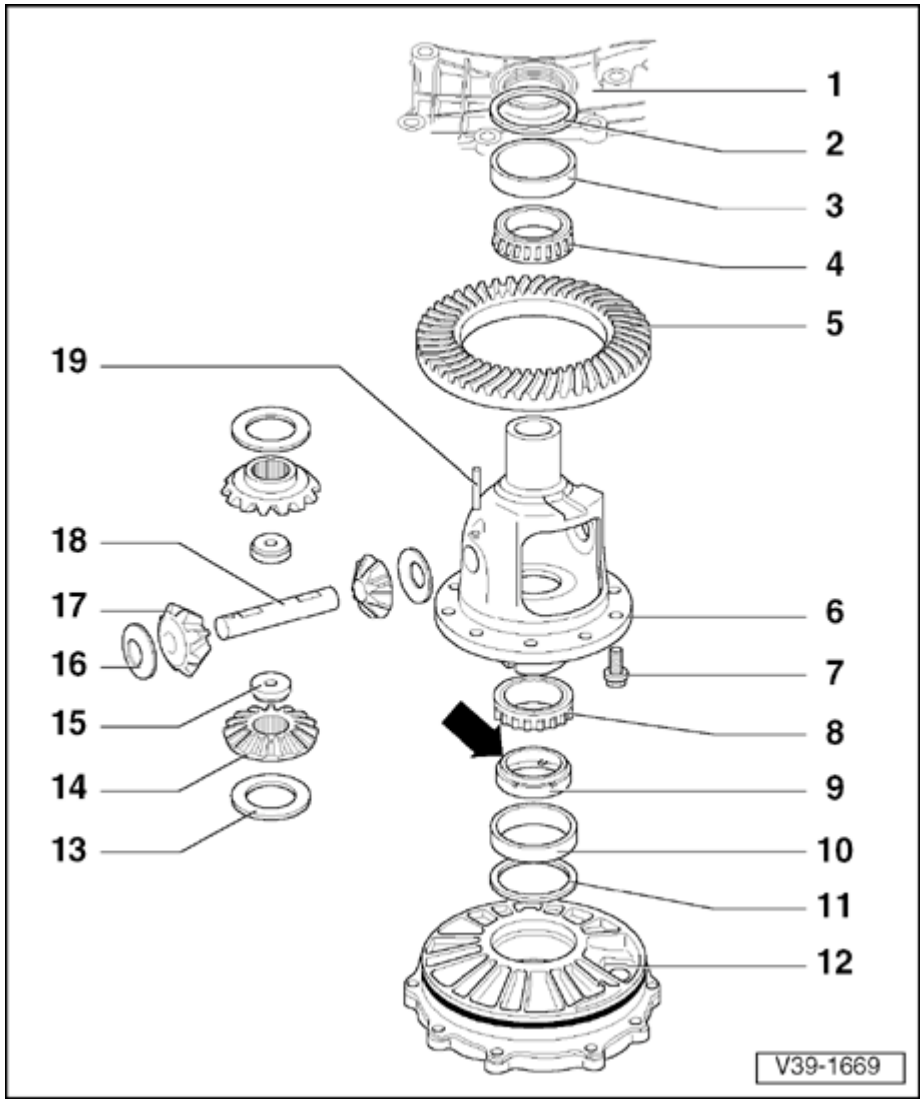
Differential, disassembling and assembling

Special tools, testers and auxiliary items required:

- Drift VW 295
- Thrust plate VW 401
- Thrust plate VW 402
- Press tool VW 412
- Installing tool VW 459/2
- Thrust plate 30-205
- Mandrel 30-505
- Press tool 40-21
- Thrust plate 40-105
- Thrust pad 3062

- Drift 3138
- Tapered roller bearing puller V.A.G 1582
- Grip V.A.G 1582/3
- Grip V.A.G 1582/6

39-18



Notes:

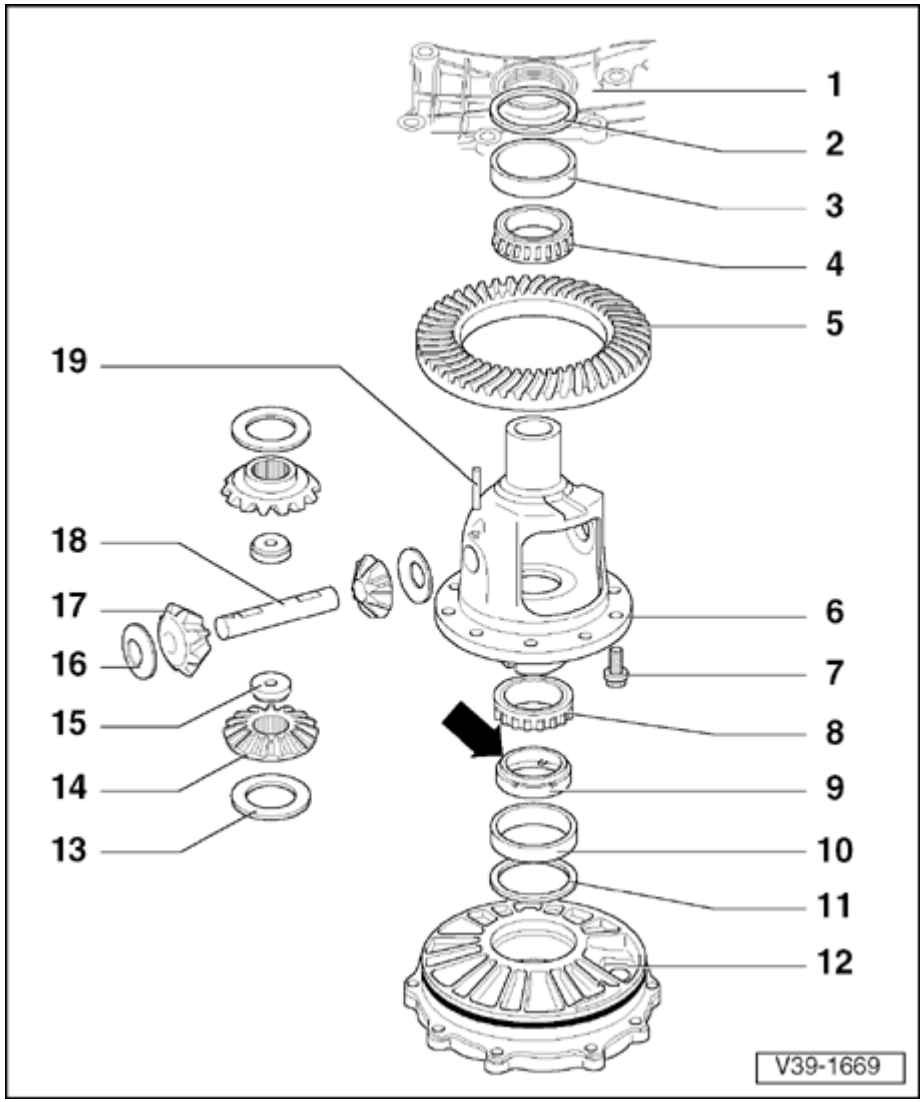
- *Removing and installing differential* ⇒ *Page 39-15* .
- *Adjustments are required when replacing components marked 1)* ⇒ *Page 39-37* , *adjustment overview*

1 - Transmission housing 1)

2 - Shim "S2"

- Note thickness
- Adjustment overview ⇒ Page 39-37

39-19



3 - Outer race for small tapered roller bearing 1)

- Driving out ⇒ Fig. 9
- Driving in ⇒ Fig. 10

4 - Inner race for small tapered roller bearing 1)

