30 CLUTCH

CLUTCH MECHANISM, SERVICING

Clutch mechanism, servicing

CAUTION:

- **Follow steps required when disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for Cabriolet**

  .
- **On vehicles equipped with a telematics system, activate the telematics control module service mode before disconnecting the battery. -->**
  - **91 - COMMUNICATION**
  - **91 RADIO, TELEPHONE, NAVIGATION, TRIP COMPUTER for Cabriolet**

NOTE:

- **Lubricate all bearings and contact surfaces with polycarbamide grease G052142A2 .**
- **Before working on pedal cluster, remove storage compartment on drivers side -->**
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT for Cabriolet**

  .
- **Make sure brake fluid does not leak into footwell, plenum chamber or onto transmission below. If it does, area affected must be thoroughly cleaned.**
- **When working in footwell, use cloths to protect floor covering against brake fluid spillage.**

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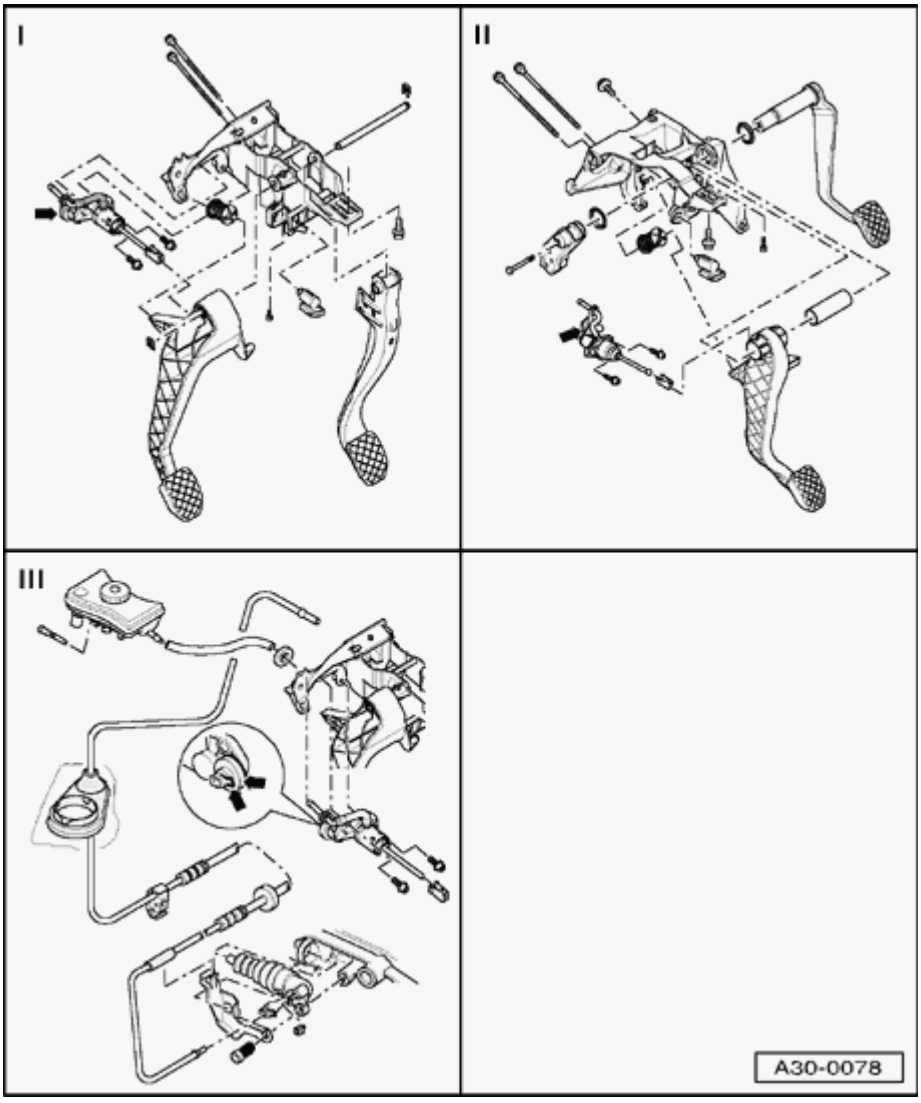


Fig. 11: Exploded View Of Pedal Cluster And Exploded View Of Hydraulic System
Courtesy of VOLKSWAGEN UNITED STATES, INC.

I - Pedal cluster - exploded view --> **Pedal cluster, assembly overview**

II - Pedal cluster (RHD vehicles) - exploded view

Not applicable for North American market

III - Hydraulics - exploded view --> **Hydraulic system, assembly overview**

Pedal cluster, assembly overview

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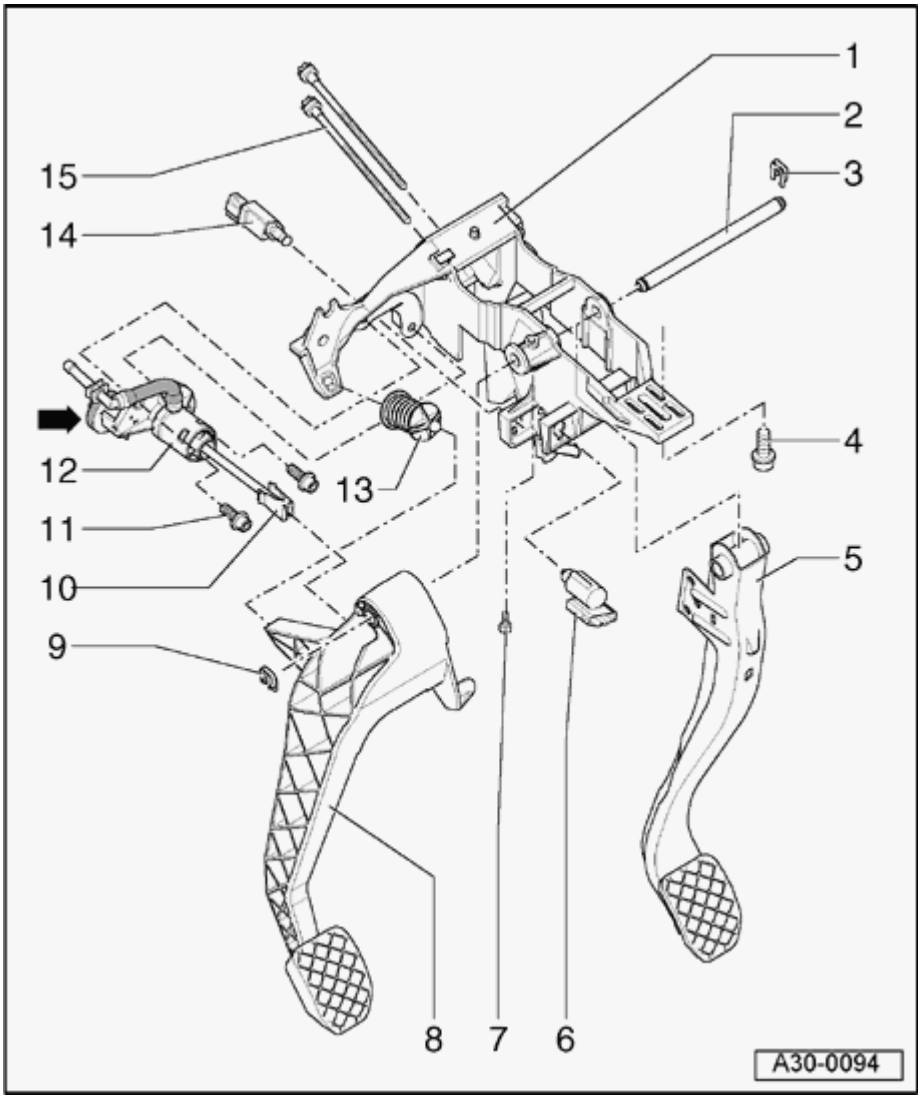


Fig. 12: Pedal Cluster, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Mounting bracket

- Removing and installing --> **Clutch master cylinder, removing and installing**

2 - Pivot pin for clutch and brake pedal

3 - Retaining clip

4 - Hexagon socket head bolt, 25 Nm

5 - Brake pedal

- Maintenance-free bearing, do not grease

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6 - Clutch Pedal Switch F36

- Removing and installing --> **Clutch Pedal Switch F36, removing and installing**
- Can only be installed once
- Replace

7 - Hexagon socket head bolt, 5 Nm

- Secures clutch and brake pedal pivot pin

8 - Clutch pedal

- Removing and installing --> **Clutch master cylinder, removing and installing**

9 - Retaining clip

10 - Retaining clip

11 - Hexagon socket head bolt, 20 Nm

12 - Clutch master cylinder

- Removing and installing --> **Clutch master cylinder, removing and installing**
- Gasket - **arrow** - must not be removed

13 - Over-center spring

- Black side points towards clutch pedal
- Removing and installing --> **Over-center spring, removing and installing**

14 - Clutch Pedal Starter Interlock Switch F194

- Only for USA vehicles
- Engine can only be started when clutch is fully depressed (Clutch Pedal Starter Interlock Switch F194 activated).
- Removing and installing
- Replace

- Do not re-install

15 - Torx bolt, 25Nm

- For securing brake master cylinder/brake servo to mounting bracket

Clutch Pedal Switch F36, removing and installing

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NOTE:

- **Clutch Pedal Switch F36 may only be installed once so as to ensure a firm fit.**

Removing

- Remove storage compartment on drivers side -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for Cabriolet

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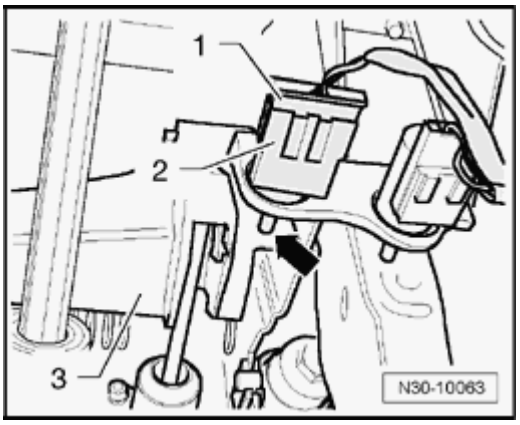


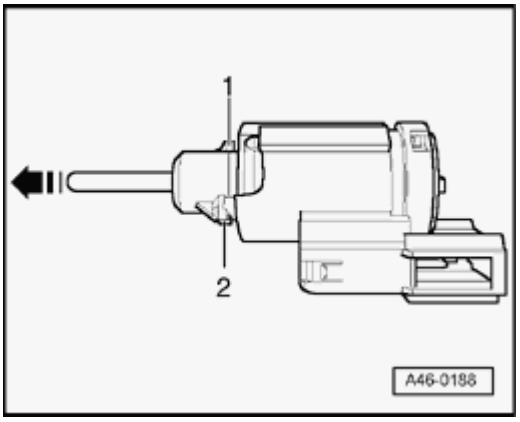
Fig. 13: Identifying Pedal Assembly And Clutch Pedal Switch F36
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical connector - **1** - on clutch pedal switch.

- The clutch pedal - **3** - is in the normal position (i.e. not pressed down). The operating rod - **arrow** - of the Clutch Pedal Switch F36 should then rest against the clutch pedal.

- Release Clutch Pedal Switch F36 - **2** - by turning 45° counterclockwise and take out of guide.

Installing



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Fig. 14: Pulling Out Switch Plunger & Identifying Retainer Tabs On Switch
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Installation is performed in reverse of removal; note the following:

- Pull out operating rod - **arrow** - all the way before installing Clutch Pedal Switch F36.

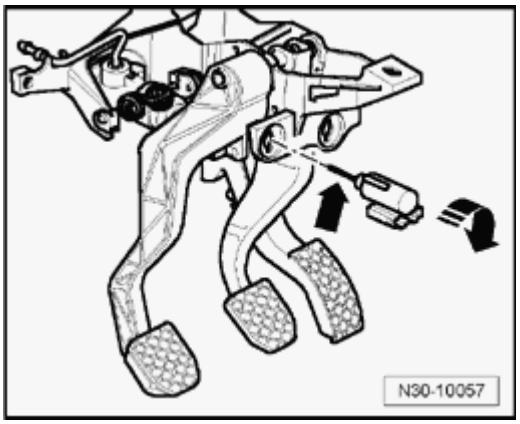


Fig. 15: Identifying Clutch Pedal Switch F36, Plunger
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- The clutch pedal should be in the normal position (i.e. not pressed down).

- Guide Clutch Pedal Switch F36 through mounting hole, press against clutch pedal and attach by turning 45° clockwise.
- Connect connector for Clutch Pedal Switch F36.
- Install storage compartment on drivers side -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for Cabriolet

.

Clutch Pedal Starter Interlock Switch F194, removing and installing

NOTE:

- **To ensure a secure fit, the Clutch Pedal Starter Interlock Switch F194 must not be installed more than once.**

Removing

- Remove storage compartment on drivers side -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for Cabriolet

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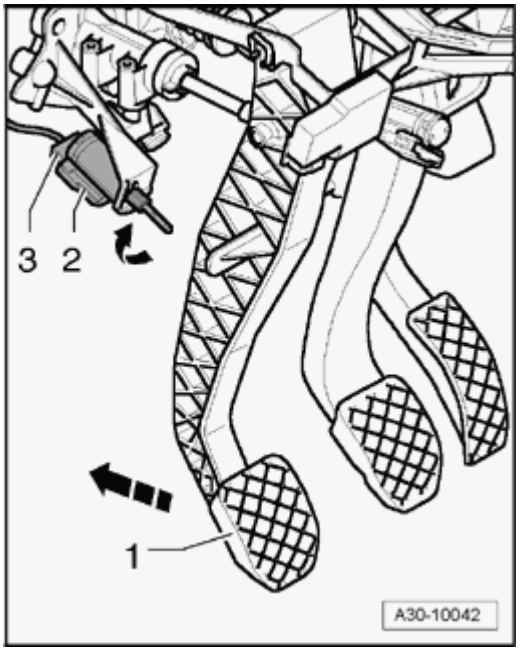


Fig. 16: Installing and Adjusting Clutch Pedal Starter Interlock Switch F194
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical connector - **3** - on clutch pedal switch for engine start.
- Press clutch pedal - **1** - all the way down and hold it in this position.
- At the same time, release Clutch Pedal Starter Interlock Switch F194 - **2** - by turning it 45° in the direction indicated - **arrow** - and pull it out of the guide.

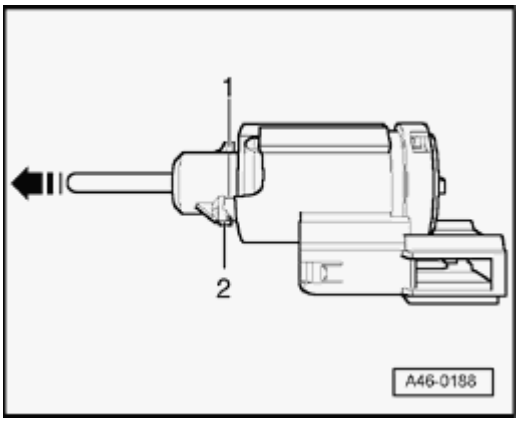


Fig. 17: Pulling Out Switch Plunger & Identifying Retainer Tabs On Switch
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Installing

- Pull out operating rod - **arrow** - all the way before installing clutch pedal switch.

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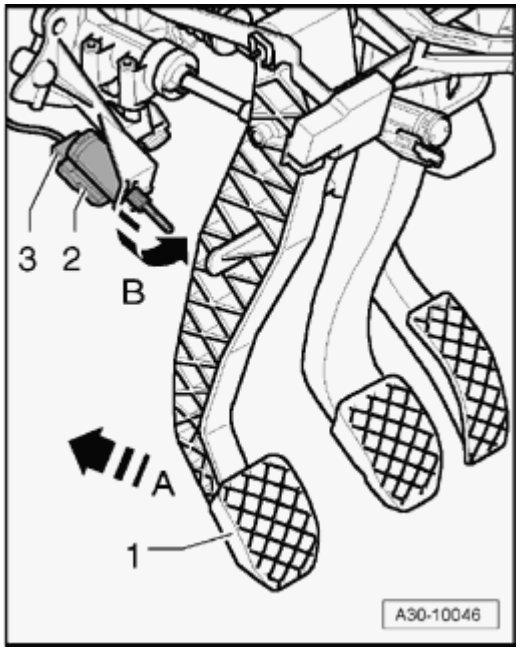


Fig. 18: Pressing Clutch Pedal All The Way Down And Pushing Operating Rod Against Clutch Pedal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- When installing Clutch Pedal Starter Interlock Switch F194, press clutch pedal - **1** - all the way down - **arrowA** -. Hold clutch pedal in this position.
- Guide Clutch Pedal Starter Interlock Switch F194 - **2** - through opening in retainer, and at the same time push operating rod against clutch pedal and secure switch by turning it 45° in the direction indicated - **arrowB** -.
- Attach electrical connector - **3** - on clutch pedal switch for engine start.
- Install storage compartment on drivers side -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for Cabriolet

  .

Over-center spring, removing and installing

Special tools, testers and auxiliary items required

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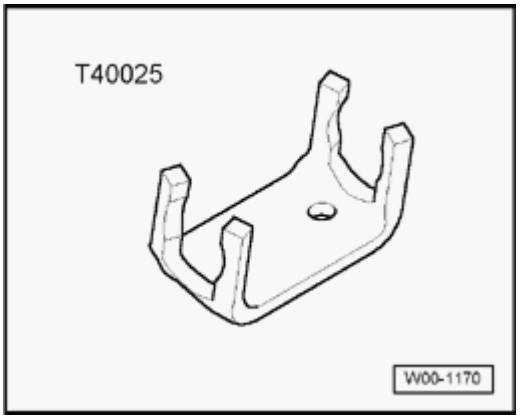


Fig. 19: T40025 Installation Clamp
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Assembly clip T40025

Removing

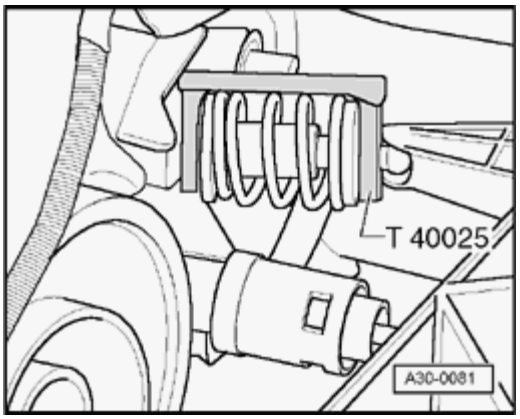


Fig. 20: Installation Clamp T40025 Installed On Over-Center Spring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove storage compartment on drivers side -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for Cabriolet

  .
- Tension over-center spring with clutch pedal, at the same time pressing on assembly clamp T40025.
- Move clutch pedal to rest position and take out over-center spring together with assembly clamp T40025 downwards.

Installing

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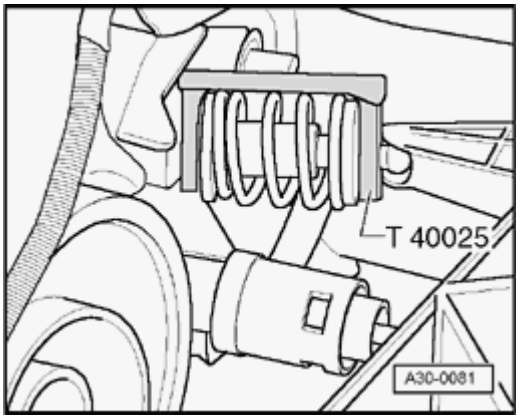


Fig. 21: Installation Clamp T40025 Installed On Over-Center Spring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull clutch pedal into the passenger compartment.
- Installation position of over-center spring: black side of over-center spring faces clutch pedal.
- Install over-center spring with assembly clamp T40025, operate clutch pedal and remove assembly clamp.

Hydraulic system, assembly overview

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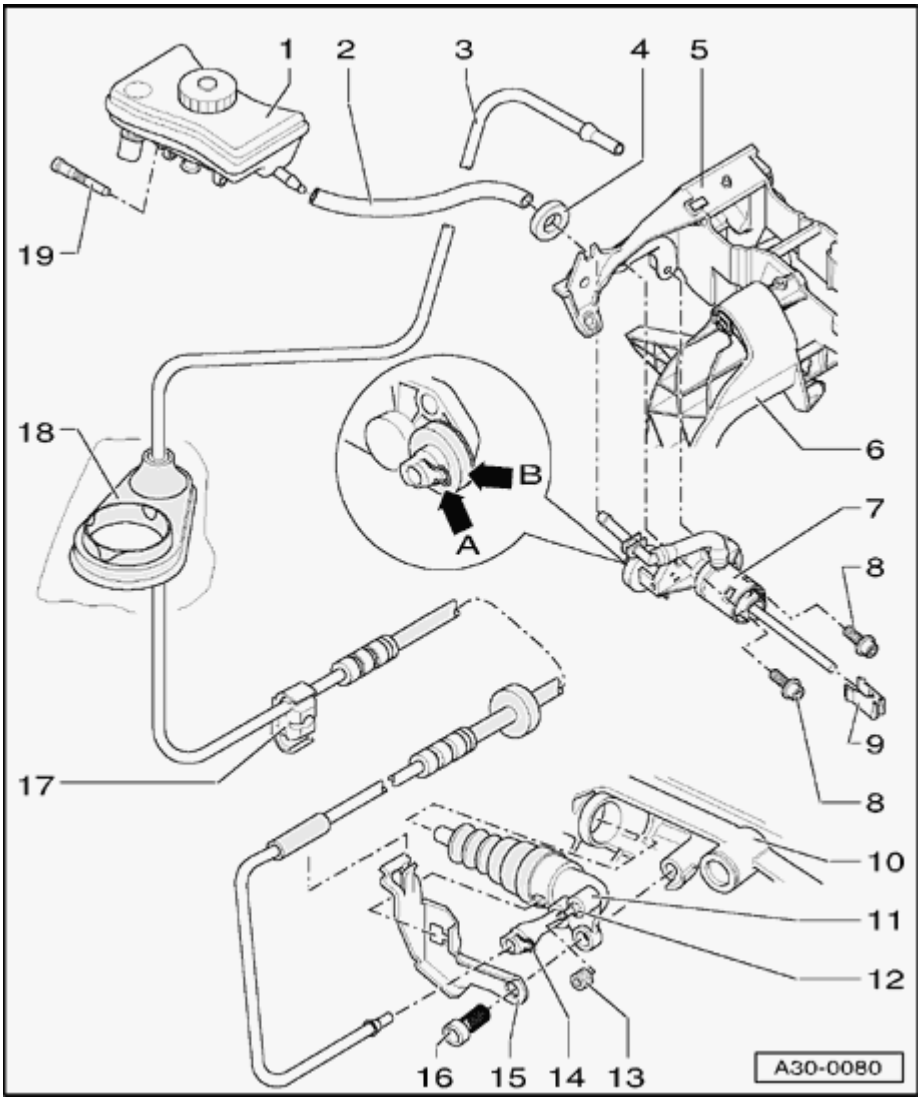


Fig. 22: Hydraulic System, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Brake fluid reservoir

2 - Supply hose

- For clutch master cylinder

3 - Line/hose assembly

- For plug-in connections on clutch master cylinder and slave cylinder
- Disconnecting from clutch master cylinder and installing --> **Clutch master cylinder, removing and installing**
- Disconnecting from clutch slave cylinder **Disconnecting clutch slave cylinder from hose/line assembly**

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4 - Grommet

5 - Mounting bracket

6 - Clutch pedal

7 - Clutch master cylinder

- Removing and installing --> **Clutch master cylinder, removing and installing**
- Do not remove clip - **arrowA** - or seal - **arrowB** -.
- To remove line/hose assembly, pull out clip - **arrowA** - , but only as far as limit stop **Clutch master cylinder, removing and installing**.

8 - Hexagon socket head bolt, 20 Nm

9 - Retaining clip

- Only replace when clutch master cylinder has been removed
- Pry off to remove **Removing retaining clip - A - in direction of - arrow -**
- Push in to install **Pressing master cylinder operating rod into retaining clip - A - (in direction of - arrow -).**

10 - Transmission

11 - Clutch slave cylinder

- Do not operate clutch pedal after slave cylinder has been removed.
- Removing and installing --> **Clutch slave cylinder on vehicles with 4.2 Liter V8 engine (S4), removing and installing**
- Bleed clutch slave cylinder after working on hydraulic clutch mechanism --> **Hydraulic clutch system, bleeding**
- Disconnecting hose/line assembly **Disconnecting clutch slave cylinder from hose/line assembly**
- Do not allow brake fluid to come into contact with transmission.

12 - Bleeder valve

- Tighten to 4.5 Nm
- Follow correct procedure when bleeding --> **Hydraulic clutch system, bleeding**.
- If bleeder valve has broken off, it can be removed with 3 mm Allen key

13 - Dust cap

14 - Clip

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- To remove line pull out clip as far as limit stop **Disconnecting clutch slave cylinder from hose/line assembly**

15 - Bracket

- For line/hose assembly
- Attached to transmission together with slave cylinder

16 - Hexagon socket head bolt, 25 Nm

- Clutch slave cylinder to transmission
- Self-locking
- Replace

17 - Retaining clip

18 - Seal

19 - Securing bolt

- For brake fluid reservoir

Removing retaining clip - A - in direction of - arrow -

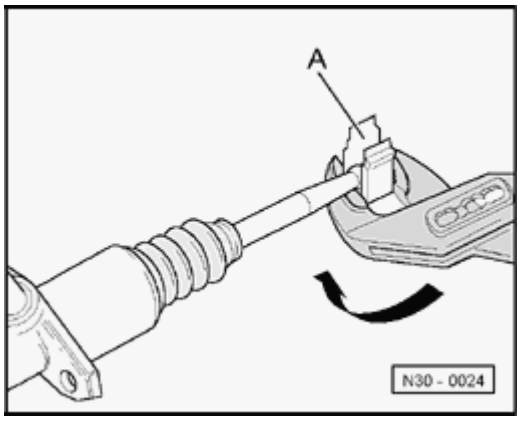


Fig. 23: Removing Retainer By Prying
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Pressing master cylinder operating rod into retaining clip - A - (in direction of - arrow -).

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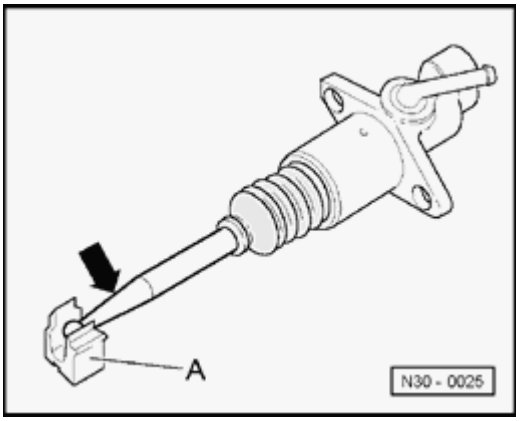


Fig. 24: Installing Clutch Master Cylinder Operating Rod In Retainer
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Disconnecting clutch slave cylinder from hose/line assembly

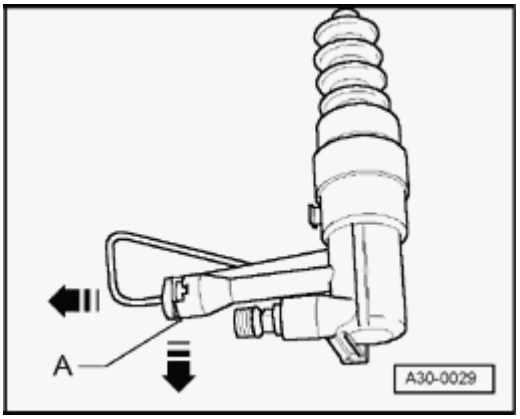


Fig. 25: Removing Hydraulic Line From Slave Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removing

- To remove hose/line assembly, use a screwdriver to pry off clip - **A** - as far as the stop. Only then can the hose/line assembly be pulled out.

Installing

- Press retaining clip - **A** - in as far as it will go.
- Push hose/line assembly into clutch slave cylinder until it engages audibly.
- Pull on line/hose assembly to check it is secure.

Clutch master cylinder and slave cylinder, notes on removing and installing

- Before replacing the clutch master cylinder or slave cylinder on the assumption that it is defective you must first perform a function check.

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- If slave cylinder is removed from transmission with hose/line assembly still attached, make sure you do not press clutch pedal. Otherwise, the piston will be pressed out of the slave cylinder and be destroyed.
- After installing the slave cylinder, carefully press the clutch pedal. If you feel an unusually strong point of resistance when depressing the clutch pedal, you must not press it down further. The operating rod of the slave cylinder is likely to have been guided past the clutch release lever. The slave cylinder would then be destroyed once pedal force exceeds approx. 300 N.

Clutch master cylinder and slave cylinder, function check

Before replacing the master and/or slave cylinder, perform the appropriate checks in the case of the following errors:

Noises when operating the clutch:

- First check the over-center spring/clutch pedal switch for noise.
- If you hear a noise, remove over-center spring and repeat check.
- Replace faulty component.

After releasing clutch pedal it still remains depressed/does not return to its initial position.

- Check whether clutch pedal returns all the way to its initial position, thereby uncovering the vent opening in the master cylinder.
- The ventilation opening must be uncovered, otherwise permanent self-ventilation for the hydraulic clutch system cannot function.
- The self-ventilation function of the clutch system can be impaired if the footwell trim or foot mats get trapped, if the clutch pedal switch jams or if the driver rests his foot on the clutch pedal for long periods of time.

Check the complete hydraulic system for external or internal leaks.

- Check brake fluid level in brake fluid reservoir.
- Check master and slave cylinder as well as the line-hose assembly including connecting points for external leaks (visual check).
- If leaks are identified replace the leaking component.
- Bleed clutch system --> **Hydraulic clutch system, bleeding**.

High pedal force:

- Clutch plate is worn (except for SAC)
- Mechanically defective pressure plate/clutch plate --> **Clutch, servicing**

Pedal forces:

Conventional clutch:

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- - Clutch lining when new: approx. 115 N
- - Clutch lining at wear limit: approx. 160 N

SAC clutch:

- - approx. 140 N higher for complete service life of the clutch

Clutch does not disengage or does not disengage fully:

- Air in hydraulic system: bleed clutch system --> **Hydraulic clutch system, bleeding** and check hydraulic system for external and internal leaks.
- Clutch plate does not run smoothly on input shaft splines
- Needle bearing in flywheel (centering bearing for input shaft) defective, replace needle bearing -->
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for BHF
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for BPG

  .
- Foreign material in clutch system
- Mechanically defective pressure plate/clutch plate --> **Clutch, servicing**
- Wrong components used or components forgotten when performing repair work (e.g. intermediate plate).

Clutch master cylinder, removing and installing

Special tools, testers and auxiliary items required

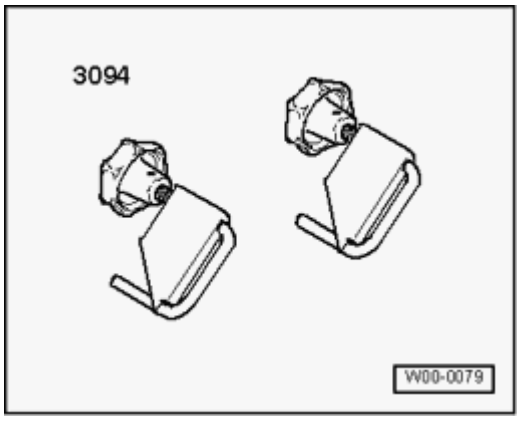


Fig. 26: Identifying Hose Clamps 3094
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Hose clamps, up to Ø 25 mm 3094

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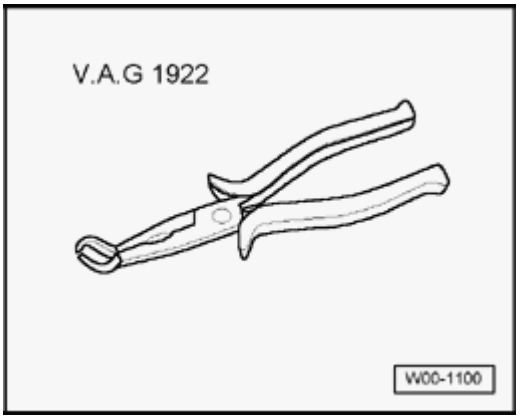


Fig. 27: Identifying Spark Plug Connector Pliers V.A.G 1922
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pliers V.A.G 1922

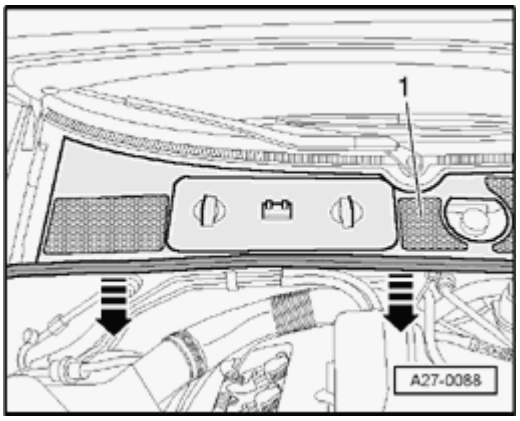


Fig. 28: Identifying Plenum Chamber Cover & Removing Rubber Seal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removing

CAUTION:

- **Follow steps required when disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for Cabriolet**

  .
- **On vehicles equipped with a telematics system, activate the telematics control module service mode before disconnecting the battery -->**
  - **91 - COMMUNICATION**
  - **91 RADIO, TELEPHONE, NAVIGATION, TRIP COMPUTER for Cabriolet**

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- Pull off rubber seal on plenum chamber in direction of - **arrow** -.
- Remove cover - **1** - from plenum chamber.
- With the ignition switched off, disconnect battery ground (GND) strap -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for Cabriolet

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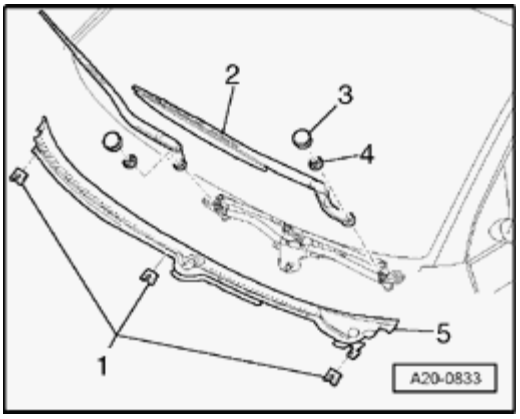


Fig. 29: Removing Securing Clips And Cowl
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pry off the two caps - **3** -.
- Remove nuts - **4** - and remove the two wiper arms - **2** -.
- Remove clips - **1** - and disconnect cowl panel grille - **5** -.

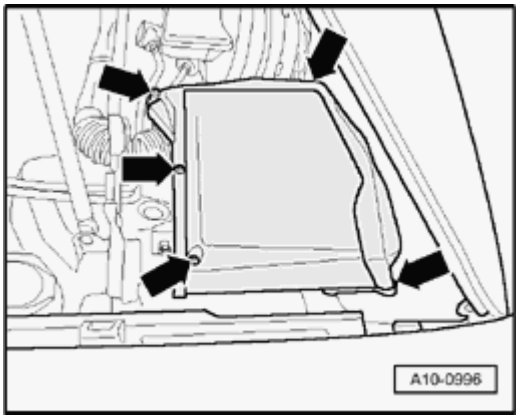


Fig. 30: Removing Screws And Cover From E-Box In Plenum Chamber
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Remove the electronics box from the plenum chamber as follows:

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- Unscrew bolts - **arrows** - and take off the cover.

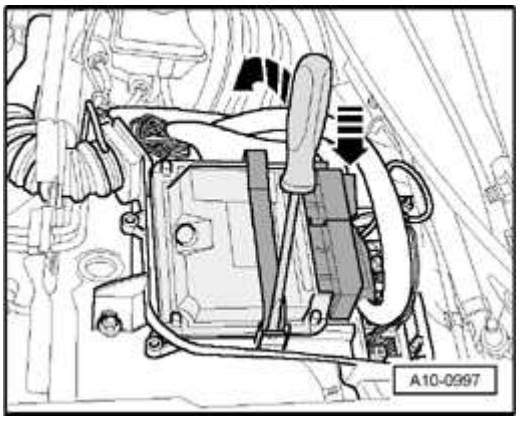


Fig. 31: Using Screwdriver To Remove Retainer Bar And Engine Control Module (ECM) J623
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Use screwdriver to carefully pry off retaining strap - **arrow** -.
- Lay aside engine control module with connectors attached.

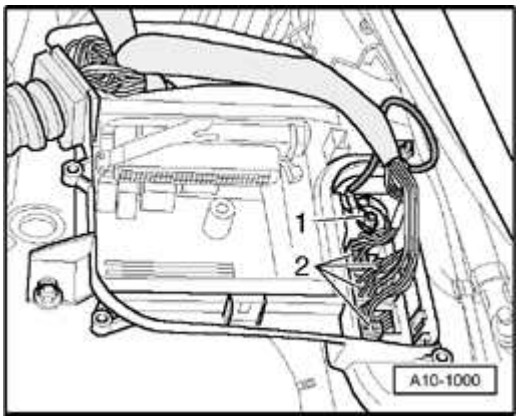


Fig. 32: Connector At Connector Rail And Wire
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect connectors - **2** - at connector console.
- Remove electrical wiring connection - **1** -.

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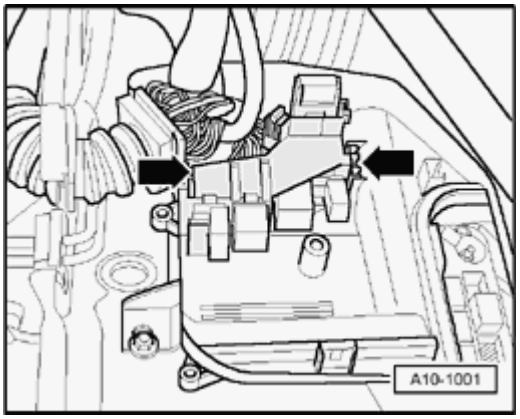


Fig. 33: Locating Auxiliary Relay Carrier Catches
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release catches - **arrows** - and lift auxiliary relay carrier out of electronics box.
- Pull engine wiring harness together with rubber grommet out through opening in electronics box.

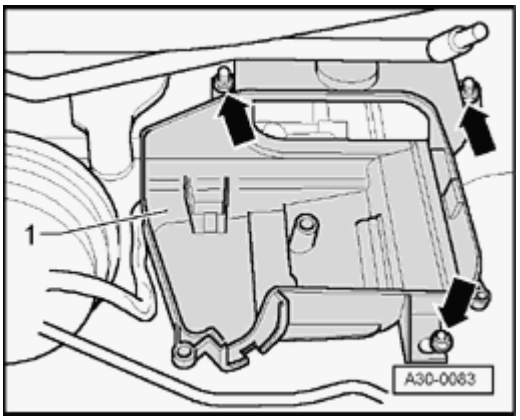


Fig. 34: Electronics Box Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **arrows** - and lift out electronics box - **1** -.

NOTE:

- **In the following steps make sure that no brake fluid escapes into the plenum chamber or onto the transmission below. If this does happen, clean the affected area thoroughly.**
- **When performing work in the footwell, put cloths on the carpet to protect it from possible brake fluid spills.**

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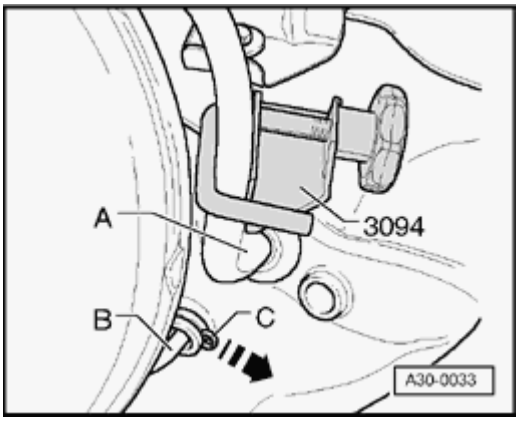


Fig. 35: Identifying Brake Fluid Reservoir Return Hose Grommet
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pinch off supply hose - **A** - from brake fluid reservoir using hose clamp 3094. Disconnect hose from clutch master cylinder and plug hose.
- Remove rubber grommet from bulkhead above connection line for supply hose.
- Lever out retaining clip - **C** - using a screwdriver and then pull out line/hose assembly - **B** - slightly.

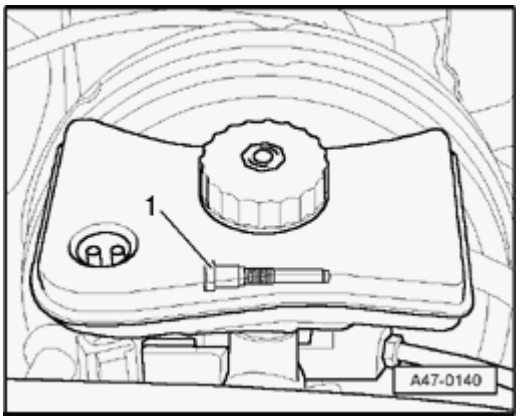


Fig. 36: Location Of Brake Fluid Reservoir Dowel Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt for brake fluid reservoir - **1** - and disconnect connector for Brake fluid level warning contact downwards.

NOTE:

- **The brake fluid reservoir does not have to be removed.**

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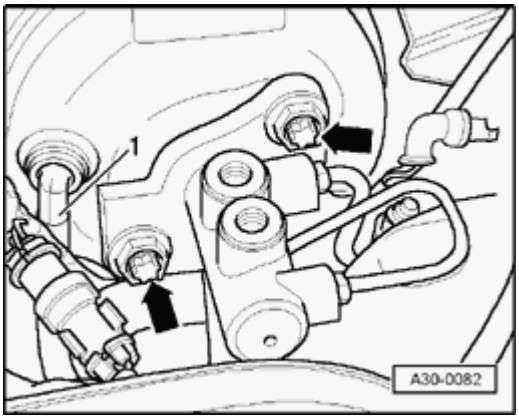


Fig. 37: Location Of Brake Servo Securing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove vacuum line to brake servo - **1** -.
- Remove the two TORX bolts - **arrows** -.

NOTE:

- **To simplify the illustration, the brake fluid reservoir has not been included.**
- **Brake fluid reservoir must be moved slightly to the side in order to unscrew upper Torx bolt.**

- Remove storage compartment on drivers side -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for Cabriolet

  .
- Removing over-center spring --> **Over-center spring, removing and installing**.

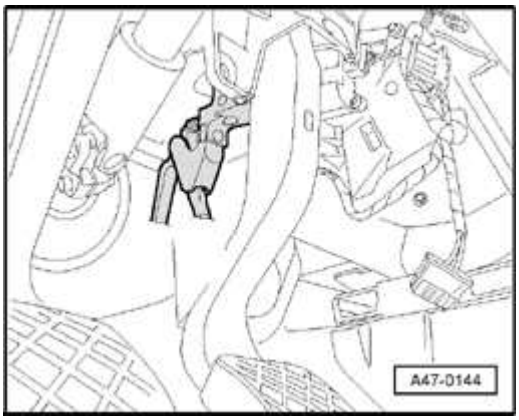


Fig. 38: Brake Pedal At Brake Servo
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect brake pedal from brake servo --> **47 - BRAKES - HYDRAULIC COMPONENTS** .

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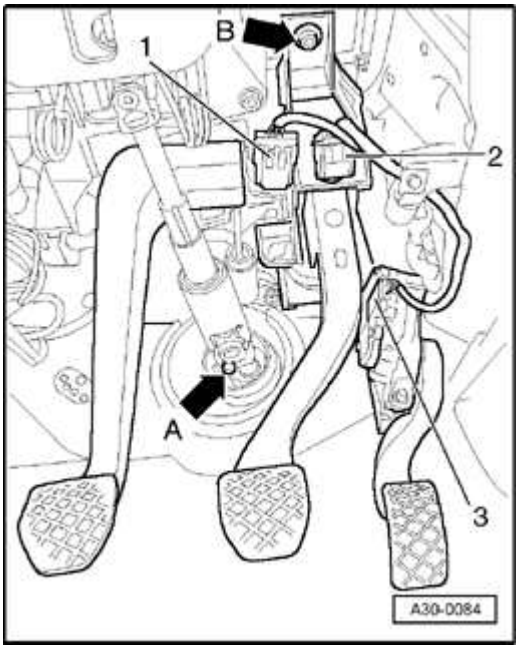


Fig. 39: Locating Steering Column At Steering Gear And Disconnecting Connector On Clutch Pedal Switch, Brake Pedal Switch And On Accelerator Pedal Module
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect steering column from steering box - **arrowA** - --> **48 - STEERING** .
- Disconnect connectors at clutch pedal switch - **1** - , brake pedal switch - **2** - and at accelerator pedal module - **3** -.
- If installed, disconnect connector from Clutch Pedal Starter Interlock Switch F194.
- Remove securing bolt for mounting bracket - **arrowB** - and remove entire pedal cluster.

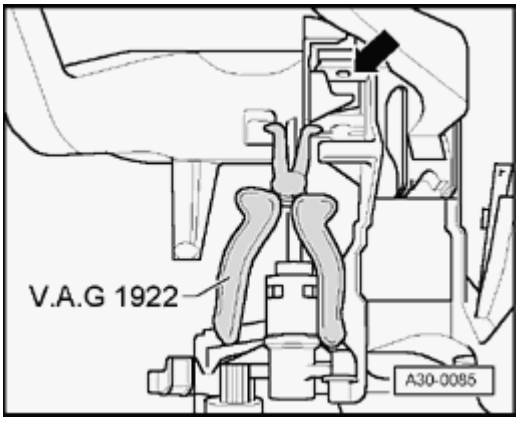


Fig. 40: Pressing Retainer Together And Detaching Clutch Pedal From Master Cylinder Using VAG 1922
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Release master cylinder operating rod from clutch pedal as follows:

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NOTE:

- **When releasing the operating rod, make sure that clutch pedal does not collide with mounting bracket for clutch pedal switch - arrow -. The mounting bracket could otherwise break off.**

- Insert pliers V.A.G 1922 in recesses on clutch pedal, press on sides of retaining clip and Disconnect clutch pedal from master cylinder.

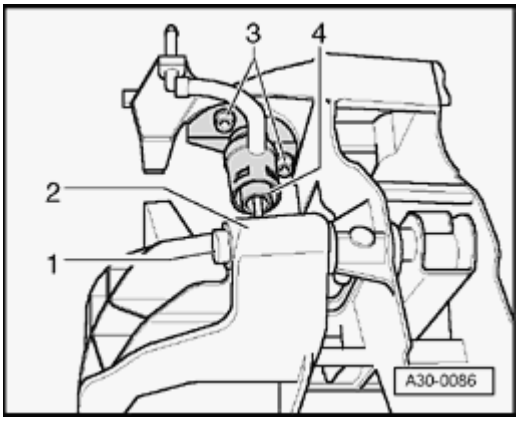


Fig. 41: Identifying Retaining Clip, Clutch Pedal, Bolts And Master Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect retaining clip - **1** - and remove clutch pedal - **2** -.
- Remove bolts - **3** - and remove clutch master cylinder - **4** -.

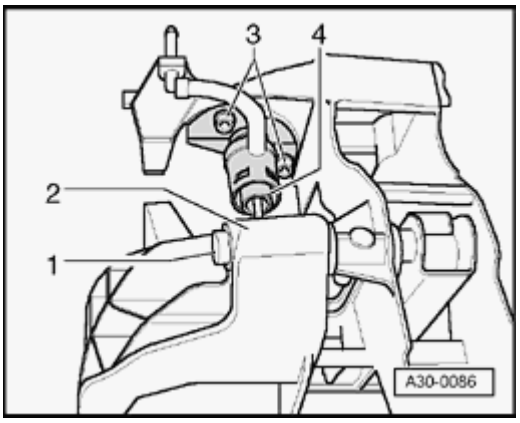


Fig. 42: Identifying Retaining Clip, Clutch Pedal, Bolts And Master Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Installing

Installation is performed in reverse sequence; note the following:

- Install clutch master cylinder - **4** - and tighten bolts - **3** - to 20Nm.

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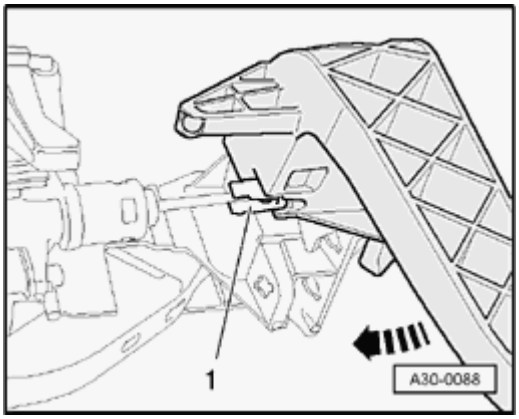


Fig. 43: Pushing Clutch Pedal To Lock Into Place, While Making Sure Mount Is Properly Secured In Clutch Pedal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install retaining clip - **1** - in clutch pedal.
- Lock clutch pedal in position by pressing in direction of - **arrow** -. Make sure retaining clip - **1** - engages correctly in clutch pedal.

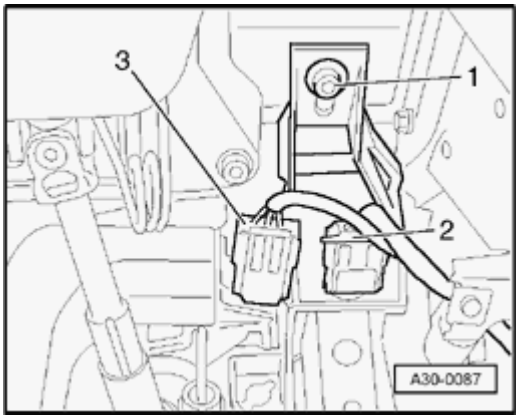


Fig. 44: Location Of Clutch Pedal Switch F36 And Pedal Assembly Securing Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

A second technician is required for the next step.

- Insert entire pedal cluster and tighten bolt - **1** - by hand. The second technician should guide hose/line assembly into clutch master cylinder from plenum chamber.

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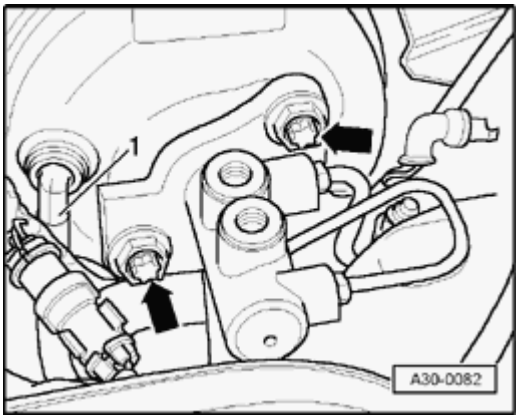


Fig. 45: Location Of Brake Servo Securing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten bolts for brake servo - **arrows** - to 25Nm.

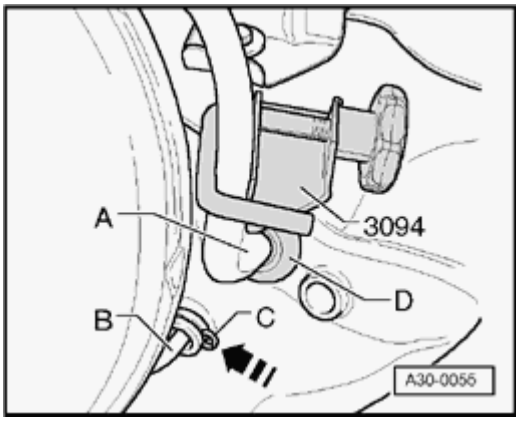


Fig. 46: Installing Rubber Grommet And After-Run Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press in retaining clip - **C** - as far as it will go.
- Insert hose/line assembly - **B** - in clutch master cylinder and make sure that it engages audibly.
- Install rubber grommet - **D** - onto connecting line for supply hose - **A** - at bulkhead.
- Push supply hose - **A** - from brake fluid reservoir on as far as it will go.

- Remove hose clamps 3094.

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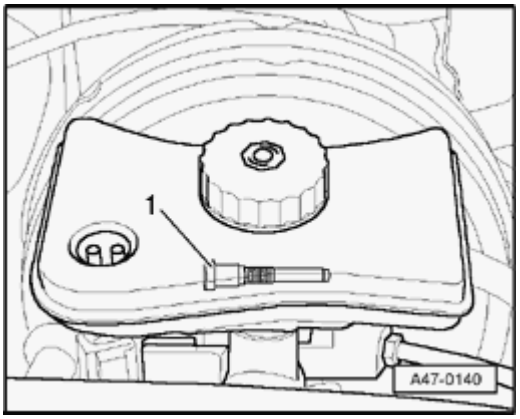


Fig. 47: Location Of Brake Fluid Reservoir Dowel Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Screw in securing bolt - **1** - for brake fluid reservoir and Connect connector at brake fluid level warning contact.

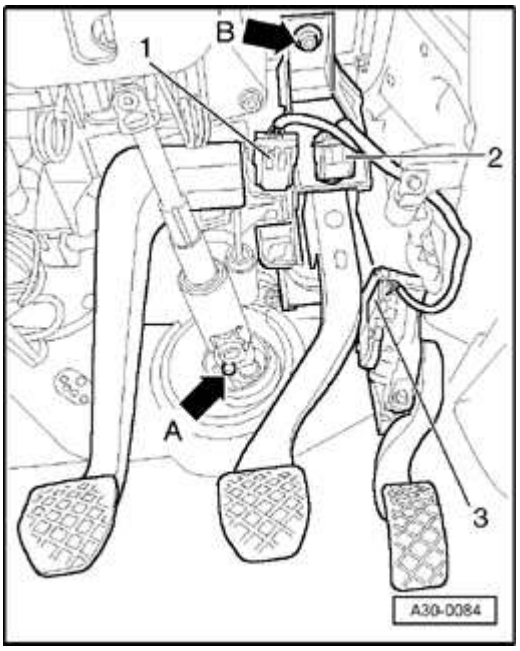


Fig. 48: Locating Steering Column At Steering Gear And Disconnecting Connector On Clutch Pedal Switch, Brake Pedal Switch And On Accelerator Pedal Module
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten hexagon socket head bolt - **arrowB** - for securing pedal cluster to instrument panel carrier to 25Nm.
- Connect connectors - **1** - , - **2** - and - **3** -.
- If installed, attach connector for Clutch Pedal Starter Interlock Switch F194.
- Connect brake pedal to brake servo --> **47 - BRAKES - HYDRAULIC COMPONENTS** .

- Secure steering column to steering box - **arrowA** - --> **48 - STEERING** .

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- Install over-center spring **Installing**.
- Install storage compartment on drivers side -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for Cabriolet

  .
- Bleed clutch system --> **Hydraulic clutch system, bleeding**.

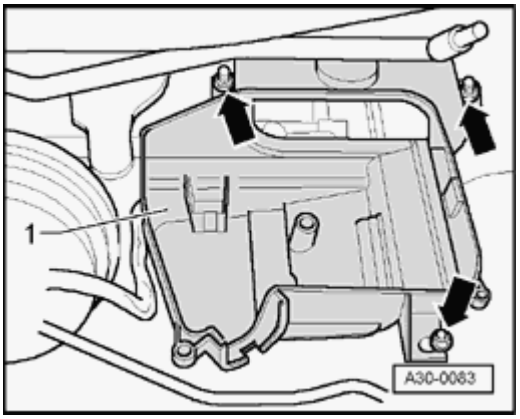


Fig. 49: Electronics Box Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install electronics box and tighten nuts -arrows- to 4Nm.
- Route engine wiring harness and Connect connector in connector console.
- Install engine control module --> **24 MULTIPORT FUEL INJECTION (MFI)** .
- If applicable, install auxiliary relay carrier and auxiliary fuse carrier -->
  - **97 WIRING**
  - **97 WIRING** for Cabriolet

  .
- Press on cover (hand-tight) and tighten bolts in diagonal sequence to 4Nm.
- Follow steps required after connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for Cabriolet

  .

NOTE:

- **Upon re-connecting the battery, remember to check and activate the vehicle equipment (radio, clock, convenience electrics etc.).**

Hydraulic clutch system, bleeding

Special tools, testers and auxiliary items required

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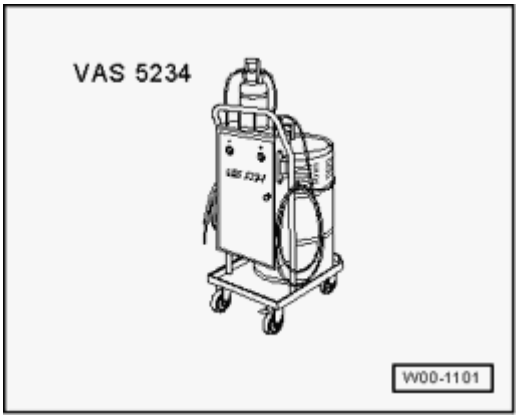


Fig. 50: Identifying Brake Filler And Bleeder Unit VAS 5234
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Brake filling and bleeding equipment VAS 5234 or brake filling and bleeding equipment V.A.G 1869
- Brake fluid specification --> **47 - BRAKES - HYDRAULIC COMPONENTS** .

Procedure

NOTE:

- **Open the bleeder valve before switching on the bleeding appliance.**
- **When performing the following steps, make sure that no brake fluid escapes onto the transmission.**
- **The clutch system must be bled after performing work on the hydraulic clutch mechanism.**
- **Before bleeding the clutch system, pull back the clutch pedal to the normal position and top off brake fluid to "Max" marking on brake fluid reservoir.**

- The clutch system should be bled at the same intervals as the brake system.

- Connect brake charge and bleed equipment V.A.G1869 or VAS 5234, but do not switch on at this stage.

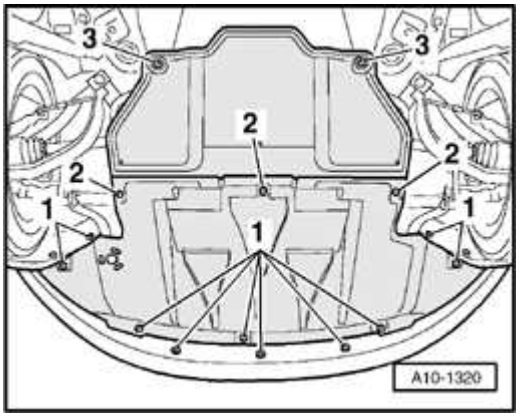


Fig. 51: Identifying Quick-Release Fasteners And Noise Insulation

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If installed, remove rear part of noise insulation - **2 to 3** -.

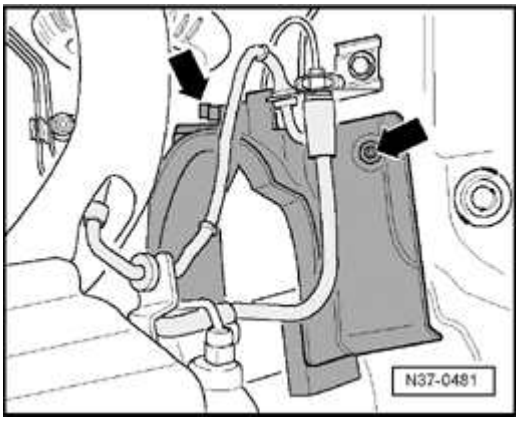


Fig. 52: Axle Shaft Noise Insulation Retainers
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If installed, remove noise insulation cover - **arrows** - in wheel housing (left-side).

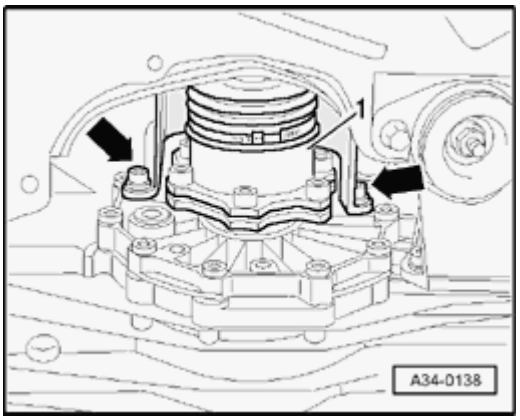


Fig. 53: Axle Shaft Shielding Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove heat shield - **arrows** - for driveshaft (left-side).

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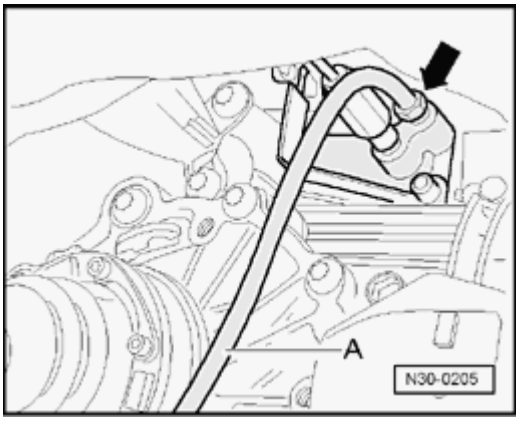


Fig. 54: Connecting Bleeder Hose To Clutch Slave Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect bleeder hose - **A** - to slave cylinder - **arrow** - and open bleeder valve.
- Connect bleeder hose to pressure hose of fluid collector bottle.
- Switch on bleeder appliance and allow about 100cm^3 of brake fluid to drain out.

- Operating pressure 2.5 bar

NOTE:

- **Ensure bleeder hose is correctly installed during bleeding operation.**

- Close bleeder valve and tighten to4.5Nm.
- Depress clutch pedal several times after bleeding process is completed.
- Repeat bleeding procedure if necessary.
- Bolt heat shield for drive shaft onto transmission.

Tightening torque

Component	Nm
Heat shield for drive shaft to transmission	23

CLUTCH RELEASE MECHANISM, SERVICING

Clutch release mechanism, servicing

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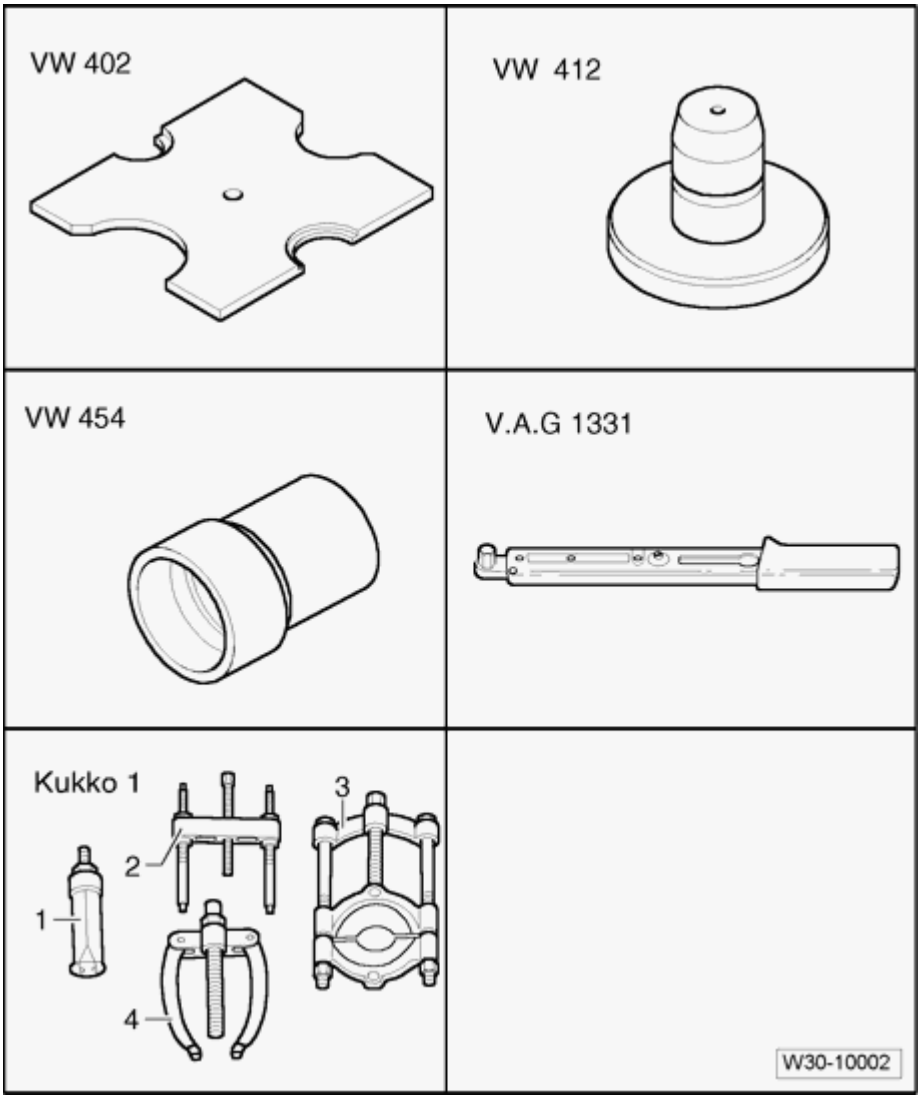


Fig. 55: Identifying Special Tools - Clutch Release Mechanism, Servicing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Thrust plate VW 402
- Press tool VW 412
- Press tool VW 454
- Torque wrench V.A.G 1331

- **- 1 -** Internal puller Kukko 21/5
- **- 4 -** Counter-support Kukko 22/1
- **Sealing grease G 052 128 A1**
- **Copper grease Z 381 351 TE**

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- **Adhesive AMV 195 KD1 01**

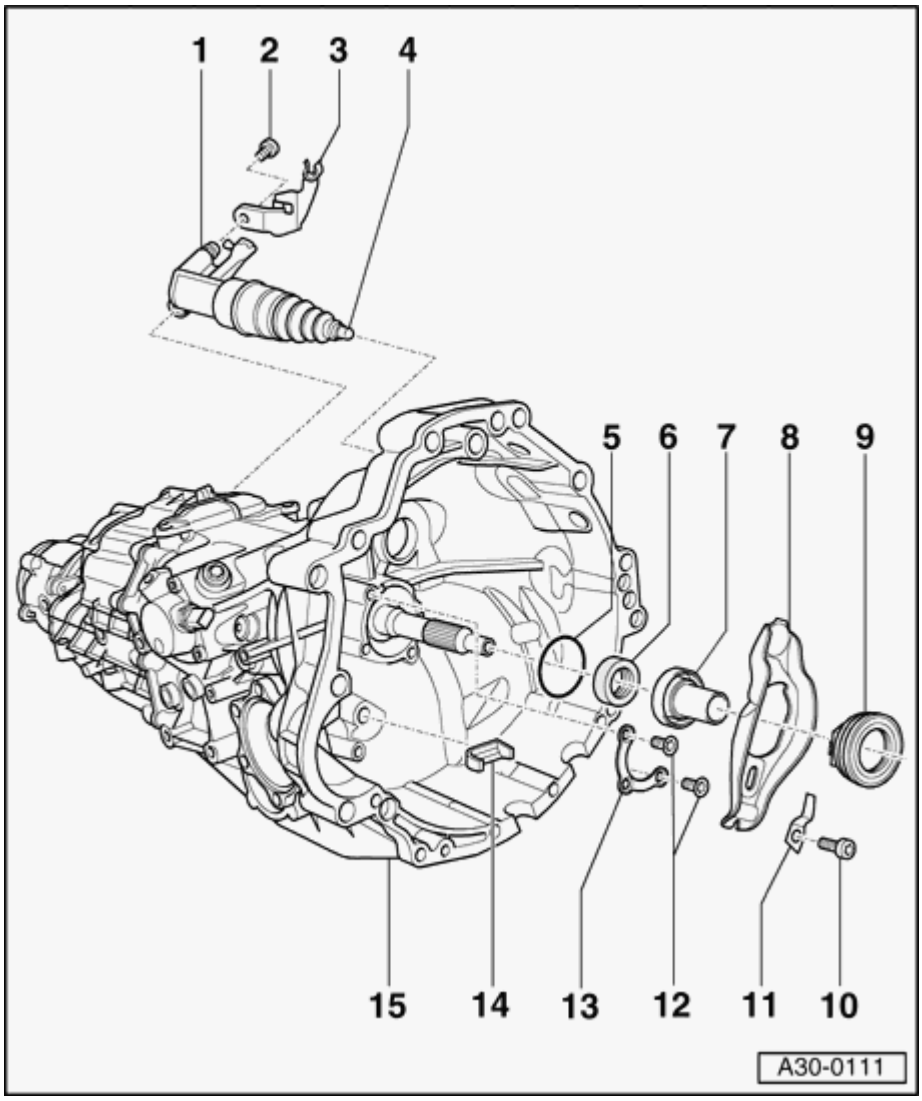


Fig. 56: Clutch Release Mechanism Remove/Install Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Clutch slave cylinder

- Removing and installing on vehicles with 8-cylinder engine --> **Clutch slave cylinder on vehicles with 4.2 Liter V8 engine (S4), removing and installing**
- Do not operate clutch pedal after slave cylinder has been removed.
- Follow correct procedure when bleeding --> **Hydraulic clutch system, bleeding**.
- Tighten bleeder valve to 4.5Nm.

- When installing, push in until the securing bolt can be installed.

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2 - Hexagon socket head bolt, 23 Nm

- Clutch slave cylinder to transmission
- Self-locking
- Replace

3 - Bracket

- For line/hose assembly
- Bolt to transmission with clutch slave cylinder

4 - Operating rod

- Lubricate end of operating rod with **copper grease Z381351TE** .

5 - O-ring

- Always replace **Replacing O-ring**
- Lubricate with gear oil before installing

6 - Oil seal

- For input shaft
- Removing **Removing input shaft oil seal**
- Installing **Installing input shaft oil seal**
- Pack space between sealing lip and dust lip half full with **sealing grease G 052 128 A1** .

7 - Guide sleeve

- Removing **Removing and installing guide sleeve**

8 - Clutch release lever

- Removing **Clutch release lever, removing and installing**
- Before installing, lubricate area which makes contact with operating rod of slave cylinder with **copper grease Z381351TE** .

9 - Release bearing

- Do not wash out; wipe clean only
- Replace bearings if noisy
- Servicing release bearing with glued plastic ring **Checking and servicing release bearing with glued plastic ring**
- Checking release bearing with mechanically attached plastic ring **Checking release bearing with**

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mechanically attached plastic ring

- Replace if groove worn on plastic ring is too deep **Checking release bearing with mechanically attached plastic ring**
- Retainer lugs on release bearing must engage in release lever

10 - Bolt, 24 Nm

- Self-locking
- Replace

11 - Leaf spring

12 - Bolt, 24 Nm

- 2 x
- Self-locking
- Replace

13 - Retaining piece

- For guide sleeve

14 - Intermediate piece

- Replace if damaged

15 - Transmission

Clutch release lever, removing and installing

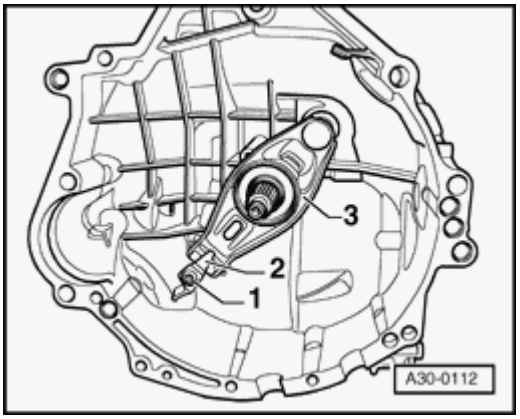


Fig. 57: Clutch Release Lever Remove/Install Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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Removing

- Loosen bolt - **1** - and remove leaf spring - **2** -.
- Remove clutch release lever - **3** - with release bearing.
- Disengage retaining tabs of release bearing at release lever.

Installing

- Before installing clutch release lever, apply a thin coat of **copper grease Z381351TE** to contact surface for operating rod of clutch slave cylinder.
- Install clutch release lever - **3** - with release bearing onto guide sleeve.
- Install leaf spring - **2** - and tighten new bolt - **1** - to 24Nm.

Checking and servicing release bearing with glued plastic ring

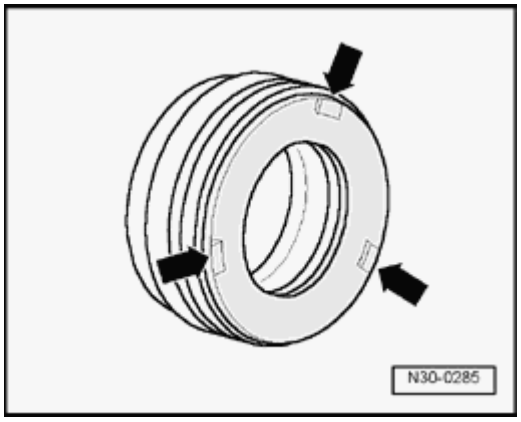


Fig. 58: Servicing Release Bearing With Plastic Ring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Identification: inner side of plastic ring has three lugs - **arrows** -.

The plastic ring - **arrows** - may come loose from the release bearing when the transmission or release bearing is removed. The release bearing does not have to be replaced if this happens.

- Before installing the transmission, glue the loose plastic ring back onto the bearing with **adhesive AMV195KD101** .

The three square lugs - **arrows** - on the plastic ring engage in the recesses of the bearing ring.

- The release bearing must be replaced if the groove worn on the plastic ring is deeper than 0.8mm.

Checking release bearing with mechanically attached plastic ring

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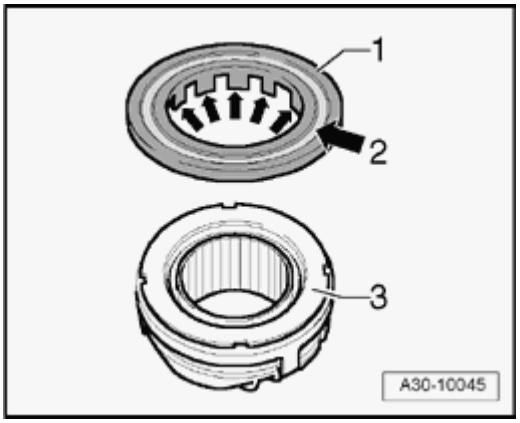


Fig. 59: Checking Release Bearing With Plastic Ring Attached
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Identification: retaining tabs around plastic ring - **arrows** -.

- The release bearing must be replaced if the plastic ring - **1** - has come loose.
- The release bearing - **3** - must be replaced if the groove - **arrow2** - worn on the plastic ring - **1** - is deeper than 0.8mm.

Removing and installing guide sleeve

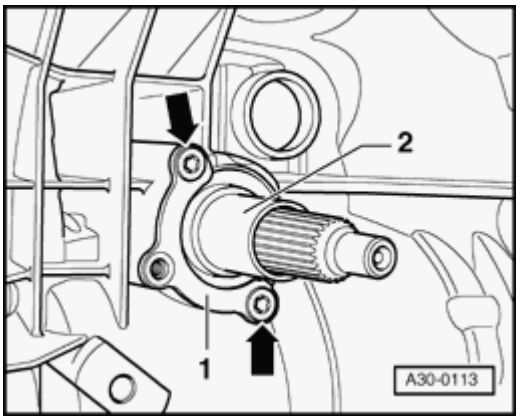


Fig. 60: Guide Sleeve Remove/Install Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removing

- Unscrew bolts - **arrows** - and remove retaining piece - **1** -.
- Pull guide sleeve - **2** - out of transmission housing.

Installing

- Replace O-ring in transmission housing **Replacing O-ring**.
- Install a thin insulating hose tightly over splines of input shaft.

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- Pack space between sealing lip and dust lip with **sealing grease G 052 128 A1** .
- Lightly oil outer circumference of guide sleeve.

- Push guide sleeve - **2** - over input shaft and into transmission housing.
- Remove insulating hose.
- Secure retaining piece - **1** - with new bolts - **arrows** -.

Replacing O-ring

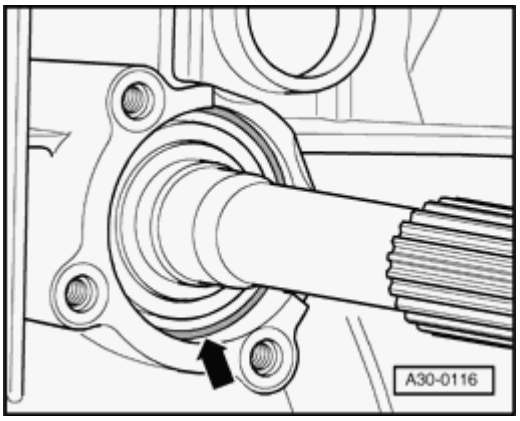


Fig. 61: O-Ring Remove/Install Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove O-ring - **arrow** - using a small screwdriver.
- Lubricate new O-ring with gear oil before installing.

Removing input shaft oil seal

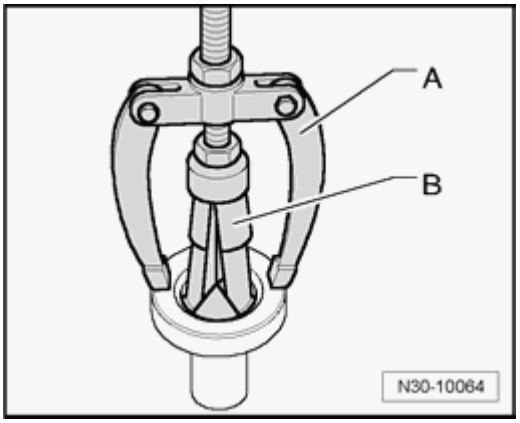


Fig. 62: Removing Input Shaft Oil Seal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

A - Counter support, e.g. - **Kukko 22/1** -

B - Internal puller 30 to 37 mm, e.g. - **Kukko 21/5** -

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Installing input shaft oil seal

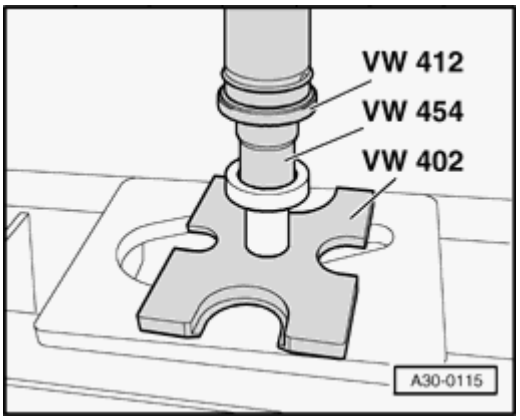


Fig. 63: Installing Input Shaft Oil Seal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Lightly lubricate outer circumference of seal with gear oil.
- Press in oil seal for input shaft as far as it will go.

- The open side of seal faces towards press tool VW 454.

- Pack space between sealing lip and dust lip half-full with **sealing grease G 052 128 A1** .

Clutch slave cylinder on vehicles with 4.2 Liter V8 engine (S4), removing and installing

Observe the notes on removing and installing clutch master cylinder and slave cylinder --> **Clutch master cylinder and slave cylinder, notes on removing and installing**.

Special tools, testers and auxiliary items required

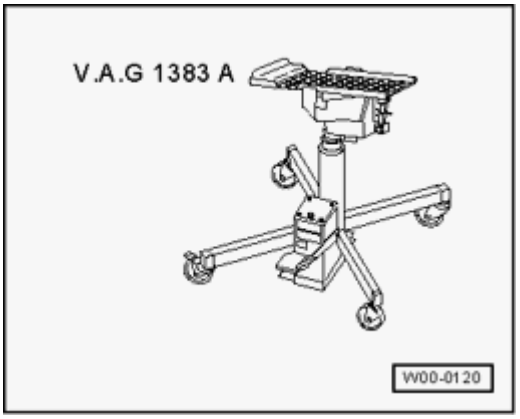


Fig. 64: Identifying Engine/Transmission Jack V.A.G. 1383 A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Engine/transmission jack V.A.G 1383 A

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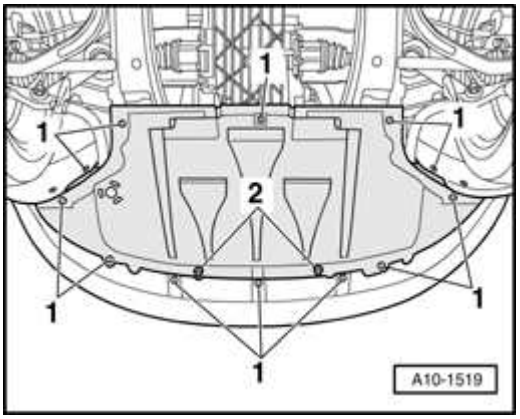


Fig. 65: Removing Quick-Release Fasteners, Screws And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removing

- Release quick release fasteners - **1** - , unscrew bolts - **2** - and remove noise insulation.

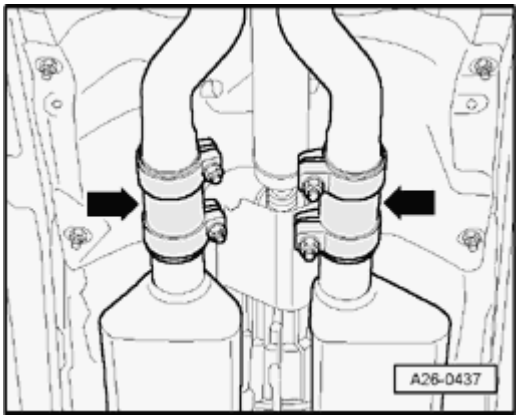


Fig. 66: Loosening Clamping Sleeves
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect exhaust system at clamps - **arrows** -.

NOTE:

- **The flexible pipe connection (de-coupling element) in the front exhaust pipe must not be bent more than 10° - otherwise it can be damaged.**

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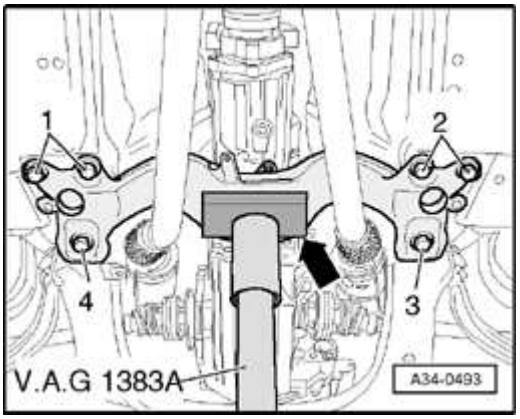


Fig. 67: Supporting Tunnel Cross Member Using VAG1383A Engine/Transmission Lift And A Piece Of Wood
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove universal mounting V.A.G 1359/2 from engine and transmission jack V.A.G 1383 A and place a wooden block - **arrow** - on the lifting column in its place.
- Support the rear cross member with engine and transmission jack V.A.G 1383 A.
- First unscrew bolts - **1** - and - **2** - , then bolts - **3** - and - **4** -.

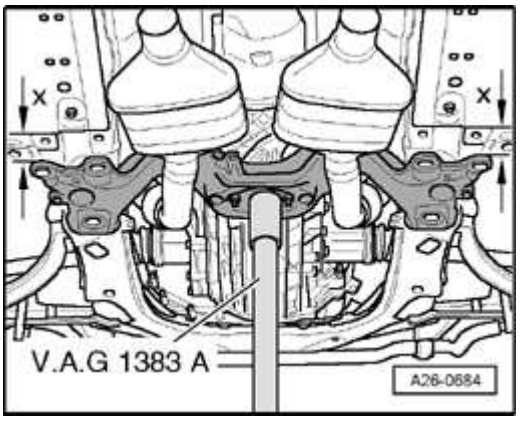


Fig. 68: Identifying Distance Between Cross Member And Body Reaches Dimension
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Lower rear cross member slowly with engine and transmission jack V.A.G 1383 A until distance between rear cross member and body reaches dimension - **x** -.

- Dimension - **x** - = 60 mm

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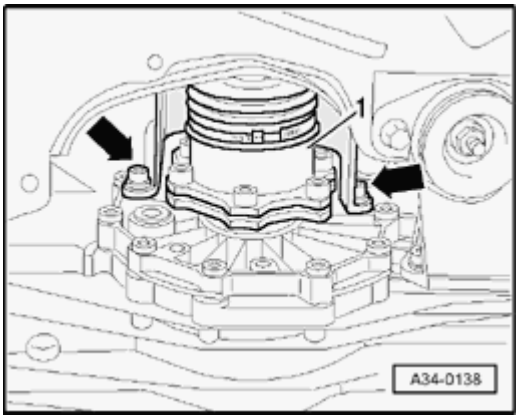


Fig. 69: Axle Shaft Shielding Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove heat shield - **arrows** - for drive shaft (left-side).
- Unbolt drive shaft - **1** - from flange shaft and move clear to the front.

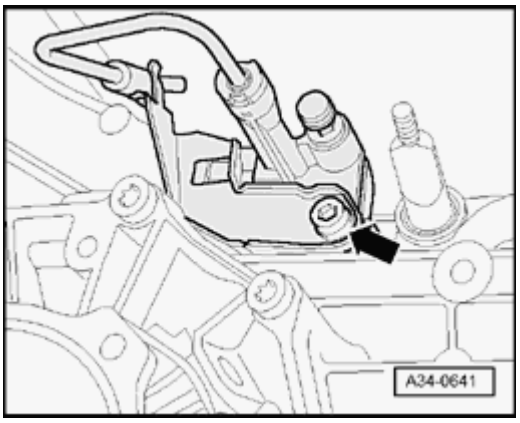


Fig. 70: Slave Cylinder Bracket And Fastener
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **arrow** - and take out clutch slave cylinder from the rear.

NOTE:

- **Do not depress clutch pedal after removing slave cylinder. The slave cylinder would then be destroyed once pedal force exceeds approx. 300 N.**

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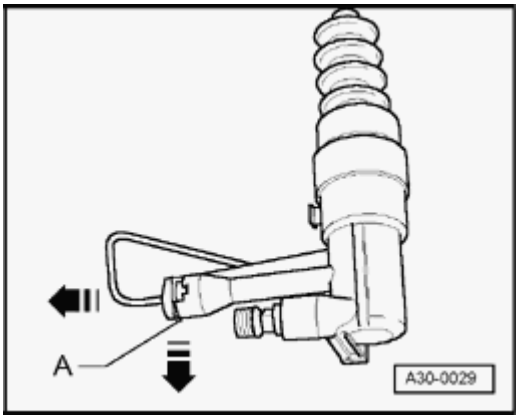


Fig. 71: Removing Hydraulic Line From Slave Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- To remove hose/line assembly, use a screwdriver to Pry off clip - **A** - as far as the stop. Only then can the hose/line assembly be pulled out.

Installing

Installation is performed in reverse sequence; note the following:

NOTE:

- **Do not allow brake fluid to come into contact with the transmission. If necessary, clean the transmission housing.**
- **If the clutch slave cylinder is inserted at an angle, there is a danger that the operating rod will be guided past the clutch release lever.**
- **To facilitate assembly, engage 6th gear before fitting slave cylinder.**
- **When installing, press in slave cylinder so that securing bolt can be installed easily.**

- Always replace securing bolt.

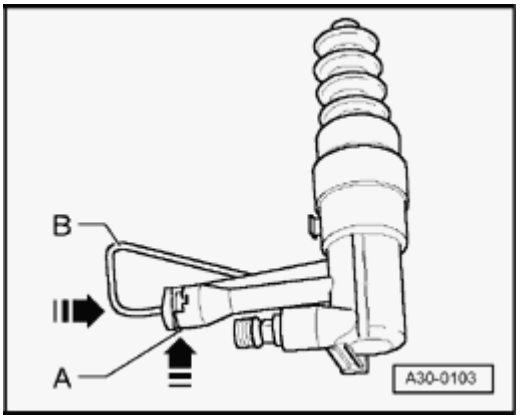


Fig. 72: Identifying Slave Cylinder Hose/Line Assembly
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- To connect line to clutch slave cylinder, press in retaining clip - **A** - as far as it will go.
- Push line - **B** - into clutch slave cylinder until it engages audibly.

