

Front final drive differential, disassembling and assembling

Special tools and equipment

- ◆ VW295 needle bearing drift
- ◆ VW401 thrust plate
- ◆ VW402 thrust plate
- ◆ VW407 punch
- ◆ VW408A punch
- ◆ VW447H thrust pad
- ◆ VW447I thrust pad
- ◆ VW472/1 pressure piece
- ◆ VW511 thrust pad
- ◆ 30-11 thrust pad

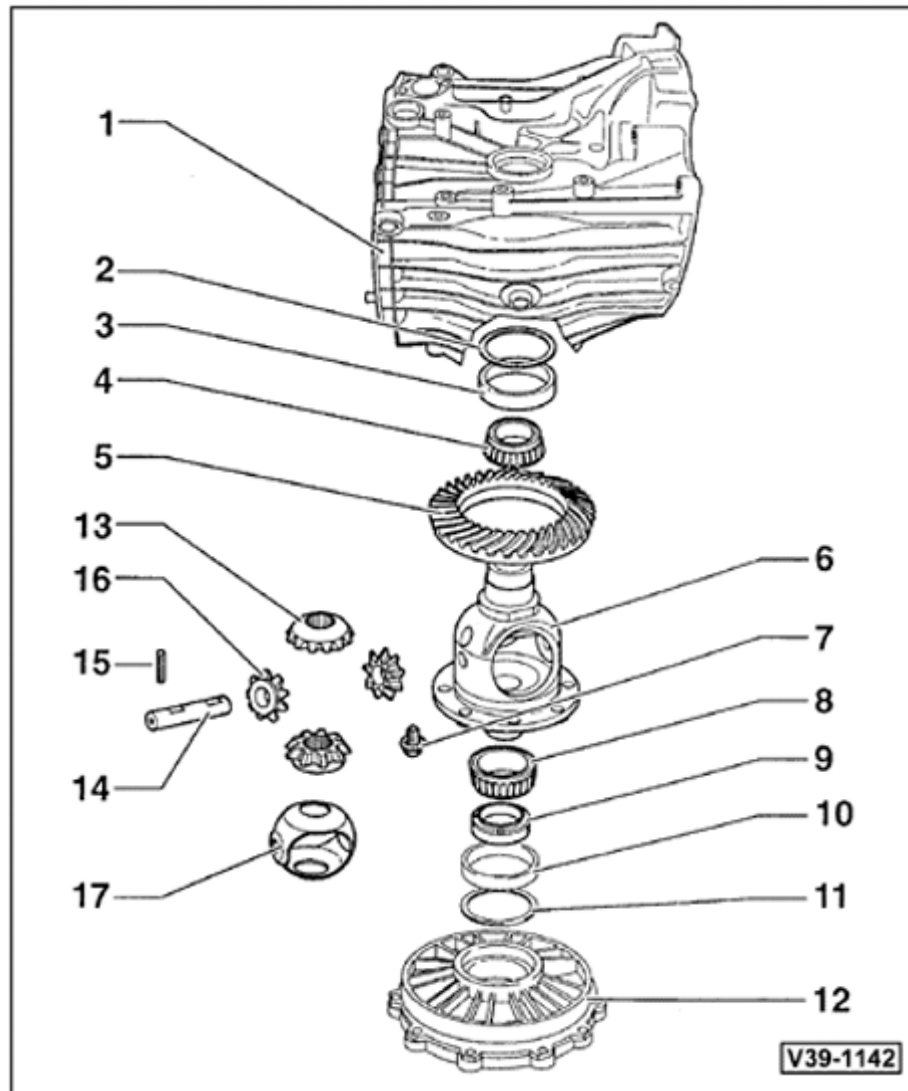
◆ 30-205 thrust pad

◆ 40-21 sleeve

- ◆ 40-105 thrust piece
- ◆ 3138 drift
- ◆ 3144 press support
- ◆ 3296 tube
- ◆ Sealant AMV 188 000 02
- ◆ Kukko 20/10 two-arm puller or Kukko 44/2 puller
- ◆ Kukko 204/2 two-arm puller

Notes:

- ◆ *Differential, removing and installing* ⇒ [Page 39-16](#) .
- ◆ *Replace both tapered roller bearings together.*
- ◆ *When replacing parts identified with(*), adjustment work is required* ⇒ *List of adjustments,* ⇒ [Page 39-37](#) .



