

## Index

### 2-Wheel drive

#### Axle shaft

- assembly 40.9, 40.10
- removing/installing 40.11

#### Axle shaft

- assembly 40.23, 40.24
- ★ ■ revised for vehicle w/097 trans. 40.27

#### Ball joint

- installing 40.6

#### Coil spring

- assembly 40.14, 40.18
- removing/installing 40.15, 40.19

#### Control arm

- assembly 40.2
- bushing 40.4, 40.8b
- revisions for 1990 m.y. 40.8a

#### CV joint/boot

- installing 40.26
- removing 40.25
- ★ ■ revised for vehicle w/097 trans. 40.27

#### Protective ring

- installing 40.22

#### Shock absorber

- assembly 40.14, 40.18

#### Stabilizer bar

- assembly 40.2
- bushings 40.5

#### Subframe

- assembly 40.2
- bushings 40.4a, 40.8
- resonance/vibration (4-cyl.) 40.3

#### Suspension

- revisions for 1990 m.y. 40.3

#### Suspension strut

- assembly 40.14, 40.18
- installing 40.13
- removing 40.12

#### Wheel bearing

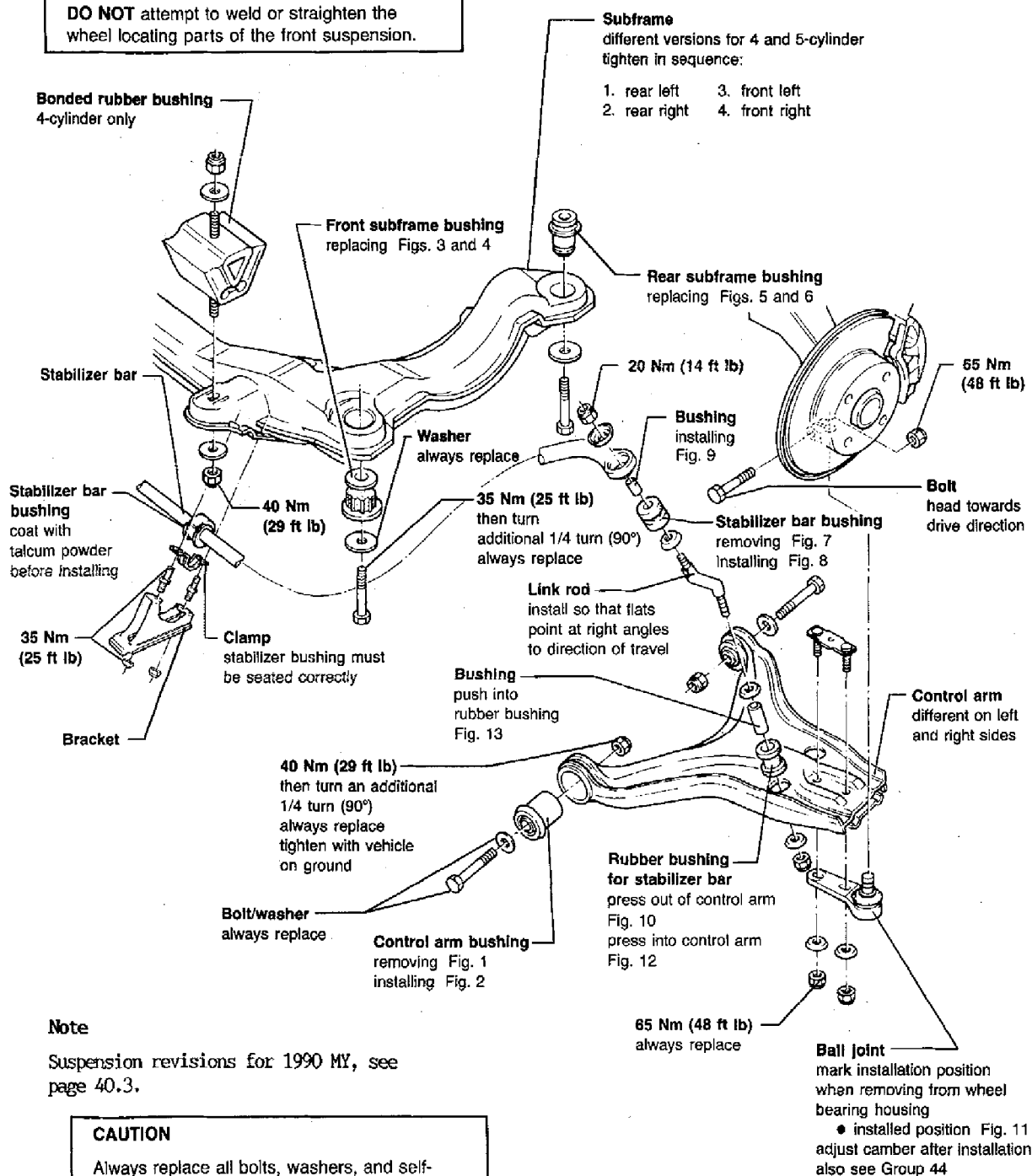
- housing 40.14, 40.20
- pressing out/in 40.16, 40.21

#### Wheel hub

- assembly 40.14, 40.20
- pressing out in 40.15, 40.21

**CAUTION**

**DO NOT** attempt to weld or straighten the wheel locating parts of the front suspension.

**Note**

Suspension revisions for 1990 MY, see page 40.3.

**CAUTION**

Always replace all bolts, washers, and self-locking nuts that secure suspension components, e.g., subframe, control arms, stabilizer bar, ball joints, etc., when repairing.

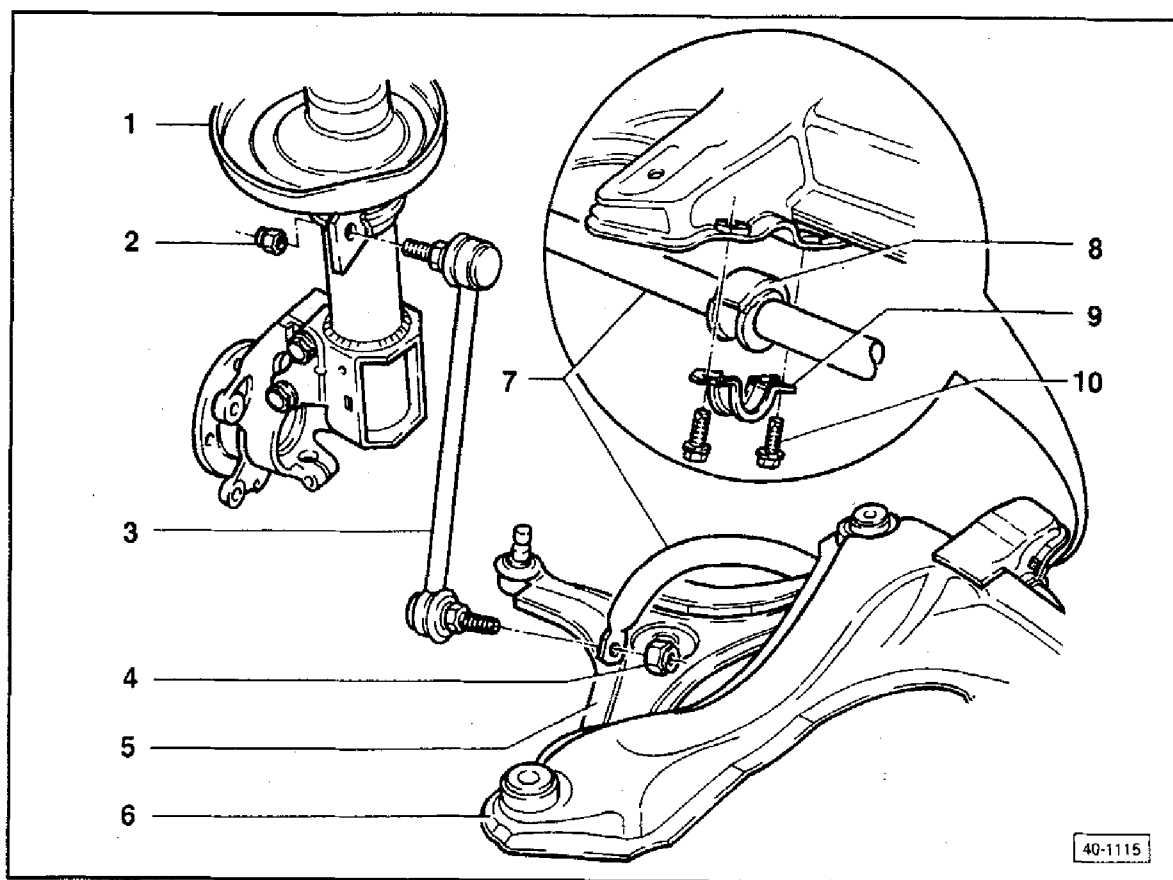
U 40-779

A-2

Subframe  
Control arm  
Stabilizer bar

**40.2**

## Front Wheel Suspension – Shafts & Axle



### CAUTION

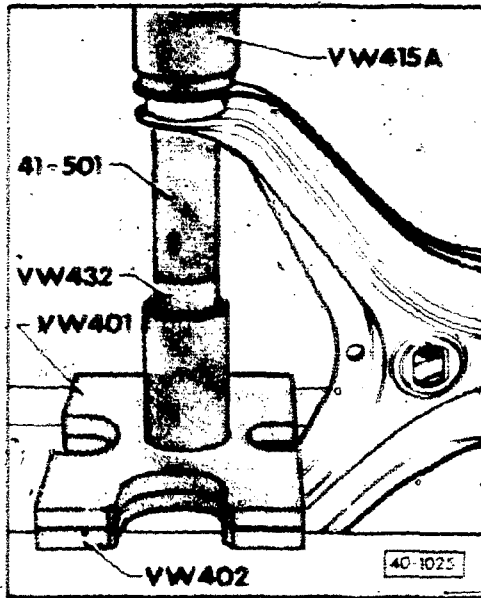
The revised suspension parts must not be installed in earlier vehicles.

- 1 — **Wheel bearing/shock absorber housing**  
with tab for mounting stabilizer link rod  
shock absorbers revised
- 2 — **45 Nm (33 ft lb)**  
always replace
- 3 — **Link rod**
- 4 — **45 Nm (33 ft lb)**  
always replace

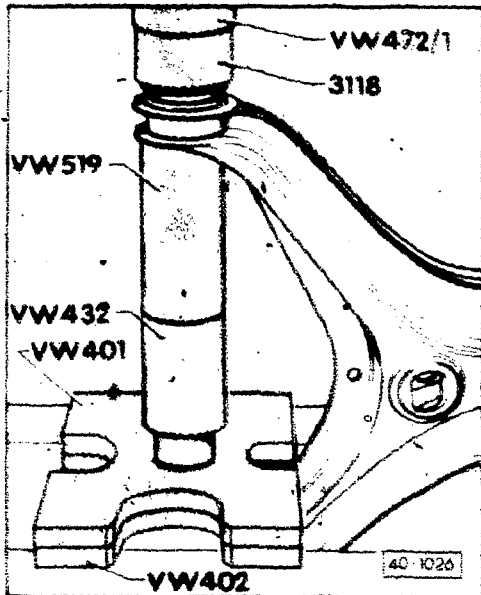
- 5 — **Control arm**  
revised to eliminate link rod mounting
- 6 — **Subframe**
- 7 — **Stabilizer bar**  
revised version
- 8 — **Rubber bushing**  
different diameters depending on stabilizer diameter
- 9 — **Clamp**  
revised from previous version
- 10 — **35 Nm (26 ft lb)**  
always replace  
tighten only with vehicle on ground

### Note

Also, see suspension revisions for 1990 MY, page 40.8a and 40.8b (control arm/bushings).



