

## 39 FINAL DRIVE, DIFFERENTIAL

### FRONT FINAL DRIVE, GEAR OIL LEVEL

Front final drive, gear oil level

**NOTE:**

- General repair notes --> [Repair instructions](#).
- Rules of cleanliness for working on automatic transmissions --> [Rules for cleanliness when working on transmission](#).

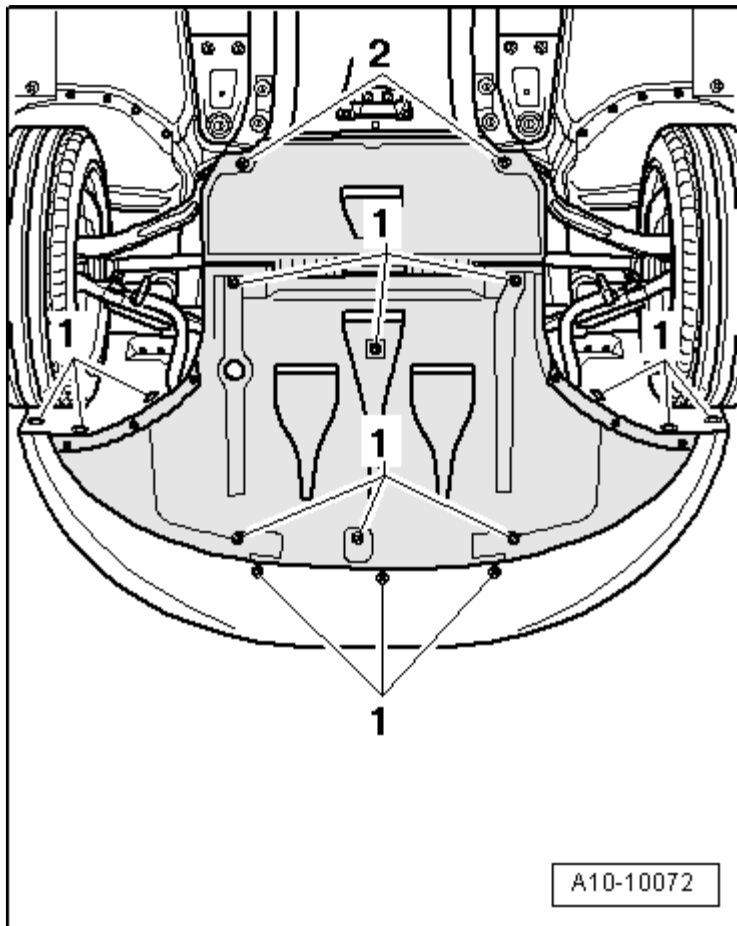
Front final drive, checking gear oil level

**NOTE:**

- The specified oil level must be maintained exactly; the transmission reacts very sensitively to over-filling.

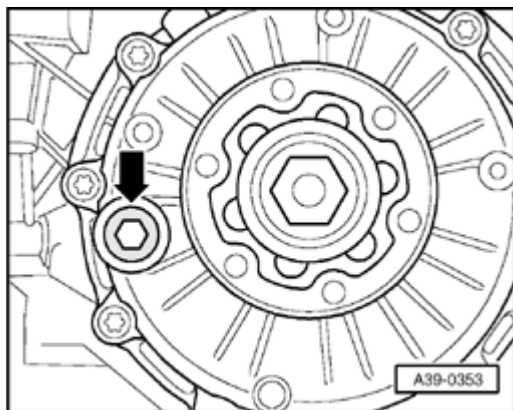
#### Test sequence

- Take vehicle for a short test drive to heat gear oil to approx. 60 ° C.
- Move vehicle onto a lifting platform or over a work pit so that it is absolutely level.
- Switch off engine and allow 5 minutes for the gear oil to settle back into transmission case.



**Fig. 193: Identifying Quick-Release Fasteners & Noise Insulation**  
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen quick-release connectors - 2 - and remove rear noise insulation.



**Fig. 194: Removing Inspection Plug**  
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove inspection plug - arrow -.

- Check oil level using a tool created in the shop, e.g. an angled section of wire.
- Specified value: Oil level 8.5 mm below bottom of filler hole.
- If necessary, top off gear oil level.
- Axle oil specification --> Capacities.

**NOTE:**

- **When servicing at the shop the oil can also be filled up to the lower edge of the oil filler hole. In this case it is necessary to draw off 0.2 ltr. to attain the correct oil level.**

- Tighten new screw plug.

Torque specification

Component	Nm
Screw plug to transmission	20 * See note

\*Replace screw plug.

**FRONT FINAL DRIVE, SERVICING**

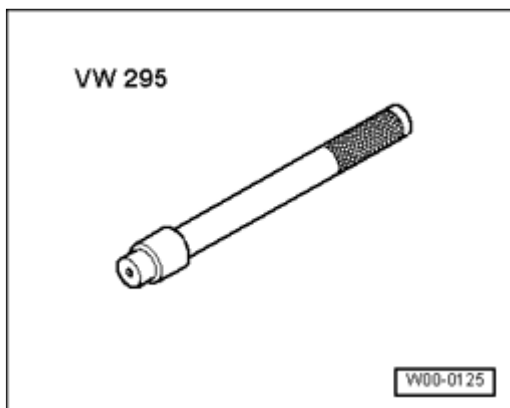
Front final drive, servicing

**NOTE:**

- **General repair notes --> Repair instructions.**
- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**

Left flange shaft, removing and installing

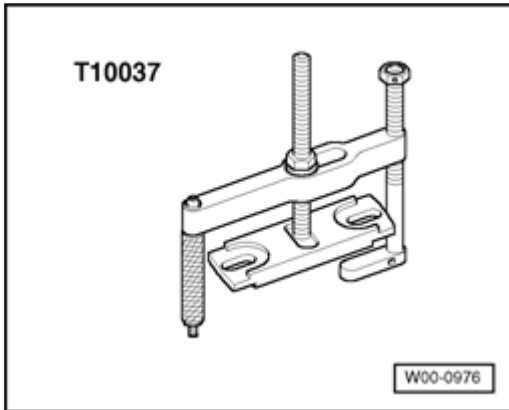
Special tools, testers and auxiliary items required



**Fig. 195: Drift VW 295**

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Drift VW 295
- Old oil collecting and extracting device V.A.G 1782



**Fig. 196: Puller T10037**

Courtesy of VOLKSWAGEN UNITED STATES, INC.

