

00 - GENERAL, TECHNICAL DATA

TECHNICAL DATA

Allocation of PR. No. for brakes

The brake system installed in a vehicle is documented on the vehicle data sticker via relevant PR number.

The vehicle data sticker is located in spare wheel well and in Maintenance booklet.

The front wheel brakes PR no. is found at item - **A** -.

WAUZZZ 4F 0 5N000250						
4F2 06C		2272107				
A6 Limousine 2.4 V6						
125 KW		M6S		09 / 03		

LY9B/LY9B			N7U / NK			
A	E0A	OGG	4UF	6XK	5SL	5RU
	1KD	JOZ	1LT			1BA ←
B	3FA			5TD	7XO	
	FOA		8GR	OG1	OYF	OJG
	T45	3NZ	8BB	U1A	X9X	1N3
	2PV		8Q1	9Q3	8Z5	D5D
	7Q2	C1Y	7KO	4X3	2K1	
C	3L5	SOR	4KC	3Y5	4K4	5D7
	1SA			Q1D		4GH
1608 4.4 4.4 4.4 4.4						
A44-10002						

Fig. 1: Allocation Of PR. No. For Brakes
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

The rear wheel brakes PR no. is found at item - **B** -.

- Allocation .
- The following table explains PR numbers. This is important for brake caliper/brake disc and brake pads.

Brakes

Vehicles with front and rear disc brakes

Brake system	
Dual-circuit brake system with diagonal distribution and ABS, EBV, EDL, ASR, ESP, ECD and EPB	

Brake master cylinder	Dia. mm	25.4	25.4
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2008 Audi A6 Quattro

BRAKES Brake System

Brake booster, vacuum	Dia. in inches	8 + 9 Tandem	7 + 8 Tandem
Assist factor		5.0	5.2

Front brakes						
Production-relevant no. (PR. no.)		1LT	1LD	1LG	1LH, 1ZL	1LJ
Brake caliper		FN-3 16	FNR G60 16	FNR G60 16	FNR G60 17	2 FNR 42 AL 18
Brake disc ventilated	Dia. mm	314	321	321	347	385
Brake disc, thickness	mm	25	30	30	30	36
Brake disc, wear limit	mm	22	27	27	27	33
Brake caliper, piston	Dia. mm	57	60	60	60	60
Brake pad thickness	mm	19.5	20.24	20.24	20.24	20.43
Brake pad wear limit	mm	3	4	4	4	4

Brake discs

NOTE:

- Hairline cracks on brake disc friction surfaces are often observed during brake repairs. Hairline cracks up to 10 mm long are not a technical flaw and are not cause for brake disc replacement.
- Brake discs with friction surfaces that have worn through should be replaced.

Rear brakes			
Production-relevant no. (PR. no.)		1KD, 2ED	1KW, 2EE
Brake caliper		C41 EPB (16)	C43 EPB (17)
Brake disc, ventilated	Dia. mm	302	330
Brake disc, thickness	mm	12	22
Brake disc, wear limit	mm	10	20
Brake caliper, piston	Dia. mm	41	41
Brake pad thickness	mm	16.90	17.46
Brake pad wear limit	mm	3	3

BRAKE TEST

General information

The wheels are driven by the test stand.

When testing, place selector lever in driving position N for vehicles with automatic transmission and in neutral position for vehicles equipped with manual transmission.

Follow instructions issued by manufacturer of brake test equipment.

- NOTE:**
- **Electronic brake control systems are inoperative when the ignition is switched off.**

Front Wheel Drive (FWD) vehicles

The brake test is to be performed on a one-axle roller test stand.

The test speed must not exceed 6 Km/h, otherwise, due to the time-delayed run-up of the rollers, the brakes may want to lock up (EDL regulation).

Test stands approved by Audi meet these requirements.

Vehicles with all-wheel drive

Test on a one-axle roller test stand for all-wheel drive vehicles

During this test, the wheels of one axle are driven in opposite directions, to prevent delivering power to the other axle.

The test speed must not exceed 6 Km/h, otherwise, due to the time-delayed run-up of the rollers, the brakes may want to lock up (EDL regulation).

CAUTION: If the test speed exceeds 6 Km/h the Torsen differential will be destroyed!

Test stands approved by Audi meet these requirements.

Test on a one-axle roller test stand

The test speed must not exceed 6 Km/h, otherwise, due to the time-delayed run-up of the rollers, the brakes may want to lock up (EDL regulation).

Test stands approved by Audi meet these requirements.

EPB (electromechanical parking brake) on brake test stand

Test sequence:

FIXYOURCAR

1:36:31 AM

Page 3

- Drive in vehicle with rear wheels on test rollers and do not switch ignition off.
- As soon as the rollers reach a speed between 3 km/h and 9 km/h, "TUV mode" is activated.
- A cancelled-out yellow electromechanical parking brake system --> appears in the instrument cluster Owners manual; Instruments and indicator lights

The EPB functions as follows:

The brakes don't close at once, but rather close a bit each time the button is pressed (parking brake pressure switch). Tension sufficient for measuring will be reached after 3 steps.

One press on the button releases the brakes again.

Prerequisite for "TUV mode" :

- Ignition on
- Front wheels, speed greater = 0 km/h
- Rear wheels, speed min. = 3, max. 9 km/h.

CAUTION: On vehicles with all wheel drive, a brake test stand with regulated wheel set must be used

BRAKE FLUID

General information

Brake fluid is hygroscopic, i.e. it has the capability to absorb water and moisture from the air.

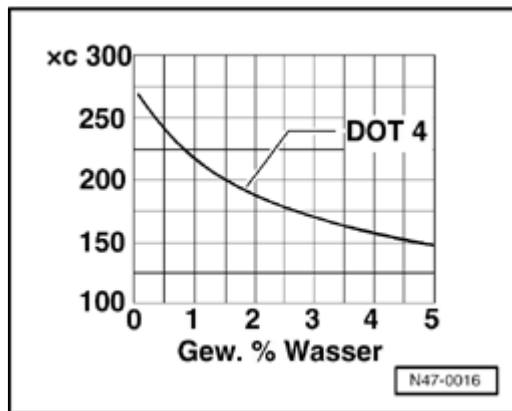


Fig. 2: Brake Fluid Graph

Courtesy of VOLKSWAGEN UNITED STATES, INC.

If water has been absorbed, the boiling point will drop, i.e., during high braking temperatures the brake fluid may develop steam bubbles and cause the brakes to fail.

Over time, brake fluid will darken in color. Dark-colored brake fluid does not specify anything about its quality. The coloring occurs through chemical reactions and can occur after a short time (several weeks), especially in vehicles with ABS.

CAUTION: The rubber components of the brake system (boots, seals) do not tolerate mineral oil, gasoline, and cleaning agents!

Even the smallest amount on a seal or boot can cause the part to change and thereby affect the function of the brake system. The results of an unclean brake system first show themselves months later, causing increased repair costs, especially on vehicles with ABS.

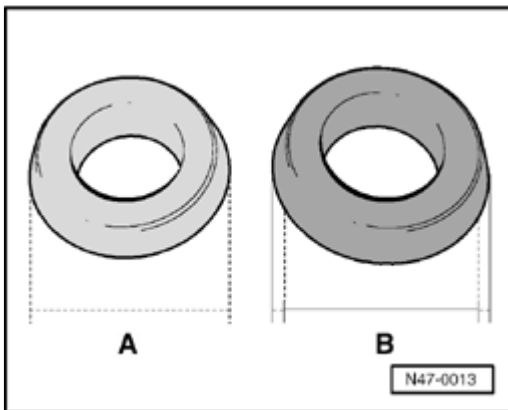


Fig. 3: Sleeve Original Size And Swollen As A Result Of Contact With Mineral Oil
Courtesy of VOLKSWAGEN UNITED STATES, INC.

A = Boot - original size

B = Boot - Swollen through contact with mineral oil

It is implied by the previously mentioned points that:

Keep containers of brake fluid closed securely. This is to make sure that no oil, dirt or cleaning materials and no air moisture can enter the container.

