39-134

Pinion shaft, removing, installing and servicing

Special tools and equipment

- VW401 thrust plate
- VW402 thrust plate
- VW407 punch
- VW408A punch
- VW412 thrust disc
- VW457 support channels
- VW460/2 mandrel
- VW519 sleeve
- VW540 engine/transmission support
- 30-205 thrust pad

- 2003/3 seal installer
- 2052/2 assembly tool for pinion shaft
- 3005 thrust pad

39-135

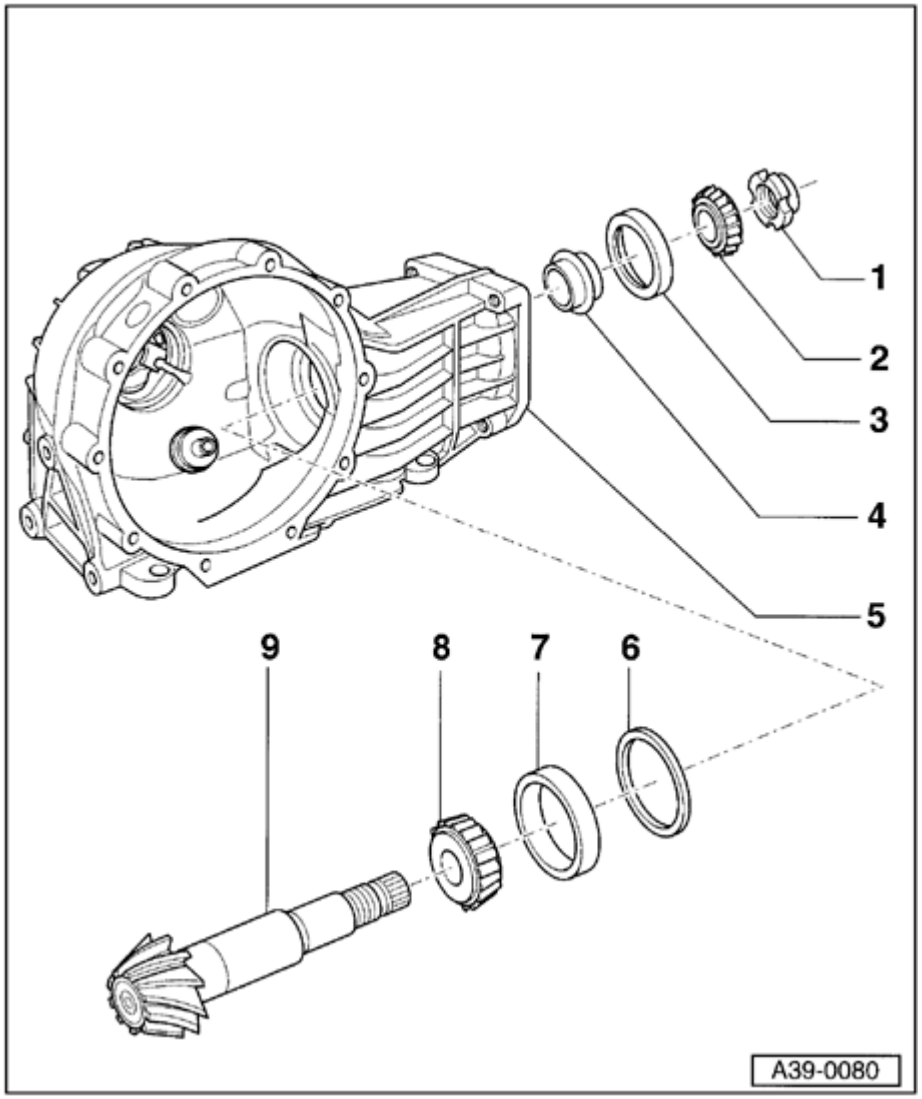
- 3062 thrust pad
- 3138 drift
- 3253 wheel bearing assembly set with 3253/3 and 3253/4
- 3304 bracket
- VAG1383A engine/transmission support
- VAG1359/2 universal mount
- Kukko 17/2 separating tool
- Kukko 21/7 extractor
- Kukko 22/2 support
- Torque gauge 0-600 Ncm (0-53 in. lb)
- 32 mm socket

39-136

Notes:

- *Observe general repair instructions ⇒ Page 00-14 .*
- *With the final drive installed, remove the drive flange housing from the rear final drive ⇒ Page 39-86 .*
- *With the final drive removed, remove the drive flange housing from the rear final drive ⇒ Page 39-119 .*
- *Always replace both tapered roller bearings together as a set. If possible, use same manufacturer.*
- *Do not oil new tapered roller bearings for the friction torque measurement. The bearings are already factory treated with a special oil.*
- *Remove differential ⇒ Page 39-114 .*
- *Adjustments are required when replacing components marked with "1)" ⇒ List of adjustments, ⇒ Page 39-149 .*

39-137



1 - Pinion shaft nut

- Always replace
- Removing ⇒ Figs. 1 and ⇒ 2
- Installing ⇒ Fig. 1
- Measuring friction torque ⇒ Fig. 12
- Securing ⇒ Fig. 13

2 - Small tapered roller bearing inner race1)

- Removing pinion shaft ⇒ Fig. 3
- Installing ⇒ Fig. 10

3 - Small tapered roller bearing outer race1)

- Removing ⇒ Fig. 4
- Installing ⇒ Fig. 9

4 - Spacer sleeve1)

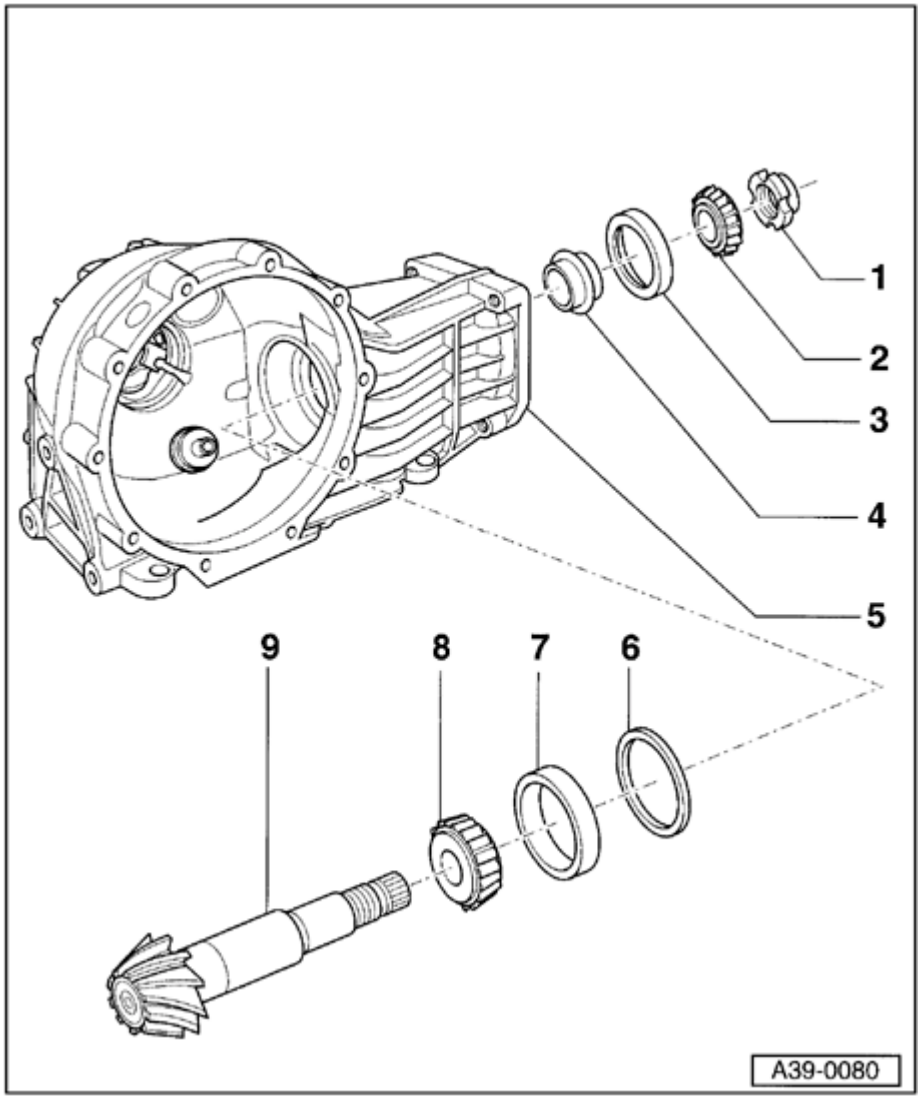
- Always replace

5 - Final drive housing1)

