TRANSMISSION

Continuously Variable Transmission (CVT) 01J

00 - GENERAL, TECHNICAL DATA

TRANSMISSION IDENTIFICATION

The "Continuously Variable Transmission (CVT) 01J" is installed in conjunction with various engines in the Audi A4 2002 -->. Allocation --> **Code letters, assembly allocation, ratios, equipment**.

Location of code letters on transmission

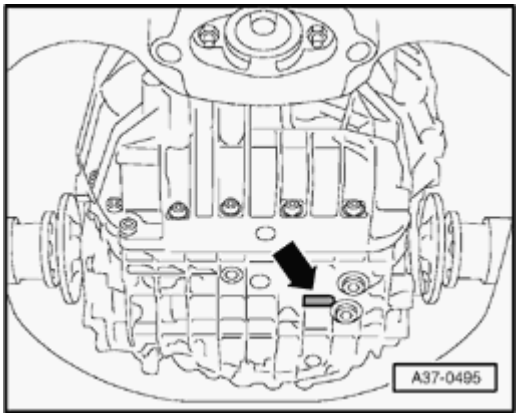


Fig. 1: Identifying Code Letters And Serial Number Of Transmission Stamped On Underside Of Transmission Housing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Code letters and serial number of transmission are stamped on underside of transmission housing - **arrow** -.

Example:	FRC	03	07	01
	I	I	I	I
	Code letters	Day	Month	Year (2001) of manufacture

NOTE:

- **The code letters of the transmission are also listed on the vehicle data stickers.**

GENERAL INFORMATION FOR CONTINUOUSLY VARIABLE TRANSMISSION (CVT) 01J

General information for "Continuously Variable Transmission (CVT) 01J"

Extensive information about the construction and function of this transmission 951103 Continuously Variable Transmission (CVT) 01J.

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NOTE:

- **The continuously variable automatic transmission multitronic 01J is also called "Continuously Variable Transmission" , short "CVT".**

Guided Fault Finding

Always perform Guided Fault Finding using Diagnostic Operation System VAS 5051 A before starting disassembly and assembly work.

CODE LETTERS, ASSEMBLY ALLOCATION, RATIOS, EQUIPMENT

Code letters, assembly allocation, ratios, equipment

Multitronic			**01J.A**		**01J.B**		**01J.B**	
Transmission	Code letters		EVE		EVJ		FQG	
Application	Model		Audi A4 2001 -->		Audi A4 2001 -->		Audi A4 Cabriolet 2003 -->	
	Engine		2.0L 5V -96 kW		3.0L 5V -162 kW		3.0L 5V -162 kW	
Input gearing ratio			57 : 41	1.390	51 : 46	1.109	51 : 46	1.109
Front final drive ratio			41 : 9	4.556	43 : 9	4.778	43 : 9	4.778
Ring gear	Diameter	mm	204		204		204	
Flange shafts	Center diameter	mm	108		88		88	
	Hole circle diameter	mm	94		104		104	

Multitronic			**01J.E**		**01J.H**		**01J.H**	
Transmission	Code letters		FQH		FQJ		FSD	
Application	Model		Audi A4 Cabriolet 2003 --> USA		Audi A4 Cabriolet 2003 -->		Audi A4 2001 --> , Audi A4 Cabriolet 2003 -->	
	Engine		1.8 L 5VT - 125 kW		1.8 L 5VT -110 kW		1.8 L 5VT -110 kW	
Input gearing ratio			57 : 41	1.390	54 : 43	1.256	54 : 43	1.256
Front final drive ratio			43 : 9	4.778	43 : 9	4.778	43 : 9	4.778
Ring gear	Diameter	mm	204		204		204	
Flange shafts	Center diameter	mm	88		88		88	
	Hole circle diameter	mm	104		104		104	

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Multitronic			**01J.E**		**01J.A**		**01J.B**	
Transmission	Code letters		FSE		FSF		FSG	
Application	Model		Audi A4 2001 --> USA, Mexico		Audi A4 2001 -->		Audi A4 2001 --> , Audi A4 Cabriolet 2003 -->	
	Engine		1.8 L 5VT - 125 kW		2.0L 5V -96 kW		3.0L 5V -162 kW	
Input gearing ratio			57 : 41	1.390	57 : 41	1.390	51 : 46	1.109
Front final drive ratio			43 : 9	4.778	41 : 9	4.556	43 : 9	4.778
Ring gear	Diameter	mm	204		204		204	
Flange shafts	Center diameter	mm	88		108		88	
	Hole circle diameter	mm	104		94		104	

Multitronic			**01J.C**	
Transmission	Code letters		FSH	
Application	Model		Audi A4 2001 --> , Audi A4 Cabriolet 2003 --> USA, Mexico	
	Engine		3.0L 5V -162 kW	
Input gearing ratio			53 : 45	1.178
Front final drive ratio			43 : 9	4.778
Ring gear	Diameter	mm	204	
Flange shafts	Center diameter	mm	88	
	Hole circle diameter	mm	104	

Multitronic			**01J.A**		**01J.B**		**01J.C**	
Transmission	Code letters		FYS		FYU		FYW	
Application	Model		Audi A4 2001 -->		Audi A4 2001 --> , Audi A4 Cabriolet 2003 --> also Mexico		Audi A4 2001 --> , Audi A4 Cabriolet 2003 --> USA, Mexico	
	Engine		2.0 L 4V FSI - 110 kW		3.0 L 5V - 162 kW 3.0 L 5V - 160 kW		3.0L 5V -162 kW	
Input gearing ratio			57 : 41	1.390	51 : 46	1.109	53 : 45	1.178
Front final drive ratio			41 : 9	4.556	43 : 9	4.778	43 : 9	4.778
Ring gear	Diameter	mm	204		204		204	
Flange shafts	Center diameter	mm	88		88		88	
	Hole circle	mm	104		104		104	

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	diameter					

Multitronic			**01J.A**		**01J.A**	
Transmission	Code letters		FYZ		FZA	
Application	Model		Audi A4 2001 -->		Audi A4 2001 -->	
	Engine		2.0 L 4V FSI - 110 kW		2.0L 5V -96 kW	
Input gearing ratio			57 : 41	1.390	57 : 41	1.390
Front final drive ratio			41 : 9	4.556	41 : 9	4.556
Ring gear	Diameter	mm	204		204	
Flange shafts	Center diameter	mm	88		108	
	Hole circle diameter	mm	104		94	

Multitronic			**01J.H**		**01J.H**		**01J.E**	
Transmission	Code letters		FZB		FZC		FZD	
Application	Model		Audi A4 2001 --> , Audi A4 Cabriolet 2003 -->		Audi A4 Cabriolet 2003 -->		Audi A4 2001 --> USA, Mexico Audi A4 Cabriolet 2003 --> USA	
	Engine		1.8 L 5VT -110 kW		1.8 L 5VT -110 kW		1.8 L 5VT - 125 kW	
Input gearing ratio			54 : 43	1.256	54 : 43	1.256	57 : 41	1.390
Front final drive ratio			43 : 9	4.778	43 : 9	4.778	43 : 9	4.778
Ring gear	Diameter	mm	204		204		204	
Flange shafts	Center diameter	mm	88		88		88	
	Hole circle diameter	mm	104		104		104	

Multitronic			**01J.H**		**01J.C**		**01J.E**	
Transmission	Code letters		GEB		GGR		GGS	
Application	Model		Audi A4 2001 --> , Audi A4 Cabriolet 2003 -->		Audi A4 2001 --> , Audi A4 Cabriolet 2003 --> USA		Audi A4 2001 -->	
	Engine		1.8 L 5VT - 120 kW 1.8 L 5VT - 125 kW * See note		3.0L 5V -162 kW		2.0L 5V -96 kW	
Input gearing ratio			54 : 43	1.256	53 : 45	1.178	57 : 41	1.390
Front final drive ratio			43 : 9	4.778	43 : 9	4.778	43 : 9	4.778

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Ring gear	Diameter	mm	204	204	204
Flange shafts	Center diameter	mm	88	88	88
	Hole circle diameter	mm	104	104	104

*Only country version Mexico.

Multitronic			**01J.E**		**01J.B**		**01J.C**	
Transmission	Code letters		GGT		GHR		GHS	
Application	Model		Audi A4 Cabriolet 2003 --> USA		Audi A4 2001 --> , Audi A4 Cabriolet 2003 --> also Mexico		Audi A4 2001 --> , Audi A4 Cabriolet 2003 --> USA	
	Engine		1.8 L 5VT - 125 kW		3.0L 5V -162 kW		3.0L 5V -162 kW	
Input gearing ratio			57 : 41	1.390	51 : 46	1.109	53 : 45	1.178
Front final drive ratio			43 : 9	4.778	43 : 9	4.778	43 : 9	4.778
Ring gear	Diameter	mm	204		204 or 203 * See note		204 or 203 * See note	
Flange shafts	Center diameter	mm	88		88		88	
	Hole circle diameter	mm	104		104		104	

* Version dependent .

Multitronic			**01J.E**		**01J.E**	
Transmission	Code letters		GHU		GHV	
Application	Model		Audi A4 2001 -->		Audi A4 2001 -->	
	Engine		2.0 L 4V FSI - 110 kW		2.0L 5V -96 kW	
Input gearing ratio			57 : 41	1.390	57 : 41	1.390
Front final drive ratio			43 : 9	4.778	43 : 9	4.778
Ring gear	Diameter	mm	204 or 203 * See note		204 or 203 * See note	
Flange shafts	Center diameter	mm	88		88	
	Hole circle diameter	mm	104		104	

*Only country version Belgium.

* Version dependent .

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Multitronic			**01J.H**		**01J.E**	
Transmission	Code letters		GHW		GHX	
Application	Model		Audi A4 2001 --> , Audi A4 Cabriolet 2003 --> also Mexico		Audi A4 2001 --> , Audi A4 Cabriolet 2003 --> USA	
	Engine		1.8 L 5VT -120 kW		1.8 L 5VT - 125 kW	
Input gearing ratio			54 : 43	1.256	57 : 41	1.390
Front final drive ratio			43 : 9	4.778	43 : 9	4.778
Ring gear	Diameter	mm	204 or 203 * See note		204 or 203 * See note	
Flange shafts	Center diameter	mm	88		88	
	Hole circle diameter	mm	104		104	

* Version dependent .

Multitronic			**01J.E**		**01J.B**	
Transmission	Code letters		GNS		GWN	
Application	Model		Audi A4 2001 -->		Audi A4 2001 --> , Audi A4 Cabriolet 2003 -->	
	Engine		1.8 L 5VT -140 kW		3.0L 5V -162 kW	
Input gearing ratio			57 : 41	1.390	51 : 46	1.109
Front final drive ratio			43 : 9	4.778	43 : 9	4.778
Ring gear	Diameter	mm	204 or 203 * See note		204 or 203 depending on version	
Flange shafts	Center diameter	mm	88		88	
	Hole circle diameter	mm	104		104	

* Version dependent .

Multitronic			**01J.C**		**01J.E**	
Transmission	Code letters		GWP		GWR	
Application	Model		Audi A4 2001 --> , Audi A4 Cabriolet 2003 --> USA		Audi A4 2001 -->	
	Engine		3.0L 5V -162 kW		2.0 L 4V FSI - 110 kW	
Input gearing ratio			53 : 45	1.178	57 : 41	1.390
Front final drive ratio			43 : 9	4.778	43 : 9	4.778
Ring gear	Diameter	mm	203		203	

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Flange shafts	Center diameter	mm	88	88
	Hole circle diameter	mm	104	104

Multitronic			**01J.E**		**01J.E**	
Transmission	Code letters		GWS		GWU	
Application	Model		Audi A4 2001 -->		Audi A4 2001 --> , Audi A4 Cabriolet 2003 --> USA	
	Engine		2.0L 5V -95 kW		1.8 L 5VT - 125 kW	
Input gearing ratio			57 : 41	1.390	57 : 41	1.390
Front final drive ratio			43 : 9	4.778	43 : 9	4.778
Ring gear	Diameter	mm	204		204	
Flange shafts	Center diameter	mm	88		88	
	Hole circle diameter	mm	104		104	

Multitronic			**01J.E**		**01J.H**		**01J.H**	
Transmission	Code letters		GZD		GZE		GZF	
Application	Model		Audi A4 2001 -->		Audi A4 2001 --> , Audi A4 Cabriolet 2003 --> USA		Audi A4 2001 --> , Audi A4 Cabriolet 2003 -->	
	Engine		2.0L 5V -96 kW		1.8 L 5VT - 125 kW		1.8 L 5VT -120 kW	
Input gearing ratio			57 : 41	1.390	57 : 41	1.390	54 : 43	1.256
Front final drive ratio			43 : 9	4.778	43 : 9	4.778	43 : 9	4.778
Ring gear	Diameter	mm	204		203		204	
Flange shafts	Center diameter	mm	88		88		88	
	Hole circle diameter	mm	104		104		104	

Multitronic			**01J.H**		**01J.H**		**01J.E**	
Transmission	Code letters		GZL		GZM		HAY HAZ	
Application	Model		Audi A4 2001 -->		Audi A4 2001 -->		Audi A4 2001 -->	
	Engine		1.8 L 5VT -140 kW		1.8 L 5VT -140 kW		2.0L 5V -96 kW	
Input gearing ratio			54 : 43	1.256	54 : 43	1.256	57 : 41	1.390
Front final drive ratio			43 : 9	4.778	43 : 9	4.778	43 : 9	4.778

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Ring gear	Diameter	mm	203	203	204 or 203 * See note
Flange shafts	Center diameter	mm	88	88	88
	Hole circle diameter	mm	104	104	104

* Version dependent .

Multitronic			**01J.K**		**01J.H**		**01J.E**	
Transmission	Code letters		HBB HBC		HBD		HBE HBG	
Application	Model		Audi A4 2001 -->		Audi A4 2001 --> , Audi A4 Cabriolet 2003 -->		Audi A4 2001 --> , Audi A4 Cabriolet 2003 -->	
	Engine		2.0L 5V -96 kW		1.8 L 5VT -120 kW		1.8 L 5VT -120 kW	
Input gearing ratio			57 : 41	1.390	54 : 43	1.256	57 : 41	1.390
Front final drive ratio			41 : 8	5.125	43 : 9	4.778	41 : 8	5.125
Ring gear	Diameter	mm	203		204 or 203 * See note		204	
Flange shafts	Center diameter	mm	88		88		88	
	Hole circle diameter	mm	104		104		104	

* Version dependent .

Multitronic			**01J.E**		**01J.G**		**01J.E**	
Transmission	Code letters		HBH		HBV		HCP	
Application	Model		Audi A4 2001 --> , Audi A4 Cabriolet 2003 -->		Audi A4 2001 --> , Audi A4 Cabriolet 2003 -->		Audi A4 2001 --> , Audi A4 Cabriolet 2003 --> USA	
	Engine		1.8 L 5VT -120 kW		3.0L 5V -162 kW		1.8 L 5VT - 125 kW	
Input gearing ratio			57 : 41	1.390	51 : 46	1.109	57 : 41	1.390
Front final drive ratio			43 : 9	4.778	41 : 8	5.125	43 : 9	4.778
Ring gear	Diameter	mm	204 or 203 * See note		203		203	
Flange shafts	Center diameter	mm	88		88		88	
	Hole circle diameter	mm	104		104		104	

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* Version dependent .

Multitronic			**01J.E**		**01J.E**	
Transmission	Code letters		HDX		HDZ	
Application	Model		Audi A4 2001 -->		Audi A4 2001 -->	
	Engine		2.0 L 4V - 105 kW FSI		2.0L 5V -96 kW	
Input gearing ratio			57 : 41	1.390	57 : 41	1.390
Front final drive ratio			43 : 9	4.778	43 : 9	4.778
Ring gear	Diameter	mm	203		203	
Flange shafts	Center diameter	mm	88		88	
	Hole circle diameter	mm	104		104	

Multitronic			**01J.K**		**01J.H**		**01J.E**	
Transmission	Code letters		HEB		HED		HEF	
Application	Model		Audi A4 2001 -->		Audi A4 2001 --> , Audi A4 Cabriolet 2003 -->		Audi A4 2001 --> , Audi A4 Cabriolet 2003 -->	
	Engine		2.0L 5V -96 kW		1.8 L 5VT -120 kW		1.8 L 5VT -120 kW	
Input gearing ratio			57 : 41	1.390	54 : 43	1.256	57 : 41	1.390
Front final drive ratio			41 : 8	5.125	43 : 9	4.778	43 : 9	4.778
Ring gear	Diameter	mm	203		203		203	
Flange shafts	Center diameter	mm	88		88		88	
	Hole circle diameter	mm	104		104		104	

Multitronic			**01J.E**	
Transmission	Code letters		HEH	
Application	Model		Audi A4 2001 --> , Audi A4 Cabriolet 2003 --> USA	
	Engine		1.8 L 5VT - 125 kW	
Input gearing ratio			57 : 41	1.390
Front final drive ratio			43 : 9	4.778
Ring gear	Diameter	mm	203	
Flange shafts	Center diameter	mm	88	
	Hole circle diameter	mm	104	

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Multitronic			**01J.B**		**01J.B**		**01J.B**	
Transmission	Code letters		HHB		HHD		HHE	
Application	Model		Audi A4 2001 -->		Audi A4 2001 --> , Audi A4 Cabriolet 2003 -->		Audi A4 2001 --> USA	
	Engine		3.0L 5V -162 kW		2.0 L 4V TFSI - 147 kW		2.0 L 4V TFSI - 147 kW	
Input gearing ratio			51 : 46	1.109	51 : 46	1.109	51 : 46	1.109
Front final drive ratio			43 : 9	4.778	43 : 9	4.778	43 : 9	4.778
Ring gear	Diameter	mm	203		203		203	
Flange shafts	Center diameter	mm	88		88		88	
	Hole circle diameter	mm	104		104		104	

Multitronic			**01J.M**		**01J.M**	
Transmission	Code letters		HJB		HJC	
Application	Model		Audi A4 2001 --> , Audi A4 Cabriolet 2003 -->		Audi A4 2001 --> USA	
	Engine		3.2 L FSI - 184 kW		3.2 L FSI - 184 kW	
Input gearing ratio			49 : 48	1.021	49 : 48	1.021
Front final drive ratio			43 : 9	4.778	43 : 9	4.778
Ring gear	Diameter	mm	204		204	
Flange shafts	Center diameter	mm	88		88	
	Hole circle diameter	mm	104		104	

Multitronic			**01J**		**01J.B**	
Transmission	Code letters		HSA HSB (USA)		HWK	
Application	Model		Audi A4 Cabriolet 2003 -->		Audi A4 2001 --> , Audi A4 Cabriolet 2003 -->	
	Engine		3.0L 5V -162 kW		2.0 L 4V TFSI - 147 kW	
Input gearing ratio			51 : 46	1.109	51 : 46	1.109
Front final drive ratio			43 : 9	4.778	43 : 9	4.778
Ring gear	Diameter	mm	203		203	
Flange shafts	Center diameter	mm	88		88	
	Hole circle	mm	104		104	

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	diameter							

Multitronic			**01J.B**		**01J.C**		**01J.M**	
Transmission	Code letters		HWT		HYF		JTS	
Application	Model		Audi A4 Cabriolet 2003 --> USA		Audi A4 Cabriolet 2003 --> USA		Audi A4 2001 -->	
	Engine		3.0L 5V -162 kW		1.8 L 5VT - 125 kW		3.2 L FSI -188 kW	
Input gearing ratio			53 : 45	1.178	57 : 41	1.390	49 : 48	1.021
Front final drive ratio			43 : 9	4.778	43 : 9	4.778	43 : 9	4.778
Ring gear	Diameter	mm	203		203		203	
Flange shafts	Center diameter	mm	88		88		88	
	Hole circle diameter	mm	104		104		104	

Multitronic			**01J.G**		**01J.B**		**01J.M**	
Transmission	Code letters		JTT		JYA		JZK	
Application	Model		Audi A4 2001 --> , Audi A4 Cabriolet 2003 -->		Audi A4 2001 -->		Audi A4 2001 -->	
	Engine		3.0L 5V -162 kW		2.0 L 4V TFSI -125 kW		3.2 L FSI -188 kW	
Input gearing ratio			51 : 46	1.109	51 : 46	1.109	49 : 48	1,021
Front final drive ratio			43 : 9	4.778	43 : 9	4.778	43 : 9	4,778
Ring gear	Diameter	mm	203		203		203	
Flange shafts	Center diameter	mm	88		88		88	
	Hole circle diameter	mm	104		104		104	

Multitronic			**01J.B**		**01J**		**01J.B**	
Transmission	Code letters		JZM		JZN JZP		JZQ	
Application	Model		Audi A4 2001 --> , Audi A4 Cabriolet 2003 -->		Audi A4 2001 -->		Audi A4 2001 --> , Audi A4 Cabriolet 2003 -->	
	Engine		2.0 L 4V TFSI - 147 kW		2.0L 5V -96 kW		1.8 L 5VT -120 kW	
Input gearing ratio			51 : 46	1.109	57 : 41	1.390	54 : 43	1.256

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Front final drive ratio			43 : 9	4.778	41 : 8	5.125	43 : 9	4.778
Ring gear	Diameter	mm	203		203		203	
Flange shafts	Center diameter	mm	88		88		88	
	Hole circle diameter	mm	104		104		104	

Multitronic			**01J.E**	
Transmission	Code letters		JZR	
Application	Model		Audi A4 2001 --> , Audi A4 Cabriolet 2003 -->	
	Engine		1.8 L 5VT -120 kW	
Input gearing ratio			57 : 41	1.390
Front final drive ratio			43 : 9	4.778
Ring gear	Diameter	mm	203	
Flange shafts	Center diameter	mm	88	
	Hole circle diameter	mm	104	

CAPACITIES

Capacities

Planetary transmission

Capacities	**Planetary transmission**	**Multitronic**
Initial filling	Approx. 7.5 L	01J
Changing	4.5 to 5.0 L * See note	
Lubricant	ATF for CVT transmission	

* ATF change interval for planetary gear -->

- **01 - MAINTENANCE**
- **01 - MAINTENANCE** for MAINTENANCE PROCEDURES - CABRIOLET

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ATF for CVT transmission can be obtained as replacement part, container size:

- 1.0 L - *ATF (Automatic Transmission Fluid) G 052 180 A2*

CAUTION: The Continuously Variable Automatic Transmission Multitronic 01J requires a different ATF than shift automatics. Only ATF for CVT

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transmission which can be obtained as replacement part must be used in the planetary gear.

Checking ATF level or replacing ATF --> **ATF level, checking and topping off**.

Front final drive

Capacities	Front final drive	Multitronic
Initial filling	Approx. 1.3 L	01J
Changing	Filled for life, No change	
Lubricant	Multitronic gear oil	

Multitronic gear oil is available as a replacement part and comes in the following container size:

- 1.0 L - *Axle oil G 052 190 A2*

CAUTION: The Continuously Variable Automatic Transmission Multitronic 01J requires a different axle oil than shift automatics. Only axle oil for Multitronic which can be obtained as a replacement part must be used in front final drive.

Oil level in front final drive, checking --> **Gear oil level in front final drive, checking**.

TOWING INSTRUCTIONS

Towing instructions

CAUTION: When towing, selector lever must be in position "N" and vehicle must not to be towed for more than 50 km or at a speed in excess of 50 km/h as otherwise transmission would be destroyed.

NOTE:

- **Tow-starting the engine, e.g. when the battery is too weak or the starter is faulty, is not possible.**

REPAIR INSTRUCTIONS

Repair instructions

CAUTION: Shift selector lever into position "P" and engage parking brake before working with the engine running.

When engine is running, an exhaust extraction system must always be connected to exhaust system.

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The maximum possible care and cleanliness and proper tools are essential to ensure satisfactory and successful transmission repairs. The usual basic safety precautions also apply when carrying out vehicle repairs.

A number of generally applicable instructions for individual repair procedures, which are otherwise mentioned at various points in the article, are summarized here. They apply to this article.

Contact corrosion!

- Transmission housing of continuously variable automatic transmission Multitronic 01J consists of a magnesium alloy.
- Bolts and other components which have direct contact with transmission have a surface coating which is matched to magnesium transmission housing.
- On magnesium transmissions, bolts must always be replaced on following bolted connections: transmission cover to transmission housing and final drive cover to transmission housing.
- Contact corrosion occurs when incorrect components (bolts, nuts, washers, etc.) are used. The transmission housing will be damaged.
- Transmission housing, transmission cover and differential cover must all be of same material.
- If you are not sure whether used parts can be re-installed, always install new parts.

CAUTION:

- **Use only Genuine Audi Parts!**
- **Damage resulting from contact corrosion is not covered by the warranty!**

General Repair Notes

Transmission

- Observe rules of cleanliness for working on the transmission --> **Rules for cleanliness when working on transmission**.
- Do not run engine with end cover removed or without ATF filling and do not tow vehicle.
- Only install clean parts: Remove packing from replacement parts immediately prior to installation and not before.
- After installing, the following fluid levels must be checked and topped off if necessary: ATF in planetary gear --> **ATF level, checking and topping off** and axle oil in front final drive --> **Gear oil level in front final drive, checking**. Capacities and specifications --> **Capacities**.

O-rings, seals, gaskets

- Always replace O-rings, gaskets and seals.
- After removing gaskets, examine contact surface on housing/shaft for burr resulting from removal or for other signs of damage.
- Thoroughly clean housing joint surfaces before assembling.
- To install, thinly coat gaskets along outer circumference and on sealing lip with ATF.

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- Lightly lubricate O-rings with ATF when installing to prevent the rings from being pinched when components are assembled.
- Only use ATF for automatic transmission components. Other types of lubrication cause faults to occur in the transmission hydraulics.
- Open sides of oil seals face fluid side.
- When pressing in new gaskets, make sure the sealing lip does not run on the same point as the sealing lip of the old seal (use insertion depth tolerances).

- After installing, the following fluid levels must be checked and topped off if necessary: ATF in planetary gear --> **ATF level, checking and topping off** or axle oil in front final drive --> **Gear oil level in front final drive, checking**. Capacities and specifications --> **Capacities**.

Bolts and nuts

- Loosen bolts in reverse of tightening sequence.
- Nuts and bolts which secure covers and housings should be tightened in stages according to specified sequence and tightening method.
- Loosen and tighten bolts and nuts for securing covers and housings in a diagonal sequence and in stages, when no tightening sequence is specified.
- The tightening torques stated apply to unoiled bolts and nuts.

- Replace self-locking bolts and nuts.
- Clean threads of bolts that were applied with locking fluid using a wire brush. Then insert bolts with *locking fluid AMV 185 101 A1* .
- Threaded holes into which self-locking bolts or bolts coated with locking fluid are installed, must be cleaned (e.g. tap). Otherwise there is a risk that the bolts will shear the next time they are removed.

Locking elements

- Do not over-stretch circlips.
- Always replace circlips which have been damaged or over-tensioned.
- Circlips must be properly seated in the base of the groove.

Bearings

- Install needle bearings with the lettering on the bearing (the side with thicker metal) facing towards the drift.
- Insert bearing with axle oil or ATF, depending on installation location.
- Do not interchange outer or inner races of bearings of the same size.
- Always replace taper roller bearings on one shaft together and use new bearings from a single manufacturer.

Adjustment shims

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- Use a micrometer to measure shims at several points. Varying tolerances make it possible to measure the required shim thickness exactly.
- Inspect for burrs and signs of damage. Install only shims that are in perfect condition.

Guided Fault Finding

Always perform Guided Fault Finding using Diagnostic Operation System VAS 5051 A before starting disassembly and assembly work.

Rules for cleanliness when working on transmission

- Carefully clean all joints and adjacent areas before disconnecting.
- Place removed parts on a clean surface and cover them. Use sheeting or paper. Do not use fluffy cloths!
- Carefully cover or plug unpacked components if repairs cannot be performed immediately.
- Only install clean parts: Remove packing from replacement parts immediately prior to installation and not before.

Transmission bell housing, ATF leaking

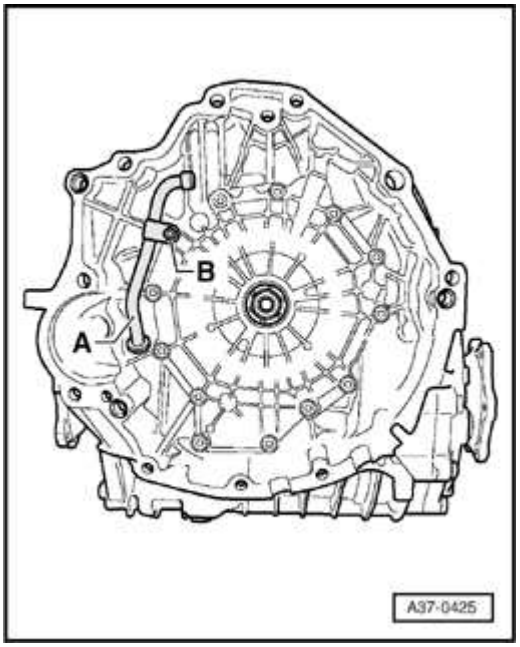


Fig. 2: Identifying ATF Breather Pipe & Level Of Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **If ATF leak is determined from check hole behind ATF breather pipe - A - at level of bolt - B - , transmission is malfunctioning and must be replaced.**

37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING

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ELECTRICAL/ELECTRONIC COMPONENTS AND INSTALLED LOCATIONS

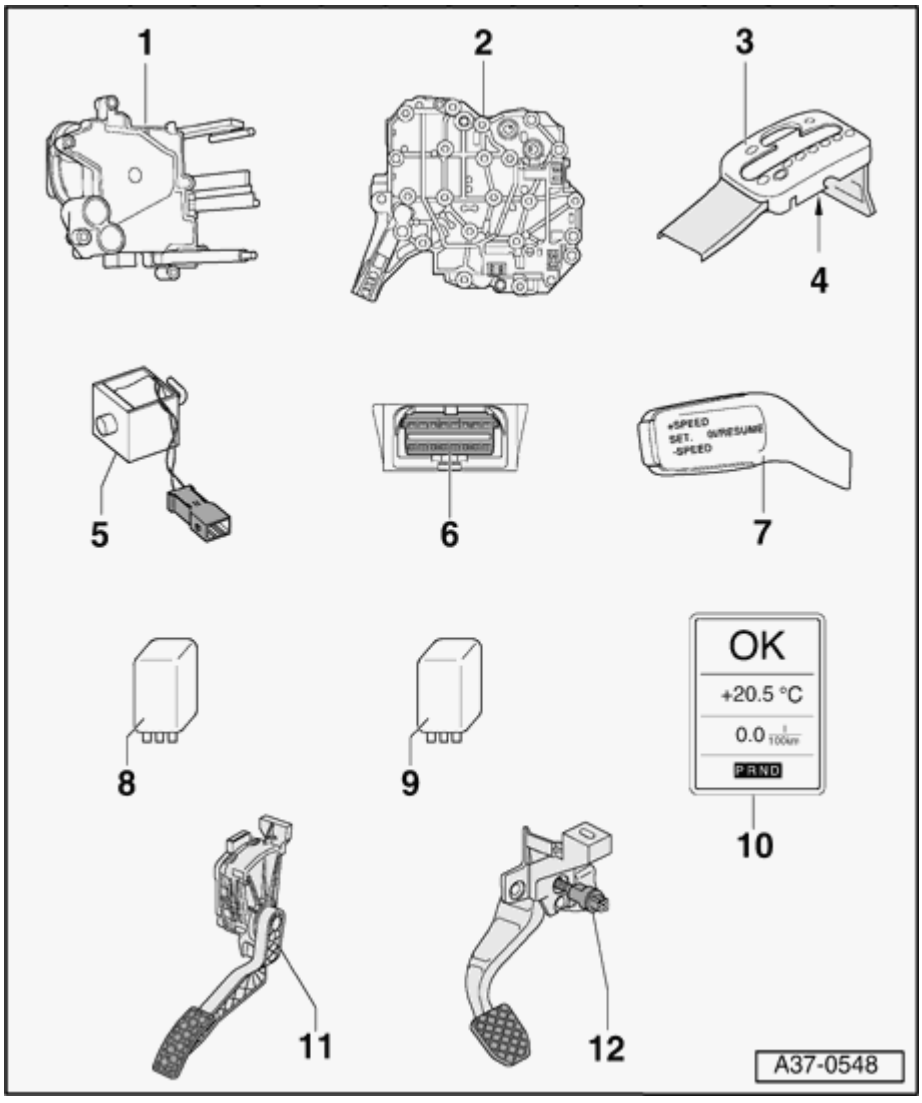


Fig. 3: Electrical/Electronic Components And Installed Locations
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Transmission Control Module (TCM) J217

- Installed location --> **Transmission Control Module (TCM) J217**
- Control module is checked with On Board Diagnostics (OBD)
- Removing and installing --> **Transmission Control Module (TCM) J217 , removing and installing**

2 - Hydraulic control module

- Installed location **Hydraulic control module**
- Valves are checked with On Board Diagnostics (OBD)

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- Removing and installing --> **Hydraulic control module, removing and installing**

3 - Shift mechanism cover

- --> **Shift mechanism cover (through VIN 8E_6A156499), removing and installing**
- --> **Shift mechanism cover (from VIN 8E_6A156500), removing and installing**

4 - Tiptronic Switch F189

- Location: Integrated into circuit board in cover of shift mechanism
- Consists of 3 Hall sensors that are controlled by a magnet on the cover strip transverse slide.
- If malfunctions at Tiptronic Switch F189 occur, check first whether magnet at control slide masking panel is properly secured and replace masking panel if necessary. Before replacing the printed circuit, check wiring.
- --> **Tiptronic Switch F189 (through VIN 8E_6A156499), removing and installing**
- --> **Tiptronic Switch F189 (from VIN 8E_6A156500), removing and installing**

5 - Shift lock solenoid N110

- Installed location --> **Shift lock solenoid N110**
- --> **Shift Lock Solenoid N110 (through VIN 8E_6A156499), removing and installing**
- --> **Shift Lock Solenoid N110 (from VIN 8E_6A156500), removing and installing**

6 - Data Link Connector (DLC)

- Installed location **Data Link Connector (DLC)**

7 - Cruise Control Switch E45

- Installed location --> **Cruise Control Switch E45**
- Removing and installing -->
  - **94 LIGHTS, SWITCHES - EXTERIOR**
  - **94 LIGHTS, SWITCHES - EXTERIOR** for ELECTRICAL EQUIPMENT, CABRIOLET

8 - Park/Neutral Position (PNP) Relay J226 (up to 10.04) or Starting Interlock Relay J207 (as of 11.04)

- Installed location --> **Power supply relay terminal 87/Starter Interlock Alarm System Relay J60 and Park/Neutral Position (PNP) Relay J226 (up to 10.04) or Starting Interlock Relay J207 (as of 11.04)**

9 - Power supply relay terminal 87/ Starter Interlock Alarm System Relay J60

- Installed location --> **Power supply relay terminal 87/Starter Interlock Alarm System Relay J60 and Park/Neutral Position (PNP) Relay J226 (up to 10.04) or Starting Interlock Relay J207 (as of 11.04)**

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10 - Transmission Range (TR) Display Y6

- Installed location --> **Transmission Range (TR) Display Y6**
- A fully illuminated gear selection indicator indicates a simple malfunction
- A blinking gear selection indicator indicates a critical malfunction
- No indication on display points to a fault in wiring or a faulty Transmission Range (TR) Display Y6

11 - Kick Down Switch F8

- Not a separate component, it adopts functions of Throttle Position (TP) Sensor G79 and Accelerator Pedal Position Sensor 2 G185 in vehicles with gasoline engine, both are integrated in accelerator pedal module; component location --> **Kick Down Switch F8**
- Installed as one unit with Throttle Position (TP) Sensor G79 in vehicles with Diesel engine, this is integrated in the accelerator pedal module; component location --> **Kick Down Switch F8**
- Signal received in Engine Control Module (ECM), signal transferred from ECM to Transmission Control Module (TCM) via CAN-Bus
- Removing and installing accelerator pedal module --> **20 - FUEL SUPPLY SYSTEM**

12 - Brake Light Switch F

- Installed location --> **Brake Light Switch F**
- Signal received in Engine Control Module (ECM), signal transferred from ECM to Transmission Control Module (TCM) via CAN-Bus
- Removing and installing --> **46 - BRAKES - MECHANICAL COMPONENTS**

Transmission Control Module (TCM) J217

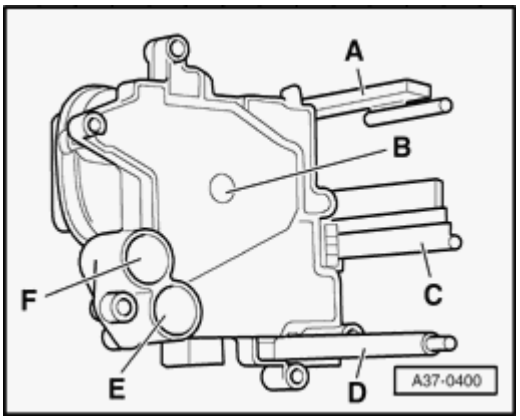


Fig. 4: Identifying Sensors Of Soiling And Metal Shavings
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Location: Transmission Control Module (TCM) J217 is on the back end of transmission, secured directly to hydraulic control module.

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The following components are integrated in the control module:

A - Transmission Output Speed (RPM) Sensor G195 and Transmission Output Speed (RPM) Sensor 2 G196

B - Transmission Fluid Temperature Sensor G93

C - Multi-Function Transmission Range (TR) Switch F125

D - Transmission Input Speed (RPM) Sensor G182

E - Automatic Transmission Hydraulic Pressure Sensor 1 G193

F - Automatic Transmission Hydraulic Pressure Sensor 2 G194

Removing and installing Transmission Control Module (TCM) J217 --> **Transmission Control Module (TCM) J217 , removing and installing**.

Hydraulic control module

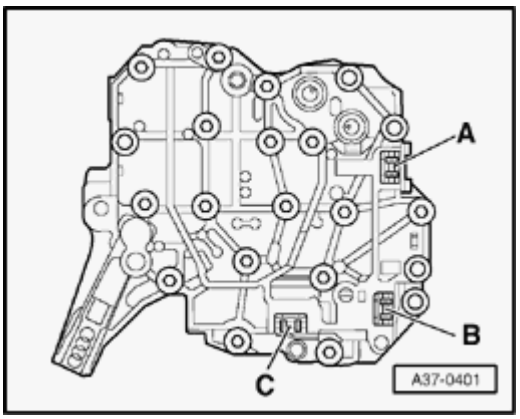


Fig. 5: Identifying Hydraulic Control Module Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Location: Hydraulic control module is bolted to back end of transmission. Transmission Control Module (TCM) J217 is fastened directly to hydraulic control module.

A - Harness connector for Automatic Transmission Pressure Regulating Valve 1 N215

B - Harness connector for Automatic Transmission Pressure Regulating Valve 2 N216

C - Harness connector for Solenoid Valve 1 N88

Following valves are integrated into hydraulic control module (not depicted here).

- Automatic Transmission Pressure Regulating Valve 1 N215 (clutch solenoid valve)
- Automatic Transmission Pressure Regulating Valve 2 N216 (solenoid valve gear)

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- Solenoid Valve 1 N88 (clutch cooling/safety shut-off)
- Clutch cooling valve

- Minimum pressure valve
- Pressure relief valve
- Clutch control valve
- Pressure control valve

NOTE:

- **Valves are monitored via On Board Diagnostic (OBD).**
- **Description and functions of individual valves 951103Continuously Variable Automatic Transmission Multitronic 01J.**

Removing and installing hydraulic control module --> **Hydraulic control module, removing and installing**.

Shift lock solenoid N110

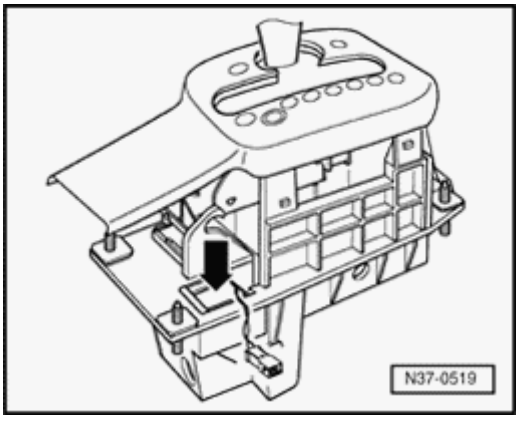


Fig. 6: Shift Lock Solenoid -N110-
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Location: Shift Lock Solenoid N110 is located in shift mechanism - **arrow** -.

Data Link Connector (DLC)

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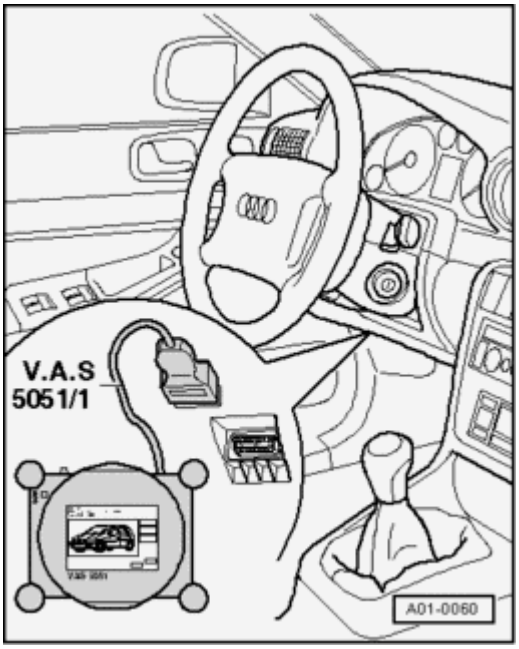


Fig. 7: Identifying Vehicle Diagnosis, Testing and Information System VAS 5051 and Data Link Connector (DLC)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Location: Diagnostic connection is located beneath knee bolster on left of steering wheel.

Cruise Control Switch E45

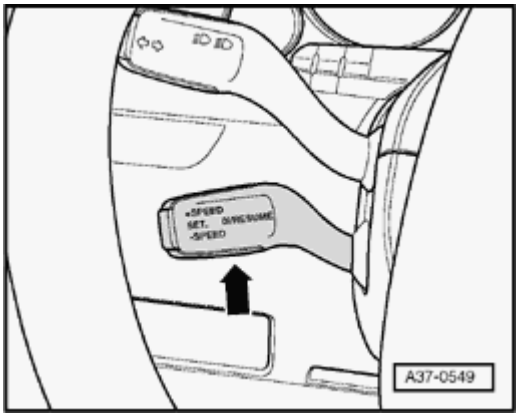


Fig. 8: Cruise Control Switch E45
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Location: Cruise control switch is located on steering column switch.

Transmission Range (TR) Display Y6

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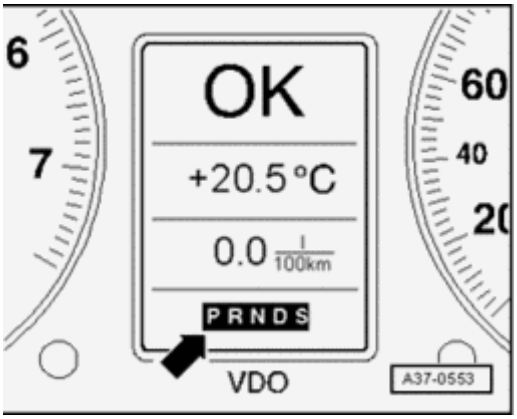


Fig. 9: Transmission Range (TR) Display Y6
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Location: Integrated in instrument cluster.

NOTE:

- **Transmission Range (TR) Display Y6 can only be replaced as a set with the instrument cluster.**

Power supply relay terminal 87/Starter Interlock Alarm System Relay J60 and Park/Neutral Position (PNP) Relay J226 (up to 10.04) or Starting Interlock Relay J207 (as of 11.04)

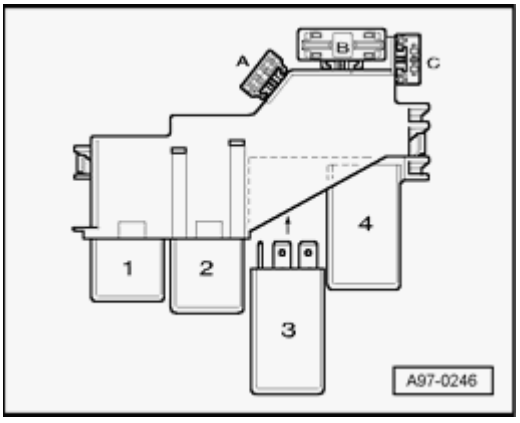


Fig. 10: Power Supply Relay Terminal 87/Starter Interlock Alarm System Relay J60 And Park/Neutral Position (PNP) Relay J226 (Up To 10.04) Or Starting Interlock Relay J207 (As Of 11.04)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Location: On relay carrier in E-box, plenum chamber.

Voltage is supplied differently via terminal 87:

1 - Starter Interlock Alarm System Relay J60 - only in vehicles with 2.4 L gasoline engine

3 - Motronic Engine Control Module (ECM) Power Supply Relay J271 - in all other vehicles with gasoline engine

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3 - Power Supply Relay (terminal 30, B+) J317 - in vehicles with Diesel engine

4 - Park/Neutral Position (PNP) Relay J226 (up to 10.04) or Starting Interlock Relay J207 (as of 11.04)

NOTE:

- **In vehicles as of 11.04, activation of reverse driving lights occurs via CAN-Bus.**

Brake Light Switch F

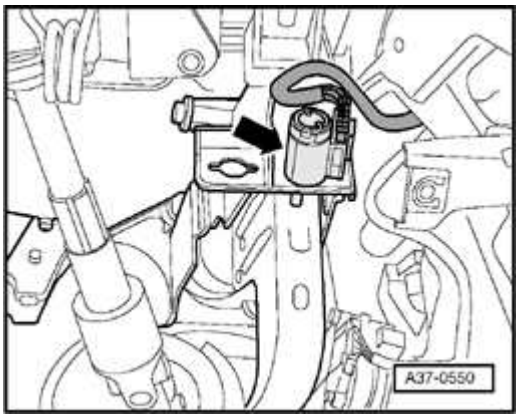


Fig. 11: Brake Light Switch F
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Location: Brake light switch - **arrow** - is located in brake pedal assembly.

NOTE:

- **Switch is only to be installed once so as to ensure a firm fit.**

Kick Down Switch F8

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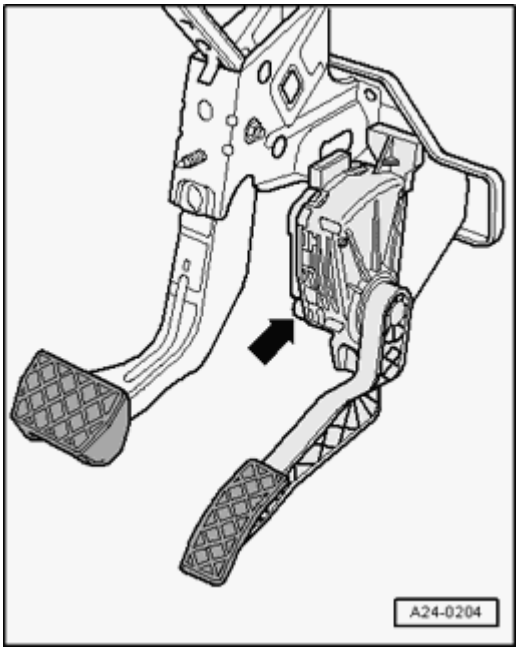


Fig. 12: Kick Down Switch F8
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Location: In accelerator pedal module - **arrow** -.

NOTE:

- **In vehicles with gasoline engine, Kick Down Switch F8 adopts the functions of Throttle Position (TP) Sensor G79 and Accelerator Pedal Position Sensor 2 G185.**

SHIFT MECHANISM (THROUGH VIN 8E_6A156499), SERVICING

Shift mechanism (through VIN 8E_6A156499), servicing

CAUTION: Shift selector lever into position "P" and engage parking brake before working with the engine running.

Shift mechanism (through VIN 8E_6A156499), checking

Overview:

- 1. Selector mechanism function test --> **Selector mechanism function test**
- 2. Checking ignition key removal lock --> **Check ignition key withdrawal lock**
- 3. Locking button on selector lever handle, checking --> **Check locking button on selector lever handle**

- If shift mechanism does not function as described, perform "Guided Fault Finding" with Vehicle Diagnosis, Testing and Information System VAS 5051B.

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Selector mechanism function test

- In selector lever positions "S" , "D" , "R" and "Tiptronic gate" the starter motor will not operate.
- If selector lever position "N" is selected at speeds greater than 5 km/h, the selector lever lock solenoid must not engage and block selector lever. Selector lever can be shifted into driving gear.
- For speeds below 2 km/h (almost standstill) and shifting into selector lever position "N" , the shift lock solenoid must only engage after approx. 1 second. Selector lever can only be shifted out of position "N" with brake pedal operated.

Selector lever in "P" position and ignition switched on:

- Do not operate brake pedal.

- Selector lever is locked and also cannot be shifted out of position "P" while locking button on selector lever handle is pressed. Shift Lock Solenoid N110 blocks selector lever.

- Press brake pedal and hold.

- Shift Lock Solenoid N110 releases selector lever. It must be possible to select a driving mode without "hitching" while locking button on selector lever handle is pressed.
- Slowly shift selector lever from "P" through "R, N, D, S" , checking whether Transmission Range (TR) Display Y6 in instrument cluster matches selector lever position.

Selector lever in "N" position and ignition switched on:

- Do not operate brake pedal.

- Up to approx. 08.01: Selector lever is locked and cannot be shifted out of position "N" without pressing button on selector lever handle. Shift Lock Solenoid N110 blocks selector lever.
- As of approx. 08.01: Selector lever is not locked immediately when rapidly shifting through position "N" (e.g. from "R" to "D"). This enables e.g. "forward and reverse maneuvers" when vehicle is stuck. Shift lock engages when selector lever is located in "N" for longer than approx. 1 s with brake not being pressed.

- Operate brake pedal.

- Shift Lock Solenoid N110 releases selector lever. It must be possible to select a driving mode without "hitching" while locking button on selector lever handle is pressed.

Selector lever in position "D" , ignition switched on:

- Shift selector lever into "Tiptronic gate".

- Brightening of "D" symbol must go out in selector mechanism cover and "+" and "-" symbols must light up.
- The Transmission Range (TR) Display Y6 in instrument cluster must change from "PRND" to "654321"

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or (from VIN 8E_5400001) from "PRNDS" to "7654321" when selector lever is shifted into "Tiptronic Gate".

If specified values are not obtained:

- Adjust selector lever cable --> **Selector lever cable (through VIN 8E_6A156499), adjusting**.
- Check ignition key removal lock.

Check ignition key withdrawal lock

- Switch ignition key to driving position ("ignition on").
- Press brake pedal and hold.

- It must be possible to shift selector lever out of position "P" without "hitching" while locking button on selector lever handle is pressed.

- Switch ignition off.

- It should not be possible to remove ignition key when selector lever is in any other position than "P".

- Place selector lever in position "P".

- It must be possible to move ignition key into removal position without "sticking".

- Remove ignition key.

- It must be possible to remove ignition key only in position "P".
- Selector lever cannot be shifted out of position "P" with locking button pressed and foot brake operated.

Check locking button on selector lever handle

Check locking button for ease of movement:

- It must be possible to press locking button without great force.
- After releasing, the locking button must come all the way back out by itself

If specified values are not obtained:

- Check whether selector lever handle is installed correctly.
- Check whether selector rod or selector lever is bent.

Function test:

- Ignition switched on

Locking button on selector lever handle must be pressed for the following shifts. If it is not pressed, the selector

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lever cannot be shifted into specified position.

- "P" to "R" and also press brake pedal
- "D" to "S"
- "N" to "R" ; in standstill, also press brake pedal after long wait
- "R" to "P"

If specified values are not obtained:

- Check whether selector lever handle is installed correctly.
- Adjust selector lever cable --> **Selector lever cable (through VIN 8E_6A156499), adjusting**.

Shift mechanism, through VIN 8E_6A156499, removing and installing

Removing

- Remove selector lever handle --> **Selector lever handle (through VIN 8E_6A156499), removing and installing**.

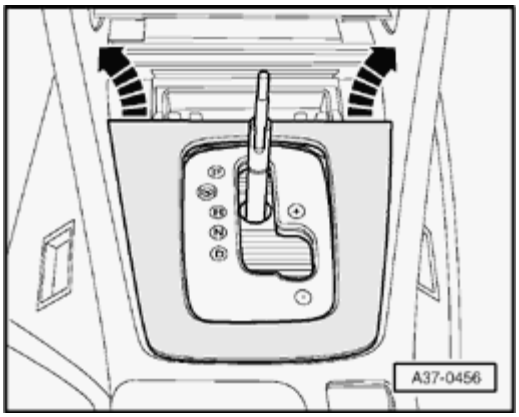


Fig. 13: Removing Trim Panel
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Open ashtray in center console and remove trim panel - **arrows** -.
- Remove air conditioning operating unit --> **87 AIR CONDITIONING** .
- Remove ashtray in center console -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

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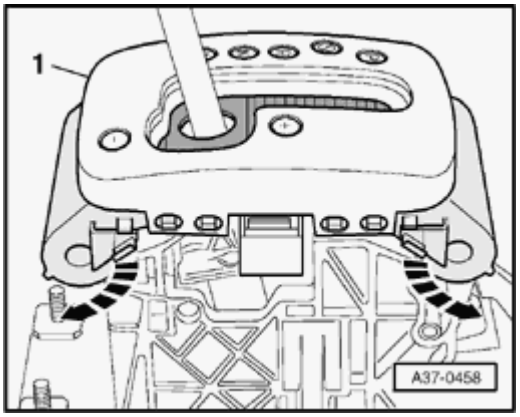


Fig. 14: Releasing Clips And Pull Cover With Guide Upwards To Remove
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release all 4 clips - **arrows** - and pull cover - **1** - with guide upwards to remove.
- Disconnect connector from side of guide plate.
- Disconnect electrical harness connector on Shift Lock Solenoid N110.

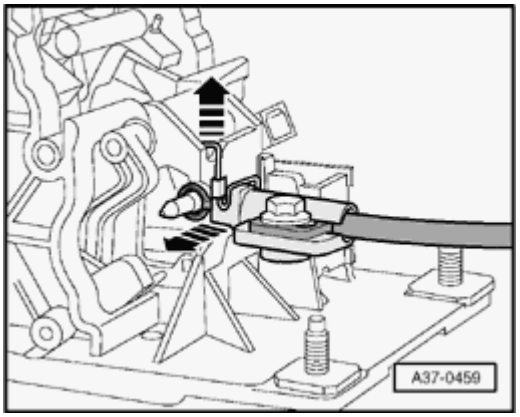
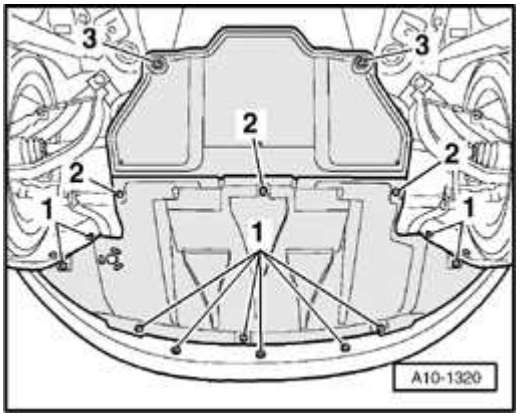


Fig. 15: Disengaging Locking Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disengage locking cable - **arrows** -.



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Fig. 16: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen quick-release screws - **2** - and - **3** - and remove rear noise insulation.

Vehicles with 4-cyl. engine:

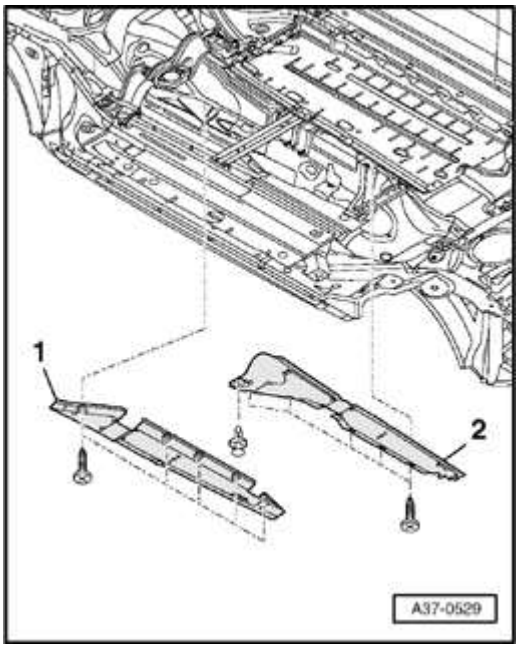


Fig. 17: Removing Vehicle Floor Plates At Inside Left/Right
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove vehicle floor plates at inside left - **2** - and inside right - **1** -.

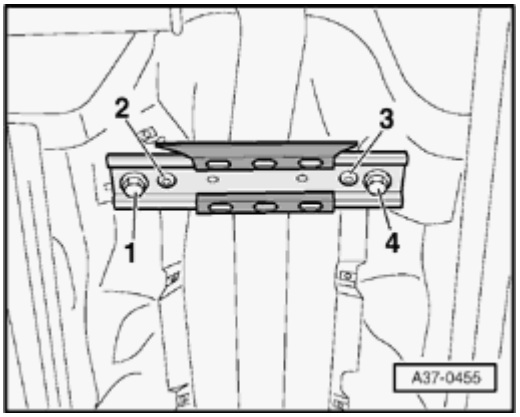


Fig. 18: Removing Bolts And Rear Cross Member For Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rear cross member for vehicle floor, to do so remove bolts - **1 through 4** -.

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All:

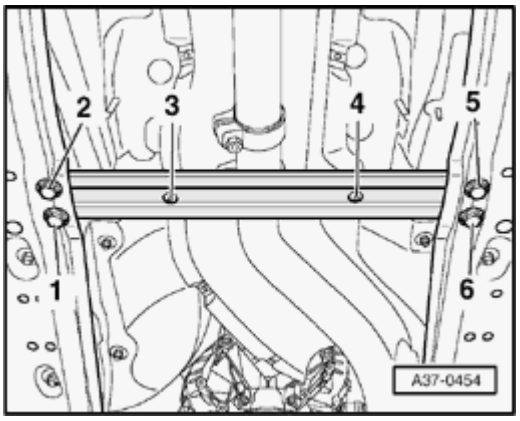


Fig. 19: Removing Bolts To Remove Front Cross Member For Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 to 6** - to remove front cross member for vehicle floor.

NOTE:

- **Depicted in illustration for a vehicle with 4-cyl. engine.**

NOTE:

- **Flex joint in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.**

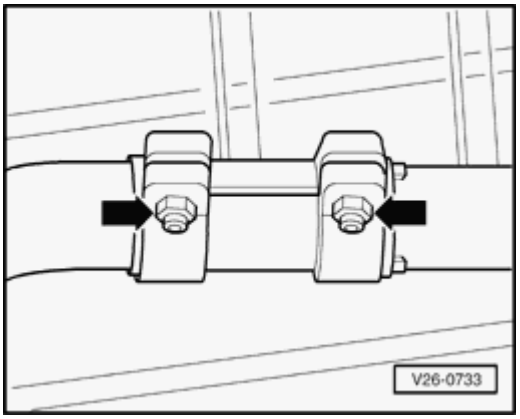


Fig. 20: Disconnecting Exhaust System At Double Clamp
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect exhaust system at double clamp - **arrows** -.

NOTE:

- **Depicted in illustration for a vehicle with 4-cyl. engine.**

- Remove heat shield below shift mechanism.

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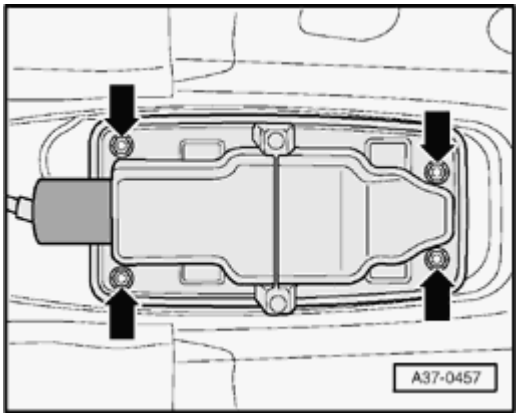


Fig. 21: Removing Lower Cover From Shift Mechanism
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove lower cover from shift mechanism - **arrows** -.
- Detach selector lever cable sleeve from shift mechanism bottom cover and slide back.

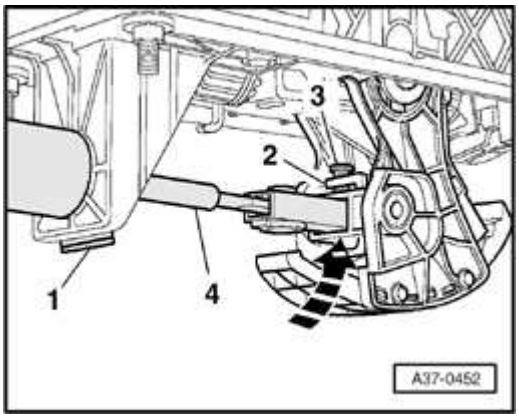


Fig. 22: Identifying Retaining Clip, Securing Spring, Push Pin & Selector Lever Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove retaining clip - **1** - for selector lever cable on shift mechanism downward.
- Pull plastic securing spring - **2** - slightly to front and push pin - **3** - upward only as far as necessary - **arrow** -.
- Remove selector lever cable - **4** - from shift mechanism.

NOTE:

- **Do not bend or kink the selector lever cable.**

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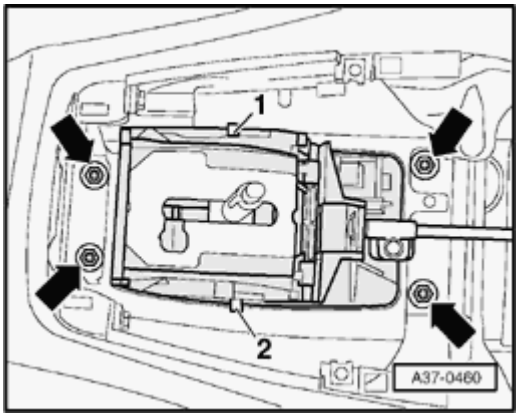


Fig. 23: Pressing Holder Clips & Removing Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **arrows** -.

NOTE:

- **A second technician is required when detaching shift mechanism below vehicle.**

- Press holder clips - **1** - and - **2** - inward, at the same time pushing shift mechanism downward.

Installing

Installation is in reverse order of removal, note the following:

- Install selector lever cable --> **Selector lever cable, (through VIN 8E_6A156499), removing and installing**.
- Install locking cable --> **Locking lever (through VIN 8E_6A156499), removing and installing**.
- Adjust locking cable --> **Locking lever (through VIN 8E_6A156499), adjusting**.
- Install exhaust system and align it free of tension -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

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- Check shift mechanism --> **Shift mechanism (through VIN 8E_6A156499), checking**.

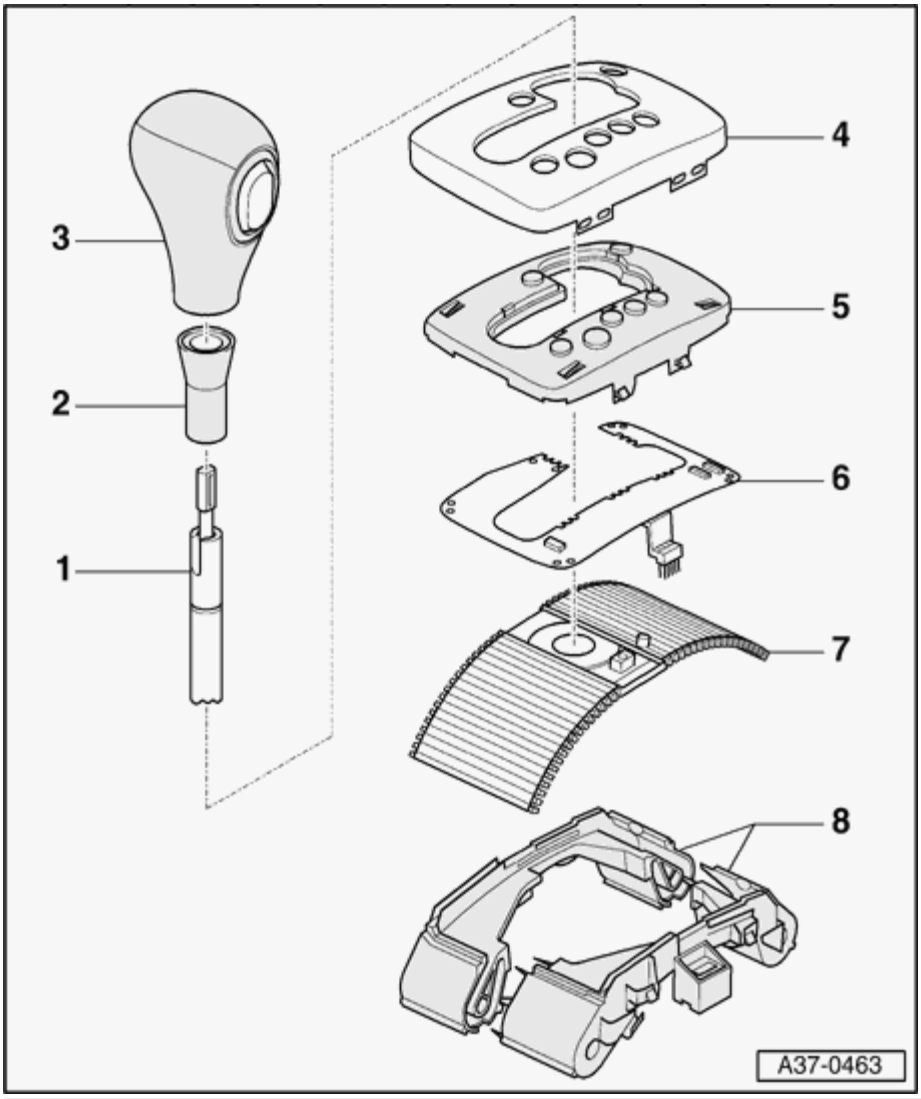
Torque specifications

Component	Nm
Shift mechanism to body	10
Bottom cover to shift mechanism	10
Front cross member to vehicle floor	55
Rear cross member to vehicle floor	60

Selector lever handle, shift mechanism cover (through VIN 8E_6A156499), assembly overview

NOTE:

- **Lubricate bearing areas and slide surfaces with *polycarbamide grease G 052 142 A2* .**



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Fig. 24: Selector Mechanism Cover, Selector Lever Handle, Component Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Selector lever

2 - Selector lever shaft piece

- Removing and installing --> **Selector lever handle (through VIN 8E_6A156499), removing and installing**

3 - Selector lever handle

- Removing and installing --> **Selector lever handle (through VIN 8E_6A156499), removing and installing**

4 - Cover

- With selector scale and Tiptronic gate
- Removing and installing --> **Tiptronic Switch F189 (through VIN 8E_6A156499), removing and installing** and also unclipping symbol inserts

5 - Symbol panel

- Clipped into cover

6 - Printed circuit board

- With integrated Tiptronic Switch F189
- Removing and installing --> **Tiptronic Switch F189 (through VIN 8E_6A156499), removing and installing**
- Switch consists of 3 Hall sensors, which are activated by a magnet on transverse slide of cover strip.
- Before replacing circuit board when DTC "18161" is entered in DTC memory, first check adjustment of selector lever cable --> **Selector lever cable (through VIN 8E_6A156499), adjusting**

7 - Cover strip

- With solenoid for Tiptronic Switch F189 on transverse slide
- Removing and installing --> **Tiptronic Switch F189 (through VIN 8E_6A156499), removing and installing**

8 - Masking panel guide

Selector lever handle (through VIN 8E_6A156499), removing and installing

Removing

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- Place selector lever in position "D".

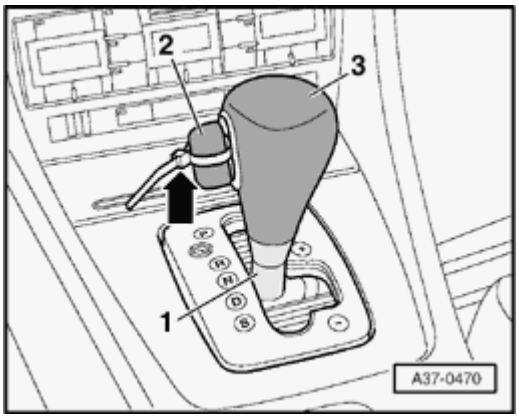


Fig. 25: Selector Lever Handle, Removing And Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Rotate sleeve - **1** - to left and push downward as far as stop.
- Carefully pull switch - **2** - just enough out of selector lever handle - **3** - until a cable tie can be inserted between button and selector lever handle.

NOTE:

- **Do not pull out the button any further, otherwise the selector lever handle will be damaged.**

- Secure button in pulled-out position using cable tie - **arrow** - as shown in illustration.
- Pull selector lever handle upward and off.

Installing

Installation is in reverse order of removal, note the following:

- Place selector lever in position "D".

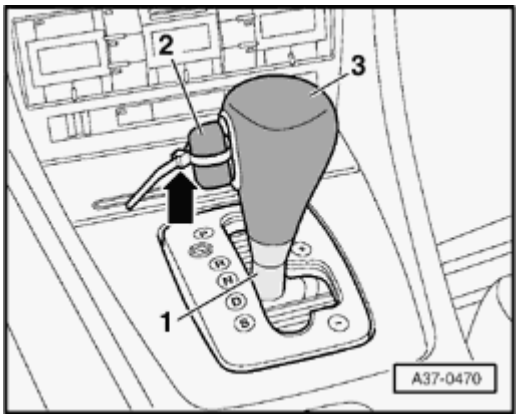


Fig. 26: Selector Lever Handle, Removing And Installing

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **To install new selector lever handle - 3 - , button - 2 - must be pulled out as far as stop and secured with a cable tie - arrow - or using assembly aid included with new handle.**
- **If the button was not secured, it must not be pulled out from the handle using mechanical aids. Apply compressed air gun to bottom of handle and press button out with compressed air.**

- Place selector lever handle - **3** - completely onto selector lever - button - **2** - faces toward driver. When doing this, handle must engage into ring groove of selector lever.
- Remove cable tie - **arrow** - or assembly aid, thereby button mechanism engages in vertical groove of selector lever. If necessary press button into selector lever handle.
- Pull sleeve - **1** - upward and engage by rotating clockwise.

Shift mechanism cover (through VIN 8E_6A156499), removing and installing

Removing

- Remove selector lever handle --> **Selector lever handle (through VIN 8E_6A156499), removing and installing**.

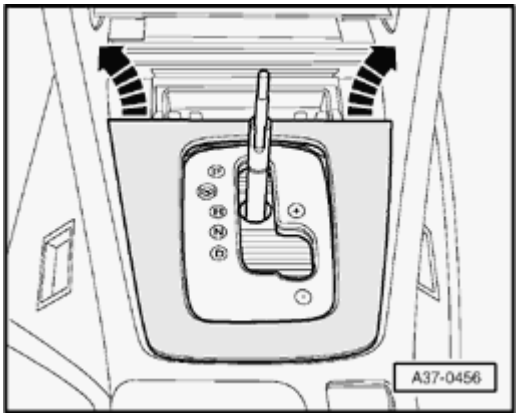


Fig. 27: Removing Trim Panel
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Open ashtray in center console and remove trim panel - **arrows** -.
- Remove 2 retaining bolts for ashtray and lift ashtray at rear.

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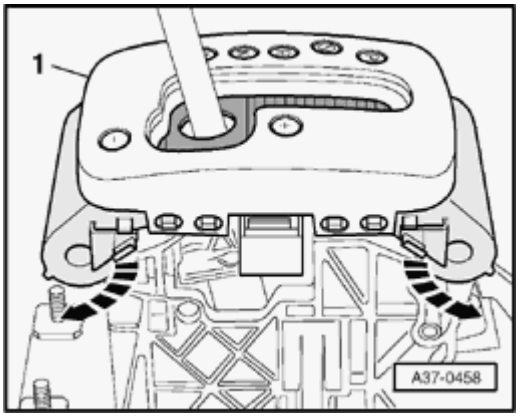


Fig. 28: Releasing Clips And Pull Cover With Guide Upwards To Remove
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release all 4 clips - **arrows** - and pull cover - **1** - with guide upwards to remove.
- Disconnect connector from side of guide plate.

Installing

Installation is in reverse order of removal, note the following:

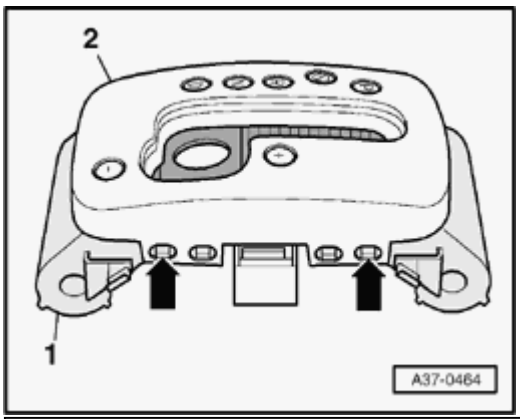
- Install selector lever handle --> **Selector lever handle (through VIN 8E_6A156499), removing and installing**.

Tiptronic Switch F189 (through VIN 8E_6A156499), removing and installing

- If malfunctions at Tiptronic Switch F189 occur, check first whether magnet at control slide masking panel is properly secured and replace masking panel if necessary. Before replacing the printed circuit, check the wiring.

Removing

- Remove cover for shift mechanism --> **Shift mechanism cover (through VIN 8E_6A156499), removing and installing**.



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Fig. 29: Pressing Down Retaining Hooks And Pull Off Cover From Guide
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press down retaining hooks - **arrows** - and pull off cover - **2** - from guide - **1** -.
- Remove circuit board with integrated Tiptronic Switch F189.

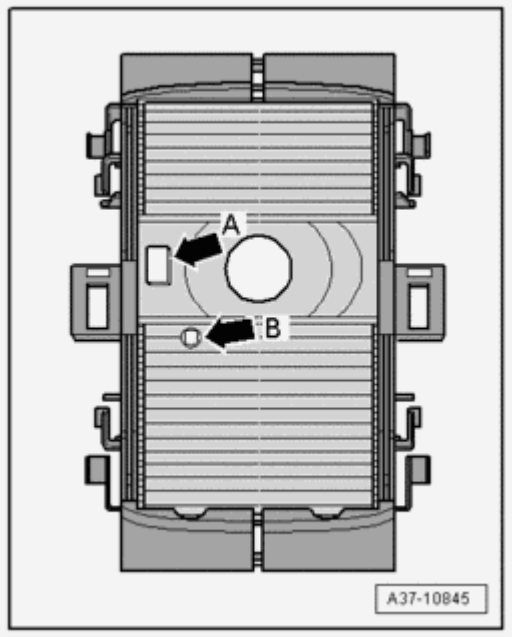


Fig. 30: Checking Magnets On Cover Strip For Secure Seating
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check magnets - **arrows** - on cover strip for secure seating.

- Cover strip must be replaced if a magnet is missing.

Installing

Installation is in reverse order of removal, note the following:

- Install cover for shift mechanism --> **Shift mechanism cover (through VIN 8E_6A156499), removing and installing**.

Shift mechanism (through VIN 8E_6A156499,), assembly overview

NOTE:

- **Lubricate bearing areas and slide surfaces with *polycarbamide grease G 052 142 A2* .**

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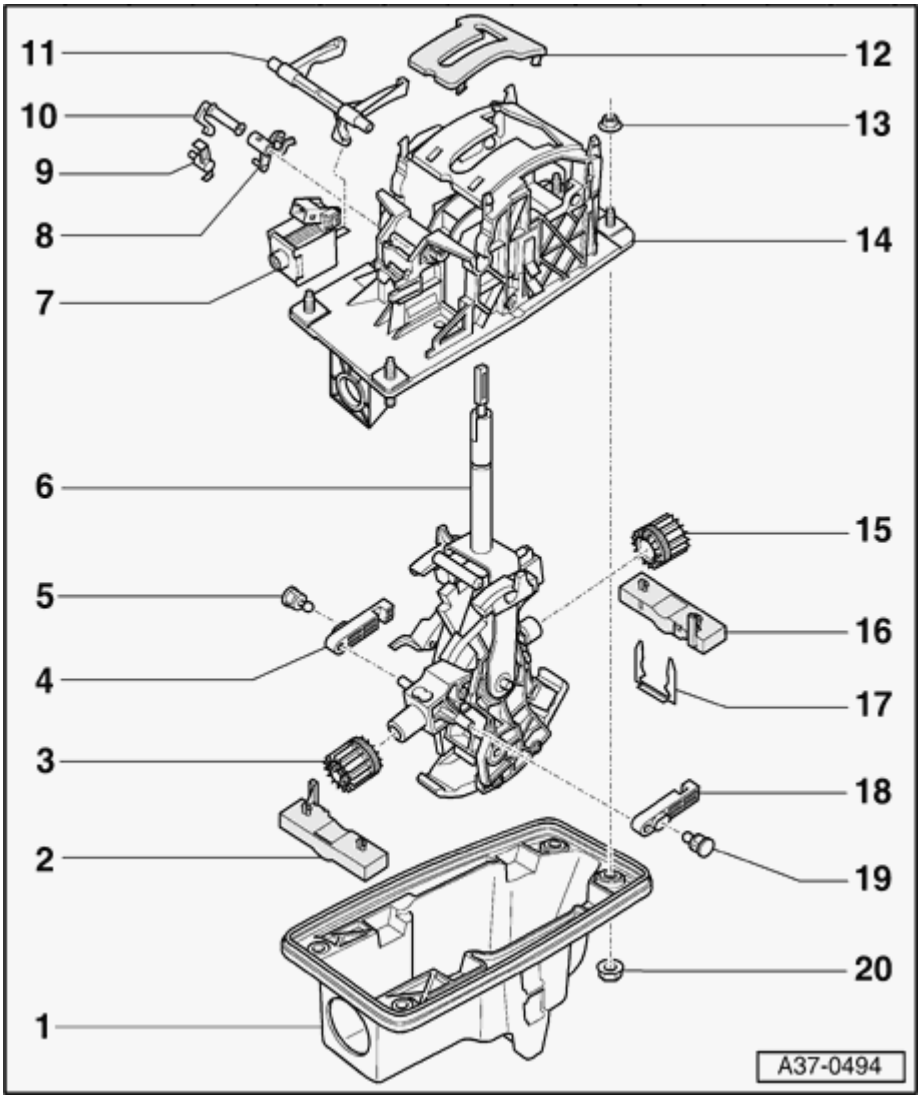


Fig. 31: Shift Mechanism (Through VIN 8E_6A156499,), Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Shift mechanism bottom cover

2 - Bracket

- For selector lever

3 - Bushing

4 - Tiptronic locking lever

5 - Pivot pin

6 - Selector lever

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7 - Shift lock solenoid N110

- --> **Shift Lock Solenoid N110 (through VIN 8E_6A156499), removing and installing**

8 - Operating lever for locking cable

9 - Lock for locking cable

10 - Lever for locking cable

11 - Locking lever

12 - Shift lever guide

NOTE:

- **If selector lever guide or shift unit is faulty, entire shift mechanism must be replaced. It is not possible to adjust both components using shop equipment.**

13 - Nut

- 10 Nm

14 - Shift unit

15 - Bushing

16 - Retaining bracket for selector lever

17 - Retaining clip

18 - Tiptronic locking lever

19 - Pivot pin

20 - Nut

- 10 Nm

Shift mechanism (through VIN 8E_6A156499), disassembling and assembling

Disassembling

NOTE:

- **Securing spring for locking cable, removing and installing Retaining spring for locking cable, removing and installing**

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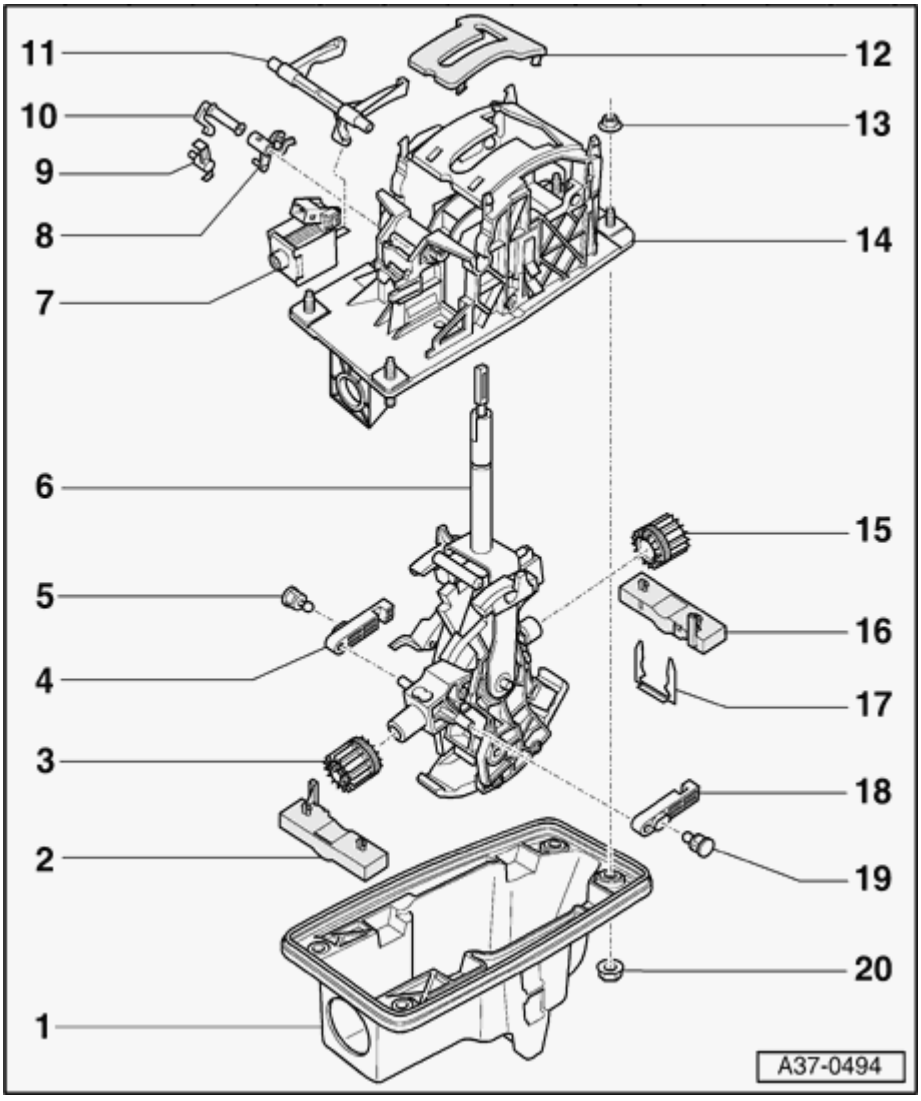


Fig. 32: Shift Mechanism (Through VIN 8E_6A156499), Disassembling And Assembling
Courtesy of VOLKSWAGEN UNITED STATES, INC.

6 - Selector lever

- Place selector lever in position "D".
- Remove shift lock solenoid - **7** - --> **Shift Lock Solenoid N110 (through VIN 8E_6A156499), removing and installing**.
- Unclip selector lever guide - **12** -.
- Release pivot pins - **5** - and - **19** - and pull them out from side.

- Unclip retaining brackets - **2** - and - **16** -.
- Pull off retaining clip - **17** -.
- Swing locking lever - **11** - fully upwards.
- Pull selector lever - **6** - with bushings - **3** - and - **15** - as well as Tiptronic locking levers - **4** - and - **18** -

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downward out of shift unit - **14** -.

Assembling

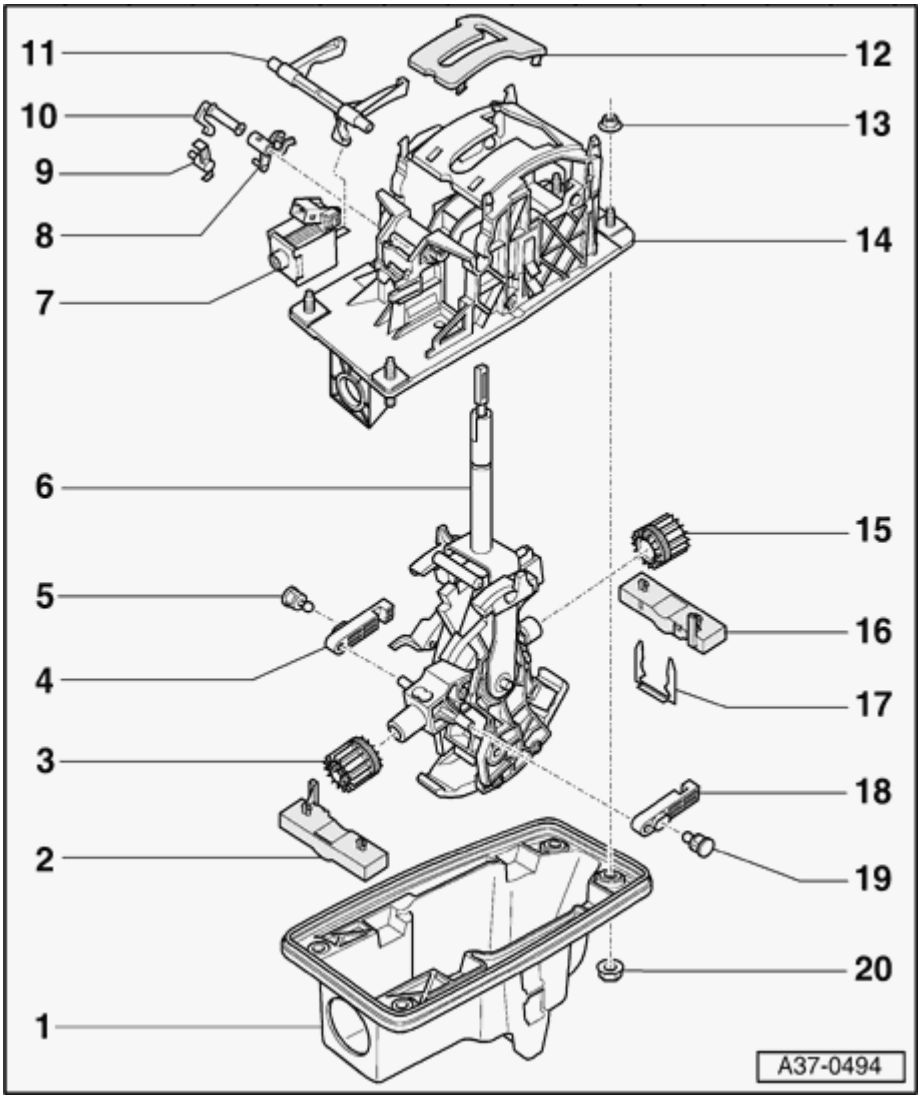


Fig. 33: Shift Mechanism (Through VIN 8E_6A156499), Disassembling And Assembling
Courtesy of VOLKSWAGEN UNITED STATES, INC.

6 - Selector lever

- Check whether selector lever is in position "D".
- Swing locking lever - **11** - fully upwards.
- Insert selector lever - **6** - from below into shift unit - **14** -.
- Connect locking levers for Tiptronic - **4** - and - **18** - as well as bushings - **3** - and - **15** - on selector lever.
- Press selector lever - **6** - with bushes into shift unit and position it with retaining clip - **17** -.

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- Engage retaining brackets - **2** - and - **16** - on shift unit.
- Push pivot pins - **5** - and - **19** - into selector lever - **6** - until they engage.
- Check whether mounting pins in Tiptronic locking lever engage.

- Install shift lock solenoid - **7** - --> **Shift Lock Solenoid N110 (through VIN 8E_6A156499), removing and installing**.
- Clip in selector lever guide - **12** -.

Retaining spring for locking cable, removing and installing

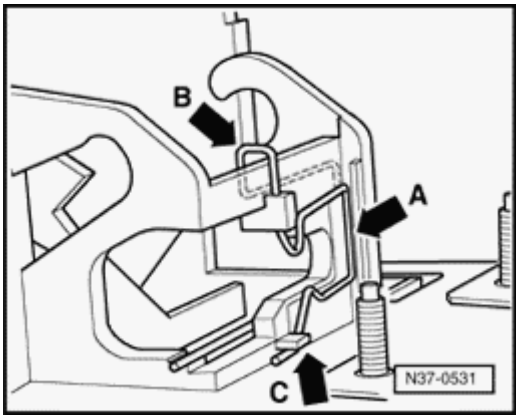


Fig. 34: Retaining Spring For Locking Cable, Removing And Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removing:

- To remove locking cable, slightly lift spring at top - **arrow B** -.
- Unhook spring at retaining tab - **arrow C** - and remove toward top.

Installing:

- Insert spring - **arrow B** - from top and hook in at retaining clip - **arrow C** -.
- Align spring so that it is seated evenly in groove - **arrow A** -.

Shift Lock Solenoid N110 (through VIN 8E_6A156499), removing and installing

Removing

- Remove cover for shift mechanism --> **Shift mechanism cover (through VIN 8E_6A156499), removing and installing**.
- Disconnect electrical harness connector on Shift Lock Solenoid N110.

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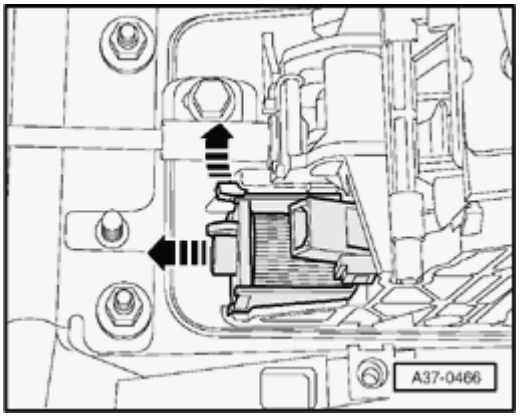


Fig. 35: Releasing Lugs And Removing Shift Lock Solenoid Forward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release lugs and remove shift lock solenoid forward - **arrows** -.

Installing

Installation is in reverse order of removal, note the following:

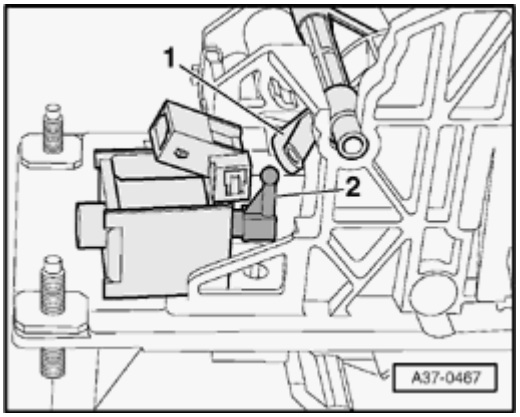


Fig. 36: Pressing Selector Lever Lock Solenoid Into Guide Until It Engages
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press shift lock solenoid into guide until it engages; operating lever - **2** - of solenoid must engage in locking lever - **1** - on shift mechanism.
- Install cover for shift mechanism --> **Shift mechanism cover (through VIN 8E_6A156499), removing and installing**.

Selector lever cable and locking cable (through VIN 8E_6A156499), assembly overview

NOTE:

- **Do not bend or kink the selector lever cable.**
- **Lightly grease eyelet and ball socket with *polycarbamide grease G 052 142 A2* before installing.**

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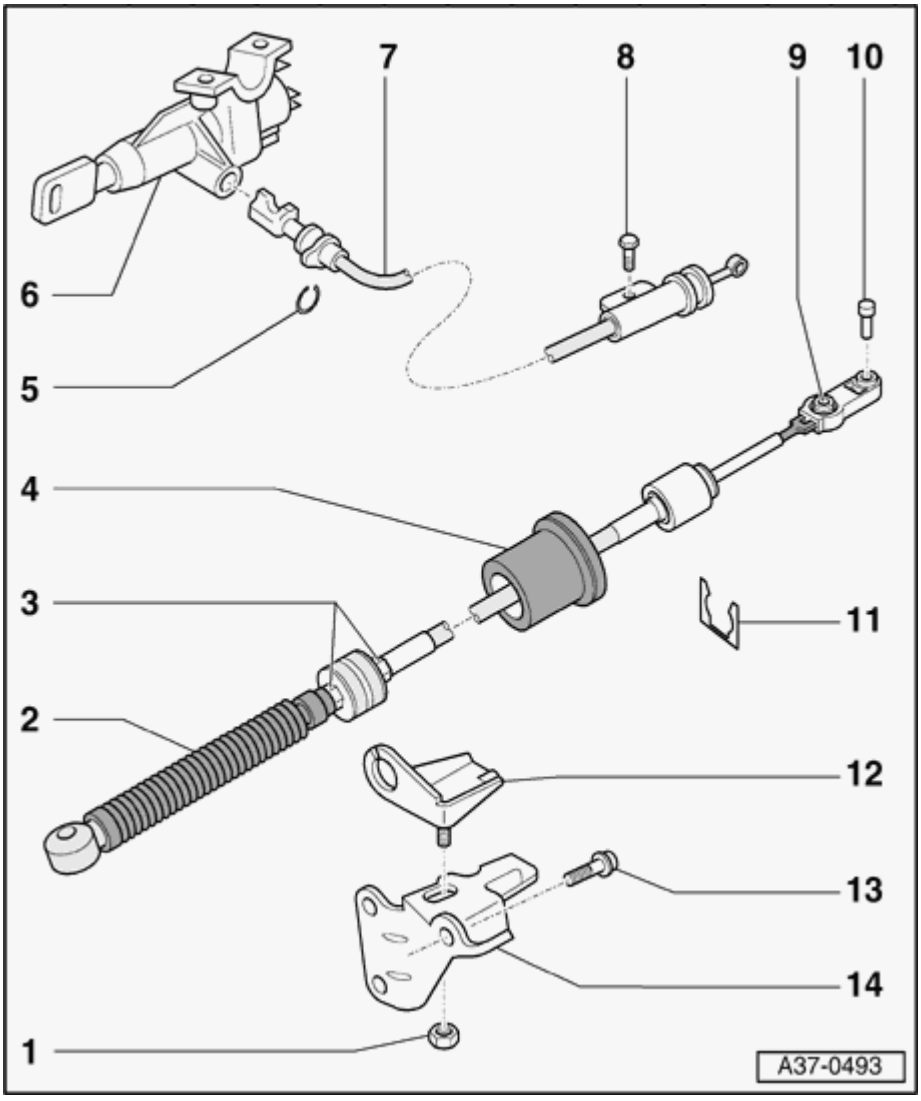


Fig. 37: Selector Lever Cable And Locking Cable (Through VIN 8E_6A156499), Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Nut

- 23 Nm

2 - Selector lever cable

- Do not bend or kink, lightly grease cable eye and ball socket before installing.
- Removing and installing --> **Selector lever cable, (through VIN 8E_6A156499), removing and installing**
- Adjusting --> **Selector lever cable (through VIN 8E_6A156499), adjusting**
- In case of damaged rubber boots, selector lever cable must be replaced
- When installing, make sure that rubber sleeve on transmission side is not twisted

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3 - Lock nuts

- 13 Nm

4 - Boot for selector lever cable

- To be buttoned into selector mechanism bottom cover

5 - Retaining clip

6 - Ignition/starter switch

- with ignition key removal lock

7 - Locking cable

- For ignition key removal lock
- Not to be kinked
- Removing and installing --> **Locking lever (through VIN 8E_6A156499), removing and installing**
- Adjusting --> **Locking lever (through VIN 8E_6A156499), adjusting**

8 - Bolt

- 9 Nm

9 - Clamping screw

- 13 Nm
- For selector lever cable
- Loosen 1 turn for adjusting, do NOT remove completely

10 - Pin

- For selector lever cable
- To remove selector lever cable, move plastic retaining spring at selector mechanism forward slightly and put screws upward, only as far as necessary.

11 - Retaining clip for selector lever cable

12 - Bracket for selector lever cable

13 - Bolt

- 23 Nm

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14 - Bracket for selector lever cable

Selector lever cable, (through VIN 8E_6A156499), removing and installing

Special tools, testers and auxiliary items required

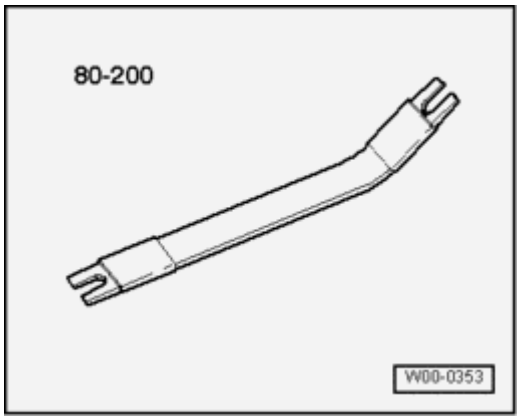


Fig. 38: Identifying Pry Lever 80-200
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pry lever 80-200

Removing

- Place selector lever in position "P".

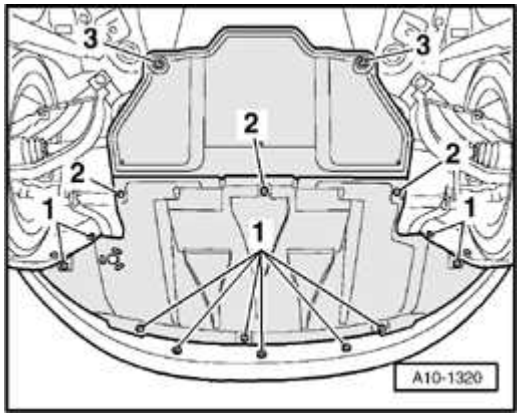


Fig. 39: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen quick-release screws - **2** - and - **3** - and remove rear noise insulation.

Vehicles with 4-cyl. engine:

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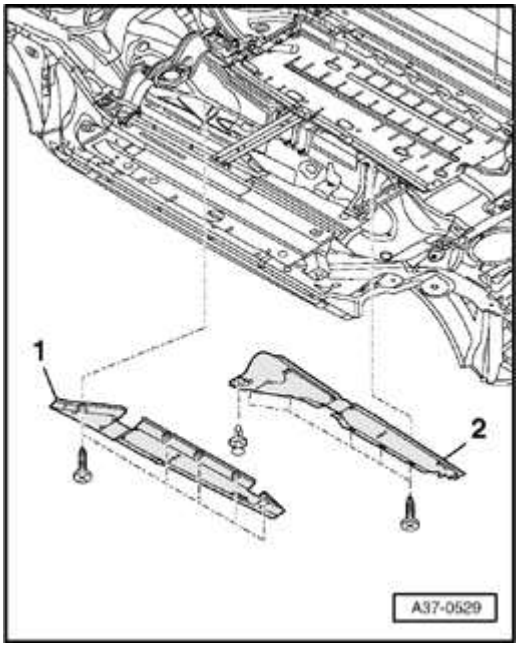


Fig. 40: Removing Vehicle Floor Plates At Inside Left/Right
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove vehicle floor plates at inside left - **2** - and inside right - **1** -.

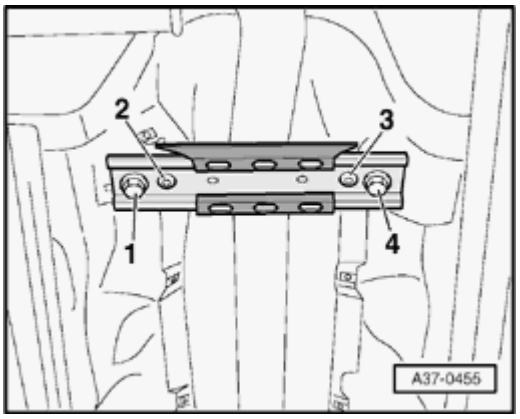


Fig. 41: Removing Bolts And Rear Cross Member For Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rear cross member for vehicle floor, remove bolts - **1 through 4** - to do so.

All:

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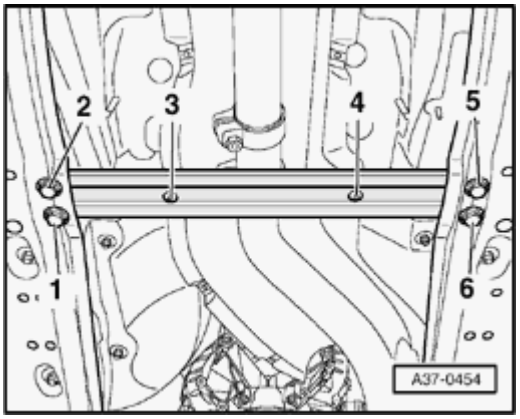


Fig. 42: Removing Bolts To Remove Front Cross Member For Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 through 6** - and remove front cross member for vehicle floor.

NOTE:

- **Depicted in illustration for a vehicle with 4-cyl. engine.**

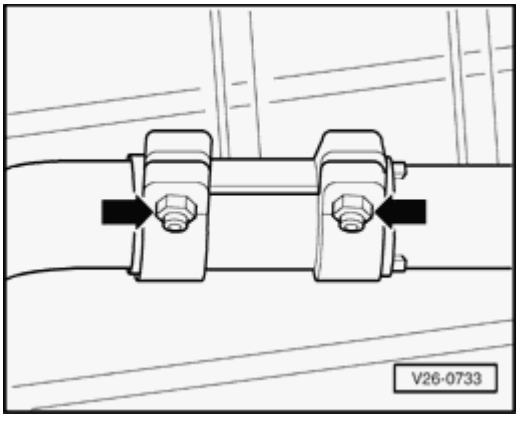


Fig. 43: Disconnecting Exhaust System At Double Clamp
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Flex joint in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.**

- Disconnect exhaust system at double clamp - **arrows** -.

NOTE:

- **Depicted in illustration for a vehicle with 4-cyl. engine.**

- Remove heat shield below shift mechanism.

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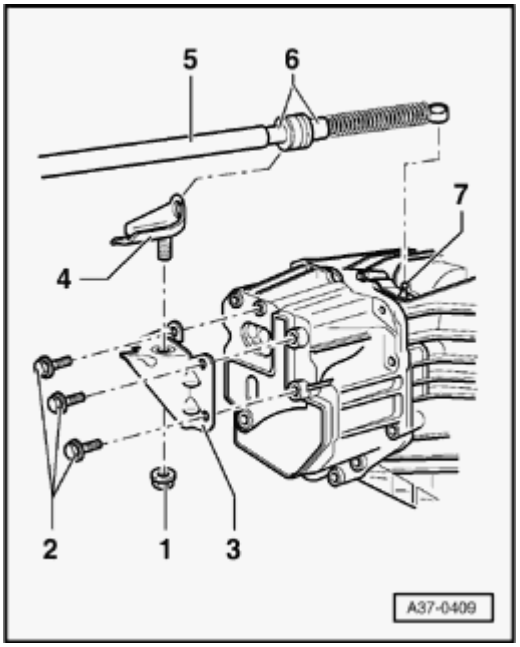


Fig. 44: Removing Bracket For Selector Lever Cable By First Removing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bracket - **3** - for selector lever cable by first removing bolts - **2** -.

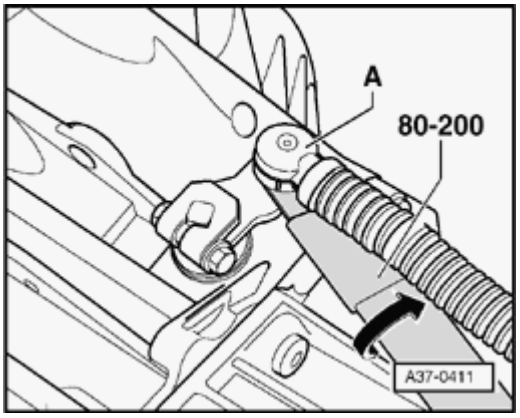


Fig. 45: Using Pry Lever 80-200 To Press Selector Lever Cable From Lever For Selector Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Using pry lever 80-200 , press selector lever cable - **A** - from lever for selector shaft - **arrow** -.

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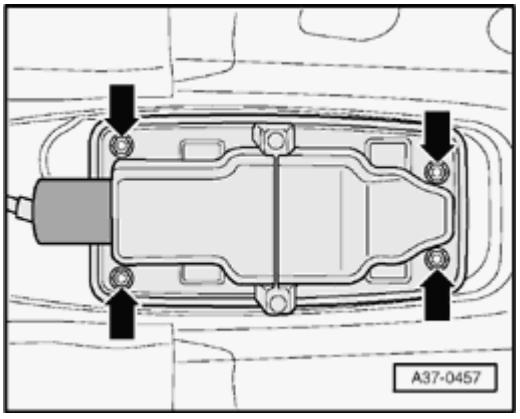


Fig. 46: Removing Lower Cover From Shift Mechanism
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove lower cover from shift mechanism - **arrows** -.
- Detach selector lever cable sleeve from shift mechanism bottom cover and slide back.

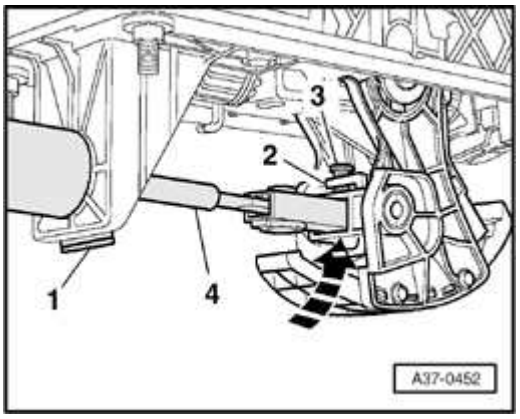


Fig. 47: Identifying Retaining Clip, Securing Spring, Push Pin & Selector Lever Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove retaining clip - **1** - for selector lever cable on shift mechanism downward.
- Pull plastic securing spring - **2** - slightly to front and push pin - **3** - upward only as far as necessary - **arrow** -.

NOTE:

- **Make sure that pin is not pushed fully out.**

- Remove selector lever cable - **4** - from shift mechanism.

NOTE:

- **Do not bend or kink selector lever cable.**

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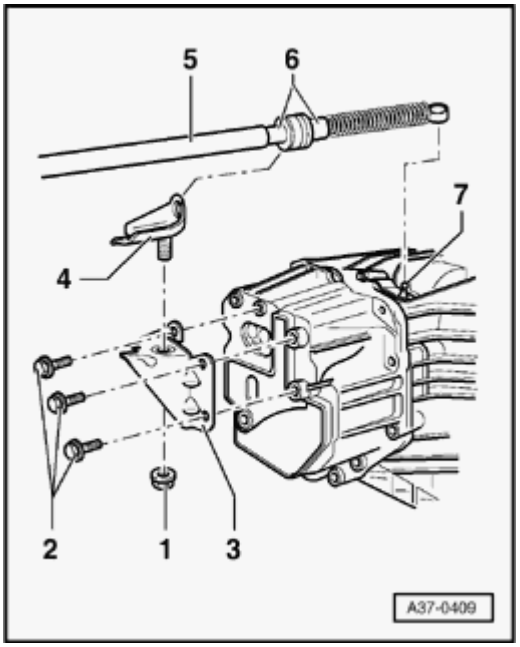


Fig. 48: Removing Bracket For Selector Lever Cable By First Removing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen lock nuts - **6** - and remove selector lever cable - **5** - from support bracket - **4** -.

NOTE:

- **Do not bend or kink selector lever cable.**

Installing

Installation is in reverse order of removal, note the following:

NOTE:

- **Do not bend or kink selector lever cable.**
- **Lightly grease eyelet and ball socket of selector lever cable with *polycarbamide grease G 052 142 A2* before installing.**

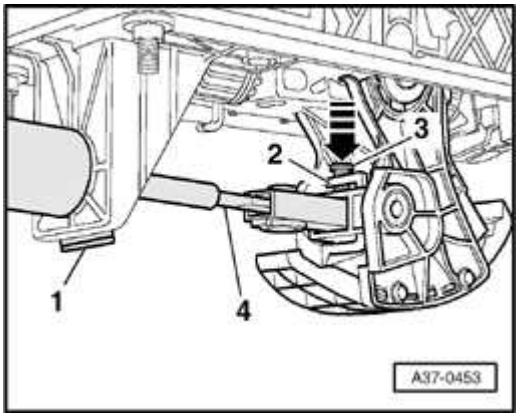


Fig. 49: Inserting End Of Selector Lever Cable Into Joint Of Selector Lever

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Slide selector lever cable into shift mechanism and secure it with retaining clip - **1** -.
- Installation position: Angled end of retaining clip points toward rear.
- Insert end of selector lever cable - **4** - into selector lever joint.
- Press pin - **3** - downward - **arrow** -.
- Check whether plastic securing spring - **2** - has locked the pin.
- Button selector lever cable boot into lower cover.

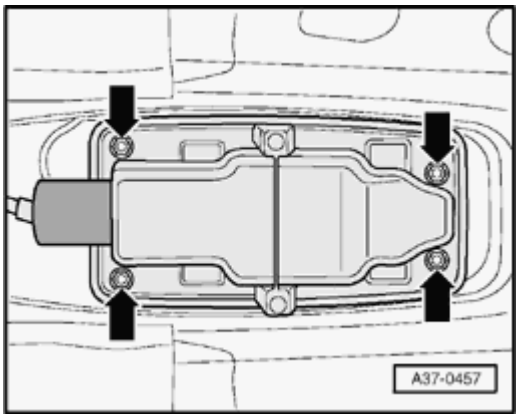
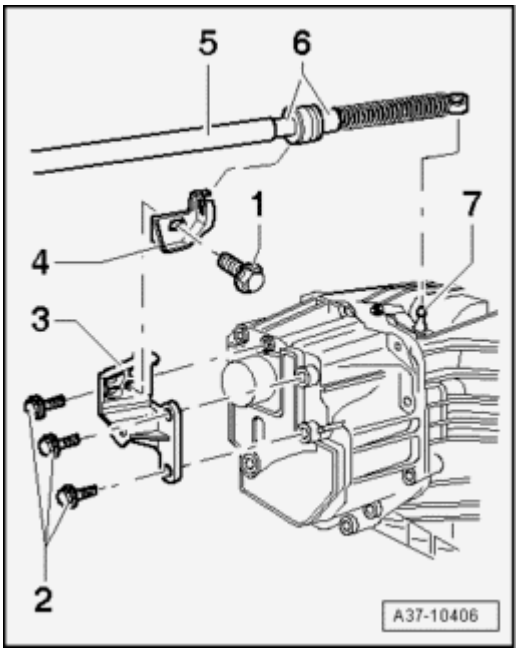


Fig. 50: Removing Lower Cover From Shift Mechanism
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Bolt lower cover securely to shift mechanism - **arrows** -.



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Fig. 51: Bolting Selector Lever Cable To Support Bracket & Tightening Lock Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tightly bolt selector lever cable - **5** - to support bracket - **4** - , tighten lock nuts - **6** - to 12 Nm.

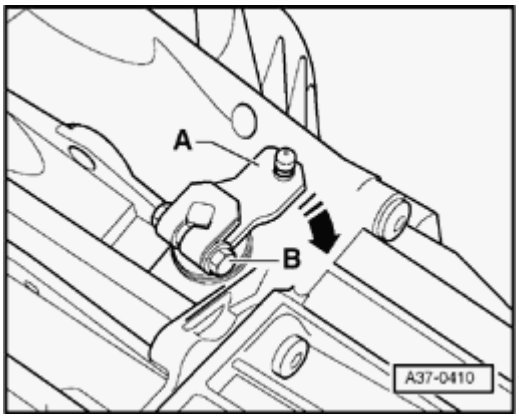


Fig. 52: Pressing Selector Shaft Lever On Transmission Completely Toward Rear
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press selector shaft lever - **A** - on transmission completely toward rear - **arrow** - until parking lock engages.

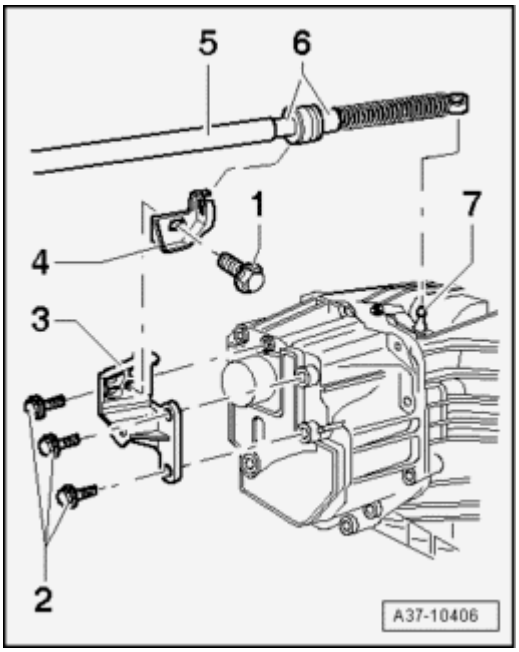


Fig. 53: Bolting Selector Lever Cable To Support Bracket & Tightening Lock Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check whether selector lever is in position "P" , then press ball socket of selector lever cable - **5** - carefully onto lever for selector shaft - **7** -.

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NOTE:

- **Take care not to bend selector shaft lever when pressing it on; support it if necessary, as otherwise selector mechanism can no longer be adjusted properly.**

- Adjust selector lever cable --> **Selector lever cable (through VIN 8E_6A156499), adjusting**.
- Install exhaust system and align it free of tension -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

.

Torque specifications

Component	Nm
Bottom cover to shift mechanism	10
Selector lever cable to mounting bracket	12
Bracket to transmission	23
Support bracket to mounting base	23
Front cross member to vehicle floor	55
Rear cross member to vehicle floor	60

Selector lever cable (through VIN 8E_6A156499), adjusting

Special tools, testers and auxiliary items required

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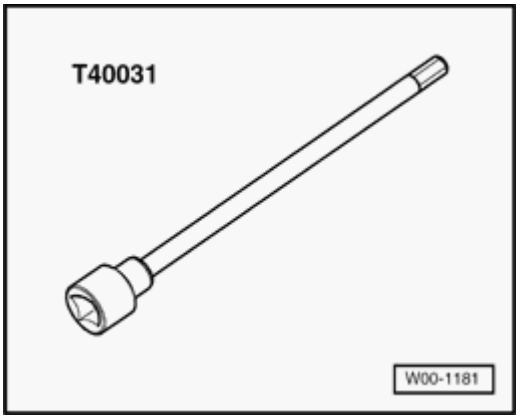


Fig. 54: Socket And Key T40031
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Socket and key T40031

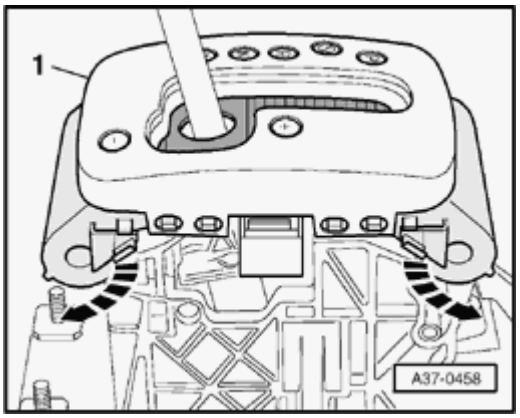


Fig. 55: Releasing Clips And Pull Cover With Guide Upwards To Remove
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove cover for shift mechanism --> **Shift mechanism cover (through VIN 8E_6A156499), removing and installing**.

NOTE:

- **There is a distinction between vehicles with "PRND" shift mechanisms (up to model year 2004) and vehicles with "PRNDS" shift mechanisms (as of model year 2005).**
- **In vehicles with "PRND" shift mechanisms (through model year 2004), selector lever cable adjustment is performed in selector lever position "D".**
- **In vehicles with "PRNDS" shift mechanisms (from model year 2005), selector lever cable adjustment is performed in selector lever position "S".**

Vehicles with "PRND" shift mechanisms

- Place selector lever in position "D".

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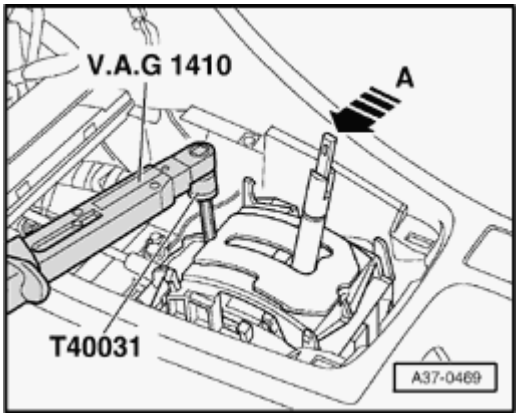


Fig. 56: Loosening Rear Clamping Screw On Selector Lever Cable Approx. 1 Turn Through Hole In Shift Mechanism Using Special Tool T40031
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen rear clamping screw on selector lever cable through hole in shift mechanism approx. one turn using socket and key T40031.

NOTE:

- **Loosen clamping screw only approx. 1 turn. Do not remove.**
- **Clamping screw is only accessible in selector lever position "D".**
- **Selector lever must remain in position "D" while clamping screw is loose.**

- Carefully move selector lever lightly toward front and rear without shifting into another selector lever position, this releases the tension on selector lever cable.
- Check exact position of selector lever in position "D" by pushing selector lever lightly towards drivers seat - **arrow A** -.

NOTE:

- **Do not touch selector lever during the adjustment.**

- Without touching selector lever, tighten clamping screw in this position using socket and key T40031.

Vehicles with "PRNDS" shift mechanisms

- Place selector lever in position "S".

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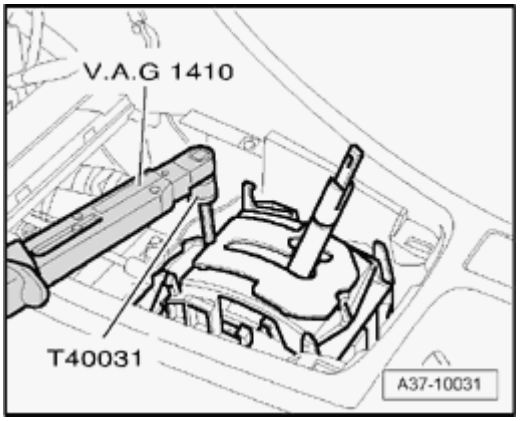


Fig. 57: Inserting Socket And Key T40031 Through Access Hole In Selector Mechanism To Loosen/Tightening Clamping Bolt At Rear Of Selector Lever Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen rear clamping screw on selector lever cable through the hole in shift mechanism approx. one turn using socket and key T40031.

NOTE:

- **Loosen clamping screw only 1 turn. Do not remove.**
- **Clamping screw is only accessible in selector lever position "S".**
- **The selector lever must remain in position "S" with clamping bolt loosened, otherwise the setting is not correct.**

- Carefully move selector lever forwards and backwards slightly without shifting to a different selector lever position.
- Pull selector lever completely toward rear once more until it stops in position "S" and release selector lever.

NOTE:

- **Do not touch selector lever during the adjustment.**

- Without touching selector lever, tighten clamping screw in this position using socket and key T40031.

Vehicles with "PRND" and "PRNDS" shift mechanisms

- Install cover for shift mechanism --> **Shift mechanism cover (through VIN 8E_6A156499), removing and installing**.
- Check shift mechanism --> **Shift mechanism (through VIN 8E_6A156499), checking**.

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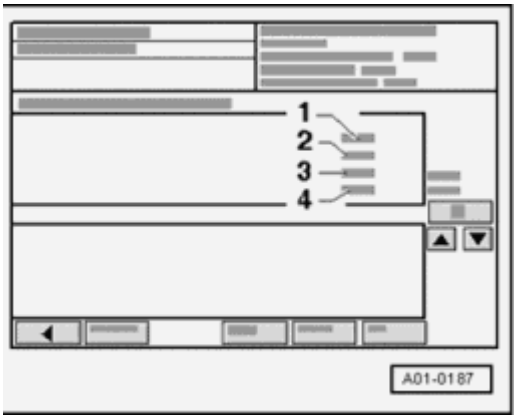


Fig. 58: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Using Vehicle Diagnosis, Testing and Information System VAS 5051 A , the position of Multi-Function Transmission Range (TR) Switch F125 can be compared to position on selector lever via On Board Diagnostic (OBD), 02 - Transmission electronics, 08 - Read measured value block, display group 2 in display field - 1 -.**

If shift mechanism does not function properly after adjusting selector lever cable:

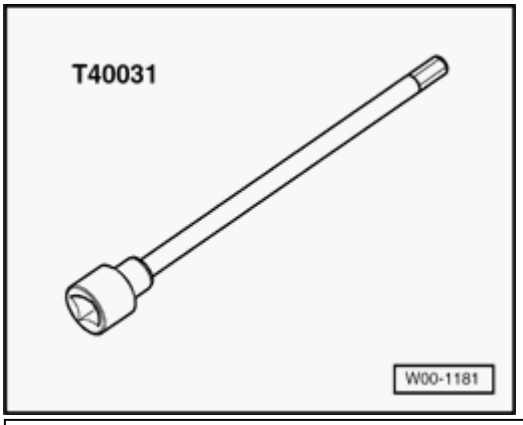
- Bring selector lever cable into basic setting --> **Selector lever cable (VIN through 8E_6A156499), bringing into basic setting**.

Torque specifications

Component	Nm
Clamping screw to selector lever cable	13

Selector lever cable (VIN through 8E_6A156499), bringing into basic setting

Special tools, testers and auxiliary items required



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Fig. 59: Socket And Key T40031
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Socket and key T40031

Work procedure

- Remove cover for shift mechanism --> **Shift mechanism cover (through VIN 8E_6A156499), removing and installing**.

NOTE:

- **There is a distinction between vehicles with "PRND" shift mechanisms (up to model year 2004) and vehicles with "PRNDS" shift mechanisms (as of model year 2005).**

Vehicles with "PRND" shift mechanisms

- Place selector lever in position "D".

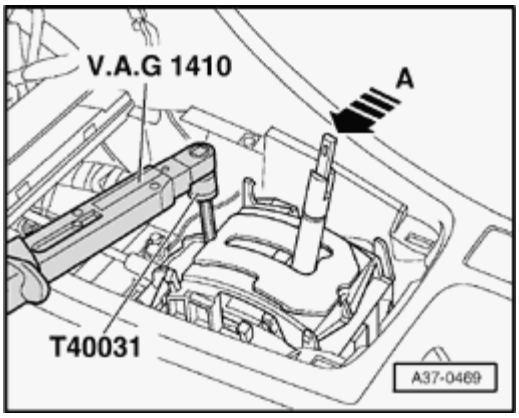


Fig. 60: Loosening Rear Clamping Screw On Selector Lever Cable Approx. 1 Turn Through Hole In Shift Mechanism Using Special Tool T40031
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Before performing basic setting, make sure that the clamping screw is tightened. It is accessible through the hole in shift mechanism in position "D" using socket and key T40031.**

- Tighten clamping screw in this position using socket and key T40031 (13 Nm).

Vehicles with "PRNDS" shift mechanisms

- Place selector lever in position "S".

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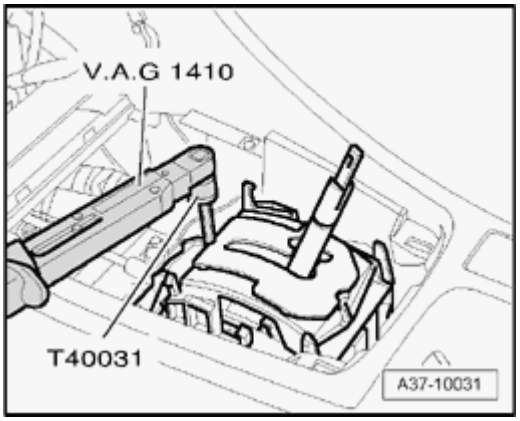


Fig. 61: Inserting Socket And Key T40031 Through Access Hole In Selector Mechanism To Loosen/Tightening Clamping Bolt At Rear Of Selector Lever Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Before performing basic setting, make sure that the clamping screw is tightened. It is accessible through the hole in shift mechanism in position "S" using socket and key T40031.**

- Tighten clamping screw in this position using socket and key T40031 (13 Nm).

Vehicles with "PRND" and "PRNDS" shift mechanisms

- Place selector lever in position "P".

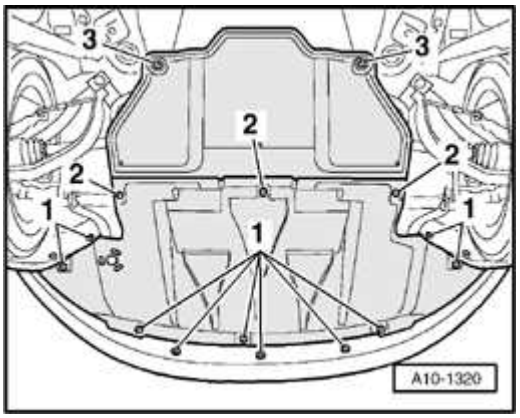


Fig. 62: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen quick-release screws - **2** - and - **3** - and remove rear noise insulation.

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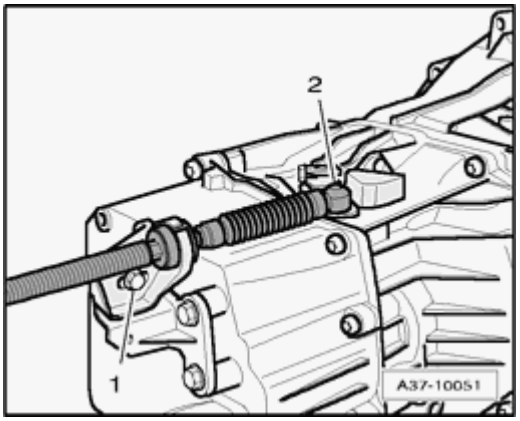


Fig. 63: Removing Support Bracket For Selector Lever Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove support bracket for selector lever cable - **1** -.

NOTE:

- **Make sure selector lever is in position "P".**

- Push lever for selector shaft - **2** - at transmission completely toward rear until parking lock engages.

NOTE:

- **When parking lock is engaged, it must not be possible to turn both front wheels in one direction at the same time.**

- Make sure that selector lever cable has been routed free of kinks and tension.

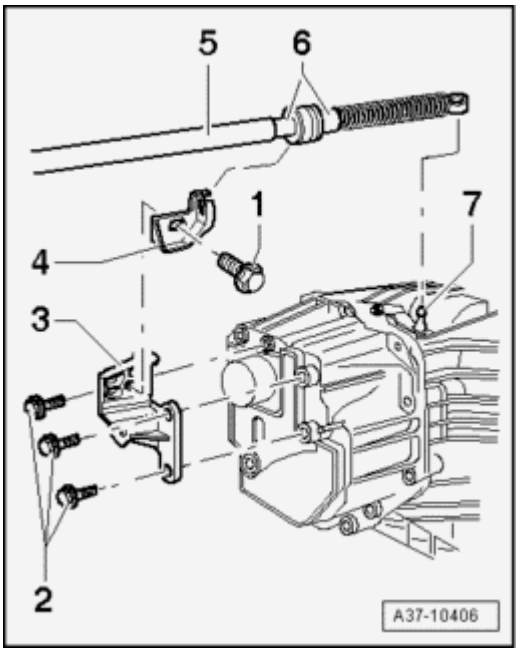


Fig. 64: Bolting Selector Lever Cable To Support Bracket & Tightening Lock Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Make sure that selector lever cable - **5** - is secured with nuts - **6** - to support bracket - **4** - (13 Nm).

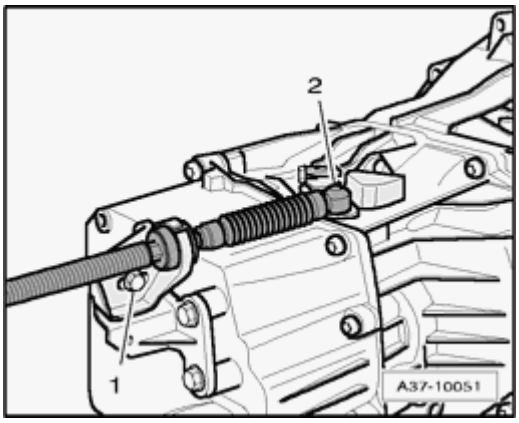


Fig. 65: Removing Support Bracket For Selector Lever Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install support bracket for selector lever cable tightly to bracket - **1** -.
- Adjust selector lever cable --> **Selector lever cable (through VIN 8E_6A156499), adjusting**.

Torque specification

Component	Nm
Clamping screw to selector lever cable	13
Support bracket to bracket, bolt M8 - **1** -	23

Locking lever (through VIN 8E_6A156499), removing and installing

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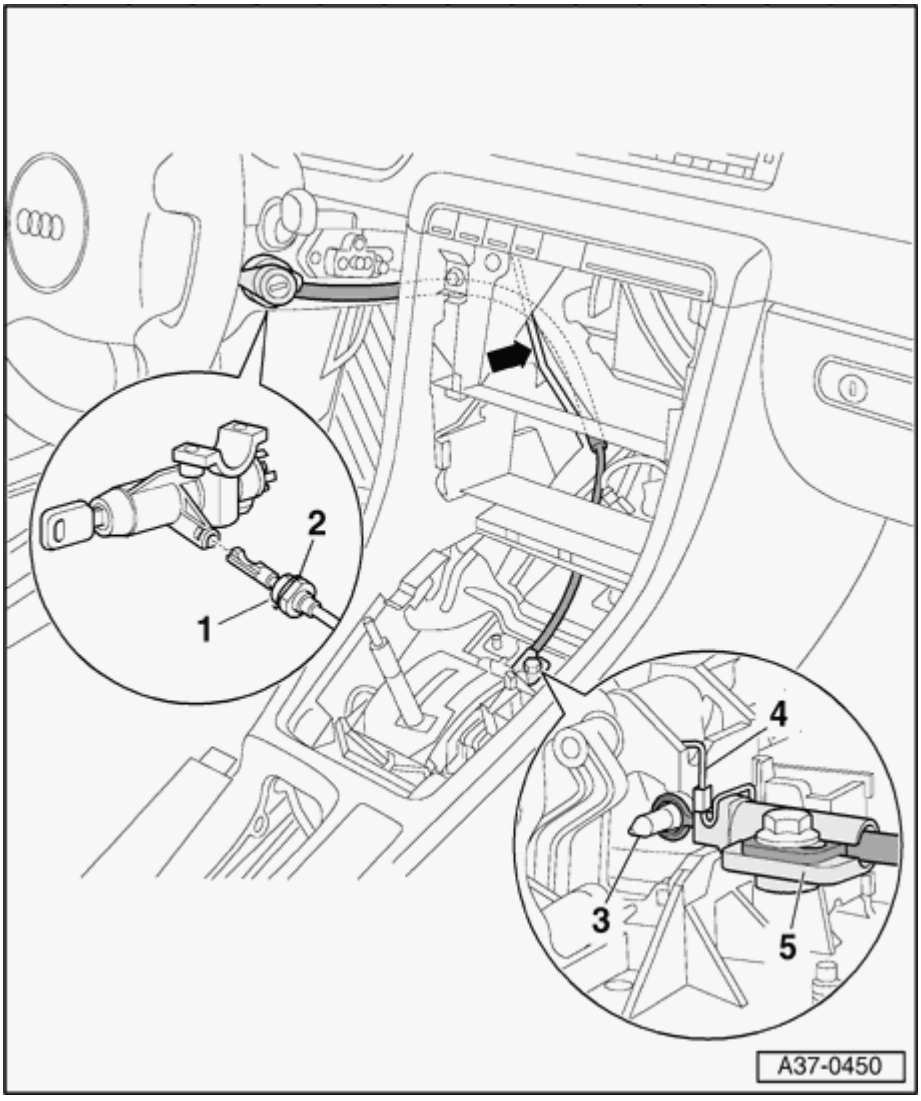


Fig. 66: Locking Cable Remove/Install Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Locking cable

Removing

NOTE:

- **Do not kink locking cable.**

CAUTION: Observe procedures for disconnecting battery -->

- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

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.

- Disconnect Ground (GND) wire at battery.
- Remove storage compartment on drivers side -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

  .
- Remove steering column trim -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

  .
- Remove A/C system operating unit --> **87 AIR CONDITIONING** .
- Remove ashtray in center console -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

  .
- Remove cover for shift mechanism --> **Shift mechanism cover (through VIN 8E_6A156499), removing and installing**.
- Turn ignition key into driving position ("ignition on").
- Place selector lever in position "P".
- Lift retaining clip - **2** - from interlock lever and pull locking cable - **1** - out of ignition/starter switch.
- Lift securing spring - **4** - for locking cable and pull locking cable support bracket - **5** - on shift mechanism sideways and disengage locking cable eye.

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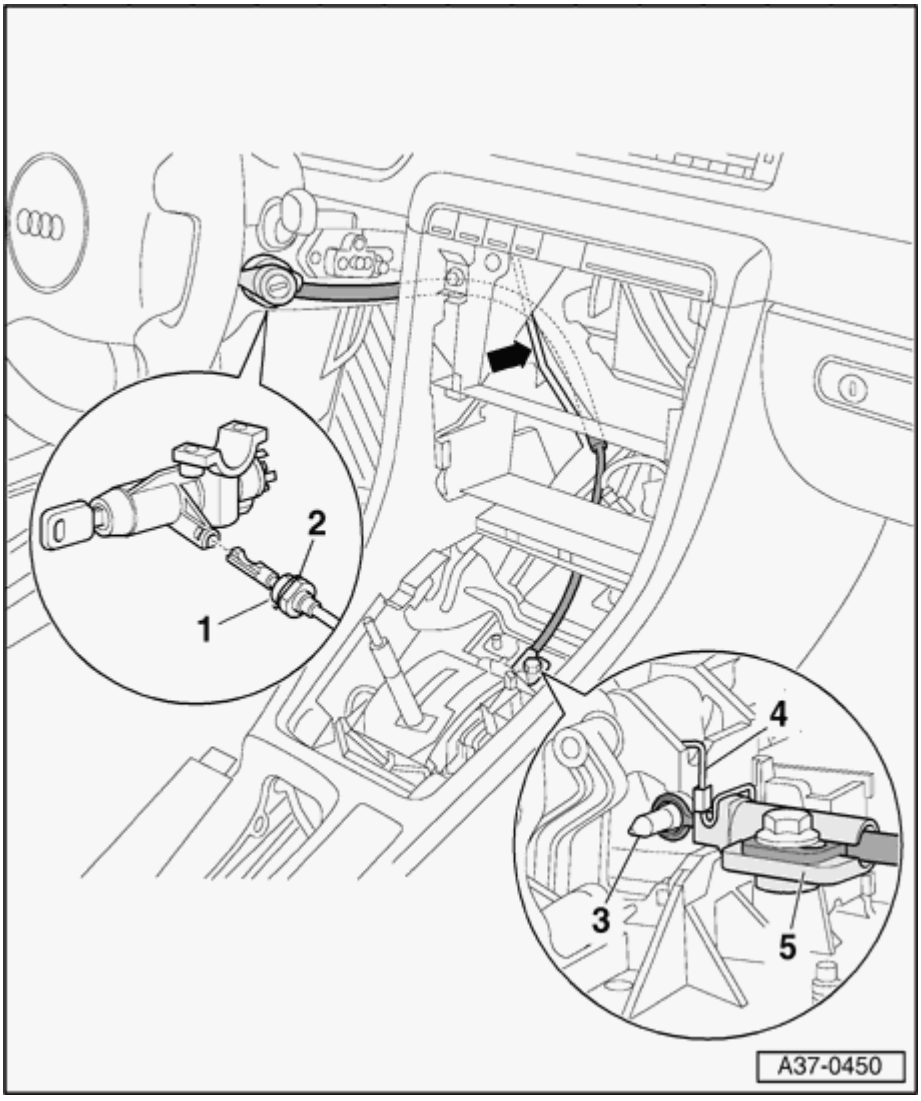


Fig. 67: Locking Cable Remove/Install Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Locking cable

Installing

Installation is in reverse order of removal, note the following:

- Route locking cable kink-free behind instrument panel strut - **arrow** -.
- Turn ignition key into driving position ("ignition on").
- Insert locking cable - **1** - into ignition/starter switch.
- Check interlock lever - **2** -.

- Bring ignition/starter switch into locking position ("ignition off").

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- Check whether selector lever is in position "P".
- Engage locking cable eye into pin - **3** -.
- Lift securing spring - **4** - slightly.

- Slide locking cable support bracket - **5** - from right into shift mechanism until securing spring - **4** - engages.
- Adjust locking cable --> **Locking lever (through VIN 8E_6A156499), adjusting**.
- Observe procedures for connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

.

Locking lever (through VIN 8E_6A156499), adjusting

Special tools, testers and auxiliary items required

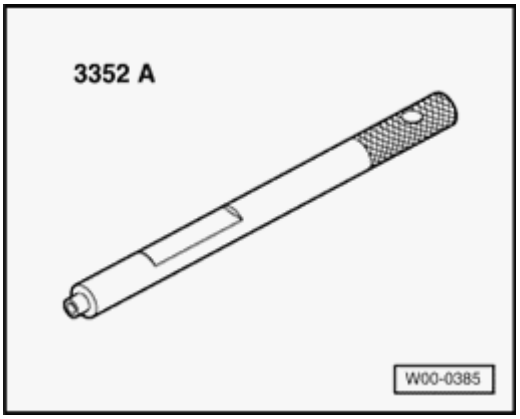


Fig. 68: Identifying Special Tools - Adjustment Pin For Shiftlock 3 3352A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Adjustment pin for shift lock 3 3352 A
- Safety glasses

Work preparations

NOTE:

- **The procedure described below will save you the effort of removing the center console.**

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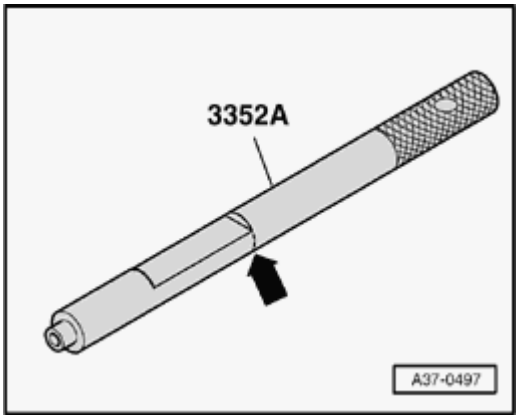


Fig. 69: Identifying Cutting Area Of Adjusting Gauge 3352A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Cut through adjustment pin for shift lock 3 3352 A at rear end of flat area - **arrow** - using a cutting grinder.

  CAUTION: Wear eye protection.

- Order a new adjustment pin for shift lock as a replacement for other use.

Work procedure

- Position steering wheel column adjustment all the way and back toward drivers seat.
- Remove cover for shift mechanism --> **Shift mechanism cover (through VIN 8E_6A156499), removing and installing**.
- Remove ashtray in center console -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

.

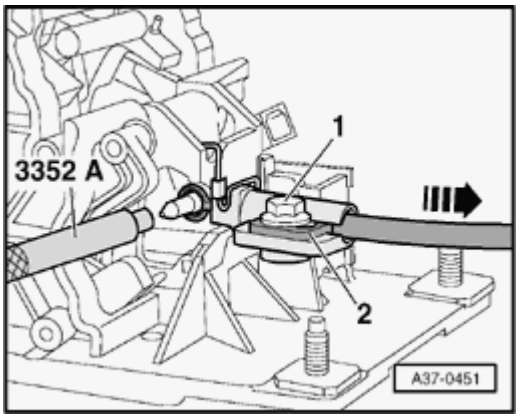


Fig. 70: Removing Adjusting Gauge

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen bolt - **1** -.

- Support bracket - **2** - of locking cable must be movable by hand

- Insert adjustment pin for shift lock 3 3352 A between pin on locking cable lever and locking cable eye.
- Pull locking cable in direction of - **arrow** - and tighten bolt to 9 Nm.
- Remove adjustment pin.
- Check ignition key removal lock after every adjustment of locking cable --> **Shift mechanism (through VIN 8E_6A156499), checking**.

Torque specification

Component	Nm
Locking cable to mounting bracket	9

SHIFT MECHANISM (FROM VIN 8E_6A156500), SERVICING

Shift mechanism (from VIN 8E_6A156500), servicing

CAUTION: Shift selector lever into position "P" and engage parking brake before working with the engine running.

Shift mechanism (from VIN 8E_6A156500), checking

Overview:

- 1. Selector mechanism function test **Selector mechanism function test**
- 2. Checking ignition key removal lock **Check ignition key withdrawal lock**
- 3. Locking button on selector lever handle, checking **Check locking button on selector lever handle**

- If shift mechanism does not function as described, perform "Guided Fault Finding" with Vehicle Diagnosis, Testing and Information System VAS 5051B.

Selector mechanism function test

- In selector lever positions "S" , "D" , "R" and "Tiptronic gate" starter motor will not operate.
- If selector lever position "N" is selected at speeds greater than 5 km/h, selector lever lock solenoid must not engage and block selector lever. Selector lever can be shifted into driving gear.
- For speeds below 2 km/h (almost standstill) and shifting into selector lever position "N" , the shift lock solenoid must only engage after approx. 1 second. Selector lever can only be shifted out of position "N" with brake pedal operated.

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Selector lever in "P" position and ignition switched on:

- Do not operate brake pedal.

- Selector lever is locked and also cannot be shifted out of position "P" while locking button on selector lever handle is pressed. Shift Lock Solenoid N110 blocks selector lever.

- Press brake pedal and hold.

- Shift Lock Solenoid N110 releases selector lever. It must be possible to select a driving mode without "hitching" while locking button on selector lever handle is pressed.
- Slowly shift selector lever from "P" through "R, N, D, S" , checking whether Transmission Range (TR) Display Y6 in instrument cluster matches selector lever position.

Selector lever in "N" position and ignition switched on:

- Do not operate brake pedal.

- Selector lever is not locked immediately when rapidly shifting through position "N" (e.g. from "R" to "D"). This enables e.g. "forward and reverse maneuvers" when vehicle is stuck. Shift lock engages when selector lever is located in "N" for longer than approx. 1 s with brake not being pressed.

- Operate brake pedal.

- Shift Lock Solenoid N110 releases selector lever. It must be possible to select a driving mode without "hitching" while locking button on selector lever handle is pressed.

Selector lever in position "D" , ignition switched on:

- Shift selector lever into "Tiptronic gate".

- Brightening of "D" symbol must go out in selector mechanism cover and "+" and "-" symbols must light up.
- The Transmission Range (TR) Display Y6 in instrument cluster should switch from "PRNDS" to "7654321" when selector lever is shifted into "Tiptronic gate".

If specified values are not obtained:

- Adjust selector lever cable --> **Selector lever cable (from VIN 8E_6A156500), adjusting**.
- Check ignition key removal lock.

Check ignition key withdrawal lock

- Switch ignition key to driving position ("ignition on").
- Press brake pedal and hold.

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- It must be possible to shift selector lever out of position "P" without "hitching" while locking button on selector lever handle is pressed.

  - Switch ignition off.

- It should not be possible to remove ignition key when selector lever is in any other position than "P".

  - Place selector lever in position "P".

- It must be possible to move ignition key into removal position without "sticking".

  - Remove ignition key.

- It must be possible to remove ignition key only in position "P".
- Selector lever cannot be shifted out of position "P" with locking button pressed and parking brake operated.

Check locking button on selector lever handle

Check locking button for ease of movement:

- It must be possible to press locking button without great force.
- After releasing, locking button must come all the way back out by itself

If specified values are not obtained:

- Check whether selector lever handle is installed correctly.
- Check whether selector rod or selector lever is bent.

Function test:

- Ignition switched on

Locking button on selector lever handle must be pressed for the following shifts. If it is not pressed, selector lever cannot be shifted into specified position.

- "P" to "R" and also press brake pedal
- "D" to "S"
- "N" to "R" ; in standstill, also press brake pedal after long wait
- "R" to "P"

If specified values are not obtained:

- Check whether selector lever handle is installed correctly.
- Adjust selector lever cable --> **Selector lever cable (from VIN 8E_6A156500), adjusting**.

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Selector lever handle, shift mechanism cover (from VIN 8E_6A156500), assembly overview

NOTE:

- **Lubricate bearing areas and slide surfaces with *polycarbamide grease G 052 142 A2* .**

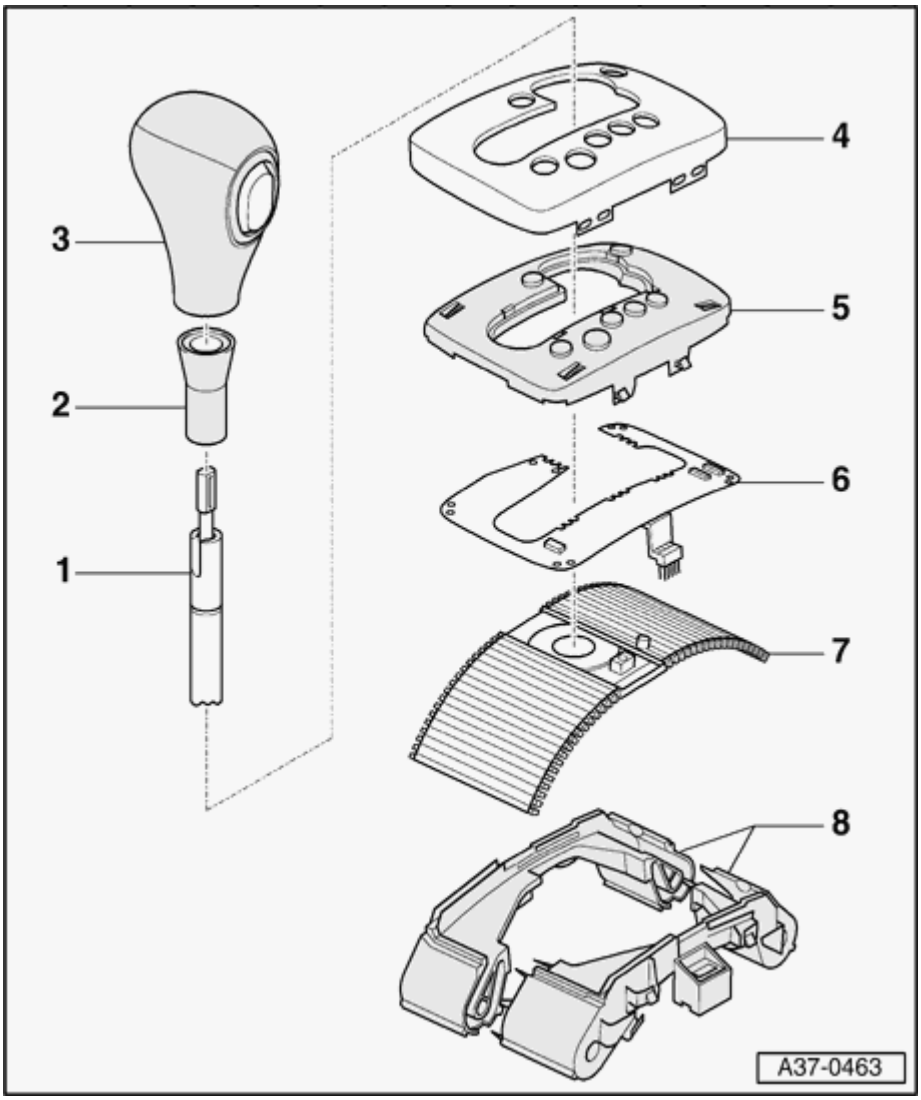


Fig. 71: Selector Mechanism Cover, Selector Lever Handle, Component Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Selector lever

2 - Selector lever shaft piece

- Removing and installing --> **Selector lever handle (from VIN 8E_6A156500), removing and installing**

3 - Selector lever handle

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- Removing and installing --> **Selector lever handle (from VIN 8E_6A156500), removing and installing**

4 - Cover

- With selector scale and Tiptronic gate
- Removing and installing --> **Tiptronic Switch F189 (from VIN 8E_6A156500), removing and installing** and also unclipping symbol inserts

5 - Symbol panel

- Clipped into cover

6 - Printed circuit board

- With integrated Tiptronic Switch F189
- Removing and installing --> **Tiptronic Switch F189 (from VIN 8E_6A156500), removing and installing**
- Switch consists of 3 Hall sensors, which are activated by a magnet on transverse slide of cover strip.
- Before replacing circuit board when DTC "18161" is entered in DTC memory, first check adjustment of selector lever cable --> **Selector lever cable (from VIN 8E_6A156500), adjusting**

7 - Cover strip

- With solenoid for Tiptronic Switch F189 on transverse slide
- Removing and installing --> **Tiptronic Switch F189 (from VIN 8E_6A156500), removing and installing**

8 - Masking panel guide

Selector lever handle (from VIN 8E_6A156500), removing and installing

Removing

- Place selector lever in position "D".

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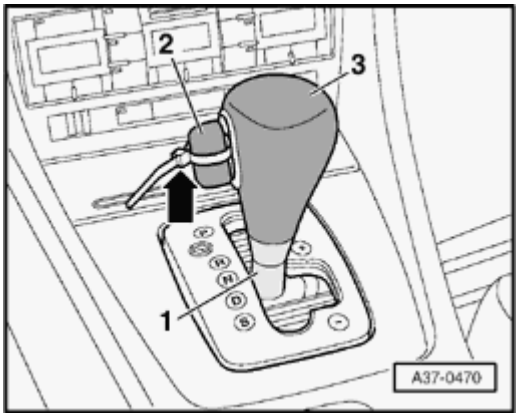


Fig. 72: Selector Lever Handle, Removing And Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Rotate sleeve - **1** - to left and push downward as far as stop.
- Carefully pull switch - **2** - just enough out of selector lever handle - **3** - until a cable tie can be inserted between button and selector lever handle.

NOTE:

- **Do not pull out the button any further, otherwise the selector lever handle will be damaged.**

- Secure button in pulled-out position using cable tie - **arrow** - as shown in illustration.
- Pull selector lever handle upward and off.

Installing

Installation is in reverse order of removal, note the following:

- Place selector lever in position "D".

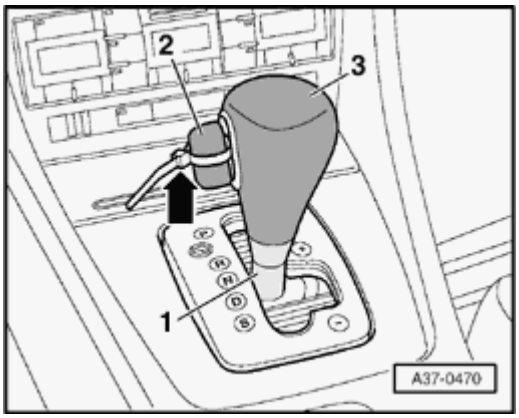


Fig. 73: Selector Lever Handle, Removing And Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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NOTE:

- **To install new selector lever handle - 3 - , button - 2 - must be pulled out as far as stop and secured with a cable tie - arrow - or using assembly aid included with new handle.**
- **If the button was not secured, it must not be pulled out from the handle using mechanical aids. Apply compressed air gun to bottom of handle and press button out with compressed air.**

- Place selector lever handle - **3** - completely onto selector lever - button - **2** - faces toward driver. When doing this, handle must engage into ring groove of selector lever.
- Remove cable tie - **arrow** - or assembly aid, thereby the button mechanism engages in the vertical groove of the selector lever. If necessary press button into selector lever handle.
- Pull sleeve - **1** - upward and engage by rotating clockwise.

Shift mechanism cover (from VIN 8E_6A156500), removing and installing

Removing

- Remove selector lever handle --> **Selector lever handle (from VIN 8E_6A156500), removing and installing**.

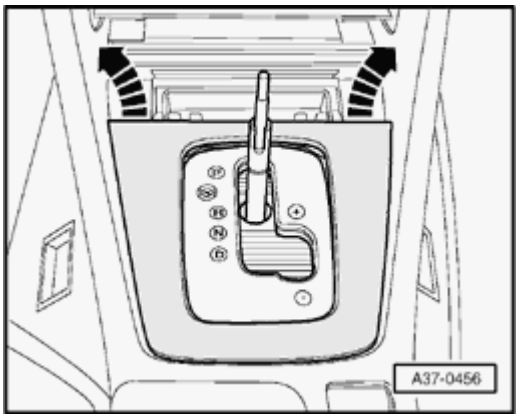


Fig. 74: Removing Trim Panel
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Open ashtray in center console and remove trim panel - **arrows** -.
- Remove 2 retaining bolts for ashtray and lift ashtray at rear.

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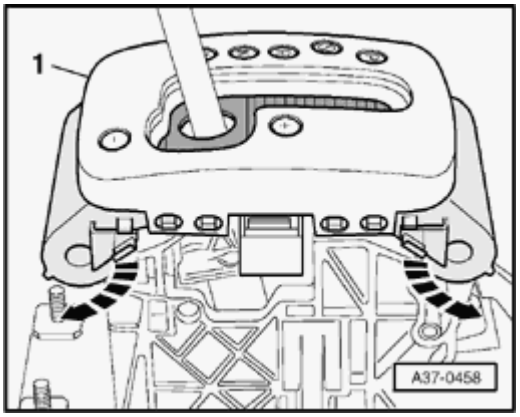


Fig. 75: Releasing Clips And Pull Cover With Guide Upwards To Remove
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release all 4 clips - **arrows** - and pull cover - **1** - with guide upwards to remove.
- Disconnect connector from the side of the guide plate.

Installing

Installation is in reverse order of removal, note the following:

- Install selector lever handle --> **Selector lever handle (from VIN 8E_6A156500), removing and installing**.

Tiptronic Switch F189 (from VIN 8E_6A156500), removing and installing

- If malfunctions at Tiptronic Switch F189 occur, first check whether magnet at control slide masking panel is properly secured and replace masking panel if necessary. Before replacing the printed circuit, check the wiring.

To replace Tiptronic switch, circuit board must be replaced.

Removing

- Remove cover for shift mechanism --> **Shift mechanism cover (from VIN 8E_6A156500), removing and installing**.

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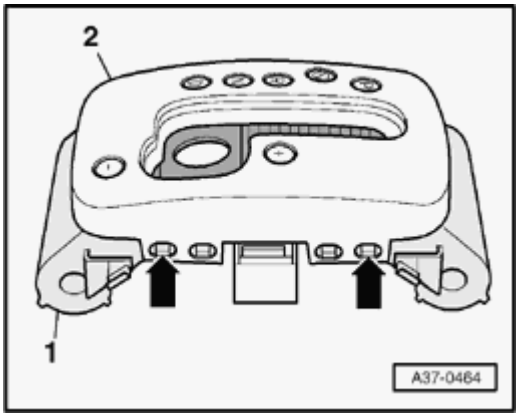


Fig. 76: Pressing Down Retaining Hooks And Pull Off Cover From Guide
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press down retaining hooks - **arrows** - and pull off cover - **2** - from guide - **1** -.
- Remove circuit board with integrated Tiptronic Switch F189.

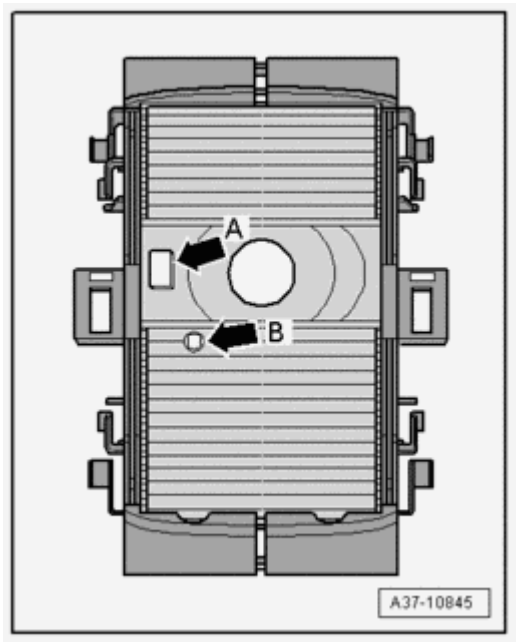


Fig. 77: Checking Magnets On Cover Strip For Secure Seating
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check magnets - **arrows** - on cover strip for secure seating.

- Cover strip must be replaced if a magnet is missing.

Installing

Installation is in reverse order of removal, note the following:

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- Install cover for shift mechanism --> **Shift mechanism cover (from VIN 8E_6A156500), removing and installing**.

Shift mechanism (from VIN 8E_6A156500), assembly overview

NOTE:

- **Lubricate bearing areas and slide surfaces with *polycarbamide grease G 052 142 A2* .**

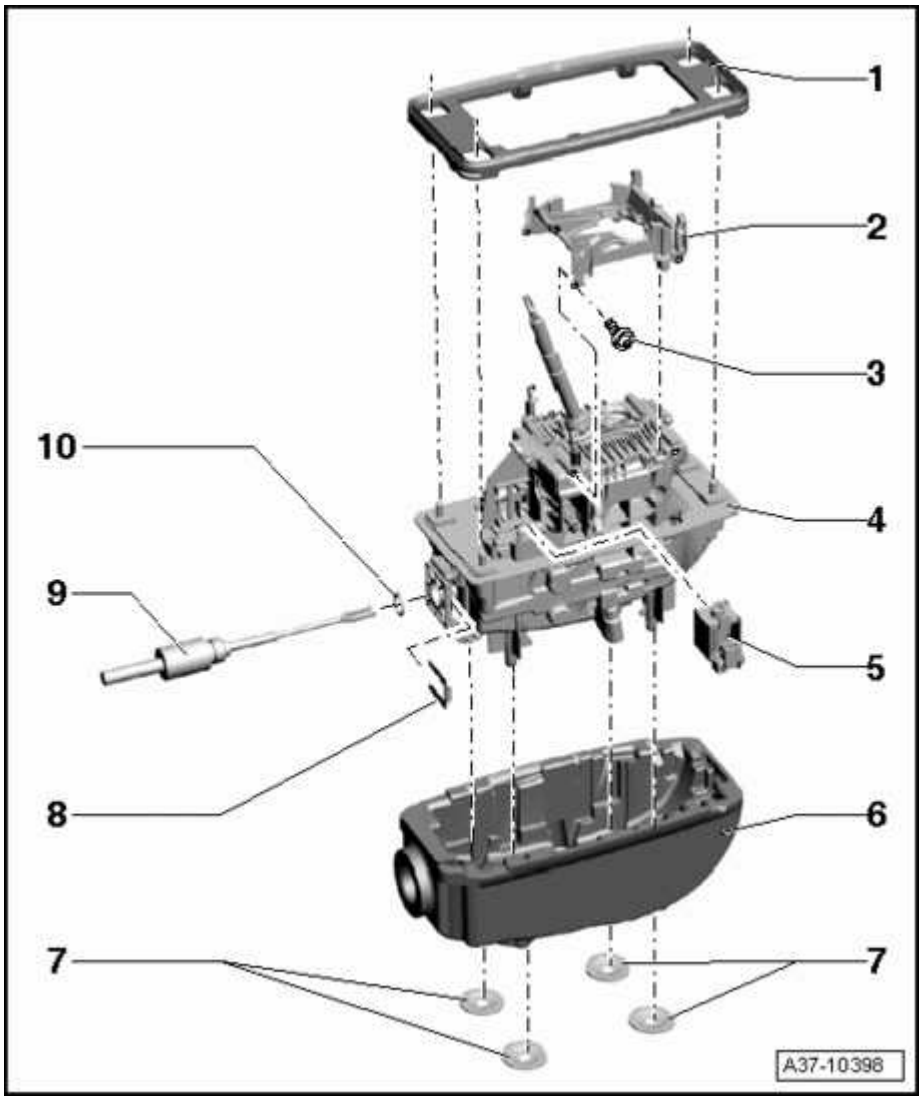


Fig. 78: Shift Mechanism (From VIN 8E_6A156500), Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Rubber seal

2 - Press tube

3 - Bolt, 2 Nm

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- Qty. 4

4 - Selector mechanism function unit

5 - Shift lock solenoid N110

- --> **Shift Lock Solenoid N110 (from VIN 8E_6A156500), removing and installing**

6 - Noise insulation

- Not installed on all vehicles

7 - Lock washers

- Qty. 4, always replace
- For securing sound insulation on selector mechanism function unit

8 - Retaining clip

- Secures selector lever cable on selector mechanism function unit

9 - Selector lever cable

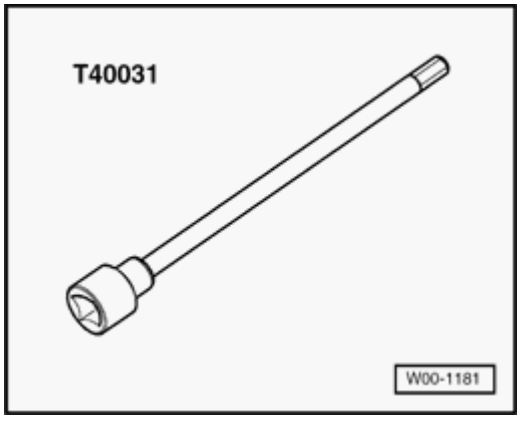
- --> **Selector lever cable (from VIN 8E_6A156500), removing and installing**
- Adjusting --> **Selector lever cable (from VIN 8E_6A156500), adjusting**

10 - O-Ring

- Always replace

Shift mechanism (from VIN 8E_6A156500), removing and installing

Special tools, testers and auxiliary items required



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Fig. 79: Socket And Key T40031
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Socket and key T40031

Removing

- Remove selector lever handle --> **Selector lever handle (from VIN 8E_6A156500), removing and installing**.
- Remove air conditioning operating unit --> **87 AIR CONDITIONING** .
- Remove ashtray in center console -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

.

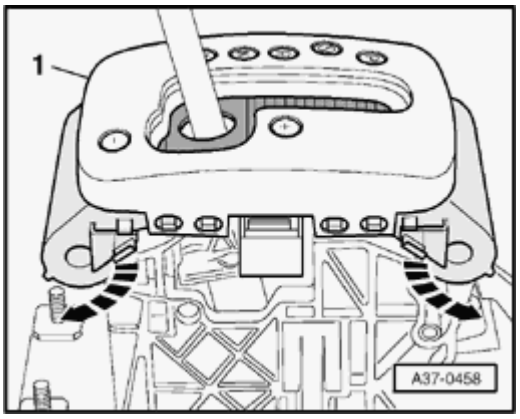
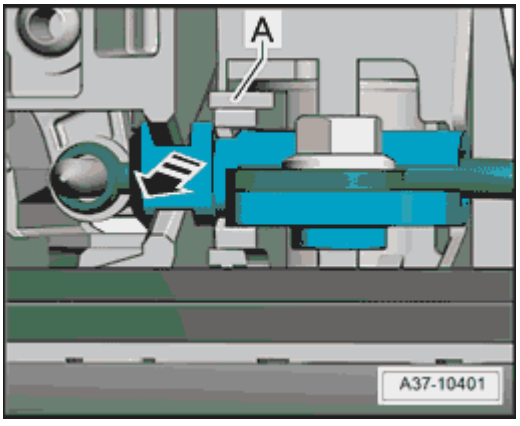


Fig. 80: Releasing Clips And Pull Cover With Guide Upwards To Remove
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release all 4 clips - **arrows** - and pull cover - **1** - with guide upwards to remove.
- Disconnect connector from side of guide plate.
- Disconnect electrical harness connector on Shift Lock Solenoid N110.



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Fig. 81: Raising Retaining Tab And Removing Locking Lever
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Raise retaining tab - **A** - and remove locking lever in direction of - **arrow** -.
- Place selector lever in position "D".

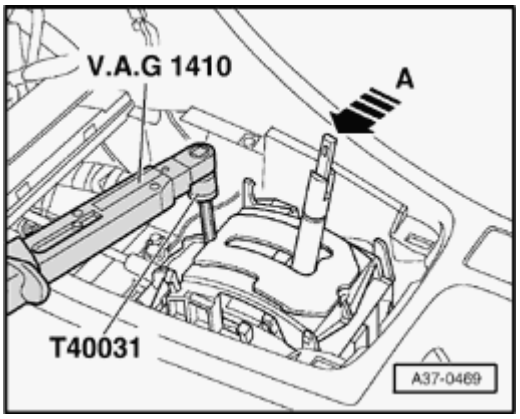


Fig. 82: Loosening Rear Clamping Screw On Selector Lever Cable Approx. 1 Turn Through Hole In Shift Mechanism Using Special Tool T40031
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen rear clamping screw on selector lever cable through hole in shift mechanism approx. one turn using socket and key T40031.

NOTE:

- **Loosen clamping screw only approx. 1 turn. Do not remove.**
- **Clamping screw is only accessible in selector lever position "D".**
- **Selector lever must remain in position "D" while clamping screw is loose.**

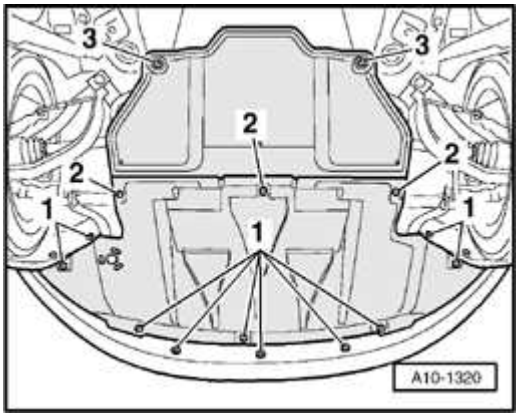


Fig. 83: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen quick-release screws - **2** - and - **3** - and remove rear noise insulation.

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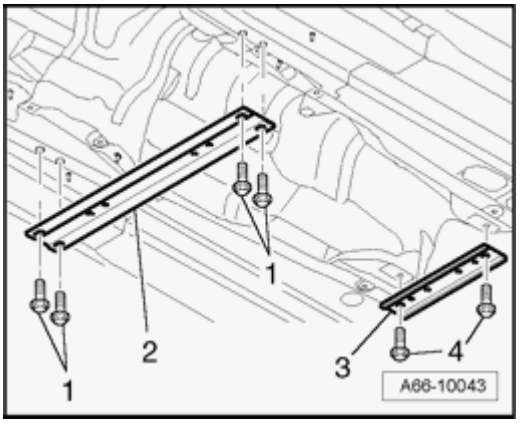


Fig. 84: Removing Tunnel Braces
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove tunnel braces -->
  - **66 EXTERIOR EQUIPMENT**
  - **66 - EXTERIOR EQUIPMENT** for BODY EXTERIOR - CABRIOLET

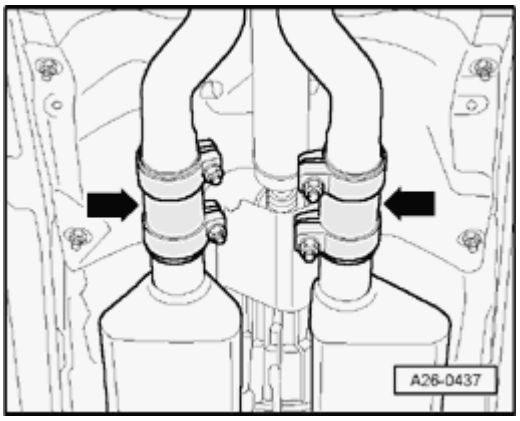


Fig. 85: Loosening Clamping Sleeves
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Flex joint in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.**

- Disconnect exhaust system at double clamps - **arrows** -.
- Remove heat shield under shift mechanism -->
  - **66 EXTERIOR EQUIPMENT**
  - **66 - EXTERIOR EQUIPMENT** for BODY EXTERIOR - CABRIOLET

For vehicles with noise insulation - A - under shift mechanism:

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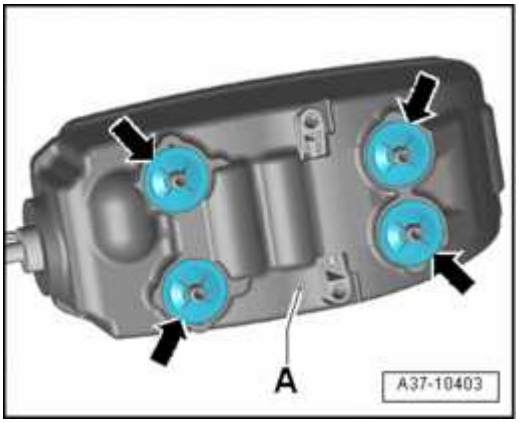


Fig. 86: Removing Lock Washers
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove lock washers - **arrows** -.

NOTE:

- **Always replace lock washers**

- Remove sound insulation - **A** - and slide forward.

All:

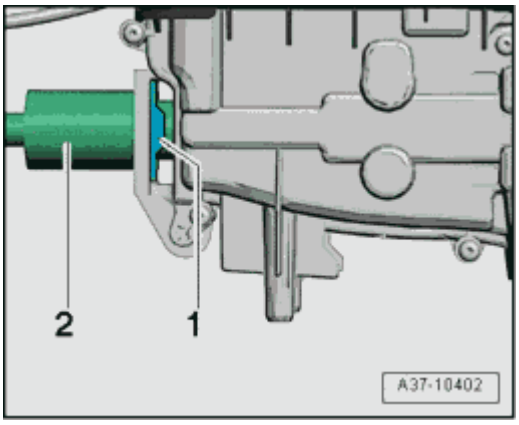


Fig. 87: Removing Selector Lever Cable Retaining Clip Sideways & Selector Lever Cable From Shift Mechanism
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove selector lever cable retaining clip - **1** - sideways.
- Remove selector lever cable - **2** - from shift mechanism.

NOTE:

- **Do not bend or kink the selector lever cable.**

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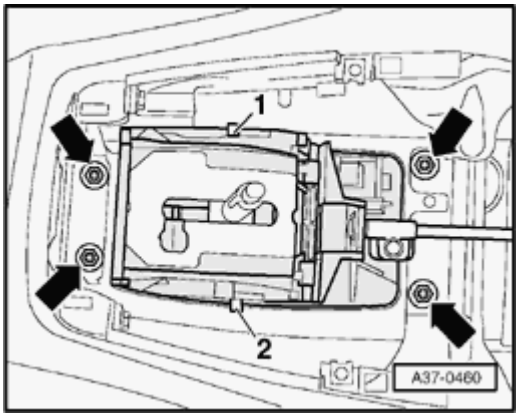


Fig. 88: Pressing Holder Clips & Removing Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **arrows** -.

NOTE:

- **A second technician is required when detaching shift mechanism below vehicle.**

- Press holder clips - **1** - and - **2** - inward, at the same time pushing shift mechanism downward.

Installing

Installation is in reverse order of removal, note the following:

- Install selector lever cable --> **Selector lever cable (from VIN 8E_6A156500), removing and installing**.
- Install locking cable --> **Locking lever (from VIN 8E_6A156500), removing and installing**.
- Adjust locking cable --> **Locking cable (from VIN 8E_6A156500), adjusting**.
- Install exhaust system and align it free of tension -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

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- Check shift mechanism --> **Shift mechanism (from VIN 8E_6A156500), checking**.

Torque specifications

Component	Nm
Shift mechanism to body	10

Shift Lock Solenoid N110 (from VIN 8E_6A156500), removing and installing

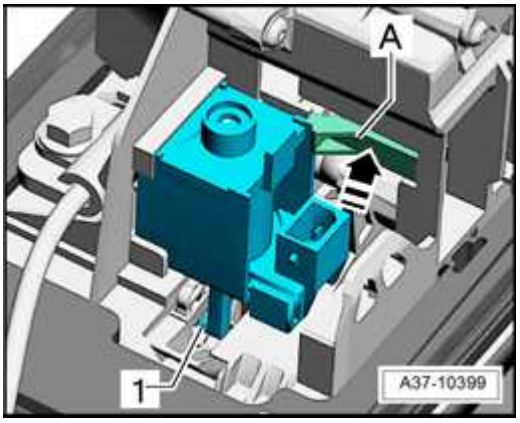


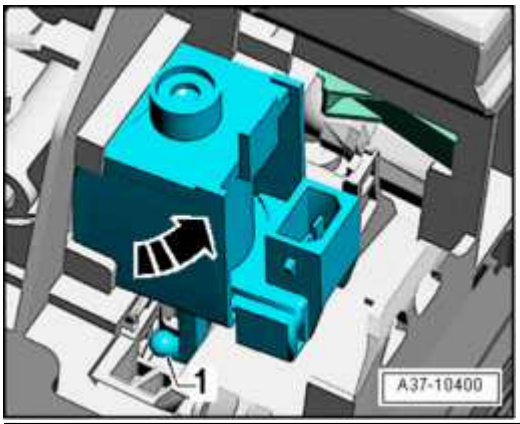
Fig. 89: Pressing Retaining Hooks Into Shift Mechanism And Hold It Down
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removing

- Remove cover for shift mechanism --> **Shift mechanism cover (from VIN 8E_6A156500), removing and installing**.
- Disconnect electrical harness connector on Shift Lock Solenoid N110.
- Press retaining hooks - **A** - into shift mechanism - **arrow** - and hold it down.

NOTE:

- **If retaining hook - A - is broken off, selector mechanism function unit must be replaced.**



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Fig. 90: Disengaging Ball Head From Operating Lever On Shift Mechanism
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tip Shift Lock Solenoid N110 down and out in direction of - **arrow** - so that ball head - **1** - disengages from operating lever on shift mechanism.
- Remove Shift Lock Solenoid N110.

Installing

Installation is in reverse order of removal, note the following:

- Rotate ball head - **1** - to correct installation position.
- Guide Shift Lock Solenoid N110 diagonally from above into shift mechanism.
- Tip Shift Lock Solenoid N110 down in opposite direction of - **arrow** -.

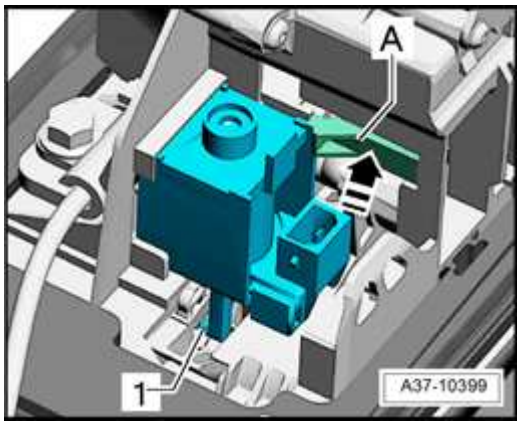


Fig. 91: Pressing Retaining Hooks Into Shift Mechanism And Hold It Down
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Ball head - **1** - must be completely engaged in operating lever on shift mechanism.
- Secure Shift Lock Solenoid N110 on retaining hook - **A** -.
- Install cover for shift mechanism --> **Shift mechanism cover (from VIN 8E_6A156500), removing and installing**.

Selector lever cable and locking cable (from VIN 8E_6A156500), assembly overview

NOTE:

- **Do not bend or kink selector lever cable.**
- **Lightly grease eyelet and ball socket with *polycarbamide grease G 052 142 A2* before installing.**

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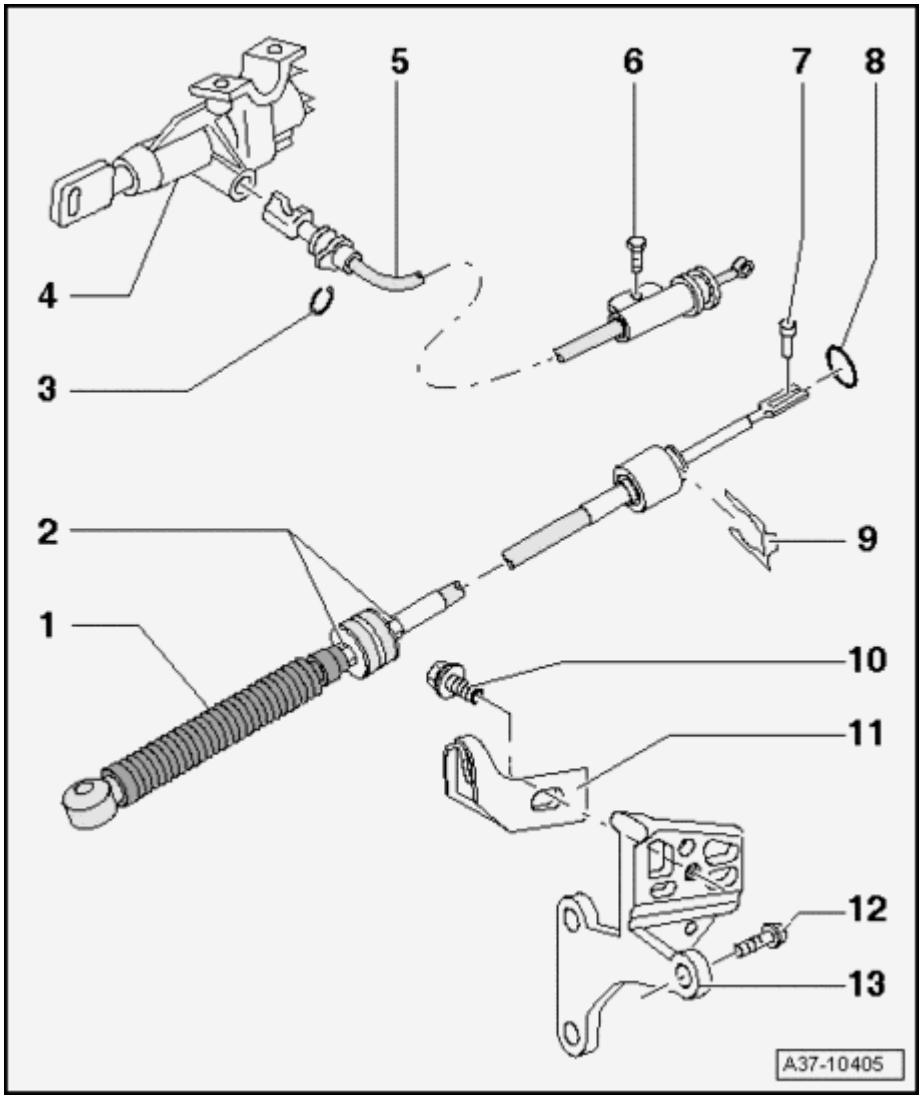


Fig. 92: Selector Lever Cable And Locking Cable (From VIN 8E_6A156500), Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Selector lever cable

- Do not bend or kink, lightly grease cable eye and ball socket before installing.
- Removing and installing --> **Selector lever cable (from VIN 8E_6A156500), removing and installing**
- Adjusting --> **Selector lever cable (from VIN 8E_6A156500), adjusting**
- In case of damaged rubber boots, selector lever cable must be replaced
- When installing, make sure that rubber sleeve on transmission side is not twisted

2 - Lock nuts

- 13 Nm

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3 - Retaining clip

4 - Ignition/starter switch

- With ignition key removal lock

5 - Locking cable

- For ignition key removal lock
- Not to be kinked
- Removing and installing --> **Locking lever (from VIN 8E_6A156500), removing and installing**
- Adjusting --> **Locking cable (from VIN 8E_6A156500), adjusting**

6 - Bolt

- 9 Nm

7 - Clamping screw

- 13 Nm
- For selector lever cable
- Loosen 1 turn for adjusting, do NOT remove completely

8 - O-Ring

- Always replace

9 - Retaining clip for selector lever cable

10 - Bolt

- 20 Nm
- For securing bracket to selector lever cable bracket

11 - Bracket for selector lever cable

- Different equipment depending on version

12 - Bolt

- 20 Nm
- Qty. 3
- For securing selector lever cable bracket to transmission

13 - Bracket for selector lever cable

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- Different equipment depending on version

Selector lever cable (from VIN 8E_6A156500), removing and installing

Special tools, testers and auxiliary items required

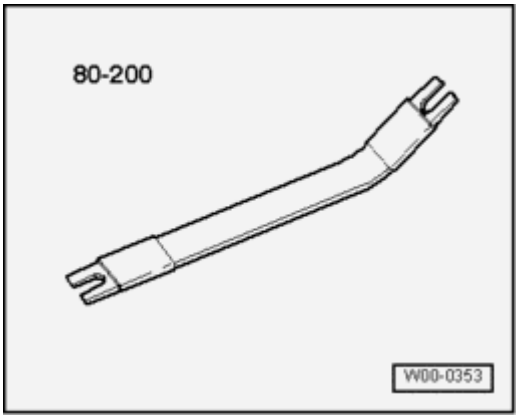


Fig. 93: Identifying Pry Lever 80-200
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pry lever 80-200

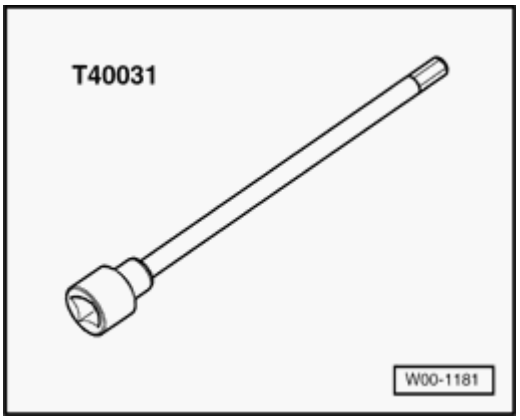


Fig. 94: Socket And Key T40031
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Socket and key T40031

Removing

- Remove selector lever handle --> **Selector lever handle (from VIN 8E_6A156500), removing and installing**.
- Remove cover for shift mechanism --> **Shift mechanism cover (from VIN 8E_6A156500), removing and installing**.
- Place selector lever in position "D".

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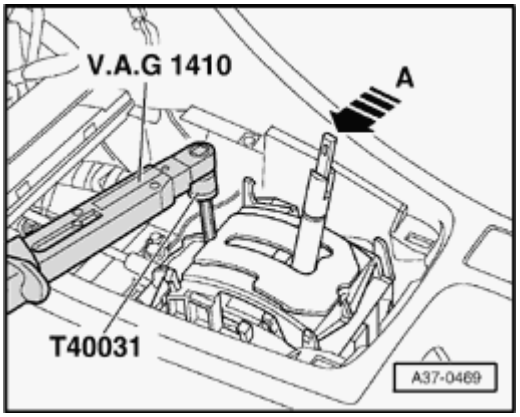


Fig. 95: Loosening Rear Clamping Screw On Selector Lever Cable Approx. 1 Turn Through Hole In Shift Mechanism Using Special Tool T40031
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen rear clamping screw on selector lever cable through hole in shift mechanism approx. one turn using socket and key T40031.

NOTE:

- **Loosen clamping screw only approx. 1 turn. Do not remove.**
- **Clamping screw is only accessible in selector lever position "D".**
- **Selector lever must remain in position "D" while clamping screw is loose.**

Removing

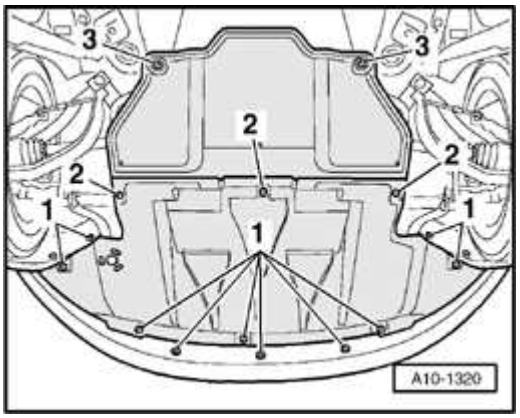


Fig. 96: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen quick-release screws - **2** - and - **3** - and remove rear noise insulation.

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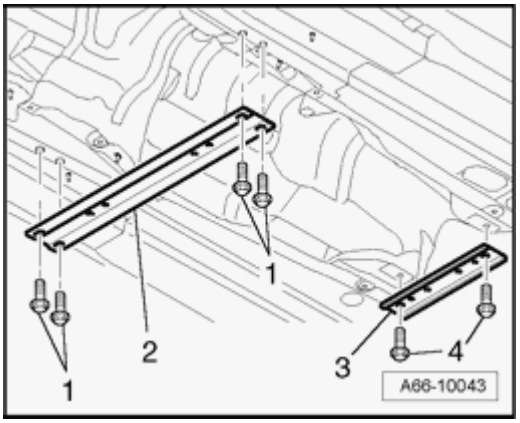


Fig. 97: Removing Tunnel Braces
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove tunnel braces -->
  - **66 EXTERIOR EQUIPMENT**
  - **66 - EXTERIOR EQUIPMENT** for BODY EXTERIOR - CABRIOLET

NOTE:

- **Flex joint in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.**

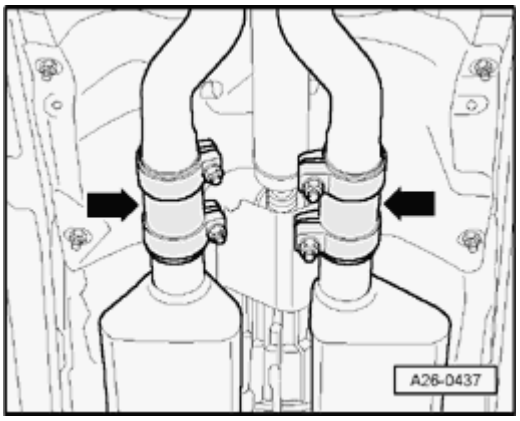


Fig. 98: Loosening Clamping Sleeves
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect exhaust system at double clamps - **arrows** -.
- Remove heat shield under shift mechanism -->
  - **66 EXTERIOR EQUIPMENT**
  - **66 - EXTERIOR EQUIPMENT** for BODY EXTERIOR - CABRIOLET

For vehicles with noise insulation - A - under shift mechanism:

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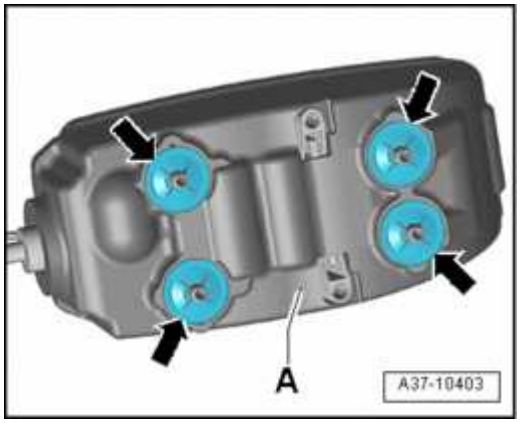


Fig. 99: Removing Lock Washers
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove lock washers - **arrows** -.

NOTE:

- **Always replace lock washers**

- Remove sound insulation - **A** - and slide forward.

All:

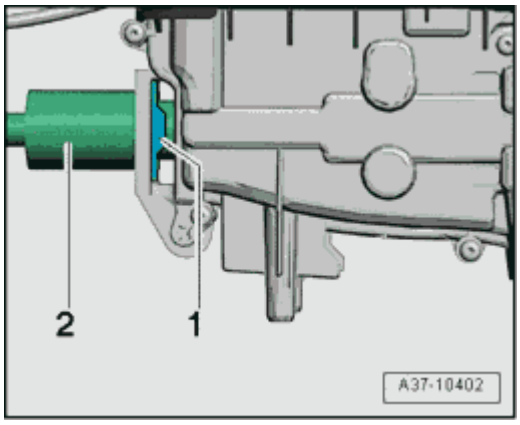


Fig. 100: Removing Selector Lever Cable Retaining Clip Sideways & Selector Lever Cable From Shift Mechanism
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove selector lever cable retaining clip - **1** - sideways.
- Remove selector lever cable - **2** - from shift mechanism.

NOTE:

- **Do not bend or kink selector lever cable.**

Installing

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Installation is in reverse order of removal, note the following:

Torque specifications --> **Selector lever cable and locking cable (from VIN 8E_6A156500), assembly overview**

NOTE:

- **Do not bend or kink selector lever cable.**
- **Lightly grease eyelet and ball socket of selector lever cable with *polycarbamide grease G 052 142 A2* before installing.**

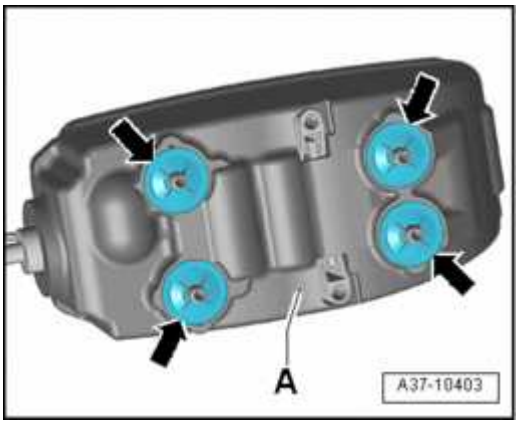


Fig. 101: Removing Lock Washers
Courtesy of VOLKSWAGEN UNITED STATES, INC.

For vehicles with noise insulation - A - under shift mechanism:

- Slide noise insulation - **A** - over opening on selector lever cable.

All:

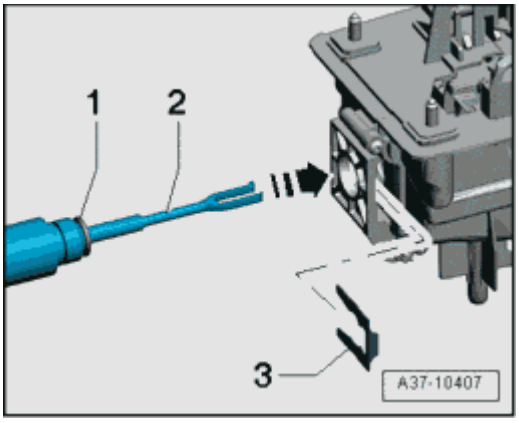


Fig. 102: Replacing O-ring on selector lever cable & Slide selector lever cable into shift mechanism
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Replace O-ring - **1** - on selector lever cable.

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- Slide selector lever cable into shift mechanism - **arrow** -.

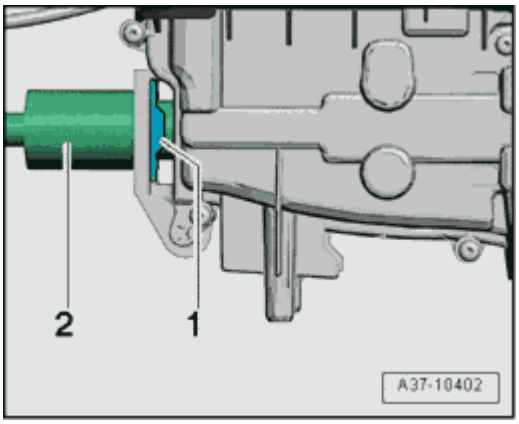


Fig. 103: Removing Selector Lever Cable Retaining Clip Sideways & Selector Lever Cable From Shift Mechanism
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Secure selector lever cable - **2** - to shift mechanism with retaining clip - **1** -.

- Installation position: Angled end of retaining clip faces toward shift mechanism.