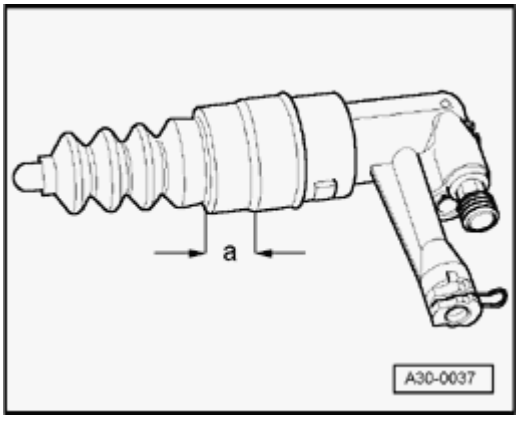


Fig. 73: Coat Boot Area Of Clutch Slave Cylinder With Lithium Grease
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Before inserting slave cylinder in transmission housing, lubricate area - **a** - of sleeve with **lithium grease G052150A2** .
- Lightly lubricate surface where operating rod and clutch release lever make contact with **copper grease Z381351TE** .

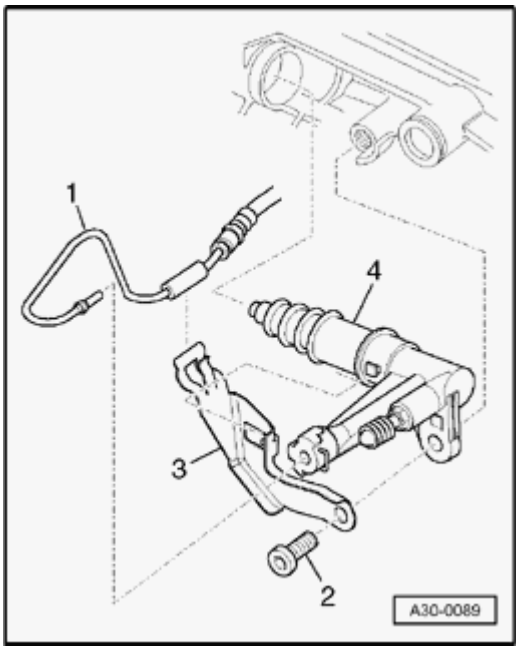


Fig. 74: Clutch Slave Cylinder, Bracket And Hose/Line Assembly
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Engage bracket for hose/line assembly - **3** - at slave cylinder - **4** -.

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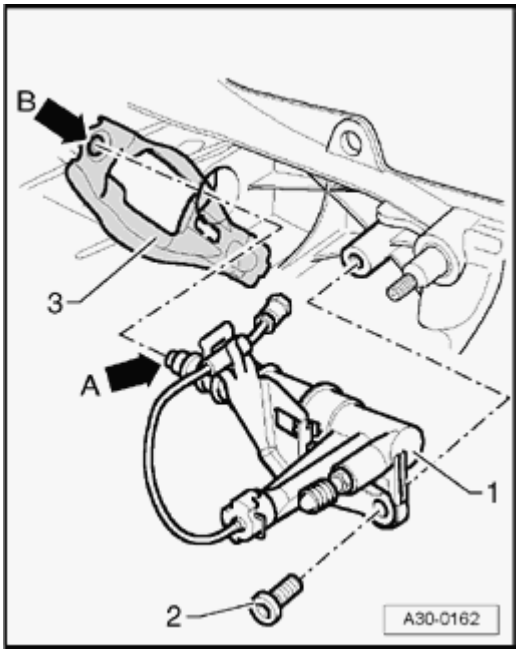


Fig. 75: Guiding Slave Cylinder Into Bore Of Transmission Housing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Guide slave cylinder - **1** - into opening in transmission housing keeping it as straight as possible (without tilting operating rod - **arrow A** -) and insert in recess - **arrow B** - on clutch release lever - **3** -.
- Use new hexagon socket head bolt - **2** - to secure to transmission.

NOTE:

- **If the slave cylinder - 1 - is inserted at an angle, there is a danger that the operating rod - arrow A - will be guided past the clutch release lever - 3 -.**

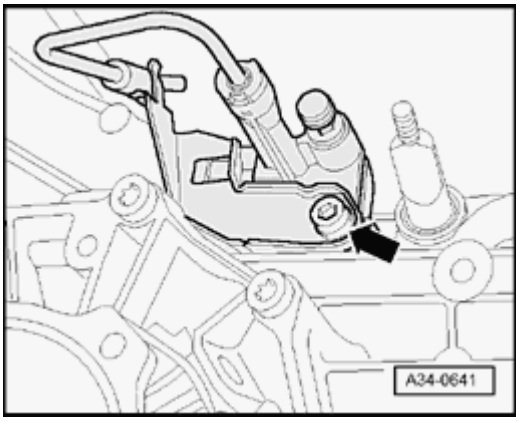


Fig. 76: Slave Cylinder Bracket And Fastener
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten bolt - **arrow** - to specified torque.
- If the line-hose assembly was disconnected at the slave cylinder, the clutch system has to be bled after installing slave cylinder --> **Hydraulic clutch system, bleeding**.

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CAUTION: After installing the slave cylinder carefully press the clutch pedal. If you feel an unusually strong point of resistance when depressing the clutch pedal, you must not press it down further. The operating rod of the slave cylinder is likely to have been guided past the clutch release lever. The slave cylinder would then be destroyed once pedal force exceeds approx. 300 N.

- Bolt drive shaft to flange shaft --> **40 - FRONT SUSPENSION**
- Bolt heat shield for drive shaft onto transmission.
-
- Install tunnel cross member --> **40 - FRONT SUSPENSION**
- Install exhaust system so it is free of stress --> **26 - EXHAUST SYSTEM, EMISSION CONTROLS** .

Tightening torques

Component	Nm
Clutch slave cylinder to transmission	23 * See note
Heat shield for drive shaft to transmission	23

* Replace bolt

CLUTCH, SERVICING

Clutch, servicing

NOTE:

- **Refer to general repair instructions --> General repair instructions.**
- **Before replacing the clutch plate and pressure plate Fault-finding No.9 - Defects on the clutch and clutch mechanism.**
- **Observe the notes on removing and installing clutch master cylinder and slave cylinder --> Clutch master cylinder and slave cylinder, notes on removing and installing.**
- **On vehicles with SAC pressure plate (self-adjusting clutch) an adjuster ring has to be reset when only the clutch plate is replaced--> Resetting adjuster ring in SAC clutch pressure plate.**

- To avoid damaging SAC pressure plate when removing and installing, observe assembly instructions for SAC pressure plate --> **Clutch with SAC pressure plate, removing and installing**.
- Check that SAC pressure plate is not distorted **Check SAC pressure plate for distortion, cracks and burns**.
- Replace clutch plate and pressure plate if riveted fastening is damaged or loose.
- Select the correct clutch plate and pressure plate according to engine code

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- To avoid damaging dual-mass flywheel during removal, please observe instructions for removal **Removing dual-mass flywheel**.
- Clean input shaft splines and (in the case of used clutch plates) the hub splines. Remove corrosion and apply only a very thin coating of **grease for clutch plate splines G000100** to the splines. Then move clutch plate backwards and forwards on input shaft until hub moves freely on shaft. It is important to remove excess grease.
- Pressure plates have an anti-corrosion coating and are greased. Only the contact surface may be cleaned, otherwise the service life of the clutch will be considerably reduced.
- If the clutch has burnt out, thoroughly clean the bell housing, flywheel and parts of the engine facing the transmission in order to prevent odors.

Clutch with SAC pressure plate (LuK version), servicing

NOTE:

- **"SAC" stands for "Self-Adjusting Clutch".**

  - Please refer to notes --> **Clutch, servicing**.

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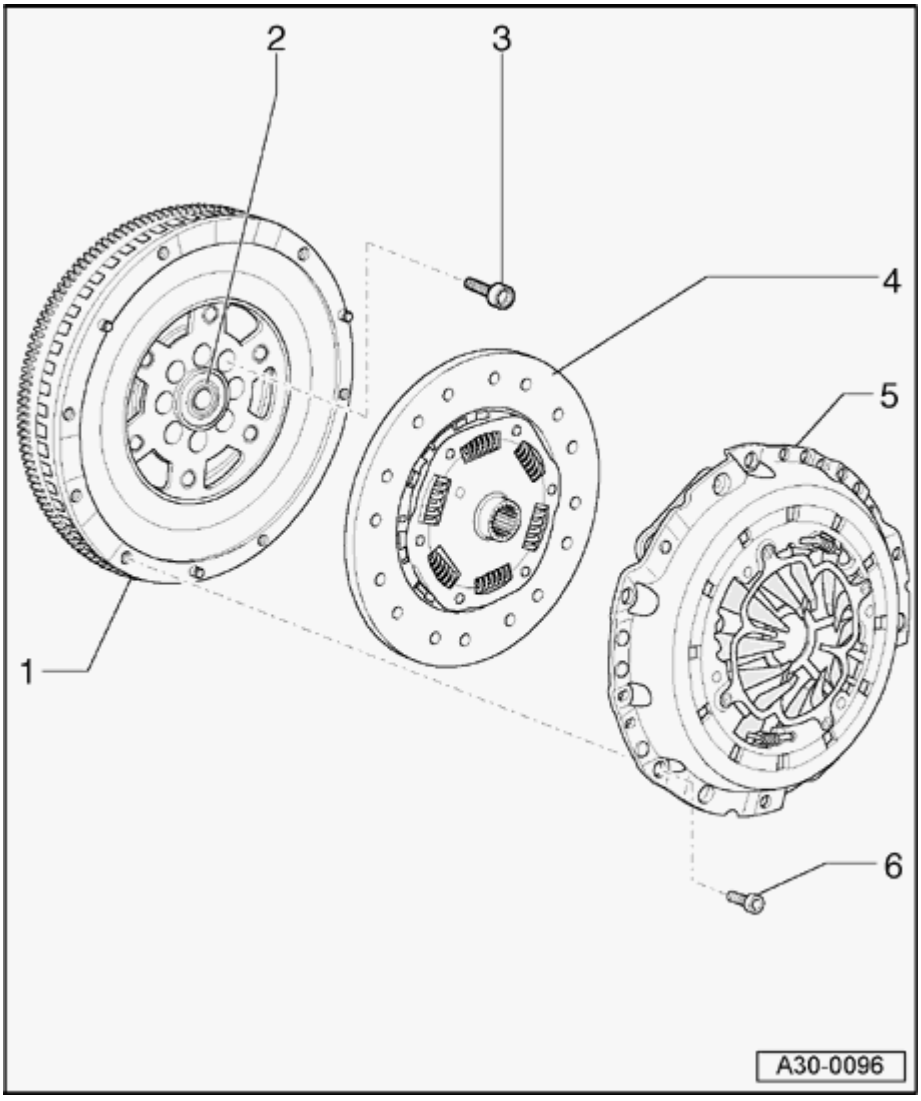


Fig. 77: Clutch With SAC Pressure Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- The transmission has to be removed before working on the clutch --> **Transmission, removing and installing**.

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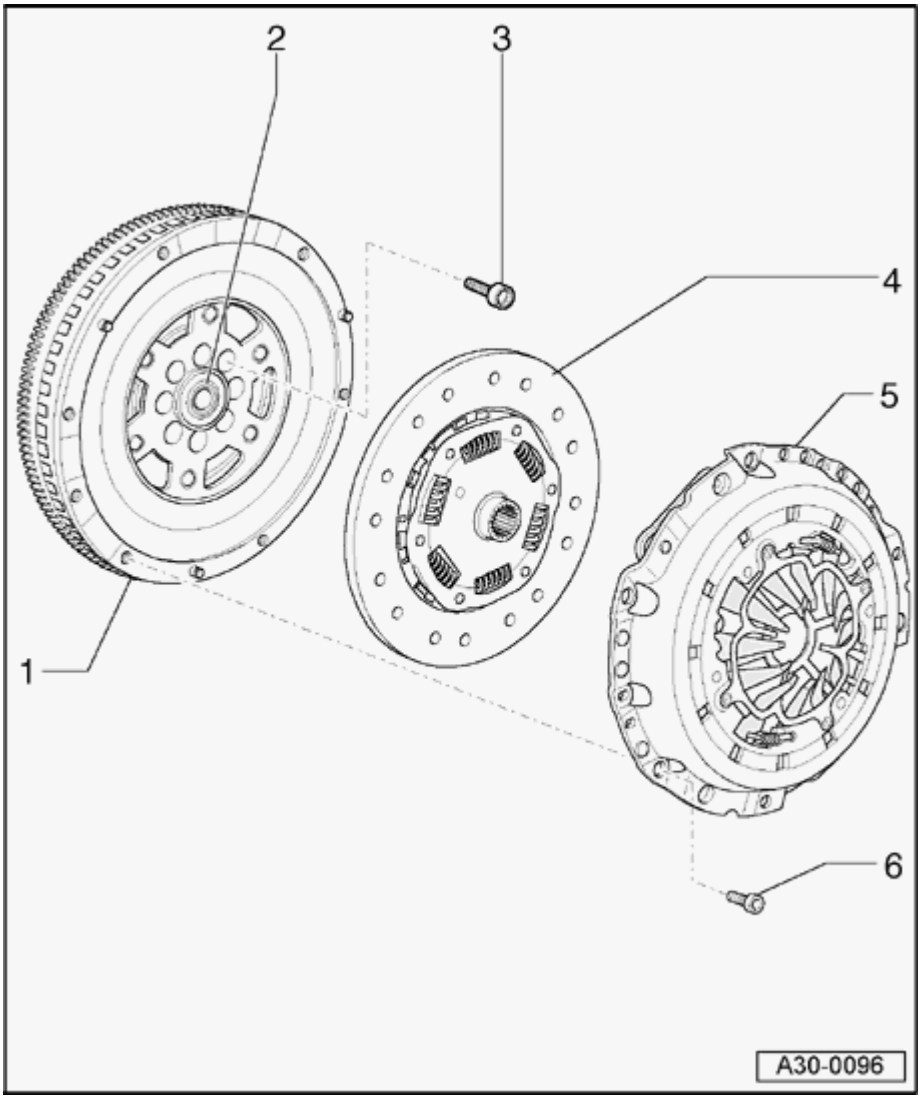


Fig. 78: Clutch With SAC Pressure Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Dual-mass flywheel

- Ensure that dowel pins fit tightly
- Contact surface for clutch lining must be free of grooves, oil and grease
- Observe instructions for removal **Removing dual-mass flywheel**
- Removing and installing --> **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK**

2 - Needle bearing

- Removing and installing --> **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK**

3 - Bolt for flywheel

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- Replace
- Bolt length: 22.5 mm; 60 Nm + 90° further
- Bolt length: 43 mm; 60 Nm + 180° further
- Observe instructions for removal **Removing dual-mass flywheel**

4 - Clutch plate

- Installation position: Clutch lining must make full contact with flywheel
- The marking "Transmission end" (transmission side), if provided, faces towards pressure plate/transmission.
- Coil springs (damper assembly) point towards pressure plate and transmission
- Clutch plate diameter --> **Code letters, assignment of mechanical units, transmission ratios, capacities**

5 - SAC pressure plate

- Removing and installing --> **Clutch with SAC pressure plate, removing and installing**
- Resetting adjuster ring --> **Resetting adjuster ring in SAC clutch pressure plate**
- Check ends of diaphragm spring **Checking ends of diaphragm spring**
- Check that pressure plate is not distorted **Check SAC pressure plate for distortion, cracks and burns**
- Check spring connection and rivets **Checking spring connection and rivet**

6 - Bolt, 22 Nm

- Observe instructions for installation --> **Clutch with SAC pressure plate, removing and installing**

Checking ends of diaphragm spring

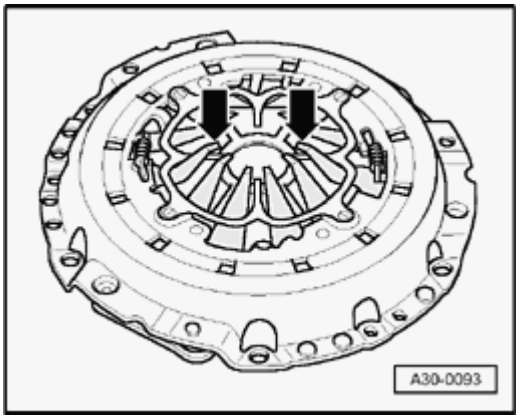


Fig. 79: Checking Ends Of The Diaphragm Spring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Wear up to half the thickness of the diaphragm spring is permitted.

NOTE:

- **Important: When performing repairs, always select the correct clutch pressure plate and clutch plate by checking engine code.**

Checking spring connection and rivet

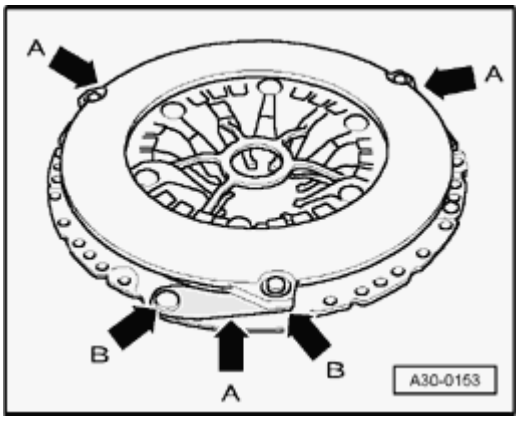


Fig. 80: Checking Spring And Rivet Connections
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check spring connections - **arrowsA** - for damage and make sure riveted fastenings - **arrowsB** - are seated tightly.

NOTE:

- **Replace pressure plate if spring connections are broken or badly bent, or if riveted fastenings are loose.**

Check SAC pressure plate for distortion, cracks and burns

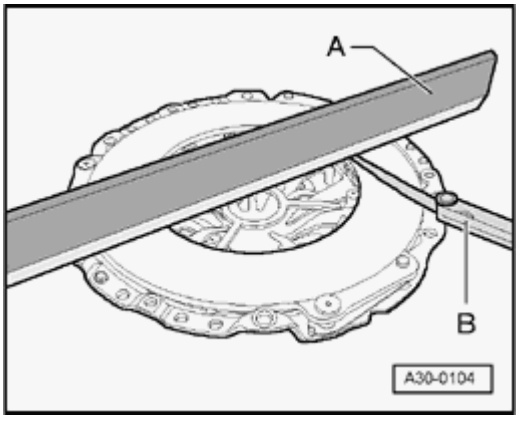


Fig. 81: Check SAC Pressure Plate For Warpage, Cracks And Burns
Courtesy of VOLKSWAGEN UNITED STATES, INC.

A - Straightedge

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B - Feeler gauge

- Pressure plate distortion up to 1.0 mm is allowed

Removing dual-mass flywheel

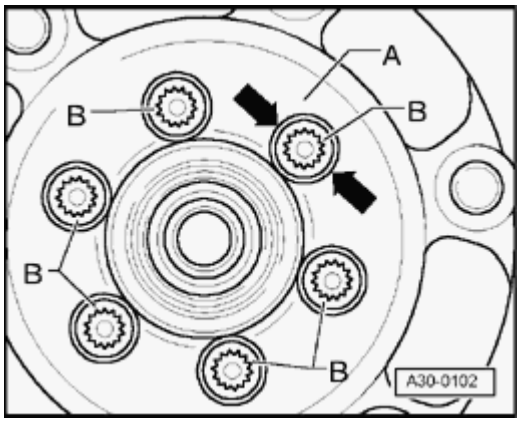


Fig. 82: Identifying Dual-Mass Flywheel & Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

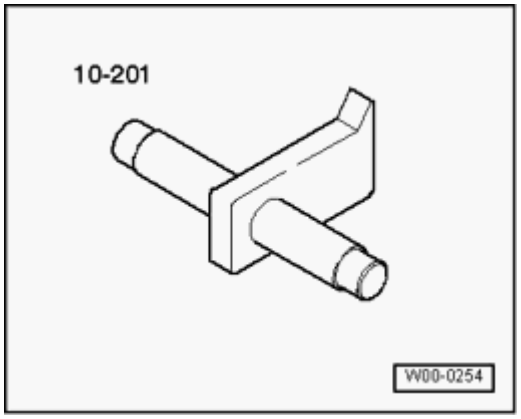
- **Do not use an impact wrench or pneumatic wrench to remove bolts - B - : this would severely damage the dual-mass flywheel. Bolts - B - must always be removed by hand.**

  - Rotate flywheel - **A** - so that bolts - **B** - are aligned centrally behind the holes - **arrows** -.
  - When unscrewing bolts - **B** - , make sure the bolt heads do not contact the flywheel - **arrows** - because this would damage the flywheel when the bolts are turned further.

Removing and installing dual-mass flywheel --> **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK**

Clutch with SAC pressure plate, removing and installing

Special tools, testers and auxiliary items required



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Fig. 83: Counter-Holder Tool 10-201
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Counterhold tool 10-201

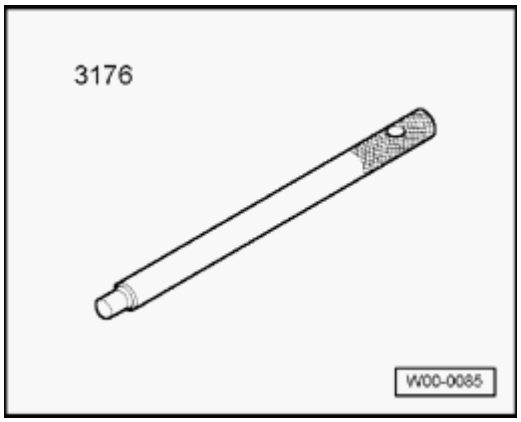


Fig. 84: Identifying Centering Mandrel 3176
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Centring mandrel 3176
- **Grease for clutch plate splines G000100**

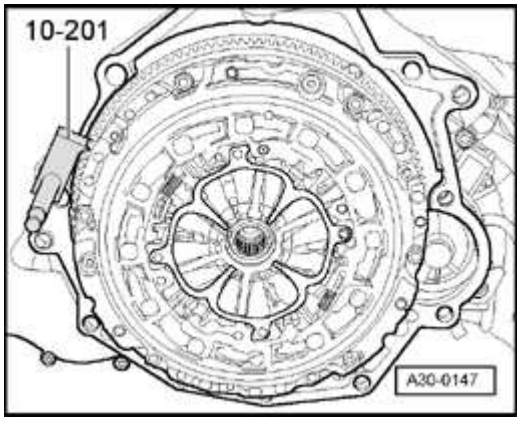


Fig. 85: Counter-Hold Tool 10 - 201 Attached Before Loosening Clutch Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removing

- Attach counter-hold tool 10-201 before loosening bolts.

To prevent the pressure plate from becoming distorted during removal (causes clutch grab when driving off), always adhere to the following procedure when unbolting the pressure plate:

- Loosen all 6 bolts consecutively in clockwise direction and in steps of 90° ($^{1}/_{4}$ turn) until the pressure plate is released.

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Installing

NOTE:

- **Before you re-install the SAC pressure plate check that it is not distorted Check SAC pressure plate for distortion, cracks and burns.**
- **When only the clutch plate is replaced, the adjuster ring in the SAC pressure plate has to be reset before assembly --> Resetting adjuster ring in SAC clutch pressure plate.**
- **Installation position of clutch plate: coil springs (damper assembly) or marking "transmission side" point towards pressure plate and transmission.**

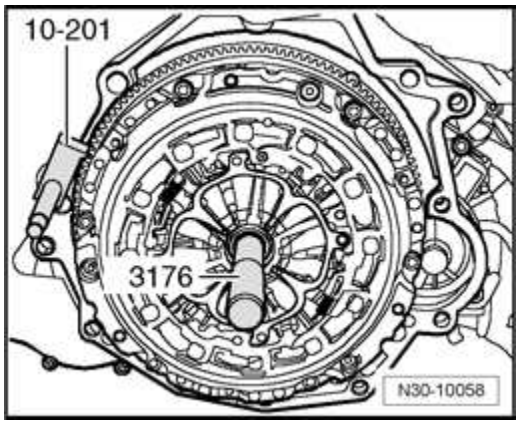


Fig. 86: Identifying 3176 And Counterhold Tool 10-201 On Clutch Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Use centering mandrel 3176 to centralize clutch plate.
- Re-position counterhold tool 10-201 to tighten bolts.

To prevent the pressure plate from becoming distorted during installation (causes clutch grab when driving off), always adhere to the following procedure when installing the pressure plate:

- Position pressure plate on dowel pins.
- Screw in all 6 bolts evenly by hand until bolt heads make contact with pressure plate.
- Tighten all six bolts consecutively in clockwise direction and in steps of 90° ($^1/_4$ turn) until the housing makes contact with flywheel.
- Tighten all 6 bolts to final torque (22Nm) consecutively in clockwise direction.

Resetting adjuster ring in SAC clutch pressure plate

NOTE:

- **"SAC" stands for "Self-Adjusting Clutch".**
- **When fitting a new clutch plate in conjunction with a used SAC pressure plate, the adjuster ring in the pressure plate has to be reset by turning it back as far as it will go. If you do not reset the adjuster ring in the**

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pressure plate, the SAC pressure plate will operate with reduced clamping force, which will cause excessive wear, especially of the clutch plate (clutch will then slip).

- **If the clutch plate is not replaced, it is not necessary to reset the adjuster ring.**
- **New SAC pressure plates are pre-set accordingly, and do not have to be reset.**

Special tools, testers and auxiliary items required

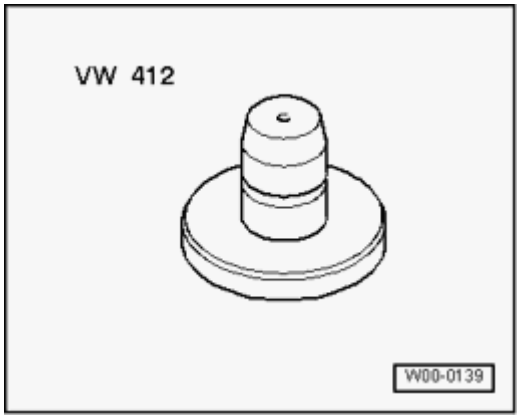


Fig. 87: Thrust Disc VW 412
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press tool VW412

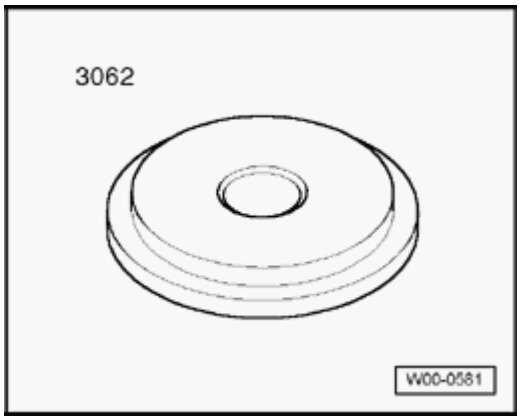


Fig. 88: Identifying Thrust Pad 3062
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Thrust pad 3062

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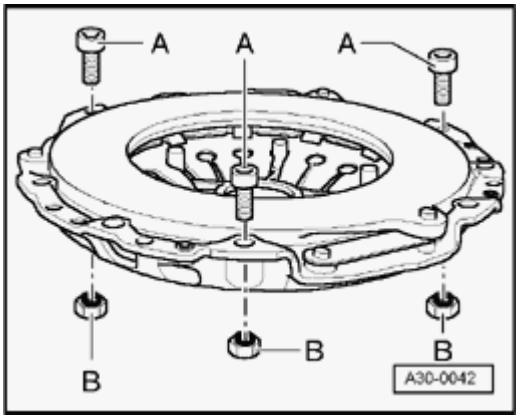


Fig. 89: Inserting Securing Bolts Into Mounting Holes On Pressure Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Procedure

- Insert 3 securing bolts for pressure plate - **A** - into the mounting holes on the pressure plate at 120° ($^{1}/_{3}$ turn) intervals, as shown in the illustration.
- Screw 3 nuts - **B** - M8 onto bolts - **A** - and tighten nuts lightly.

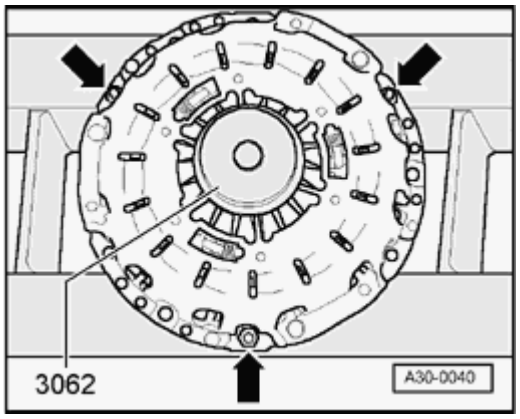


Fig. 90: Placing SAC Pressure Plate Onto Press
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place the SAC pressure plate onto the press tool so that only the 3 bolt heads - **arrows** - make contact.
- Position thrust pad 3062 in the center of the pressure plate.

Do not use force when performing the following steps, as this could cause the forks on the adjuster ring to break off.

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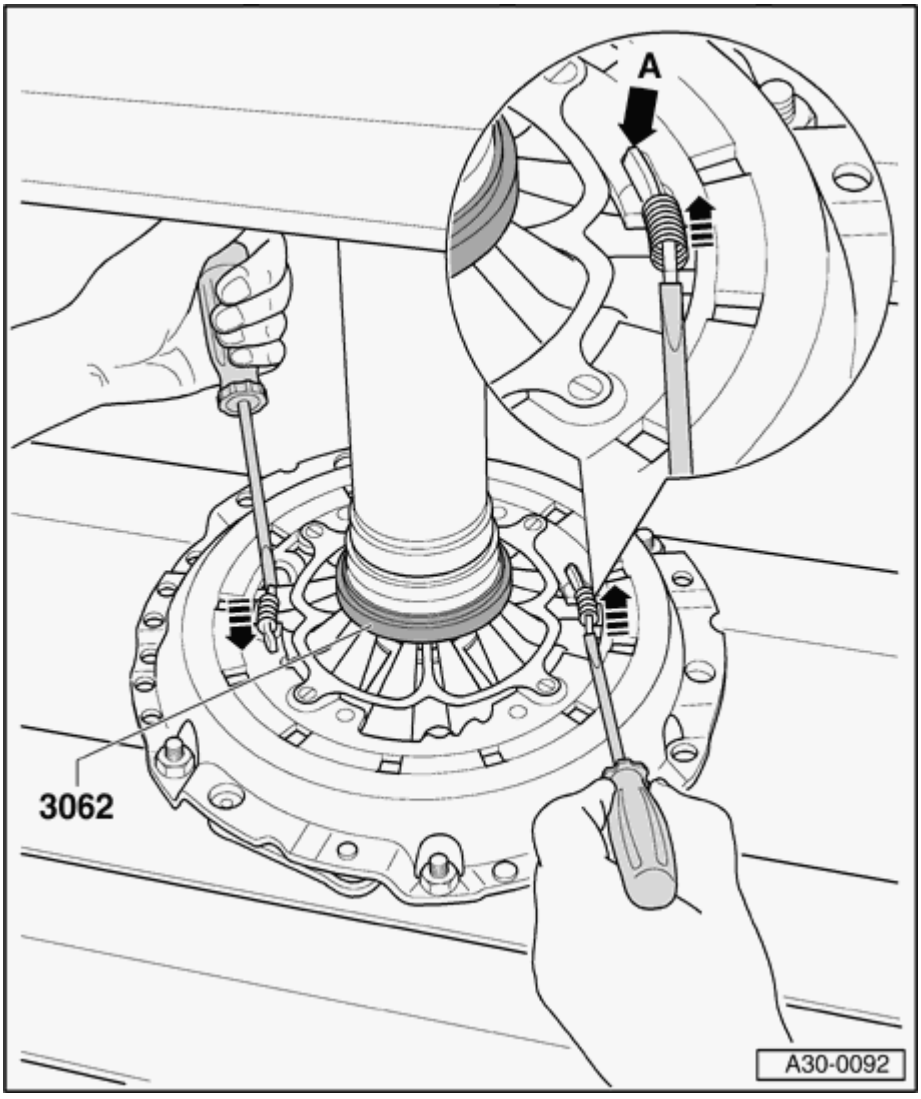


Fig. 91: Turning The Adjuster Ring Evenly Using Both Screwdrivers Until It Reaches The Limit Stop
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Apply two screwdrivers to the forks on the adjuster ring. Use the press tool to apply pressure to the pressure plate until it is just possible to move the adjuster ring.
- Using the two screwdrivers, turn back the adjuster ring evenly in direction of - **arrows** - until it reaches the stop - **arrowA** -.
- Hold the adjuster ring against the stop and reduce the pressure applied by the press tool so that the adjuster ring is held in this position.

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30 CLUTCH

CLUTCH MECHANISM COMPONENTS (ON CHASSIS)

Clutch mechanism components (on chassis)

CAUTION: Before beginning repairs on the electrical system:

- **Obtain the anti-theft radio security code.**
- **Switch the ignition off.**
- **Disconnect the battery Ground (GND) strap.**
- **On vehicles equipped with Audi Telematics by OnStar ® , switch-off the emergency (back-up) battery for the Telematic/Telephone Control Module prior to disconnecting vehicle battery. Refer to**
  - **91 - COMMUNICATION**
  - **91 RADIO, TELEPHONE, NAVIGATION, TRIP COMPUTER for Cabriolet**

  .
- **After reconnecting vehicle battery, re-code and check operation of anti-theft radio. Also check operation of clock and power windows according to article and/or Owner's Manual.**
- **After reconnecting vehicle battery on vehicles equipped with Audi Telematics by OnStar ® , switch-on the emergency (back-up) battery for the Telematic/Telephone Control Module. Refer to**
  - **91 - COMMUNICATION**
  - **91 RADIO, TELEPHONE, NAVIGATION, TRIP COMPUTER for Cabriolet**

  .

Clutch mechanism components (on chassis), servicing

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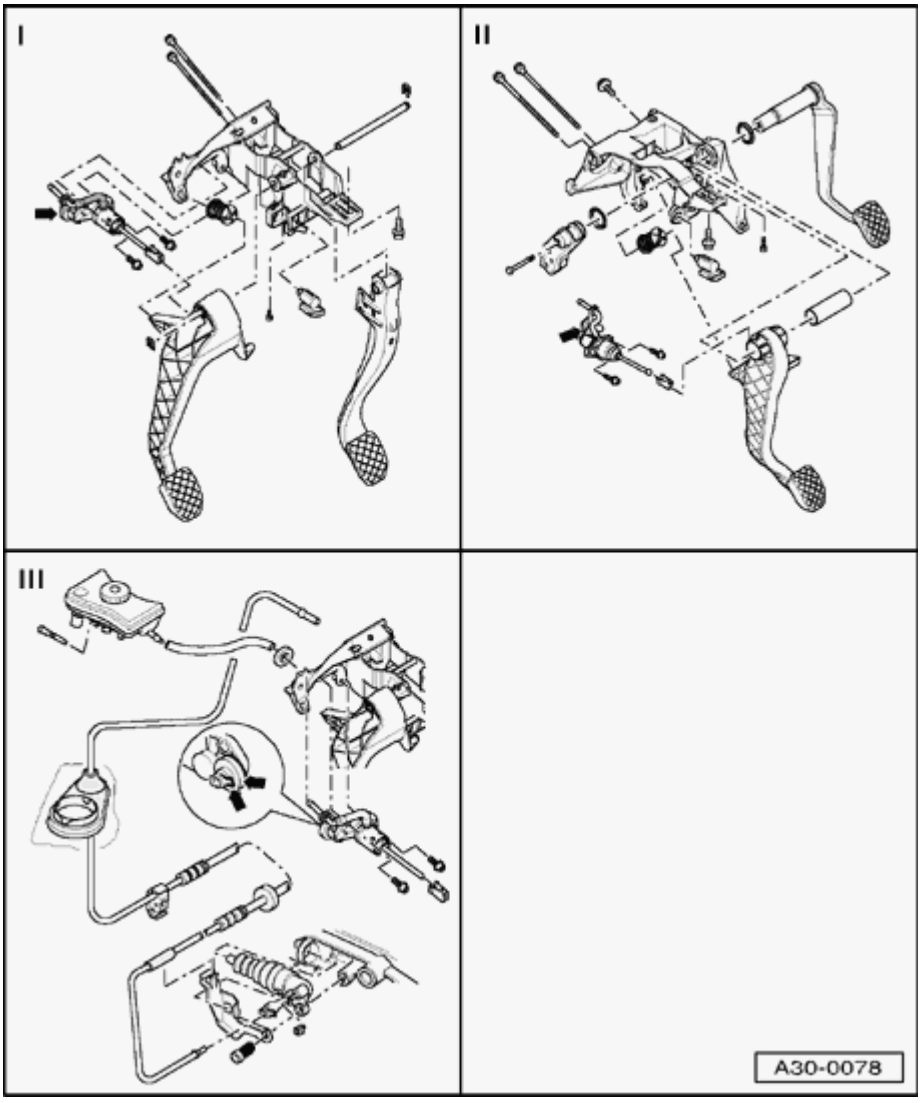


Fig. 11: Exploded View Of Pedal Cluster And Exploded View Of Hydraulic System
Courtesy of VOLKSWAGEN UNITED STATES, INC.

I - Exploded view of pedal cluster. Refer to Pedal cluster, assembly overview

II - Exploded view of hydraulic system. Refer to Hydraulic system, component overview

NOTE:

- **Lubricate all bearing and contact surfaces with polycarbamide grease G 052 142 A 2.**
- **Remove cover panel under instrument panel before carrying out work on pedal cluster:**

  Refer to

  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT for Cabriolet**

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- **Make sure brake fluid does not escape into footwell or plenum chamber or onto transmission below. If it does, clean affected area thoroughly.**
- **When working in footwell, cover carpet with cloths to protect it from brake fluid spillage.**

Pedal cluster, assembly overview

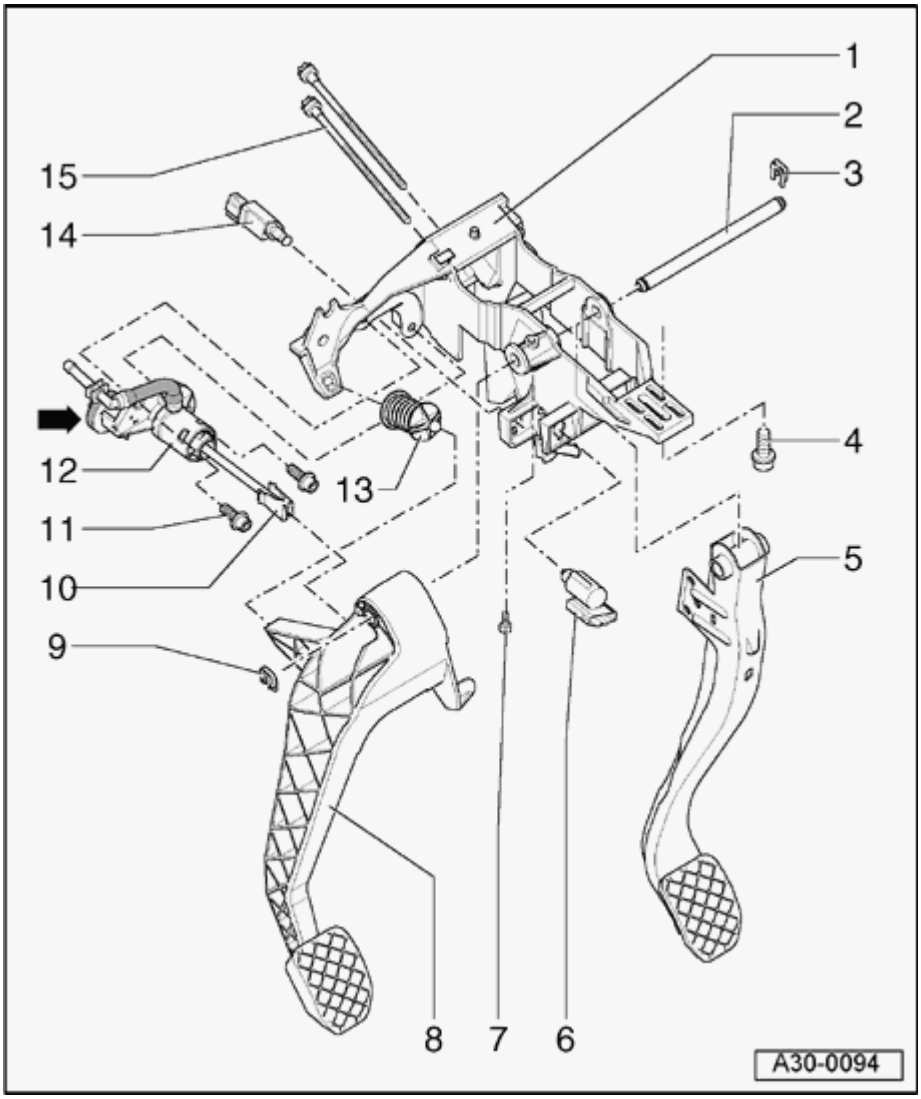


Fig. 12: Pedal Cluster, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Mounting bracket

- Removing and installing. Refer to **Master cylinder, removing and installing**

2 - Mounting pin for clutch and brake pedal

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3 - Locking element

4 - Hex socket-head bolt, 25 Nm

5 - Brake pedal

- Attachment maintenance-free, do not lubricate

6 - Clutch pedal switch

- Do not install more than one time

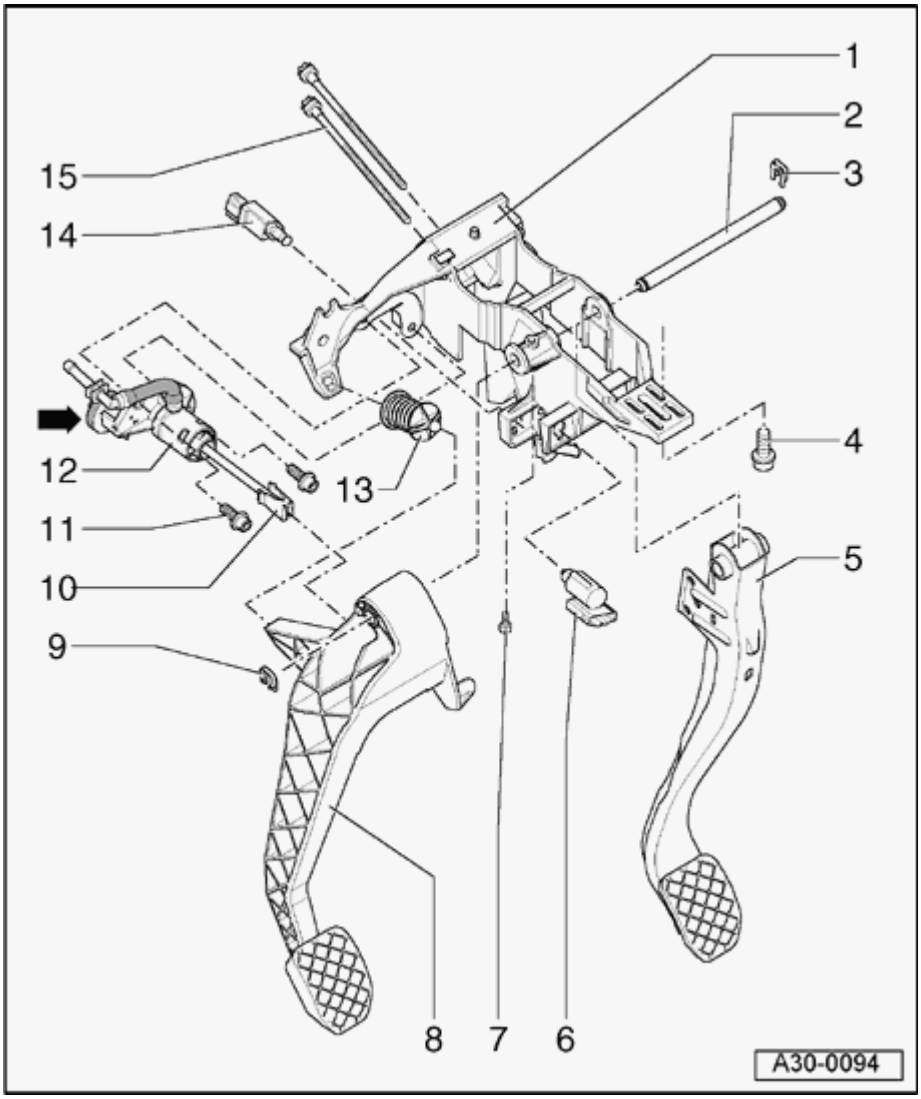


Fig. 13: Pedal Cluster, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

7 - Hex socket-head bolt, 5Nm

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- For securing mounting pin for clutch and brake pedal

8 - Clutch pedal

- Removing and installing. Refer to **Master cylinder, removing and installing**

9 - Locking element

10 - Mount

- Removing and installing. Refer to **Hydraulic system, component overview**

11 - Hex socket-head bolt, 20Nm

12 - Master cylinder

- Removing and installing. Refer to **Master cylinder, removing and installing**
- Do not remove gasket (arrow)

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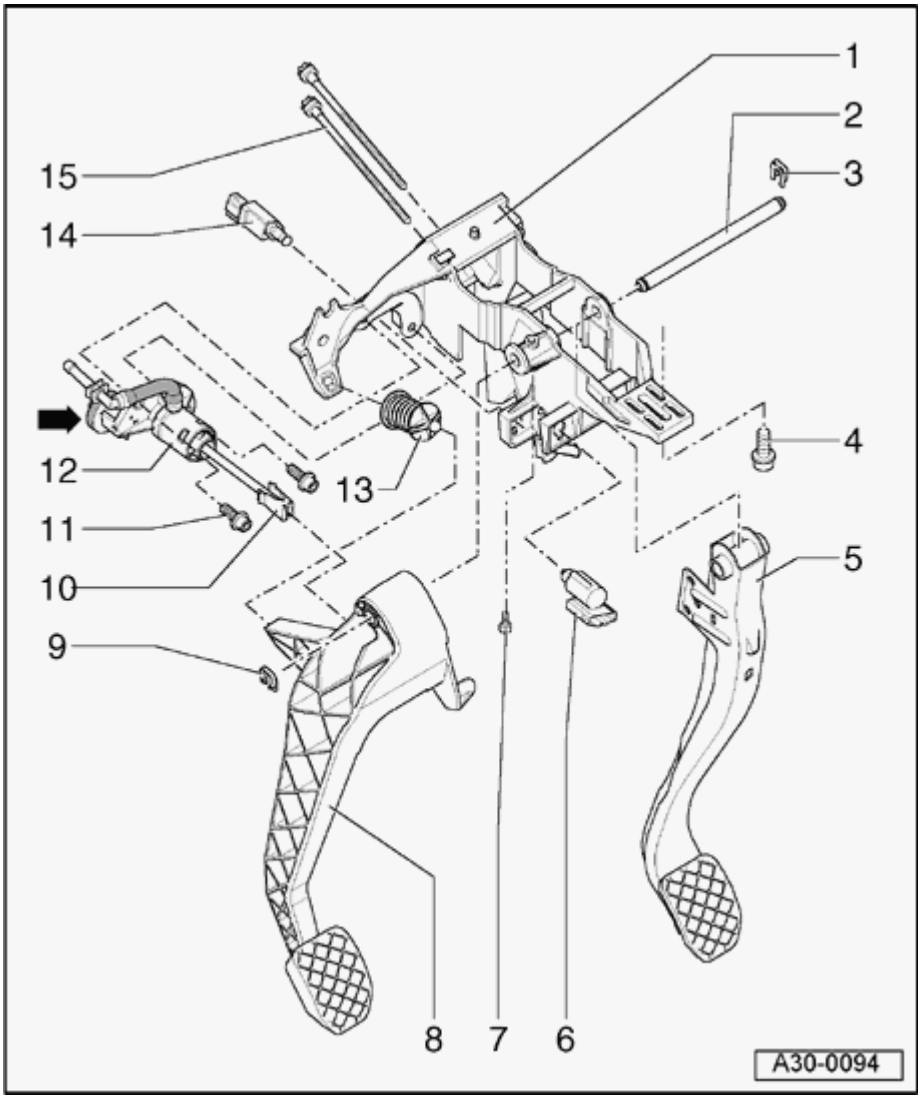


Fig. 14: Pedal Cluster, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

13 - Over-center spring

- Black side facing clutch pedal
- Removing and installing. Refer to **Over-center spring, removing and installing**
- Assignment

14 - Clutch pedal starter interlock switch -F194-

- Do not install more than one time

15 - TORX bolt, 25 Nm

- For attaching brake master cylinder/brake booster to mounting bracket

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Over-center spring, removing and installing

Special tools and equipment

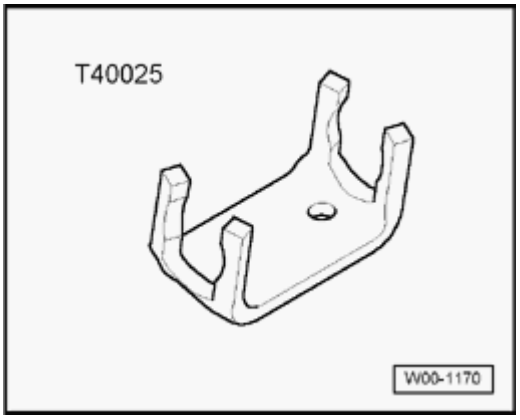


Fig. 15: T40025 Installation Clamp
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- T40025 Mounting clip

Removing

- Remove driver's storage compartment:

Refer to

- **68 - INTERIOR EQUIPMENT**
- **68 - INTERIOR EQUIPMENT** for Cabriolet

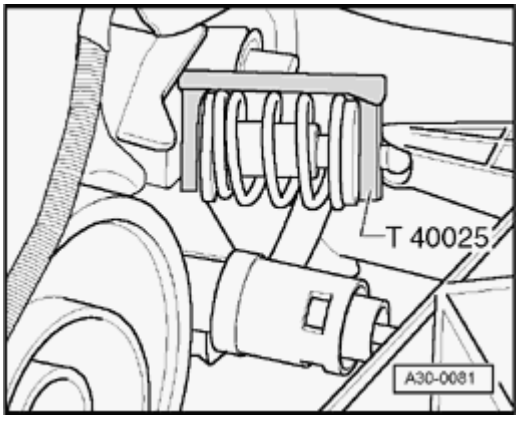


Fig. 16: Installation Clamp T40025 Installed On Over-Center Spring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tension over-center spring with clutch pedal and press on mounting clip T40025.
- Move clutch pedal to home position and pull over-center spring together with mounting clip T40025

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downward to remove.

Installing

- Pull clutch pedal into passenger compartment.

Installation position of over-center spring:

- Black side of over-center spring faces clutch pedal.

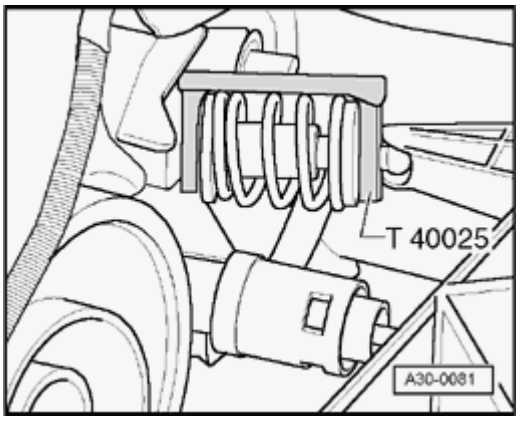


Fig. 17: Installation Clamp T40025 Installed On Over-Center Spring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install over-center spring with mounting clip T40025, press clutch pedal and remove mounting clip.

Hydraulic system, component overview

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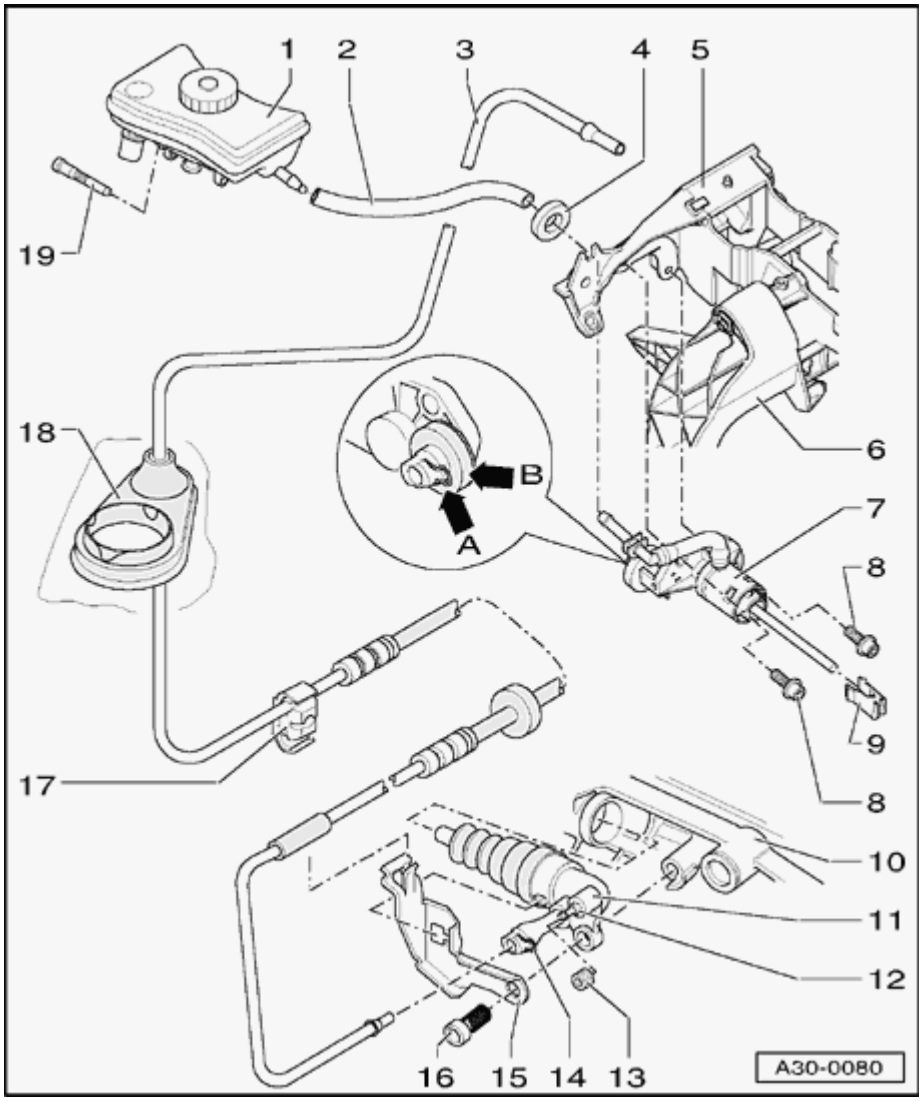


Fig. 18: Hydraulic System, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Brake fluid reservoir

2 - Supply hose

- For master cylinder

3 - Hose/line assembly

- For push-on connections on master/slave cylinder
- Separating from master cylinder and installing. Refer to **Master cylinder, removing and installing**
- Separating from slave cylinder. See **Separating slave cylinder from hose/pipe assembly**

4 - Grommet

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5 - Mounting bracket

6 - Clutch pedal

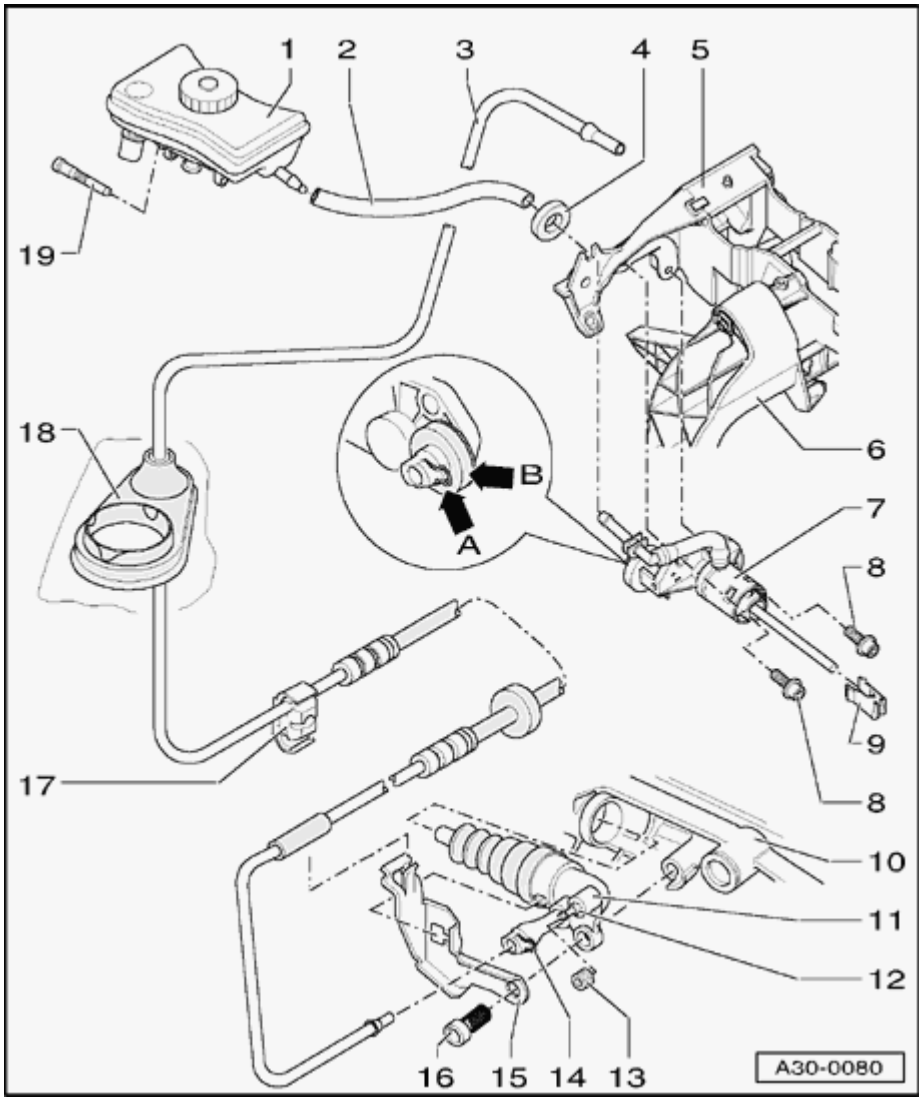


Fig. 19: Hydraulic System, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

7 - Master cylinder

- Removing and installing. Refer to **Master cylinder, removing and installing**
- Do not remove clip (arrow A) or gasket (arrow B)
- To remove hose/pipe assembly pull out clip (arrow A) as far as it will go.

8 - Hex socket-head bolt, 20Nm

9 - Mount

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- Only replace when master cylinder removed
- Detaching. See **Prying off mount**
- Pressing on. See **Pressing master cylinder operating rod into mount**

10 - Transmission

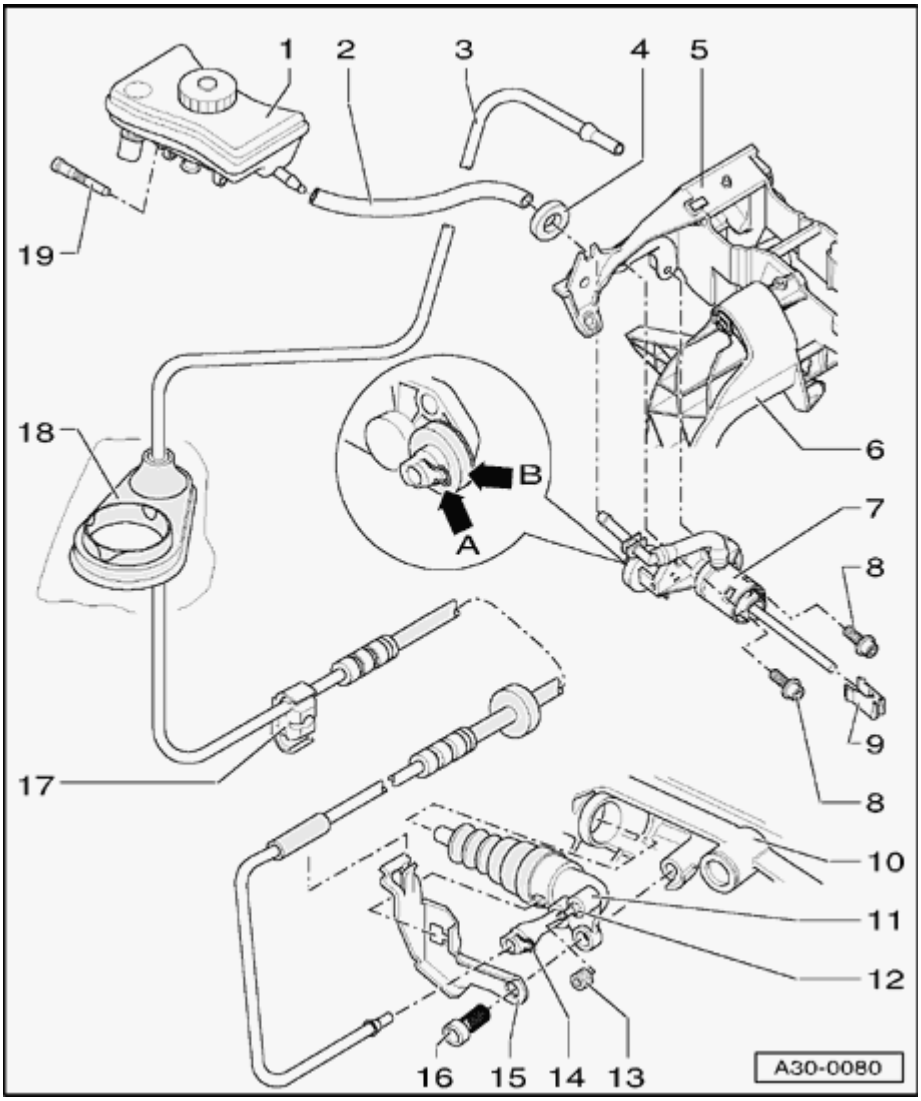


Fig. 20: Hydraulic System, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

11 - Slave cylinder

- Do not press clutch pedal after removal
- Removing and installing. Refer to **Lubricating clutch slave cylinder with grease before installing**
- Bleed slave cylinder after working on hydraulic clutch mechanism. Refer to **Clutch system, bleeding**
- Separate from hose/line assembly. See **Separating slave cylinder from hose/pipe assembly**

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- Brake fluid must not escape onto transmission

12 - Bleeder valve

- Tighten to 4.5 Nm
- Follow work sequence for bleeding. Refer to **Clutch system, bleeding**

13 - Dust cap

14 - Clip

- To remove tube pull out clip as far as it will go. Refer to **Separating slave cylinder from hose/pipe assembly**.

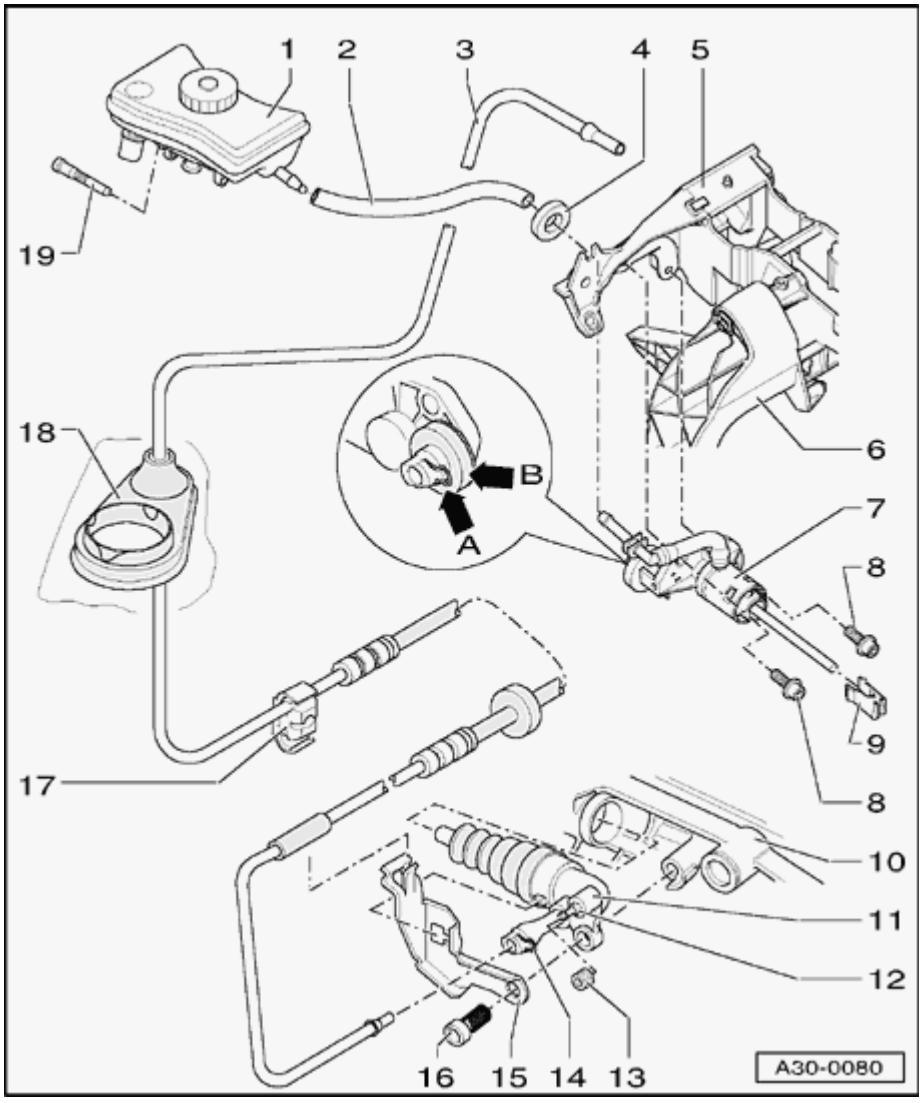


Fig. 21: Hydraulic System, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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15 - Bracket

- For hose/pipe assembly
- Attached to transmission together with slave cylinder

16 - Hex socket-head bolt, 25 Nm

- Slave cylinder to transmission
- Self-locking
- Always replace

17 - Holding clip

18 - Gasket

19 - Bolt

- For brake fluid reservoir

Prying off mount

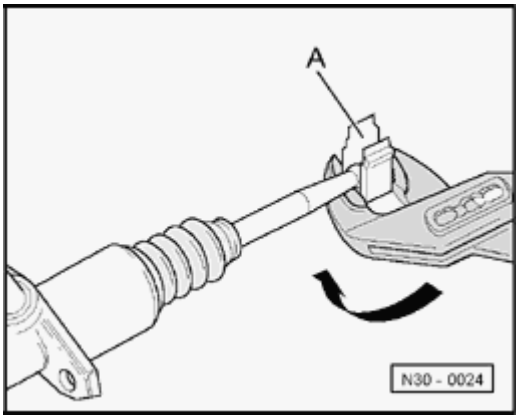


Fig. 22: Removing Retainer By Prying
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Pressing master cylinder operating rod into mount

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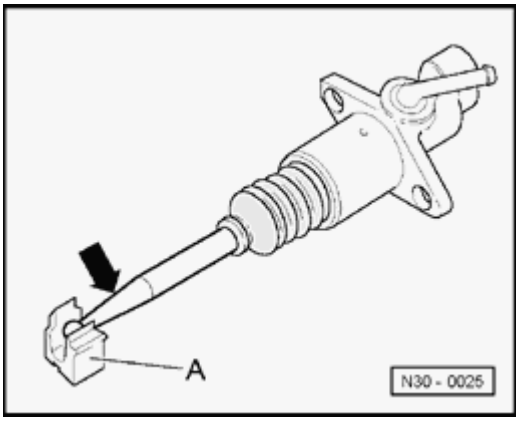


Fig. 23: Installing Clutch Master Cylinder Operating Rod In Retainer
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Separating slave cylinder from hose/pipe assembly

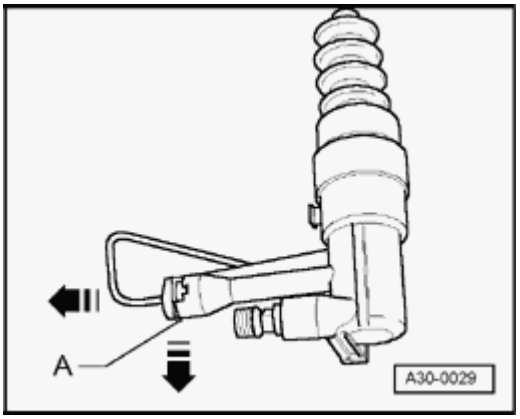


Fig. 24: Removing Hydraulic Line From Slave Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removing

To remove the hose/pipe assembly use a screwdriver to pry out clip -A- as far as it will go. Only then can the hose/pipe assembly be pulled out.

Installing

- Push in clip -A- as far as it will go.
- Insert hose/pipe assembly in slave cylinder until it clicks into position.
- Check proper installation by pulling hose/pipe assembly.

Master cylinder, removing and installing

Special tools, testers and other items required

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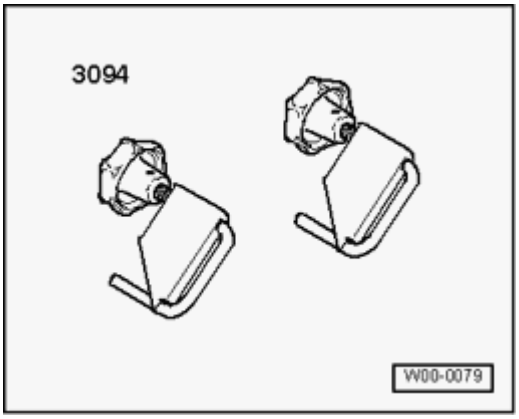


Fig. 25: Identifying Hose Clamps 3094
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- 3094 Hose clamp

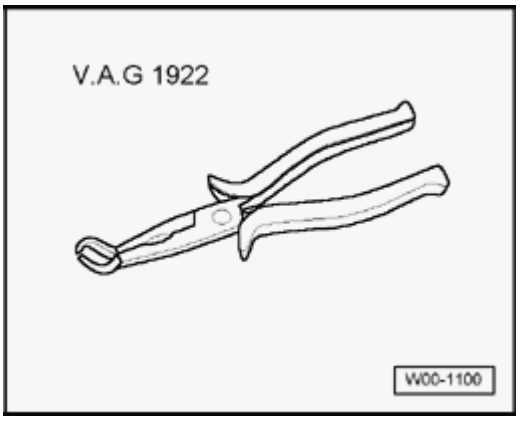


Fig. 26: Identifying Spark Plug Connector Pliers V.A.G 1922
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- VAG 1922 Pliers

Removing

- Pull off gasket on plenum chamber in direction of arrow.

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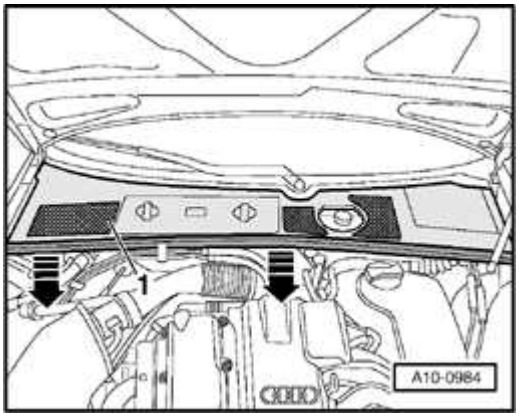


Fig. 27: Removing Cover Over Plenum Chamber
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove cover -1- on top of plenum chamber.
- First check if a coded radio is installed. In this case obtain anti-theft code.

See Caution for disconnecting Telematics battery. Refer to **Clutch mechanism components (on chassis)**

- Disconnect battery Ground strap with ignition switched off.

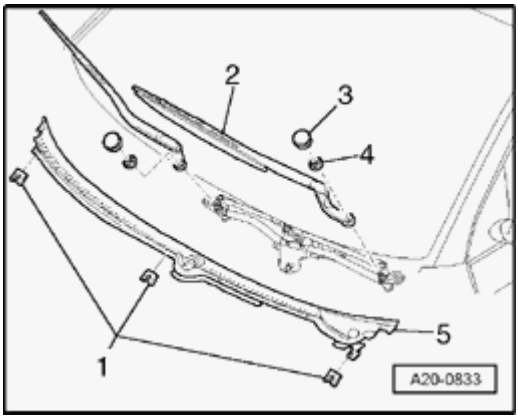


Fig. 28: Removing Securing Clips And Cowl
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pry off two covers -3- with a screwdriver.
- Remove nuts -4- and two wiper arms -2-.
- Pull off clips -1- and remove cowl panel grille -5-.

Remove electronics box in plenum chamber as follows:

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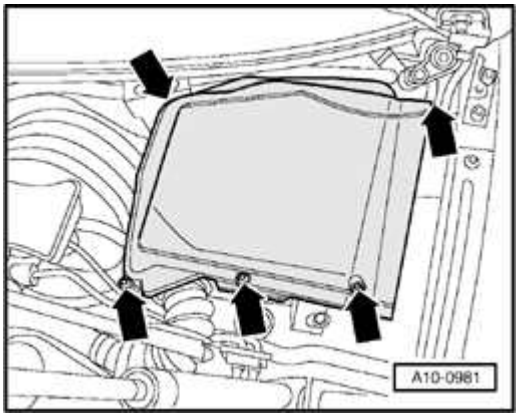


Fig. 29: Electronics Box Sealing Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts (arrows) and take off cover lid.

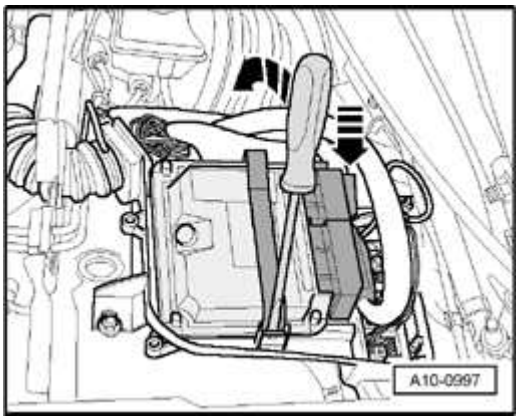


Fig. 30: Using Screwdriver To Remove Retainer Bar And Engine Control Module (ECM) J623
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully pry off mount bar with screwdriver (arrow).

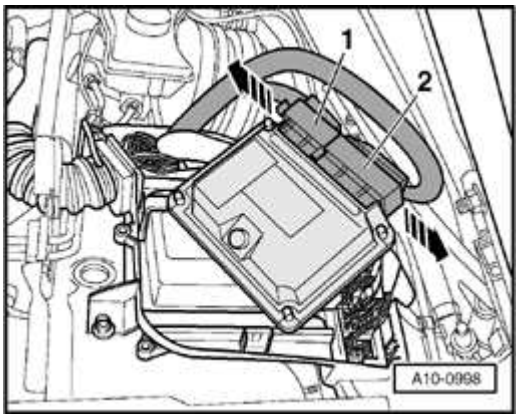


Fig. 31: Releasing Connector Latches And Pulling Off Connectors On Engine Control Module
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Loosen connector locks (arrows) and unplug connectors -1- and -2- from engine control module.

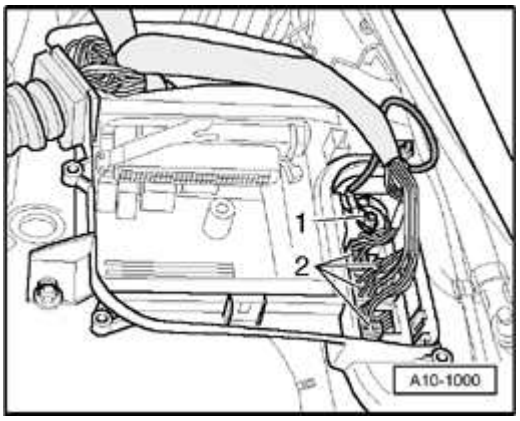


Fig. 32: Connector At Connector Rail And Wire
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove connectors -2- from connector strip.
- Disconnect electrical connection -1-.

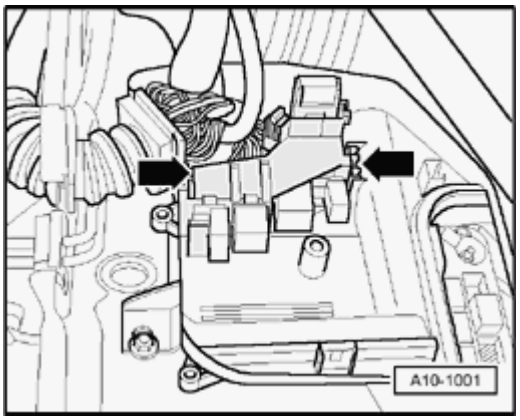


Fig. 33: Locating Auxiliary Relay Carrier Catches
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release locks (arrows) and pull auxiliary relay carrier in electronics box upward and off.
- Pull engine wiring harness together with grommet out of recess in electronics box.

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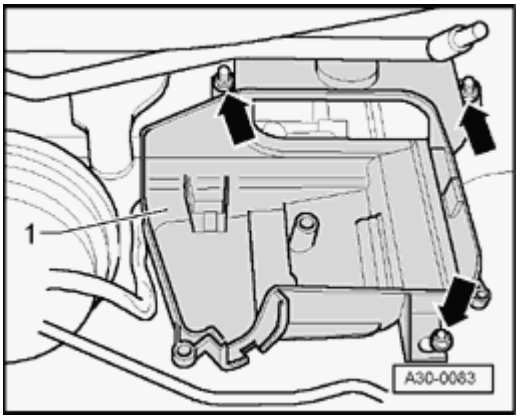


Fig. 34: Electronics Box Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts (arrows) and lift out electronics box -1-.

NOTE:

- **During the following steps make sure that brake fluid does not escape into plenum chamber or onto transmission below. If it does, clean affected area thoroughly.**
- **When working in footwell, cover carpet with cloths to protect it from brake fluid spillage.**

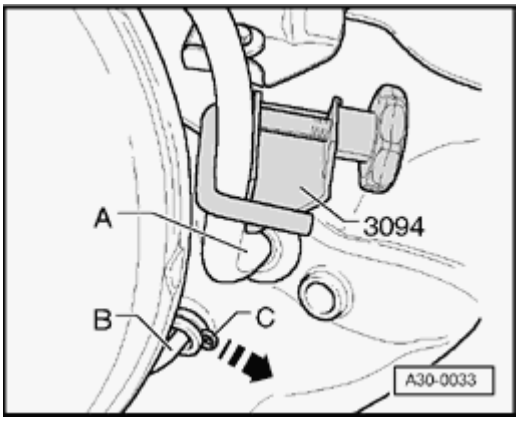


Fig. 35: Identifying Brake Fluid Reservoir Return Hose Grommet
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect supply hose -A- to brake fluid reservoir with special tool 3094, disconnect from master cylinder and seal with plug.
- On bulkhead remove grommet above connecting tube for supply hose.
- Pry out securing clip -C- with screwdriver and then pull tube -B- out slightly.

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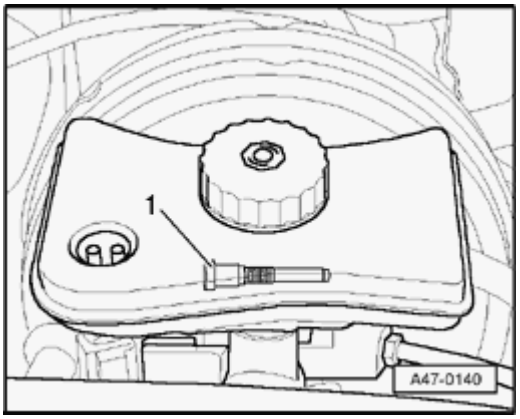


Fig. 36: Location Of Brake Fluid Reservoir Dowel Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt for brake fluid reservoir -1- and unplug connector for monitoring fluid level by pulling downward.

NOTE: Do not remove brake fluid reservoir.

NOTE:

- **Brake fluid reservoir not shown for purpose of clearer illustration.**
- **To remove the top TORX bolt; swivel brake fluid reservoir sideways slightly.**

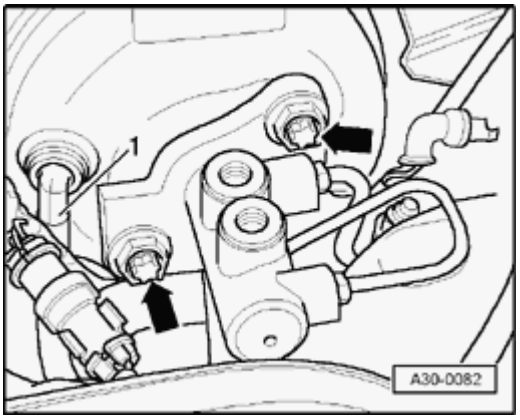


Fig. 37: Location Of Brake Servo Securing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove two TORX bolts (arrows).
- Remove vacuum tube to brake booster -1-.
- Remove driver's storage compartment.

Refer to

- **68 - INTERIOR EQUIPMENT**

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- **68 - INTERIOR EQUIPMENT** for Cabriolet

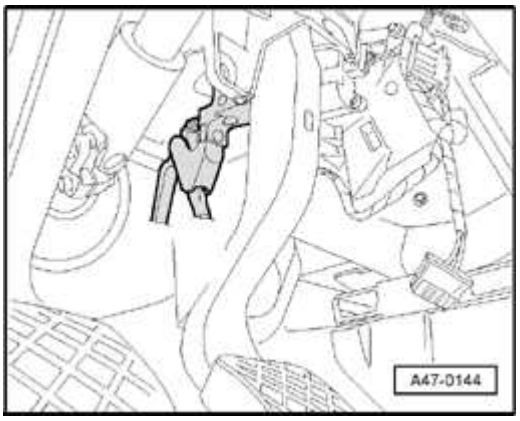


Fig. 38: Brake Pedal At Brake Servo
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Separate brake pedal from brake booster.

Refer to **47 - BRAKES - HYDRAULIC COMPONENTS**

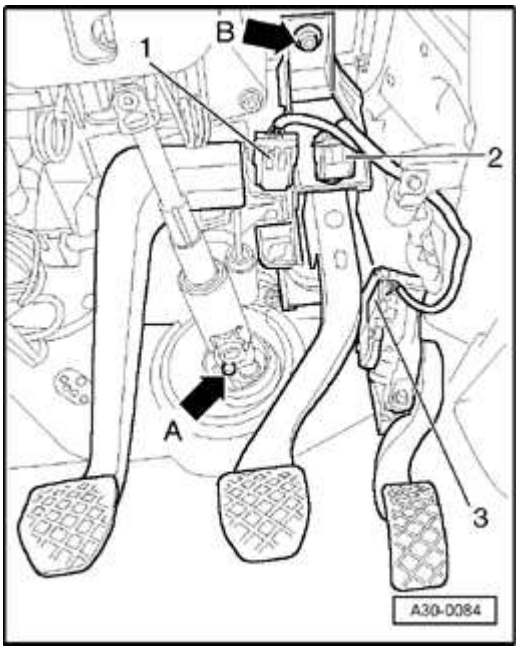


Fig. 39: Locating Steering Column At Steering Gear And Disconnecting Connector On Clutch Pedal Switch, Brake Pedal Switch And On Accelerator Pedal Module
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Separate steering column from steering box (arrow A).

Refer to **48 - STEERING**

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- Disconnect connectors from clutch pedal switch -1-, brake pedal switch -2- and accelerator pedal module -3-.
- Remove bolt for mounting bracket (arrow B) and remove pedal cluster assembly.

Release master cylinder operating rod from clutch pedal as follows:

- Remove over-center spring. Refer to **Over-center spring, removing and installing**.

NOTE:

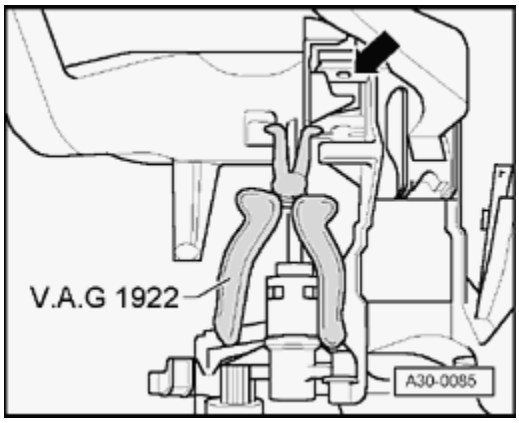
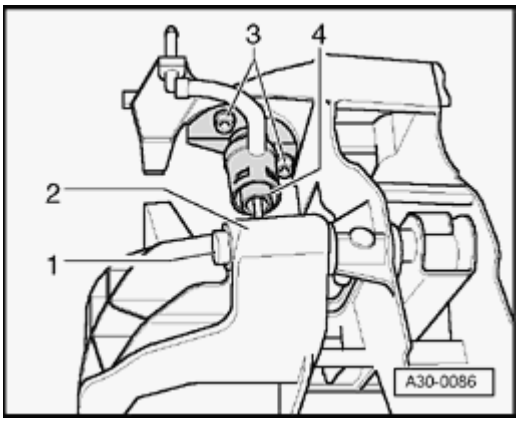


Fig. 40: Pressing Retainer Together And Detaching Clutch Pedal From Master Cylinder Using VAG 1922
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- **When releasing make sure clutch pedal does not bounce against clutch pedal switch mount (arrow). Otherwise the mount might break.**
- **In order to assure sufficiently secure fitting of clutch pedal switch. Refer to Pedal cluster, assembly overview Item 6- as well as Clutch pedal starter interlock switch -F194-. Refer to Pedal cluster, assembly overview Item 14- in pedal cluster, these switches must not be installed more than once.**

- Insert pliers VAG 1922 into recesses in clutch pedal, compress mount (arrows) and separate clutch pedal from master cylinder.



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Fig. 41: Identifying Retaining Clip, Clutch Pedal, Bolts And Master Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove securing clip -1- and clutch pedal -2-.
- Remove bolts -3- and master cylinder -4-.

Installing

Install in reverse order, paying attention to the following:

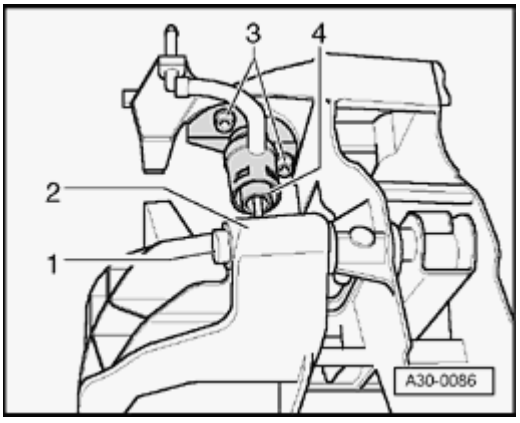


Fig. 42: Identifying Retaining Clip, Clutch Pedal, Bolts And Master Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert master cylinder and tighten bolts -3- to 20 Nm.

