

BRAKES**Anti-Lock Brake System (Sedan)****ANTI-LOCK BRAKE SYSTEM****GENERAL INFORMATION****ANTI-LOCK BRAKE SYSTEM**

CAUTION: The anti-lock brake system is generally maintenance-free.

Testing, assembly, and repair work may only be performed by qualified personnel.

By not observing the points described in the service information the system can be damaged and vehicle safety could be compromised.

- Before performing repair work on the anti-lock brake system, determine the cause of the malfunction using On-Board Diagnostics (OBD).
- If a new ABS hydraulic unit, check the coding using the vehicle diagnosis, testing and information system VAS 5051 B or VAS 5052.
- Switch ignition off before installation work. On vehicles with coded radio unit, determine code and disconnect battery Ground (GND) cable.
- When working with brake fluid, observe relevant safety precautions and notes **BRAKE FLUID**.
- Bleed brake system with brake filler/bleeder unit VAS 5234 for all work that requires opening the hydraulic system. High and low pressure testing should also be performed on the brake system **HIGH AND LOW PRESSURE TESTING**
- During the final road test, perform an ABS-controlled braking at least one time (pulsing must be felt in the brake pedal). See vehicle diagnosis, testing and information system VAS 5051 B or VAS 5052.
- Absolute cleanliness is required when working on the anti-lock brake system, it is not permitted to use any products which contain mineral oil, such as oils, greases etc.
- Thoroughly clean all unions and the adjacent areas before loosening. Do not use aggressive cleaning agents such as brake cleaner, fuel, thinners or similar chemicals.
- Place parts that have been removed on a clean surface and cover.
- Carefully cover over opened components or seal, if repairs are not carried out immediately. (Sealing plugs, use repair kit 1 H0 698 311 A)
- Only use lint-free cloths.
- Only unpack replacement parts immediately prior to installation.
- Only use genuine parts in their original packaging.
- Do not work with compressed air and do not move vehicle while the system is open.
- Make sure that brake fluid does not enter harness connectors.

DESCRIPTION AND OPERATION

VAS 5051, CONNECTING AND SELECTING FUNCTIONS

Special tools and workshop equipment required

- Vehicle diagnosis, testing and information system VAS 5051 B or VAS 5052

-- Connect diagnostic cable to the Data Link Connector (DLC).



Fig. 1: Connecting Diagnostic Cable VAS 5051/5A To Diagnostic Connector
Courtesy of AUDI OF AMERICA, LLC

- Switch tester on.
- Switch on ignition.
- Touch the field / the button on the screen: Guided Fault Finding.
- Select one after another:

- Brand
- Model
- Model year
- Version
- Engine code

-- Confirm data entered.

Wait until tester has checked all control modules in vehicle.

-- Press **Go to** button and select "Function/Component Selection" function.

-- Select "suspension" on display.

-- Select "brake system" on display.

-- Select "01-On Board Diagnostic (OBD) capable system..." indicated on display.

-- Select on display "Anti-lock brake system..."

-- Select on display "Function".

Now, all possible functions of the anti-lock brake system installed in the vehicle will be displayed.

-- Select desired function on display.

ABS/ELECTRONIC STABILIZATION PROGRAM, BOSCH 8.1 COMPONENT OVERVIEW

The Bosch ESP 8.1 has the following functions:

- ABS - Anti-lock braking system
- ASR - Anti-slip regulation
- EBD - Electronic brake pressure distribution
- EDL - Electronic differential lock
- ESP - Electronic stabilization program
- FBS - Fading brake support
- HBA - Hydraulic brake assist
- MSR - Engine drag torque regulation
- Emergency braking signal
- Brake disc cleaning
- Trailer stabilization

The brake system is distributed diagonally. The vacuum brake servo unit boosts the brakes pneumatically.

NOTE: ABS disturbances do not affect the brake system and the booster. Conventional brake system stays operative even without ABS. A change in braking behavior should be checked. When the ABS warning lamp comes on the rear wheels can lock-up early when braking!

Malfunction sources are reduced by direct connection of components named. The components are replaced instead of repaired.

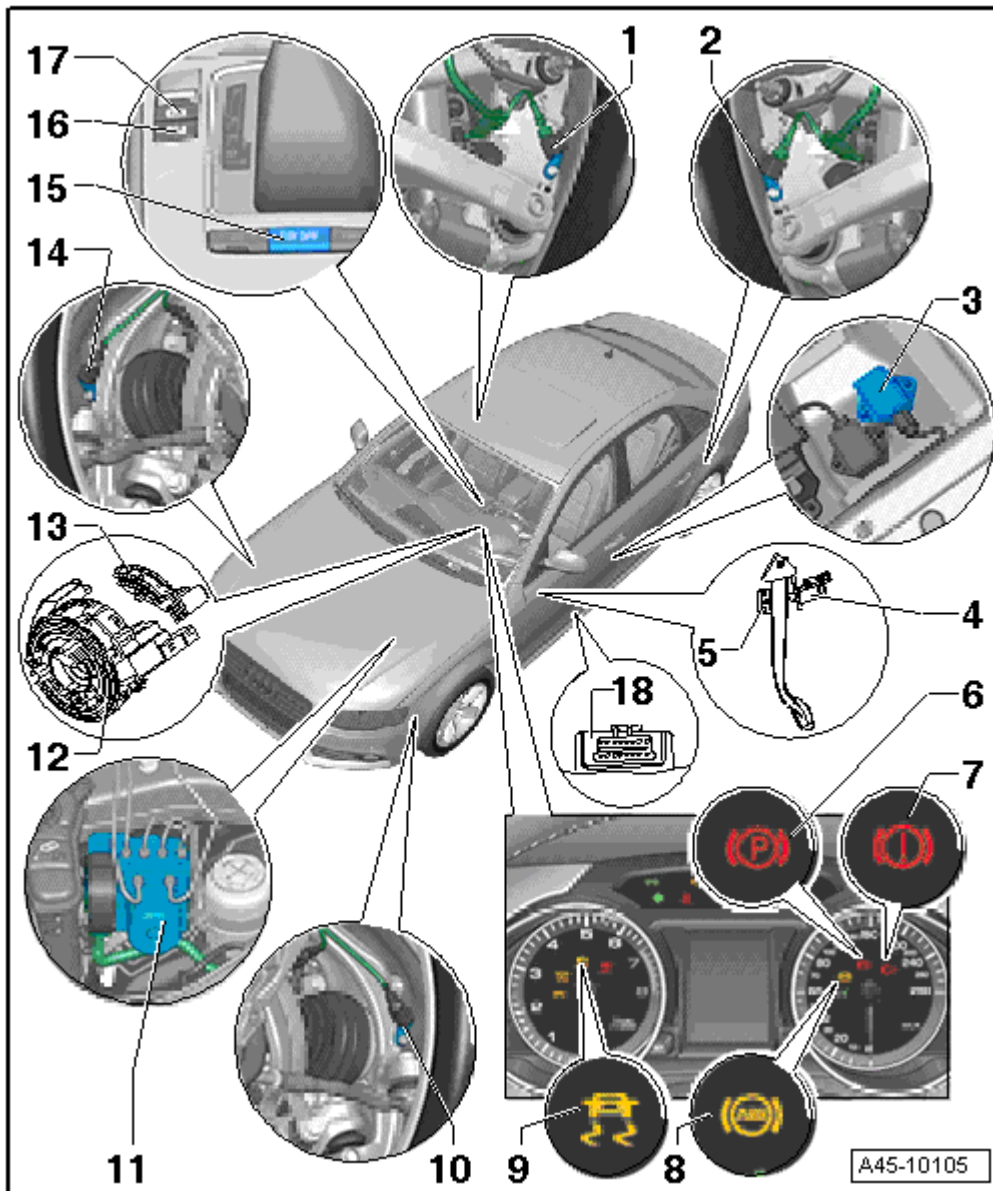


Fig. 2: Identifying ABS/Electronic Stabilization Program, Bosch 8.1 Component Overview
Courtesy of AUDI OF AMERICA, LLC

1. Right Rear ABS Wheel Speed Sensor -G44-

- Removing and Installing **REAR ABS WHEEL SPEED SENSORS**

- Can be tested in "Guided Fault Finding" with the vehicle diagnosis, testing and information system VAS 5051B or VAS 5052
2. Left Rear ABS Wheel Speed Sensor -G46-
 - Removing and Installing **REAR ABS WHEEL SPEED SENSORS**
 3. ESP-Sensor Unit -G419-
 - Component location: Under left seat
 - Removing and Installing **ELECTRONIC STABILIZATION PROGRAM SENSOR UNIT**
 - 9 Nm
 - Combined Transverse Acceleration Sensor -G200-, Rotation Rate Sensor -G202- and Longitudinal Acceleration Sensor -G251-.
 - Can be tested in "Guided Fault Finding" with vehicle diagnosis, testing and information system VAS 5051B or VAS 5052
 - Observe installation instructions
 - Check arrow in direction of travel when installing
 4. Brake lamp sensor
 - Component location: On brake pedal
 - Removing and Installing **BRAKE LAMP SENSOR**
 - Can be tested in "Guided Fault Finding" with vehicle diagnosis, testing and information system VAS 5051B or VAS 5052

NOTE: Cannot be reused after removal.

