

SUSPENSION**Wheels, Tires and Vehicle Alignment (Sedan)****44 WHEELS, TIRES AND VEHICLE ALIGNMENT****GENERAL INFORMATION****WHEELS AND TIRES**

This information can be found in Repair Manual **General Information** .

TIRE PRESSURE MONITORING SYSTEM, INDIRECT SYSTEM

Refer to the Owner's Manual.

If the vehicle has a tire pressure monitoring system display, it will be documented on the vehicle data label or in ELSA under "Vehicle Data" by the PR number **TIRE PRESSURE MONITORING SYSTEM, DIRECT SYSTEM**.

With the help of the ABS speed sensor, the tire pressure monitoring system compares both the rolling circumference and the vibration behavior of the individual wheels. The instrument cluster display shows if there are any changes to one or more wheels. If only one wheel is affected, the location of the wheel will be indicated.

The tire pressure monitoring system is a software module in the ESP/ABS control module for detecting slow losses of pressure at a wheel location. With the help of the ABS speed sensors, the TPMS compares the speed and rolling circumference of the individuals wheels. If the rolling circumference of a wheel changes, the tire pressure monitoring display indicator lamp lights up in the instrument cluster. Rolling circumference of tire may be change if:

- the tire pressure is too low.
- the tire has structural damage.
- the tire or the pressure was changed and the tire pressures were not saved.
- the vehicle is loaded on one side.
- the tires on one axle are loaded more heavily (for example when towing a trailer or driving up and down inclines).
- snow chains are installed.
- the spare tire is installed.
- one tire per axle was changed (or if the tires were rotated from front to back or the other way around).
- The left and right wheels drive on different surfaces for an extended period of time.

Tire Pressure Monitoring Display Appearing

The tire pressure monitoring display in the instrument cluster informs the driver if the tire pressure is too low or if there is a system malfunction.

System Fault in the TPMS Display (TPMS Display +)

If the indicator lamp blinks for approximately 1 minute after switching the ignition on and then stays on continuously, there is a system malfunction. "TPMS" is also displayed in the instrument cluster.

A system malfunction is stored in the Diagnostic Trouble Code (DTC) memory for the ABS/ESP control module and indicated by the yellow TPMS lamp in the instrument cluster. The TPMS lamp cannot be turned off by pressing the multimedia control head -E380- button. Proceed as follows if there is a fault stored in the DTC memory.

-- Connect the vehicle diagnostic tester and select "Guided Fault Finding".

-- Select the corresponding program in "Guided Functions".

-- Follow the prompts on the screen.

Perform Calibration: (readapt tire pressure)

The tire pressures must be saved in either the radio or MMI (depending on equipment) each time the pressure or a tire is changed.

-- Turn the ignition on, select the "CAR" function button and select the tire pressure monitoring system using the rotary switch on the multimedia control head -- knob and save the tire pressure by pressing the rotary knob.

TIRE PRESSURE MONITORING SYSTEM, DIRECT SYSTEM

Refer to the Owner's Manual.

If the vehicle has a tire pressure monitoring system display, it will be documented on the vehicle data label or in ELSA under "Vehicle Data" by the PR number **Tire Pressure Monitoring System/Tire Pressure Monitoring System Display**.

The tire pressure monitoring system monitors the pressure of the four tires while driving.

Damaged tire pressure sensors -- should be replaced for safety reasons.

Do not clean tire pressure sensors -- with steam blasting or strong compressed air.

For safety reasons, replace the tire pressure monitoring sensor -- and clean the rim after using tire sealant.

The tire pressure monitoring system consists of a control module, a central antenna integrated in the control module and one tire pressure sensor -- in each of the four wheels.

If the wheel positions on the vehicle are changed, tires are changed, tire pressure sensors -- are replaced or pressures are changed, control module must be readapted.

NOTE: **When changing a tire with tire pressure monitoring sensors -- (summer/winter**

tires), check the tire pressure and adapt the sensor to the control module.

A Fault May be Saved in the Diagnostic Trouble Code (DTC) Memory if:

There is a system malfunction.

When installing less than four wheels with tire pressure sensors --.

When installing tires or incorrect tire pressure sensors --. (If this is the case, the yellow warning lamp in the instrument cluster "system malfunction diagram" illuminates and cannot be deactivated by the system.)

The system has detected new sensors but the multimedia system control head -E380- button was not been pressed to confirm the current tire pressures. (In this case, the system malfunction is erased by pressing the button.)

WHEEL ALIGNMENT INFORMATION

Wheel alignment must only performed using VW/Audi-approved wheel alignment equipment.

Each time wheels are aligned, both front and rear wheels must be aligned.

Otherwise, proper vehicle driveability cannot be ensured.

NOTE: Axle alignment should not be performed until the vehicle has been driven 1, 000-2, 000 km, since it takes this long for the suspension to settle.

The individual specifications should be followed as exactly as possible when making adjustments.

WARNING: After adjusting the chassis on vehicles with ESP or ABS, calibrate the steering angle sensor -G85- after the axle alignment. Refer to vehicle diagnosis, testing and information system VAS 5051 in "Guided Functions."

WHEN VEHICLE ALIGNMENT IS NECESSARY

- Vehicle shows handling problems.
- Involved in an accident.
- Axle components were removed.
- Tire wear patterns are uneven.

A Component on the Front Axle was Replaced:	Wheel Alignment Check Required		A Component on the Rear Axle was Replaced:	Wheel Alignment Check Required	
	Yes	No		Yes	No

2012 Audi S4

SUSPENSION Wheels, Tires and Vehicle Alignment (Sedan)

Upper Rear Control Arm		X	Coil Spring		X
Upper Front Control Arm		X	Upper Transverse Link	X	
Lower Guide Control Arm		X	Lower Transverse Link	X	
Lower Track Control Arm		X	Bonded Rubber Bushing		X
Ball Joint		X			
Suspension Strut		X	Shock Absorbers		X
Shock Absorber Fork		X			
Wheel Bearing Housing		X	Wheel Bearing Housing	X	
Tie Rod	X		Tie Rod	X	
Tie Rod End	X				
Steering Gear	X				
Subframe	X		Subframe	X	
Stabilizer Bar		X	Stabilizer Bar		X
Coupling Rod		X	Coupling Rod		X

A Component on the Front Axle was Removed and Reinstalled:	Wheel Alignment Check Required		A Component on the Rear Axle Was Removed and Reinstalled:	Wheel Alignment Check Required	
	Yes	No		Yes	No
Upper Rear Control Arm		X	Coil Spring		X
Upper Front Control Arm		X	Upper Transverse Link	X	
Lower Guide Control Arm		X	Lower Transverse Link	X	
Lower Track Control Arm		X	Bonded Rubber Bushing		X
Ball Joint		X			
Suspension Strut		X	Shock Absorbers		X
Shock Absorber Fork		X			
Wheel Bearing Housing		X	Wheel Bearing Housing	X	
Tie Rod	X		Tie Rod	X	
Steering Gear	X				
Subframe	X		Subframe	X	
Stabilizer Bar		X	Stabilizer Bar		X
Coupling Rod		X	Coupling Rod		X

EXPLANATIONS OF THE PRODUCTION CONTROL NUMBERS (PR NUMBER)

The vehicle data plate documents which front/rear axle or tire pressure monitoring system is installed using the corresponding PR numbers.

There is a vehicle data label in the spare wheel well and also one in the customer Maintenance booklet.

Front/Rear Axle

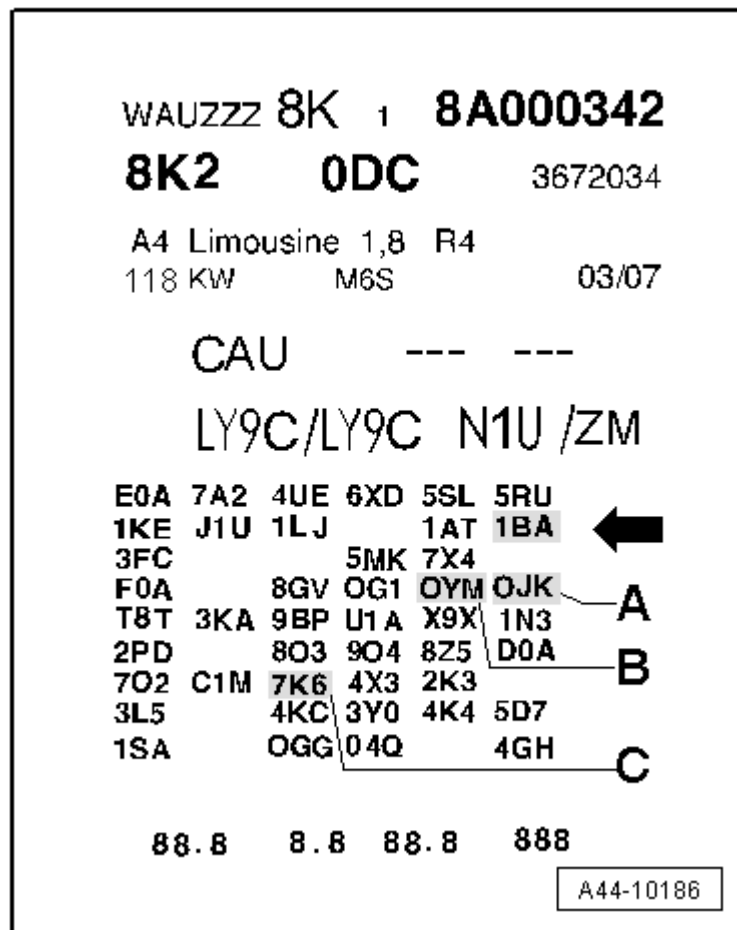


Fig. 1: Explanations Of Production Control Numbers
 Courtesy of AUDI OF AMERICA, LLC

The front/rear axle PR No. is in illustration -A and B-.

-- The front axle PR number is item -A-.

-- Item -B- shows PR number for the rear axle

Suspension Versions

WAUZZZ 8K 1 8A000342
 8K2 0DC 3672034
 A4 Limousine 1,8 R4
 118 KW M6S 03/07
 CAU --- ---
 LY9C/LY9C N1U /ZM

E0A	7A2	4UE	6XD	5SL	5RU	
1KE	J1U	1LJ		1AT	1BA	←
3FC			5MK	7X4		
F0A		8GV	OG1	OYM	OJK	A
T8T	3KA	9BP	U1A	X9X	1N3	
2PD		803	904	8Z5	D0A	B
702	C1M	7K6	4X3	2K3		
3L5		4KC	3Y0	4K4	5D7	
1SA		OGG	04Q		4GH	C

88.8 8.8 88.8 888

A44-10186

Fig. 2: Explanations Of Production Control Numbers
 Courtesy of AUDI OF AMERICA, LLC

The suspension version PR No. is in illustration -arrow-

In this example the vehicle has standard suspension 1BA installed.

1BA = Standard suspension

1BE = Sport suspension

1BD = Sport suspension S4

1BR = Heavy duty suspension

1BV = Sport suspension S line

1BL = Chassis with electronic damping

1BB = China City Suspension

1BP = Steel Spring Suspension allroad

Tire Pressure Monitoring System/Tire Pressure Monitoring System Display

The tire pressure monitoring system PR number can be found in ELSA under "Vehicle Data".

7K0 = without tire pressure monitoring system

7K6 = tire pressure monitoring system display

7K8 = tire pressure monitoring system, frequency 315 MHz Basis

Driver Assist System

The driver assist system PR number can be found in ELSA under "Vehicle Data".

7Y2 = lane assist

7Y3 = lane change assistance and lane assist

8T4 = Adaptive Cruise Control (ACC)

WHEEL ALIGNMENT MEASUREMENT PREPARATIONS**Special tools and workshop equipment required**

- Brake Pedal Actuator V.A.G 1869/2
- Vehicle Diagnostic, Testing and Information System VAS 5051 B with corresponding diagnostic cable.
- Steering Wheel Sales VAS 6458
- Wheel alignment computer released by VW/Audi

The measurement sensor must be properly adjusted and attached to the vehicle; observe device manufacturer's operating instructions.

Make sure that the sliding plates and turn tables are not touching the end stop when checking the wheel alignment.

Drive the vehicle onto the alignment rack without tension. Move the vehicle back and forth if necessary to relieve any tension on the axle components.

The steering wheel must be "evened out" into the center position before beginning the measuring and adjusting. Use VAS 6458 for this.

VEHICLE ALIGNMENT OVERVIEW**Special tools and workshop equipment required**

- Steering Wheel Sales VAS 6458

NOTE: **Vehicle must only be measured at curb weight. Refer to TEST PREREQUISITES!**

Check which suspension is installed in the vehicle. This information can be found on the vehicle data plate. Refer to EXPLANATIONS OF THE PRODUCTION CONTROL NUMBERS (PR NUMBER).

Observe the Following Work Sequence!

- 1 - Drive the vehicle onto the alignment rack without tension. Move the vehicle back and forth if necessary to relieve any tension on the axle components.
- 2 - The steering wheel must be "evened out" into the center position before beginning the measuring and adjusting. Use VAS 6458 for this.
- 3 - Steering rack, checking center position, refer to **STEERING RACK, CHECKING MECHANICAL CENTER POSITION**.
- 4 - Perform wheel run-out compensation, refer to **WHEEL RUN-OUT COMPENSATION**.
- 5 - Check the maximum steering angle, refer to **MAXIMUM STEERING ANGLE, CHECKING**.
- 6 - Check front axle camber and adjust if necessary, refer to **FRONT AXLE CAMBER, CHECKING AND ADJUSTING**.
- 7 - Check rear axle camber and adjust if necessary, refer to **REAR AXLE CAMBER, ADJUSTING**.
- 8 - Check rear axle toe and adjust if necessary, refer to **REAR AXLE TOE, ADJUSTING**.
- 9 - Check the front axle toe angle and adjust if necessary, refer to **FRONT AXLE TOE, ADJUSTING**.
- 10 - If adjustments have been made on the front axle, calibrate the dynamic steering, refer to **DYNAMIC STEERING BASIC SETTING**.
- 11 - If adjustments have been made on the suspension, perform a zero adjustment on the steering angle sensor - G85.
- 12 - If adjustments have been made on the rear axle, calibrate the dynamic steering. Refer to **DYNAMIC STEERING BASIC SETTING** vehicle diagnosis, testing and information system VAS5051.
- 13 - If adjustments have been made on the rear axle, calibrate the adaptive cruise control. Refer to **ADJUSTMENT PROCEDURE USING ACC Setting Device VAS 6190, ADJUSTMENT PROCEDURE USING ACC Setting Device VAS 6430** and/or lane assist **CALIBRATION PROCEDURE**.

DYNAMIC STEERING

In conventional steering system, there is a direct mechanical connection between the steering wheel and the steering gear. That means there is a constant, specific relationship between the angle of the steering wheel and the angle of the wheels. In this version, only one ratio can be used in a vehicle. Selecting the appropriate ratio is a compromise because the different and somewhat contradictory requirements must be satisfied as best as possible.

The important requirements can only be fulfilled optimally by a variable ratio. Such a ratio changes the actual steering angle of the wheels depending on the vehicle speed and steering angle. Dynamic steering generally implements two variable ratios with comfortable and sporty characteristics.

The variable ratios are implemented by an additional electro-mechanical steering pinion actuator that superimposes the driver's steering movement. In emergencies such as an actuator malfunction, the steering functions exactly like conventional steering. The mechanical connection between the steering wheel and the front axle is not disconnected.

The advantages of dynamic steering are even more extensive. The system is also activated in conjunction with the ESP and its sensors under poor driving conditions. Through selective variation of the front wheel steering angle, the dynamic steering supports the ESP within dynamic driving limits.

The "actuator" located on the steering column is a fixed component of the column. If the "actuator" is faulty, the entire steering column must be replaced.

The "valve" located on the power steering pump is a fixed component of the pump. If the "valve" is faulty, the entire power steering pump must be replaced.

Correct basic setting is required for proper dynamic steering function.

NOTE: To make a basic setting successfully, the steering angle sensor -G85- must first be calibrated using the steering wheel balance VAS 6458.

A Basic Setting is Necessary If:

- the active steering control module -J792- is replaced.
- the front axle toe is adjusted.
- the rear axle toe is adjusted.
- the vehicle suspension was changed, for example, changing from standard to sport suspension.
- the steering angle sensor -- was calibrated.
- the steering column was replaced.
- the steering wheel is at an angle when driving straight.

NOTE: Before performing a basic setting on the dynamic steering, check the Diagnostic Trouble Code (DTC) memory and correct any faults. A basic setting to the dynamic steering must only be performed using alignment equipment approved by VW/Audi.

ADAPTIVE CRUISE CONTROL

Distance regulation sensor and distance regulation control module -J428- are installed in one housing. If sensor/control module is faulty, entire unit must be replaced.

In the following description, the sensor/control module unit is identified as the "sensor".

The sensor is located behind the front bumper right air intake grille.

Malfunctions can occur due to contamination on the sensor. Remove the air intake grille in front of the sensor according to the repair information and clean the sensor.

A new sensor generation with a revised bracket is being installed in production as a running change from MY 12; allocation.

Before performing Adaptive Cruise Control (ACC) adjustment, Diagnostic Trouble Code (DTC) memory must be interrogated and malfunctions corrected.

ACC control module "measured value block 2" shows whether sensor is only slightly misaligned.

The ACC adjustment may only be set using a VW/Audi-approved wheel alignment tester and adjustment device!

A correct adjustment is required for perfect ACC function.

NOTE: A new adjustment is necessary if:

Rear axle toe is adjusted.

The complete adaptive cruise control sensor -G550- must be replaced.

Alignment work performed on the right longitudinal member.

There is damage on the front end.

The adjustment angle is greater than -0.8° to $+0.8^{\circ}$.

LANE ASSIST

Lane assist helps the driver keep the vehicle in its lane. If the system is in operation and the vehicle approaches a recognized boundary line and will leave the lane, the driver is notified by a vibration in the steering wheel. If the system is in operation and the turn signal is activated before driving over a recognized boundary, the warning is not given because the system assumes it is an intentional lane change.

The steering wheel is equipped with a vibration motor to create the steering wheel vibration. The vibration motor is encased in foam in the lower right spoke of the steering wheel. The steering wheel vibrations are generated by a rotating weight installed on the motor. It cannot be replaced separately. The entire steering wheel

motor must be replaced if the vibration motor is faulty. Refer to **AIRBAG STEERING WHEEL** . The duration of the steering wheel vibration depends on the driver reaction and generally lasts about one second.

The camera -- and directional stabilization assistance control module -J759- are installed in one housing. The entire unit must be replaced if the camera or control module is faulty.

The directional stabilization assistance control module is installed at the center of the top edge of the windshield at the level of the interior rearview mirror. It is secured in a bracket that is bonded to the windshield.

Changes that restrict the visual area of the camera (such as applying labels, stone damage) can lead to malfunctions.

The button -- for the directional stabilization assistance button -E517- is integrated in a mount with the turn signal lever. Pressing the button switches the system on and off. If the directional stabilization assistance button -- is faulty, the mount must be completely replaced with the cruise control switch -E45- and the windshield wiper intermittent mode switch -E22-. Refer to **Removal and Installation** .

NOTE: **The message "Audi lane assist not available: no sensor range at this time" appears if the camera function is no longer available due to ongoing poor visibility of the lane lines. The following could cause this:**

- The camera visual field is dirty or icy. If that is the problem, it should be corrected.
- There is condensation on the camera visual field. If this is the case, wait until the condensation disappears.
- Lane lines are not visible for an extended period of time due to road conditions (such as snow on the road surface).

If the condensation does not clear on its own or if there is heavy dirt on the inside of the lens (in the camera visual field), the camera visual field must be cleaned by hand. To do this, remove the control module and the lens screen and clean the front window using cleaning solution. Control module and lens screen, removing, refer to **Directional Stabilization Assistance Control Module -J759- AND LENS SCREEN**.

The calibration must be correct for proper lane assist function.

Calibration is Necessary If:

- "No or incorrect basic setting/adaptation" is stored actively in the Diagnostic Trouble Code (DTC) memory.
- the directional stabilization assistance control module -- is replaced.
- The windshield is replaced or removed.
- the rear axle toe is adjusted.
- the vehicle suspension was changed, for example, changing from standard to sport suspension.
- The vehicle level sensor on vehicles with electronic damping was adapted

NOTE: **Before calibrating the lane assist, check the DTC memory and correct any**

faults. To calibrate the lane assist, the vehicle driving direction must be specified and serves as the reference position for the tool VAS 6430. The lane assist must only be calibrated using alignment equipment approved by VW/Audi. Only use the VAS 6430 to calibrate the lane assist.

DESCRIPTION AND OPERATION

TIRE PRESSURE MONITORING SYSTEM OVERVIEW

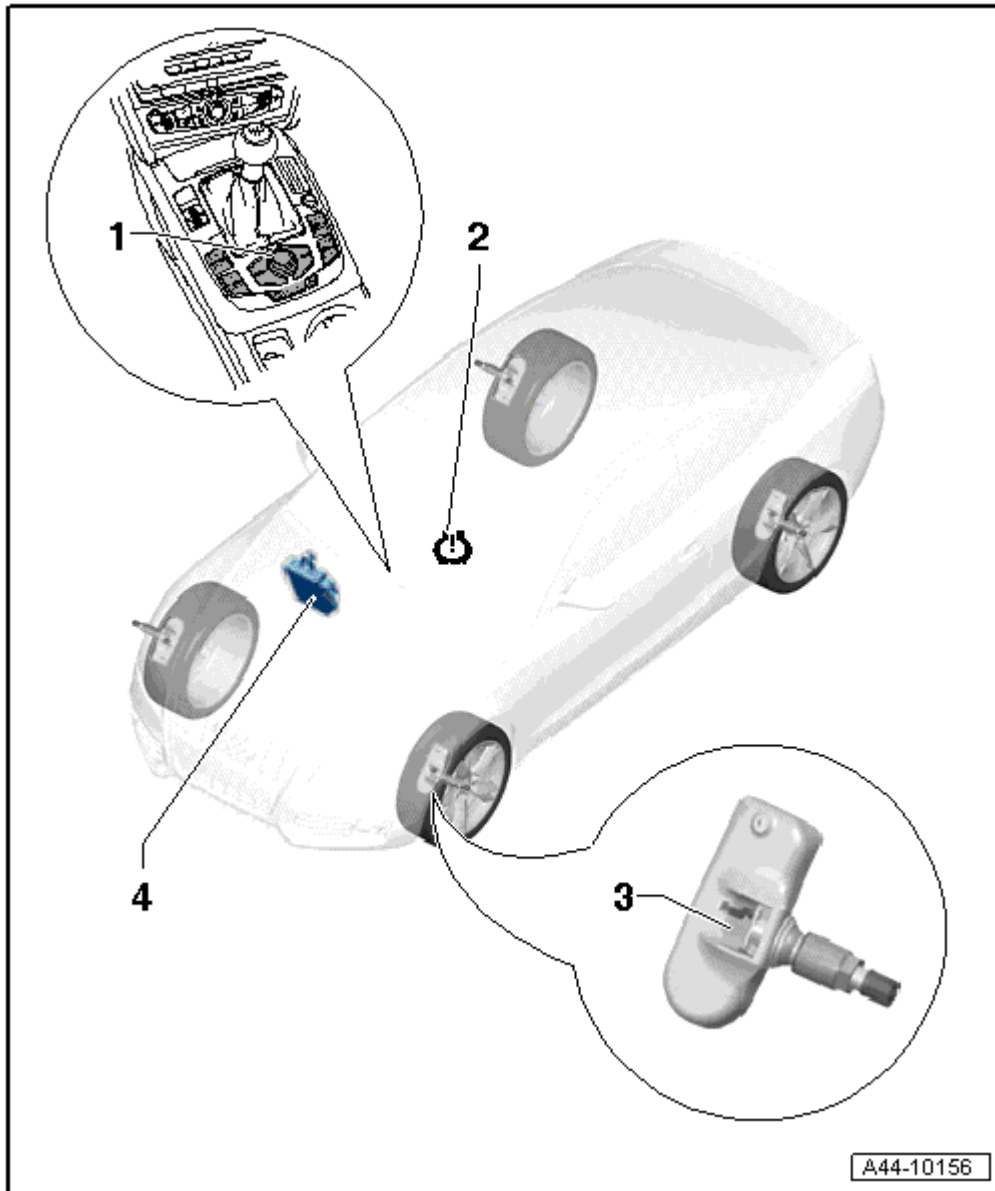


Fig. 3: Tire Pressure Monitoring System Overview
Courtesy of AUDI OF AMERICA, LLC

1. Multimedia Control Head -E380-

- Component location: the multimedia control head -- is installed in the center console.
 - The "Tire Pressure Monitoring" function is selected by pressing the "CAR" function button and using the knob in the "Systems" car menu.
2. Display in Instrument Cluster
 - See Vehicle diagnostic, test and information system VAS 5051 B
 3. Left Front Tire Pressure Monitoring Sensor -G222-, Right Front Tire Pressure Monitoring Sensor -G223-, Left Rear Tire Pressure Monitoring Sensor -G224- and Right Rear Tire Pressure Monitoring Sensor -G225-
 - Removing and installing, refer to **Tire Pressure Sensor --**
 - If wheel positions on the vehicle are changed, tires are changed, tire pressure sensors -- are replaced or pressures are changed, control module must be readapted. Refer to **TIRE PRESSURE MONITORING SYSTEM, USING THE SYSTEM.**
 4. Tire Pressure Monitoring Control Module -J502-
 - If tire pressure monitoring control module -- is replaced, system must be coded, refer to **TIRE PRESSURE MONITORING SYSTEM, USING THE SYSTEM.**
 - Removing and installing, refer to **Tire Pressure Monitoring Control Module -J502-**

TIRE PRESSURE MONITORING SYSTEM, USING THE SYSTEM

Function

The tire pressure monitoring system is controlled using the multimedia system control head -E380-, which is installed in the center console.

The system monitors the tire pressure that was set for monitoring in each of the four tires.

-- The tire pressures must be checked, corrected and saved via the multimedia system control head -- under the menu items "CAR", "Systems" and "Tire Pressure Monitoring".

-- Then check and correct the tire pressure for the tires on the vehicle (including spare tire) according to the specifications on the sticker on the fuel filler flap/B-pillar.

Tire Pressure Monitoring Active

If the tire pressure monitoring system detects a loss of pressure in one or more tires, this is indicated to the driver by the tire pressure warning light illuminating in the instrument cluster. A tire pressure warning symbol with the text "Check tire pressure" also appears in the instrument cluster driver information system. In this case, the tire pressures must be checked (according to the specifications on the label on the fuel tank door/B-pillar). If the tire pressure is very different in one or more tires, check that tire for damage or foreign objects. Replace the tire if necessary, refer to **TIRES, CHANGING.**

-- If the cause of the tire pressure warning has been corrected: Correct and save the tire pressures via the multimedia system control head --.

Fault in the TPMS

A system malfunction is stored in the tire pressure monitoring control module -J502- Diagnostic Trouble Code (DTC) memory. If a malfunction occurs or there is already one present, this is indicated when the ignition is switched on by the yellow malfunction lamp in the instrument cluster blinking for 1 minute and then staying on. The yellow warning lamp cannot be switched off by pressing the multimedia system control head -- button in the center console. Except in the case that 1 - 4 tire pressure monitoring sensors -- recognized, the pressures were not stored. Moreover, the "TPMS" warning lamp in the instrument cluster comes on and "Tire Pressure System Fault". If there is a fault stored in the DTC memory, connect the vehicle diagnostic tester and select "Guided Fault Finding".

Recode the Tire Pressure Monitoring Control Module --.

The tire pressure monitoring control module -- must be coded if it is replaced. To do this, proceed as follows.

-- Connect vehicle diagnostic tester perform vehicle-specific entry into Guided Fault Finding and select **go to** button "function/component selection".

-- Select the corresponding program in "Guided Functions".

-- Follow the prompts on the screen.

Tire Pressures, Saving

The correct saving of the specified values in the basic requirement for dependable tire pressure monitoring.

Each time a tire or tire pressure monitoring system -- is replaced, press the multimedia system control head -- button in the center console when in the tire pressure monitoring menu when the ignition is switched on and the vehicle is standing.

The procedure for saving the tire pressures must be initiated each time the tire specified pressures are changed. The procedure takes place while driving.

Changing a Tire or Replacing Just One Tire Pressure Sensor --, Change.

Adapting the tire pressure sensors -- is a basic requirement for the tire pressure monitoring system to function properly.

Each time a tire or tire pressure monitoring system -- is replaced, press the multimedia system control head -- button in the center console when in the tire pressure monitoring menu when the ignition is turned on and the vehicle is standing.

The vehicle must stand for 20 minutes and then be driven on a 10 minute adaptation drive at speeds higher than 25 km/h.

If the multimedia system control head -- button is not pressed, the system adapts the new sensors but still illuminates the warning lamp to request actively the confirmation the actual tire pressures.

The system detects a malfunction if the control module is not ready for adapting because the 20 minute waiting

period was not completed. The system only adapts the tire pressure monitoring sensors automatically after a 20 minute waiting period. If the control module is ready, "YES/NO" can be read in measured values block 126.