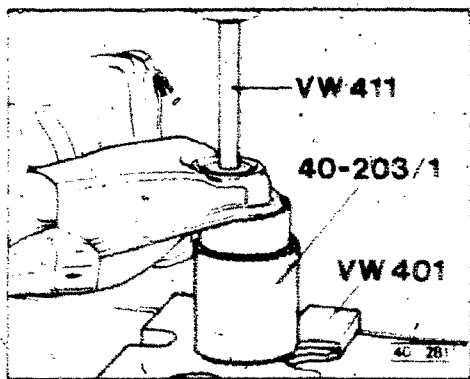
► Fig. 1 Control arm bushing, removing



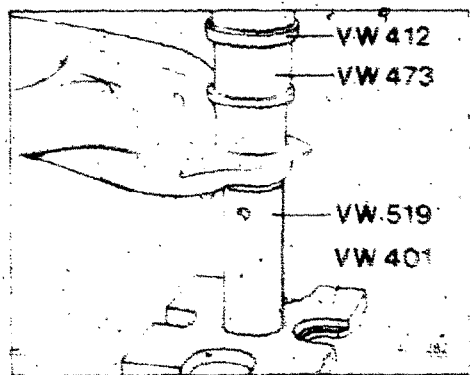
► Fig. 2 Control arm bushing, installing

■ install bushing to stop

# Front Wheel Suspension – Shafts & Axle

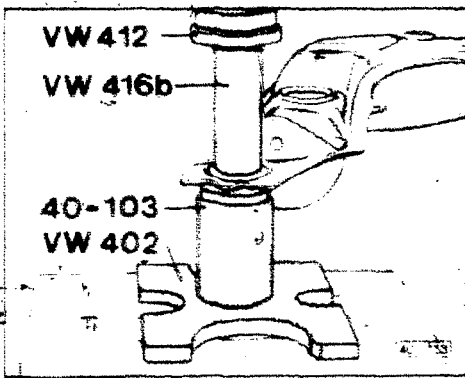


► Fig. 3 Front subframe bushing, pressing out (vehicles with 4-cylinder engine)

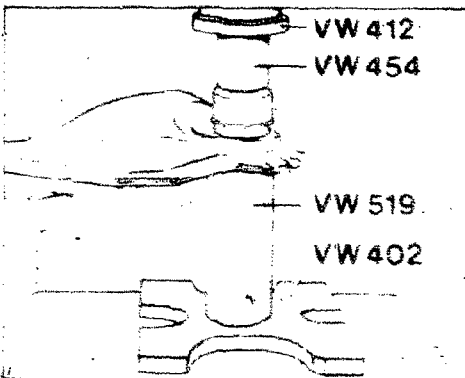


► Fig. 4 Front subframe bushing, pressing in (vehicles with 4-cylinder engine)

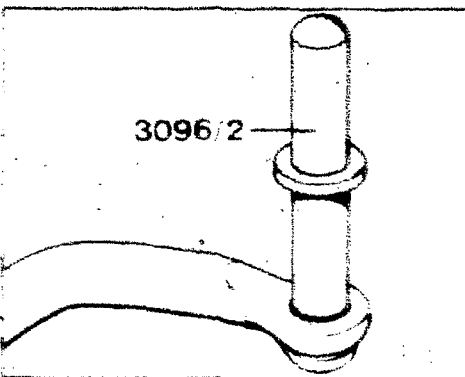
■ apply acid-free lubricant before installing



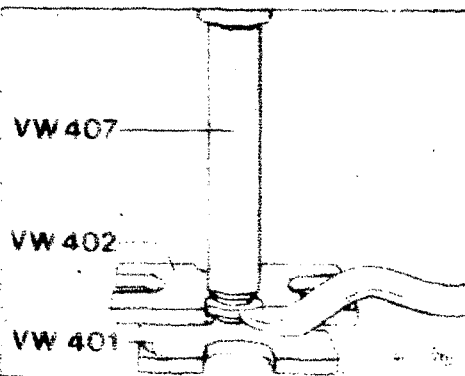
► Fig. 5 Rear subframe bushing, pressing out (vehicles with 4-cylinder engine)



► Fig. 6 Rear subframe bushing, pressing in (vehicles with 4-cylinder engine)

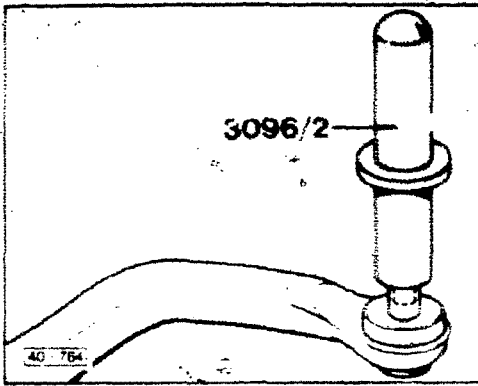


► Fig. 7 Stabilizer bar bushing, pressing out  
■ cut collar off rubber bushing



► Fig. 8 Stabilizer bar bushing, pressing in  
■ apply acid-free lubricant before installation

# Front Wheel Suspension – Shafts & Axle

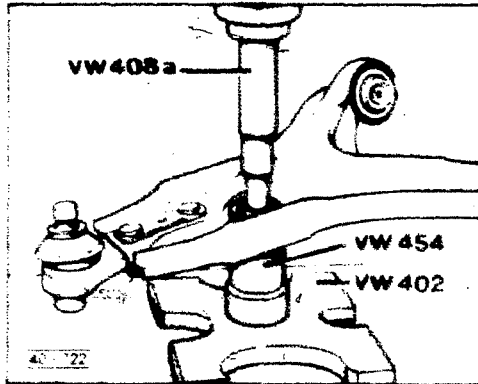


► Fig. 9 Bushing, pressing in

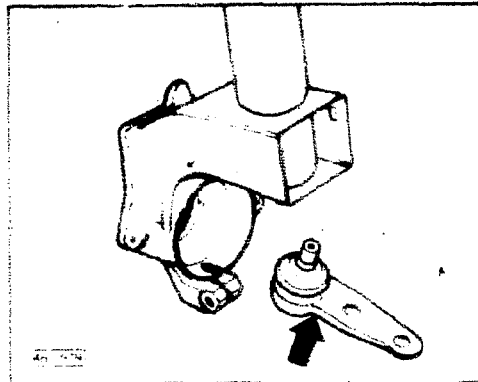
- coat bushing with acid-free lubricant before installing

**Note**

Inner bushing must be aligned in center of rubber bushing.

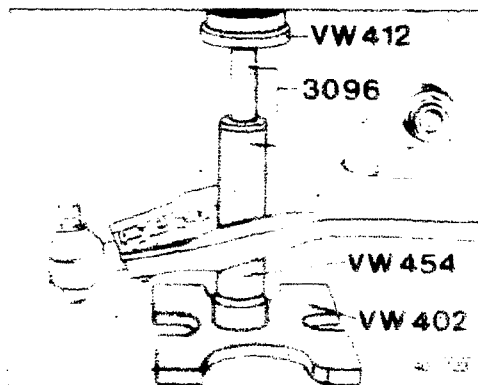


► Fig. 10 Rubber bushing in control arm, pressing out



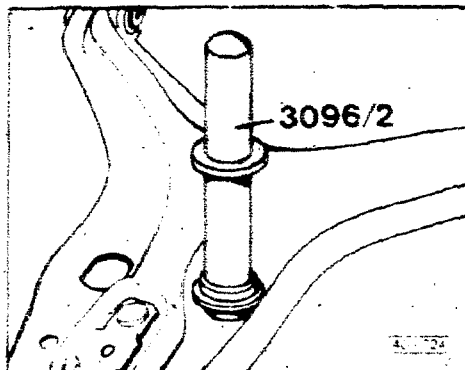
► Fig. 11 Ball joint, installing (right-side shown)

- offset faces in direction of vehicle travel (arrow)
- **DO NOT** expand slot on wheel bearing housing
- adjust camber after installation



► Fig. 12 Rubber bushing in control arm, pressing in

- coat rubber bushing and inner section of sleeve 3096/1 with acid-free lubricant

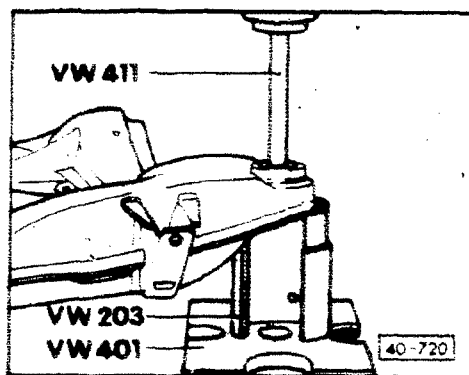


► Fig. 13 Bushing, pressing in

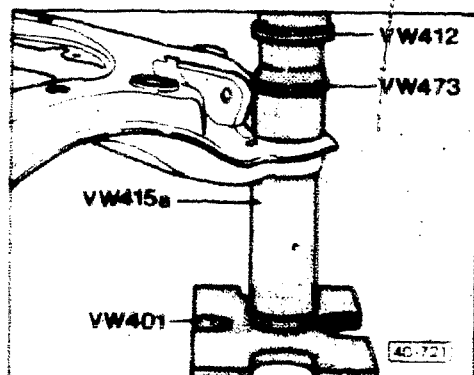
- lubricate bushing with acid-free lubricant before installing

**Note**

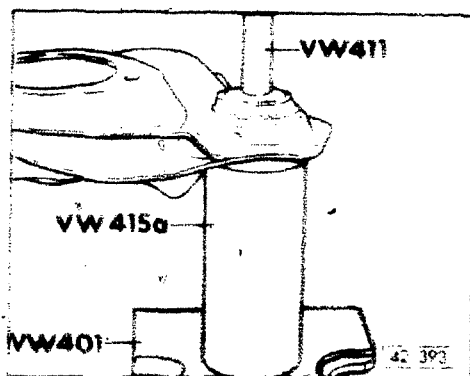
Inner bushing must be aligned in center of rubber bushing.