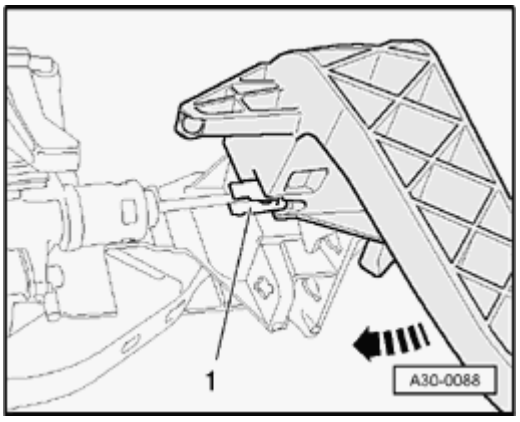


Fig. 43: Pushing Clutch Pedal To Lock Into Place, While Making Sure Mount Is Properly Secured In Clutch Pedal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert mount -1- in clutch pedal.
- Push clutch pedal in direction of arrow to lock into place, while making sure mount -1- is properly secured in clutch pedal.
- Installing over-center spring. Refer to **Over-center spring, removing and installing**.

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For the next step a second technician is required.

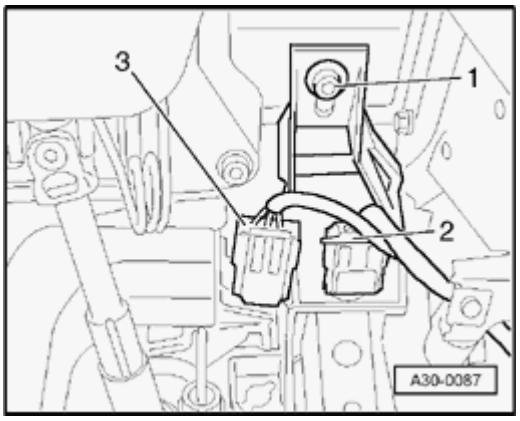


Fig. 44: Location Of Clutch Pedal Switch F36 And Pedal Assembly Securing Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert pedal cluster assembly and tighten bolt -1- hand-tight. Simultaneously, second technician feeds tube from plenum chamber side into master cylinder.

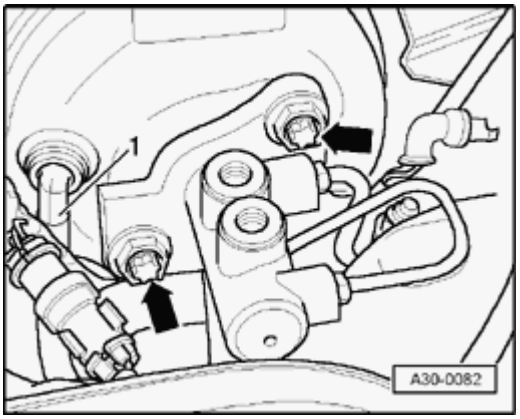


Fig. 45: Location Of Brake Servo Securing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten brake booster bolts (arrows) to 25 Nm.

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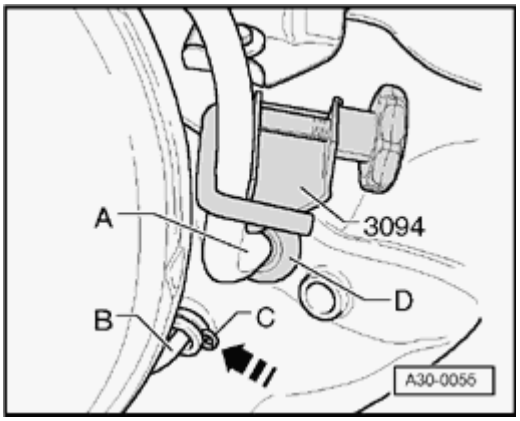


Fig. 46: Installing Rubber Grommet And After-Run Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push in securing clip -C- as far as it will go.
- Insert tube -B- in master cylinder until it clicks into position.
- Install grommet -D- over connecting tube/supply hose -A- and into bulkhead.
- Push on supply hose -A- to brake fluid reservoir as far as it will go.

- Remove special tool 3094.
- Screw in brake fluid reservoir bolt.

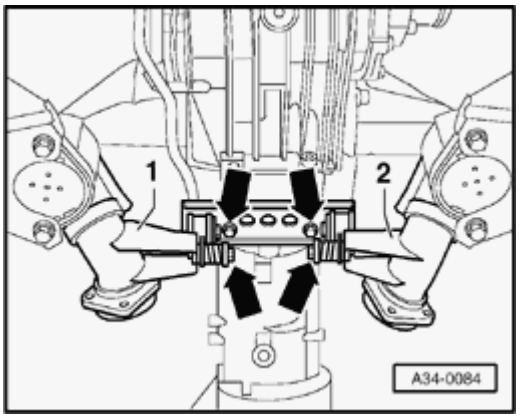


Fig. 47: Locating Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten hex socket-head bolt (arrow B) which secures pedal cluster to instrument panel carrier to 25 Nm.
- Attach connectors -1-, -2- and -3-.
- Connect brake pedal to brake booster.

Refer to **47 - BRAKES - HYDRAULIC COMPONENTS**

- Attach steering column to steering box (arrow A).

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Refer to **48 - STEERING**

- Install driver's storage compartment:

Refer to

- **68 - INTERIOR EQUIPMENT**
- **68 - INTERIOR EQUIPMENT** for Cabriolet

- Bleed clutch system. Refer to **Clutch system, bleeding**.

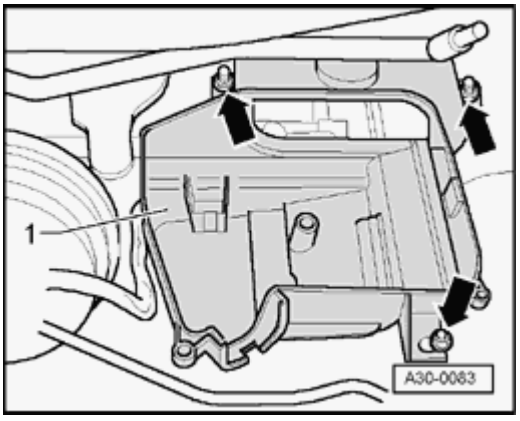


Fig. 48: Electronics Box Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert electronics box and tighten nuts (arrows) to 4 Nm.
- Route engine wiring harness and attach connection in connector station.
- Install engine control module plus auxiliary relay carrier and auxiliary fuse holder, if installed.

Refer to **97 WIRING** r.

- Push on cover lid by hand and tighten bolts diagonally - 4 Nm.

See Caution for connecting Telematics battery. Refer to **Clutch mechanism components (on chassis)**

NOTE: If the battery is reconnected remember to check and activate vehicle equipment (radio, clock, convenience electronics etc.).

Refer to

- **01 - MAINTENANCE**
- **01 - MAINTENANCE** for Cabriolet

Clutch system, bleeding

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Special tools, testers and other items required

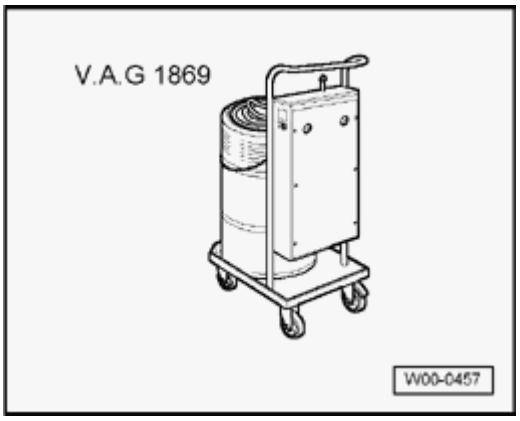


Fig. 49: Identifying Brake Filler And Bleeder Unit V.A.G 1869
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Brake system brake filler and bleeder unit VAS 5234

Brake fluid specification:

Refer to **47 - BRAKES - HYDRAULIC COMPONENTS**

NOTE:

- **Open bleeder valve before switching on bleeding equipment.**
- **Make sure no brake fluid escapes onto transmission when performing subsequent work.**
- **Bleed system after working on hydraulic clutch mechanism.**
- **Before bleeding the system pull out clutch pedal and fill brake fluid reservoir with brake fluid up to "max".**

- Connect brake system brake filler and bleeder unit VAS 5234, but do not switch on at this point.
- Remove sound insulation below transmission, if installed.

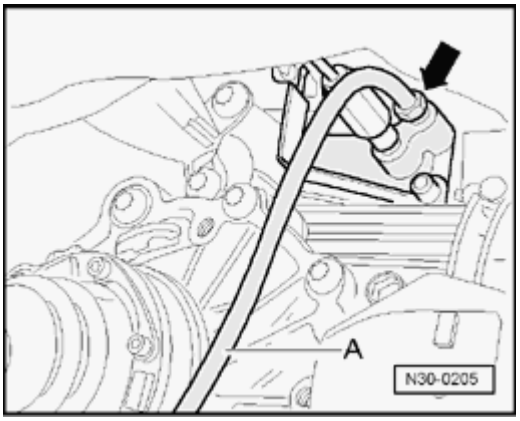


Fig. 50: Connecting Bleeder Hose To Clutch Slave Cylinder

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Attach bleeder hose -A- to slave cylinder (arrow) and open bleeder valve.
- Connect bleeder hose to pressure hose of collecting bottle.
- Then switch on bleeding appliance and allow approx. 100 cm3 of brake fluid to drain out.

- Working pressure 2.5 bar

NOTE: Make sure bleed hose is correctly installed when bleeding.

- Tighten bleeder valve to 4.5 Nm.
- Press clutch pedal several times following completion of bleeding process.
- Bleed system again if necessary.

CLUTCH RELEASE MECHANISM COMPONENTS (ON TRANSMISSION), SERVICING

Clutch release mechanism components (on transmission), servicing

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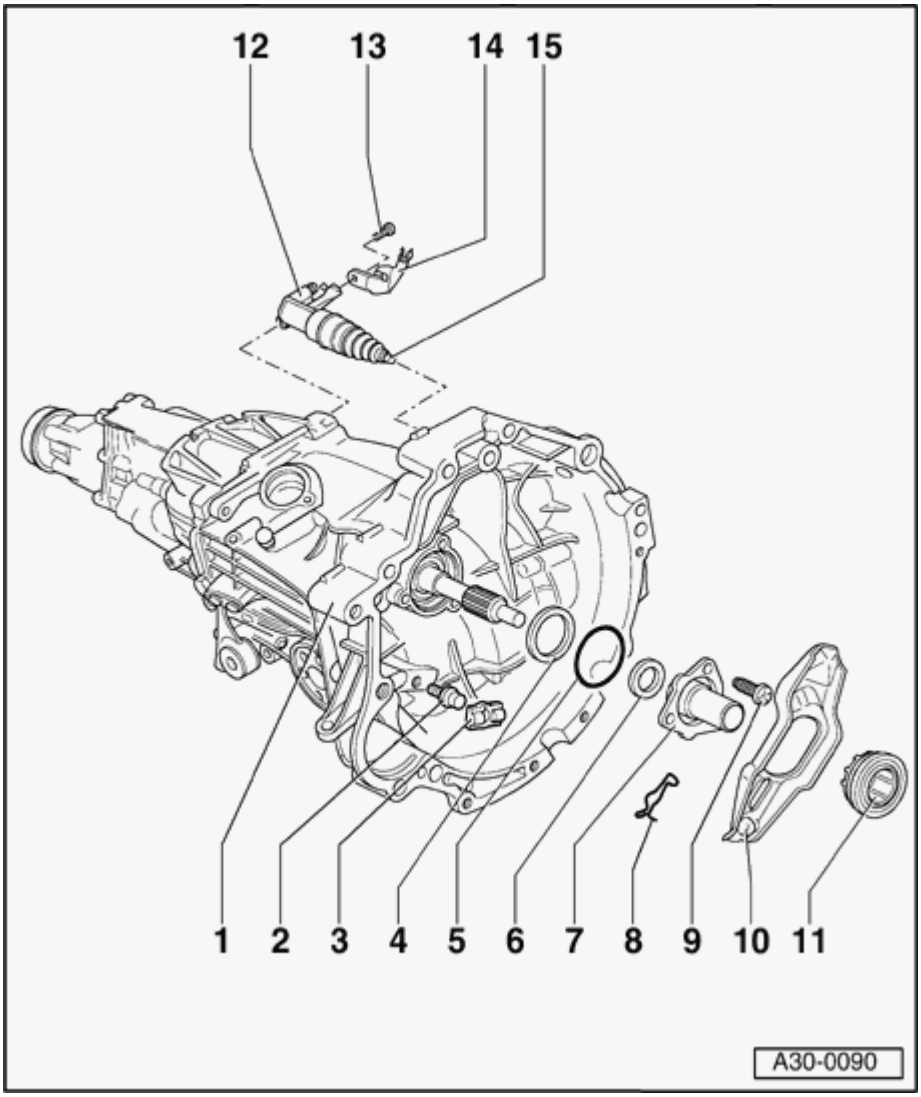


Fig. 51: Clutch Release Mechanism Components (On Transmission), Servicing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Transmission

2 - Ball pivot, 25 Nm

- Lubricate with MoS2 grease

3 - Intermediate piece

4 - Dished washer

- Small diameter (convex side) facing guide sleeve

5 - O-ring

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- Always replace

6 - Oil seal for input shaft

- Available together with guide sleeve -item 7 as one part

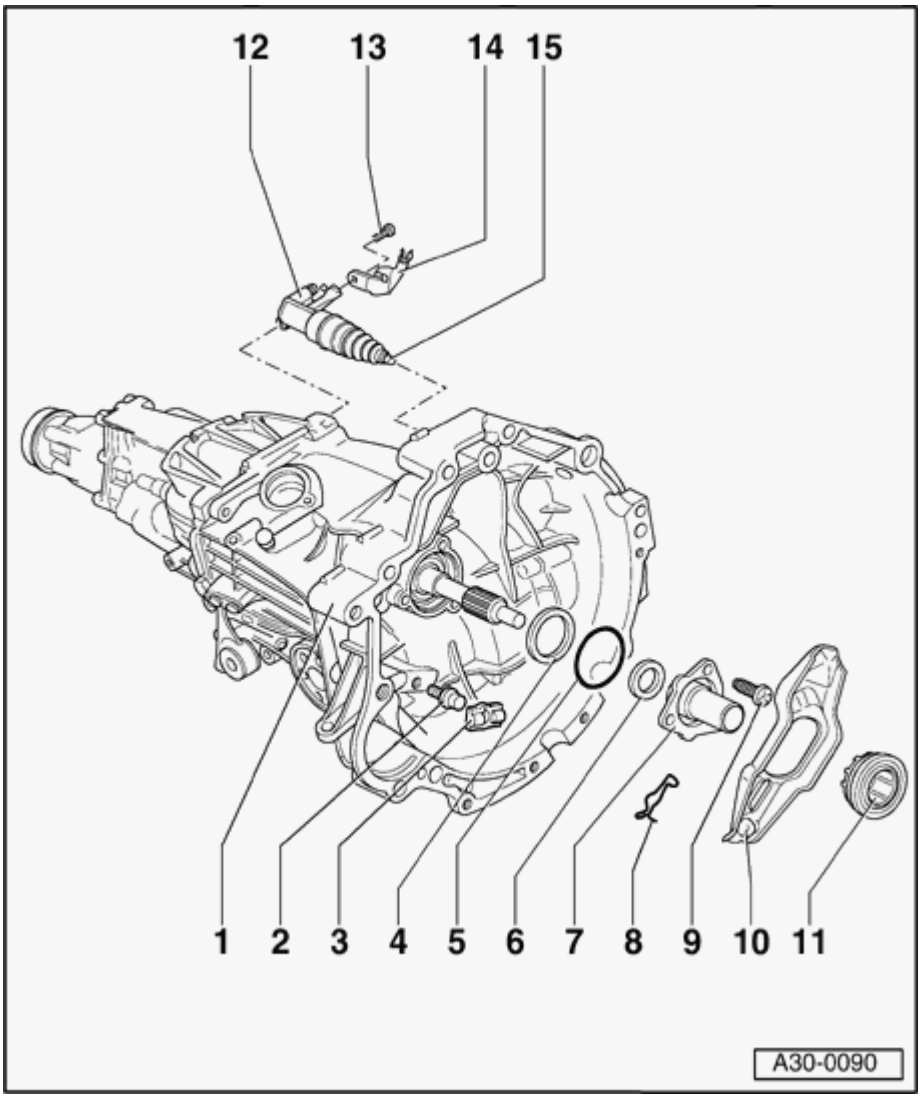


Fig. 52: Clutch Release Mechanism Components (On Transmission), Servicing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

7 - Guide sleeve

- Available together with oil seal -item 6 as one part
- Installation position: Oil drain hole facing downward
- To protect oil seal -item 7 place shrink down tube over input shaft splines

8 - Retaining spring

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- Attach to clutch release lever

9 - Internal TORX head bolt, 35 Nm

- Self-locking
- Always replace

10 - Clutch release lever

- Before installing lubricate locating recess for plunger of clutch slave cylinder with copper paste e.g. Z 381 351 TE

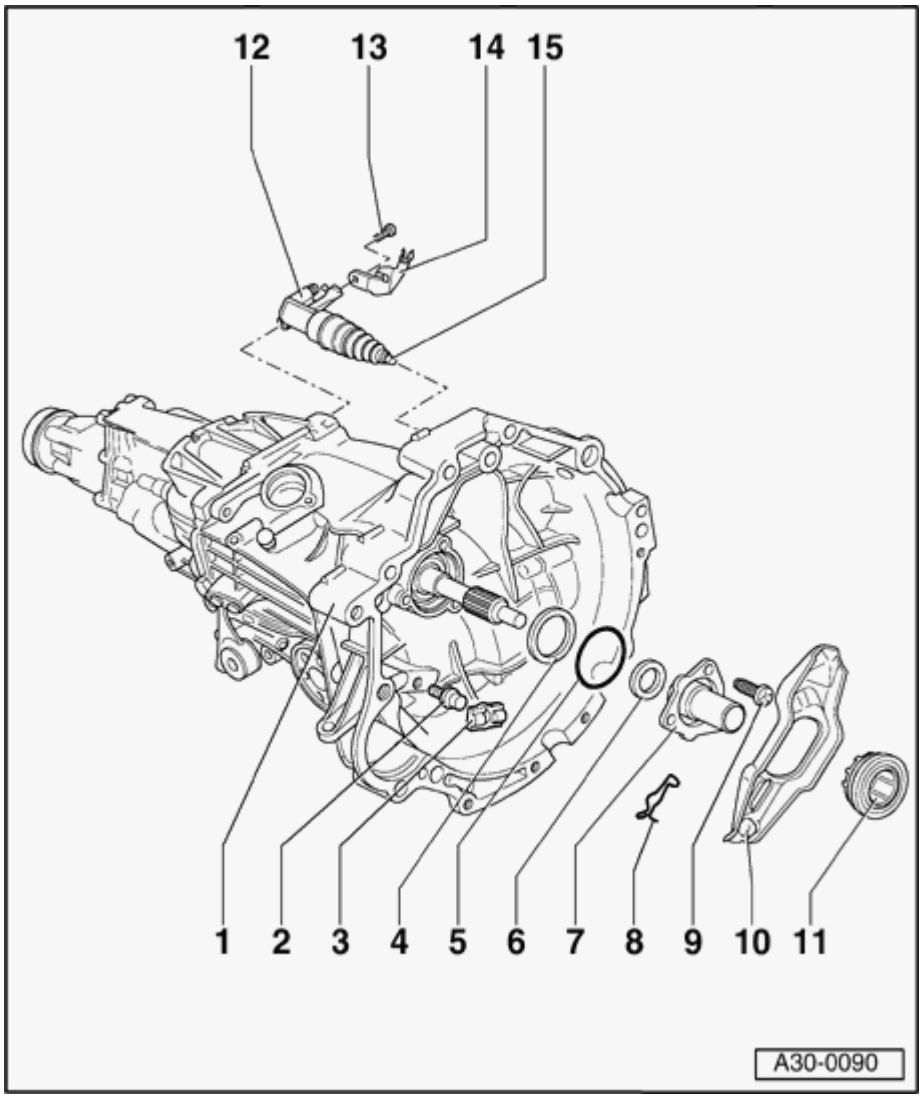


Fig. 53: Clutch Release Mechanism Components (On Transmission), Servicing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

11 - Release bearing

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- With or without plastic ring. See **Servicing release bearing with plastic ring**, depending on design
- Glue on detached plastic ring. See **Servicing release bearing with plastic ring**
- Never wash out bearing; only wipe
- Replace noisy bearings

- Lock retaining tabs on release bearing in release lever

12 - Slave cylinder

- Do not press clutch pedal after removal
- Separating from hose/pipe assembly. See **Separating slave cylinder from hose/pipe assembly**
- Installing. See **Lubricating clutch slave cylinder with grease before installing** and see **Installing clutch slave cylinder**
- Pre-load slave cylinder so that securing bolt can be installed easily

- Tighten bleeder valve to 4.5 Nm
- Bleed clutch system. Refer to **Clutch system, bleeding**

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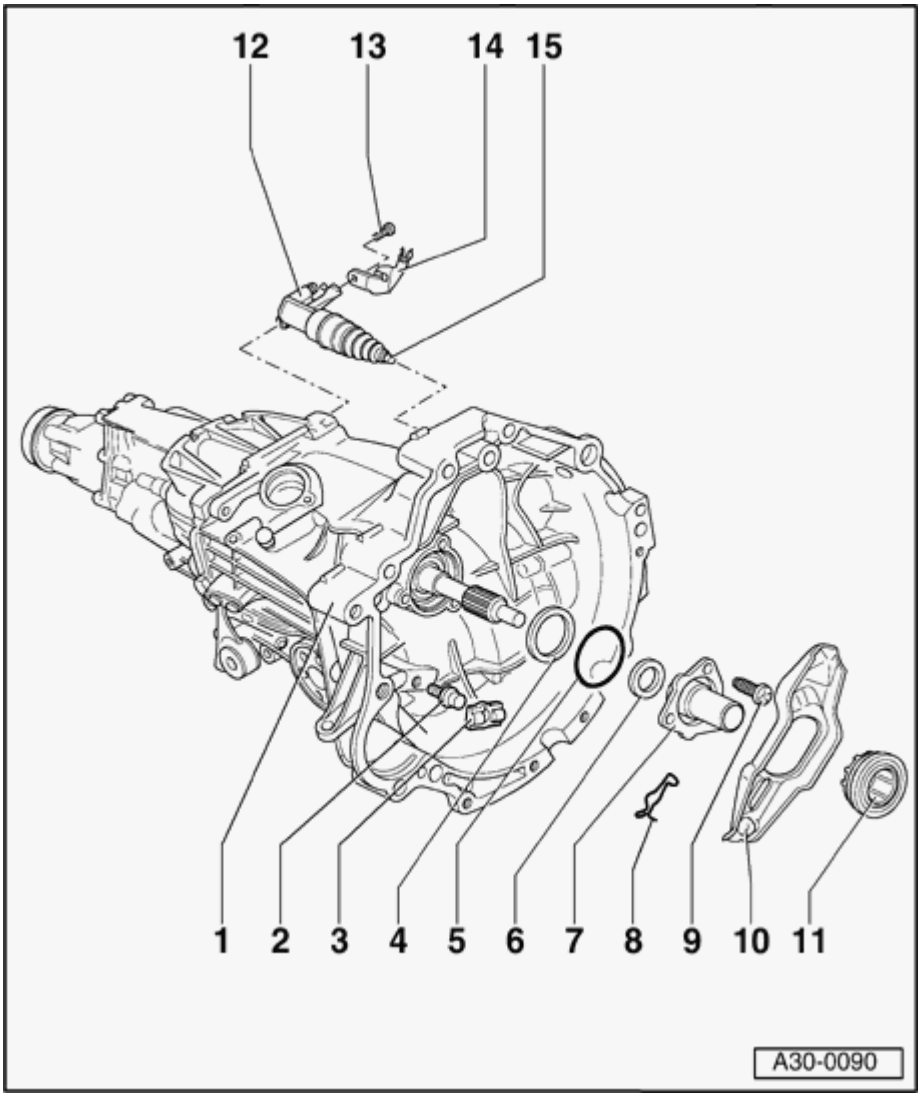


Fig. 54: Clutch Release Mechanism Components (On Transmission), Servicing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

13 - Hex socket-head bolt, 23Nm

- Slave cylinder to transmission
- Self-locking
- Always replace

14 - Bracket

- For hose/pipe assembly
- Attached to transmission together with slave cylinder
- Installing. See **Installing clutch slave cylinder**

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15 - Plunger

- Lubricate end of plunger with copper paste, e.g. Z 381 351 TE

Separating slave cylinder from hose/pipe assembly

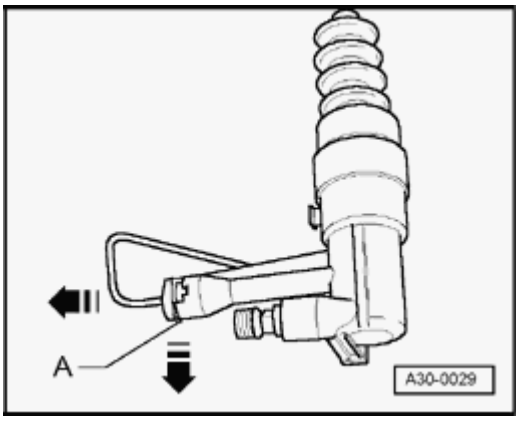


Fig. 55: Removing Hydraulic Line From Slave Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removing

To remove hose/pipe assembly use a screwdriver to pry out clip -A- as far as it will go. Only then can the hose/pipe assembly be pulled out.

Installing

- Push in clip -A- as far as it will go.
- Insert hose/pipe assembly in slave cylinder until it clicks into position.
- Check proper installation by pulling hose/pipe assembly.

Lubricating clutch slave cylinder with grease before installing

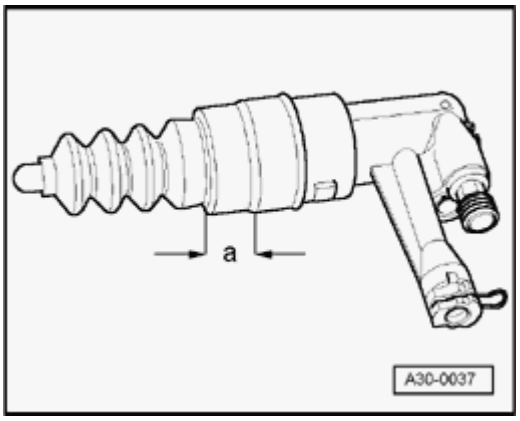


Fig. 56: Coat Boot Area Of Clutch Slave Cylinder With Lithium Grease

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Apply a thin layer of copper paste, e.g. Z 381 351 TE, to contact surface for plunger on clutch release lever
- Before installing slave cylinder in transmission housing lubricate area -a- of boot with lithium base grease G 052 150 A2.

Installing clutch slave cylinder

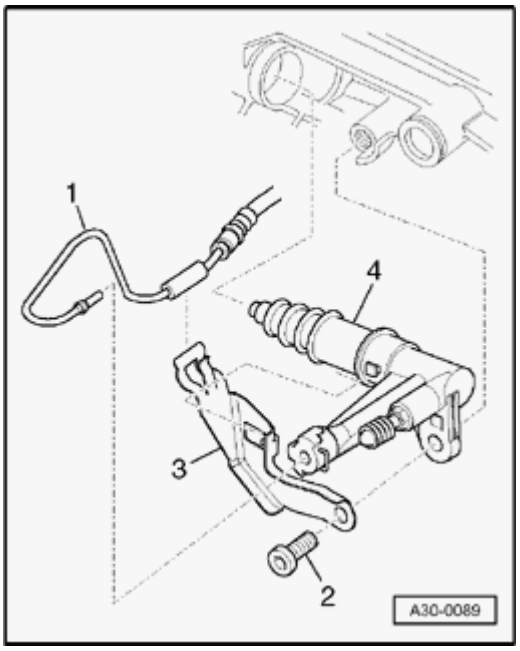


Fig. 57: Clutch Slave Cylinder, Bracket And Hose/Line Assembly
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Lock bracket for hose/pipe assembly -3- on slave cylinder -4- and bolt onto transmission together with slave cylinder.
- Insert clutch slave cylinder into hole of transmission housing without major lateral deviation from direction of motion of plunger.

NOTE:

- **If clutch slave cylinder -4- is not kept straight during insertion there is a risk that the plunger might move past the clutch release lever.**
- **Pre-load clutch slave cylinder so that securing bolt can be installed easily.**
- **Replace securing bolt -2-.**

Servicing release bearing with plastic ring

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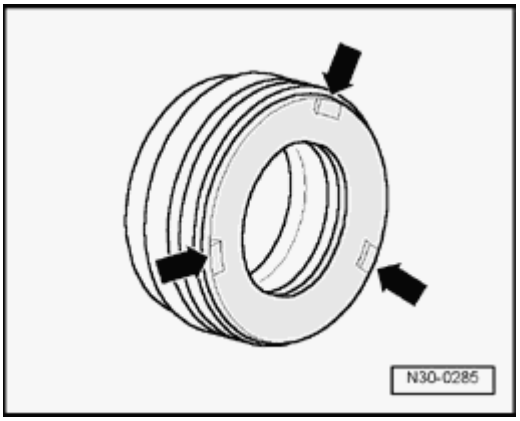


Fig. 58: Servicing Release Bearing With Plastic Ring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

In the case of release bearings with plastic ring, the latter may become detached from the release bearing during the removal of the transmission or the release bearing. This does not mean that the release bearing has to be replaced.

- Before installing transmission glue loose plastic ring onto bearing ring with adhesive AMV 195 KD1 01.

Three square lugs (arrows) of plastic ring locate in recesses of bearing ring.

NOTE: If running face of plastic ring is worn by more than 0.5 mm, replace the release bearing.

CLUTCH, SERVICING

Clutch, servicing

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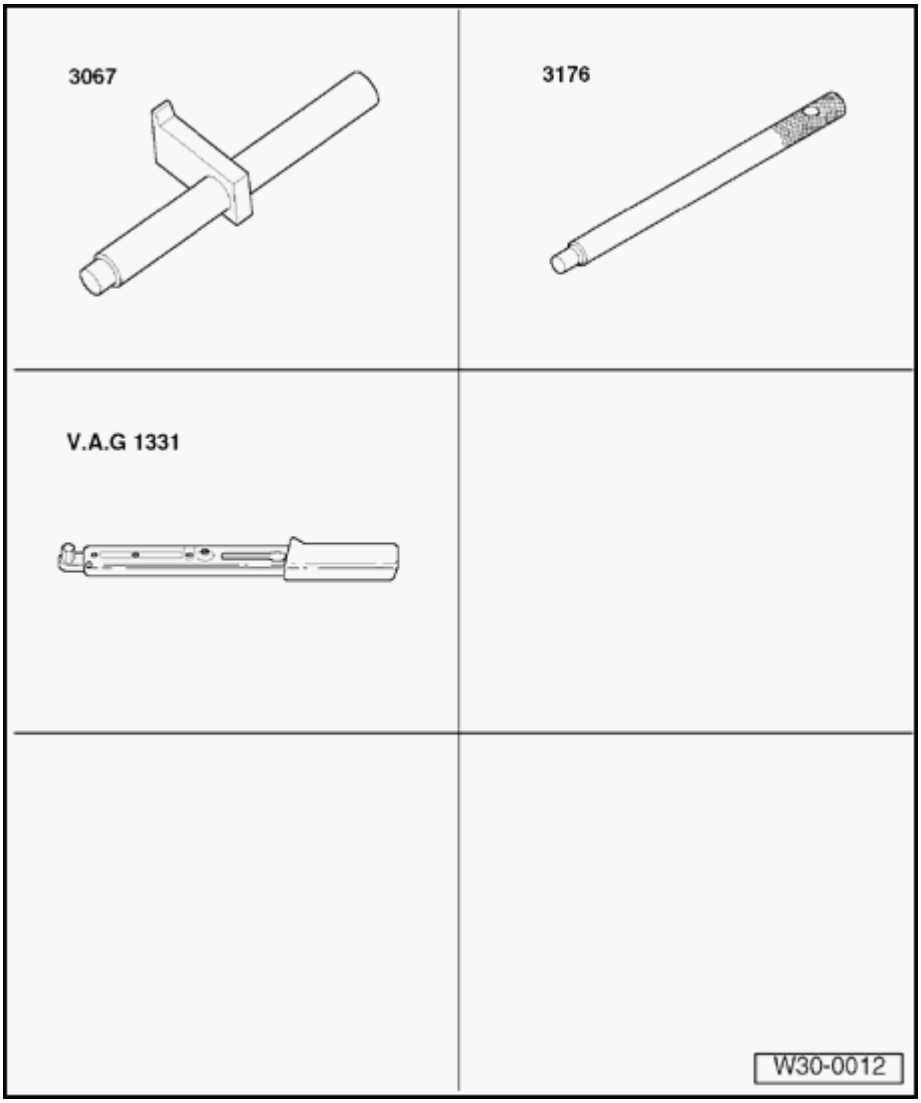


Fig. 59: Identifying Special Tools - Clutch, Servicing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools and equipment

- 3067 Counterhold
- 3176 Centering mandrel
- VAG 1331 Torque wrench

NOTE:

- **Follow general repair instructions. Refer to General repair instructions.**
- **Replace clutch plates and pressure plates where riveted joint is damaged or loose.**
- **Assign clutch plate and pressure plate by way of engine code.**
- **Clean input shaft splines and - in the case of used clutch plates - hub**

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splines, remove corrosion and apply extremely thin layer of grease G 000 100 to splines. Then move clutch plate back and forth on input shaft until hub moves freely on shaft. Excess grease must be removed.

- **Pressure plates have an anti-corrosion coating and are greased. Only the contact surface may be cleaned, as otherwise the clutch service life will be considerably shortened.**
- **To reduce the odor nuisance of a scorched clutch, thoroughly clean bell housing, flywheel and parts of engine facing transmission.**

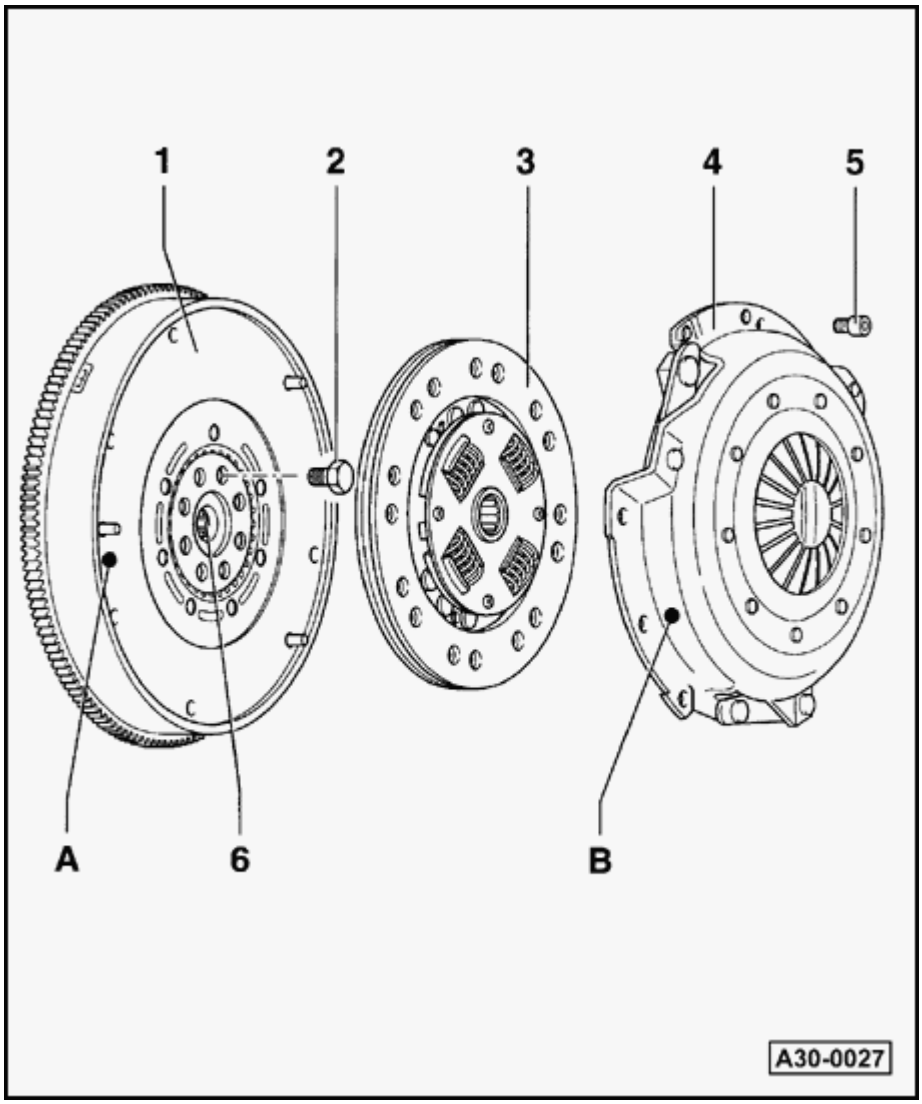


Fig. 60: Clutch Remove/Install Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

For servicing the clutch first remove the transmission. Refer to **Transmission, removing and installing**.

A - Paint dot on dual-mass flywheel

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- If present, white paint dot -A- on dual-mass flywheel must be aligned with white paint dot -B- on pressure plate

B - Paint dot on pressure plate

- If present, white paint dot -A- on dual-mass flywheel must be aligned with white paint dot -B- on pressure plate

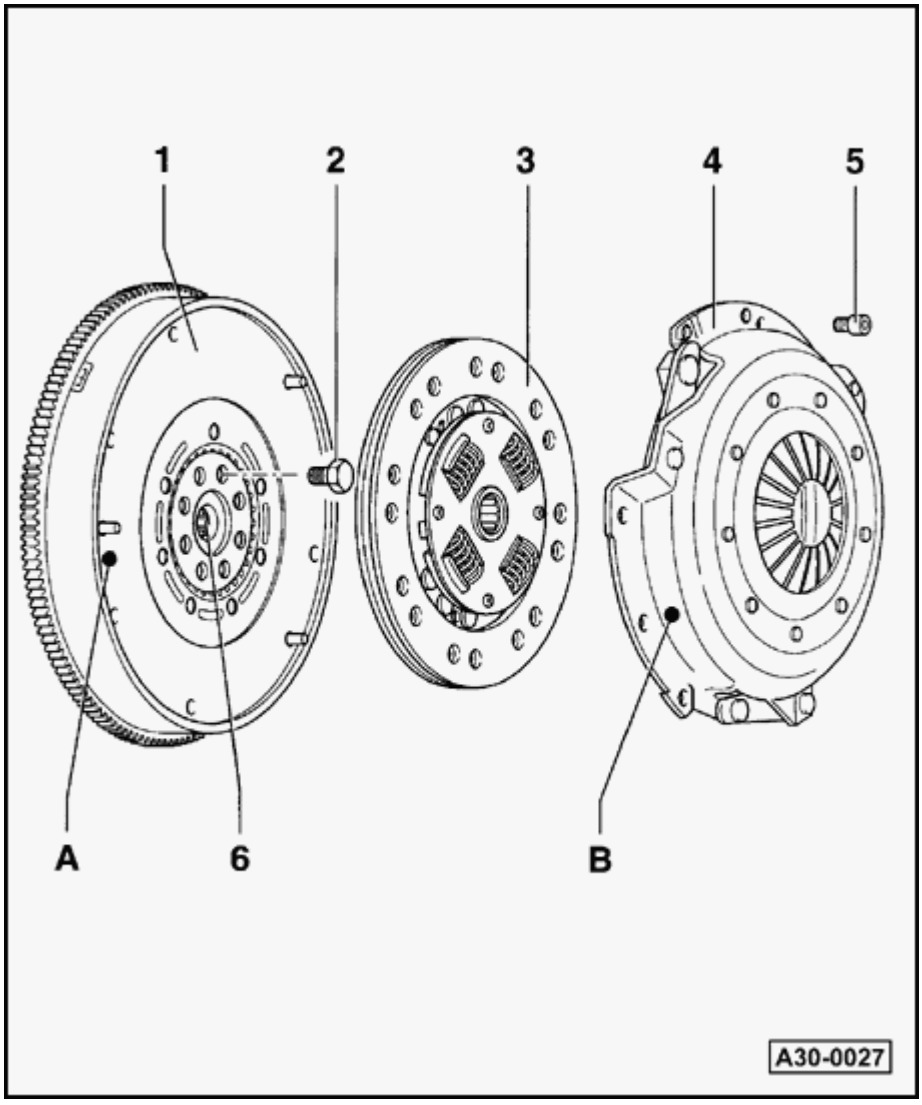


Fig. 61: Clutch Remove/Install Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Dual-mass flywheel

- Make sure centering pins are a tight fit
- Locating face for clutch lining must be free from grooves, oil and grease
- Removing and installing

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Refer to **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK**

2 - Bolt for flywheel

- Always replace
- Bolt length 22.5 mm: 60 Nm 1/4turn (90 °)
- Bolt length 43 mm: 60 Nm plus 1/2 turn (180 °)

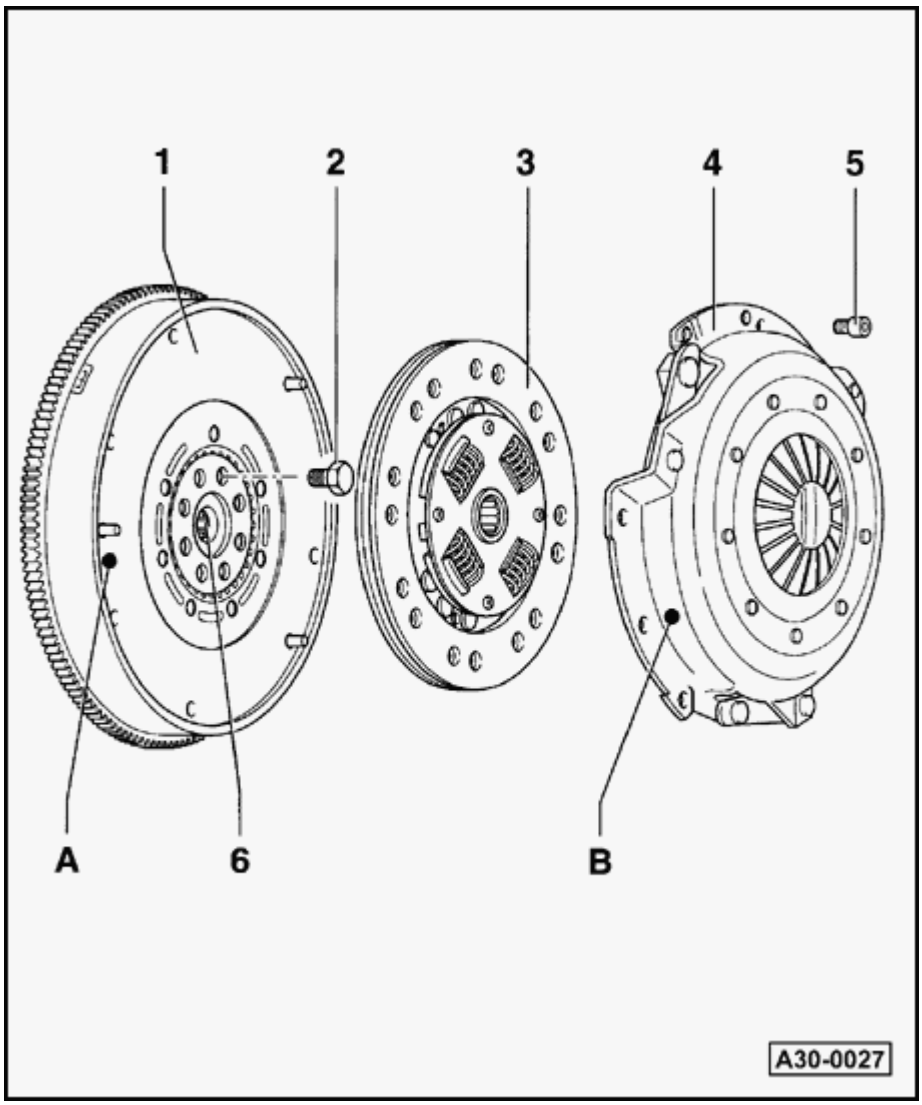


Fig. 62: Clutch Remove/Install Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

3 - Clutch plate

- Installation position:

  - Damping set (coil springs) toward pressure plate or transmission

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- Lining of clutch plate must be located against flywheel
- Writing "Getriebeseite", if present, toward pressure plate or transmission

- Do not lubricate
- Diameter of clutch plate. Refer to **Code letters, assignment of mechanical units, transmission ratios and capacities** onward
- Centering. See **Centering clutch plate and removing/installing pressure plate**
- Slightly lubricate splines

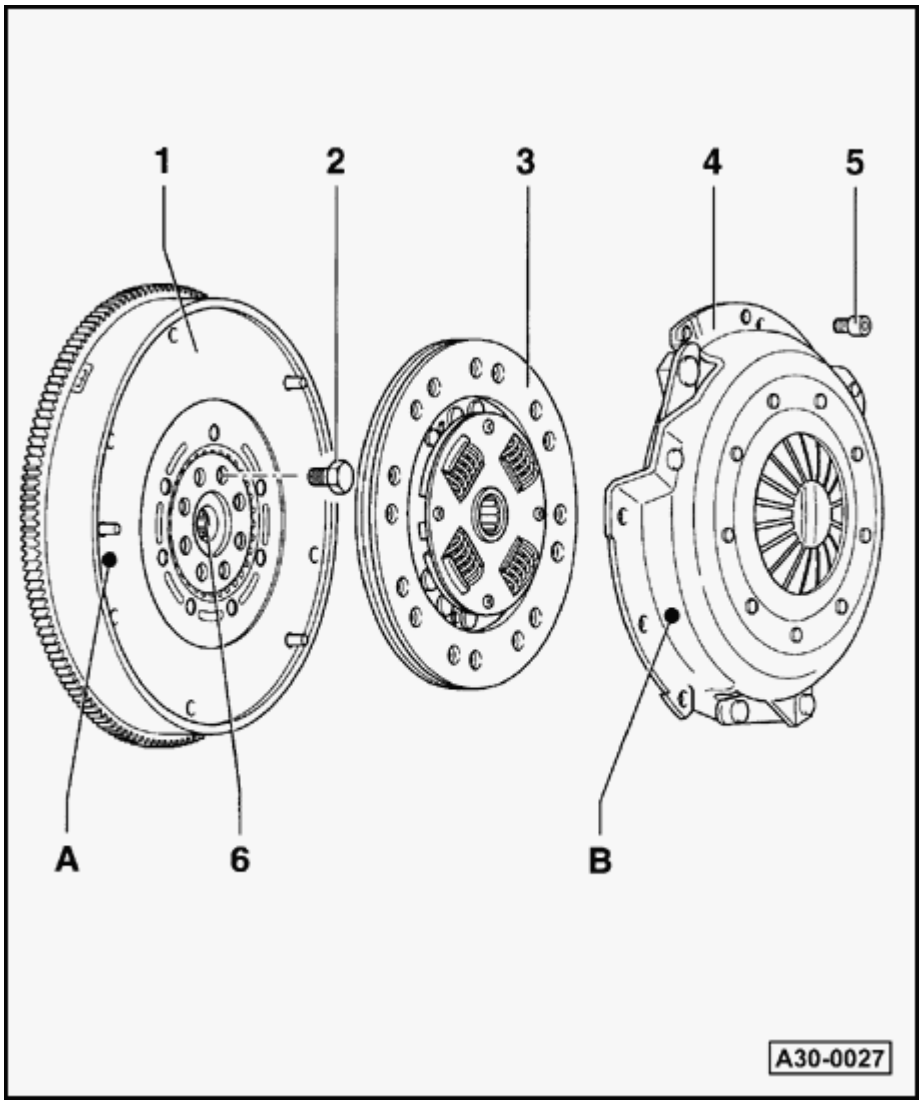


Fig. 63: Clutch Remove/Install Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

4 - Pressure plate

- Removing and installing. See **Centering clutch plate and removing/installing pressure plate**

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- Checking ends of diaphragm spring. See **Checking ends of diaphragm spring**
- Checking spring attachment and rivet attachments. See **Checking spring attachment and rivet attachments**
- If present, line up white paint dots on flywheel -A- and pressure plate -B-, with one another during assembly.

5 - Bolt, 25 Nm

- Loosen and tighten gradually in diagonal sequence

6 - Needle bearing

- Removing and installing

Refer to **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK**

Centering clutch plate and removing/installing pressure plate

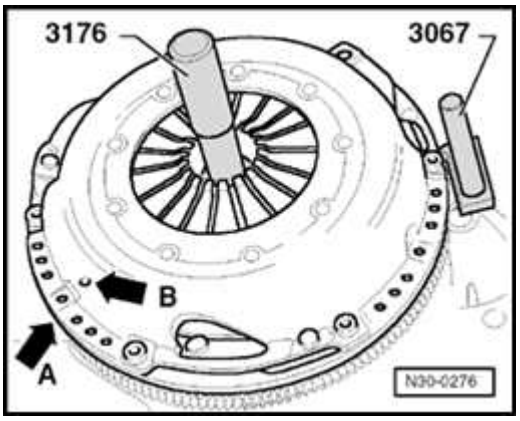


Fig. 64: Centering Clutch Plate And Removing And Installing Pressure Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen and tighten bolts gradually in diagonal sequence, 25 Nm.

NOTE:

- **Reverse position of counterhold 3067 when removing.**
- **Installation position of clutch plate: Damping set (coil springs) or writing "Getriebeseite" must face pressure plate or transmission.**
- **Only install attachment bolts once contact surface of pressure plate and lining of clutch plate are located completely on flywheel.**
- **Use centering mandrel 3176 to center clutch plate.**
- **During assembly ensure that white paint dots, if present, on dual-mass flywheel -A- and pressure plate -B- are lined up with one another.**

Checking ends of diaphragm spring

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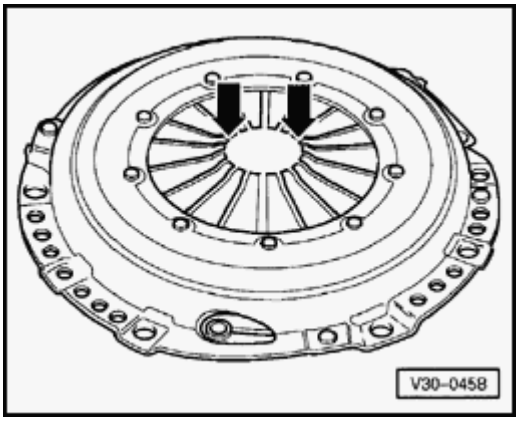


Fig. 65: Checking Ends Of Diaphragm Spring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wear down to half the diaphragm spring thickness is permissible.

NOTE: When performing repairs, always assign clutch pressure plate and clutch plate by way of engine code.

Checking spring attachment and rivet attachments

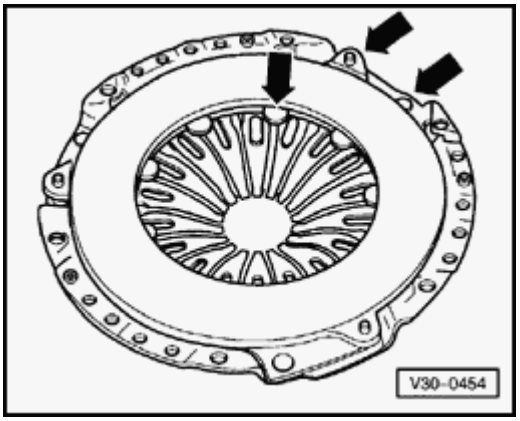


Fig. 66: Checking Spring Connections And Rivet Connections
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check spring attachment between pressure plate and cover for cracks, check rivet attachments are secure.
- Replace clutches showing damaged springs or loose rivet attachments (arrows).

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30 CLUTCH

CLUTCH MECHANISM, SERVICING

Clutch mechanism, servicing

CAUTION: Before beginning repairs on the electrical system:

- **Obtain the anti-theft radio security code.**
- **Switch the ignition off.**
- **Disconnect the battery Ground (GND) strap.**
- **On vehicles equipped with Audi Telematics by OnStar ® , switch-off the emergency (back-up) battery for the Telematic/Telephone Control Module prior to disconnecting vehicle battery. Refer to**
  - **91 - COMMUNICATION**
  - **91 RADIO, TELEPHONE, NAVIGATION, TRIP COMPUTER for Cabriolet**

  .
- **After reconnecting vehicle battery, re-code and check operation of anti-theft radio. Also check operation of clock and power windows according to article and/or Owner's Manual.**
- **After reconnecting vehicle battery on vehicles equipped with Audi Telematics by OnStar ® , switch-on the emergency (back-up) battery for the Telematic/Telephone Control Module. Refer to**
  - **91 - COMMUNICATION**
  - **91 RADIO, TELEPHONE, NAVIGATION, TRIP COMPUTER for Cabriolet**

  .

Clutch mechanism, servicing

See Caution before beginning repairs on the electrical system. Refer to **Clutch mechanism, servicing**

Refer to

- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for Cabriolet

NOTE:

- **Disconnect battery Ground strap with the ignition switched off.**
- **Lubricate all bearings and contact surfaces with polycarbamide grease G 052 142 A 2.**

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- **Before working on pedal cluster, remove cover below dash panel:**

  Refer to
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT for Cabriolet**

- **Ensure that no brake fluid escapes into the footwell, plenum chamber or onto the transmission below. If this does happen, clean the affected areas thoroughly.**
- **When performing work in the footwell, put cloths on the carpet to protect it from possible brake fluid spills.**

Pedal cluster assembly, overview

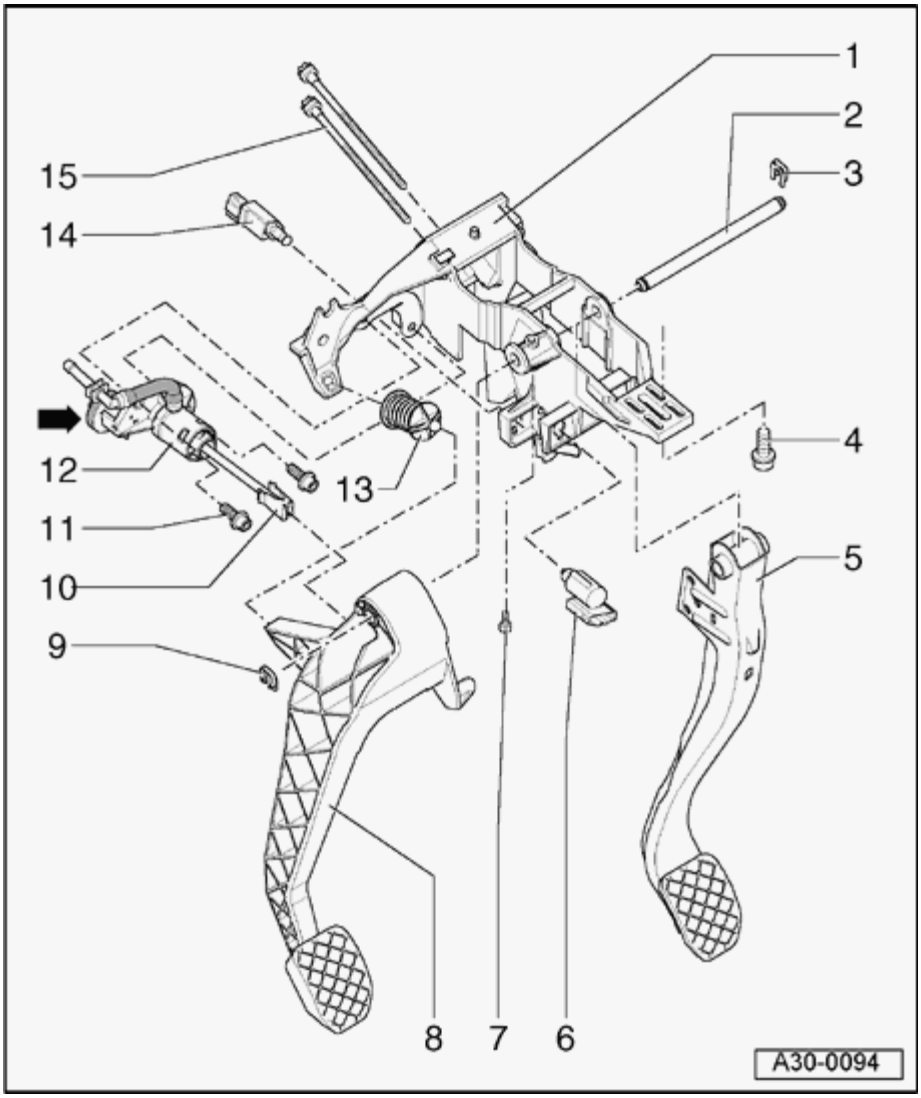


Fig. 11: Pedal Cluster, Assembly Overview

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Bracket

- Removing and installing:

Refer to **46 - BRAKES - MECHANICAL COMPONENTS**

2 - Pivot pin for clutch and brake pedal

3 - Securing clip

4 - Hex socket-head bolt - 25 Nm

5 - Brake pedal

- Maintenance-free mount, do not grease

6 - Clutch Vacuum Vent Valve Switch -F36-

- In order to assure sufficiently secure installation, switch must not be installed more than once

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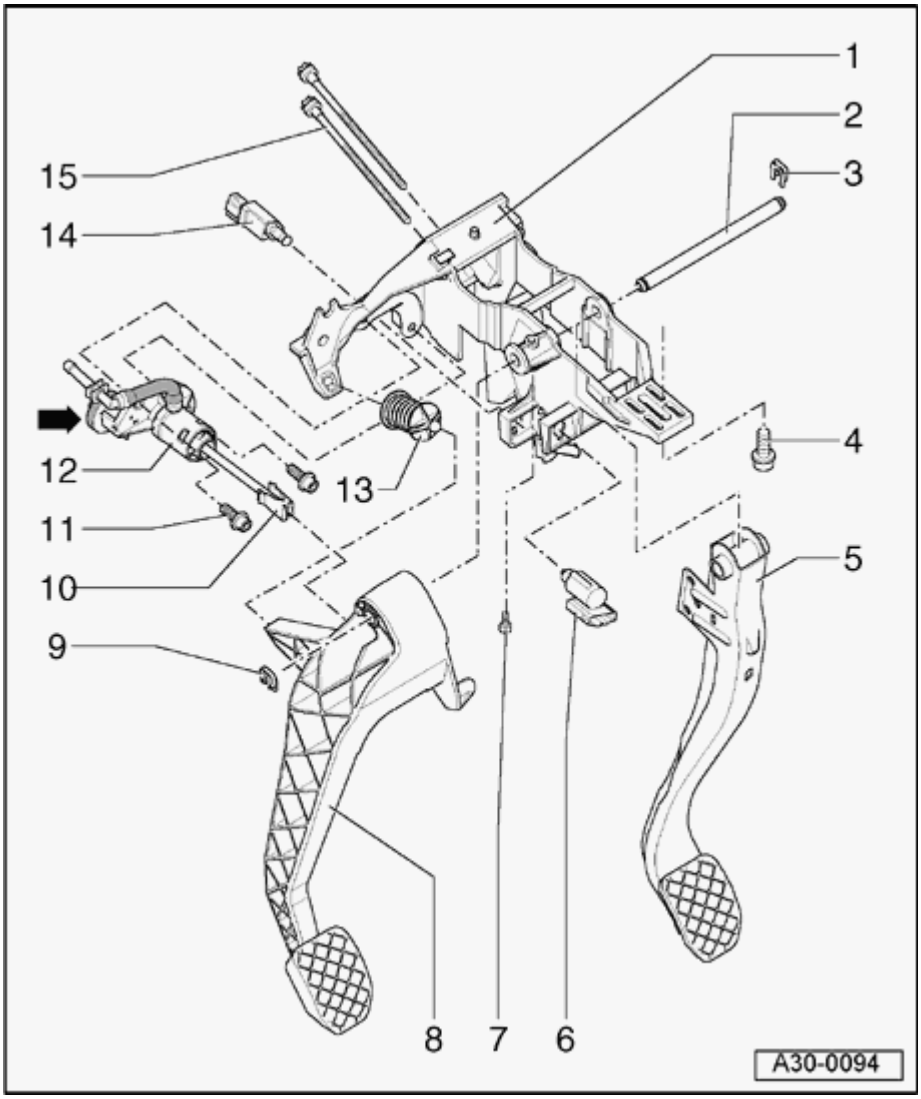


Fig. 12: Pedal Cluster, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

7 - Hex socket-head bolt - 5Nm

- Secures clutch and brake pedal pivot pin

8 - Clutch pedal

- Removing and installing. Refer to **Master cylinder, removing and installing**

9 - Securing clip

10 - Mount

- Removing and installing. Refer to **Hydraulic system, exploded view**

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11 - Hex socket-head bolt - 20Nm

12 - Master cylinder

- Removing and installing. Refer to **Master cylinder, removing and installing**
- Seal -arrow- must not be removed

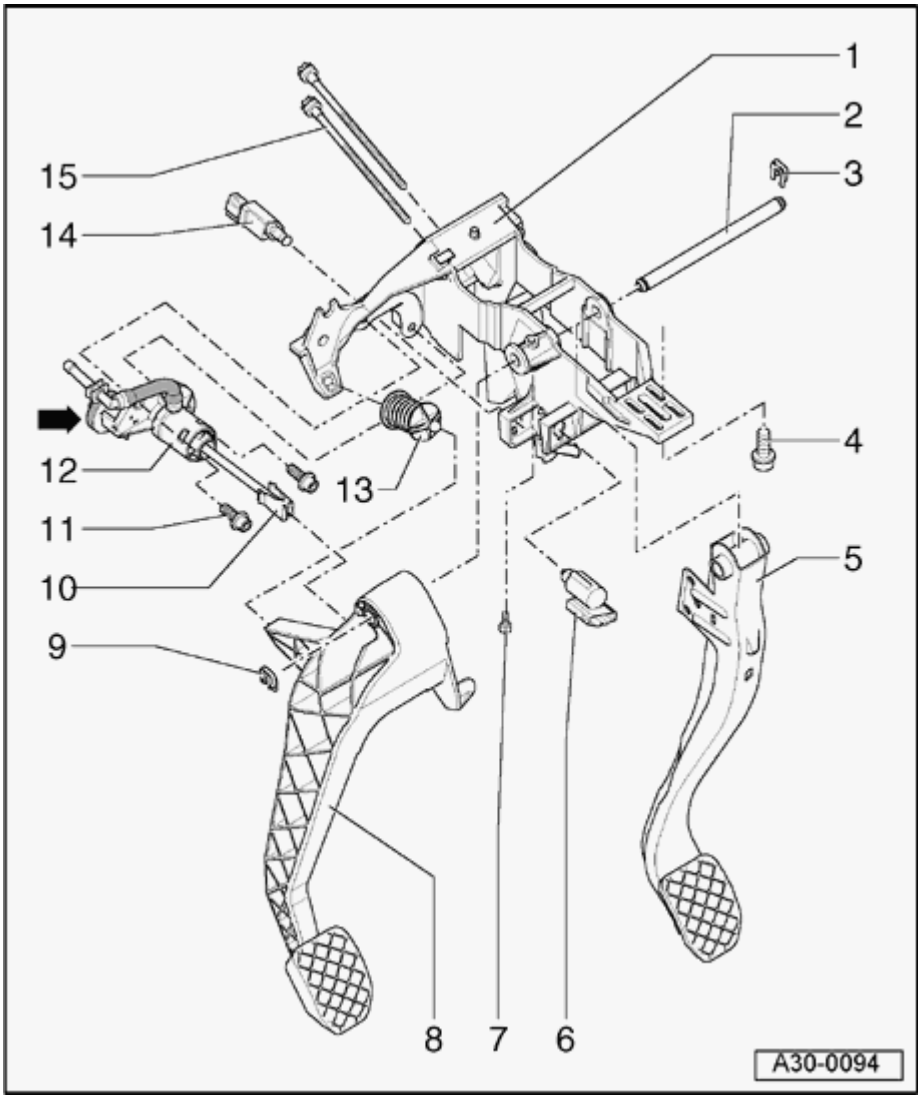


Fig. 13: Pedal Cluster, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

13 - Over-center spring

- Black side faces clutch pedal
- Removing and installing. Refer to **Over center spring, removing and installing**
- Allocation

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14 - Clutch Pedal Position (CPP) Switch -F194- (Interlock switch)

- In order to assure sufficiently secure installation, switch must not be installed more than once

15 - TORX-screw - 25 Nm

- For fastening brake master cylinder/brake servo to mounting bracket

Over center spring, removing and installing

Special tools and workshop equipment required

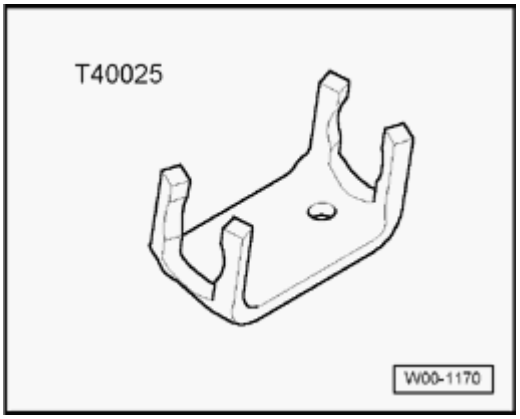


Fig. 14: T40025 Installation Clamp
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- T40025 retaining clamp

Removing

- Remove driver's side tray:

Refer to

- **68 - INTERIOR EQUIPMENT**
- **68 - INTERIOR EQUIPMENT** for Cabriolet

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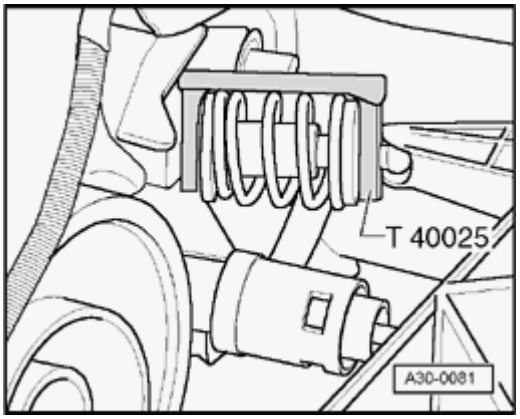


Fig. 15: Installation Clamp T40025 Installed On Over-Center Spring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tension over-center spring with clutch pedal and press on retaining clamp T40025.
- Bring clutch pedal to rest position and remove over-center spring downward together with retaining clamp T40025.

Installing

- Pull clutch pedal into the passenger compartment.

Installation position of over-center spring:

- Black side of over-center spring faces clutch pedal.

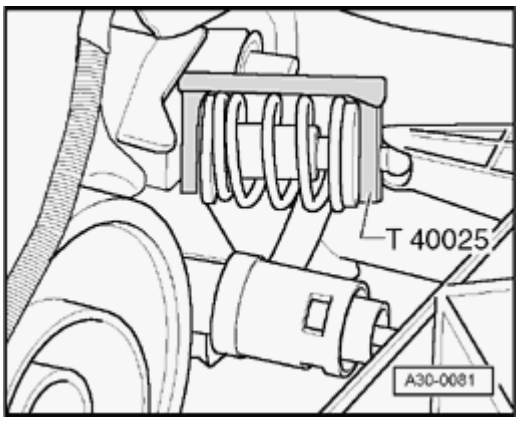


Fig. 16: Installation Clamp T40025 Installed On Over-Center Spring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install over-center spring with retaining clamp T40025, operate clutch pedal and remove retaining clamp.

Hydraulic system, exploded view

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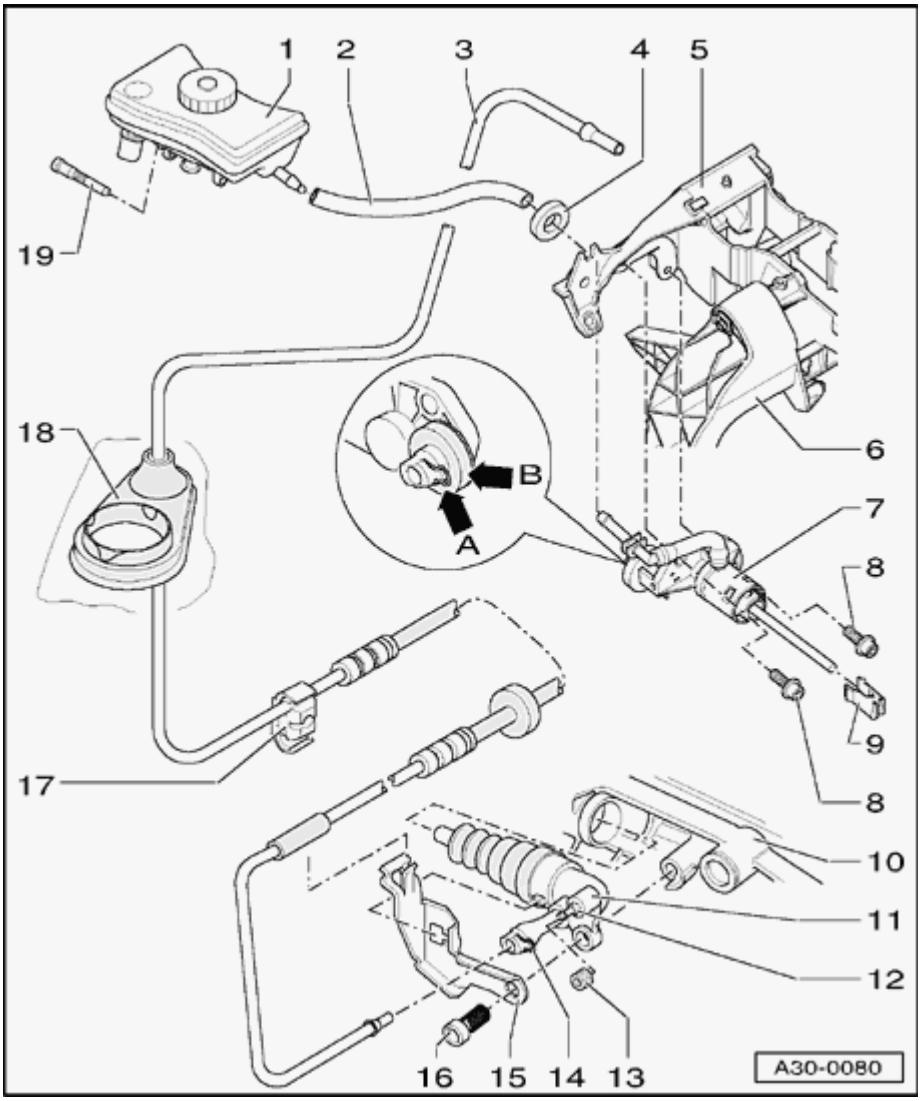


Fig. 17: Hydraulic System, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Brake fluid reservoir

2 - Supply hose

- For master cylinder

3 - Hose assembly

- For plug connections on master/slave cylinders
- Detaching from master cylinder and installing. Refer to **Master cylinder, removing and installing**
- Detaching from slave cylinder. See **Detaching slave cylinder from hose/pipe assembly**

4 - Grommet

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5 - Bracket

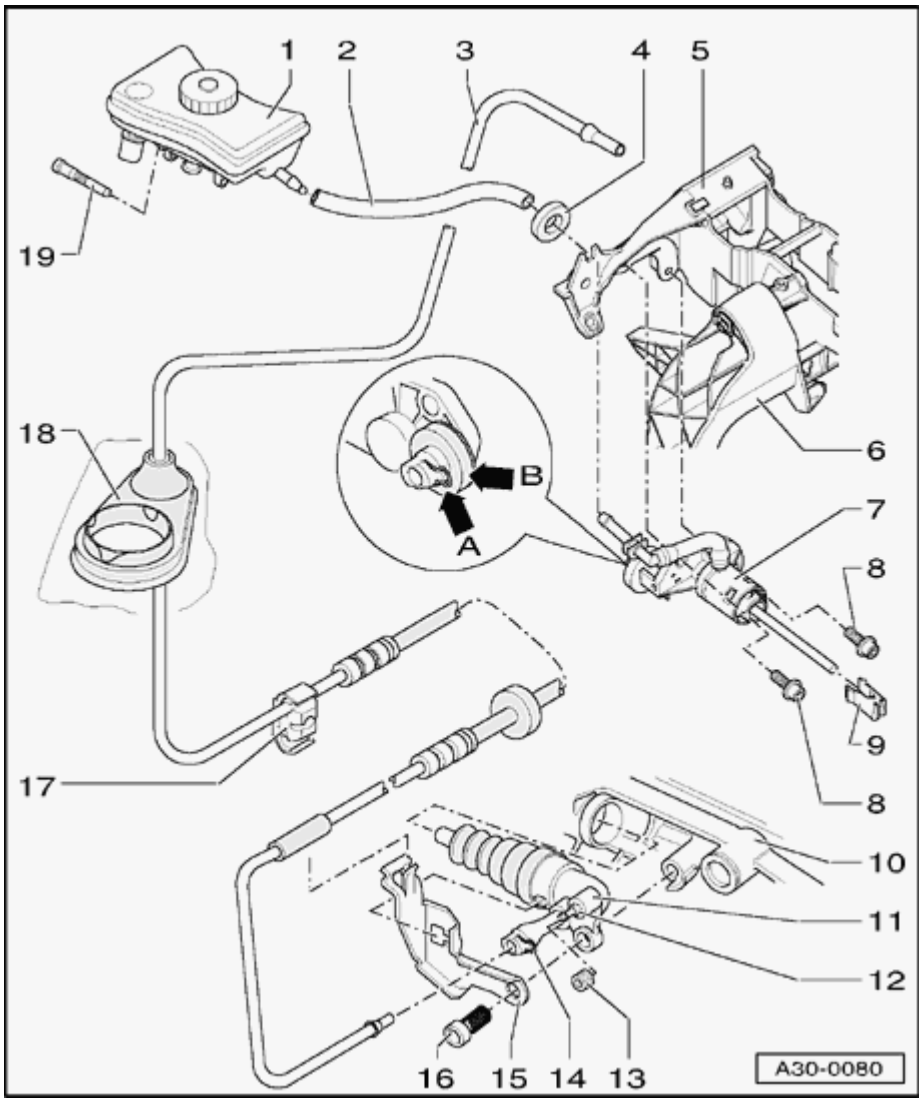


Fig. 18: Hydraulic System, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

6 - Clutch pedal

7 - Master cylinder

- Removing and installing. Refer to **Master cylinder, removing and installing**
- Clips (arrow A) and seal (arrow B) must not be removed
- To remove the hose/pipe assembly, pull out the clip (arrow A) up to the stop. Refer to **Fig. 34**

8 - Hex socket-head bolt - 20Nm

9 - Mount

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- Replace only with master cylinder removed
- Prying off. See **Lever off mount**
- Pressing on. See **Press master cylinder operating rod into mount**

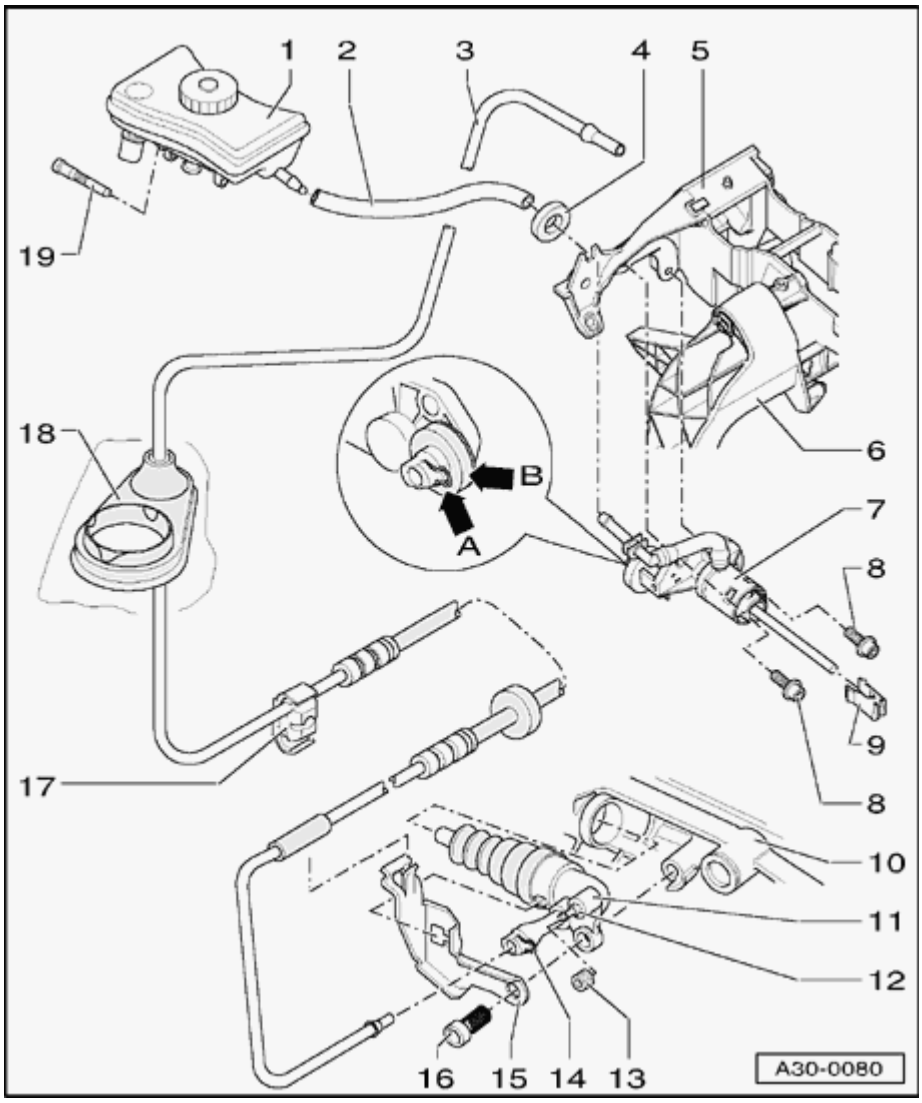


Fig. 19: Hydraulic System, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

10 - Transmission

11 - Slave cylinder

- Removing. See **Removing clutch slave cylinder**
- Installing. See **Installing clutch slave cylinder** and see **Coat clutch slave cylinder with grease before installing**
- Do not operate clutch pedal after slave cylinder has been removed.

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- After working on hydraulic clutch mechanism, bleed slave cylinder. Refer to **Clutch system, bleeding**
- Detach from hose/pipe assembly. See **Detaching slave cylinder from hose/pipe assembly**

12 - Bleeder valve

- Tighten to 4.5 Nm
- Follow correct work sequence when bleeding. Refer to **Clutch system, bleeding**
- A broken bleeder valve can be screwed out with a 3mm hex socket wrench

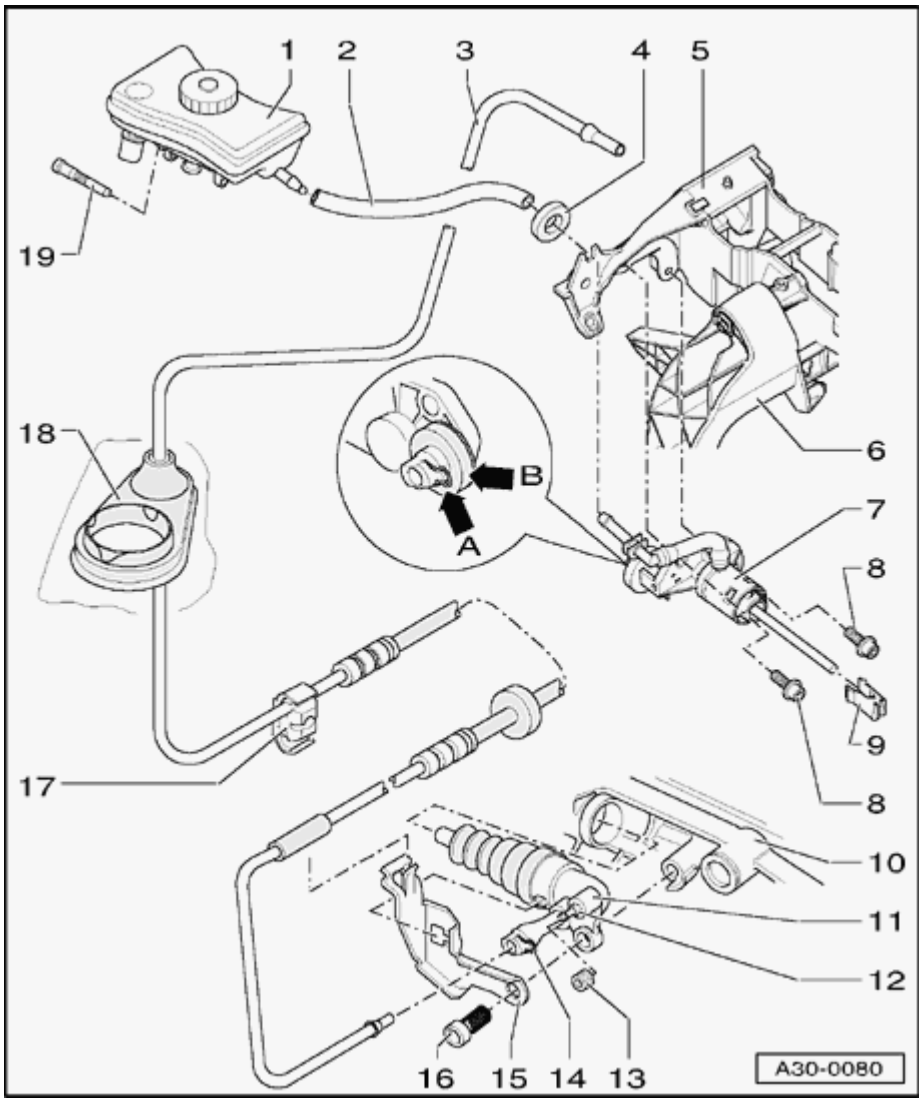


Fig. 20: Hydraulic System, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

13 - Dust cap

14 - Clamp

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- To remove the line, pull out the clamp to the stop. See **Detaching slave cylinder from hose/pipe assembly**

15 - Bracket

- For hose/pipe assembly
- Fastened together with slave cylinder to transmission

16 - Hex socket-head bolt - 25 Nm

- Slave cylinder to transmission
- Self-locking
- Always replace

17 - Retaining clip

18 - Gasket

19 - Bolt

- For brake fluid reservoir

Lever off mount

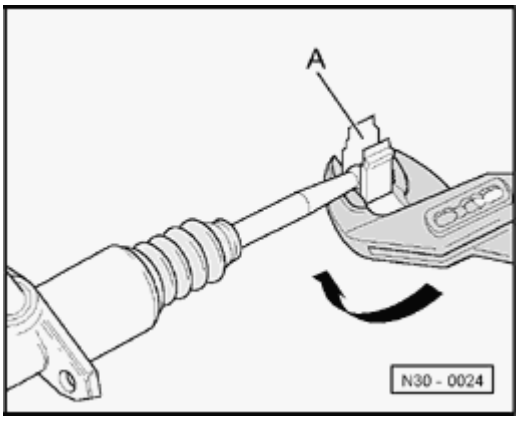


Fig. 21: Removing Retainer By Prying
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Press master cylinder operating rod into mount

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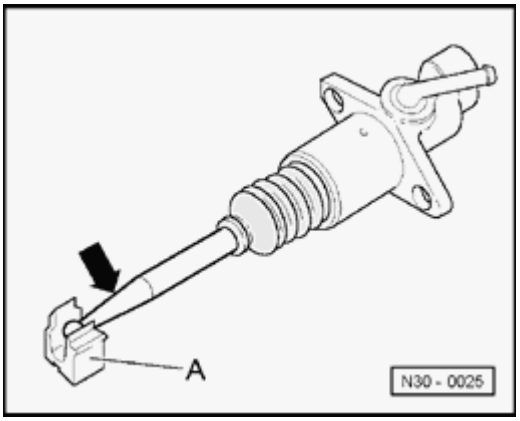


Fig. 22: Installing Clutch Master Cylinder Operating Rod In Retainer
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Detaching slave cylinder from hose/pipe assembly

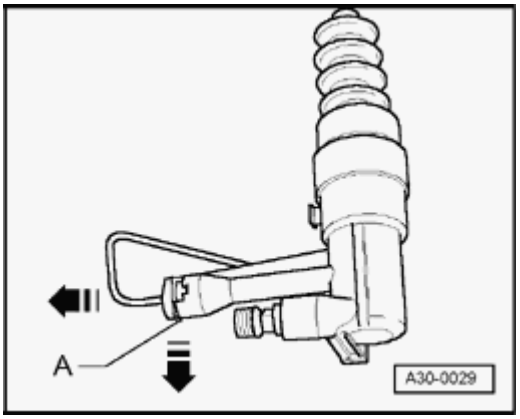


Fig. 23: Removing Hydraulic Line From Slave Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removing

- To remove the hose/pipe assembly, lever out the clip -A- up to the stop using a screwdriver. Only then can the hose/pipe assembly be pulled out.

Installing

- Press in clip -A- to stop.
- Push hose/pipe assembly into slave cylinder until it engages audibly.
- To check, pull on the hose/pipe assembly.

Master cylinder, removing and installing

Special tools, testers and auxiliary equipment required

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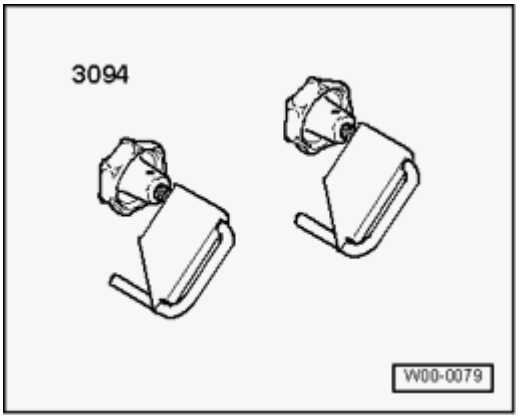


Fig. 24: Identifying Hose Clamps 3094
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- 3094 Hose clip

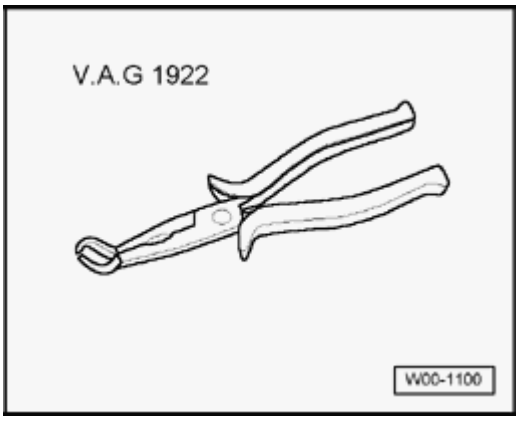


Fig. 25: Identifying Spark Plug Connector Pliers V.A.G 1922
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- V.A.G 1922 Pliers

Removing

WARNING: Observe safety precautions when disconnecting the battery.

Refer to

- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for Cabriolet**

See Caution before beginning repairs on the electrical system. Refer to **Clutch mechanism, servicing**

- With the ignition switched off disconnect the battery Ground strap.

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- Pull the rubber gasket off plenum chamber in direction of arrow.