TIRE PRESSURE MONITORING SENSOR -- OVERVIEW

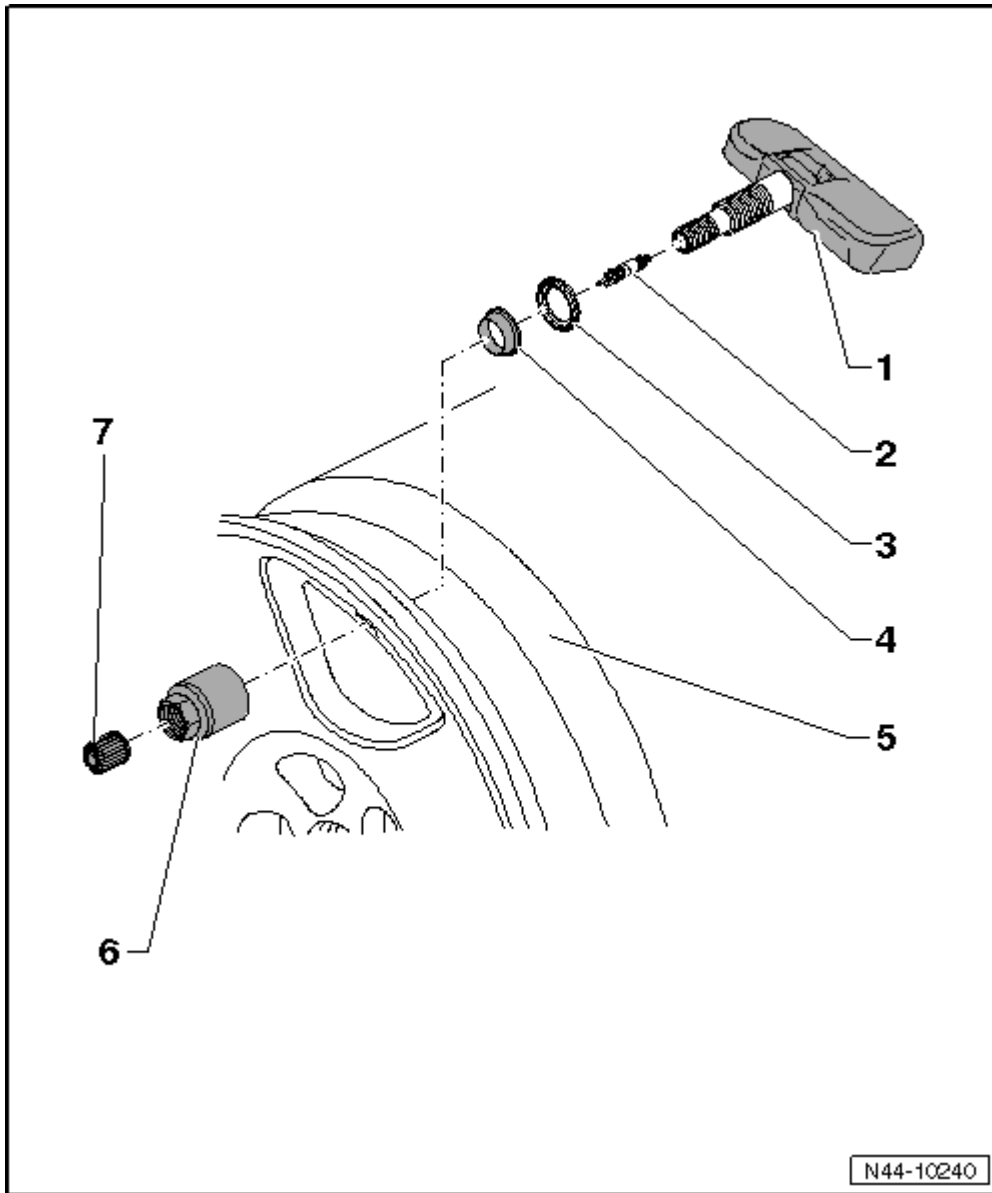


Fig. 4: Identifying Assembly Overview: Tire Pressure Sensor

Courtesy of AUDI OF AMERICA, LLC

1. Left Front Tire Pressure Monitoring Sensor -G222-, Right Front Tire Pressure Monitoring Sensor -G223-, Left Rear Tire Pressure Monitoring Sensor -G224- and Right Rear Tire Pressure Monitoring Sensor -G225-
 - Replace the valve insert each time a tire is changed.
 - When using used tire pressure sensors --, replace the union nut, valve insert, seal, sealing washer and valve cap.

- After installing, visually check if the sensor is secure in its bed.
 - Replace damaged sensors.
 - Do not clean the sensors with steam blasting or strong compressed air.
 - Removing and installing, refer to **Tire Pressure Sensor --**
2. Valve Core
 - Replace damaged valves.
 - When changing a tire, replace the valve insert.
 3. Sealing Washer
 - When installing the new sealing washer, counter hold it to prevent the valve body from pushing through. If the connection breaks, then replace the tire pressure monitoring sensor --.
 4. Seal
 - When installing the new seal, counter hold it to prevent the valve body from pushing through. If the connection breaks, then replace the tire pressure monitoring sensor --.
 5. Rim
 - Tires, removing and mounting, refer to **TIRES, CHANGING**
 6. Union Nut
 - 8 Nm
 7. Valve Cap
 - Use only original valve caps from the repair set.
 - Do not use comfort valve caps and metal caps

DYNAMIC STEERING OVERVIEW

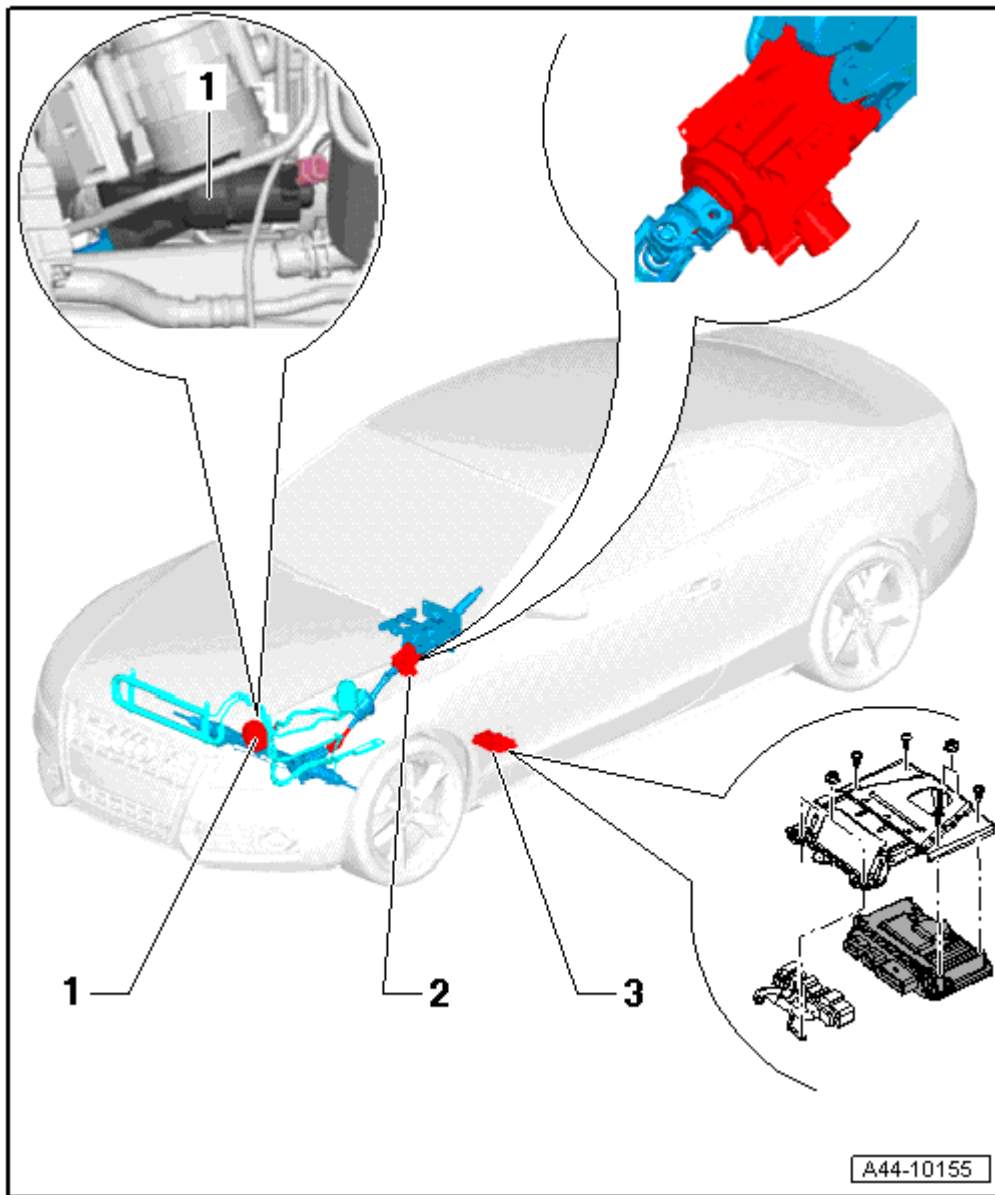


Fig. 5: Identifying Dynamic Steering Overview
 Courtesy of AUDI OF AMERICA, LLC

1. Power Steering Pump

- With an electric control valve
- The control valve is only installed on vehicles with 6- and 8-cylinder engines.
- The power steering pump and control valve are one component and are replaced together.
- Installation location in vehicles with 4 and 6-cylinder engines: on the left front of the engine (belt drive).
- Installation location on vehicles with 8-cylinder engines: on the rear left of the engine (chain drive).

2. Actuator

- Must not be loosened or removed from the steering column.

- The actuator and steering column are one component and are replaced together.
 - The system must be calibrated if the actuator is replaced. Refer to **DYNAMIC STEERING BASIC SETTING**.
 - Removing and installing, refer to **STEERING COLUMN**
3. Active Steering Control Module -J792-
- The basic setting must be made if the active steering control module is replaced --. Refer to **DYNAMIC STEERING BASIC SETTING**.
 - Removing and installing, refer to **Active Steering Control Module -J792-**

ADAPTIVE CRUISE CONTROL SENSOR -G550- OVERVIEW

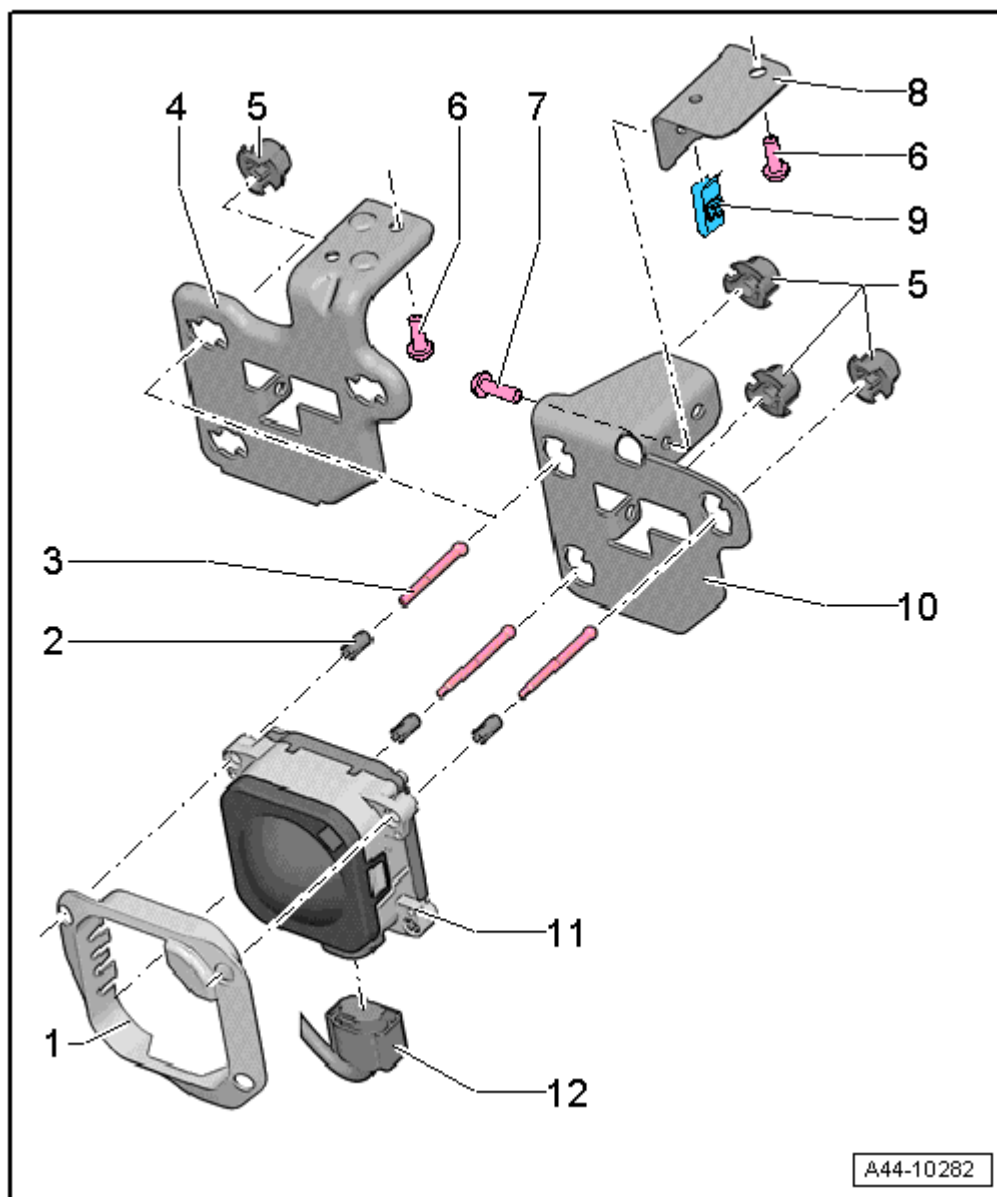


Fig. 6: Identifying Adaptive Cruise Control Sensor

Courtesy of AUDI OF AMERICA, LLC

1. Cover
2. Clip
 - Installed from MY 12
 - Always replace the clip if the stud bolt -3- was removed.
 - Removing and installing, refer to **Distance Regulation Control Module -- CLIP, REPLACING, FROM MY 12**
3. Stud
 - If the stud bolt is being removed, then the clip -2- must always be replaced.
 - Observe adjustment dimension when installing, refer to **Fig. 70**
4. Bracket
 - For vehicles through MY 12
5. Nut
6. Bolt
 - 8 Nm
7. Bolt
 - 8 Nm
8. Angle Bracket
 - Installed on vehicles from MY 12
9. Spring Nut
10. Bracket
 - For vehicles from MY 12
 - If a repair is required, the bracket is replaced by bracket -4-. Allocation.
11. Adaptive Cruise Control Sensor --
 - There are different versions; allocation.
 - Removing and installing, refer to **Adaptive Cruise Control Sensor -G550-**
12. Connector
 - Squeeze both clips to release the connector.

SPECIFICATIONS**WHEEL ALIGNMENT SPECIFIED VALUES**

Front and All Wheel Drive

Specifications valid for all engine versions

Front Axle	Standard Suspension (1BA)	China City Suspension (1BB)	Sport Suspension (1BE/1BD)	Steel Spring Suspension allroad (1BP)
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2012 Audi S4

SUSPENSION Wheels, Tires and Vehicle Alignment (Sedan)

Camber	$- 43' \pm 23'$	$- 43' \pm 23'$	$- 1^{\circ}5' \pm 23'$	$- 20' \pm 23'$
Maximum permissible difference between both sides	30'	30'	30'	30'
Toe per wheel (adjustment value)	$+ 10' \pm 5'$	$+ 10' \pm 5'$	$+ 10' \pm 5'$	$+ 10' \pm 5'$
Toe per wheel (control value)	$+ 10' \pm 7'$	$+ 10' \pm 7'$	$+ 10' \pm 7'$	$+ 10' \pm 7'$
Toe-out angle at 20 degrees ⁽¹⁾	$1^{\circ}49' \pm 30'$	$1^{\circ}49' \pm 30'$	$1^{\circ}49' \pm 30'$	$1^{\circ}49' \pm 30'$
Outer wheel steering angle at maximum steering angle	$33^{\circ}12' + 1^{\circ}30'_{-2^{\circ}}$	$33^{\circ}12' + 1^{\circ}30'_{-2^{\circ}}$	$33^{\circ}12' + 1^{\circ}30'_{-2^{\circ}}$	$33^{\circ}12' + 1^{\circ}30'_{-2^{\circ}}$
Inner wheel steering angle at maximum steering angle	$39^{\circ}36' + 1^{\circ}30'_{-2^{\circ}}$	$39^{\circ}36' + 1^{\circ}30'_{-2^{\circ}}$	$39^{\circ}36' + 1^{\circ}30'_{-2^{\circ}}$	$39^{\circ}36' + 1^{\circ}30'_{-2^{\circ}}$

(1) Wheel stop on outer wheel is reduced by this amount. It can also be indicated negatively in alignment computer, depending on manufacturer.

Front Axle	Chassis with Electronic Damping (1BL)	Heavy Duty Suspension (1BR)	Sport Suspension S line (1BV)
Camber	$- 1^{\circ}5' \pm 23'$	$- 30' \pm 23'$	$- 1^{\circ}13' \pm 23'$
Maximum permissible difference between both sides	30'	30'	30'
Toe per wheel (adjustment value)	$+ 10' \pm 5'$	$+ 10' \pm 5'$	$+ 10' \pm 5'$
Toe per wheel (control value)	$+ 10' \pm 7'$	$+ 10' \pm 7'$	$+ 10' \pm 7'$
Toe-out angle at 20 degrees ⁽¹⁾	$1^{\circ}49' \pm 30'$	$1^{\circ}49' \pm 30'$	$1^{\circ}49' \pm 30'$
Outer wheel steering angle at maximum steering angle	$33^{\circ}12' + 1^{\circ}30'_{-2^{\circ}}$	$33^{\circ}12' + 1^{\circ}30'_{-2^{\circ}}$	$33^{\circ}12' + 1^{\circ}30'_{-2^{\circ}}$
Inner wheel steering angle at maximum steering angle	$39^{\circ}36' + 1^{\circ}30'_{-2^{\circ}}$	$39^{\circ}36' + 1^{\circ}30'_{-2^{\circ}}$	$39^{\circ}36' + 1^{\circ}30'_{-2^{\circ}}$

(1) Wheel stop on outer wheel is reduced by this amount. It can also be indicated negatively in alignment computer, depending on manufacturer.

Rear Axle	Standard Suspension (1BA)	China City Suspension (1BB)	Sport Suspension (1BE)/(1BD)	Steel Spring Suspension allroad (1BP)
Camber	$- 1^{\circ}20' \pm 25'$	$- 1^{\circ}20' \pm 25'$	$- 1^{\circ}20' \pm 25'$	$- 1^{\circ}20' \pm 25'$
Maximum permissible difference between both sides	30'	30'	30'	30'
Toe per wheel (adjustment)	$+ 10' \pm 5'$	$+ 10' \pm 5'$	$+ 10' \pm 5'$	$+ 10' \pm 5'$

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value)				
Toe per wheel (control value)	+ 10' ± 5'	+ 10' ± 5'	+ 10' ± 5'	+ 10' ± 5'
Maximum permissible deviation in direction of travel relative to vehicle longitudinal axis	10'	10'	10'	10'

Rear Axle	Chassis with Electronic Damping (1BL)	Heavy Duty Suspension (1BR)	Sport Suspension S line (1BV)
Camber	- 1°20' ± 25'	- 1°20' ± 25'	- 1°20' ± 25'
Maximum permissible difference between both sides	30'	30'	30'
Toe per wheel (adjustment value)	+ 10' ± 5'	+ 10' ± 5'	+ 10' ± 5'
Toe per wheel (control value)	+ 10' ± 5'	+ 10' ± 5'	+ 10' ± 5'
Maximum permissible deviation in direction of travel relative to vehicle longitudinal axis	10'	10'	10'

Calculating the camber adjustment value:

camber adjustment value = -43' + [(vehicle height left + vehicle height right) : 2] - 391

NOTE: **1' camber = 1 mm vehicle height**

The camber values are defined in the following table based on the vehicle heights at the front axle.

Camber adjustment values on the front axle for RHD vehicles and standard chassis (1BA)						
Vehicle height			Camber			Maximum permissible difference in height between the right and left
Drift	Left and right average absolute value Wheel	Average Delta or specified vehicle height in mm	Test - adjustment dimension	Drift	Maximum permissible difference between both sides	
too high	401	10	-33'			
	400	9	-34'			
	399	8	-35'			
	398	7	-36'			
	397	6	-37'			
	396	5	-38'			

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	395	4	-39'			
	394	3	-40'			
	393	2	-41'			
	392	1	-42'			
specified	391	0	-43'			
to low	390	-1	-44'	± 23'	30'	< or = 10 mm
	389	-2	-45'			
	388	-3	-46'			
	387	-4	-47'			
	386	-5	-48'			
	385	-6	-49'			
	384	-7	-50'			
	383	-8	-51'			
	382	-9	-52'			
	381	-10	-53'			

Additional vehicle data for vehicles with front and all wheel drive:

This additional vehicle data only serves for a faster diagnosis in the case of accidents.

Table **SPECIFICATIONS**

Specified values valid for all engine versions.

TEST PREREQUISITES

- Check suspension, steering and steering linkage for excessive play and damage, repair if necessary.
- Tread depth difference may be no more than 2 mm on an axle.
- Tires inflated to prescribed pressure.
- Drive the vehicle onto the alignment rack without tension. Move the vehicle back and forth if necessary to relieve any tension on the axle components.
- Vehicle accurately aligned, suspension bounced and rocked several times
- Make sure that the sliding plates and turn tables are not touching the end stop when checking the wheel alignment.
- The steering wheel must be "evened out" into the center position before beginning the measuring and adjusting. Use steering wheel scales VAS 6458 for this.
- The measurement sensor must be properly adjusted and attached to the vehicle; observe device manufacturer's operating instructions.
- Make sure that the sliding plates and turn tables are not touching the end stop when checking the wheel alignment.
- Vehicle curb weight "Curb weight means: the weight of a vehicle ready to be driven (the fuel tank is full, the windshield washer fluid reservoir is full, spare wheel, vehicles tool and vehicle jack and no people in the vehicle)"

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- Spare wheel, vehicle tools and vehicle jack must be located in the position specified by the vehicle manufacturer.
- Perform wheel run-out compensation: Permissible axial run-out of the wheel rims can exceed the specified toe setting tolerance. If compensation for wheel run-out is not performed, it will not be possible to obtain a correct toe-in adjustment.
- After a certain period, wheel alignment platforms and computer equipment can lose their original leveling setting and adjustments.
- Alignment platforms and alignment units/alignment computers should be calibrated at least once a year during maintenance.
- Treat these highly sensitive units carefully and conscientiously.
- If necessary, contact the manufacturer for familiarization with the proper use of the equipment.

FASTENER TIGHTENING SPECIFICATIONS

Component	Fastener Size	Nm
Adaptive Cruise Control Sensor Assembly Bracket Bolt	-	8
Level Control System Control Module Bracket and Ground Wire Nut	-	6
Level Control System Control Module to Bracket Bolt	-	8
Tire Pressure Monitoring Control Module Nut	-	2
Tire Pressure Monitoring Sensor Union Nut	-	8

DIAGNOSIS AND TESTING

STEERING RACK, CHECKING MECHANICAL CENTER POSITION

The general mechanical center position of the rack can be checked with the appropriate markings on the power steering gear. Refer to **HYDRAULIC POWER STEERING GEAR STEERING, CENTERING** .

WHEEL RUN-OUT COMPENSATION

The lateral run-out of the wheel must be compensated for. Otherwise, measurement will result in false readings.

Permissible axial run-out of the wheel rims can exceed the specified toe setting tolerance. If compensation for wheel run-out is not performed, it will not be possible to obtain a correct toe-in adjustment.

A correct toe-in adjustment will not be possible without performing lateral run-out compensation!

-- For this, observe notes by manufacturer of wheel alignment equipment.

MAXIMUM STEERING ANGLE, CHECKING

-- If the maximum steering angle has been determined on the alignment equipment, so that the value is not

within the tolerance, then check for damage or deformations to the steering and suspension components and inspect the symmetry of the ties rod. In this case, shorten the "longer" tie rod end (install it deeper into the tie rod) and replace any damaged components.

-- If a steering wheel fault is determined on the alignment equipment when setting the center position of the steering, then check the steering and suspension for damage or deformations and replace any damaged components. Check the tie rod symmetry as well.

-- Measure dimension -a- on the "shorter" tie rod head. Shorten the "longer" tie rod head to the same dimension. To do this, install the tie rod head -1- deeper into the tie rod -2-.

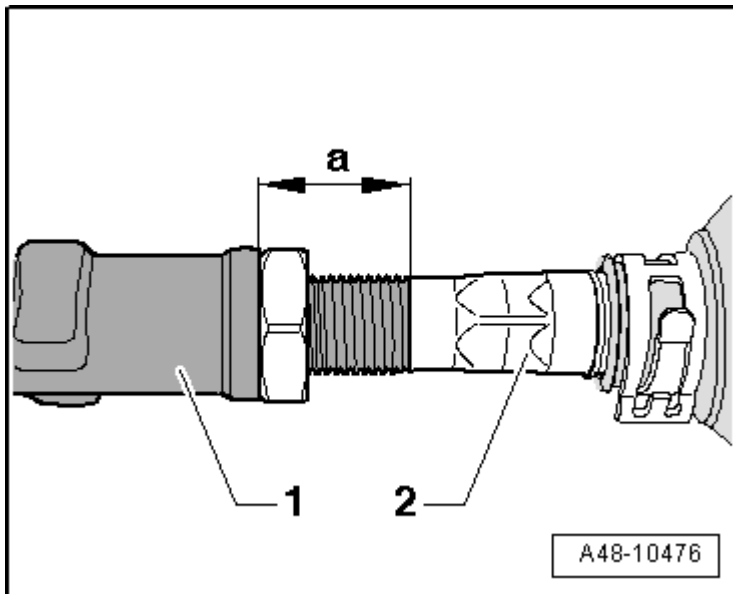


Fig. 7: Measuring Tie Rod / Tie Rod Head Dimension
 Courtesy of AUDI OF AMERICA, LLC

Dimension -a- right tie rod end = dimension -a- left tie rod end; maximum permissible difference between right and left < 2.5 mm.

-- When the steering wheel returns to its center position, let the steering wheel "come to its center" using even movements.

FRONT AXLE CAMBER, CHECKING AND ADJUSTING

Camber cannot be adjusted.

Camber can be centered evenly within specified tolerance range by shifting subframe.

-- Remove noise insulation. Refer to Description and Operation .

NOTE: The tunnel crossmember must be loosened before adjusting the camber. Refer to [For engine(s) CCBA] Removal and Installation or to [For engine(s) CAEB,

CALA] Removal and Installation or [For engine(s) CCBA] Removal and Installation or to Removal and Installation .

The tunnel crossmember must be loosened to prevent the transmission mount from being stressed.

Depending on the engine version, the subframe shield must be loosened in order to be able to mount the plastic coated tire iron for moving the subframe.

-- Remove the bolts -arrows-.

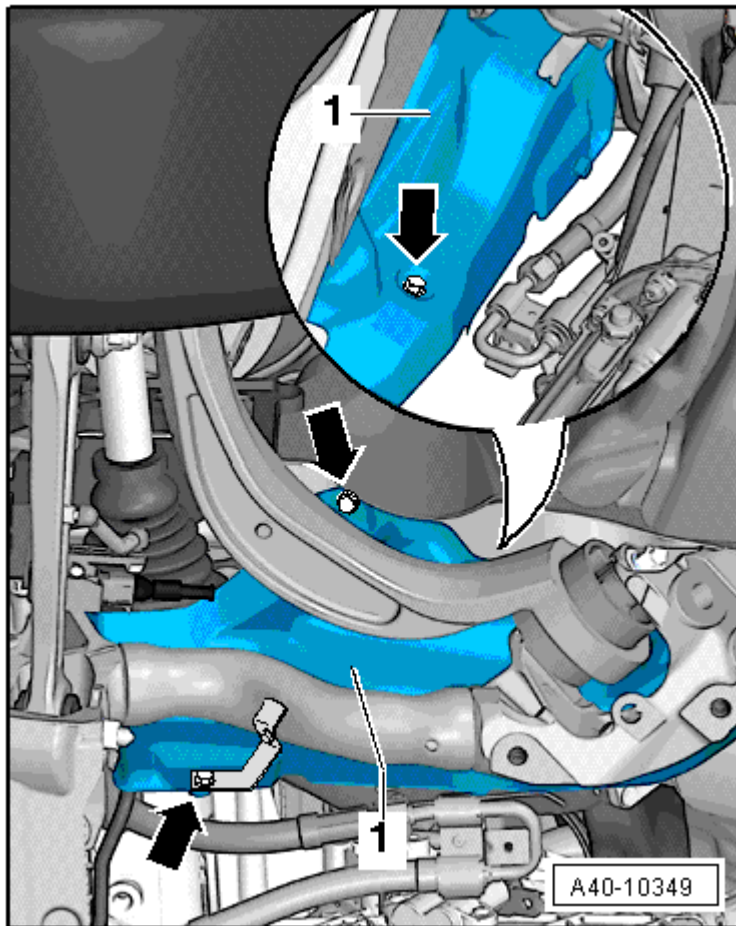


Fig. 8: Identifying Subframe Shield
Courtesy of AUDI OF AMERICA, LLC

-- Move the subframe shield -1- to the side.