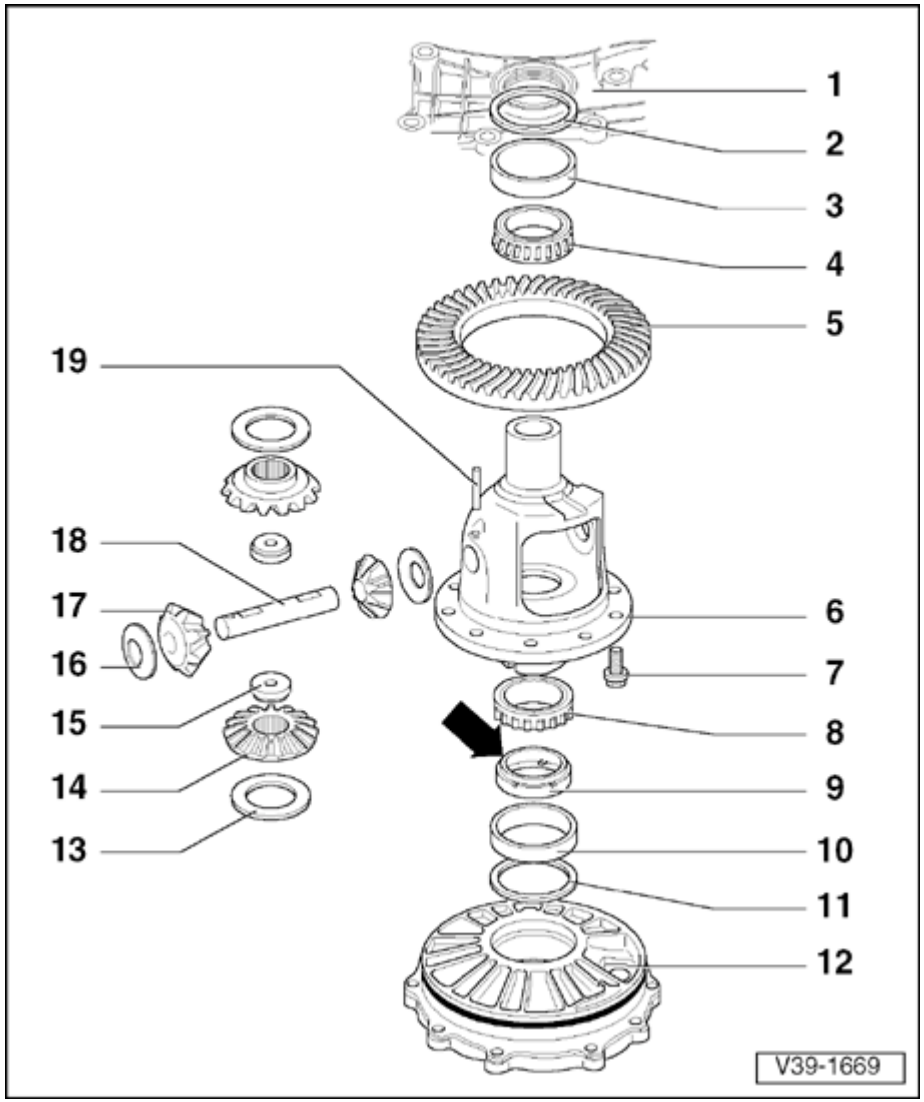
- Pulling out ⇒ Fig. 1
- Pressing in ⇒ Fig. 3
- Low friction bearing; do not oil when measuring frictional torque

5 - Ring gear 1)

- Paired with drive pinion (final drive set)
- Removing ⇒ Fig. 5
- Installing ⇒ Fig. 6

6 - Differential housing 1)

