

10 - ENGINE, REMOVING AND INSTALLING

ENGINE, WITH MULTITRONIC TRANSMISSION, REMOVING AND INSTALLING

Engine, with Multitronic Transmission, Removing and Installing

Engine, with Multitronic Transmission, Removing and Installing

--> **Engine, Removing**

--> **Engine and Transmission, Separating**

--> **Engine, Securing to Engine and Transmission Holder**

--> **Engine, Installing**

Engine, Removing

Engine, Removing

2006 Audi A6 Quattro

ENGINE 3.2 V6 4V Engine Mechanical, Engine Code(s): BKH

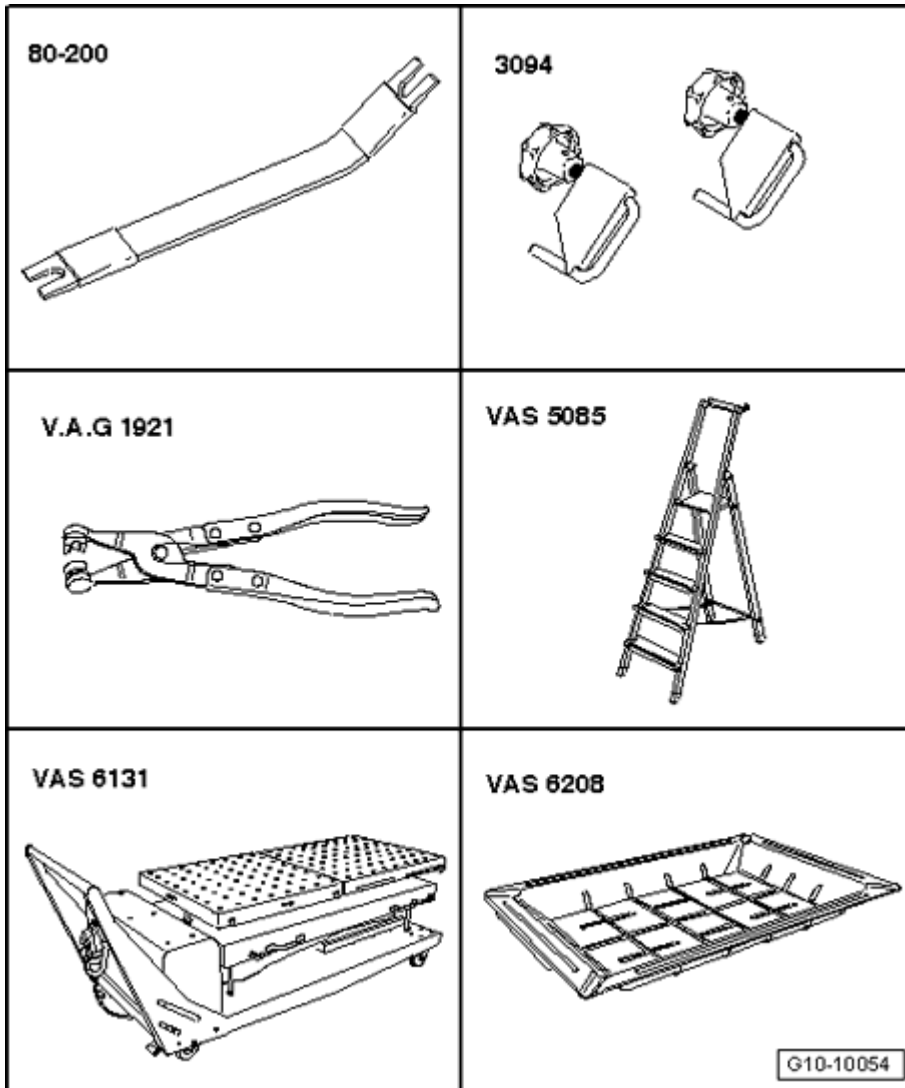


Fig. 10: Identifying Special Tools - Engine, Removing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Pry Lever - Rmv Outside Mirror 80-200
- Hose Clamps Up to 25 mm dia. 3094
- Hose clamp pliers V.A.G 1921
- Step ladder VAS 5085
- Scissor lift platform VAS 6131 A with support set for Audi VAS 6131/10
- Drip tray for workshop crane VAS 6208

Special tools, testers and auxiliary items required

2006 Audi A6 Quattro

ENGINE 3.2 V6 4V Engine Mechanical, Engine Code(s): BKH

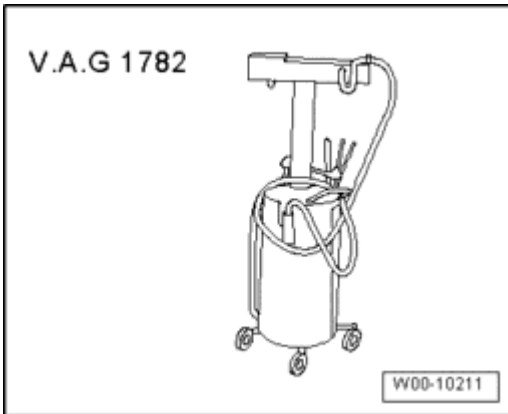


Fig. 11: Identifying Old Oil Collecting And Extracting Device V.A.G 1782
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Old oil collecting and extracting device V.A.G 1782

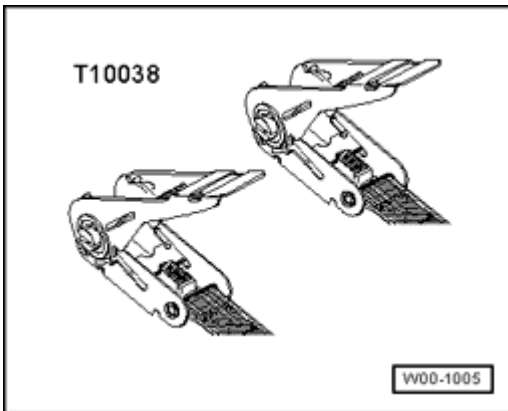


Fig. 12: Identifying Tensioning Strap T10038
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tension strap T10038

NOTE:

- If engine and transmission are to be separated after removal, the Supplementary Set Audi A6 (C6) VAS 6131/12 will also be required.

Procedure

NOTE:

- With lock carrier installed, engine is removed downward with transmission and subframe.
- All cable ties which are opened or cut open when removing engine, must be replaced in the same position when installing engine.
- Drained coolant must be stored in a clean container for disposal or reuse.

CAUTION: Before removing engine, secure vehicle against tipping over. For this the luggage compartment must be empty.

CAUTION: Observe safety precautions when disconnecting the battery --> 27 - STARTER, GENERATOR, CRUISE CONTROL .

NOTE:

- So that the front wheels can still be turned with the battery disconnected, the battery must only be disconnected with ignition key inserted.

- Remove luggage compartment floor trim.

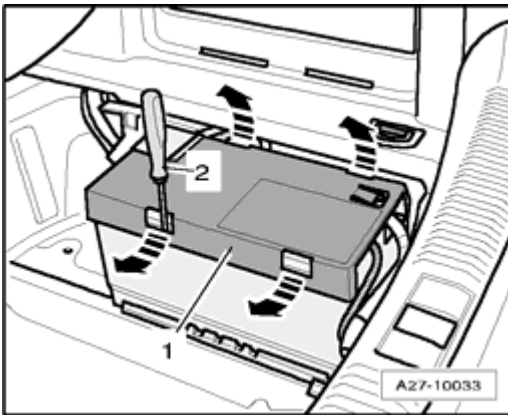
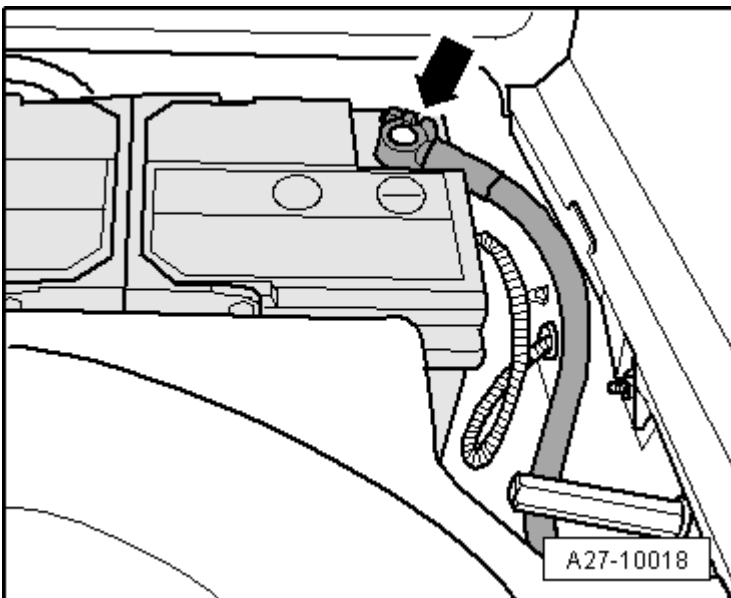


Fig. 13: Releasing Retaining Clips With A Screwdriver And Removing Battery Ground Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release retaining clips - **arrows** - with a screwdriver - **2** - and remove cover - **1** -.



Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect Ground (GND) cable - **arrow** - at battery.

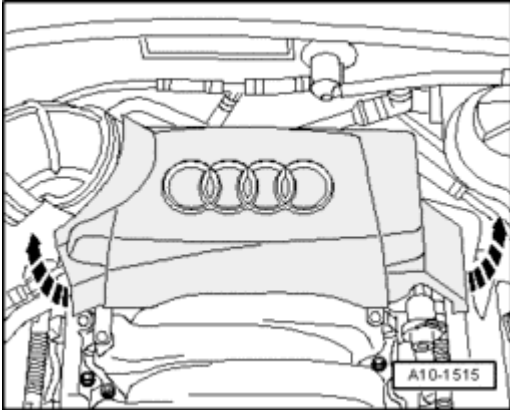


Fig. 15: Removing Rear Engine Cover

Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

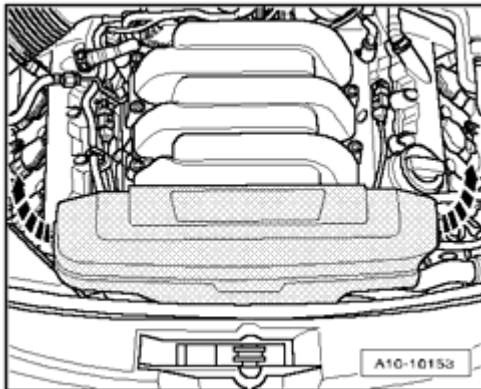


Fig. 16: Identifying Front Engine Cover

Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

CAUTION: Cover cap of expansion tank with rag and open carefully, as hot steam i.e. hot coolant may escape when opening.

- Open cap of coolant expansion tank.

NOTE:

- Before removing ribbed belt, mark the turning direction on it with chalk or a felt tip pen. A reversed direction of rotation can cause damage to the belt under operating conditions.

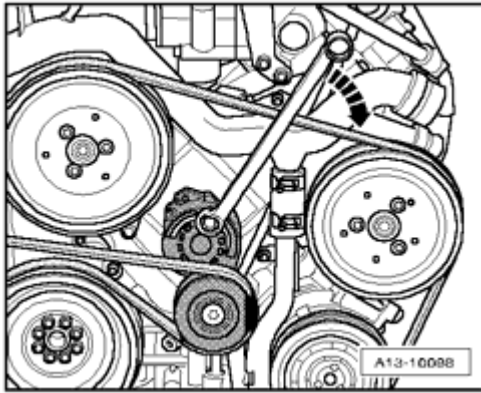


Fig. 17: Pivoting Tensioning Device To Relieve Tension On Ribbed Belt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pivot tensioning device in direction of - **arrow** - to relieve tension on ribbed belt.
- Remove ribbed belt and release tensioning device.
- Remove both front wheels.

NOTE:

- **Secure brake discs using a wheel bolts.**

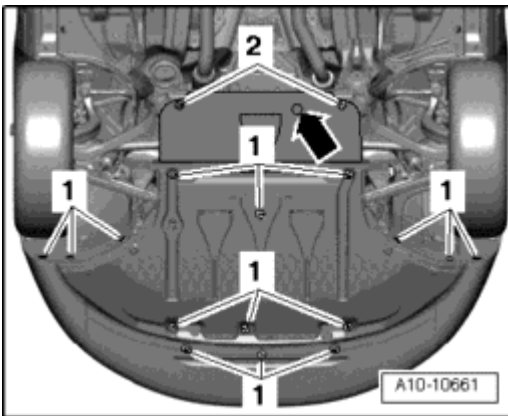


Fig. 18: Identifying Noise Insulation And Mountings
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove noise insulation and mountings - **1, 2** - - **arrow** - where present.

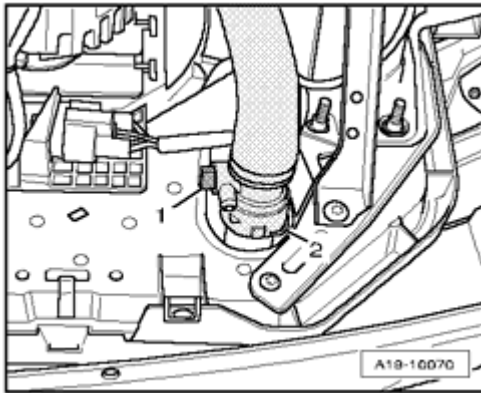


Fig. 19: Identifying Drain Plug & Coolant Hose

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place drip tray for workshop crane VAS 6208 under engine.
- Open drain plug - 1 - and allow coolant to drain.
- Then disconnect coolant hose - 2 - from radiator.

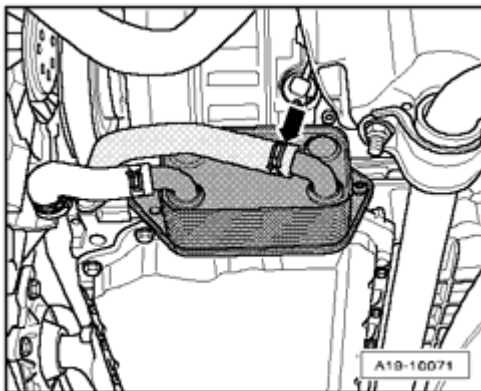


Fig. 20: Disconnecting Coolant Hose From Oil Cooler

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect coolant hose - **arrow** - from oil cooler and drain remaining coolant.
- Then remove coolant hose.

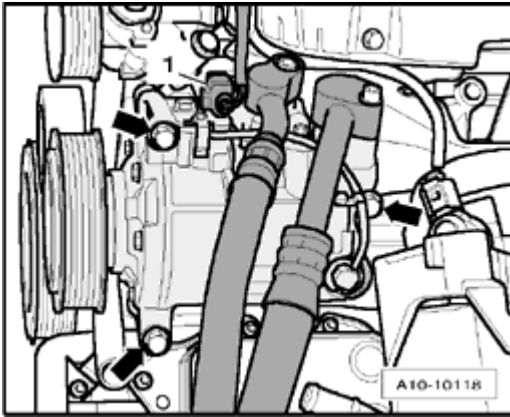


Fig. 21: Disconnecting Connector For Wiring To Air Conditioning Compressor Clutch Solenoid
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect connector - **1** - for wiring to air conditioning compressor clutch solenoid.

CAUTION: The air conditioning refrigerant circuit must not be opened.

- Remove air conditioning compressor from bracket - **arrows** -.

NOTE:

- To prevent damage to the refrigerant lines/hoses, ensure that the lines and hoses are not stretched, kinked or bent.

- Hang up air conditioning compressor with attached lines on left side of vehicle.

NOTE:

- Place a rag under hydraulic lines to catch escaping hydraulic fluid.

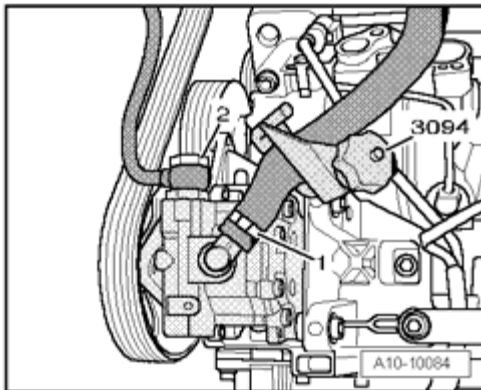


Fig. 22: Identifying Hydraulic Hose, Hydraulic Pressure Line & Hose Clamps 3094
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Clamp off hydraulic hose - **1** - for power steering pump with a Hose Clamps Up to 25 mm dia. 3094.

- Remove hydraulic hose from power steering pump.
- Remove hydraulic pressure line - **2** - at power steering pump and set it aside on top of the longitudinal member.

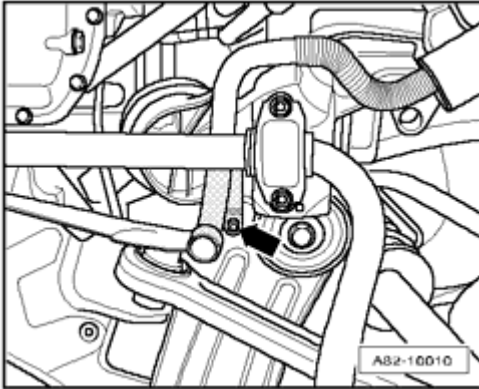
Vehicles with auxiliary heater:

Fig. 23: Removing Bolt For Corrugated Exhaust Pipe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove right front wheel housing liner in front area --> **66 - EXTERIOR EQUIPMENT**.
- Remove bolt - **arrow** - for corrugated exhaust pipe.

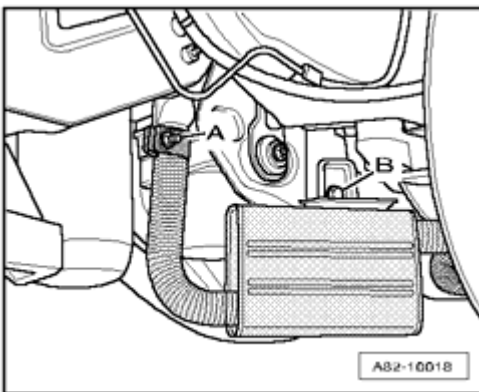


Fig. 24: Loosening Nut On Clamp For Corrugated Exhaust Pipe & Removing Bolt & Muffler With Corrugated Exhaust Pipe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen nut - **A** - on clamp for corrugated exhaust pipe.
- Remove bolt - **B** - and remove muffler with corrugated exhaust pipe.

All:

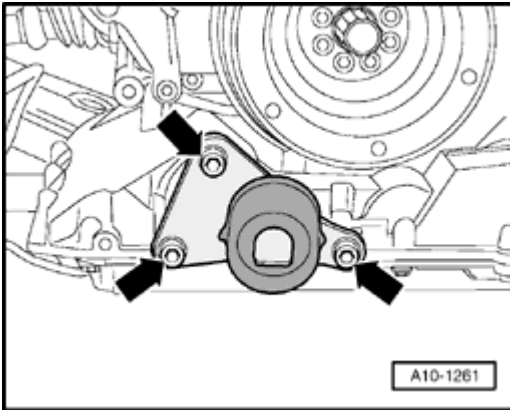


Fig. 25: Removing Bolts And Torque Support From Engine
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - and remove torque support from engine.

NOTE:

- **Observe the rules of cleanliness for working on automatic transmissions -- > 00 TECHNICAL DATA .**

- Place old oil collecting and extracting device V.A.G 1782 under engine.

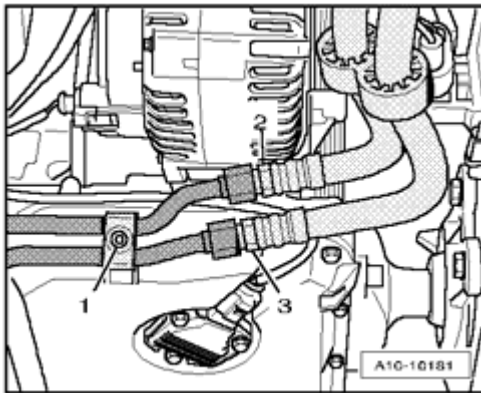


Fig. 26: Loosening Union Nuts And Disconnecting ATF Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen union nuts - **2** - and - **3** - and disconnect ATF lines.

NOTE:

- **Ignore - 1 -.**

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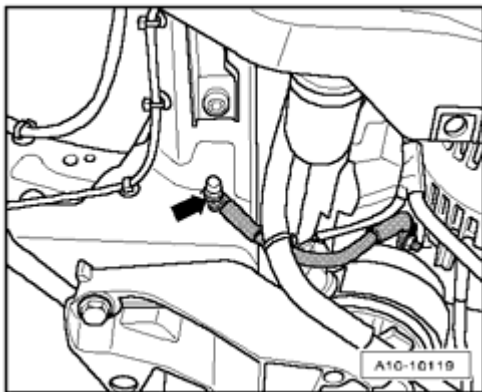


Fig. 27: Removing Ground (GND) Strap From Right Longitudinal Member
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove Ground (GND) cable - **arrow** - from right longitudinal member.

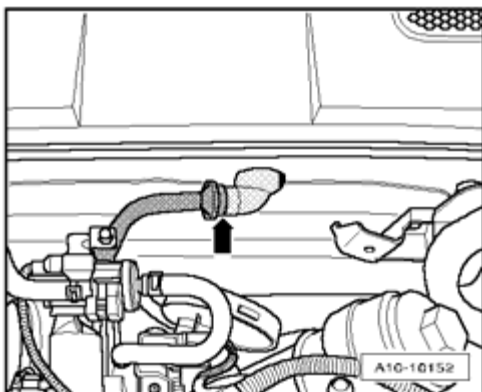


Fig. 28: Removing Vacuum Hose For Brake Booster At Bulkhead
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove vacuum hose - **arrow** - for brake booster at bulkhead.

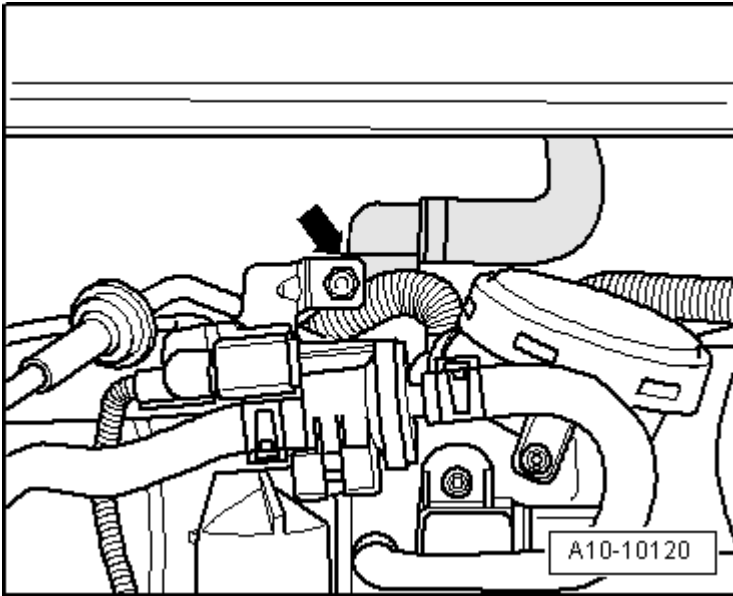


Fig. 29: Removing Coolant Hose To Heater Core On Rear Of Engine
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove coolant hose - **arrow** - to heater core on rear of engine.

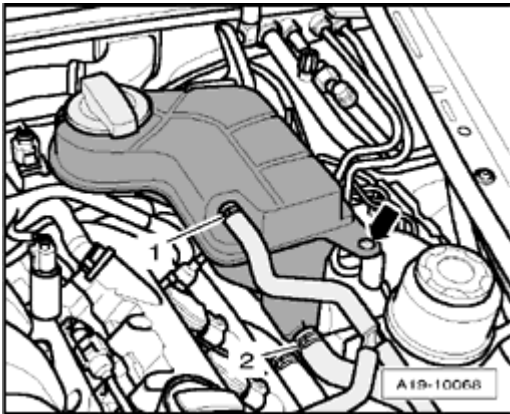


Fig. 30: Removing Coolant Hoses At Coolant Expansion Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove coolant hoses - **1** - and - **2** - at coolant expansion tank.
- Remove coolant expansion tank - **arrow** -.
- Disconnect electrical connector on Engine Coolant Level (ECL) Warning Switch F66 at bottom of expansion tank.

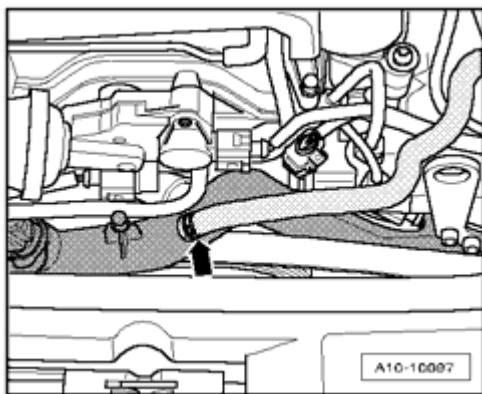


Fig. 31: Removing Coolant Hose From Front Coolant Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove coolant hose - **arrow** - from front coolant line.

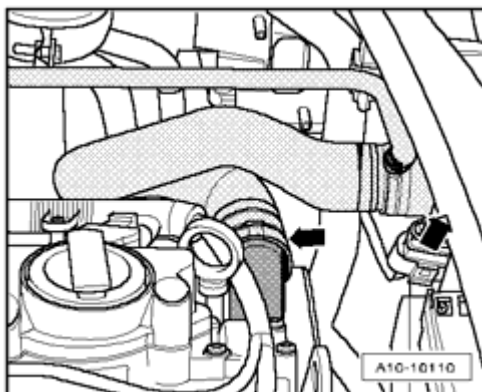


Fig. 32: Removing Left Front Coolant Hose In Engine Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left front coolant hose in engine compartment - **arrows** -.

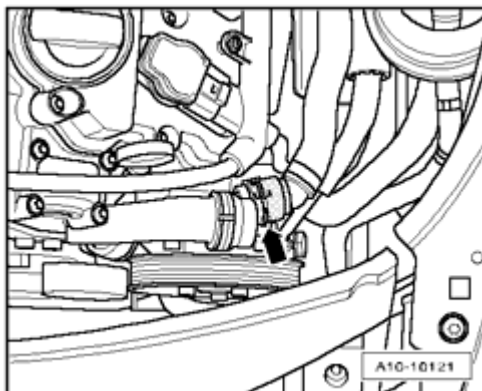


Fig. 33: Removing Coolant Hose From Front Coolant Line

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove coolant hose - **arrow** - from front coolant line.

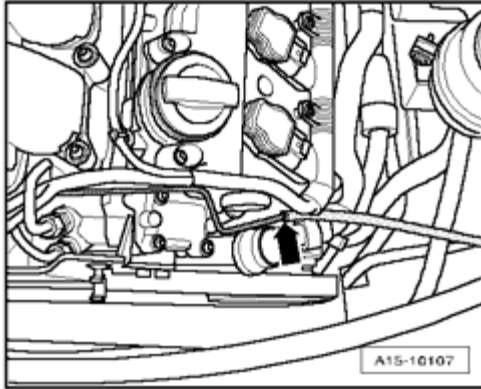


Fig. 34: Disconnecting Vacuum Hose To Leak Detection Pump
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect vacuum hose - **arrow** - to leak detection pump.

CAUTION: Note rules of cleanliness for working on the fuel injection system --> Clean Working Conditions .

CAUTION: Fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

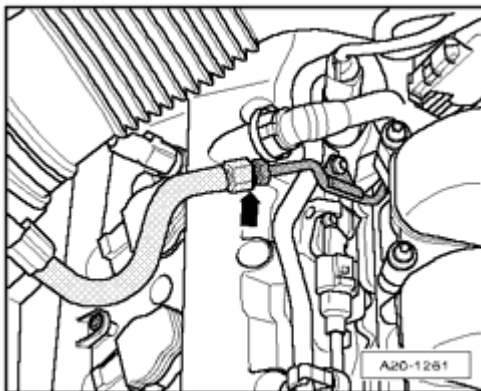


Fig. 35: Separating Fuel Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Separate fuel line - **arrow** - and lay aside.

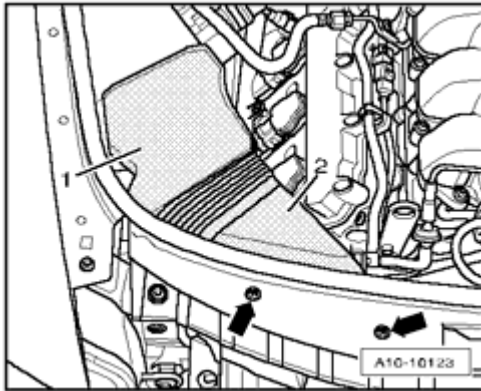


Fig. 36: Removing Air Duct Screws & Air Ducts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** -.
- Remove air duct - **1** - and - **2** -.

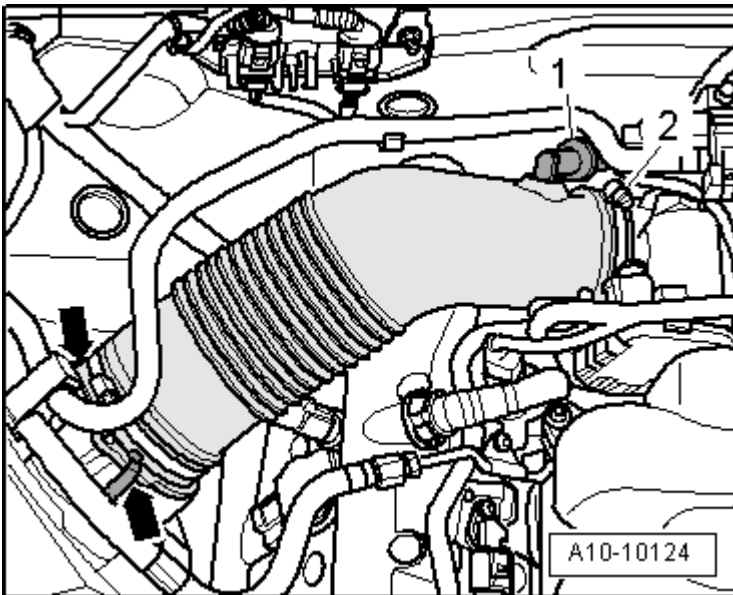


Fig. 37: Disconnecting Check Valve From Connection At Air Duct Hose & Removing Air Duct Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect check valve - **1** - from air duct hose.
- Remove air duct hose, thereby loosening the hose clamp - **2** - and opening clips - **arrows** -.

