

92 - WINDSHIELD WIPER AND WASHER SYSTEM

FRONT WINDSHIELD WIPER SYSTEM, SERVICING

Windshield wiper blades, replacing

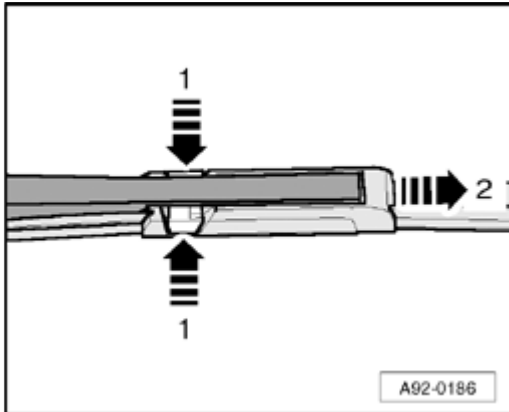


Fig. 162: Identifying Wiper Blade Retaining Clips And Wiper Arm
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removing

NOTE:

- If the windshield wiper motor is to be run during the work procedure, the hood must be closed, otherwise the voltage supply of the wiper motor will be interrupted.
- With the engine running, bring the windshield wipers to "service position" Operating instructions.
- Switch off ignition.
- Lift off wiper arm from front windshield.
- Compress clip - arrows 1 -.
- Push wiper blade off wiper arm - arrow 2 -.
- Remove wiper blade.

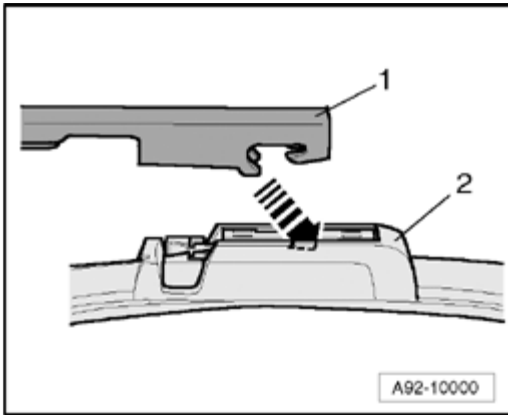


Fig. 163: Identifying Wiper Blade And Wiper Arm
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Installing

Installation is performed in reverse order of removal, noting the following:

- Hold wiper blade - **2** - parallel and slide onto wiper arm - **1** - - **arrow** -. Make sure wiper arm rest completely in guide.
- Switch ignition on and operate "wipe once" , thus the wipers leave the "service position".

Wiper arms, removing and installing

Removing

NOTE:

- If the windshield wiper motor is to be run during the work procedure, the hood must be closed, otherwise the voltage supply of the wiper motor will be interrupted.
- Switch the ignition on.
- Operate "wipe once" and let wiper arms run to end position.
- Switch ignition off and remove ignition key.

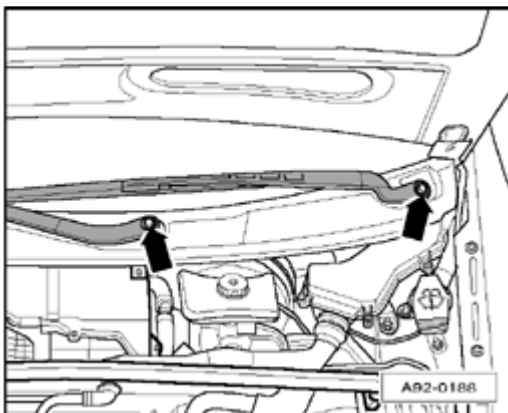


Fig. 164: Identifying Hex Head Nuts

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pry off cover caps on wiper arms using a screwdriver.
- Loosen nuts - **arrows** - several rotations.
- Loosen wiper arms successively by tilting slightly from the wiper arm axle.
- Remove nuts completely and remove wiper arms.

NOTE:

- **If the wiper arm cannot be pulled off in this way, use a commercially available puller.**

Installing

Installation is performed in reverse order of removal, noting the following:

- Adjust wiper arms --> **Wiper arms, adjusting.**

Wiper arms, adjusting**Work procedure**

NOTE:

- **If the windshield wiper motor is to be run during the work procedure, the hood must be closed, otherwise the voltage supply of the wiper motor will be interrupted.**
- **Remove wiper arms --> Wiper arms, removing and installing.**
- **Switch the ignition on.**
- **Operate "wipe once" and let wiper motor run in end position.**

NOTE:

- **Every second time the wiper motor is switched off, it returns the wiper arms to a slightly lower rest position, thus tipping the wiper blade lips the other way.**
- **To do so, the wiper motor moves the wiper arms farther down than to rest position and then a bit up again. This lower rest position must not be used to adjust the wiper crank.**
- **Only use rest position where wiper arms are rested directly in normal end position. Operate "wipe once" again if necessary.**
- **Switch off ignition.**

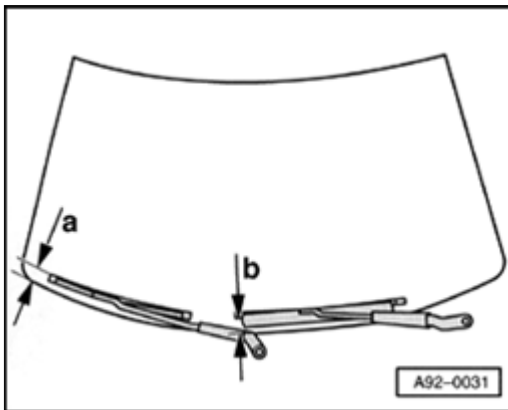


Fig. 165: Checking Windshield Wiper Blade Tips Position
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position wiper arm with wiper blade installed at wiper axles and align wiper blade at windshield as follows:
 - Dimension - **a** - = 10 15 mm.
 - Dimension - **b** - = 30 40 mm.

NOTE:

- The dimensions indicate the gap between the wiper blade tips to black cowl grille at lower edge of windshield.
- Tighten wiper arm nuts.
- Switch the ignition on.
- Operate "wipe once" and let wiper arms run to end position.
- Switch off ignition.
- Check adjustment of wiper arms again, correct if necessary.

Tightening torque

Component	Nm
Wiper arm to wiper axle	15

Windshield wiper motor with Wiper Motor Control Module J400 , removing and installing

NOTE:

- The Wiper Motor Control Module J400 is integrated in the windshield wiper motor.

Removing

NOTE:

- If the windshield wiper motor is to be run during the work procedure, the hood must be closed, otherwise the voltage supply of the wiper motor will

be interrupted.

- If the windshield wiper motor is replaced with Wiper Motor Control Module J400 , select "Path 09 - Electronic central electric / J400 Wiper Motor Control Module, functions / J400 - Replacing" in "Guided Functions".

