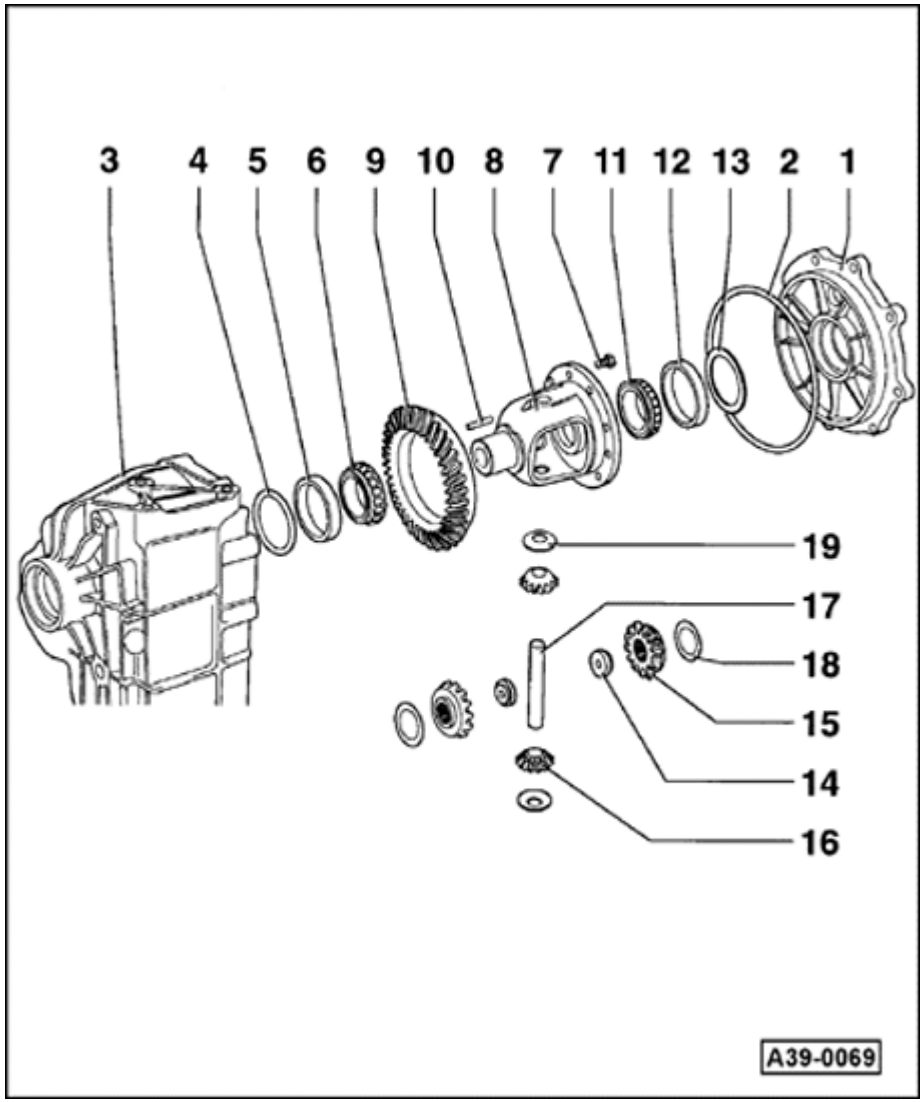
Differential, disassembling and assembling

Special tools, testers and auxiliary items

- Drift VW 295
- Press plate VW 401
- Press plate VW 402
- Press tool VW 407
- Press tool VW 408 A
- Press tool VW 412
- Press tool VW 442
- Press tool 40-21
- Thrust plate 40-105
- Thrust pad 2050

- Drift 3138
- Tapered roller bearing puller V.A.G 1582 and V.A.G 1582/6
- Two-arm puller Kukko 44/2

39-121



Note:

- *General repair instructions* ⇒ *Page 00-11* .
- *Replace both tapered roller bearings of the differential together. Use same make if possible.*
- *Adjustments are required when replacing components marked 1)* ⇒ *Page 39-150* , *Adjustment overview*