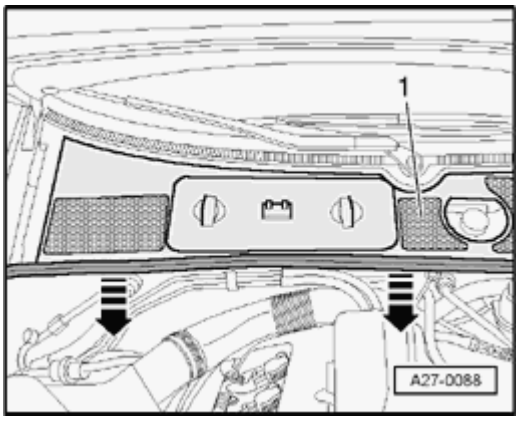


Fig. 26: Identifying Plenum Chamber Cover & Removing Rubber Seal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove cover -1- above plenum chamber.

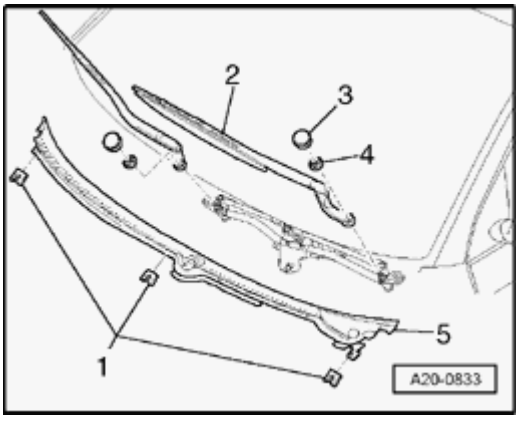


Fig. 27: Removing Securing Clips And Cowl
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Lever off both trim caps -3- with a screwdriver.
- Unscrew nuts -4- and remove both wiper arms -2-.
- Pull off clips -1- and remove cowl grille -5-.

Remove the electronics box from the plenum chamber as follows:

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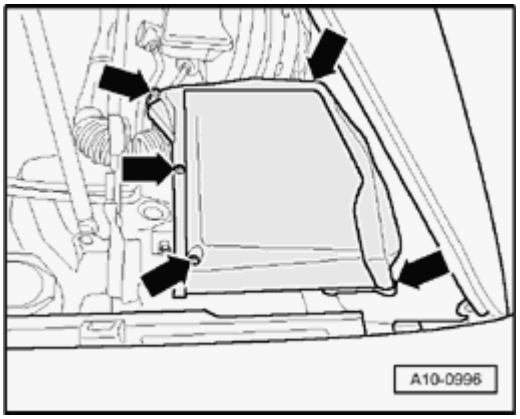


Fig. 28: Removing Screws And Cover From E-Box In Plenum Chamber
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unscrew the bolts -arrows- and pull off the sealing cap.

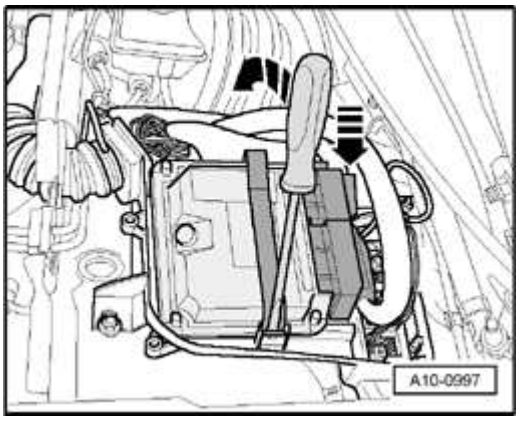


Fig. 29: Using Screwdriver To Remove Retainer Bar And Engine Control Module (ECM) J623
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully lever off the retainer bar with a screwdriver -arrow-.

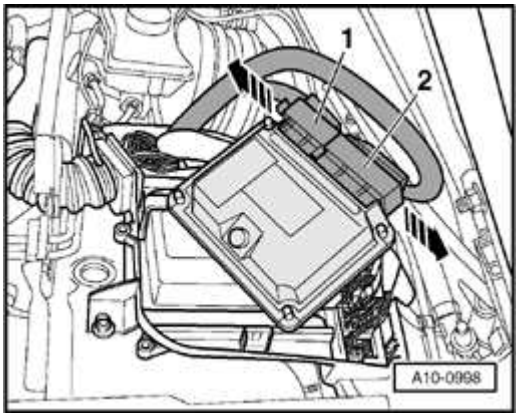


Fig. 30: Releasing Connector Latches And Pulling Off Connectors On Engine Control Module
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Release the connector catches -arrows- and detach connectors -1- and -2- of engine control unit.

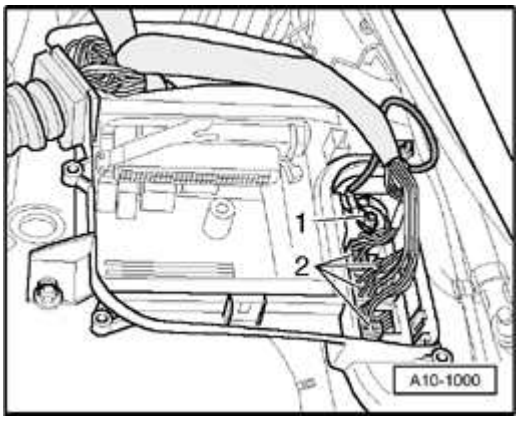


Fig. 31: Connector At Connector Rail And Wire
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Detach connectors -2- on connector console.
- Unscrew the electrical wiring connection -1-.

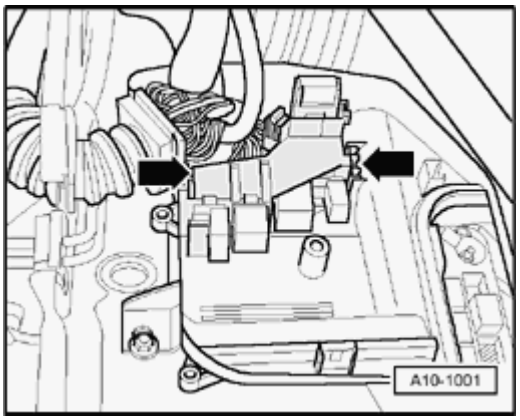


Fig. 32: Locating Auxiliary Relay Carrier Catches
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release catch -arrow- and detach additional relay carrier in electronics box upward.
- Pull engine wiring harness together with rubber grommet through opening in electronics box.

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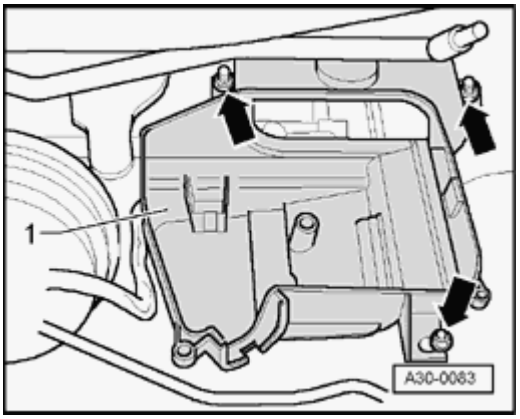


Fig. 33: Electronics Box Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts -arrows- and lift out electronics box -1-.

NOTE:

- **In the following steps make sure that no brake fluid escapes into the plenum chamber or onto the transmission below. If this does happen, clean the affected areas thoroughly.**
- **When performing work in the footwell, put cloths on the carpet to protect it from possible brake fluid spills.**

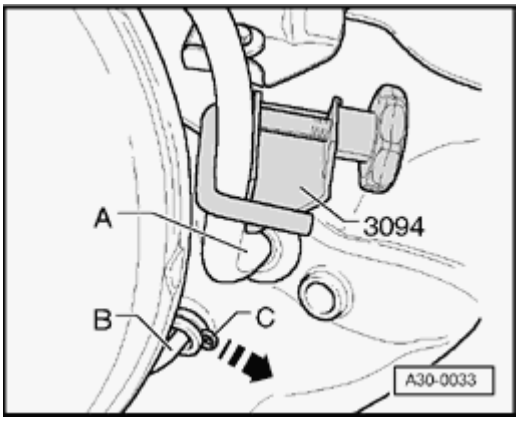


Fig. 34: Identifying Brake Fluid Reservoir Return Hose Grommet
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Clamp supply hose -A- leading to brake fluid reservoir using special tool 3094. Pull hose off at master cylinder and plug it.
- Remove rubber grommet from cross panel above connection pipe for supply hose.
- Pry out retaining clip -C- with a screwdriver and then pull out pipe -B- slightly.

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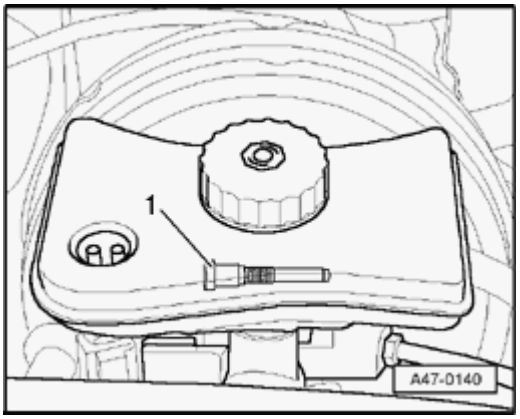


Fig. 35: Location Of Brake Fluid Reservoir Dowel Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unscrew bolt for brake fluid reservoir -1- and detach fluid level connector downward.

NOTE: The brake fluid reservoir is not removed.

NOTE:

- **For the sake of clarity, the brake fluid reservoir is not shown here.**
- **To remove the upper Torx bolt, the brake fluid reservoir must be swivelled slightly to one side.**

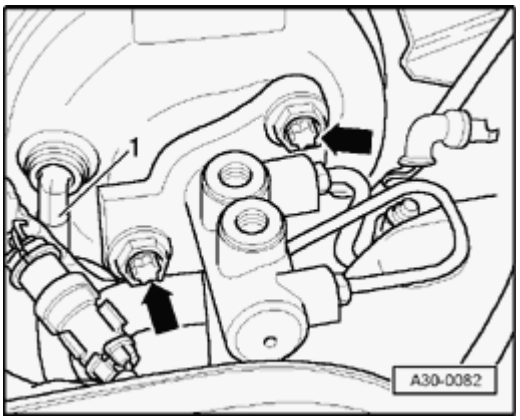


Fig. 36: Location Of Brake Servo Securing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove the two Torx bolts -arrows-.
- Detach vacuum pipe from brake servo -1-.
- Remove driver's side storage compartment.

Refer to

- **68 - INTERIOR EQUIPMENT**
- **68 - INTERIOR EQUIPMENT** for Cabriolet

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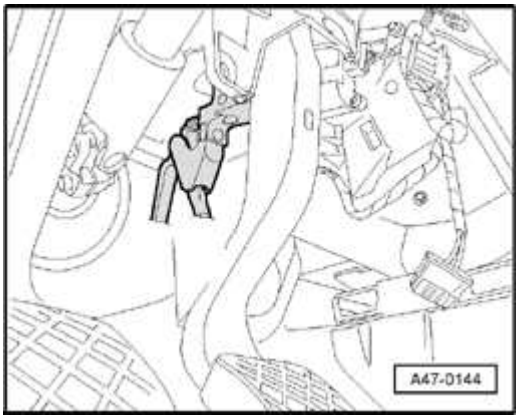


Fig. 37: Brake Pedal At Brake Servo
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Detach brake pedal from brake servo.

Refer to **46 - BRAKES - MECHANICAL COMPONENTS**

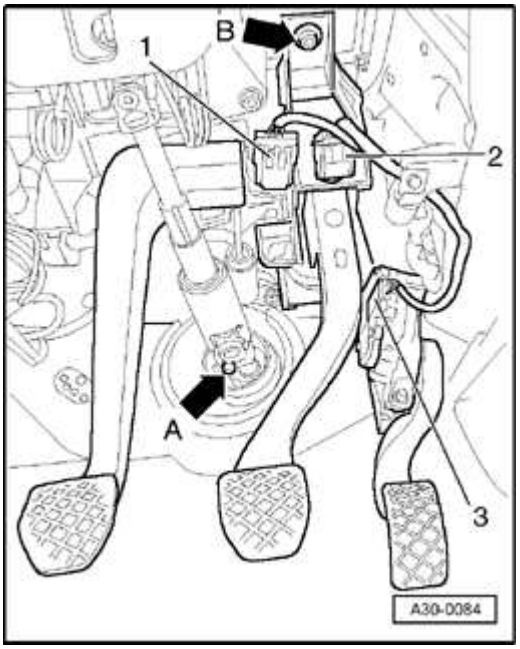


Fig. 38: Locating Steering Column At Steering Gear And Disconnecting Connector On Clutch Pedal Switch, Brake Pedal Switch And On Accelerator Pedal Module
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Detach steering column from steering box -arrow A-.

Refer to **48 - STEERING** .

- Detach connectors from clutch pedal switch -1-, brake pedal switch -2- and from accelerator pedal module -3-.

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- Unscrew retaining bolts for mounting bracket -arrow B- and remove the complete pedal cluster.

Separate master cylinder operating rod from clutch pedal as follows:

- Removing over-center spring. Refer to **Over center spring, removing and installing**.

NOTE:

- **In order to assure sufficiently secure installations of Clutch Vacuum Vent Valve Switch -F36- -Item 6-: Refer to Pedal cluster assembly, overview and of Clutch Pedal Position (CPP) Switch -F194- -Item 14-: Refer to Pedal cluster assembly, overview (Interlock switch) in the pedal assembly, these switches must not be installed more than once.**

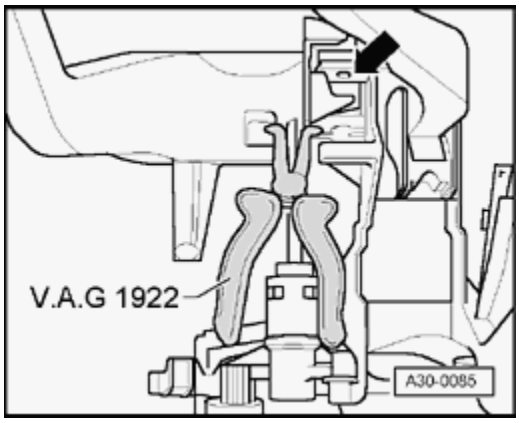


Fig. 39: Pressing Retainer Together And Detaching Clutch Pedal From Master Cylinder Using VAG 1922
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- **When releasing, make sure that the clutch pedal does not knock against the mount for the clutch pedal switch -arrow-. The mount could break off.**

- Position pliers VAG 1922 in the clutch pedal recesses, press the mount together -arrow- and detach clutch pedal from master cylinder.

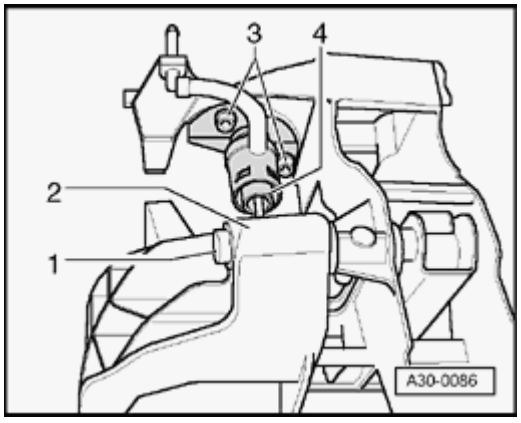


Fig. 40: Identifying Retaining Clip, Clutch Pedal, Bolts And Master Cylinder

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release securing clip -1- and remove clutch pedal -2-.
- Screw out bolts -3- and remove master cylinder -4-.

Installing

Installation is carried out in the reverse order, when doing this note the following:

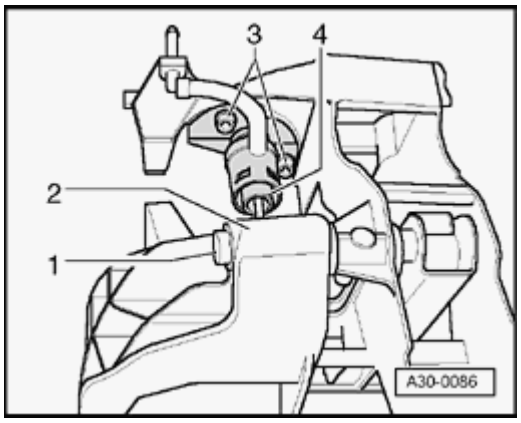


Fig. 41: Identifying Retaining Clip, Clutch Pedal, Bolts And Master Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert master cylinder and tighten bolts -3- to 20 Nm.

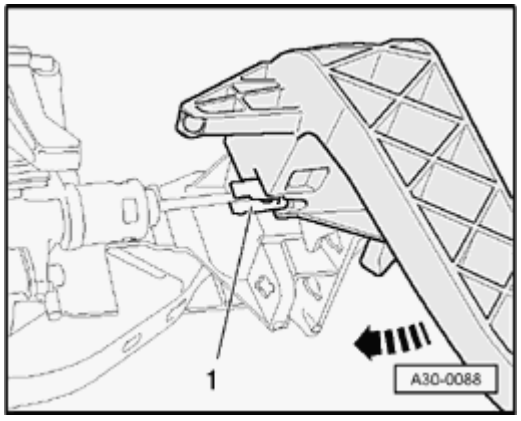


Fig. 42: Pushing Clutch Pedal To Lock Into Place, While Making Sure Mount Is Properly Secured In Clutch Pedal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install mount -1- in clutch pedal.
- Press the clutch pedal in direction of arrow until it engages; ensure correct locking of the mount -1- in the clutch pedal.
- Installing over-center spring. Refer to **Over center spring, removing and installing**.

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A second mechanic is required for the next step.

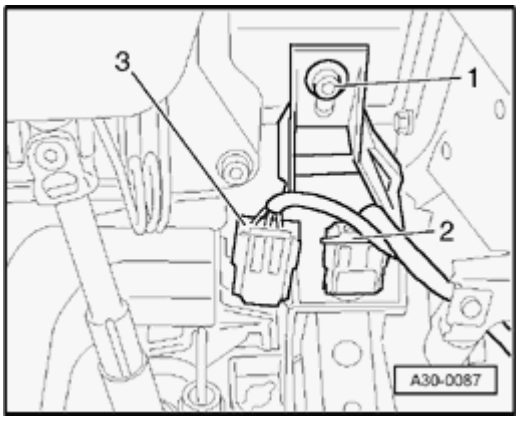


Fig. 43: Location Of Clutch Pedal Switch F36 And Pedal Assembly Securing Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert complete pedal cluster and tighten bolt -1- finger tight. The second mechanic should guide the pipe into the master cylinder starting from the plenum chamber.

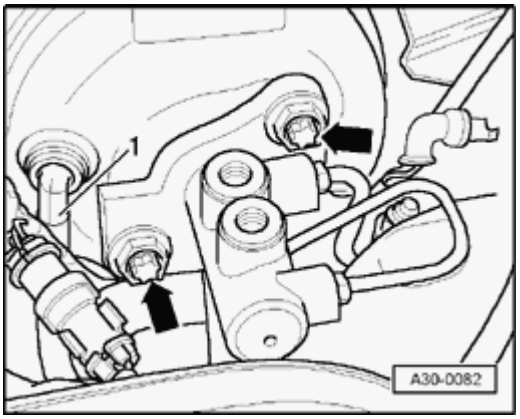


Fig. 44: Location Of Brake Servo Securing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten the retaining bolts for the brake servo -arrows- to 25 Nm.

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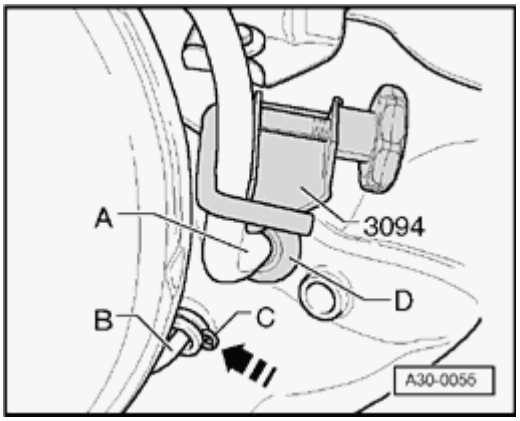


Fig. 45: Installing Rubber Grommet And After-Run Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press retaining clip -C- home.
- Push pipe -B- into master cylinder until it audibly locks in place.
- Insert rubber grommet -D- over connection pipe/supply hose -A- into the cross panel.
- Slide supply hose -A- for the brake fluid reservoir on as far as its stop.

- Remove special tool 3094.
- Screw in securing bolt for brake fluid reservoir.

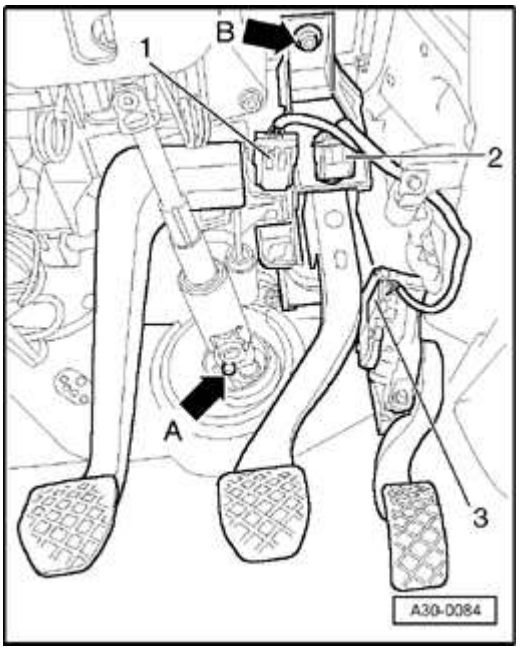


Fig. 46: Locating Steering Column At Steering Gear And Disconnecting Connector On Clutch Pedal Switch, Brake Pedal Switch And On Accelerator Pedal Module
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten the hex socket head bolt -arrow B- for securing pedal cluster to dash panel crossmember to 25

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Nm.

- Plug in connectors -1-, -2- and -3-.
- Connect brake pedal to brake servo.

Refer to **46 - BRAKES - MECHANICAL COMPONENTS**

- Attach steering column to steering box -arrow A-.

Refer to **48 - STEERING**

- Install storage compartment for driver's side:

Refer to

- **68 - INTERIOR EQUIPMENT**
- **68 - INTERIOR EQUIPMENT** for Cabriolet

- Bleed the clutch system. Refer to **Clutch system, bleeding**.

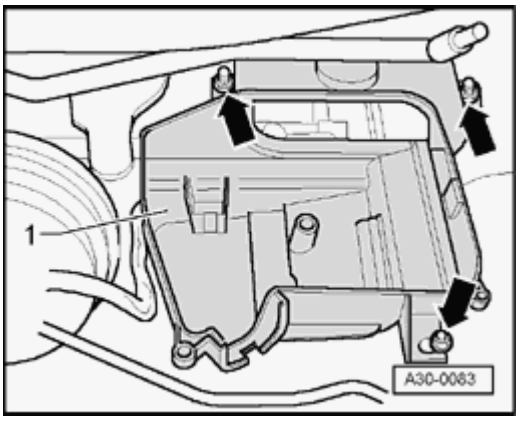


Fig. 47: Electronics Box Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert the electronics box and tighten nuts -arrows- to 4 Nm.
- Route the engine wiring harness and join the connector in the connector station.
- Install the engine control unit and, if removed, also the auxiliary relay carrier and the auxiliary fuse box.

Refer to

- **97 WIRING**
- **97 WIRING** for Cabriolet

- Press on sealing cap hand-tight and tighten bolts in diagonal sequence - 4 Nm.

See Caution for disconnecting Telematics battery. Refer to **Clutch mechanism, servicing**

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- Observe safety precautions after connecting the battery.

Refer to

- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for Cabriolet

Clutch system, bleeding

Special tools, testers and auxiliary equipment required

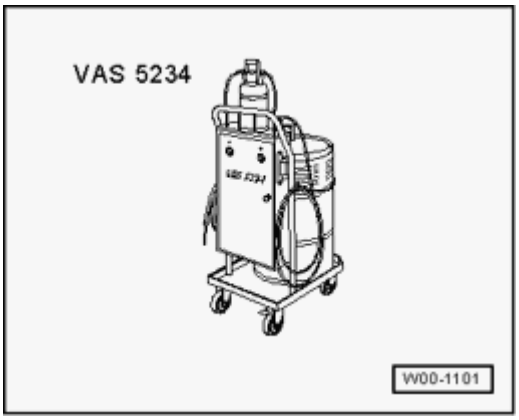


Fig. 48: Identifying Brake Filler And Bleeder Unit VAS 5234
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- VAS 5234 Brake filler and bleeder unit

- Brake fluid specification.

Refer to **47 - BRAKES - HYDRAULIC COMPONENTS**

NOTE:

- **Open the bleeder valve before switching on the bleeder unit.**
- **When performing the following steps, make sure that no brake fluid escapes onto the transmission.**
- **The clutch system must be bled after performing work on the hydraulic clutch mechanism.**
- **Before bleeding, pull out clutch pedal and fill brake fluid reservoir with brake fluid up to "max." marking.**

- Connect VAS 5234 Brake filler and bleeder unit, but do not switch on at this stage.
- If installed, remove noise insulation beneath transmission.

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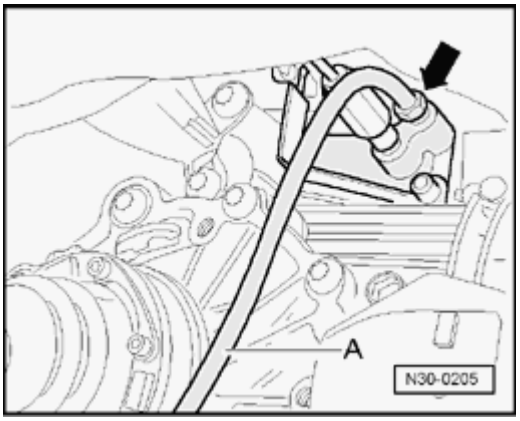


Fig. 49: Connecting Bleeder Hose To Clutch Slave Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect bleeder hose -A- to slave cylinder (arrow) and open bleeder valve.
- Connect bleeder hose to pressure hose of fluid collector bottle.
- Switch on the bleeder appliance and allow about 100 cm3 of brake fluid to drain out.

- Working pressure 2.5 bar

NOTE: Ensure bleeder hose is correctly installed during bleeding operation.

- Close bleeder valve and tighten to 4.5 Nm.
- Depress clutch pedal several times after completion of bleeding process.
- Bleed again if necessary.

CLUTCH RELEASE MECHANISM, SERVICING

Clutch release mechanism, servicing

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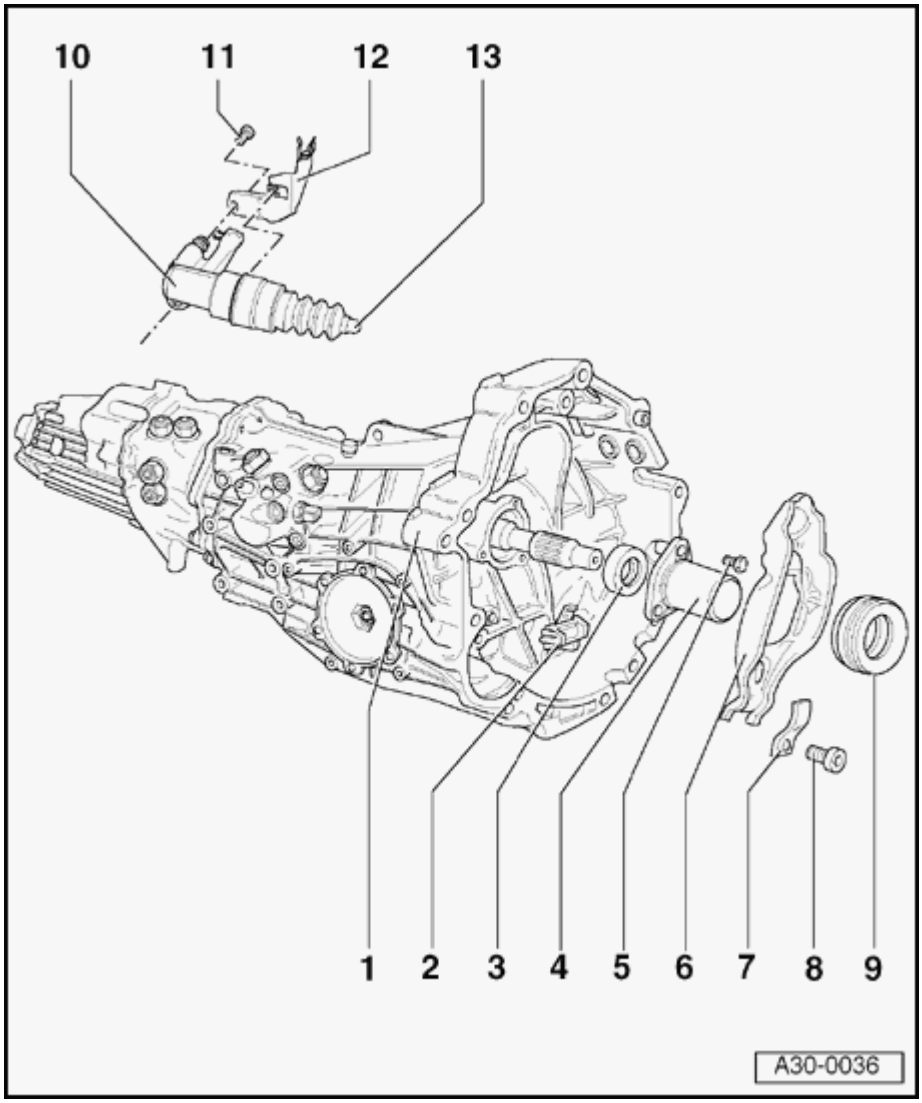


Fig. 50: Identifying Clutch Release Mechanism Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Transmission

2 - Intermediate piece

- Replace, if damaged

3 - Shaft seal

- For input shaft
- Removing. See **Removing shaft seal for input shaft**
- Installing. See **Installing shaft seal for input shaft**
- Standard insertion depth: 3.5 mm, insertion depth for repairs: 4.5 mm

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4 - Locating sleeve

5 - Bolt -15 Nm

- 3 pieces

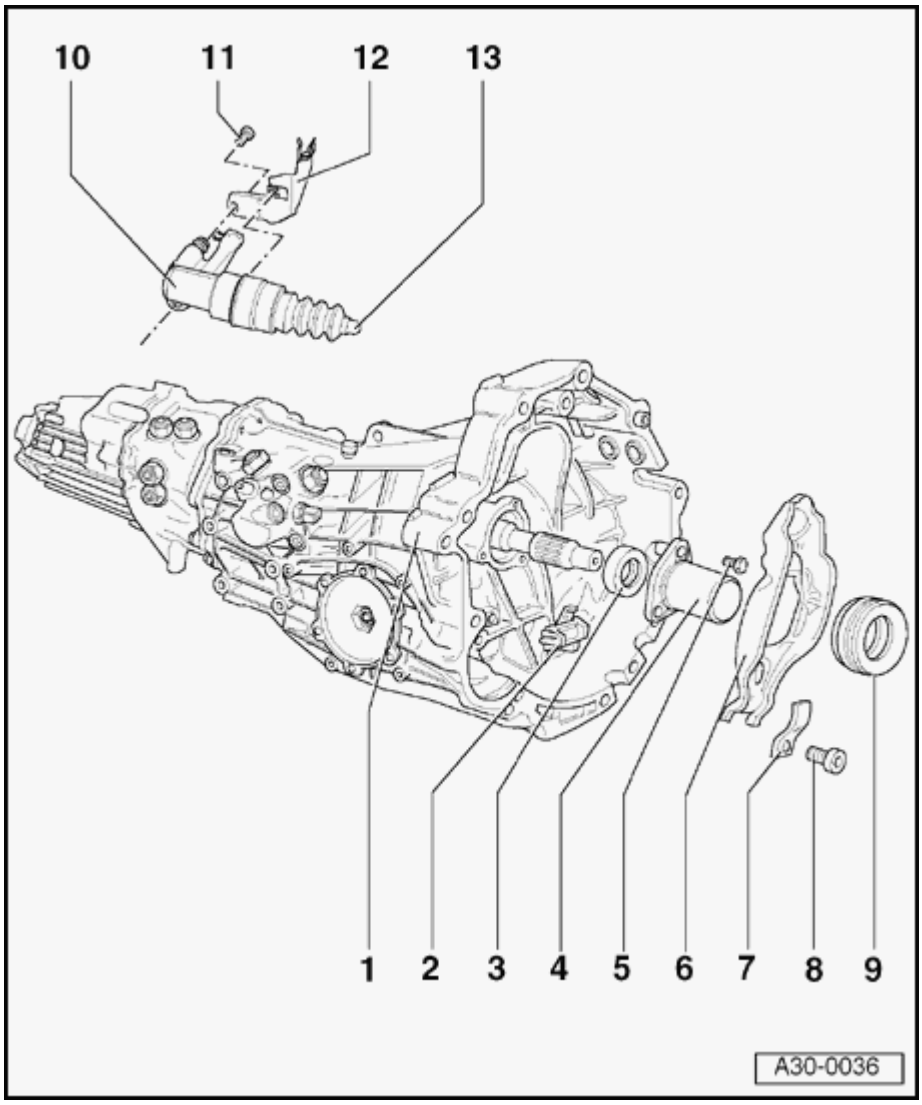


Fig. 51: Identifying Clutch Release Mechanism Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

6 - Clutch release lever

- Removing. See **Removing clutch release lever**
- Must engage in lugs in intermediate piece when installed. See **Installing clutch release lever**
- Before installing, coat contact surface of clutch slave cylinder push rod with copper grease, e.g. Z 381 351 TE.

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7 - Leaf spring

8 - Release and tighten bolt - 25 Nm

- Self-locking
- Always replace

9 - Release bearing

- With or without plastic ring, depending on version. See **Repairing release bearing with plastic ring**
- Cement detached plastic ring. See **Repairing release bearing with plastic ring**
- Do not wash out, wipe clean only
- Replace noisy bearings

- Engage retaining latches at the release bearing in contact release lever

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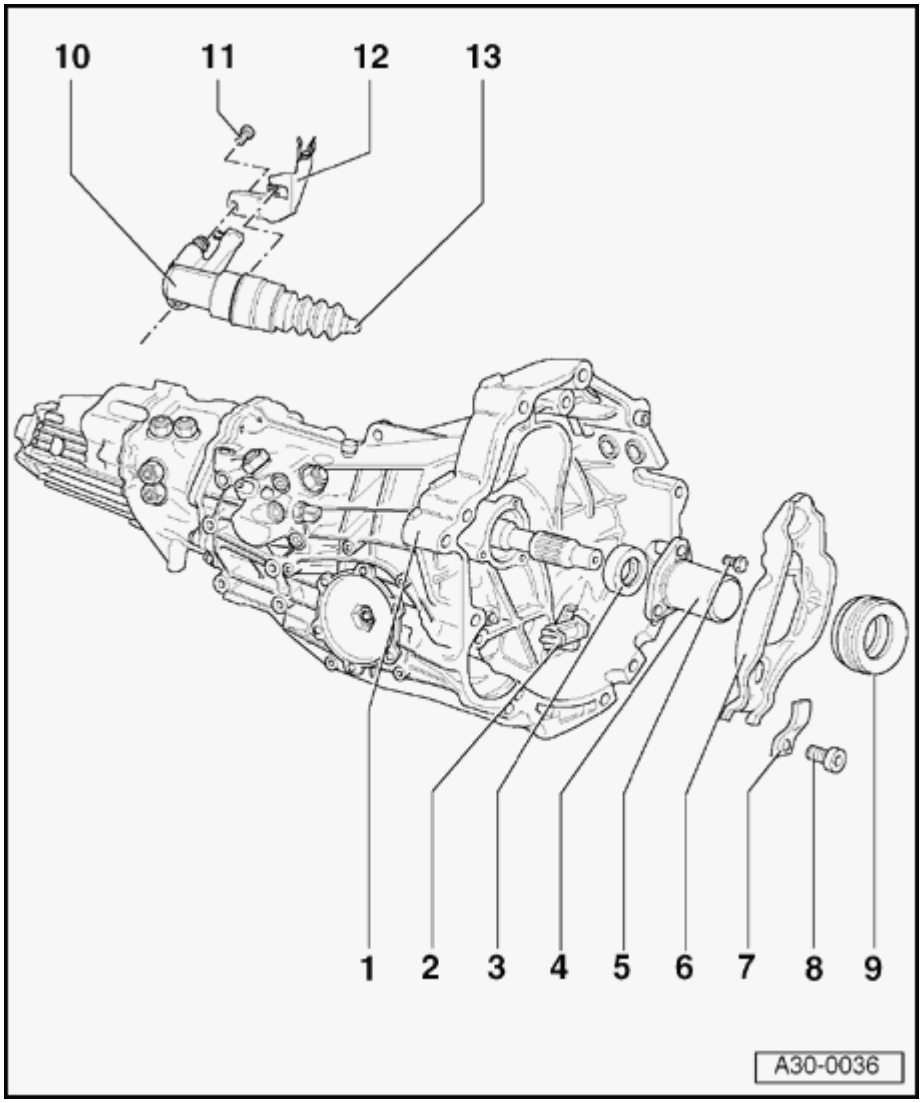


Fig. 52: Identifying Clutch Release Mechanism Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

10 - Clutch slave cylinder

- Do not operate clutch pedal after slave cylinder has been removed.
- Follow correct work sequence when bleeding. Refer to **Clutch system, bleeding**
- Tighten bleed valve to 4.5 Nm
- Detach from hose/pipe assembly. See **Detaching slave cylinder from hose/pipe assembly**
- Removing. See **Removing clutch slave cylinder**
- Installing. See **Installing clutch slave cylinder** and see **Coat clutch slave cylinder with grease before installing**
- When installing, push on until the securing bolt can be fitted

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11 - Hex socket-head bolt, 23Nm

- Slave cylinder to transmission
- Self-locking
- Always replace

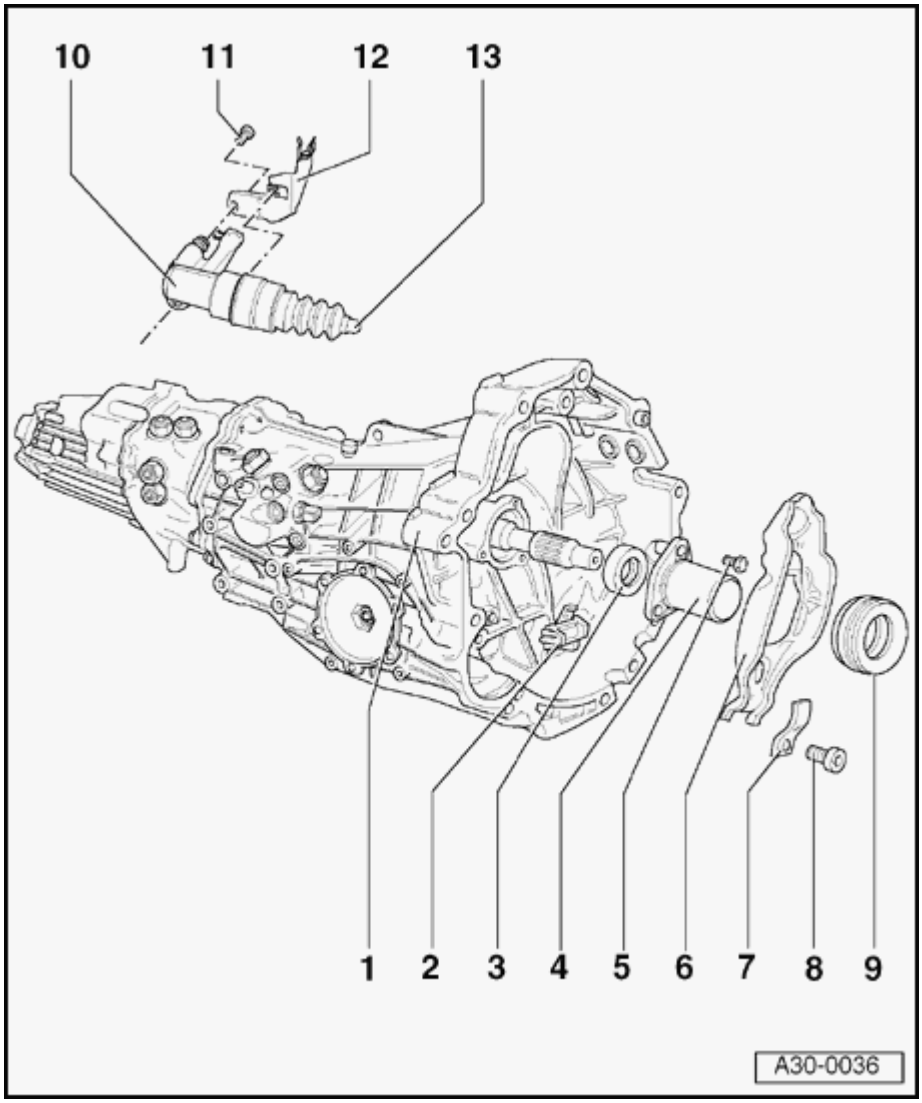


Fig. 53: Identifying Clutch Release Mechanism Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

12 - Bracket

- For hose/pipe assembly
- Fastened together to transmission with slave cylinder
- Installing. See **Installing clutch slave cylinder**
- Bolt onto transmission with clutch slave cylinder

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13 - Push rod

- Lubricate end of push rod with copper grease, e.g. Z 381 351 TE

Removing shaft seal for input shaft

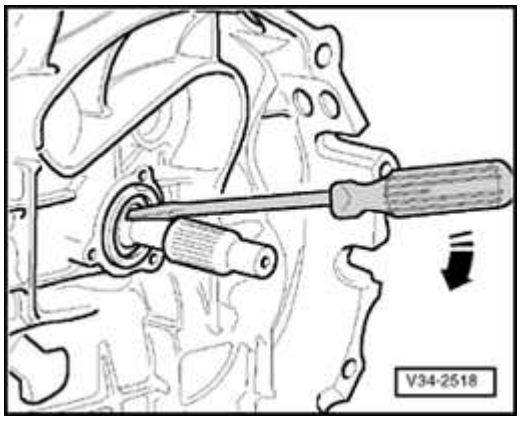


Fig. 54: Removing Shaft Seal For Input Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Lever out seal carefully with a screwdriver.

NOTE: Do not damage bearing surface on input shaft for shaft seal.

Installing shaft seal for input shaft

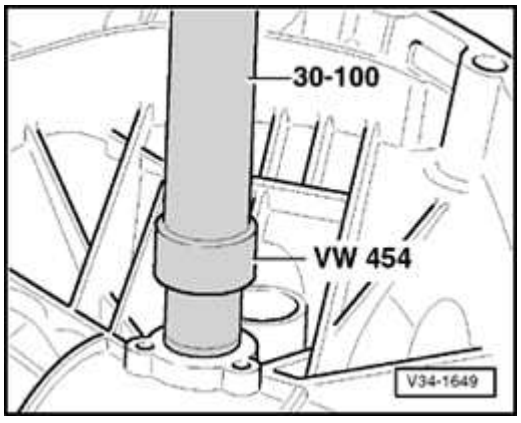


Fig. 55: Installing Shaft Seal For Input Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Lightly oil outer circumference of seal.
- Fill space between sealing and dust lips with sealing grease G 052 128 A1.
- Pull a thin protective hose tightly onto splines of input shaft.
- Tapping in input shaft seal.

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- Standard insertion depth: 3.5 mm
- Standard insertion depth: 4.5 mm

- Remove protective hose.

Removing clutch release lever

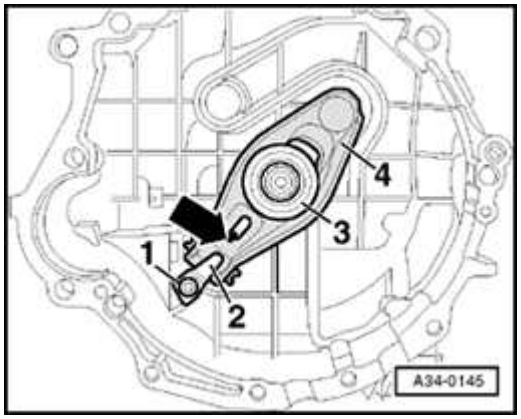


Fig. 56: Removing Clutch Release Lever
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release bolt -1-, remove leaf spring - 2- and press back the detent -arrow-.
- Remove clutch release lever -4- together with release bearing -3-.
- Disengage the retaining latches of the release bearing at release lever.

Installing clutch release lever

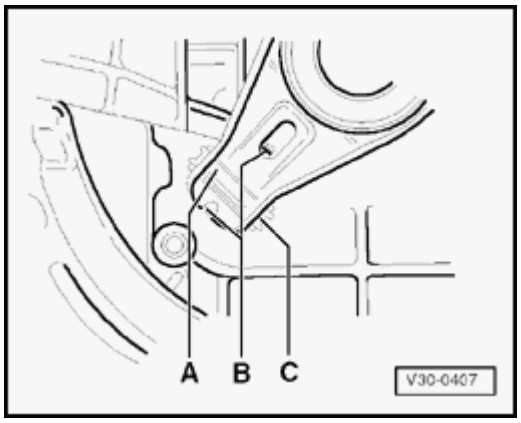


Fig. 57: Installing Clutch Release Lever
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Before installing the clutch release lever, the contact surface of clutch slave cylinder push rod must be coated with a thin layer of copper paste.
- Insert clutch release lever -A- into the intermediate piece -C- and allow it to engage (detent -B- becomes visible).

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- Insert leaf spring -Item 7: Refer to **Clutch release mechanism, servicing**, tighten retaining bolt -Item : Refer to 8 **Clutch release mechanism, servicing** to 25 Nm.

Detaching slave cylinder from hose/pipe assembly

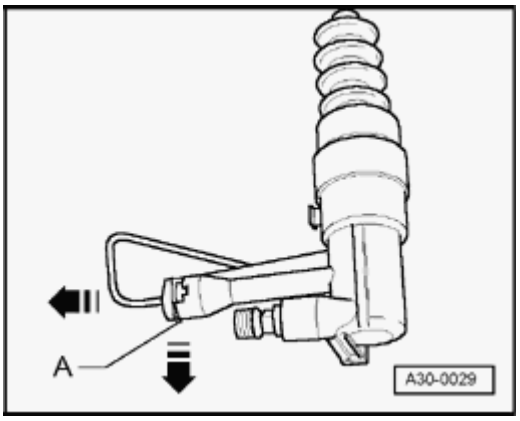


Fig. 58: Removing Hydraulic Line From Slave Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removing

- To remove the hose/pipe assembly, lever out clip -A- to the stop using a screwdriver. Only then can the hose/pipe assembly be pulled out.

Installing

- Press in clip -A- to stop.
- Push hose/pipe assembly into slave cylinder until it engages audibly.
- To check, pull on the hose/pipe assembly.

Removing clutch slave cylinder

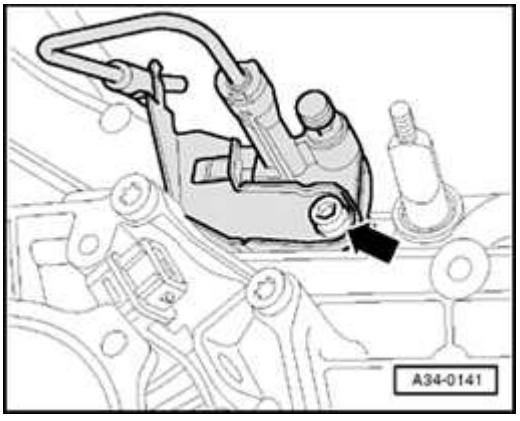


Fig. 59: Removing/Installing Slave Cylinder Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Remove bolt -arrow-, remove clutch slave cylinder rearward.

NOTE: Do not depress clutch pedal after removing slave cylinder.

Installing clutch slave cylinder

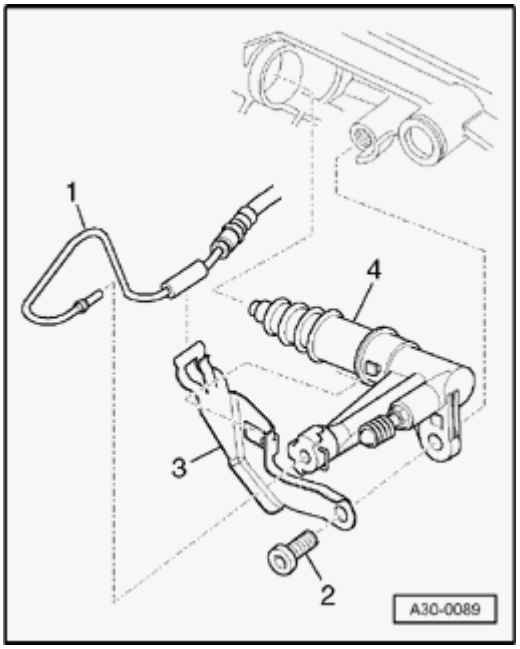


Fig. 60: Clutch Slave Cylinder, Bracket And Hose/Line Assembly
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Coat clutch slave cylinder with lithium grease G 052 150 A2. See **Coat clutch slave cylinder with grease before installing**.
- Engage bracket for hose/pipe assembly -3- at the slave cylinder -4-.
- When inserting the clutch slave cylinder into the mounting hole of the transmission housing, keep it as far as possible in line with the direction of operation of the push rod.

NOTE:

- **If the clutch slave cylinder -4- is inserted off-line there is a danger that the push rod will be guided past the clutch release lever.**
- **When installing, press in the clutch slave cylinder far enough so that the securing bolt can be fitted easily.**
- **Replace securing bolt -2-.**

- Tighten bracket for hose/line assembly together with slave cylinder on transmission.

Coat clutch slave cylinder with grease before installing

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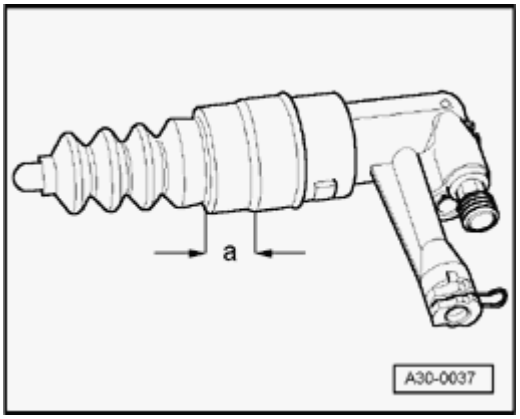


Fig. 61: Coat Boot Area Of Clutch Slave Cylinder With Lithium Grease
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Lightly lubricate contact surface for push rod at clutch release lever with copper grease, e.g. Z 381 351 TE.
- Before installing slave cylinder into transmission housing, lubricate area -a- on boot with lithium grease G 052 150 A2.

Repairing release bearing with plastic ring

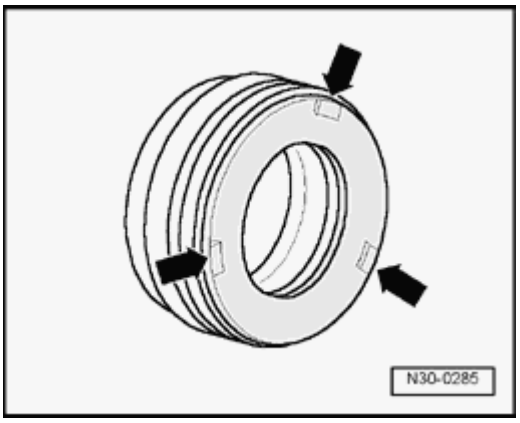


Fig. 62: Servicing Release Bearing With Plastic Ring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

In the case of release bearings with plastic ring it is possible that the plastic ring detaches from the release bearing during removal of the transmission. This does not signify that replacement of the release bearing is necessary.

- Cement the loose plastic ring to the bearing ring the with adhesive AMV 195 KD1 01 before installing the transmission.

Three rectangular lugs -arrows- on the plastic ring engage into recesses in the bearing ring.

NOTE: If the plastic ring has become embedded deeper than 0.5 mm in the bearing

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surface, the bearing ring must be replaced.

CLUTCH, SERVICING

Clutch, servicing

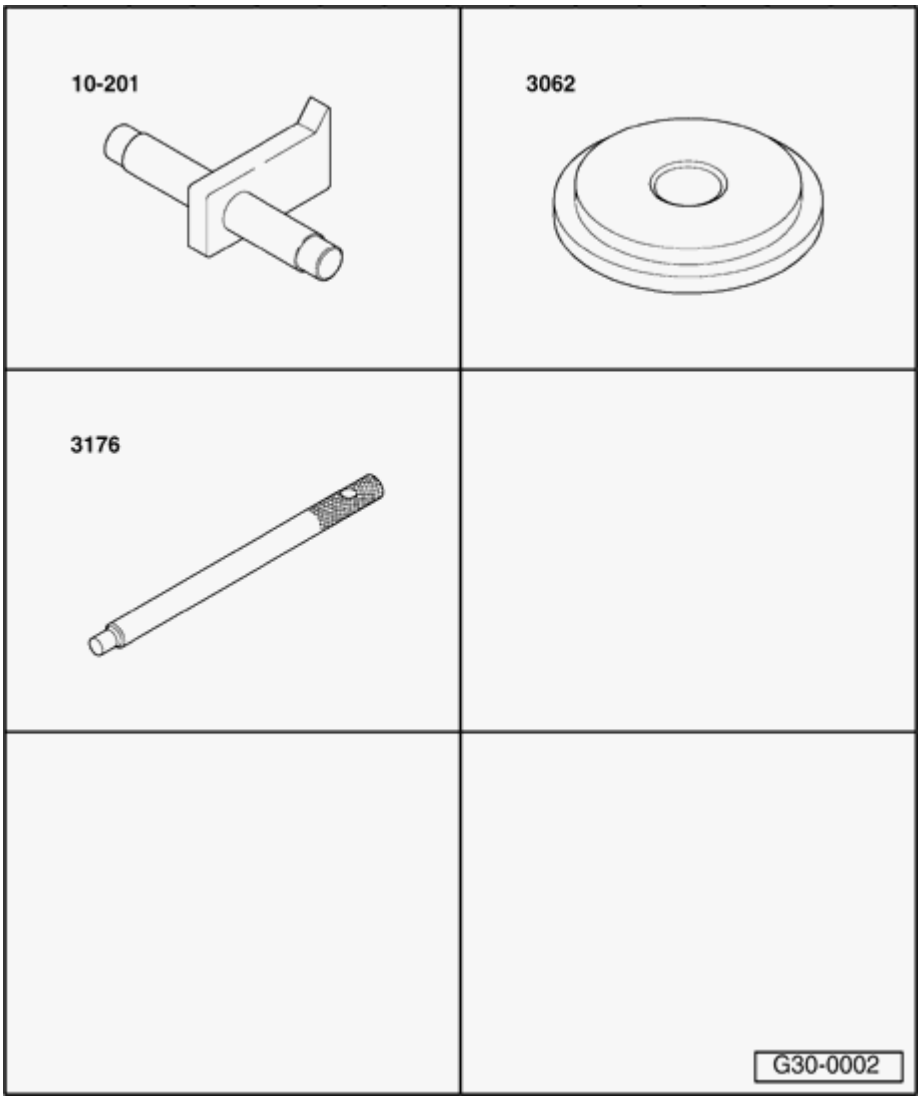


Fig. 63: Identifying Special Tools - Clutch, Servicing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools and equipment

- Retainer 10-201
- Thrust pad 3062
- Centering mandrel 3176
- Grease G 000 100

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NOTE:

- **Observe the general repair instructions. Refer to General repair instructions.**
- **The adjuster ring for the SAC-clutch pressure plate (self-adjusting clutch pressure plate) must be reset before assembly when the clutch ring is replaced exclusively. Refer to SAC clutch pressure plate adjuster ring, resetting onward.**
- **Replace clutch plates and pressure plates with damaged or loose rivets.**
- **Select the correct clutch plate and pressure plate according to engine code.**
- **Clean input shaft splines and (in the case of used clutch plates) the hub splines. Remove corrosion and apply only a very thin coating of grease G 000 100 to the splines. Then move clutch plate to and for on input shaft until hub moves freely on shaft. Excess grease must be removed.**
- **Pressure plates are protected against corrosion and greased. Only the contact surface may be cleaned, otherwise the service life of the clutch will be considerably reduced.**
- **If the clutch has burnt out, thoroughly clean the bell housing, flywheel and parts of the engine facing the transmission in order to reduce the smell.**

Clutch with SAC pressure plate

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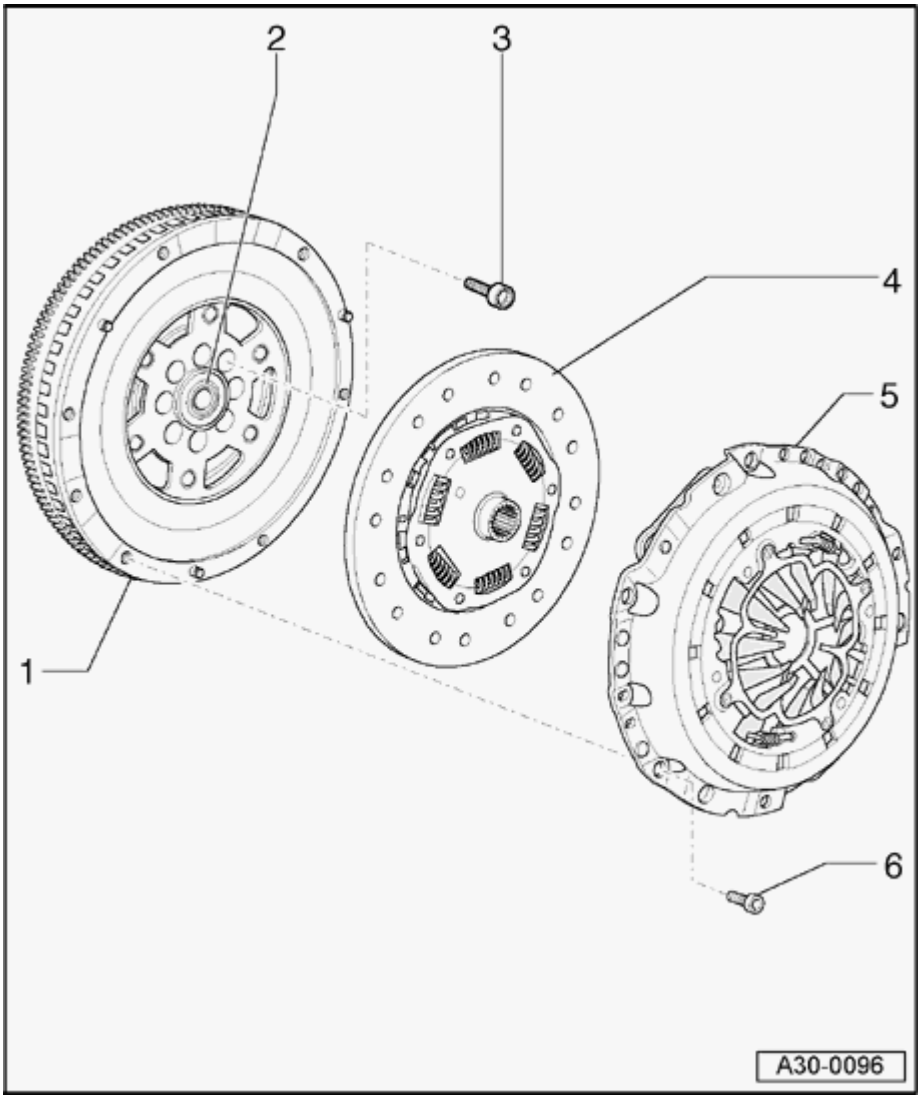


Fig. 64: Clutch With SAC Pressure Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove transmission to work on clutch. Refer to **Transmission, removing and installing**.

1 - Dual-mass flywheel

- Make sure that centering pins are a tight fit.
- Contact surface for clutch lining must be free of grooves, oil and grease
- Removing and installing

Refer to

- **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
- **13 ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 3.0 LITER 6-CYL. 5V ENGINE

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MECHANICAL, ENGINE CODE(S): AVK, BGN

- **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

2 - Needle bearing

- Driving off and on

Refer to

- **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
- **13 ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
- **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

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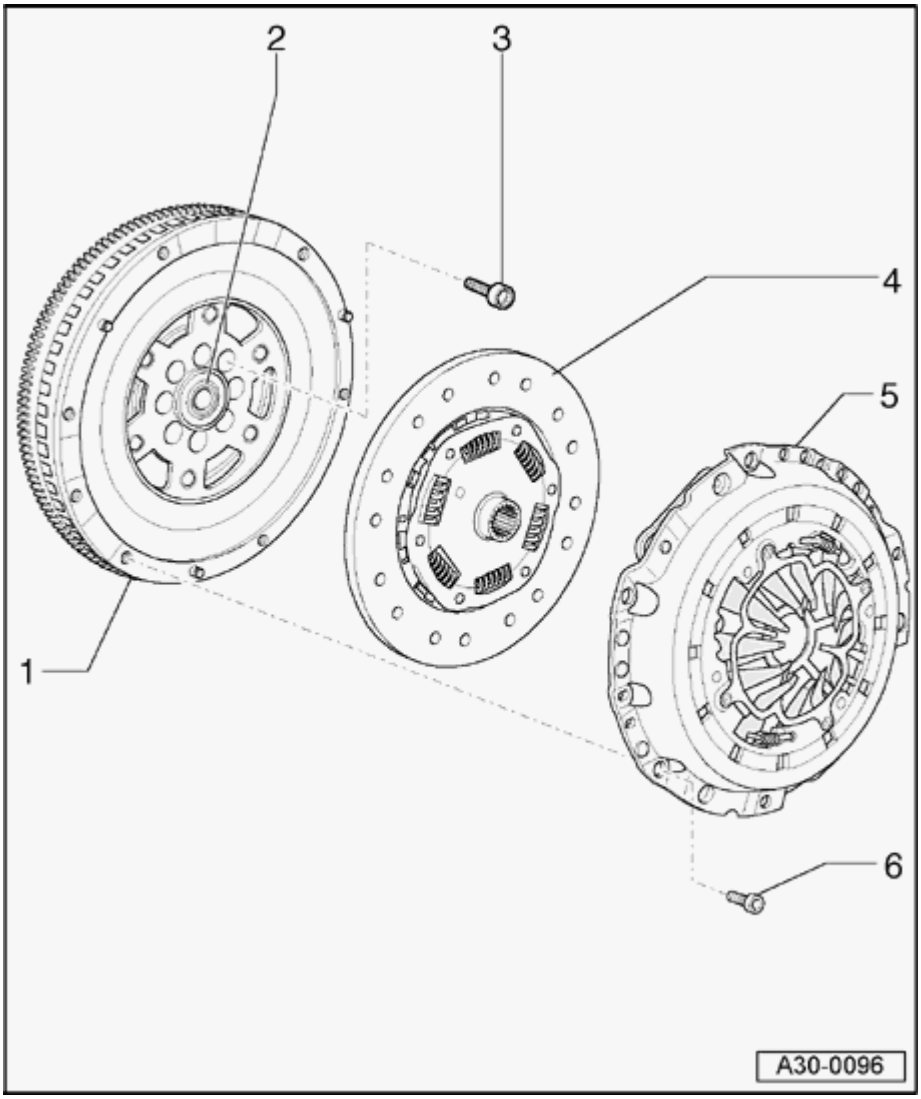


Fig. 65: Clutch With SAC Pressure Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

3 - Bolt for flywheel

- Always replace
- Screw length 43 mm 60 Nm plus additional 180 ° turn
- Screw length 22.5 mm 60 Nm plus additional 90 ° turn

4 - Clutch plate

- Installation position:

  - Clutch lining must make full contact with flywheel
  - Marking "Getriebeseite" (if present) goes toward pressure plate and transmission

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- Spring pack (coil springs) toward pressure plate and transmission

- Centering. See **Removing and installing clutch with SAC pressure plate**
- Do not grease
- Clutch plate diameter. Refer to **Code letters, mechanical unit assignment, transmission ratios, capacities**onward

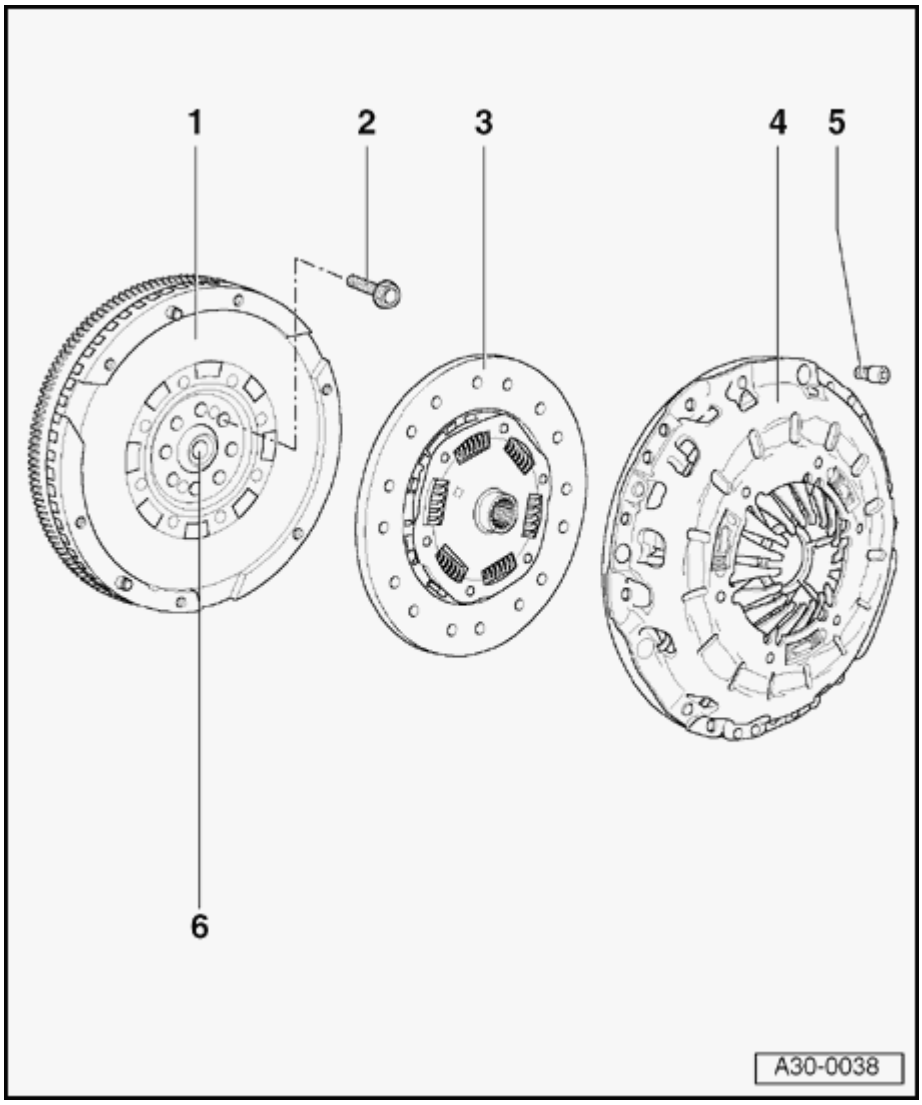


Fig. 66: Identifying Clutch Components (SAC Pressure Plate)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

5 - SAC pressure plate

- Resetting adjuster ring. Refer to **SAC clutch pressure plate adjuster ring, resetting**
- Removing and installing. See **Removing and installing clutch with SAC pressure plate**
- Check ends of diaphragm spring. See **Checking ends of the diaphragm spring**

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- Check spring connection and riveted fastenings

6 - Bolt, 25 Nm

- Tighten in small stages and in diagonal sequence

Removing and installing clutch with SAC pressure plate

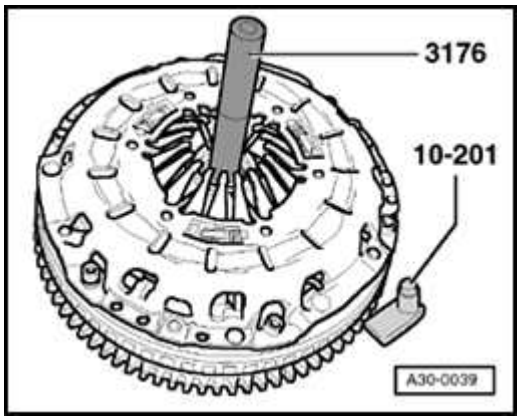


Fig. 67: Removing And Installing Of Clutch With SAC Pressure Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **The SAC pressure plate adjuster ring must be turned back prior to installation when the clutch plate is replaced exclusively. Refer to SAC clutch pressure plate adjuster ring, resetting onward.**
- **The clutch plate lining and the contact surface of the pressure plate must make full contact with the flywheel before the securing bolts are inserted.**
- **Tighten securing bolts evenly and in diagonal sequence in small steps to avoid damaging centering holes in pressure plate and centering pins on flywheel.**

- Installation position of clutch plate: spring pack (coil springs) or marking "Getriebeseite" toward pressure plate and transmission.
- Loosen and tighten bolts gradually in several stages working diagonally. Tightening torque: 25 Nm.
- Re-position Retainer 10-201 when removing.
- Use mandrel 3176 to center clutch plate.

Checking ends of the diaphragm spring

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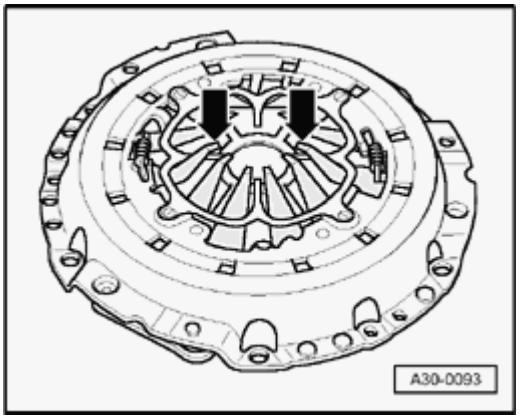


Fig. 68: Checking Ends Of The Diaphragm Spring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wear up to half the thickness of the diaphragm spring is permitted.

NOTE: When performing repairs always match up clutch pressure plate and clutch plate by checking engine code.

SAC clutch pressure plate adjuster ring, resetting

"SAC" stands for self-adjusting clutch.

When installing a new clutch plate with a used SAC pressure plate, the pressure plate adjuster ring must be turned back to the limit stop. If the pressure plate adjuster ring is not turned back, the SAC pressure plate functions at a reduced pressure, resulting in increased wear of the clutch and in particular of the clutch plate (clutch slips).

If the clutch plate is not replaced, the adjuster ring does not require resetting.

New SAC pressure plates are pre-set and consequently do not require resetting.

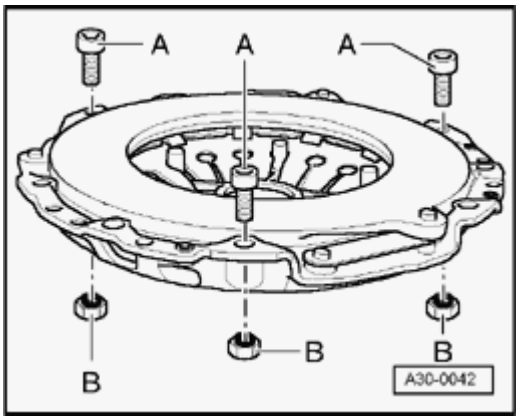


Fig. 69: Inserting Securing Bolts Into Mounting Holes On Pressure Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Insert 3 pressure plate securing bolts -A- in the fixing holes of the pressure plate at a 120 ° offset (1/3 turn) as indicated in the illustration.
- Screw 3 nuts -B- (M8) onto bolts -A-and tighten slightly.

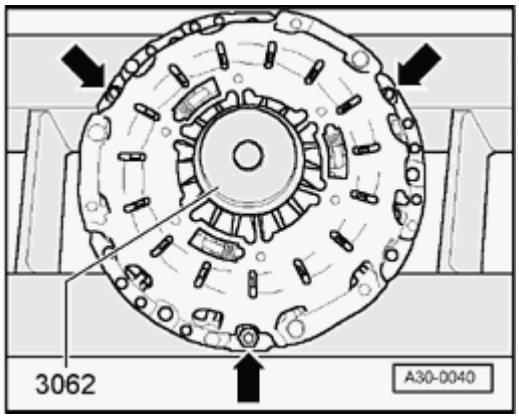


Fig. 70: Placing SAC Pressure Plate Onto Press
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position SAC pressure plate on the pressing tool in such a way that only the 3 bolt heads rest upon it.
- Center special tool 3062 on the center of the pressure plate.

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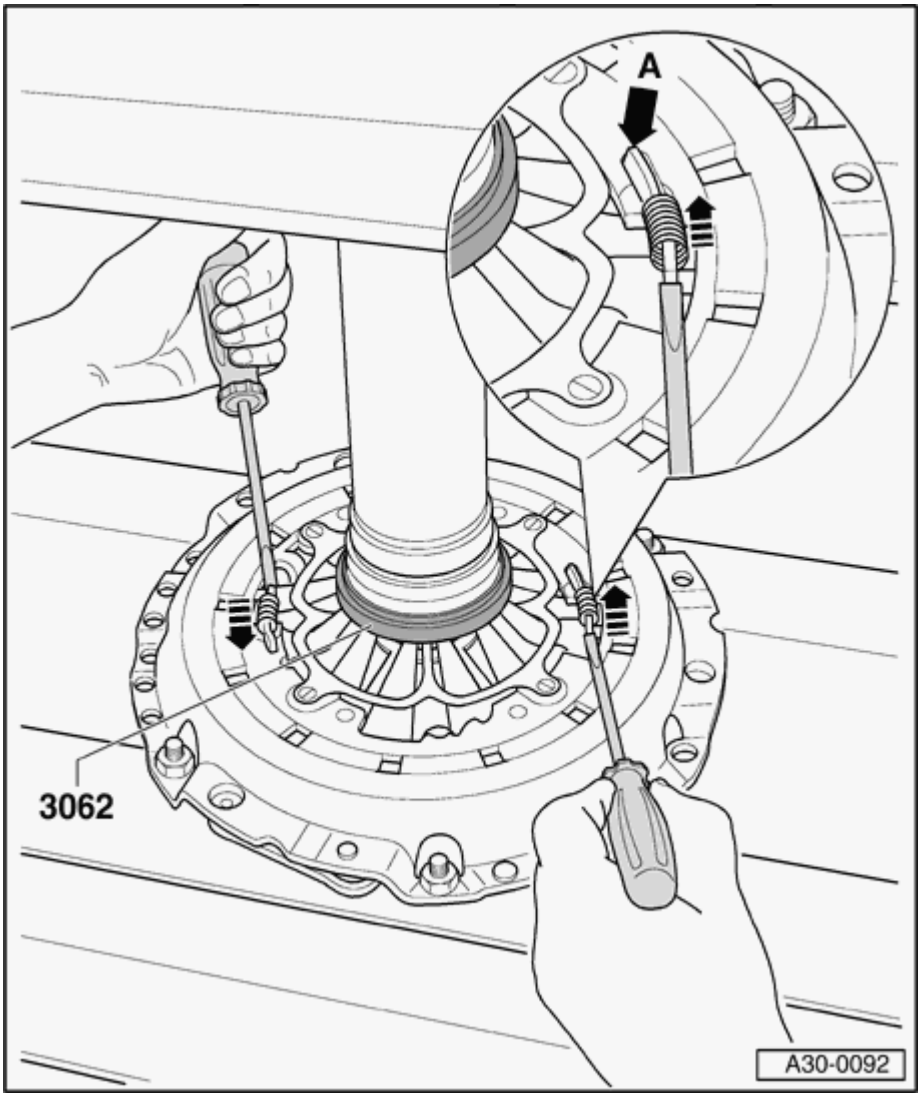


Fig. 71: Turning The Adjuster Ring Evenly Using Both Screwdrivers Until It Reaches The Limit Stop
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position two screwdrivers at the adjuster ring. Press against the pressure plate with the pressing tool until the adjuster ring can just be moved.
- Turn the adjuster ring evenly using both screwdrivers in direction of arrow until it reaches the limit stop - arrow A-.
- Hold the adjuster ring at the stop while reducing the pressure of the pressing tool so that the adjuster ring remains in position.

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30 CLUTCH

CLUTCH MECHANISM, SERVICING

Clutch mechanism, servicing

CAUTION:

- **Follow steps required when disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for Cabriolet**

.

NOTE:

- **Lubricate all bearings and contact surfaces with polycarbamide grease G052142A2 .**
- **Before working on pedal cluster, remove storage compartment on drivers side -->**
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT for Cabriolet**

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- **Make sure that no brake fluid escapes into the footwell, the plenum chamber or onto the transmission below. If this does happen, clean the affected area thoroughly.**
- **When performing work in the footwell, put cloths on the carpet to protect it from possible brake fluid spills.**

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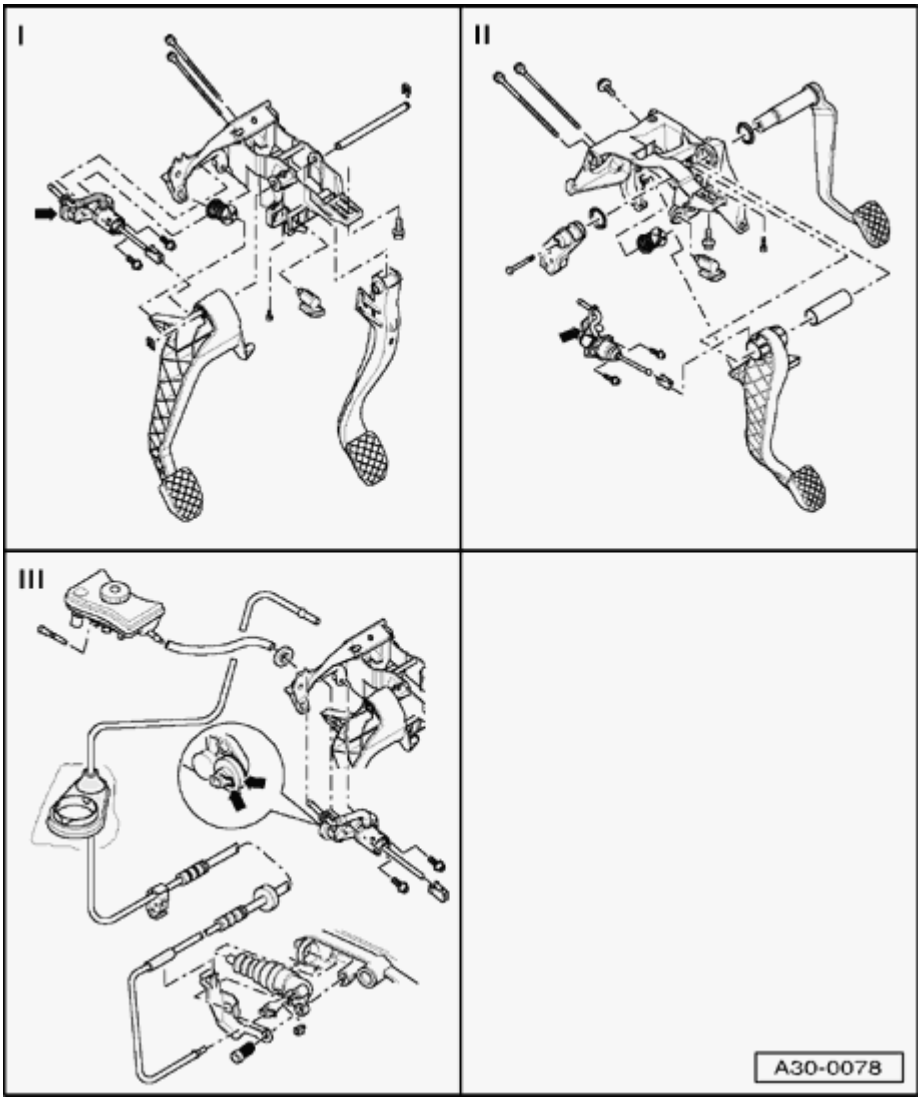


Fig. 8: Exploded View Of Pedal Cluster And Exploded View Of Hydraulic System
Courtesy of VOLKSWAGEN UNITED STATES, INC.

I - Pedal cluster - LHD vehicles, assembly overview --> **Pedal cluster - LHD vehicles, assembly overview**

II - Pedal cluster - RHD vehicles, assembly overview --> **Pedal cluster - RHD vehicles, assembly overview**

III - Hydraulics, assembly overview --> **Hydraulic system, assembly overview**

Pedal cluster - LHD vehicles, assembly overview

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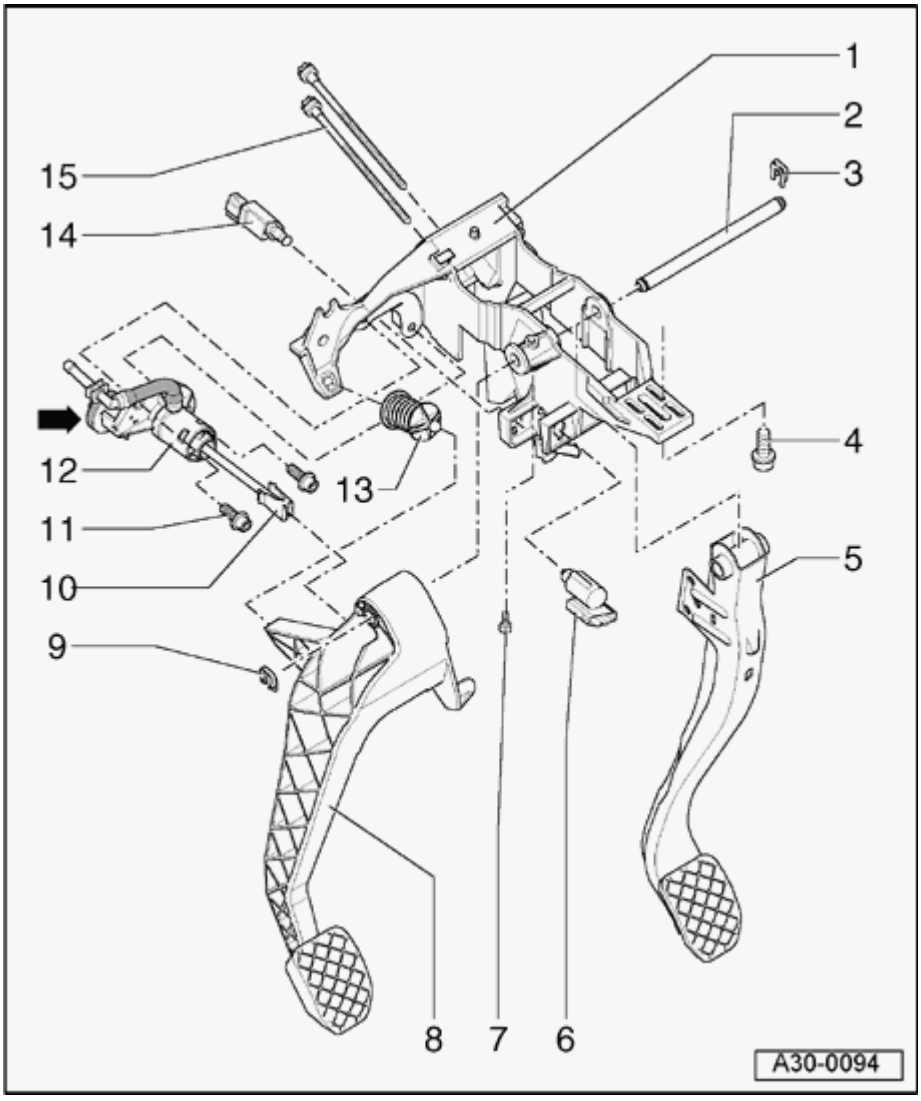


Fig. 9: Pedal Cluster, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Mounting bracket

- Removing and installing --> **Master cylinder, removing and installing**

2 - Pivot pin for clutch and brake pedal

3 - Retaining clip

4 - Hex socket head bolt -25 Nm-

5 - Brake pedal

- Maintenance-free bearing, do not grease

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6 - Clutch pedal switch F 36

- Removing and installing --> **Clutch pedal switch F36, removing and installing**
- Only installed one time
- Replace

7 - Hex socket head bolt -5 Nm-

- Secures clutch and brake pedal pivot pin

8 - Clutch pedal

- Removing and installing --> **Master cylinder, removing and installing**

9 - Retaining clip

10 - Retaining clip

11 - Hex socket head bolt -20 Nm-

12 - Master cylinder

- Removing and installing --> **Master cylinder, removing and installing**
- Gasket - **arrow** - must not be removed

13 - Over-center spring

- Black side points toward clutch pedal
- Removing and installing --> **Over-center spring, removing and installing**

14 - Clutch pedal starter interlock switch F194

- Only for USA
- Engine can only be started when clutch is fully depressed (clutch pedal starter interlock switch activated).
- Removing and installing
- Replace

- Only install one time

15 - Torx bolt, 25Nm

- For securing brake master cylinder/brake servo to mounting bracket

Clutch pedal switch F36, removing and installing

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NOTE:

- **Clutch pedal switch F36 may only be installed once so as to ensure a firm fit.**

Removing

- Remove storage compartment on drivers side -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for Cabriolet

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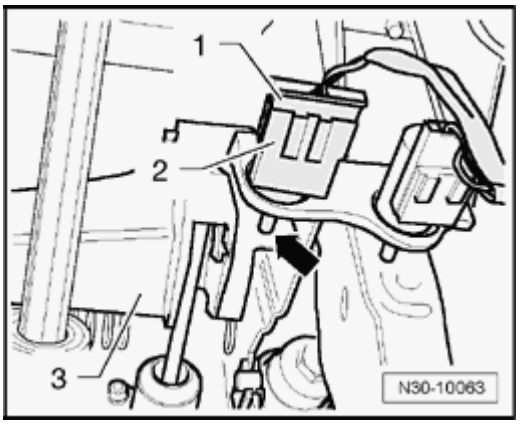


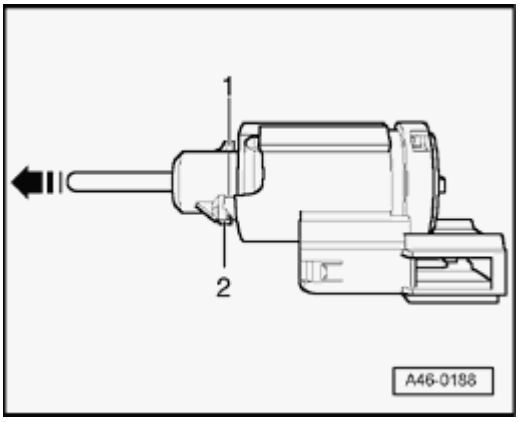
Fig. 10: Identifying Pedal Assembly And Clutch Pedal Switch F36
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical connector - **1** - on clutch pedal switch.

- The clutch pedal - **3** - is in the normal position (i.e. not pressed down). The operating rod - **arrow** - of the clutch pedal switch F36 should then rest against the clutch pedal.

- Release clutch pedal switch F36 - **2** - by turning 45° counter-clockwise and remove from guide.

Installing



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Fig. 11: Pulling Out Switch Plunger & Identifying Retainer Tabs On Switch
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Installation is perform in reverse sequence. Note the following:

- Pull out operating rod - **arrow** - all the way before installing clutch pedal switch F36.

