Front drive axles, removing and installing

WARNING!

- ***Do not re-use any fasteners that are worn or deformed in normal use.***

- ***Some fasteners are designed to be used only once, and are unreliable and may fail if used a second time. This includes, but is not limited to, nuts, bolts, washers, circlips and cotter pins. Always follow the recommendations in this manual-replace these fasteners with new parts where indicated, and any other time it is deemed necessary by inspection.***

Removing

- Remove wheel trim.

  On light-alloy wheels use puller in vehicle tool kit to remove trim cap

- Remove collar bolt for drive axle.

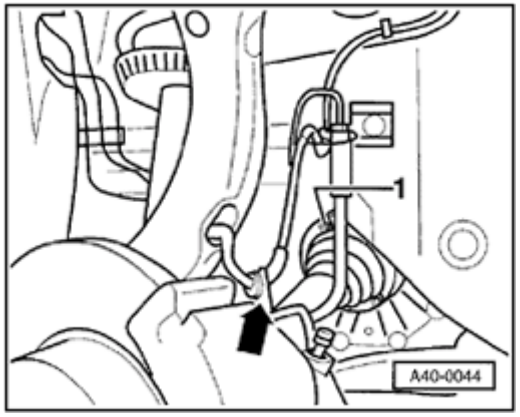
WARNING!

The vehicle must be standing on its wheels

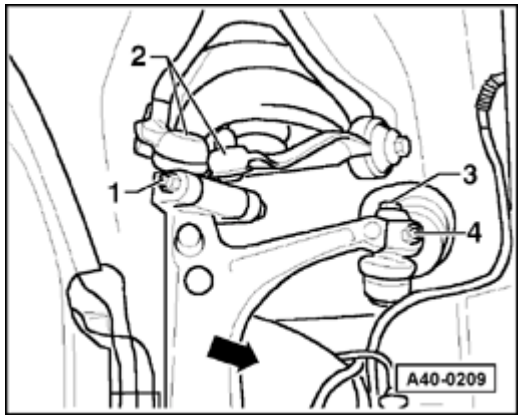
when loosening or tightening the collar bolt for the drive axle (item - 17 -, page ⇒ Page 40-4). Otherwise the risk of an accident exists.

- Remove wheel.

40-18



- Remove socket-head bolts -1- and disconnect drive axle from drive flange on transmission.
- Remove ABS wheel speed sensor wiring from retainer on brake caliper (arrow).
- Pull ABS wheel speed sensor out from wheel bearing housing slightly.



- Remove nut -1-, remove bolt and disconnect both links -2- upward.

CAUTION!

- ***Do not use a chisel (or similar) to widen the slots in the wheel bearing housing.***
- ***Do not loosen bolts -3- and -4-. Otherwise, the wheel alignment must be checked.***

- Swing wheel bearing housing aside in direction of arrow.
- Remove drive axle.

Installing

- Install drive axle into wheel bearing housing and bolt it to drive flange on transmission.

- Install both upper links and tighten nut to 40 Nm (30 ft lb).

  When tightening, press upper links downward as far as possible

- Fully tighten bolts connecting drive axle to drive flange on transmission.

  - M8 bolts: 40 Nm (30 ft lb)

  - M10 bolts: 80 Nm (59 ft lb)

- Push ABS wheel speed sensor into wheel bearing housing up to stop and insert sensor wiring into retainer on brake caliper.

- Install wheel.

- Install and tighten new bolt for drive axle.

  - M14 bolt: 115 Nm (85 ft lb) + 1/2-turn (180

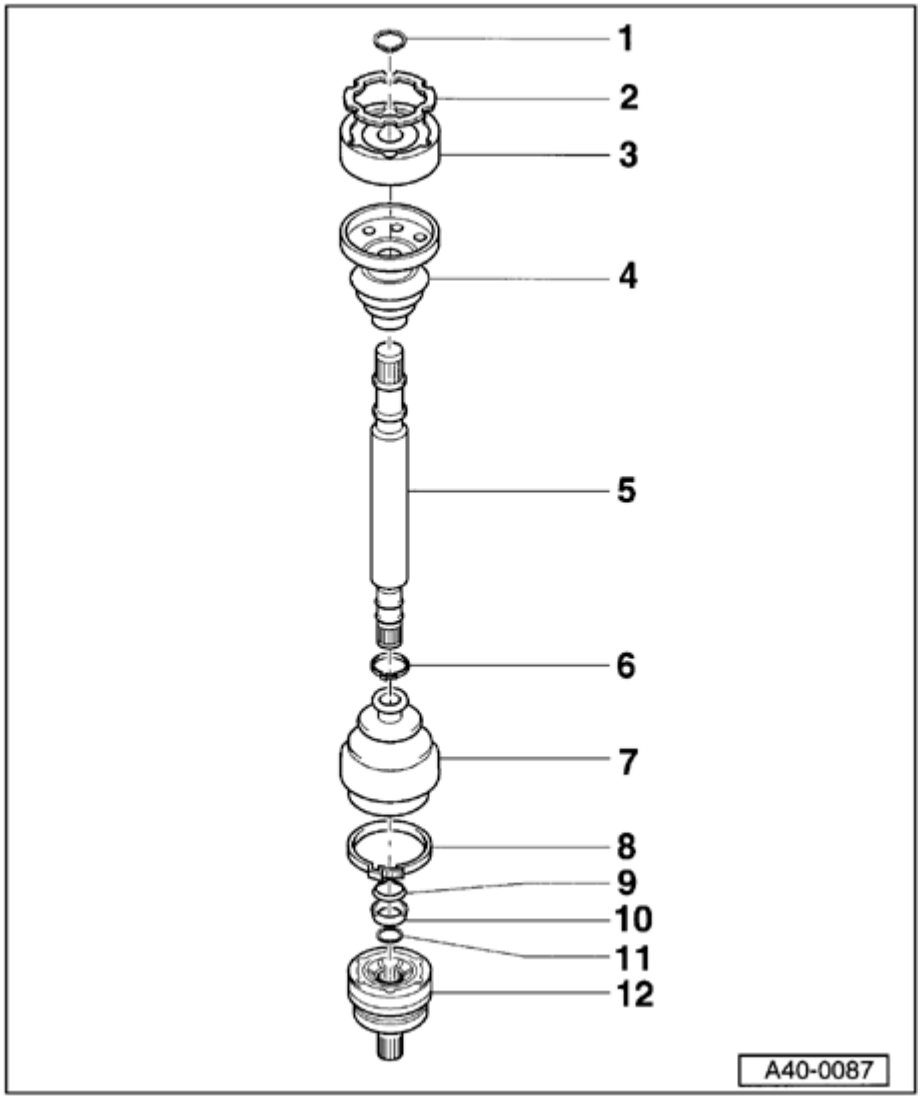
(180 °)

- M16 bolt: 190 Nm (140 ft lb) + 1/2-turn (180 °)

WARNING!