39-20



7 - Ring gear bolt, 60 Nm + 45° further

- Always replace
- Use only genuine bolts

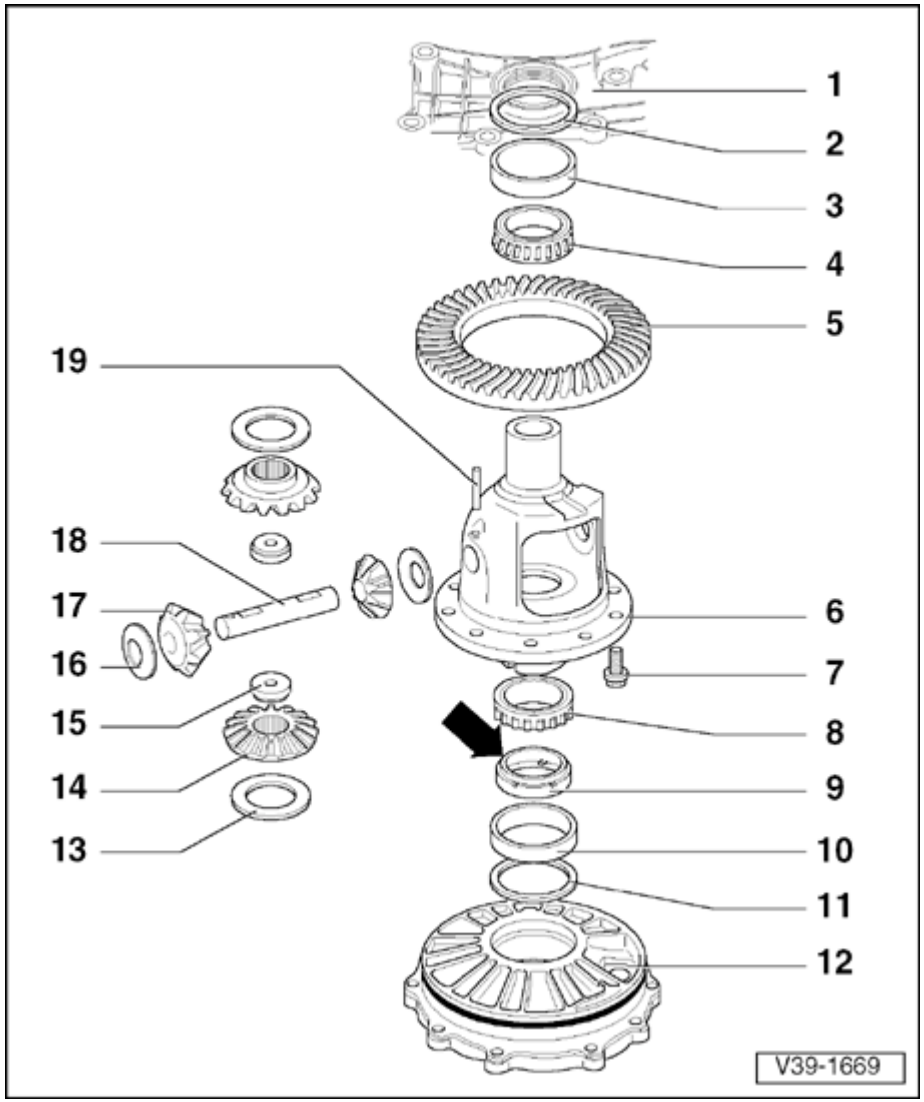
8 - Inner race for large tapered roller bearing 1)

- Pulling off ⇒ Fig. 2
- Pressing on ⇒ Fig. 4
- Low friction bearing; do not oil when measuring frictional torque

9 - Drive wheel

- For speedometer sender
- Removing and installing ⇒ Page 39-4
- Fit the drive wheel carefully onto the differential, making sure that it is kept straight. Do not use force; the drive wheel can break easily
- Installation position: shoulder (arrow) toward differential

39-21



10 - Outer race for large tapered roller bearing 1)

- Driving out ⇒ Fig. 11
- Driving in ⇒ Fig. 12

11 - Shim "S1"

- Note thickness
- Adjustment overview ⇒ Page 39-37

12 - Cover for final drive 1)

