

TRANSMISSION

Final Drive, Differential - Manual Transmission 0B4 AWD (Sedan)

39 FINAL DRIVE, DIFFERENTIAL

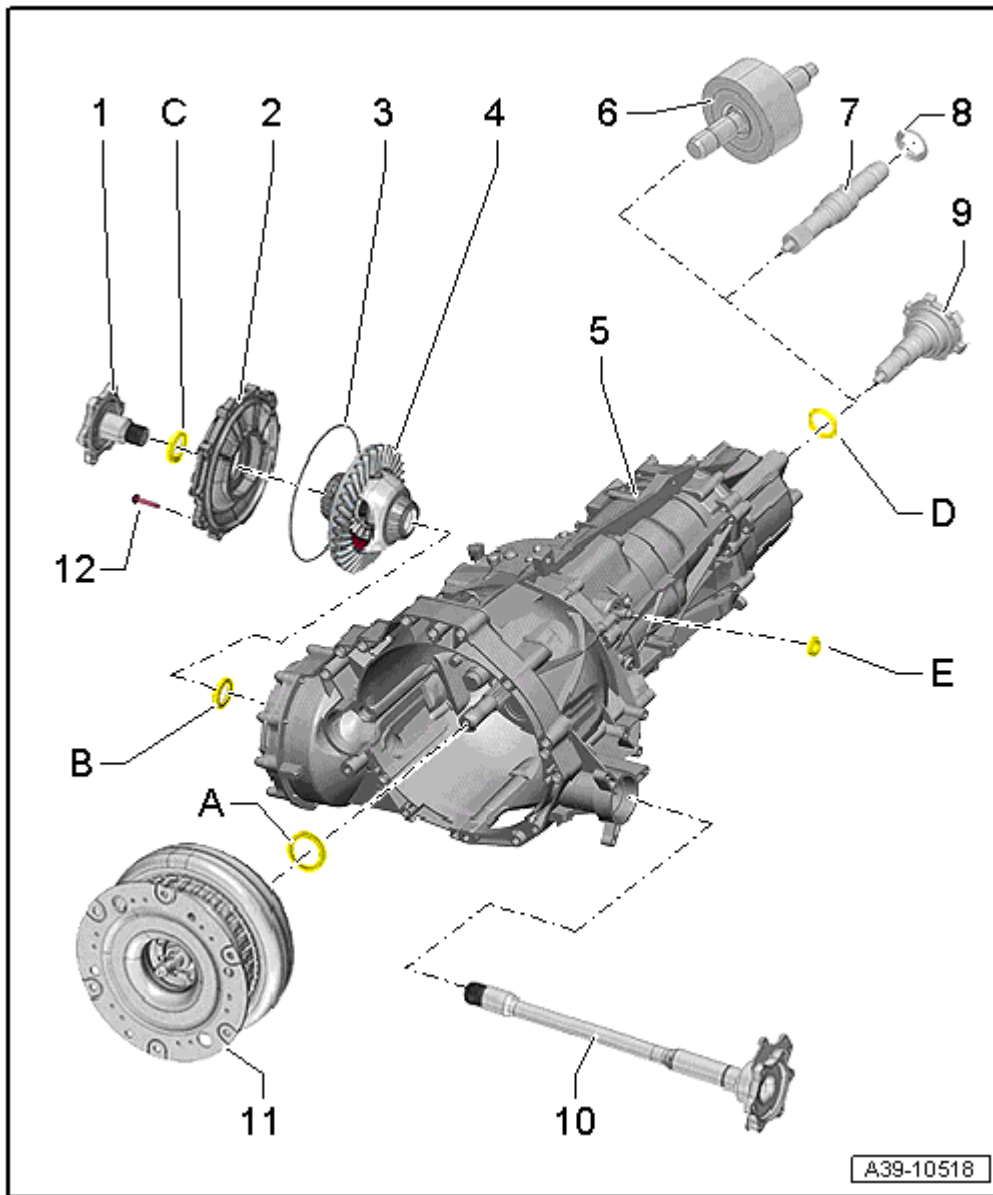
DESCRIPTION AND OPERATION

SHAFT SEALS ON TRANSMISSION OVERVIEW

The shaft seals -A- and -B- can only be replaced after the transmission has been removed. Refer to **Removal and Installation** .

The shaft seals -C-, -D- and -E- can be replaced with the transmission installed.

NOTE: When replacing the final drive cover -2-, the bearing pre-load for the tapered roller bearing on the differential has to be adjusted. Refer to **FINAL DRIVE COVER**.



A39-10518

Fig. 1: Identifying Shaft Seals On Transmission Overview

Courtesy of AUDI OF AMERICA, LLC

1. A - Shaft Seal
 - For the input shaft
 - Removing and installing, refer to **Removal and Installation** .
2. B - Shaft Seal
 - For the left flange shaft
 - Removing and installing, refer to **Removal and Installation** .
3. C - Shaft Seal
 - For the right flange shaft
 - Removing and installing, refer to **RIGHT FLANGE SHAFT SEAL**

4. D - Shaft Seal
 - For the rear flange shaft or transmission output shaft with splines
 - Refer to **REAR FLANGE SHAFT SEAL ON THE TRANSMISSION**
 - Refer to **TRANSMISSION OUTPUT SHAFT SEAL, VEHICLES WITHOUT VIBRATION DAMPER ON THE TRANSMISSION OUTPUT SHAFT**
 - Refer to **TRANSMISSION OUTPUT SHAFT SEAL WITH SPLINES, REMOVING - VEHICLES WITH VIBRATION DAMPER ON THE TRANSMISSION OUTPUT SHAFT**
5. E - Shaft Seal
 - For the gearshift shaft
 - Refer to **SELECTOR SHAFT SEAL, TRANSMISSION INSTALLED**
6. 1 - Right Flange Shaft
 - Removing and installing, refer to **RIGHT FLANGE SHAFT SEAL**
7. 2 - Final Drive Cover
 - Removing and installing, refer to **FINAL DRIVE COVER**
8. 3 - O-ring
 - On the cover for the final drive
 - Removing and installing, refer to **FINAL DRIVE COVER**
9. 4 - Differential
10. 5 - Transmission
11. 6 - Transmission Output Shaft with Splines
 - With vibration damper; allocation
 - Replace the shaft seal when replacing the transmission output shaft with splines -D-
12. 7 - Transmission Output Shaft with Splines
 - Without vibration damper; allocation
 - Replace the shaft seal when replacing the transmission output shaft with splines -D-
13. 8 - Dust Ring
 - Replace after removing
14. 9 - Rear Flange Shaft
 - Removing and installing, refer to **REAR FLANGE SHAFT SEAL ON THE TRANSMISSION**
15. 10 - Left Flange Shaft
 - Removing and installing, refer to **Removal and Installation**
16. 11 - Clutch Module
 - Removing and installing, refer to **Removal and Installation**
17. 12 - Bolt
 - 24 Nm
 - Steel bolts (M8; 38 mm long)
 - Quantity: 10

2012 Audi S4

TRANSMISSION Final Drive, Differential - Manual Transmission 0B4 AWD (Sedan)

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Component	Bolt Size	Nm
Final Drive Cover	M8	24
Drive Axle Heat Shield to Transmission	-	23

REMOVAL AND INSTALLATION

RIGHT FLANGE SHAFT SEAL

Special tools and workshop equipment required

- Needle Bearing Drift VW 295
- Puller T10037
- Thrust Piece T40163
- Used Oil Collecting and Extracting Device V.A.G 1782
- Sealing grease G 052 128 A1

REMOVING

- Transmission is installed.

-- General repair instructions, refer to **REPAIR INFORMATION** .

-- Remove right front wheel.

