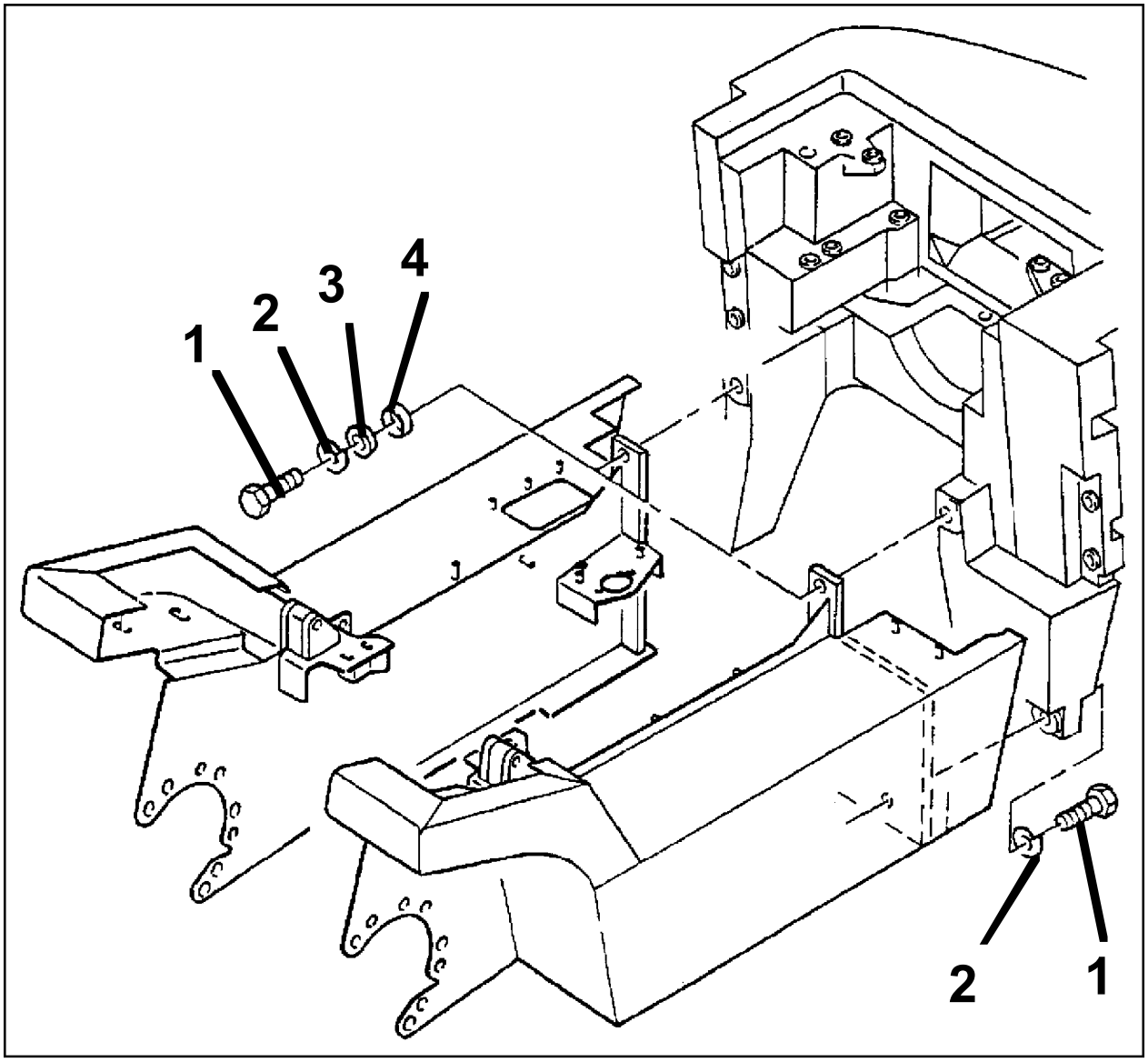
# WORKSHOP MANUAL
# R 70-20 bis 45


**R 7012/13, R 7015/16, R 7023/24,**

**R 7041 - 43**

**Ident-No.: 164 729** (ex147 986, 145 221)

# Chassis Frame and Counterweight




**Chassis Frame**

The chassis frame is constructed of electrically welded steel plate.