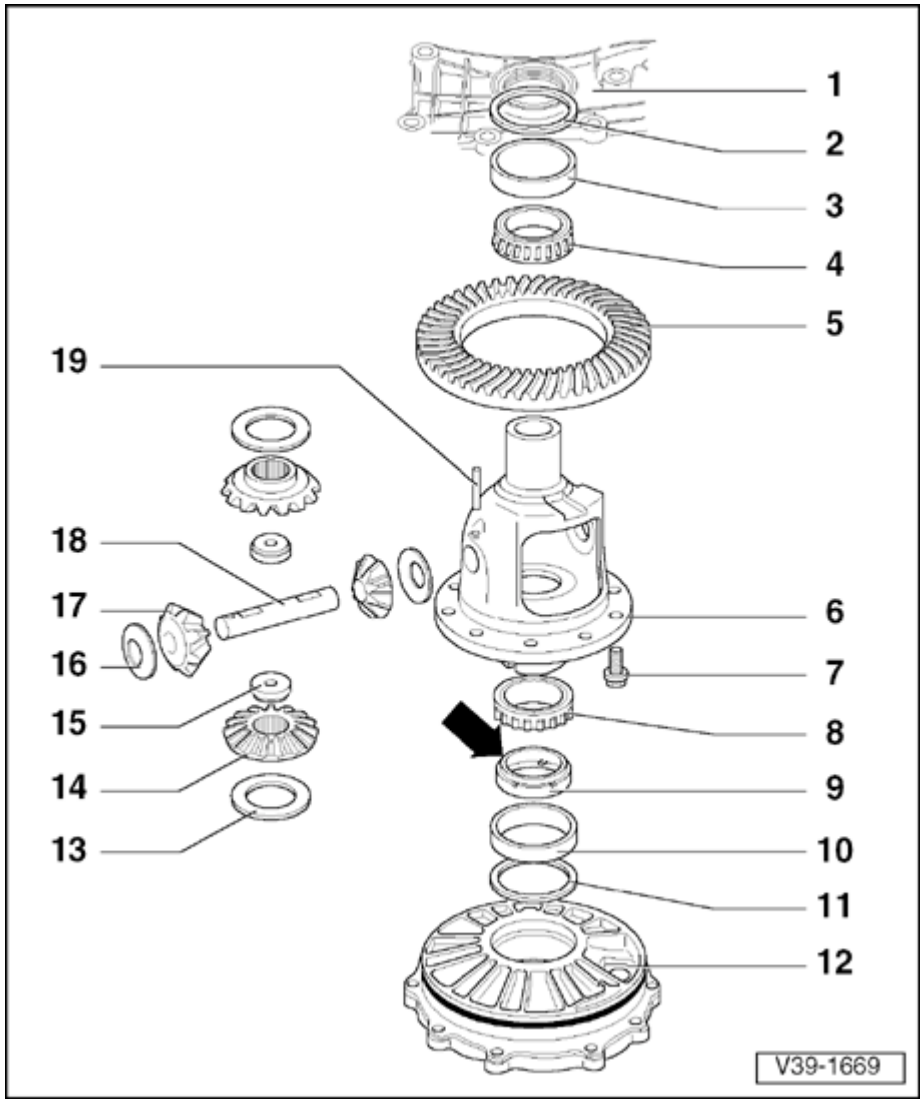
- With O-ring
- Replace O-ring
- Oil O-ring before installing

13 - Shims

- Re-determining thickness ⇒ Fig. 8

14 - Sun wheels

- Adjusting ⇒ Fig. 8



15 - Threaded piece

16 - Thrust washer

- Check for cracks and chipping

17 - Planet wheels

- Installing ⇒ Fig. 7

18 - Shaft for planet wheels

- Drive out with drift after removing spring pin
- Before driving in, align thrust washers

19 - Spring pin

- Drive in flush

39-23

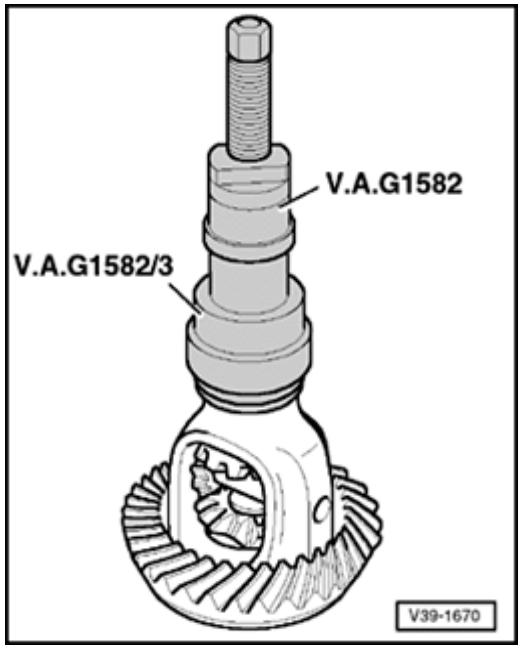


Fig. 1 Pulling inner race for small tapered roller bearing out of housing

- Fit thrust plate 40-105 before fitting puller.