5. Brake pedal
 - With bracket for brake lamp sensor
 - Removing and Installing, with Manual Transmission **BRAKE PEDAL, WITH MANUAL TRANSMISSION**
 - Removing and Installing, with Automatic Transmission **BRAKE PEDAL, WITH AUTOMATIC TRANSMISSION**
6. Electro-Mechanical Parking Brake Indicator Lamp -K213-
 - Located in tachometer.
 - Lights up when parking brake is engaged and ignition is switched on,
 - Lights up for 20 seconds when parking brake is engaged and ignition is switched off,
 - Blinks after engaging parking brake if brake pressure is not sufficient to prevent vehicle from rolling.
7. Brake system warning lamp -K118-
 - Located in tachometer.
 - Lights up with ABS indicator lamp when ABS system malfunctions
 - Blinks when brake fluid is too low
 - Blinks when there is a brake system malfunction

NOTE: The malfunction is indicated more precisely when the "SET button" in the instrument cluster is pressed.

8. ABS warning lamp -K47-

NOTE: The indicator lamp monitors the ABS and the Electronic Differential Lock (EDL).

- Component location: In tachometer
- Lights up for several seconds when ignition is switched on and goes out after an automatic ABS system self-check if there are no malfunctions in the ABS system.
- There is an ABS malfunction if the indicator light:
 - Does not light up when ignition is switched on,
 - Does not go out after a few seconds,
 - Lights up while driving.
- ABS malfunctions have no effect on the brake system. However, a change in braking behavior should be checked.

NOTE: The Electronic Differential Lock (EDL) and ABS work together. The ABS indicator light lights up when the EDL malfunctions.

9. ABS/ESP Control Lamp -K155-

- Component location: In tachometer
- Blinks when driving if ESP/ASR engages regularly.
- Comes on when ignition is switched on and goes out after a short self-check.
- Comes on if there is an ESP system malfunction.
- Comes on if there is an ABS system malfunction because ESP and ABS work together.
- Comes on when ASR is switched off.
- Lights up during sensor programming if:
 - Battery was disconnected and connected,
 - Vehicle was started with jump start,
 - Battery is too weak.
- After sensor programming procedure, the ESP light goes out after driving a short distance.

10. Left front ABS wheel speed sensor G47

- Removing and Installing **FRONT ABS WHEEL SPEED SENSORS**
- Can be tested in "Guided Fault Finding" with vehicle diagnosis, testing and information system VAS 5051B or VAS 5052

11. ABS Control Module -J104-

- Removing and Installing **ABS HYDRAULIC UNIT WITH ABS CONTROL MODULE**

12. Return ring

- Removing and Installing **STEERING ANGLE SENSOR**

13. Steering Angle Sensor -G85-

- Component location: Installed in coil ring with slip ring on steering column.
- Removing and Installing **STEERING ANGLE SENSOR**
- Perform zero adjustment

Vehicle diagnosis, testing and information system VAS 5051B or VAS 5052

14. Right Front ABS Wheel Speed Sensor -G45-

- Removing and Installing **FRONT ABS WHEEL SPEED SENSORS**

15. ASR/ESP Button -E256-

- Component location: In center console
- Switches ASR off and on

16. Audi Hold Assist pressure switch

- Located in center console
- Function **AUDI HOLD ASSIST**
- Removing and Installing **AUDI HOLD ASSIST SWITCH**

17. Parking Brake Pressure Switch -F234-

- Located in center console
- Removing and Installing **ELECTRO-MECHANICAL PARKING BRAKE SWITCH**

18. Data Link Connector (DLC)

- Component location: Cover in driver footwell



Fig. 3: Connecting Diagnostic Cable VAS 5051/5A To Diagnostic Connector
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AUDI HOLD ASSIST

Depending on the model, the vehicle may be equipped with Audi Hold Assist (AHA).

Function

The function assists the driver if the vehicle must remain stopped frequently or for long periods of time when the engine is running.

When the vehicle is stopped and the function is activated, the vehicle is held in place by Audi Hold Assist (AHA).

The driver can release the brake pedal.

The vehicle is held in place by maintaining the brake pressure on all four wheels in ESP.

To prevent the ESP solenoid valves to overheat when stopped for long periods of time, the rear electro-mechanical parking brake automatically takes over braking when the solenoid valves reach a temperature of 200

°C.

The point when the brakes automatically release is based on the following information:

- Engine speed
- Angle
- Gear engaged
- With manual transmissions, distance on the clutch pedal through clutch sensor
- With automatic transmissions, through converter release

To prevent vehicle from rolling back, the brakes are only released when there is sufficient engine torque.

Activation

The following conditions must be fulfilled to switch "stand by" function on:

- Driver wearing seat belt
- Engine running
- Driver door closed
- No ESP and electronic parking brake malfunctions.

The switch -2- in center console activates function.

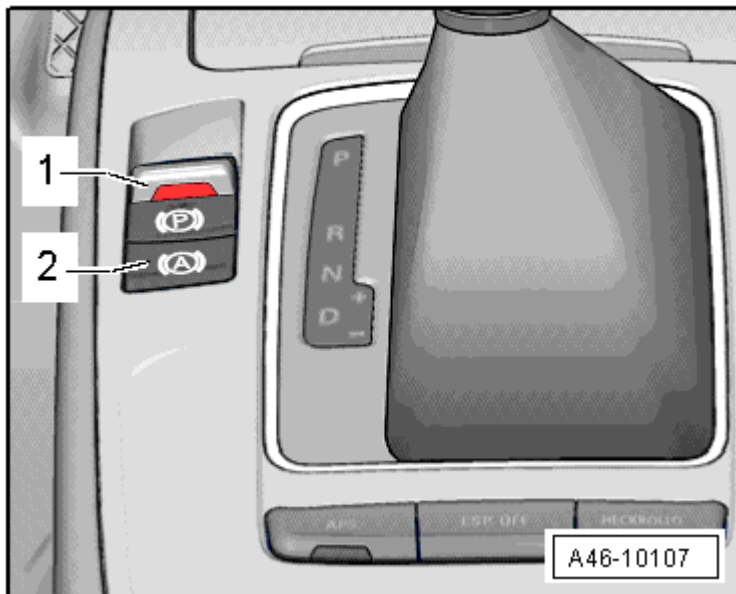


Fig. 4: Identifying Hold / Parking Brake Switches
Courtesy of AUDI OF AMERICA, LLC

The switch indicates operating conditions.

- Deactivated - LED in switch is off.
- Stand by - LED in switch is on.
- Active - LED in switch is on and instrument cluster display shows a "green P".

Braking function is only transferred from ESP to the electronic parking brake if the "green P" in the instrument cluster is visible and if:

- Solenoid valves in ESP have reached a temperature of 200 °C
- Driver door is opened
- Driver seat belt is unlatched
- Engine is stopped
- Ignition is switched off
- Switch is operated
- Brake pedal or gas pedal are pressed.
- Audi Hold Assist switch is operated without pressing the brake.

NOTE: When braking function is transferred from the ESP to the electronic parking brake, the instrument cluster display changes from a "green P" to a "red P".

ABS HYDRAULIC UNIT WITH ABS CONTROL MODULE ASSEMBLY OVERVIEW

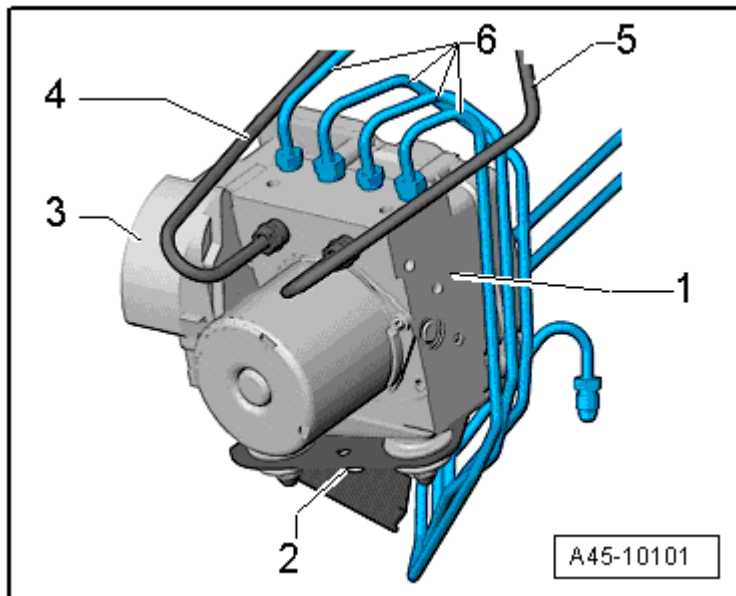


Fig. 5: Identifying ABS Hydraulic Unit With ABS Control Module Assembly Overview
Courtesy of AUDI OF AMERICA, LLC

1. ABS Hydraulic Unit -N55- with ABS Control Module -J104-
 - Component location: In left of the engine compartment.
 - Removing and Installing **ABS HYDRAULIC UNIT WITH ABS CONTROL MODULE.**

- The hydraulic control unit is comprised of the ABS Hydraulic Unit -N55- with integrated Brake Pressure Sensor 1 -G201- and ABS Control Module -J104-.
- The components must not be separated from each other.
- Do not disconnect connector before successfully completing OBD.
- Switch ignition off before disconnecting connector.
- The Brake Pressure Sensor 1 -G201- is integrated into ABS Hydraulic Unit -N55- and cannot be replaced.

CAUTION: The ABS Hydraulic Unit -N55- and ABS Control Module -J104- must not be separated from each other.