-- Loosen the bolts -1- through -8-.

Depending on the engine version, the following steps are necessary to loosen the bolt -1-.

- Remove the right protective joint boot, if applicable.
- Remove one wheel housing liner clip.
- Tilt the wheel housing liner to the side slightly.

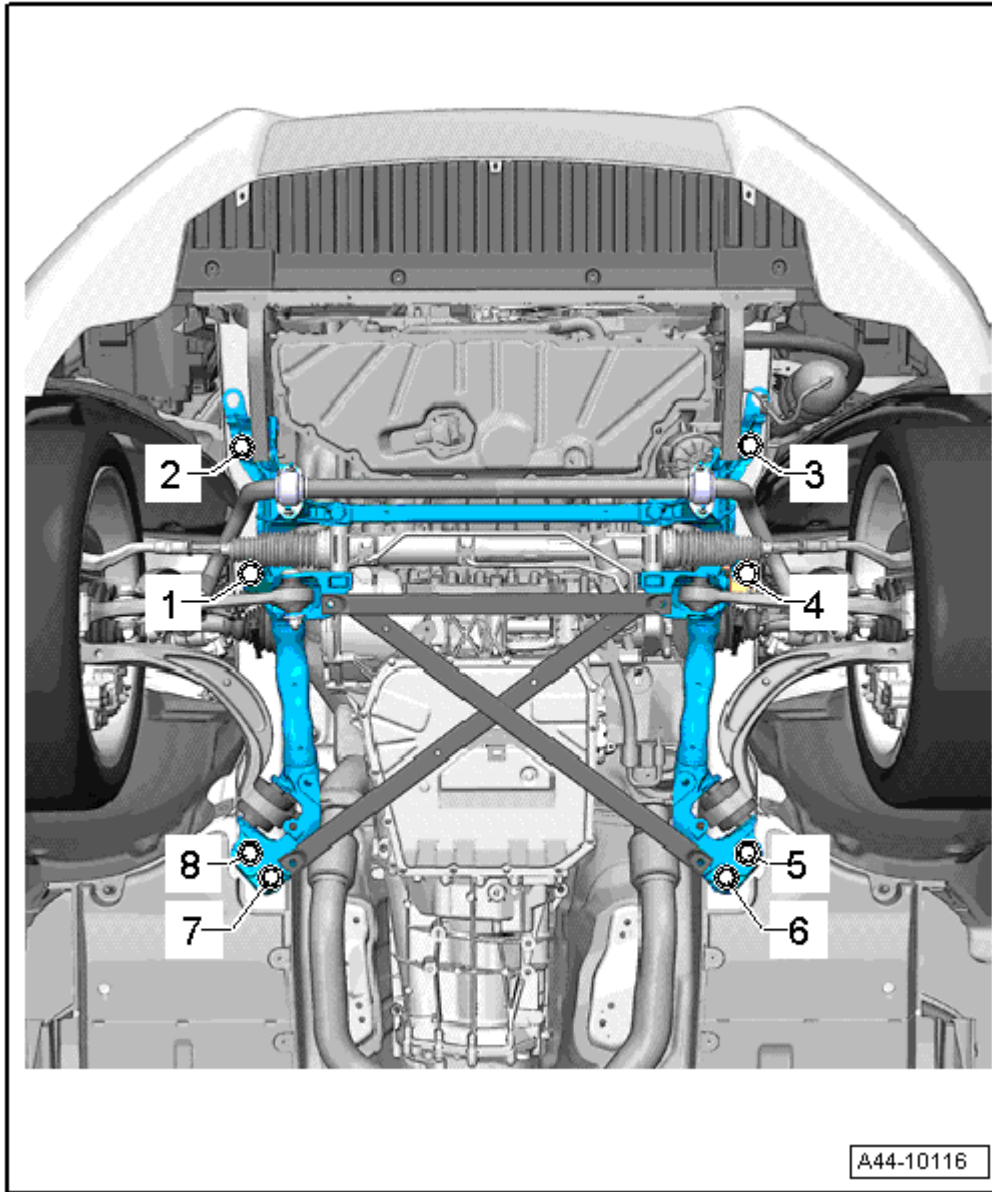


Fig. 9: Identifying Subframe & Bolts
Courtesy of AUDI OF AMERICA, LLC

NOTE: If the subframe is moved, the front of the vehicle must be lifted at the jack points using an axle lift.

-- Using a plastic-coated tire iron, slide the subframe with the engine mount and stabilizer bar in the appropriate location.

Push in the center of the subframe near the lower control arm between the subframe and the body longitudinal member.

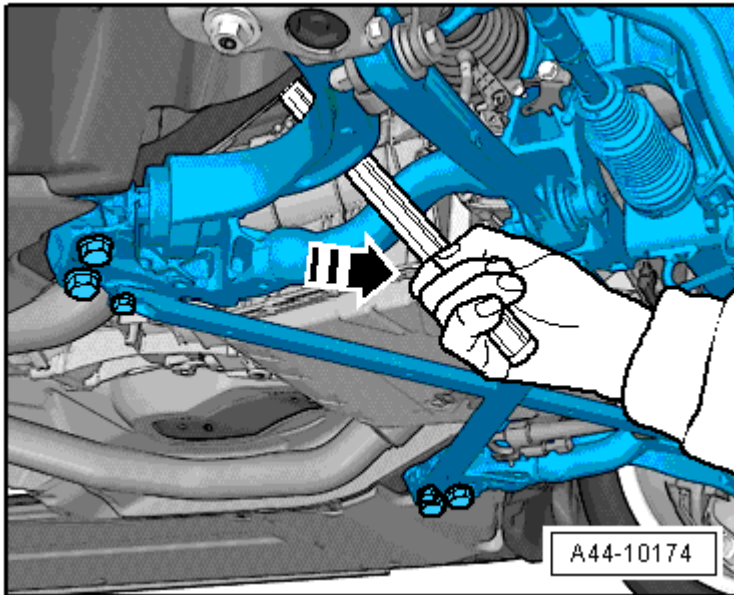


Fig. 10: Pushing In Center Of Subframe Near Lower Control Arm Between Subframe And Body Longitudinal Member

Courtesy of AUDI OF AMERICA, LLC

If you do not have a plastic-coated tire iron, wrap a standard tire iron in adhesive tape.

-- The vehicle must be bounced several times at the front axle before checking the camber values.

WARNING: Do not damage any parts!

Axle alignment specified values, refer to **WHEEL ALIGNMENT SPECIFIED VALUES**.

-- Tighten the bolts -2 and 3- to the specifications.

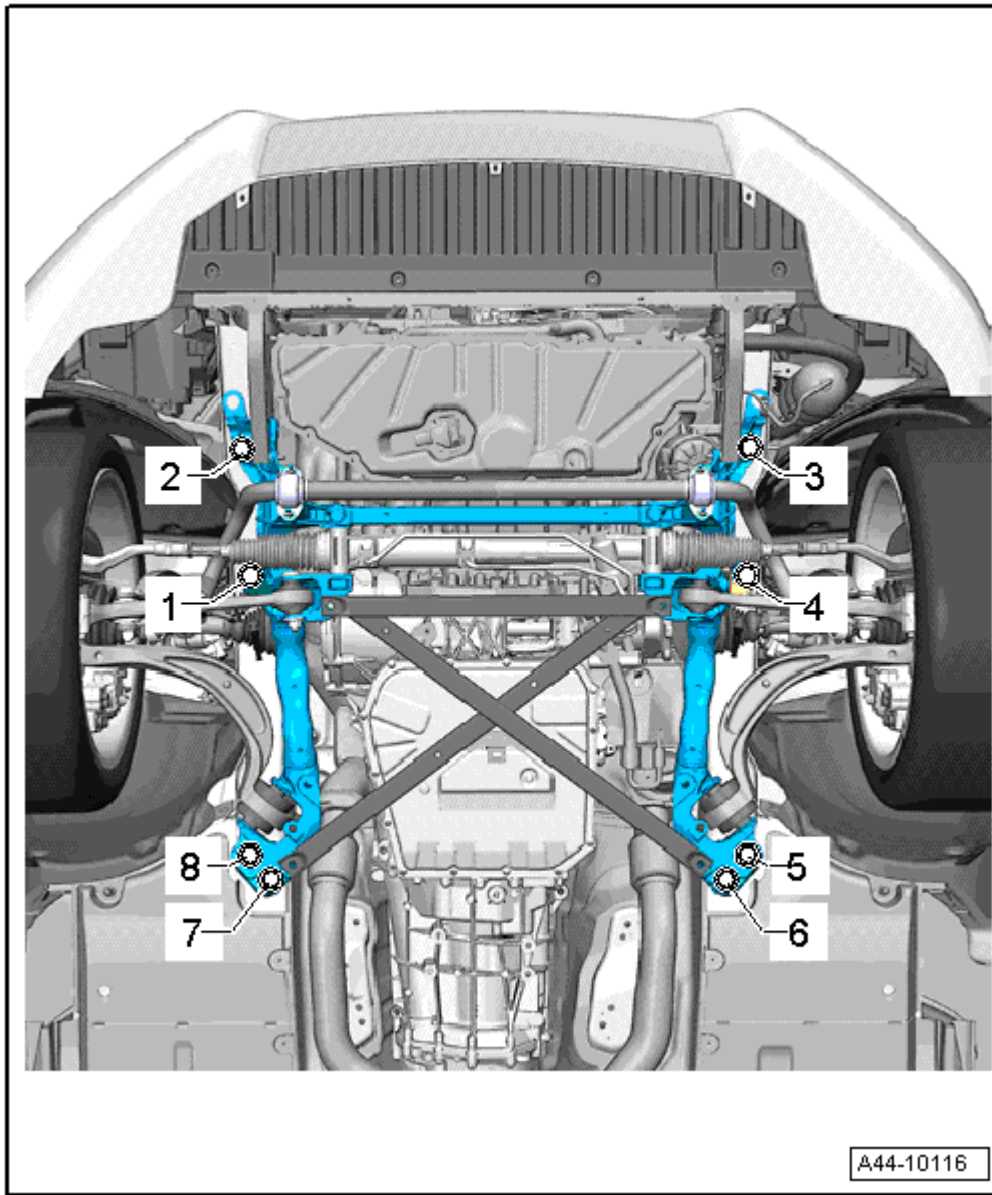


Fig. 11: Identifying Subframe & Bolts
 Courtesy of AUDI OF AMERICA, LLC

-- Install the new bolts -1 and 4- one after another and tighten. Refer to SUBFRAME, CROSSBRACE, STABILIZER BAR, COUPLING ROD AND SUBFRAME SHIELD OVERVIEW .

-- Install the new bolts -2- and -3- one after another and tighten. Refer to SUBFRAME, CROSSBRACE, STABILIZER BAR, COUPLING ROD AND SUBFRAME SHIELD OVERVIEW .

-- Install the new bolts -8 and 5- one after another and tighten. Refer to SUBFRAME, CROSSBRACE, STABILIZER BAR, COUPLING ROD AND SUBFRAME SHIELD OVERVIEW .

-- Install the new bolts -7 and 6- one after another and tighten. Refer to SUBFRAME, CROSSBRACE, STABILIZER BAR, COUPLING ROD AND SUBFRAME SHIELD OVERVIEW .

-- Tighten the tunnel crossmember, the tunnel crossmember must be loosened before adjusting the camber. Refer to [For engine(s) CCBA] Removal and Installation or to [For engine(s) CAEB, CALA] Removal and Installation or [For engine(s) CCBA] Removal and Installation or to Removal and Installation .

-- Check camber value once more. Refer to WHEEL ALIGNMENT SPECIFIED VALUES.

-- Install the right protective joint boot and the wheel housing fastener, if removed.

-- Install the subframe shield, if it was removed. Tightening specifications, refer to SUBFRAME, CROSSBRACE, STABILIZER BAR, COUPLING ROD AND SUBFRAME SHIELD OVERVIEW .

-- Install noise insulation. Refer to Description and Operation .

CAUTION: Every time camber is corrected, axle alignment values should be checked.

REAR AXLE CAMBER, ADJUSTING

-- Remove the nut -A- of threaded connection of the wheel bearing housing/control arm, and bolt on new nut until stop.

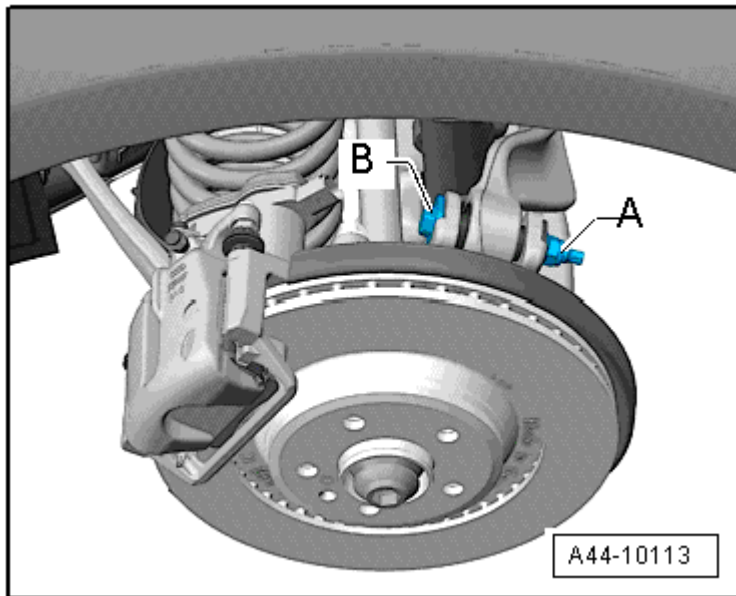


Fig. 12: Removing Nut Of Threaded Connection Wheel Bearing Housing/Control Arm, And Bolt On New Nut Until Stop

Courtesy of AUDI OF AMERICA, LLC

-- Adjust the camber by rotating the adjusting bolt -B-. To turn the adjusting bolt -B-, turn the hex head at the >>top of the bolt<<.

Axle alignment specified values, refer to WHEEL ALIGNMENT SPECIFIED VALUES.

NOTE: The maximum adjustment range is 135° to left or right of center position.

Do not rotate the adjusting bolt -B- further once the end position has been reached or the components will be damaged.

For a better illustration, camber adjustment is shown with wheel removed.

-- Tighten nut -A- -item 9- UPPER TRANSVERSE LINK, TIE ROD, COIL SPRING, LOWER CONTROL ARM AND LEVEL CONTROL SYSTEM SENSOR OVERVIEW .

-- After tightening nut -A-, check camber value once more. Refer to WHEEL ALIGNMENT SPECIFIED VALUES.

REAR AXLE TOE, ADJUSTING

Special tools and workshop equipment required

- Tool Insert T40183
- No illustration, commercially available pawl with fine gear

-- Remove the nut -A- of threaded connection tie rod/subframe, and screw on new nut until stop.

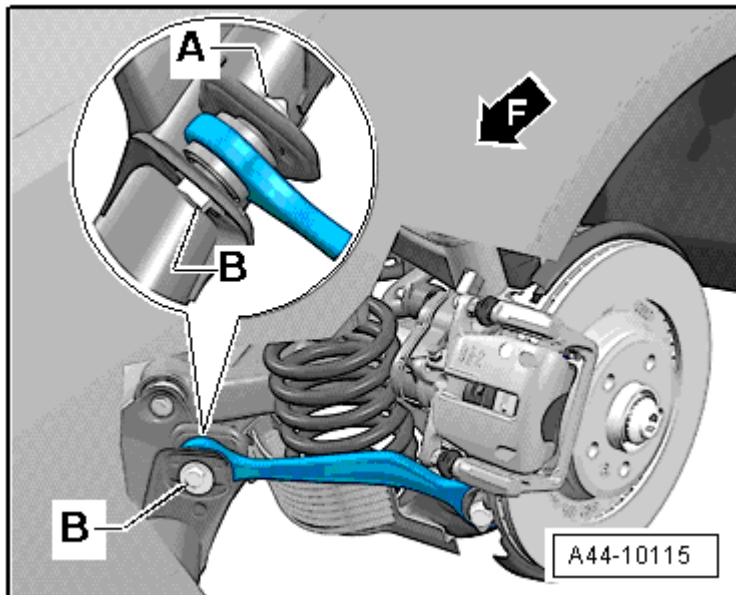


Fig. 13: Removing Nut Of Threaded Connection Tie Rod/Subframe
Courtesy of AUDI OF AMERICA, LLC

-- Adjust toe by turning eccentric bolt -B-.

Axle alignment specified values, refer to WHEEL ALIGNMENT SPECIFIED VALUES.

-- Tighten the nut -A- using the T40183 -item 25- **UPPER TRANSVERSE LINK, TIE ROD, COIL SPRING, LOWER CONTROL ARM AND LEVEL CONTROL SYSTEM SENSOR OVERVIEW** .

-- After tightening nut -A-, check toe value once more. Refer to **WHEEL ALIGNMENT SPECIFIED VALUES**.

NOTE: The maximum adjustment range is 90° to left or right of center position.

The geometric drive axle is automatically changed when individual toe settings are changed.

FRONT AXLE TOE, ADJUSTING

-- Measure the dimension -a- between the tie rod head -1- and the left and right tie rod -2- and make a note of the value. Dimension -a- should be the same before and after adjusting on the left and right.

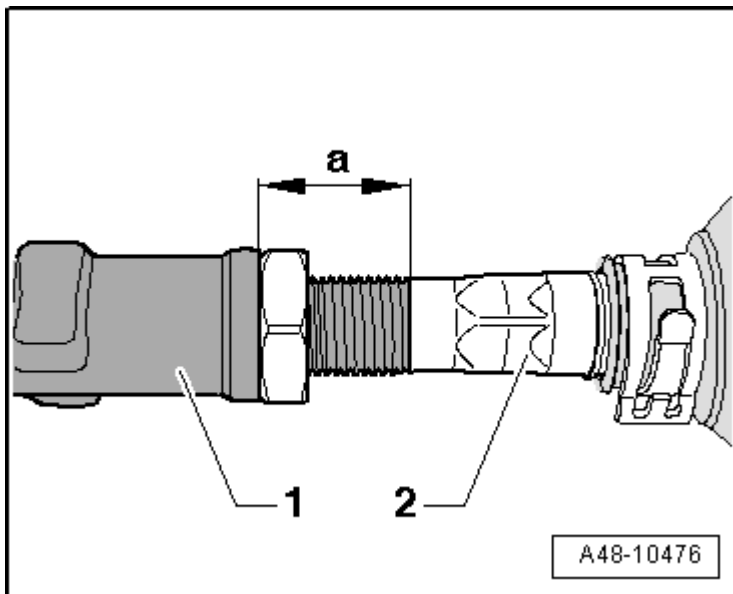


Fig. 14: Measuring Tie Rod / Tie Rod Head Dimension
Courtesy of AUDI OF AMERICA, LLC

-- Loosen lock nut -B-.

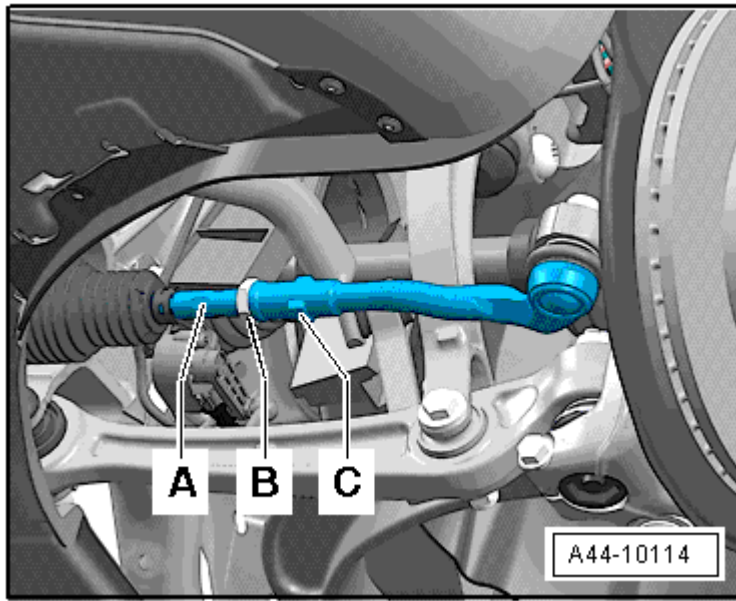


Fig. 15: Loosening Lock Nut

Courtesy of AUDI OF AMERICA, LLC

NOTE: Counter hold the tie rod end -C- when loosening the lock nut -B-.

-- Adjust toe on the left and right hand wheels at hex -A-.

Be sure that boot is not twisted after turning tie rods.

Twisted boots wear out quickly.

-- Tighten lock nut -B-, refer to **HYDRAULIC POWER STEERING GEAR, SERVICING** and check toe-in value again.

After tightening lock nut -B- it is possible that the value deviates slightly.

If the measured toe nevertheless lies within the tolerance, the adjustment is correct.

DYNAMIC STEERING BASIC SETTING

Special tools and workshop equipment required

- Vehicle Diagnostic, Testing and Information System VAS 5051 B with corresponding diagnostic cable.
- Steering Wheel Sales VAS 6458
- Wheel alignment computer

There are two choices for performing a basic setting on the dynamic steering:

The "Quick Access"

This procedure should be selected for the following activities if:

- the active steering control module -J792- was replaced,
- the steering angle sensor -G85- was calibrated,
- the steering column was replaced,
- the steering wheel is at an angle when driving straight.

The "Complete Alignment"

This procedure should be selected for the following activities if:

- the suspension was adjusted during an axle alignment,
- the front axle toe was adjusted,
- the rear axle toe was adjusted,
- the vehicle suspension was changed, for example, changing from standard to sport suspension.

NOTE: Both procedures are programmed into the axle alignment computer.

The respective procedure is performed automatically.

It is only necessary to select the appropriate program for the procedure that will be performed.

"Quick Access" Procedure:	"Complete Alignment" Procedure:
Drive the vehicle onto the measuring platform	Drive the vehicle onto the measuring platform
Activate the measuring system	Activate the measuring system
Select the model range	Select the model range
Perform wheel run-out compensation, refer to <u>WHEEL RUN-OUT COMPENSATION</u>	Perform wheel run-out compensation, refer to <u>WHEEL RUN-OUT COMPENSATION</u>
"Front wheels straight" display on the alignment computer	Perform initial suspension measurement, refer to <u>WHEN VEHICLE ALIGNMENT IS NECESSARY</u>
Connect the vehicle diagnosis, testing and information system	Adjust the suspension
Select the "Function/component selection" function <u>Subsequent procedures are performed via the vehicle diagnosis, testing and information system.</u>	Perform the final suspension measurement
	Answer the "Dynamic steering installed?" inquiry
	"Front wheels straight" display on the alignment computer
	Connect the vehicle diagnosis, testing and information system
	Select the "Function/component selection" function

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Subsequent procedures are performed via the vehicle diagnosis, testing and information system.

NOTE: A basic setting to the steering angle sensor -- must be made using the VAS 6458 before beginning the calibration.

Before beginning the basic setting, check the Diagnostic Trouble Code (DTC) memory and correct any malfunctions present.

- Connect the battery charger. Refer to General Information .
- Connect the VAS 5051 B to the vehicle.
- Select the basic setting procedure for dynamic steering in the alignment computer.
- Install the quick clamps on all four wheels.
- Install the measurement sensors on the front and rear wheels.
- Perform wheel run-out compensation. Refer to WHEEL RUN-OUT COMPENSATION.
- Position the wheels so they are straight according to the alignment computer.

NOTE: Disregard the steering wheel position when doing this.

Only the display on the alignment computer is valid.

Subsequent procedures are performed via the vehicle diagnosis, testing and information system.

- Turn on ignition.
- Touch **Guided Fault Finding** .
- Select in succession:
 - Brand
 - Type
 - Model year
 - Version
 - Engine Code
- Confirm data entered.

Wait until the VAS 5051 B has checked all available control modules in vehicle.

-- Press the **go to** button and select "function/component selection".

-- Select the corresponding program in "Guided Functions".

Now follow the instructions on the screen to perform the basic setting.

ACC SETTING DEVICE VAS 6190, CONVERTING FOR ADJUSTMENT PROCEDURE

Special tools and workshop equipment required

- ACC Adjustment Device VAS 6190

Before performing adjustment, check in which mounts have the vertical slits on the VAS 6190 are located. VAS 6190 may have to be adapted before performing adjustment.

The VAS 6190 must be adapted before adjustment procedure. If this is done during the adjustment procedure, the pre-calibration on the VAS 6190 must be repeated.

-- For the adjustment procedure, the vertical slits in mounts -1- through -4- must be inserted so that laser beam is approximately centered vertically when it contacts the sensor lens.

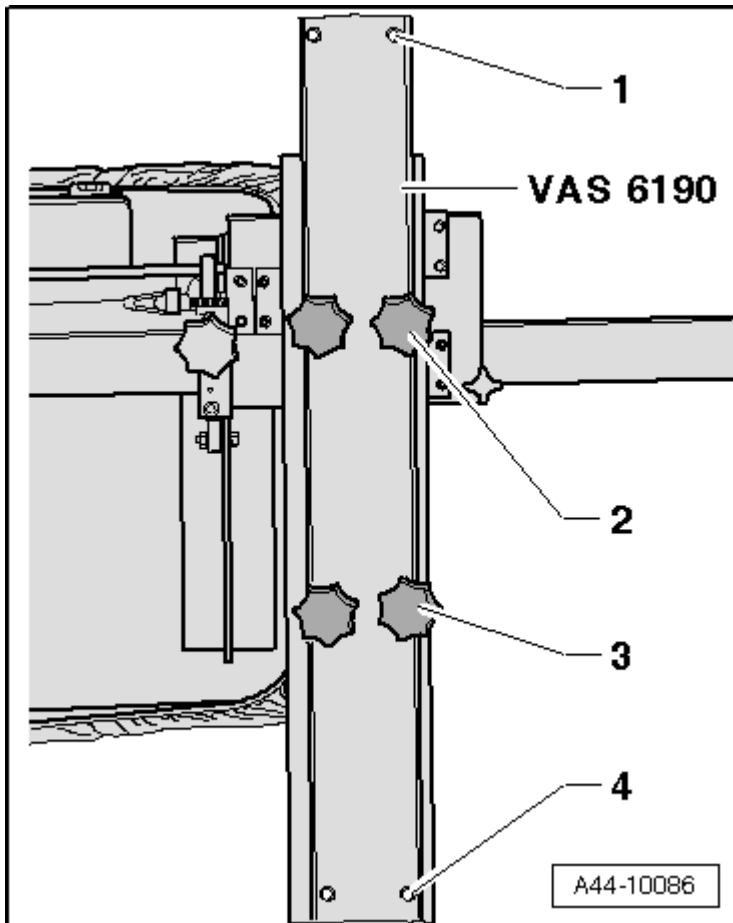


Fig. 16: Identifying VAS 6190 And Vertical Slits In Mounts -1- Through -4-

Courtesy of AUDI OF AMERICA, LLC

-- The original nut at the top of the horizontal slits must be replaced with a standard nut -3-.