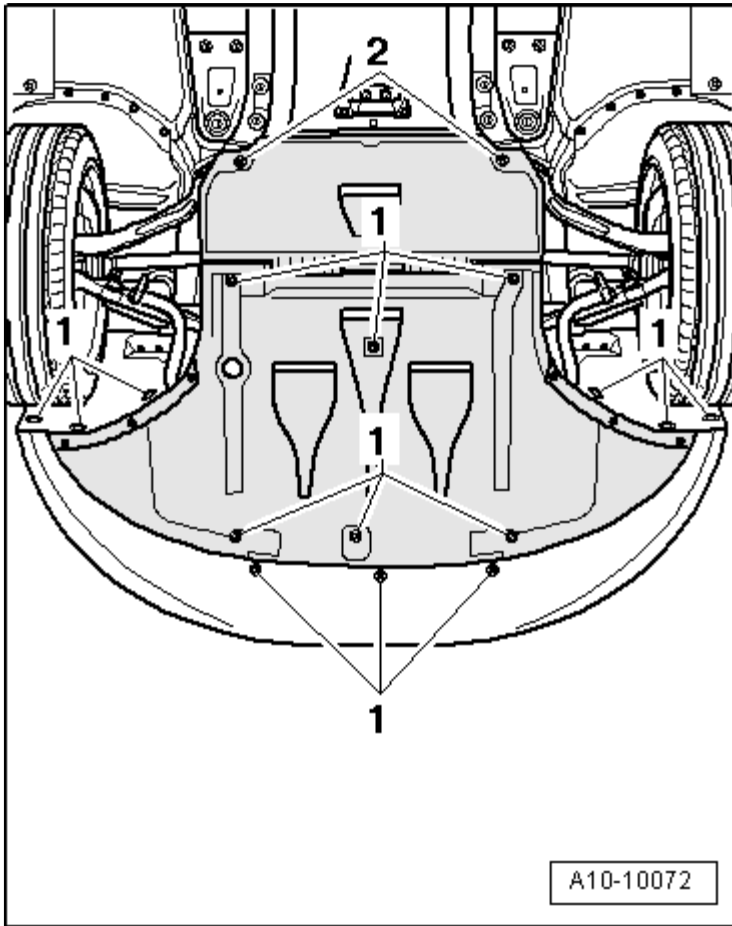
- Puller T10037

**Removing**

- Transmission installed.
- Remove left front wheel.

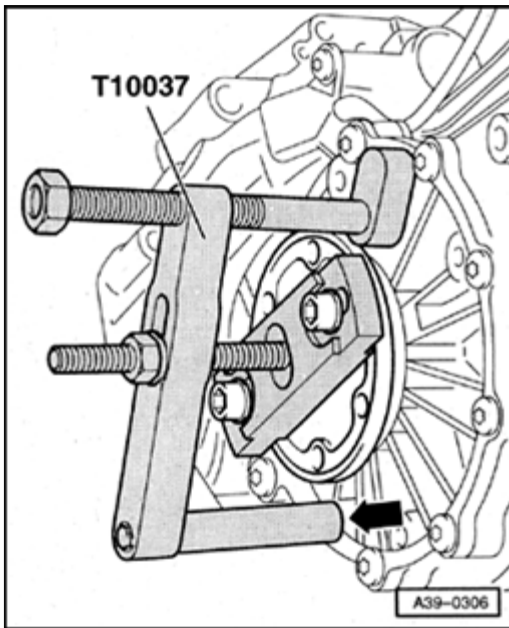
**NOTE:**

- **Secure brake disc with a wheel bolt.**



**Fig. 197: Identifying Quick-Release Fasteners & Noise Insulation**  
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen quick-release connectors - **1** - and - **2** - and remove noise insulation.
- Remove left drive axle --> **40 - FRONT SUSPENSION** .
- Place old oil collecting and extracting device V.A.G 1782 beneath transmission.



**Fig. 198: Removing Drive Flange (Left Side)**

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tightly thread lower support of puller T10037 on cover for differential - **arrow** -.

**NOTE:**

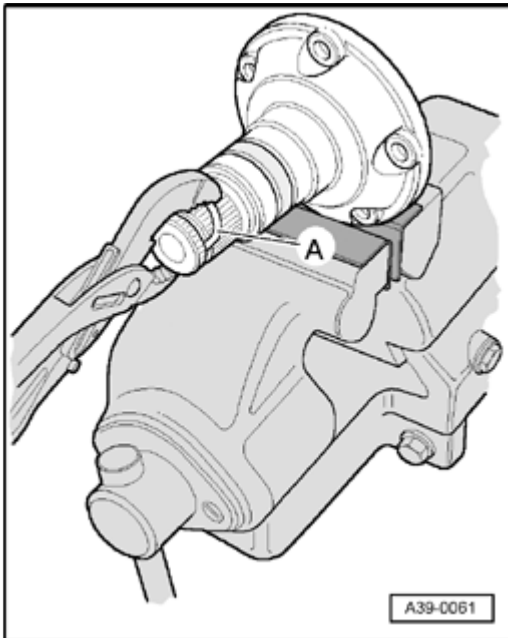
- **To avoid damage to the needle bearings (polygon bearings) or differential during removal, the flange shaft must be removed evenly, parallel and without one sided pressure**

- Pull left flange shaft using puller T10037 only far enough out until bearing on shaft is pulled out of transmission housing.