Store containers of brake fluid away from oil (even hydraulic oil) and cleaning fluids to prevent an accidental mixing of both fluids or even filling the brake system with the wrong fluid.

The use of brake fluid approved by AUDI is recommended

45 - ANTI-LOCK BRAKE SYSTEM

Notes for repair work on ABS

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 article, 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).
- When installing a new hydraulic control unit, coding must be checked Vehicle diagnosis, test, and information system VAS 5051.
- Switch ignition off before installation work. On vehicles with coded radio unit, determine code and disconnect battery Ground (GND) strap.
- When working with brake fluid, observe relevant safety precautions and notes --> **Brake fluid**.
- With all work that requires hydraulic system to be opened, brake system should be bled (e.g. with Brake Filler/Bleeder Unit VAS 5234) --> **Pressure leak test**. High and low pressure testing should also be performed on brake system --> **High and low pressure testing**
- During final road test, ensure that an ABS-controlled braking is performed at least one time (pulsing must be felt in brake pedal). See Vehicle Diagnosis, Testing and Information System VAS 5051
- 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 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 packed parts.
- Do not work with compressed air and do not move vehicle while the system is open.
- Make sure that no brake fluid enters plug connectors.

VEHICLE DIAGNOSTIC, TESTING AND INFORMATION SYSTEM VAS 5051 , CONNECTING AND SELECTING FUNCTION

Vehicle Diagnostic, Testing and Information System VAS 5051 , connecting and selecting function

Special tools, testers and auxiliary items required

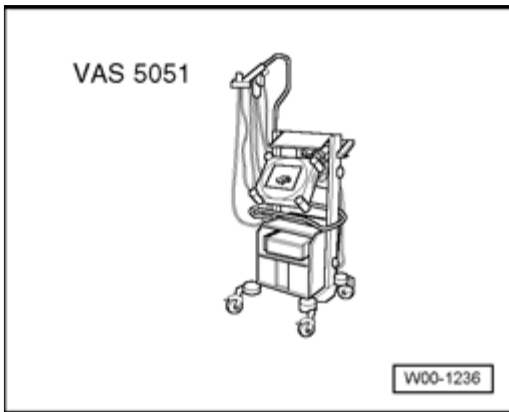


Fig. 4: VAS 5051 Vehicle Diagnosis, Testing and Information System
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Vehicle diagnostic, test and information system VAS 5051

CAUTION:

- During a test drive, the testing and measuring equipment must always be secured on the back seat.
- These devices may be operated only by a passenger during a test drive.

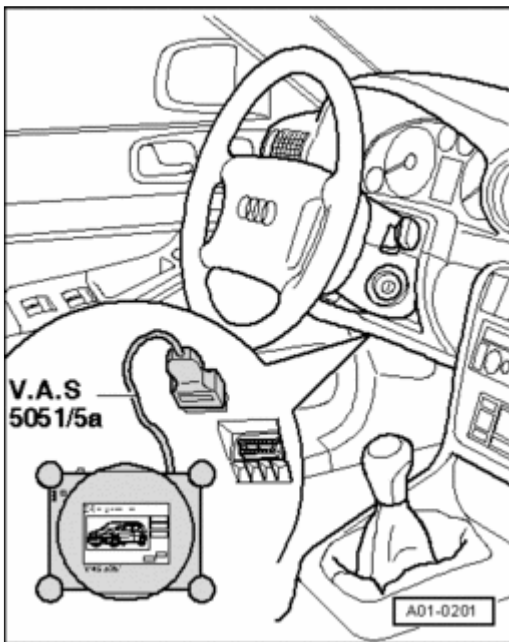


Fig. 5: Connecting Data Link Connector (DLC)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect the VAS 5051/5a diagnostic cable connector to diagnostic connection.

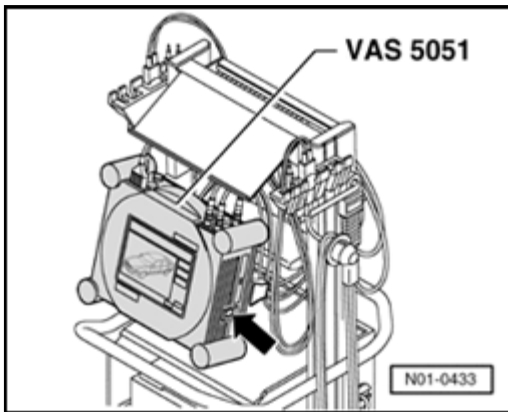


Fig. 6: Identifying Volkswagen Tester VAS 5051, On Switch
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Switch on tester - **arrow** -.

The tester is ready for operation when it displays the image (photo) of a vehicle.

- Switch on ignition.
- Touch the field/button on screen: Guided Fault Finding.
- Select one after another:
 - Brand
 - Type
 - Model year
 - Version
- Engine code
- Confirm entered data.

Wait until tester has checked all control modules installed in the vehicle.

- Press Goto button and select "Function/Component Selection" function.
- Select on display "Suspension"
- Select on display "Brake system"
- 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 Anti-lock brake System (ABS) installed in vehicle are displayed.

- Select desired function on display.

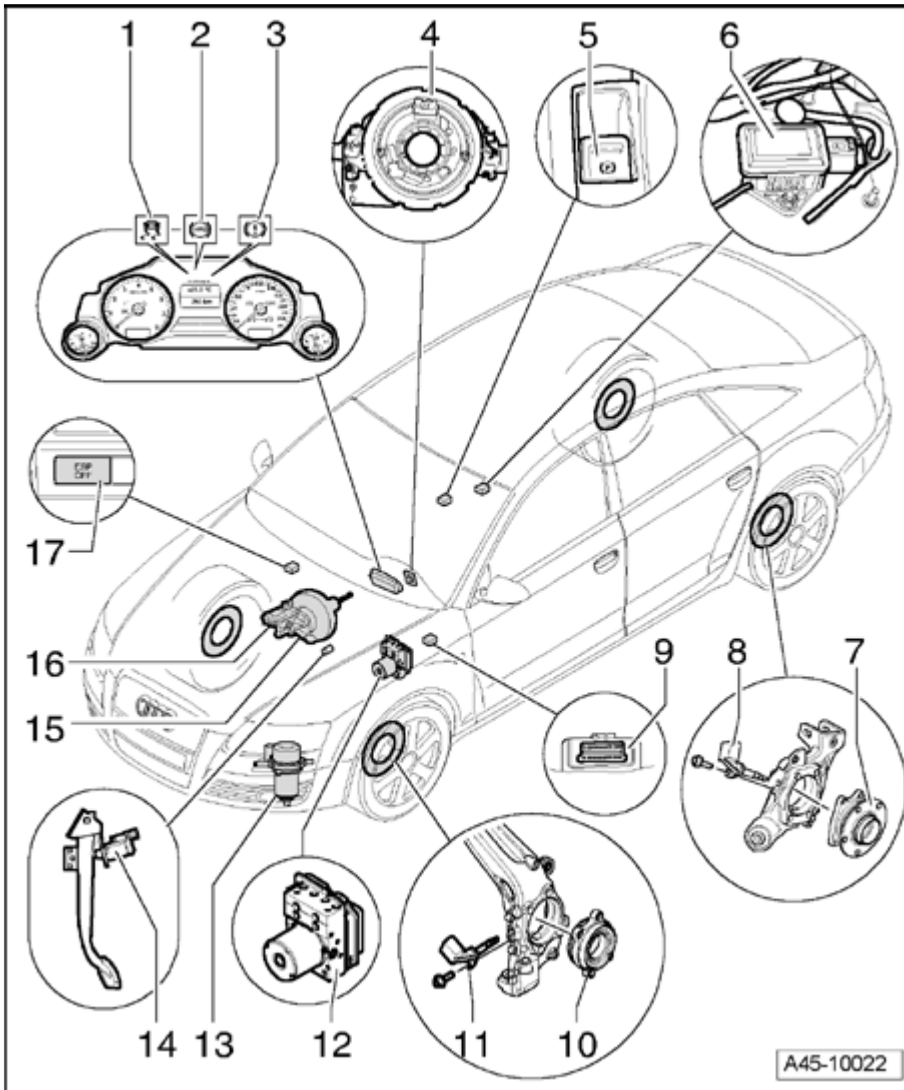
ABS/ESP, COMPONENT OVERVIEW**ABS/ESP, component overview**

Fig. 7: Identifying Special Tools - ABS/ESP, Component Overview
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Traction Control Indicator Lamp K86

- Component location: In instrument cluster
- More information Owners Manual
- It blinks when driving if ESP engages regularly.
- It comes on as a function test when ignition is started.
- It comes on when ignition is switched on and goes out after driving a short distance when ESP performs a system-specified adaptation process on its sensors.