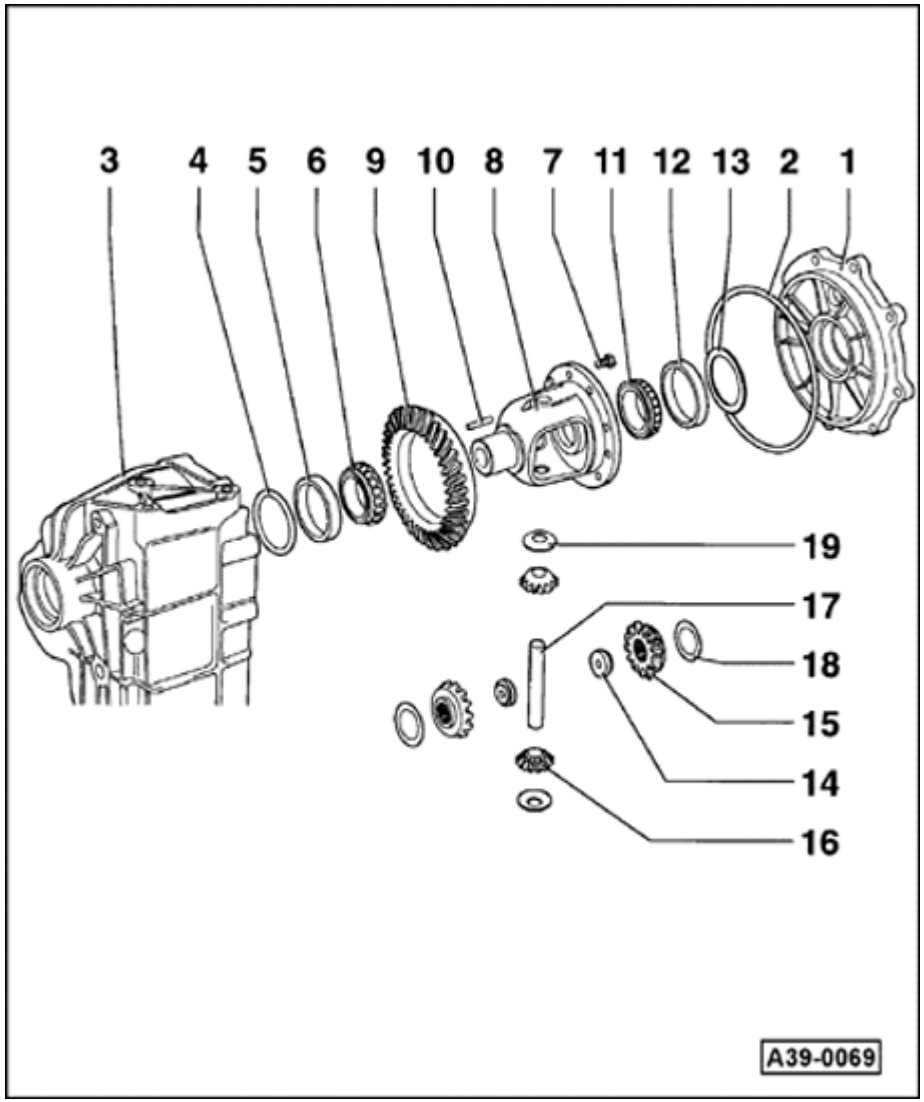
1 - Cover for final drive 1)

2 - O-ring

- Always replace
- Insert with oil

3 - Final drive housing 1)

39-122



4 - Shim "S2"

- Note thickness
- Adjustment overview ⇒ Page 39-150

5 - Outer race for small tapered roller bearing 1)

- Knocking out ⇒ Fig. 1
- Pressing in ⇒ Fig. 2

6 - Inner race for small tapered roller bearing 1)