6 - Shim S3

- Note thickness
- List of adjustments ⇒ Page 39-149

39-138



7 - Large tapered roller bearing outer race1)

- Removing ⇒ Fig. 5
- Installing ⇒ Fig. 8

8 - Large tapered roller bearing inner race1)

- Removing ⇒ Fig. 6
- Installing ⇒ Fig. 7

9 - Pinion shaft1)

- Is matched with ring gear, always replace as a set

39-139

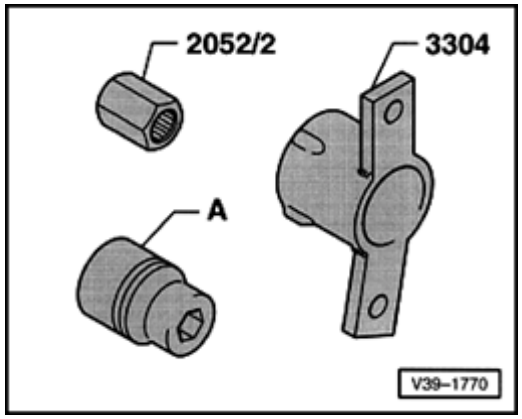


Fig. 1 Tool to loosen and tighten pinion shaft nut

A- 32 mm socket

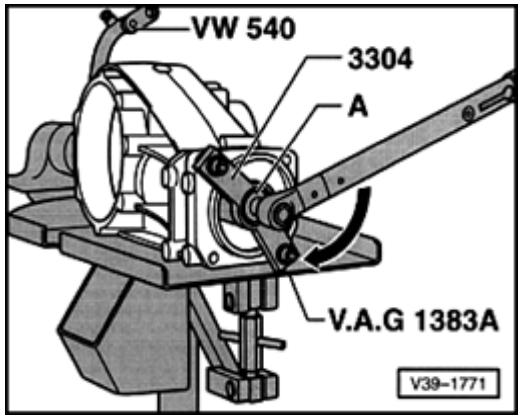


Fig. 2 Removing pinion shaft nut

- Screw 3304 bracket on using two M8 x 30 hex-head bolts.
- Final drive must be supported when loosening nut (e.g. using VAG1359/2 universal transmission attachment in combination with VAG1383A transmission jack).

39-140

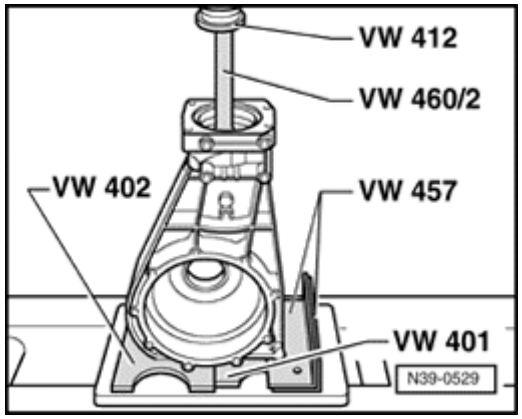


Fig. 3 Removing pinion shaft from small tapered roller bearing inner race

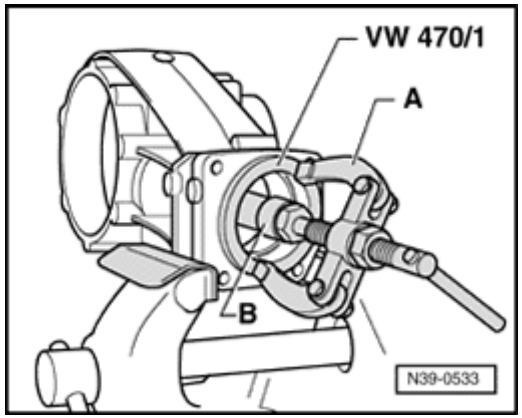


Fig. 4 Removing small tapered roller bearing outer race

A - Counter support e.g. Kukko 22/2

B - Internal puller 46-58 mm, e.g. Kukko 21/7

39-141

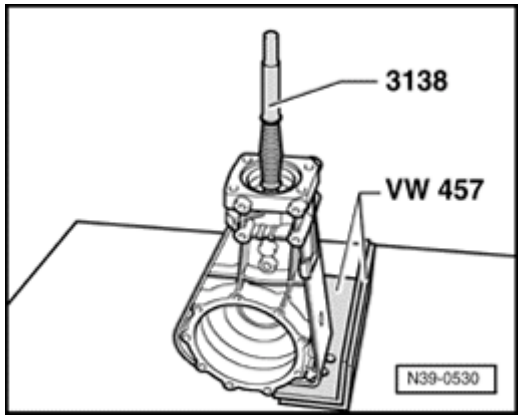


Fig. 5 Removing large tapered roller bearing outer race

- After removing, check shims for damage.