**Installing**

Installation is in reverse order of removal. Note the following:

- Replace securing ring for flange shaft, to do this clamp flange shaft in a vise with protective pads.



**Fig. 199: Removing And Installing Securing Ring**  
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press old securing ring out of groove of flange shaft with new securing ring - **A** -.
- Clean flange shaft.
- A damaged sealing ring must be replaced --> **Left flange shaft oil seal, replacing.**
- Drive in flange shaft using needle bearing drift VW 295.
- Install left drive axle --> **40 - FRONT SUSPENSION** .
- Check gear oil level in front final drive --> **Front final drive, checking gear oil level.**

#### Right flange shaft, removing and installing

#### Special tools, testers and auxiliary items required

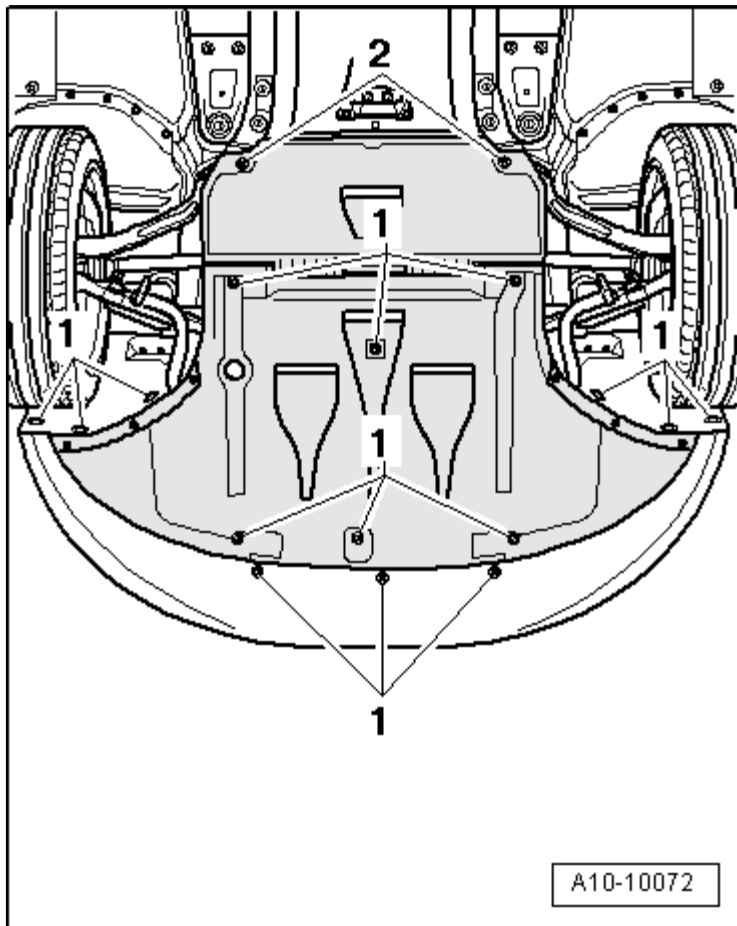
- Old oil collecting and extracting device V.A.G 1782

#### Removing

- Transmission installed.
- Remove right front wheel.

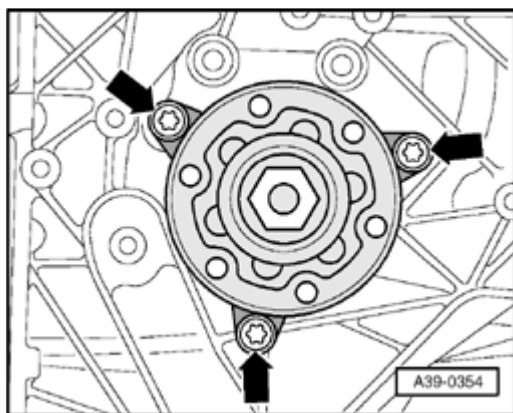
#### NOTE:

- **Secure brake disc with a wheel bolt.**



**Fig. 200: Identifying Quick-Release Fasteners & Noise Insulation**  
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen quick-release connectors - 1 - and - 2 - and remove noise insulation.
- Remove right drive axle --> **40 - FRONT SUSPENSION** .



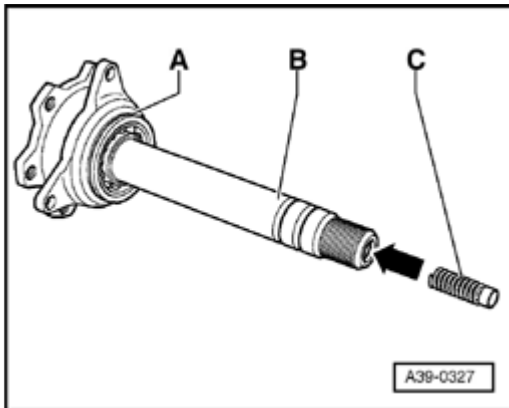
**Fig. 201: Removing Mounting Bracket For Flange Shaft**  
 Courtesy of VOLKSWAGEN UNITED STATES, INC.



- Remove mounting bracket for flange shaft - **arrows** -.
- Place old oil collecting and extracting device V.A.G 1782 beneath transmission.
- Pull out right flange shaft together with mounting bracket.

### Installing

- Clean flange shaft.
- A damaged sealing ring must be replaced --> **Sealing ring for right flange shaft and grooved ball bearing, replacing.**



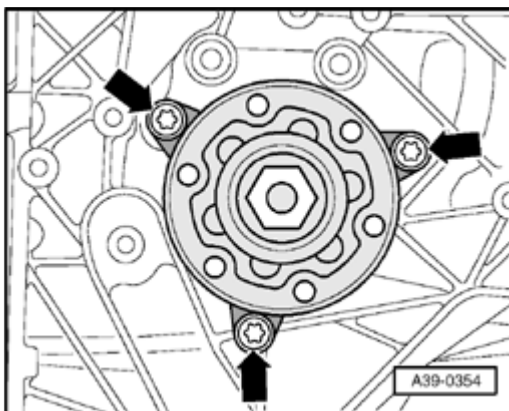
**Fig. 202: Replacing O-Ring, Sliding Spring With Cap Outward Into Hole On End Of Flange Shaft & Inserting Flange Shaft Into Transmission Housing**

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Replace O-ring - **arrow A** - in mounting bracket for flange shaft.
- Slide spring - **C** - with cap outward into hole on end of flange shaft - **arrow** -.
- Insert flange shaft - **B** - into transmission housing.