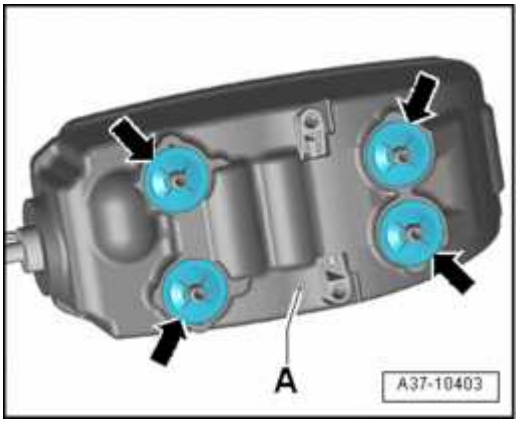


Fig. 104: Removing Lock Washers
Courtesy of VOLKSWAGEN UNITED STATES, INC.

For vehicles with noise insulation - A - under shift mechanism:

- Secure sound insulation to shift mechanism with four new lock washers - **arrows** -.

All:

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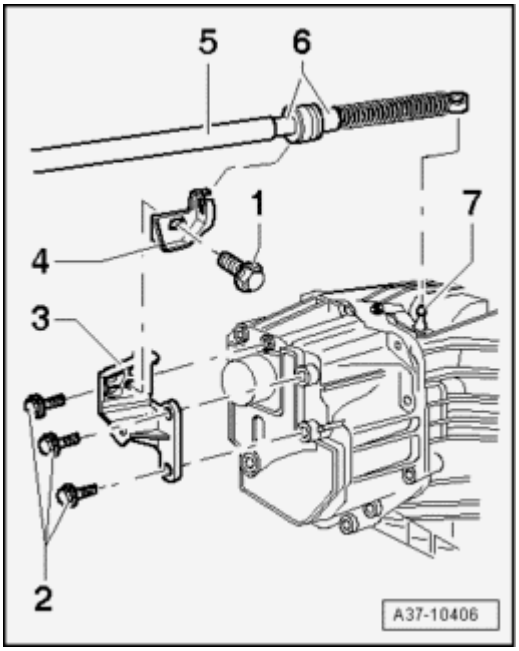


Fig. 105: Bolting Selector Lever Cable To Support Bracket & Tightening Lock Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tightly bolt selector lever cable - **5** - to support bracket - **4** - , tighten lock nuts - **6** -.

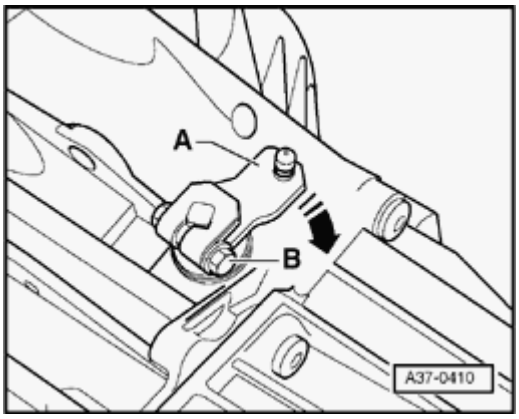


Fig. 106: Pressing Selector Shaft Lever On Transmission Completely Toward Rear
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press selector shaft lever - **A** - on transmission completely toward rear - **arrow** - until parking lock engages.

NOTE:

- **When parking lock is engaged, it must not be possible to turn both front wheels in one direction at the same time.**

- Then press selector shaft forward 3 detents, so transmission is in "D" position.
- Ensure selector lever in vehicle is also in "D" position.

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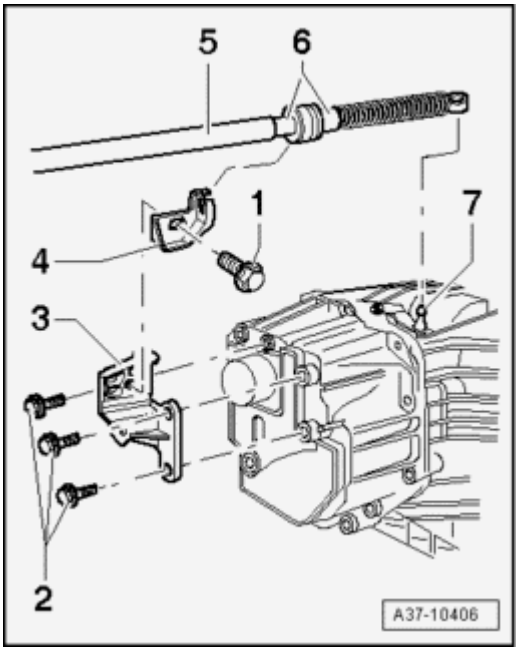


Fig. 107: Bolting Selector Lever Cable To Support Bracket & Tightening Lock Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully press selector lever cable ball socket - **5** - onto selector shaft lever - **7** - in this position.

NOTE:

- **Take care not to bend selector shaft lever when pressing it on; support it if necessary, as otherwise selector mechanism can no longer be adjusted properly.**

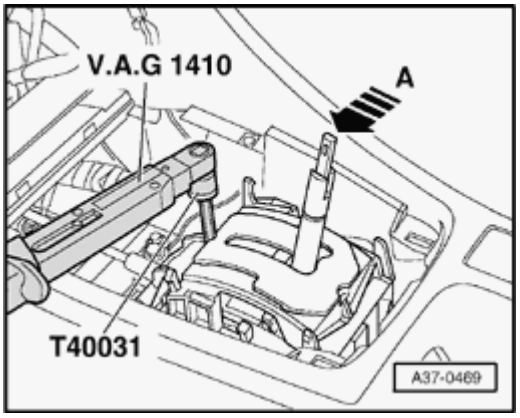


Fig. 108: Loosening Rear Clamping Screw On Selector Lever Cable Approx. 1 Turn Through Hole In Shift Mechanism Using Special Tool T40031
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check exact position of selector lever in position "D" by pushing selector lever lightly towards drivers seat - **arrow A** -.

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NOTE:

- **Do not touch selector lever during the adjustment.**

- Tighten clamping screw with Socket T40031 through hole in shift mechanism while in this position, without touching selector lever.
- Adjust selector lever cable --> **Selector lever cable (from VIN 8E_6A156500), adjusting**.
- Install exhaust system and align it free of tension -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

.

Selector lever cable (from VIN 8E_6A156500), adjusting

Special tools, testers and auxiliary items required

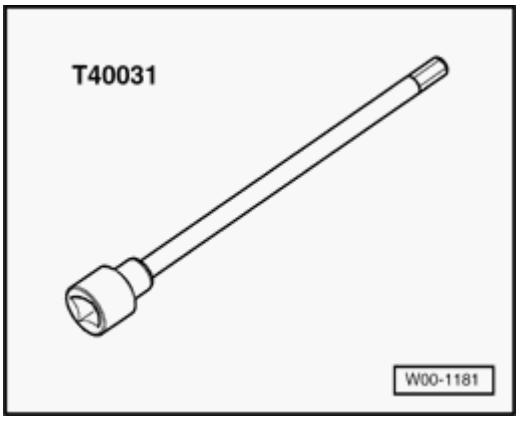


Fig. 109: Socket And Key T40031
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Socket and key T40031

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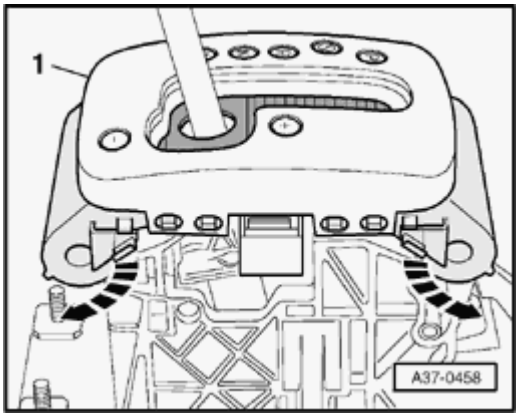


Fig. 110: Releasing Clips And Pull Cover With Guide Upwards To Remove
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove cover for shift mechanism --> **Shift mechanism cover (from VIN 8E_6A156500), removing and installing**.
- Place selector lever in position "D".

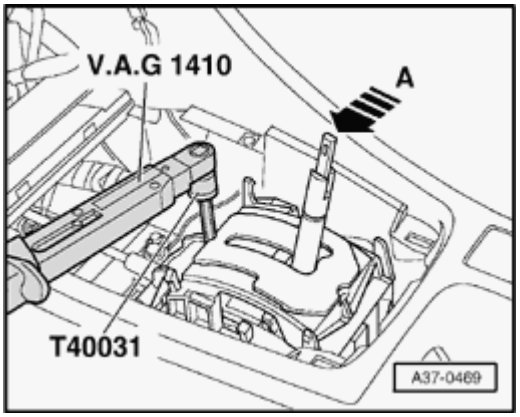


Fig. 111: Loosening Rear Clamping Screw On Selector Lever Cable Approx. 1 Turn Through Hole In Shift Mechanism Using Special Tool T40031
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen rear clamping screw on selector lever cable through hole in shift mechanism approx. one turn using socket and key T40031.

NOTE:

- **Loosen clamping screw only approx. 1 turn. Do not remove.**
- **Clamping screw is only accessible in selector lever position "D".**
- **Selector lever must remain in position "D" while clamping screw is loose.**

- Carefully move selector lever lightly toward front and rear without shifting into another selector lever position, this releases the tension on selector lever cable.
- Check exact position of selector lever in position "D" by pushing selector lever lightly towards drivers seat - **arrow A** -.

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NOTE:

- **Do not touch selector lever during the adjustment.**

- Without touching selector lever, tighten clamping screw in this position using socket and key T40031.
- Install cover for shift mechanism --> **Shift mechanism cover (from VIN 8E_6A156500), removing and installing**.
- Check shift mechanism --> **Shift mechanism (from VIN 8E_6A156500), checking**.

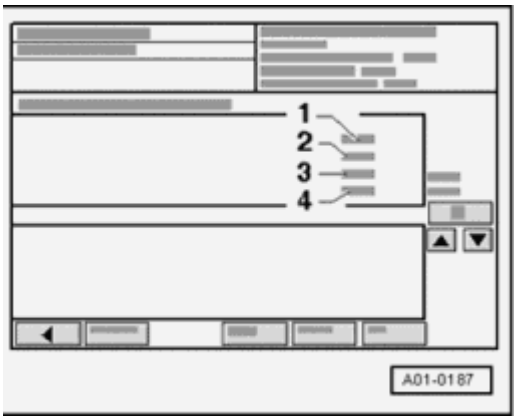


Fig. 112: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Using Vehicle Diagnosis, Testing and Information System VAS 5051 A , the position of Multi-Function Transmission Range (TR) Switch F125 can be compared to position on selector lever via On Board Diagnostic (OBD), 02 - Transmission electronics, 08 - Read measured value block, display group 2 in display field - 1 -.**

If shift mechanism does not function properly after adjusting selector lever cable:

- Bring selector lever cable into basic setting --> **Selector lever cable, from VIN 8E_6A156500), bringing into basic setting**.

Torque specifications

Component	Nm
Clamping screw to selector lever cable	13

Selector lever cable, from VIN 8E_6A156500), bringing into basic setting

Special tools, testers and auxiliary items required

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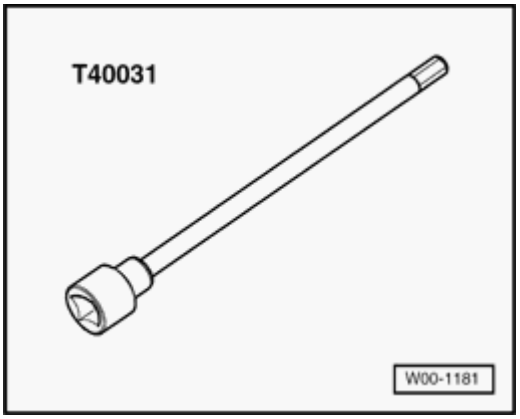


Fig. 113: Socket And Key T40031
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Socket and key T40031

Work procedure

- Remove cover for shift mechanism --> **Shift mechanism cover (from VIN 8E_6A156500), removing and installing**.
- Place selector lever in position "D".

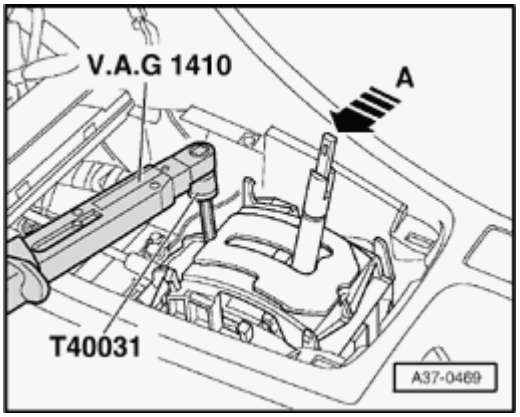


Fig. 114: Loosening Rear Clamping Screw On Selector Lever Cable Approx. 1 Turn Through Hole In Shift Mechanism Using Special Tool T40031
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Before performing basic setting, make sure that the clamping screw is tightened. It is accessible through hole in shift mechanism in position "D" using socket and key T40031.**

- Tighten clamping screw in this position using socket and key T40031 (13 Nm).
- Place selector lever in position "P".

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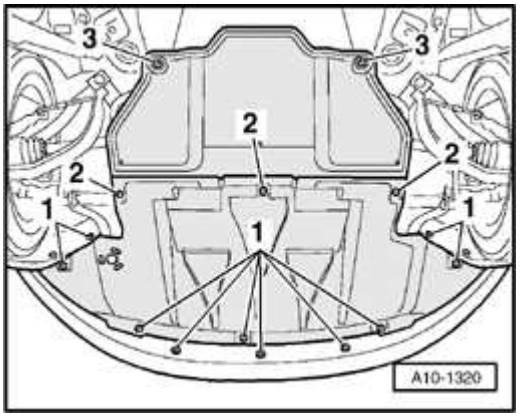


Fig. 115: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen quick-release screws - **2** - and - **3** - and remove rear noise insulation.

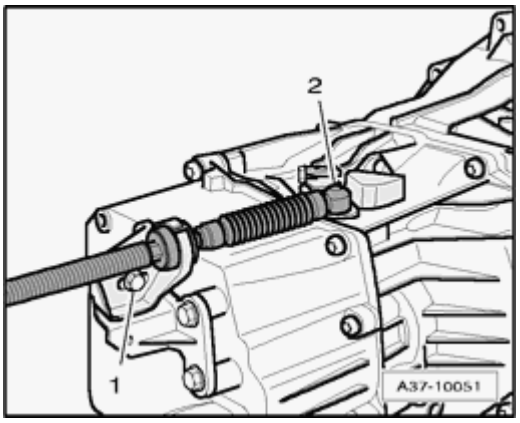


Fig. 116: Removing Support Bracket For Selector Lever Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove support bracket for selector lever cable - **1** -.

NOTE:

- **Make sure selector lever is in position "P".**

- Push lever for selector shaft - **2** - at transmission completely toward rear until parking lock engages.

NOTE:

- **When parking lock is engaged, it must not be possible to turn both front wheels in one direction at the same time.**

- Make sure that selector lever cable has been routed free of kinks and tension.

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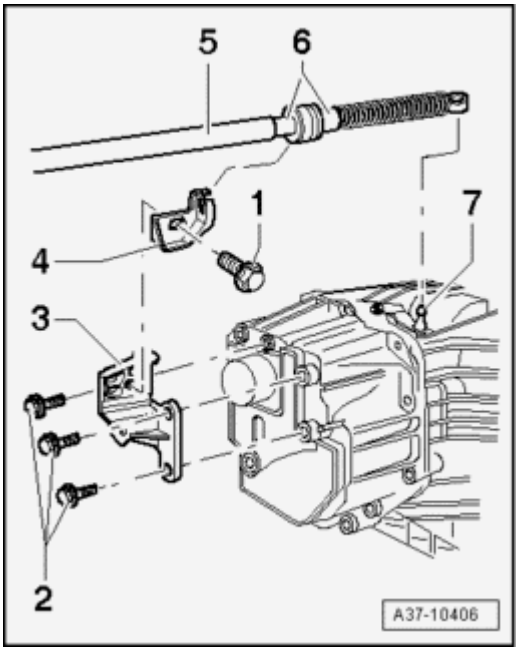


Fig. 117: Bolting Selector Lever Cable To Support Bracket & Tightening Lock Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Make sure that selector lever cable - **5** - is secured with nuts - **6** - to support bracket - **4** - (13 Nm).

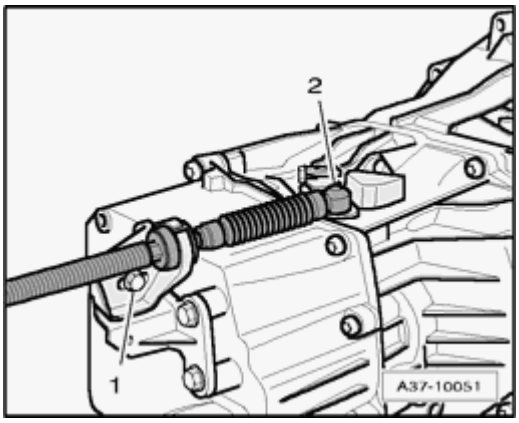


Fig. 118: Removing Support Bracket For Selector Lever Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install support bracket for selector lever cable tightly to bracket - **1** -.
- Adjust selector lever cable --> **Selector lever cable (from VIN 8E_6A156500), adjusting**.

Torque specification

Component	Nm
Clamping screw to selector lever cable	13
Selector lever cable to bracket (lock nut, qty. 2)	13

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Support bracket to bracket, bolt M8 - **1** -	23

Locking lever (from VIN 8E_6A156500), removing and installing

Overview

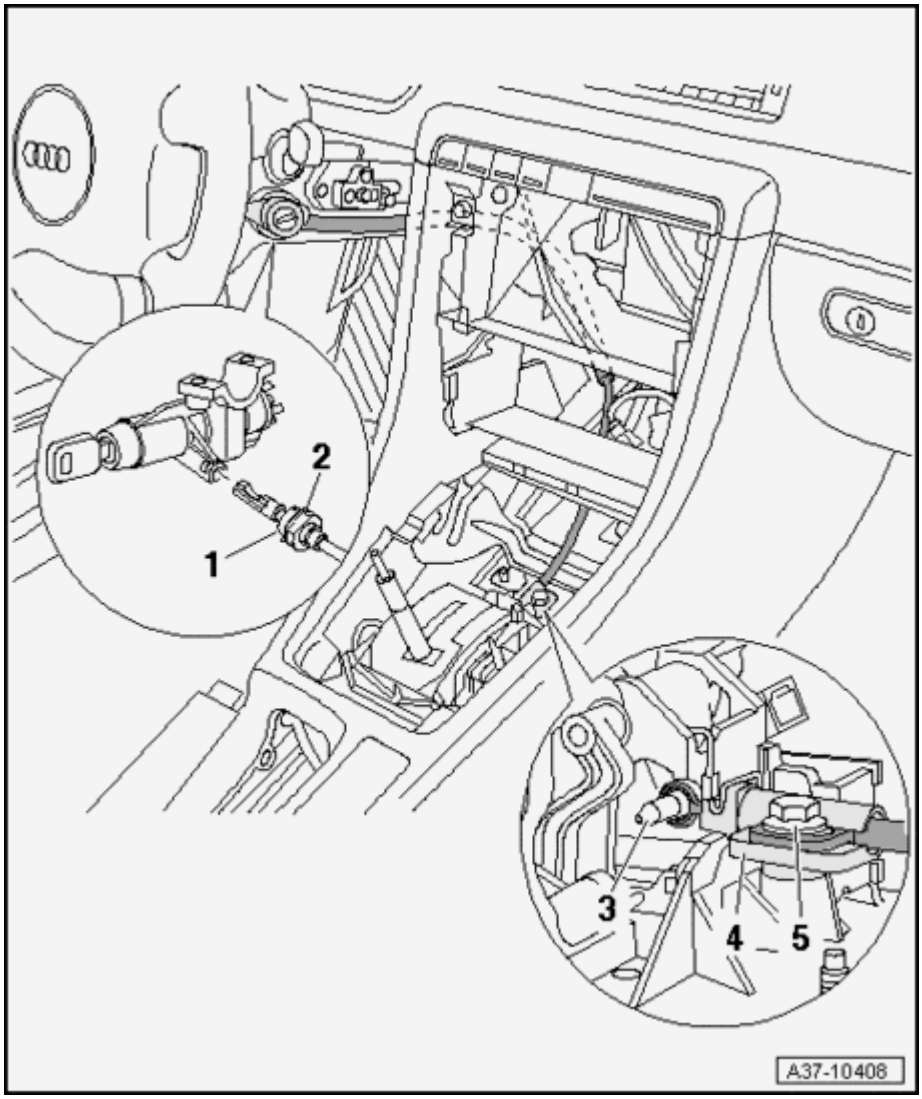


Fig. 119: Locking Lever (From VIN 8E_6A156500), Removing And Installing Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Locking cable

2 - Retaining clip

3 - Locking cable eye pins

4 - Locking cable bracket

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5 - Bolt, 10 Nm

- For adjusting locking cable

Removing

NOTE:

- **Do not kink locking cable.**

CAUTION: Observe procedures for disconnecting battery -->

- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

- Disconnect Ground (GND) wire at battery.
- Remove storage compartment on drivers side -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

  .
- Remove steering column trim -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

  .
- Remove A/C system operating unit --> **87 AIR CONDITIONING** .
- Remove ashtray in center console -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

  .
- Remove cover for shift mechanism --> **Shift mechanism cover (from VIN 8E_6A156500), removing and installing**.
- Turn ignition key into driving position "ignition on".
- Place selector lever in position "P".

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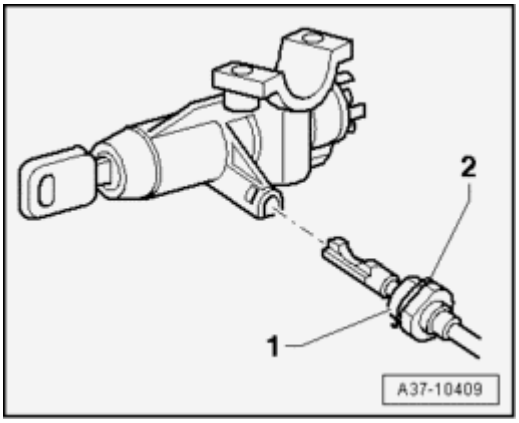


Fig. 120: Lifting Retaining Clip From Interlock Lever And Pulling Locking Cable Out Of Ignition/Starter Switch
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Lift retaining clip - **2** - from interlock lever and pull locking cable - **1** - out of ignition/starter switch.

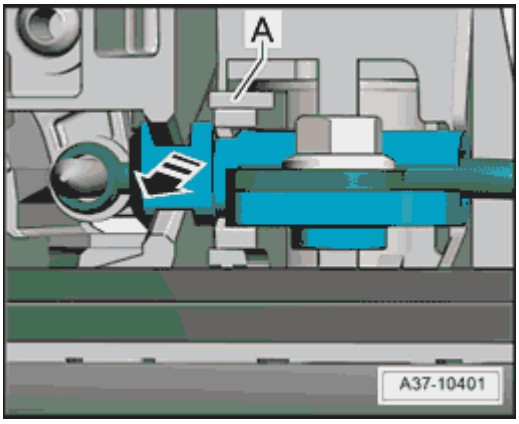


Fig. 121: Raising Retaining Tab And Removing Locking Lever
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Raise retaining tab - **A** - and remove locking lever in direction of - **arrow** - from locking cable eye pins.

Installing

Installation is in reverse order of removal, note the following:

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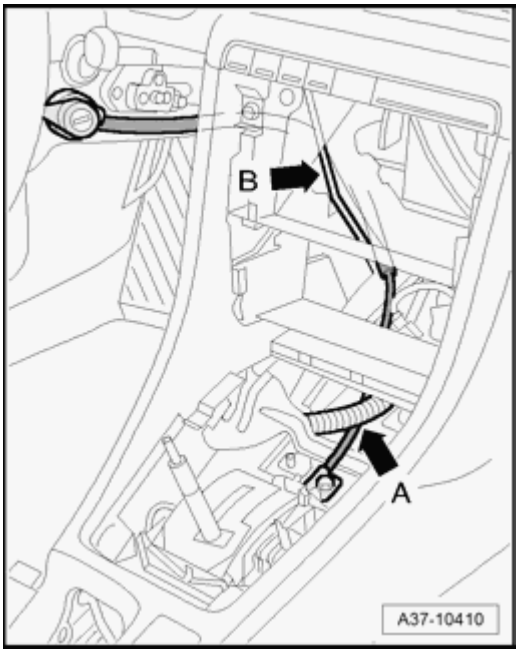


Fig. 122: Routing Locking Cable Without Kinks Under Wiring Harness And Behind Instrument Panel Brace
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Route locking cable without kinks under wiring harness - **arrow A** - and behind instrument panel brace - **arrow B** -.
- Turn ignition key into driving position "ignition on".

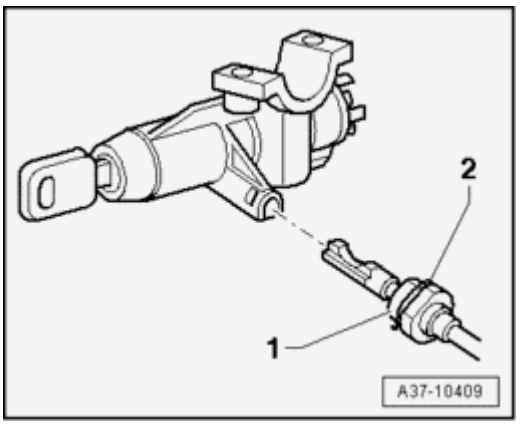


Fig. 123: Lifting Retaining Clip From Interlock Lever And Pulling Locking Cable Out Of Ignition/Starter Switch
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert locking cable - **1** - into ignition/starter switch.
- Check interlock lever - **2** -.
- Bring ignition/starter switch into locking position "ignition off".
- Check whether selector lever is in position "P".

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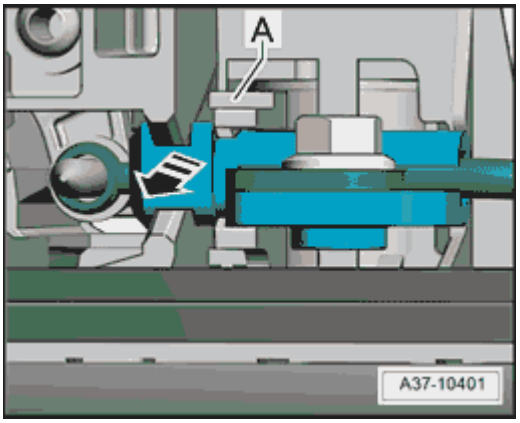


Fig. 124: Raising Retaining Tab And Removing Locking Lever
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Slide locking cable in opposite in direction of - **arrow** - onto locking cable eye pins.
- The retaining tab - **A** - must engage over locking cable
- Adjust locking cable --> **Locking cable (from VIN 8E_6A156500), adjusting**.
- Observe procedures for connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

.

Locking cable (from VIN 8E_6A156500), adjusting

Special tools, testers and auxiliary items required

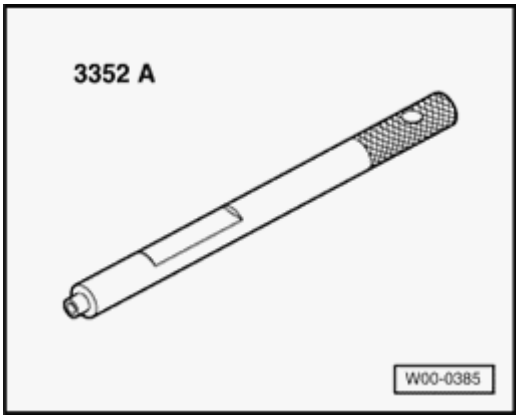


Fig. 125: Identifying Special Tools - Adjustment Pin For Shiftlock 3 3352A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Adjustment pin for shift lock 3 3352 A

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- Safety glasses

Work preparations

NOTE:

- **The procedure described below will save you the effort of removing the center console.**

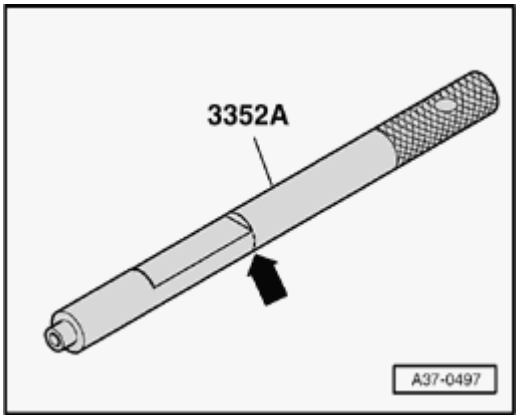


Fig. 126: Identifying Cutting Area Of Adjusting Gauge 3352A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Cut through adjustment pin for shift lock 3 3352 A at rear end of flat area - **arrow** - using a cutting grinder.

  CAUTION: Wear eye protection.

- Order a new adjustment pin for shift lock as a replacement for other use.

Work procedure

- Position steering wheel column adjustment all the way and back toward drivers seat.
- Remove cover for shift mechanism --> **Shift mechanism cover (from VIN 8E_6A156500), removing and installing**.
- Remove ashtray in center console -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

  .
- Place selector lever in position "P".

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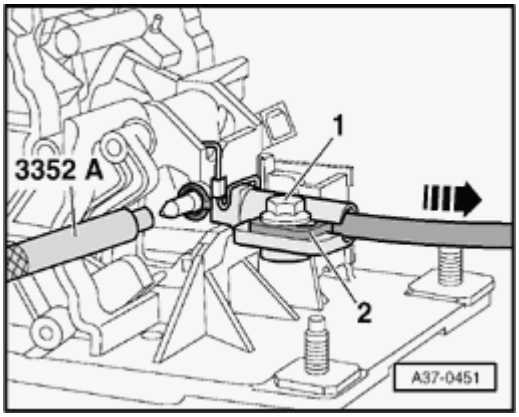


Fig. 127: Removing Adjusting Gauge
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen bolt - **1** -.

- Support bracket - **2** - of locking cable must be movable by hand

- Insert adjustment pin for shift lock 3 3352 A between pin on locking cable lever and locking cable eye.
- Pull locking cable in direction of - **arrow** - and tighten bolt to 10 Nm.
- Remove adjustment pin.
- Check ignition key removal lock after every adjustment of locking cable --> **Shift mechanism (from VIN 8E_6A156500), checking**.

Torque specification

Component	Nm
Locking cable to mounting bracket	10

TRANSMISSION, REMOVING AND INSTALLING

Transmission, removing and installing

Overview:

- --> **Transmission (vehicles with 1.8 L turbo engine, also Audi Cabriolet), removing**
- --> **Transmission (vehicles with 2.0 L normally-aspirated engine, also Audi Cabriolet), removing**
- --> **Transmission (vehicles with 2.0 L TFSI engine, also Audi Cabriolet), removing**
- --> **Transmission (vehicles with 6-cyl. 3.0 L gasoline engine, also Audi Cabriolet), removing**

- --> **Transmission (vehicles with 6-cyl. 3.2 L FSI gasoline engine, also Audi Cabriolet), removing**
- --> **Installing transmission**

Transmission (vehicles with 1.8 L turbo engine, also Audi Cabriolet), removing

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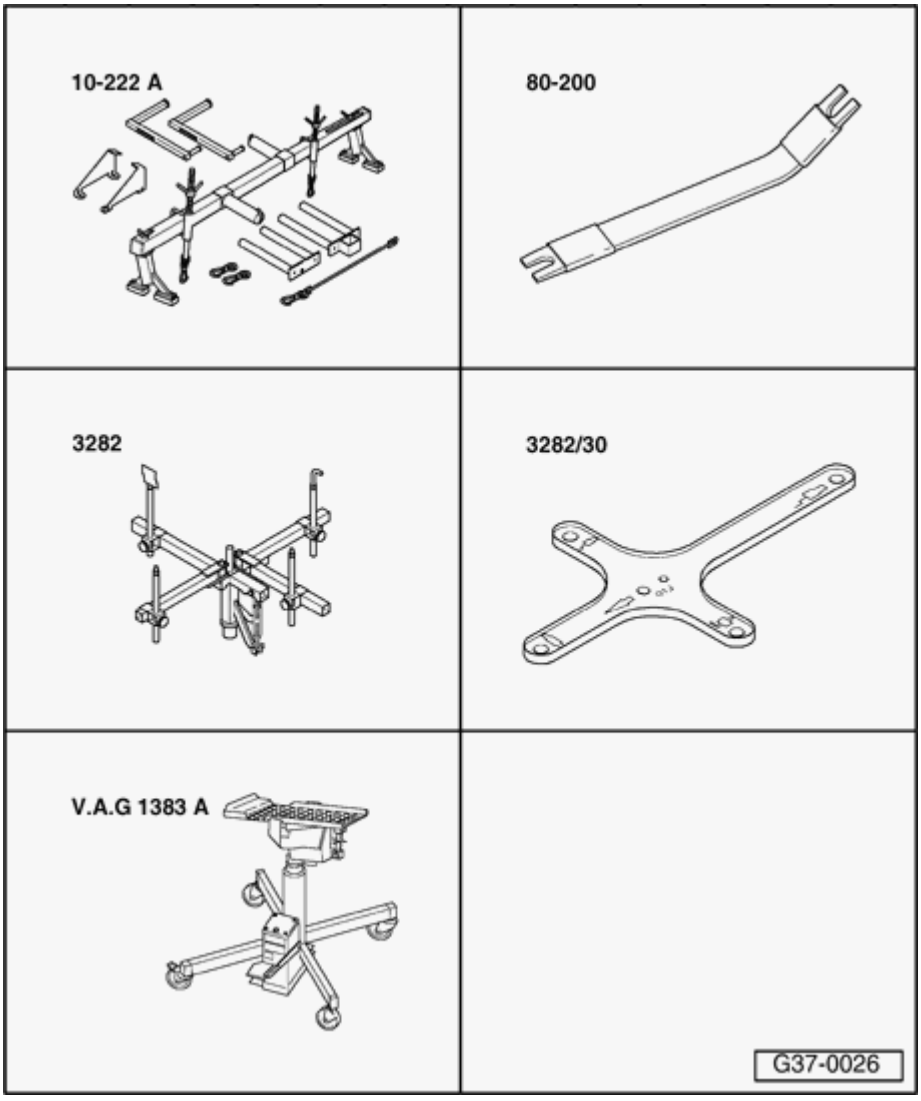


Fig. 128: Identifying Special Tools - Transmission (Vehicles With 1.8 L Turbo Engine, Also Audi Cabriolet), Removing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Engine support bridge 10-222 A
- Pry lever 80-200
- Transmission support 3282
- Adjustment plate 3282/30
- Engine/Gearbox Jack V.A.G 1383 A

Special tools, testers and auxiliary items required

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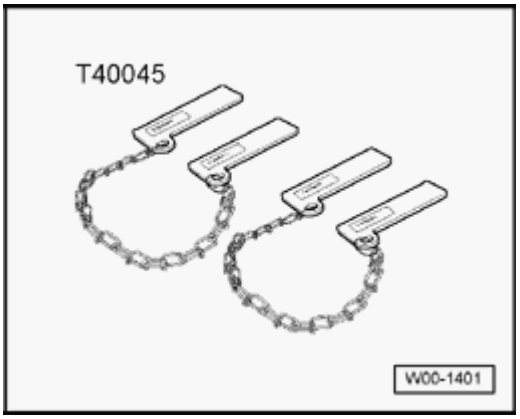


Fig. 129: Insert Pad For Front Fender T40045
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fender insert pads T40045

Work procedure

- Place selector lever in position "P".

CAUTION: Observe procedures for disconnecting battery -->

- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

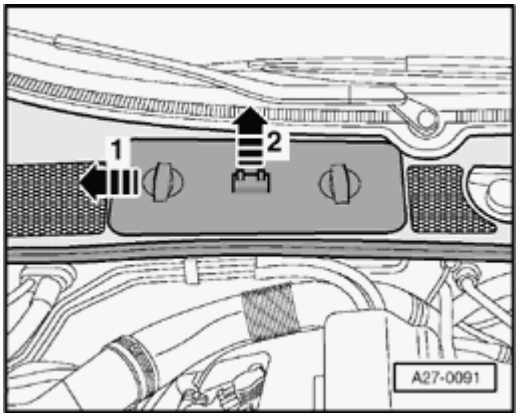


Fig. 130: Sliding Cover Over Battery To Right And Pull It Off Upwards
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Slide cover over battery to right - **arrow 1** - and pull it off upwards - **arrow 2** -.

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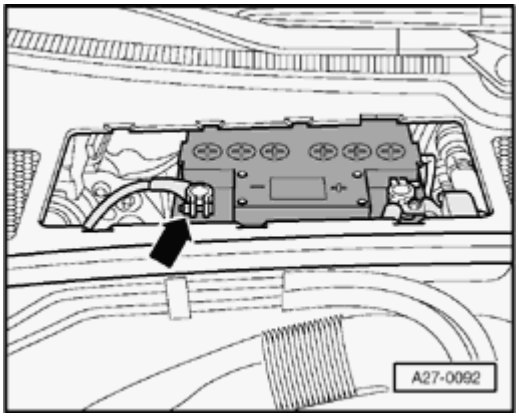


Fig. 131: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) wire - **arrow** -.

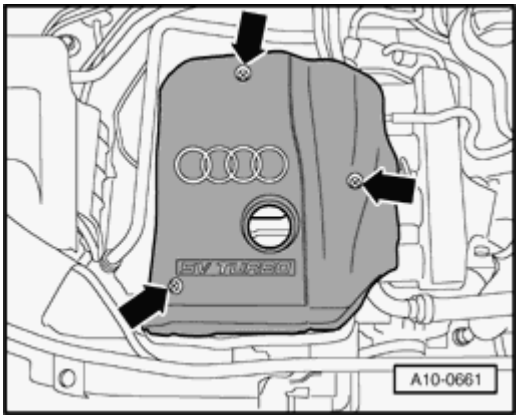


Fig. 132: Removing Engine Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove engine cover - **arrows** -.

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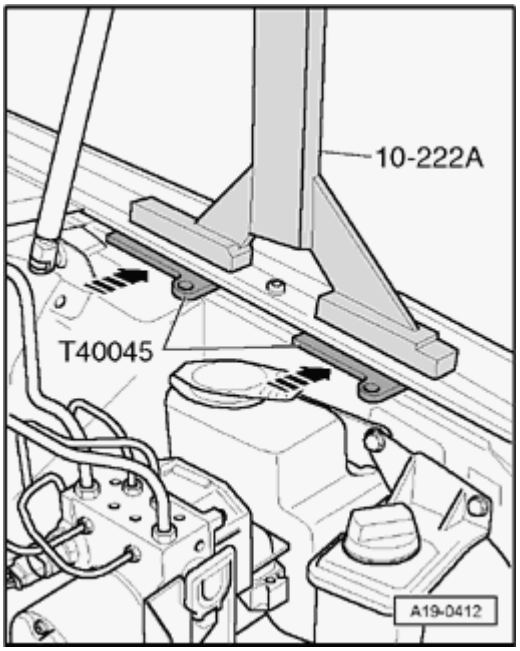


Fig. 133: Placing Insert Pad For Front Fender T40045 On Both Sides Between Fender Attachment Edge And Web Plate Lying Beneath
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull off sealing rubber at bolted flanges of fender.
- To prevent damage to bolted flanges of fender when using engine support bridge 10-222 A , insert fender insert pads T40045 on both sides between bolted flange of fender and web plate lying beneath.

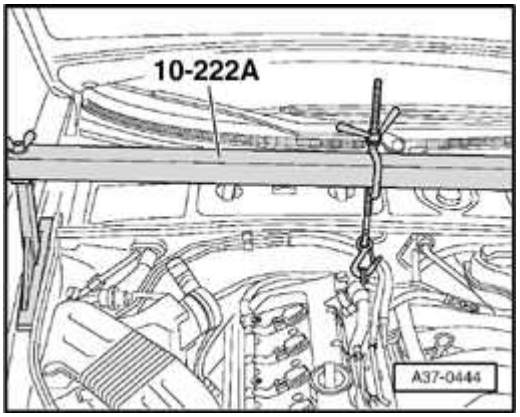


Fig. 134: Positioning Engine Support Bridge 10-222 A Onto Bolted Flange Of Fenders
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position engine support bridge 10-222 A onto bolted flange of fenders; spindle stands at rear.
- Expose rear lifting eye on engine.
- Connect hook on spindle with lifting eye on back of engine.
- Take up some of the engine weight by tightening spindle of support bar, but do not lift.

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- Remove both front wheels.

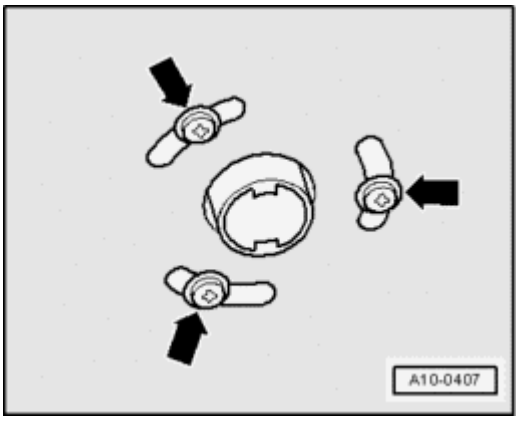


Fig. 135: Identifying Exhaust Pipe Fasteners
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On vehicles equipped with auxiliary heater, remove bolts - **arrows** - for exhaust pipe of auxiliary/additional heater to noise insulation.

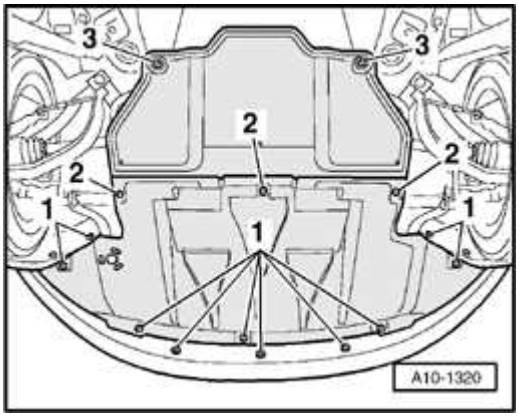


Fig. 136: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts or quick-release screws - **1 to 3** - and remove noise insulation at front and rear.

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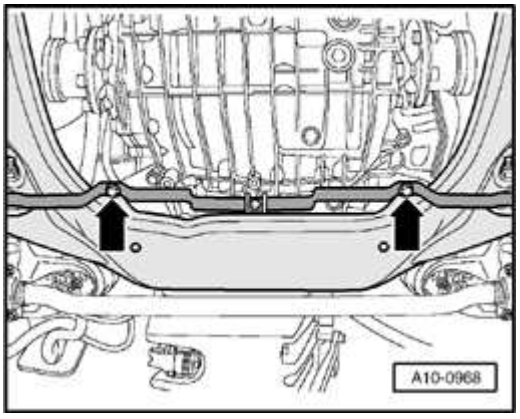


Fig. 137: Removing Bracket For Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove noise insulation bracket - **arrows** -.

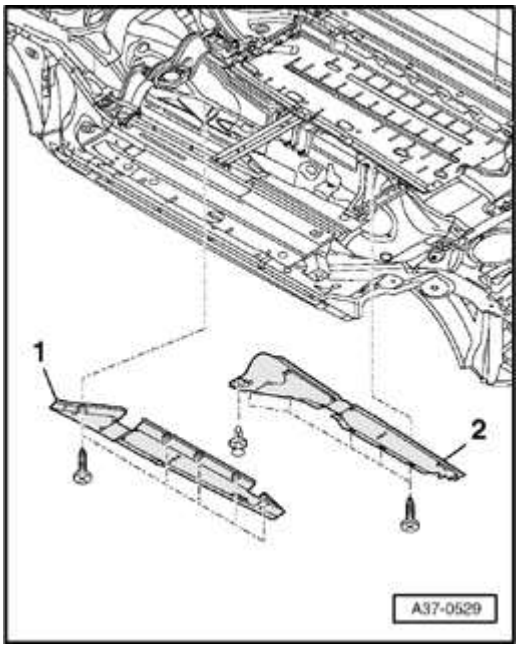


Fig. 138: Removing Vehicle Floor Plates At Inside Left/Right
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove vehicle floor plates at inside left - **2** - and inside right - **1** -.

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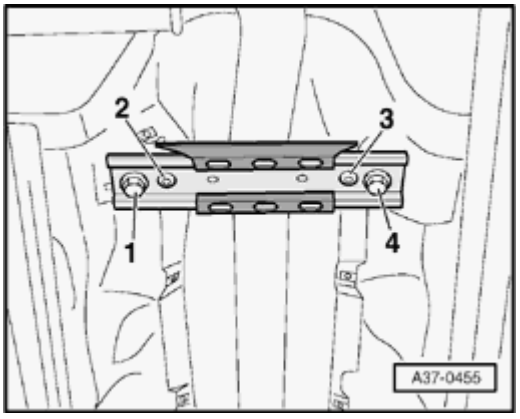


Fig. 139: Removing Bolts And Rear Cross Member For Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 through 4** - and remove rear cross member for vehicle floor:

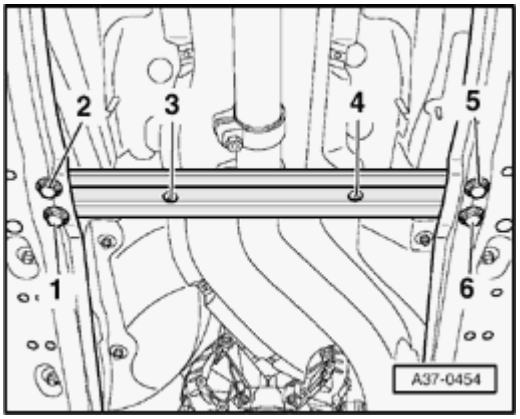


Fig. 140: Removing Bolts To Remove Front Cross Member For Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 to 6** - and remove front cross member for vehicle floor.

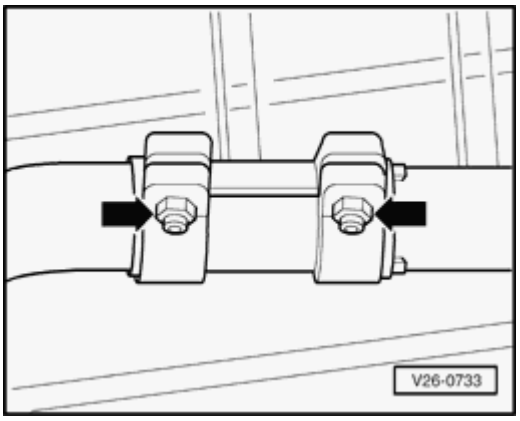


Fig. 141: Disconnecting Exhaust System At Double Clamp
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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NOTE:

- **Flex joint in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.**

- Disconnect exhaust system at double clamp - **arrows** -.
- Remove heat shield for exhaust system.

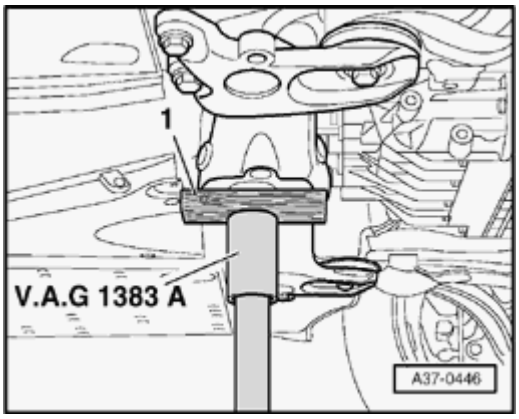


Fig. 142: Placing Plunger Of Engine/Transmission Jack V.A.G 1383 A With Block Of Wood Inserted In Between On Transmission At Bottom
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place plunger of Engine/Transmission Jack V.A.G 1383 A with a block of wood inserted in between - **1** - on transmission at bottom.
- Support tunnel cross member using Engine/Transmission Jack V.A.G 1383 A.

CAUTION: The lock carrier must be installed - danger of injury.

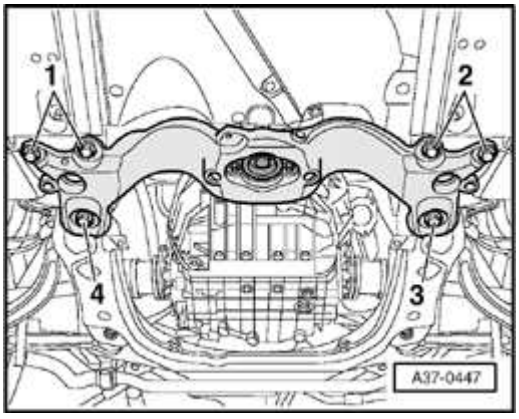


Fig. 143: Removing Bolts & Slowly Release Rear Crossmember Using VAG1383A Engine/Transmission Jack
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- First remove bolts - **1** - and - **2** - , then bolts - **3** - and - **4** -.

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- Slowly lower tunnel cross member using Engine/Transmission Jack V.A.G 1383 A.

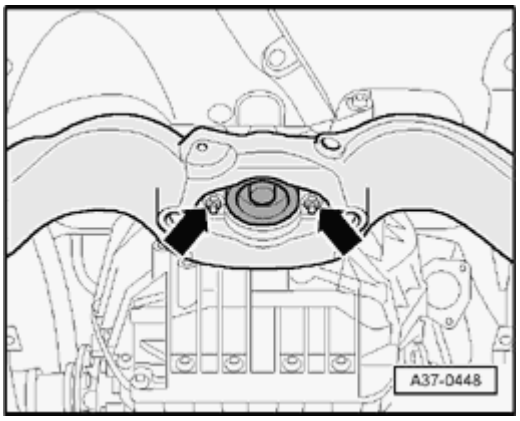


Fig. 144: Removing Nuts And Tunnel Cross Member
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **arrows** - and remove tunnel cross member.

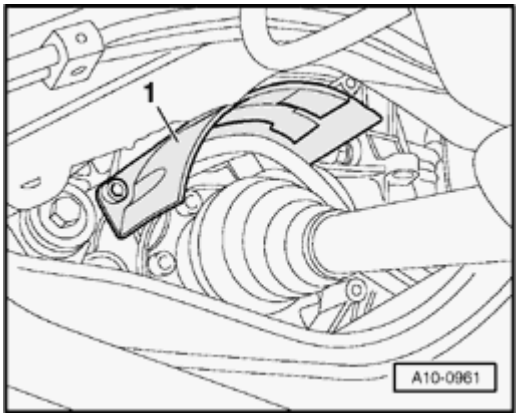


Fig. 145: Removing Left/Right Heat Shields For Drive Axles
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove heat shield - **1** - for right drive axle.
- Remove drive axle from transmission flange on left and right sides --> **40 - FRONT SUSPENSION** .
- Remove front exhaust pipe bracket - **1** -.

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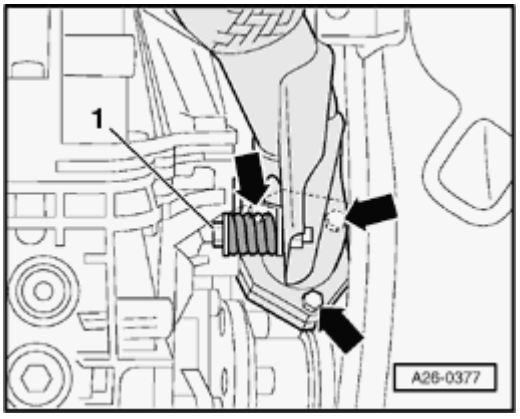


Fig. 146: Removing Front Exhaust Pipe Bracket & Bolts Front Exhaust Pipe/Catalytic Converter
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - for front exhaust pipe/catalytic converter.

NOTE:

- **Flex joint in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.**

- Remove front exhaust pipe.

NOTE:

- **Observe the rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**

- Place an oil receptacle underneath transmission.

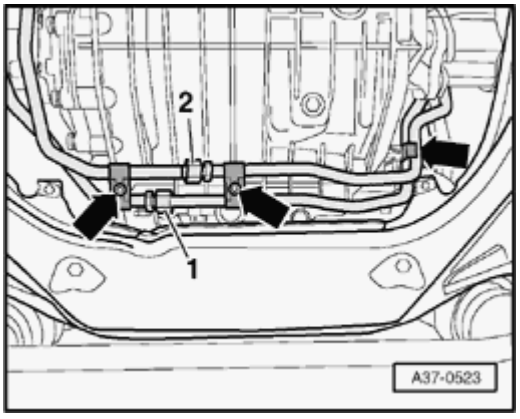


Fig. 147: Removing Union Nuts And Disconnecting ATF Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove union nuts - **1** - and - **2** - and disconnect ATF lines.
- Remove bracket for ATF-lines - **arrows** -.

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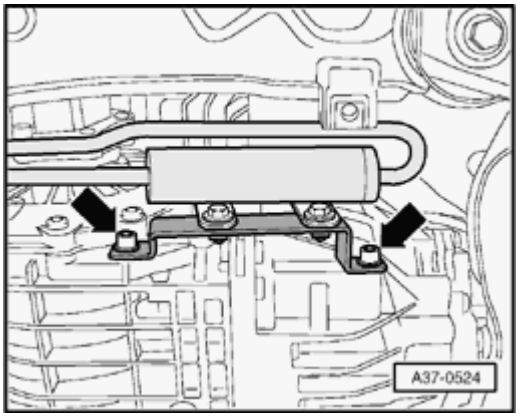


Fig. 148: Removing ATF Filter On Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove ATF filter on transmission - **arrows** -.

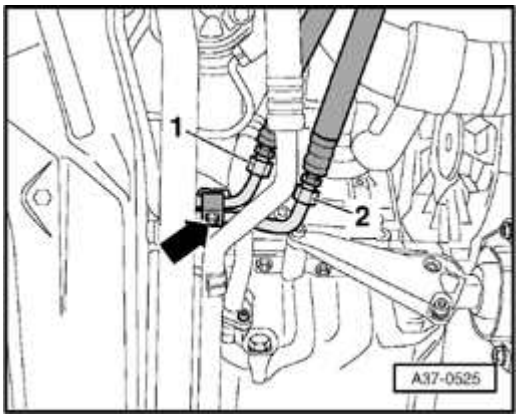


Fig. 149: Disconnecting ATF Pipes & Removing Bracket For ATF Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove union nuts - **1** - and - **2** - and disconnect ATF lines.
- Remove bracket for ATF-lines - **arrows** -.

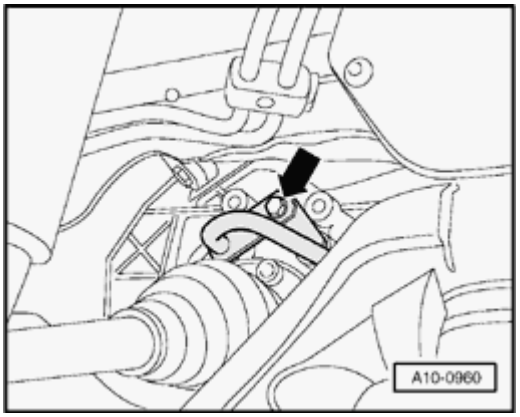


Fig. 150: Removing Bolt And ATF Lines From Transmission

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **arrow** - and remove ATF lines from transmission.
- Disconnect ATF lines.

For transmission with right-angled connector:

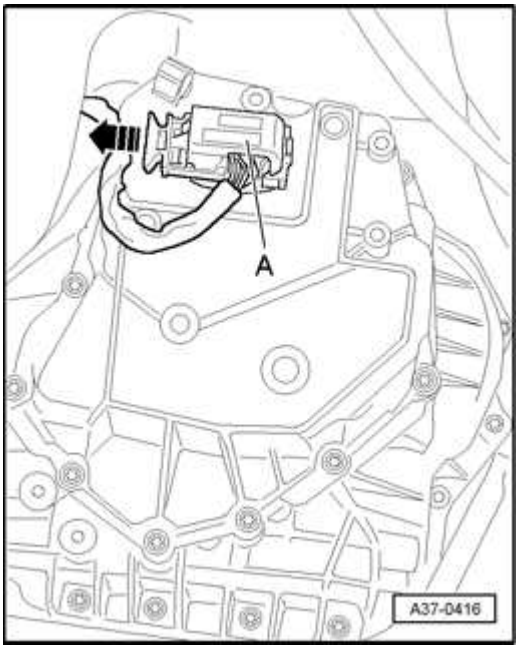


Fig. 151: Disengaging Harness Connector From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disengage harness connector - **A** - in direction of - **arrow** - and disconnect it from transmission.
- Free up wiring harness.

For transmission with round connector:

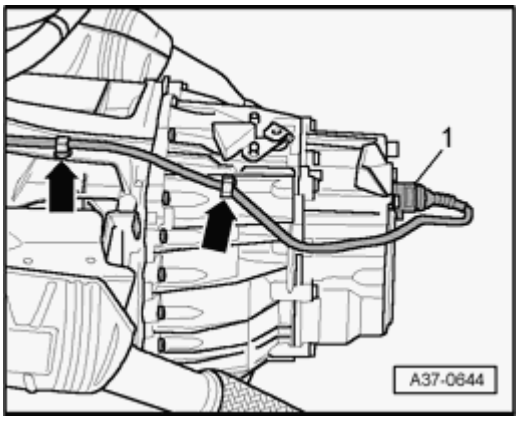


Fig. 152: Disengaging Electrical Harness Connector And Disconnecting From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Disengage electrical harness connector - **1** - and disconnect from transmission.
- Move wiring harness clear - **arrows** -.

All:

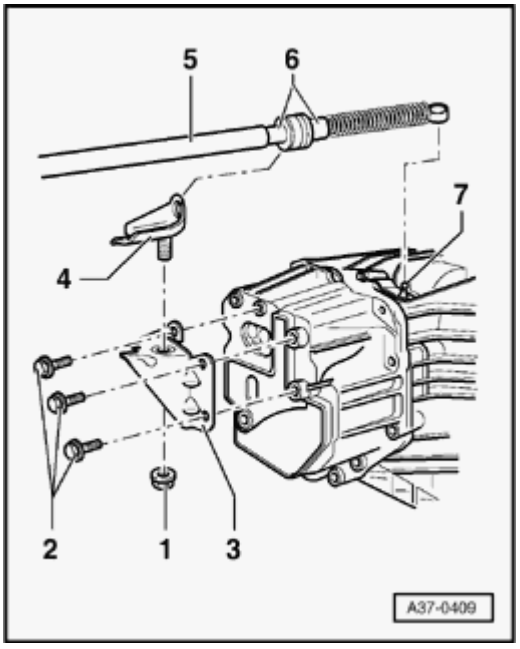


Fig. 153: Removing Bracket For Selector Lever Cable By First Removing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bracket - **3** - for selector lever cable by first removing bolts - **2** -.

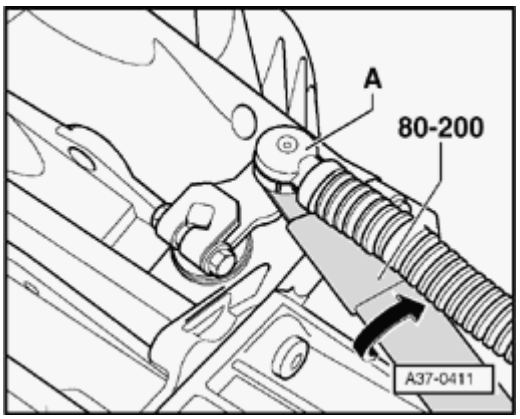


Fig. 154: Using Pry Lever 80-200 To Press Selector Lever Cable From Lever For Selector Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Using pry lever 80-200 , press selector lever cable - **A** - from lever for selector shaft - **arrow** -.

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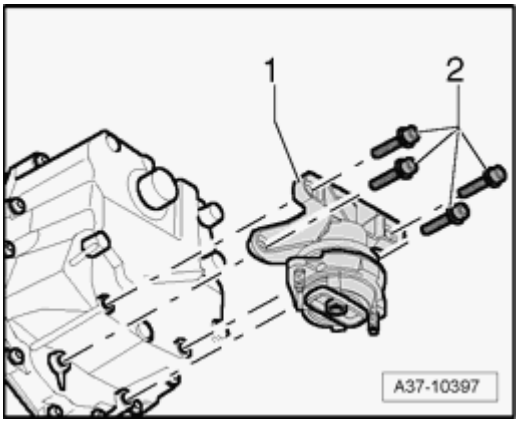


Fig. 155: Removing Bolts And Transmission Support From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **2** - and remove transmission support - **1** - from transmission.

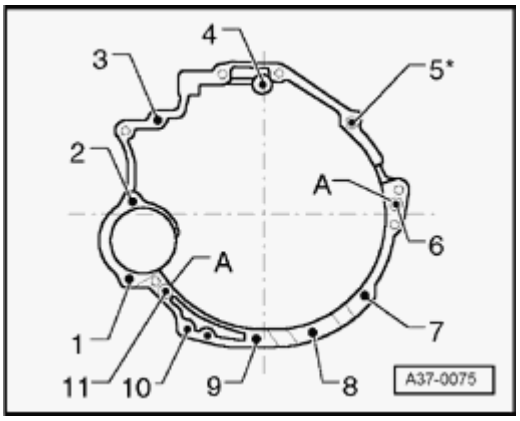


Fig. 156: Identifying Engine/Transmission Mountings (Automatic/Manual Transmission)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 to 5** - and - **11** - on engine/transmission flange.
- Loosen bolt - **6** - only and then tighten by hand.

NOTE:

- **Starter must not be removed.**

- Mount transmission support 3282 on Engine/Transmission Jack V.A.G 1383 A.

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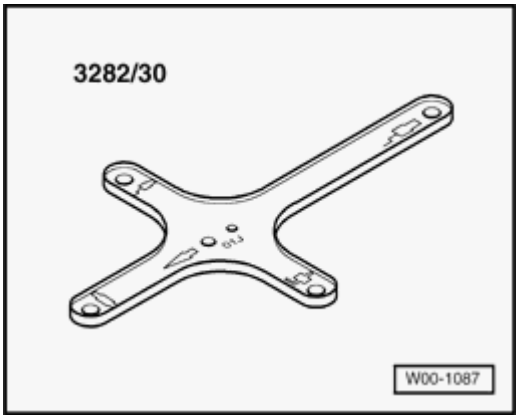


Fig. 157: Identifying Template 3282/30
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Set Template 3282/30 on to transmission support 3282 (template only installs in one position).
- Align arms of transmission support to correspond with holes in adjustment plate.
- Attach support elements on adjustment plate, as illustrated.

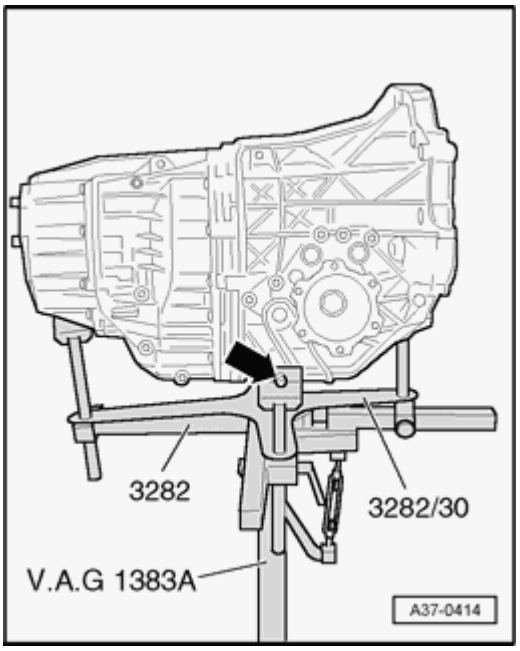


Fig. 158: Moving Engine/Transmission Jack V.A.G 1383 A With Transmission Mount 3282 Under Transmission And Support Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Move engine/transmission jack V.A.G 1383 A with transmission mount 3282 under transmission and support transmission.

NOTE:

- **The arrow symbol on the adjusting plate points in direction of travel.**

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- Align template parallel to transmission and secure to transmission using a bolt M10 x 20 - **arrow** -.

Audi Cabriolet:

NOTE:

- **So that the 4 engine/transmission connecting bolts at bottom can be removed on the Audi Cabriolet, the following work steps must also be performed:**

- Raise transmission slightly using Engine/Transmission Jack V.A.G 1383 A.

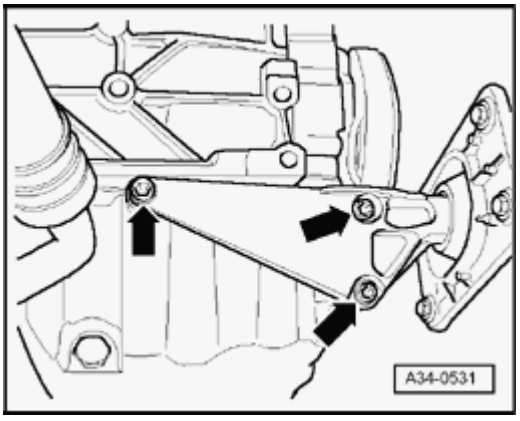


Fig. 159: Removing Torque Support
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove torque support - **arrows** -.

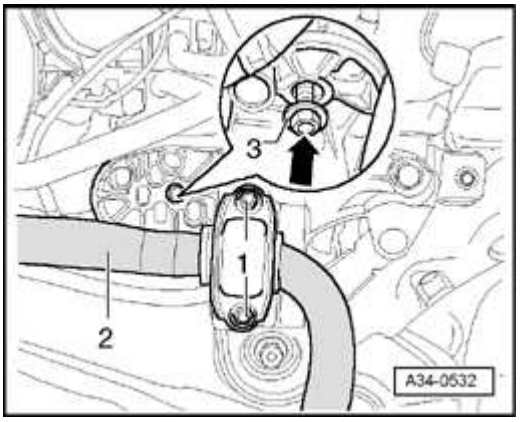


Fig. 160: Swivel Stabilizer Bar Nuts, Engine Mountings Nut And End Of Stud
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left and right nuts - **1** - and swing stabilizer bar - **2** - downward.
- Remove nuts - **3** - at engine mount on left and right far enough until lower edge of nut is flush with threaded pin - **arrow** -.
- Raise engine using engine support bridge 10-222 A far enough until both nuts - **3** - (on left and right

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sides) make contact on plate from below.

All:

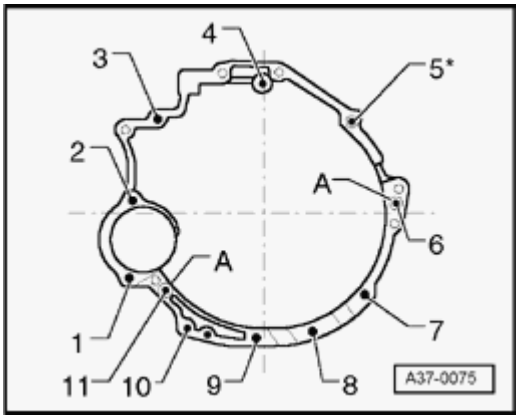


Fig. 161: Identifying Engine/Transmission Mountings (Automatic/Manual Transmission)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **7 to 10** - at engine/transmission flange.

Audi Cabriolet:

- Lower engine again.
- Lower transmission again slowly.

All:

- Tie up drive axles.
- Remove last engine/transmission mounting bolt.
- Press off transmission from bushings and let it down carefully.

Transmission (vehicles with 2.0 L normally-aspirated engine, also Audi Cabriolet), removing

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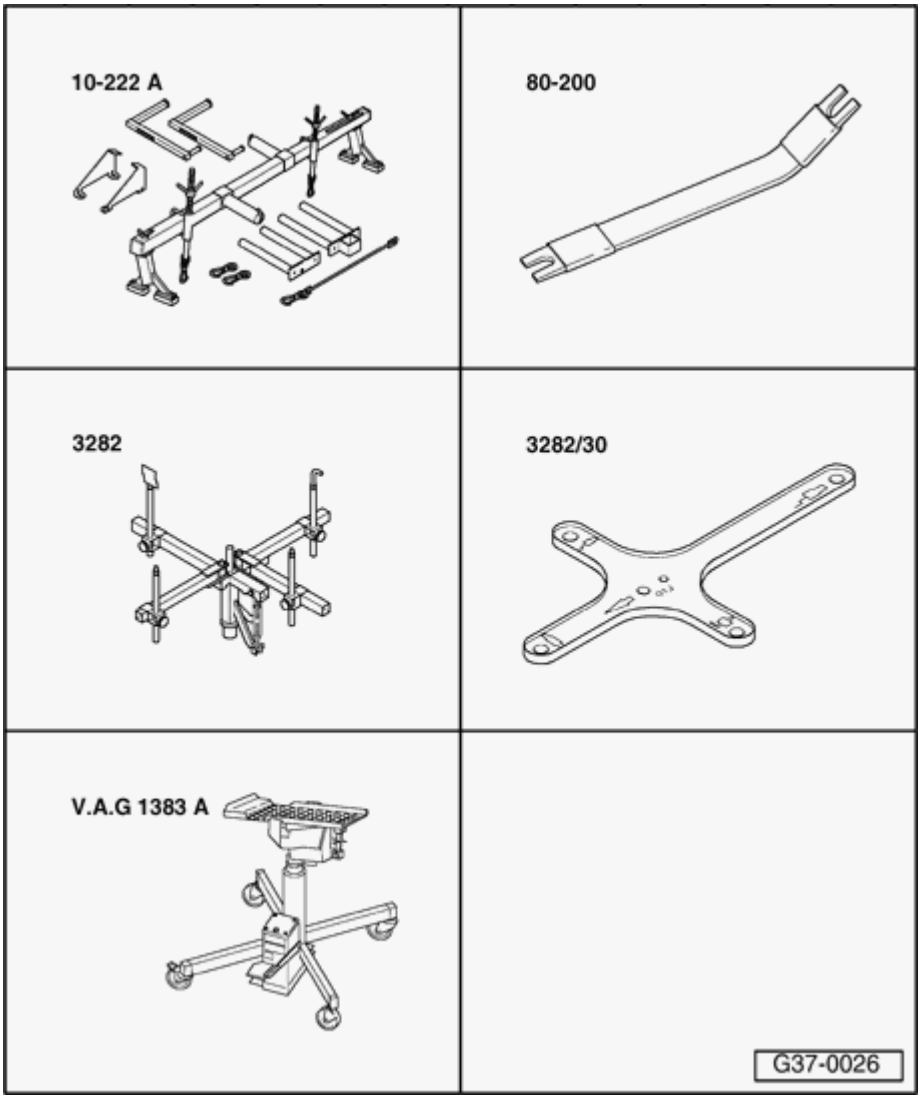


Fig. 162: Identifying Special Tools - Transmission (Vehicles With 2.0 L Normally-Aspirated Engine, Also Audi Cabriolet), Removing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Engine support bridge 10-222 A
- Pry lever 80-200
- Transmission support 3282
- Adjustment plate 3282/30
- Engine/Transmission Jack V.A.G 1383 A

Special tools, testers and auxiliary items required

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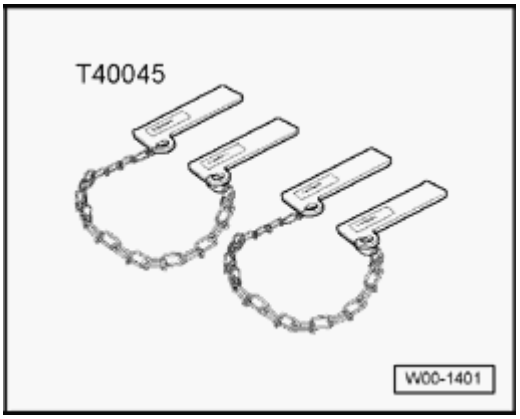


Fig. 163: Insert Pad For Front Fender T40045
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fender insert pads T40045

Work procedure

- Place selector lever in position "P".

CAUTION: Observe procedures for disconnecting battery -->

- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

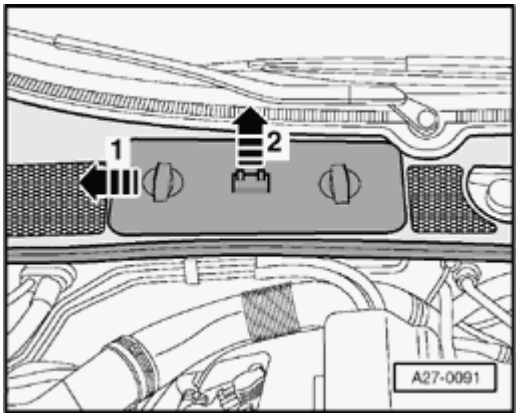


Fig. 164: Sliding Cover Over Battery To Right And Pull It Off Upwards
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Slide cover over battery to right - **arrow 1** - and pull it off upwards - **arrow 2** -.

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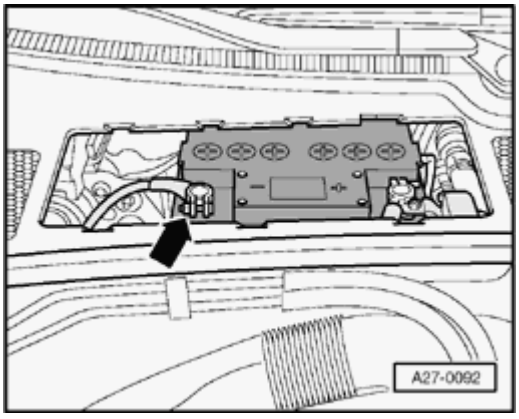


Fig. 165: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) wire - **arrow** -.

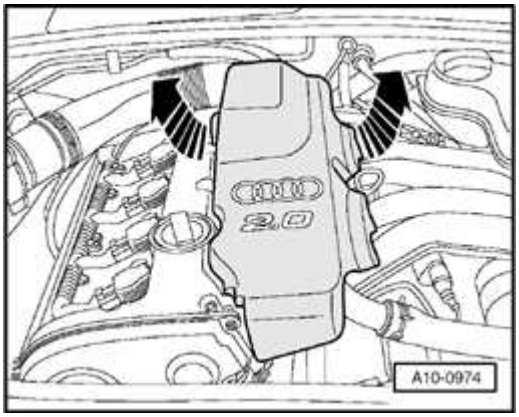


Fig. 166: Removing Engine Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove engine cover - **arrows** -.

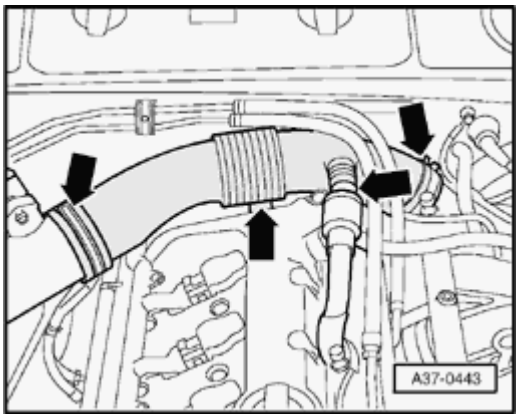


Fig. 167: Disconnecting Air Guide Hose Between Mass Air Flow (MAF) Sensor And Intake Manifold
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Disconnect air guide hose between Mass Air Flow (MAF) sensor and intake manifold - **arrows** -.

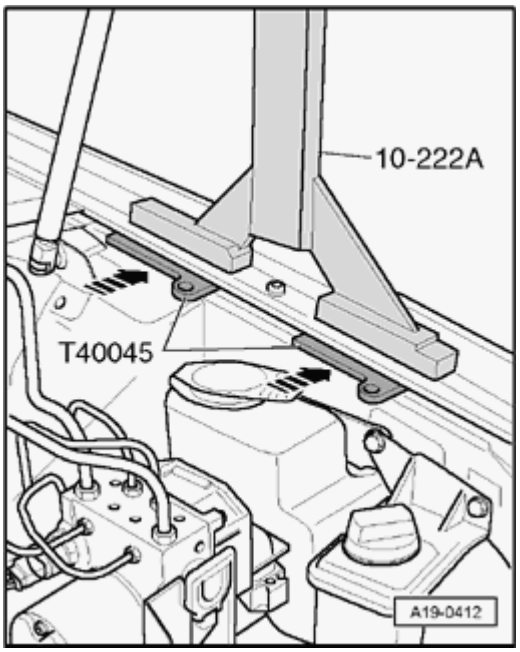


Fig. 168: Placing Insert Pad For Front Fender T40045 On Both Sides Between Fender Attachment Edge And Web Plate Lying Beneath
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull off sealing rubber at bolted flanges of fender.
- To prevent damage to bolted flanges of fender when using engine support bridge 10-222 A , insert fender insert pads T40045 on both sides between bolted flange of fender and web plate lying beneath.

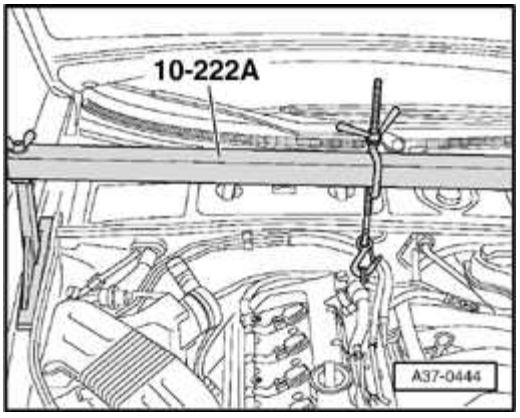


Fig. 169: Positioning Engine Support Bridge 10-222 A Onto Bolted Flange Of Fenders
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position engine support bridge 10-222 A onto bolted flange of fenders; spindle stands at rear.
- Expose rear lifting eye on engine.
- Connect hook on spindle with lifting eye on back of engine.

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- Take up some of the engine weight by tightening spindle of support bar, but do not lift.

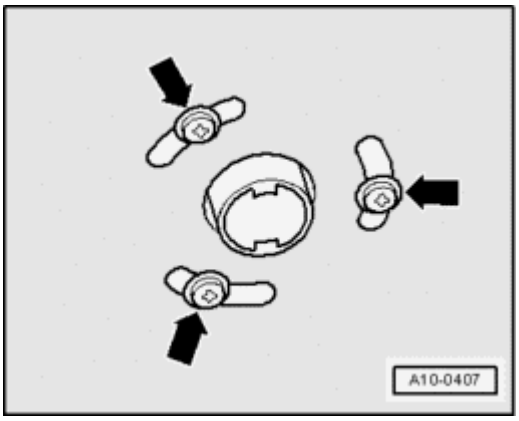


Fig. 170: Identifying Exhaust Pipe Fasteners
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove both front wheels.
- On vehicles equipped with auxiliary heater, remove bolts - **arrows** - for exhaust pipe of auxiliary/additional heater to noise insulation.

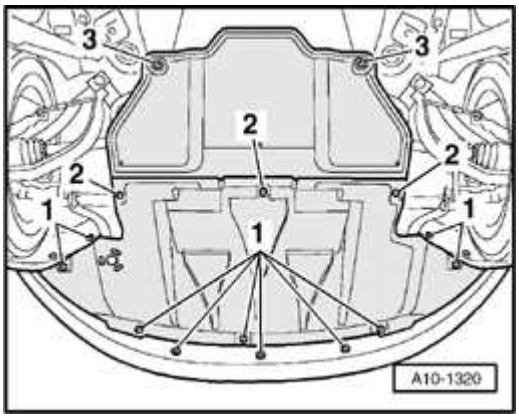


Fig. 171: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts or quick-release screws - **1 to 3** - and remove noise insulation at front and rear.

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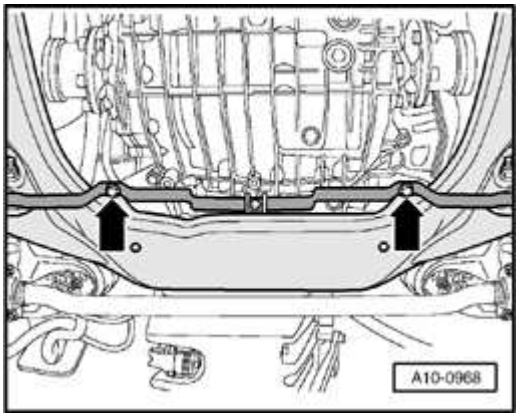


Fig. 172: Removing Bracket For Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove noise insulation bracket - **arrows** -.

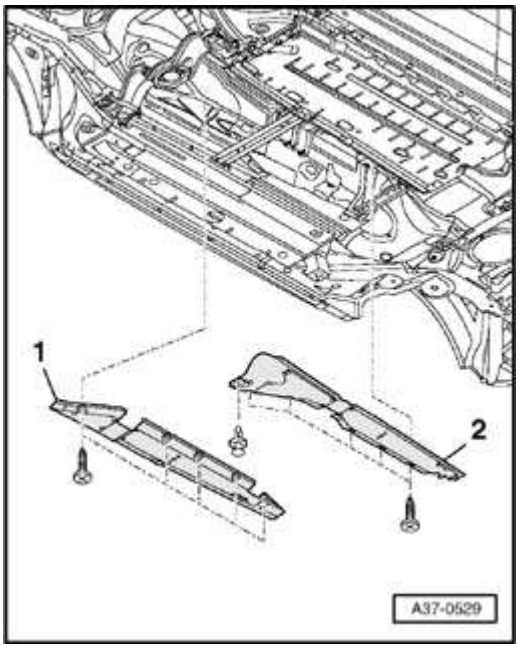


Fig. 173: Removing Vehicle Floor Plates At Inside Left/Right
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove vehicle floor plates at inside left - **2** - and inside right - **1** -.

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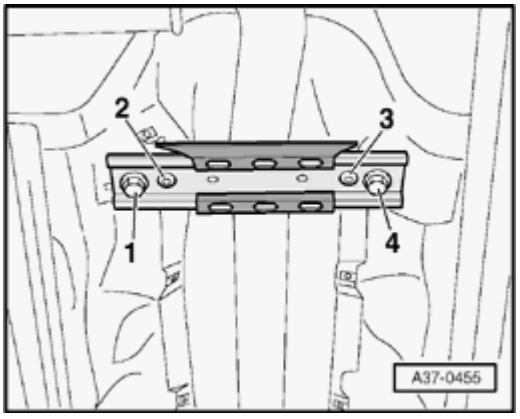


Fig. 174: Removing Bolts And Rear Cross Member For Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 through 4** - and remove rear cross member for vehicle floor.

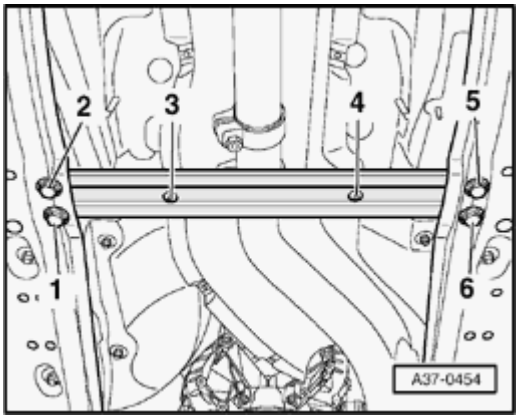


Fig. 175: Removing Bolts To Remove Front Cross Member For Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 to 6** - to remove front cross member for vehicle floor.

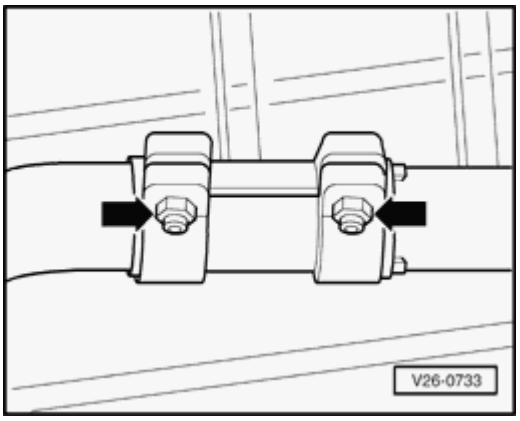


Fig. 176: Disconnecting Exhaust System At Double Clamp
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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NOTE:

- **Flex joint in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.**

- Disconnect exhaust system at double clamp - **arrows** -.
- Remove heat shield for exhaust system.

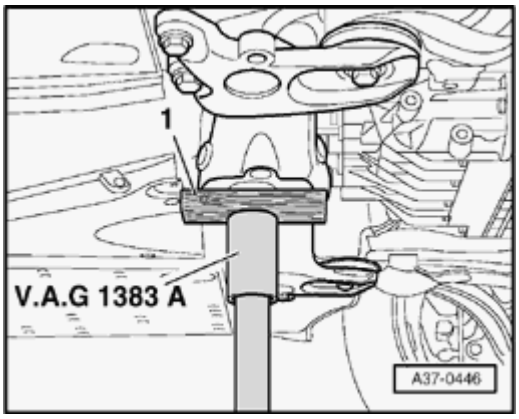


Fig. 177: Placing Plunger Of Engine/Transmission Jack V.A.G 1383 A With Block Of Wood Inserted In Between On Transmission At Bottom
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place plunger of Engine/Transmission Jack V.A.G 1383 A with a block of wood inserted in between - **1** - on transmission at bottom.
- Support tunnel cross member using Engine/Transmission Jack V.A.G 1383 A.

CAUTION: The lock carrier must be installed - danger of injury.

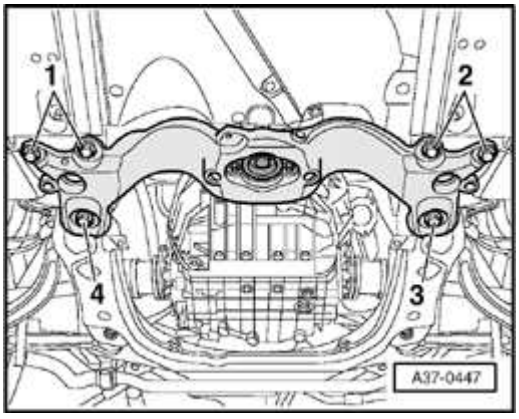


Fig. 178: Removing Bolts & Slowly Release Rear Crossmember Using VAG1383A Engine/Transmission Jack
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- First remove bolts - **1** - and - **2** - , then bolts - **3** - and - **4** -.

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- Slowly lower tunnel cross member using Engine/Transmission Jack V.A.G 1383 A.

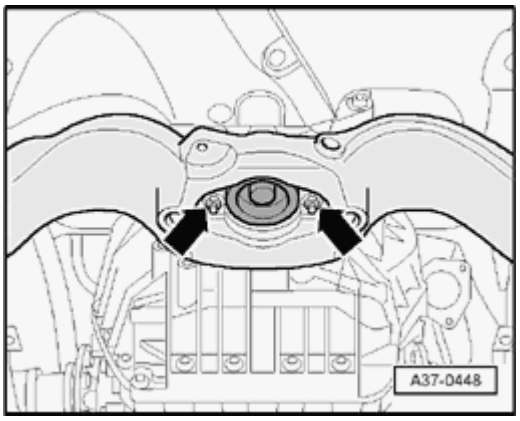


Fig. 179: Removing Nuts And Tunnel Cross Member
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **arrows** - and remove tunnel cross member.

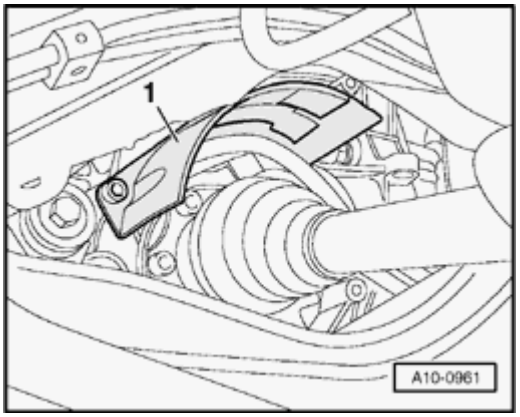


Fig. 180: Removing Left/Right Heat Shields For Drive Axles
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove heat shield - **1** - for right drive axle.
- Remove drive axle from transmission flange on left and right sides --> **40 - FRONT SUSPENSION** .

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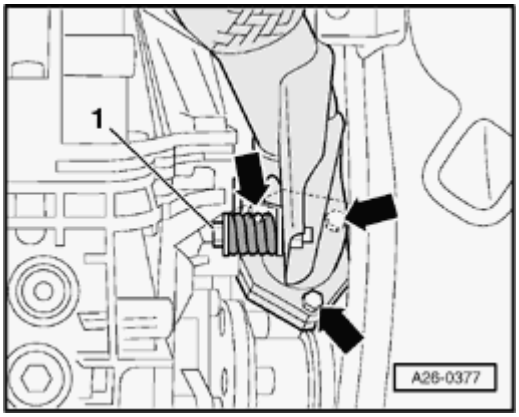


Fig. 181: Removing Front Exhaust Pipe Bracket & Bolts Front Exhaust Pipe/Catalytic Converter
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove front exhaust pipe bracket - **1** -.
- Remove bolts front exhaust pipe/catalytic converter - **arrows** -.

NOTE:

- **Flex joint in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.**

- Remove front exhaust pipe.

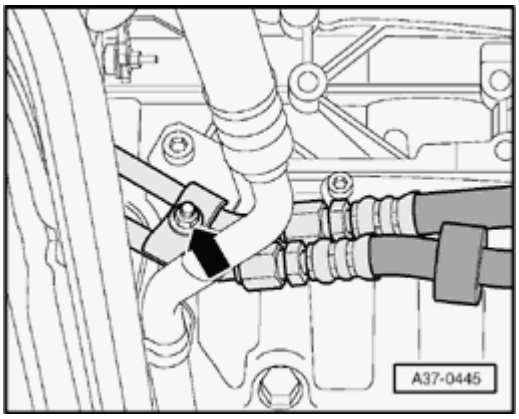


Fig. 182: Removing Bracket For ATF-Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bracket for ATF-lines - **arrow** -.

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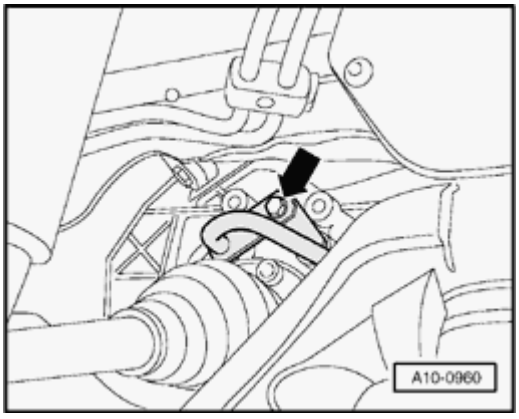


Fig. 183: Removing Bolt And ATF Lines From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Observe the rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**

- Place an oil receptacle underneath transmission.
- Remove bolt - **arrow** - and remove ATF lines from transmission.
- Move ATF lines clear to one side and secure in place.

For transmission with right-angled connector:

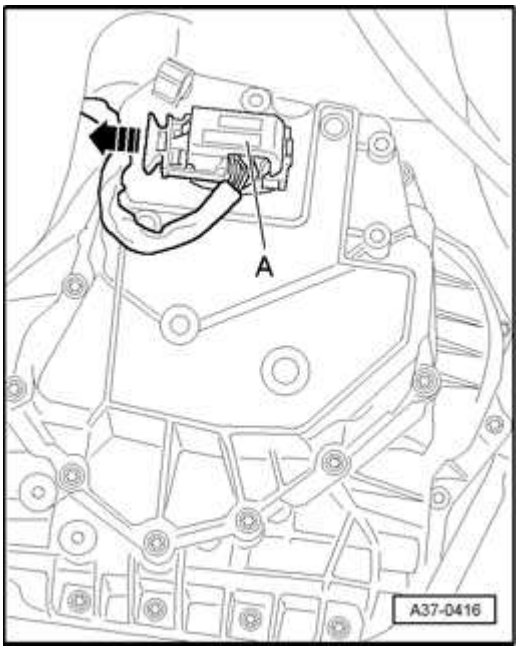


Fig. 184: Disengaging Harness Connector From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disengage harness connector - **A** - in direction of - **arrow** - and disconnect it from transmission.

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- Free up wiring harness.

For transmission with round connector:

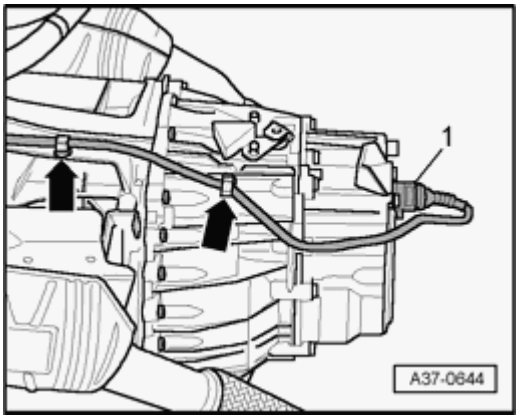


Fig. 185: Disengaging Electrical Harness Connector And Disconnecting From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disengage electrical harness connector - **1** - and disconnect from transmission.
- Move wiring harness clear - **arrows** -.

All:

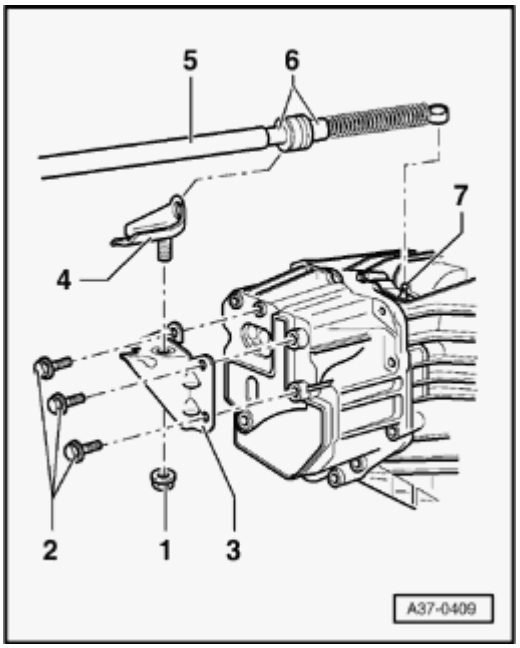


Fig. 186: Removing Bracket For Selector Lever Cable By First Removing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bracket - **3** - for selector lever cable by first removing bolts - **2** -.

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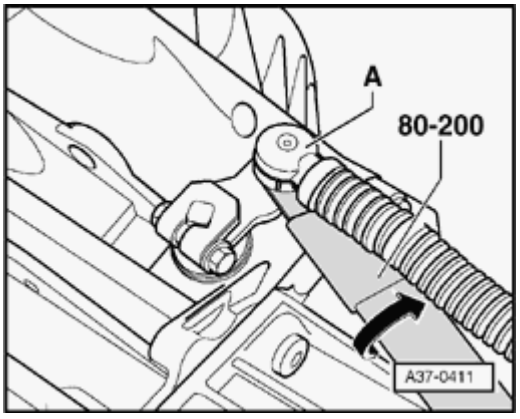


Fig. 187: Using Pry Lever 80-200 To Press Selector Lever Cable From Lever For Selector Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Using pry lever 80-200 , press selector lever cable - **A** - from lever for selector shaft - **arrow** -.

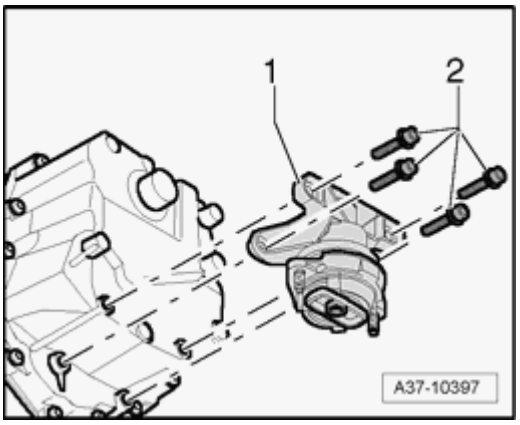


Fig. 188: Removing Bolts And Transmission Support From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **2** - and remove transmission support - **1** - from transmission.

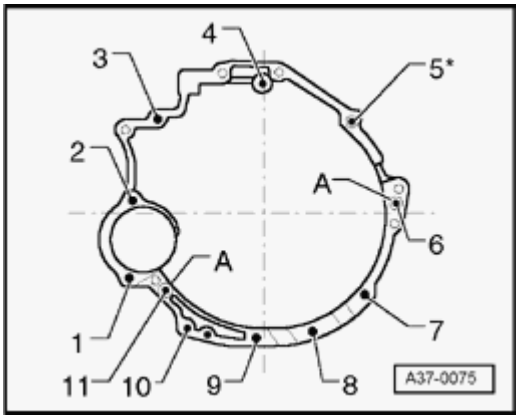


Fig. 189: Identifying Engine/Transmission Mountings (Automatic/Manual Transmission)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Remove bolts - **1 to 5** - and - **11** - on engine/transmission flange.
- Loosen bolt - **6** - only and then tighten by hand.

NOTE:

- **Starter must not be removed.**

- Mount transmission support 3282 on Engine/Transmission Jack V.A.G 1383 A.

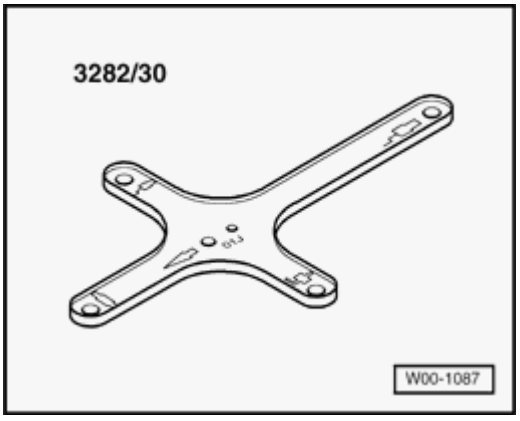


Fig. 190: Identifying Template 3282/30
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Set Template 3282/30 on to transmission support 3282 (template only fits in one position).
- Align arms of transmission support to correspond with holes in adjustment plate.
- Attach support elements on adjustment plate, as illustrated.

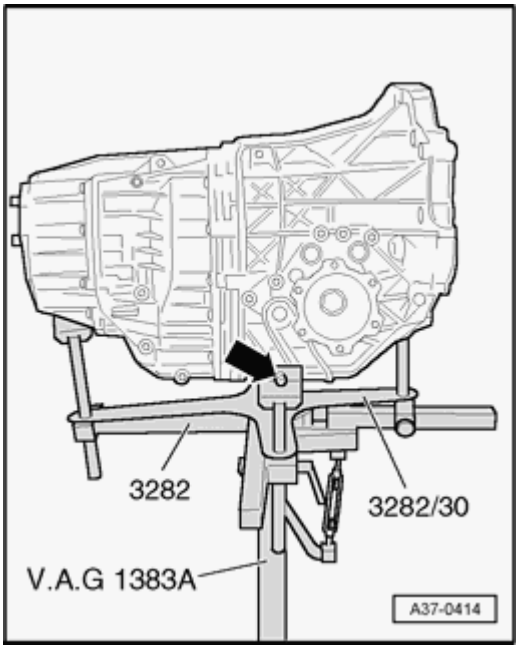


Fig. 191: Moving Engine/Transmission Jack V.A.G 1383 A With Transmission Mount 3282 Under Transmission And Support Transmission

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Move engine/transmission jack V.A.G 1383 A with transmission mount 3282 under transmission and support transmission.

NOTE:

- **The arrow symbol on the adjusting plate points in the direction of travel.**

- Align template parallel to transmission and secure to transmission using a bolt M10 x 20 - **arrow** -.
- Raise transmission slightly using Engine/Transmission Jack V.A.G 1383 A.

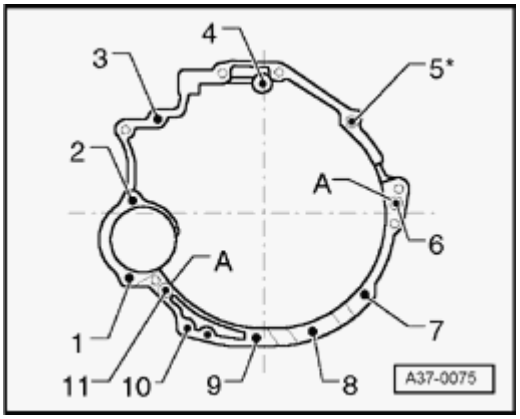


Fig. 192: Identifying Engine/Transmission Mountings (Automatic/Manual Transmission)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **7 to 10** - at engine/transmission flange.
- Lower transmission again slowly.
- Tie up drive axles.
- Remove last bolt securing transmission to engine.

- Press off transmission from bushings and let it down carefully.

Transmission (vehicles with 2.0 L TFSI engine, also Audi Cabriolet), removing

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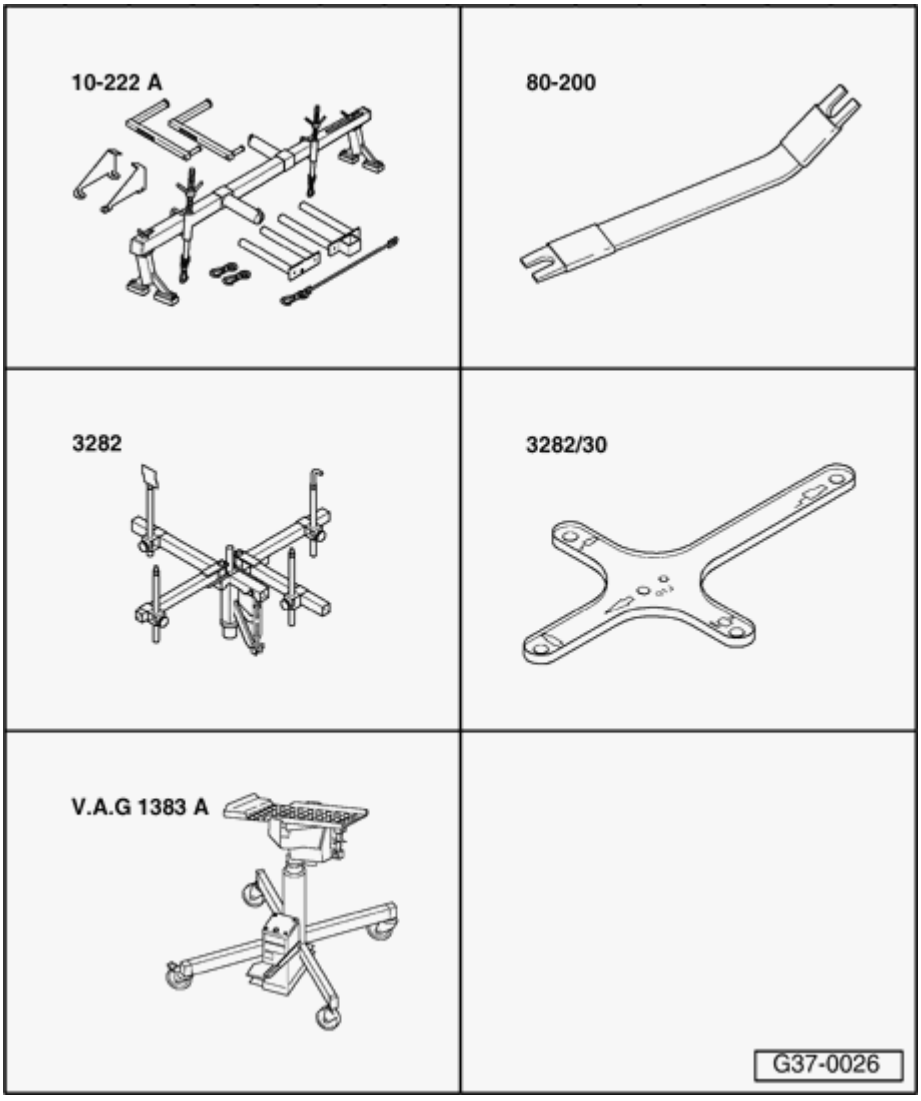


Fig. 193: Identifying Special Tools - Transmission (Vehicles With 2.0 L TFSI Engine, Also Audi Cabriolet), Removing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Engine support bridge 10-222 A
- Pry lever 80-200
- Transmission support 3282
- Adjustment plate 3282/30
- Engine/Transmission Jack V.A.G 1383 A

Special tools, testers and auxiliary items required

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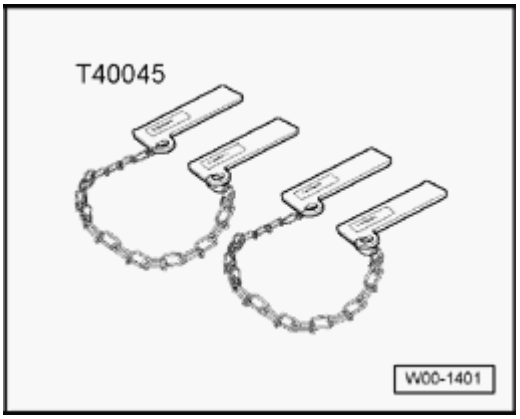


Fig. 194: Insert Pad For Front Fender T40045
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fender insert pads T40045

Work procedure

- Place selector lever in position "P".

CAUTION: Observe procedures for disconnecting battery -->

- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

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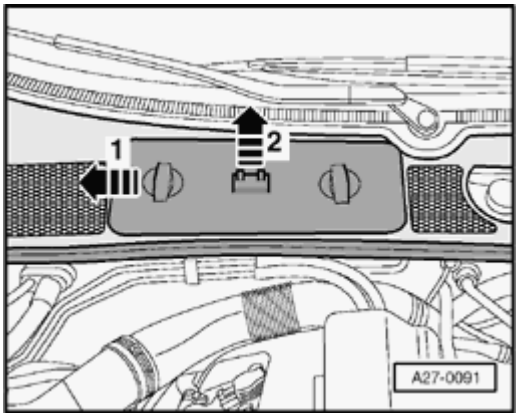


Fig. 195: Sliding Cover Over Battery To Right And Pull It Off Upwards
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Slide cover over battery to right - **arrow 1** - and pull it off upwards - **arrow 2** -.

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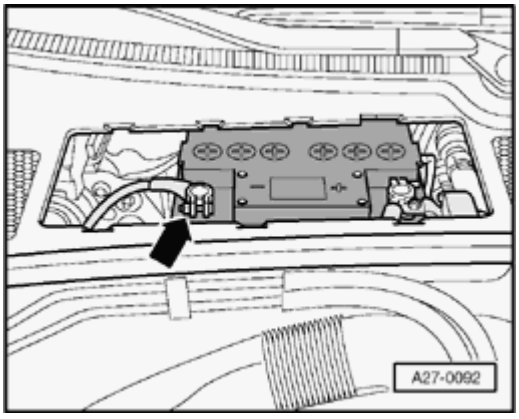


Fig. 196: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) wire - **arrow** -.

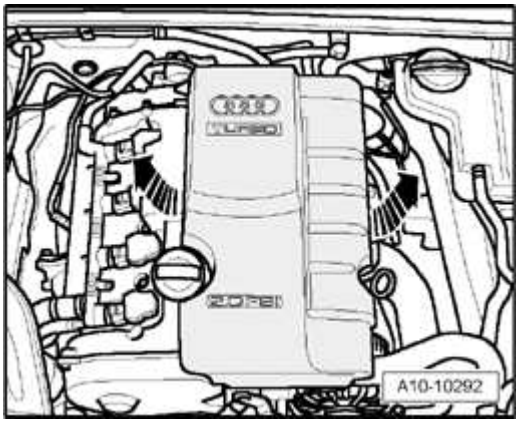


Fig. 197: Removing Engine Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove engine cover - **arrows** -.
- Pull off sealing rubber at bolted flanges of fender.

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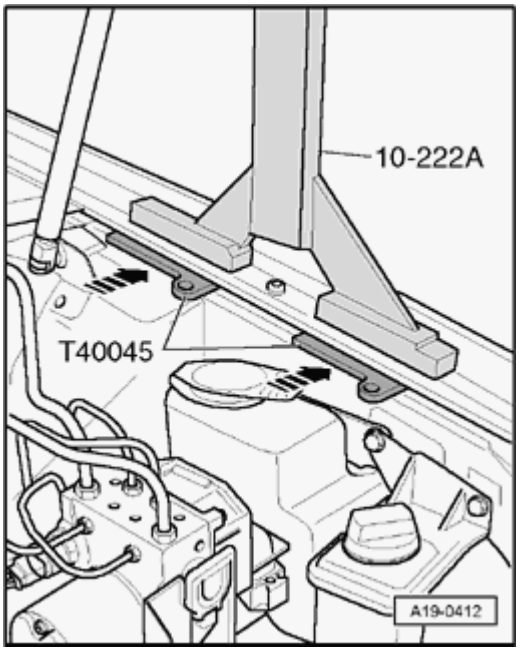


Fig. 198: Placing Insert Pad For Front Fender T40045 On Both Sides Between Fender Attachment Edge And Web Plate Lying Beneath
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- To prevent damage to bolted flanges of fender when using engine support bridge 10-222 A , insert fender insert pads T40045 on both sides between bolted flange of fender and web plate lying beneath.

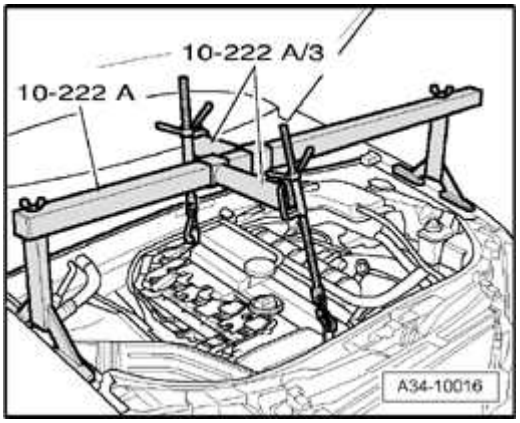


Fig. 199: Engine Support Bridge 10-222 A Set Up With Adapters 10-222/3 On Fender Mounting Flanges
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position engine support bridge 10-222 A with adapters 10-222/3 on to bolted flanges of fender.
- Position engine support bridge 10-222 A with adapters 10-222 A/3 on to bolted flanges of fender.
- Engage spindles onto engine lifting eyes as shown.
- Pre-tension engine slightly using spindles on engine support bridge.

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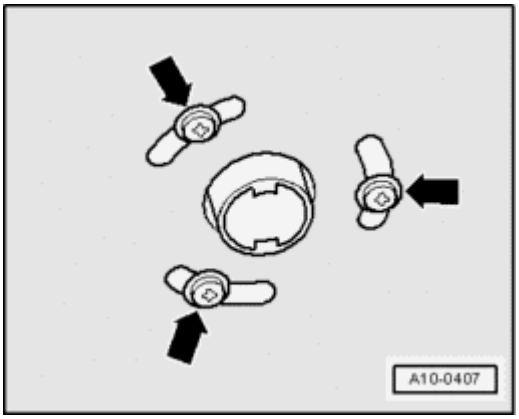


Fig. 200: Identifying Exhaust Pipe Fasteners
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove both front wheels.
- On vehicles equipped with auxiliary heater, remove bolts - **arrows** - for exhaust pipe of auxiliary/additional heater to noise insulation.

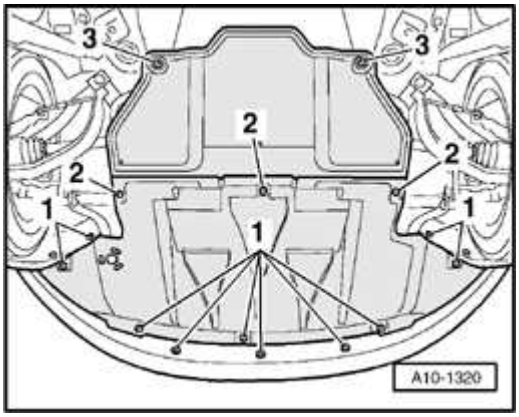
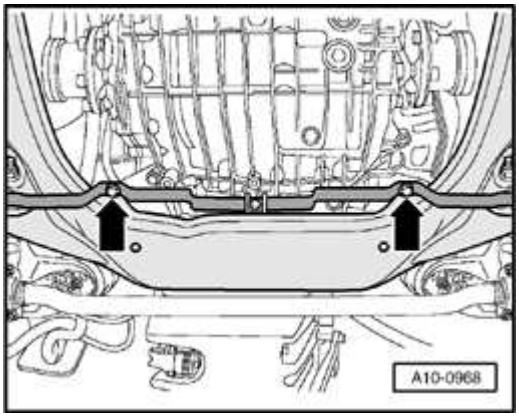


Fig. 201: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen quick-release screws - **1 to 3** - and remove front and rear noise insulation.



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Fig. 202: Removing Bracket For Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove noise insulation bracket - **arrows** -.

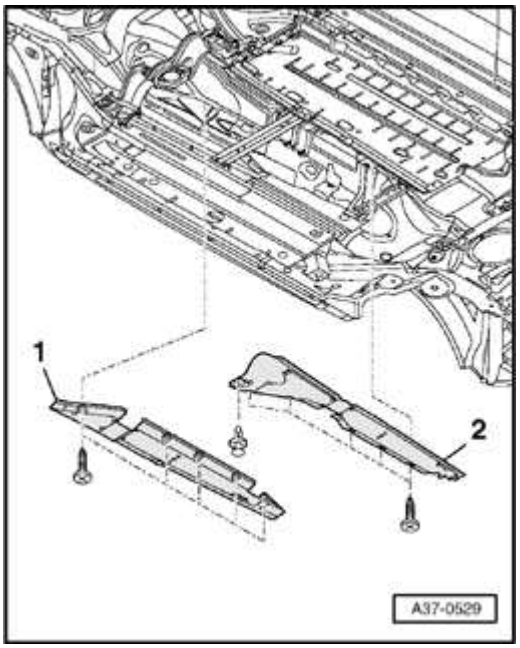


Fig. 203: Removing Vehicle Floor Plates At Inside Left/Right
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove vehicle floor plates at inside left - **2** - and inside right - **1** -.

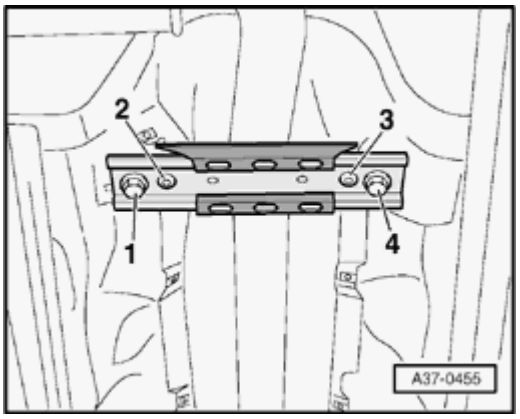


Fig. 204: Removing Bolts And Rear Cross Member For Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 through 4** - and remove rear cross member for vehicle floor.

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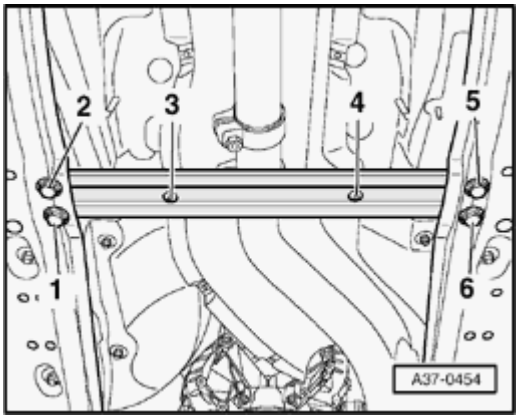


Fig. 205: Removing Bolts To Remove Front Cross Member For Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 to 6** - to remove front cross member for vehicle floor.

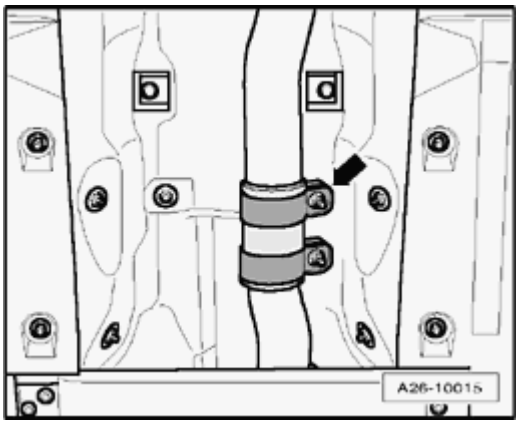


Fig. 206: Loosening Clamping Sleeve
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Flex joint in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.**

- Loosen bolts of front double clamp - **arrows** -.
- To disconnect exhaust system, slide clamping sleeve toward rear.
- Remove heat shield for exhaust system.

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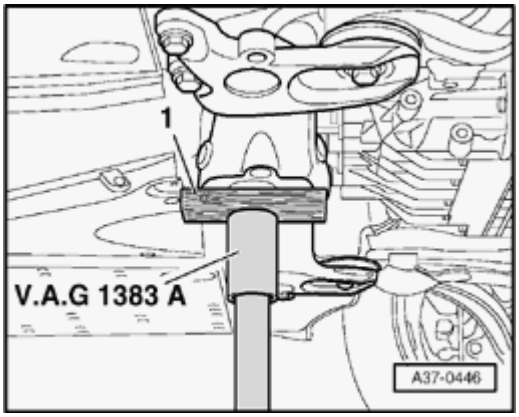


Fig. 207: Placing Plunger Of Engine/Transmission Jack V.A.G 1383 A With Block Of Wood Inserted In Between On Transmission At Bottom
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place plunger of Engine/Transmission Jack V.A.G 1383 A with a block of wood inserted in between - **1** - on transmission at bottom.
- Support tunnel cross member using Engine/Transmission Jack V.A.G 1383 A.

CAUTION: The lock carrier must be installed - danger of injury.

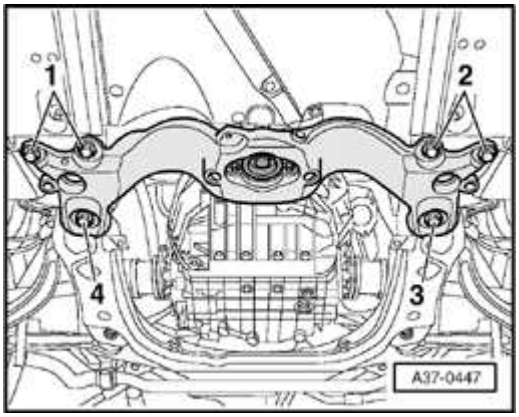


Fig. 208: Removing Bolts & Slowly Release Rear Crossmember Using VAG1383A Engine/Transmission Jack
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- First remove bolts - **1** - and - **2** - , then bolts - **3** - and - **4** -.
- Slowly lower tunnel cross member using Engine/Transmission Jack V.A.G 1383 A.

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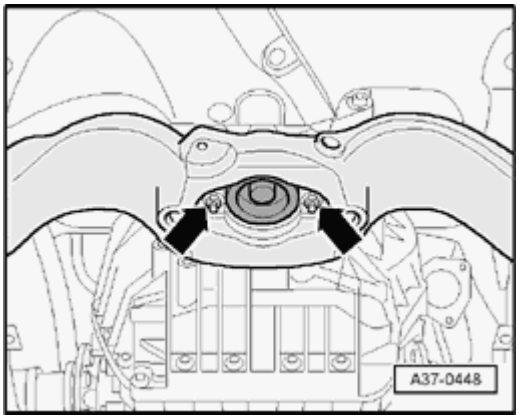


Fig. 209: Removing Nuts And Tunnel Cross Member
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **arrows** - and remove tunnel cross member.

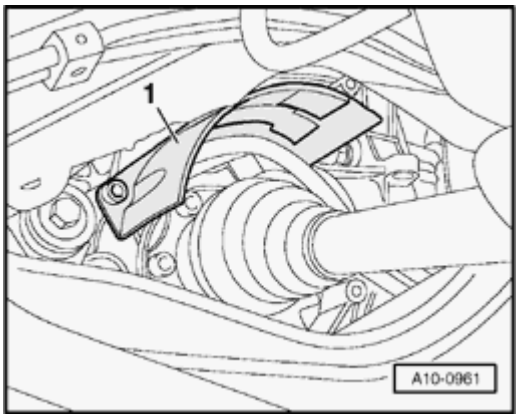


Fig. 210: Removing Left/Right Heat Shields For Drive Axles
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove heat shield - **1** - for right drive axle.
- Remove drive axle from transmission flange on left and right sides --> **40 - FRONT SUSPENSION** .

NOTE:

- **Flex joint in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.**

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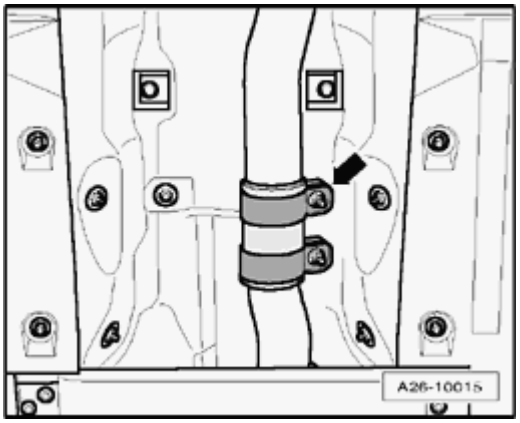


Fig. 211: Loosening Clamping Sleeve
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen bolts of front double clamp - **arrows** -.
- To disconnect exhaust system, slide clamping sleeve toward rear.

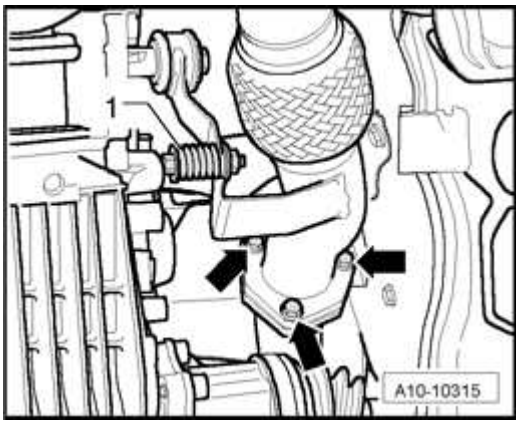
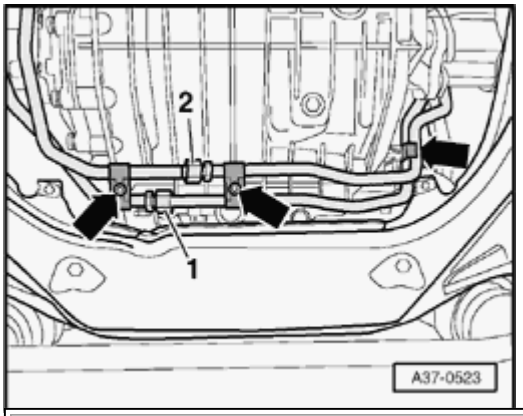


Fig. 212: Separating Front Exhaust Pipe/Catalytic Converter
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - for front exhaust pipe/catalytic converter connection.
- Remove nut - **1** - on front exhaust pipe bar and remove front exhaust pipe.



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Fig. 213: Removing Union Nuts And Disconnecting ATF Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Observe the rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**

- Place an oil receptacle underneath transmission.
- Remove union nuts - **1** - and - **2** - and disconnect ATF lines.
- Remove bracket for ATF-lines - **arrows** -.

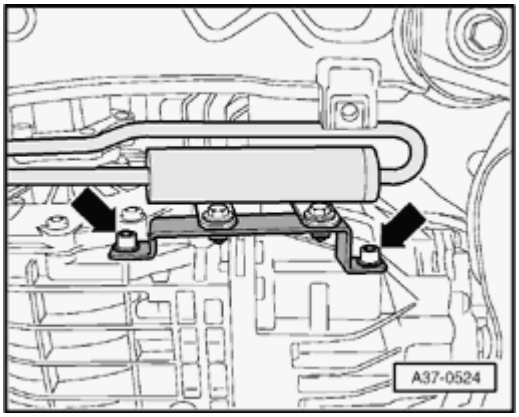


Fig. 214: Removing ATF Filter On Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove ATF filter on transmission - **arrows** -.

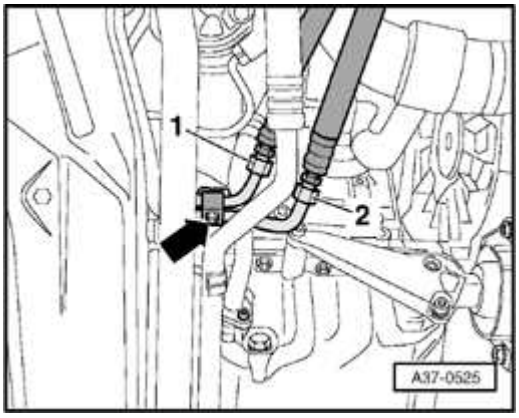


Fig. 215: Disconnecting ATF Pipes & Removing Bracket For ATF Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove union nuts - **1** - and - **2** - and disconnect ATF lines.
- Remove bracket for ATF-lines - **arrows** -.

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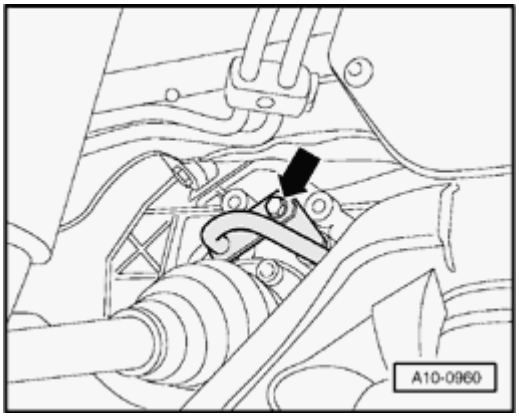


Fig. 216: Removing Bolt And ATF Lines From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **arrow** - and remove ATF lines from transmission.
- Disconnect ATF lines.

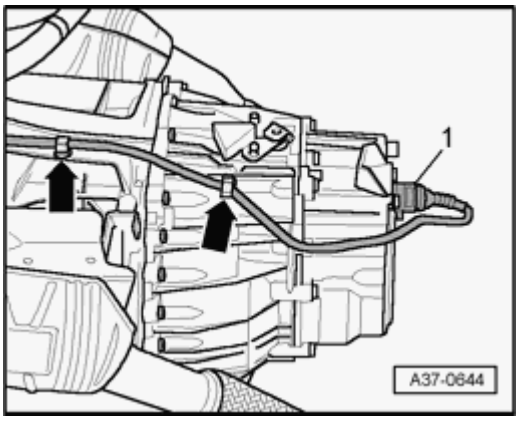


Fig. 217: Disengaging Electrical Harness Connector And Disconnecting From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disengage electrical harness connector - **1** - and disconnect it from transmission.
- Move wiring harness - **arrows** - to clear engine.

NOTE:

- **For the sake of illustration, shown with transmission removed.**

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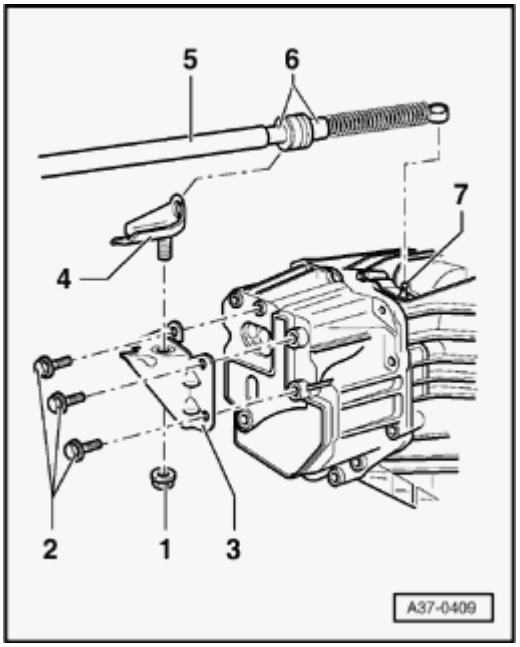


Fig. 218: Removing Bracket For Selector Lever Cable By First Removing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bracket - **3** - for selector lever cable by first removing bolts - **2** -.

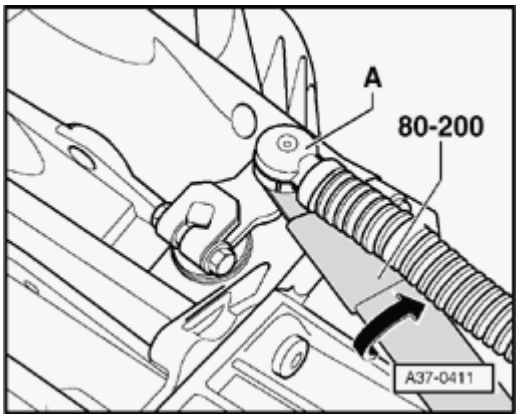


Fig. 219: Using Pry Lever 80-200 To Press Selector Lever Cable From Lever For Selector Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Using pry lever 80-200 , press selector lever cable - **A** - from lever for selector shaft - **arrow** -.

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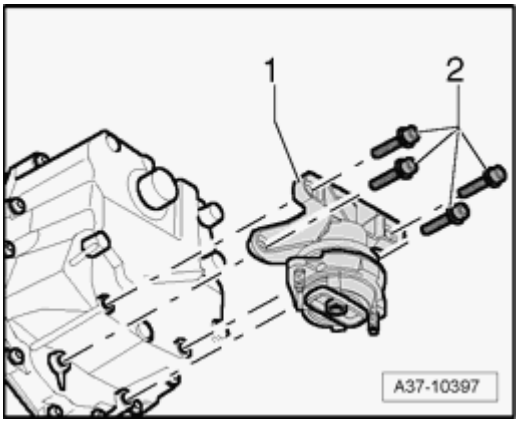


Fig. 220: Removing Bolts And Transmission Support From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **2** - and remove transmission support - **1** - from transmission.

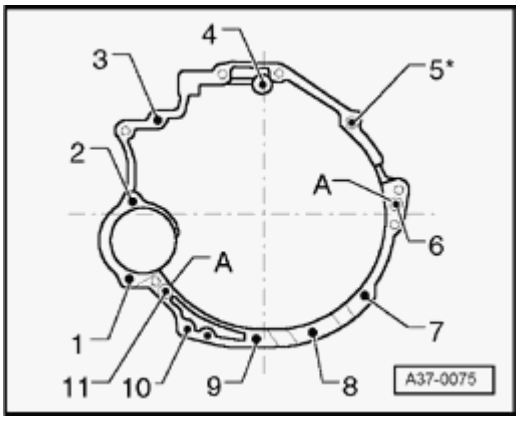


Fig. 221: Identifying Engine/Transmission Mountings (Automatic/Manual Transmission)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 to 5** - and - **11** - on engine/transmission flange.
- Loosen bolt - **6** - only and then tighten by hand.

NOTE:

- **Starter must not be removed.**

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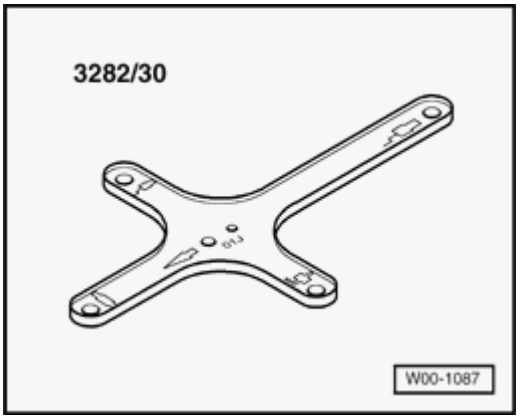


Fig. 222: Identifying Template 3282/30
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mount transmission support 3282 on Engine/Transmission Jack V.A.G 1383 A.
- Set Template 3282/30 on to transmission support 3282 (template only fits in one position).
- Align arms of transmission support to correspond with holes in adjustment plate.
- Attach support elements on adjustment plate, as illustrated.

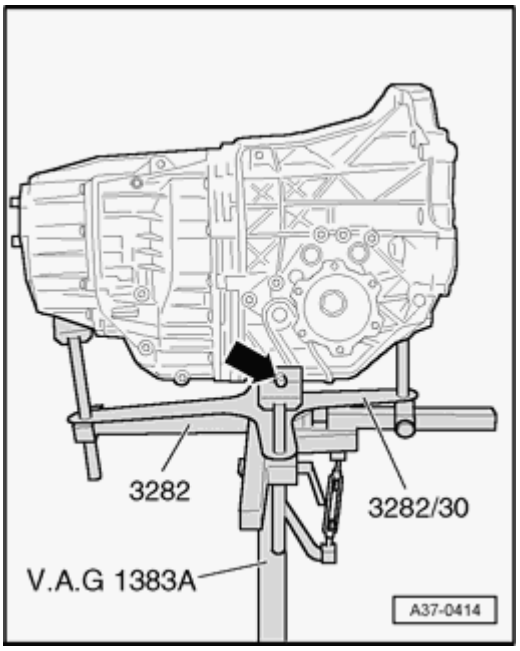


Fig. 223: Moving Engine/Transmission Jack V.A.G 1383 A With Transmission Mount 3282 Under Transmission And Support Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Move engine/transmission jack V.A.G 1383 A with transmission mount 3282 under transmission and support transmission.

NOTE:

- **The arrow symbol on the adjusting plate points in direction of travel.**

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- Align template parallel to transmission and secure to transmission using a bolt M10 x 20 - **arrow** -.

Audi Cabriolet:

NOTE:

- **So that the 4 engine/transmission connecting bolts at bottom can be removed on the Audi Cabriolet, the following work steps must also be performed:**

- Raise transmission slightly using Engine/Transmission Jack V.A.G 1383 A.

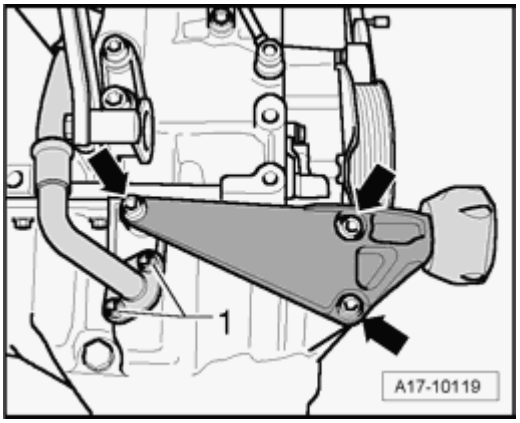


Fig. 224: Removing Bolts And Torque Supports From Oil Pan
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - and remove torque support.

NOTE:

- **Disregard - 1 -.**

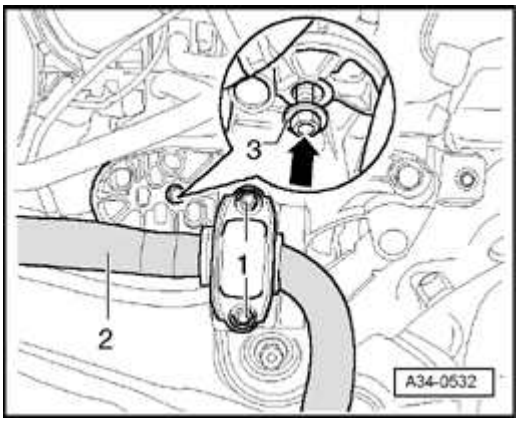


Fig. 225: Swivel Stabilizer Bar Nuts, Engine Mountings Nut And End Of Stud
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left and right nuts - **1** - and swing stabilizer bar - **2** - downward.
- Remove nuts - **3** - at engine mount on left and right far enough until lower edge of nut is flush with

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threaded pin - **arrow** -.

- Raise engine using engine support bridge 10-222 A far enough until both nuts - **3** - (on left and right sides) make contact on plate from below.

All:

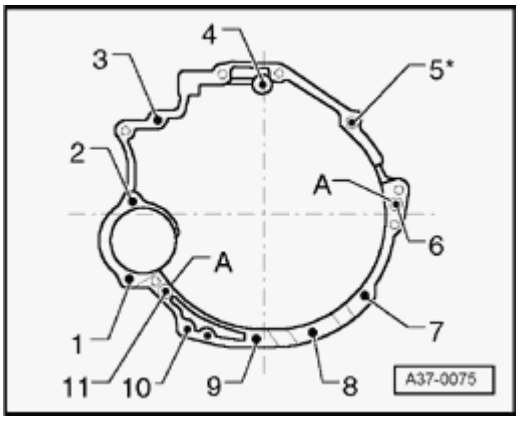


Fig. 226: Identifying Engine/Transmission Mountings (Automatic/Manual Transmission)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **7 to 10** - at engine/transmission flange.

Audi Cabriolet:

- Lower engine again.
- Lower transmission again slowly.

All:

- Tie up drive axles.
- Remove last engine/transmission mounting bolt.
- Press off transmission from bushings and let it down carefully.

Transmission (vehicles with 6-cyl. 3.0 L gasoline engine, also Audi Cabriolet), removing

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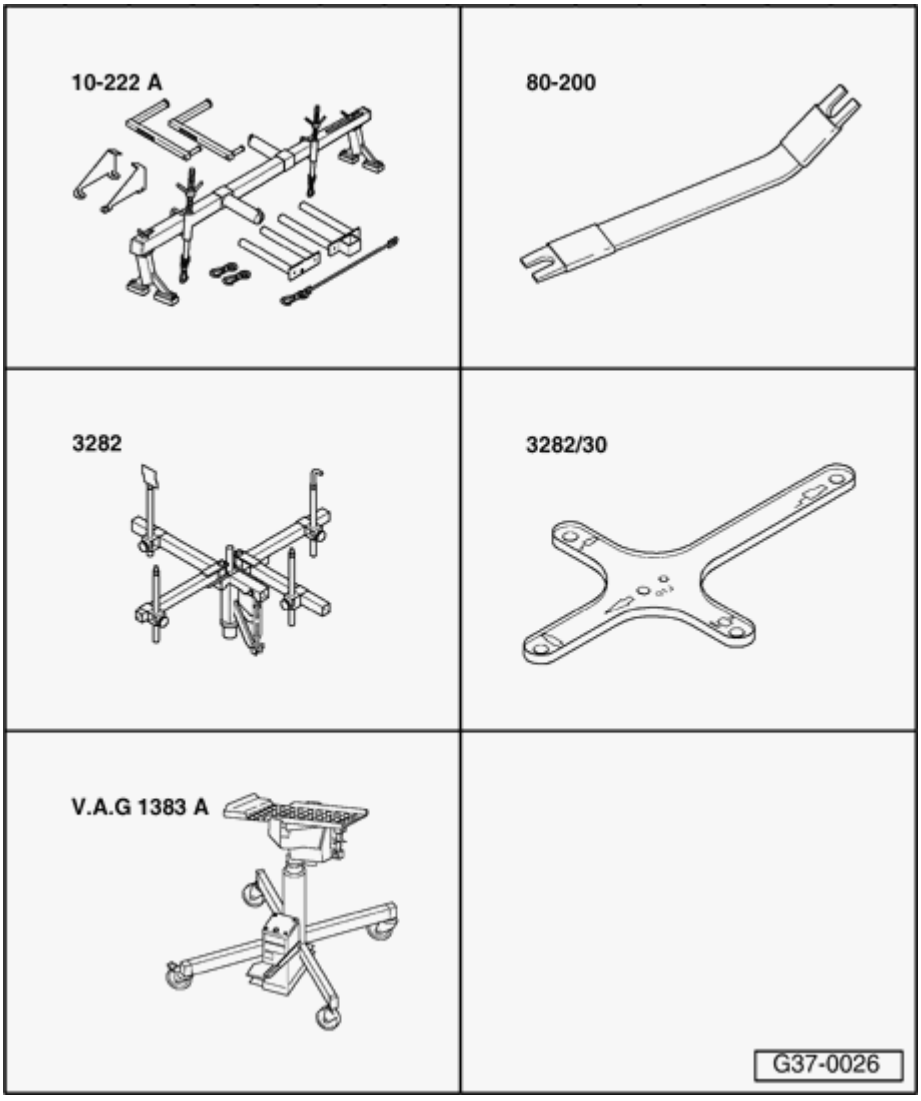


Fig. 227: Identifying Special Tools - Transmission (Vehicles With 6-Cyl. 3.0 L Gasoline Engine, Also Audi Cabriolet), Removing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Engine support bridge 10-222 A
- Pry lever 80-200
- Transmission support 3282
- Adjustment plate 3282/30

- Engine/Transmission Jack V.A.G 1383 A

Special tools, testers and auxiliary items required

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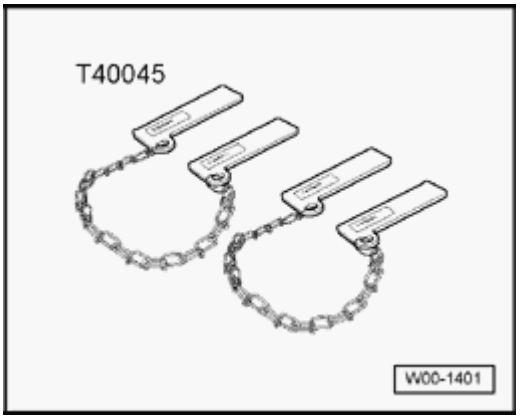


Fig. 228: Insert Pad For Front Fender T40045
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fender insert pads T40045

Work procedure

NOTE:

- **Reinstall cable ties that were loosened or cut off during removal at same locations during installation.**

- Place selector lever in position "P".

CAUTION: Observe procedures for disconnecting battery -->

- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

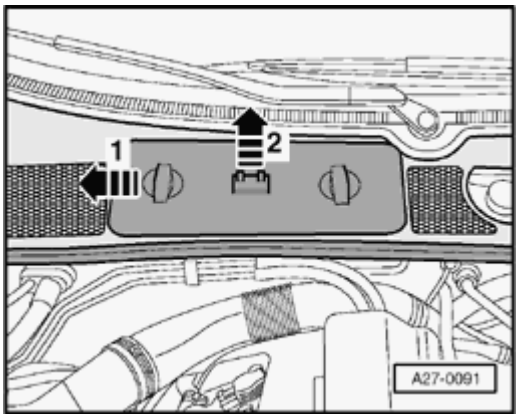


Fig. 229: Sliding Cover Over Battery To Right And Pull It Off Upwards
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Slide cover over battery to right - **arrow 1** - and pull it off upwards - **arrow 2** -.

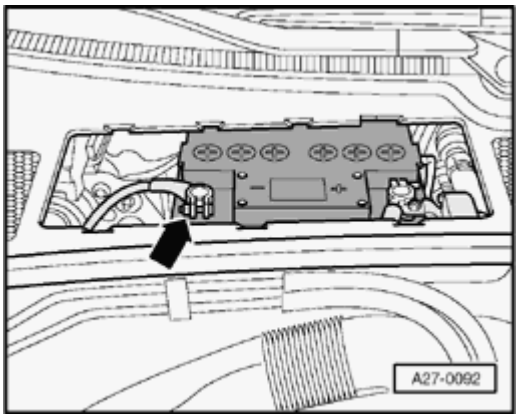


Fig. 230: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) wire - **arrow** -.

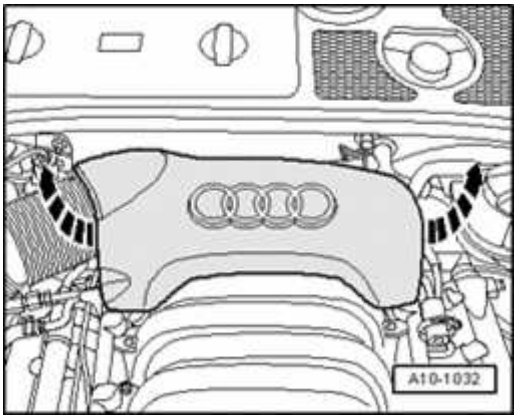
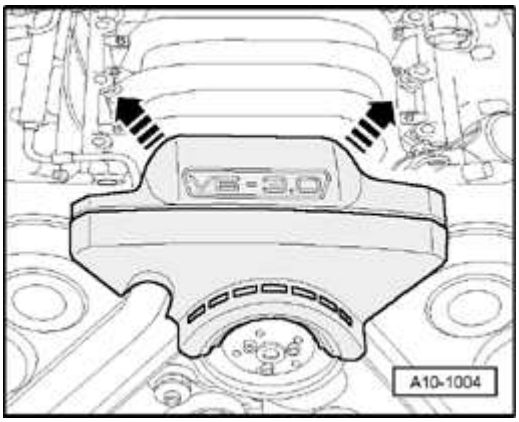


Fig. 231: Removing Rear Engine Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rear engine cover - **arrows** -.



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Fig. 232: Removing Front Engine Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove front engine cover - **arrows** -.

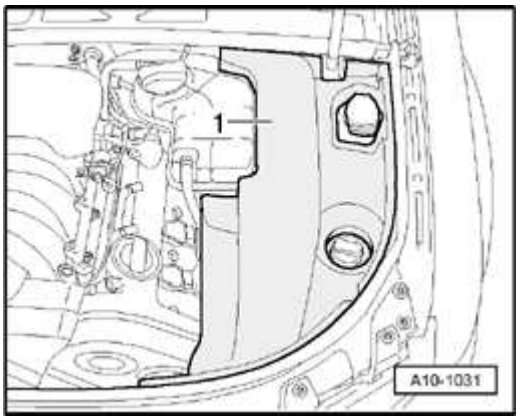


Fig. 233: Removing Cover In Engine Compartment (Left Side)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left cover - **1** - in engine compartment.

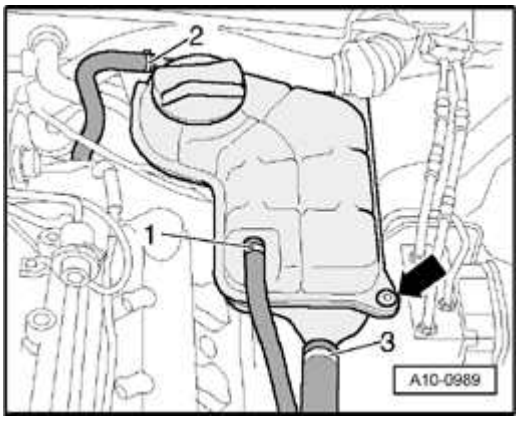


Fig. 234: Removing Coolant Hoses
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove coolant reservoir - **arrow** -.
- Disconnect electrical wiring to Engine Coolant Level (ECL) Warning Switch F66 at bottom of coolant expansion tank.
- Tie coolant expansion tank with connected coolant hoses - **1 to 3** - to side.
- If present, remove connector heat shield at left of bulkhead.

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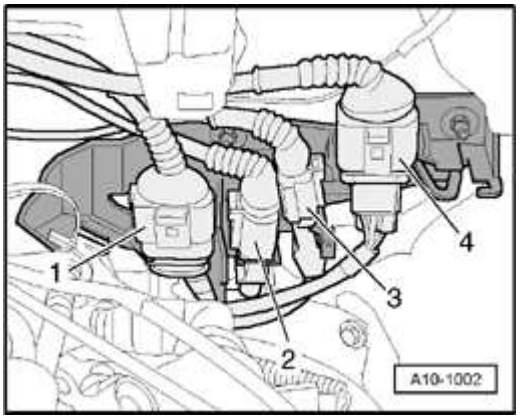


Fig. 235: Removing Harness Connectors From Bracket At Left Of Bulkhead
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove electrical connectors - **1 through 4** - from bracket at left of bulkhead.
- Disconnect electrical connectors - **1** - and - **4** -.
- Guide out wiring for lambda probes from below.

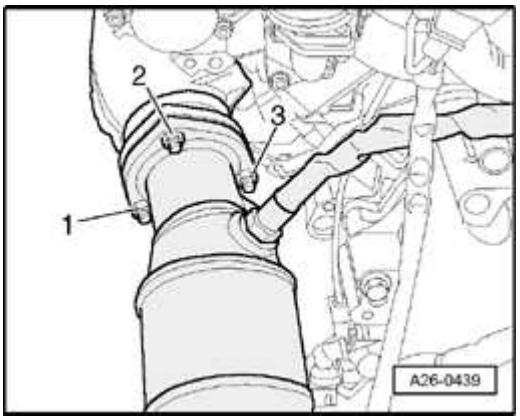


Fig. 236: Left Front Exhaust Pipe To Exhaust Manifold Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nut - **2** - which is accessible from top for left exhaust pipe/exhaust manifold.

NOTE:

- **For the sake of illustration, shown with engine removed.**

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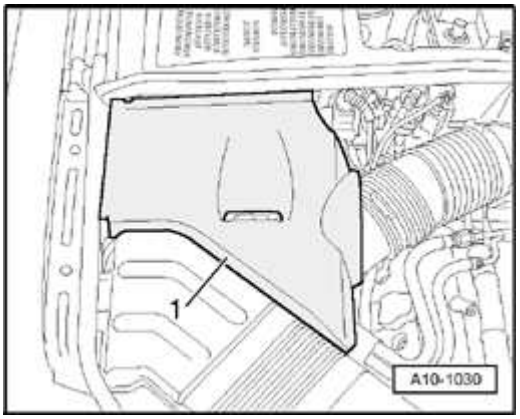


Fig. 237: Removing Cover In Engine Compartment (Right Side)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove right cover - **1** - in engine compartment.

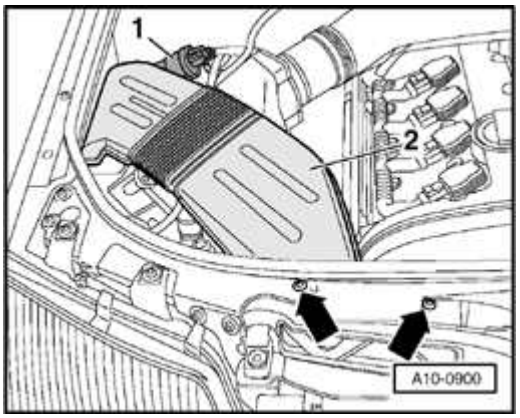
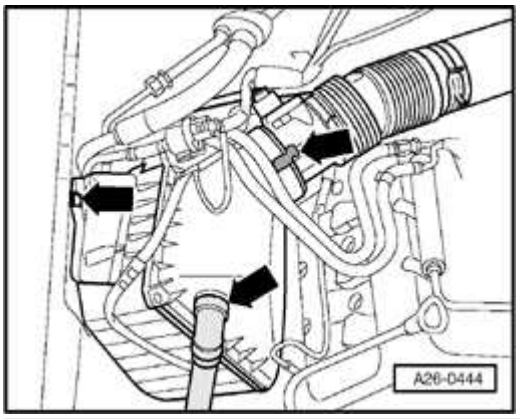


Fig. 238: Evaporative Emission Canister Purge Regulator Valve N80 And Air Duct
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** -.
- Disengage Evaporative Emission (EVAP) Canister Purge Regulator Valve N80 - **1** - at air duct.
- Remove air duct - **2** -.



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Fig. 239: Removing Air Filter Housing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove air filter housing - **arrows** -.

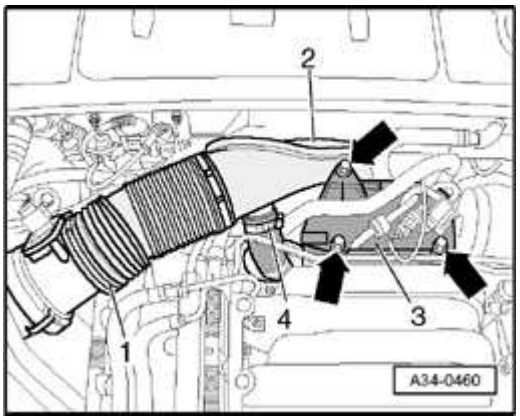


Fig. 240: Identifying Holding Plate, Intake Air Hose, Hose & Air Duct
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts for holding plate - **3** - for solenoid valves - **arrows** -.
- Disconnect electrical harness connector at Mass Air Flow (MAF) Sensor G70.
- Disconnect crankcase ventilation hose - **4** - from air guide - **2** -.

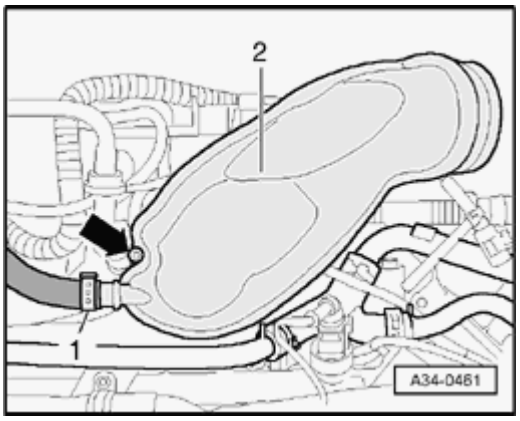


Fig. 241: Removing Bolt And Disconnect Air Duct At Throttle Valve Control Module
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **arrow** - and disconnect air guide - **2** - from throttle valve control module.
- Disconnect hose - **1** - from air guide.

NOTE:

- **For sake of illustration, air guide is shown from rear with engine removed.**

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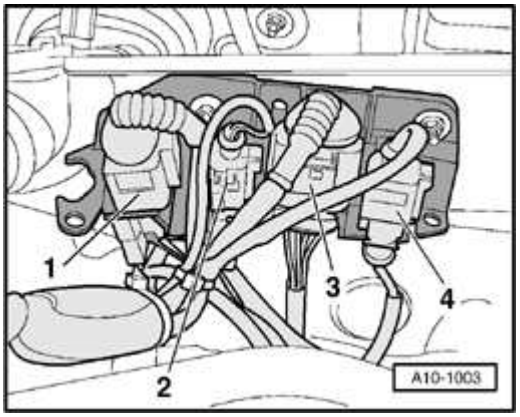


Fig. 242: Removing Harness Connectors From Bracket At Right Of Bulkhead
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove electrical connectors - **1 through 4** - from bracket at right of bulkhead.
- Disconnect electrical connectors - **1** - and - **4** -.
- Guide out wiring for lambda probes from below.

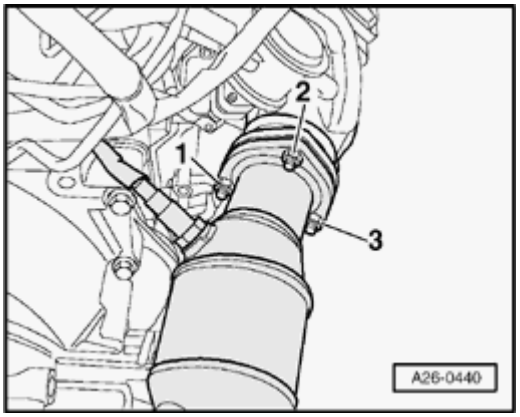


Fig. 243: Removing Nut Which Is Accessible From Top For Right Exhaust Pipe/Exhaust Manifold
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nut - **2** - which is accessible from top for right exhaust pipe/exhaust manifold.

NOTE:

- **For the sake of illustration, shown with engine removed.**

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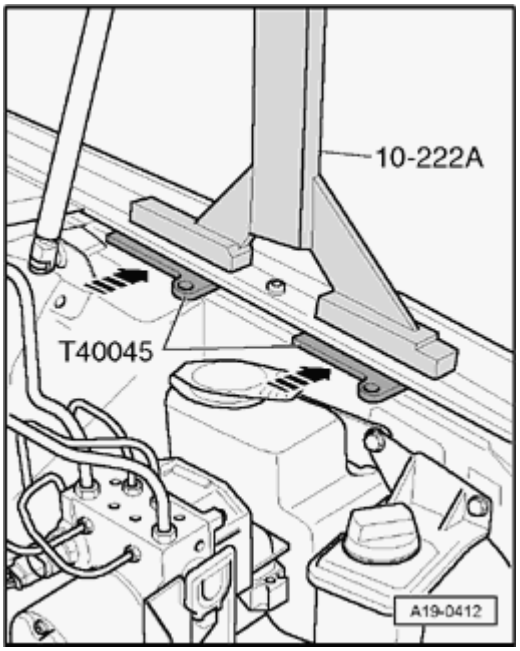


Fig. 244: Placing Insert Pad For Front Fender T40045 On Both Sides Between Fender Attachment Edge And Web Plate Lying Beneath
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull off sealing rubber at bolted flanges of fender.
- To prevent damage to bolted flanges of fender when using engine support bridge 10-222 A , insert fender insert pads T40045 on both sides between bolted flange of fender and web plate lying beneath.

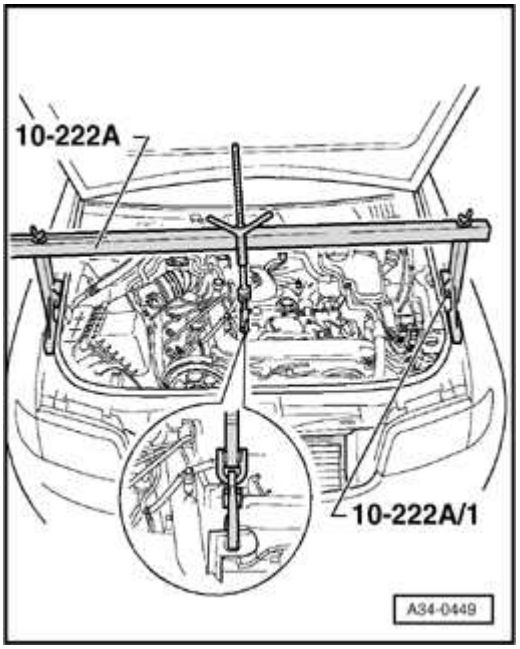


Fig. 245: Positioning Engine Support Bridge 10-222 A Onto Bolted Flange Of Fenders
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Position engine support bridge 10-222 A onto bolted flange of fenders; spindle stands at front.
- Take up some of the engine weight by tightening spindle of support bar, but do not lift.
- Remove both front wheels.

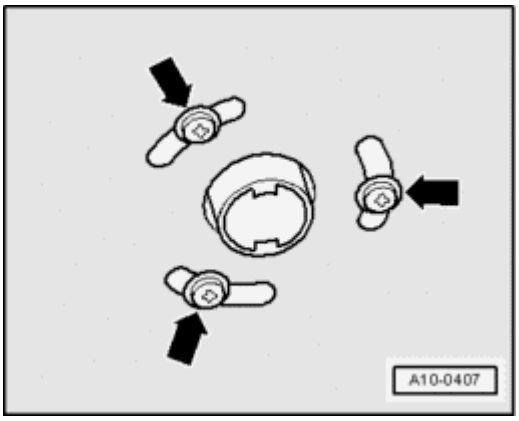


Fig. 246: Identifying Exhaust Pipe Fasteners
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On vehicles equipped with auxiliary heater, remove bolts - **arrows** - for exhaust pipe of auxiliary/additional heater to noise insulation.

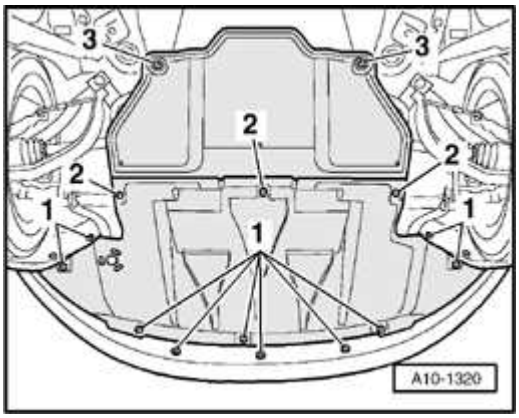


Fig. 247: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts or quick-release screws - **1 to 3** - and remove noise insulation at front and rear.

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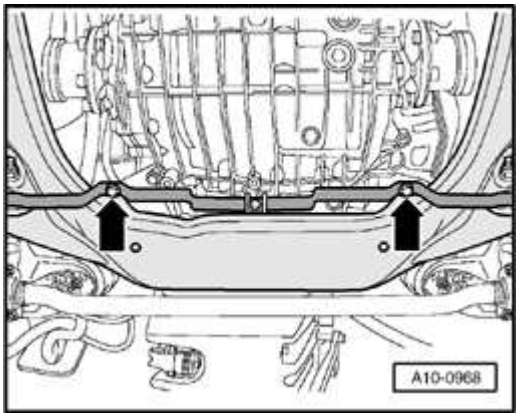


Fig. 248: Removing Bracket For Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove noise insulation bracket - **arrows** -.

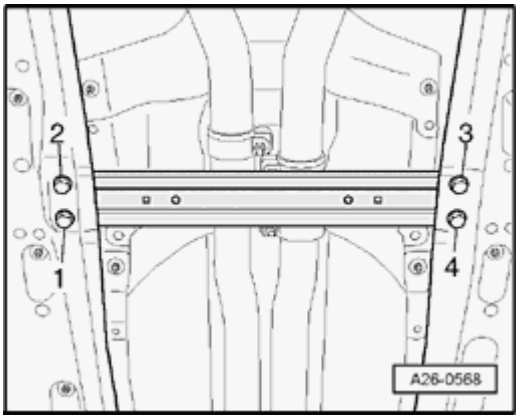


Fig. 249: Removing Bolts For Front Vehicle Floor Crossmember
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 through 4** - and remove front cross member for vehicle floor.

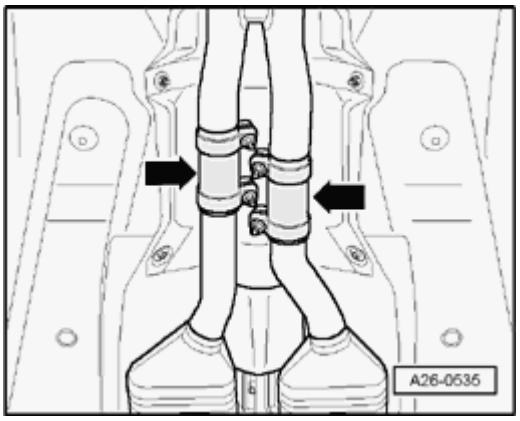


Fig. 250: Exhaust System And Clamps
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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NOTE:

- **Flex joint in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.**

- Disconnect exhaust system at both double clamps - **arrows** -.

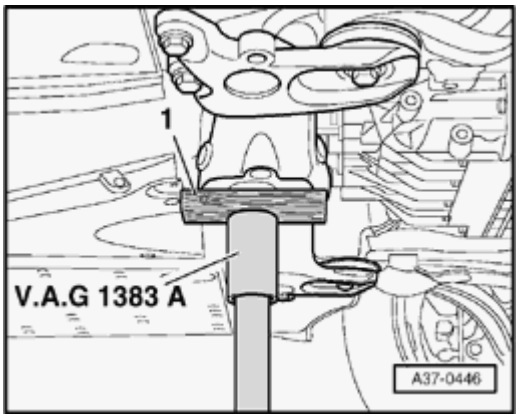


Fig. 251: Placing Plunger Of Engine/Transmission Jack V.A.G 1383 A With Block Of Wood Inserted In Between On Transmission At Bottom
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place plunger of Engine/Transmission Jack V.A.G 1383 A with a block of wood inserted in between - **1** - on transmission at bottom.
- Support tunnel cross member using Engine/Transmission Jack V.A.G 1383 A.

CAUTION: The lock carrier must be installed - danger of injury.

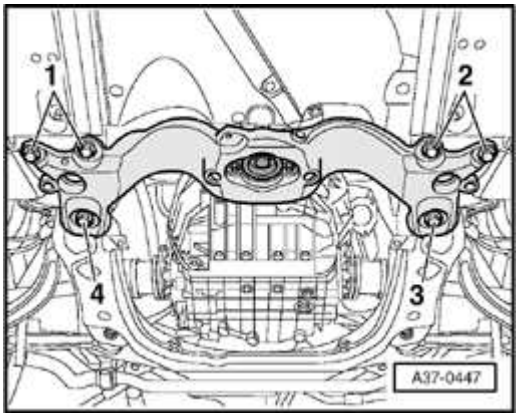


Fig. 252: Removing Bolts & Slowly Release Rear Crossmember Using VAG1383A Engine/Transmission Jack
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- First remove bolts - **1** - and - **2** - , then bolts - **3** - and - **4** -.
- Slowly lower tunnel cross member using Engine/Transmission Jack V.A.G 1383 A.

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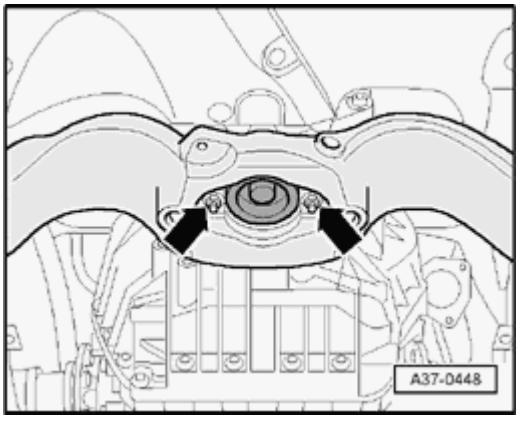


Fig. 253: Removing Nuts And Tunnel Cross Member
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **arrows** - and remove tunnel cross member.

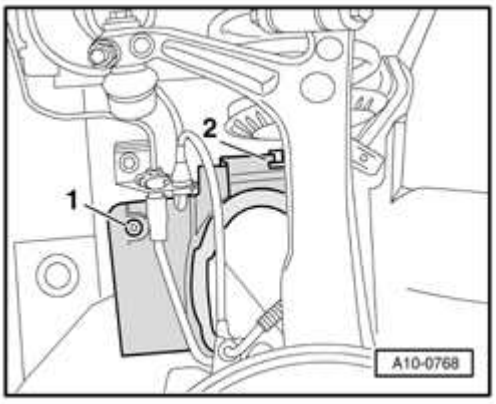
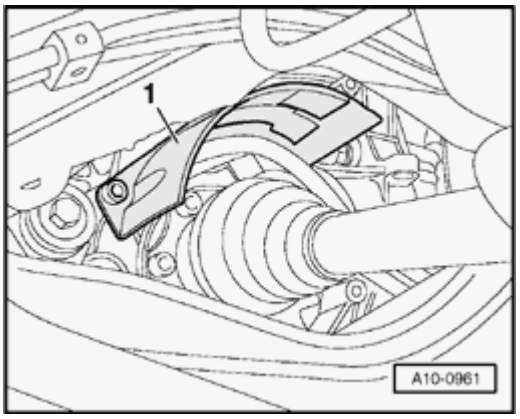


Fig. 254: Removing Bolt For Noise Insulation Cover Over Left/Right Drive Axle, Disengaging Hook And Removing Noise Insulation Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **1** - for noise insulation cover over left and right drive axle.
- Disengage hook - **2** - and remove noise insulation cover.



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Fig. 255: Removing Left/Right Heat Shields For Drive Axles
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left and right heat shields for drive axles - **1** -.
- Remove drive axle from transmission flange on left and right sides --> **40 - FRONT SUSPENSION** .

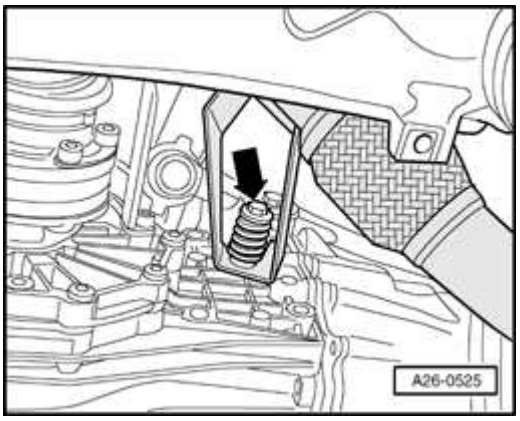


Fig. 256: Removing Bracket For Left Front Exhaust Pipe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bracket for left front exhaust pipe - **arrow** -.

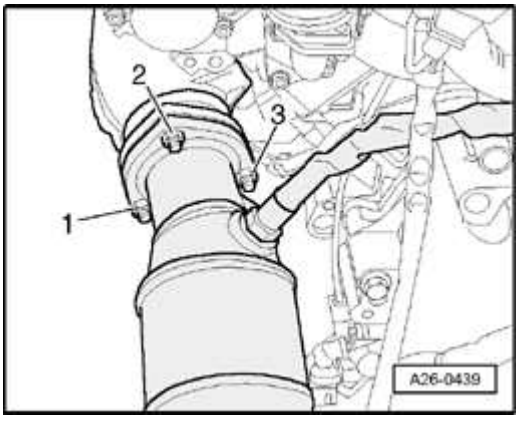


Fig. 257: Left Front Exhaust Pipe To Exhaust Manifold Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Free up oxygen sensor wiring.
- Remove nuts - **1** - and - **3** - which are accessible from bottom for front exhaust pipe/left exhaust manifold.

NOTE:

- **For the sake of illustration, shown with engine removed.**

- Remove front exhaust pipe complete with primary and main catalytic converter.

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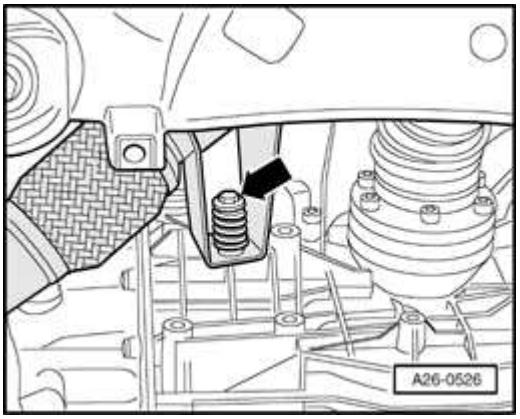


Fig. 258: Removing Bracket For Right Front Exhaust Pipe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bracket for right front exhaust pipe - **arrow** -.

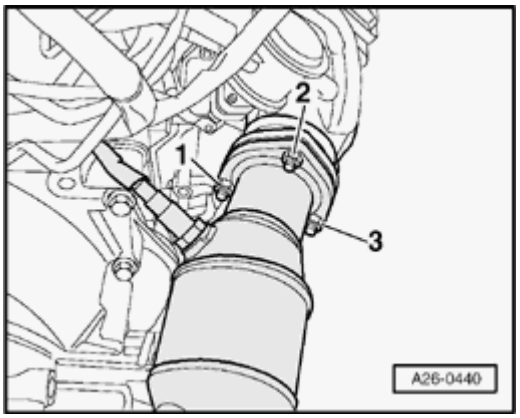


Fig. 259: Removing Nut Which Is Accessible From Top For Right Exhaust Pipe/Exhaust Manifold
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Free up oxygen sensor wiring.
- Remove nuts - **1** - and - **3** - which are accessible from bottom for front exhaust pipe/right exhaust manifold.
- Remove front exhaust pipe complete with primary and main catalytic converter.

NOTE:

- **For the sake of illustration, shown with engine removed.**

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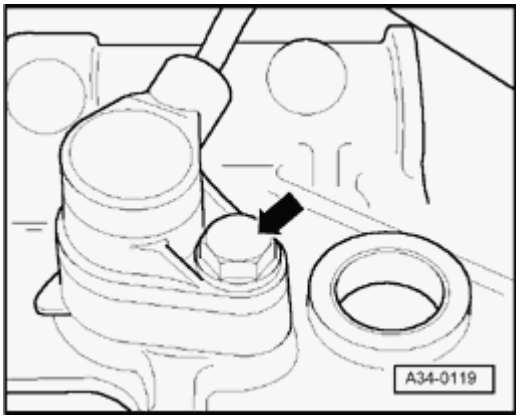


Fig. 260: Location Of Engine Speed (RPM) Sensor G28 On Coupling Housing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove Engine Speed (RPM) Sensor G28 on left of transmission - **arrow** - and lay to side.

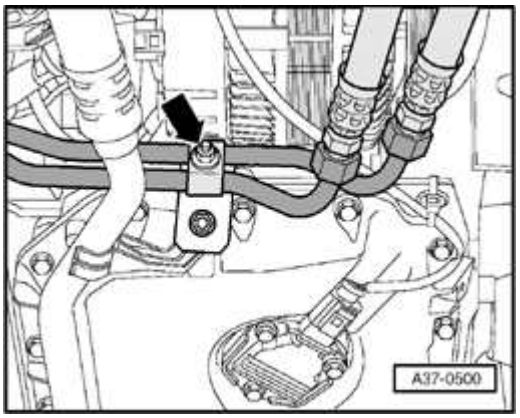


Fig. 261: Removing Bracket For ATF-Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bracket for ATF-lines - **arrow** -.

NOTE:

- **Observe the rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**

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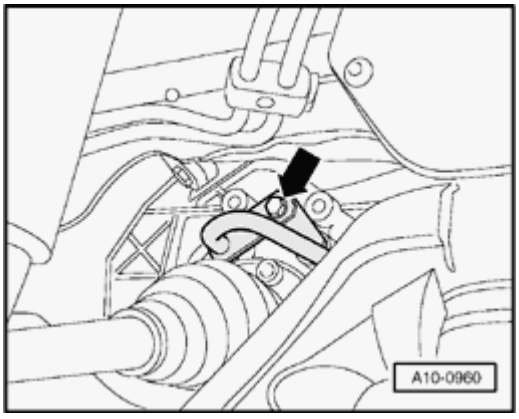


Fig. 262: Removing Bolt And ATF Lines From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **arrow** - and remove ATF lines from transmission.
- Move ATF lines clear to one side and secure in place.

For transmission with right-angled connector:

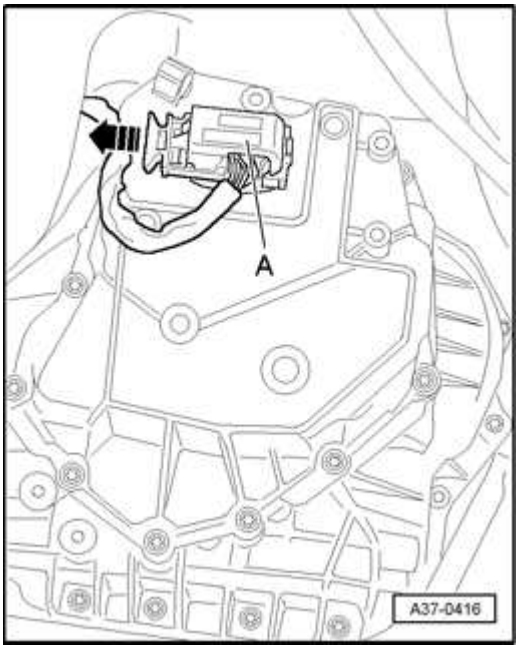


Fig. 263: Disengaging Harness Connector From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disengage harness connector - **A** - in direction of - **arrow** - and disconnect it from transmission.
- Free up wiring harness.

For transmission with round connector:

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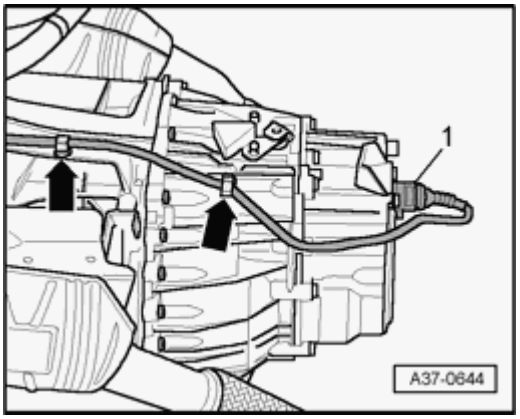


Fig. 264: Disengaging Electrical Harness Connector And Disconnecting From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disengage electrical harness connector - **1** - and disconnect from transmission.
- Move wiring harness clear - **arrows** -.

All:

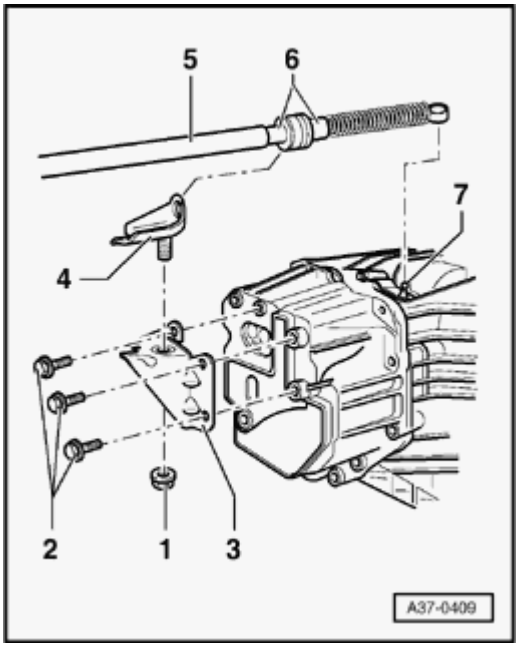


Fig. 265: Removing Bracket For Selector Lever Cable By First Removing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bracket - **3** - for selector lever cable by first removing bolts - **2** -.

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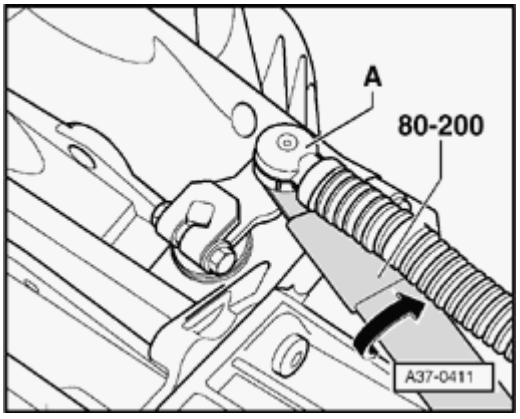


Fig. 266: Using Pry Lever 80-200 To Press Selector Lever Cable From Lever For Selector Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Using pry lever 80-200 , press selector lever cable - **A** - from lever for selector shaft - **arrow** -.

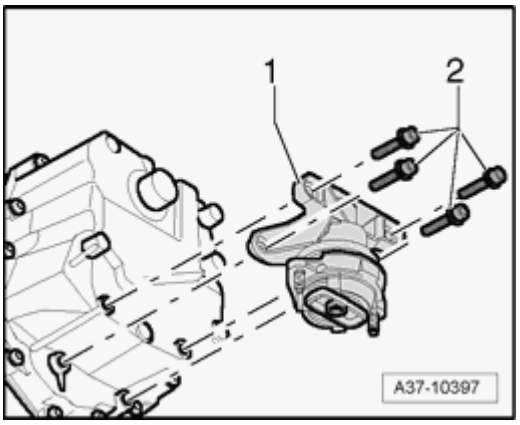


Fig. 267: Removing Bolts And Transmission Support From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **2** - and remove transmission support - **1** - from transmission.

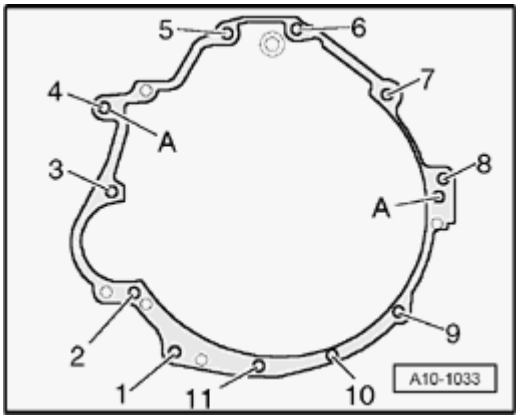


Fig. 268: Identifying Engine/Transmission Tightening/Loosening Sequence
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Remove bolts - **2 to 7** - at engine/transmission flange.
- Loosen bolt - **8** - only and then tighten by hand.

NOTE:

- **Starter must not be removed.**

- Mount transmission support 3282 on the Engine/Transmission Jack V.A.G 1383 A.

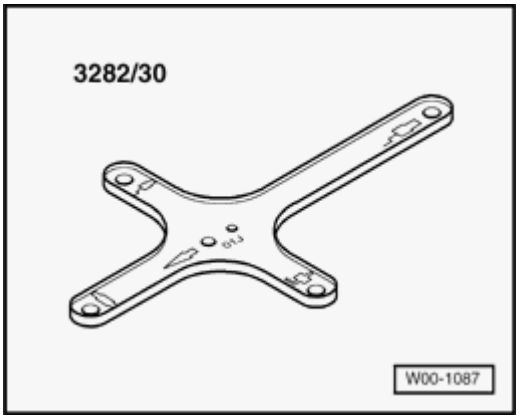


Fig. 269: Identifying Template 3282/30
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Set Template 3282/30 on to transmission support 3282 (template only fits in one position).
- Align arms of transmission support to correspond with holes in adjustment plate.
- Attach support elements on adjustment plate, as illustrated.

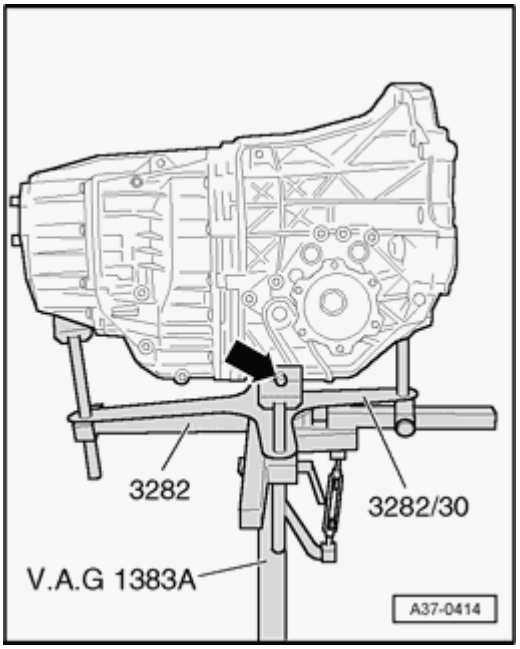


Fig. 270: Moving Engine/Transmission Jack V.A.G 1383 A With Transmission Mount 3282 Under Transmission And Support Transmission

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Move engine/transmission jack V.A.G 1383 A with transmission mount 3282 under transmission and support transmission.

NOTE:

- **The arrow symbol on the adjusting plate points in the direction of travel.**

- Align template parallel to transmission and secure to transmission using a bolt M10 x 20 - **arrow** -.

Audi Cabriolet:

NOTE:

- **So that the 4 engine/transmission connecting bolts at bottom can be removed on the Audi Cabriolet, the following work steps must also be performed:**

- Raise transmission slightly using Engine/Transmission Jack V.A.G 1383 A.

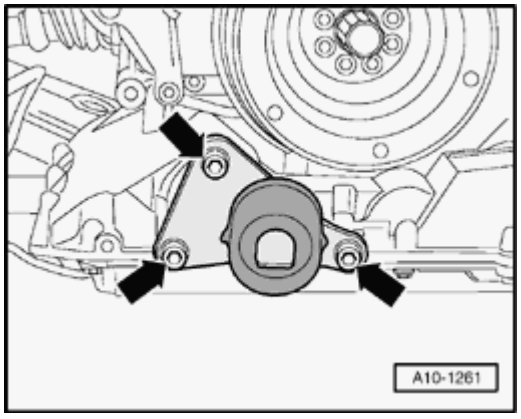
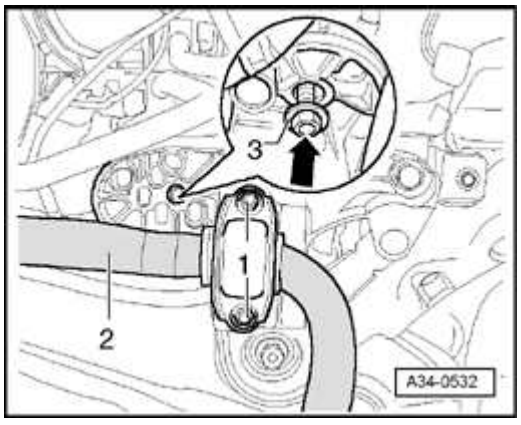


Fig. 271: Removing Torque Support
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove torque support - **arrows** -.



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Fig. 272: Swivel Stabilizer Bar Nuts, Engine Mountings Nut And End Of Stud
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left and right nuts - **1** - and swing stabilizer bar - **2** - downward.
- Remove nuts - **3** - at engine mount on left and right far enough until lower edge of nut is flush with threaded pin - **arrow** -.
- Raise engine using engine support bridge 10-222 A far enough until both nuts - **3** - (on left and right sides) make contact on from below.

All:

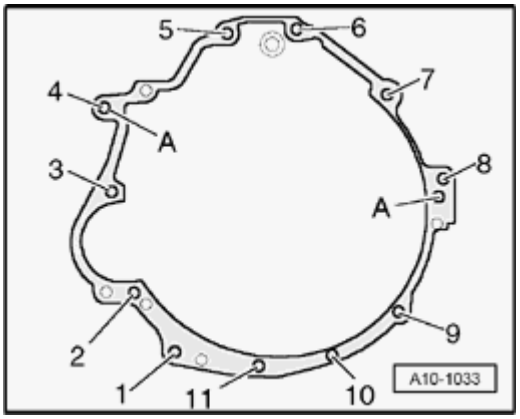


Fig. 273: Identifying Engine/Transmission Tightening/Loosening Sequence
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1** - and - **9 through 11** - on engine/transmission flange.

Audi Cabriolet:

- Lower engine again.
- Lower transmission again slowly.

All:

- Move drive shafts towards rear.
- Remove last bolt securing transmission to engine.
- Press off transmission from bushings and let it down carefully.

Transmission (vehicles with 6-cyl. 3.2 L FSI gasoline engine, also Audi Cabriolet), removing

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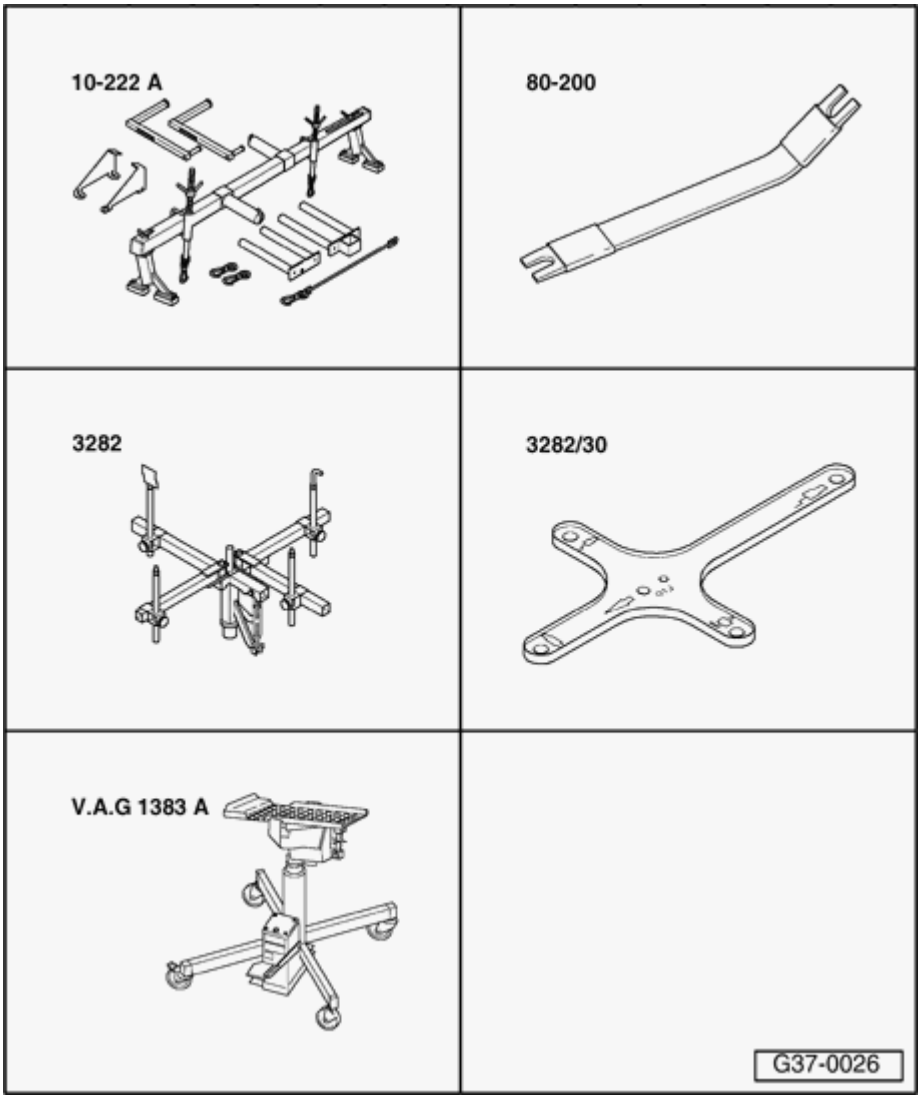


Fig. 274: Identifying Special Tools - Transmission (Vehicles With 6-Cyl. 3.2 L FSI Gasoline Engine, Also Audi Cabriolet), Removing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Engine support bridge 10-222 A
- Pry lever 80-200
- Transmission support 3282
- Adjustment plate 3282/30
- Engine/Transmission Jack V.A.G 1383 A

Special tools, testers and auxiliary items required

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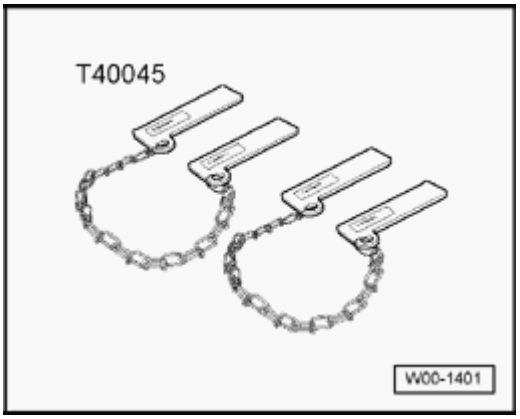


Fig. 275: Insert Pad For Front Fender T40045
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fender insert pads T40045
- Drip tray for VAS 6100 VAS 6208

Work procedure

NOTE:

- **Reinstall cable ties that were loosened or cut off during removal at same locations during installation.**

- Place selector lever in position "P".

CAUTION: Observe procedures for disconnecting battery -->

- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

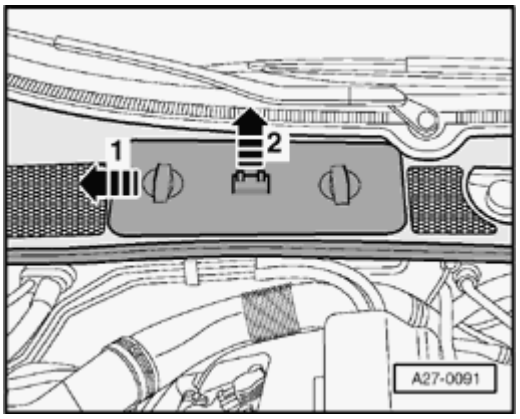


Fig. 276: Sliding Cover Over Battery To Right And Pull It Off Upwards

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Slide cover over battery to right - **arrow 1** - and pull it off upwards - **arrow 2** -.

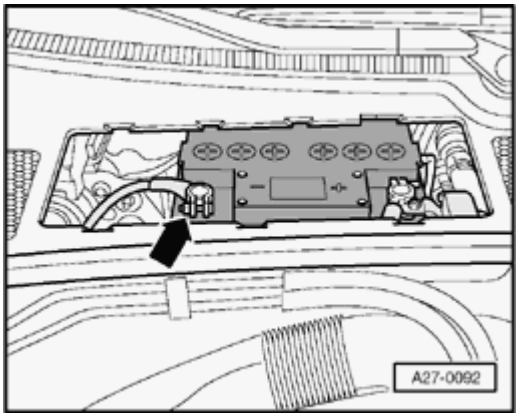


Fig. 277: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) wire - **arrow** -.