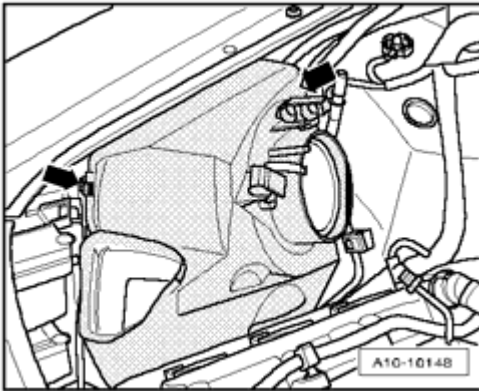


Fig. 38: Opening Clips And Removing Upper Part Of Air Filter Housing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Open clips - **arrows** - and remove upper part of air filter housing.

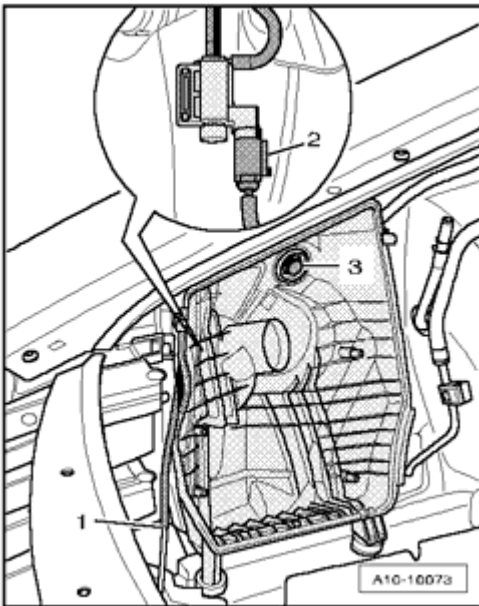


Fig. 39: Identifying Vacuum Line, Spreader Clips & Electrical Connection
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect vacuum line - **1** -.
- Remove pin from spreader clips - **3** -.
- Remove lower part of air filter housing and, on the backside, disconnect electrical connection - **2** - at the intake air switch-over valve N335.

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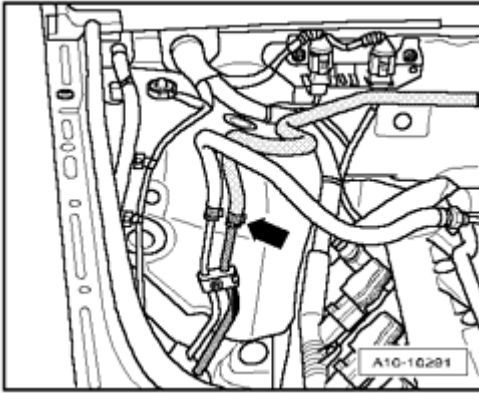


Fig. 40: Disconnecting Vacuum Hose To EVAP Canister
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect vacuum hose - **arrow** - to EVAP canister.

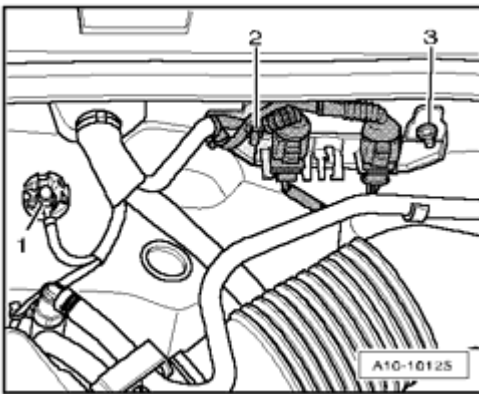


Fig. 41: Removing Nuts & Ground (GND) Wire
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **2** - and - **3** - and remove right bracket for harness connectors from bulkhead.
- Remove Ground (GND) wire - **1** - on right strut tower.

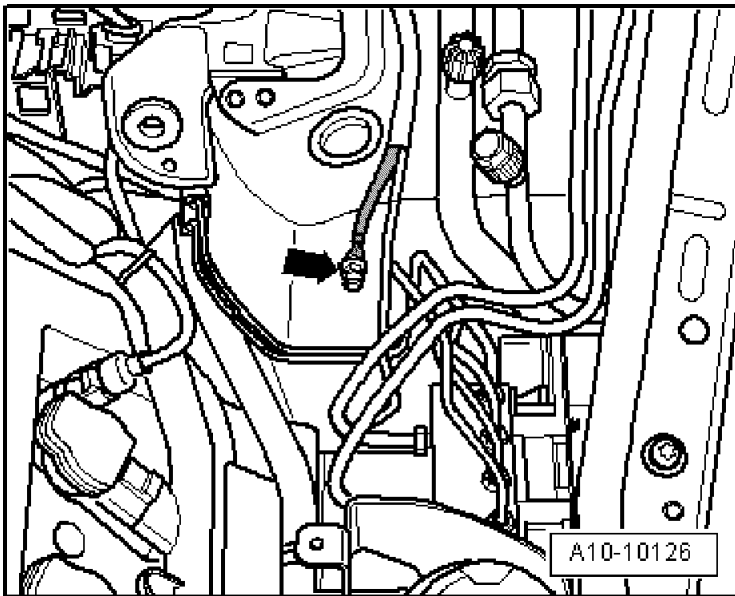


Fig. 42: Removing Ground (GND) Wire On Left Strut Tower
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove Ground (GND) wire - **arrow** - on left strut tower.

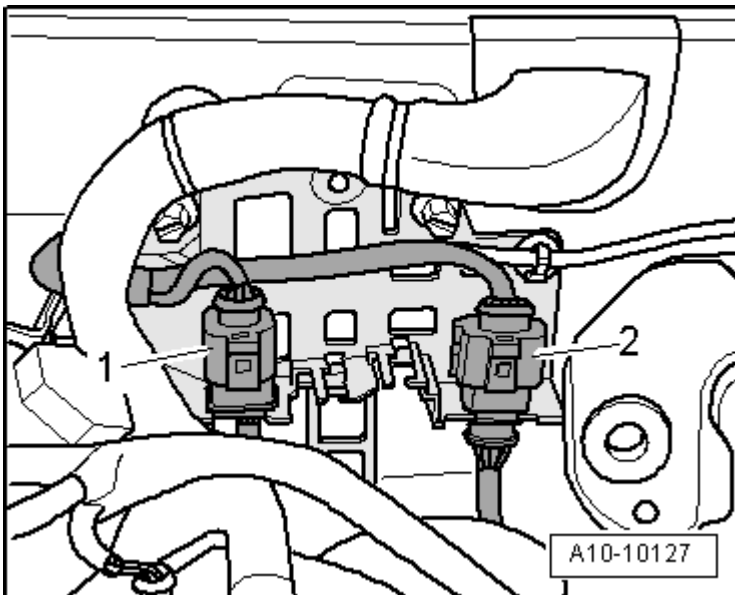


Fig. 43: Disconnecting Electrical Harness Connector For Oxygen Sensor (O2S) 2 Behind Three Way Catalytic Converter (TWC) G131
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left bracket for harness connectors - **1** - and - **2** - from bulkhead.

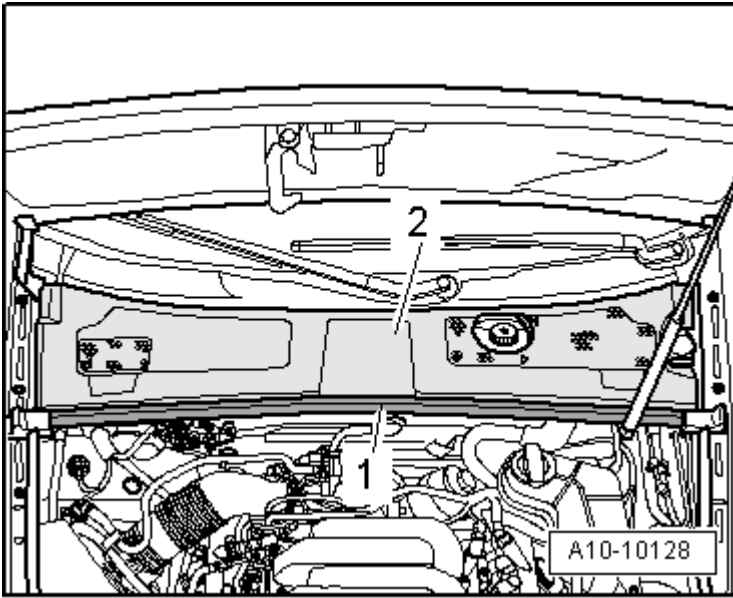


Fig. 44: Removing Rubber Seal For Plenum Chamber Cover & Plenum Chamber Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rubber seal - 1 - for plenum chamber cover.
- Remove plenum chamber cover - 2 -.

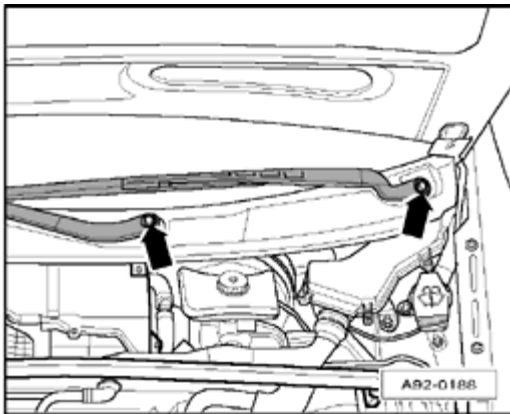


Fig. 45: Identifying Wiper Arm Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pry off caps on the wiper arms using a screwdriver.
- Loosen nuts - **arrows** - by several turns.
- Loosen wiper arms by gently rocking the wiper arm. Remove the nuts and remove the wiper arms.

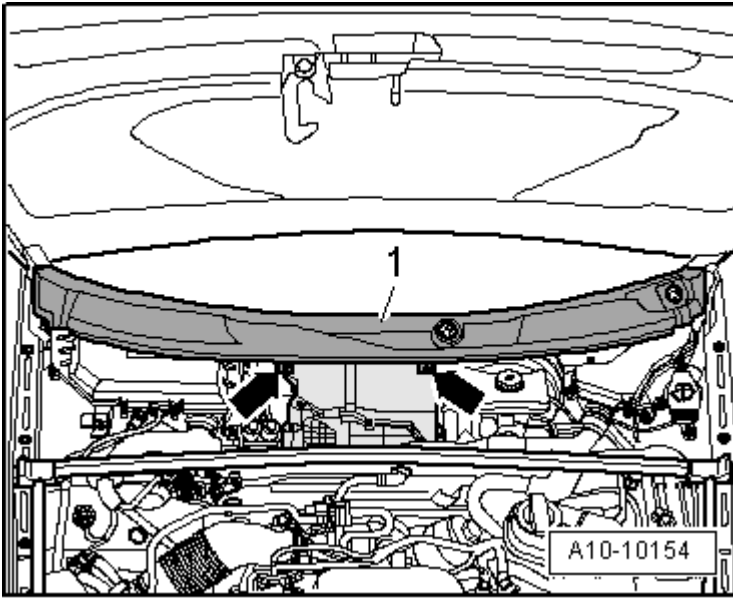


Fig. 46: Removing Bolts For Cowl Grill

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - for cowl grill - **1** -.

CAUTION: To prevent the cowl grille - **1** - from tearing when removing, coat transition between windshield and cowl grille with a soapy solution and pull grille up vertically out of fastening strip beginning at edge of window.

- Pull cowl grill off from windshield.

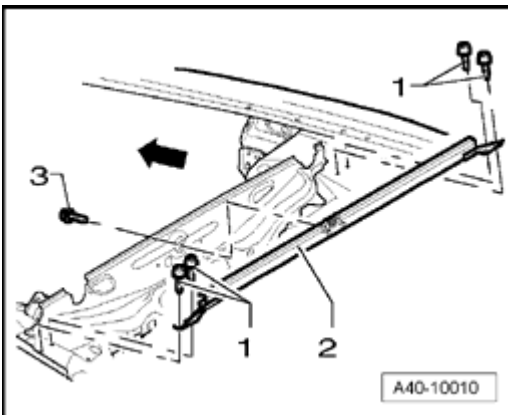


Fig. 47: Removing Bolts And Strut Tower Brace

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If equipped, remove bolts - **1** - and - **3** - and remove strut tower brace - **2** -.

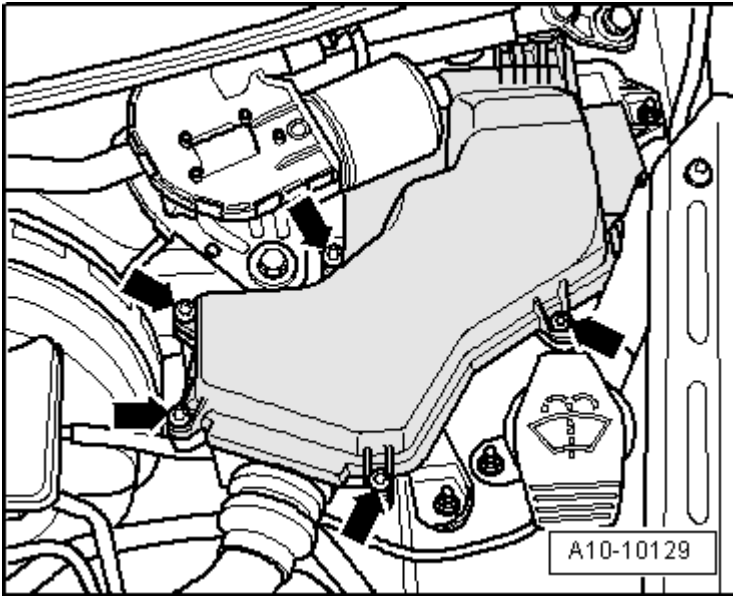


Fig. 48: Removing Bolts And Cover Form E-Box At Left In Engine Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - and remove cover form E-box at left in engine compartment.

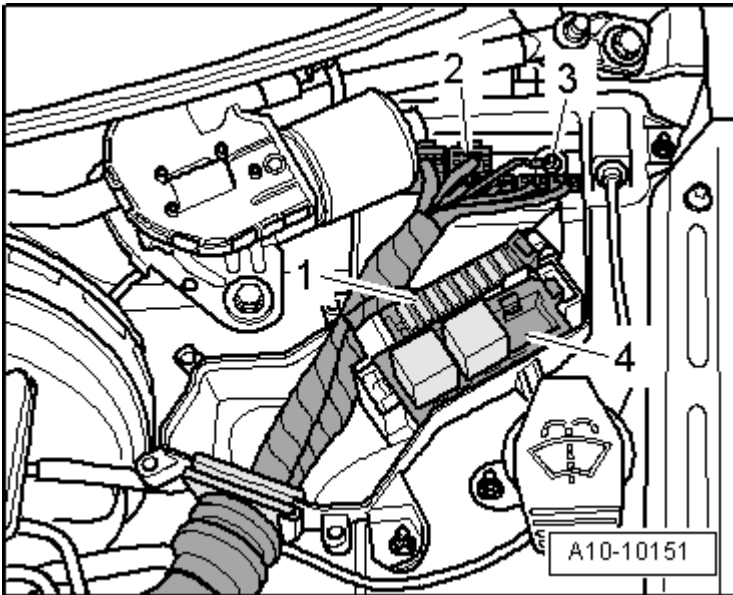


Fig. 49: Identifying Fuse Holder, 3-Socket Relay Carrier, Electrical Wire Connection & Electrical Connections
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release retaining tabs and pull fuse holder - **1** - and 3-socket relay carrier - **4** - upward and off.
- Remove electrical wire connection - **3** -.
- Disconnect all electrical connections - **2** - at rear on the connector strip.

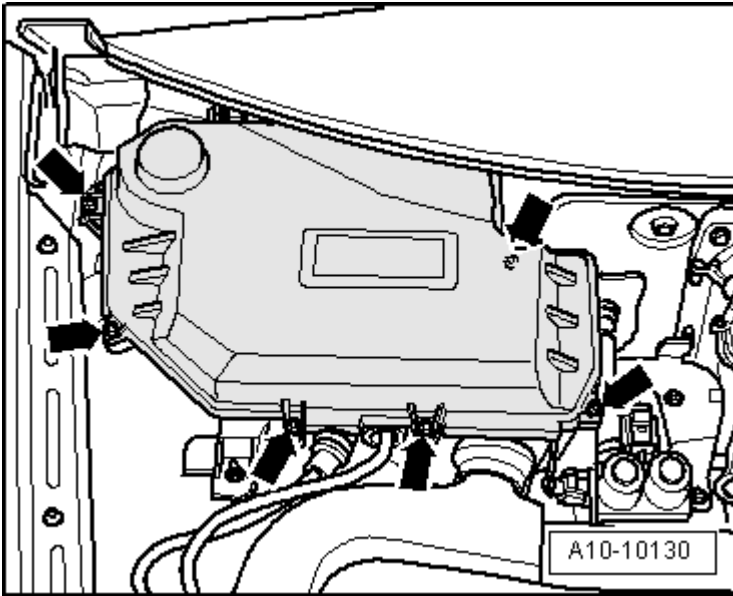


Fig. 50: Removing Bolts And Cover For E-Box At Right In Engine Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - and remove cover for E-box at right in engine compartment.

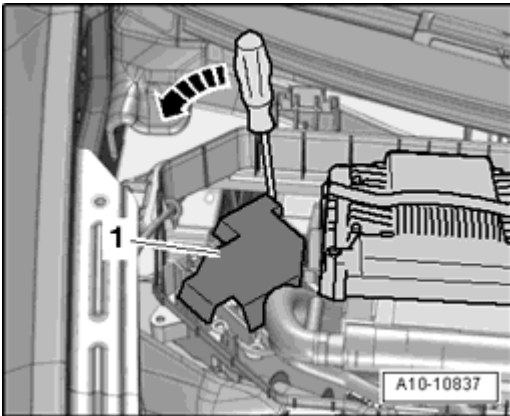


Fig. 51: Opening Cover Using Screwdriver
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Where present, open cover - **1** - using a screwdriver - **arrow** - and remove.

CAUTION: The heater pump valve unit (left of E-box) becomes very hot during operation - Risk of burning!

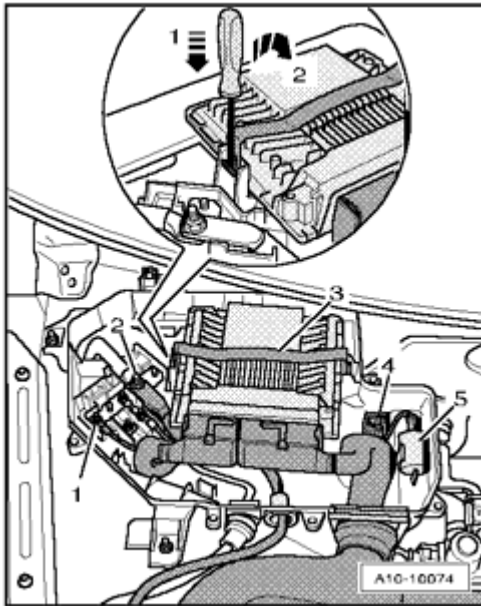


Fig. 52: Prying Off Retaining Clip With Screwdriver And Removing ECM From E-Box
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully pry off the retaining clip - 3 - with a screwdriver - **arrows 1 and 2** - and remove the ECM from the E-box.

NOTE:

- **Engine Control Module (ECM) remains connected at wiring harness.**

- Unclip suppression capacitor - 5 - from bracket in E-box.
- Disconnect electrical connection - 4 - at rear on connector strip.
- Remove electrical wiring connections - 1 - and - 2 -.

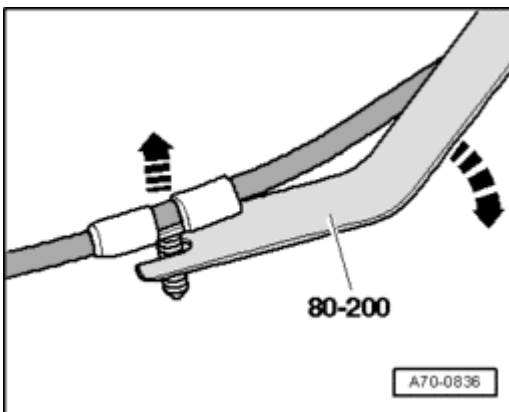


Fig. 53: Using Pry Lever 80 - 200 To Remove Instrument Panel Central Tube
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Free electrical wiring up to generator using Pry Lever - Rmv Outside Mirror 80-200.

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- Set both wiring harnesses on engine and secure Engine Control Module (ECM) against falling down.
- Have a second technician press brake pedal.

CAUTION: To loosen collar bolt for drive axle, the wheel bearing must not be under load (vehicle must not be standing on its wheels).

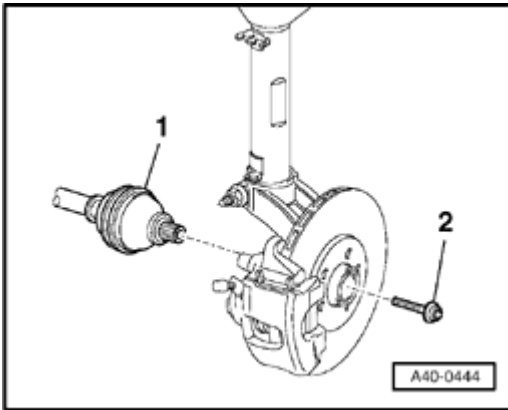


Fig. 54: Removing Collar Bolt At Left/Right Drive Axles
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove collar bolt - 2 - at left and right drive axles - 1 -.

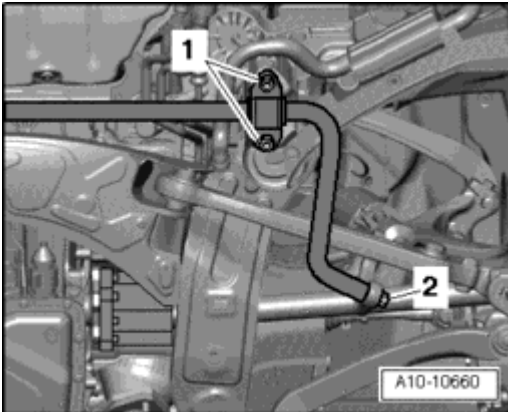


Fig. 55: Removing Left/Right Nuts, Bolts & Stabilizer Bar
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Evenly remove left and right nuts - 1 -.
- Remove left and right bolts - 2 - and remove stabilizer bar.

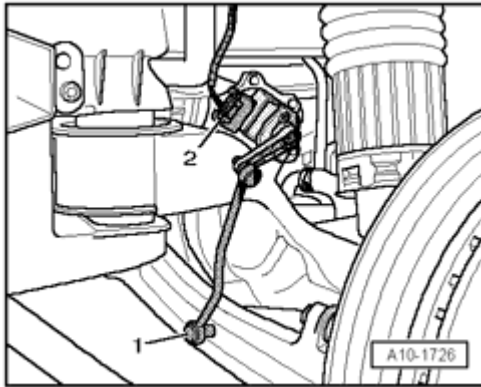


Fig. 56: Disconnecting Electrical Harness Connector At Level Control System Sensor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - 2 - at Level Control System Sensor.

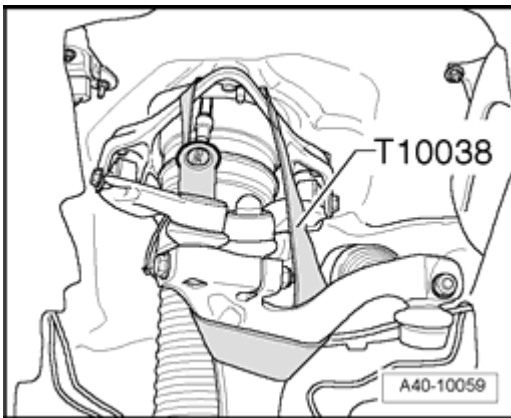


Fig. 57: Disconnecting Connecting Link At Control Arm
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect connecting link - 1 - at control arm.

CAUTION: Risk of damaging axle joints on upper control arms.

- **Support wheel bearing housing.**

- Tie up wheel bearing housing with Tension Strap T10038 as shown in illustration.

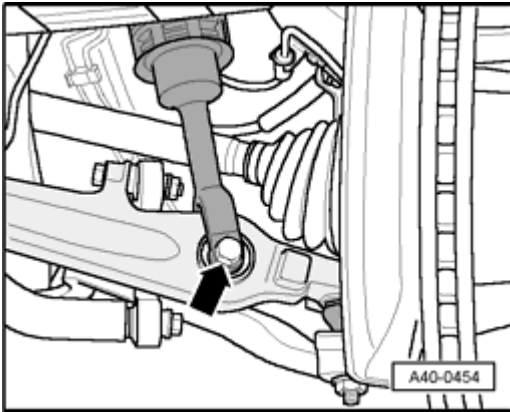


Fig. 58: Removing Suspension Strut From Control Arm
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove suspension strut from control arm - **arrow** -.

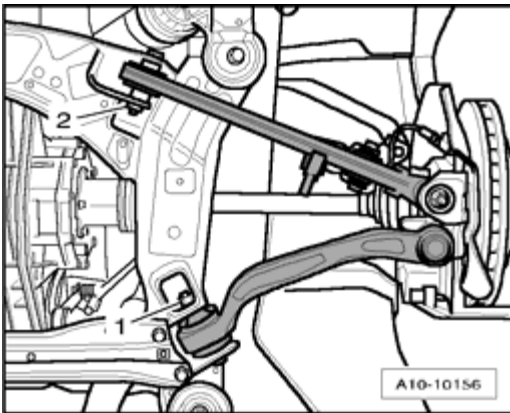


Fig. 59: Removing Guide Control Arm And Control Arm On Subframe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove guide control arm - **1** - and control arm - **2** - on subframe.

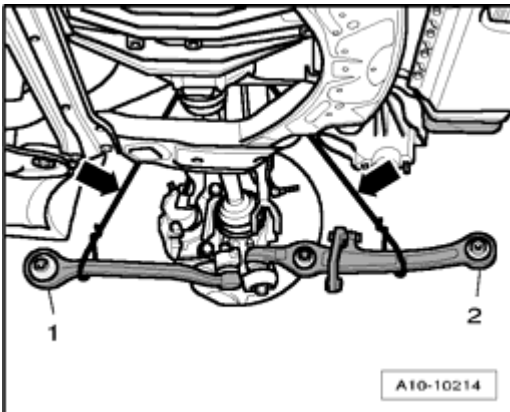


Fig. 60: Swinging Guide Control Arm And Control Arm Outward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Swing guide control arm - 1 - and control arm - 2 - outward.

CAUTION: Guide control arm and control arm must not hang free. Tie up both control arms on wheel bearing housing - arrows - as shown in illustration.

- Repeat work procedure on opposite side of the vehicle.

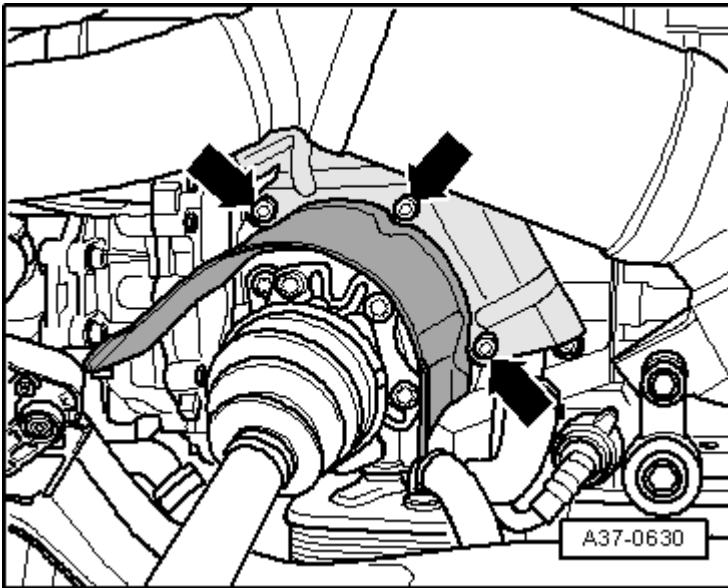


Fig. 61: Removing Heat Shield For Drive Axle
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove heat shield for drive axle - **arrows** -.
- Remove drive axle from transmission flanged shaft.

CAUTION: Do not damage brake hose!

- Swing wheel bearing housing outward and remove drive axle.
- Repeat work procedure on opposite side of the vehicle.

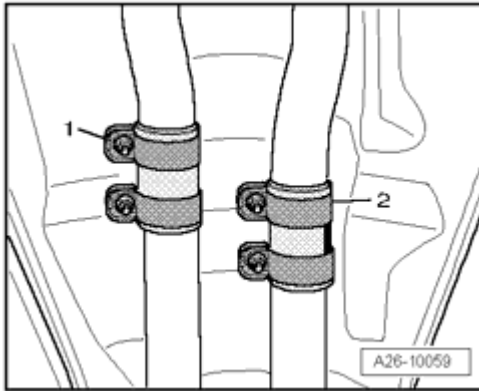


Fig. 62: Loosening Clamping Sleeves

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen clamping sleeves - 1 - and - 2 -.

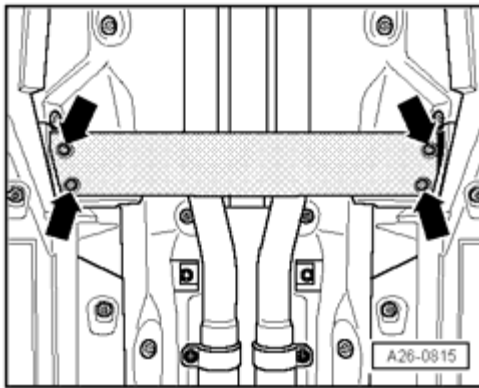


Fig. 63: Removing Front Transverse Beam

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove front transverse beam - **arrows** -.