2. ESP bracket
 - The bracket cannot be removed.
3. ABS control module J104 electrical connector
4. Brake line
 - To brake master cylinder.
 - 14 Nm
5. Brake line
 - To brake master cylinder.
 - 14 Nm
6. Brake lines
 - Hydraulic unit to right front brake caliper
 - 14 Nm
 - Hydraulic unit to left front brake caliper
 - 14 Nm
 - Hydraulic control unit to left rear brake caliper
 - 14 Nm
 - Hydraulic control unit to right rear brake caliper
 - 14 Nm

ABS/ELECTRONIC STABILIZATION PROGRAM SPEED SENSOR ASSEMBLY OVERVIEW

Right front illustration

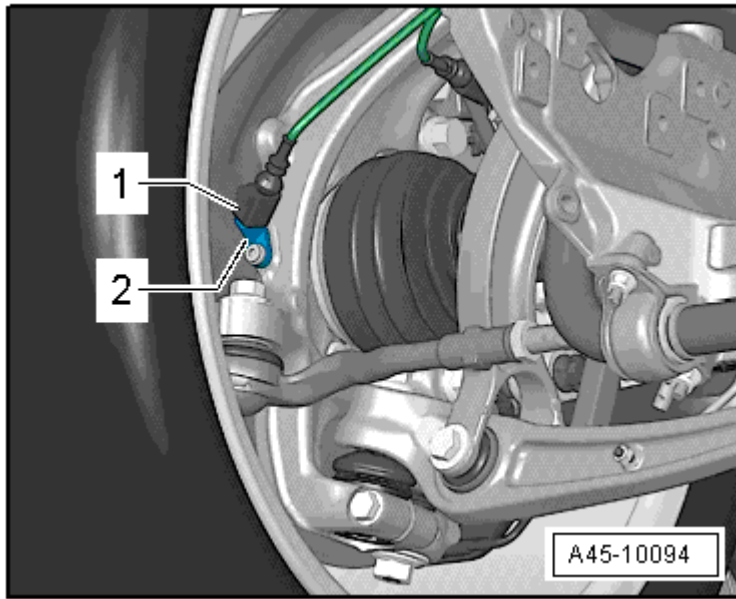


Fig. 6: Identifying ABS/Electronic Stabilization Program Speed Sensor Assembly Overview
 Courtesy of AUDI OF AMERICA, LLC

1. Speed sensors G45 and G47
2. Socket head bolt
 - 9 Nm

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Components	Fastener Size	Nm
Brake lines to hydraulic unit M10 (dia. 5 mm brake lines)		12
Brake lines to hydraulic unit M12 (dia. 5 mm brake lines)		12
Brake lines to hydraulic unit M12 (dia. 8 mm brake lines)		16
ABS/ESP speed sensor to wheel bearing housing		9

REMOVAL AND INSTALLATION

AUDI HOLD ASSIST SWITCH

Removing

- Remove center console **Removal and Installation** .
- Remove Audi Hold Assist switch -2- **[For engine(s) CAEB, CALA, CCBA] Removal and Installation** .

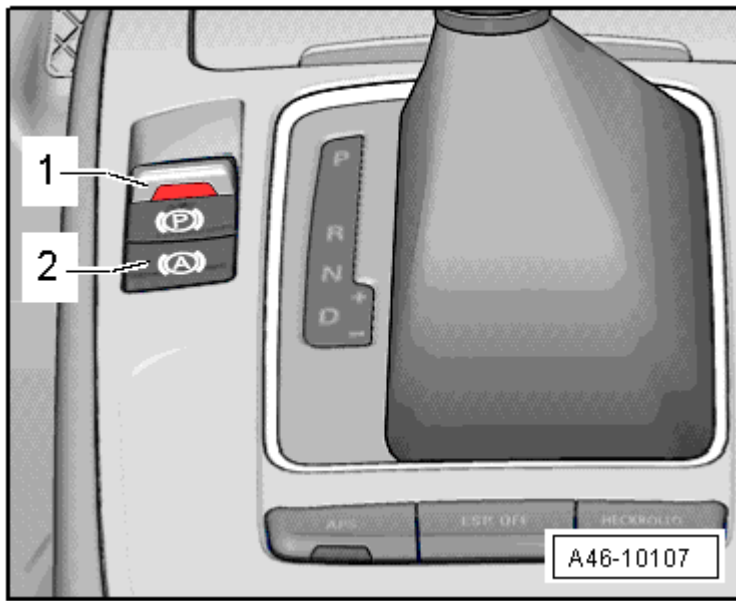


Fig. 7: Identifying Hold / Parking Brake Switches
Courtesy of AUDI OF AMERICA, LLC

Installing

-- Installation is in reverse sequence.

BRAKE LAMP SENSOR

Special tools and workshop equipment required

- Release Tool for Brake Light Switch -T40168-

NOTE:

- After removing, the brake lamp sensor can be re-used.
- The brake light sensor programs itself. It is not necessary to calibrate it after installation.

Removing

-- Remove driver side storage compartment -1 to 3--.



-- Disconnect electrical connector to footwell vent -C-

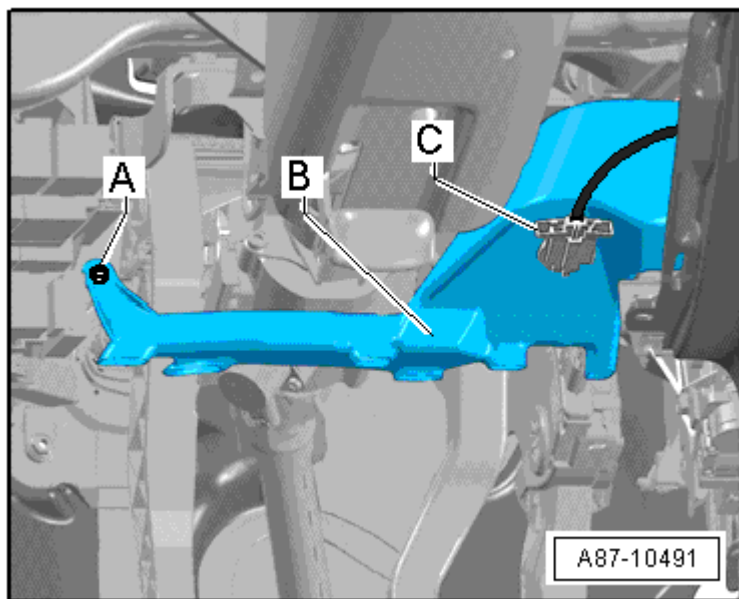
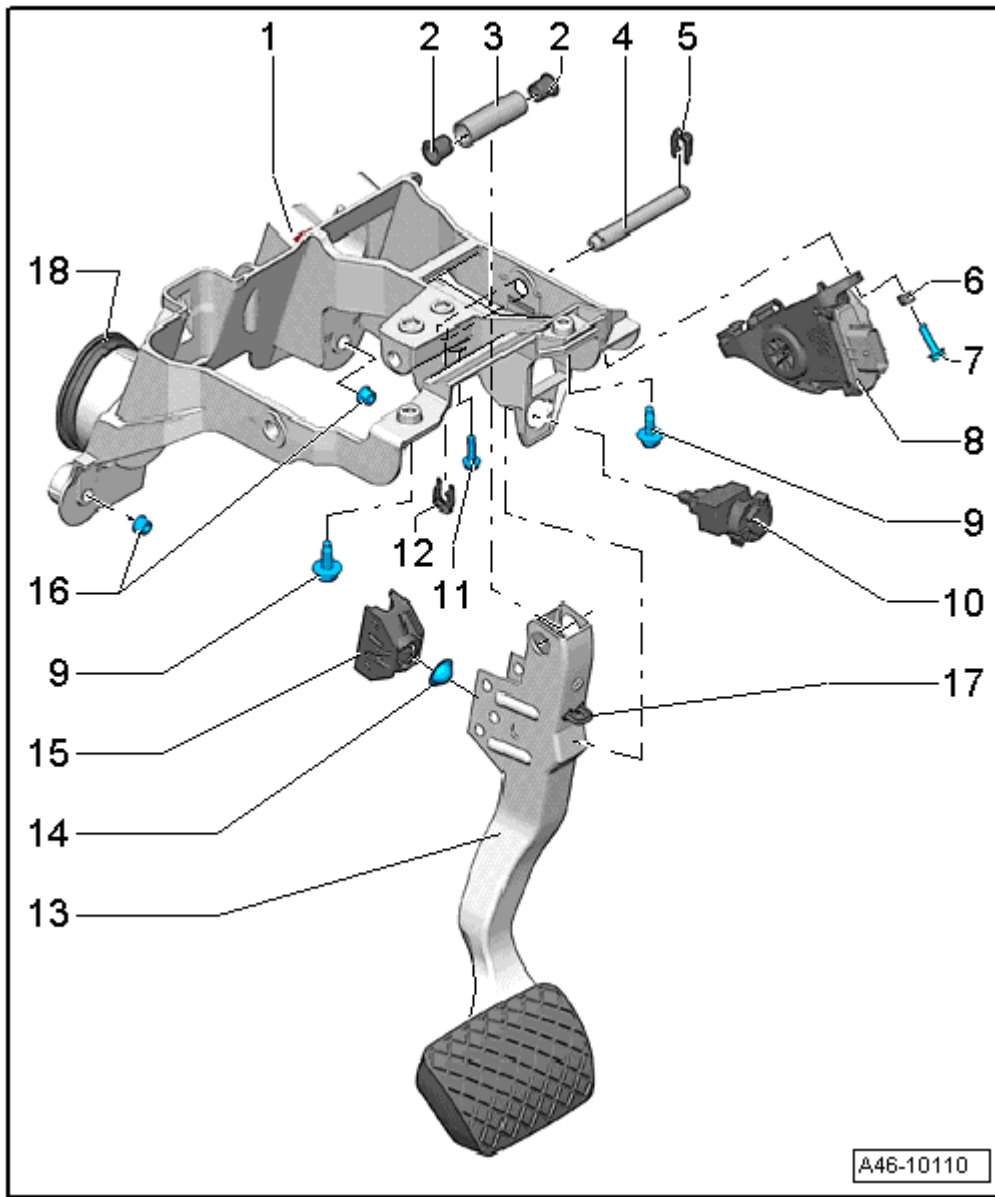


Fig. 9: Identifying Footwell Vents

Courtesy of AUDI OF AMERICA, LLC

- Remove footwell vents -A- and -B-.
- Disconnect electrical connector to brake light sensor.