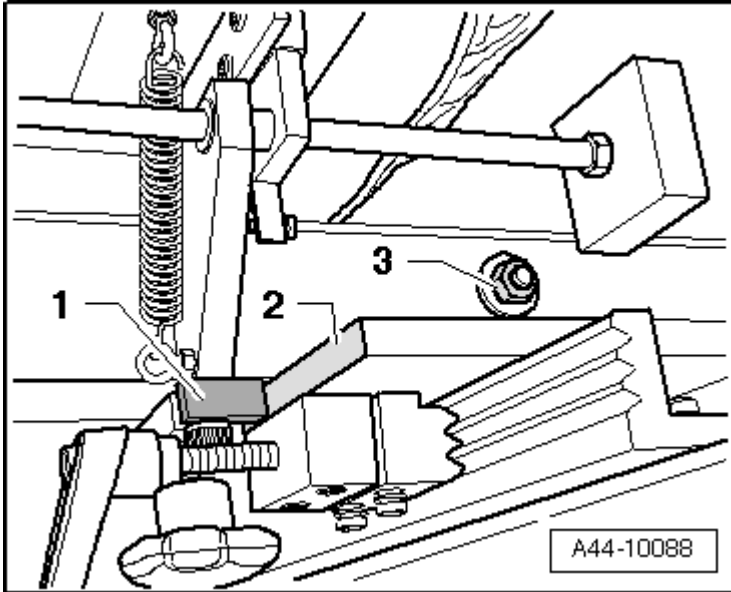
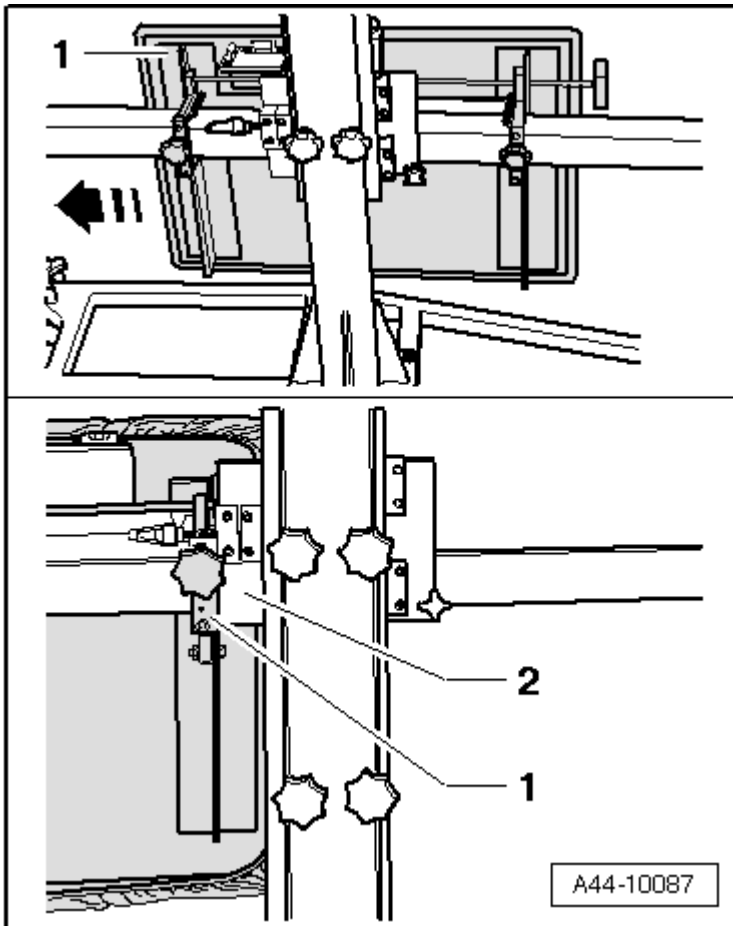


Fig. 17: Identifying Mirror -1-, Vertical Slits -2- And Bolt -3-
Courtesy of AUDI OF AMERICA, LLC

NOTE: The original nut at the top of the horizontal slits must be replaced with a standard nut so that the mirror can be slide far enough to the center.

-- The mirror at the center -1- must be removed and installed again all the way to the left -arrow- near the vertical slits -2-.



**Fig. 18: Identifying Mirror -1-, Mirror Adjustment Knob And Vertical Slits -2-
Courtesy of AUDI OF AMERICA, LLC**

-- Then the mirror -1- must be slide on horizontal slits as far as stop on vertical slits -2-.

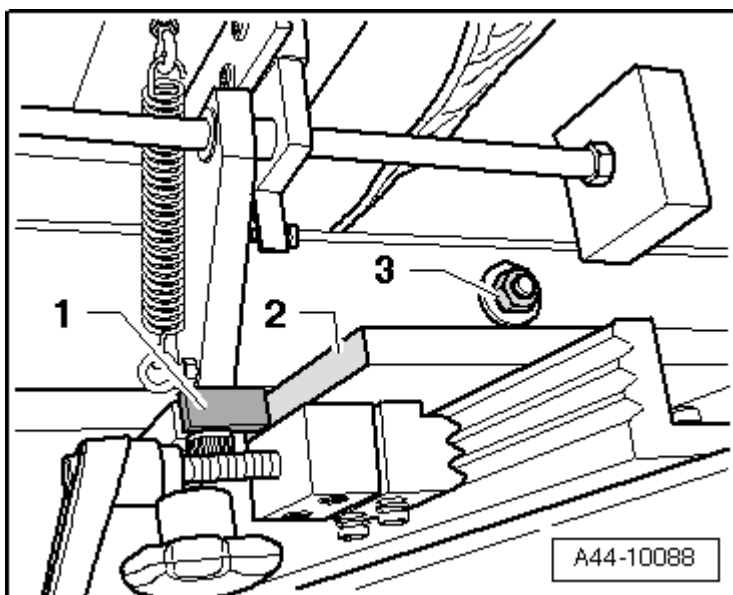


Fig. 19: Identifying Mirror -1-, Vertical Slits -2- And Bolt -3-
Courtesy of AUDI OF AMERICA, LLC

ADJUSTMENT PROCEDURE USING ACC SETTING DEVICE VAS 6190

Special tools and workshop equipment required

- Vehicle Diagnosis, Testing and Information System VAS 5051 A
- Diagnostic Cable VAS 5051/5A
- ACC Adjustment Device VAS 6190
- Adjuster for ACC VAS 6190/2
- Wheel alignment computer
- ADC Test Fixture VAS 6041
- ADC Reflector Mirror VAS 6041/1

NOTE: **The VAS 6190 may have to be adapted for the adjustment procedure. Refer to ACC Setting Device VAS 6190, CONVERTING FOR ADJUSTMENT PROCEDURE.**

Before driving the vehicle onto the alignment stand, check whether there is a sufficiently large space between the vehicle and the VAS 6190. The distance between the VAS 6190 and the vehicle must be 120 cm +/- 5 cm.

If there is not sufficient space, drive vehicle backward on the alignment stand in order to be able to use the corresponding space.

- Before beginning the adjustment, check the Diagnostic Trouble Code (DTC) memory and correct any malfunctions present.

The adjustment procedure is described here with the VAS 6190. However the VAS 6041 and VAS 6041/1 can also be used.

NOTE: **If there was a previous axle alignment, the steps under "Calibration procedure without a previous axle alignment" should not performed.**

Calibration procedure without a previous axle alignment.

- Connect battery charger. Refer to **General Information** .
- Select the ACC calibration button on the alignment computer.
- Install quick clamps on the rear wheels.
- Install measuring sensors on the rear wheels.
- Perform a rim run-out compensation on the rear wheels.

NOTE: The VAS 6190 must not be moved on the calibration beam.

Calibration procedure with or without a previous axle alignment

- Remove the right front air intake grille. Refer to "Front Bumper" in **Removal and Installation**.
- Remove all dirt on the sensor lens.
- Position VAS 6190 at a distance -A- of 120 cm +/- 5 cm from sensor lens to mirror surface.

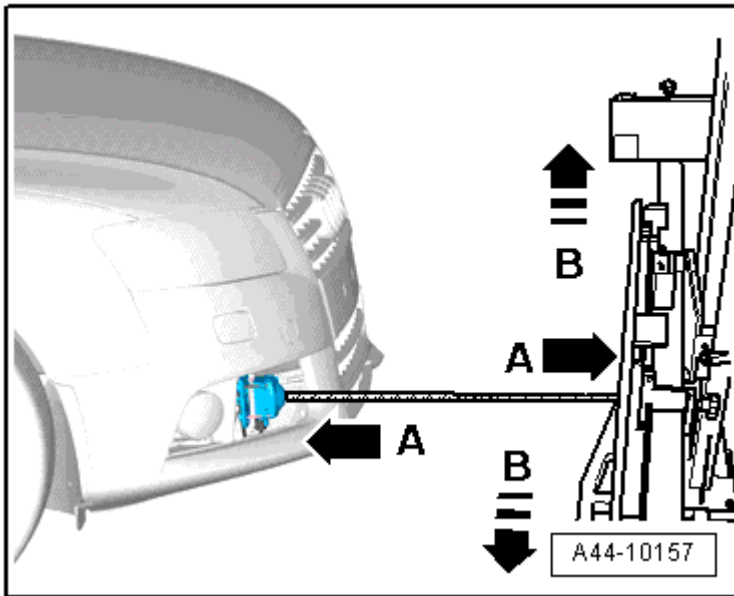


Fig. 20: Positioning VAS 6190 At A Distance Of 120 CM +/- 5 CM From Sensor Lens To Mirror Surface
Courtesy of AUDI OF AMERICA, LLC

WARNING:

- Place a toolbox or container weighing approximately 5 to 7 kg on the VAS 6190 before installing the measuring sensors and moving the mirror on the calibration beam.
- If weight is not put on the VAS 6190, it could tip over when the mirror is moved and/or when the measuring sensors VAS 6190 are installed.

- Load the VAS 6190 with the weight -arrow- as shown in the illustration.

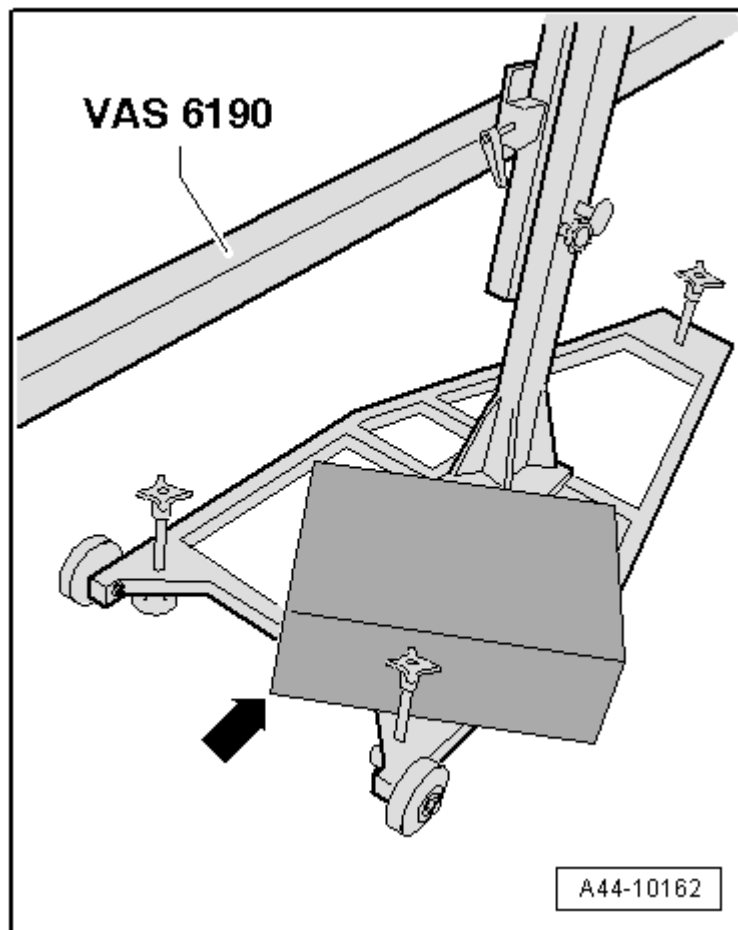


Fig. 21: Identifying VAS 6190 Loaded With Weight -Arrow-
Courtesy of AUDI OF AMERICA, LLC

-- Install the front wheel measuring sensors -1- on the VAS 6190.

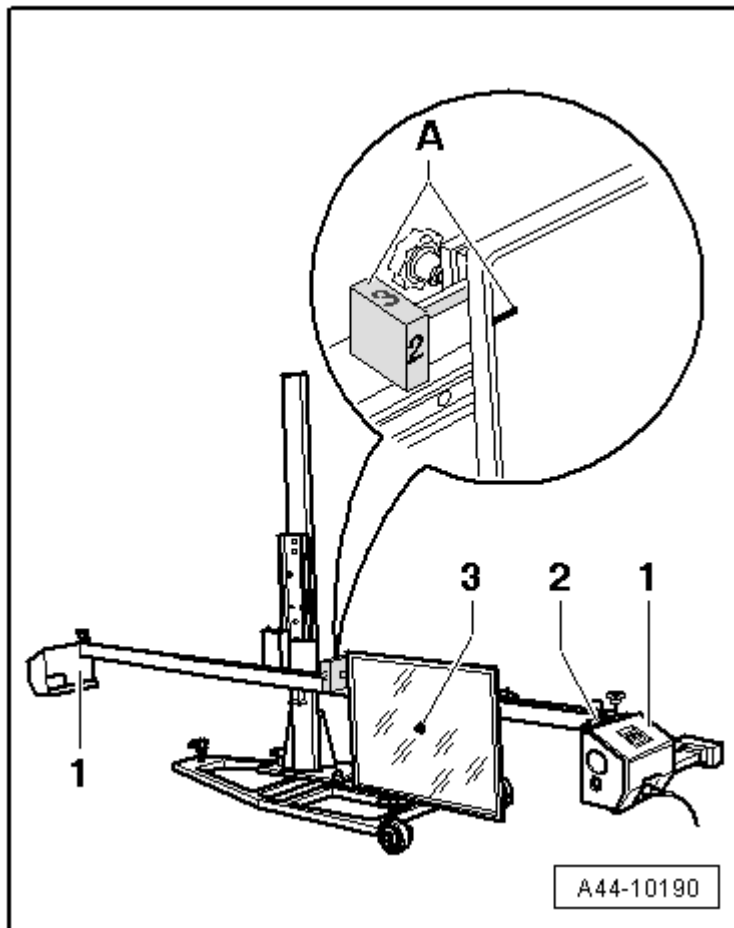


Fig. 22: Identifying Measurement Sensor -1-, Bubble Level -2- And Laser Beam Calibration Mirror -3-
Courtesy of AUDI OF AMERICA, LLC

-- In area -A-, bring item -2- on rotary knob into alignment with marking on mirror (number 2 on rotary knob must face toward vehicle).

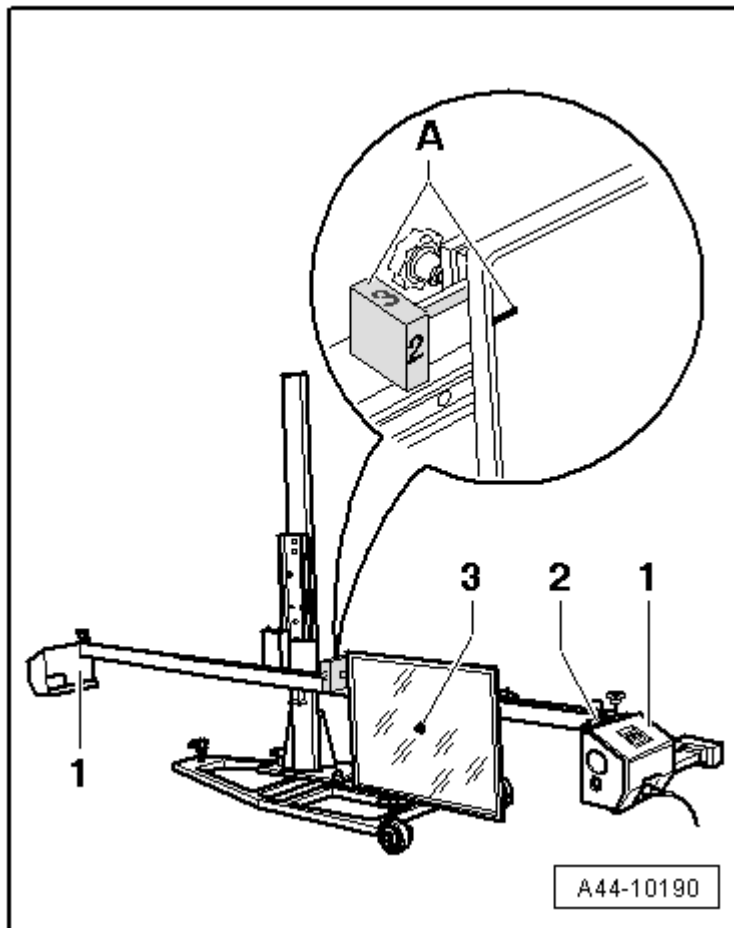


Fig. 23: Identifying Measurement Sensor -1-, Bubble Level -2- And Laser Beam Calibration Mirror -3-
Courtesy of AUDI OF AMERICA, LLC

-- Now align by sliding it sideways -arrows B- VAS 6190 so that the laser beam is horizontally centered on the sensor lens.

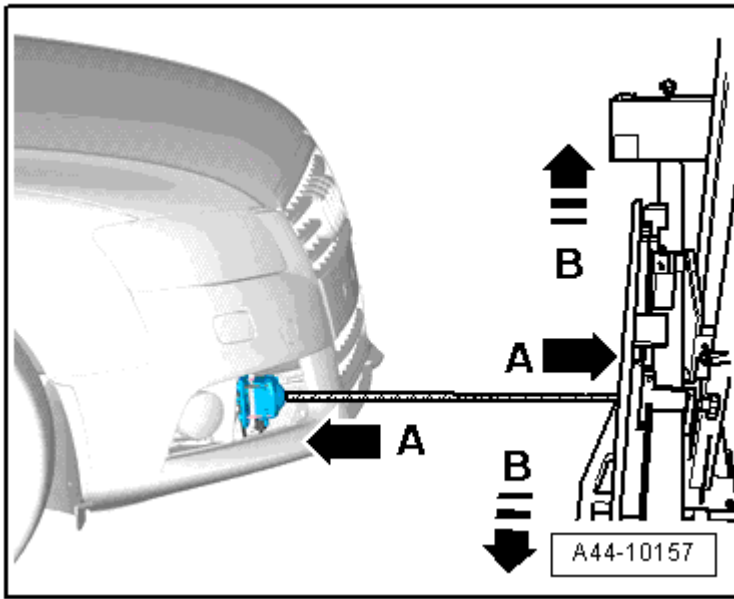


Fig. 24: Positioning VAS 6190 At A Distance Of 120 CM +/- 5 CM From Sensor Lens To Mirror Surface
 Courtesy of AUDI OF AMERICA, LLC

-- Bring bubble levels -2- on VAS 6190 into balance using adjustment screws -1-.

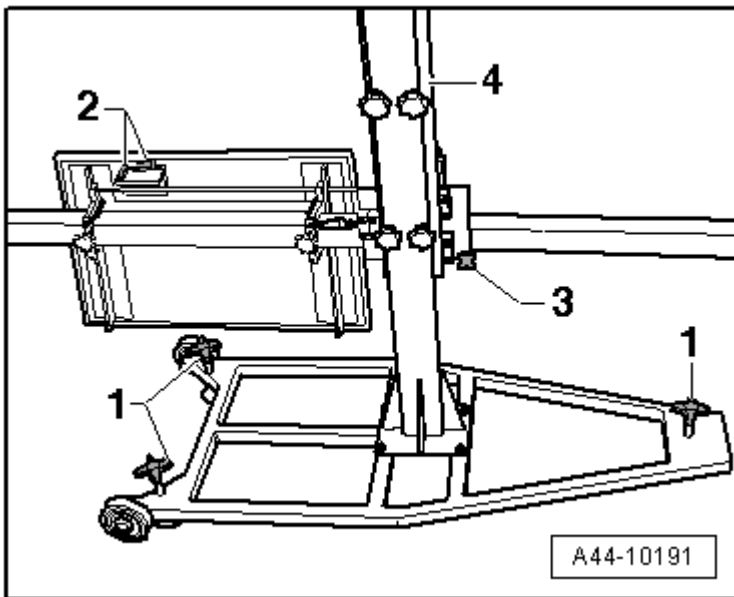
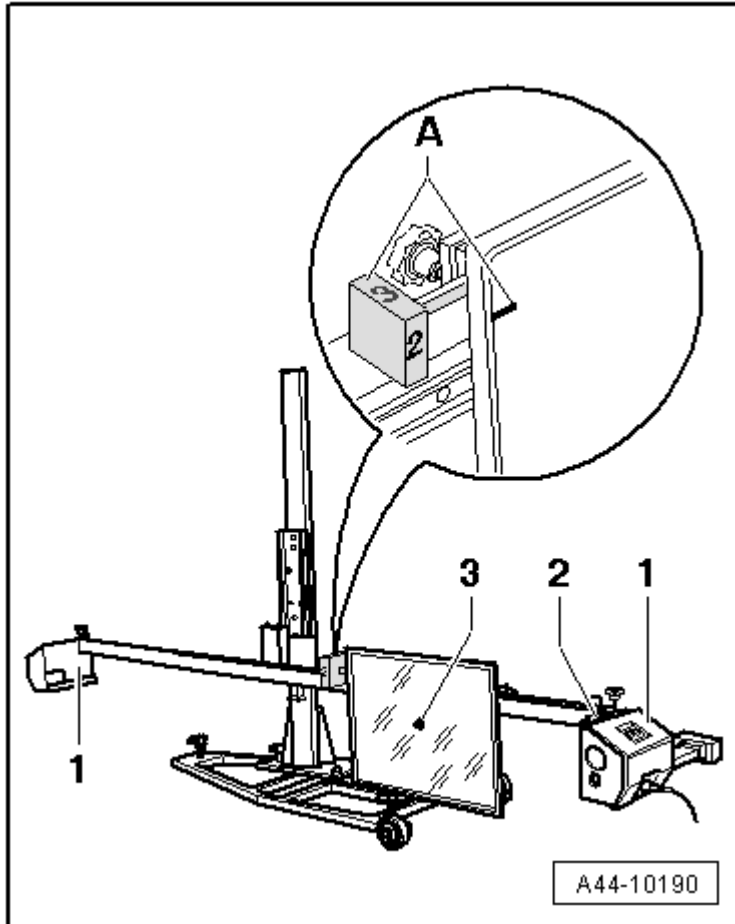


Fig. 25: Identifying Balance Using Adjustment Screws -1-, Bubble Levels -2-, Fine Adjustment Screw -3- And Vertical Slits -4-
 Courtesy of AUDI OF AMERICA, LLC

-- Adjust vertical slits -4- on VAS 6190 so that laser beam is vertically centered on sensor lens.

-- Adjust the same front axle individual toe settings using fine adjustment screw -3-.

- The difference between individual toe values must be less than 6' or they must be the same.
- Bring bubbles -2- on measurement sensor -1- into balance.



**Fig. 26: Identifying Measurement Sensor -1-, Bubble Level -2- And Laser Beam Calibration Mirror -3-
Courtesy of AUDI OF AMERICA, LLC**

- Now using laser beam -3- on VAS 6190, check whether laser beam contacts sensor lens.

NOTE: If the laser beam still meets the sensor lens at this step after adjusting the same individual toe values, the VAS 6190 is aligned correctly (positioned).

If the laser beam does not meet the sensor lens, VAS 6190 alignment must be performed again.

- Connect VAS 5051 B.
- Connect VAS 5051/5A to Data Link Connector (DLC).



Fig. 27: Connecting Diagnostic Cable VAS 5051/5A To Diagnostic Connector
Courtesy of AUDI OF AMERICA, LLC

-- Turn VAS 5051 A on.

VAS 5051 A is ready to operate when it displays operating modes in button fields.

-- Turn on ignition.

-- Touch **Guided Fault Finding** .

-- Select in succession:

- Brand
- Type
- Model year
- Version
- Engine Code

-- Confirm data entered.

Wait until the VAS 5051 A has checked all available control modules in vehicle.

-- Press the **go to** button and select "function/component selection".

-- Select the corresponding program in "Guided Functions".

Now follow instructions on screen to perform adjustment.

-- Turn the VAS 6190/2 in direction of -arrow A or B- and use the upper screw -2- and the lower screw -1- for precision adjustment in "Guided Fault Finding".

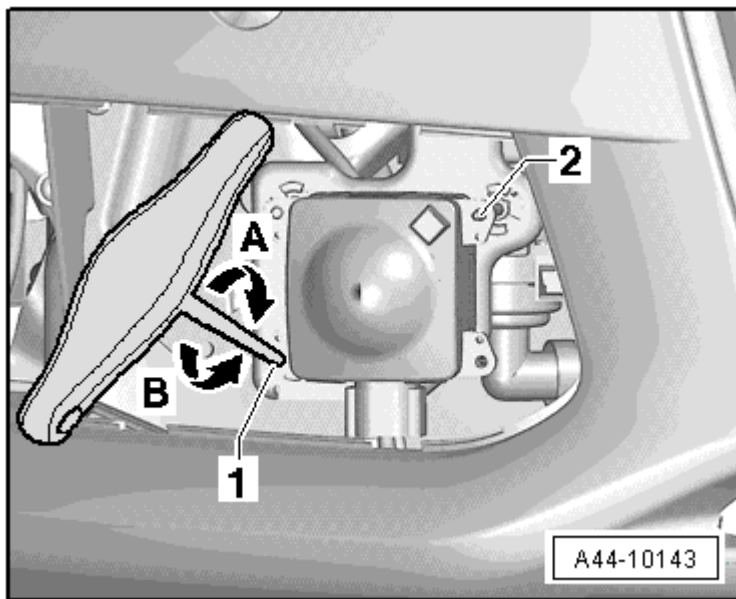


Fig. 28: Turn VAS 6190/2 In Direction Of -Arrow A Or B- And Use Upper Screw -2- And Lower Screw -1-

Courtesy of AUDI OF AMERICA, LLC

WARNING: The ACC adjustment is only accepted if "actuator diagnosis ended" is displayed in VAS 5051/B.

-- Turn ignition off.

-- Disconnect VAS 5051/5A connector from DLC.

-- Disconnect the battery charger. Refer to **General Information** .

-- Install the air intake grille. Refer to "Front Bumper" in **Removal and Installation** .

ADJUSTMENT PROCEDURE USING ACC SETTING DEVICE VAS 6430

Special tools and workshop equipment required

- Vehicle Diagnostic, Testing and Information System VAS 5051 B with corresponding diagnostic cable.
- ACC Adjustment Device VAS 6430
- Wheel Alignment Computer
- Adjuster for ACC VAS 6190/2

NOTE: Before driving the vehicle onto the alignment stand, check whether there is a sufficiently large space between the vehicle and the VAS 6430. The distance between the VAS 6430 and the vehicle must be 120 cm +/- 5 cm.

If there is not sufficient space, drive vehicle backward on alignment stand in order to be able to use the corresponding space.

Before performing the calibration procedure, check the position of the calibration mirror. The calibration mirror may need to be adapted before performing the calibration.

The VAS 6430 must be adapted before adjustment procedure. If this is done during the adjustment procedure, the pre-calibration on the VAS 6430 must be repeated.

- Before beginning the adjustment, check the Diagnostic Trouble Code (DTC) memory and correct any malfunctions present.

The adjustment procedure is described here with the VAS 6430.

NOTE: If there was a previous axle alignment, the steps under "Calibration procedure without a previous axle alignment" should not be performed.

Calibration procedure without a previous axle alignment

- Connect the battery charger. Refer to General Information .
- Select the ACC calibration button on the alignment computer.
- Install quick clamps on the rear wheels.
- Install measuring sensors on the rear wheels.
- Perform a rim run-out compensation on the rear wheels.

NOTE: The VAS 6430 must not be moved on the calibration beam.

Calibration procedure with or without a previous axle alignment.

- Remove the right front air intake grille. Refer to "Front Bumper" in Removal and Installation .

-- Remove all dirt on the sensor lens.

-- If necessary, remove the mirror installed at the center and install it all the way at the right near the vertical slits.

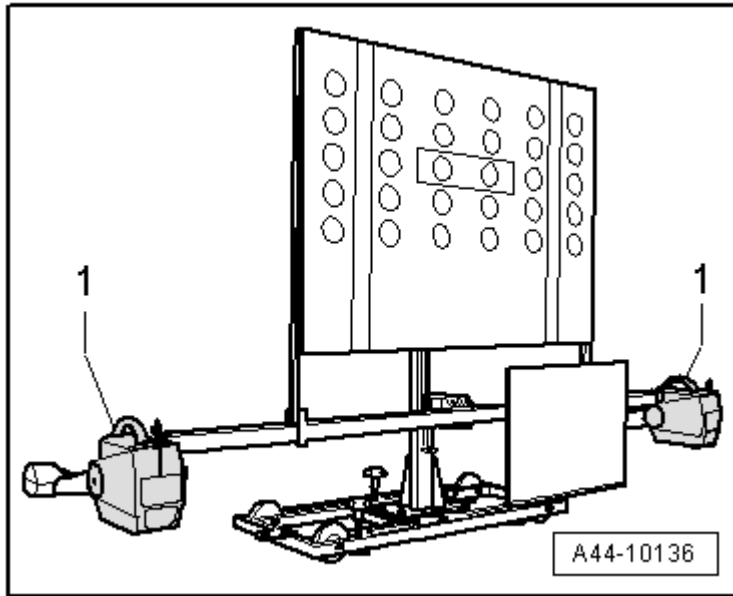


Fig. 29: Identifying Front Wheel Measuring Sensors
Courtesy of AUDI OF AMERICA, LLC

-- Position VAS 6430 at a distance -A- of 120 cm +/- 5 cm from sensor lens to mirror surface.