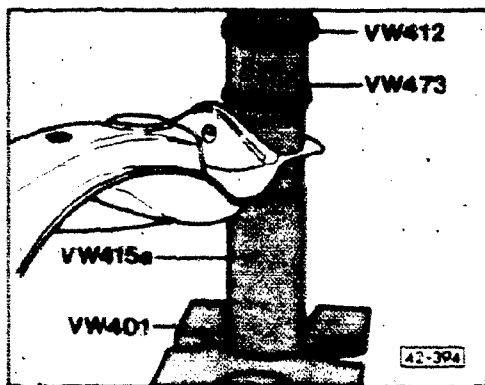
► Fig. 14 Front subframe bushing, pressing out (vehicles with 5-cylinder engine)



► Fig. 15 Front subframe bushing, pressing in (vehicles with 5-cylinder engine)



► Fig. 16 Rear subframe bushing, pressing out (vehicles with 5-cylinder engine)



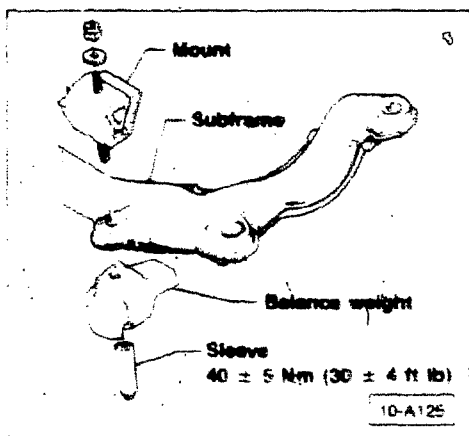
► Fig. 17 Rear subframe bushing, pressing in (vehicles with 5-cylinder engine)

- apply acid-free lubricant before installing

## Subframe resonance/vibration, eliminating (4-cylinder)

Humming or droning noises occurring at approx. 1800-2000 RPM could be caused by resonance/vibration from the subframe.

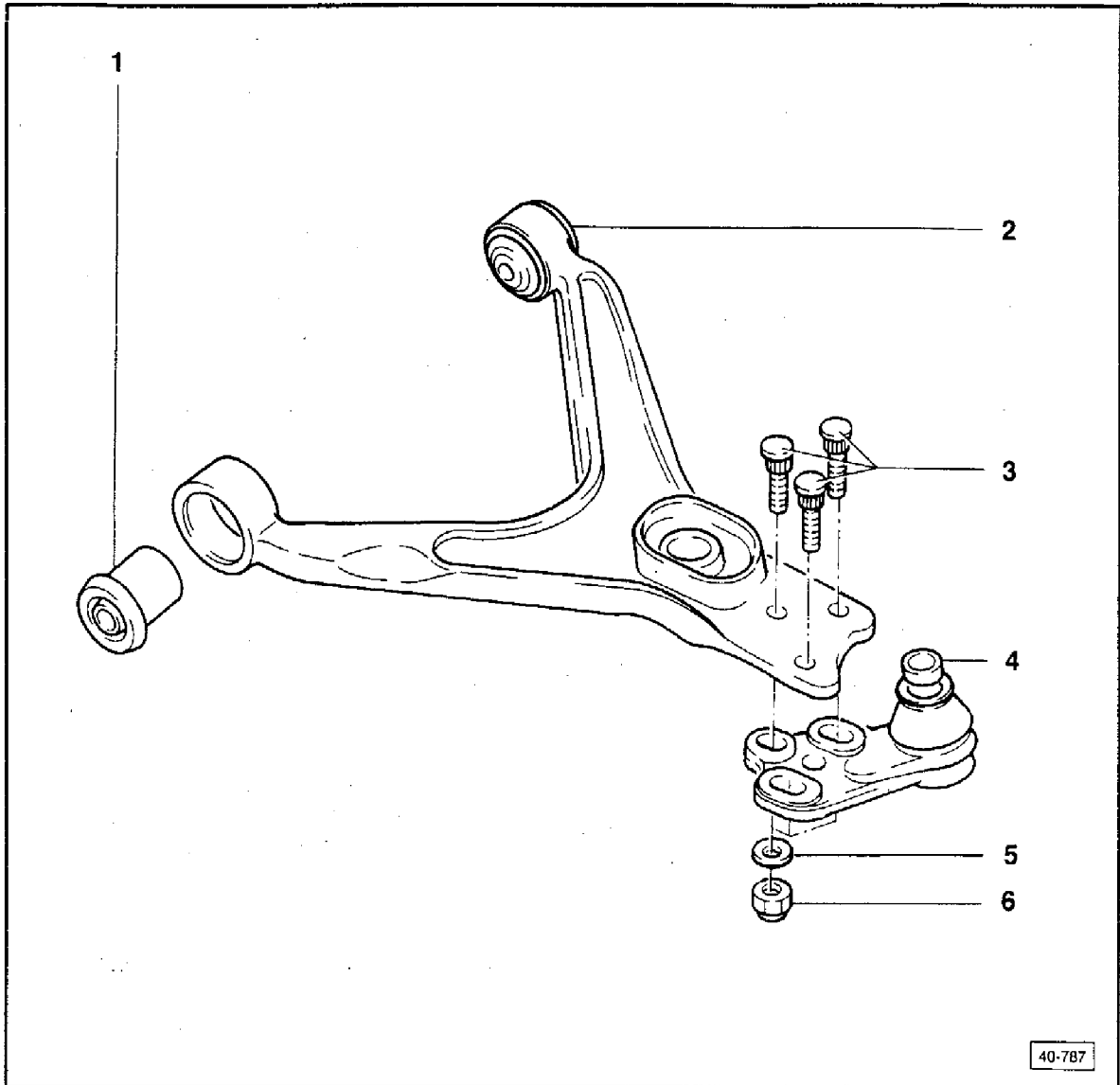
The following procedure describes the installation of a balance weight to cure subframe resonance/vibration.



- remove sound absorber pan
- remove left sound absorber pan support bracket
- remove left engine mount lower nut and washer
- clean engine mount threads
- apply loctite to sleeve threads
  - Part No. D 000 600
- install balance weight, Part No. 893 199 333C, sleeve, Part No. 893 199 467
  - torque  $40 \pm 5$  Nm ( $30 \pm 4$  ft lb)
- reinstall all components in reverse order

### Caution

Part numbers are for reference only. Always check with your Parts Department for latest information.



40-787

**CAUTION**

The revised suspension parts must not be installed in earlier vehicles.

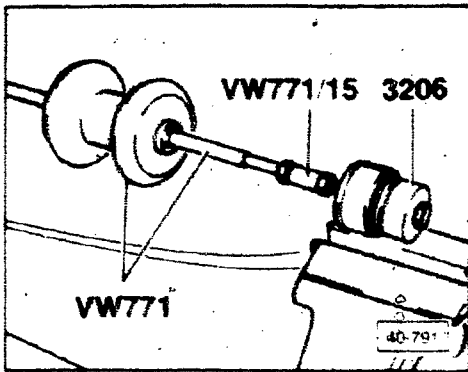
- 1 — **Bushing**  
removing, Fig. 1  
installing, Fig. 2
- 2 — **Control arm**  
left/right sides different
- 3 — **Bolt**  
install in control arm to stop

- 4 — **Ball joint**  
left/right sides different  
end diameter = 19.0 mm  
do not expand slot in wheel bearing housing when  
removing/installing  
adjust camber after installation

- 5 — **Washer**
- 6 — **65 Nm (48 ft lb)**

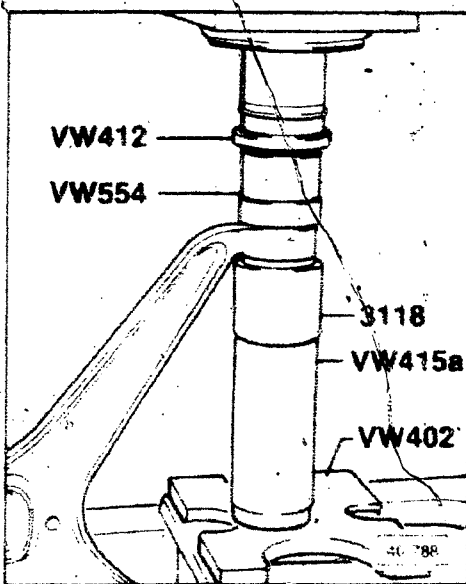
**Note**

Prior to change use tool 3098 to adjust camber. Vehicles with revised suspension use tool 3196 for camber adjustment.



► Fig. 1 Control arm bushing, removing

- mount control arm in vise (use jaw covers)
- remove with 3206



► Fig. 2 Control arm bushing, installing

- press in to stop

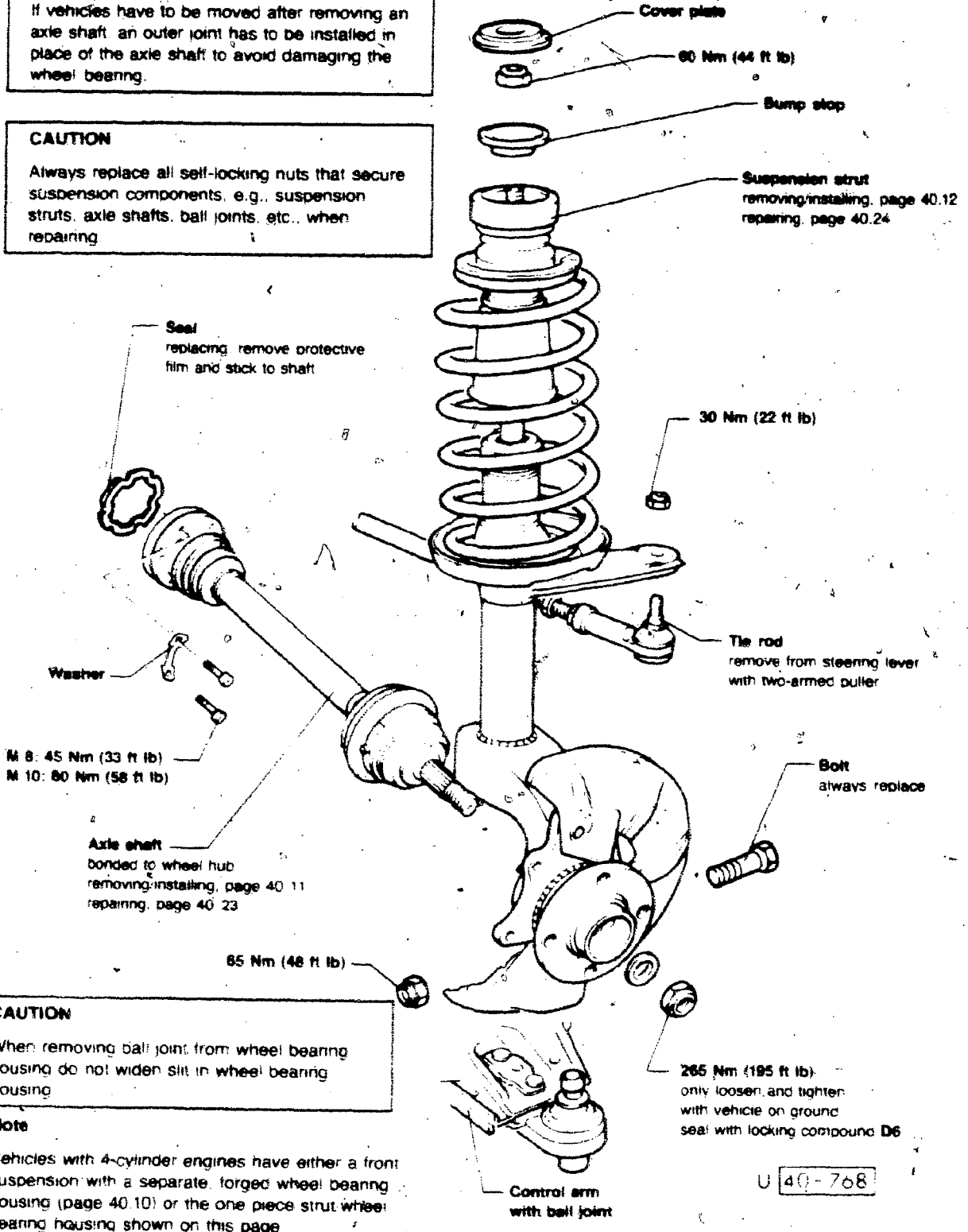
# Front Wheel Suspension – Shafts & Axle

## CAUTION

If vehicles have to be moved after removing an axle shaft, an outer joint has to be installed in place of the axle shaft to avoid damaging the wheel bearing.