The fuel tank is positioned within the righthand frame section, whereas the hydraulic tank is housed within the left-hand frame section.

**Counterweight**

The removable rear counterweight is secured to the frame weldment by 4 bolts.

1 = hex. hd. bolt M24 x 110, 8.8
DIN 933
Torque loading = 710 Nm

2 = locking ring

3 = spherical washer C25 DIN 6319

4 = ball cup D28 DIN 6319

**Weight of the counterweight**

7041 = 2200 kgs
7042 = 2570 kgs
7043 = 2910 kgs

# Steer Axle

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## Technical Data for Maintenance Service

**Functional Group 02**

**Steer axle**

| | |
|---|---|
| Wheel lock angle | 80-82° |
| Toe-in | 01 ± 1 mm |
| Wheel camber | 0° |
| Trail | 0° |

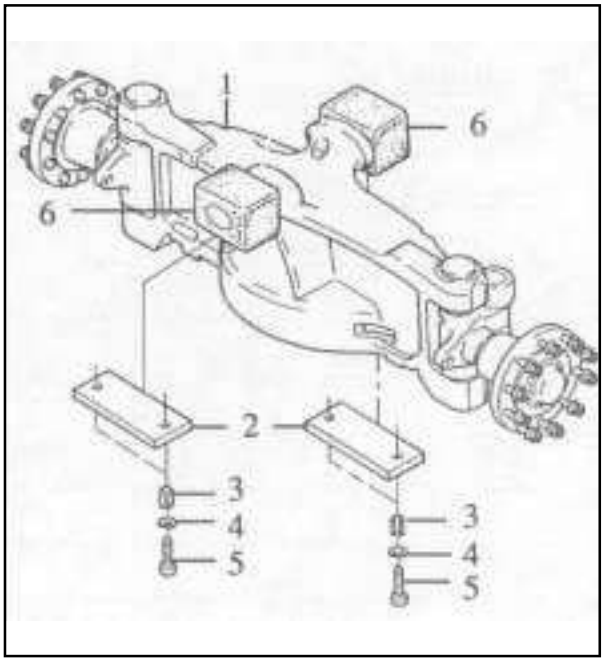
**Torque loadings for**

| | |
|---|---|
| Wheel hub | MA = 470 Nm |
| Neoprene blocks | MA = 195 Nm |
| Wheel nuts | MA = 600 Nm |

**Lubricant**

| | |
|---|---|
| Wheel hub bearings | lithium soap based grease |
| Stube axle king pin bearings | lithium soap based grease |

**Steer axle - Construction**




The articulating steer axle suspended from the counterweight is mounted in neoprene blocks. The stub axles are supported in the axle beam on roller thrust bearings and bushes. Steering is limited by stop screws on the stubs axles.

1 = axle beam
2 = fixing plates
3 = roll pin
4 = tension washer
5 = hex. hd. screw
6 = neoprene block

