



# R70-16 R70-18 R70-20 Compact

**Treibgas-Gabelstapler**  
**LPG Fork Truck**  
**Chariot élévateur au GPL**

**Diesel-Gabelstapler**  
**Diesel Fork Truck**  
**Chariot élévateur Diesel**

**STILL  
ELECTRONIC  
DOCUMENTATION  
SYSTEM**

**STEDS**



**Werk-  
statt-  
handbuch**

**Work-  
shop  
manual**

**Manuel  
d'Atelier**

**DFG R7052/56 R7074/75 R7076 Compact**  
**DFG R7054/58 R7077/78 R7079 Compact**



STILL GmbH

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## Frame and Counterweight

### Frame

The welded steel frame is of unit construction and has a bolt-on cast iron counterweight.

The hydraulic oil tank serves as a frame cross-member located underneath the floor plate.

### Counterweight

The removable rear counterweight is secured to the frame by three bolts (see sketch).

1 = hex hd bolt M 24 x 85 / 8.8

2 = spherical washer

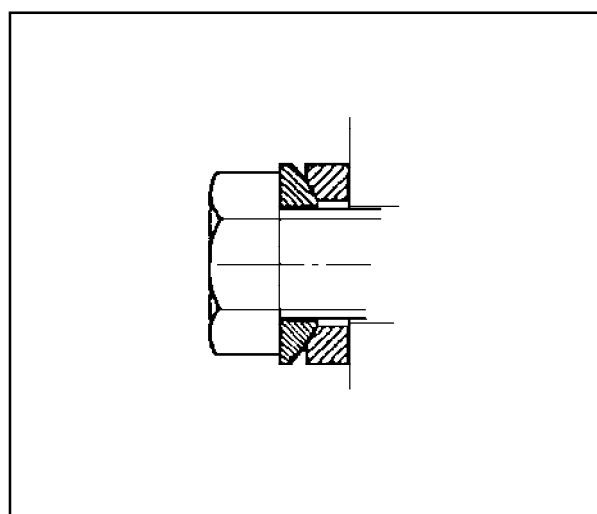
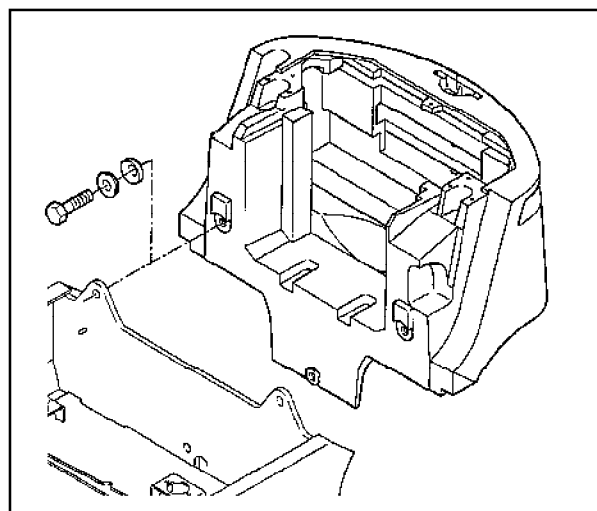
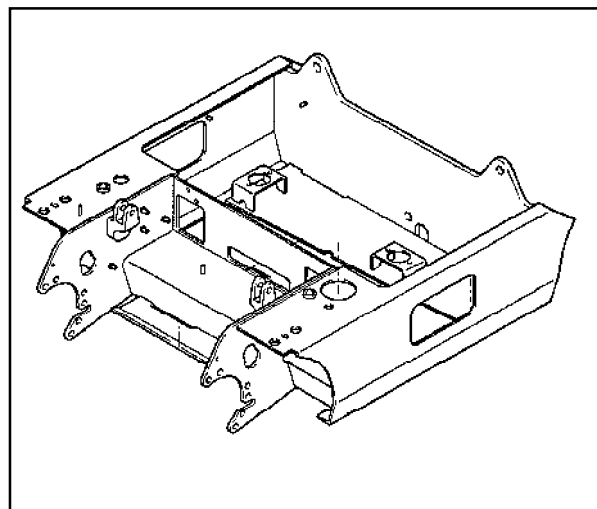
3 = ball cup

The three counterweight bolts (item 1) should be torqued to **660 Nm**.