1 - Transmission housing*

2 - Adjustment shim S2

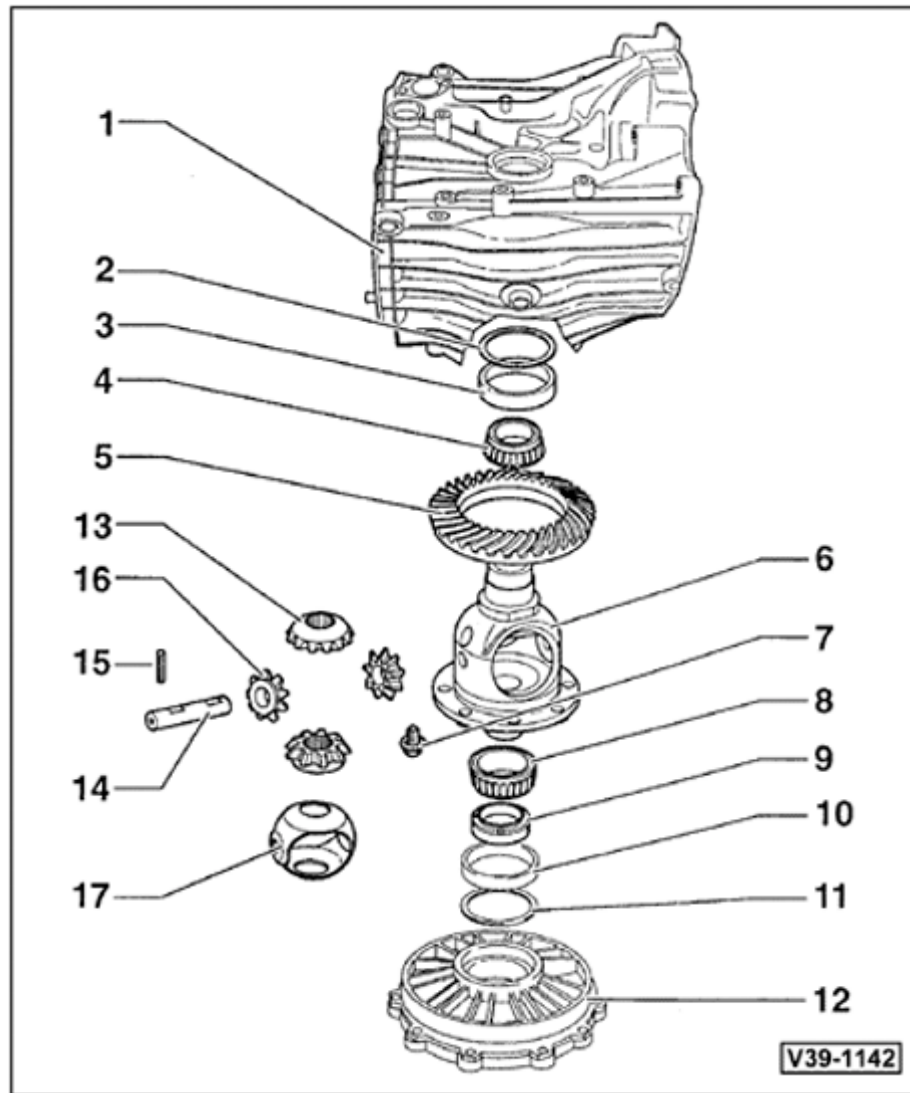
- ◆ Note thickness
- ◆ List of adjustments ⇒ [Page 39-37](#)

3 - Right tapered roller bearing outer race*

- ◆ Tapered roller bearings on left and right are identical (not for transmission code CXF)
- ◆ Removing ⇒ [Fig. 1](#)
- ◆ Pressing in using VW472/1 special tool and VW408A punch ⇒ [Fig. 2](#)
- ◆ Install using VW295 needle bearing drift and 30-205 thrust pad (transmission code CXF)

4 - Right tapered roller bearing inner race*

- ◆ Tapered roller bearings on left and right are identical (not for transmission code CXF)
- ◆ Removing using 3296 tube ⇒ [Fig. 3](#)
- ◆ Installing ⇒ [Fig. 4](#)
- ◆ Transmission code CXF: install using 40-21 sleeve