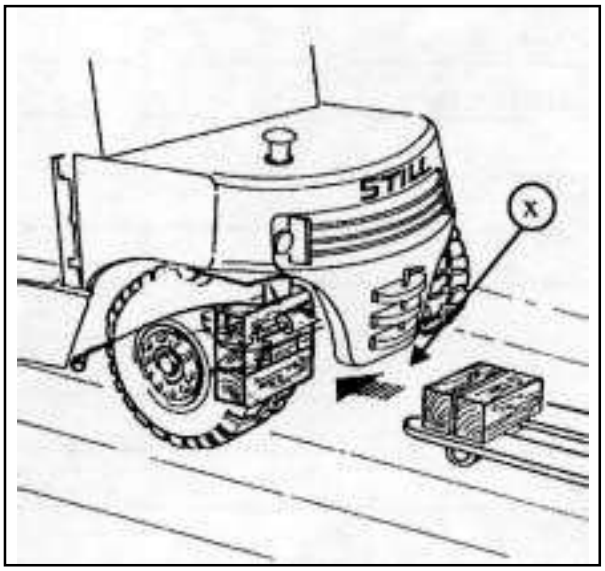
**Steer axle removal**

**Caution:**
**Remove steer axle only wit mast** in **position on the truck!**

- Securely chock the front wheels to prevent rolling of the truck
- Apply the parking brake
- Slacken steer wheel nuts
- J ack up rear of the truck at counterweight (x) and place wooden blocks under the counterweight in front of the axle
- Remove wheels
- Disconnect the hydraulic connections at steer cylinder.

**Caution: prepare for oil spillage!**

- Remove the four hex. head screws M16 x 70 which retain the steer axle in place
- Slide a hand pallet truck under the steer axle with wooden blocks placed on the fork ends of the hand pallet truck
- Using a leverdrive steer axle out of roll pins and lower the axle onto the hand pallet truck

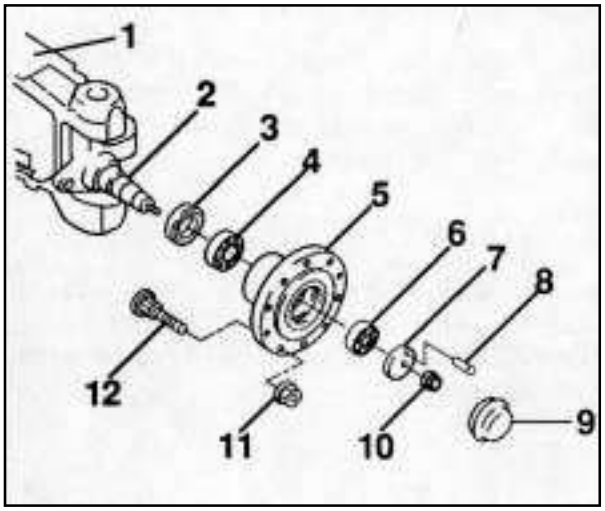



**Steer axle installation**

- Reverse the removal procedure
- The slots of the roll pins must face the direction of forward travel
- Torque socket head screws to:
  MA 195 Nm

- **Note:**
**Do not swap hydraulic connections left and right!**

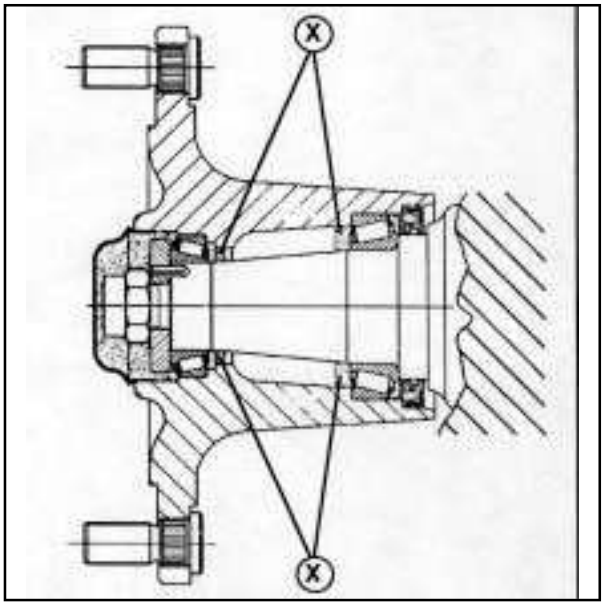
**Wheel Hub - Removal and Dismantling**




1 = axle beam
2 = stub axle
3 = radial seal
4 = tapered roller bearing
5 = wheel hub
6 = tapered roller bearing
7 = washer
8 = roll pin
9 = hubcap
10 = nut
11 = ball seat nut
12 = wheel bolt