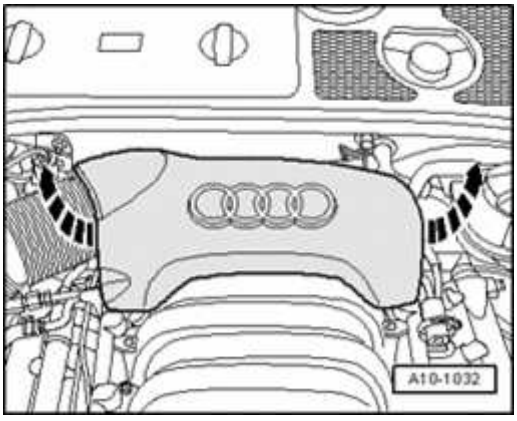


Fig. 278: Removing Rear Engine Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rear engine cover - **arrows** -.

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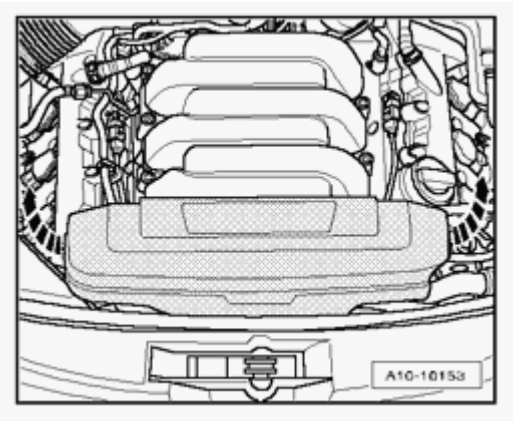


Fig. 279: Identifying Front Engine Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove front engine cover - **arrows** -.
- Pull off sealing rubber at bolted flanges of fender.

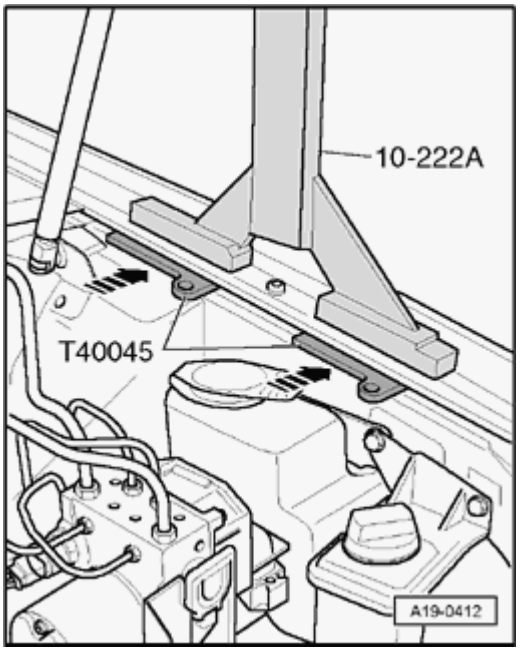


Fig. 280: Placing Insert Pad For Front Fender T40045 On Both Sides Between Fender Attachment Edge And Web Plate Lying Beneath
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- To prevent damage to bolted flanges of fender when using engine support bridge 10-222 A , insert fender insert pads T40045 on both sides between bolted flange of fender and web plate lying beneath.

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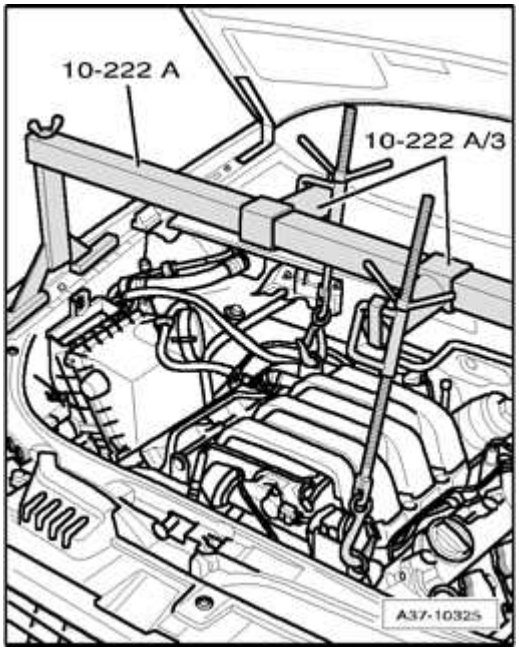


Fig. 281: Setting Up Engine Support Bridge 10-222 A With Adapters 10-222 A/3 On Fender Mounting Flanges
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position engine support bridge 10-222 A with two adapters 10 - 222 A/3 on to bolted flanges of fender.
- Engage spindles onto engine lifting eyes as shown.
- Take up some of the engine weight by tightening spindle of support bar, but do not lift.
- Remove both front wheels.

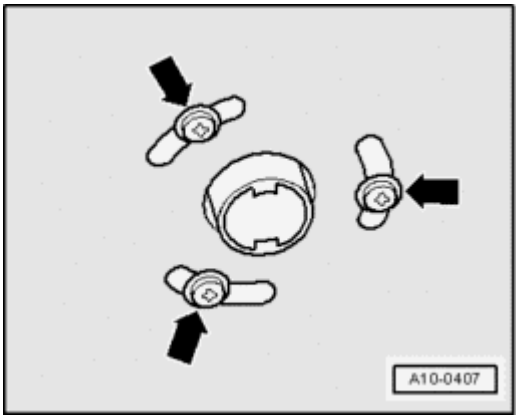


Fig. 282: Identifying Exhaust Pipe Fasteners
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On vehicles equipped with auxiliary heater, remove bolts - **arrows** - for exhaust pipe of auxiliary/additional heater to noise insulation.

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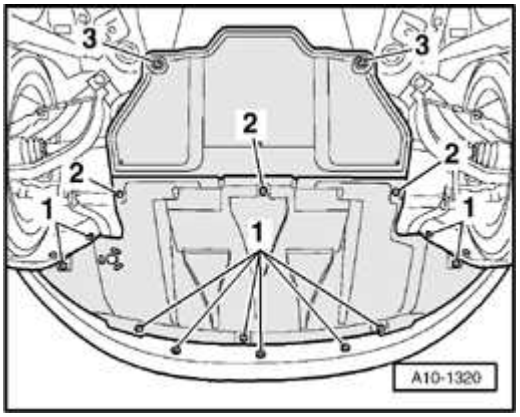


Fig. 283: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts or quick-release screws - **1 to 3** - and remove noise insulation at front and rear.

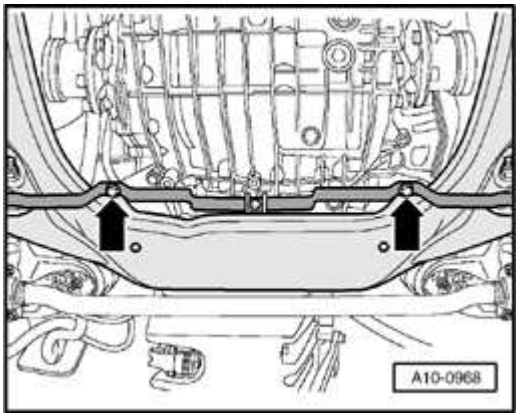


Fig. 284: Removing Bracket For Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove noise insulation bracket - **arrows** -.

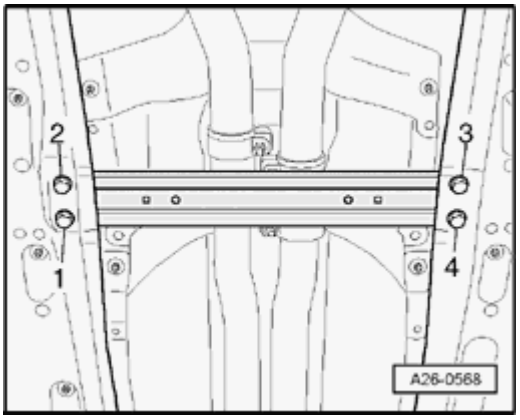


Fig. 285: Removing Bolts For Front Vehicle Floor Crossmember
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Remove bolts - **1 through 4** - and remove front cross member for vehicle floor.

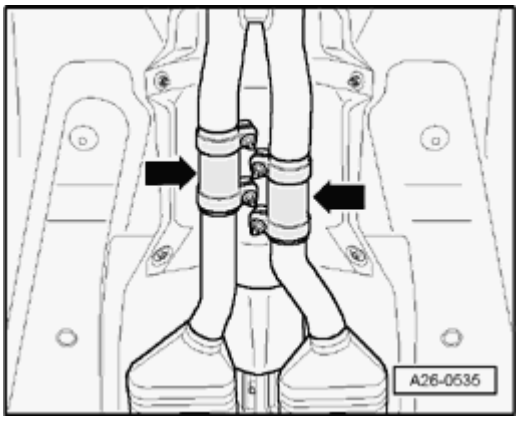


Fig. 286: Exhaust System And Clamps
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Flex joint in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.**

- Disconnect exhaust system at both double clamps - **arrows** -.

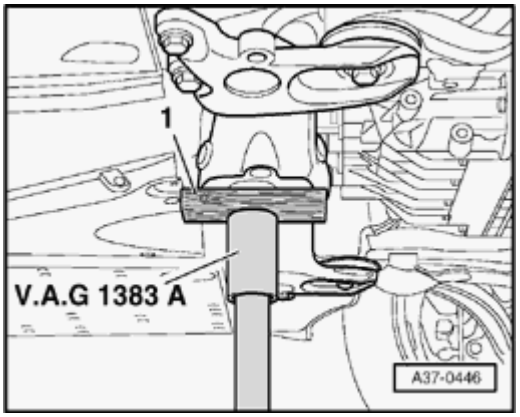


Fig. 287: Placing Plunger Of Engine/Transmission Jack V.A.G 1383 A With Block Of Wood Inserted In Between On Transmission At Bottom
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place plunger of Engine/Transmission Jack V.A.G 1383 A with a block of wood inserted in between - **1** - on transmission at bottom.
- Support tunnel cross member using Engine/Transmission Jack V.A.G 1383 A.

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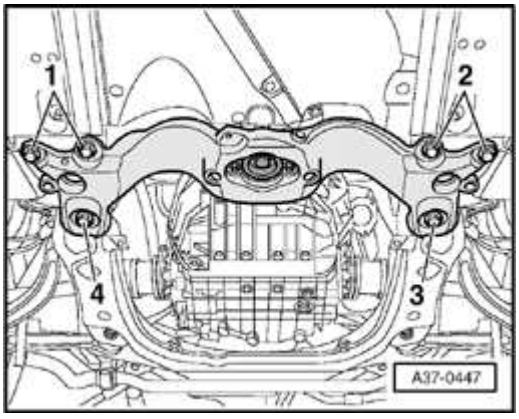


Fig. 288: Removing Bolts & Slowly Release Rear Crossmember Using VAG1383A Engine/Transmission Jack
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- First remove bolts - **1** - and - **2** - , then bolts - **3** - and - **4** -.
- Slowly lower tunnel cross member using Engine/Transmission Jack V.A.G 1383 A.

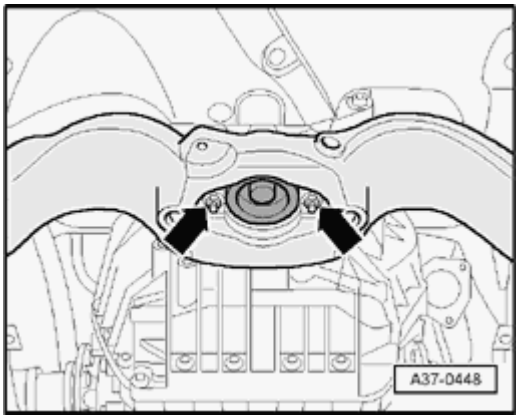
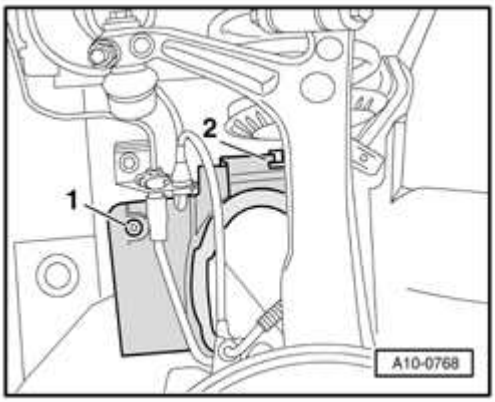


Fig. 289: Removing Nuts And Tunnel Cross Member
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **arrows** - and remove tunnel cross member.



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Fig. 290: Removing Bolt For Noise Insulation Cover Over Left/Right Drive Axle, Disengaging Hook And Removing Noise Insulation Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If installed, remove bolt - **1** - for noise insulation cover over left and right drive axle.
- Disengage hook - **2** - and remove noise insulation cover.

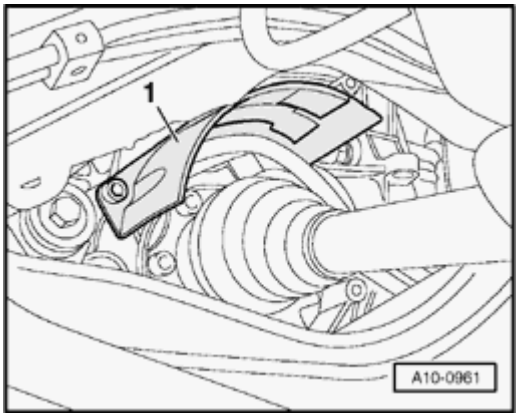


Fig. 291: Removing Left/Right Heat Shields For Drive Axles
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left and right heat shields for drive axles - **1** -.
- Remove drive axle from transmission flange on left and right sides --> **40 - FRONT SUSPENSION** .
- Remove left and right front exhaust pipe with catalytic converter -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

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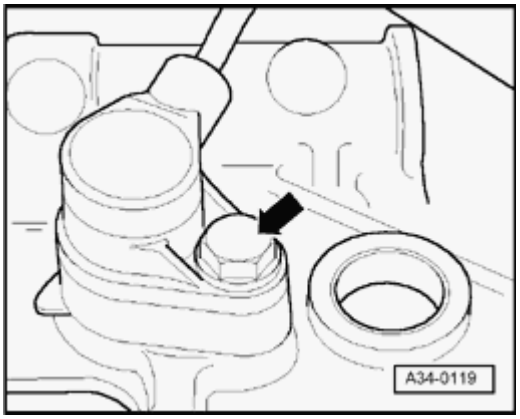


Fig. 292: Location Of Engine Speed (RPM) Sensor G28 On Coupling Housing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove Engine Speed (RPM) Sensor G28 on left of transmission - **arrow** - and lay to side.

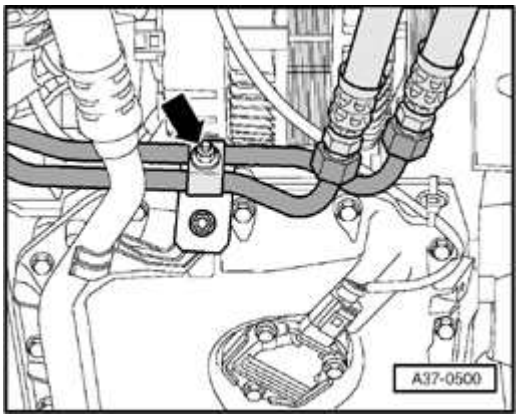


Fig. 293: Removing Bracket For ATF-Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bracket for ATF-lines - **arrow** -.
- Place drip tray for workshop crane VAS 6208 under transmission.

NOTE:

- **Observe the rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**

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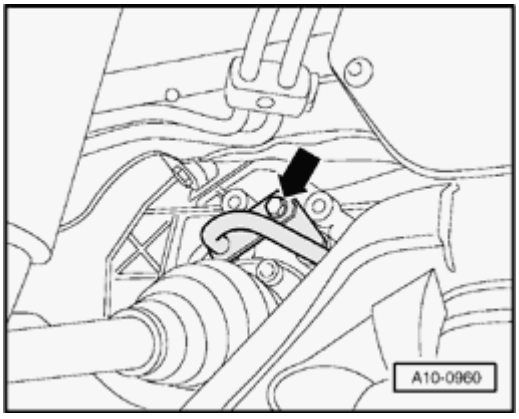


Fig. 294: Removing Bolt And ATF Lines From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **arrow** - and remove ATF lines from transmission.
- Seal openings with clean cover caps.
- Move ATF lines clear to one side and secure in place.

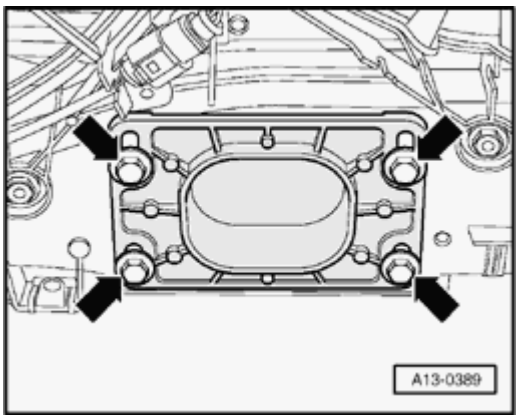
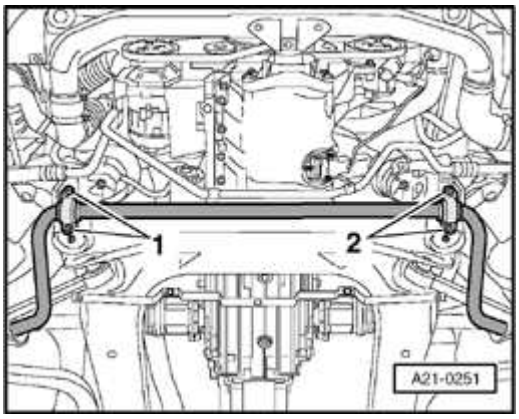


Fig. 295: Removing/Installing Bolts At Torque Support Stop
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen bolts - **arrows** - at torque support stop approx. two rotations each.



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Fig. 296: Removing Stabilizer Bar Mountings
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left and right stabilizer mounts - **1** - and - **2** -.
- Swing stabilizer downward.

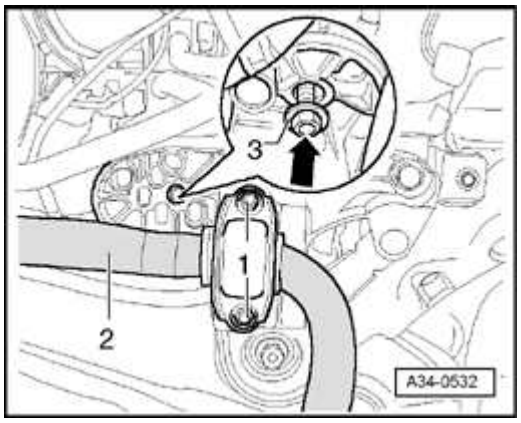


Fig. 297: Swivel Stabilizer Bar Nuts, Engine Mountings Nut And End Of Stud
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **3** - at engine mount on left and right far enough until lower edge of nut is flush with threaded pin - **arrow** -.
- Raise engine using spindles of engine support bridge 10-222 A far enough until both nuts - **3** - (on left and right sides) make contact on from below.

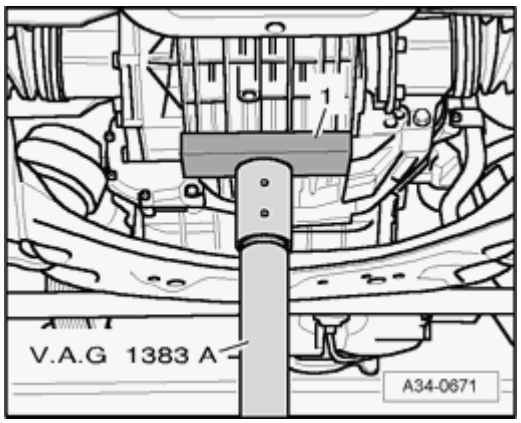


Fig. 298: Placing Plunger Of Engine/Transmission Jack V.A.G 1383 A With Block Of Wood Inserted In Between Transmission At Bottom
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place plunger of Engine/Transmission Jack V.A.G 1383 A with a block of wood - **1** - inserted in between transmission at bottom.
- Raise transmission slightly using Engine/Transmission Jack V.A.G 1383 A.

NOTE:

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- **Lower connecting bolts on engine/transmission flange are accessible by doing this.**

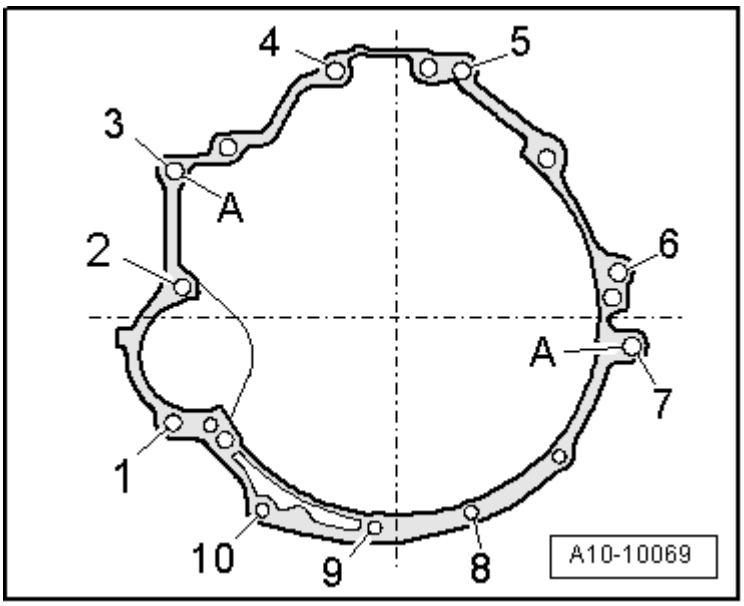


Fig. 299: Identifying Engine/Transmission Threaded Connections
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **8, 9 and 10** - on engine/transmission flange.
- Lower engine again using spindles of engine support bridge 10-222 A.

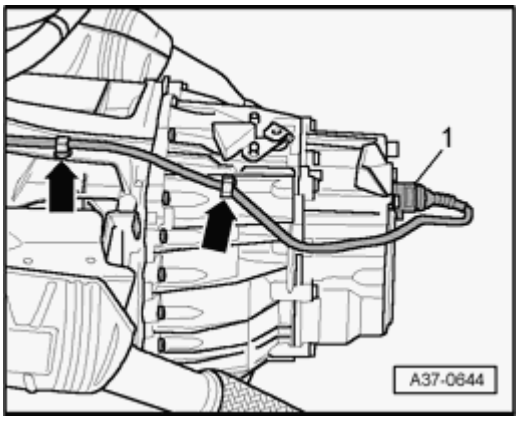


Fig. 300: Disengaging Electrical Harness Connector And Disconnecting From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disengage electrical harness connector - **1** - and disconnect from transmission.
- Move wiring harness clear - **arrows** -.

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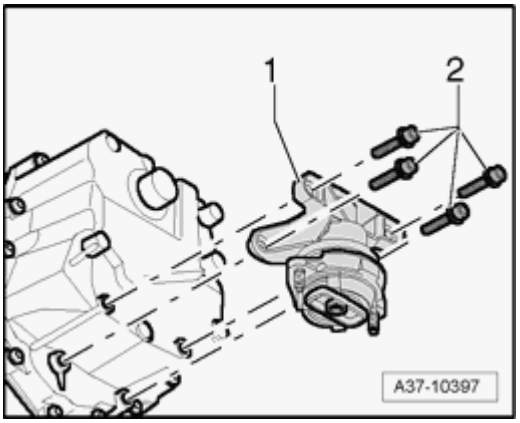


Fig. 301: Removing Bolts And Transmission Support From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **2** - and remove transmission support - **1** - from transmission.

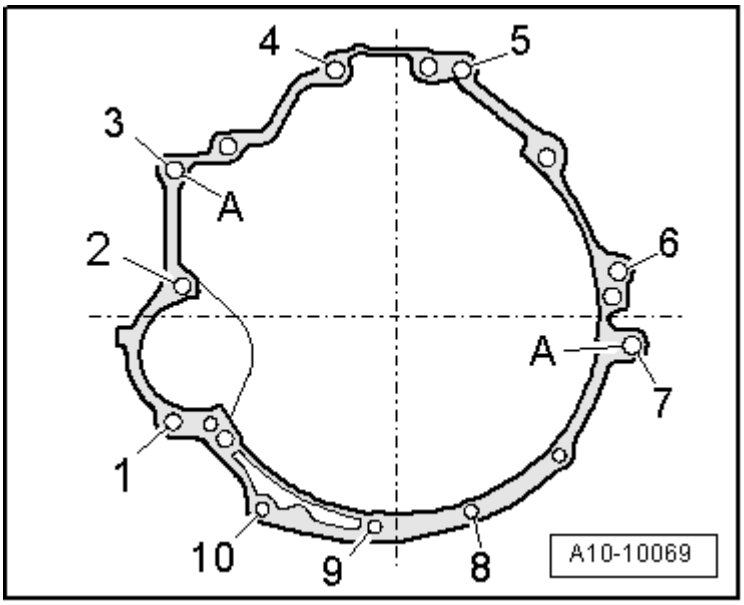


Fig. 302: Identifying Engine/Transmission Threaded Connections
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **2 to 6** - at engine/transmission flange.
- Loosen bolts - **1** - and - **7** - only and then tighten by hand.

NOTE:

- **Starter must not be removed.**

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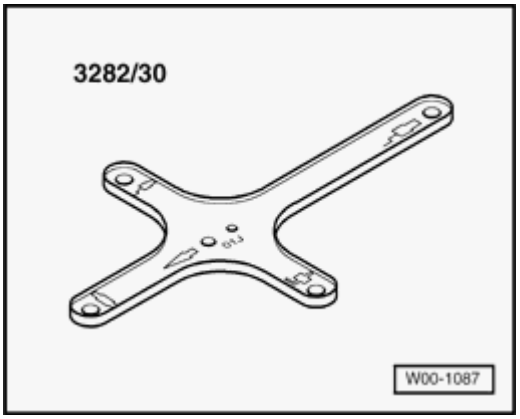


Fig. 303: Identifying Template 3282/30
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mount transmission support 3282 on Engine/Transmission Jack V.A.G 1383 A.
- Set Template 3282/30 on to transmission support 3282 (template only fits in one position).
- Align arms of transmission support to correspond with holes in adjustment plate.
- Attach support elements on adjustment plate, as illustrated.

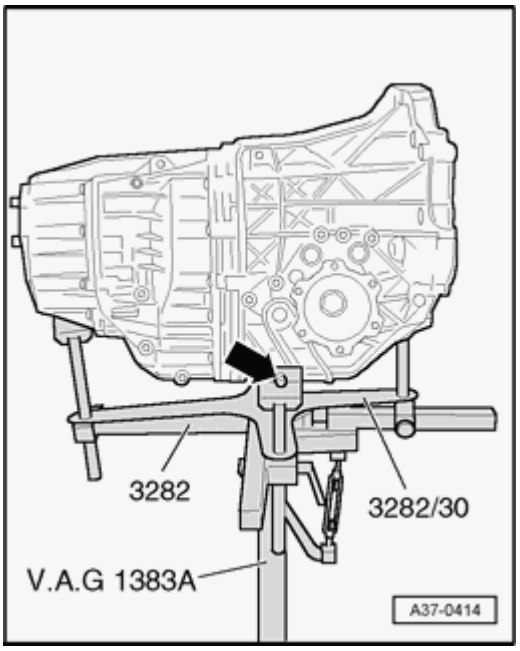


Fig. 304: Moving Engine/Transmission Jack V.A.G 1383 A With Transmission Mount 3282 Under Transmission And Support Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Move engine/transmission jack V.A.G 1383 A with transmission mount 3282 under transmission and support transmission.

NOTE:

- **The arrow symbol on the adjusting plate points in the direction of travel.**

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- Align template parallel to transmission and secure to transmission using a bolt M10 x 20 - **arrow** -.
- Move drive shafts towards rear.

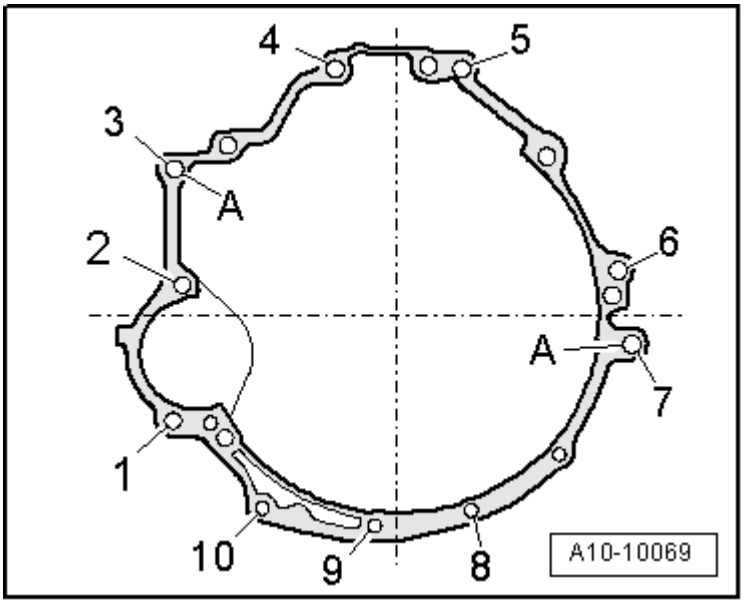


Fig. 305: Identifying Engine/Transmission Threaded Connections
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove last mounting bolts - **1** - and - **7** - on engine/transmission flange.
- Press transmission off bushings - **A** - and carefully lower it far enough until selector lever cable is accessible.

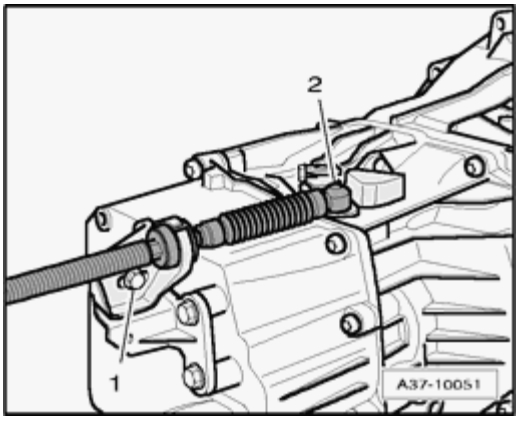


Fig. 306: Removing Support Bracket For Selector Lever Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mark installation position of support bracket for selector lever cable.
- Remove bolt - **1** - support bracket for selector lever cable.
- Press selector lever cable ball joint - **2** - off from selector shaft lever.

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NOTE:

- **Do not bend or kink the selector lever cable.**

- Slowly lower transmission.
- Pay attention to clearance of drive axles when lowering transmission.

Installing transmission

Installation is in reverse order of removal, note the following:

NOTE:

- **Before installing a replacement transmission, clean ATF lines and ATF cooler --> ATF lines and ATF cooler, cleaning.**
- **When performing repairs, replace self-locking nuts and bolts.**
- **Always replace bolts that are secured with tightening torque as well as seals, gaskets and O-rings.**
- **Clean input shaft splines of transmission and damper unit splines on flywheel, remove corrosion and apply only a very thin coating of *lubricant G 000 100* on splines. Excess grease must be removed.**
- **Secure all hose connections with hose clamps of the same type as those equipped by the factory .**
- **When installing, bring all cable ties back to same positions.**

- Check if alignment sleeves for centering engine/transmission are in cylinder block, and install if necessary.
- Before installing transmission, tie electrical wiring to one side so that it cannot be trapped between engine and transmission.
- Raise engine far enough until selector lever cable can be installed.

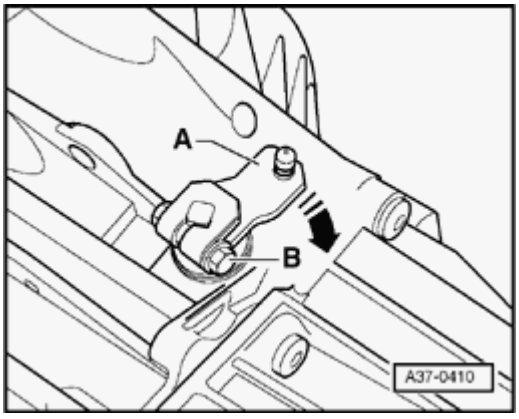


Fig. 307: Pressing Selector Shaft Lever On Transmission Completely Toward Rear
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press selector shaft lever - **A** - on transmission completely toward rear - **arrow** - until parking lock engages.

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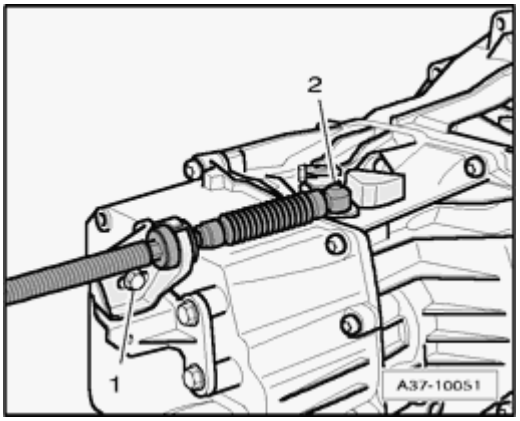


Fig. 308: Removing Support Bracket For Selector Lever Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully press ball socket of selector lever cable - **2** - onto lever for selector rod.

NOTE:

- **Take care not to bend selector shaft lever when pressing it on; support it if necessary, as otherwise selector mechanism can no longer be adjusted properly.**

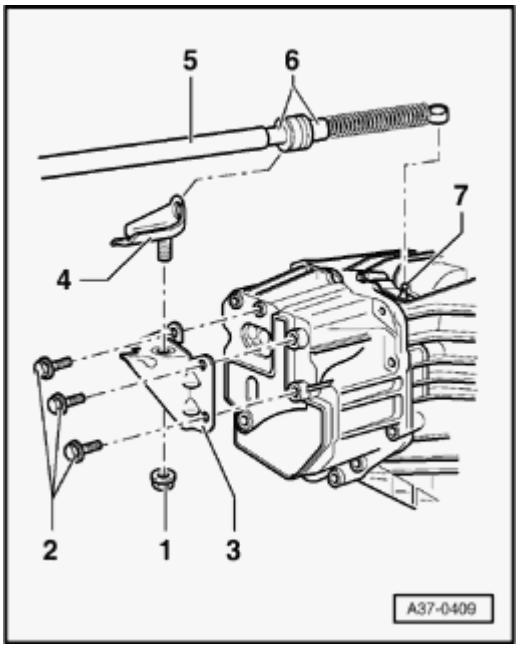


Fig. 309: Removing Bracket For Selector Lever Cable By First Removing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

If bracket for selector lever cable - **3** - was removed from transmission:

- Tighten bolts - **2** - on bracket - **3** - for selector lever cable to 23 Nm on transmission.

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NOTE:

- **Do not bend or kink the selector lever cable.**
- **Lightly grease ball socket of selector lever cable with *polycarbamide grease G 052 142 A2* before installing.**

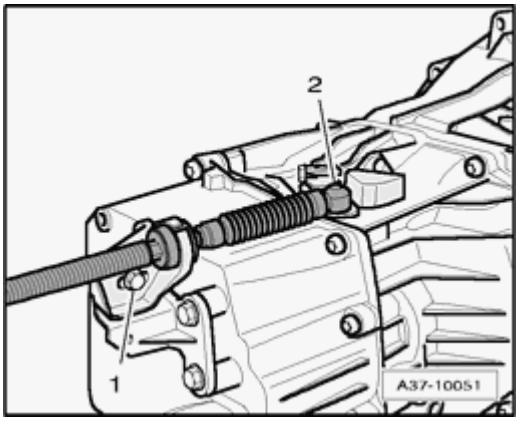


Fig. 310: Removing Support Bracket For Selector Lever Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install support bracket for selector lever cable - **1** - according to marking on bracket.
- Place intermediate panel or intermediate plate onto bushings.

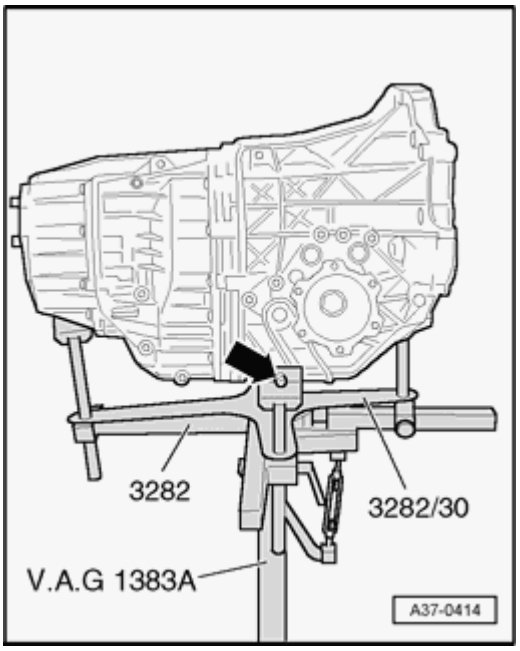


Fig. 311: Moving Engine/Transmission Jack V.A.G 1383 A With Transmission Mount 3282 Under Transmission And Support Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully raise transmission and bring into installation position using transmission support 3282.

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NOTE:

- **Tightening torques are valid only for nuts and bolts that are lightly greased, oiled, covered with a thin coat of phosphate or blackened, tightening torques Securing engine/transmission (transmission flange pattern).**
- **Additional lubricant such as engine or transmission oil may be used, but do not use graphite lubricant.**
- **Do not use degreased parts.**
- **Tolerance for torque specification ± 15%.**

- Tighten connecting bolts on engine/transmission flange to tightening torque (tables **Securing engine/transmission (transmission flange pattern)**).

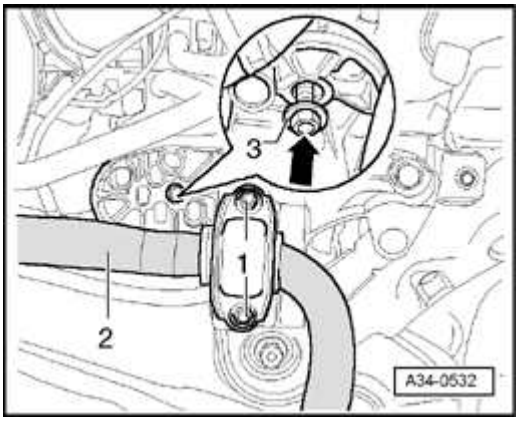


Fig. 312: Swivel Stabilizer Bar Nuts, Engine Mountings Nut And End Of Stud
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten nuts for left and right engine mounts - **3** - -->
  - **10 - ENGINE - ASSEMBLY** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **10 - ENGINE - ASSEMBLY** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **10 ENGINE - ASSEMBLY** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **10 - ENGINE - ASSEMBLY** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **10 - ENGINE - ASSEMBLY** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE (S): BNS
  - **10 - ENGINE - ASSEMBLY** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE (S): BHF

  .
- Tighten stabilizer bolts - **2** - --> **40 - FRONT SUSPENSION** .
- Tighten bolts of torque support or torque support stop to engine -->
  - **10 - ENGINE - ASSEMBLY** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL,

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ENGINE CODE(S): AMB

- **10 - ENGINE - ASSEMBLY** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
- **10 ENGINE - ASSEMBLY** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
- **10 - ENGINE - ASSEMBLY** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
- **10 - ENGINE - ASSEMBLY** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE (S): BNS
- **10 - ENGINE - ASSEMBLY** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE (S): BHF

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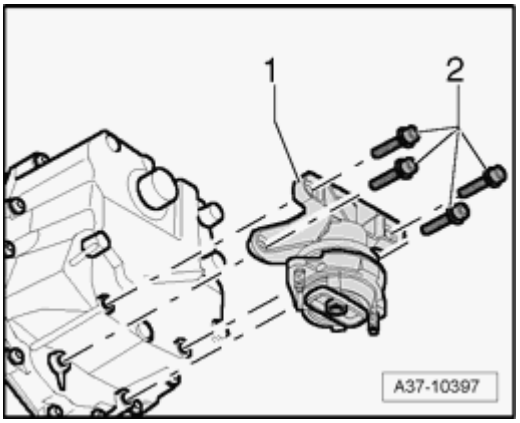


Fig. 313: Removing Bolts And Transmission Support From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Bolt transmission mount - **1** - onto transmission with bolts - **2** - --> **Transmission mount, transmission support and tunnel cross member, removing and installing**
- Install ATF lines with new sealing rings --> **ATF lines, ATF cooler and auxiliary ATF filter, servicing**.
- Install exhaust system -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

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- Install drive axles --> **40 - FRONT SUSPENSION** .

- Install heat shield for left and right drive axle.
- Install tunnel cross member --> **Transmission mount, transmission support and tunnel cross member, removing and installing**.
- Align exhaust system so it is free of tension -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

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- Electrical connections and routing --> Electrical Wiring Diagrams, Troubleshooting and Component Locations.

- Observe procedures for connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

.

- Check adjustment of selector lever cable --> **Selector lever cable (through VIN 8E_6A156499), adjusting**.
- Check oil level in front final drive --> **Gear oil level in front final drive, checking**.
- Check ATF level and top off --> **ATF level, checking and topping off**.

Securing engine/transmission (transmission flange pattern)

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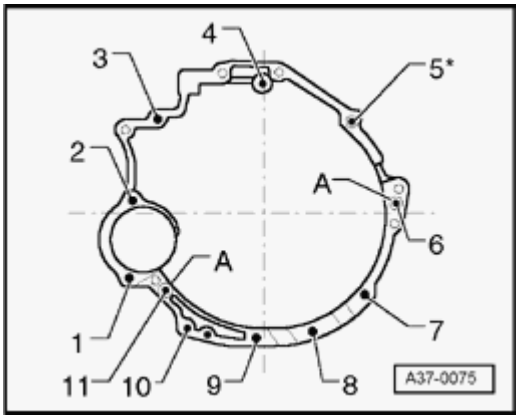


Fig. 314: Identifying Engine/Transmission Mountings (Automatic/Manual Transmission)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Vehicles with 1.8 L turbo engine:

Item	Bolt	Nm
1	M10x60	45 * See note
2, 3, 4, 6, 11	M12x67	65 * See note
5	M12x100	65 * See note
7	M10x50	45 * See note
8 10	M10x45	45 * See note
A	Alignment sleeves for centering	

*Replace bolts.

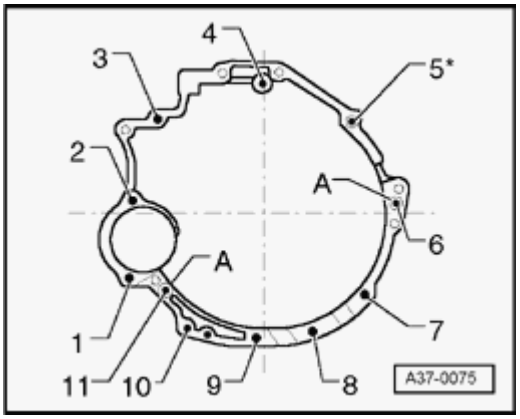


Fig. 315: Identifying Engine/Transmission Mountings (Automatic/Manual Transmission)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Vehicles with 2.0 L normally aspirated engine:

Item	Bolt	Nm
1	M10x60	45 * See note

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2	M12x67	65 * See note
3, 4	M12x75	65 * See note
5	M12x110	65 * See note
6	M12x80	65 * See note
7	M10x50	45 * See note
8 10	M10x45	45 * See note
11	M12x90	65 * See note
A	Alignment sleeves for centering	

*Replace bolts.

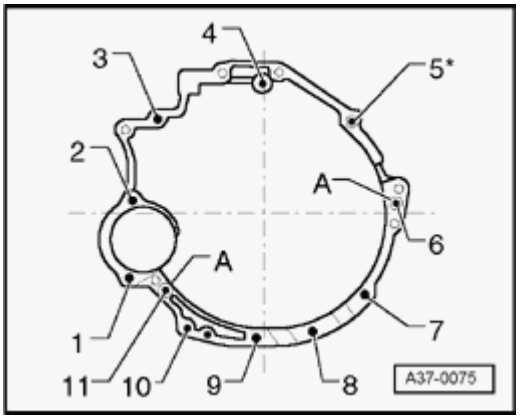


Fig. 316: Identifying Engine/Transmission Mountings (Automatic/Manual Transmission)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Vehicles with 2.0 L TFSI engine:

Item	Bolt	Nm
1	M10x60	45 * See note
2, 3, 4, 6	M12x75	65 * See note
5	M12x100	65 * See note
7	M10x50	45 * See note
8 10	M10x45	45 * See note
11	M12x67	65 * See note
A	Alignment sleeves for centering	

*Replace bolts.

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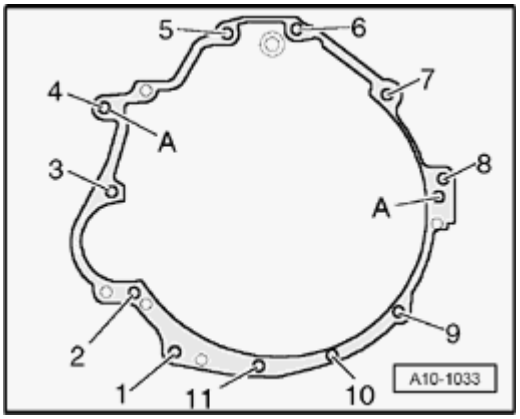


Fig. 317: Identifying Engine/Transmission Tightening/Loosening Sequence
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Vehicles with 3.0 L 6-cyl. gasoline engine:

Item	Bolt	Nm
1, 10, 11	M10x60	45 * See note
2	M10x90	65 * See notes
3	M12x110	65 * See note
4	M12x80	65 * See note
5, 6	M12x90	65 * See note
7	M10x100	45 * See note
8	M12x75	65 * See note
9	M10x70	45 * See note
A	Alignment sleeves for centering	

*Replace bolts.

*Bolt strength rating 10.9

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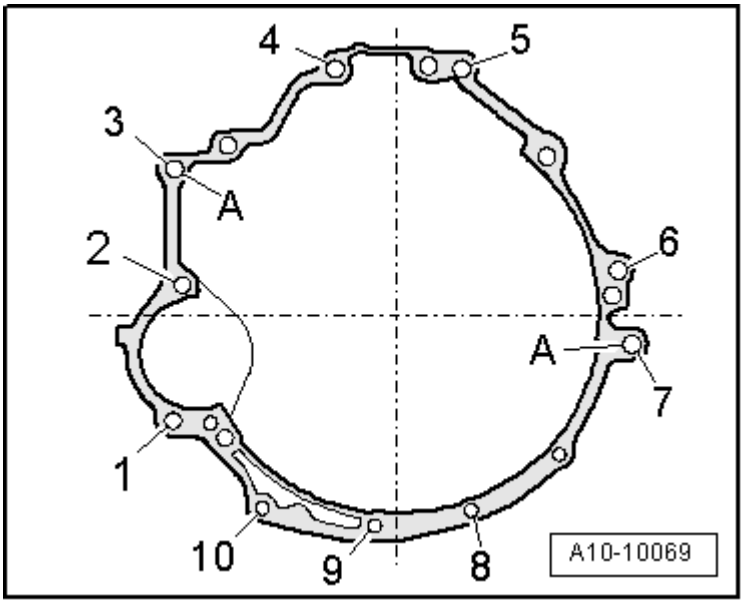


Fig. 318: Identifying Engine/Transmission Threaded Connections
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Vehicles with 3.2 L FSI 6-cyl. gasoline engine:

Item	Bolt	Nm
1, 7	M10x115	65 * See note
2	M12x130	65
3, 4, 5, 6	M12x110	65
8, 9, 10	M10x80	45
A	Alignment sleeves for centering	

*Bolt strength rating 10.9.

Torque specifications

Component		Nm
Bolts/nuts	M6	10
	M8	20
	M10	45
	M12	65
Except for the following:		
Mounting base for selector lever cable to gearbox		23
Heat shield for drive axle to transmission		23

Automatic transmission, transporting

Special tools, testers and auxiliary items required

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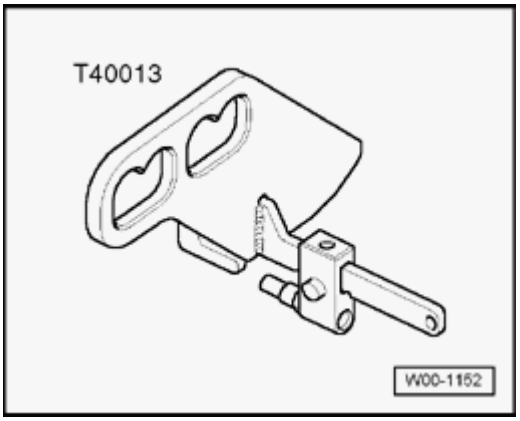


Fig. 319: Lifting Tackle T40013
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Lifting tackle T40013

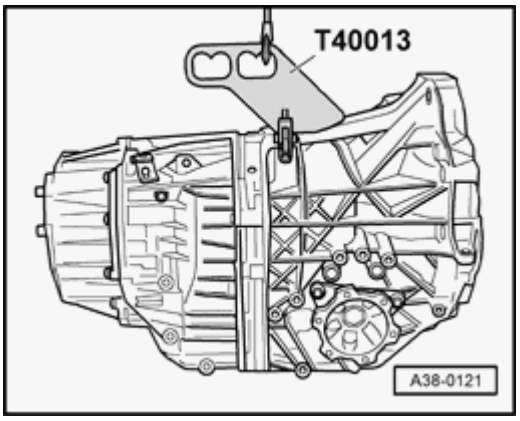


Fig. 320: Identifying Transmission Lift Hook T40013 Used To Transporting The Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Work procedure

The transmission lift hook T40013 can be used when transporting the transmission and for aligning transmission support 3282.

- Mount and secure transmission lift hook T40013 on upper rib of transmission housing as shown in the illustration.

Transmission, attaching to assembly stand

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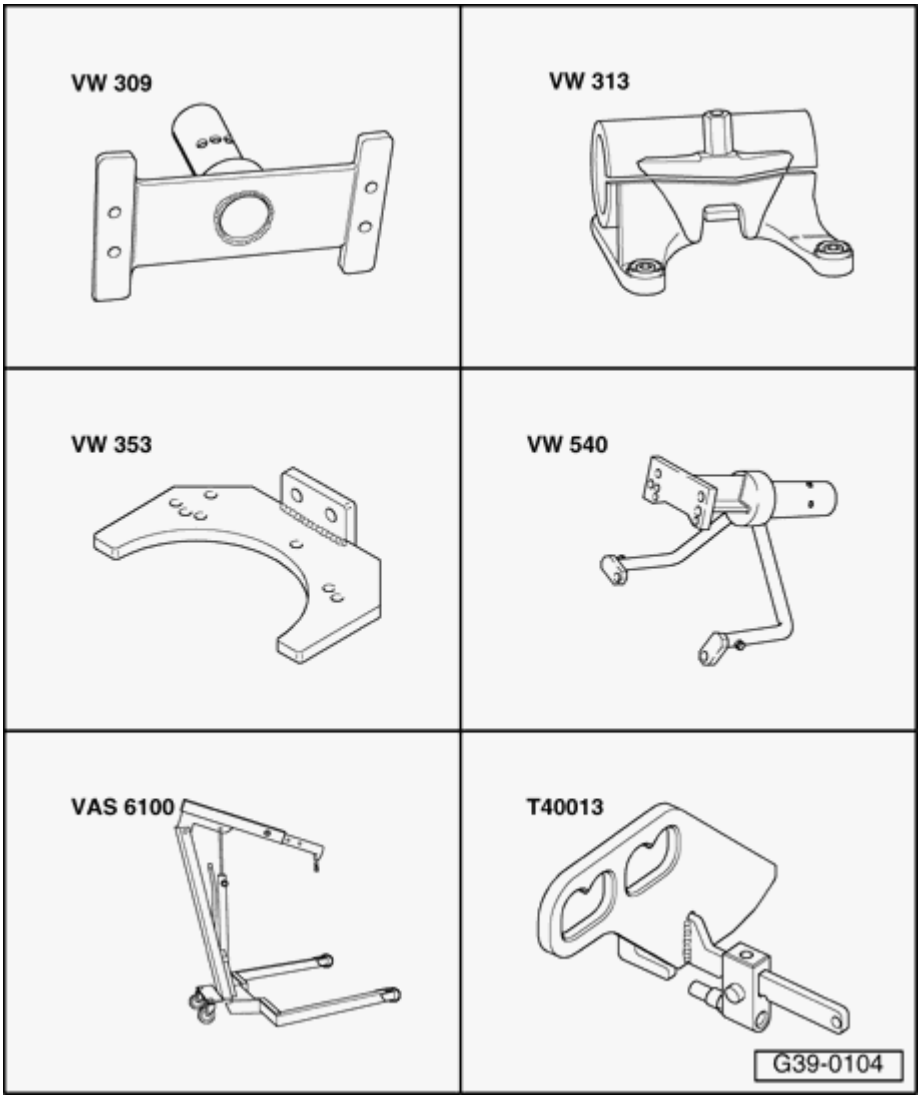


Fig. 321: Identifying Special Tools - Transmission, Attaching To Assembly Stand
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Holding plate VW 309
- Holding fixture VW 313
- Transmission support VW 353
- Engine and Transmission Holder VW 540

- Workshop crane VAS 6100
- Lifting tackle T40013

Suspending transmission vertically

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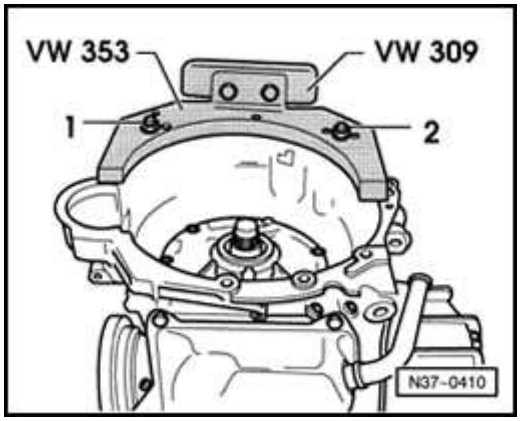


Fig. 322: Securing Transmission To Assembly Stand With Bolts & Installing Transmission Support VW 353 Onto Holding Plate VW 309
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Secure transmission to assembly stand with bolts - **1** - and - **2** -.
- Install transmission support VW 353 onto holding plate VW 309.

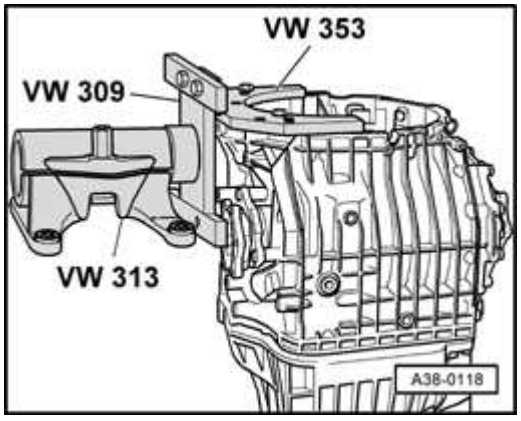


Fig. 323: Using Workshop Crane VAS 6100 To Insert Transmission Into Holding Fixture VW 313
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Using workshop crane VAS 6100 , insert transmission into holding fixture VW 313.

CAUTION: Center of gravity of transmission is outside center of rotation at holding fixture. To turn the transmission, a second technician must hold the transmission housing to prevent back-swing.

Securing transmission in horizontal position

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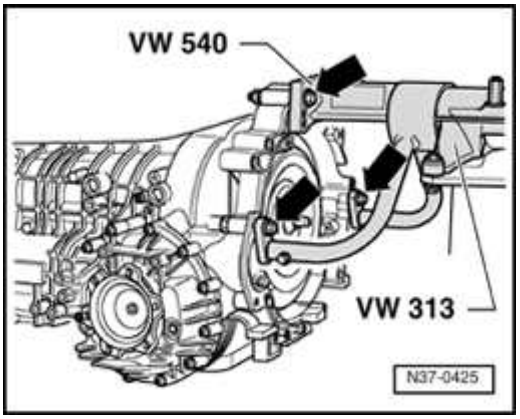


Fig. 324: Securing Transmission In Horizontal Position
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Bolt transmission onto engine/transmission holder VW 540 - **arrows** -.
- Using workshop crane VAS 6100 , insert transmission into holding fixture VW 313.

CAUTION: Center of gravity of transmission is outside center of rotation at holding fixture. To turn the transmission, a second technician must hold the transmission housing to prevent back-swing.

Transmission mount, transmission support and tunnel cross member, removing and installing

Special tools, testers and auxiliary items required

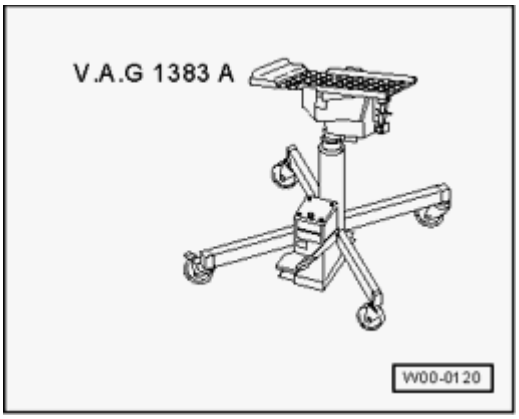


Fig. 325: Identifying Engine/Transmission Jack V.A.G. 1383 A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Engine/Transmission Jack V.A.G 1383 A
- Wooden block

Removing

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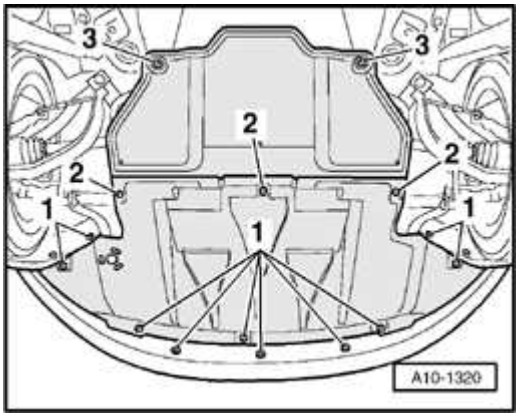


Fig. 326: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen quick-release screws - **2** - and - **3** - and remove rear noise insulation.

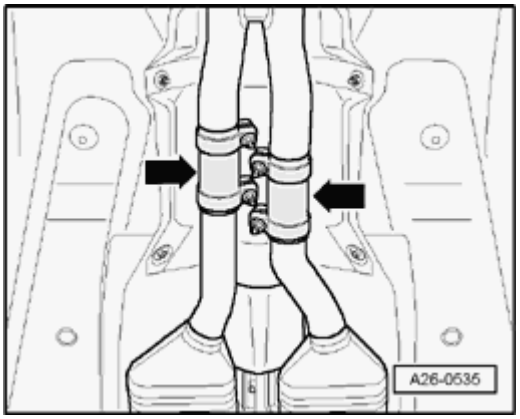


Fig. 327: Exhaust System And Clamps
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Flex joint in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.**

- Disconnect exhaust system at both double clamps - **arrows** -.

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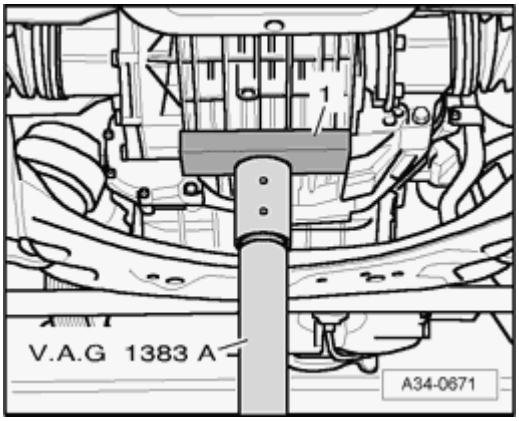


Fig. 328: Placing Plunger Of Engine/Transmission Jack V.A.G 1383 A With Block Of Wood Inserted In Between Transmission At Bottom
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place plunger of Engine/Transmission Jack V.A.G 1383 A with a block of wood inserted in between - **1** - on transmission at bottom.
- Raise transmission slightly using Engine/Transmission Jack V.A.G 1383 A.

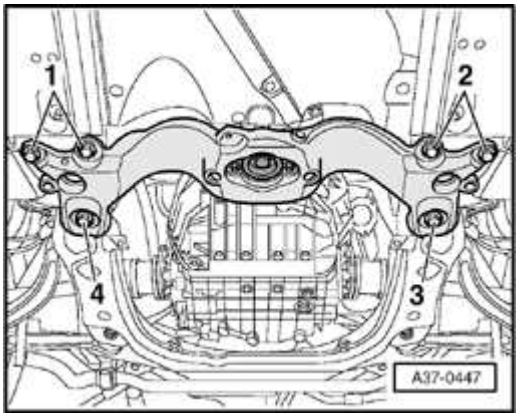


Fig. 329: Removing Bolts & Slowly Release Rear Crossmember Using VAG1383A Engine/Transmission Jack
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- First remove bolts - **1** - and - **2** - , then bolts - **3** - and - **4** -.

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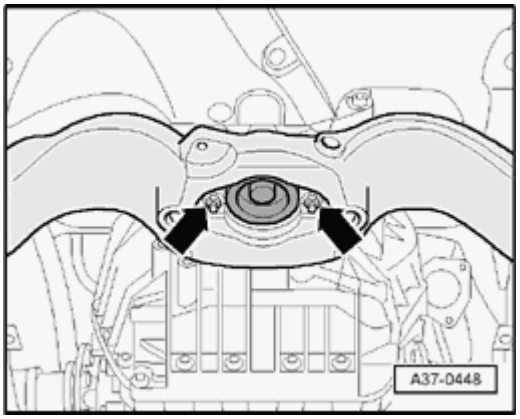


Fig. 330: Removing Nuts And Tunnel Cross Member
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **arrows** - and slide tunnel cross member slightly toward rear.

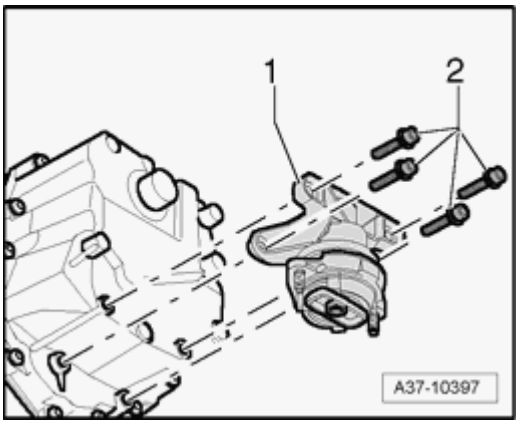


Fig. 331: Removing Bolts And Transmission Support From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **2** - and remove transmission mount - **1** - from transmission.

Installing

Installation is in reverse order of removal.

Torque specifications

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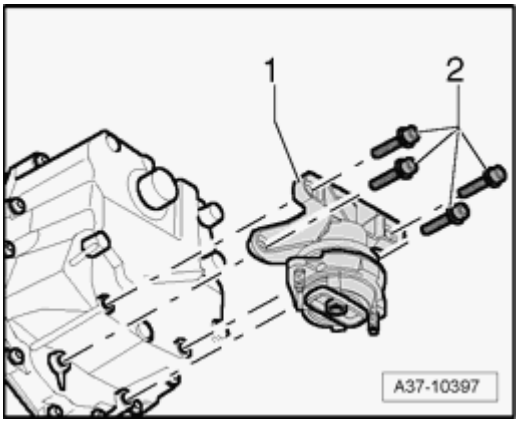


Fig. 332: Removing Bolts And Transmission Support From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Transmission mount - 1 - to transmission

- Bolts M8 - **2** - , tightening torque: 23 Nm

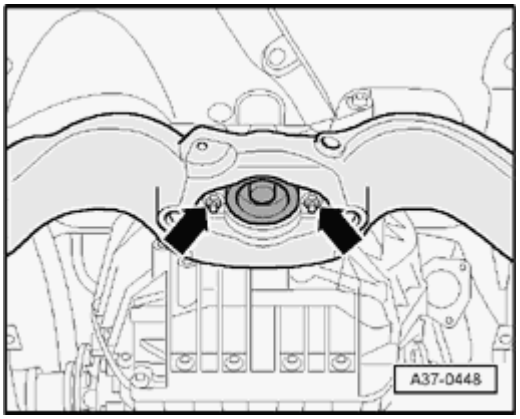


Fig. 333: Removing Nuts And Tunnel Cross Member
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Transmission mount to tunnel cross member

- Nuts M8 - **arrows** - , tightening torque: 23 Nm

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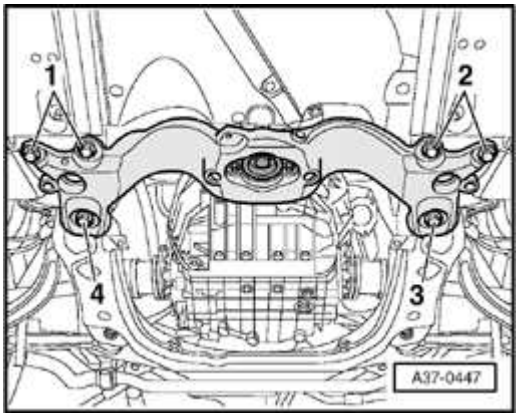


Fig. 334: Removing Bolts & Slowly Release Rear Crossmember Using VAG1383A Engine/Transmission Jack
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Tunnel cross member to chassis

- Always replace bolts M12 - **3** - and - **4** - , tightening torque: 110 Nm plus an additional 90° (corresponds to one-quarter turn)
- Bolts M10 - **1** - and - **2** - , tightening torque: 65 Nm

- Align exhaust system so it is free of tension -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

.

ATF IN PLANETARY GEARING

ATF in planetary gearing

NOTE:

- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **General repair notes --> Repair instructions.**

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ATF level, checking and topping off

Special tools, testers and auxiliary items required

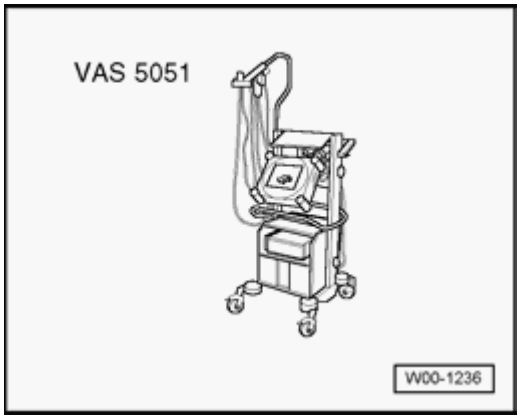


Fig. 335: Identifying Vehicle Diagnosis, Testing And Information System VAS 5051
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Vehicle Diagnosis, Testing and Information System VAS 5051 A with Diagnostic cable VAS 5051/5A

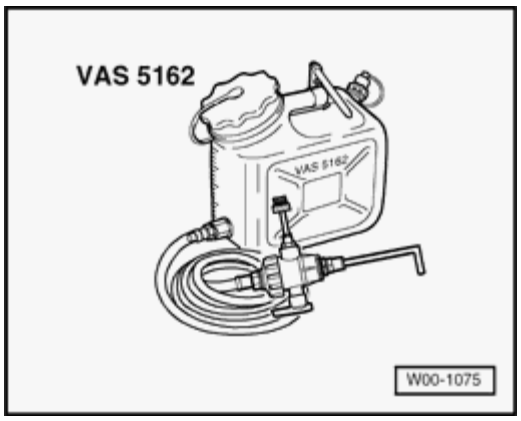


Fig. 336: ATF Filler System F/CVT Transmission VAS 5162
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- ATF filler system F/CVT transmission VAS 5162
- Safety glasses
- Oil receptacle

CAUTION: The Continuously Variable Automatic Transmission Multitronic 01J requires a different ATF than shift automatics. Only ATF for CVT transmission which can be obtained as replacement part must be used in the planetary gear. ATF specifications --> Capacities.

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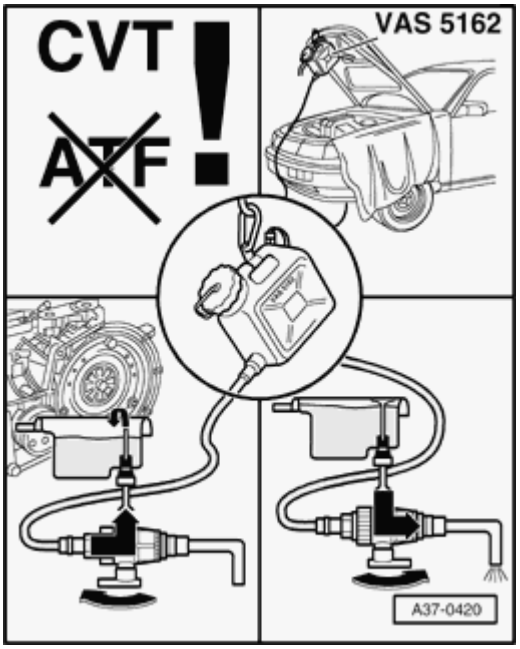


Fig. 337: Identifying Illustration On Reservoir For ATF Filler System F/CVT Transmission VAS5162
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **The illustration on the reservoir for Atf Filler System F/CVT Transmission VAS5162 in upper left graphic refers to the use of special ATF for CVT transmissions.**
- **The illustration also shows pictures of the steps required to fill the transmission. These steps will be explained in the following.**

CAUTION:

- **Engine must not be started if only a small amount or no ATF is in the transmission after repair work or after significant ATF loss.**
- **In this case, a preliminary filling with 4.5 to 5 liters ATF must be performed.**

NOTE:

- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **General repair notes --> Repair instructions.**

Test conditions

- Transmission not in emergency operating mode.
- Move vehicle onto a lifting platform or over a work pit so that it stands absolutely horizontal.
- Engine idling.
- Air conditioner and heating must be switched off.

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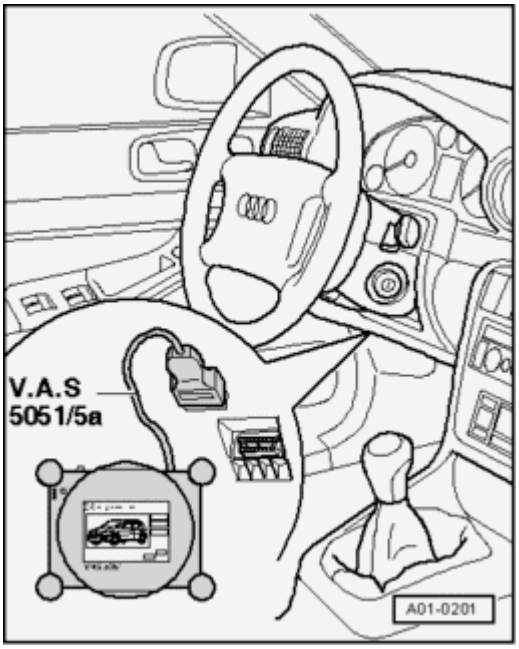


Fig. 338: Connecting Data Link Connector (DLC)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Vehicle Diagnostic, Testing and Information System VAS 5051 A connected, Vehicle Self-Diagnosis and vehicle system "02 - Transmission electronics" selected.
- ATF temperature must not be higher than 30°C at start of test, allow transmission to cool down if necessary.

NOTE:

- **The ATF level will vary according to the temperature of the ATF.**
- **Checking ATF level at too low ATF temperature leads to overfilling.**
- **If the ATF level is checked when the ATF temperature is too high, this will result in under filling.**
- **Over and under filling lead to impaired functioning of transmission.**
- **ATF temperature is read off on the Vehicle Diagnosis, Testing and Information System VAS 5051 A.**

Checking ATF temperature

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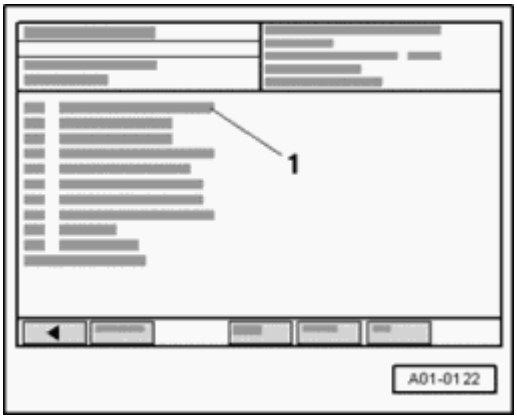


Fig. 339: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 A :

- In selection - **1** - , click on diagnostic function "08 - Read measuring value block".



Fig. 340: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 A :

1 - Enter display group, max. input value = 255

- In button field - **2** - , enter "10" for "Display group 10" and confirm input by pressing Q button.

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Fig. 341: Diagnostic System VAS 5051: Display - Display Fields
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 A :

- Read off ATF temperature indicated in display field - **3** -.

Checking ATF level and topping off

NOTE:

- **Engine keeps running at idle speed.**
- **The ATF level is checked at the ATF inspection plug.**
- **ATF level is correct if a little bit of fluid still escapes at the ATF check plug between 35°and 45°C (50°C for hot countries) ATF temperature (dependent on the fluid level when warming up).**

- Fill ATF filler system F/CVT transmission VAS 5162 with ATF for CVT transmissions.

- ATF specification --> **Capacities**.

CAUTION: The ATF filler tool must be clean and the ATF must not be mixed with any other ATF oils!

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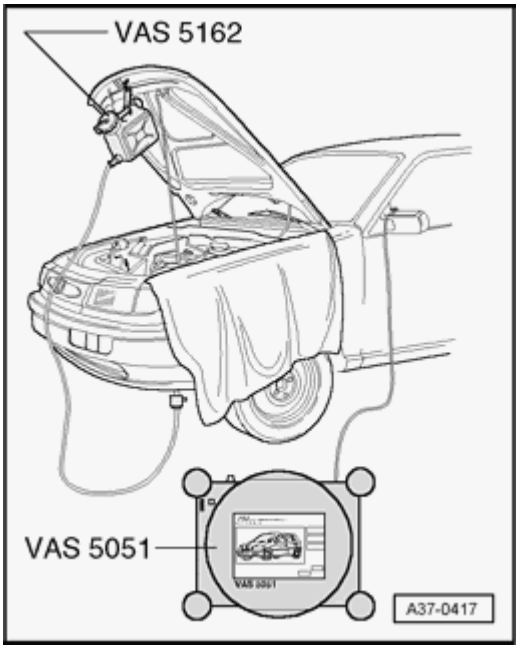


Fig. 342: Securing Filled Reservoir Of ATF Filler System F/CVT Transmission VAS 5162 As High As Possible On Vehicle
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Secure filled reservoir of ATF filler system F/CVT transmission VAS 5162 as high as possible on vehicle.

NOTE:

- **The shut-off valve on ATF filler system F/CVT transmission VAS 5162 must be closed.**

- While brake pedal is depressed, shift through all selector lever positions ("P" , "R" , "N" , "D" , "S") let each position remain shifted at idle for approx. 2 seconds.

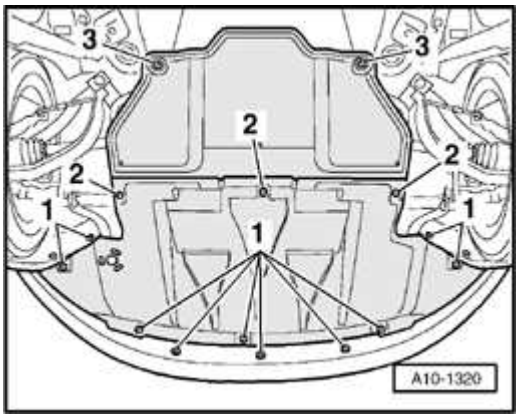


Fig. 343: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen quick-release screws - **2** - and - **3** - and remove rear noise insulation.

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- Place an oil receptacle underneath transmission.

CAUTION: Wear eye protection.

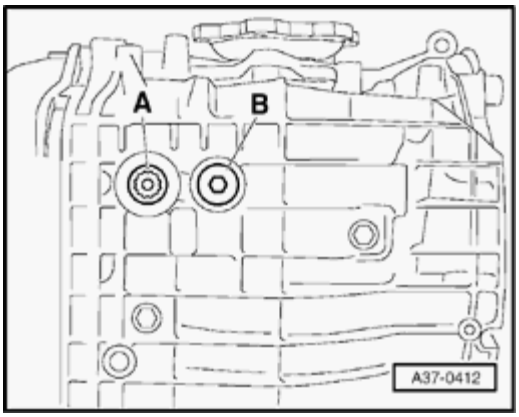


Fig. 344: Identifying ATF Check Plug
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If an ATF temperature of 35°C is reached, remove ATF check plug - **B** -.

NOTE:

- **Approx. 5 cl of ATF will always drain initially from the internal oil level pipe when the plug is removed.**

If ATF continues to flow out of the ATF filler plug hole over the overflow tube before the ATF reaches 40°C, the ATF level is OK.

- Replace and tighten ATF check plug.

- Tightening torque: 20 Nm.

NOTE:

- **At the latest at 45°C (50°C for hot countries) the ATF check plug must be installed again.**
- **At an ATF temperature above 45°C, too much ATF flows out due to heat up and the transmission is not filled sufficiently!**

The ATF check is now completed.

- Press <-- button to end function "08 - Read measured value block".
- Select "06 - End output".
- Switch off ignition and disconnect Data Link Connector (DLC).

Add ATF if no ATF has escaped from the ATF check plug hole by 40°C Filling ATF.

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Filling ATF

NOTE:

- **Engine keeps running at idle speed.**

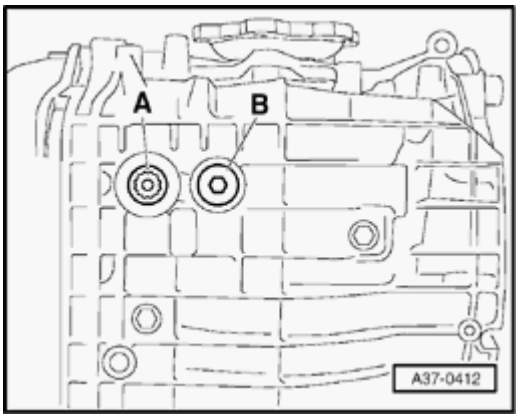


Fig. 345: Identifying ATF Check Plug
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Thread connection on shut-off valve of ATF filler system F/CVT transmission VAS 5162 into opening of ATF check plug - **B** -.

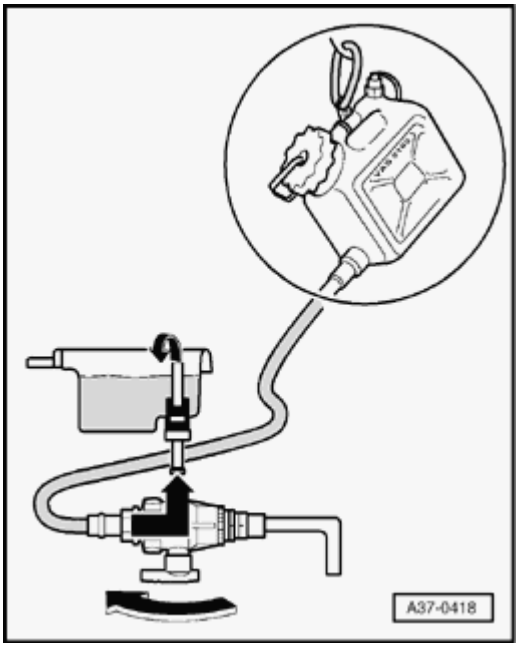


Fig. 346: Rotating Shut-Off Valve In Direction Of Filler Hose & Filling ATF Into Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Rotate shut-off valve in direction of filler hose - **lower arrow** -. ATF flows into transmission.
- Hold a suitable container beneath outlet of ATF filler system F/CVT transmission VAS 5162.

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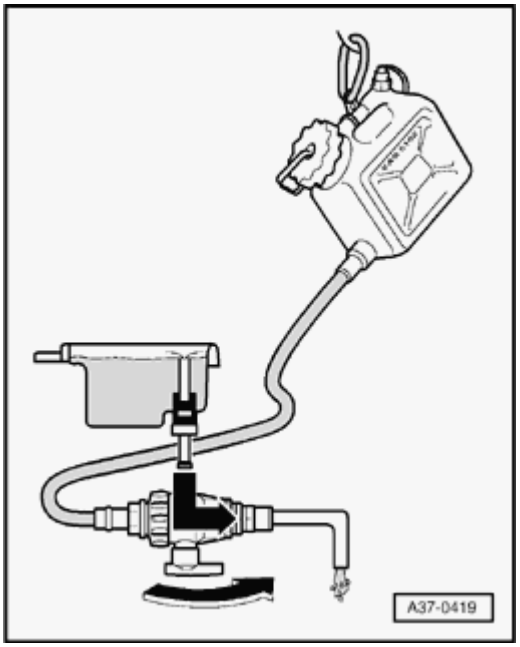


Fig. 347: Checking Atf Level By Rotating Shut-Off Valve In Direction Of Outlet
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check ATF level by rotating shut-off valve in direction of outlet - **lower arrow** -.

ATF level is correct when ATF drips out only lightly from outlet before 45°C is reached.

NOTE:

- **Approx. 5 cl of ATF will initially drain from the internal oil level pipe. This is normal.**

- If no additional ATF flows out, rotate shut-off valve back in direction of filler hose and fill with more ATF; repeat check of ATF level.
- After reaching correct ATF level, remove shut-off valve again.

NOTE:

- **After removing shut-off valve, ATF drips out lightly.**

- Replace and tighten ATF check plug.

- Tightening torque: 20 Nm.

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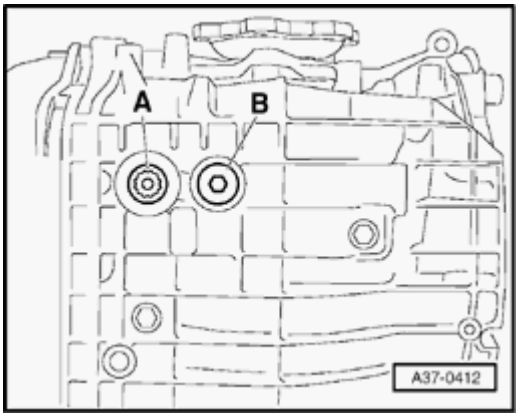


Fig. 348: Identifying ATF Check Plug
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **At the latest at 45°C (50°C for hot countries) the ATF check plug - B - must be installed again.**
- **At an ATF temperature above 45°C, too much ATF flows out due to heat up and the transmission is not filled sufficiently!**

- Press <-- button to end function "08 - Read measured value block".
- Select "06 - End output".
- Switch off ignition and disconnect Data Link Connector (DLC).

ATF, changing or filling after repairs

Special tools, testers and auxiliary items required

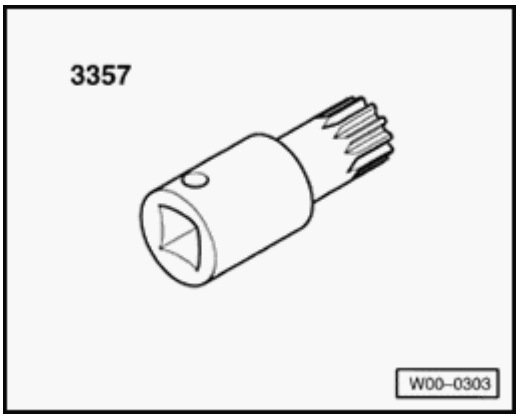


Fig. 349: Identifying Triple Square Socket Driver 3357
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Triple square socket driver 3357

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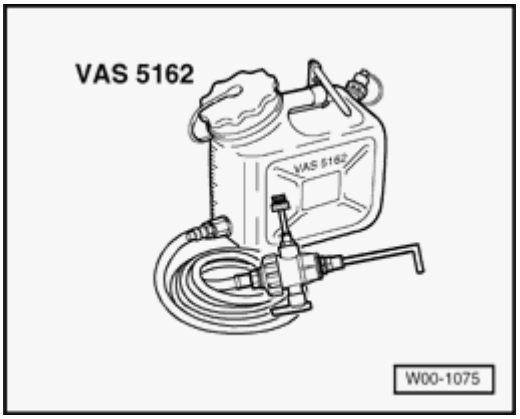


Fig. 350: ATF Filler System F/CVT Transmission VAS 5162
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- ATF filler system F/CVT transmission VAS 5162
- Old oil collecting and extracting device V.A.G 1782
- Safety glasses

Work procedure

- Move vehicle onto a lifting platform or over a work pit so that it stands absolutely horizontal.

CAUTION: Do not allow engine to run without filling ATF and do not tow the vehicle.

NOTE:

- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **General repair notes --> Repair instructions.**
- **Observe disposal regulations!**
- **Always blow compressed air through ATF cooler and ATF lines (max. 10 mbar) and replace auxiliary ATF filter before installing a replacement transmission --> Additional ATF filter.**

- Fill ATF filler system F/CVT transmission VAS 5162 with ATF for CVT transmissions.

- ATF specification --> **Capacities**.

CAUTION: The ATF filler tool must be clean and the ATF must not be mixed with any other ATF oils!

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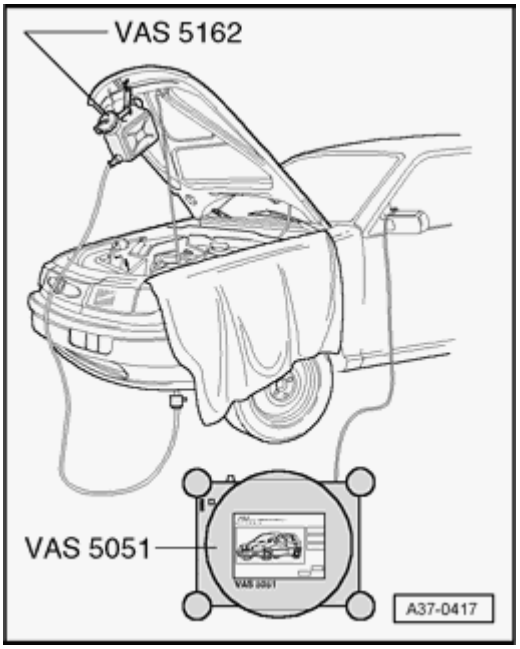


Fig. 351: Securing Filled Reservoir Of ATF Filler System F/CVT Transmission VAS 5162 As High As Possible On Vehicle
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Secure filled reservoir of ATF filler system F/CVT transmission VAS 5162 as high as possible on the vehicle.

NOTE:

- **The shut-off valve on the ATF filler system F/CVT transmission VAS 5162 must be closed.**

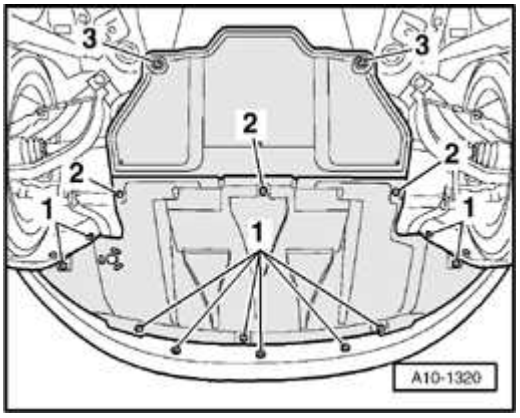


Fig. 352: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen quick-release screws - **2** - and - **3** - and remove rear noise insulation.
- Place old oil collecting and extracting device V.A.G 1782 beneath transmission.

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CAUTION: Wear eye protection.

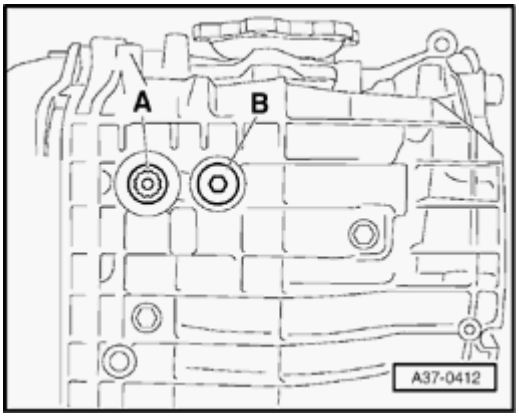


Fig. 353: Identifying ATF Check Plug
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove ATF drain plug - **A** - using triple square socket driver 3357 and drain ATF.
- Tighten ATF drain plug again.

- Tightening torque: 24 Nm.

- Remove ATF check plug - **B** -.
- Thread connection on shut-off valve of ATF filler system F/CVT transmission VAS 5162 into opening of ATF check plug - **B** -.

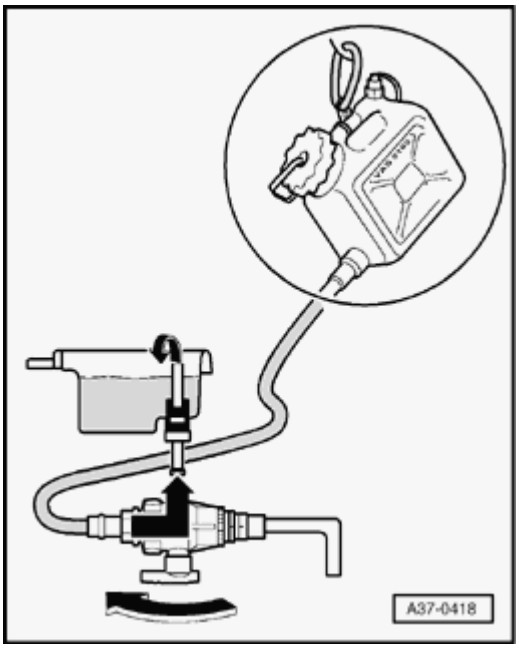


Fig. 354: Rotating Shut-Off Valve In Direction Of Filler Hose & Filling ATF Into Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Rotate shut-off valve in direction of filler hose - **lower arrow** -. ATF flows into transmission.
- Fill at least 4.5 to liters ATF into transmission.
- Selector lever in "P" , start engine and let it run at idle.

For vehicles as of model year 2005:

- Selector lever in position "P"
- Let engine run at high speed at a minimum of 2500 RPM by depressing accelerator pedal.

CAUTION: It is necessary to run engine at high speed so that ATF pump is ventilated after performing repairs on the transmission.

All model years:

- Check ATF level and top off --> **ATF level, checking and topping off**.

NOTE:

- **Observe all notes and test requirements for "Checking ATF level and topping off".**

ATF LINES, ATF COOLER AND AUXILIARY ATF FILTER, SERVICING

ATF lines, ATF cooler and auxiliary ATF filter, servicing

NOTE:

- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **General repair notes --> Repair instructions.**
- **Always blow compressed air through ATF cooler and ATF lines (max. 10 mbar) and replace auxiliary ATF filter before installing a replacement transmission --> ATF lines and ATF cooler, cleaning. If extremely dirty ATF flows out when blowing with compressed air, ATF cooler and ATF lines must also be flushed with clean ATF.**
- **To install, first insert ATF lines into transmission or cooler by hand as far as they will go, then bolt on.**
- **Check ATF level --> ATF level, checking and topping off after replacing ATF lines.**

ATF lines, ATF cooler and auxiliary ATF filter (vehicles with 1.8 L turbo engine)

Part 1

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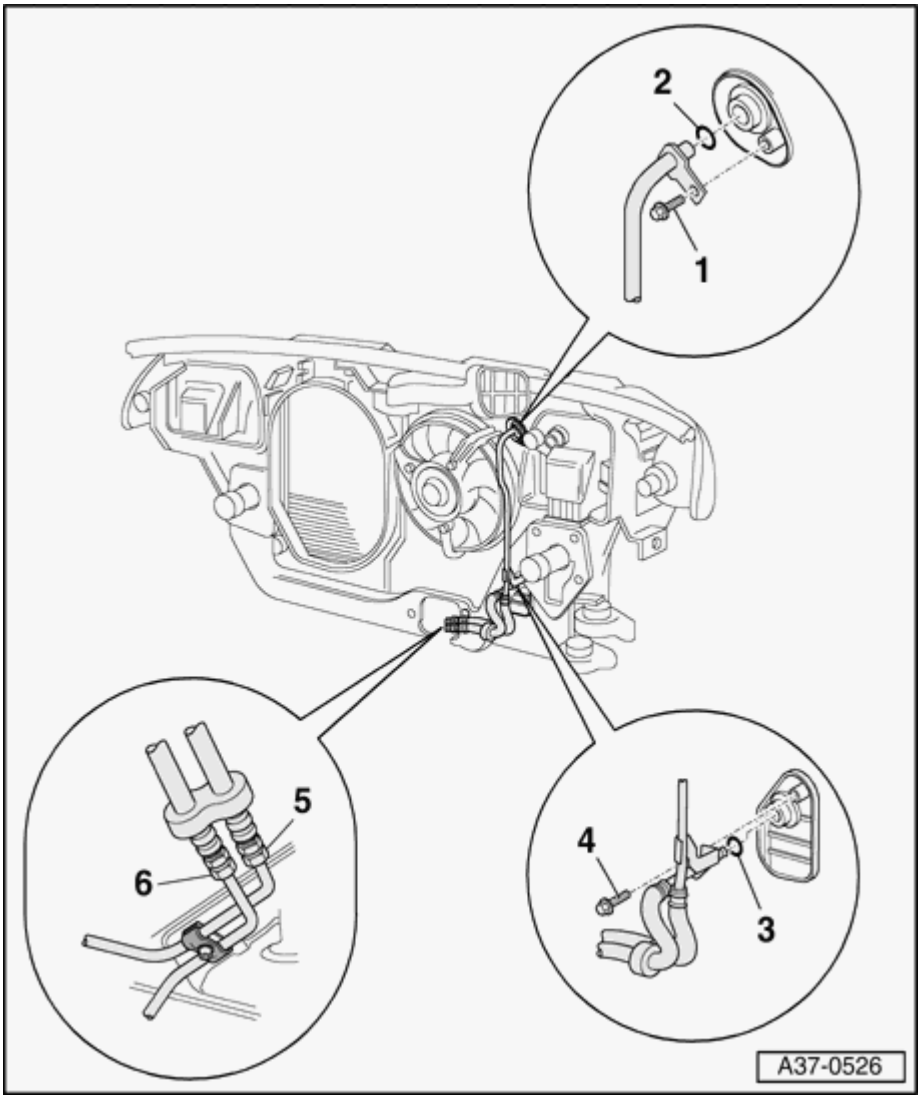


Fig. 355: ATF Lines, ATF Cooler And Auxiliary ATF Filter Overview (Vehicles With 1.8 L Turbo Engine) Part 1
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Combi bolt, 5 Nm

2 - O-Ring

- Replace
- Insert with ATF

3 - O-Ring

- Replace
- Insert with ATF

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4 - Combi bolt, 5 Nm

5 - Union nut, 29 Nm

6 - Union nut, 29 Nm

Part 2

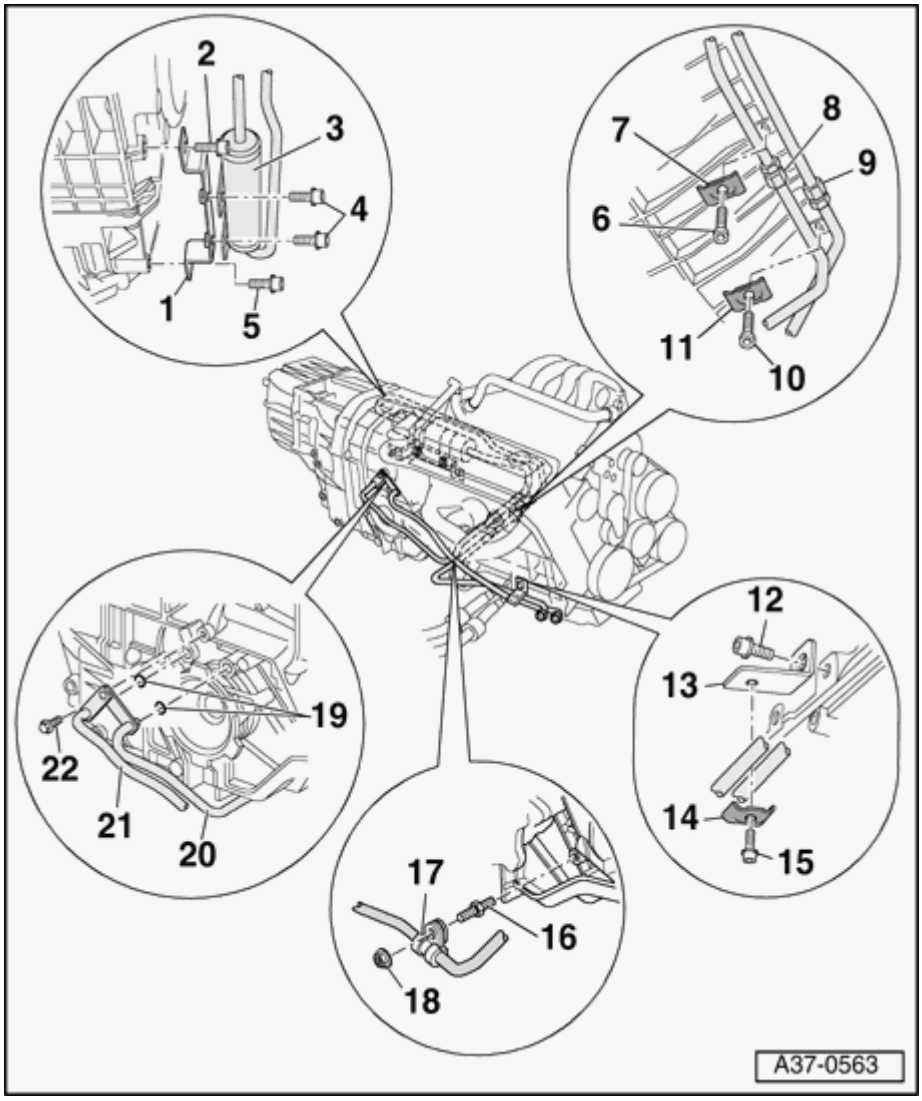


Fig. 356: ATF Lines, ATF Cooler And Auxiliary ATF Filter Overview (Vehicles With 1.8 L Turbo Engine) Part 2
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Bracket

2 - Combi bolt, 40 Nm

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3 - Additional ATF filter

- Must be replaced when transmission is malfunctioning
- Removing and installing --> **Additional ATF filter**

4 - Combi bolt, 20 Nm

5 - Combi bolt, 46 Nm

6 - Combi bolt, 5 Nm

7 - Clamp

8 - Union nut, 29 Nm

9 - Union nut, 29 Nm

10 - Combi bolt, 5 Nm

11 - Clamp

12 - Combi bolt, 46 Nm

13 - Bracket

14 - Clamp

15 - Combi bolt, 5 Nm

16 - Double bolt, 10 Nm

17 - Clamp

18 - Combi nut, 10 Nm

19 - O-Ring

- Replace
- Insert with ATF

20 - ATF line

21 - ATF line

22 - Combi bolt, 21 Nm

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ATF lines, ATF cooler and auxiliary ATF filter (vehicles with 2.0 L normally aspirated engine)

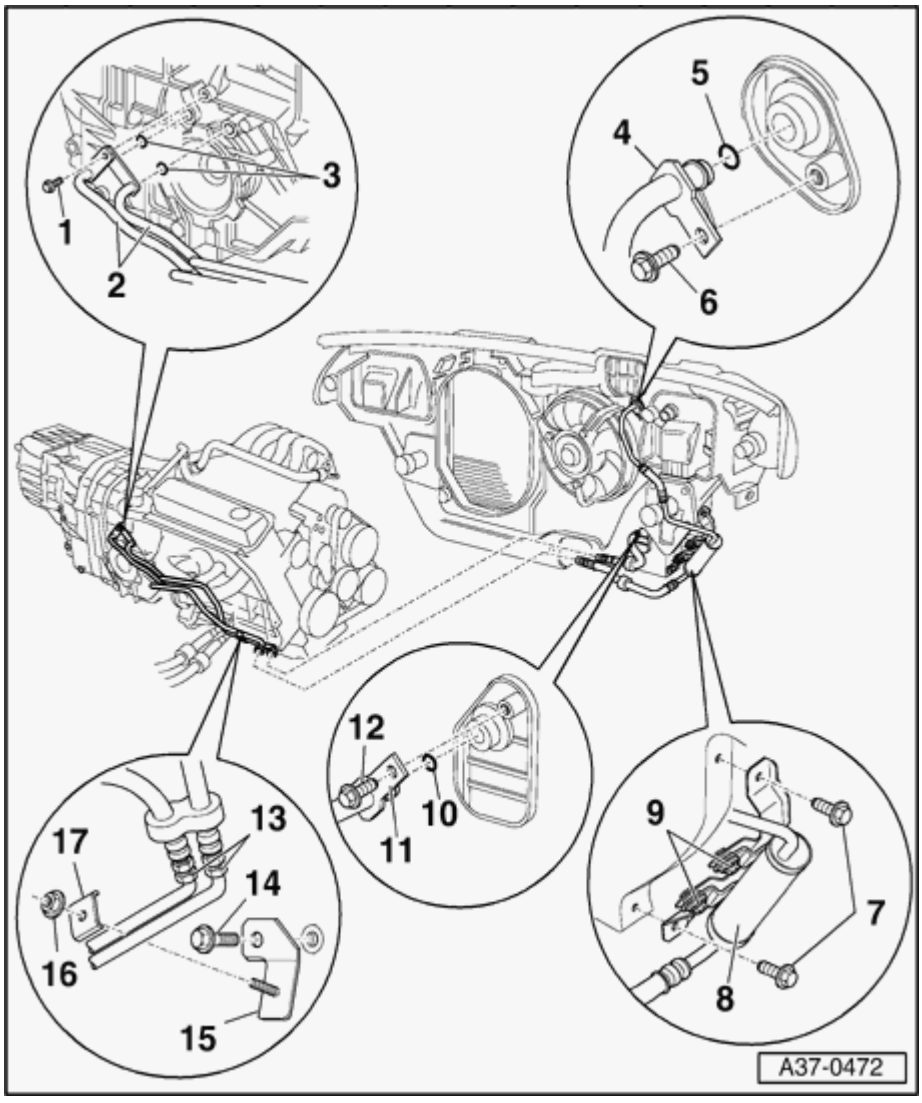


Fig. 357: ATF Lines, ATF Cooler And Auxiliary ATF Filter Overview (Vehicles With 2.0 L Normally Aspirated Engine)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Bolt, 20 Nm

2 - ATF lines

3 - O-Ring

- Replace
- Insert with ATF

4 - ATF line

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5 - O-Ring

- Replace
- Insert with ATF

6 - Combi bolt, 5 Nm

7 - Combi bolt, 10 Nm

8 - Additional ATF filter

- Must be replaced when transmission is malfunctioning
- Removing and installing --> **Additional ATF filter**

9 - Combi bolt, 10 Nm

10 - O-Ring

- Replace
- Insert with ATF

11 - ATF line

12 - Combi bolt, 5 Nm

13 - Union nut, 29 Nm

14 - Combi bolt, 46 Nm

15 - Bracket

16 - Combi nut, 5 Nm

17 - Clamp

ATF lines, ATF cooler and auxiliary ATF filter (vehicles with 2.0 L TFSI engine)

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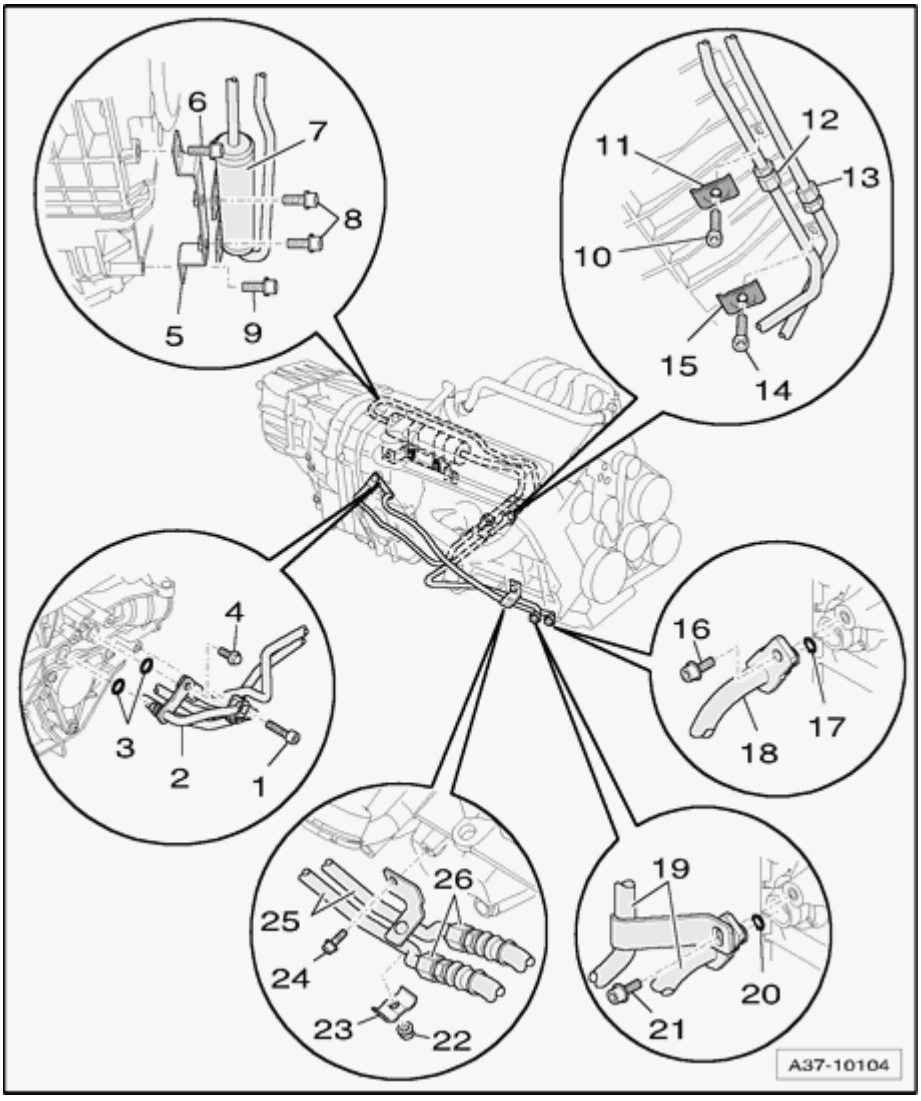


Fig. 358: ATF Lines, ATF Cooler And Auxiliary ATF Filter Overview (Vehicles With 2.0 L TFSI Engine)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Socket head cap screw, 21 Nm

2 - ATF lines

- To auxiliary ATF filter and to ATF cooler

3 - O-Ring

- Replace
- Insert with ATF

4 - Combi bolt, 21 Nm

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5 - Bracket

6 - Combi bolt, 40 Nm

7 - Additional ATF filter

- Must be replaced when transmission is malfunctioning
- Removing and installing --> **Additional ATF filter**

8 - Combi bolt, 20 Nm

9 - Combi bolt, 46 Nm

10 - Combi bolt, 5 Nm

11 - Clamp

12 - Union nut, 29 Nm

13 - Union nut, 29 Nm

14 - Combi bolt, 5 Nm

15 - Clamp

16 - Combi bolt, 5 Nm

17 - O-Ring

- Replace
- Insert with ATF

18 - ATF line

19 - ATF lines

20 - O-Ring

- Replace
- Insert with ATF

21 - Combi bolt, 5 Nm

22 - Combi nut, 10 Nm

23 - Clamp

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24 - Combi bolt, 10 Nm

25 - ATF lines

26 - Union nuts, 29 Nm

ATF lines, ATF cooler and auxiliary ATF filter (vehicles with 6-cyl. gasoline engine)

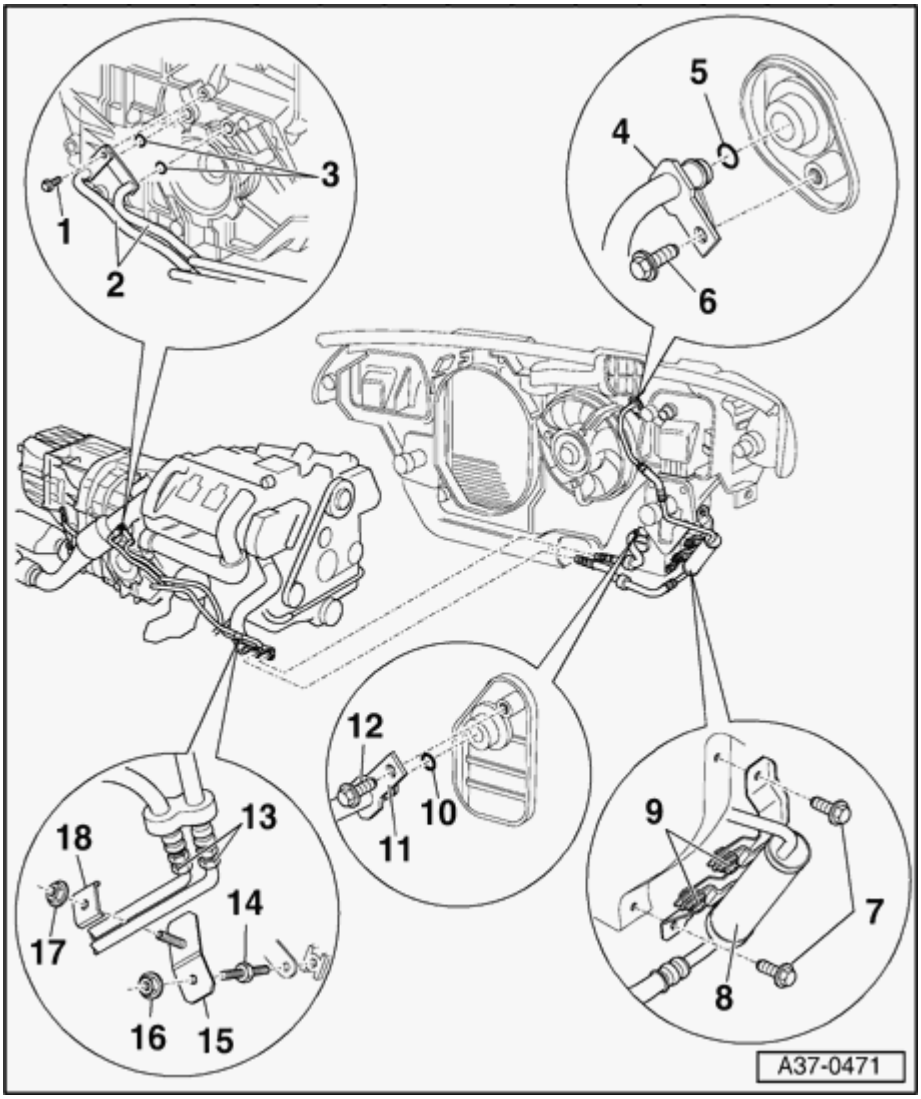


Fig. 359: ATF Lines, ATF Cooler And Auxiliary ATF Filter Overview (Vehicles With 6-Cyl. Gasoline Engine)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Combi bolt, 21 Nm

2 - ATF lines

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3 - O-Ring

- Replace
- Insert with ATF

4 - ATF line

5 - O-Ring

- Replace
- Insert with ATF

6 - Combi bolt, 5 Nm

7 - Combi bolt, 10 Nm

8 - Additional ATF filter

- Must be replaced when transmission is malfunctioning
- Removing and installing --> **Additional ATF filter**

9 - Combi bolt, 10 Nm

10 - O-Ring

- Replace
- Insert with ATF

11 - ATF line

12 - Combi bolt, 5 Nm

13 - Union nut, 29 Nm

14 - Double bolt, 10 Nm

- Not installed on 3.2 L FSI engine

15 - Bracket

16 - 10 Nm

- Combination nut for 3.0 L engines
- Bolt for 3.2 L FSI engines

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17 - Combi nut, 5 Nm

18 - Clamp

ATF lines and ATF cooler, cleaning

Special tools, testers and auxiliary items required

- Old oil collecting and extracting device V.A.G 1782
- Hose diameter approx. 18 mm
- Compressed air gun, commercially available
- Safety glasses

Work procedure

NOTE:

- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**

- Before installing a replacement transmission, always blow into ATF cooler and ATF lines with compressed air (max. 10 bar).
- Before installing a replacement transmission, always replace auxiliary ATF filter.

NOTE:

- **If extremely dirty ATF flows out when blowing with compressed air, ATF cooler and ATF lines must also be flushed with clean ATF.**
- **ATF lines, removing and installing --> ATF lines, ATF cooler and auxiliary ATF filter, servicing.**

Additional ATF filter

NOTE:

- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **General repair notes --> Repair instructions.**
- **Always blow compressed air through ATF cooler and ATF lines (max. 10 mbar) and replace auxiliary ATF filter before installing a replacement transmission. If extremely dirty ATF flows out when blowing with compressed air, ATF cooler and ATF lines must also be flushed with clean ATF.**
- **To install, first insert ATF lines into transmission or cooler by hand as far as they will go, then bolt on.**

Auxiliary ATF filter, removing and installing (vehicles with 1.8 turbo and 2.0 L TFSI)

Special tools, testers and auxiliary items required

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- Oil receptacle

Removing

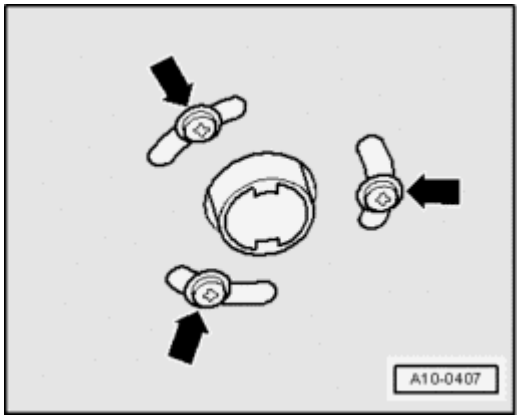


Fig. 360: Identifying Exhaust Pipe Fasteners
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On vehicles equipped with auxiliary heater, remove bolts **- arrows -** for exhaust pipe of auxiliary/additional heater to noise insulation.

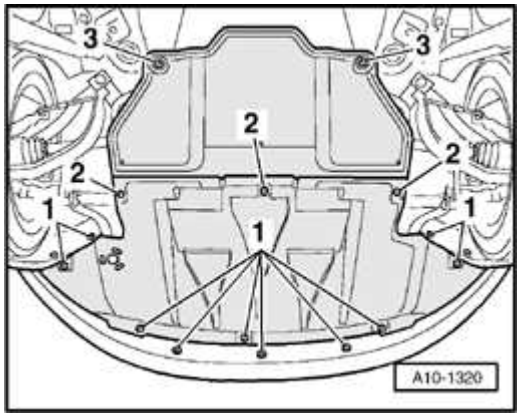


Fig. 361: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts or quick-release screws **- 1 to 3 -** and remove noise insulation at front and rear.

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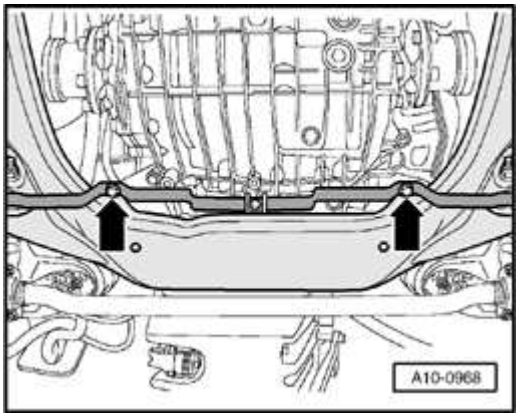


Fig. 362: Removing Bracket For Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove noise insulation bracket - **arrows** -.

NOTE:

- **Observe the rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**

- Place an oil receptacle underneath transmission.

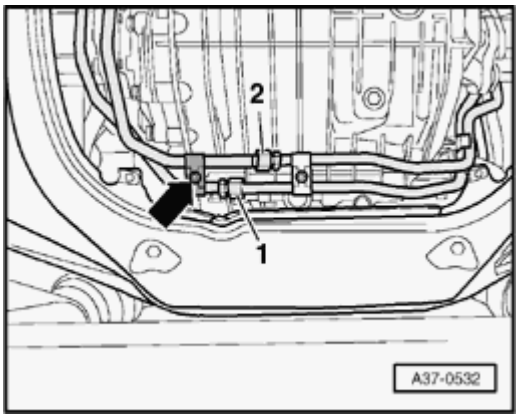


Fig. 363: Removing Union Nuts And Disconnecting ATF Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove union nuts - **1** - and - **2** - and disconnect ATF lines.
- Remove clamp for ATF-lines - **arrow** -.

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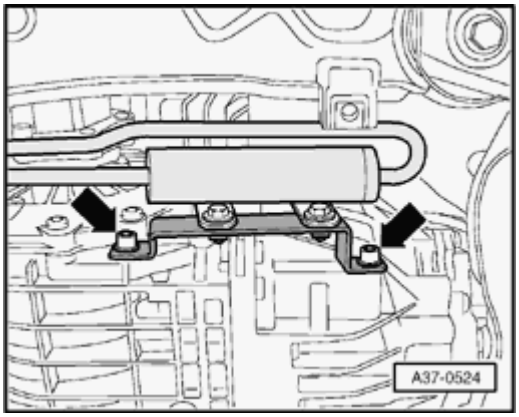


Fig. 364: Removing ATF Filter On Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove auxiliary ATF filter on transmission - **arrows** -.

Installing

Installation is in reverse order of removal, note the following:

- Check ATF level and top off --> **ATF level, checking and topping off**.

Torque specifications

Component	Nm
ATF auxiliary filter to bracket	20
ATF auxiliary filter bracket to transmission	40
ATF lines to transmission	21
Line clamp to engine	5
ATF line union nut	29

Auxiliary ATF filter, removing and installing (vehicles with 2.0 L normally aspirated- and 6-cyl. gasoline engine)

Special tools, testers and auxiliary items required

- Oil receptacle

Removing

NOTE:

- **Removal and installation is here described for vehicles with 6-cyl. gasoline engine in the following. On vehicles installed with 2.0l engines components inside the vehicle possibly look different from the ones shown in the illustrations.**

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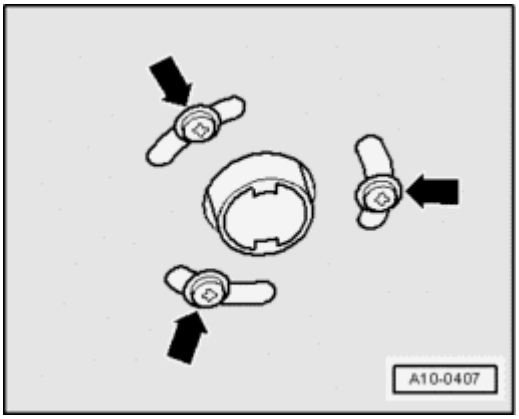


Fig. 365: Identifying Exhaust Pipe Fasteners
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On vehicles equipped with auxiliary heater, remove bolts - **arrows** - for exhaust pipe of auxiliary/additional heater to noise insulation.

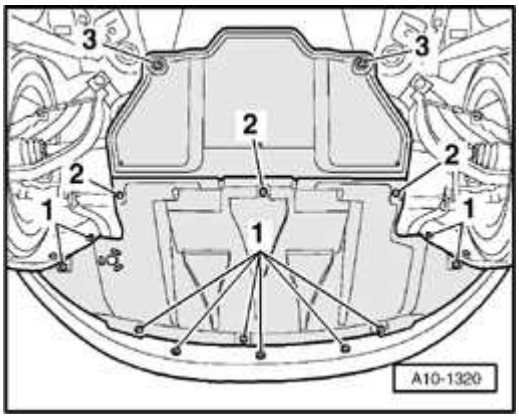


Fig. 366: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen bolts or quick-release screws - **1** - and - **2** - and remove front noise insulation.

NOTE:

- **Observe the rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**

- Place an oil receptacle underneath transmission.

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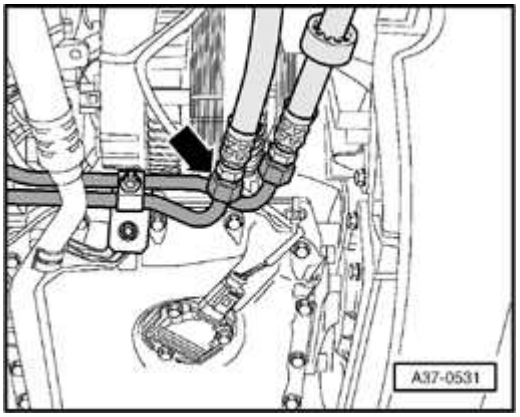


Fig. 367: Removing Union Nut And Disconnecting Atf-Line To Auxiliary Atf Filter
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove union nut - **arrow** - and disconnect ATF-line to auxiliary ATF filter.

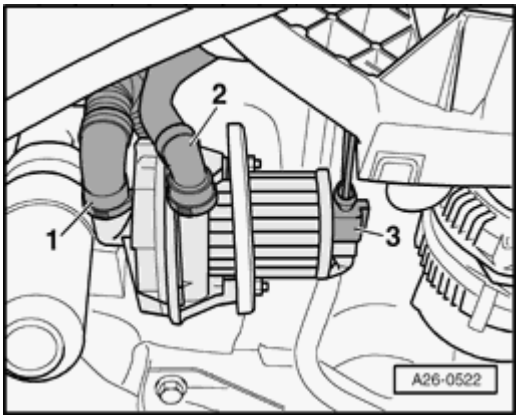
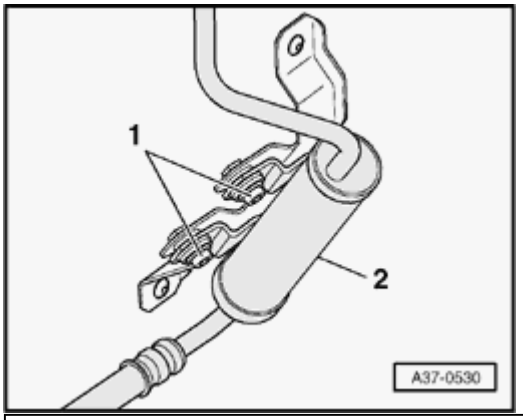


Fig. 368: Disconnecting Air Hoses At Secondary Air Injection (AIR) Pump
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect air hoses - **1** - and - **2** - at Secondary Air Injection (AIR) pump.

NOTE:

- **Electrical harness connector - 3 - remains connected.**



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Fig. 369: Removing Bolts At Auxiliary Atf Filter Bracket
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1** - at auxiliary ATF filter bracket - **2** -.

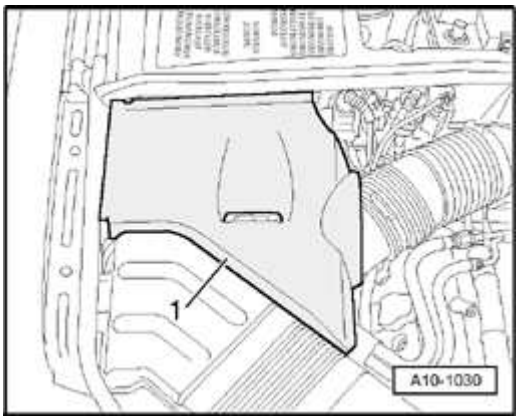


Fig. 370: Removing Cover In Engine Compartment (Right Side)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove right cover - **1** - in engine compartment.

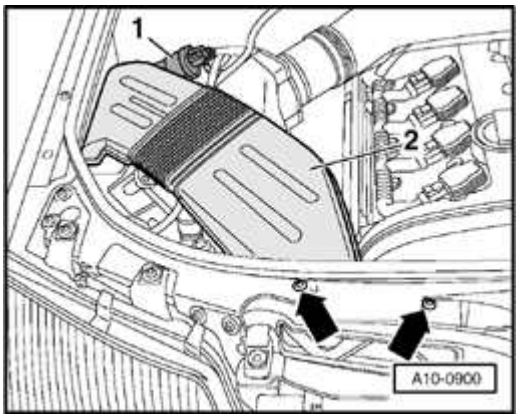


Fig. 371: Evaporative Emission Canister Purge Regulator Valve N80 And Air Duct
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** -.
- Disengage Evaporative Emission (EVAP) Canister Purge Regulator Valve N80 - **1** - at air duct.
- Remove air duct - **2** -.

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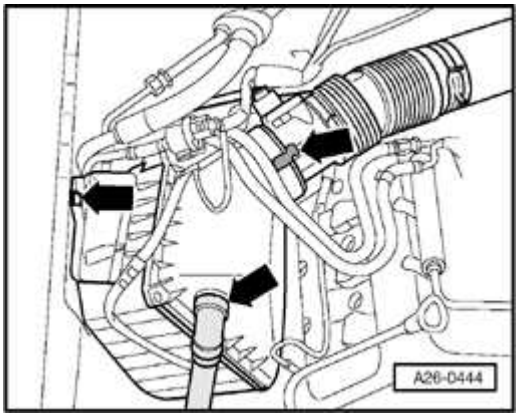


Fig. 372: Removing Air Filter Housing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove air filter housing - **arrows** -.

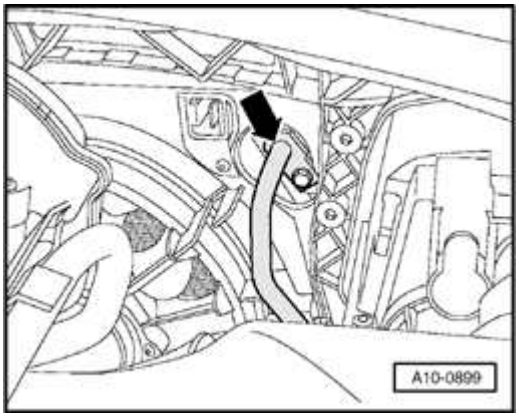


Fig. 373: Disconnecting ATF-Lines At Top And Bottom Of Radiator
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect upper ATF line - **arrow** - from cooler.
- Remove auxiliary ATF filter.

Installing

Installation is in reverse order of removal, note the following:

NOTE:

- **Replace O-rings.**

- Check ATF level and top off --> **ATF level, checking and topping off**.

Torque specifications

Component	Nm

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ATF line to cooler	5
ATF auxiliary filter to bracket	10
ATF line union nut	29

ATF BREATHER PIPE

ATF breather pipe

- If ATF flows out at underside of transmission bell housing, input shaft seal and/or ATF breather pipe may be leaking. Before replacing any parts, be sure to find actual cause of malfunction.
- Input shaft seal must be replaced if leaking --> **Input shaft seal, replacing**.
- ATF breather pipe must be replaced if leaking.

NOTE:

- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **General repair notes --> Repair instructions.**

ATF breather pipe, removing and installing

Removing

- Transmission removed.

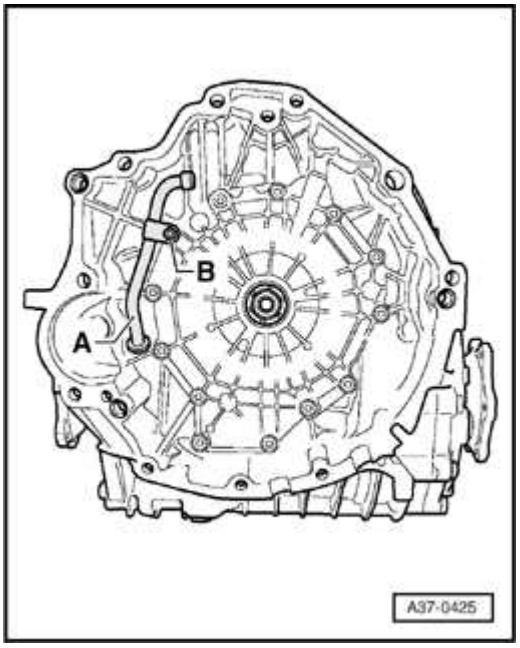


Fig. 374: Identifying ATF Breather Pipe & Level Of Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **B** -.

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- Pull ATF breather pipe - **A** - out of mount.

NOTE:

- **If ATF leak is determined from check hole behind ATF breather pipe - A - , slightly below bolt - B - , transmission is malfunctioning and must be replaced.**

Installing

Installation is in reverse order of removal, note the following:

- Insert new ATF breather pipe - **A** - until it reaches stop.
- Tighten ATF breather pipe with strap and bolt - **B** - on transmission housing.

Torque specification

Component	Nm
ATF breather pipe to transmission housing	25

38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS

TRANSMISSION, DISASSEMBLING AND ASSEMBLING

End cover, removing and installing

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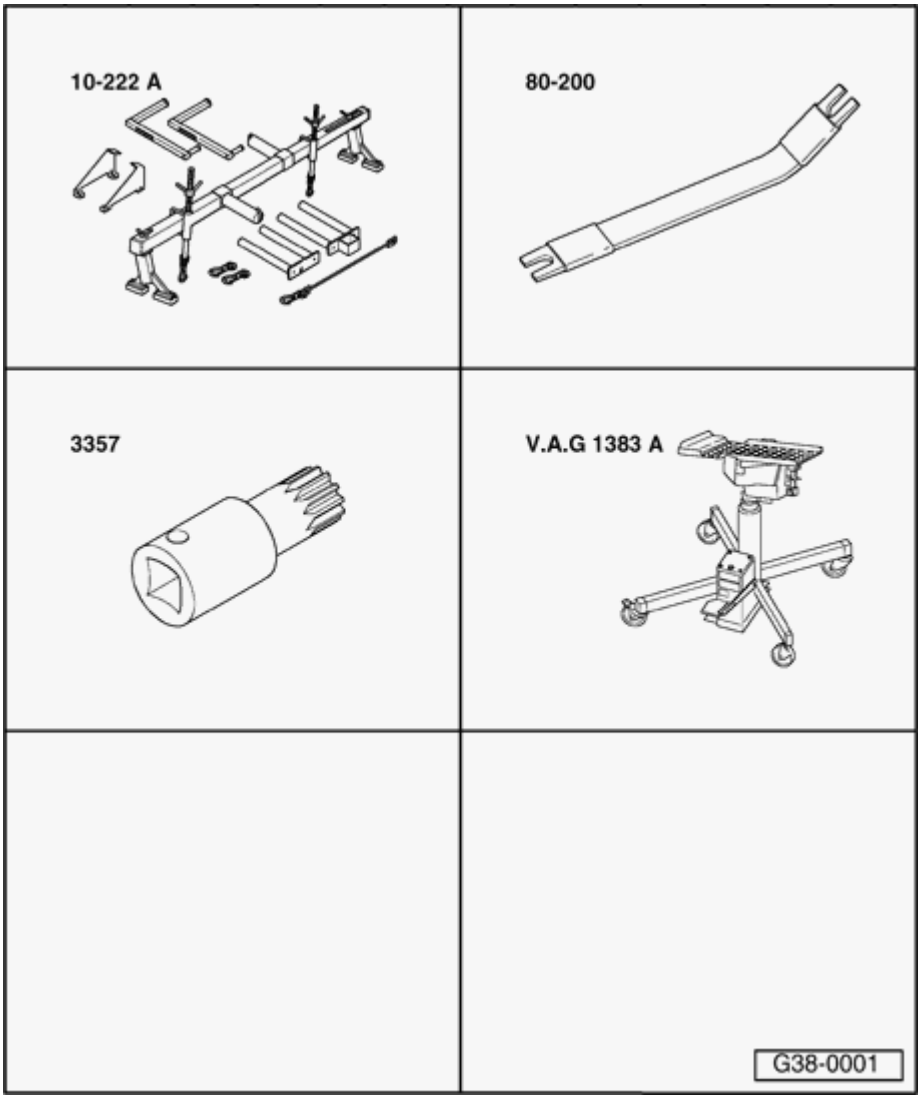


Fig. 375: Identifying Special Tools - End Cover, Removing And Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Engine support bridge 10-222 A
- Pry lever 80-200
- Triple square socket driver 3357
- Engine/Transmission Jack V.A.G 1383 A
- Oil receptacle

Removing

NOTE:

- **Rules of cleanliness for working on automatic transmissions --> Rules for**

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cleanliness when working on transmission.

- **General repair notes --> Repair instructions.**

CAUTION: Do not run engine with the end cover removed or without ATF filling and do not tow vehicle.

- Place selector lever in position "P".

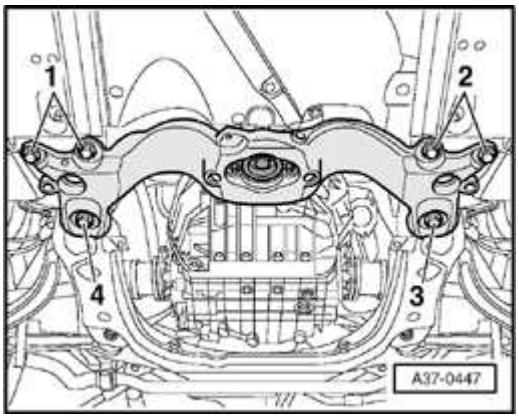


Fig. 376: Removing Bolts & Slowly Release Rear Crossmember Using VAG1383A Engine/Transmission Jack
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove tunnel cross member --> **Transmission mount, transmission support and tunnel cross member, removing and installing**.

Vehicles with oval connector:

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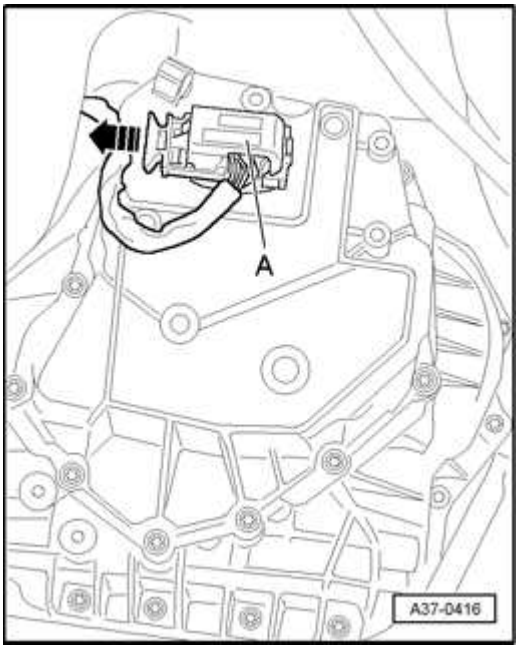


Fig. 377: Disengaging Harness Connector From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disengage harness connector - **A** - in direction of - **arrow** - and disconnect it from transmission.

Vehicles with round connector:

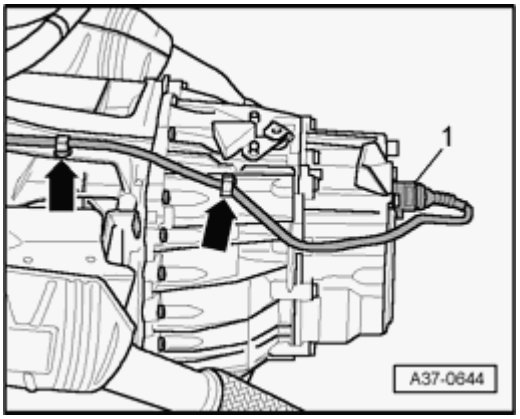


Fig. 378: Disengaging Electrical Harness Connector And Disconnecting From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disengage electrical harness connector - **1** - and disconnect it from transmission.

All:

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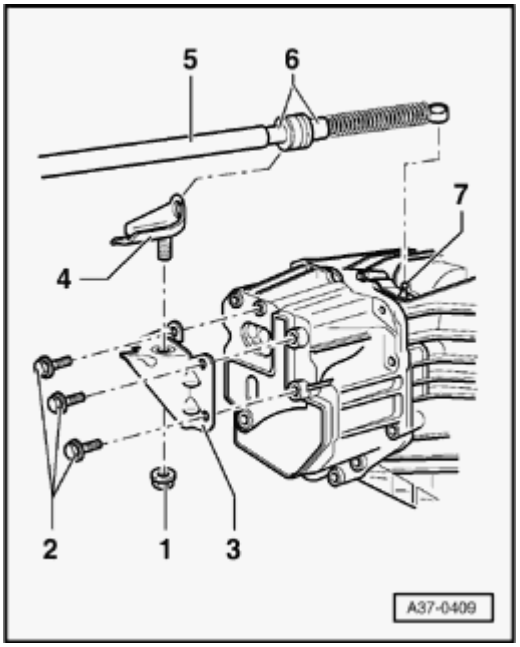


Fig. 379: Removing Bracket For Selector Lever Cable By First Removing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bracket - **3** - for selector lever cable by first removing bolts - **2** -.

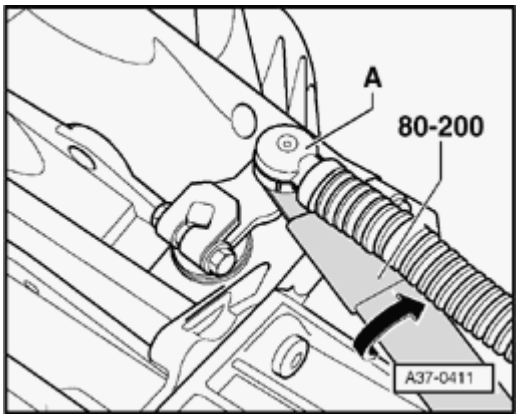


Fig. 380: Using Pry Lever 80-200 To Press Selector Lever Cable From Lever For Selector Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Using pry lever 80-200 , press selector lever cable - **A** - from lever for selector shaft - **arrow** -.

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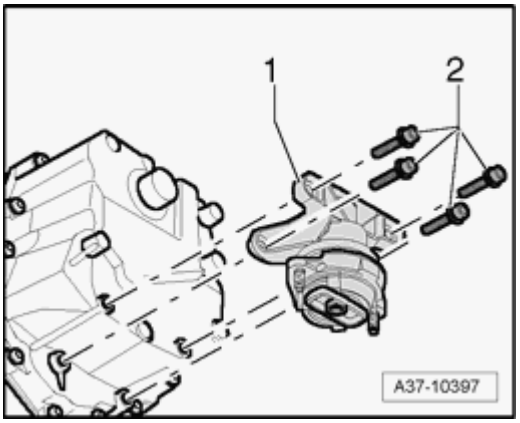


Fig. 381: Removing Bolts And Transmission Support From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **2** - and remove transmission mount - **1** - from transmission.

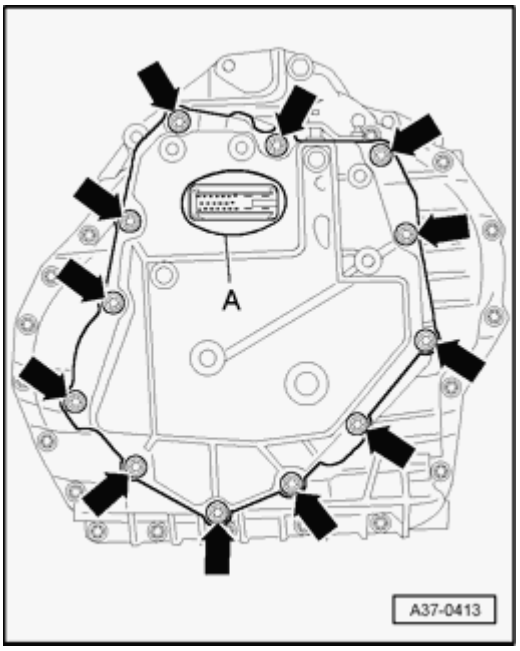


Fig. 382: Removing Bolts And End Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - and remove end cover.

Installing

Installation is in reverse order of removal, note the following:

NOTE:

- **Replace sealing rings, seals and bolts for end cover.**

Vehicles with round connector:

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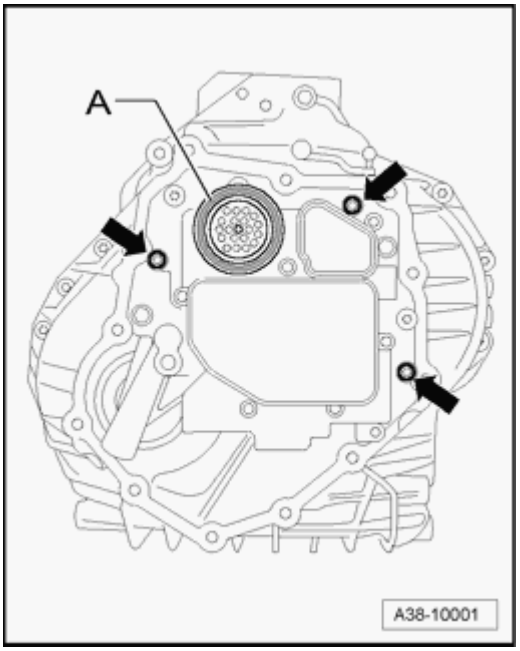


Fig. 383: Sliding New Twin Lip Oil Seal With Twin Lips Facing Outward Onto Connector At Transmission Control Module (TCM) J217
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Slide new twin lip oil seal - **A** - with twin lips facing outward onto connector at Transmission Control Module (TCM) J217.

Vehicles with oval connector:

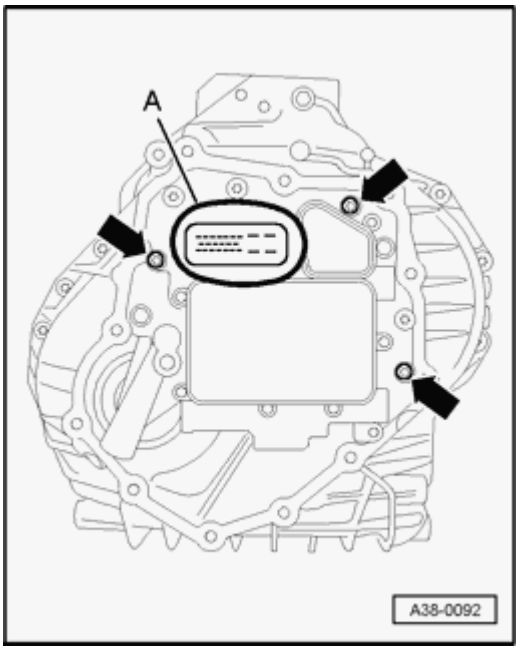


Fig. 384: Sliding New Twin Lip Oil Seal With Twin Lips Facing Outward Onto Connector At Transmission Control Module (TCM) J217

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Slide new twin lip oil seal - **A** - with twin lips facing outward onto connector at Transmission Control Module (TCM) J217.

All:

- Clean sealing surfaces on transmission housing and on end cover.
- If bushings were installed in transmission housing or in cover, they must be remounted in same location.

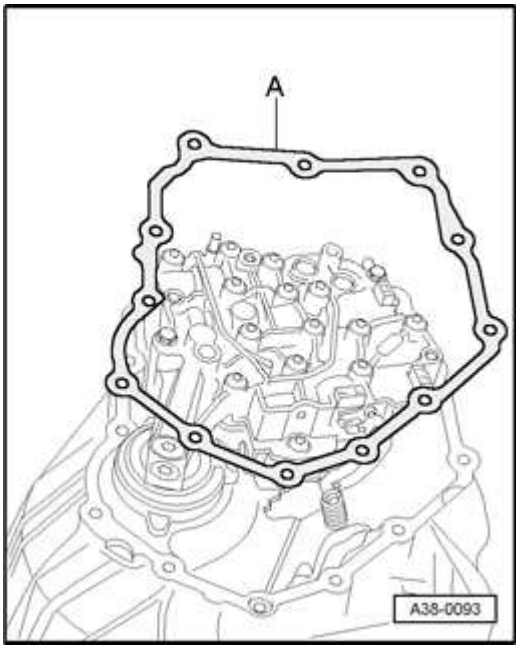


Fig. 385: Sliding New Twin Lip Oil Seal With Twin Lips Facing Outward Onto Connector At Transmission Control Module (TCM) J217
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Slide new twin lip oil seal - **A** - with twin lips facing outward onto connector at Transmission Control Module (TCM) J217.

NOTE:

- **There are metal and paper seals. The new seal must be made of the same material as the old one .**
- **Make sure bushings are seated properly.**

- Put on end cover and make sure seal does not slip.

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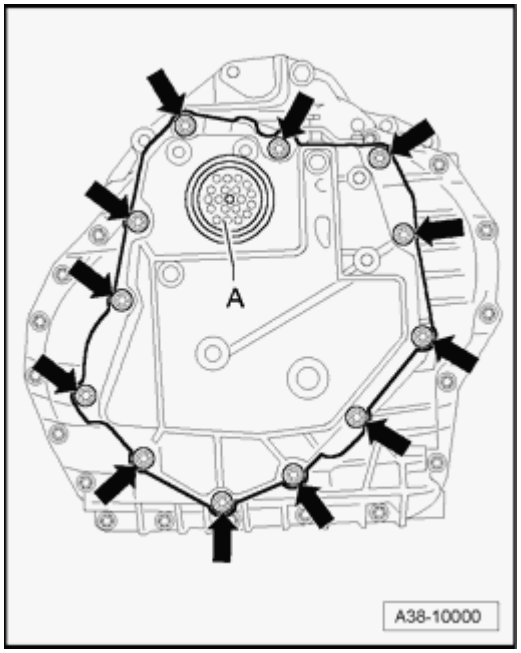
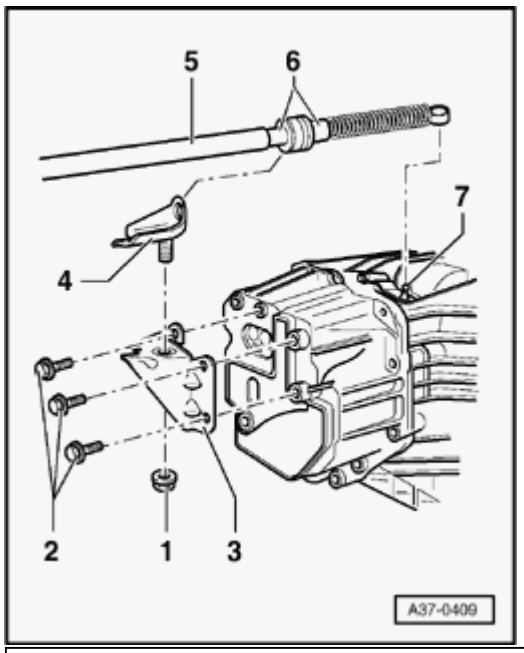


Fig. 386: Tightening New Bolts First Hand-Tight And In Diagonal Sequence
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten new bolts - **arrows** - first hand-tight and in diagonal sequence, and then to tightening torque (table **Torque specifications**).
- Check installation position of twin lip oil seal - **A** - :

- Twin lip oil seal must fit flush (sealing lips must not be twisted).

- Check installation position of twin lip oil seal - **A** - : It must fit flush (sealing lips must not be twisted).



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Fig. 387: Removing Bracket For Selector Lever Cable By First Removing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten bolts - **2** - of bracket for selector lever cable - **3** - on transmission.

NOTE:

- **Do not bend or kink the selector lever cable.**
- **Lightly grease eyelet and ball socket of selector lever cable with *polycarbamide grease G 052 142 A2* before installing.**

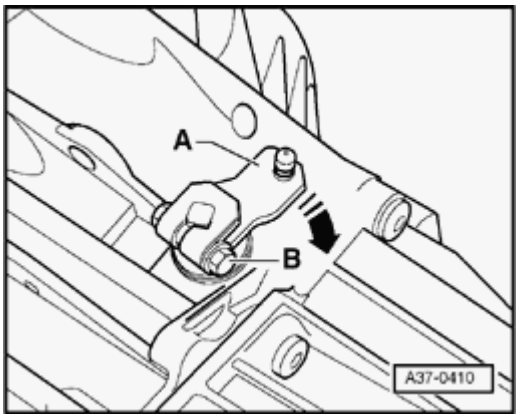


Fig. 388: Pressing Selector Shaft Lever On Transmission Completely Toward Rear
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press selector shaft lever - **A** - on transmission completely toward rear - **arrow** - until parking lock engages.

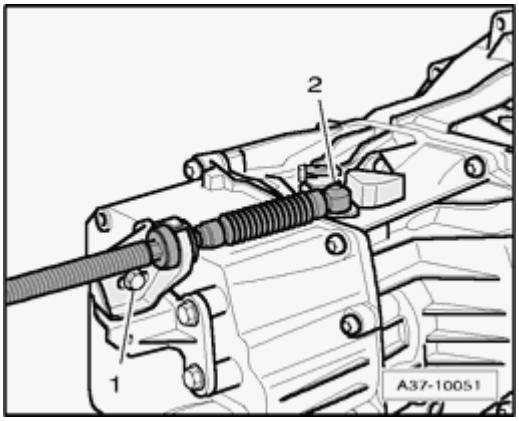


Fig. 389: Removing Support Bracket For Selector Lever Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check whether selector lever is in position "P" , then press ball socket of selector lever cable - **2** - carefully onto lever for selector shaft.

NOTE:

- **Take care not to bend selector shaft lever when pressing it on; support it if**

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necessary, as otherwise selector mechanism can no longer be adjusted properly.

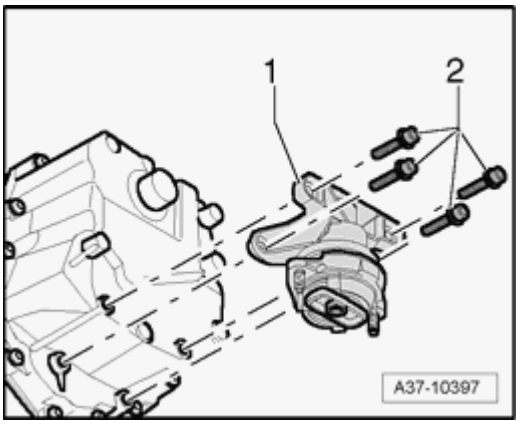


Fig. 390: Removing Bolts And Transmission Support From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Bolt transmission mount - **1** - onto transmission - **2** - --> **Transmission mount, transmission support and tunnel cross member, removing and installing**.
- Install tunnel cross member --> **Transmission mount, transmission support and tunnel cross member, removing and installing**.
- Adjust selector lever cable --> **Selector lever cable (through VIN 8E_6A156499), adjusting**.
- Install exhaust system and align it free of tension -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

  .

- Fill with ATF --> **ATF, changing or filling after repairs**.

Torque specifications

Component	Nm
End cover to transmission, replace bolts	15 + 90°* See note

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Mounting base for selector lever cable to transmission	23
Front cross member to vehicle floor	55
Rear cross member to vehicle floor	60

* 90° is a quarter turn.

Transmission Control Module (TCM) J217 , removing and installing

NOTE:

- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **General repair notes --> Repair instructions.**

- Remove end cover --> **End cover, removing and installing**.

The corresponding description for Transmission Control Module (TCM) J217 , removing and installing can be found in --> 38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS .

Selector shaft, cleaning

NOTE:

- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **General repair notes --> Repair instructions.**
- **Transmission Control Module (TCM) J217 removed**

Work procedure

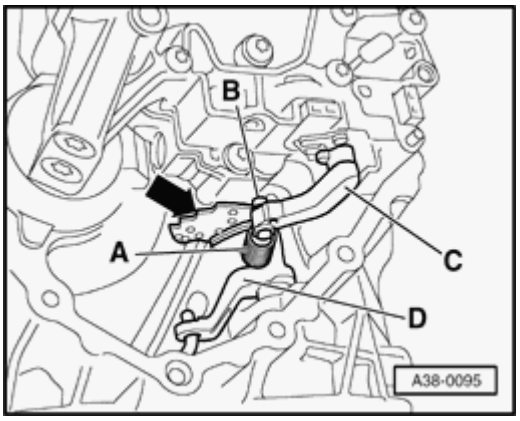


Fig. 391: Identifying Catch Of Selector Shaft, Spring & Roller
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Clean catch - **arrow** - of selector shaft. Do not use fluffy materials for cleaning. Clean contact surfaces of magnet especially thoroughly of metal shavings and the like.

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NOTE:

- **Make sure that spring - A - and roller - B - are secured properly.**

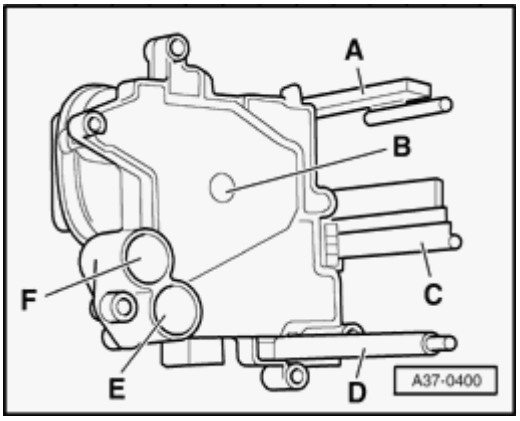


Fig. 392: Identifying Sensors Of Soiling And Metal Shavings
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If necessary, clean sensors - **A** - , - **C** - and - **D** - of soiling and metal shavings.
- Install Transmission Control Module (TCM) J217 --> **Transmission Control Module (TCM) J217 , removing and installing**.

Hydraulic control module, removing and installing

NOTE:

- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **General repair notes --> Repair instructions.**
- **Always replace hydraulic control assembly if it has collected dirt or if it is defective.**

- Remove end cover --> **End cover, removing and installing**.

The corresponding description for removal and installation of the hydraulic control unit can be found in --> **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS** .

CAUTION: The hydraulic control assembly must not under any circumstances be supported on the long pump shaft on the back side or raised up. Otherwise, the blades inside the vane pump will be crushed and the pump damaged.

Input shaft, removing and installing

NOTE:

- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **General repair notes --> Repair instructions.**

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- **Transmission removed and secured vertically to assembly stand Suspending transmission vertically.**

The corresponding description for removal and installation of the input shaft can be found in --> **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS** .

Input shaft, servicing

The corresponding description, along with disassembling and assembling input shaft, can be found in --> **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS** .

39 - FINAL DRIVE, DIFFERENTIAL

GEAR OIL IN FRONT FINAL DRIVE

Gear oil in front final drive

NOTE:

- **General repair notes --> Repair instructions.**
- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**

Gear oil level in front final drive, checking

NOTE:

- **The specified oil level must be maintained exactly; the transmission reacts very sensitively to over-filling.**

Test sequence

- Take vehicle for a short test drive to heat gear oil to approx. 60°C.
- Move vehicle onto a lifting platform or over a work pit so that it is absolutely level.
- Switch off engine and allow 5 minutes for gear oil to settle back into transmission case.

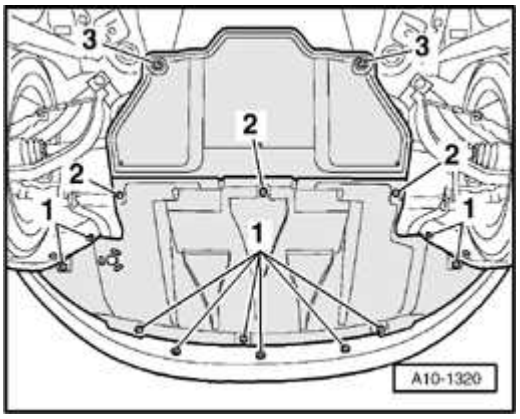


Fig. 393: Identifying Quick-Release Fasteners And Noise Insulation

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen quick-release screws - **2** - and - **3** - and remove rear noise insulation.

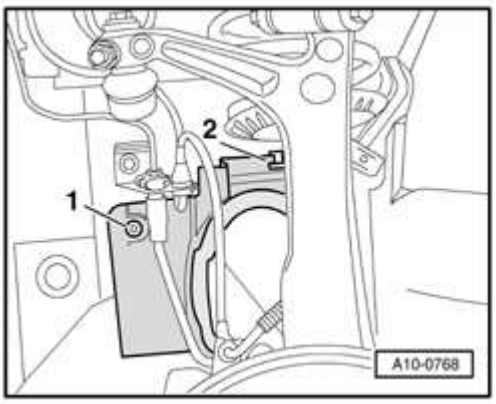


Fig. 394: Removing Bolt For Noise Insulation Cover Over Left/Right Drive Axle, Disengaging Hook And Removing Noise Insulation Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If installed, remove bolt - **1** - for noise insulation cover over left drive axle.
- Disengage hook - **2** - and remove noise insulation cover.

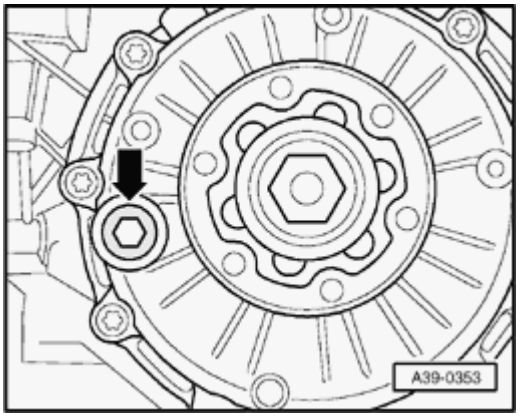


Fig. 395: Removing Inspection Plug
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove inspection plug - **arrow** -.
- Check oil level using a tool created in the workshop, e.g. an angled section of wire.

- Specified value: Oil level 8.5 mm below bottom of filler hole.

- If necessary, top off gear oil level.

- Axle oil specification --> **Capacities**.

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NOTE:

- **When servicing at the workshop the oil can also be filled up to the lower edge of the oil filler hole. In this case it is necessary to draw off 0.2 ltr. to attain the correct oil level.**

  - Tighten new screw plug.

Torque specification

Component	Nm
Screw plug to transmission	20 * See note

*Replace screw plug.

FRONT FINAL DRIVE, SERVICING

Front final drive, servicing

NOTE:

- **General repair notes --> Repair instructions.**
- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**

Left flange shaft, removing and installing

Special tools, testers and auxiliary items required

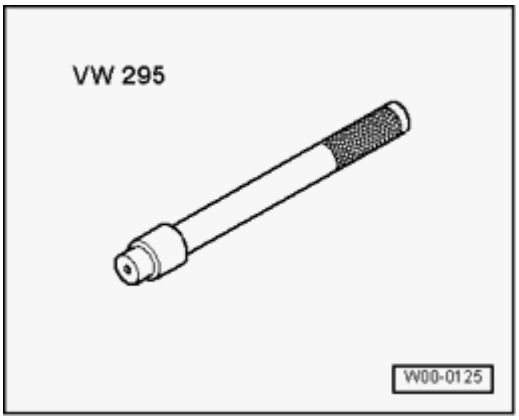


Fig. 396: Drift VW 295
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Drift VW 295

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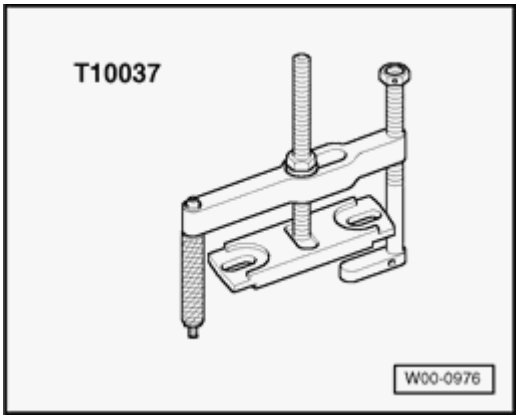


Fig. 397: Puller T10037
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Puller T10037
- Oil receptacle

Removing

- Transmission installed.

  - Remove left front wheel.

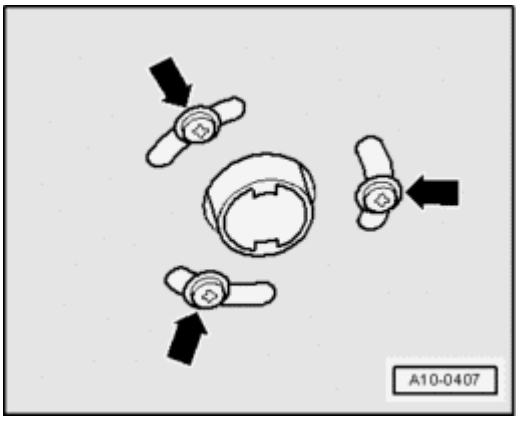


Fig. 398: Identifying Exhaust Pipe Fasteners
Courtesy of VOLKSWAGEN UNITED STATES, INC.

  - On vehicles equipped with auxiliary heater, remove bolts - **arrows** - for exhaust pipe of auxiliary/additional heater to noise insulation.

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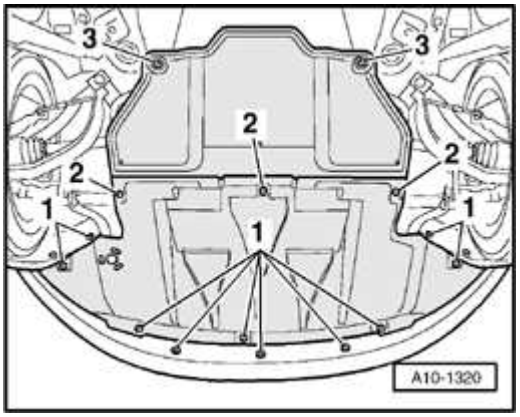


Fig. 399: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts or quick-release screws - **1 to 3** - and remove noise insulation at front and rear.

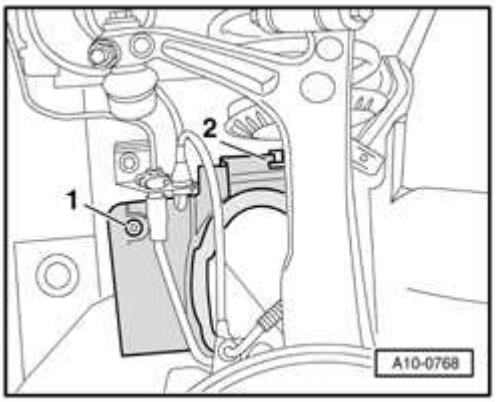


Fig. 400: Removing Bolt For Noise Insulation Cover Over Left/Right Drive Axle, Disengaging Hook And Removing Noise Insulation Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If installed, remove bolt - **1** - for noise insulation cover over left drive axle.
- Disengage hook - **2** - and remove noise insulation cover.
- Where installed, remove heat shield for left drive axle.
- Remove left drive axle.

- Place an oil receptacle underneath transmission.

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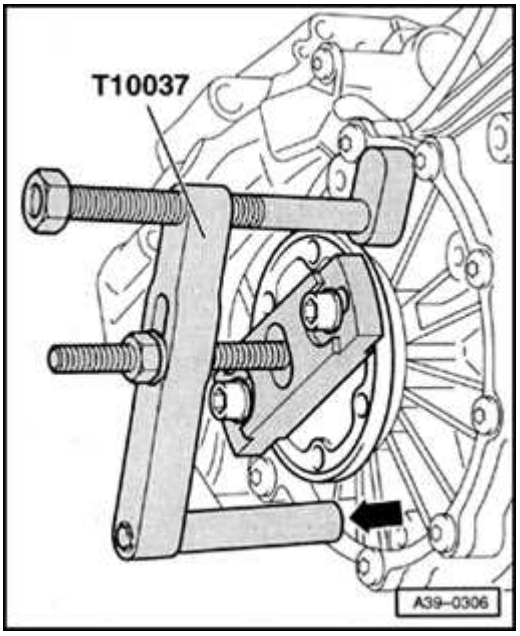


Fig. 401: Removing Drive Flange (Left Side)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tightly thread lower support of puller T10037 on cover for differential - **arrow** -.

NOTE:

- **To avoid damage to the needle bearings (polygon bearings) or differential during removal, the flange shaft must be removed evenly, parallel and without one sided pressure**

- Pull left flange shaft using puller T10037 only far enough out until bearing on shaft is pulled out of transmission housing.

Installing

Installation is in reverse order of removal, note the following:

- Replace securing ring for flange shaft, to do this, clamp flange shaft in a vise with protective pads.

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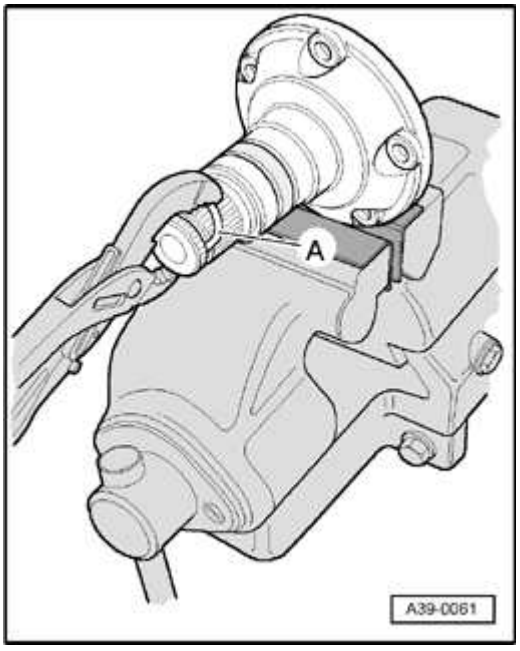


Fig. 402: Removing And Installing Securing Ring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press old securing ring out of groove of flange shaft with new securing ring - **A** -.
- Clean flange shaft.
- A damaged sealing ring must be replaced --> **Left flange shaft oil seal, replacing**.
- Drive in flange shaft using needle bearing drift VW 295.

- Install left drive axle --> **40 - FRONT SUSPENSION** .
- Check gear oil level in front final drive --> **Gear oil level in front final drive, checking**.

Torque specification

Component	Nm
Heat shield for drive axle to transmission	23

Right flange shaft, removing and installing

Special tools, testers and auxiliary items required

- Oil receptacle

Removing

- Transmission installed.

- Remove right front wheel.

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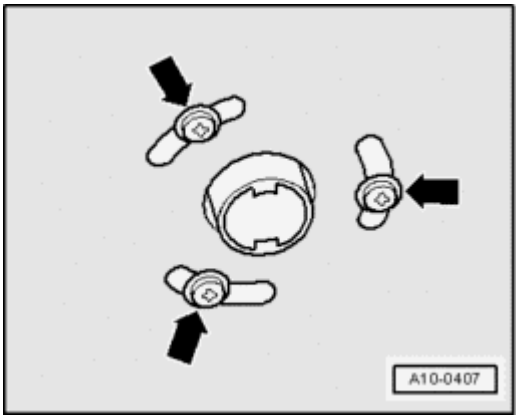


Fig. 403: Identifying Exhaust Pipe Fasteners
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On vehicles equipped with auxiliary heater, remove bolts - **arrows** - for exhaust pipe of auxiliary/additional heater to noise insulation.

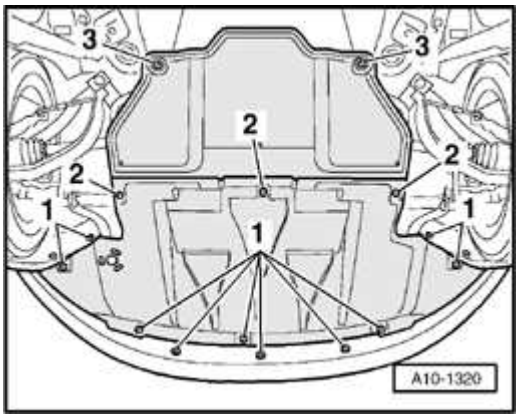


Fig. 404: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts or quick-release screws - **1 to 3** - and remove noise insulation at front and rear.

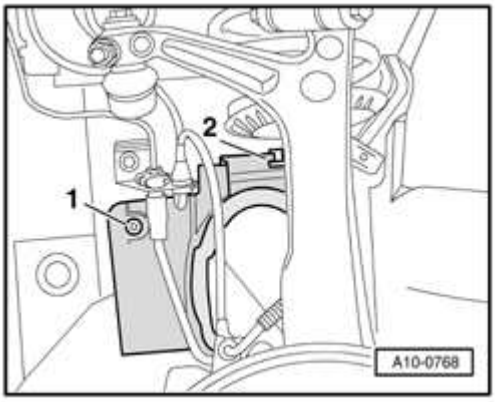


Fig. 405: Removing Bolt For Noise Insulation Cover Over Left/Right Drive Axle, Disengaging Hook And

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Removing Noise Insulation Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Where installed, remove bolt - **1** - for noise insulation cover over right drive axle.
- Disengage hook - **2** - and remove noise insulation cover.
- Remove heat shield for right drive axle.
- Remove right drive axle --> **40 - FRONT SUSPENSION** .

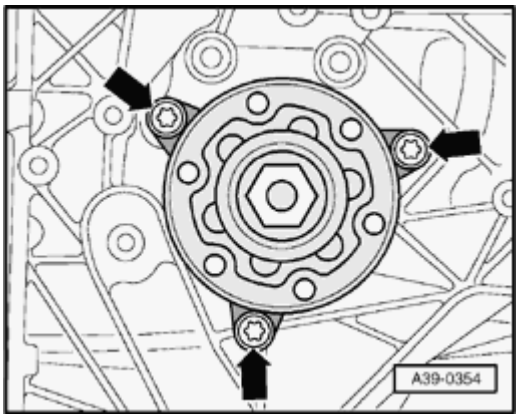


Fig. 406: Removing Mounting Bracket For Flange Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove mounting bracket for flange shaft - **arrows** -.
- Place an oil receptacle underneath transmission.
- Pull out right flange shaft together with mounting bracket.

Installing

- Clean flange shaft.
- A damaged sealing ring must be replaced --> **Sealing ring for right flange shaft and grooved ball bearing, replacing**.

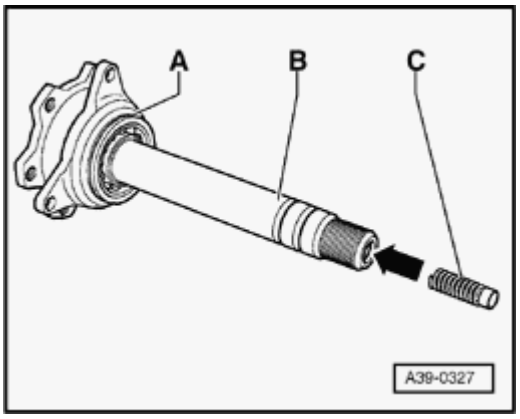


Fig. 407: Replacing O-Ring, Sliding Spring With Cap Outward Into Hole On End Of Flange Shaft &

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Inserting Flange Shaft Into Transmission Housing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Replace O-ring - **arrow A** - in mounting bracket for flange shaft.
- Slide spring - **C** - with cap outward into hole on end of flange shaft - **arrow** -.
- Insert flange shaft - **B** - into transmission housing.

NOTE:

- **While sliding in the flange shaft, make sure that spring - C - remains in the flange shaft and does not fall into transmission.**

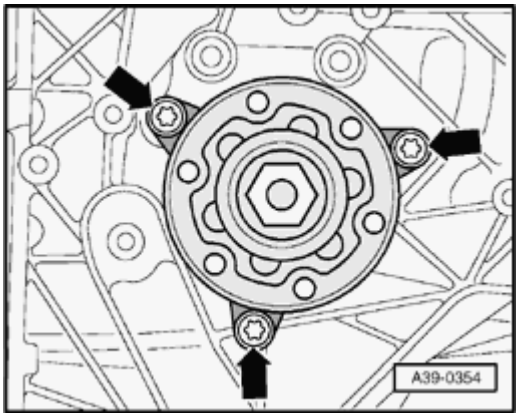


Fig. 408: Removing Mounting Bracket For Flange Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tightly bolt mounting bracket for flange shaft - **arrows** -.
- Install right drive axle --> **40 - FRONT SUSPENSION** .
- Check gear oil level in front final drive --> **Gear oil level in front final drive, checking**.

Torque specifications

Component	Nm
Bearing bracket for right-hand flange shaft to transmission	25
Heat shield for drive axle to transmission	23

Left flange shaft oil seal, replacing

Special tools, testers and auxiliary items required

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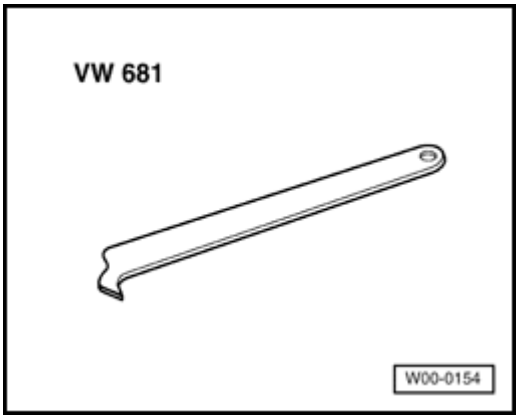


Fig. 409: Special Tool - Oil Seal Extractor Lever VW 681
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Extractor lever VW 681

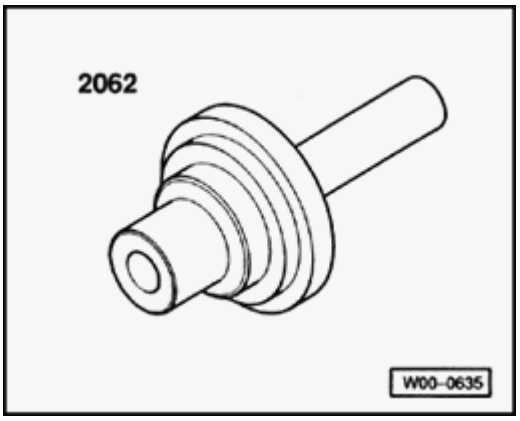


Fig. 410: Fitting Drift 2062
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Driver 2062

Work procedure

- Transmission installed
  - Remove left flange shaft --> **Left flange shaft, removing and installing**.

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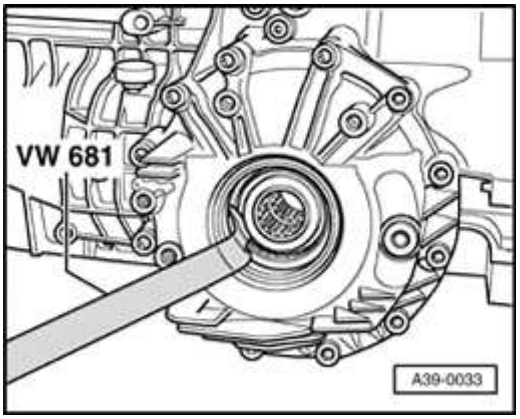


Fig. 411: Removing Flange Shaft Oil Seal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull out sealing ring for flange shaft using extractor lever VW 681.

NOTE:

- **Do not damage seating surfaces for oil seal.**

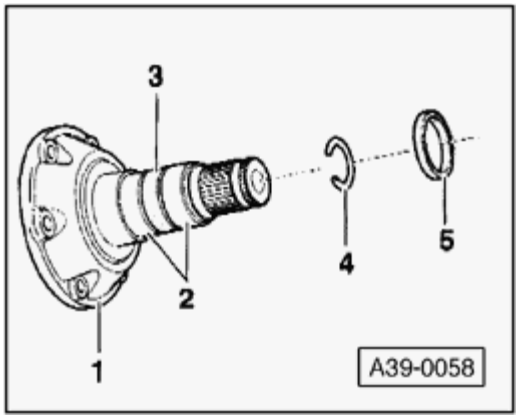


Fig. 412: Flange Shaft Design
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Setup of flange shaft with polygon bearing

1. Flange shaft
2. Needle bearing (polygon bearing)
3. Spacer ring
4. Circlip
5. Not installed

NOTE:

- **If the polygon bearings do not run smoothly with the flange shaft removed, this does indicate that the bearings are faulty. A test for noisy bearings can only be performed with the bearings installed.**

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- **Watch for damage to the polygon bearings (e.g. cracks in bearing outer ring)**
- **If polygon bearings are damaged, flange shaft must be replaced.**

- Coat outer edge and sealing lip of oil seal with axle oil.

- Installation position: The open side of the sealing ring faces the transmission.

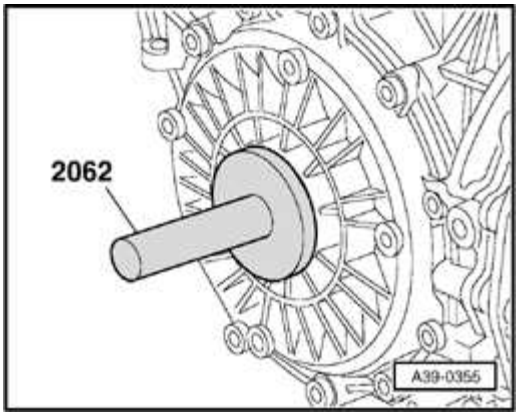


Fig. 413: Driving In New Sealing Ring For Left Flange Shaft Uniformly Using Driver Below Surface Of Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Drive in new sealing ring for left flange shaft uniformly using driver 2062 5.5 mm below surface of cover, do not cant when doing so.

NOTE:

- **If reinstalling an old flange shaft, the seal must be driven in approx. 6.5 mm so that the new seal does not sit on the running surface of the old seal.**

- Install left flange shaft --> **Left flange shaft, removing and installing**.
- Check gear oil level in front final drive --> **Gear oil level in front final drive, checking**.

Sealing ring for right flange shaft and grooved ball bearing, replacing

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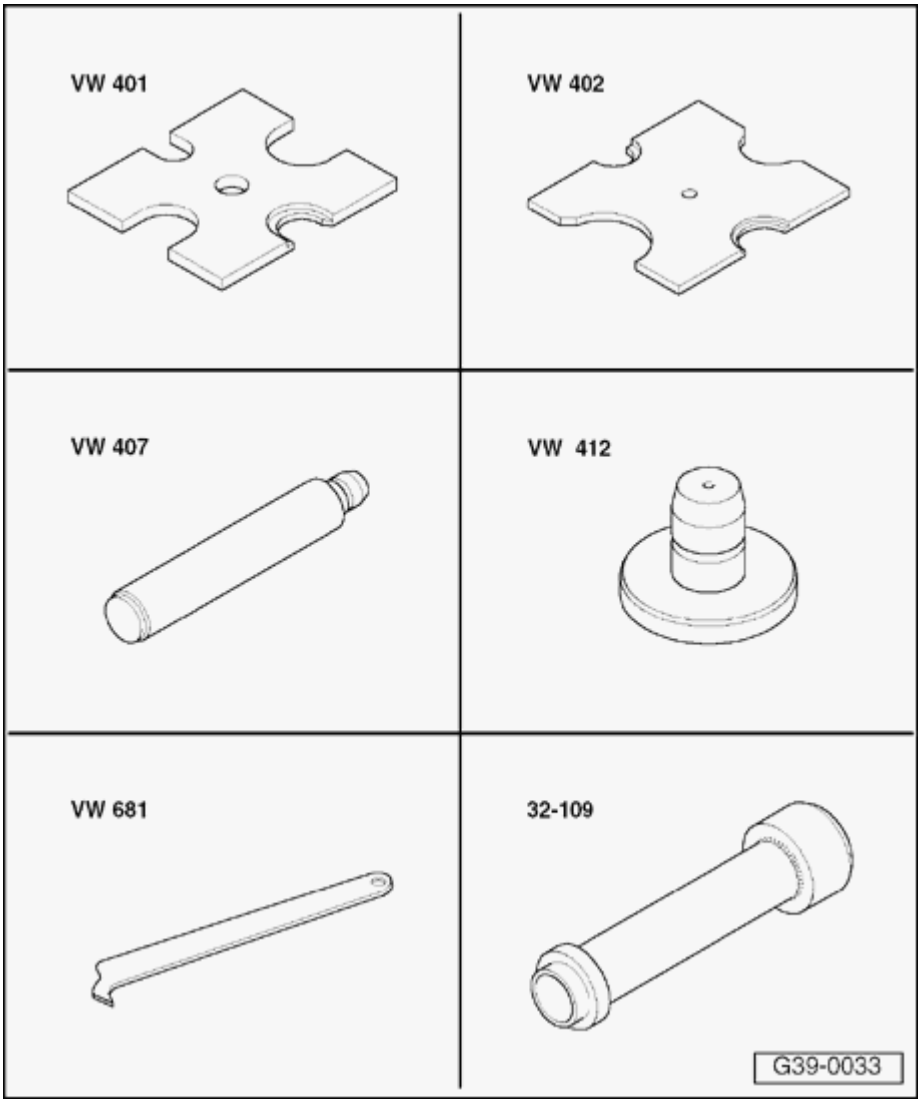


Fig. 414: Identifying Special Tools - Sealing Ring For Right Flange Shaft And Grooved Ball Bearing, Replacing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Pressure plate VW 401
- Pressure plate VW 402
- Punch VW 407
- Punch VW 412

- Extractor lever VW 681
- Driving sleeve 32-109

Special tools, testers and auxiliary items required

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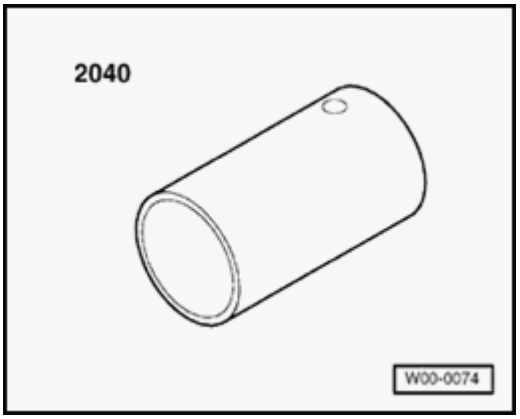


Fig. 415: Tube 2040
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tube 2040

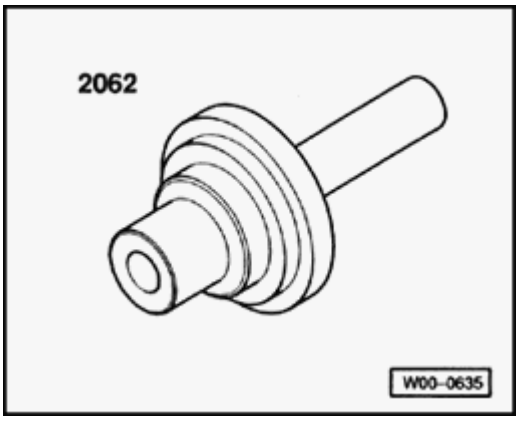


Fig. 416: Fitting Drift 2062
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Driver 2062

Work procedure

- Remove right flange shaft --> **Right flange shaft, removing and installing**.

Seal, removing

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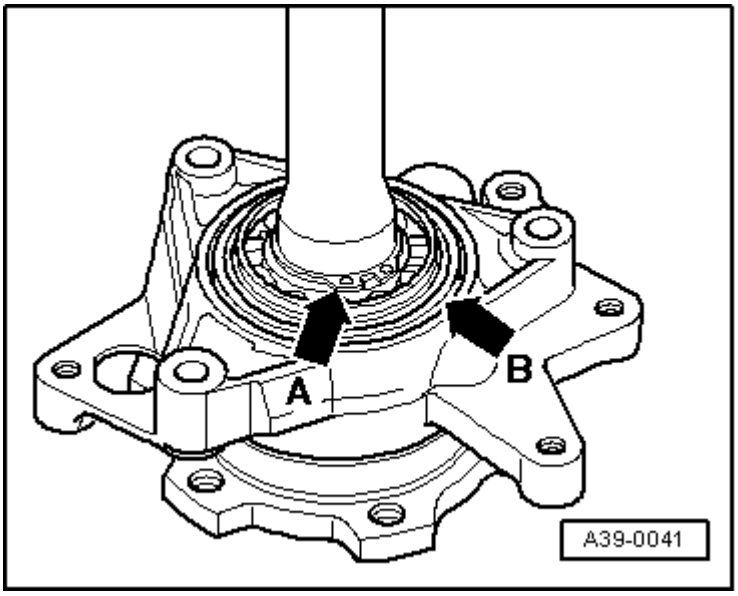


Fig. 417: Removing/Installing Circlip And Seal At Grooved Ball Bearing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove securing ring - **arrow A** - for grooved ball bearing.

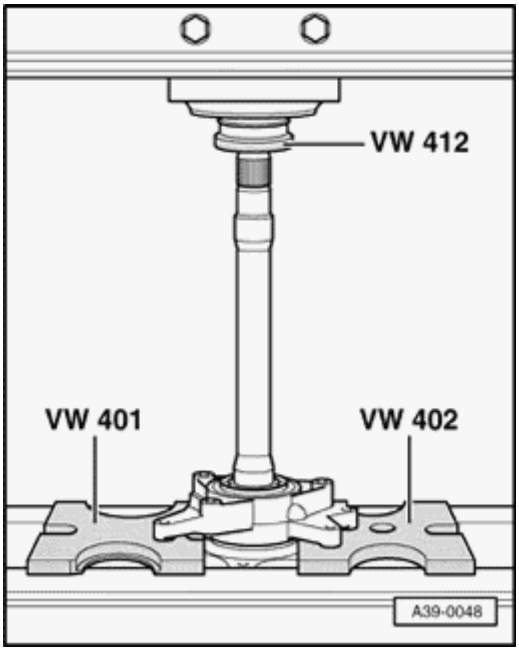


Fig. 418: Pressing Flange Shaft Out Of Flange Shaft Bearing Bracket
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press flange shaft out of mounting bracket for flange shaft as shown in the illustration.
- Pull sealing ring for flange shaft out of mounting bracket using extractor lever VW 681.

Removing grooved ball bearing

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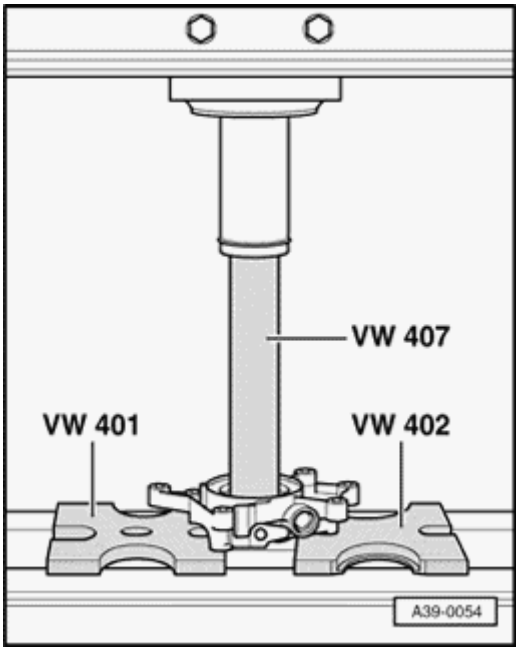


Fig. 419: Pressing Grooved Ball Bearing Out Of Bearing Bracket
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press grooved ball bearing out of mounting bracket.

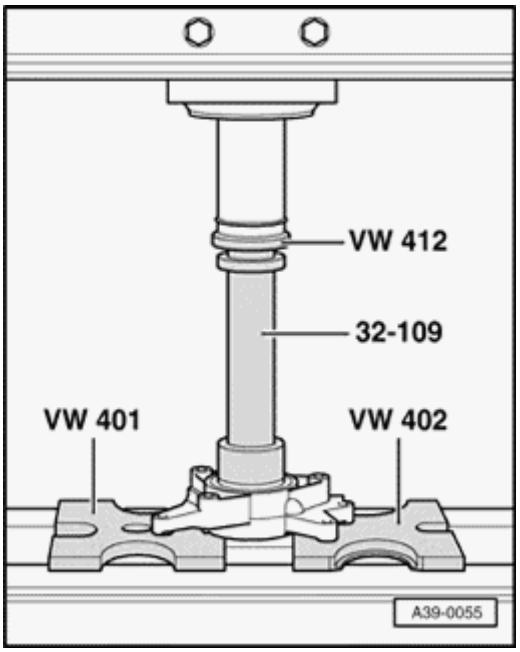


Fig. 420: Pressing New Grooved Ball Bearing Into Bearing Bracket
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Installing grooved ball bearing

Sealing ring, installing

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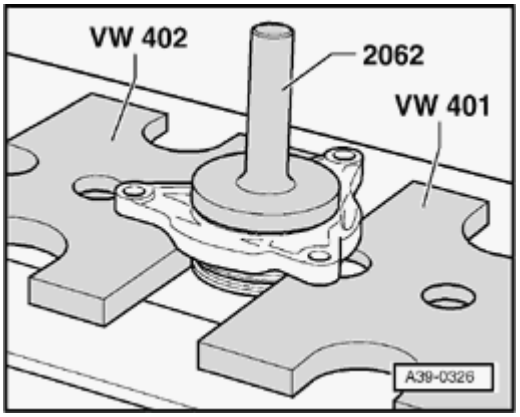


Fig. 421: Pressing New Grooved Ball Bearing Into Mounting Bracket
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press new grooved ball bearing into mounting bracket.
- Coat outer edge and sealing lip of oil seal with axle oil.

- Installation position: The open side of the sealing ring faces the transmission.

- Drive in new sealing ring for right flange shaft uniformly using driver 2062 5.5 mm below surface of mounting bracket, do not cant when doing so.

NOTE:

- **If reinstalling an old flange shaft, the seal must be driven in approx. 6.5 mm so that the new seal does not sit on the running surface of the old seal.**

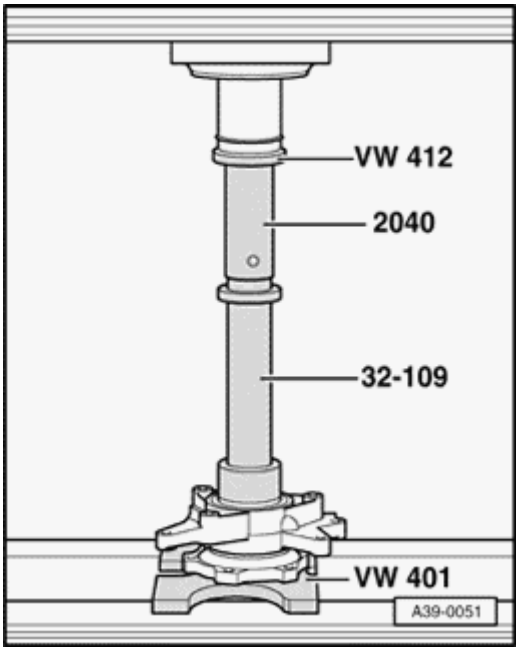


Fig. 422: Pressing Bearing Bracket With Grooved Ball Bearing Onto Flange Shaft

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press mounting bracket with grooved ball bearing onto flange shaft.