### NOTE:

- **While sliding in the flange shaft, make sure that spring - C - remains in the flange shaft and does not fall into transmission.**



**Fig. 203: Removing Mounting Bracket For Flange Shaft**

**Courtesy of VOLKSWAGEN UNITED STATES, INC.**

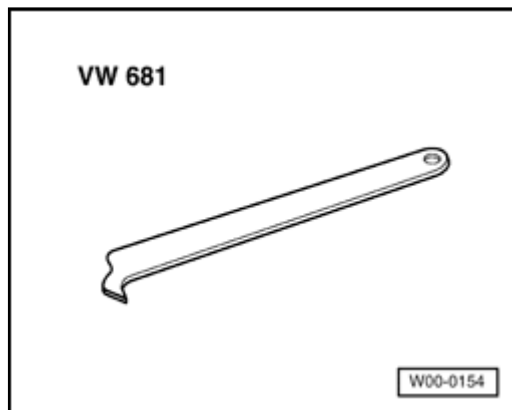
- Tightly bolt mounting bracket for flange shaft - **arrows** -.
- Install right drive axle --> **40 - FRONT SUSPENSION**
- Check gear oil level in front final drive --> **Front final drive, checking gear oil level.**

## Torque specification

Component	Nm
Bearing bracket for right-hand flange shaft to transmission	25

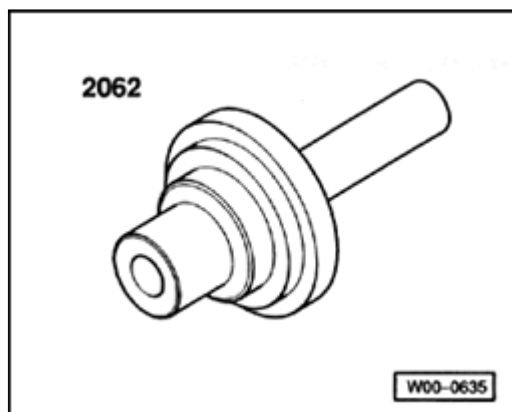
## Left flange shaft oil seal, replacing

## Special tools, testers and auxiliary items required



**Fig. 204: Special Tool - Oil Seal Extractor Lever VW 681**  
**Courtesy of VOLKSWAGEN UNITED STATES, INC.**

- Extractor lever VW 681

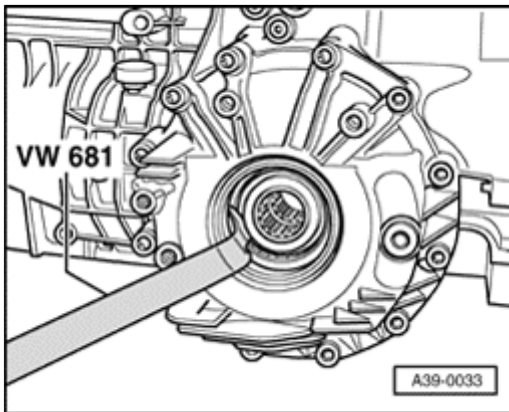


**Fig. 205: Fitting Drift 2062**  
**Courtesy of VOLKSWAGEN UNITED STATES, INC.**

- Driver 2062

### Work procedure

- Transmission installed
  - Remove left flange shaft --> **Left flange shaft, removing and installing.**

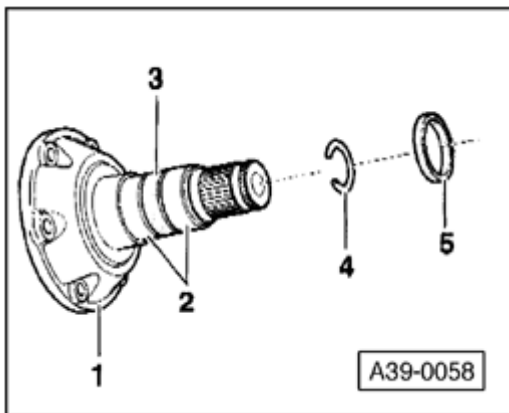


**Fig. 206: Removing Flange Shaft Oil Seal**  
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull out sealing ring for flange shaft using extractor lever VW 681.

### NOTE:

- Do not damage seating surfaces for oil seal.



**Fig. 207: Flange Shaft Design**  
Courtesy of VOLKSWAGEN UNITED STATES, INC.

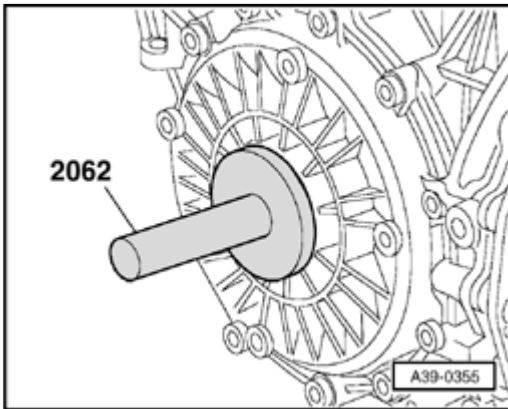
Setup of flange shaft with polygon bearing

1. Flange shaft
2. Needle bearing (polygon bearing)

3. Spacer ring
4. Circlip
5. Not installed

**NOTE:**

- If the polygon bearings do not run smoothly with the flange shaft removed, this does indicate that the bearings are faulty. A test for noisy bearings can only be performed with the bearings installed.
  - Watch for damage to the polygon bearings (e.g. cracks in bearing outer ring)
  - If polygon bearings are damaged, flange shaft must be replaced.
- Coat outer edge and sealing lip of oil seal with axle oil.
  - Installation position: The open side of the sealing ring faces transmission.