- It comes on when ESP or ASR lamp malfunctions
- Comes on if ESP is switched off.
- It comes on if there is an ABS malfunction because the ESP system works together with ABS.
- If battery was disconnected and connected, the vehicle was started by jump starting or the battery is very low, the ESP performs an adaptation sequence on its sensors during the first several meters driven. The indicator light comes on for this. The indicator light goes out as soon as the adaptation process is completed.
- If indicator light comes on immediately after starting engine, there is a system-directed shut down of the system. In this case, ESP can be reactivated by switching ignition on and off. If the indicator light goes out, the system is completely functional again.

2 - ABS warning light K47

- Component location: In instrument cluster
- More information Owners Manual
- The indicator light comes on for several seconds when ignition is switched on or engine is started. The indicator light goes out after an automatic test has been completed.

There is an ABS malfunction:

- The indicator light does not come on when ignition is switched on.
- The indicator light goes out again after a few seconds
- The indicator light comes on when driving.
- The vehicle can still be braked with standard brake system, that is, without ABS.
- The ESP indicator light also comes on when there is an ABS malfunction.

Malfunction in complete brake system.

- If ABS indicator light comes on together with brake system indicator light, not only is the ABS faulty but it must be assumed that the brake system is as well.
- If the brake system malfunctions, the symbol appears in instrument cluster display.

3 - Brake System Warning Lamp K118 symbol

- Location in instrument cluster in Driver Information System
- If indicator light blinks, there is a brake system malfunction.

The brake system indicator light blinks when brake fluid is too low or the ABS system or parking brake is malfunctioning.

- More information Owners Manual

4 - Steering Angle Sensor G85 with ESP

- Component location: Installed in coil ring with slip ring on steering column --> **69 - PASSENGER PROTECTION - AIRBAGS, SEAT BELTS**
- Perform zero adjustment.

Vehicle diagnostic, test and information system VAS 5051

5 - Parking Brake Pressure Switch F234

- Component location: In center console
- Removing and installing --> **Parking Brake Contact Switch F321 , removing and installing**

6 - ESP-Sensor Unit G419

- Component location: under center console extension
- Can be tested in "Guided Fault Finding" using Vehicle diagnosis, testing and information system VAS 5051
- Observe installation instructions

--> **ESP Sensor Unit G419 , removing and installing**

7 - Wheel bearing/hub unit

- The ABS sensor ring is installed in the wheel bearing

8 - Right/Left Rear ABS Wheel Speed Sensor G44/G46

- Can be tested in "Guided Fault Finding" using Vehicle diagnosis, testing and information system VAS 5051
- Replacing **Speed sensor on rear axle, removing and installing**

9 - Diagnostic connection

- Component location: Cover in driver footwell
- --> **Fig. 8**

10 - Wheel bearing/hub unit

- The ABS sensor ring is installed in wheel bearing

11 - Right/Left Front ABS Wheel Speed Sensor G45/G47

- Can be tested in "Guided Fault Finding" using Vehicle diagnosis, testing and information system VAS 5051

- Replacing **Speed sensor on front axle, removing and installing**

12 - ABS Hydraulic Unit N55 with ABS Control Module J104

- The hydraulic control unit is comprised of hydraulic unit and control module.
- The Brake Pressure Sensor 1 G201 is integrated in ABS Hydraulic Unit N55 and can only be replaced together.
- Do not disconnect connector (42-pin) before successfully completing self-diagnosis. Switch ignition off before separating connector.
- Component location: On hydraulic unit in engine compartment, left
- Removing and installing --> **Hydraulic unit, removing and installing**

13 - Brake system vacuum pump V192

- Only installed with V6 MPI 3.0L.
- Removing and installing **Brake system vacuum pump V192 , removing and installing**

14 - Brake Light Switch F and Brake Pedal Switch F47

- Removing and installing --> **Brake light switch, removing and installing**
- Can be tested in "Guided Fault Finding" using Vehicle diagnosis, testing and information system VAS 5051

15 - Tandem brake booster

- Removing and installing --> **Brake booster, removing and installing**

16 - Brake Fluid Level Warning Switch F34

17 - ASR/ESP Button E256

- Component location: In center console

Diagnostic connection

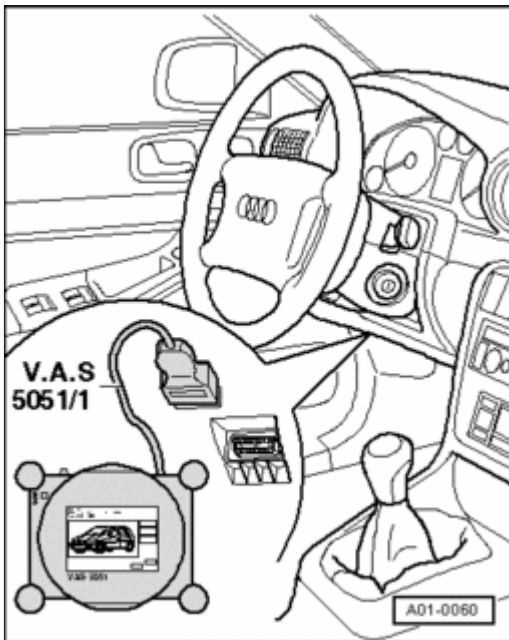


Fig. 8: Identifying Vehicle Diagnosis, Testing and Information System VAS 5051 and Data Link Connector (DLC)

Courtesy of VOLKSWAGEN UNITED STATES, INC.

ANTI-LOCK BRAKE SYSTEM (ABS) BOSCH 8.0

Anti-lock brake System (ABS) Bosch 8.0

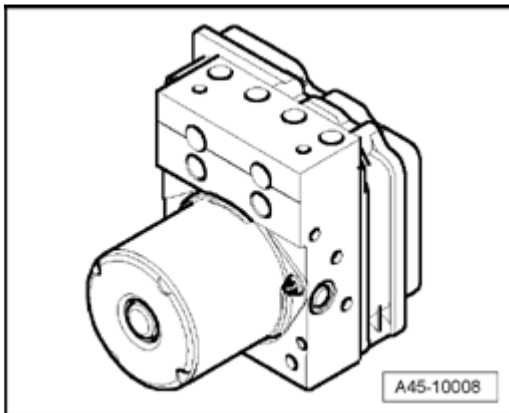


Fig. 9: Anti-Lock Brake System (ABS) Bosch 8.0

Courtesy of VOLKSWAGEN UNITED STATES, INC.

The ABS brake system is divided diagonally (two circuits). The vacuum brake servo unit boosts brakes pneumatically.

Hydraulic unit and control module form one component. Therefore, it is designated as hydraulic control unit.

Malfunction sources are reduced by direct connection of components named. Hydraulic control module is

serviced by replacing it.

Bolts that connect individual hydraulic control unit components should not be loosened.