- Pulling out ⇒ Fig. 3
- Pressing in ⇒ Fig. 4

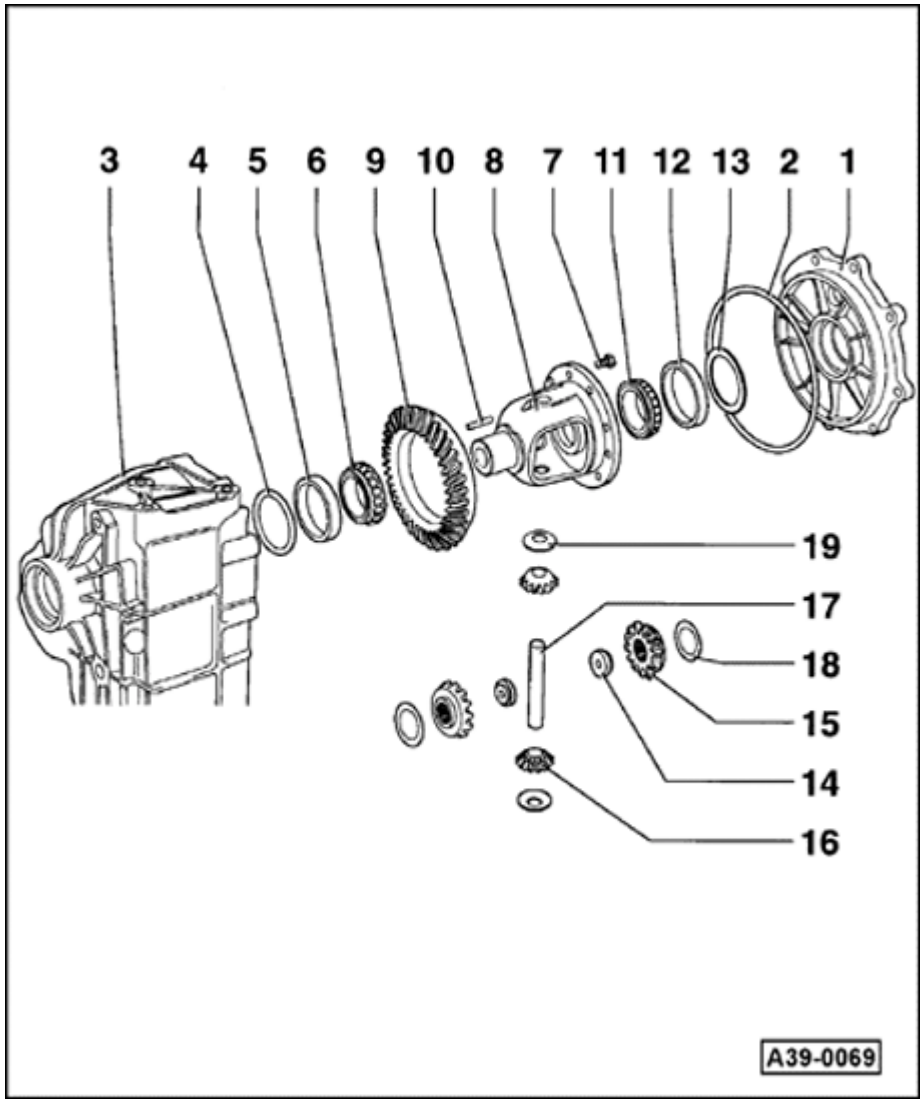
7 - Bolt, 60 Nm + turn 45° further

- Always replace
- Allocation

⇒ *Parts catalog*

- Lightly tighten bolts then tighten diagonally to correct torque

39-123



8 - Differential housing [1)]

9 - Ring gear [1)]

- Paired with drive pinion (final drive set)
- Select correct version according to code letters

⇒ *Parts catalog*

- Drive off housing with a punch ⇒ Fig. 9
- Installing on differential housing ⇒ Fig. 10