-- Remove the rear noise insulation by loosening the fasteners -2- and -3-

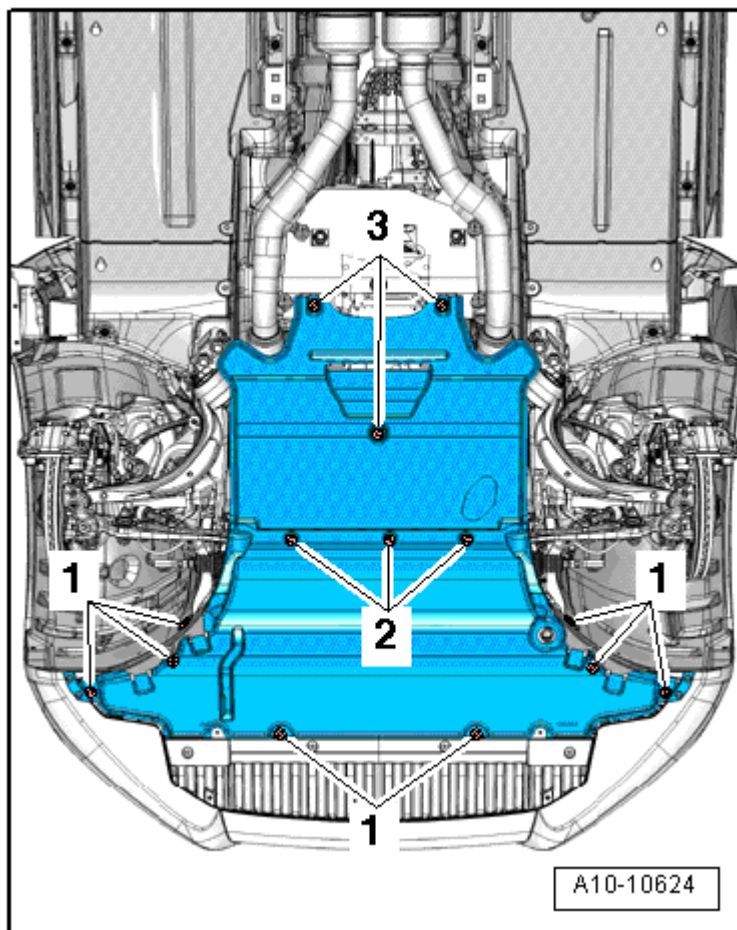


Fig. 2: Identifying Noise Insulation Components
 Courtesy of AUDI OF AMERICA, LLC

-- If equipped, remove the noise insulation -1- in the right wheel housing.

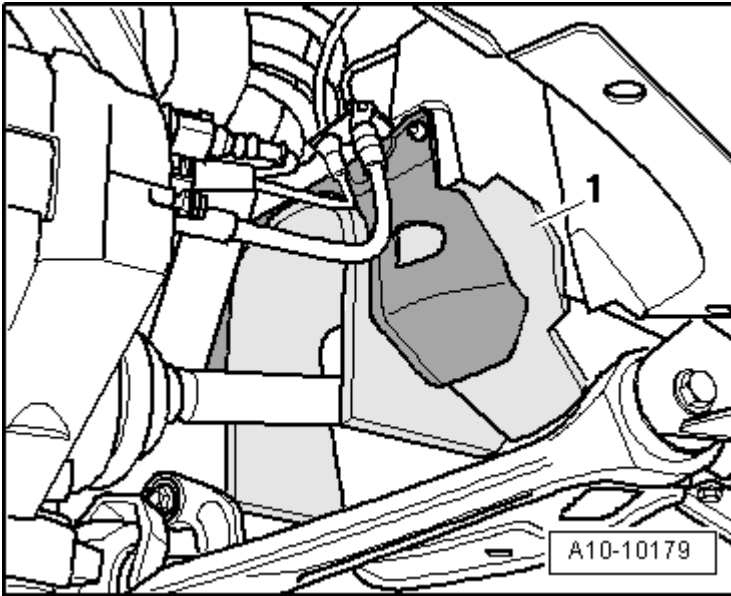


Fig. 3: Remove Right Drive Axle Cover
Courtesy of AUDI OF AMERICA, LLC

-- Remove the bolts -arrows- and remove the heat shield from the right drive axle.

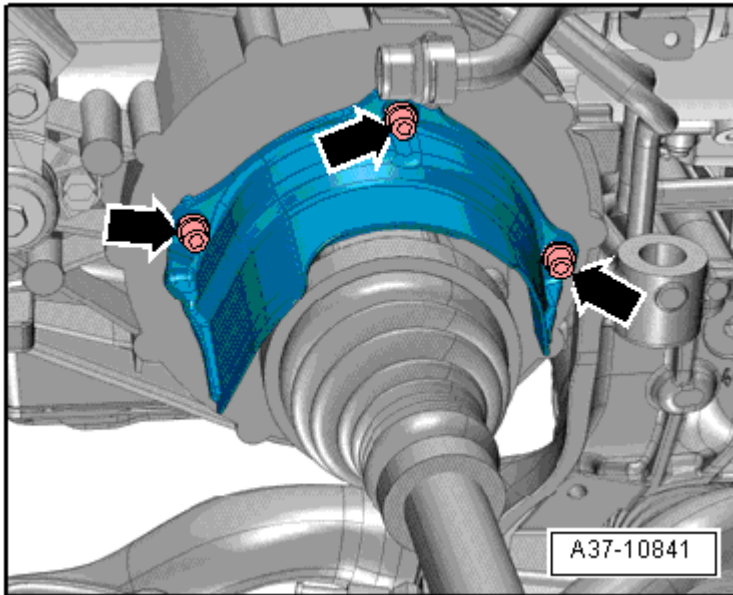


Fig. 4: Driveshaft Heat Shield - Tightening Specification
Courtesy of AUDI OF AMERICA, LLC

-- Remove the right drive axle on the transmission and lay it aside. Refer to **Removal and Installation** .

Place the V.A.G 1782 under the transmission.

-- Remove the right flange shaft by installing the T10037 to the final drive cover -arrow-.

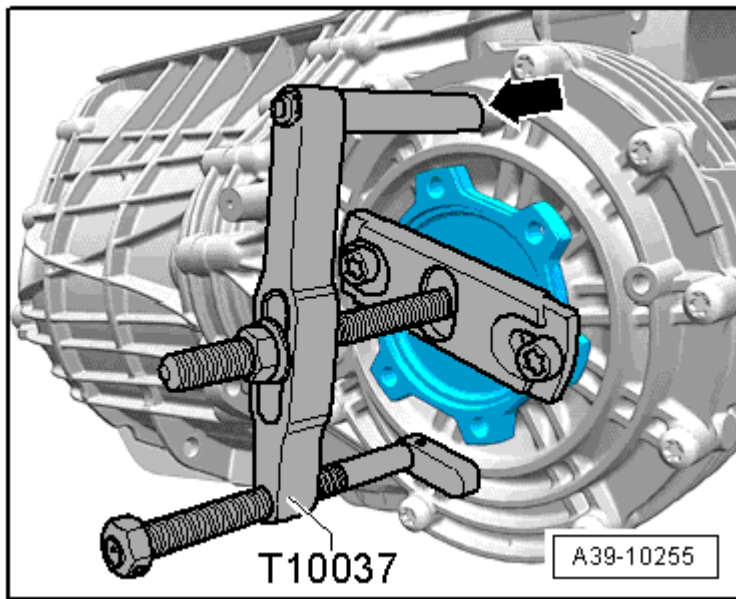


Fig. 5: Remove Right Flange Shaft By Fastening T10037
 Courtesy of AUDI OF AMERICA, LLC

-- Pry out the flange shaft seal.

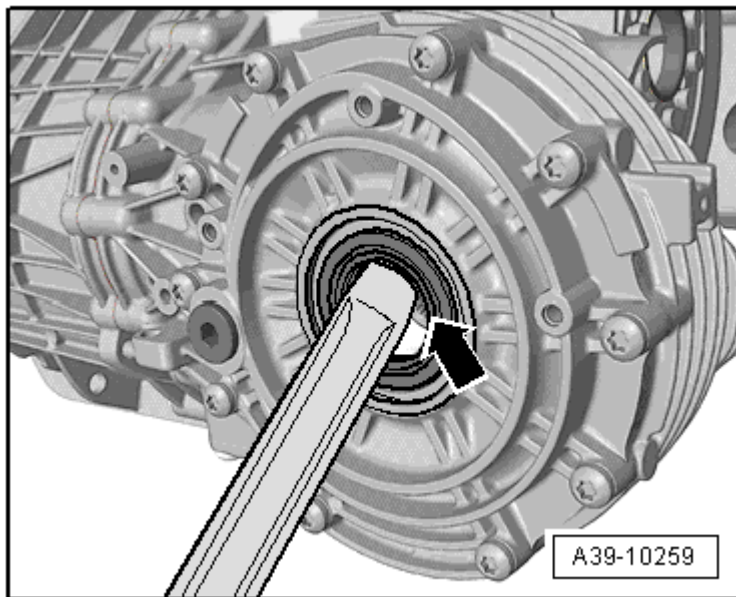


Fig. 6: Pry Out Flange Shaft Sealing Ring
 Courtesy of AUDI OF AMERICA, LLC

INSTALLING

Installation is performed in the reverse order of removal while observing the following:

-- Always replace the flange locking ring -A-.