Hydraulic unit and brake lines

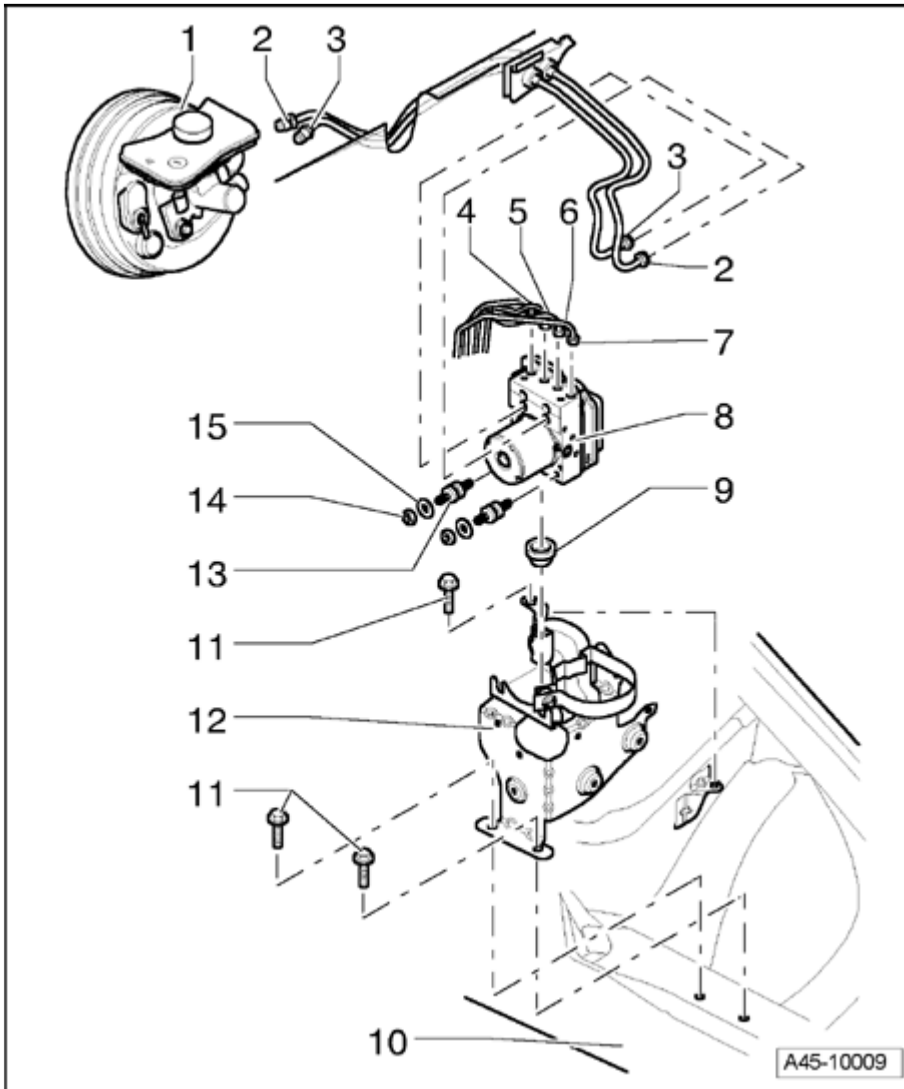


Fig. 10: Exploded View Of Hydraulic Unit And Brake Lines
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Brake master cylinder and brake booster

2 - Brake line

- Brake master cylinder/primary piston circuit to hydraulic control unit

3 - Brake line

- Brake master cylinder/secondary piston circuit to hydraulic unit

4 - Brake line

- Hydraulic unit to right front brake caliper

5 - Brake line

- Hydraulic control unit to left rear brake caliper

6 - Brake line

- Hydraulic control unit to right rear brake caliper

7 - Brake line

- Hydraulic unit to left front brake caliper

8 - ABS Hydraulic Unit N55 with ABS Control Module J104

- With integrated brake pressure sensor
- Removing and installing --> **Hydraulic unit, removing and installing**

9 - Buffer, Qty. 2

10 - Body long member

11 - Combi-nut, torque specification 10 Nm

12 - ESP bracket

13 - Bolt with rubber bushing, torque specification 10 Nm

- Integrated securely in assembly

14 - Combi-nut, torque specification 8 Nm

15 - Washer

Hydraulic unit, removing and installing

Special tools, testers and auxiliary items required

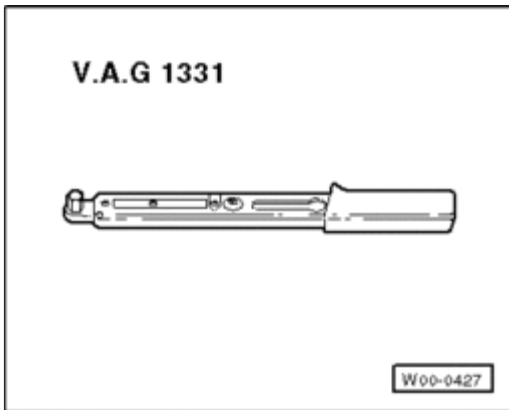


Fig. 11: Torque Wrench V.A.G 1331
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Torque wrench V.A.G 1331

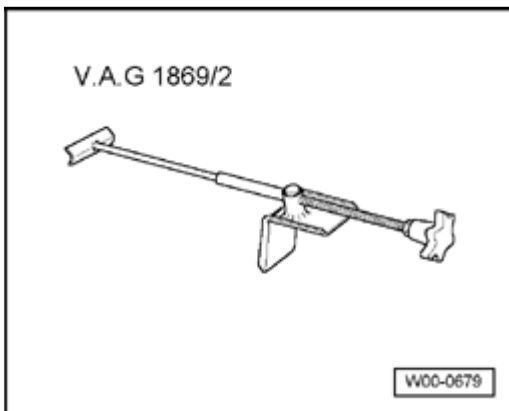


Fig. 12: Brake Pedal Depressor V.A.G 1869/2
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Brake pedal actuator V.A.G 1869/2
- Not shown
- Repair kit plugs 1H0 698 311 A

Removing

Component location:

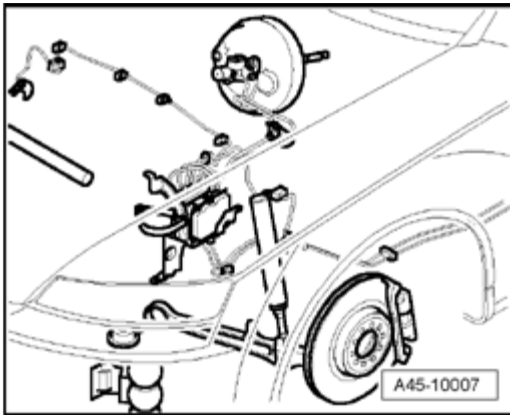


Fig. 13: Locating Hydraulic Unit

Courtesy of VOLKSWAGEN UNITED STATES, INC.

Hydraulic unit is located at left of engine compartment.

CAUTION: Brake lines must not be bent.

- Note or request radio code on vehicles with coded radio if necessary.
- Disconnect battery. --> **27 - STARTER, GENERATOR, CRUISE CONTROL**

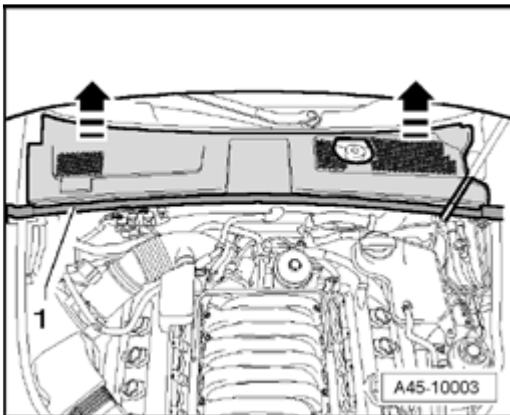


Fig. 14: Removing Plenum Chamber Cover

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove plenum chamber cover.

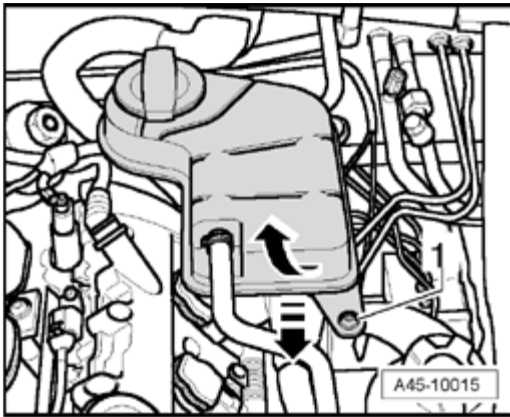


Fig. 15: Removing Hex Bolts Securing Coolant Expansion Tank & Disconnecting Connector From Coolant Expansion Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove coolant reservoir hex head bolt -1-.
- Disconnect connector from reservoir.