5 - Ring gear*

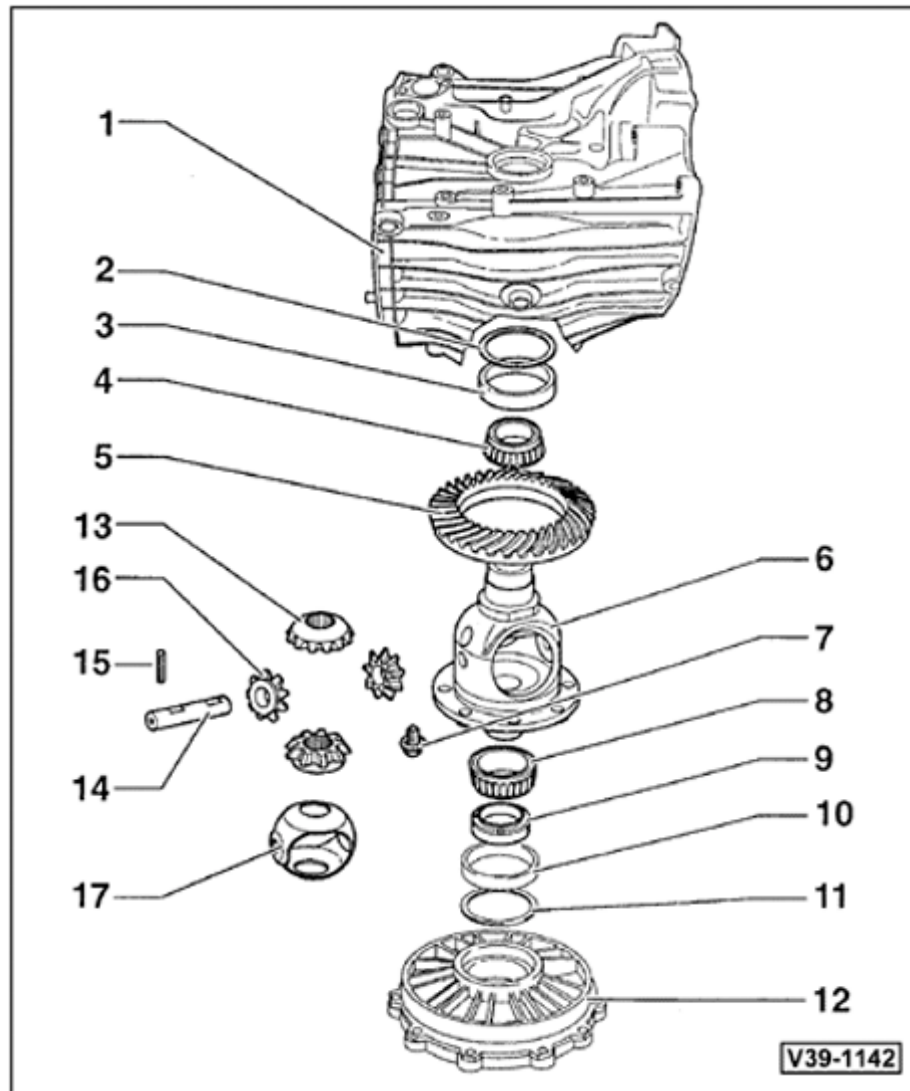
- ◆ Is matched to pinion shaft (gear set)
- ◆ Allocate by transmission code ⇒ parts catalog, ⇒ [Page 00-3](#)
- ◆ Remove from differential housing using a drift ⇒ [Fig. 9](#)
- ◆ Installing on differential housing ⇒ [Fig. 10](#)

6 - Differential housing*

- ◆ Allocate by transmission code ⇒ parts catalog
- ◆ Transmission identification ⇒ [Page 00-3](#)

7 - Ring gear bolt

- ◆ Always replace
- ◆ Lightly tighten bolts, then tighten diagonally to correct torque
- ◆ 60 Nm (44 ft lb) + 1/4-turn (90°)