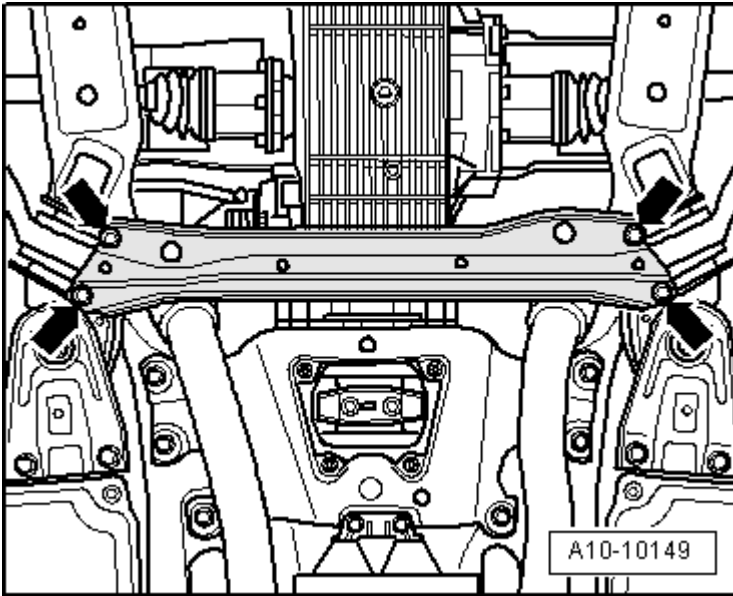


Fig. 64: Removing Subframe Transverse Beam
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove subframe transverse beam - **arrows** -.

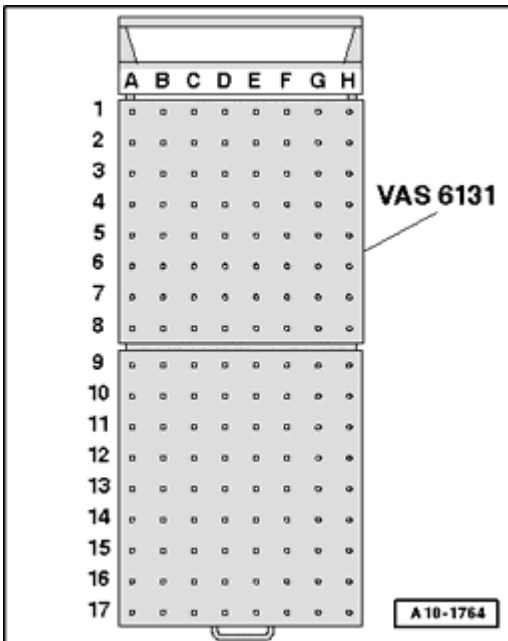


Fig. 65: Identifying Scissor Lift Platform VAS 6131 A
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

Prepare scissor lift platform:

- Equip scissor lift platform VAS 6131 A with support set for Audi VAS 6131/10 as follows:

2006 Audi A6 Quattro

ENGINE 3.2 V6 4V Engine Mechanical, Engine Code(s): BKH

Platform coordinates	Parts of support set for Audi VAS 6131/10			
B4	/10-1	/10-4	/10-5	/10-11
G4	/10-1	/10-4	/10-5	/10-12
B10	/10-1	/10-2	/10-5	/10-8
G	/10-1	/10-2	/10-5	/10-8
E13	/10-1	/10-3	/10-5	/10-6
D16	/10-1	/10-3	/10-5	/10-6

- Install support elements first tightly by hand on scissor lift platform.
- Place scissor lift platform VAS 6131 A in horizontal position.
- Note bubble level (sight glass) on support platform.
- Drive scissor lift platform VAS 6131 A under engine/transmission subassembly.

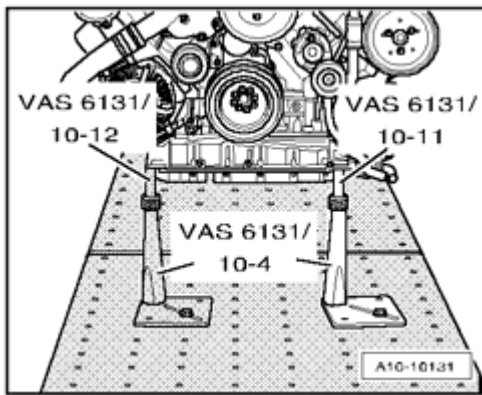


Fig. 66: Positioning Support Elements From VAS 6131/10 At Front On Engine
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position support elements from VAS 6131/10 at front on engine as shown in illustration.
- Make sure that the threaded spindles are completely screwed in.

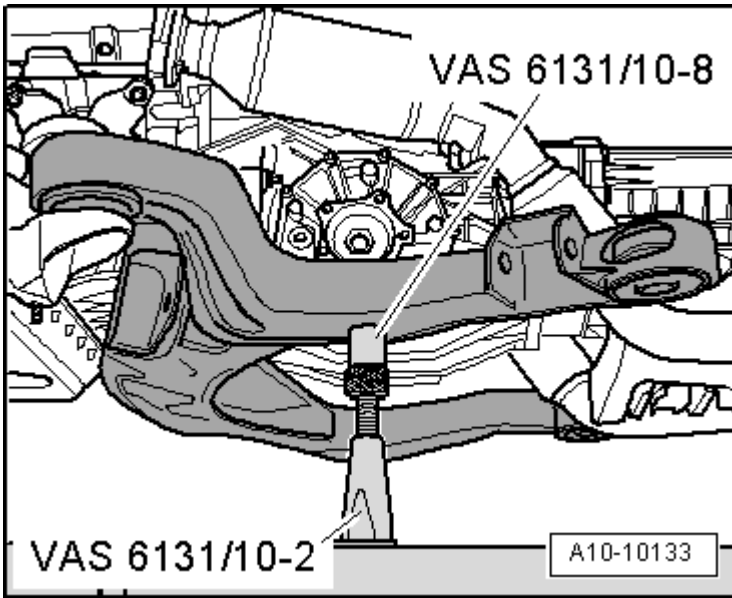


Fig. 67: Positioning Support Elements From VAS 6131/10 At Left/Right On Subframe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position support elements from VAS 6131/10 at left and right on subframe as shown in illustration.

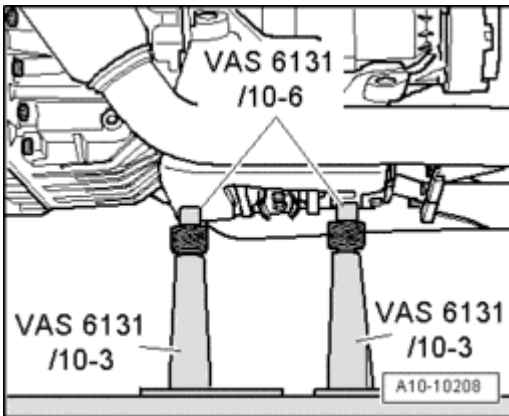


Fig. 68: Positioning Support Elements From VAS 6131/10 At Rear On Tunnel Cross Member
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position support elements from VAS 6131/10 at rear on tunnel cross member, as shown in illustration.
- Twist all spindles of support elements upward far enough until all support pins make contact at support points.
- Tighten base plates for support elements to 20 Nm on scissor lift platform VAS 6131 A.

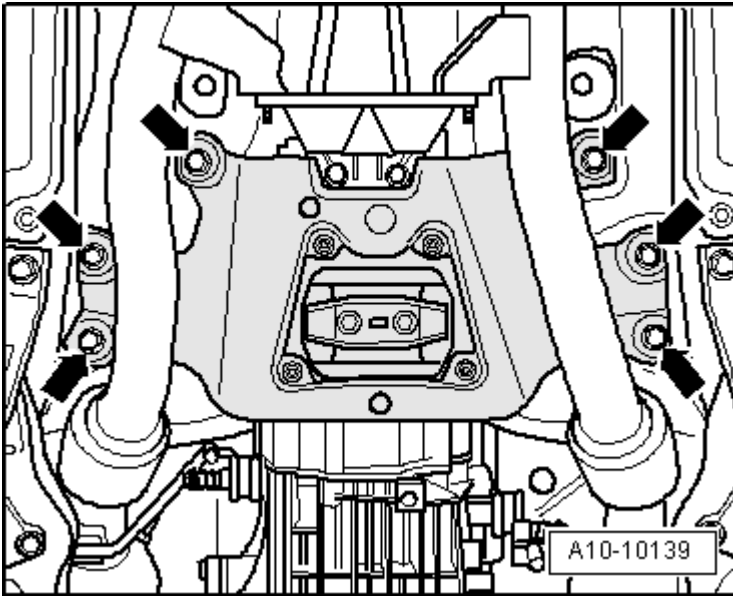


Fig. 69: Removing Bolts On Tunnel Cross Member
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - on tunnel cross member.

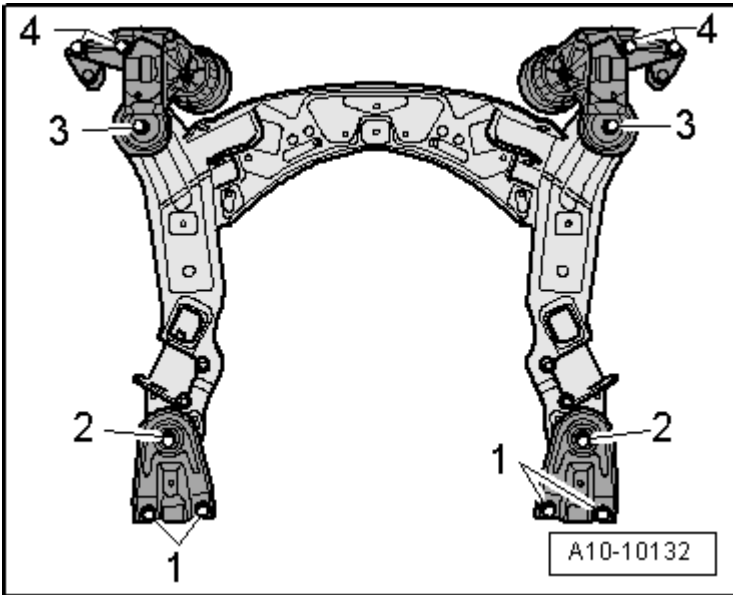


Fig. 70: Bolts Removal Sequence
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1** -.
- Mark installation position of subframe and of both engine mount consoles to longmembers using a felt-tip marker.
- Remove bolts - **2** - , - **3** - and - **4** - in diagonal sequence and in stages.

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ENGINE 3.2 V6 4V Engine Mechanical, Engine Code(s): BKH

NOTE:

- **Verify that all hoses and lines between engine, transmission, subframe and body have been disconnected.**
- **While lowering, carefully guide engine/transmission subassembly with subframe out of engine compartment in order to prevent damage.**

- Slowly lower engine/transmission subassembly downward (approximately 10 cm).
- Mark selector lever cable bracket installation location.

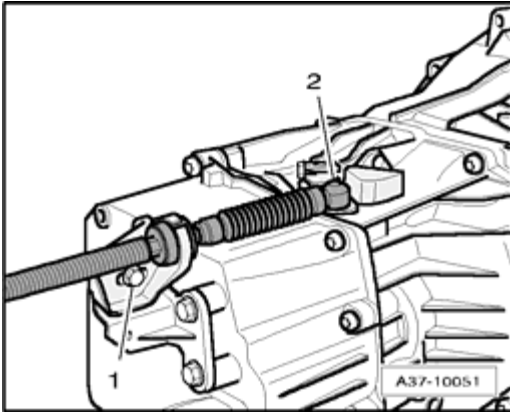


Fig. 71: Removing Support Bracket For Selector Lever Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove selector lever cable bracket bolt - **1** -.
- Press ball socket - **2** - of selector lever cable from selector shaft lever.

NOTE:

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

- Completely lower Scissor Lift Table VAS 6131 A and remove it with engine/transmission assembly under vehicle.

Engine and Transmission, Separating

Engine and Transmission, Separating

Special tools, testers and auxiliary items required

- Support Set VAS 6131/10 and Supplementary Set Audi A6 (C6) VAS 6131/12

Procedure

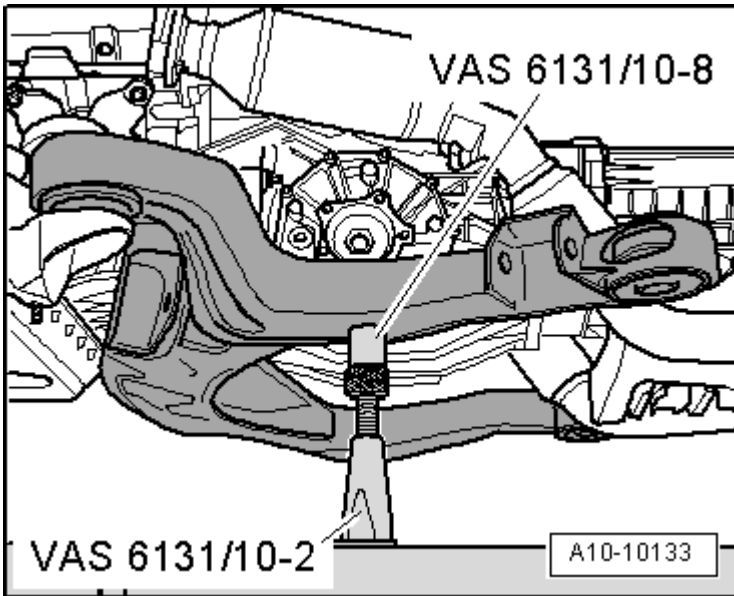


Fig. 72: Positioning Support Elements From VAS 6131/10 At Left/Right On Subframe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Engine/transmission assembly removed and placed on Scissor Lift Table VAS 6131 A.
 - Twist spindles of support elements at left and right at subframe completely downward.
 - Remove support pins from spindles.
 - Remove subframe to side.
 - Remove both base plates of the subframe support elements on scissor lift table VAS 6131 A.

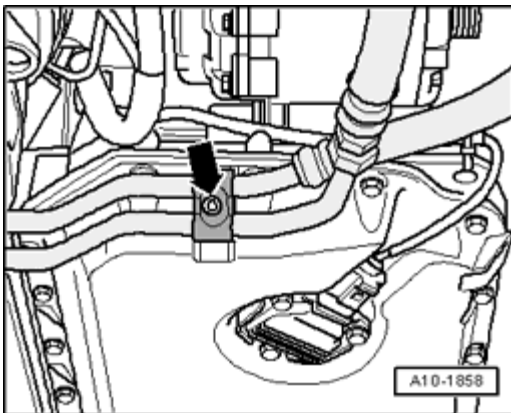


Fig. 73: Removing ATF Line Bracket
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove ATF line bracket - **arrow** -.

NOTE:

- Observe the rules of cleanliness for working on automatic transmissions --
> 00 TECHNICAL DATA .

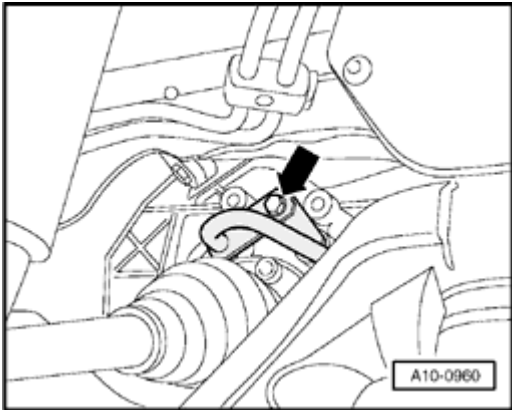


Fig. 74: Removing Bolt And Disconnecting ATF Lines From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **arrow** - and disconnect ATF lines from transmission.
- NOTE:**
- The support points for front of engine and tunnel cross member remain unchanged.

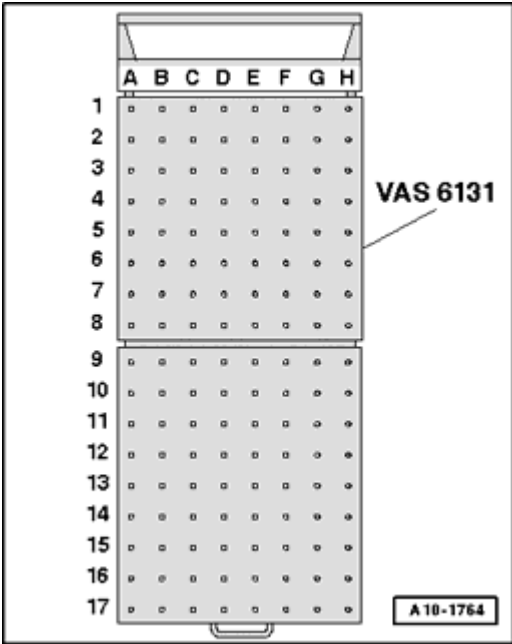


Fig. 75: Identifying Scissor Lift Platform VAS 6131
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Equip scissor lift platform VAS 6131 A with support set for Audi VAS 6131/10 and VAS 6131/12 as follows:

Platform coordinates	Parts of Support Set VAS 6131/10 and VAS 6131/12		

2006 Audi A6 Quattro

ENGINE 3.2 V6 4V Engine Mechanical, Engine Code(s): BKH

B4 1)	/10-1	/10-4	/10-5	/10-11
G4 1)	/10-1	/10-4	/10-5	/10-12
B7	/10-1	/10-4	/10-5	/10-11
G7	/10-1	/10-4	/10-5	/10-10
C10	/10-1	/10-4	/10-5	/12-1
G	/10-1	/12-2	/10-5	/12-1
E13 1)	/10-1	/10-3	/10-5	/10-6
D16 1)	/10-1	/10-3	/10-5	/10-6

1) The support elements remain unchanged.

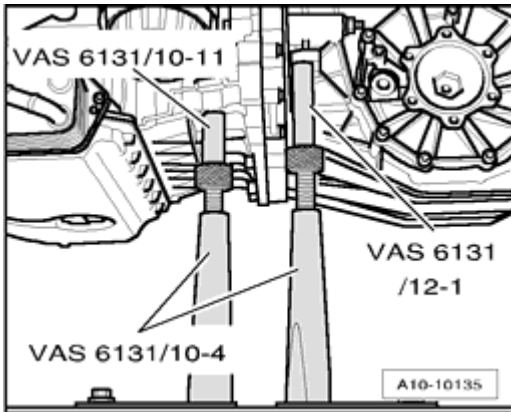


Fig. 76: Positioning/Removing Support Elements From VAS 6131/10 And VAS 6131/12 At Left On Engine

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position support elements from VAS 6131/10 and VAS 6131/12 at left on engine/transmission assembly as shown in illustration.

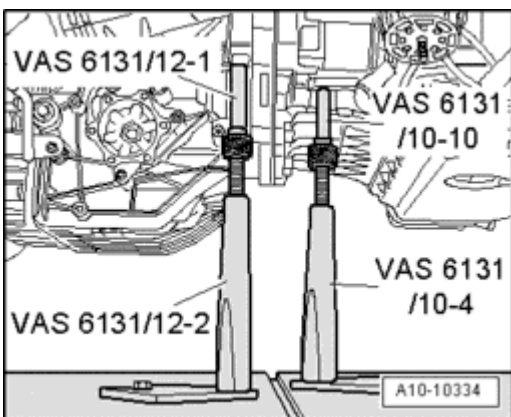


Fig. 77: Removing Both Base Plates For Right Support Element On Scissor Lift Table VAS 6131 A

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position support elements from VAS 6131/10 and VAS 6131/12 at right on engine/transmission assembly as shown in illustration.

- Twist spindles of attachments upward far enough until all support pins make contact at support points.
- Tighten base plates for support elements to 20 Nm on scissor lift platform VAS 6131 A.

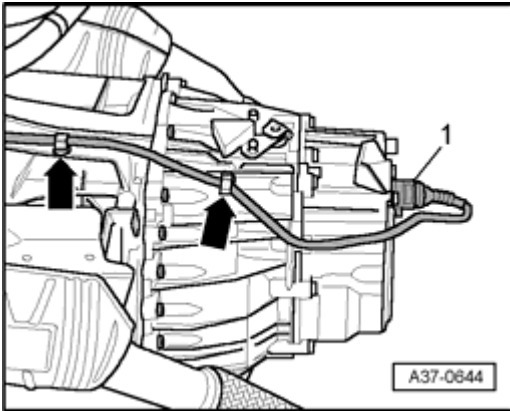


Fig. 78: Releasing Electrical Connector And Removing From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release electrical connector - **1** - and remove from transmission.
- Free up wiring harness to engine - **arrows** -.

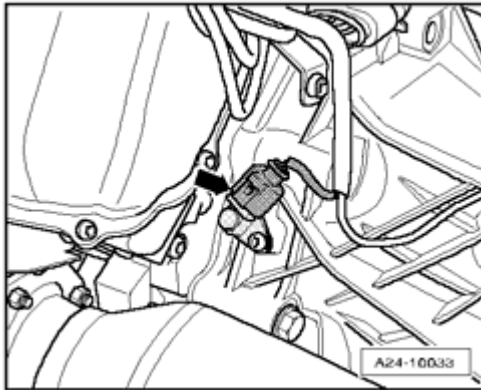


Fig. 79: Disconnecting Electrical Connector For Engine Speed (RPM) Sensor G28
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical connector - **arrow** - for Engine Speed (RPM) Sensor G28.

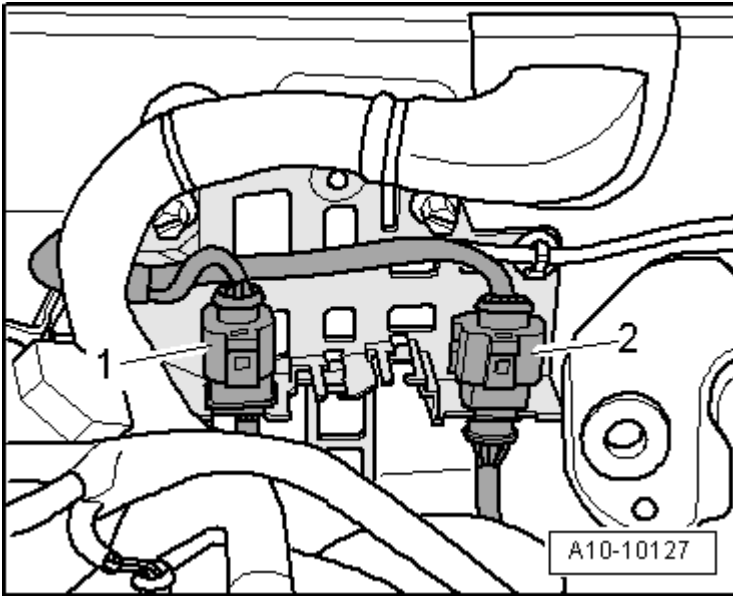


Fig. 80: Disconnecting Electrical Harness Connector For Oxygen Sensor (O2S) 2 Behind Three Way Catalytic Converter (TWC) G131

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - 2 - for Oxygen Sensor (O2S) 2 Behind Three Way Catalytic Converter (TWC) G131 and free up wire.

NOTE:

- In the illustration, the electrical harness connector is depicted as installed.
- Ignore - 1 -.

NOTE:

- Do not bend the flex joint in front of the exhaust pipe more than 10 or it could be damaged.

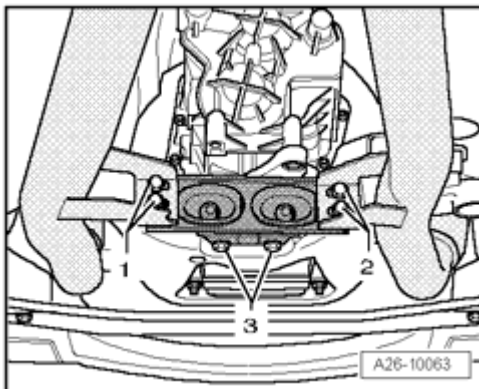


Fig. 81: Removing/Installing Mounting Bolts For Front Exhaust Pipes

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - 1 - at rear bracket for exhaust system

NOTE:

- Ignore - 2 - and - 3 -.

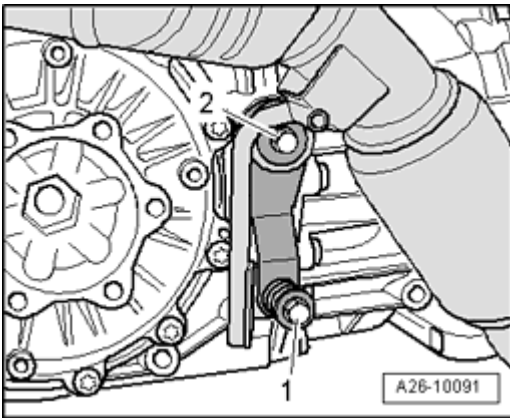


Fig. 82: Removing Bolt At Left Bracket For Front Exhaust Pipe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - 1 - at left bracket for front exhaust pipe.

NOTE:

- Ignore - 2 -.

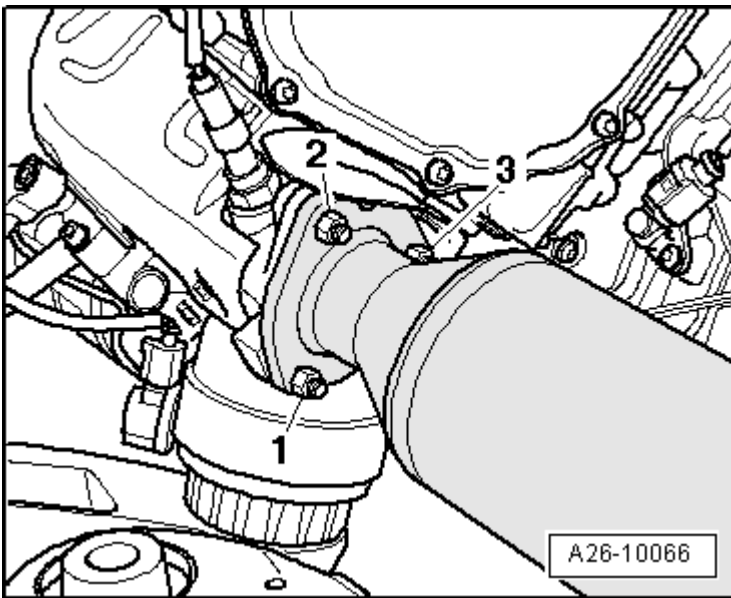


Fig. 83: Removing Nuts & Left Front Exhaust Pipe With Catalytic Converter
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - 1 to 3 -.
- Remove left front exhaust pipe with catalytic converter.

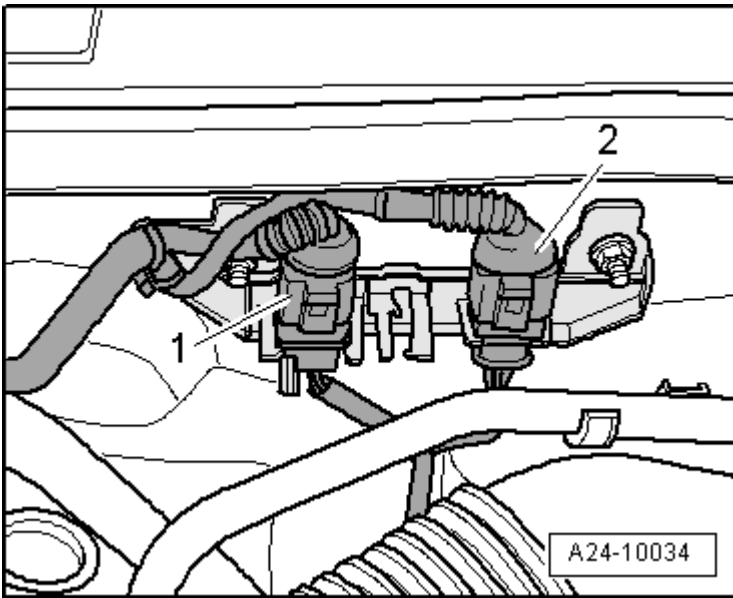


Fig. 84: Disconnecting Electrical Harness Connector For Oxygen Sensor (O2S) Behind Three Way Catalytic Converter (TWC) G130

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - 2 - for Oxygen Sensor (O2S) Behind Three Way Catalytic Converter (TWC) G130 and free up wire.

NOTE:

- In the illustration, the electrical harness connector is depicted as installed.
- Ignore - 1 -.

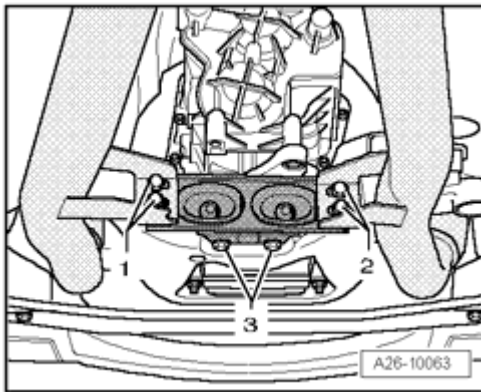


Fig. 85: Removing/Installing Mounting Bolts For Front Exhaust Pipes

Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- Do not bend the flex joint in front of the exhaust pipe more than 10 or it could be damaged.

- Remove bolts - 2 - at rear bracket for exhaust system

NOTE:

- Ignore - 1 - and - 3 -.

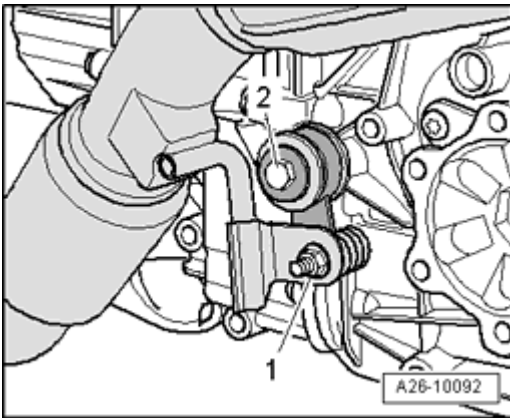


Fig. 86: Removing Bolt At Right Bracket For Front Exhaust Pipe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - 1 - at right bracket for front exhaust pipe.

NOTE:

- Ignore - 2 -.

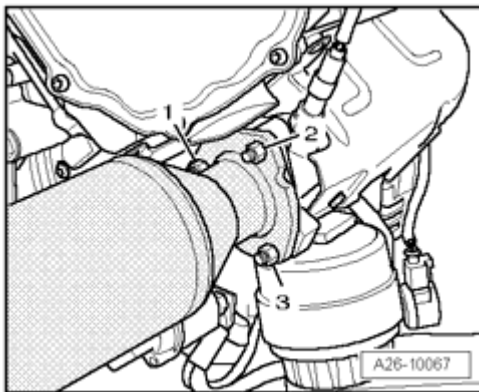


Fig. 87: Removing Nuts & Right Front Exhaust Pipe With Catalytic Converter
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - 1 to 3 -.
- Remove right front exhaust pipe with catalytic converter.