39-24

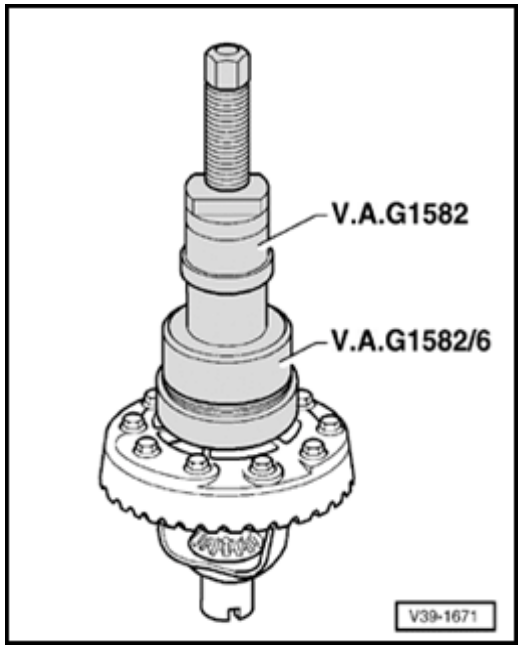


Fig. 2 Pulling inner race for large tapered roller bearing off housing

- Fit thrust plate 40-105 before fitting puller.

39-25

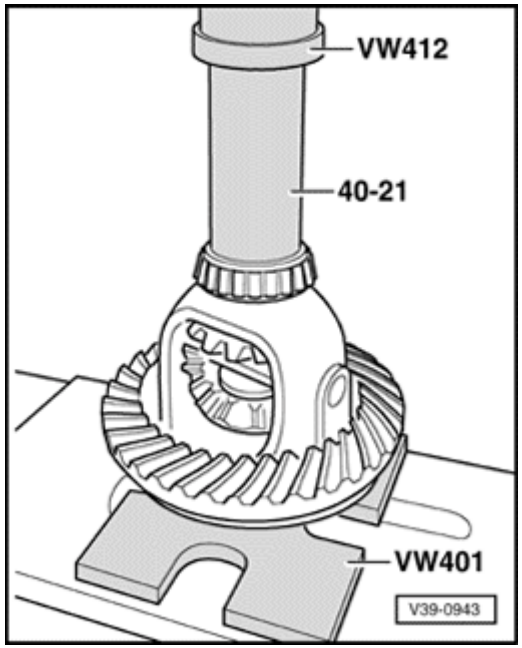


Fig. 3 Pressing on inner race for small tapered roller bearing

- Heat bearing to approx. 10 ° C, fit in position and press home.

39-26

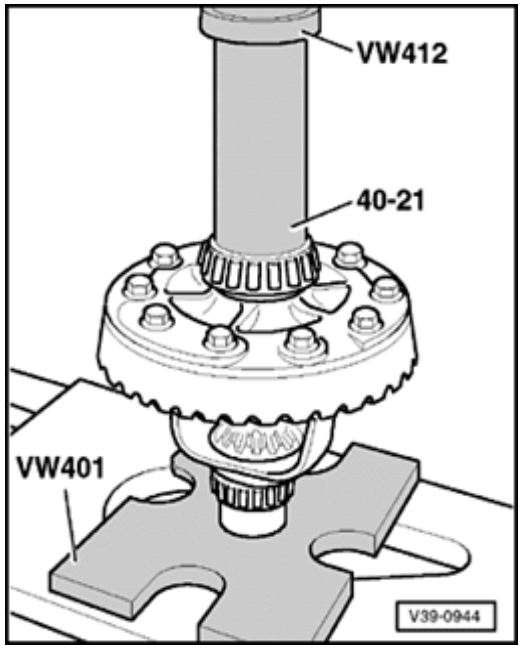


Fig. 4 Pressing on inner race for large tapered roller bearing

- Heat bearing to approx. 100 ° C, fit in position and press home.