**Fig. 208: Driving In New Sealing Ring For Left Flange Shaft Uniformly Using Driver Below Surface Of Cover**

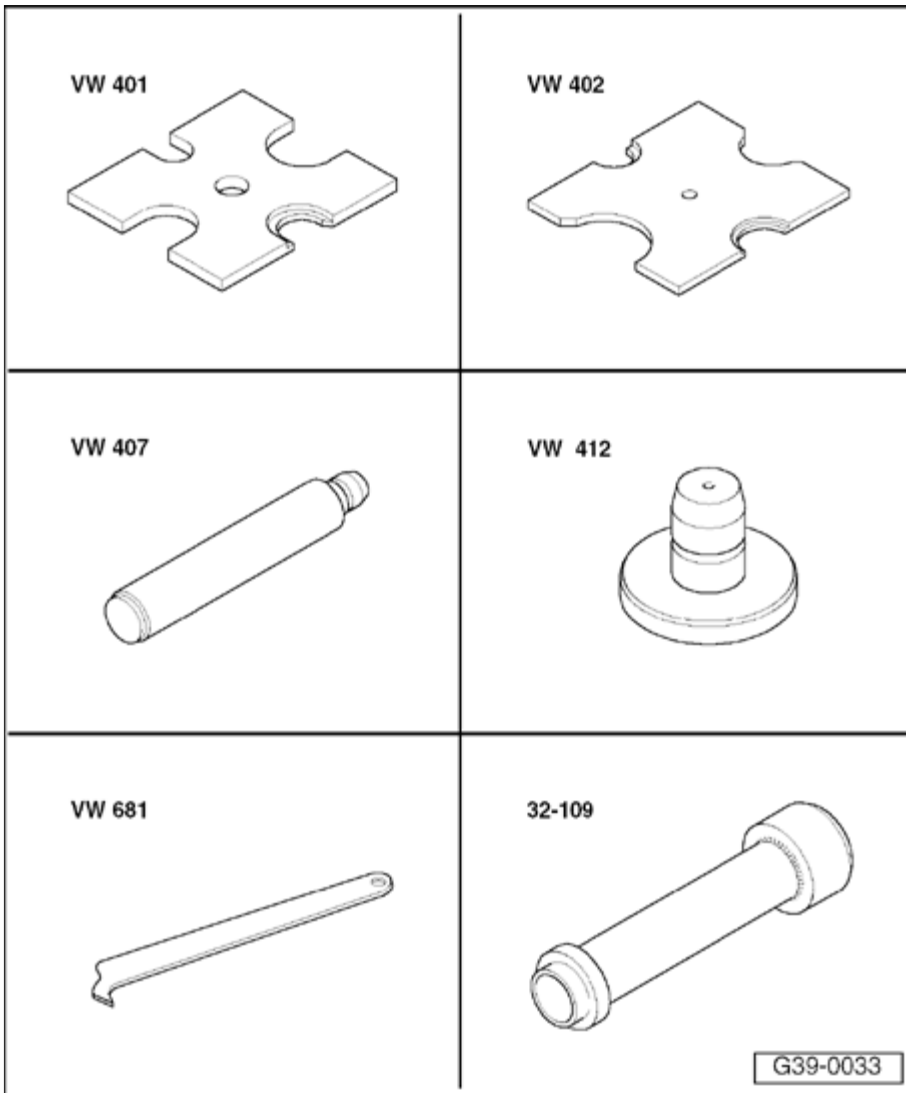
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Drive in new sealing ring for left flange shaft uniformly using driver 2062 5.5 mm below surface of cover, when doing so do not cant.

**NOTE:**

- If reinstalling an old flange shaft, the seal must be driven in approx. 6.5 mm so that the new seal does not sit on the running surface of the old seal.
- Install left flange shaft --> Left flange shaft, removing and installing.
  - Check gear oil level in front final drive --> Front final drive, checking gear oil level.

Sealing ring for right flange shaft and grooved ball bearing, replacing



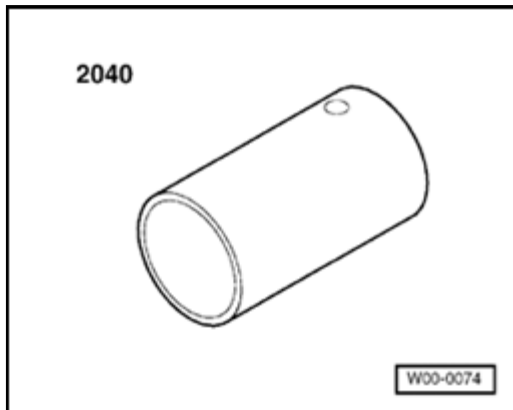
**Fig. 209: Identifying Special Tools -- Sealing Ring For Right Flange Shaft And Grooved Ball Bearing, Replacing**

Courtesy of VOLKSWAGEN UNITED STATES, INC.