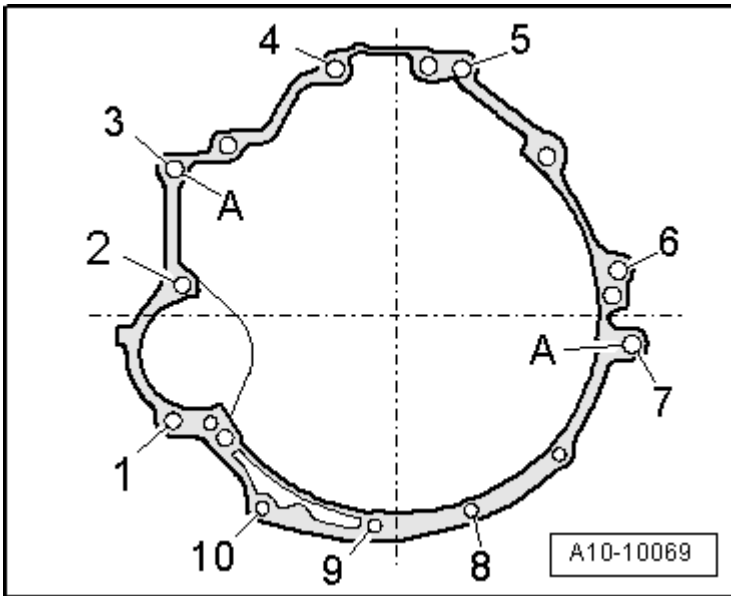


Fig. 88: Identifying Engine/Transmission Threaded Connections
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove engine/transmission threaded connections - **1 to 10** -.

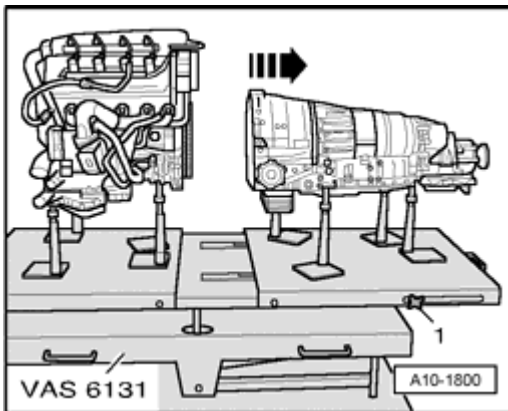


Fig. 89: Loosening Clamping Bolts On Side Of Scissor Lift Table VAS 6131 And Pulling Rear Table Section With Transmission Rearward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen clamping bolts - **1** - on side of scissor lift table VAS 6131 A and pull rear table section with transmission rearward - **arrow** -.

Engine, Securing to Engine and Transmission Holder

Engine, Securing to Engine and Transmission Holder

2006 Audi A6 Quattro

ENGINE 3.2 V6 4V Engine Mechanical, Engine Code(s): BKH

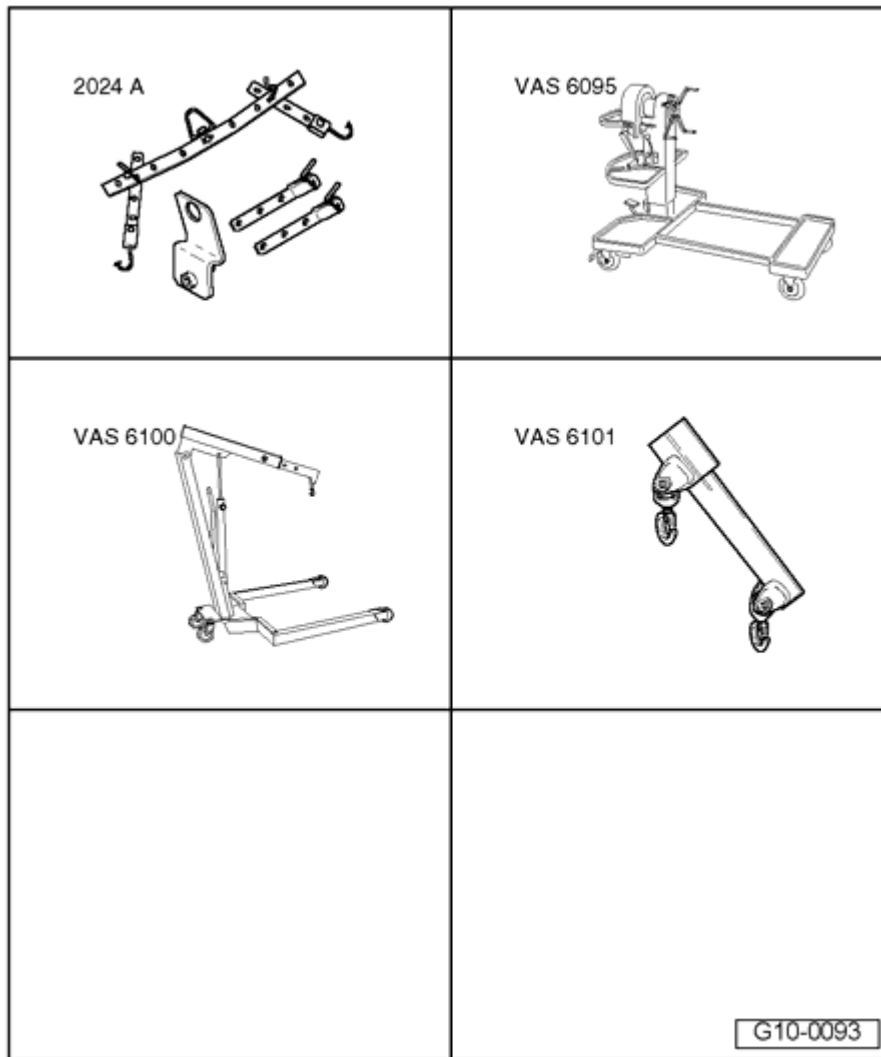


Fig. 90: Identifying Special Tools - Engine, Securing To Engine And Transmission Holder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Lifting tackle 2024 A
- Engine and transmission holder VAS 6095 with bracket VAS 6095/1-5
- Shop crane VAS 6100
- Lift arm extension for workshop crane VAS 6101

Procedure

- Engine separated from transmission --> **Engine and Transmission, Separating.**

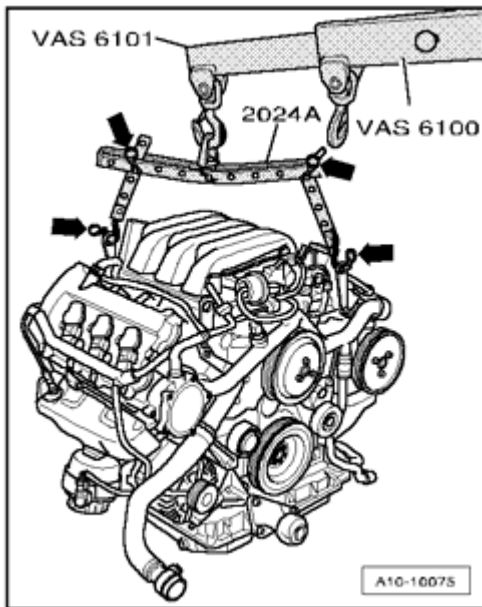


Fig. 91: Hooking Engine Sling 2024 A Onto Engine And Onto Workshop Crane VAS 6100 With Lift Arm Extension For Workshop Crane VAS 6101

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Hook engine sling 2024 A onto engine and onto workshop crane VAS 6100 with lift arm extension for workshop crane VAS 6101 as shown in the illustration.

NOTE:

- To be aligned to the center of gravity of the engine assembly, the hole rails of the lifting hook must be inserted as shown in the illustration.

CAUTION: Risk of accident due to loose engine sling components.

- Use securing pins - arrows - to secure the lifting hooks and alignment pins.

- Remove engine supports from cylinder block.

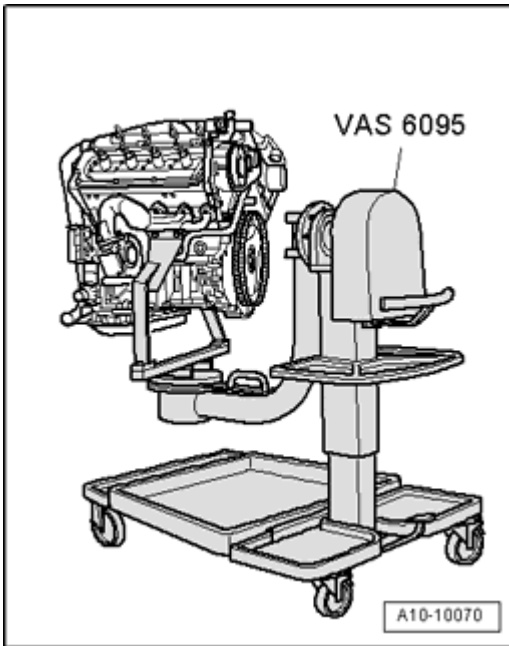


Fig. 92: Securing Engine Using Bracket VAS 6095/1-5 To 40 Nm Engine And Transmission Holder VAS 6095

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Secure engine using bracket VAS 6095/1-5 to 40 Nm Engine and Transmission Holder VAS 6095 as shown in illustration.

Engine, Installing

Engine, Installing

NOTE:

- During assembly, replace self-locking nuts and bolts.
- Always replace bolts that are tightened to torque as well as sealing rings, gaskets and O-rings.
- Secure all hose connections with hose clamps appropriate for the model .
- During installation, all cable ties must be re-installed at the same location.
- Clean the transmission input shaft splines and the splines of the damper unit on the flywheel, remove corrosion and apply only a very thin coating of *lubricant G 000 100* on splines. Remove all excess grease.

- Make sure centering sleeves for engine to transmission are installed in cylinder block. Install if necessary.
- Attach transmission to engine with new bolts.

NOTE:

- Tightening specifications only apply to lightly greased, oiled, phosphated or blackened nuts and bolts.
- Additional lubricants, such as engine or transmission oil are permissible,

although lubricants containing graphite are not.

- Do not use any degreased parts.
- Tolerance for torque specifications 15%.

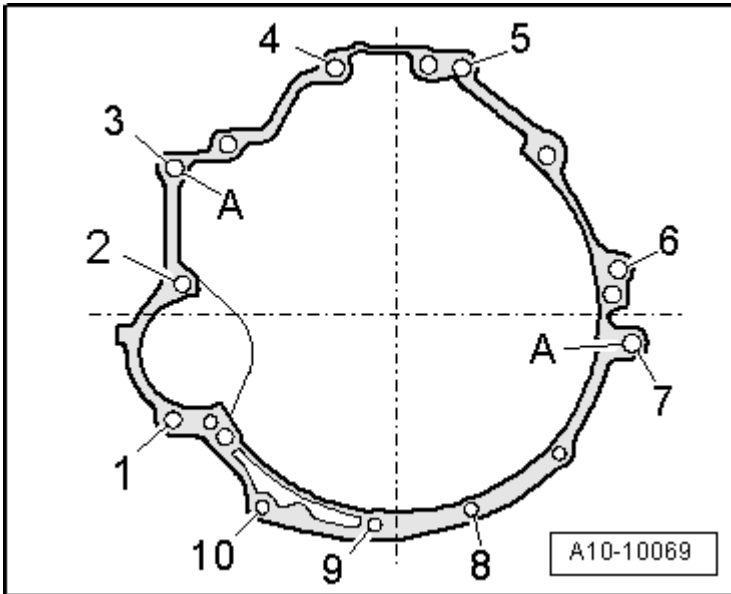


Fig. 93: Identifying Engine/Transmission Threaded Connections
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Engine/transmission, fastening

Item	Bolt 1)	Nm
1, 7	M10x100	65 2)
2	M12x120	65
3, 5	M12x100	65
4, 6	M12x95	65
8, 9, 10	M10x70	45
A	Alignment sleeves for centering	
1) Replace engine/transmission securing bolts. 2) Bolt class 10.9.		

Further installation is in reverse order of removal, noting the following.

- Install front exhaust pipes with catalytic converter: Left --> **Left Front Exhaust Pipe with Catalytic Converter, Removing and Installing**, right --> **Right Exhaust Pipe with Catalytic Converter, Removing and Installing**.
- Fasten ATF lines --> **37 CONTROLS, HOUSING**.

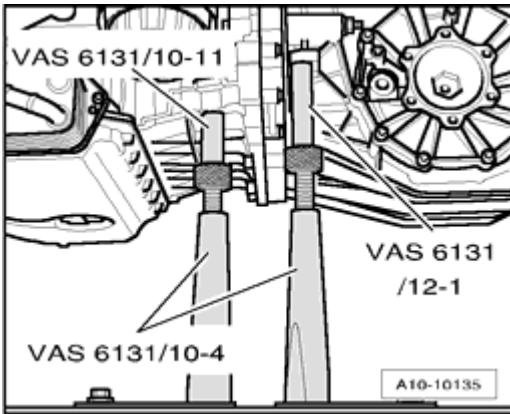


Fig. 94: Positioning/Removing Support Elements From VAS 6131/10 And VAS 6131/12 At Left On Engine

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Rotate attachment spindles at left of engine/transmission assembly downward.
- Remove both base plates for left support element on scissor lift platform VAS 6131 A.

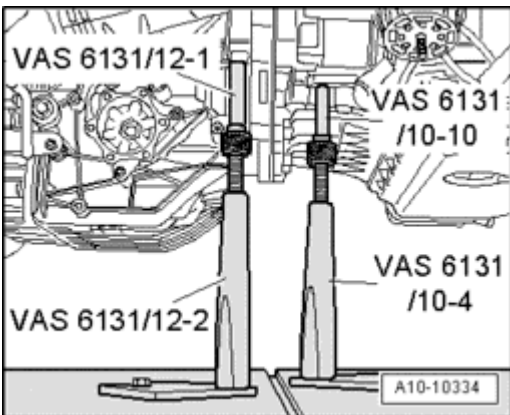


Fig. 95: Removing Both Base Plates For Right Support Element On Scissor Lift Table VAS 6131 A

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Rotate attachment spindles at right of engine/transmission assembly downward.
- Remove both base plates for right support element on Scissor Lift Table VAS 6131 A.

NOTE:

- The support points for front of engine and tunnel cross member remain unchanged.

2006 Audi A6 Quattro

ENGINE 3.2 V6 4V Engine Mechanical, Engine Code(s): BKH

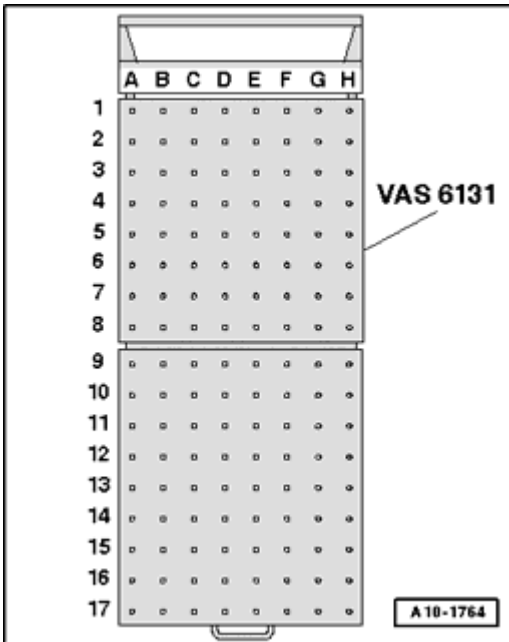


Fig. 96: Identifying Scissor Lift Platform VAS 6131
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Equip scissor lift platform VAS 6131 A with support set for Audi VAS 6131/10 as follows:

Platform coordinates	Parts of support set for Audi VAS 6131/10			
B4 1)	/10-1	/10-4	/10-5	/10-11
G4 1)	/10-1	/10-4	/10-5	/10-12
B10	/10-1	/10-2	/10-5	/10-8 2)
G	/10-1	/10-2	/10-5	/10-8 2)
E13 1)	/10-1	/10-3	/10-5	/10-6
D16 1)	/10-1	/10-3	/10-5	/10-6
1) The support elements remain unchanged. 2) Only install support elements after installing subframe.				

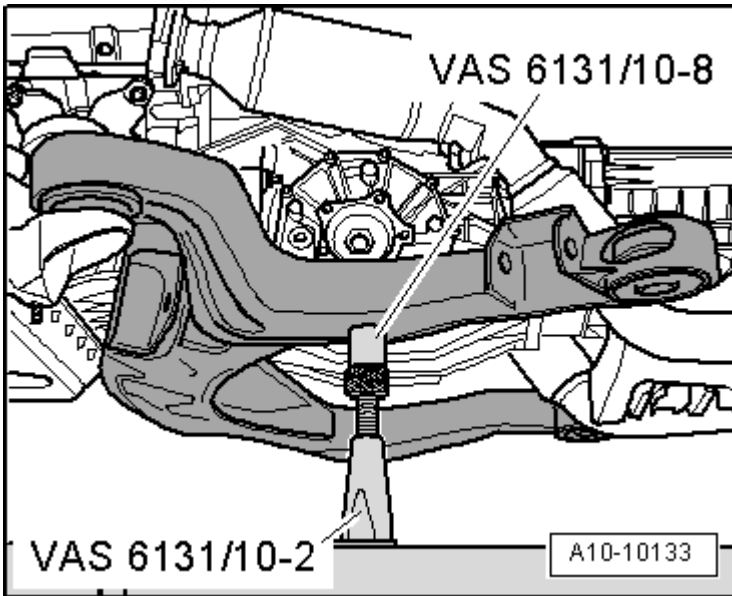


Fig. 97: Positioning Support Elements From VAS 6131/10 At Left/Right On Subframe
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position subframe on both Attachments VAS 6131/10-8.
- Twist spindles of support elements upward on both sides.
- Tighten base plates for support elements to 20 Nm on scissor lift platform VAS 6131 A.
- Using Scissor Lift Platform VAS 6131 A , slowly guide engine/transmission unit with subframe into body from below.

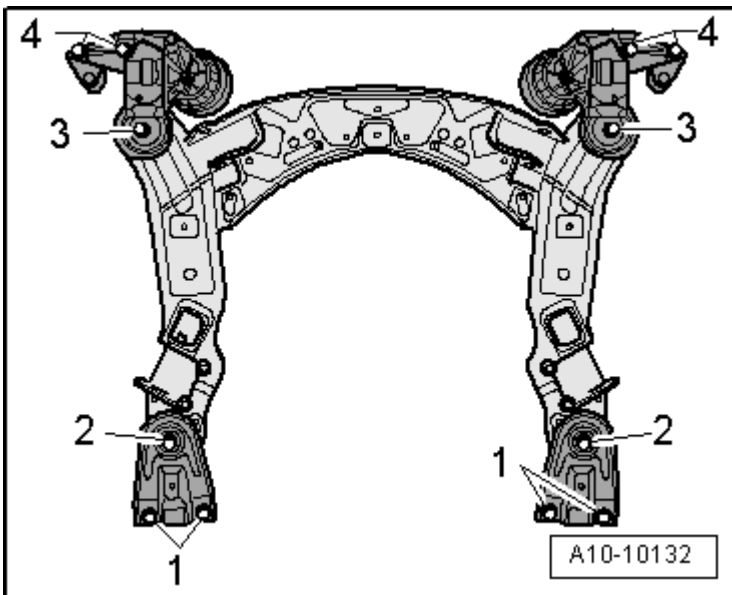


Fig. 98: Bolts Removal Sequence
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

removal.

- Tighten bolts for subframe and engine mount consoles only to specified torque. Do not tighten further (tighten bolts only after axle alignment).

1. 55 Nm
2. 115 Nm
3. 115 Nm
4. 75 Nm

CAUTION: Vehicle must not be driven in this condition.

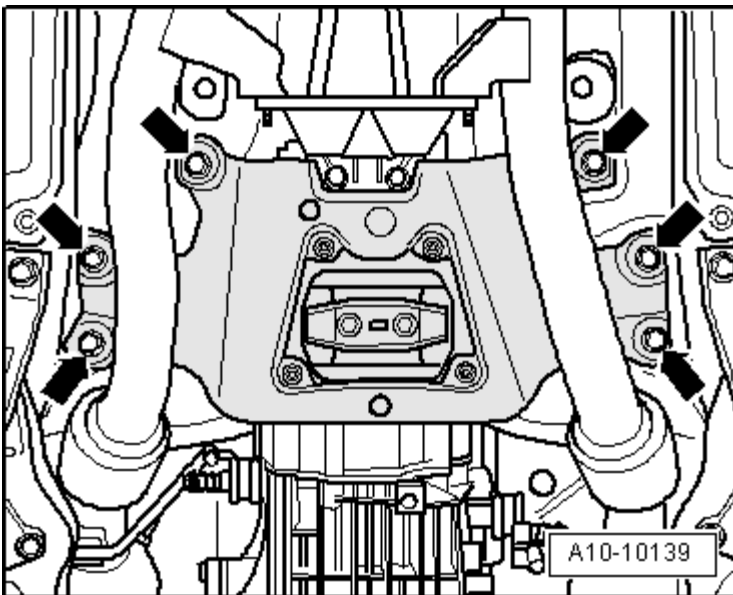


Fig. 99: Removing Bolts On Tunnel Cross Member
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten bolts - **arrows** - at tunnel cross member.

Further installation is in reverse order of removal, noting the following:

- Install selector lever cable, adjust if necessary --> **37 CONTROLS, HOUSING** .
- Install drive axles --> **40 - FRONT SUSPENSION** .
- Install guide control arm, control arm, stabilizer bar and suspension strut --> **40 - FRONT SUSPENSION** .
- Align exhaust system free of tension --> **Exhaust System, Installing**.
- Install front cross member --> **50 - BODY - FRONT** .
- Install subframe front cross member --> **40 - FRONT SUSPENSION** .

- Install A/C compressor --> **87 - AIR CONDITIONING** .
- Install ribbed belt --> **Ribbed Belt, Removing and Installing** .

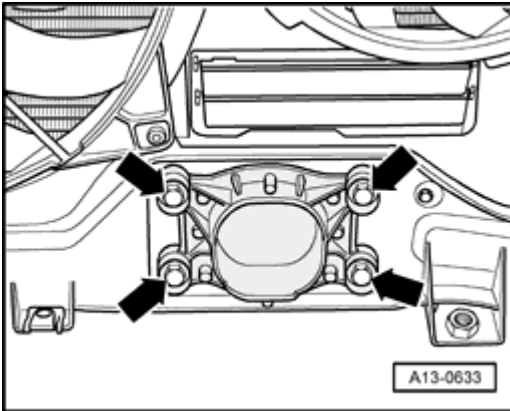


Fig. 100: Placing Torque Support On Rubber Buffer For Torque Support And Tightening Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place torque support on rubber buffer for torque support and tighten bolts - **arrows** -.
- Electrical connections and routing --> Electrical Wiring Diagrams, Troubleshooting and Component Locations.
- Observe safety precautions after connecting battery --> **27 - STARTER, GENERATOR, CRUISE CONTROL** .

CAUTION: Do not use a battery charger for starting assistance! There is the risk that the vehicle control modules could be damaged.

- Mount wiper arms and adjust --> **92 - WINDSHIELD WIPER AND WASHER SYSTEM** .
- Check oil level --> **Oil Level, Checking** .
- Bleed fuel system --> **24 - FUEL INJECTION SYSTEM** .
- Fill with coolant --> **Cooling System, Draining and Filling** .

NOTE:

- Only reuse drained coolant if cylinder head or engine block was not replaced.
- Dirty coolant must not be re-used.

- Fill power-steering system oil and bleed steering system --> **48 - STEERING** .
- Check ATF level --> **37 CONTROLS, HOUSING** .
- Align subframe and both engine bearing plates --> **40 - FRONT SUSPENSION** .
- Perform axle alignment --> **44 - WHEELS, TIRES, WHEEL ALIGNMENT** .

CAUTION: After wheel alignment, tighten subframe bolts to final torque.

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Tightening Specifications

NOTE:

- Tightening specifications only apply to lightly greased, oiled, phosphated or blackened nuts and bolts.
- Additional lubricants, such as engine or transmission oil are permissible, although lubricants containing graphite are not.
- Do not use any degreased parts.
- Tolerance for torque specifications 15%.

Component		Nm
Bolts/nuts	M6	9
	M8	20
	M10	40
	M12	65
Exceptions:		
Engine mount console to longitudinal member		75
Tunnel cross member to body		40
Hydraulic pressure line to power steering pump		47
Fuel hose to fuel line		22
Torque bracket to engine		40
Torque support stop to lock carrier		23
Hose clamps 9 mm wide		3
Hose clamps 13 mm wide		5,5

ENGINE, WITH AUTOMATIC TRANSMISSION 09L, REMOVING AND INSTALLING

Engine, with Automatic Transmission 09L, Removing and Installing

--> Engine, Removing

--> Engine and Automatic Transmission 09L, Separating

--> Engine, Securing to Engine and Transmission Holder

--> Engine, Installing

Engine, Removing

Engine, Removing

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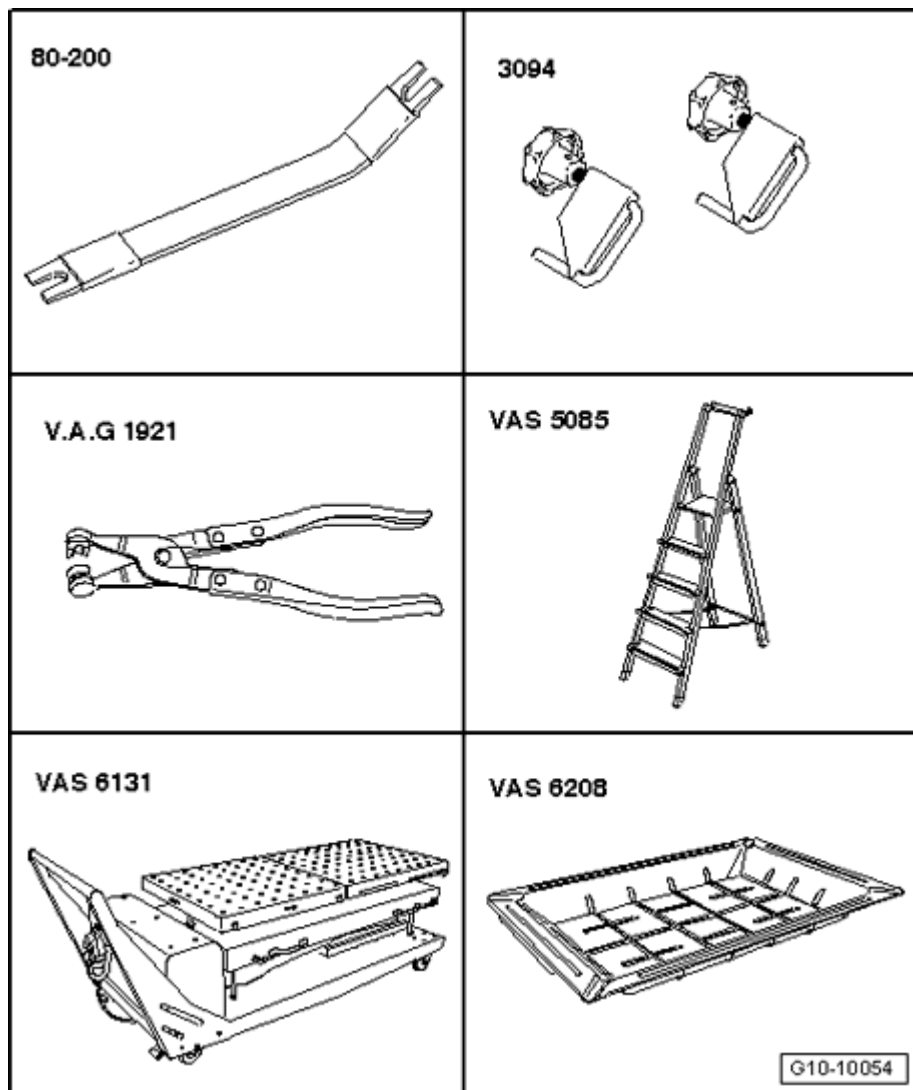


Fig. 101: Identifying Special Tools - Engine, Removing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Pry Lever - Rmv Outside Mirror 80-200
- Hose Clamps Up to 25 mm dia. 3094
- Hose clamp pliers V.A.G 1921
- Step ladder VAS 5085
- Scissor lift platform VAS 6131 A with support set for Audi VAS 6131/10
- Drip tray for workshop crane VAS 6208

Special tools, testers and auxiliary items required

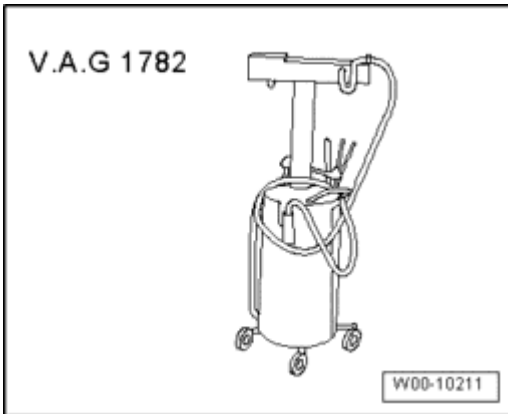


Fig. 102: Identifying Old Oil Collecting And Extracting Device V.A.G 1782
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Old oil collecting and extracting device V.A.G 1782

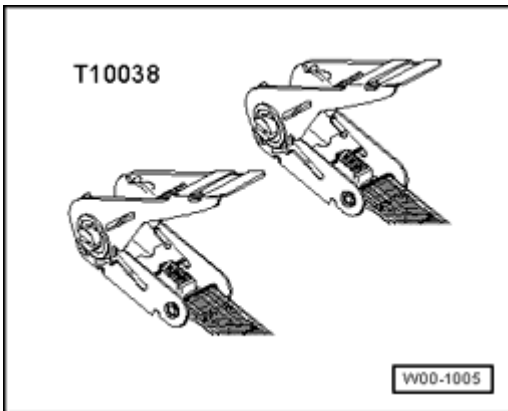


Fig. 103: Identifying Tensioning Strap T10038
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tension strap T10038

Procedure

NOTE:

- With lock carrier installed, engine is removed downward with transmission and subframe.
- All cable ties which are opened or cut open when removing engine, must be replaced in the same position when installing engine.
- Drained coolant must be stored in a clean container for disposal or reuse.