8 - Left tapered roller bearing inner race*

- ◆ Tapered roller bearings on left and right are identical (not for transmission code CXF)
- ◆ Removing ⇒ [Fig. 5](#)
- ◆ Installing using 3296 tube ⇒ [Fig. 6](#)
- ◆ Transmission code CXF: install using 40-21 sleeve

9 - Speedometer drive gear

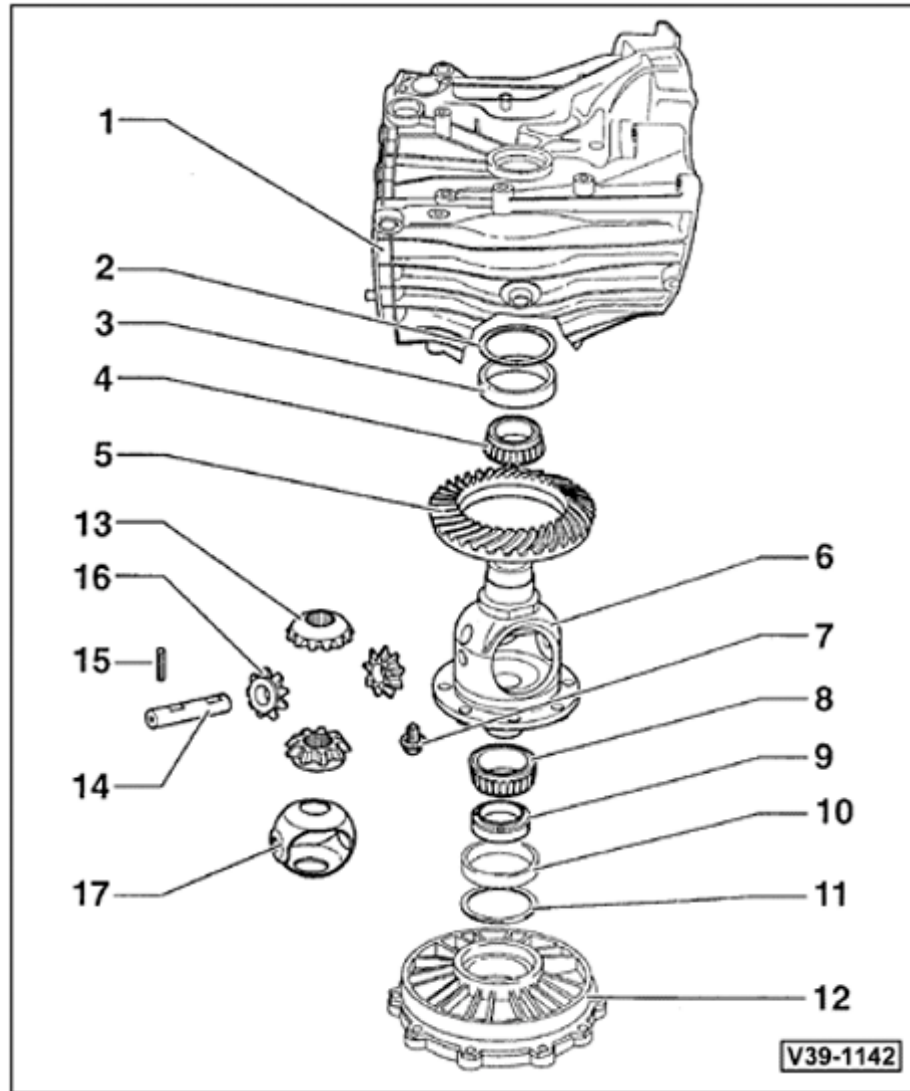
- ◆ Removing and installing ⇒ [Page 39-14](#)

CAUTION!

Install drive gear carefully onto differential, without canting. Do not use force, the drive gear can break easily.