#### Special tools, testers and auxiliary items required

- Pressure plate VW 401
- Pressure plate VW 402
- Punch VW 407
- Punch VW 412
  
- Extractor lever VW 681
- Driving sleeve 32-109

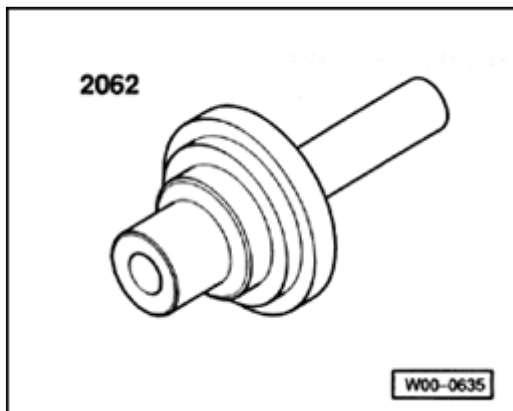
#### Special tools, testers and auxiliary items required



**Fig. 210: Tube 2040**

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tube 2040



**Fig. 211: Fitting Drift 2062**

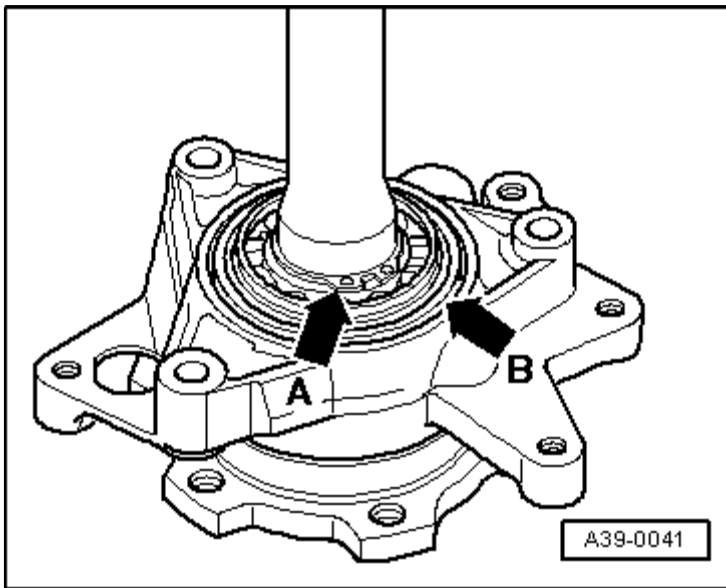
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Driver 2062

### Work procedure

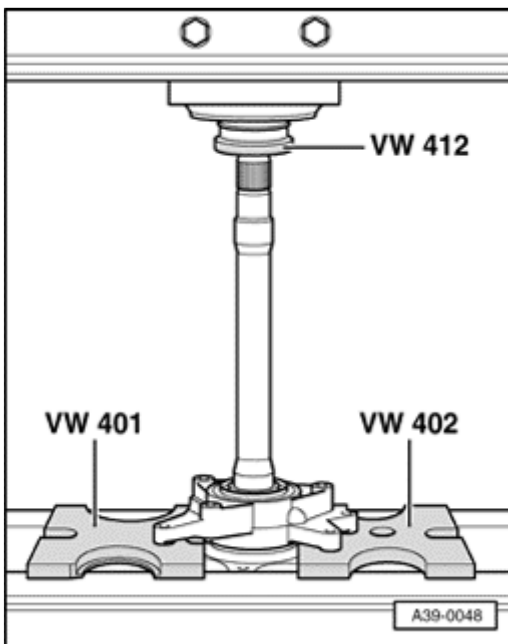
- Remove right flange shaft --> **Right flange shaft, removing and installing.**

Seal, removing



**Fig. 212: Removing/Installing Circlip And Seal At Grooved Ball Bearing**  
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

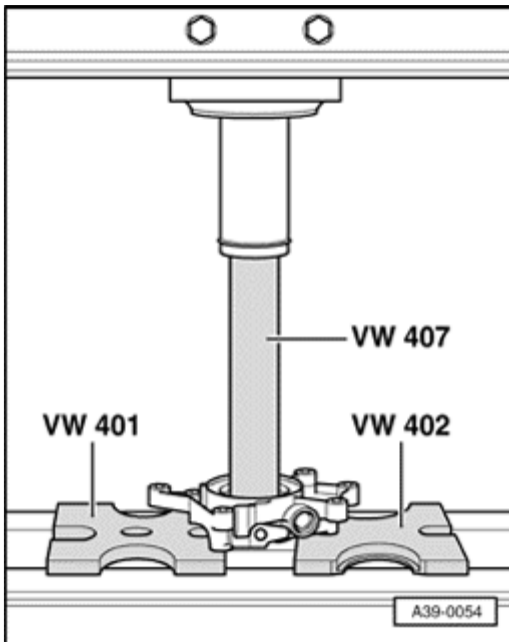
- Remove securing ring - **arrow A** - for grooved ball bearing.



**Fig. 213: Pressing Flange Shaft Out Of Flange Shaft Bearing Bracket**  
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press flange shaft out of mounting bracket for flange shaft as shown in the illustration.
- Pull sealing ring for flange shaft out of mounting bracket using extractor lever VW 681.

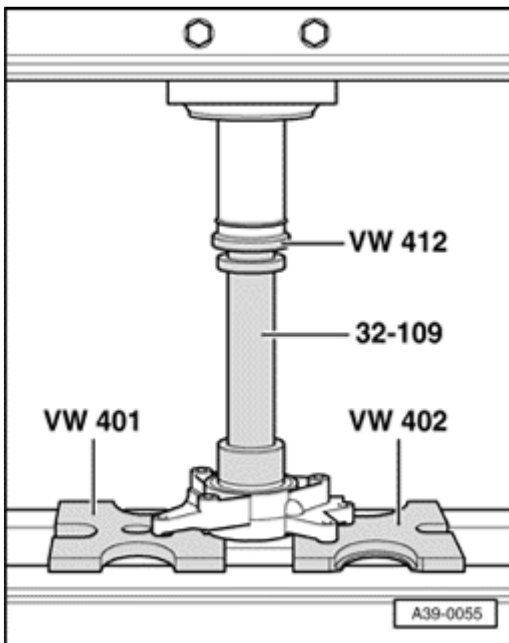
Removing grooved ball bearing



**Fig. 214: Pressing Grooved Ball Bearing Out Of Bearing Bracket**  
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press grooved ball bearing out of mounting bracket.