The vehicle must be standing on its wheels when loosening or tightening the collar bolt for the drive axle (item - 17 -, page ⇒ Page 40-4). Otherwise the risk of an accident exists.

40-20



Drive axle with inner Constant Velocity (CV) joint, servicing

Constant velocity (CV) joints are packed with grease G 000 603.

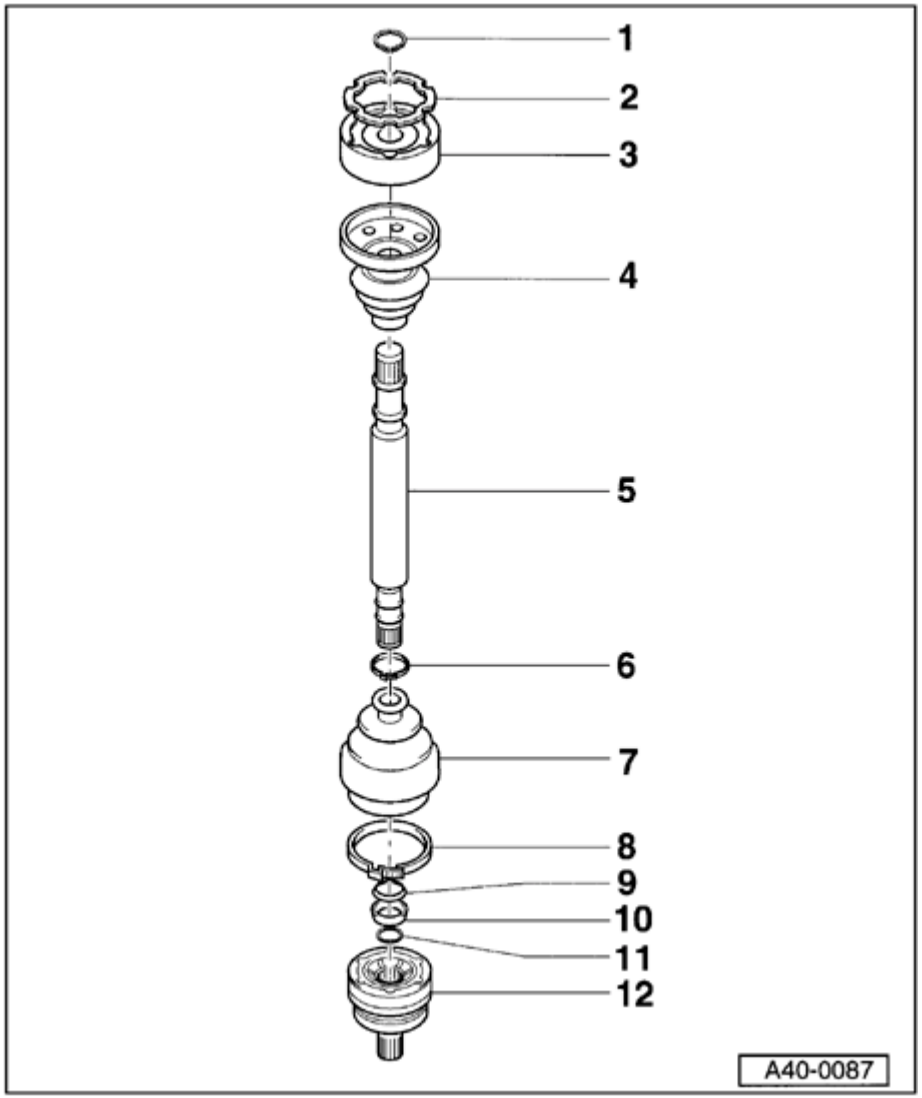
Outer CV joints

Outer joint dia.	Total grease required	Proportions:	
		Joint	Boot
88 mm (3.5 in.)	100 g (3.5 oz.)	50 g (1.8 oz)	50 g (1.8 oz)
98 mm (3.9 in.)	120 g (4.2 oz.)	80 g (2.8 oz.)	40 g (1.4 oz.)

Inner CV joints

Inner joint dia.	Total grease required	Proportions:	
		Joint	Boot
100 mm (3.9 in.)	110 g (3.8 oz.)	55 g (1.9 oz)	55 g (1.9 oz)
108 mm (4.3 in.)	120 g (4.2 oz.)	35 g (1.2 oz.)	85 g (3.0 oz.)
Re-grease the joint, if necessary, when replacing the CV joint boot.			

40-21



1 - Circlip

- Always replace
- Use VW161a circlip pliers for removing and installing

2 - Gasket

- To replace, remove protective backing and stick onto joint

3 - Inner CV joint

- Outer diameter 100 or 108 mm (3.9 or 4.3 in.), depending on engine/transmission application
- Replace only complete joint
- Pressing off ⇒ page 40-26
- Pressing on ⇒ page 40-27
- Greasing ⇒ page 40-20