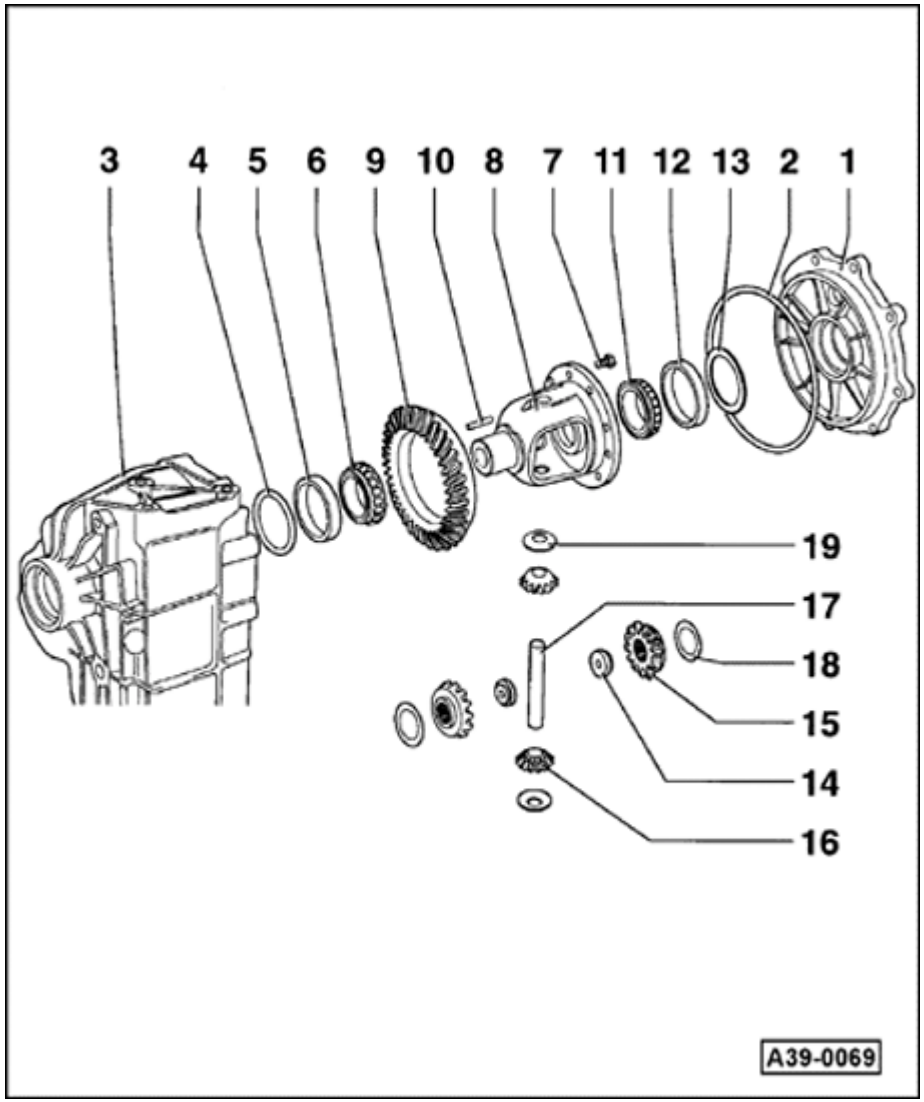
10 - Spring pin

- For securing planet pinion axis shaft
- Drive in flush

11 - Inner race for large tapered roller bearing [1)]

- Pulling off ⇒ Fig. 5
- Pressing on ⇒ Fig. 6

39-124



12 - Outer race for large tapered roller bearing
1)

- Driving out ⇒ Fig. 7
- Pressing in ⇒ Fig. 8

13 - Shim "S1"