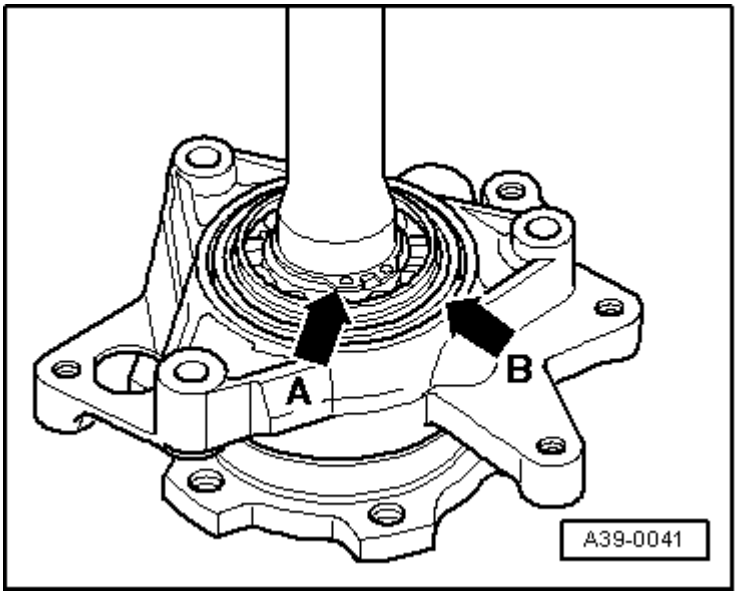


Fig. 423: Removing/Installing Circlip And Seal At Grooved Ball Bearing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert securing ring - **arrow A** -.
- Install right flange shaft --> **Right flange shaft, removing and installing**.
- Check gear oil level in front final drive --> **Gear oil level in front final drive, checking**.

Input shaft seal, replacing

- If ATF flows out at underside of transmission bell housing, input shaft seal and/or ATF breather pipe may be leaking. Before replacing any parts, be sure to find actual cause of malfunction.
- Input shaft seal must be replaced if leaking.
- ATF breather pipe must be replaced if leaking --> **ATF breather pipe**.

NOTE:

- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **General repair notes --> Repair instructions.**

Special tools, testers and auxiliary items required

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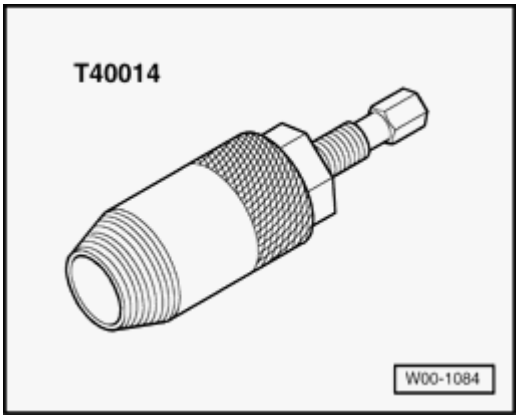


Fig. 424: Seal Remover T40014
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Seal remover T40014

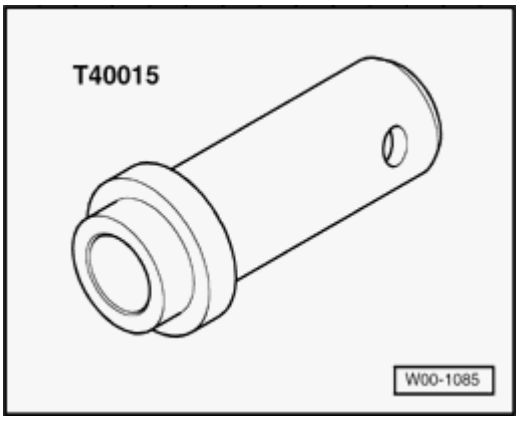


Fig. 425: Thrust Piece T40015
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Thrust piece T40015

Work procedure

- Transmission removed.

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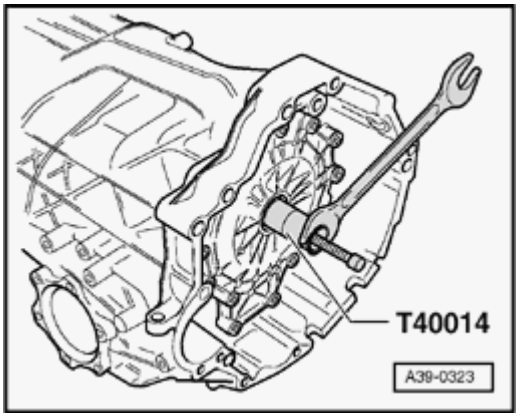


Fig. 426: Rotating Seal Ring Extractor T40014 By Hand Into Shaft Seal Until Tool Has Good Hold In Shaft Sea
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Rotate seal ring extractor T40014 by hand into shaft seal until tool has a good hold in the shaft seal. Then tighten puller with an open-end wrench.
- You can pull out oil seal a short distance by screwing in rear bolt of puller.
- Re-tighten extractor using open-end wrench so that extractor again grasps the shaft seal tightly and pull out sealing ring further by tightening the screw.
- Repeat procedure until shaft seal has been pulled out completely.

NOTE:

- **Input shaft must be installed to install the shaft seal.**

- Coat new shaft seal with ATF.

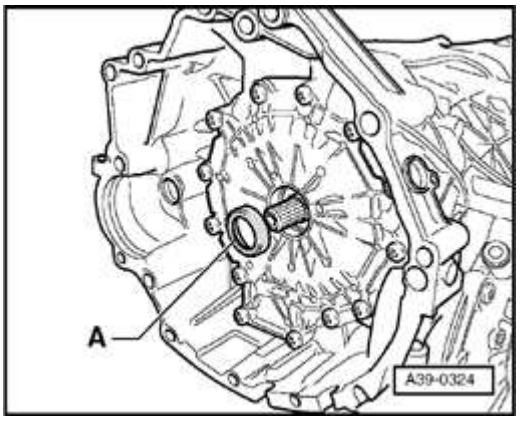


Fig. 427: Sliding Shaft Seal Onto Input Shaft With Open Side Facing Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Slide shaft seal - **A** - onto input shaft with open side facing transmission.

NOTE:

- **Slide sealing ring as far as possible into cover so that it cannot bend when driving in.**

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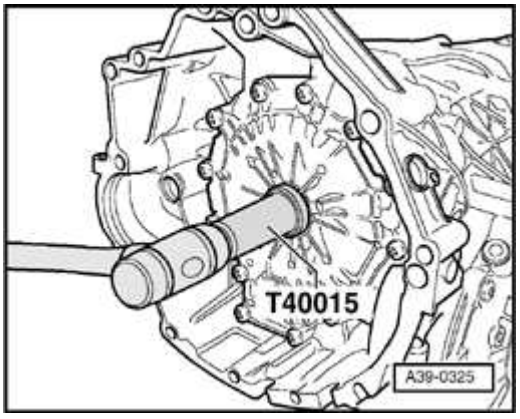


Fig. 428: Driving In Sealing Ring Until It Stops Using Thrust Piece T40015
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Drive in sealing ring until it stops using thrust piece T40015.

Selector shaft oil seal, replacing

Special tools, testers and auxiliary items required

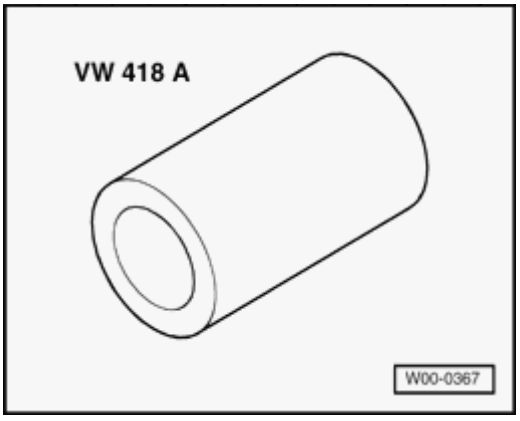


Fig. 429: Sleeve VW 418 A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tube VW 418 A

Work procedure

- Transmission removed.

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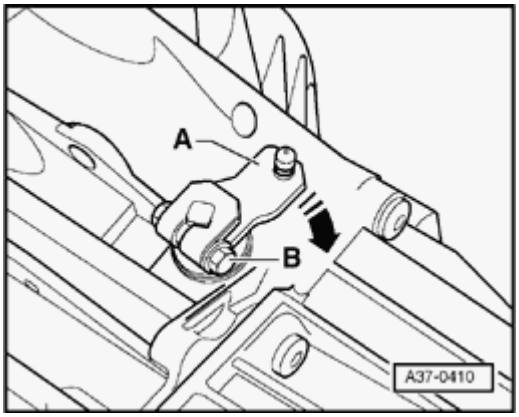


Fig. 430: Pressing Selector Shaft Lever On Transmission Completely Toward Rear
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **B** - completely and remove lever for selector shaft - **A** - upward.
- Carefully pry out sealing ring for selector shaft lying underneath using a screwdriver.

NOTE:

- **Sealing surface and selector shaft must not be damaged.**

- Coat outer circumference of new sealing ring with ATF.
- Slide on new sealing ring over selector shaft and press in.
- Drive in sealing ring until it stops using tube 31.5 mm dia. VW 418 A.
- Connect lever for selector shaft - **A** - to selector shaft and tighten bolt - **B** -.

Torque specification

Component	Nm
Lever for selector shaft to selector shaft	10

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TRANSMISSION

Continuously Variable Transmission (CVT) 01J - Internal Components, Servicing

00 - GENERAL, TECHNICAL DATA

REPAIR INSTRUCTIONS

General Repair Notes

To ensure flawless and successful transmission repairs, the greatest care and cleanliness as well as the use of good and proper tools is essential. The usual basic safety precautions also, naturally apply when carrying out vehicle repairs.

A number of generally applicable instructions for individual repair operations, which are otherwise mentioned at various points in the article, are summarized here. They apply to this article.

Transmission

- Observe rules of cleanliness for working on the transmission --> **Rules for cleanliness when working on transmission**.
- After transmission repairs, clean ATF lines and ATF cooler --> **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING** .
- Reusable components must be cleaned, checked and reconditioned if necessary before installation --> **Transmission components, evaluating wear**
- The old transmission should be installed and put into operation as quickly as possible to prevent corrosion on the newly installed components.

After installing, following fluid levels must be checked and topped off if necessary:

- Top off ATF level after repair --> **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING** .
- Gear oil in front final drive --> **39 - FINAL DRIVE, DIFFERENTIAL** .
- Capacities and specifications --> **00 - GENERAL, TECHNICAL DATA** .

O-rings, gaskets, seals

- O-rings, gaskets and seals must be replaced.
- After removing gaskets, examine contact surface on housing/shaft for burr resulting from removal or for other signs of damage.
- Open sides of oil seals face fluid side.
- To install, thinly coat gaskets along outer circumference and on sealing lip with ATF.
- Coat O-rings with transmission fluid or Vaseline before inserting to prevent crushing rings during installation.

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- Use only ATF or Vaseline in areas near ATF. Other types of lubrication cause malfunctions to occur in the transmission hydraulics.
- When pressing in new gaskets, make sure the sealing lip does not run on the same point as the sealing lip of the old seal (use insertion depth tolerances).
- Replace paper seals, always clean sealing surfaces and remove old seals completely.

Bolts and nuts

- Loosen bolts in reverse order of tightening.
- Loosen and tighten bolts and nuts for securing covers and housings in a diagonal sequence and in stages, when no tightening sequence is specified.
- The tightening torques stated apply to unoiled bolts and nuts.
- Replace self-locking bolts and nuts.

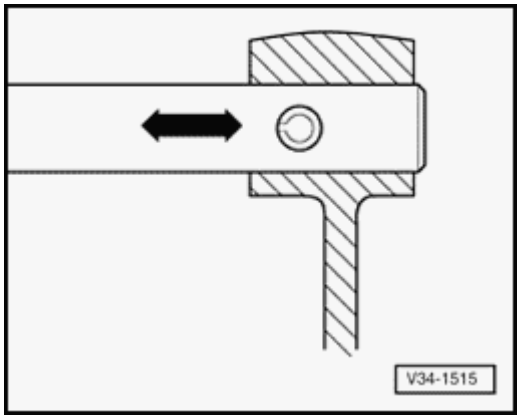


Fig. 1: Identifying Spring Pins Installation Position
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Locking elements

- Do not over-stretch circlips.
- Always replace circlips which have been damaged or over-tensioned.
- Circlips must be properly seated in the base of the groove.
- Replace spring pins. Installation position: Slot is longitudinal to line of force.

Bearings

- Slightly grease mount with ATF before inserting.
- Attach mount and adjustment shims only with Vaseline. Other lubricants cause malfunctions of the hydraulic transmission controls.

Contact corrosion!

General:

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Contact corrosion can occur if non-approved fasteners are used on vehicle (bolts, nuts, washers, etc.).

For this reason, all fasteners used in production are specially treated. These parts can be identified by their greenish color.

Rubber, plastic and adhesives also consist of non-conductive materials.

If you are not sure whether used parts can be re-installed, always install new parts.

The following points should be observed especially for transmission:

- Multitronic transmission 01J or 0AN housing is made of magnesium alloy.
- Bolts and other components which have direct contact with transmission have a surface coating which is matched to magnesium transmission housing.
- On magnesium transmissions, bolts must always be replaced on following bolted connections: Transmission housing cover and final drive cover on transmission housing as well as engine bolts on transmission.
- Contact corrosion occurs when incorrect components (bolts, nuts, washers, etc.) are used. The transmission housing will be damaged.
- Transmission housing, transmission cover and differential cover must all be of same material.
- If you are not sure whether used parts can be re-installed, always install new parts.

CAUTION:

- **Accessories must be approved by AUDI AG!**
- **Damage resulting from contact corrosion is not covered by the warranty!**

Rules for cleanliness when working on transmission

- Carefully clean all joints and adjacent areas before disconnecting.
- Place removed parts on a clean surface and cover them. Use sheeting or paper. Use lint-free cloths only!
- Carefully cover or plug unpacked components if repairs cannot be performed immediately.
- Only install clean parts: Remove packing from replacement parts immediately prior to installation and not before.

37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING

ATF FLUSHING PROCESS

ATF flushing process

Special tools, testers and auxiliary items required

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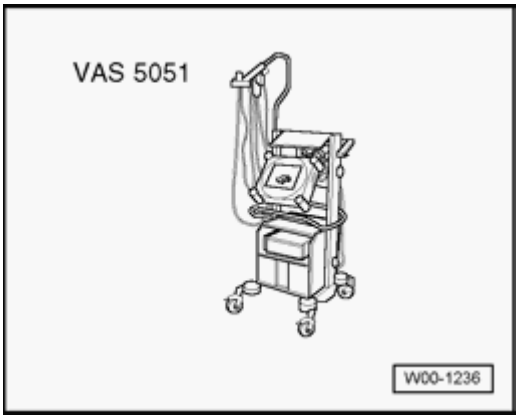


Fig. 2: Identifying Vehicle Diagnosis, Testing And Information System VAS 5051
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Vehicle Diagnosis, Testing and Information System VAS 5051 with Diagnostic cable VAS 5051/5A

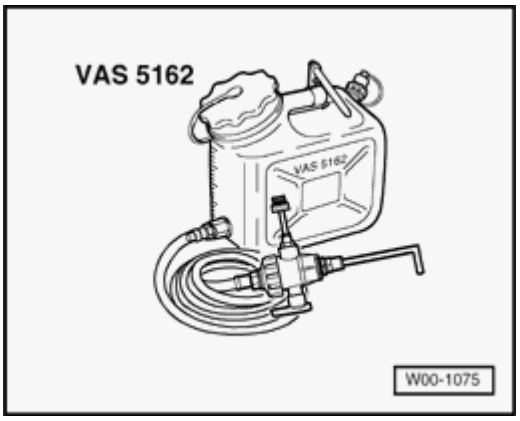


Fig. 3: ATF Filler System F/CVT Transmission VAS 5162
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- ATF filler system F/CVT gearbox VAS 5162

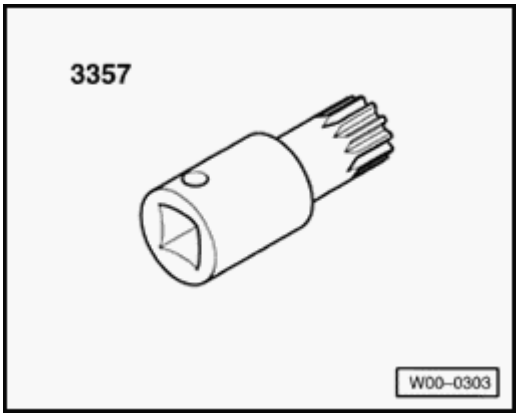


Fig. 4: Identifying Triple Square Socket Driver 3357
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Triple square socket driver 3357
- Drip tray
- Safety glasses

Work procedure

- Transmission installed.

With normal ATF change, only about 55 to 60% of total ATF in transmission is replaced.

"ATF flush" procedure is necessary when old ATF in transmission must be removed completely.

ATF must always be flushed with following procedures:

- Changing input shaft
- Servicing input shaft

In addition, test run must be performed 2 times and afterwards ATF must be changed, as described below.

Only by doing this will ATF in transmission be changed completely.

CAUTION: If all these steps are not followed completely, transmission components will be damaged.

- After installing transmission: --> **ATF, filling for ATF flushing process**.

CAUTION:

- **After installing the transmission with a new disc pack or input shaft, the Vehicle Diagnosis, Testing and Information System VAS 5051 A must check before the first drive whether or not update programming in the Transmission Control Module (TCM) J217 must be carried out.**
- **If update programming is needed but not carried out, transmission components will be damaged.**
- **If update programming is not needed but carried out, transmission components will be damaged.**

Check whether update programming in the Transmission Control Module (TCM) J217 must be carried out.

- Vehicle Diagnosis, Testing, and Information System VAS 5051 connected.

- Vehicle-specific access to Vehicle Diagnosis, Testing, and Information System VAS 5051 in "Guided Fault Finding".
- Using Goto button, select "Complaint registration " function in test plan and find following selection:

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Text lines to select			
"Repair solution"			
	"Drive"		
		"Function"	
			" Jerking when accelerating from stop"

- Press " Transfer" text line and select test program " Jerking when accelerating from stop".

NOTE:

- **Through this process in Vehicle Diagnosis, Testing, and Information System VAS 5051 update programming is only carried out for the Transmission Control Module (TCM) J217 if this is necessary.**

- If necessary, carrying out update programming in Transmission Control Module (TCM) J217.

ATF flush

CAUTION: If all steps are not carried out in correct order or followed exactly, transmission components will be damaged.

- --> **Input shaft adjustment (air gap), checking**
- First test run pass through: --> **Carry out ATF flush test run**.
- Second test run pass through: --> **Carry out ATF flush test run**.
- Check and correct ATF level --> **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING** .

NOTE:

- **Observe all notes and test requirements for "Checking ATF level and topping off".**

After ATF level is checked and restored, flushing process is complete.

Input shaft adjustment (air gap), checking

CAUTION: Do not allow engine to run without filling ATF and do not tow the vehicle.

- ATF filled

- Drive vehicle off hoist.

NOTE:

- **On vehicles with air suspension, vehicle lifting mode must be deactivated -> 43 - SELF-LEVELING SUSPENSION .**
- **ATF filled**

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- Place vehicle on level surface.

NOTE:

- **With parking brake released, vehicle may roll forward or backward by itself when in selector lever position "N".**

- Start engine.
- Place selector lever in position "N".

- Do not engage parking brake.
- Do not operate brake pedal.

- Press accelerator.

- Vehicle should not be allowed to roll.

If vehicle rolls in selector lever position "N":

- Adjust selector lever cable --> **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**

If selector lever cable adjustment is OK but vehicle still rolls in selector lever position "N":

- Input shaft, servicing --> **Input shaft, servicing with 6 lining discs** or --> **Input shaft, servicing with 7 lining discs**

NOTE:

- **In this case, input shaft adjustment (air gap) was not performed correctly.**

If vehicle does not roll in selector lever position "N" :

The input shaft adjustment with evaluation of air play is OK.

- Carry out ATF flush *First test run pass through:* under **ATF flush**

Carry out ATF flush test run

- ATF filled --> **ATF, filling for ATF flushing process**.
- The input shaft (air gap) adjustment is OK --> **Input shaft adjustment (air gap), checking**

- Drive vehicle off hoist.

NOTE:

- **On vehicles with air suspension, vehicle lifting mode must be deactivated --> 43 - SELF-LEVELING SUSPENSION .**

CAUTION: Do not allow engine to run without filling ATF and do not tow the vehicle.

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- Follow specifications exactly and carry out all safety instructions.

CAUTION: In following test drive, all traffic laws must be followed. If necessary, vehicle must be driven on a test site.

- Start engine.
- Place selector lever in position "D".
- Shift selector lever into "Tiptronic gate".
- Move wheels by lightly pressing accelerator.

- Note driving mode display in instrument cluster
- Move from 1st to highest gear by moving selector level towards "+".
- Then move back to 1st gear by moving selector lever back towards "-".

NOTE:

- **Press brake pedal if necessary**

- Press brake pedal and brake wheels down to 0 km/h.
- Place selector lever in position "R".
- Accelerate wheels up to 20 km/h by lightly pressing accelerator.
- Press brake pedal and brake wheels down to 0 km/h.

- Place selector lever in position "D" again and repeat same procedure 5 times.

NOTE:

- **Process must be repeated five times so that all old ATF is mixed with new ATF.**

- Place selector lever in position "P" afterwards and switch engine off.
- Drain ATF --> **ATF, draining for ATF flushing process**.
- Fill with ATF --> **ATF, filling for ATF flushing process**.
- Carry out ATF flush **ATF flush**

ATF, draining for ATF flushing process

- Vehicle on a flat surface

NOTE:

- **Observe disposal regulations!**
- **Activate vehicle lifting mode --> 43 - SELF-LEVELING SUSPENSION before driving vehicle with air suspension onto hoist, that is, with all four wheels hanging.**

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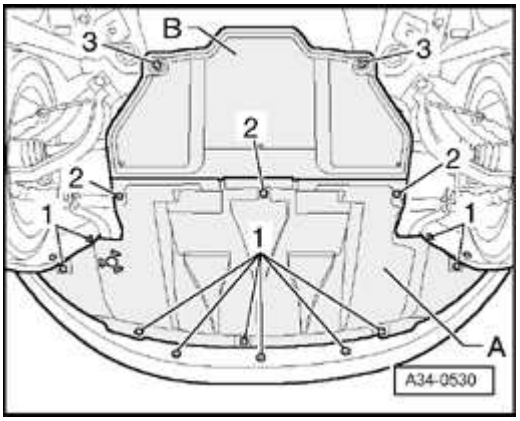


Fig. 5: Front And Rear Sound Insulation And Fasteners
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen fasteners - **2** - and - **3** - and remove rear noise insulation - **B** -.
- Place an oil receptacle underneath transmission.

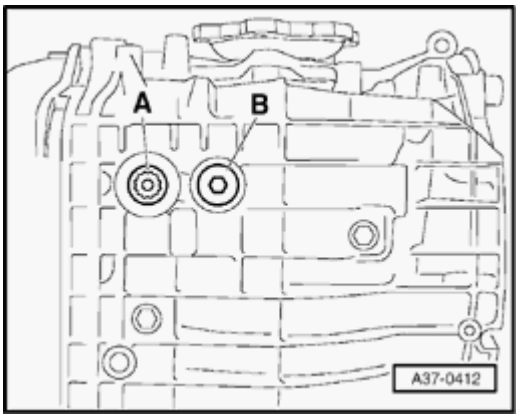


Fig. 6: Identifying ATF Check Plug
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove ATF drain plug - **A** - using triple square socket driver 3357 and drain ATF.
- Tighten ATF drain plug again.

- Tightening torque: 24 Nm.

CAUTION: Do not allow engine to run without filling ATF and do not tow the vehicle.

ATF, filling for ATF flushing process

CAUTION:

- **The Multitronic 01J or 0AN transmission requires a different ATF than shift automatics. Only ATF for CVT transmission which can be obtained as replacement part must be used .**

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- **Do not allow engine to run without filling ATF and do not tow the vehicle.**

- Vehicle on a flat surface

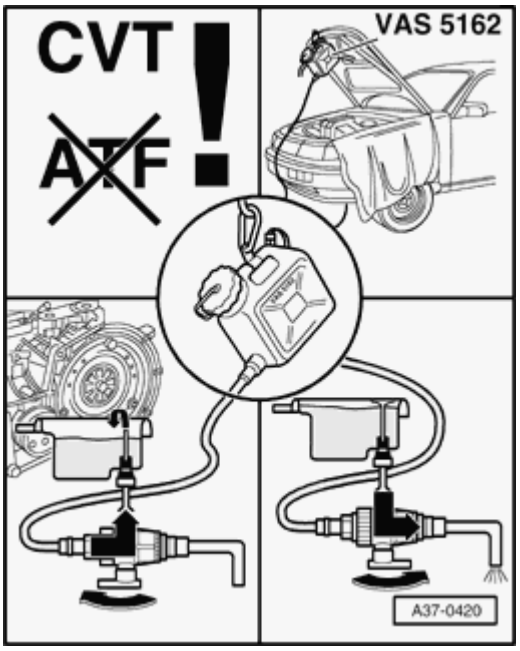


Fig. 7: Identifying Illustration On Reservoir For ATF Filler System F/CVT Transmission VAS5162
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **The illustration on the reservoir for ATF filler system F/CVT gearbox VAS 5162 in upper left graphic refers to the use of special ATF for CVT transmissions.**
- **The illustration also shows pictures of the steps required to fill the transmission. These steps will be explained in the following.**

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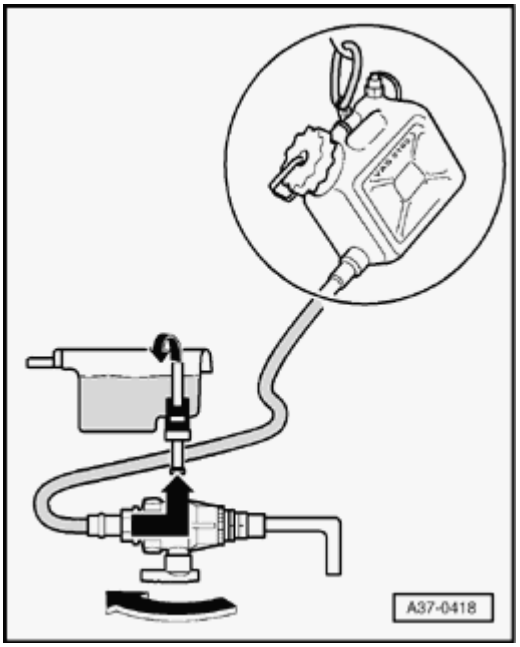


Fig. 8: Securing Filled Reservoir Of ATF Filler System F/CVT Gearbox VAS 5162 As High As Possible On Vehicle
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Secure filled reservoir of ATF filler system F/CVT gearbox VAS 5162 as high as possible on the vehicle.
- The shut-off valve on the ATF filler system F/CVT gearbox VAS 5162 must be closed.

CAUTION:

- **Engine must not be started if only a small amount or no ATF is in the transmission after repair work or after significant ATF loss.**
- **In this case, a preliminary filling with 4.5 to 5 liters ATF must be performed.**

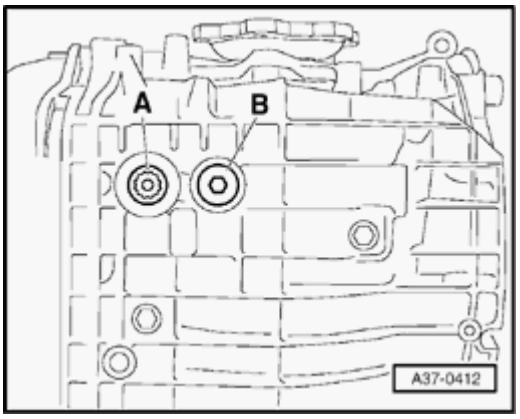


Fig. 9: Identifying ATF Check Plug
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove ATF check plug - **B** -.

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- Thread connection on shut-off valve of ATF filler system F/CVT gearbox VAS 5162 into opening of ATF check plug - **B** -.

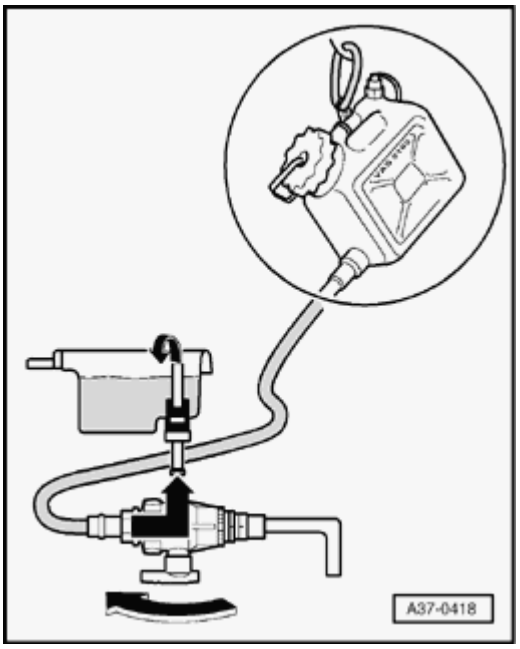


Fig. 10: Securing Filled Reservoir Of ATF Filler System F/CVT Gearbox VAS 5162 As High As Possible On Vehicle
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Rotate shut-off valve in direction of filler hose - **lower arrow** -. ATF flows into transmission.
- Fill transmission with 5 Liter ATF.
- Selector lever in "P" , start engine and let it run at idle.

CAUTION: Let engine run at high speed at "2500 - -3000 RPM" for approx. 4 to 5 seconds immediately after starting.

Running the engine at high speeds is necessary so that the ATF pump is bled after a transmission repair.

If running at high speeds is not performed, the transmission can be damaged.

- Start engine
- By pressing the gas pedal, run engine at high speed at "2500 - -3000 RPM" for approx. 5 seconds.
- Press brake pedal and hold.
- Shift through all selector lever positions "P, R, N, D, S" and let each position remain shifted at idle for approx. 2 seconds.

- Selector lever in "P" and let engine continue to run at idle.

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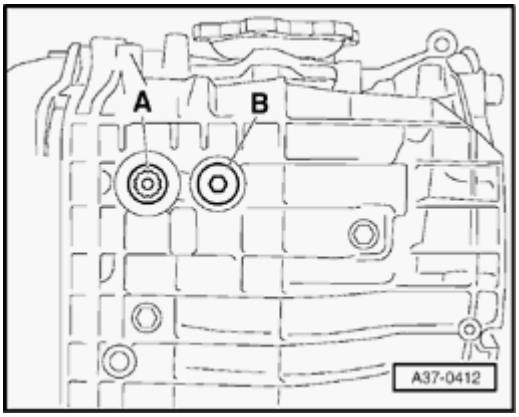


Fig. 11: Identifying ATF Check Plug
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Thread connection on shut-off valve of ATF filler system F/CVT gearbox VAS 5162 from ATF check plug opening - **B** -.
- Allow excess ATF to drain off.
- Install ATF check plug - **B** -.

- Tightening torque: 20 Nm.

TRANSMISSION, ATTACHING TO ASSEMBLY STAND

Transmission, attaching to assembly stand

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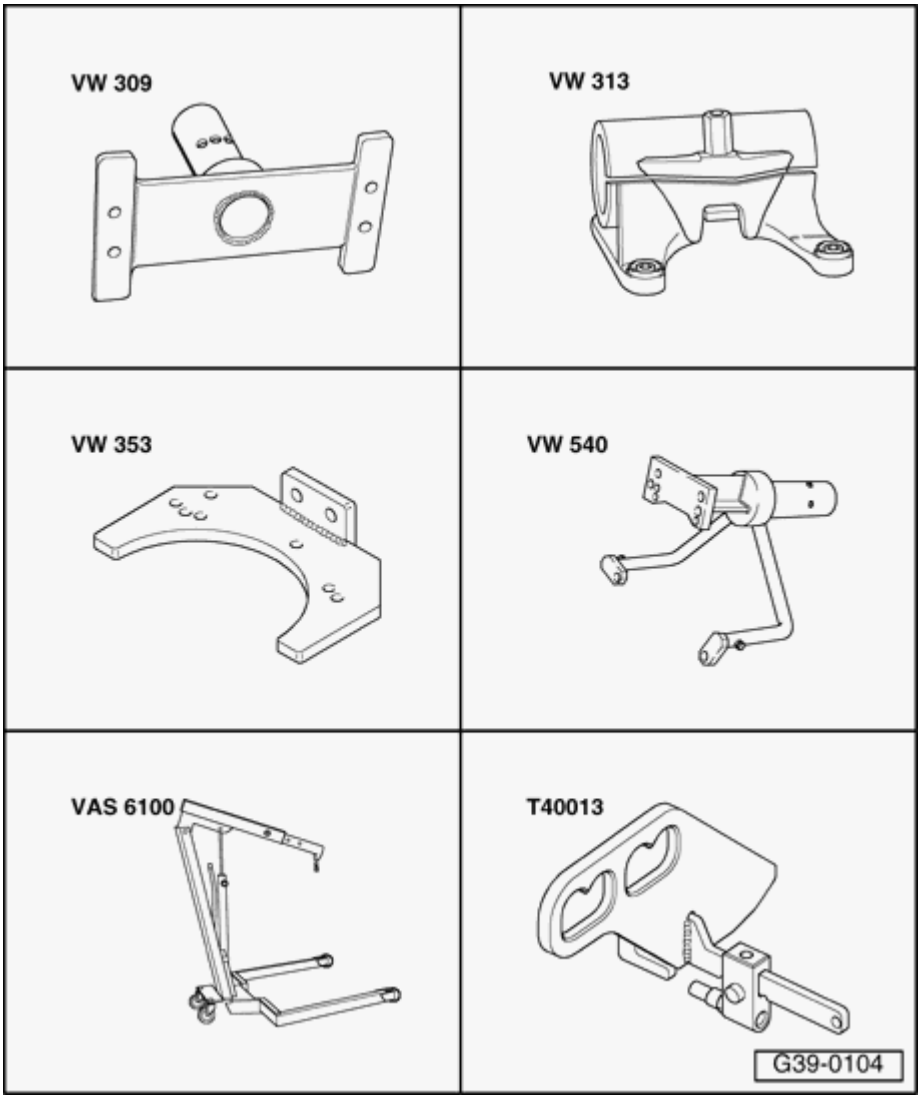


Fig. 12: Identifying Special Tools - Transmission, Attaching To Assembly Stand
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Holding plate VW 309
- Holding fixture VW 313
- Transmission support VW 353
- Engine and Transmission Holder VW 540

- Workshop crane VAS 6100
- Lifting tackle T40013

Suspending transmission vertically

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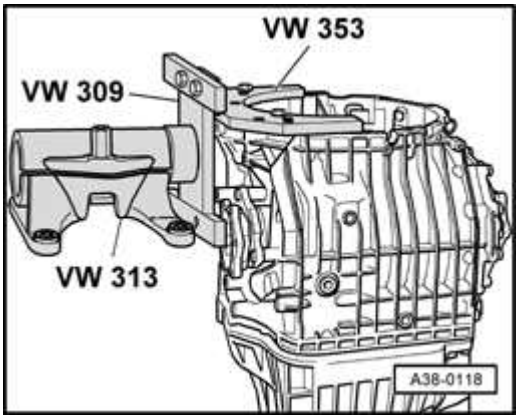


Fig. 13: Using Workshop Crane VAS 6100 To Insert Transmission Into Holding Fixture VW 313
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Secure transmission to assembly block with 2 bolts.
- Install transmission support VW 353 onto holding plate VW 309.
- Using Shop Crane VAS 6100 , insert transmission into Holding Fixture VW 313.

CAUTION: Center of gravity of transmission is outside center of rotation at holding fixture. To turn the transmission, a second technician must hold the transmission housing to prevent back-swing.

Securing transmission in horizontal position

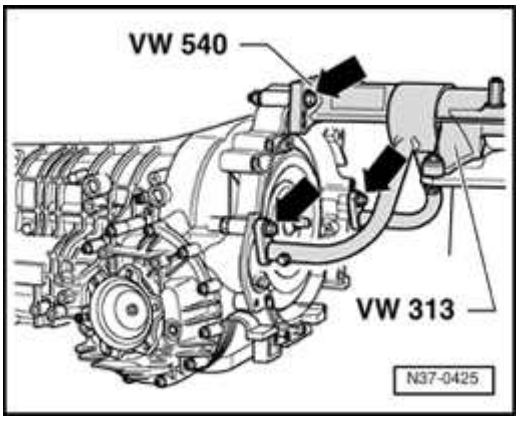


Fig. 14: Securing Transmission In Horizontal Position
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Bolt transmission onto engine/transmission holder VW 540 - **arrows** -.
- Using Shop Crane VAS 6100 , insert transmission into Holding Fixture VW 313.

CAUTION: Center of gravity of transmission is outside center of rotation at holding fixture. To turn the transmission, a second technician must hold the transmission housing to prevent back-swing.

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SELECTOR SHAFT SEAL, REPLACING

Selector shaft seal, replacing

Special tools, testers and auxiliary items required

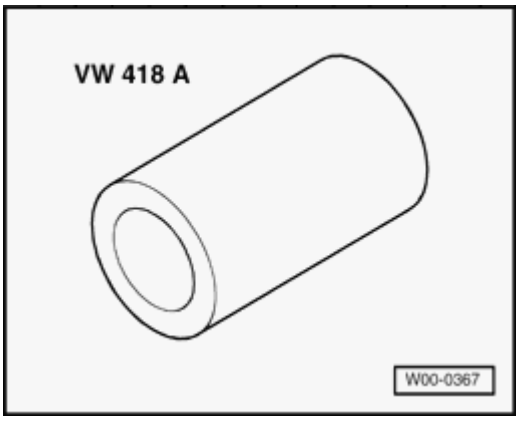


Fig. 15: Sleeve VW 418 A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tube VW 418 A

Work procedure

- Transmission removed.

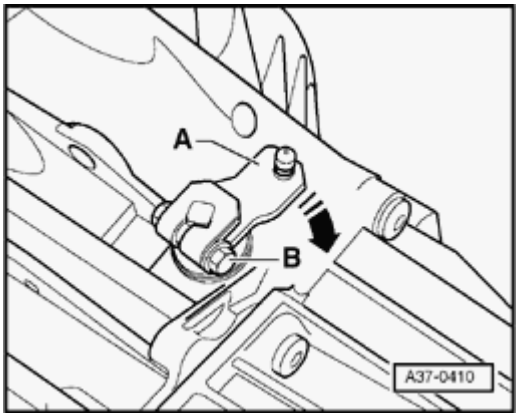


Fig. 16: Removing Bolt Completely And Lever For Selector Shaft Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **B** - completely and remove lever for selector shaft - **A** - upward.
- Carefully pry selector shaft seal lying below out with screwdriver.

NOTE:

- **Sealing surface and selector shaft must not be damaged.**

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- Coat outer circumference of new shaft seal with ATF.
- Slide on new shaft seal over selector shaft and press in.
- Drive in shaft seal until it stops using tube VW 418 A.
- Connect lever for selector shaft - **A** - to selector shaft and tighten bolt - **B** -.

Torque specification

Component	Nm
Lever for selector shaft to selector shaft	10

ATF BREATHER PIPE, REMOVING AND INSTALLING

ATF breather pipe, removing and installing

If ATF flows out at underside of transmission bell housing, input shaft seal and/or ATF breather pipe may be leaking. Before replacing any parts, be sure to find actual cause of malfunction.

- Input shaft seal must be replaced if leaking --> **Input shaft seal, replacing**.
- ATF breather pipe must be replaced if leaking.

Removing

NOTE:

- **Observe general repair notes --> Repair instructions .**
- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **Transmission removed**

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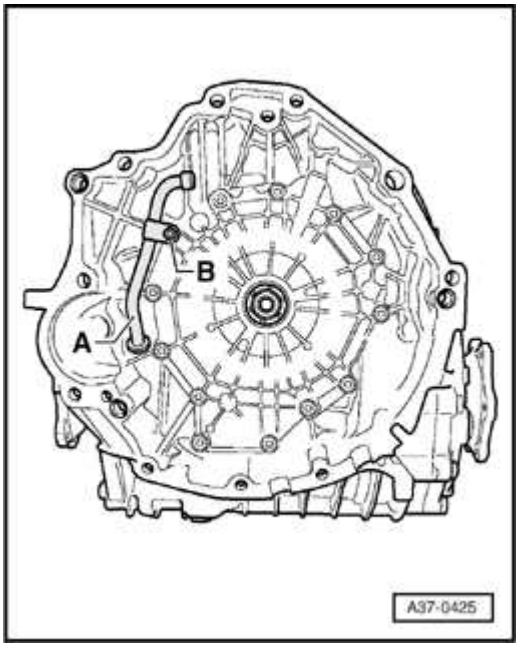


Fig. 17: Identifying ATF Breather Pipe & Level Of Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **B** -.
- Pull ATF breather pipe - **A** - out of mount.

Installing

Installation in reverse order of removal, note the following:

- Insert new ATF breather pipe - **A** - until it reaches stop.
- Tighten ATF breather pipe with strap and bolt - **B** - on transmission housing.

Torque specification

Component	Nm
ATF breather pipe to transmission housing	25

38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS

TRANSMISSION, DISASSEMBLING AND ASSEMBLING

End cover, transmission removed, removing and installing

Special tools, testers and auxiliary items required

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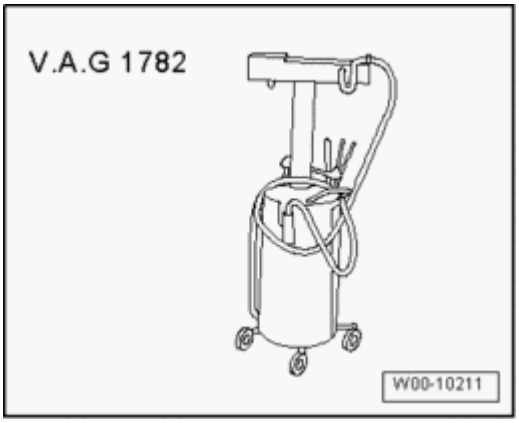


Fig. 18: Identifying Old Oil Collecting And Extracting Device V.A.G 1782
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Old oil collecting and extracting device V.A.G 1782

NOTE:

- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **General repair notes --> Repair instructions .**
- **To remove the end cover, the transmission must "not" be removed.**
- **End cover, removing with transmission installed --> 38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**

Removing

- Transmission fastened vertically to assembly stand --> **Transmission, attaching to assembly stand**

  - Place used oil collection and extraction device V.A.G 1782 under transmission.

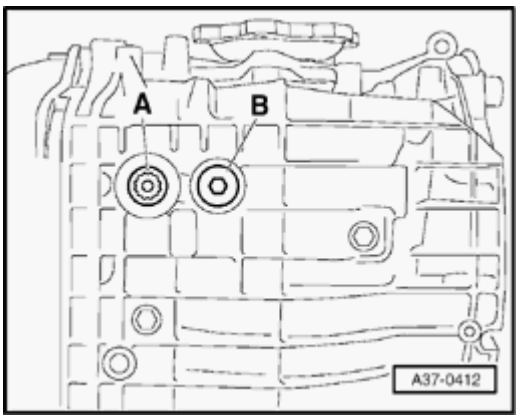


Fig. 19: Identifying ATF Check Plug
Courtesy of VOLKSWAGEN UNITED STATES, INC.

  - Remove ATF drain plug - **A** - using triple square socket driver 3357 and drain ATF.

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- Tighten ATF drain plug again.
- Tightening torque: 24 Nm.

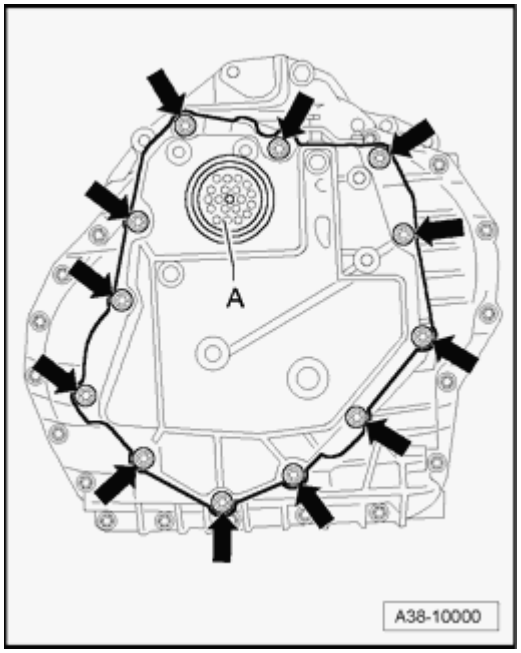


Fig. 20: Removing/Installing Bolts And End Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - and remove end cover.

Installing

Install in reverse order of removal, note the following:

NOTE:

- **Replace seals and bolts for end cover.**

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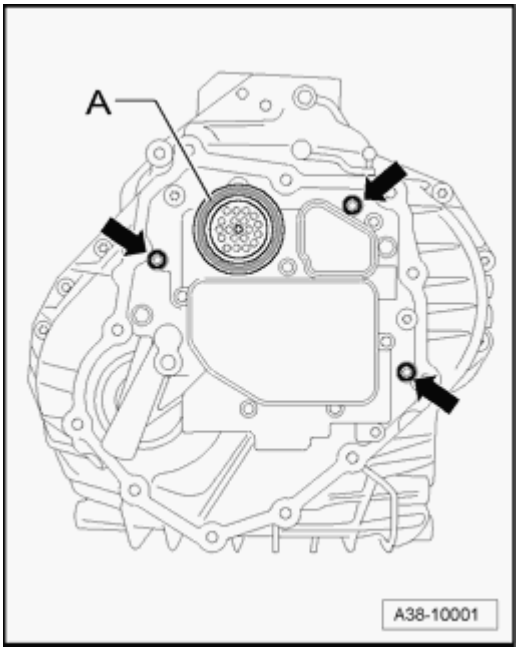
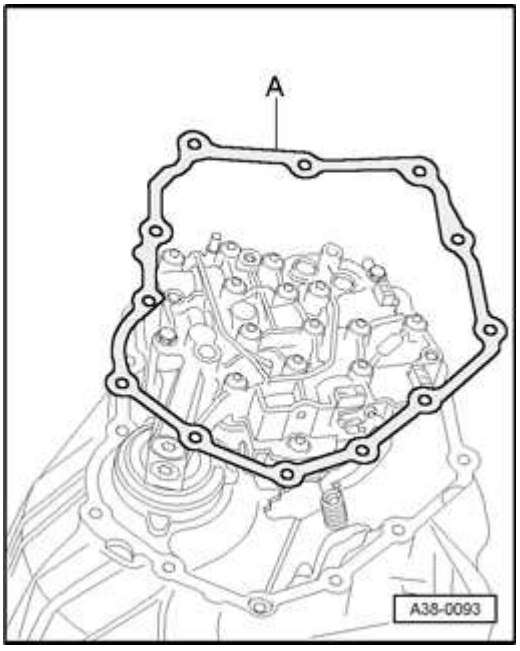


Fig. 21: Sliding New Twin Lip Oil Seal With Twin Lips Facing Outward Onto Connector At Transmission Control Module (TCM) J217
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Slide new gasket - **A** - with double lip outward onto connector on Transmission Control Module (TCM) J217.
- Clean sealing surfaces on transmission housing and on end cover.
- If bushings were installed in transmission housing or in cover, they must be re-mounted in the same location.



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Fig. 22: Placing New Seal For End Cover Onto Transmission Housing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place new seal for end cover - **A** - onto transmission housing.

NOTE:

- **There are metal and paper seals. The new seal must be made of the same material as the old one .**
- **Make sure bushings are seated properly.**

- Put on end cover and make sure the seal does not slip.

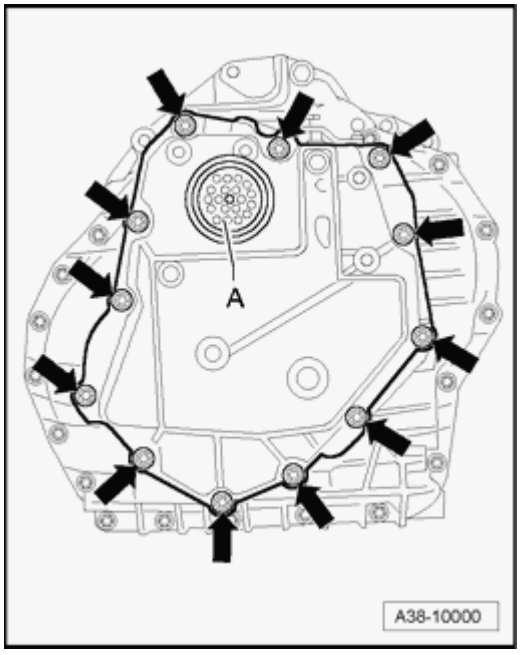


Fig. 23: Removing/Installing Bolts And End Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten new bolts - **arrows** - first hand-tight and in diagonal sequence, and then to tightening torque.
- Check installation position of gasket - **A** - :

- Gasket must fit flush (sealing lips must not be twisted).

NOTE:

- **All instructions and steps for "Changing ATF or filling after a repair" must be followed exactly --> 37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**

- Fill with ATF --> **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING** .

Torque specifications

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Component	Nm
End cover to transmission Replace bolts tighten diagonally	15 + 90°

Transmission Control Module (TCM) J217 , removing and installing

NOTE:

- **Observe general repair notes --> Repair instructions .**
- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**

Removing

The Transmission Control Module (TCM) J217 can be removed with transmission installed.

- Remove end cover --> **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS** .

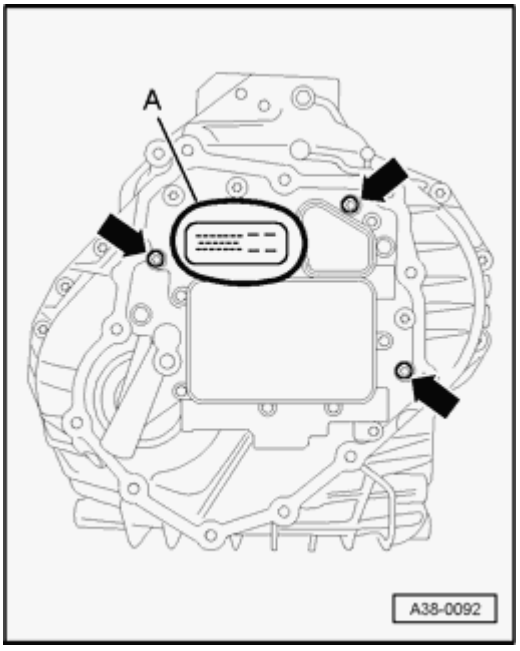


Fig. 24: Removing/Installing Bolts & Twin Lip Oil Seal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - and pull out Transmission Control Module (TCM) J217 without tilting it.
- Remove twin lip oil seal - **A** - from Transmission Control Module (TCM) J217.

NOTE:

- **When positioning Transmission Control Module (TCM) J217 , ensure sensor on control module is not damaged.**

Installing

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Install in reverse order of removal, note the following:

NOTE:

- **Replace gaskets and O-rings.**

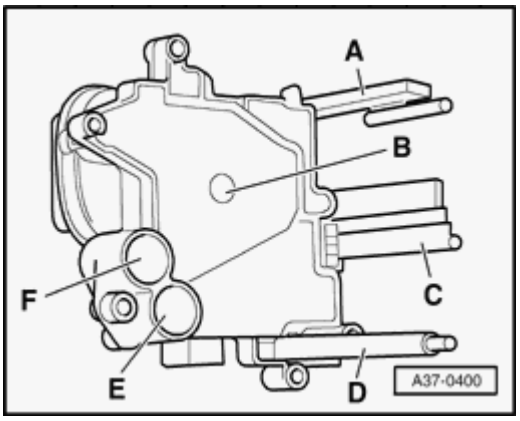


Fig. 25: Identifying Sensors Of Soiling And Metal Shavings
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If necessary, clean sensors - **A** - , - **C** - and - **D** - of soiling and metal shavings.
- Clean selector shaft --> **Selector shaft, cleaning**.

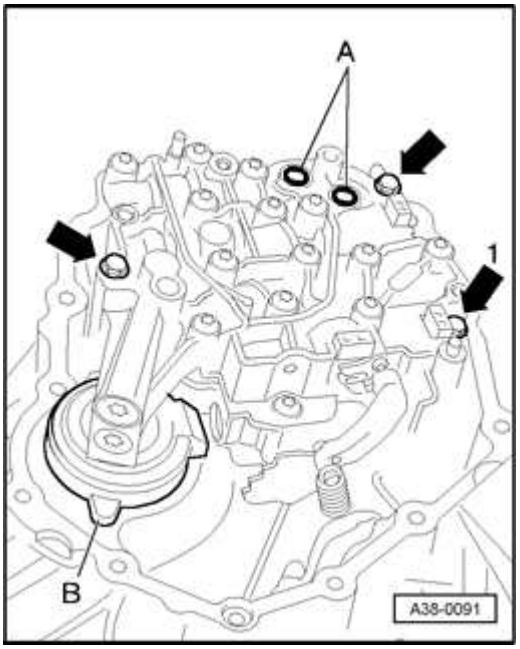


Fig. 26: Coating New O-Rings On Hydraulic Control Module With ATF
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Before installing Transmission Control Module (TCM) J217 , coat new O-rings - **A** - on hydraulic control module with ATF.

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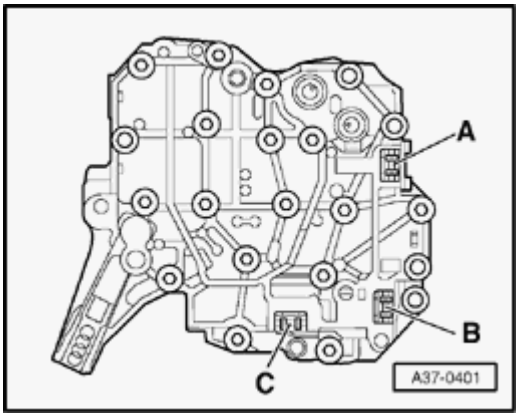


Fig. 27: Identifying Hydraulic Control Module Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install Transmission Control Module (TCM) J217 without canting it.

- Harness connectors - **A** - , - **B** - and - **C** - on rear side of control module must engage on hydraulic control module.

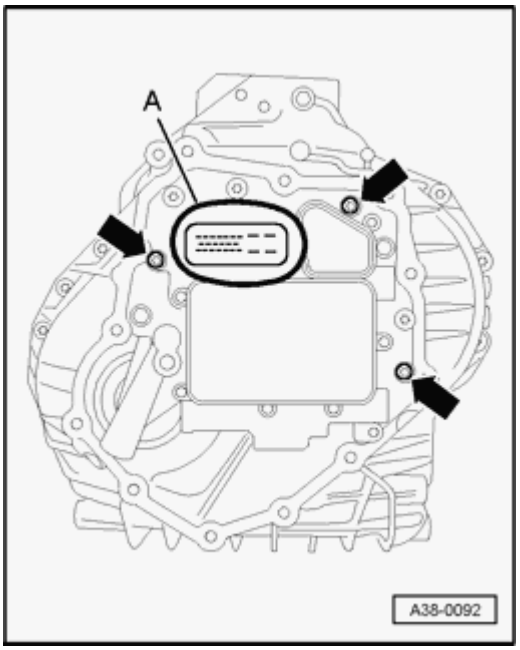


Fig. 28: Removing/Installing Bolts & Twin Lip Oil Seal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten bolts - **arrows** -.
- Install end cover --> **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS** .

After connecting Transmission Control Module (TCM) J217 , the following steps must be performed:

- Complete coding for new Transmission Control Module (TCM) J217.

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- Perform adaptation for Transmission Control Module (TCM) J217.

Use Vehicle Diagnosis, Testing and Information System VAS 5051 for this.

Torque specification

Component	Nm
Transmission Control Module (TCM) J217 to hydraulic control module	10

Selector shaft, cleaning

NOTE:

- **Observe general repair notes --> Repair instructions .**
- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**

Work procedure

- Remove end cover --> **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS** .
- Remove Transmission Control Module (TCM) J217 --> **Transmission Control Module (TCM) J217 , removing and installing**.

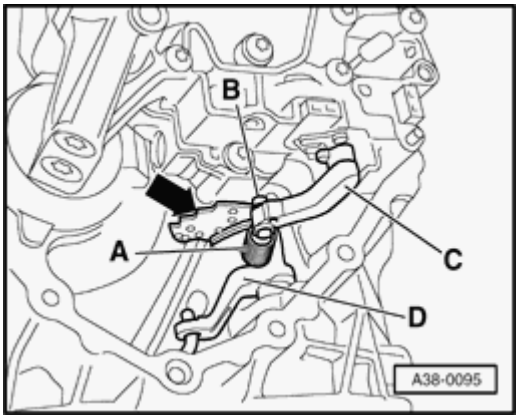


Fig. 29: Identifying Catch Of Selector Shaft, Spring & Roller
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Clean catch - **arrow** - of selector shaft. Do not use fluffy materials for cleaning. Clean contact surfaces of magnet especially thoroughly of metal shavings and the like.

NOTE:

- **Make sure that spring - A - and roller - B - are properly secured.**

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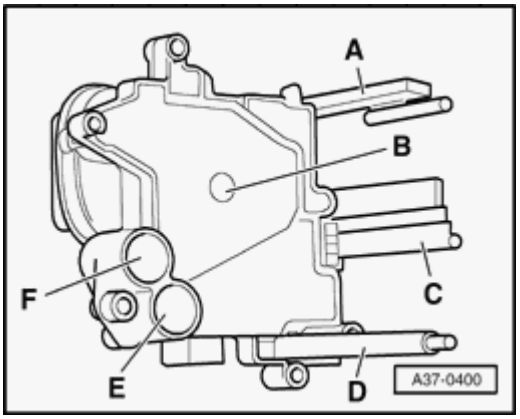


Fig. 30: Identifying Sensors Of Soiling And Metal Shavings
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If necessary, clean sensors - **A** - , - **C** - and - **D** - of soiling and metal shavings.
- Install Transmission Control Module (TCM) J217 --> **Transmission Control Module (TCM) J217 , removing and installing**.
- Install end cover --> **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS** .

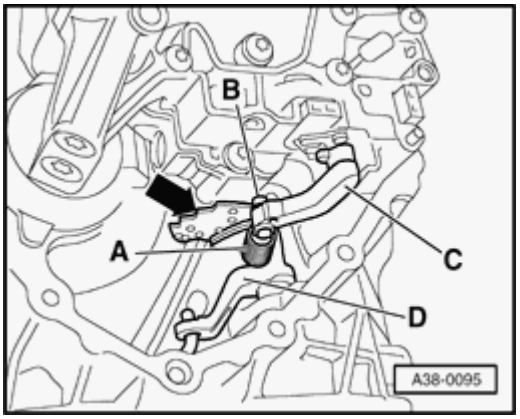
Hydraulic control module, removing and installing

NOTE:

- **Observe general repair notes --> Repair instructions .**
- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **Always replace a dirty or faulty hydraulic control module.**

Removing

- Remove end cover --> **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS** .
- Remove Transmission Control Module (TCM) J217 --> **Transmission Control Module (TCM) J217 , removing and installing**.



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Fig. 31: Identifying Catch Of Selector Shaft, Spring & Roller
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull slider for selector lever position - **C** - downward out of bearing hole of hydraulic control module.
- Disengage spring - **A** - from selector shaft - **D** -.

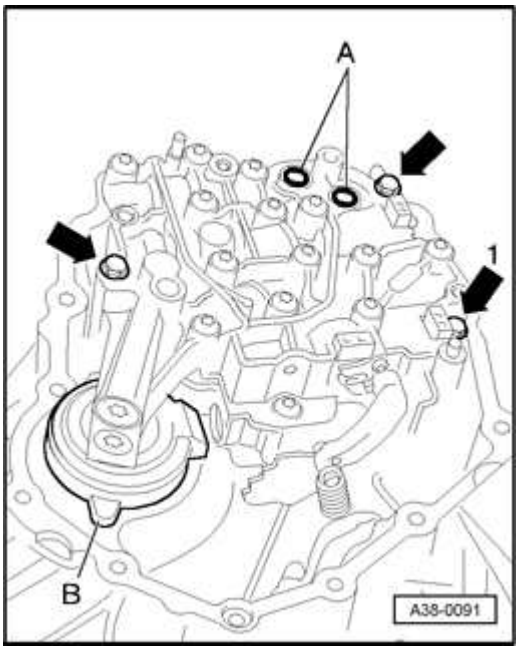


Fig. 32: Coating New O-Rings On Hydraulic Control Module With ATF
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - and remove hydraulic control module.

CAUTION: The hydraulic control assembly must not under any circumstances be supported on the long pump shaft on the back side or raised up. Otherwise, the blades inside the vane pump will be crushed and the pump damaged.

Installing

Install in reverse order of removal, note the following:

NOTE:

- **Replace gaskets and O-rings.**

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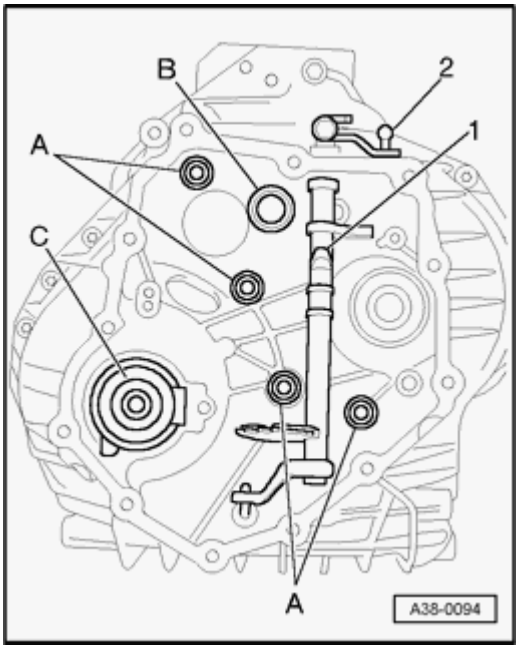


Fig. 33: Identifying Axial Sealing Elements, Cover, Selector Shaft & Shifting Cam
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Replace axial sealing elements - **A** - (qty. 4) and - **B** -.
- Coat axial sealing elements with ATF before installing.

- Axial sealing elements - **A** - must be inserted into mounts with smaller diameter facing transmission.

- Install cover - **C** - , while doing so note locating tab.

- Locating tab on rear side of cover must be inserted into small hole on transmission surface.

- Push lever for selector shaft - **2** - completely toward front until it stops so that shifting cam - **1** - stands almost vertically (with slight tilt toward right).

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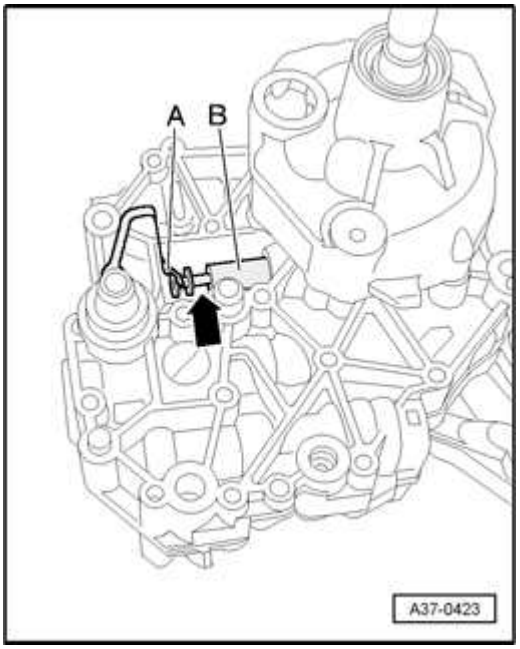


Fig. 34: Pressing Control Piston On Rear Side Of Hydraulic Control Module Completely Inward Until It Engages Into Assembly Spring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press control piston - **B** - on rear side of hydraulic control module completely inward (left) until it engages into assembly spring - **A** -.
- Insert hydraulic control assembly into transmission. Align unit properly to fit without jamming.

NOTE:

- **When installing control module, make sure that shifting cam (item 1 in Fig. 33) engages into free groove - arrow - on control piston - B -.**

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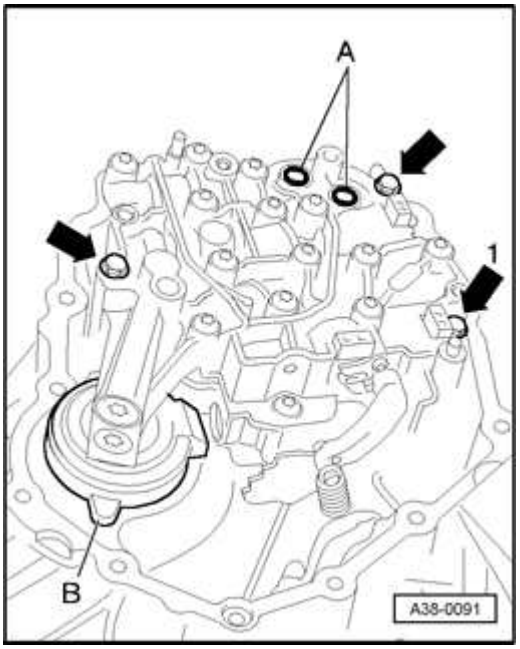


Fig. 35: Coating New O-Rings On Hydraulic Control Module With ATF
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Hand-tighten bolts - **arrows** -. Bolt - **arrow 1** - is shorter than the other two bolts.
- Check that cover is properly mounted.

- Locating tab - **B** - must be inserted into hole intended for it on the transmission.

Check function of control piston

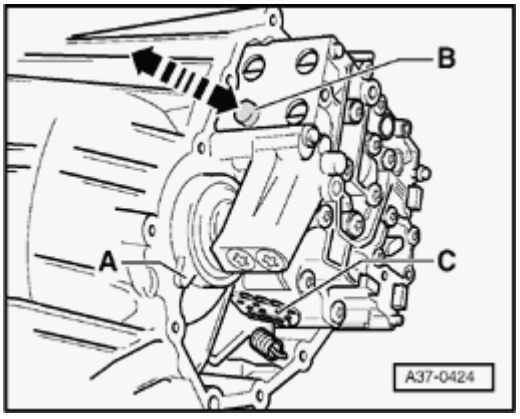


Fig. 36: Moving Selector Shaft At Detent Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Move selector shaft at detent plate - **C** - or at lever for selector shaft several times toward left and right.

- When doing this, control piston - **B** - must travel outward and inward accordingly - **arrow** -.

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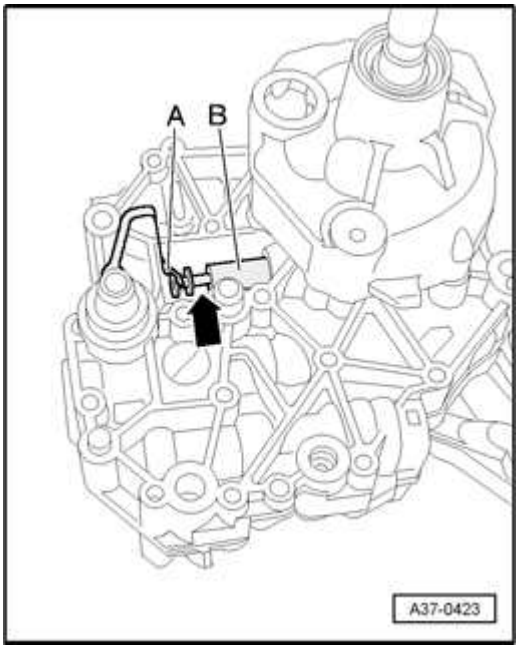


Fig. 37: Pressing Control Piston On Rear Side Of Hydraulic Control Module Completely Inward Until It Engages Into Assembly Spring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

If control piston does not move, shifting cam has not engaged into groove - **arrow** - at control piston on rear side of hydraulic control module. In this case:

- Remove hydraulic control module once again and insert again.

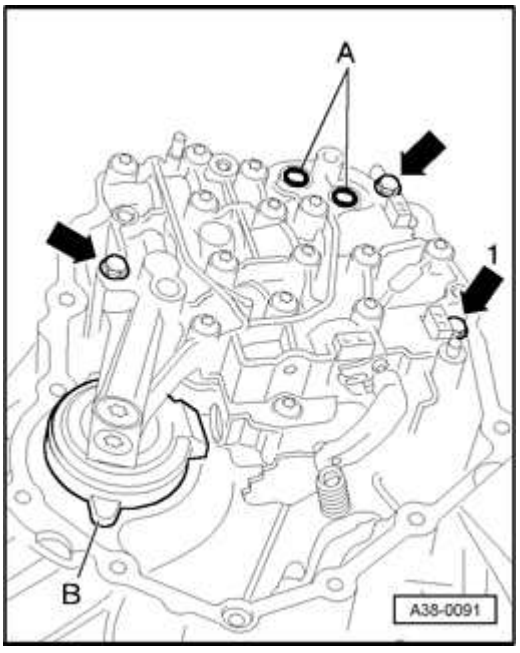


Fig. 38: Coating New O-Rings On Hydraulic Control Module With ATF
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Tighten bolts - **arrows** -.

Installing slider for selector lever position

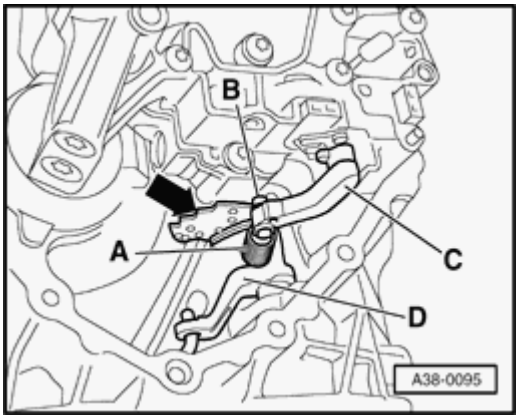


Fig. 39: Identifying Catch Of Selector Shaft, Spring & Roller
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect roller - **B** - with collar downward onto slider for selector lever position - **C** -.
- Engage spring - **A** - into selector shaft - **D** - and slider for selector lever position.
- Slide slider for selector lever position into bearing hole in housing of hydraulic control module.

NOTE:

- **For the sake of illustration, transmission is shown without hydraulic control module.**

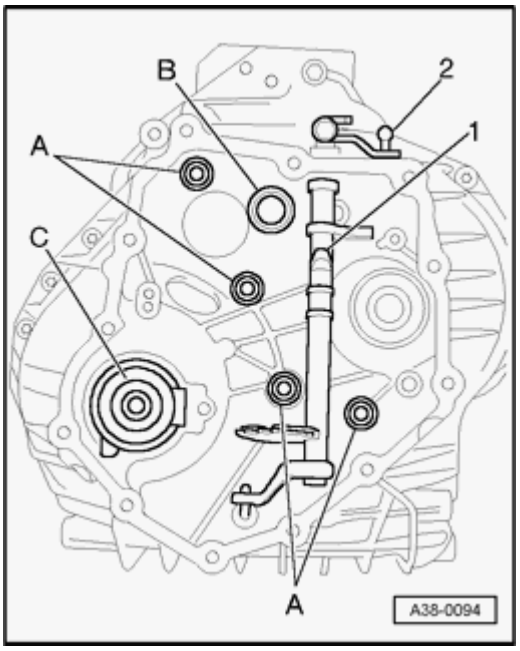


Fig. 40: Identifying Axial Sealing Elements, Cover, Selector Shaft & Shifting Cam
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Shift lever for selector shaft - **2** - toward front and rear until stop:

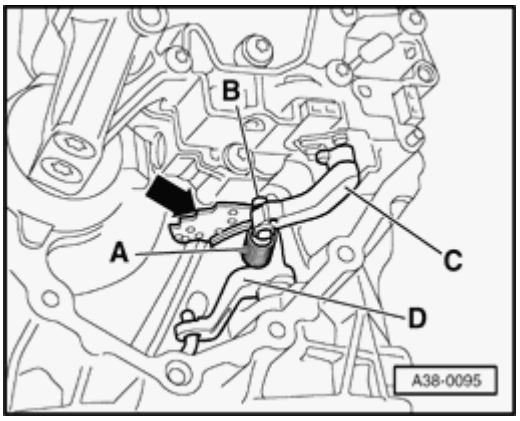


Fig. 41: Identifying Catch Of Selector Shaft, Spring & Roller
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Detent plate - **arrow** - moves toward front or toward rear.
- When doing this, it must allow the roller - **B** - to be engaged in the individual notches.
- Slider for selector lever position - **C** - moves in steps toward front or rear.
- Roller must be installed with collar facing downward so that it cannot be pulled off upward.

- Clean selector shaft --> **Selector shaft, cleaning**.
- Insert Transmission Control Module (TCM) J217 with new O-rings --> **Transmission Control Module (TCM) J217 , removing and installing**.
- Install end cover --> **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS** .
- Fill with ATF --> **ATF, filling for ATF flushing process**.

- After installing transmission, check ATF level and correct --> **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING** .

Torque specification

Component	Nm
Hydraulic control module to transmission housing	10

Input shaft seal, replacing

- If ATF flows out at underside of transmission bell housing, input shaft seal and/or ATF breather pipe may be leaking. Before replacing any parts, be sure to find actual cause of malfunction.
- Input shaft seal must be replaced if leaking.
- ATF breather pipe must be replaced if leaking --> **ATF breather pipe, removing and installing**.

Special tools, testers and auxiliary items required

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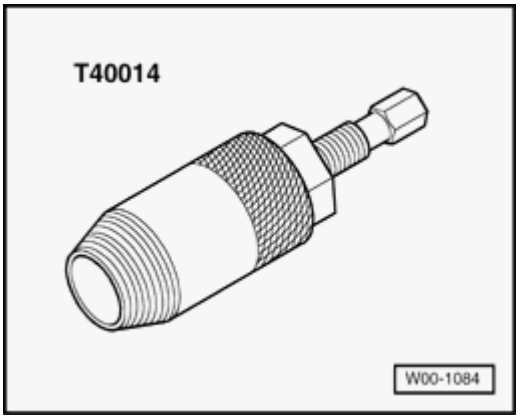


Fig. 42: Seal Remover T40014
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Seal remover T40014

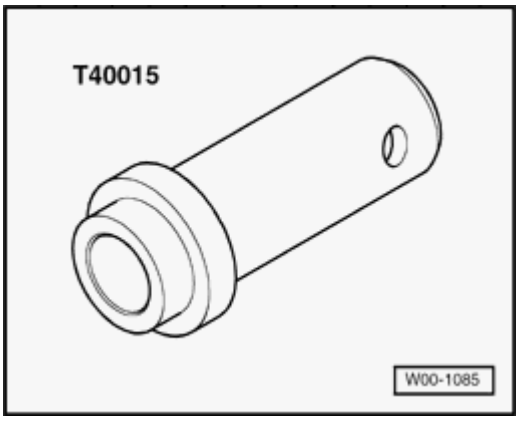


Fig. 43: Thrust Piece T40015
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Thrust piece T40015

Work procedure

NOTE:

- **Observe general repair notes --> Repair instructions .**
- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **Transmission removed.**

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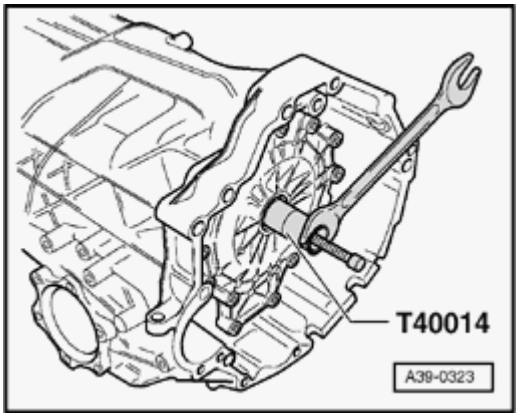


Fig. 44: Rotating Seal Ring Extractor T40014 By Hand Into Shaft Seal Until Tool Has Good Hold In Shaft Sea
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Rotate seal ring extractor T40014 by hand into shaft seal until the tool has a good hold in the shaft seal. Then tighten puller with an opened wrench.
- You can pull out shaft seal a short distance by screwing in rear bolt of puller.
- Re-tighten puller T40014 so that it re-engages securely in the shaft seal and continue tightening shaft seal by installing bolt.
- Repeat procedure until shaft seal has been pulled out completely.

- Input shaft and flange cover must be installed to install seal.

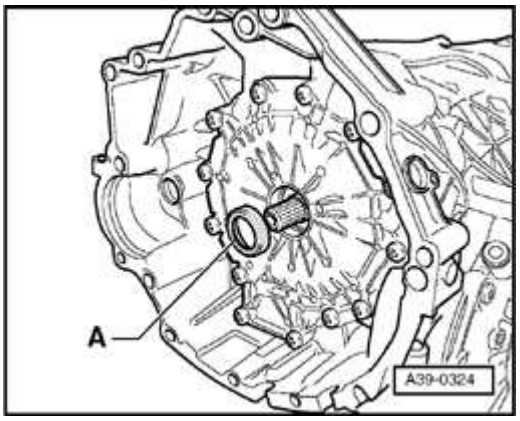


Fig. 45: Sliding Shaft Seal Onto Input Shaft With Open Side Facing Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Coat new shaft seal - **A** - with ATF.
- Slide shaft seal onto input shaft with open side facing transmission.

NOTE:

- **Slide shaft seal as far as possible into cover so that it cannot bend when driving in.**

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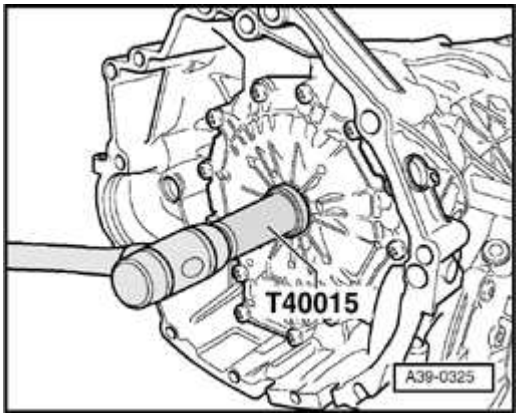


Fig. 46: Driving In Sealing Ring Until It Stops Using Thrust Piece T40015
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Drive in shaft seal until it stops using thrust piece T40015.
- Fill with ATF --> **ATF, filling for ATF flushing process**.
- After installing transmission, check ATF level and correct --> **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING** .

Input shaft, removing and installing

Special tools, testers and auxiliary items required

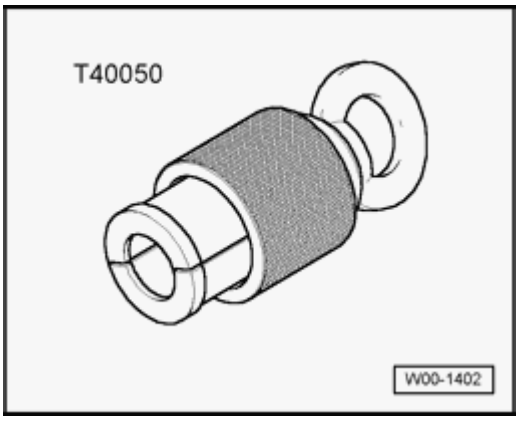


Fig. 47: Puller T40050
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Puller T40050

Removing

NOTE:

- **Observe general repair notes --> Repair instructions .**
- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**

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- **Transmission removed and secured vertically to assembly stand Suspending transmission vertically.**

- Drain ATF --> **ATF, draining for ATF flushing process** , pivot transmission in installation position (level),

NOTE:

- **Transmission must not be turned so that flange points downward.**

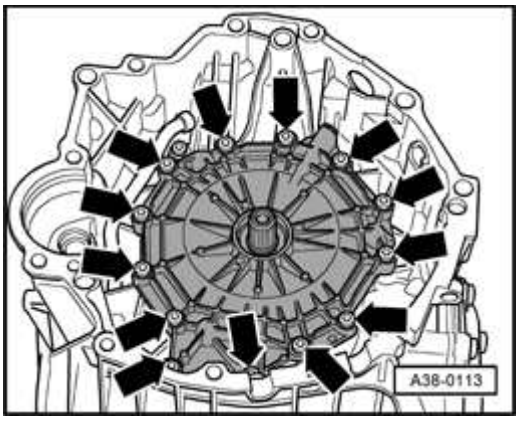


Fig. 48: Removing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** -.
- Using a plastic mallet, carefully knock input shaft flange cover so that input shaft flange cover loosens itself from seal.

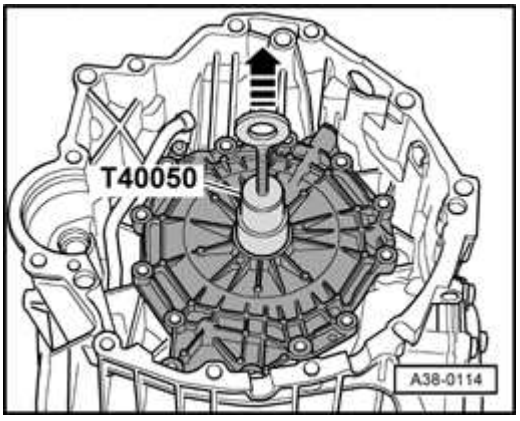


Fig. 49: Securing Puller T40050 On Transmission Input Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Secure Puller T40050 on transmission input shaft.
- Check Puller T40050 for secure seating on input shaft.

- Circlip must be pushed all the way down.

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- Pull input shaft with flange cover and forward clutch on Puller T40050 out of transmission housing - **arrow** -.

CAUTION:
- **Input shaft must not be set down on the projecting oil pipe - arrow - otherwise it will be damaged.**
- **If the oil pipe is damaged, starting problems or a transmission malfunction will result.**

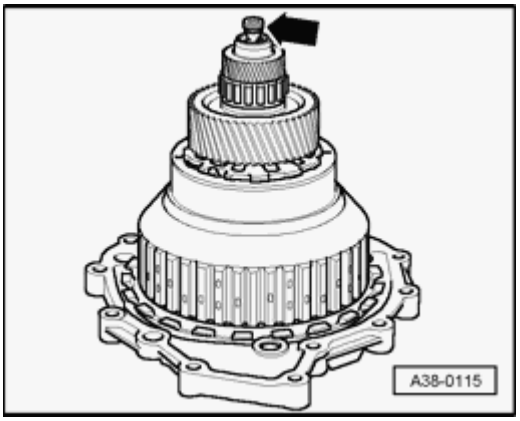


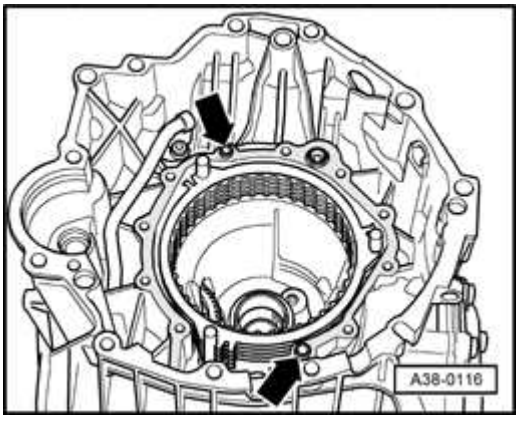
Fig. 50: Identifying Oil Pipe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

CAUTION: The reverse gear clutch plates must not be removed from the transmission housing.

Installing

Install in reverse order of removal, note the following:

- Check wear on transmission components --> **Transmission components, evaluating wear**
- Clean sealing surfaces on transmission housing and flange cover.



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Fig. 51: Checking Whether Bushings For Centering Flange Cover On Transmission Housing Are Installed And Seated Securely
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check whether bushings - **arrows** - for centering flange cover on transmission housing are installed and seated securely.

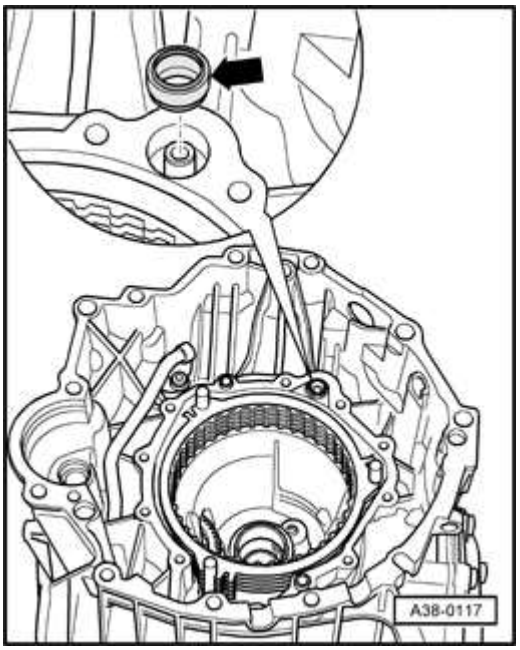


Fig. 52: Checking Condition Of Sealing Ring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check condition of sealing ring - **arrow** - , replace if necessary.

- Installation position of oil seal: Sealing lip towards flange cover.

- Place paper gasket in position.

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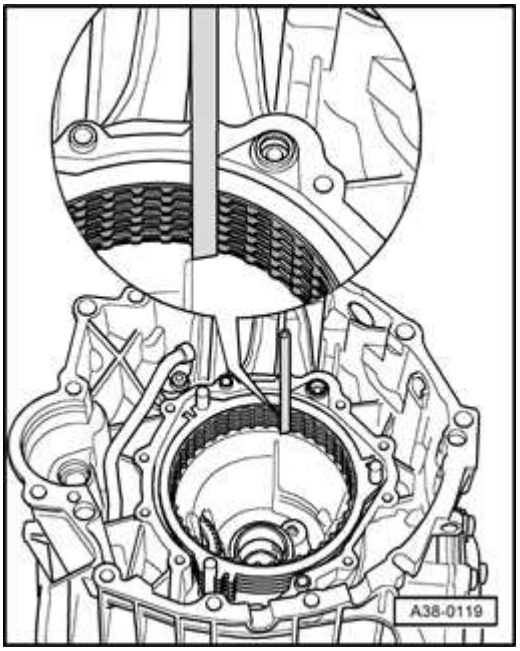


Fig. 53: Aligning Clutch Discs Of Reverse Gear Clutch E.G. Using Straight-Edge
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Align clutch discs of reverse gear clutch e.g. using a straight-edge.
- Splines must stand exactly in a row.

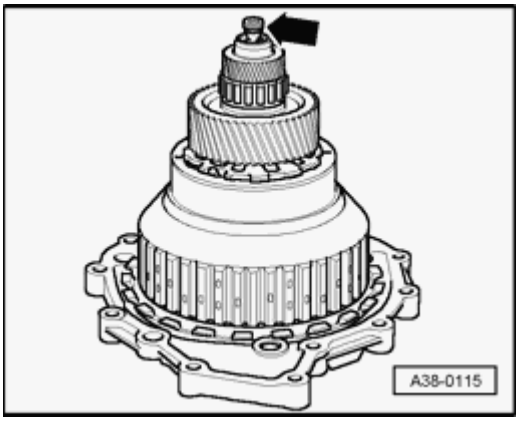


Fig. 54: Identifying Oil Pipe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check installation dimension of oil pipe - **arrow** - :
- If oil pipe is inserted completely, the dimension from its end to the input shaft is approx. 11.5 mm.

If the dimension is smaller, the oil pipe possibly is damaged as it was pushed in too far and is broken at the end.

If the dimension is larger, it is not pushed in far enough.

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CAUTION:

- **Input shaft must not be set down on the projecting oil pipe - arrow - otherwise it will be damaged.**
- **If the oil pipe is damaged, starting problems or a transmission malfunction will result.**

- Insert entire input shaft into transmission housing.

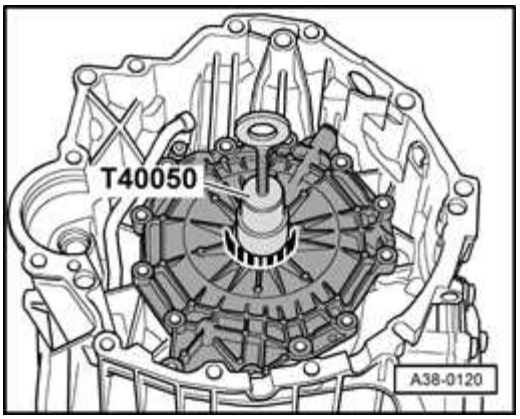


Fig. 55: Using Back And Forth Rotating Motions On Input Shaft Until Clutch Discs Of Reverse Gear Clutch Have Engaged
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Use back and forth rotating motions - **arrow** - on input shaft until clutch discs of reverse gear clutch have engaged. Raise input shaft slightly when doing this.
- Just before the input shaft is fully in position, rotate it counter-clockwise over the last few millimeters so that it engages in the teeth of the helical intermediate gearing.

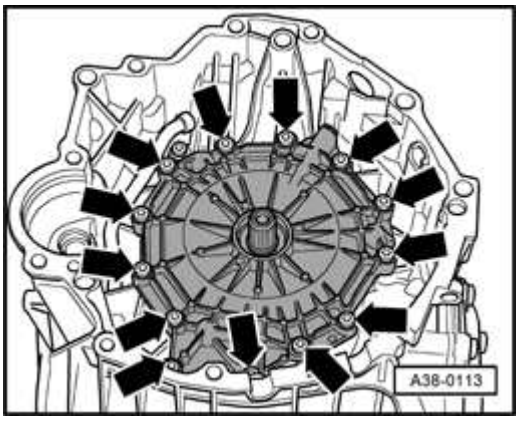


Fig. 56: Removing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten bolts - **arrows** - in diagonal sequence and in stages.
- Fill with ATF --> **ATF, filling for ATF flushing process**.

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CAUTION:

- **The Multitronic 01J or 0AN transmission requires a different ATF than shift automatics. Only ATF for CVT transmission which can be obtained as replacement part must be used in planetary gearing .**
- **Flush ATF after installing transmission --> ATF flushing process.**

Torque specification

Component	Nm
Flange cover on transmission housing	23

Torsen differential cover, removing and installing

Special tools, testers and auxiliary items required

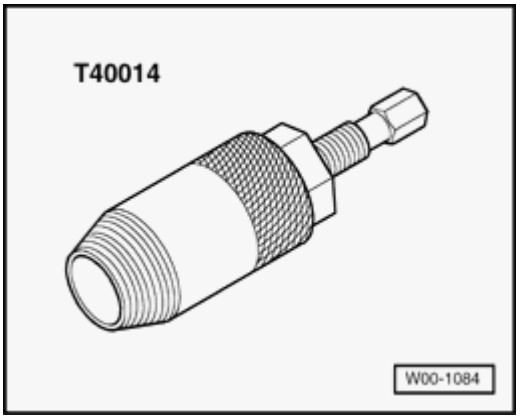


Fig. 57: Seal Remover T40014
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Seal remover T40014

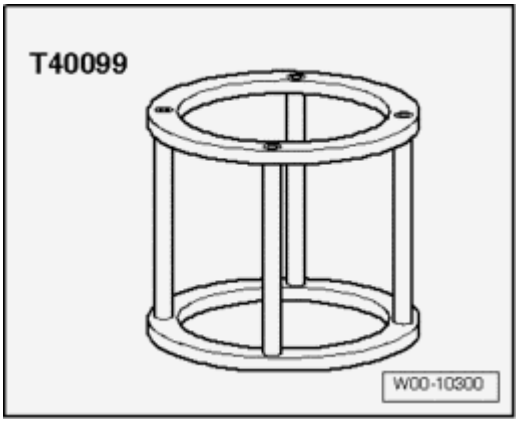


Fig. 58: Pressure Stand T40099
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Pressure stand T40099
- Ice spray
- Protective gloves

Removing:

- Input shaft removed --> **Input shaft, removing and installing**.

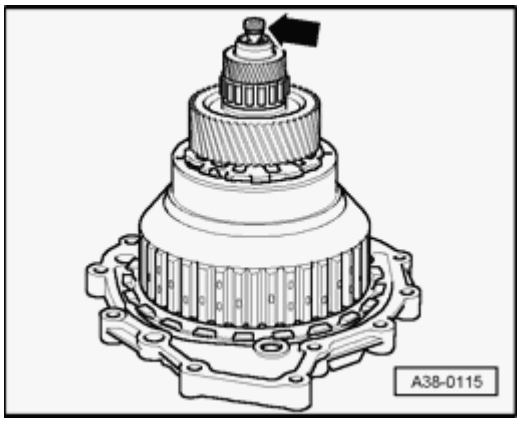


Fig. 59: Identifying Oil Pipe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull oil pipe - **arrow** - upward and out to avoid damage.

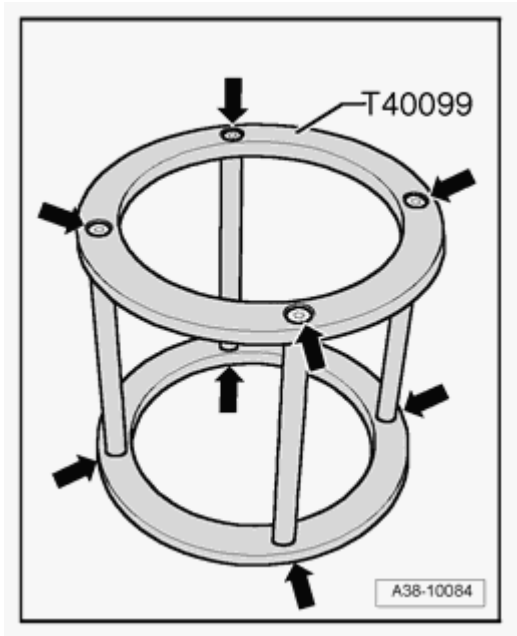


Fig. 60: Checking All 8 Screws On Pressure Stand T40099
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check all 8 screws - **arrows** - on Pressure Stand T40099.

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- Screws must be installed flush to 25 Nm Assembly instructions for pressure stand T40099.

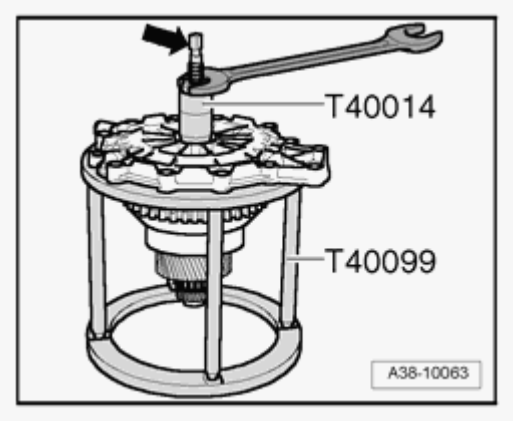


Fig. 61: Pulling Out Input Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert input shaft in pressure stand T40099.
- Rotate seal ring extractor T40014 by hand into shaft seal until tool has a good hold in the shaft seal. Then tighten puller with an opened wrench.
- You can pull out shaft seal a short distance by installing rear bolt - **arrow** -.
- Re-tighten Seal ring extractor T40014 so that puller engages securely in shaft seal again and continue turning bolt to pull out shaft seal.
- Repeat procedure until shaft seal has been pulled out completely.

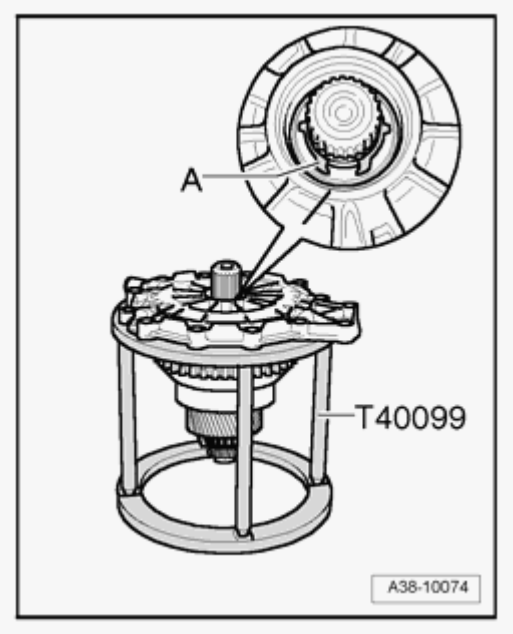


Fig. 62: Removing Input Shaft Cover Circlip
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Remove input shaft cover circlip - **A** -.
- Measure and note thickness of removed circlip.

NOTE:

- **When installing, circlip must be replaced with a new circlip of same thickness.**

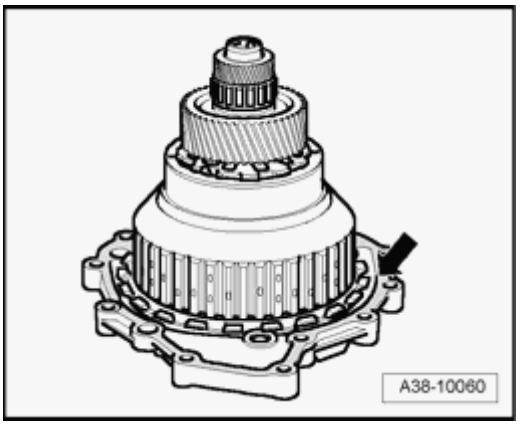
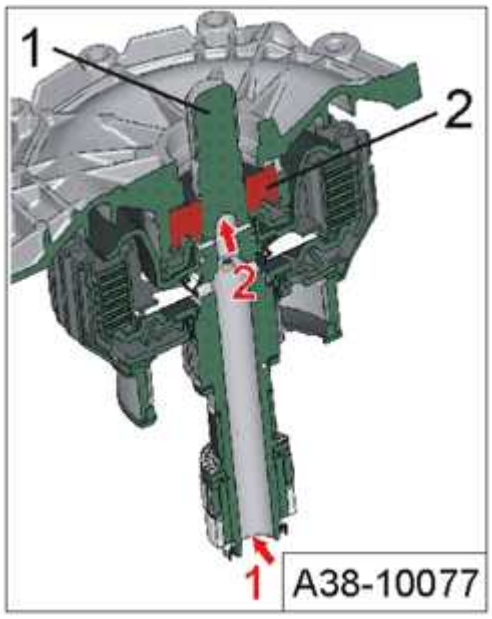


Fig. 63: Cleaning Cover Sealing Surface
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Clean cover sealing surface - **arrow** -.

CAUTION: Wear protective gloves!

The ice spray can reach temperatures under 0° Celsius which can freeze the skin without protective gloves.



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Fig. 64: Cooling Hollow Shaft On Inside Of Ball Bearing Seat Over Opening Of Removed Oil Pipe With Ice Spray
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Cool hollow shaft - **1** - on inside of ball bearing - **2** - seat - **arrow 2** - over opening - **arrow 1** - of removed oil pipe with ice spray, for example.

NOTE:

- **Shaft represented in section here.**
- **Shaft must be cooled so that ball bearing - 2 - can be pressed off more easily and not be damaged.**

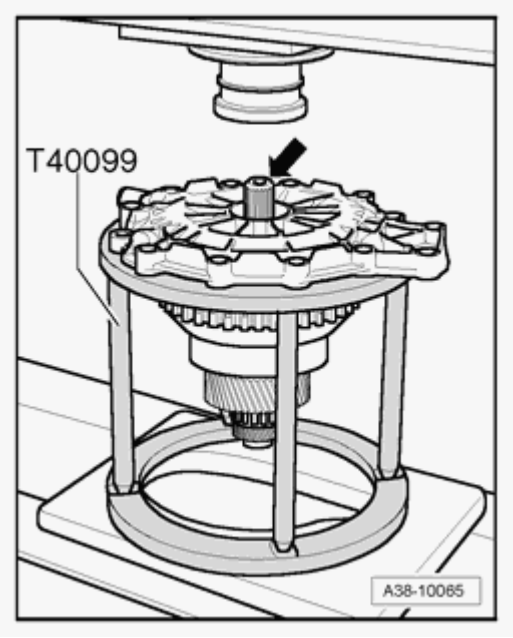


Fig. 65: Inserting Input Shaft In Pressure Stand T40099
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Clean surface of pressure stand T40099.
- Insert input shaft in pressure stand T40099.

- Input shaft sealing surface must be flush.
- There must be no objects such as cable ties or dirt between input shaft sealing surfaces and surface of pressure stand T40099.

CAUTION: Shavings or dirt damage cover sealing surfaces when pressed, cover must then be replaced.

- Also cool shaft from outside - **arrow** - with ice spray, for example.

NOTE:

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- **Shaft must be cooled so that ball bearing can be pressed off more easily and not be damaged.**

- Place input shaft together with pressure stand T40099 on hydraulic press thrust plate.

NOTE:

- **Pressure stand T40099 should lie on as much surface of hydraulic press as possible.**

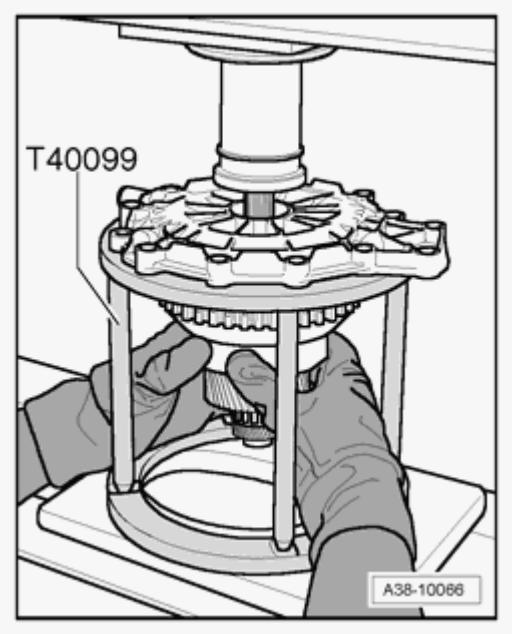


Fig. 66: Holding Shaft From Below And Pressing Shaft Out Of Cover With Hydraulic Press
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Hold shaft from below and at the same time, press shaft out of cover with hydraulic press.

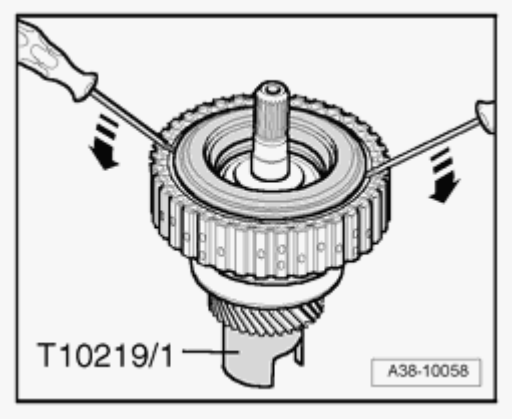


Fig. 67: Placing Input Shaft On Assembly Tool T10219/1
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Place input shaft on assembly tool T10219/1.

NOTE:

- **Ignore screwdriver and arrows.**

Installing:

- Replace ball bearing in input shaft cover --> **Ball bearing in input shaft cover, replacing**

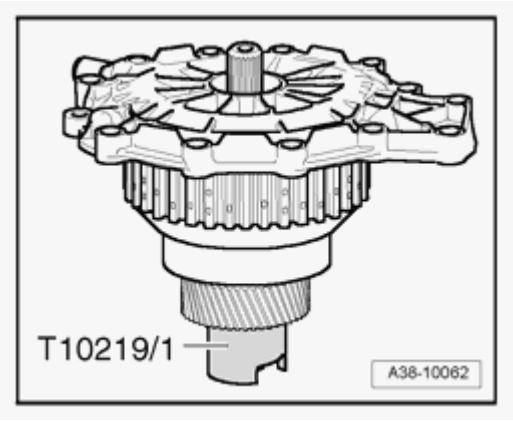


Fig. 68: Placing Input Shaft Cover On Input Shaft And Pressing On By Hand As Far As Possible
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place input shaft cover on input shaft and press on by hand as far as possible.

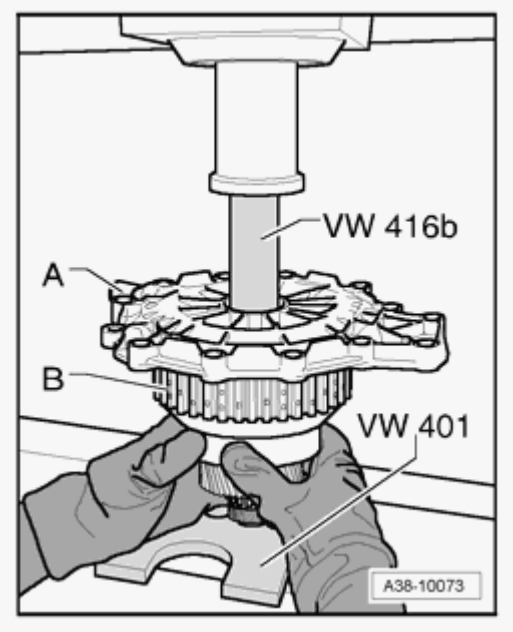


Fig. 69: Placing Input Shaft On Thrust Plate VW 401 & Pressing Input Shaft Cover With Tube VW 416 B Onto Input Shaft Up To Stop
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Place input shaft - **B** - on Thrust plate VW 401.

CAUTION: Place input shaft straight and centered under hydraulic press thrust disc; otherwise input shaft can tip to the side when cover is pressed on.

- With hydraulic press, press input shaft cover - **A** - with Tube VW 416 B onto input shaft up to stop.

Input shaft cover circlip, installing

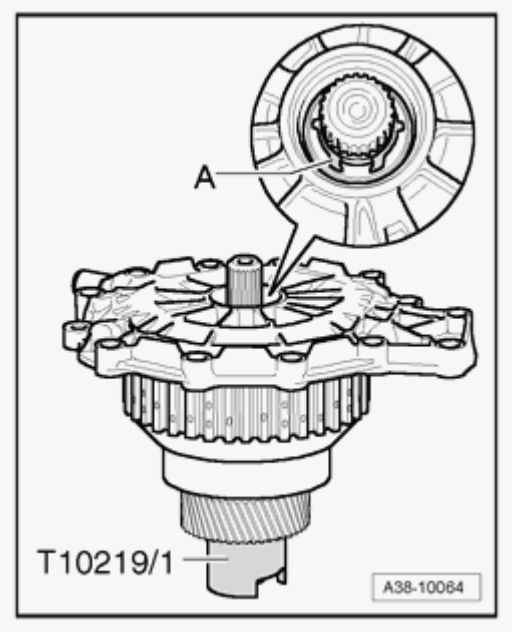


Fig. 70: Input Shaft Cover Circlip, Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- When installing, circlip - **A** - must be replaced with a new circlip of same thickness.

NOTE:

- **Check for correct circlip seating.**

Oil pipe, installing

- Check wear on transmission components --> **Transmission components, evaluating wear**

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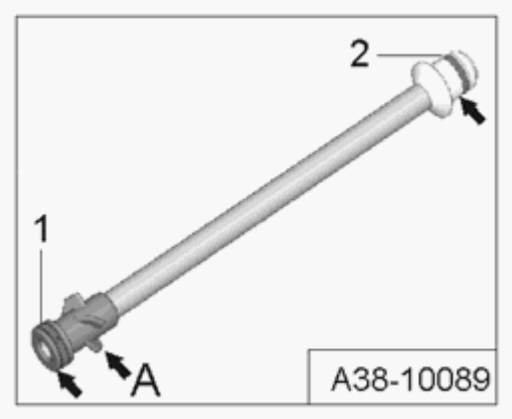


Fig. 71: Identifying O-Ring, Oil Pipe & Rotor Blades
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Replace O-ring on oil pipe - **2** -.

- The oil pipe is pressed into the input shaft with the O-ring - **2** -.
- Oil pipe must engage noticeably, rotor blades - **arrow A** - on oil pipe must lie completely in input shaft.

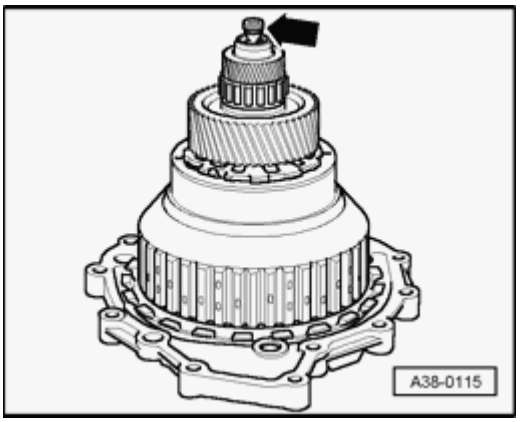


Fig. 72: Identifying Oil Pipe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press oil pipe - **arrow** - down into input shaft to stop.

- If oil pipe is inserted completely, the dimension from its end to the input shaft is approx. 11.5 mm.

If dimension is smaller, the oil pipe possibly is damaged as it was pushed in too far and is broken at the end.

If dimension is larger, it is not pushed in far enough.

CAUTION:

- **Input shaft must not be set down on the projecting oil pipe - arrow - otherwise it will be damaged.**
- **If the oil pipe is damaged, starting problems or a transmission**

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malfunction will result.

Ball bearing in input shaft cover, replacing

- Input shaft cover removed --> **Torsen differential cover, removing and installing**.

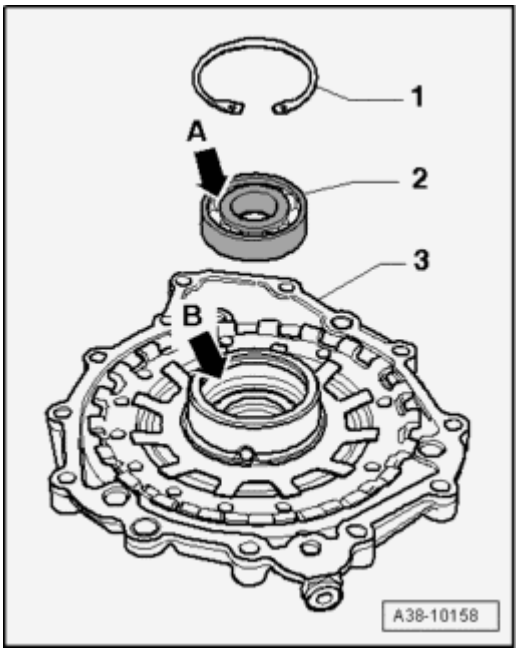


Fig. 73: Identifying Circlip, Ball Bearing & Input Shaft Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Assembly overview

1. Circlip, measure and always replace
2. Ball bearing, always replace
3. Input shaft cover

Removing

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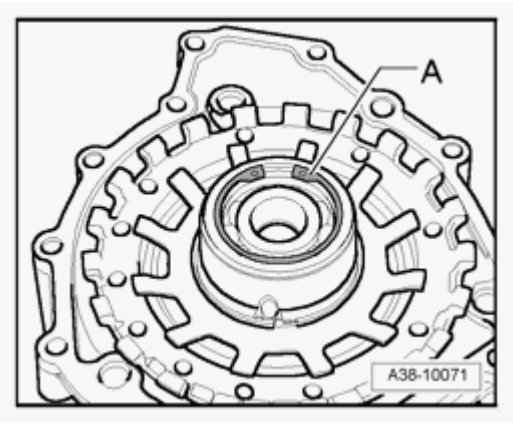


Fig. 74: Identifying Circlip
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove circlip - **A** -.
- Measure and note thickness of removed circlip.

NOTE:

- **When installing, circlip must be replaced with a new circlip of same thickness.**

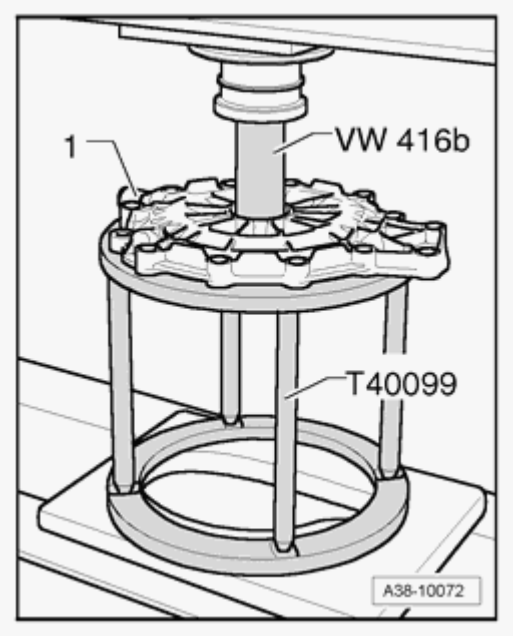


Fig. 75: Laying Input Shaft Cover On Pressure Stand T40099, Placing Under Hydraulic Press & Pressing Ball Bearing With Tube VW 416 B Out Of Input Shaft Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Lay input shaft cover - **1** - on pressure stand T40099 and place under hydraulic press.
- Press ball bearing with Tube VW 416 B out of input shaft cover.

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NOTE:

- **In some cases, ball bearing can also be pressed out by hand without hydraulic press.**
- **Ball bearing must be replaced.**

Installing

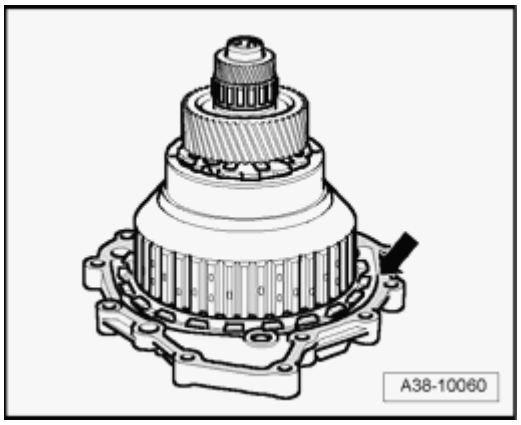


Fig. 76: Cleaning Cover Sealing Surface
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check cover sealing surface - **arrow** - and cover for damage:

- Surface of sealing surfaces must not show any damage.
- Input shaft cover must not be broken cracked.

NOTE:

- **The illustration is shown with input shaft.**

If sealing surface or cover is damaged:

- Replace input shaft cover.

NOTE:

- **A new ball bearing is installed with a new input shaft cover.**

If sealing surface and cover are not damaged:

- Replace ball bearing.

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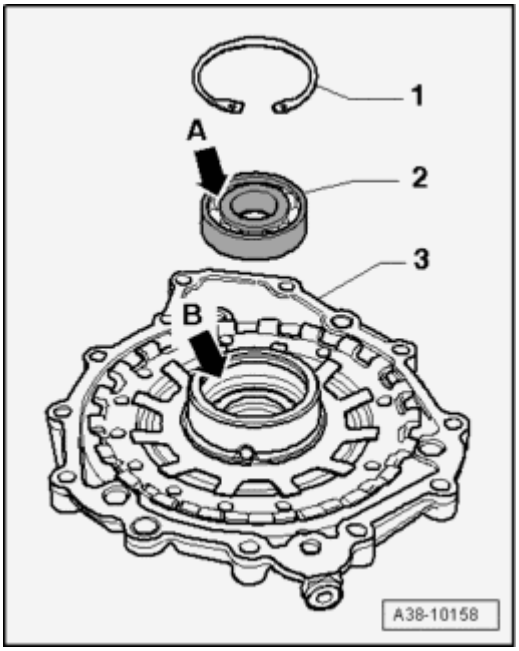


Fig. 77: Identifying Circlip, Ball Bearing & Input Shaft Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Clean ball bearing seat in cover - **arrow B** -.

CAUTION: Note ball bearing position:

- **The ball bearing cause must face downward in cover.**
- **The open side of the ball bearing must face upward, the balls - arrow A - in the bearing must be visible when inserting.**

If the ball bearing is installed incorrectly, it can be damaged during operation and the transmission could possibly be damaged.

- Install ball bearing - **2** - flush and press in by hand as far as possible.

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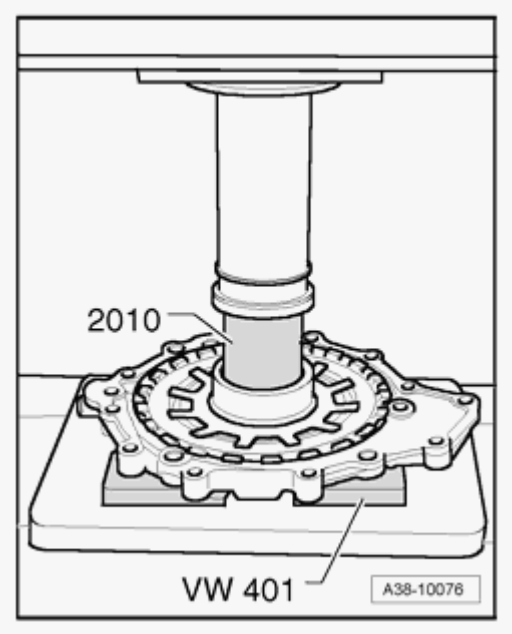


Fig. 78: Laying Input Shaft Cover On Thrust Plate VW 401 & Using Tube 2010 To Press Ball Bearing In As Far As Stop
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Lay input shaft cover on Thrust plate VW 401.
- Using a Tube 2010 , press ball bearing in as far as stop.

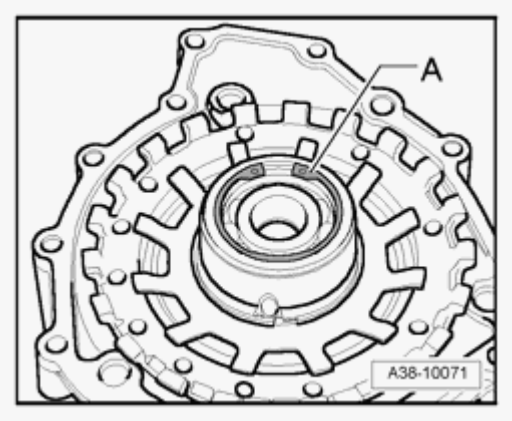


Fig. 79: Identifying Circlip
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- When installing, circlip - **A** - must be replaced with a new circlip of same thickness.
- Check for correct circlip seating, push ball bearing in or use next thinnest circlip, if necessary.

INPUT SHAFT, SERVICING WITH 7 LINING DISCS

Input shaft, servicing with 7 lining discs

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CAUTION:

- **Servicing with the incorrect number of lining discs leads to input shaft damage after bringing vehicle into operation again.**
- **In this case, the software in the Transmission Control Module (TCM) J217 does not match the number of lining discs.**

There are two types of transmissions. They are differentiated according to transmission code :

1. Transmission with 7 lining discs serviced

These transmissions are installed in vehicles with 4-cyl. 1.9L TDI engine, 4-cyl. 2.0L TDI engine, 6-cyl. 2.5L TDI engine, 6-cyl. 3.0L MPI gasoline engine and 6-cyl. 3.2L FSI gasoline engine.

- --> **Input shaft with 7 lining discs, assembly overview**
- --> **Input shaft with 7 lining discs, disassembling and assembling**

2. Transmission with 6 lining discs serviced

These transmissions are installed in vehicles with all other engines.

- --> **Input shaft with 6 lining discs, assembly overview**
- --> **Input shaft with 6 lining discs, disassembling and assembling**

Input shaft with 7 lining discs, assembly overview

CAUTION:

- **Note the difference between input shafts with 6 and 7 lining discs --> Input shaft, servicing with 7 lining discs**

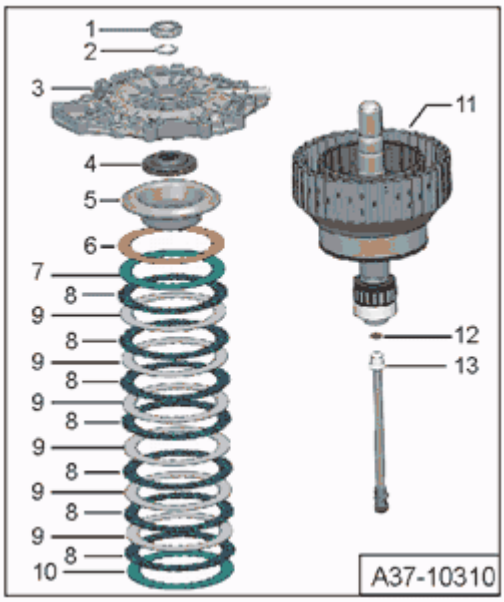


Fig. 80: Input Shaft With 7 Lining Discs, Assembly Overview

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Input shaft seal

- Replace --> **Input shaft seal, replacing**

2 - Input shaft cover circlip

- Replace with same thickness

3 - Input shaft cover

- After removing cover, input shaft cover ball bearing must be replaced --> **Ball bearing in input shaft cover, replacing**

4 - Piston

- Check for wear --> **Transmission components, evaluating wear**

5 - Pressure plate

- Check for wear --> **Transmission components, evaluating wear**

6 - Corrugated spring washer

7 - Upper adjustment disc

- Determine thickness --> **Input shaft with 7 lining discs, adjusting with air gap determination**
- Replace

8 - Coated plate

- Qty. 7
- Replace

9 - Outer plate

- Qty. 6
- Replace

10 - Lower adjustment disc

- Determine thickness --> **Input shaft with 7 lining discs, adjusting with air gap determination**
- Replace

11 - Input shaft cylinder

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- Check for wear --> **Transmission components, evaluating wear**

12 - O-Ring

- Replace

13 - Oil pipe

- Check for wear --> **Transmission components, evaluating wear**

Input shaft with 7 lining discs, disassembling and assembling

CAUTION:

- **Note the difference between input shafts with 6 and 7 lining discs --> Input shaft, servicing with 7 lining discs**

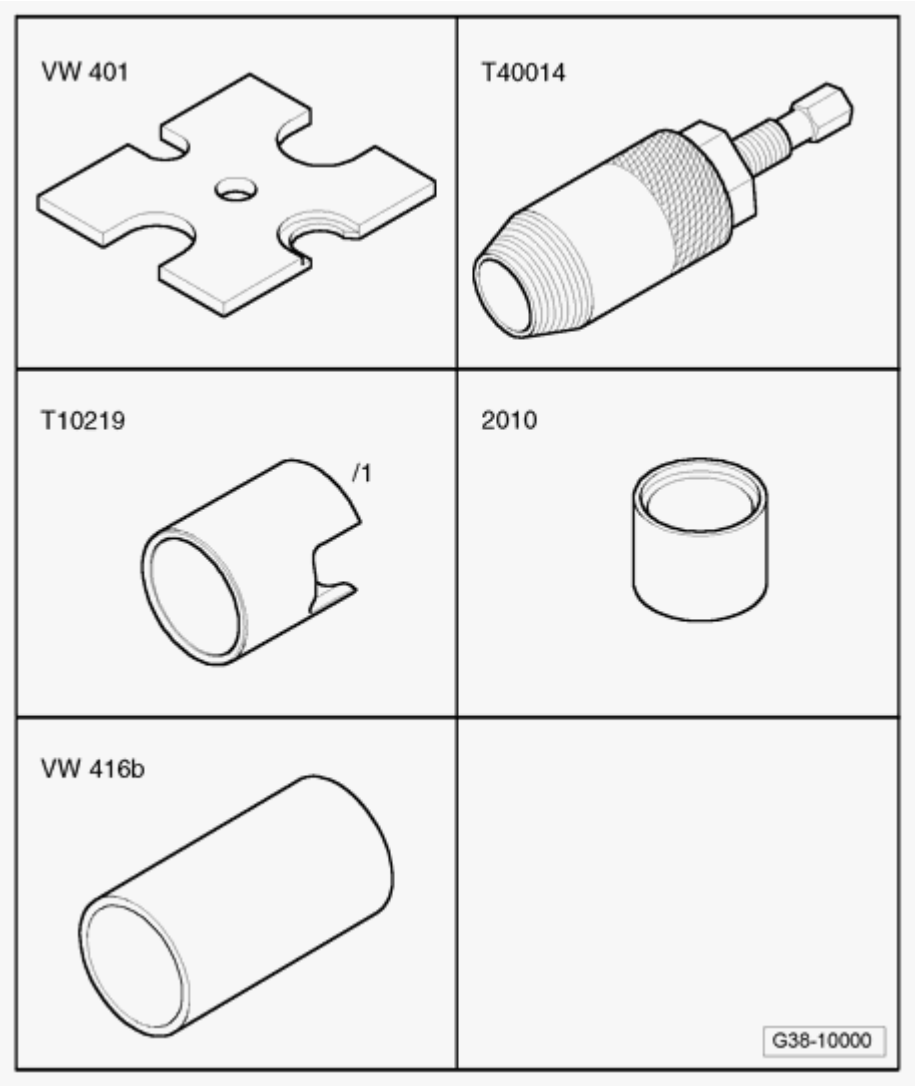


Fig. 81: Identifying Special Tools - Input Shaft With 7 Lining Discs, Disassembling And Assembling (1 Of

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2)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Pressure plate VW 401
- Seal remover T40014
- Assembly tool T10219/1
- Tube 2010
- Tube VW 416 B

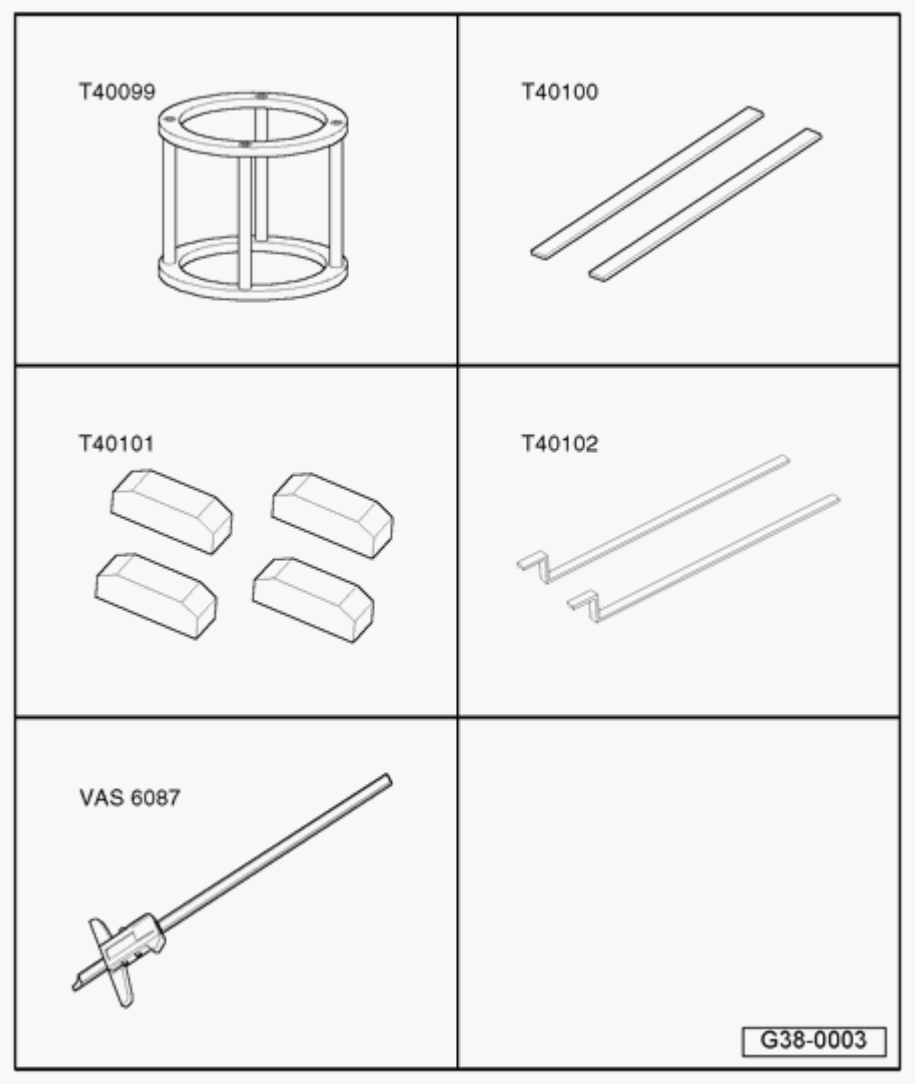


Fig. 82: Identifying Special Tools - Input Shaft With 7 Lining Discs, Disassembling And Assembling (2 Of 2)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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Special tools, testers and auxiliary items required

- Pressure stand T40099
- 2 piece ruler T40100
- 4 piece calipers T40101
- 2 piece feeler gauge T40102 for input shafts with 7 lining discs
- Digital depth gauge VAS 6087
- Protective gloves
- Ice spray

Input shaft, disassembling

- Transmission removed

NOTE:

- **Observe general repair notes --> Repair instructions .**
- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**

- Remove input shaft --> **Input shaft, removing and installing**.
- Remove input shaft cover from shaft --> **Torsen differential cover, removing and installing**

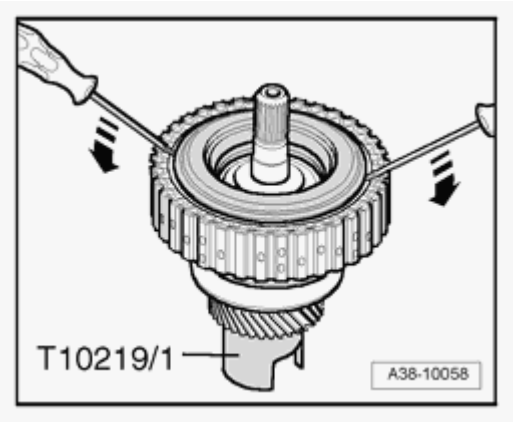


Fig. 83: Placing Input Shaft On Assembly Tool T10219/1
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place input shaft on assembly tool T10219/1.
- Carefully raise thrust plate with pistons with two screwdrivers - **arrows** -.

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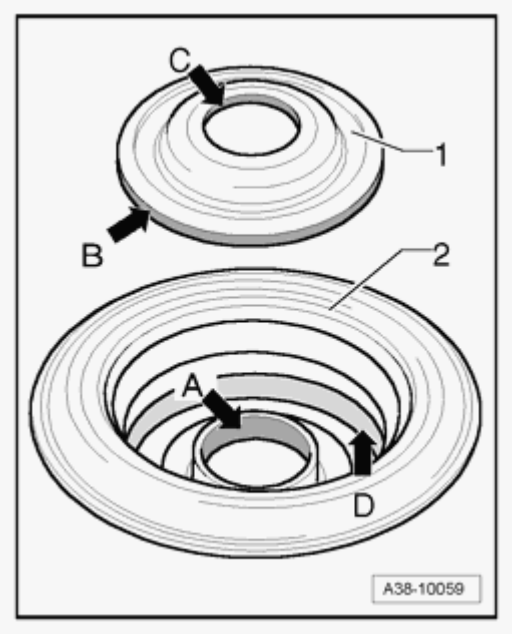


Fig. 84: Inner Running And Sealing Surfaces Of Thrust Plate And Pistons
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Precautionary measures:

CAUTION:

- **The inner running and sealing surfaces - arrow A - of the thrust plate and pistons - arrow C - must not touch shaft during removal and installation.**
- **The running and contact surfaces must not show the smallest signs of damage such as scratches or grooves as a result of removing or installing.**
- **If damaged, the thrust plate or pistons must be replaced.**

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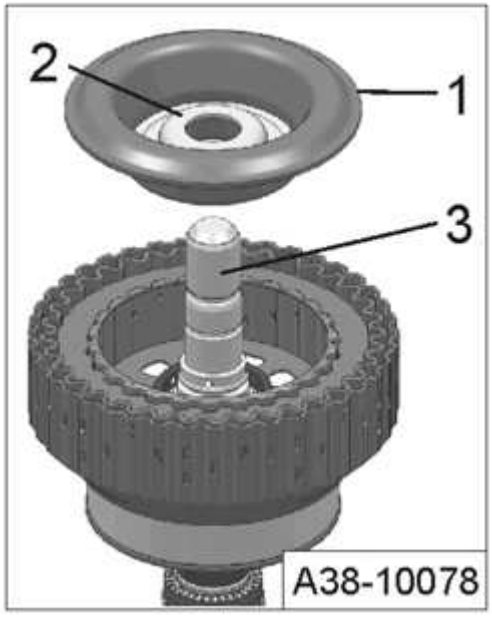


Fig. 85: Guiding Thrust Plate With Pistons Up Over Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully guide thrust plate - **1** - with pistons - **2** - up over shaft - **3** -.
- Inner running surfaces of thrust plate - **1** - and pistons - **2** - must not touch shaft.

Disc pack, removing

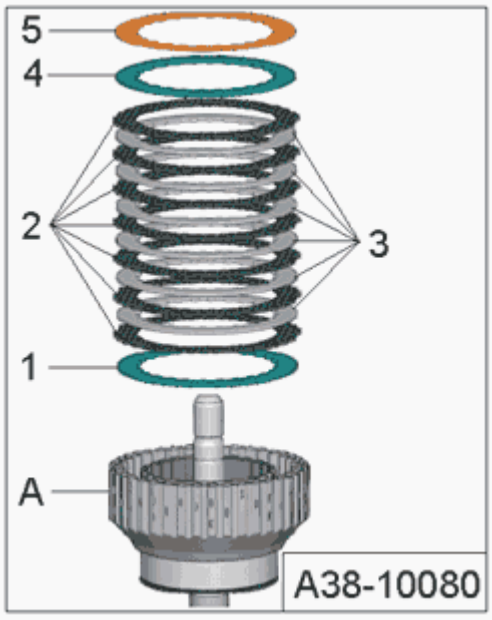


Fig. 86: Identifying Disc Pack
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Remove corrugated spring washer - **5** - , they must be used again.
- Remove upper adjustment disc - **4** - from input shaft cylinder - **A** -.
- Measure adjustment disc thickness - **4** - and note measurement.
- Remove all lining discs - **2** - and outer discs - **3** - from input shaft cylinder - **A** -.

NOTE:

- **With old version of input shaft, only 6 lining discs and 5 outer discs are installed. They must also be replaced with new disc pack with 7 lining discs and 6 outer discs .**

- Remove lower adjustment disc - **1** - from input shaft cylinder - **A** -.
- Measure adjustment disc thickness - **1** - and note measurement.

CAUTION:

- **All old, used adjustment discs, outer discs and lining discs must be replaced. They must not be reinstalled as that would not ensure the input shaft function (surface is used up).**
- **The corrugated spring washer must be used again.**

Input shaft, assembling

CAUTION: Before assembly, check for wear on transmission components.

- Replace ball bearing in input shaft cover --> **Ball bearing in input shaft cover, replacing**.
- Adjust input shaft and determine air gap --> **Input shaft with 7 lining discs, adjusting with air gap determination**

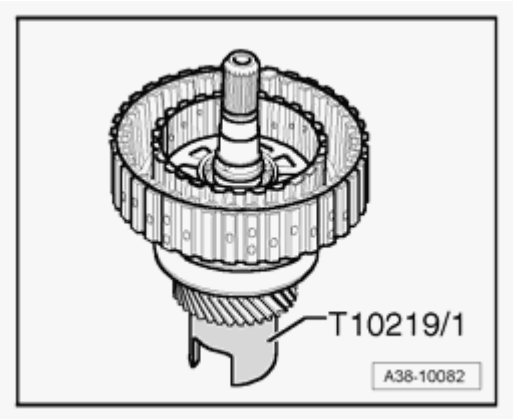


Fig. 87: Placing Input Shaft On Assembly Tool T10219/1
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place input shaft on assembly tool T10219/1.

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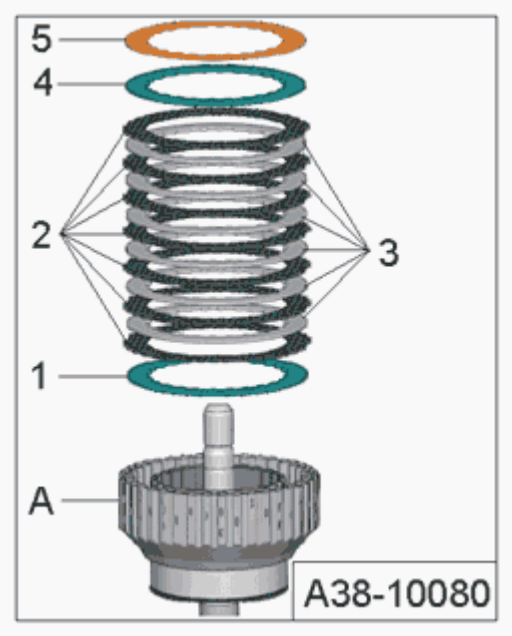


Fig. 88: Identifying Disc Pack
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert determined lower adjustment disc - **1** - in input shaft cylinder - **A** -.
- Insert alternately and with same alignment each lining disc - **2** - (7 pieces) and outer disc - **3** - (6 pieces, 1.9 mm thickness).

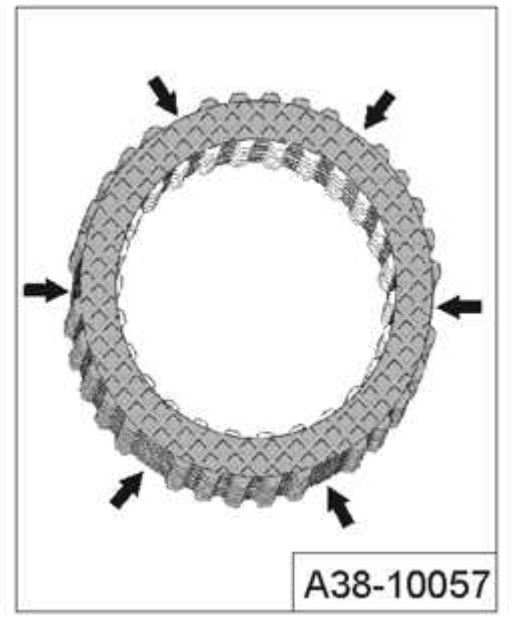


Fig. 89: Lining Disc Alignment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Lining disc alignment:

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CAUTION:

- **The lining discs must be installed with the same alignment, that is the places without outside teeth - arrows - must always lie one on top of the other. Only in this way is the adjustment correct; you must mark the cylinder for correct installation, if necessary.**

NOTE:

- **With old version of input shaft, only 6 lining discs and 5 outer discs are installed. They must also be replaced with new disc pack with 7 lining discs and 6 outer discs .**

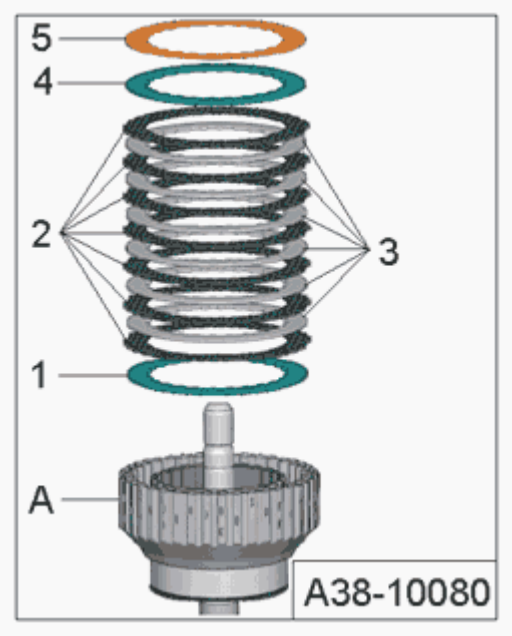


Fig. 90: Identifying Disc Pack
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert determined upper adjustment disc - **4** - in input shaft cylinder - **A** -.
- Lastly, insert corrugated spring washer - **5** -.

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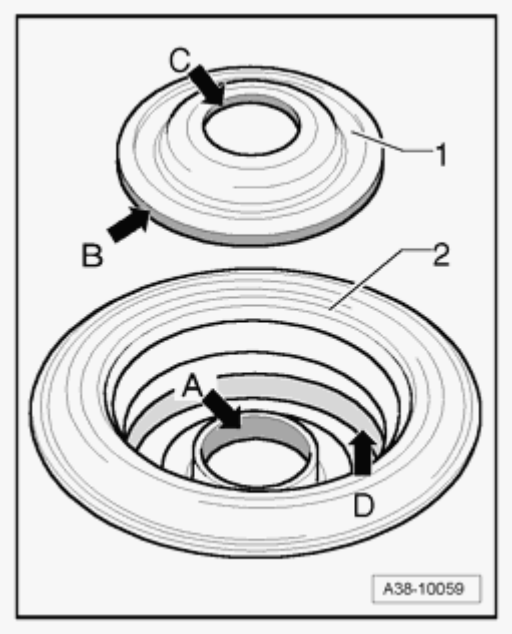


Fig. 91: Inner Running And Sealing Surfaces Of Thrust Plate And Pistons
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press piston - **1** - into stop on thrust plate - **2** -.

CAUTION:

- **The inner running and sealing surfaces - arrow A - of the thrust plate and pistons - arrow C - must not touch shaft during removal and installation.**
- **The running and contact surfaces must not show the smallest signs of damage such as scratches or grooves as a result of removing or installing.**
- **If damaged, the thrust plate or pistons must be replaced.**

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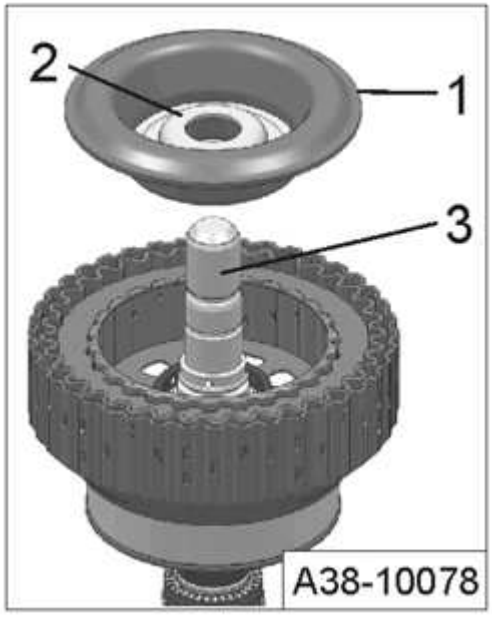


Fig. 92: Guiding Thrust Plate With Pistons Up Over Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully guide pressure plate - **1** - with pistons - **2** - down over shaft - **3** -.
- Inner running surfaces of thrust plate - **1** - and pistons - **2** - must not touch shaft.
- Press thrust plate with pistons uniformly into input shaft up to stop.

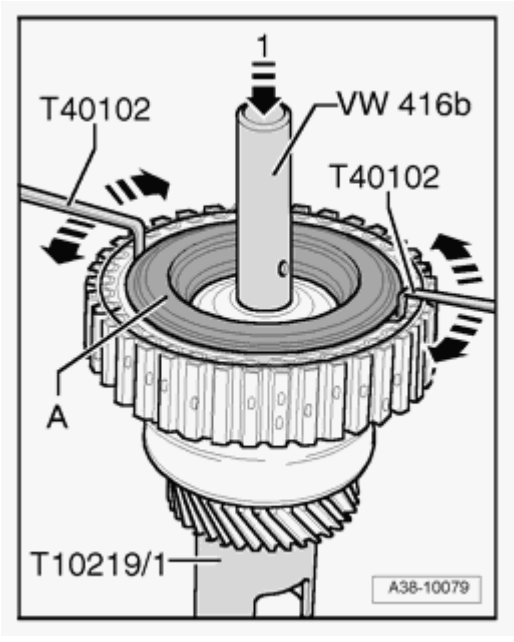


Fig. 93: Checking Air Play With Feeler Gauge T40102
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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Checking air play with feeler gauge T40102

- Insert both feeler gauges T40102 under thrust plate - **A** -.
- A second technician must push thrust plate - **A** - down to stop - **arrow 1** - with Tube VW 416 B.
- Guide both feeler gauges T40102 circularly in direction of - **arrow** - back and forth under thrust plate.

- Both feeler gauges T40102 must be guided oppositely.
- Feeler gauges T40102 must not be angled.
- Entire circular area must be checked.
- Both feeler gauges T40102 must always move freely without slightest resistance.

If feeler gauges T40102 cannot be guided in direction of - **arrow** - without blocking:

- Repeat input shaft adjustment --> **Input shaft with 7 lining discs, adjusting with air gap determination**.

CAUTION: Air play must pass check with feeler gauges T40102 , otherwise transmission will exhibit problems after reassembly.

If feeler gauges T40102 can be guided in direction of - **arrow** - without blocking:

- Install input shaft cover --> **Torsen differential cover, removing and installing**.

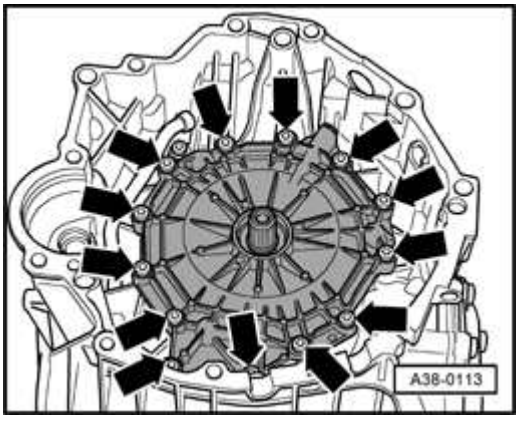


Fig. 94: Removing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install input shaft --> **Input shaft, removing and installing**.

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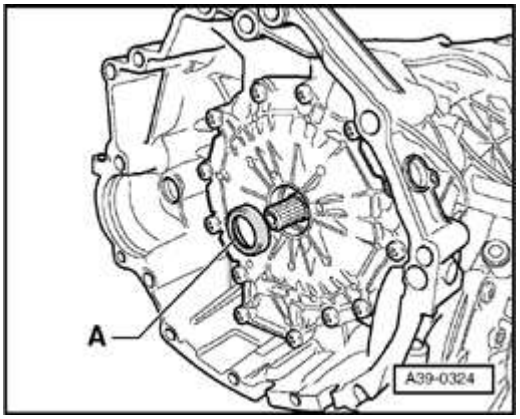


Fig. 95: Sliding Shaft Seal Onto Input Shaft With Open Side Facing Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install input shaft seal - **A** - --> **Input shaft seal, replacing**.
- Fill with ATF --> **ATF, filling for ATF flushing process**.

CAUTION:

- **The Multitronic 01J or 0AN transmission requires a different ATF than shift automatics. Only ATF for CVT transmission which can be obtained as replacement part must be used in planetary gearing .**
- **Flush ATF after installing transmission --> ATF flushing process.**

Input shaft with 7 lining discs, adjusting with air gap determination

NOTE:

- **Observe general repair notes --> Repair instructions .**
- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **All components must be cleaned thoroughly before inserting.**

Clutch measurement

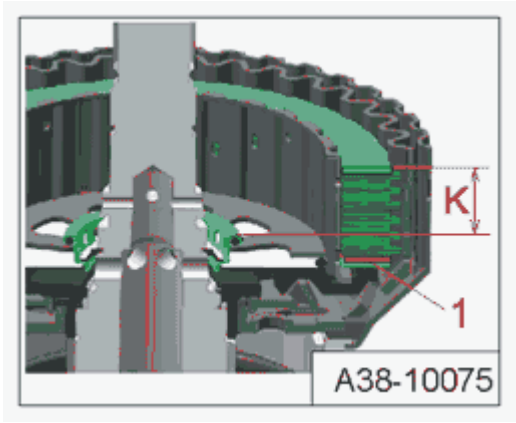


Fig. 96: Identifying Distance Of Clutch From Upper Contact Ring Shim On Shaft & Corrugated Spring

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Washer Is Installed Under Disc Pack
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Distance - K - of the clutch from the upper contact ring shim on the shaft (Thrust plate contact surface) is determined.**
- **The corrugated spring washer - 1 - is installed under the disc pack to perform measurements.**

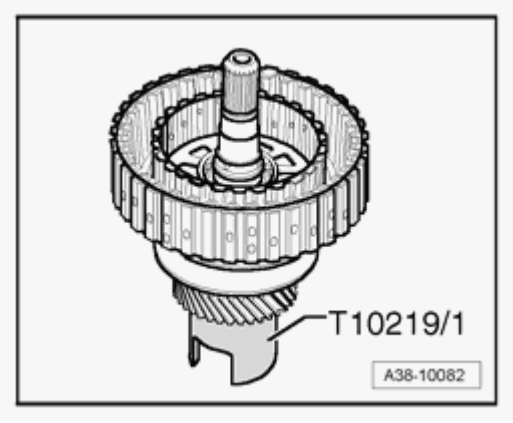


Fig. 97: Placing Input Shaft On Assembly Tool T10219/1
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place input shaft on assembly tool T10219/1.

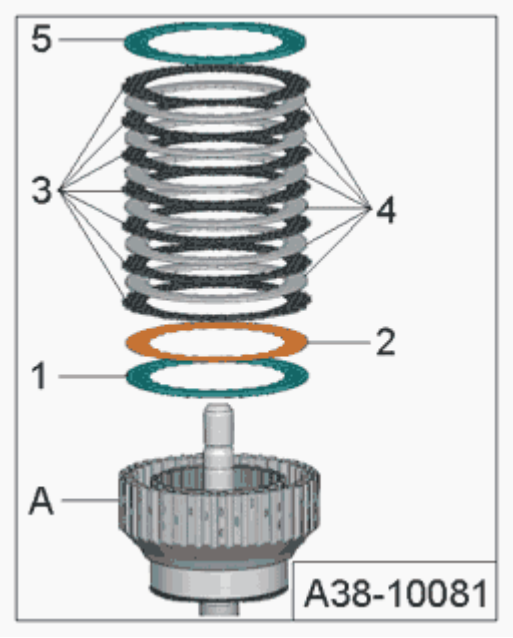


Fig. 98: Identifying Adjustment Discs, Lining Discs, Outer Discs And Corrugated Spring Washer
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Insert new lower adjustment disc - **1** - of same thickness as old in input shaft cylinder - **A** -.
- Insert corrugated spring washer - **2** -.

NOTE:

- **The corrugated spring washer is installed at the bottom only for measurement, it is installed again at the time during assembly.**

- Insert alternately and with same alignment each lining disc - **3** - (7 pieces) and outer disc - **4** - (6 pieces, 1.9 mm thickness).

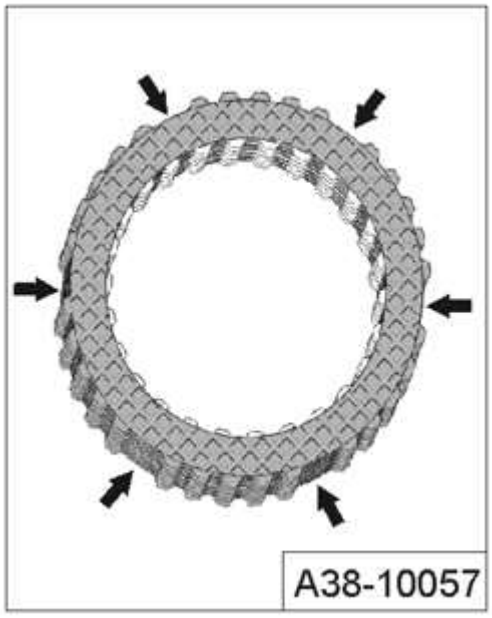


Fig. 99: Lining Disc Alignment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Lining disc alignment:

CAUTION:

- **The lining discs must be installed with the same alignment, that is the places without outside teeth - arrows - must always lie one on top of the other. Only in this way is the adjustment correct; you must mark the cylinder for correct installation, if necessary.**

NOTE:

- **With old version of input shaft, only 6 lining discs and 5 outer discs are installed. They must be replaced with new disc pack with 7 lining discs and 6 outer discs .**

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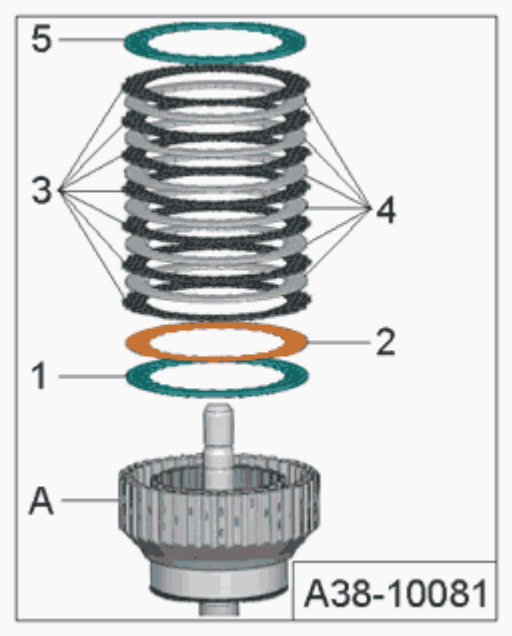


Fig. 100: Identifying Adjustment Discs, Lining Discs, Outer Discs And Corrugated Spring Washer
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Last, insert new upper shim - **5** - of same thickness as old in input shaft.

NOTE:

- **For the following measurements, all tool and component surfaces must be completely clean in order to obtain exact values.**

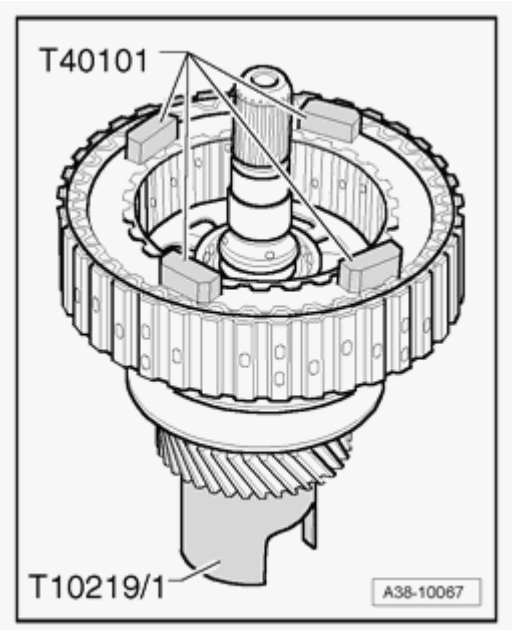


Fig. 101: Placing 4 Calipers T40101 On Upper Shim
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Place 4 calipers T40101 on upper shim.

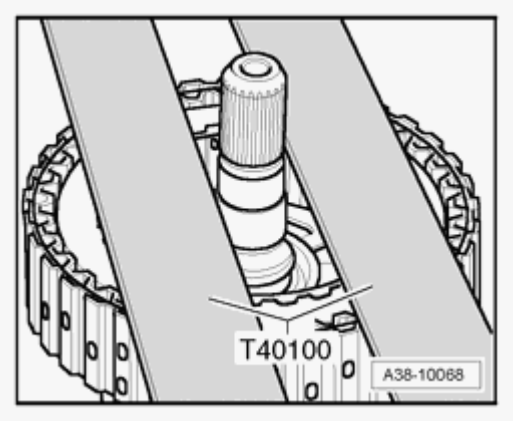


Fig. 102: Laying Ruler T40100 Centered Over Every 2 Calipers T40101
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Lay a ruler T40100 centered over every 2 calipers T40101.

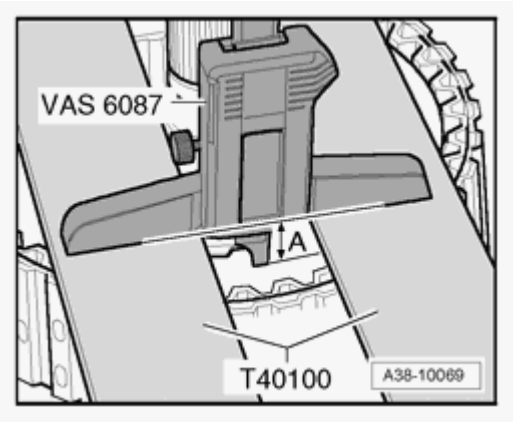


Fig. 103: Measuring Shim With Digital Depth Gauge VAS 6087 And Note Measurement
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Measure shim with digital depth gauge VAS 6087 and note measurement - **A** -.

- Digital depth gauge VAS 6087 must lie flush on both rulers T40100 when measuring.

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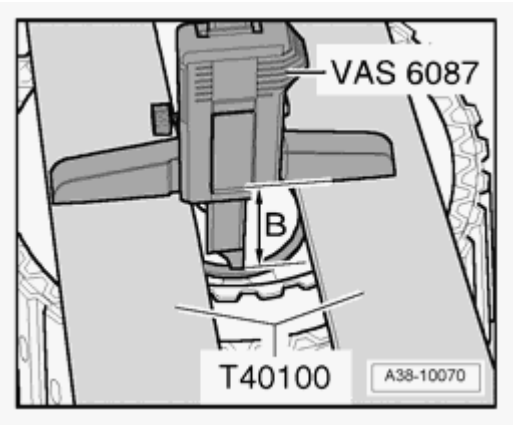


Fig. 104: Measuring With Digital Depth Gauge VAS 6087 On Shaft Contact Ring (Thrust Plate Contact Surface) And Note Measurement
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Measure with digital depth gauge VAS 6087 on shaft contact ring (Thrust plate contact surface) and note measurement - **B** -.

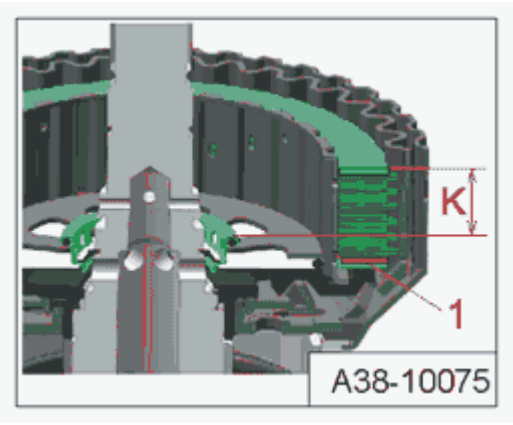


Fig. 105: Identifying Distance Of Clutch From Upper Contact Ring Shim On Shaft & Corrugated Spring Washer Is Installed Under Disc Pack
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Subtract both measurements "B A" , to obtain clutch distance - **K** -.

Clutch distance calculation - **K** - : "B A = K"

NOTE:

- **The corrugated spring washer - 1 - is installed under the disc pack to perform measurements.**

- Repeat measurement on opposite side of input shaft and also determine clutch distance - **K** -.
- Insert 4 calipers T40101 and 2 rulers T40100 at 90° on input shaft and repeat measurements.
- Using 4 values determined for clutch distance - **K** - , calculate average M_K .

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Average: " (Value 1 + Value 2 + Value 3 + Value 4) : 4 = M_K "

Thrust plate measurement

- First check for damage and replace, if necessary.
- Rotate thrust play and lay on level and clean surface.

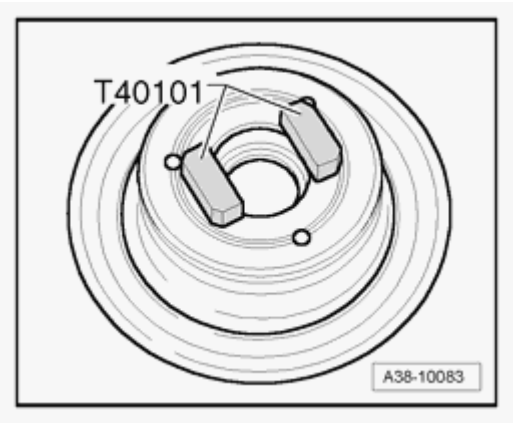


Fig. 106: Placing 2 Calipers T40101 On Cleaned Thrust Plate Running Surface
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place 2 calipers T40101 on cleaned thrust plate running surface.

- Calipers T40101 must lie completely on clean running surfaces and must not lie on edge

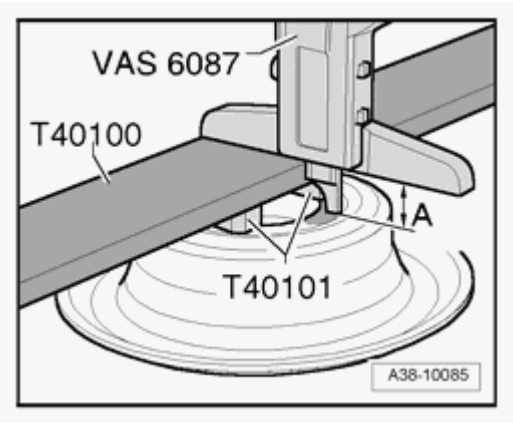


Fig. 107: Measuring Shim With Digital Depth Gauge VAS 6087 On Upper Running Surface And Note Measurement
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Lay rulers T40100 centered on calipers T40101.
- Measure shim with digital depth gauge VAS 6087 on upper running surface and note measurement - **A** -.

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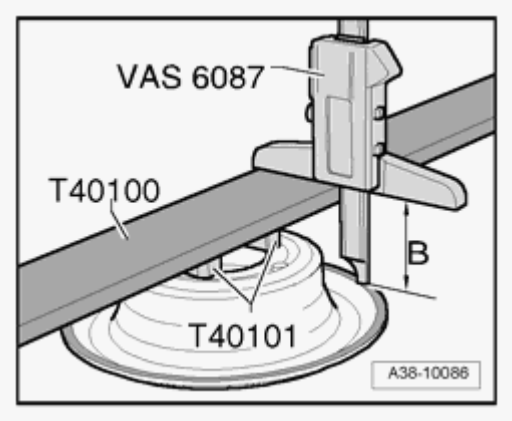


Fig. 108: Measuring With Digital Depth Gauge VAS 6087 On Lower Running Surface And Note Measurement
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Measure with digital depth gauge VAS 6087 on lower running surface and note measurement - **B** -.
- Subtract value of both measurements "B A" to determine distance "D" of both running surfaces to thrust plate.

Thrust plate distance calculation "D" : "B A = D"

- Repeat measurement on 2 additional places on thrust plate off-set at 120°.
- Using these three measurements, calculate thrust plate average M_D .

Average: " (Value 1 + Value 2 + Value 3) : 3 = M_D "

Determining air play

- Determine air gap on the basis of the following calculations:

	Average of thrust plate measurements " M_D " (Value 1 + Value 2 + Value 3) : 3
	Average of clutch measurements " M_K " (Value 1 + Value 2 + Value 3 + Value 4) : 4
=	Air gap

Air gap = " M_D " " M_K "

Air gap specified value: 1.8 ± 0.2 mm.

If specified value is not obtained:

A - Measured value too small:

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- Insert corresponding thinner adjustment disc, lower adjustment disc must also be replaced, if necessary.
- Check air gap again after installing new adjustment disc --> **Input shaft with 7 lining discs, adjusting with air gap determination**.

B - Measured value too large:

- Insert corresponding thicker adjustment disc, lower adjustment disc must also be replaced, if necessary.
- Check air gap again after installing new adjustment disc --> **Input shaft with 7 lining discs, adjusting with air gap determination**.

Following adjustment discs are available:

Available adjustment discs [thickness in mm]		
1.90	2.15	2.65
2.90	3.15	

NOTE:

- **Air gap can be adjusted using upper and lower adjustment discs.**

If specified value is obtained:

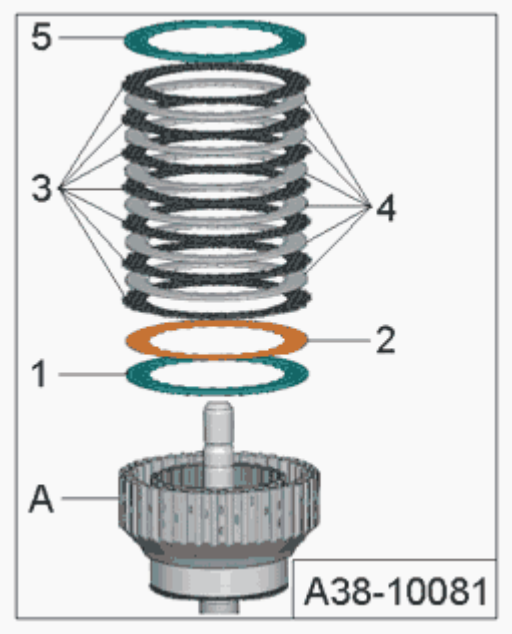


Fig. 109: Identifying Adjustment Discs, Lining Discs, Outer Discs And Corrugated Spring Washer
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove all adjustment discs, lining discs, outer discs and the corrugated spring washer - **5** - , - **4** - , - **3** - , - **2** - and - **1** - from input shaft cylinder - **A** -.

CAUTION: This step is necessary because the corrugated spring washer - 2 - is only

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installed over the lower adjustment disc - 1 - in order to adjust the input shaft. When assembling the input shaft, the corrugated spring washer is installed in the upper position.

- Assemble input shaft **Input shaft, assembling**.

INPUT SHAFT, SERVICING WITH 6 LINING DISCS

Input shaft, servicing with 6 lining discs

CAUTION:

- **Servicing with the incorrect number of lining discs leads to input shaft damage after bringing vehicle into operation again.**
- **In this case, the software in the Transmission Control Module (TCM) J217 does not match the number of lining discs.**

There are two types of transmissions. They are differentiated according to transmission code :

1. Transmission with 7 lining discs serviced

These transmissions are installed in vehicles with 4-cyl. 1.9L TDI engine, 4-cyl. 2.0L TDI engine, 6-cyl. 2.5L TDI engine, 6-cyl. 3.0L MPI gasoline engine and 6-cyl. 3.2L FSI gasoline engine.

- --> **Input shaft with 7 lining discs, assembly overview**
- --> **Input shaft with 7 lining discs, disassembling and assembling**

2. Transmission with 6 lining discs serviced

These transmissions are installed in vehicles with all other engines.

- --> **Input shaft with 6 lining discs, assembly overview**
- --> **Input shaft with 6 lining discs, disassembling and assembling**

Input shaft with 6 lining discs, assembly overview

CAUTION:

- **Note the difference between input shafts with 6 and 7 lining discs --> Input shaft, servicing with 6 lining discs**

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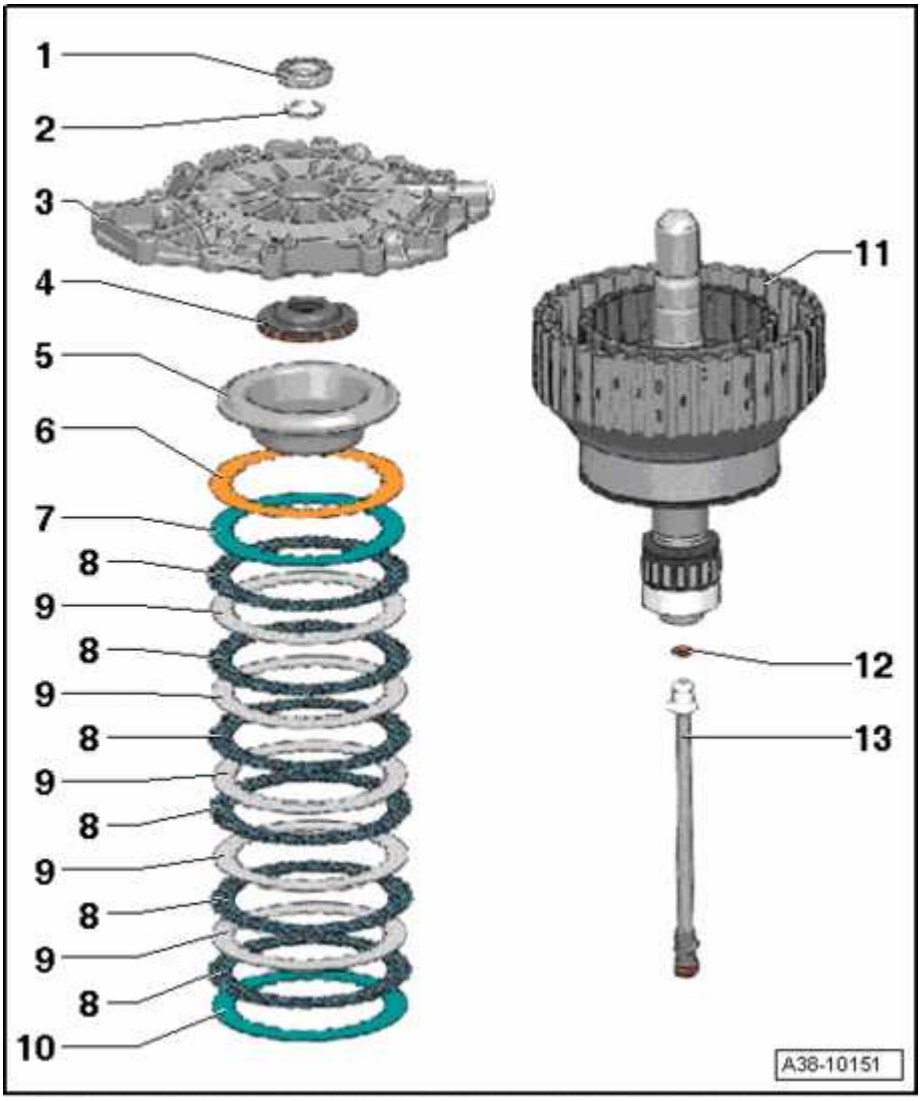


Fig. 110: Input Shaft With 6 Lining Discs, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Input shaft seal

- Replace --> **Input shaft seal, replacing**

2 - Input shaft cover circlip

- Replace with same thickness

3 - Input shaft cover

- After removing cover, input shaft cover ball bearing must be replaced --> **Ball bearing in input shaft cover, replacing**

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4 - Piston

- Check for wear --> **Transmission components, evaluating wear**

5 - Pressure plate

- Check for wear --> **Transmission components, evaluating wear**

6 - Corrugated spring washer

7 - Upper adjustment disc

- Determine thickness --> **Input shaft with 6 lining discs, adjusting with air gap determination**
- Replace

8 - Coated plate

- Qty. 6
- Replace

9 - Outer plate

- Qty. 5
- Replace

10 - Lower adjustment disc

- Determine thickness --> **Input shaft with 6 lining discs, adjusting with air gap determination**
- Replace

11 - Input shaft cylinder

- Check for wear --> **Transmission components, evaluating wear**

12 - O-Ring

- Replace

13 - Oil pipe

- Check for wear --> **Transmission components, evaluating wear**

Input shaft with 6 lining discs, disassembling and assembling

CAUTION:

- **Note the difference between input shafts with 6 and 7 lining discs -->**

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Input shaft, servicing with 6 lining discs

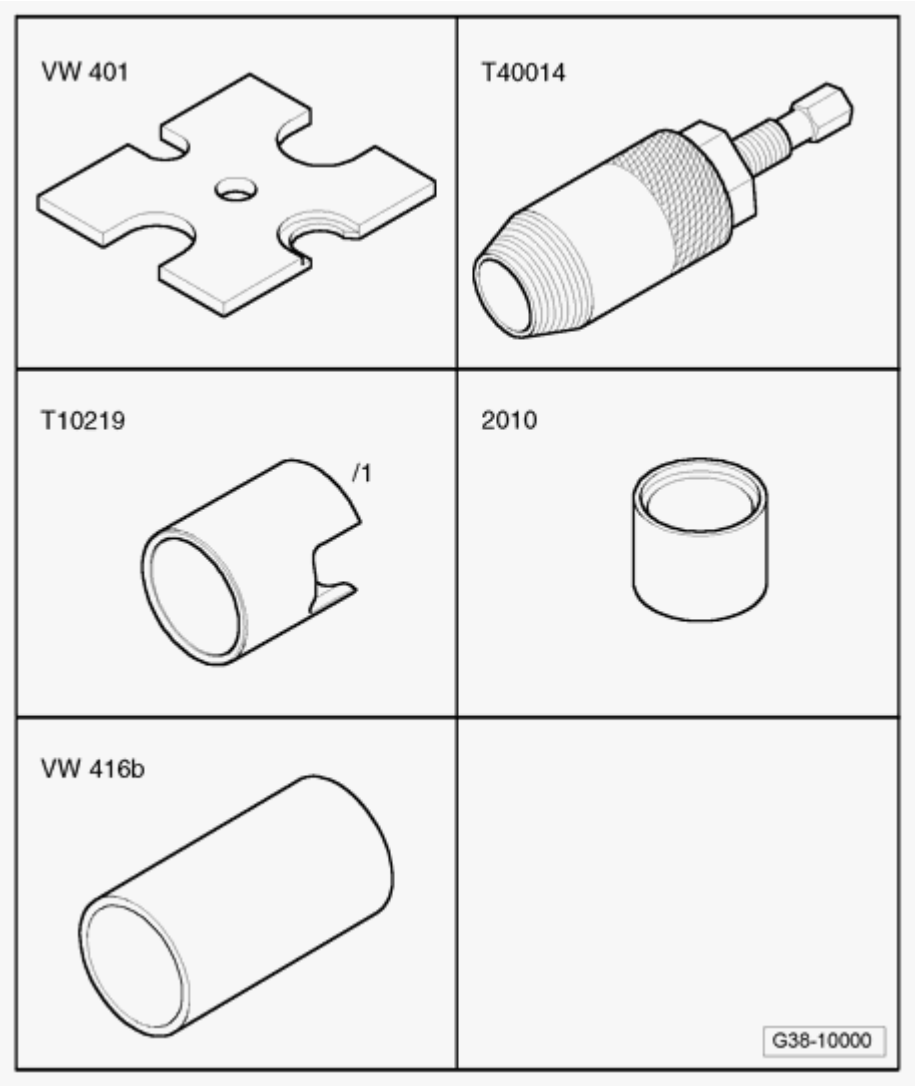


Fig. 111: Identifying Special Tools - Input Shaft With 6 Lining Discs, Disassembling And Assembling (1 Of 2)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Pressure plate VW 401
- Seal remover T40014
- Assembly tool T10219/1
- Tube 2010
- Tube VW 416 B

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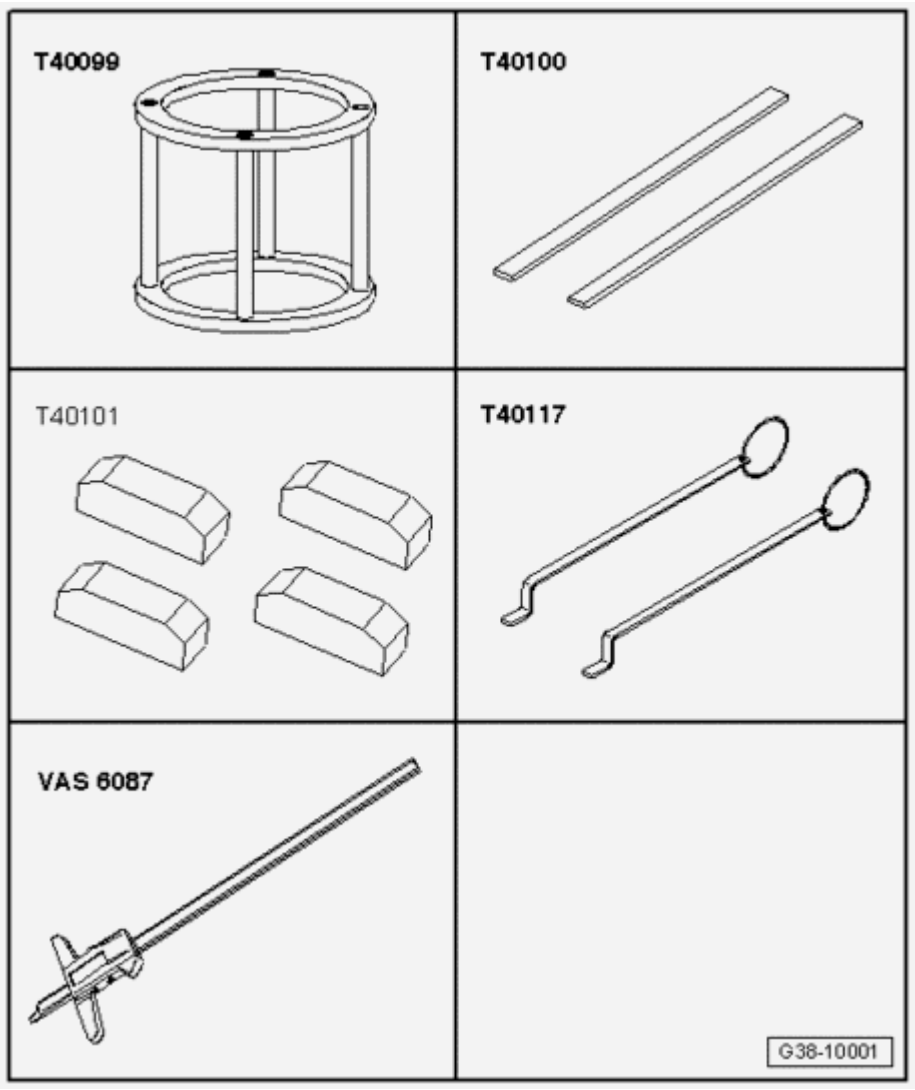


Fig. 112: Identifying Special Tools - Input Shaft With 6 Lining Discs, Disassembling And Assembling (2 Of 2)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Pressure stand T40099
- 2 piece ruler T40100
- 4 piece calipers T40101
- 2 piece feeler gauge T40117 for input shafts with 6 lining discs
- Digital depth gauge VAS 6087
- Protective gloves
- Ice spray

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Work procedure

- Transmission removed

NOTE:

- **Observe general repair notes --> Repair instructions .**
- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**

- Remove input shaft --> **Input shaft, removing and installing**.
- Remove input shaft cover from shaft --> **Torsen differential cover, removing and installing**

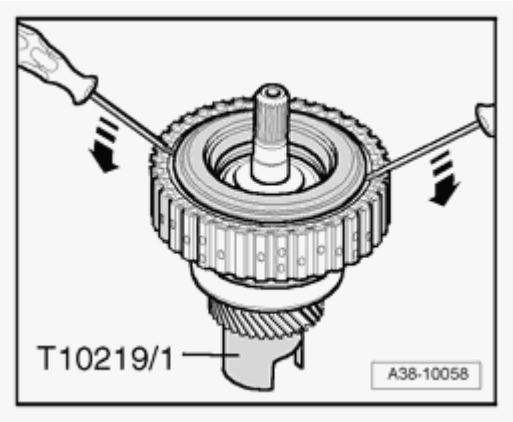


Fig. 113: Placing Input Shaft On Assembly Tool T10219/1
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place input shaft on assembly tool T10219/1.
- Carefully raise thrust plate with pistons with two screwdrivers - **arrows** -.

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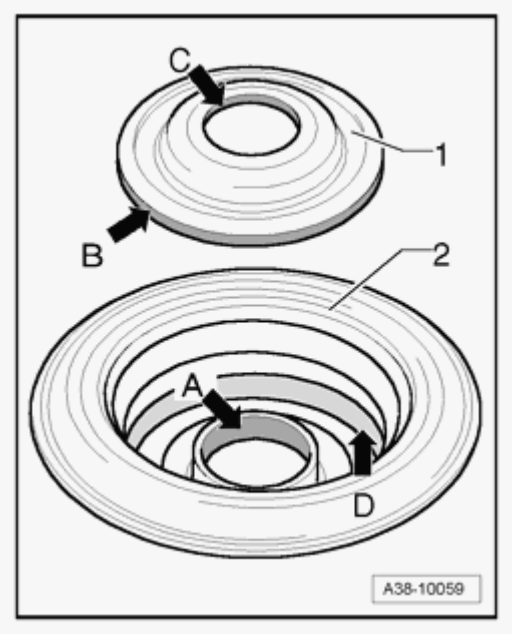


Fig. 114: Inner Running And Sealing Surfaces Of Thrust Plate And Pistons
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Precautionary measures:

CAUTION:

- **The inner running and sealing surfaces - arrow A - of the thrust plate and pistons - arrow C - must not touch shaft during removal and installation.**
- **The running and contact surfaces must not show the smallest signs of damage such as scratches or grooves as a result of removing or installing.**
- **If damaged, the thrust plate or pistons must be replaced.**

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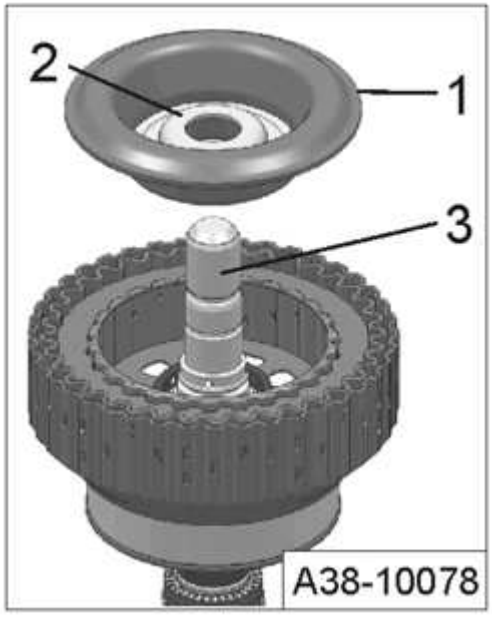


Fig. 115: Guiding Thrust Plate With Pistons Up Over Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully guide thrust plate - **1** - with pistons - **2** - up over shaft - **3** -.
- Inner running surfaces of thrust plate - **1** - and pistons - **2** - must not touch shaft.

Disc pack, removing

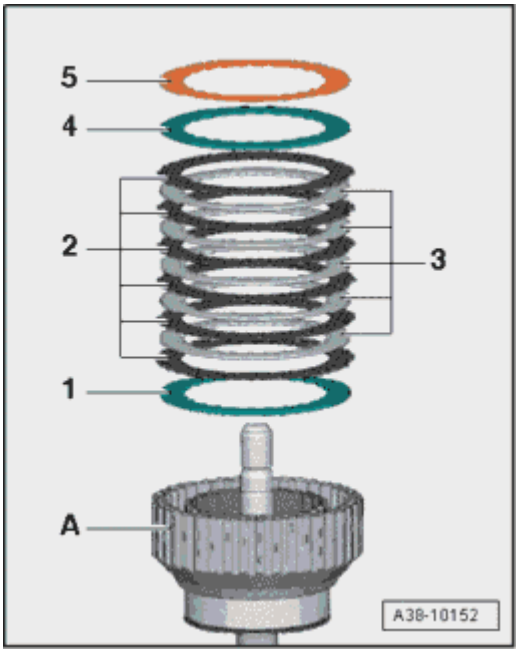


Fig. 116: Identifying Disc Pack
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Remove corrugated spring washer - **5** - , they must be used again.
- Remove upper adjustment disc - **4** - from input shaft cylinder - **A** -.
- Measure adjustment disc thickness - **4** - and note measurement.
- Remove all lining discs - **2** - and outer discs - **3** - from input shaft cylinder - **A** -.

- Remove lower adjustment disc - **1** - from input shaft cylinder - **A** -.
- Measure adjustment disc thickness - **1** - and note measurement.

CAUTION:
- **All old, used adjustment discs, outer discs and lining discs must be replaced. They must not be reinstalled as that would not ensure the input shaft function (surface is used up).**
- **The corrugated spring washer must be used again.**

Input shaft, assembling

CAUTION: Before assembly, check for wear on transmission components --> Transmission components, evaluating wear.

- Replace ball bearing in input shaft cover --> **Ball bearing in input shaft cover, replacing**.
- Adjust input shaft and determine air gap --> **Input shaft with 6 lining discs, adjusting with air gap determination**.

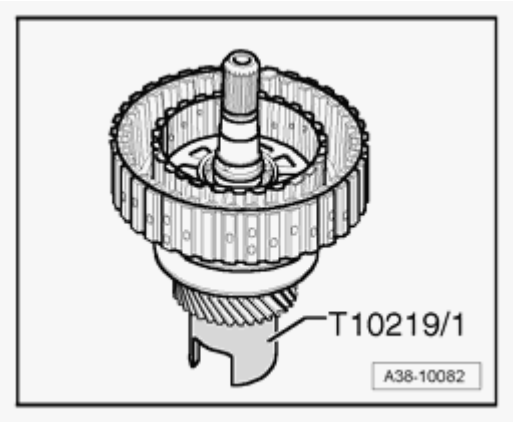


Fig. 117: Placing Input Shaft On Assembly Tool T10219/1
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place input shaft on assembly tool T10219/1.

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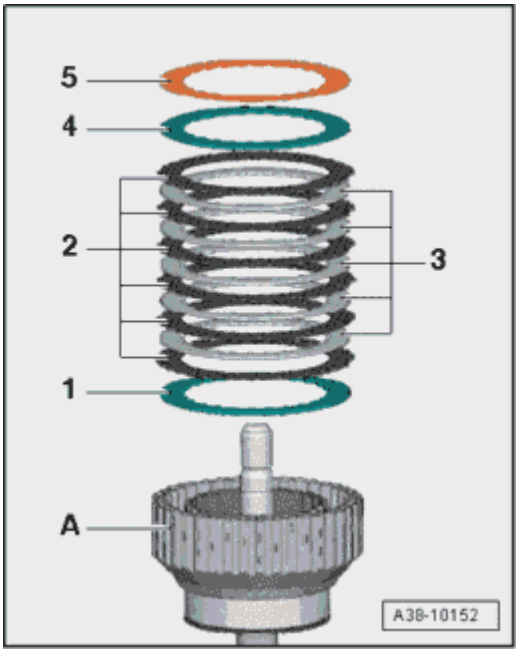


Fig. 118: Identifying Disc Pack
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert determined lower adjustment disc - **1** - in input shaft cylinder - **A** -.
- Insert alternately and with same alignment each lining disc - **2** - (6 pieces) and outer disc - **3** - (5 pieces, 1.9 mm thickness).

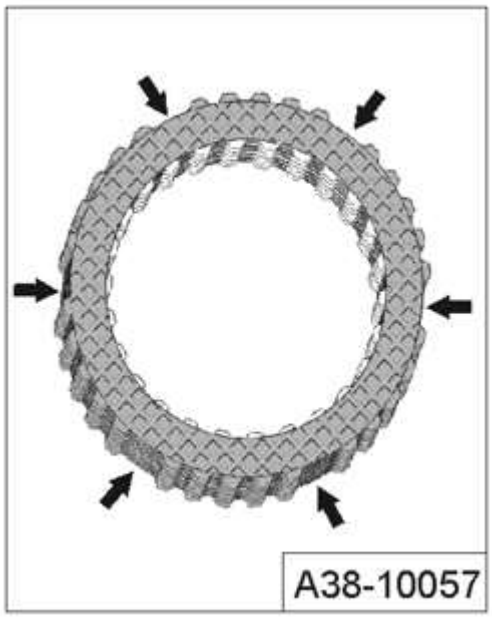


Fig. 119: Lining Disc Alignment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Lining disc alignment:

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CAUTION:

- **The lining discs must be installed with the same alignment, that is the places without outside teeth - arrows - must always lie one on top of the other. Only in this way is the adjustment correct; you must mark the cylinder for correct installation, if necessary.**

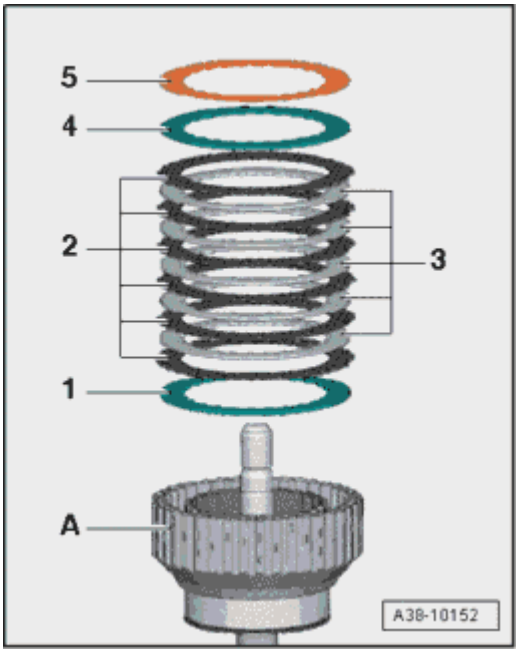


Fig. 120: Identifying Disc Pack
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert determined upper adjustment disc - **4** - in input shaft cylinder - **A** -.
- Lastly, insert corrugated spring washer - **5** -.

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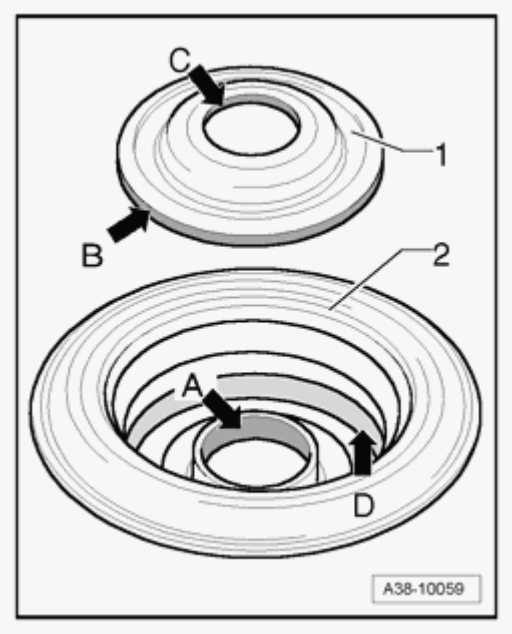


Fig. 121: Inner Running And Sealing Surfaces Of Thrust Plate And Pistons
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press pistons - **1** - into stop on thrust plate - **2** -.

CAUTION:

- **The inner running and sealing surfaces - arrow A - of the thrust plate and pistons - arrow C - must not touch shaft during removal and installation.**
- **The running and contact surfaces must not show the smallest signs of damage such as scratches or grooves as a result of removing or installing.**
- **If damaged, the thrust plate or pistons must be replaced.**

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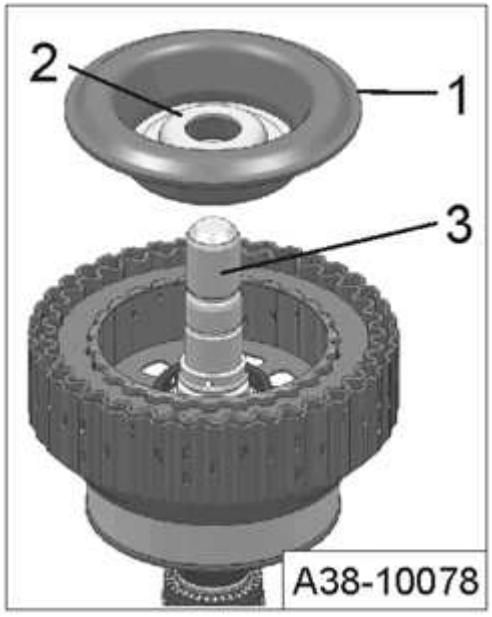


Fig. 122: Guiding Thrust Plate With Pistons Up Over Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully guide pressure plate - **1** - with pistons - **2** - down over shaft - **3** -.
- Inner running surfaces of thrust plate - **1** - and pistons - **2** - must not touch shaft.
- Press thrust plate with pistons uniformly into input shaft up to stop.