10 - Left tapered roller bearing outer race*

- ◆ Tapered roller bearings on left and right are identical (not for transmission code CXF)
- ◆ Removing ⇒ [Fig. 7](#)
- ◆ Pressing in using VW472/1 special tool and VW408A punch ⇒ [Fig. 8](#)
- ◆ Press in using 40-21 sleeve (transmission code CXF)

**11 - Adjustment shim S1**

- ◆ Note thickness
- ◆ List of adjustments ⇒ [Page 39-37](#)

12 - Differential cover***13 - Large differential bevel gear**

- ◆ Installing ⇒ [Fig. 11](#)

14 - Differential bevel gear shaft

- ◆ Drive out using drift, after removing roll pin

15 - Roll pin

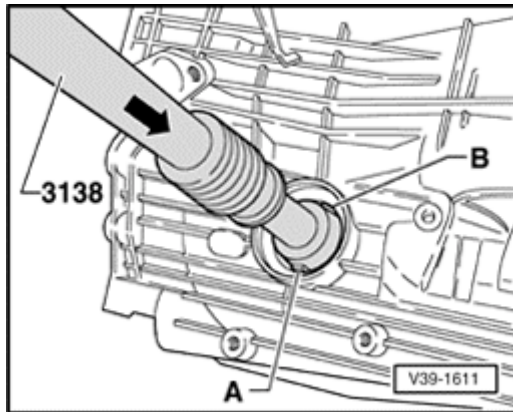
- ◆ For securing differential bevel gear shaft
- ◆ Version with annular groove, removing and installing ⇒ [Fig. 12](#)
- ◆ Version without annular groove, drive out using drift

16 - Small differential bevel gears

- ◆ Installing ⇒ [Fig. 11](#)

17 - Thrust washer assembly

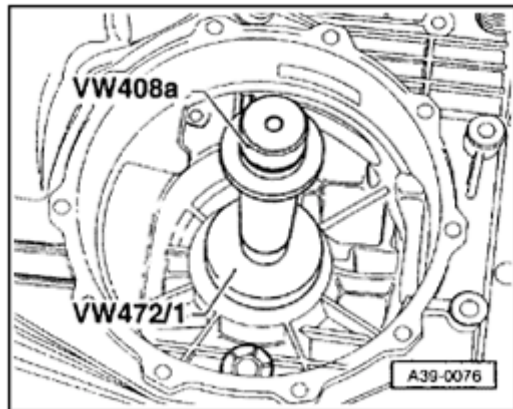
- ◆ Coat with transmission oil when installing



A

Fig. 1 Removing small tapered roller bearing outer race from transmission housing

- Turn webs -A- and -B- out until they sit on outer race within recess in transmission.
- After removing, check shims for damage.



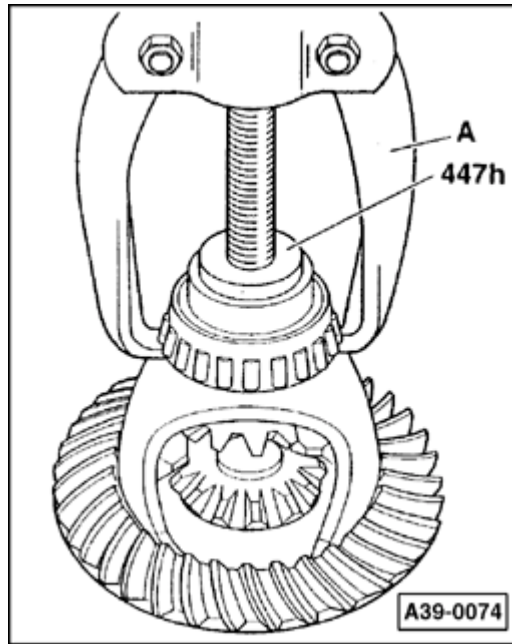
A

Fig. 2 Installing right tapered roller bearing outer race into transmission housing

- VW472/1 pressure piece is installed with cone in outer race.

Note:

Transmission code CXF: use 30-205 thrust pad and VW295 needle bearing drift.



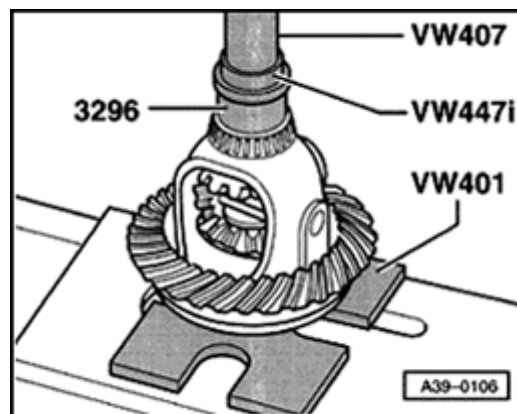
A

Fig. 3 Removing right tapered roller bearing inner race

A - Kukko 20/10 two-arm puller, e.g. Kukko 44/2

Notes:

- ◆ Pullers with a small spindle diameter, 30-11 thrust pad must be placed between 447H pressure washer and the puller.
- ◆ Transmission code CX: use 40-105 thrust piece.
- ◆ The differential housing has a notch under the bearing seat to install puller -A-.