## CAUTION

Always replace all self-locking nuts that secure suspension components, e.g., suspension struts, axle shafts, ball joints, etc., when repairing.



## CAUTION

When removing ball joint from wheel bearing housing do not widen slit in wheel bearing housing.

## Note

Vehicles with 4-cylinder engines have either a front suspension with a separate, forged wheel bearing housing (page 40.10) or the one piece strut wheel bearing housing shown on this page.

U 40-768

Attached wheel bearing housing

Suspension strut  
Axle shaft

40.9

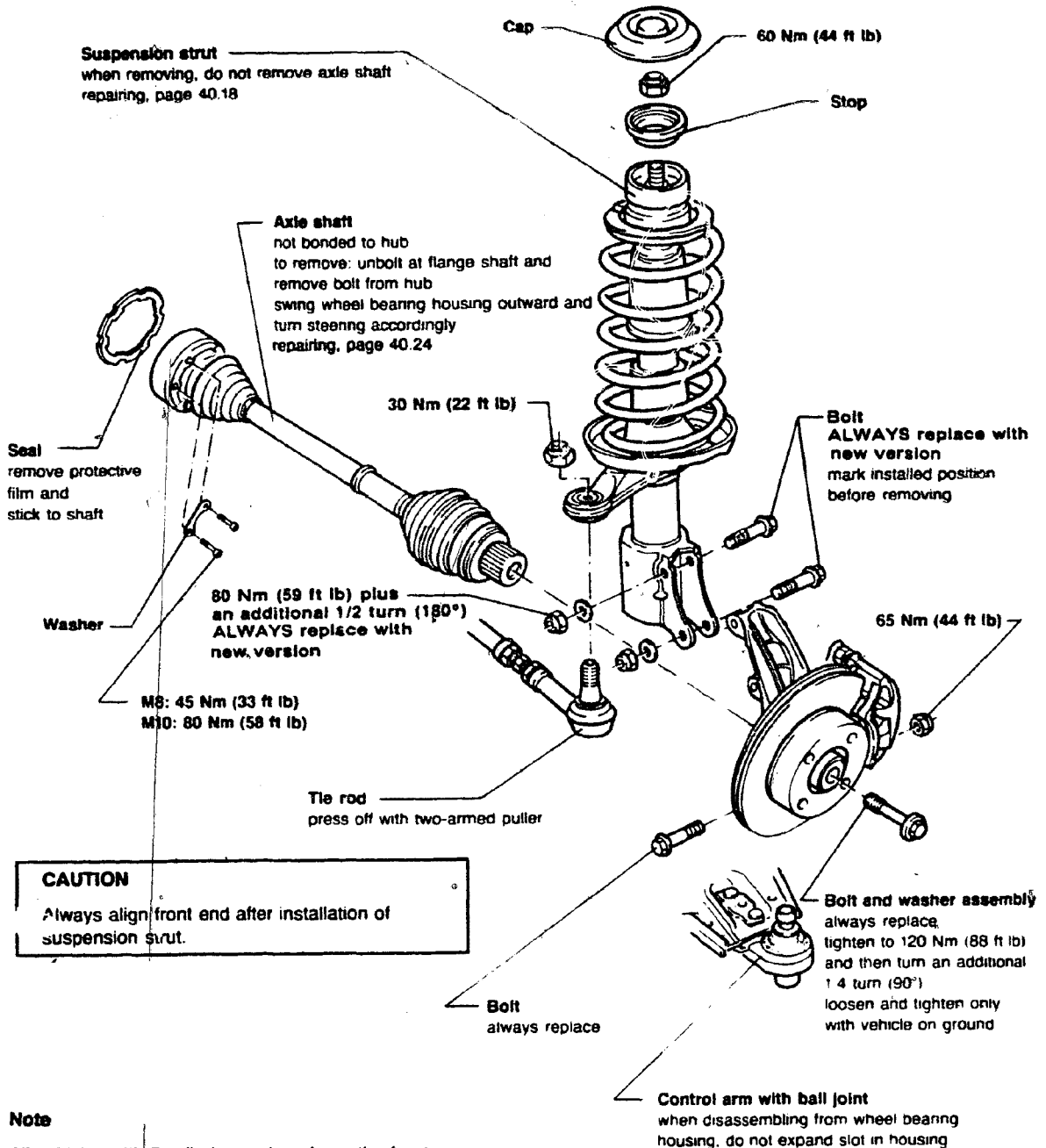
# Front Wheel Suspension – Shafts & Axle

## CAUTION

If vehicles have to be moved after removing an axle shaft, an outer joint has to be installed in place of the axle shaft to avoid damaging the wheel bearing.

## CAUTION

Always replace all self-locking nuts securing suspension components, e.g., suspension strut/wheel bearing housing, tie rod, etc., when repairing.



## CAUTION

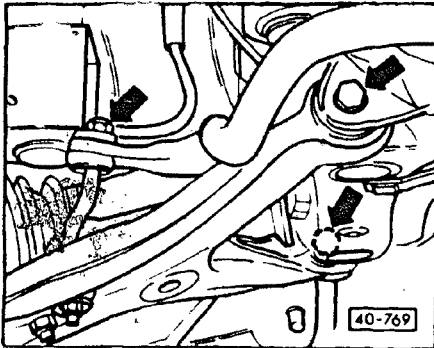
Always align front end after installation of suspension strut.

## Note

All vehicles with 5-cylinder engines have the front suspension with a forged wheel bearing housing.

U 40-771

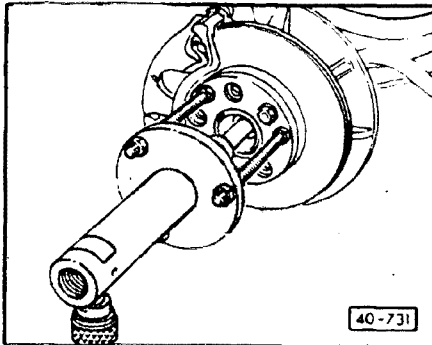
# Front Wheel Suspension – Shafts & Axle



## Axle shaft, removing/installing

### Removing

- loosen wheel bolts
- remove bolt or nut for wheel hub to axle shaft (vehicle on ground)
- remove washer
- remove wheel
- remove axle shaft flange
- remove nut from link rod
- remove mounting bolts for control arm/stabilizer bar/subframe (arrows)
- push control arm downward
- using puller as shown, press axle shaft out of hub



### CAUTION

If vehicles have to be moved after removing an axle shaft, refasten the control arm to the subframe and to the link rod and instead of the axle shaft, install an outer joint to avoid damage to the wheel bearing.

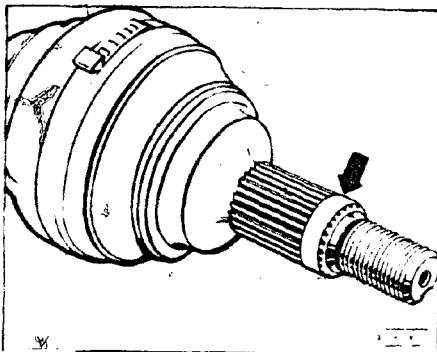
### Installing

### CAUTION

Clean splines on axle shaft and wheel hub to remove oil, grease and traces of locking compound.

### Vehicles with attached wheel bearing housing only:

- apply locking compound **D6** to splines of outer constant velocity joint over an area of approximately **5 mm** wide (arrow) and then install axle shaft



### Note

When installing the right drive shaft do not damage the boot on the cover plate.

### CAUTION

Allow locking compound **D6** at least **60** minutes to harden with vehicle stationary.

# Front Wheel Suspension – Shafts & Axle

## Suspension strut, removing/installing

### Removing

- loosen wheel bolts
- remove hub/axle shaft nut or bolt (vehicle standing on its wheels)
- remove washer
- remove wheel
- remove brake caliper bolts and brake caliper (middle arrows)
- remove brake disc
- remove bracket for brake hose (upper arrow) and fasten caliper to body with wire
- remove mounting bolt for ball joint to wheel bearing housing (lower arrow)

- press off tie rod end

- remove nut from link rod (arrow)
- pry down on control arm to remove ball joint from wheel bearing housing

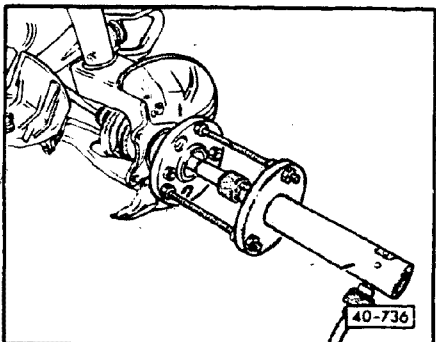
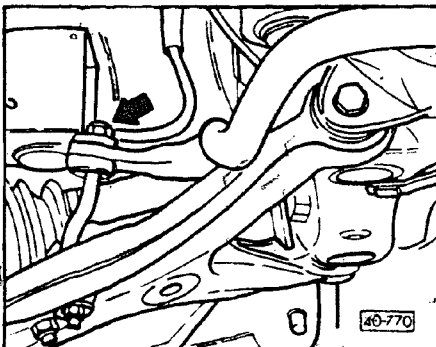
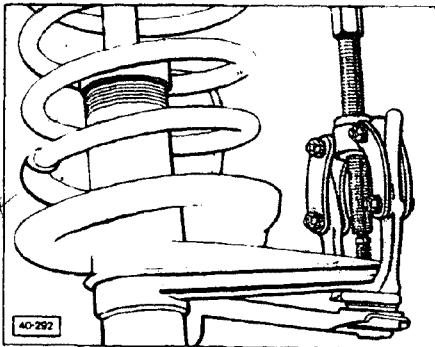
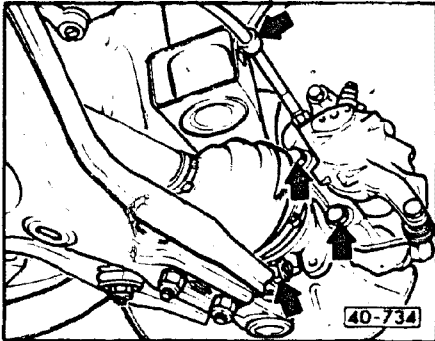
### Note

While prying ball joint out move steering wheel alternately from left to right (2 mechanics required).

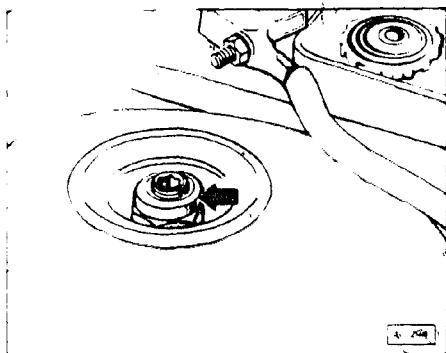
- using puller as shown, press axle shaft out of hub and remove

### CAUTION

Always remove stub axle with mechanical or hydraulic hub puller only. DO NOT heat up wheel bearing housing or wheel bearing will be damaged.