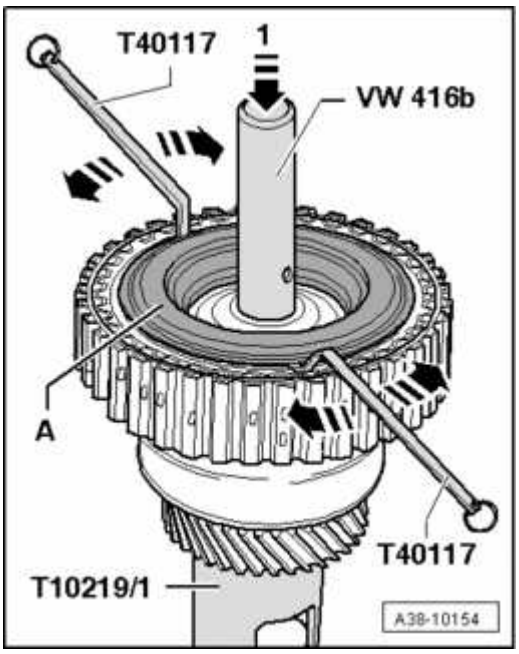


Fig. 123: Checking Air Play With Feeler Gauge T40117
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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Checking air play with feeler gauge T40117

- Insert both feeler gauges T40117 under thrust plate - **A** -.
- A second technician must push thrust plate - **A** - down to stop - **arrow 1** - with Tube VW 416 B.
- Guide both feeler gauges T40117 circularly in direction of - **arrow** - back and forth under thrust plate.

- Both feeler gauges T40117 must be guided oppositely.
- Feeler gauges T40117 must not be angled.
- Entire circular area must be checked.
- Both feeler gauges T40117 must always move freely without slightest resistance.

If feeler gauges T40117 cannot be guided in direction of - **arrow** - without blocking:

- Repeat input shaft adjustment --> **Input shaft with 6 lining discs, adjusting with air gap determination**.

CAUTION: Air play must pass check with feeler gauges T40117 , otherwise transmission will exhibit problems after reassembly.

If feeler gauges T40117 can be guided in direction of - **arrow** - without blocking:

- Install input shaft cover --> **Torsen differential cover, removing and installing**.

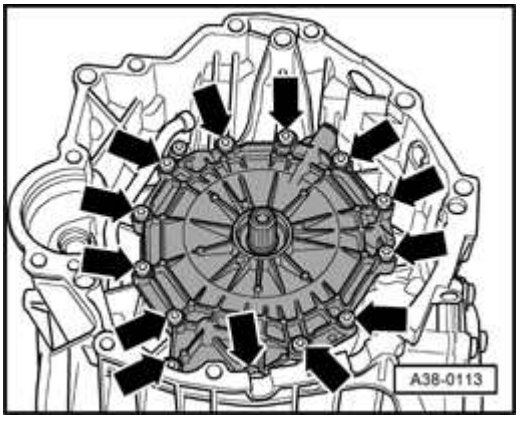


Fig. 124: Removing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install input shaft --> **Input shaft, removing and installing**.

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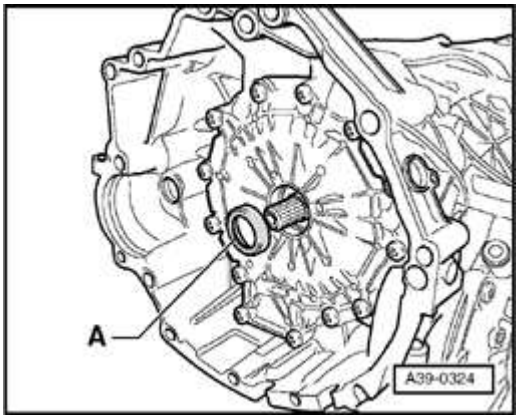


Fig. 125: Sliding Shaft Seal Onto Input Shaft With Open Side Facing Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install input shaft seal - **A** - --> **Input shaft seal, replacing**.
- Fill with ATF --> **ATF, filling for ATF flushing process**.

CAUTION:

- **The Multitronic 01J or 0AN transmission requires a different ATF than shift automatics. Only ATF for CVT transmission which can be obtained as replacement part must be used in planetary gearing .**
- **Flush ATF after installing transmission --> ATF flushing process.**

Input shaft with 6 lining discs, adjusting with air gap determination

NOTE:

- **Observe general repair notes --> Repair instructions .**
- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **All components must be cleaned thoroughly before inserting.**

Clutch measurement

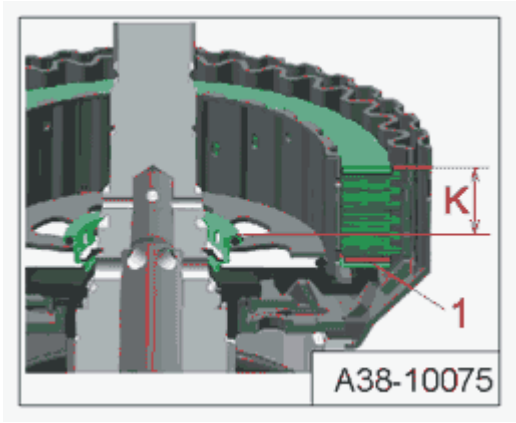


Fig. 126: Identifying Distance Of Clutch From Upper Contact Ring Shim On Shaft & Corrugated Spring

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Washer Is Installed Under Disc Pack
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **The distance - K - of the clutch from the upper contact ring shim on the shaft (Thrust plate contact surface) is determined.**
- **The corrugated spring washer - 1 - is installed under the disc pack to perform measurements.**

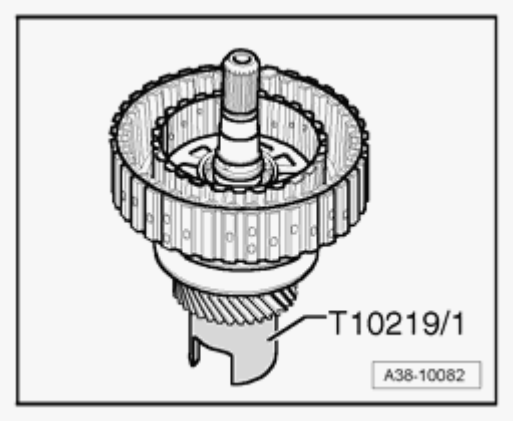


Fig. 127: Placing Input Shaft On Assembly Tool T10219/1
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place input shaft on assembly tool T10219/1.

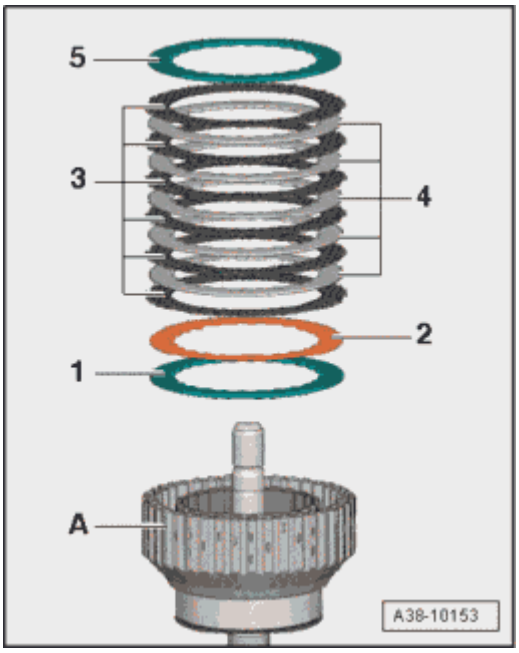


Fig. 128: Identifying Adjustment Discs, Lining Discs, Outer Discs And Corrugated Spring Washer
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Insert new lower adjustment disc - **1** - of same thickness as old in input shaft cylinder - **A** -.
- Insert corrugated spring washer - **2** -.

NOTE:

- **The corrugated spring washer is installed at the bottom only for measurement, it is installed again at the time during assembly.**

- Insert alternately and with same alignment each lining disc - **3** - (6 pieces) and outer disc - **4** - (5 pieces, 1.9 mm thickness).

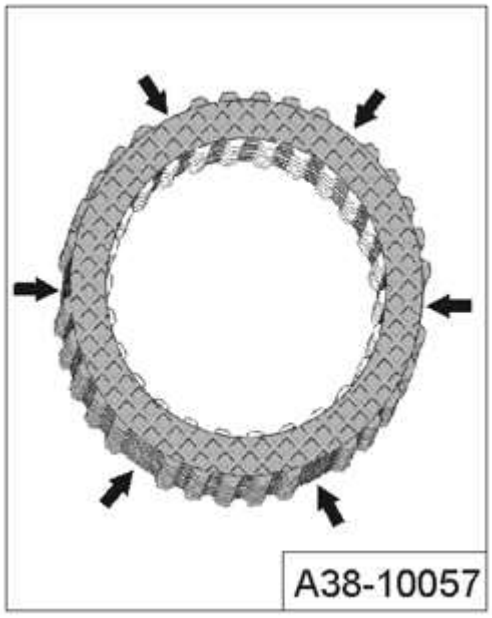


Fig. 129: Lining Disc Alignment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Lining disc alignment:

CAUTION:

- **The lining discs must be installed with the same alignment, that is the places without outside teeth - arrows - must always lie one on top of the other. Only in this way is the adjustment correct; you must mark the cylinder for correct installation, if necessary.**

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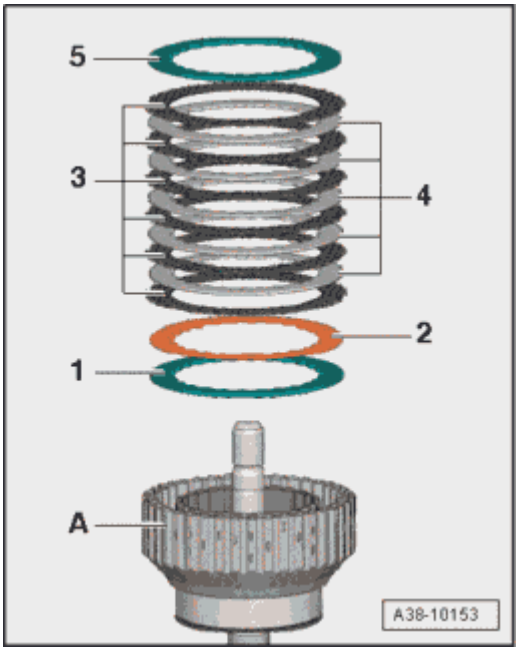


Fig. 130: Identifying Adjustment Discs, Lining Discs, Outer Discs And Corrugated Spring Washer
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Last, insert new upper shim - **5** - of same thickness as old in input shaft.

NOTE:

- **For the following measurements, all tool and component surfaces must be completely clean in order to obtain exact values.**

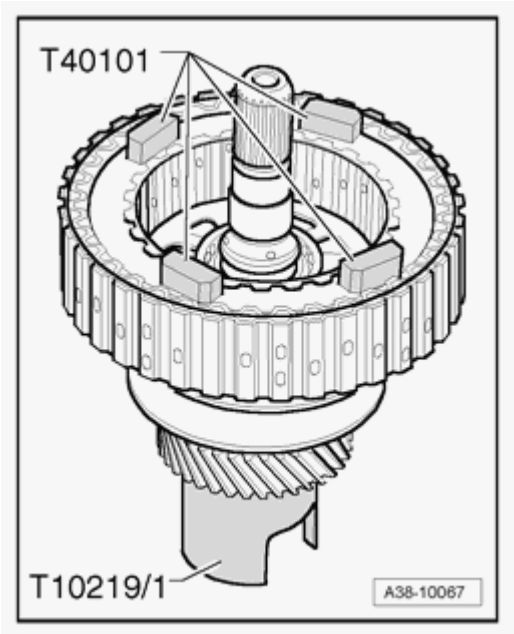


Fig. 131: Placing 4 Calipers T40101 On Upper Shim
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Place 4 calipers T40101 on upper shim.

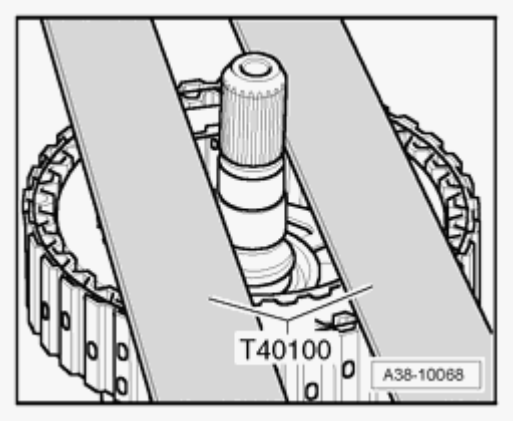


Fig. 132: Laying Ruler T40100 Centered Over Every 2 Calipers T40101
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Lay a ruler T40100 centered over every 2 calipers T40101.

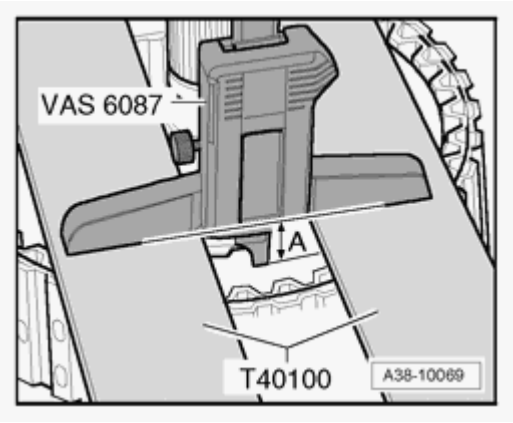


Fig. 133: Measuring Shim With Digital Depth Gauge VAS 6087 And Note Measurement
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Measure shim with digital depth gauge VAS 6087 and note measurement - **A** -.

- Digital depth gauge VAS 6087 must lie flush on both rulers T40100 when measuring.

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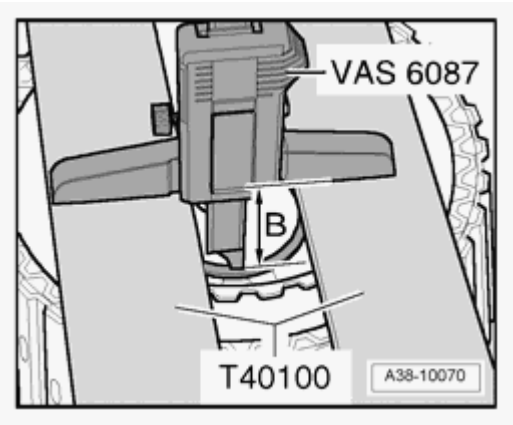


Fig. 134: Measuring With Digital Depth Gauge VAS 6087 On Shaft Contact Ring (Thrust Plate Contact Surface) And Note Measurement
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Measure with digital depth gauge VAS 6087 on shaft contact ring (Thrust plate contact surface) and note measurement - **B** -.

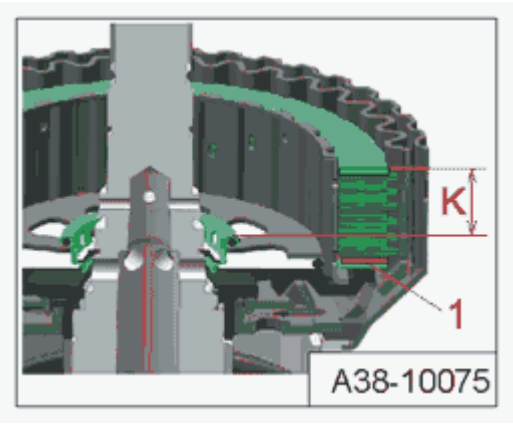


Fig. 135: Identifying Distance Of Clutch From Upper Contact Ring Shim On Shaft & Corrugated Spring Washer Is Installed Under Disc Pack
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Subtract both measurements "B A" , to obtain clutch distance - **K** -.

Clutch distance calculation - **K** - : "B A = K"

NOTE:

- **The corrugated spring washer - 1 - is installed under the disc pack to perform measurements.**

- Repeat measurement on opposite side of input shaft and also determine clutch distance - **K** -.
- Insert 4 calipers T40101 and 2 rulers T40100 at 90° on input shaft and repeat measurements.
- Using 4 values determined for clutch distance - **K** - , calculate average M_K .

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Average: " (Value 1 + Value 2 + Value 3 + Value 4) : 4 = M_K "

Thrust plate measurement

- First check for damage and replace, if necessary **Checking pistons and thrust plate for wear**.
- Rotate thrust play and lay on level and clean surface.

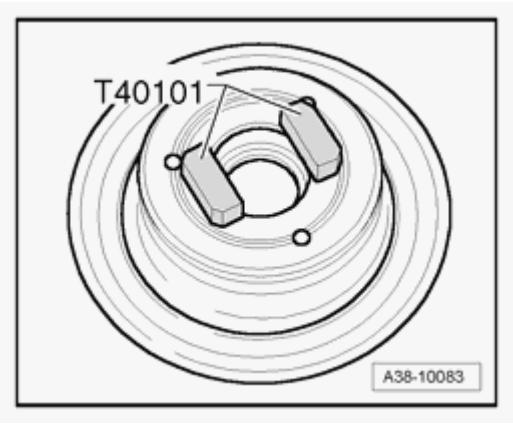


Fig. 136: Placing 2 Calipers T40101 On Cleaned Thrust Plate Running Surface
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place 2 calipers T40101 on cleaned thrust plate running surface.

- Calipers T40101 must lie completely on clean running surfaces and must not lie on edge

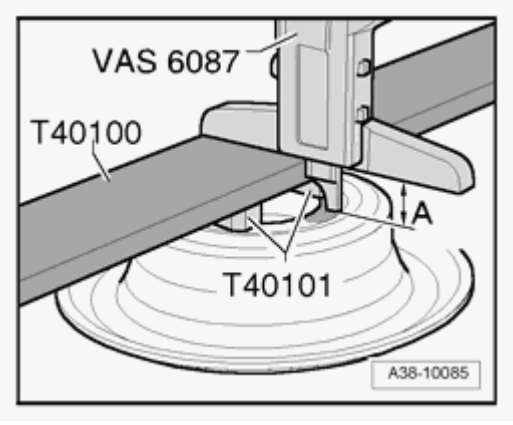


Fig. 137: Measuring Shim With Digital Depth Gauge VAS 6087 On Upper Running Surface And Note Measurement
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Lay rulers T40100 centered on calipers T40101.
- Measure shim with digital depth gauge VAS 6087 on upper running surface and note measurement - **A** -.

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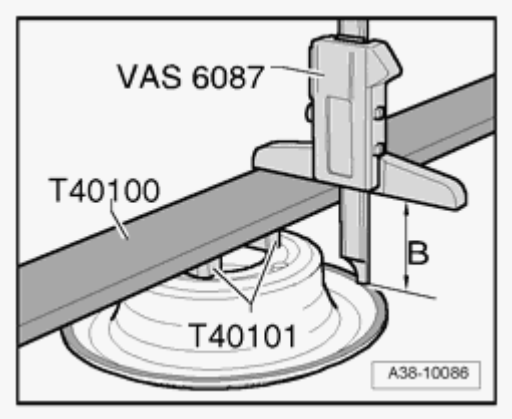


Fig. 138: Measuring With Digital Depth Gauge VAS 6087 On Lower Running Surface And Note Measurement
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Measure with digital depth gauge VAS 6087 on lower running surface and note measurement - **B** -.
- Subtract value of both measurements "B A" to determine distance "D" of both running surfaces to thrust plate.

Thrust plate distance calculation "D" : "B A = D"

- Repeat measurement on 2 additional places on thrust plate off-set at 120°.
- Using these three measurements, calculate thrust plate average M_D .

Average: " (Value 1 + Value 2 + Value 3) : 3 = M_D "

Determining air play

- Determine air gap on the basis of the following calculations:

	Average of thrust plate measurements " M_D " (Value 1 + Value 2 + Value 3) : 3
	Average of clutch measurements " M_K " (Value 1 + Value 2 + Value 3 + Value 4) : 4
=	Air gap

Air gap = " M_D " " M_K "

Air gap specified value: 1.4 ± 0.2 mm.

If specified value is not obtained:

A - Measured value too small:

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- Insert corresponding thinner adjustment disc, lower adjustment disc must also be replaced, if necessary.
- Check air gap again after installing new adjustment disc --> **Input shaft with 6 lining discs, adjusting with air gap determination**.

B - Measured value too large:

- Insert corresponding thicker adjustment disc, lower adjustment disc must also be replaced, if necessary.
- Check air gap again after installing new adjustment disc --> **Input shaft with 6 lining discs, adjusting with air gap determination**.

Following adjustment discs are available:

Available adjustment discs [thickness in mm]		
1.90	2.15	2.65
2.90	3.15	

NOTE:

- **Air gap can be adjusted using upper and lower adjustment discs.**

If specified value is obtained:

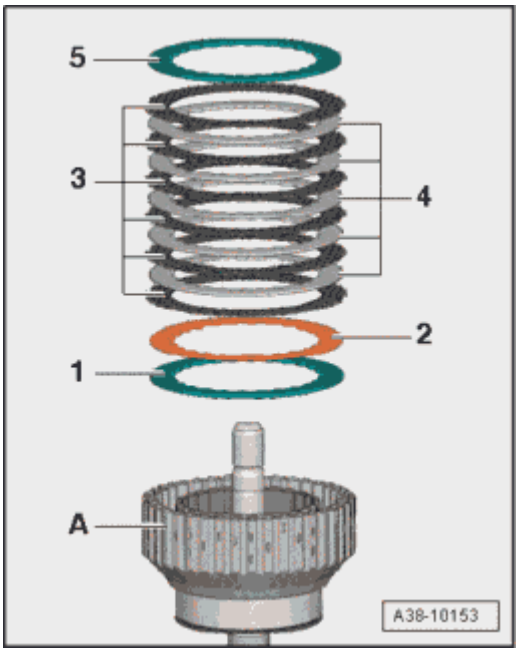


Fig. 139: Identifying Adjustment Discs, Lining Discs, Outer Discs And Corrugated Spring Washer
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove all adjustment discs, lining discs, outer discs and the corrugated spring washer - **5** - , - **4** - , - **3** - , - **2** - and - **1** - from input shaft cylinder - **A** -.

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CAUTION: This step is necessary because the corrugated spring washer - 2 - is only installed over the lower adjustment disc - 1 - in order to adjust the input shaft. When assembling the input shaft, the corrugated spring washer is installed in the upper position.

- Assemble input shaft **Input shaft, assembling**.

39 - FINAL DRIVE, DIFFERENTIAL

FRONT FINAL DRIVE, SERVICING

Left flange shaft seal, replacing

Special tools, testers and auxiliary items required

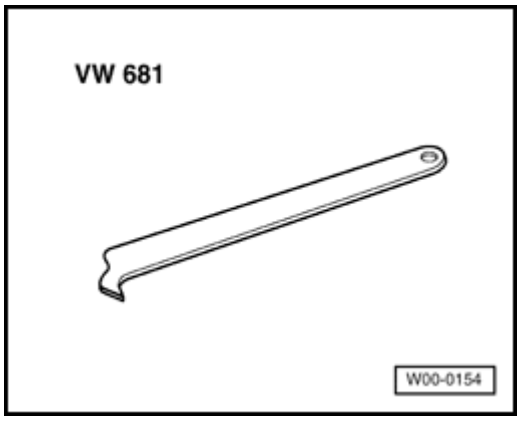


Fig. 140: Special Tool - Oil Seal Extractor Lever VW 681
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Extractor lever VW 681

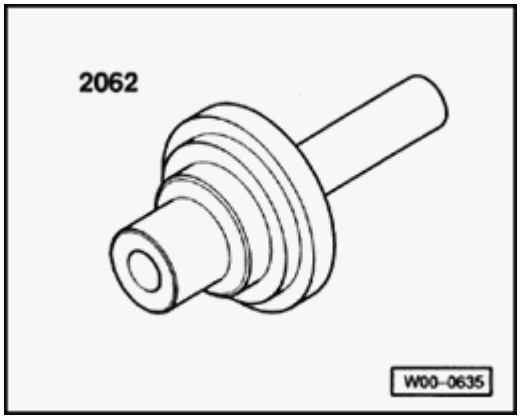


Fig. 141: Fitting Drift 2062
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Driver 2062

Work procedure

- Transmission installed
  - Remove left flange shaft --> **39 - FINAL DRIVE, DIFFERENTIAL** .

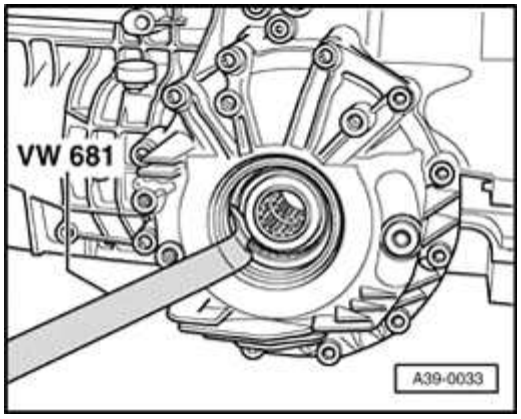


Fig. 142: Removing Flange Shaft Oil Seal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

  - Pull out flange shaft seal using Extractor lever VW 681.

NOTE:

- **Do not damage shaft seal seating surfaces.**

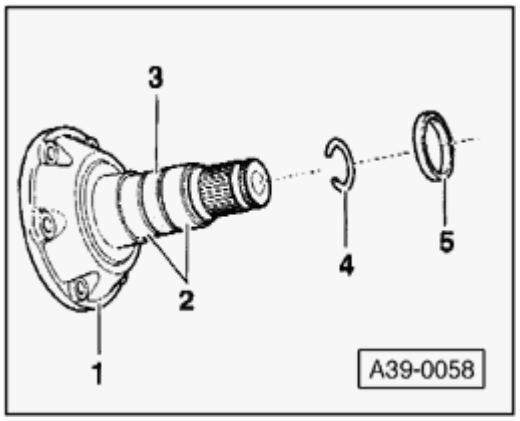


Fig. 143: Flange Shaft Design
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Setup of flange shaft with polygon bearing

1. Flange shaft
2. Needle bearing (polygon bearing)

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3. Spacer ring
4. Circlip
5. Not installed

NOTE:

- **If the polygon bearings do not run smoothly with the flange shaft removed, this does indicate that the bearings are faulty. A test for noisy bearings can only be performed with the bearings installed.**
- **Watch for damage to the polygon bearings (e.g. cracks in bearing outer ring)**
- **If polygon bearings are damaged, flange shaft must be replaced.**

- Moisten outer circumference and shaft seal lip with axle oil.

- Installation position: Open side of shaft seal faces transmission.

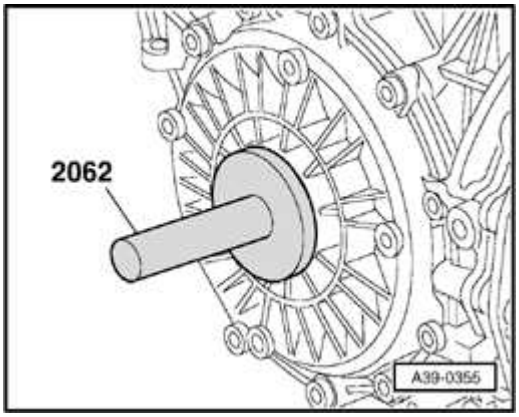


Fig. 144: Driving In New Sealing Ring For Left Flange Shaft Uniformly Using Driver Below Surface Of Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Drive in new left flange shaft seal uniformly with Driver 2062.

- Production drive-in depth 5.5 mm below cover surface.
- If re-using the used flange shaft, repair drive-in depth is 6.5 mm.

NOTE:

- **Do not angle shaft seal when driving in.**

- Install left flange shaft --> **39 - FINAL DRIVE, DIFFERENTIAL** .
- Check gear oil level in front final drive --> **39 - FINAL DRIVE, DIFFERENTIAL** .

Right flange shaft seal and grooved ball bearing, replacing

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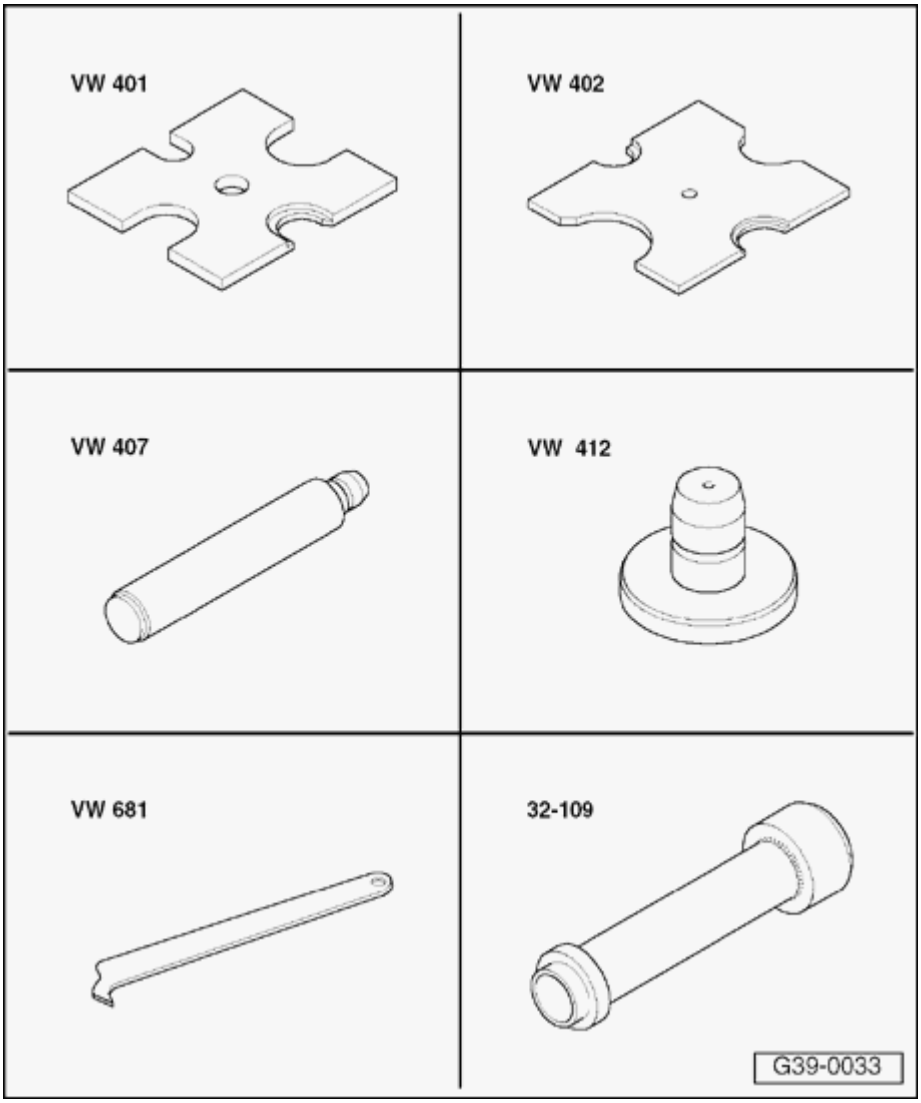


Fig. 145: Identifying Special Tools - Right Flange Shaft Seal And Grooved Ball Bearing, Replacing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Pressure plate VW 401
- Pressure plate VW 402
- Punch VW 407
- Punch VW 412

- Extractor lever VW 681
- Driving sleeve 32 - 109

Special tools, testers and auxiliary items required

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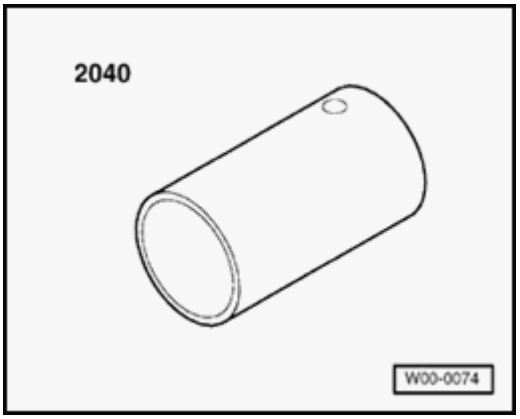


Fig. 146: Tube 2040
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tube 2040

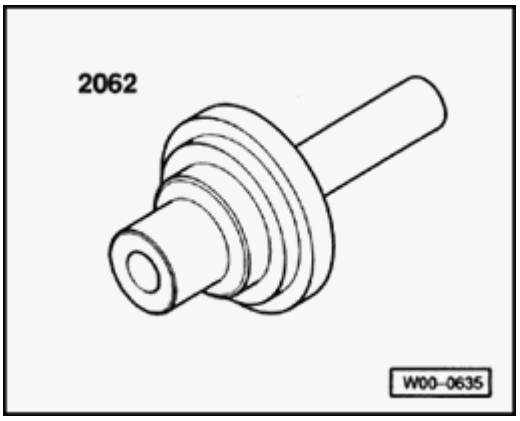


Fig. 147: Fitting Drift 2062
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Driver 2062

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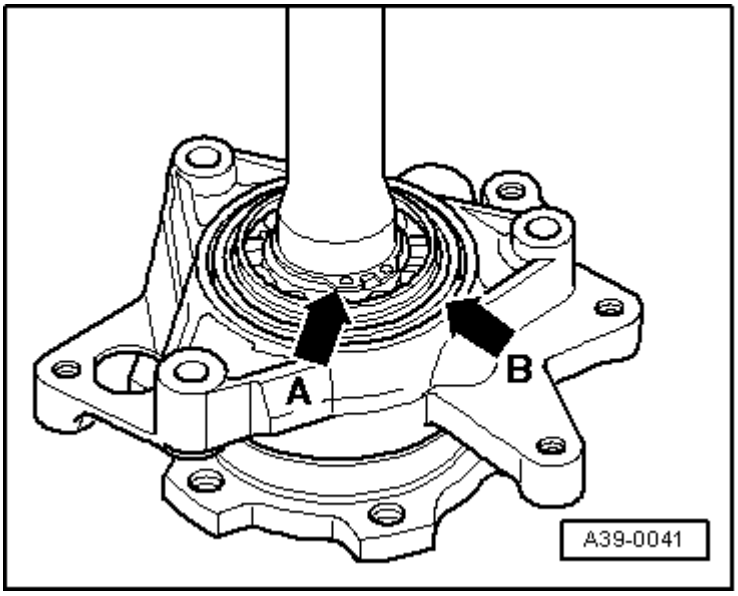


Fig. 148: Removing/Installing Circlip And Seal At Grooved Ball Bearing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Work procedure

- Remove right flange shaft --> **39 - FINAL DRIVE, DIFFERENTIAL** .

Removing shaft seal

- Remove securing ring - **arrow A** - for grooved ball bearing.

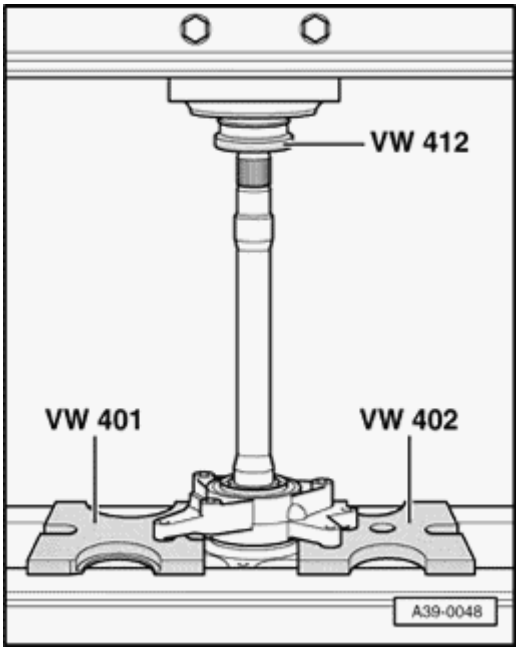


Fig. 149: Pressing Flange Shaft Out Of Flange Shaft Bearing Bracket

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press flange shaft out of mounting bracket for flange shaft as shown in the illustration.
- Pull flange shaft seal out of mounting bracket using Extractor lever VW 681.

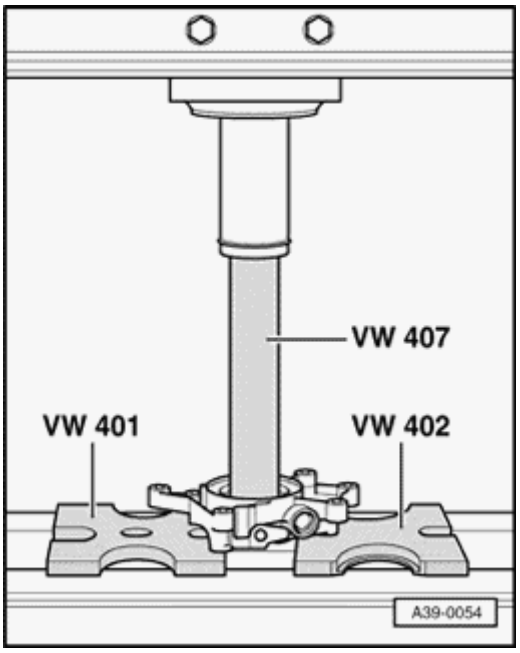


Fig. 150: Pressing Grooved Ball Bearing Out Of Bearing Bracket
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removing grooved ball bearing

- Press grooved ball bearing out of mounting bracket.

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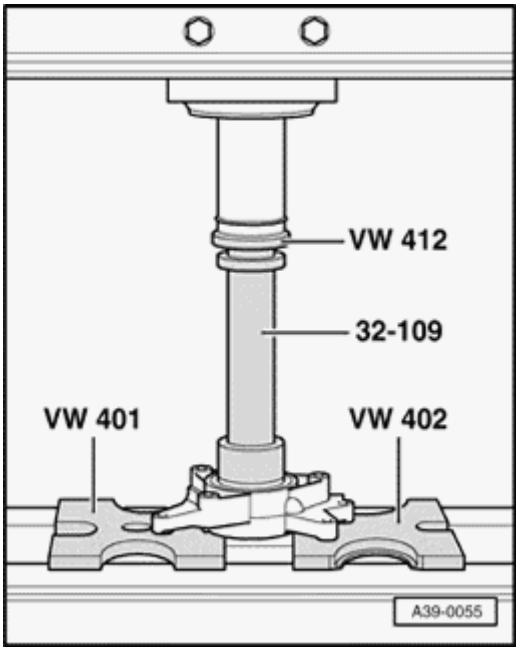


Fig. 151: Pressing New Grooved Ball Bearing Into Bearing Bracket
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Installing grooved ball bearing

- Press new grooved ball bearing into mounting bracket.

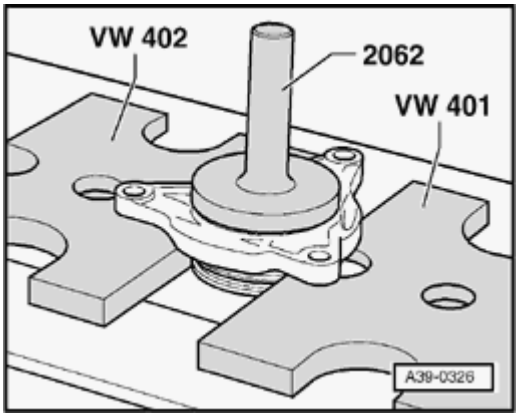


Fig. 152: Pressing New Grooved Ball Bearing Into Mounting Bracket
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Installing shaft seal

- Coat outer edge and sealing lip of shaft seal with axle oil.
- Installation position: Open side of shaft seal faces transmission.
- Drive in new right flange shaft seal uniformly with Driver 2062.

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- Production drive-in depth 5.5 mm below mounting bracket surface.
- If re-using the used flange shaft, repair drive-in depth is 6.5 mm.

NOTE:

- **Do not angle shaft seal when driving in.**

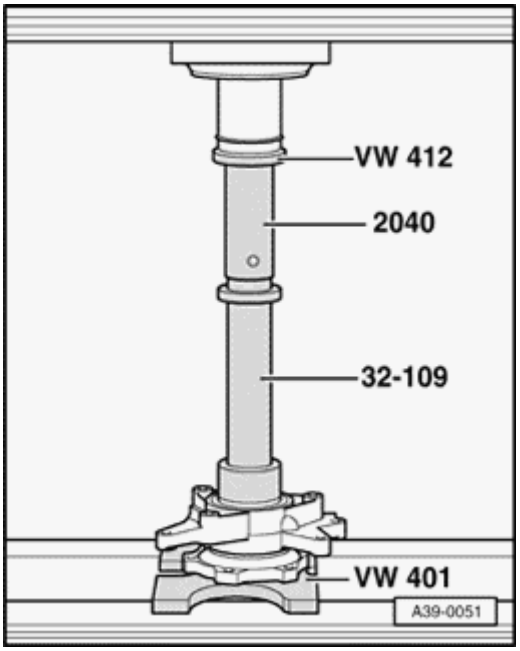


Fig. 153: Pressing Bearing Bracket With Grooved Ball Bearing Onto Flange Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press mounting bracket with grooved ball bearing onto flange shaft.

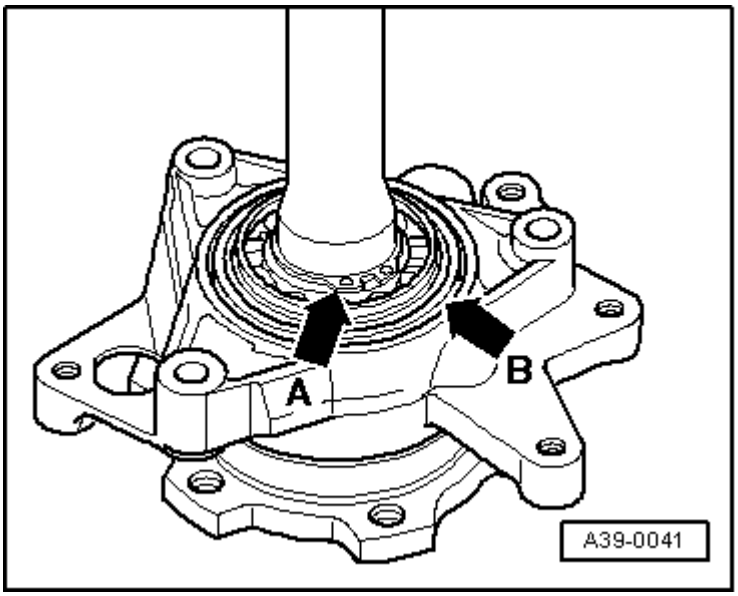


Fig. 154: Removing/Installing Circlip And Seal At Grooved Ball Bearing

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert securing ring - **arrow A** -.
- Install right flange shaft --> **39 - FINAL DRIVE, DIFFERENTIAL** .
- Check gear oil level in front final drive --> **39 - FINAL DRIVE, DIFFERENTIAL** .

Differential shaft seal, replacing

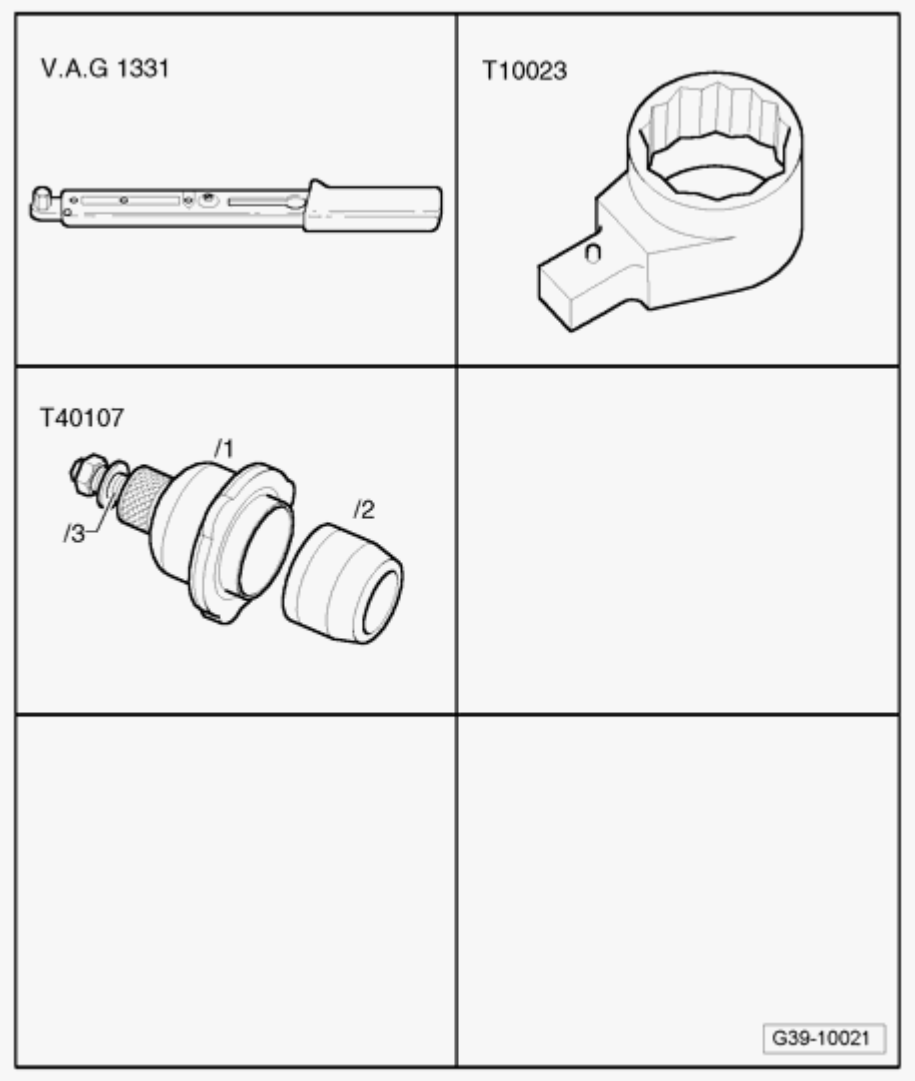


Fig. 155: Identifying Special Tools - Differential Shaft Seal, Replacing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Torque wrench V.A.G 1331
- Socket T10023
- Thrust pad T40107

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- Assembly lever
- *Cleaning solution D 009 401 04*

Work procedure

- The differential shaft seal can be replaced with transmission installed.

- Drain ATF --> **ATF, draining for ATF flushing process**.
- Remove differential --> **Differential, removing and installing**
- Remove right flange shaft --> **39 - FINAL DRIVE, DIFFERENTIAL** .

NOTE:

- **In the case of insufficient accessibility in the vehicle, right flange shaft must not be completely removed. In that case, it only needs to be pulled out of transmission housing a little in order to create enough room to remove and install shaft seal.**

CAUTION:

- **In the following procedures, the differential shaft surface must not come in contact with hard objects. Even small scratches or damage to the differential shaft sealing surface cause lack of seal and the transmission must be replaced completely.**

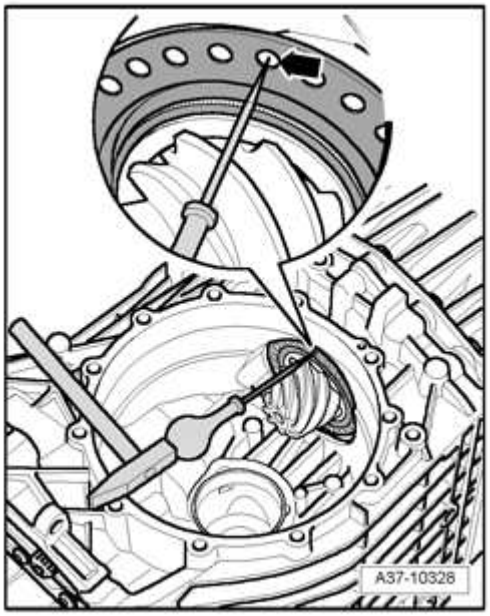


Fig. 156: Placing Punch On Side Hole Of Pinion Shaft Seal And Punch Small Hole To Install Metal Screw In Shaft Seal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place a punch on a side hole of pinion shaft seal and punch a small hole - **arrow** - to install a metal screw

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in shaft seal.

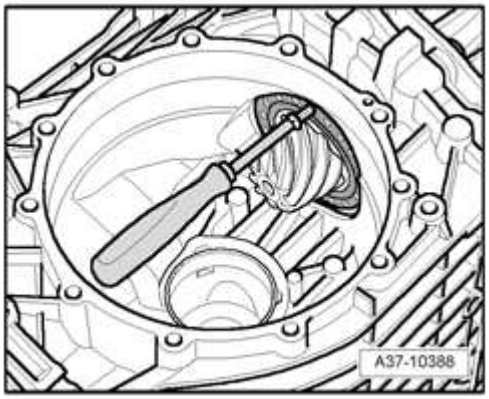


Fig. 157: Installing Metal Screw With Large Head In Shaft Seal Hole
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install metal screw with large head in shaft seal hole.

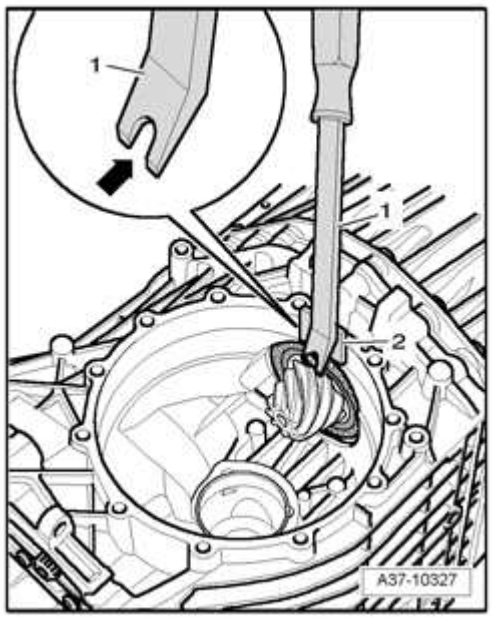


Fig. 158: Using Stable Lever With Center Notch To Install Metal Screw
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Use a stable lever - **1** - with center notch - **arrow** - to install metal screw.
- Position lever on metal screw.

CAUTION: Lay an appropriate wood or plastic plate - 2 - between lever and transmission housing to prevent damage.

The housing must not be damaged.

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- Remove shaft seal.

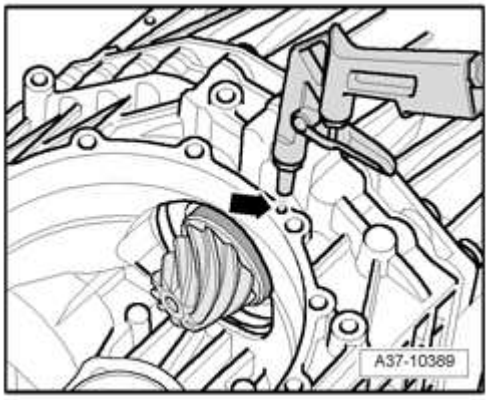


Fig. 159: Cleaning Breather Tube Using Pressurized Air
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Clean breather tube - **arrow** - using pressurized air and lay a cloth on interior side of breather tube.

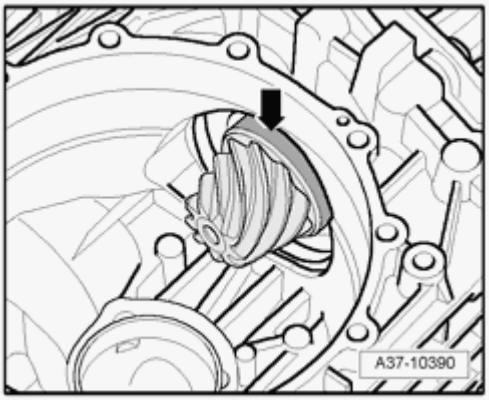


Fig. 160: Identifying Differential Shaft Sealing Surface
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Clean differential shaft sealing surface with *cleaning solution D 009 401 04* and a soft cloth; to do so turn differential shaft.

- Selector shaft lever must not be in position "P".

- Remove stubborn deposits with the fingernail, do not use tools at all.

CAUTION:

- **Do not clean the differential shaft mechanically with tools or polishing paste under any circumstances. Even small scratches or damage to the differential shaft sealing surface cause lack of seal and the transmission must be replaced completely.**

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- Coat outside circumference of shaft seal with ATF.
- Check assembly aid T40107/2 for cracks or burrs. Do not use a damaged assembly aid.

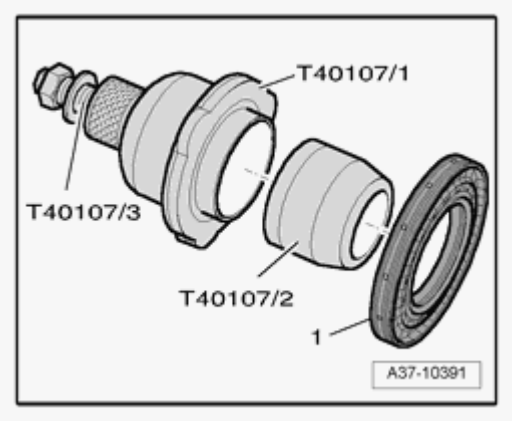


Fig. 161: Placing Assembly Aid T40107/2 On Pressure Sleeve T40107/1 And Sliding Shaft Seal Onto Pressure Sleeve
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place assembly aid T40107/2 on pressure sleeve T40107/1 and slide shaft seal - **1** - onto pressure sleeve.

- Closed side of shaft seal points towards tool.

- Remove assembly aid T40107/2.
- Connect pressure sleeve T40107/1 with shaft seal - **1** - to differential shaft.

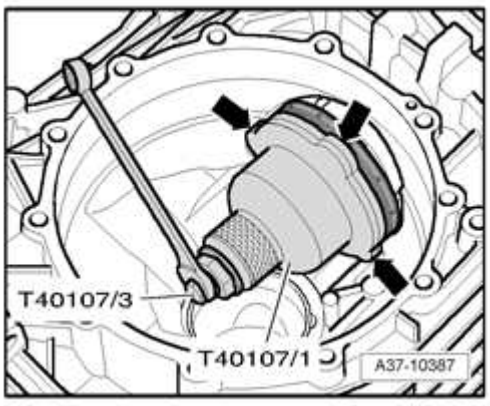


Fig. 162: Bringing Pressure Sleeve T40107/1 Into Correct Position
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place selector shaft lever in "P" position (all the way back).
- Rotate nuts on spindle T40107/3 all the way back.
- Rotate spindle T40107/3 to stop with open-end wrench.

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NOTE:

- **This installs spindle securely on differential shaft.**

- Bring pressure sleeve T40107/1 into correct position.

- Tabs - **arrows** - pressure sleeve circumference must engage in notches on transmission housing.

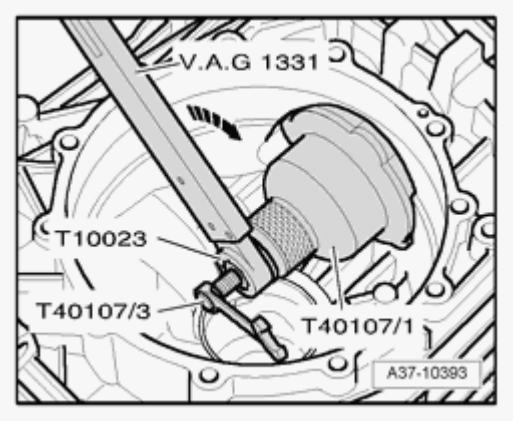


Fig. 163: Pressing Shaft Seal Into Transmission Housing With Pressure Sleeve And Tightening Nut To 17 Nm Using Torque Wrench V.A.G 1331 And Socket T10023
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press shaft seal into transmission housing with pressure sleeve and tighten nut to 17 Nm using Torque wrench V.A.G 1331 and Socket T10023.

- Shaft seal must settle for 2 minutes.

- After waiting 2 minutes, remove nut and remove pressure sleeve in driving direction.

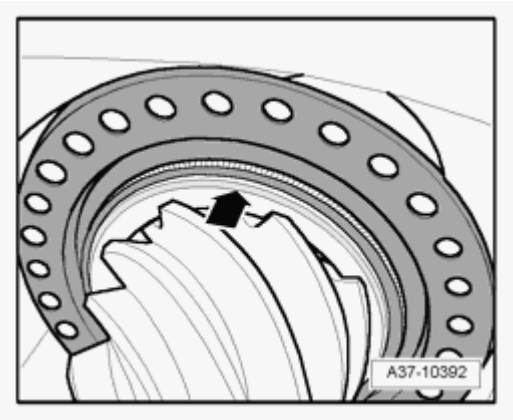


Fig. 164: Checking Whether Shaft Seal Lip Visible From Outside Lies On Cylindrical Differential Shaft Sealing Surface And Not On Chamfer
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check whether shaft seal lip visible from outside lies on cylindrical differential shaft sealing surface and not on chamfer - **arrow** - ; press shaft seal on, if necessary

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- Install right flange shaft --> **39 - FINAL DRIVE, DIFFERENTIAL** .
- Install differential housing and front final drive cover --> **Differential, removing and installing**.

With transmission removed:

NOTE:

- **To check for leaks, transmission must be reinstalled in vehicle so that a road test can be performed.**
- **Transmission, removing and installing --> 37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**

All:

- Fill with ATF --> **ATF, filling for ATF flushing process**.

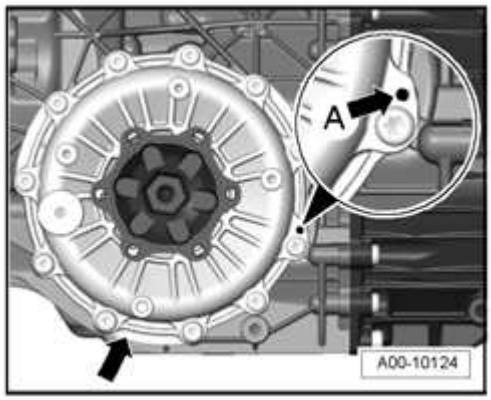


Fig. 165: Performing An Extended Test Drive And Finally Checking For Leaks On Bleeder Hole On Front Final Drive Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Perform an extended test drive and finally check for leaks on bleeder hole - **arrow A** - on front final drive cover.

NOTE:

- **The bleeder hole is covered with a protective plate in certain transmissions.**
- **On new transmissions, the bleeder hole is placed to the side so a leak is only visible at side of front final driver cover.**
- **If oil escapes at the bleeder hole, repair must be repeated.**

Front final drive cover (on removed transmission), removing and installing

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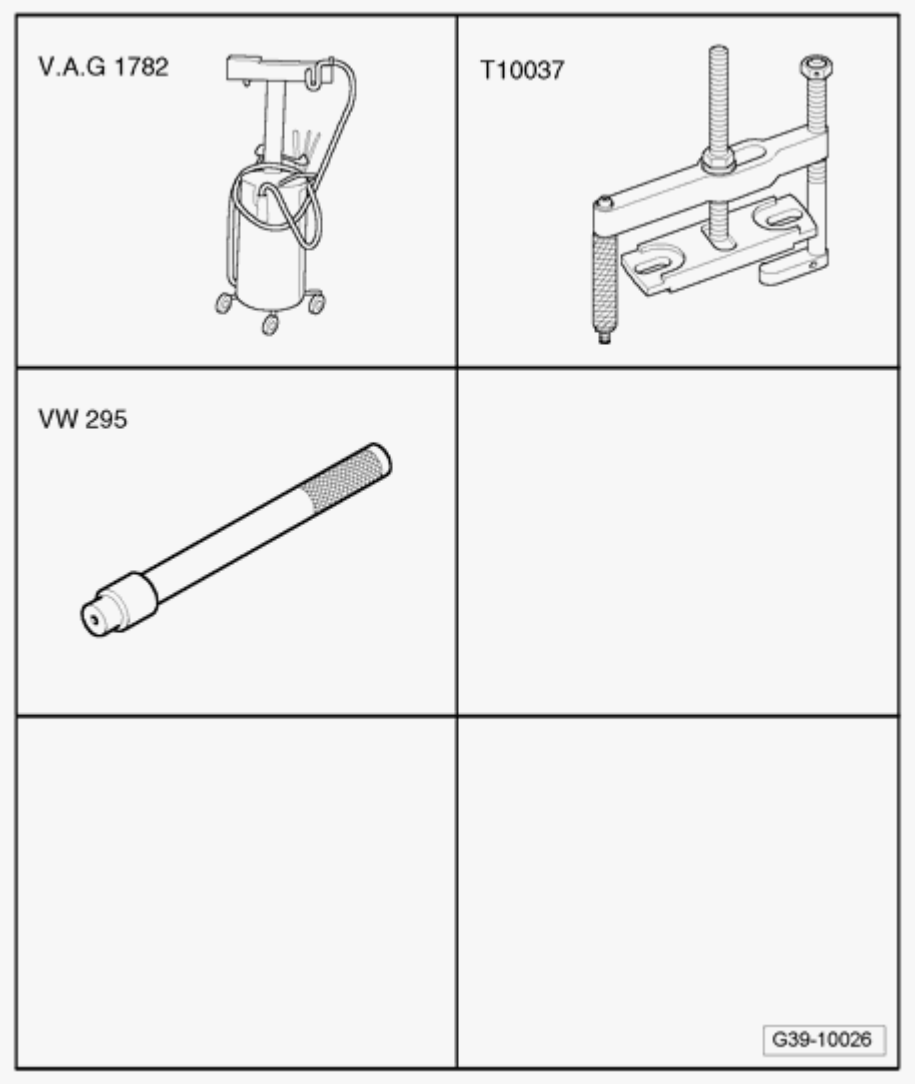


Fig. 166: Identifying Special Tools - Front Final Drive Cover (On Removed Transmission), Removing And Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Old oil collecting and extracting device V.A.G 1782
- Puller T10037
- Drift VW 295

Removing

NOTE:

- **Front final drive cover, removing and installing on installed transmission --> 39 - FINAL DRIVE, DIFFERENTIAL**
- **Observe general repair notes --> Repair instructions .**

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- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **Transmission removed and secured to assembly stand --> Transmission, attaching to assembly stand.**

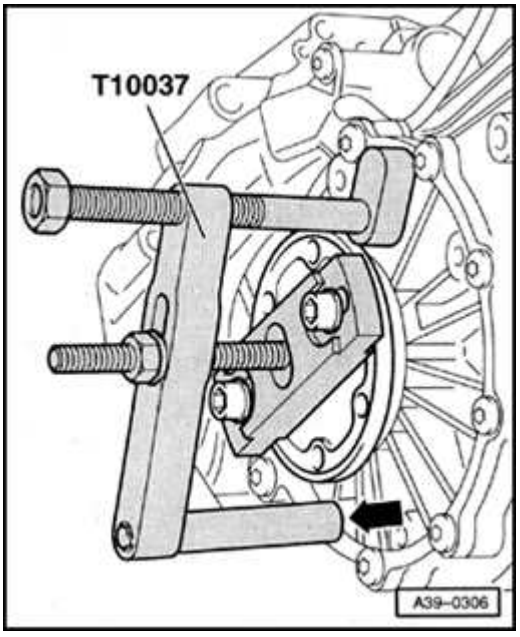


Fig. 167: Removing Drive Flange (Left Side)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place old oil collecting and extracting device V.A.G 1782 beneath transmission.
- Tightly thread lower support of puller T10037 on front differential cover - **arrow** -.

NOTE:

- **To avoid damage to the needle bearings (polygon bearings) or differential during removal, the flange shaft must be removed evenly, parallel and without one sided pressure**

- Remove left flange shaft with Puller T10037.
- Clamp flange shaft in vise, using jaw protectors.

Flange shaft circlip must always be replaced.

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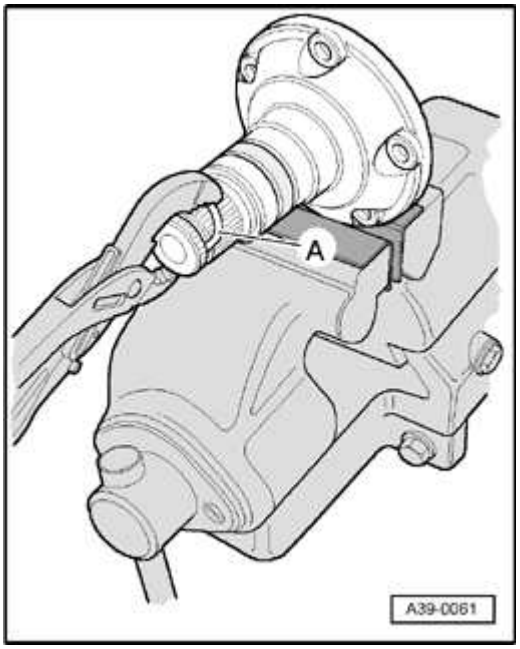


Fig. 168: Pressing Circlip With New Circlip Out Of Flanged Shaft Groove
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press circlip with new circlip - **A** - out of flanged shaft groove.

CAUTION: Before removing front final drive cover, ensure that right flange shaft is installed. Otherwise differential can fall out of transmission housing.

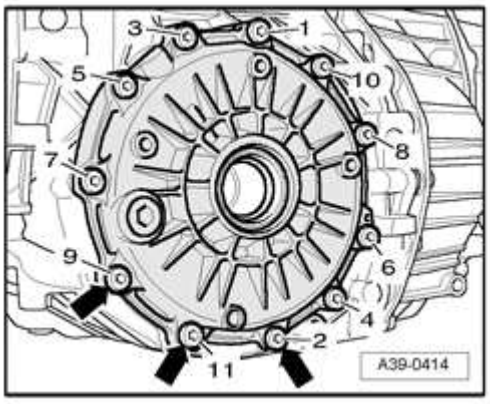


Fig. 169: Tightening Bolts On Front Final Drive Cover In Sequence
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten bolts on front final drive cover - **11 to 1** - in sequence.

CAUTION:

- **Slowly and carefully remove front final driver cover from transmission housing. Otherwise differential can fall out of transmission.**

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- **A differential that has fallen out can no longer be installed. If differential falls out, transmission must be replaced.**
- **Ensure that the differential bearing race and adjustment shims do not fall out of the transmission housing and front final drive cover.**
- **Bearing rings and adjustment shims that have fallen out cannot be relocated with workshop equipment.**

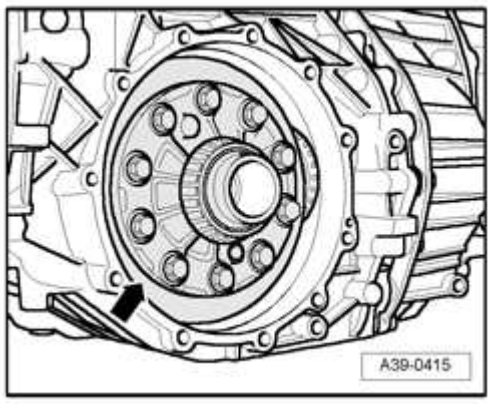


Fig. 170: Securing Differential Against Falling Out
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Secure differential - **arrow** - against falling out.

Installing

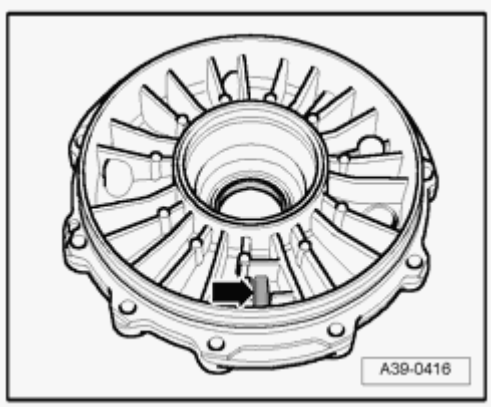


Fig. 171: Ensuring That Magnet Under Plastic Cover In Front Final Drive Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Ensure that magnet under plastic cover in front final drive cover is installed.

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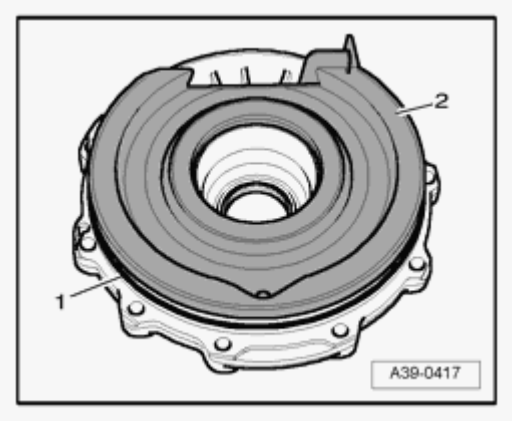


Fig. 172: Replacing O-Ring In Front Final Drive Cover & Checking Cover For Secure Seating
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Replace O-ring - **1** - in front final drive cover.
- Check cover for secure seating - **2** -.

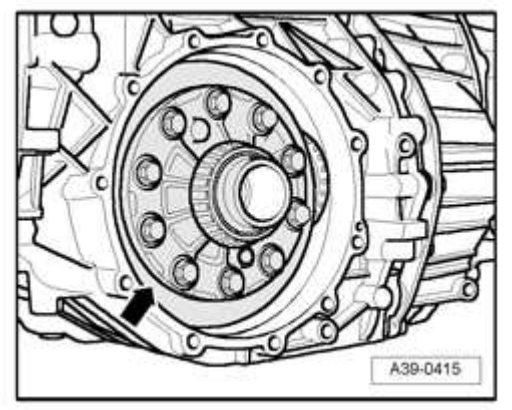


Fig. 173: Checking Differential For Correct Seating In Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check differential - **arrow** - for correct seating in transmission.

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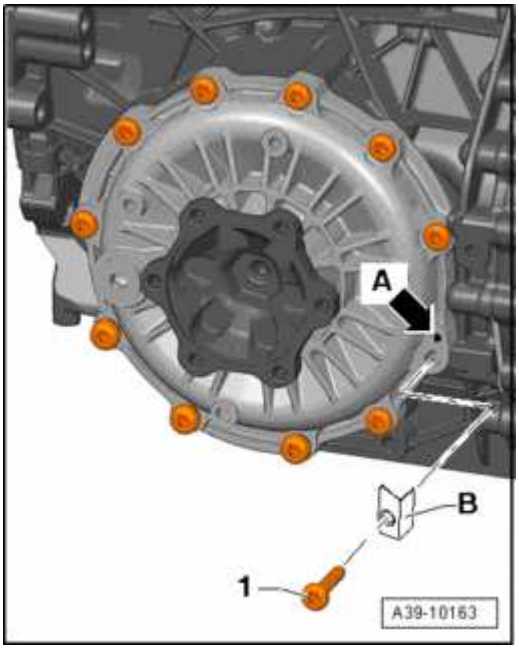


Fig. 174: Replacing All Bolts On Front Final Drive Cover & Installing Shield Between Final Drive Cover And Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position front final drive cover on transmission housing.
- Replace all bolts on front final drive cover.
- If present, install shield - **B** - between final drive cover and bolt - **1** -.

NOTE:

- **The shield - B - should protect the bleeder hole - arrow A - from dirt and water.**

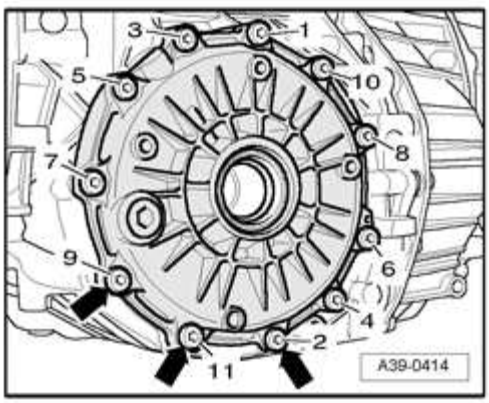


Fig. 175: Tightening Bolts On Front Final Drive Cover In Sequence
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Tightening sequence:

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CAUTION:
- **The 3 bolts with spacer washers are inserted in the places marked with the - arrows -.**
- **Use original bolts .**

- Tighten bolts on front final drive cover in 2 stages in sequence shown as follows:
- Stage: Hand-tighten bolts in - **1 to 11** - sequence.
- Stage: Tighten bolts in - **1 to 11** - sequence in several stages to tightening torque.
- Check left flange shaft seal, replace if necessary --> **Left flange shaft seal, replacing**

- Install left flange shaft --> **39 - FINAL DRIVE, DIFFERENTIAL** .
- Fill axle oil and check level in front final drive --> **39 - FINAL DRIVE, DIFFERENTIAL** .

CAUTION: The Multitronic 01J or 0AN transmission requires a different axle oil than shift automatics. Only axle oil for Multitronic which can be obtained as a replacement part must be used in front final drive .

Torque specification

Component	Nm
Front final drive cover on transmission housing	25 1)
Oil filler plug on front final drive cover	20

- 1) Replace bolts.

Differential, removing and installing

Removing

CAUTION:
- **Slowly and carefully remove front final driver cover from transmission housing. Otherwise differential can fall out of transmission.**
- **A differential that has fallen out can no longer be installed. If differential falls out, transmission must be replaced.**
- **Ensure that the differential bearing race and adjustment shims do not fall out of the transmission housing and front final drive cover.**
- **Bearing rings and adjustment shims that have fallen out cannot be relocated with workshop equipment.**

With transmission installed:

- Remove front final drive cover --> **39 - FINAL DRIVE, DIFFERENTIAL** .

With transmission removed:

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- Remove front final drive cover --> **Front final drive cover (on removed transmission), removing and installing**.

All:

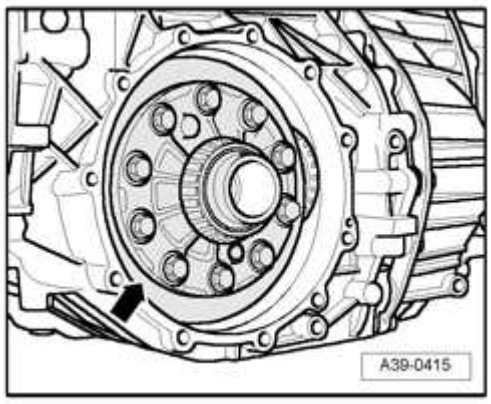


Fig. 176: Securing Differential Against Falling Out
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully remove differential - **arrow** -.

Installing

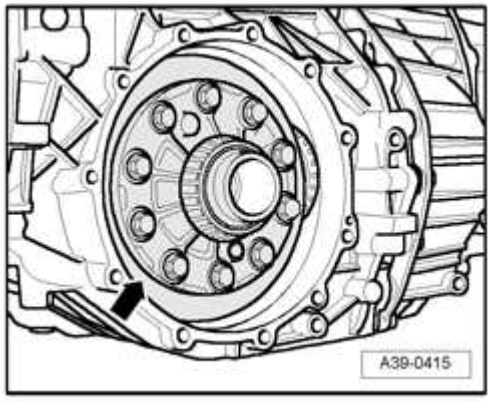


Fig. 177: Securing Differential Against Falling Out
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully install differential - **arrow** -.

With transmission installed:

- Install front final drive cover --> **39 - FINAL DRIVE, DIFFERENTIAL** .

With transmission removed:

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- Install front final drive cover --> **Front final drive cover (on removed transmission), removing and installing**.

TRANSMISSION COMPONENTS, EVALUATING WEAR

Input shaft, checking for wear

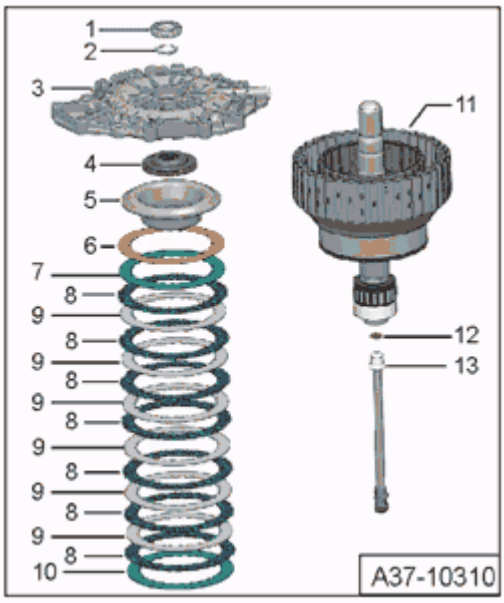


Fig. 178: Exploded View Of Input Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

4 - Piston

- Checking for wear **Checking pistons and thrust plate for wear**

5 - Pressure plate

- Checking for wear **Checking pistons and thrust plate for wear**

11 - Input shaft cylinder

- Check running and sealing surfaces for wear **Check input shaft cylinder running and sealing surfaces for wear**
- Checking for signs of wear caused by coated plate --> **Check inner circumference of input shaft cylinder for scoring from lining discs**

13 - Oil pipe

- Checking for wear **Checking oil pipe for wear**

Checking pistons and thrust plate for wear

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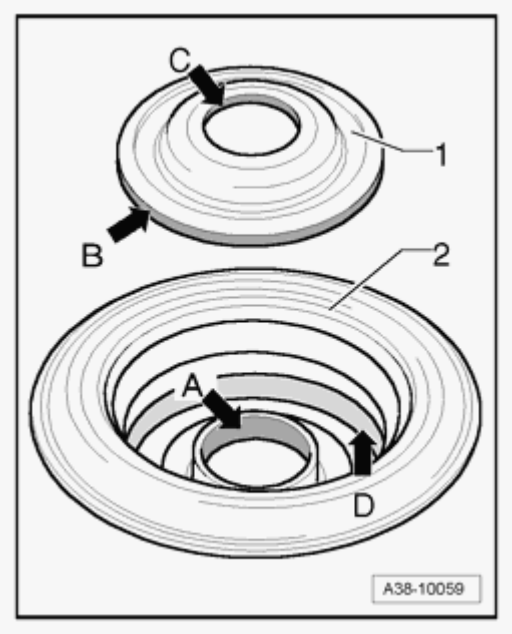


Fig. 179: Inner Running And Sealing Surfaces Of Thrust Plate And Pistons
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove pistons - **1** - from thrust plate - **2** -.

Check thrust plate - 2 -

- Check thrust plate running and sealing surfaces - **arrow A** - for wear.
- Check thrust plate running and sealing surfaces - **arrow D** - for wear.

- If running or sealing surfaces - **arrow A** - show grooves, scratches or scoring, thrust plate - **2** - must be replaced.
- If running or sealing surfaces - **arrow D** - show grooves, scratches or scoring, thrust plate - **2** - and pistons - **1** - must be replaced.

Checking pistons - 1 -

- Check seal - **arrow B** - on outer piston circumference - **1** - for damage.
- Check running surface - **arrow C** - on interior piston circumference - **1** - on shaft.

- If seal - **arrow B** - is damaged or piston running surface - **arrow C** - shows grooves, scratches, scoring or uneven thickness from wear, piston - **1** - must be replaced.

Check input shaft cylinder running and sealing surfaces for wear

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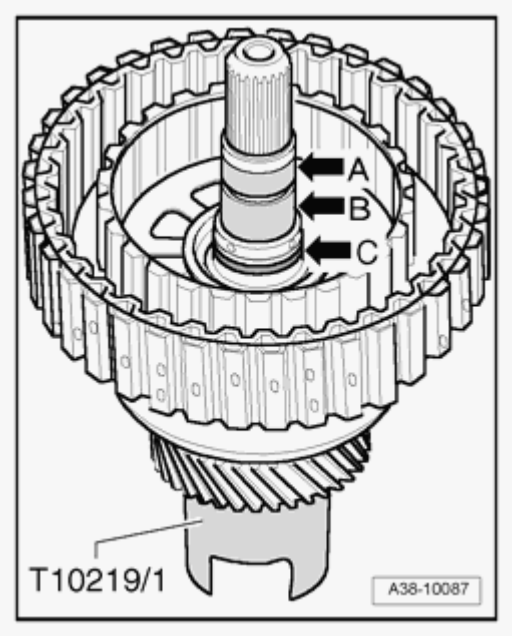


Fig. 180: Checking Input Shaft Cylinder Running And Sealing Surfaces For Wear
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check input shaft running and sealing surfaces - **arrow A** - for wear.

NOTE:

- **Shaft seal in input shaft cover seals at this sealing surface - arrow A -.**
- **Light scoring from shaft seal is normal.**

- Check ball bearing running surface - **arrow B** - in input shaft cover for wear.
- Check shaft seal - **arrow C** - for damage.

- If seal - **arrow C** - is damaged or shaft running surfaces - **arrow B** - or - **arrow A** - show deep scoring or grooves, entire input shaft must be replaced.

Check inner circumference of input shaft cylinder for scoring from lining discs

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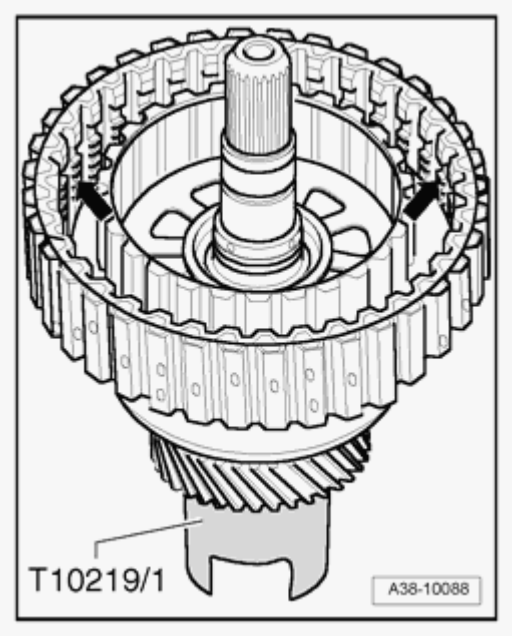


Fig. 181: Checking Inner Circumference Of Input Shaft Cylinder For Scoring From Lining Discs
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check inner circumference of input shaft cylinder for scoring from lining discs - **arrows** -.

- If there is scoring on interior circumference of input shaft cylinder from lining discs - **arrows** - , entire input shaft must be replaced.

Checking oil pipe for wear

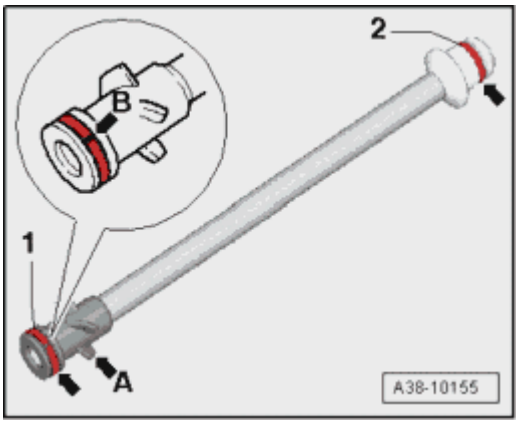


Fig. 182: Checking Oil Pipe For Wear
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check oil pipe seal - **1** - for damage.

- The seal must have a gap - **arrow B** -.
- If gap - **arrow B** - is completely closed, oil pipe must be replaced.

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- Check oil pipe running surfaces - **arrows** - and rotor blades - **arrow A** - for wear, cracks and damage.

- If seal - **1** - or rotor blades - **arrow A** - are damaged or running surfaces - **arrow** - show deep scoring or grooves, oil pipe must be replaced.
- The O-ring - **2** - must always be replaced.

- Always check oil pipe running surfaces in suction jet pump --> **Suction jet pump, checking wear**

Suction jet pump, checking wear

- Input shaft removed --> **Input shaft, removing and installing**

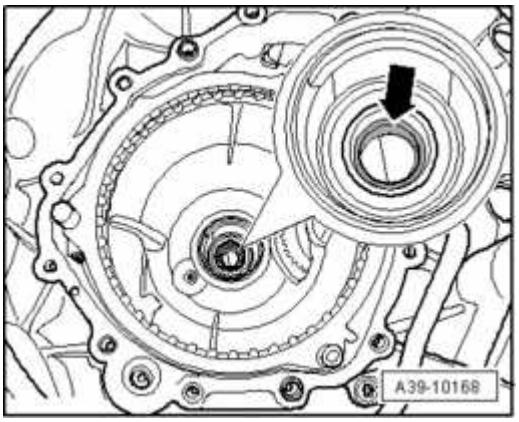


Fig. 183: Checking Oil Pipe Running Surfaces In Suction Jet Pump For Scoring, Scratches Or Damage
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check oil pipe running surfaces - **arrow** - in suction jet pump for scoring, scratches or damage.

- The oil pipe running surface in suction jet pump - **arrow** - must not have any noticeable, cascaded scoring or scratches.

In case of noticeable, cascaded scoring or damage to the wear surface by the oil pipe, suction jet pump must be replaced.

- Always check oil pipe **Checking oil pipe for wear**

Differential shaft, checking for wear

- Differential removed
- Shaft seal removed --> **Differential shaft seal, replacing**.

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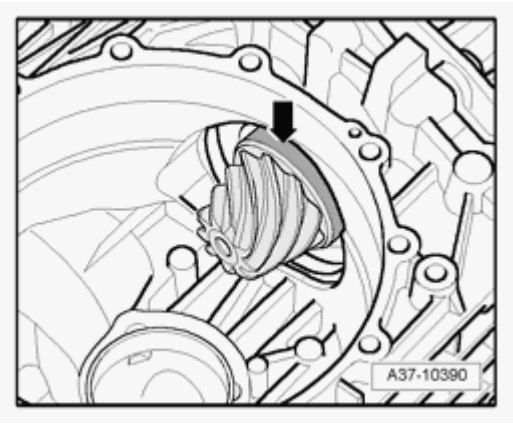


Fig. 184: Identifying Differential Shaft Sealing Surface
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check differential shaft sealing surface for scratches or damage.
- The differential shaft sealing surface must not be scratched or scored.

NOTE:

- **Even the smallest scratches or damage on the differential shaft sealing surface will cause lack of seal, even with a new shaft seal.**

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TRANSMISSION

Continuously Variable Transmission (CVT) 01J On Board Diagnostic (OBD)

01 ON BOARD DIAGNOSTIC (OBD)

ON BOARD DIAGNOSTIC (OBD), OPERATION

On Board Diagnostic (OBD), operation

The Multitronic 01J constantly variable automatic transmission is controlled electronically/hydraulically.

The Transmission Control Module (TCM) receives information from components which influence the shifts. Based on this information, the control module activates the applicable proportioning valves in the valve body. The three proportioning valves regulate the fluid pressure generated by the ATF pump.

Proportioning valve 1 regulates the opening and closing of the clutches or brakes respectively.

Proportioning valve 2 controls the transmission ratio between the two disc sets, depending on driving conditions, i.e. it regulates the pressures on the adjusting cylinders of the two disc sets and keeps the chain at a constant tension.

Proportioning valve 3 regulates ATF cooling of the transmission.

A more precise description and operation of the individual valves can be found in:

Refer to Self-study Program Course No. 951103, Variable Automatic Transmission, Multitronic 01J

Transmission Control Module (TCM) DTC Recognition

The term "On Board Diagnostic" refers to the electrical/electronic part of the controls.

The control module is equipped with a Diagnostic Trouble Code (DTC) memory so that in the event of the failure of an electrical/electronic component, or in the event of an open circuit, the cause of the malfunction can be determined quickly.

The potential of the On Board Diagnostic (OBD) system can only be fully exploited with the V.A.G. 5051 Vehicle Diagnostic Measurement and Information System or with the V.A.G. 1551 scan tool, operating mode 1 "Rapid Data Transmission."

For functions which the V.A.G. 5051 Vehicle Diagnostic Measurement and Information System or the V.A.G. 1551 scan tool can cover. Refer to **List of Selectable Functions**, Overview of Selectable Functions.

Malfunctions are recognized by means of electrical signals. If malfunctions occur in the sensors or components being monitored, they are stored in the DTC memory indicating the type and location of the malfunctions.

If a malfunction is present, it is saved as a statistical error. If the malfunction occurs only briefly and is then no

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longer present, it becomes an intermittent malfunction after the ignition is switched off and on again.

Malfunctions occurring sporadically (intermittently, occasionally) are displayed on the screen as "sporadic."

After 40 engine cold starts (followed by transmission warm-up) the sporadic malfunctions are automatically deleted from the DTC memory

A maximum of 10 trouble codes are stored in the DTC memory. If an eleventh trouble code should be detected with 10 statistical trouble codes, emergency shutoff takes place.

If 10 trouble codes have already been saved in the DTC memory but they are not all statistical, and an eleventh trouble code is added, the oldest existing sporadic trouble code is overwritten.

Transmission Control Module (TCM) safety functions

In the event of a failure of individual or several components or sensors, the control module -J217- activates corresponding substitute functions. This ensures non-destructive operation of the transmission with the consequent effect on the function and quality of the shifts.

Three conditions can be distinguished which are recognized by multitronic.

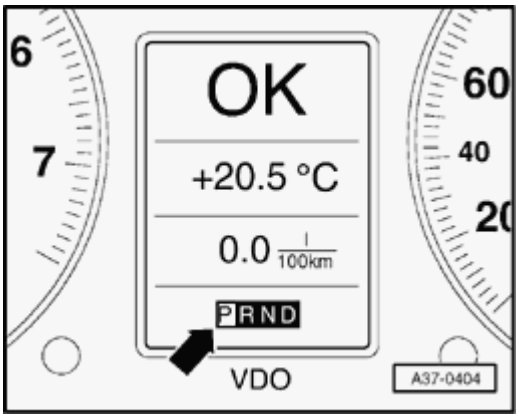


Fig. 1: Transmission Range (TR) Selector Lever Display -Y6-
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - The trouble code is stored and a substitute program allows the vehicle to continue to be driven (with some limitations). The driver is not alerted to this condition, since it is not critical to safety nor for the transmission. The transmission range display in the instrument cluster indicates as normal the particular range that has been selected (arrow). The driver may notice a difference in vehicle driveability and contact an authorized dealer.

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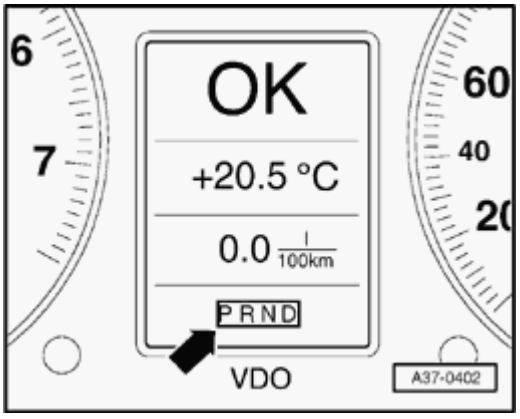


Fig. 2: Identifying Fully Illuminated Transmission Range Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

2 - The trouble code is stored and a substitute program allows the vehicle to continue to be driven (with some restrictions). The fully illuminated transmission range display in the instrument cluster shows the driver a simple malfunction (arrow). This malfunction is barely noticeable to the driver, but the brightly lighted transmission range display is intended to indicate that he or she should consult an authorized dealer as soon as possible to avoid subsequent damage in the transmission.

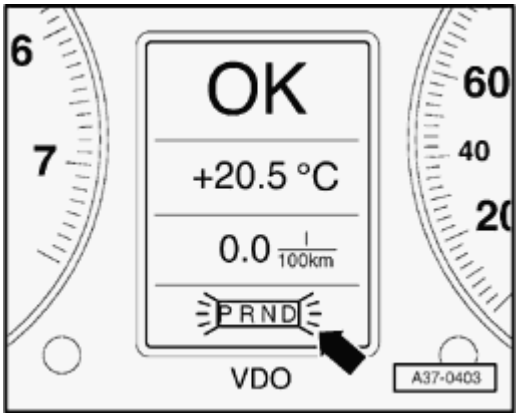


Fig. 3: Identifying Flashing Transmission Range Indicator
Courtesy of VOLKSWAGEN UNITED STATES, INC.

3 - A flashing transmission range indicator in the instrument cluster points to a serious malfunction in the transmission (arrow). The condition is critical to safety or for the transmission.

CAUTION: A flashing transmission range display indicator in the instrument cluster means the vehicle could come to an immediate stop or might not continue operation the next time the vehicle is stopped. This could mean that stopping at a traffic signal can cause traffic to be obstructed.

The flashing transmission range display is requesting the driver to stop his or her vehicle at the nearest possible location and to inform an Audi authorized dealer.

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NOTE: In specific cases following a short wait, driving can be resumed by restarting the engine. In any case, the driver should immediately consult an Audi authorized dealer.

If the Transmission Control Module (TCM) -J217- fails, for example, due to a loss of the voltage feed, it will not be possible to continue driving.

CAUTION: When the vehicle is towed, the transmission selector lever must be in position N, and it must not be towed more than 50 km and not above 50 km/h, otherwise the transmission will be destroyed.

Technical Data

DTC memory	
• Permanent memory	Yes
Data output	
Rapid data transmission Blink code output	Yes No
Output Diagnostic Test Mode (DTM)	Refer to **Output Diagnostic Test Mode (DTM)**
Basic setting	No
Adaptation	Refer to **Adaptation**
Coding control module	Refer to **Transmission Control Module (TCM), coding**
Reading Measured Value Block	Refer to **Measured Value Block, reading**
Electrical/Electronic components and component locations	Refer to **Electrical/electronic components and locations**

ELECTRICAL/ELECTRONIC COMPONENTS AND LOCATIONS

Electrical/electronic components and locations

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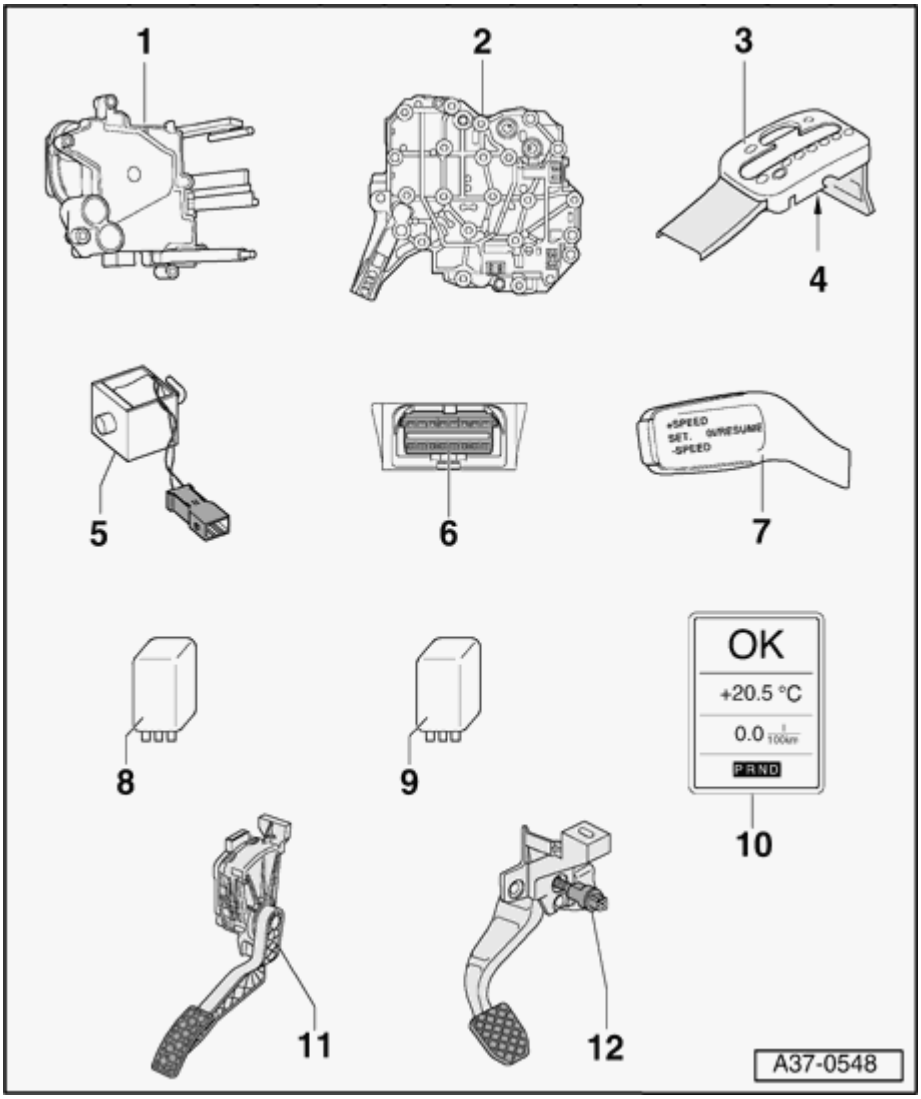


Fig. 4: Electrical/Electronic Components And Locations
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Transmission Control Module (TCM) for multitronic -J217-

- Component location --> **Fig. 5**
- Control module is tested by the OBD system
- Removal and installation:

Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**

2 - Hydraulic unit

- Component location. See **Fig. 6**
- Valves are tested by the OBD system

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Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**

- Removal and installation:

3 - Shift control mechanism cover

- Removal and installation:

Refer to **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**

4 - Tiptronic Switch -F189-

- Component location: Integral with the printed-circuit board which is located in the cover for the shift control mechanism
- Consists of 3 Hall sensors which are triggered by a solenoid on the transverse slide of the roll cover
- Can be tested in Measured Value Block. Refer to **Measured Value Block, reading**
- In the event of Tiptronic switch malfunctions, first check whether the solenoid is properly attached to the roll cover, if necessary replace the transverse slide. The circuit board must not be replaced until the wiring connections have been inspected.

- Removal and installation:

Refer to **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**

5 - Shift lock solenoid -N110-

- Component location. See **Fig. 7**
- Can be tested in the Measured Value Block. Refer to **Measured Value Block, reading** and **Electrical Testing**
- Removal and installation:

Refer to **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**

6 - Data Link Connector (DLC)

- Component location. Refer to **Fig. 8**

7 - Cruise control switch -E45-

- Component location. See **Fig. 9**
- Removal and installation:

Refer to

- **94 LIGHTS, SWITCHES - EXTERIOR**

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- **94 LIGHTS, SWITCHES - EXTERIOR** for ELECTRICAL EQUIPMENT, CABRIOLET

8 - Park/Neutral Position (PNP) relay -J226-

- Component location. See **Fig. 11**

9 - Power supply relay terminal 87

- Component location. Refer to **Fig. 11**

10 - Transmission Range (TR) selector lever display -Y6-

- Component location. Refer to **Fig. 10**
- Flashing transmission range display indicates a critical defect. Refer to **Transmission Control Module (TCM) safety functions**
- Fully illuminated transmission range display indicates a simple defect. Refer to **Transmission Control Module (TCM) safety functions**
- No display points to a wiring fault or a faulty display -Y6-

11 - Kickdown switch -F8-

- Component location. See **Fig. 13**
- No mechanical switch. A specific value from the Throttle position sensors -G79-/-G185- is saved in the Engine Control Module (ECM)
- Signal transmission from the Engine Control Module (ECM) to the Transmission Control Module (TCM) over the CAN bus
- Can be tested in Measured Value Block. Refer to **Measured Value Block, reading**

- Accelerator pedal module removal and installation:

Refer to **20 - FUEL SUPPLY SYSTEM**

12 - Brake light switch -F-

- Component location. See **Fig. 12**
- Can be tested in Measured Value Block. Refer to **Measured Value Block, reading**
- Removal and installation:

Refer to **46 - BRAKES - MECHANICAL COMPONENTS**

Transmission Control Module (TCM) for multitronic -J217-

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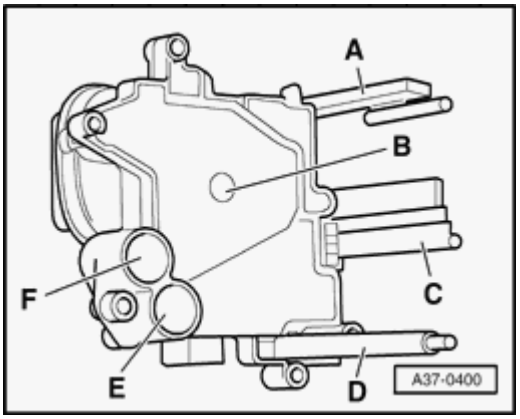


Fig. 5: Transmission Control Module (TCM) For Multitronic -J217-
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Component location: The Transmission Control Module (TCM) -J217- is mounted at the rear of the transmission, directly on the hydraulic unit.

The following components are integrated in the control module.

A - Sender for transmission output RPM -G195- and Sender 2 for transmission output RPM -G196-

B - Transmission fluid temperature sensor -G93-

C - Multi-function transmission range (TR) switch -F125-

D - Sensor for transmission RPM -G182-

E - Sender 1 for hydraulic pressure, automatic transmission -G193-

F - Sender 2 for hydraulic pressure, automatic transmission -G194-

CAUTION: Always perform the Adaptation after installing a new Transmission Control Module (TCM) -J217-: Refer to Adaptation

Hydraulic Unit

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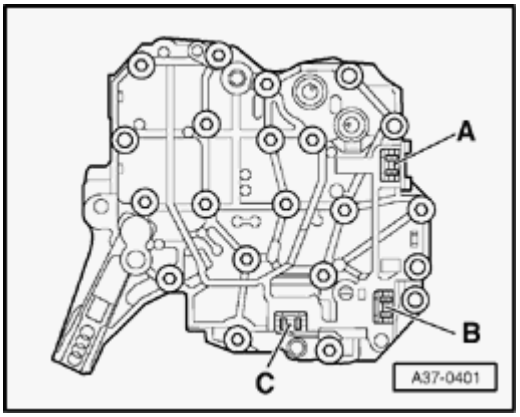


Fig. 6: Hydraulic Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Component location: The hydraulic unit is bolted to the rear of the transmission. The Transmission Control Module (TCM) -J217- is bolted directly to the hydraulic unit.

A - Wiring connector for Pressure control valve 1 for automatic transmission -N215-

A - Wiring connector for Pressure control valve 2 for automatic transmission -N216-

C - Wiring connector for solenoid valve 1 -N88-

The following valves are integral on the hydraulic unit (not shown here):

1 - Pressure control valve 1 for automatic transmission -N215-; clutch solenoid valve

2 - Pressure control valve 2 for automatic transmission -N216-; transmission ratio solenoid valve

3 - Solenoid valve 1 -N88-; clutch cooling/safety cutoff

4 - Clutch cooling valve

5 - Minimum pressure valve

6 - Pressure control valve

7 - Clutch control valve

8 - Control pressure valve

You will find a more precise description and operation of the individual valves in:

Refer to Self-study Program Course No. 951103, Variable Automatic Transmission, Multitronic 01J

Shift lock solenoid -N110-

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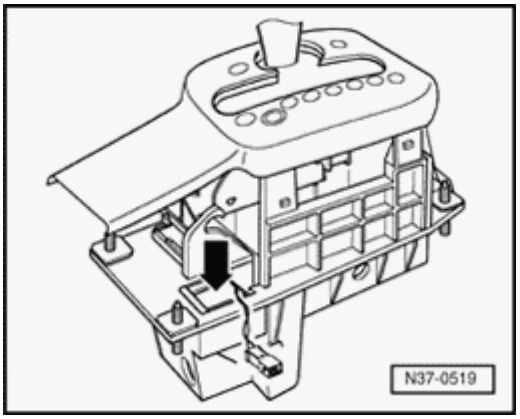


Fig. 7: Shift Lock Solenoid -N110-
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Component location: The shift lock solenoid is located in the shift control mechanism (arrow).

Data Link Connector (DLC)

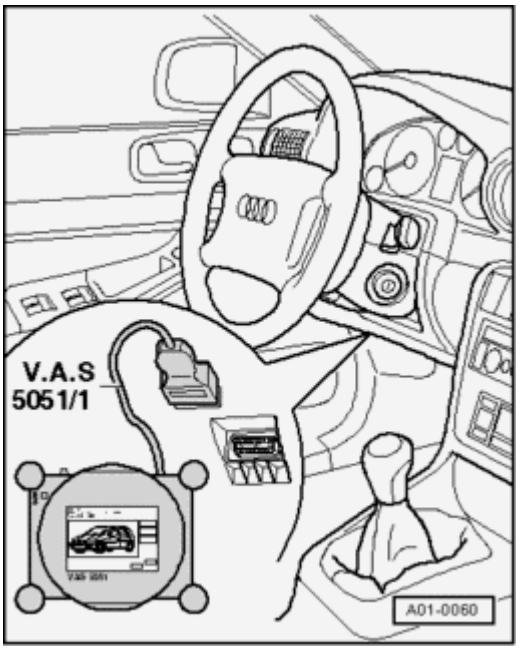


Fig. 8: Identifying Vehicle Diagnosis, Testing and Information System VAS 5051 and Data Link Connector (DLC)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Component location: The DLC is located under the knee bolster to the left of the steering wheel.

Cruise control switch -E45-

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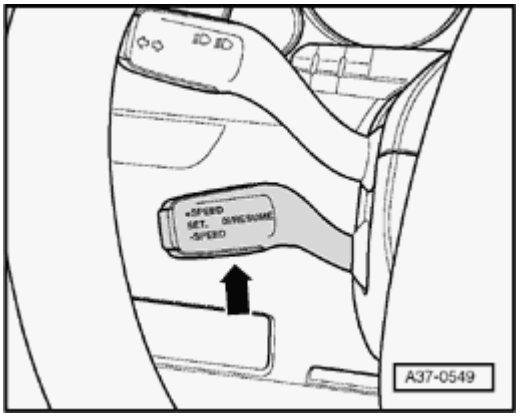


Fig. 9: Cruise Control Switch -E45-
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Component location: The cruise control switch is located on the steering column switch.

Transmission Range (TR) selector lever display -Y6-

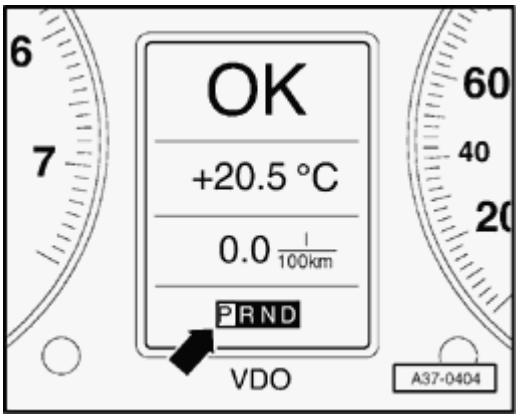


Fig. 10: Transmission Range (TR) Selector Lever Display -Y6-
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Component location: Integrated in the instrument cluster

NOTE: The transmission range selector lever display can only be replaced together with the instrument cluster.

Relay for power supply terminal 87 and Park/Neutral Position (PNP) relay -J226-

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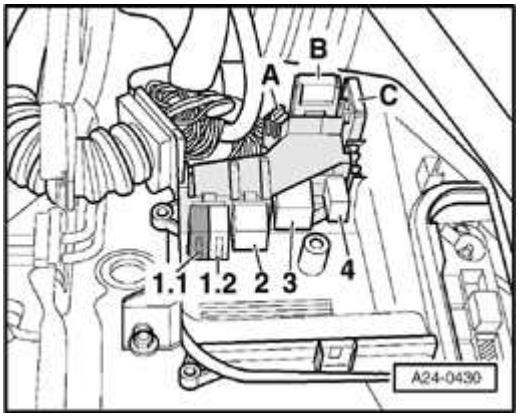


Fig. 11: Relay For Power Supply Terminal 87 And Park/Neutral Position (PNP) Relay -J226-
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Component location: On the relay carrier in the E-Box plenum.

3 - Relay for power supply terminal 87

Power supply via terminal 87 is handled through the Motronic ECM power supply relay -J271-.

4 - Park/Neutral Position (PNP) relay -J226-

Brake light switch -F-

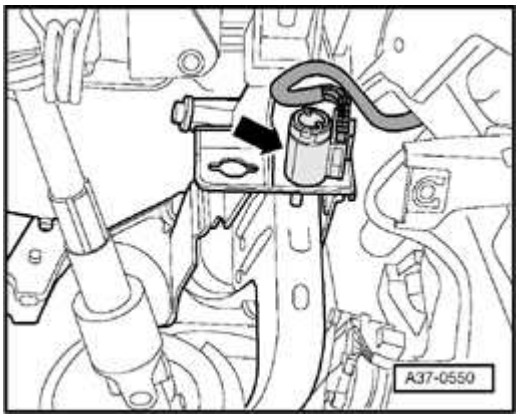


Fig. 12: Brake Light Switch -F-
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Component location: The brake light switch -arrow- is located on the pedal cluster.

NOTE: To ensure an adequately tight fit, the switch must only be installed once.

Kickdown switch -F8-

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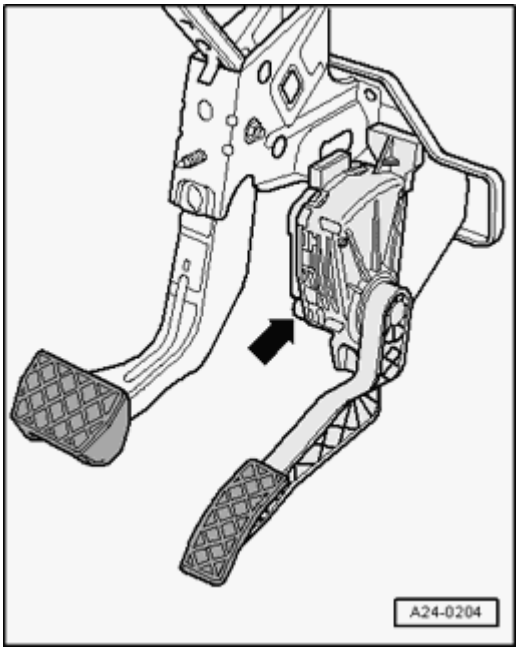


Fig. 13: Kick Down Switch F8
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Component location:

- No mechanical switch. A specific value from the Throttle position sensors -G79-/-G185- is stored in the Engine Control Module (ECM)

ON BOARD DIAGNOSTIC (OBD), PROGRAM

Safety Precautions

If the use of test and measuring equipment is required during test drives, the following precautions must be observed:

CAUTION:

- **The test and measurement equipment must always be secured on the rear seat and operated from there by a second person.**
- **If the test and measurement equipment is operated from the passenger seat, the person sitting there could be injured in an accident from deployment of the passenger side airbag.**

In order to prevent injuries to persons and/or destruction of electrical and electronic components, the following precautions must be observed:

- Attach measurement and test equipment terminals only with the ignition switched OFF.
- With some tests it may happen that the control module detects and stores a trouble code. For this reason, the DTC memory must be read and if necessary deleted after completing all tests and repairs.

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- Disconnecting and attaching battery terminals must only be carried out with the ignition switched OFF, otherwise the Transmission Control Module (TCM) can be damaged.

CAUTION: Observe precautions when disconnecting battery terminals.

Refer to

- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

Performance testing, brake testing and towing

CAUTION: When the vehicle is towed, the transmission selector lever must be in position N, and it must not be towed more than 50 km and not above 50 km/h, otherwise the transmission will be destroyed.

NOTE: It is not possible to tow the vehicle in order to start the engine, for example when the battery is too weak or the starter is not working.

VAS 5051 Vehicle Diagnosis, Measurement and Information System, connecting and selecting functions

Test requirements

- Parking brake applied.
- Vehicle voltage supply O.K.
- Voltage supply and fuses for particular system O.K.

Refer to Electrical Wiring Diagrams, Troubleshooting and Component Locations binder

- Ground connections for transmission O.K.

Refer to Electrical Wiring Diagrams, Troubleshooting and Component Locations binder

- Check ground connections for corrosion and damaged connection, repair as needed.

Refer to Electrical Wiring Diagrams, Troubleshooting and Component Locations binder

- Check battery ground (GND) strap and ground (GND) strap between battery and transmission.

Test procedure

- Switch ignition OFF.

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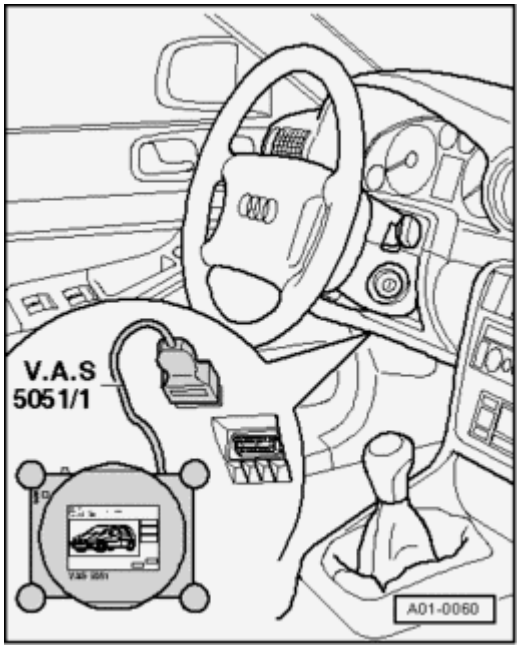


Fig. 14: Identifying Vehicle Diagnosis, Testing and Information System VAS 5051 and Data Link Connector (DLC)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

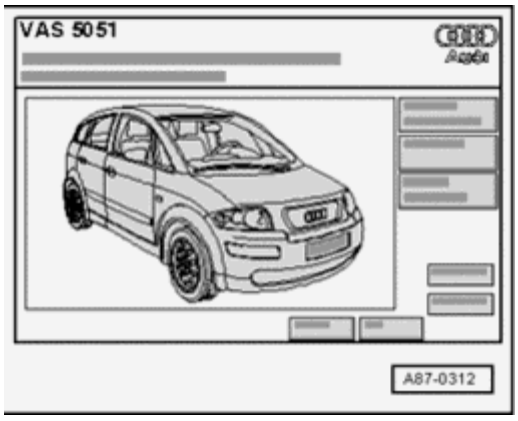
- Connect VAS 5051 Vehicle Diagnosis, Measurement and Information System with diagnostic lead VAS 5051/1.

NOTE: The Data Link Connector (DLC) is located at the left-side knee bolster.

CAUTION: Please observe safety precautions. Refer to Safety Precautions

NOTE: If an error message appears in the display:

Refer to Users Manual for VAS 5051 Vehicle Diagnosis, Measurement and Information System VAS 5051



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Fig. 15: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051

- Touch "Vehicle OBD" button.

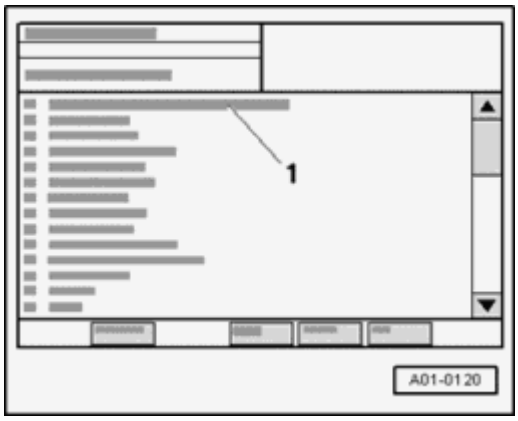


Fig. 16: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051

NOTE: By touching "00 Read DTC Memory Complete System" in the selection -1- the automatic test sequence is performed, i.e. a scan is performed of the DTC memory for all systems in the vehicle capable of OBD.

Depending on the desired function:

- Switch ignition ON.

or

- Start engine.
- In selection -1- touch vehicle system "02 Transmission Electronics".
- Wait until next display appears on screen.

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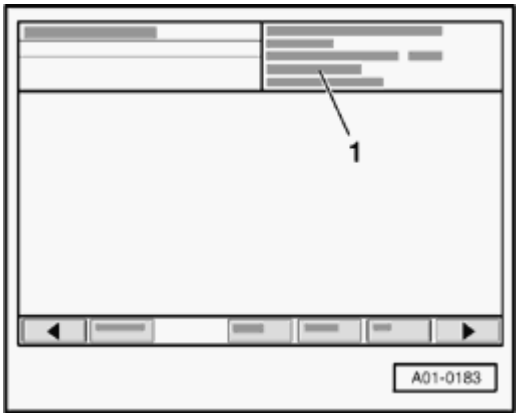


Fig. 17: Diagnostic System VAS 5051: Display - System In Basic Setting
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051:

1 - Control module identification number of the Transmission Control Module (TCM).

Identification number of Transmission Control Module (example)		
02 - Transmission electronics	Vehicle system	
01J927156.	Part number; application	
V301) 01J2) 3.0l 5V3) USA4) 20405)	1) 2) 3) 4) 5)	Internal designation for Continuously Variable Transmission Multitronic 01J Engine version: 3.0 liter 5V Market, USA and Canada Control module data status (software status)
Code 1001	Control module coding check. Refer to **Transmission Control Module (TCM), coding**	
Plant number 12345	Plant identification of the VAS 5051 with which the last coding was performed.	

LIST OF SELECTABLE FUNCTIONS

List of Selectable Functions

		Refer to
02 -	Diagnostic Trouble Code (DTC) memory	**Diagnostic Trouble Code (DTC) memory, reading**
03 -	Output Diagnostic Test Mode (DTM)	**Output Diagnostic Test Mode (DTM)**
05 -	Erasing DTC memory	**Diagnostic Trouble Code (DTC) memory, erasing**

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06 -	Ending output	
07 -	Coding control module	**Transmission Control Module (TCM), coding**
08 -	Reading Measure Value Block	**Measured Value Block, reading**

DIAGNOSTIC TROUBLE CODE (DTC) MEMORY, READING

Diagnostic Trouble Code (DTC) memory, reading

- Connect VAS 5051 Vehicle Diagnosis, Measurement and Information System. Refer to **VAS 5051 Vehicle Diagnosis, Measurement and Information System, connecting and selecting functions**. In selection touch vehicle system "02 Transmission Electronics". Ignition must be switched on.

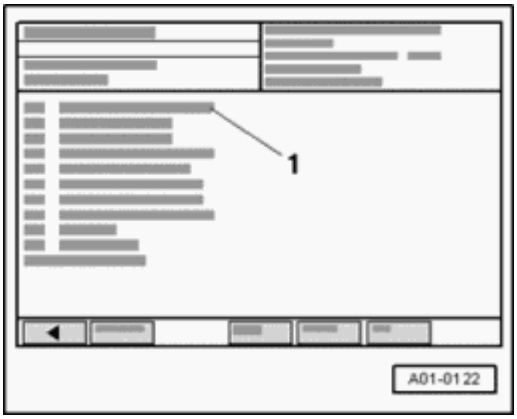


Fig. 18: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051

- In selection -1- touch diagnostic function "02 Read DTC memory".

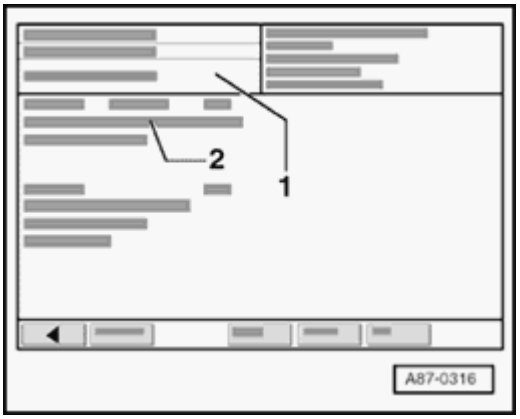


Fig. 19: Identifying Content Of DTC Memory & Identification Of Fault On Diagnostic System VAS 5051 Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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Display on VAS 5051:

1 - Contents of the DTC memory:

0 DTC detected

or

X DTCs detected

2 - DTC

DTC

Location of DTC

Type of DTC

A - If DTCs were recognized:

- Print out contents of screen or OBD protocol.
- End function "02 Read DTC memory" by touching <-- button.

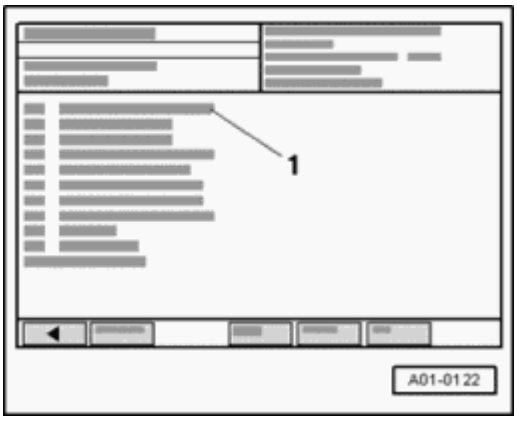


Fig. 20: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051

- Repair malfunction(s) using DTC Chart. Refer to **Diagnostic Trouble Code (DTC) table**.
- In selection touch diagnostic function "02 Read DTC memory" again and delete DTC memory. Refer to **Diagnostic Trouble Code (DTC) memory, erasing**.
- Touch "06 End output".

B - If no DTC was detected:

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- Touch "06 End output".

DIAGNOSTIC TROUBLE CODE (DTC) TABLE

Diagnostic Trouble Code (DTC) table

NOTE:

- **In the following list all the possible DTCs are shown in ascending order. These DTCs can be recognized by the Transmission Control Module (TCM) -J217-. Then they are displayed on the VAS 5051 Vehicle Diagnosis, Measurement and Information System VAS 5051 or on the V.A.G 1551 scan tool during reading of the DTC memory content.**
- **If DTCs occur only occasionally or if the DTC memory was not deleted after the malfunction was corrected, these DTCs will be displayed for a predetermined time as "intermittently occurring DTCs". Refer to Transmission Control Module (TCM) DTC Recognition.**
- **If faulty components are displayed when the DTC memory is read, make an additional check of wiring connections to the components for short or open circuits.**

Refer to Electrical Wiring Diagrams, Troubleshooting and Component Locations binder

PART 1, UP TO DIAGNOSTIC TROUBLE CODE 18149/P1741

Part 1, up to Diagnostic Trouble Code 18149/P1741

Output at printer	Possible cause	Corrective action
16889/P0505		
Idle speed control Malfunction	• Specified engine idle RPM is lower than the specified idle RPM required by the transmission, which means that the required increase in idle RPM was not carried out.	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 020. ○ Read DTC memory for Engine Control Module (ECM) and repair malfunction.
16987/P0603		
Control module faulty	• Control module - J217- faulty	○ Replace Transmission Control Module

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		(TCM). Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS** ○ Check all applicable Technical Bulletins.

Output at printer	Possible cause	Corrective action
16988/P0604		
Control module faulty	• Control module - J217- faulty	○ Replace Transmission Control Module (TCM). Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**
16989/P0605		
Control module faulty	• Control module - J217- faulty	○ Replace Transmission Control Module (TCM). Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**
17086/P0702		
Control module faulty	• Control module - J217- faulty	○ Replace Transmission Control Module (TCM). Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC**

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		CONTROLS ○ Check all applicable Technical Bulletins.

Output at printer		Possible cause	Corrective action
17087/P0703			
Brake light switch -F-			
Electrical malfunction in circuit		• Wiring connection between brake test switch, Brake light switch -F- and Engine Control Module (ECM) faulty	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 001. ○ Check wiring connections and harness connectors using wiring diagram. ○ Read DTC memory for Engine Control Module (ECM) and repair malfunction.
		• Brake light switch -F- faulty	○ Replace Brake light switch -F-. Refer to **46 - BRAKES - MECHANICAL COMPONENTS**

Note on DTC 17087/P0703:

- Conditions for DTC recognition: The signals from the brake light switch and the brake test switch are transmitted over the CAN bus circuit to the Transmission Control Module (TCM) and evaluated there. After 10 consecutive occurrences of an implausibility between the brake light switch and the brake test switch (one switch actuated, the other not) this DTC is saved in the Transmission Control Module (TCM).

Output at printer		Possible cause	Corrective action
17090/P0706			
Multifunction Transmission Range (TR) switch. Refer to -F125-			
	Implausible signal	• Selector lever cable	○ Read Measured

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		wrongly adjusted	Value Block. Refer to **Measured Value Block, reading**; display group number 002. ○ Adjust selector lever cable. Refer to **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**
		• Operation of selector shaft solenoid 2) for multifunction transmission range switch affected by dirt or metal chips	○ Clean selector shaft. Refer to **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**
		• Multifunction TR switch -F125- faulty	○ Replace2) Transmission Control Module. Refer to **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**
		• Selector shaft solenoid 1) for multifunction TR switch demagnetized by a strong electrical field (welding equipment for example) or selector shaft bent or damaged	○ Replace transmission. Refer to **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**

1) The solenoid transmits the current position of the selector shaft to the Hall sensors on the multifunction TR switch -F125-. If the shift control mechanism is correctly adjusted, this position matches the selector lever position.

2) The multifunction TR switch -F125- is integrated in the Transmission Control Module (TCM) -J217- and can only be replaced as a unit with the Transmission Control Module (TCM).

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Output at printer	Possible cause	Corrective action
17094/P0710		
Transmission fluid temperature sensor -G93-		
Electrical malfunction in circuit	• Transmission fluid temperature sensor -G93- faulty	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 010 or 011. ○ Replace Transmission Control Module (TCM) 3. Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**
17095/P0711		
Transmission fluid temperature sensor -G93-		
Implausible signal	• Transmission fluid temperature sensor -G93- faulty	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 010 or 011 ○ Replace Transmission Control Module (TCM) 4. Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**

3) The transmission fluid temperature sensor -G93- is integrated in the Transmission Control Module (TCM) -J217- and can only be replaced as a unit along with the Transmission Control Module (TCM).

Output at printer	Possible cause	Corrective action

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17096/P0712		
Transmission fluid temperature sensor -G93-		
Signal too low	• Transmission fluid temperature sensor -G93- faulty	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 010 or 011. ○ Replace Transmission Control Module (TCM) 4. Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**

4) The Transmission fluid temperature sensor -G93- is integrated in the Transmission Control Module (TCM) -J217- and can only be replaced as a unit along with the Transmission Control Module (TCM).

Note on DTC 17096/P0712:

- Condition for DTC recognition: The temperature reading measured fell below -60°C.

Output at printer	Possible cause	Corrective action
17097/P0713		
Transmission fluid temperature sensor -G93-		
Signal too high	• Transmission fluid temperature sensor -G93- faulty	○ Read Measured Value Block 5). Refer to **Measured Value Block, reading**; display group number 010 or 011. ○ Replace Transmission Control Module (TCM) 4. Refer to **38 - AUTOMATIC**

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		TRANSMISSION - GEARS, HYDRAULIC CONTROLS

4) The transmission fluid temperature sensor -G93- is integrated in the Transmission Control Module (TCM) -J217- and can only be replaced as a unit with the Transmission Control Module (TCM).

5) The Measured Value Block should be read out when the engine and transmission have cooled (approx. room temperature). If the temperature reading is then higher than or equal to 160°C, the transmission fluid temperature sensor -G93- is clearly faulty.

Note on DTC 17097/P0713:

- Condition for DTC recognition: The temperature reading measured has exceeded 160°C.

Output at printer	Possible cause	Corrective action
17100/P0716		
Sensor for transmission RPM -G182-		
Implausible signal	• Sensor for transmission RPM -G182- faulty	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 007 ○ Replace Transmission Control Module (TCM) 6. Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**

6) The Sensor for transmission RPM -G182- is integrated in the Transmission Control Module (TCM) -J217 and can only be replaced as a unit along with the Transmission Control Module (TCM).

Note on DTC 17100/P0716:

- Condition for DTC recognition: The Transmission Control Module recognizes short-term drive RPM which is higher than 7000 RPM.

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Output at printer		Possible cause	Corrective action
17101/P0717			
Sensor for transmission RPM -G182-			
No signal		• Sensor for transmission RPM -G182- faulty	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 007. ○ Replace Transmission Control Module (TCM) 6. Refer to **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**
		• Sensor wheel in transmission has become detached or is faulty.	○ Replace transmission. Refer to **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**

6) The Sensor for transmission RPM -G182- is integrated in the Transmission Control Module (TCM) -J217- and can only be replaced as a unit along with the Transmission Control Module (TCM).

Note on DTC 17101/P0717:

- Condition for DTC recognition: The Transmission Control Module (TCM) recognizes short-term input RPM which is less than or equal to 1 RPM and simultaneously an output RPM which is higher than 100 RPM.

Output at printer	Possible cause	Corrective action
17105/P0721		
Sender for transmission output RPM -G195-		
Implausible signal	• Sender for transmission output RPM -G195- faulty	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group

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		number 004. ○ Replace Transmission Control Module (TCM) 7. Refer to **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**
17106/P0722		
Sender for transmission output RPM -G195-		
No signal	• Sender for transmission RPM -G195- faulty	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 004.
	• The Transmission Control Module (TCM) is not receiving an indication of vehicle direction	○ Replace Transmission Control Module (TCM) 7. Refer to **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**

7) The Sender for transmission RPM -G195- is integrated in the Transmission Control Module (TCM) -J217- and can only be replaced as a unit along with the Transmission Control Module (TCM).

Output at printer	**Possible cause**	**Corrective action**
17110/P0726		
RPM signal from Engine Control Module (ECM)		
Implausible signal	• Malfunction in Engine speed RPM sensor -G28- diagnosed by Engine Control Module (ECM)	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display

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		• Engine RPM too high recognized (engine over revved)	group number 009. ○ Read DTC memory for Engine Control Module (ECM) and repair malfunction.
		• Wiring from Engine Control Module (ECM) to Transmission Control Module faulty	○ Perform electrical test. Refer to **Electrical Testing**. ○ Check wiring connections and harness connectors using wiring diagram.

Note on DTC 17110/P0726:

- An implausible RPM signal is being received by the Transmission Control Module (TCM) over the RPM lead. The cause could be, for example, engine RPM too high or false RPM readings caused by interference from the ignition system. The substitute engine RPM signal is then transmitted by the Engine Control Module (ECM) over the CAN bus circuit to the Transmission Control Module.

Output at printer	Possible cause	Corrective action
17111/P0727		
RPM signal from Engine Control Module (ECM)		
No signal	• Open circuit in wiring	○ Perform electrical test. Refer to **Electrical Testing**. ○ Check wiring connections and harness connectors using wiring diagram.
	• Malfunction in Engine Control Module (ECM)	○ Read DTC memory for Engine Control Module (ECM) and

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			repair malfunction.
		• Transmission Control Module - J217- faulty	○ Replace Transmission Control Module (TCM). Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**
17114/P0730			
Monitoring gear ratio			
	Wrong transmission ratio	• Transmission faulty	○ Replace transmission. Refer to **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**

Note on DTC 17111/P0727:

- In the event of an open circuit in the RPM lead, the substitute engine RPM signal is transmitted by the Engine Control Module (ECM) over the CAN bus circuit to the Transmission Control Module (TCM).

Output at printer	Possible cause	Corrective action
17134/P0750		
Shift valve 1. Refer to solenoid valve 1 -N88-		
Operational malfunction	• Clutch pressure too high • Solenoid valve 1 - N88- 8) faulty	○ Replace hydraulic unit. Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**
17137/P0753		
Shift valve 1. Refer to solenoid valve 1 -N88-		
Electrical malfunction in circuit	• Wires 9) to solenoid valve 1 - N88- have a short circuit to B+ or ground	○ Replace Transmission Control Module (TCM) 9. Refer to **38 - AUTOMATIC TRANSMISSION**

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		- GEARS, HYDRAULIC CONTROLS

8) Solenoid valve 1 -N88- is integral in the hydraulic unit and can only be replaced as a unit along with the hydraulic unit.

9) The wires are integral in the Transmission Control Unit -J217- and can only be replaced as a unit along with the new Transmission Control Module (TCM).

Output at printer	Possible cause	Corrective action
18031/P1623		
Data bus drive 10)		
No communication	• Open wire in CAN bus circuit	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 125. ○ Check CAN bus. Refer to **Data Exchange between Transmission Control Module (TCM) and CAN-Capable Control Modules, checking**.
	• Incorrect or faulty Engine Control Module (ECM)	○ Check Engine Control Module (ECM) identification number and read DTC memory.
	• Incorrect or faulty ABS control module	○ Check ABS control module identification number and read DTC memory.
	• Transmission Control Module (TCM) does not match the Engine Control Module (ECM), or the ABS control module 11)	○ Check Engine Control Module (ECM) identification number.
	• Incorrect or faulty instrument cluster	○ Check instrument cluster identification number and read DTC memory.

10) The data bus is also described as a CAN bus.

11) Software status of Engine Control Module (ECM), ABS and Transmission Control Module (TCM) or instrument cluster do not match, or an incorrect Transmission Control Module could also have been installed.

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Notes on DTC 18031/P1623:

- The exchange of data and information between the Engine Control Module (ECM), ABS control module, Transmission Control Module (TCM) and instrument cluster is carried out over the CAN bus. All information signals are transmitted over 2 leads.
- The Transmission Control Module (TCM) can send signals and data, but it cannot receive anything.

Output at printer		Possible cause	Corrective action
18112/P1704			
Kickdown switch -F8- 13)			
	Electrical malfunction in circuit	• Open wire in CAN bus circuit	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 125. ○ Check CAN bus. Refer to **Data Exchange between Transmission Control Module (TCM) and CAN-Capable Control Modules, checking**.
		• Short circuit or open circuit between accelerator pedal module and Engine Control Module (ECM) • Accelerator pedal module	○ Read out DTC memory for Engine Control Module (ECM) and repair malfunction. ○ Check wiring connections and harness connectors

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		faulty	using wiring diagram. ○ Replace accelerator pedal module. Refer to **20 - FUEL SUPPLY SYSTEM**

13) No mechanical switch. A specific value from the Throttle position sensors -G79-/-G185- is saved in the Engine Control Module (ECM). Signal transmission from Engine Control Module (ECM) to Transmission Control Module takes place over CAN bus.

Note on DTC 18112/P1704:

- With the brake pedal depressed and simultaneous full depression of the accelerator pedal as far as Kickdown (Wide Open Throttle) this DTC can be displayed erroneously.

Output at printer	Possible cause	Corrective action
18113/P1705		
Monitoring gear ratio		
Adaptation limit reached	• Adaptation values stored too limited	○ Delete DTC memory, perform adaptation: **NOTE:** ○ **If transmission is operating correctly, delete DTC memory and ignore renewed DTC entry.**
	• Hydraulic malfunction	○ Replace hydraulic unit. Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**

Output at printer	Possible cause	Corrective action
18132/P1724		
Signal for Park/Neutral position		

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Short circuit to ground	• Park/Neutral position relay - J226- faulty	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 005. ○ Replace relay for Park/Neutral position relay - J226-. See **Fig. 11**.
	• Short circuit to ground in the electrical wiring	○ Check wiring connections and harness connectors using wiring diagram.
18137/P1729		
Signal for Park/Neutral position		
Short circuit to B+	• Relay for Park/Neutral position relay - J226- faulty	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 005. ○ Replace relay for Park/Neutral position relay - J226-. See **Fig. 11**.
	• Short circuit to B+ in the electrical wiring	○ Check wiring connections and harness connectors using wiring diagram.

Note on DTC 18132/P1724:

- Open circuit cannot be determined by the control module.

Note on DTC 18137/P1729:

- Open circuit cannot be determined by the control module.

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Output at printer		Possible cause	Corrective action
18141/P1733			
Tiptronic switch -F189-			
	Short circuit to ground	• Tiptronic switch -F189- faulty	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 003.
		• Short circuit to ground in the electrical wiring • Short circuit to ground in the Tiptronic buttons on the multifunction steering wheel or in the wiring	○ Check wiring and harness connectors using wiring diagram.
		• Solenoid in the masking cover for shift mechanism has become detached	○ Replace printed-circuit board14) or roll cover15) for shift mechanism. Refer to **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**

14) The Tiptronic switch -F189- consists of switches for recognition, upshift and downshift. It is integrated in the shift mechanism printed circuit board, i.e. if the Tiptronic switch is faulty, the printed circuit board has to be replaced.

15) The Tiptronic switch -F189- receives its Tiptronic gate recognition or upshift/downshift information through the solenoid on the transverse slide of the roll cover. If the solenoid has become detached, the cover must be replaced.

Note on DTC 18141/P1733:

- In the case of this DTC "Downshift switch" is always displayed in Measured Value Block 003.

Output at printer		Possible cause	Corrective action
18147/P1739			
Tiptronic switch -F189-			

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	Short circuit to ground	• Tiptronic switch - F189- faulty	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 003.
		• Short circuit to ground in the electrical wiring • Short circuit to ground in the Tiptronic buttons on the multifunction steering wheel or in the wiring	○ Check wiring and harness connectors using wiring diagram.
		• Solenoid in the roll cover for shift mechanism has become detached	○ Replace printed circuit board14) or rollcover15) for shift mechanism. Refer to **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**

14) The Tiptronic switch -F189- consists of switches for recognition, upshift and downshift. It is integrated in the shift mechanism printed circuit board, i.e. if the Tiptronic switch is faulty, the printed circuit board has to be replaced.

15) The Tiptronic switch -F189- receives its Tiptronic gate recognition or upshift/downshift information through the solenoid on the transverse slide of the roll cover. If the solenoid has become detached, the cover must be replaced.

Note on DTC 18147/P1739:

- In the case of this DTC "Upshift switch" is always displayed in Measured Value Block 003.

Output at printer	Possible cause	Corrective action
18148/P1740		
Monitoring clutch temperature	• Clutch was overloaded, for example, as the result of repeated hill starts with a	○ Allow ATF to cool.

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	trailer	
18149/P1741		
Clutch pressure adaptation		
Adaptation limit reached	• Hydraulic malfunction	○ Replace hydraulic unit. Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**

Notes on DTC 18148/P1740:

- The DTC is displayed when clutch temperature is too high.
- Engine torque is automatically cut back until the temperature has fallen into the permissible operating range again.

Note on DTC 18149/P1741:

- If this DTC occurs intermittently (display SP), the DTC memory must be deleted. Afterward, the vehicle must be taken for a test drive and the DTC memory read again. If the DTC recurs, the hydraulic unit must be replaced.

PART 2, UP TO DIAGNOSTIC TROUBLE CODE 18270/P1862

Part 2, up to Diagnostic Trouble Code 18270/P1862

Output at printer		Possible cause	Corrective action
18150/P1742			
Clutch torque adaptation			
	Adaptation limit reached	• Malfunction in Engine Control Module (ECM)	○ Read Engine Control Module (ECM) DTC memory and repair malfunction.
		• ATF properties are no longer OK	○ Change ATF, then perform adaptation. Refer to **Adaptation**. Refer to **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**

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	• Transmission faulty	○ Replace transmission. Refer to **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**

Output at printer		Possible cause	Corrective action
18151/P1743			
Monitoring clutch slip			
Signal too high		• Incorrect transmission installed16)	○ Compare code letters on transmission with code letters in --> **00 - GENERAL, TECHNICAL DATA**
		• ATF properties are no longer OK	○ Change ATF, then perform adaptation. Refer to **Adaptation**. Refer to **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**
		• Clutch faulty	○ Replace transmission. Refer to **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**

16) This DTC is displayed if an incorrect transmission has been installed, i.e. if a transmission for a 1.8 liter engine was mistakenly installed in a vehicle with a 3.0 liter engine.

Output at printer		Possible cause	Corrective action
18152/P1744			
Tiptronic switch -F189-			
	Short circuit to ground	• Tiptronic switch, -F189-17) faulty	○ Read Measured Value Block. Refer to **Measured Value**

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			Block, reading; display group number 003.
		• Short circuit to ground in the electrical wiring • Short circuit to ground in the Tiptronic buttons on the multifunction steering wheel or in the wiring	○ Check wiring and harness connectors using wiring diagram.
		• Solenoid in roll cover for shift mechanism has become detached	○ Replace printed circuit board14) or roll cover15) for shift mechanism. Refer to **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**

14) The Tiptronic switch -F189- consists of switches for recognition, upshift and downshift. It is integrated in the shift mechanism printed circuit board, i.e. if the Tiptronic switch -F189- is faulty, the printed-circuit board has to be replaced.

15) The Tiptronic switch -F189- receives its Tiptronic gate recognition or upshift/downshift information through the solenoid on the transverse slide for the roll cover. If the solenoid has become detached, the cover must be replaced.

17) If the transmission is shifted into the Tiptronic gate with the selector lever in D this shift procedure is recognized by the Tiptronic recognition switch -F189- and transmitted to the Transmission Control Module (TCM).

Note on DTC 18152/P1744:

- DTC is displayed if Tiptronic recognition was detected, although the selector lever is not in the Tiptronic gate.

Output at printer	Possible cause	Corrective action
18156/P1748		
Control module faulty	• Transmission Control Module (TCM) -J217-	○ Replace Transmission Control Module

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	faulty	(TCM). Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**
18158/P1750		
Power supply		
Voltage too low	• Generator or voltage regulator faulty	○ Check power supply for Transmission Control Module (TCM). Refer to **Electrical Testing**.
	• Transmission Control Module (TCM) -J217- faulty	○ Replace Transmission Control Module (TCM). Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**

Note on DTC 18158/P1750:

- Condition for DTC recognition: Battery voltage was detected as less than or at 10 V.

Output at printer	Possible cause	Corrective action
18159/P1751		
Power supply		
Voltage too high	• Generator or voltage regulator faulty	○ Check power supply for Transmission Control Module (TCM). Refer to **Electrical Testing**.
	• Transmission Control Module (TCM) -J217-	○ Replace Transmission Control Module

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	faulty	(TCM). Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**

Notes on DTC 18159/P1751:

- Condition for DTC recognition: Battery voltage above 16 volts.
- This DTC was also displayed, for example, when jump starting with a 24 volt battery.

Output at printer		Possible cause	Corrective action
18161/P1753			
Tiptronic switch -F189-			
	Implausible signal	• Individual Hall sensors are not switching to ground	○ With an intermittent DTC: Check adjustment of selector lever cable. Refer to **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING** ○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 002. ○ Replace printed circuit board14) for shift mechanism. Refer to **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**
		• Connector at the shift mechanism not connected • Power supply for shift mechanism	○ Check wiring and harness connectors using wiring diagram.

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		missing • All 3 Tiptronic wires have an open circuit	

14) The Tiptronic switch -F189- consists of switches for recognition, upshift and downshift. It is integrated in the shift mechanism printed circuit board, i.e. if the Tiptronic switch -F189- is faulty, the printed circuit board has to be replaced.

Output at printer		Possible cause	Corrective action
18162/P1754			
Tiptronic switch -F189-			
	Open circuit/short circuit to B+	• Tiptronic switch -F189- faulty (upshift)	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 003. ○ Replace printed circuit board14) for shift mechanism. Refer to **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**
		• Open circuit/short circuit to B+ in the electrical wiring • Open circuit/short circuit to B+ in the Tiptronic buttons on the multifunction steering wheel or in the wiring	○ Check wiring and harness connectors using wiring diagram.

14) The Tiptronic switch -F189- consists of switches for recognition, upshift and downshift. It is integrated in the shift mechanism printed circuit board, i.e. if the Tiptronic switch -F189- is faulty, the printed circuit board has to be replaced.

Output at printer	Possible cause	Corrective action
18163/P1755		

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Tiptronic switch -F189-			
	Open circuit/short circuit to B+	• Tiptronic switch -F189- faulty (downshift)	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 003. ○ Replace printed circuit board14) for shift mechanism. Refer to **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**
		• Open circuit/short circuit to B+ in the electrical wiring • Open circuit/short circuit to B+ in the Tiptronic buttons on the multifunction steering wheel or in the wiring	○ Check wiring and harness connectors using wiring diagram.

14) The Tiptronic switch -F189- consists of switches for recognition, upshift and downshift. It is integrated in the shift mechanism printed circuit board, i.e. if the Tiptronic switch -F189- is faulty, the printed circuit board has to be replaced.

Output at printer		**Possible cause**	**Corrective action**
18164/P1756			
Tiptronic switch -F189-			
	Open circuit/short circuit to B+	• Tiptronic switch -F189- faulty (recognition)	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 003. ○ Replace printed circuit board14) for shift mechanism. Refer to **37 - AUTOMATIC**

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			TRANSMISSION - CONTROLS, HOUSING
		• Open circuit/short circuit to B+ in the electrical wiring • Open circuit/short circuit to B+ in the Tiptronic buttons on the multifunction steering wheel or in the wiring	○ Check wiring and harness connectors using wiring diagram.

14) The Tiptronic switch -F189- consists of switches for recognition, upshift and downshift. It is integrated in the shift mechanism printed circuit board, i.e. if the Tiptronic switch -F189- is faulty, the printed circuit board has to be replaced.

Output at printer	Possible cause	Corrective action
18165/P1757		
Power supply		
Open circuit	• Open circuit in electrical wiring	○ Check power supply for Transmission Control Module (TCM). Refer to **Electrical Testing**.
	• Transmission Control Module (TCM) -J217- faulty	○ Replace Transmission Control Module (TCM). Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**

Output at printer	Possible cause	Corrective action
18169/P1761		
Shift locksolenoid -N110-18)		
Short circuit to ground	• Short circuit to ground in electrical wiring	○ Perform Output Diagnostic Test Mode (DTM). Refer to

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	• Fuse faulty	**Output Diagnostic Test Mode (DTM)**. ○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 001. ○ Perform electrical test. Refer to **Electrical Testing**. ○ Check wiring connections and harness connectors using wiring diagram.
	• Shift lock solenoid -N110- faulty	○ Replace Shift lock solenoid -N110-. . Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**
	• Short circuit on shift mechanism printed circuit board	○ Replace shift mechanism printed circuit board. Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**
	• Transmission Control Module (TCM) -J217- faulty	○ Replace Transmission Control Module (TCM). Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**

18) Shift locksolenoid -N110- is also described as selector lever lock solenoid.

Output at printer	Possible cause	Corrective action
18172/P1764		
Monitoring transmission temperature	• Clutch was overloaded, for example, as the result of repeated hill starts with a trailer	○ Allow ATF to cool.
18173/P1765		
Sender 2 for hydraulic pressure -G194-		

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	Adaptation limit reached	• Ignition switched off with vehicle coasting	○ Erase DTC memory, switch ignition OFF and ON, read DTC memory again. If no other DTC has been entered, no malfunction is present.
		• Transmission Control Module (TCM) -J217- faulty	○ Replace Transmission Control Module (TCM). Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**

Notes on DTC 18172/P1764:

- The DTC is displayed when clutch temperature is too high.
- Engine torque is automatically cut back until the temperature has fallen into the permissible operating range again.

Output at printer	Possible cause	Corrective action
18181/P1773		
Sender 1 for hydraulic pressure -G193-		
Signal too high	• Hydraulic unit contaminated or faulty	○ Replace hydraulic unit and change ATF. Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**
18183/P1775		
Sender 1 for hydraulic pressure -G193-		
Adaptation limit reached	• Ignition switched off with vehicle coasting	○ Erase DTC memory, switch ignition OFF and ON, read DTC memory again. If no other DTC has been

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			entered, no malfunction is present
		• Transmission Control Module (TCM) -J217- faulty	○ Replace Transmission Control Module (TCM). Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**

Note on DTC 18181/P1773:

- If DTC 18201/P1793 is displayed in addition, the sensor wheel may be faulty and the transmission must be replaced.

Output at printer		Possible cause	Corrective action
18185/P1777			
Sender 2 for hydraulic pressure -G194-			
	Implausible signal	• Flow rate in the ATF lines inadequate because ATF hoses were installed twisted, ATF filter is clogged or ATF lines are crushed	○ Check routing of hoses and lines. ○ Replace ATF filter. Refer to **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**
		• Transmission Control Module (TCM) -J217- faulty	○ Replace Transmission Control Module (TCM). Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**

Output at printer	Possible cause	Corrective action
18194/P1786		
Signal for back-up light		
Open circuit	• Park/Neutral position (PNP)	○ Read Measured Value Block.

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	relay -J226- faulty	Refer to **Measured Value Block, reading**; display group number 005. ○ Replace Park/Neutral position (PNP) relay -J226. See **Fig. 11**.
	• Open circuit in the electrical wiring	○ Check wiring connections and harness connectors using wiring diagram.
	• Transmission Control Module (TCM) -J217- faulty	○ Replace Transmission Control Module (TCM). Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**

Output at printer	Possible cause	Corrective action
18195/P1787		
Signal for back-up light		
Short circuit to ground	• Park/Neutral position (PNP) relay -J226- faulty	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 005. ○ Replace Park/Neutral position (PNP) relay -J226. See **Fig. 11**.
	• Short circuit to ground in electrical wiring	○ Check wiring connections and harness connectors

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		using wiring diagram.
	• Transmission Control Module (TCM) -J217- faulty	○ Replace Transmission Control Module (TCM). Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**

Output at printer	Possible cause	Corrective action
18196/P1788		
Signal for back-up light		
Short circuit to B+	• Park/Neutral position (PNP) relay -J226- faulty	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 005. ○ Replace Park/Neutral position (PNP) relay -J226-. See **Fig. 11**.
	• Short circuit to B+ in electrical wiring	○ Check wiring connections and harness connectors using wiring diagram.
	• Transmission Control Module (TCM) -J217- faulty	○ Replace Transmission Control Module (TCM). Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**

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Output at printer		Possible cause	Corrective action
18198/P1790			
Signal for transmission range selector lever position display			
	Open circuit	• Harness connector not connected at instrument cluster • Open circuit in electrical wiring	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 002. ○ Check wiring connections and harness connectors using wiring diagram.
		• Transmission Range selector lever display -Y6- in instrument cluster faulty	○ Replace instrument cluster19). Refer to • **90 INSTRUMENTS** • **90 INSTRUMENTS** for ELECTRICAL EQUIPMENT, CABRIOLET
		• Transmission Control Module (TCM) -J217- faulty	○ Replace Transmission Control Module (TCM). Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**

19) The Transmission Range selector lever display -Y6- is integrated in the instrument cluster and can only be replaced as a unit with the instrument cluster.

Output at printer		Possible cause	Corrective action
18199/P1791			
Signal for transmission range selector lever display			
	Short circuit to ground	• Short circuit to ground in electrical wiring	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 002.

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			○ Check wiring connections and harness connectors using wiring diagram.
		• Transmission Range selector lever display -Y6- in instrument cluster faulty	○ Replace instrument cluster19). Refer to • **90 INSTRUMENTS** • **90 INSTRUMENTS** for ELECTRICAL EQUIPMENT, CABRIOLET
		• Transmission Control Module (TCM) -J217- faulty	○ Replace Transmission Control Module (TCM). Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**

19) The Transmission Range selector lever display -Y6- is integrated in the instrument cluster and can only be replaced as a unit with the instrument cluster.

Note on DTC 18199/P1791:

- No display in instrument cluster.

Output at printer		**Possible cause**	**Corrective action**
18200/P1792			
Signal for transmission range selector lever display			
	Short circuit to B+	• Short circuit to B+ in electrical wiring	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 002. ○ Check wiring connections and harness connectors using wiring diagram.
		• Transmission	○ Replace instrument

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	Range selector lever display -Y6- in instrument cluster faulty	cluster19). Refer to • **90 INSTRUMENTS** • **90 INSTRUMENTS** for ELECTRICAL EQUIPMENT, CABRIOLET
	• Transmission Control Module (TCM) -J217- faulty	○ Replace Transmission Control Module (TCM). Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**

19) The Transmission Range selector lever display -Y6- is integrated in the instrument cluster and can only be replaced as a unit with the instrument cluster.

Output at printer		Possible cause	Corrective action
18201/P1793			
Sender 2 for transmission output RPM -G196-			
No signal		• Hydraulic unit contaminated or faulty	○ Replace hydraulic unit and change ATF. Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**
18203/P1795			
Signal for road speed			
	Open circuit	• Open circuit in electrical wiring	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 001. ○ Check wiring connections and harness connectors using wiring

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			diagram.
		• Instrument cluster faulty	○ Read DTC memory for instrument cluster.
		• Transmission Control Module (TCM) -J217- faulty	○ Replace Transmission Control Module (TCM). Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**

Note on DTC 18201/P1793:

- If DTC 18181/P1773 is displayed in addition, the sensor wheel may be faulty and the transmission must be replaced.

Output at printer		**Possible cause**	**Corrective action**
18204/P1796			
Signal for road speed			
	Short circuit to ground	• Short circuit to ground in electrical wiring	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 001. ○ Check wiring connections and harness connectors using wiring diagram.
		• Instrument cluster faulty	○ Read DTC memory for instrument cluster.
		• Transmission Control Module (TCM) -J217- faulty	○ Replace Transmission Control Module (TCM). Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC**

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		CONTROLS

Output at printer		**Possible cause**	**Corrective action**
18205/P1797			
Signal for road speed			
	Short circuit to B+	• Short circuit to B+ in the electrical wiring	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 001. ○ Check wiring connections and harness connectors using wiring diagram.
		• Instrument cluster faulty	○ Read DTC memory for instrument cluster.
		• Transmission Control Module (TCM) -J217- faulty	○ Replace Transmission Control Module (TCM). Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**

Output at printer	**Possible cause**	**Corrective action**
18206/P1798		
Sender 2 for transmission output RPM -G196-		
Implausible signal	• Incorrect transmission installed16)	○ Compare code letters on transmission with code letters in --> **00 - GENERAL, TECHNICAL DATA**
	• Hydraulic unit contaminated or faulty	○ Replace hydraulic unit and change ATF. Refer to **38 - AUTOMATIC**

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		TRANSMISSION - GEARS, HYDRAULIC CONTROLS

16) This DTC is displayed if an incorrect transmission has been installed, i.e. if a transmission for a 1.8 liter engine was mistakenly installed in a vehicle with a 3.0 liter engine.

Output at printer		**Possible cause**	**Corrective action**
18221/P1813			
Pressure control valve 1 -N215-			
	Electrical malfunction in circuit	• Transmission Control Module (TCM) -J217- faulty	○ Replace Transmission Control Module (TCM). Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**
		• Pressure control valve faulty	○ Replace hydraulic unit. Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**
18226/P1818			
Pressure control valve 2 -N216-			
	Electrical malfunction in circuit	• Transmission Control Module (TCM) -J217- faulty	○ Replace Transmission Control Module (TCM). Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS**
		• Pressure control valve faulty	○ Replace hydraulic unit. Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC**

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			CONTROLS

Output at printer		**Possible cause**	**Corrective action**
18249/P1841			
Engine Control Module (ECM)/Transmission Control Module (TCM)			
	Versions do not match	• Incorrect Transmission Control Module (TCM) installed or incorrectly coded20)	○ Check Engine Control Module (ECM) identification number.
		• Incorrect or faulty Engine Control Module (ECM)	○ Check Engine Control Module (ECM) identification number and read DTC memory.

20) Code 0000 is displayed in the Transmission Control Module (TCM) identification number.

Output at printer		**Possible cause**	**Corrective action**
18258/P1850			
Data bus drive10)			
	Missing message from Engine Control Module (ECM)	• Open circuit in CAN bus circuit	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 125. ○ Check CAN bus. Refer to **Data Exchange between Transmission Control Module (TCM) and CAN-Capable Control Modules, checking**.
18259/P1851			
Data bus drive10)			
	Missing message from ABS control module	• Open circuit in CAN bus circuit	○ Read Measured Value Block. Refer

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			to **Measured Value Block, reading**; display group number 125. ○ Check CAN bus. Refer to **Data Exchange between Transmission Control Module (TCM) and CAN-Capable Control Modules, checking**.

10) The data bus is also described as a CAN bus.

Notes on DTC 18258/P1850:

- Condition for DTC recognition: The Transmission Control Module (TCM) is not receiving a message from the Engine Control Module (ECM). However, communication with the ABS control module and the instrument cluster is working.
- The exchange of data and information between the Engine Control Module (ECM), ABS control module, Transmission Control Module (TCM) and instrument cluster is carried out over what is called a CAN bus. All information signals are transmitted over 2 leads.

Notes on DTC 18259/P1851:

- Condition for DTC recognition: The Transmission Control Module (TCM) is not receiving a signal from the ABS control module. However, communication with the Engine Control Module (ECM) and the instrument cluster is working.
- The exchange of data and information between the Engine Control Module (ECM), ABS control module, Transmission Control Module (TCM) and instrument cluster is carried out over what is called a CAN bus. All information signals are transmitted over 2 leads.

Output at printer		**Possible cause**	**Corrective action**
18262/P1854			
Data bus drive10)			
	Faulty	• Transmission Control Module (TCM) -J217- faulty	○ Replace Transmission Control Module (TCM). Refer to **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC**

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			CONTROLS
18263/P1855			
Data bus drive10)			
	Monitoring software status	• Open circuit in CAN bus circuit	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 125. ○ Check CAN bus. Refer to **Data Exchange between Transmission Control Module (TCM) and CAN-Capable Control Modules, checking**.
		• Incorrect Transmission Control Module (TCM)	○ Check TCM identification number.

10) The data bus is also described as a CAN bus.

Note on DTC 18262/P1854:

- The exchange of data and information between the Engine Control Module (ECM), ABS control module, Transmission Control Module (TCM) and instrument cluster is carried out over what is called a CAN bus. All information signals are transmitted over 2 leads.

Note on DTC 18263/P1855:

- The exchange of data and information between the Engine Control Module (ECM), ABS control module, Transmission Control Module (TCM) and instrument cluster is carried out over what is called a CAN bus. All information signals are transmitted over 2 leads.

Output at printer		**Possible cause**	**Corrective action**
18265/P1857			
Load signal			
	Error message from Engine Control Module (ECM)	• Error in "Signal for Actual Engine Torque" diagnosed by Engine Control Module (ECM)	○ Read Engine Control Module (ECM) DTC memory and repair malfunction.

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		• Incorrect or faulty Engine Control Module (ECM) or engine components faulty	○ Check Engine Control Module (ECM) identification number and read DTC memory

Notes on DTC 18265/P1857:

- The signal for actual engine torque is transmitted from the Engine Control Module (ECM) over the CAN bus lead to the Transmission Control Module (TCM).
- Conditions for DTC recognition: The malfunction in the component in question is diagnosed by the Engine Control Module (ECM). This diagnosis is transmitted over the CAN bus circuit to the Transmission Control Module (TCM).

Output at printer		Possible cause	Corrective action
18270/P1862			
Data bus drive 10)			
	Missing message from instrument cluster	• Open circuit in CAN bus circuit	○ Read Measured Value Block. Refer to **Measured Value Block, reading**; display group number 125. ○ Check CAN bus. Refer to **Data Exchange between Transmission Control Module (TCM) and CAN-Capable Control Modules, checking**.

10) The data bus is also described as a CAN bus.

Notes on DTC 18270/P1862:

- Condition for DTC recognition: The Transmission Control Module is not receiving a message from the Engine Control Module (ECM). However, communication with the ABS control module is working.
- The exchange of data and information between the Engine Control Module (ECM), ABS control module, Transmission Control Module (TCM) and instrument cluster is carried out over what is called a CAN bus. All information signals are transmitted over 2 wires.

OUTPUT DIAGNOSTIC TEST MODE (DTM)

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Output Diagnostic Test Mode (DTM)

NOTE:

- **Output DTM can only be performed if the selector lever is in "P" or "N," the engine is not running and the vehicle is stationary.**
- **Output DTM is terminated if the engine is started, the vehicle starts to move or if a switch is not made within about 60 seconds to the next actuator. It is also terminated if the selector lever is moved to a position other than "P" or "N."**

Triggering sequence	
1.	Signal for back-up light
2.	Shift lock solenoid -N110-

Test sequence

- Connect VAS 5051 Vehicle Diagnosis, Measurement and Information System. Refer to **VAS 5051 Vehicle Diagnosis, Measurement and Information System, connecting and selecting functions** and select vehicle system "02 Transmission Electronics". Ignition must be switched on.

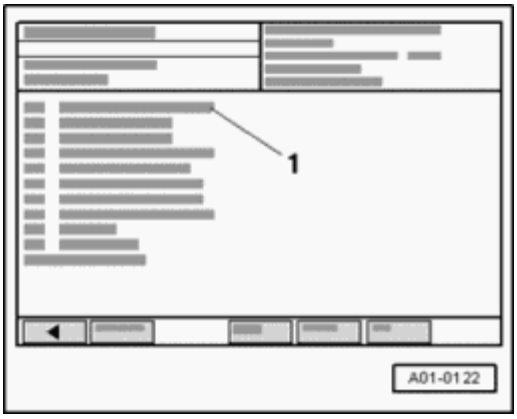


Fig. 21: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051

- Touch -1- diagnostic function "03 Diagnostic Test Mode".
- Touch delta button.

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Fig. 22: Display On VAS 5051 - (1st Control Element In Test & Evaporative Emission (EVAP) Canister Purge Regulator Valve-N80-)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051:

A - First actuator being tested

1 - Back-up light signal

- The Park/Neutral Position (PNP) Relay -J226- turns the back-up lights ON and OFF at intervals for about 1 minute unless a switch has been made to the next actuator by pressing the delta button.

If the back-up lights do not illuminate:

- Check Park/Neutral Position (PNP) Relay -J226- and wiring using wiring diagram.

NOTE: Any electrical malfunctions are saved in the DTC memory. Refer to DTC chart starts on Diagnostic Trouble Code (DTC) table.

- Touch delta button.

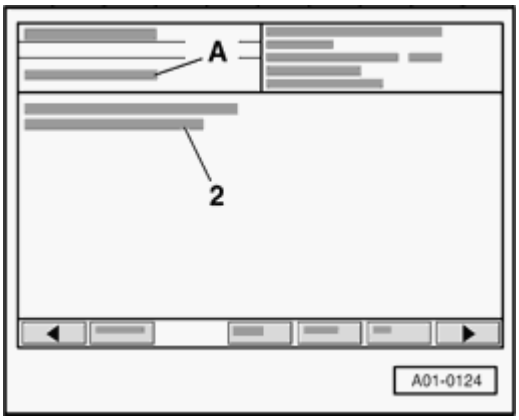


Fig. 23: Display On VAS 5051 - (2nd Control Element In Test & Secondary Air Injection (AIR) Solenoid

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Valve -N112-)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051:

A - Second actuator being tested

2 - Shift lock solenoid -N110-

- The shift lock solenoid -N110- is triggered at intervals for about 1 minute (clicks) unless actuator diagnosis is terminated by touching the delta button.

NOTE: In addition, the brake symbol on the shift mechanism cover must illuminate at intervals.

If the solenoid is not triggered:

- Perform electrical test. Refer to **Electrical Testing**.

NOTE: Any electrical malfunctions are saved in the DTC memory. Refer to DTC chart starts on Diagnostic Trouble Code (DTC) table.

- Touch the delta button.



Fig. 24: Display On VAS 5051 - (Output Diagnostic Test Mode Is Completed)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051:

A - Actuator test is concluded

- End function "03 Diagnostic Test Mode" by touching <-- button.

DIAGNOSTIC TROUBLE CODE (DTC) MEMORY, ERASING

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Diagnostic Trouble Code (DTC) memory, erasing

Requirements

- DTC memory read. Refer to **Diagnostic Trouble Code (DTC) memory, reading**.
- All DTCs corrected.

After DTC scan has been performed:

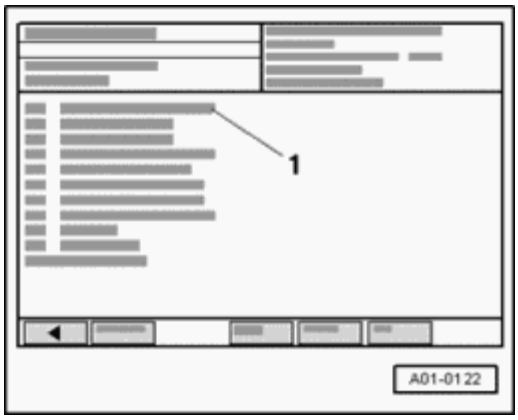


Fig. 25: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051

- Touch -1- diagnostic function "05 Erase DTC memory".



Fig. 26: Diagnostic System VAS 5051: Display
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Display on VAS 5051:

1 - No display (before erasing)

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or

DTC memory erased

NOTE: If the message: "DTC memory has not been read yet" appears in display field -1-, the test procedure was not followed exactly. The DTC memory can only be erased if the DTC memory was read previously.

2 - you sure you want to do this? will be deleted!

- Touch "OK" button in display -2-.
- End function "05 Erase DTC memory" by touching <-- button.
- After repair read DTC memory again.

NOTE: This erases DTCs which were stored during repair of the malfunction, for example by removing harness connectors.

- After reading and deleting DTC memory, test drive vehicle and read DTC memory again.

DTC memory must display:

"No DTC recognized"

TRANSMISSION CONTROL MODULE (TCM), CODING

Transmission Control Module (TCM), coding

The Transmission Control Module (TCM) can be coded.

NOTE: Coding can only be performed with the ignition ON and with the selector lever in position "P" or "N." The accelerator pedal must be in the idle position. The vehicle must be stationary and the engine must not be started.

Test procedure

- Connect VAS 5051 Vehicle Diagnosis, Measurement and Information System. Refer to **VAS 5051 Vehicle Diagnosis, Measurement and Information System, connecting and selecting functions** and select vehicle system "02 Transmission Electronics". Ignition must be switched on.

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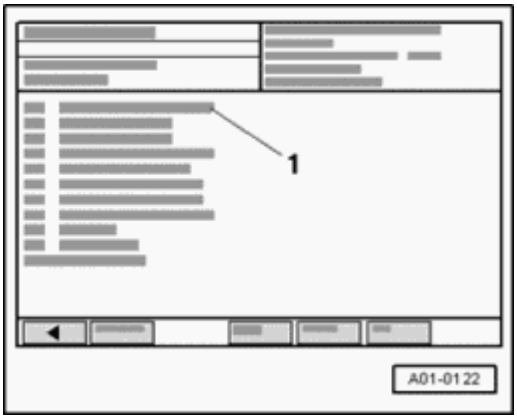


Fig. 27: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051

- Touch -1- diagnostic function "07 Coding control module".



Fig. 28: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051:

1 - Enter code word

- On keypad -2- enter control module code as given in code chart.
- Confirm entry by pressing Q button.

Coding chart

Code number	For vehicles
01001	USA and Canada
00000	Impermissible code If this code is displayed, an incorrect transmission

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	may have been installed or it has been incorrectly coded. Check control module identification number.

NOTE: After coding, the Transmission Control Module DTC memory is automatically deleted.

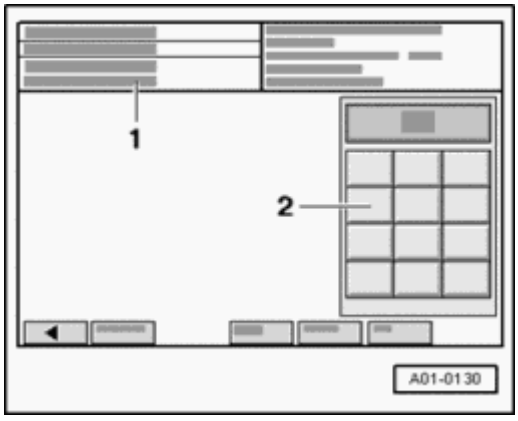


Fig. 29: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051:

1 - Coding is being carried out

- Wait until next display appears on screen.

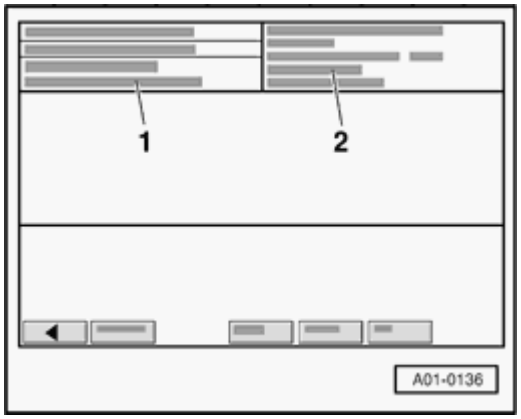


Fig. 30: Diagnostic System VAS 5051: Display - (Coding Of Vehicle System Performed & Control Module Identification With New Coding)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051:

1 - Coding in the vehicle system completed

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2 - Control module identification number with new coding (previous coding in parentheses)

- Terminate function "07 Coding Control Module" by pressing <-- button.
- Perform adaptation. Refer to **Adaptation**.

MEASURED VALUE BLOCK, READING

Measured Value Block, reading

CAUTION: Please observe safety precautions. Refer to Safety Precautions

Test procedure

- Connect VAS 5051 Vehicle Diagnosis, Measurement and Information System. Refer to **VAS 5051 Vehicle Diagnosis, Measurement and Information System, connecting and selecting functions** and select vehicle system "02 Transmission Electronics". Ignition must be switched on.

or, depending on the desired operation:

- Start engine.

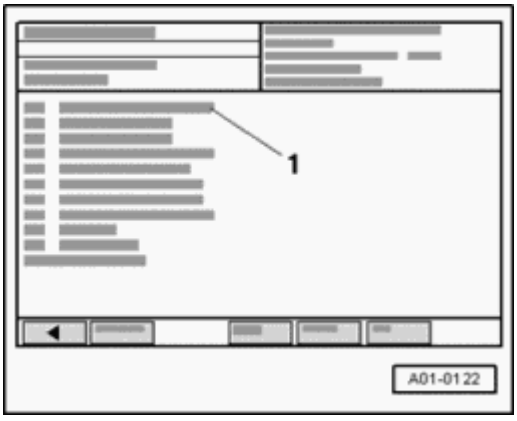


Fig. 31: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051

- Touch -1- diagnostic function "08 Read Measured Value Block".

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Fig. 32: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051:

1 - Enter display group Max. input value = 255

- On key pad -2- enter desired 3-digit display group number. Refer to **List of Selectable Display Groups** and confirm entry by touching Q button.

Example:

- Enter "001" for "Display group number 001" and confirm by touching Q button.

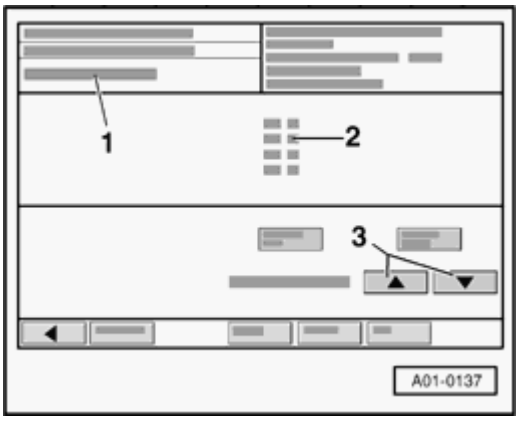


Fig. 33: Identifying VAS5051 Tester Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 for display group 001 to 255:

1 - Display group X

2 - Display field 1

Display field 2

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Display field 3

Display field 4

NOTE:

- **If a display field is not being used, there will be no display.**
- **To switch to another display field, proceed as follows:**

Display group	VAS 5051
Higher	Press s button
Lower	Press t button

- End function "08 Read Measured Value Block" by touching <-- button.

List of Selectable Display Groups

NOTE: The legend for the values in the individual display fields can be found under. Refer to "Test Chart for Measured Value Blocks" starting on Measured Value Block table.

Display on screen (example)			
Display fields: **1 2 3 4** | | | |	**Display group number**	**Display field**	**Description**
Read Measured Value Block --> **Bls.OFF Bts.OFF PN active 0 km/h**	001	1 2 3 4	Brake light switch Brake test switch Shift lock solenoid - N110- Speed
Read Measured Value Block --> **D 1 0 1 0 M switch 3**	002	1 2 3 4	Selector lever position Hall sensor status of the multi-function switch Tiptronic recognition Gear selected
Read Measured Value Block --> **D M switch not actuated Reverse switch**	003	1 2 3 4	Selector lever position Tiptronic recognition Upshift switch for Tiptronic Reverse switch for Tiptronic
Read Measured Value Block --> **D Forward 70 RPM 70 RPM**	004	1 2 3 4	Selector lever position Directional display Output speed 1 Output speed 2

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Display on screen (example)			
Display fields: **1 2 3 4** | | | |	**Display group number**	**Display field**	**Description**
Read Measured Value Block --> **D Terminal 50 OFF Relay OFF 13.6 V**	005	1 2 3 4	Selector lever position Park/Neutral position ON/OFF Back-up light ON/OFF Supply voltage terminal 15
Read Measured Value Block --> **P 0.470 A 0.265 A 0.000 A**	006	1 2 3 4	Can be ignored
Read Measured Value Block --> **760 RPM 0 RPM 0 RPM AS**	007	1 2 3 4	Engine RPM Transmission input RPM Transmission output RPM Synchronous flag
Read Measured Value Block --> **62 % 310 RPM 2480 RPM 3240 RPM**	008	1 2 3 4	Accelerator pedal value Actual transmission output RPM Specified transmission input RPM Actual transmission input RPM

Display on screen (example)			
Display fields: **1 2 3 4** | | | |	**Display group number**	**Display field**	**Description**
Read Measured Value Block --> **100 % Kickdown 234 Nm 6500 RPM**	009	1 2 3 4	Accelerator pedal value Kickdown switch Actual engine torque Engine RPM
Read Measured Value Block --> 0.25 A ADP. O.K. 72°C 387 Nm	010	1 2 3 4	Adaptation of clutch curve driving forward Adaptation of starting from stop characteristics driving forward Transmission fluid temperature Specified clutch value

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Read Measured Value Block --> 0.25 A ADP. O.K. 72°C 387 Nm	011	1 2 3 4	Adaptation of clutch curve backing up Adaptation of starting from stop characteristics backing up Transmission fluid temperature Specified clutch value
Read Measured Value Block --> 0.5 A 0.81 A 0.28 A	012	1 2 3 4	Can be ignored at this time

Display on screen (example)			
Display fields: **1 2 3 4** | | | |	**Display group number**	**Display field**	**Description**
Read Measured Value Block --> 8.1 bar 3.2 bar 72°C 89°C	013	1 2 3 4	Clutch pressure MF pressure Transmission fluid temperature Coolant temperature
Read Measured Value Block --> 0.28 A 0.81 A 0.28 A 0.75 A	014	1 2 3 4	Can be ignored at this time
Read Measured Value Block --> **0.091 A 0.813 A 3 bar 3 bar**	015	1 2 3 4	Can be ignored at this time

Display on screen (example)			
Display fields: **1 2 3 4** | | | |	**Display group number**	**Display field**	**Description**
Read Measured Value Block --> **12.2 2.6 83 2.77**	016	1 2 3 4	Can be ignored at this time
Read Measured Value Block --> **0 % 800 RPM 20 Nm 12 Nm**	017	1 2 3 4	Accelerator pedal value Engine RPM Engine torque Specified clutch torque

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			(clutch 1)
Read Measured Value Block --> **8.1 bar 129 Nm 3.2 bar 0.098 A**	018	1 2 3 4	Can be ignored at this time
Read Measured Value Block --> **8.1 bar 0.12 A A/C compressor ON**	019	1 2 3 4	Can be ignored at this time

Display on screen (example)			
Display fields: **1 2 3 4** | | | |	**Display group number**	**Display field**	**Description**
Read Measured Value Block --> **800 RPM 800 RPM 800 RPM**	020	1 2 3 4	Engine RPM Specified engine RPM at idle Specified transmission RPM at idle
Read Measured Value Block --> **90 Nm 79 Nm 90 Nm 1399 Nm/sec**	021	1 2 3 4	Can be ignored at this time
Read Measured Value Block --> **ABS act EDS not act ASR not act ESP act**	022	1 2 3 4	ABS ON/OFF (Anti-lock brake system) EDS ON/OFF (Electronic Differential Lock) ASR ON/OFF (Automatic Traction Control) ESP ON/OFF (Electronic Stability Program)
Read Measured Value Block -->	023 to 124	1 2 3 4	Can be ignored at this time

Display on screen (example)			
Display fields: **1 2 3 4** | | | |	**Display group number**	**Display field**	**Description**
Read Measured Value Block -->	125	1 2	Engine Control Module (ECM) is participant on

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Eng 1 ABS 1 Steering whl 0 Instr cluster 1		3 4	the CAN bus ABS control module is participant on the CAN bus Steering column electronics system is participant on the CAN bus Instrument cluster is participant on the CAN bus

Measured Value Block table

Display group number	Display field	Description	Test conditions		Specified value displayed	Steps in the events of deviations from specified value
001	1	Brake light switch F	Brake	Actuated	Bls ON	Brake light switch and brake test switch must always have the same status (ON or OFF)
				Not actuated	Bls OFF	○ Refer to DTC 17087/P0703
Continued	2	Brake test switch	Brake	Actuated	Bts ON	
?				Not actuated	Bts OFF	

Display group number	Display field	Description	Test conditions		Specified value displayed	Steps in the events of deviations from specified value
001	3	Shift lock solenoid - N110-	In selector lever position P or N			
			Brake	Actuated	P N deactivated	○ Refer to DTC 18169/P1761
				Not actuated	P N active	
	4	Speed	While driving 1)		.km/h	The speedometer display and values on the tester can show minor divergences ○ Refer to DTCs 18203/P1795,

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					18204/P1796 and 18205/P1797

1) While driving: a second technician is needed to read the specified values.

Display group number	Display field	Description	Test conditions		Specified value displayed	Steps in the events of deviations from specified value
002	1	Selector lever position Multi-function TR switch -F125-	Stationary	Selector lever position		
				P	P	○ Compare with Measured Value Block 002, display field 4
				Between P and R	ZP	○ Refer to DTC 17090/P0706
				R	R	
				Between R and N	ZN	
Continued				N	N	
?				D	D	

Display group number	Display field	Description	Test conditions		Specified value displayed	Steps in the events of deviations from specified value
002	2	Hall sensor status of the Multi-function TR switch -F125-	Stationary	Selector lever position		
				P	0101	○ Refer to DTC 17090/P0706
				ZP	0100	
				R	0110	
				ZN	0010	
Continued				N	0011	
?				D	1010	

Display group number	Display field	Description	Test conditions	Specified value displayed	Steps in the events of deviations from specified value
002	3	Tiptronic switch -F189-	Selector lever in the	M-switch	

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			Tiptronic gate			○ Refer to DTCs 18152/P1744, 18161/P1753 and 18164/P1756
			Selector lever not in the Tiptronic gate		Not actuated	
	4	Gear selected	Stationary	Selector lever position		○ Check conformity with selector lever display -Y6- in instrument cluster
				P	P	
				R	R	
				N	N	
				D	D	
			While driving 2)	D and shifted into the Tiptronic gate	1, 2, 3, 4, 5 or 6	○ Refer to DTCs 18198/P1790, 18199/P1791 and 18200/P1792

2) While driving: a second technician is needed to read the specified values.

Display group number	Display field	Description	Test conditions	Specified value displayed	Steps in the events of deviations from specified value
003	1	Selector lever position	Refer to display group number 002, display field 1		
	2	Tiptronic switch -F189- (recognition)	Refer to display group number 002, display field 3		
	3	Tiptronic switch -F189- (upshift)	Selector lever in Tiptronic gate	Not actuated	○ Refer to DTCs 18147/P1739 and 18162/P1754
			Upshift 4)	Upshift switch	
	4	Tiptronic switch -F189- (downshift)	Selector lever in Tiptronic gate	Not actuated	○ Refer to DTCs

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					18141/P1733 and 18163/P1755
			Downshift 5)	Downshift switch	

4) You must activate the upshift switch (+) by tapping the selector lever forward. On vehicles with multi-function steering wheel the upshift switch has to be activated by additionally tapping the upper left or right button (+) on the steering wheel.

5) You must activate the downshift switch (-) by tapping the selector lever to the rear. On vehicles with multi-function steering wheel the downshift switch has to be activated by additionally tapping the lower left or right button (-) on the steering wheel.

Display group number	Display field	Description	Test conditions		Specified value displayed	Steps in the events of deviations from specified value
004	1	Selector lever position	Refer to display group number 002, display field 1			
	2	Directional display	Stationary		Not recognized	
			While driving 2)	Driving forward	Forward	○ Compare with Measured Value Block 004, display field 3 and 4
Continued ?				Driving in reverse	Backward	

2) While driving: a second technician is needed to read the specified values.

Display group number	Display field	Description	Test conditions	Specified value displayed	Steps in the events of deviations from specified value
004	3	Output RPM from Sender for transmission output RPM -G195-	While driving2)	0.... 2000 rpm	Displays in display fields 3 and 4 must be the same. ○ Refer to

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					DTCs 17105/P0721 and 17106/P0722
	4	Output RPM from Sender for transmission output RPM -G196-	While driving2)	0.... 2000 rpm	Displays in display fields 3 and 4 must be the same. ○ Refer to DTCs 18201/P1793 and 18206/P1798

2) While driving: a second technician is needed to read the specified values.

Notes on display group number 004:

- If "0 RPM" is shown in display field 3 or 4, the corresponding sender is faulty and the Transmission Control Module (TCM) must be replaced.
- If "0 RPM" is shown in display field 3 and 4, there is a mechanical defect in the transmission, and the transmission must be replaced.

Display group number	Display field	Description		Test conditions		Specified value displayed	Steps in the events of deviations from specified value
005	1	Selector lever position		Refer to display group number 002, display field 1			
	2	Park/Neutral position switch			Gear selected		
			Not active		P, N	Terminal 50 ON	○ Refer to DTCs 18132/P1724 and 18137/P1729
			Active		R, D	Terminal 50 OFF	
	3	Back-up light			Gear selected		
Continued			Off		P, N, D	Relay OFF	○ Refer to DTCs 18194/P1786, 18195/P1787 and 18196/P1788
?			On		R	Relay ON	

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Display group number	Display field	Description	Test conditions		Specified value displayed	Steps in the events of deviations from specified value
005	4	Supply voltage Terminal 15	Stationary	min.	10.0 V	○ Check fuses and wiring using wiring diagram
				max.	15.0 V	○ Perform electrical test. Refer to starting on **Electrical Testing**
006			Can be ignored			

Display group number	Display field	Description	Test conditions	Specified value displayed	Steps in the events of deviations from specified value
007	1	Engine RPM	With the engine running	0... 7000 rpm	○ Refer to DTCs 17110/P0726 and 17111/P0727
Continued ?	2	Input RPM from Sensor for transmission RPM -G182-	While driving 2)	0... 7000 rpm	○ Refer to DTCs 17100/P0716 and 17101/P0717

2) While driving: a second technician is needed to read the specified values.

Display group number	Display field	Description	Test conditions	Specified value displayed	Steps in the events of deviations from specified value
007	3	Output RPM from Sender for transmission	While driving 2)	0... 2200 rpm	○ For -G195-. Refer to

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		output RPM -G195- and Sender 2 for transmission output RPM -G196-				DTCs 17105/P0721 and 17106/P0722 ○ For -G196-. Refer to DTCs 18201/P1793 and 18206/P1798
	4	Synchronous flag	While driving 2)	Synchronous operation	SY	Engine and transmission input RPM are the same
				Asynchronous operation	AS	Engine and transmission input RPM are different, for example, when starting from stop and accelerating.

2) While driving a second technician is needed to read the specified values.

Note on display group number 007, display field 4:

- If "AS" is always displayed, the clutch is slipping. The ATF must be changed. If "AS" is still displayed the transmission must be replaced.

Display group number	Display field	Description	Test conditions		Specified value displayed	Steps if deviations from specified value
008	1	Accelerator pedal value	Stationary	Accelerator pedal not depressed	0...1%	When accelerating from idle to Wide Open Throttle the % value increases steadily
				Accelerator pedal fully depressed	99...100%	○ Refer to DTC 18269/P1861
	2	Transmission output RPM	Refer to display group number 007, display field 3			
	3	Specified transmission input RPM	While driving 2)		0... 7000 rpm	Specified and actual transmission input RPM should be approximately the same at a constant speed

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	4	Actual transmission input RPM	While driving 2)	0... 7000 rpm	○ Refer to DTCs 17100/P0716, 17101/P0717 and 17114/P0730

2) While driving a second technician is needed to read the specified values.

Display group number	Display field	Description	Test conditions		Specified value displayed	Steps in the events of deviations from specified value
009	1	Accelerator pedal value	Refer to display group number 008, display field 1			
	2	Kickdown switch -F8-	Stationary	Not actuated	Not actuated	
				Kickdown actuated6)	Kickdown	○ Refer to DTC 18112/P1704
	3	Engine torque	While driving 2)		.Nm	The signal for actual engine torque is transmitted by the Engine Control Module (ECM) over the CAN bus line to the Transmission Control Module (TCM) ○ Refer to DTC 18265/P1857
	4	Engine RPM	Refer to display group number 007, display field 1			

2) While driving a second technician is needed to read the specified values.

6) In order to generate the Kickdown signal the accelerator pedal must be depressed to the stop.

Display group number	Display field	Description	Test conditions		Specified value displayed	Steps in the events of deviations from specified value
010	1	Adaptation of clutch curve forward	Can be ignored			
	2	Adaptation of start-from-stop behavior forward	Perform adaptation	During adaptation	ADP. is running 7)	The test conditions must be observed. Refer to **Adaptation**
			Refer to	Following	ADP.	

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			Adaptation	successful adaptation	O.K. 7)	
	3	Transmission fluid temperature		max.	160°C	○ Refer to DTCs 17094/P0710, 17095/P0711, 17096/P0712 and 17097/P0713
				min.	-60°C	
	4	Specified clutch torque	Can be ignored			

7) "ADP" is the abbreviation for adaptation. Adaptation means adapting to an internal specified value.

Display group number	Display field	Description	Test conditions		Specified value displayed	Steps in the events of deviations from specified value
011	1	Adaptation of clutch curve in reverse	Can be ignored			
	2	Adaptation of start-from-stop characteristics in reverse	Perform adaptation	During adaptation	ADP. is running 7)	The test conditions must be observed. Refer to **Adaptation**
			Refer to **Adaptation**	Following successful adaptation	ADP. O.K. 7)	
	3	Transmission fluid temperature	Refer to display group number 010, display field 3			
	4	Specified clutch torque	Can be ignored			

7) "ADP" is the abbreviation for adaptation. Adaptation means adapting to an internal specified value.

Display group number	Display field	Description	Test conditions	Specified value displayed	Steps in the events of deviations from specified value

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012 to 016	In each instance 1 to 4		Can be ignored		
017	1	Accelerator pedal value	Refer to display group number 008, display field 1		
	2	Engine RPM	Refer to display group number 007, display field 1		
	3	Engine torque	Refer to display group number 009, display field 3		
	4	Specified clutch torque (clutch 1)	While driving 2)	... Nm	Is calculated by the control module

2) While driving a second technician is needed to read the specified values.

Display group number	Display field	Description	Test conditions	Specified value displayed	Steps in the events of deviations from specified value
018 to 019	In each instance 1 to 4		Can be ignored		
20	2	Engine RPM	Refer to display group number 007, display field 1		
	2	Specified engine RPM at idle	With the engine running	Up to about 1200 RPM	The value in display field 2 must be greater than or the same as the value in display field 3
	3	Specified transmission RPM at idle	With the engine running	Up to about 1200 RPM	If the value in display field 3 is always greater than in display field 2: o Read Transmission (TCM) and Engine Control Module (ECM) DTC memory and repair malfunction
021			Can be ignored		

Display	Display	Description	Test conditions	Specified	Steps in the

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group number	field				value displayed	events of deviations from specified value
022	1	ABS system (Anti-lock Brake System)	While driving 2)	ABS activated by panic stop	ABS active	Is activated when required by the ABS control module
				No panic stop	ABS not active	○ Read ABS control module DTC memory and correct malfunction
	2	EDL system (Electronic Differential Lock)	While driving 2)	One wheel spins when starting from stop and is braked.	EDL active	Is activated when required by the ABS control module
Continued ?				Not activated	EDL not active	○ Read ABS control module DTC memory and correct malfunction

2) While driving a second technician is needed to read the specified values.

Display group number	Display field	Description	Test conditions		Specified value displayed	Steps in the events of deviations from specified value
022	3	ASR system (Automatic Traction Control)	While driving 2)	Wheel spin is braked	ASR active	Is activated when required by Engine Control Module (ECM) and ABS control module
				Not activated	ASR not active	○ Read DTC memory of corresponding control module and repair

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						malfunction
	4	ESP system (Electronic Stability Program)	While driving 2)	When the vehicle drifts out in a turn	ESP active	Is activated when required by Engine Control Module (ECM) and ABS control module
					ESP not active	○ Read DTC memory of corresponding control module and repair malfunction
023 to 124			Can be ignored			

2) While driving a second technician is needed to read the specified values.

Display group number	Display field	Description	Test conditions		Specified value displayed	Steps in the events of deviations from specified value
125	1	Participant on CAN bus drive: Engine Control Module (ECM)	Stationary	Participates	Engine 1	○ Check CAN bus. Refer to **Data Exchange between Transmission Control Module (TCM) and CAN-Capable Control Modules, checking**
				Does not participate	Engine 0	
	2	Participant on CAN bus drive: ABS control module	Stationary	Participates	ABS 1	○ Check CAN bus. Refer to **Data Exchange between Transmission Control Module**

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						(TCM) and CAN-Capable Control Modules, checking
				Does not participate	ABS 0	
	3	Participant on CAN bus drive: Control module for steering column electronics	Stationary	Participates	Steering wheel 1	○ Check CAN bus. Refer to **Data Exchange between Transmission Control Module (TCM) and CAN-Capable Control Modules, checking**
				Does not participate	Steering wheel 0	
	4	Participant on CAN bus drive: Instrument cluster	Stationary	Participates	Instrument cluster 1	○ Check CAN bus. Refer to **Data Exchange between Transmission Control Module (TCM) and CAN-Capable Control Modules, checking**
				Does not participate	Instrument cluster 0	

Notes on display group number 125

- If "1" is displayed, communication from the corresponding control module to the Transmission Control Module (TCM) is O.K.
- If "0" is displayed and no trouble code has been set in the DTC memory, the corresponding control module does not have CAN capability (or is faulty).

ADAPTATION

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Adaptation

Adaptation must be performed after the following operations:

- After replacing the Transmission Control Module (TCM) -J217-
- After coding the Transmission Control Module -J217-
- After reprogramming (flash) the Transmission Control Module -J217-

Requirement:

- No trouble codes in the DTC memory; read DTC memory. Refer to **Diagnostic Trouble Code (DTC) memory, reading**.

Adaptation for driving forward

- Read Measured Value Block display group 010, engine at idle. Refer to **Measured Value Block, reading**.



Fig. 34: Diagnostic System VAS 5051: Display - Display Fields
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051

- Check whether transmission fluid temperature in display field 3 is higher than 60°C. A short test drive may be necessary to reach this temperature.
- Drive forward briefly and then brake to a stop again.
- Check display in display field 2.

- Display must from change "ADP. is running" to "ADP. O.K."

If the display does not come up as described:

- Repeat start from stop and braking procedure until "ADP. O.K." is displayed.

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If the specified value "ADP. O.K." is not obtained:

- Read DTC memory. Refer to **Diagnostic Trouble Code (DTC) memory, reading** and correct malfunction. Adaptation must be performed again afterward.
- Perform adaptation for driving in reverse.

Adaptation for driving in reverse:

- Read Measured Value Block display group 011, engine at idle. Refer to **Measured Value Block, reading**.



Fig. 35: Diagnostic System VAS 5051: Display - Display Fields
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051

- Drive backward (in reverse) briefly and then brake to a stop again.
- Check display in display field 2.

- Display must from change "ADP. is running" to "ADP. O.K."

If the display does not come up as described:

- Repeat start from stop and braking procedure until "ADP. O.K." is displayed.

If the specified value "ADP. O.K." is not obtained:

- Read DTC memory. Refer to **Diagnostic Trouble Code (DTC) memory, reading** and correct malfunction. Adaptation must be performed again afterward.