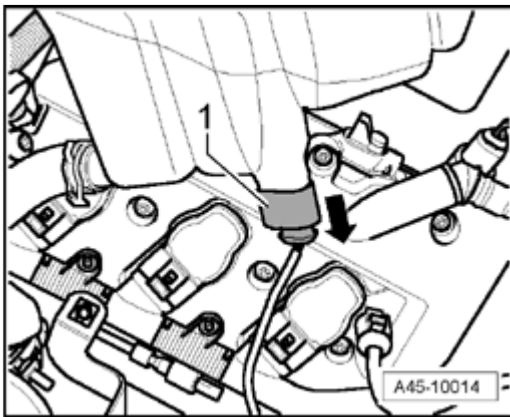


Fig. 16: Moving Coolant Expansion Tank Clear To One Side
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Lay aside reservoir.

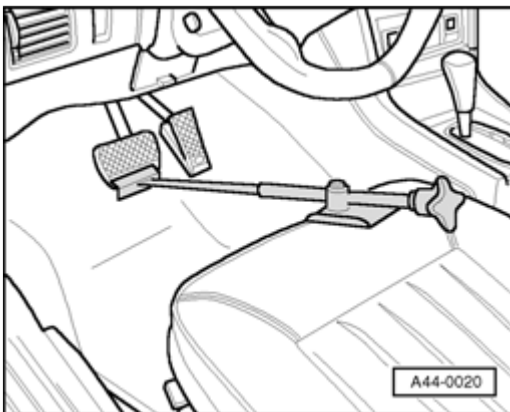


Fig. 17: Brake Pedal Depressor VAG 1869/2 Inserted Between Brake Pedal And Driver's Seat
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install brake pedal loading device V.A.G 1869/2 between brake pedal and driver seat. Depress brake pedal a minimum of 60 mm.
- Connect hose of a bleeder bottle to bleeder screws of left front and left rear brake calipers, and open bleeder screws.

NOTE: ● **Thereby, the pressure in the hydraulic unit is relieved.**

- Close left front and left rear bleeder screws.
- Do not remove brake pedal loading device V.A.G 1869/2.
- To protect against escaping brake fluid, place a lint-free rag in the area under control module and hydraulic unit.

NOTE: ● **Number brake lines.**

CAUTION: Do not bend brake lines near the hydraulic unit!

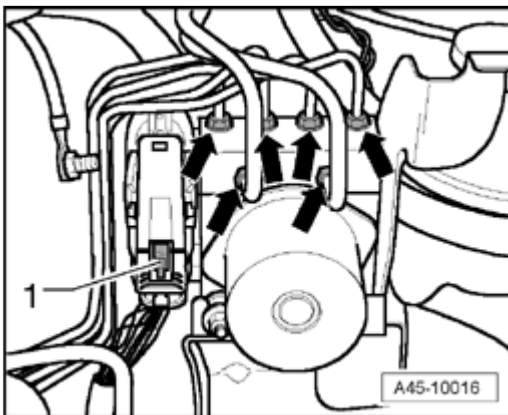


Fig. 18: Identifying Brake Lines
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Completely remove brake lines from hydraulic unit to brake master cylinder.
- Remove remaining brake lines - **arrows** - from hydraulic unit.
- Seal brake lines and threaded bores with sealing plugs from repair kit.
- Press red securing clip upward

NOTE: ● **Make sure that no brake fluid gets into the control module connector housing. This could lead to corrosion of the contacts and thereby cause the system to fail.**

- Clean a dirty connector housing thoroughly with compressed air.

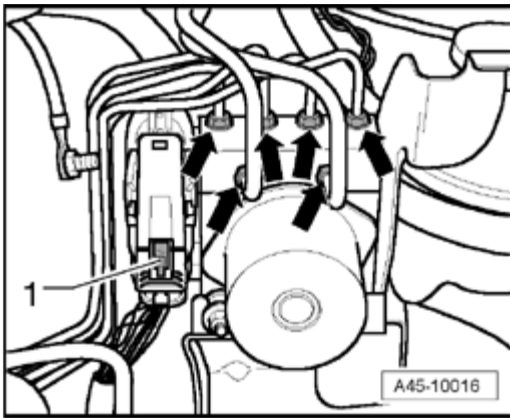


Fig. 19: Identifying Brake Lines

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release connector at control module - **arrow** - and remove.

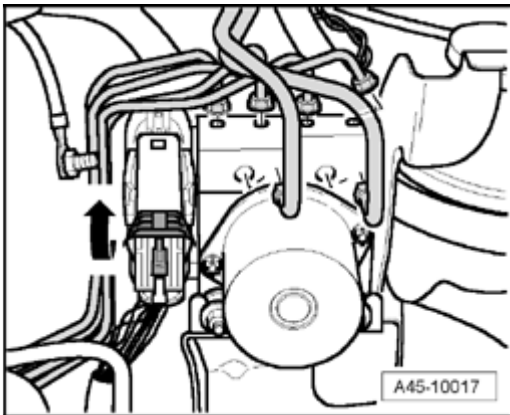


Fig. 20: Sliding Securing Bracket And Removing Connector

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Slide securing bracket in direction of - **arrow** - and remove connector.

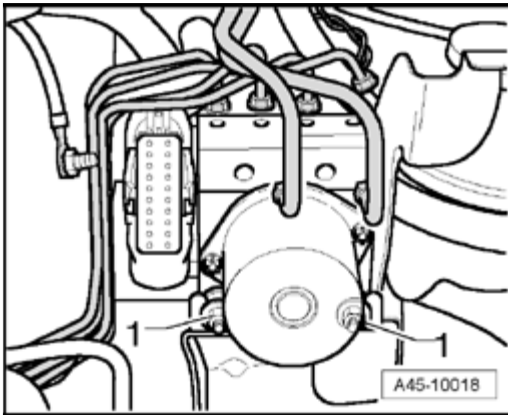


Fig. 21: Removing Hydraulic Control Unit
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove hex head bolts - 1 -.
- Remove hydraulic control unit.

Installing

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

NOTE:

- Do not remove sealing plugs at new hydraulic unit until the corresponding brake line is about to be installed.
- If the sealing plugs are removed too early, brake fluid can escape. If this occurs, unit may not be sufficiently filled or adequately bled.

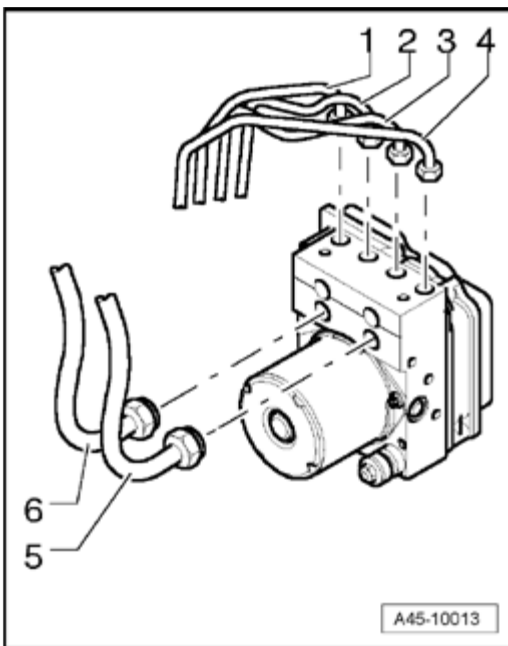


Fig. 22: Connecting Brake Caliper & Piston Circuit Lines

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect lines according to identification:

1 - To right front brake caliper

2 - To left rear brake caliper

3 - To right rear brake caliper

4 - To left front brake caliper

5 - To primary piston circuit

6 - To secondary piston circuit

- Connect connector at hydraulic pump.
- Clip ABS unit to bracket.