## Front Wheel Suspension – Shafts & Axle

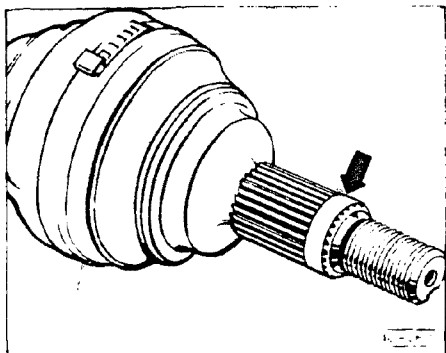


- remove cover plate
- support suspension strut from below
- loosen nut from shock absorber (**arrow**) while holding piston rod with internal socket wrench

### Installing

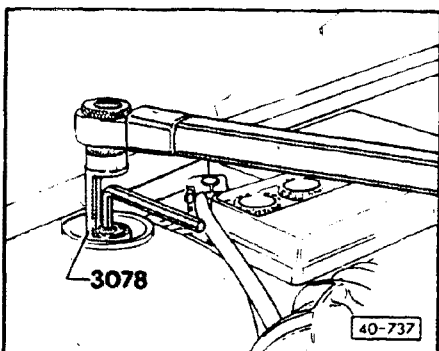
#### CAUTION

Splines on axle shaft and wheel hub must be free of oil, grease and old locking compound.



#### Vehicles with attached wheel bearing housing only:

- apply locking compound **D6** to splines of outer constant velocity joint over an area of approximately 5 mm wide (**arrow**) and then install axle shaft

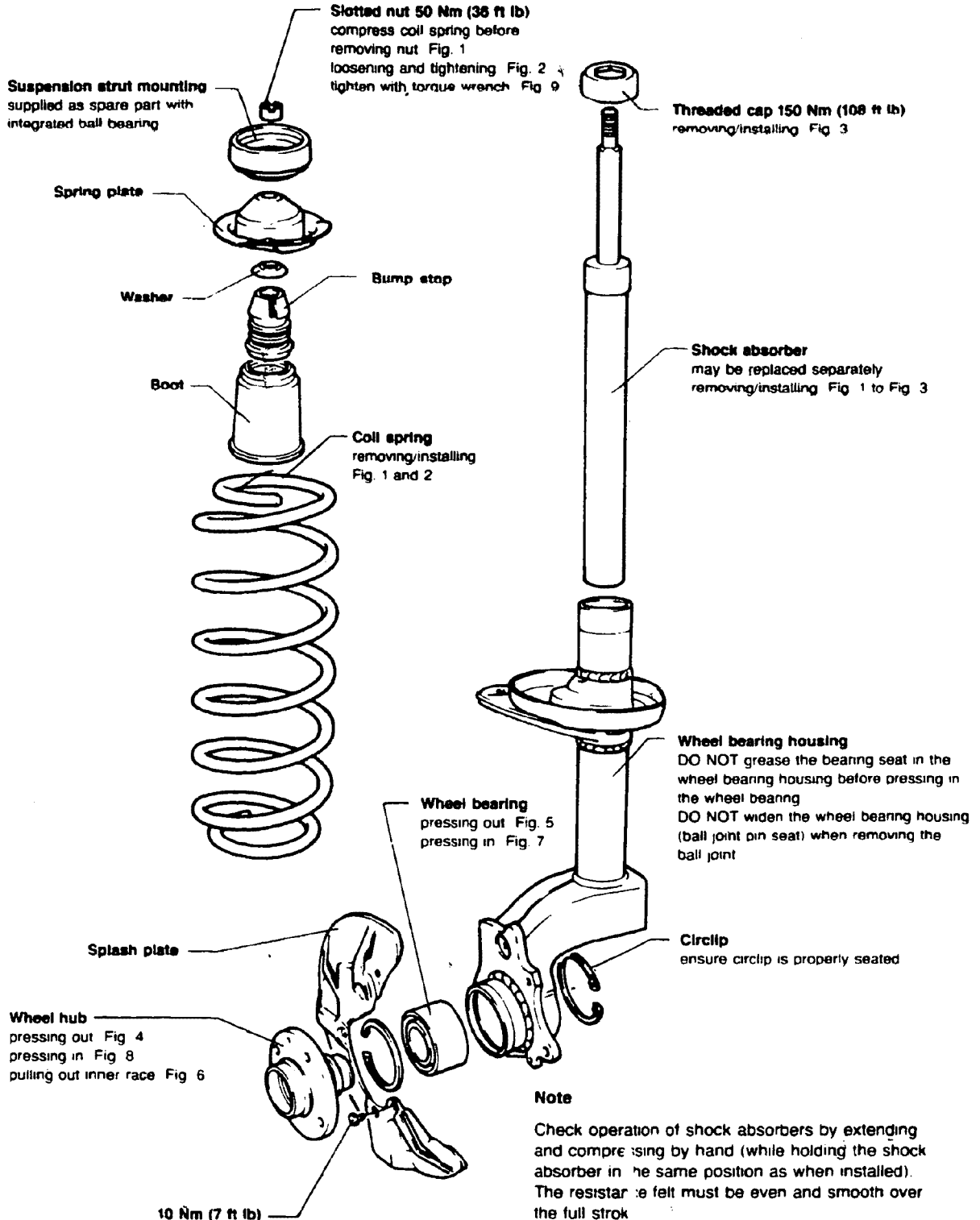


- torque shock absorber nut while holding piston rod
  - 60 Nm (44 ft lb)

#### CAUTION

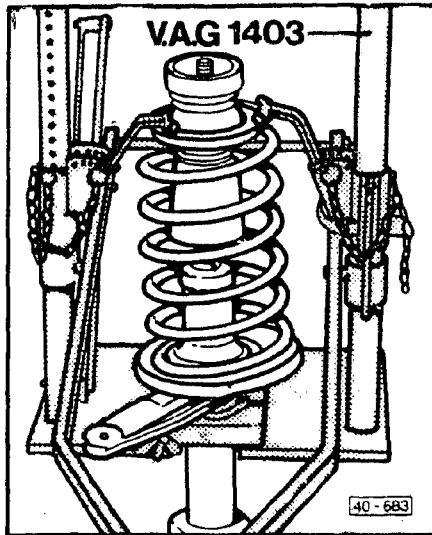
Allow locking compound **D6** at least 60 minutes to harden with vehicle stationary.

# Front Wheel Suspension – Shafts & Axle



U 40-781

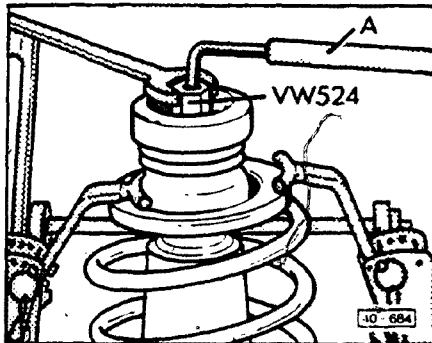
# Front Wheel Suspension – Shafts & Axle



► Fig. 1 Coil spring, removing/installing

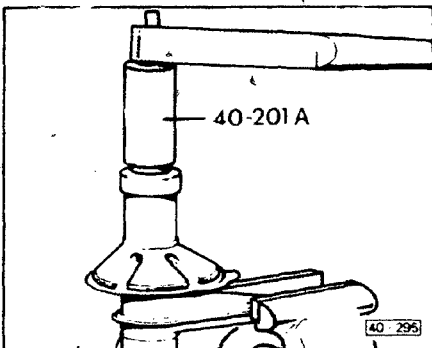
## Note

If the tool V.A.G. 1403 is not available, use tool VW 340.

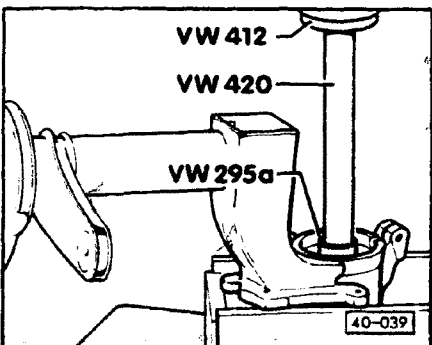


► Fig. 2 Coil spring, removing/installing

A = internal socket wrench

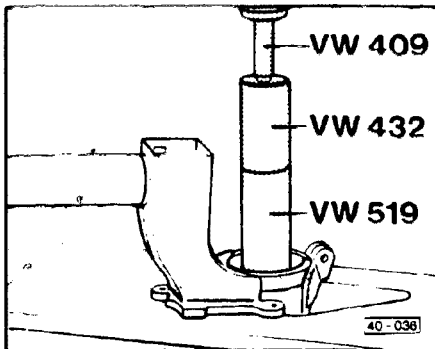


► Fig. 3 Shock absorber, removing/installing



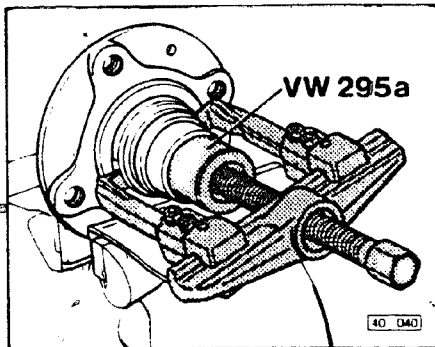
► Fig. 4 Wheel hub, pressing out

# Front Wheel Suspension – Shafts & Axle



► Fig. 5 Wheel bearing, removing

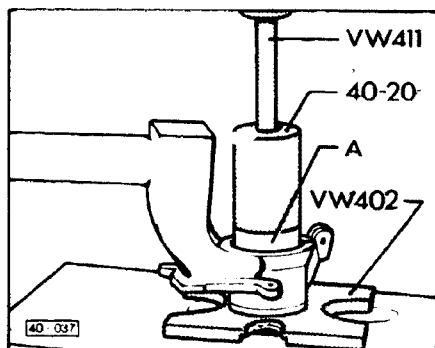
- first remove circlips



► Fig. 6 Wheel bearing inner race, removing

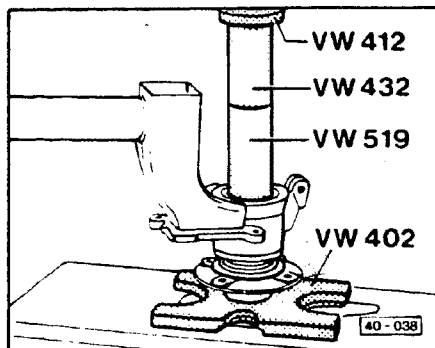
## Note

Arms of puller should be ground down as required.



► Fig. 7 Wheel bearing, pressing in

- install outer circlip
- press bearing in to stop
- install inner circlip

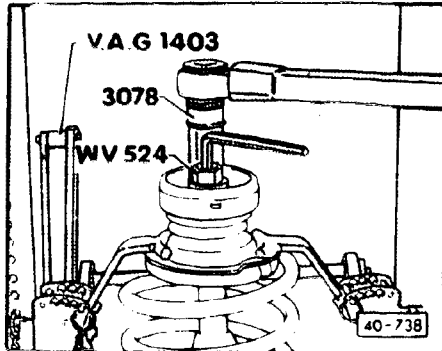


► Fig. 8 Wheel hub, installing

## Note

Tool VW 519 must only contact the inner race.