ELECTRICAL TESTING

Electrical Testing

Special tools and equipment

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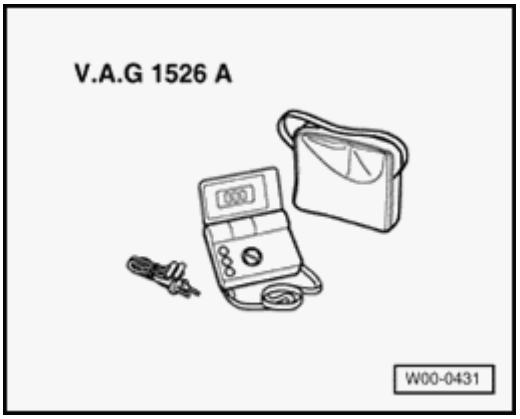


Fig. 36: Special Tool - Multimeter V.A.G 1526 A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Multimeter V.A.G. 1526 A

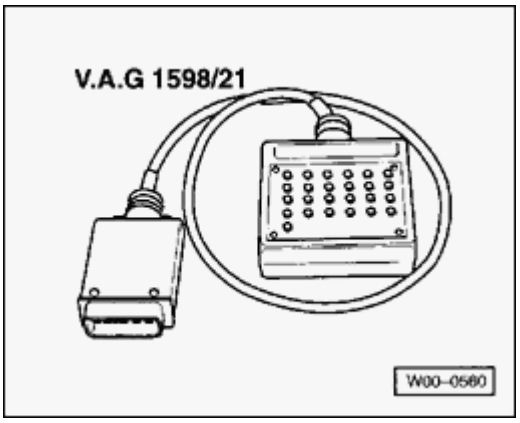


Fig. 37: VAG 1598/21 Adapter From VAG 1598 A Test Box
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Test box V.A.G. 1598/21

NOTE:

- **For testing, use Multimeter V.A.G. 1526 A or VAS 5051 Vehicle Diagnosis, Measurement and Information System. The charts contain the specific measurement methods which have to be set up before the corresponding measurements.**
- **The specified values given are valid for an ambient temperature of 0°C to 40°C.**
- **If the values measured deviate from the specified values, determine the malfunction using the wiring diagram.**
- **If the values measured show only a minor deviation from the specified values, clean cavities and plugs on the test equipment and test leads, repeat test. Before replacing the components in question, check their wires and connectors. In particular with specified values below 10 ohms**

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repeat the resistance measurement on the component.

- **The terminal numbers of the connector and the cavity numbers on the V.A.G. 1598/21 test box match. Refer to Multiple harness connector (25-pin connector) for Transmission control module -J217- (cavities on V.A.G 1598/21).**

CAUTION: In order to avoid destroying electronic components, the specific measurement range on the measuring equipment must be switched on before connecting the test leads.

Test requirements:

- Vehicle power supply O.K.
- Power supply and fuses for particular system OK

Refer to Electrical Wiring Diagrams, Troubleshooting and Component Locations

- Ground connections for transmission O.K.

Refer to Electrical Wiring Diagrams, Troubleshooting and Component Locations

- Check ground connections for corrosion and faulty connection, repair as needed.

Refer to Electrical Wiring Diagrams, Troubleshooting and Component Locations

- Check battery ground strap and ground strap between battery and transmission.

Test procedure

- Switch ignition OFF.

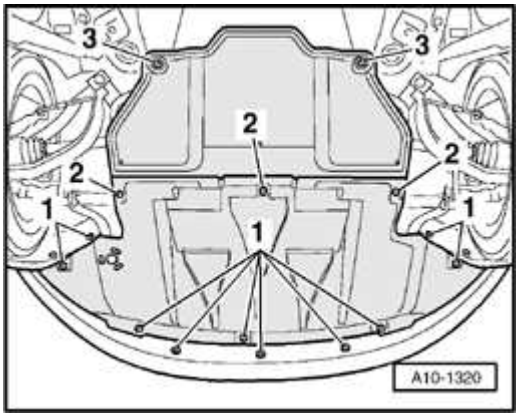


Fig. 38: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Undo quick release fasteners -2- and -3- and remove sound deadening at rear. Sound deadening at front remains installed.
- Loosen cover for vehicle floor and heat shield above exhaust system in rear area of transmission. Push heat shield a little to one side.

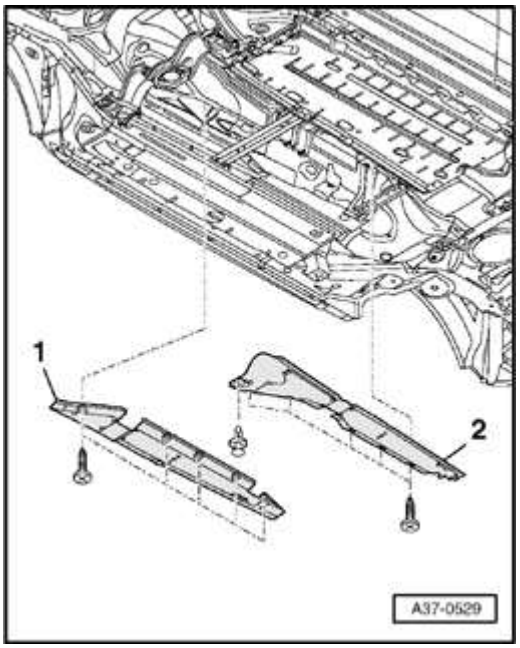
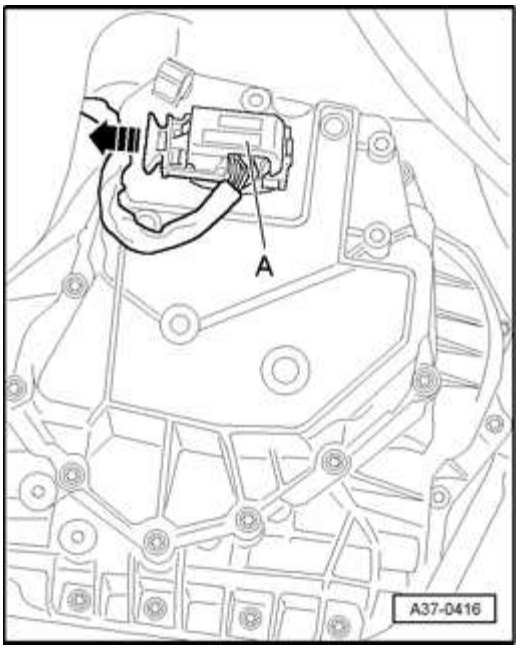


Fig. 39: Removing Vehicle Floor Plates At Inside Left/Right
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Where used, remove left inner -2- and right inner -1- vehicle floor covers.



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Fig. 40: Disengaging Harness Connector From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unlock connector -A- in direction of (arrow) and disconnect it from transmission.
- Uncover wiring harness.
- Connect test box V.A.G 1598/21 to wiring harness to control module.
- Perform test as described in specific test chart.

Multiple harness connector (25-pin connector) for Transmission control module -J217- (cavities on V.A.G 1598/21)

1-	Not used	15-	Engine RPM signal
2-	K-wire for diagnosis	16-	Not used
3-	Park/Neutral position (PNP) relay -J226-	17-	Not used
4-	Park/Neutral position (PNP) relay -J226-	18-	Not used
5-	Vehicle speed signal	19-	Not used
6-	Not used	20-	Not used
7-	Shift lock solenoid -N110-	21-	Not used
8-	Supply voltage (terminal 15)	22-	Not used
9-	Supply voltage (terminal 87)	23-	Not used
10-	CAN bus (High)	24-	Not used
11-	CAN bus (Low)	25-	Ground for power consumers (terminal 31)
12-	Tiptronic switch -F189- (upshift)		
13-	Tiptronic switch -F189- (recognition)		
14-	Tiptronic switch -F189- (downshift)		

Component tested	Corresponding test step
Supply voltage for Transmission Control Module -J217-	o Perform test steps 1, 2 and 3
Shift lock solenoid -N110-	o Perform test step 4
Wire connection to the Engine Control Module (ECM) (engine RPM signal)	o Perform test step 5

Test table

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Switch on measurement range: Voltage measurement					
Test step	**V.A.G 1598/21**	**What is being tested**	• **Test conditions** ○ Additional procedures	**Specified value**	**Steps if deviations from specified value**
1	25 + Plus at the Battery	Ground connection for the Transmission Control Module (TCM) - J217-	• Ignition switched off	Approximately battery voltage	○ Check wiring routing using wiring diagram.
2	8 + 25	Supply voltage for Transmission Control Module (TCM) - J217- (terminal 15)	• Ignition switched on	Approximately battery voltage	○ Check fuses. ○ Check wiring routing using wiring diagram.
			• Ignition switched off	About 0 V	
3	9 + 25	Supply voltage for Transmission Control Module (TCM) - J217- (terminal 87)	• Ignition switched on	Approximately battery voltage	○ Check fuses. ○ Check wiring routing using wiring diagram8)
			• Ignition switched off	About 0 V	

8) Power supply through terminal 87 is managed in different ways: On vehicles with the 2.4 liter engine through the ignition time delay relay for ignition cut off -J64-; On all other gasoline engines through the Motronic ECM power supply relay -J271-; On vehicles with diesel engines through the Diesel Direct Fuel Injection (DFI) system relay -J322-.

Switch on measurement range: Voltage measurement					
Test step	**V.A.G 1598/21**	**What is being tested**	• **Test conditions** ○ Additional procedures	**Specified value**	**Steps if deviations from specified value**
4	7 + 25	Shift lock solenoid -	• Ignition switched on	Approximately battery voltage	○ Check

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		N110-	• Selector lever in position P or N ○ Brake pedal depressed		wiring connections and fuses using wiring diagram. ○ Check shift lock solenoid - N110-. Refer to **Shift Lock Solenoid - N110-, checking**
			○ Brake pedal not depressed	Approx. 0 V	○ Check brake light switch.

Switch on measurement range: Resistance measurement					
Test step	**V.A.G 1598/21 cavities**	**What is being tested**	• **Test conditions** ○ Additional procedures	**Specified value**	**Steps in the events of deviations from specified value**
5	15 + xx 7)	Wire connection to the Engine Control Module (ECM) (engine RPM signal)	• Ignition switched off • Disconnect Engine Control Module (ECM)	Less than 1.5 ohms	○ Check wiring routing using wiring diagram.

7) Corresponding terminal pinout on the Engine Control Module (ECM):

Refer to Electrical Wiring Diagrams, Troubleshooting and Component Locations

Shift Lock Solenoid -N110-, checking

NOTE: This test must be performed if the specified values in the voltage measurement are not reached.

Additional special tools and equipment

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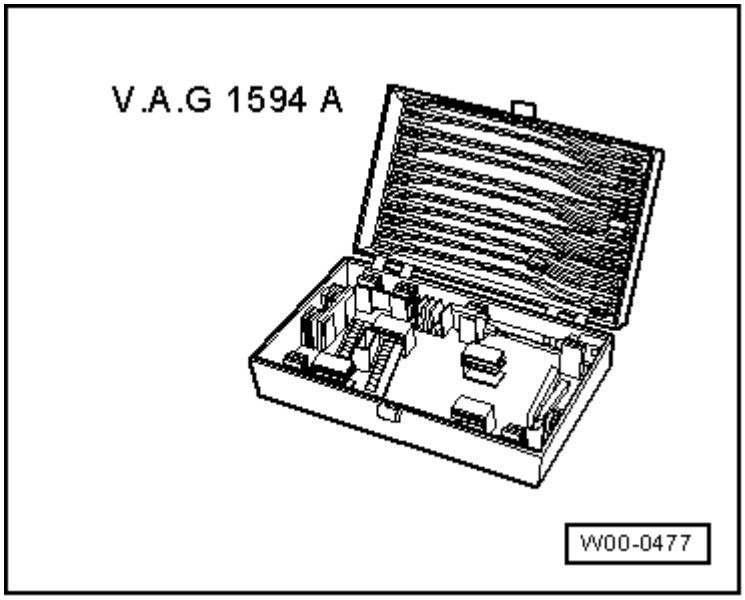


Fig. 41: Identifying Adapter Set V.A.G 1594 A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connector test kit V.A.G 1594 A

Test sequence

- Remove cover for shift control mechanism

Refer to **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**

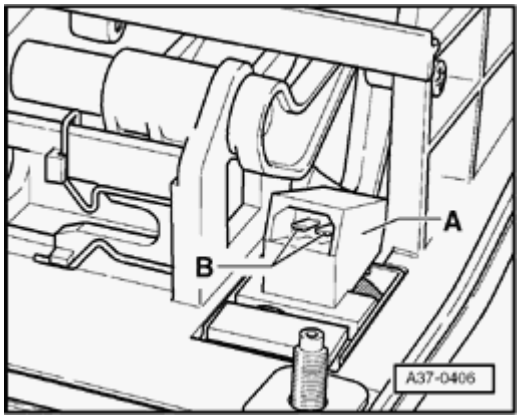


Fig. 42: Disconnecting Harness Connector At Shift Lock Solenoid -N110 & Attaching Multimeter For Resistance Measurement Between Contacts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect harness connector at Shift lock solenoid -N110 -A-.
- Attach multimeter for resistance measurement between contacts -B-.

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- Specified value: 22.3 ± 1 ohms

If the specified value is not reached:

- Replace the shift lock solenoid.

Refer to **37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING**

Data Exchange between Transmission Control Module (TCM) and CAN-Capable Control Modules, checking

NOTE:

- **The exchange of data between the individual control modules is carried out by means of a bus system.**
- **"CAN Bus" describes a system to carry and distribute data.**
- **The wiring connections between the control modules, over which the data are transmitted, are described as data lines.**
- **Data are transmitted serially, that means in sequence, over these data lines to the attached control modules (e.g. engine RPM, accelerator pedal position).**

Checking bus system

In the DTC table you were instructed to inspect the exchange of data between the Transmission Control Module (TCM) and CAN-capable control modules.

- Connect VAS 5051 Vehicle Diagnosis, Measurement and Information System. Refer to **VAS 5051 Vehicle Diagnosis, Measurement and Information System, connecting and selecting functions** and select vehicle system "02 Transmission Electronics". Ignition must be switched on.

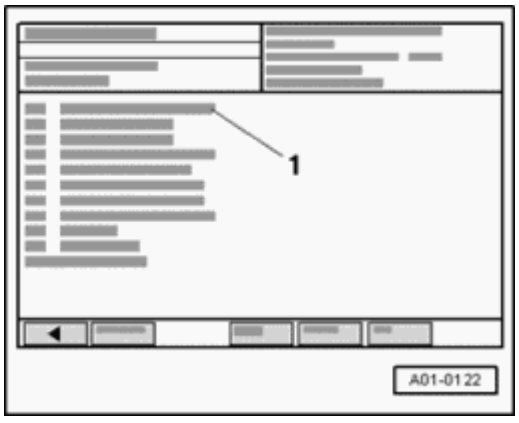


Fig. 43: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051

- Touch -1- diagnostic function "08 Read Measured Value Block".

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Fig. 44: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051

1 - Enter display group Max. input value = 255

NOTE: Measured Value Block 125 shows the participants on the data BUS drive.

- On keypad enter -2- "125" for "Display group number 125" and confirm by touching Q button.



Fig. 45: Diagnostic System VAS 5051: Display - Display Fields
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051

- Check displays in display fields -1- to -4-.

The display shows the control modules which are CAN- capable with the Engine Control Module (ECM):

- Display 1: CAN-capable control module is a participant on data bus
- Display 0 or no display: CAN-capable control module is not a participant on data bus or not CAN-capable

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- End function "08 Read Measured Value Block" by touching <-- button.
- Touch "06 End output".

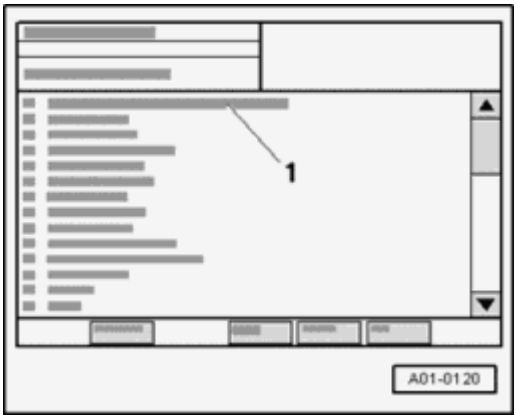


Fig. 46: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051

- In selection -1- touch diagnostic function "00 Read DTC memory complete system".

- DTC memory of all systems in the vehicle capable of On Board Diagnostic (OBD) is read.

If a control module responds and identifies itself, the number of stored DTCs or "No DTC" is displayed on the screen.

Any stored DTCs in a system are shown in sequence. Then the VAS 5051 sends the next address word.

If a DTC referring to "Data bus drive..." or "...CAN bus" is displayed:

- Check whether correct Engine Control Module (ECM) and other CAN-capable control modules have been installed (Part No. and Code).

If the correct control modules have been installed:

- Check whether multiple connectors for control module are fully seated.

If the multiple connectors are fully seated:

- Check CAN bus system.

Checking a "Dual Wire Bus System"

Communication takes place between two or more control modules over a "Dual Wire Bus System".

- Analyze DTCs stored in control modules.

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NOTE: The analysis helps to pinpoint the wiring malfunction.

Example 1:

Based on the DTCs entered in the DTC memories, it can be seen that control module 1 is not connected to control modules 2 and 3.

Control module	DTCs entered in the DTC memory:
1	• Message missing from control module 2 • Message missing from control module 3
2	• Message missing from control module 1
3	• Message missing from control module 1

- Switch ignition OFF.
- Disconnect control modules connected by bus circuit and check whether a bus wiring connection has an open circuit.

Refer to Electrical Wiring Diagrams, Troubleshooting and Component Locations

- If no malfunction is found in bus wiring, replace control module 1.

Example 2:

Based on the DTCs entered in the DTC memories, it can be seen that control module 2 is not connected to control modules 1 and 3.

Control module	DTCs entered in the DTC memory:
1	• Message missing from control module 2
2	• Message missing from control module 1 • Message missing from control module 3
3	• Message missing from control module 2

- Switch ignition OFF.
- Disconnect control modules connected by the bus circuit and check whether a bus wiring connection has an open circuit.

Refer to Electrical Wiring Diagrams, Troubleshooting and Component Locations

- If no malfunction is found in bus wiring, replace control module 2.

Example 3:

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Based on the DTCs entered in the DTC memory, it can be seen that no transmission or reception activity is possible in any of the control modules.

Control module	DTCs entered in the DTC memory:
1	• Data bus drive faulty
2	• Data bus drive faulty
3	• Data bus drive faulty

- Switch ignition OFF.

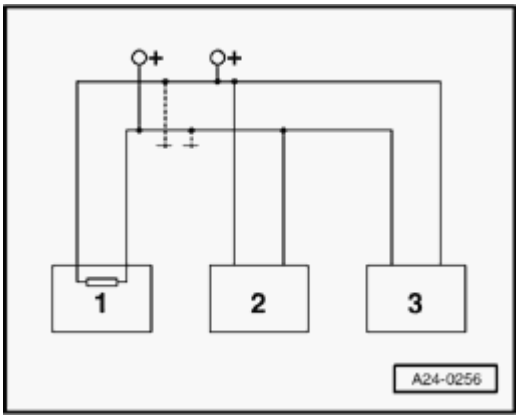


Fig. 47: Checking Bus Wires For Short Circuit To B+ Or Ground
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect control modules connected by bus circuit wiring and inspect bus wiring for a short circuit to B+ and to ground.

Refer to Electrical Wiring Diagrams, Troubleshooting and Component Locations

If you are unable to determine any cause in the bus wiring for the DTC "Data bus drive faulty", check to see whether one of the control modules is responsible for this DTC.

Test requirement:

- VAS 5051 Vehicle Diagnosis, Measurement and Information System connected and Vehicle OBD selected. Refer to **VAS 5051 Vehicle Diagnosis, Measurement and Information System, connecting and selecting functions**.

All the control modules which use the CAN bus for communication are disconnected. The ignition is switched OFF.

- Connect one control module.

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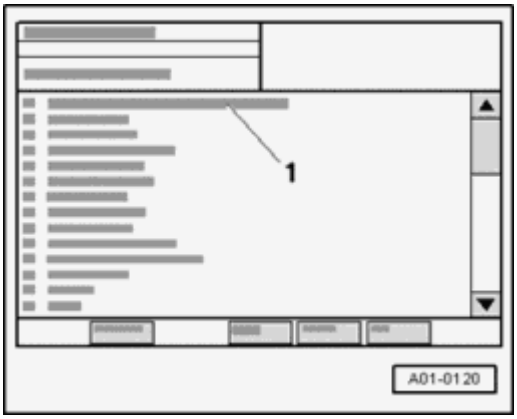


Fig. 48: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051

- Switch ignition ON.
- Touch appropriate vehicle system in Display -1-.
- Read DTC memory of control module just connected and delete it.
- Touch delta button.

- In display touch -1- diagnostic function "06 End output".
- Switch ignition OFF and ON again.
- Leave ignition switched ON for 10 seconds. Then, using scan tool, read DTC memory of control module just connected.
- If DTC "Data bus drive faulty" is read, control module just connected must be replaced.

- If DTC "Data bus drive not faulty" is read, connect next control module and repeat procedure.

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37 - AUTOMATIC TRANSMISSION - CONTROLS, HOUSING

ELECTRICAL/ELECTRONIC COMPONENTS AND INSTALLED LOCATIONS

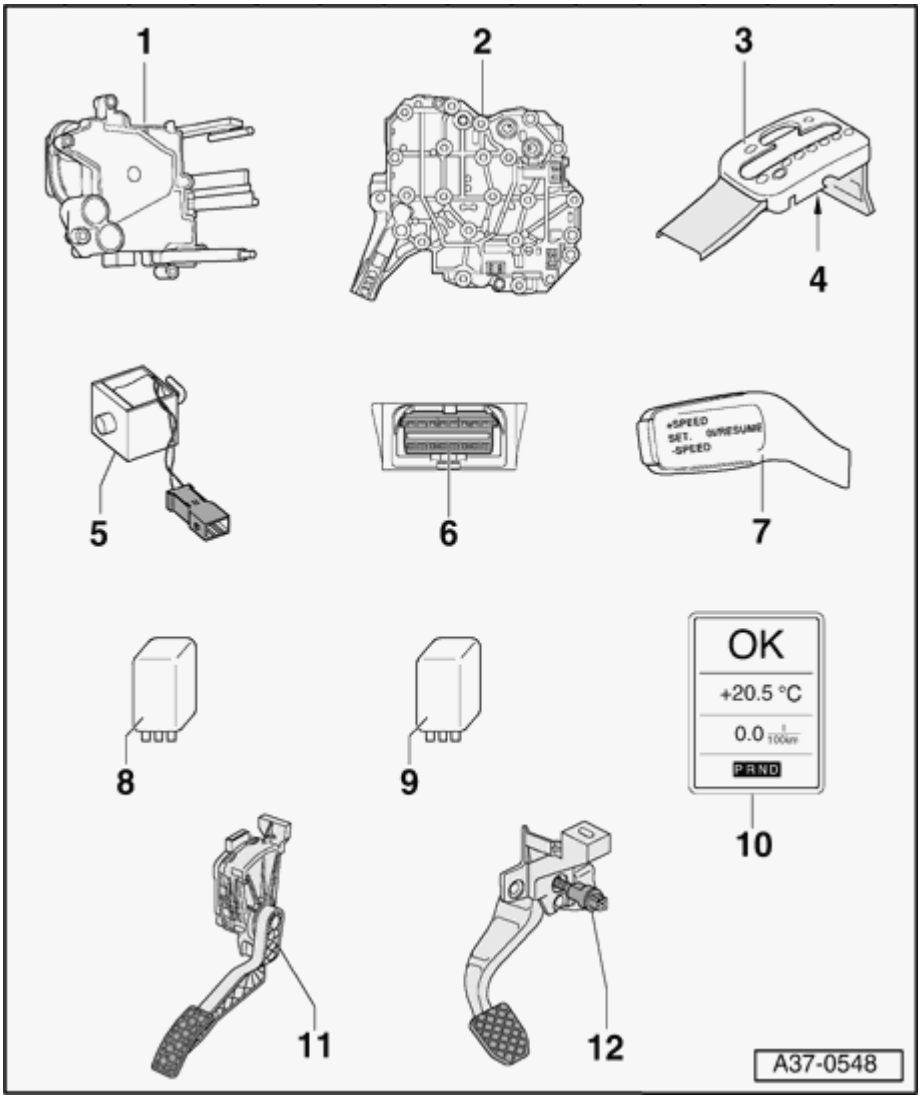


Fig. 3: Electrical/Electronic Components And Installed Locations
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Transmission Control Module (TCM) J217

- Installed location --> **Transmission Control Module (TCM) J217**
- Control module is checked with On Board Diagnostics (OBD)
- Removing and installing --> **Transmission Control Module (TCM) J217 , removing and installing**

2 - Hydraulic control module

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- Installed location **Hydraulic control module**
- Valves are checked with On Board Diagnostics (OBD)
- Removing and installing --> **Hydraulic control module, removing and installing**

3 - Shift mechanism cover

- --> **Shift mechanism cover (through VIN 8E_6A156499), removing and installing**
- --> **Shift mechanism cover (from VIN 8E_6A156500), removing and installing**

4 - Tiptronic Switch F189

- Location: Integrated into circuit board in cover of shift mechanism
- Consists of 3 Hall sensors that are controlled by a magnet on the cover strip transverse slide.
- If malfunctions at Tiptronic Switch F189 occur, check first whether magnet at control slide masking panel is properly secured and replace masking panel if necessary. Before replacing the printed circuit, check wiring.
- --> **Tiptronic Switch F189 (through VIN 8E_6A156499), removing and installing**
- --> **Tiptronic Switch F189 (from VIN 8E_6A156500), removing and installing**

5 - Shift lock solenoid N110

- Installed location --> **Shift lock solenoid N110**
- --> **Shift Lock Solenoid N110 (through VIN 8E_6A156499), removing and installing**
- --> **Shift Lock Solenoid N110 (from VIN 8E_6A156500), removing and installing**

6 - Data Link Connector (DLC)

- Installed location **Data Link Connector (DLC)**

7 - Cruise Control Switch E45

- Installed location --> **Cruise Control Switch E45**
- Removing and installing -->
  - **94 LIGHTS, SWITCHES - EXTERIOR**
  - **94 LIGHTS, SWITCHES - EXTERIOR** for ELECTRICAL EQUIPMENT, CABRIOLET

8 - Park/Neutral Position (PNP) Relay J226 (up to 10.04) or Starting Interlock Relay J207 (as of 11.04)

- Installed location --> **Power supply relay terminal 87/Starter Interlock Alarm System Relay J60 and Park/Neutral Position (PNP) Relay J226 (up to 10.04) or Starting Interlock Relay J207 (as of 11.04)**

9 - Power supply relay terminal 87/ Starter Interlock Alarm System Relay J60

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- Installed location --> **Power supply relay terminal 87/Starter Interlock Alarm System Relay J60 and Park/Neutral Position (PNP) Relay J226 (up to 10.04) or Starting Interlock Relay J207 (as of 11.04)**

10 - Transmission Range (TR) Display Y6

- Installed location --> **Transmission Range (TR) Display Y6**
- A fully illuminated gear selection indicator indicates a simple malfunction
- A blinking gear selection indicator indicates a critical malfunction
- No indication on display points to a fault in wiring or a faulty Transmission Range (TR) Display Y6

11 - Kick Down Switch F8

- Not a separate component, it adopts functions of Throttle Position (TP) Sensor G79 and Accelerator Pedal Position Sensor 2 G185 in vehicles with gasoline engine, both are integrated in accelerator pedal module; component location --> **Kick Down Switch F8**
- Installed as one unit with Throttle Position (TP) Sensor G79 in vehicles with Diesel engine, this is integrated in the accelerator pedal module; component location --> **Kick Down Switch F8**
- Signal received in Engine Control Module (ECM), signal transferred from ECM to Transmission Control Module (TCM) via CAN-Bus
- Removing and installing accelerator pedal module --> **20 - FUEL SUPPLY SYSTEM**

12 - Brake Light Switch F

- Installed location --> **Brake Light Switch F**
- Signal received in Engine Control Module (ECM), signal transferred from ECM to Transmission Control Module (TCM) via CAN-Bus
- Removing and installing --> **46 - BRAKES - MECHANICAL COMPONENTS**

Transmission Control Module (TCM) J217

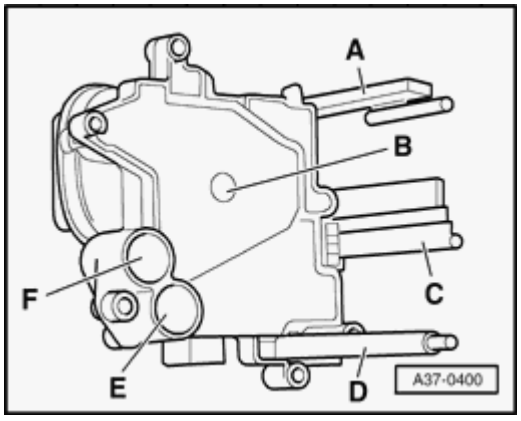


Fig. 4: Identifying Sensors Of Soiling And Metal Shavings
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Location: Transmission Control Module (TCM) J217 is on the back end of transmission, secured directly to hydraulic control module.

The following components are integrated in the control module:

A - Transmission Output Speed (RPM) Sensor G195 and Transmission Output Speed (RPM) Sensor 2 G196

B - Transmission Fluid Temperature Sensor G93

C - Multi-Function Transmission Range (TR) Switch F125

D - Transmission Input Speed (RPM) Sensor G182

E - Automatic Transmission Hydraulic Pressure Sensor 1 G193

F - Automatic Transmission Hydraulic Pressure Sensor 2 G194

Removing and installing Transmission Control Module (TCM) J217 --> **Transmission Control Module (TCM) J217 , removing and installing**.

Hydraulic control module

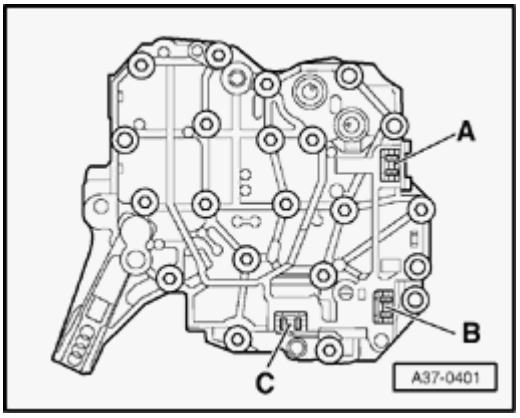


Fig. 5: Identifying Hydraulic Control Module Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Location: Hydraulic control module is bolted to back end of transmission. Transmission Control Module (TCM) J217 is fastened directly to hydraulic control module.

A - Harness connector for Automatic Transmission Pressure Regulating Valve 1 N215

B - Harness connector for Automatic Transmission Pressure Regulating Valve 2 N216

C - Harness connector for Solenoid Valve 1 N88

Following valves are integrated into hydraulic control module (not depicted here).

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- Automatic Transmission Pressure Regulating Valve 1 N215 (clutch solenoid valve)
- Automatic Transmission Pressure Regulating Valve 2 N216 (solenoid valve gear)
- Solenoid Valve 1 N88 (clutch cooling/safety shut-off)
- Clutch cooling valve

- Minimum pressure valve
- Pressure relief valve
- Clutch control valve
- Pressure control valve

NOTE:

- **Valves are monitored via On Board Diagnostic (OBD).**
- **Description and functions of individual valves 951103Continuously Variable Automatic Transmission Multitronic 01J.**

Removing and installing hydraulic control module --> **Hydraulic control module, removing and installing**.

Shift lock solenoid N110

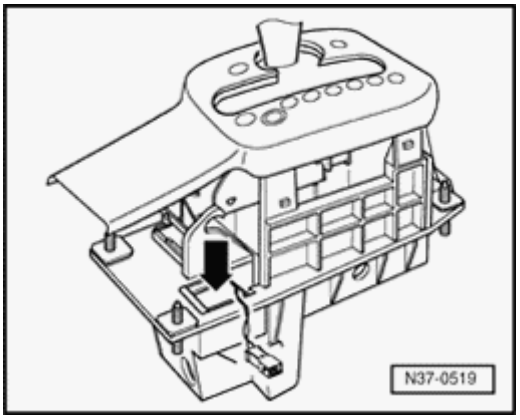


Fig. 6: Shift Lock Solenoid -N110-
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Location: Shift Lock Solenoid N110 is located in shift mechanism - **arrow** -.

Data Link Connector (DLC)

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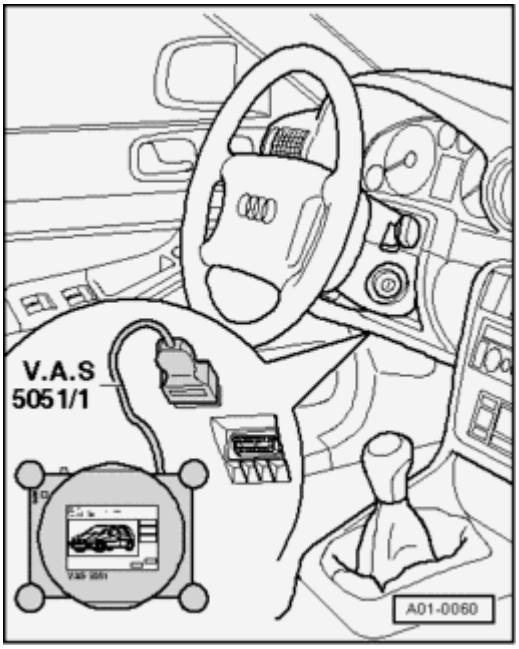


Fig. 7: Identifying Vehicle Diagnosis, Testing and Information System VAS 5051 and Data Link Connector (DLC)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Location: Diagnostic connection is located beneath knee bolster on left of steering wheel.

Cruise Control Switch E45

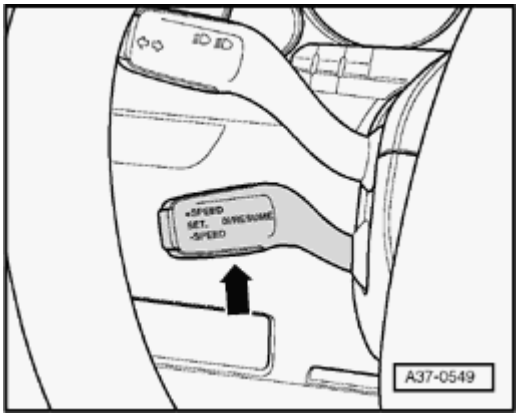


Fig. 8: Cruise Control Switch E45
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Location: Cruise control switch is located on steering column switch.

Transmission Range (TR) Display Y6

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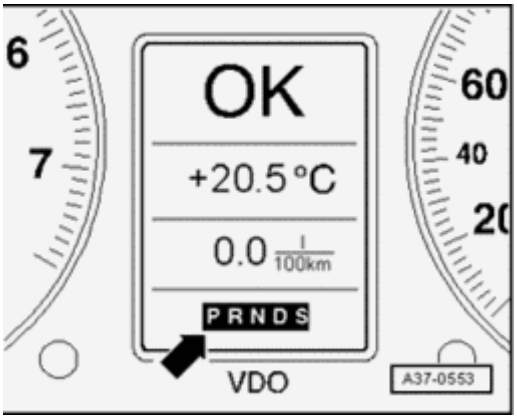


Fig. 9: Transmission Range (TR) Display Y6
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Location: Integrated in instrument cluster.

NOTE:

- **Transmission Range (TR) Display Y6 can only be replaced as a set with the instrument cluster.**

Power supply relay terminal 87/Starter Interlock Alarm System Relay J60 and Park/Neutral Position (PNP) Relay J226 (up to 10.04) or Starting Interlock Relay J207 (as of 11.04)

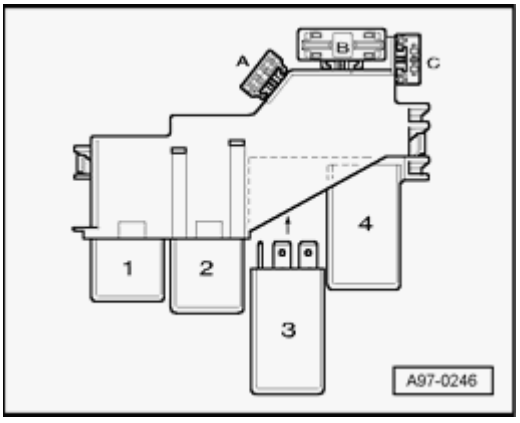


Fig. 10: Power Supply Relay Terminal 87/Starter Interlock Alarm System Relay J60 And Park/Neutral Position (PNP) Relay J226 (Up To 10.04) Or Starting Interlock Relay J207 (As Of 11.04)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Location: On relay carrier in E-box, plenum chamber.

Voltage is supplied differently via terminal 87:

1 - Starter Interlock Alarm System Relay J60 - only in vehicles with 2.4 L gasoline engine

3 - Motronic Engine Control Module (ECM) Power Supply Relay J271 - in all other vehicles with gasoline engine

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3 - Power Supply Relay (terminal 30, B+) J317 - in vehicles with Diesel engine

4 - Park/Neutral Position (PNP) Relay J226 (up to 10.04) or Starting Interlock Relay J207 (as of 11.04)

NOTE:

- **In vehicles as of 11.04, activation of reverse driving lights occurs via CAN-Bus.**

Brake Light Switch F

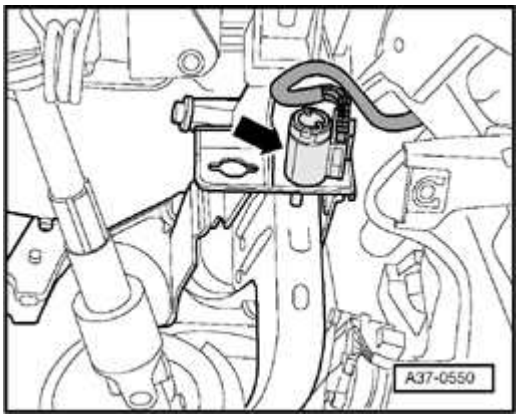


Fig. 11: Brake Light Switch F
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Location: Brake light switch - **arrow** - is located in brake pedal assembly.

NOTE:

- **Switch is only to be installed once so as to ensure a firm fit.**

Kick Down Switch F8

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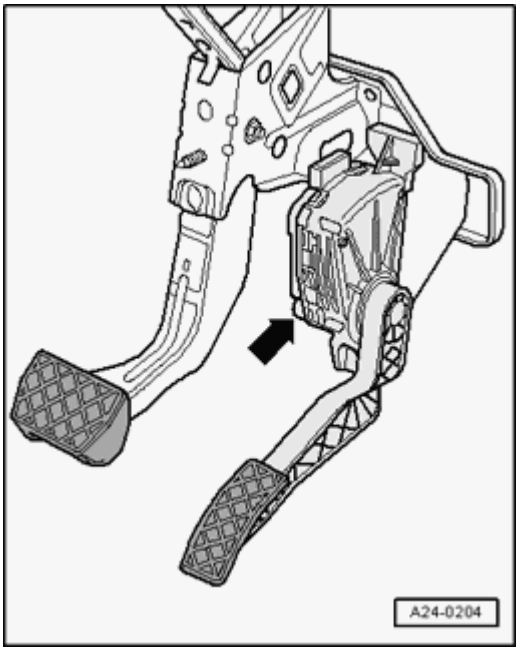


Fig. 12: Kick Down Switch F8
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Location: In accelerator pedal module - **arrow** -.

NOTE:

- **In vehicles with gasoline engine, Kick Down Switch F8 adopts the functions of Throttle Position (TP) Sensor G79 and Accelerator Pedal Position Sensor 2 G185.**

SHIFT MECHANISM (THROUGH VIN 8E_6A156499), SERVICING

Shift mechanism (through VIN 8E_6A156499), servicing

CAUTION: Shift selector lever into position "P" and engage parking brake before working with the engine running.

Shift mechanism (through VIN 8E_6A156499), checking

Overview:

- 1. Selector mechanism function test --> **Selector mechanism function test**
- 2. Checking ignition key removal lock --> **Check ignition key withdrawal lock**
- 3. Locking button on selector lever handle, checking --> **Check locking button on selector lever handle**

- If shift mechanism does not function as described, perform "Guided Fault Finding" with Vehicle Diagnosis, Testing and Information System VAS 5051B.

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Selector mechanism function test

- In selector lever positions "S" , "D" , "R" and "Tiptronic gate" the starter motor will not operate.
- If selector lever position "N" is selected at speeds greater than 5 km/h, the selector lever lock solenoid must not engage and block selector lever. Selector lever can be shifted into driving gear.
- For speeds below 2 km/h (almost standstill) and shifting into selector lever position "N" , the shift lock solenoid must only engage after approx. 1 second. Selector lever can only be shifted out of position "N" with brake pedal operated.

Selector lever in "P" position and ignition switched on:

- Do not operate brake pedal.

- Selector lever is locked and also cannot be shifted out of position "P" while locking button on selector lever handle is pressed. Shift Lock Solenoid N110 blocks selector lever.

- Press brake pedal and hold.

- Shift Lock Solenoid N110 releases selector lever. It must be possible to select a driving mode without "hitching" while locking button on selector lever handle is pressed.
- Slowly shift selector lever from "P" through "R, N, D, S" , checking whether Transmission Range (TR) Display Y6 in instrument cluster matches selector lever position.

Selector lever in "N" position and ignition switched on:

- Do not operate brake pedal.

- Up to approx. 08.01: Selector lever is locked and cannot be shifted out of position "N" without pressing button on selector lever handle. Shift Lock Solenoid N110 blocks selector lever.
- As of approx. 08.01: Selector lever is not locked immediately when rapidly shifting through position "N" (e.g. from "R" to "D"). This enables e.g. "forward and reverse maneuvers" when vehicle is stuck. Shift lock engages when selector lever is located in "N" for longer than approx. 1 s with brake not being pressed.

- Operate brake pedal.

- Shift Lock Solenoid N110 releases selector lever. It must be possible to select a driving mode without "hitching" while locking button on selector lever handle is pressed.

Selector lever in position "D" , ignition switched on:

- Shift selector lever into "Tiptronic gate".

- Brightening of "D" symbol must go out in selector mechanism cover and "+" and "-" symbols must light up.
- The Transmission Range (TR) Display Y6 in instrument cluster must change from "PRND" to "654321"

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or (from VIN 8E_5400001) from "PRNDS" to "7654321" when selector lever is shifted into "Tiptronic Gate".

If specified values are not obtained:

- Adjust selector lever cable --> **Selector lever cable (through VIN 8E_6A156499), adjusting**.
- Check ignition key removal lock.

Check ignition key withdrawal lock

- Switch ignition key to driving position ("ignition on").
- Press brake pedal and hold.

- It must be possible to shift selector lever out of position "P" without "hitching" while locking button on selector lever handle is pressed.

- Switch ignition off.

- It should not be possible to remove ignition key when selector lever is in any other position than "P".

- Place selector lever in position "P".

- It must be possible to move ignition key into removal position without "sticking".

- Remove ignition key.

- It must be possible to remove ignition key only in position "P".
- Selector lever cannot be shifted out of position "P" with locking button pressed and foot brake operated.

Check locking button on selector lever handle

Check locking button for ease of movement:

- It must be possible to press locking button without great force.
- After releasing, the locking button must come all the way back out by itself

If specified values are not obtained:

- Check whether selector lever handle is installed correctly.
- Check whether selector rod or selector lever is bent.

Function test:

- Ignition switched on

Locking button on selector lever handle must be pressed for the following shifts. If it is not pressed, the selector

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lever cannot be shifted into specified position.

- "P" to "R" and also press brake pedal
- "D" to "S"
- "N" to "R" ; in standstill, also press brake pedal after long wait
- "R" to "P"

If specified values are not obtained:

- Check whether selector lever handle is installed correctly.
- Adjust selector lever cable --> **Selector lever cable (through VIN 8E_6A156499), adjusting**.

Shift mechanism, through VIN 8E_6A156499, removing and installing

Removing

- Remove selector lever handle --> **Selector lever handle (through VIN 8E_6A156499), removing and installing**.

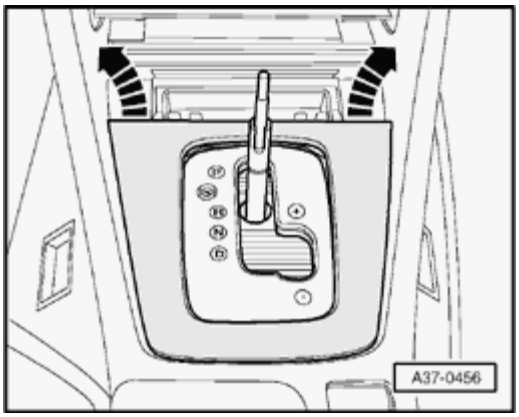


Fig. 13: Removing Trim Panel
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Open ashtray in center console and remove trim panel - **arrows** -.
- Remove air conditioning operating unit --> **87 AIR CONDITIONING** .
- Remove ashtray in center console -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

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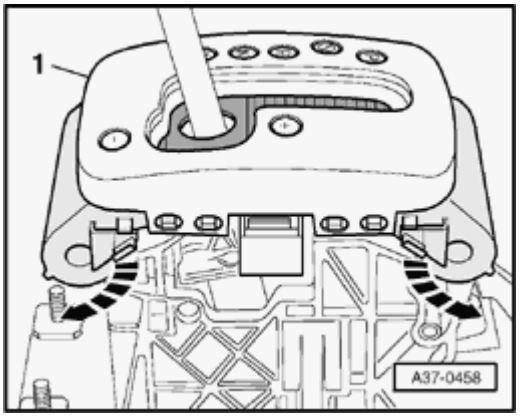


Fig. 14: Releasing Clips And Pull Cover With Guide Upwards To Remove
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release all 4 clips - **arrows** - and pull cover - **1** - with guide upwards to remove.
- Disconnect connector from side of guide plate.
- Disconnect electrical harness connector on Shift Lock Solenoid N110.

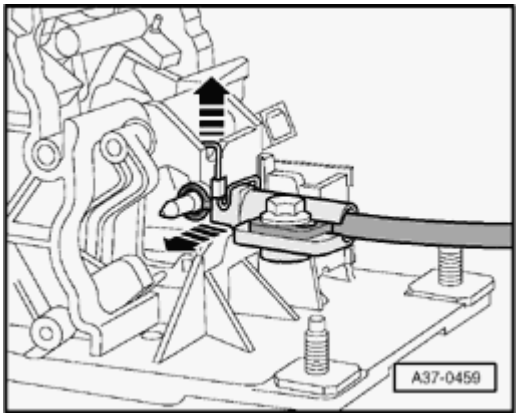
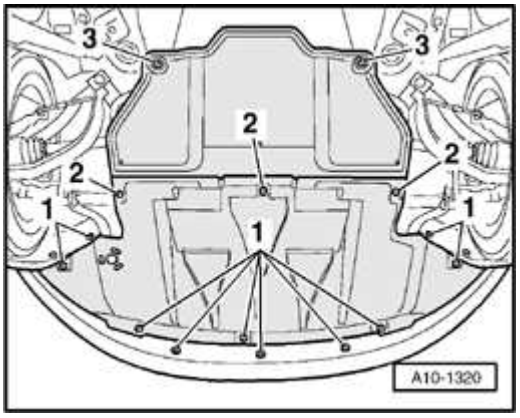


Fig. 15: Disengaging Locking Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disengage locking cable - **arrows** -.



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Fig. 16: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen quick-release screws - **2** - and - **3** - and remove rear noise insulation.

Vehicles with 4-cyl. engine:

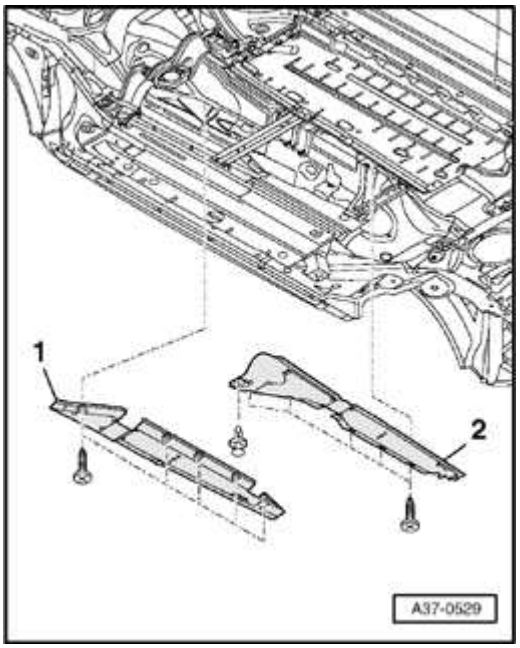


Fig. 17: Removing Vehicle Floor Plates At Inside Left/Right
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove vehicle floor plates at inside left - **2** - and inside right - **1** -.

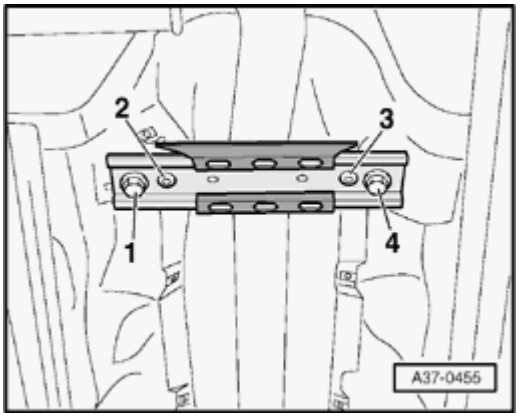


Fig. 18: Removing Bolts And Rear Cross Member For Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rear cross member for vehicle floor, to do so remove bolts - **1 through 4** -.

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All:

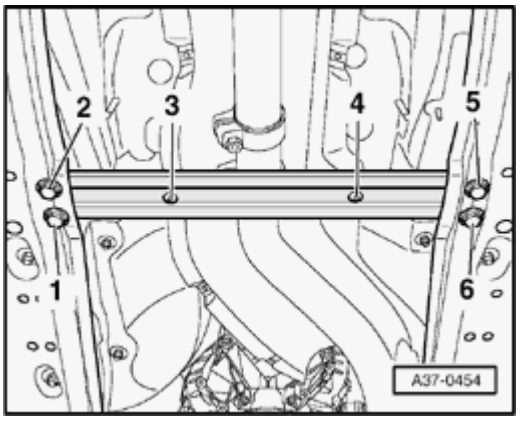


Fig. 19: Removing Bolts To Remove Front Cross Member For Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 to 6** - to remove front cross member for vehicle floor.

NOTE:

- **Depicted in illustration for a vehicle with 4-cyl. engine.**

NOTE:

- **Flex joint in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.**

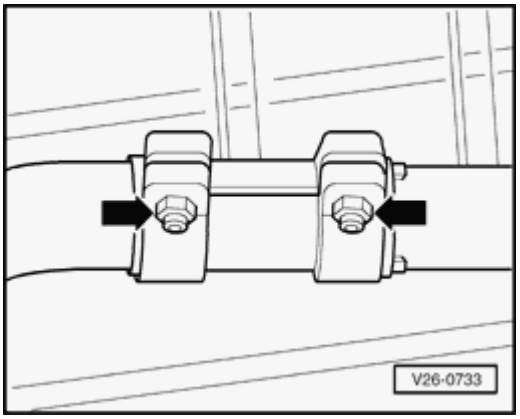


Fig. 20: Disconnecting Exhaust System At Double Clamp
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect exhaust system at double clamp - **arrows** -.

NOTE:

- **Depicted in illustration for a vehicle with 4-cyl. engine.**

- Remove heat shield below shift mechanism.

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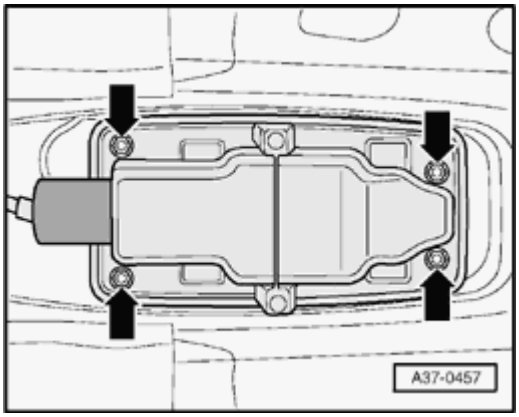


Fig. 21: Removing Lower Cover From Shift Mechanism
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove lower cover from shift mechanism - **arrows** -.
- Detach selector lever cable sleeve from shift mechanism bottom cover and slide back.

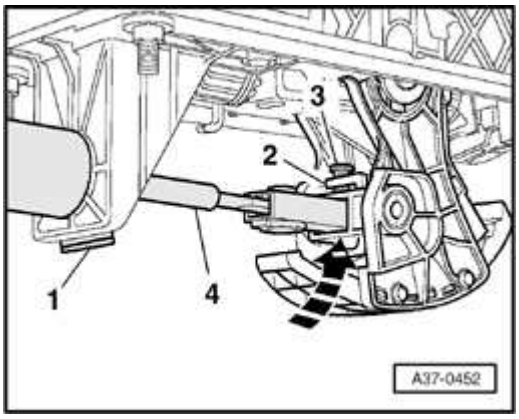


Fig. 22: Identifying Retaining Clip, Securing Spring, Push Pin & Selector Lever Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove retaining clip - **1** - for selector lever cable on shift mechanism downward.
- Pull plastic securing spring - **2** - slightly to front and push pin - **3** - upward only as far as necessary - **arrow** -.
- Remove selector lever cable - **4** - from shift mechanism.

NOTE:

- **Do not bend or kink the selector lever cable.**

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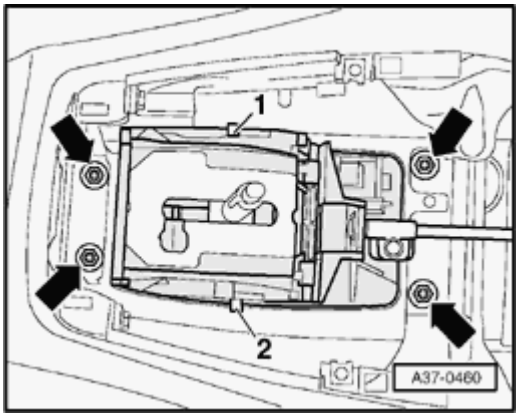


Fig. 23: Pressing Holder Clips & Removing Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **arrows** -.

NOTE:

- **A second technician is required when detaching shift mechanism below vehicle.**

- Press holder clips - **1** - and - **2** - inward, at the same time pushing shift mechanism downward.

Installing

Installation is in reverse order of removal, note the following:

- Install selector lever cable --> **Selector lever cable, (through VIN 8E_6A156499), removing and installing**.
- Install locking cable --> **Locking lever (through VIN 8E_6A156499), removing and installing**.
- Adjust locking cable --> **Locking lever (through VIN 8E_6A156499), adjusting**.
- Install exhaust system and align it free of tension -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

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- Check shift mechanism --> **Shift mechanism (through VIN 8E_6A156499), checking**.

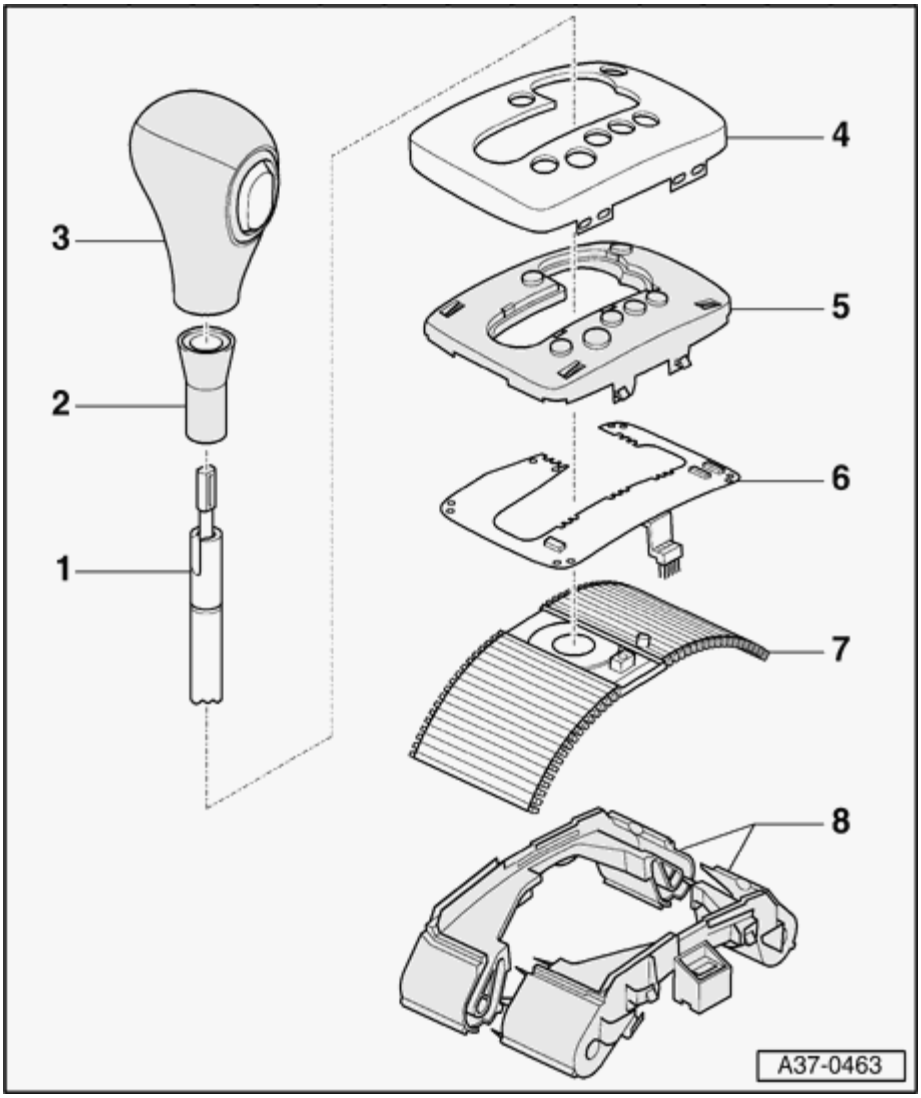
Torque specifications

Component	Nm
Shift mechanism to body	10
Bottom cover to shift mechanism	10
Front cross member to vehicle floor	55
Rear cross member to vehicle floor	60

Selector lever handle, shift mechanism cover (through VIN 8E_6A156499), assembly overview

NOTE:

- **Lubricate bearing areas and slide surfaces with *polycarbamide grease G 052 142 A2* .**



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Fig. 24: Selector Mechanism Cover, Selector Lever Handle, Component Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Selector lever

2 - Selector lever shaft piece

- Removing and installing --> **Selector lever handle (through VIN 8E_6A156499), removing and installing**

3 - Selector lever handle

- Removing and installing --> **Selector lever handle (through VIN 8E_6A156499), removing and installing**

4 - Cover

- With selector scale and Tiptronic gate
- Removing and installing --> **Tiptronic Switch F189 (through VIN 8E_6A156499), removing and installing** and also unclipping symbol inserts

5 - Symbol panel

- Clipped into cover

6 - Printed circuit board

- With integrated Tiptronic Switch F189
- Removing and installing --> **Tiptronic Switch F189 (through VIN 8E_6A156499), removing and installing**
- Switch consists of 3 Hall sensors, which are activated by a magnet on transverse slide of cover strip.
- Before replacing circuit board when DTC "18161" is entered in DTC memory, first check adjustment of selector lever cable --> **Selector lever cable (through VIN 8E_6A156499), adjusting**

7 - Cover strip

- With solenoid for Tiptronic Switch F189 on transverse slide
- Removing and installing --> **Tiptronic Switch F189 (through VIN 8E_6A156499), removing and installing**

8 - Masking panel guide

Selector lever handle (through VIN 8E_6A156499), removing and installing

Removing

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- Place selector lever in position "D".

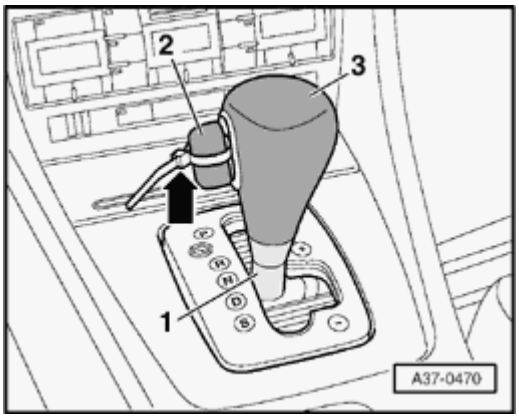


Fig. 25: Selector Lever Handle, Removing And Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Rotate sleeve - **1** - to left and push downward as far as stop.
- Carefully pull switch - **2** - just enough out of selector lever handle - **3** - until a cable tie can be inserted between button and selector lever handle.

NOTE:

- **Do not pull out the button any further, otherwise the selector lever handle will be damaged.**

- Secure button in pulled-out position using cable tie - **arrow** - as shown in illustration.
- Pull selector lever handle upward and off.

Installing

Installation is in reverse order of removal, note the following:

- Place selector lever in position "D".

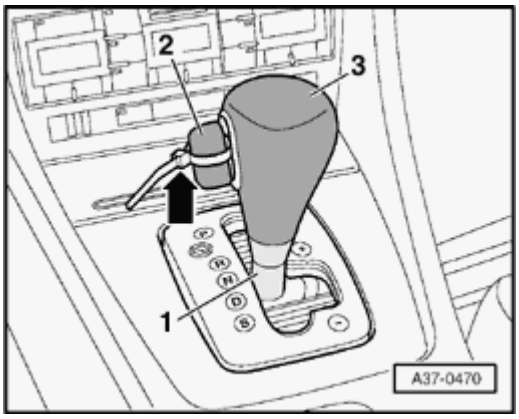


Fig. 26: Selector Lever Handle, Removing And Installing

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **To install new selector lever handle - 3 - , button - 2 - must be pulled out as far as stop and secured with a cable tie - arrow - or using assembly aid included with new handle.**
- **If the button was not secured, it must not be pulled out from the handle using mechanical aids. Apply compressed air gun to bottom of handle and press button out with compressed air.**

- Place selector lever handle - **3** - completely onto selector lever - button - **2** - faces toward driver. When doing this, handle must engage into ring groove of selector lever.
- Remove cable tie - **arrow** - or assembly aid, thereby button mechanism engages in vertical groove of selector lever. If necessary press button into selector lever handle.
- Pull sleeve - **1** - upward and engage by rotating clockwise.

Shift mechanism cover (through VIN 8E_6A156499), removing and installing

Removing

- Remove selector lever handle --> **Selector lever handle (through VIN 8E_6A156499), removing and installing**.

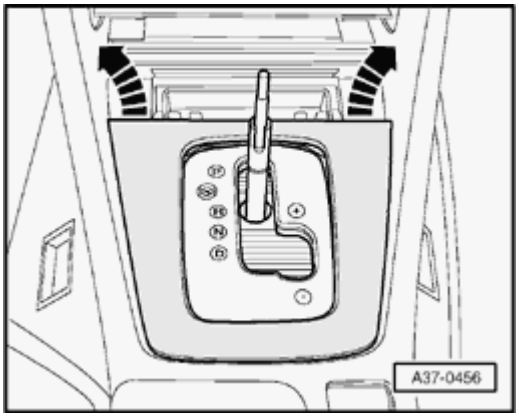


Fig. 27: Removing Trim Panel
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Open ashtray in center console and remove trim panel - **arrows** -.
- Remove 2 retaining bolts for ashtray and lift ashtray at rear.

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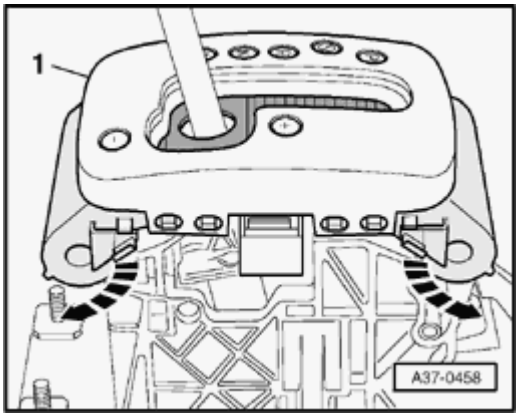


Fig. 28: Releasing Clips And Pull Cover With Guide Upwards To Remove
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release all 4 clips - **arrows** - and pull cover - **1** - with guide upwards to remove.
- Disconnect connector from side of guide plate.

Installing

Installation is in reverse order of removal, note the following:

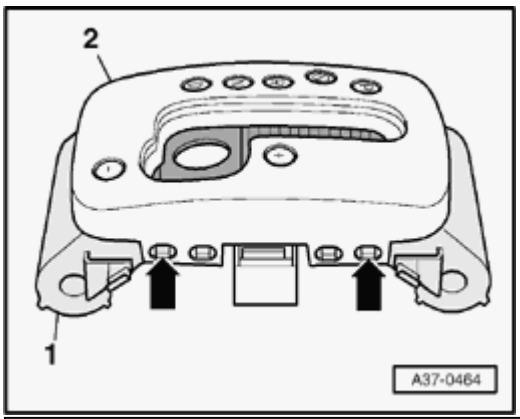
- Install selector lever handle --> **Selector lever handle (through VIN 8E_6A156499), removing and installing**.

Tiptronic Switch F189 (through VIN 8E_6A156499), removing and installing

- If malfunctions at Tiptronic Switch F189 occur, check first whether magnet at control slide masking panel is properly secured and replace masking panel if necessary. Before replacing the printed circuit, check the wiring.

Removing

- Remove cover for shift mechanism --> **Shift mechanism cover (through VIN 8E_6A156499), removing and installing**.



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Fig. 29: Pressing Down Retaining Hooks And Pull Off Cover From Guide
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press down retaining hooks - **arrows** - and pull off cover - **2** - from guide - **1** -.
- Remove circuit board with integrated Tiptronic Switch F189.

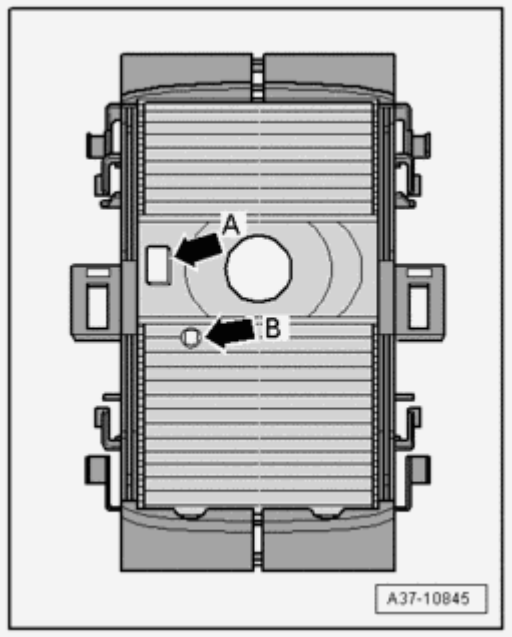


Fig. 30: Checking Magnets On Cover Strip For Secure Seating
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check magnets - **arrows** - on cover strip for secure seating.

- Cover strip must be replaced if a magnet is missing.

Installing

Installation is in reverse order of removal, note the following:

- Install cover for shift mechanism --> **Shift mechanism cover (through VIN 8E_6A156499), removing and installing**.

Shift mechanism (through VIN 8E_6A156499,), assembly overview

NOTE:

- **Lubricate bearing areas and slide surfaces with *polycarbamide grease G 052 142 A2* .**

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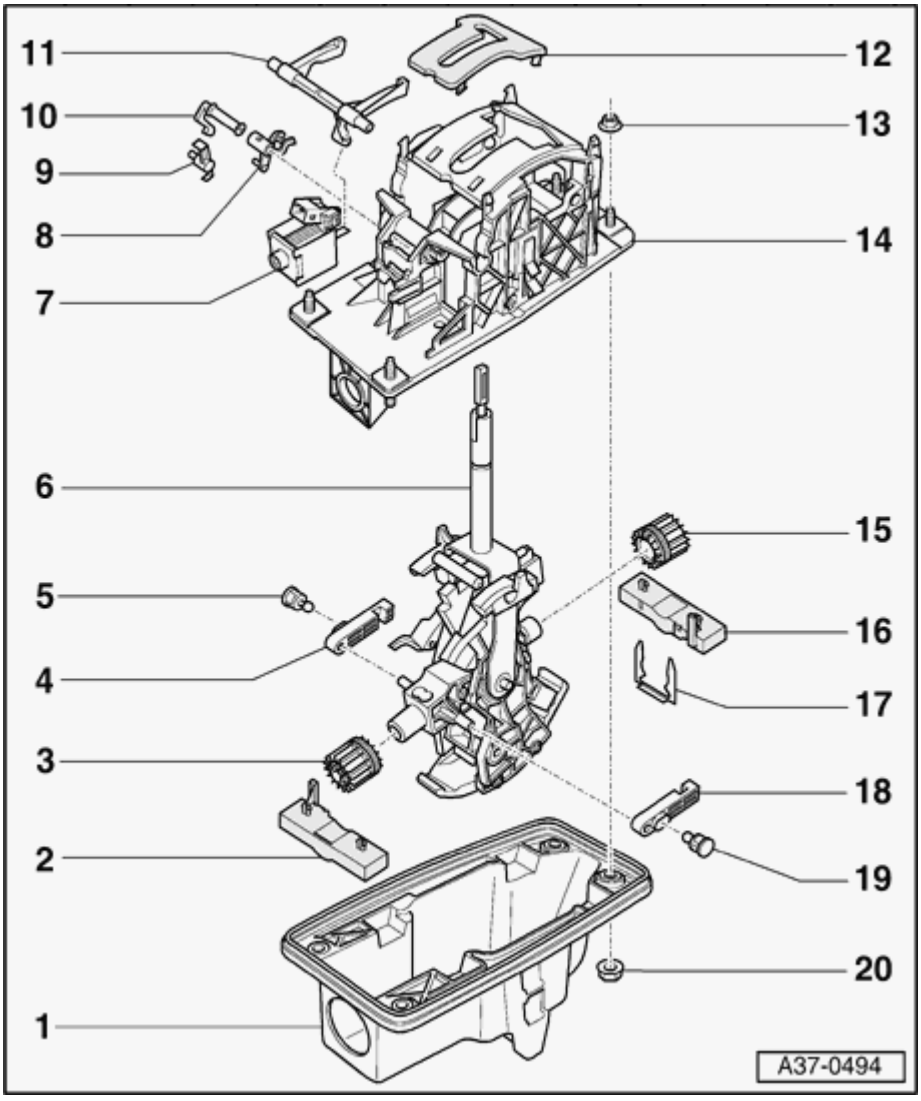


Fig. 31: Shift Mechanism (Through VIN 8E_6A156499,), Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Shift mechanism bottom cover

2 - Bracket

- For selector lever

3 - Bushing

4 - Tiptronic locking lever

5 - Pivot pin

6 - Selector lever

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7 - Shift lock solenoid N110

- --> **Shift Lock Solenoid N110 (through VIN 8E_6A156499), removing and installing**

8 - Operating lever for locking cable

9 - Lock for locking cable

10 - Lever for locking cable

11 - Locking lever

12 - Shift lever guide

NOTE:

- **If selector lever guide or shift unit is faulty, entire shift mechanism must be replaced. It is not possible to adjust both components using shop equipment.**

13 - Nut

- 10 Nm

14 - Shift unit

15 - Bushing

16 - Retaining bracket for selector lever

17 - Retaining clip

18 - Tiptronic locking lever

19 - Pivot pin

20 - Nut

- 10 Nm

Shift mechanism (through VIN 8E_6A156499), disassembling and assembling

Disassembling

NOTE:

- **Securing spring for locking cable, removing and installing Retaining spring for locking cable, removing and installing**

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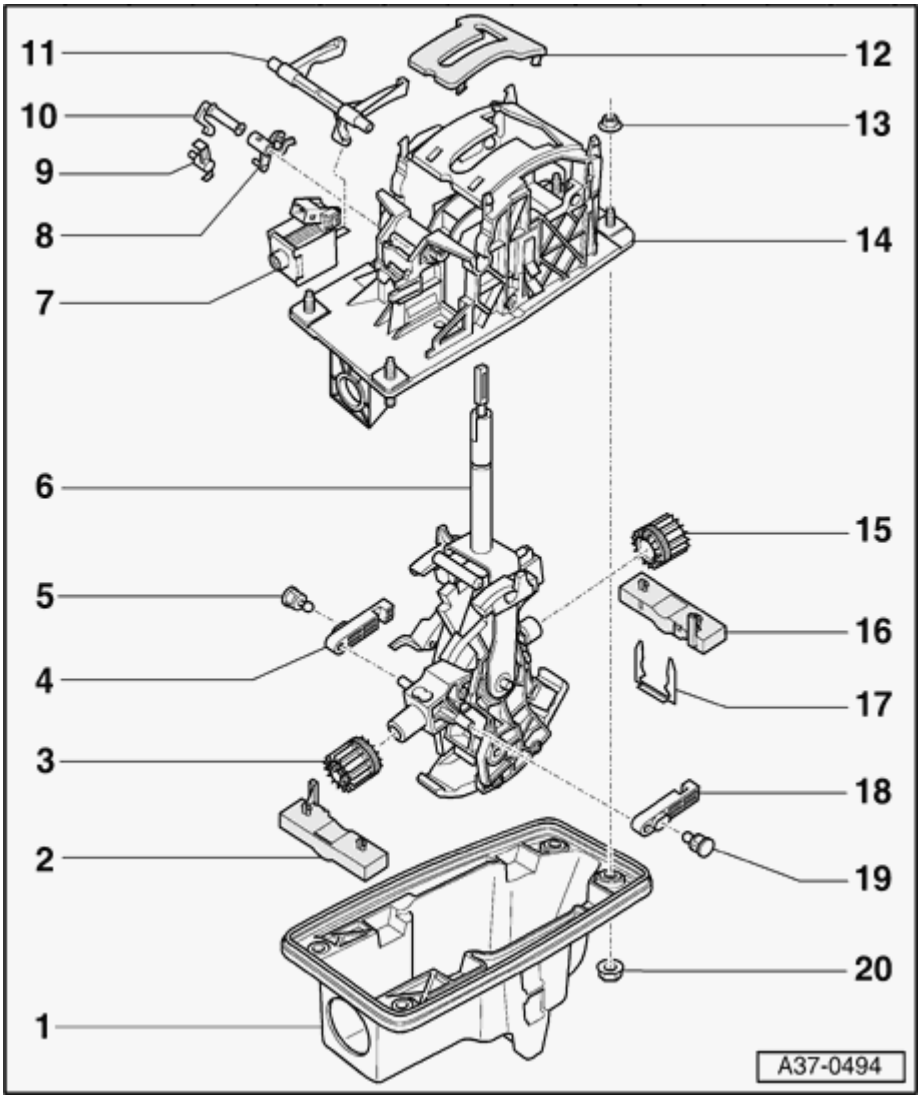


Fig. 32: Shift Mechanism (Through VIN 8E_6A156499), Disassembling And Assembling
Courtesy of VOLKSWAGEN UNITED STATES, INC.

6 - Selector lever

- Place selector lever in position "D".
- Remove shift lock solenoid - **7** - --> **Shift Lock Solenoid N110 (through VIN 8E_6A156499), removing and installing**.
- Unclip selector lever guide - **12** -.
- Release pivot pins - **5** - and - **19** - and pull them out from side.

- Unclip retaining brackets - **2** - and - **16** -.
- Pull off retaining clip - **17** -.
- Swing locking lever - **11** - fully upwards.
- Pull selector lever - **6** - with bushings - **3** - and - **15** - as well as Tiptronic locking levers - **4** - and - **18** -

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downward out of shift unit - **14** -.

Assembling

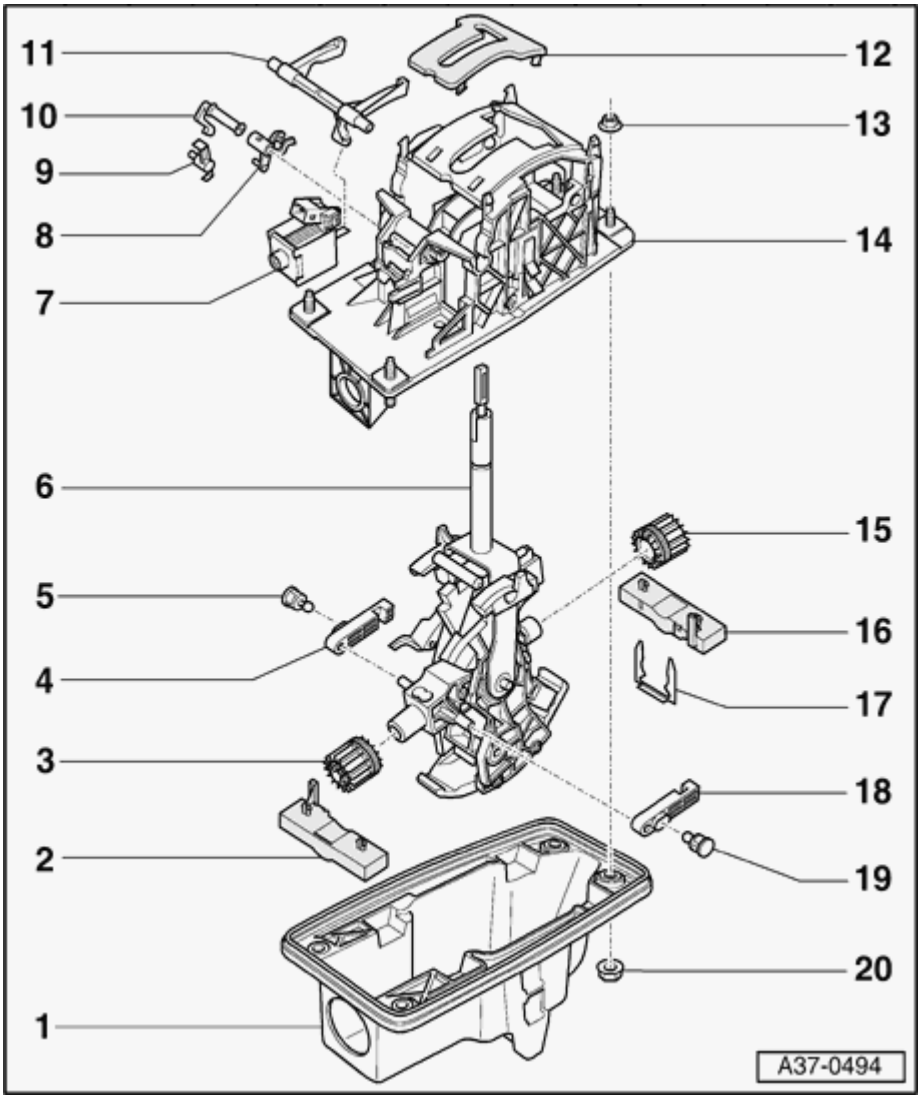


Fig. 33: Shift Mechanism (Through VIN 8E_6A156499), Disassembling And Assembling
Courtesy of VOLKSWAGEN UNITED STATES, INC.

6 - Selector lever

- Check whether selector lever is in position "D".
- Swing locking lever - **11** - fully upwards.
- Insert selector lever - **6** - from below into shift unit - **14** -.
- Connect locking levers for Tiptronic - **4** - and - **18** - as well as bushings - **3** - and - **15** - on selector lever.
- Press selector lever - **6** - with bushes into shift unit and position it with retaining clip - **17** -.

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- Engage retaining brackets - **2** - and - **16** - on shift unit.
- Push pivot pins - **5** - and - **19** - into selector lever - **6** - until they engage.
- Check whether mounting pins in Tiptronic locking lever engage.

- Install shift lock solenoid - **7** - --> **Shift Lock Solenoid N110 (through VIN 8E_6A156499), removing and installing**.
- Clip in selector lever guide - **12** -.

Retaining spring for locking cable, removing and installing

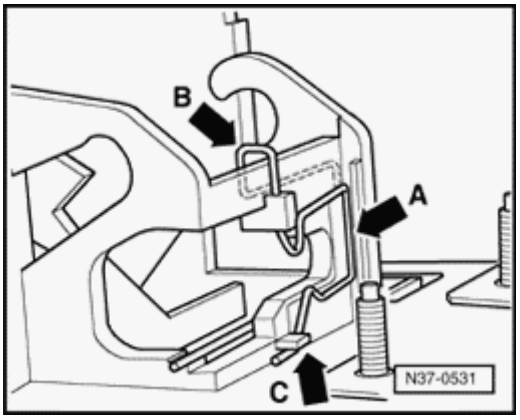


Fig. 34: Retaining Spring For Locking Cable, Removing And Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removing:

- To remove locking cable, slightly lift spring at top - **arrow B** -.
- Unhook spring at retaining tab - **arrow C** - and remove toward top.

Installing:

- Insert spring - **arrow B** - from top and hook in at retaining clip - **arrow C** -.
- Align spring so that it is seated evenly in groove - **arrow A** -.

Shift Lock Solenoid N110 (through VIN 8E_6A156499), removing and installing

Removing

- Remove cover for shift mechanism --> **Shift mechanism cover (through VIN 8E_6A156499), removing and installing**.
- Disconnect electrical harness connector on Shift Lock Solenoid N110.

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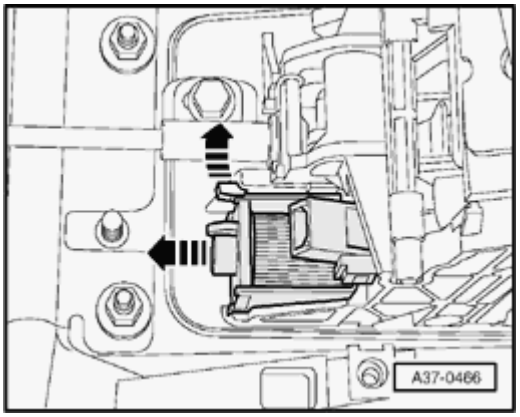


Fig. 35: Releasing Lugs And Removing Shift Lock Solenoid Forward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release lugs and remove shift lock solenoid forward - **arrows** -.

Installing

Installation is in reverse order of removal, note the following:

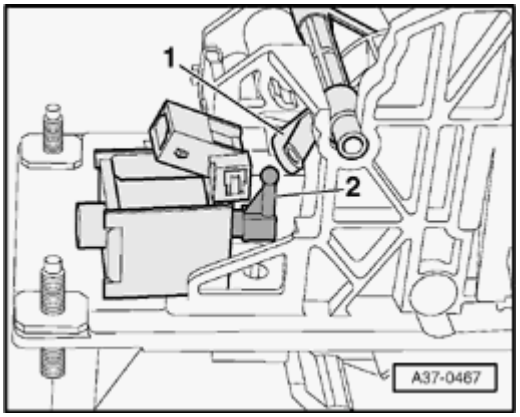


Fig. 36: Pressing Selector Lever Lock Solenoid Into Guide Until It Engages
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press shift lock solenoid into guide until it engages; operating lever - **2** - of solenoid must engage in locking lever - **1** - on shift mechanism.
- Install cover for shift mechanism --> **Shift mechanism cover (through VIN 8E_6A156499), removing and installing**.

Selector lever cable and locking cable (through VIN 8E_6A156499), assembly overview

NOTE:

- **Do not bend or kink the selector lever cable.**
- **Lightly grease eyelet and ball socket with *polycarbamide grease G 052 142 A2* before installing.**

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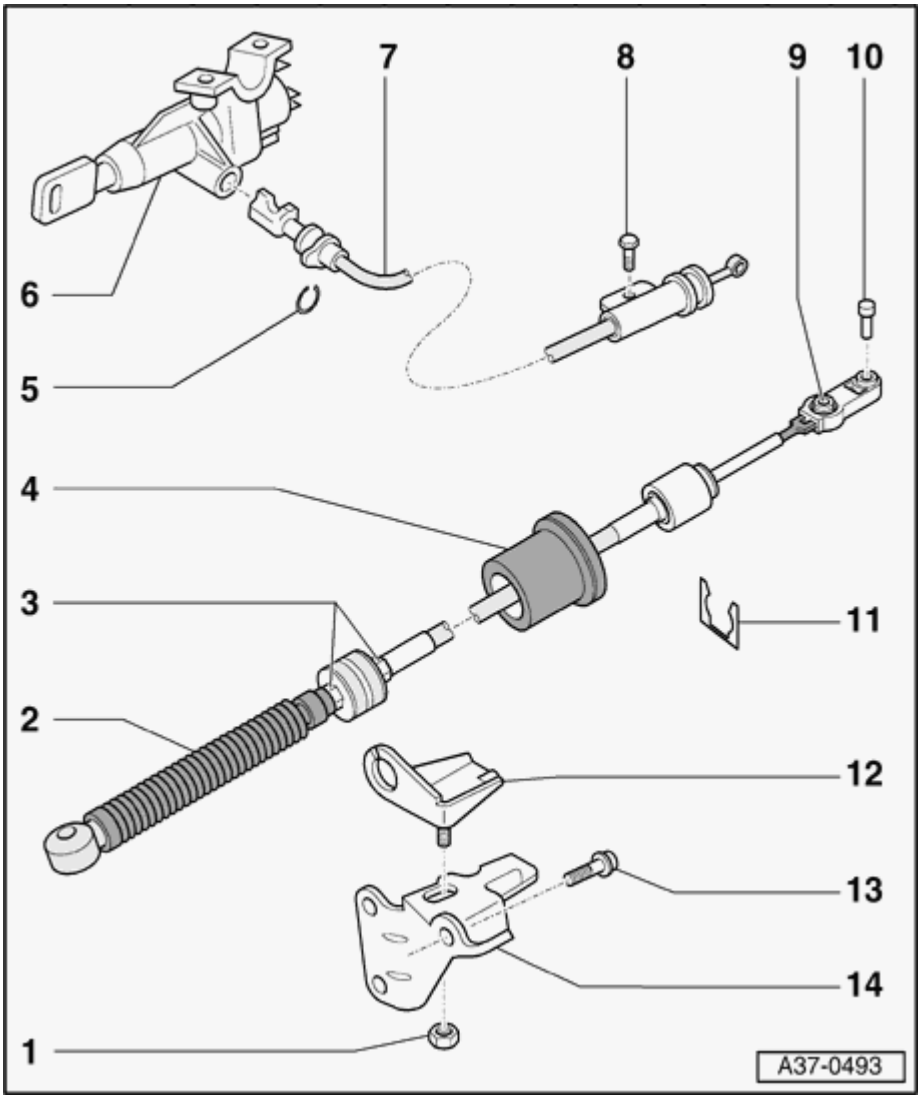


Fig. 37: Selector Lever Cable And Locking Cable (Through VIN 8E_6A156499), Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Nut

- 23 Nm

2 - Selector lever cable

- Do not bend or kink, lightly grease cable eye and ball socket before installing.
- Removing and installing --> **Selector lever cable, (through VIN 8E_6A156499), removing and installing**
- Adjusting --> **Selector lever cable (through VIN 8E_6A156499), adjusting**
- In case of damaged rubber boots, selector lever cable must be replaced
- When installing, make sure that rubber sleeve on transmission side is not twisted

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3 - Lock nuts

- 13 Nm

4 - Boot for selector lever cable

- To be buttoned into selector mechanism bottom cover

5 - Retaining clip

6 - Ignition/starter switch

- with ignition key removal lock

7 - Locking cable

- For ignition key removal lock
- Not to be kinked
- Removing and installing --> **Locking lever (through VIN 8E_6A156499), removing and installing**
- Adjusting --> **Locking lever (through VIN 8E_6A156499), adjusting**

8 - Bolt

- 9 Nm

9 - Clamping screw

- 13 Nm
- For selector lever cable
- Loosen 1 turn for adjusting, do NOT remove completely

10 - Pin

- For selector lever cable
- To remove selector lever cable, move plastic retaining spring at selector mechanism forward slightly and put screws upward, only as far as necessary.

11 - Retaining clip for selector lever cable

12 - Bracket for selector lever cable

13 - Bolt

- 23 Nm

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14 - Bracket for selector lever cable

Selector lever cable, (through VIN 8E_6A156499), removing and installing

Special tools, testers and auxiliary items required

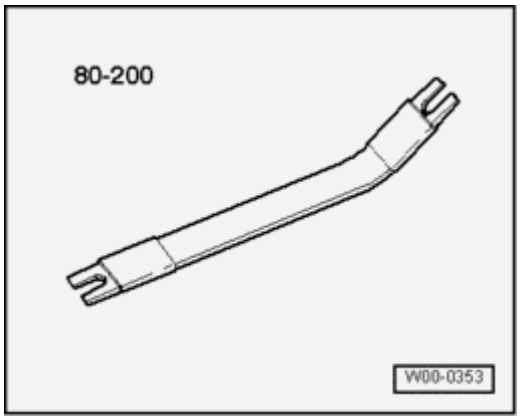


Fig. 38: Identifying Pry Lever 80-200
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pry lever 80-200

Removing

- Place selector lever in position "P".

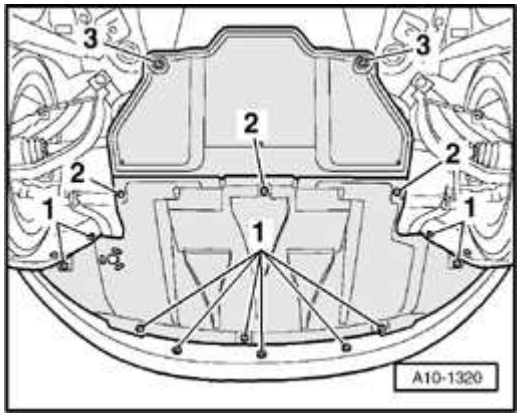


Fig. 39: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen quick-release screws - **2** - and - **3** - and remove rear noise insulation.

Vehicles with 4-cyl. engine:

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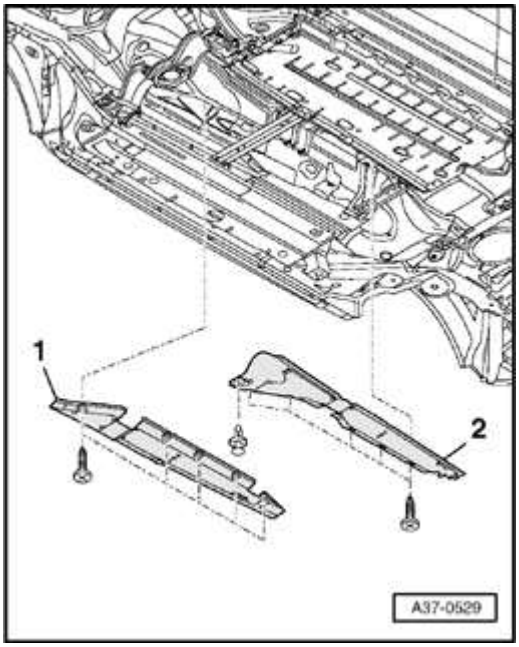


Fig. 40: Removing Vehicle Floor Plates At Inside Left/Right
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove vehicle floor plates at inside left - **2** - and inside right - **1** -.

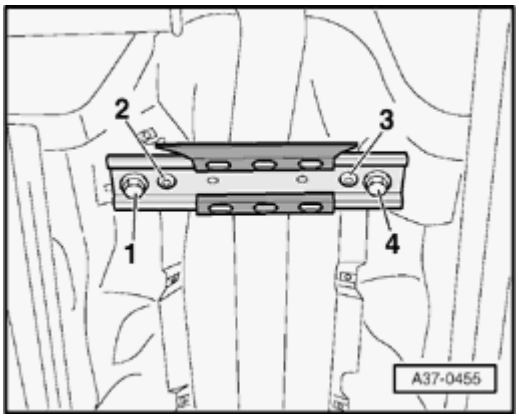


Fig. 41: Removing Bolts And Rear Cross Member For Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rear cross member for vehicle floor, remove bolts - **1 through 4** - to do so.

All:

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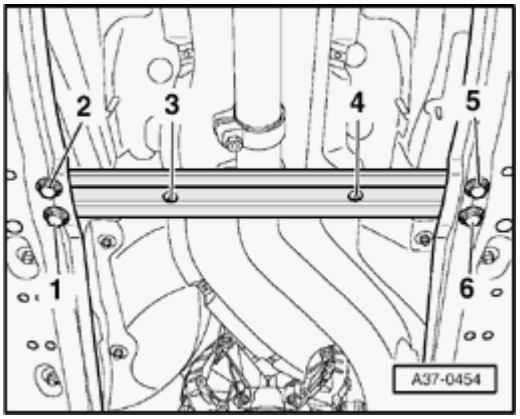


Fig. 42: Removing Bolts To Remove Front Cross Member For Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 through 6** - and remove front cross member for vehicle floor.

NOTE:

- **Depicted in illustration for a vehicle with 4-cyl. engine.**

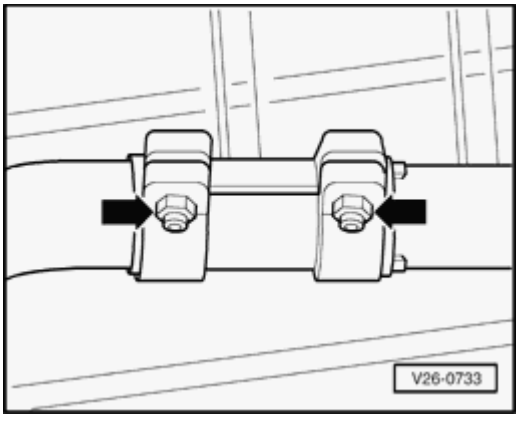


Fig. 43: Disconnecting Exhaust System At Double Clamp
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Flex joint in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.**

- Disconnect exhaust system at double clamp - **arrows** -.

NOTE:

- **Depicted in illustration for a vehicle with 4-cyl. engine.**

- Remove heat shield below shift mechanism.

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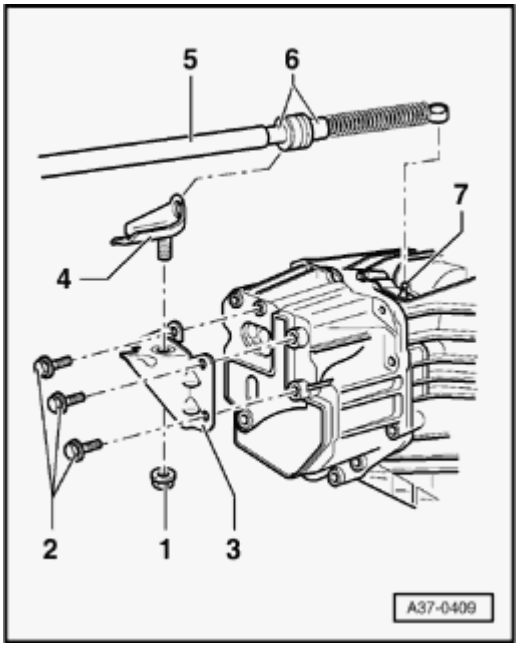


Fig. 44: Removing Bracket For Selector Lever Cable By First Removing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bracket - **3** - for selector lever cable by first removing bolts - **2** -.

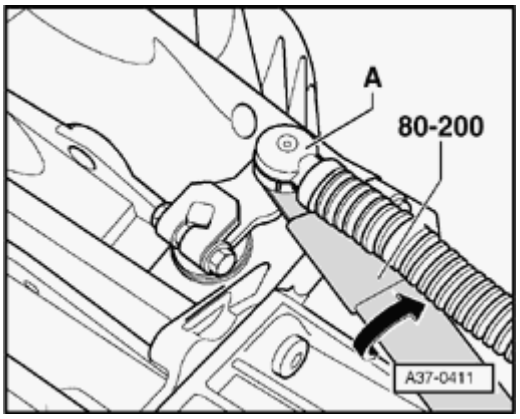


Fig. 45: Using Pry Lever 80-200 To Press Selector Lever Cable From Lever For Selector Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Using pry lever 80-200 , press selector lever cable - **A** - from lever for selector shaft - **arrow** -.

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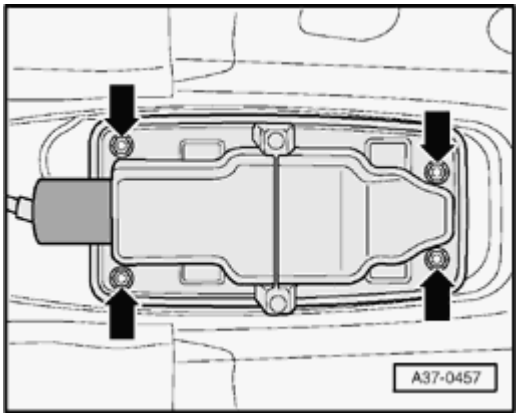


Fig. 46: Removing Lower Cover From Shift Mechanism
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove lower cover from shift mechanism - **arrows** -.
- Detach selector lever cable sleeve from shift mechanism bottom cover and slide back.

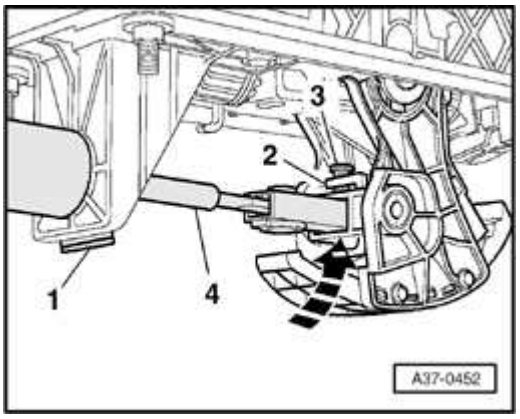


Fig. 47: Identifying Retaining Clip, Securing Spring, Push Pin & Selector Lever Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove retaining clip - **1** - for selector lever cable on shift mechanism downward.
- Pull plastic securing spring - **2** - slightly to front and push pin - **3** - upward only as far as necessary - **arrow** -.

NOTE:

- **Make sure that pin is not pushed fully out.**

- Remove selector lever cable - **4** - from shift mechanism.

NOTE:

- **Do not bend or kink selector lever cable.**

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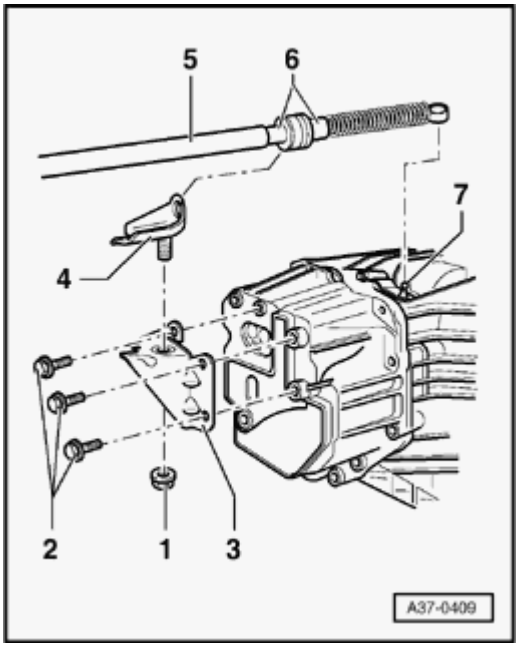


Fig. 48: Removing Bracket For Selector Lever Cable By First Removing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen lock nuts - **6** - and remove selector lever cable - **5** - from support bracket - **4** -.

NOTE:

- **Do not bend or kink selector lever cable.**

Installing

Installation is in reverse order of removal, note the following:

NOTE:

- **Do not bend or kink selector lever cable.**
- **Lightly grease eyelet and ball socket of selector lever cable with *polycarbamide grease G 052 142 A2* before installing.**

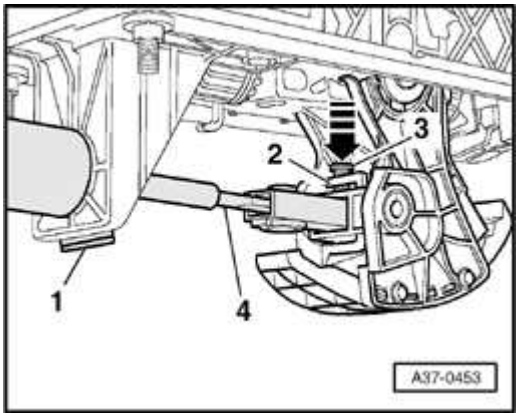


Fig. 49: Inserting End Of Selector Lever Cable Into Joint Of Selector Lever

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Slide selector lever cable into shift mechanism and secure it with retaining clip - **1** -.
- Installation position: Angled end of retaining clip points toward rear.
- Insert end of selector lever cable - **4** - into selector lever joint.
- Press pin - **3** - downward - **arrow** -.
- Check whether plastic securing spring - **2** - has locked the pin.
- Button selector lever cable boot into lower cover.

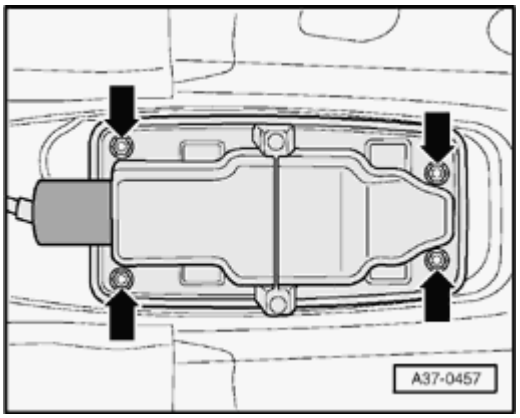
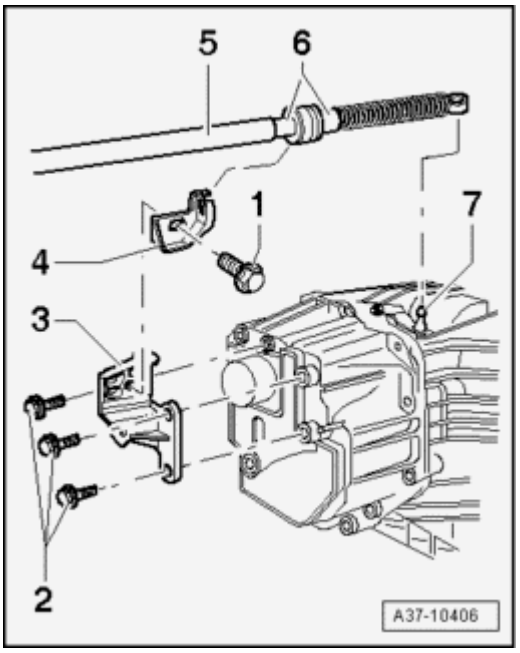


Fig. 50: Removing Lower Cover From Shift Mechanism
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Bolt lower cover securely to shift mechanism - **arrows** -.



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Fig. 51: Bolting Selector Lever Cable To Support Bracket & Tightening Lock Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tightly bolt selector lever cable - **5** - to support bracket - **4** - , tighten lock nuts - **6** - to 12 Nm.

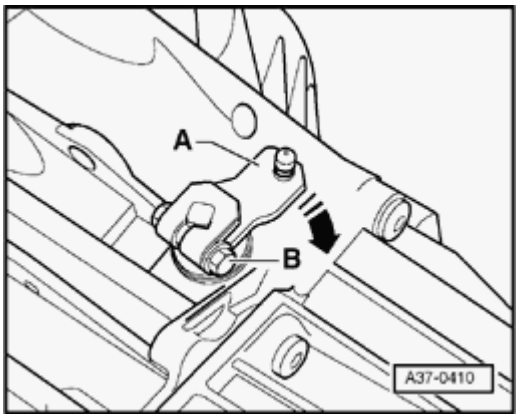


Fig. 52: Pressing Selector Shaft Lever On Transmission Completely Toward Rear
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press selector shaft lever - **A** - on transmission completely toward rear - **arrow** - until parking lock engages.

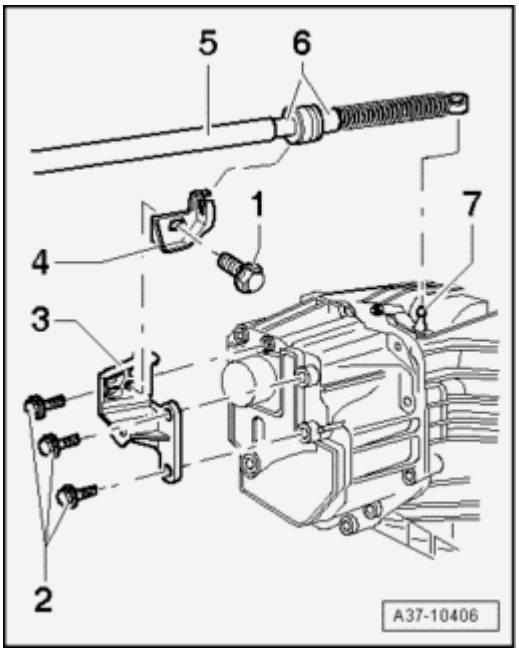


Fig. 53: Bolting Selector Lever Cable To Support Bracket & Tightening Lock Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check whether selector lever is in position "P" , then press ball socket of selector lever cable - **5** - carefully onto lever for selector shaft - **7** -.

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NOTE:

- **Take care not to bend selector shaft lever when pressing it on; support it if necessary, as otherwise selector mechanism can no longer be adjusted properly.**

- Adjust selector lever cable --> **Selector lever cable (through VIN 8E_6A156499), adjusting**.
- Install exhaust system and align it free of tension -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

.

Torque specifications

Component	Nm
Bottom cover to shift mechanism	10
Selector lever cable to mounting bracket	12
Bracket to transmission	23
Support bracket to mounting base	23
Front cross member to vehicle floor	55
Rear cross member to vehicle floor	60

Selector lever cable (through VIN 8E_6A156499), adjusting

Special tools, testers and auxiliary items required

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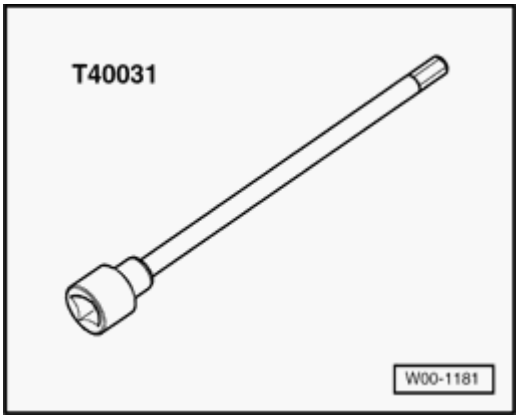


Fig. 54: Socket And Key T40031
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Socket and key T40031

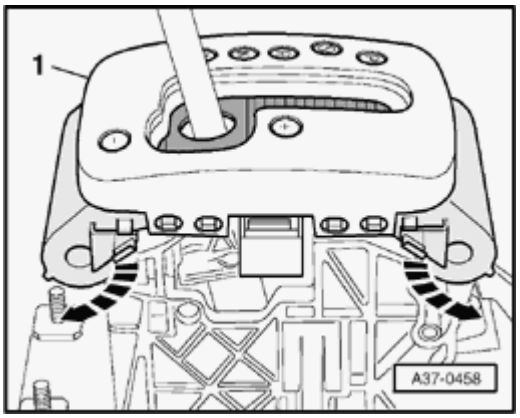


Fig. 55: Releasing Clips And Pull Cover With Guide Upwards To Remove
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove cover for shift mechanism --> **Shift mechanism cover (through VIN 8E_6A156499), removing and installing**.

NOTE:

- **There is a distinction between vehicles with "PRND" shift mechanisms (up to model year 2004) and vehicles with "PRNDS" shift mechanisms (as of model year 2005).**
- **In vehicles with "PRND" shift mechanisms (through model year 2004), selector lever cable adjustment is performed in selector lever position "D".**
- **In vehicles with "PRNDS" shift mechanisms (from model year 2005), selector lever cable adjustment is performed in selector lever position "S".**

Vehicles with "PRND" shift mechanisms

- Place selector lever in position "D".

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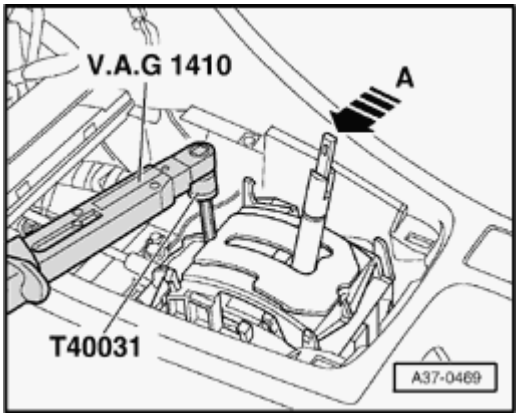


Fig. 56: Loosening Rear Clamping Screw On Selector Lever Cable Approx. 1 Turn Through Hole In Shift Mechanism Using Special Tool T40031
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen rear clamping screw on selector lever cable through hole in shift mechanism approx. one turn using socket and key T40031.

NOTE:

- **Loosen clamping screw only approx. 1 turn. Do not remove.**
- **Clamping screw is only accessible in selector lever position "D".**
- **Selector lever must remain in position "D" while clamping screw is loose.**

- Carefully move selector lever lightly toward front and rear without shifting into another selector lever position, this releases the tension on selector lever cable.
- Check exact position of selector lever in position "D" by pushing selector lever lightly towards drivers seat - **arrow A** -.

NOTE:

- **Do not touch selector lever during the adjustment.**

- Without touching selector lever, tighten clamping screw in this position using socket and key T40031.

Vehicles with "PRNDS" shift mechanisms

- Place selector lever in position "S".

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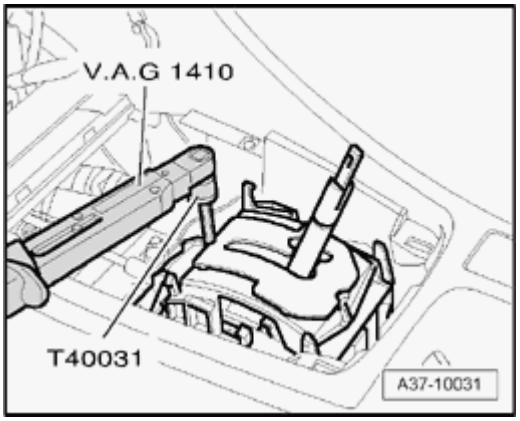


Fig. 57: Inserting Socket And Key T40031 Through Access Hole In Selector Mechanism To Loosen/Tightening Clamping Bolt At Rear Of Selector Lever Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen rear clamping screw on selector lever cable through the hole in shift mechanism approx. one turn using socket and key T40031.

NOTE:

- **Loosen clamping screw only 1 turn. Do not remove.**
- **Clamping screw is only accessible in selector lever position "S".**
- **The selector lever must remain in position "S" with clamping bolt loosened, otherwise the setting is not correct.**

- Carefully move selector lever forwards and backwards slightly without shifting to a different selector lever position.
- Pull selector lever completely toward rear once more until it stops in position "S" and release selector lever.

NOTE:

- **Do not touch selector lever during the adjustment.**

- Without touching selector lever, tighten clamping screw in this position using socket and key T40031.

Vehicles with "PRND" and "PRNDS" shift mechanisms

- Install cover for shift mechanism --> **Shift mechanism cover (through VIN 8E_6A156499), removing and installing**.
- Check shift mechanism --> **Shift mechanism (through VIN 8E_6A156499), checking**.

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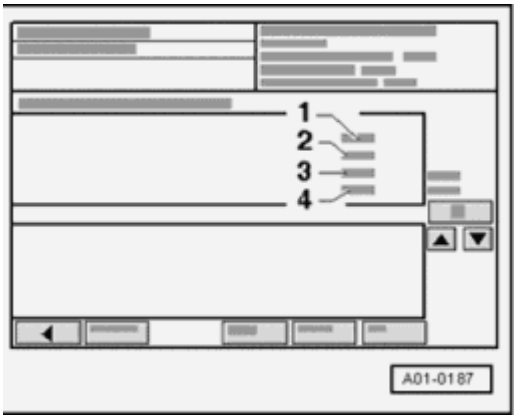


Fig. 58: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Using Vehicle Diagnosis, Testing and Information System VAS 5051 A , the position of Multi-Function Transmission Range (TR) Switch F125 can be compared to position on selector lever via On Board Diagnostic (OBD), 02 - Transmission electronics, 08 - Read measured value block, display group 2 in display field - 1 -.**

If shift mechanism does not function properly after adjusting selector lever cable:

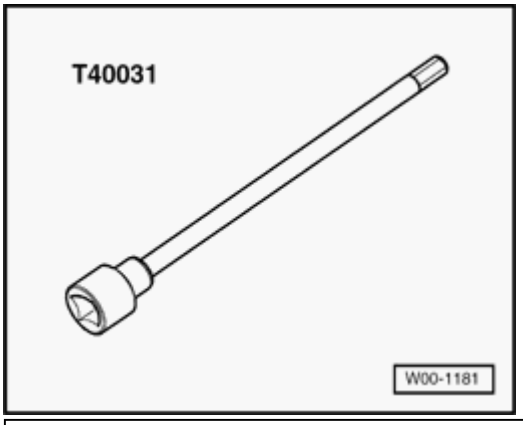
- Bring selector lever cable into basic setting --> **Selector lever cable (VIN through 8E_6A156499), bringing into basic setting**.

Torque specifications

Component	Nm
Clamping screw to selector lever cable	13

Selector lever cable (VIN through 8E_6A156499), bringing into basic setting

Special tools, testers and auxiliary items required



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Fig. 59: Socket And Key T40031
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Socket and key T40031

Work procedure

- Remove cover for shift mechanism --> **Shift mechanism cover (through VIN 8E_6A156499), removing and installing**.

NOTE:

- **There is a distinction between vehicles with "PRND" shift mechanisms (up to model year 2004) and vehicles with "PRNDS" shift mechanisms (as of model year 2005).**

Vehicles with "PRND" shift mechanisms

- Place selector lever in position "D".

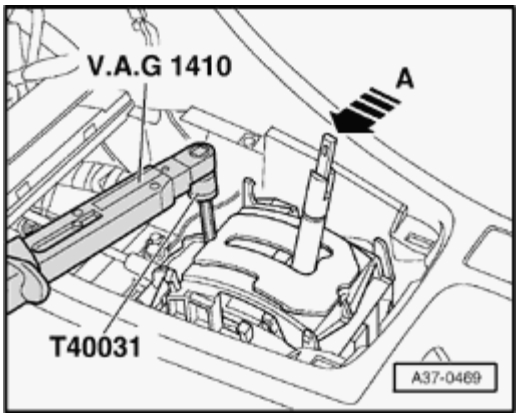


Fig. 60: Loosening Rear Clamping Screw On Selector Lever Cable Approx. 1 Turn Through Hole In Shift Mechanism Using Special Tool T40031
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Before performing basic setting, make sure that the clamping screw is tightened. It is accessible through the hole in shift mechanism in position "D" using socket and key T40031.**

- Tighten clamping screw in this position using socket and key T40031 (13 Nm).

Vehicles with "PRNDS" shift mechanisms

- Place selector lever in position "S".

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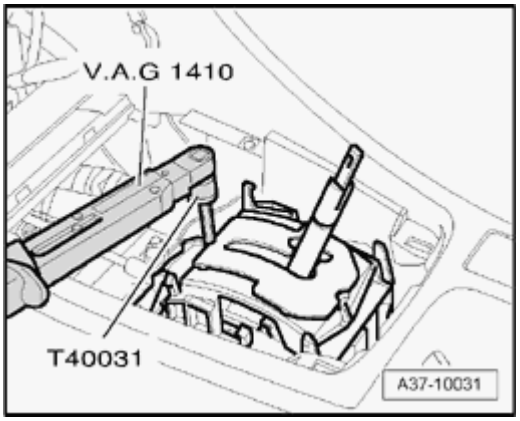


Fig. 61: Inserting Socket And Key T40031 Through Access Hole In Selector Mechanism To Loosen/Tightening Clamping Bolt At Rear Of Selector Lever Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Before performing basic setting, make sure that the clamping screw is tightened. It is accessible through the hole in shift mechanism in position "S" using socket and key T40031.**

- Tighten clamping screw in this position using socket and key T40031 (13 Nm).

Vehicles with "PRND" and "PRNDS" shift mechanisms

- Place selector lever in position "P".

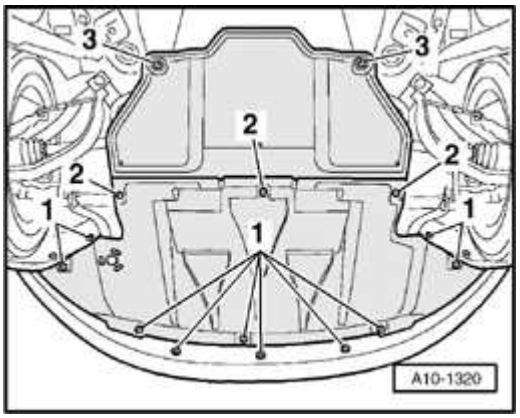


Fig. 62: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen quick-release screws - **2** - and - **3** - and remove rear noise insulation.

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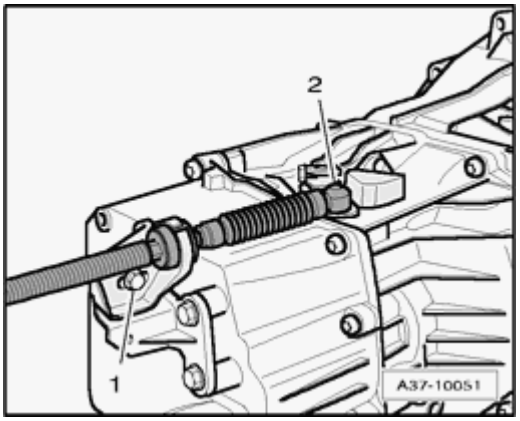


Fig. 63: Removing Support Bracket For Selector Lever Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove support bracket for selector lever cable - **1** -.

NOTE:

- **Make sure selector lever is in position "P".**

- Push lever for selector shaft - **2** - at transmission completely toward rear until parking lock engages.

NOTE:

- **When parking lock is engaged, it must not be possible to turn both front wheels in one direction at the same time.**

- Make sure that selector lever cable has been routed free of kinks and tension.

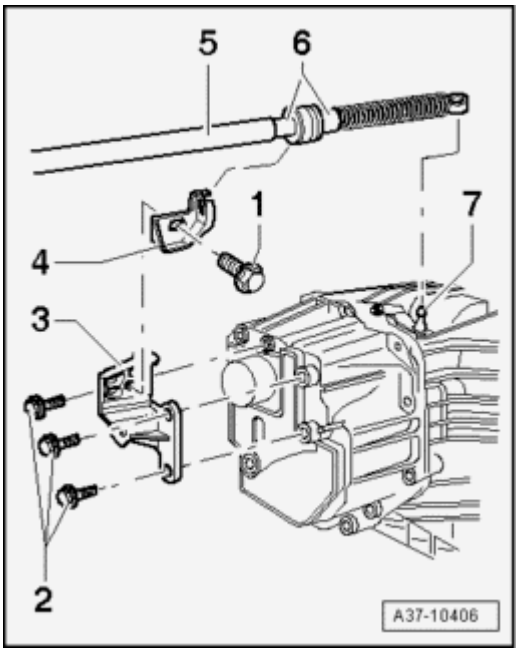


Fig. 64: Bolting Selector Lever Cable To Support Bracket & Tightening Lock Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Make sure that selector lever cable - **5** - is secured with nuts - **6** - to support bracket - **4** - (13 Nm).

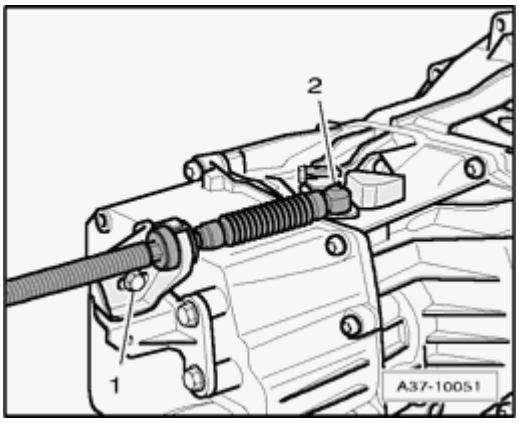


Fig. 65: Removing Support Bracket For Selector Lever Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install support bracket for selector lever cable tightly to bracket - **1** -.
- Adjust selector lever cable --> **Selector lever cable (through VIN 8E_6A156499), adjusting**.

Torque specification

Component	Nm
Clamping screw to selector lever cable	13
Support bracket to bracket, bolt M8 - **1** -	23

Locking lever (through VIN 8E_6A156499), removing and installing

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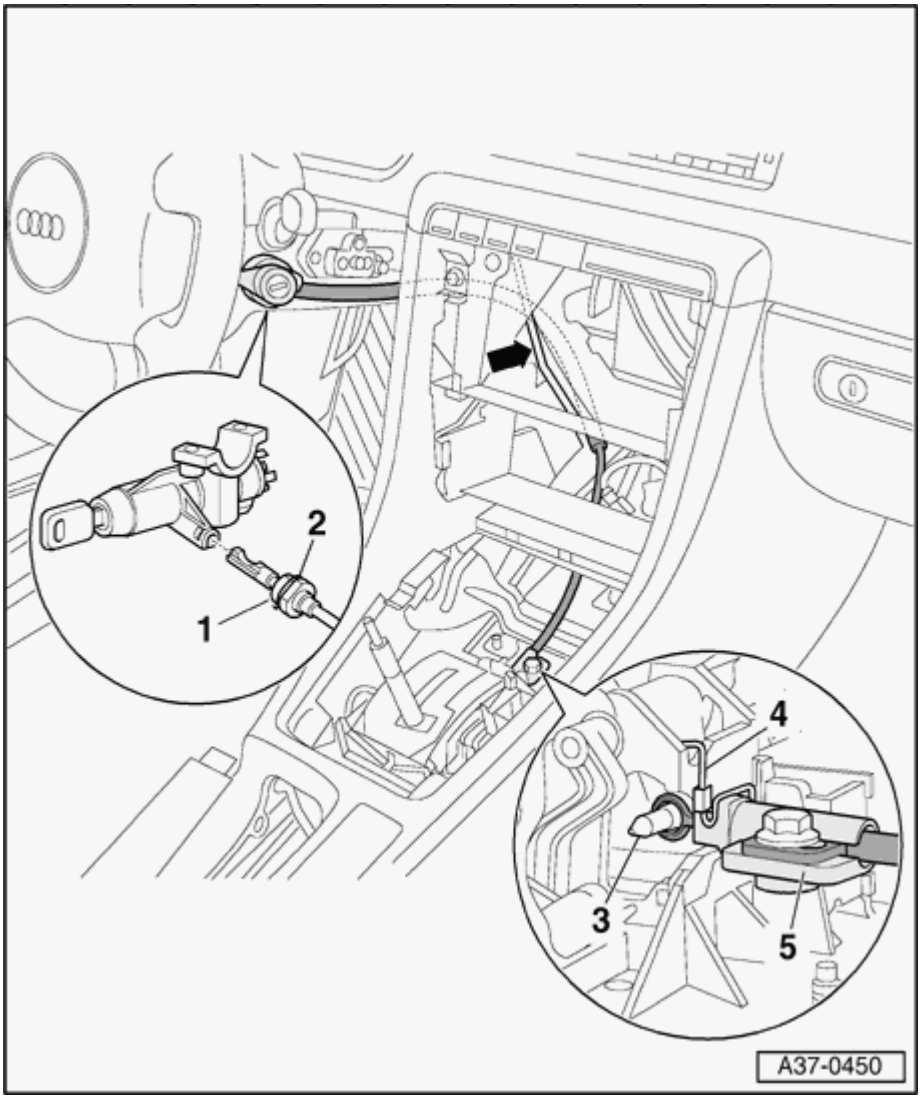


Fig. 66: Locking Cable Remove/Install Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Locking cable

Removing

NOTE:

- **Do not kink locking cable.**

CAUTION: Observe procedures for disconnecting battery -->

- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

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.

- Disconnect Ground (GND) wire at battery.
- Remove storage compartment on drivers side -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

  .
- Remove steering column trim -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

  .
- Remove A/C system operating unit --> **87 AIR CONDITIONING** .
- Remove ashtray in center console -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

  .
- Remove cover for shift mechanism --> **Shift mechanism cover (through VIN 8E_6A156499), removing and installing**.
- Turn ignition key into driving position ("ignition on").
- Place selector lever in position "P".
- Lift retaining clip - **2** - from interlock lever and pull locking cable - **1** - out of ignition/starter switch.
- Lift securing spring - **4** - for locking cable and pull locking cable support bracket - **5** - on shift mechanism sideways and disengage locking cable eye.

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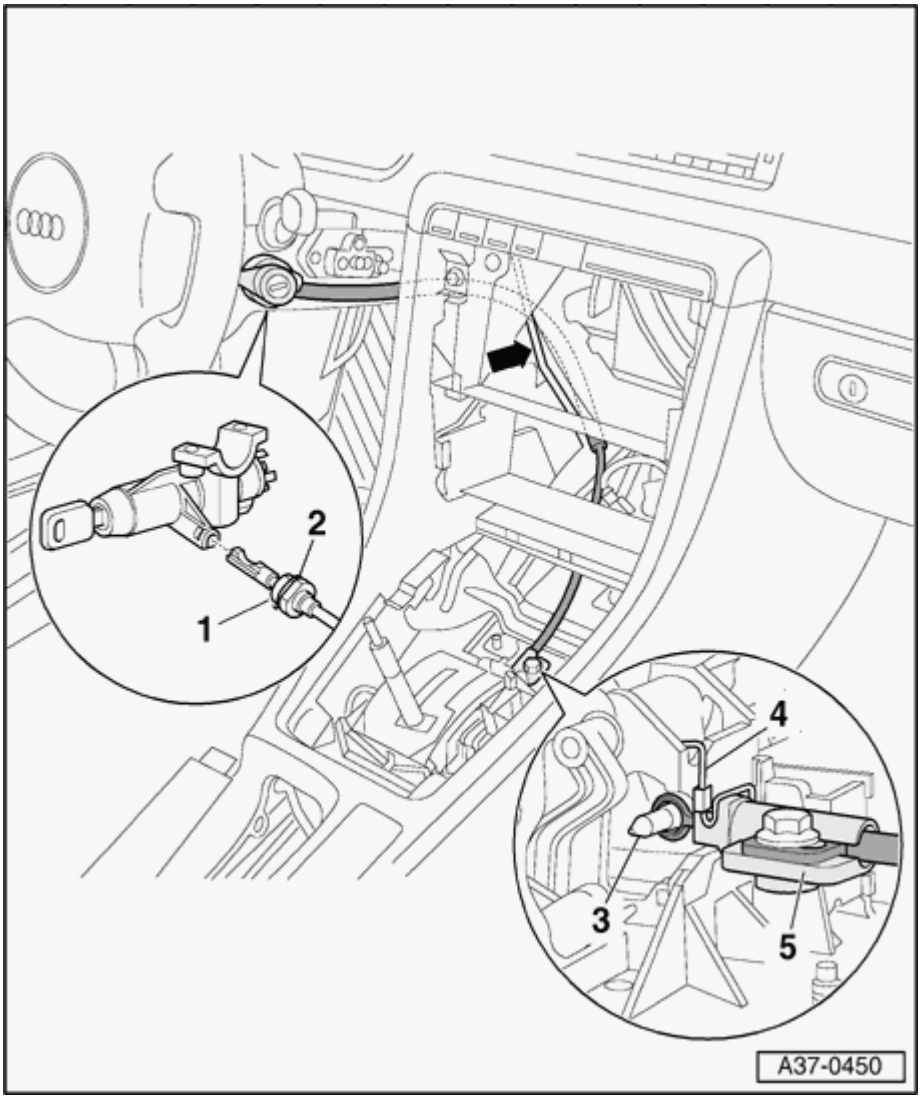


Fig. 67: Locking Cable Remove/Install Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Locking cable

Installing

Installation is in reverse order of removal, note the following:

- Route locking cable kink-free behind instrument panel strut - **arrow** -.
- Turn ignition key into driving position ("ignition on").
- Insert locking cable - **1** - into ignition/starter switch.
- Check interlock lever - **2** -.

- Bring ignition/starter switch into locking position ("ignition off").

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- Check whether selector lever is in position "P".
- Engage locking cable eye into pin - **3** -.
- Lift securing spring - **4** - slightly.
- Slide locking cable support bracket - **5** - from right into shift mechanism until securing spring - **4** - engages.
- Adjust locking cable --> **Locking lever (through VIN 8E_6A156499), adjusting**.
- Observe procedures for connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

.

Locking lever (through VIN 8E_6A156499), adjusting

Special tools, testers and auxiliary items required

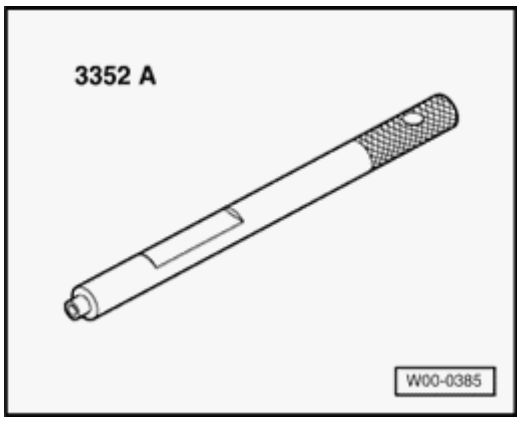


Fig. 68: Identifying Special Tools - Adjustment Pin For Shiftlock 3 3352A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Adjustment pin for shift lock 3 3352 A
- Safety glasses

Work preparations

NOTE:

- **The procedure described below will save you the effort of removing the center console.**

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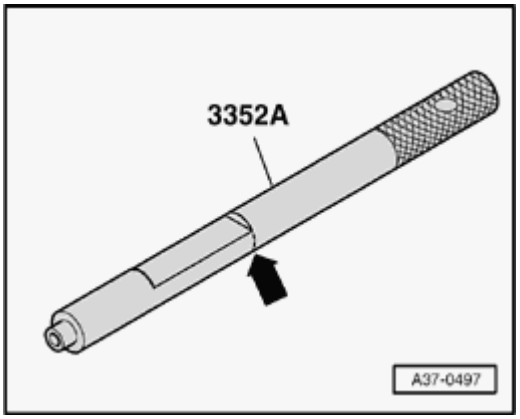


Fig. 69: Identifying Cutting Area Of Adjusting Gauge 3352A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Cut through adjustment pin for shift lock 3 3352 A at rear end of flat area - **arrow** - using a cutting grinder.

  CAUTION: Wear eye protection.

- Order a new adjustment pin for shift lock as a replacement for other use.

Work procedure

- Position steering wheel column adjustment all the way and back toward drivers seat.
- Remove cover for shift mechanism --> **Shift mechanism cover (through VIN 8E_6A156499), removing and installing**.
- Remove ashtray in center console -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

.

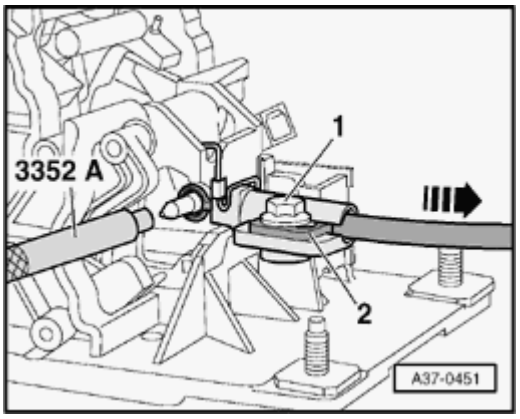


Fig. 70: Removing Adjusting Gauge

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen bolt - **1** -.

- Support bracket - **2** - of locking cable must be movable by hand

- Insert adjustment pin for shift lock 3 3352 A between pin on locking cable lever and locking cable eye.
- Pull locking cable in direction of - **arrow** - and tighten bolt to 9 Nm.
- Remove adjustment pin.
- Check ignition key removal lock after every adjustment of locking cable --> **Shift mechanism (through VIN 8E_6A156499), checking**.

Torque specification

Component	Nm
Locking cable to mounting bracket	9

SHIFT MECHANISM (FROM VIN 8E_6A156500), SERVICING

Shift mechanism (from VIN 8E_6A156500), servicing

CAUTION: Shift selector lever into position "P" and engage parking brake before working with the engine running.

Shift mechanism (from VIN 8E_6A156500), checking

Overview:

- 1. Selector mechanism function test **Selector mechanism function test**
- 2. Checking ignition key removal lock **Check ignition key withdrawal lock**
- 3. Locking button on selector lever handle, checking **Check locking button on selector lever handle**

- If shift mechanism does not function as described, perform "Guided Fault Finding" with Vehicle Diagnosis, Testing and Information System VAS 5051B.

Selector mechanism function test

- In selector lever positions "S" , "D" , "R" and "Tiptronic gate" starter motor will not operate.
- If selector lever position "N" is selected at speeds greater than 5 km/h, selector lever lock solenoid must not engage and block selector lever. Selector lever can be shifted into driving gear.
- For speeds below 2 km/h (almost standstill) and shifting into selector lever position "N" , the shift lock solenoid must only engage after approx. 1 second. Selector lever can only be shifted out of position "N" with brake pedal operated.

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Selector lever in "P" position and ignition switched on:

- Do not operate brake pedal.

- Selector lever is locked and also cannot be shifted out of position "P" while locking button on selector lever handle is pressed. Shift Lock Solenoid N110 blocks selector lever.

- Press brake pedal and hold.

- Shift Lock Solenoid N110 releases selector lever. It must be possible to select a driving mode without "hitching" while locking button on selector lever handle is pressed.
- Slowly shift selector lever from "P" through "R, N, D, S" , checking whether Transmission Range (TR) Display Y6 in instrument cluster matches selector lever position.

Selector lever in "N" position and ignition switched on:

- Do not operate brake pedal.

- Selector lever is not locked immediately when rapidly shifting through position "N" (e.g. from "R" to "D"). This enables e.g. "forward and reverse maneuvers" when vehicle is stuck. Shift lock engages when selector lever is located in "N" for longer than approx. 1 s with brake not being pressed.

- Operate brake pedal.

- Shift Lock Solenoid N110 releases selector lever. It must be possible to select a driving mode without "hitching" while locking button on selector lever handle is pressed.

Selector lever in position "D" , ignition switched on:

- Shift selector lever into "Tiptronic gate".

- Brightening of "D" symbol must go out in selector mechanism cover and "+" and "-" symbols must light up.
- The Transmission Range (TR) Display Y6 in instrument cluster should switch from "PRNDS" to "7654321" when selector lever is shifted into "Tiptronic gate".

If specified values are not obtained:

- Adjust selector lever cable --> **Selector lever cable (from VIN 8E_6A156500), adjusting**.
- Check ignition key removal lock.

Check ignition key withdrawal lock

- Switch ignition key to driving position ("ignition on").
- Press brake pedal and hold.

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- It must be possible to shift selector lever out of position "P" without "hitching" while locking button on selector lever handle is pressed.

  - Switch ignition off.

- It should not be possible to remove ignition key when selector lever is in any other position than "P".

  - Place selector lever in position "P".

- It must be possible to move ignition key into removal position without "sticking".

  - Remove ignition key.

- It must be possible to remove ignition key only in position "P".
- Selector lever cannot be shifted out of position "P" with locking button pressed and parking brake operated.

Check locking button on selector lever handle

Check locking button for ease of movement:

- It must be possible to press locking button without great force.
- After releasing, locking button must come all the way back out by itself

If specified values are not obtained:

- Check whether selector lever handle is installed correctly.
- Check whether selector rod or selector lever is bent.

Function test:

- Ignition switched on

Locking button on selector lever handle must be pressed for the following shifts. If it is not pressed, selector lever cannot be shifted into specified position.

- "P" to "R" and also press brake pedal
- "D" to "S"
- "N" to "R" ; in standstill, also press brake pedal after long wait
- "R" to "P"

If specified values are not obtained:

- Check whether selector lever handle is installed correctly.
- Adjust selector lever cable --> **Selector lever cable (from VIN 8E_6A156500), adjusting**.

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Selector lever handle, shift mechanism cover (from VIN 8E_6A156500), assembly overview

NOTE:

- **Lubricate bearing areas and slide surfaces with *polycarbamide grease G 052 142 A2* .**

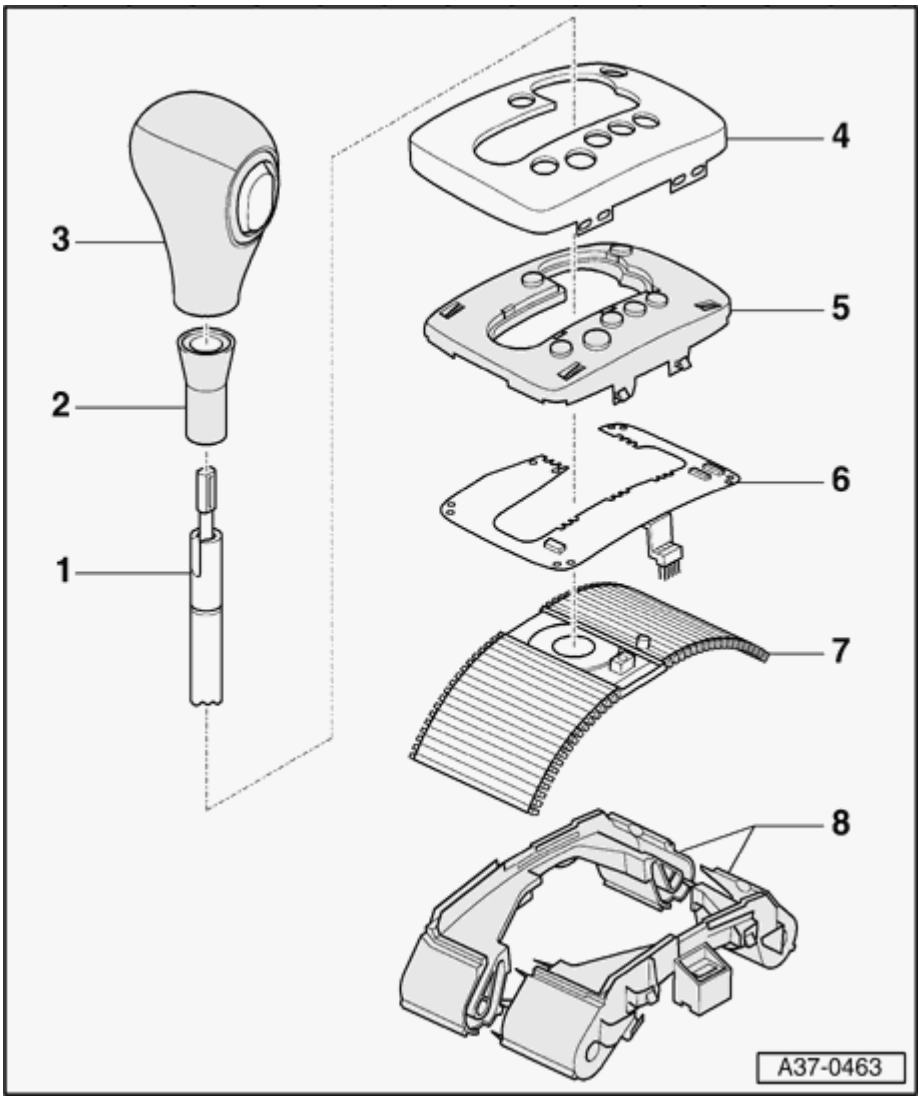


Fig. 71: Selector Mechanism Cover, Selector Lever Handle, Component Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Selector lever

2 - Selector lever shaft piece

- Removing and installing --> **Selector lever handle (from VIN 8E_6A156500), removing and installing**

3 - Selector lever handle

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- Removing and installing --> **Selector lever handle (from VIN 8E_6A156500), removing and installing**

4 - Cover

- With selector scale and Tiptronic gate
- Removing and installing --> **Tiptronic Switch F189 (from VIN 8E_6A156500), removing and installing** and also unclipping symbol inserts

5 - Symbol panel

- Clipped into cover

6 - Printed circuit board

- With integrated Tiptronic Switch F189
- Removing and installing --> **Tiptronic Switch F189 (from VIN 8E_6A156500), removing and installing**
- Switch consists of 3 Hall sensors, which are activated by a magnet on transverse slide of cover strip.
- Before replacing circuit board when DTC "18161" is entered in DTC memory, first check adjustment of selector lever cable --> **Selector lever cable (from VIN 8E_6A156500), adjusting**

7 - Cover strip

- With solenoid for Tiptronic Switch F189 on transverse slide
- Removing and installing --> **Tiptronic Switch F189 (from VIN 8E_6A156500), removing and installing**

8 - Masking panel guide

Selector lever handle (from VIN 8E_6A156500), removing and installing

Removing

- Place selector lever in position "D".

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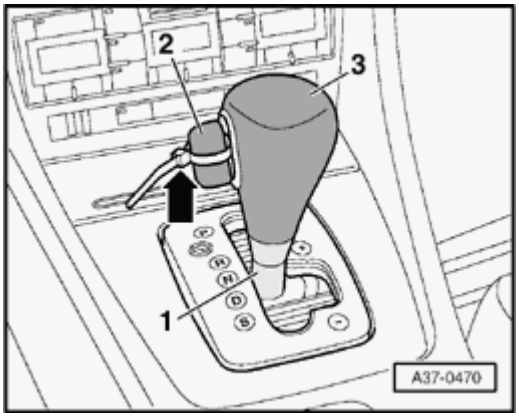


Fig. 72: Selector Lever Handle, Removing And Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Rotate sleeve - **1** - to left and push downward as far as stop.
- Carefully pull switch - **2** - just enough out of selector lever handle - **3** - until a cable tie can be inserted between button and selector lever handle.

NOTE:

- **Do not pull out the button any further, otherwise the selector lever handle will be damaged.**

- Secure button in pulled-out position using cable tie - **arrow** - as shown in illustration.
- Pull selector lever handle upward and off.

Installing

Installation is in reverse order of removal, note the following:

- Place selector lever in position "D".

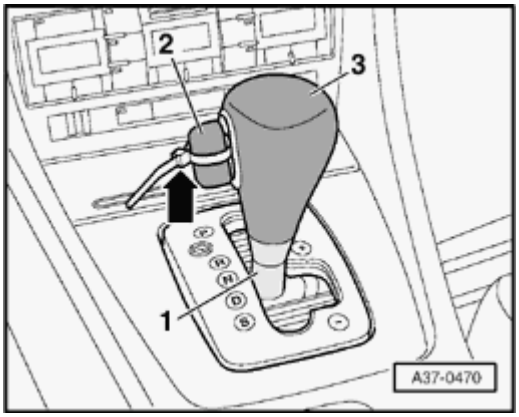


Fig. 73: Selector Lever Handle, Removing And Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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NOTE:

- **To install new selector lever handle - 3 - , button - 2 - must be pulled out as far as stop and secured with a cable tie - arrow - or using assembly aid included with new handle.**
- **If the button was not secured, it must not be pulled out from the handle using mechanical aids. Apply compressed air gun to bottom of handle and press button out with compressed air.**

- Place selector lever handle - **3** - completely onto selector lever - button - **2** - faces toward driver. When doing this, handle must engage into ring groove of selector lever.
- Remove cable tie - **arrow** - or assembly aid, thereby the button mechanism engages in the vertical groove of the selector lever. If necessary press button into selector lever handle.
- Pull sleeve - **1** - upward and engage by rotating clockwise.

Shift mechanism cover (from VIN 8E_6A156500), removing and installing

Removing

- Remove selector lever handle --> **Selector lever handle (from VIN 8E_6A156500), removing and installing**.

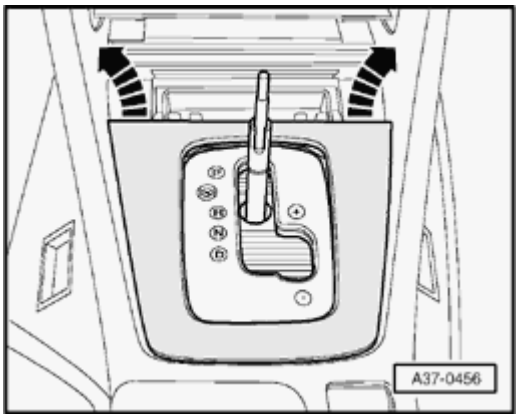


Fig. 74: Removing Trim Panel
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Open ashtray in center console and remove trim panel - **arrows** -.
- Remove 2 retaining bolts for ashtray and lift ashtray at rear.

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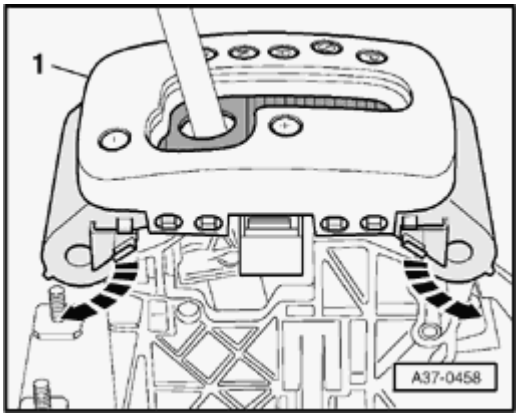


Fig. 75: Releasing Clips And Pull Cover With Guide Upwards To Remove
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release all 4 clips - **arrows** - and pull cover - **1** - with guide upwards to remove.
- Disconnect connector from the side of the guide plate.

Installing

Installation is in reverse order of removal, note the following:

- Install selector lever handle --> **Selector lever handle (from VIN 8E_6A156500), removing and installing**.

Tiptronic Switch F189 (from VIN 8E_6A156500), removing and installing

- If malfunctions at Tiptronic Switch F189 occur, first check whether magnet at control slide masking panel is properly secured and replace masking panel if necessary. Before replacing the printed circuit, check the wiring.

To replace Tiptronic switch, circuit board must be replaced.

Removing

- Remove cover for shift mechanism --> **Shift mechanism cover (from VIN 8E_6A156500), removing and installing**.

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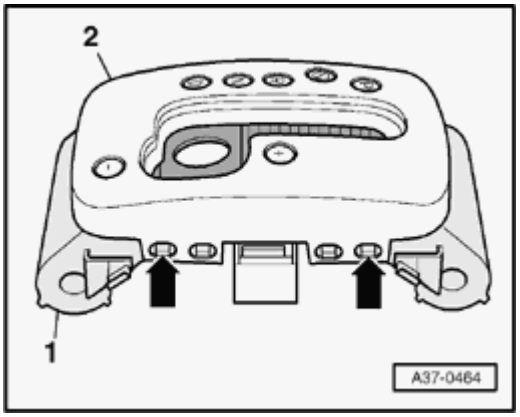


Fig. 76: Pressing Down Retaining Hooks And Pull Off Cover From Guide
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press down retaining hooks - **arrows** - and pull off cover - **2** - from guide - **1** -.
- Remove circuit board with integrated Tiptronic Switch F189.

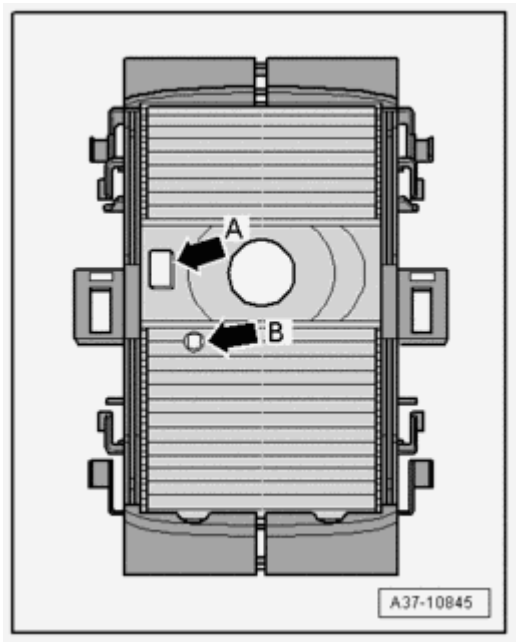


Fig. 77: Checking Magnets On Cover Strip For Secure Seating
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check magnets - **arrows** - on cover strip for secure seating.

- Cover strip must be replaced if a magnet is missing.

Installing

Installation is in reverse order of removal, note the following:

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- Install cover for shift mechanism --> **Shift mechanism cover (from VIN 8E_6A156500), removing and installing**.

Shift mechanism (from VIN 8E_6A156500), assembly overview

NOTE:

- **Lubricate bearing areas and slide surfaces with *polycarbamide grease G 052 142 A2* .**

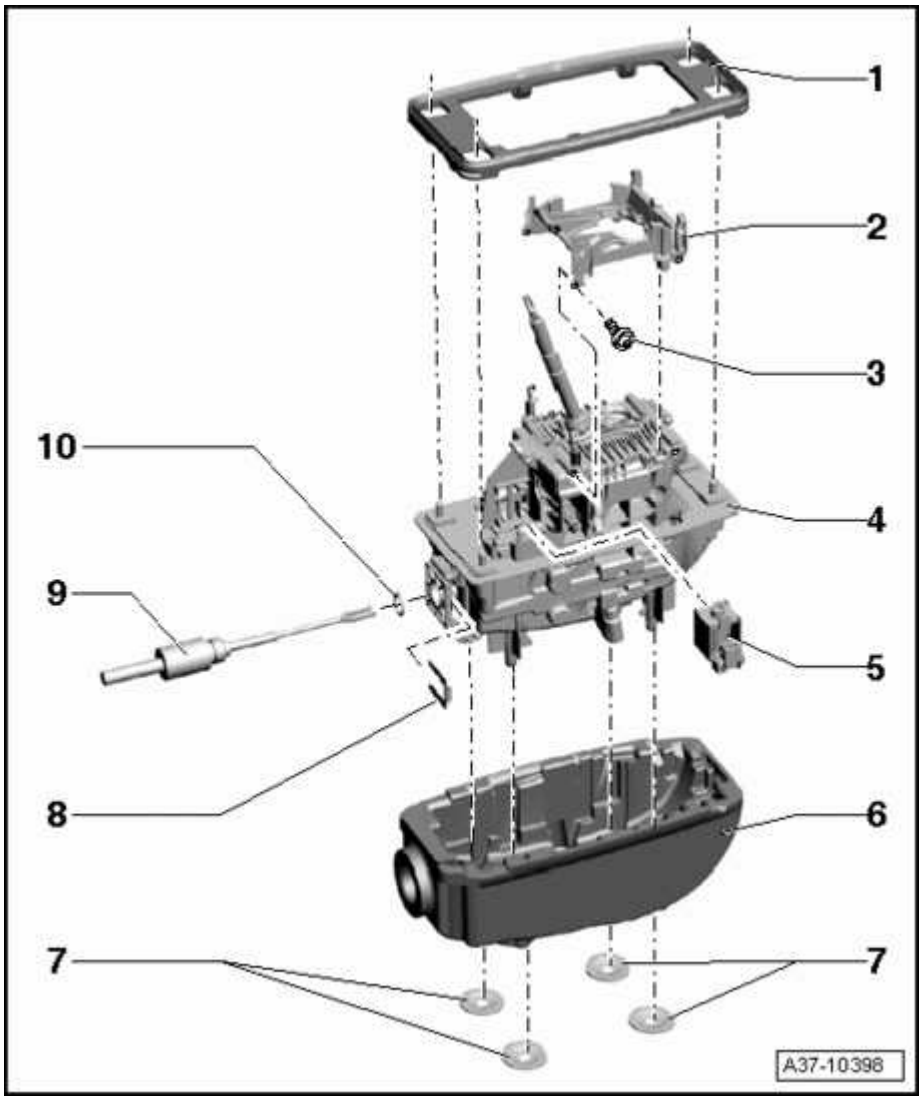


Fig. 78: Shift Mechanism (From VIN 8E_6A156500), Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Rubber seal

2 - Press tube

3 - Bolt, 2 Nm

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- Qty. 4

4 - Selector mechanism function unit

5 - Shift lock solenoid N110

- --> **Shift Lock Solenoid N110 (from VIN 8E_6A156500), removing and installing**

6 - Noise insulation

- Not installed on all vehicles

7 - Lock washers

- Qty. 4, always replace
- For securing sound insulation on selector mechanism function unit

8 - Retaining clip

- Secures selector lever cable on selector mechanism function unit

9 - Selector lever cable

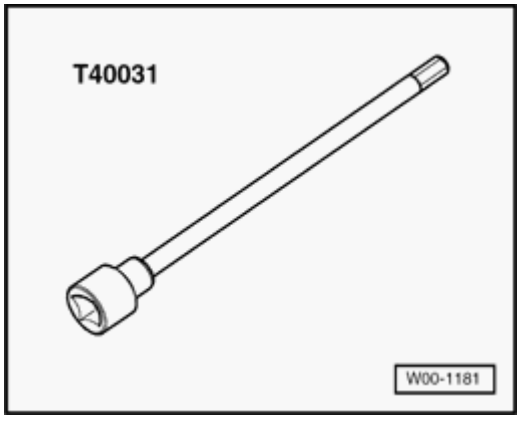
- --> **Selector lever cable (from VIN 8E_6A156500), removing and installing**
- Adjusting --> **Selector lever cable (from VIN 8E_6A156500), adjusting**

10 - O-Ring

- Always replace

Shift mechanism (from VIN 8E_6A156500), removing and installing

Special tools, testers and auxiliary items required



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Fig. 79: Socket And Key T40031
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Socket and key T40031

Removing

- Remove selector lever handle --> **Selector lever handle (from VIN 8E_6A156500), removing and installing**.
- Remove air conditioning operating unit --> **87 AIR CONDITIONING** .
- Remove ashtray in center console -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

.

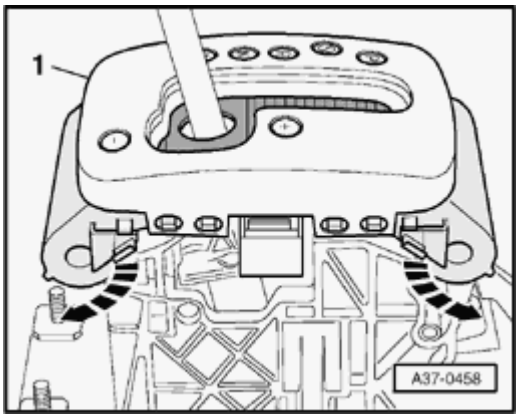
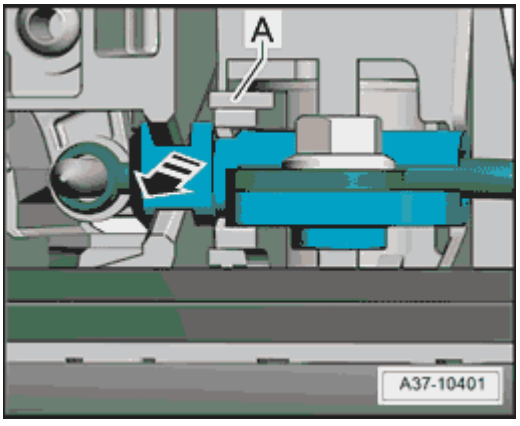


Fig. 80: Releasing Clips And Pull Cover With Guide Upwards To Remove
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release all 4 clips - **arrows** - and pull cover - **1** - with guide upwards to remove.
- Disconnect connector from side of guide plate.
- Disconnect electrical harness connector on Shift Lock Solenoid N110.



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Fig. 81: Raising Retaining Tab And Removing Locking Lever
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Raise retaining tab - **A** - and remove locking lever in direction of - **arrow** -.
- Place selector lever in position "D".

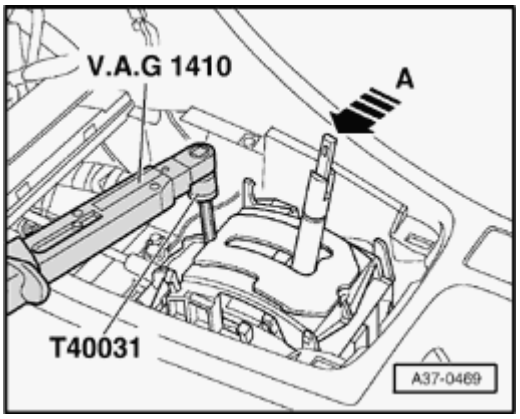


Fig. 82: Loosening Rear Clamping Screw On Selector Lever Cable Approx. 1 Turn Through Hole In Shift Mechanism Using Special Tool T40031
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen rear clamping screw on selector lever cable through hole in shift mechanism approx. one turn using socket and key T40031.

NOTE:

- **Loosen clamping screw only approx. 1 turn. Do not remove.**
- **Clamping screw is only accessible in selector lever position "D".**
- **Selector lever must remain in position "D" while clamping screw is loose.**

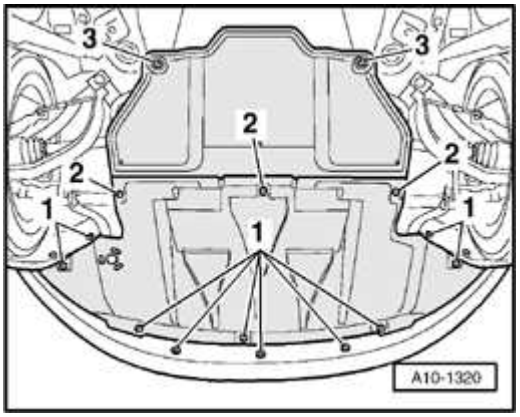


Fig. 83: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen quick-release screws - **2** - and - **3** - and remove rear noise insulation.

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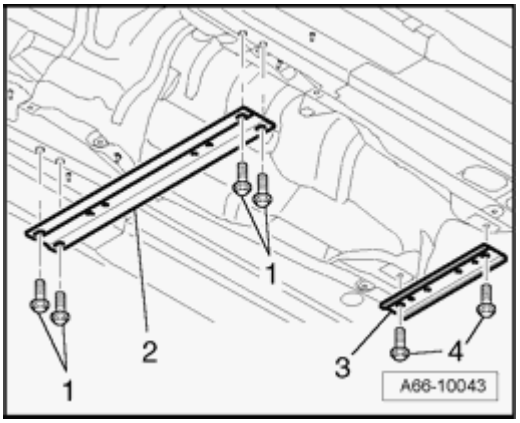


Fig. 84: Removing Tunnel Braces
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove tunnel braces -->
  - **66 EXTERIOR EQUIPMENT**
  - **66 - EXTERIOR EQUIPMENT** for BODY EXTERIOR - CABRIOLET

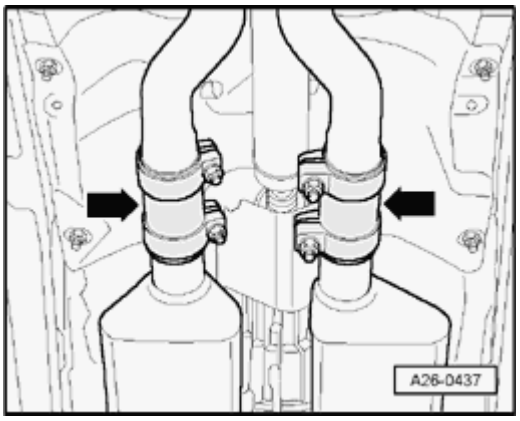


Fig. 85: Loosening Clamping Sleeves
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Flex joint in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.**

- Disconnect exhaust system at double clamps - **arrows** -.
- Remove heat shield under shift mechanism -->
  - **66 EXTERIOR EQUIPMENT**
  - **66 - EXTERIOR EQUIPMENT** for BODY EXTERIOR - CABRIOLET

For vehicles with noise insulation - A - under shift mechanism:

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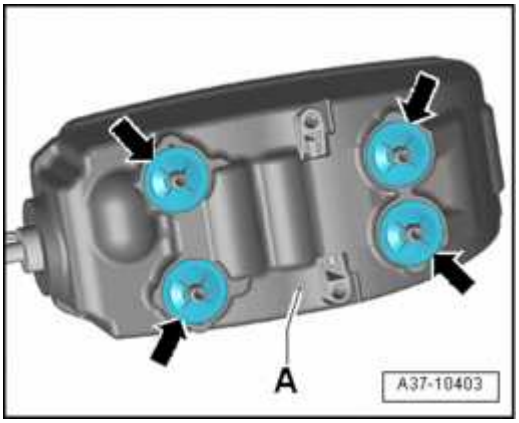


Fig. 86: Removing Lock Washers
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove lock washers - **arrows** -.

NOTE:

- **Always replace lock washers**

- Remove sound insulation - **A** - and slide forward.

All:

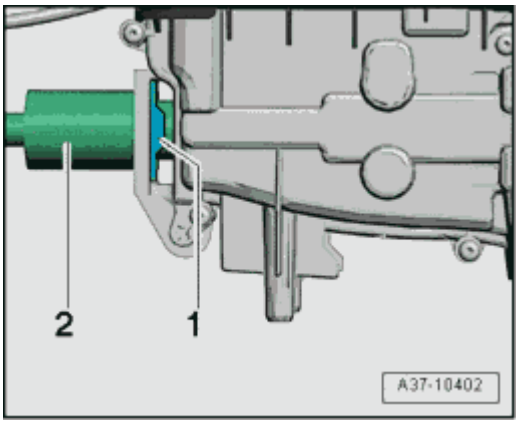


Fig. 87: Removing Selector Lever Cable Retaining Clip Sideways & Selector Lever Cable From Shift Mechanism
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove selector lever cable retaining clip - **1** - sideways.
- Remove selector lever cable - **2** - from shift mechanism.

NOTE:

- **Do not bend or kink the selector lever cable.**

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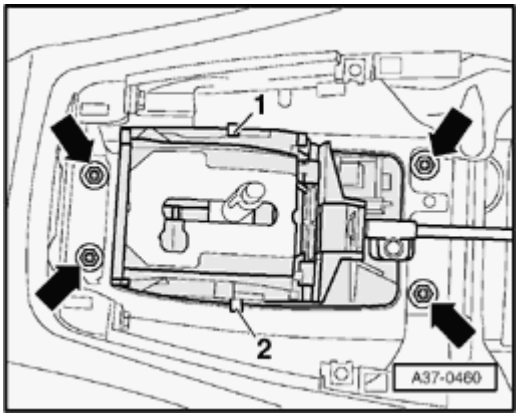


Fig. 88: Pressing Holder Clips & Removing Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **arrows** -.

NOTE:

- **A second technician is required when detaching shift mechanism below vehicle.**

- Press holder clips - **1** - and - **2** - inward, at the same time pushing shift mechanism downward.

Installing

Installation is in reverse order of removal, note the following:

- Install selector lever cable --> **Selector lever cable (from VIN 8E_6A156500), removing and installing**.
- Install locking cable --> **Locking lever (from VIN 8E_6A156500), removing and installing**.
- Adjust locking cable --> **Locking cable (from VIN 8E_6A156500), adjusting**.
- Install exhaust system and align it free of tension -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

.

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- Check shift mechanism --> **Shift mechanism (from VIN 8E_6A156500), checking**.

Torque specifications

Component	Nm
Shift mechanism to body	10

Shift Lock Solenoid N110 (from VIN 8E_6A156500), removing and installing

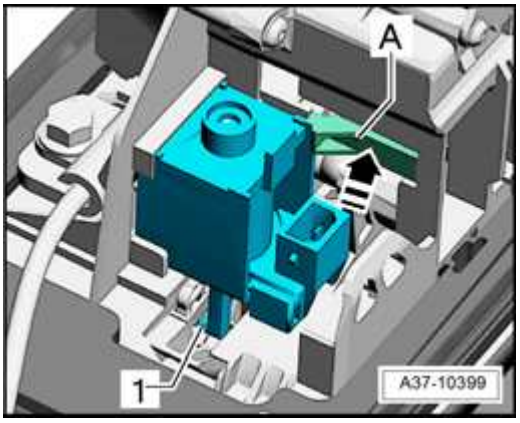


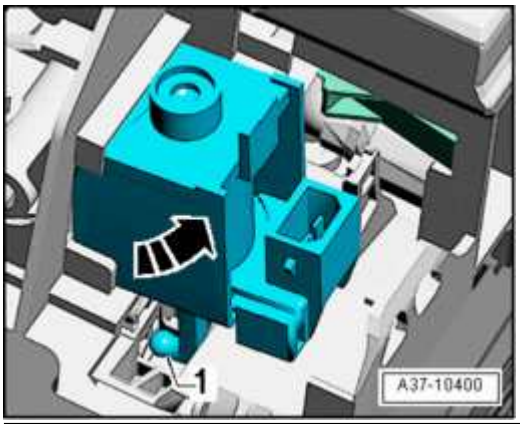
Fig. 89: Pressing Retaining Hooks Into Shift Mechanism And Hold It Down
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removing

- Remove cover for shift mechanism --> **Shift mechanism cover (from VIN 8E_6A156500), removing and installing**.
- Disconnect electrical harness connector on Shift Lock Solenoid N110.
- Press retaining hooks - **A** - into shift mechanism - **arrow** - and hold it down.

NOTE:

- **If retaining hook - A - is broken off, selector mechanism function unit must be replaced.**



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Fig. 90: Disengaging Ball Head From Operating Lever On Shift Mechanism
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tip Shift Lock Solenoid N110 down and out in direction of - **arrow** - so that ball head - **1** - disengages from operating lever on shift mechanism.
- Remove Shift Lock Solenoid N110.

Installing

Installation is in reverse order of removal, note the following:

- Rotate ball head - **1** - to correct installation position.
- Guide Shift Lock Solenoid N110 diagonally from above into shift mechanism.
- Tip Shift Lock Solenoid N110 down in opposite direction of - **arrow** -.

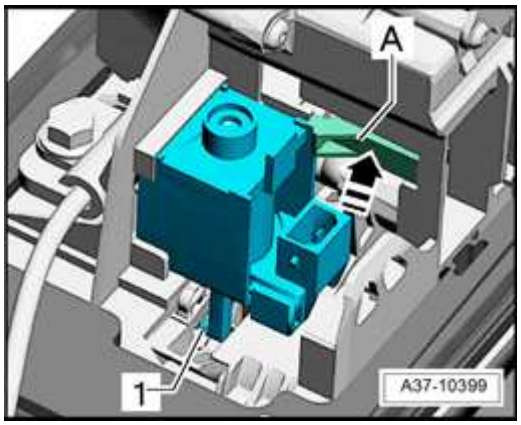


Fig. 91: Pressing Retaining Hooks Into Shift Mechanism And Hold It Down
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Ball head - **1** - must be completely engaged in operating lever on shift mechanism.
- Secure Shift Lock Solenoid N110 on retaining hook - **A** -.
- Install cover for shift mechanism --> **Shift mechanism cover (from VIN 8E_6A156500), removing and installing**.

Selector lever cable and locking cable (from VIN 8E_6A156500), assembly overview

NOTE:

- **Do not bend or kink selector lever cable.**
- **Lightly grease eyelet and ball socket with *polycarbamide grease G 052 142 A2* before installing.**

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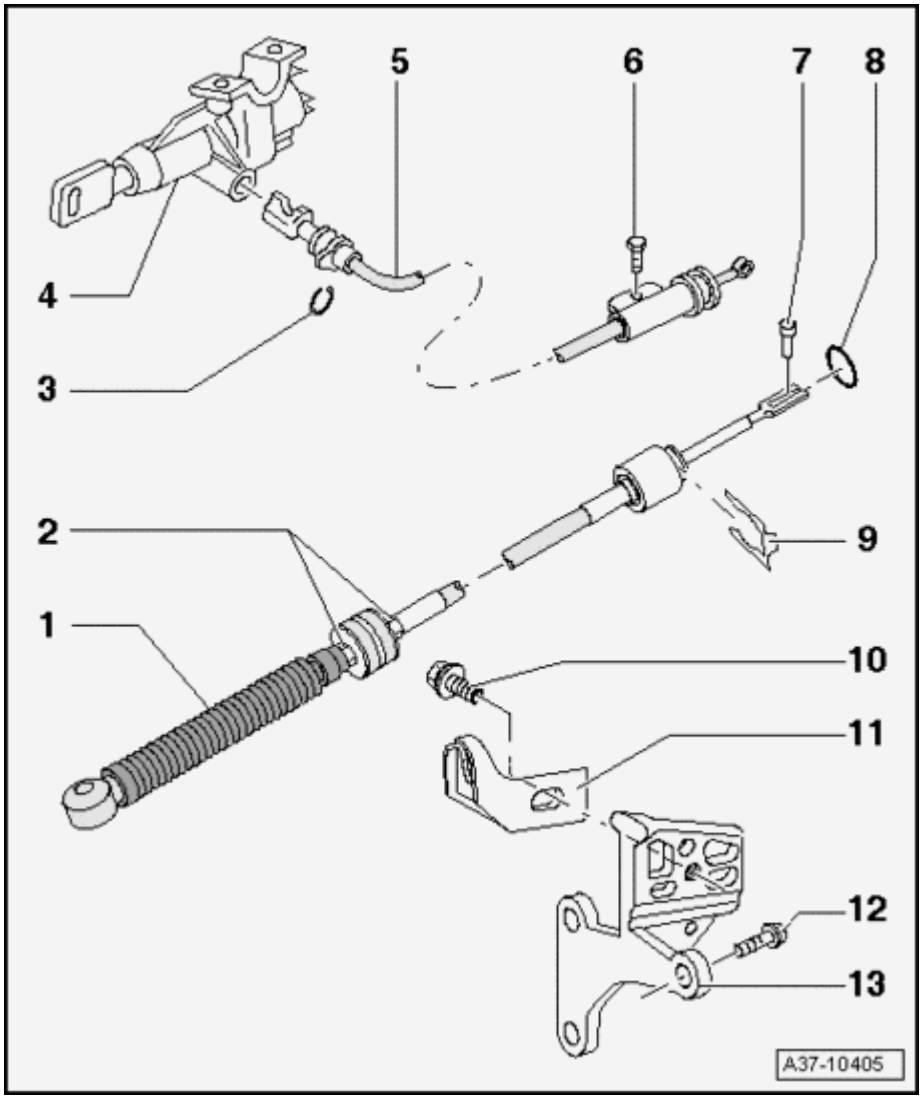


Fig. 92: Selector Lever Cable And Locking Cable (From VIN 8E_6A156500), Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Selector lever cable

- Do not bend or kink, lightly grease cable eye and ball socket before installing.
- Removing and installing --> **Selector lever cable (from VIN 8E_6A156500), removing and installing**
- Adjusting --> **Selector lever cable (from VIN 8E_6A156500), adjusting**
- In case of damaged rubber boots, selector lever cable must be replaced
- When installing, make sure that rubber sleeve on transmission side is not twisted

2 - Lock nuts

- 13 Nm

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3 - Retaining clip

4 - Ignition/starter switch

- With ignition key removal lock

5 - Locking cable

- For ignition key removal lock
- Not to be kinked
- Removing and installing --> **Locking lever (from VIN 8E_6A156500), removing and installing**
- Adjusting --> **Locking cable (from VIN 8E_6A156500), adjusting**

6 - Bolt

- 9 Nm

7 - Clamping screw

- 13 Nm
- For selector lever cable
- Loosen 1 turn for adjusting, do NOT remove completely

8 - O-Ring

- Always replace

9 - Retaining clip for selector lever cable

10 - Bolt

- 20 Nm
- For securing bracket to selector lever cable bracket

11 - Bracket for selector lever cable

- Different equipment depending on version

12 - Bolt

- 20 Nm
- Qty. 3
- For securing selector lever cable bracket to transmission

13 - Bracket for selector lever cable

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- Different equipment depending on version

Selector lever cable (from VIN 8E_6A156500), removing and installing

Special tools, testers and auxiliary items required

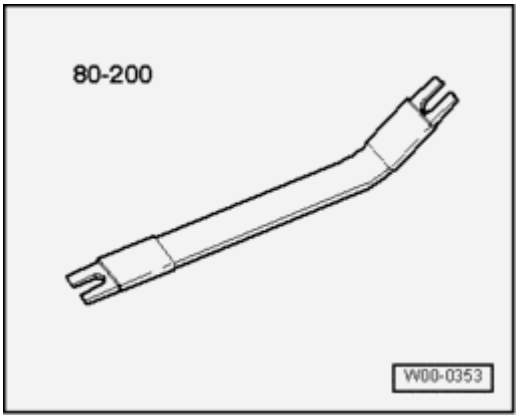


Fig. 93: Identifying Pry Lever 80-200
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pry lever 80-200

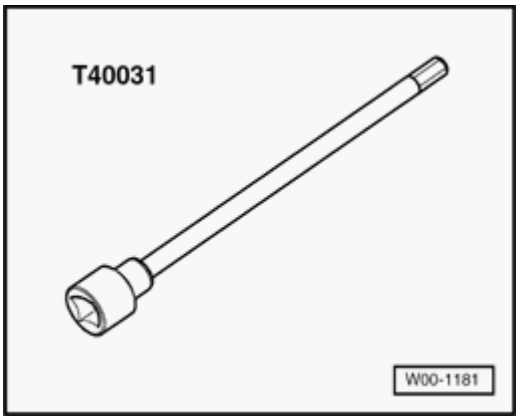


Fig. 94: Socket And Key T40031
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Socket and key T40031

Removing

- Remove selector lever handle --> **Selector lever handle (from VIN 8E_6A156500), removing and installing**.
- Remove cover for shift mechanism --> **Shift mechanism cover (from VIN 8E_6A156500), removing and installing**.
- Place selector lever in position "D".

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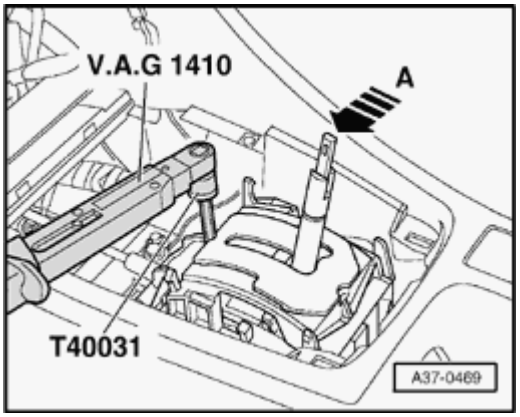


Fig. 95: Loosening Rear Clamping Screw On Selector Lever Cable Approx. 1 Turn Through Hole In Shift Mechanism Using Special Tool T40031
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen rear clamping screw on selector lever cable through hole in shift mechanism approx. one turn using socket and key T40031.

NOTE:

- **Loosen clamping screw only approx. 1 turn. Do not remove.**
- **Clamping screw is only accessible in selector lever position "D".**
- **Selector lever must remain in position "D" while clamping screw is loose.**

Removing

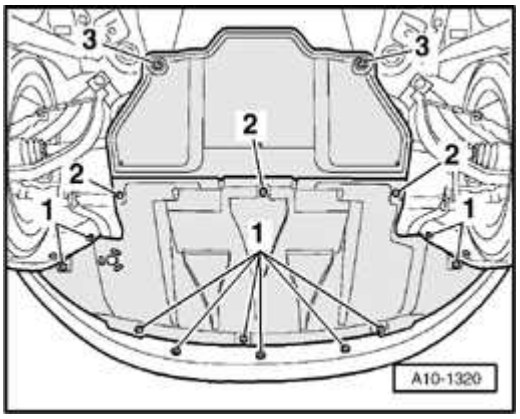


Fig. 96: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen quick-release screws - **2** - and - **3** - and remove rear noise insulation.

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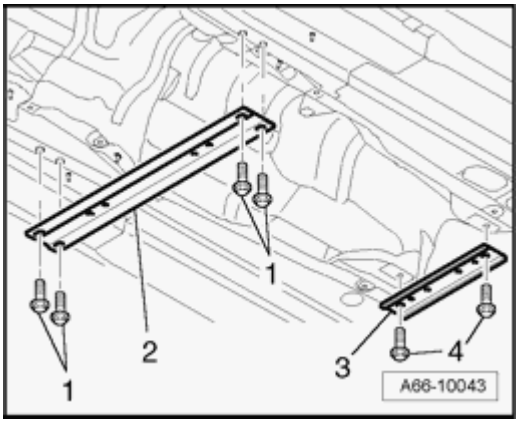


Fig. 97: Removing Tunnel Braces
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove tunnel braces -->
  - **66 EXTERIOR EQUIPMENT**
  - **66 - EXTERIOR EQUIPMENT** for BODY EXTERIOR - CABRIOLET

NOTE:

- **Flex joint in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.**

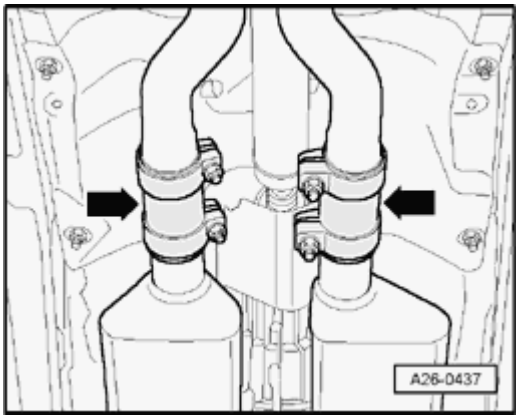


Fig. 98: Loosening Clamping Sleeves
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect exhaust system at double clamps - **arrows** -.
- Remove heat shield under shift mechanism -->
  - **66 EXTERIOR EQUIPMENT**
  - **66 - EXTERIOR EQUIPMENT** for BODY EXTERIOR - CABRIOLET

For vehicles with noise insulation - A - under shift mechanism:

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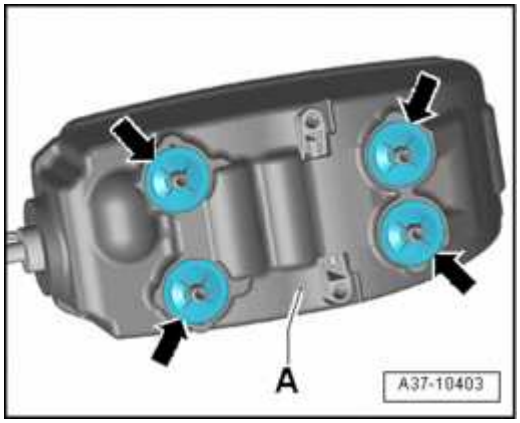


Fig. 99: Removing Lock Washers
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove lock washers - **arrows** -.

NOTE:

- **Always replace lock washers**

- Remove sound insulation - **A** - and slide forward.

All:

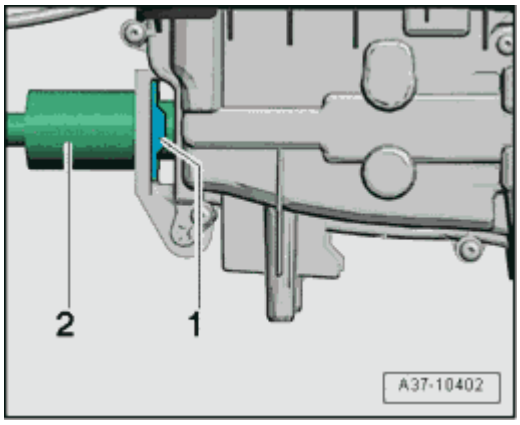


Fig. 100: Removing Selector Lever Cable Retaining Clip Sideways & Selector Lever Cable From Shift Mechanism
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove selector lever cable retaining clip - **1** - sideways.
- Remove selector lever cable - **2** - from shift mechanism.

NOTE:

- **Do not bend or kink selector lever cable.**

Installing

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Installation is in reverse order of removal, note the following:

Torque specifications --> **Selector lever cable and locking cable (from VIN 8E_6A156500), assembly overview**

NOTE:

- **Do not bend or kink selector lever cable.**
- **Lightly grease eyelet and ball socket of selector lever cable with *polycarbamide grease G 052 142 A2* before installing.**

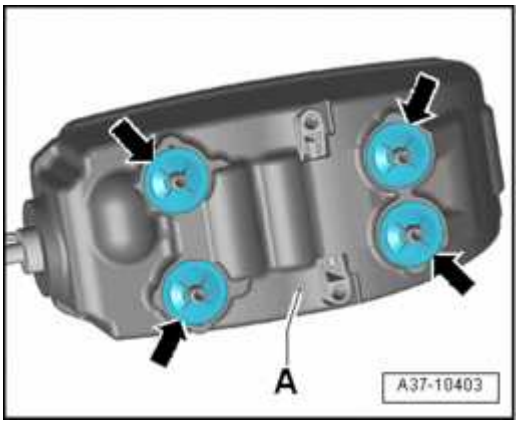


Fig. 101: Removing Lock Washers
Courtesy of VOLKSWAGEN UNITED STATES, INC.

For vehicles with noise insulation - A - under shift mechanism:

- Slide noise insulation - **A** - over opening on selector lever cable.

All:

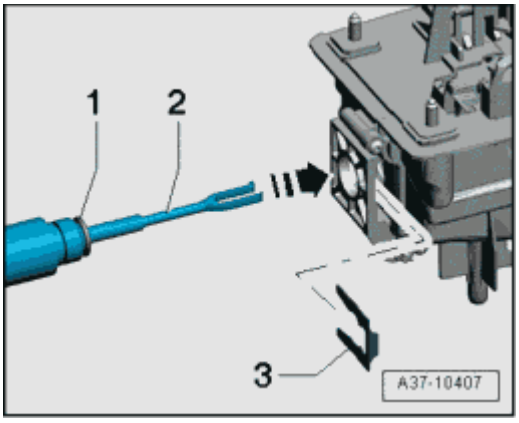


Fig. 102: Replacing O-ring on selector lever cable & Slide selector lever cable into shift mechanism
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Replace O-ring - **1** - on selector lever cable.

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- Slide selector lever cable into shift mechanism - **arrow** -.

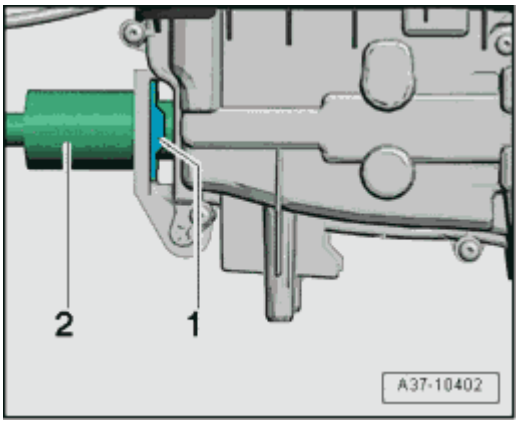


Fig. 103: Removing Selector Lever Cable Retaining Clip Sideways & Selector Lever Cable From Shift Mechanism
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Secure selector lever cable - **2** - to shift mechanism with retaining clip - **1** -.

- Installation position: Angled end of retaining clip faces toward shift mechanism.

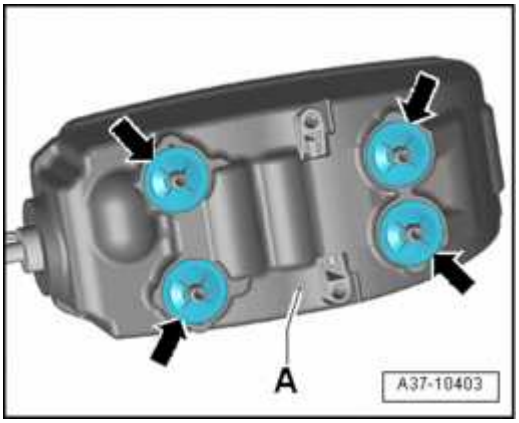


Fig. 104: Removing Lock Washers
Courtesy of VOLKSWAGEN UNITED STATES, INC.

For vehicles with noise insulation - A - under shift mechanism:

- Secure sound insulation to shift mechanism with four new lock washers - **arrows** -.

All:

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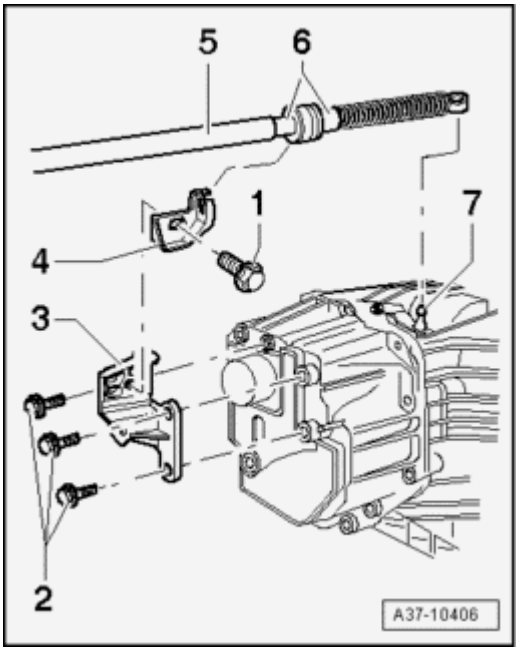


Fig. 105: Bolting Selector Lever Cable To Support Bracket & Tightening Lock Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tightly bolt selector lever cable - **5** - to support bracket - **4** - , tighten lock nuts - **6** -.

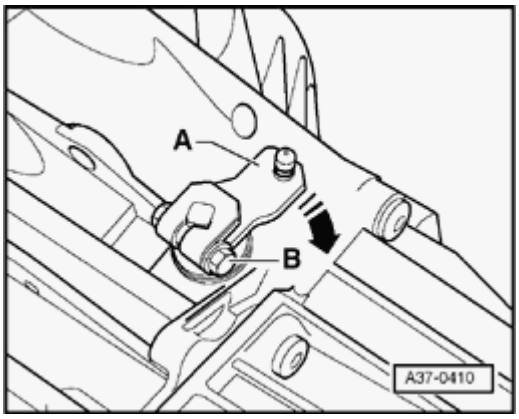


Fig. 106: Pressing Selector Shaft Lever On Transmission Completely Toward Rear
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press selector shaft lever - **A** - on transmission completely toward rear - **arrow** - until parking lock engages.

NOTE:

- **When parking lock is engaged, it must not be possible to turn both front wheels in one direction at the same time.**

- Then press selector shaft forward 3 detents, so transmission is in "D" position.
- Ensure selector lever in vehicle is also in "D" position.

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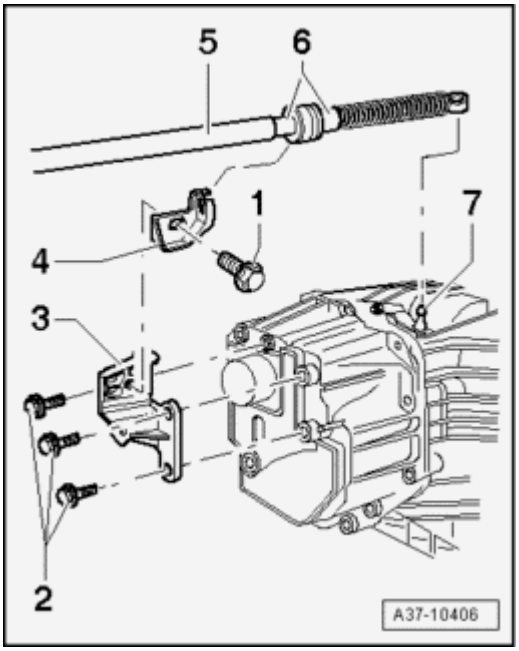


Fig. 107: Bolting Selector Lever Cable To Support Bracket & Tightening Lock Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully press selector lever cable ball socket - **5** - onto selector shaft lever - **7** - in this position.

NOTE:

- **Take care not to bend selector shaft lever when pressing it on; support it if necessary, as otherwise selector mechanism can no longer be adjusted properly.**

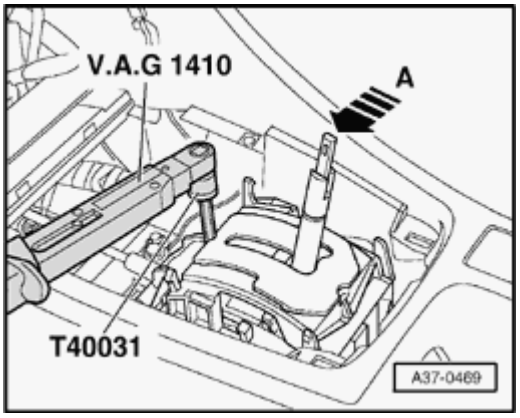


Fig. 108: Loosening Rear Clamping Screw On Selector Lever Cable Approx. 1 Turn Through Hole In Shift Mechanism Using Special Tool T40031
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check exact position of selector lever in position "D" by pushing selector lever lightly towards drivers seat - **arrow A** -.

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NOTE:

- **Do not touch selector lever during the adjustment.**

- Tighten clamping screw with Socket T40031 through hole in shift mechanism while in this position, without touching selector lever.
- Adjust selector lever cable --> **Selector lever cable (from VIN 8E_6A156500), adjusting**.
- Install exhaust system and align it free of tension -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

.

Selector lever cable (from VIN 8E_6A156500), adjusting

Special tools, testers and auxiliary items required

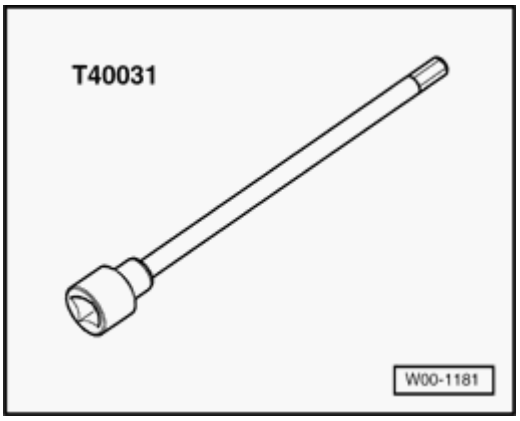


Fig. 109: Socket And Key T40031
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Socket and key T40031

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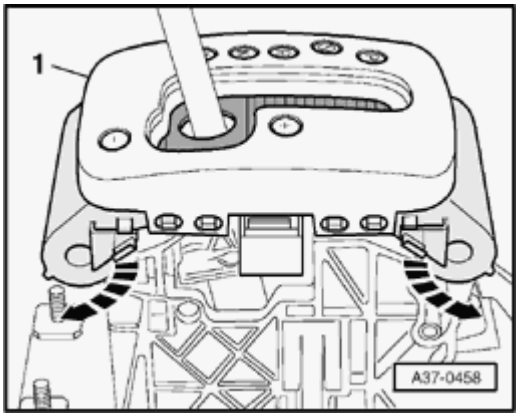


Fig. 110: Releasing Clips And Pull Cover With Guide Upwards To Remove
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove cover for shift mechanism --> **Shift mechanism cover (from VIN 8E_6A156500), removing and installing**.
- Place selector lever in position "D".

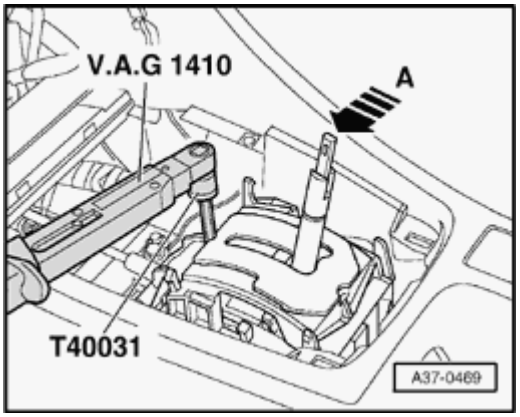


Fig. 111: Loosening Rear Clamping Screw On Selector Lever Cable Approx. 1 Turn Through Hole In Shift Mechanism Using Special Tool T40031
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen rear clamping screw on selector lever cable through hole in shift mechanism approx. one turn using socket and key T40031.