Installing grooved ball bearing



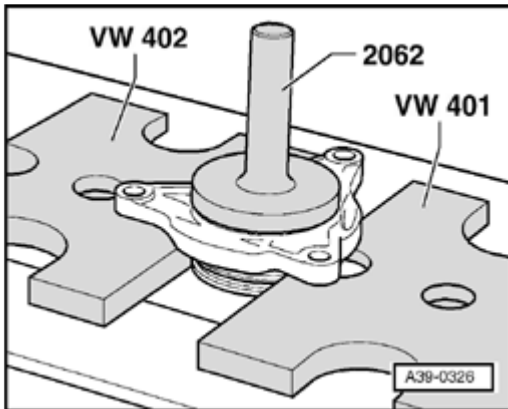
**Fig. 215: Pressing New Grooved Ball Bearing Into Bearing Bracket**  
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press new grooved ball bearing into mounting bracket.



## Sealing ring, installing

- Coat outer edge and sealing lip of oil seal with axle oil.
- Installation position: The open side of the sealing ring faces the transmission.

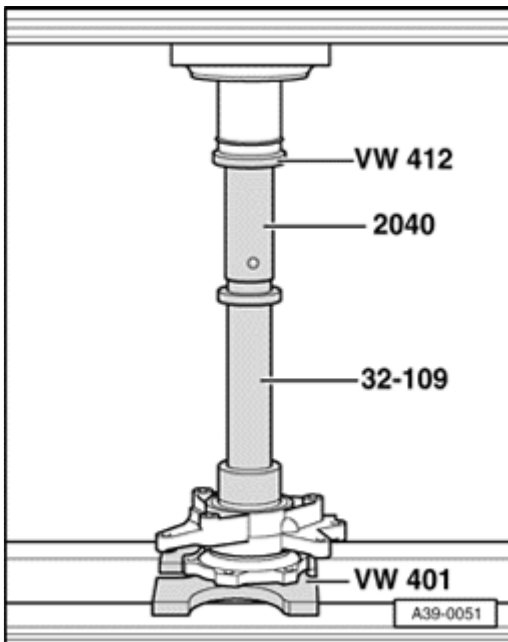


**Fig. 216: Pressing New Grooved Ball Bearing Into Mounting Bracket**  
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Drive in new sealing ring for right flange shaft uniformly using driver 2062 5.5 mm below surface of mounting bracket, when doing so do not cant.

**NOTE:**

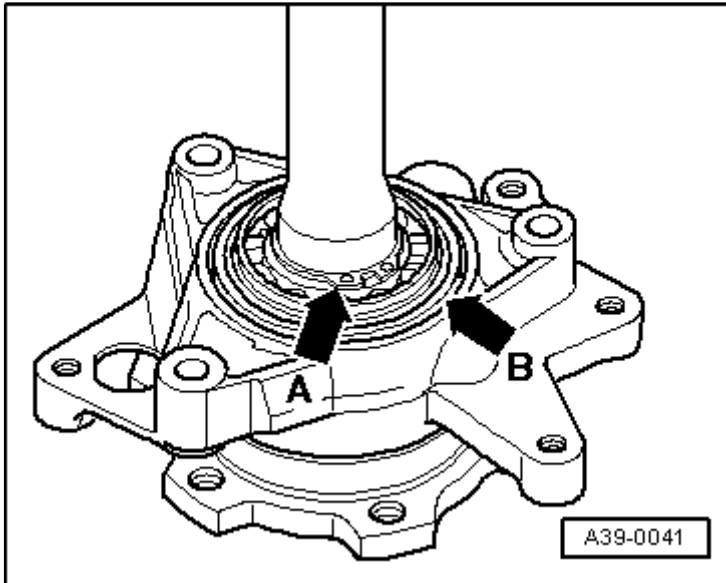
- If reinstalling an old flange shaft, the seal must be driven in approx. 6.5 mm so that the new seal does not sit on the running surface of the old seal.



**Fig. 217: Pressing Bearing Bracket With Grooved Ball Bearing Onto Flange Shaft**

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press mounting bracket with grooved ball bearing onto flange shaft.



**Fig. 218: Removing/Installing Circlip And Seal At Grooved Ball Bearing**  
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert securing ring - **arrow A** -.
- Install right flange shaft --> **Right flange shaft, removing and installing.**
- Check gear oil level in front final drive --> **Front final drive, checking gear oil level.**

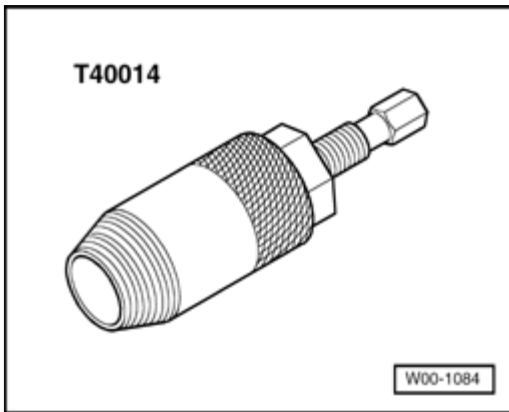
#### Input shaft seal, replacing

- If ATF flows out at underside of transmission bell housing, input shaft seal and/or ATF breather tube may be leaking. Before replacing any parts, be sure to find actual cause of malfunction.
- Input shaft seal must be replaced if leaking.
- ATF breather tube must be replaced if leaking --> **ATF breather pipe, removing and installing.**

#### NOTE:

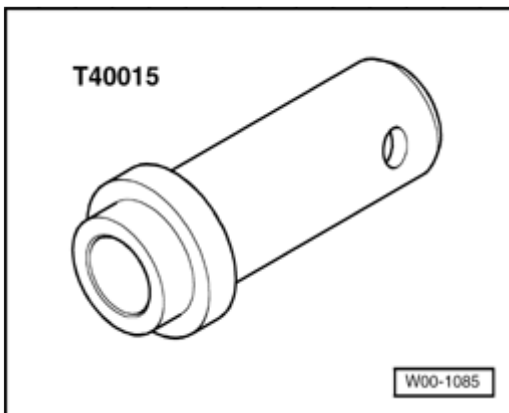
- **Rules of cleanliness for working on automatic transmissions --> Rules for cleanliness when working on transmission.**
- **General repair notes --> Repair instructions.**