CAUTION: Before removing engine, secure vehicle against tipping over. For this the luggage compartment must be empty.

CAUTION: Observe safety precautions when disconnecting the battery --> 27 - STARTER, GENERATOR, CRUISE CONTROL .

NOTE:

- So that the front wheels can still be turned with the battery disconnected, the battery must only be disconnected with ignition key inserted.
- On vehicles with all-wheel drive, the electrical parking brake must be released before disconnecting the battery, so that the driveshaft can be rotated for removal.

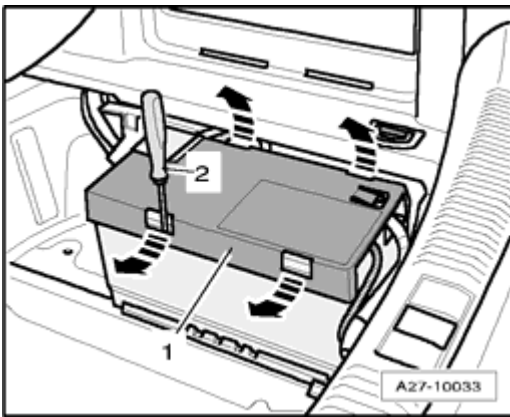


Fig. 104: Releasing Retaining Clips With A Screwdriver And Removing Battery Ground Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove luggage compartment floor trim.
- Release retaining clips - **arrows** - with a screwdriver - **2** - and remove cover - **1** -.

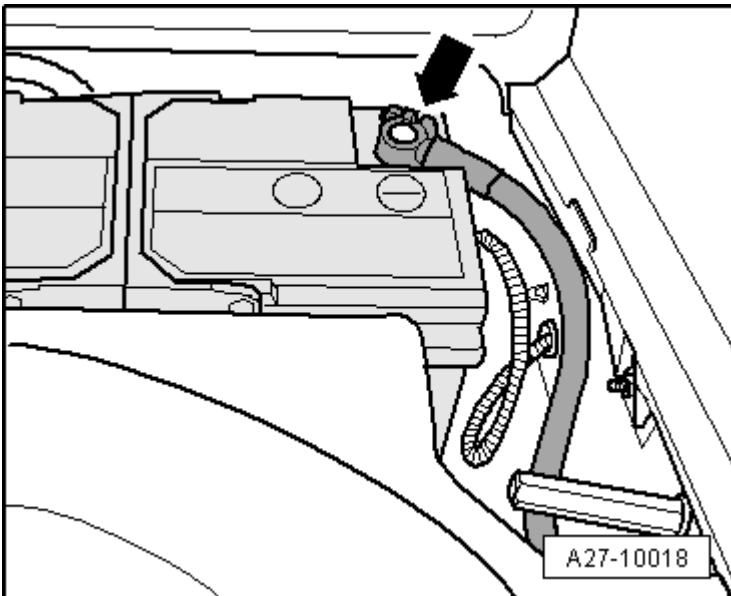


Fig. 105: Disconnecting Ground (GND) Cable At Battery
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect Ground (GND) cable - **arrow** - at battery.

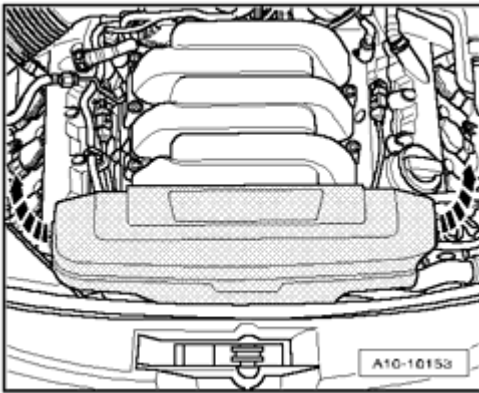


Fig. 106: Identifying Front Engine Cover

Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

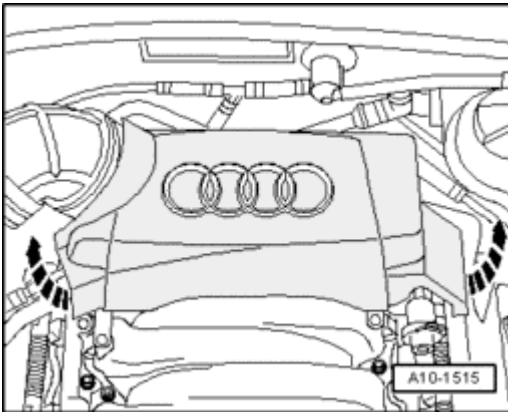


Fig. 107: Removing Rear Engine Cover

Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

CAUTION: Cover cap of expansion tank with rag and open carefully, as hot steam i.e. hot coolant may escape when opening.

- Open cap of coolant expansion tank.

NOTE:

- Before removing ribbed belt, mark the turning direction on it with chalk or a felt tip pen. A reversed direction of rotation can cause damage to the belt under operating conditions.

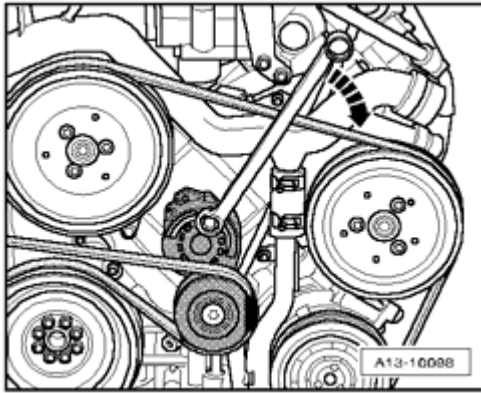


Fig. 108: Pivoting Tensioning Device To Relieve Tension On Ribbed Belt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pivot tensioning device in direction of - **arrow** - to relieve tension on ribbed belt.
- Remove ribbed belt and release tensioning device.
- Remove both front wheels.

NOTE:

- **Secure brake discs using a wheel bolt.**

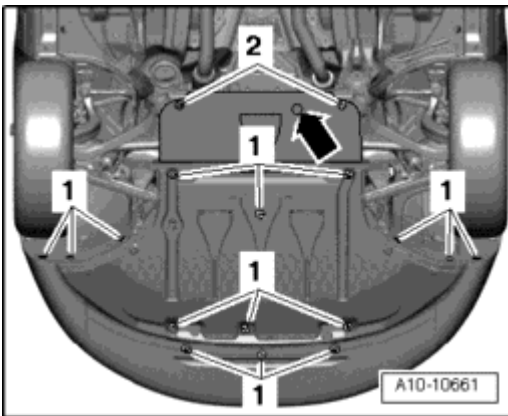


Fig. 109: Identifying Noise Insulation And Mountings
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove noise insulation and mountings - **1, 2** - - **arrow** - where present.

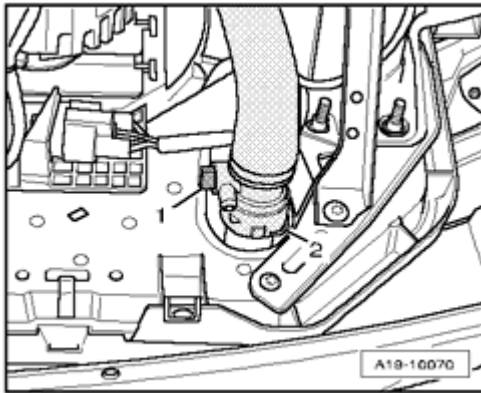


Fig. 110: Identifying Drain Plug & Coolant Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place drip tray for workshop crane VAS 6208 under engine.
- Open drain plug - **1** - and allow coolant to drain.
- Then disconnect coolant hose - **2** - from radiator.

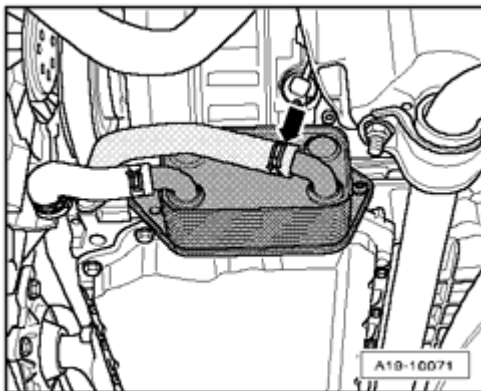


Fig. 111: Disconnecting Coolant Hose From Oil Cooler
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect coolant hose - **arrow** - from oil cooler and drain remaining coolant.
- Then remove coolant hose.

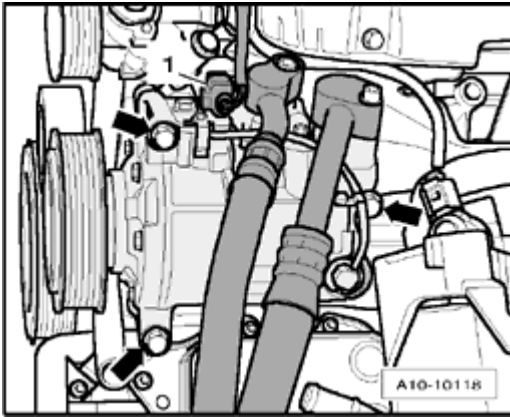


Fig. 112: Disconnecting Connector For Wiring To Air Conditioning Compressor Clutch Solenoid
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Separate connector - 1 - for wiring to air conditioning compressor clutch solenoid.

CAUTION: The air conditioning refrigerant circuit must not be opened.

- Remove air conditioning compressor from bracket - arrows -.

NOTE:

- To prevent damage to the refrigerant lines/hoses, ensure that the lines and hoses are not stretched, kinked or bent.

- Hang up the air conditioning compressor with attached lines on left side of vehicle.

NOTE:

- Place a rag under hydraulic lines to catch escaping hydraulic fluid.

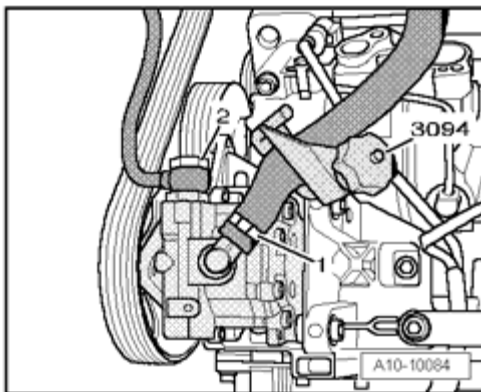


Fig. 113: Identifying Hydraulic Hose, Hydraulic Pressure Line & Hose Clamps 3094
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Clamp off hydraulic hose - 1 - for power steering pump with a Hose Clamps Up to 25 mm dia. 3094.

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- Remove hydraulic hose from power steering pump.
- Remove hydraulic pressure line - **2** - at power steering pump and set it aside on top of the longitudinal member.

Vehicles with auxiliary heater:

- Remove right front wheel housing liner in front area --> **66 - EXTERIOR EQUIPMENT** .

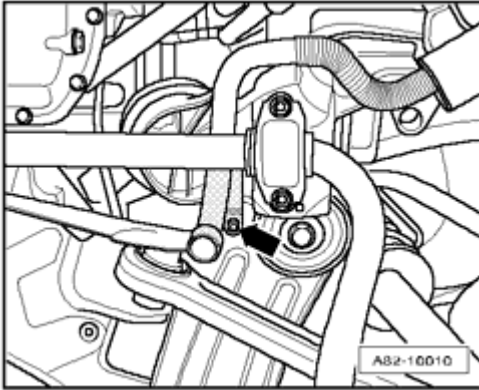


Fig. 114: Removing Bolt For Corrugated Exhaust Pipe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **arrow** - for corrugated exhaust pipe.

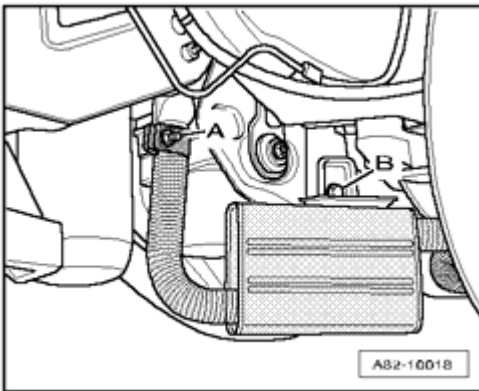


Fig. 115: Loosening Nut On Clamp For Corrugated Exhaust Pipe & Removing Bolt & Muffler With Corrugated Exhaust Pipe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen nut - **A** - on clamp for corrugated exhaust pipe.
- Remove bolt - **B** - and remove muffler with corrugated exhaust pipe.

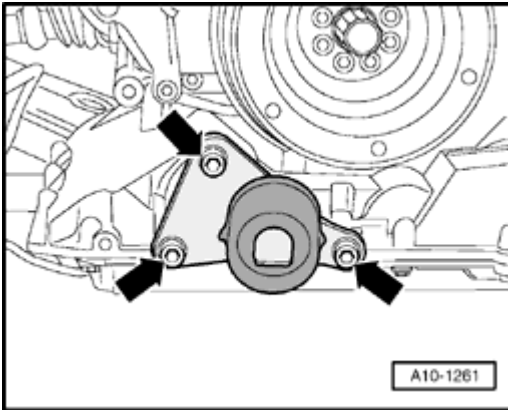


Fig. 116: Removing Bolts And Torque Support From Engine
Courtesy of VOLKSWAGEN UNITED STATES, INC.

All:

- Remove bolts - **arrows** - and remove torque support from engine.

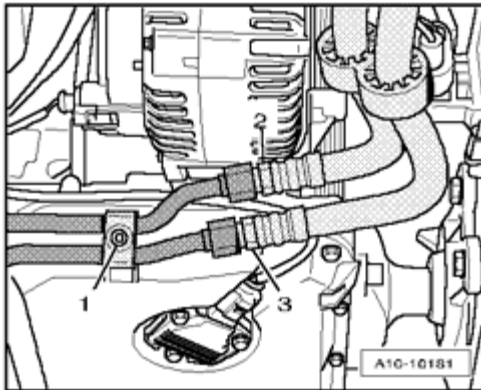


Fig. 117: Loosening Union Nuts And Disconnecting ATF Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Observe the rules of cleanliness for working on automatic transmissions -- > 00 TECHNICAL DATA .**

- Place old oil collecting and extracting device V.A.G 1782 under engine.
- Loosen union nuts - **2** - and - **3** - and disconnect ATF lines.

NOTE:

- **Ignore - 1 - .**

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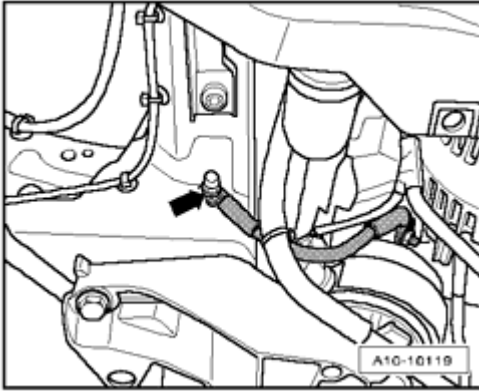


Fig. 118: Removing Ground (GND) Strap From Right Longitudinal Member
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove Ground (GND) cable - **arrow** - from right longitudinal member.

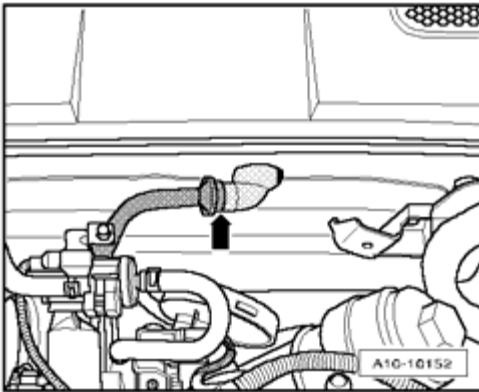


Fig. 119: Removing Vacuum Hose For Brake Booster At Bulkhead
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect brake booster vacuum hose from grommet - **arrow** - on bulkhead.

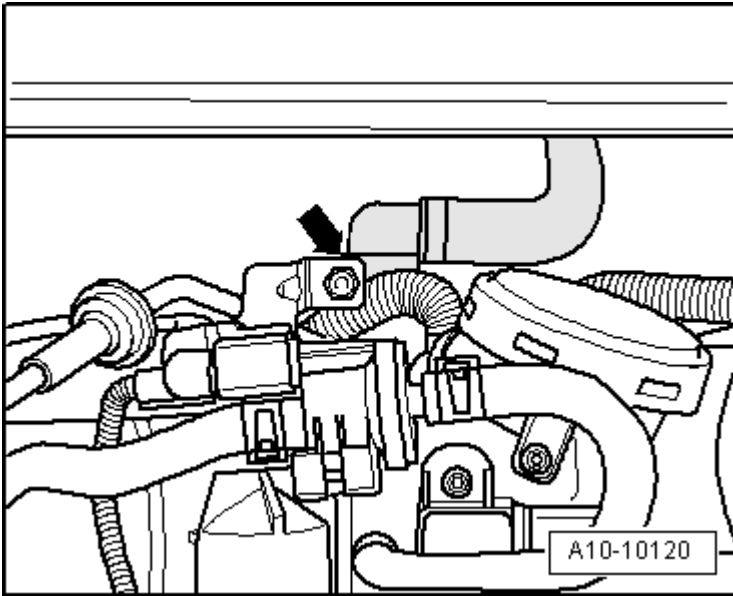


Fig. 120: Removing Coolant Hose To Heater Core On Rear Of Engine
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove coolant hose - **arrow** - to heater core on rear of engine.

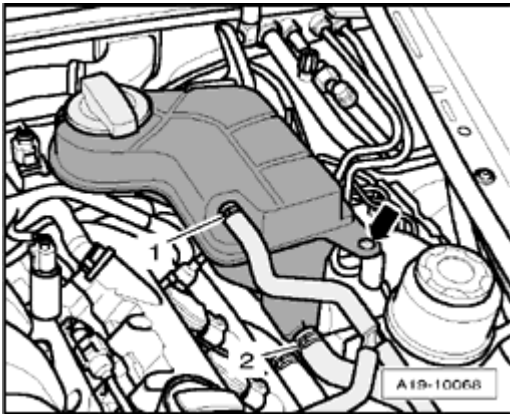


Fig. 121: Removing Coolant Hoses At Coolant Expansion Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove coolant hoses - **1** - and - **2** - at coolant expansion tank.
- Remove coolant expansion tank - **arrow** -.
- Disconnect electrical connection at Engine Coolant Level (ECL) Warning Switch F66 at bottom of coolant expansion tank.

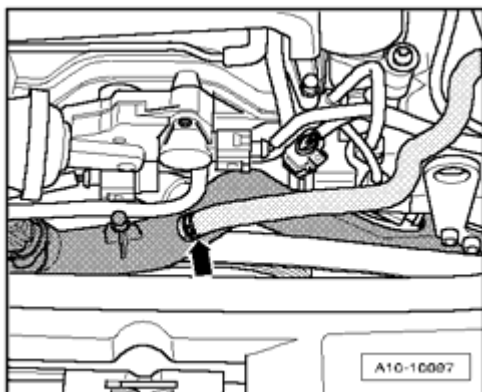


Fig. 122: Removing Coolant Hose From Front Coolant Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove coolant hose - **arrow** - from front coolant line.

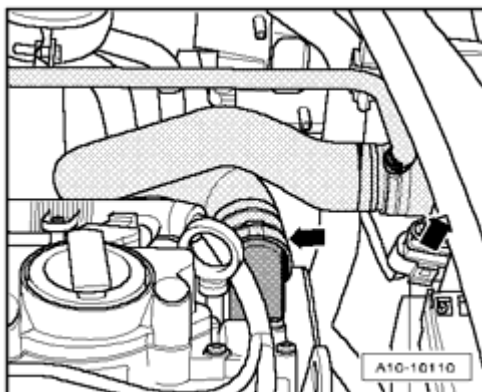


Fig. 123: Removing Left Front Coolant Hose In Engine Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left front coolant hose in engine compartment - **arrows** -.

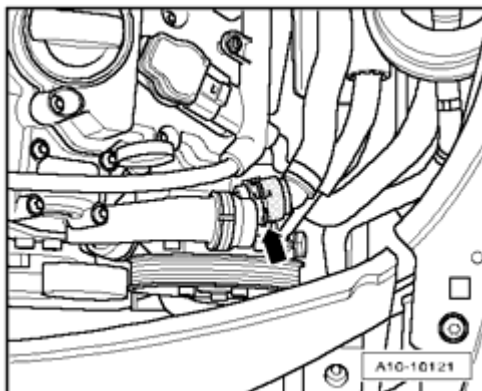


Fig. 124: Removing Coolant Hose From Front Coolant Line

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove coolant hose - **arrow** - from front coolant line.

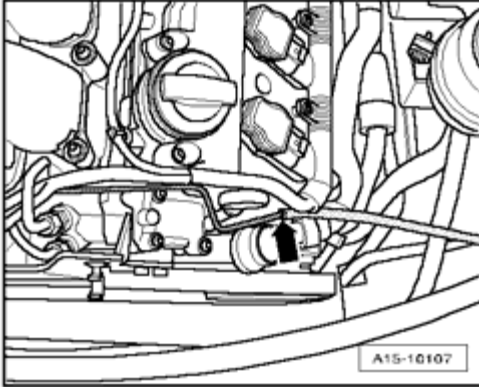


Fig. 125: Disconnecting Vacuum Hose To Leak Detection Pump
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect vacuum hose - **arrow** - to leak detection pump.

CAUTION: Note rules of cleanliness for working on the fuel injection system --> Clean Working Conditions .

CAUTION: Fuel system is under pressure! Before opening the low pressure section of the fuel injection system, wrap a clean rag around the connection and relieve residual pressure by carefully loosening the connection.

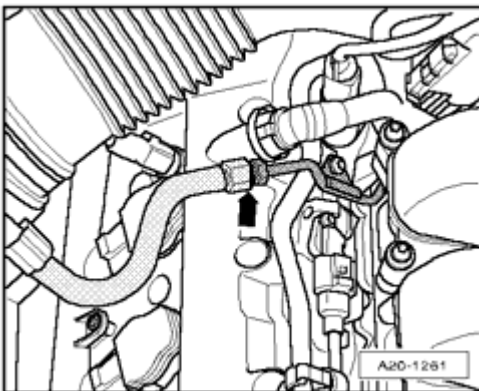


Fig. 126: Separating Fuel Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Separate fuel line - **arrow** - and lay aside.

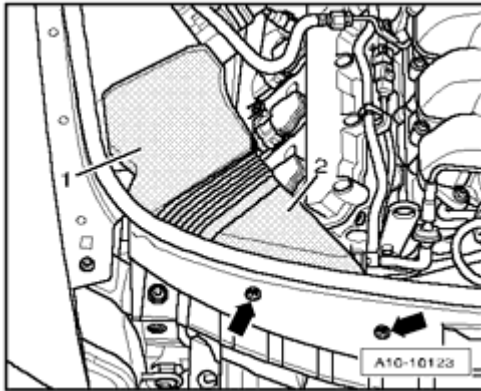


Fig. 127: Removing Air Duct Screws & Air Ducts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** -.
- Remove air duct - **1** - and - **2** -.

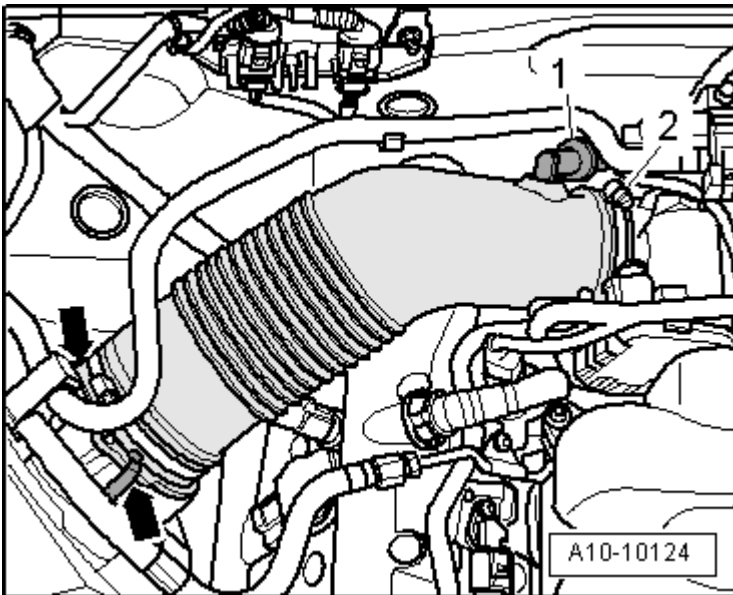


Fig. 128: Disconnecting Check Valve From Connection At Air Duct Hose & Removing Air Duct Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect check valve - **1** - from connection at air duct hose.
- Remove air duct hose, thereby loosening hose clamp - **2** - and opening the clips - **arrows** -.

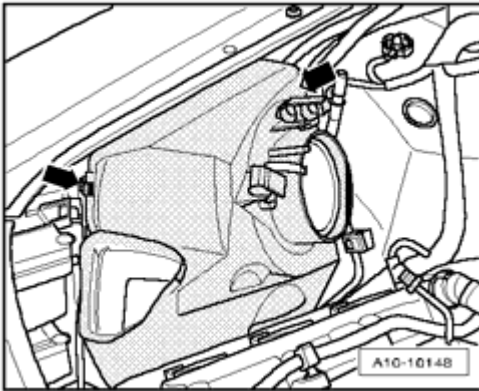


Fig. 129: Opening Clips And Removing Upper Part Of Air Filter Housing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Open clips - **arrows** - and remove upper part of air filter housing.

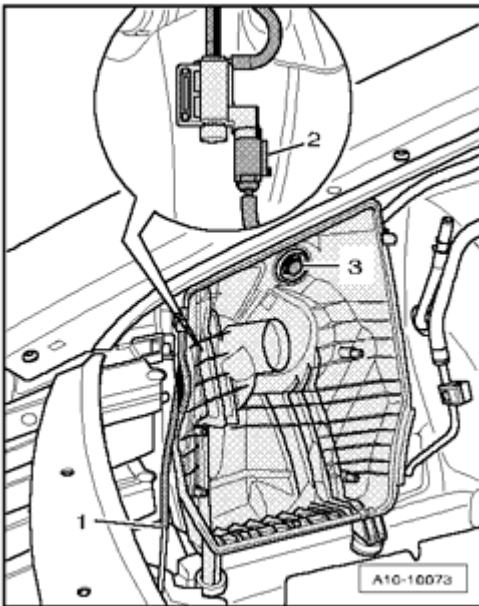


Fig. 130: Identifying Vacuum Line, Spreader Clips & Electrical Connection
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect vacuum line - **1** -.
- Remove pin from spreader clips - **3** -.
- Remove lower part of air filter housing and, on the backside, disconnect electrical connection - **2** - at the intake air switch-over valve N335.

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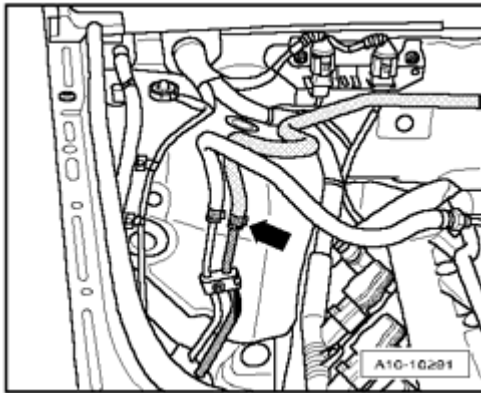


Fig. 131: Disconnecting Vacuum Hose To EVAP Canister
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect vacuum hose - **arrow** - to EVAP canister.

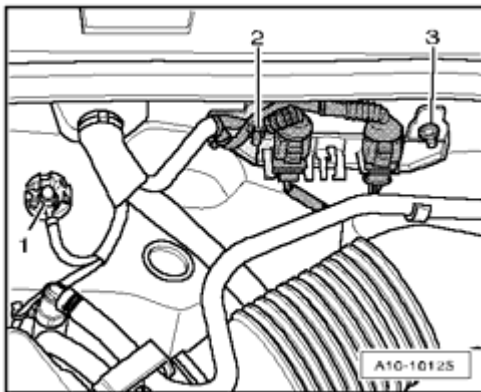


Fig. 132: Removing Nuts & Ground (GND) Wire
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **2** - and - **3** - and remove right bracket for harness connectors from bulkhead.
- Remove Ground (GND) wire - **1** - on right strut tower.

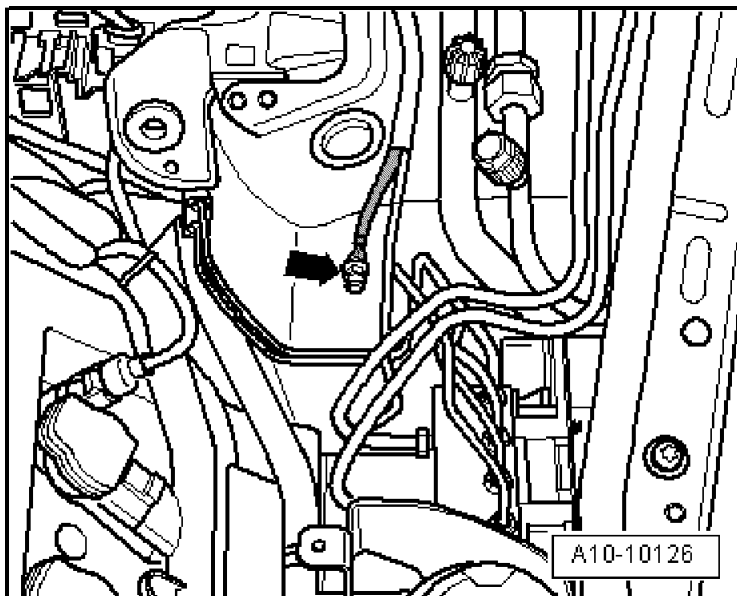


Fig. 133: Removing Ground (GND) Wire On Left Strut Tower
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove Ground (GND) wire - **arrow** - on left strut tower.