4 - CV joint boot with cap

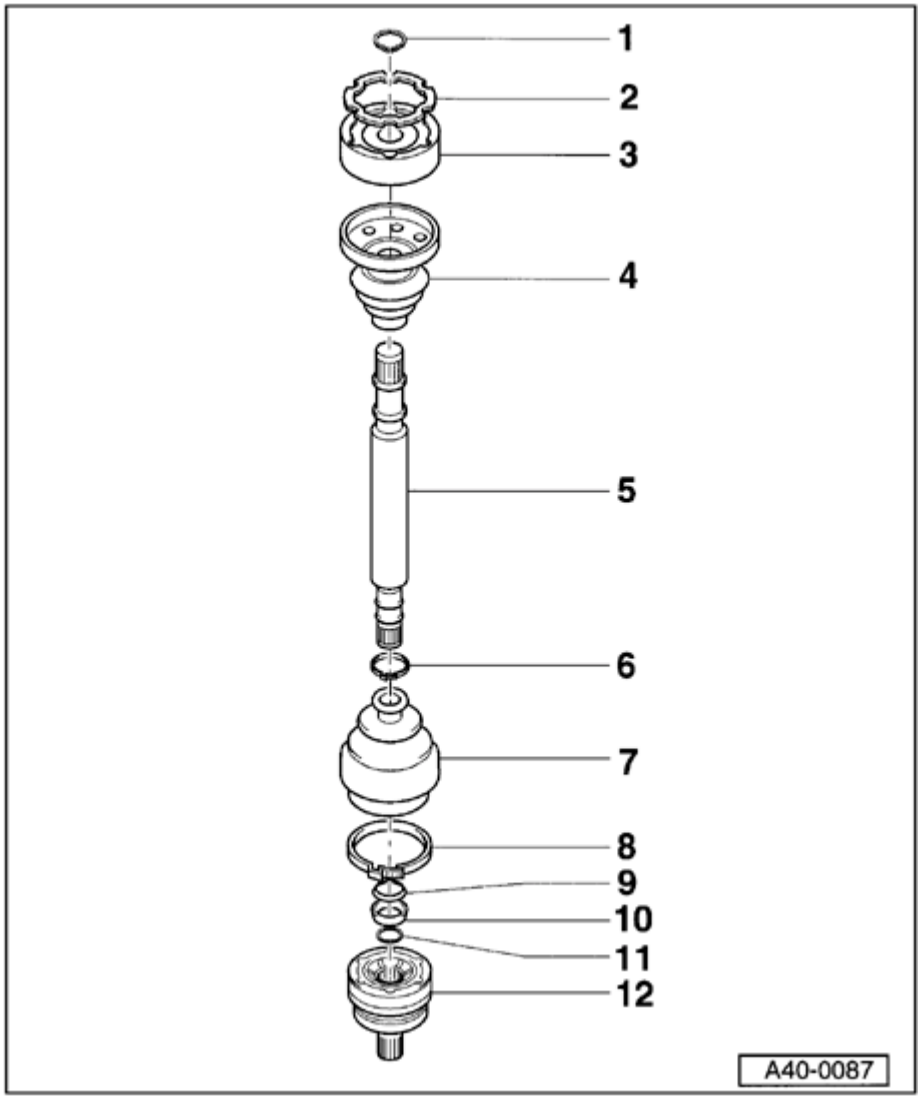
- With vent hole
- Check for splits and abrasions
- Use arbor to drive off
- Seal cap end with D-3 before attaching to CV joint

5 - Axle shaft (tubular shaft)

6 - Clamp

- Always replace

40-22



7 - CV joint boot

- Check for splits and abrasions
- Ventilate joint boot before tightening small clamp ⇒ page 40-28
- As of chassis no. 8DTA 279 794 revised boots are installed on 88 mm outer joint ⇒ page 40-25

8 - Clamp

- Always replace
- Tightening ⇒ pages 40-25 and ⇒ Page 40-28

9 - Spring washer

- Larger dia. (concave side) contacts spacer washer
- Installation position ⇒ page 40-27

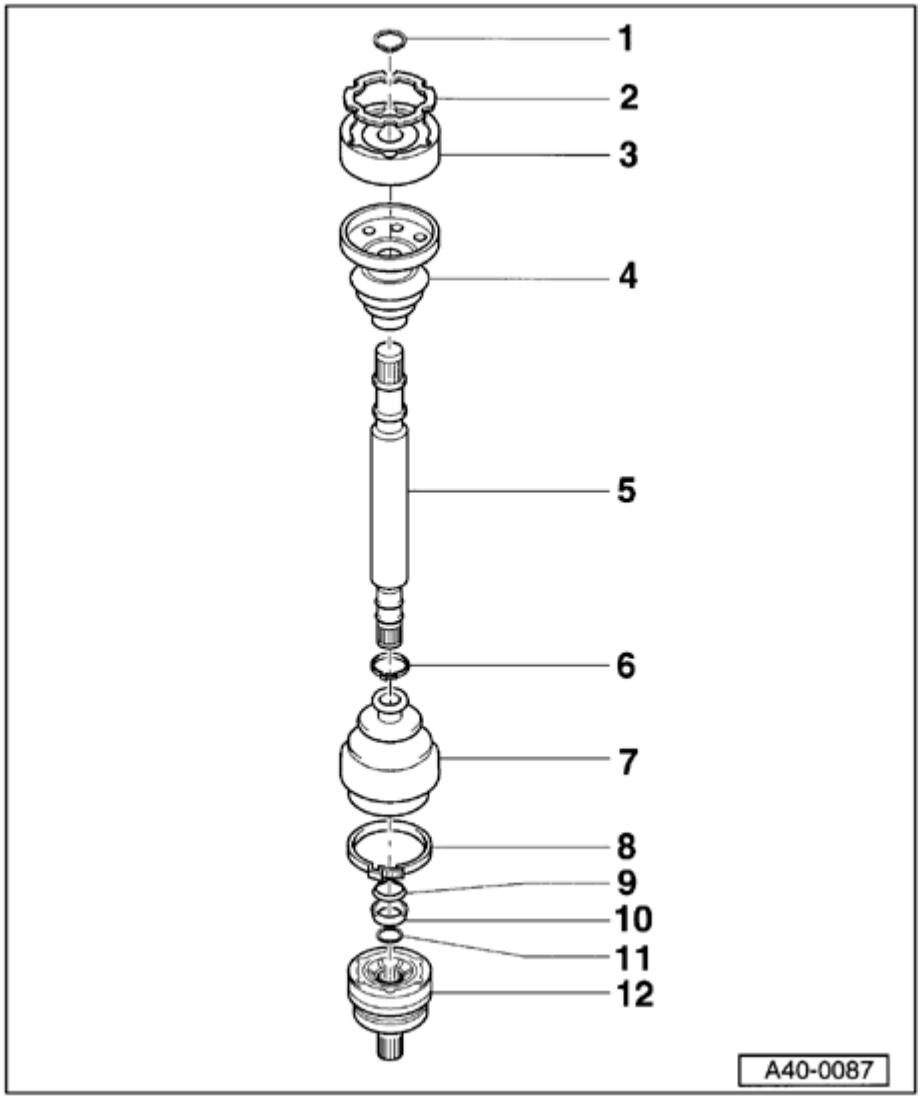
10 - Spacer washer

- Installation position ⇒ page 40-27

11 - Circlip

- Always replace
- Insert into groove in shaft

40-23



12 - Outer CV joint

- Outer diameter 88 or 98 mm (3.5 or 3.9 in.), depending on engine/transmission application
- Replace only complete joint
- Pressing off ⇒ page 40-26
- Installing: Using plastic hammer, drive joint onto shaft until circlip locks in place in annular groove of CV joint
- Greasing ⇒ page 40-20

Plastic CV joint boots

Special tools, test equipment and auxiliary items

VAG1275	3207	VW411
VW401/402	VW412	VW522
40-204 A	VAG1682	3340

On the Audi A4, new plastic CV joint boots are installed on the 88 mm outer joint (wheel end) of the front axle.