A46-10110

Fig. 10: Identifying Brake Pedal Assembly Overview

Courtesy of AUDI OF AMERICA, LLC

NOTE: The brake pedal stop -17- must always be installed, there is the danger that the brake lamp sensor bracket -10- could brake when the brake pedal is unlocked.

-- Press brake light sensor plunger -10- all the way in using a finger.

-- With plunger pressed in, rotate the colored piece on the brake light sensor left as far as stop to release switch.

NOTE: The plunger must remained pressed in when releasing the brake light sensor.

-- Let go of brake light sensor plunger after releasing.

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BRAKES Anti-Lock Brake System (Sedan)

-- Insert a release tool for brake light switchT40168 between brake light sensor plunger and brake pedal.

The cone on the tool must face in the direction of the driver seat. The opening on the tool must align with the bulge on the brake light sensor.

-- Press release tool for brake light switchT40168 against brake lamp sensor. This releases three retaining tabs on the brake lamp sensor.

-- Remove brake lamp sensor from mount.

Installing

NOTE: The brake pedal stop -17- must always be installed, there is the danger that the brake lamp sensor mount -10- could brake when the brake pedal is unlocked.



NOTE:

- When installing the brake lamp sensor, the plunger adjusts itself automatically.
- The brake pedal must remain in end position during installation and must not be moved.
- The brake pedal must be connected with the brake booster.

NOTE:

- The brake lamp sensor must engage audibly with all three retaining tabs.

- The switch must not be rotated in the mount on the brake pedal.
- When installing the brake lamp sensor, the plunger adjusts itself automatically.

- Rotate colored piece on the brake lamp sensor to the right as far as the stop to secure the switch.
- Connect electrical connector to brake lamp sensor.
- Install footwell vents -A- and -B-.

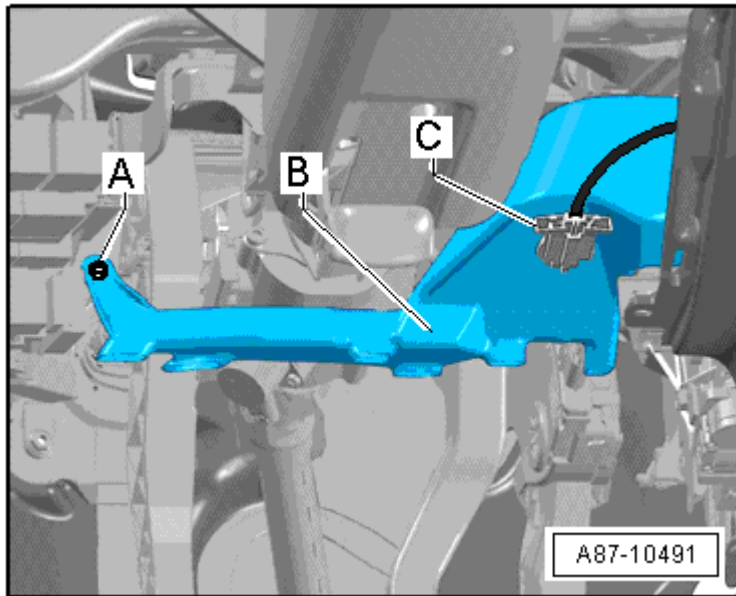


Fig. 12: Identifying Footwell Vents
Courtesy of AUDI OF AMERICA, LLC

- Tighten footwell vent bolt -A-.
- Connect electrical connector to footwell vent -C-.
- Install driver side storage compartment -1 to 3-.

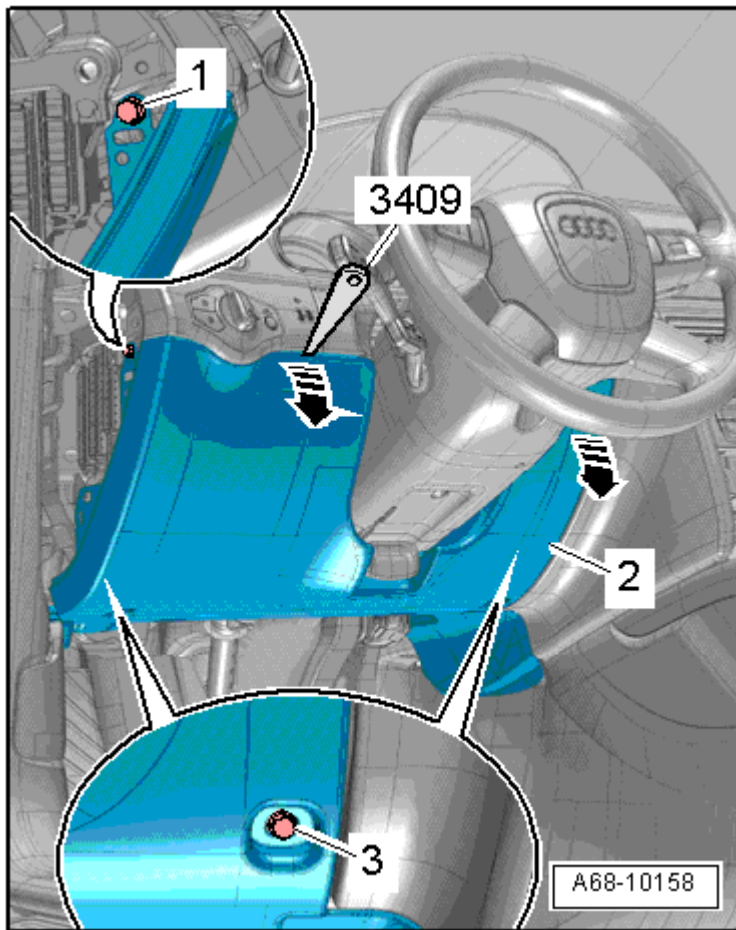


Fig. 13: Identifying Driver Side Storage Compartment
Courtesy of AUDI OF AMERICA, LLC

NOTE: Check brake lamp sensor function after installing it and before driving.

ESP SENSOR UNIT -G419- / ESP SENSOR UNIT 2 -G536-

CAUTION: The ESP sensor unit is susceptible to strong vibrations and impacts. Strong vibrations and impacts can damage the ESP sensor unit. If the ESP sensor unit has fallen on the floor, correct function is no longer ensured and the unit should not be installed.

The ESP sensor unit -G419- is installed under left seat on all models.

Special tools and workshop equipment required

- Torque Wrench V.A.G 1410

NOTE: • ESP sensor unit 2 is not installed on all models.

- The ESP sensor unit and ESP sensor unit 2 are installed under the left seat on all models.

Removing

ESP sensor unit -1- and ESP sensor unit 2 -3- are always installed under the left seat.

NOTE: The arrow on the sensor units points in the direction of travel.

-- Remove left seat Removal and Installation .

-- Fold bar on carpet up.

On vehicles where bar on the carpet is not cut through, cut through it using a sharp knife.

-- Remove footwell vent.

-- Disconnect electrical connector -2-.

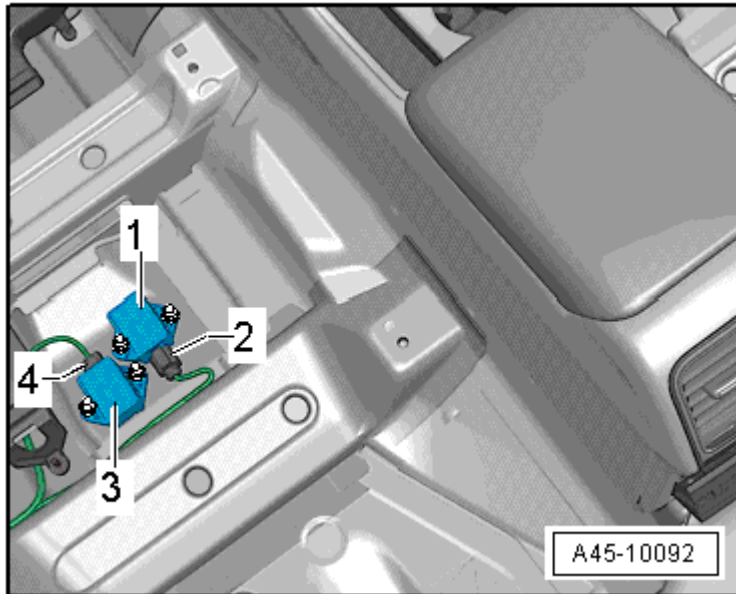


Fig. 14: Identifying ESP Sensor Unit
Courtesy of AUDI OF AMERICA, LLC

-- Remove sensor unit mounting nuts.