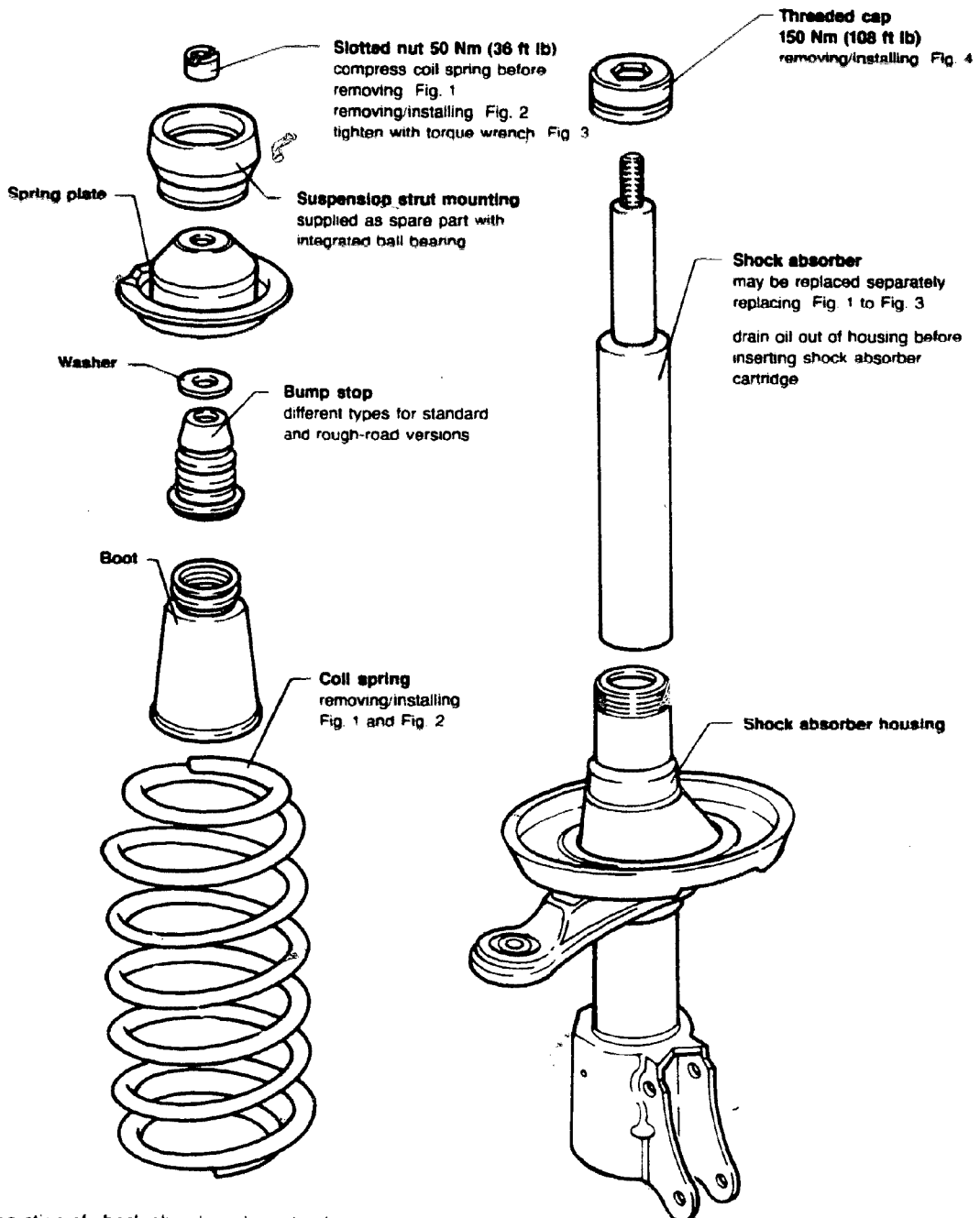
## Front Wheel Suspension – Shafts & Axle



► Fig. 9 Upper shock absorber nut, tightening

# Front Wheel Suspension – Shafts & Axle

(Vehicles with 5-cylinder engine)

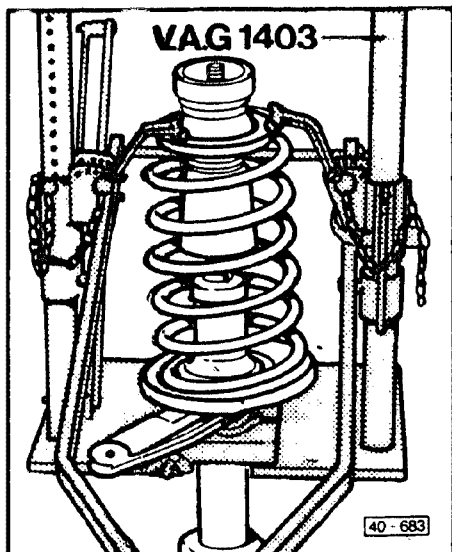


## Note

Check operation of shock absorbers by extending and compressing by hand (while holding shock absorber in the same position as when installed). The resistance felt must be even and smooth over the full stroke.

U 40-782

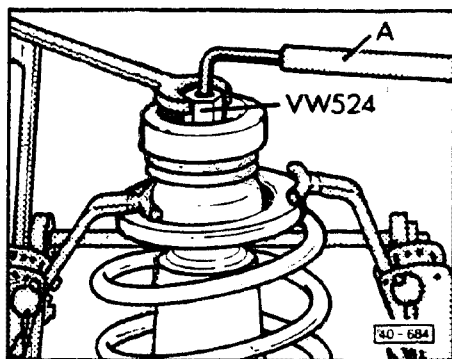
# Front Wheel Suspension – Shafts & Axle



► Fig. 1 Coil spring, removing/installing

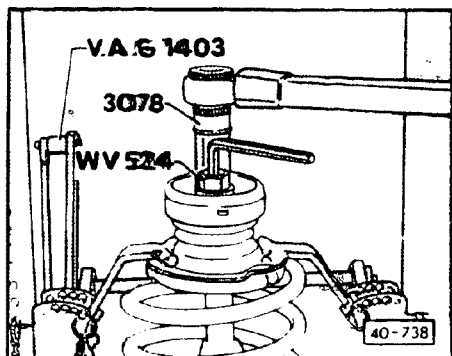
## Note

If tool V.A.G. 1403 is not available, use tool VW 340



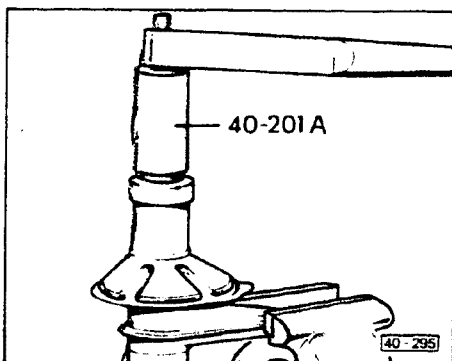
► Fig. 2 Coil spring, removing/installing

- hold shock absorber shaft with internal socket wrench



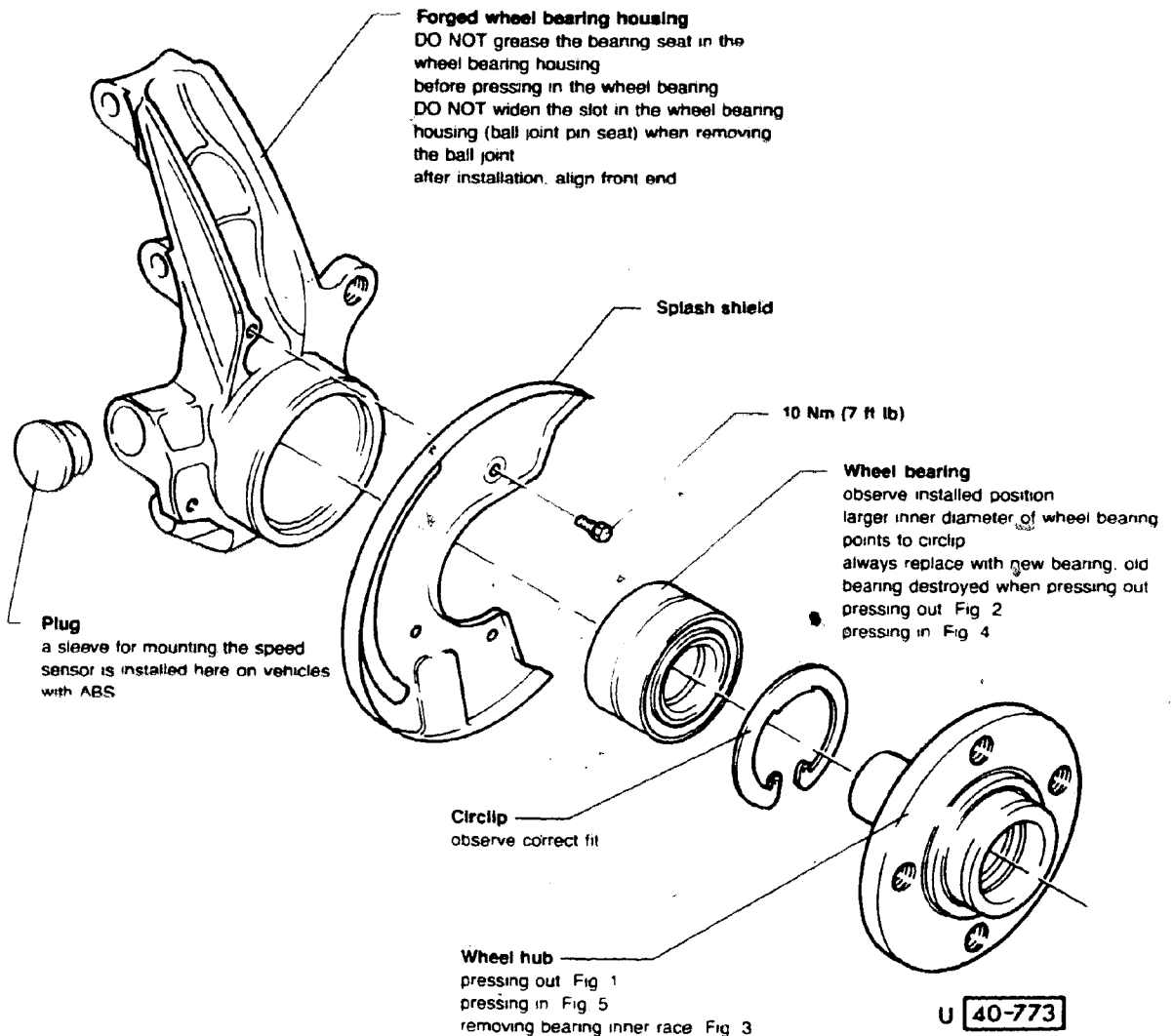
► Fig. 3 Shock absorber, installing

- tighten slotted nut to 50 Nm (36 ft lb)