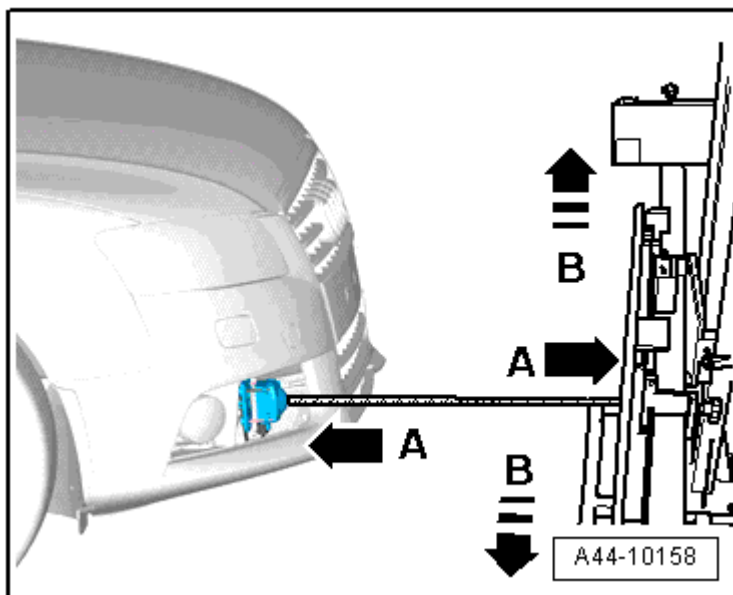


Fig. 30: Position VAS 6430 At A Distance Of 120 Cm +/- 5 Cm From Sensor Lens To Mirror Surface
Courtesy of AUDI OF AMERICA, LLC

-- Install the front wheel measuring sensors -1- on the VAS 6430.

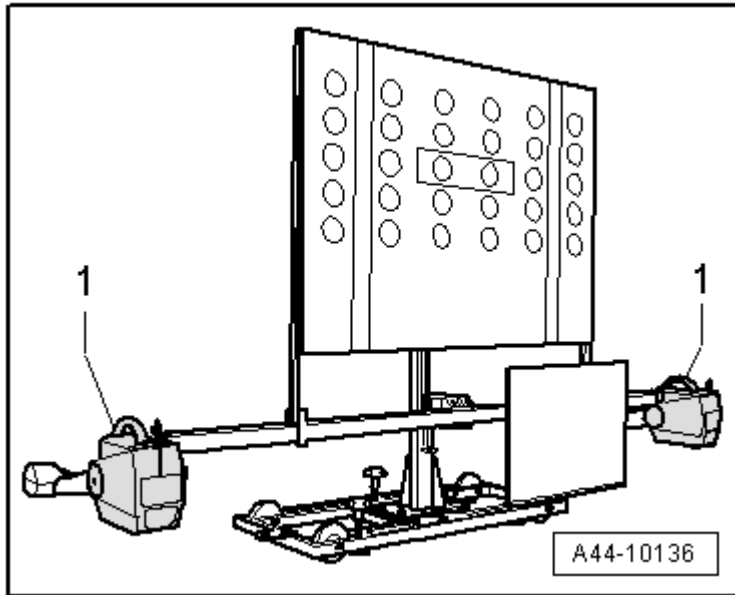


Fig. 31: Identifying Front Wheel Measuring Sensors
Courtesy of AUDI OF AMERICA, LLC

-- In area -A-, bring item -2- on rotary knob into alignment with marking on mirror (number 2 on rotary knob must face toward vehicle).

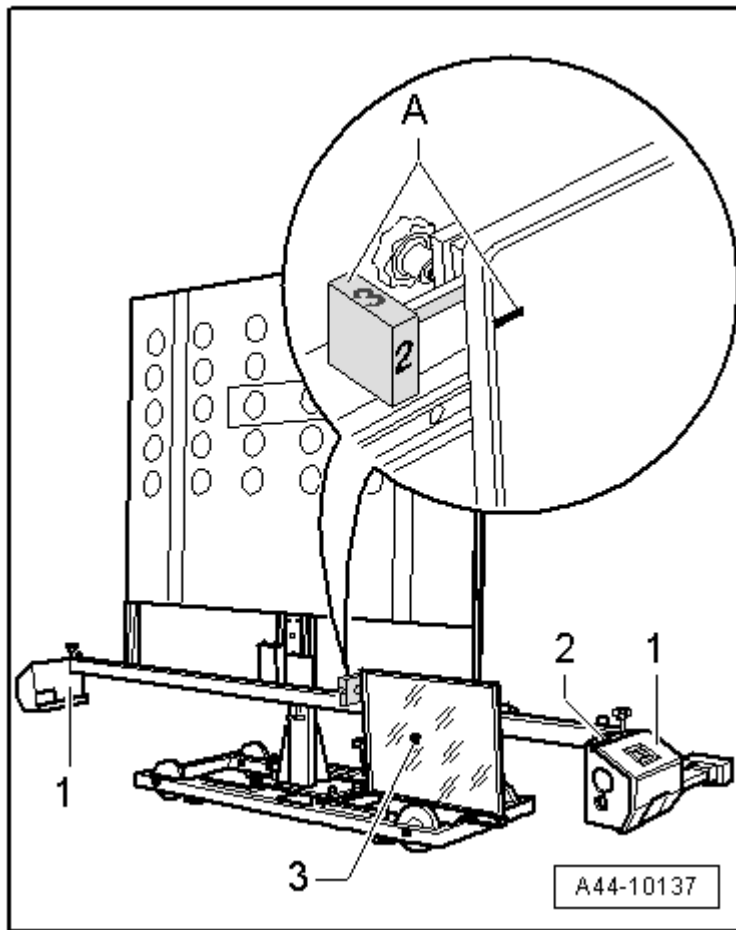


Fig. 32: Identifying Special Tool VAS 6430/3 Setup
Courtesy of AUDI OF AMERICA, LLC

-- Now align by sliding it sideways -arrows B- VAS 6430 so that the laser beam is horizontally centered on the sensor lens.

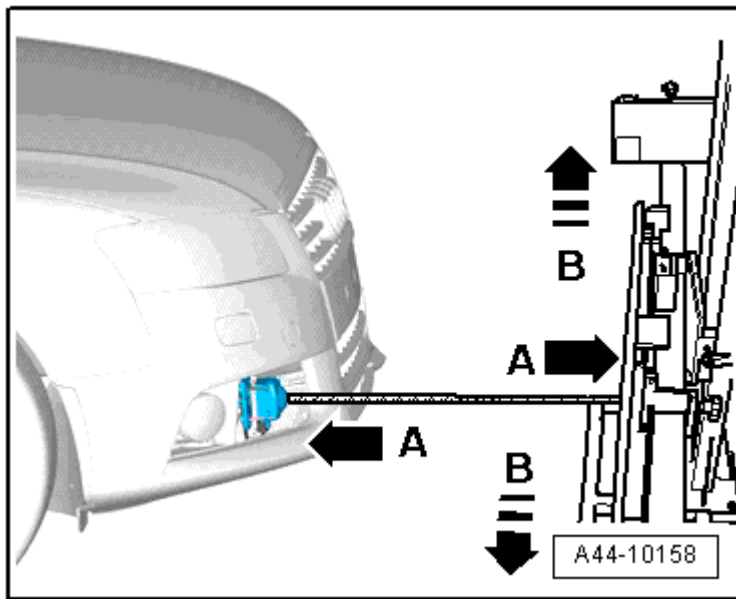


Fig. 33: Position VAS 6430 At A Distance Of 120 Cm +/- 5 Cm From Sensor Lens To Mirror Surface
Courtesy of AUDI OF AMERICA, LLC

-- Level the bubble levels -A and B- on the VAS 6430 using the adjusting screws -1, 2 and 3-.

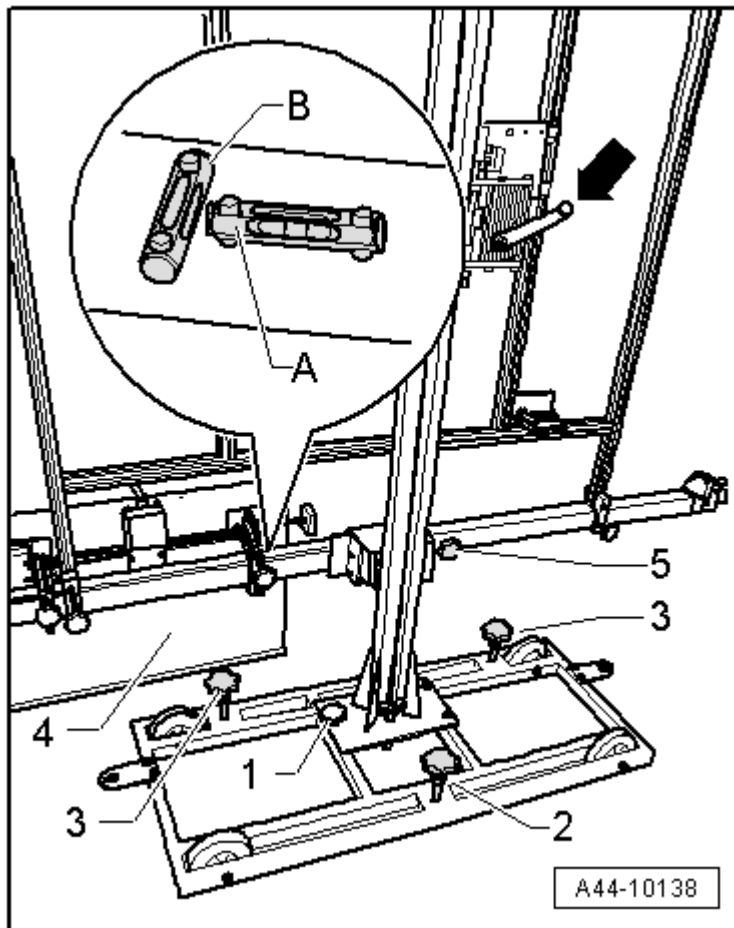


Fig. 34: Adjusting Special Tool VAS 6430/3 Mirror
Courtesy of AUDI OF AMERICA, LLC

-- Adjust the mirror -4- using the crank -arrow- on the VAS 6430 so the laser beam is vertically centered on the sensor lens.

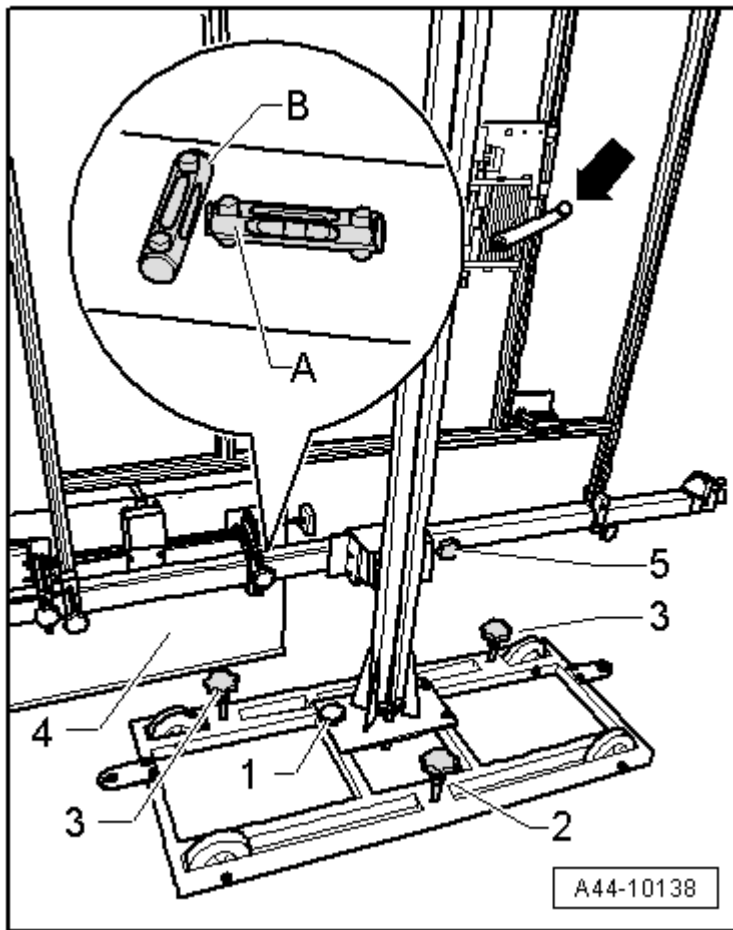


Fig. 35: Adjusting Special Tool VAS 6430/3 Mirror
Courtesy of AUDI OF AMERICA, LLC

- Adjust the same front axle individual toe settings using fine adjustment screw -5-.
- The difference between individual toe values must be less than 6' or they must be the same.
- Bring bubbles -2- on measurement sensor -1- into balance.

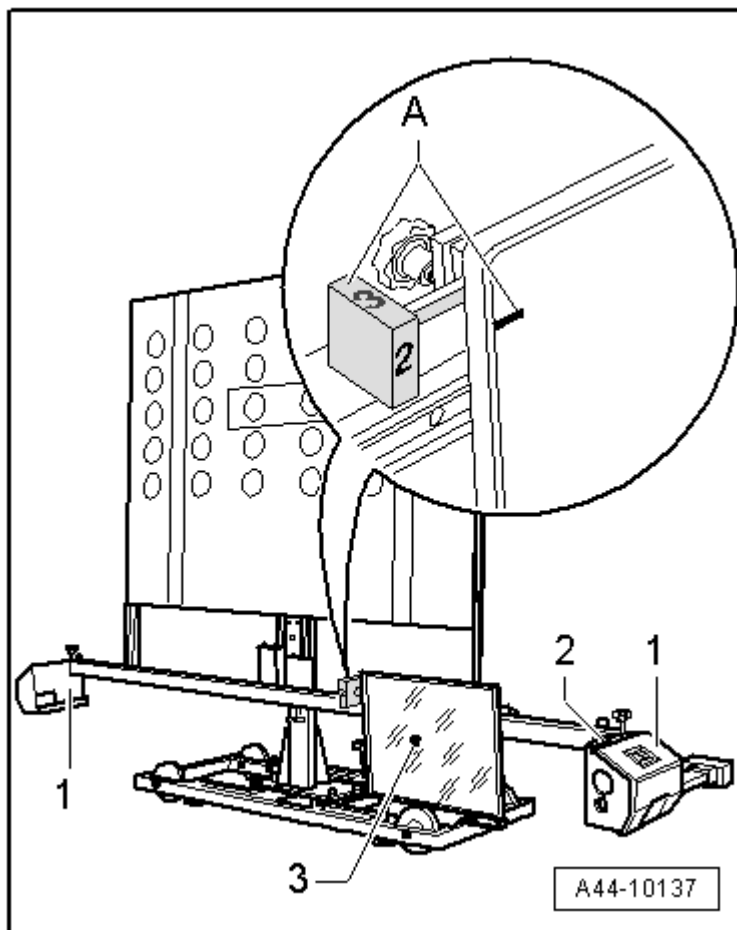


Fig. 36: Identifying Special Tool VAS 6430/3 Setup
Courtesy of AUDI OF AMERICA, LLC

-- Now using the laser beam -3- on the VAS 6430, check if the laser beam contacts sensor lens.

NOTE: If the laser beam still meets the sensor lens at this step after adjusting the same individual toe values, the VAS 6430 is aligned correctly (positioned).

If the laser beam does not meet the sensor lens, VAS 6430 alignment must be performed again.

-- Connect the VAS 5051 B.

-- Connect VAS 5051/5A to Data Link Connector (DLC).



Fig. 37: Connecting Diagnostic Cable VAS 5051/5A To Diagnostic Connector
Courtesy of AUDI OF AMERICA, LLC

-- Turn VAS 5051 B on.

VAS 5051 B is ready to operate when it displays operating modes in button fields.

-- Turn on ignition.

-- Touch **Guided Fault Finding** .

-- Select in succession:

- Brand
- Type
- Model year
- Version
- Engine Code

-- Confirm data entered.

Wait until the VAS 5051 B has checked all available control modules in vehicle.

-- Press the **go to** button and select "function/component selection".

-- Select the corresponding program in "Guided Functions".

Now follow instructions on screen to perform adjustment.

-- Turn the VAS 6190/2 in direction of -arrow A or B- and use the upper screw -2- and the lower screw -1- for precision adjustment in "Guided Fault Finding".

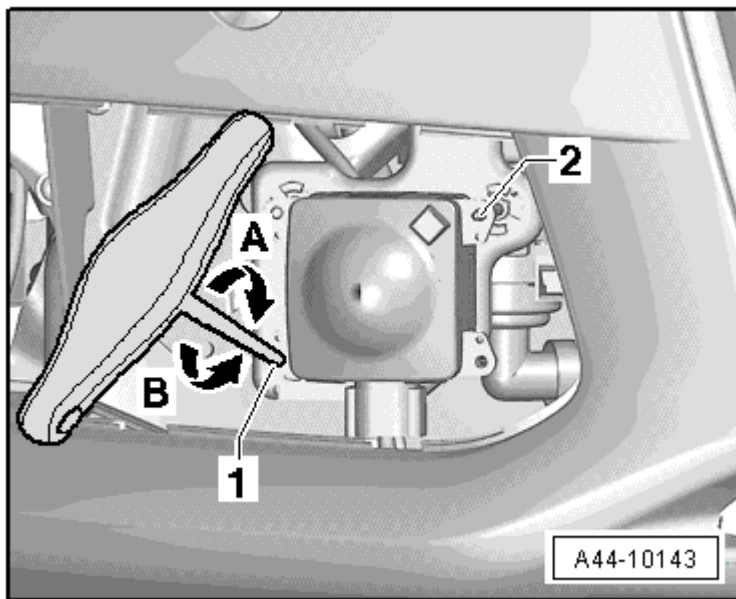


Fig. 38: Turn VAS 6190/2 In Direction Of -Arrow A Or B- And Use Upper Screw -2- And Lower Screw -1-

Courtesy of AUDI OF AMERICA, LLC

WARNING: The ACC adjustment is only accepted if "actuator diagnosis ended" is displayed in VAS 5051/B.

-- Turn ignition off.

-- Disconnect VAS 5051/5A connector from DLC.

-- Disconnect the battery charger. Refer to **General Information** .

-- Install the air intake grille. Refer to "Front Bumper" in **Removal and Installation** .

CALIBRATION PROCEDURE

Special tools and workshop equipment required

2012 Audi S4

SUSPENSION Wheels, Tires and Vehicle Alignment (Sedan)

- Vehicle Diagnostic, Testing and Information System VAS 5051 B with corresponding diagnostic cable.
- ACC Adjustment Device VAS 6430
- Wheel Alignment Computer

NOTE: Check if the directional stabilization assistance control module -J759- is seated in the bracket correctly.

Perform a visual inspection to see if the camera visual area is free.

Check the Diagnostic Trouble Code (DTC) memory and correct any malfunctions before beginning the calibration.

Before driving the vehicle onto the alignment stand, check if there is enough space between the center of the wheel hub on the front wheels and the VAS 6430. The distance between the VAS 6430 and the center of the wheel hub on the front wheels must be 150 cm +/- 2.5 cm.

If there is not sufficient space, drive the vehicle backward on the alignment stand in order to be able to use the corresponding space.

Check the position of the calibration board on the calibration beam and align it with the center of the board if necessary.

-- Follow the prerequisites for alignment. Refer to TEST PREREQUISITES.

-- Connect battery charger. Refer to General Information .

-- Connect the VAS 5051 B to the vehicle. (Guide the diagnostic cable through the door window.)

NOTE: During the calibration procedure, make sure all the vehicle doors remain closed and the vehicle exterior lighting is turned off.

-- Position the front wheels so they are straight.

-- Select the lane assist calibration procedure in the alignment computer.

-- Install the quick clamps on all four wheels.

-- Install measuring sensors on the rear wheels.

-- Perform a rim run-out compensation on the rear wheels.

NOTE: The VAS 6430 must not be moved on the calibration beam.

-- Position the VAS 6430 at a distance of -A- 150 cm +/- 2.5 cm from the center of the wheel hub on the front

wheels to the beam on the VAS 6430 as shown in the illustration.

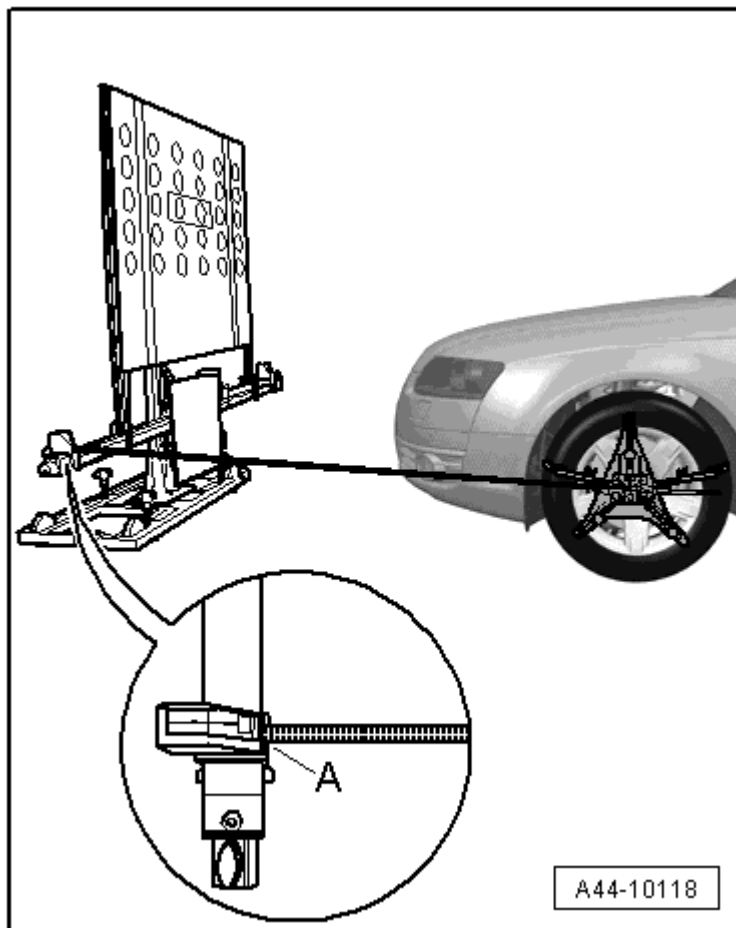


Fig. 39: Positioning VAS 6430

Courtesy of AUDI OF AMERICA, LLC

-- Install the front wheel measuring sensors -1- on the VAS 6430.

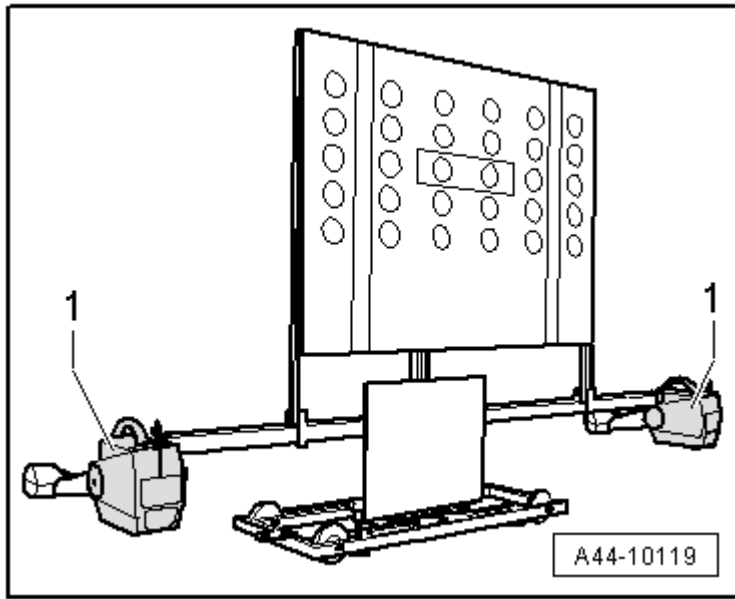


Fig. 40: Front Wheel Measuring Sensors
Courtesy of AUDI OF AMERICA, LLC

NOTE: The alignment stand must be in the lowest level position for the next step.

-- Enter the height value -A- between the VAS 6430 contact patch and the wheel contact surface as shown in the illustration and enter it in the alignment computer.

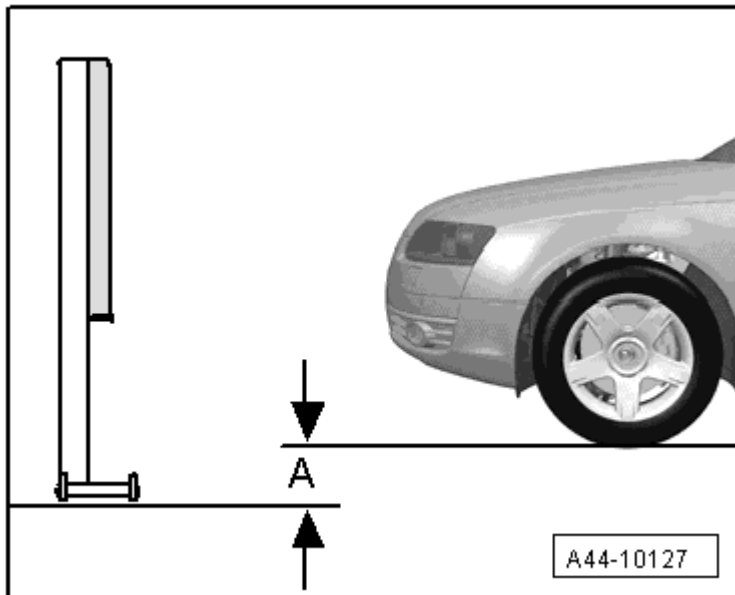


Fig. 41: Height Value Between VAS 6430 Contact Patch And Wheel Contact Surface
Courtesy of AUDI OF AMERICA, LLC

-- Check the position of the calibration board on the calibration beam and align it with the center of the board if

necessary.

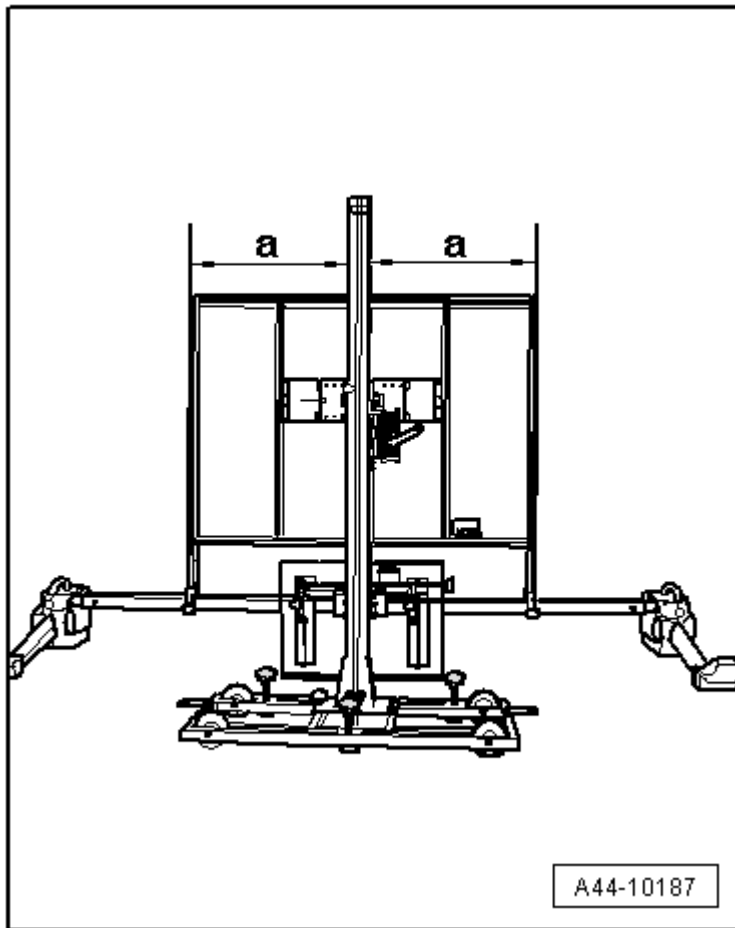


Fig. 42: Identifying Alignment Of Distance -a-
Courtesy of AUDI OF AMERICA, LLC

$a = a$

-- Loosen the bolt -arrow- and place the measuring bar -1- on the floor.

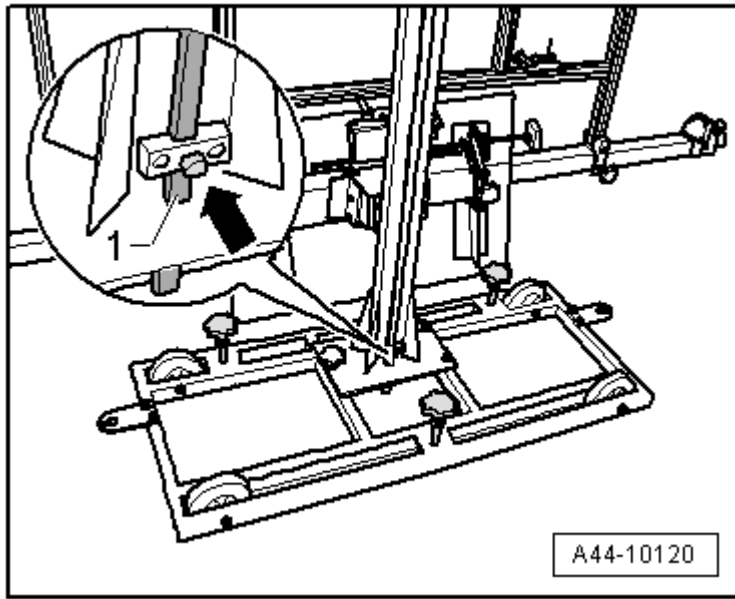


Fig. 43: Identifying Bolt And Measuring Bar On Floor
Courtesy of AUDI OF AMERICA, LLC

-- Adjust the calibration panel to the specified height -2- according to the alignment computer using the crank -1-.