Weight of the counterweights :

7052 / 7054 → 940 kgs

7056 / 7058 → 1080 kgs



## Jacking up the truck

### CAUTION:

Before jacking up the truck :

#### Apply the parking brake !

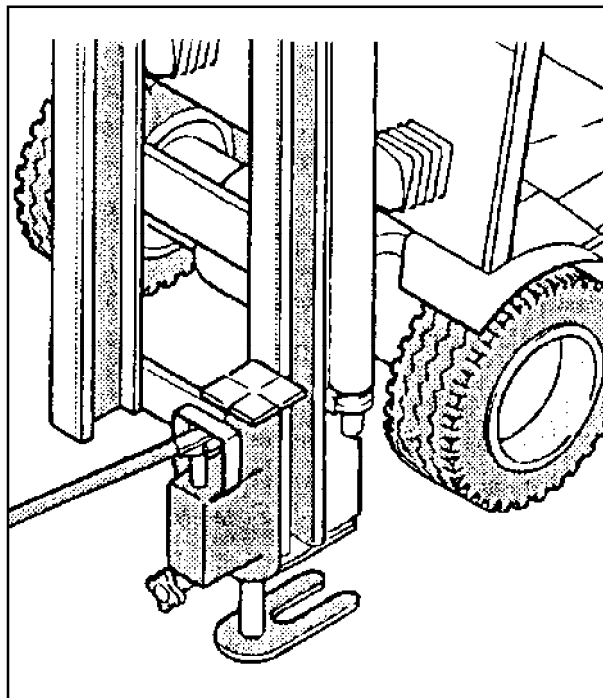
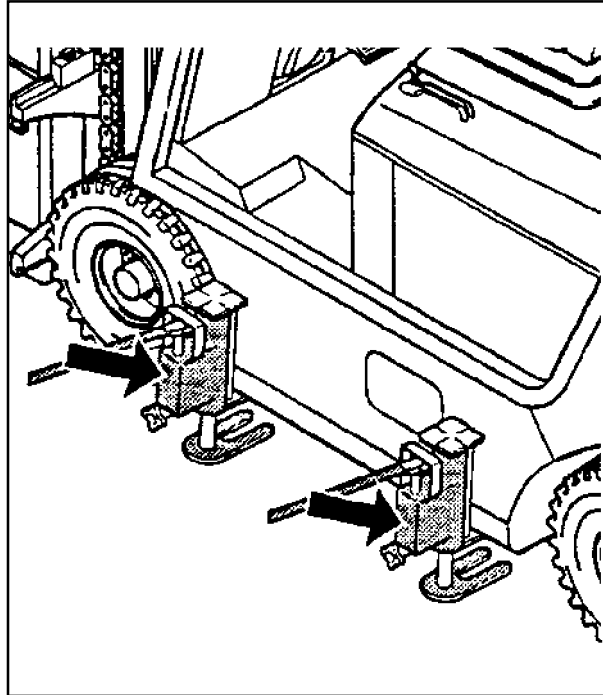
To carry out certain maintenance tasks the truck must be jacked up and securely chocked into position. Always make sure only jacks of suitable capacity are used.

Before jacking up the truck, position it on level ground and secure against slipping or rolling.

Jack up the truck by placing a jack at locations shown in the figures, i.e. beneath the mast right or left and beneath the frame at the front or at the rear.

#### Never jack up the truck at rear counterweight !

When jacking up the truck observe safety rules covering maintenance and service jobs on the mast.