The plastic boots can be identified because they are made out of a harder material than the rubber boots.

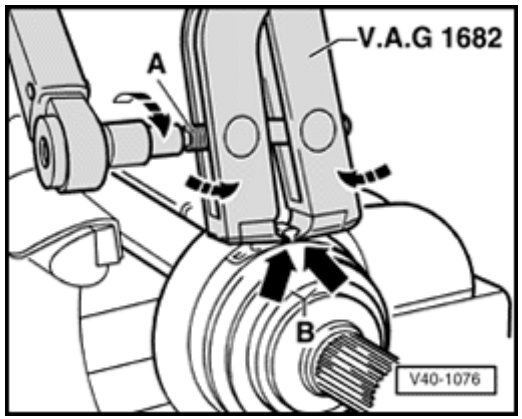
The harder plastic boots necessitates the use of stainless steel clamps for attaching the boots.

40-25

Clamps used on rubber joint boots are tightened using VAG1275 pliers.

The following instructions are only for stainless steel clamps

Tightening clamp on outer CV joint

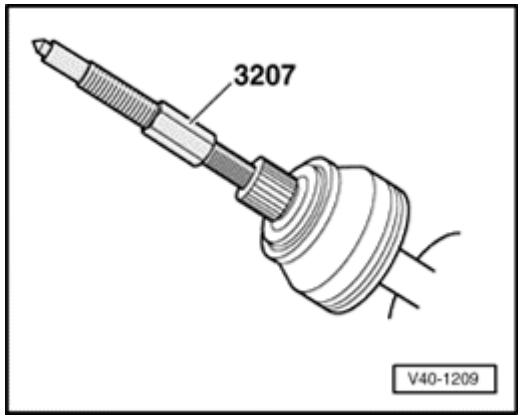


- Position VAG1682 pliers as shown in illustration. Make sure jaws of pliers seat in grooves of clamp (arrows -B-).
- Using torque wrench, turn spindle -A- and tighten clamp.
  - Do not cant pliers
  - Tightening torque: 20 Nm (15 ft lb)

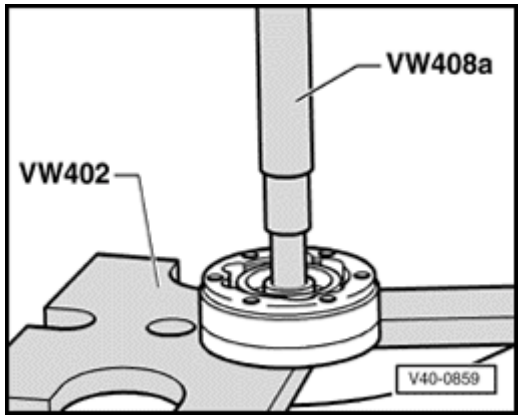
Notes:

- *Use a torque wrench with a range of 5-50 Nm (approx. 4-40 ft lb) (e.g. VAG1331).*
- *Make sure spindle -A- turns freely. If necessary lubricate the spindle threads with MOS2 grease.*
- *If the spindle does not turn freely (e.g. spindle is dirty), the clamping force required on the clamp will not be achieved even though the correct tightening torque is indicated.*

Pressing off outer constant velocity joint



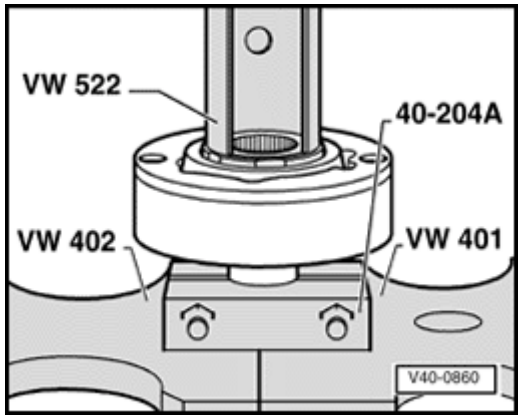
- Clamp drive axle in vise using protective jaw covers.
- Remove clamp and slide back boot.
- Thread 3207 pressure spindle (with M16 and M14 threaded sections) into end of constant velocity joint until joint is pressed off of axle shaft.



Pressing off inner constant velocity joint

Notes:

- *First use a drift to drive off the boot.*
- *Support the ball hub.*

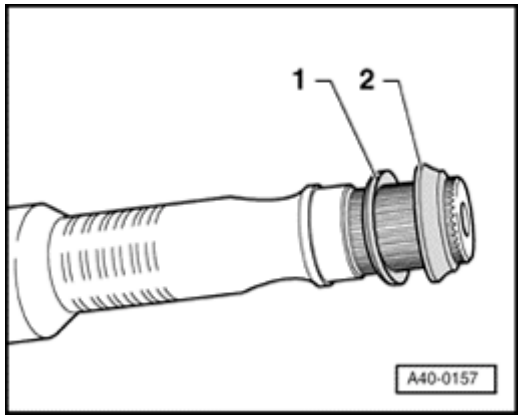


Pressing on inner constant velocity joint

- Press joint on up to stop.
- Install circlip.

Note:

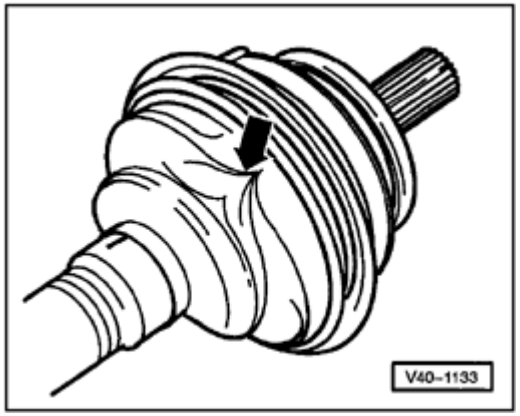
The chamfer on the inner diameter of the ball hub (splines) must face the contact shoulder on the drive axle.