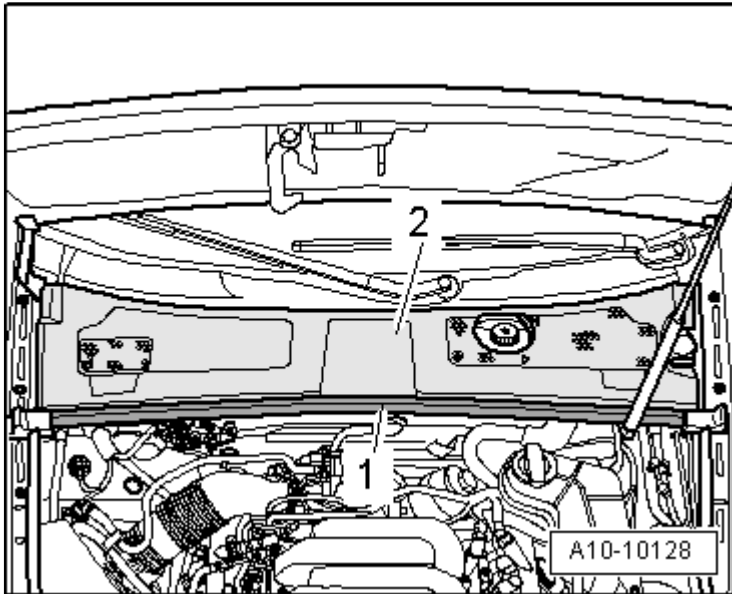


Fig. 166: Removing Rubber Seal For Plenum Chamber Cover & Plenum Chamber Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rubber seal - 1 -.
- Remove plenum chamber cover - 2 -.
- Remove wiper arms --> **Wiper arms, removing and installing.**

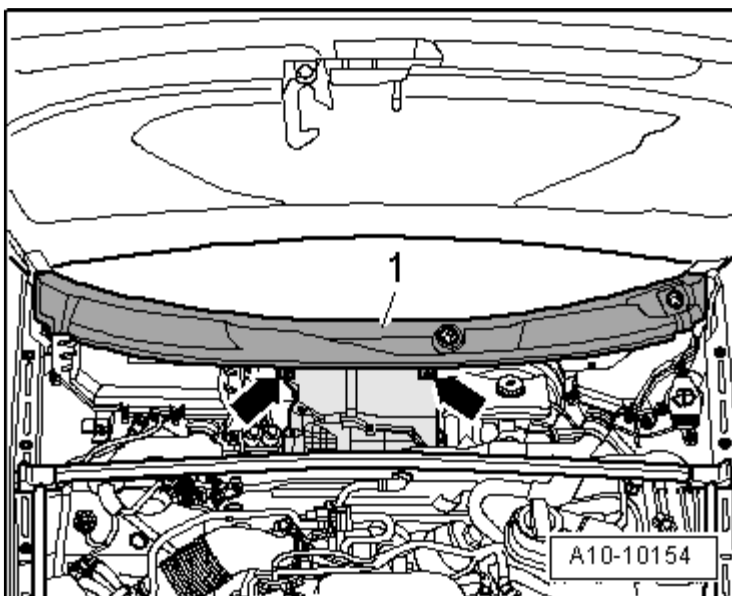
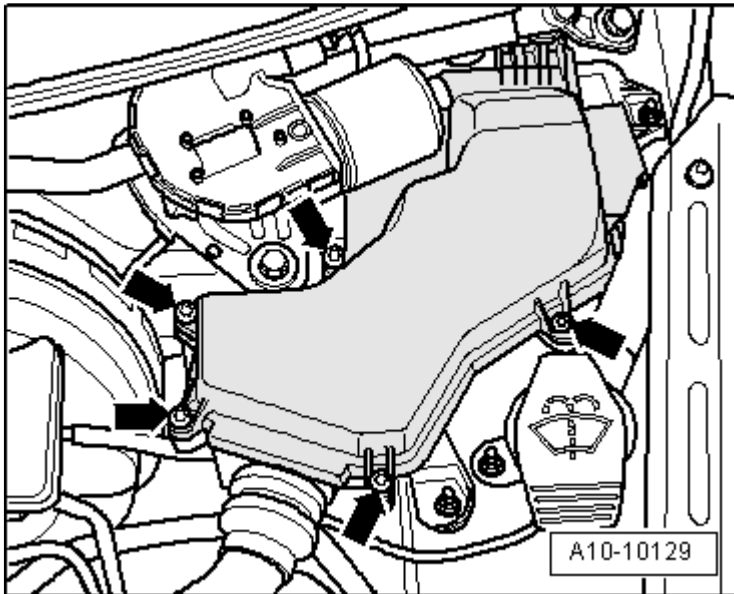


Fig. 167: Removing Bolts For Cowl Grille

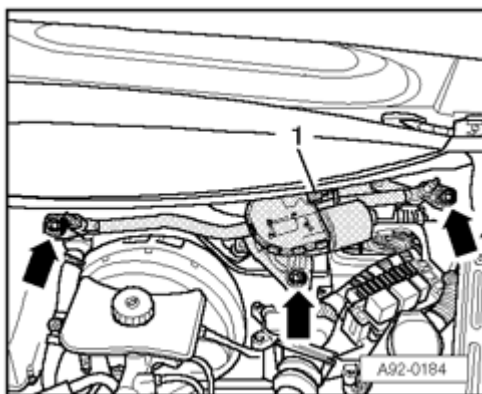
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - for cowl grille - **1** - at left and right.
- Carefully pull cowl grille off locking mechanism on windshield.

**Fig. 168: Removing Bolts And Cover Form E-Box At Left In Engine Compartment**

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** -.
- Remove E-Box cover in left plenum chamber.

**Fig. 169: Identifying Bolts For Wiper Frame And Electrical Harness Connector**

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - and remove wiper frame completely.
- Disconnect electrical harness connector - **1** -.

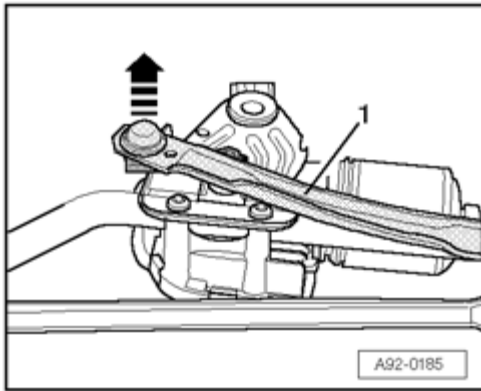


Fig. 170: Prying Off Wiper Linkage From Ball Head
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pry off wiper linkage - **1** - from ball head - **arrow** -.