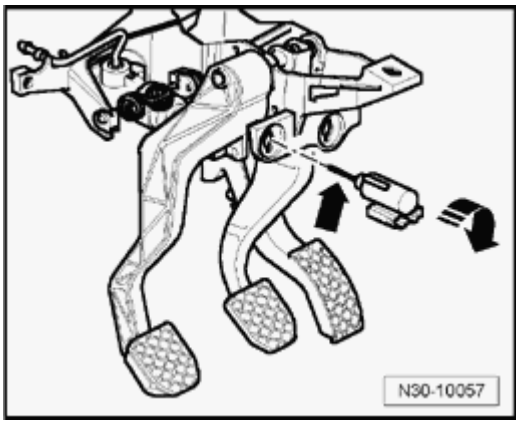


Fig. 12: Identifying Clutch Pedal Switch F36, Plunger
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- The clutch pedal should be in the normal position (i.e. not pressed down).

- Guide clutch pedal switch F36 through mounting hole, press against clutch pedal and attach by turning 45° clockwise.
- Plug in connector for clutch pedal switch F36.
- Install storage compartment on drivers side -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for Cabriolet

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Removing and installing clutch pedal starter interlock switch F194

NOTE:

- **To ensure a secure fit, the clutch pedal starter interlock switch F194 must not be installed more than once.**

Removing

- Remove storage compartment on drivers side -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for Cabriolet

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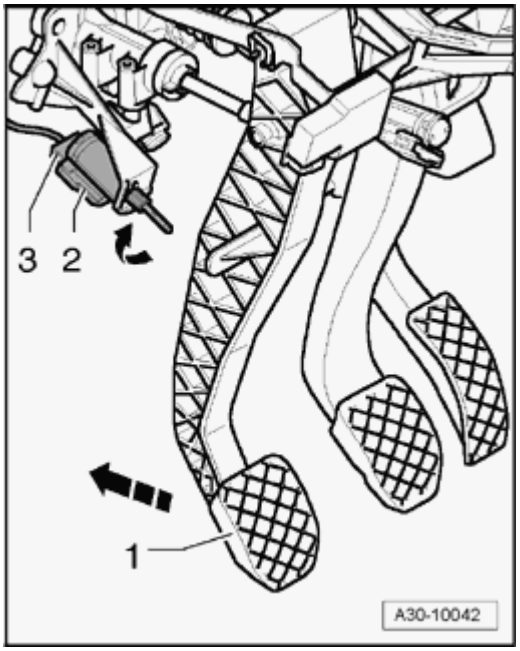


Fig. 13: Installing and Adjusting Clutch Pedal Starter Interlock Switch F194
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical connector - **3** - on clutch pedal starter interlock switch.
- Press clutch pedal - **1** - all the way down and hold it in this position.
- At the same time, release clutch pedal starter interlock switch - **2** - by turning it 45° in the direction indicated - **arrow** - and pull it out of the guide.

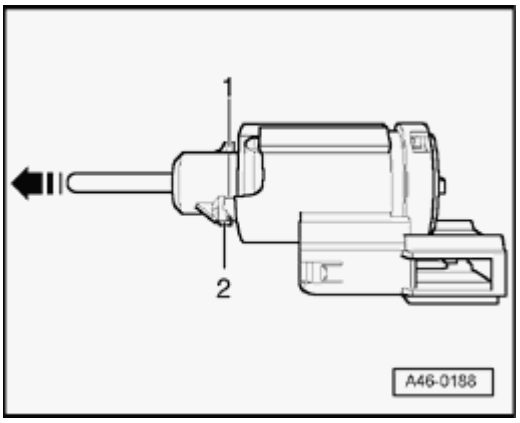


Fig. 14: Pulling Out Switch Plunger & Identifying Retainer Tabs On Switch
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Installing

- Pull out operating rod - **arrow** - all the way before installing clutch pedal switch.

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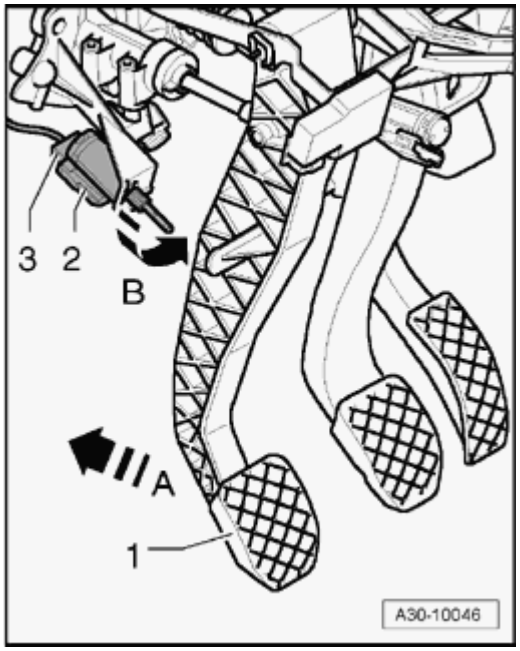


Fig. 15: Pressing Clutch Pedal All The Way Down And Pushing Operating Rod Against Clutch Pedal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- When installing clutch pedal starter interlock switch, press clutch pedal - **1** - all the way down - **arrow A** -. Hold clutch pedal in this position.
- Guide clutch pedal starter interlock switch - **2** - through opening in retainer, and at the same time push operating rod against clutch pedal and secure switch by turning it 45° in the direction indicated - **arrow B** -.
- Connect electrical connector - **3** - on clutch pedal starter interlock switch.
- Install storage compartment on drivers side -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for Cabriolet

  .

Over-center spring, removing and installing

Special tools, testers and auxiliary items required

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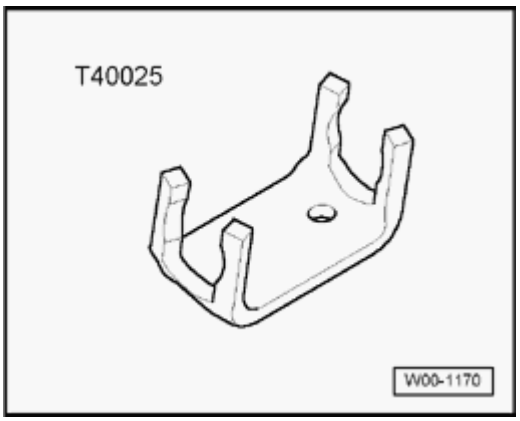


Fig. 16: T40025 Installation Clamp
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Assembly clamp T40025

Removing

- Remove storage compartment on drivers side -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for Cabriolet

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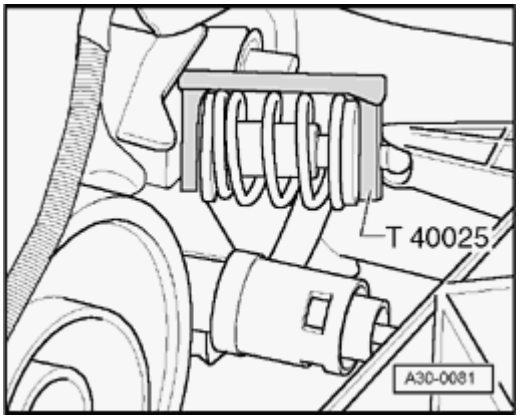


Fig. 17: Installation Clamp T40025 Installed On Over-Center Spring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tension over-center spring with clutch pedal, at the same time pressing on assembly clamp T40025.
- Move clutch pedal to rest position and remove over-center spring together with assembly clamp T40025 downward.

Installing

- Pull clutch pedal into the passenger compartment.

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Installation position of over-center spring:

- Black side of over-center spring points toward clutch pedal.
  - Install over-center spring with assembly clamp T40025, operate clutch pedal and remove assembly clamp.

Pedal cluster - RHD vehicles, assembly overview

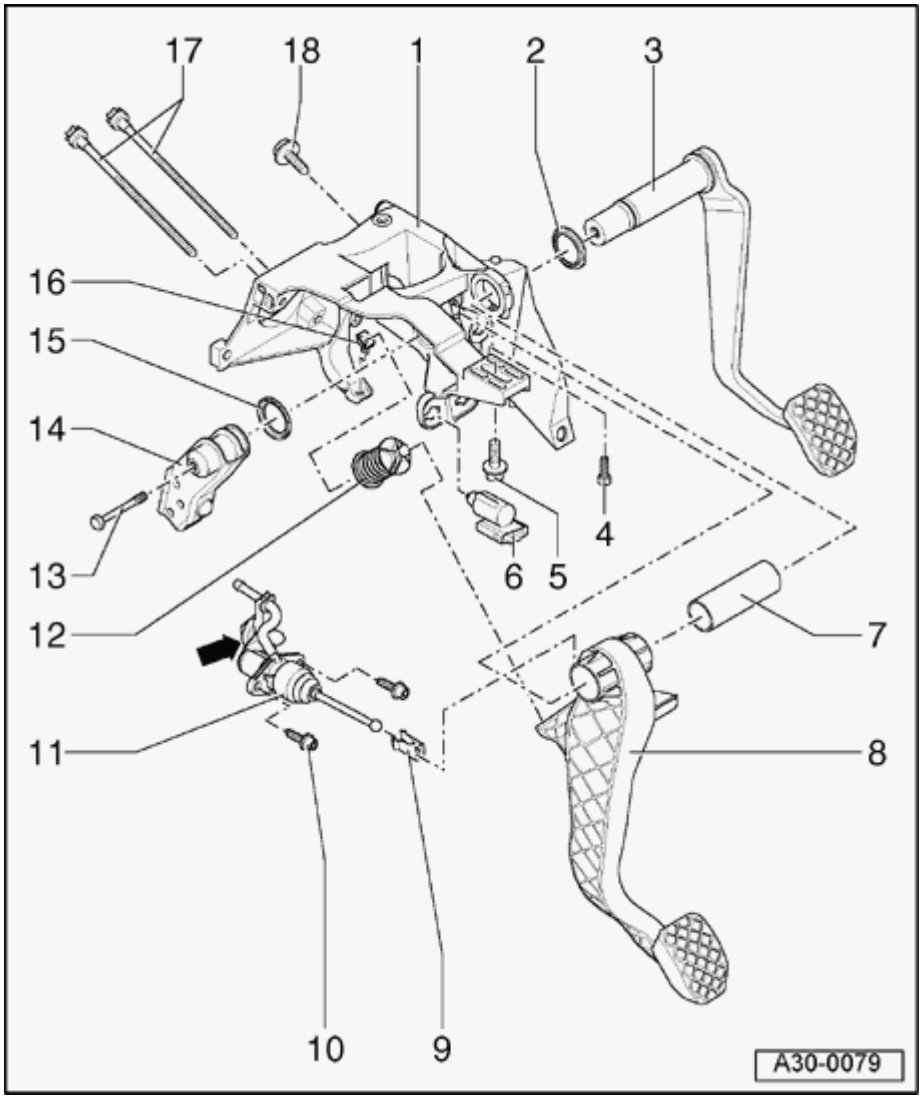


Fig. 18: Pedal Cluster - RHD Vehicles, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Mounting bracket

- Removing and installing --> **Master cylinder, removing and installing**

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2 - Washer

3 - Brake pedal

- Maintenance-free bearing, do not grease

4 - Hex socket head bolt -5 Nm-

- For securing the bearing sleeve

5 - Hex socket head bolt -25 Nm-

6 - Clutch pedal switch F36

- Only install one time
- Replace

7 - Bearing sleeve

- Check for freedom of movement in clutch pedal

8 - Clutch pedal

- Removing and installing --> **Master cylinder, removing and installing**

9 - Retaining clip

10 - Hex socket head bolt, 20 Nm

11 - Master cylinder

- Removing and installing --> **Master cylinder, removing and installing**
- Gasket - **arrow** - must not be removed

12 - Over-center spring

- Removing and installing --> **Over-center spring, removing and installing**

13 - Bolt -22 Nm-

- Self-locking
- Replace

14 - Lever

- Pin only fits in one position

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15 - Washer

16 - Mounting

- For over-center spring

17 - Torx bolt, 25Nm

- For securing brake master cylinder/brake servo to mounting bracket

18 - Bolt, 25 Nm

Hydraulic system, assembly overview

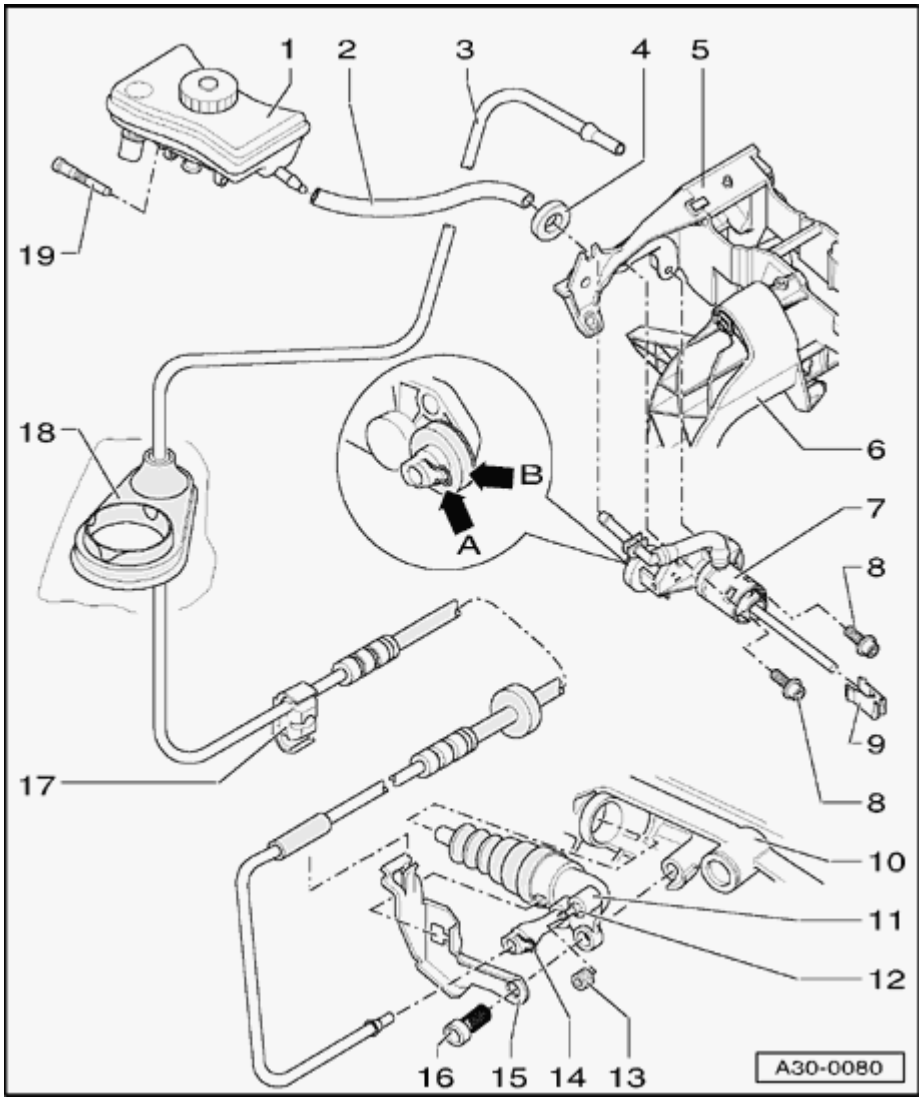


Fig. 19: Hydraulic System, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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1 - Brake fluid reservoir

2 - Supply hose

- For master cylinder

3 - Line/hose assembly

- For plug-in connections on master cylinder and slave cylinder
- Disconnecting from master cylinder and installing **Fig. 32**
- Disconnecting from clutch slave cylinder **Disconnecting slave cylinder from hose/line assembly**

4 - Grommet

5 - Mounting bracket

6 - Clutch pedal

7 - Master cylinder

- Removing and installing --> **Master cylinder, removing and installing**
- Do not remove clip - **arrow A** - or seal - **arrow B** -.
- To remove line/hose assembly, pull out clip - **arrow A** - , but only as far as limit stop **Fig. 32**.

8 - Hex socket head bolt -20 Nm-

9 - Retaining clip

- Only replace when master cylinder has been removed
- Pry off to remove **Prying retaining clip - A - off in direction of - arrow -**
- Push in to install **Pressing master cylinder operating rod into retaining clip - A - (in direction of - arrow -).**

10 - Transmission

11 - Slave cylinder

- Do not operate clutch pedal after slave cylinder has been removed.
- Removing and installing --> **Slave cylinder, removing and installing**
- Bleed slave cylinder after working on hydraulic clutch mechanism --> **Clutch hydraulic system, bleeding**
- Disconnecting hose/line assembly **Disconnecting slave cylinder from hose/line assembly**

- Do not allow brake fluid to come into contact with transmission.

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12 - Bleeder valve

- Tighten to 4.5 Nm
- Follow correct procedure when bleeding --> **Clutch hydraulic system, bleeding**.
- If bleeder valve has broken off, it can be removed with 3 mm Allen key

13 - Dust cap

14 - Clip

- To remove line pull out clip as far as limit stop **Disconnecting slave cylinder from hose/line assembly**

15 - Bracket

- For line/hose assembly
- Attached to transmission together with slave cylinder

16 - Hex socket head bolt -25 Nm-

- Slave cylinder to transmission
- Self-locking
- Replace

17 - Retaining clip

18 - Gasket

19 - Securing bolt

- For brake fluid reservoir

Prying retaining clip - A - off in direction of - arrow -

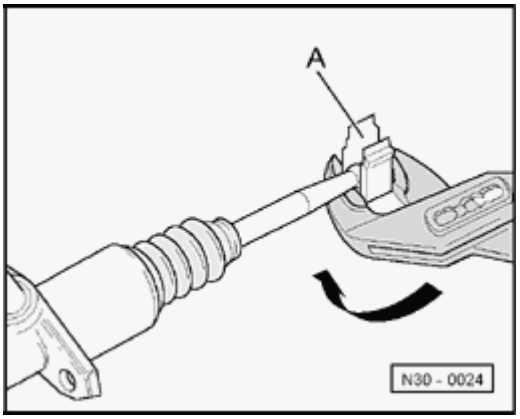


Fig. 20: Removing Retainer By Prying

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

Pressing master cylinder operating rod into retaining clip - A - (in direction of - arrow -).

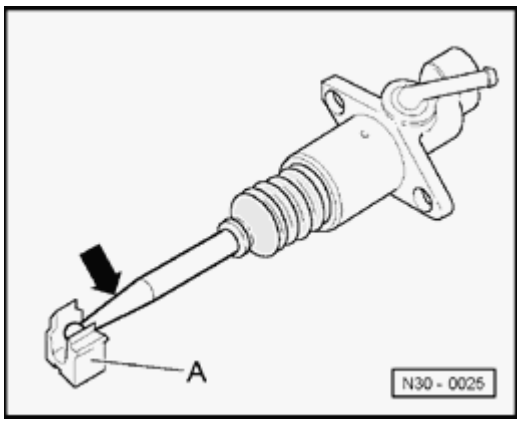


Fig. 21: Installing Clutch Master Cylinder Operating Rod In Retainer
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Disconnecting slave cylinder from hose/line assembly

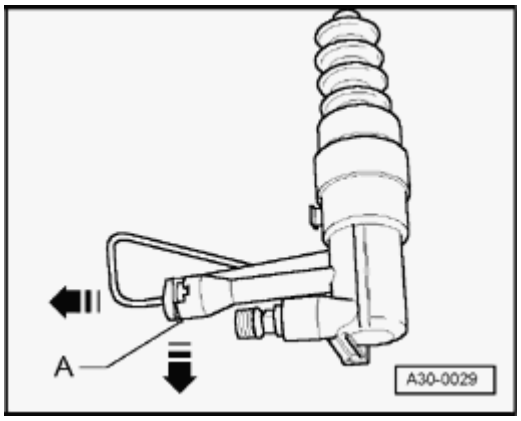


Fig. 22: Removing Hydraulic Line From Slave Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removing

- To remove hose/line assembly, use a screwdriver to pry off clip - **A** - as far as stop. Only then can hose/line assembly be pulled out.

Installing

- Press retaining clip - **A** - in as far as it will go.
- Insert hose/line assembly - **B** - in slave cylinder and make sure that it engages audibly.
- Pull on line/hose assembly to check it is secure.

Notes on removing and installing master cylinder and slave cylinder

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- Before replacing the master cylinder or slave cylinder on the assumption that it is faulty, first perform a function check.
- If slave cylinder is removed from transmission with hose/line assembly still attached, make sure you do not press clutch pedal. Otherwise, the piston will be pressed out of the slave cylinder and be destroyed.
- After installing the slave cylinder, carefully press the clutch pedal. If you feel an unusually strong resistance when depressing the clutch pedal, you must not press it down further. The push rod of the slave cylinder is likely to have been guided past the clutch release lever. The slave cylinder would then be destroyed once pedal force exceeds approx. 300 N.

Function check for master cylinder and slave cylinder

Before you replace the clutch master or slave cylinder you must - in the case of the following malfunctions - first carry out the appropriate checks.

Noises when operating the clutch:

- First check the over-center spring / clutch pedal switch for noise.
- If you hear a noise, remove over-center spring and repeat check.
- replace relevant component.

After releasing clutch pedal it still remains depressed / does not return to its initial position.

- Check whether clutch pedal returns all the way to its initial position, thereby uncovering the ventilation opening in the master cylinder.
- The ventilation opening must be uncovered, otherwise permanent self-ventilation for the hydraulic clutch system cannot function.
- The self-ventilation function of the clutch system can be impaired if the footwell trim or foot mats get trapped, if the clutch pedal switch jams or if the driver rests his foot on the clutch pedal for long periods of time.

Check the complete hydraulic system for external or internal leaks.

- Check brake fluid level in brake fluid reservoir.
- Check master and slave cylinder as well as the line-hose assembly including connecting points for external leaks (visual check).
- If you identify any leaks you must replace the leaking component.
- Bleed clutch system --> **Clutch hydraulic system, bleeding**.

High pedal force:

- Clutch plate is worn (except for SAC)
- Mechanically faulty pressure plate/clutch plate --> **Clutch, servicing**

Pedal forces:

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Conventional clutch: - Clutch lining when new: approx. 115 N- Clutch lining at wear limit: approx. 160 N

SAC clutch: - Approx. 140 N higher for complete service life of the clutch

Clutch does not disengage or does not disengage fully:

- Air in hydraulic system: bleed clutch system --> **Clutch hydraulic system, bleeding** and check hydraulic system for external and internal leaks.
- Clutch plate does not run smoothly on input shaft splines
- Needle bearing in flywheel (centering bearing for input shaft) faulty, replace needle bearing -->
  - **13 ENGINE - CRANKSHAFT, CYLINDER BLOCK** for AVK
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for BPG

  .
- Foreign body in clutch system
- Mechanically faulty pressure plate/clutch plate --> **Clutch, servicing**
- Wrong components used or components omitted when performing repair work (e.g. intermediate plate).

Master cylinder, removing and installing

Special tools, testers and auxiliary items required

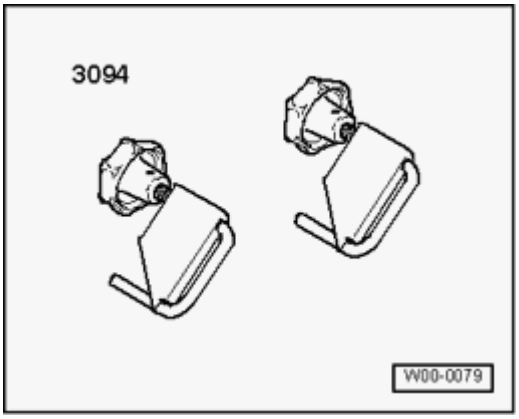


Fig. 23: Identifying Hose Clamps 3094
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Hose clamp 3094

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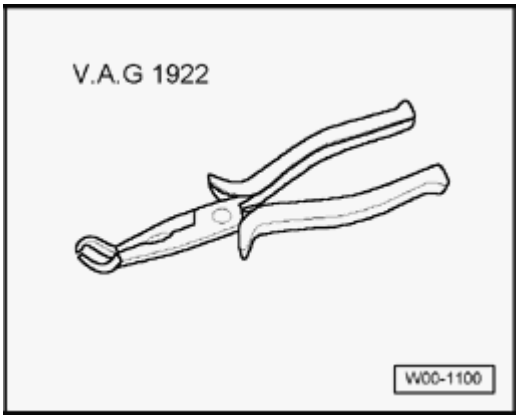


Fig. 24: Identifying Spark Plug Connector Pliers V.A.G 1922
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Spark plug connector pliers V.A.G1922

Removing

Observe the notes on removing and installing master cylinder and slave cylinder --> **Notes on removing and installing master cylinder and slave cylinder**.

CAUTION:

- **Follow steps required when disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for Cabriolet**

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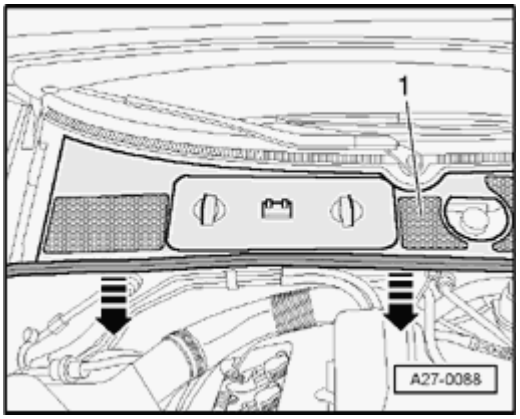


Fig. 25: Identifying Plenum Chamber Cover & Removing Rubber Seal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull off rubber seal on plenum chamber in direction of - **arrow** -.
- Remove cover - **1** - from plenum chamber.
- With ignition switched off, disconnect battery Ground (GND) strap -->

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- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for Cabriolet

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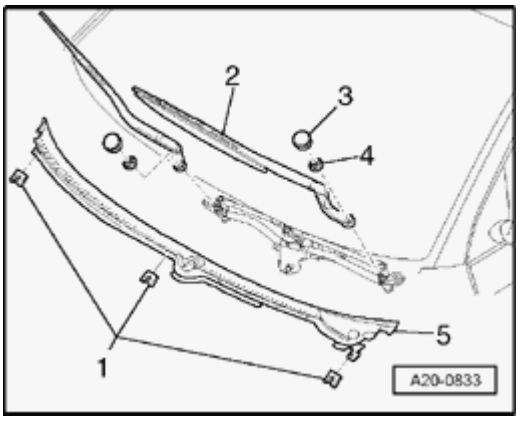


Fig. 26: Removing Securing Clips And Cowl
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Use screwdriver to pry off the two caps - **3** -.
- Remove nuts - **4** - and detach the two wiper arms - **2** -.
- Pull off clips - **1** - and detach cowl panel grille - **5** -.

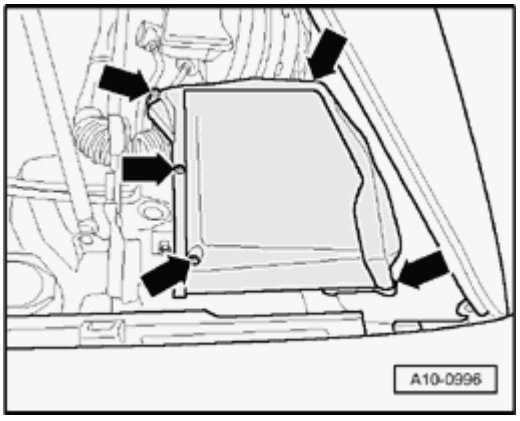


Fig. 27: Removing Screws And Cover From E-Box In Plenum Chamber
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Take the electronics box out of the plenum chamber as follows:

- Remove bolts - **arrows** - and take off cover.

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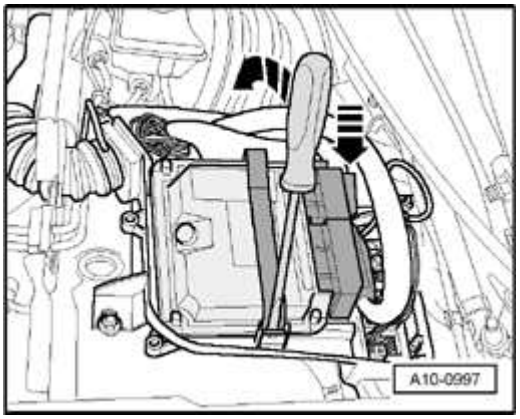


Fig. 28: Using Screwdriver To Remove Retainer Bar And Engine Control Module (ECM) J623
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Use screwdriver to carefully pry off retaining strap - **arrow** -.
- Lay aside engine control module with connectors attached.

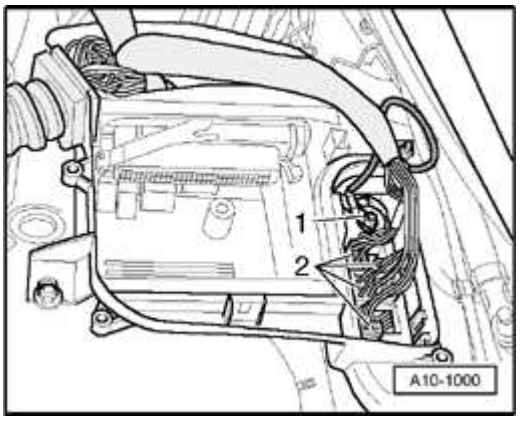
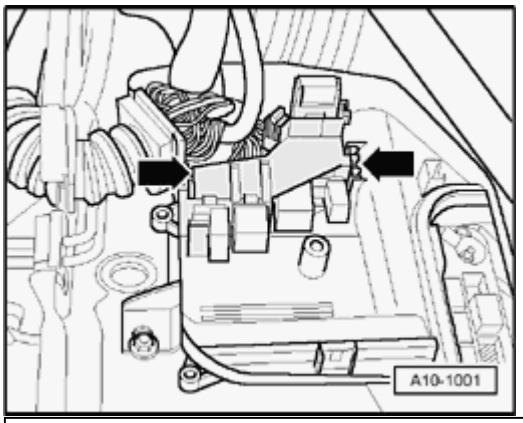


Fig. 29: Connector At Connector Rail And Wire
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect connectors - **2** - at console.
- Disconnect electrical wiring connection - **1** -.



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Fig. 30: Locating Auxiliary Relay Carrier Catches
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release catches - **arrows** - and lift auxiliary relay carrier out of electronics box.
- Pull engine wiring harness together with rubber grommet out through opening in electronics box.

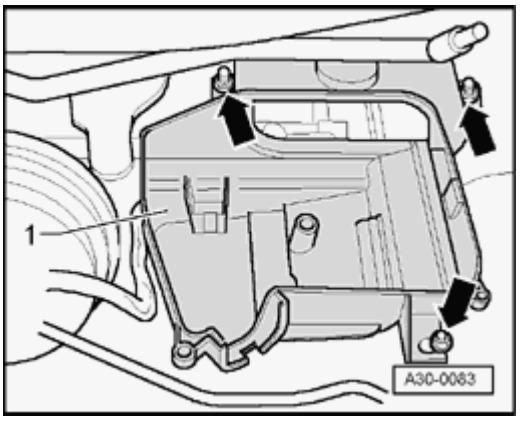


Fig. 31: Electronics Box Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **arrows** - and lift out electronics box - **1** -.

NOTE:

- **In the following steps make sure that no brake fluid escapes into the plenum chamber or onto the transmission below. If this does happen, clean the affected area thoroughly.**
- **When performing work in the footwell, put cloths on the carpet to protect it from possible brake fluid spills.**

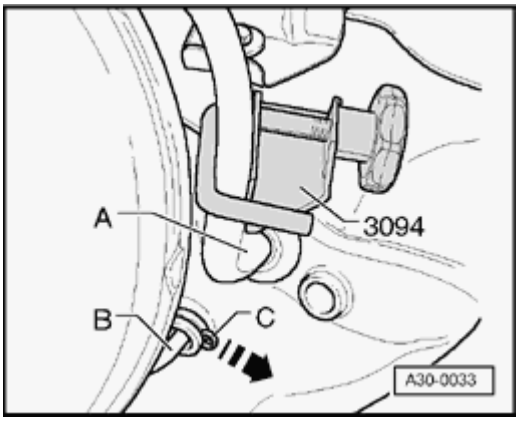


Fig. 32: Identifying Brake Fluid Reservoir Return Hose Grommet
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Clamp supply hose - **A** - from brake fluid reservoir using hose clamp 3094. Disconnect hose from master cylinder and plug hose.

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- Remove rubber grommet from bulkhead above connection line for supply hose.
- Pry out retaining clip - **C** - using a screwdriver and pull out line/hose assembly - **B** - slightly.

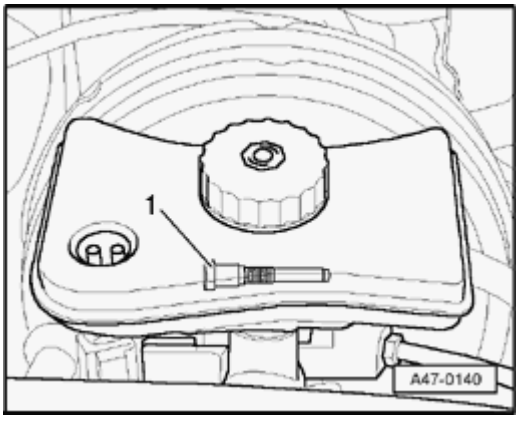


Fig. 33: Location Of Brake Fluid Reservoir Dowel Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove brake fluid reservoir bolt - **1** - and disconnect connector for brake fluid level warning contact downward.

NOTE:

- **Brake fluid reservoir must not be removed.**

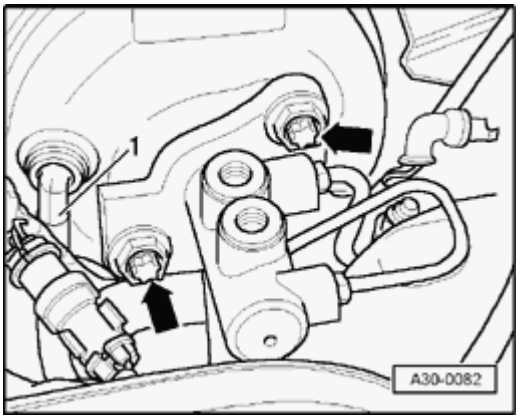


Fig. 34: Location Of Brake Servo Securing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove vacuum line to brake servo - **1** -.
- Remove two TORX bolts - **arrows** -.

NOTE:

- **To simplify the illustration, the brake fluid reservoir has not been included.**
- **The brake fluid reservoir must be moved slightly to the side in order to unscrew the upper TORX bolt.**

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- Remove storage compartment on drivers side -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for Cabriolet

  .
- Removing over-center spring --> **Over-center spring, removing and installing**.

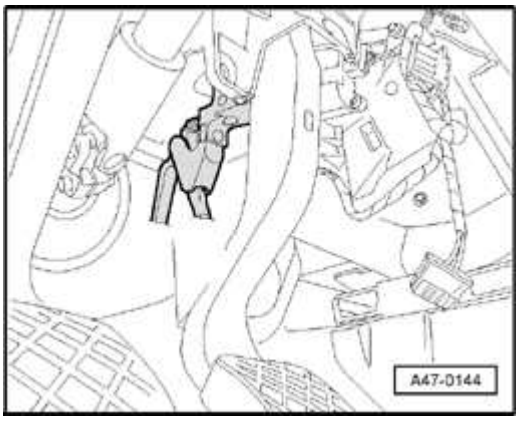


Fig. 35: Brake Pedal At Brake Servo
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect brake pedal from brake servo --> **47 - BRAKES - HYDRAULIC COMPONENTS** .

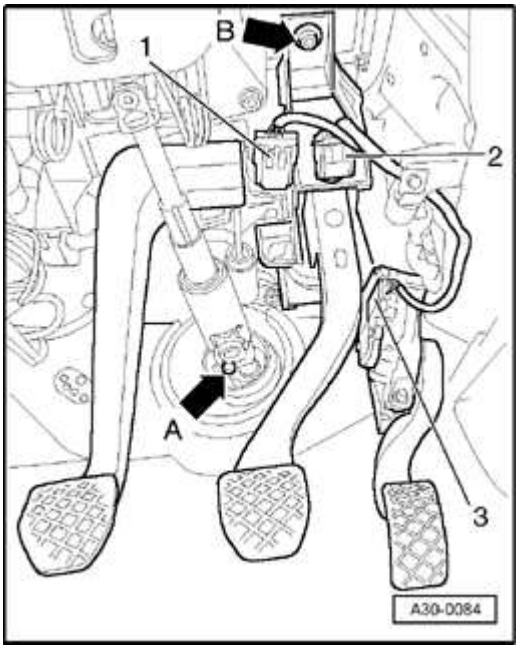


Fig. 36: Locating Steering Column At Steering Gear And Disconnecting Connector On Clutch Pedal Switch, Brake Pedal Switch And On Accelerator Pedal Module
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect steering column from steering gear - **arrow A** - --> **48 - STEERING** .

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- Disconnect connectors from clutch pedal switch - **1** - , brake light switch - **2** - and accelerator pedal module - **3** -.
- If installed, disconnect connector from clutch pedal starter interlock switch F194.
- Remove securing bolt for mounting bracket - **arrow B** - and remove entire pedal cluster.

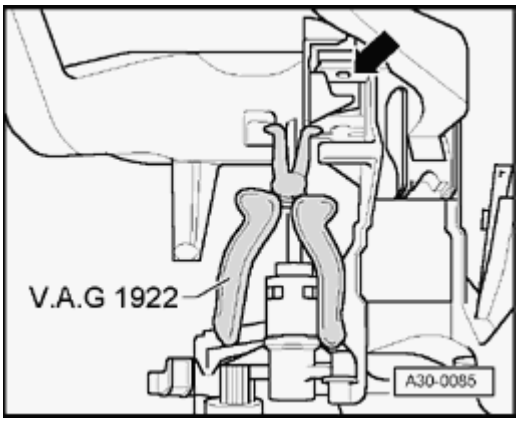


Fig. 37: Pressing Retainer Together And Detaching Clutch Pedal From Master Cylinder Using VAG 1922
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Release master cylinder operating rod from clutch pedal as follows:

NOTE:

- **When releasing the operating rod, make sure that clutch pedal does not collide with mounting bracket for clutch pedal switch - arrow -. The mounting bracket could otherwise break off.**

- Apply spark plug connector pliers V.A.G1922 in clutch pedal recesses, press on sides of retaining clip and detach clutch pedal from master cylinder.

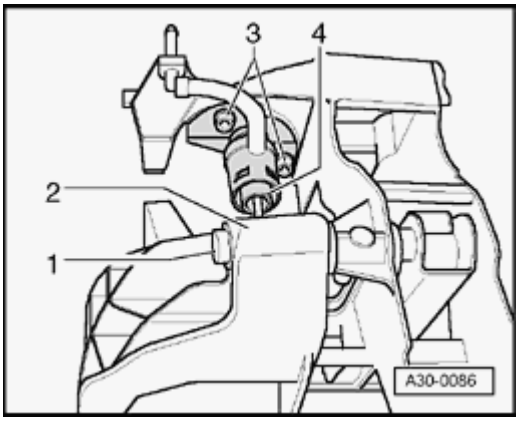


Fig. 38: Identifying Retaining Clip, Clutch Pedal, Bolts And Master Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove retaining clip - **1** - and remove clutch pedal - **2** -.

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- Remove bolts - **3** - and remove master cylinder - **4** -.

Installing

Installation is perform in reverse sequence. Note the following:

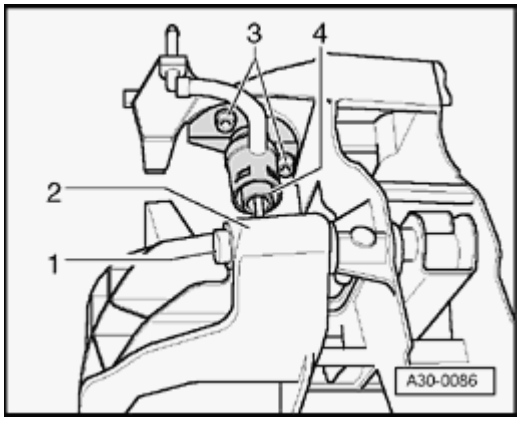


Fig. 39: Identifying Retaining Clip, Clutch Pedal, Bolts And Master Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install master cylinder - **4** - and tighten bolts - **3** - to 20Nm.

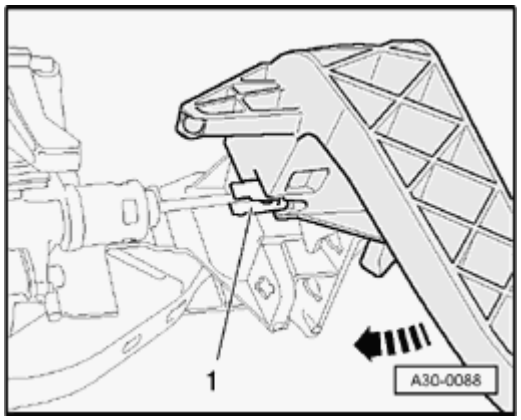


Fig. 40: Pushing Clutch Pedal To Lock Into Place, While Making Sure Mount Is Properly Secured In Clutch Pedal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert retaining clip - **1** - in clutch pedal.
- Lock clutch pedal in position by pressing in direction of - **arrow** -. Make sure retaining clip - **1** - engages correctly in clutch pedal.

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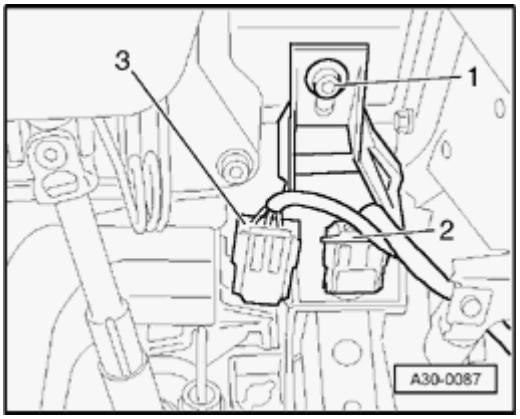


Fig. 41: Location Of Clutch Pedal Switch F36 And Pedal Assembly Securing Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

A second technician is required for the next step.

- Insert entire pedal cluster and tighten bolt - **1** - by hand. The second technician should guide hose/line assembly into master cylinder from plenum chamber.

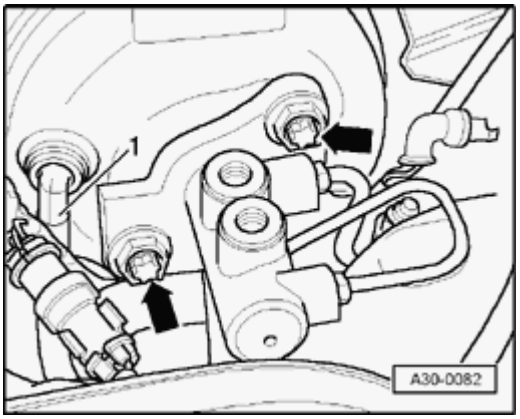


Fig. 42: Location Of Brake Servo Securing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten bolts for brake servo - **arrows** - to 25 Nm.

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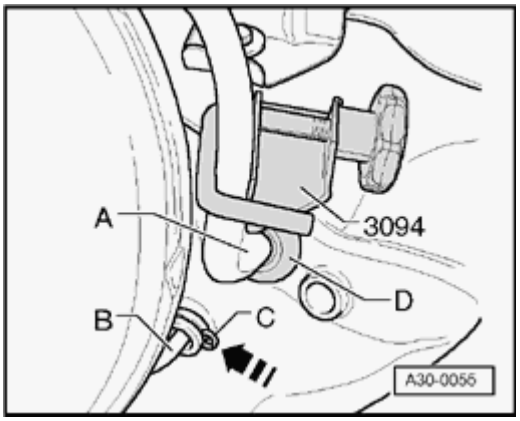


Fig. 43: Installing Rubber Grommet And After-Run Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press in retaining clip - **C** - as far as it will go.
- Insert hose/line assembly - **B** - in master cylinder and make sure that it engages audibly.
- Install rubber grommet - **D** - onto connecting line for supply hose - **A** - at bulkhead.
- Push supply hose - **A** - from brake fluid reservoir on as far as it will go.

- Remove hose clamps 3094.

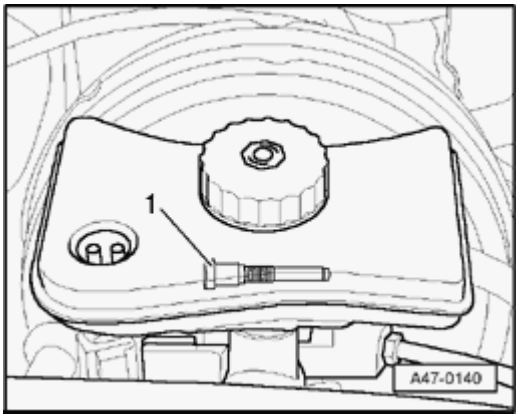


Fig. 44: Location Of Brake Fluid Reservoir Dowel Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten securing bolt - **1** - for brake fluid reservoir and connect connector at brake fluid level warning contact.

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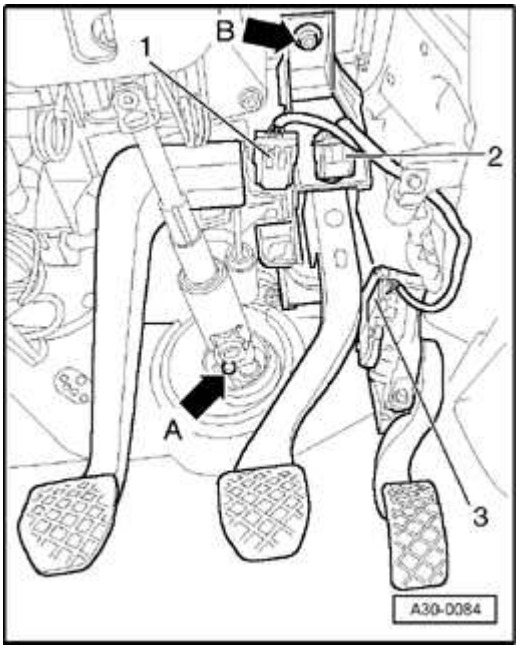


Fig. 45: Locating Steering Column At Steering Gear And Disconnecting Connector On Clutch Pedal Switch, Brake Pedal Switch And On Accelerator Pedal Module
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten hex socket head bolt - **arrow B** - for securing pedal cluster to instrument panel carrier to 25Nm.
- Connect connectors - **1** - , - **2** - and - **3** -.
- If installed, plug in connector for clutch pedal switch F194.
- Connect brake pedal to brake servo --> **47 - BRAKES - HYDRAULIC COMPONENTS** .

- Secure steering column to steering gear - **arrow A** - --> **48 - STEERING** .
- Install over-center spring.
- Install storage compartment on drivers side -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for Cabriolet

  .
- Bleed clutch system --> **Clutch hydraulic system, bleeding**.

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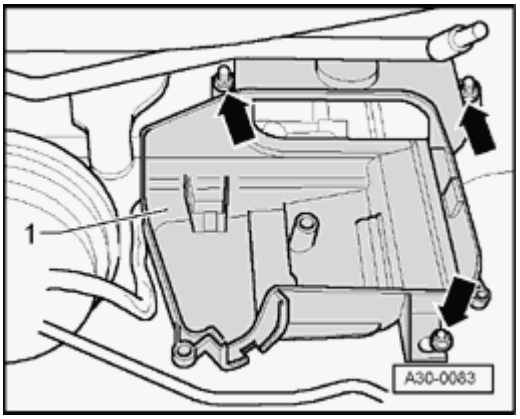


Fig. 46: Electronics Box Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert electronics box and tighten nuts - **arrows** - to 4Nm.
- Route engine wiring harness and connect connector in console.
- Install engine control module-->
  - **28 - IGNITION/GLOW PLUG SYSTEM** for AVK
  - **28 - IGNITION/GLOW PLUG SYSTEM** for BPG
- If applicable, install auxiliary relay carrier and auxiliary fuse carrier -->
  - **97 WIRING**
  - **97 WIRING** for Cabriolet

  .

- Press on cover (hand-tight) and tighten bolts in diagonal sequence to 4Nm.
- Follow steps required after connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for Cabriolet

  .

Clutch hydraulic system, bleeding

Special tools, testers and auxiliary items required

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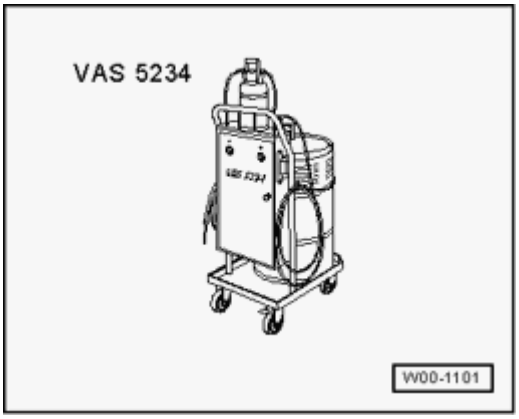


Fig. 47: Identifying Brake Filler And Bleeder Unit VAS 5234
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Brake filler bleeder unit VAS 5234

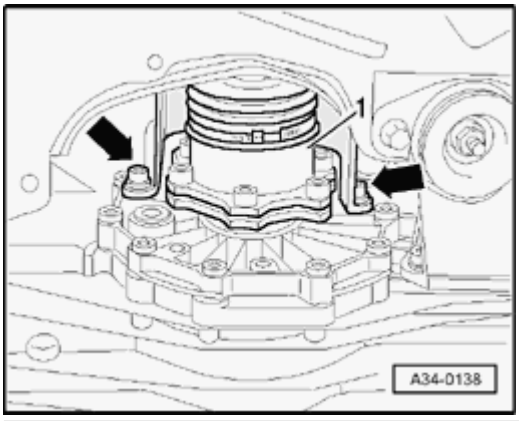
Brake fluid specification --> **47 - BRAKES - HYDRAULIC COMPONENTS** .

Procedure

NOTE:

- **Open the bleeder valve before switching on the bleeding appliance.**
- **When performing the following steps, make sure that no brake fluid escapes onto the transmission.**
- **The clutch system must be bled after performing work on the hydraulic clutch mechanism.**
- **Before bleeding the clutch system, pull out clutch pedal and top off brake fluid to "Max" marking on brake fluid reservoir.**
- **The clutch hydraulic system should be bled at the same intervals as the brake system.**

- Connect brake filler bleeder unit VAS 5234, but do not switch on.
- If installed, remove sound insulation beneath transmission.



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Fig. 48: Axle Shaft Shielding Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If installed, remove heat shield - **arrows** - for drive axle (left-side).

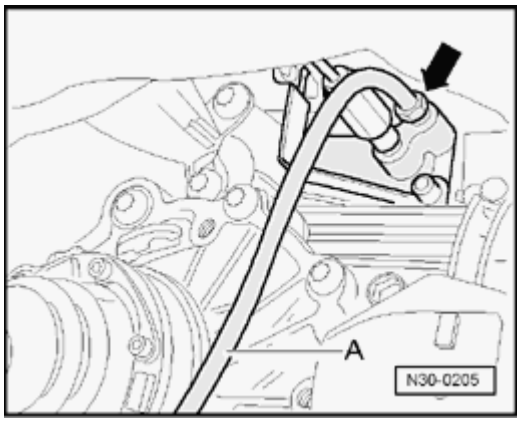


Fig. 49: Connecting Bleeder Hose To Clutch Slave Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect bleeder hose - **A** - to slave cylinder - **arrow** - and open bleeder valve.
- Connect bleeder hose to pressure hose of fluid collector bottle.
- Switch on bleeder appliance and allow about 100cm^3 of brake fluid to drain out.

- Operating pressure 2.5 bar

NOTE:

- **Make sure bleeder hose is correctly installed during bleeding operation.**

- Close bleeder valve and tighten to4.5Nm.
- Depress clutch pedal several times after bleeding process is completed.
- Repeat bleeding procedure if necessary.
- If installed, screw heat shield for drive axle (left-side) onto transmission.

Tightening torques

Component		Nm
Heat shield for drive axle to transmission		23

CLUTCH RELEASE MECHANISM, SERVICING

Clutch release mechanism, servicing

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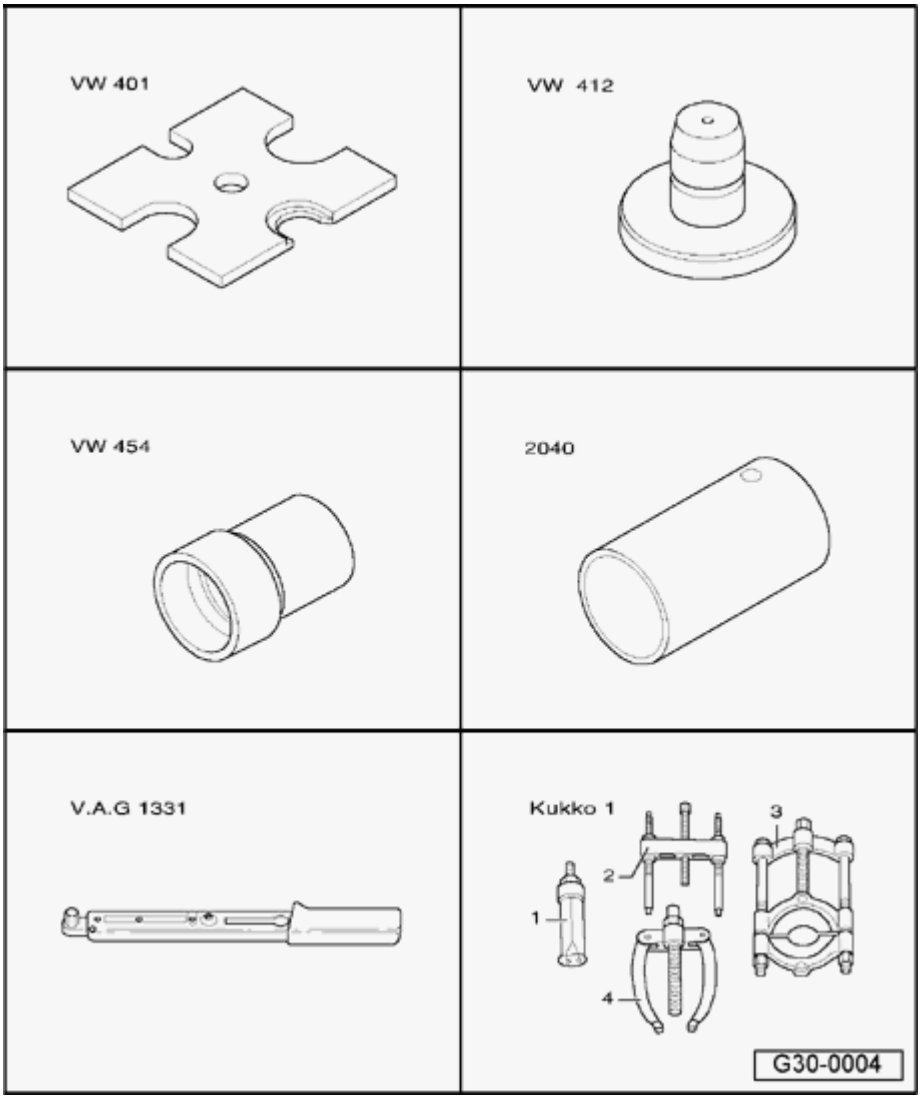


Fig. 50: Identifying Special Tools - Clutch Release Mechanism, Servicing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Thrust plate VW 401
- Thrust disc VW 412
- Thrust tube VW 454
- Press tube 2040

- Torque wrench V.A.G 1331
- **- 1 -** Internal puller Kukko 21/4
- **- 4 -** Counter-support Kukko 22/1
- **Locking fluid AMV 185 101 A1**

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- **Sealing grease G 052 128 A1**
- **Copper grease Z 381 351 TE**
- **Adhesive AMV 195 KD1 01**

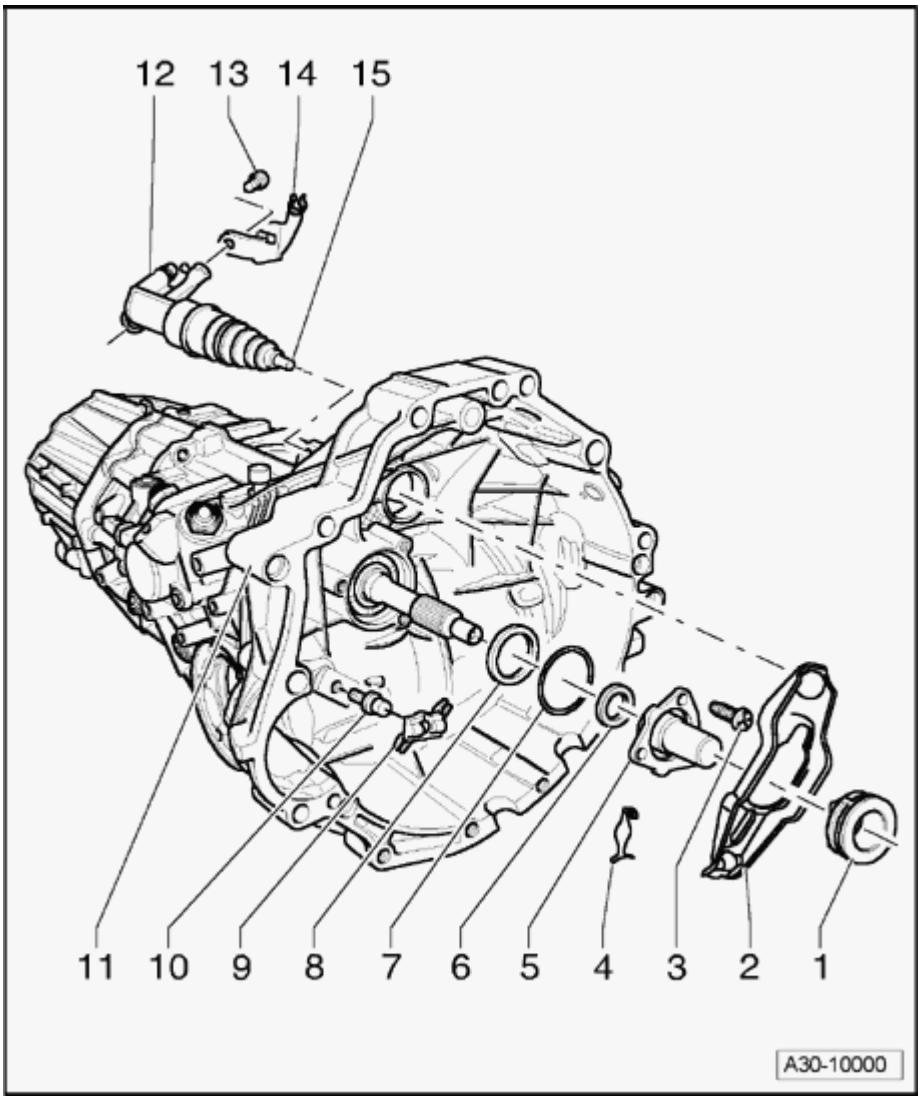


Fig. 51: Clutch Release Mechanism Remove/Install Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Release bearing

- Do not wash out; wipe clean only
- Replace bearings if noisy
- Servicing release bearing with glued plastic ring **Checking and servicing release bearing with glued plastic ring**
- Checking release bearing with mechanically attached plastic ring **Checking release bearing with mechanically attached plastic ring**

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- Replace if running mark (groove) is too deep **Checking release bearing with mechanically attached plastic ring**
- Retainer tabs on release bearing must engage in release lever

2 - Clutch release lever

- Before installing, lubricate area which makes contact with operating rod of slave cylinder with **copper grease Z381351TE** .

3 - Torx bolt, 35Nm

- 3 (Qty.)
- Apply **locking fluid AMV 185 101 A1** when installing

4 - Retaining spring

- Secure to clutch release lever

5 - Guide sleeve

- Installation position: Oil drain hole points downward.
- Before removing and installing, cover input shaft splines with a shrink-fit hose to protect oil seal.

6 - Oil seal

- For input shaft
- Pack space between sealing lip and dust lip half full with **sealing grease G 052 128 A1** .

7 - O-ring

- Always replace

8 - Convex washer

9 - Intermediate piece

- Installation position: insert locating element between ribs of housing

10 - Ball head stud

- Lubricate with MoS_2 grease.

11 - Transmission

12 - Slave cylinder

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- Removing and installing --> **Slave cylinder, removing and installing**
- Do not operate clutch pedal after slave cylinder has been removed.
- Follow correct procedure when bleeding --> **Clutch hydraulic system, bleeding**.
- Tighten bleeder valve to 4.5Nm.

- When installing push in until the securing bolt can be installed.

13 - Hex socket head bolt, 23 Nm

- Self-locking
- Replace

14 - Bracket

- For line/hose assembly
- Bolt to transmission with clutch slave cylinder

15 - Operating rod

- Lubricate end of operating rod with **copper grease Z381351TE** .

Checking and servicing release bearing with glued plastic ring

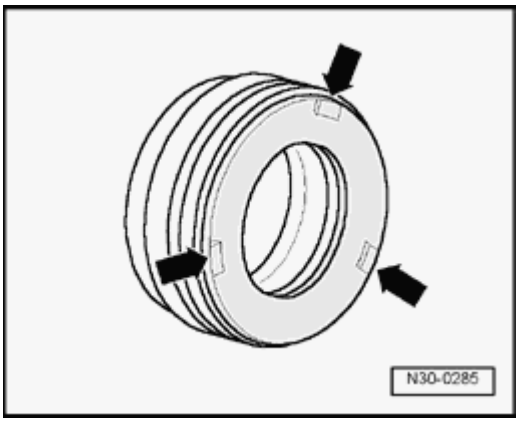


Fig. 52: Servicing Release Bearing With Plastic Ring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Identification: inner side of plastic ring has three tabs - **arrows** -.

The plastic ring - **arrows** - may come loose from the release bearing when the transmission or release bearing is removed. The release bearing does not have to be replaced if this happens.

- Before installing the transmission, glue the loose plastic ring back onto the bearing ring with **adhesive AMV195KD101** .

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Three square tabs - **arrows** - of the plastic ring engage in recesses of bearing ring.

- The release bearing must be replaced if the groove worn on the plastic ring is deeper than 0.8mm.

Checking release bearing with mechanically attached plastic ring

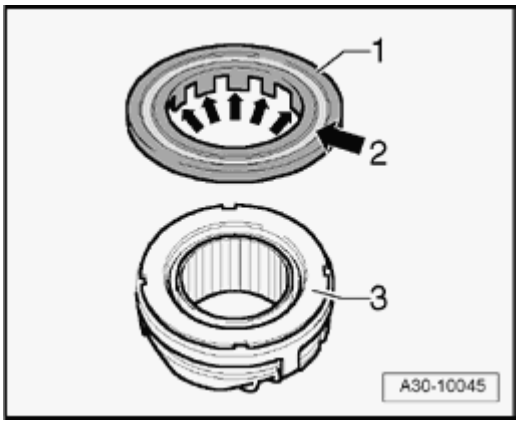


Fig. 53: Checking Release Bearing With Plastic Ring Attached
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Identification: retaining tabs around plastic ring - **arrows** -.

- The release bearing must be replaced if plastic ring - **1** - has come loose.
- The release bearing - **3** - must be replaced if groove - **arrow2** - worn on the plastic ring - **1** - is deeper than 0.8mm.

Pulling oil seal out of guide sleeve

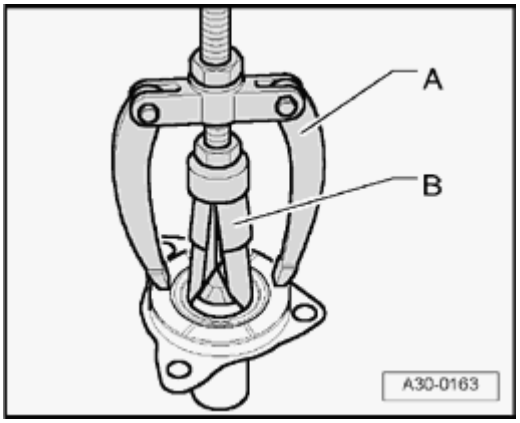


Fig. 54: Pulling Oil Seal Out Of Guide Sleeve
Courtesy of VOLKSWAGEN UNITED STATES, INC.

A - Counter-support, e.g. Kukko 22/1

B - Internal puller 23.5...30 mm, e.g. Kukko 21/4

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Pressing oil seal into guide sleeve (press in onto stop)

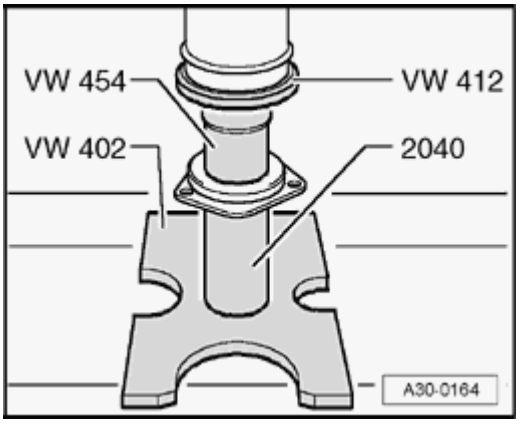


Fig. 55: Pressing Oil Seal Into Guide Sleeve (Press In Onto Stop)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **The open side of seal faces toward thrust tube VW 454.**

Slave cylinder, removing and installing

Observe the notes on removing and installing master cylinder and slave cylinder --> **Notes on removing and installing master cylinder and slave cylinder**.

Special tools, testers and auxiliary items required

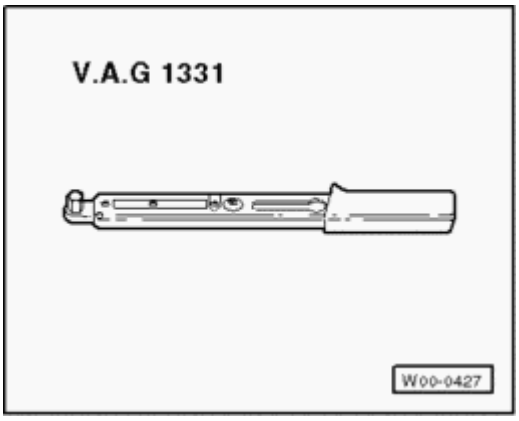


Fig. 56: Identifying Torque Wrench V.A.G. 1331
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Torque wrench V.A.G 1331
- **Lithium grease G052150A2**
- **Copper grease Z381351TE**

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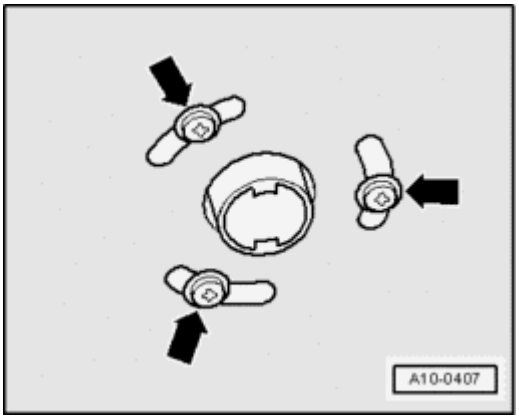


Fig. 57: Fasteners
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removing

- On vehicles installed with auxiliary heater, remove bolts - **arrows** - securing exhaust pipe of auxiliary/heater to sound insulation.

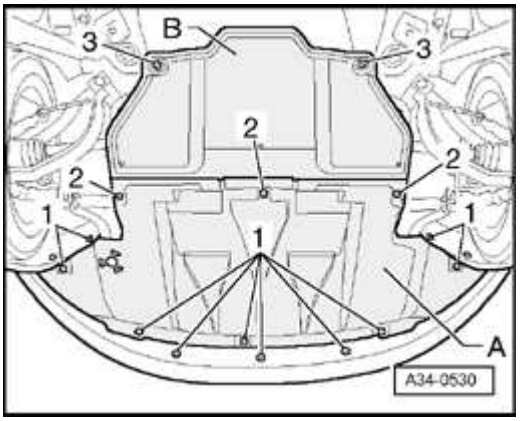


Fig. 58: Front And Rear Sound Insulation And Fasteners
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen bolts/quick release fasteners - **1** - and - **2** - and remove front sound insulation - **A** -.
- If installed, loosen quick release fasteners - **3** - and remove rear sound insulation - **B** -.

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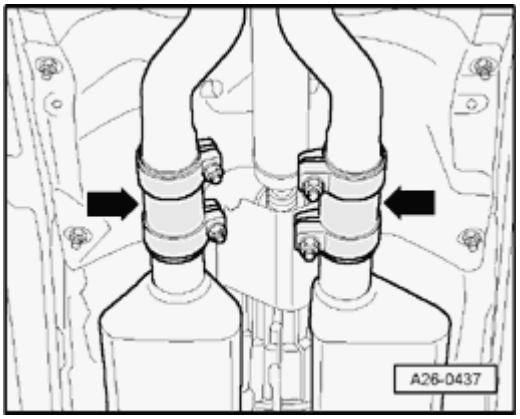


Fig. 59: Exhaust System Clamps
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Vehicles with 6-cylinder engine:

- Disconnect exhaust system at clamp (left-side) - **left arrow** -.

NOTE:

- **The flexible pipe connection (de-coupling element) in the front exhaust pipe must not be bent more than 10° - otherwise it can be damaged.**

- Remove front exhaust pipe (left-side) with catalytic converter --> 3.0 Liter 6-Cyl. 5V Engine Mechanical, Engine Code(s): AVK - **26 EXHAUST SYSTEM, EMISSION CONTROLS** .

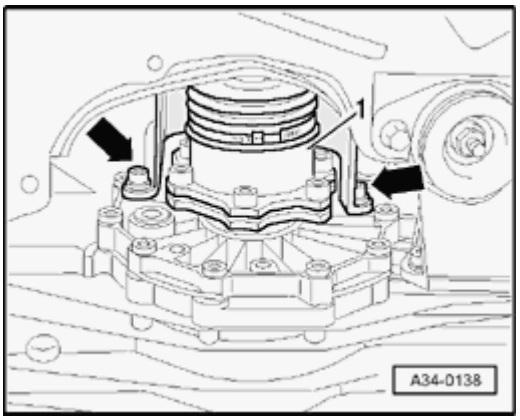


Fig. 60: Axle Shaft Shielding Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove heat shield - **arrows** - for drive axle (left-side).

Continued for all vehicles:

- Remove drive axle (left-side) - **1** - from flange shaft and move to front, making sure you do not damage surface protection.

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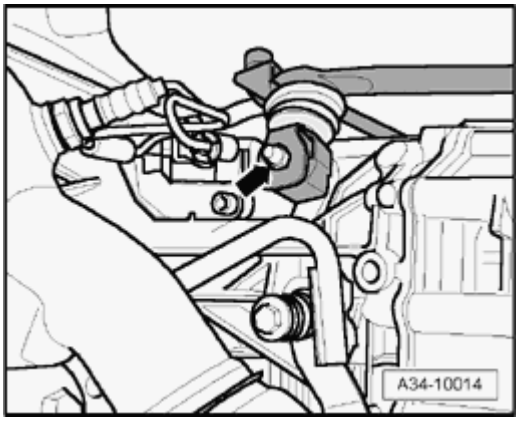


Fig. 61: Selector Shaft Lever Nut
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nut - **arrow** - and detach selector shaft lever from selector shaft.

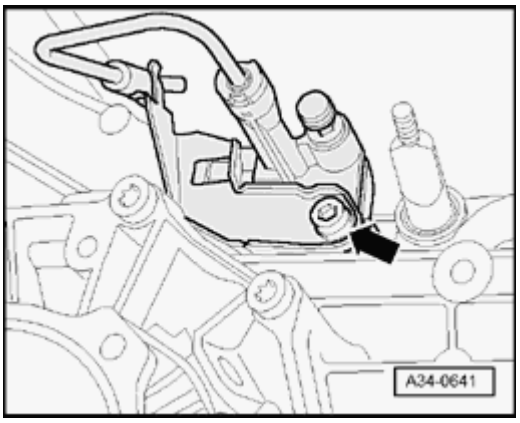


Fig. 62: Slave Cylinder Bracket And Fastener
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **arrow** - and remove slave cylinder from rear.

NOTE:

- **Do not depress clutch pedal after removing slave cylinder. The slave cylinder would then be destroyed once pedal force exceeds approx. 300 N.**

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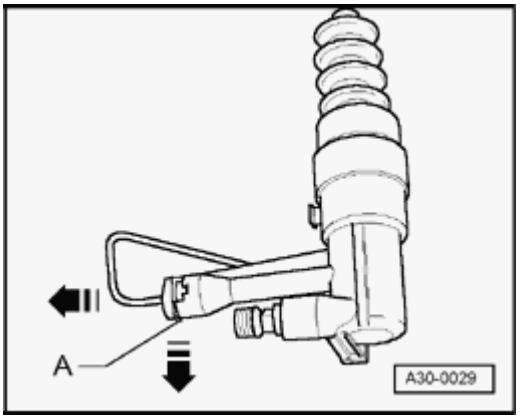


Fig. 63: Removing Hydraulic Line From Slave Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- To remove hose/line assembly, use a screwdriver to pry off clip - **A** - as far as stop. Only then can the hose/line assembly be pulled out.

Installing

Installation is perform in reverse sequence. Note the following:

NOTE:

- **Do not allow brake fluid to come into contact with the transmission. If necessary, clean the transmission housing.**
- **If the slave cylinder is inserted at an angle, there is a danger that the operating rod will be guided past the clutch release lever.**
- **When installing, press in slave cylinder so that securing bolt can be installed easily.**
- **Always replace securing bolt.**

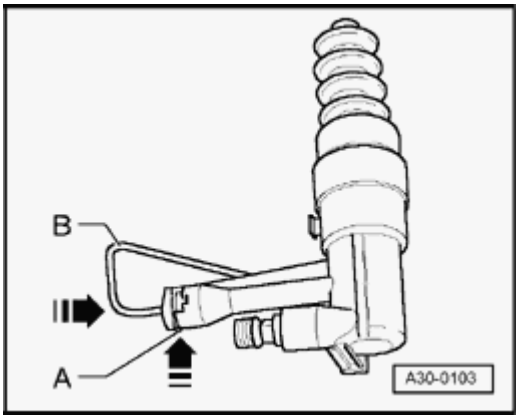


Fig. 64: Identifying Slave Cylinder Hose/Line Assembly
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- To connect line to clutch slave cylinder, press in retaining clip - **A** - as far as it will go.

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- Push line - **B** - into slave cylinder until it engages audibly.

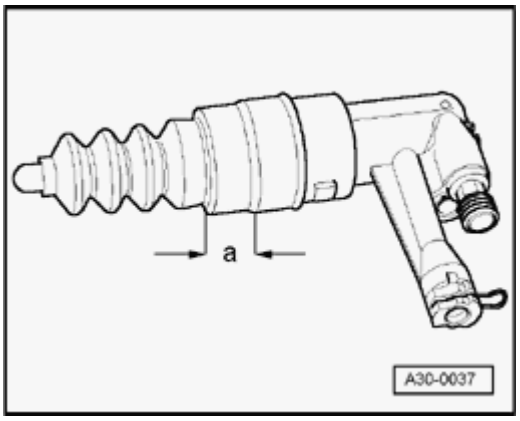


Fig. 65: Coat Boot Area Of Clutch Slave Cylinder With Lithium Grease
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Before inserting slave cylinder in transmission housing, lubricate area - **a** - of sleeve with **lithium grease G052150A2** .
- Lightly lubricate surface where operating rod and clutch release lever make contact with **copper grease Z381351TE** .

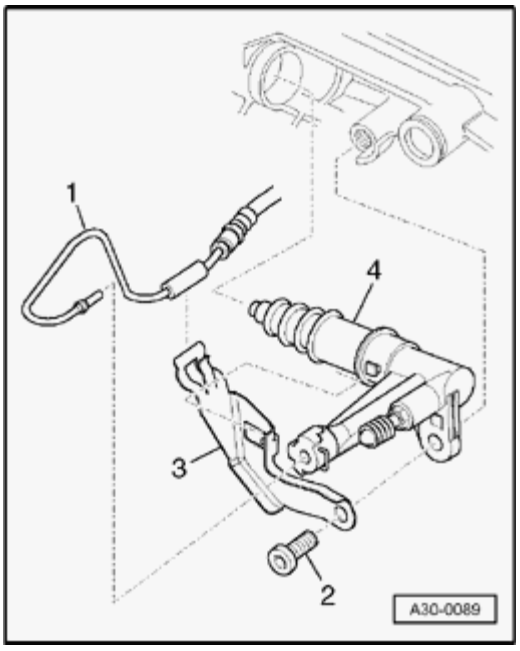


Fig. 66: Clutch Slave Cylinder, Bracket And Hose/Line Assembly
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Attach bracket for hose/line assembly - **3** - to slave cylinder - **4** -.

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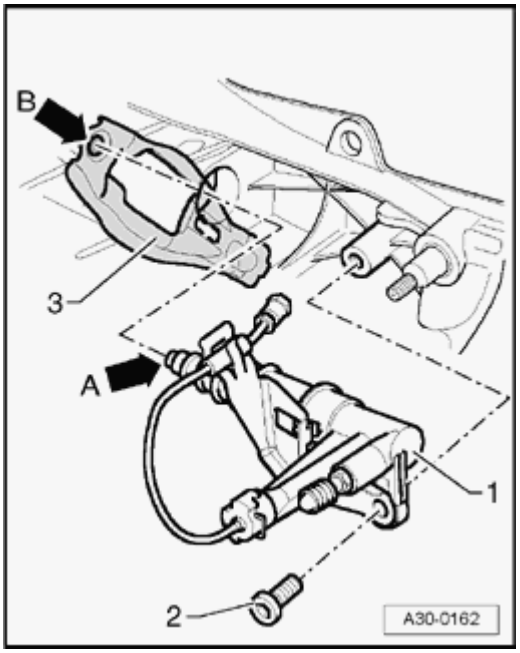


Fig. 67: Guiding Slave Cylinder Into Bore Of Transmission Housing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Guide slave cylinder - **1** - into opening in transmission housing keeping it as straight as possible (without tilting operating rod - **arrow A** -) and insert in recess - **arrow B** - on clutch release lever - **3** -.
- Use new hex socket head bolt - **2** - to secure to transmission.

NOTE:

- **If the slave cylinder - 1 - is inserted at an angle, there is a danger that the operating rod - arrow A - will be guided past the clutch release lever - 3 -.**

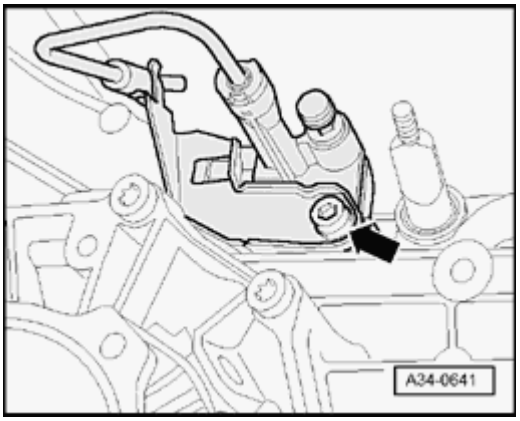


Fig. 68: Slave Cylinder Bracket And Fastener
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten bolt - **arrow** - to specified torque.
- If line/hose assembly was disconnected at slave cylinder, the clutch system has to be bled after installing slave cylinder --> **Clutch hydraulic system, bleeding**.

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CAUTION: After installing the slave cylinder carefully press the clutch pedal. If you feel an unusually strong resistance when depressing the clutch pedal, you must not press it down further. The push rod of the slave cylinder is likely to have been guided past the clutch release lever. The slave cylinder would then be destroyed once pedal force exceeds approx. 300 N.

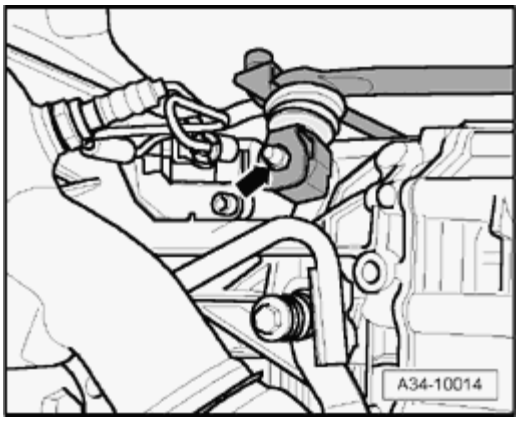


Fig. 69: Selector Shaft Lever Nut
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install selector shaft lever and tighten nut - **arrow** -.
- Bolt drive axle (left-side) to flange shaft --> **40 - FRONT SUSPENSION**

Vehicles with 6-cylinder engine:

- Screw heat shield for drive axle (left-side) onto transmission.
- Install exhaust system and perform stress-free alignment --> 3.0 Liter 6-Cyl. 5V Engine Mechanical, Engine Code(s): AVK - **26 EXHAUST SYSTEM, EMISSION CONTROLS** .

Tightening torques

Component	Nm
Slave cylinder to transmission* See note	23
Selector shaft lever to transmission	23
Heat shield for drive axle to transmission	23

* replace bolt

CLUTCH, SERVICING

Clutch, servicing

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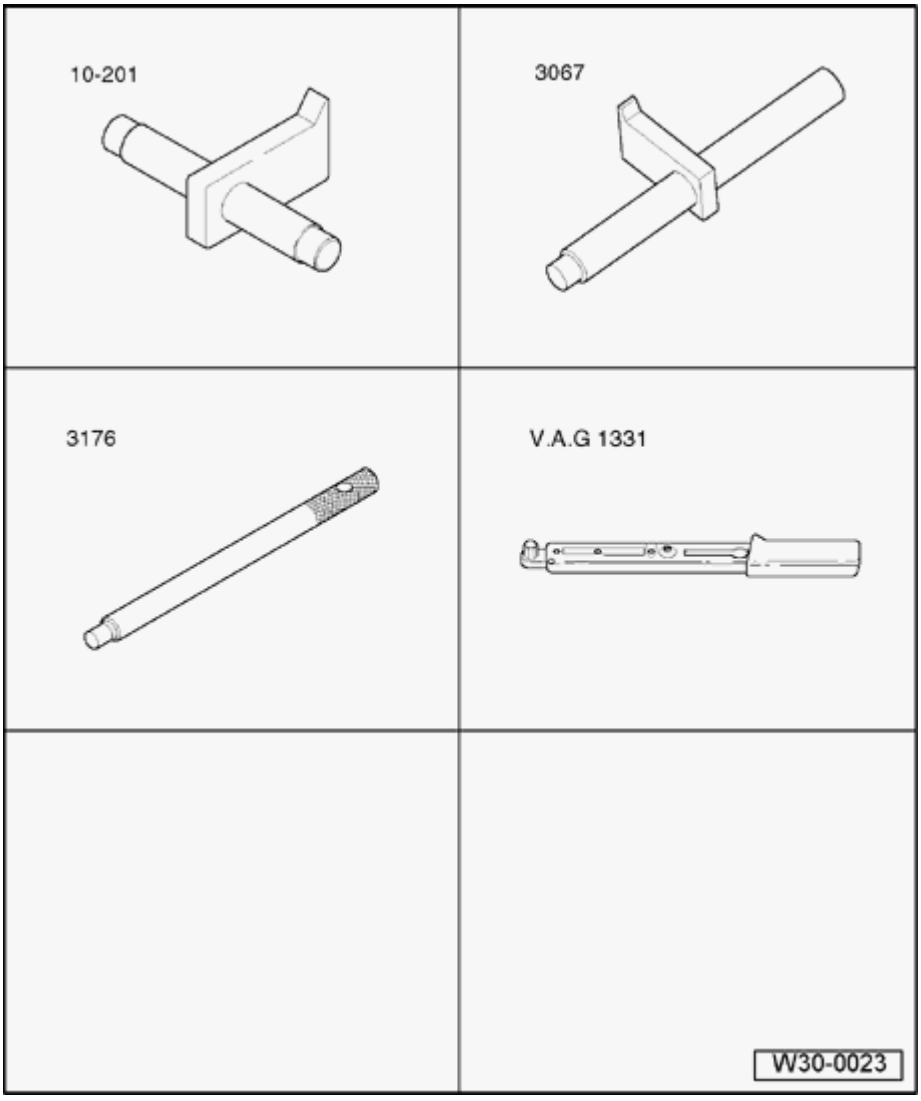


Fig. 70: Identifying Special Tools - Clutch, Servicing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Counterhold tool 10 - 201
- Locking bar 3067
- Centering mandrel 3176
- Torque wrench V.A.G 1331

- **Grease for clutch plate splines G 000 100**

NOTE:

- **Refer to general repair instructions --> General repair instructions.**
- **Observe the notes on removing and installing master cylinder and slave cylinder --> Notes on removing and installing master cylinder and slave**

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cylinder.

- **On vehicles with SAC pressure plate (self-adjusting clutch, LuK version) an adjuster ring has to be reset when only the clutch plate is replaced --> Adjuster ring in SAC clutch pressure plate, adjusting.**
- **To avoid damaging SAC pressure plate when removing and installing, observe assembly instructions for SAC pressure plate --> Clutch with SAC pressure plate, removing and installing.**
- **Check that SAC pressure plate is not warped Check SAC pressure plate for warpage, cracks and burns**
- **If the vehicle is installed with a self-adjusting clutch (Sachs version), the clutch plate and pressure plate can only be replaced together --> Self-adjusting clutch (Sachs version), servicing.**
- **Replace clutch plate and pressure plate if riveted fastening is damaged or loose.**
- **Select correct clutch plate and pressure plate according to engine code**
- **To avoid damaging dual-mass flywheel during removal please observe instructions for removal Removing dual-mass flywheel**
- **Clean input shaft splines and (in the case of used clutch plates) the hub splines. Remove corrosion and apply only a very thin coating of grease for clutch plate splines G000100 to the splines. Then move clutch plate backward and forward on input shaft until hub moves freely on shaft. It is important to remove excess grease.**
- **Pressure plates have an anti-corrosion coating and are greased. Only the contact surface may be cleaned, otherwise the service life of the clutch will be considerably reduced.**
- **If the clutch has burned out, thoroughly clean the bell housing, flywheel and parts of the engine facing the transmission in order to prevent odors.**

Servicing conventional clutch --> **Conventional clutch, servicing**

Servicing self-adjusting clutch (Sachs version) --> **Self-adjusting clutch (Sachs version), servicing**

Servicing clutch with SAC pressure plate (LuK version) --> **Clutch with SAC pressure plate (LuK version), servicing**

Conventional clutch, servicing

- Please refer to notes --> **Clutch, servicing**.
- The transmission has to be removed before working on the clutch --> **Transmission, removing and installing**.