- Slacken ball seat nuts (11) and remove wheel
- Pull hub cap (9) from wheel
- Slacken nut (10)
- Remove washer (7) together with roll pin (8)
- Withdraw the hub
- If necessary, drive out of wheel hub outer races of tapered roller bearings (4) and (10)

Remove radial seal (3)




**Wheel hub - Reassembling and Installation**

- Apply a smear of grease to the sealing lips of the radial seal

- Before re-assembling the hub, first fill cavity of tapered roller bearings and bearing cage with grease

- The corresponding bearing spaces must be repacked with grease at places identified by an X on the drawing

- To reassemble the hubs, reverse the procedure

- Tighten nut (8) while rotating the wheel hub

Torque loading: MA = 470 Nm

**Checking the steering angles**

The steering angle ‘a’ must amount to 80° -82°. To facilitate the measurement use the complementary angle ß for the setting. It should amount to 98° - 100°.

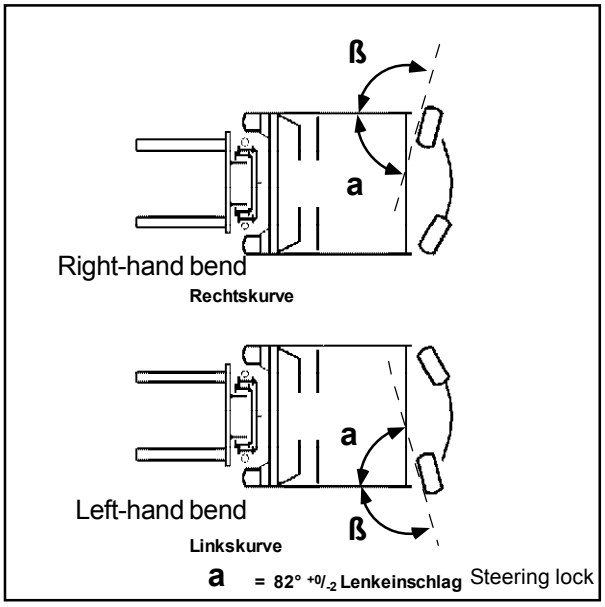
**Important:**

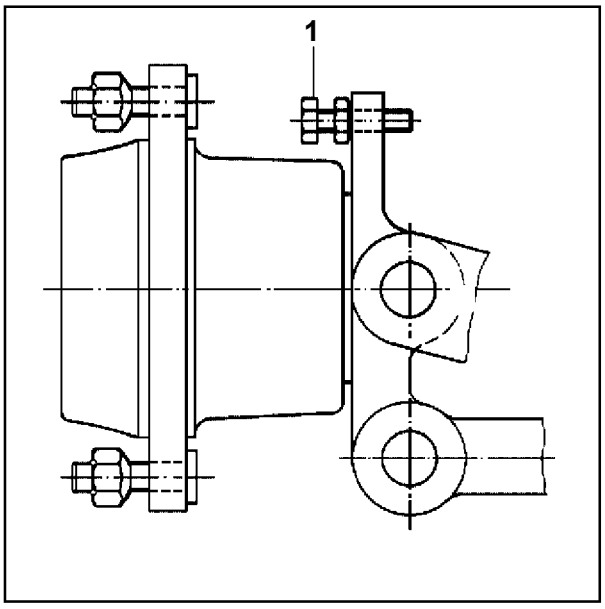
Ensure that the wheel lock is limited by the stop screws (1) and not by the cylinder stroke.