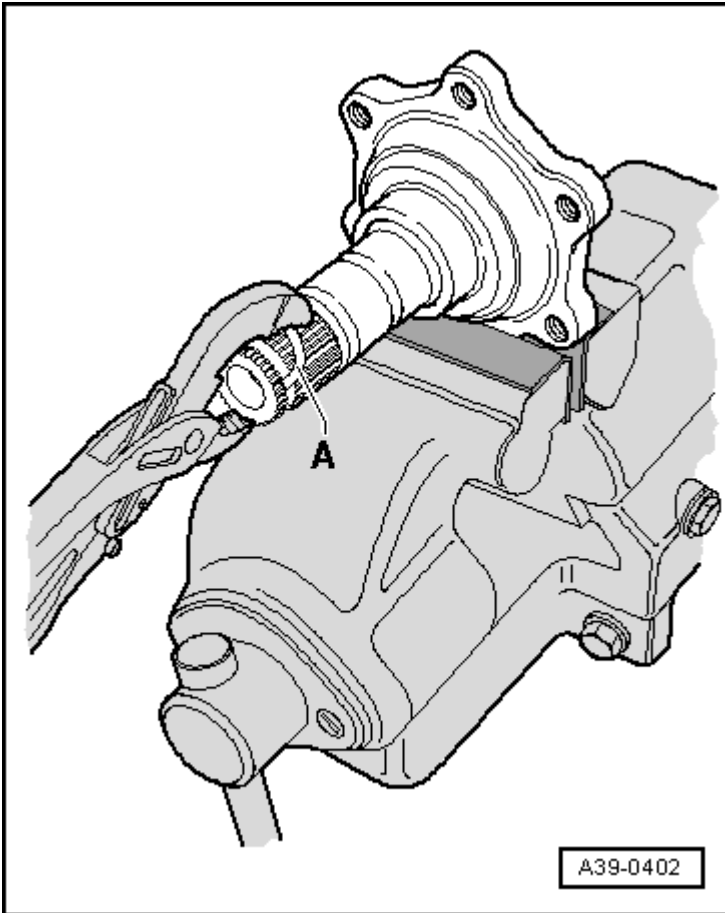


Fig. 7: Identifying Flange Shaft Clamped In Vise And Using New Circlip To Press Old Circlip Out Of Groove In Flange Shaft

Courtesy of AUDI OF AMERICA, LLC

- Clamp the flange shaft in a vise with jaw protectors. Remove the old circlip from the groove in the flange shaft using the new circlip -A-.
- Lightly coat the outer circumference of the new shaft seal with oil.
- Drive in shaft seal as far as stop using T40163; do not cant while doing this.

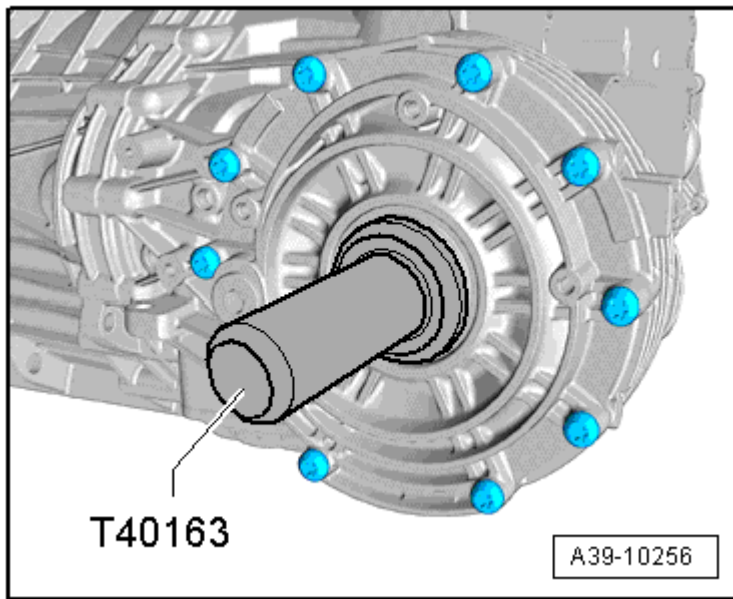


Fig. 8: Install Shaft Seal

Courtesy of AUDI OF AMERICA, LLC

- Fill the space between the sealing and dust lip half way with sealing grease G 052 128 A1.
- Drive the flange shaft in using a VW 295.
- Attach the drive axle to the flange shaft. Refer to **Removal and Installation** .
- Install the drive axle heat shield.
- Transmission oil level, checking. Refer to **MANUAL TRANSMISSION, CHECKING TRANSMISSION FLUID LEVEL** .
- If equipped, install the noise insulation -1- in the right wheel housing.

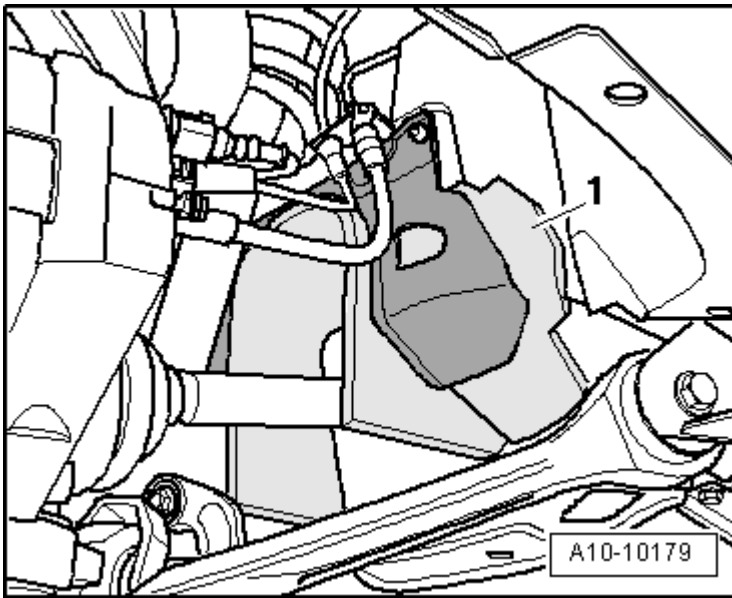


Fig. 9: Remove Right Drive Axle Cover

Courtesy of AUDI OF AMERICA, LLC

-- Install the rear noise insulation. Refer to **Removal and Installation** .

Tightening Specifications

Component	Nm
Heat shield for drive axle to transmission	23

FINAL DRIVE COVER

- The adjusting shim used for the differential tapered roller bearing pre-load must be determined again when replacing the final drive cover.

NOTE: General repair instructions, refer to **REPAIR INFORMATION** .

This adjusting shim is located behind the outer race / tapered roller bearing inside the final drive cover.

Special tools and workshop equipment required

- Crankshaft Seal Installing Tool VW 204 B
- Needle Bearing Drift VW 295
- End Gauge VW 385/33
- Centering Plate VW 385/41

- Universal Dial Gauge Mount VW 387
- Pressure Plate VW 402
- Thrust Disc VW 412
- Grease Cap Puller VW 637/2
- Press Tool 3345
- Puller T 10037
- Ruler (1 Set = 2 Pieces) T40100
- Use Oil Collecting and Extracting Device V.A.G 1782
- Transmission is installed.