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## Technical Data for Maintenance Service

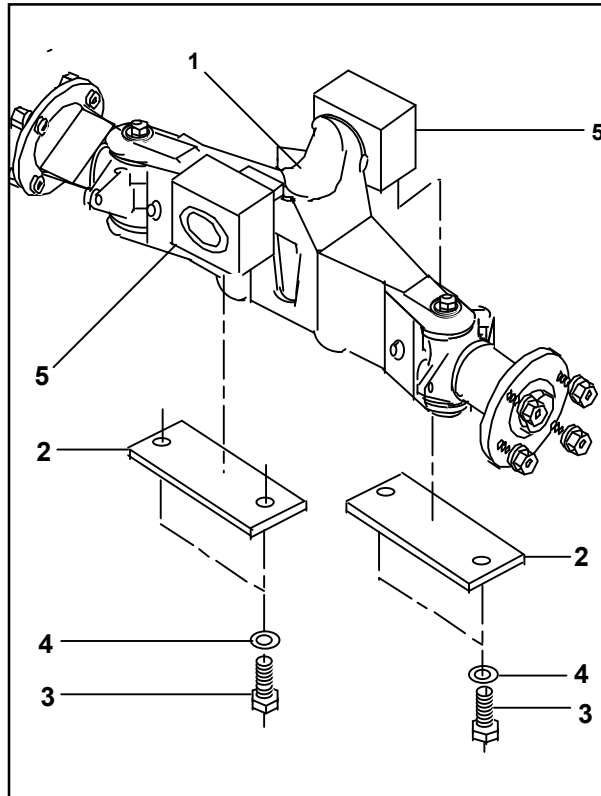
	Functional Group 02
Steer axle	
Wheel lock angle	80 - 82 °
Toe-in	0 ± 1 mm
Wheel camber	0 °
Trail	0 °
Torque loading	
Wheel hub	MA = 145 Nm
Wheel nuts	MA = 210Nm
Axle bearings	MA = 195 Nm
Steer cylinder fixing	MA = 210 Nm
Nut on king pin	MA = 290 Nm
Lubricants	
Wheel hub bearings	Grease F to DIN 51825-KP2K-20 lithium soap based
	Grease F to DIN 51825-KP2K-30,lithium soap based
Stub axle bearings	Grease FL to DIN 51825 - KPF2N-20, lithium soap based
	STILL Ident No. 148659

## Steer axle

### Configuration of steer axle

The articulating steer axle suspended from the counterweight is mounted in 2 neoprene blocks. The stub axles are supported in the axle beam on tapered roller bearings. Steering is limited by stop screws on the stub axles.

- 1 axle beam
- 2 fixing plates
- 3 hex. hd. bolt
- 4 spring washer
- 5 neoprene blocks



### Steer axle removal

**CAUTION: Remove steer axle only with mast in position on the truck!**  
**Risk of tipping!**

- Apply the parking brake.
- Securely chock the front wheels to prevent rolling of the truck.
- Slacken steer wheel nuts.
- Jack 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 when disconnecting the hydraulic connections!**  
**Catch oil in a pan of adequate capacity and dispose of the used oil in accordance with laws and regulations.**

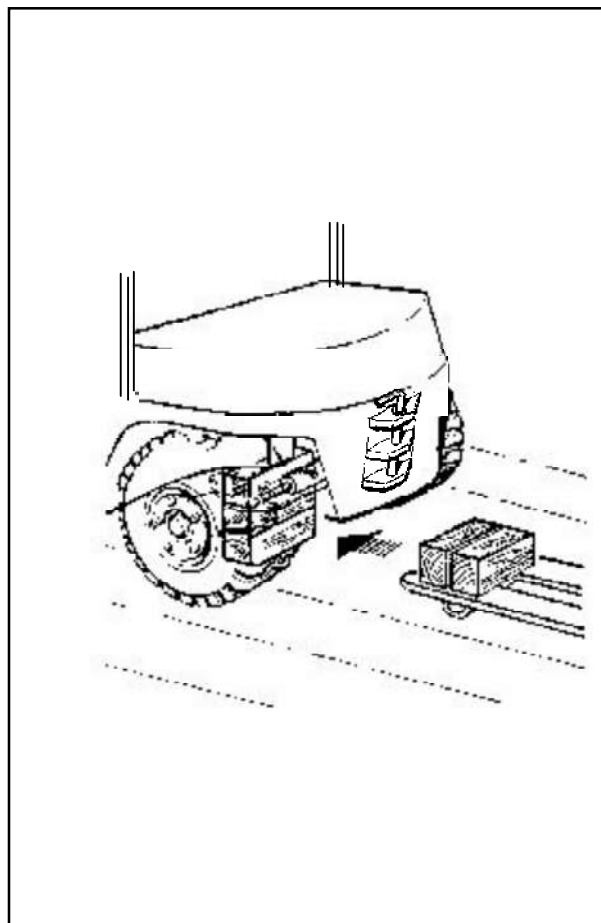
- Remove the 4 socket head screws which retain the steer axle in place.
- Slide a hand pallet truck under the steer axle with wooden blocks placed on the fork ends of the hand pallet truck.
- Using a lever, drive steer axle out of roll pins and lower the axle onto the hand pallet truck.