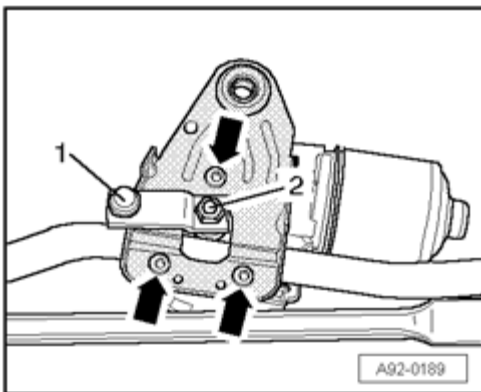


Fig. 171: Identifying Nut, Crank, Wiper Motor And Wiper Frame
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nut - **2** - and remove crank - **1** - from wiper motor.
- Remove wiper motor from wiper frame - **arrows** -.

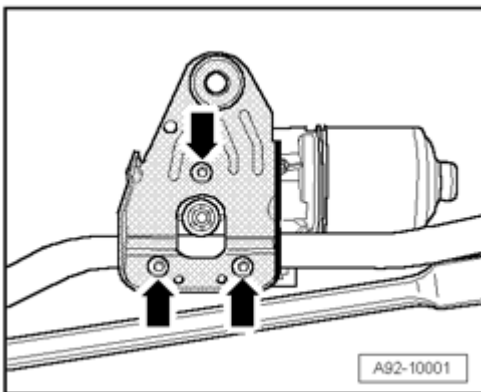


Fig. 172: Bolting Wiper Motor Without Crank On To Wiper Frame
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

Installing

Installation is performed in reverse order of removal, noting the following:

- Bolt wiper motor without crank on to wiper frame - **arrows** -.
- Connect electrical harness connector.
- Switch the ignition on.
- Perform next program step in "Guided Functions".

NOTE:

- The "Replace" function in "Guided Functions" e.g. switches off the alternating park position of the wiper motor. The wiper motor then runs always to the "lower" park position which is the one for adjustment.
- Operate "wipe once" and let wiper motor run in end position.
- Switch ignition off and remove ignition key.

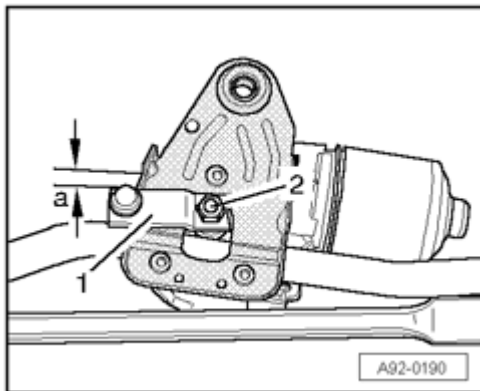


Fig. 173: Aligning Crank Toward Wiper Frame
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Align crank - **1** - toward wiper frame.
- Dimension - **a** - = 10.6 ± 0.6 mm.
- Keep crank in position and hand-tighten nut - **2** - in order to maintain this position.
- Then, hold crank in position using an open-end wrench and tighten nut.
- Switch the ignition on.
- Operate "wipe once" and let wiper motor run in end position.
- Check if dimension - **a** - is reached; align again if necessary.
- Switch ignition off and remove ignition key.

- Install wiper motor with wiper frame in vehicle, observe the following tightening sequence to do so:
- Hand-tighten center bolt.
- Tighten outer bolts, then tighten center bolt at wiper frame.

The rest of the installation is performed in reverse order of removal, noting the following:

- Adjust wiper arms --> **Wiper arms, adjusting.**

Tightening torques

Component	Nm
Wiper motor to wiper frame	9
Wiper crank to wiper motor	17
Wiper frame to plenum chamber	8
Cowl grille to blower box	2.7

FRONT WINDSHIELD WASHER SYSTEM, SERVICING

Filler neck for washer fluid reservoir, removing and installing

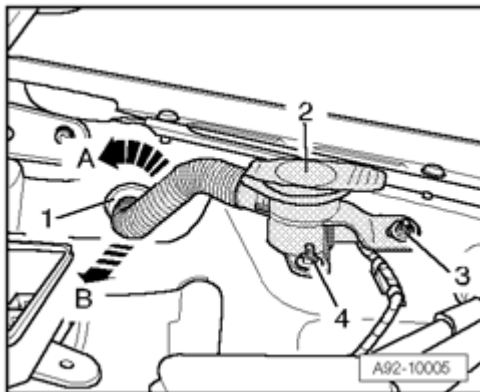


Fig. 174: Identifying Nuts, Filler Neck, Sealing Grommet, And Washer Fluid Reservoir
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removing

- Remove E-Box in left plenum chamber --> **E-Box in left plenum chamber, removing and installing.**
- Remove nuts - 3 - and - 4 - from filler neck - 2 -.
- Pull sealing grommet - 1 - out of body cut-out.
- Rotate filler hose for filler neck counter-clockwise - **arrow A** -.
- Pull filler hose for filler neck out of washer fluid reservoir - **arrow B** -.

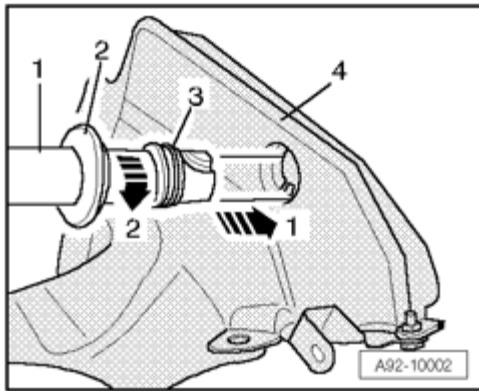


Fig. 175: Identifying Filler Hose, Washer Fluid Reservoir, O-Ring, And Sealing Grommet
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

Installing

Installation is performed in reverse order of removal, noting the following:

- Insert filler hose - **1** - for filler neck into washer fluid reservoir - **4** - - **arrow 1** -.
- Rotate filler hose for filler neck clockwise - **arrow 2** -.

NOTE:

- **Make sure O-ring - 3 - is not crimped when inserted.**
- **Press sealing grommet - 2 - into body opening.**
- **Install E-Box in left plenum chamber.**