- Note thickness
- Adjustment overview ⇒ Page 39-150

14 - Threaded piece

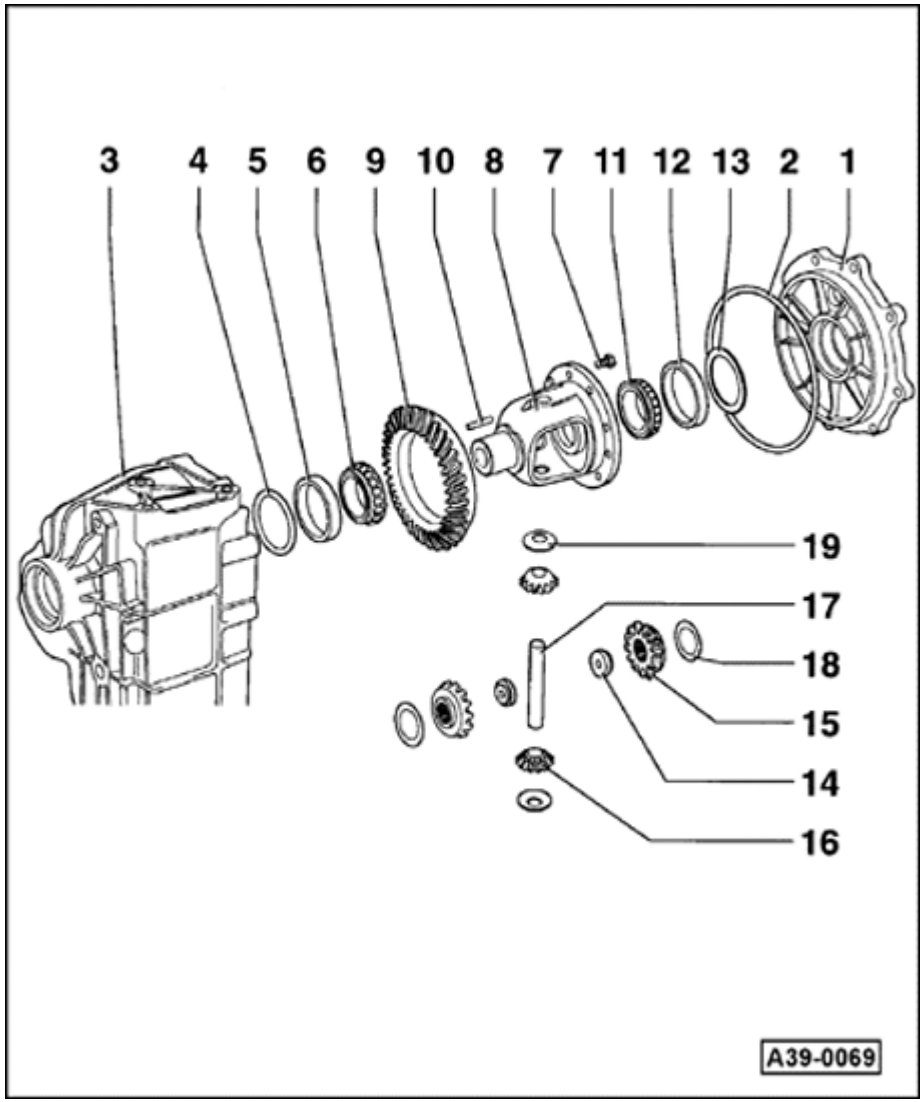
15 - Sun wheel

- Installing ⇒ Fig. 11
- Adjusting ⇒ Fig. 12

16 - Planet pinion

- Installing ⇒ Fig. 11

39-125



17 - Planet pinion axis shaft

- Knock out with drift
- Drive in carefully so that the thrust washers are not damaged
- Secure with spring pin - 10 -

18 - Shim

- Re-determining thickness ⇒ Fig. 12

19 - Thrust washer

- Check for cracks

39-126

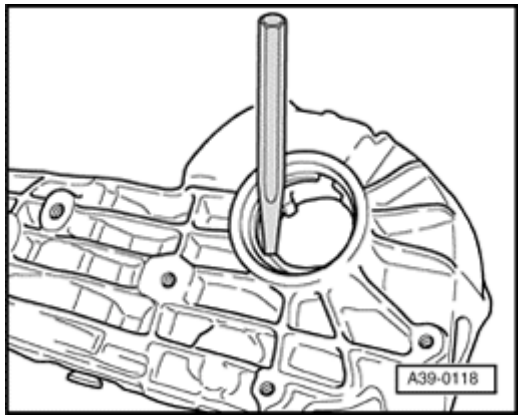


Fig. 1 Knocking outer race of small tapered roller bearing out of housing

- After removing check shims for damage.