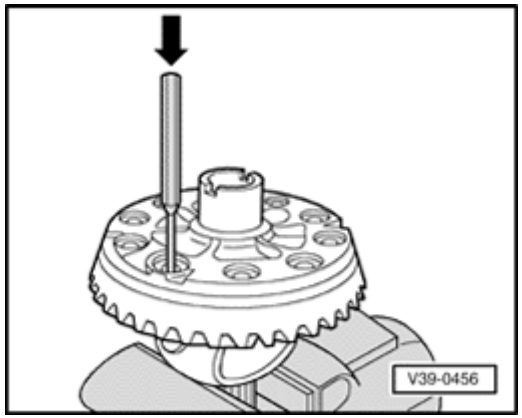


Fig. 5 Driving ring gear off housing

39-27

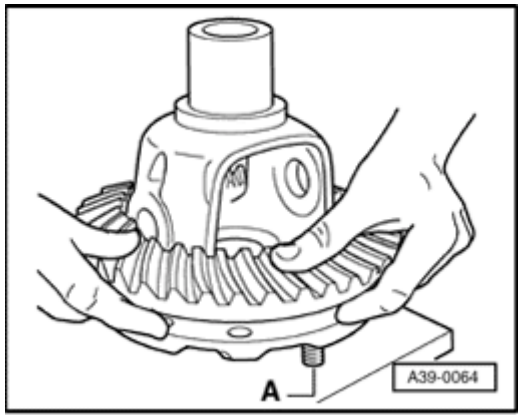


Fig. 6 Installing ring gear

- Use 2 centering pins -A- (local manufacture) as a guide.

CAUTION!

Wear protective gloves.

- Heat ring gear to approx. 100 ° C and install.
- Allow ring gear to cool off slightly before inserting bolts. Then tighten to specified torque.

39-28

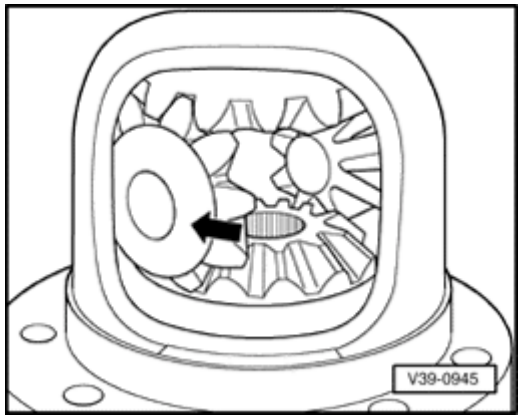


Fig. 7 Installing planet wheels and sun wheels

- Carefully pry out drive wheel for speedometer sender with a screwdriver.
- Insert thrust washers for planet wheels with a small amount of grease.
- Insert sun wheels with selected shims ⇒ Fig. 8 .
- Insert planet wheels spaced 180° apart and rotate into position (arrow).
- Insert threaded pieces.

  Installation position: stepped shoulder toward sun wheels
- Locate thrust washers and planet wheels so that they align with holes.
- Drive planet pinion shaft into final position and secure.

39-29

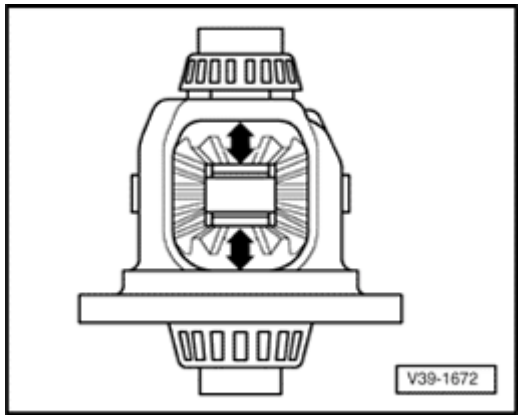


Fig. 8 Adjusting planet wheels and sun wheels

- Insert sun wheels with thinnest shims (0.5 mm).
- Insert planet wheels with thrust washers and press in shaft.

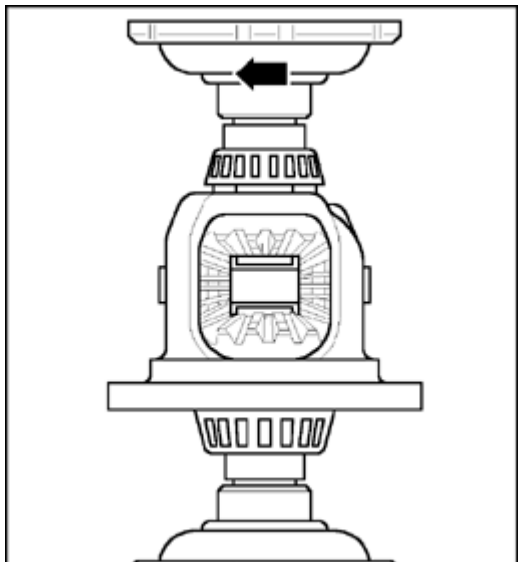
Note:

Do not now interchange bevel gears and thrust washers!