Tightening torque

Component	Nm
Filler neck for washer fluid reservoir to body	7

Washer fluid reservoir, removing and installing

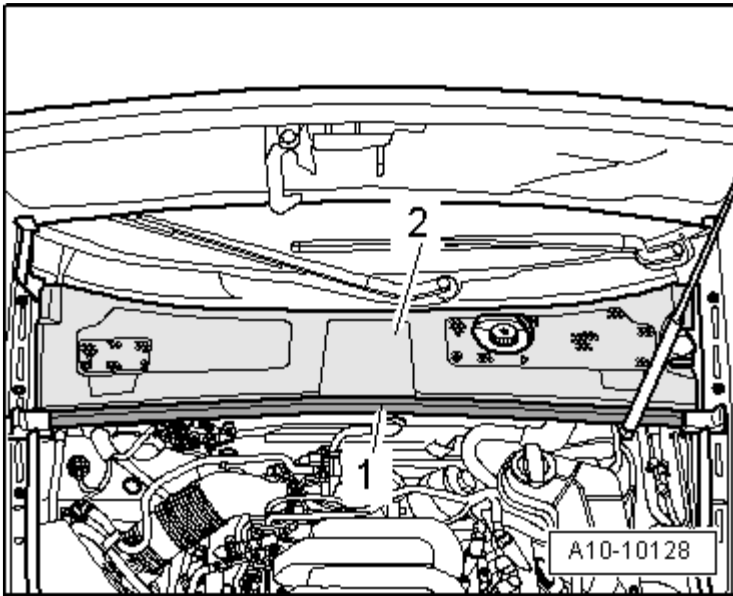


Fig. 176: Removing Rubber Seal For Plenum Chamber Cover & Plenum Chamber Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removing

NOTE:

- All cable ties opened or cut during engine removal must be reinstalled at the same locations during installation.
- Remove rubber seal - 1 -.
- Remove plenum chamber cover - 2 -.
- Remove wiper arms --> Wiper arms, removing and installing.

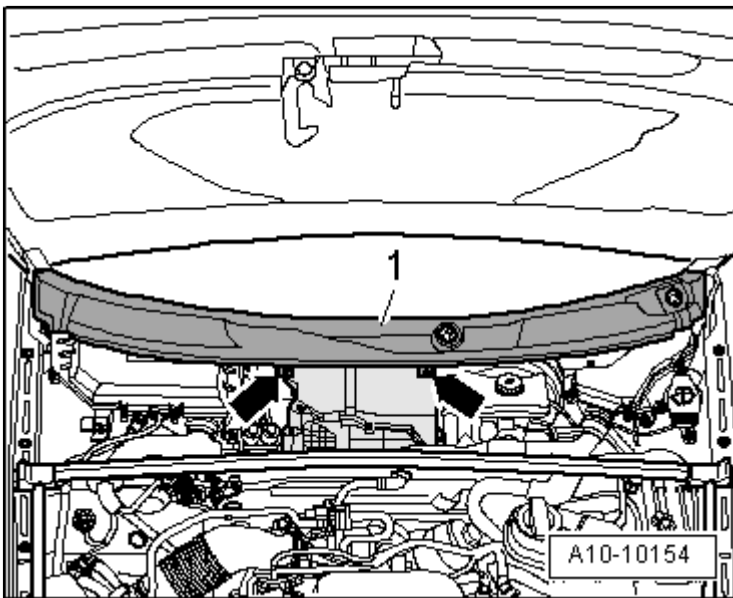


Fig. 177: Removing Bolts For Cowl Grill

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - for cowl grille - **1** - at left and right.
- Carefully pull cowl grille off locking mechanism on windshield.

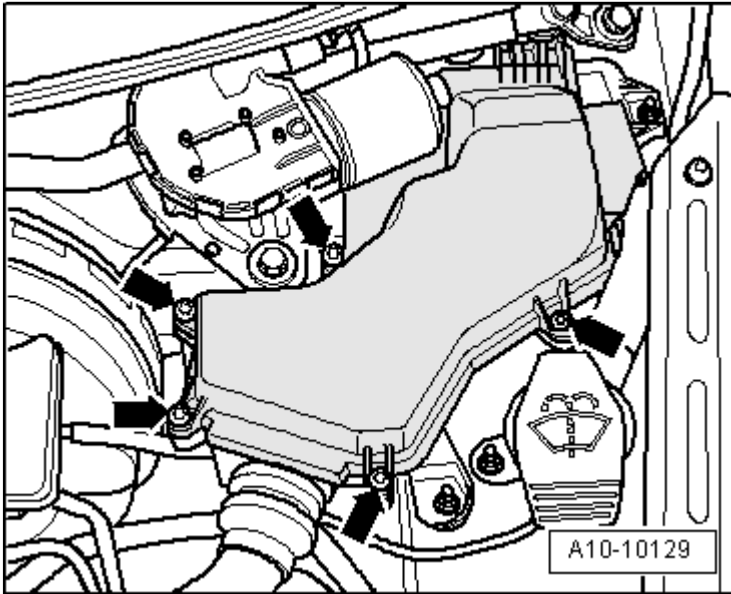


Fig. 178: Removing Bolts And Cover Form E-Box At Left In Engine Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** -.
- Remove E-Box cover in left plenum chamber.

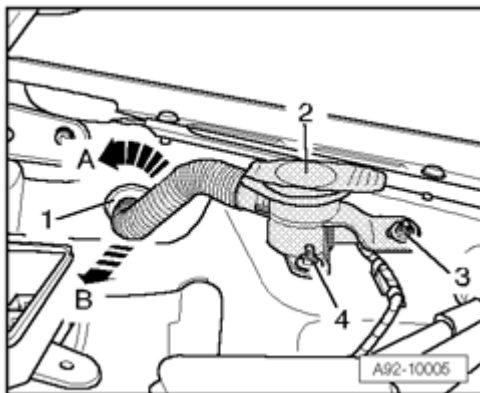


Fig. 179: Identifying Nuts, Filler Neck, Sealing Grommet, And Washer Fluid Reservoir
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **3** - and - **4** - from filler neck - **2** -.
- Pull sealing grommet - **1** - out of body opening.
- Rotate filler hose for filler neck counter-clockwise - **arrow A** -.

- Pull filler hose for filler neck out of washer fluid reservoir - **arrow B** -.

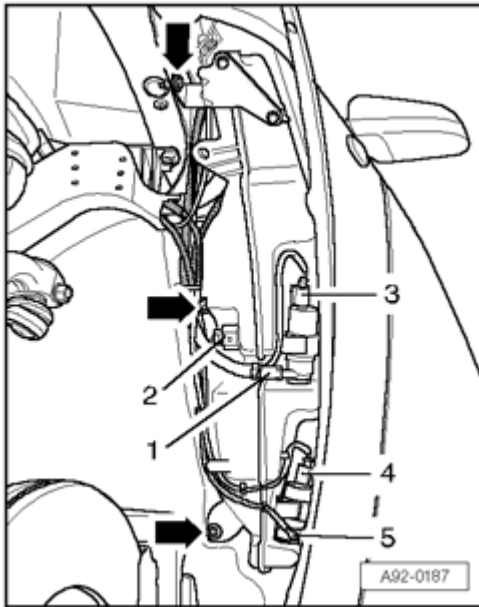


Fig. 180: Identifying Electrical Harness Connector, Hose Coupling, Washer Fluid Line, Nuts, And Bolts
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left front wheel.