NOTE:

- **Do not tighten bolts completely. This makes it easier to fasten the individual brake lines to the hydraulic unit.**

- After fastening brake lines, fasten hydraulic unit.
- Remove brake pedal loading device V.A.G 1869/2.
- Bleed brake system --> **Bleeding braking system.**
- Code ABS Control Module J104. Code control module using VAS 5051 via "Guided Fault Finding" function.
- If control module is replaced, select "Replace" function for respective control module in "Guided Fault Finding".

For this, use Vehicle diagnostic, test and information system VAS 5051.

- After fastening brake lines to hydraulic unit, perform output check diagnosis. Vehicle diagnostic, test and information system VAS 5051

NOTE:

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

Tightening torques

Component	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 SYSTEM COMPONENTS ON FRONT AND REAR AXLES, REMOVING AND INSTALLING

ABS system components on front axle, removing and installing

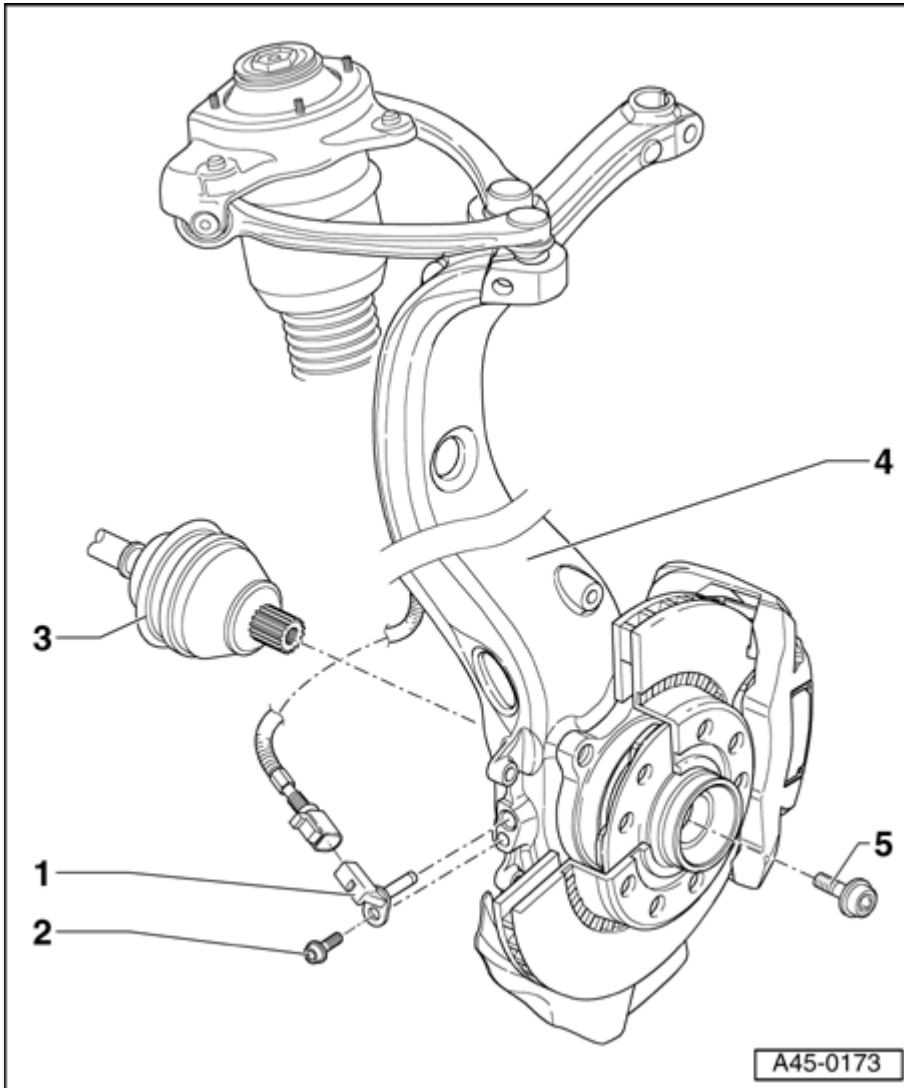


Fig. 23: ABS System Components On Front Axle, Removing And Installing Overview
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - ABS wheel speed sensor

- Before inserting sensor, clean inner surface of mounting hole and coat with *Polycarbamide grease G 000 650*

- Replacing **Speed sensor on front axle, removing and installing**

2 - Hex socket head bolt, 18 Nm

3 - Drive axle

4 - Wheel hub with wheel bearing

5 - Socket head bolt

- Replace after each removal --> **40 - FRONT SUSPENSION** Drive shaft, servicing.

Speed sensor on front axle, removing and installing

Special tools, testers and auxiliary items required

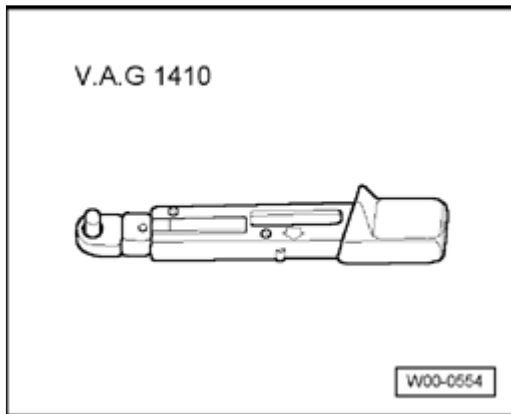


Fig. 24: Torque Wrench V.A.G 1410

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Torque wrench V.A.G 1410

Removing

- Raise vehicle.

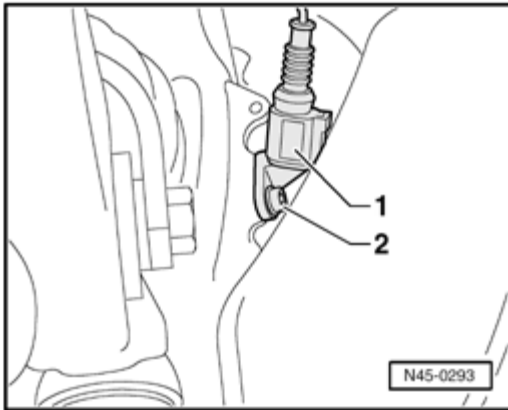


Fig. 25: Identifying Speed Sensor, Speed Sensor Wiring Connector & Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Separate speed sensor and speed sensor wiring connector - **1** -.
- Remove bolt - **2** - from wheel bearing housing.
- Remove ABS speed sensor from wheel bearing housing.

Installing

- Before inserting speed sensor, clean hole inner surface and coat speed sensor all-round with *Polycarbamide grease G 000 650*
- Insert wheel speed sensor in hole of wheel bearing housing and tighten bolt.
- Connect speed sensor to speed sensor wiring.