### Steer axle installation

- Reverse the removal procedure.
- The slots of the roll pins must face the direction of forward travel.

-Torque the 4 socket heads to:  $M_A = 195 \text{ Nm}$

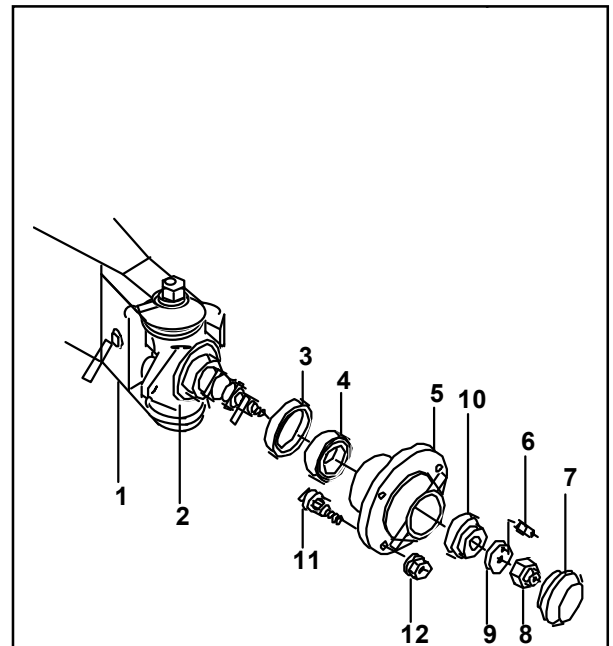
**CAUTION: Do not swap hydraulic connections left and right!**



**Wheel hub - Removal and Dismantling**

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

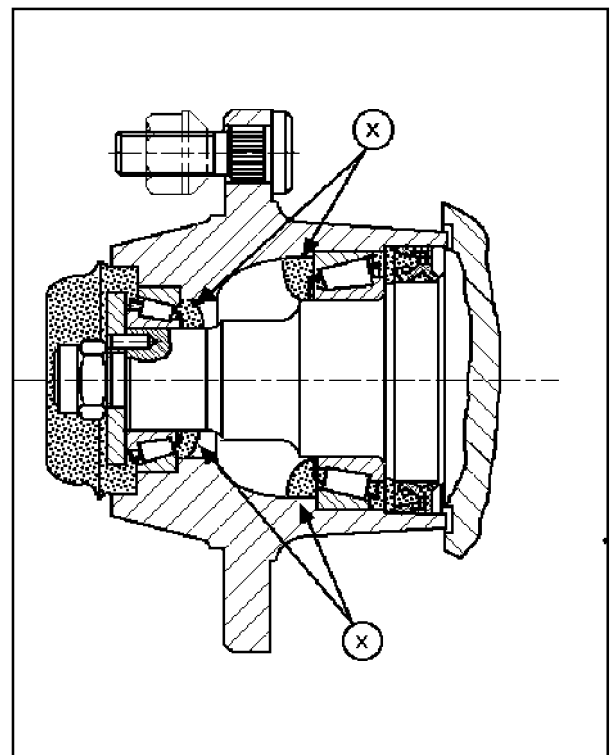
- Slacken ball seat nuts (12) and remove wheel.
- Pull hub cap (7) from wheel.
- Slacken nut (8)
- Remove washer (9) with roll pin (6).
- Withdraw the hub.
- Remove radial sealing ring (3) then remove tapered roller bearings (4) and (10) from hub.
- If necessary, drive out of wheel hub outer races of tapered roller bearings (4) and (10).