Procedure

- General repair instructions, refer to **REPAIR INFORMATION** .
- Remove right front wheel.
- Remove the rear noise insulation by loosening the fasteners -2- and -3-

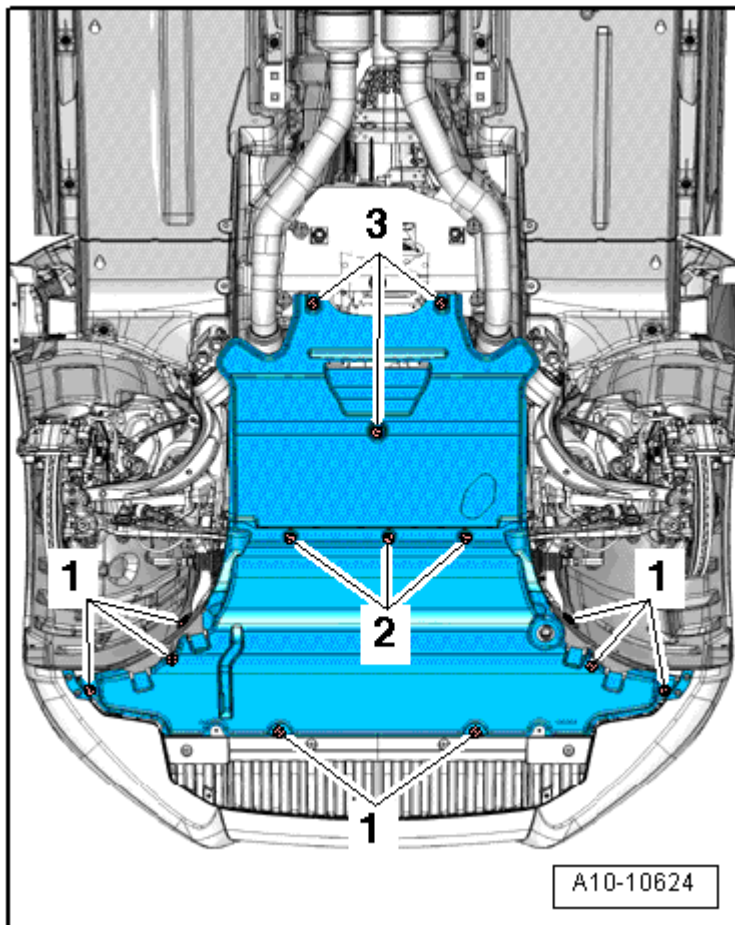
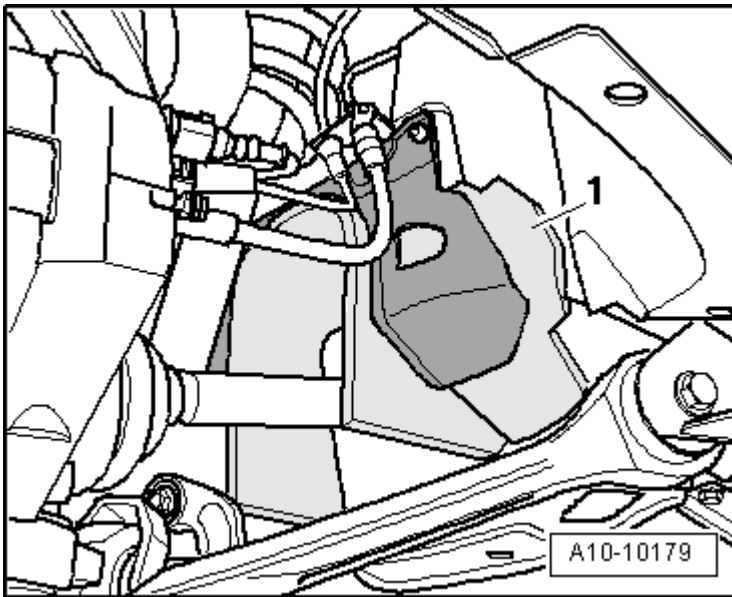


Fig. 10: Identifying Noise Insulation Components

Courtesy of AUDI OF AMERICA, LLC

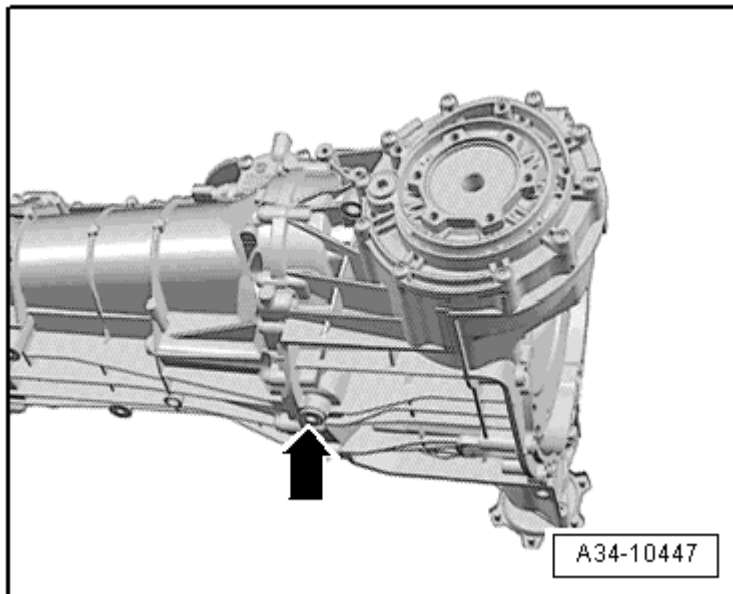
-- If equipped, remove the noise insulation -1- in the right wheel housing.

**Fig. 11: Remove Right Drive Axle Cover**

Courtesy of AUDI OF AMERICA, LLC

-- Place the V.A.G 1782 under the transmission.

-- Remove the plug -arrow- and drain the transmission fluid.

**Fig. 12: Locating Transmission Fluid Drain Plug**

Courtesy of AUDI OF AMERICA, LLC

- Install the plug -arrow- and tighten it to 40 Nm.
- Remove the bolts -arrows- and remove the heat shield from the right drive axle.

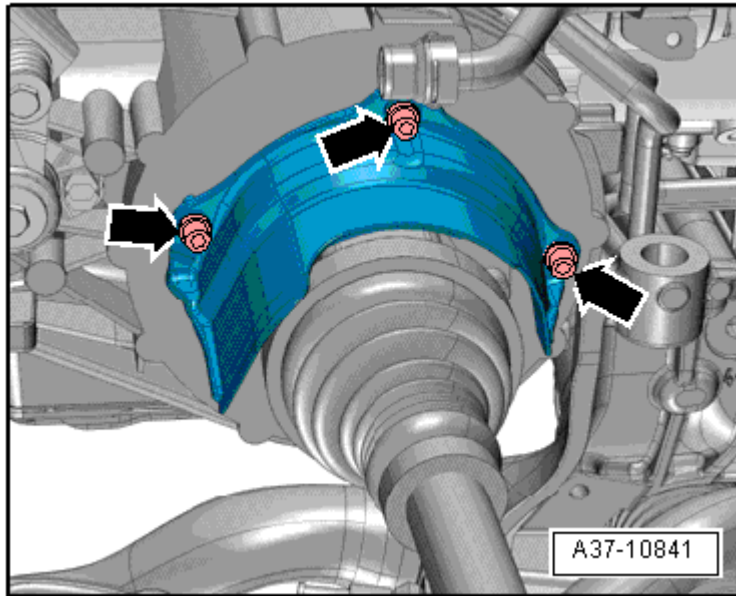


Fig. 13: Driveshaft Heat Shield - Tightening Specification

Courtesy of AUDI OF AMERICA, LLC

- Remove the right drive axle on the transmission and lay it aside. Refer to **Removal and Installation** .
- Place the V.A.G 1782 under the transmission near the differential.
- Remove the right flange shaft by installing the T10037 to the final drive cover -arrow-.

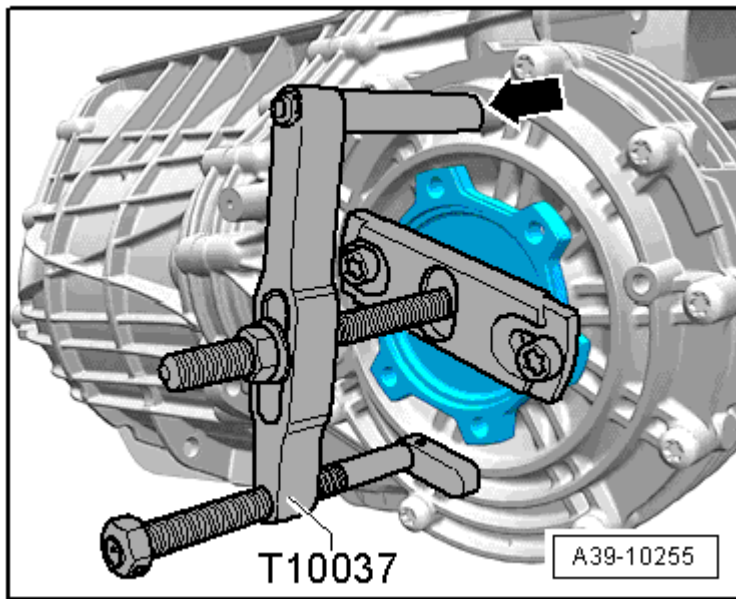


Fig. 14: Remove Right Flange Shaft By Fastening T10037
Courtesy of AUDI OF AMERICA, LLC

Remove the bolts -arrows- and the final drive cover.