Wheel angle stop adjustment

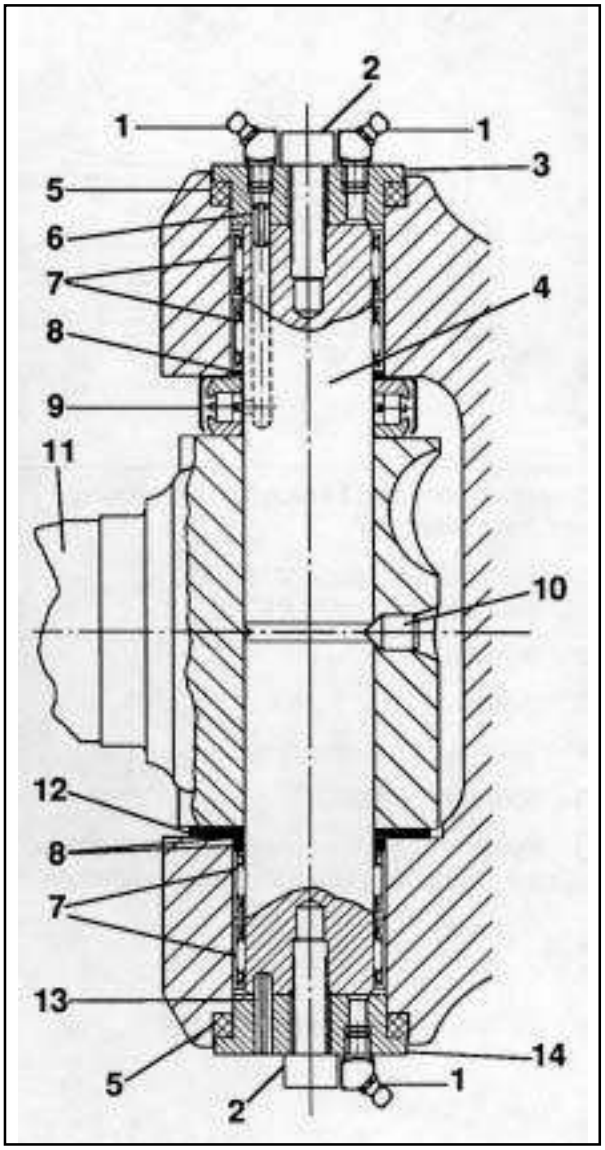
The wheel stop angle is limited by the stop screws (1).

- By operating on stop screws (1), set both steering angles to 82° - 2°
- Check opposite angles
- Check for adequate clearance between wheels and truck frame
- Check that the wheel lock is not limited by the cylinder stroke



**Stub axle king pin bearings**




Removal:

Unscrew the three grease nipples (1)

Remove screws (2) from lower and upper ends of king pin

Remove washers (3 & 14), roll pins (6 & 13) as well as seals (5)

Unscrew grub screw (10)

Drive king pin (4) down, forcing out lower needle bearings (7) and seal (8) at the bottom of the king pin. Then drive out king pin into opposite direction. Drive out upper needle bearings (7) and seal (8)

Remove stub axle (11) with thrust bearing (9) and shims (12)

**Installation:**

**Pack bearings with grease. apply a smear of grease to the sealing lips of the seals before installation!**

Install needle bearings (7) andseals(8) into axle beam

Install stub axle (11) with thrust bearing (9) into axle beam

Grease shims (12) before installation. Compensate for any play by adding shims (12), making sure that the thickest shim is placed bearing end

Install stub axle king pin (4), pressing it in at 8 kN max.