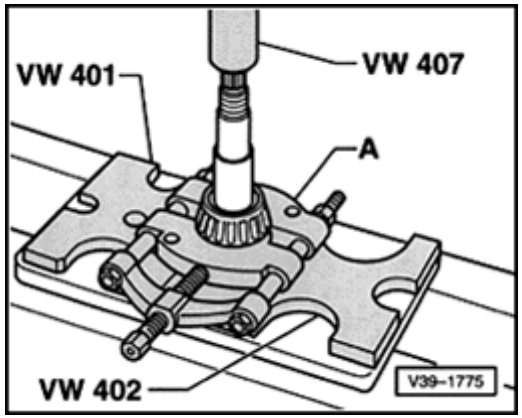


Fig. 6 Removing large tapered roller bearing inner race from pinion shaft

A - Separating device 22-115 mm, e.g. Kukko 17/2

39-142

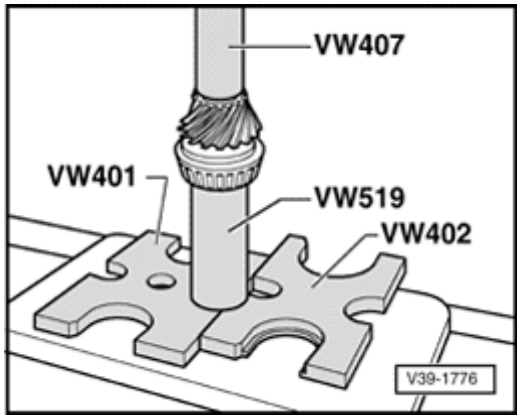


Fig. 7 Installing large tapered roller bearing inner race onto pinion shaft

WARNING!

Wear protective gloves.

- Heat bearing to approx. 100 ° C (212 ° F), install and press down.

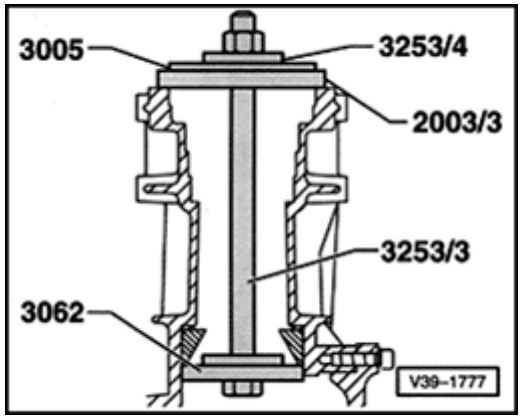


Fig. 8 Installing large tapered roller bearing inner race onto pinion shaft

- First insert predetermined shim S3 for pinion shaft ⇒ Page 39-149 .

Note:

The marking "Oben" on 3253/4 thrust piece faces the nut of the puller.

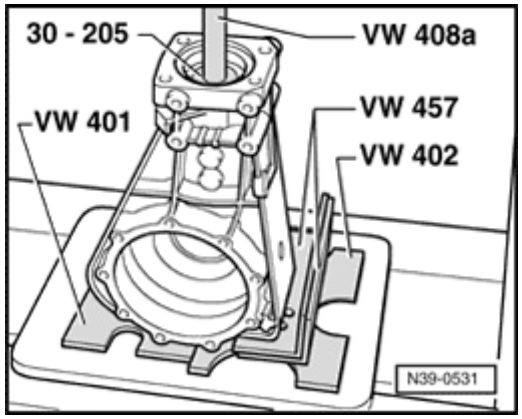


Fig. 9 Installing small tapered roller bearing outer race

- Oil outer race, and position using VW408A punch and 30-205 thrust pad.