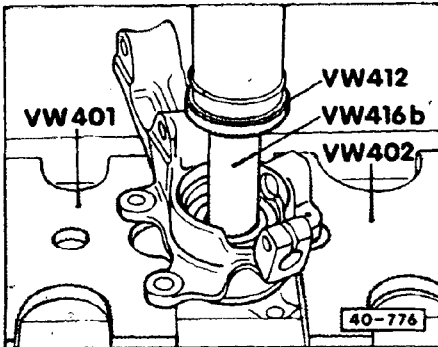


► Fig. 4 Threaded cap, removing/installing

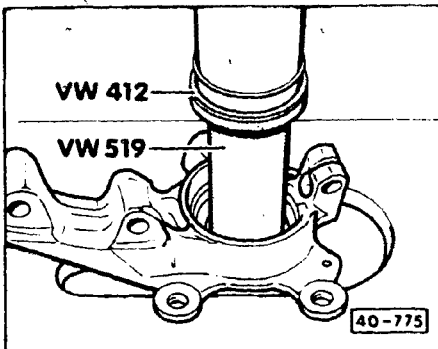
# Front Wheel Suspension – Shafts & Axle



# Front Wheel Suspension – Shafts & Axle

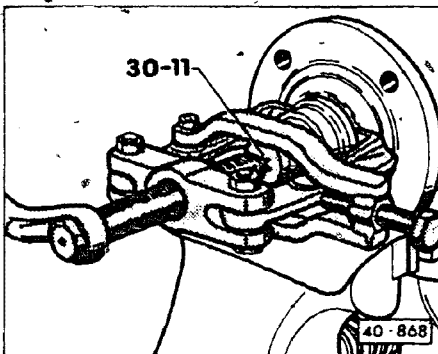


► Fig. 1 Wheel hub, pressing out



► Fig. 2 Wheel bearing, pressing out

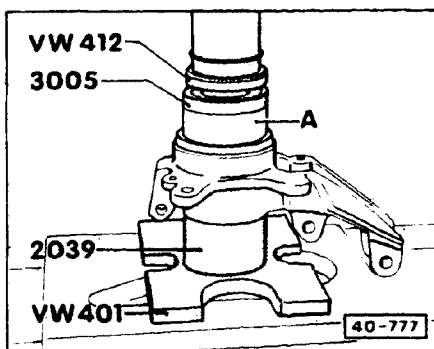
■ first remove circlip



► Fig. 3 Wheel bearing inner race, removing

## Note

Use an extractor with a clamp, e.g. Kukko 204-1.

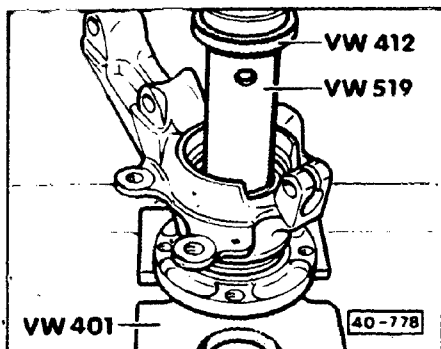


► Fig. 4 Wheel bearing, pressing in

## Note

Larger diameter of wheel bearing points towards circlip.

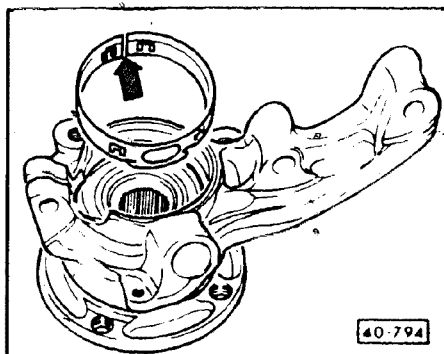
# Front Wheel Suspension – Shafts & Axle



► Fig. 5 Wheel hub, pressing in

**Note**

Tool VW 519 must only support itself on the inner race when pressing.



► Fig. 6 Protective ring, installing

- coat wheel bearing housing in area of ring with oil
- press ring in by hand until locking tabs engage
  - do not overlap (arrow)

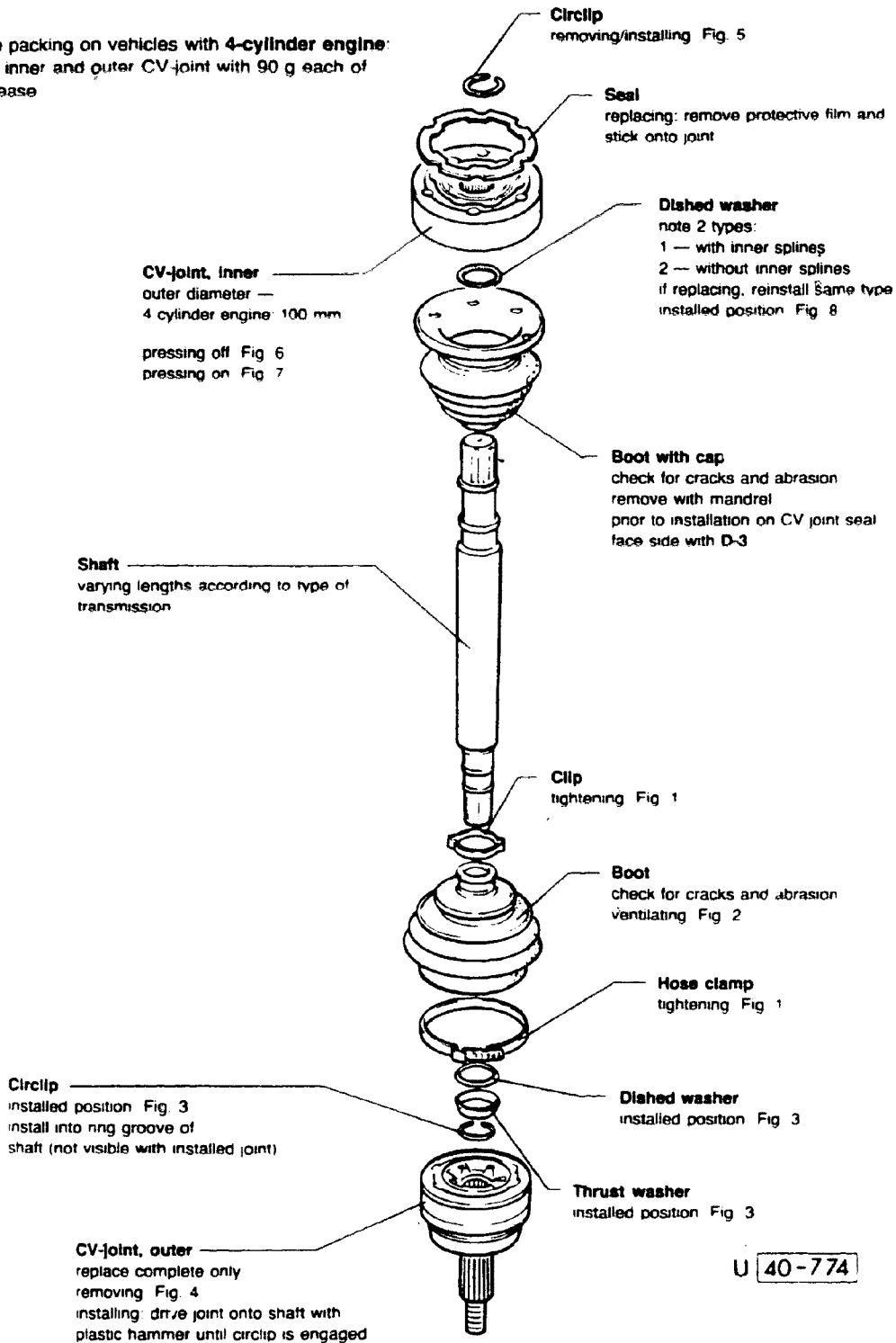
**Note**

Vehicles not equipped with protective rings in production cannot have them added later.

# Front Wheel Suspension – Shafts & Axle

## Note

Grease packing on vehicles with 4-cylinder engine:  
grease inner and outer CV-joint with 90 g each of  
G-6 grease



# Front Wheel Suspension – Shafts & Axle

## Note

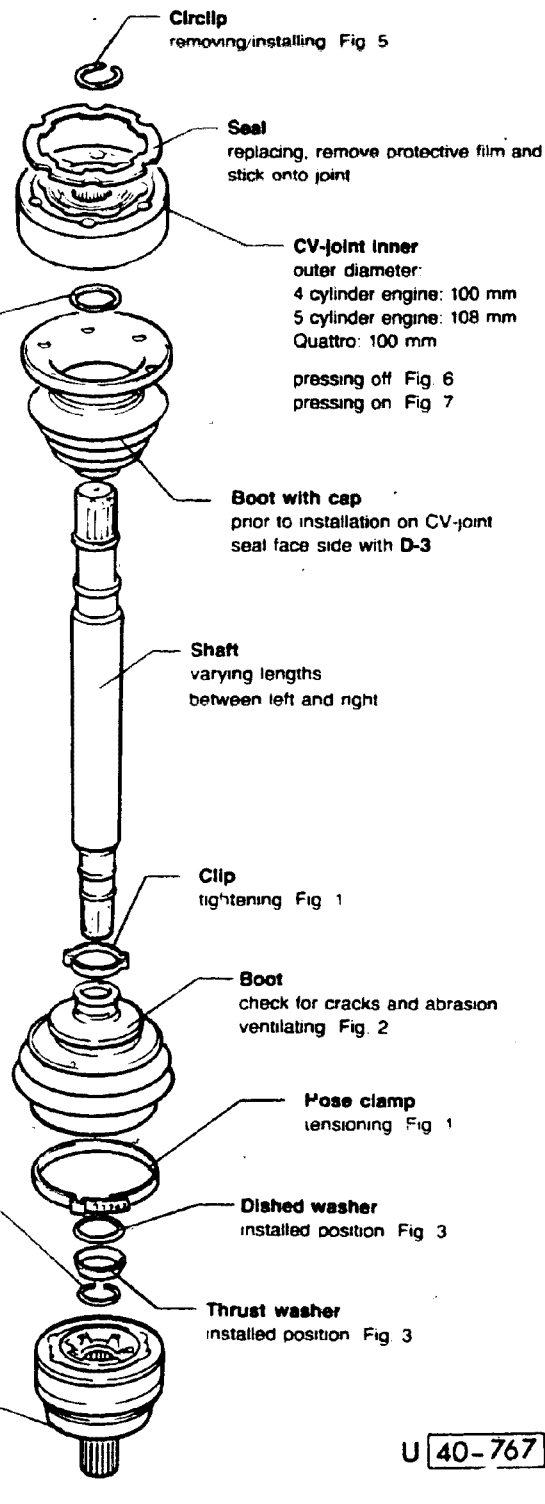
Grease packing on vehicles  
with **4-cylinder engine**: grease inner and outer  
CV-joint with 90g each of G-6 grease

Grease packing on vehicles with **5-cylinder engine** :  
inner CV-joint with 120g G-6 grease  
and outer CV-joint with 90g G-6 grease