Installation positions of spacer washer and spring washer (outer CV joint end)

1 - Spring washer

2 - Spacer washer (plastic)

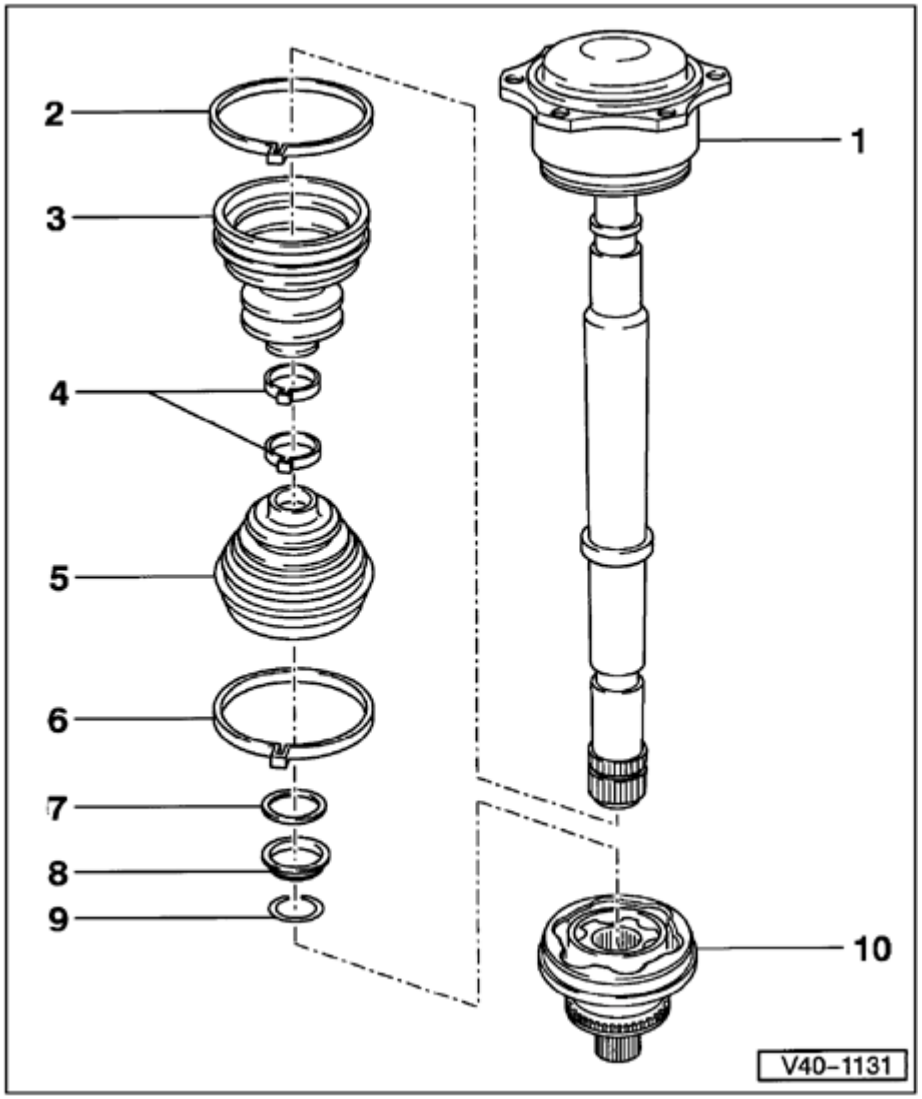


Ventilating joint boot

Only for rubber joint boot.

The joint boot is often pressed in while being installed on the body of the joint. This creates a vacuum inside the boot which draws it inward with a fold (arrow) while driving. Therefore after installing, lift the boot at the small diameter end to equalize pressure.

40-29



Drive axle with triple-rotor joint, servicing

Grease quantity and type

Note:

Pack the outer constant velocity joints with the following greases:

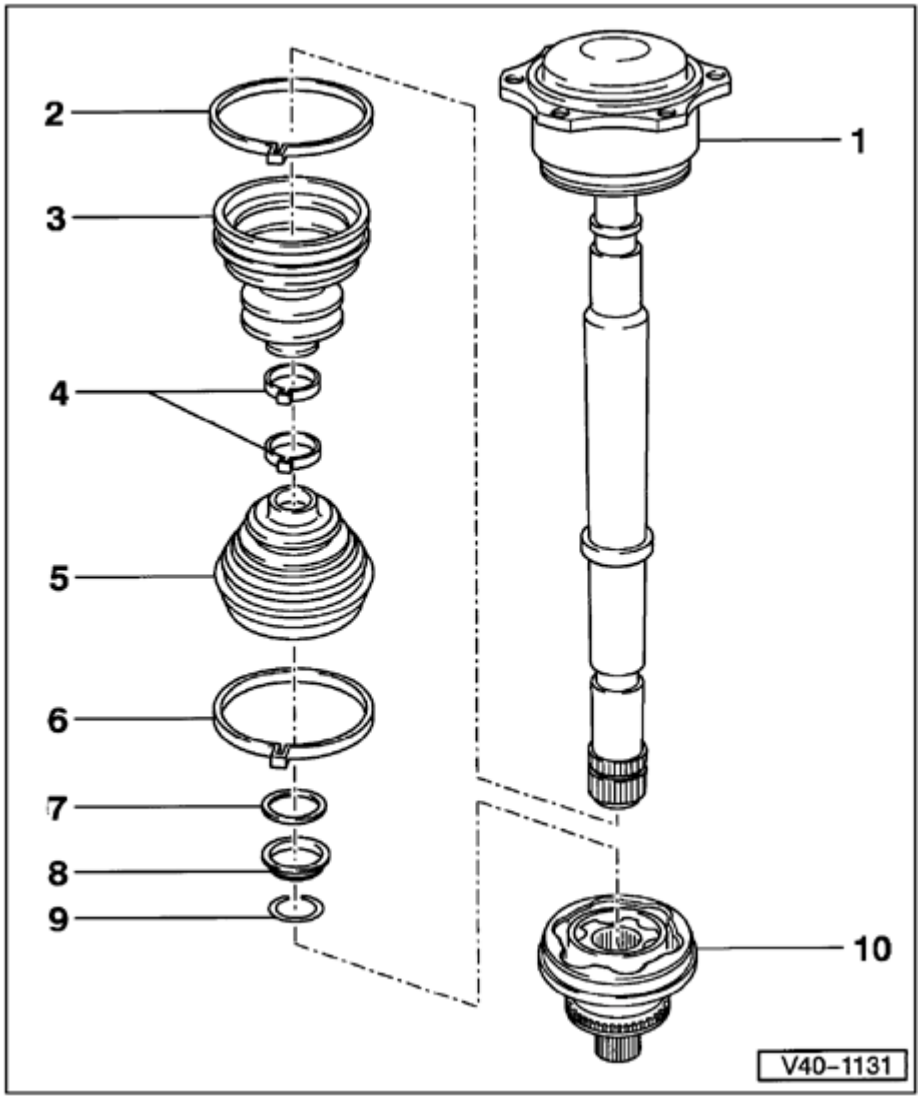
- *88 mm joint diameter: G 000 603*
- *98 mm joint diameter: G 000 633*

CAUTION!