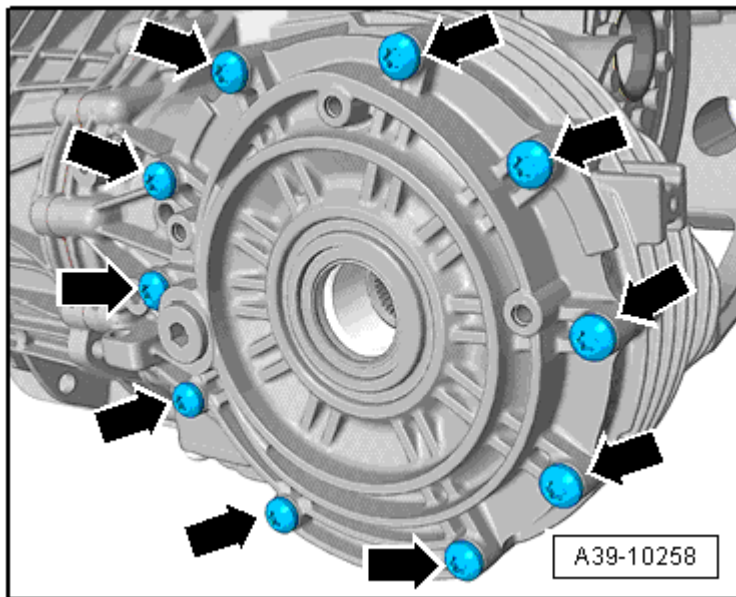


Fig. 15: Left Flange Shaft Seal
Courtesy of AUDI OF AMERICA, LLC

CAUTION: There is a risk of destroying the differential.

- When removing the final drive cover, make sure the differential does not fall out.

-- Mount the VW 637/2 alternating from side to side and pressing in direction of -arrow- and then carefully pry out the outer race / tapered roller bearing from the old final drive cover.

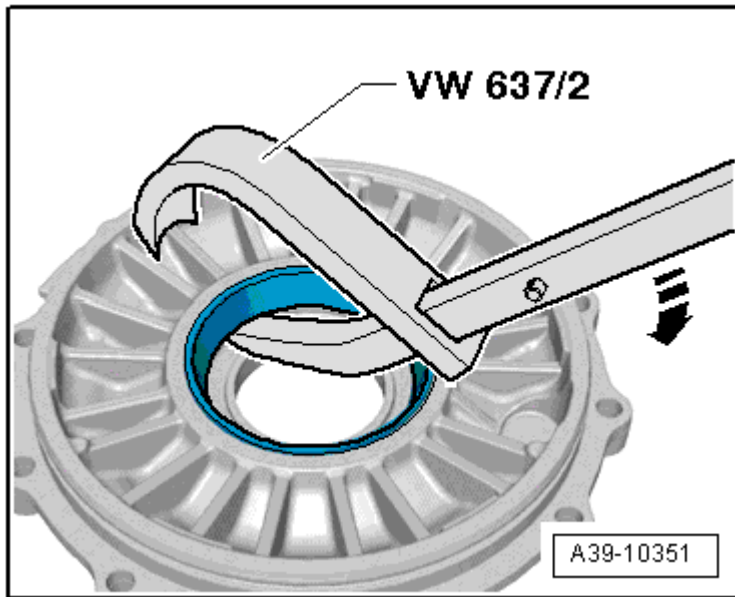


Fig. 16: Prying Outer Race Tapered Bearing
Courtesy of AUDI OF AMERICA, LLC

NOTE: If it is not possible to remove the outer race/tapered roller bearing using the VW 637/2, then remove the outer race using the internal puller 56 to 110 mm -B- and the counter support -A-.

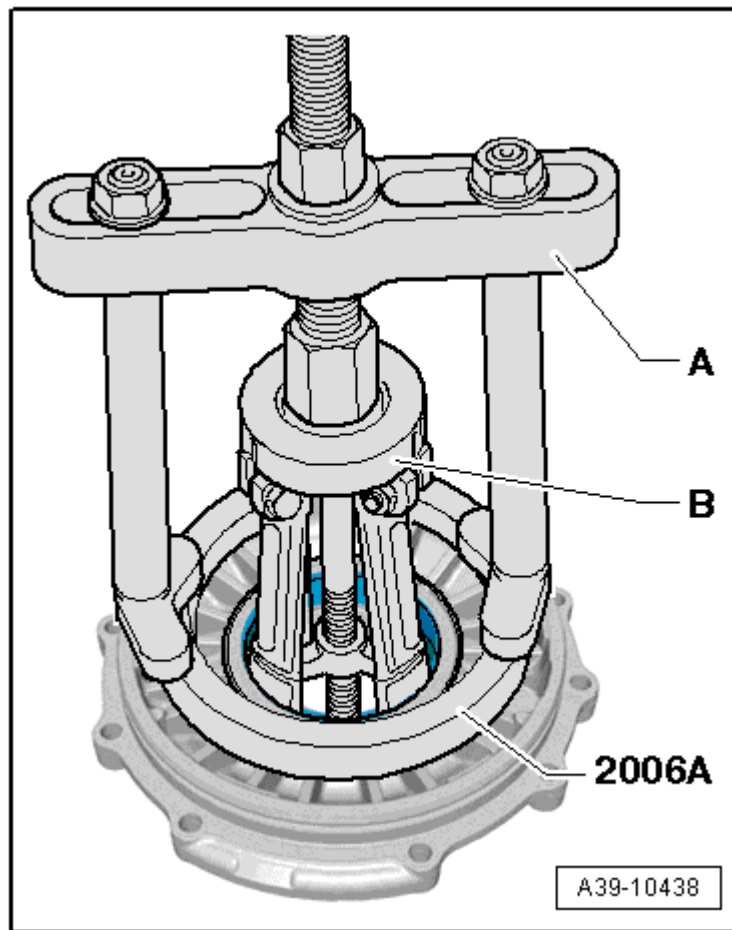


Fig. 17: Removing Outer Race Tapered Bearing
Courtesy of AUDI OF AMERICA, LLC

A - Counter-support, for example, Kukko 22/4

B - Internal puller 56 to 110 mm, for example, Kukko 21/89

-- Remove the old adjusting shim.

Determining Shim Thickness

-- Measure the dimension -a- on the old and new covers as follows:

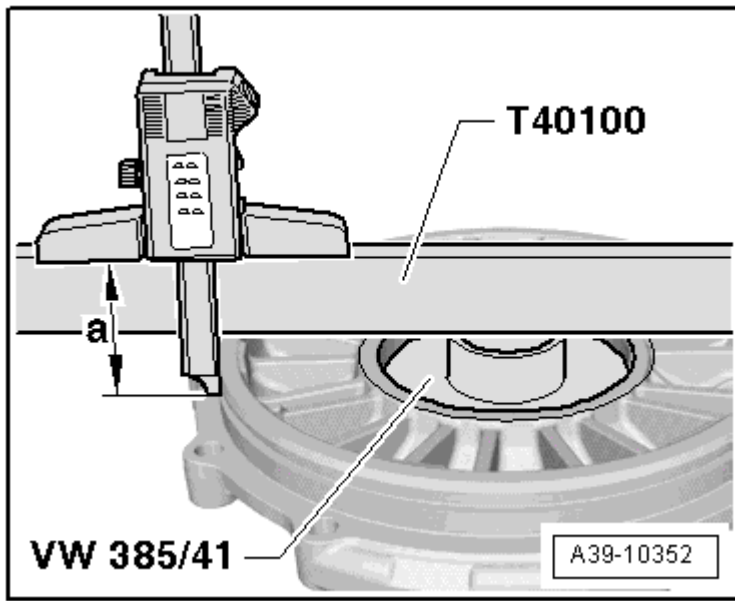


Fig. 18: Determining Shim Thickness
 Courtesy of AUDI OF AMERICA, LLC

- Install the VW 385/41 in the bearing seat for the outer race / tapered roller bearing.
- Measure the bolting surface with the digital depth gauge (for example, digital depth gauge VAS 6087).