NOTE:

- **Loosen clamping screw only approx. 1 turn. Do not remove.**
- **Clamping screw is only accessible in selector lever position "D".**
- **Selector lever must remain in position "D" while clamping screw is loose.**

- Carefully move selector lever lightly toward front and rear without shifting into another selector lever position, this releases the tension on selector lever cable.
- Check exact position of selector lever in position "D" by pushing selector lever lightly towards drivers seat - **arrow A** -.

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NOTE:

- **Do not touch selector lever during the adjustment.**

- Without touching selector lever, tighten clamping screw in this position using socket and key T40031.
- Install cover for shift mechanism --> **Shift mechanism cover (from VIN 8E_6A156500), removing and installing**.
- Check shift mechanism --> **Shift mechanism (from VIN 8E_6A156500), checking**.

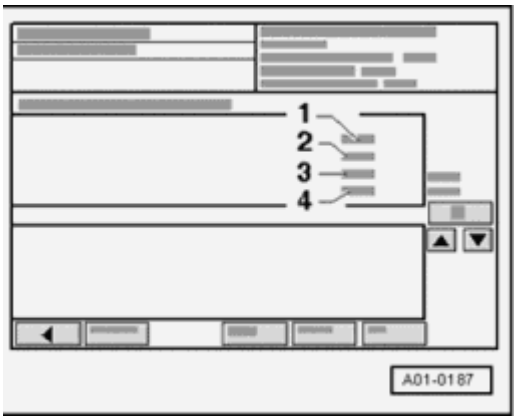


Fig. 112: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Using Vehicle Diagnosis, Testing and Information System VAS 5051 A , the position of Multi-Function Transmission Range (TR) Switch F125 can be compared to position on selector lever via On Board Diagnostic (OBD), 02 - Transmission electronics, 08 - Read measured value block, display group 2 in display field - 1 -.**

If shift mechanism does not function properly after adjusting selector lever cable:

- Bring selector lever cable into basic setting --> **Selector lever cable, from VIN 8E_6A156500), bringing into basic setting**.

Torque specifications

Component	Nm
Clamping screw to selector lever cable	13

Selector lever cable, from VIN 8E_6A156500), bringing into basic setting

Special tools, testers and auxiliary items required

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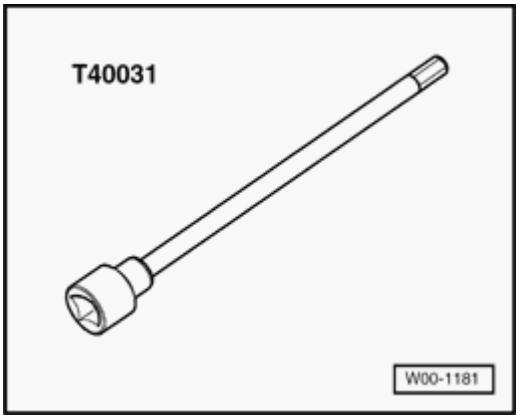


Fig. 113: Socket And Key T40031
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Socket and key T40031

Work procedure

- Remove cover for shift mechanism --> **Shift mechanism cover (from VIN 8E_6A156500), removing and installing**.
- Place selector lever in position "D".

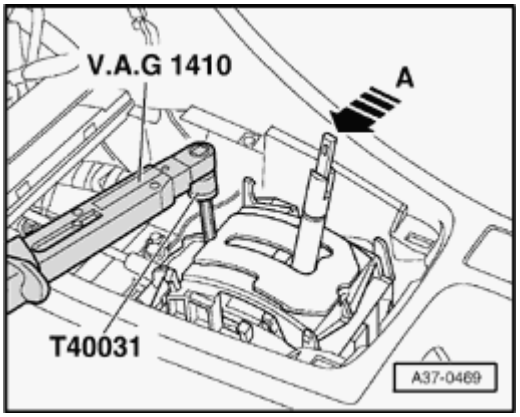


Fig. 114: Loosening Rear Clamping Screw On Selector Lever Cable Approx. 1 Turn Through Hole In Shift Mechanism Using Special Tool T40031
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Before performing basic setting, make sure that the clamping screw is tightened. It is accessible through hole in shift mechanism in position "D" using socket and key T40031.**

- Tighten clamping screw in this position using socket and key T40031 (13 Nm).
- Place selector lever in position "P".

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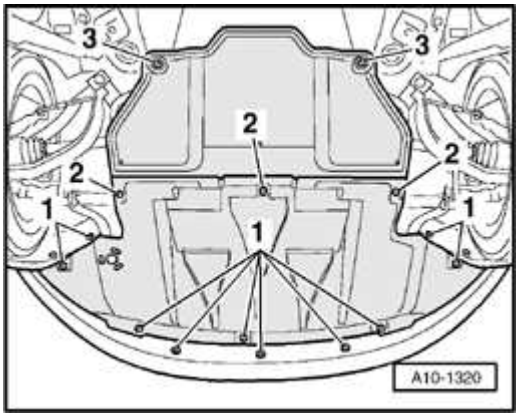


Fig. 115: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen quick-release screws - **2** - and - **3** - and remove rear noise insulation.

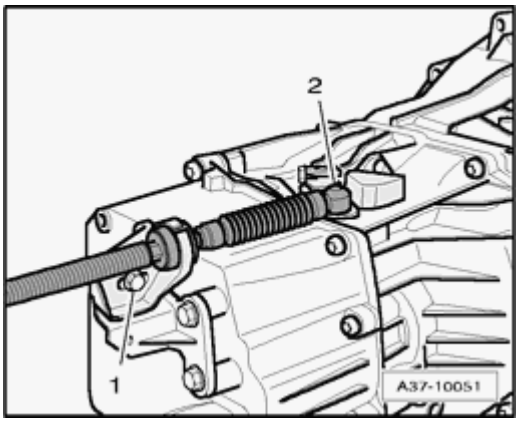


Fig. 116: Removing Support Bracket For Selector Lever Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove support bracket for selector lever cable - **1** -.

NOTE:

- **Make sure selector lever is in position "P".**

- Push lever for selector shaft - **2** - at transmission completely toward rear until parking lock engages.

NOTE:

- **When parking lock is engaged, it must not be possible to turn both front wheels in one direction at the same time.**

- Make sure that selector lever cable has been routed free of kinks and tension.

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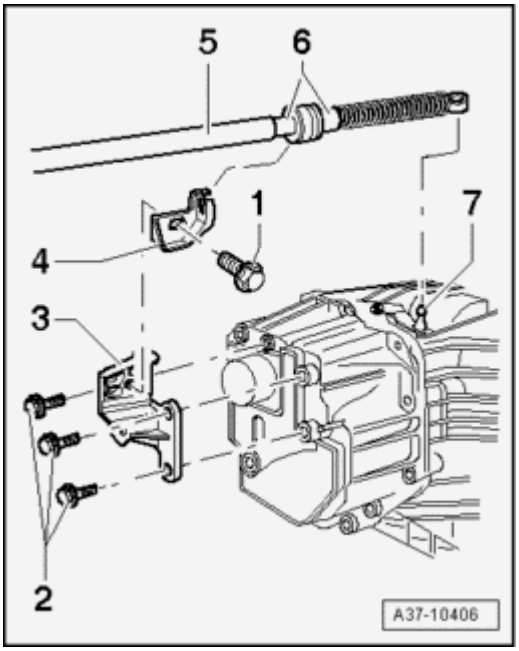


Fig. 117: Bolting Selector Lever Cable To Support Bracket & Tightening Lock Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Make sure that selector lever cable - **5** - is secured with nuts - **6** - to support bracket - **4** - (13 Nm).

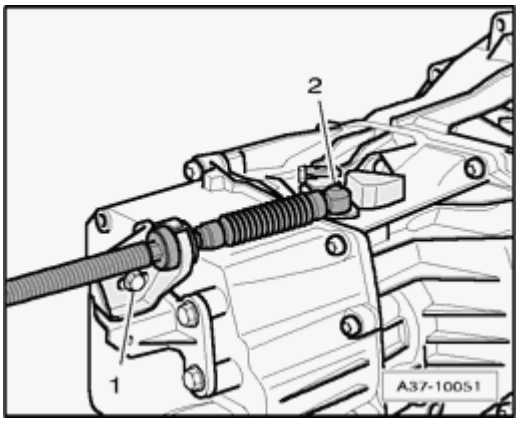


Fig. 118: Removing Support Bracket For Selector Lever Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install support bracket for selector lever cable tightly to bracket - **1** -.
- Adjust selector lever cable --> **Selector lever cable (from VIN 8E_6A156500), adjusting**.

Torque specification

Component	Nm
Clamping screw to selector lever cable	13
Selector lever cable to bracket (lock nut, qty. 2)	13

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Support bracket to bracket, bolt M8 - **1** -	23

Locking lever (from VIN 8E_6A156500), removing and installing

Overview

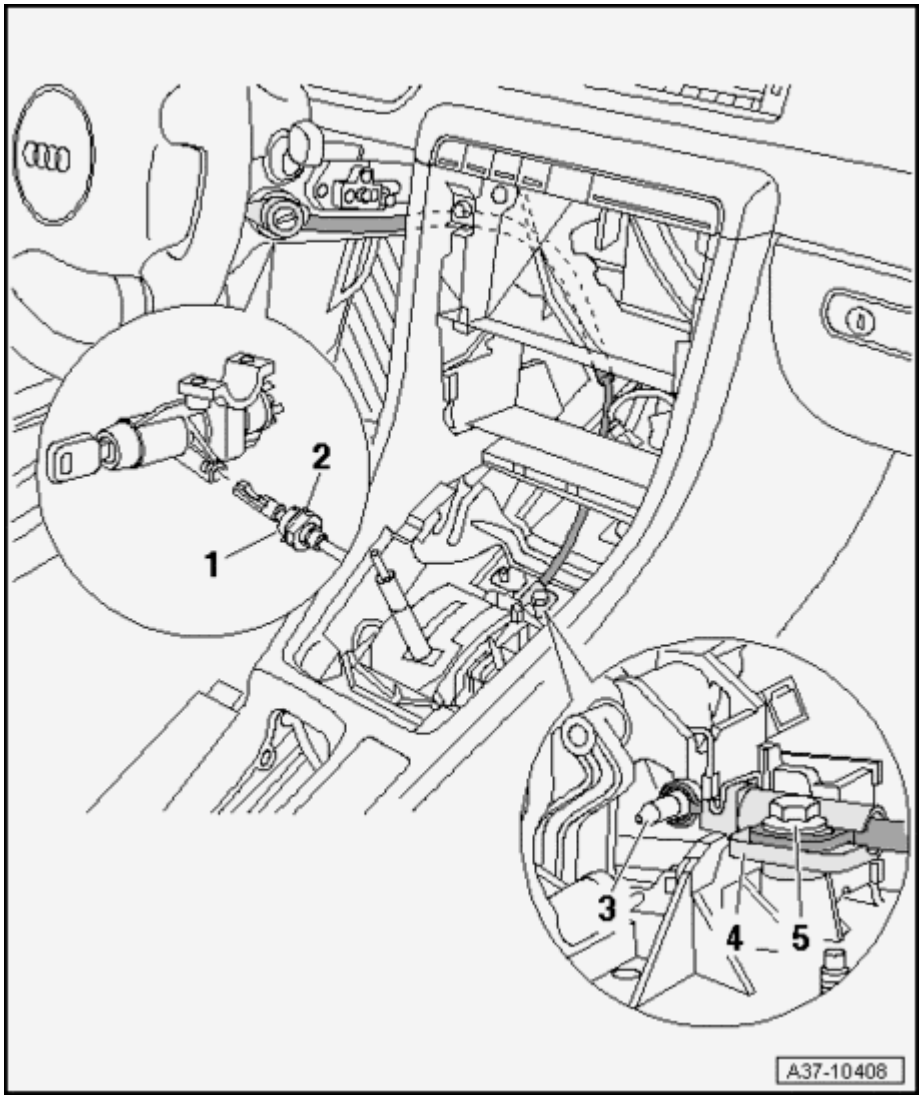


Fig. 119: Locking Lever (From VIN 8E_6A156500), Removing And Installing Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Locking cable

2 - Retaining clip

3 - Locking cable eye pins

4 - Locking cable bracket

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5 - Bolt, 10 Nm

- For adjusting locking cable

Removing

NOTE:

- **Do not kink locking cable.**

CAUTION: Observe procedures for disconnecting battery -->

- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

- Disconnect Ground (GND) wire at battery.
- Remove storage compartment on drivers side -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

  .
- Remove steering column trim -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

  .
- Remove A/C system operating unit --> **87 AIR CONDITIONING** .
- Remove ashtray in center console -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

  .
- Remove cover for shift mechanism --> **Shift mechanism cover (from VIN 8E_6A156500), removing and installing**.
- Turn ignition key into driving position "ignition on".
- Place selector lever in position "P".

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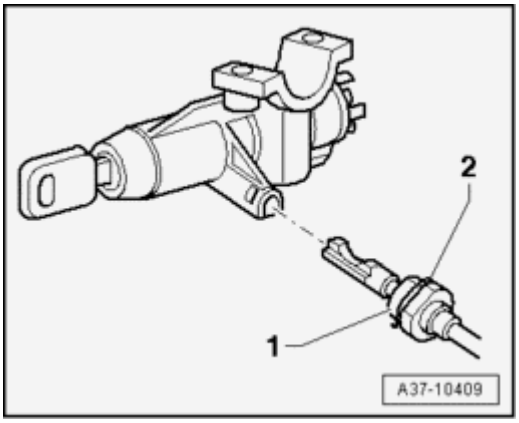


Fig. 120: Lifting Retaining Clip From Interlock Lever And Pulling Locking Cable Out Of Ignition/Starter Switch
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Lift retaining clip - **2** - from interlock lever and pull locking cable - **1** - out of ignition/starter switch.

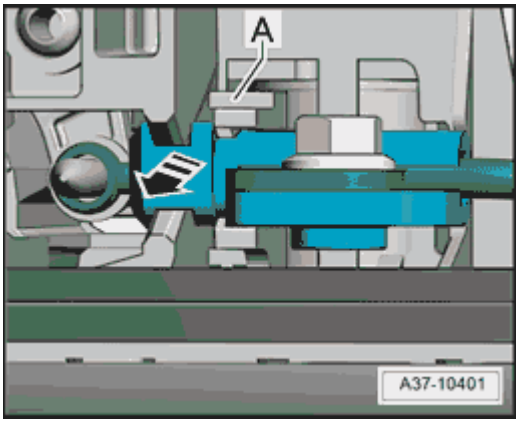


Fig. 121: Raising Retaining Tab And Removing Locking Lever
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Raise retaining tab - **A** - and remove locking lever in direction of - **arrow** - from locking cable eye pins.

Installing

Installation is in reverse order of removal, note the following:

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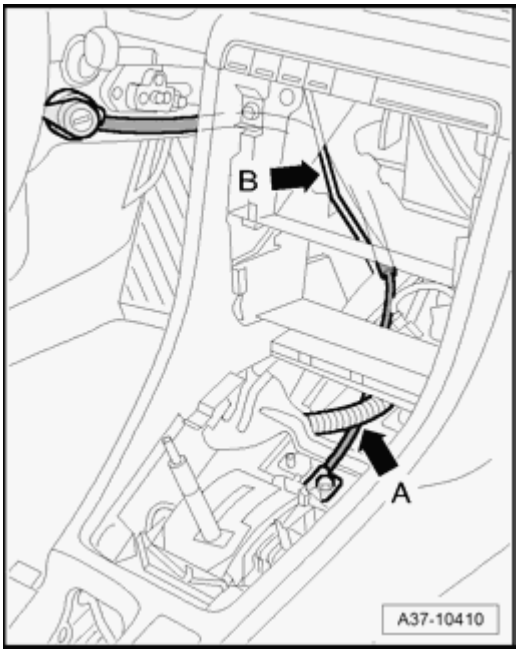


Fig. 122: Routing Locking Cable Without Kinks Under Wiring Harness And Behind Instrument Panel Brace
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Route locking cable without kinks under wiring harness - **arrow A** - and behind instrument panel brace - **arrow B** -.
- Turn ignition key into driving position "ignition on".

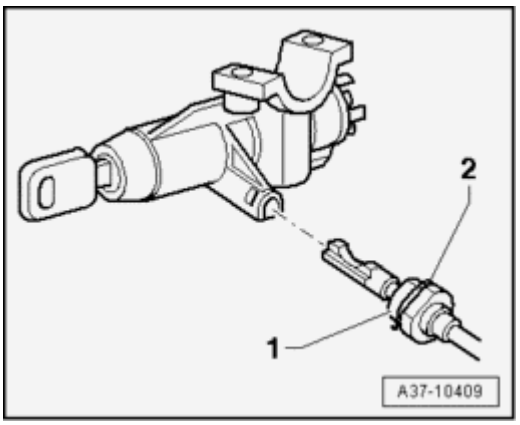


Fig. 123: Lifting Retaining Clip From Interlock Lever And Pulling Locking Cable Out Of Ignition/Starter Switch
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert locking cable - **1** - into ignition/starter switch.
- Check interlock lever - **2** -.
- Bring ignition/starter switch into locking position "ignition off".
- Check whether selector lever is in position "P".

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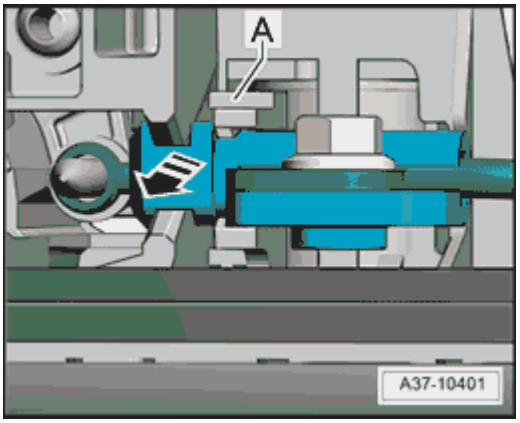


Fig. 124: Raising Retaining Tab And Removing Locking Lever
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Slide locking cable in opposite in direction of - **arrow** - onto locking cable eye pins.
- The retaining tab - **A** - must engage over locking cable
- Adjust locking cable --> **Locking cable (from VIN 8E_6A156500), adjusting**.
- Observe procedures for connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

.

Locking cable (from VIN 8E_6A156500), adjusting

Special tools, testers and auxiliary items required

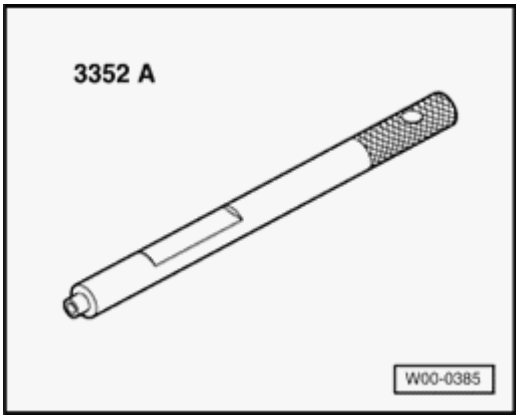


Fig. 125: Identifying Special Tools - Adjustment Pin For Shiftlock 3 3352A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Adjustment pin for shift lock 3 3352 A

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- Safety glasses

Work preparations

NOTE:

- **The procedure described below will save you the effort of removing the center console.**

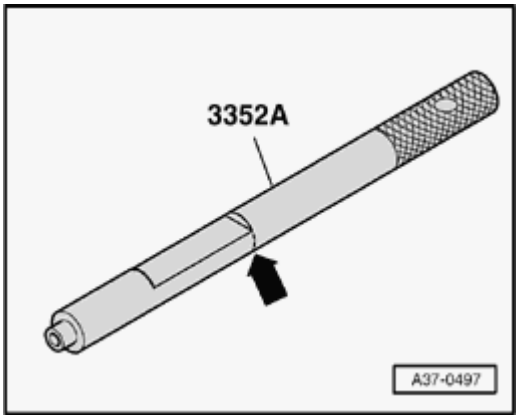


Fig. 126: Identifying Cutting Area Of Adjusting Gauge 3352A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Cut through adjustment pin for shift lock 3 3352 A at rear end of flat area - **arrow** - using a cutting grinder.

  CAUTION: Wear eye protection.

- Order a new adjustment pin for shift lock as a replacement for other use.

Work procedure

- Position steering wheel column adjustment all the way and back toward drivers seat.
- Remove cover for shift mechanism --> **Shift mechanism cover (from VIN 8E_6A156500), removing and installing**.
- Remove ashtray in center console -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

  .
- Place selector lever in position "P".

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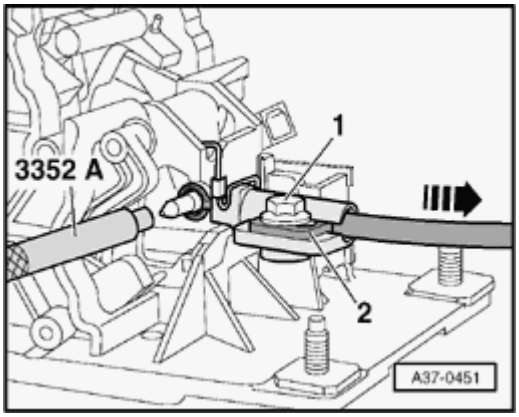


Fig. 127: Removing Adjusting Gauge
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen bolt - **1** -.

- Support bracket - **2** - of locking cable must be movable by hand

- Insert adjustment pin for shift lock 3 3352 A between pin on locking cable lever and locking cable eye.
- Pull locking cable in direction of - **arrow** - and tighten bolt to 10 Nm.
- Remove adjustment pin.
- Check ignition key removal lock after every adjustment of locking cable --> **Shift mechanism (from VIN 8E_6A156500), checking**.

Torque specification

Component	Nm
Locking cable to mounting bracket	10

TRANSMISSION, REMOVING AND INSTALLING

Transmission, removing and installing

Overview:

- --> **Transmission (vehicles with 1.8 L turbo engine, also Audi Cabriolet), removing**
- --> **Transmission (vehicles with 2.0 L normally-aspirated engine, also Audi Cabriolet), removing**
- --> **Transmission (vehicles with 2.0 L TFSI engine, also Audi Cabriolet), removing**
- --> **Transmission (vehicles with 6-cyl. 3.0 L gasoline engine, also Audi Cabriolet), removing**

- --> **Transmission (vehicles with 6-cyl. 3.2 L FSI gasoline engine, also Audi Cabriolet), removing**
- --> **Installing transmission**

Transmission (vehicles with 1.8 L turbo engine, also Audi Cabriolet), removing

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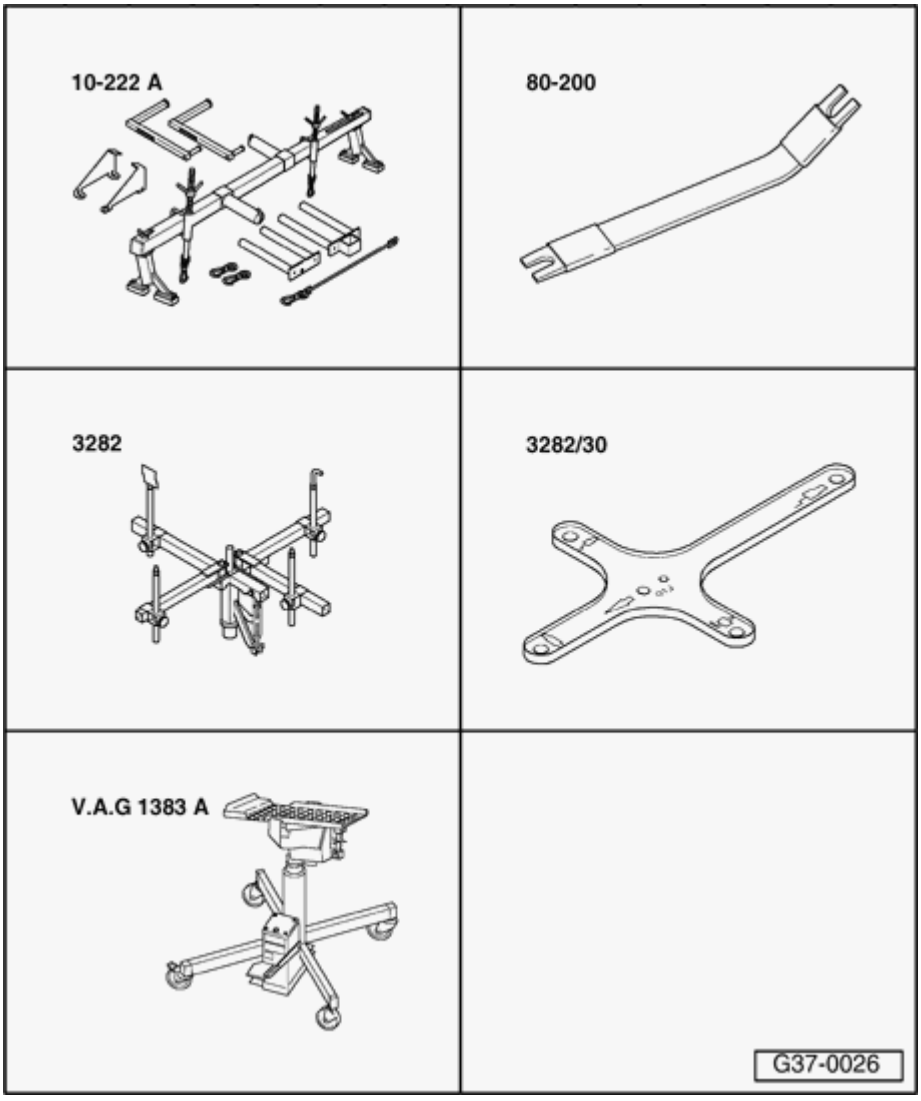


Fig. 128: Identifying Special Tools - Transmission (Vehicles With 1.8 L Turbo Engine, Also Audi Cabriolet), Removing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Engine support bridge 10-222 A
- Pry lever 80-200
- Transmission support 3282
- Adjustment plate 3282/30
- Engine/Gearbox Jack V.A.G 1383 A

Special tools, testers and auxiliary items required

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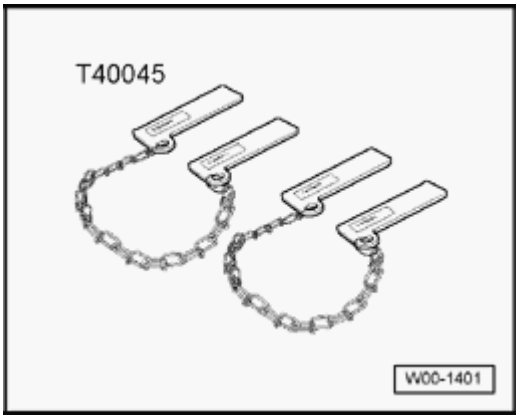


Fig. 129: Insert Pad For Front Fender T40045
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fender insert pads T40045

Work procedure

- Place selector lever in position "P".

CAUTION: Observe procedures for disconnecting battery -->

- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

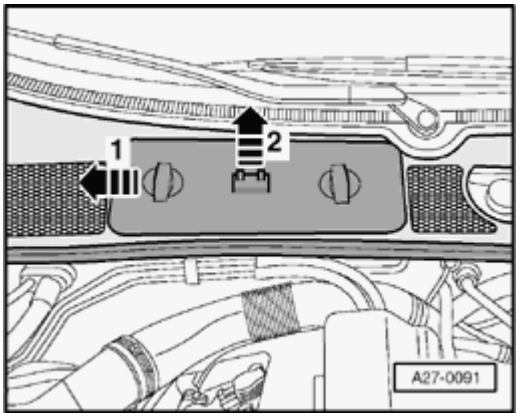


Fig. 130: Sliding Cover Over Battery To Right And Pull It Off Upwards
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Slide cover over battery to right - **arrow 1** - and pull it off upwards - **arrow 2** -.

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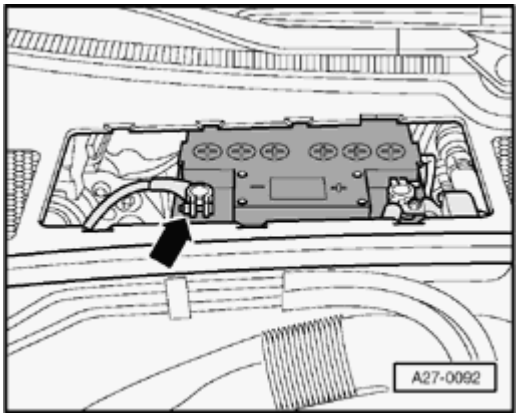


Fig. 131: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) wire - **arrow** -.

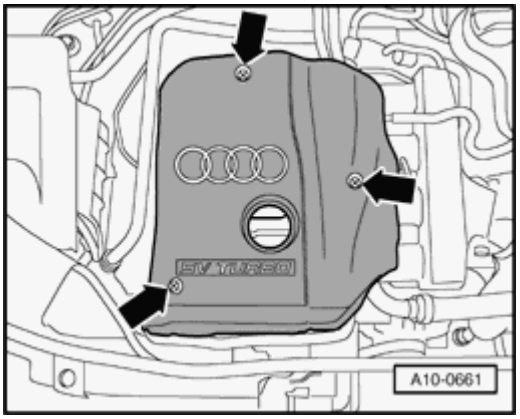


Fig. 132: Removing Engine Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove engine cover - **arrows** -.

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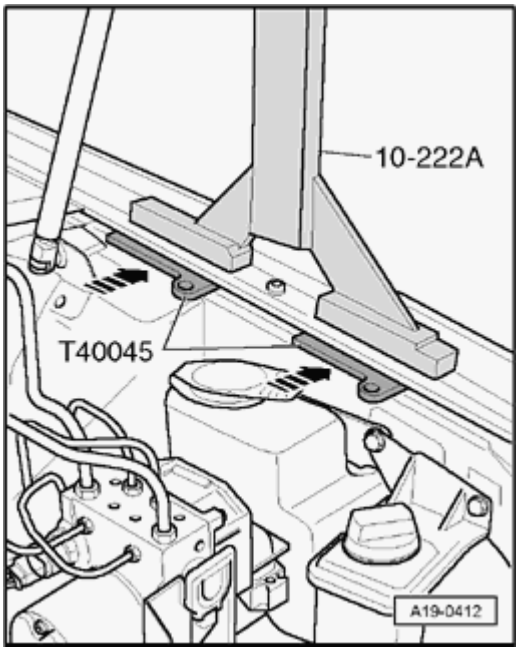


Fig. 133: Placing Insert Pad For Front Fender T40045 On Both Sides Between Fender Attachment Edge And Web Plate Lying Beneath
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull off sealing rubber at bolted flanges of fender.
- To prevent damage to bolted flanges of fender when using engine support bridge 10-222 A , insert fender insert pads T40045 on both sides between bolted flange of fender and web plate lying beneath.

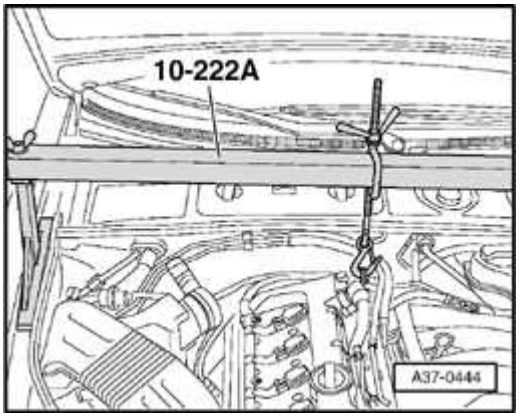


Fig. 134: Positioning Engine Support Bridge 10-222 A Onto Bolted Flange Of Fenders
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position engine support bridge 10-222 A onto bolted flange of fenders; spindle stands at rear.
- Expose rear lifting eye on engine.
- Connect hook on spindle with lifting eye on back of engine.
- Take up some of the engine weight by tightening spindle of support bar, but do not lift.

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- Remove both front wheels.

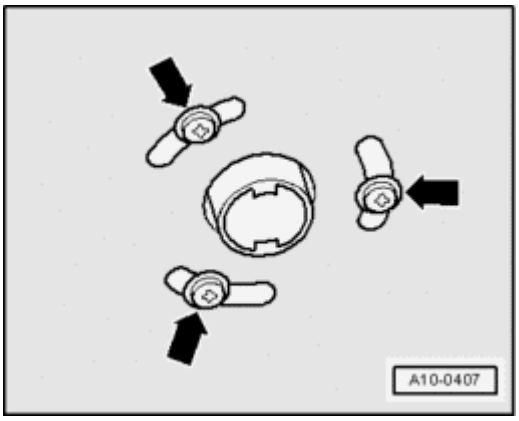


Fig. 135: Identifying Exhaust Pipe Fasteners
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On vehicles equipped with auxiliary heater, remove bolts - **arrows** - for exhaust pipe of auxiliary/additional heater to noise insulation.

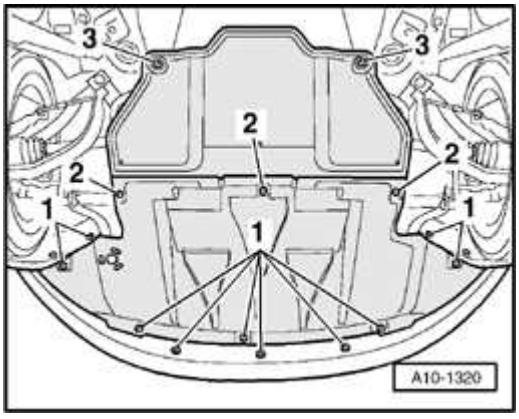


Fig. 136: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts or quick-release screws - **1 to 3** - and remove noise insulation at front and rear.

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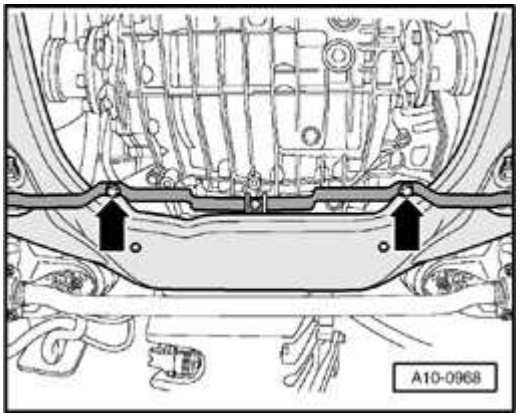


Fig. 137: Removing Bracket For Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove noise insulation bracket - **arrows** -.

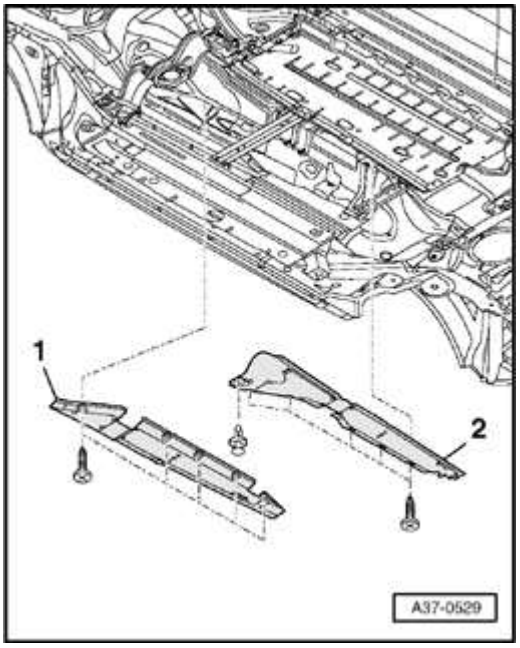


Fig. 138: Removing Vehicle Floor Plates At Inside Left/Right
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove vehicle floor plates at inside left - **2** - and inside right - **1** -.

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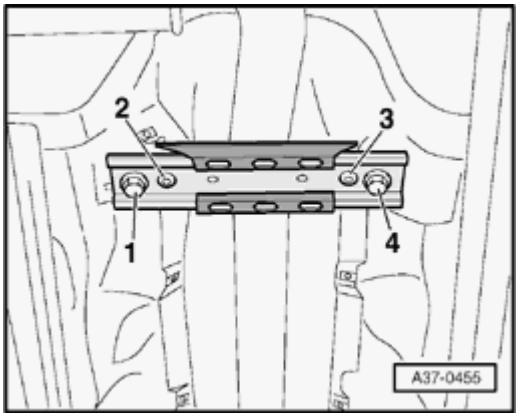


Fig. 139: Removing Bolts And Rear Cross Member For Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 through 4** - and remove rear cross member for vehicle floor:

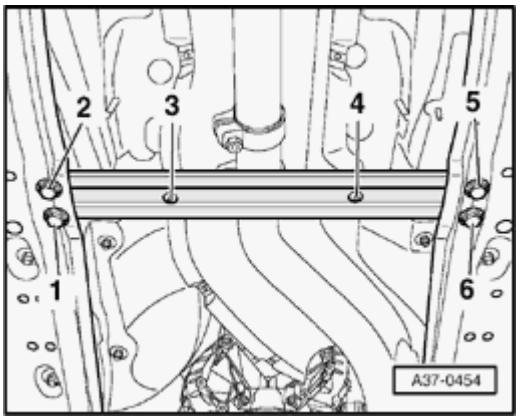


Fig. 140: Removing Bolts To Remove Front Cross Member For Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 to 6** - and remove front cross member for vehicle floor.

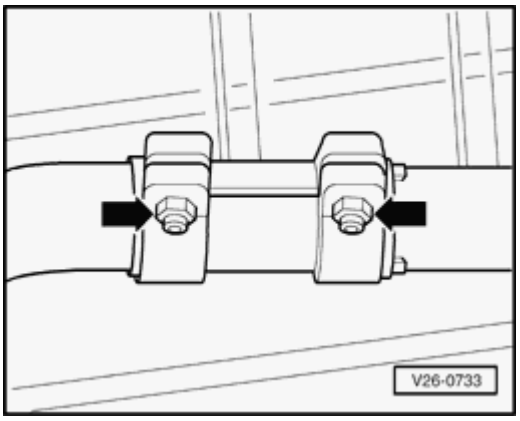


Fig. 141: Disconnecting Exhaust System At Double Clamp
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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NOTE:

- **Flex joint in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.**

- Disconnect exhaust system at double clamp - **arrows** -.
- Remove heat shield for exhaust system.

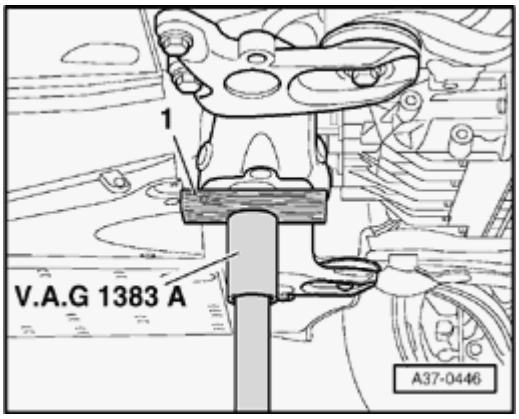


Fig. 142: Placing Plunger Of Engine/Transmission Jack V.A.G 1383 A With Block Of Wood Inserted In Between On Transmission At Bottom
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place plunger of Engine/Transmission Jack V.A.G 1383 A with a block of wood inserted in between - **1** - on transmission at bottom.
- Support tunnel cross member using Engine/Transmission Jack V.A.G 1383 A.

CAUTION: The lock carrier must be installed - danger of injury.

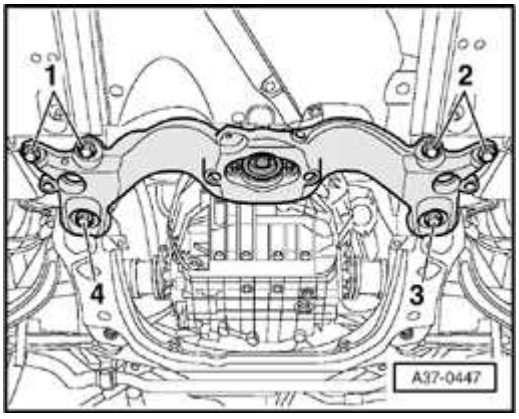


Fig. 143: Removing Bolts & Slowly Release Rear Crossmember Using VAG1383A Engine/Transmission Jack
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- First remove bolts - **1** - and - **2** - , then bolts - **3** - and - **4** -.

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- Slowly lower tunnel cross member using Engine/Transmission Jack V.A.G 1383 A.

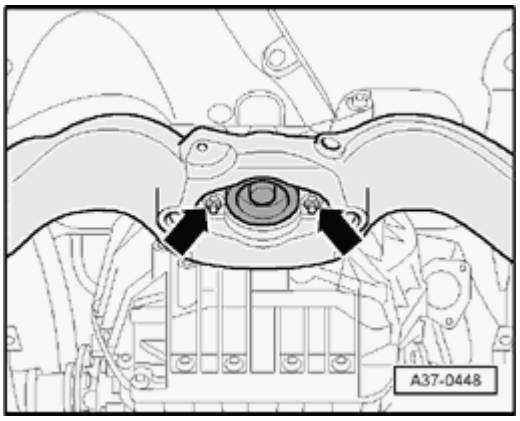


Fig. 144: Removing Nuts And Tunnel Cross Member
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **arrows** - and remove tunnel cross member.

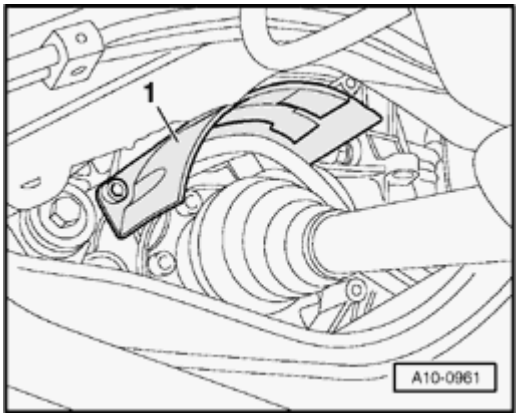


Fig. 145: Removing Left/Right Heat Shields For Drive Axles
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove heat shield - **1** - for right drive axle.
- Remove drive axle from transmission flange on left and right sides --> **40 - FRONT SUSPENSION** .
- Remove front exhaust pipe bracket - **1** -.

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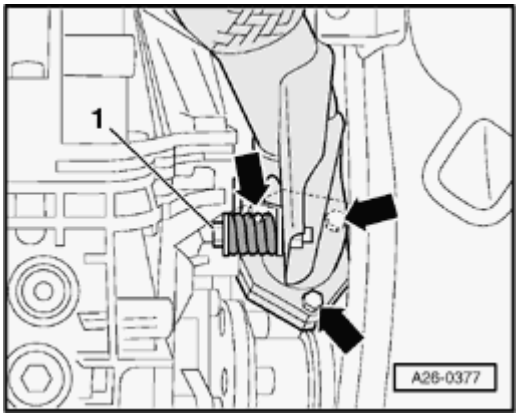


Fig. 146: Removing Front Exhaust Pipe Bracket & Bolts Front Exhaust Pipe/Catalytic Converter
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - for front exhaust pipe/catalytic converter.

NOTE:

- **Flex joint in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.**

- Remove front exhaust pipe.

NOTE:

- **Observe the rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**

- Place an oil receptacle underneath transmission.

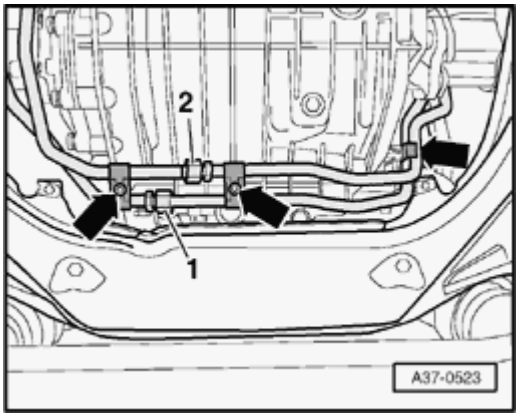


Fig. 147: Removing Union Nuts And Disconnecting ATF Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove union nuts - **1** - and - **2** - and disconnect ATF lines.
- Remove bracket for ATF-lines - **arrows** -.

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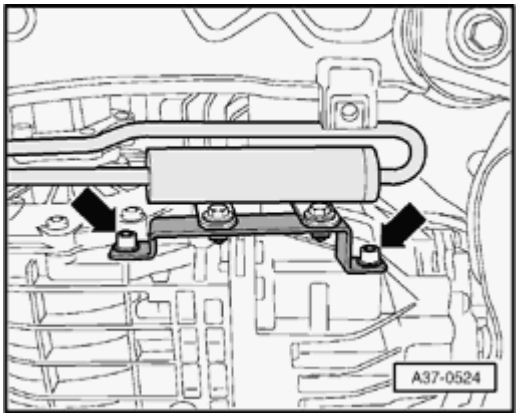


Fig. 148: Removing ATF Filter On Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove ATF filter on transmission - **arrows** -.

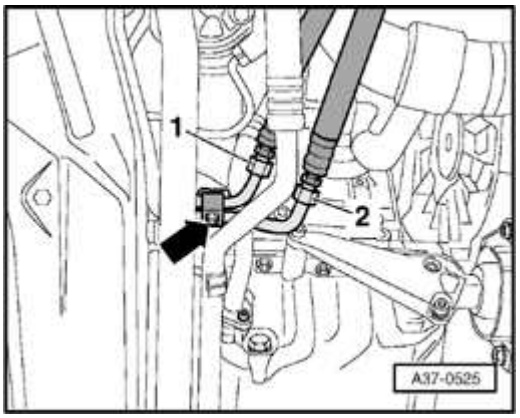


Fig. 149: Disconnecting ATF Pipes & Removing Bracket For ATF Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove union nuts - **1** - and - **2** - and disconnect ATF lines.
- Remove bracket for ATF-lines - **arrows** -.

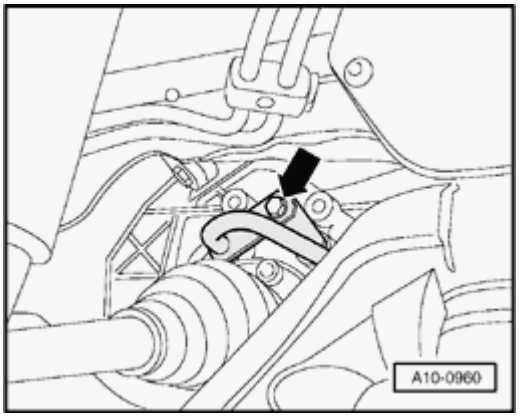


Fig. 150: Removing Bolt And ATF Lines From Transmission

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **arrow** - and remove ATF lines from transmission.
- Disconnect ATF lines.

For transmission with right-angled connector:

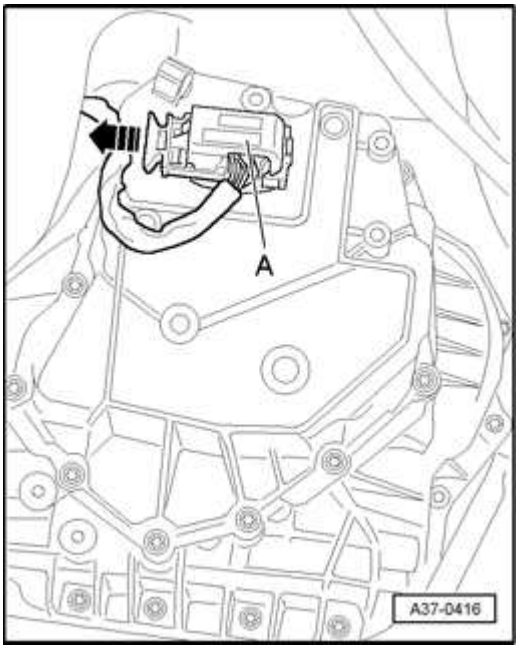


Fig. 151: Disengaging Harness Connector From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disengage harness connector - **A** - in direction of - **arrow** - and disconnect it from transmission.
- Free up wiring harness.

For transmission with round connector:

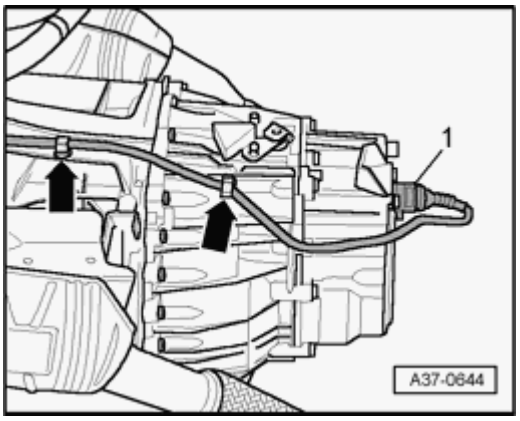


Fig. 152: Disengaging Electrical Harness Connector And Disconnecting From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Disengage electrical harness connector - **1** - and disconnect from transmission.
- Move wiring harness clear - **arrows** -.

All:

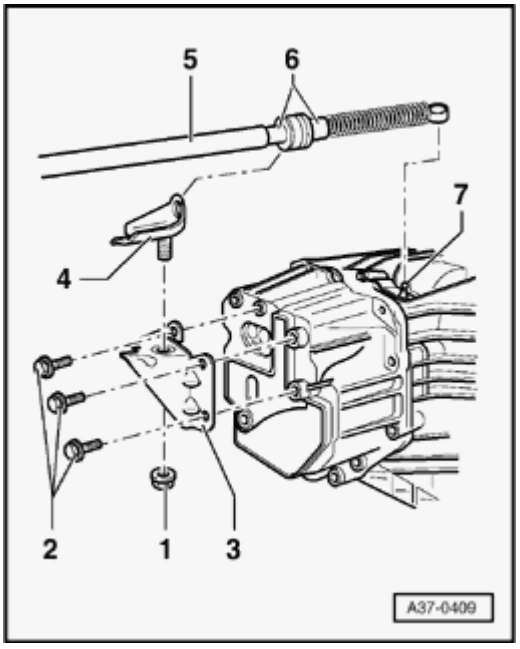


Fig. 153: Removing Bracket For Selector Lever Cable By First Removing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bracket - **3** - for selector lever cable by first removing bolts - **2** -.

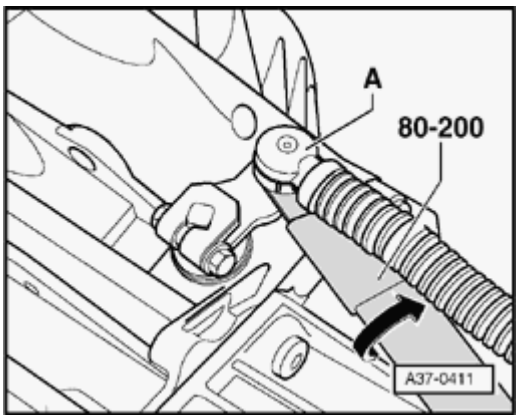


Fig. 154: Using Pry Lever 80-200 To Press Selector Lever Cable From Lever For Selector Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Using pry lever 80-200 , press selector lever cable - **A** - from lever for selector shaft - **arrow** -.

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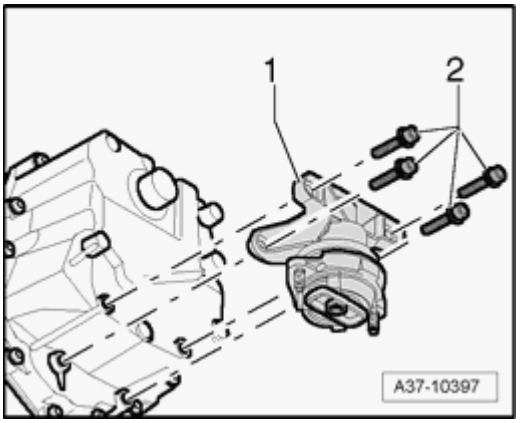


Fig. 155: Removing Bolts And Transmission Support From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **2** - and remove transmission support - **1** - from transmission.

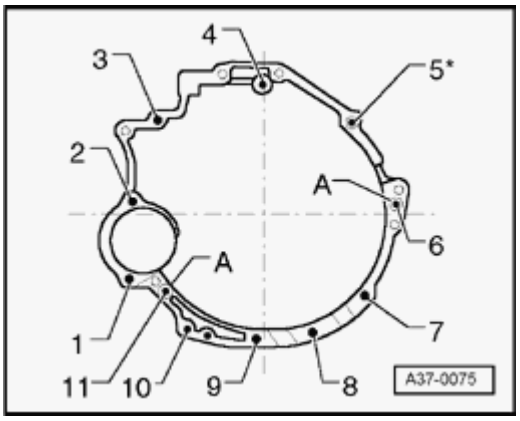


Fig. 156: Identifying Engine/Transmission Mountings (Automatic/Manual Transmission)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 to 5** - and - **11** - on engine/transmission flange.
- Loosen bolt - **6** - only and then tighten by hand.

NOTE:

- **Starter must not be removed.**

- Mount transmission support 3282 on Engine/Transmission Jack V.A.G 1383 A.

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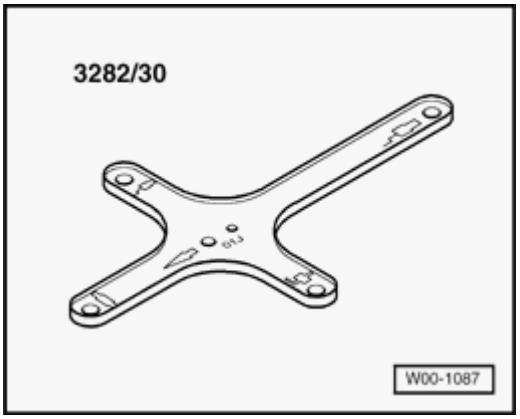


Fig. 157: Identifying Template 3282/30
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Set Template 3282/30 on to transmission support 3282 (template only installs in one position).
- Align arms of transmission support to correspond with holes in adjustment plate.
- Attach support elements on adjustment plate, as illustrated.

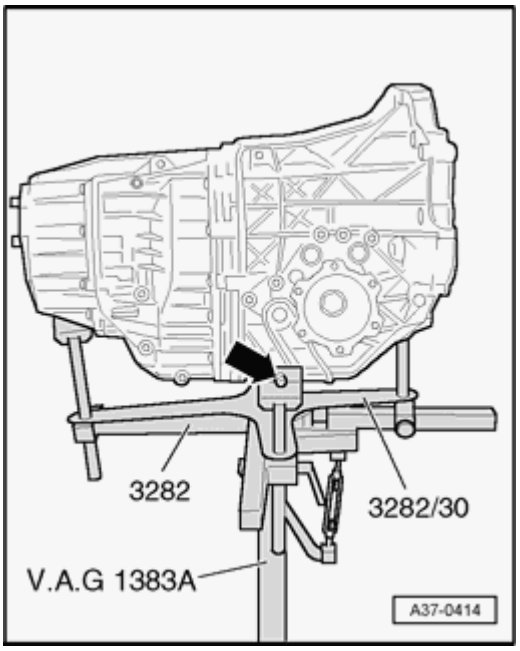


Fig. 158: Moving Engine/Transmission Jack V.A.G 1383 A With Transmission Mount 3282 Under Transmission And Support Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Move engine/transmission jack V.A.G 1383 A with transmission mount 3282 under transmission and support transmission.

NOTE:

- **The arrow symbol on the adjusting plate points in direction of travel.**

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- Align template parallel to transmission and secure to transmission using a bolt M10 x 20 - **arrow** -.

Audi Cabriolet:

NOTE:

- **So that the 4 engine/transmission connecting bolts at bottom can be removed on the Audi Cabriolet, the following work steps must also be performed:**

- Raise transmission slightly using Engine/Transmission Jack V.A.G 1383 A.

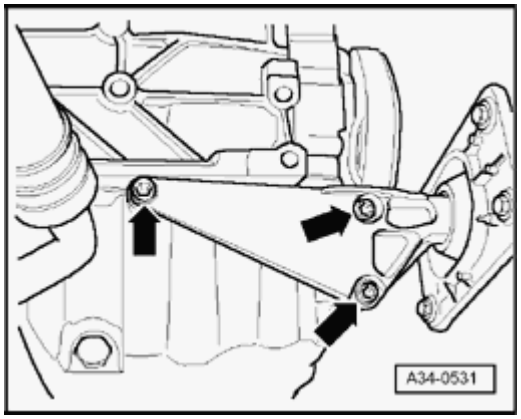


Fig. 159: Removing Torque Support
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove torque support - **arrows** -.

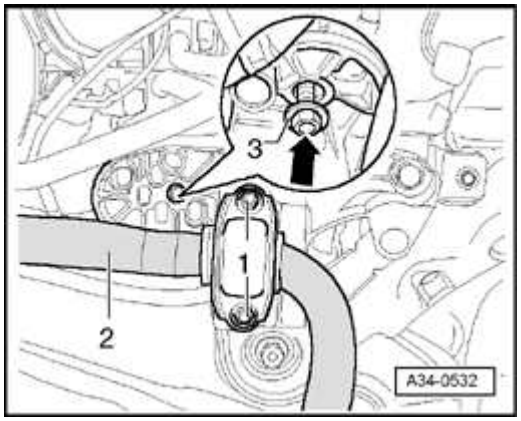


Fig. 160: Swivel Stabilizer Bar Nuts, Engine Mountings Nut And End Of Stud
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left and right nuts - **1** - and swing stabilizer bar - **2** - downward.
- Remove nuts - **3** - at engine mount on left and right far enough until lower edge of nut is flush with threaded pin - **arrow** -.
- Raise engine using engine support bridge 10-222 A far enough until both nuts - **3** - (on left and right

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sides) make contact on plate from below.

All:

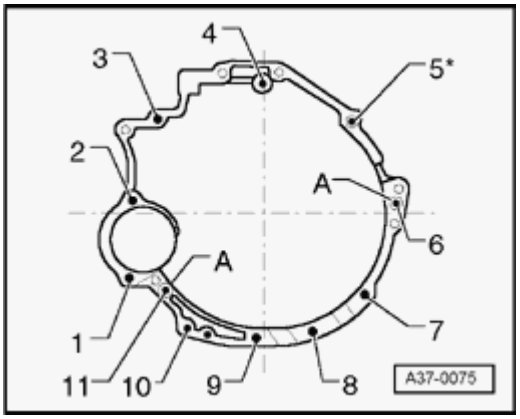


Fig. 161: Identifying Engine/Transmission Mountings (Automatic/Manual Transmission)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **7 to 10** - at engine/transmission flange.

Audi Cabriolet:

- Lower engine again.
- Lower transmission again slowly.

All:

- Tie up drive axles.
- Remove last engine/transmission mounting bolt.
- Press off transmission from bushings and let it down carefully.

Transmission (vehicles with 2.0 L normally-aspirated engine, also Audi Cabriolet), removing

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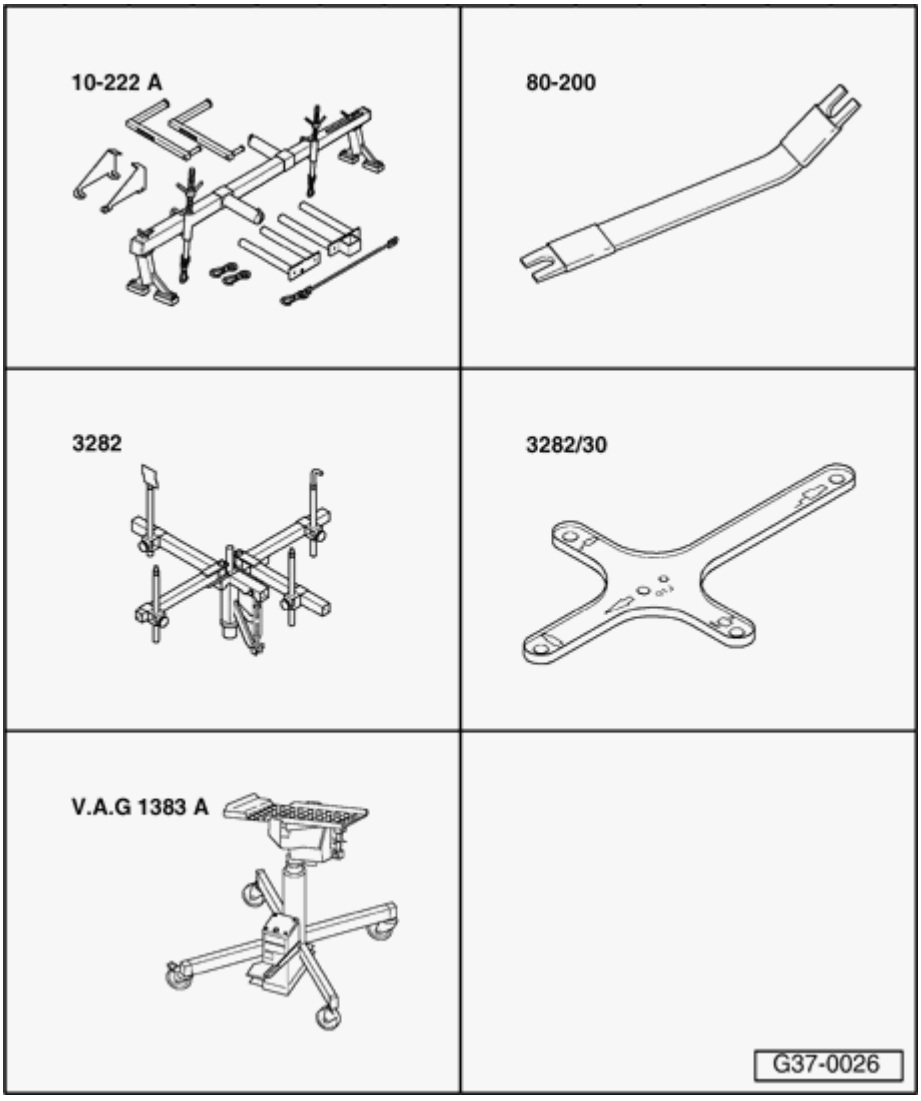


Fig. 162: Identifying Special Tools - Transmission (Vehicles With 2.0 L Normally-Aspirated Engine, Also Audi Cabriolet), Removing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Engine support bridge 10-222 A
- Pry lever 80-200
- Transmission support 3282
- Adjustment plate 3282/30
- Engine/Transmission Jack V.A.G 1383 A

Special tools, testers and auxiliary items required

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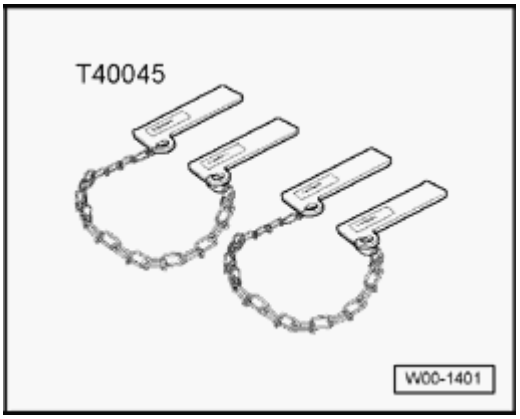


Fig. 163: Insert Pad For Front Fender T40045
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fender insert pads T40045

Work procedure

- Place selector lever in position "P".

CAUTION: Observe procedures for disconnecting battery -->

- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

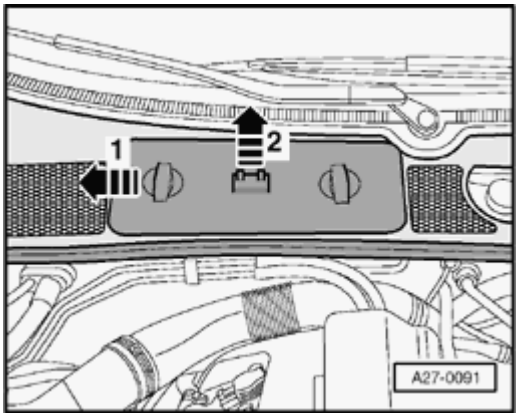


Fig. 164: Sliding Cover Over Battery To Right And Pull It Off Upwards
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Slide cover over battery to right - **arrow 1** - and pull it off upwards - **arrow 2** -.

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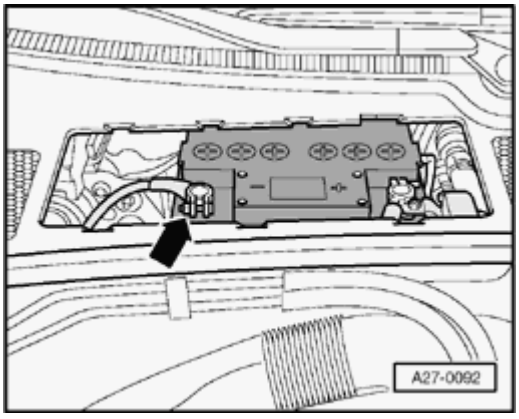


Fig. 165: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) wire - **arrow** -.

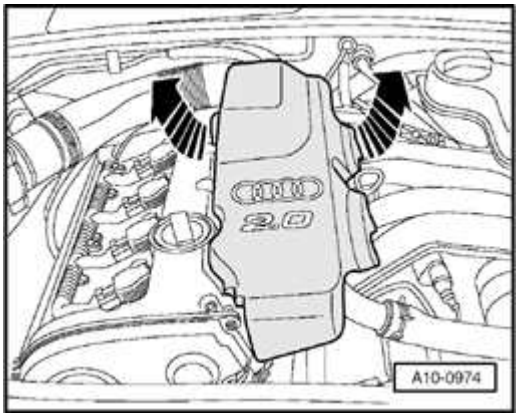


Fig. 166: Removing Engine Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove engine cover - **arrows** -.

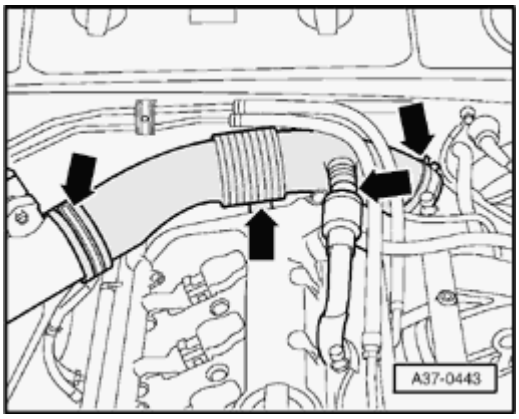


Fig. 167: Disconnecting Air Guide Hose Between Mass Air Flow (MAF) Sensor And Intake Manifold
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Disconnect air guide hose between Mass Air Flow (MAF) sensor and intake manifold - **arrows** -.

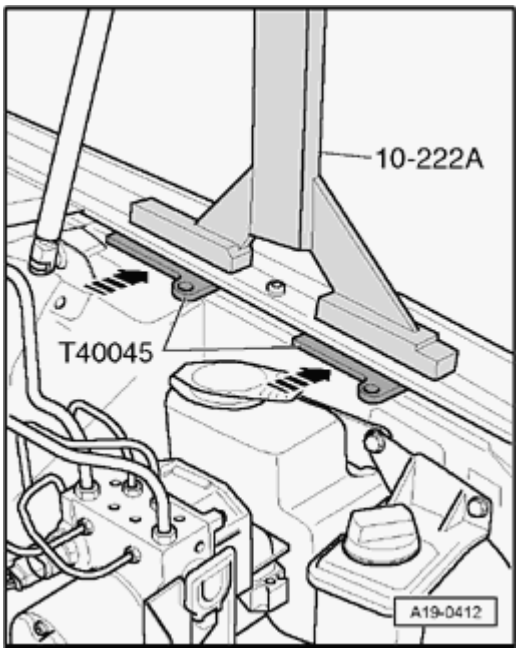


Fig. 168: Placing Insert Pad For Front Fender T40045 On Both Sides Between Fender Attachment Edge And Web Plate Lying Beneath
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull off sealing rubber at bolted flanges of fender.
- To prevent damage to bolted flanges of fender when using engine support bridge 10-222 A , insert fender insert pads T40045 on both sides between bolted flange of fender and web plate lying beneath.

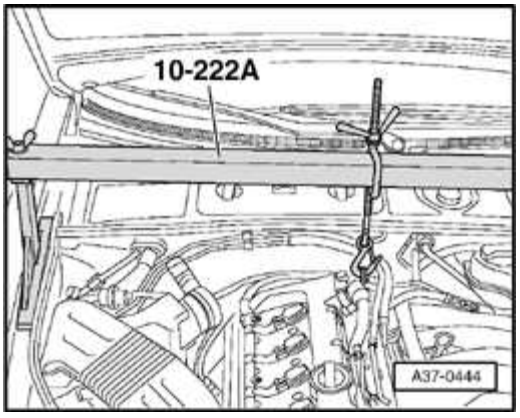


Fig. 169: Positioning Engine Support Bridge 10-222 A Onto Bolted Flange Of Fenders
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position engine support bridge 10-222 A onto bolted flange of fenders; spindle stands at rear.
- Expose rear lifting eye on engine.
- Connect hook on spindle with lifting eye on back of engine.

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- Take up some of the engine weight by tightening spindle of support bar, but do not lift.

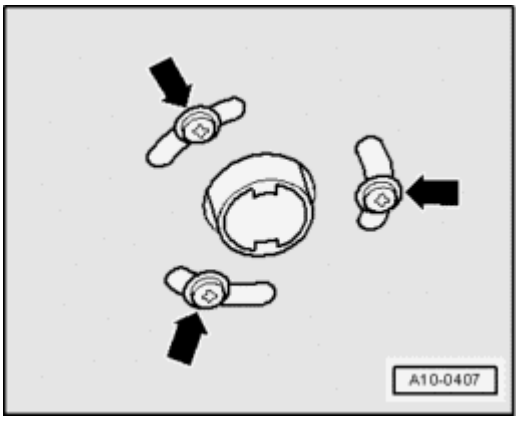


Fig. 170: Identifying Exhaust Pipe Fasteners
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove both front wheels.
- On vehicles equipped with auxiliary heater, remove bolts - **arrows** - for exhaust pipe of auxiliary/additional heater to noise insulation.

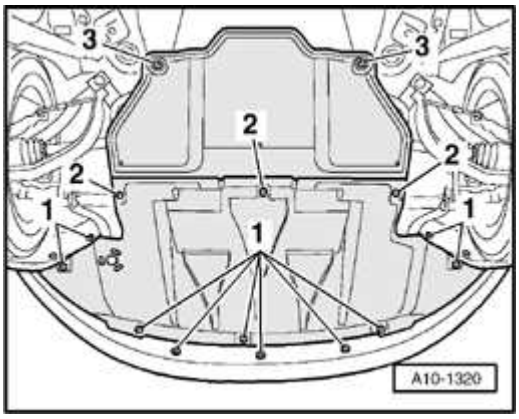


Fig. 171: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts or quick-release screws - **1 to 3** - and remove noise insulation at front and rear.

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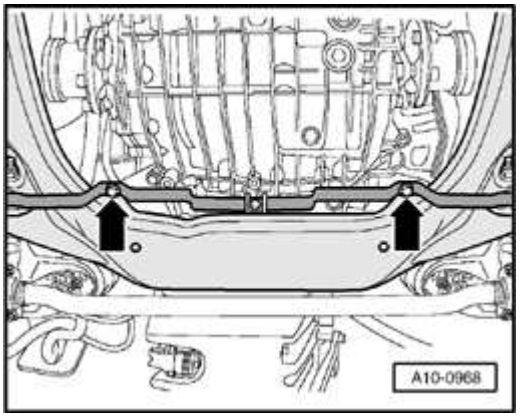


Fig. 172: Removing Bracket For Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove noise insulation bracket - **arrows** -.

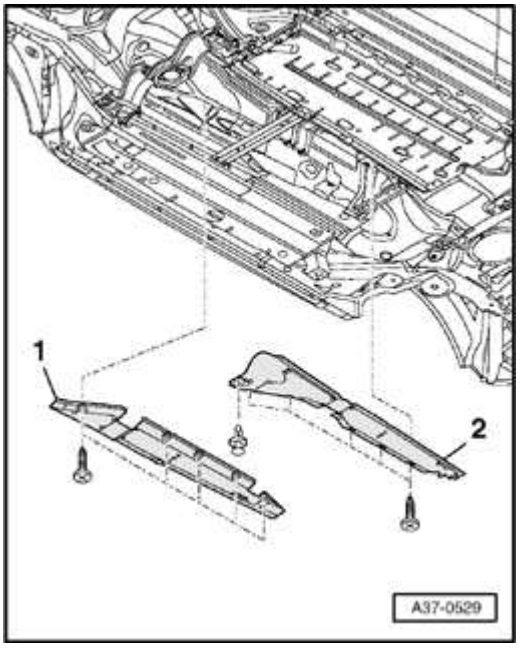


Fig. 173: Removing Vehicle Floor Plates At Inside Left/Right
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove vehicle floor plates at inside left - **2** - and inside right - **1** -.

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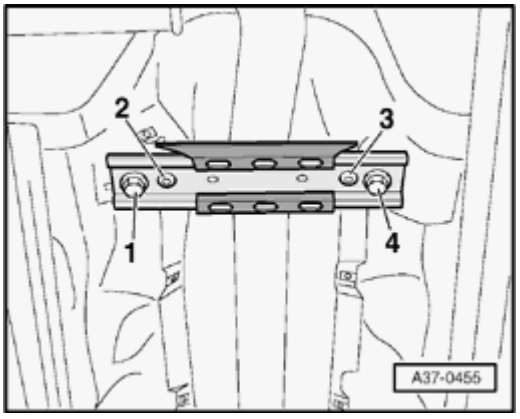


Fig. 174: Removing Bolts And Rear Cross Member For Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 through 4** - and remove rear cross member for vehicle floor.

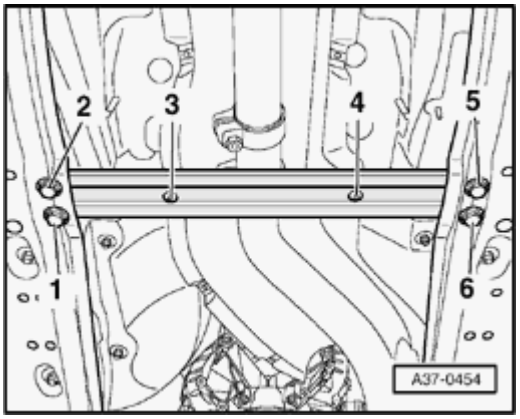


Fig. 175: Removing Bolts To Remove Front Cross Member For Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 to 6** - to remove front cross member for vehicle floor.

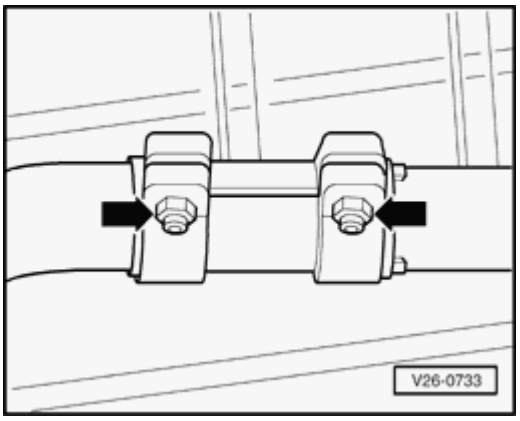


Fig. 176: Disconnecting Exhaust System At Double Clamp
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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NOTE:

- **Flex joint in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.**

- Disconnect exhaust system at double clamp - **arrows** -.
- Remove heat shield for exhaust system.

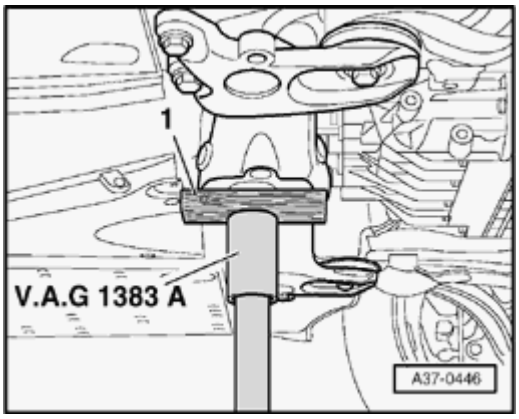


Fig. 177: Placing Plunger Of Engine/Transmission Jack V.A.G 1383 A With Block Of Wood Inserted In Between On Transmission At Bottom
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place plunger of Engine/Transmission Jack V.A.G 1383 A with a block of wood inserted in between - **1** - on transmission at bottom.
- Support tunnel cross member using Engine/Transmission Jack V.A.G 1383 A.

CAUTION: The lock carrier must be installed - danger of injury.

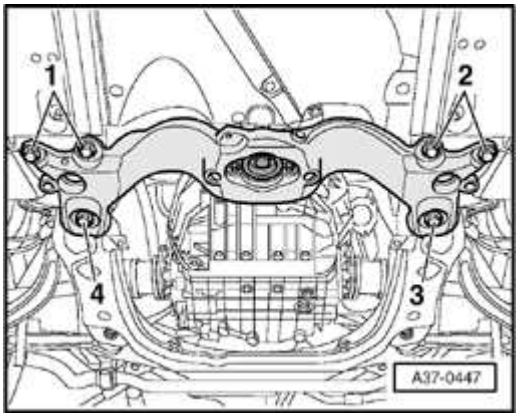


Fig. 178: Removing Bolts & Slowly Release Rear Crossmember Using VAG1383A Engine/Transmission Jack
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- First remove bolts - **1** - and - **2** - , then bolts - **3** - and - **4** -.

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- Slowly lower tunnel cross member using Engine/Transmission Jack V.A.G 1383 A.

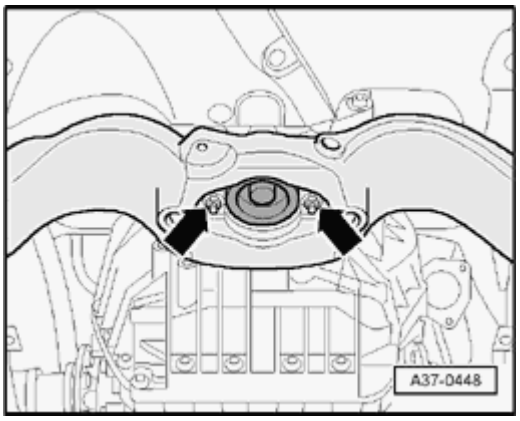


Fig. 179: Removing Nuts And Tunnel Cross Member
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **arrows** - and remove tunnel cross member.

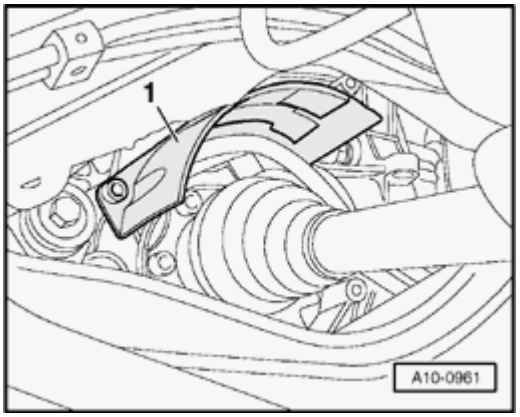


Fig. 180: Removing Left/Right Heat Shields For Drive Axles
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove heat shield - **1** - for right drive axle.
- Remove drive axle from transmission flange on left and right sides --> **40 - FRONT SUSPENSION** .

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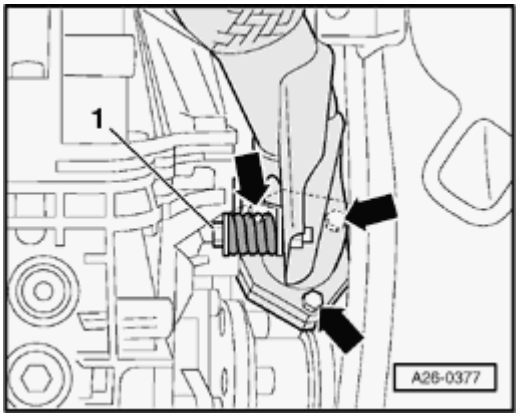


Fig. 181: Removing Front Exhaust Pipe Bracket & Bolts Front Exhaust Pipe/Catalytic Converter
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove front exhaust pipe bracket - **1** -.
- Remove bolts front exhaust pipe/catalytic converter - **arrows** -.

NOTE:

- **Flex joint in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.**

- Remove front exhaust pipe.

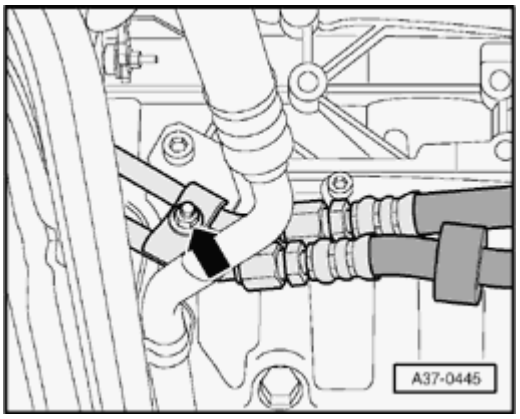


Fig. 182: Removing Bracket For ATF-Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bracket for ATF-lines - **arrow** -.

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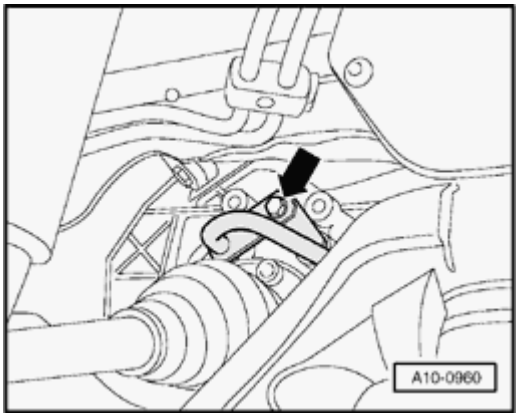


Fig. 183: Removing Bolt And ATF Lines From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Observe the rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**

- Place an oil receptacle underneath transmission.
- Remove bolt - **arrow** - and remove ATF lines from transmission.
- Move ATF lines clear to one side and secure in place.

For transmission with right-angled connector:

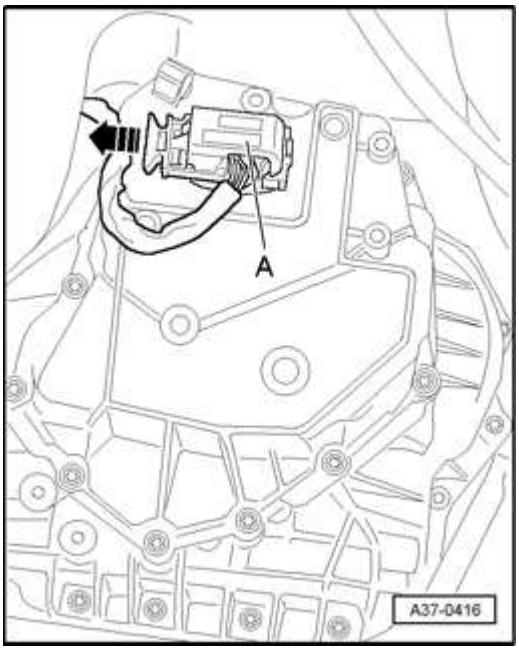


Fig. 184: Disengaging Harness Connector From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disengage harness connector - **A** - in direction of - **arrow** - and disconnect it from transmission.

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- Free up wiring harness.

For transmission with round connector:

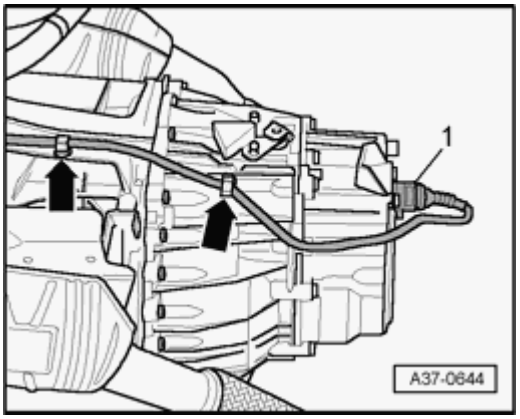


Fig. 185: Disengaging Electrical Harness Connector And Disconnecting From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disengage electrical harness connector - **1** - and disconnect from transmission.
- Move wiring harness clear - **arrows** -.

All:

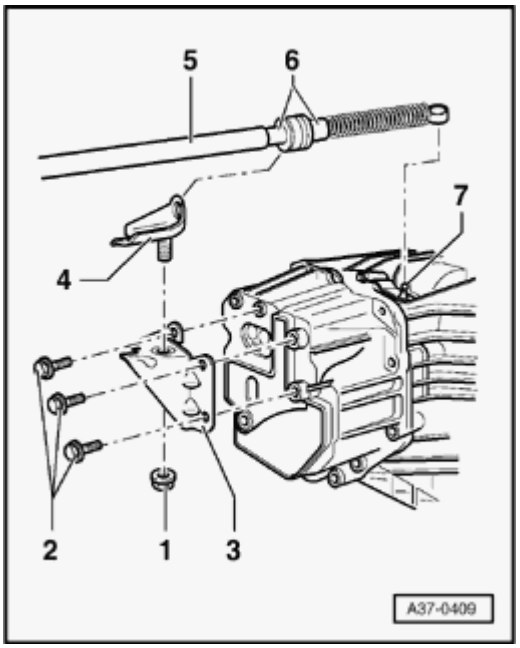


Fig. 186: Removing Bracket For Selector Lever Cable By First Removing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bracket - **3** - for selector lever cable by first removing bolts - **2** -.

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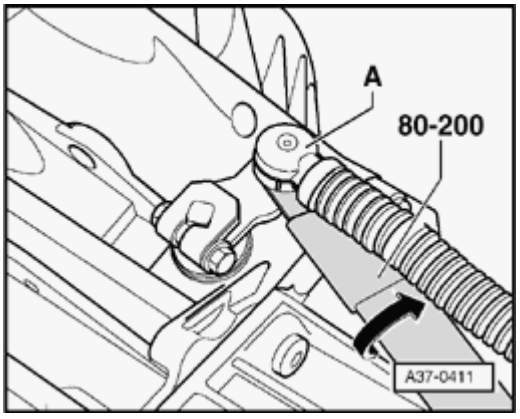


Fig. 187: Using Pry Lever 80-200 To Press Selector Lever Cable From Lever For Selector Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Using pry lever 80-200 , press selector lever cable - **A** - from lever for selector shaft - **arrow** -.

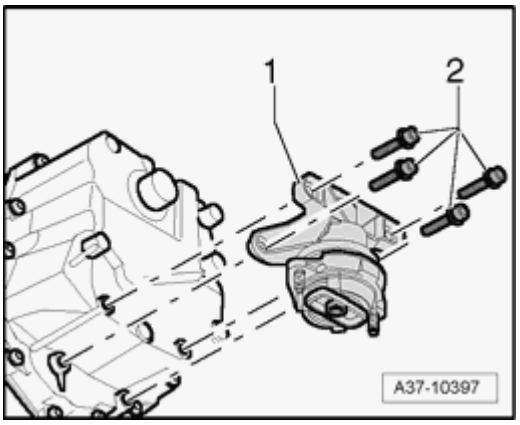


Fig. 188: Removing Bolts And Transmission Support From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **2** - and remove transmission support - **1** - from transmission.

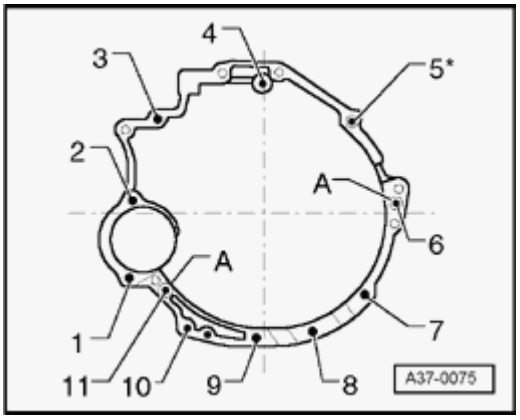


Fig. 189: Identifying Engine/Transmission Mountings (Automatic/Manual Transmission)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Remove bolts - **1 to 5** - and - **11** - on engine/transmission flange.
- Loosen bolt - **6** - only and then tighten by hand.

NOTE:

- **Starter must not be removed.**

- Mount transmission support 3282 on Engine/Transmission Jack V.A.G 1383 A.

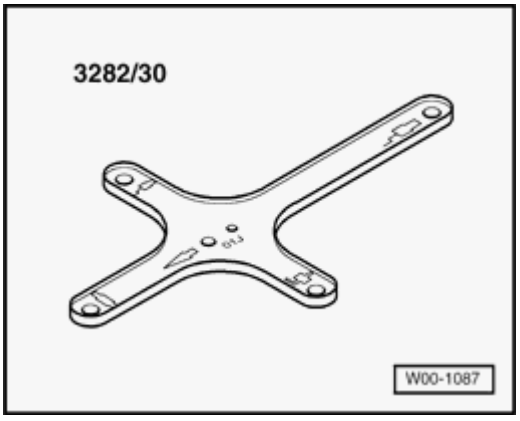


Fig. 190: Identifying Template 3282/30
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Set Template 3282/30 on to transmission support 3282 (template only fits in one position).
- Align arms of transmission support to correspond with holes in adjustment plate.
- Attach support elements on adjustment plate, as illustrated.

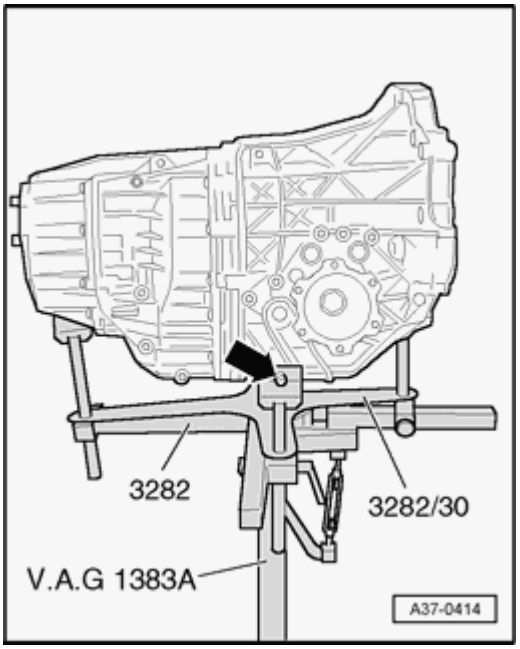


Fig. 191: Moving Engine/Transmission Jack V.A.G 1383 A With Transmission Mount 3282 Under Transmission And Support Transmission

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Move engine/transmission jack V.A.G 1383 A with transmission mount 3282 under transmission and support transmission.

NOTE:

- **The arrow symbol on the adjusting plate points in the direction of travel.**

- Align template parallel to transmission and secure to transmission using a bolt M10 x 20 - **arrow** -.
- Raise transmission slightly using Engine/Transmission Jack V.A.G 1383 A.

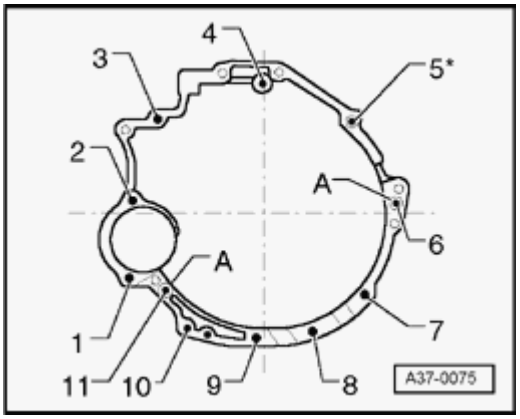


Fig. 192: Identifying Engine/Transmission Mountings (Automatic/Manual Transmission)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **7 to 10** - at engine/transmission flange.
- Lower transmission again slowly.
- Tie up drive axles.
- Remove last bolt securing transmission to engine.

- Press off transmission from bushings and let it down carefully.

Transmission (vehicles with 2.0 L TFSI engine, also Audi Cabriolet), removing

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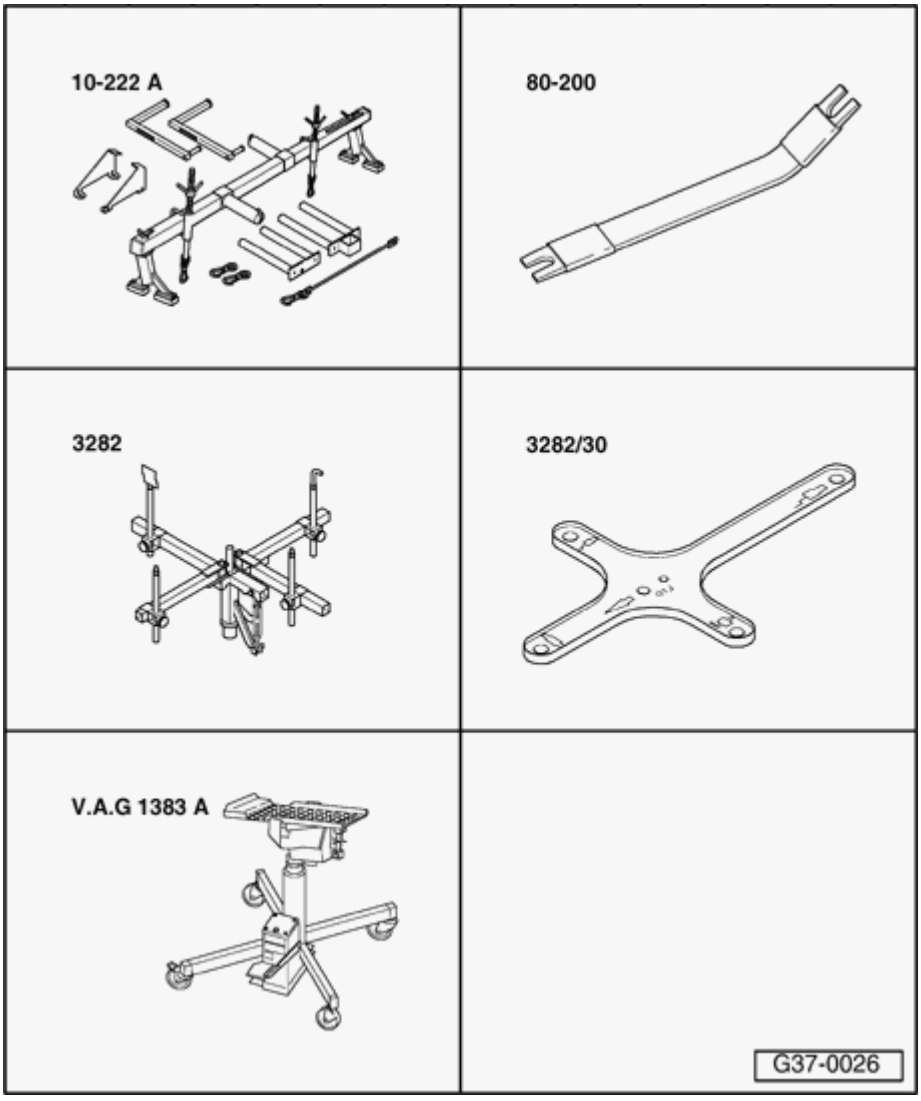


Fig. 193: Identifying Special Tools - Transmission (Vehicles With 2.0 L TFSI Engine, Also Audi Cabriolet), Removing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Engine support bridge 10-222 A
- Pry lever 80-200
- Transmission support 3282
- Adjustment plate 3282/30
- Engine/Transmission Jack V.A.G 1383 A

Special tools, testers and auxiliary items required

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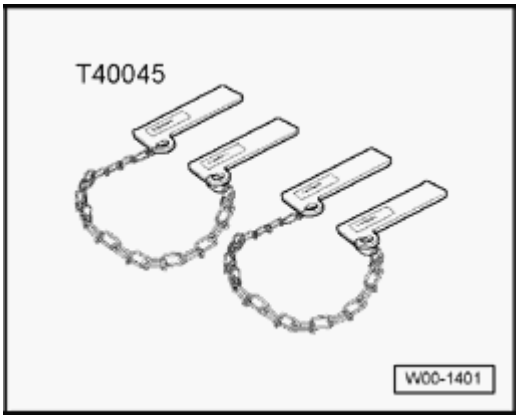


Fig. 194: Insert Pad For Front Fender T40045
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fender insert pads T40045

Work procedure

- Place selector lever in position "P".

CAUTION: Observe procedures for disconnecting battery -->

- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

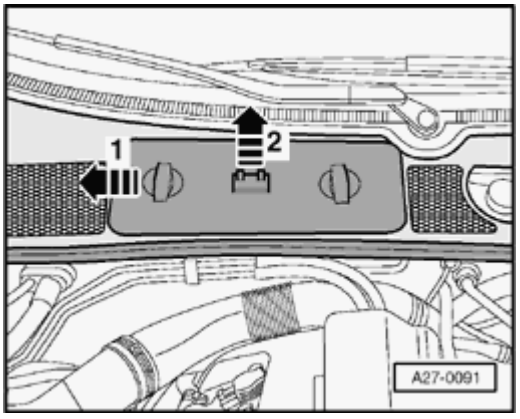


Fig. 195: Sliding Cover Over Battery To Right And Pull It Off Upwards
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Slide cover over battery to right - **arrow 1** - and pull it off upwards - **arrow 2** -.

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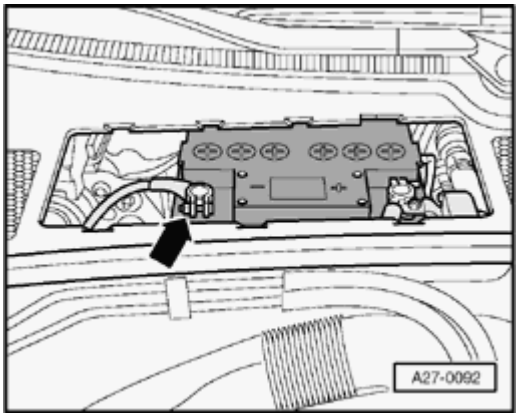


Fig. 196: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) wire - **arrow** -.

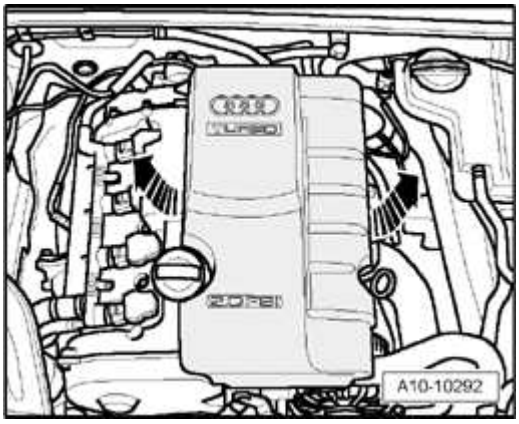


Fig. 197: Removing Engine Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove engine cover - **arrows** -.
- Pull off sealing rubber at bolted flanges of fender.

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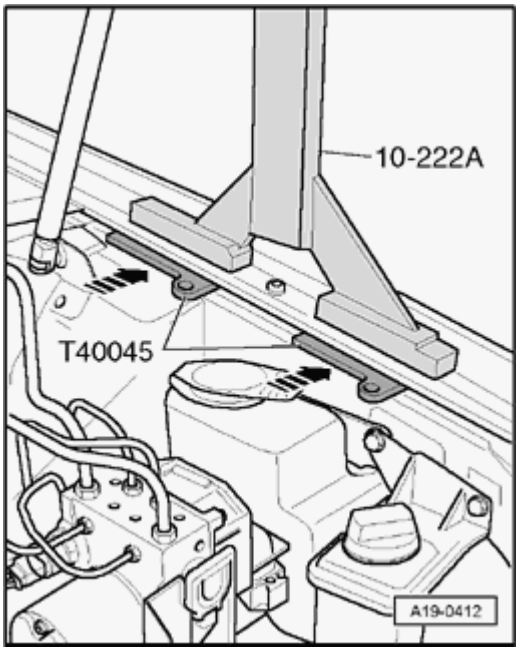


Fig. 198: Placing Insert Pad For Front Fender T40045 On Both Sides Between Fender Attachment Edge And Web Plate Lying Beneath
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- To prevent damage to bolted flanges of fender when using engine support bridge 10-222 A , insert fender insert pads T40045 on both sides between bolted flange of fender and web plate lying beneath.

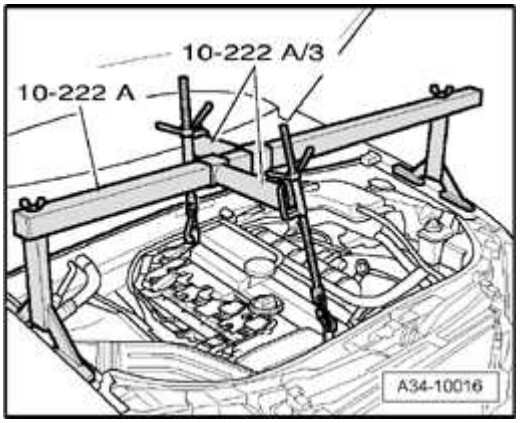


Fig. 199: Engine Support Bridge 10-222 A Set Up With Adapters 10-222/3 On Fender Mounting Flanges
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position engine support bridge 10-222 A with adapters 10-222/3 on to bolted flanges of fender.
- Position engine support bridge 10-222 A with adapters 10-222 A/3 on to bolted flanges of fender.
- Engage spindles onto engine lifting eyes as shown.
- Pre-tension engine slightly using spindles on engine support bridge.

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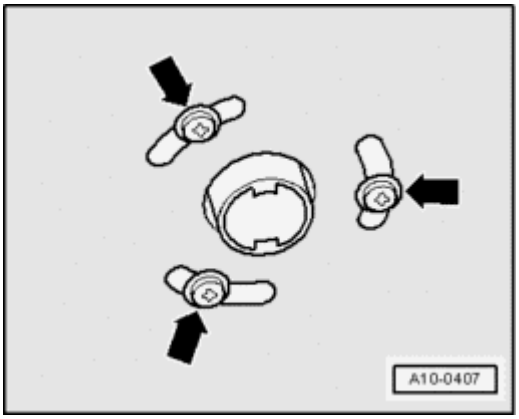


Fig. 200: Identifying Exhaust Pipe Fasteners
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove both front wheels.
- On vehicles equipped with auxiliary heater, remove bolts - **arrows** - for exhaust pipe of auxiliary/additional heater to noise insulation.

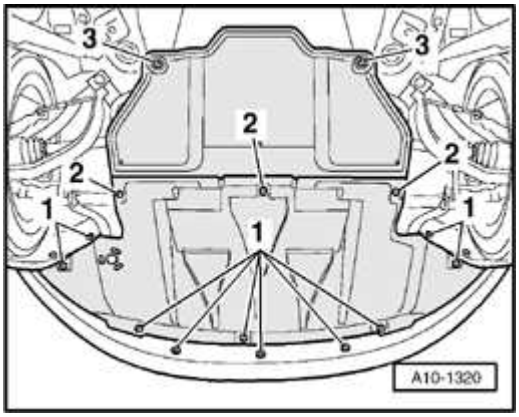
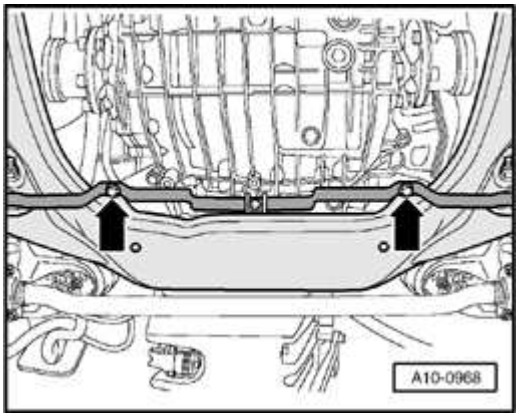


Fig. 201: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen quick-release screws - **1 to 3** - and remove front and rear noise insulation.



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Fig. 202: Removing Bracket For Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove noise insulation bracket - **arrows** -.

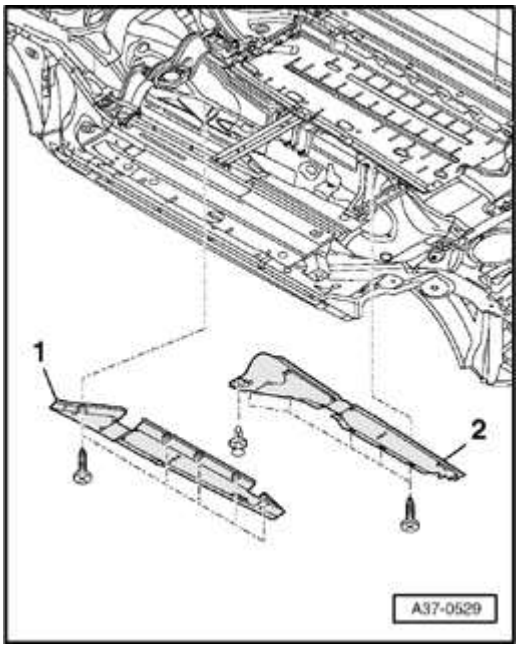


Fig. 203: Removing Vehicle Floor Plates At Inside Left/Right
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove vehicle floor plates at inside left - **2** - and inside right - **1** -.

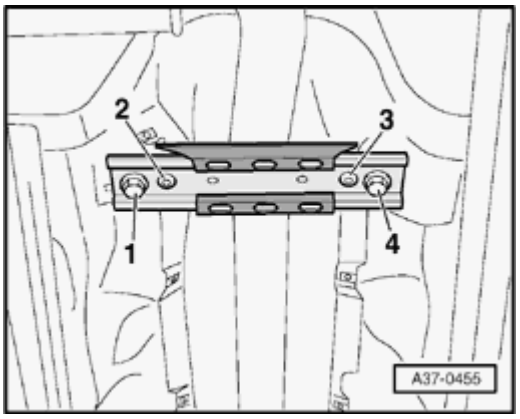


Fig. 204: Removing Bolts And Rear Cross Member For Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 through 4** - and remove rear cross member for vehicle floor.

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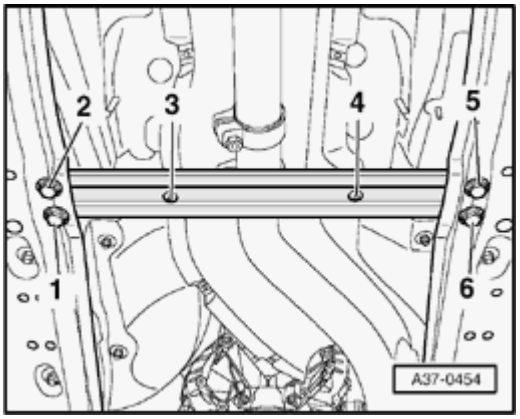


Fig. 205: Removing Bolts To Remove Front Cross Member For Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 to 6** - to remove front cross member for vehicle floor.

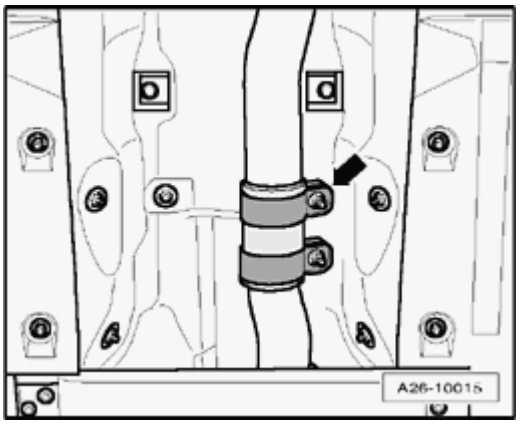


Fig. 206: Loosening Clamping Sleeve
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Flex joint in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.**

- Loosen bolts of front double clamp - **arrows** -.
- To disconnect exhaust system, slide clamping sleeve toward rear.
- Remove heat shield for exhaust system.

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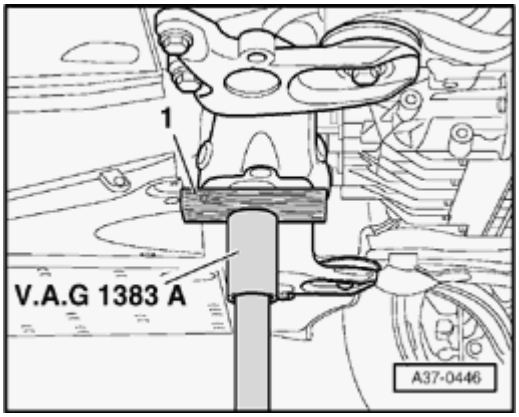


Fig. 207: Placing Plunger Of Engine/Transmission Jack V.A.G 1383 A With Block Of Wood Inserted In Between On Transmission At Bottom
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place plunger of Engine/Transmission Jack V.A.G 1383 A with a block of wood inserted in between - **1** - on transmission at bottom.
- Support tunnel cross member using Engine/Transmission Jack V.A.G 1383 A.

CAUTION: The lock carrier must be installed - danger of injury.

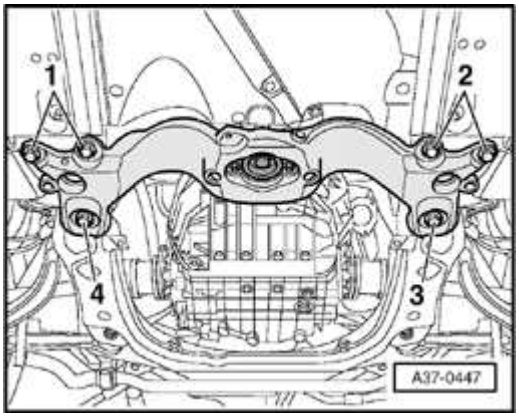


Fig. 208: Removing Bolts & Slowly Release Rear Crossmember Using VAG1383A Engine/Transmission Jack
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- First remove bolts - **1** - and - **2** - , then bolts - **3** - and - **4** -.
- Slowly lower tunnel cross member using Engine/Transmission Jack V.A.G 1383 A.

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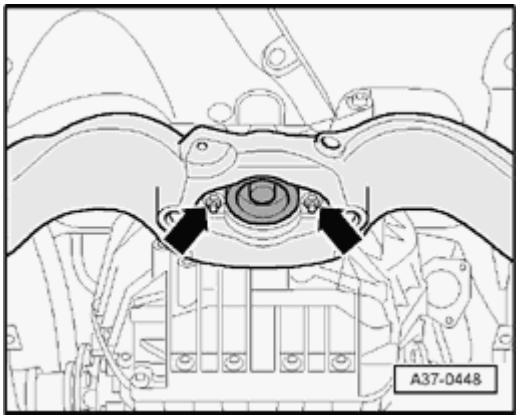


Fig. 209: Removing Nuts And Tunnel Cross Member
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **arrows** - and remove tunnel cross member.

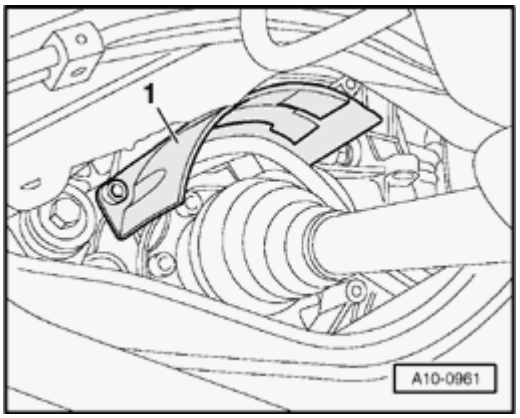


Fig. 210: Removing Left/Right Heat Shields For Drive Axles
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove heat shield - **1** - for right drive axle.
- Remove drive axle from transmission flange on left and right sides --> **40 - FRONT SUSPENSION** .

NOTE:

- **Flex joint in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.**

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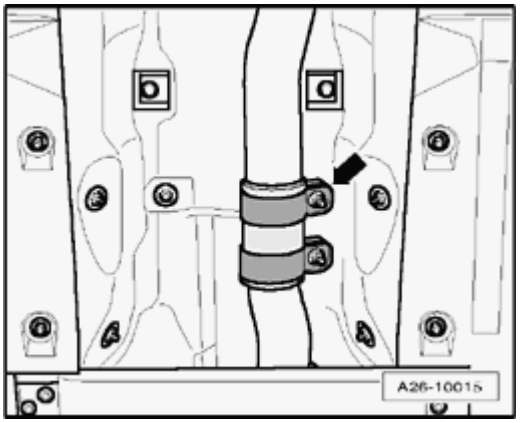


Fig. 211: Loosening Clamping Sleeve
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen bolts of front double clamp - **arrows** -.
- To disconnect exhaust system, slide clamping sleeve toward rear.

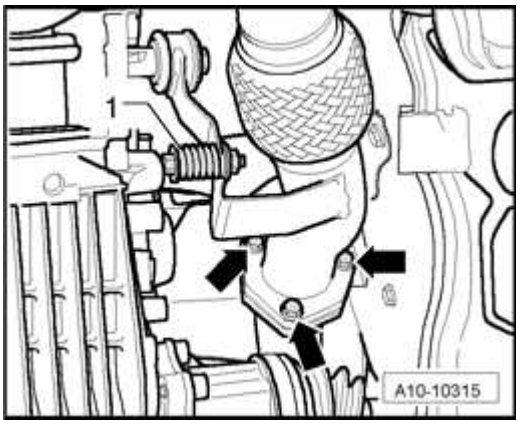
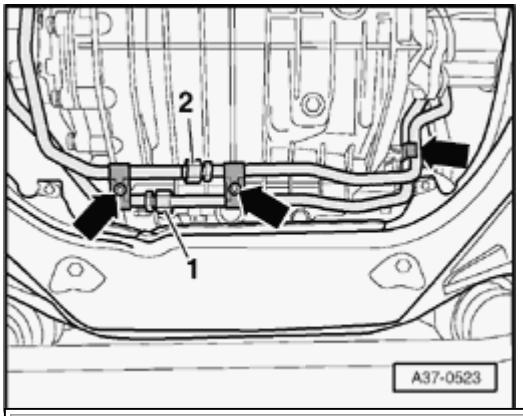


Fig. 212: Separating Front Exhaust Pipe/Catalytic Converter
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - for front exhaust pipe/catalytic converter connection.
- Remove nut - **1** - on front exhaust pipe bar and remove front exhaust pipe.



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Fig. 213: Removing Union Nuts And Disconnecting ATF Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Observe the rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**

- Place an oil receptacle underneath transmission.
- Remove union nuts - **1** - and - **2** - and disconnect ATF lines.
- Remove bracket for ATF-lines - **arrows** -.

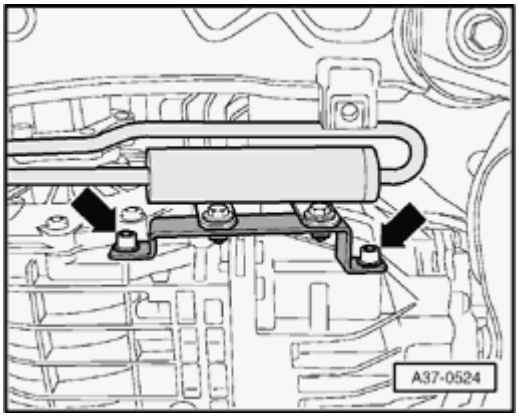


Fig. 214: Removing ATF Filter On Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove ATF filter on transmission - **arrows** -.

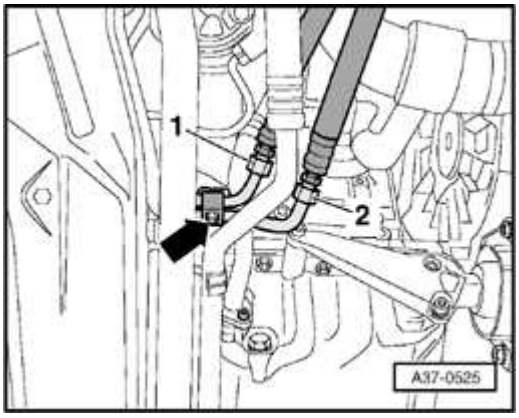


Fig. 215: Disconnecting ATF Pipes & Removing Bracket For ATF Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove union nuts - **1** - and - **2** - and disconnect ATF lines.
- Remove bracket for ATF-lines - **arrows** -.

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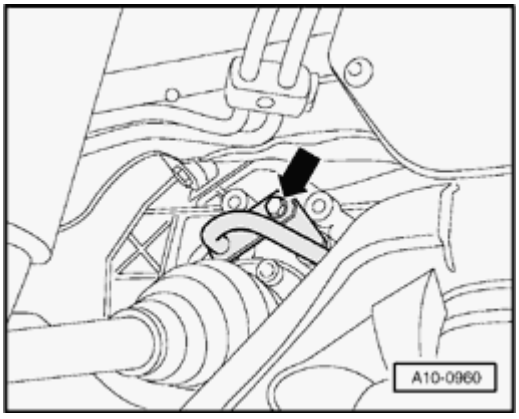


Fig. 216: Removing Bolt And ATF Lines From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **arrow** - and remove ATF lines from transmission.
- Disconnect ATF lines.

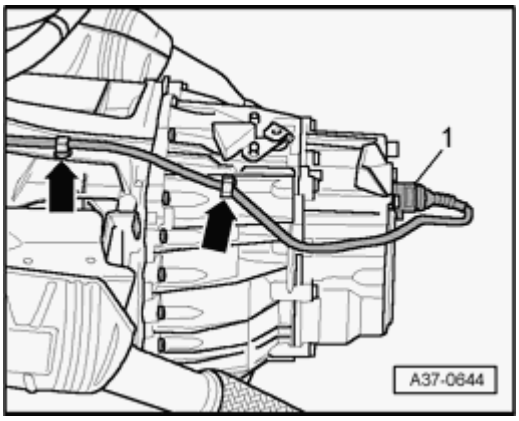


Fig. 217: Disengaging Electrical Harness Connector And Disconnecting From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disengage electrical harness connector - **1** - and disconnect it from transmission.
- Move wiring harness - **arrows** - to clear engine.

NOTE:

- **For the sake of illustration, shown with transmission removed.**

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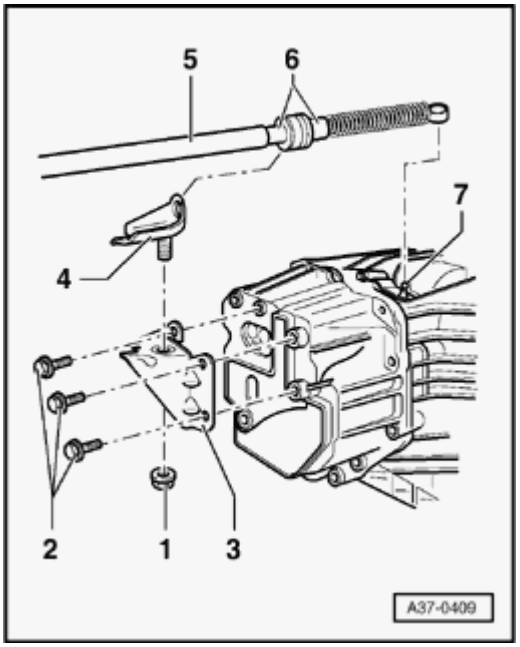


Fig. 218: Removing Bracket For Selector Lever Cable By First Removing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bracket - **3** - for selector lever cable by first removing bolts - **2** -.

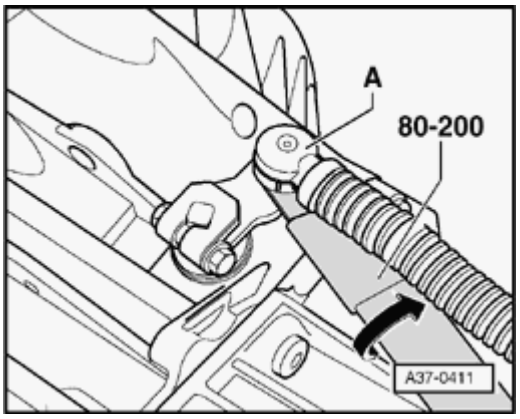


Fig. 219: Using Pry Lever 80-200 To Press Selector Lever Cable From Lever For Selector Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Using pry lever 80-200 , press selector lever cable - **A** - from lever for selector shaft - **arrow** -.

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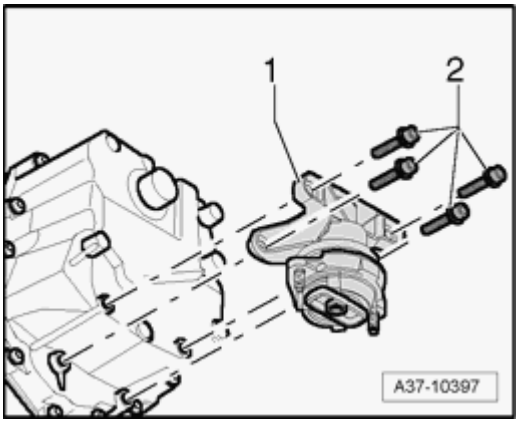


Fig. 220: Removing Bolts And Transmission Support From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **2** - and remove transmission support - **1** - from transmission.

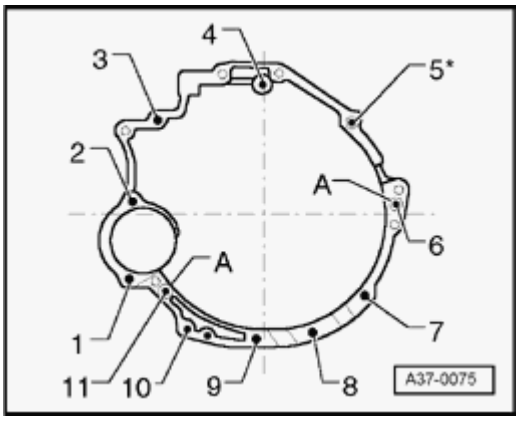


Fig. 221: Identifying Engine/Transmission Mountings (Automatic/Manual Transmission)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 to 5** - and - **11** - on engine/transmission flange.
- Loosen bolt - **6** - only and then tighten by hand.

NOTE:

- **Starter must not be removed.**

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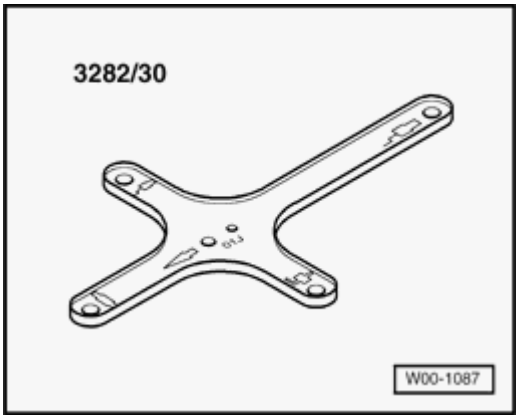


Fig. 222: Identifying Template 3282/30
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mount transmission support 3282 on Engine/Transmission Jack V.A.G 1383 A.
- Set Template 3282/30 on to transmission support 3282 (template only fits in one position).
- Align arms of transmission support to correspond with holes in adjustment plate.
- Attach support elements on adjustment plate, as illustrated.

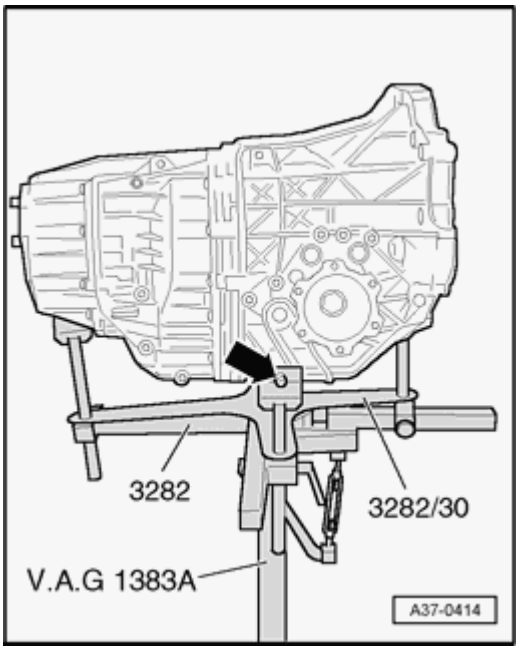


Fig. 223: Moving Engine/Transmission Jack V.A.G 1383 A With Transmission Mount 3282 Under Transmission And Support Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Move engine/transmission jack V.A.G 1383 A with transmission mount 3282 under transmission and support transmission.

NOTE:

- **The arrow symbol on the adjusting plate points in direction of travel.**

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- Align template parallel to transmission and secure to transmission using a bolt M10 x 20 - **arrow** -.

Audi Cabriolet:

NOTE:

- **So that the 4 engine/transmission connecting bolts at bottom can be removed on the Audi Cabriolet, the following work steps must also be performed:**

- Raise transmission slightly using Engine/Transmission Jack V.A.G 1383 A.

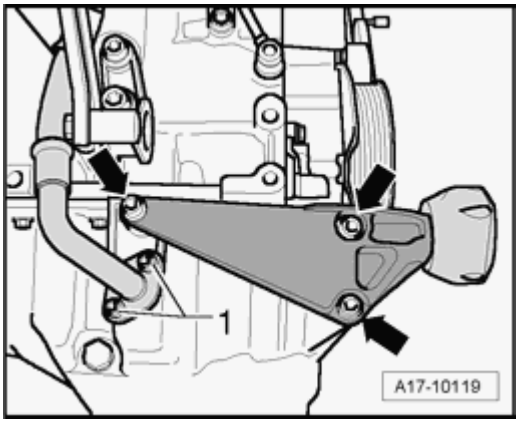


Fig. 224: Removing Bolts And Torque Supports From Oil Pan
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - and remove torque support.

NOTE:

- **Disregard - 1 -.**

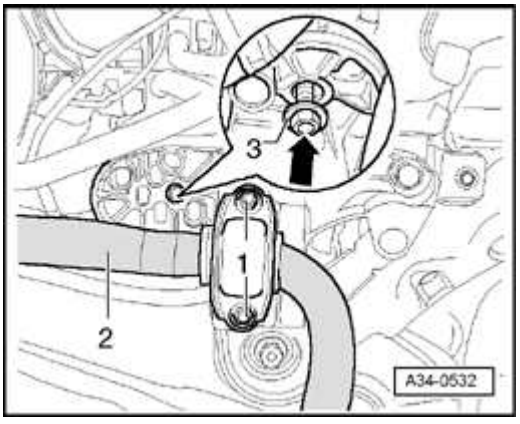


Fig. 225: Swivel Stabilizer Bar Nuts, Engine Mountings Nut And End Of Stud
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left and right nuts - **1** - and swing stabilizer bar - **2** - downward.
- Remove nuts - **3** - at engine mount on left and right far enough until lower edge of nut is flush with

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threaded pin - **arrow** -.

- Raise engine using engine support bridge 10-222 A far enough until both nuts - **3** - (on left and right sides) make contact on plate from below.

All:

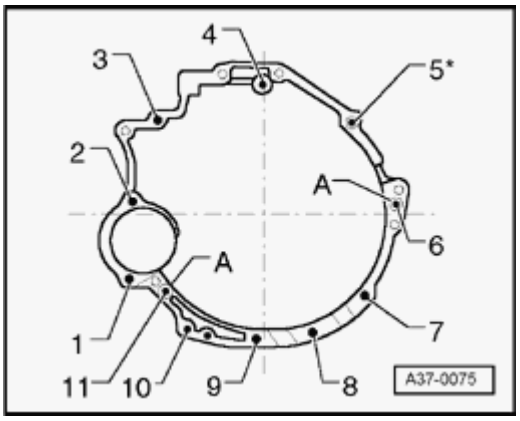


Fig. 226: Identifying Engine/Transmission Mountings (Automatic/Manual Transmission)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **7 to 10** - at engine/transmission flange.

Audi Cabriolet:

- Lower engine again.
- Lower transmission again slowly.

All:

- Tie up drive axles.
- Remove last engine/transmission mounting bolt.
- Press off transmission from bushings and let it down carefully.

Transmission (vehicles with 6-cyl. 3.0 L gasoline engine, also Audi Cabriolet), removing

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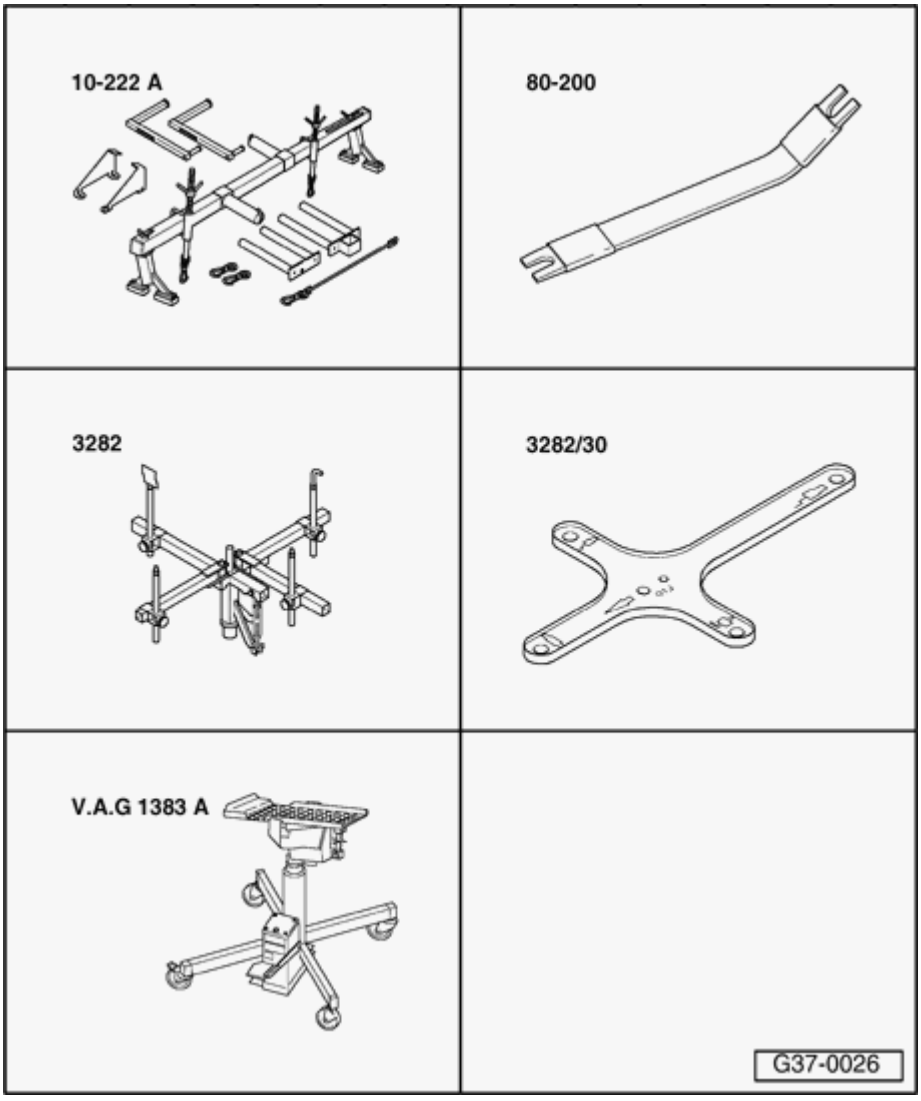


Fig. 227: Identifying Special Tools - Transmission (Vehicles With 6-Cyl. 3.0 L Gasoline Engine, Also Audi Cabriolet), Removing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Engine support bridge 10-222 A
- Pry lever 80-200
- Transmission support 3282
- Adjustment plate 3282/30
- Engine/Transmission Jack V.A.G 1383 A

Special tools, testers and auxiliary items required

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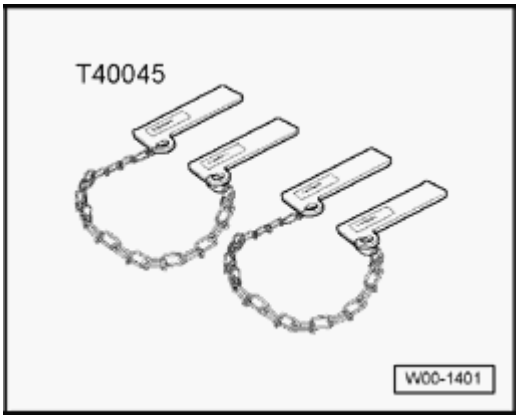


Fig. 228: Insert Pad For Front Fender T40045
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fender insert pads T40045

Work procedure

NOTE:

- **Reinstall cable ties that were loosened or cut off during removal at same locations during installation.**

- Place selector lever in position "P".

CAUTION: Observe procedures for disconnecting battery -->

- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

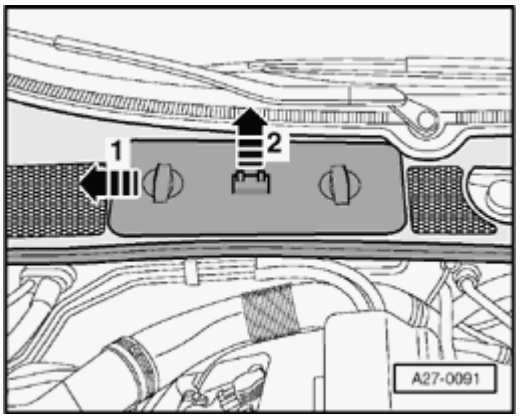


Fig. 229: Sliding Cover Over Battery To Right And Pull It Off Upwards
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Slide cover over battery to right - **arrow 1** - and pull it off upwards - **arrow 2** -.

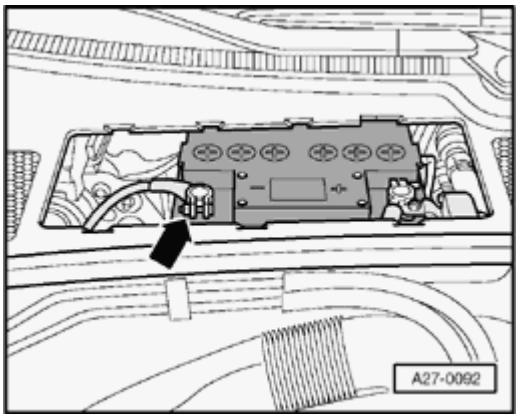


Fig. 230: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) wire - **arrow** -.

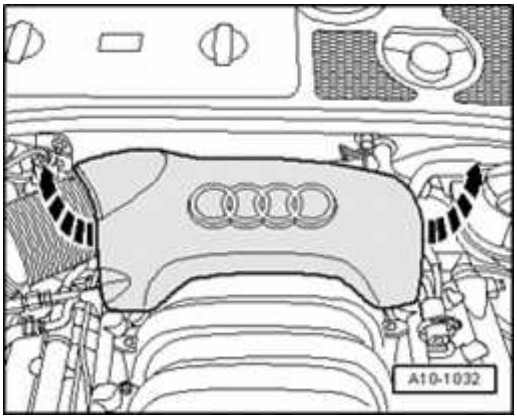
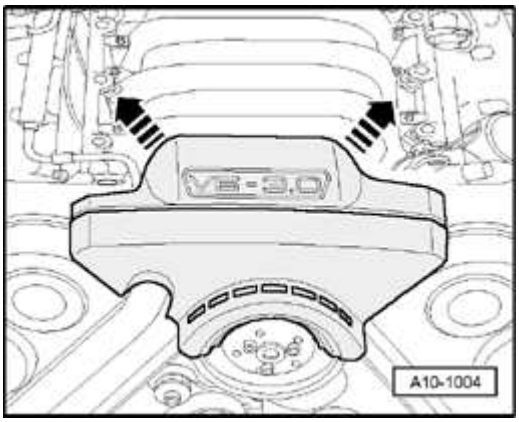


Fig. 231: Removing Rear Engine Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rear engine cover - **arrows** -.



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Fig. 232: Removing Front Engine Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove front engine cover - **arrows** -.

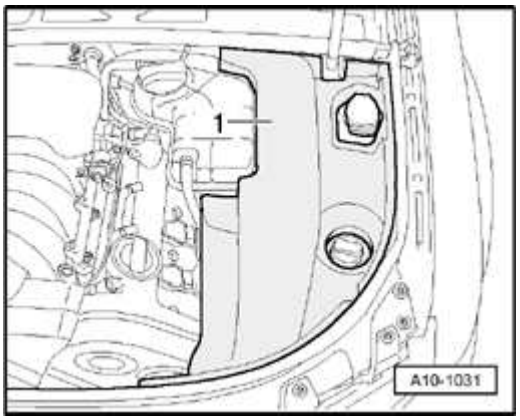


Fig. 233: Removing Cover In Engine Compartment (Left Side)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left cover - **1** - in engine compartment.

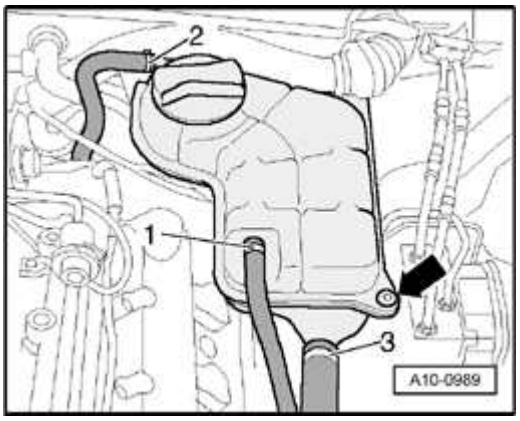


Fig. 234: Removing Coolant Hoses
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove coolant reservoir - **arrow** -.
- Disconnect electrical wiring to Engine Coolant Level (ECL) Warning Switch F66 at bottom of coolant expansion tank.
- Tie coolant expansion tank with connected coolant hoses - **1 to 3** - to side.
- If present, remove connector heat shield at left of bulkhead.

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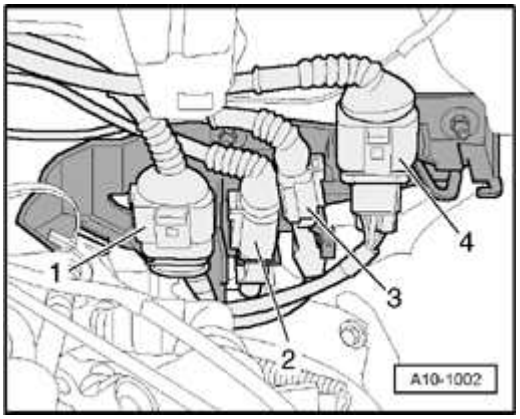


Fig. 235: Removing Harness Connectors From Bracket At Left Of Bulkhead
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove electrical connectors - **1 through 4** - from bracket at left of bulkhead.
- Disconnect electrical connectors - **1** - and - **4** -.
- Guide out wiring for lambda probes from below.

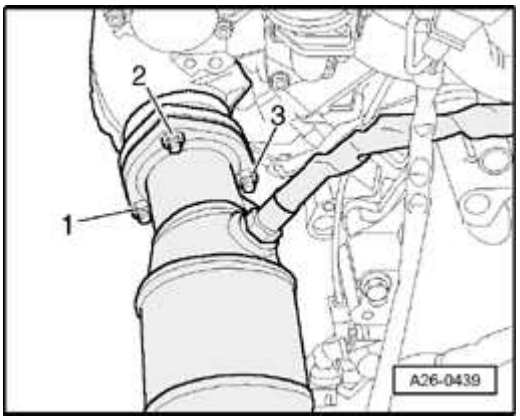


Fig. 236: Left Front Exhaust Pipe To Exhaust Manifold Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nut - **2** - which is accessible from top for left exhaust pipe/exhaust manifold.

NOTE:

- **For the sake of illustration, shown with engine removed.**

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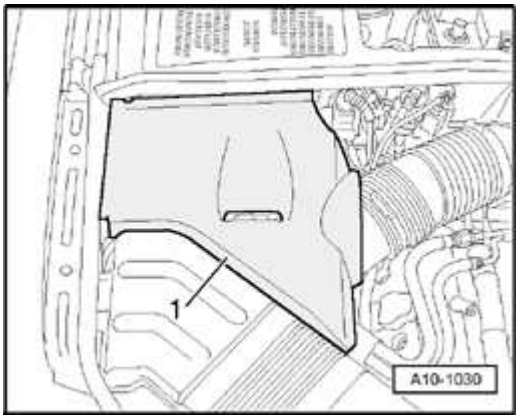


Fig. 237: Removing Cover In Engine Compartment (Right Side)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove right cover - **1** - in engine compartment.

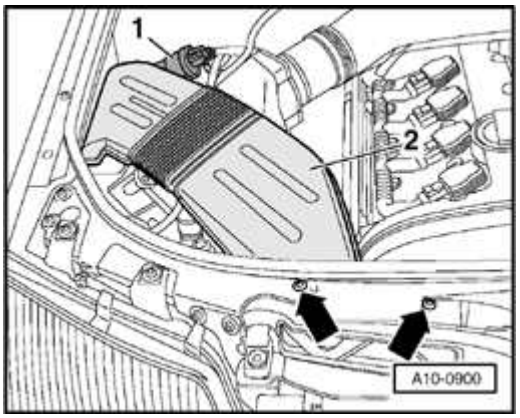
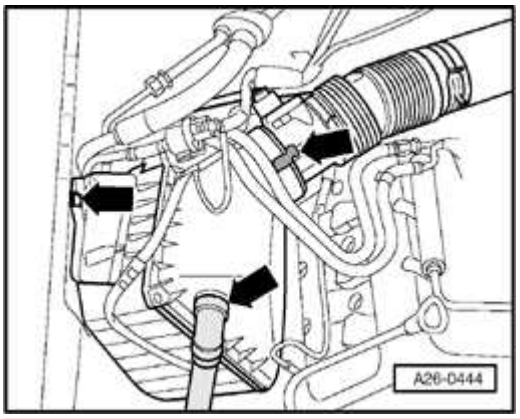


Fig. 238: Evaporative Emission Canister Purge Regulator Valve N80 And Air Duct
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** -.
- Disengage Evaporative Emission (EVAP) Canister Purge Regulator Valve N80 - **1** - at air duct.
- Remove air duct - **2** -.



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Fig. 239: Removing Air Filter Housing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove air filter housing - **arrows** -.

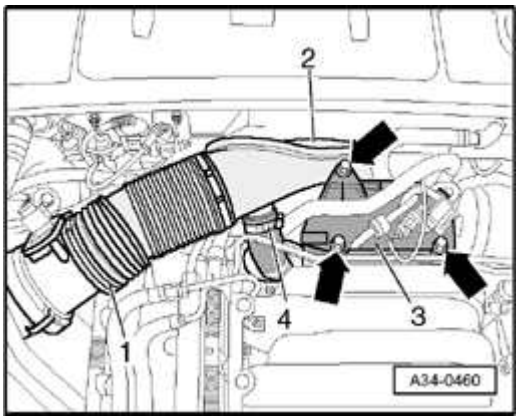


Fig. 240: Identifying Holding Plate, Intake Air Hose, Hose & Air Duct
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts for holding plate - **3** - for solenoid valves - **arrows** -.
- Disconnect electrical harness connector at Mass Air Flow (MAF) Sensor G70.
- Disconnect crankcase ventilation hose - **4** - from air guide - **2** -.

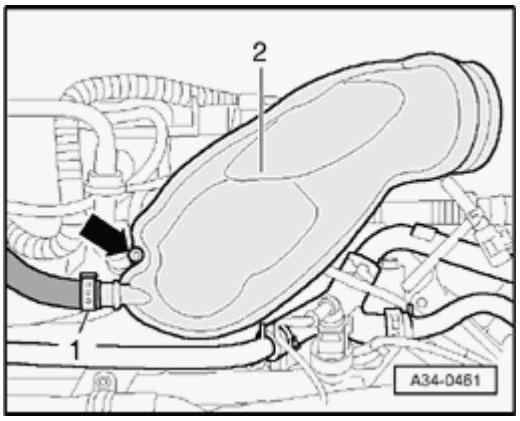


Fig. 241: Removing Bolt And Disconnect Air Duct At Throttle Valve Control Module
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **arrow** - and disconnect air guide - **2** - from throttle valve control module.
- Disconnect hose - **1** - from air guide.

NOTE:

- **For sake of illustration, air guide is shown from rear with engine removed.**

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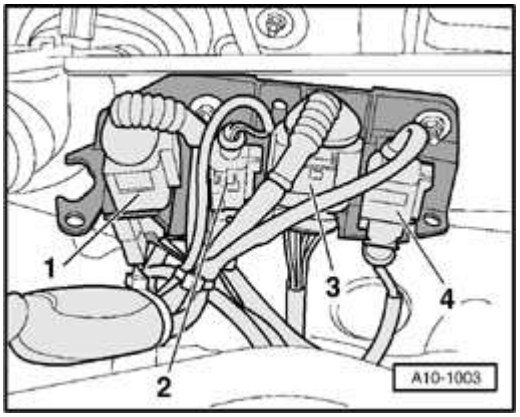


Fig. 242: Removing Harness Connectors From Bracket At Right Of Bulkhead
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove electrical connectors - **1 through 4** - from bracket at right of bulkhead.
- Disconnect electrical connectors - **1** - and - **4** -.
- Guide out wiring for lambda probes from below.

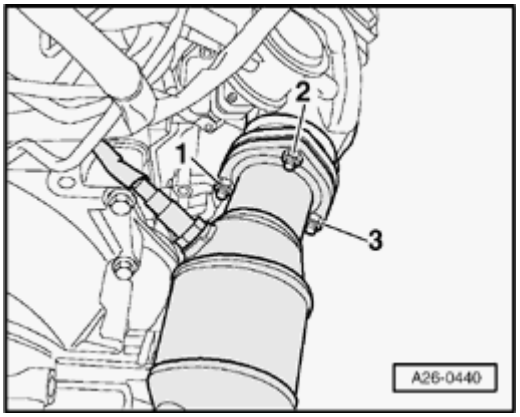


Fig. 243: Removing Nut Which Is Accessible From Top For Right Exhaust Pipe/Exhaust Manifold
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nut - **2** - which is accessible from top for right exhaust pipe/exhaust manifold.

NOTE:

- **For the sake of illustration, shown with engine removed.**

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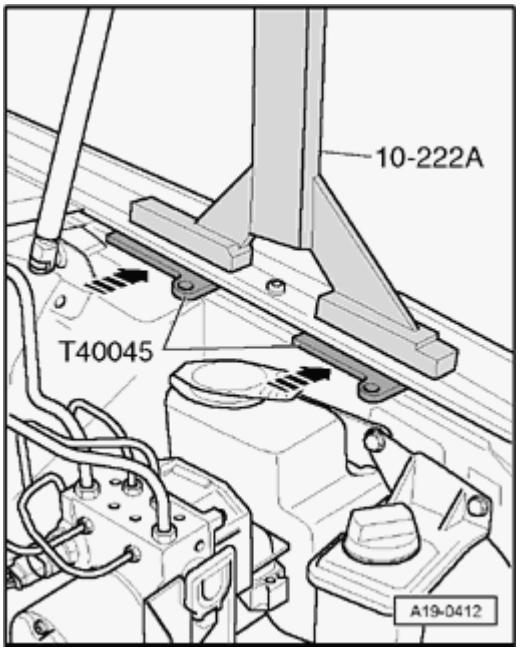


Fig. 244: Placing Insert Pad For Front Fender T40045 On Both Sides Between Fender Attachment Edge And Web Plate Lying Beneath
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull off sealing rubber at bolted flanges of fender.
- To prevent damage to bolted flanges of fender when using engine support bridge 10-222 A , insert fender insert pads T40045 on both sides between bolted flange of fender and web plate lying beneath.

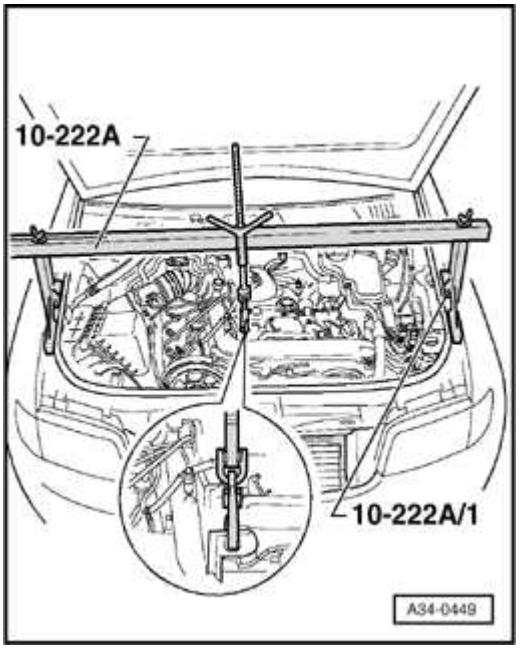


Fig. 245: Positioning Engine Support Bridge 10-222 A Onto Bolted Flange Of Fenders
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Position engine support bridge 10-222 A onto bolted flange of fenders; spindle stands at front.
- Take up some of the engine weight by tightening spindle of support bar, but do not lift.
- Remove both front wheels.

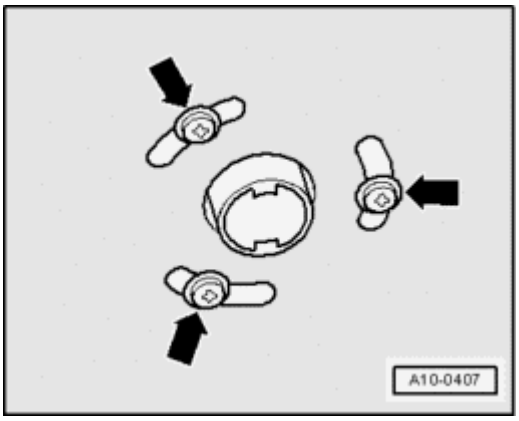


Fig. 246: Identifying Exhaust Pipe Fasteners
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On vehicles equipped with auxiliary heater, remove bolts - **arrows** - for exhaust pipe of auxiliary/additional heater to noise insulation.

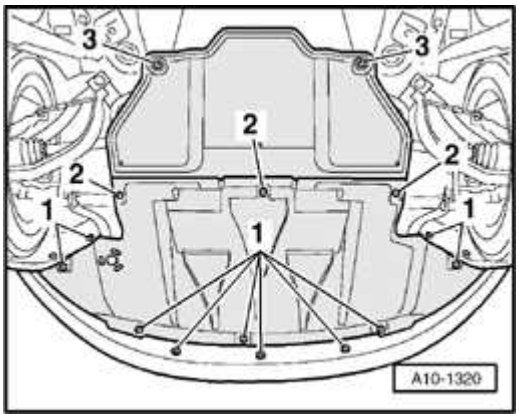


Fig. 247: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts or quick-release screws - **1 to 3** - and remove noise insulation at front and rear.

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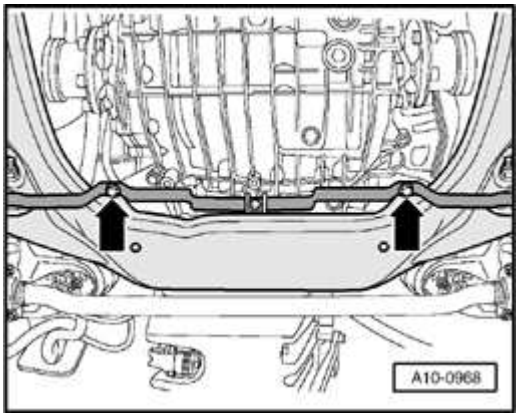


Fig. 248: Removing Bracket For Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove noise insulation bracket - **arrows** -.

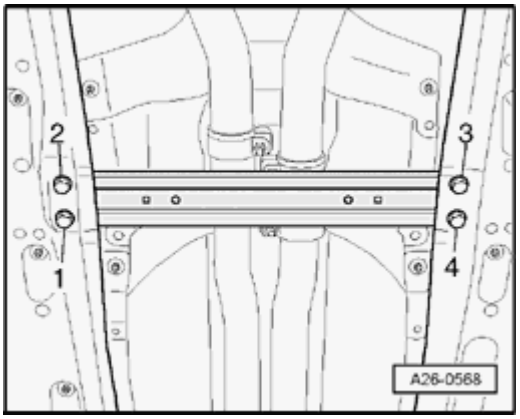


Fig. 249: Removing Bolts For Front Vehicle Floor Crossmember
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 through 4** - and remove front cross member for vehicle floor.

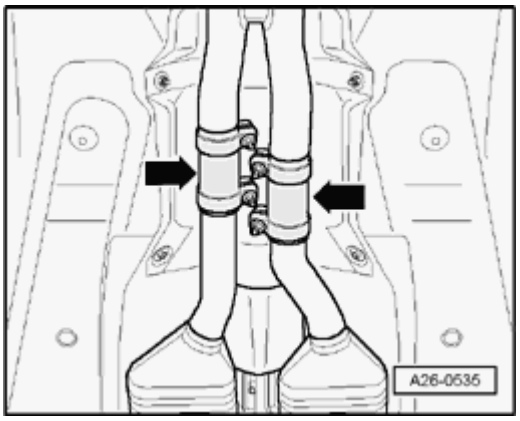


Fig. 250: Exhaust System And Clamps
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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NOTE:

- **Flex joint in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.**

- Disconnect exhaust system at both double clamps - **arrows** -.

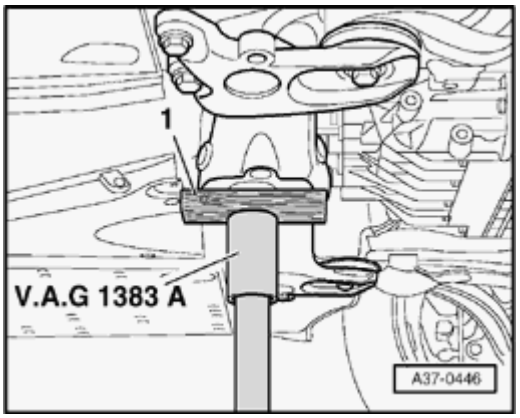


Fig. 251: Placing Plunger Of Engine/Transmission Jack V.A.G 1383 A With Block Of Wood Inserted In Between On Transmission At Bottom
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place plunger of Engine/Transmission Jack V.A.G 1383 A with a block of wood inserted in between - **1** - on transmission at bottom.
- Support tunnel cross member using Engine/Transmission Jack V.A.G 1383 A.

CAUTION: The lock carrier must be installed - danger of injury.

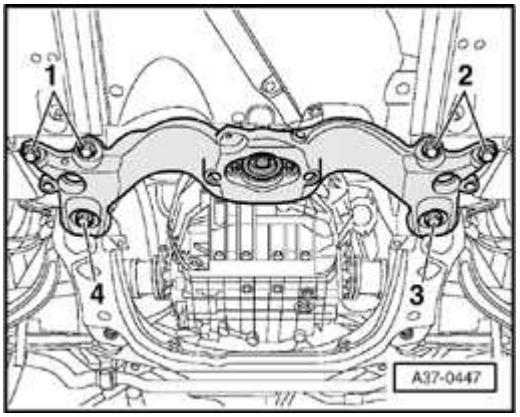


Fig. 252: Removing Bolts & Slowly Release Rear Crossmember Using VAG1383A Engine/Transmission Jack
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- First remove bolts - **1** - and - **2** - , then bolts - **3** - and - **4** -.
- Slowly lower tunnel cross member using Engine/Transmission Jack V.A.G 1383 A.

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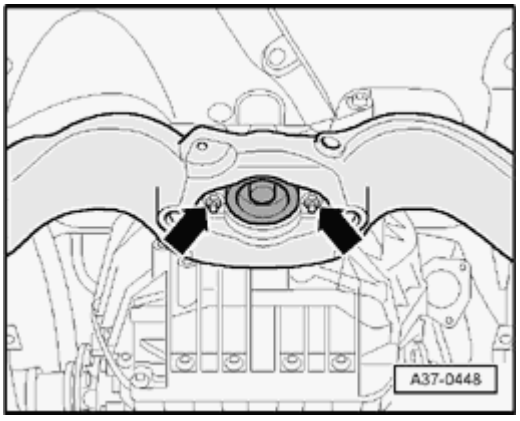


Fig. 253: Removing Nuts And Tunnel Cross Member
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **arrows** - and remove tunnel cross member.

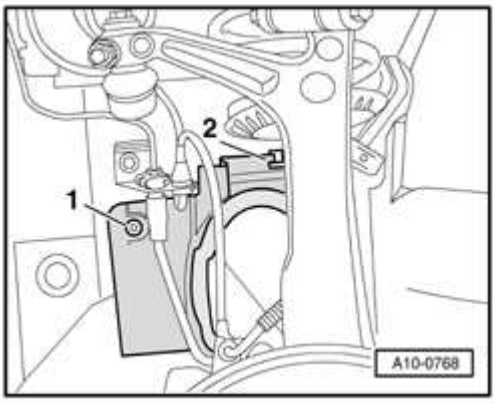
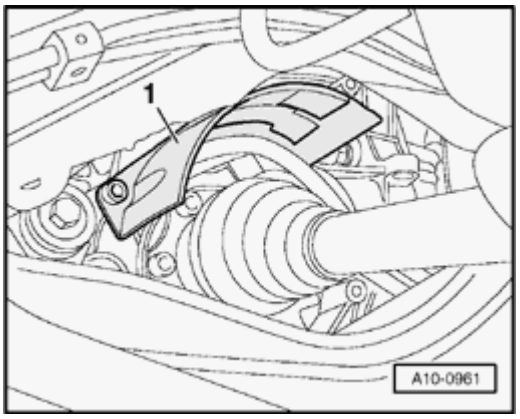


Fig. 254: Removing Bolt For Noise Insulation Cover Over Left/Right Drive Axle, Disengaging Hook And Removing Noise Insulation Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **1** - for noise insulation cover over left and right drive axle.
- Disengage hook - **2** - and remove noise insulation cover.



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Fig. 255: Removing Left/Right Heat Shields For Drive Axles
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left and right heat shields for drive axles - **1** -.
- Remove drive axle from transmission flange on left and right sides --> **40 - FRONT SUSPENSION** .

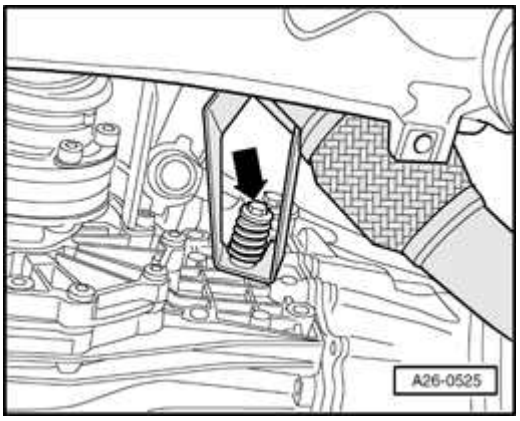


Fig. 256: Removing Bracket For Left Front Exhaust Pipe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bracket for left front exhaust pipe - **arrow** -.

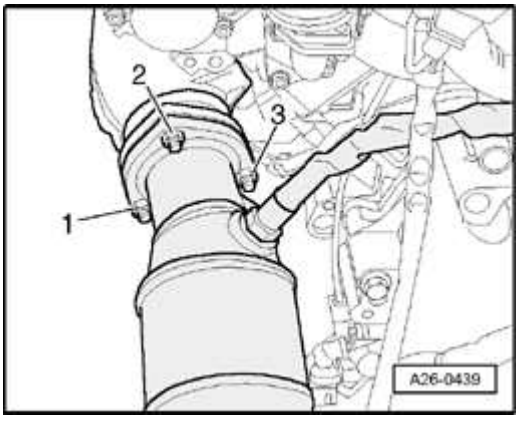


Fig. 257: Left Front Exhaust Pipe To Exhaust Manifold Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Free up oxygen sensor wiring.
- Remove nuts - **1** - and - **3** - which are accessible from bottom for front exhaust pipe/left exhaust manifold.

NOTE:

- **For the sake of illustration, shown with engine removed.**

- Remove front exhaust pipe complete with primary and main catalytic converter.

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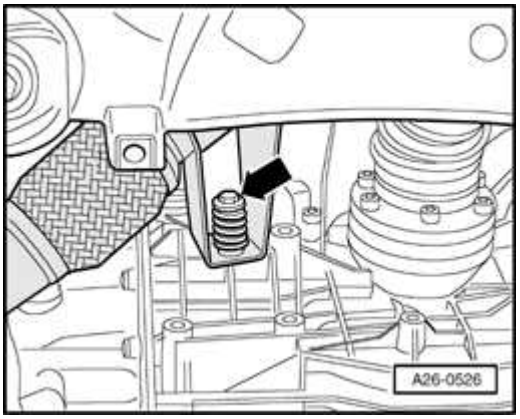


Fig. 258: Removing Bracket For Right Front Exhaust Pipe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bracket for right front exhaust pipe - **arrow** -.

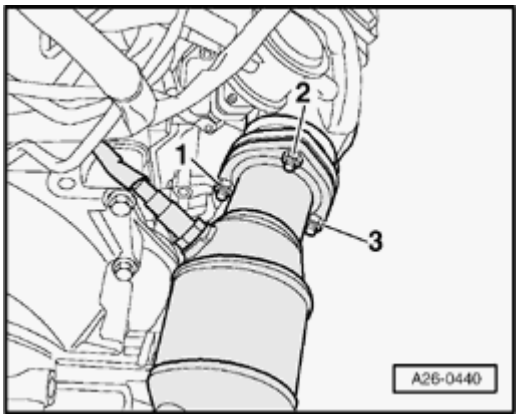


Fig. 259: Removing Nut Which Is Accessible From Top For Right Exhaust Pipe/Exhaust Manifold
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Free up oxygen sensor wiring.
- Remove nuts - **1** - and - **3** - which are accessible from bottom for front exhaust pipe/right exhaust manifold.
- Remove front exhaust pipe complete with primary and main catalytic converter.

NOTE:

- **For the sake of illustration, shown with engine removed.**

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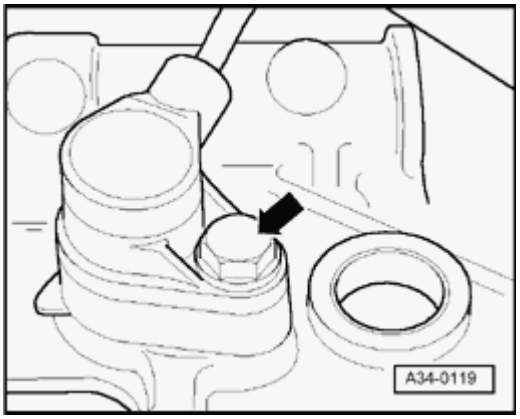


Fig. 260: Location Of Engine Speed (RPM) Sensor G28 On Coupling Housing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove Engine Speed (RPM) Sensor G28 on left of transmission - **arrow** - and lay to side.

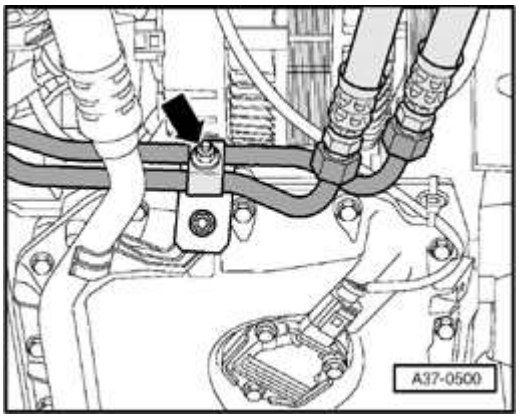


Fig. 261: Removing Bracket For ATF-Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bracket for ATF-lines - **arrow** -.

NOTE:

- **Observe the rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**

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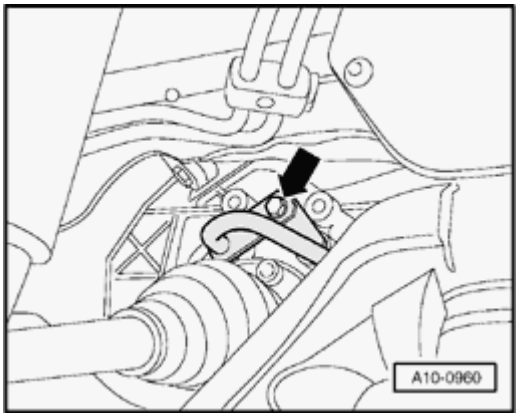


Fig. 262: Removing Bolt And ATF Lines From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **arrow** - and remove ATF lines from transmission.
- Move ATF lines clear to one side and secure in place.

For transmission with right-angled connector:

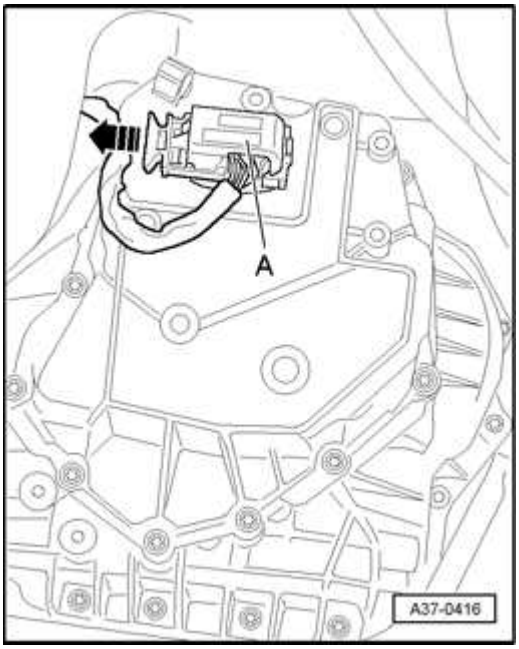


Fig. 263: Disengaging Harness Connector From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disengage harness connector - **A** - in direction of - **arrow** - and disconnect it from transmission.
- Free up wiring harness.

For transmission with round connector:

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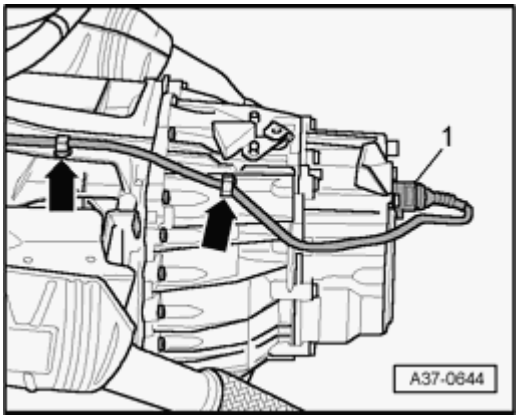


Fig. 264: Disengaging Electrical Harness Connector And Disconnecting From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disengage electrical harness connector - **1** - and disconnect from transmission.
- Move wiring harness clear - **arrows** -.

All:

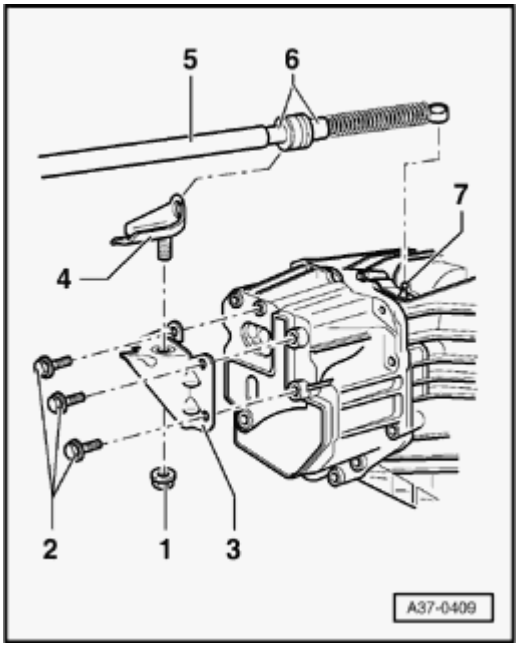


Fig. 265: Removing Bracket For Selector Lever Cable By First Removing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bracket - **3** - for selector lever cable by first removing bolts - **2** -.

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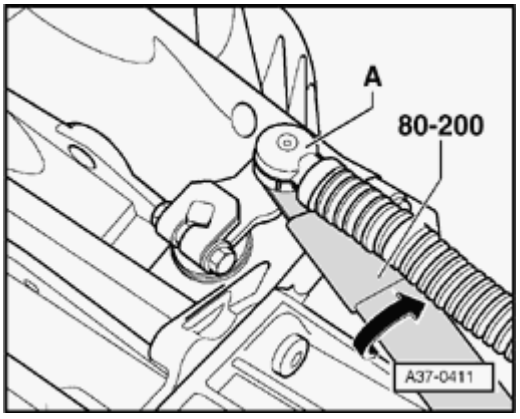


Fig. 266: Using Pry Lever 80-200 To Press Selector Lever Cable From Lever For Selector Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Using pry lever 80-200 , press selector lever cable - **A** - from lever for selector shaft - **arrow** -.

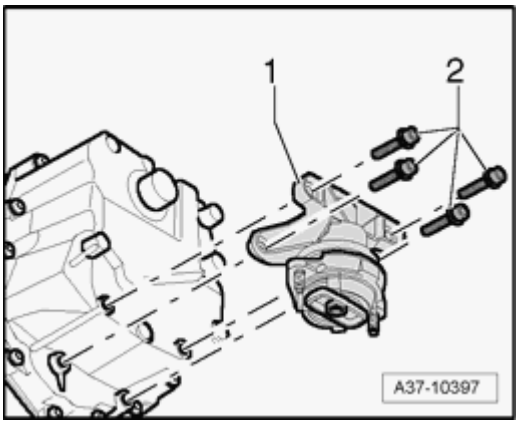


Fig. 267: Removing Bolts And Transmission Support From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **2** - and remove transmission support - **1** - from transmission.

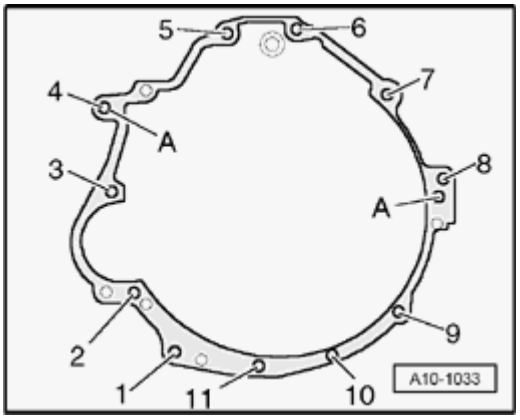


Fig. 268: Identifying Engine/Transmission Tightening/Loosening Sequence
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Remove bolts - **2 to 7** - at engine/transmission flange.
- Loosen bolt - **8** - only and then tighten by hand.

NOTE:

- **Starter must not be removed.**

- Mount transmission support 3282 on the Engine/Transmission Jack V.A.G 1383 A.

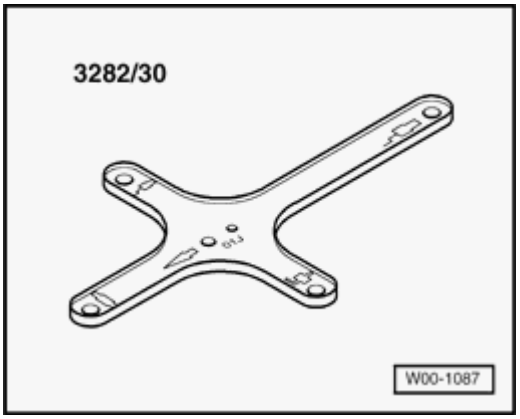


Fig. 269: Identifying Template 3282/30
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Set Template 3282/30 on to transmission support 3282 (template only fits in one position).
- Align arms of transmission support to correspond with holes in adjustment plate.
- Attach support elements on adjustment plate, as illustrated.

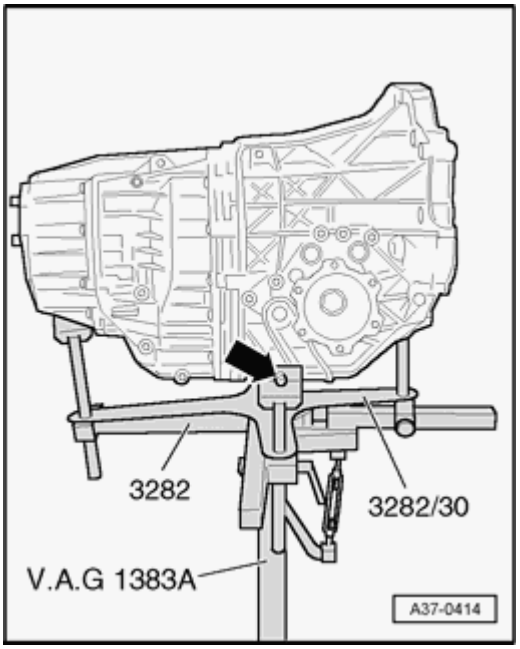


Fig. 270: Moving Engine/Transmission Jack V.A.G 1383 A With Transmission Mount 3282 Under Transmission And Support Transmission

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Move engine/transmission jack V.A.G 1383 A with transmission mount 3282 under transmission and support transmission.

NOTE:

- **The arrow symbol on the adjusting plate points in the direction of travel.**

- Align template parallel to transmission and secure to transmission using a bolt M10 x 20 - **arrow** -.

Audi Cabriolet:

NOTE:

- **So that the 4 engine/transmission connecting bolts at bottom can be removed on the Audi Cabriolet, the following work steps must also be performed:**

- Raise transmission slightly using Engine/Transmission Jack V.A.G 1383 A.

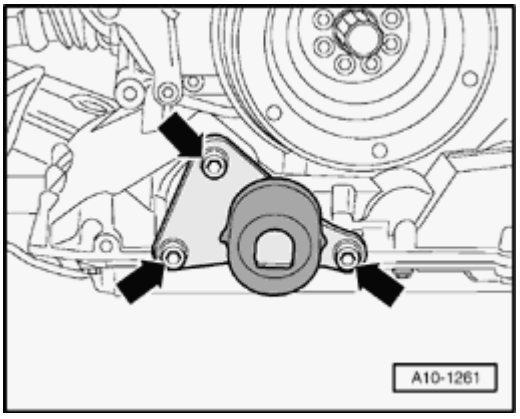
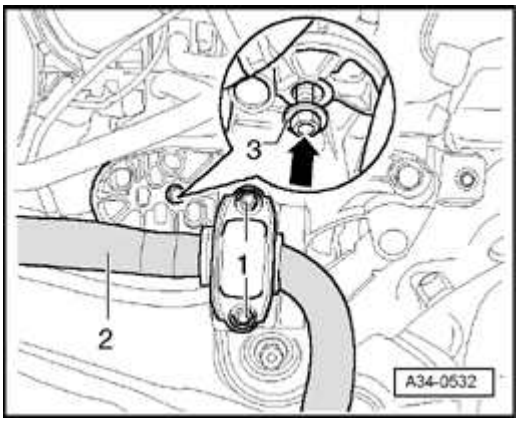


Fig. 271: Removing Torque Support
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove torque support - **arrows** -.



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Fig. 272: Swivel Stabilizer Bar Nuts, Engine Mountings Nut And End Of Stud
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left and right nuts - **1** - and swing stabilizer bar - **2** - downward.
- Remove nuts - **3** - at engine mount on left and right far enough until lower edge of nut is flush with threaded pin - **arrow** -.
- Raise engine using engine support bridge 10-222 A far enough until both nuts - **3** - (on left and right sides) make contact on from below.

All:

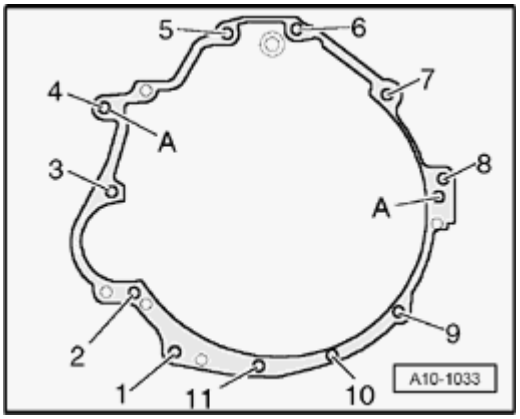


Fig. 273: Identifying Engine/Transmission Tightening/Loosening Sequence
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1** - and - **9 through 11** - on engine/transmission flange.

Audi Cabriolet:

- Lower engine again.
- Lower transmission again slowly.

All:

- Move drive shafts towards rear.
- Remove last bolt securing transmission to engine.
- Press off transmission from bushings and let it down carefully.

Transmission (vehicles with 6-cyl. 3.2 L FSI gasoline engine, also Audi Cabriolet), removing

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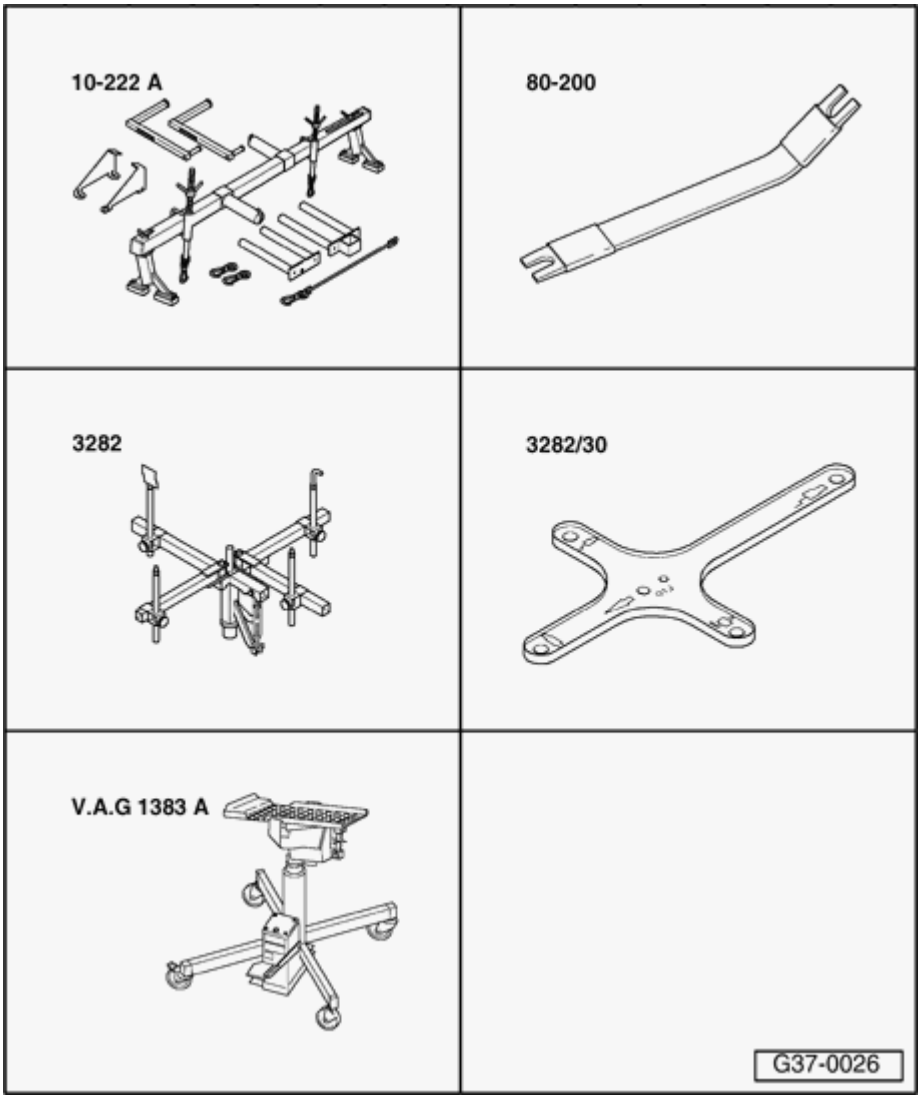


Fig. 274: Identifying Special Tools - Transmission (Vehicles With 6-Cyl. 3.2 L FSI Gasoline Engine, Also Audi Cabriolet), Removing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Engine support bridge 10-222 A
- Pry lever 80-200
- Transmission support 3282
- Adjustment plate 3282/30
- Engine/Transmission Jack V.A.G 1383 A

Special tools, testers and auxiliary items required

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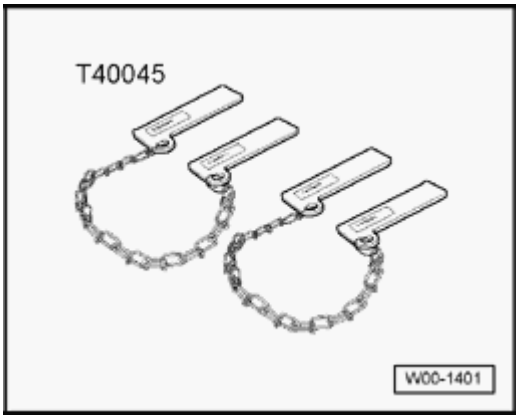


Fig. 275: Insert Pad For Front Fender T40045
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fender insert pads T40045
- Drip tray for VAS 6100 VAS 6208

Work procedure

NOTE:

- **Reinstall cable ties that were loosened or cut off during removal at same locations during installation.**

- Place selector lever in position "P".

CAUTION: Observe procedures for disconnecting battery -->

- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

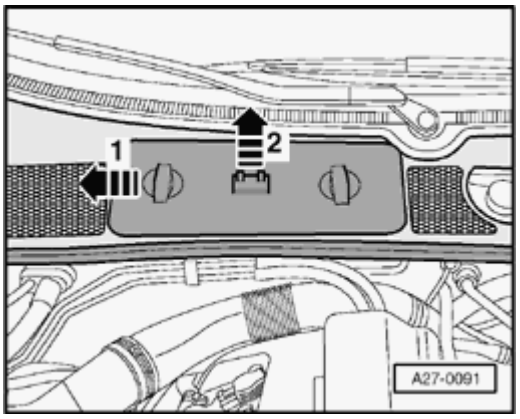


Fig. 276: Sliding Cover Over Battery To Right And Pull It Off Upwards

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Slide cover over battery to right - **arrow 1** - and pull it off upwards - **arrow 2** -.

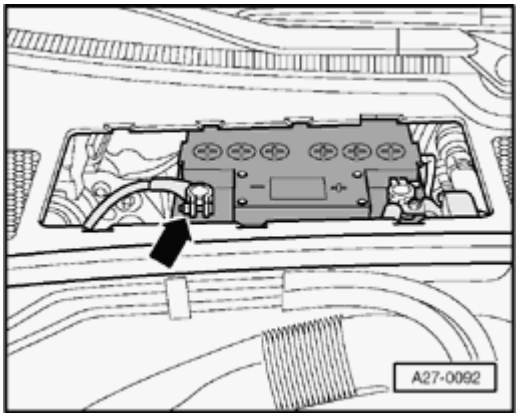


Fig. 277: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) wire - **arrow** -.

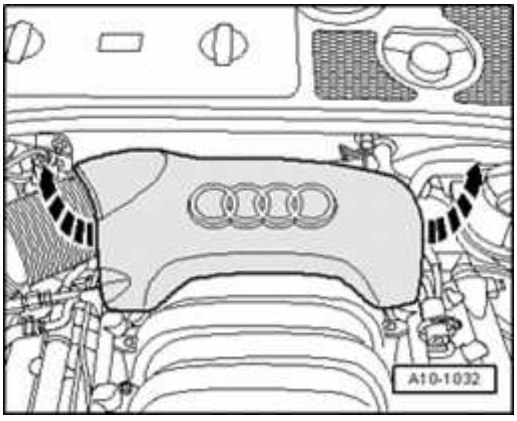


Fig. 278: Removing Rear Engine Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rear engine cover - **arrows** -.

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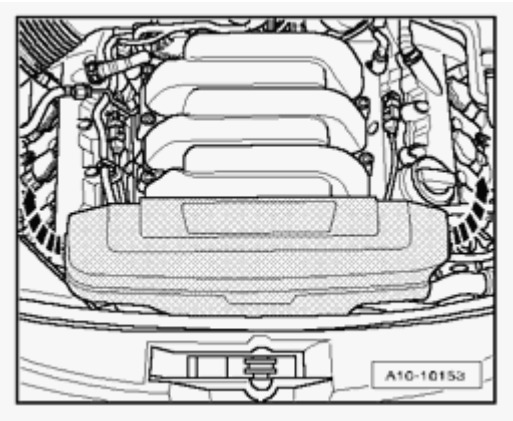


Fig. 279: Identifying Front Engine Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove front engine cover - **arrows** -.
- Pull off sealing rubber at bolted flanges of fender.

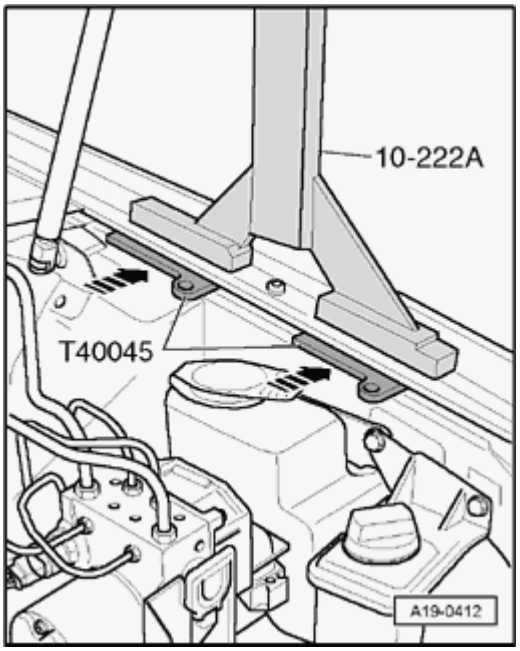


Fig. 280: Placing Insert Pad For Front Fender T40045 On Both Sides Between Fender Attachment Edge And Web Plate Lying Beneath
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- To prevent damage to bolted flanges of fender when using engine support bridge 10-222 A , insert fender insert pads T40045 on both sides between bolted flange of fender and web plate lying beneath.

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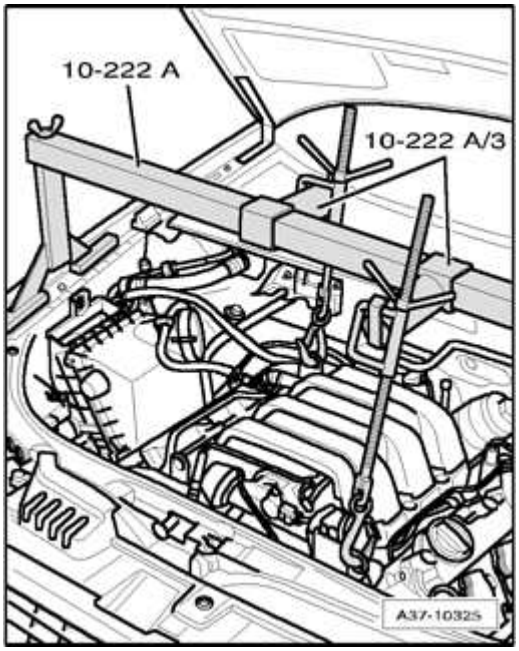


Fig. 281: Setting Up Engine Support Bridge 10-222 A With Adapters 10-222 A/3 On Fender Mounting Flanges
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position engine support bridge 10-222 A with two adapters 10 - 222 A/3 on to bolted flanges of fender.
- Engage spindles onto engine lifting eyes as shown.
- Take up some of the engine weight by tightening spindle of support bar, but do not lift.
- Remove both front wheels.

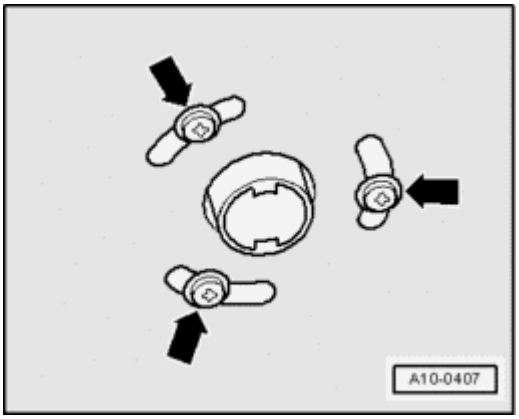


Fig. 282: Identifying Exhaust Pipe Fasteners
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On vehicles equipped with auxiliary heater, remove bolts - **arrows** - for exhaust pipe of auxiliary/additional heater to noise insulation.

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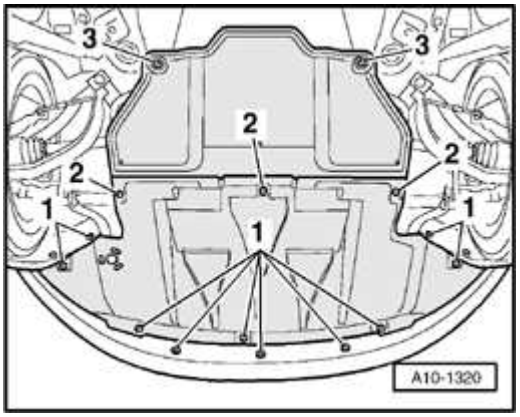


Fig. 283: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts or quick-release screws - **1 to 3** - and remove noise insulation at front and rear.

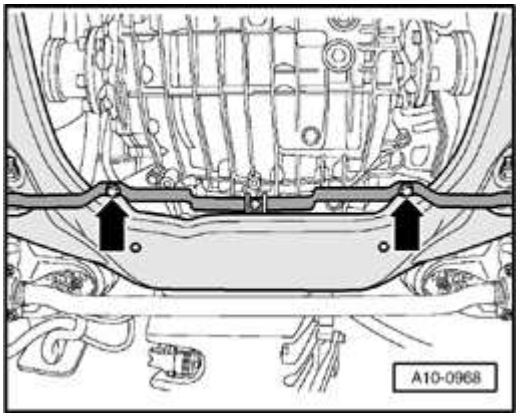


Fig. 284: Removing Bracket For Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove noise insulation bracket - **arrows** -.

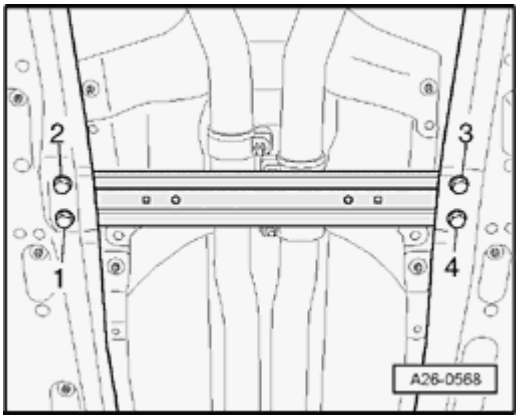


Fig. 285: Removing Bolts For Front Vehicle Floor Crossmember
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Remove bolts - **1 through 4** - and remove front cross member for vehicle floor.