A Fig. 4 Installing right tapered roller bearing inner race

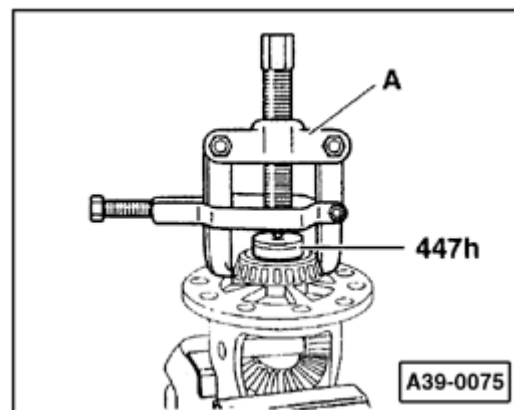
WARNING!

Wear protective gloves.

- Heat inner race to approx. 100 ° C (212 ° F), position and install.

Note:

Transmission code CXF: use 40-21 sleeve.

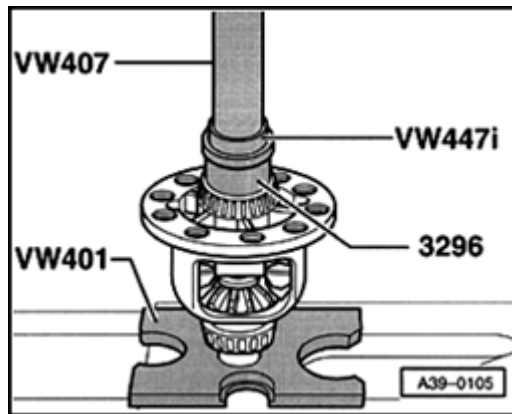


A Fig. 5 Removing left tapered roller bearing inner race

A - Two-arm puller, e.g. Kukko 204/2

Notes:

- ◆ *On a puller with a small spindle diameter, 30-11 thrust pad must be placed between 447H pressure washer and THE puller.*
- ◆ *Transmission code CXF: use 40-105 thrust piece.*
- ◆ *The differential housing has a notch under the bearing seat to install puller -A-.*



A

Fig. 6 Installing left tapered roller bearing inner race

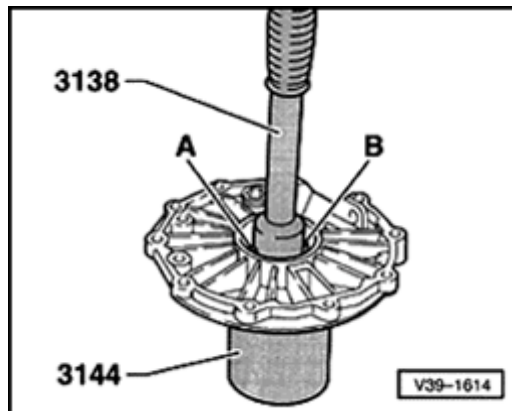
WARNING!

Wear protective gloves.

- Heat inner race to approx. 100 ° C (212 ° F), position and install.

Note:

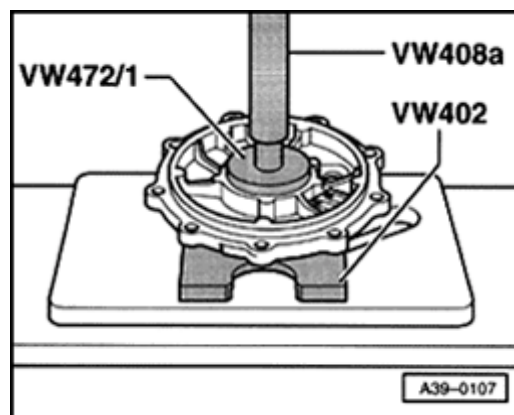
transmission code CX: , use 40-21 sleeve.