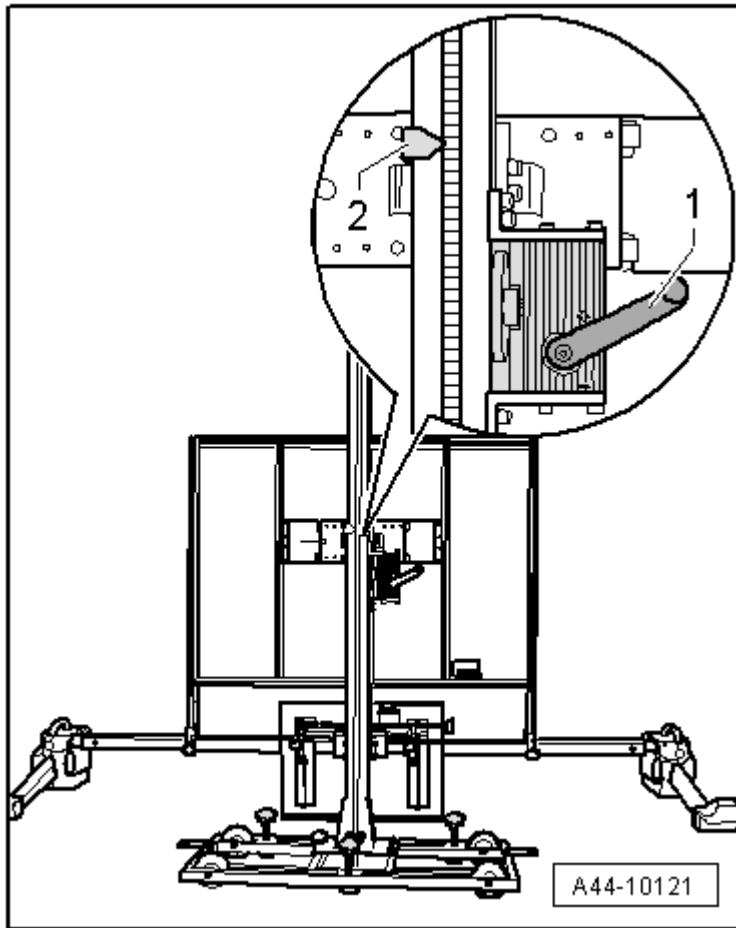


Fig. 44: Adjusting Calibration Panel To Specified Height According To Alignment Computer Using Crank

Courtesy of AUDI OF AMERICA, LLC

If the specified height was reached -2-, then the measuring bar must be pushed slightly forward and secured with the locking bolt.

NOTE: If in later procedure the height of the calibration board must be corrected, make sure the measuring bar is touching the ground when this is being done.

-- Level the bubble level -A- using the adjusting screw -1-.

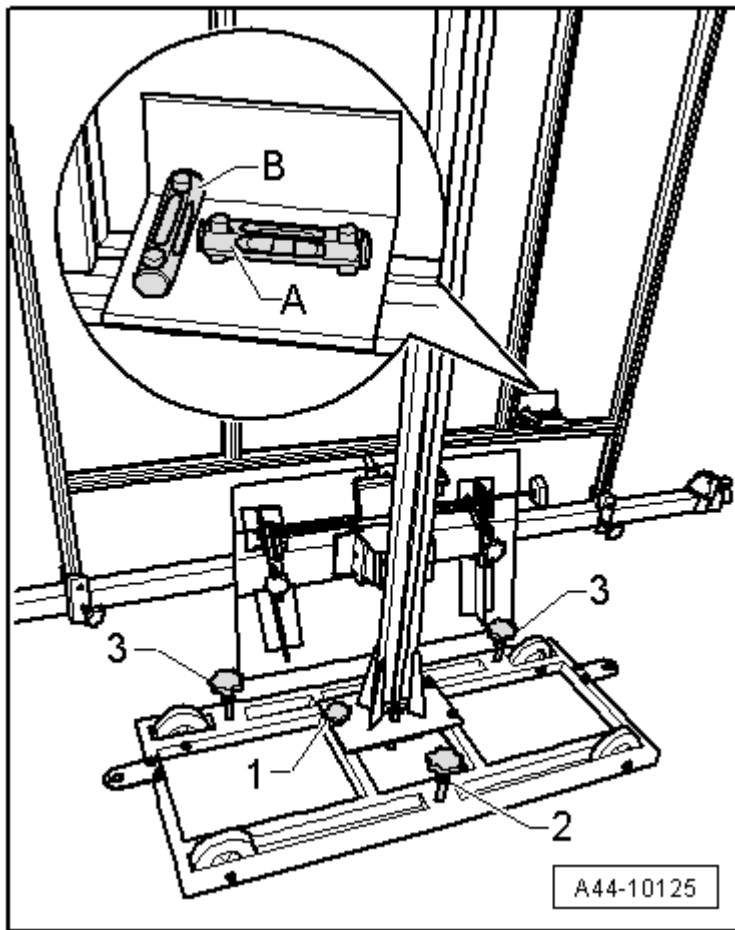


Fig. 45: Identifying Bubble Level And Adjusting Screw
Courtesy of AUDI OF AMERICA, LLC

The bubble adjustment -A- serves to compare the ground conditions.

-- Move the VAS 6430 sideways -arrow B- until the display on the alignment computer is within the tolerance range.

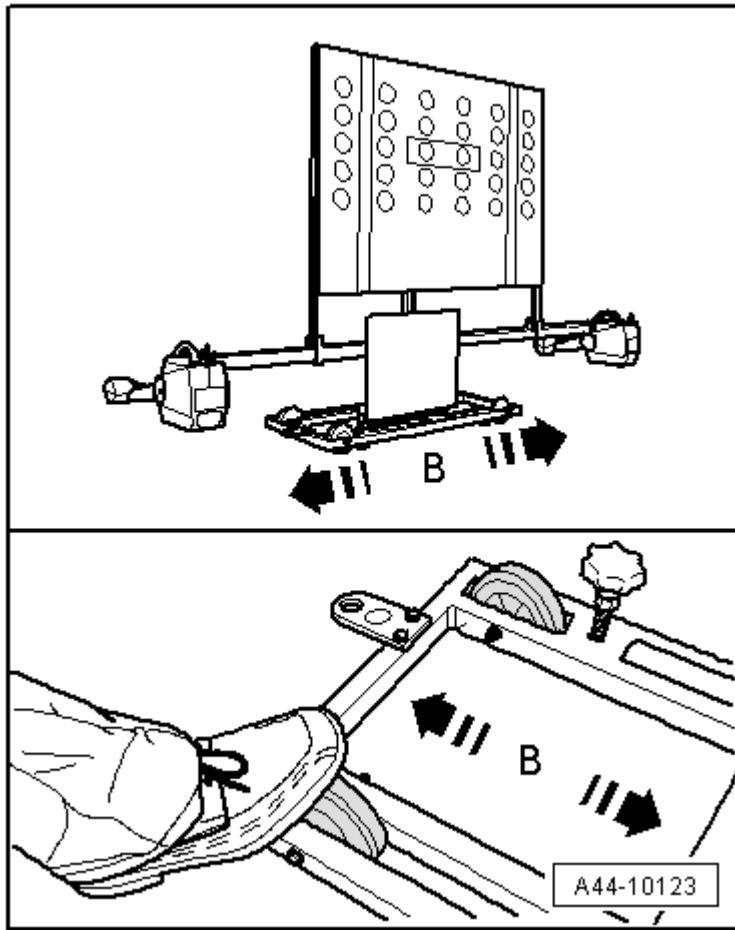


Fig. 46: Moving VAS 6430 Sideways Until Display On Alignment Computer Is Within Tolerance Range
Courtesy of AUDI OF AMERICA, LLC

-- Secure the VAS 6430 by tightening the bolts -2- and -3- slightly. (This prevents the VAS 6430 from rolling away.)

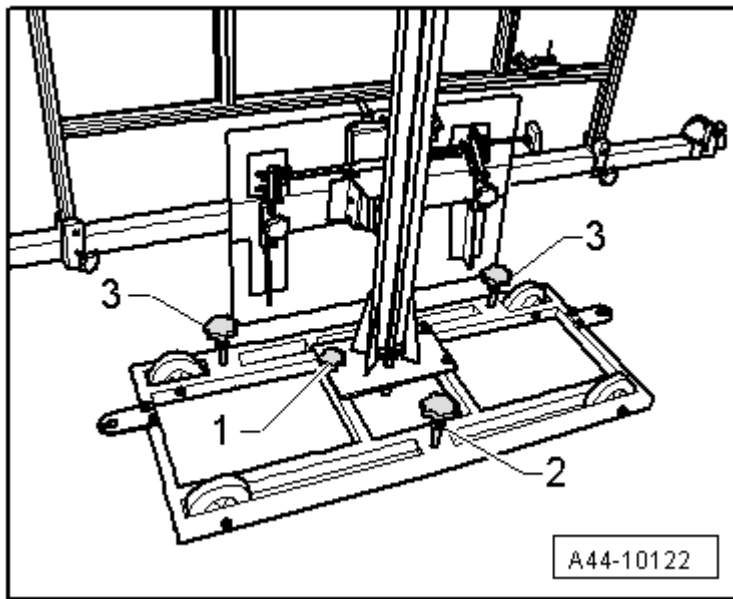


Fig. 47: Identifying VAS 6430 And Bolts
Courtesy of AUDI OF AMERICA, LLC

-- Turn the precision adjustment screw -1- until the display on the alignment computer is located within the tolerance range.

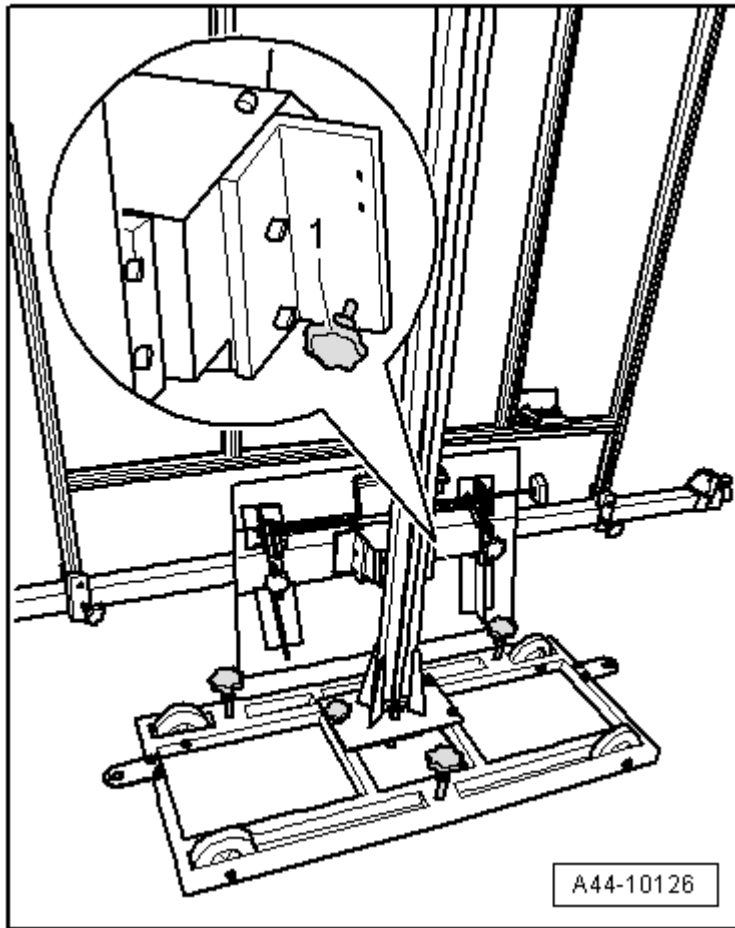


Fig. 48: Identifying Precision Adjustment Screw
Courtesy of AUDI OF AMERICA, LLC

-- Level the bubble level -A- using the adjusting screw -1-.

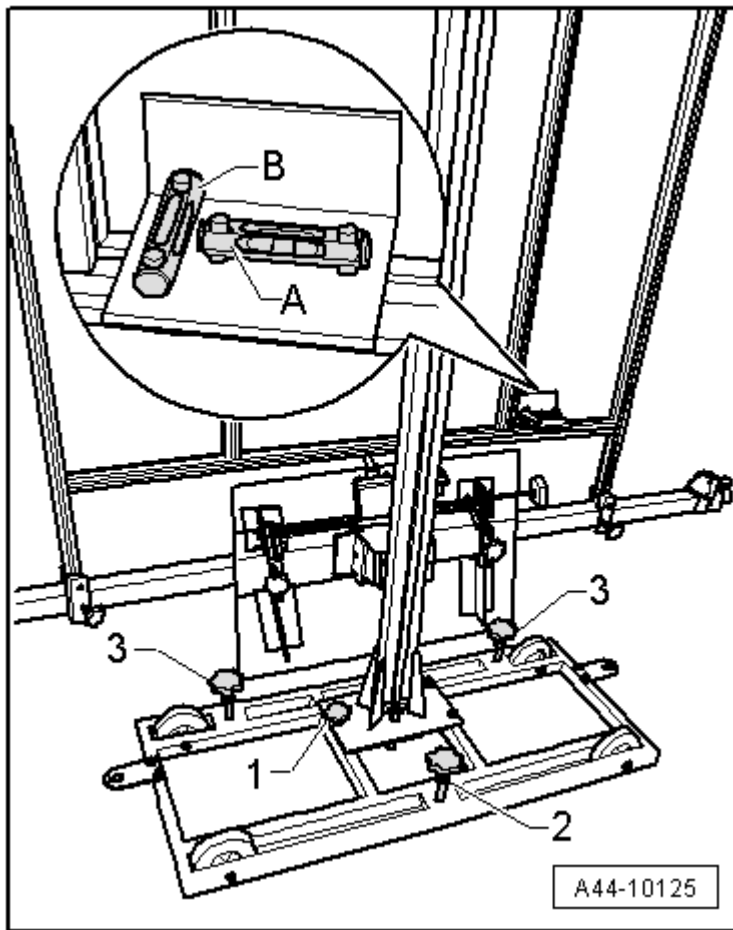


Fig. 49: Identifying Bubble Level And Adjusting Screw
 Courtesy of AUDI OF AMERICA, LLC

-- Level the bubble level -B- using the adjusting screw -2-.

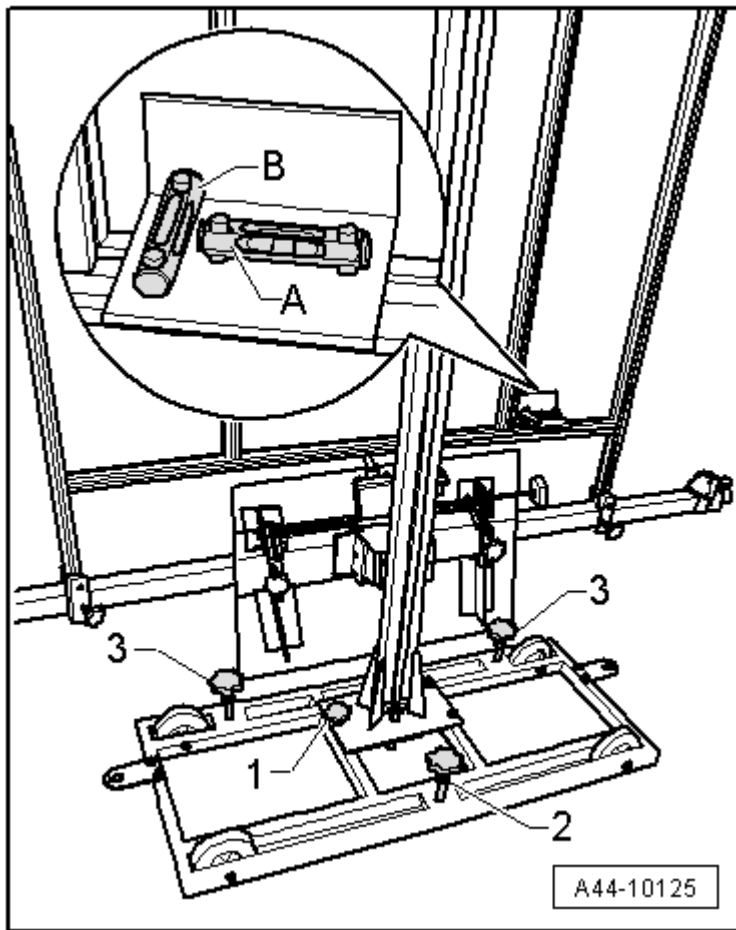


Fig. 50: Identifying Bubble Level And Adjusting Screw
Courtesy of AUDI OF AMERICA, LLC

Subsequent procedures are performed using the VAS 5051 B.

-- Turn on ignition.

-- Touch **Guided Fault Finding** .

-- Select in succession:

- Brand
- Type
- Model year
- Version
- Engine Code

-- Confirm data entered.

Wait until the VAS 5051 B has checked all available control modules in vehicle.

-- Press the **go to** button and select "function/component selection".

-- Select the corresponding program in "Guided Functions".

Now follow the instructions on the screen to perform the calibration.

NOTE: **A step is performed in guided fault finding next to determine the body height.**

-- Determine the body height -a- at all four wheels in the center of the wheel between the wheel contact surface and the lower edge of the fender.

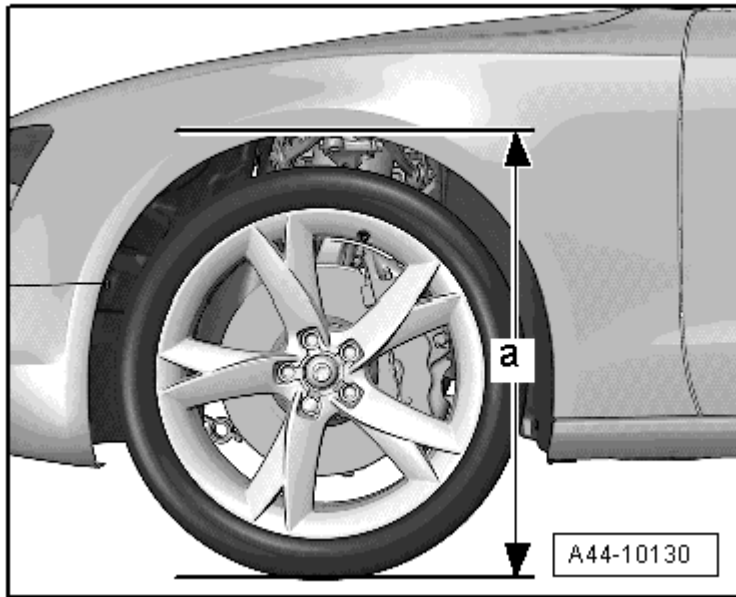


Fig. 51: Body Height

Courtesy of AUDI OF AMERICA, LLC

REMOVAL AND INSTALLATION

TIRE PRESSURE MONITORING CONTROL MODULE -J502-

Special tools and workshop equipment required

- Torque Wrench V.A.G 1783

Removing

The tire pressure monitoring control module -- is located in the right front footwell under the instrument panel.

Before removing the tire pressure monitoring control module --, perform Guided Fault Finding under "replace control module".

-- Remove the glove compartment. Refer to **Removal and Installation** .

- Remove the sill panel strip. Refer to **Removal and Installation** .
- Remove the locking mechanisms -A arrows- and the cover -arrow B-.

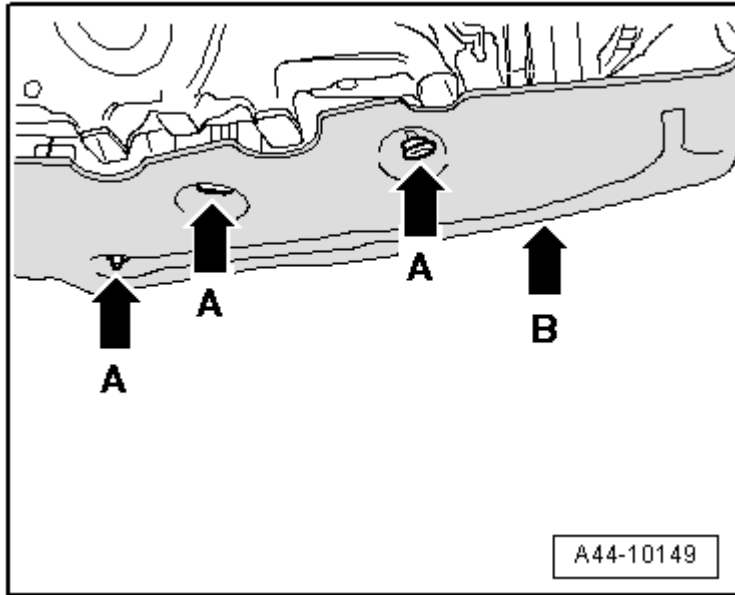


Fig. 52: Removing Locking Mechanisms
 Courtesy of AUDI OF AMERICA, LLC

- Remove the bolt -1- and the vent -2-.

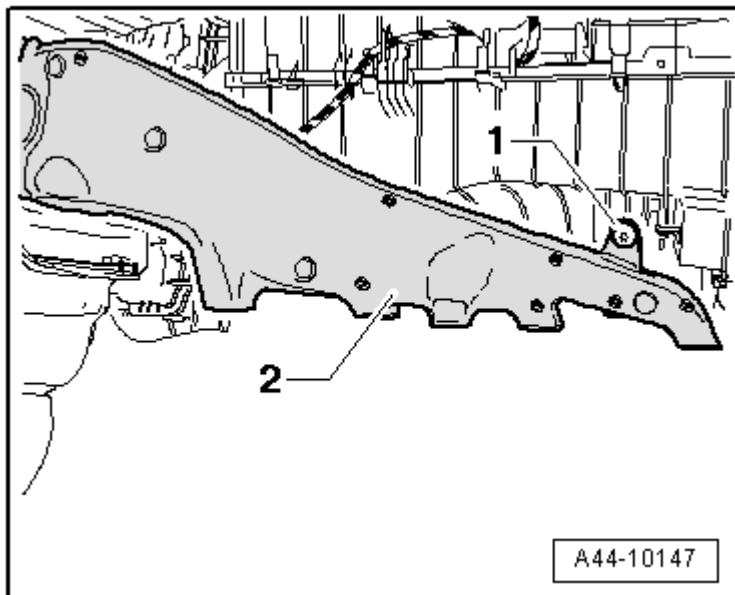


Fig. 53: Removing Bolt And Vent
 Courtesy of AUDI OF AMERICA, LLC

- Remove the cover -arrow- and the pollen filter.

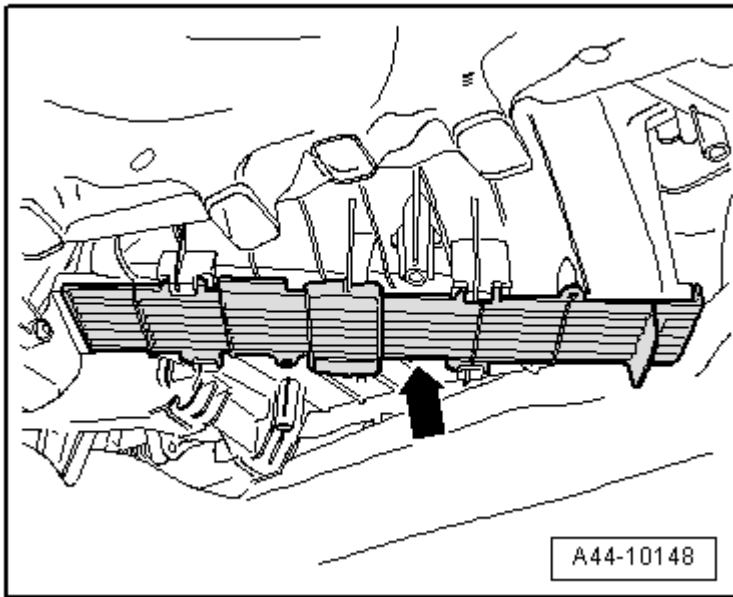


Fig. 54: Removing Cover And Pollen Filter
Courtesy of AUDI OF AMERICA, LLC

CAUTION: • Make sure the carpet does not tear when handling it.

-- Carefully lay the carpet aside with the help of a second technician.

-- Move the insulating mat -arrow- up.

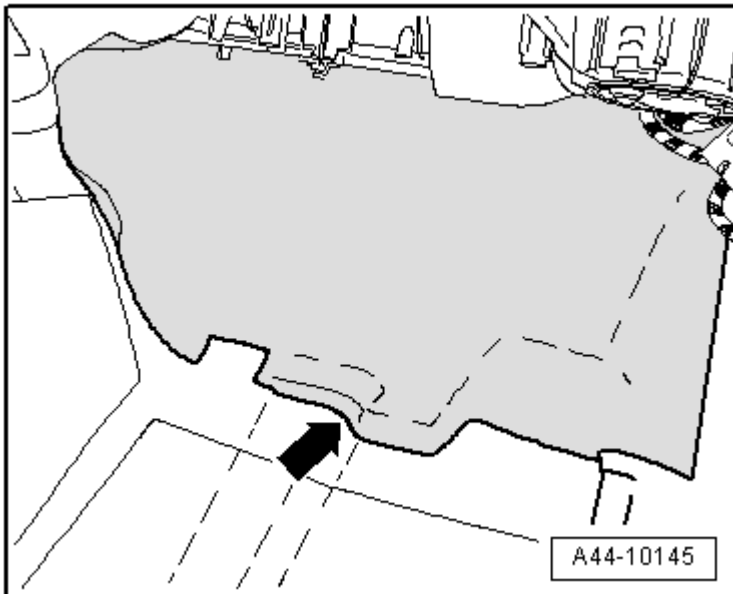


Fig. 55: Moving Insulating Mat
Courtesy of AUDI OF AMERICA, LLC

-- Release and remove the connector -3-.

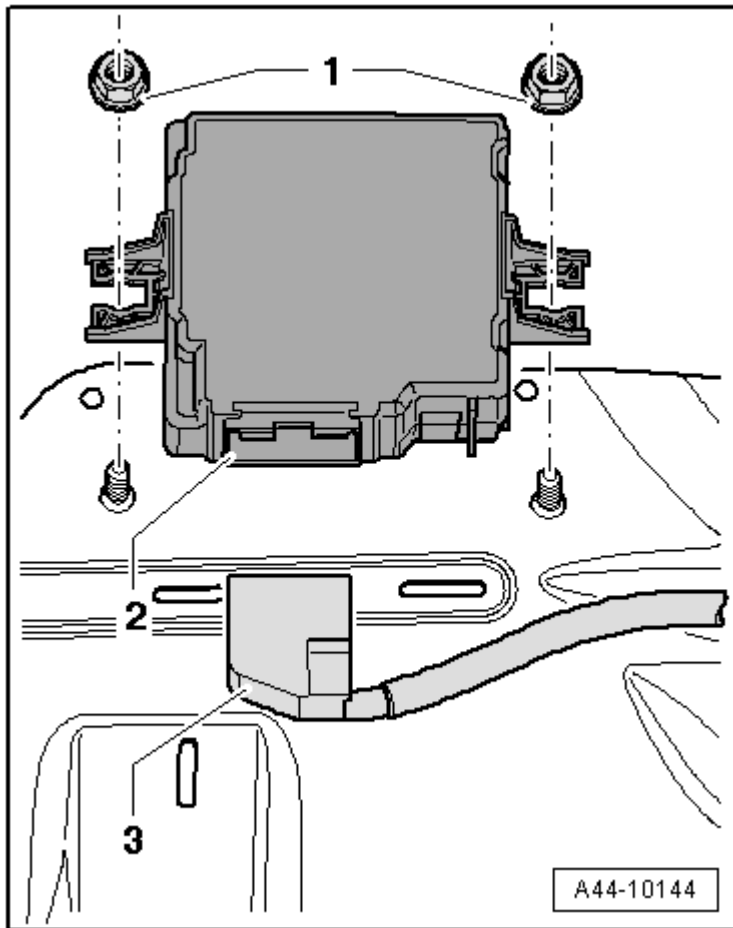


Fig. 56: Release And Remove Connector
Courtesy of AUDI OF AMERICA, LLC

-- Remove the nuts -1- and remove the tire pressure monitoring control module -- -1- upward.