**Wheel hub - Reassembling and Installation**

- Apply a smear of grease to the sealing lips of the radial sealing ring.
- Before re-assembling the hub, repack with grease F: cavity between inner race and bearing cage of tapered roller bearings, and the bearing spaces identified by an 'x' on the drawing.
- To reassemble the hubs, reverse the procedure.
- Tighten nut (8) while rotating the wheel hub.

Torque loading:  
 $M_A = 145 \text{ Nm}$





## Steer axle

### Checking the steering angles

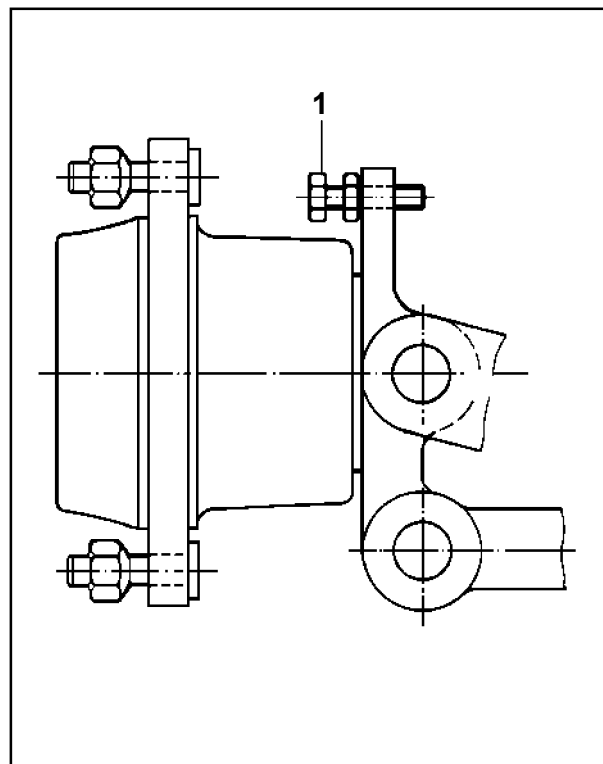
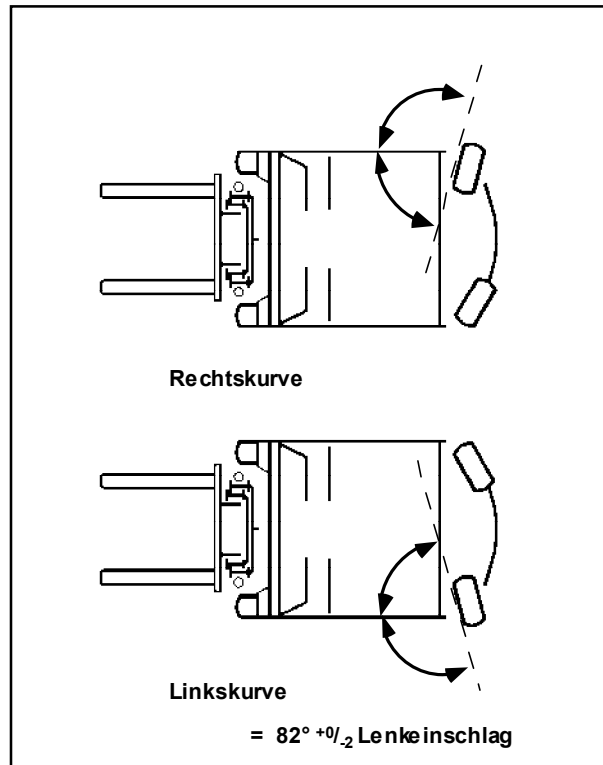
The steering angle  $a$  must amount to  $80^\circ - 82^\circ$ .  
To facilitate the measurement use the complementary angle  $b$  for the setting. It should amount to  $98^\circ - 100^\circ$ .