A

Fig. 7 Removing left tapered roller bearing outer race from differential cover

- Turn webs -A- and -B- out until they sit on outer race within recess in differential cover.
- After removing, check shims for damage.

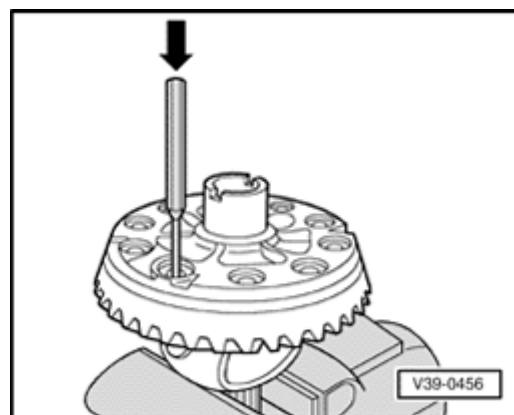


A **Fig. 8** Installing left tapered roller bearing outer race into differential cover

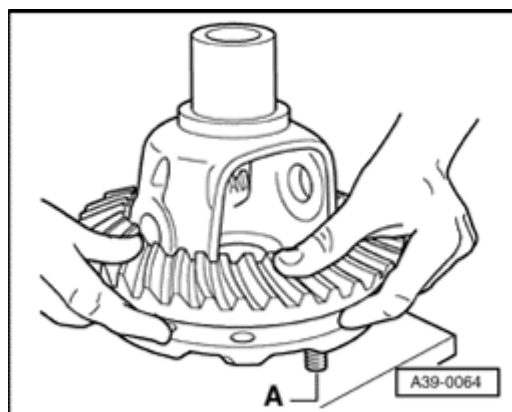
- VW 472/1 pressure piece is installed with cone in outer race.

Note:

Transmission code CXF: use VW511 thrust pad and VW295 needle bearing drift.



A **Fig. 9** Removing ring gear from differential housing

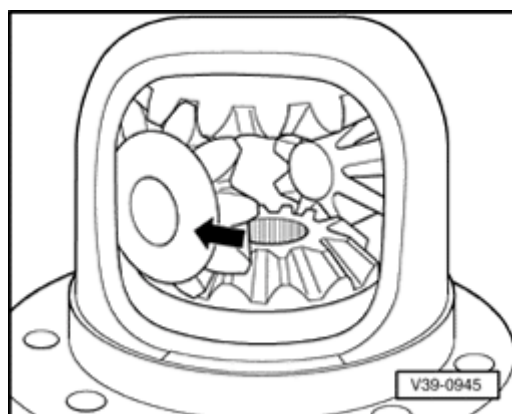


A Fig. 10 Installing ring gear

WARNING!

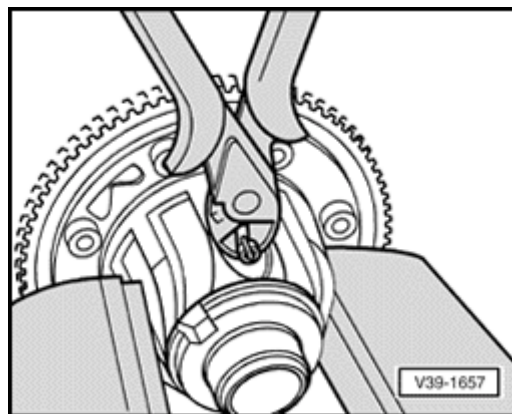
Wear protective gloves.

- When installing ring gear, guide with centering pins -A- (local manufacture).
- Heat ring gear to approx. 100 ° C (212 ° F) and install.
- Allow ring gear to cool off slightly before inserting bolts.
- Tighten to specified torque.



A Fig. 11 Installing differential bevel gears

- Lubricate one-piece thrust washer with transmission oil and install.
- Install large differential bevel gears.
- Insert small differential bevel gears at 180 ° from their final position, and rotate into place (arrow).
- Drive small differential bevel gear shaft into final position and secure.



A **Fig. 12 Removing and installing roll pin**

Removing

Roll pin with annular groove:

- Remove using diagonal-cutting pliers.

Roll pin without annular groove:

- Remove from behind, using punch.

Installing

- Install roll pin until stop is reached.