Installing

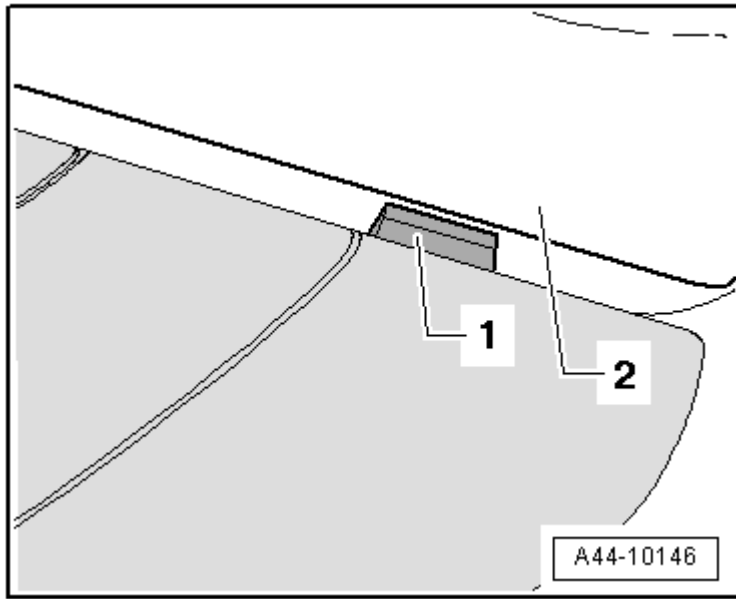


Fig. 57: Removing Nuts And Remove Tire Pressure Monitoring Control Module
 Courtesy of AUDI OF AMERICA, LLC

Install in reverse order of removal. Note the following:

- If the center console was pulled out of the instrument panel when pulling the carpet back, insert the center console with the pins -1- in the instrument panel -2-.
- Tighten the nuts -1- to 2 Nm.
- The system must be coded if the tire pressure monitoring control module -- is replaced **TIRE PRESSURE MONITORING SYSTEM, USING THE SYSTEM** use vehicle diagnostic tester.

TIRES, CHANGING

Replace the nickel-plated valve insert each time a tire is changed.

The tire pressure sensor -- can be reused.

- For safety reason, replace the tire pressure monitoring sensor -- and clean the rim after using tire sealant.
- Let air out of the tire by removing nickel-plated valve insert.
- Remove the tires, refer to **Fig. 58**.
- When changing a tire, replace the valve insert -item 2- **TIRE PRESSURE MONITORING SYSTEM, DIRECT SYSTEM**.
- Do not clean the sensors with steam blasting or strong compressed air.

-- When reusing used tire pressure sensors --, check the connection between the sensor and the metal valve for damage.

Replace damaged sensors.

CAUTION:

- When installing the new sealing washer and the new sealing ring, counter hold them so that the valve body cannot slip through.
- If the connection breaks, then replace the tire pressure monitoring sensor --.

-- Install tires, refer to **Fig. 59**.

-- Install new nickel-plated valve insert.

-- Fill tires.

-- Balance the tire.

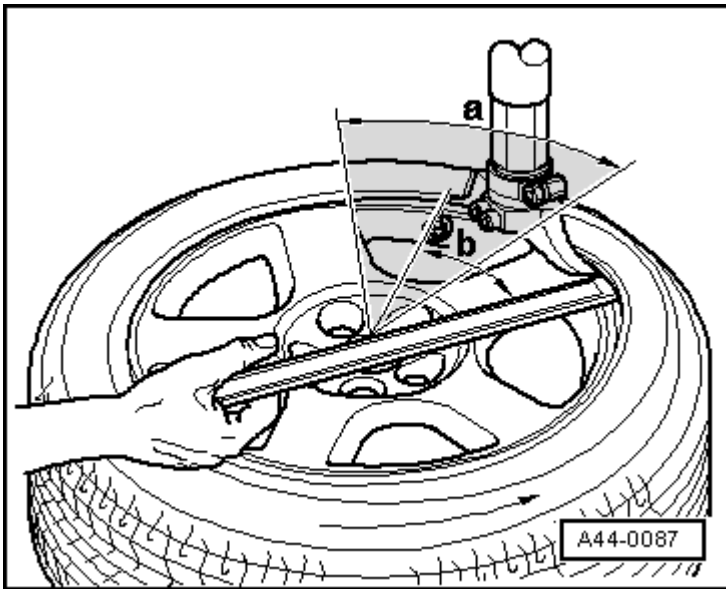


Fig. 58: Dismounting Tire

Courtesy of AUDI OF AMERICA, LLC

Roll or press the tire off.

When using pressure paddles, first separate tires from side opposite of valve.

Do not use pressure paddles in hatched area -a-.

-- Position mounting head near valve so that so that tire iron can be put on approximately 30° -b- next to tire valve.

-- Then remove tire in valve area first.

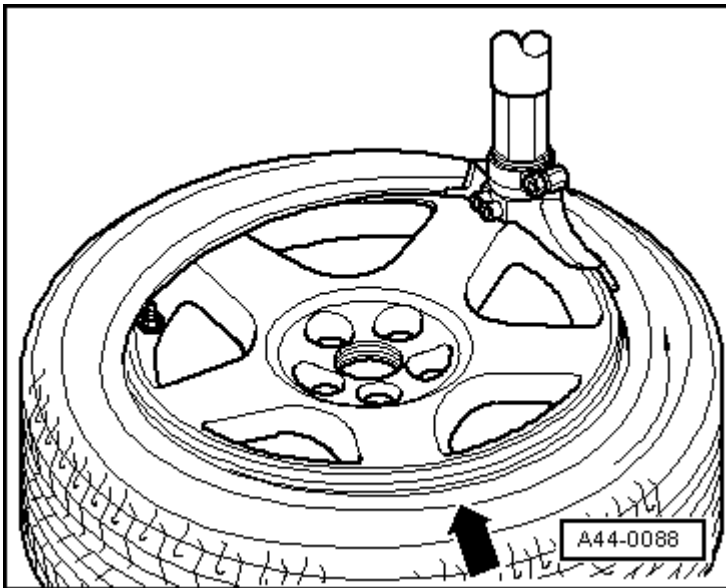


Fig. 59: Mounting Tire

Courtesy of AUDI OF AMERICA, LLC

Do Not Use Pressure Paddles in Valve Area.

-- Position tire pressure sensor -- approximately 180° opposite the mounting head.

-- Press tire in bed approximately 90° in front of mounting head -arrow-.

-- Mount tire.

TIRE PRESSURE SENSOR --

Special tools and workshop equipment required

- Torque Wrench V.A.G 1410

Removing

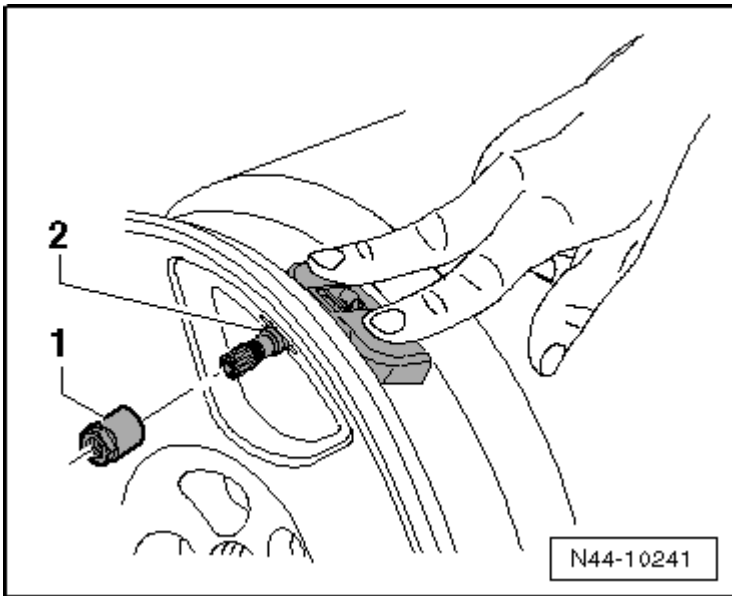


Fig. 60: Identifying Union Nut And Tire Pressure Sensor
Courtesy of AUDI OF AMERICA, LLC

- Remove the union nut -1-.
- Remove tire pressure sensor -- -2- from rim well.

Installing

NOTE: Replace damaged sensors.

When using used tire pressure monitoring sensors, check the connection between the sensor and the valve for damage.

For safety reason, replace the tire pressure monitoring sensor and clean the rim after using tire sealant.

Do not clean the tire pressure sensors with steam jet cleaners or strong compressed air.

When sliding the new seal and sealing washer on, prevent the valve body from being pressed through by counter holding it (the antenna connection could be damaged).

- Insert the sensor -2- with the new seal and sealing washer through the rim from the inside and press the seal into the valve bore. Make sure the valve shaft is in the center inside the valve hole.

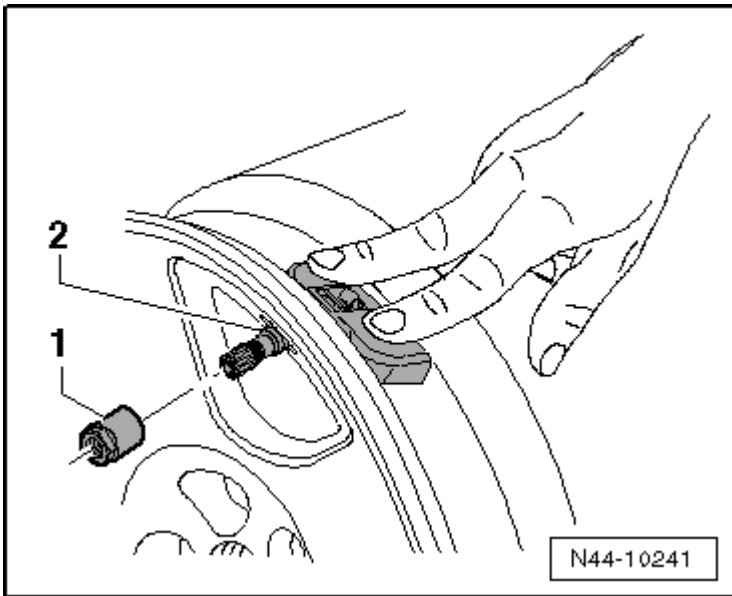


Fig. 61: Identifying Union Nut And Tire Pressure Sensor
Courtesy of AUDI OF AMERICA, LLC

-- Install union nut -1- on tire pressure sensor -- -2-. When doing this, press the sensor into the bed and hold it there.

CAUTION:

- When tightening the union nut, avoid excessive pressure on the nut and on the tool

-- Press tire pressure sensor -- -1- onto rim well and tighten union nut. Refer to **Tire Pressure Monitoring Sensor -- OVERVIEW**.

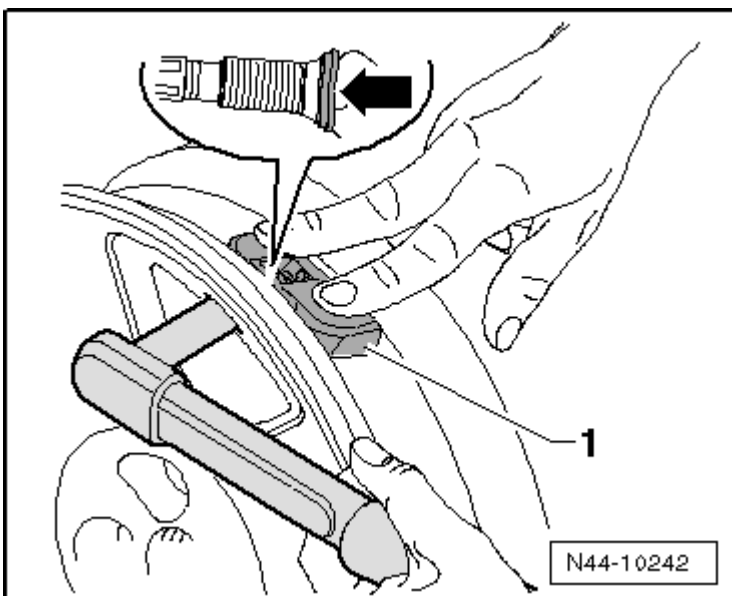


Fig. 62: Pressing Tire Pressure Sensor On To Rim Well And Tightening It With Union Nut

Courtesy of AUDI OF AMERICA, LLC

NOTE: After installing, tire pressure sensor -- must lie firmly in its bed.

Sealing washer -arrow- becomes slightly deformed when doing this.

ACTIVE STEERING CONTROL MODULE -J792-

Special tools and workshop equipment required

- Torque Wrench V.A.G 1783

Removing

The active steering control module -J792- is located in the footwell under the driver seat.

Before removing control module, read out code using Guided Fault Finding in "Replace control module" function.

- Loosen the driver seat and slide it back with the wires connected.
- Remove the sill panel strip. Refer to **Removal and Installation** .
- Remove the foot rest. Refer to **Removal and Installation** .
- Disengage the carpet and support it using a suitable block of wood -6-.

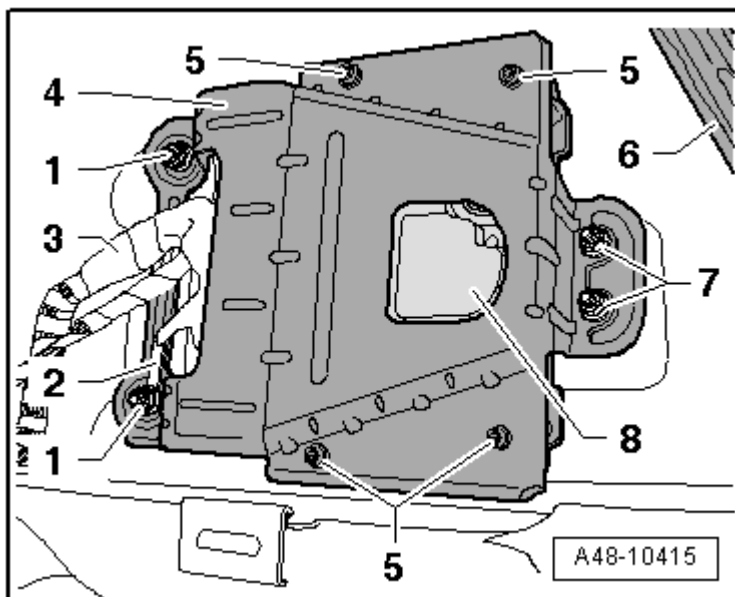


Fig. 63: Disengaging Carpet And Support It Using A Suitable Block Of Wood
Courtesy of AUDI OF AMERICA, LLC

- Remove nuts -7-.
- Remove the nuts -1- and remove the ground wire -2- from the threaded pin.
- Carefully disconnect the wiring harness clip connection -3- from the bracket -4-.
- Remove the wiring harness connectors -3- from the control module -8-.
- Remove the bolts -5- from the control module -8- and remove the bracket -4-.

Installing

Install in reverse order of removal. Note the following:

Follow the sequence when installing the control module:

- Tighten the bracket -4- with the bolts -5- to the control module -8- to 8 Nm.

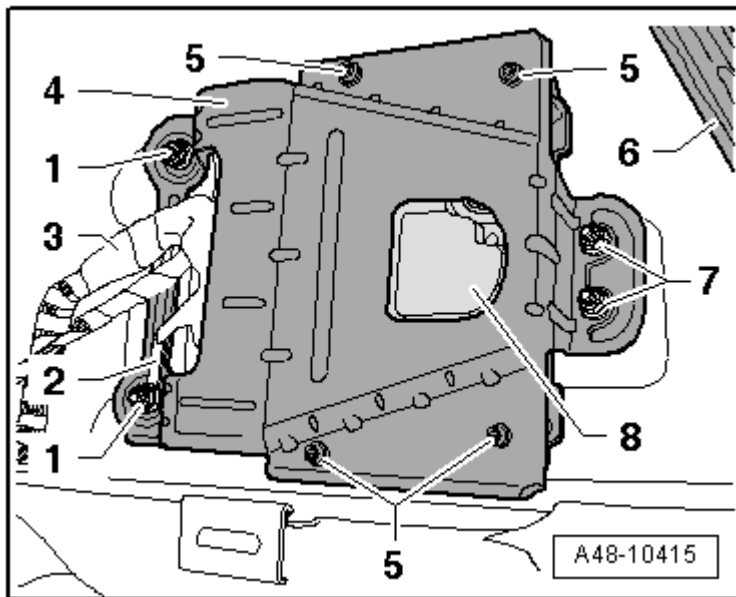


Fig. 64: Tightening Bracket -4- With Bolts -5- To Control Module -8-
Courtesy of AUDI OF AMERICA, LLC

- Connect the wiring harness connectors -3- to the control module -8-.
- Carefully slide the wiring harness clip connection -3- into the bracket -4-.
- Insert the control module with the bracket.
- Connect the ground wire -2- to the threaded pin and tighten the nuts -1- to 6 Nm.
- Tighten nuts -7- to 6 Nm.

-- The system must be calibrated if the active steering control module is replaced --. Refer to **DYNAMIC STEERING BASIC SETTING**.

Tightening specifications:

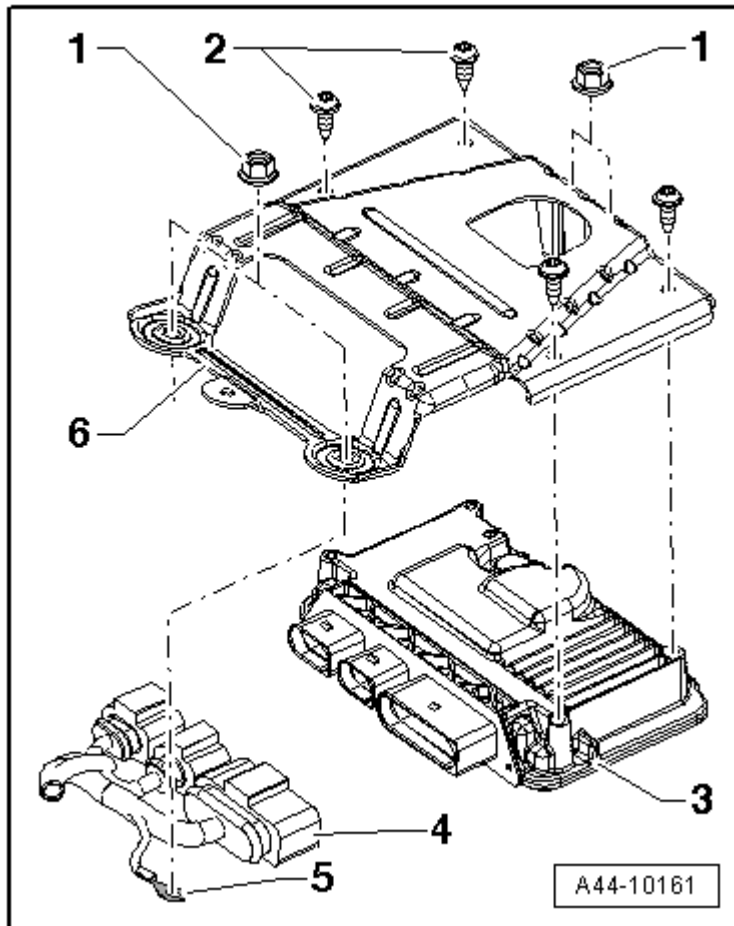


Fig. 65: Identifying Steering Control Module Components
Courtesy of AUDI OF AMERICA, LLC

Component	Nm
Bracket -6- and ground wire -5- (integrated in the connector wiring harness -4-) with the nut -1- to the threaded pin	6

Bracket -6-
with bolts -
2- to the
control
module -3-

8

ADAPTIVE CRUISE CONTROL SENSOR -G550-

The adaptive cruise control sensor -- is located behind the right air intake grille in the front bumper.

Special tools and workshop equipment required

- Torque Wrench V.A.G 1783

Removing

If it necessary to replace the distance regulation control module, then start the program on the vehicle diagnostic tester in "Guided Functions".

-- Remove the right front air intake grille. Refer to "Front Bumper" in **Removal and Installation** .

-- Remove the cover -item 1- **Distance Regulation Control Module -- CLIP, REPLACING, FROM MY 12** from the adaptive cruise control sensor --.

Vehicles through MY 12

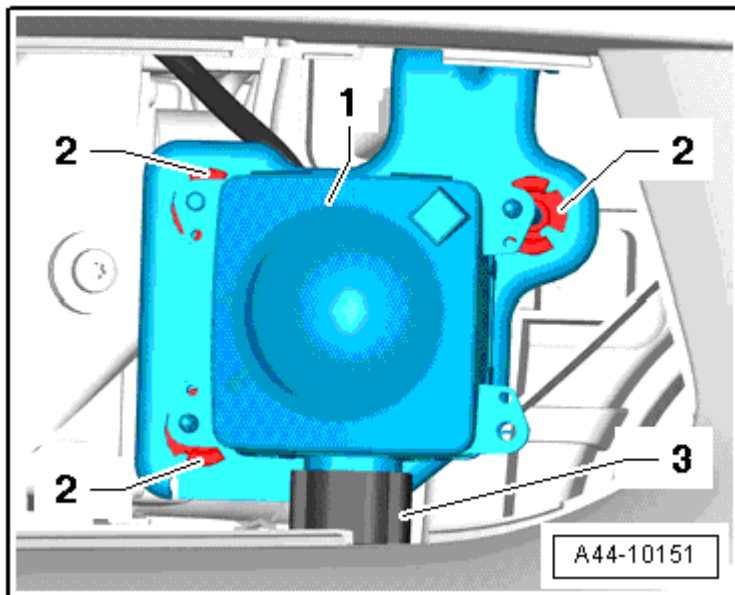


Fig. 66: Turning Nuts Approximately 45° Left And Remove Them
Courtesy of AUDI OF AMERICA, LLC

-- Turn the nuts -2- approximately 45° to the left and remove them.

- Release and remove the connector -3-.
- Remove the adaptive cruise control sensor -- -1- forward through the bumper cover.
- Remove the bolts -1- and the bracket -2-.

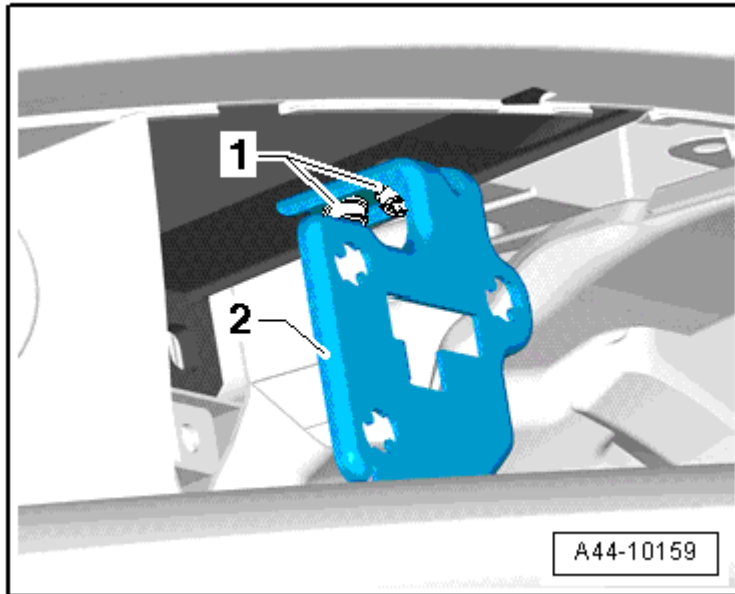


Fig. 67: Removing Bolts And Bracket
Courtesy of AUDI OF AMERICA, LLC

Vehicles from MY 12

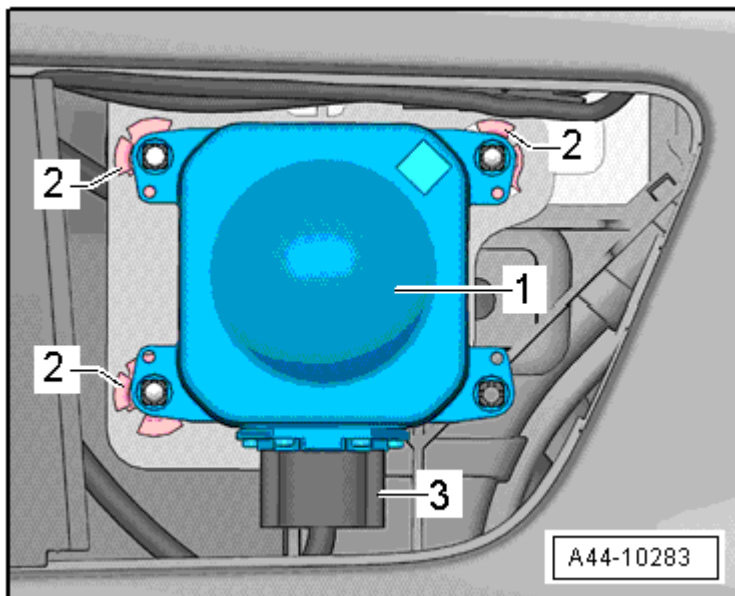


Fig. 68: Removing Adaptive Cruise Control Sensor
Courtesy of AUDI OF AMERICA, LLC

-- Turn the nuts -2- approximately 45° to the left and remove the adaptive cruise control sensor -- -1- with the stud bolts from the nuts.

-- Release and remove the connector -3-.

-- Remove the adaptive cruise control sensor -- -1- forward through the bumper cover.

-- Turn the bolt -1- just far enough so that the tip of the bolt does not extend past the spring nut.

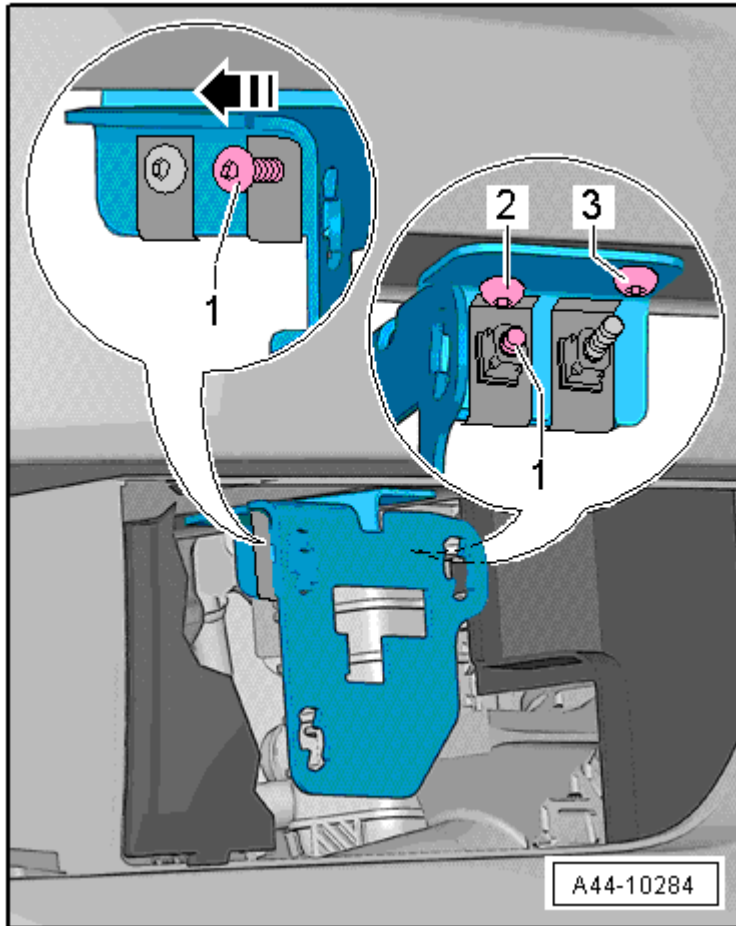


Fig. 69: Turn Bolt Just Far Enough So That Tip Of Bolt Does Not Extend Past Spring Nut
Courtesy of AUDI OF AMERICA, LLC

-- Remove the bolt -2 and 3- and the bracket.

Installing

Install in reverse order of removal. Note the following:

NOTE: Studs in bracket are preset. If necessary, correct adjustment.

-- Place sensor on a soft and clean surface.

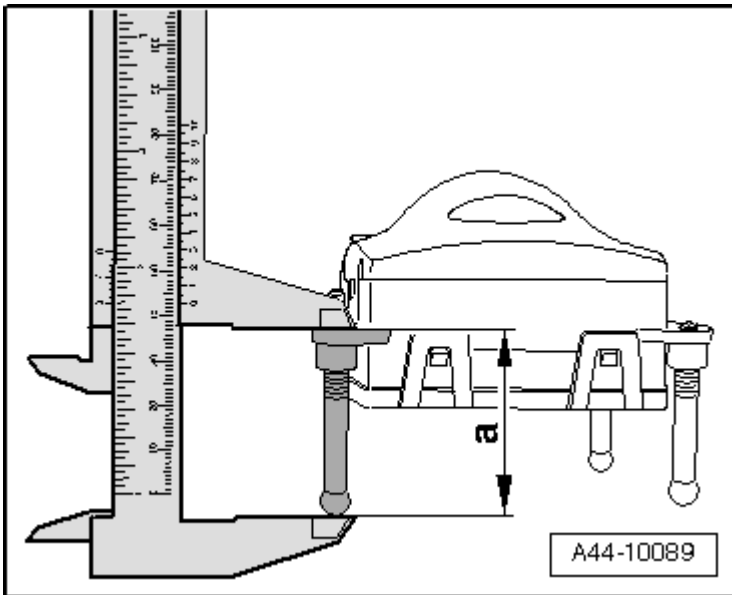


Fig. 70: Measure Dimension -a- Of All Studs.

Courtesy of AUDI OF AMERICA, LLC

Dimension -a- must be 43 mm.

-- Insert bracket and tighten bolts.

Tightening specification, refer to **Adaptive Cruise Control Sensor -G550- OVERVIEW**

-- Install the adaptive cruise control sensor -- and carefully push the nuts onto the threaded pins in the sensor.

-- Install the air intake grille. Refer to "Front Bumper" in **Removal and Installation** .

-- Calibrate the adaptive cruise control. Refer to **ADJUSTMENT PROCEDURE USING ACC Setting Device VAS 6190**.