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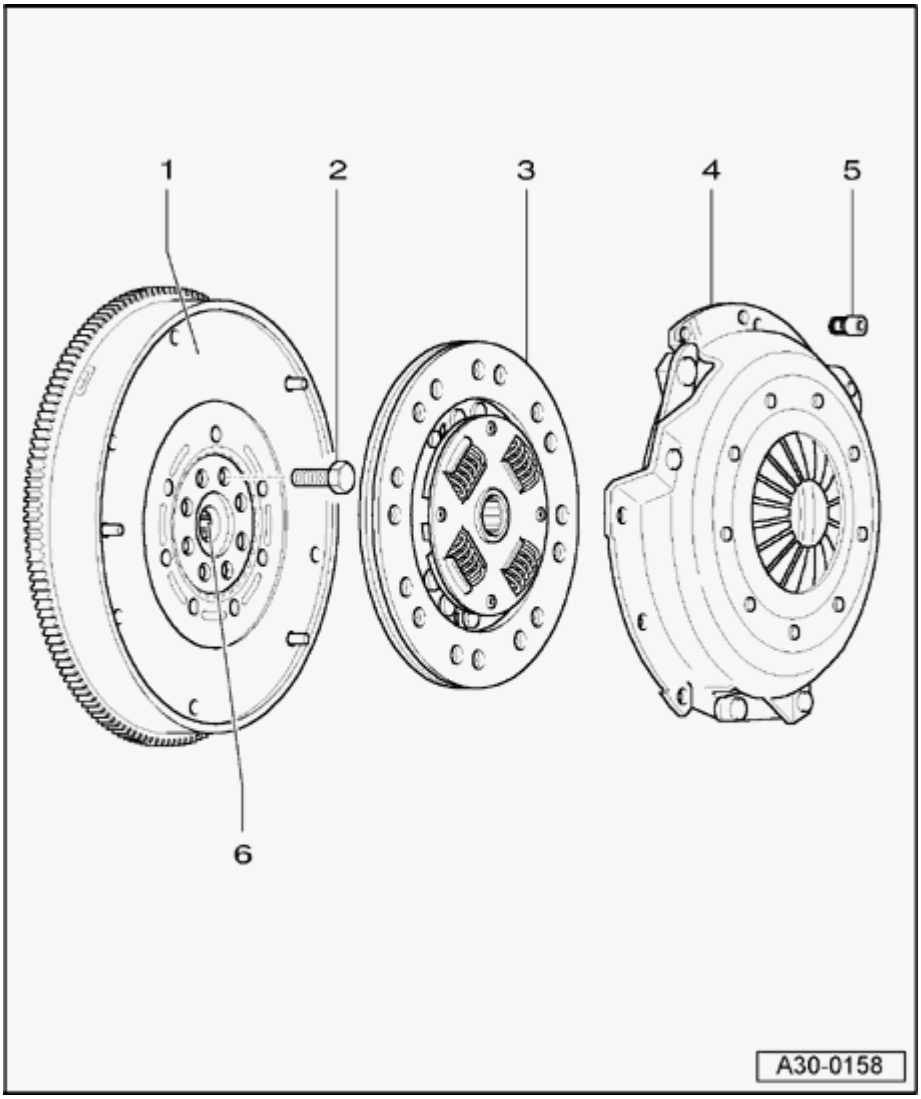


Fig. 71: Conventional Clutch Remove/Install Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Flywheel/dual mass flywheel

- Make sure that dowel pins fit tightly
- Contact surface for clutch lining must be free of grooves, oil and grease
- Removing and installing -->
  - **13 ENGINE - CRANKSHAFT, CYLINDER BLOCK** for AVK
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for BPG

2 - Bolt for flywheel

- Always replace
- Bolt length: 22.5 mm; 60 Nm plus an additional 90° $^{1}/_{4}$ turn

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- Bolt length: 43 mm; 60 Nm plus an additional 180° $^{1}/_{2}$ turn

3 - Clutch plate

- Installation position: Clutch lining must make full contact with flywheel
- The marking "Getriebeseite" (if provided) faces pressure plate/transmission.
- Coil springs (damper assembly) point toward pressure plate and transmission
- Centralize **Centralizing clutch plate and removing and installing pressure plate**
- Clutch plate diameter --> **Code letters, allocation, transmission ratios, capacities**

4 - Pressure plate

- Removing and installing **Centralizing clutch plate and removing and installing pressure plate**
- Check ends of diaphragm spring **Checking ends of diaphragm spring**
- Check spring connection and rivets **Checking spring connection and rivet**
- Check wire ring **Checking wire ring**

5 - Bolt, 22 Nm

- Loosen and tighten gradually in several stages and in diagonal sequence

6 - Needle bearing

- Removing and installing -->
  - **13 ENGINE - CRANKSHAFT, CYLINDER BLOCK** for AVK
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for BPG

Centralizing clutch plate and removing and installing pressure plate

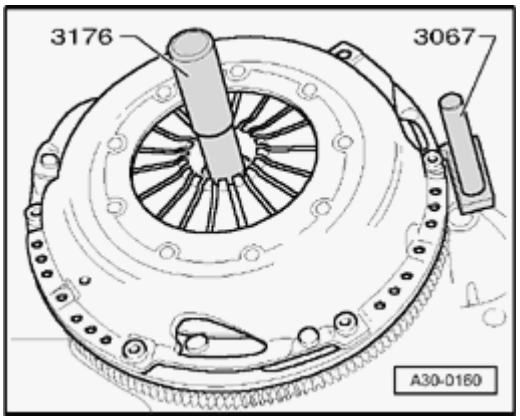


Fig. 72: Changing Over Flywheel Retainer 3067
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Loosen and tighten bolts gradually in several stages and in diagonal sequence.
- To remove, reverse position of counter-hold tool 3067 or counter-hold tool 10 - 201.

Installation position of clutch plate: coil springs (damper assembly) or marking "Getriebeseite" point toward pressure plate and transmission.

- Before tightening securing bolts, clutch lining and contact surface of pressure plate must make full contact with flywheel.

Checking ends of diaphragm spring

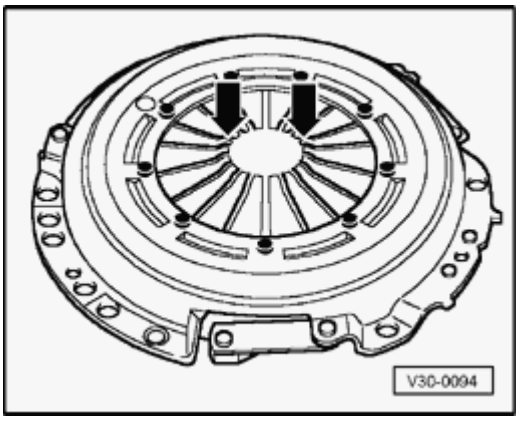


Fig. 73: Checking Ends Of Diaphragm Spring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wear up to half the thickness of the diaphragm spring is permitted.

NOTE:

- **When performing repairs, always select the correct clutch pressure plate and clutch plate by checking engine code.**

Checking spring connection and rivet

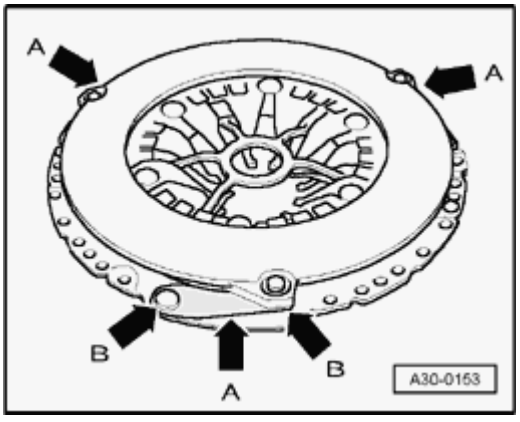


Fig. 74: Checking Spring And Rivet Connections
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Check spring connections - **arrows A** - for damage and make sure riveted fastenings - **arrows B** - are seated tightly.

NOTE:

- **Replace pressure plate if spring connections are broken or badly bent, or if riveted fastenings are loose.**

Checking wire ring

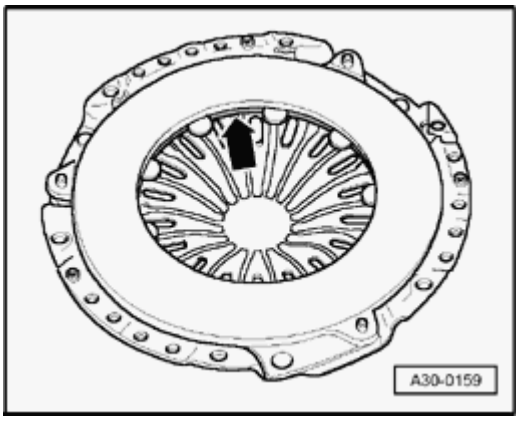


Fig. 75: Identifying Wire Ring In Thrust Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check that wire ring in pressure plate - **arrow** - is not damaged. Replace pressure plate if wire ring is broken.

Self-adjusting clutch (Sachs version), servicing

CAUTION: On this type of clutch the pressure plate and clutch plate can only be replaced together.

- Please refer to notes --> **Clutch, servicing**.
- The transmission has to be removed before working on the clutch --> **Transmission, removing and installing**.
- Identification **Identification**
- Select correct clutch plate and pressure plate according to engine code

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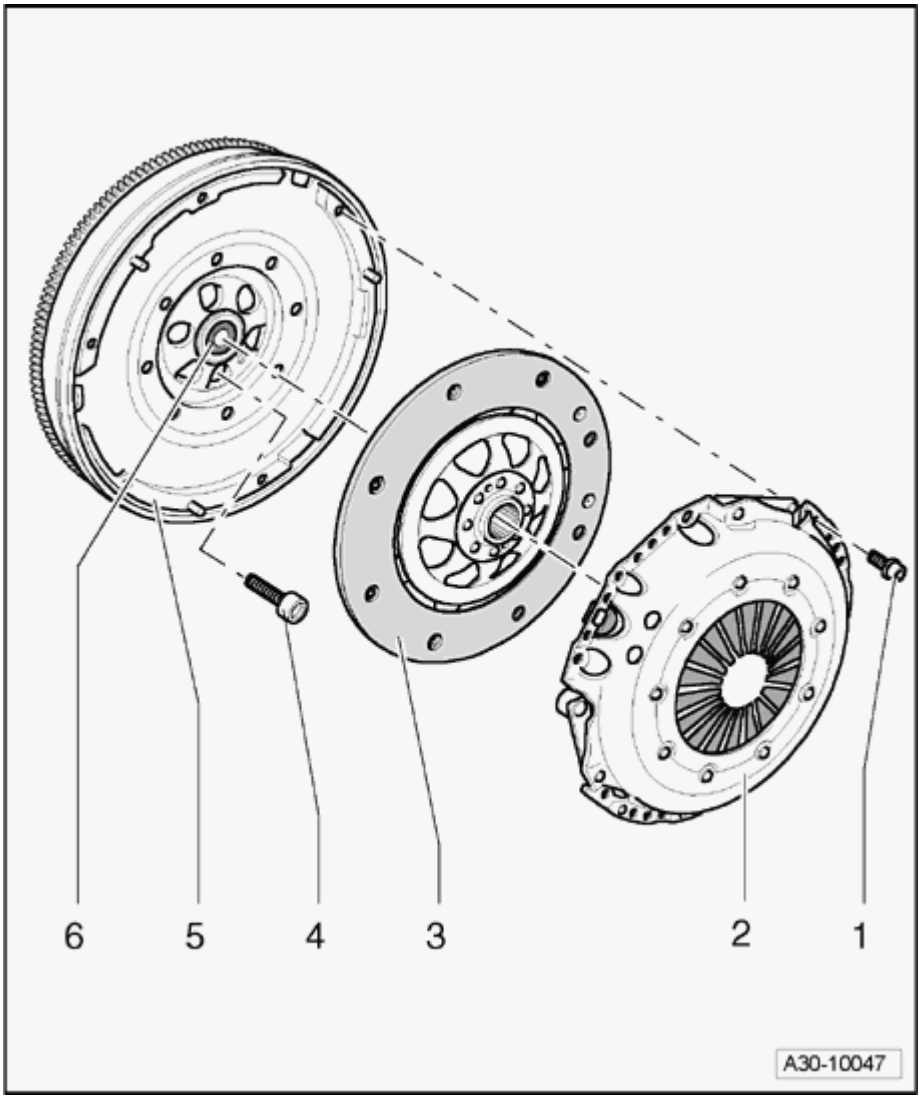


Fig. 76: Self-Adjusting Clutch Assembly Overview (Manufactured By Sachs)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Bolt, 22 Nm

- Observe instructions for installation --> **Self-adjusting clutch (Sachs version), removing and installing**

2 - Pressure plate

- Self-adjusting
- Identification **Identification**
- Pressure plate and clutch plate can only be replaced together.
- Removing and installing --> **Self-adjusting clutch (Sachs version), removing and installing**
- Check ends of diaphragm spring **Checking ends of diaphragm spring**

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- Check spring connection and rivets **Checking spring connection and rivet**
- Check wire ring **Checking wire ring**

3 - Clutch plate

- Pressure plate and clutch plate can only be replaced together.
- Installation position: Clutch lining must make full contact with flywheel
- The marking "Getriebeseite" (transmission side), if provided, faces toward pressure plate/transmission.
- If installed, coil springs (damper assembly) face pressure plate and transmission

- Centralize **Fig. 86**
- Clutch plate diameter --> **Code letters, allocation, transmission ratios, capacities**

4 - Bolt for flywheel

- Always replace
- Observe instructions for removal **Removing dual-mass flywheel**
- Bolt length: 22.5 mm; 60 Nm plus an additional 90° $^{1}/_{4}$ turn
- Bolt length: 43 mm; 60 Nm plus an additional 180° $^{1}/_{2}$ turn

5 - Dual-mass flywheel

- Make sure that dowel pins fit tightly
- Contact surface for clutch lining must be free of grooves, oil and grease
- Observe instructions for removal **Removing dual-mass flywheel**

6 - Needle bearing

- Removing and installing -->
  - **13 ENGINE - CRANKSHAFT, CYLINDER BLOCK** for AVK
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for BPG

Identification

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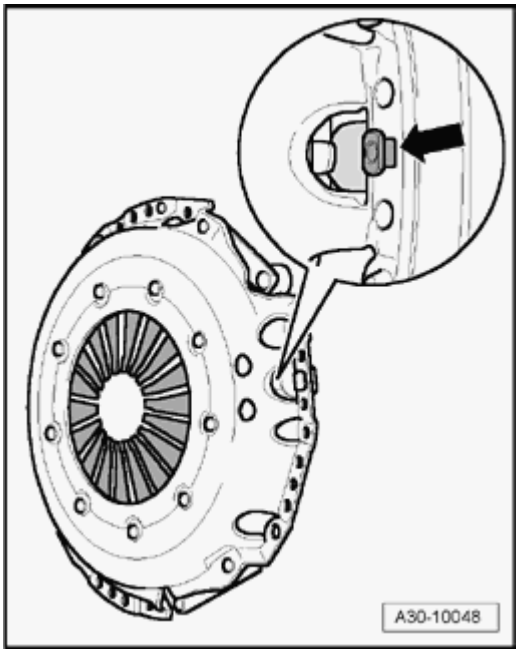


Fig. 77: Pressure Plate With Impact (Position Sensor)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Pressure plate with stop mechanism (position sensor) - **arrow** -.

Checking ends of diaphragm spring

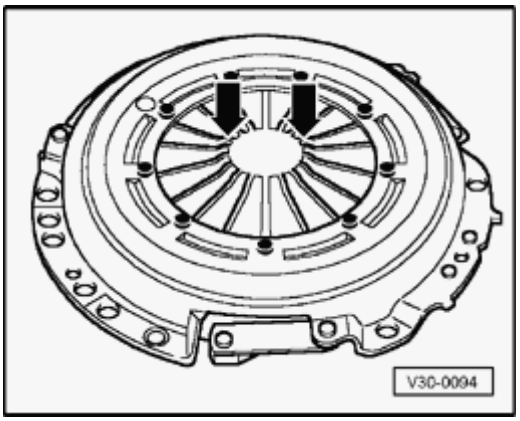


Fig. 78: Checking Ends Of Diaphragm Spring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wear up to half the thickness of the diaphragm spring is permitted.

NOTE:

- **When performing repairs, always select the correct clutch pressure plate and clutch plate by checking engine code.**

Checking spring connection and rivet

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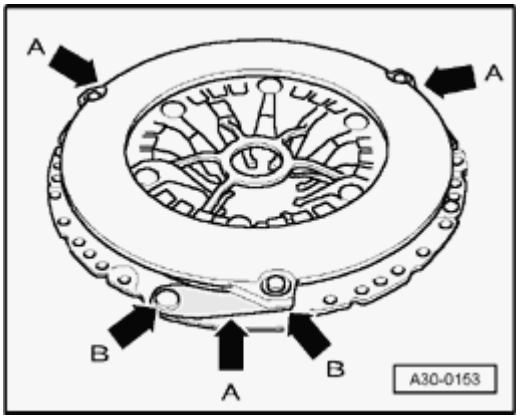


Fig. 79: Checking Spring And Rivet Connections
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check spring connections - **arrows A** - for damage and make sure riveted fastenings - **arrows B** - are seated tightly.

NOTE:

- **Replace pressure plate if spring connections are broken or badly bent, or if riveted fastenings are loose.**

Checking wire ring

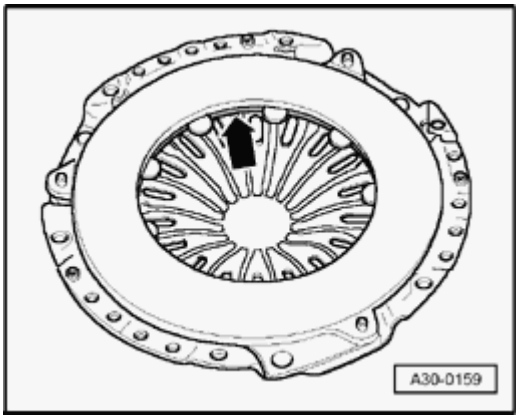


Fig. 80: Identifying Wire Ring In Thrust Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check that wire ring in pressure plate - **arrow** - is not damaged. Replace pressure plate if wire ring is broken.

Removing dual-mass flywheel

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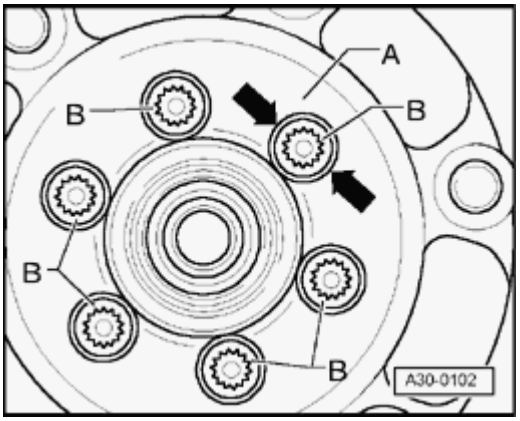


Fig. 81: Identifying Dual-Mass Flywheel & Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Do not use an impact wrench or pneumatic wrench to remove bolts - B - : this would severely damage the dual-mass flywheel. Bolts - B - must always be removed by hand.**

- Rotate flywheel - **A** - so that bolts - **B** - are aligned centrally behind holes - **arrows** -.
- When removing bolts - **B** - , make sure the bolt heads do not contact flywheel - **arrows** - because this would damage the flywheel when the bolts are turned further.
- Removing and installing dual-mass flywheel -->
  - **13 ENGINE - CRANKSHAFT, CYLINDER BLOCK** for AVK
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for BPG

  for the appropriate engine code.

Self-adjusting clutch (Sachs version), removing and installing

Special tools, testers and auxiliary items required

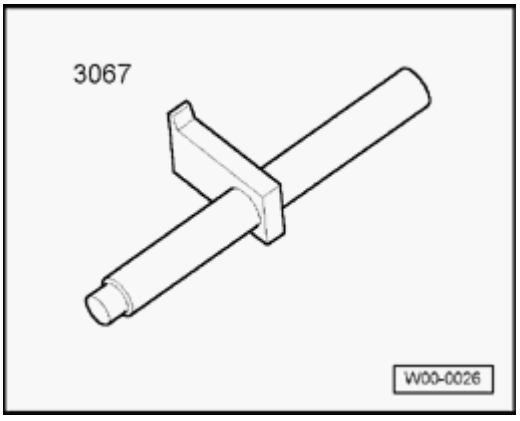


Fig. 82: Identifying Flywheel Retainer 3067
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Flywheel retainer 3067

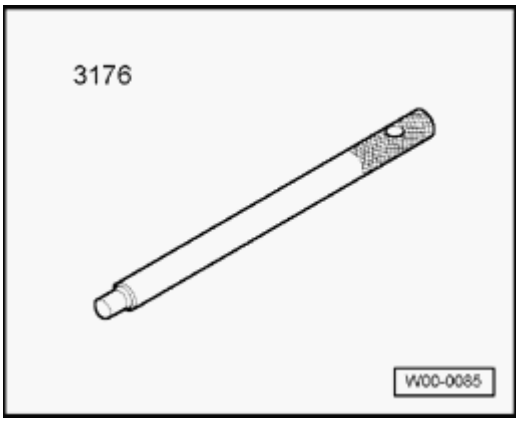


Fig. 83: Identifying Centering Mandrel 3176
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Centering mandrel 3176
- **Grease for clutch plate splines G000100**

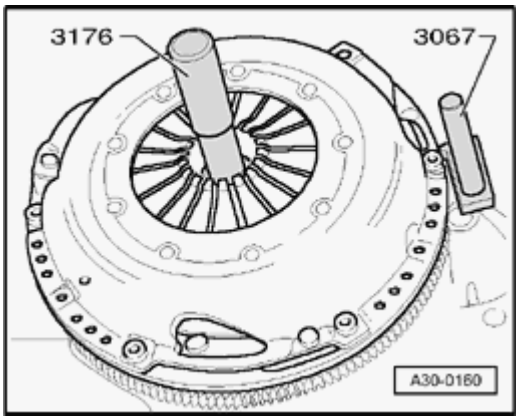


Fig. 84: Changing Over Flywheel Retainer 3067
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Attach flywheel retainer 3067 or counter-hold tool 10 - 201 before loosening bolts.

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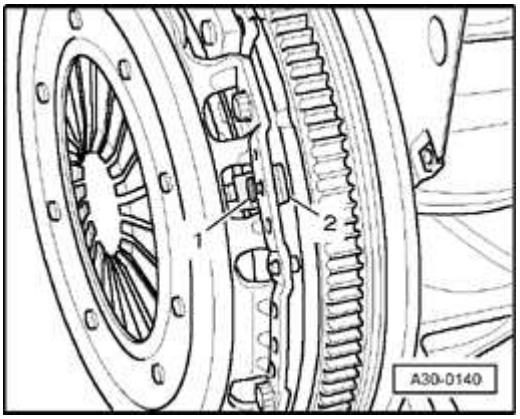


Fig. 85: Identifying Stop & Pin
Courtesy of VOLKSWAGEN UNITED STATES, INC.

To prevent the pressure plate from becoming distorted during removal (causes clutch grab when driving off), always adhere to the following procedure when unbolting the pressure plate:

- Loosen all six bolts consecutively in clockwise direction and in steps of 90° (1⁄4 turn) until pressure plate is released.

- Stop - **2** - (position sensor) with pin - **1** - should come free when bolts are loosened.

Installing

- Installation position of clutch plate: coil springs (damper assembly) or marking "Getriebeseite" point toward pressure plate and transmission.

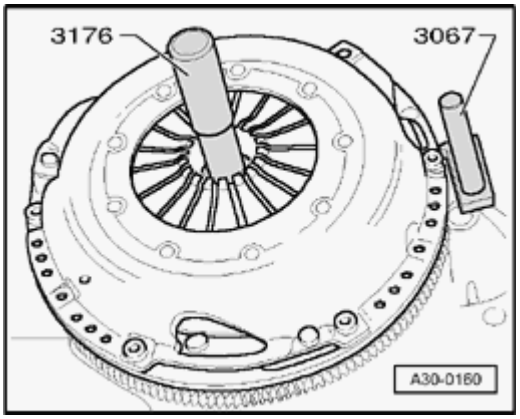


Fig. 86: Changing Over Flywheel Retainer 3067
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- To remove, reverse position of flywheel retainer 3067 or counter-hold tool 10 - 201.
- Use centering mandrel 3176 to centralize clutch plate.

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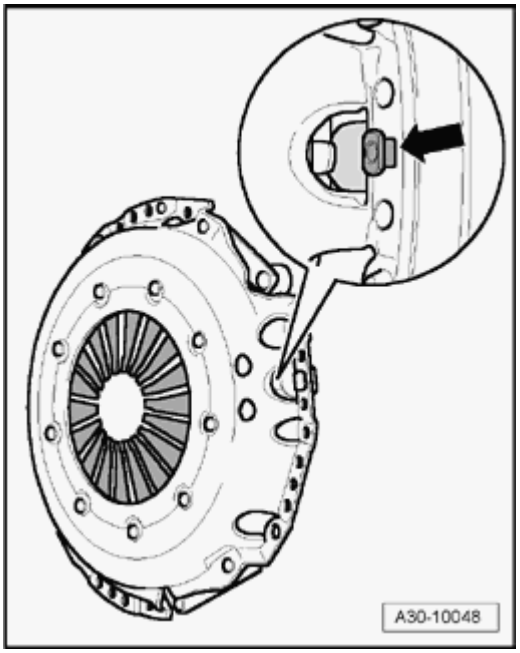


Fig. 87: Pressure Plate With Impact (Position Sensor)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

To prevent the pressure plate from becoming distorted during installation (causes clutch grab when driving off), always adhere to the following procedure when installing pressure plate:

- Position pressure plate on dowel pins.
- Make sure that the stop mechanism (position sensor) - **arrow** - is free to move.
- Screw in all 6 bolts evenly by hand until bolt heads make contact with pressure plate.
- Tighten all six bolts consecutively in clockwise direction and in steps of 90° (14 turn) until the housing makes contact with flywheel.
- The stop pin - **arrow** - should then lift away from pressure plate.
- Tighten all 6 bolts to final torque (22Nm) consecutively in clockwise direction.

Clutch with SAC pressure plate (LuK version), servicing

- Please refer to notes --> **Clutch, servicing**.
- Remove transmission before working on clutch --> **Transmission, removing and installing**.

NOTE:

- **"SAC" stands for "Self-Adjusting Clutch".**

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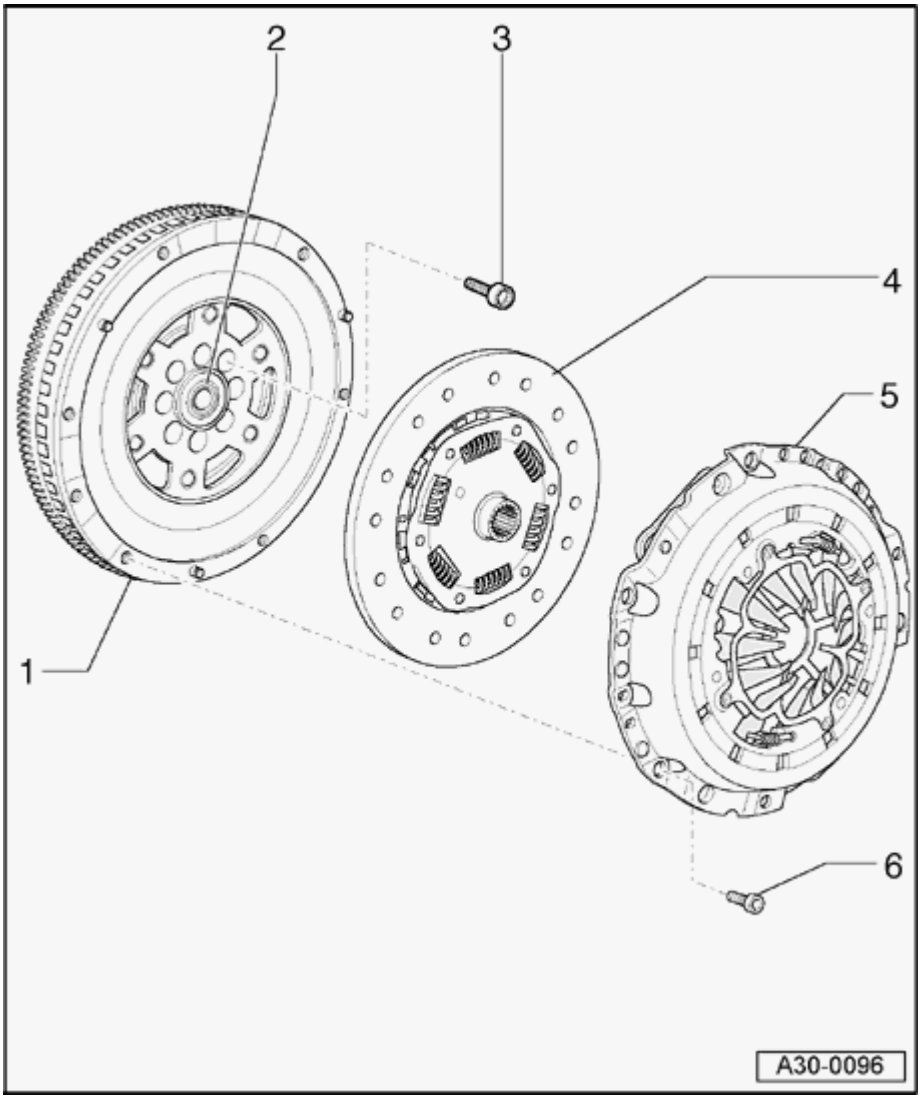


Fig. 88: Clutch With SAC Pressure Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Dual-mass flywheel

- Make sure that dowel pins fit tightly
- Contact surface for clutch lining must be free of grooves, oil and grease
- Observe instructions for removal **Removing dual-mass flywheel**
- Removing and installing -->
  - **13 ENGINE - CRANKSHAFT, CYLINDER BLOCK** for AVK
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for BPG

2 - Needle bearing

- Removing and installing -->

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- **13 ENGINE - CRANKSHAFT, CYLINDER BLOCK** for AVK
- **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for BPG

3 - Bolt for flywheel

- Always replace
- Bolt length: 22.5 mm; 60 Nm plus an additional 90° $^{1}/_{4}$ turn
- Bolt length: 43 mm; 60 Nm plus an additional 180° $^{1}/_{2}$ turn
- Observe instructions for removal **Removing dual-mass flywheel**

4 - Clutch plate

- Installation position: Clutch lining must make full contact with flywheel
- Marking "Getriebeseite" (if provided) faces pressure plate/transmission.
- Coil springs (damper assembly) point toward pressure plate and transmission
- Centralize
- Clutch plate diameter --> **Code letters, allocation, transmission ratios, capacities**

5 - SAC pressure plate

- Removing and installing --> **Clutch with SAC pressure plate, removing and installing**
- Resetting adjuster ring --> **Adjuster ring in SAC clutch pressure plate, adjusting**
- Check ends of diaphragm spring **Checking ends of diaphragm spring**
- Check that pressure plate is not warped **Check SAC pressure plate for warpage, cracks and burns**
- Check spring connection and rivets **Checking spring connection and rivet**

6 - Bolt -22 Nm-

- Observe instructions for installation --> **Clutch with SAC pressure plate, removing and installing**

Checking ends of diaphragm spring

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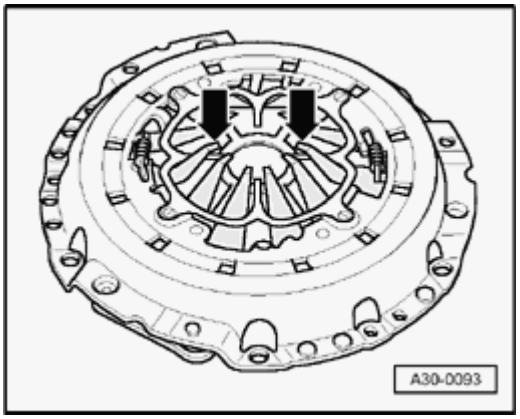


Fig. 89: Checking Ends Of The Diaphragm Spring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wear up to half the thickness of the diaphragm spring is permitted.

NOTE:

- **When performing repairs, always select the correct clutch pressure plate and clutch plate by checking engine code.**

Checking spring connection and rivet

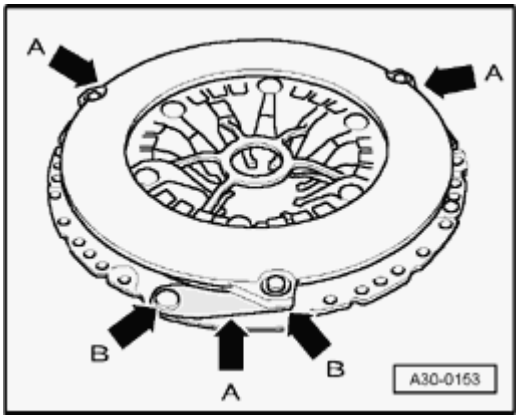


Fig. 90: Checking Spring And Rivet Connections
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check spring connections - **arrows A** - for damage and make sure riveted fastenings - **arrows B** - are seated tightly.

NOTE:

- **Replace pressure plate if spring connections are broken or badly bent, or if riveted fastenings are loose.**

Check SAC pressure plate for warpage, cracks and burns

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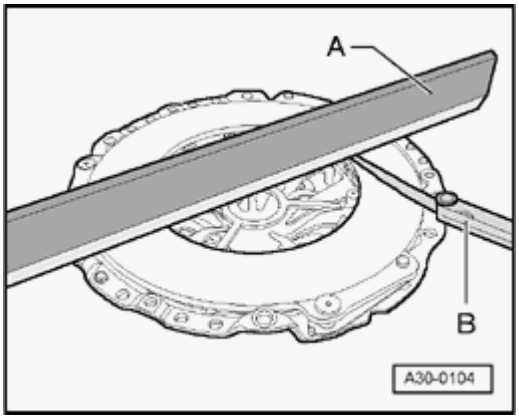


Fig. 91: Check SAC Pressure Plate For Warpage, Cracks And Burns
Courtesy of VOLKSWAGEN UNITED STATES, INC.

A - Straightedge

B - Feeler gauge

- Pressure plate warpage up to 1.0 mm is allowed

Removing dual-mass flywheel

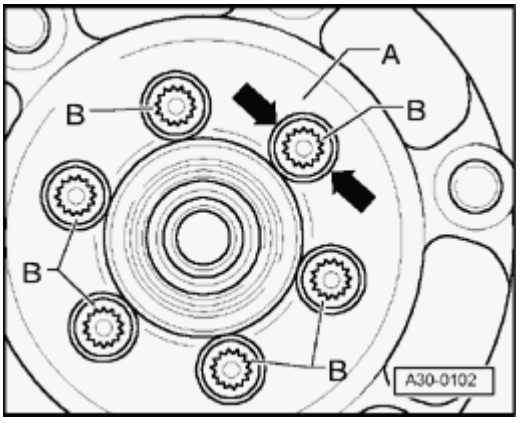


Fig. 92: Identifying Dual-Mass Flywheel & Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Do not use an impact wrench or pneumatic wrench to remove bolts - B - : this would severely damage the dual-mass flywheel. Bolts - B - must always be removed by hand.**

- Rotate flywheel - **A** - so that bolts - **B** - are aligned centrally behind the holes - **arrows** -.
- When removing bolts - **B** - , make sure bolt heads do not contact flywheel - **arrows** - because this would damage flywheel when bolts are turned further.
- Removing and installing dual-mass flywheel -->

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- **13 ENGINE - CRANKSHAFT, CYLINDER BLOCK** for AVK
- **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for BPG

.

Clutch with SAC pressure plate, removing and installing

Special tools, testers and auxiliary items required

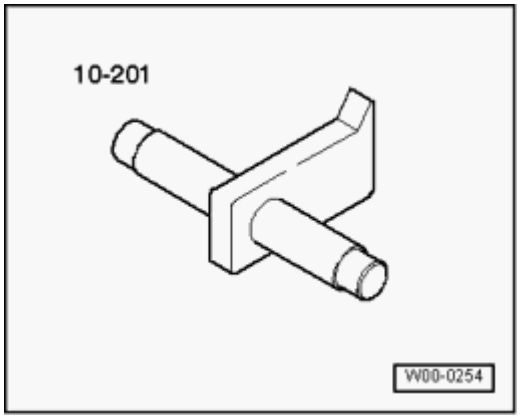


Fig. 93: Counterhold 10-201
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Counterhold tool 10 - 201

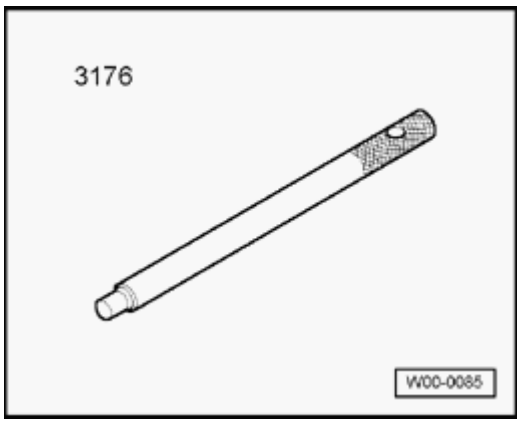


Fig. 94: Identifying Centering Mandrel 3176
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Centering mandrel 3176
- **Grease for clutch plate splines G000100**

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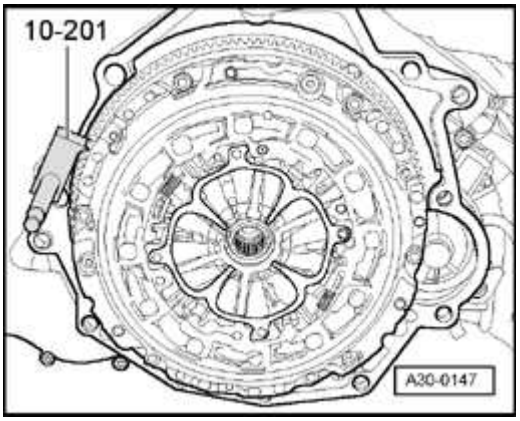


Fig. 95: Counter-Hold Tool 10 - 201 Attached Before Loosening Clutch Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Attach counter-hold tool 10 - 201 before loosening bolts.

To prevent the pressure plate from becoming warped during removal (causes clutch grab when driving off), always adhere to the following procedure when unscrewing the pressure plate:

- Loosen all six bolts consecutively in clockwise direction and in steps of 90° (14 turn) until the pressure plate is released.

Installing

NOTE:

- **Before re-installing the SAC pressure plate check that it is not warped Check SAC pressure plate for warpage, cracks and burns.**
- **When only the clutch plate is replaced, the adjuster ring in the SAC pressure plate has to be reset before assembly --> Adjuster ring in SAC clutch pressure plate, adjusting.**
- **Installation position of clutch plate: coil springs (damper assembly) or marking "Getriebeseite" point toward pressure plate and transmission.**

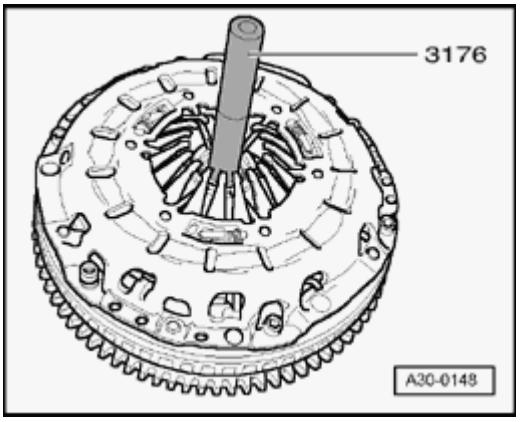


Fig. 96: Using Centering Mandrel 3176 To Centralize Clutch Plate

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Use centering mandrel 3176 to centralize clutch plate.
- Re-position counterhold tool 10 - 201 to tighten bolts.

To prevent the pressure plate from becoming warped during installation (causes clutch grab when driving off), always adhere to the following procedure when installing the pressure plate:

- Position pressure plate on dowel pins.
- Screw in all 6 bolts evenly by hand until bolt heads make contact with pressure plate.
- Tighten all six bolts consecutively in clockwise direction and in steps of 90° (14 turn) until the housing makes contact with flywheel.
- Tighten all 6 bolts to final torque (22Nm) consecutively in clockwise direction.

Adjuster ring in SAC clutch pressure plate, adjusting

NOTE:

- **"SAC" stands for "Self-Adjusting Clutch".**
- **When installing a new clutch plate in conjunction with a used SAC pressure plate, the adjuster ring in the pressure plate has to be reset by turning it back as far as it will go. If you do not reset the adjuster ring in the pressure plate, the SAC pressure plate will operate with reduced clamping force, which will cause excessive wear, especially of the clutch plate (clutch will then slip).**
- **If the clutch plate is not replaced, it is not necessary to reset the adjuster ring.**
- **New SAC pressure plates are pre-set accordingly, and do not have to be reset.**

Special tools, testers and auxiliary items required

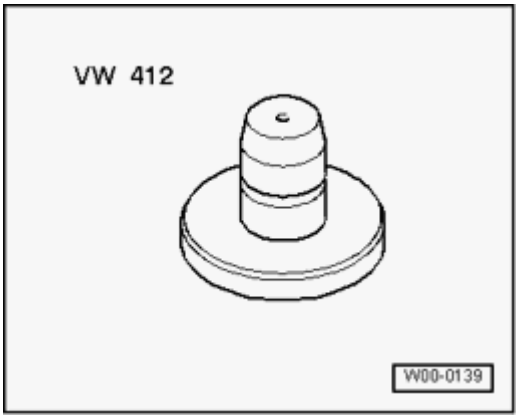


Fig. 97: Thrust Disc VW 412
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Thrust disc VW412

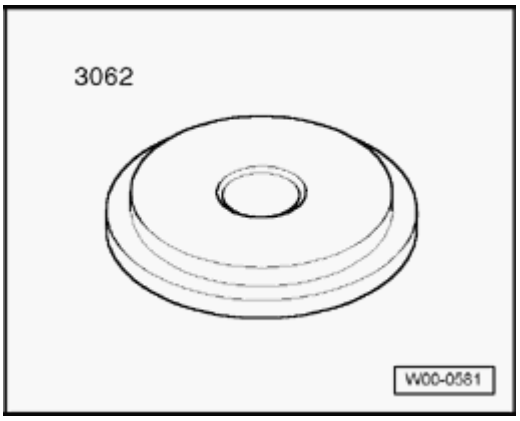


Fig. 98: Identifying Thrust Pad 3062
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Thrust pad 3062

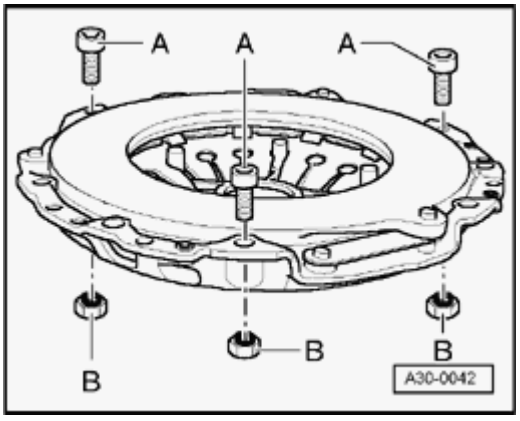


Fig. 99: Inserting Securing Bolts Into Mounting Holes On Pressure Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Procedure

- Insert 3bolts for securing pressure plate - **A** - into mounting holes on pressure plate at 120° (13) intervals, as illustrated.
- Screw 3 nuts - **B** - M8 onto bolts - **A** - and tighten nuts.

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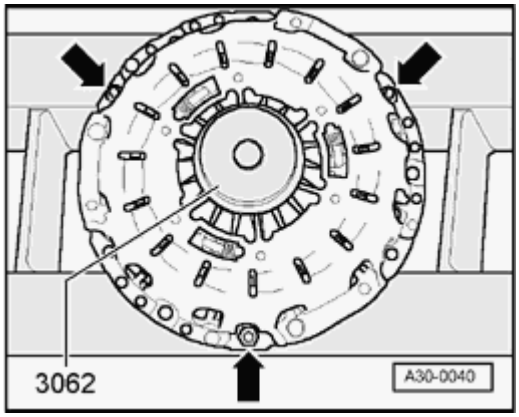


Fig. 100: Placing SAC Pressure Plate Onto Press
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place SAC pressure plate onto thrust disc so that only 3 bolt heads - **arrows** - make contact.
- Position thrust pad 3062 in center of pressure plate.

Do not use force when performing the following steps, as this could cause the forks on the adjuster ring to break off.

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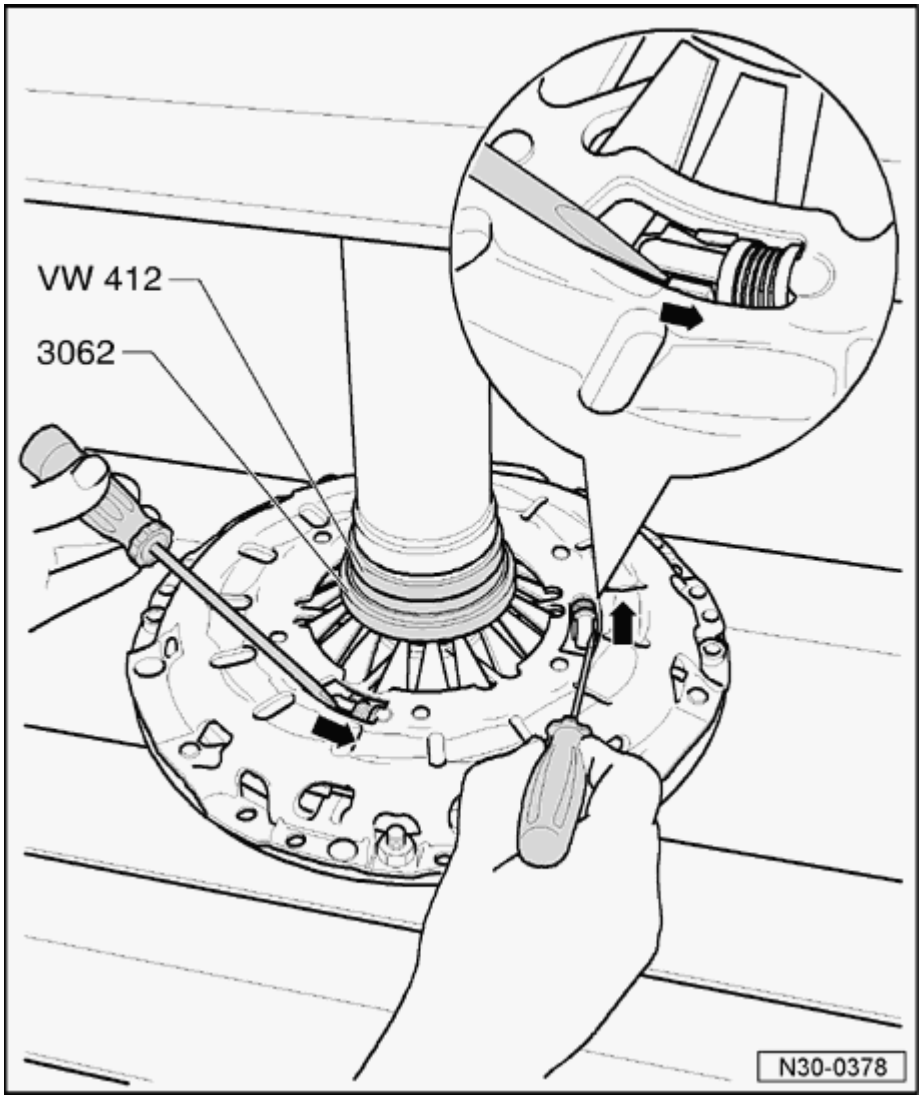


Fig. 101: Positioning Two Screwdrivers On Adjusting Ring Forks
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Apply two screwdrivers to forks on adjuster ring. Use thrust disc to apply pressure to pressure plate until it is just possible to move adjuster ring.
- Using two screwdrivers, turn back adjuster ring evenly in direction of - **arrows** - until it reaches stop.
- Hold adjuster ring against stop and reduce pressure applied by thrust disc so that the adjuster ring is held in this position.

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30 CLUTCH

CLUTCH MECHANISM, SERVICING

Clutch mechanism, servicing

CAUTION:

- **Follow steps required when disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for Cabriolet**

.

NOTE:

- **Lubricate all bearings and contact surfaces with polycarbamide grease G052142A2 .**
- **Before working on pedal cluster, remove storage compartment on drivers side -->**
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT for Cabriolet**

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- **Make sure that no brake fluid escapes into the footwell, the plenum chamber or onto the transmission below. If this does happen, clean the affected area thoroughly.**
- **When performing work in the footwell, put cloths on the carpet to protect it from possible brake fluid spills.**

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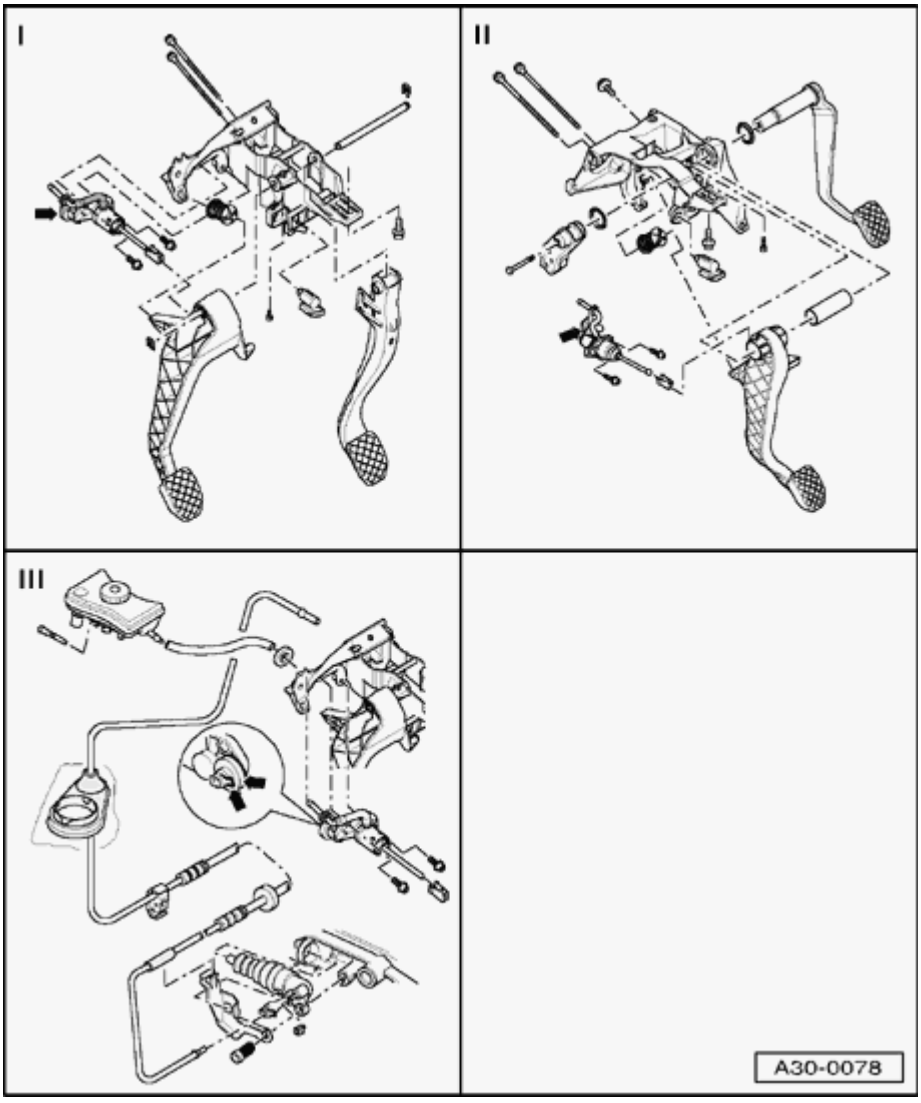


Fig. 11: Exploded View Of Pedal Cluster And Exploded View Of Hydraulic System
Courtesy of VOLKSWAGEN UNITED STATES, INC.

I - Pedal cluster (LHD vehicles), assembly overview --> **Pedal cluster (LHD vehicles), assembly overview**

II - Pedal cluster (RHD vehicles), assembly overview --> **Pedal cluster (RHD vehicles), assembly overview**

III - Hydraulics, assembly overview --> **Hydraulic system, assembly overview**

Pedal cluster (LHD vehicles), assembly overview

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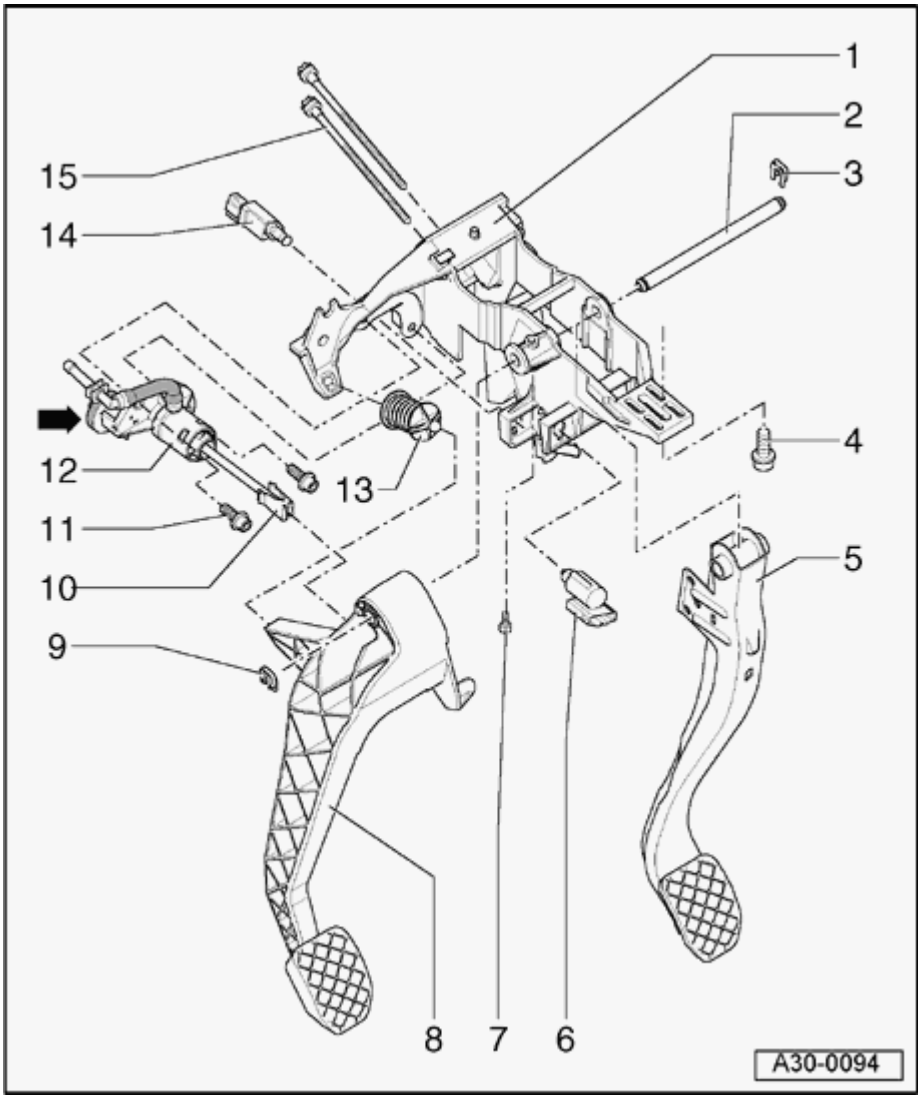


Fig. 12: Pedal Cluster, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Mounting bracket

- Removing and installing --> **Master cylinder, removing and installing**

2 - Pivot pin for clutch and brake pedal

3 - Retaining clip

4 - Hex socket head bolt, 25 Nm

5 - Brake pedal

- Maintenance-free bearing, do not grease

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6 - Clutch pedal switch F36

- Removing and installing --> **Clutch pedal switch F36, removing and installing**
- Can only be installed once
- Replace

7 - Hex socket head bolt, 5 Nm

- Secures clutch and brake pedal pivot pin

8 - Clutch pedal

- Removing and installing --> **Master cylinder, removing and installing**

9 - Retaining clip

10 - Retaining clip

11 - Hex socket head bolt, 20 Nm

12 - Master cylinder

- Removing and installing --> **Master cylinder, removing and installing**
- Gasket - **arrow** - must not be removed

13 - Over-center spring

- Black side points toward clutch pedal
- Removing and installing --> **Over-center spring, removing and installing**

14 - Clutch Pedal Starter Interlock Switch F194

- USA models and vehicles with 3.2liter. FSI engine only
- Engine can only be started when clutch is fully depressed (switch activated).
- Removing and installing --> **Clutch Pedal Starter Interlock Switch F194, removing and installing**
- Replace

- Can only be installed once

15 - Torx bolt, 25Nm

- For securing brake master cylinder/brake servo to mounting bracket

Clutch pedal switch F36, removing and installing

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NOTE:

- **Clutch pedal switch may only be installed once so as to ensure a secure fit.**

Removing

- Remove storage compartment on drivers side -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for Cabriolet

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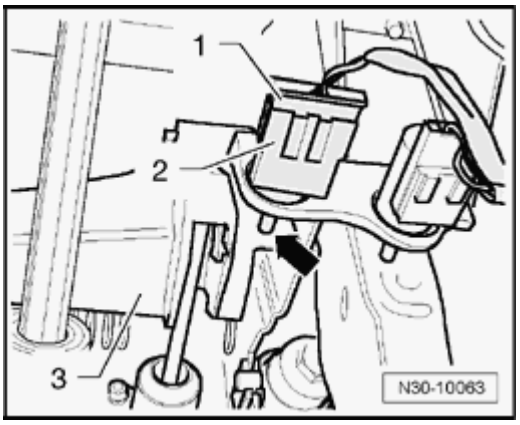


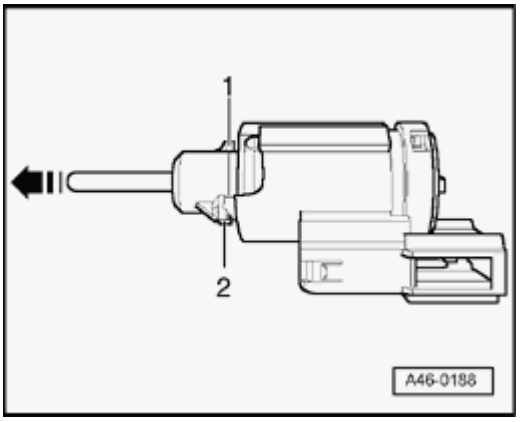
Fig. 13: Identifying Pedal Assembly And Clutch Pedal Switch F36
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical connector - **1** - on clutch pedal switch.

- The clutch pedal - **3** - is in the normal position (i.e. not pressed down). The operating rod - **arrow** - of clutch pedal switch should then rest against clutch pedal.

- Release clutch pedal switch - **2** - by turning 45° counter-clockwise and remove from guide.

Installing



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Fig. 14: Pulling Out Switch Plunger & Identifying Retainer Tabs On Switch
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Installation is in reverse order of removal. Note the following:

- Pull out operating rod - **arrow** - all the way before installing clutch pedal switch.

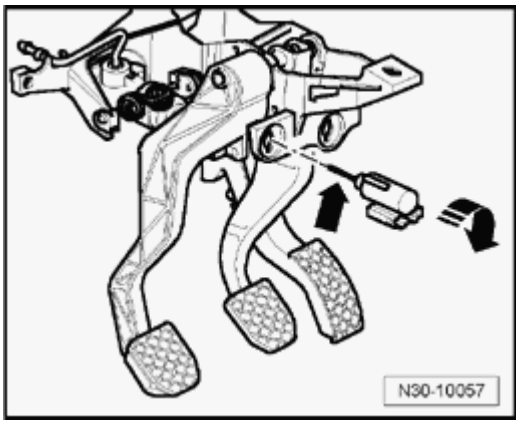


Fig. 15: Identifying Clutch Pedal Switch F36, Plunger
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- The clutch pedal should be in the normal position (i.e. not pressed down).

- Guide clutch pedal switch through mounting hole, press against clutch pedal and attach by turning 45° clockwise.
- Connect connector for clutch pedal switch.
- Install storage compartment on drivers side -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for Cabriolet

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Clutch Pedal Starter Interlock Switch F194, removing and installing

NOTE:

- **To ensure a secure fit, the clutch pedal starter interlock switch F194 must not be installed more than once.**

Removing

- Remove storage compartment on drivers side -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for Cabriolet

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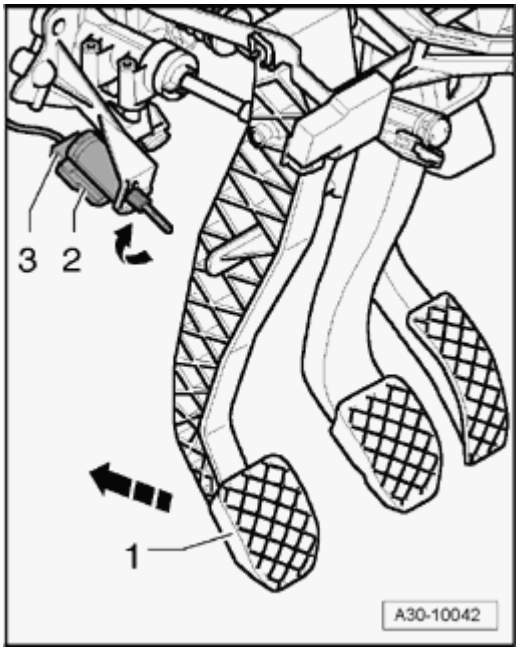


Fig. 16: Installing and Adjusting Clutch Pedal Starter Interlock Switch F194
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical connector - **3** - on clutch pedal switch.
- Press clutch pedal - **1** - all the way down and hold it in this position.
- At the same time, release clutch pedal starter interlock switch F194 - **2** - by turning it 45° in the direction indicated - **arrow** - and pull it out of the guide.

Installing

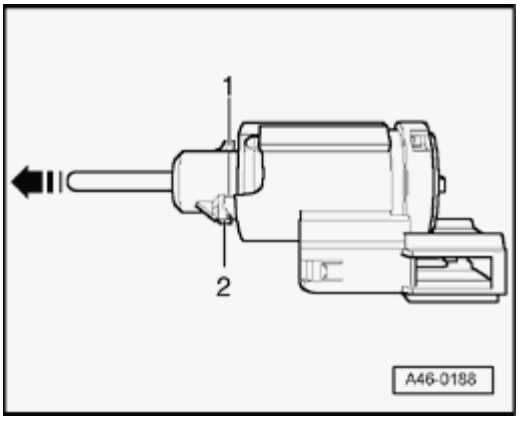


Fig. 17: Pulling Out Switch Plunger & Identifying Retainer Tabs On Switch
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull out operating rod - **arrow** - all the way before installing clutch pedal switch.

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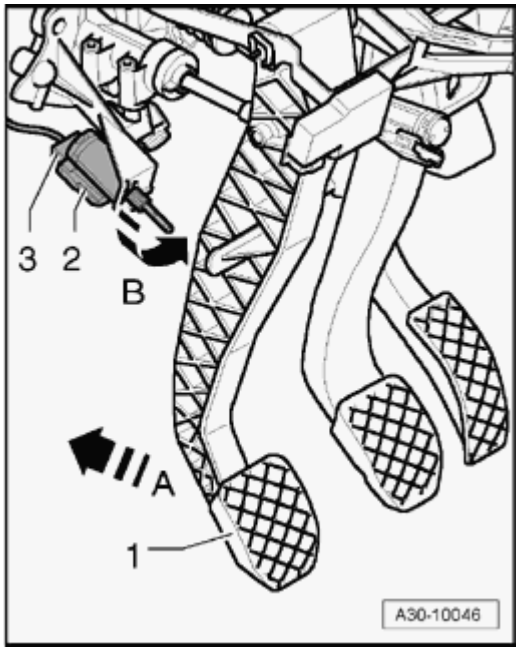


Fig. 18: Pressing Clutch Pedal All The Way Down And Pushing Operating Rod Against Clutch Pedal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- When installing clutch pedal starter interlock switch F194, press clutch pedal - **1** - all the way down - **arrow A** -. Hold clutch pedal in this position.
- Guide clutch pedal starter interlock switch F194 - **2** - through opening in retainer, and at the same time push operating rod against clutch pedal and secure switch by turning it 45° in the direction indicated - **arrow B** -.
- Connect electrical connector - **3** - on clutch pedal starter interlock switch F194.
- Install storage compartment on drivers side -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for Cabriolet

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Over-center spring, removing and installing

Special tools, testers and auxiliary items required

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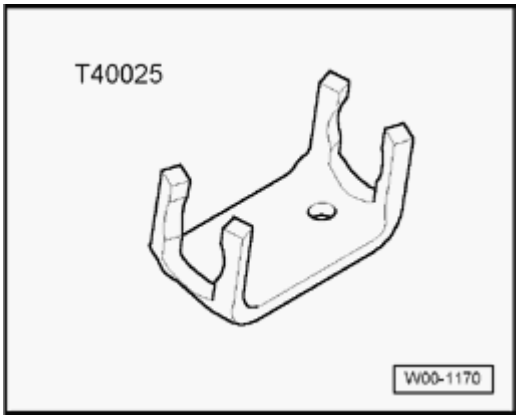


Fig. 19: T40025 Installation Clamp
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Assembly clip T40025

Removing

- Remove storage compartment on drivers side -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for Cabriolet

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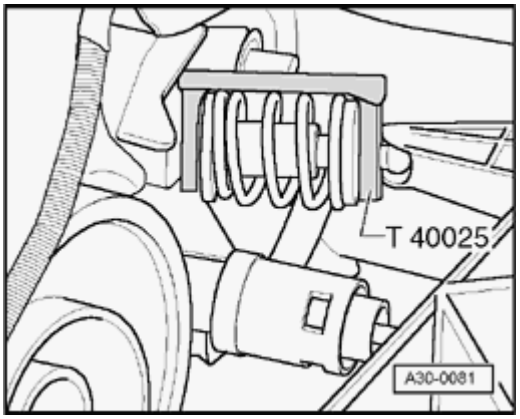


Fig. 20: Installation Clamp T40025 Installed On Over-Center Spring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tension over-center spring with clutch pedal, at the same time pressing on assembly clamp T40025.
- Move clutch pedal to rest position and remove over-center spring together with assembly clamp T40025 downward.

Installing

- Pull clutch pedal into the passenger compartment.

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Installation position of over-center spring:

- Black side of over-center spring points toward clutch pedal.

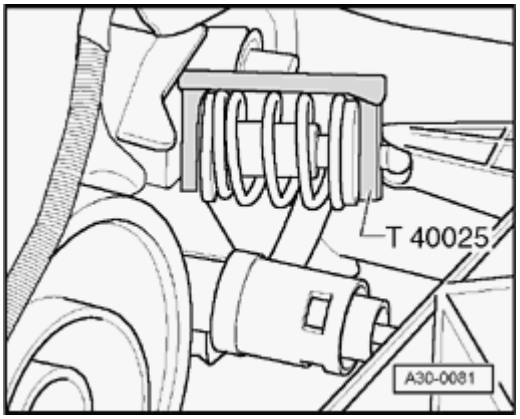


Fig. 21: Installation Clamp T40025 Installed On Over-Center Spring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install over-center spring with assembly clamp T40025, operate clutch pedal and remove assembly clamp.

Pedal cluster (RHD vehicles), assembly overview

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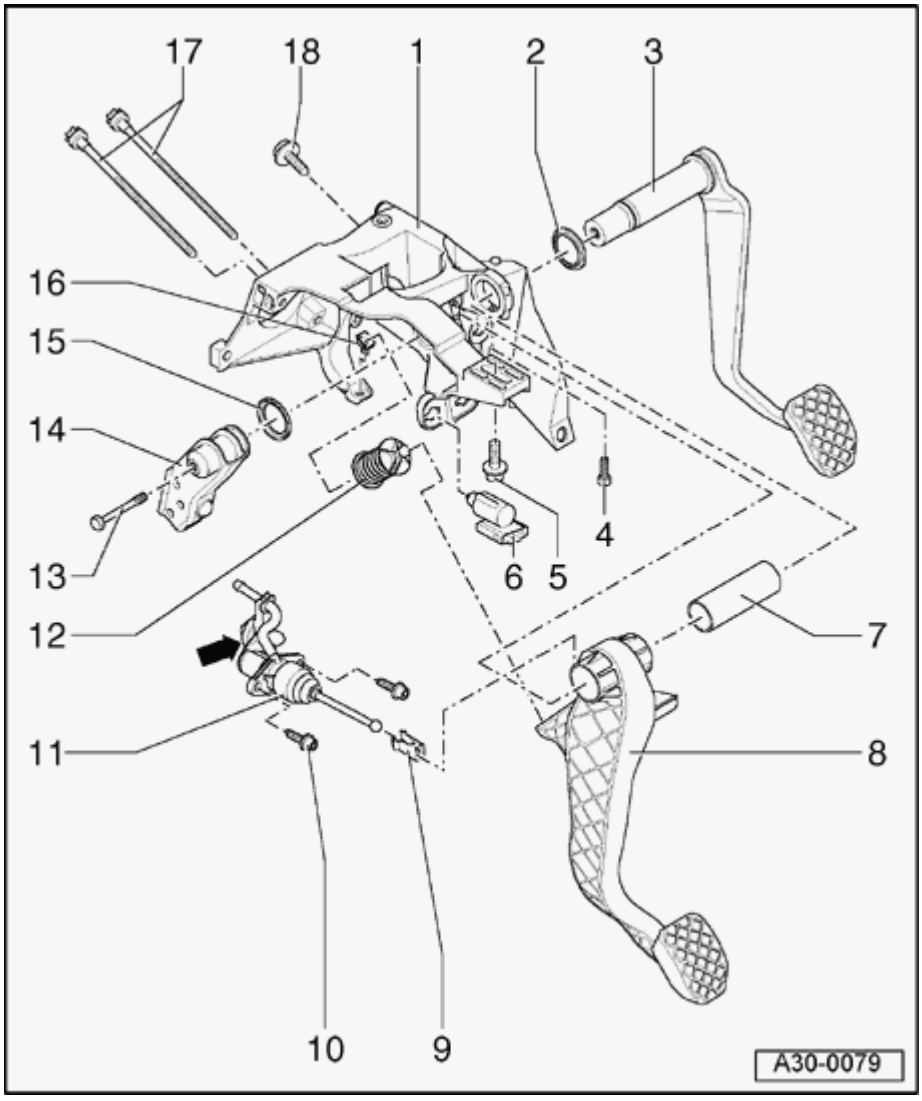


Fig. 22: Pedal Cluster - RHD Vehicles, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Mounting bracket

- Removing and installing --> **Master cylinder, removing and installing**

2 - Washer

3 - Brake pedal

- Maintenance-free bearing, do not grease

4 - Hex socket head bolt, 5 Nm

- For securing the bearing sleeve

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5 - Hex socket head bolt, 25 Nm

6 - Clutch pedal switch F 36

- Can only be installed once
- Replace

7 - Bearing sleeve

- Check for freedom of movement in clutch pedal

8 - Clutch pedal

- Removing and installing --> **Master cylinder, removing and installing**

9 - Retaining clip

10 - Hex socket head bolt, 20 Nm

11 - Master cylinder

- Removing and installing --> **Master cylinder, removing and installing**
- Gasket - **arrow** - must not be removed

12 - Over-center spring

- Removing and installing --> **Over-center spring, removing and installing**

13 - Bolt, 22 Nm

- Self-locking
- Replace

14 - Lever

- Pin only fits in one position

15 - Washer

16 - Mounting

- For over-center spring

17 - TORX bolt, 25 Nm

- For securing brake master cylinder/brake servo to mounting bracket

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18 - Bolt, 25 Nm

Hydraulic system, assembly overview

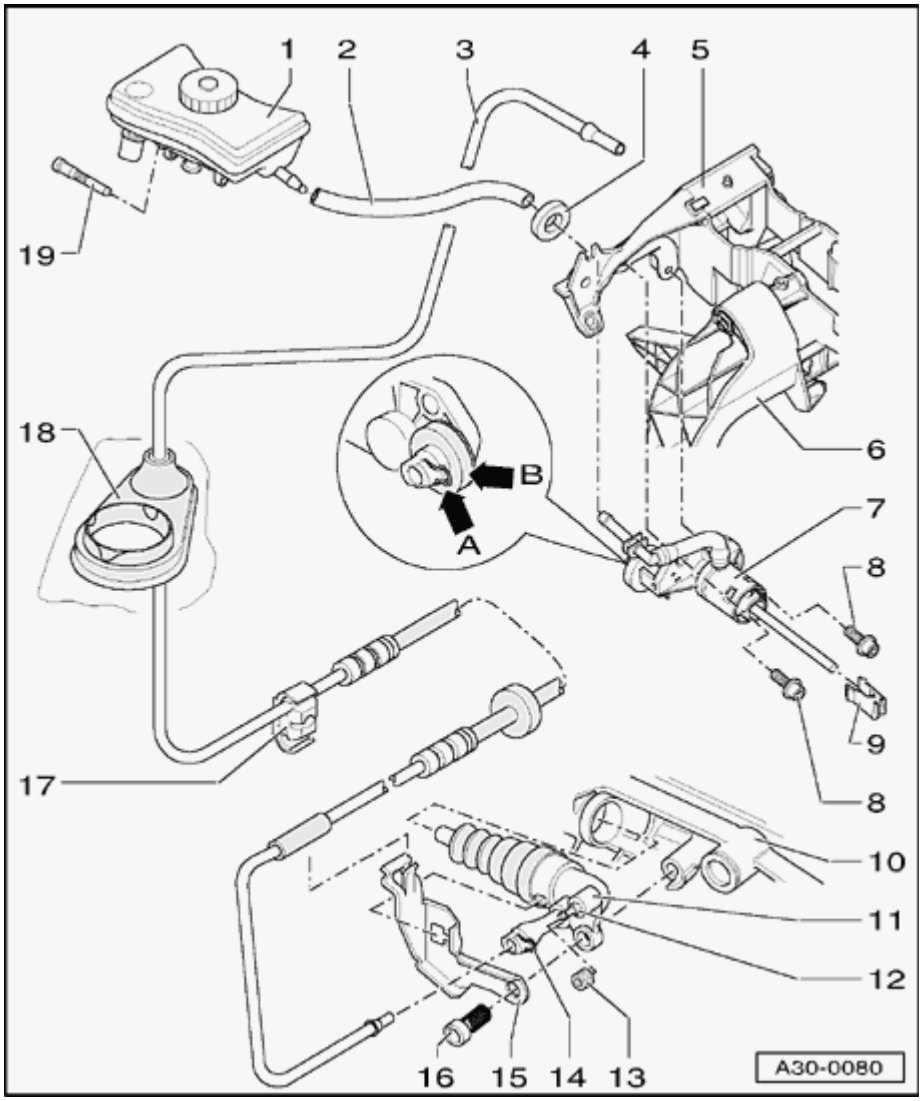


Fig. 23: Hydraulic System, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Brake fluid reservoir

2 - Supply hose

- For clutch master cylinder

3 - Line/hose assembly

- For connections on master cylinder and slave cylinder

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- Disconnecting from master cylinder and installing **Fig. 35**
- Disconnecting from slave cylinder **Disconnecting slave cylinder from hose/line assembly**

4 - Grommet

5 - Mounting bracket

6 - Clutch pedal

7 - Master cylinder

- Removing and installing --> **Master cylinder, removing and installing**
- Do not remove clip - **arrow A** - or seal - **arrow B** -.
- To remove line/hose assembly, pull out clip - **arrow A** - , but only as far as limit stop **Fig. 35**.

8 - Hex socket head bolt, 20 Nm

9 - Retaining clip

- Only replace when master cylinder has been removed
- Pry off to remove **Prying retaining clip - A - off in direction of - arrow -**
- Push in to install **Pressing master cylinder operating rod into retaining clip - A - (in direction of - arrow -).**

10 - Transmission

11 - Slave cylinder

- Do not operate clutch pedal after slave cylinder has been removed.
- Removing and installing --> **Slave cylinder, removing**
- Bleed slave cylinder after working on hydraulic clutch mechanism --> **Clutch hydraulic system, bleeding**
- Disconnecting hose/line assembly **Disconnecting slave cylinder from hose/line assembly**

- Do not allow brake fluid to come into contact with transmission.

12 - Bleeder valve

- Tighten to 4.5 Nm
- Follow correct procedure when bleeding --> **Clutch hydraulic system, bleeding**.
- If bleeder valve has broken off, it can be removed with 3 mm Allen key

13 - Dust cap

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14 - Clip

- To remove line pull out clip as far as limit stop **Disconnecting slave cylinder from hose/line assembly**

15 - Bracket

- For line/hose assembly
- Attached to transmission together with slave cylinder

16 - Hex socket head bolt, 25 Nm

- Slave cylinder to transmission
- Self-locking
- Replace

17 - Retaining clip

18 - Gasket

19 - Securing bolt

- For brake fluid reservoir

Prying retaining clip - A - off in direction of - arrow -

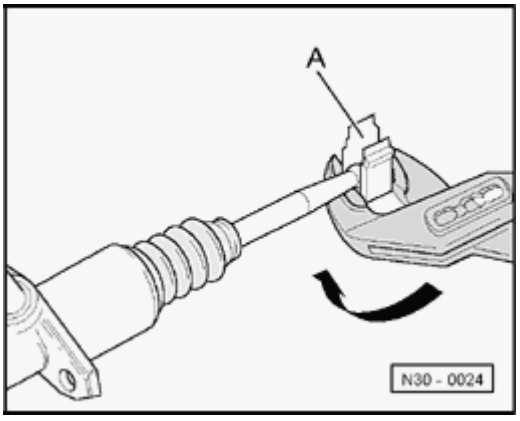


Fig. 24: Removing Retainer By Prying
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Pressing master cylinder operating rod into retaining clip - A - (in direction of - arrow -).

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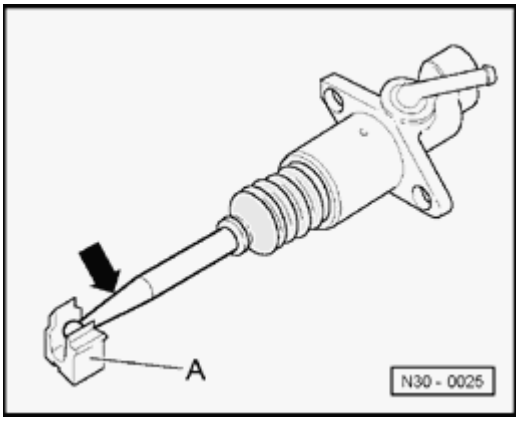


Fig. 25: Installing Clutch Master Cylinder Operating Rod In Retainer
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Disconnecting slave cylinder from hose/line assembly

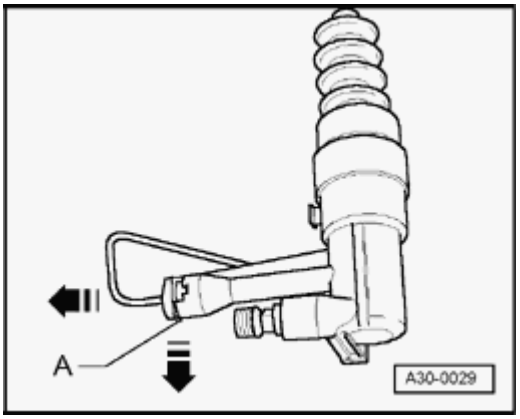


Fig. 26: Removing Hydraulic Line From Slave Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removing

- To remove hose/line assembly, use a screwdriver to pry off clip - **A** - as far as stop. Only then can the hose/line assembly be pulled out.

Installing

- Press retaining clip - **A** - in as far as it will go.
- Insert hose/line assembly in slave cylinder and make sure that it engages audibly.
- Pull on line/hose assembly to check it is secure.

Notes on removing and installing master cylinder and slave cylinder

- Before replacing the master cylinder or slave cylinder on the assumption that it is faulty, first perform a function check.

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- If slave cylinder is removed from transmission with hose/line assembly still attached, make sure you do not press clutch pedal. Otherwise, the piston will be pressed out of the slave cylinder and be destroyed.
- After installing the slave cylinder carefully press the clutch pedal. If an unusually strong point of pressure is felt when depressing the clutch pedal, do not press it down further. The push rod of the slave cylinder is likely to have been guided past the clutch release lever. The slave cylinder would then be destroyed once pedal force exceeds approx. 300 N.

Function check for master and slave cylinder

Before replacing the master or slave cylinder - in the case of the following faults - first perform the appropriate checks.

Noises when operating the clutch:

- First check the over-center spring / clutch pedal switch for noise.
- If you hear a noise, remove over-center spring and repeat check.
- Replace relevant component.

After releasing clutch pedal it still remains depressed / does not return to its initial position.

- Check whether clutch pedal returns all the way to its initial position, thereby uncovering the vent opening in the master cylinder.
- The ventilation opening must be uncovered, otherwise permanent self-ventilation for the hydraulic clutch system cannot function.
- The self-ventilation function of the clutch system can be impaired if the footwell trim or foot mats get trapped, if the clutch pedal switch jams or if the driver rests his foot on the clutch pedal for long periods of time.

Check the complete hydraulic system for external or internal leaks.

- Check brake fluid level in brake fluid reservoir.
- Check master and slave cylinder as well as the line/hose assembly including connecting points for external leaks (visual check).
- If leaks are identified replace the leaking component.
- Bleed clutch system --> **Clutch hydraulic system, bleeding**.

High pedal force:

- Clutch plate is worn (except for SAC)
- Mechanically faulty pressure plate/clutch plate --> **Clutch, servicing**

Pedal forces:

Conventional clutch: - Clutch lining when new: approx. 115 N- Clutch lining at wear limit: approx. 160 N

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SAC clutch: - Approx. 140 N higher for complete service life of the clutch

Clutch does not disengage or does not disengage fully:

- Air in hydraulic system: bleed clutch system --> **Clutch hydraulic system, bleeding** and check hydraulic system for external and internal leaks.
- Clutch plate does not run smoothly on input shaft splines
- Needle bearing in flywheel (centering bearing for input shaft) faulty, replace needle bearing --> **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** .
- Foreign body in clutch system
- Mechanically faulty pressure plate/clutch plate --> **Clutch, servicing**
- Wrong components used or components forgotten when carrying out repair work (e.g. intermediate plate).

Master cylinder, removing and installing

Special tools, testers and auxiliary items required

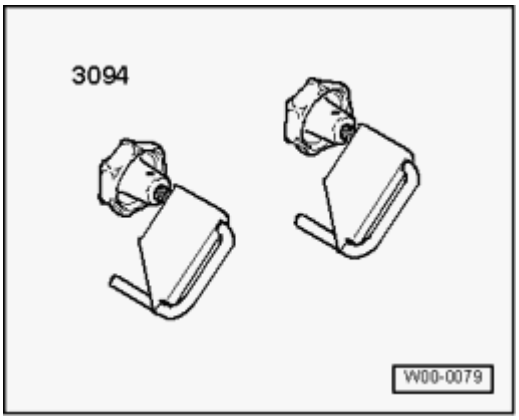


Fig. 27: Identifying Hose Clamps 3094
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Hose clamp 3094
- Pliers V.A.G1922

Removing

Observe the notes on removing and installing clutch master cylinder and slave cylinder --> **Notes on removing and installing master cylinder and slave cylinder**.

CAUTION:

- **Follow steps required when disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for Cabriolet**

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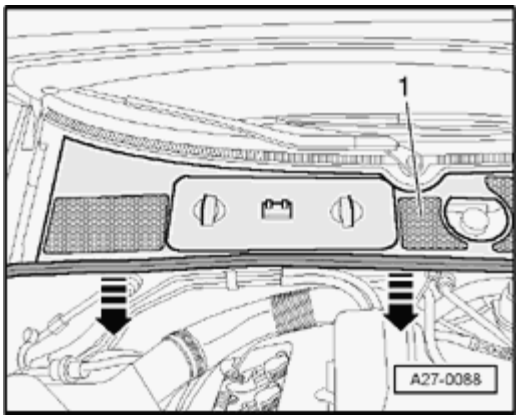


Fig. 28: Identifying Plenum Chamber Cover & Removing Rubber Seal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rubber seal on plenum chamber in direction of - **arrow** -.
- Remove cover - **1** - from plenum chamber.
- With ignition switched off, disconnect battery Ground (GND) strap -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for Cabriolet

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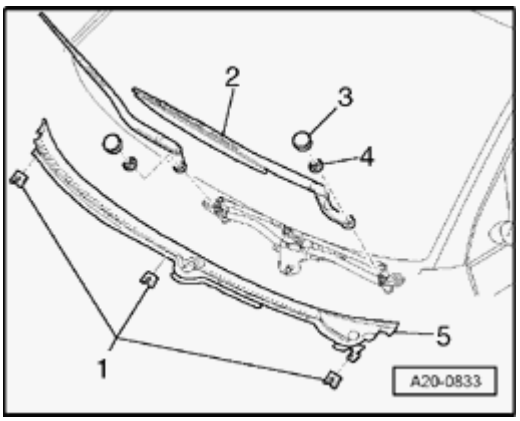


Fig. 29: Removing Securing Clips And Cowl
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Use screwdriver to pry off two caps - **3** -.
- Remove nuts - **4** - and take off two wiper arms - **2** -.
- Pull off clips - **1** - and remove cowl panel grille - **5** -.

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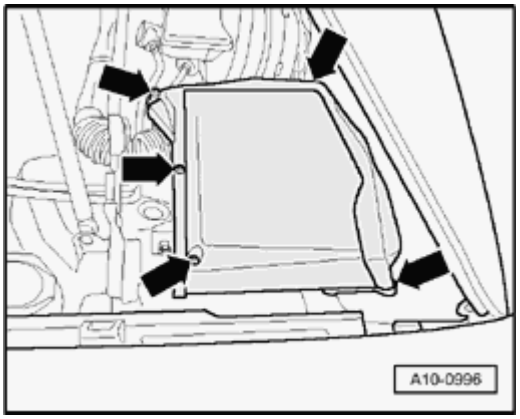


Fig. 30: Removing Screws And Cover From E-Box In Plenum Chamber
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Take electronics box out of plenum chamber as follows:

- Remove bolts - **arrows** - and take off cover.

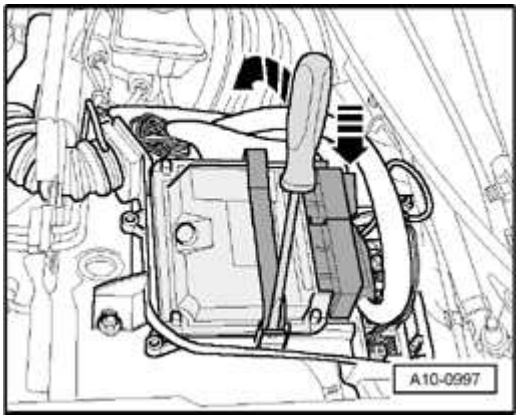


Fig. 31: Using Screwdriver To Remove Retainer Bar And Engine Control Module (ECM) J623
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Use screwdriver to carefully pry off retaining strap - **arrow** -.
- Lay aside engine control module with connectors attached.

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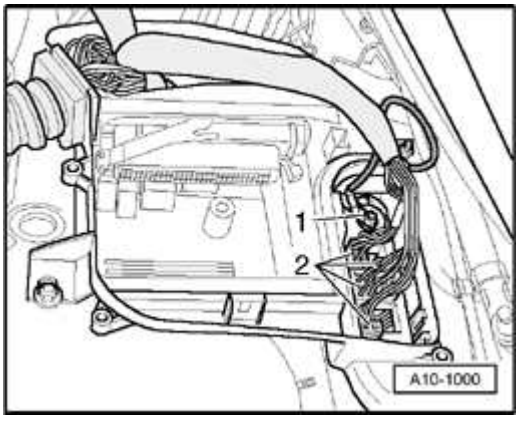


Fig. 32: Disconnecting Electrical Harness Connectors On Connector Station
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect connectors - **2** - at console.
- Disconnect electrical wiring connection - **1** -.