Apply Loctite grade 243 to threads of grub screw (10) and install grub screw

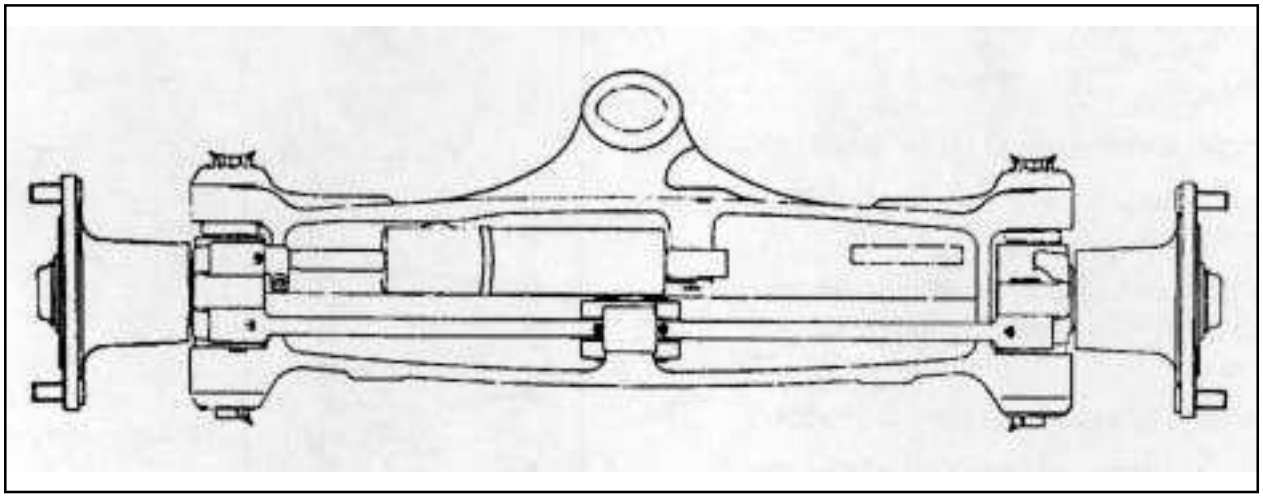
Install washers (3 & 14) with seals (5)

Install roll pins (6 & 13)

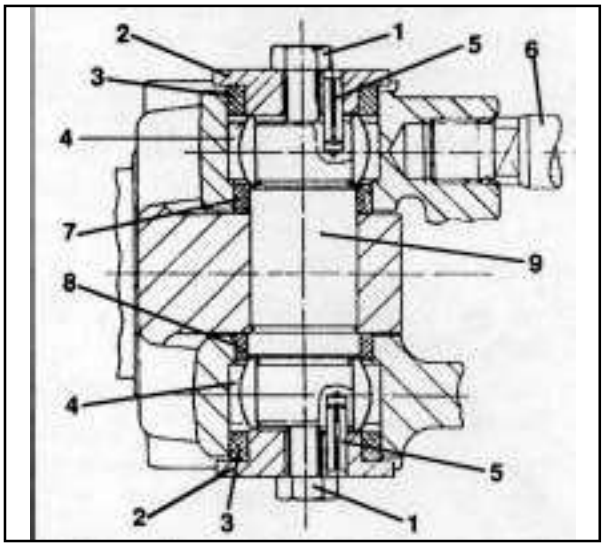
Install screws (2)

Install grease nipples (1)

Lubricate the stub axle with grease!