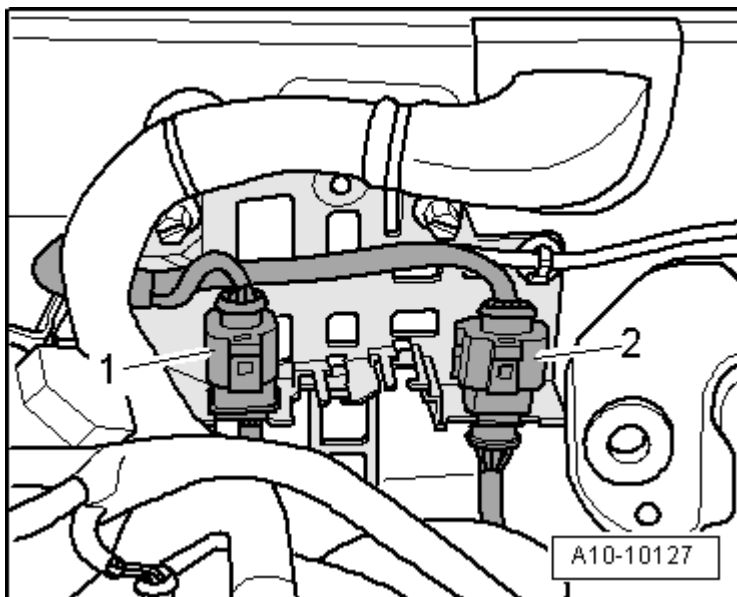


Fig. 134: Disconnecting Electrical Harness Connector For Oxygen Sensor (O2S) 2 Behind Three Way Catalytic Converter (TWC) G131
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left bracket for harness connectors - **1** - and - **2** - from bulkhead.

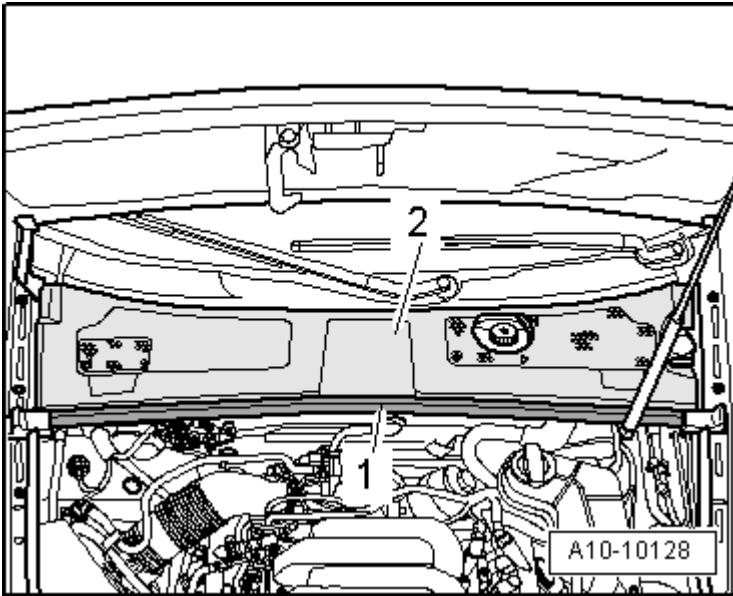


Fig. 135: Removing Rubber Seal For Plenum Chamber Cover & Plenum Chamber Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rubber seal - 1 - for plenum chamber cover.
- Remove plenum chamber cover - 2 -.

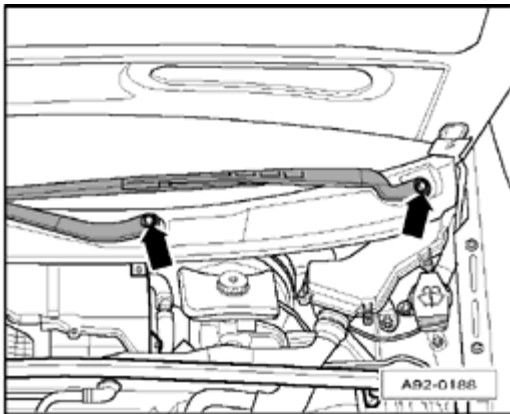


Fig. 136: Identifying Wiper Arm Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pry off caps on the wiper arms using a screwdriver.
- Loosen nuts - **arrows** - by several turns.
- Loosen wiper arms by gently rocking the wiper arm. Remove nuts and wiper arms.

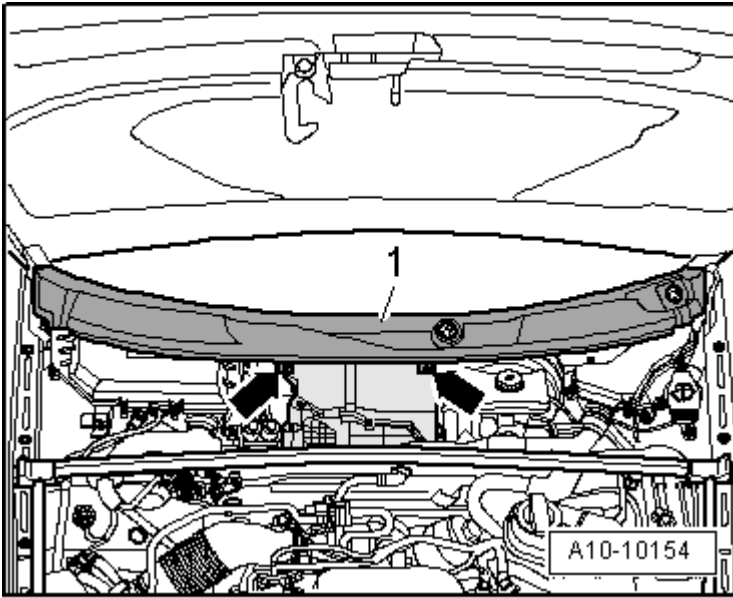


Fig. 137: Removing Bolts For Cowl Grill

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - for cowl grill - **1** -.

CAUTION: To prevent the cowl grille - **1** - from tearing when removing, coat transition between windshield and cowl grille with a soapy solution and pull grille up vertically out of fastening strip beginning at edge of window.

- Pull cowl grill off from windshield.

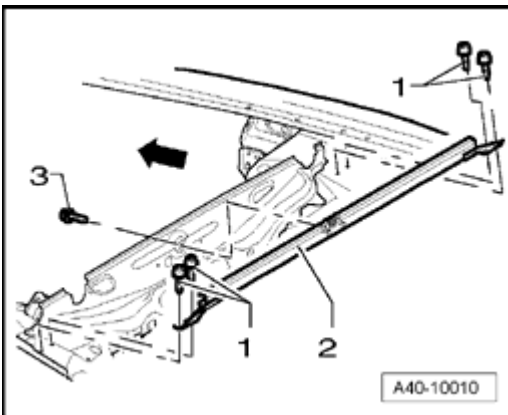


Fig. 138: Removing Bolts And Strut Tower Brace

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If equipped, remove bolts - **1** - and - **3** - and remove strut tower brace - **2** -.

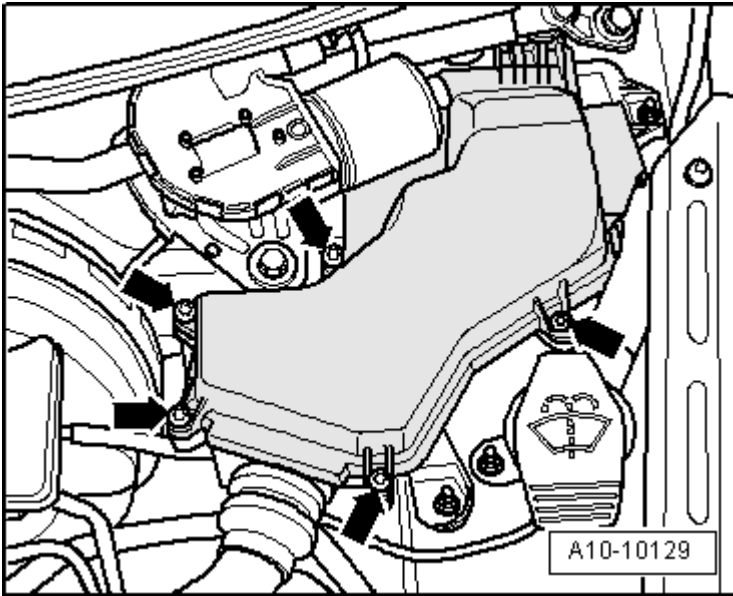


Fig. 139: Removing Bolts And Cover Form E-Box At Left In Engine Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - and remove cover form E-box at left in engine compartment.

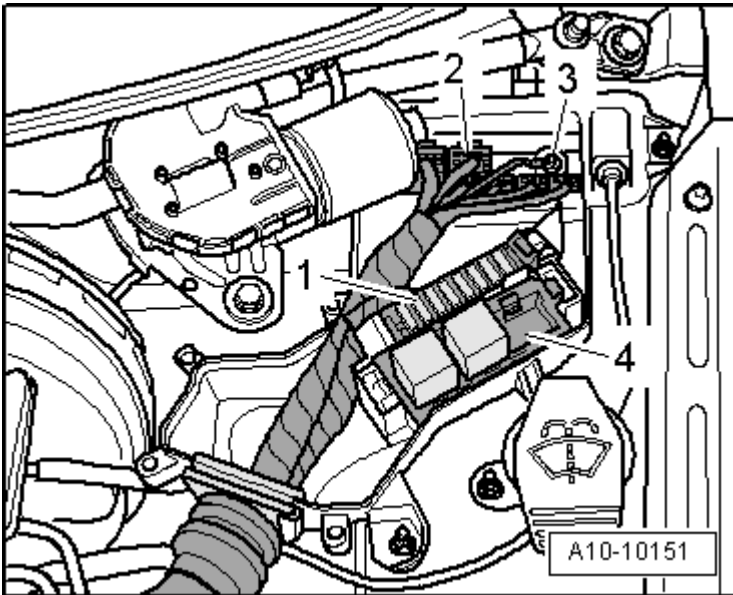


Fig. 140: Identifying Fuse Holder, 3-Socket Relay Carrier, Electrical Wire Connection & Electrical Connections
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release retaining tabs and pull fuse holder - **1** - and 3-socket relay carrier - **4** - upward and off.
- Remove electrical wire connection - **3** -.
- Disconnect all electrical connections - **2** - at rear on the connector strip.

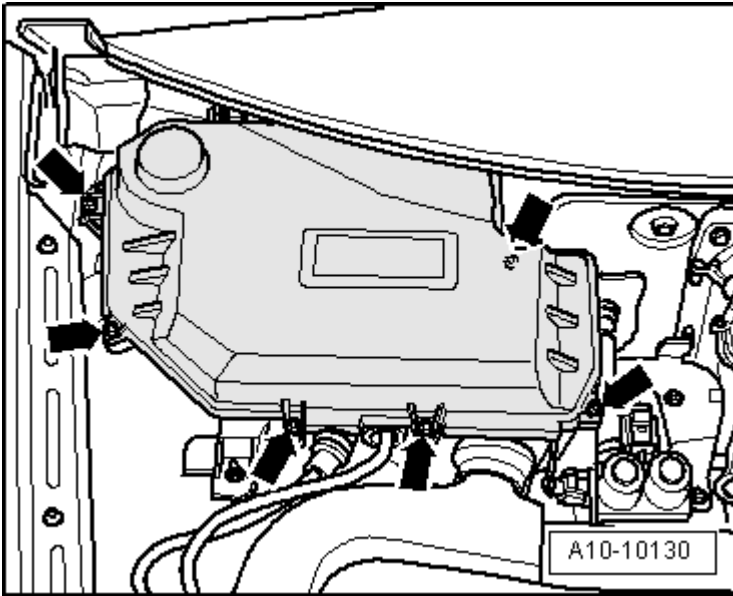


Fig. 141: Removing Bolts And Cover For E-Box At Right In Engine Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - and remove cover for E-box at right in engine compartment.

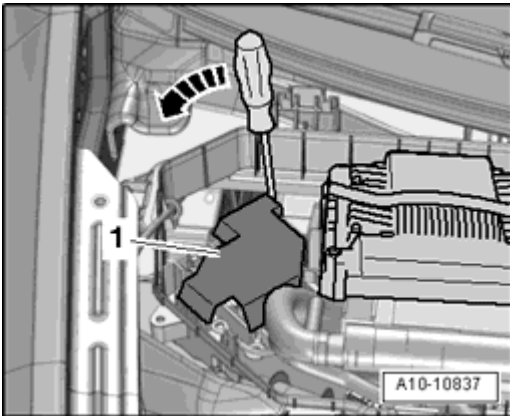


Fig. 142: Opening Cover Using Screwdriver
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Where present, open cover - **1** - using a screwdriver - **arrow** - and remove.

CAUTION: The heater pump valve unit (left of E-box) becomes very hot during operation - Risk of burning!

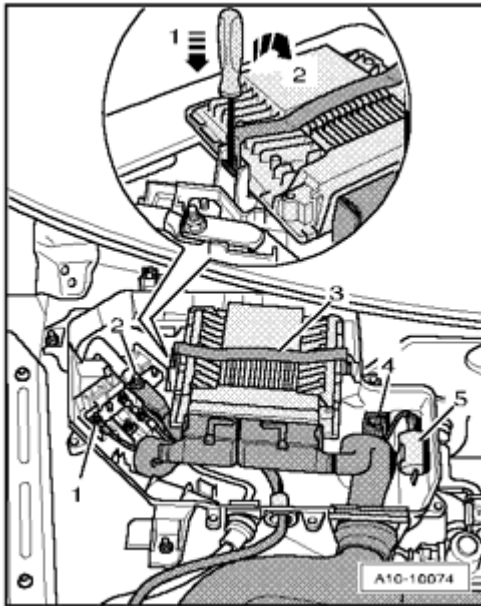


Fig. 143: Prying Off Retaining Clip With Screwdriver And Removing ECM From E-Box
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully pry off retaining clip - 3 - with a screwdriver - **arrows 1 and 2** - and remove ECM from the E-box.

NOTE:

- **Engine Control Module (ECM) remains connected at wiring harness.**

- Unclip suppression capacitor - 5 - from bracket in E-box.
- Disconnect electrical connection - 4 - at rear on the connector strip.
- Remove electrical wiring connections - 1 - and - 2 -.

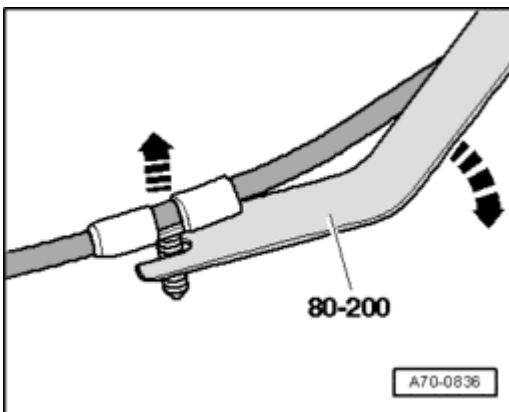


Fig. 144: Using Pry Lever 80 - 200 To Remove Instrument Panel Central Tube
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Free electrical wiring up to generator using Pry Lever - Rmv Outside Mirror 80-200.

- Set both wiring harnesses on engine and secure Engine Control Module (ECM) against falling down.

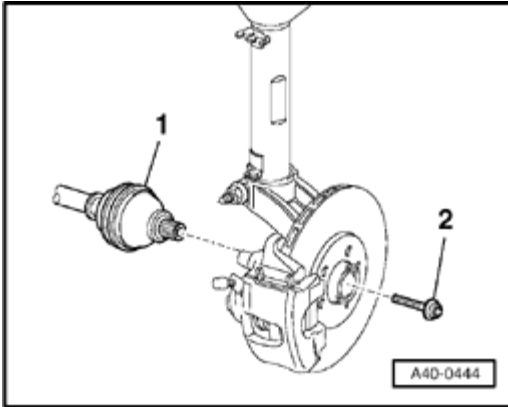


Fig. 145: Removing Collar Bolt At Left/Right Drive Axles
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Have a second technician press brake pedal.

CAUTION: To loosen collar bolt for drive axle, the wheel bearing must not be under load (vehicle must not be standing on its wheels).

- Remove collar bolt - 2 - at left and right drive axles - 1 -.

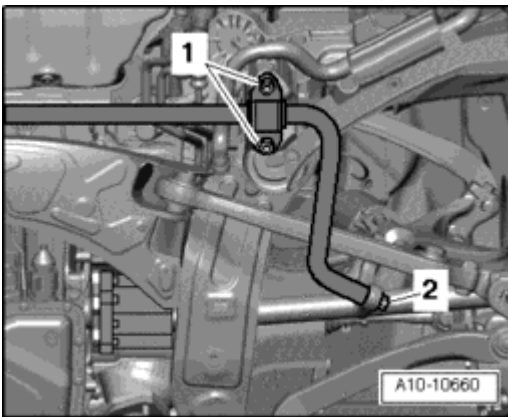


Fig. 146: Removing Left/Right Nuts, Bolts & Stabilizer Bar
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Evenly remove left and right nuts - 1 -.
- Remove left and right bolts - 2 - and remove stabilizer bar.

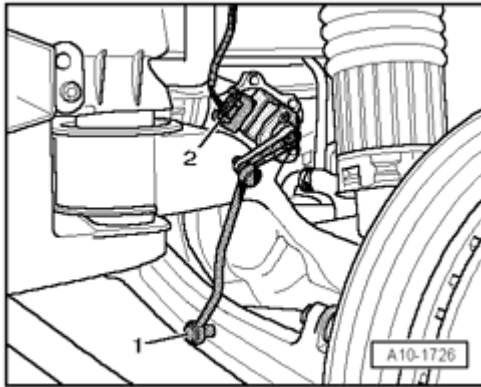


Fig. 147: Disconnecting Electrical Harness Connector At Level Control System Sensor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - 2 - at Level Control System Sensor.
- Disconnect connecting link - 1 - at control arm.

CAUTION: Risk of damaging axle joints on upper control arms.

- Support wheel bearing housing.

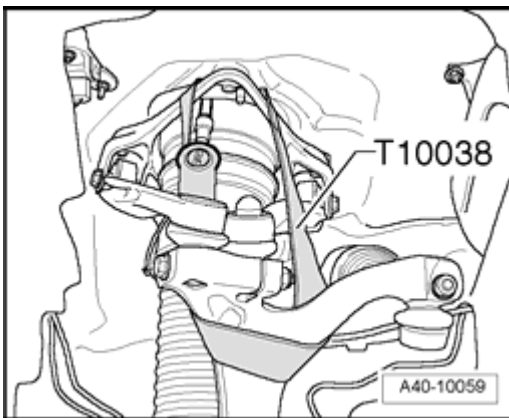


Fig. 148: Disconnecting Connecting Link At Control Arm
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tie up wheel bearing housing with Tension Strap T10038 as shown in illustration.

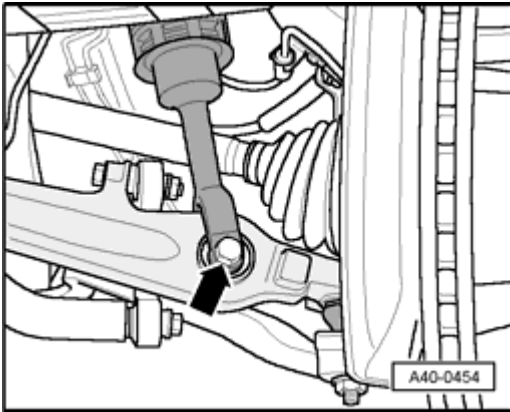


Fig. 149: Removing Suspension Strut From Control Arm
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove suspension strut from control arm - **arrow** -.

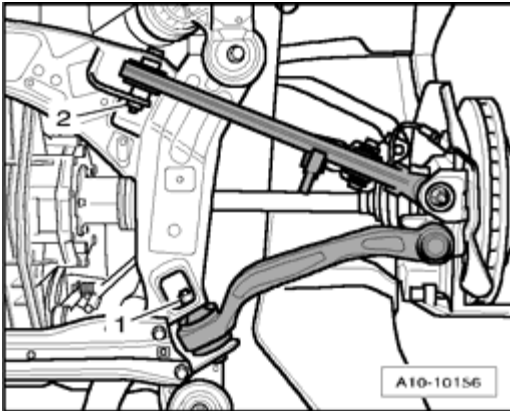


Fig. 150: Removing Guide Control Arm And Control Arm On Subframe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove guide control arm - **1** - and control arm - **2** - on subframe.

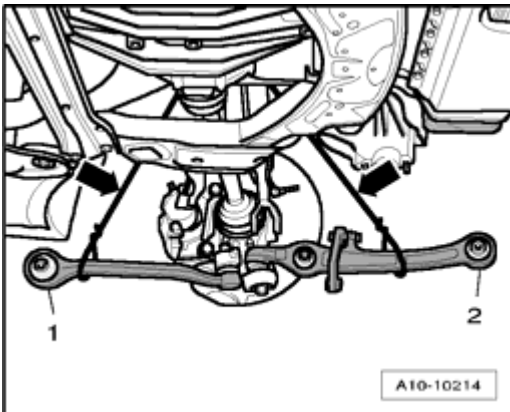


Fig. 151: Swinging Guide Control Arm And Control Arm Outward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Swing guide control arm - 1 - and control arm - 2 - outward.

CAUTION: Guide control arm and control arm must not hang free. Tie up both control arms on wheel bearing housing - arrows - as shown in illustration.

- Repeat work procedure on opposite side of the vehicle.
- Remove drive axle from transmission flanged shaft.

CAUTION: Do not damage brake hose!

- Swing wheel bearing housing outward and remove drive axle.
- Repeat work procedure on opposite side of the vehicle.

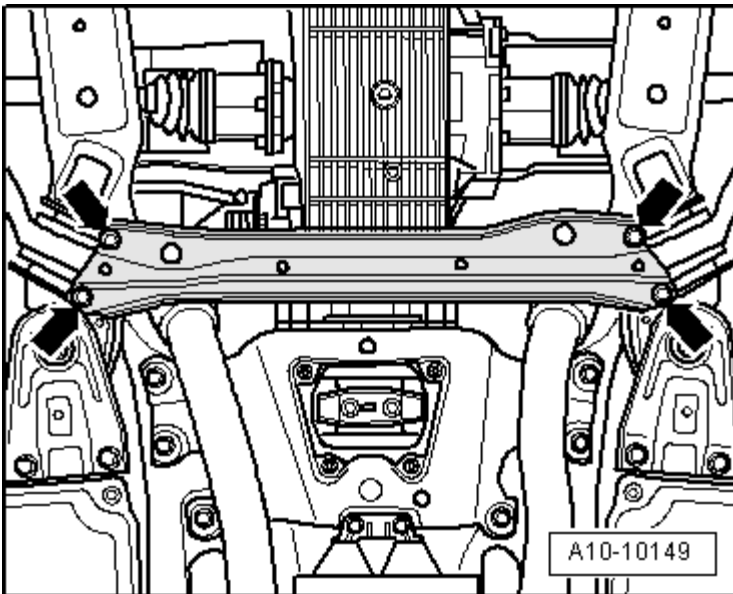


Fig. 152: Removing Subframe Transverse Beam
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove subframe transverse beam - **arrows** -.

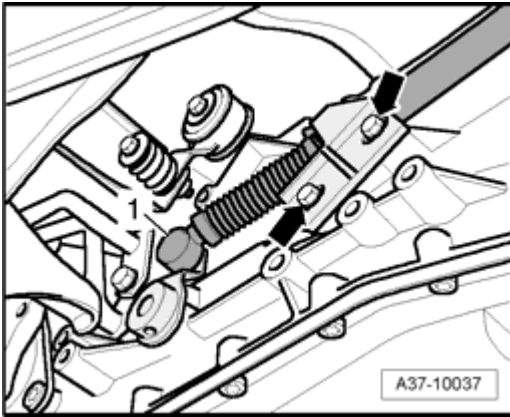


Fig. 153: Pressing Ball Socket Of Selector Lever Cable From Selector Shaft Lever & Removing Bracket On Transmission

Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- Mark the installation position of bracket for selector lever cable using a felt-tip marker.

- Press ball socket - 1 - of selector lever cable from selector shaft lever.
- Remove bracket on transmission - **arrows** -.
- Move selector lever cable clear.

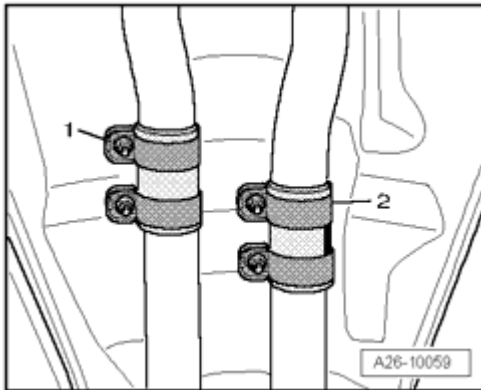


Fig. 154: Loosening Clamping Sleeves

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen clamping sleeves - 1 - and - 2 -.

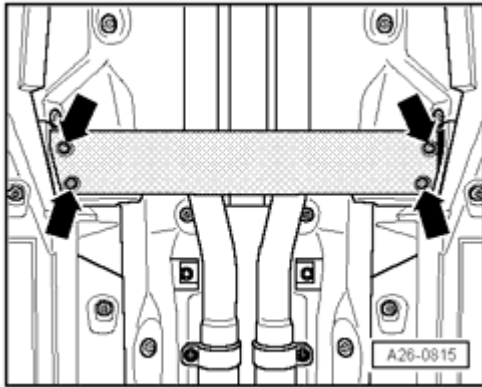


Fig. 155: Removing Front Transverse Beam
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove front transverse beam - **arrows** -.

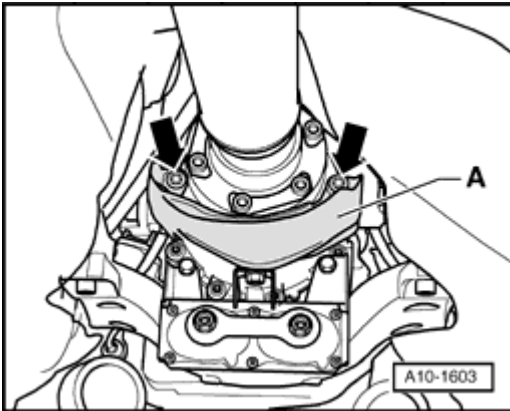
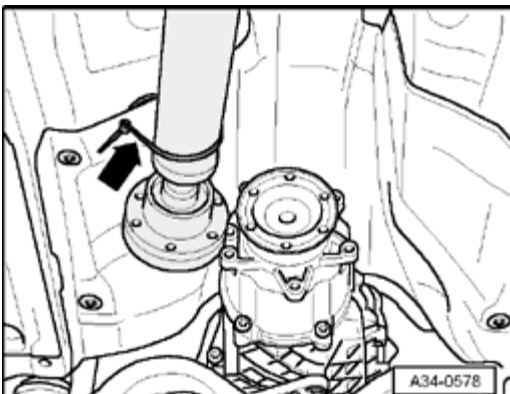


Fig. 156: Removing/Installing Heat Shield For Driveshaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove heat shield - **A** - for driveshaft - **arrows** -.
- Remove bolts at transmission/driveshaft flange.
- Push driveshaft together with rear final drive. The constant velocity (CV) joints can move axially.



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Fig. 157: Drive Shaft Tied To Side, Onto Heat Shield

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tie driveshaft up and to the side against heat shield - **arrow** -.

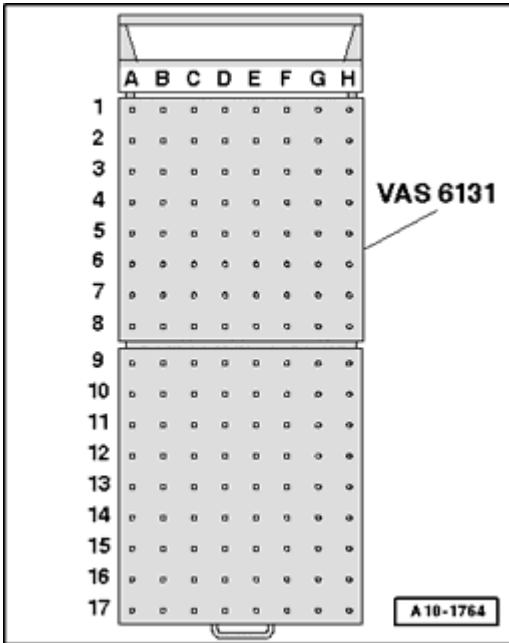


Fig. 158: Identifying Scissor Lift Platform VAS 6131

Courtesy of VOLKSWAGEN UNITED STATES, INC.

Prepare scissor lift platform:

- Equip scissor lift platform VAS 6131 A with support set for Audi VAS 6131/10 , VAS 6131/11 and VAS 6131/12 as follows:

Platform coordinates	Parts of support set for Audi VAS 6131/10 , VAS 6131/11 and VAS 6131/12			
B5	/10-1	/10-4	/10-5	/10-11
F5	/10-1	/10-4	/10-5	/10-12
B11	/10-1	/10-2	/10-5	/10-8
G11	/10-1	/10-2	/10-5	/10-8
E9	/10-1	/10-3	/10-5	/11-3
D10	/10-1	/10-2	/10-5	/12-1
G14	/10-1	/10-4	/10-5	/10-13
D16	/10-1	/10-3	/10-5	/10-6

- Install support elements first tightly by hand on scissor lift platform.
- Place scissor lift platform VAS 6131 A in horizontal position.

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- Note bubble level (sight glass) on support platform.
- Drive scissor lift platform VAS 6131 A under engine/transmission subassembly.

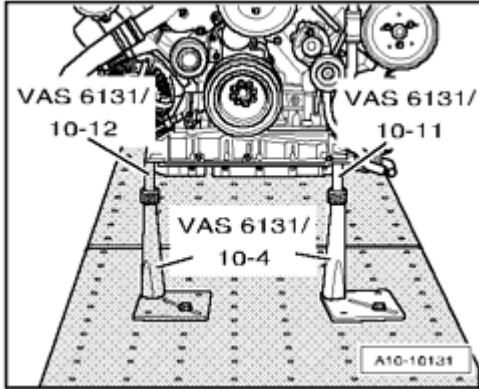


Fig. 159: Positioning Support Elements From VAS 6131/10 At Front On Engine
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position support elements from VAS 6131/10 at front on engine as shown in illustration.