-- Remove ESP sensor unit -1- or ESP sensor unit 2 -3- upward out of the vehicle.

Installing

NOTE: The arrow on the sensor unit points in the direction of travel.

CAUTION: Strong vibrations can destroy the ESP Sensor Unit.

-- Install ESP sensor unit -1- or ESP sensor unit 2 -3- into the mounts from the top.

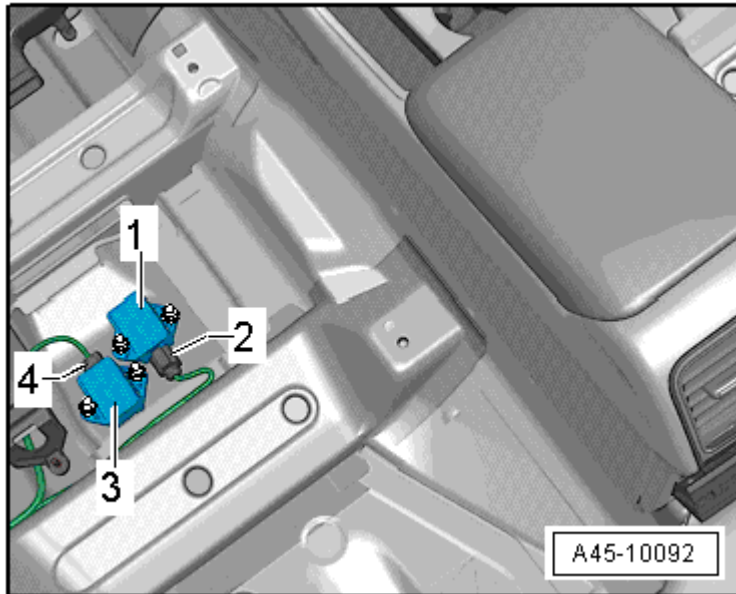


Fig. 15: Identifying ESP Sensor Unit
Courtesy of AUDI OF AMERICA, LLC

Make sure the sensor units are properly seated on the bracket and free of tension when installing them.

-- Install and tighten sensor unit mounting nuts.

-- Connect the connector -2- or -4-.

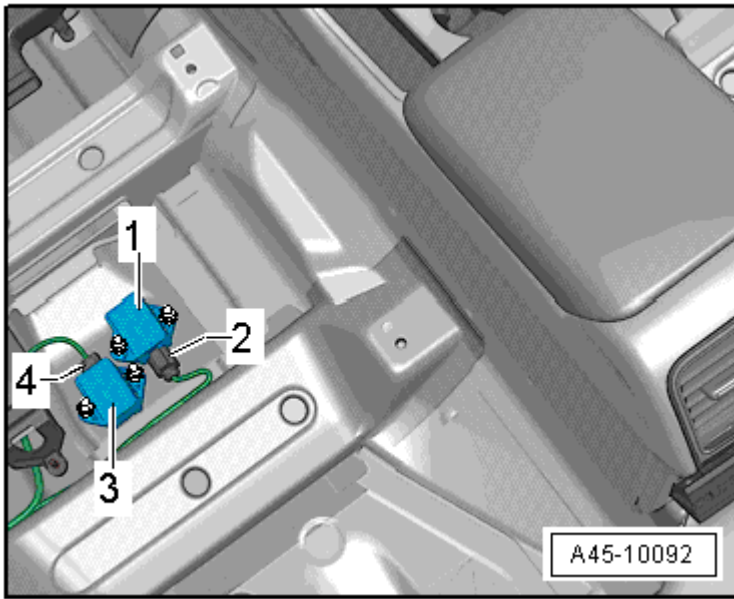


Fig. 16: Identifying ESP Sensor Unit
Courtesy of AUDI OF AMERICA, LLC

- Install footwell vent.
- Fold bar on carpet down.
- Install left seat **Removal and Installation** .

After replacing the ESP sensor unit G419, perform a basic setting (calibration) on the following sensors.

- Transverse acceleration sensor G200
- Longitudinal acceleration sensor G251

Use vehicle diagnosis, testing and information VAS 5051B or VAS 5052 for this.

-- On display, select:

- Chassis
- Brake System
- 01- On Board Diagnostic (OBD) capable systems
- 03 - Brake electronics

-- Select the following functions on the display:

- Calibrate transverse acceleration sensor G200
- Calibrate longitudinal acceleration sensor G251

-- Then perform the ESP driving and system test.

STEERING ANGLE SENSOR

The steering angle sensor G85 is installed between the steering wheel and steering column switch.

Removing

-- Set wheels to straight ahead position.

Coil connector with slip ring -1-.

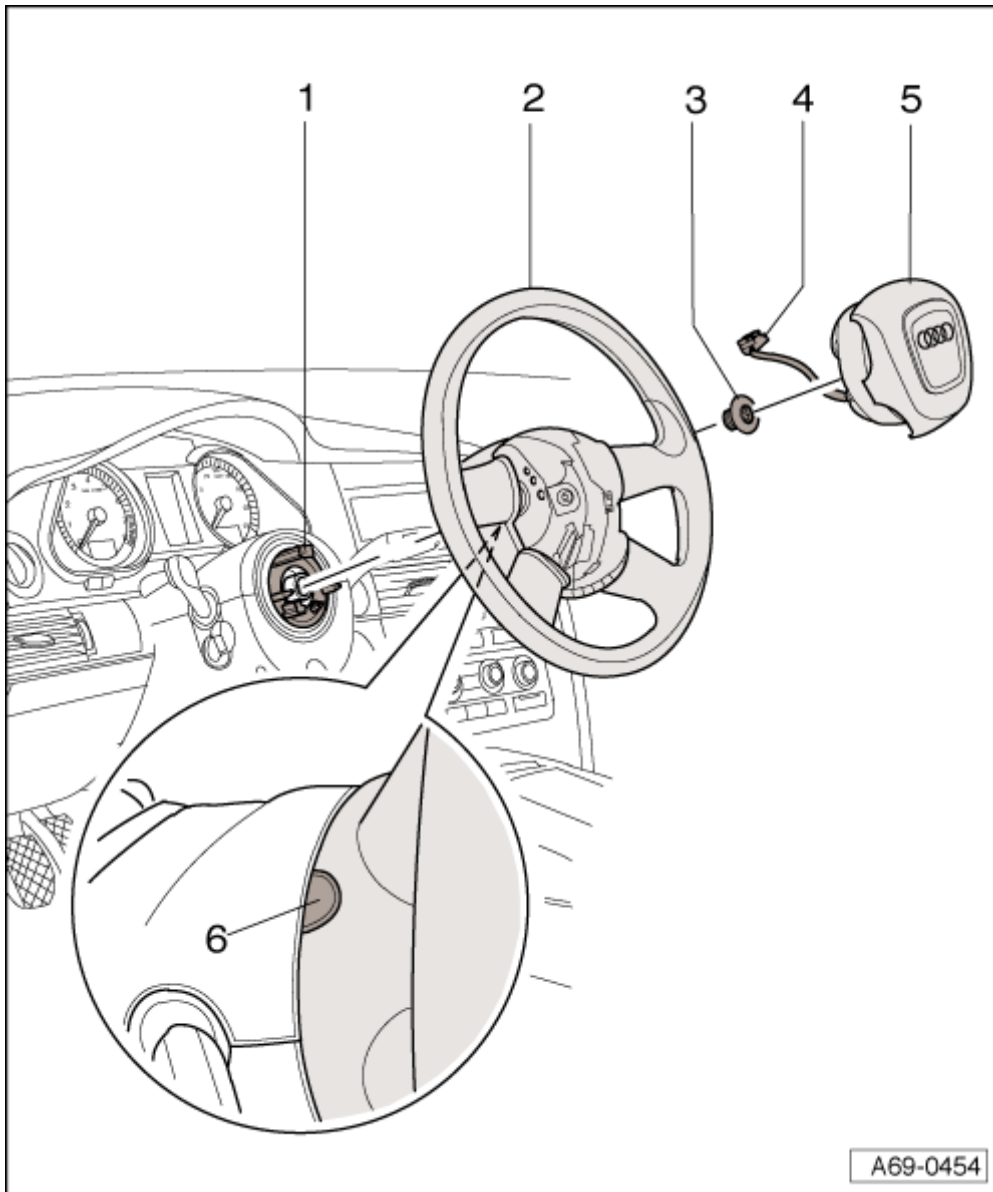


Fig. 17: Identifying Driver Airbag - Assembly Overview
Courtesy of AUDI OF AMERICA, LLC

-- Remove airbag unit and steering wheel [**For engine(s) CAEB, CALA, CCBA**] **Removal and Installation** .

- Clipped onto switch for turn signals, high/low beam headlamps and headlamp flasher.
- Clipped to coil ring with slip ring.

CAUTION: The coil ring with slip ring must not be turned when they have been removed.

- Remove steering column switch module **[For engine(s) CAEB, CALA, CCBA] Removal and Installation** .

Installing

Installation is in reverse order of removal.

- Install airbag unit and steering wheel **[For engine(s) CAEB, CALA, CCBA] Removal and Installation** .
- Calibrate steering angle sensor -G85-.

Use vehicle diagnosis, testing and information system VAS 5051B or VAS 5052 for this.

- On the display, select:

- Chassis
- Brake system (Repair Group 01;45)
- 01- On Board Diagnostic (OBD) capable systems
- 03 - ABS/ESP brake electronics

- Select desired function on display.