DISTANCE REGULATION CONTROL MODULE -- CLIP, REPLACING, FROM MY 12

If the stud bolt is being removed, then the clip -item 3- **Adaptive Cruise Control Sensor -G550- OVERVIEW** must always be replaced. -item 2-

The clip will get damaged when it is being removed.

- The adaptive cruise control sensor -G550- is removed and the nuts are removed from the stud bolts.

-- Remove the stud bolt -1- with a suitable tool -2-.

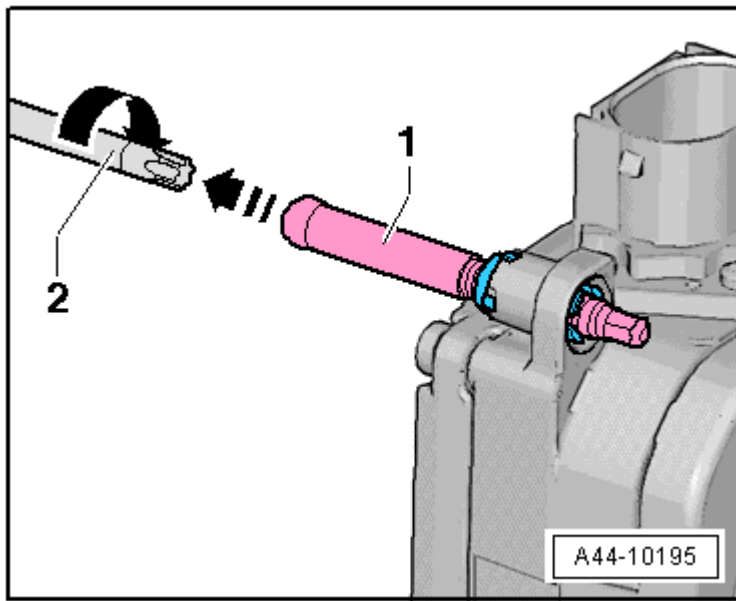


Fig. 71: Removing Stud Bolt With A Suitable Tool
Courtesy of AUDI OF AMERICA, LLC

-- Place a screwdriver between the hook and the housing.

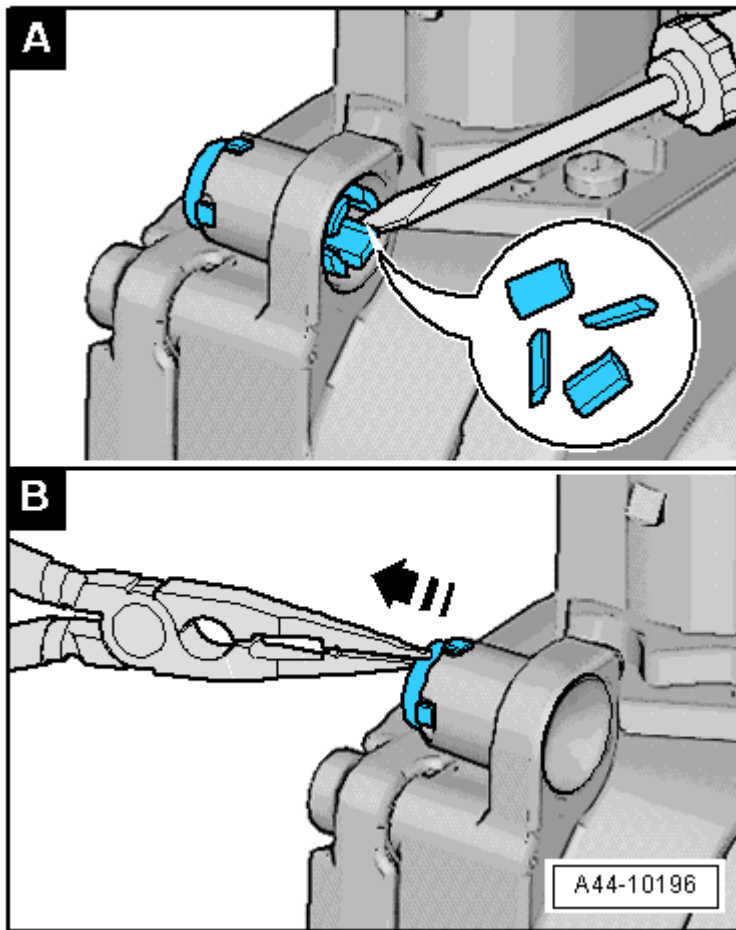


Fig. 72: Placing A Screwdriver Between Hook And Housing
Courtesy of AUDI OF AMERICA, LLC

-- Using the screwdriver, bend the hook to the center point until it audibly breaks off.

- Repeat this until all the hooks are broken.

-- To prevent the broken hooks from getting caught on the housing, remove them using needle nose pliers.

-- Remove the clip with needle nose pliers as illustrated.

-- Insert the new clip into the hole for the housing from the left side and push it in by hand until it audibly engages.

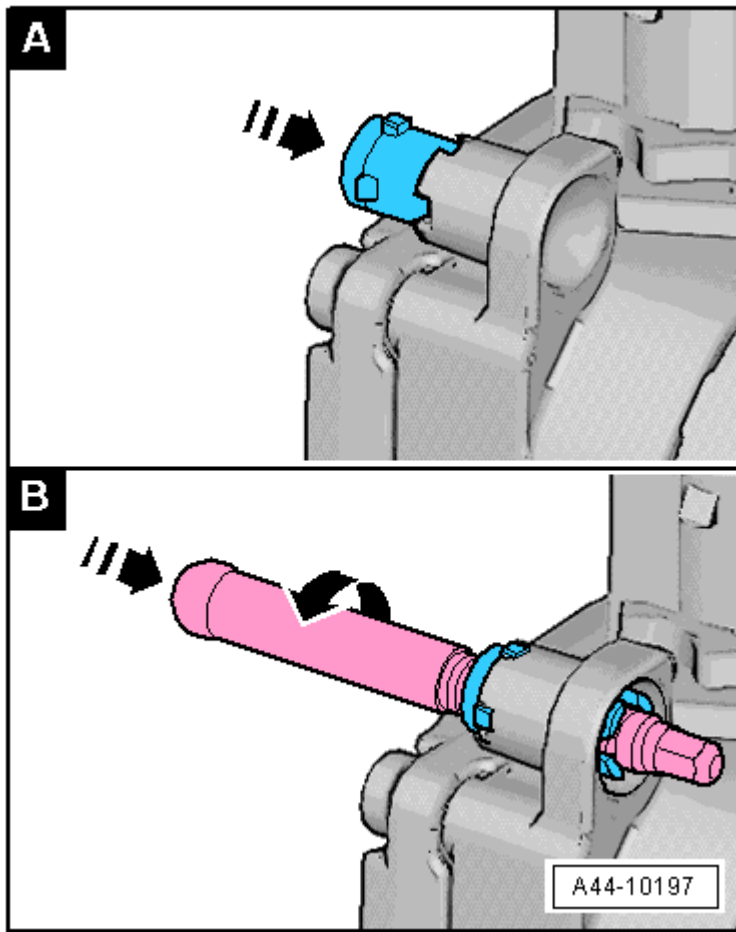


Fig. 73: Inserting New Clip Into Hole For Housing From Left Side And Push It In By Hand Until It Audibly Engages

Courtesy of AUDI OF AMERICA, LLC

- Make sure the tabs are lined up correctly.
- Mount the stud bolt making sure it is parallel to the hole.
- The stud bolt can be tightened once it is correctly aligned.
- Install the stud bolt until the dimension -a- is reached.

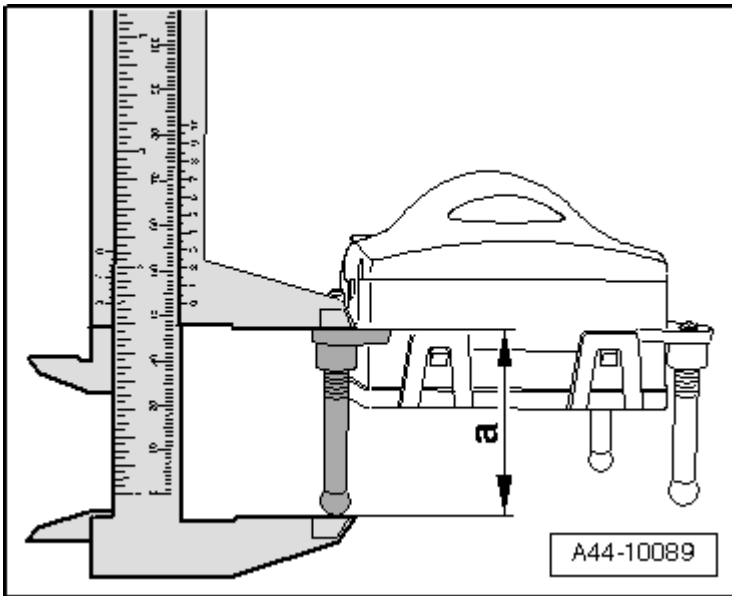


Fig. 74: Measure Dimension -a- Of All Studs.
 Courtesy of AUDI OF AMERICA, LLC

Dimension -a- = 43.3 mm

-- Repeat this on the other clips.

-- Install the ACC sensor in the bracket and then adjust the ACC. Refer to **ADJUSTMENT PROCEDURE USING ACC Setting Device VAS 6190** or **ADJUSTMENT PROCEDURE USING ACC Setting Device VAS 6430**.

DIRECTIONAL STABILIZATION ASSISTANCE CONTROL MODULE -J759- AND LENS SCREEN

Removing

-- Remove the cover trim -1- down from the bracket in the direction of the -arrow-.

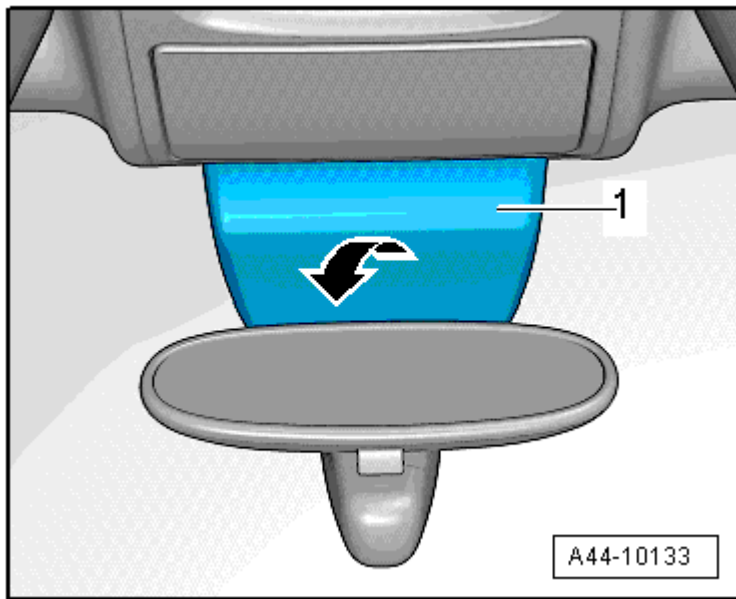


Fig. 75: Removing Cover Trim Down From Bracket
 Courtesy of AUDI OF AMERICA, LLC

-- Press the retaining clamp -1- in the direction of the -arrow- and remove the directional stabilization assistance control module sideways and down from the bracket.

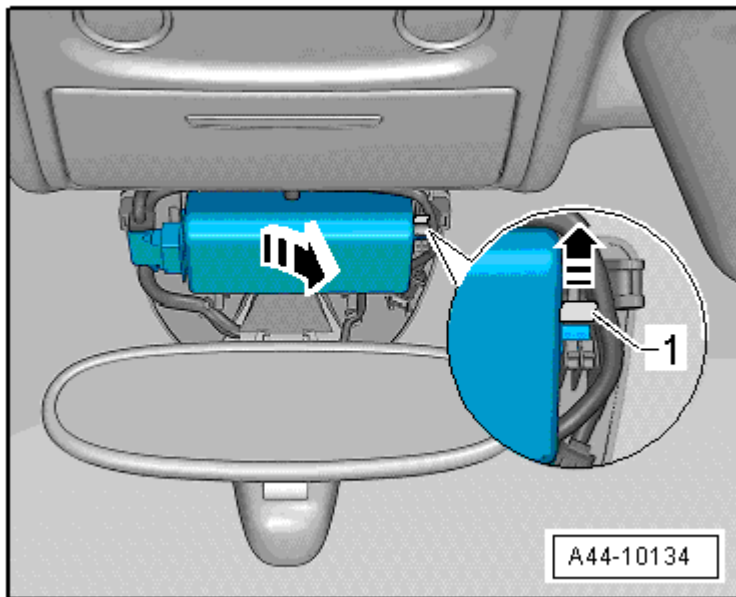


Fig. 76: Pressing Retaining Clamp Forward And Removing Directional Stabilization Assistance Control Module J759 Sideways And Down From Bracket
 Courtesy of AUDI OF AMERICA, LLC

-- Disconnect the electrical connector and remove the directional stabilization assistance control module.

-- Press the clamps -arrows-, pull the lens screen out of the bracket and remove it toward the rear.

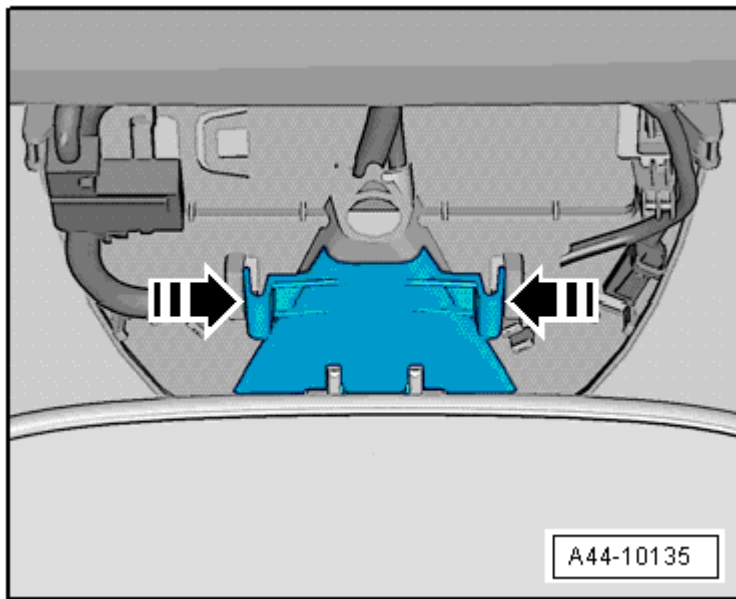


Fig. 77: Pressing Clamps To Pull Lens Screen Out Of Bracket
Courtesy of AUDI OF AMERICA, LLC

Installing

Install in reverse order of removal. Note the following:

NOTE: The camera visual area on the inside of the window must not be covered with condensation or dirty. If it is, clean the visual window by hand using a cleaning solution.

If the directional stabilization assistance control module -- is replaced, the camera -- and the control module must be recalibrated -- **CALIBRATION PROCEDURE.**

SPECIAL TOOLS

2012 Audi S4

SUSPENSION Wheels, Tires and Vehicle Alignment (Sedan)

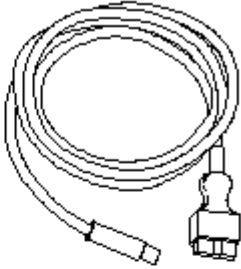
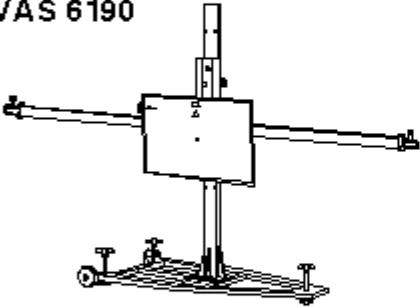
VAS 5051 A 	VAS 5051/5A 
VAS 6190 	
	G44-10003

Fig. 78: Identifying Special Tools
Courtesy of AUDI OF AMERICA, LLC

Special tools and workshop equipment required

- Vehicle Diagnosis, Testing and Information System VAS 5051 A
- Diagnostic Cable VAS 5051/5A
- ACC Adjustment Device VAS 6190
- Adjuster for ACC VAS 6190/2

Special tools and workshop equipment required

- Tool Insert T40183

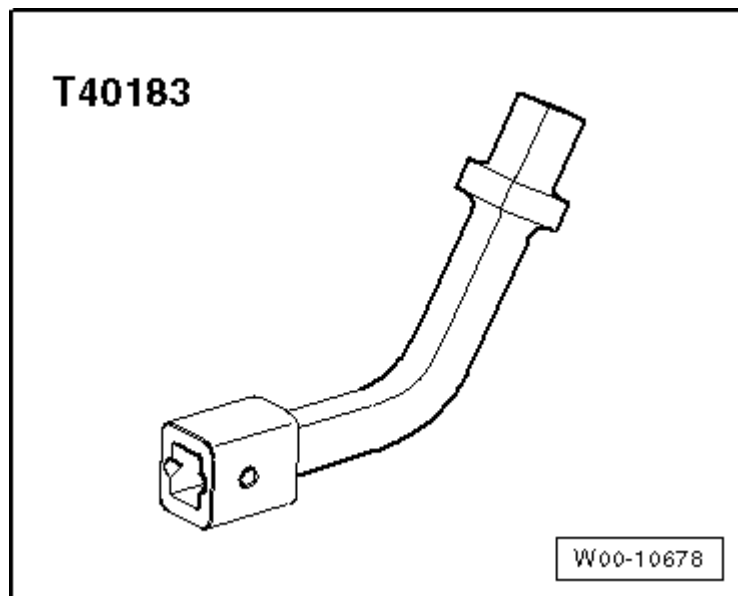


Fig. 79: Identifying Tool Insert T40183
Courtesy of AUDI OF AMERICA, LLC

- Torque Wrench V.A.G 1410

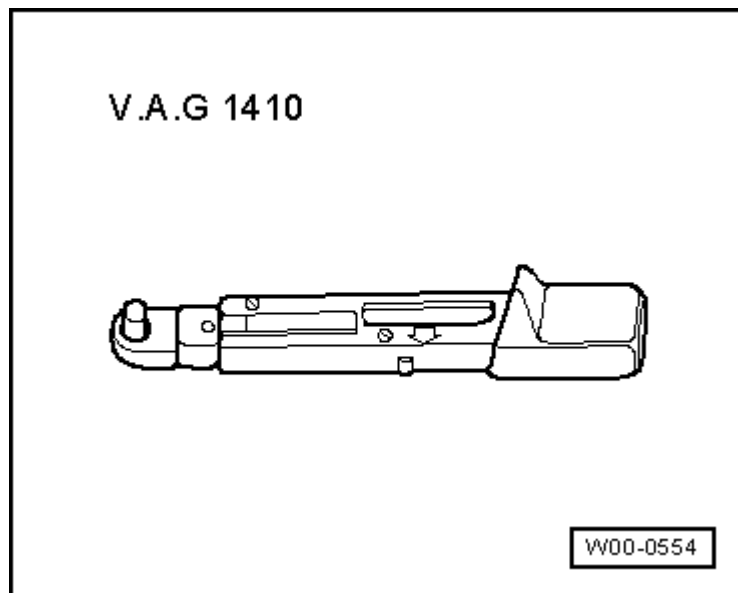


Fig. 80: Identifying Torque Wrench V.A.G 1410
Courtesy of AUDI OF AMERICA, LLC

- Torque Wrench V.A.G 1783

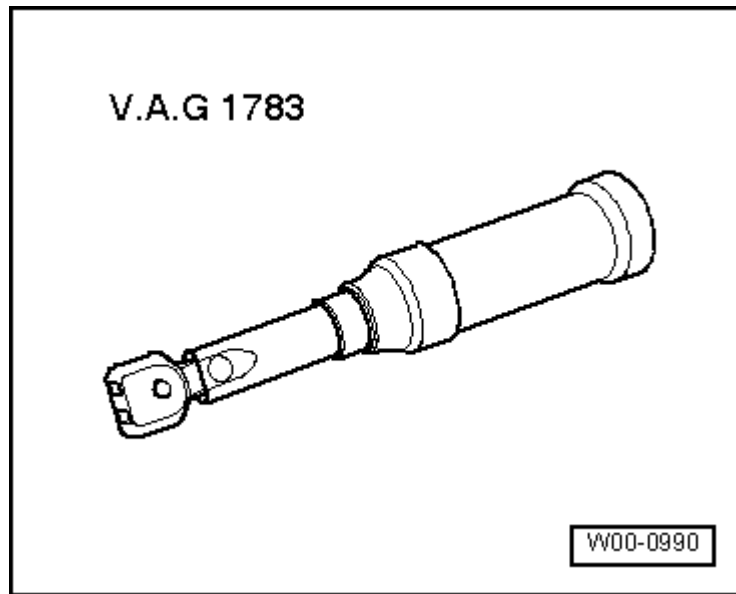


Fig. 81: Identifying Torque Wrench V.A.G 1783
Courtesy of AUDI OF AMERICA, LLC

- Brake Pedal Actuator V.A.G 1869/2

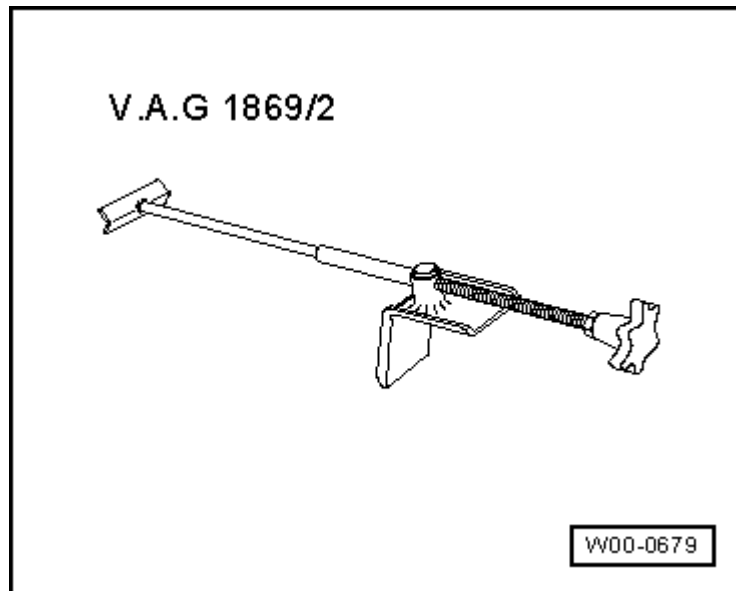


Fig. 82: Brake Pedal Actuator V.A.G 1869/2
Courtesy of AUDI OF AMERICA, LLC

- Vehicle Diagnostic, Testing and Information System VAS 5051 B with corresponding diagnostic cable.

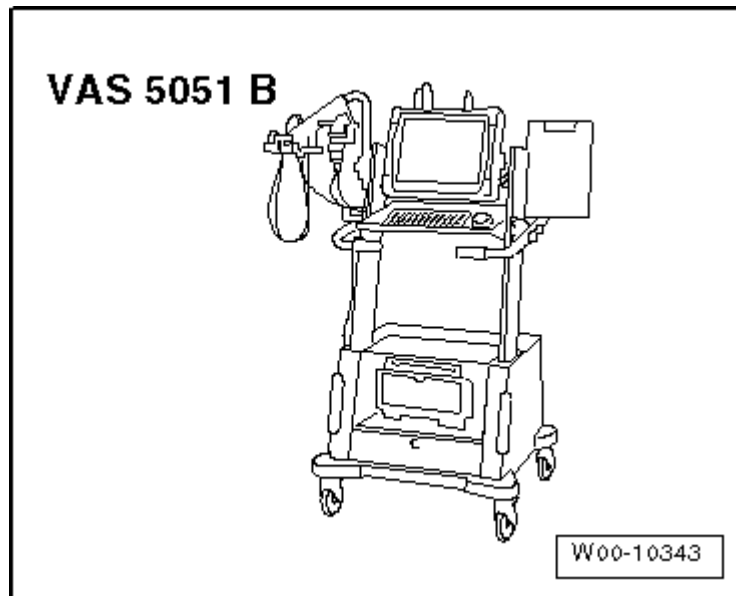


Fig. 83: Identifying Vehicle Diagnosis, Testing And Information System VAS 5051B
Courtesy of AUDI OF AMERICA, LLC

- Adjuster for ACC VAS 6190/2

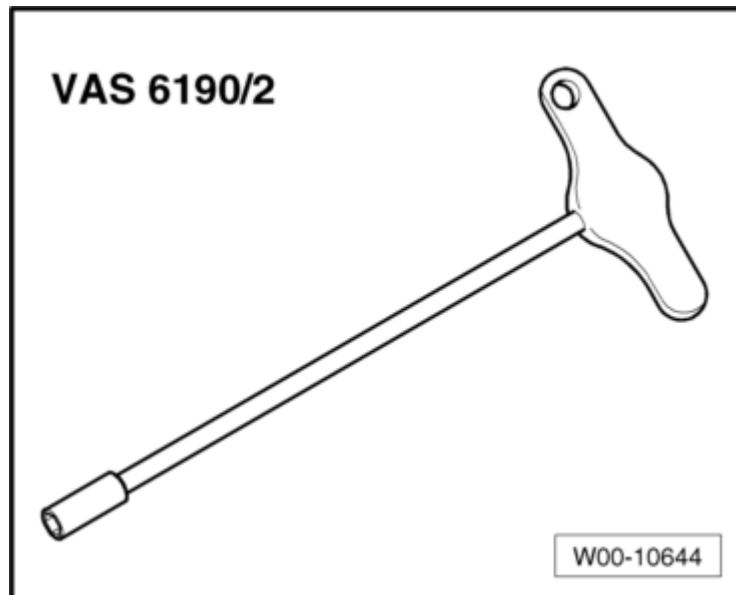


Fig. 84: Identifying Adjustment Tool VAS 6190/2
Courtesy of AUDI OF AMERICA, LLC

- ACC Adjustment Device VAS 6430

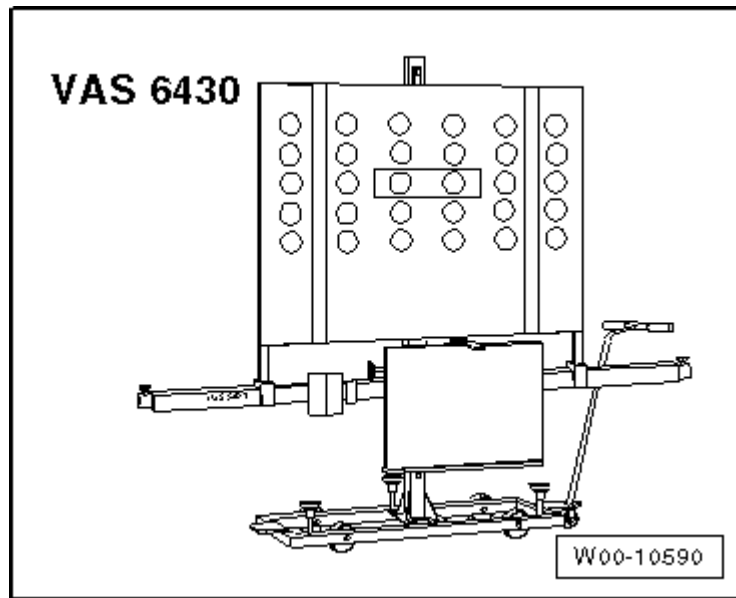


Fig. 85: Identifying Setting Device VAS 6430
Courtesy of AUDI OF AMERICA, LLC

- Steering Wheel Sales VAS 6458

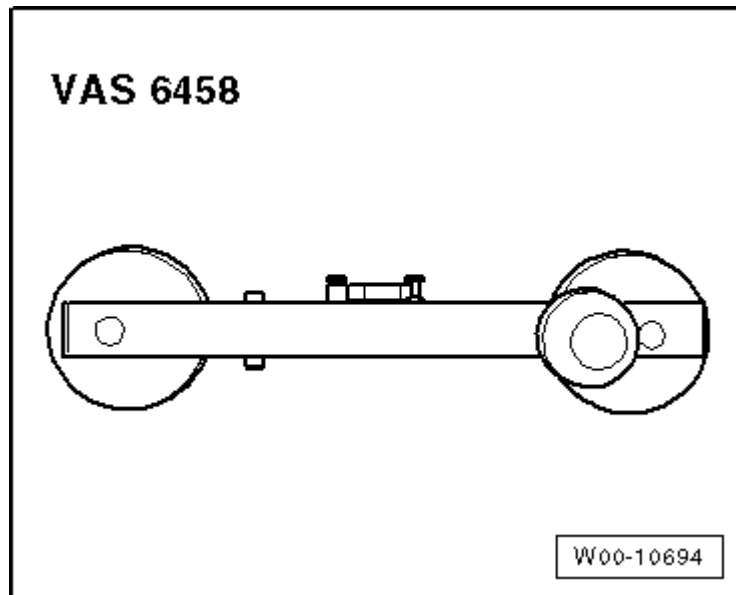


Fig. 86: Identifying VAS 6458
Courtesy of AUDI OF AMERICA, LLC

- Wheel alignment computer released by VW/Audi
- Not illustrated:
- ADC Test Fixture VAS 6041
- ADC Reflector Mirror VAS 6041/1