NOTE:

- Secure brake disc using a wheel bolt.
- Remove left front wheel housing liner --> 66 - EXTERIOR EQUIPMENT .
- Disconnect electrical harness connectors - 2 - , - 3 - and - 4 - .
- Disconnect hose coupling - 1 - by pressing release button.
- Remove washer fluid line - 5 - at washer fluid pump.
- Remove nuts and bolts - arrows -.
- Unhook washer fluid reservoir at threaded pin.
- Remove washer fluid reservoir downward.

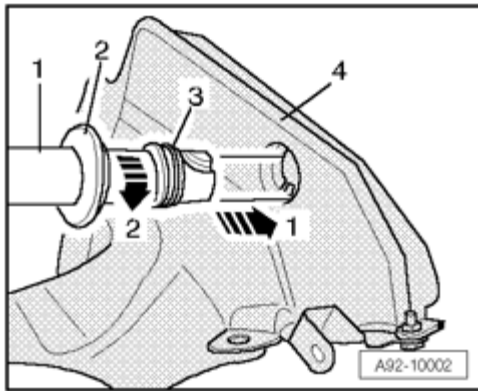


Fig. 181: Identifying Filler Hose, Washer Fluid Reservoir, O-Ring, And Sealing Grommet
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

Installing

Installation is performed in reverse order of removal, noting the following:

NOTE:

- During installation, re-install all cable ties at the same locations.
- Install washer fluid reservoir and hand-tighten nuts.
- Insert filler hose - 1 - for filler neck into washer fluid reservoir - 4 - - arrow 1 -.
- Rotate filler hose for filler neck clockwise - arrow 2 -.

NOTE:

- Make sure O-ring - 3 - is not crimped when inserted.
- Press sealing grommet - 2 - into body opening.
- Tighten bolt and nuts at washer fluid reservoir.
- When attaching water hose, make sure it engages audibly in connection of washer fluid pump.
- Install left front wheel house liner --> **66 - EXTERIOR EQUIPMENT** .
- Adjust wiper arms --> Wiper arms, adjusting.

Tightening torques

Component	Nm
Washer fluid reservoir to body	7
Filler neck for washer fluid reservoir to body	7
Cowl grille to blower box	2.7

Washer nozzles, removing and installing

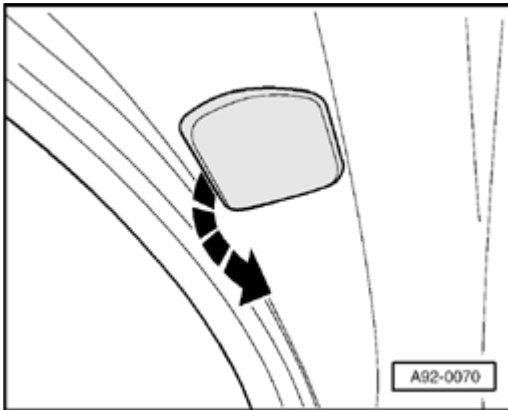


Fig. 182: Unclipping Base Of Spray Jet From Bottom Of Hood
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removing

- Unclip washer nozzles from bottom of hood - **arrow** -.

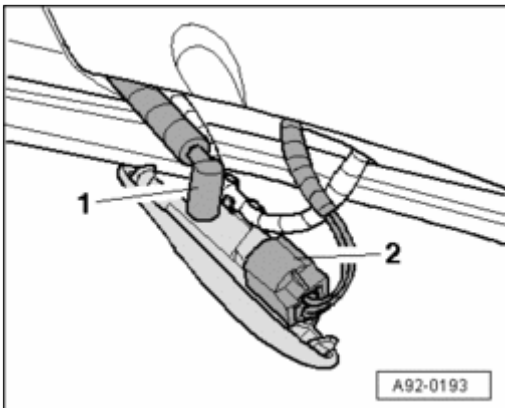


Fig. 183: Identifying Hose, And Electrical Connection
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect washer fluid line - **1** - from unclipped nozzle.
- Disconnect electrical harness connector - **2** -.

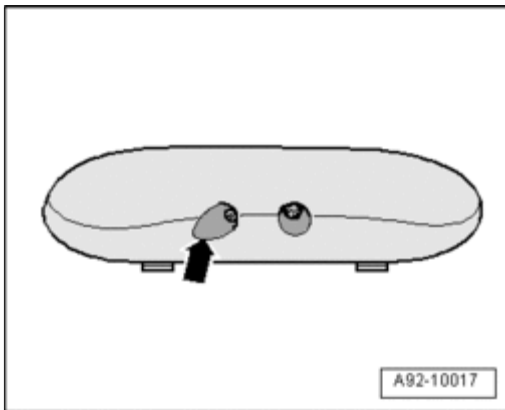


Fig. 184: Locating Oval Opening For Spray Individual Nozzles
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Installing

Installation is performed in reverse order of removal, noting the following:

- When attaching water hose, make sure it engages audibly in connection of nozzle.
- Insert nozzle in hood.
- Oval opening - **arrow** - for single nozzle must point toward outside of vehicle.

Adjusting spray nozzles

Special tools, testers and auxiliary items required

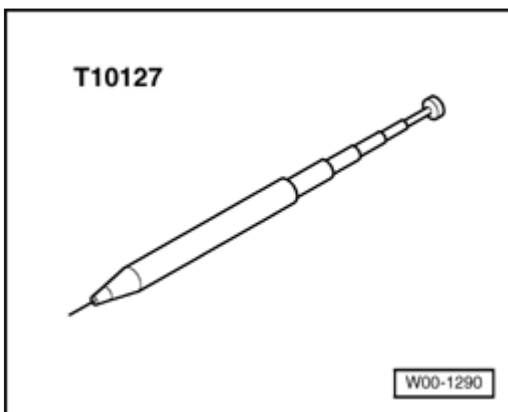


Fig. 185: Identifying Adjustment Tool T10127 Equipped With Needle 3125/ 5 A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Windshield Washer Aiming Tool T10127 equipped with needle 3125/5 A

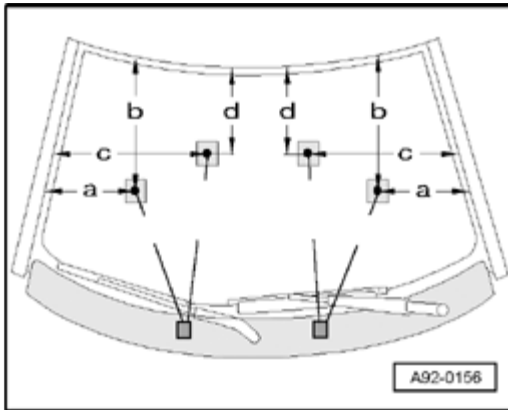


Fig. 186: Identifying Dimensions For Windshield Spray Jet Setting
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

Setting

NOTE:

- The adjustment dimensions indicate the required values for the driving vehicle, i.e. when standing still, the spray nozzles spray in a slightly offset manner.
- Mark the four points on the windshield using a water soluble marker:
- Dimension - a - = 255 mm.
- Dimension - b - = 510 mm.
- Dimension - c - = 530 mm.
- Dimension - d - = 430 mm.
- Locate points from every single nozzle using Windshield Washer Aiming Tool T10127.
- If the spray area does not correspond to the specifications, the nozzle is contaminated and must be cleaned.