Example:

Dimension -a- for the old final drive cover	58.40 mm
Dimension -a- for the new final drive cover	58.65 mm
Difference	= 0.25 mm

- Install a thicker adjusting shim if the dimension -a- on the new cover is smaller.
- Install a thinner adjusting shim if the dimension -a- on the new cover is larger.

Example:

Old shim	1.50 mm
Difference	- 0.25 mm
New shim	= 1.25 mm

- In this example, the adjusting shim thickness is 1.25 mm.
- Install the new adjusting shim in the new final drive cover.
- Press in the outer race/tapered roller bearing until you hit the stop and see the smaller diameter of VW 204 B for the outer race/tapered roller bearing.

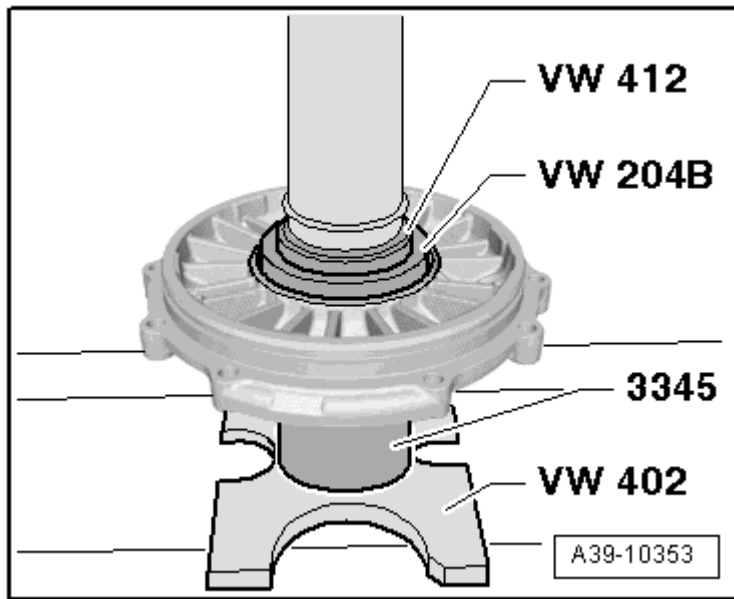


Fig. 19: Installing Outer Race Tapered Bearing
 Courtesy of AUDI OF AMERICA, LLC

NOTE: Support the final drive cover using the 3345 directly under the bearing mount.

Check the bearing pre-load measure for the tapered roller bearing / differential as follows:

-- Install the final drive cover without an O-ring and tighten the 4 bolts -arrows-.

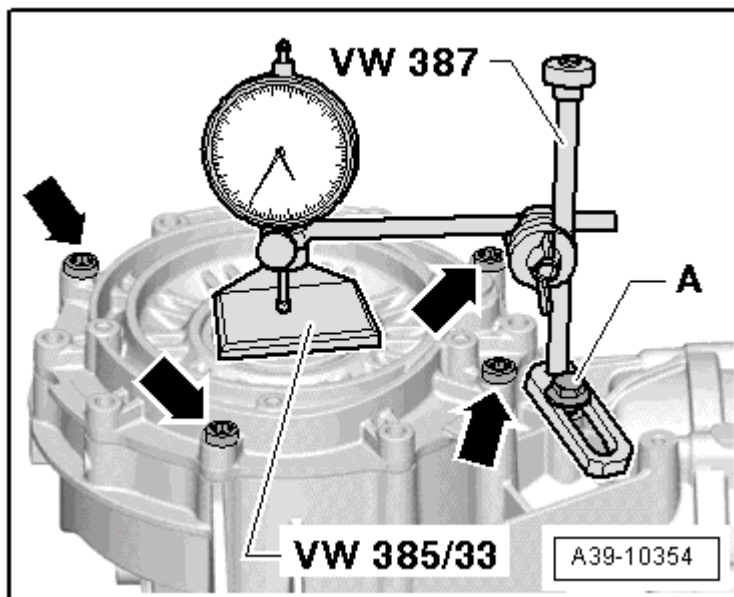


Fig. 20: Checking Tapered Roller Bearing Pre-Load
 Courtesy of AUDI OF AMERICA, LLC

- Install the measuring tools.
- Attach the VW 387 in the threaded hole in the transmission housing with the bolt -A-.
- Place the dial gauge extension on center of VW 385/33.
- Set the dial gauge (3 mm measuring range) to 0 with 1 mm preload.
- Loosen the 4 bolts -arrows- diagonally one turn.
- Read the measured value on the gauge.
 - It must be between 0.10 to 0.15 mm
- Replace the O-ring -arrow-.

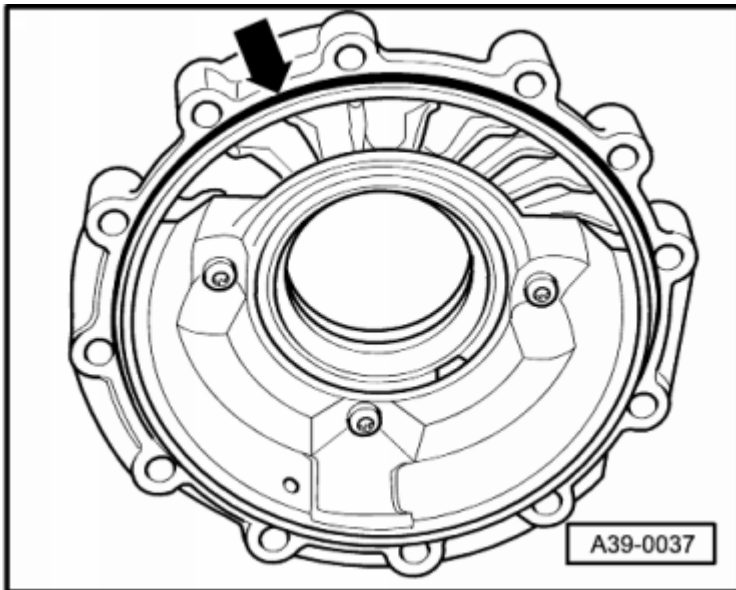


Fig. 21: Differential Cover O-Ring
Courtesy of AUDI OF AMERICA, LLC

- Install the final drive cover with a new O-ring and tighten the bolts -arrows-. Tightening specification, see item 17.

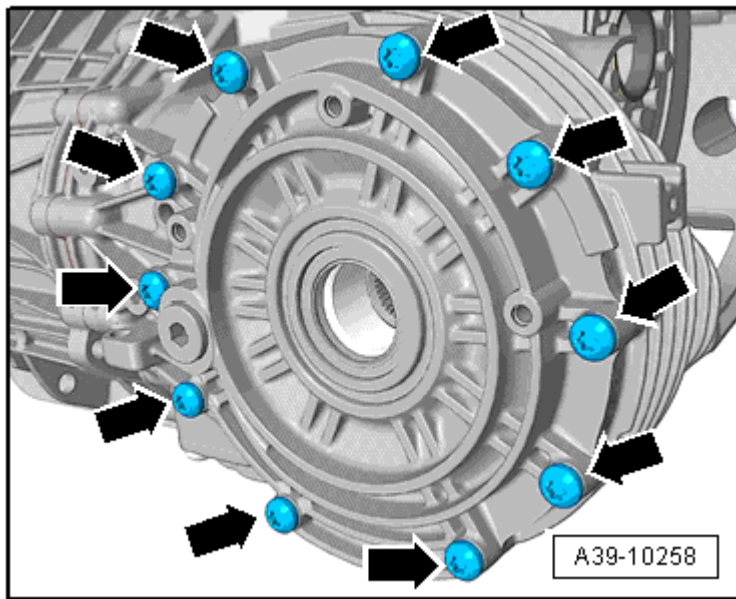


Fig. 22: Left Flange Shaft Seal

Courtesy of AUDI OF AMERICA, LLC

NOTE: Replace right flange shaft seal **RIGHT FLANGE SHAFT SEAL**

-- Always replace the right flange shaft circlip -A-.