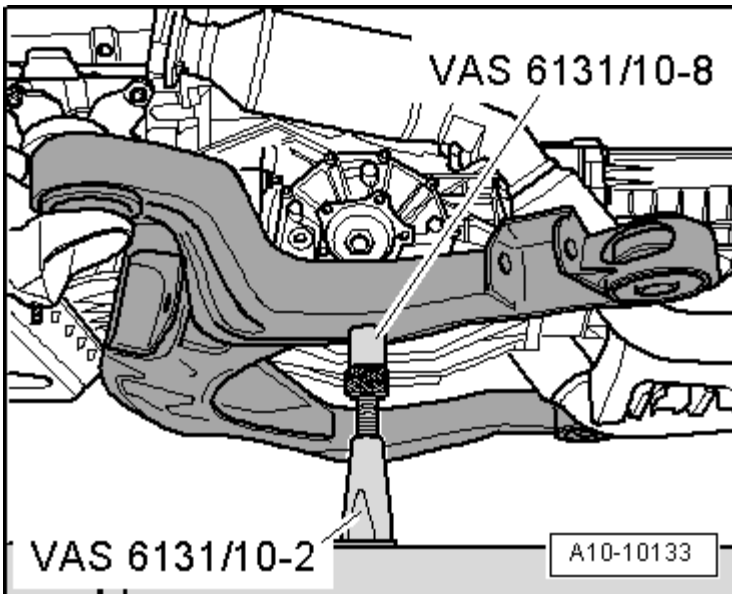


Fig. 160: Positioning Support Elements From VAS 6131/10 At Left/Right On Subframe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position support elements from VAS 6131/10 at left and right on subframe as shown in illustration.

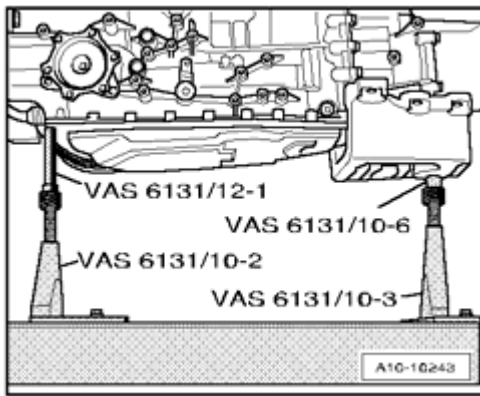


Fig. 161: Positioning Support Elements From VAS 6131/10 And VAS 6131/12 At Left On Transmission And Tunnel Cross Member

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position support elements from VAS 6131/10 and VAS 6131/12 at left on transmission and tunnel cross member as shown in illustration.

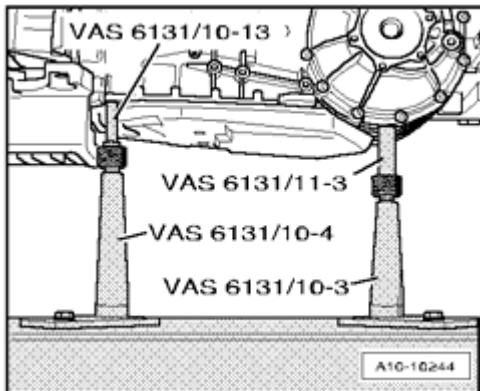


Fig. 162: Positioning Support Elements From VAS 6131/10 And VAS 6131/11 At Right On Transmission

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position support elements from VAS 6131/10 and VAS 6131/11 at right on transmission as shown in illustration.
- Twist all spindles of support elements upward far enough until all support pins make contact at support points.
- Tighten base plates for support elements to 20 Nm on scissor lift platform VAS 6131 A.

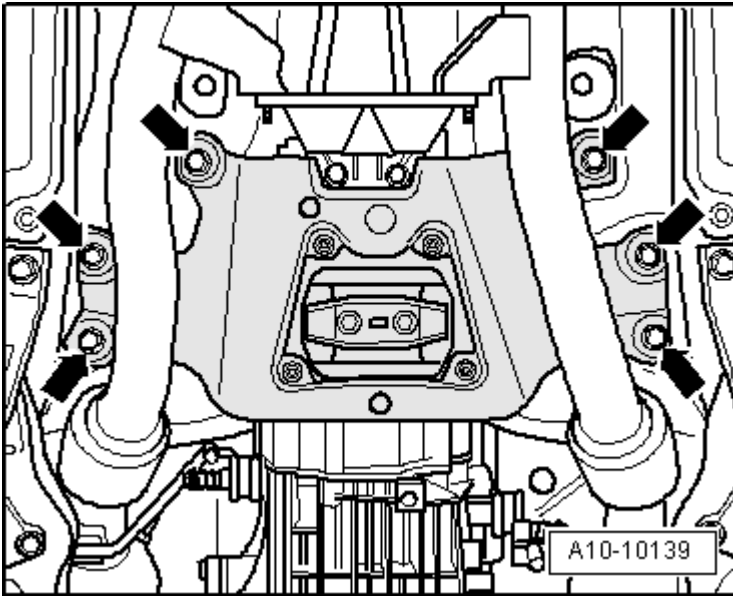


Fig. 163: Removing Bolts On Tunnel Cross Member
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - on tunnel cross member.

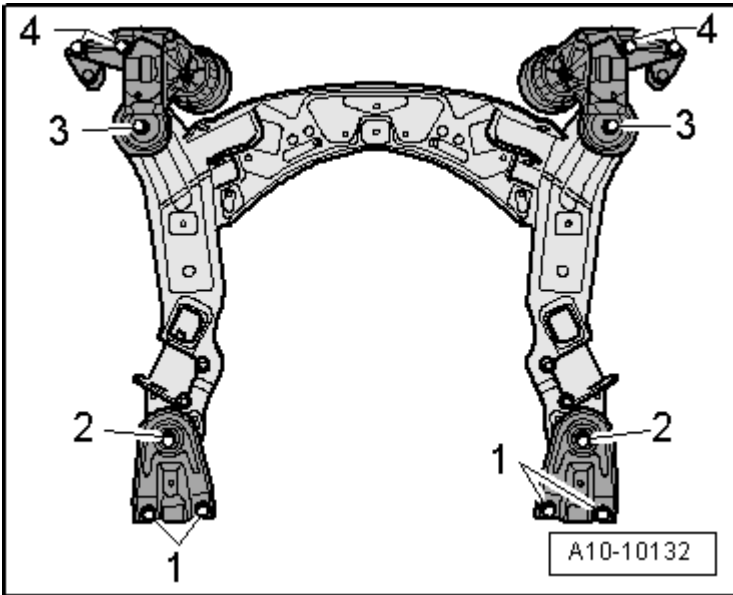


Fig. 164: Bolts Removal Sequence
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1** -.
- Mark installation position of subframe and of both engine mount consoles to longmembers using a felt-tip marker.
- Remove bolts - **2** - , - **3** - and - **4** - in diagonal sequence and in stages.

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NOTE:

- **Verify that all hoses and lines between engine, transmission, subframe and body have been disconnected.**
 - **While lowering, carefully guide engine/transmission subassembly with subframe out of engine compartment in order to prevent damage.**
- Slowly lower engine/transmission subassembly downward.
 - Remove scissor lift table VAS 6131 A under vehicle.

Engine and Automatic Transmission 09L, Separating

Engine and Automatic Transmission 09L, Separating

Special tools, testers and auxiliary items required

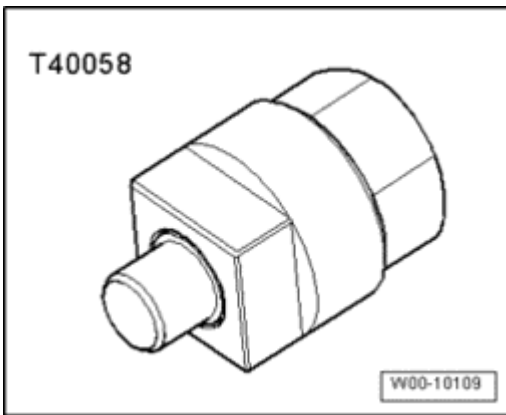


Fig. 165: Adapter T40058

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Adapter T40058

Procedure

- Engine/transmission assembly removed and placed on Scissor Lift Table VAS 6131 A.

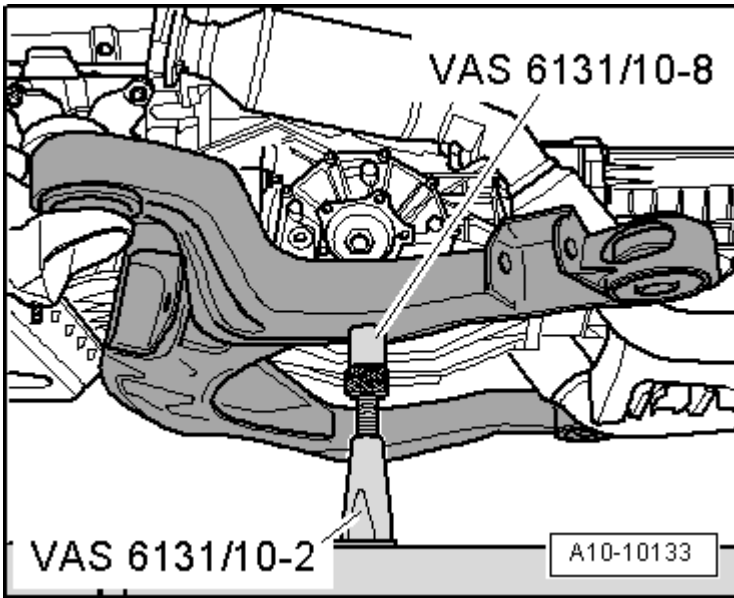


Fig. 166: Positioning Support Elements From VAS 6131/10 At Left/Right On Subframe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Twist spindles of support elements at left and right at subframe completely downward.
- Remove support pins from spindles.
- Remove subframe to the side.

NOTE:

- **A second technician is required to remove subframe.**

- Remove both base plates of the subframe support elements on scissor lift table VAS 6131 A.

NOTE:

- **Support points for front of engine, transmission and tunnel cross member remain unchanged.**

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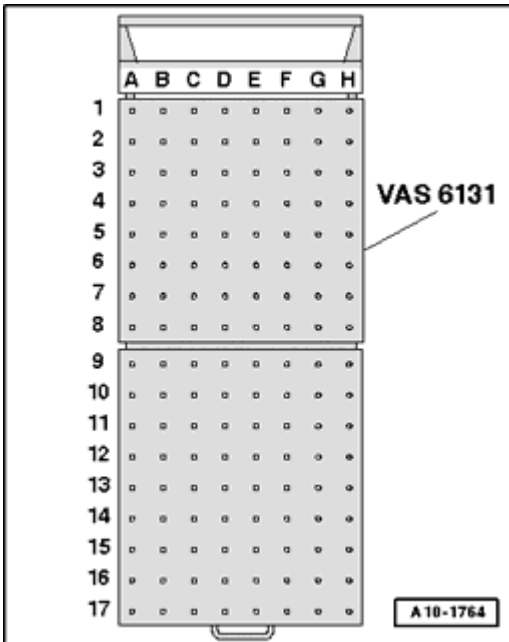


Fig. 167: Identifying Scissor Lift Platform VAS 6131
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Equip scissor lift platform VAS 6131 A with support set for Audi VAS 6131/10 , VAS 6131/11 and VAS 6131/12 as follows:

Platform coordinates	Parts of support set for Audi VAS 6131/10 , VAS 6131/11 and VAS 6131/12			
B5 1)	/10-1	/10-4	/10-5	/10-11
F5 1)	/10-1	/10-4	/10-5	/10-12
B8	/10-1	/10-4	/10-5	/10-11
G8	/10-1	/10-4	/10-5	/10-10
E9 1)	/10-1	/10-3	/10-5	/11-3
D10 1)	/10-1	/10-4	/10-5	/12-1
G14 1)	/10-1	/10-4	/10-5	/10-13
D16 1)	/10-1	/10-3	/10-5	/10-6
1) The support elements remain unchanged.				

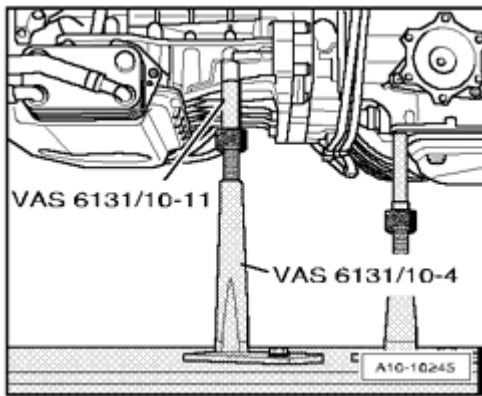


Fig. 168: Positioning Support Elements From VAS 6131/10 At Left On Engine
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position support elements from VAS 6131/10 at left on engine as shown in illustration.

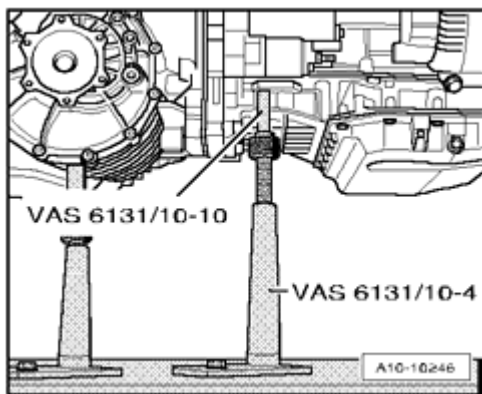


Fig. 169: Removing Base Plate For Right Support Element On Scissor Lift Platform VAS 6131 A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position support elements from VAS 6131/10 at right on engine as shown in illustration.
- Twist spindles of attachments upward far enough until all support pins make contact at support points.
- Tighten base plates for support elements to 20 Nm on scissor lift platform VAS 6131 A.

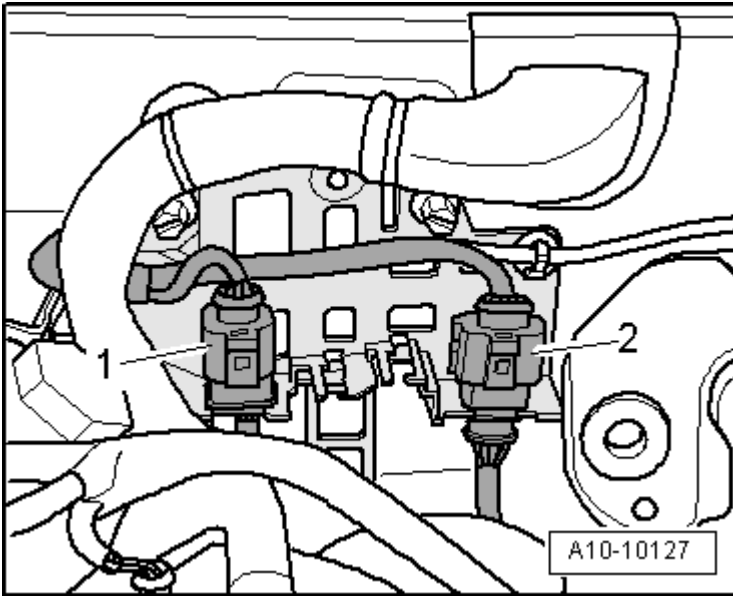


Fig. 170: Disconnecting Electrical Harness Connector For Oxygen Sensor (O2S) 2 Behind Three Way Catalytic Converter (TWC) G131

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - 2 - for Oxygen Sensor (O2S) 2 Behind Three Way Catalytic Converter (TWC) G131 and free up wire.

NOTE:

- In the illustration, the electrical harness connector is depicted as installed.
- Ignore - 1 -.

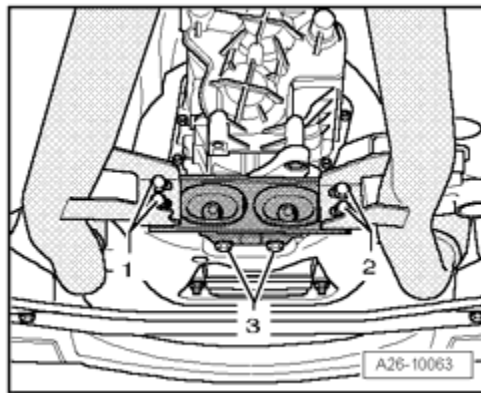


Fig. 171: Removing/Installing Mounting Bolts For Front Exhaust Pipes
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- Do not bend the flex joint in front of the exhaust pipe more than 10 or it could be damaged.
-
- Remove bolts - 1 - at rear bracket for exhaust system

NOTE:

- Ignore - 2 - and - 3 -.

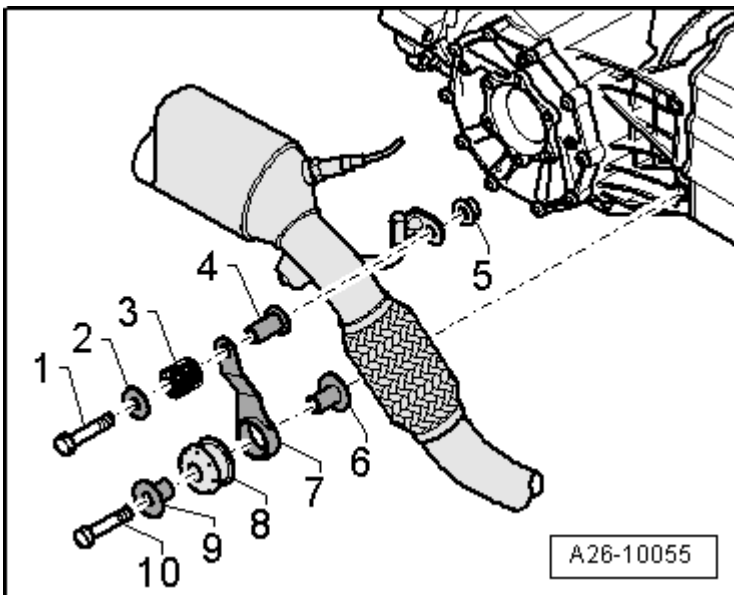


Fig. 172: Removing Bolt At Left Bracket For Front Exhaust Pipe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - 1 - at left bracket for front exhaust pipe.

NOTE:

- Disregard the other items.

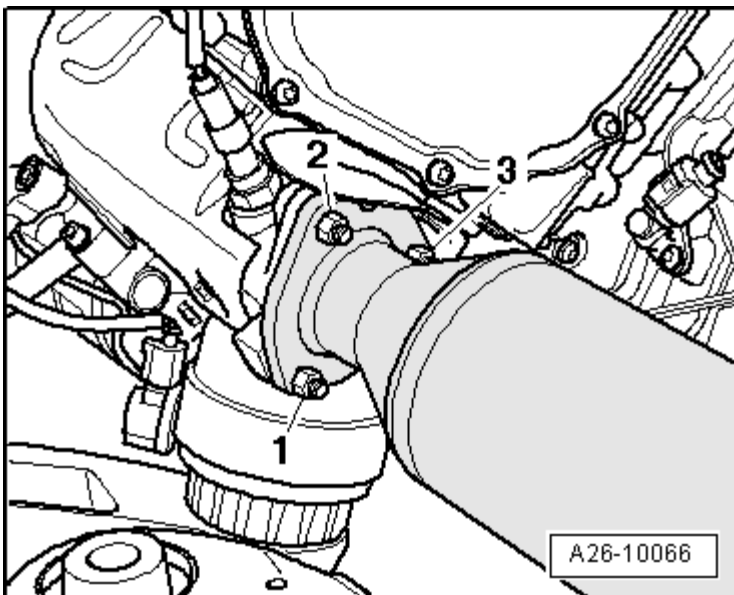


Fig. 173: Removing Nuts & Left Front Exhaust Pipe With Catalytic Converter
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **1 to 3** -.
- Remove left front exhaust pipe with catalytic converter.

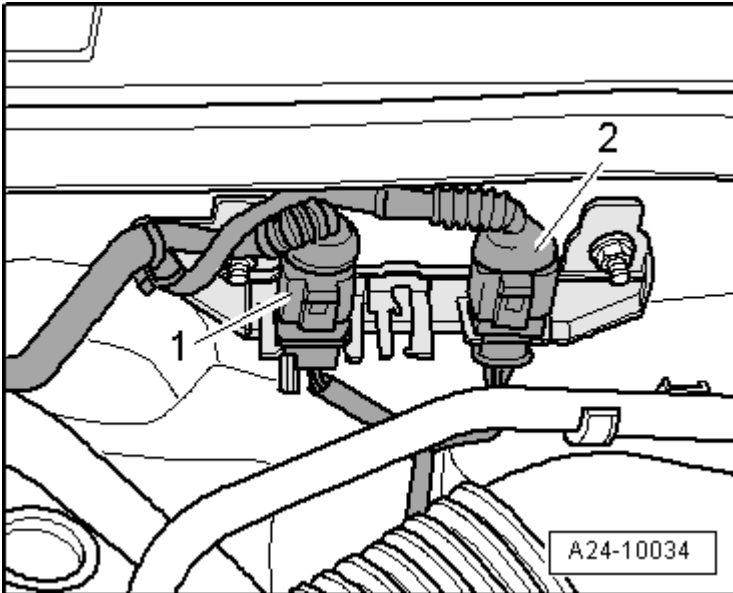


Fig. 174: Disconnecting Electrical Harness Connector For Oxygen Sensor (O2S) Behind Three Way Catalytic Converter (TWC) G130

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **2** - for Oxygen Sensor (O2S) Behind Three Way Catalytic Converter (TWC) G130 and free up wire.

NOTE:

- In the illustration, the electrical harness connector is depicted as installed.
- Ignore - **1** -.

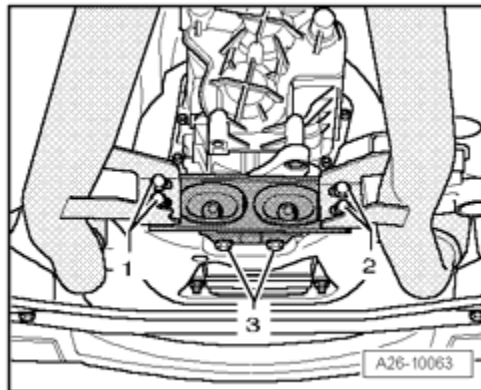


Fig. 175: Removing/Installing Mounting Bolts For Front Exhaust Pipes
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Do not bend the flex joint in front of the exhaust pipe more than 10 or it could be damaged.

- Remove bolts - 2 - at rear bracket for exhaust system.

NOTE:

- Ignore - 1 - and - 3 -.

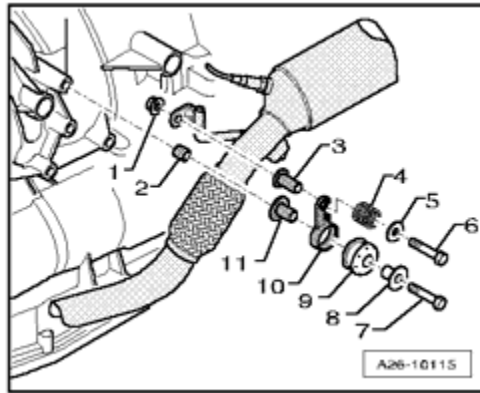


Fig. 176: Removing Bolt At Right Bracket For Front Exhaust Pipe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - 6 - at right bracket for front exhaust pipe.

NOTE:

- Disregard the other items.

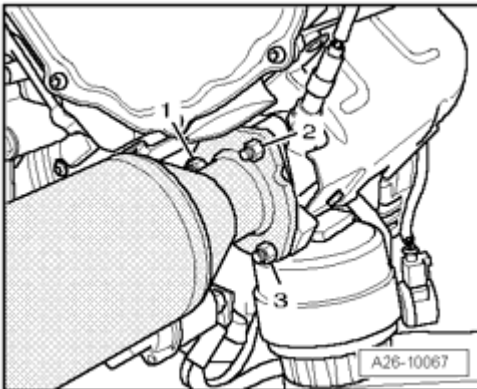


Fig. 177: Removing Nuts & Right Front Exhaust Pipe With Catalytic Converter
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - 1 to 3 -.
- Remove right front exhaust pipe with catalytic converter.

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- Observe the rules of cleanliness for working on automatic transmissions --
> 00 TECHNICAL DATA .

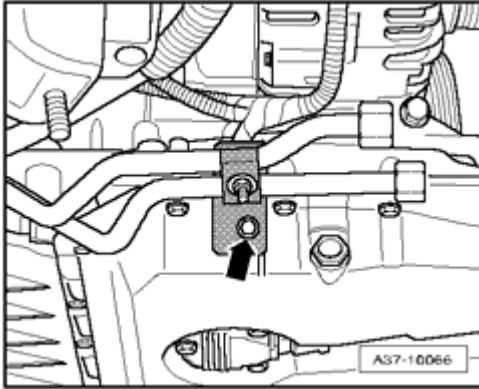


Fig. 178: Removing Bracket For ATF Lines On Oil Pan
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bracket - **arrow** - for ATF lines on oil pan.

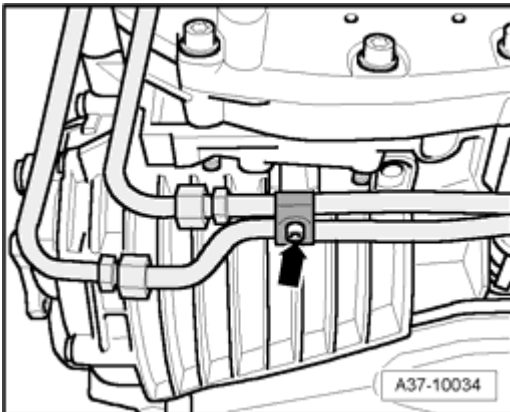


Fig. 179: Removing Bracket For ATF Lines At Bottom On Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bracket - **arrow** - for ATF lines at bottom on transmission.

NOTE:

- Place a rag under the ATF lines to catch escaping ATF.

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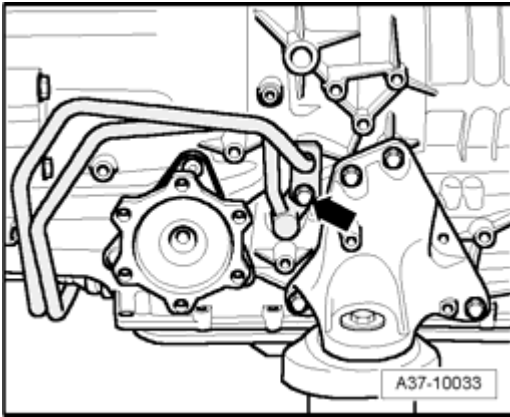


Fig. 180: Removing Bolt & Disconnecting ATF Lines From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

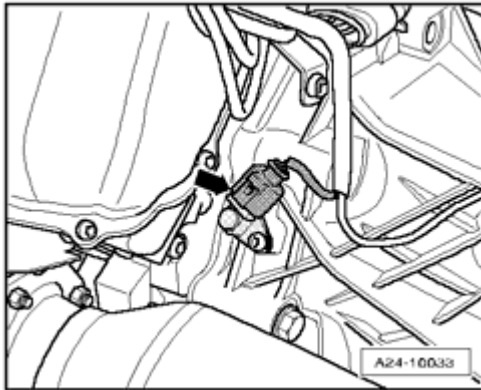


Fig. 181: Disconnecting Electrical Connector For Engine Speed (RPM) Sensor G28
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical connector - **arrow** - on Engine Speed (RPM) Sensor G28.

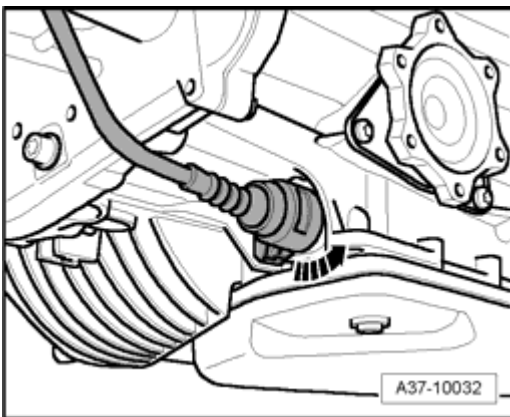


Fig. 182: Disconnecting Electrical Harness Connector On Transmission

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector on transmission, to do this swing twist lock counterclockwise - **arrow** -.

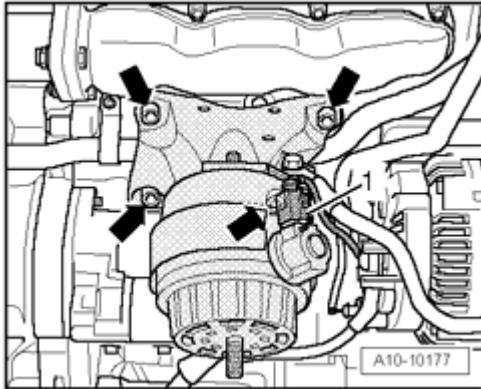


Fig. 183: Disconnecting Electrical Harness Connector At Right Engine Mount

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **1** - at right engine mount.
- Free up electrical wire on engine mount console.
- Remove bolts - **arrows** - and remove right engine mount.

NOTE:

- Shown without engine mount console to provide a better illustration.

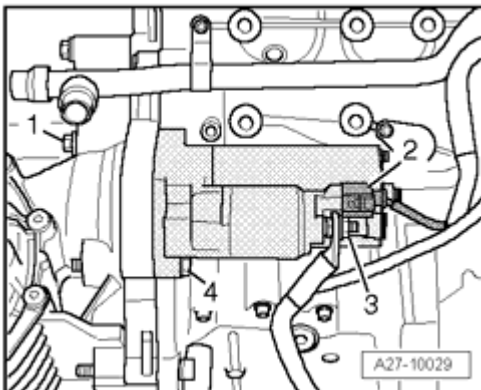


Fig. 184: Disconnecting Electrical Wires On Starter, Removing Bolts & Starter

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical wires - **2** - and - **3** - on starter.
- Remove bolts - **1** - and - **4** - and remove starter.