Cleaning the nozzle:

- Remove nozzle --> **Washer nozzles, removing and installing.**
- Flush nozzle opposite to spray direction using clear water.
- To remove remaining impurities, the nozzle must only be blown out opposite to spray direction using compressed air.

If the spray area still does not correspond to the specifications:

- Replace nozzle.

REAR WINDOW WIPER AND WASHER SYSTEM - AVANT

Rear window wiper - component overview

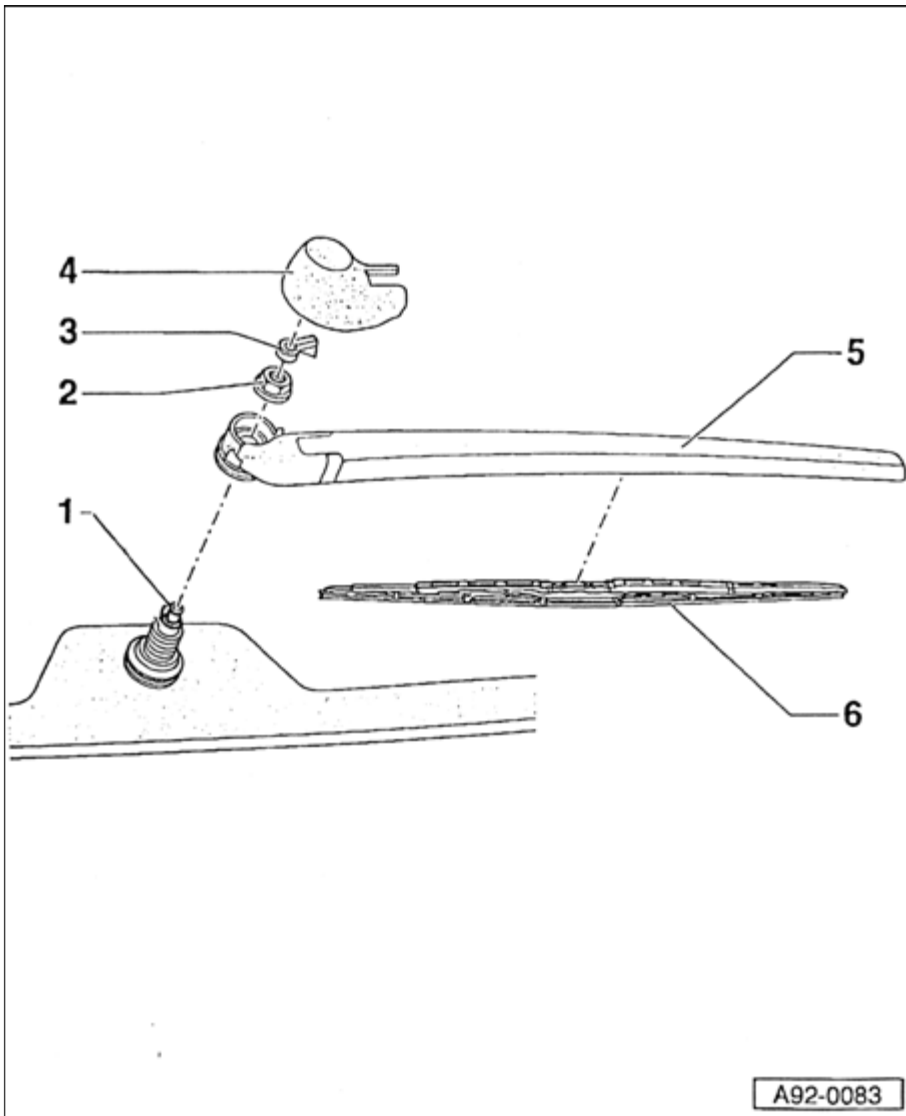


Fig. 187: Rear Window Wiper/Washer, Assembly
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Connecting pipe

- For nozzle

2 - Nut (12 Nm)

3 - Spray nozzles

- Removing and installing --> **Nozzle, removing and installing**
- Adjusting --> **Adjusting spray nozzle**

4 - Cap for rear windshield wiper

5 - Wiper arm

- Removing and installing --> **Wiper arm, removing and installing**

6 - Wiper blade

- Replace --> **Rear window wiper blades, replacing**

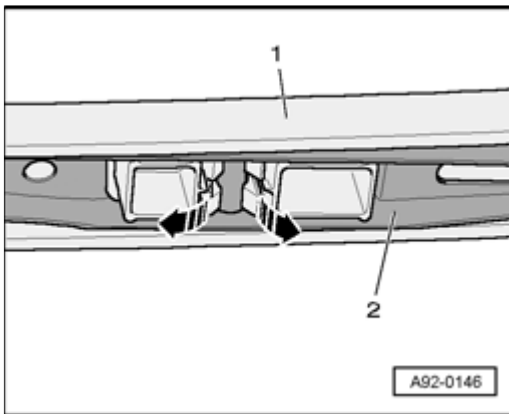
Rear window wiper blades, replacing

Fig. 188: Identifying Retaining Clips, Wiper Blade, And Wiper Arm
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removing

- Lift off wiper arm from front rear window.
- Release clips - **arrows** - using a screwdriver and pull wiper blade - **2** - out of wiper arm - **1** -.

Installing

Installation is performed in reverse order of removal, noting the following:

- The wiper blade can only be installed in one position.
- Wiper blade must audibly engage in wiper arm.

Nozzle, removing and installing

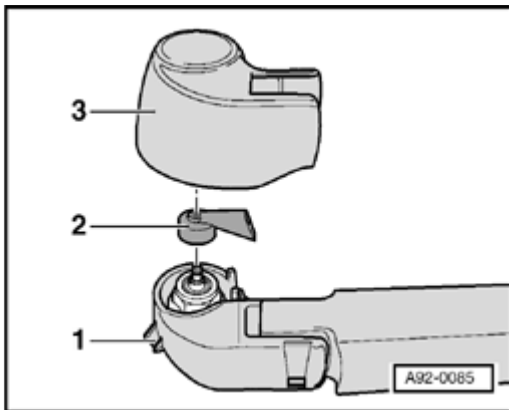


Fig. 189: Identifying Wiper Arm, Spray Jet, And Cap
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removing

- Carefully expand ends of caps - **3** - and lift off from wiper arm - **1** -.
- Carefully remove nozzle - **2** - from connecting pipe.

Installing

Installation is performed in reverse order of removal, noting the following:

- Insert nozzle so that spray opening faces opening at wiper arm.