**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).

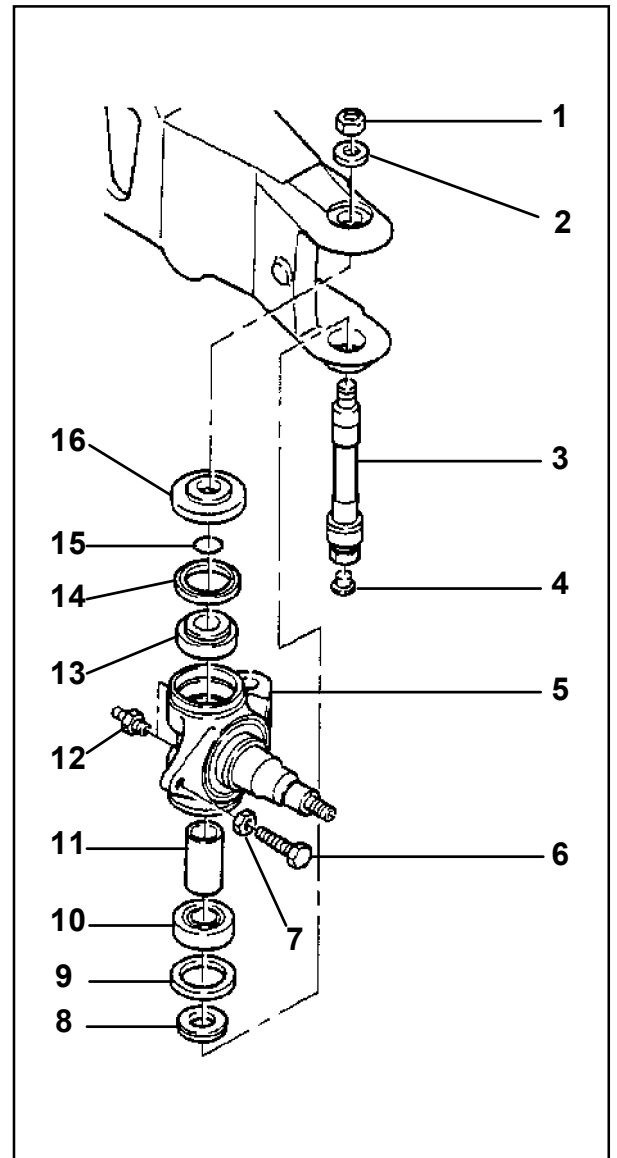
- By operating on stop screws (1), set both steering angles to  $80^\circ - 82^\circ$ .
- Check opposite angles.
- Check for adequate clearance between wheels and truck frame.
- Check that the wheel lock is not limited by the cylinder stroke.



**Stub axle - Removal and Dismantling**

- 1 nut
- 2 washer
- 3 king pin
- 4 plug
- 5 stub axle
- 6 hex. hd. screw
- 7 nut
- 8 spacing washer
- 9 wiper ring
- 10 tapered roller bearing
- 11 spacer
- 12 grease nipple
- 13 tapered roller bearing
- 14 wiper ring
- 15 O-Ring
- 16 spacing washer

- Remove the wheel.
- Press out the pin located between track rod and stub axle.
- Slacken nut (1).
- Remove washer (2).
- Press the king pin (3) down through the stub axle and remove the king pin.
- Remove the stub axle from the axle.
- Remove from the stub axle: spacing washers, 'O' ring, wiper rings, tapered roller bearings and spacer (items 8-16).