Part numbers are listed here for reference only. Always check with your Parts department for the latest information.

Outer joint dia.	Total amt. of grease	Proportions	
		Joint	Boot
88 mm (3.5 in.)	100 g (3.5 oz.)	50 g (1.8 oz.)	50 g (1.8 oz.)
98 mm (3.9 in.)	120 g (4.2 oz.)	80 g (2.8 oz.)	40 g (1.4 oz.)

40-30



1 - Drive axle with triple-rotor joint

- Replacement part supplied with boot and filled with grease

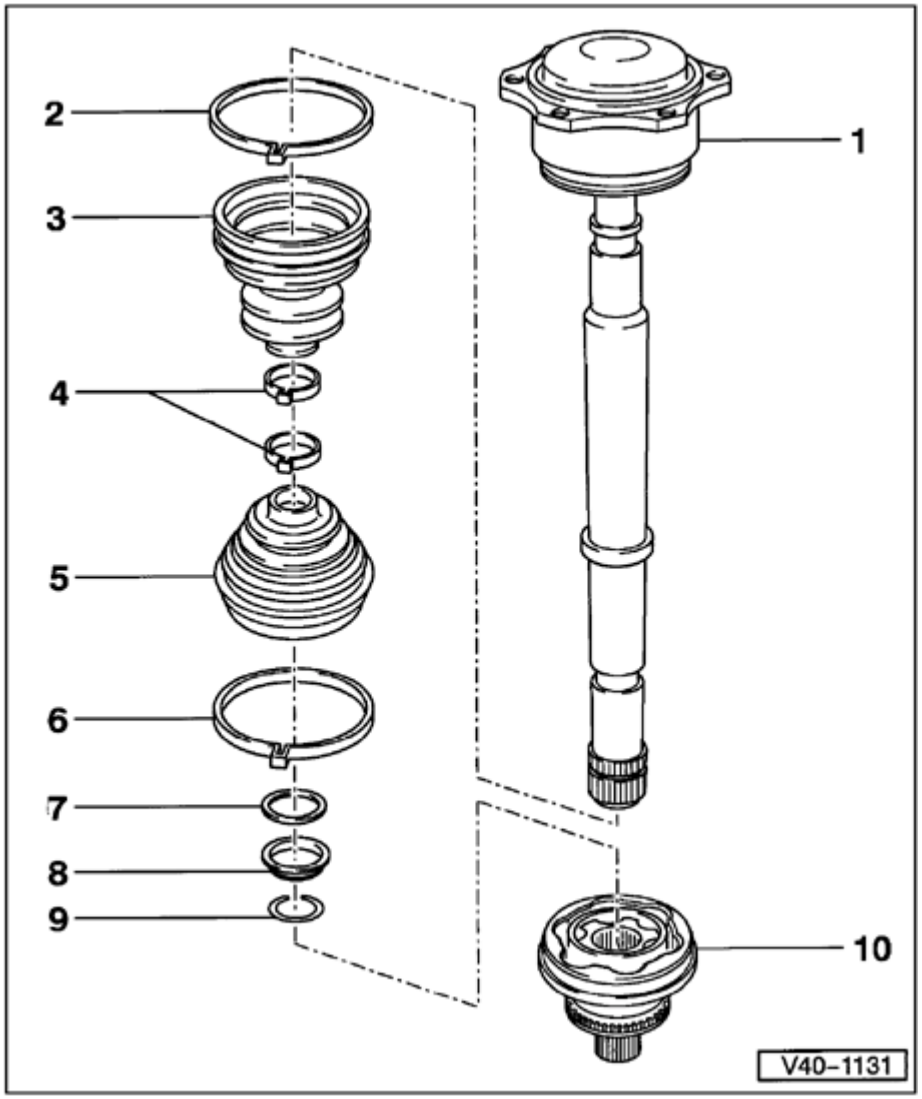
2 - Clamp

- Always replace
- Tightening ⇒ Fig.1

3 - Boot for inner triple-rotor joint

- Check for splits and abrasions
- Only 32 mm diameter shafts have replaceable inner boots
- To replace, drive off outer constant velocity joint
- When slipping onto profiled shaft, apply small quantity of grease to bead on profiled shaft and use VAG1474/5 wedge (part of VAG1474) to carefully position boot ⇒ Fig. 4

40-31



4 - Clamps

- Always replace
- Tightening ⇒ Fig.1

5 - Boot for outer constant velocity joint

- Check for splits and abrasions
- Before tightening clamp, briefly lift end of boot to equalize pressure (ventilate) ⇒ Fig. 3
- As of chassis no. 8DTA 279 794, new boots were introduced for 88 mm outer joint (wheel end) ⇒ Fig. 1