- ABS control module J104, ASR and ESP functions
- Steering angle sensor G85 calibration, Vehicle diagnosis, testing and information system VAS 5051 B or VAS 5052.

- Then perform the ESP driving and system test.

ELECTRO-MECHANICAL PARKING BRAKE SWITCH

Removing

- Remove center console **Removal and Installation** .
- Remove parking brake switch -F321- -1- **[For engine(s) CAEB, CALA, CCBA] Removal and Installation** .

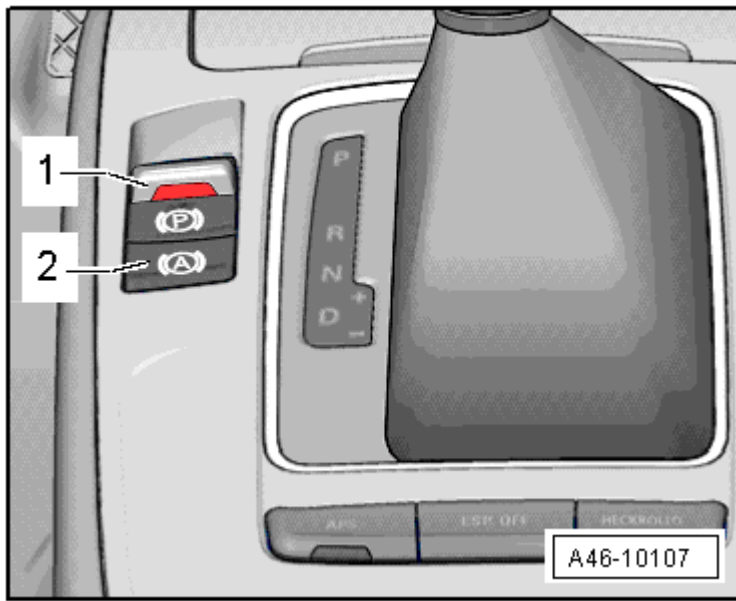


Fig. 18: Identifying Hold / Parking Brake Switches
Courtesy of AUDI OF AMERICA, LLC

The switch is clipped into front of center console on the side.

Installing

-- Installation is in reverse order of removal.

ABS HYDRAULIC UNIT WITH ABS CONTROL MODULE

The ABS hydraulic unit N55 with ABS control module J104 is located in the left front of the engine compartment.

Special tools and workshop equipment required

- Brake Pedal Actuator V.A.G 1869/2
- Repair Kit Plugs 1H0 698 311 A

CAUTION: The ABS control module J104 and ABS hydraulic unit N55 must not be separated.

Removing

-- Read control module version and make a note of it.

Use vehicle diagnosis, testing and information system VAS 5051B or VAS 5052 for this.

-- Disconnect battery, refer to [For engine(s) CAEB, CALA, CCBA] Removal and Installation , note radio

code.

-- Insert brake pedal actuator V.A.G 1869/2 between brake pedal and driver seat by pressing brake pedal down at least 60 mm. By doing this, the valves in the brake master cylinder are closed and the brake fluid reservoir does not run empty.

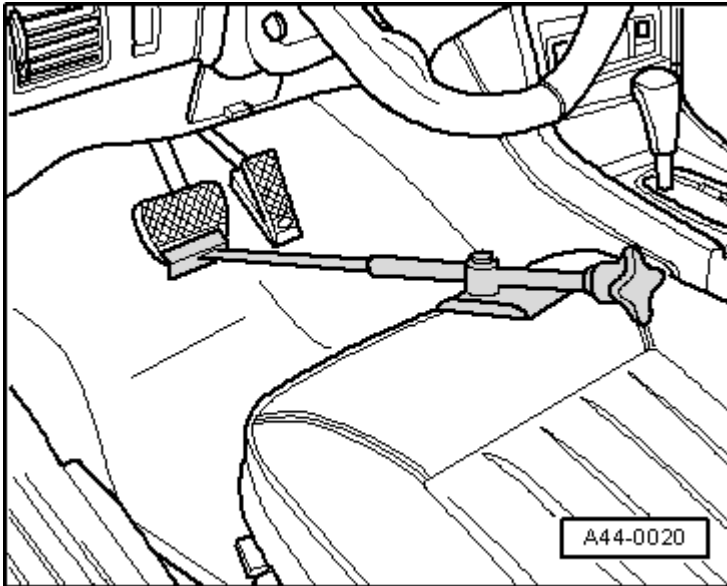


Fig. 19: Identifying Brake Pedal Depressor VAG 1869/2 Inserted Between Brake Pedal And Driver's Seat
Courtesy of AUDI OF AMERICA, LLC

- Connect hose from a bleeder bottle to bleeder screw on left front caliper.
- Connect hose from a bleeder bottle to bleeder screw on left rear caliper.
- Open bleeder screws on left front and rear brake calipers to reduce pressure in the ABS hydraulic unit N55.
- Close left front and left rear bleeder screws.

NOTE: **Do not remove brake pedal loading device V.A.G 1869/2.**

- Press securing clip on connector to the control module -1- up.

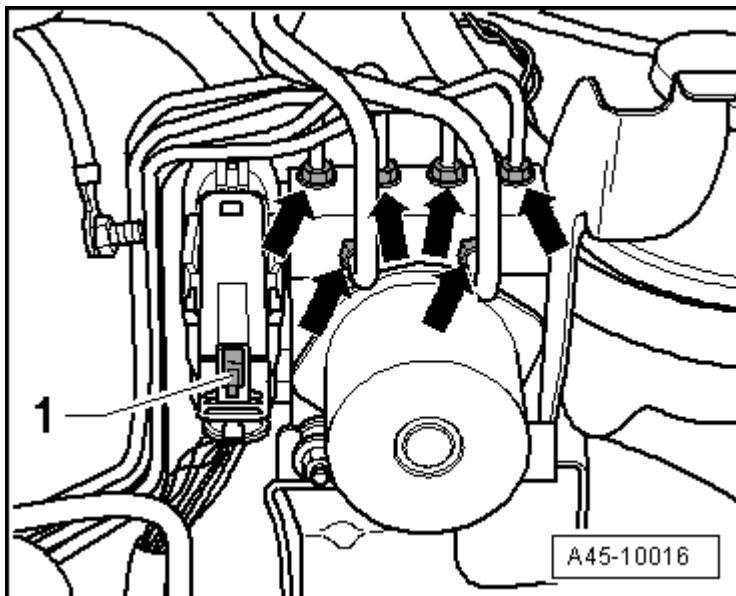


Fig. 20: Identifying Brake Lines

Courtesy of AUDI OF AMERICA, LLC

-- Pull securing bracket in direction of -arrow- and remove connector.

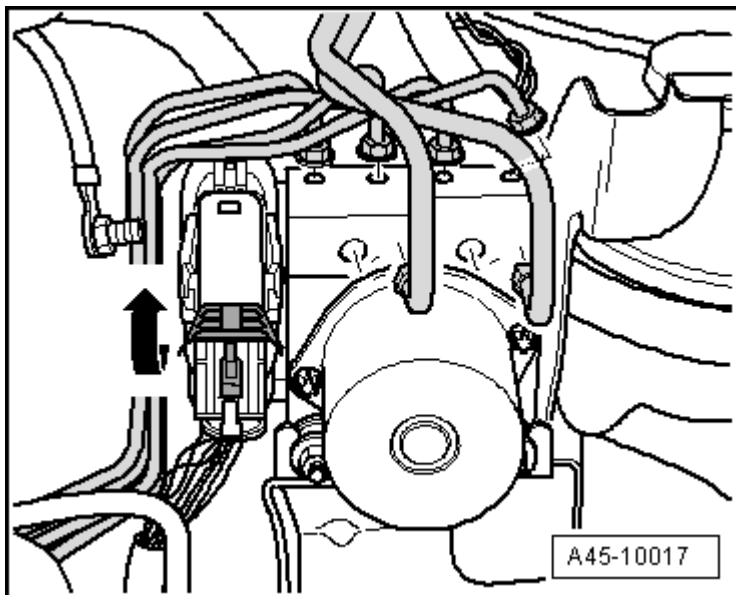


Fig. 21: Pushing Retaining Plate And Disconnecting Connector

Courtesy of AUDI OF AMERICA, LLC

NOTE:

- Ensure no brake fluid enters control module connector housing. This could lead to corrosion of the contacts and thereby cause the system to fail.
- A contaminated connector housing must be carefully cleaned with compressed air.

-- To protect against escaping brake fluid, place a lint-free cloth in the area under the control module J104 and hydraulic unit N55.

-- Mark brake lines for installation later.

WARNING: Do not bend or kink the brake lines.

-- Remove brake lines from ABS hydraulic unit N55 and brake master cylinder.

-- Remove remaining brake lines -arrows- from ABS hydraulic unit N55.