ABS system components on rear axle, removing and installing

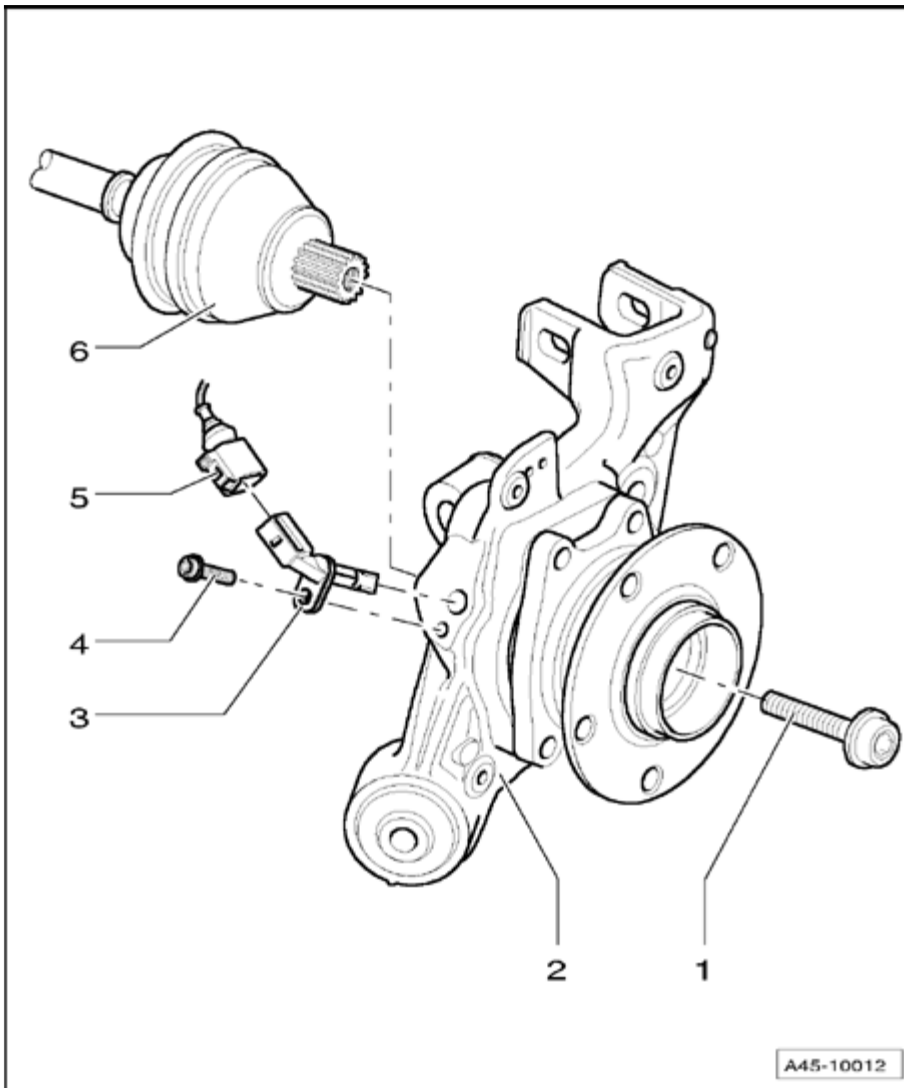


Fig. 26: ABS System Components On Rear Axle, Removing And Installing Overview
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Socket head bolt

- Replace after each removal --> **42 - REAR SUSPENSION** ; Rear drive shaft, servicing.

2 - Wheel bearing/hub unit

- The ABS sensor ring is installed in wheel bearing

3 - ABS wheel speed sensor

- Before inserting sensor, clean inner surface of mounting hole and coat with *Polycarbamide grease G 000 650*
- Replacing **Speed sensor on rear axle, removing and installing**

4 - Hex socket head bolt, 18 Nm

5 - Sensor cable/vehicle side

- For speed sensor harness

6 - Drive axle

Speed sensor on rear axle, removing and installing

Removing

- Raise vehicle.

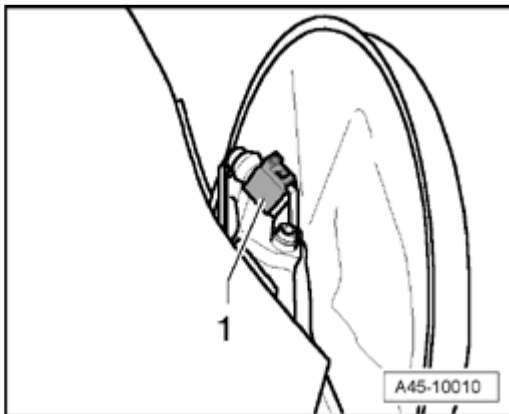


Fig. 27: Separating Speed Sensor And Speed Sensor Wiring Connector
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Separate speed sensor - 1 - and speed sensor wiring connector.

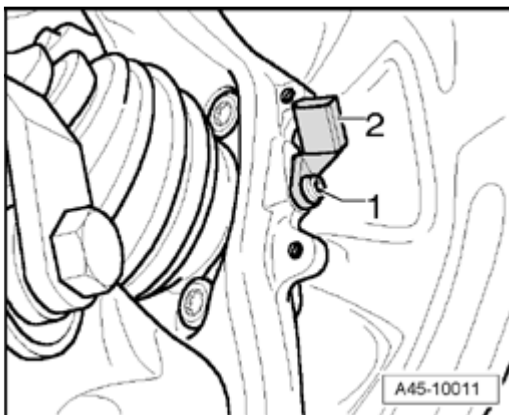


Fig. 28: Removing Bolt From Wheel Bearing Housing & ABS Speed Sensor From Wheel Bearing Housing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - 1 - from wheel bearing housing.

- Remove ABS speed sensor from wheel bearing housing.

Installing

- Before inserting speed sensor, clean hole inner surface and coat speed sensor all-round with *Polycarbamide grease G 000 650*
- Insert speed sensor into hole in wheel bearing housing and tighten bolt together with retainer for speed sensor harness to 10 Nm.
- Connect speed sensor to speed sensor wiring.

ESP SYSTEM COMPONENTS, REMOVING AND INSTALLING

Brake light switch, removing and installing

NOTE:

- Remove brake light switch to adjust.
- To ensure sufficient secure seating and definite adjustment, the brake light switch may only be installed once.

Removing

- Separate electrical connection.
- Remove brake light switch by rotating it 45° toward left.

Installing

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

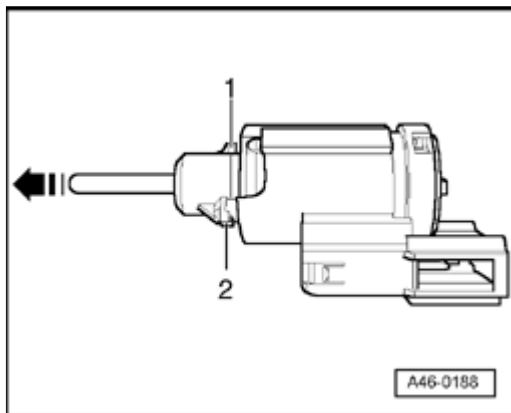


Fig. 29: Pulling Out Switch Plunger & Identifying Retainer Tabs On Switch
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull out plunger of brake light switch completely - **arrow** -.
- Insert switch with tabs - **1** - and - **2** - in designated retainers in assembly opening.
- Remove driver side storage tray: --> **68 - INTERIOR EQUIPMENT**

NOTE:

- The brake pedal must not be actuated during installation.
- When installing brake switch, plunger adjusts itself automatically.

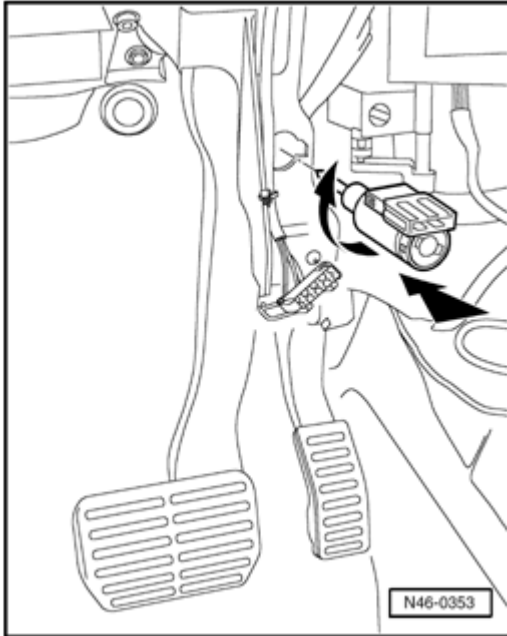


Fig. 30: Guiding Switch Through Installation Hole, Pressing Against Pedal And Securing By Turning 45Degrees Clockwise

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Guide switch through mounting hole, press against pedal and secure by turning 45° to right.

After adjusting the brake light switch check whether the brake pedal is on end stop (rest position).

ESP Sensor Unit G419 , removing and installing

The ESP Sensor Unit G419 is located on front tunnel under air conditioner.