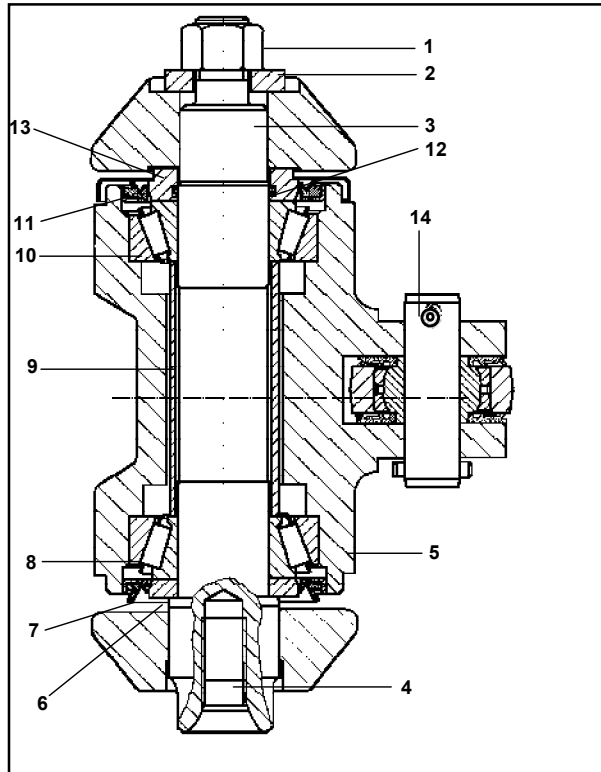


## Steer axle

### Stub axle - Reassembling and Installation

- |    |                        |
|----|------------------------|
| 1  | nut                    |
| 2  | washer                 |
| 3  | king pin               |
| 4  | plug                   |
| 5  | stub axle              |
| 6  | spacing washer         |
| 7  | wiper ring             |
| 8  | tapered roller bearing |
| 9  | spacer                 |
| 10 | tapered roller bearing |
| 11 | wiper ring             |
| 12 | O-Ring                 |
| 13 | spacing washer         |
| 14 | pin                    |

- Insert spacer (9) into the stub axle.
- Install both tapered roller bearings (8 & 10) after having first repacked them with a sufficient amount of FL grade grease!
- Apply a smear of FL grade grease to the sealing lips of the wiper rings (7 & 11).
- Install wiper rings (7 & 11), 'O' ring (12) as well as both spacing washers (items 13 & 6).
- Install the stub axle into the axle beam.
- Drive in the king pin (3) from below after having first applied a light smear of oil to it.
- Fit the washer (2) into position on the king pin.
- Install a new nut (1) and tighten to a torque of:  
 **$M_A = 290 \text{ Nm}$**
- Press the pin (14) into the track rod and secure with roll pins.
- Install wheel.
- Lubricate the steer axle with FL grade grease.  
Lubricating the steer axle
- Operate the linkage during steering.
- Using a grease gun, lubricate with **FL grade** grease the fittings with which the steer axle is equipped until a small amount of fresh grease oozes out at the lubricating points.



**Track rod removal**

The steer axle is fitted with two track rods arranged between the steering cylinder and the two stub axles.

- 1 stub axle
- 2 piston rod
- 3 sealing rings
- 4 roll pins
- 5 pin
- 6 track rod
- 7 ball joint

- Remove the roll pins (4).
- Using a press, press out the pins (5).

**Track rod installation**

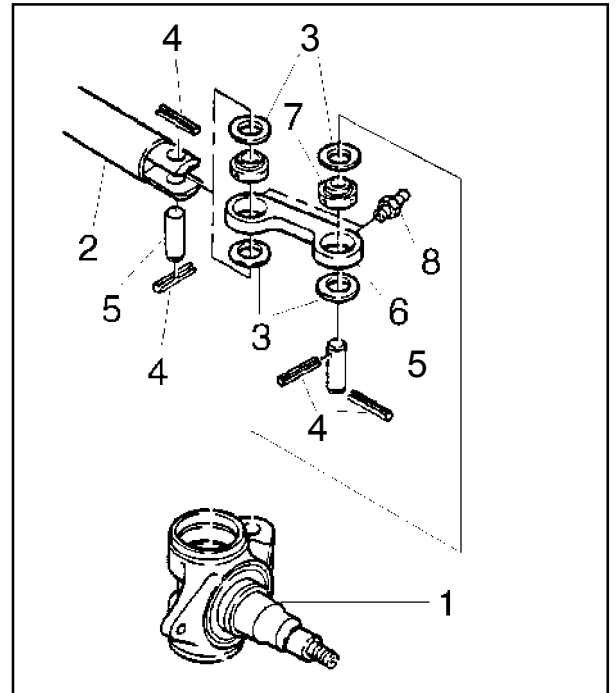
- Reverse the removal procedure.