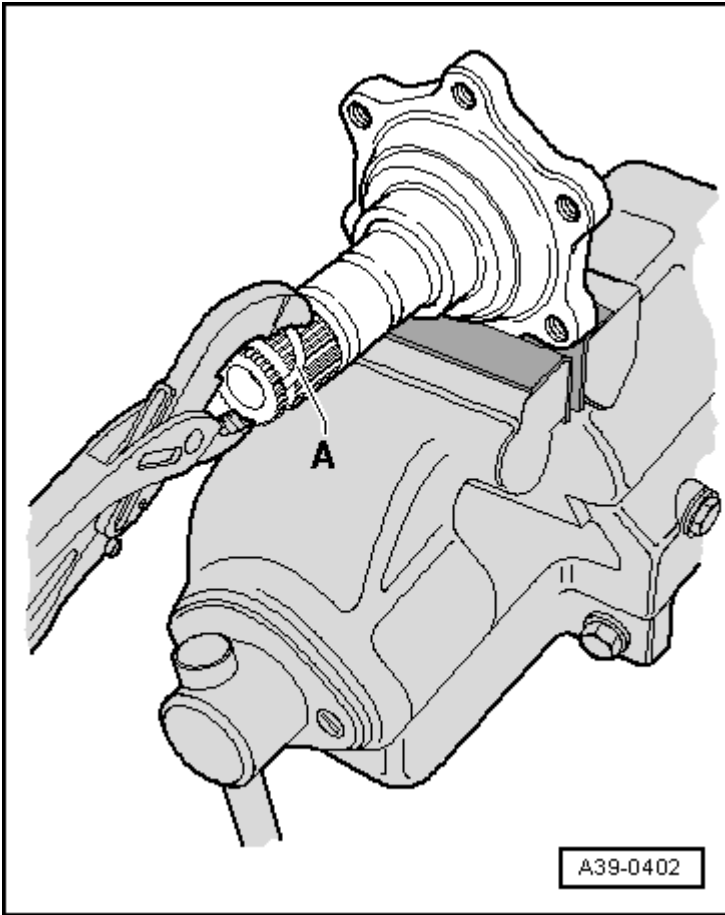


Fig. 23: Identifying Flange Shaft Clamped In Vise And Using New Circlip To Press Old Circlip Out Of Groove In Flange Shaft

Courtesy of AUDI OF AMERICA, LLC

- Clamp the flange shaft in a vise with jaw protectors. Remove the old circlip from the groove in the flange shaft using the new circlip -A-.
- Drive the right flange shaft in using the VW 295.
- Attach the drive axle to the flange shaft. Refer to **Removal and Installation** .
- Install the drive axle heat shield.
- Fill transmission oil and check oil level. Refer to **MANUAL TRANSMISSION, CHECKING TRANSMISSION FLUID LEVEL** .
- If equipped, install the noise insulation -1- in the right wheel housing.

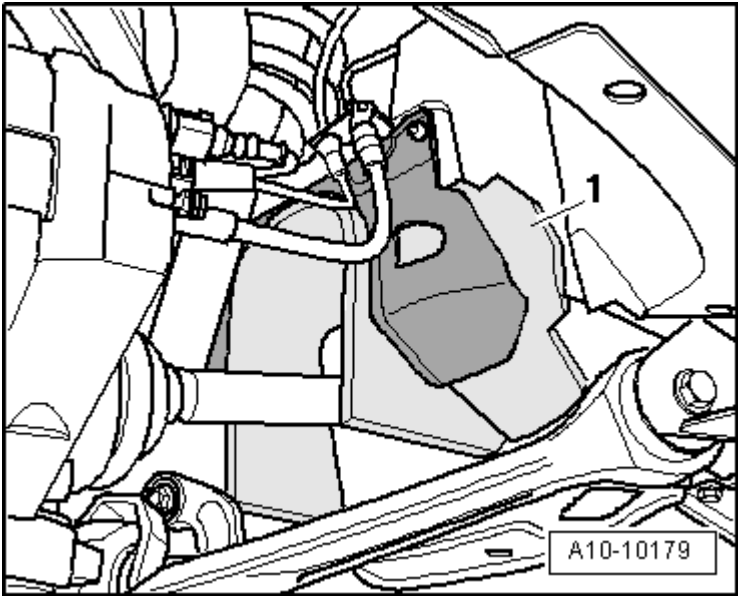


Fig. 24: Remove Right Drive Axle Cover
Courtesy of AUDI OF AMERICA, LLC

-- Install the rear noise insulation. Refer to **Removal and Installation** .

Tightening Specifications

Component	Nm
Heat shield for driveshaft to transmission	23

SPECIAL TOOLS

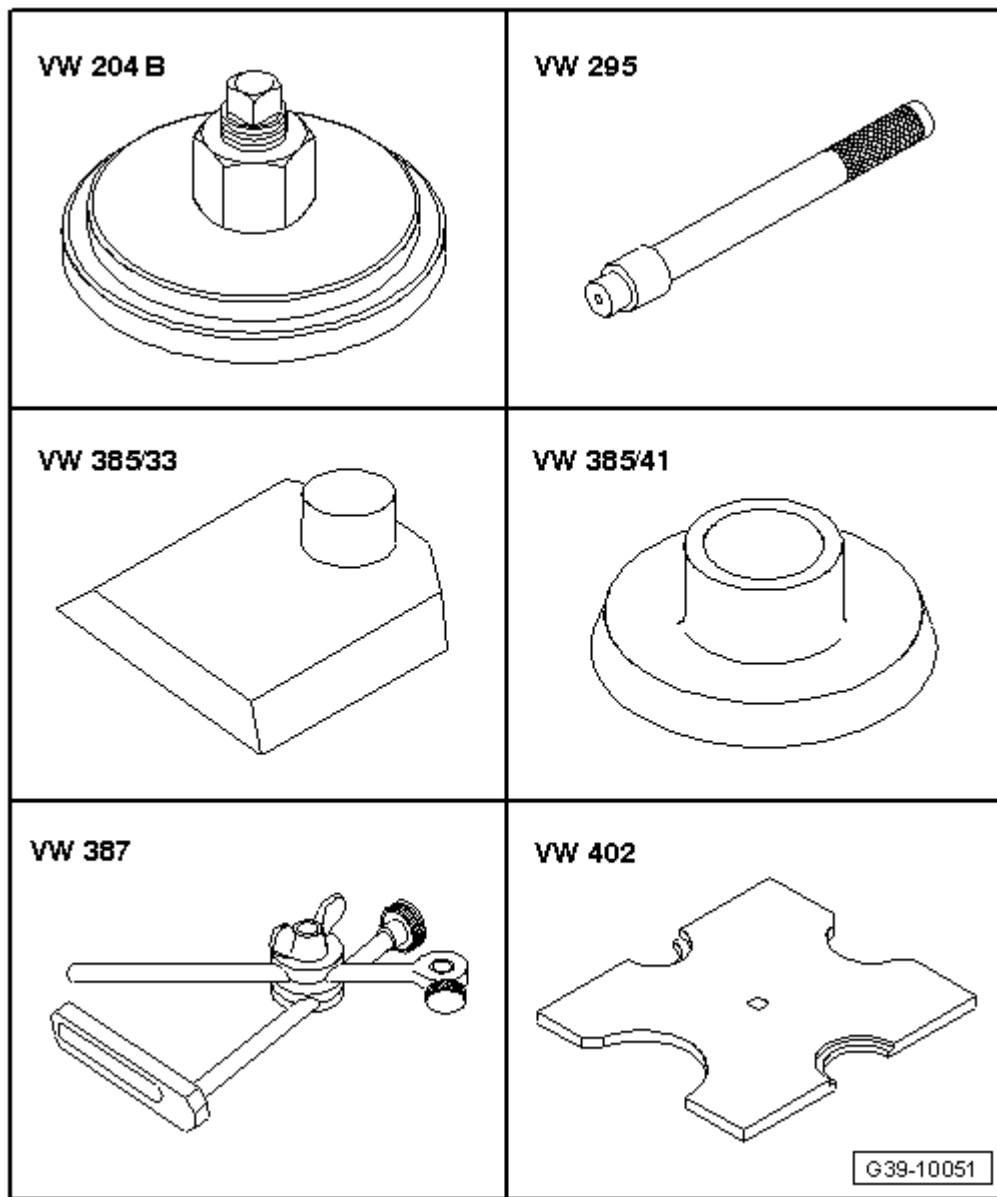


Fig. 25: Special Tools And Workshop Equipment
 Courtesy of AUDI OF AMERICA, LLC

Special tools and workshop equipment required

- Crankshaft Seal Installing Tool VW 204 B
- Needle Bearing Drift VW 295
- End Gauge VW 385/33
- Centering Plate VW 385/41
- Universal Dial Gauge Mount VW 387
- Pressure Plate VW 402