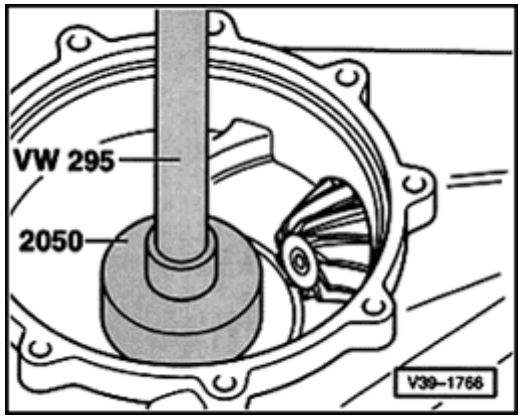


Fig. 2 Pressing outer race of small tapered roller bearing into housing (press against stop)

- Position outer race using VW 295 and light even blows with a hammer.
- Drive in onto stop as shown in illustration.

39-127

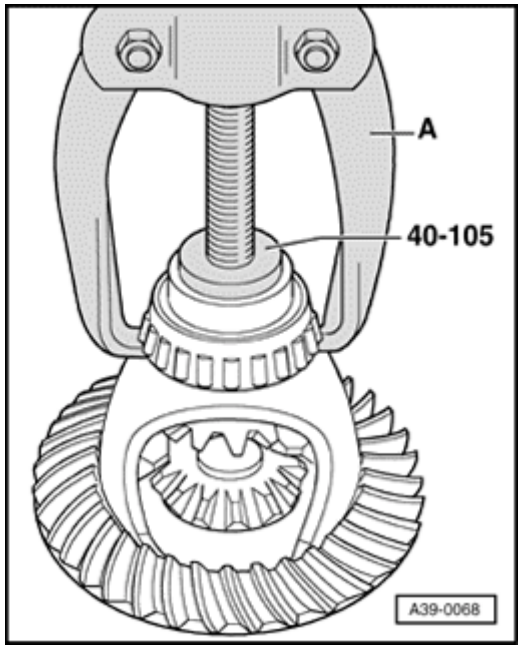


Fig. 3 Pulling off inner race for small tapered roller bearing

A - Two arm puller, e.g. Kukko 44/2

39-128

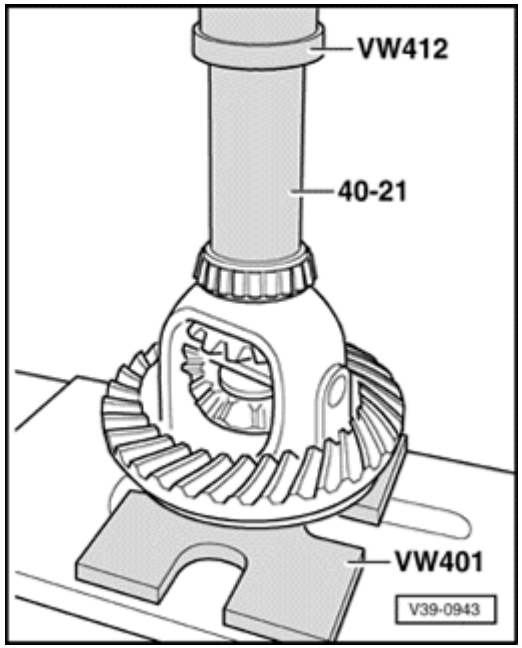


Fig. 4 Pressing on inner race for small tapered roller bearing

CAUTION!

Wear protective gloves.

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

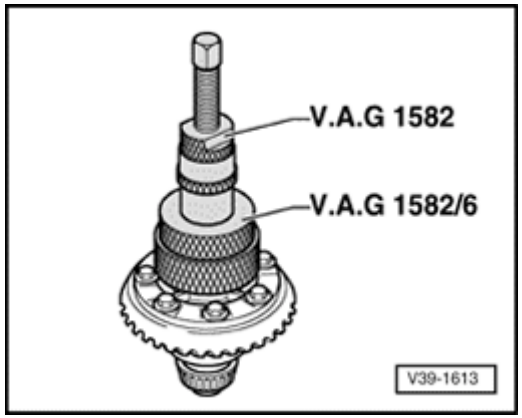


Fig. 5 Pulling off inner race for large tapered roller bearing

- Before fitting extractor position press piece 40-105 on differential housing.