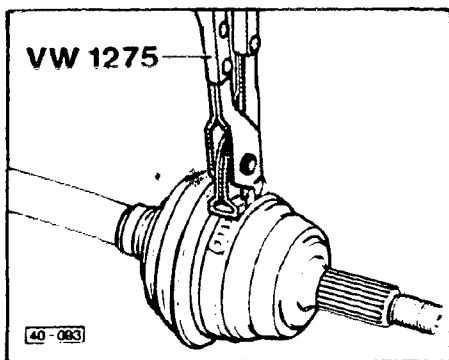
### Dished washer

Note 2 types:

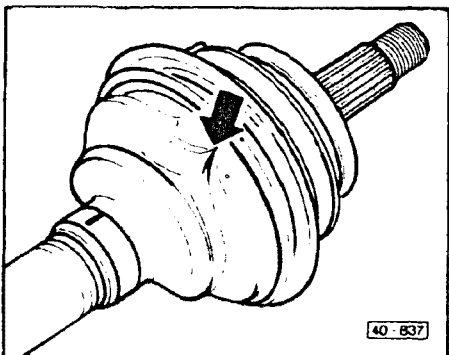
- 1 — with inner splines
  - 2 — without inner splines
- when replacing reinstall the  
same type (not installed in Audi 90)  
installed position Fig 8



U 40-767



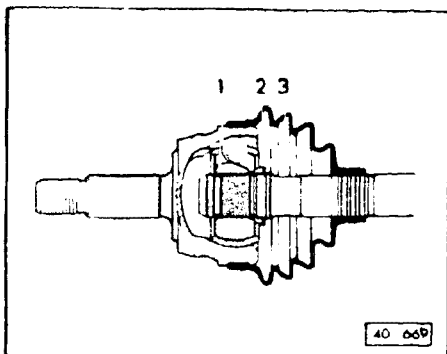
► Fig. 1 Clamp, tensioning



► Fig. 2 Boot ventilating

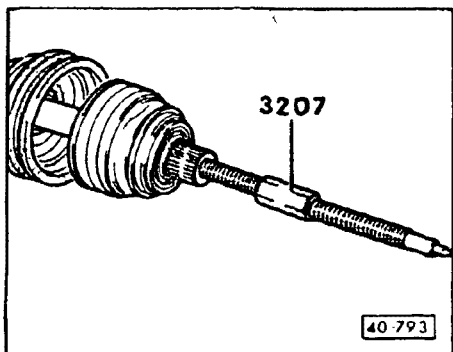
### Note

Boot can be pressed in during installation causing an inward fold (**arrow**) during vehicle operation. After installing, pull the small diameter end of the boot open momentarily, to allow the pressure to equalize. This venting of the boot will prevent an inward fold.



► Fig. 3 Dished washer, thrust washer installed position

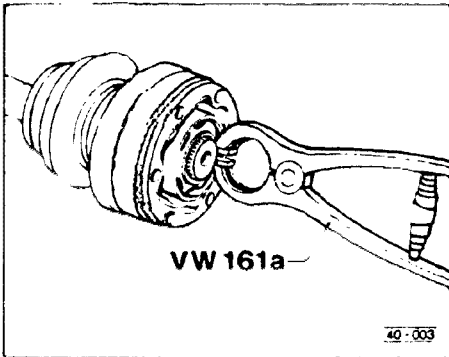
- 1 — circlip
- 2 — thrust washer
- 3 — dished washer



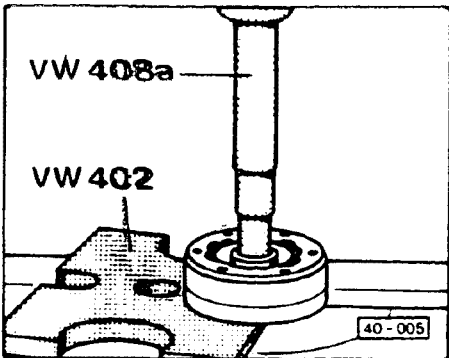
► Fig. 4 CV-joint (outer), removing

- clamp shaft in vise
- pull back boot
- thread in special tool until CV joint pushes away from shaft

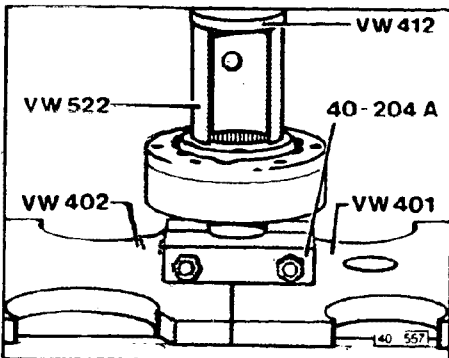
# Front Wheel Suspension – Shafts & Axle



► Fig. 5 CV-joint (inner) circlip, removing

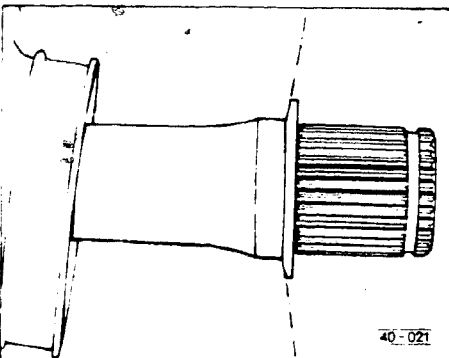


► Fig. 6 CV-joint (inner), removing



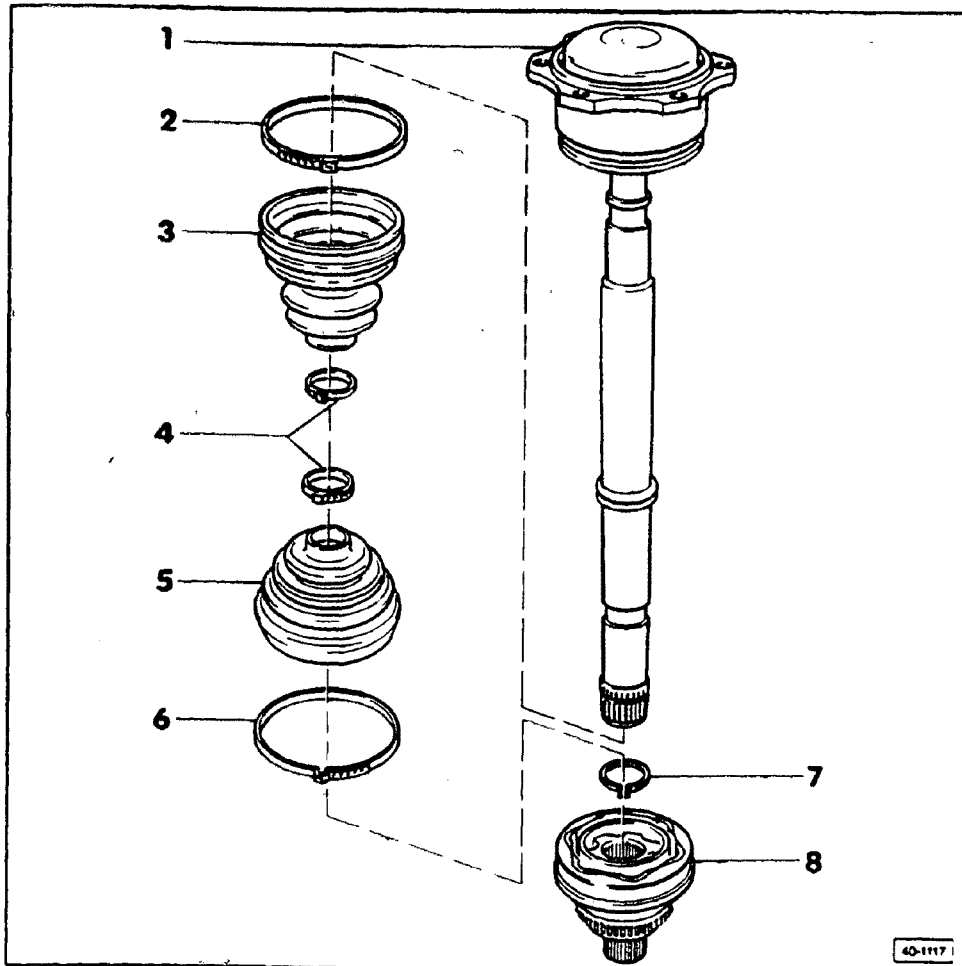
► Fig. 7 CV-joint circlip, installing

- press joint on to stop
- insert circlip



► Fig. 8 Dished washer, installing

- note position



## Note

Drive shafts with a revised inner CV joint will be installed in vehicles with the 4-speed automatic transmission 097 and 130 hp engine (code letters NF).

### 1 — Drive shaft with Inner CV joint

- supplied as replacement part with boot and grease
- regrease when replacing boot
- grease with 250 grams of G 000 604 lubricant

### 2 — Clamp

- stainless steel
- always replace
- tightening, Fig. 1

### 3 — Boot

- check for cracks and wear
- to replace press CV joint off
- to install, grease bead on shaft lightly and carefully slide boot on with aid of plastic wedge, Fig. 3

### 4 — Clamp

- stainless steel
- always replace
- tightening, Fig. 1

### 5 — Boot

- check for cracks and wear
- to install, press off outer CV joint

### 6 — Clamp

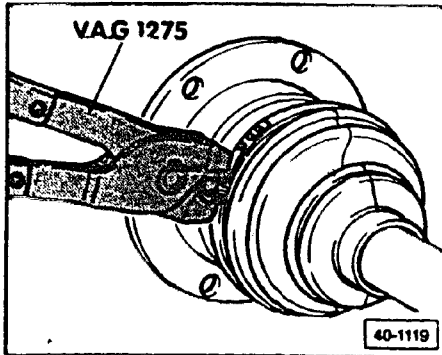
- stainless steel
- always replace
- tightening, Fig. 1

### 7 — Locking ring

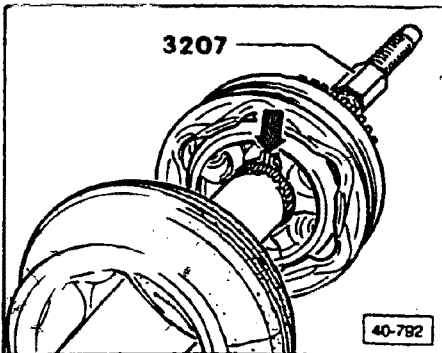
- always replace
- install in ring groove of CV joint

### 8 — CV joint, outer

- replace complete
- pressing off shaft, Fig. 2
- grease with 90 grams of G 000 604 lubricant
  - 50 grams in boot, 40 grams in CV joint
- regrease when replacing boot
- to install, drive onto shaft with plastic hammer until lock ring snaps into groove

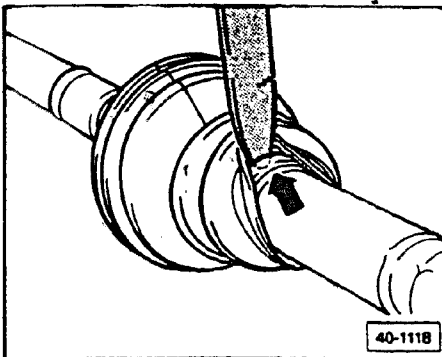


► Fig. 1 Clamps, tightening



► Fig. 2 Outer CV joint, pressing off

- clamp shaft in vice
- push boot back
- open lock ring (arrow)
- thread in M16 side of tool 3207 until CV joint is pushed away from shaft



► Fig. 3 CV joint boot, installing on shaft