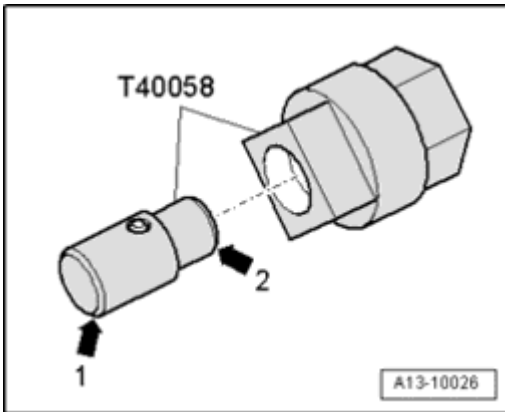


Fig. 185: Inserting Guide Pin Of Adapter T40058 So That Large Diameter Points To Engine
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert guide pin of adapter T40058 so that large diameter - **arrow 1** - points to engine. Small diameter - **arrow 2** - points to adapter.

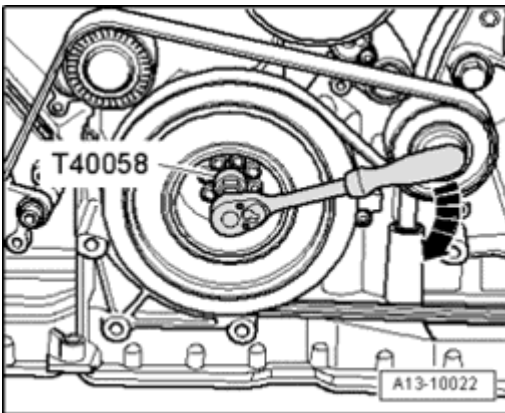


Fig. 186: Loosening Torque Converter Bolts Using Adapter T40058
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- To loosen torque converter bolts, counterhold crankshaft using adapter T40058.

NOTE:

- Disregard - arrow -.

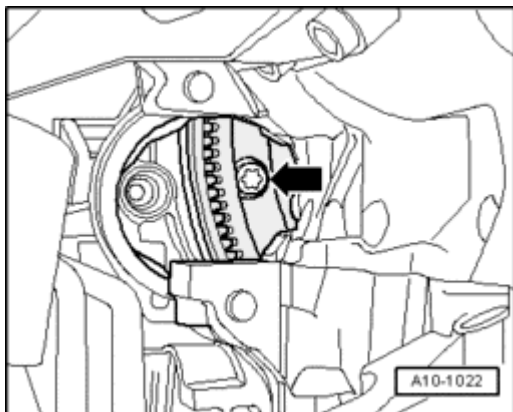


Fig. 187: Torque Converter Bolts

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove 3 torque converter bolts - **arrows** - in opening on removed starter (turn crankshaft $\frac{1}{3}$ rotation in each case).

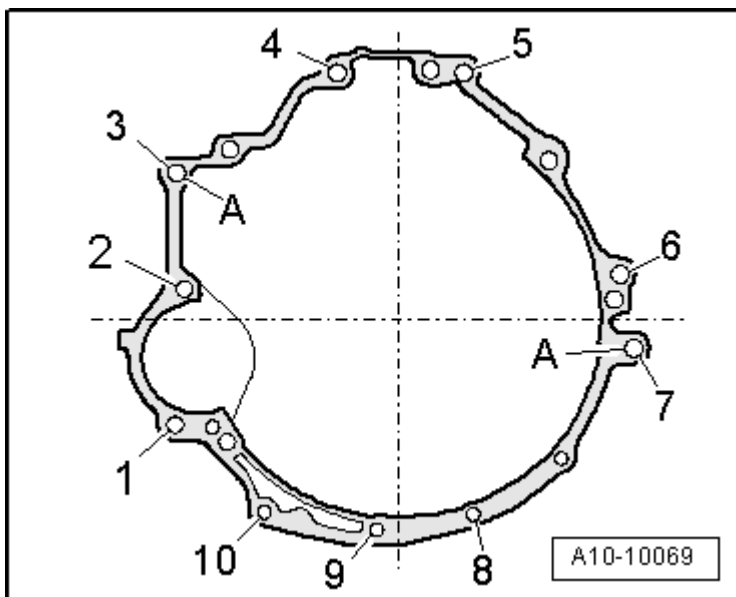


Fig. 188: Identifying Engine/Transmission Threaded Connections

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove engine/transmission threaded connections - **3 to 10** -.

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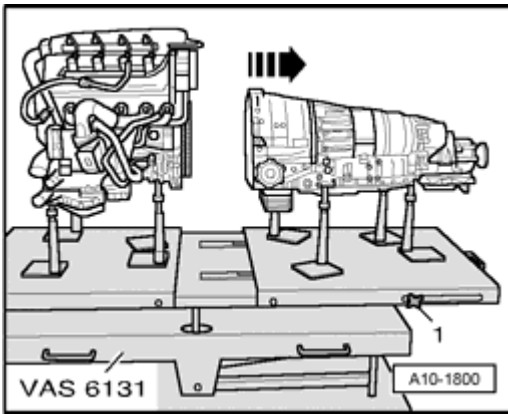


Fig. 189: Loosening Clamping Bolts On Side Of Scissor Lift Table VAS 6131 And Pull Rear Table Section With Transmission Rearward

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen side clamping screws - **1** - on scissor lift platform VAS 6131 A and pull rear platform top with transmission toward rear - **arrow** - , simultaneously push torque converter through opening of drive plate while doing this.
- Secure torque converter in transmission to prevent it from falling out.

Engine, Securing to Engine and Transmission Holder

Engine, Securing to Engine and Transmission Holder

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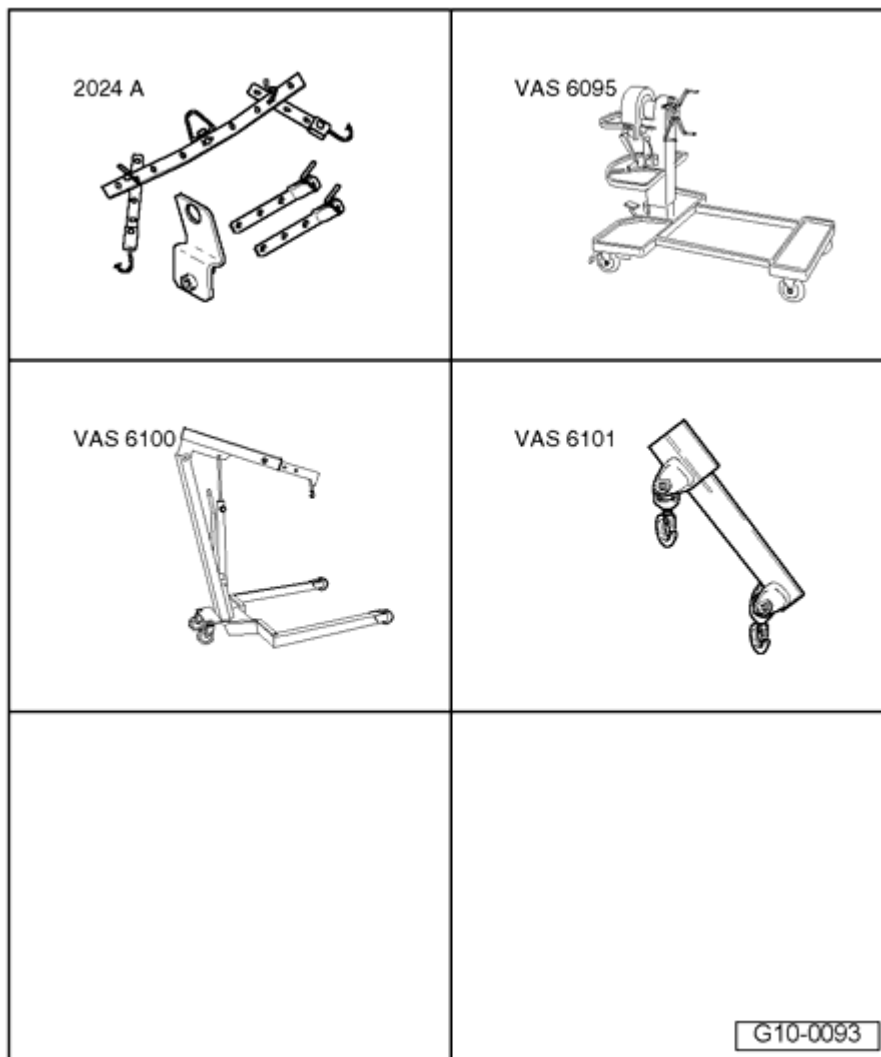


Fig. 190: Identifying Special Tools - Engine, Securing To Engine And Transmission Holder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Lifting tackle 2024 A
- Engine and transmission holder VAS 6095 with bracket VAS 6095/1-5
- Shop crane VAS 6100
- Lift arm extension for workshop crane VAS 6101

Procedure

- Engine separated from transmission.

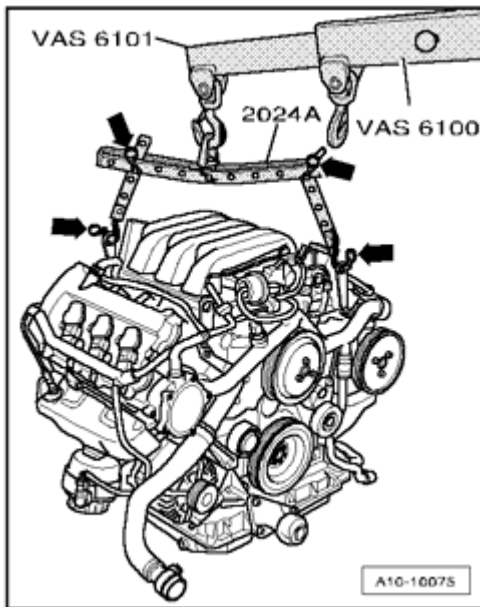


Fig. 191: Hooking Engine Sling 2024 A Onto Engine And Onto Workshop Crane VAS 6100 With Lift Arm Extension For Workshop Crane VAS 6101

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Hook engine sling 2024 A onto engine and onto workshop crane VAS 6100 with lift arm extension for workshop crane VAS 6101 as shown in the illustration.

NOTE:

- To be aligned to the center of gravity of the engine assembly, the hole rails of the lifting hook must be inserted as shown in the illustration.

CAUTION: Lifting hooks and alignment pins on the engine sling must be secured with securing pins - arrows -.

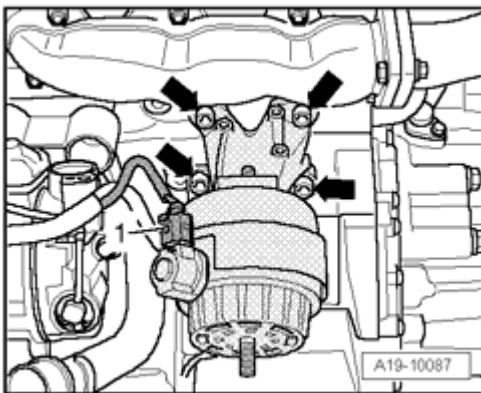


Fig. 192: Removing Bolts And Left/Right Engine Support

Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Disconnect electrical harness connector - **1** - at left engine mount.
- Remove bolts - **arrows** - and remove left engine mount.

NOTE:

- Shown without engine mount console to provide a better illustration.

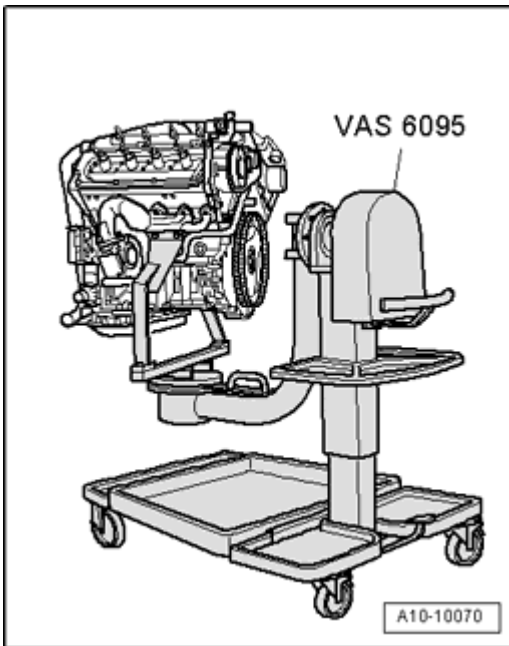


Fig. 193: Securing Engine Using Bracket VAS 6095/1-5 To 40 Nm Engine And Transmission Holder VAS 6095

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Secure engine using bracket VAS 6095/1-5 to 40 Nm Engine and Transmission Holder VAS 6095 as shown in illustration.

Engine, Installing

Engine, Installing

Special tools, testers and auxiliary items required

- Depth gauge

Procedure

NOTE:

- During assembly, replace self-locking nuts and bolts.
- Always replace bolts that are tightened to torque as well as sealing rings, gaskets and O-rings.
- Secure all hose connections with hose clamps appropriate for the model .

- During installation, all cable ties must be re-installed at the same location.

Installation dimension for torque converter, checking

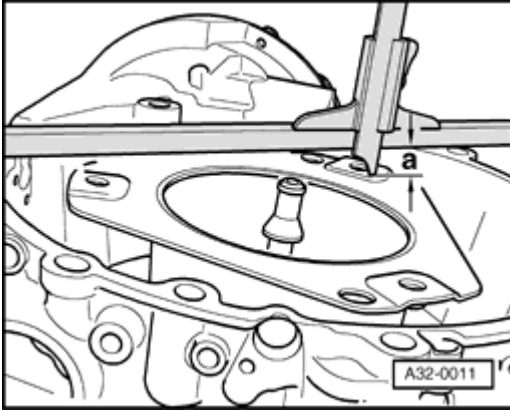


Fig. 194: Checking Installation Dimension For Torque Converter
Courtesy of VOLKSWAGEN UNITED STATES, INC.

When torque converter is installed correctly, distance between contact surface of threaded holes at torque converter and contact surface of converter housing on Automatic Transmission 09L is minimum 19 mm.

CAUTION: If torque converter is incorrectly installed, torque converter coupling and ATF pump could be damaged when transmission and engine are flanged together.

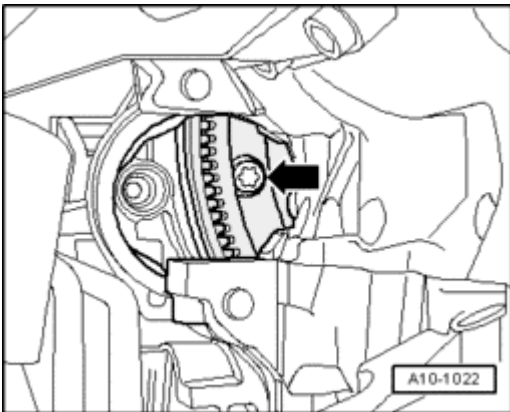


Fig. 195: Torque Converter Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Before connecting engine and transmission, rotate torque converter and engine drive plate so that one hole or one threaded hole stands at height of opening of the removed starter - **arrow** -.
- To secure torque converter to drive plate, use new original ribbed bolts .
- Make sure alignment sleeves for engine to transmission are installed in cylinder block. Install if necessary.

- Install intermediate plate between engine and transmission onto alignment bushings.
- Bolt transmission to engine.

CAUTION: Keep checking whether the torque converter behind the drive plate can be turned before and during tightening of the bolts at engine/transmission flange. If the torque converter cannot be turned, it must be assumed that it has not been inserted properly and that the coupling plate of the ATF pump and therefore the transmission will be destroyed during final tightening of the bolts.

NOTE:

- Tightening specifications only apply to lightly greased, oiled, phosphated or blackened nuts and bolts.
- Additional lubricants, such as engine or transmission oil are permissible, although lubricants containing graphite are not.
- Do not use any degreased parts.
- Tolerance for torque specifications 15%.

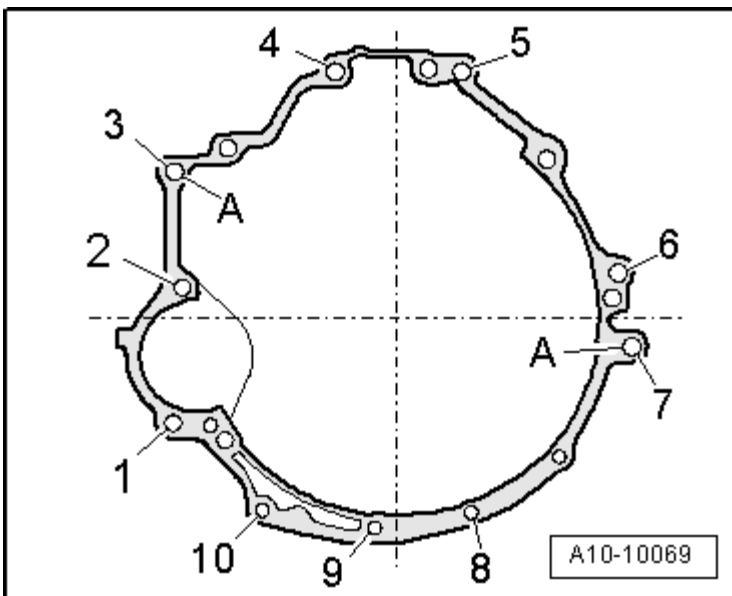


Fig. 196: Identifying Engine/Transmission Threaded Connections
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Engine/transmission, fastening

Item	Bolt	Nm
1	M10x100	65 1)
2, 6	M12x120	65
3, 4, 5	M12x105	65

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7	M12x130	65
8, 9, 10	M10x80	45
A	Alignment sleeves for centering	
1) Bolt class 10.9.		

Further installation is in reverse order of removal, noting the following.

- Fasten the ATF lines --> **37 CONTROLS, HOUSING** .
- Install front exhaust pipes: Left --> **Left Front Exhaust Pipe with Catalytic Converter, Removing and Installing** , right --> **Right Exhaust Pipe with Catalytic Converter, Removing and Installing** .
- Always clean threaded bores in transmission flanged shaft for locking fluid residue using a tap before installation.

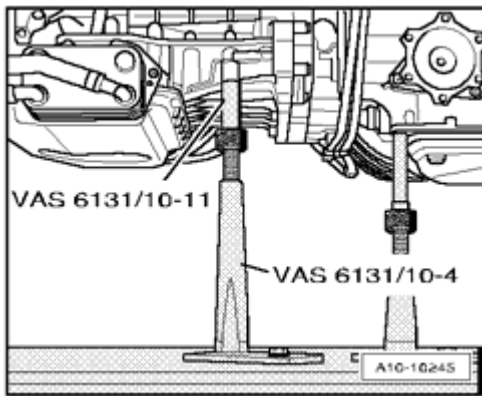


Fig. 197: Positioning Support Elements From VAS 6131/10 At Left On Engine
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Turn spindle of left support element on engine downward.
- Remove base plate for left support element on scissor lift platform VAS 6131 A.

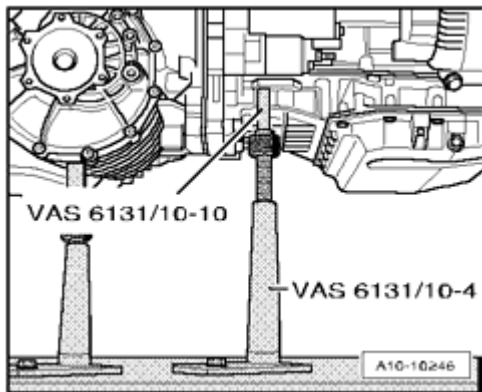


Fig. 198: Removing Base Plate For Right Support Element On Scissor Lift Platform VAS 6131 A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Turn spindle of right support element on engine downward.
- Remove base plate for right support element on scissor lift platform VAS 6131 A.

NOTE:

- Support points for front of engine, transmission and tunnel cross member remain unchanged.

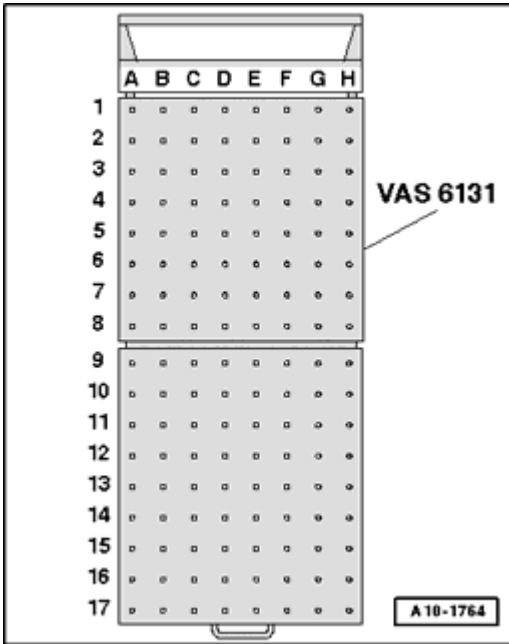


Fig. 199: Identifying Scissor Lift Platform VAS 6131
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Equip scissor lift platform VAS 6131 A with support set for Audi VAS 6131/10 as follows:

Platform coordinates	Parts of support set for Audi VAS 6131/10			
B5 1)	/10-1	/10-4	/10-5	/10-11
F5 1)	/10-1	/10-4	/10-5	/10-12
B11	/10-1	/10-2	/10-5	/10-8 2)
G11	/10-1	/10-2	/10-5	/10-8 2)
E9 1)	/10-1	/10-3	/10-5	/11-3
D10 1)	/10-1	/10-2	/10-5	/12-1
G14 1)	/10-1	/10-4	/10-5	/10-13
D16 1)	/10-1	/10-3	/10-5	/10-6

1) The support elements remain unchanged. 2) Only install support elements after installing subframe.

NOTE:

- A second technician is required to position subframe onto support elements.

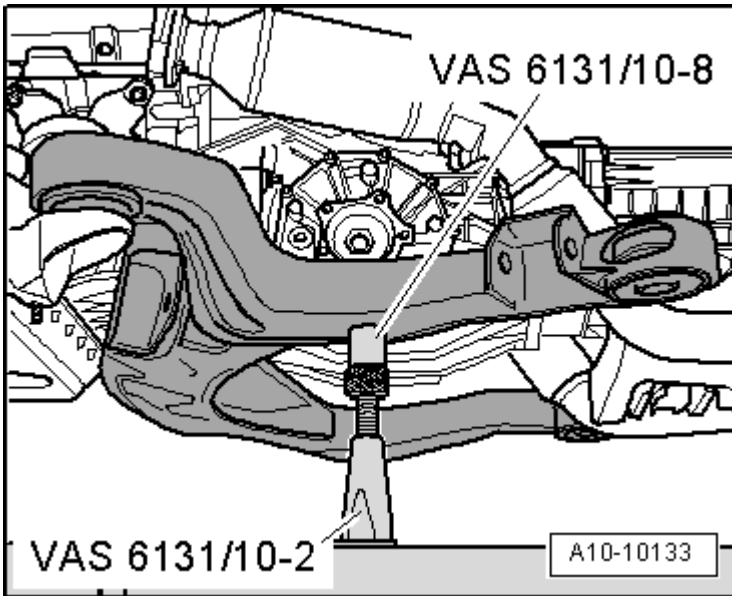


Fig. 200: Positioning Support Elements From VAS 6131/10 At Left/Right On Subframe
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position subframe on both support elements VAS 6131/10-8.
- Twist spindles of support elements upward on both sides.
- Tighten base plates for support elements to 20 Nm on scissor lift platform VAS 6131 A.
- Using Scissor Lift Platform VAS 6131 A , slowly guide engine/transmission unit with subframe into body from below.

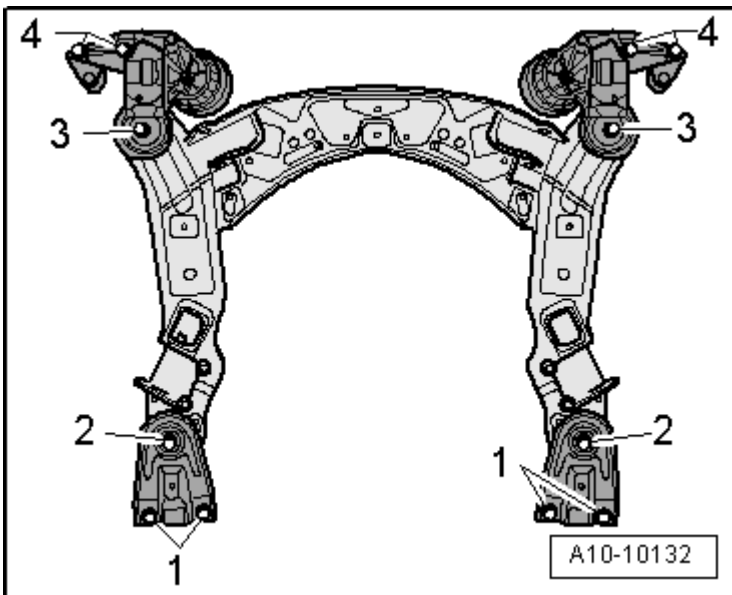


Fig. 201: Bolts Removal Sequence
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

removal.

- Tighten bolts for subframe and engine mount consoles only to specified torque. Do not tighten further (tighten bolts only after axle alignment).

1. 55 Nm
2. 115 Nm
3. 115 Nm
4. 75 Nm

CAUTION: Vehicle must not be driven in this condition.

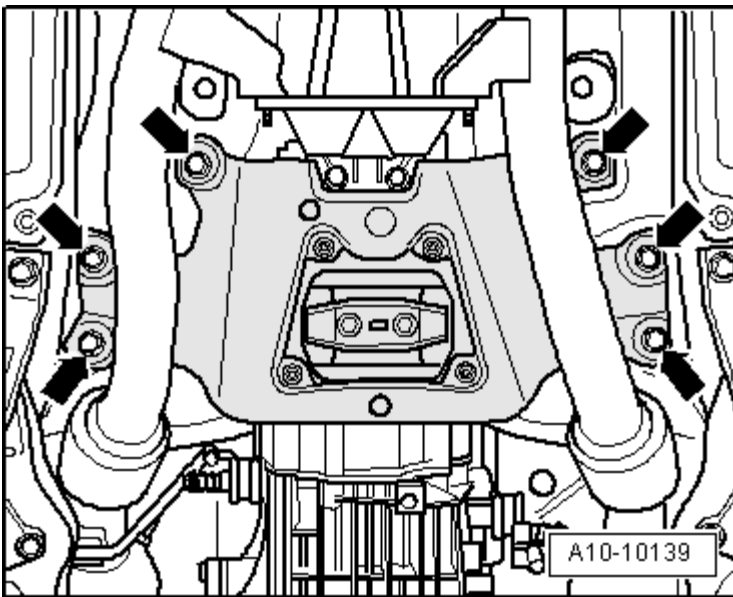


Fig. 202: Removing Bolts On Tunnel Cross Member
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fasten bolts - **arrows** - for tunnel cross member.

Further installation is in reverse order of removal, noting the following:

- Install selector lever cable, adjust if necessary --> **37 CONTROLS, HOUSING** .
- Install drive axles --> **40 - FRONT SUSPENSION** .
- Install guide control arm, control arm, stabilizer bar and suspension strut --> **40 - FRONT SUSPENSION** .
- Install subframe cross member --> **40 - FRONT SUSPENSION** .
- Install front cross member --> **50 - BODY - FRONT** .
- Install driveshaft -->

- **39 FINAL DRIVE, REAR DIFFERENTIAL** for REAR FINAL DRIVE 01R
- **39 - FINAL DRIVE, DIFFERENTIAL** for REAR FINAL DRIVE 0AR
- Align exhaust system --> **Exhaust System, Installing**.
- Install A/C compressor --> **87 - AIR CONDITIONING**.
- Install ribbed belt --> **Ribbed Belt, Removing and Installing**.

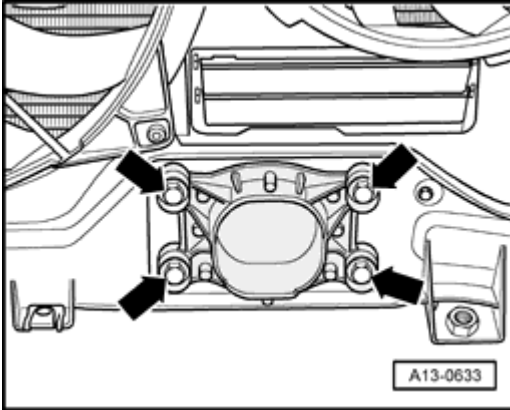


Fig. 203: Placing Torque Support On Rubber Buffer For Torque Support And Tightening Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place torque support on rubber buffer for torque support and tighten bolts - **arrows** -.
- Electrical connections and routing --> Electrical Wiring Diagrams, Troubleshooting and Component Locations.
- Observe safety precautions after connecting battery --> **27 - STARTER, GENERATOR, CRUISE CONTROL**.

CAUTION: Do not use a battery charger for starting assistance! There is the risk that the vehicle control modules could be damaged.

- Mount wiper arms and adjust --> **92 - WINDSHIELD WIPER AND WASHER SYSTEM**.
- Install dome brace --> **40 - FRONT SUSPENSION**.
- Check oil level --> **Oil Level, Checking**.
- Bleed fuel system --> **24 - FUEL INJECTION SYSTEM**.
- Fill with coolant --> **Cooling System, Draining and Filling**.

NOTE:

- Only reuse drained coolant if cylinder head or engine block was not replaced.
- Dirty coolant must not be re-used.

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- Fill power-steering system oil and bleed steering system --> **48 - STEERING** .
- Check ATF level --> **37 CONTROLS, HOUSING** .
- Align subframe and both engine bearing consoles --> **40 - FRONT SUSPENSION**
- Perform axle alignment --> **44 - WHEELS, TIRES, WHEEL ALIGNMENT** .

CAUTION: After axle alignment, tighten subframe bolts to final torque.

Tightening Specifications

NOTE:

- Tightening specifications only apply to lightly greased, oiled, phosphated or blackened nuts and bolts.
- Additional lubricants, such as engine or transmission oil are permissible, although lubricants containing graphite are not.
- Do not use any degreased parts.
- Tolerance for torque specifications 15%.

Component		Nm
Bolts/nuts	M6	9
	M8	20
	M10	40
	M12	65
Exceptions:		
Drive plate to torque converter		85 1)
Clamp B+ to starter		16
Engine support to cylinder block		40
Engine mount console to longitudinal member		75
Tunnel cross member to body		40
Hydraulic pressure line to power steering pump		47
Fuel hose to fuel line		22
Torque bracket to engine		40
Torque support stop to lock carrier		23
Hose clamps 9 mm wide		3
Hose clamps 13 mm wide		5,5
1) Replace ribbed bolts; only use original equipment bolts .		