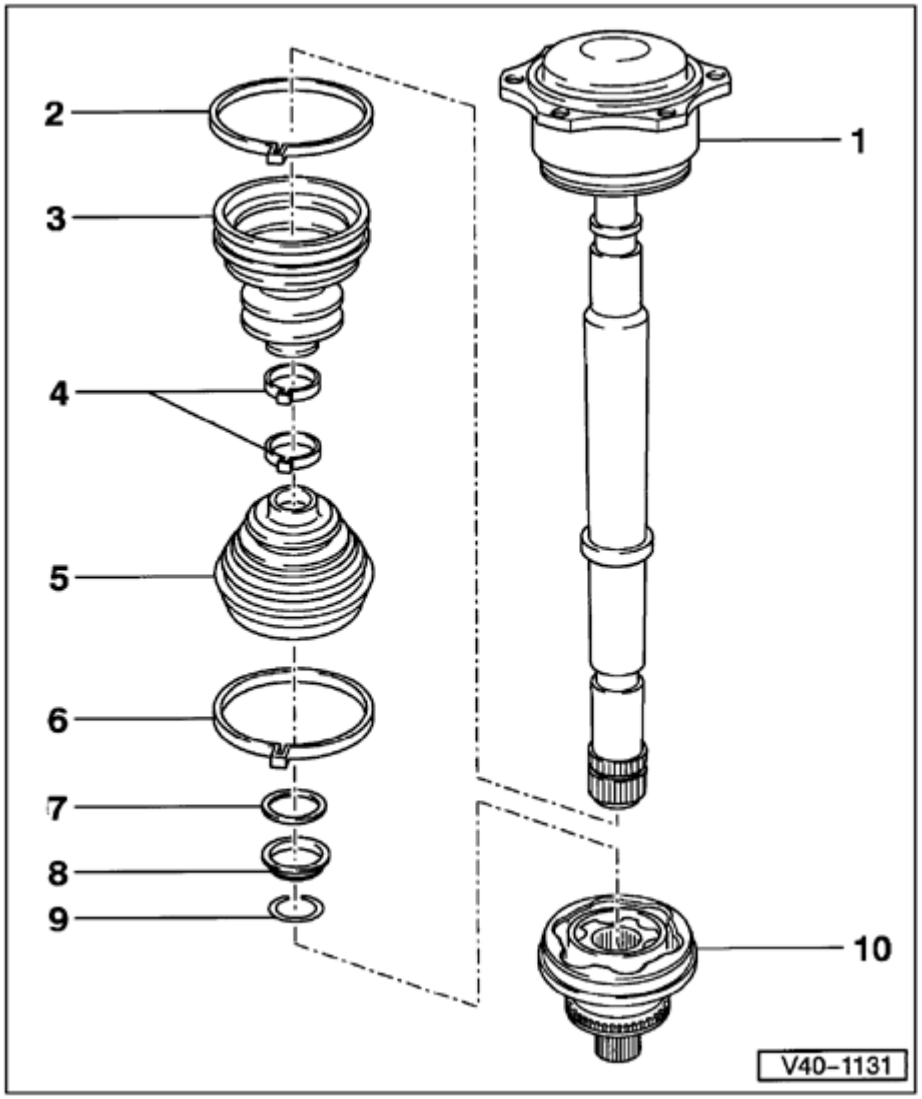
6 - Clamp

- Always replace
- Tightening ⇒ Fig. 1

7 - Spring washer

- Installation position ⇒ Fig. 5

40-32



8 - Spacer washer (plastic)

- Installation position ⇒ Fig. 5

9 - Circlip

- Always replace
- Install into circular groove on axle shaft before installing joint
- Not visible with joint installed

10 - Outer constant velocity joint

- Outer diameter 88 or 98 mm, depending on engine/transmission combination
- Replace as complete part only
- Pressing off ⇒ Fig. 2 (with hollow shaft ⇒ page 40-36)
- Installing: use plastic hammer to drive onto axle shaft until circlip engages
- Greasing ⇒ page 40-29

40-33

Clamps used on rubber joint boots are tightened using VAG1275 pliers

Instructions in Fig. ⇒ 1 are only for stainless steel clamps

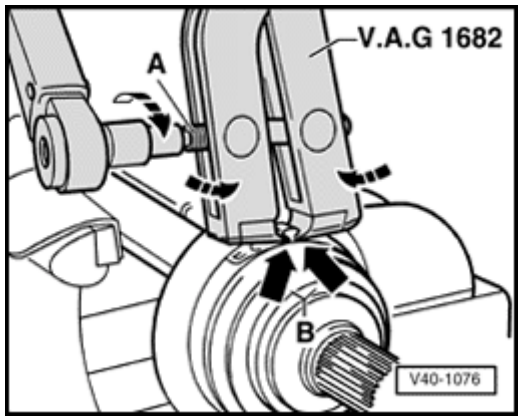


Fig. 1 Tightening clamp on outer CV joint

- Position VAG1682 pliers as shown in illustration. Make sure jaws of pliers seat in grooves of clamp (arrows -B-).
- Using torque wrench, turn spindle -A- and tighten clamp.
  - Do not cant pliers
  - Tightening torque: 20 Nm (15 ft lb)

Notes:

- *Use a torque wrench with a range of 5-50 Nm (approx. 4-40 ft lb) (e.g. VAG1331).*
- *Make sure spindle -A- turns freely. If necessary lubricate the spindle threads with MOS2 grease.*
- *If the spindle does not turn freely (e.g. spindle is dirty), the clamping force required on the clamp will not be achieved even though the correct tightening torque is indicated.*

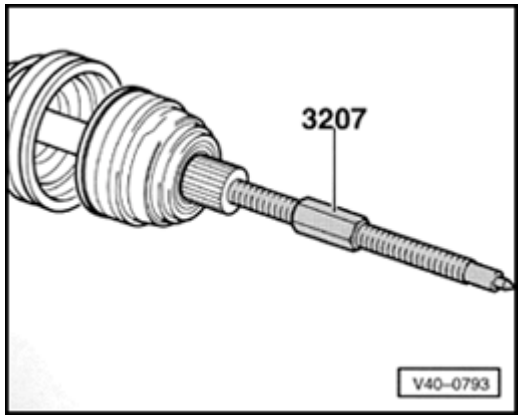


Fig. 2 Pressing off outer constant velocity joint

- Clamp drive axle in vise using protective jaw covers.
- Remove large clamp and slide back boot.
- Thread special tool into end of constant velocity joint until joint is pressed off of axle shaft.

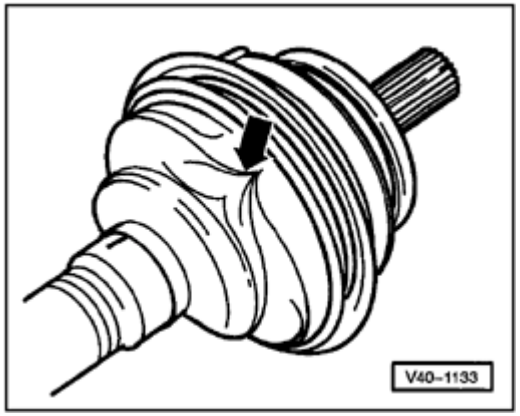


Fig. 3 Ventilating joint boot

Only for rubber joint boot

The joint boot is often pressed in while being installed on the body of the joint. This creates a vacuum inside the boot which draws it inward with a fold (arrow) while driving. Therefore after installing, lift the boot at the small diameter end to equalize pressure.