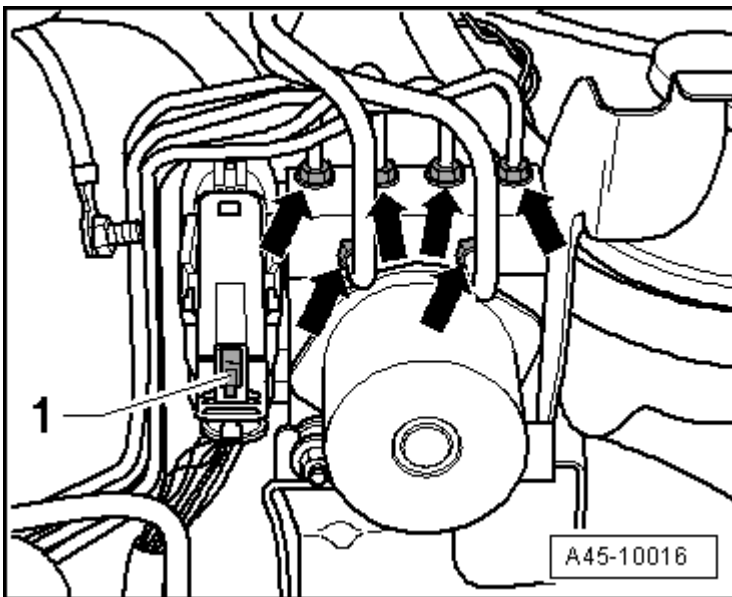


Fig. 22: Identifying Brake Lines
Courtesy of AUDI OF AMERICA, LLC

-- Seal brake lines and threaded holes with plugs from repair kit.

-- Carefully remove ABS hydraulic unit N55 together with ABS control module J104 upward from bracket.

NOTE: When removing the ESP control module from the bracket, make sure the rubber buffers do not fall into the engine compartment.

WARNING: Excessive shaking (e.g. dropping, impact) may destroy the control module. Control module must then no longer be used.

-- Set hydraulic unit N55 with control module J104 down on a clean, level surface.

NOTE: Seal threaded holes and brake lines with plugs after removing the ABS control

module J104 and ABS hydraulic unit N55.

WARNING: The hydraulic pump must not be separated from the hydraulic unit N55.

Installing

Installation is in reverse order of removal, with special attention to the following:

NOTE:

- **For customer service, the hydraulic unit N55 is filled with brake fluid.**
- **Remove sealing plugs on the new hydraulic unit N55 when the corresponding brake line is going to be installed.**
- **If the sealing plugs are removed from the hydraulic unit N55 before installing the corresponding brake line, the brake fluid will drain. If that is the case, sufficient brake system bleeding can no longer be ensured.**

NOTE:

All the rubber buffers must be inserted in the bracket.

-- Press hydraulic unit N55 with control module J104 down into bracket in the vehicle.

NOTE:

When pressing ESP control module into the bracket, counterhold the rubber buffers so they do not fall through.

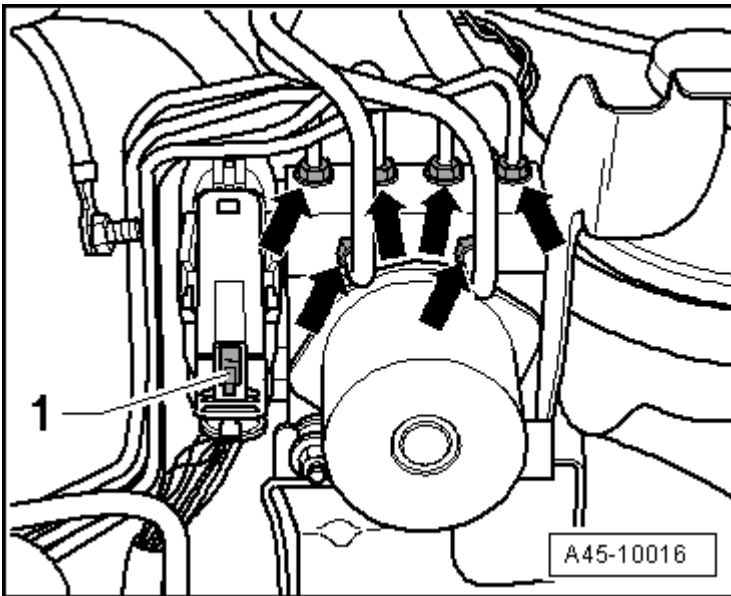
-- Connect brake lines according to the markings.

CAUTION: If the brake line connectors are replaced, an ABS/ESP system malfunction will register.

NOTE:

By performing the output check diagnosis, it can be determined if the line connections were interchanged.

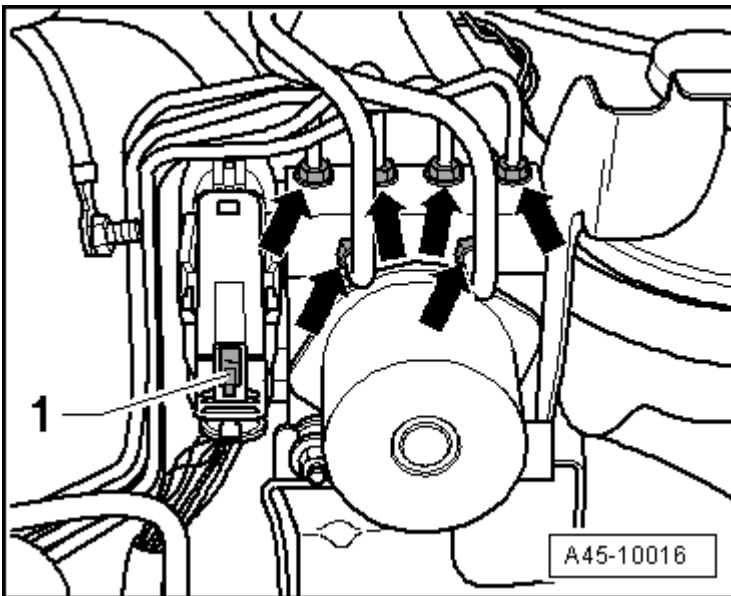
-- Tighten all brake lines -arrow- on hydraulic unit N55.

**Fig. 23: Identifying Brake Lines**

Courtesy of AUDI OF AMERICA, LLC

Component	Nm
All brake lines to the hydraulic unit	14

- Connect electrical connector on control module J104.
- Press locking bracket down until it engages audibly.
- Press securing clip -1- down and engage it.

**Fig. 24: Identifying Brake Lines**

Courtesy of AUDI OF AMERICA, LLC

- Remove brake pedal loading device V.A.G 1869/2.
- Bleed brake system **BRAKE SYSTEM, BLEEDING** .
- After securing brake lines on hydraulic unit N55, perform output diagnostic test mode.

NOTE: **By performing the output check diagnosis, it can be determined if the line connections were interchanged.**

Use vehicle diagnosis, testing and information VAS 5051B or 5052 for this.

If ABS Hydraulic Unit J104 was replaced, it must be coded.

Use vehicle diagnosis, testing and information system VAS 5051B or VAS 5052 for this.

-- On display, select:

- Chassis
- Brake System
- 01- On Board Diagnostic (OBD) capable systems
- 03 - Brake electronics

-- Select the following functions on the display:

- ABS/ASR/ESP control module J104
- ABS/ASR/ESP control module J104, functions
- J104 Coding control module

The following sensors should also be calibrated after replacing control module J104.

- Steering angle sensor G85
- Transverse acceleration sensor G200
- Longitudinal acceleration sensor G251

Use vehicle diagnosis, testing and information system VAS 5051B or VAS 5052 for this.

-- On display, select:

- Chassis
- Brake System
- 01- On Board Diagnostic (OBD) capable systems
- 03 - Brake electronics

-- Select the following functions on the display:

- ABS/ASR/ESP control module J104
- ABS/ASR/ESP control module J104, functions.

-- Then perform the ESP driving and system test.

ELECTRONIC STABILIZATION PROGRAM BRACKET

The bracket for the hydraulic unit N55 and the control module J104 cannot be removed.

FRONT ABS WHEEL SPEED SENSORS

NOTE: The sensor ring/rotor is installed in the respective wheel bearing unit and cannot be replaced.

Removing

- Raise vehicle.
- Remove wheels.
- Release connector -1- on speed sensor and disconnect.

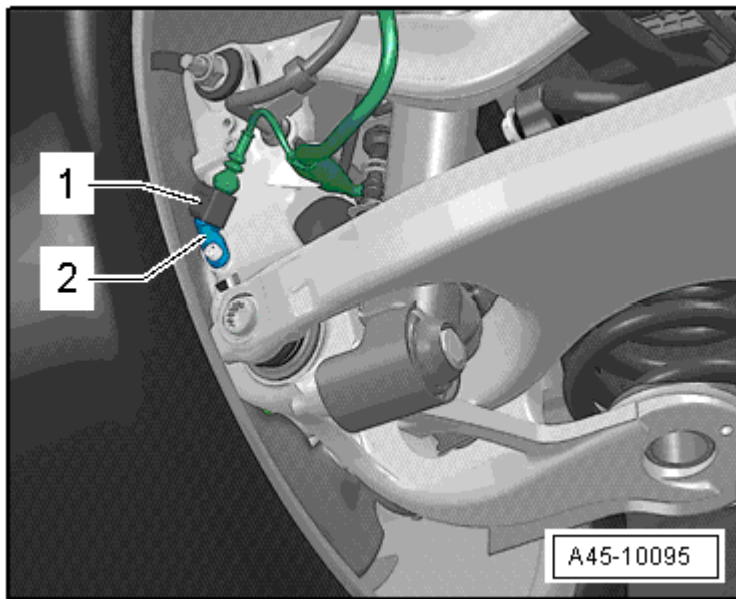


Fig. 25: Identifying ABS Wheel Speed Sensor
Courtesy of AUDI OF AMERICA, LLC

- Remove bolt -2-.

-- Remove speed sensor from wheel bearing housing.