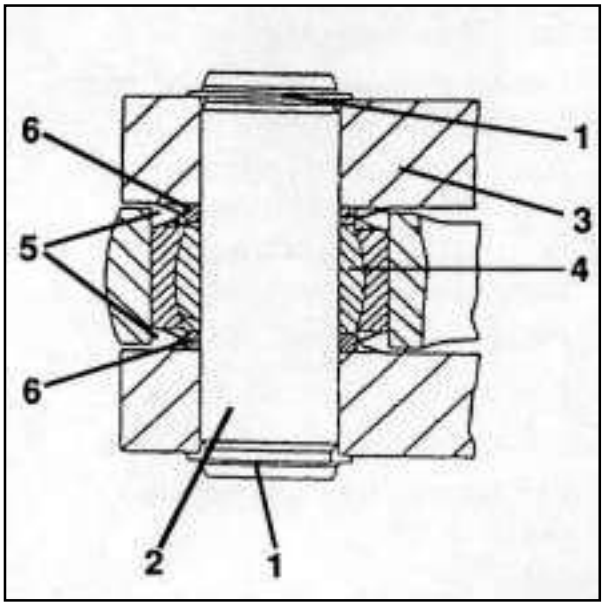


**Track rod and steer cylinder bearing at stub axle**




1 = hex. hd. screw M10 x 35, secured with Loctite 243
2 = washer
3 = oil seal
4 = ball joint, press force: 4 kN max.
5 = roll pin 6 x 24
6 = completely screw in piston rod then screw but by one turn
7 = oil seal
8 = oil seal
9 = pin, press force: 8 kN max.

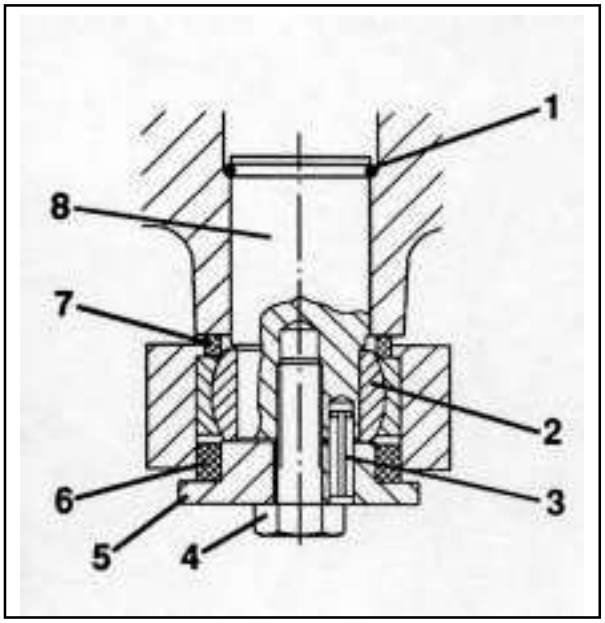
**Track rod bearing on steering bell crank**




1 = circlip (retaining ring)
2 = pin, press into steering bell crank at 30 kN max.
press into ball joint at 10 kN max.
3 = steering bell crank
4 = ball joint, press force: 4 kN max.
5 = V shaped rings
6 = washer

## Steer Axle

### Steer cylinder mounting at axle beam




1 = snap ring

2 = ball joint, press force: 2.6 kN

3 = roll pin

4 = hex. hd. bolt, secured with Loctite 243

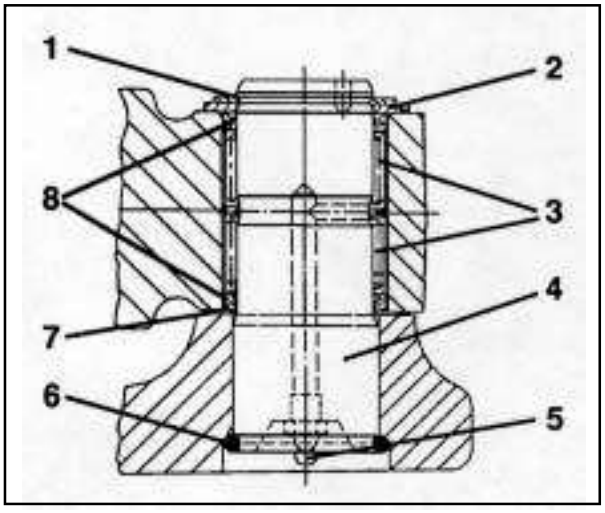
5 = washer

6 = oil seal

7 = oil seal

8 = pin,
press into ball joint at 9 kN max.
press into axle beam at 68 kM max.

### Bell crank mounting




1 = locking ring

2 = washer / shims

3 = needle bearing

4 = pin, press into axle beam at 42 M max.

5 = grease nipple

6 = snap ring

7 = washer (must always be fitted)

8 = oil seal