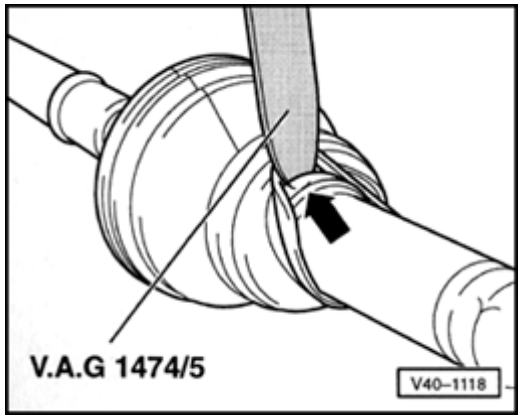


Fig. 4 Positioning boot over bead of profiled shaft

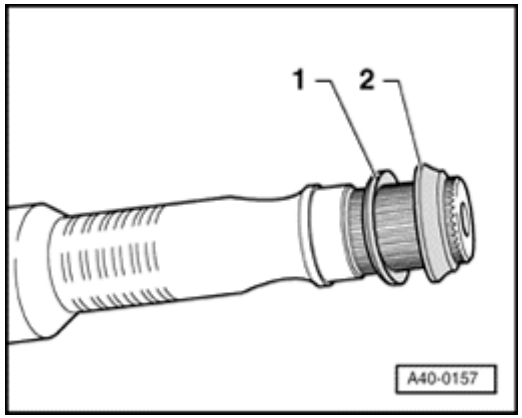


Fig. 5 Installation positions of spacer washer and spring washer (outer CV joint end)

1 - Spring washer

2 - Spacer washer (plastic)

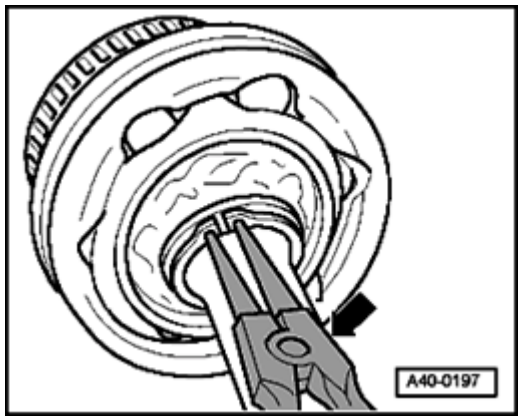
Axle shaft (hollow shaft), servicing

The axle shaft can be identified by a circlip on the axle shaft at the outer joint

Removing outer joint

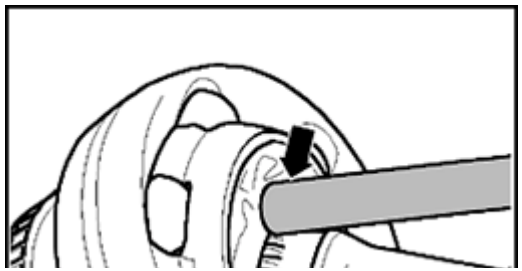
- Clamp drive axle in vise using protective jaw covers.

- Remove clamps (large and small) and slide back boot.



- Remove circlip using pointed pliers (arrow) and push back spring washer and spacer washer.

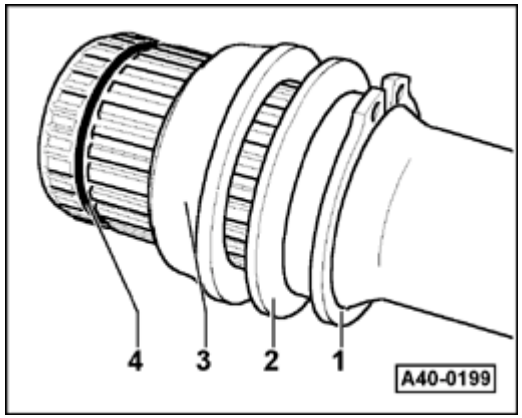
Driving off outer joint



- Only drive off using drift (brass or copper) at ball hub (arrow).

Assembly

- When slipping boot onto profiled shaft, apply small quantity of grease to bead on profiled shaft and carefully position boot.



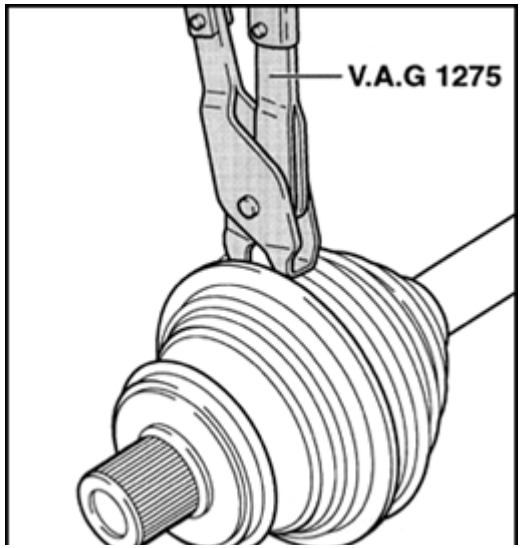
1 - Circlip

2 - Dished washer

3 - Spacer washer (plastic)

4 - Circlip (snap ring)

- Use plastic headed hammer to drive joint onto shaft until circlip engages.



Tightening clamp

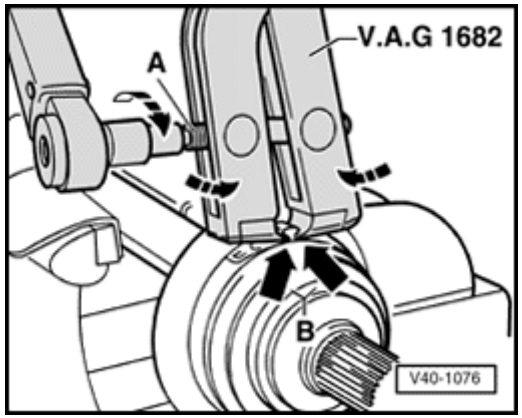
Plastic CV joint boots

On the Audi A4, new plastic CV joint boots are installed on the 88 mm outer joint (wheel end) of the front axle.

The plastic boots can be identified because they are made out of a harder material than the rubber boots.

The harder plastic boots necessitates the use of stainless steel clamps for attaching the boots.

Instructions for stainless steel clamps only



Tightening clamp on outer CV joint

- Position VAG1682 pliers as shown in illustration. Make sure jaws of pliers seat in grooves of clamp (arrows -B-).
- Using torque wrench, turn spindle -A- and tighten clamp.
  - Do not cant pliers
  - Tightening torque: 20 Nm (15 ft lb)

Notes:

- *Use a torque wrench with a range of 5-50 Nm (approx. 4-40 ft lb) (e.g. VAG1331).*
- *Make sure spindle -A- turns freely. If necessary lubricate the spindle threads with MOS2 grease.*
- *If the spindle does not turn freely (e.g. spindle is dirty), the clamping*

force required on the clamp will not be achieved even though the correct tightening torque is indicated.