Adjusting spray nozzle

Special tools, testers and auxiliary items required

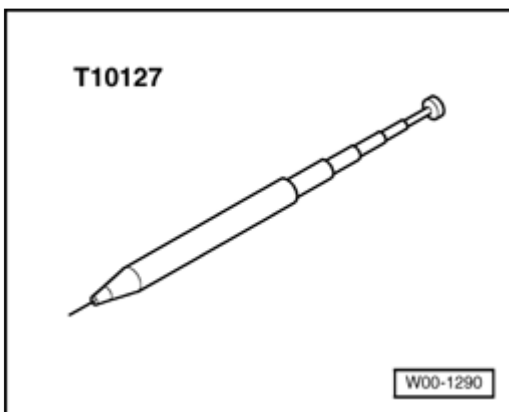


Fig. 190: Identifying Adjustment Tool T10127 Equipped With Needle 3125/ 5 A
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Windshield Washer Aiming Tool T10127 equipped with needle 3125/5 A

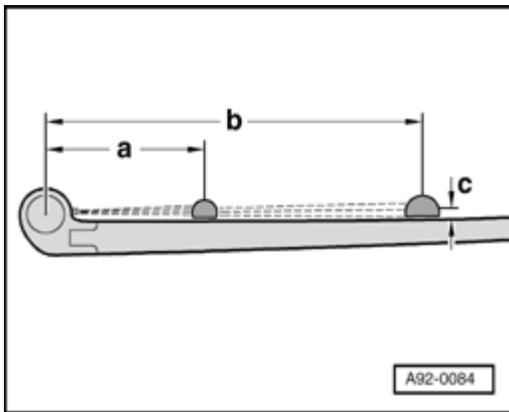


Fig. 191: Identifying Windshield Wiper Dimensions
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

Work procedure

- Adjust nozzles using Windshield Washer Aiming Tool T10127 so that the water jets are sprayed onto the rear window above the wipers at the points shown.
- Dimension - **a** - = approx. 122 mm.
- Dimension - **b** - = approx. 330 mm.
- Dimension - **c** - = approx. 5 mm.

Wiper arm, removing and installing

Removing

- Switch the ignition on.
- Activate "rear wiper" and let wiper arm run to end position.
- Switch ignition off and remove ignition key.

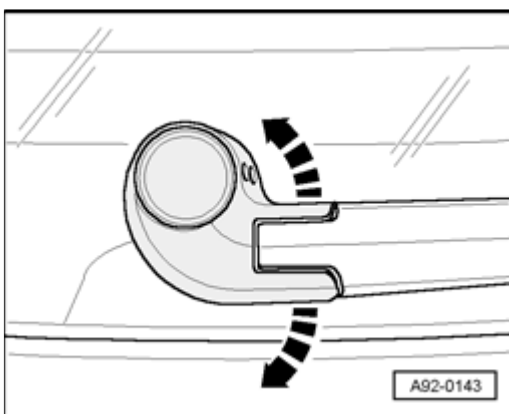


Fig. 192: Identifying Cover
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully expand cap - **arrows** - and remove.

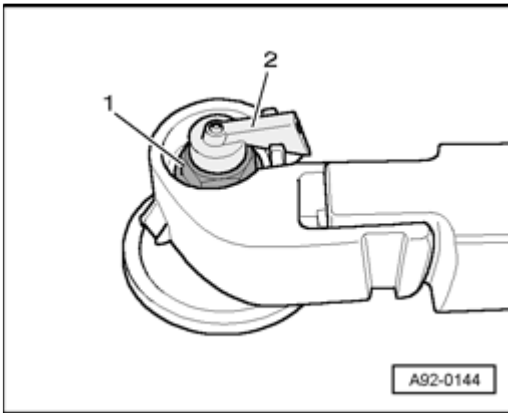


Fig. 193: Identifying Spray Jets And Hex Head Nuts
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully pull off nozzle - **2** -.
- Loosen nut - **1** - several rotations.
- Loosen wiper arm by tilting slightly from the wiper axle.
- Remove nuts completely and remove wiper arm.

Installing

Installation is performed in reverse order of removal, noting the following:

- Adjust wiper arm --> **Wiper arm, adjusting.**

Wiper arm, adjusting

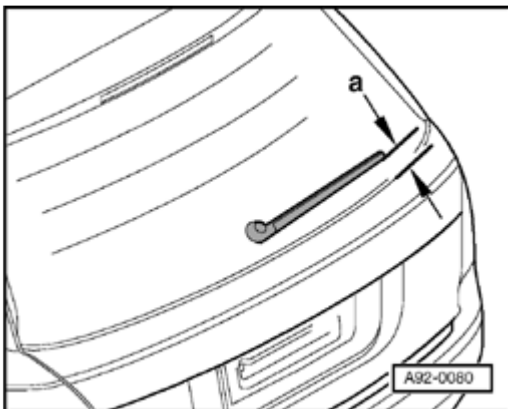


Fig. 194: Identifying Dimensions For Wiper Blade On Rear Window
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

Work procedure

- Position wiper arm with wiper blade installed at wiper axle and align wiper blade at rear window as follows:
 - Dimension - a - = 27 mm.

NOTE:

- Dimension is the gap between tip of wiper blade and lower edge of window.
- Switch the ignition on.
- Activate "rear wipe" and let wiper arm run to end position.
- Check adjustment of wiper arm again, correct if necessary.