#### Special tools, testers and auxiliary items required



**Fig. 219: Seal Remover T40014**  
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Seal remover T40014

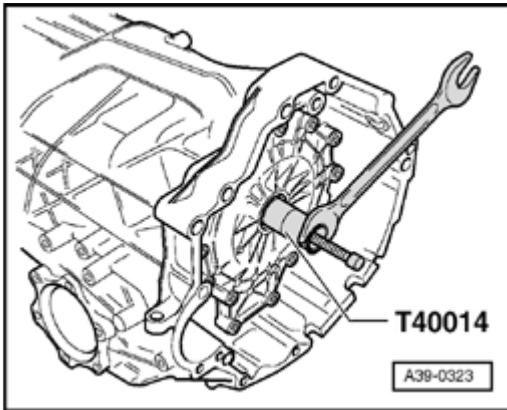


**Fig. 220: Thrust Piece T40015**  
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Thrust piece T40015

**Work procedure**

- Transmission removed.



**Fig. 221: Rotating Seal Ring Extractor T40014 By Hand Into Shaft Seal Until Tool Has Good Hold In Shaft Sea**

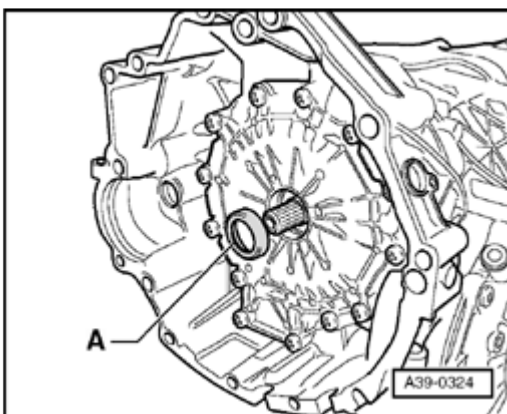
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Rotate seal ring extractor T40014 by hand into shaft seal until the tool has a good hold in the shaft seal. Then tighten puller with an open-end wrench.
- You can pull out oil seal a short distance by screwing in rear bolt of puller.
- Re-tighten extractor using open-end wrench so that extractor again grasps the shaft seal tightly and pull out sealing ring further by screwing in the screw.
- Repeat procedure until shaft seal has been pulled out completely.

**NOTE:**

- **Input shaft and flange cover must be installed to install the shaft seal.**

- Coat new shaft seal with ATF.

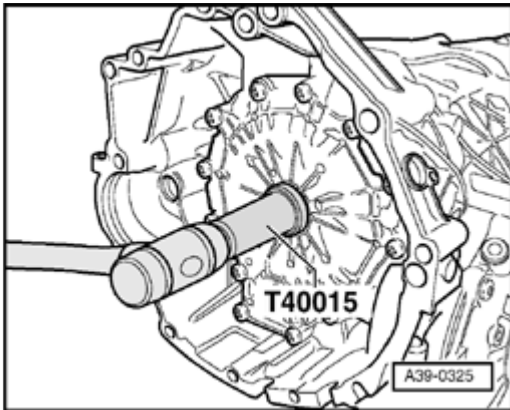


**Fig. 222: Sliding Shaft Seal Onto Input Shaft With Open Side Facing Transmission**  
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Slide shaft seal - A - onto input shaft with open side facing transmission.

**NOTE:**

- **Slide sealing ring as far as possible into cover so that it cannot bend when driving in.**

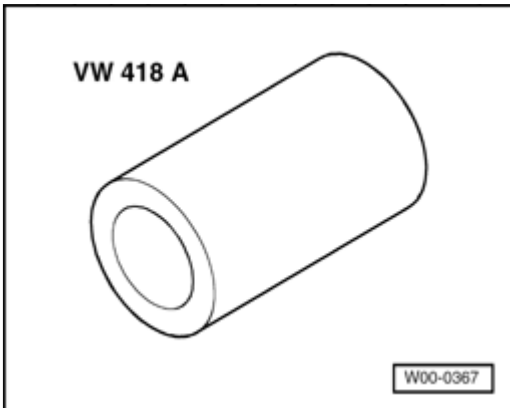


**Fig. 223: Driving In Sealing Ring Until It Stops Using Thrust Piece T40015**  
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Drive in sealing ring until it stops using thrust piece T40015.

Selector shaft oil seal, replacing

Special tools, testers and auxiliary items required

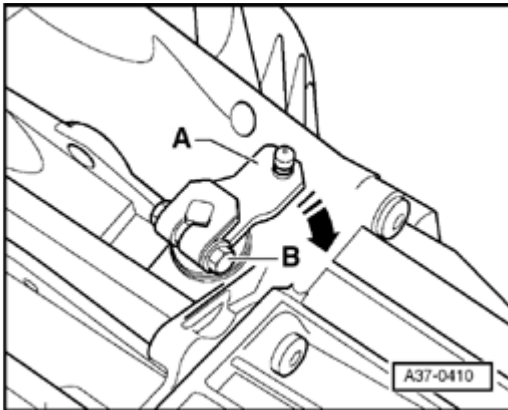


**Fig. 224: Sleeve VW 418 A**  
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tube VW 418 A

Work procedure

- Transmission removed.



**Fig. 225: Pressing Selector Shaft Lever On Transmission Completely Toward Rear**  
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **B** - completely and remove lever for selector shaft - **A** - upward.
- Carefully pry out sealing ring for selector shaft lying underneath using a screwdriver.

**NOTE:**            • **Sealing surface and selector shaft must not be damaged.**

- Coat outer circumference of new sealing ring with ATF.
- Slide on new sealing ring over selector shaft and press in.
- Drive in sealing ring until it stops using tube 31.5 mm dia. VW 418 A.
- Connect lever for selector shaft - **A** - to selector shaft and tighten bolt - **B** -.

Torque specification

Component	Nm
Lever for selector shaft to selector shaft	10