Installing

Installation is in reverse of removal, with special attention to the following:

-- Before inserting speed sensor, clean hole inner surface and coat speed sensor all-round with Polycarbamide grease G 000 650.

-- Turn steering completely left and right after installation, making sure the speed sensor wiring has sufficient clearance.

-- Install wheels.

Wheel bolt tightening specifications, refer to **Specifications** .

-- Lower vehicle.

REAR ABS WHEEL SPEED SENSORS

Left rear illustration.

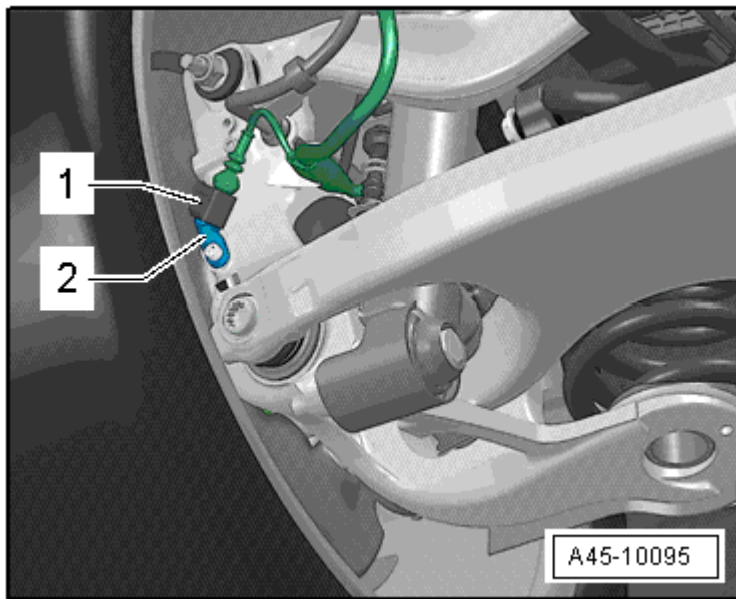


Fig. 26: Identifying ABS Wheel Speed Sensor
Courtesy of AUDI OF AMERICA, LLC

1. Speed sensors G44 and G46
2. Socket head bolt
 - 9 Nm.

NOTE: The sensor ring/rotor is installed in the respective wheel bearing unit and cannot be replaced.

Removing

- Raise vehicle.
- Release connector -1- on speed sensor and disconnect.

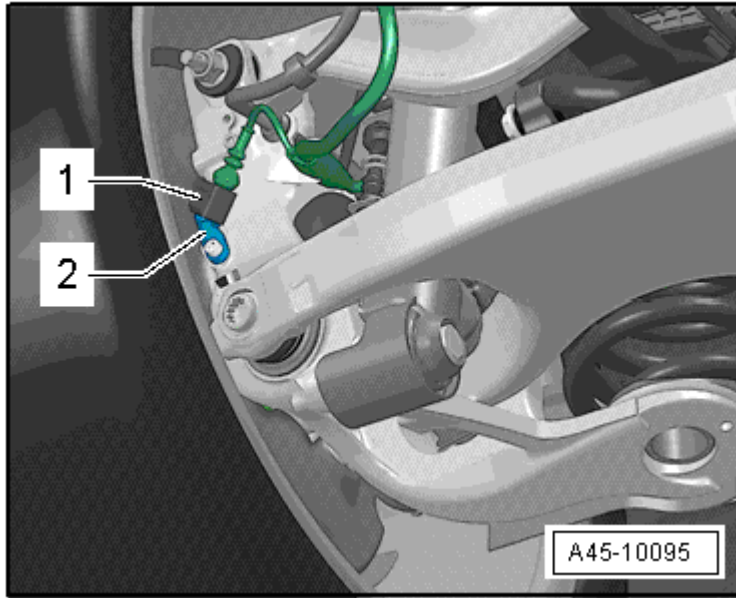


Fig. 27: Identifying ABS Wheel Speed Sensor
Courtesy of AUDI OF AMERICA, LLC

- Remove bolt -2-.
- Remove speed sensor from wheel bearing housing.

Installing

Installation is in reverse order of removal, with special attention to the following:

- Before inserting speed sensor, clean hole inner surface and coat speed sensor all-round with Polycarbamide grease G 000 650.
 - Install wheels.
- Wheel bolt tightening specifications, refer to **Specifications** .
- Lower vehicle.

SPECIAL TOOLS

Special tools and workshop equipment required

- Vehicle diagnosis, testing and information system VAS 5051 B or VAS 5052

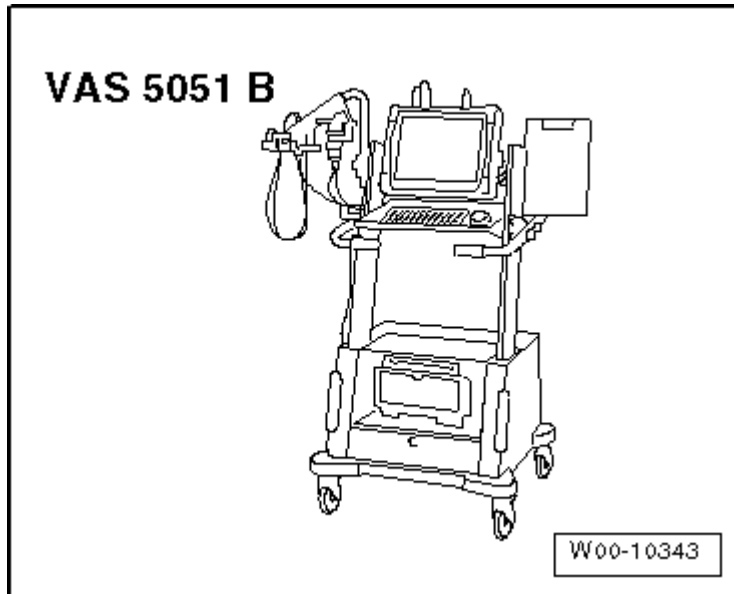


Fig. 28: Identifying Identifying Vehicle Diagnosis, Testing And Information System VAS 5051B
Courtesy of AUDI OF AMERICA, LLC

- Torque Wrench V.A.G 1410

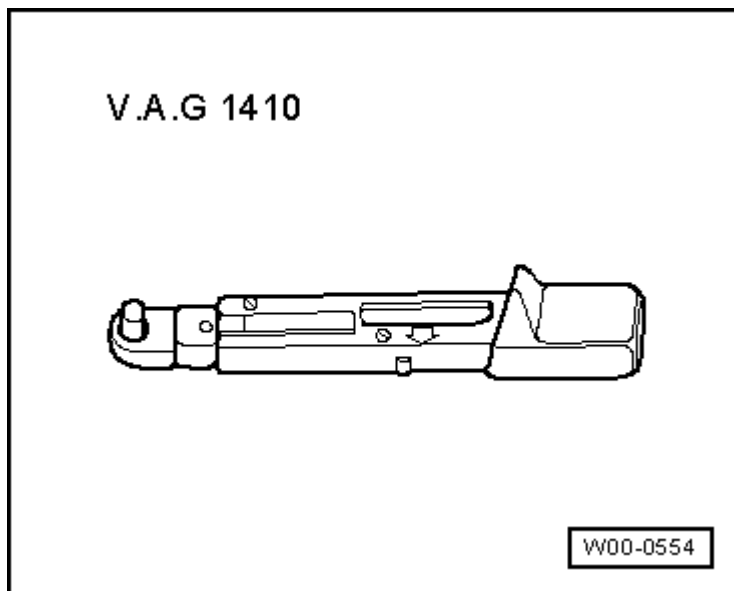


Fig. 29: Identifying Torque Wrench V.A.G 1410
Courtesy of AUDI OF AMERICA, LLC

- Brake pedal actuator V.A.G 1869/2

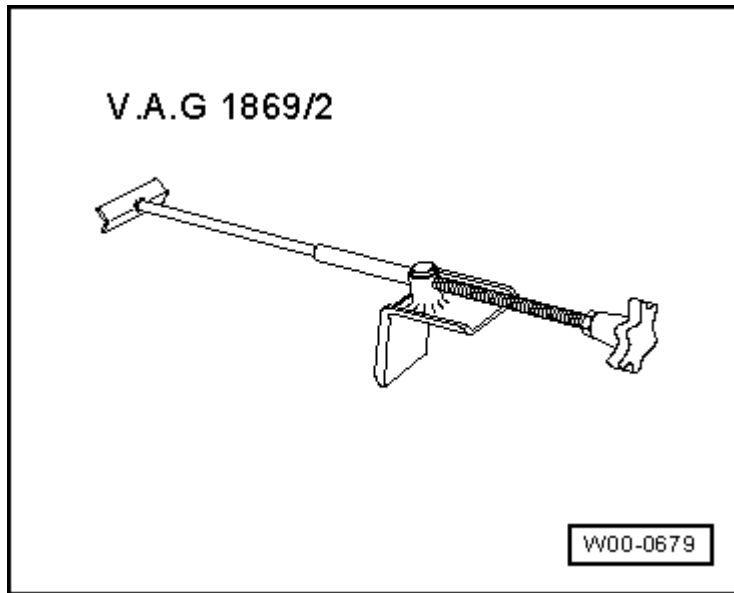


Fig. 30: Identifying Brake Pedal Actuator V.A.G 1869/2
Courtesy of AUDI OF AMERICA, LLC

- Repair kit plugs 1H0 698 311 A