Tightening torque

Component	Nm
Wiper arm to wiper axle	12

Rear window wiper motor - component overview

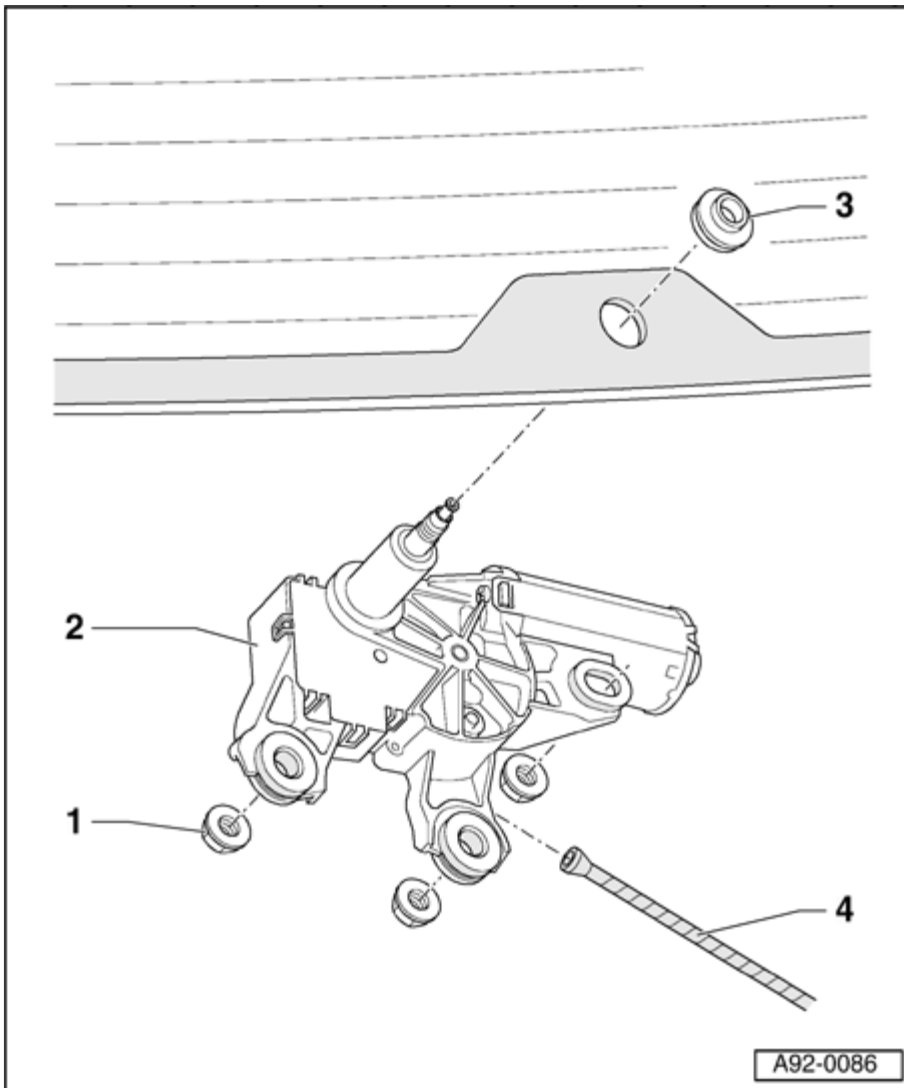


Fig. 195: Rear Window Wiper Motor, Assembly
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Nut (8 Nm)

2 - Windshield Wiper Motor

- Removing and installing --> **Removing and installing rear wiper motor**

3 - Sealing rubber

4 - Washer fluid hose

Removing and installing rear wiper motor

Removing

- Remove wiper arm --> **Wiper arm, removing and installing.**
- Remove lower rear lid trim --> **70 - INTERIOR TRIM .**

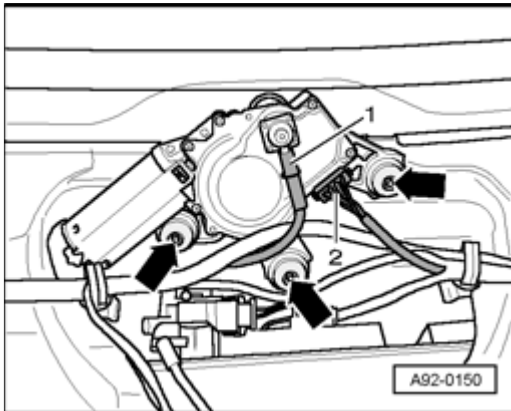


Fig. 196: Identifying Electrical Connection, Washer Fluid Hose, And Nuts
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **2** -.
- Disconnect washer fluid hose - **1** - from connecting pipe of nozzle.
- Unscrew nuts - **arrows** - and remove wiper motor.

Installing

Installation is performed in reverse order of removal, noting the following:

- Carefully attach rubber seal in rear window bore.
- Washer fluid hose must engage audibly into nozzle connection.
- Switch the ignition on.
- Activate "rear wipe" and let wiper motor run in end position.
- Switch off ignition.
- Install lower rear lid trim --> **70 - INTERIOR TRIM .**
- Adjust wiper arm --> **Wiper arm, adjusting.**

Component	Nm
Wiper motor to rear lid	8

Washer fluid reservoir removing and installing

NOTE:

- The combined washer fluid reservoir for front and rear window washer system is located in engine compartment, left front. Removing and

installing --> Washer fluid reservoir, removing and installing.

REPAIRING HEADLIGHT CLEANING SYSTEM

Spray jets for headlight cleaning system, removing and installing

Special tools, testers and auxiliary items required



Fig. 197: Identifying Hose Clamp Pliers V.A.G 1275
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Hose clamp pliers V.A.G 1275

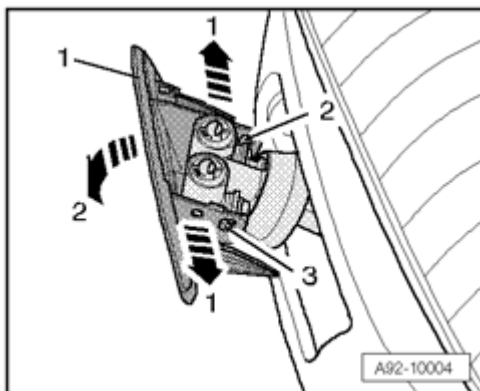


Fig. 198: Identifying Cap, Securing Tabs, Cover, And Brackets
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removing

- Remove front bumper cover --> 63 - BUMPERS .

NOTE:

- Protect bumper cover by laying rag underneath and secure nozzle using pliers.

- At bumper cover, pull cap - 1 - of nozzles upward and carefully unhook securing tabs - arrows 1 -.
- Swivel cover downward - arrow 2 - and carefully disengage brackets - 2 - and - 3 -.

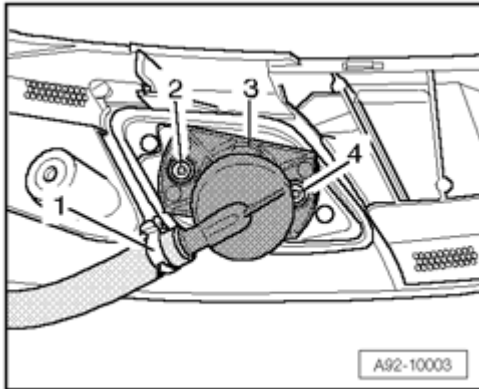


Fig. 199: Identifying Bolts, Water Hose, And Nozzle
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect water hose - 1 - from nozzle - 3 -.
- Unscrew bolts - 2 - and - 4 - and remove nozzle.

Installing

Installation is performed in reverse order of removal, noting the following:

NOTE:

- Secure all hose connections using hose clamps appropriate for the model type Parts Catalog
- Install hose clamp using hose clamp pliers V.A.G 1275.
- Install front bumper cover --> 63 - BUMPERS .

Tightening torque

Component	Nm
Nozzle to bumper cover	2.5

Adjusting spray jets

NOTE:

- Nozzles are supplied preadjusted by the manufacturer and must not be adjusted after installation.

Washer fluid reservoir, removing and installing

NOTE:

- The combined washer fluid reservoir for window washer system and headlamp cleaning system is located between A-pillar and left fender. Removing and installing --> Washer fluid reservoir, removing and installing.