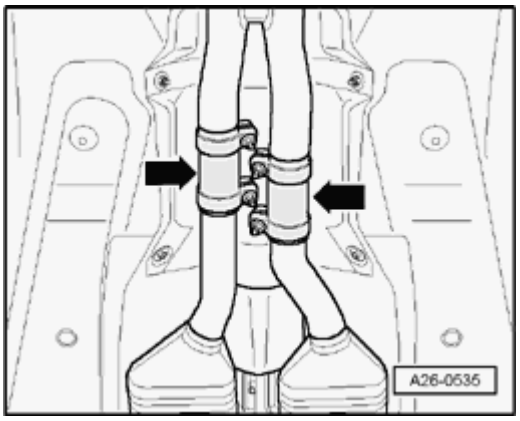


Fig. 286: Exhaust System And Clamps
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Flex joint in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.**

- Disconnect exhaust system at both double clamps - **arrows** -.

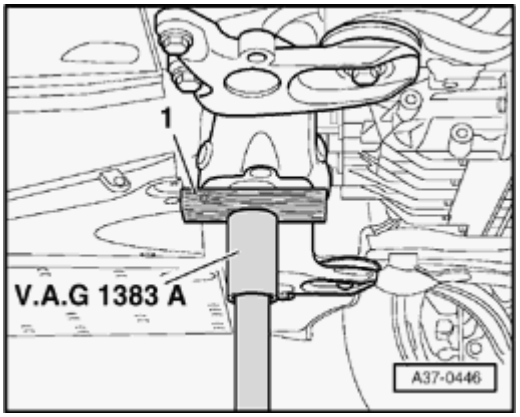


Fig. 287: Placing Plunger Of Engine/Transmission Jack V.A.G 1383 A With Block Of Wood Inserted In Between On Transmission At Bottom
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place plunger of Engine/Transmission Jack V.A.G 1383 A with a block of wood inserted in between - **1** - on transmission at bottom.
- Support tunnel cross member using Engine/Transmission Jack V.A.G 1383 A.

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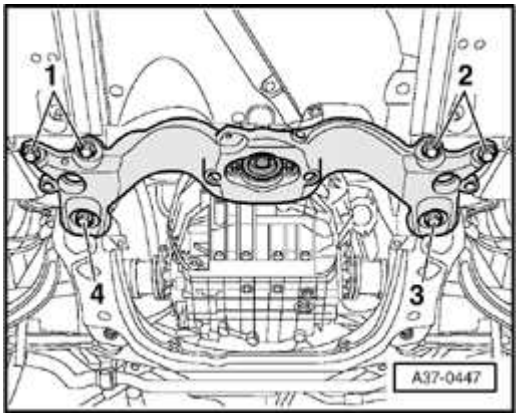


Fig. 288: Removing Bolts & Slowly Release Rear Crossmember Using VAG1383A Engine/Transmission Jack
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- First remove bolts - **1** - and - **2** - , then bolts - **3** - and - **4** -.
- Slowly lower tunnel cross member using Engine/Transmission Jack V.A.G 1383 A.

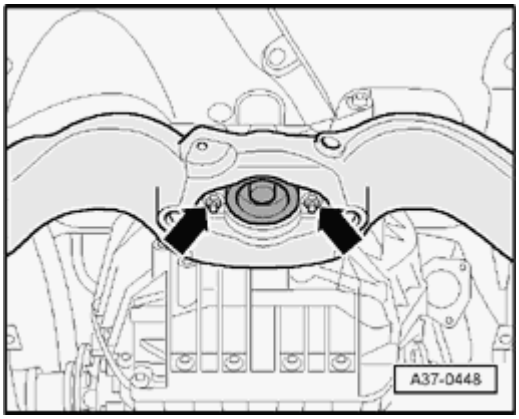
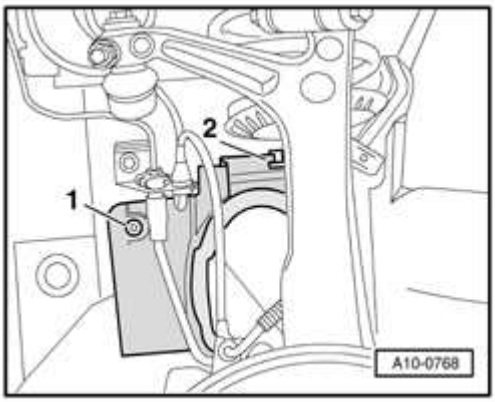


Fig. 289: Removing Nuts And Tunnel Cross Member
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **arrows** - and remove tunnel cross member.



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Fig. 290: Removing Bolt For Noise Insulation Cover Over Left/Right Drive Axle, Disengaging Hook And Removing Noise Insulation Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If installed, remove bolt - **1** - for noise insulation cover over left and right drive axle.
- Disengage hook - **2** - and remove noise insulation cover.

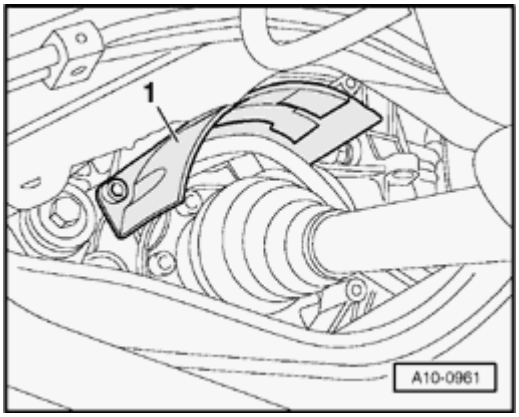


Fig. 291: Removing Left/Right Heat Shields For Drive Axles
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left and right heat shields for drive axles - **1** -.
- Remove drive axle from transmission flange on left and right sides --> **40 - FRONT SUSPENSION** .
- Remove left and right front exhaust pipe with catalytic converter -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

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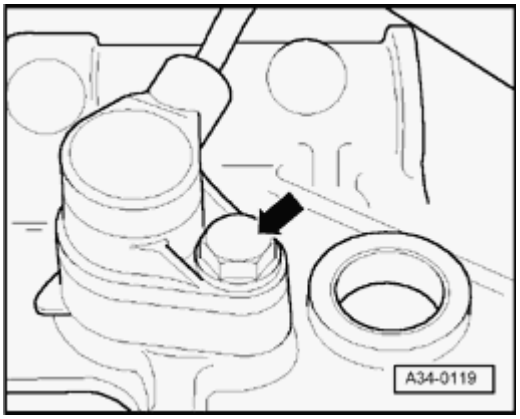


Fig. 292: Location Of Engine Speed (RPM) Sensor G28 On Coupling Housing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove Engine Speed (RPM) Sensor G28 on left of transmission - **arrow** - and lay to side.

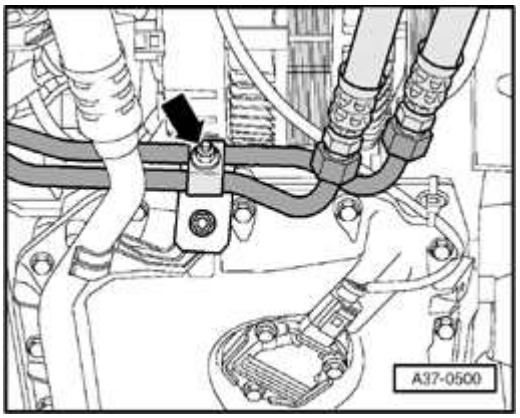


Fig. 293: Removing Bracket For ATF-Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bracket for ATF-lines - **arrow** -.
- Place drip tray for workshop crane VAS 6208 under transmission.

NOTE:

- **Observe the rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**

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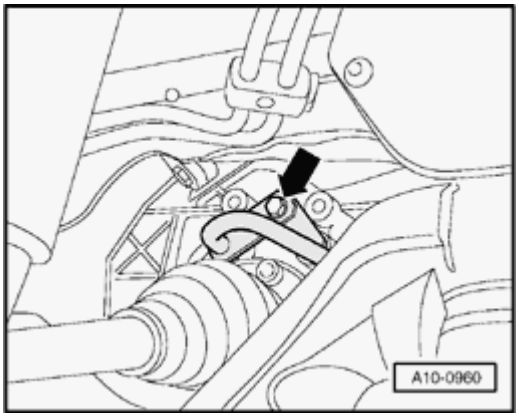


Fig. 294: Removing Bolt And ATF Lines From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **arrow** - and remove ATF lines from transmission.
- Seal openings with clean cover caps.
- Move ATF lines clear to one side and secure in place.

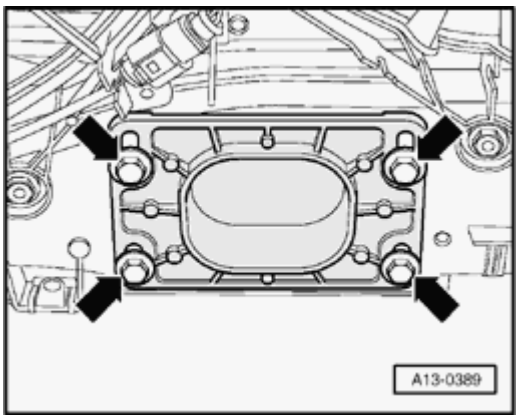
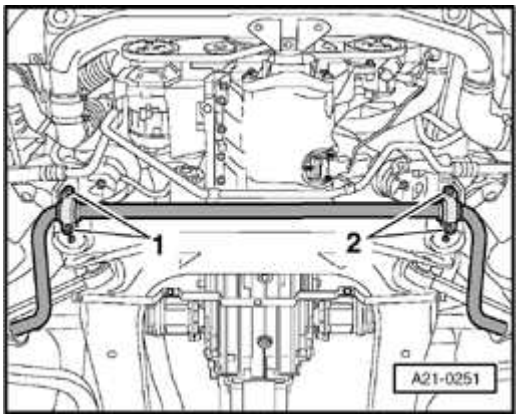


Fig. 295: Removing/Installing Bolts At Torque Support Stop
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen bolts - **arrows** - at torque support stop approx. two rotations each.



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Fig. 296: Removing Stabilizer Bar Mountings
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left and right stabilizer mounts - **1** - and - **2** -.
- Swing stabilizer downward.

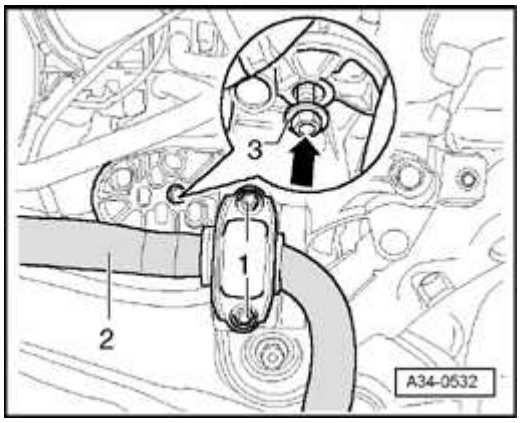


Fig. 297: Swivel Stabilizer Bar Nuts, Engine Mountings Nut And End Of Stud
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **3** - at engine mount on left and right far enough until lower edge of nut is flush with threaded pin - **arrow** -.
- Raise engine using spindles of engine support bridge 10-222 A far enough until both nuts - **3** - (on left and right sides) make contact on from below.

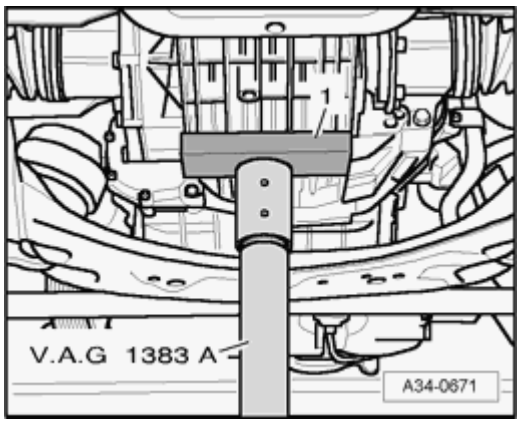


Fig. 298: Placing Plunger Of Engine/Transmission Jack V.A.G 1383 A With Block Of Wood Inserted In Between Transmission At Bottom
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place plunger of Engine/Transmission Jack V.A.G 1383 A with a block of wood - **1** - inserted in between transmission at bottom.
- Raise transmission slightly using Engine/Transmission Jack V.A.G 1383 A.

NOTE:

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- **Lower connecting bolts on engine/transmission flange are accessible by doing this.**

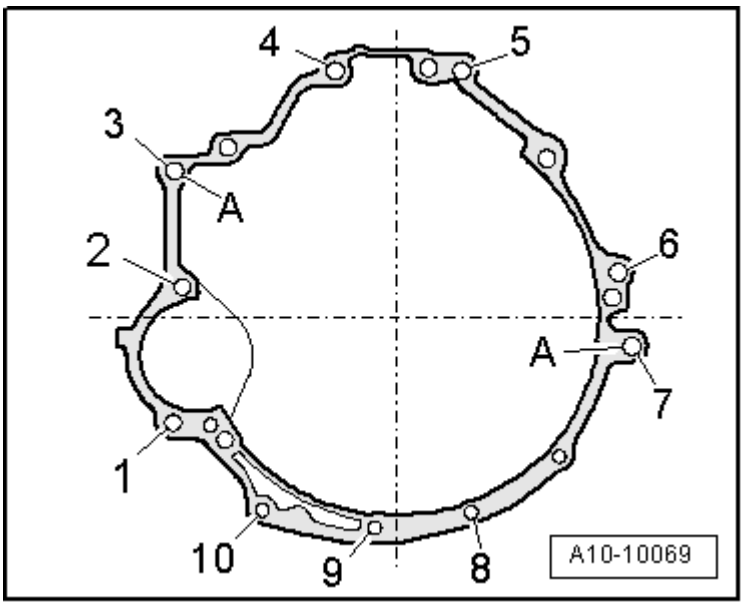


Fig. 299: Identifying Engine/Transmission Threaded Connections
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **8, 9 and 10** - on engine/transmission flange.
- Lower engine again using spindles of engine support bridge 10-222 A.

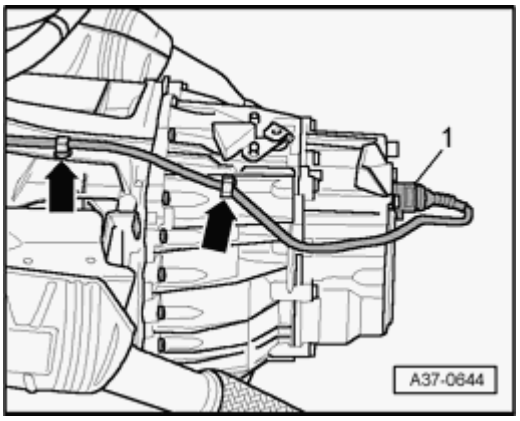


Fig. 300: Disengaging Electrical Harness Connector And Disconnecting From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disengage electrical harness connector - **1** - and disconnect from transmission.
- Move wiring harness clear - **arrows** -.

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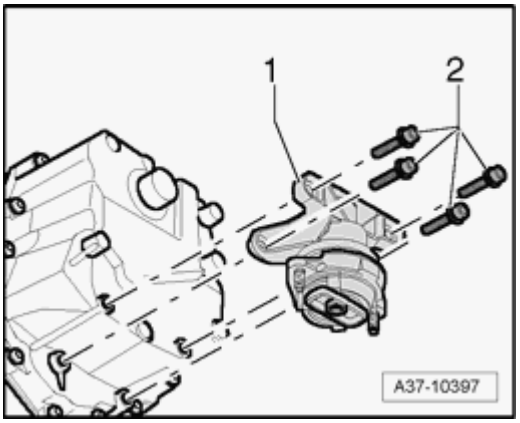


Fig. 301: Removing Bolts And Transmission Support From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **2** - and remove transmission support - **1** - from transmission.

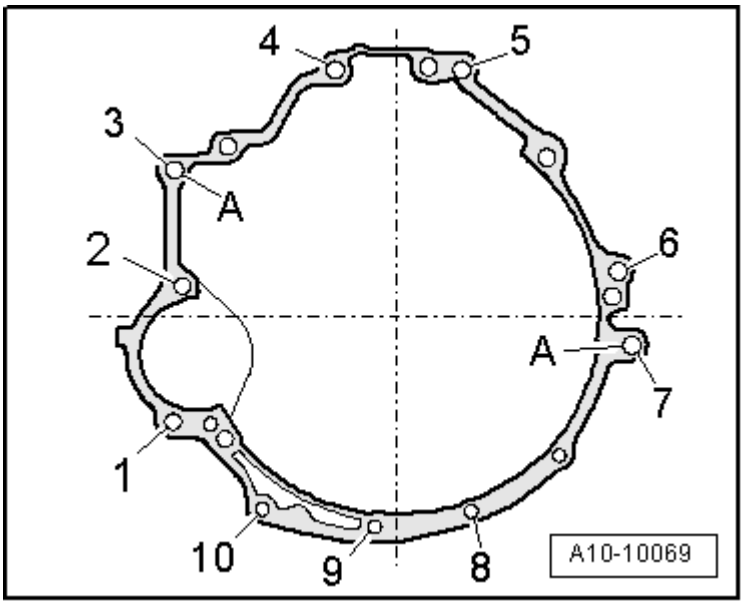


Fig. 302: Identifying Engine/Transmission Threaded Connections
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **2 to 6** - at engine/transmission flange.
- Loosen bolts - **1** - and - **7** - only and then tighten by hand.

NOTE:

- **Starter must not be removed.**

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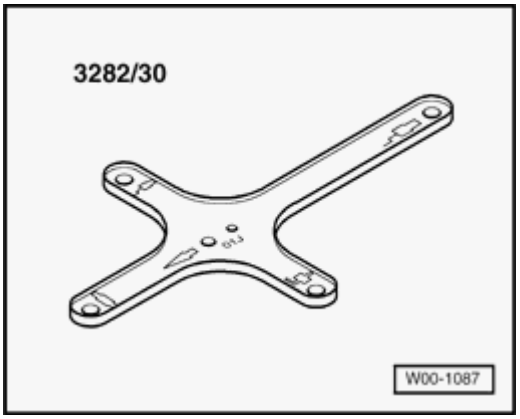


Fig. 303: Identifying Template 3282/30
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mount transmission support 3282 on Engine/Transmission Jack V.A.G 1383 A.
- Set Template 3282/30 on to transmission support 3282 (template only fits in one position).
- Align arms of transmission support to correspond with holes in adjustment plate.
- Attach support elements on adjustment plate, as illustrated.

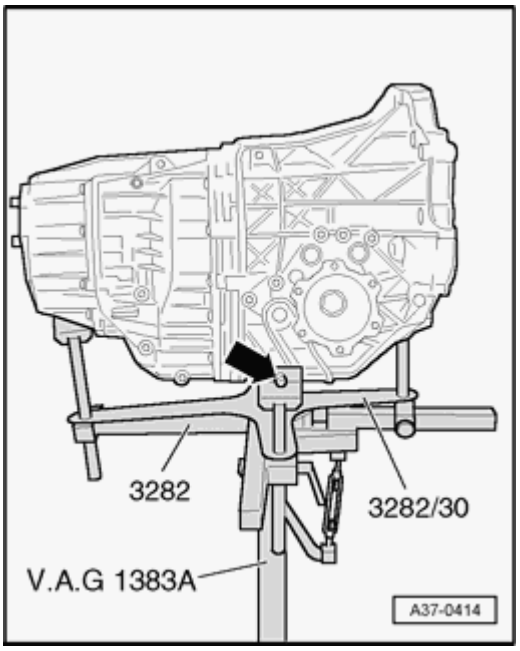


Fig. 304: Moving Engine/Transmission Jack V.A.G 1383 A With Transmission Mount 3282 Under Transmission And Support Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Move engine/transmission jack V.A.G 1383 A with transmission mount 3282 under transmission and support transmission.

NOTE:

- **The arrow symbol on the adjusting plate points in the direction of travel.**

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- Align template parallel to transmission and secure to transmission using a bolt M10 x 20 - **arrow** -.
- Move drive shafts towards rear.

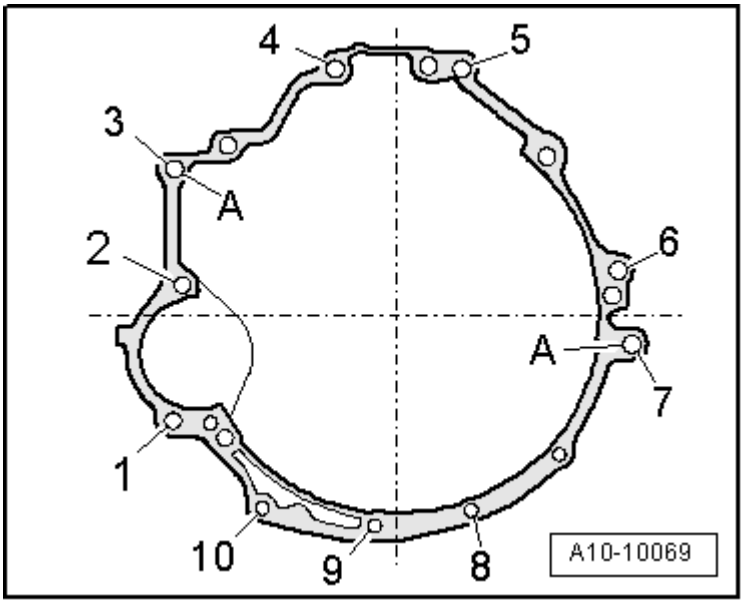


Fig. 305: Identifying Engine/Transmission Threaded Connections
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove last mounting bolts - **1** - and - **7** - on engine/transmission flange.
- Press transmission off bushings - **A** - and carefully lower it far enough until selector lever cable is accessible.

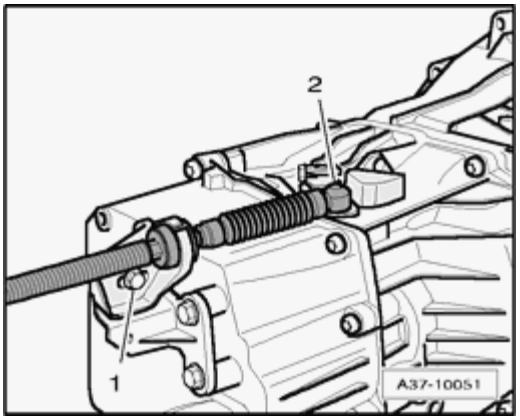


Fig. 306: Removing Support Bracket For Selector Lever Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mark installation position of support bracket for selector lever cable.
- Remove bolt - **1** - support bracket for selector lever cable.
- Press selector lever cable ball joint - **2** - off from selector shaft lever.

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NOTE:

- **Do not bend or kink the selector lever cable.**

- Slowly lower transmission.
- Pay attention to clearance of drive axles when lowering transmission.

Installing transmission

Installation is in reverse order of removal, note the following:

NOTE:

- **Before installing a replacement transmission, clean ATF lines and ATF cooler --> ATF lines and ATF cooler, cleaning.**
- **When performing repairs, replace self-locking nuts and bolts.**
- **Always replace bolts that are secured with tightening torque as well as seals, gaskets and O-rings.**
- **Clean input shaft splines of transmission and damper unit splines on flywheel, remove corrosion and apply only a very thin coating of *lubricant G 000 100* on splines. Excess grease must be removed.**
- **Secure all hose connections with hose clamps of the same type as those equipped by the factory .**
- **When installing, bring all cable ties back to same positions.**

- Check if alignment sleeves for centering engine/transmission are in cylinder block, and install if necessary.
- Before installing transmission, tie electrical wiring to one side so that it cannot be trapped between engine and transmission.
- Raise engine far enough until selector lever cable can be installed.

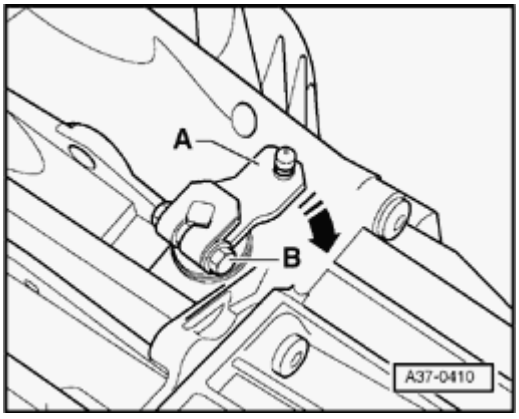


Fig. 307: Pressing Selector Shaft Lever On Transmission Completely Toward Rear
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press selector shaft lever - **A** - on transmission completely toward rear - **arrow** - until parking lock engages.

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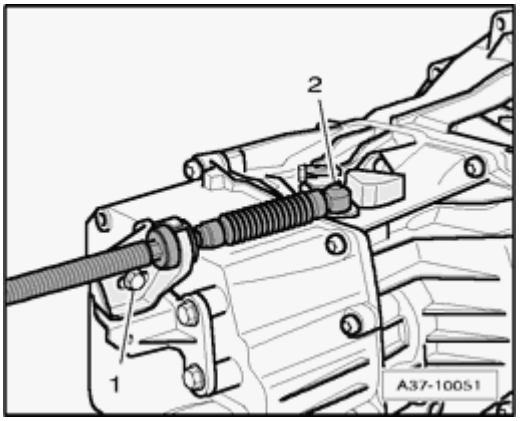


Fig. 308: Removing Support Bracket For Selector Lever Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully press ball socket of selector lever cable - **2** - onto lever for selector rod.

NOTE:

- **Take care not to bend selector shaft lever when pressing it on; support it if necessary, as otherwise selector mechanism can no longer be adjusted properly.**

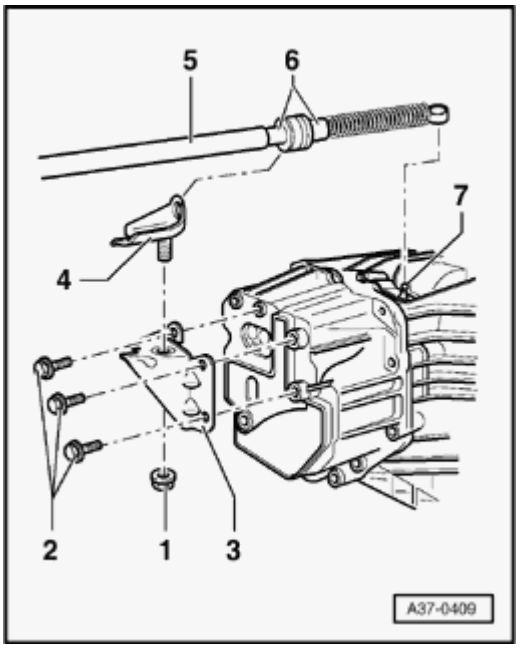


Fig. 309: Removing Bracket For Selector Lever Cable By First Removing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

If bracket for selector lever cable - **3** - was removed from transmission:

- Tighten bolts - **2** - on bracket - **3** - for selector lever cable to 23 Nm on transmission.

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NOTE:

- **Do not bend or kink the selector lever cable.**
- **Lightly grease ball socket of selector lever cable with *polycarbamide grease G 052 142 A2* before installing.**

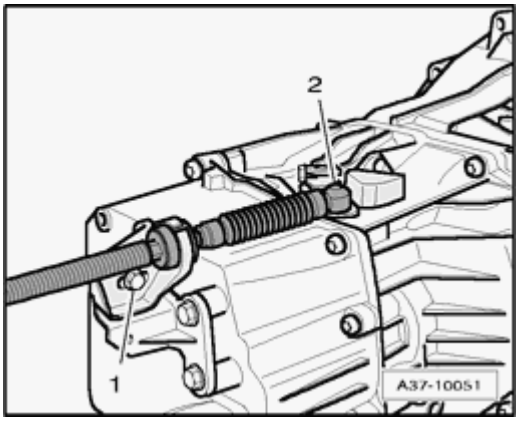


Fig. 310: Removing Support Bracket For Selector Lever Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install support bracket for selector lever cable - **1** - according to marking on bracket.
- Place intermediate panel or intermediate plate onto bushings.

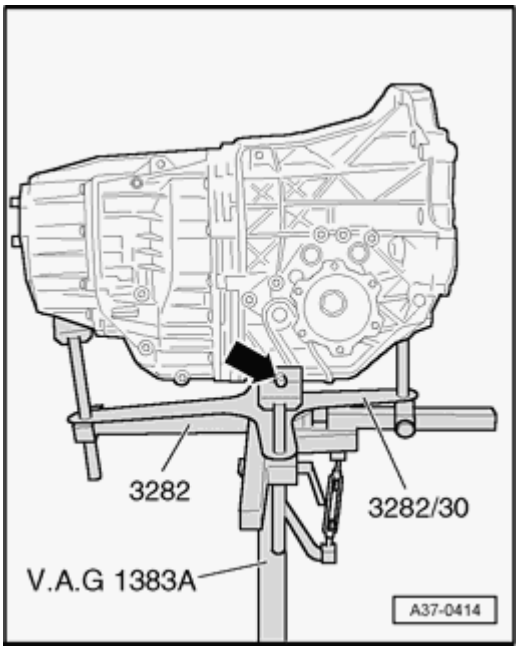


Fig. 311: Moving Engine/Transmission Jack V.A.G 1383 A With Transmission Mount 3282 Under Transmission And Support Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully raise transmission and bring into installation position using transmission support 3282.

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NOTE:

- **Tightening torques are valid only for nuts and bolts that are lightly greased, oiled, covered with a thin coat of phosphate or blackened, tightening torques Securing engine/transmission (transmission flange pattern).**
- **Additional lubricant such as engine or transmission oil may be used, but do not use graphite lubricant.**
- **Do not use degreased parts.**
- **Tolerance for torque specification ± 15%.**

- Tighten connecting bolts on engine/transmission flange to tightening torque (tables **Securing engine/transmission (transmission flange pattern)**).

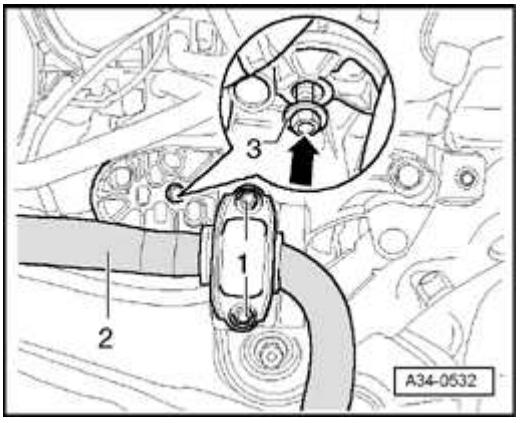


Fig. 312: Swivel Stabilizer Bar Nuts, Engine Mountings Nut And End Of Stud
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten nuts for left and right engine mounts - **3** - -->
  - **10 - ENGINE - ASSEMBLY** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **10 - ENGINE - ASSEMBLY** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **10 ENGINE - ASSEMBLY** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **10 - ENGINE - ASSEMBLY** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **10 - ENGINE - ASSEMBLY** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE (S): BNS
  - **10 - ENGINE - ASSEMBLY** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE (S): BHF

  .
- Tighten stabilizer bolts - **2** - --> **40 - FRONT SUSPENSION** .
- Tighten bolts of torque support or torque support stop to engine -->
  - **10 - ENGINE - ASSEMBLY** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL,

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ENGINE CODE(S): AMB

- **10 - ENGINE - ASSEMBLY** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
- **10 ENGINE - ASSEMBLY** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
- **10 - ENGINE - ASSEMBLY** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
- **10 - ENGINE - ASSEMBLY** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE (S): BNS
- **10 - ENGINE - ASSEMBLY** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE (S): BHF

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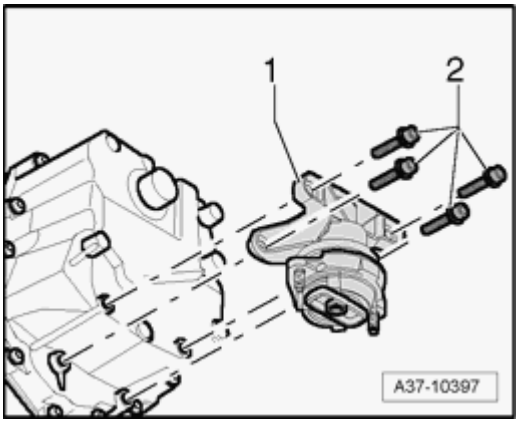


Fig. 313: Removing Bolts And Transmission Support From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Bolt transmission mount - **1** - onto transmission with bolts - **2** - --> **Transmission mount, transmission support and tunnel cross member, removing and installing**
- Install ATF lines with new sealing rings --> **ATF lines, ATF cooler and auxiliary ATF filter, servicing**.
- Install exhaust system -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

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- Install drive axles --> **40 - FRONT SUSPENSION** .

- Install heat shield for left and right drive axle.
- Install tunnel cross member --> **Transmission mount, transmission support and tunnel cross member, removing and installing**.
- Align exhaust system so it is free of tension -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

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- Electrical connections and routing --> Electrical Wiring Diagrams, Troubleshooting and Component Locations.

- Observe procedures for connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

.

- Check adjustment of selector lever cable --> **Selector lever cable (through VIN 8E_6A156499), adjusting**.
- Check oil level in front final drive --> **Gear oil level in front final drive, checking**.
- Check ATF level and top off --> **ATF level, checking and topping off**.

Securing engine/transmission (transmission flange pattern)

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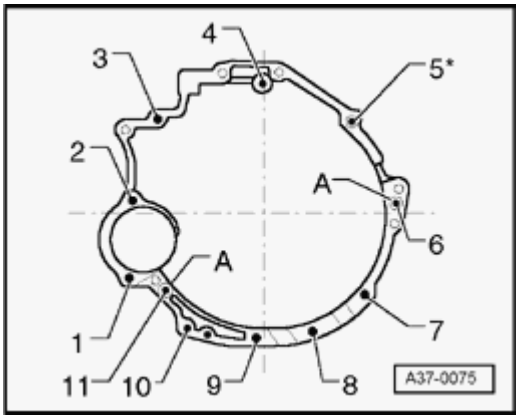


Fig. 314: Identifying Engine/Transmission Mountings (Automatic/Manual Transmission)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Vehicles with 1.8 L turbo engine:

Item	Bolt	Nm
1	M10x60	45 * See note
2, 3, 4, 6, 11	M12x67	65 * See note
5	M12x100	65 * See note
7	M10x50	45 * See note
8 10	M10x45	45 * See note
A	Alignment sleeves for centering	

*Replace bolts.

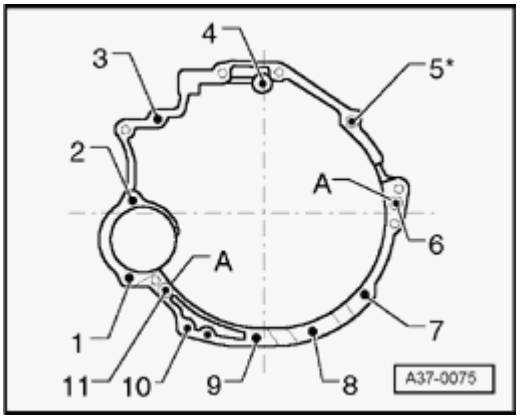


Fig. 315: Identifying Engine/Transmission Mountings (Automatic/Manual Transmission)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Vehicles with 2.0 L normally aspirated engine:

Item	Bolt	Nm
1	M10x60	45 * See note

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2	M12x67	65 * See note
3, 4	M12x75	65 * See note
5	M12x110	65 * See note
6	M12x80	65 * See note
7	M10x50	45 * See note
8 10	M10x45	45 * See note
11	M12x90	65 * See note
A	Alignment sleeves for centering	

*Replace bolts.

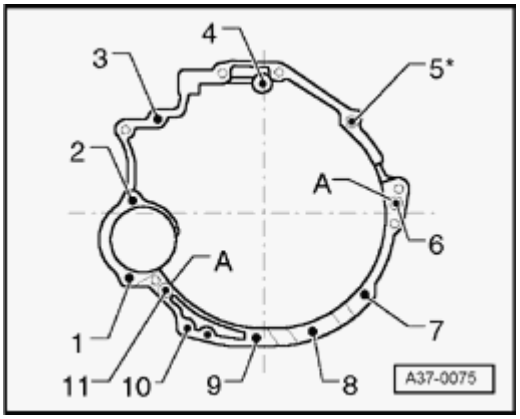


Fig. 316: Identifying Engine/Transmission Mountings (Automatic/Manual Transmission)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Vehicles with 2.0 L TFSI engine:

Item	Bolt	Nm
1	M10x60	45 * See note
2, 3, 4, 6	M12x75	65 * See note
5	M12x100	65 * See note
7	M10x50	45 * See note
8 10	M10x45	45 * See note
11	M12x67	65 * See note
A	Alignment sleeves for centering	

*Replace bolts.

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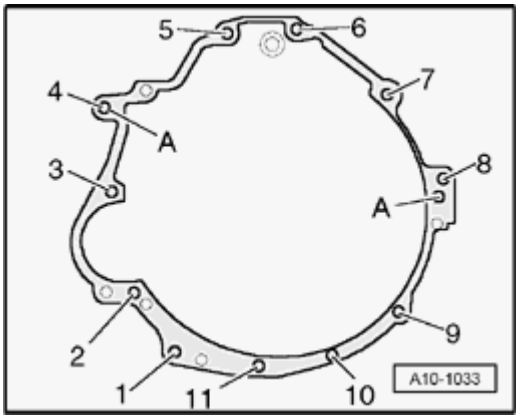


Fig. 317: Identifying Engine/Transmission Tightening/Loosening Sequence
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Vehicles with 3.0 L 6-cyl. gasoline engine:

Item	Bolt	Nm
1, 10, 11	M10x60	45 * See note
2	M10x90	65 * See notes
3	M12x110	65 * See note
4	M12x80	65 * See note
5, 6	M12x90	65 * See note
7	M10x100	45 * See note
8	M12x75	65 * See note
9	M10x70	45 * See note
A	Alignment sleeves for centering	

*Replace bolts.

*Bolt strength rating 10.9

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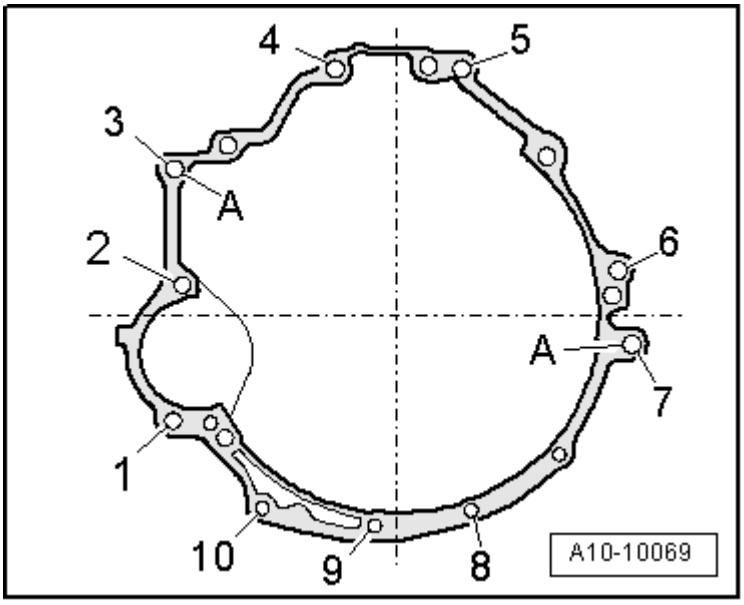


Fig. 318: Identifying Engine/Transmission Threaded Connections
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Vehicles with 3.2 L FSI 6-cyl. gasoline engine:

Item	Bolt	Nm
1, 7	M10x115	65 * See note
2	M12x130	65
3, 4, 5, 6	M12x110	65
8, 9, 10	M10x80	45
A	Alignment sleeves for centering	

*Bolt strength rating 10.9.

Torque specifications

Component		Nm
Bolts/nuts	M6	10
	M8	20
	M10	45
	M12	65
Except for the following:		
Mounting base for selector lever cable to gearbox		23
Heat shield for drive axle to transmission		23

Automatic transmission, transporting

Special tools, testers and auxiliary items required

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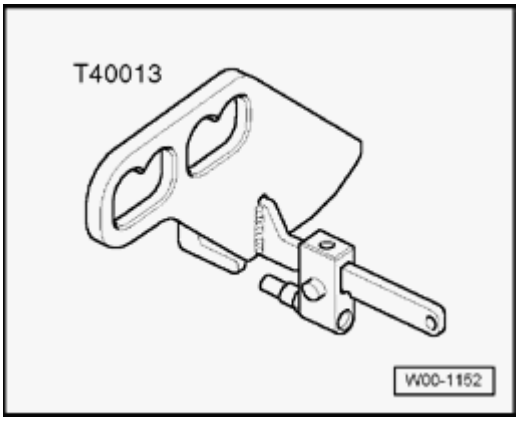


Fig. 319: Lifting Tackle T40013
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Lifting tackle T40013

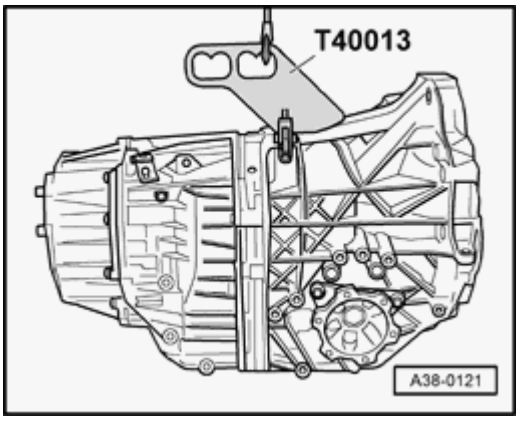


Fig. 320: Identifying Transmission Lift Hook T40013 Used To Transporting The Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Work procedure

The transmission lift hook T40013 can be used when transporting the transmission and for aligning transmission support 3282.

- Mount and secure transmission lift hook T40013 on upper rib of transmission housing as shown in the illustration.

Transmission, attaching to assembly stand

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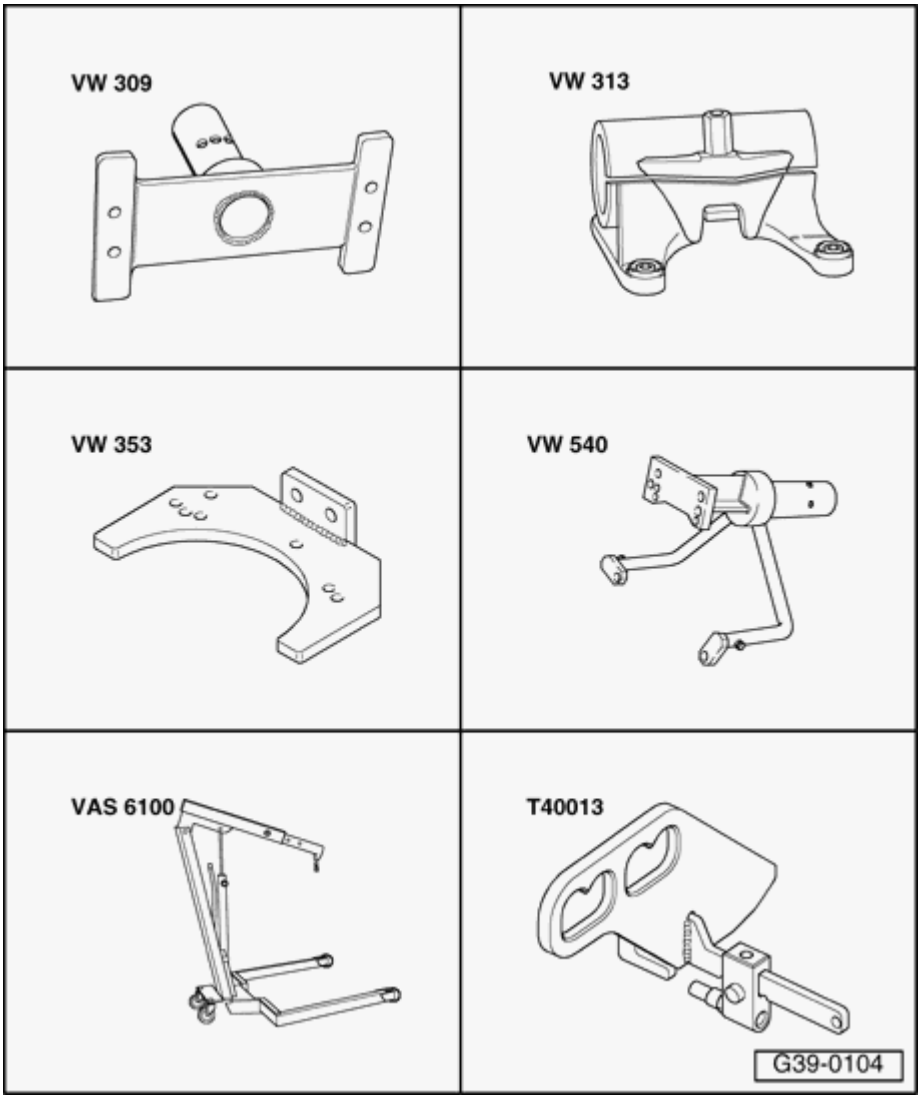


Fig. 321: Identifying Special Tools - Transmission, Attaching To Assembly Stand
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Holding plate VW 309
- Holding fixture VW 313
- Transmission support VW 353
- Engine and Transmission Holder VW 540

- Workshop crane VAS 6100
- Lifting tackle T40013

Suspending transmission vertically

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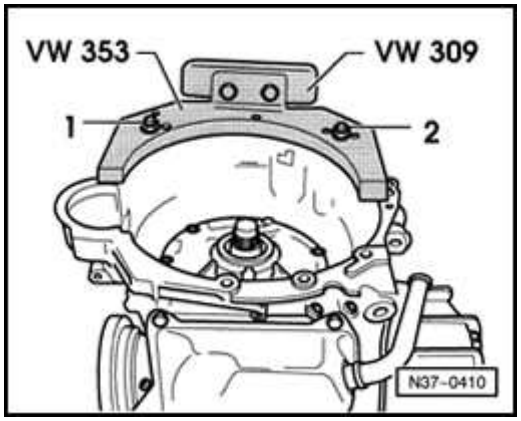


Fig. 322: Securing Transmission To Assembly Stand With Bolts & Installing Transmission Support VW 353 Onto Holding Plate VW 309
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Secure transmission to assembly stand with bolts - **1** - and - **2** -.
- Install transmission support VW 353 onto holding plate VW 309.

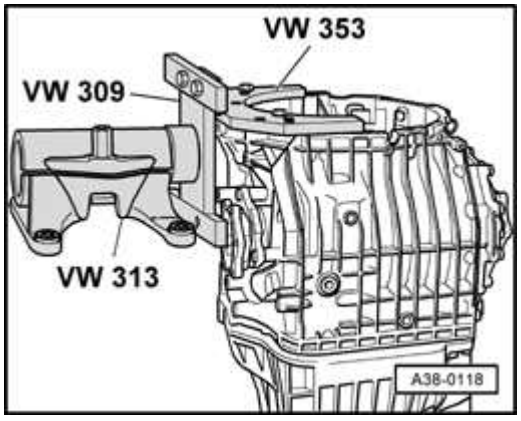


Fig. 323: Using Workshop Crane VAS 6100 To Insert Transmission Into Holding Fixture VW 313
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Using workshop crane VAS 6100 , insert transmission into holding fixture VW 313.

CAUTION: Center of gravity of transmission is outside center of rotation at holding fixture. To turn the transmission, a second technician must hold the transmission housing to prevent back-swing.

Securing transmission in horizontal position

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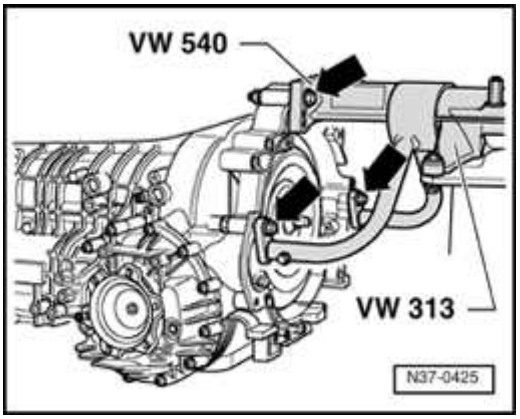


Fig. 324: Securing Transmission In Horizontal Position
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Bolt transmission onto engine/transmission holder VW 540 - **arrows** -.
- Using workshop crane VAS 6100 , insert transmission into holding fixture VW 313.

CAUTION: Center of gravity of transmission is outside center of rotation at holding fixture. To turn the transmission, a second technician must hold the transmission housing to prevent back-swing.

Transmission mount, transmission support and tunnel cross member, removing and installing

Special tools, testers and auxiliary items required

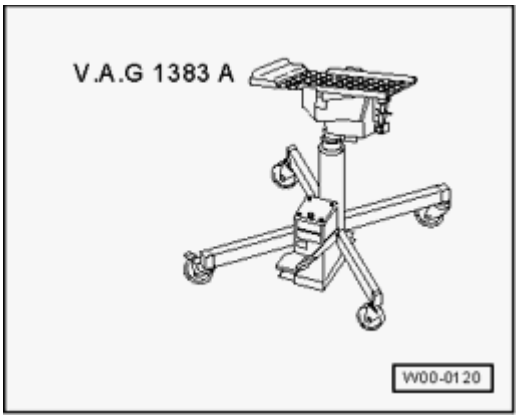


Fig. 325: Identifying Engine/Transmission Jack V.A.G. 1383 A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Engine/Transmission Jack V.A.G 1383 A
- Wooden block

Removing

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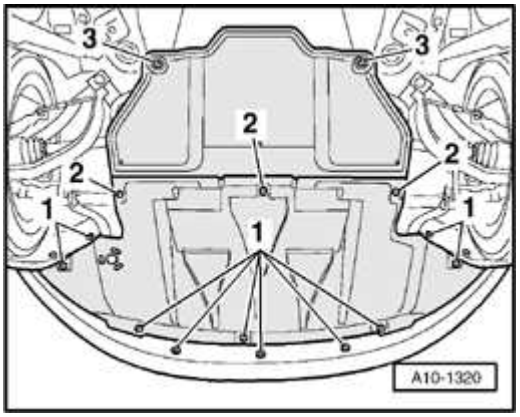


Fig. 326: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen quick-release screws - **2** - and - **3** - and remove rear noise insulation.

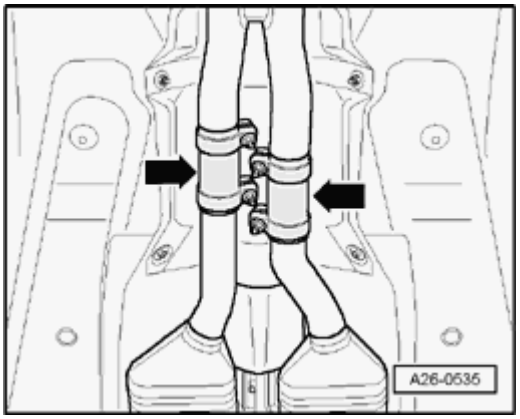


Fig. 327: Exhaust System And Clamps
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Flex joint in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.**

- Disconnect exhaust system at both double clamps - **arrows** -.

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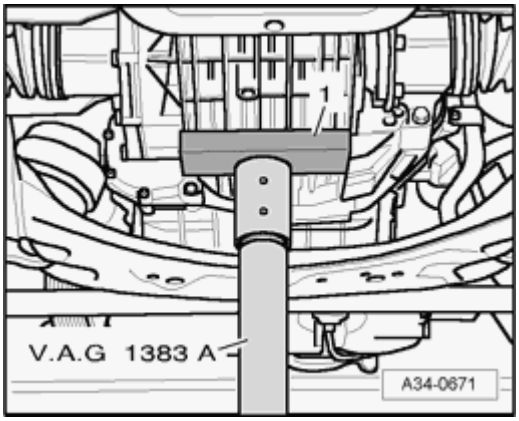


Fig. 328: Placing Plunger Of Engine/Transmission Jack V.A.G 1383 A With Block Of Wood Inserted In Between Transmission At Bottom
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place plunger of Engine/Transmission Jack V.A.G 1383 A with a block of wood inserted in between - **1** - on transmission at bottom.
- Raise transmission slightly using Engine/Transmission Jack V.A.G 1383 A.

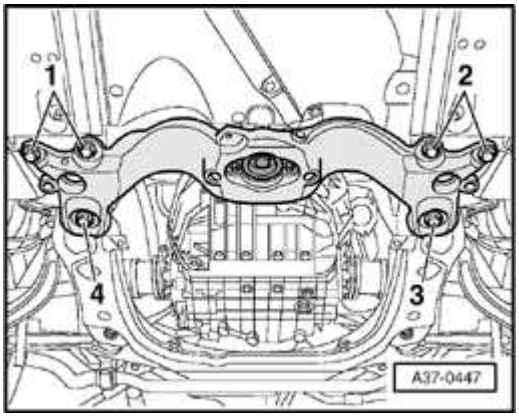


Fig. 329: Removing Bolts & Slowly Release Rear Crossmember Using VAG1383A Engine/Transmission Jack
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- First remove bolts - **1** - and - **2** - , then bolts - **3** - and - **4** -.

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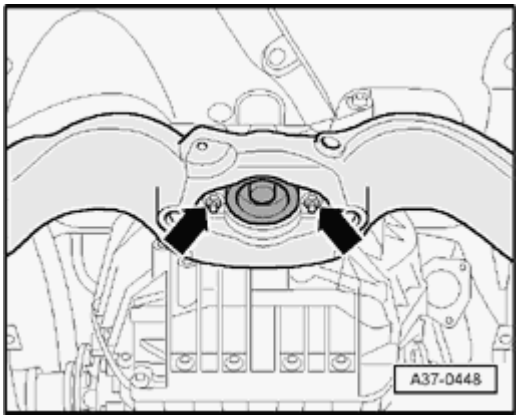


Fig. 330: Removing Nuts And Tunnel Cross Member
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **arrows** - and slide tunnel cross member slightly toward rear.

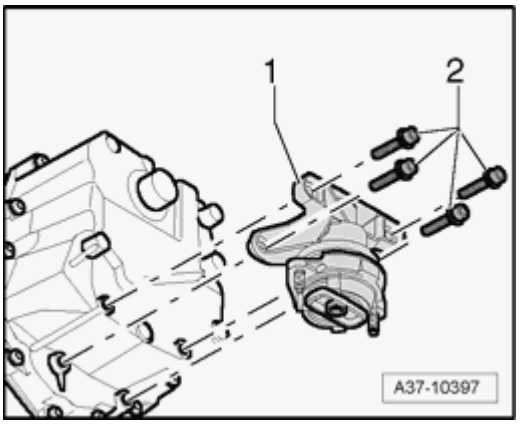


Fig. 331: Removing Bolts And Transmission Support From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **2** - and remove transmission mount - **1** - from transmission.

Installing

Installation is in reverse order of removal.

Torque specifications

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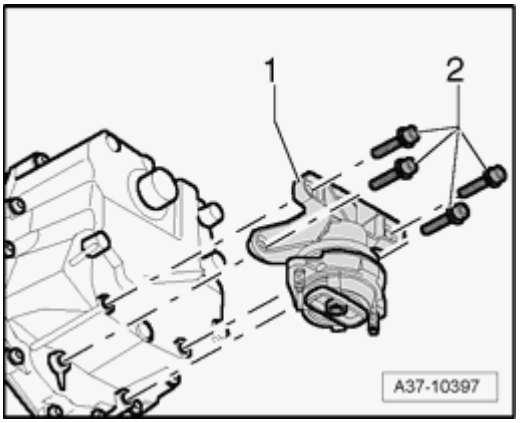


Fig. 332: Removing Bolts And Transmission Support From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Transmission mount - 1 - to transmission

- Bolts M8 - **2** - , tightening torque: 23 Nm

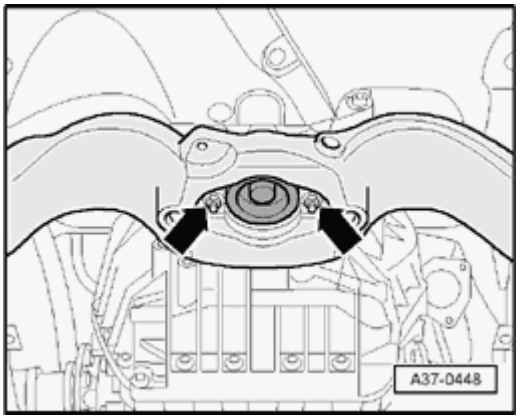


Fig. 333: Removing Nuts And Tunnel Cross Member
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Transmission mount to tunnel cross member

- Nuts M8 - **arrows** - , tightening torque: 23 Nm

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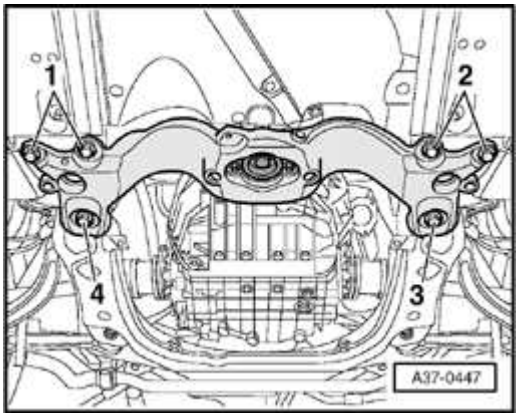


Fig. 334: Removing Bolts & Slowly Release Rear Crossmember Using VAG1383A Engine/Transmission Jack
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Tunnel cross member to chassis

- Always replace bolts M12 - **3** - and - **4** - , tightening torque: 110 Nm plus an additional 90° (corresponds to one-quarter turn)
- Bolts M10 - **1** - and - **2** - , tightening torque: 65 Nm

- Align exhaust system so it is free of tension -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

.

ATF IN PLANETARY GEARING

ATF in planetary gearing

NOTE:

- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **General repair notes --> Repair instructions.**

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ATF level, checking and topping off

Special tools, testers and auxiliary items required

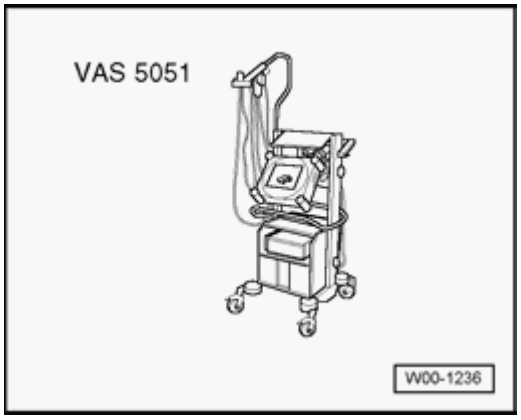


Fig. 335: Identifying Vehicle Diagnosis, Testing And Information System VAS 5051
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Vehicle Diagnosis, Testing and Information System VAS 5051 A with Diagnostic cable VAS 5051/5A

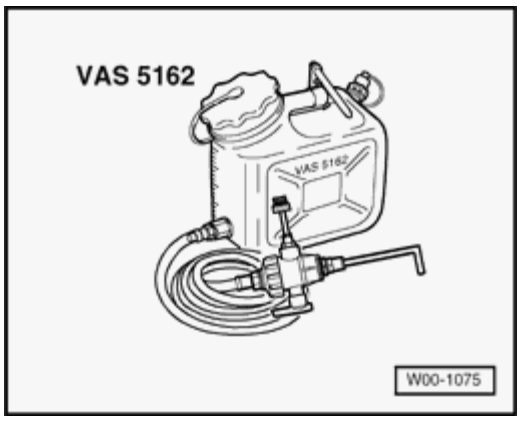


Fig. 336: ATF Filler System F/CVT Transmission VAS 5162
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- ATF filler system F/CVT transmission VAS 5162
- Safety glasses
- Oil receptacle

CAUTION: The Continuously Variable Automatic Transmission Multitronic 01J requires a different ATF than shift automatics. Only ATF for CVT transmission which can be obtained as replacement part must be used in the planetary gear. ATF specifications --> Capacities.

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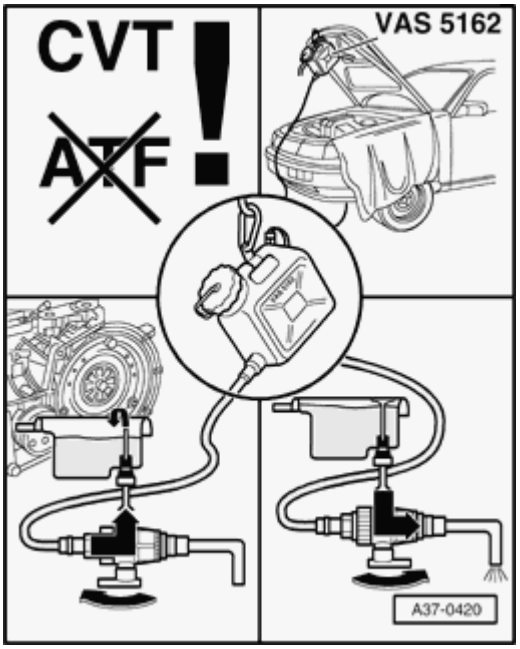


Fig. 337: Identifying Illustration On Reservoir For ATF Filler System F/CVT Transmission VAS5162
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **The illustration on the reservoir for Atf Filler System F/CVT Transmission VAS5162 in upper left graphic refers to the use of special ATF for CVT transmissions.**
- **The illustration also shows pictures of the steps required to fill the transmission. These steps will be explained in the following.**

CAUTION:

- **Engine must not be started if only a small amount or no ATF is in the transmission after repair work or after significant ATF loss.**
- **In this case, a preliminary filling with 4.5 to 5 liters ATF must be performed.**

NOTE:

- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **General repair notes --> Repair instructions.**

Test conditions

- Transmission not in emergency operating mode.
- Move vehicle onto a lifting platform or over a work pit so that it stands absolutely horizontal.
- Engine idling.
- Air conditioner and heating must be switched off.

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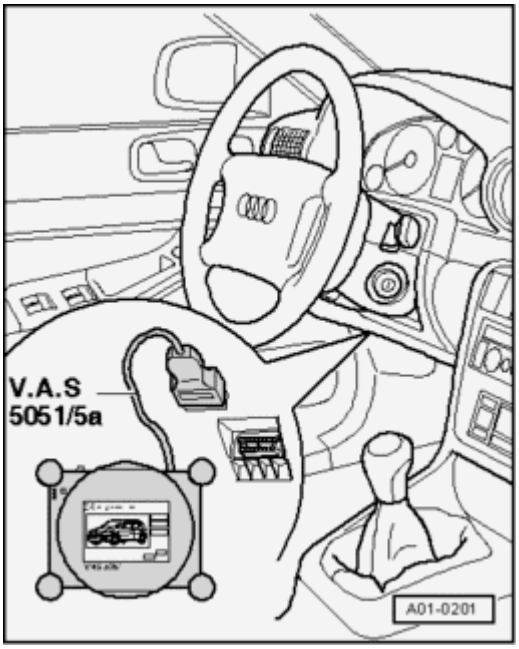


Fig. 338: Connecting Data Link Connector (DLC)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Vehicle Diagnostic, Testing and Information System VAS 5051 A connected, Vehicle Self-Diagnosis and vehicle system "02 - Transmission electronics" selected.
- ATF temperature must not be higher than 30°C at start of test, allow transmission to cool down if necessary.

NOTE:

- **The ATF level will vary according to the temperature of the ATF.**
- **Checking ATF level at too low ATF temperature leads to overfilling.**
- **If the ATF level is checked when the ATF temperature is too high, this will result in under filling.**
- **Over and under filling lead to impaired functioning of transmission.**
- **ATF temperature is read off on the Vehicle Diagnosis, Testing and Information System VAS 5051 A.**

Checking ATF temperature

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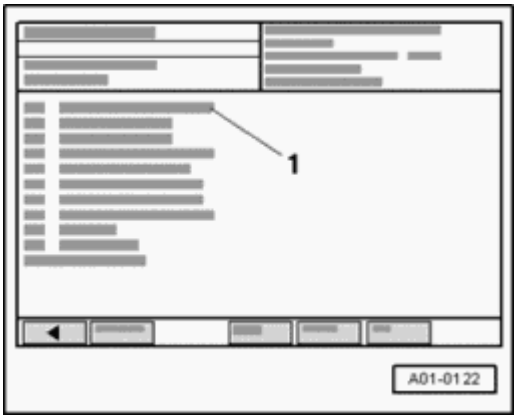


Fig. 339: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 A :

- In selection - **1** - , click on diagnostic function "08 - Read measuring value block".



Fig. 340: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 A :

1 - Enter display group, max. input value = 255

- In button field - **2** - , enter "10" for "Display group 10" and confirm input by pressing Q button.

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Fig. 341: Diagnostic System VAS 5051: Display - Display Fields
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 A :

- Read off ATF temperature indicated in display field - **3** -.

Checking ATF level and topping off

NOTE:

- **Engine keeps running at idle speed.**
- **The ATF level is checked at the ATF inspection plug.**
- **ATF level is correct if a little bit of fluid still escapes at the ATF check plug between 35°and 45°C (50°C for hot countries) ATF temperature (dependent on the fluid level when warming up).**

- Fill ATF filler system F/CVT transmission VAS 5162 with ATF for CVT transmissions.

- ATF specification --> **Capacities**.

CAUTION: The ATF filler tool must be clean and the ATF must not be mixed with any other ATF oils!

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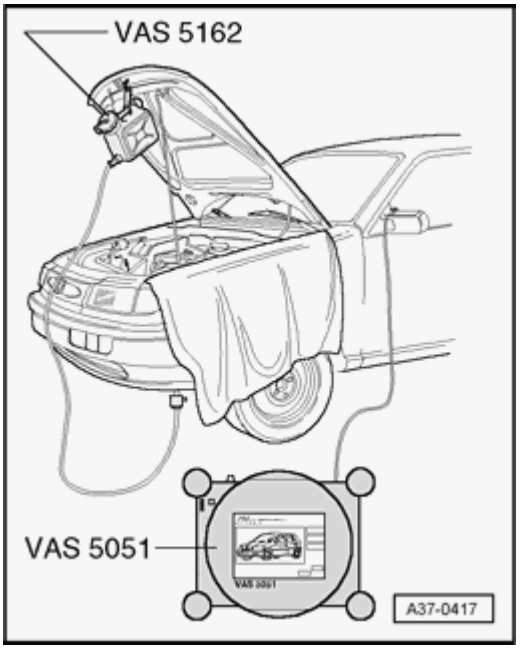


Fig. 342: Securing Filled Reservoir Of ATF Filler System F/CVT Transmission VAS 5162 As High As Possible On Vehicle
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Secure filled reservoir of ATF filler system F/CVT transmission VAS 5162 as high as possible on vehicle.

NOTE:

- **The shut-off valve on ATF filler system F/CVT transmission VAS 5162 must be closed.**

- While brake pedal is depressed, shift through all selector lever positions ("P" , "R" , "N" , "D" , "S") let each position remain shifted at idle for approx. 2 seconds.

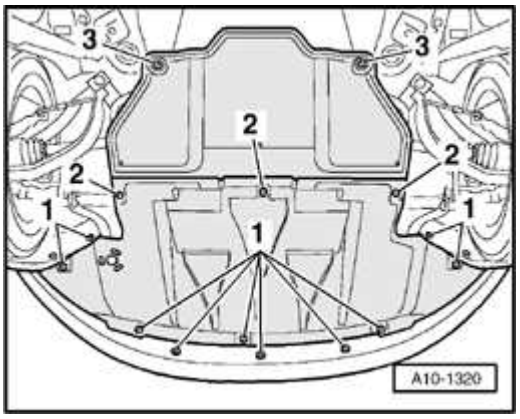


Fig. 343: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen quick-release screws - **2** - and - **3** - and remove rear noise insulation.

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- Place an oil receptacle underneath transmission.

CAUTION: Wear eye protection.

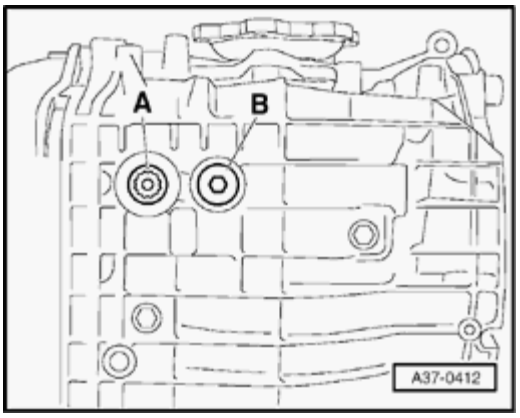


Fig. 344: Identifying ATF Check Plug
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If an ATF temperature of 35°C is reached, remove ATF check plug - **B** -.

NOTE:

- **Approx. 5 cl of ATF will always drain initially from the internal oil level pipe when the plug is removed.**

If ATF continues to flow out of the ATF filler plug hole over the overflow tube before the ATF reaches 40°C, the ATF level is OK.

- Replace and tighten ATF check plug.

- Tightening torque: 20 Nm.

NOTE:

- **At the latest at 45°C (50°C for hot countries) the ATF check plug must be installed again.**
- **At an ATF temperature above 45°C, too much ATF flows out due to heat up and the transmission is not filled sufficiently!**

The ATF check is now completed.

- Press <-- button to end function "08 - Read measured value block".
- Select "06 - End output".
- Switch off ignition and disconnect Data Link Connector (DLC).

Add ATF if no ATF has escaped from the ATF check plug hole by 40°C Filling ATF.

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Filling ATF

NOTE:

- **Engine keeps running at idle speed.**

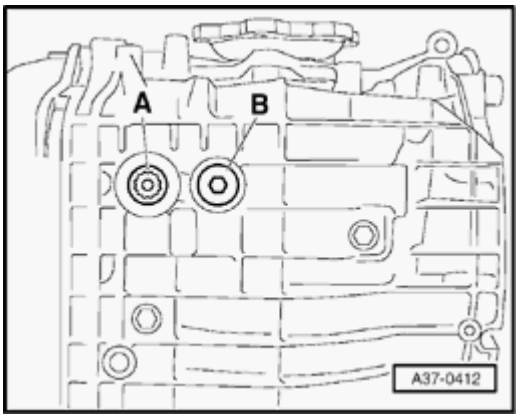


Fig. 345: Identifying ATF Check Plug
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Thread connection on shut-off valve of ATF filler system F/CVT transmission VAS 5162 into opening of ATF check plug - **B** -.

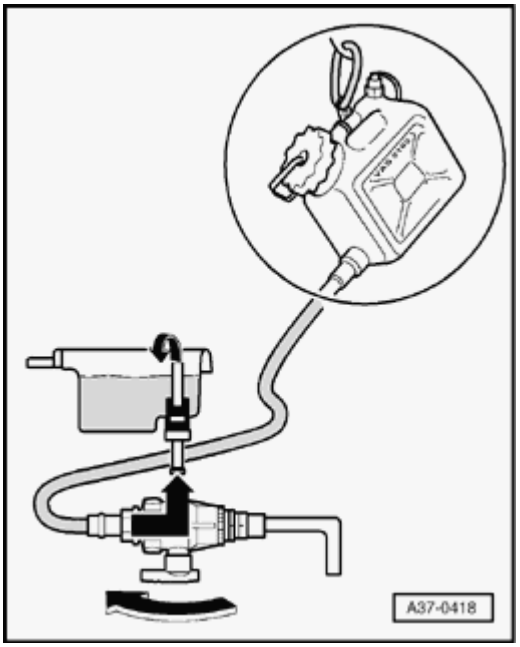


Fig. 346: Rotating Shut-Off Valve In Direction Of Filler Hose & Filling ATF Into Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Rotate shut-off valve in direction of filler hose - **lower arrow** -. ATF flows into transmission.
- Hold a suitable container beneath outlet of ATF filler system F/CVT transmission VAS 5162.

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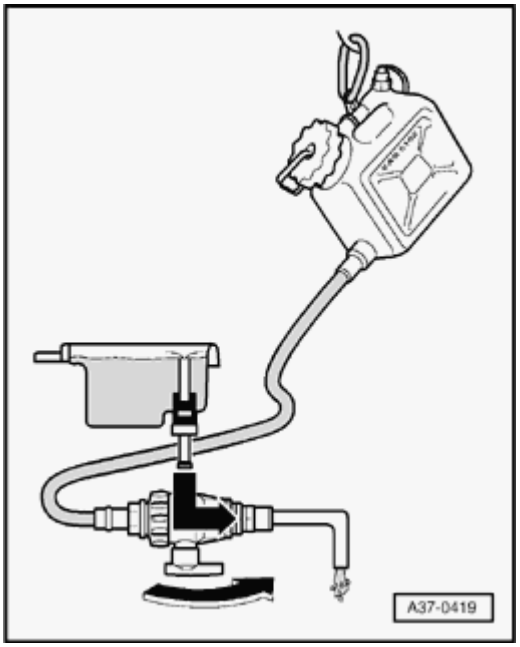


Fig. 347: Checking Atf Level By Rotating Shut-Off Valve In Direction Of Outlet
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check ATF level by rotating shut-off valve in direction of outlet - **lower arrow** -.

ATF level is correct when ATF drips out only lightly from outlet before 45°C is reached.

NOTE:

- **Approx. 5 cl of ATF will initially drain from the internal oil level pipe. This is normal.**

- If no additional ATF flows out, rotate shut-off valve back in direction of filler hose and fill with more ATF; repeat check of ATF level.
- After reaching correct ATF level, remove shut-off valve again.

NOTE:

- **After removing shut-off valve, ATF drips out lightly.**

- Replace and tighten ATF check plug.

- Tightening torque: 20 Nm.

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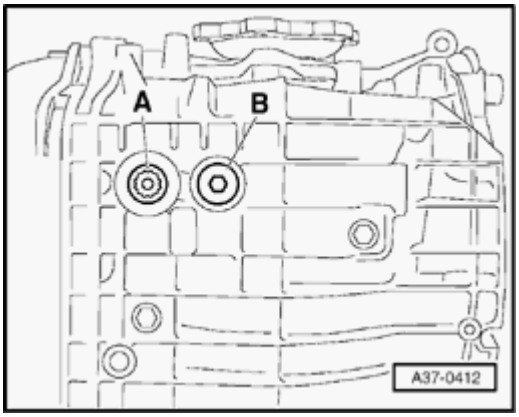


Fig. 348: Identifying ATF Check Plug
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **At the latest at 45°C (50°C for hot countries) the ATF check plug - B - must be installed again.**
- **At an ATF temperature above 45°C, too much ATF flows out due to heat up and the transmission is not filled sufficiently!**

- Press <-- button to end function "08 - Read measured value block".
- Select "06 - End output".
- Switch off ignition and disconnect Data Link Connector (DLC).

ATF, changing or filling after repairs

Special tools, testers and auxiliary items required

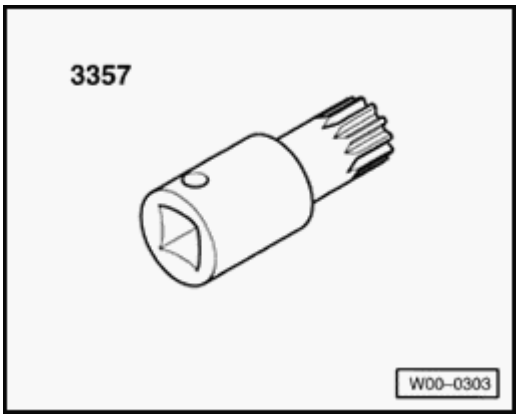


Fig. 349: Identifying Triple Square Socket Driver 3357
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Triple square socket driver 3357

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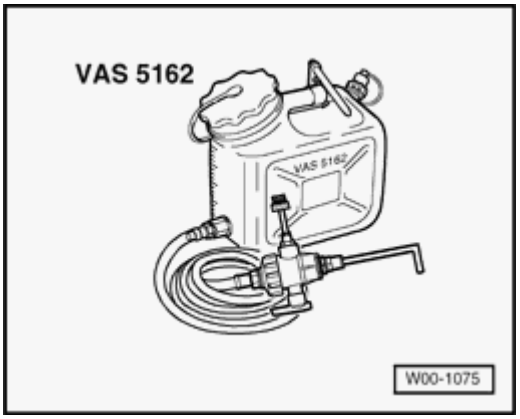


Fig. 350: ATF Filler System F/CVT Transmission VAS 5162
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- ATF filler system F/CVT transmission VAS 5162
- Old oil collecting and extracting device V.A.G 1782
- Safety glasses

Work procedure

- Move vehicle onto a lifting platform or over a work pit so that it stands absolutely horizontal.

CAUTION: Do not allow engine to run without filling ATF and do not tow the vehicle.

NOTE:

- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **General repair notes --> Repair instructions.**
- **Observe disposal regulations!**
- **Always blow compressed air through ATF cooler and ATF lines (max. 10 mbar) and replace auxiliary ATF filter before installing a replacement transmission --> Additional ATF filter.**

- Fill ATF filler system F/CVT transmission VAS 5162 with ATF for CVT transmissions.

- ATF specification --> **Capacities**.

CAUTION: The ATF filler tool must be clean and the ATF must not be mixed with any other ATF oils!

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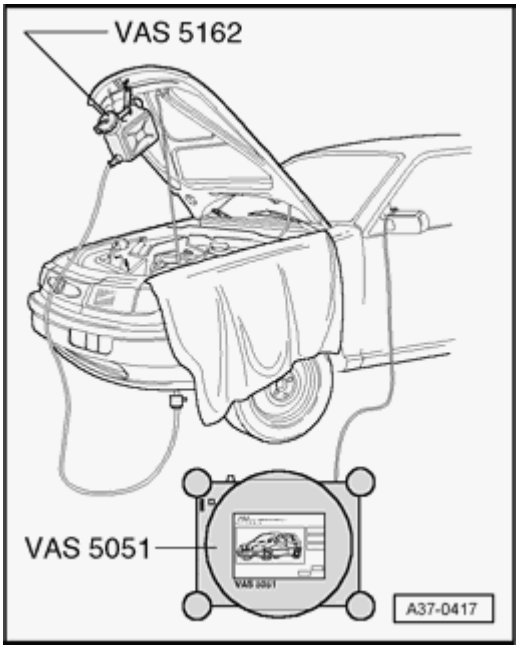


Fig. 351: Securing Filled Reservoir Of ATF Filler System F/CVT Transmission VAS 5162 As High As Possible On Vehicle
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Secure filled reservoir of ATF filler system F/CVT transmission VAS 5162 as high as possible on the vehicle.

NOTE:

- **The shut-off valve on the ATF filler system F/CVT transmission VAS 5162 must be closed.**

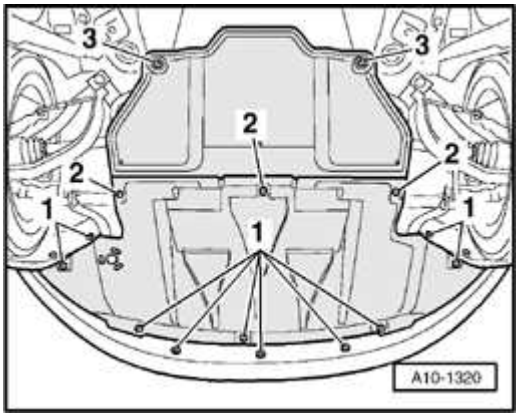


Fig. 352: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen quick-release screws - **2** - and - **3** - and remove rear noise insulation.
- Place old oil collecting and extracting device V.A.G 1782 beneath transmission.

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CAUTION: Wear eye protection.

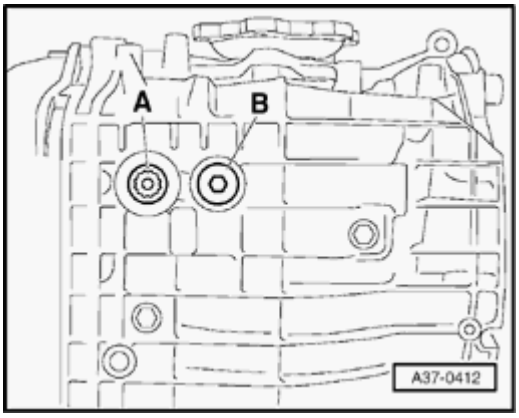


Fig. 353: Identifying ATF Check Plug
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove ATF drain plug - **A** - using triple square socket driver 3357 and drain ATF.
- Tighten ATF drain plug again.

- Tightening torque: 24 Nm.

- Remove ATF check plug - **B** -.
- Thread connection on shut-off valve of ATF filler system F/CVT transmission VAS 5162 into opening of ATF check plug - **B** -.

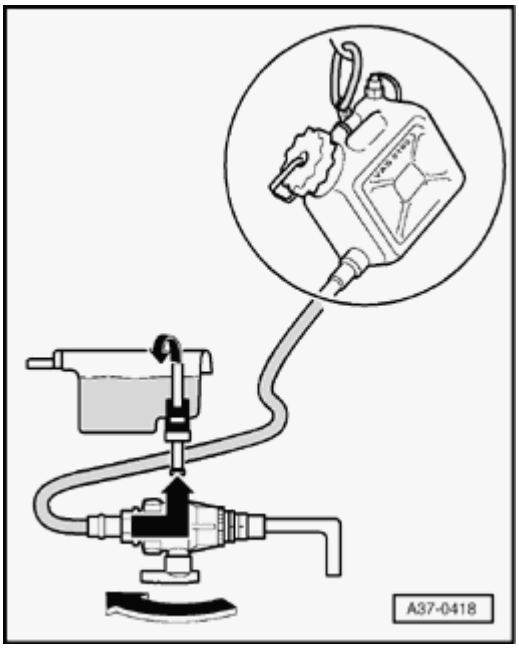


Fig. 354: Rotating Shut-Off Valve In Direction Of Filler Hose & Filling ATF Into Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Rotate shut-off valve in direction of filler hose - **lower arrow** -. ATF flows into transmission.
- Fill at least 4.5 to liters ATF into transmission.
- Selector lever in "P" , start engine and let it run at idle.

For vehicles as of model year 2005:

- Selector lever in position "P"
- Let engine run at high speed at a minimum of 2500 RPM by depressing accelerator pedal.

CAUTION: It is necessary to run engine at high speed so that ATF pump is ventilated after performing repairs on the transmission.

All model years:

- Check ATF level and top off --> **ATF level, checking and topping off**.

NOTE:

- **Observe all notes and test requirements for "Checking ATF level and topping off".**

ATF LINES, ATF COOLER AND AUXILIARY ATF FILTER, SERVICING

ATF lines, ATF cooler and auxiliary ATF filter, servicing

NOTE:

- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **General repair notes --> Repair instructions.**
- **Always blow compressed air through ATF cooler and ATF lines (max. 10 mbar) and replace auxiliary ATF filter before installing a replacement transmission --> ATF lines and ATF cooler, cleaning. If extremely dirty ATF flows out when blowing with compressed air, ATF cooler and ATF lines must also be flushed with clean ATF.**
- **To install, first insert ATF lines into transmission or cooler by hand as far as they will go, then bolt on.**
- **Check ATF level --> ATF level, checking and topping off after replacing ATF lines.**

ATF lines, ATF cooler and auxiliary ATF filter (vehicles with 1.8 L turbo engine)

Part 1

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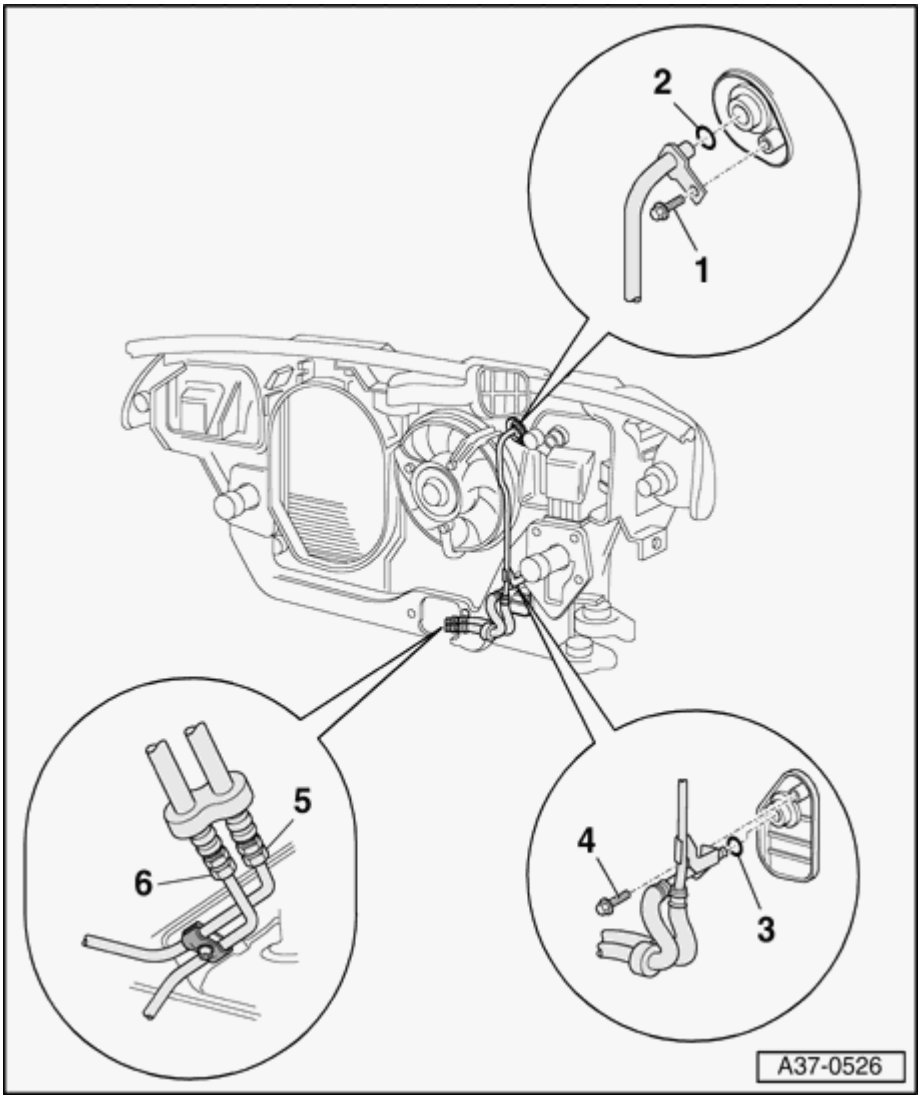


Fig. 355: ATF Lines, ATF Cooler And Auxiliary ATF Filter Overview (Vehicles With 1.8 L Turbo Engine) Part 1
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Combi bolt, 5 Nm

2 - O-Ring

- Replace
- Insert with ATF

3 - O-Ring

- Replace
- Insert with ATF

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4 - Combi bolt, 5 Nm

5 - Union nut, 29 Nm

6 - Union nut, 29 Nm

Part 2

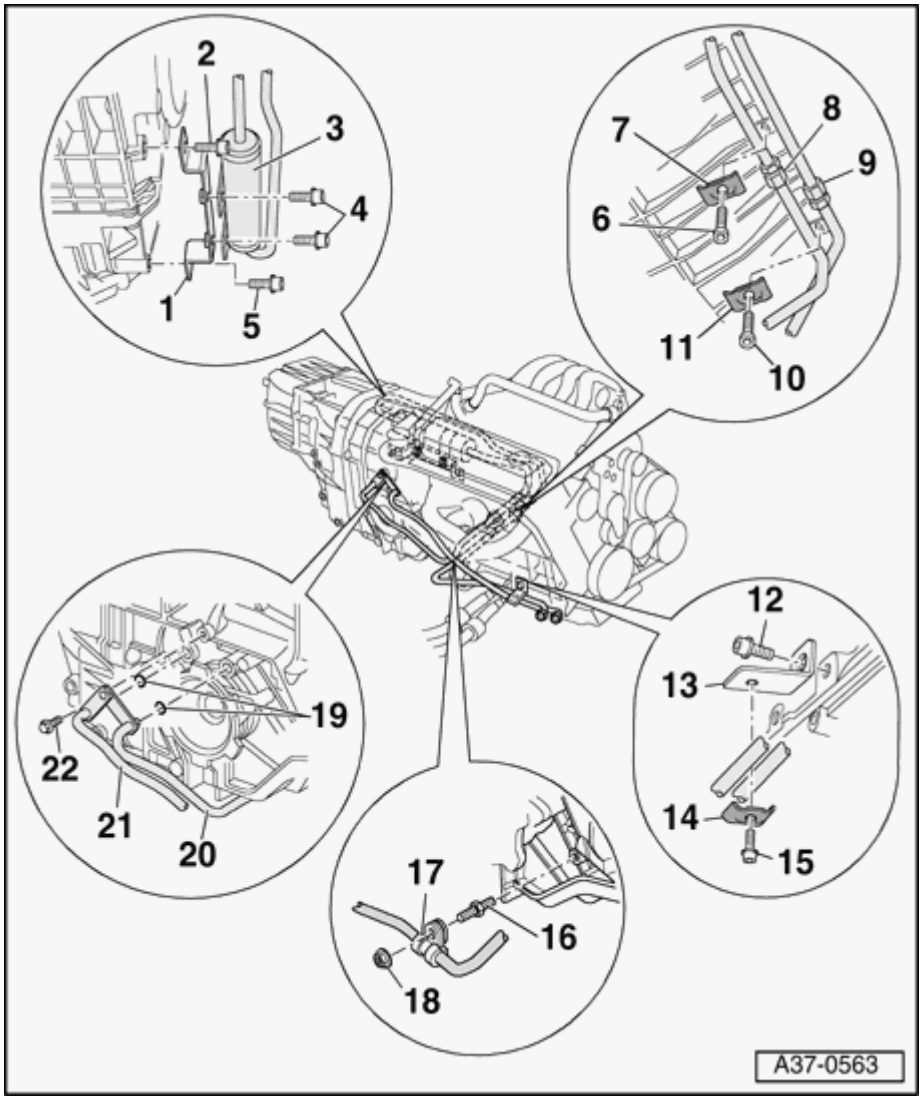


Fig. 356: ATF Lines, ATF Cooler And Auxiliary ATF Filter Overview (Vehicles With 1.8 L Turbo Engine) Part 2
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Bracket

2 - Combi bolt, 40 Nm

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3 - Additional ATF filter

- Must be replaced when transmission is malfunctioning
- Removing and installing --> **Additional ATF filter**

4 - Combi bolt, 20 Nm

5 - Combi bolt, 46 Nm

6 - Combi bolt, 5 Nm

7 - Clamp

8 - Union nut, 29 Nm

9 - Union nut, 29 Nm

10 - Combi bolt, 5 Nm

11 - Clamp

12 - Combi bolt, 46 Nm

13 - Bracket

14 - Clamp

15 - Combi bolt, 5 Nm

16 - Double bolt, 10 Nm

17 - Clamp

18 - Combi nut, 10 Nm

19 - O-Ring

- Replace
- Insert with ATF

20 - ATF line

21 - ATF line

22 - Combi bolt, 21 Nm

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ATF lines, ATF cooler and auxiliary ATF filter (vehicles with 2.0 L normally aspirated engine)

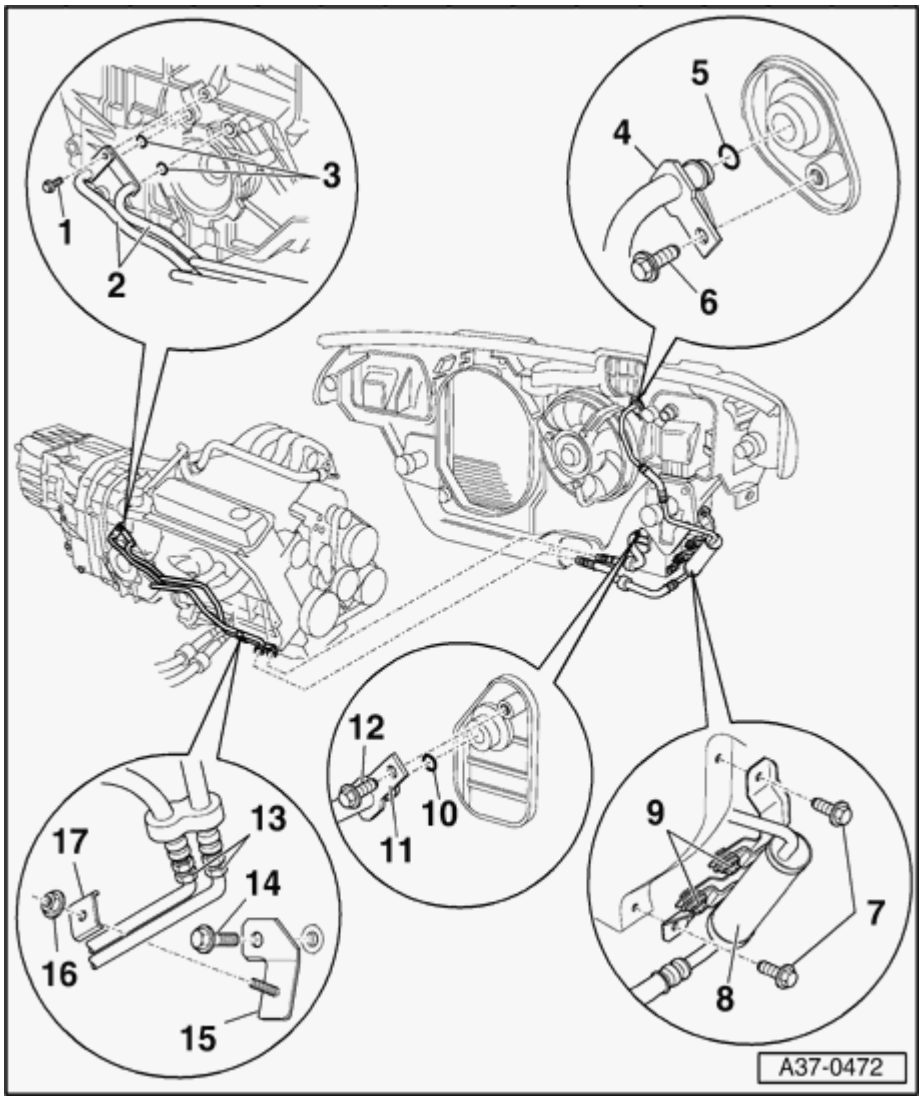


Fig. 357: ATF Lines, ATF Cooler And Auxiliary ATF Filter Overview (Vehicles With 2.0 L Normally Aspirated Engine)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Bolt, 20 Nm

2 - ATF lines

3 - O-Ring

- Replace
- Insert with ATF

4 - ATF line

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5 - O-Ring

- Replace
- Insert with ATF

6 - Combi bolt, 5 Nm

7 - Combi bolt, 10 Nm

8 - Additional ATF filter

- Must be replaced when transmission is malfunctioning
- Removing and installing --> **Additional ATF filter**

9 - Combi bolt, 10 Nm

10 - O-Ring

- Replace
- Insert with ATF

11 - ATF line

12 - Combi bolt, 5 Nm

13 - Union nut, 29 Nm

14 - Combi bolt, 46 Nm

15 - Bracket

16 - Combi nut, 5 Nm

17 - Clamp

ATF lines, ATF cooler and auxiliary ATF filter (vehicles with 2.0 L TFSI engine)

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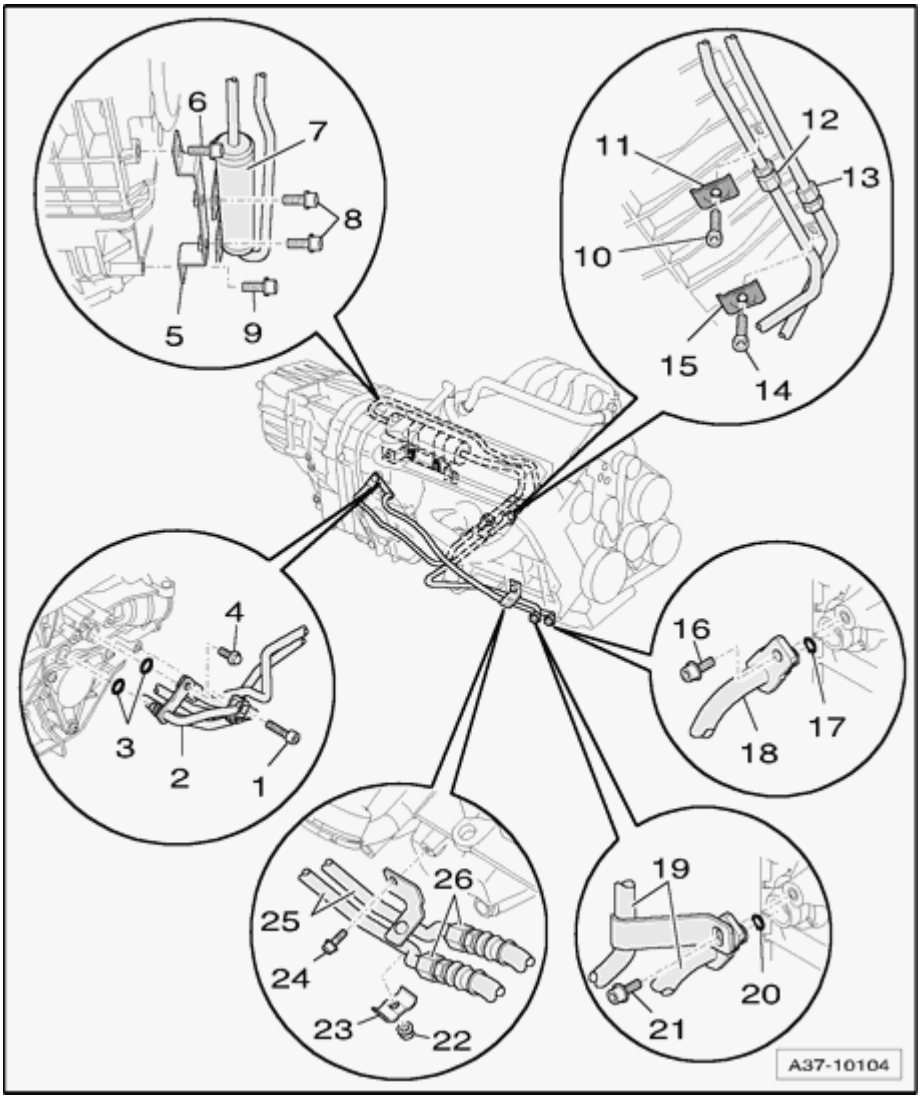


Fig. 358: ATF Lines, ATF Cooler And Auxiliary ATF Filter Overview (Vehicles With 2.0 L TFSI Engine)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Socket head cap screw, 21 Nm

2 - ATF lines

- To auxiliary ATF filter and to ATF cooler

3 - O-Ring

- Replace
- Insert with ATF

4 - Combi bolt, 21 Nm

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5 - Bracket

6 - Combi bolt, 40 Nm

7 - Additional ATF filter

- Must be replaced when transmission is malfunctioning
- Removing and installing --> **Additional ATF filter**

8 - Combi bolt, 20 Nm

9 - Combi bolt, 46 Nm

10 - Combi bolt, 5 Nm

11 - Clamp

12 - Union nut, 29 Nm

13 - Union nut, 29 Nm

14 - Combi bolt, 5 Nm

15 - Clamp

16 - Combi bolt, 5 Nm

17 - O-Ring

- Replace
- Insert with ATF

18 - ATF line

19 - ATF lines

20 - O-Ring

- Replace
- Insert with ATF

21 - Combi bolt, 5 Nm

22 - Combi nut, 10 Nm

23 - Clamp

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24 - Combi bolt, 10 Nm

25 - ATF lines

26 - Union nuts, 29 Nm

ATF lines, ATF cooler and auxiliary ATF filter (vehicles with 6-cyl. gasoline engine)

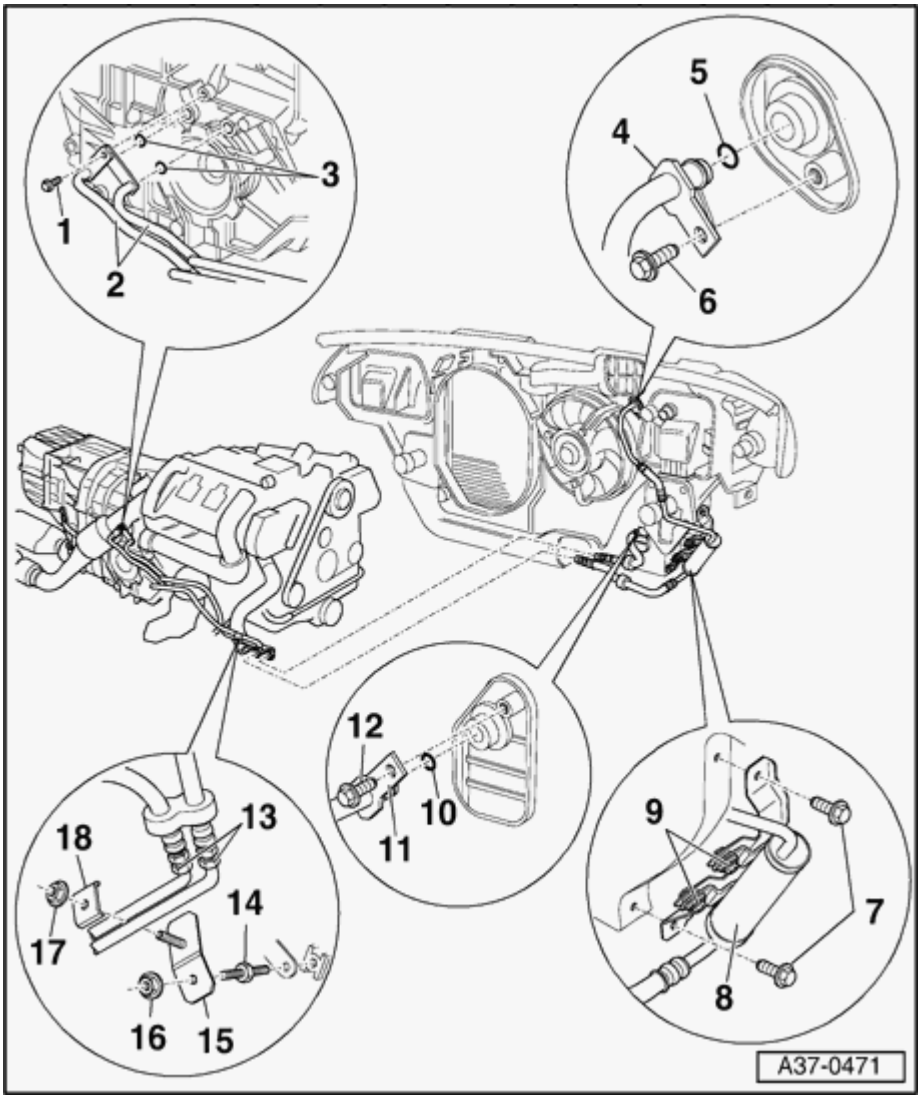


Fig. 359: ATF Lines, ATF Cooler And Auxiliary ATF Filter Overview (Vehicles With 6-Cyl. Gasoline Engine)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Combi bolt, 21 Nm

2 - ATF lines

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3 - O-Ring

- Replace
- Insert with ATF

4 - ATF line

5 - O-Ring

- Replace
- Insert with ATF

6 - Combi bolt, 5 Nm

7 - Combi bolt, 10 Nm

8 - Additional ATF filter

- Must be replaced when transmission is malfunctioning
- Removing and installing --> **Additional ATF filter**

9 - Combi bolt, 10 Nm

10 - O-Ring

- Replace
- Insert with ATF

11 - ATF line

12 - Combi bolt, 5 Nm

13 - Union nut, 29 Nm

14 - Double bolt, 10 Nm

- Not installed on 3.2 L FSI engine

15 - Bracket

16 - 10 Nm

- Combination nut for 3.0 L engines
- Bolt for 3.2 L FSI engines

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17 - Combi nut, 5 Nm

18 - Clamp

ATF lines and ATF cooler, cleaning

Special tools, testers and auxiliary items required

- Old oil collecting and extracting device V.A.G 1782
- Hose diameter approx. 18 mm
- Compressed air gun, commercially available
- Safety glasses

Work procedure

NOTE:

- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**

- Before installing a replacement transmission, always blow into ATF cooler and ATF lines with compressed air (max. 10 bar).
- Before installing a replacement transmission, always replace auxiliary ATF filter.

NOTE:

- **If extremely dirty ATF flows out when blowing with compressed air, ATF cooler and ATF lines must also be flushed with clean ATF.**
- **ATF lines, removing and installing --> ATF lines, ATF cooler and auxiliary ATF filter, servicing.**

Additional ATF filter

NOTE:

- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **General repair notes --> Repair instructions.**
- **Always blow compressed air through ATF cooler and ATF lines (max. 10 mbar) and replace auxiliary ATF filter before installing a replacement transmission. If extremely dirty ATF flows out when blowing with compressed air, ATF cooler and ATF lines must also be flushed with clean ATF.**
- **To install, first insert ATF lines into transmission or cooler by hand as far as they will go, then bolt on.**

Auxiliary ATF filter, removing and installing (vehicles with 1.8 turbo and 2.0 L TFSI)

Special tools, testers and auxiliary items required

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- Oil receptacle

Removing

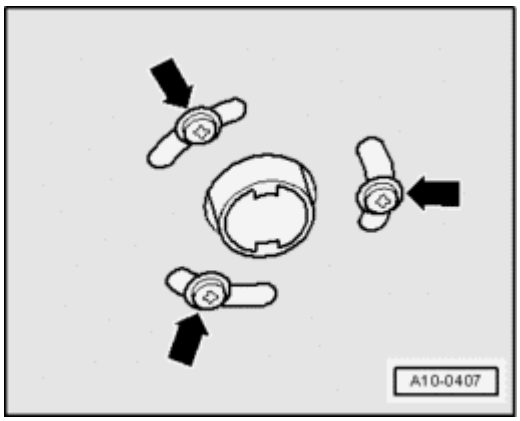


Fig. 360: Identifying Exhaust Pipe Fasteners
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On vehicles equipped with auxiliary heater, remove bolts **- arrows -** for exhaust pipe of auxiliary/additional heater to noise insulation.

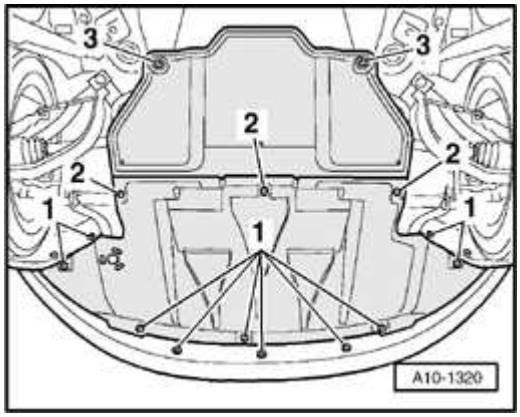


Fig. 361: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts or quick-release screws **- 1 to 3 -** and remove noise insulation at front and rear.

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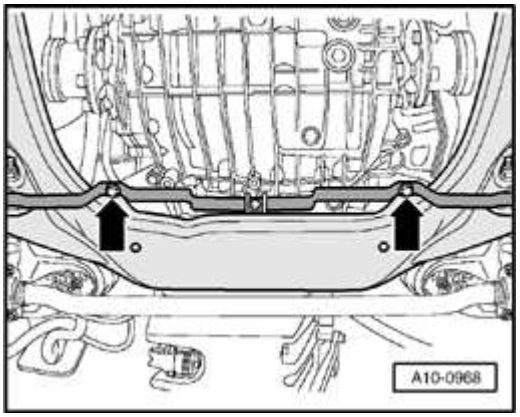


Fig. 362: Removing Bracket For Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove noise insulation bracket - **arrows** -.

NOTE:

- **Observe the rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**

- Place an oil receptacle underneath transmission.

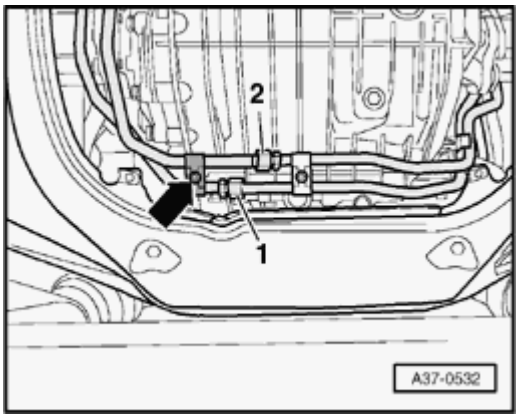


Fig. 363: Removing Union Nuts And Disconnecting ATF Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove union nuts - **1** - and - **2** - and disconnect ATF lines.
- Remove clamp for ATF-lines - **arrow** -.

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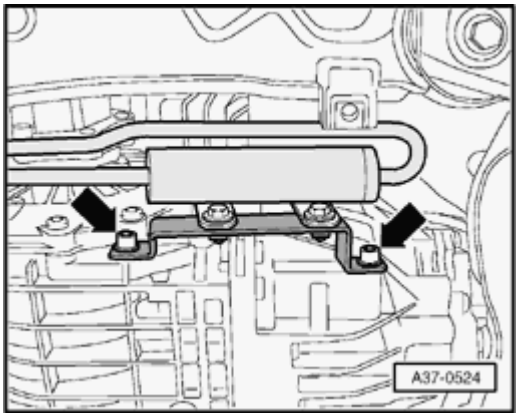


Fig. 364: Removing ATF Filter On Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove auxiliary ATF filter on transmission - **arrows** -.

Installing

Installation is in reverse order of removal, note the following:

- Check ATF level and top off --> **ATF level, checking and topping off**.

Torque specifications

Component	Nm
ATF auxiliary filter to bracket	20
ATF auxiliary filter bracket to transmission	40
ATF lines to transmission	21
Line clamp to engine	5
ATF line union nut	29

Auxiliary ATF filter, removing and installing (vehicles with 2.0 L normally aspirated- and 6-cyl. gasoline engine)

Special tools, testers and auxiliary items required

- Oil receptacle

Removing

NOTE:

- **Removal and installation is here described for vehicles with 6-cyl. gasoline engine in the following. On vehicles installed with 2.0l engines components inside the vehicle possibly look different from the ones shown in the illustrations.**

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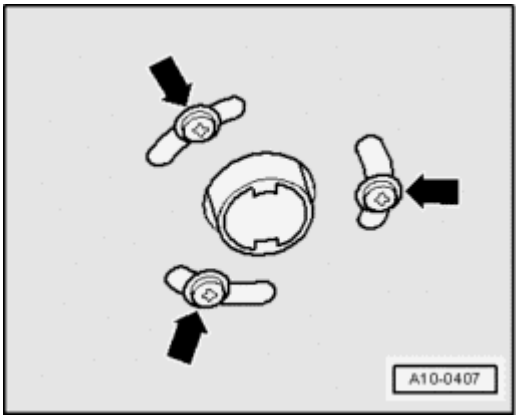


Fig. 365: Identifying Exhaust Pipe Fasteners
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On vehicles equipped with auxiliary heater, remove bolts - **arrows** - for exhaust pipe of auxiliary/additional heater to noise insulation.

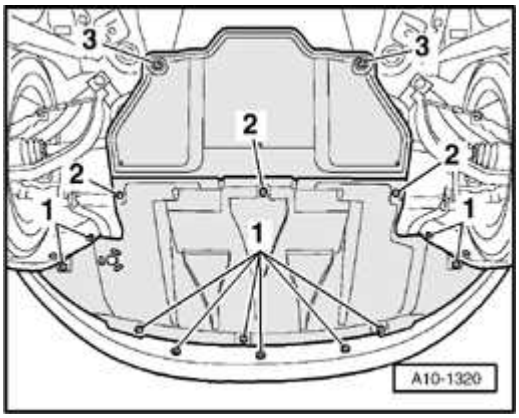


Fig. 366: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen bolts or quick-release screws - **1** - and - **2** - and remove front noise insulation.

NOTE:

- **Observe the rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**

- Place an oil receptacle underneath transmission.

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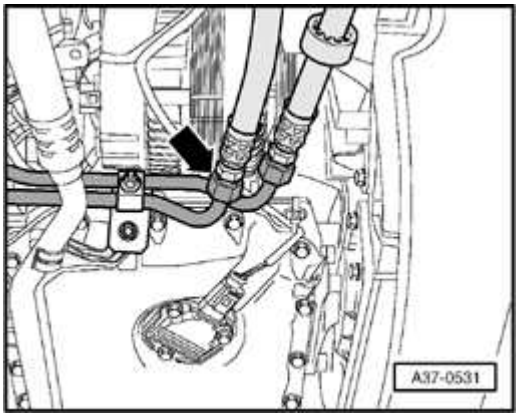


Fig. 367: Removing Union Nut And Disconnecting Atf-Line To Auxiliary Atf Filter
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove union nut - **arrow** - and disconnect ATF-line to auxiliary ATF filter.

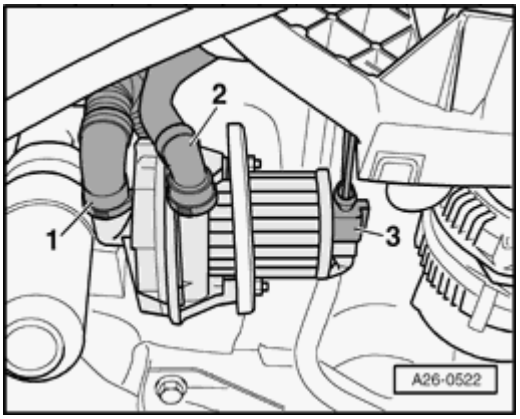
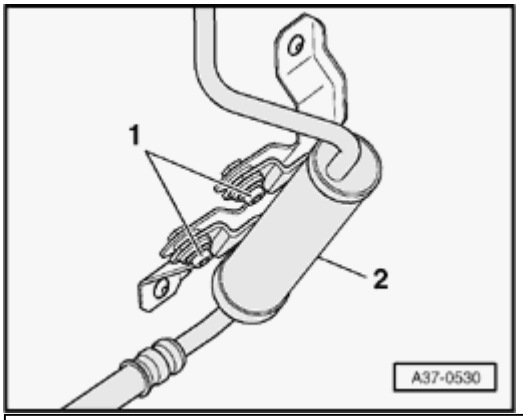


Fig. 368: Disconnecting Air Hoses At Secondary Air Injection (AIR) Pump
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect air hoses - **1** - and - **2** - at Secondary Air Injection (AIR) pump.

NOTE:

- **Electrical harness connector - 3 - remains connected.**



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Fig. 369: Removing Bolts At Auxiliary Atf Filter Bracket
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1** - at auxiliary ATF filter bracket - **2** -.

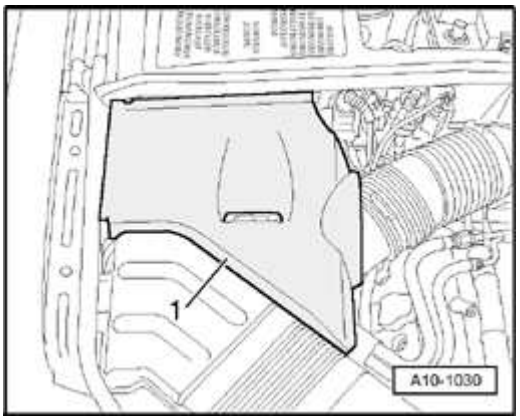


Fig. 370: Removing Cover In Engine Compartment (Right Side)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove right cover - **1** - in engine compartment.

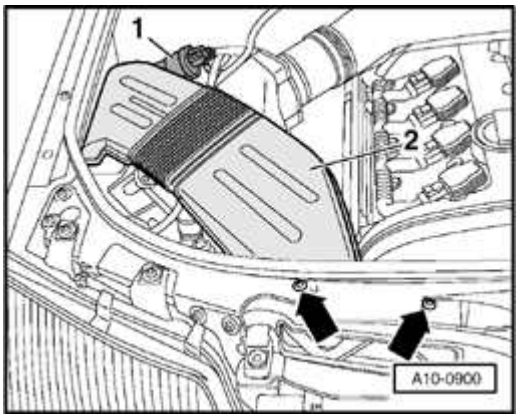


Fig. 371: Evaporative Emission Canister Purge Regulator Valve N80 And Air Duct
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** -.
- Disengage Evaporative Emission (EVAP) Canister Purge Regulator Valve N80 - **1** - at air duct.
- Remove air duct - **2** -.

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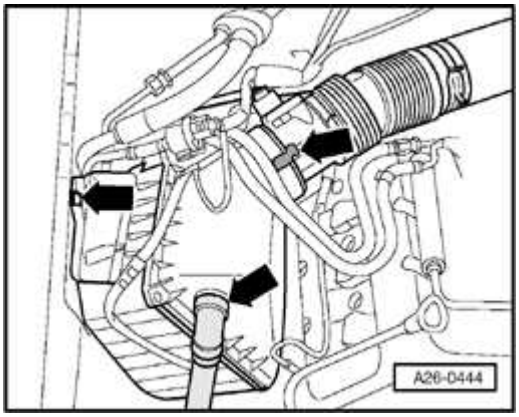


Fig. 372: Removing Air Filter Housing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove air filter housing - **arrows** -.

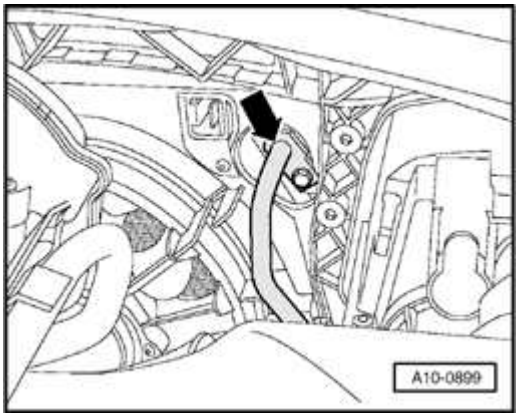


Fig. 373: Disconnecting ATF-Lines At Top And Bottom Of Radiator
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect upper ATF line - **arrow** - from cooler.
- Remove auxiliary ATF filter.

Installing

Installation is in reverse order of removal, note the following:

NOTE:

- **Replace O-rings.**

- Check ATF level and top off --> **ATF level, checking and topping off**.

Torque specifications

Component	Nm

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ATF line to cooler	5
ATF auxiliary filter to bracket	10
ATF line union nut	29

ATF BREATHER PIPE

ATF breather pipe

- If ATF flows out at underside of transmission bell housing, input shaft seal and/or ATF breather pipe may be leaking. Before replacing any parts, be sure to find actual cause of malfunction.
- Input shaft seal must be replaced if leaking --> **Input shaft seal, replacing**.
- ATF breather pipe must be replaced if leaking.

NOTE:

- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **General repair notes --> Repair instructions.**

ATF breather pipe, removing and installing

Removing

- Transmission removed.

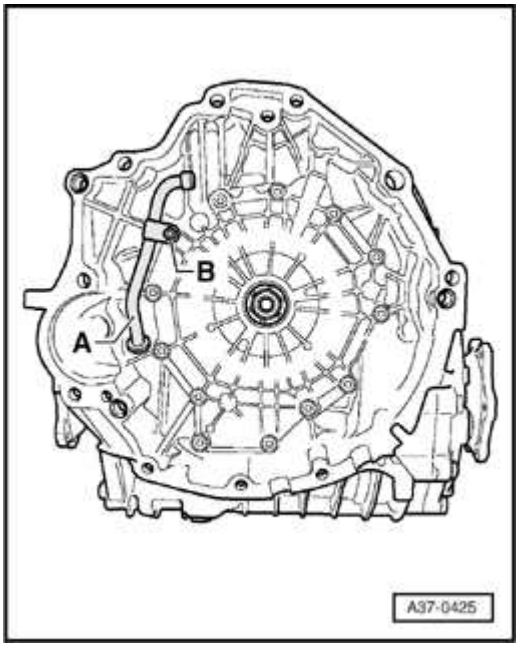


Fig. 374: Identifying ATF Breather Pipe & Level Of Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **B** -.

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- Pull ATF breather pipe - **A** - out of mount.

NOTE:

- **If ATF leak is determined from check hole behind ATF breather pipe - A - , slightly below bolt - B - , transmission is malfunctioning and must be replaced.**

Installing

Installation is in reverse order of removal, note the following:

- Insert new ATF breather pipe - **A** - until it reaches stop.
- Tighten ATF breather pipe with strap and bolt - **B** - on transmission housing.

Torque specification

Component	Nm
ATF breather pipe to transmission housing	25

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38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS

TRANSMISSION, DISASSEMBLING AND ASSEMBLING

End cover, removing and installing

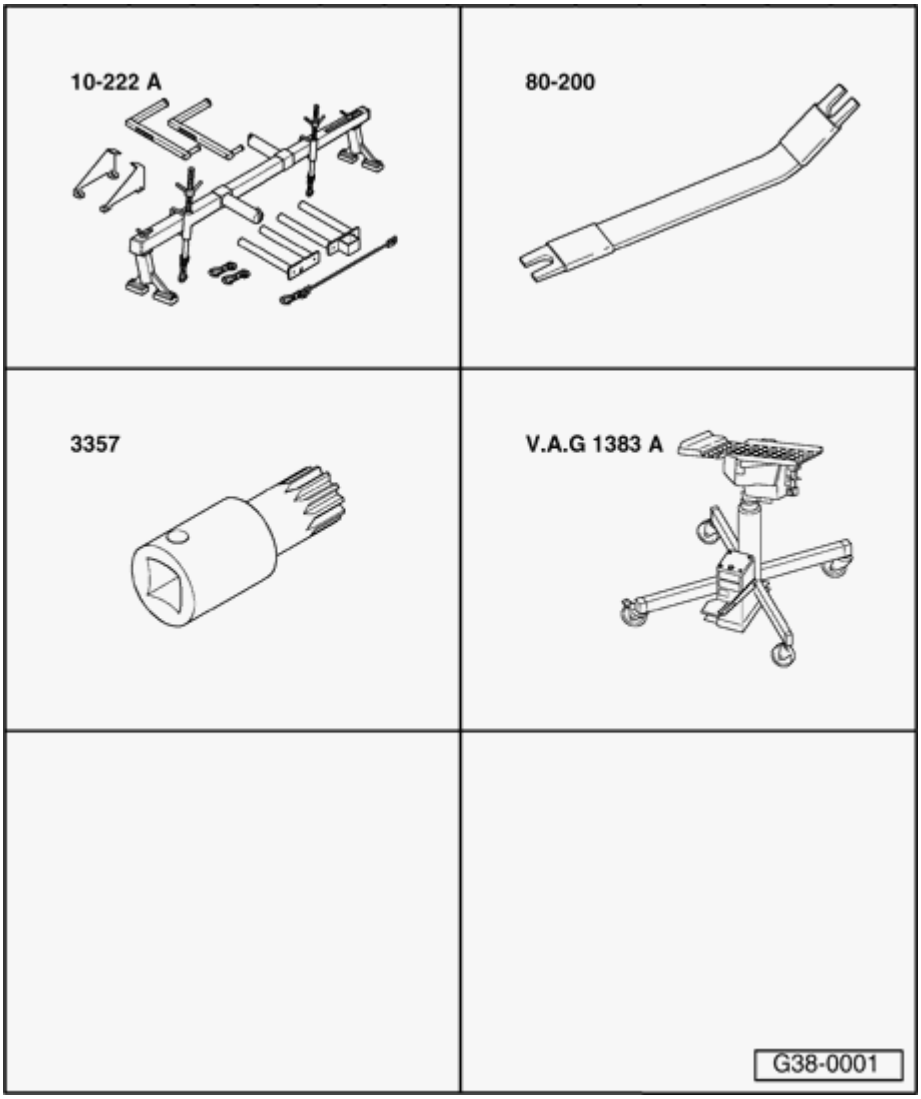


Fig. 375: Identifying Special Tools - End Cover, Removing And Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Engine support bridge 10-222 A
- Pry lever 80-200
- Triple square socket driver 3357

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- Engine/Transmission Jack V.A.G 1383 A
- Oil receptacle

Removing

NOTE:

- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **General repair notes --> Repair instructions.**

CAUTION: Do not run engine with the end cover removed or without ATF filling and do not tow vehicle.

- Place selector lever in position "P".

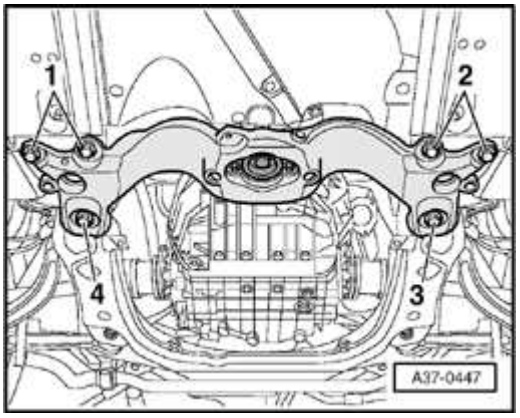


Fig. 376: Removing Bolts & Slowly Release Rear Crossmember Using VAG1383A Engine/Transmission Jack
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove tunnel cross member --> **Transmission mount, transmission support and tunnel cross member, removing and installing**.

Vehicles with oval connector:

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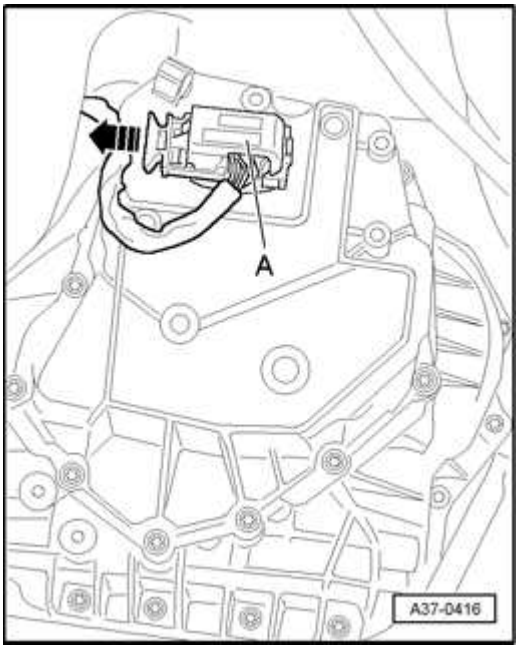


Fig. 377: Disengaging Harness Connector From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disengage harness connector - **A** - in direction of - **arrow** - and disconnect it from transmission.

Vehicles with round connector:

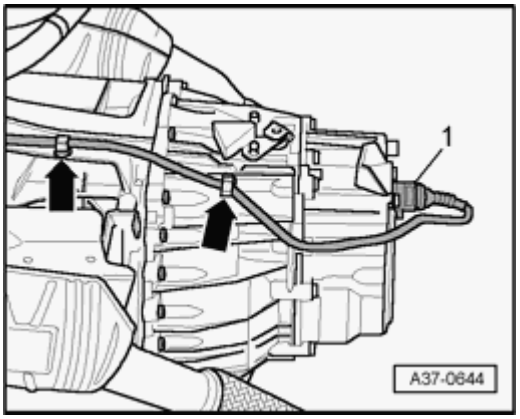


Fig. 378: Disengaging Electrical Harness Connector And Disconnecting From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disengage electrical harness connector - **1** - and disconnect it from transmission.

All:

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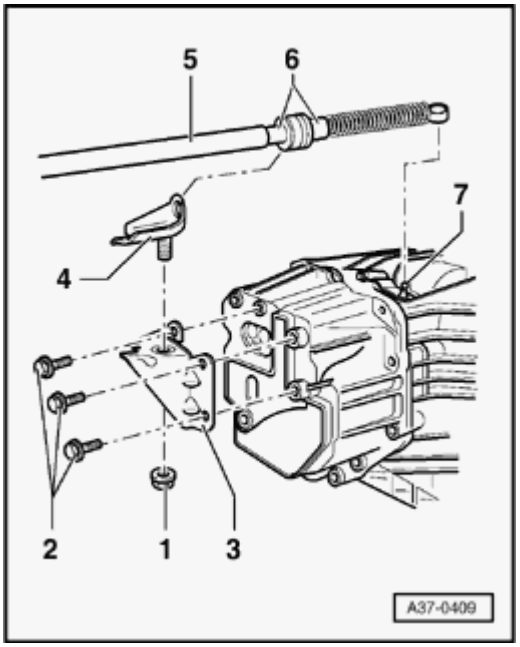


Fig. 379: Removing Bracket For Selector Lever Cable By First Removing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bracket - **3** - for selector lever cable by first removing bolts - **2** -.

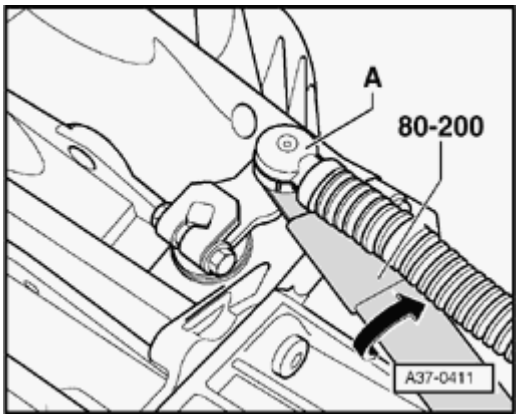


Fig. 380: Using Pry Lever 80-200 To Press Selector Lever Cable From Lever For Selector Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Using pry lever 80-200 , press selector lever cable - **A** - from lever for selector shaft - **arrow** -.

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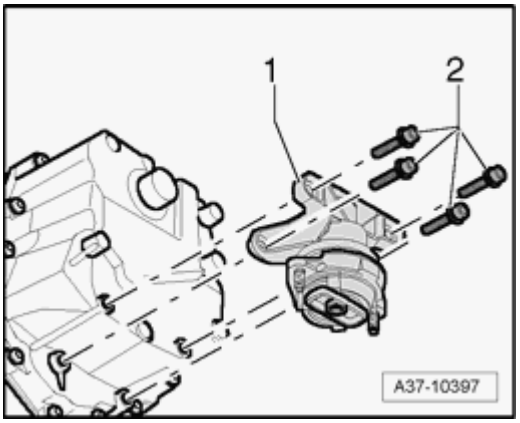


Fig. 381: Removing Bolts And Transmission Support From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **2** - and remove transmission mount - **1** - from transmission.

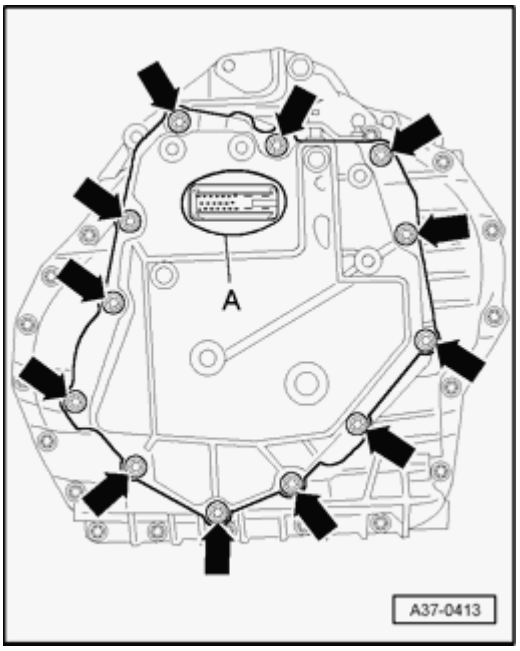


Fig. 382: Removing Bolts And End Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - and remove end cover.

Installing

Installation is in reverse order of removal, note the following:

NOTE:

- **Replace sealing rings, seals and bolts for end cover.**

Vehicles with round connector:

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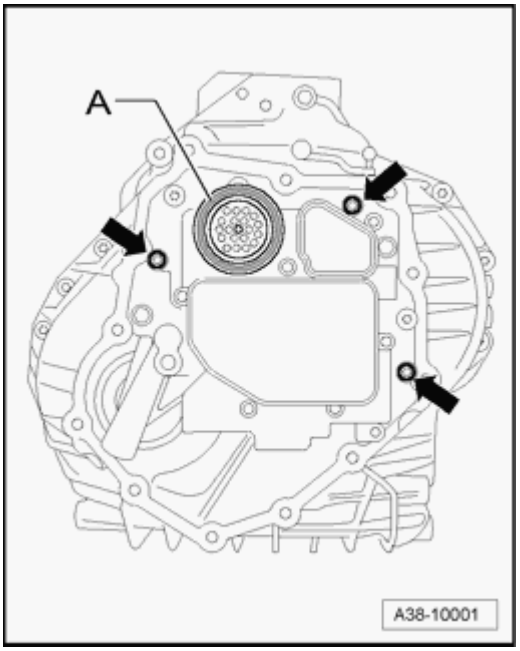


Fig. 383: Sliding New Twin Lip Oil Seal With Twin Lips Facing Outward Onto Connector At Transmission Control Module (TCM) J217
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Slide new twin lip oil seal - **A** - with twin lips facing outward onto connector at Transmission Control Module (TCM) J217.

Vehicles with oval connector:

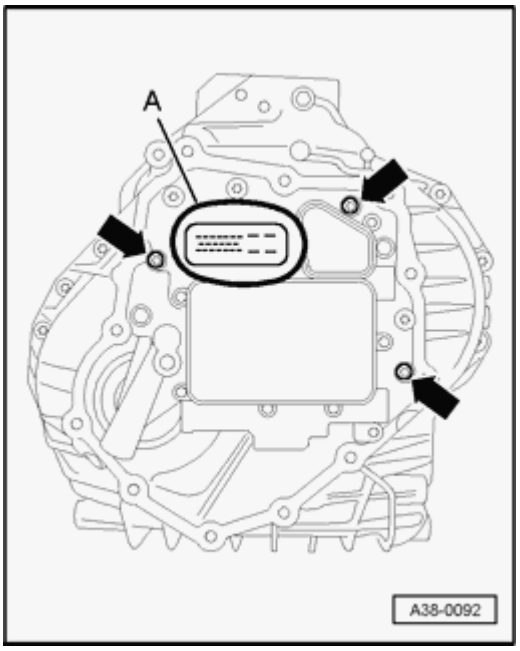


Fig. 384: Sliding New Twin Lip Oil Seal With Twin Lips Facing Outward Onto Connector At Transmission Control Module (TCM) J217

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Slide new twin lip oil seal - **A** - with twin lips facing outward onto connector at Transmission Control Module (TCM) J217.

All:

- Clean sealing surfaces on transmission housing and on end cover.
- If bushings were installed in transmission housing or in cover, they must be remounted in same location.

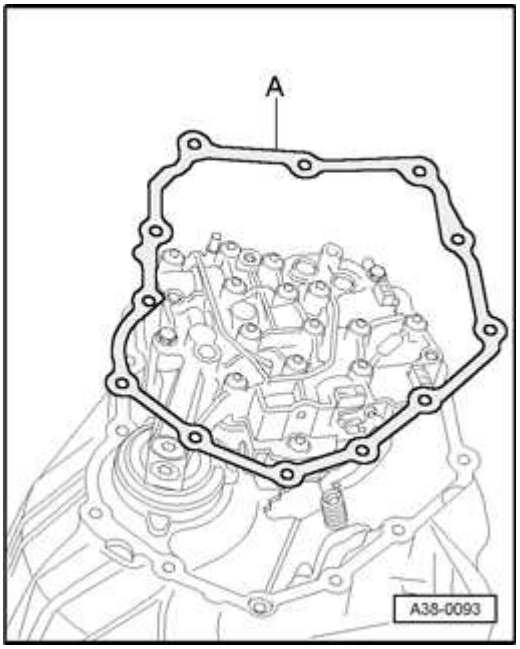


Fig. 385: Sliding New Twin Lip Oil Seal With Twin Lips Facing Outward Onto Connector At Transmission Control Module (TCM) J217
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Slide new twin lip oil seal - **A** - with twin lips facing outward onto connector at Transmission Control Module (TCM) J217.

NOTE:

- **There are metal and paper seals. The new seal must be made of the same material as the old one .**
- **Make sure bushings are seated properly.**

- Put on end cover and make sure seal does not slip.

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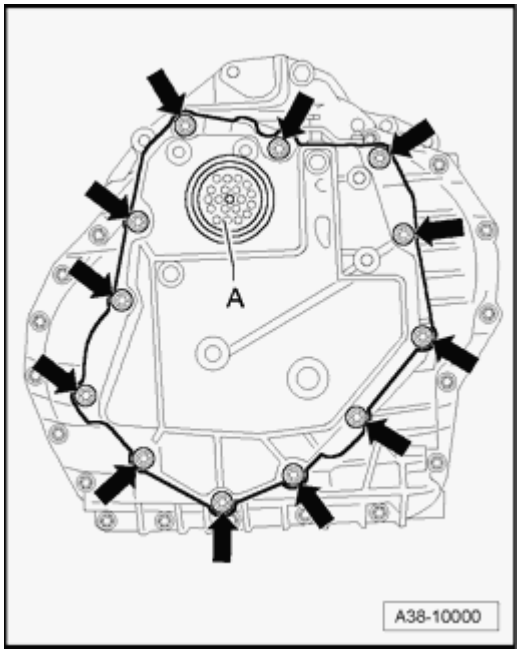
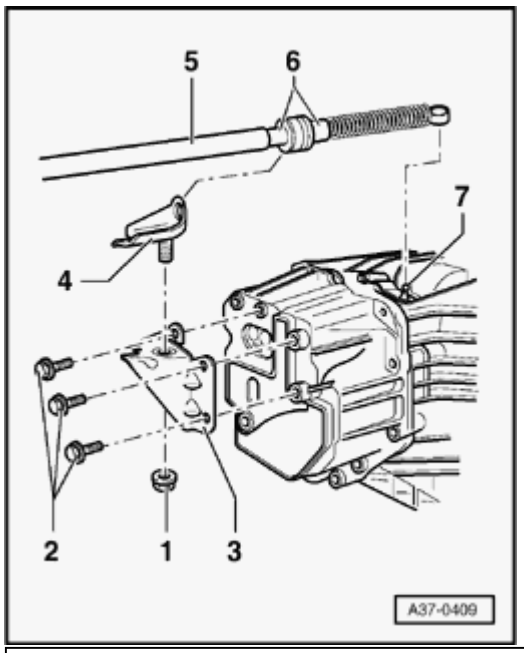


Fig. 386: Tightening New Bolts First Hand-Tight And In Diagonal Sequence
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten new bolts - **arrows** - first hand-tight and in diagonal sequence, and then to tightening torque (table **Torque specifications**).
- Check installation position of twin lip oil seal - **A** - :

- Twin lip oil seal must fit flush (sealing lips must not be twisted).

- Check installation position of twin lip oil seal - **A** - : It must fit flush (sealing lips must not be twisted).



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Fig. 387: Removing Bracket For Selector Lever Cable By First Removing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten bolts - **2** - of bracket for selector lever cable - **3** - on transmission.

NOTE:

- **Do not bend or kink the selector lever cable.**
- **Lightly grease eyelet and ball socket of selector lever cable with *polycarbamide grease G 052 142 A2* before installing.**

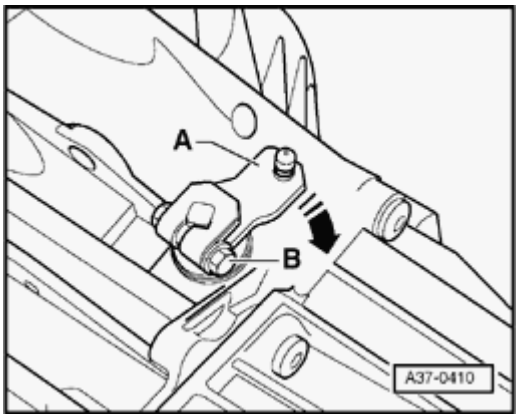


Fig. 388: Pressing Selector Shaft Lever On Transmission Completely Toward Rear
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press selector shaft lever - **A** - on transmission completely toward rear - **arrow** - until parking lock engages.

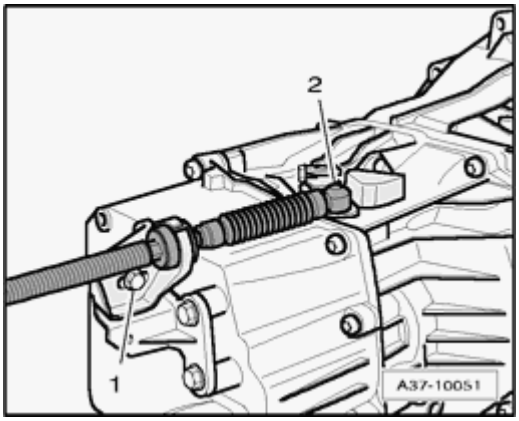


Fig. 389: Removing Support Bracket For Selector Lever Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check whether selector lever is in position "P" , then press ball socket of selector lever cable - **2** - carefully onto lever for selector shaft.

NOTE:

- **Take care not to bend selector shaft lever when pressing it on; support it if**

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necessary, as otherwise selector mechanism can no longer be adjusted properly.

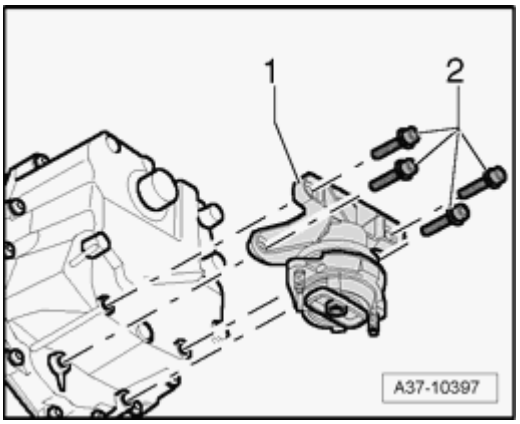


Fig. 390: Removing Bolts And Transmission Support From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Bolt transmission mount - **1** - onto transmission - **2** - --> **Transmission mount, transmission support and tunnel cross member, removing and installing**.
- Install tunnel cross member --> **Transmission mount, transmission support and tunnel cross member, removing and installing**.
- Adjust selector lever cable --> **Selector lever cable (through VIN 8E_6A156499), adjusting**.
- Install exhaust system and align it free of tension -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

  .

- Fill with ATF --> **ATF, changing or filling after repairs**.

Torque specifications

Component	Nm
End cover to transmission, replace bolts	15 + 90°* See note

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Mounting base for selector lever cable to transmission	23
Front cross member to vehicle floor	55
Rear cross member to vehicle floor	60

* 90° is a quarter turn.

Transmission Control Module (TCM) J217 , removing and installing

NOTE:

- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **General repair notes --> Repair instructions.**

- Remove end cover --> **End cover, removing and installing**.

The corresponding description for Transmission Control Module (TCM) J217 , removing and installing can be found in --> 38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS .

Selector shaft, cleaning

NOTE:

- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **General repair notes --> Repair instructions.**
- **Transmission Control Module (TCM) J217 removed**

Work procedure

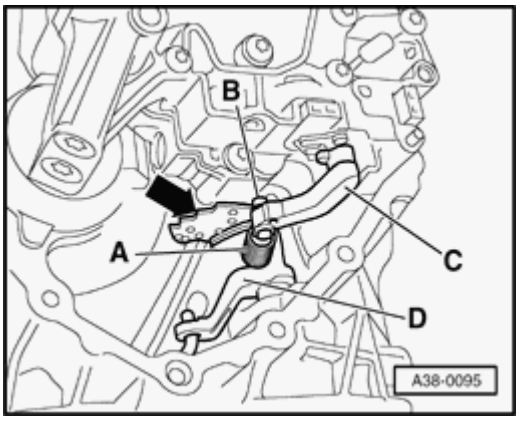


Fig. 391: Identifying Catch Of Selector Shaft, Spring & Roller
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Clean catch - **arrow** - of selector shaft. Do not use fluffy materials for cleaning. Clean contact surfaces of magnet especially thoroughly of metal shavings and the like.

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NOTE:

- **Make sure that spring - A - and roller - B - are secured properly.**

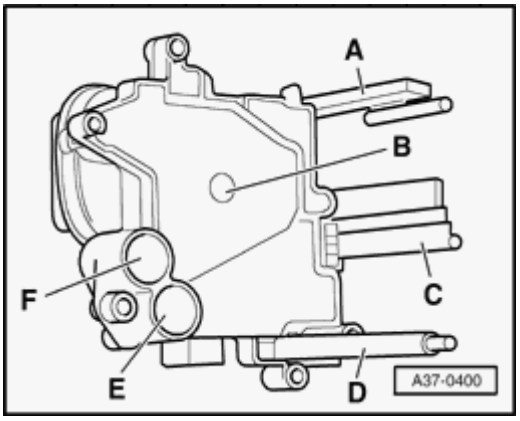


Fig. 392: Identifying Sensors Of Soiling And Metal Shavings
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If necessary, clean sensors - **A** - , - **C** - and - **D** - of soiling and metal shavings.
- Install Transmission Control Module (TCM) J217 --> **Transmission Control Module (TCM) J217 , removing and installing**.

Hydraulic control module, removing and installing

NOTE:

- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **General repair notes --> Repair instructions.**
- **Always replace hydraulic control assembly if it has collected dirt or if it is defective.**

- Remove end cover --> **End cover, removing and installing**.

The corresponding description for removal and installation of the hydraulic control unit can be found in --> **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS** .

CAUTION: The hydraulic control assembly must not under any circumstances be supported on the long pump shaft on the back side or raised up. Otherwise, the blades inside the vane pump will be crushed and the pump damaged.

Input shaft, removing and installing

NOTE:

- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **General repair notes --> Repair instructions.**

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- **Transmission removed and secured vertically to assembly stand Suspending transmission vertically.**

The corresponding description for removal and installation of the input shaft can be found in --> **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS** .

Input shaft, servicing

The corresponding description, along with disassembling and assembling input shaft, can be found in --> **38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS** .

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39 - FINAL DRIVE, DIFFERENTIAL

GEAR OIL IN FRONT FINAL DRIVE

Gear oil in front final drive

NOTE:

- **General repair notes --> Repair instructions.**
- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**

Gear oil level in front final drive, checking

NOTE:

- **The specified oil level must be maintained exactly; the transmission reacts very sensitively to over-filling.**

Test sequence

- Take vehicle for a short test drive to heat gear oil to approx. 60°C.
- Move vehicle onto a lifting platform or over a work pit so that it is absolutely level.
- Switch off engine and allow 5 minutes for gear oil to settle back into transmission case.

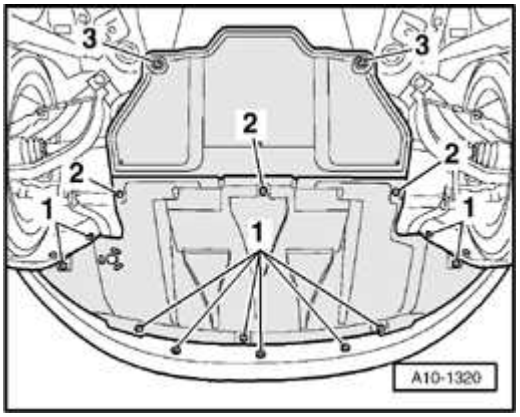


Fig. 393: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen quick-release screws - **2** - and - **3** - and remove rear noise insulation.

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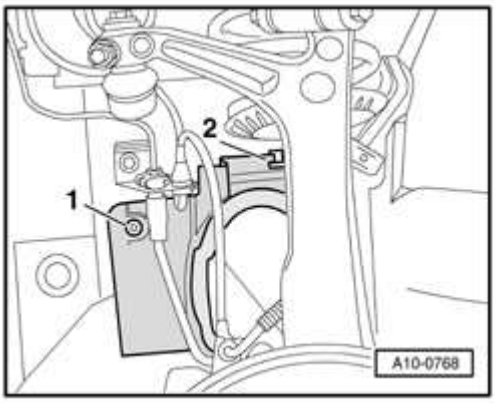


Fig. 394: Removing Bolt For Noise Insulation Cover Over Left/Right Drive Axle, Disengaging Hook And Removing Noise Insulation Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If installed, remove bolt - **1** - for noise insulation cover over left drive axle.
- Disengage hook - **2** - and remove noise insulation cover.

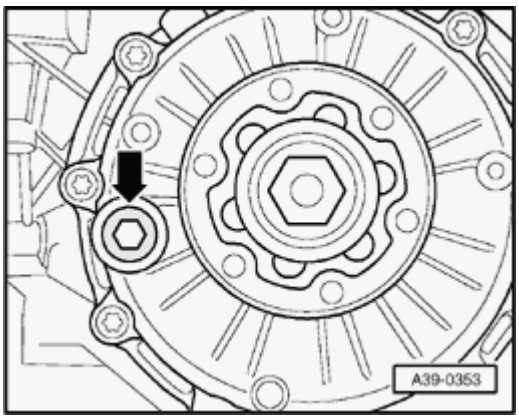


Fig. 395: Removing Inspection Plug
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove inspection plug - **arrow** -.
- Check oil level using a tool created in the workshop, e.g. an angled section of wire.

- Specified value: Oil level 8.5 mm below bottom of filler hole.

- If necessary, top off gear oil level.

- Axle oil specification --> **Capacities**.

NOTE:

- **When servicing at the workshop the oil can also be filled up to the lower edge of the oil filler hole. In this case it is necessary to draw off 0.2 ltr. to attain the correct oil level.**

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- Tighten new screw plug.

Torque specification

Component	Nm
Screw plug to transmission	20 * See note

*Replace screw plug.

FRONT FINAL DRIVE, SERVICING

Front final drive, servicing

NOTE:

- **General repair notes --> Repair instructions.**
- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**

Left flange shaft, removing and installing

Special tools, testers and auxiliary items required

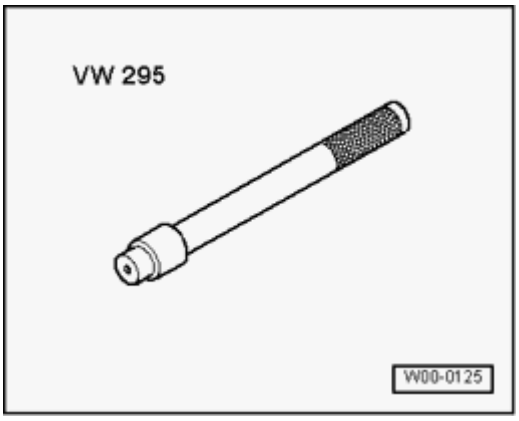


Fig. 396: Drift VW 295
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Drift VW 295

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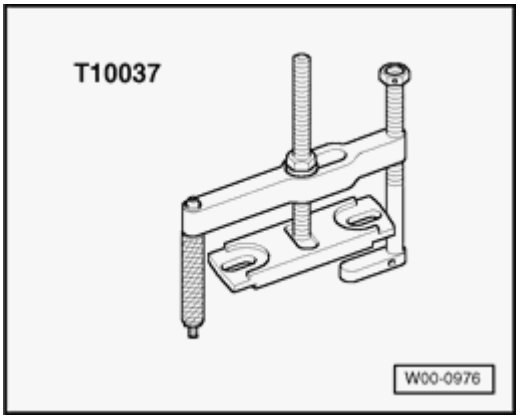


Fig. 397: Puller T10037
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Puller T10037
- Oil receptacle

Removing

- Transmission installed.

  - Remove left front wheel.

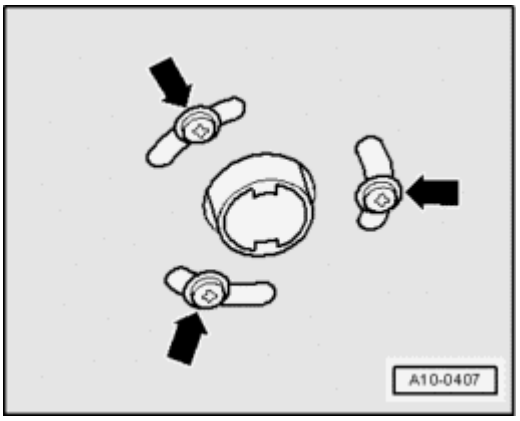


Fig. 398: Identifying Exhaust Pipe Fasteners
Courtesy of VOLKSWAGEN UNITED STATES, INC.

  - On vehicles equipped with auxiliary heater, remove bolts - **arrows** - for exhaust pipe of auxiliary/additional heater to noise insulation.

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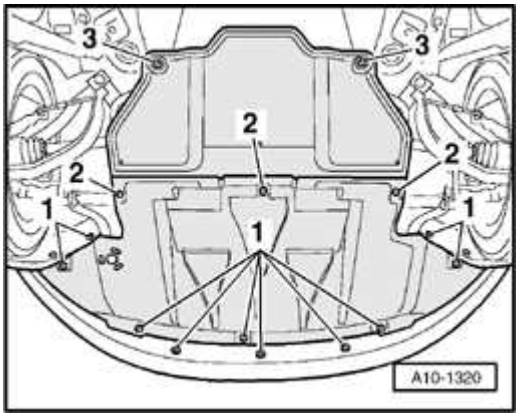


Fig. 399: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts or quick-release screws - **1 to 3** - and remove noise insulation at front and rear.

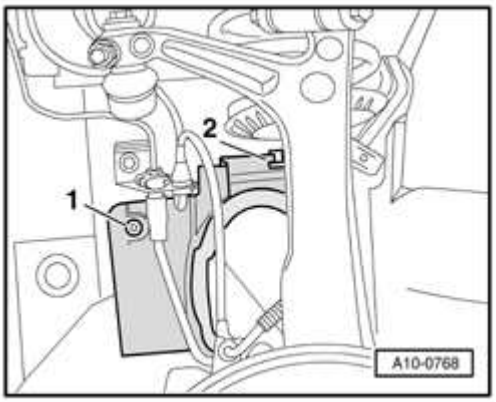


Fig. 400: Removing Bolt For Noise Insulation Cover Over Left/Right Drive Axle, Disengaging Hook And Removing Noise Insulation Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If installed, remove bolt - **1** - for noise insulation cover over left drive axle.
- Disengage hook - **2** - and remove noise insulation cover.
- Where installed, remove heat shield for left drive axle.
- Remove left drive axle.

- Place an oil receptacle underneath transmission.

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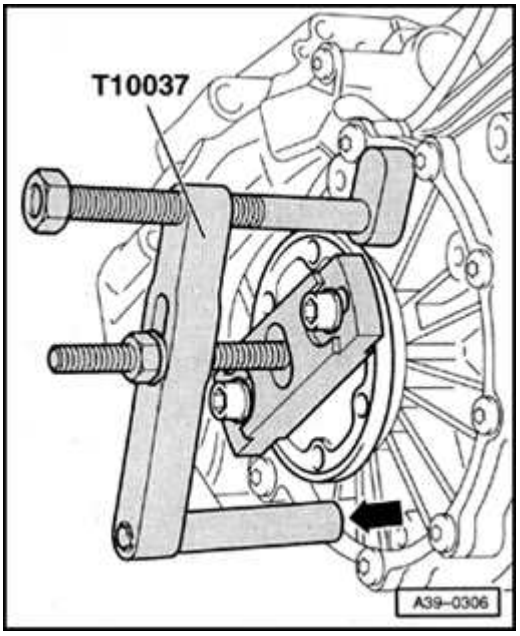


Fig. 401: Removing Drive Flange (Left Side)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tightly thread lower support of puller T10037 on cover for differential - **arrow** -.

NOTE:

- **To avoid damage to the needle bearings (polygon bearings) or differential during removal, the flange shaft must be removed evenly, parallel and without one sided pressure**

- Pull left flange shaft using puller T10037 only far enough out until bearing on shaft is pulled out of transmission housing.

Installing

Installation is in reverse order of removal, note the following:

- Replace securing ring for flange shaft, to do this, clamp flange shaft in a vise with protective pads.

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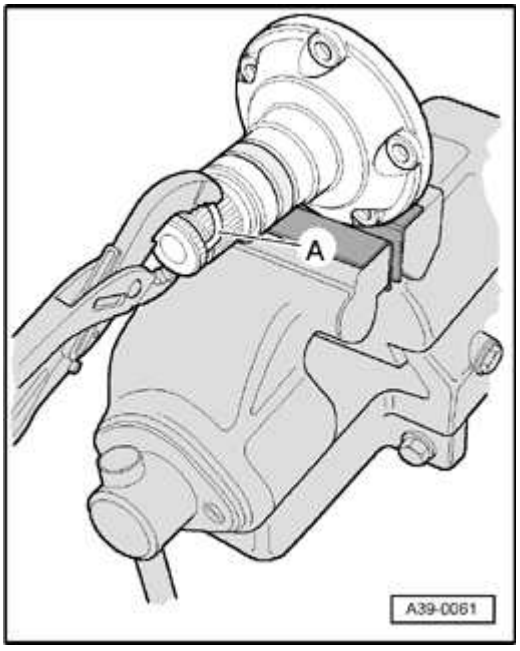


Fig. 402: Removing And Installing Securing Ring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press old securing ring out of groove of flange shaft with new securing ring - **A** -.
- Clean flange shaft.
- A damaged sealing ring must be replaced --> **Left flange shaft oil seal, replacing**.
- Drive in flange shaft using needle bearing drift VW 295.

- Install left drive axle --> **40 - FRONT SUSPENSION** .
- Check gear oil level in front final drive --> **Gear oil level in front final drive, checking**.

Torque specification

Component	Nm
Heat shield for drive axle to transmission	23

Right flange shaft, removing and installing

Special tools, testers and auxiliary items required

- Oil receptacle

Removing

- Transmission installed.

- Remove right front wheel.

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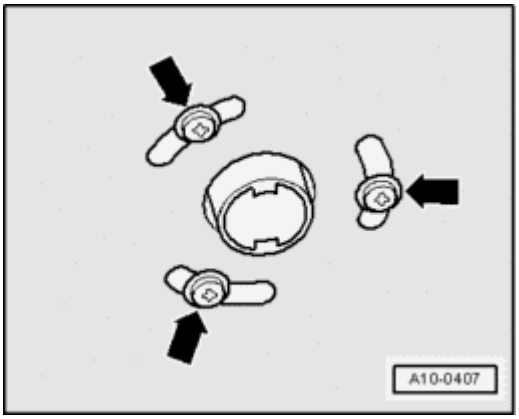


Fig. 403: Identifying Exhaust Pipe Fasteners
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On vehicles equipped with auxiliary heater, remove bolts - **arrows** - for exhaust pipe of auxiliary/additional heater to noise insulation.

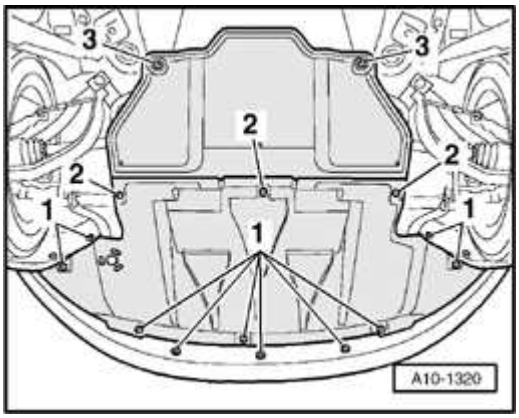


Fig. 404: Identifying Quick-Release Fasteners And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts or quick-release screws - **1 to 3** - and remove noise insulation at front and rear.

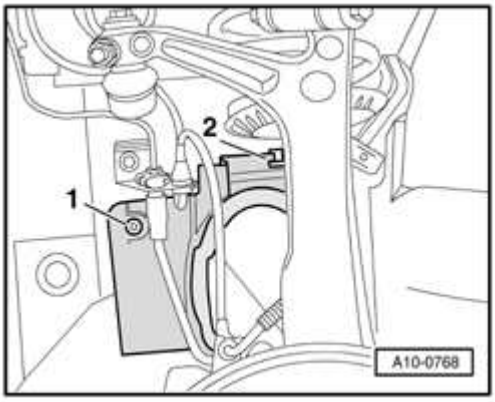


Fig. 405: Removing Bolt For Noise Insulation Cover Over Left/Right Drive Axle, Disengaging Hook And

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Removing Noise Insulation Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Where installed, remove bolt - **1** - for noise insulation cover over right drive axle.
- Disengage hook - **2** - and remove noise insulation cover.
- Remove heat shield for right drive axle.
- Remove right drive axle --> **40 - FRONT SUSPENSION** .

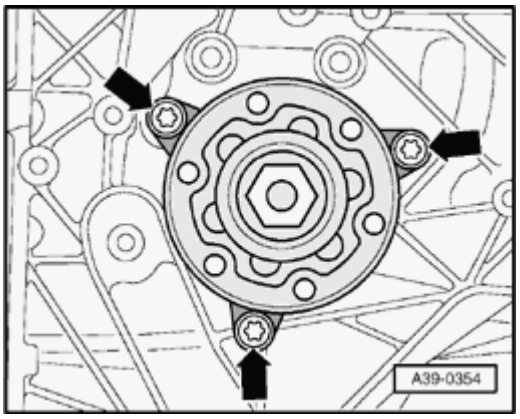


Fig. 406: Removing Mounting Bracket For Flange Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove mounting bracket for flange shaft - **arrows** -.
- Place an oil receptacle underneath transmission.
- Pull out right flange shaft together with mounting bracket.

Installing

- Clean flange shaft.
- A damaged sealing ring must be replaced --> **Sealing ring for right flange shaft and grooved ball bearing, replacing**.

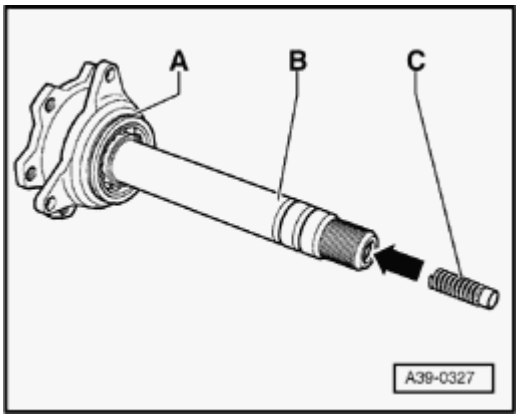


Fig. 407: Replacing O-Ring, Sliding Spring With Cap Outward Into Hole On End Of Flange Shaft &

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Inserting Flange Shaft Into Transmission Housing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Replace O-ring - **arrow A** - in mounting bracket for flange shaft.
- Slide spring - **C** - with cap outward into hole on end of flange shaft - **arrow** -.
- Insert flange shaft - **B** - into transmission housing.

NOTE:

- **While sliding in the flange shaft, make sure that spring - C - remains in the flange shaft and does not fall into transmission.**

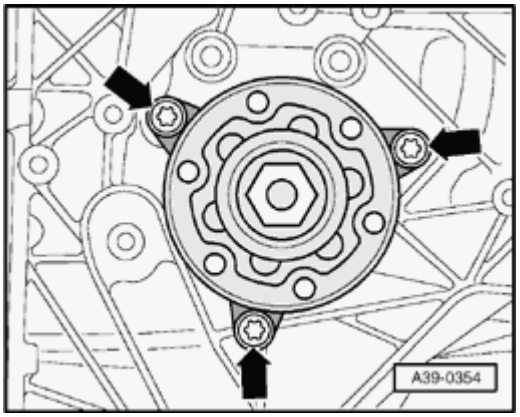


Fig. 408: Removing Mounting Bracket For Flange Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tightly bolt mounting bracket for flange shaft - **arrows** -.
- Install right drive axle --> **40 - FRONT SUSPENSION** .
- Check gear oil level in front final drive --> **Gear oil level in front final drive, checking**.

Torque specifications

Component	Nm
Bearing bracket for right-hand flange shaft to transmission	25
Heat shield for drive axle to transmission	23

Left flange shaft oil seal, replacing

Special tools, testers and auxiliary items required

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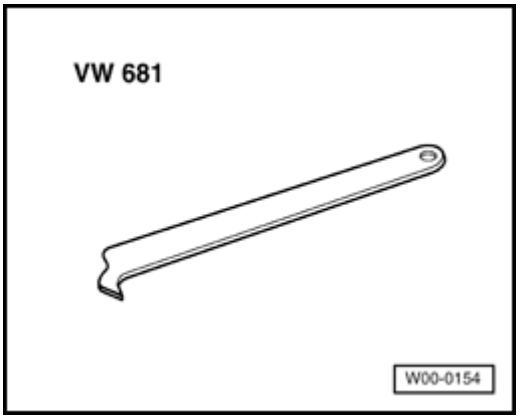


Fig. 409: Special Tool - Oil Seal Extractor Lever VW 681
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Extractor lever VW 681

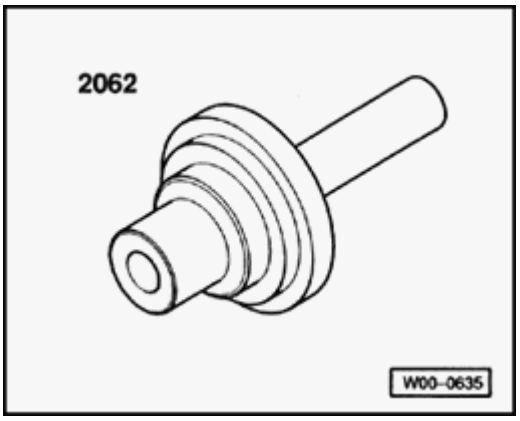


Fig. 410: Fitting Drift 2062
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Driver 2062

Work procedure

- Transmission installed
  - Remove left flange shaft --> **Left flange shaft, removing and installing**.

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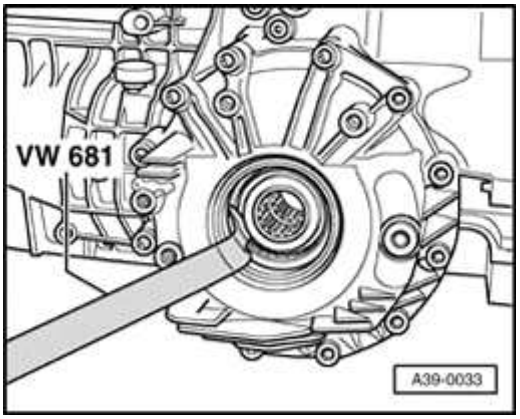


Fig. 411: Removing Flange Shaft Oil Seal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull out sealing ring for flange shaft using extractor lever VW 681.

NOTE:

- **Do not damage seating surfaces for oil seal.**

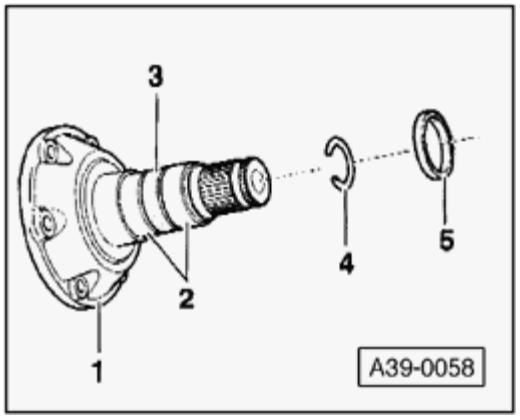


Fig. 412: Flange Shaft Design
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Setup of flange shaft with polygon bearing

1. Flange shaft
2. Needle bearing (polygon bearing)
3. Spacer ring
4. Circlip
5. Not installed

NOTE:

- **If the polygon bearings do not run smoothly with the flange shaft removed, this does indicate that the bearings are faulty. A test for noisy bearings can only be performed with the bearings installed.**

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- **Watch for damage to the polygon bearings (e.g. cracks in bearing outer ring)**
- **If polygon bearings are damaged, flange shaft must be replaced.**

- Coat outer edge and sealing lip of oil seal with axle oil.

- Installation position: The open side of the sealing ring faces the transmission.

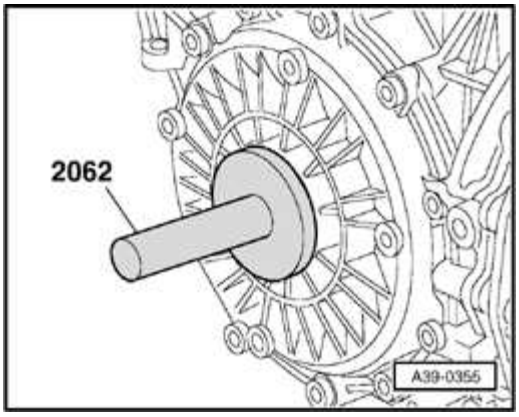


Fig. 413: Driving In New Sealing Ring For Left Flange Shaft Uniformly Using Driver Below Surface Of Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Drive in new sealing ring for left flange shaft uniformly using driver 2062 5.5 mm below surface of cover, do not cant when doing so.

NOTE:

- **If reinstalling an old flange shaft, the seal must be driven in approx. 6.5 mm so that the new seal does not sit on the running surface of the old seal.**

- Install left flange shaft --> **Left flange shaft, removing and installing**.
- Check gear oil level in front final drive --> **Gear oil level in front final drive, checking**.

Sealing ring for right flange shaft and grooved ball bearing, replacing

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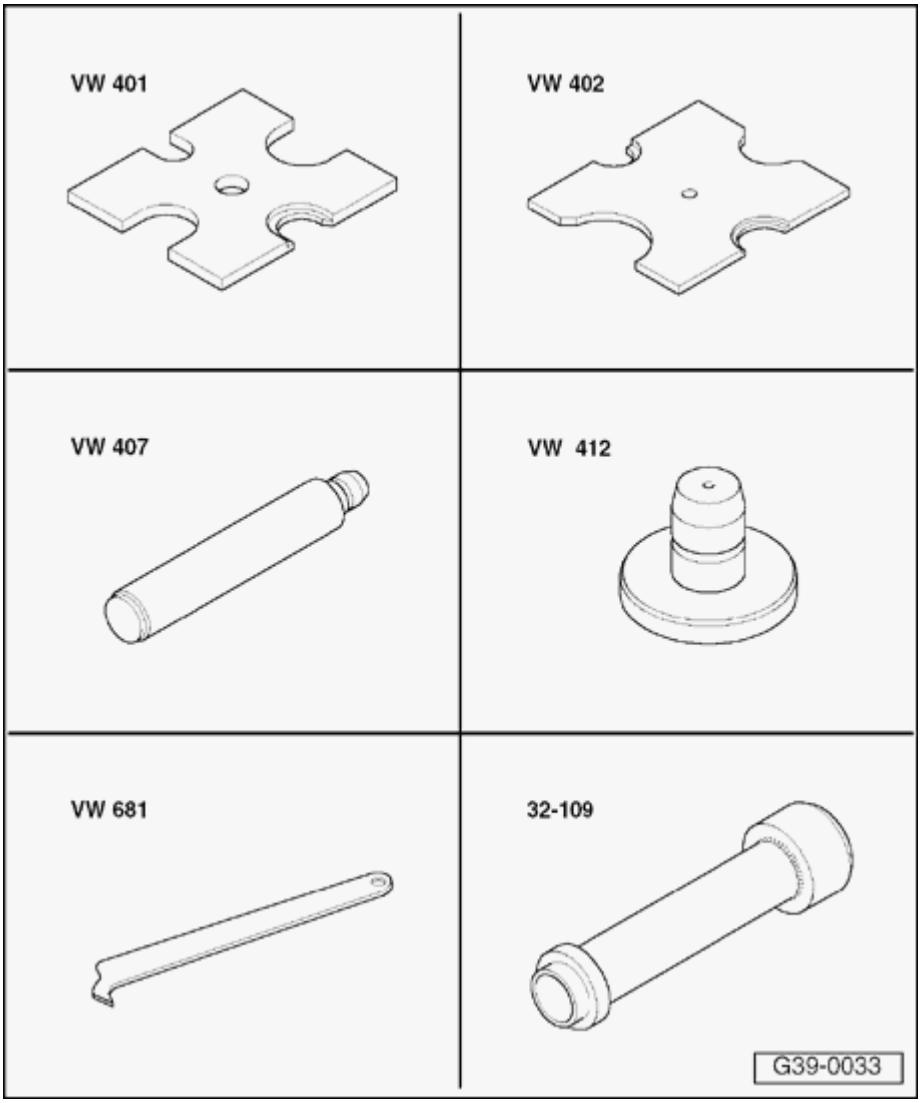


Fig. 414: Identifying Special Tools - Sealing Ring For Right Flange Shaft And Grooved Ball Bearing, Replacing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Pressure plate VW 401
- Pressure plate VW 402
- Punch VW 407
- Punch VW 412

- Extractor lever VW 681
- Driving sleeve 32-109

Special tools, testers and auxiliary items required

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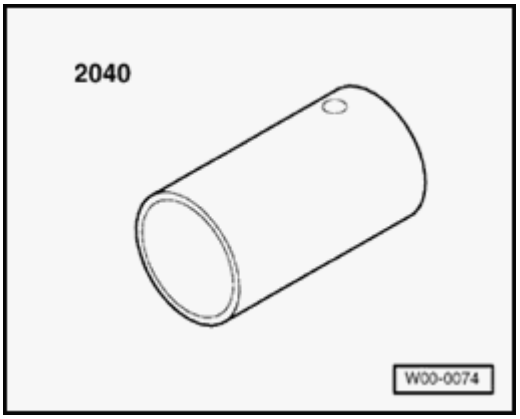


Fig. 415: Tube 2040
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tube 2040

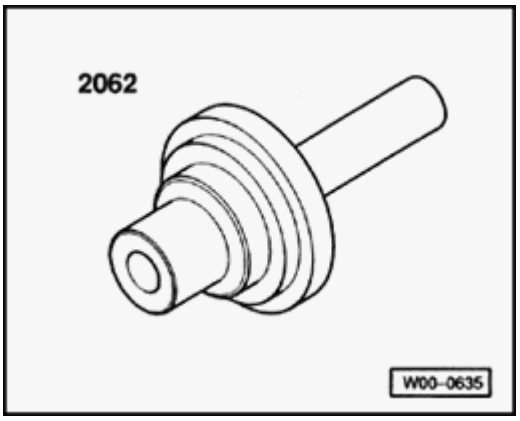


Fig. 416: Fitting Drift 2062
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Driver 2062

Work procedure

- Remove right flange shaft --> **Right flange shaft, removing and installing**.

Seal, removing

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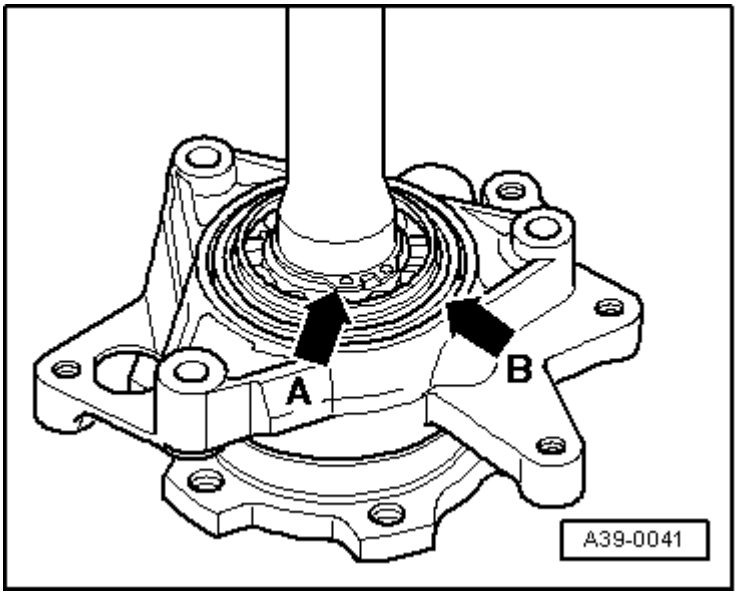


Fig. 417: Removing/Installing Circlip And Seal At Grooved Ball Bearing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove securing ring - **arrow A** - for grooved ball bearing.

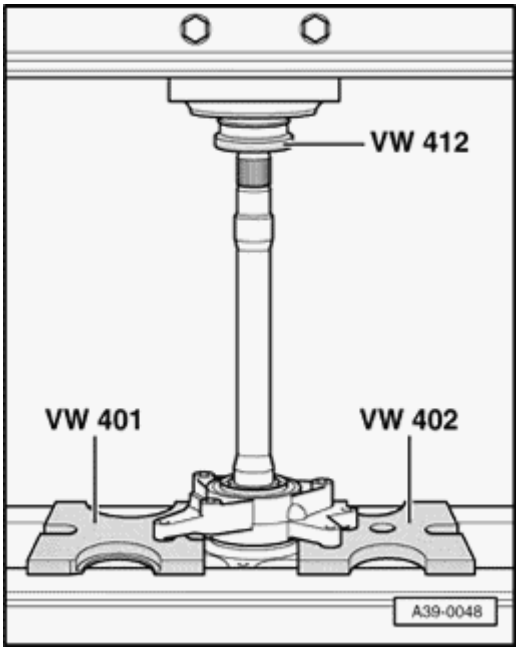


Fig. 418: Pressing Flange Shaft Out Of Flange Shaft Bearing Bracket
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press flange shaft out of mounting bracket for flange shaft as shown in the illustration.
- Pull sealing ring for flange shaft out of mounting bracket using extractor lever VW 681.

Removing grooved ball bearing

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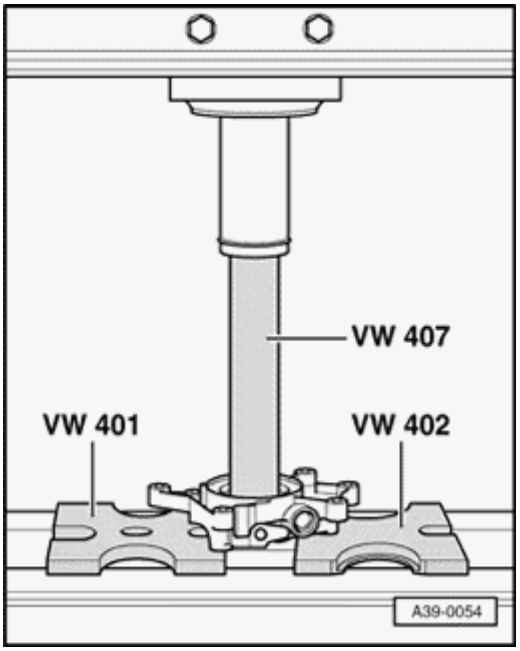


Fig. 419: Pressing Grooved Ball Bearing Out Of Bearing Bracket
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press grooved ball bearing out of mounting bracket.

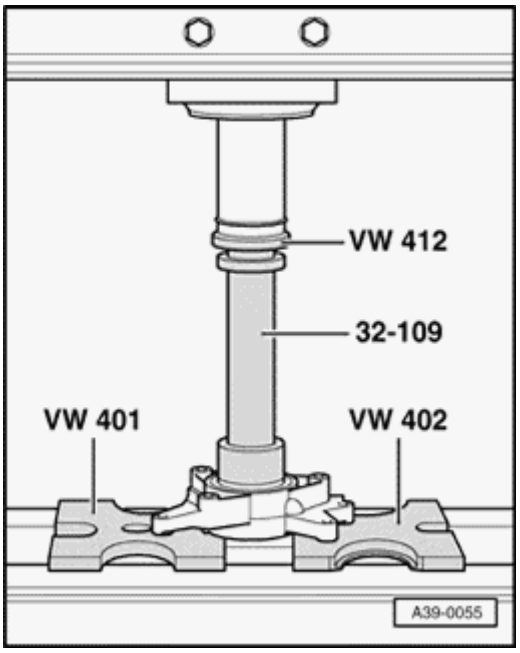


Fig. 420: Pressing New Grooved Ball Bearing Into Bearing Bracket
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Installing grooved ball bearing

Sealing ring, installing

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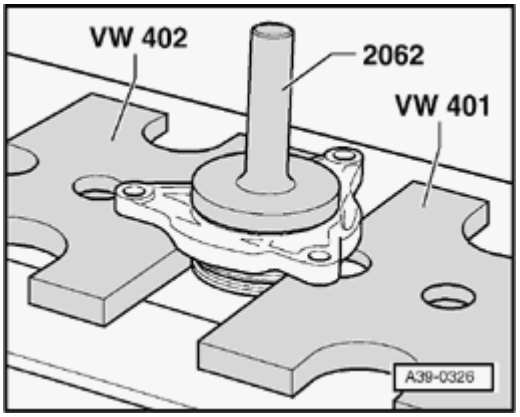


Fig. 421: Pressing New Grooved Ball Bearing Into Mounting Bracket
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press new grooved ball bearing into mounting bracket.
- Coat outer edge and sealing lip of oil seal with axle oil.

- Installation position: The open side of the sealing ring faces the transmission.

- Drive in new sealing ring for right flange shaft uniformly using driver 2062 5.5 mm below surface of mounting bracket, do not cant when doing so.

NOTE:

- **If reinstalling an old flange shaft, the seal must be driven in approx. 6.5 mm so that the new seal does not sit on the running surface of the old seal.**

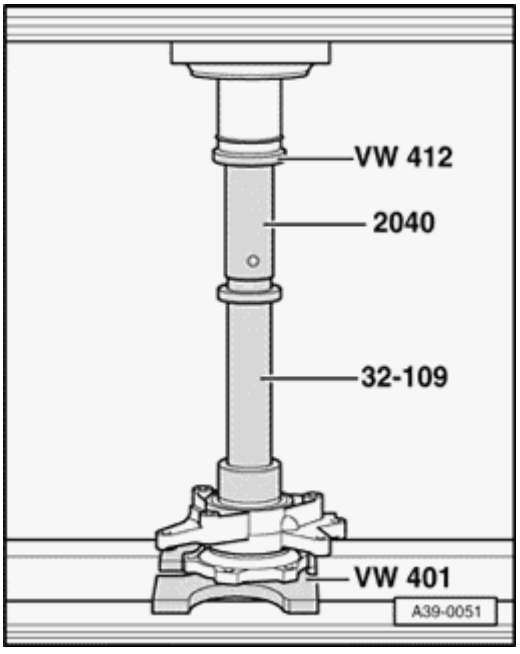


Fig. 422: Pressing Bearing Bracket With Grooved Ball Bearing Onto Flange Shaft

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press mounting bracket with grooved ball bearing onto flange shaft.

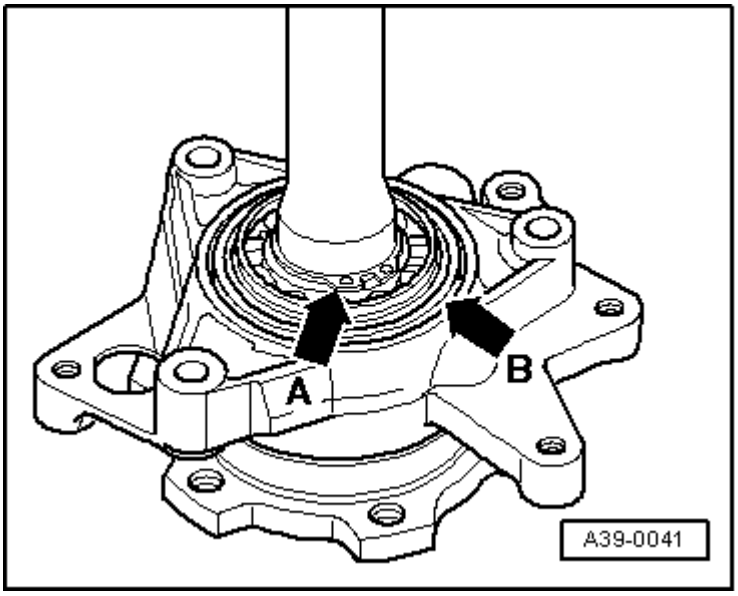


Fig. 423: Removing/Installing Circlip And Seal At Grooved Ball Bearing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert securing ring - **arrow A** -.
- Install right flange shaft --> **Right flange shaft, removing and installing**.
- Check gear oil level in front final drive --> **Gear oil level in front final drive, checking**.

Input shaft seal, replacing

- If ATF flows out at underside of transmission bell housing, input shaft seal and/or ATF breather pipe may be leaking. Before replacing any parts, be sure to find actual cause of malfunction.
- Input shaft seal must be replaced if leaking.
- ATF breather pipe must be replaced if leaking --> **ATF breather pipe**.

NOTE:

- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **General repair notes --> Repair instructions.**

Special tools, testers and auxiliary items required

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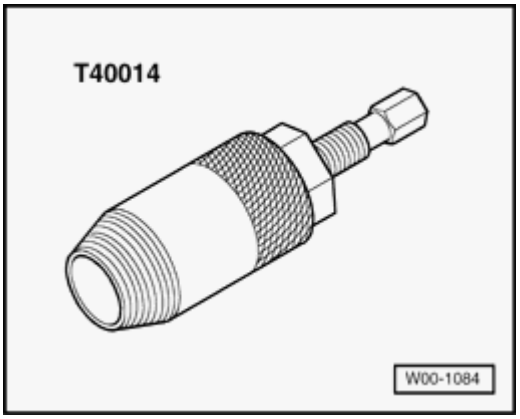


Fig. 424: Seal Remover T40014
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Seal remover T40014

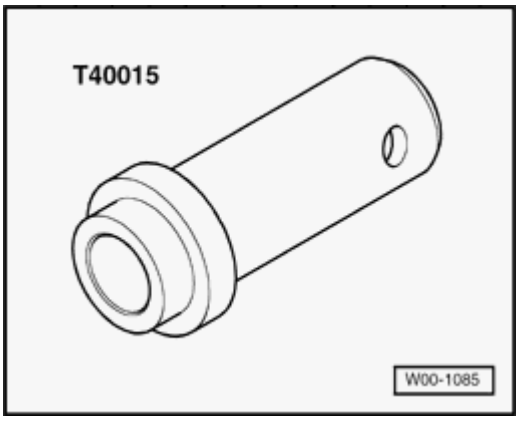


Fig. 425: Thrust Piece T40015
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Thrust piece T40015

Work procedure

- Transmission removed.

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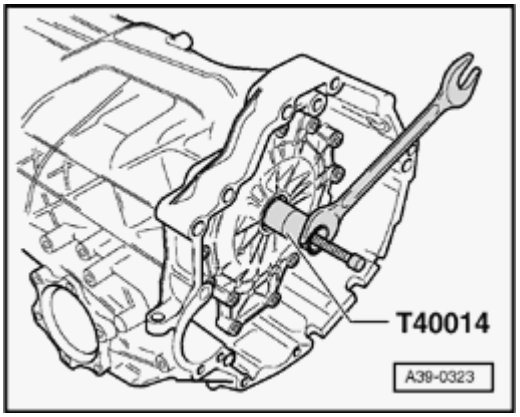


Fig. 426: Rotating Seal Ring Extractor T40014 By Hand Into Shaft Seal Until Tool Has Good Hold In Shaft Sea
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Rotate seal ring extractor T40014 by hand into shaft seal until tool has a good hold in the shaft seal. Then tighten puller with an open-end wrench.
- You can pull out oil seal a short distance by screwing in rear bolt of puller.
- Re-tighten extractor using open-end wrench so that extractor again grasps the shaft seal tightly and pull out sealing ring further by tightening the screw.
- Repeat procedure until shaft seal has been pulled out completely.

NOTE:

- **Input shaft must be installed to install the shaft seal.**

- Coat new shaft seal with ATF.

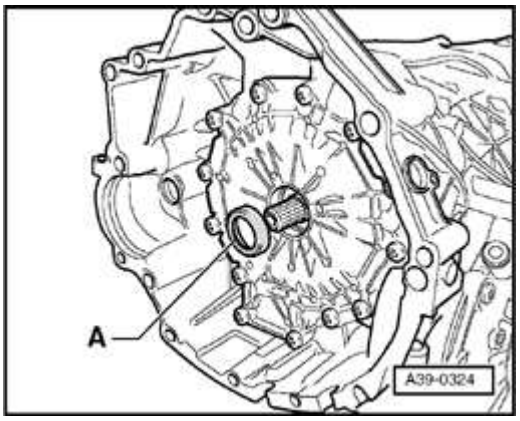


Fig. 427: Sliding Shaft Seal Onto Input Shaft With Open Side Facing Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Slide shaft seal - **A** - onto input shaft with open side facing transmission.

NOTE:

- **Slide sealing ring as far as possible into cover so that it cannot bend when driving in.**

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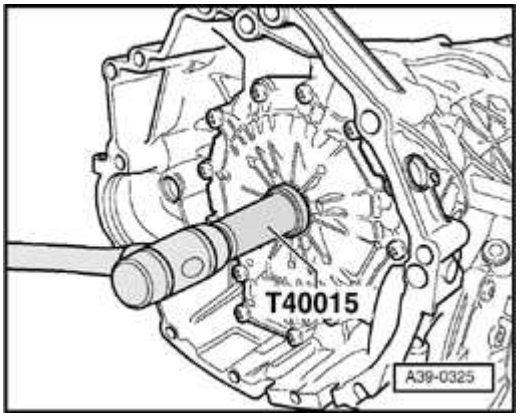


Fig. 428: Driving In Sealing Ring Until It Stops Using Thrust Piece T40015
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Drive in sealing ring until it stops using thrust piece T40015.

Selector shaft oil seal, replacing

Special tools, testers and auxiliary items required

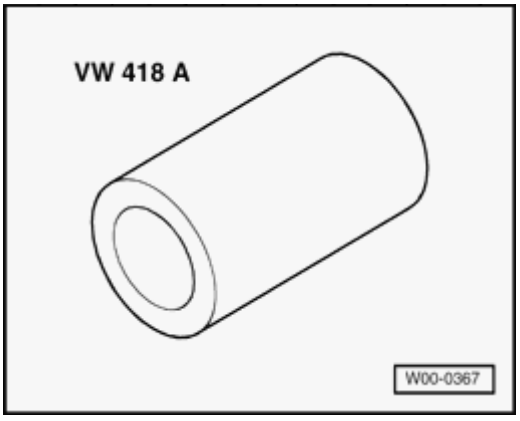


Fig. 429: Sleeve VW 418 A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tube VW 418 A

Work procedure

- Transmission removed.

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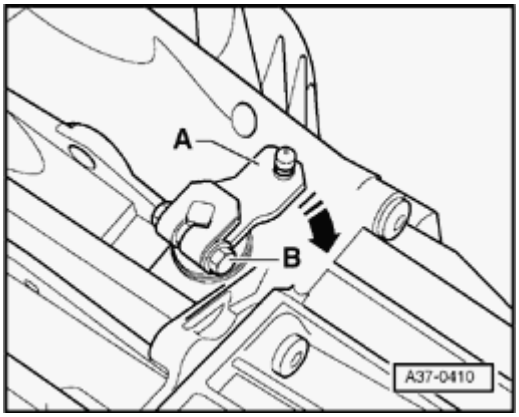


Fig. 430: Pressing Selector Shaft Lever On Transmission Completely Toward Rear
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **B** - completely and remove lever for selector shaft - **A** - upward.
- Carefully pry out sealing ring for selector shaft lying underneath using a screwdriver.

NOTE:

- **Sealing surface and selector shaft must not be damaged.**

- Coat outer circumference of new sealing ring with ATF.
- Slide on new sealing ring over selector shaft and press in.
- Drive in sealing ring until it stops using tube 31.5 mm dia. VW 418 A.
- Connect lever for selector shaft - **A** - to selector shaft and tighten bolt - **B** -.

Torque specification

Component	Nm
Lever for selector shaft to selector shaft	10

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