Install pins cylinder end with a maximum press force of

**max. 21 kN**

and pins stub axle end with a maximum press force of

**max. 26 kN**





## Steer axle

### Steering cylinder removal

- Remove track rods.
- Disconnect hydraulic connections after having marked them for identification.

**WARNING: Hydraulic oil may spill when disconnecting lines; be prepared for oil spillage!**

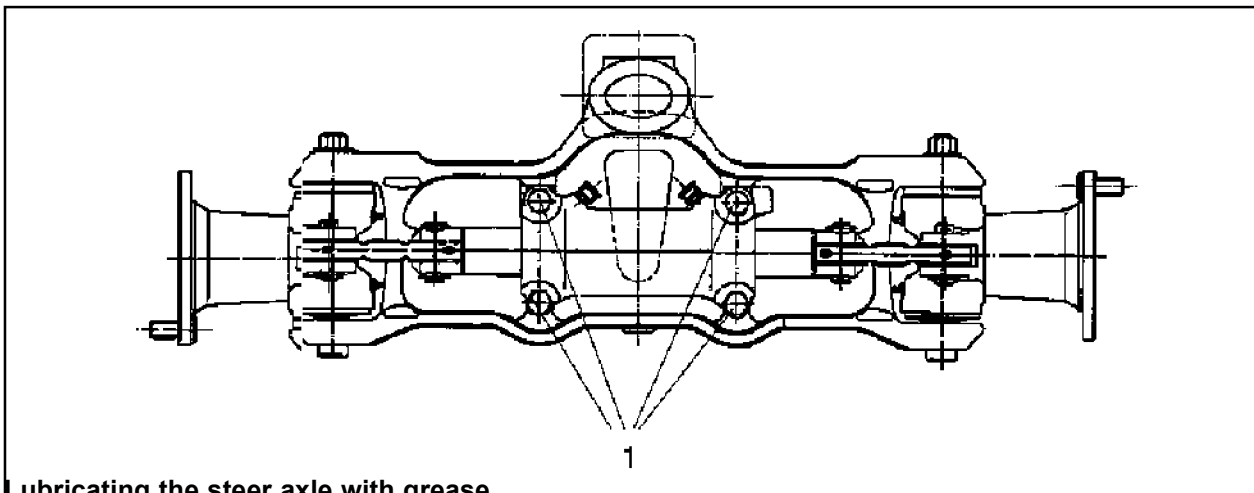
- Slacken the four fixing screws (1).  
Steering cylinder installation
- Retighten the fixing screws (1).  
Torque loading:  $M_A = 210 \text{ Nm}$
- Reconnect hydraulic connections.

### CAUTION:

Do not swap hydraulic connections!

- Install track rods.

**NOTE: For steering cylinder dismantling and reassembling refer to F.G. 06.**



### Lubricating the steer axle with grease

- Operate the linkage during greasing while the steer axle is off load.
- Using a grease gun, lubricate with FL grade grease the 8 fittings with which the steer axle is equipped until a small amount of fresh grease oozes out at the lubricating points.

**NOTE: When lubricating the upper bearing, the grease need not ooze out of the upper sealing ring, it may also escape from the bottom.**

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## Technical Data for Maintenance Service

Functional Group 03	
Power Axle	
Torque loading	Power axle mounting bolts: 195 Nm
Torque loading	Axle housing mounting bolts: 120 Nm
Axial clearance	Hollow shaft: $\pm 0.05$ mm at the maximum
Axial clearance	Wheel hub: 0.07 mm pre-load
Axial clearance	Wheel hub: 0.21 mm slackness
Grade of grease	lithium soap based grease
Torque loading	Wheel hub / slotted nut: 180+20 Nm
Gearbox oil	Capacity: approx. 2 litres Grade SAE – 80 MIL - L - 2105 API – GL 4

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