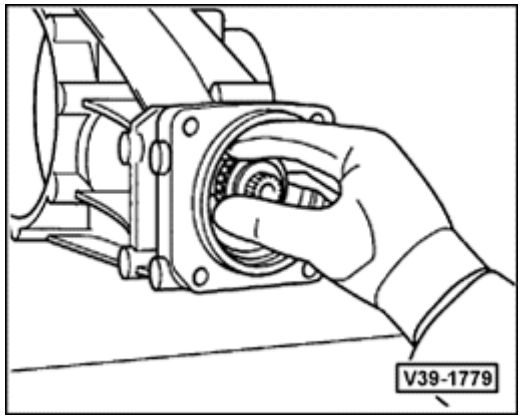


Fig. 10 Installing small tapered roller bearing inner race

WARNING!

Wear protective gloves.

- Insert pinion shaft with new spacer sleeve.
- Heat small tapered roller bearing inner race to approx. 100 ° C (212 ° F) and install onto pinion shaft.
- Lift up pinion shaft and press bearing using 40-21 sleeve up to stop.

39-144

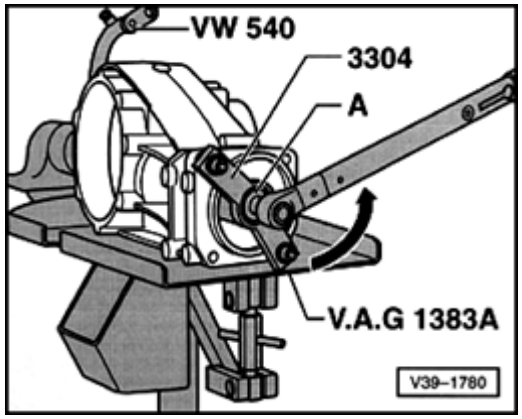


Fig. 11 Tightening nut for pinion shaft and measuring friction torque

- Attach 3304 using two M8 x 30 hex-head bolts.
- Final drive must be supported when tightening nut (e.g. using VAG1359/2 universal transmission attachment in combination with VAG1383A transmission jack).
- Replace nut for pinion shaft.
- Tighten nut for pinion shaft, until no more play can be felt on pinion shaft.
- Increase tightening torque until specified friction torque is attained, measuring friction torque several times during this process ⇒ Fig. 12 .

Note:

If the specified friction torque is exceeded, the spacer sleeve must be replaced and the adjustment repeated. A spacer sleeve that has been over-compressed at any time cannot be reused.

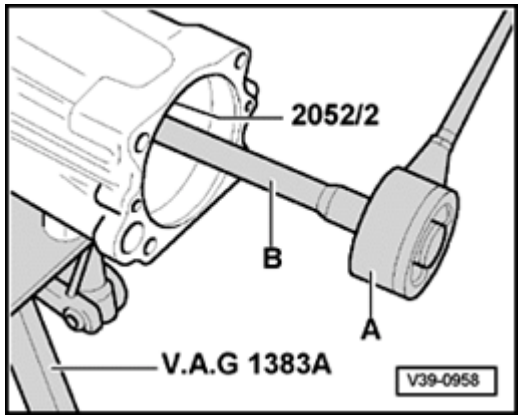


Fig. 12 Measuring friction torque

A - Torque gauge, 0-600 Ncm (53 in. lb) (commercially available)

B - Socket attachment, 32 mm

- Following friction torque should be set:

New bearings	Used bearings1)
200-250 Ncm (18-22 in. lb)	30-60 Ncm (3-5 in. lb)

1) Must have run at least 50 km (30 miles)

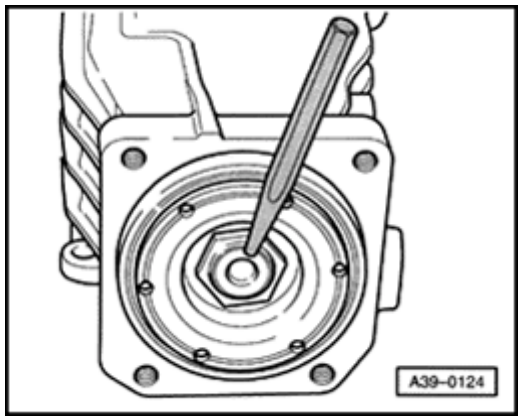


Fig. 13 Securing pinion shaft nut

- Secure pinion shaft nut using mandrel.