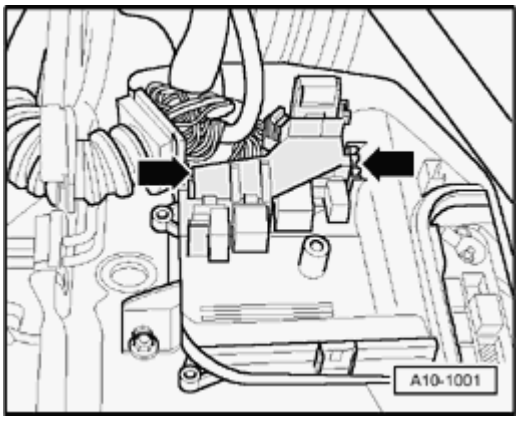
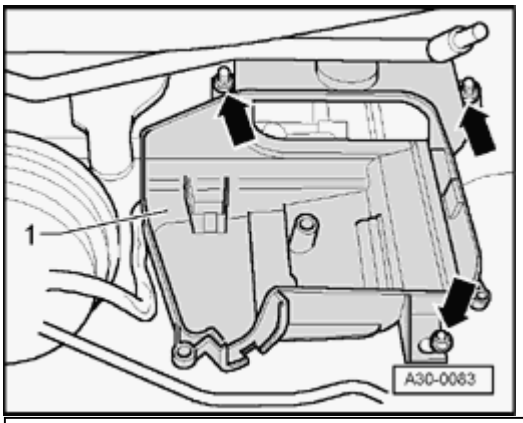


Fig. 33: Locating Auxiliary Relay Carrier Catches
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release catches - **arrows** - and lift auxiliary relay carrier out of electronics box.
- Pull engine wiring harness together with rubber grommet out through opening in electronics box.



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Fig. 34: Electronics Box Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **arrows** - and lift out electronics box - **1** -.

NOTE:

- **In the following steps make sure that no brake fluid escapes into the plenum chamber or onto the transmission below. If this does happen, clean the affected area thoroughly.**
- **When performing work in the footwell, put cloths on the carpet to protect it from possible brake fluid spills.**

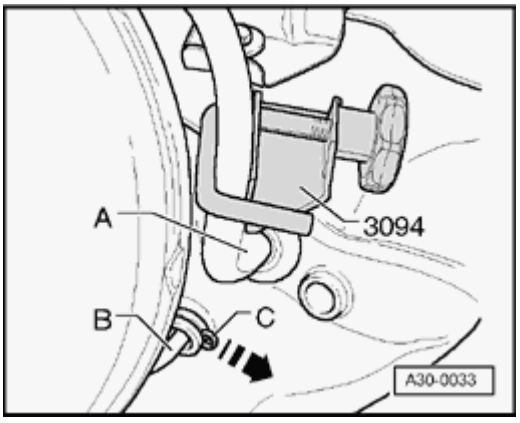


Fig. 35: Identifying Brake Fluid Reservoir Return Hose Grommet
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Clamp supply hose - **A** - from brake fluid reservoir using hose clamp 3094. Disconnect hose from master cylinder and plug hose.
- Remove rubber grommet from bulkhead above connection line for supply hose.
- Pry out retaining clip - **C** - using a screwdriver and pull line/hose assembly - **B** - out slightly.

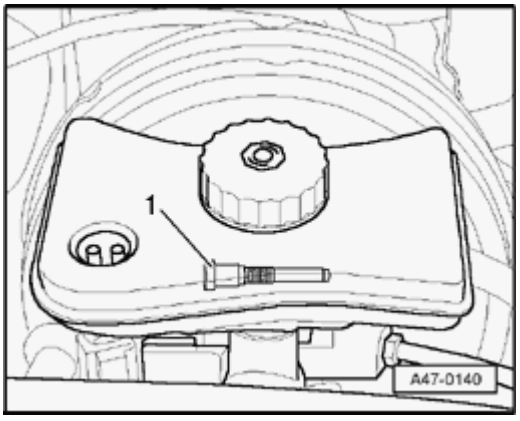


Fig. 36: Location Of Brake Fluid Reservoir Dowel Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Remove bolt for brake fluid reservoir - **1** - and disconnect connector for brake fluid level warning contact downward.

NOTE:

- **Brake fluid reservoir must not be removed.**

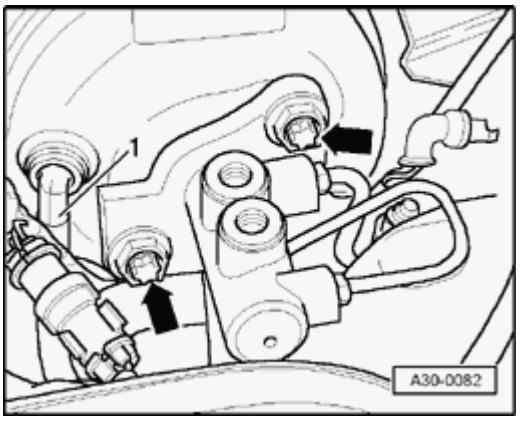


Fig. 37: Location Of Brake Servo Securing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

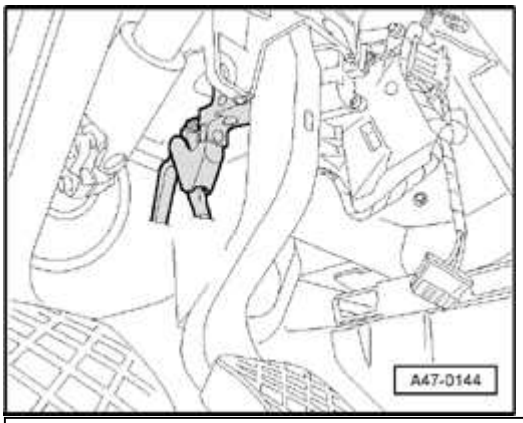
- Remove vacuum line to brake servo - **1** -.
- Remove two TORX bolts - **arrows** -.

NOTE:

- **To simplify the illustration, the brake fluid reservoir has not been included.**
- **The brake fluid reservoir must be moved slightly to the side in order to unscrew the upper TORX bolt.**

- Remove storage compartment on drivers side -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for Cabriolet

  .
- Removing over-center spring --> **Over-center spring, removing and installing**.



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Fig. 38: Brake Pedal At Brake Servo
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect brake pedal from brake servo --> **47 - BRAKES - HYDRAULIC COMPONENTS** .

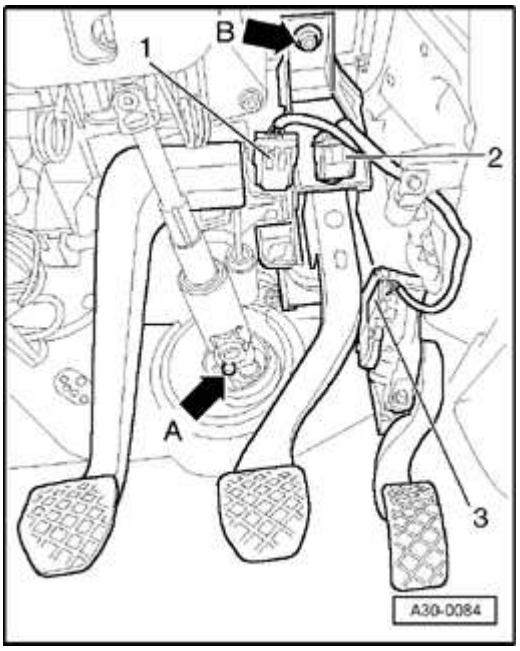


Fig. 39: Locating Steering Column At Steering Gear And Disconnecting Connector On Clutch Pedal Switch, Brake Pedal Switch And On Accelerator Pedal Module
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect steering column from steering gear - **arrow A** - --> **48 - STEERING** .
- Disconnect connectors from clutch pedal switch F36 - **1** - , brake light switch F - **2** - and accelerator pedal module - **3** -.
- If installed, disconnect connector from clutch pedal switch for engine start F194.
- Remove securing bolt for mounting bracket - **arrow B** - and remove entire pedal cluster.

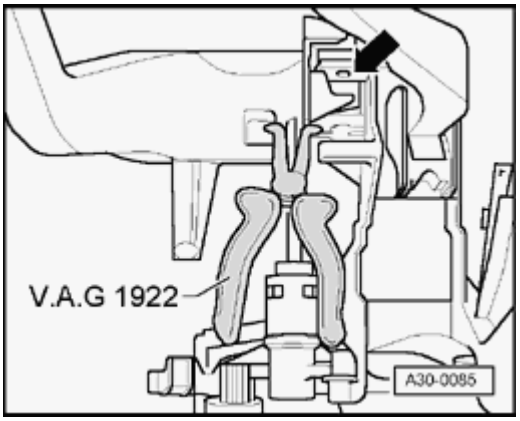


Fig. 40: Pressing Retainer Together And Detaching Clutch Pedal From Master Cylinder Using VAG 1922

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

Release master cylinder operating rod from clutch pedal as follows:

NOTE:

- **When releasing the operating rod, make sure that clutch pedal does not collide with mounting bracket for clutch pedal switch - arrow -. The mounting bracket could otherwise break off.**

- Position spark plug connector pliers V.A.G1922 in clutch pedal recesses, press on sides of retaining clip and disconnect clutch pedal from master cylinder.

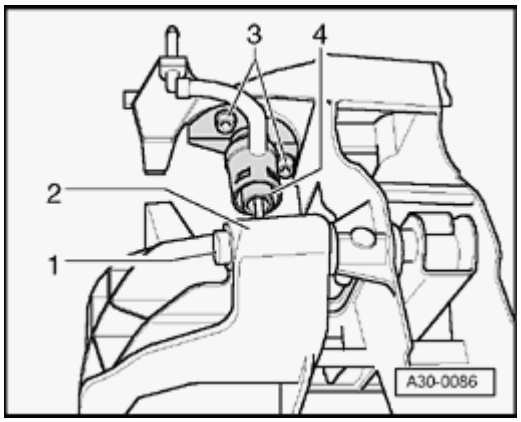


Fig. 41: Identifying Retaining Clip, Clutch Pedal, Bolts And Master Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove retaining clip - **1** - and remove clutch pedal - **2** -.
- Remove bolts - **3** - and remove master cylinder - **4** -.

Installing

Installation is in reverse order of removal. Note the following:

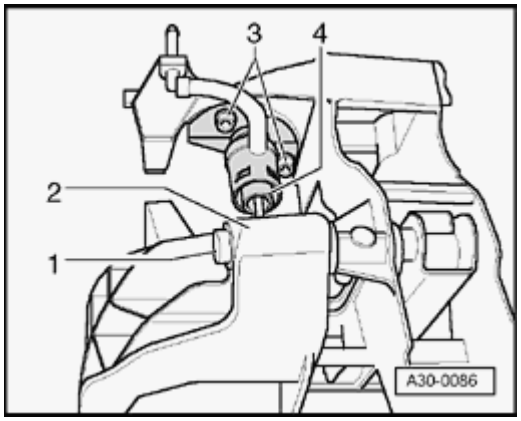


Fig. 42: Identifying Retaining Clip, Clutch Pedal, Bolts And Master Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Insert master cylinder - **4** - and tighten bolts - **3** - to 20Nm.

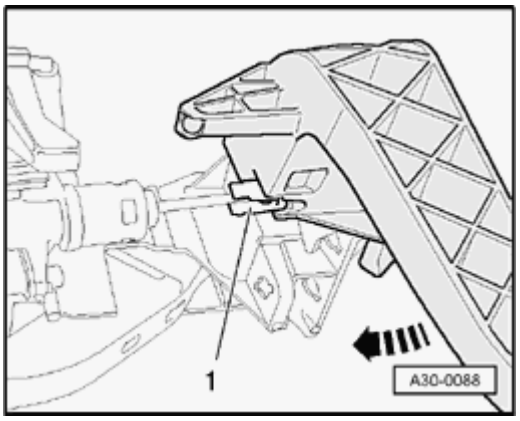


Fig. 43: Pushing Clutch Pedal To Lock Into Place, While Making Sure Mount Is Properly Secured In Clutch Pedal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert retaining clip - **1** - in clutch pedal.
- Lock clutch pedal in position by pressing in direction of - **arrow** -. Make sure retaining clip - **1** - engages correctly in clutch pedal.

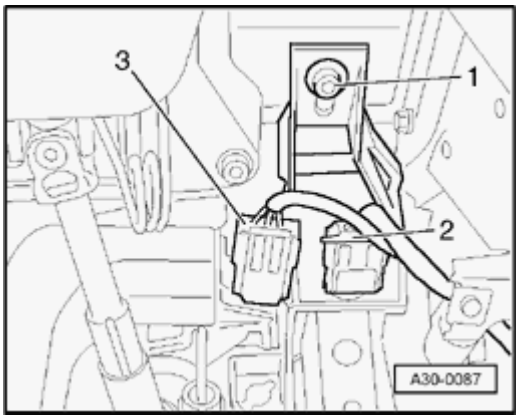


Fig. 44: Location Of Clutch Pedal Switch F36 And Pedal Assembly Securing Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

A second technician is required for the next step.

- Insert entire pedal cluster and tighten bolt - **1** - by hand. Second technician must guide hose/line assembly into master cylinder from plenum chamber.

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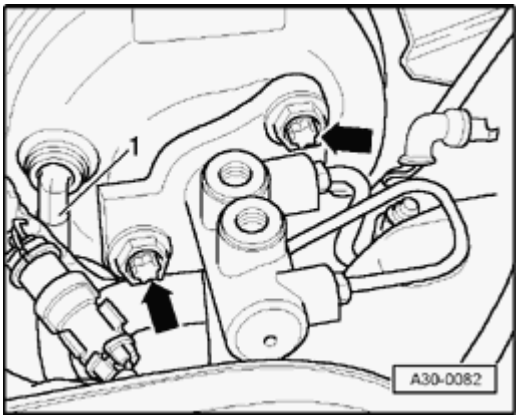


Fig. 45: Location Of Brake Servo Securing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten bolts for brake servo - **arrows** - to 25 Nm.

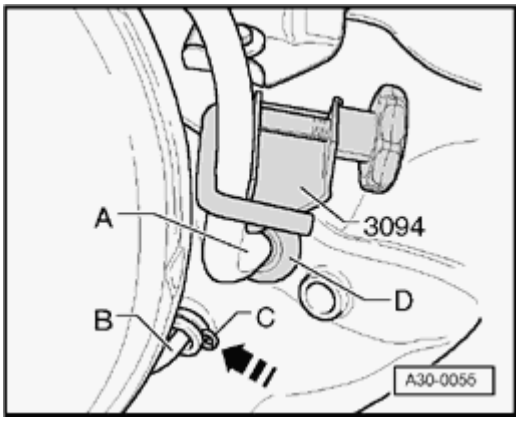


Fig. 46: Installing Rubber Grommet And After-Run Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press in retaining clip - **C** - as far as it will go.
- Insert hose/line assembly - **B** - in master cylinder and make sure that it engages audibly.
- Install rubber grommet - **D** - onto connecting line for supply hose - **A** - at bulkhead.
- Push supply hose - **A** - from brake fluid reservoir on as far as it will go.

- Remove hose clamps 3094.

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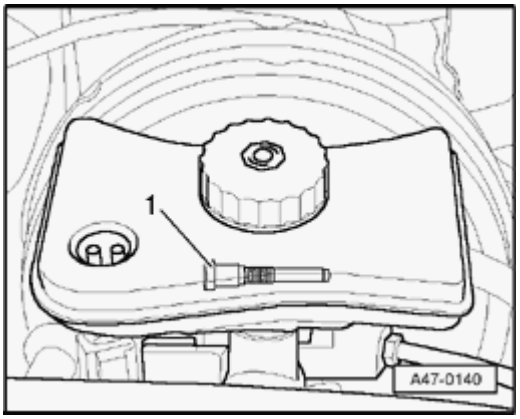


Fig. 47: Location Of Brake Fluid Reservoir Dowel Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten securing bolt - **1** - for brake fluid reservoir and connect connector at brake fluid level warning contact.

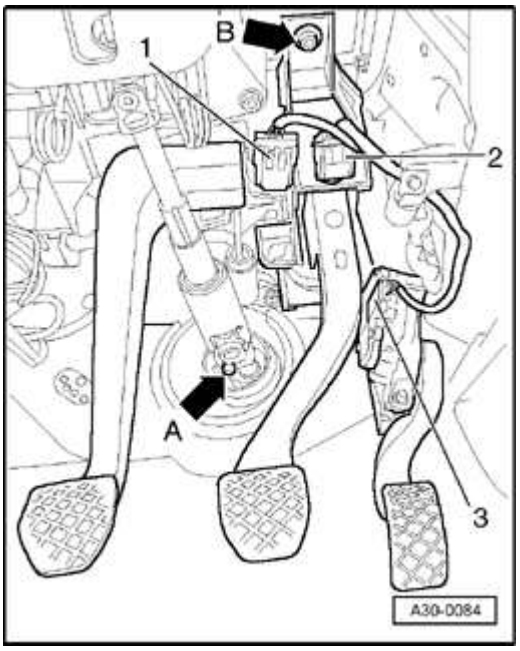


Fig. 48: Locating Steering Column At Steering Gear And Disconnecting Connector On Clutch Pedal Switch, Brake Pedal Switch And On Accelerator Pedal Module
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten hex socket head bolt - **arrow B** - for securing pedal cluster to instrument panel carrier to 25Nm.
- Connect connectors - **1** - , - **2** - and - **3** -.
- If installed, connect connector for Clutch Pedal Starter Interlock Switch F 194.
- Connect brake pedal to brake servo --> **47 - BRAKES - HYDRAULIC COMPONENTS** .

- Secure steering column to steering gear - **arrow A** - --> **48 - STEERING** .

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- Install over-center spring.
- Install storage compartment on drivers side -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for Cabriolet

  .
- Bleed clutch system --> **Clutch hydraulic system, bleeding**.

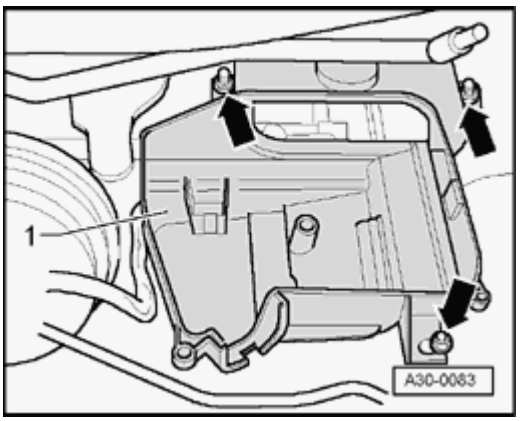


Fig. 49: Electronics Box Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert electronics box and tighten nuts - **arrows** - to 4Nm.
- Route engine wiring harness and plug in connector in connector console.
- Install engine control unit --> **24 - MULTIPORT FUEL INJECTION (MFI)** or **24 - FUEL INJECTION SYSTEM** .
- If applicable, install auxiliary relay carrier and auxiliary fuse carrier -->
  - **97 WIRING**
  - **97 WIRING** for Cabriolet

  .
- Press on cover (hand-tight) and tighten bolts in diagonal sequence to 4Nm.
- Follow steps required after connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for Cabriolet

  .

Clutch hydraulic system, bleeding

Special tools, testers and auxiliary items required

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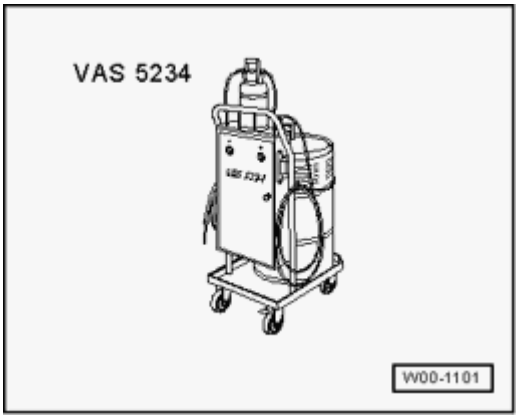


Fig. 50: Identifying Brake Filler And Bleeder Unit VAS 5234
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Brake filler and bleeder unit VAS 5234

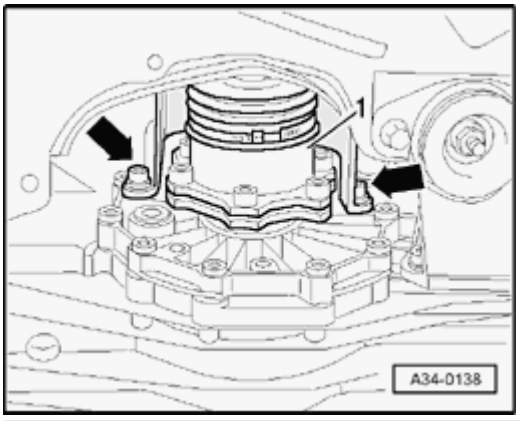
Brake fluid specification --> **47 - BRAKES - HYDRAULIC COMPONENTS** .

Procedure

NOTE:

- **Open the bleeder valve before switching on the bleeding appliance.**
- **When performing the following steps, make sure that no brake fluid escapes onto the transmission.**
- **The clutch system must be bled after performing work on the hydraulic clutch mechanism.**
- **Before bleeding the clutch system, pull out clutch pedal and top off brake fluid to "Max" marking on brake fluid reservoir.**
- **The clutch system should be bled at the same intervals as the brake system.**

- Connect brake filler and bleeder unit VAS 5234, but do not switch on at this stage.
- If installed, remove sound insulation beneath transmission.



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Fig. 51: Axle Shaft Shielding Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If installed, remove heat shield - **arrows** - for drive axles (left-side).

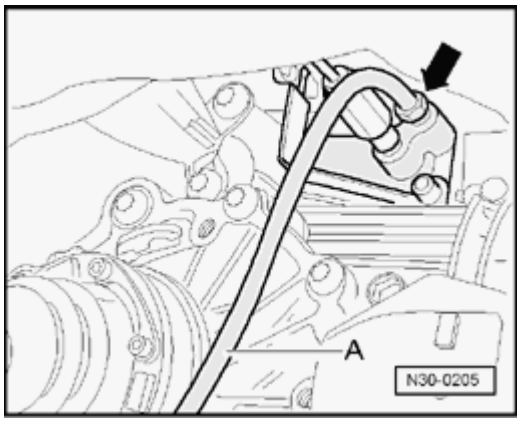


Fig. 52: Connecting Bleeder Hose To Clutch Slave Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect bleeder hose - **A** - to slave cylinder - **arrow** - and open bleeder valve.
- Connect bleeder hose to pressure hose of fluid collector bottle.
- Switch on bleeder appliance and allow about 100cm^3 of brake fluid to drain out.

- Operating pressure 2.5 bar

NOTE:

- **Make sure bleeder hose is correctly installed during bleeding operation.**

- Close bleeder valve and tighten to4.5Nm.
- Depress clutch pedal several times after bleeding process is completed.
- Repeat bleeding procedure if necessary.
- If installed, screw heat shield for drive axle (left-side) onto transmission.

Tightening torques

Component		Nm
Heat shield for drive axle to transmission		23

CLUTCH RELEASE MECHANISM, SERVICING

Clutch release mechanism, servicing

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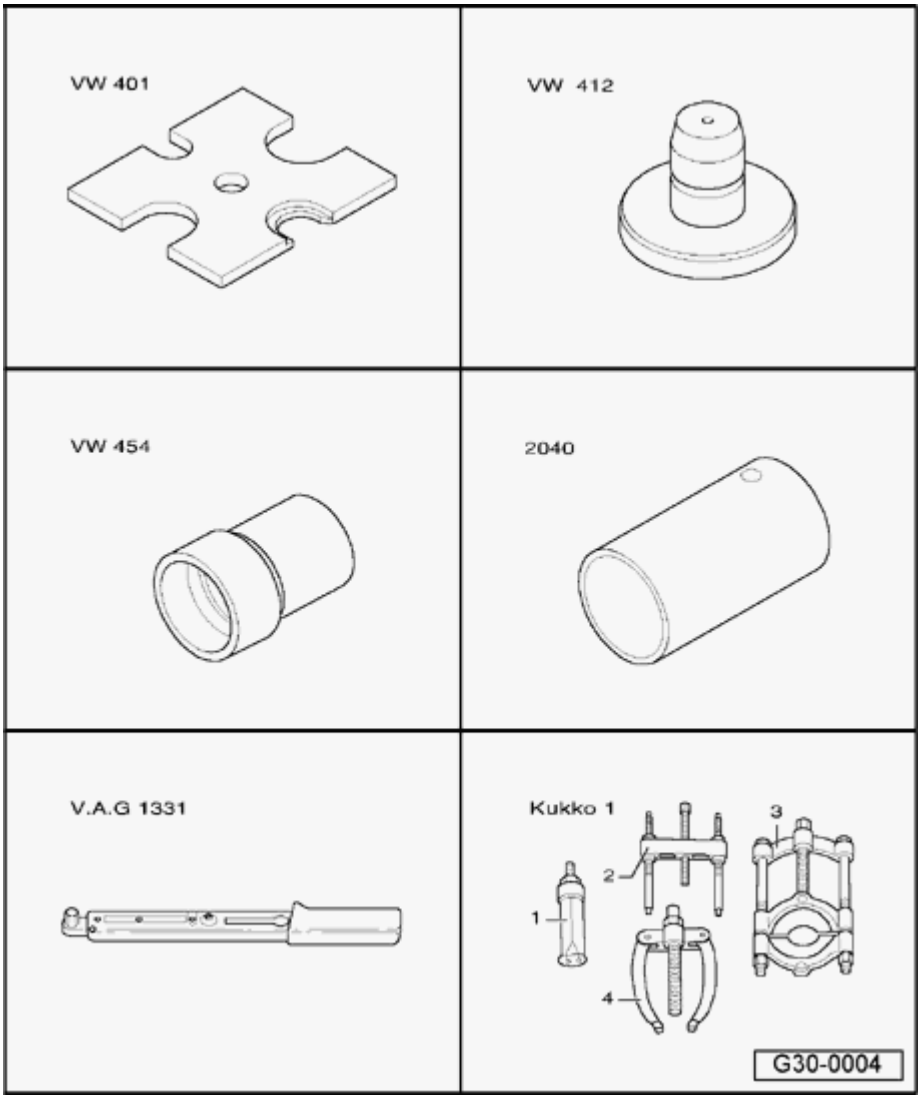


Fig. 53: Identifying Special Tools -- Clutch Release Mechanism, Servicing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Thrust plate VW 401
- Thrust disc VW 412
- Thrust tube VW 454
- Tube 2040

- Torque wrench V.A.G 1331
- **- 1 -** Internal puller Kukko 21/4
- **- 4 -** Counter-support Kukko 22/1
- **Locking fluid AMV 185 101 A1**

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- **Sealing grease G 052 128 A1**
- **Copper grease Z 381 351 TE**
- **Adhesive AMV 195 KD1 01**

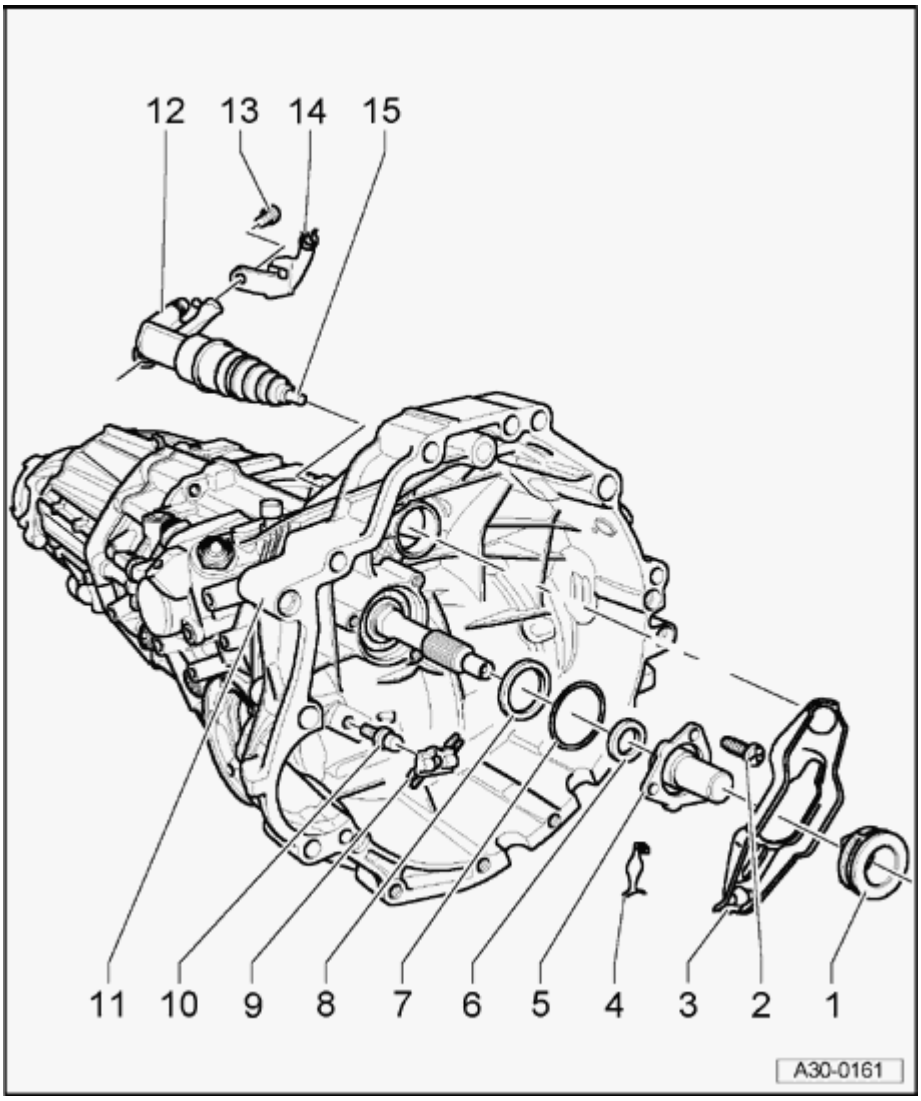


Fig. 54: Clutch Release Mechanism Remove/Install Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Release bearing

- Do not wash out; wipe clean only
- Replace bearings if noisy
- Servicing release bearing with glued plastic ring **Checking and servicing release bearing with glued plastic ring**
- Checking release bearing with mechanically attached plastic ring **Checking release bearing with mechanically attached plastic ring**

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- Replace if running mark (groove) is too deep **Checking release bearing with mechanically attached plastic ring**
- Retainer tabs on release bearing must engage in release lever

2 - TORX bolt, 35 Nm

- 3x
- Apply **locking fluid AMV 185 101 A1** when installing

3 - Clutch release lever

- Before installing, lubricate area which makes contact with operating rod of slave cylinder with **copper grease Z381351TE** .

4 - Retaining spring

- Secure to clutch release lever

5 - Guide sleeve

- Installation position: Oil drain hole points downward.
- Before removing and installing, cover input shaft splines with a shrink-fit hose to protect oil seal.

6 - Seal

- For input shaft
- Pack space between sealing lip and dust lip half full with **sealing grease G 052 128 A1** .

7 - O-ring

- Always replace

8 - Convex washer

9 - Intermediate piece

- Installation position: insert locating element between ribs of housing

10 - Ball head stud

- Lubricate with MoS_2 grease.

11 - Transmission

12 - Slave cylinder

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- Removing and installing --> **Slave cylinder, removing**
- Do not operate clutch pedal after slave cylinder has been removed.
- Follow correct procedure when bleeding --> **Clutch hydraulic system, bleeding**.
- Tighten bleeder valve to 4.5Nm.

- When installing push in until the securing bolt can be installed.

13 - Hex socket head bolt -23 Nm-

- Self-locking
- Replace

14 - Bracket

- For line/hose assembly
- Bolt to transmission with slave cylinder

15 - Operating rod

- Lubricate end of operating rod with **copper grease Z381351TE** .

Checking and servicing release bearing with glued plastic ring

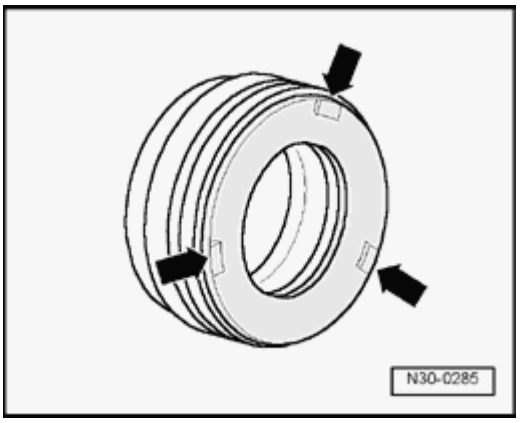


Fig. 55: Servicing Release Bearing With Plastic Ring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Identification: inner side of plastic ring has three tabs - **arrows** -.

The plastic ring - **arrows** - may come loose from the release bearing when the transmission or release bearing is removed. The release bearing does not have to be replaced if this happens.

- Before installing the transmission, glue loose plastic ring back onto bearing with **adhesive AMV195KD101** .

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Three square tabs - **arrows** - of the plastic ring engage in recesses of the bearing ring.

- The release bearing must be replaced if the groove worn on the plastic ring is deeper than 0.8 mm.

Checking release bearing with mechanically attached plastic ring

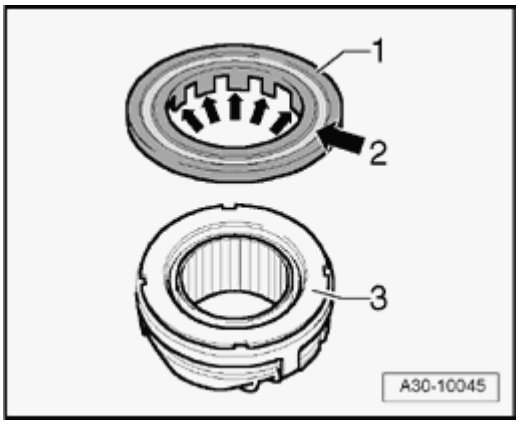


Fig. 56: Checking Release Bearing With Plastic Ring Attached
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Identification: retaining tabs around plastic ring - **arrows** -.

- The release bearing must be replaced if the plastic ring - **1** - has come loose.
- The release bearing - **3** - must be replaced if the groove - **arrow2** - worn on the plastic ring - **1** - is deeper than 0.8mm.

Pulling oil seal out of guide sleeve

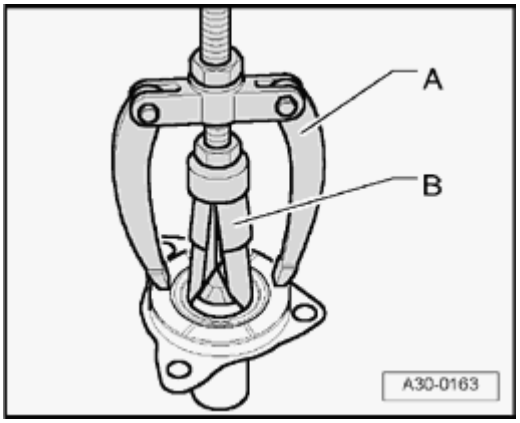


Fig. 57: Pulling Oil Seal Out Of Guide Sleeve
Courtesy of VOLKSWAGEN UNITED STATES, INC.

A - Counter-support, e.g. Kukko 22/1

B - Internal puller 23.5 to 30 mm, e.g. Kukko 21/4

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Pressing oil seal into guide sleeve (press in onto stop)

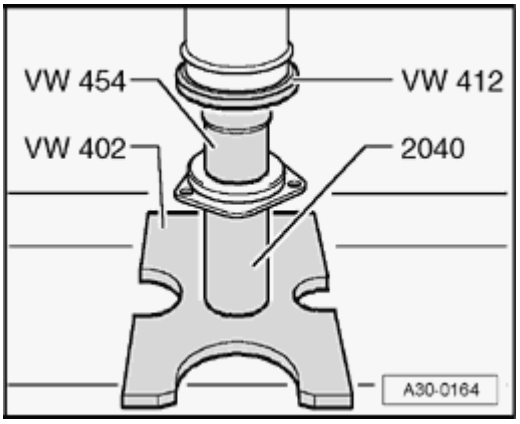


Fig. 58: Pressing Oil Seal Into Guide Sleeve (Press In Onto Stop)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **The open side of seal faces toward thrust tube VW 454.**

Slave cylinder, removing

Observe the notes on removing and installing clutch master cylinder and slave cylinder --> **Notes on removing and installing master cylinder and slave cylinder**.

Special tools, testers and auxiliary items required

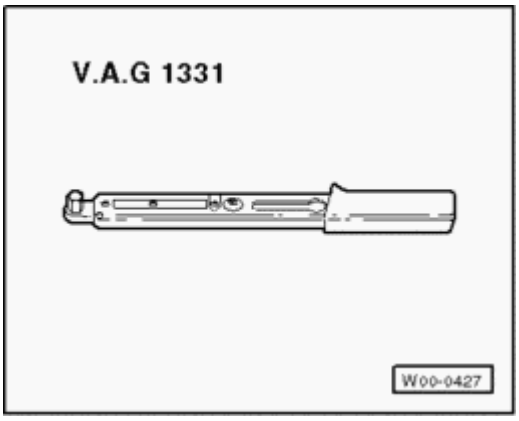


Fig. 59: Identifying Torque Wrench V.A.G. 1331
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Torque wrench V.A.G 1331
- **Lithium grease G052150A2**
- **Copper grease Z381351TE**

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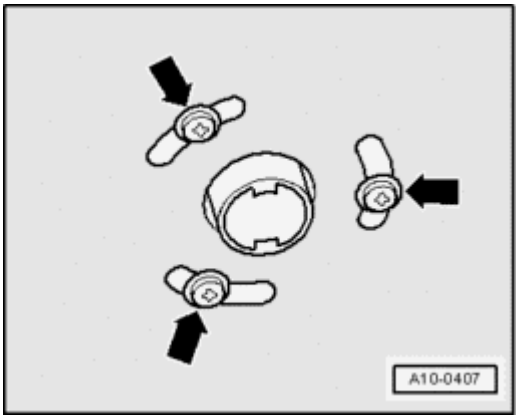


Fig. 60: Fasteners
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removing

- On vehicles equipped with auxiliary heater, remove bolts - **arrows** - securing exhaust pipe of auxiliary heater to sound insulation.

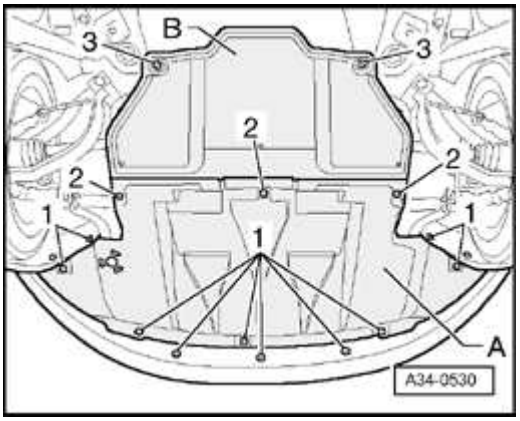


Fig. 61: Front And Rear Sound Insulation And Fasteners
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen bolts/quick release fasteners - **1** - and - **2** - and remove front sound insulation - **A** -.
- If installed, loosen quick release fasteners - **3** - and remove rear sound insulation - **B** -.

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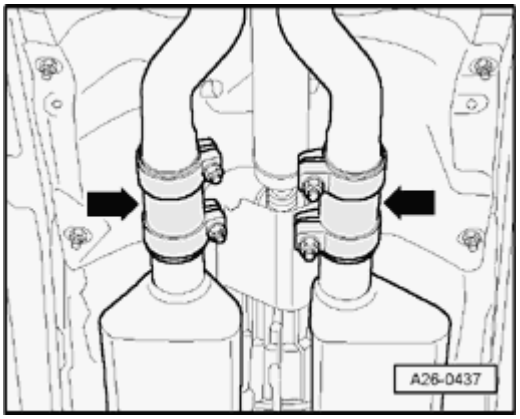


Fig. 62: Exhaust System Clamps
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Vehicles with 6-cylinder engine:

- Disconnect exhaust system at clamp (left-side) - **left arrow** -.

NOTE:

- **The flexible pipe connection (de-coupling element) in the front exhaust pipe must not be bent more than 10° - otherwise it can be damaged.**

- Remove front exhaust pipe (left-side) with catalytic converter --> **26 - EXHAUST SYSTEM, EMISSION CONTROLS** .

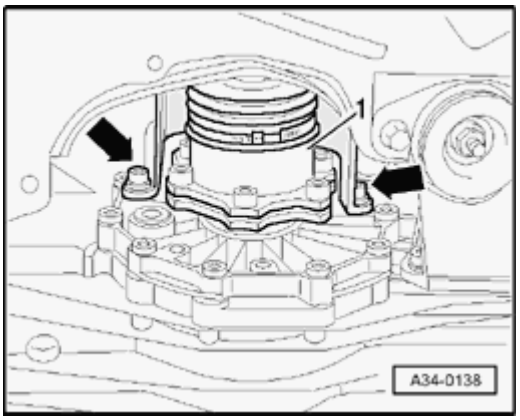


Fig. 63: Axle Shaft Shielding Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove heat shield - **arrows** - for drive axle (left-side).

Continued for all vehicles:

- Remove drive axle (left-side) - **1** - from flange shaft and move to front, making sure you do not damage surface protection.

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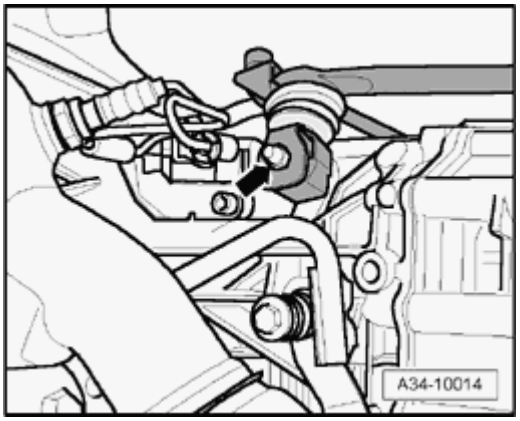


Fig. 64: Selector Shaft Lever Nut
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nut - **arrow** - and detach selector shaft lever from selector shaft.

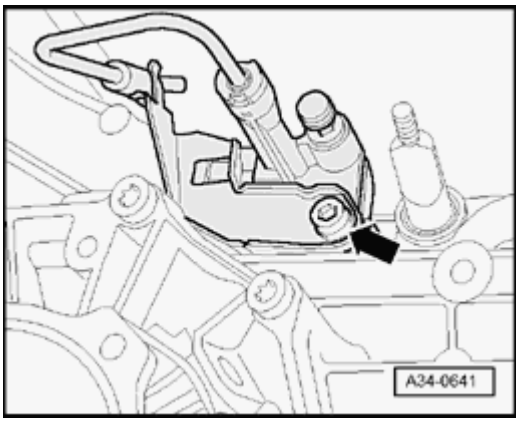


Fig. 65: Slave Cylinder Bracket And Fastener
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **arrow** - and take out slave cylinder from rear.

NOTE:

- **Do not depress clutch pedal after removing slave cylinder. The slave cylinder would then be destroyed once pedal force exceeds approx. 300 N.**

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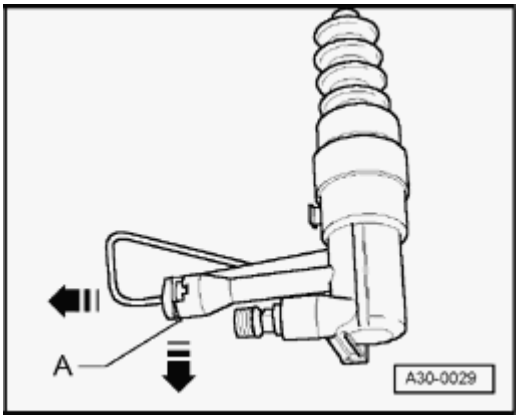


Fig. 66: Removing Hydraulic Line From Slave Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- To remove hose/line assembly, use a screwdriver to pry off clip - **A** - as far as stop. Only then can the hose/line assembly be pulled out.

Installing

Installation is in reverse sequence or removal. Note the following:

NOTE:

- **Do not allow brake fluid to come into contact with the transmission. If necessary, clean the transmission housing.**
- **If the slave cylinder is inserted at an angle, there is a danger that the operating rod will be guided past the clutch release lever.**
- **When installing, press in slave cylinder so that securing bolt can be installed easily.**
- **Always replace securing bolt.**

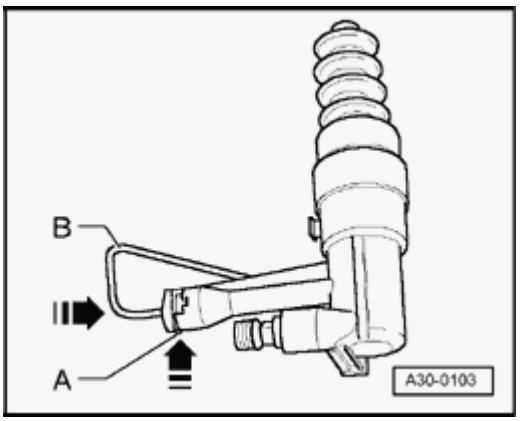


Fig. 67: Identifying Slave Cylinder Hose/Line Assembly
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- To connect line to slave cylinder, press in retaining clip - **A** - as far as it will go.

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- Push line - **B** - into slave cylinder until it engages audibly.

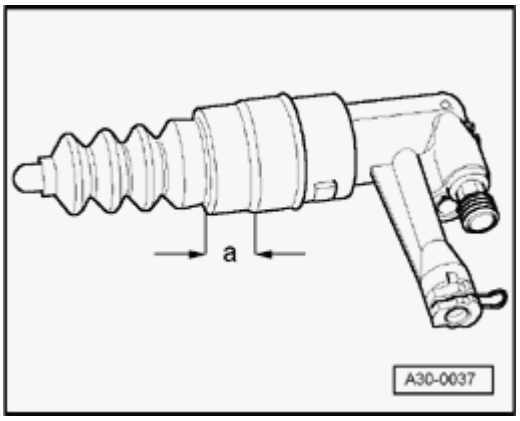


Fig. 68: Coat Boot Area Of Clutch Slave Cylinder With Lithium Grease
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Before inserting slave cylinder in transmission housing, lubricate area - **a** - of sleeve with **lithium grease G052150A2** .
- Lightly lubricate surface where operating rod and clutch release lever make contact with **copper grease Z381351TE** .

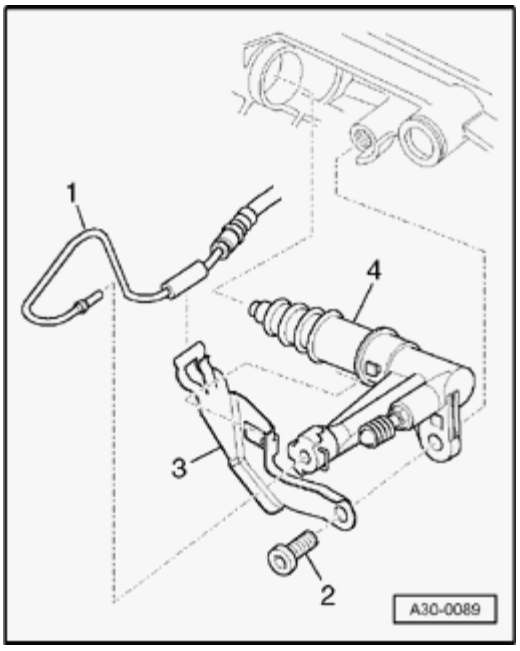


Fig. 69: Clutch Slave Cylinder, Bracket And Hose/Line Assembly
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Attach bracket for hose/line assembly - **3** - to slave cylinder - **4** -.

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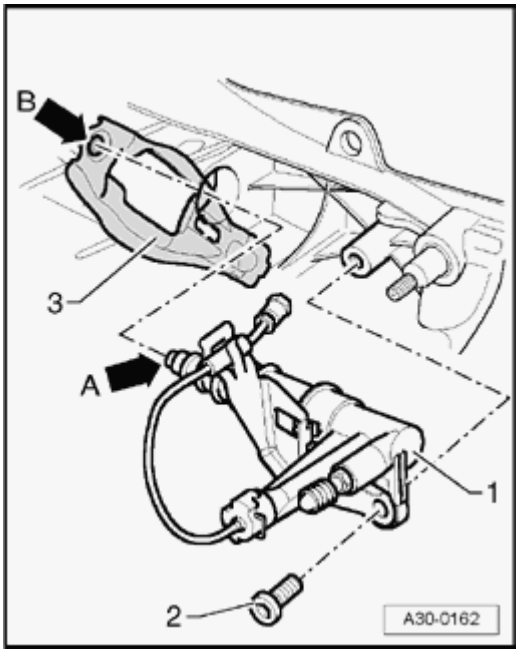
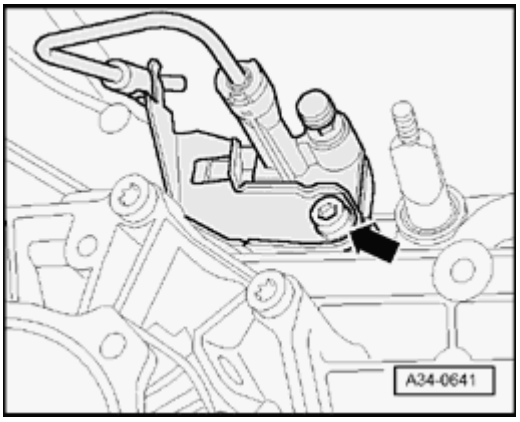


Fig. 70: Guiding Slave Cylinder Into Bore Of Transmission Housing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Guide slave cylinder - **1** - into opening in transmission housing keeping it as straight as possible (without tilting operating rod - **arrow A** -) and insert in recess - **arrow B** - on clutch release lever - **3** -.
- Use new hex socket head bolt - **2** - to secure to transmission.

NOTE:

- **If the slave cylinder - 1 - is inserted at an angle, there is a danger that the operating rod - arrow A - will be guided past the clutch release lever - 3 -.**
- **After installing the slave cylinder carefully press the clutch pedal. If you feel an unusually strong point of resistance when depressing the clutch pedal, you must not press it down further. The push rod of the slave cylinder is likely to have been guided past the clutch release lever. The slave cylinder would then be destroyed once pedal force exceeds approx. 300 N.**



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Fig. 71: Slave Cylinder Bracket And Fastener
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten bolt - **arrow** - to specified torque.
- If line-hose assembly was disconnected at slave cylinder, the clutch system has to be bled after installing slave cylinder --> **Clutch hydraulic system, bleeding**.

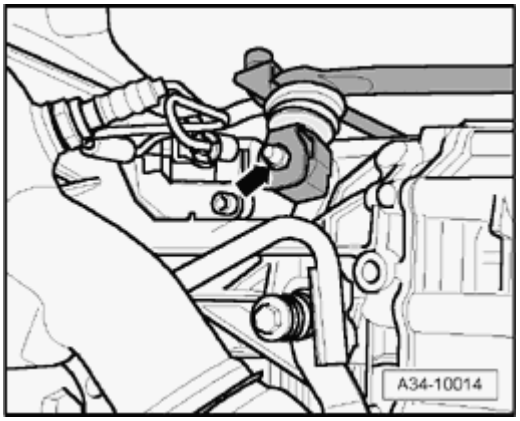


Fig. 72: Selector Shaft Lever Nut
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install selector shaft lever and tighten nut - **arrow** -.
- Bolt drive axle (left-side) to flange shaft --> **40 - FRONT SUSPENSION**

Vehicles with 6-cylinder engine:

- Screw heat shield for drive axle (left-side) onto transmission.
- Install exhaust system and perform stress-free alignment --> **26 - EXHAUST SYSTEM, EMISSION CONTROLS** .

Tightening torques

Component	Nm
Slave cylinder to transmission* See note	23
Selector shaft lever to transmission	23
Heat shield for drive axle to transmission	23

* Replace bolt

CLUTCH, SERVICING

Clutch, servicing

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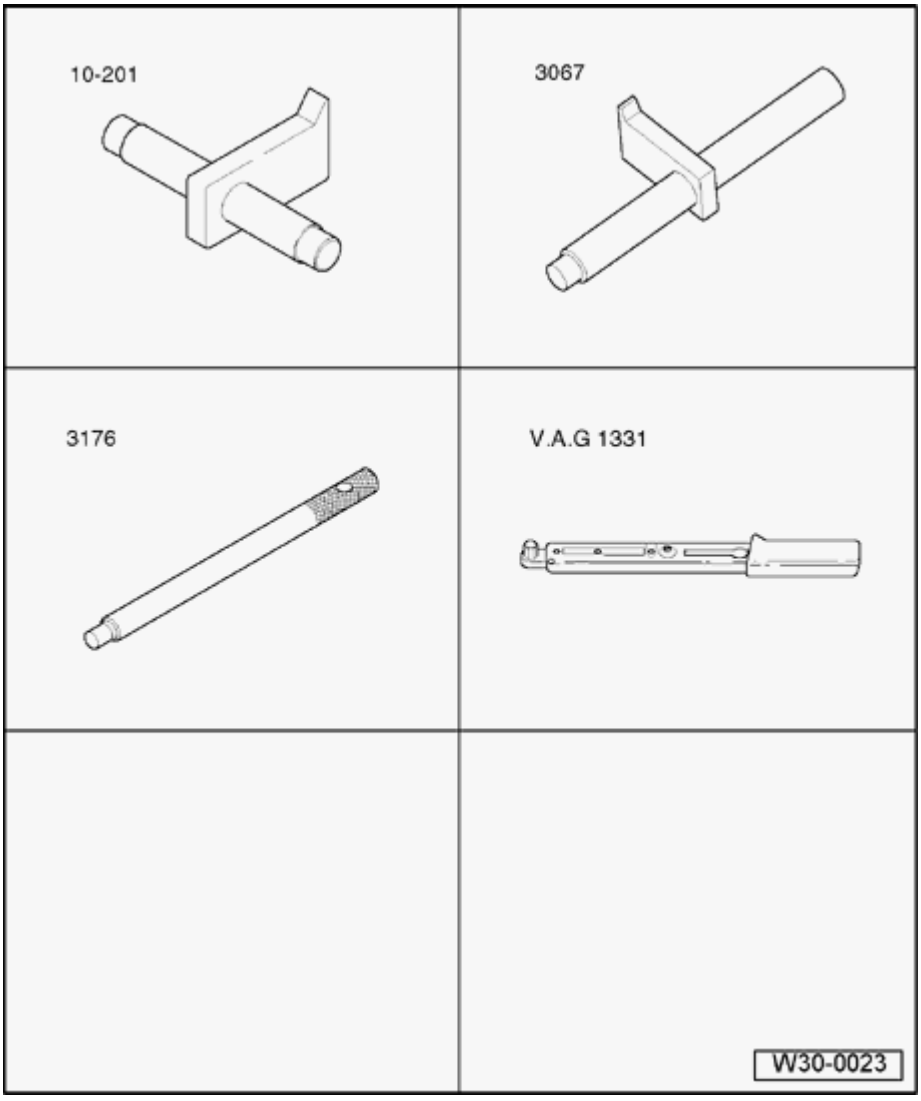


Fig. 73: Identifying Special Tools - Clutch, Servicing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Counterhold tool 10 - 201
- Counterhold tool 3067
- Centering mandrel 3176
- Torque wrench V.A.G 1331

- **Grease for clutch plate splines G 000 100**

NOTE:

- **Refer to general repair instructions --> General repair instructions.**
- **Observe the notes on removing and installing master cylinder and slave cylinder --> Notes on removing and installing master cylinder and slave**

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cylinder.

- **On vehicles with SAC pressure plate (self-adjusting clutch, LuK version) an adjuster ring has to be reset when only the clutch plate is replaced --> Adjuster ring in SAC clutch pressure plate, resetting.**
- **To avoid damaging SAC pressure plate when removing and installing, observe assembly instructions for SAC pressure plate --> Clutch with SAC pressure plate, removing and installing.**
- **Check that SAC pressure plate is not distorted Check SAC pressure plate for warpage, cracks and burns.**
- **If the vehicle is fitted with a self-adjusting clutch (Sachs version), the clutch plate and pressure plate can only be replaced together --> Self-adjusting clutch (Sachs version), servicing.**
- **replace clutch plate and pressure plate if riveted fastening is damaged or loose.**
- **Select the correct clutch plate and pressure plate according to engine code**
- **To avoid damaging dual-mass flywheel during removal, please observe instructions for removal Removing dual-mass flywheel**
- **Clean input shaft splines and (in the case of used clutch plates) the hub splines. Remove corrosion and apply only a very thin coating of grease for clutch plate splines G000100 to the splines. Then move clutch plate backward and forward on the input shaft until hub moves freely on shaft. It is important to remove excess grease.**
- **Pressure plates have an anti-corrosion coating and are greased. Only the contact surface may be cleaned, otherwise the service life of the clutch will be considerably reduced.**
- **If the clutch has burned out, thoroughly clean the bell housing, flywheel and parts of the engine facing the transmission in order to prevent odors.**

Servicing conventional clutch --> **Conventional clutch, servicing**

Servicing self-adjusting clutch (Sachs version) --> **Self-adjusting clutch (Sachs version), servicing**

Servicing clutch with SAC pressure plate (LuK version) --> **Clutch with SAC pressure plate (LuK version), servicing**

Conventional clutch, servicing

- Please refer to notes --> **Clutch, servicing**.
- Remove transmission to work on clutch --> **Transmission, removing and installing**.

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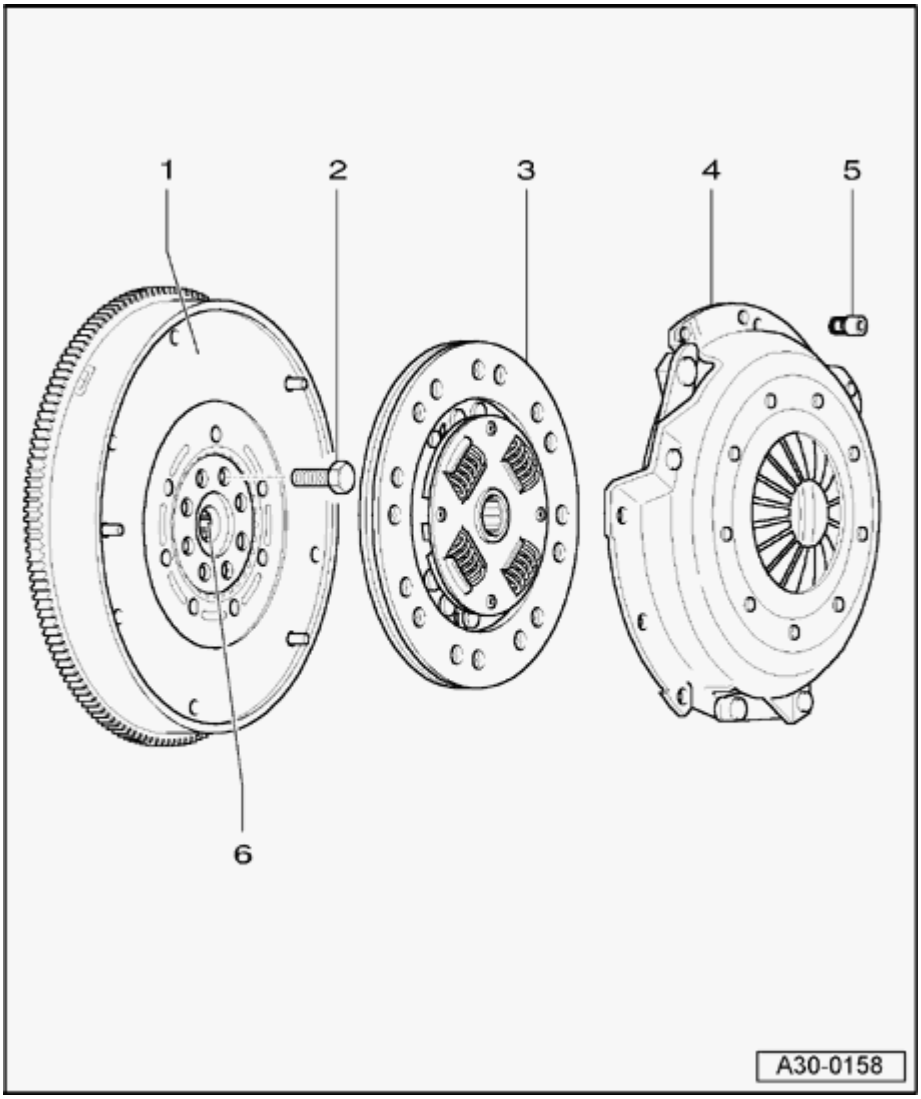


Fig. 74: Conventional Clutch Remove/Install Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Flywheel/dual mass flywheel

- Ensure that dowel pins fit tightly
- Contact surface for clutch lining must be free of grooves, oil and grease
- Removing and installing --> **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK**

2 - Bolt for flywheel

- Always replace
- Bolt length: 22.5 mm; 60 Nm plus an additional 90° $^{1}/_{4}$ turn
- Bolt length: 43 mm; 60 Nm plus an additional 180° $^{1}/_{2}$ turn

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3 - Clutch plate

- Installation position: Clutch lining must make full contact with flywheel
- Marking "Getriebeseite" (transmission side), if provided, faces pressure plate/transmission.
- Coil springs (damper assembly) point toward pressure plate and transmission
- Centralize **Centralizing clutch plate and removing and installing pressure plate**
- Clutch plate diameter --> **Code letters, allocation, transmission ratios, capacities**

4 - Pressure plate

- Removing and installing **Centralizing clutch plate and removing and installing pressure plate**
- Check ends of diaphragm spring **Checking ends of diaphragm spring**
- Check spring connection and rivets **Checking spring connection and rivet**
- Check wire ring **Checking wire ring**

5 - Bolt -22 Nm-

- Loosen and tighten gradually in several stages and in diagonal sequence

6 - Needle bearing

- Removing and installing --> **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK**

Centralizing clutch plate and removing and installing pressure plate

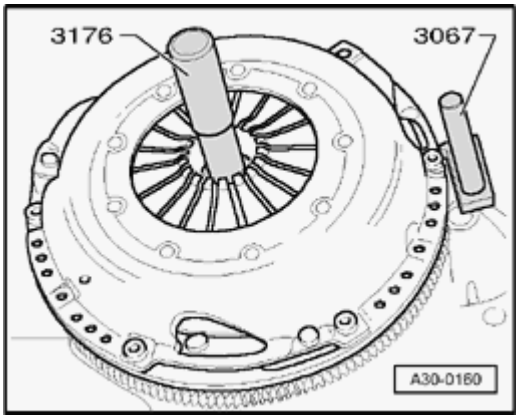


Fig. 75: Changing Over Flywheel Retainer 3067
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen and tighten bolts gradually in several stages and in diagonal sequence.
- To remove, reverse position of counter-hold tool 3067 or counter-hold tool 10 - 201.

Installation position of clutch plate: coil springs (damper assembly) or marking "Getriebeseite" point toward

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pressure plate and transmission.

- Before tightening securing bolts, clutch lining and contact surface of pressure plate must make full contact with flywheel.

Checking ends of diaphragm spring

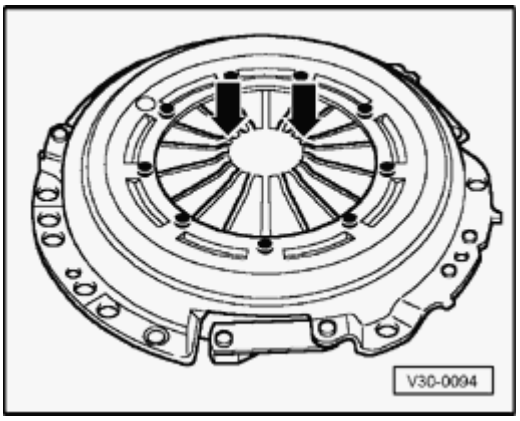


Fig. 76: Checking Ends Of Diaphragm Spring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wear up to half the thickness of the diaphragm spring is permitted.

NOTE:

- **When performing repairs, always match the correct clutch pressure plate and clutch plate by checking engine code.**

Checking spring connection and rivet

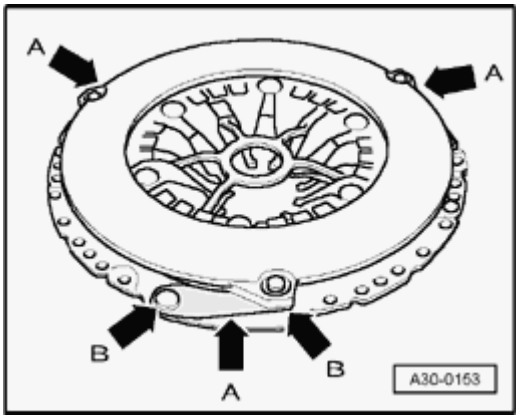


Fig. 77: Checking Spring And Rivet Connections
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check spring connections - **arrows A** - for damage and make sure riveted fastenings - **arrows B** - are seated tightly.

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NOTE:

- **replace pressure plate if spring connections are broken or badly bent, or if riveted fastenings are loose.**

Checking wire ring

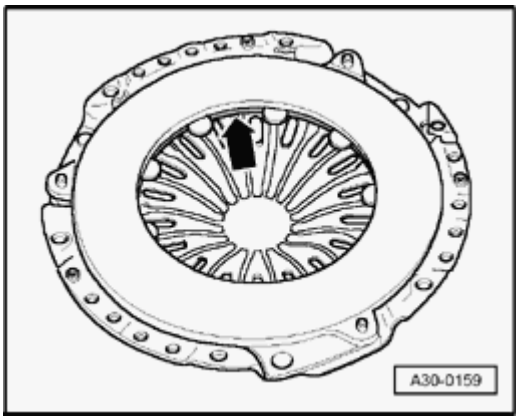


Fig. 78: Identifying Wire Ring In Thrust Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check that wire ring in pressure plate - **arrow** - is not damaged. Replace pressure plate if wire ring is broken.

Self-adjusting clutch (Sachs version), servicing

CAUTION: On this type of clutch the pressure plate and clutch plate can only be replaced together.

- Please refer to notes --> **Clutch, servicing**.
- Remove transmission to work on clutch--> **Transmission, removing and installing**.
- Identification **Identification**
- Select correct clutch plate and pressure plate according to engine code

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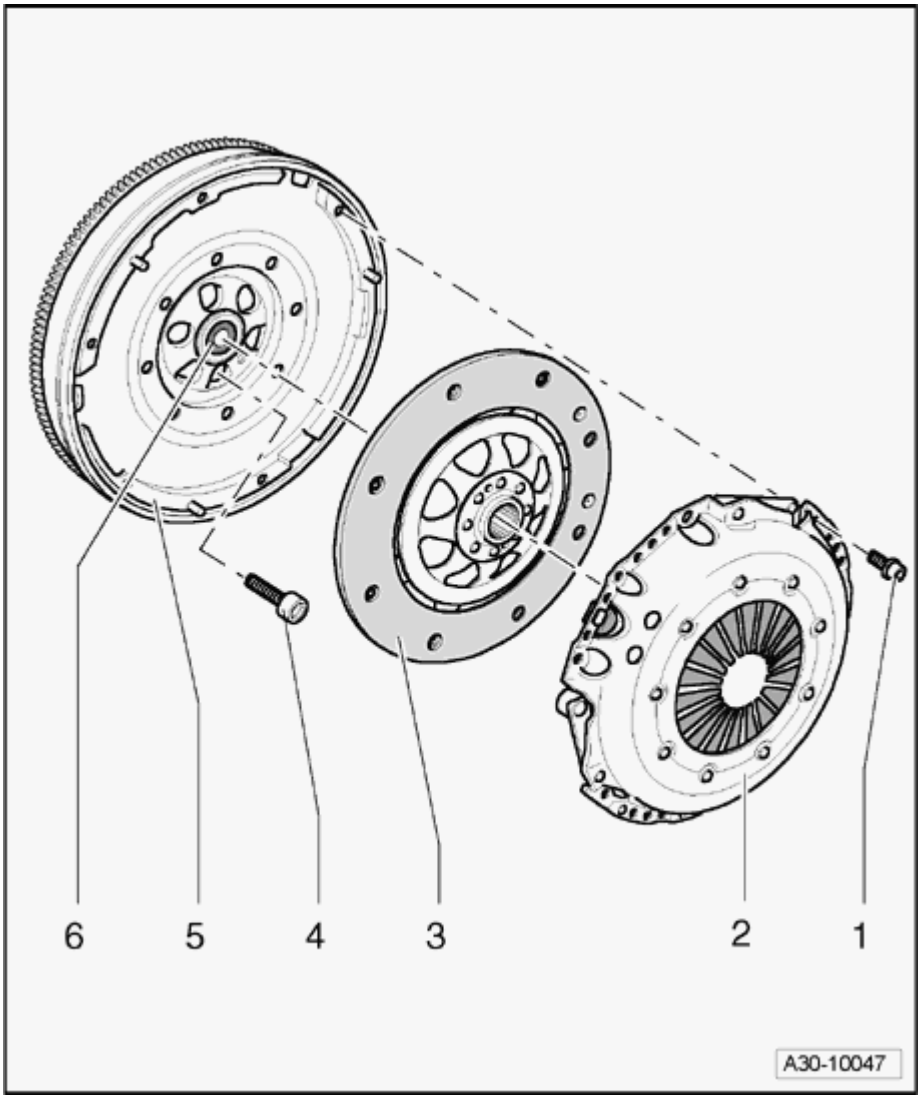


Fig. 79: Self-Adjusting Clutch Assembly Overview (Manufactured By Sachs)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Bolt -22 Nm-

- Observe instructions for installation --> **Self-adjusting clutch (Sachs version), removing and installing**

2 - Pressure plate

- Self-adjusting
- Identification **Identification**
- Pressure plate and clutch plate can only be replaced together.
- Removing and installing --> **Self-adjusting clutch (Sachs version), removing and installing**

- Check ends of diaphragm spring **Checking ends of diaphragm spring**

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- Check spring connection and rivets **Checking spring connection and rivet**
- Check wire ring **Checking wire ring**

3 - Clutch plate

- Pressure plate and clutch plate can only be replaced together.
- Installation position: Clutch lining must make full contact with flywheel
- The marking "Getriebeseite" (transmission side), if provided, faces pressure plate/transmission.
- If installed, coil springs (damper assembly) face pressure plate and transmission

- Centralize **Fig. 89**
- Clutch plate diameter --> **Code letters, allocation, transmission ratios, capacities**

4 - Bolt for flywheel

- Always replace
- Observe instructions for removal **Removing dual-mass flywheel**
- Bolt length: 22.5 mm; 60 Nm plus an additional 90° $^{1}/_{4}$ turn
- Bolt length: 43 mm; 60 Nm plus an additional 180° $^{1}/_{2}$ turn

5 - Dual-mass flywheel

- Ensure that dowel pins fit tightly
- Contact surface for clutch lining must be free of grooves, oil and grease
- Observe instructions for removal **Removing dual-mass flywheel**

6 - Needle bearing

- Removing and installing --> **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK**

Identification

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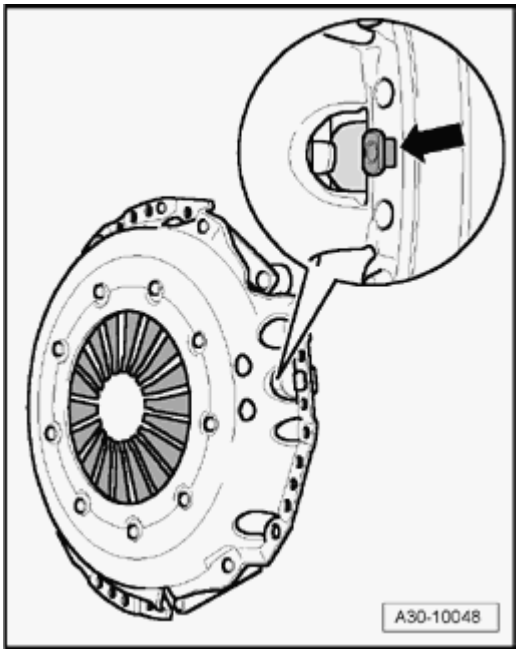


Fig. 80: Pressure Plate With Impact (Position Sensor)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Pressure plate with stop mechanism (position sensor) - **arrow** -.

Checking ends of diaphragm spring

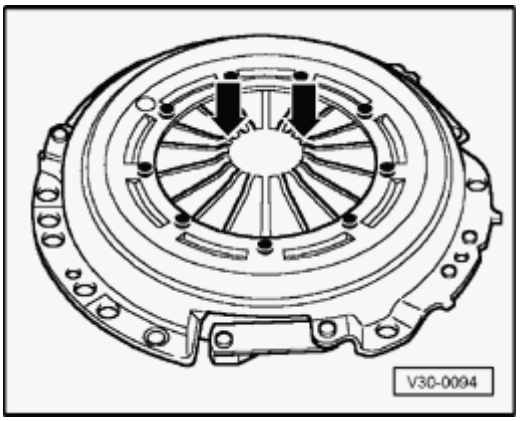


Fig. 81: Checking Ends Of Diaphragm Spring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wear up to half the thickness of the diaphragm spring is permitted.

NOTE:

- **Important: When performing repairs, always select the correct clutch pressure plate and clutch plate by checking engine code.**

Checking spring connection and rivet

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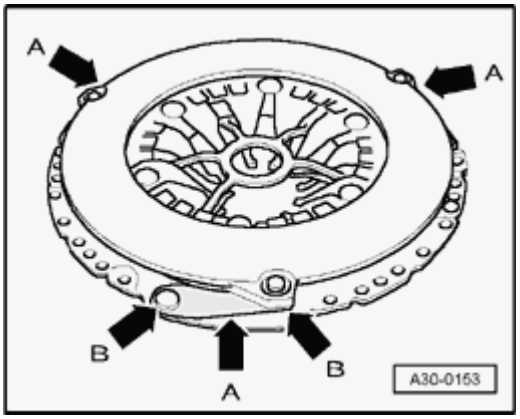


Fig. 82: Checking Spring And Rivet Connections
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check spring connections - **arrows A** - for damage and make sure riveted fastenings - **arrows B** - are seated tightly.

NOTE:

- **Replace pressure plate if spring connections are broken or badly bent, or if riveted fastenings are loose.**

Checking wire ring

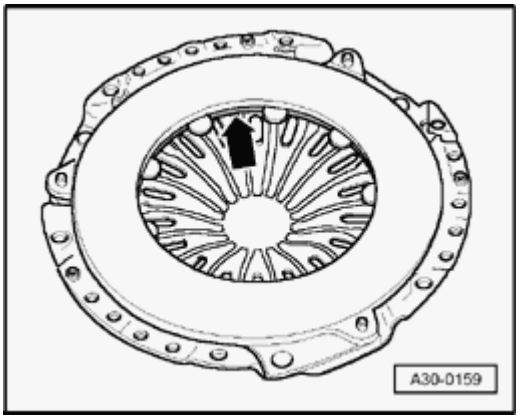


Fig. 83: Identifying Wire Ring In Thrust Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check that wire ring in pressure plate - **arrow** - is not damaged. replace pressure plate if wire ring is broken.

Removing dual-mass flywheel

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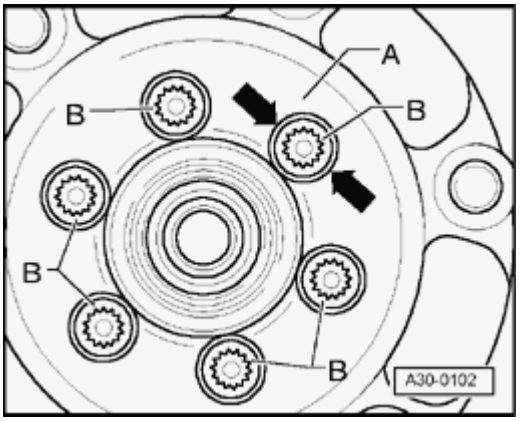


Fig. 84: Identifying Dual-Mass Flywheel & Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Do not use an impact wrench or pneumatic wrench to remove bolts - B - : this would severely damage the dual-mass flywheel. Bolts - B - must always be removed by hand.**

- Rotate flywheel - **A** - so that bolts - **B** - are aligned centrally behind the holes - **arrows** -.
- When removing bolts - **B** - , make sure the bolt heads do not contact the flywheel - **arrows** - because this would damage the flywheel when the bolts are turned further.
- Removing and installing dual-mass flywheel --> **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for the appropriate engine code.

Self-adjusting clutch (Sachs version), removing and installing

Special tools, testers and auxiliary items required

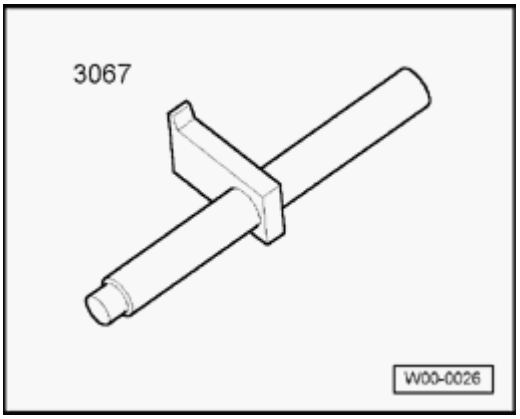


Fig. 85: Identifying Flywheel Retainer 3067
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Counterhold tool 3067

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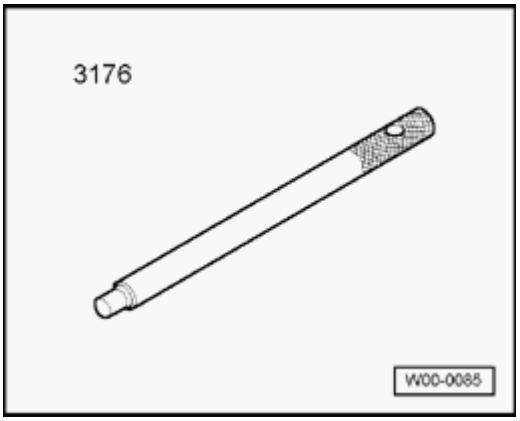


Fig. 86: Identifying Centering Mandrel 3176
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Centering mandrel 3176
- **Grease for clutch plate splines G000100**

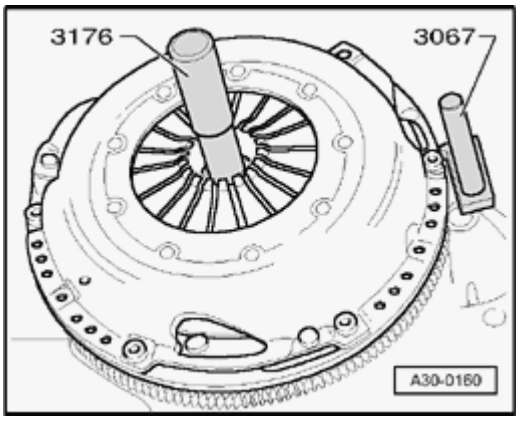


Fig. 87: Changing Over Flywheel Retainer 3067
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Attach counter-hold tool 3067 or counter-hold tool 10 - 201 before loosening bolts.

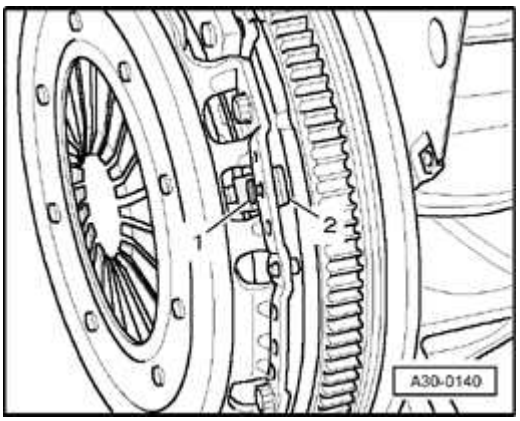


Fig. 88: Identifying Stop & Pin

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

To prevent the pressure plate from becoming distorted during removal (causes clutch grab when driving off), always adhere to the following procedure when unbolting the pressure plate:

- Loosen all six bolts consecutively in clockwise direction and in steps of 90° (1⁄4 turn) until the pressure plate is released.

- Stop - **2** - with pin - **1** - should come loose when the bolts are loosened.

Installing

- Installation position of clutch plate: coil springs (damper assembly) or marking "Getriebeseite" point toward pressure plate and transmission.

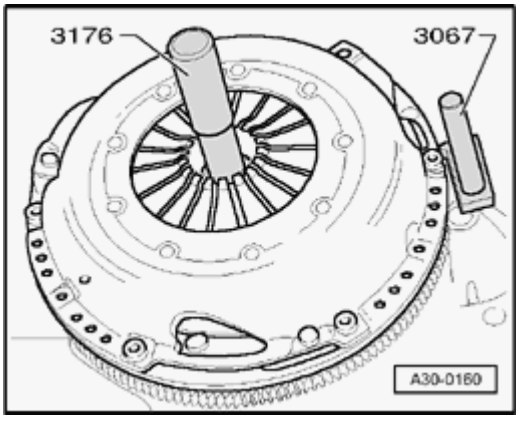


Fig. 89: Changing Over Flywheel Retainer 3067
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- To remove, reverse position of counter-hold tool 3067 or counter-hold tool 10 - 201.
- Use centering mandrel 3176 to centralize clutch plate.

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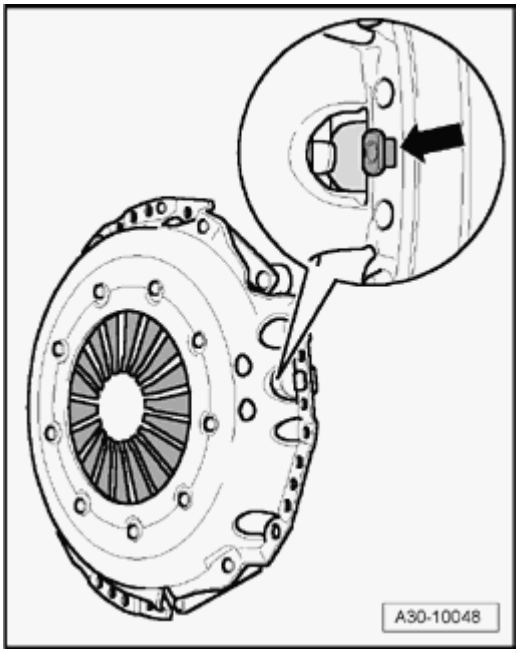


Fig. 90: Pressure Plate With Impact (Position Sensor)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

To prevent the pressure plate from becoming distorted during installation (causes clutch grab when driving off), always adhere to the following procedure when installing the pressure plate:

- Position pressure plate on dowel pins.
- Make sure that the stop mechanism - **arrow** - is free to move.
- Tighten all 6 bolts evenly by hand until bolt heads make contact with pressure plate.
- Tighten all six bolts consecutively in clockwise direction and in steps of 90° (1⁄4 turn) until the housing makes contact with flywheel.

- The stop mechanism - **arrow** - should then lift away from the pressure plate.
- Tighten all 6 bolts to final torque (22Nm) consecutively in clockwise direction.

Clutch with SAC pressure plate (LuK version), servicing

- Please refer to notes --> **Clutch, servicing**.
- Remove transmission to work on clutch --> **Transmission, removing and installing**.

NOTE:

- **"SAC" stands for "Self-Adjusting Clutch".**

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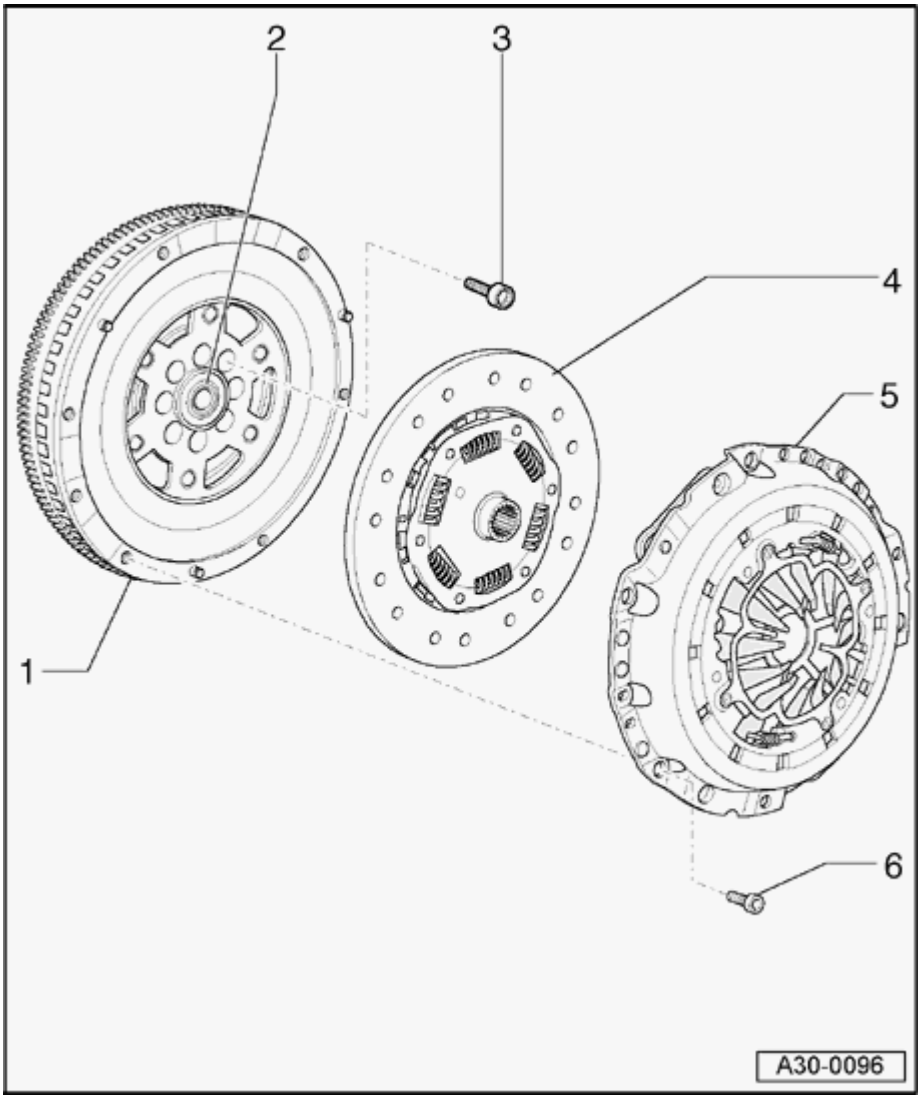


Fig. 91: Clutch With SAC Pressure Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Dual-mass flywheel

- Ensure that dowel pins fit tightly
- Contact surface for clutch lining must be free of grooves, oil and grease
- Observe instructions for removal **Removing dual-mass flywheel**
- Removing and installing --> **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK**

2 - Needle bearing

- Removing and installing --> **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK**

3 - Bolt for flywheel

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- Always replace
- Bolt length: 22.5 mm; 60 Nm plus an additional 90° $^{1}/_{4}$ turn
- Bolt length: 43 mm; 60 Nm plus an additional 180° $^{1}/_{4}$ turn
- Observe instructions for removal **Removing dual-mass flywheel**

4 - Clutch plate

- Installation position: Clutch lining must make full contact with flywheel
- The marking "Getriebeseite" (if provided) faces pressure plate/transmission.
- Coil springs (damper assembly) point toward pressure plate and transmission
- Clutch plate diameter --> **Code letters, allocation, transmission ratios, capacities**

5 - SAC pressure plate

- Removing and installing --> **Clutch with SAC pressure plate, removing and installing**
- Resetting adjuster ring --> **Adjuster ring in SAC clutch pressure plate, resetting**
- Check ends of diaphragm spring **Checking ends of diaphragm spring**
- Check that pressure plate is not warped **Check SAC pressure plate for warpage, cracks and burns**
- Check spring connection and rivets **Checking spring connection and rivet**

6 - Bolt -22 Nm-

- Observe instructions for installation --> **Clutch with SAC pressure plate, removing and installing**

Checking ends of diaphragm spring

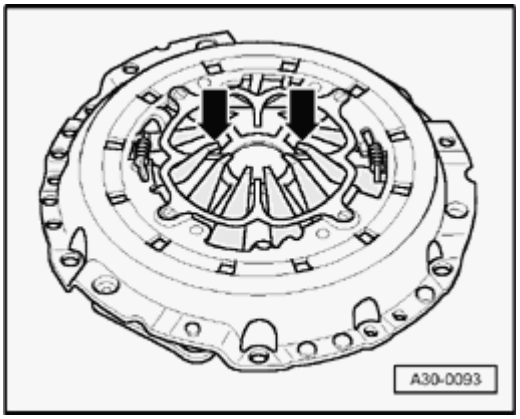


Fig. 92: Checking Ends Of The Diaphragm Spring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wear up to half the thickness of the diaphragm spring is permitted.