39-129

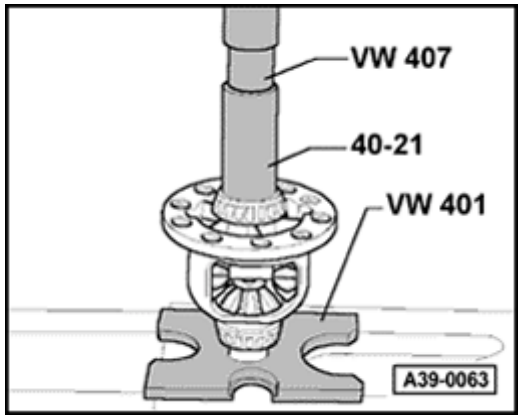


Fig. 6 Pressing on inner race for large tapered roller bearing

CAUTION!

Wear protective gloves.

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

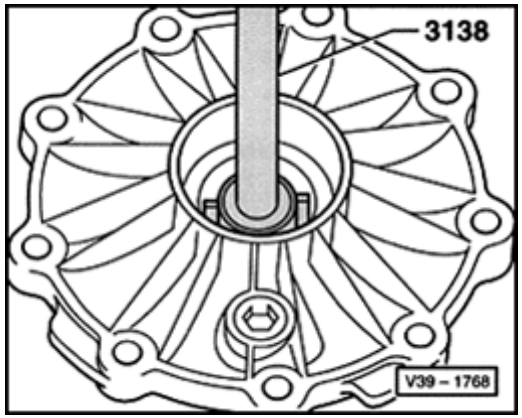


Fig. 7 Driving outer race for large tapered roller bearing out of cover

- After removing check shims for damage.

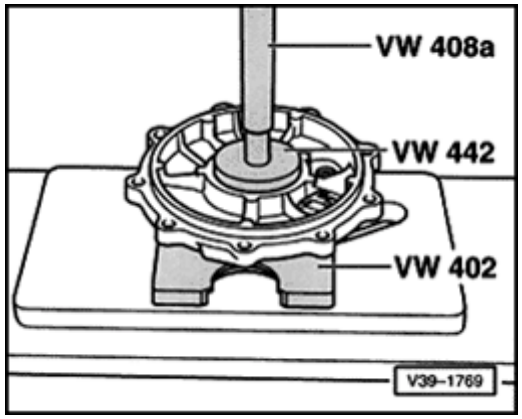


Fig. 8 Pressing outer race for large tapered roller bearing into cover

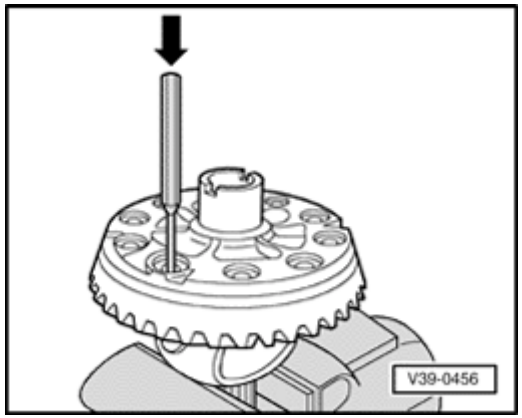


Fig. 9 Driving ring gear off housing

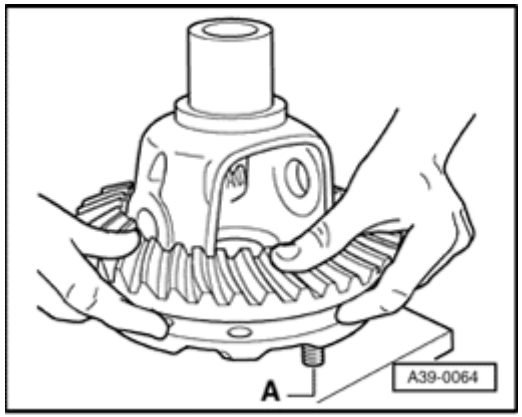


Fig. 10 Installing ring gear

CAUTION!