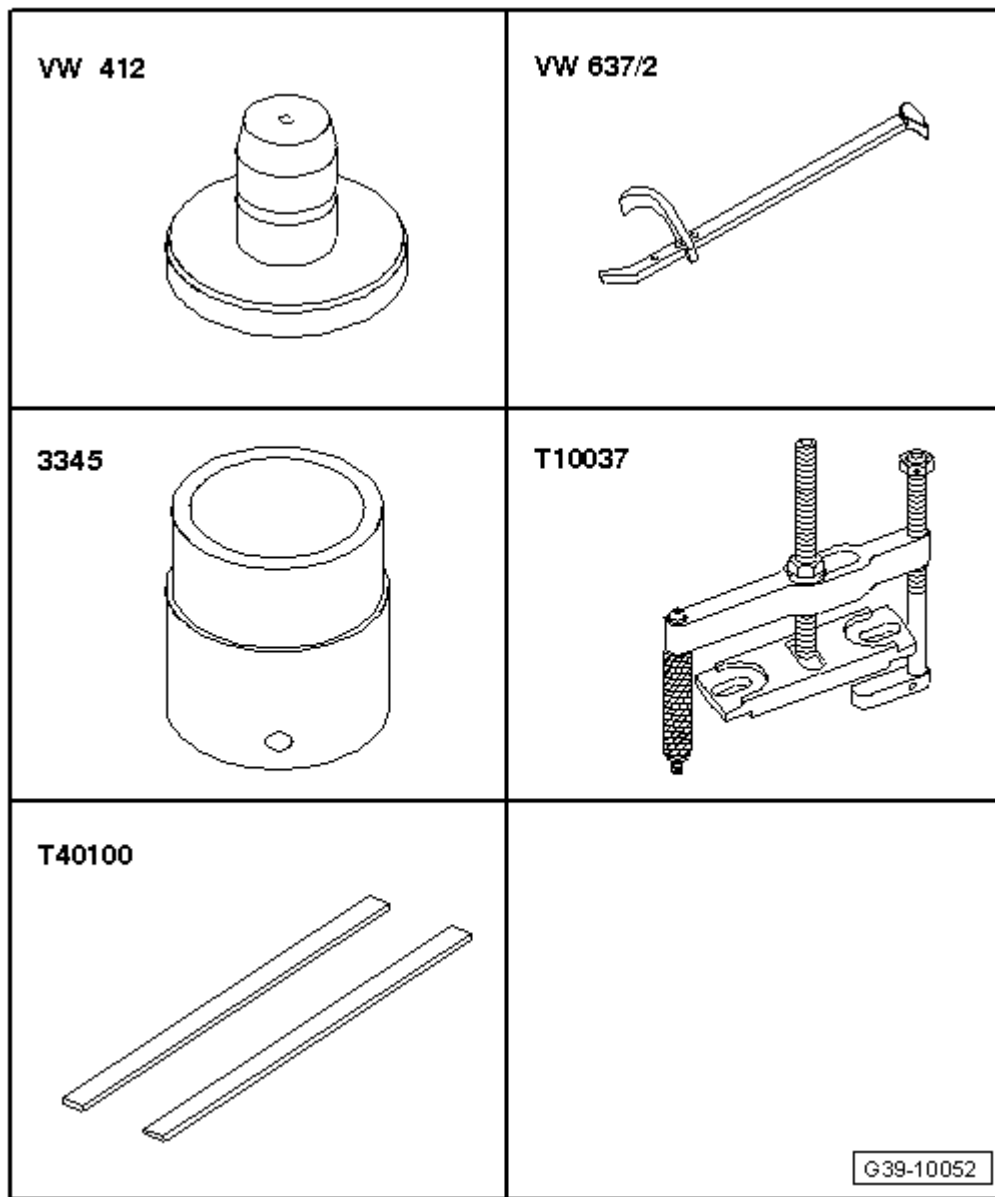


Fig. 26: Special Tools And Workshop Equipment
Courtesy of AUDI OF AMERICA, LLC

Special tools and workshop equipment required

- Thrust Disc VW 412
- Grease Cap Puller VW 637/2
- Press Tool 3345
- Puller T10037
- Ruler (1 Set = 2 Pieces) T40100

Special tools and workshop equipment required

- Thrust Piece T40163

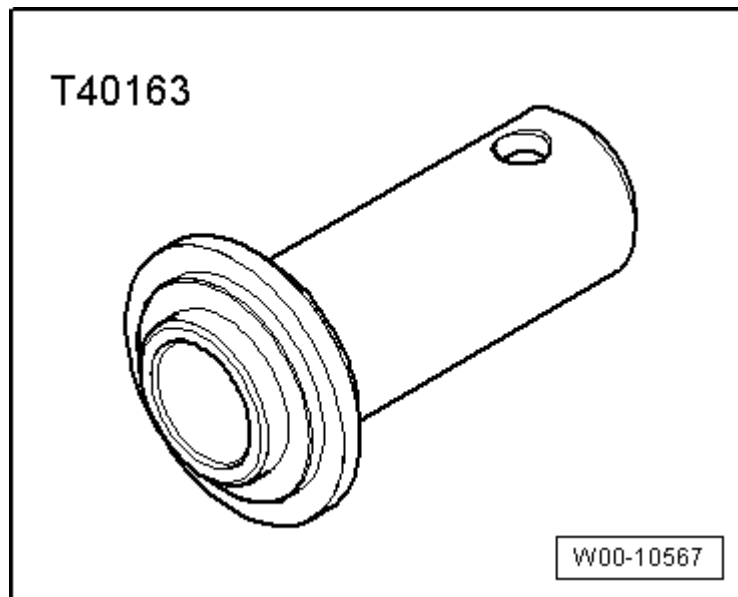


Fig. 27: Thrust Piece T40163

Courtesy of AUDI OF AMERICA, LLC

- Used Oil Collecting and Extracting Device V.A.G 1782

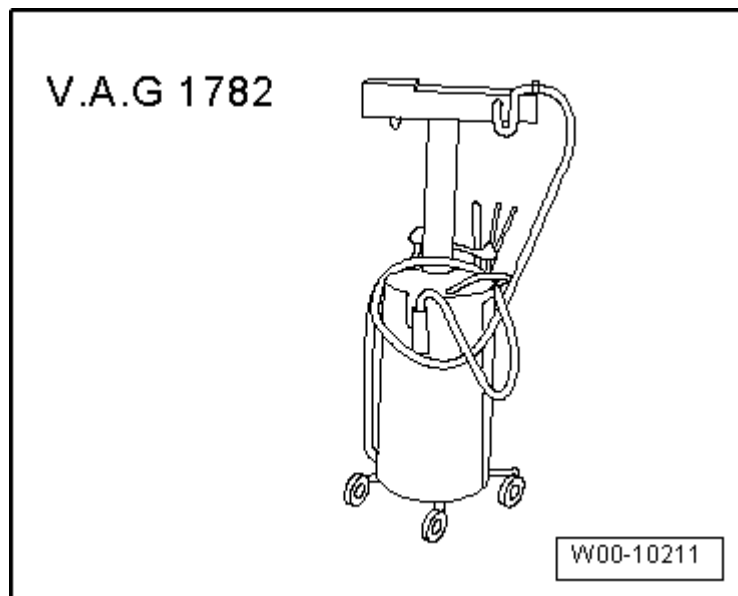


Fig. 28: Identifying Oil Extractor V.A.G 1782

Courtesy of AUDI OF AMERICA, LLC

- Sealing grease G 052 128 A1