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NOTE:

- **Important: When performing repairs, always select the correct clutch pressure plate and clutch plate by checking engine code.**

Checking spring connection and rivet

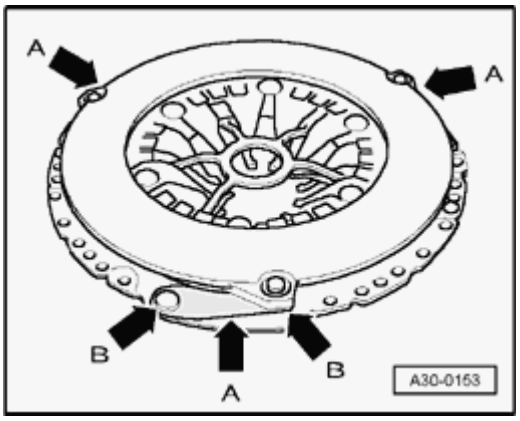


Fig. 93: Checking Spring And Rivet Connections
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check spring connections - **arrows A** - for damage and make sure riveted fastenings - **arrows B** - are seated tightly.

NOTE:

- **Replace pressure plate if spring connections are broken or badly bent, or if riveted fastenings are loose.**

Check SAC pressure plate for warpage, cracks and burns

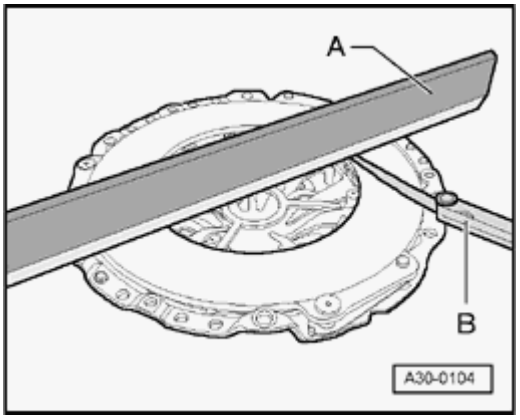


Fig. 94: Check SAC Pressure Plate For Warpage, Cracks And Burns
Courtesy of VOLKSWAGEN UNITED STATES, INC.

A - Straightedge

B - Feeler gauge

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- Pressure plate warpage up to 1.0 mm is allowed

Removing dual-mass flywheel

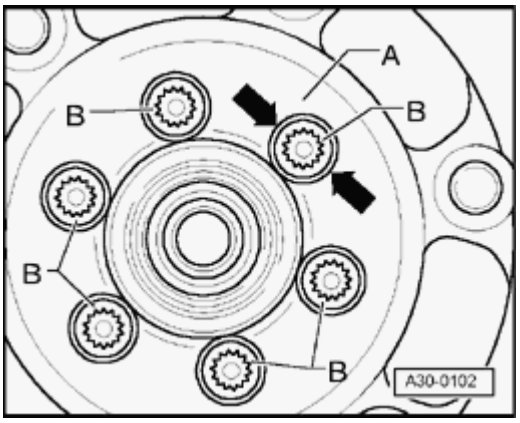


Fig. 95: Identifying Dual-Mass Flywheel & Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Do not use an impact wrench or pneumatic wrench to remove bolts - B - : this would severely damage the dual-mass flywheel. Bolts - B - must always be removed by hand.**

- Rotate flywheel - **A** - so that bolts - **B** - are aligned centrally behind holes - **arrows** -.
- When removing bolts - **B** - , make sure the bolt heads do not contact flywheel - **arrows** - because this would damage the flywheel when the bolts are turned further.
- Removing and installing dual-mass flywheel --> **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for the appropriate engine code.

Clutch with SAC pressure plate, removing and installing

Special tools, testers and auxiliary items required

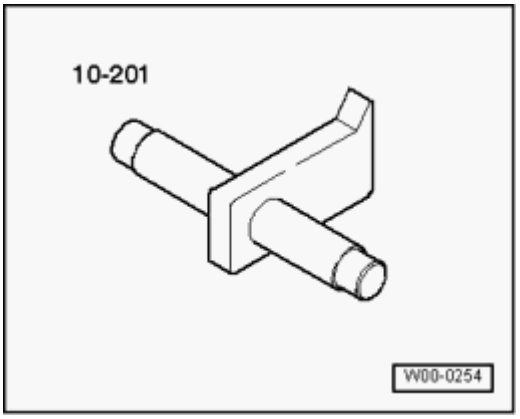


Fig. 96: Counter-Holder Tool 10-201
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Counterhold tool 10 - 201

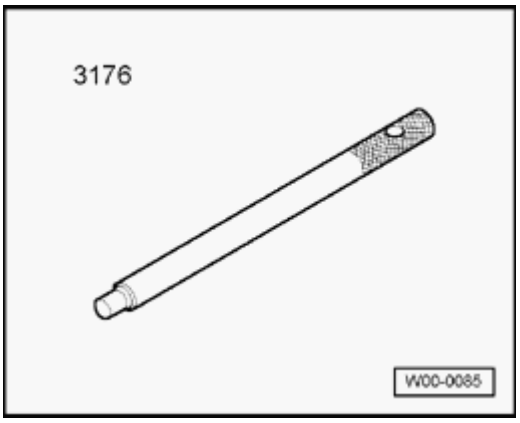


Fig. 97: Identifying Centering Mandrel 3176
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Centering mandrel 3176
- **Grease for clutch plate splines G000100**

Removing

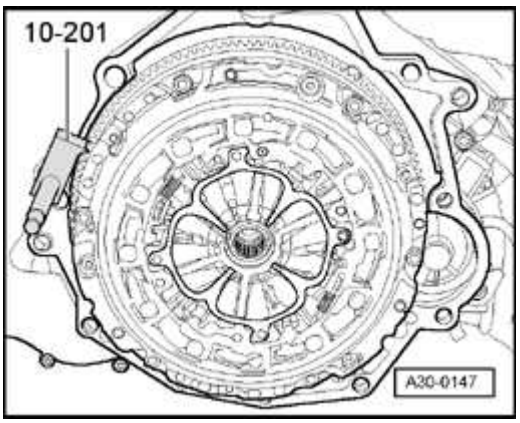


Fig. 98: Counter-Hold Tool 10 - 201 Attached Before Loosening Clutch Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Attach counter-hold tool 10 - 201 before loosening bolts.

To prevent the pressure plate from becoming warped during removal (causes clutch grab when driving off), always adhere to the following procedure when unscrewing the pressure plate:

- Loosen all six bolts consecutively in clockwise direction and in steps of 90° (14 turn) until pressure plate is released.

Installing

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NOTE:

- **Before re-installing the SAC pressure plate, check that it is not warped Check SAC pressure plate for warpage, cracks and burns.**
- **When only the clutch plate is replaced, the adjuster ring in the SAC pressure plate has to be reset before assembly --> Adjuster ring in SAC clutch pressure plate, resetting.**
- **Installation position of clutch plate: coil springs (damper assembly) or marking "Getriebeseite" point toward pressure plate and transmission.**

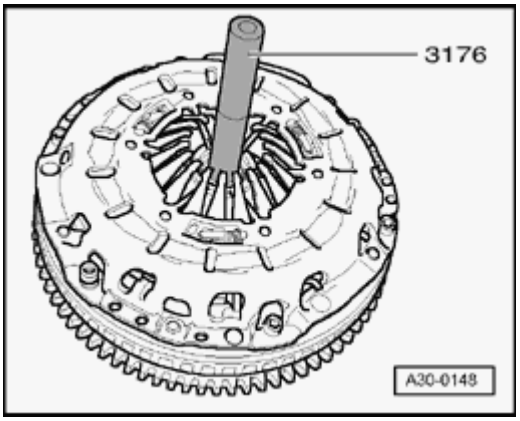


Fig. 99: Using Centering Mandrel 3176 To Centralize Clutch Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Use centering mandrel 3176 to centralize clutch plate.
- Re-position counterhold tool 10 - 201 to tighten bolts.

To prevent the pressure plate from becoming warped during installation (causes clutch grab when driving off), always adhere to the following procedure when installing the pressure plate:

- Position pressure plate on dowel pins.
- Tighten all 6 bolts evenly by hand until bolt heads make contact with pressure plate.
- Tighten all six bolts consecutively in clockwise direction and in steps of 90° (14 turn) until housing makes contact with flywheel.
- Tighten all 6 bolts to final torque (22Nm) consecutively in clockwise direction.

Adjuster ring in SAC clutch pressure plate, resetting

NOTE:

- **"SAC" stands for "Self-Adjusting Clutch".**
- **When installing a new clutch plate in conjunction with a used SAC pressure plate, the adjuster ring in the pressure plate has to be reset by turning it back as far as it will go. If you do not reset the adjuster ring in the pressure plate, the SAC pressure plate will operate with reduced clamping force, which will cause excessive wear, especially of the clutch plate (clutch will then slip).**

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- **If the clutch plate is not replaced, it is not necessary to reset the adjuster ring.**
- **New SAC pressure plates are pre-set accordingly, and do not have to be reset.**

Special tools, testers and auxiliary items required

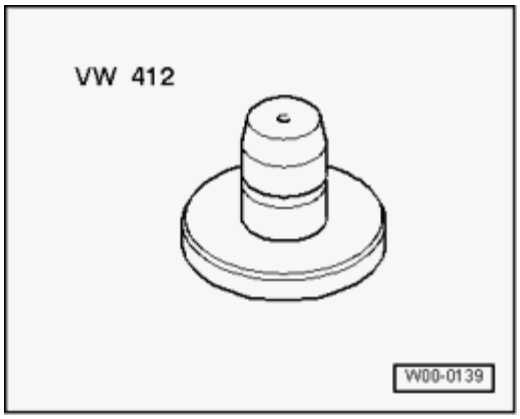


Fig. 100: Thrust Disc VW 412
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press tool VW412

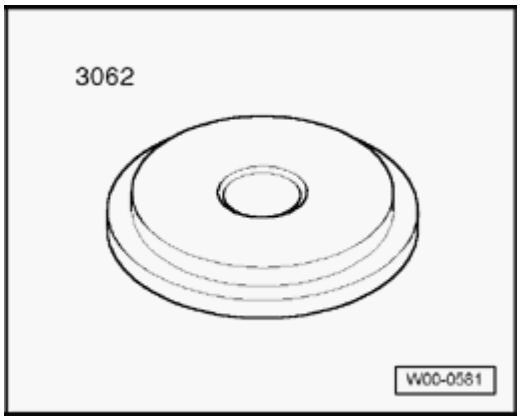


Fig. 101: Identifying Thrust Pad 3062
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Thrust pad 3062

Procedure

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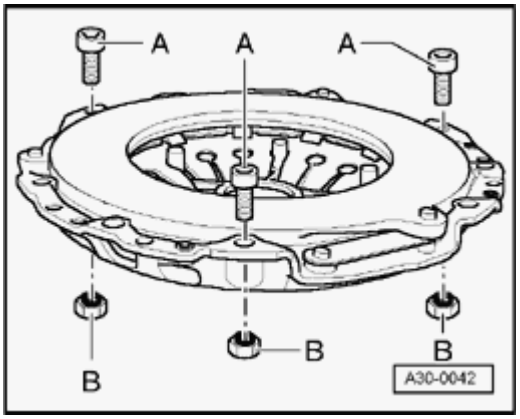


Fig. 102: Inserting Securing Bolts Into Mounting Holes On Pressure Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert 3 bolts for securing pressure plate - **A** - into mounting holes on pressure plate located at 120° (13) intervals, as shown in illustration.
- Screw 3 nuts - **B** - M8 onto bolts - **A** - and tighten nuts.

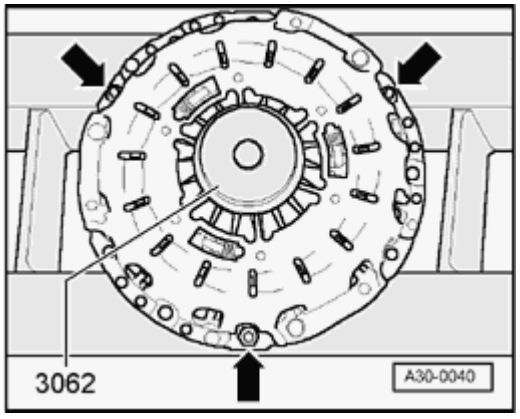


Fig. 103: Placing SAC Pressure Plate Onto Press
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place SAC pressure plate onto press tool so that only the 3 bolt heads - **arrows** - make contact.
- Position thrust pad 3062 in center of pressure plate.

Do not use force when performing the following steps, as this could cause the forks on the adjuster ring to break off.

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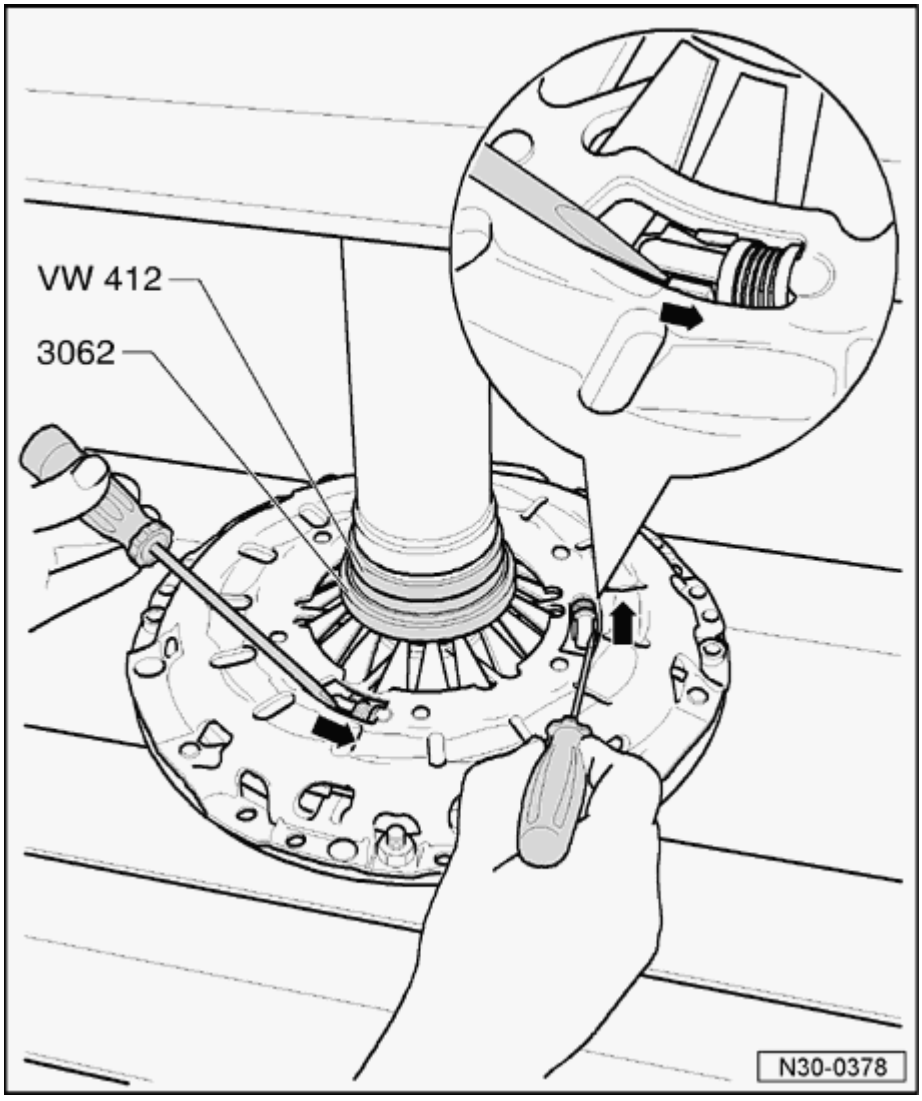


Fig. 104: Positioning Two Screwdrivers On Adjusting Ring Forks
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Apply two screwdrivers to forks on adjuster ring. Use press tool to apply pressure to pressure plate until it is just possible to move adjuster ring.
- Using two screwdrivers, turn back adjuster ring evenly in direction of - **arrows** - until it reaches stop.
- Hold adjuster ring against stop and reduce pressure applied by press tool so that adjuster ring is held in this position.

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30 CLUTCH

CLUTCH MECHANISM, SERVICING

Clutch mechanism, servicing

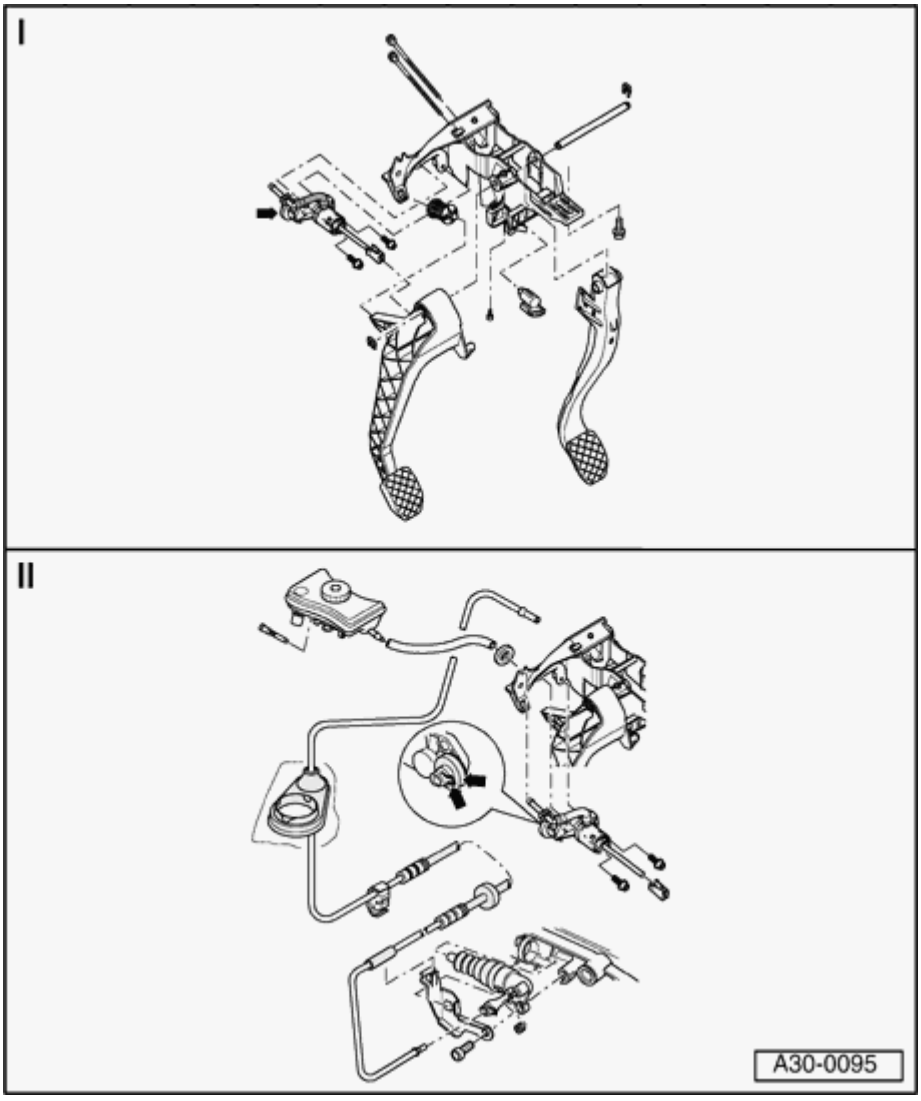


Fig. 7: Clutch Mechanism, Servicing - Pedal Cluster And Hydraulic System
Courtesy of VOLKSWAGEN UNITED STATES, INC.

I - Exploded view of pedal cluster. Refer to Pedal cluster, assembly overview

II - Exploded view of hydraulic system. Refer to Hydraulic system, assembly overview

NOTE:

- **Note or obtain radio code on vehicles with coded radio.**
- **Disconnect battery ground strap with the ignition switched off.**

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- **Lubricate all bearings and contact surfaces with polycarbamide grease G 052 142 A 2.**

CAUTION: On vehicles equipped with Audi Telematics by OnStar ® , switch-off the emergency (back-up) battery for the Telematic/Telephone Control Module prior to disconnecting the vehicle battery. Switch-on the emergency (back-up) battery after reconnecting the vehicle battery. Refer to

- **91 - COMMUNICATION**
- **91 RADIO, TELEPHONE, NAVIGATION, TRIP COMPUTER for Cabriolet**

.

- Remove cover below instrument panel, before working on foot pedal cluster

Refer to

- **68 - INTERIOR EQUIPMENT**
- **68 - INTERIOR EQUIPMENT** for Cabriolet

- Make sure brake fluid does not escape into footwell or plenum chamber or onto transmission below. If this does happen, clean the affected areas thoroughly.
- Protect the carpet from brake fluid using rags, when performing work in the footwell.

Pedal cluster, assembly overview

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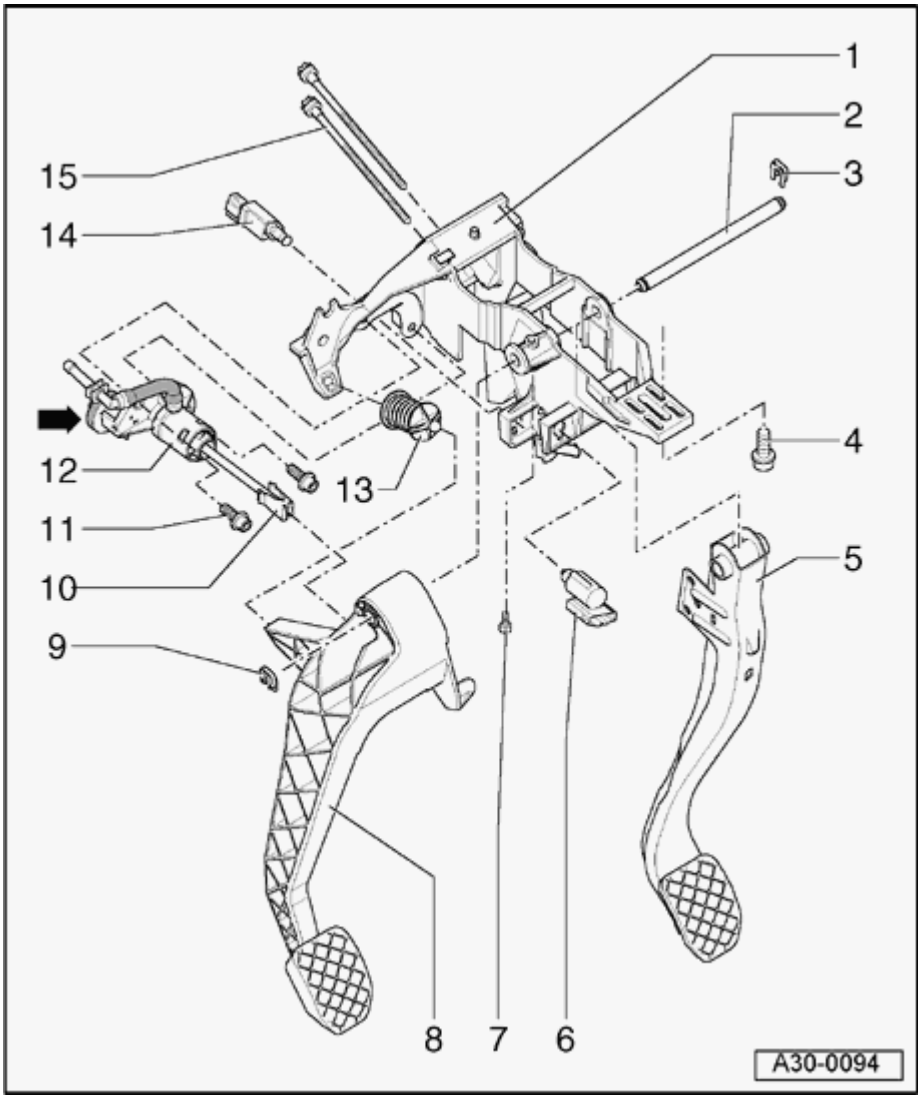


Fig. 8: Pedal Cluster, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Mounting bracket

- Removing and installing. Refer to **Slave cylinder, removing and installing**

2 - Fulcrum pin for clutch and brake pedal

3 - Fastener

4 - Hex socket-head bolt - 25 Nm

5 - Brake pedal

- Mounting is maintenance-free, do not grease

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6 - Clutch pedal switch

- Can only be installed one time

7 - Hex socket-head bolt - 5 Nm

- For securing pivot pins for clutch and brake pedal

8 - Clutch pedal

- Removing and installing. Refer to **Slave cylinder, removing and installing**

9 - Fastener

10 - Retainer

- Removing and installing. Refer to **Hydraulic system, assembly overview**

11 - Hex socket-head bolt - 20 Nm

12 - Master cylinder

- Removing and installing. Refer to **Slave cylinder, removing and installing**
- Seal -arrow- must not be removed

13 - Over-center spring

- Black end points toward clutch pedal
- Removing and installing. Refer to **Over-center spring, removing and installing**
- Allocation

Refer to Parts list

14 - Clutch Pedal Position (CPP) Switch -F194-

- Can only be installed one time

15 - Torx bolt - 25 Nm

- For securing brake master cylinder/brake servo to mounting bracket

Over-center spring, removing and installing

Special tools and workshop equipment required

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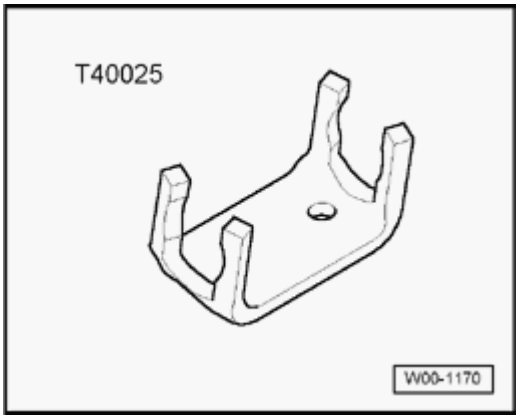


Fig. 9: T40025 Installation Clamp
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- T40025 Installation clamp

Removing

- Remove driver's storage compartment:

Refer to

- **68 - INTERIOR EQUIPMENT**
- **68 - INTERIOR EQUIPMENT** for Cabriolet

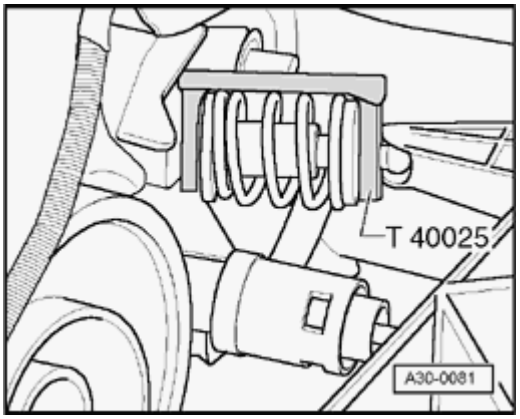


Fig. 10: Installation Clamp T40025 Installed On Over-Center Spring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tension over-center spring with clutch pedal and press on installation clamp T40025.
- Bring clutch pedal to rest position and take out over-center with spring and installation clamp T40025 from below.

Installing

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- Pull clutch pedal into passenger compartment.

Installation position over-center spring:

- Black end over-center spring points toward clutch pedal.

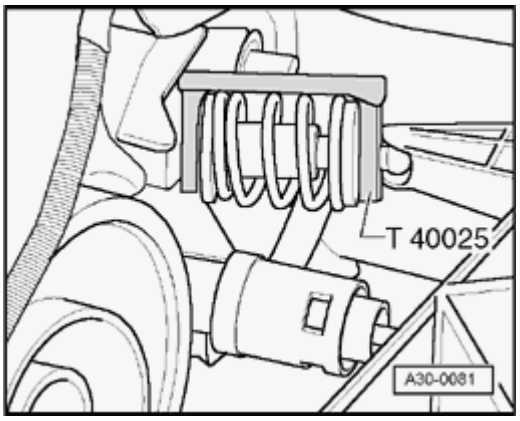


Fig. 11: Installation Clamp T40025 Installed On Over-Center Spring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert over-center spring with installation clamp T40025, depress clutch pedal and pull out installation clamp.

Hydraulic system, assembly overview

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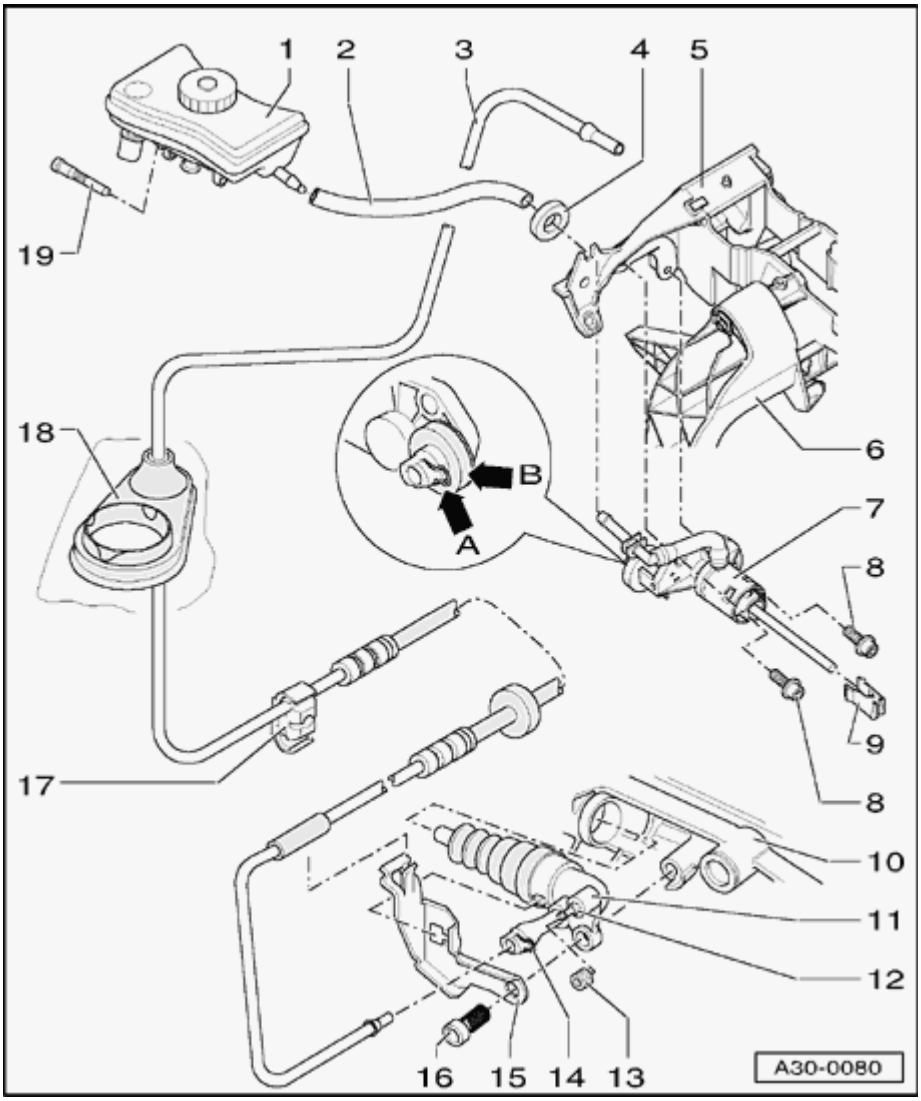


Fig. 12: Hydraulic System, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Brake fluid reservoir

2 - Supply hose

- For master cylinder

3 - Hose assembly

- For plug-in connections on master/slave cylinder
- Separating from master cylinder and installing. Refer to **Slave cylinder, removing and installing**
- Separating from slave cylinder. See **Separating slave cylinder from hose and pipe assembly**

4 - Grommet

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5 - Mounting bracket

6 - Clutch pedal

7 - Master cylinder

- Removing and installing. Refer to **Slave cylinder, removing and installing**
- Clip (arrow A) and seal (arrow B) must not be removed
- To remove hose/pipe assembly, pull clip (arrow A) out up to stop. Refer to **Fig. 27**

8 - Hex socket-head bolt - 20 Nm

9 - Retainer

- Replace only with master cylinder removed
- Removing. See **Pulling off retainer**
- Pressing on. See **Pressing master cylinder operating rod into retainer**

10 - Transmission

11 - Slave cylinder

- Do not operate clutch pedal after slave cylinder has been removed.
- Removing and installing. Refer to **Before installing, coat clutch slave cylinder with grease**
- After working on hydraulic clutch mechanism, bleed slave cylinder. Refer to **Clutch system, bleeding**
- Separating from hose/pipe assembly. See **Separating slave cylinder from hose and pipe assembly**
- Brake fluid must not come into contact with transmission

12 - Bleeder valve

- Tighten to 4.5 Nm
- Follow correct sequence when bleeding. Refer to **Clutch system, bleeding**

13 - Dust cap

14 - Clip

- To remove pipe, pull out clip up to stop. Refer to **Separating slave cylinder from hose and line assembly**

15 - Bracket

- for hose and line assembly

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- Secured to transmission with slave cylinder

16 - Hex socket-head bolt - 25 Nm

- Slave cylinder to transmission
- Self-locking
- Always replace

17 - Retaining clip

18 - Seal

19 - Securing bolt

- for brake fluid reservoir

Pulling off retainer

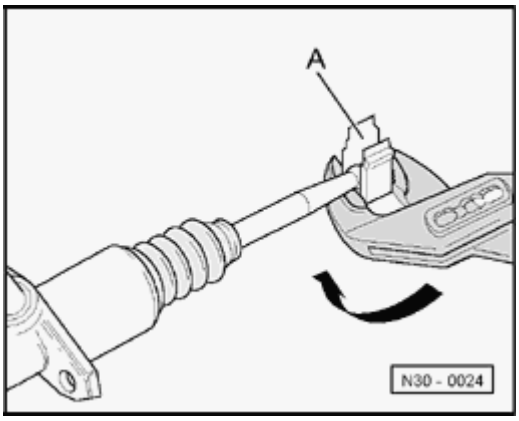
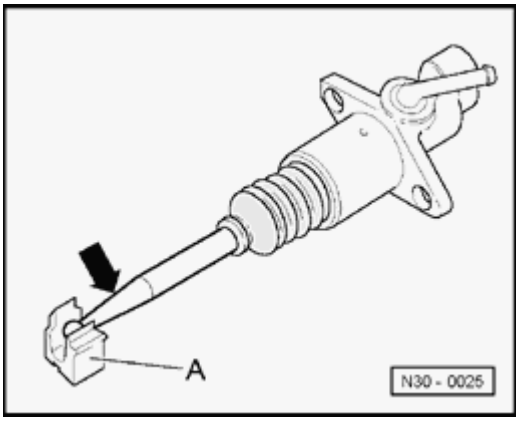


Fig. 13: Removing Retainer By Prying
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Pressing master cylinder operating rod into retainer



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Fig. 14: Installing Clutch Master Cylinder Operating Rod In Retainer
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Separating slave cylinder from hose and pipe assembly

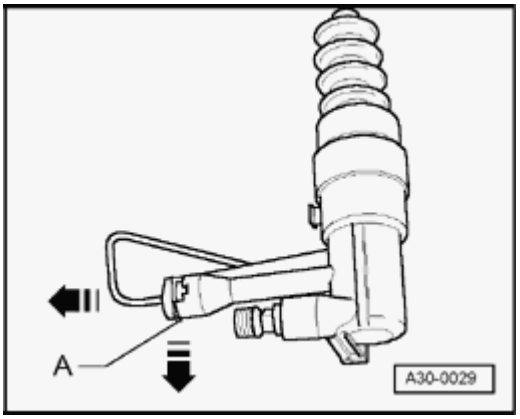


Fig. 15: Removing Hydraulic Line From Slave Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removing

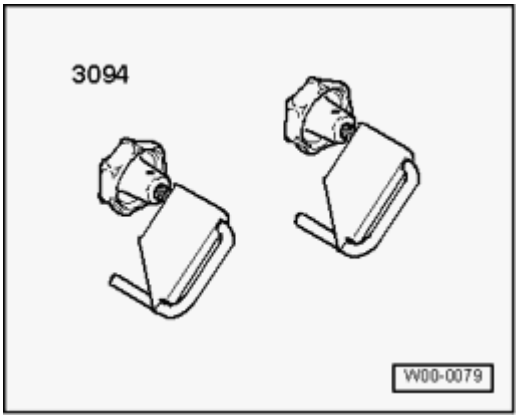
- Use a screwdriver to remove hose and line assembly, pull out clip -A- up to stop. Then the hose and pipe assembly can be pulled out.

Installing

- Press in clip -A- up to stop
- Insert hose and pipe assembly into slave cylinder until it is heard to engage.
- Test by pulling on hose and pipe assembly.

Slave cylinder, removing and installing

Special tools, testers and auxiliary items required



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Fig. 16: Identifying Hose Clamps 3094
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- 3094 Hose clip

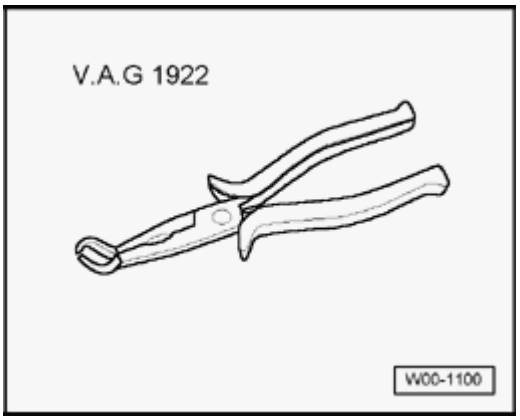


Fig. 17: Identifying Spark Plug Connector Pliers V.A.G 1922
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- VAG 1922 Pliers

Removing

- Remove rubber seal from plenum chamber in direction of arrow.

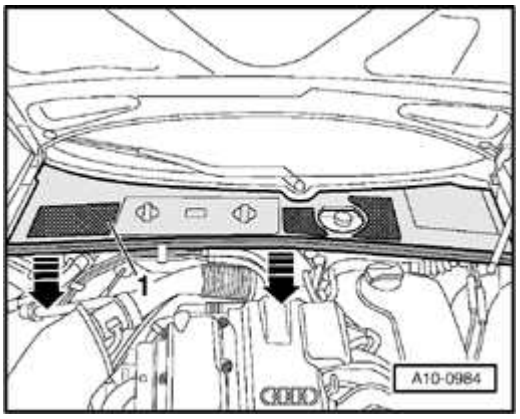


Fig. 18: Removing Cover Over Plenum Chamber
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove cover -1- over plenum chamber.
- Check whether an encoded radio is installed. If so, obtain anti-theft code.

CAUTION: On vehicles equipped with Audi Telematics by OnStar ® , switch-off the emergency (back-up) battery for the Telematic/Telephone Control Module prior to disconnecting the vehicle battery. Switch-on the emergency (back-

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up) battery after reconnecting the vehicle battery. Refer to

- **91 - COMMUNICATION**
- **91 RADIO, TELEPHONE, NAVIGATION, TRIP COMPUTER for Cabriolet**

.

- Disconnect battery ground strap with ignition switched off.

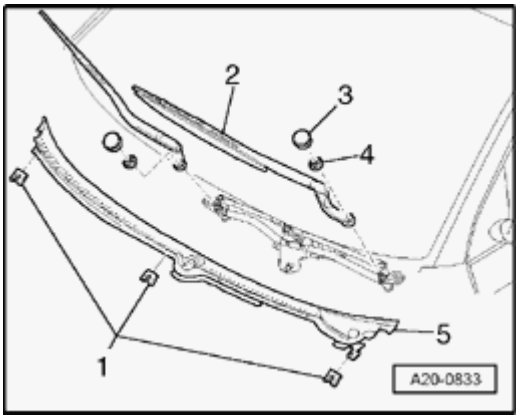


Fig. 19: Removing Securing Clips And Cowl
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Use screwdriver to pry off the two caps -3-.
- Remove nuts -4- and detach the two wiper arms -2-.
- Pull off clips -1- and remove cowl panel grille -5-.

Remove electronics box in plenum chamber as follows:

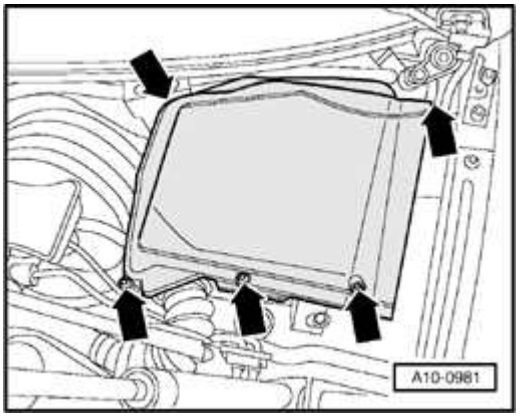


Fig. 20: Electronics Box Sealing Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Screw out bolts -arrows- and pull off sealing cover.

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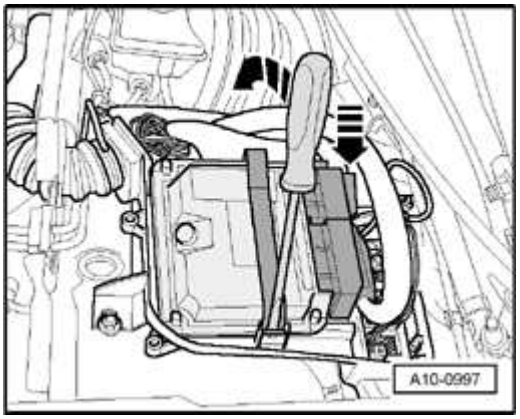


Fig. 21: Using Screwdriver To Remove Retainer Bar And Engine Control Module (ECM) J623
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully pry off retainer bar with screwdriver -arrow-.

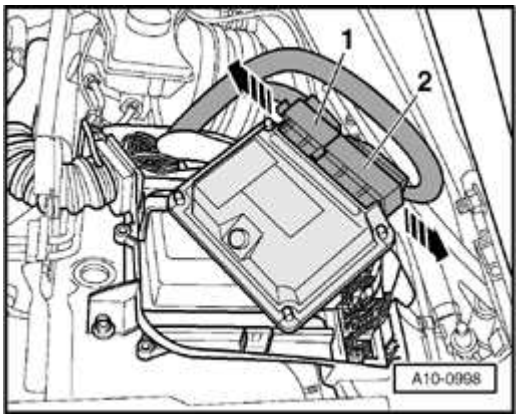


Fig. 22: Releasing Connector Latches And Pulling Off Connectors On Engine Control Module
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release connector latches -arrows- and pull off connectors -1- and -2- on engine control module.

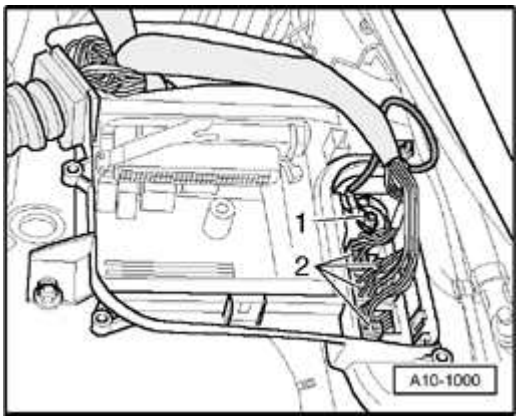


Fig. 23: Connector At Connector Rail And Wire
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Pull off connector -2- from connector rail
- Disconnect wire -1-.

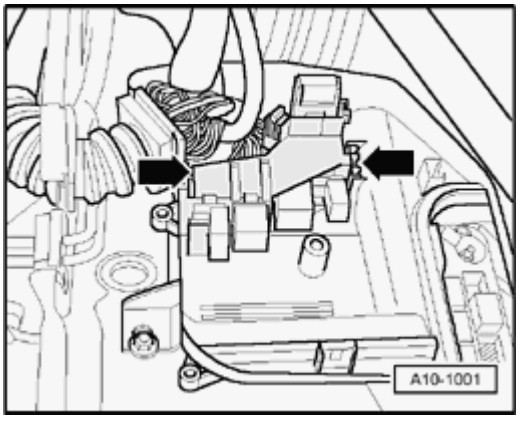


Fig. 24: Locating Auxiliary Relay Carrier Catches
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release catches -arrows- and pull auxiliary relay carrier in electronics box upward to remove.
- Pull engine wiring harness together with rubber grommet out of recess in electronics box.

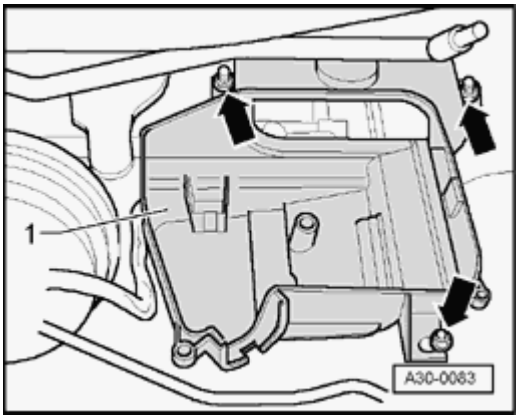


Fig. 25: Electronics Box Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts -arrows- and lift out electronics box -1-.

NOTE:

- **Make sure that brake fluid does not escape into the plenum chamber or onto the transmission below. If this does happen, clean the affected areas thoroughly.**
- **Protect the carpet from brake fluid using rags when performing work in the footwell.**

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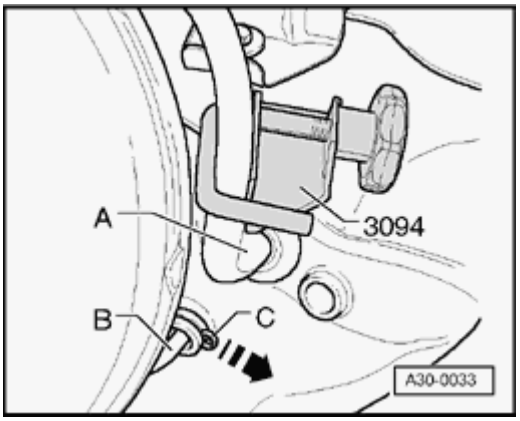


Fig. 26: Identifying Brake Fluid Reservoir Return Hose Grommet
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Clamp supply hose -A- leading to brake fluid reservoir using special tool 3094. Pull hose off at master cylinder and plug it.
- Remove rubber grommet from bulkhead on the supply hose connecting line.
- Use a screwdriver to pry out retaining clip -C- and then pull out line -B- slightly.

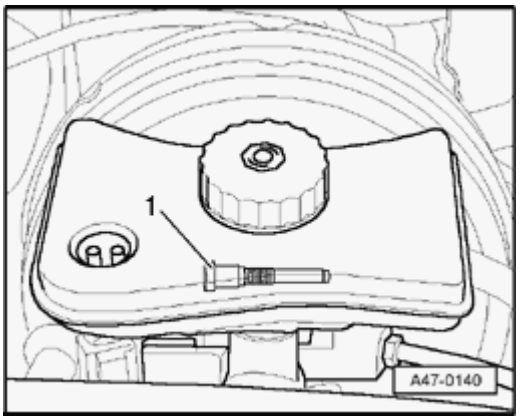


Fig. 27: Location Of Brake Fluid Reservoir Dowel Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt from brake fluid reservoir -1- and disconnect connector from fluid level below.

NOTE: Do not remove the brake fluid reservoir.

NOTE:

- **For ease of illustration, brake fluid reservoir is not shown.**
- **To remove the top Torx bolt, swivel brake fluid reservoir slightly to one side.**

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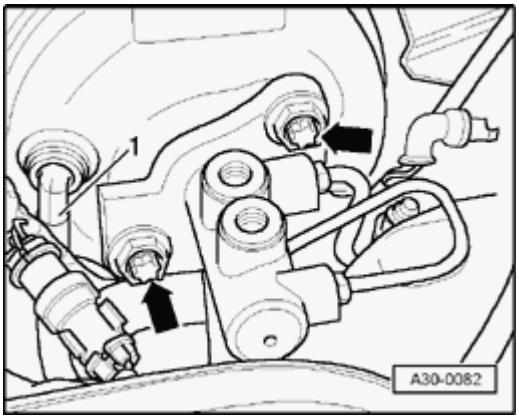


Fig. 28: Location Of Brake Servo Securing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove the two Torx bolts -arrows-.
- Remove vacuum line from brake servo -1-.
- Remove driver's side storage compartment.

Refer to

- **68 - INTERIOR EQUIPMENT**
- **68 - INTERIOR EQUIPMENT** for Cabriolet

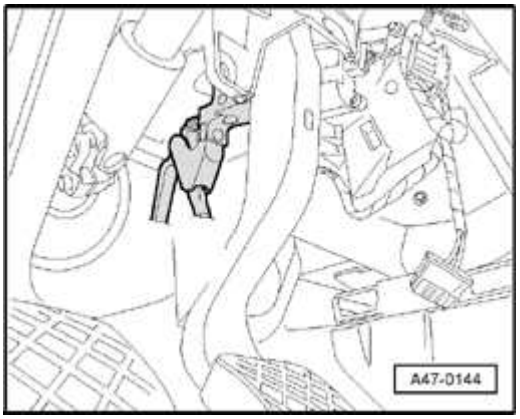


Fig. 29: Brake Pedal At Brake Servo
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Detach brake pedal from brake servo.

Refer to **47 - BRAKES - HYDRAULIC COMPONENTS**

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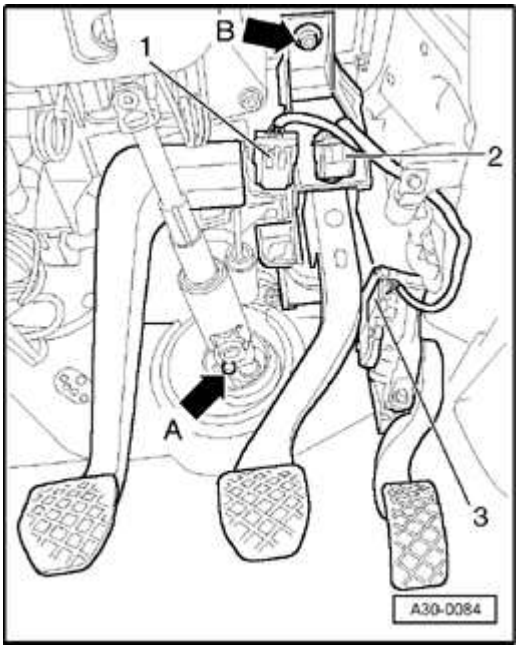


Fig. 30: Locating Steering Column At Steering Gear And Disconnecting Connector On Clutch Pedal Switch, Brake Pedal Switch And On Accelerator Pedal Module
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect steering column from steering gear -arrow A-.

Refer to **48 - STEERING**

- Disconnect connector on clutch pedal switch -1-, brake pedal switch -2- and on accelerator pedal module -3-.
- Remove securing bolt from mounting bracket -arrow B- and complete pedal cluster.

Release master cylinder operating rod from clutch pedal as follows:

- Removing over-center spring. Refer to **Over-center spring, removing and installing**.

NOTE:

- **Make sure a tight connection in the clutch pedal switch. Refer to Pedal cluster, assembly overview Pos. 6 as well as the Clutch Pedal Position (CPP) Switch -F194-. Refer to Pedal cluster, assembly overview Pos. 14 in the pedal cluster, these switches may only be installed once.**

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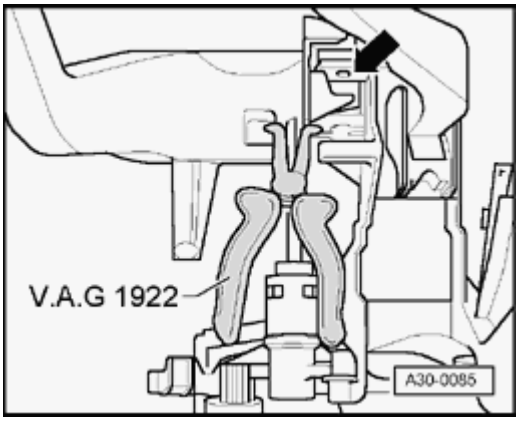


Fig. 31: pressing Retainer Together And Detaching Clutch Pedal From Master Cylinder Using VAG 1922
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- When releasing clutch pedal make sure that it does not strike against retainer for clutch pedal switch -arrow-. This could break the retainer.

- Insert pliers VAG 1922 into recess of clutch pedal, press retainer together -arrows- and detach clutch pedal from master cylinder.

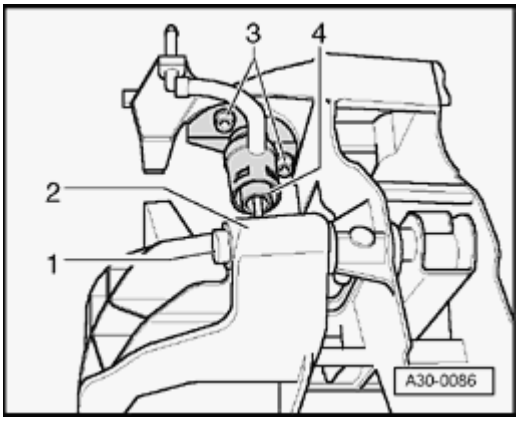


Fig. 32: Identifying Retaining Clip, Clutch Pedal, Bolts And Master Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove retaining clip -1- and pull off clutch pedal -2-.
- Remove bolts -3- and detach master cylinder -4-.

Installing

Install in reverse order, paying attention to the following:

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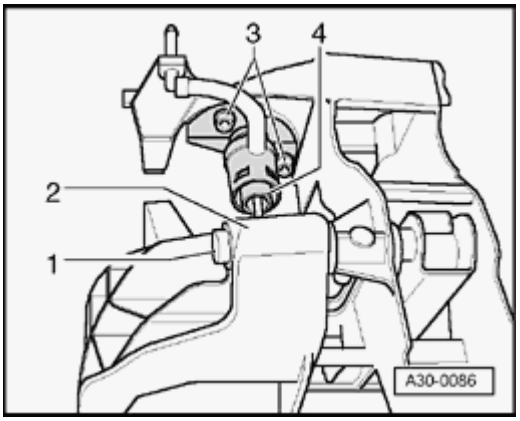


Fig. 33: Identifying Retaining Clip, Clutch Pedal, Bolts And Master Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert master cylinder and tighten screws -3- to 20 Nm.

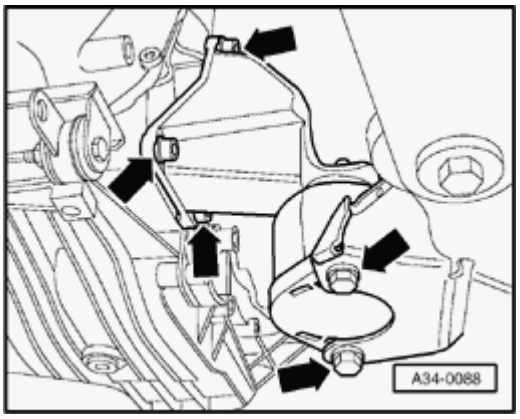


Fig. 34: Locating Mounting Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert retainer -1- into clutch pedal.
- Press clutch pedal in direction of arrow to engage, make sure that retainer -1- is correctly locked in clutch pedal.
- Install over-center spring. Refer to **Over-center spring, removing and installing**.

A second mechanic is required for the next step.

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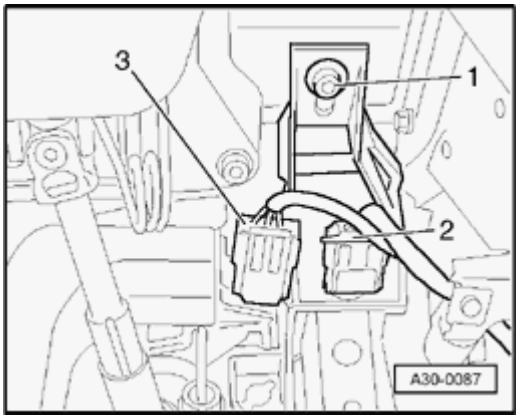


Fig. 35: Location Of Clutch Pedal Switch F36 And Pedal Assembly Securing Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert complete pedal cluster and install bolt -1- hand-tight. The second mechanic must simultaneously insert line into master cylinder from plenum chamber side.

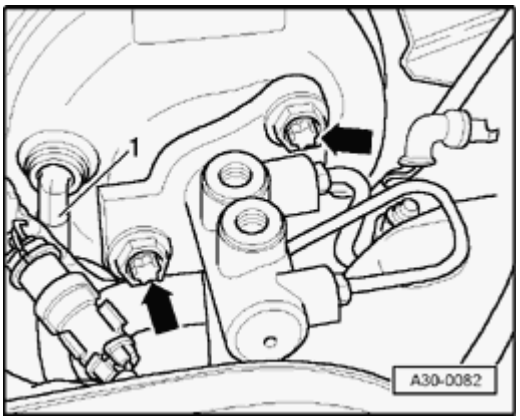


Fig. 36: Location Of Brake Servo Securing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten bolts for brake servo -arrows- to 25 Nm.

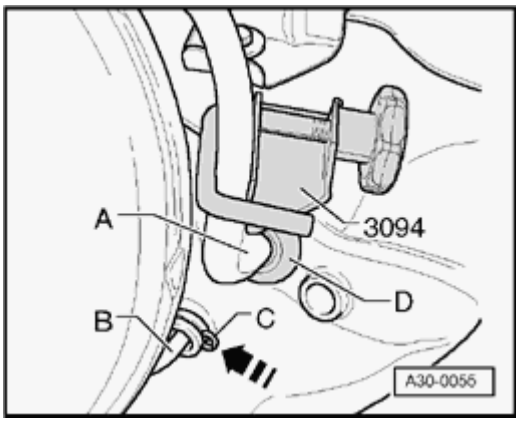


Fig. 37: Installing Rubber Grommet And After-Run Hose

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press in retaining clip -C- up to stop.
- Insert line -B- into master cylinder until it is heard to engage.
- Insert rubber grommet -D- over supply hose connecting line -A- into bulkhead.
- Slide supply hose -A- for the brake fluid reservoir up to stop.

- Remove special tool 3094.
- Install bolt for brake fluid reservoir.

- Tighten hex socket-head bolt for securing pedal cluster on instrument panel support to 25 Nm.
- Plug in connectors.
- Connect brake pedal to brake servo.

Refer to **47 - BRAKES - HYDRAULIC COMPONENTS**

- Secure steering column to steering gear -arrow A-.

Refer to **48 - STEERING**

- Installing driver's storage compartment:

Refer to

- **68 - INTERIOR EQUIPMENT**
- **68 - INTERIOR EQUIPMENT** for Cabriolet

- Bleed clutch system. Refer to **Clutch system, bleeding**.

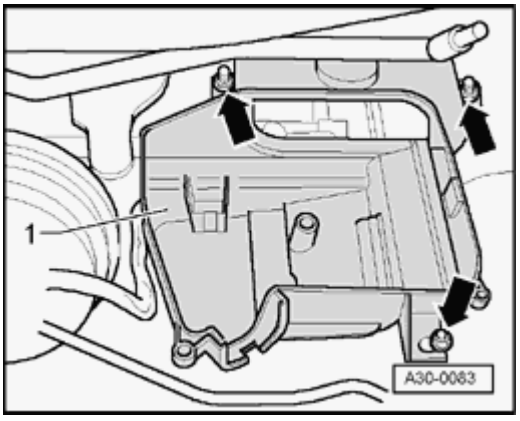


Fig. 38: Electronics Box Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert electronics box and tighten nuts -arrows- to 4 Nm.

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- Route engine wiring harness and connect connectors to connector point.
- Install engine control module and if applicable auxiliary relay carrier with auxiliary fuse carrier.

Refer to **97 WIRING**

- Press on sealing cover hand-tight and tighten screws in diagonal sequence to 4 Nm.

NOTE:

- **On re-connecting battery, remember to check and re-activate vehicle equipment (radio, clock, convenience electronics, etc.).**

Refer to

- **01 - MAINTENANCE**
- **01 - MAINTENANCE** for Cabriolet

Clutch system, bleeding

Special tools, testers and auxiliary items required

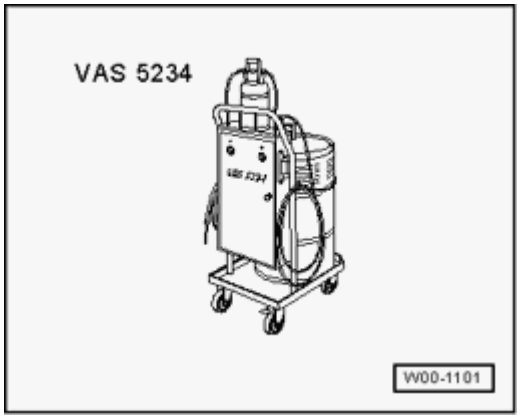


Fig. 39: Identifying Brake Filler And Bleeder Unit VAS 5234
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Brake filling and bleeding unit VAS 5234

- Brake fluid specification

Refer to **47 - BRAKES - HYDRAULIC COMPONENTS**

NOTE:

- **Open bleed valve before switching on bleeding appliance.**
- **When performing the following steps, make sure that no brake fluid escapes onto the transmission.**
- **Performing work on the hydraulic clutch mechanism the clutch system must be bled.**

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- **Pull out clutch pedal and fill brake fluid reservoir with brake fluid up to "max." mark before bleeding.**

- Connect brake filling and bleeding unit VAS 5234, but do not turn on at this time.
- If installed, remove noise insulation beneath transmission.

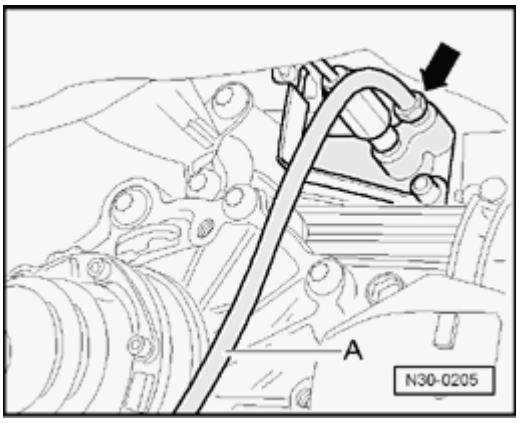


Fig. 40: Connecting Bleeder Hose To Clutch Slave Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect bleeder hose -A- to slave cylinder (arrow) and open bleeder valve.
- Connect bleed hose to pressure hose of collector bottle.
- Switch on bleeding appliance and allow about 100 cm3 of brake fluid to flow out.

- Working pressure 2.5 bar

NOTE: Make sure bleed hose is correctly installed during bleeding operation.

- Tighten bleed valve to 4.5 Nm.
- Depress clutch pedal several times after bleeding process.
- Bleed again if necessary.

CLUTCH RELEASE MECHANISM, SERVICING

Clutch release mechanism, servicing

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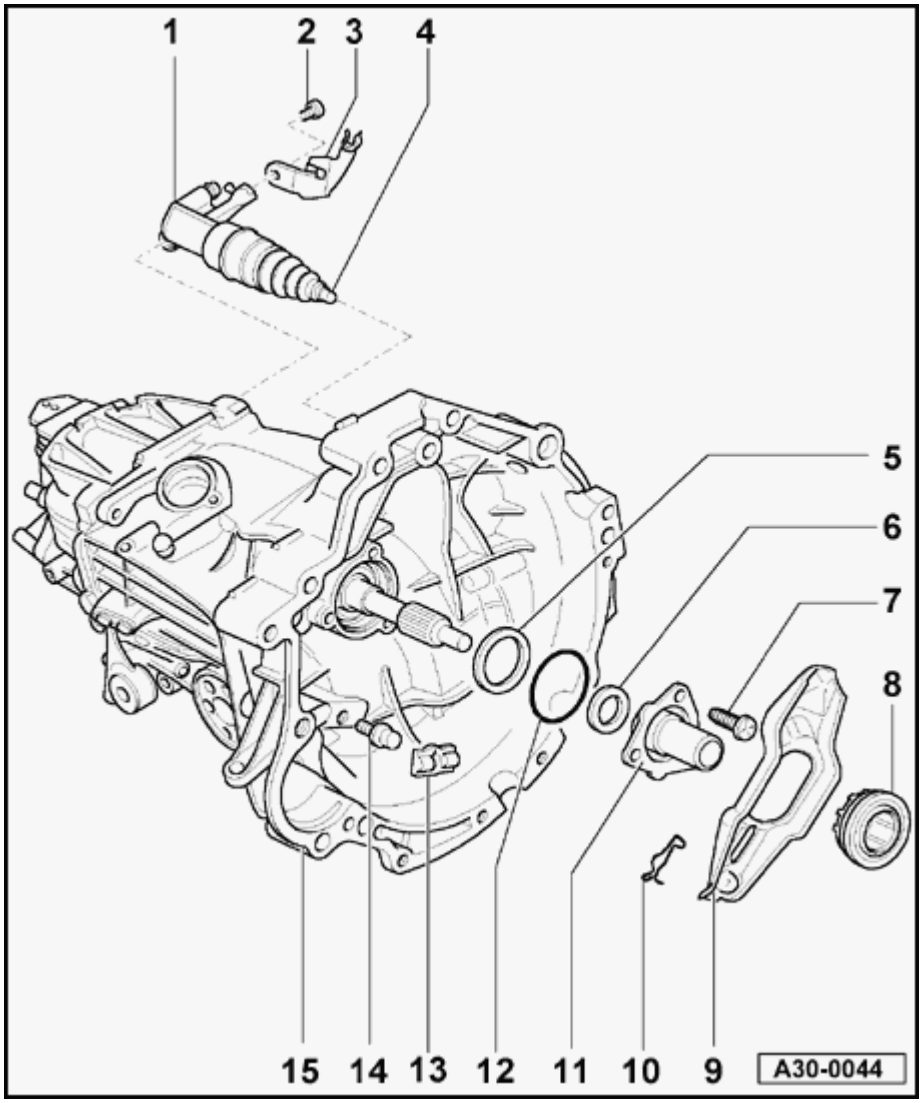


Fig. 41: Clutch Release Mechanism, Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Slave cylinder

- Do not operate clutch pedal after slave cylinder has been removed.
- Separating from hose and line assembly. See **Separating slave cylinder from hose and line assembly**
- Installing. See **Before installing, coat clutch slave cylinder with grease** and . **Installing clutch slave cylinder**
- When installing, press in slave cylinder far enough so that securing bolt can be installed easily.

- Tighten bleed valve to 4.5 Nm
- Bleeding clutch system. Refer to **Clutch system, bleeding**

2 - Hex socket-head bolt, 23 Nm

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- Slave cylinder to transmission
- Self-locking
- Always replace

3 - Bracket

- For hose and line assembly
- Secured to transmission with slave cylinder
- Installing. See **Installing clutch slave cylinder**

4 - Push rod

- Lubricate end of push rod with copper grease, e.g. Z 381 351 TE

5 - Dished washer

- Smaller diameter (convex side) to guide sleeve

6 - Input shaft oil seal

- Available with guide sleeve -Item 11- **Clutch release mechanism, servicing** as replacement part

7 - Torx socket head bolt

- Self-locking
- Always replace
- Black; only for aluminum transmission
- Allocation

- On aluminum transmission tighten to 35 Nm

8 - Release bearing

- With or without plastic ring depending on design. See **Servicing release bearing with plastic ring**
- Adhering detached plastic ring. See **Servicing release bearing with plastic ring**
- Do not wash out bearing, only wipe
- Replace noisy bearings

- Allow retaining lugs on release bearing to engage in release lever

9 - Clutch release lever

- Coat contact surface of clutch slave cylinder push rod with copper grease, e.g. Z 381 351 TE before installing

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10 - Retaining spring

- Secure to clutch release lever

11 - Guide sleeve

- Available with oil seal -Item 6- **Clutch release mechanism, servicing** as replacement part
- Installation position: Oil drain hole points downward
- Cover input shaft splines with a shrink-fit hose to protect oil seal -Item 6- **Clutch release mechanism, servicing** before removing and installing

12 - O-ring

- Always replace

13 - Intermediate piece

14 - Ball stud

- Lubricate with MoS2-grease
- On aluminum transmissions tighten to 25 Nm

Separating slave cylinder from hose and line assembly

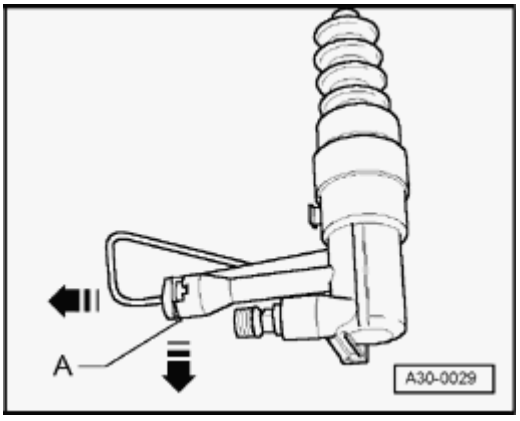


Fig. 42: Removing Hydraulic Line From Slave Cylinder
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removing

- Use a screwdriver to remove hose and line assembly, pry out clip -A- up to stop. Then pulled out the hose and line assembly.

Installing

- Press in clip -A- up to stop

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- Insert hose and line assembly into slave cylinder until it is heard to engage.
- Test by pulling on hose and line assembly.

Before installing, coat clutch slave cylinder with grease

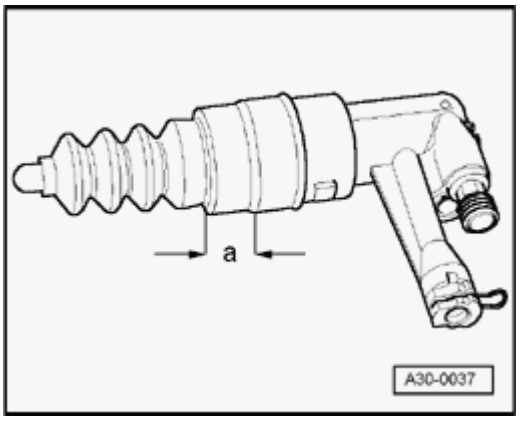


Fig. 43: Coat Boot Area Of Clutch Slave Cylinder With Lithium Grease
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Lightly lubricate contact surface for push rod at clutch release lever with copper grease, e.g. Z 381 351 TE.
- Lubricate area -a- on boot with lithium grease G 052 150 A2 before fitting slave cylinder into transmission housing.

Installing clutch slave cylinder

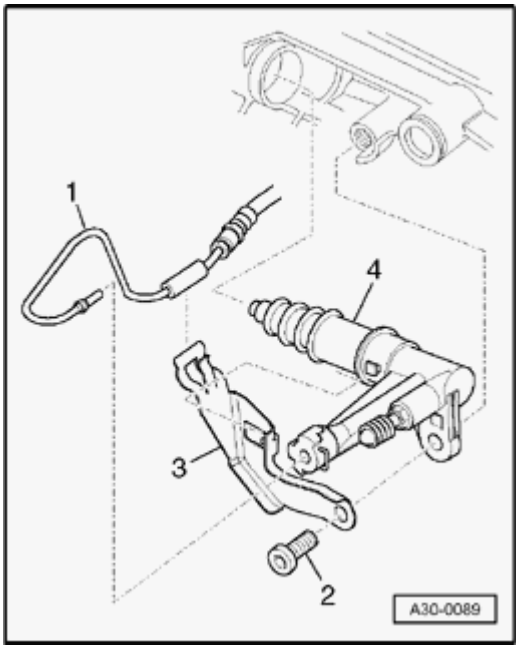


Fig. 44: Clutch Slave Cylinder, Bracket And Hose/Line Assembly
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Fasten bracket for hose line assembly -3- onto slave cylinder -4- and bolt together slave cylinder to transmission.
- Insert the clutch slave cylinder into the mounting hole of the transmission housing, keep it in line with the direction of operation of the push rod.

NOTE:

- **There is a danger that the push rod will be guided past the clutch release lever if the clutch slave cylinder -4- is inserted off-line.**
- **Press in the clutch slave cylinder far enough so that the securing bolt can be fitted easily.**
- **Replace securing bolt - 2-.**

Servicing release bearing with plastic ring

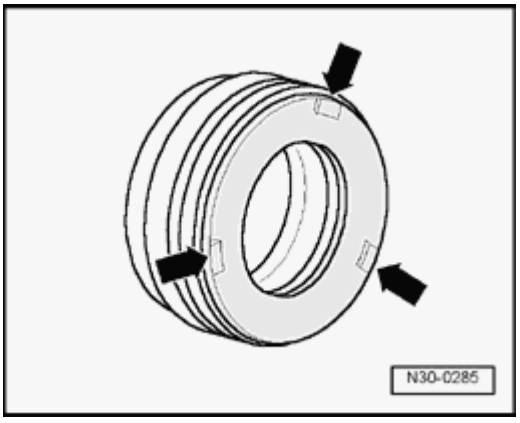


Fig. 45: Servicing Release Bearing With Plastic Ring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

On release bearings with plastic ring it is possible that the plastic ring detaches from the release bearing during removal of transmission or release bearing; this is not a reason for replacing release bearing.

- Adhere plastic ring back onto bearing ring with adhesive AMV 195 KD1 01 before installing transmission.

Three right-angled lugs -arrows- on plastic ring engage in the recesses of bearing ring.

NOTE: **The release bearing must be replaced if the plastic ring lies deeper than 0.5 mm on the contact surface.**

CLUTCH, SERVICING

Clutch, servicing

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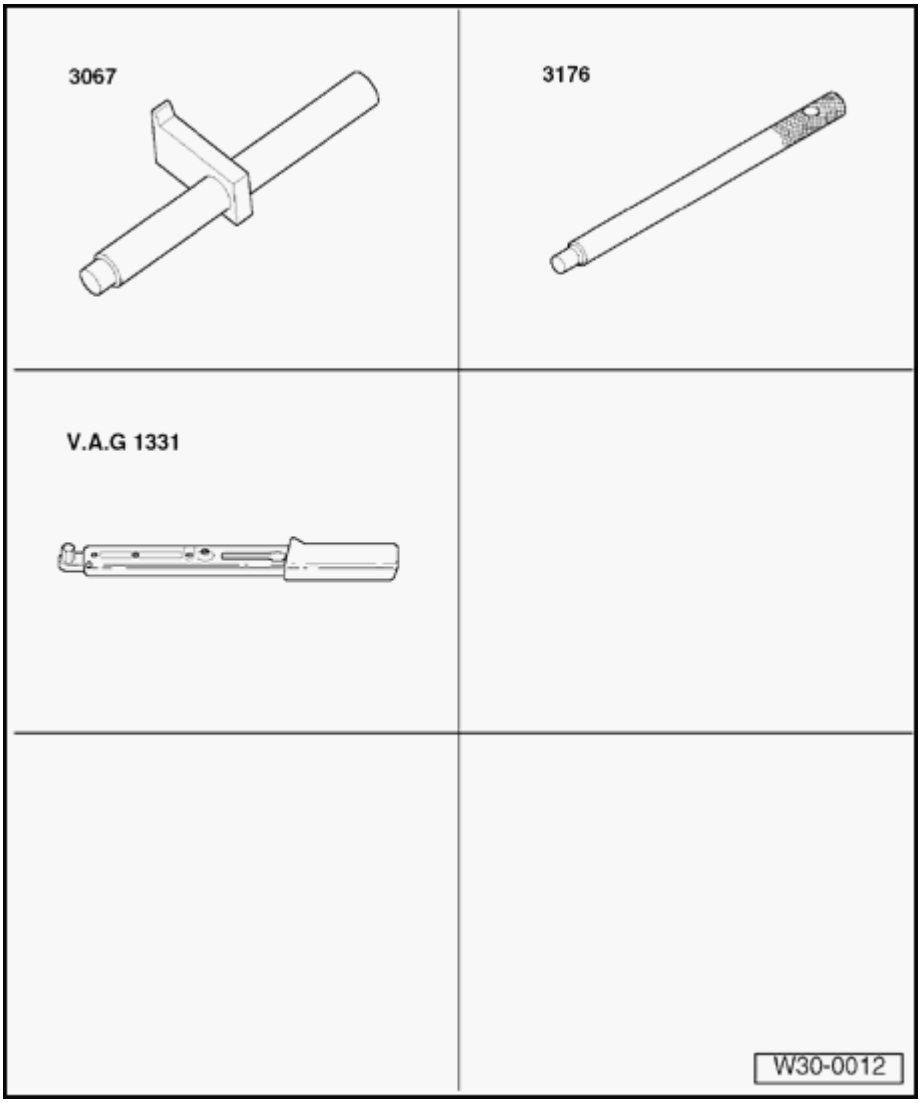


Fig. 46: Identifying Special Tools - Clutch, Servicing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools and workshop equipment required

- 3067 Flywheel retainer
- 3176 Centering mandrel
- VAG 1331 Torque wrench

NOTE:

- **Observe the general repair instructions. Refer to General repair instructions.**
- **Replace clutch plates and pressure plates with damaged or loose rivets.**
- **Select the correct clutch plate and pressure plate according to engine code:**

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- Clean input shaft splines and (in the case of used clutch plates) the hub splines. Remove corrosion and apply only a very thin coating of grease G 000 100 to the splines. Then move clutch plate on input shaft until hub moves freely on shaft. Excess grease must be removed.
- Pressure plates are protected against corrosion and are greased. Only the contact surface may be cleaned, otherwise the service life of the clutch will be reduced.
- If the clutch has burnt out, thoroughly clean the bellhousing, flywheel and parts of the engine facing the transmission to reduce the smell of burnt linings.

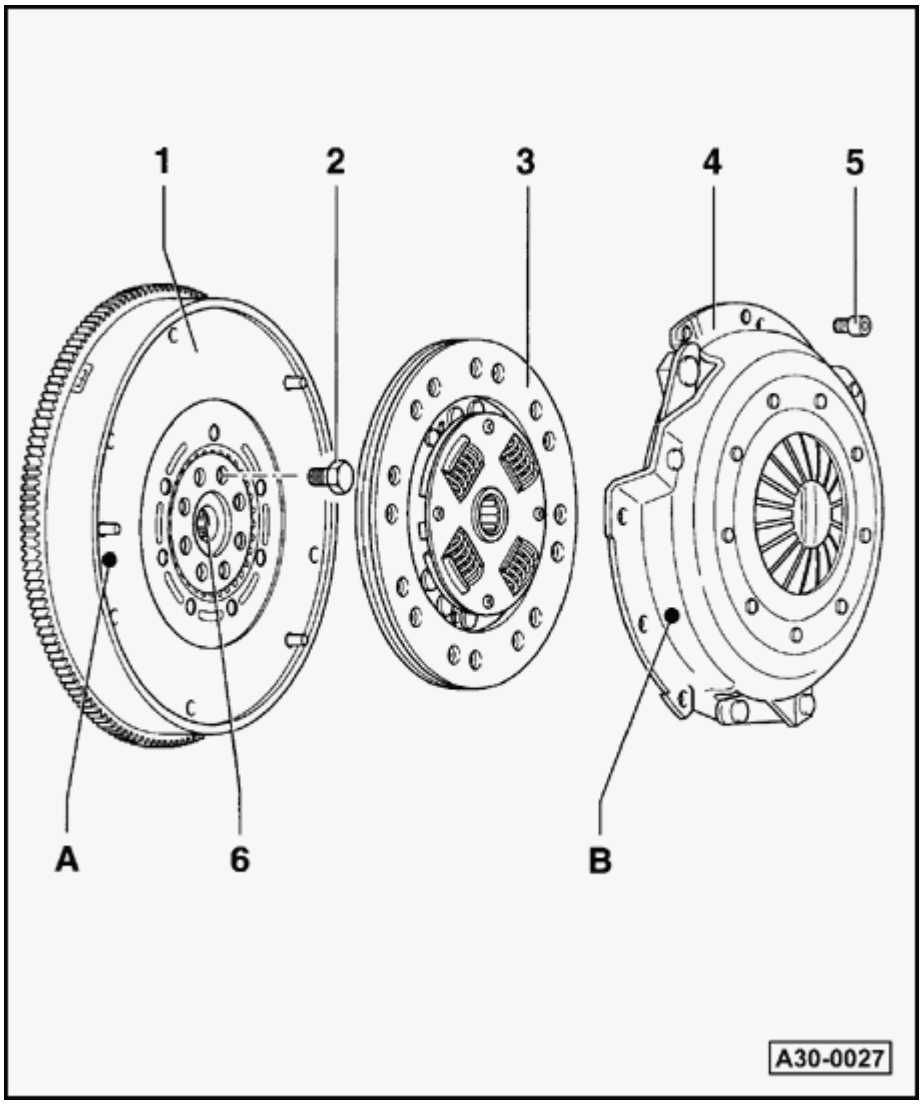


Fig. 47: Clutch Remove/Install Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove transmission to work on clutch. Refer to **Transmission, removing and installing**.

A - Colored marking on dual mass flywheel

- If components are marked, white marking -A- on dual mass flywheel must coincide with white marking -

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B- on pressure plate.

B - Colored marking on pressure plate

- If components are marked, white marking -A- on dual mass flywheel must coincide with white marking -B- on pressure plate.

1 - Flywheel/dual mass flywheel

- Make sure that centering pins are a tight fit
- Contact surface for clutch lining must be free of grooves, oil and grease
- Removing and installing. Refer to **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK**

2 - Bolt for flywheel

- Always replace
- Vehicles without dual mass flywheel 60 Nm + turn 90 ° further
- Vehicles with dual mass flywheel

  - Bolt length 22 mm 60 Nm + turn 90 ° further
  - Bolt length 42 mm 60 Nm + turn 180 ° further

3 - Clutch plate

- Installation position:

  - Spring pack (coil springs) toward pressure plate and transmission
  - Clutch lining must make full contact with flywheel
  - Marking "Getriebeseite" (if present) goes toward pressure plate and transmission

- Do not grease
- Clutch plate diameter. Refer to **Code letters, application, ratios, capacities**onward
- Centering. See **Centering clutch plate and removing and installing pressure plate**
- Lightly grease splines

4 - Pressure plate

- Removing and installing. See **Centering clutch plate and removing and installing pressure plate**
- Check ends of diaphragm spring. See **Checking ends of diaphragm spring**
- Checking spring connection and riveted fastenings. See **Checking spring connection and riveted fastenings**
- If components are marked, assemble with white marking on flywheel -A- aligning with white marking on pressure plate -B-.

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5 - Bolt, 25 Nm

- Loosen and tighten gradually over several stages in diagonal sequence

6 - Needle bearing

- Removing and installing:

Refer to **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK**

Centering clutch plate and removing and installing pressure plate

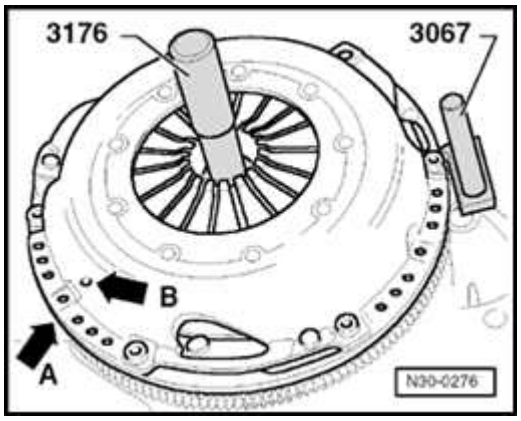


Fig. 48: Centering Clutch Plate And Removing And Installing Pressure Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen and tighten bolts gradually over several stages in diagonal sequence - 25 Nm.
- Reverse position of counterhold 3067 when removing.
- Installation position of clutch plate: Spring pack (coil springs) or marking "Getriebeseite" toward pressure plate and transmission.
- Do not insert mounting bolts until clutch lining and contact surface of pressure plate must make full contact with flywheel.
- Use mandrel 3176 to center clutch plate.
- If components are marked, assemble with white marking on dual-mass flywheel -A- aligning with white marking on pressure plate -B-.

Checking ends of diaphragm spring

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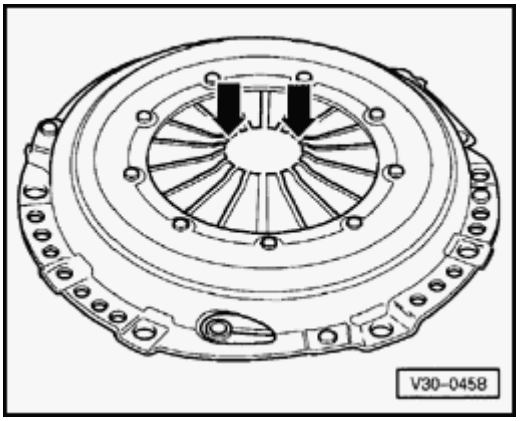


Fig. 49: Checking Ends Of Diaphragm Spring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wear up to half the thickness of the diaphragm spring is permitted.

NOTE: When performing repairs always match up clutch pressure plate and clutch plate by checking engine code.

Checking spring connection and riveted fastenings

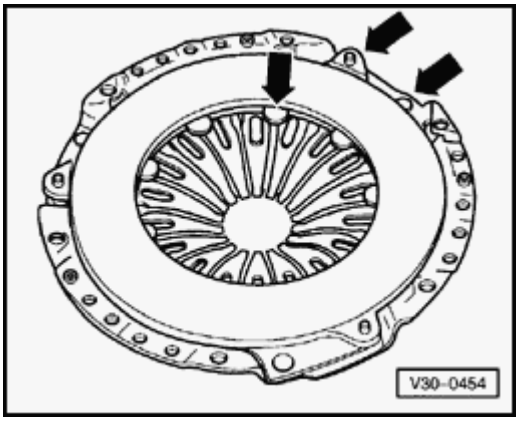


Fig. 50: Checking Spring Connections And Rivet Connections
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check spring connection between pressure plate and cover for cracks and make sure rivet fastenings are seated tightly.
- Replace clutches with damaged springs or loose riveted fastenings -arrows-.

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