Wear protective gloves.

- When fitting ring gear guide centralizing pins -A- (local manufacture).
- Heat ring gear to approx. 100 ° C and install.

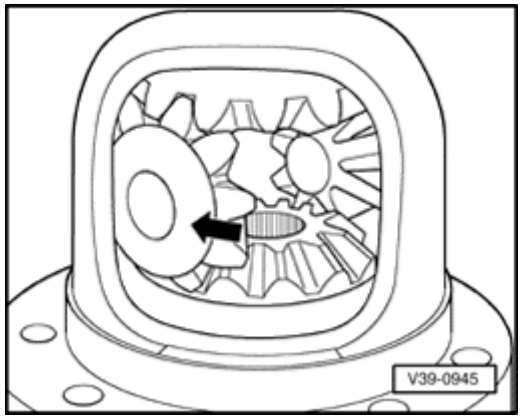


Fig. 11 Installing sun wheels and planet pinions

- If sun wheels have been replaced, measure and select new shims ⇒ Fig. 12 .
- Insert sun wheels with measured shims.
- Install planet pinions spaced 180 ° apart, and rotate into position (arrow).
- Fit and align thrust washers.
- Insert threaded pieces.
- Drive planet pinion shaft into final position and secure.

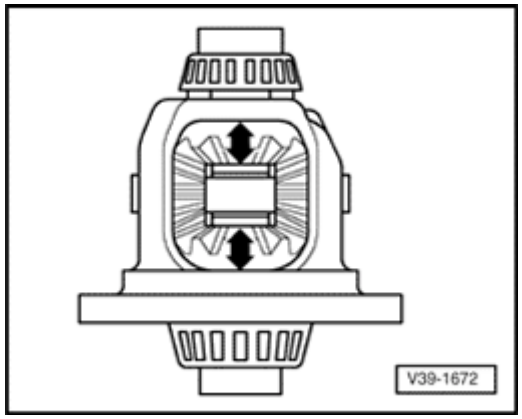


Fig. 12 Adjusting differential bevel gears

- Insert sun wheels with thinnest shims (0.5 mm).
- Insert planet pinions with thrust washers spaced 180° apart.

Note:

Do not now interchange bevel gears and thrust washers.

- Drive in planet pinion axis shaft.
- Press planet pinions outward.
- Press sun wheels in direction indicated (arrows), and check the amount of play.
- Determine thickest shims for sun wheels (on each side) which can still just be inserted.

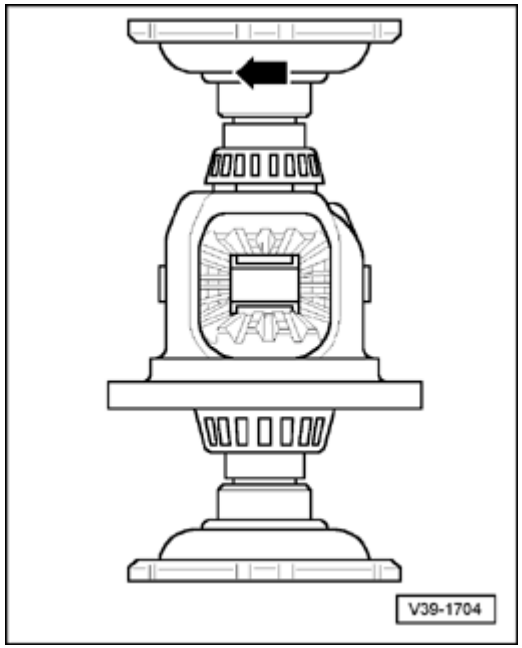
  The same thickness of shim should be used on both sides.
- Identify shims according to table.

⇒ *Parts catalog*

The following shims are available:

Shim thickness (mm)		
0.50	0.70	0.90
0.60	0.80	1.00

Note:



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