- Press planet wheels outward and check play of sun wheels by hand (arrows).
- Adjust play by inserting an appropriate shim ⇒ Page 39-30 .

  Specification: max. 0.10 mm

Note:



The adjustment is also correct if no further play is perceptible, although it is still possible to rotate the differential bevel gears (arrow).

- Determine shim from table.

⇒ *Parts catalog*

The following shims are available:

Shim thickness (mm)		
0.50	0.70	0.90
0.60	0.80	1.00

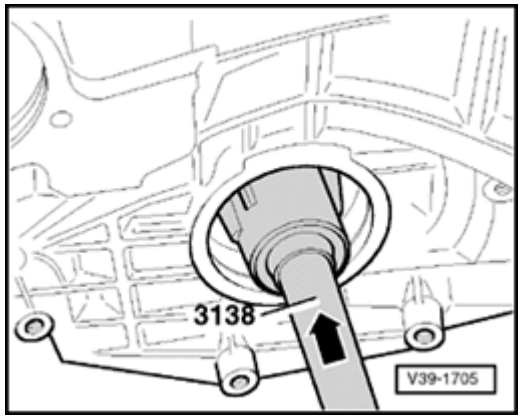


Fig. 9 Driving outer race for small tapered roller bearing out of transmission housing

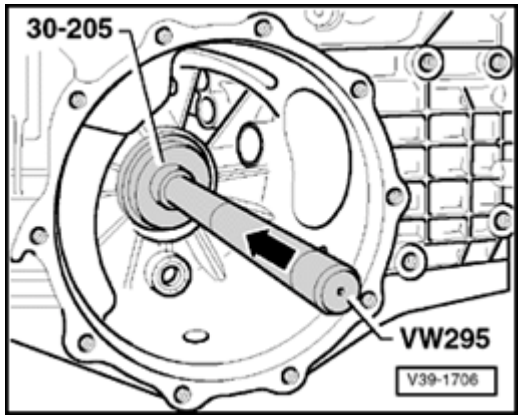


Fig. 10 Driving outer race for small tapered roller bearing into transmission housing

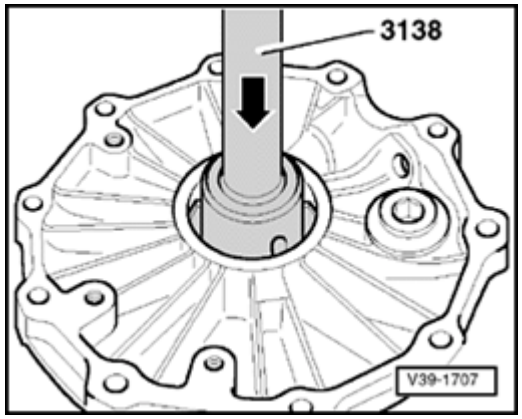


Fig. 11 Driving outer race for large tapered roller bearing out of cover

Use suitable base, e.g. VW 470 with recess toward cover.

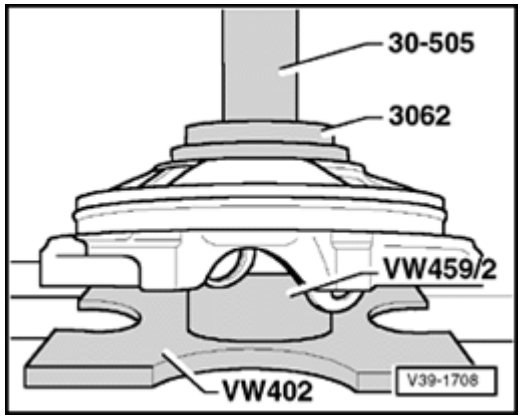


Fig. 12 Driving outer race for large tapered roller bearing into cover