Special tools, testers and auxiliary items required

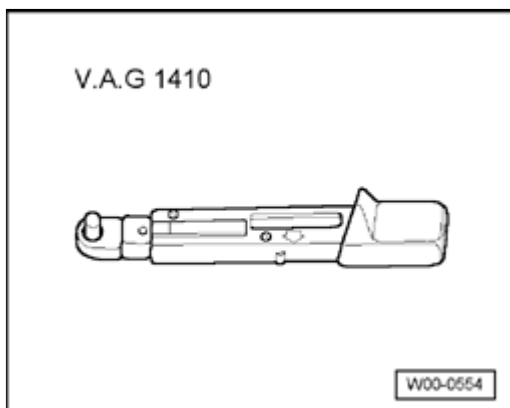


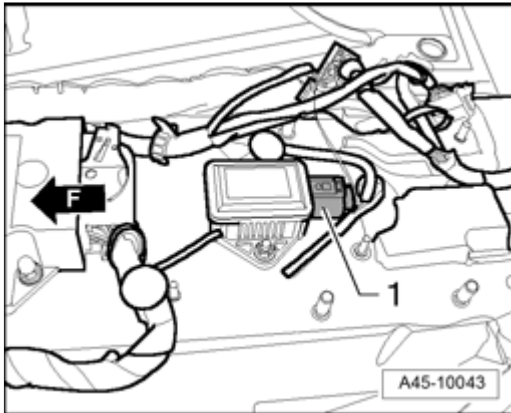
Fig. 31: Torque Wrench V.A.G 1410

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Torque wrench V.A.G 1410

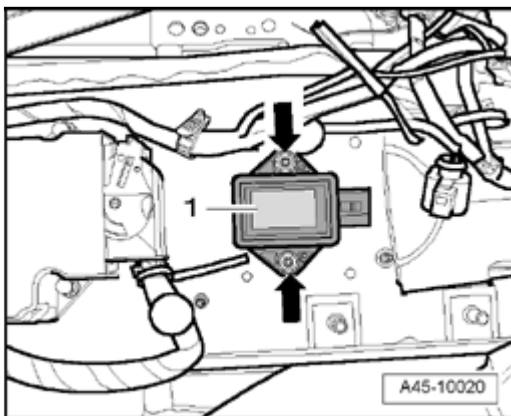
Removing

- Remove center console extension. --> **68 - INTERIOR EQUIPMENT**

**Fig. 32: Removing Connector From ESP Sensor Unit G419**

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove connector - **1** - from ESP Sensor Unit G419.
- - **Arrow** - points in direction of travel

**Fig. 33: Removing Two Mounting Bolts & ESP Sensor Unit G419**

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove two mounting bolts - **arrows** -.
- Remove ESP Sensor Unit G419 - **1** -.

Installing

CAUTION: Strong vibrations can destroy the ESP Sensor Unit G419.

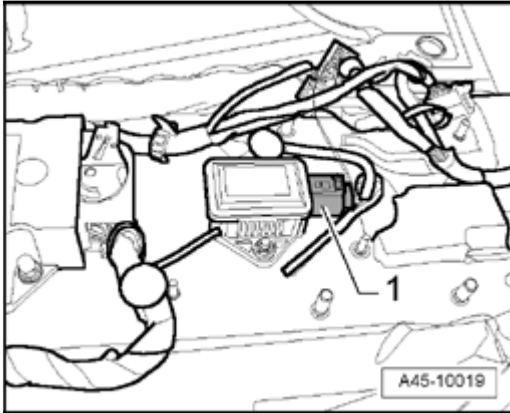


Fig. 34: Installation Is In Reverse Order Of Removal
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Installation is in reverse order of removal.

When installing ESP Sensor Unit G419 make sure it is correctly seated in its mounting and is free of stress.

Do not use securing bolts to forcibly position ESP Sensor Unit G419.

- Tighten bolts to 10 Nm.
- If control module is replaced, select "Replace" function for respective control module in "Guided Fault Finding".

For this, use Vehicle diagnostic, test and information system VAS 5051.

Steering angle sensor G85 , removing and installing

The Steering angle sensor G85 is located between steering wheel and steering column switch.

Removing and installing

- Remove coil ring with slip ring --> **69 - PASSENGER PROTECTION - AIRBAGS, SEAT BELTS**

--> **48 - STEERING** ; Vehicle diagnostic, test and information system VAS 5051

- Then the Steering angle sensor G85 zero adjustment must be performed.
- Connect Vehicle Diagnosis, Testing, and Information System VAS 5051 and select "Functions/Component selection" using Go to button.
- Then select replace Steering Angle Sensor G85 under "Function" --> **Vehicle Diagnostic, Testing and Information System VAS 5051 , connecting and selecting function.**

Parking Brake Contact Switch F321 , removing and installing**Removing**

- Remove rear center console. --> **68 - INTERIOR EQUIPMENT**
- Remove Climatronic Control Module J255. --> **87 - AIR CONDITIONING**
- Remove Parking Brake Contact Switch F321. --> **96 - LIGHTS, SWITCHES - INTERIOR, ANTI-THEFT**

Installing

- Installation is in reverse order of removal.

Left Front Brake Pressure Sensor G518 and Right Front Brake Pressure Sensor G519 , removing and installing**Removing**

- Raise vehicle.

NOTE:

- **The Brake Pressure Sensor 1 G201 distributors are located on the long member, accessible from the sides over the tie rods.**

- Remove wheels.

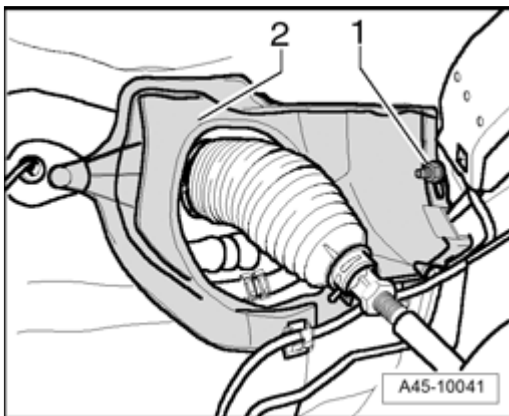


Fig. 35: Identifying Nut & Plastic Housing Cover
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nut - 1 - and fold cover away to side.
- Unclip wiring harness.
- Plastic housing cover, opening

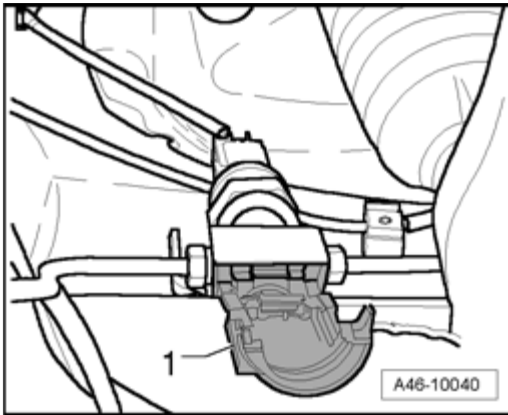


Fig. 36: Removing Connector

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove connector - **1** -.
- To protect against escaping brake fluid, place sufficient lint-free cloths in area.

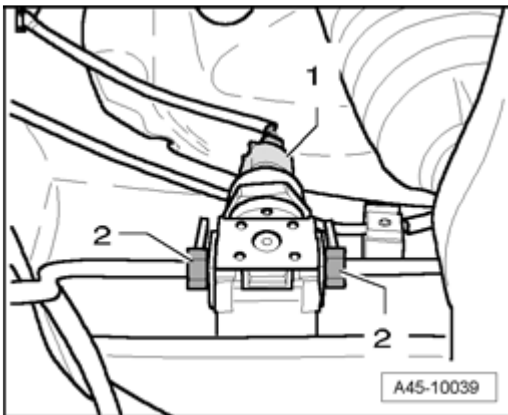


Fig. 37: Removing Brake Lines & Disconnecting Brake Pressure Sensor 1 G201 From ACC Distributor
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove brake lines - **2** -. Torque specification 12 Nm.
- Disconnect Brake Pressure Sensor 1 G201 - **1** - from ACC distributor. Torque specification 12 Nm.

Installing

- Installation is in reverse order of removal.
- Bleed brake system --> **Bleeding braking system.**