

Operating Instructions

WHEEL SET KG 125 SERIES

**RAD/RND
160/250**

WITH GROOVED BALL BEARINGS



Wheel set KG 125

RAD / RND 160 / 250

Table of contents

Description.....	3
Technical construction RAD / RND 160 / 250.....	4
Assembly / Disassembly:	
General.....	6
Assembly instructions.....	6
Correction of the middle track width.....	10
Disassembly instructions.....	11
Maintenance.....	14
Component parts.....	16
Parts list RAD / RND 160.....	17
Parts list RAD / RND 250.....	18

Description

KARL GEORG maintenance free wheel sets take over rail-born transport tasks in crane building, in conveyor technique as well as in machine building.

The assembly variant RAD / RND is suitable for direct installation into welded and mechanically machined steel constructions.

The drive shafts are available with tooth profile according to DIN 5480 or with feather keyway according to DIN 6885, suitable for hollow shaft gearboxes of your choice.

The middle track width can be corrected by ± 7 mm for wheel set RAD / RND 160 and by $\pm 10,5$ mm for wheel set RAD / RND 250 by replaceable compensating discs between roller bearing and circlip.

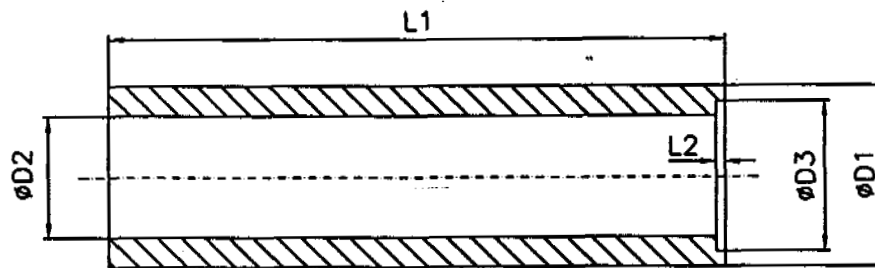
Delivery of the wheel sets RAD / RND is effected in component parts.

Attention

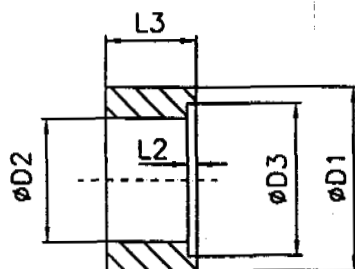
An assembly set is required for assembly and disassembly. Delivery of the wheel set RAD / RND 160 / 250 does not include these instruments (see instructions page 6).

The assembly set consists of:

- 1 Assembly tube long for RAD (40)
- 1 Assembly tube short for RND (40)
- 1 Hexagon head screw DIN 933 (41) ¹⁾
- 1 Hexagon head nut DIN 934 (42) ¹⁾



Assembly tube long for RAD

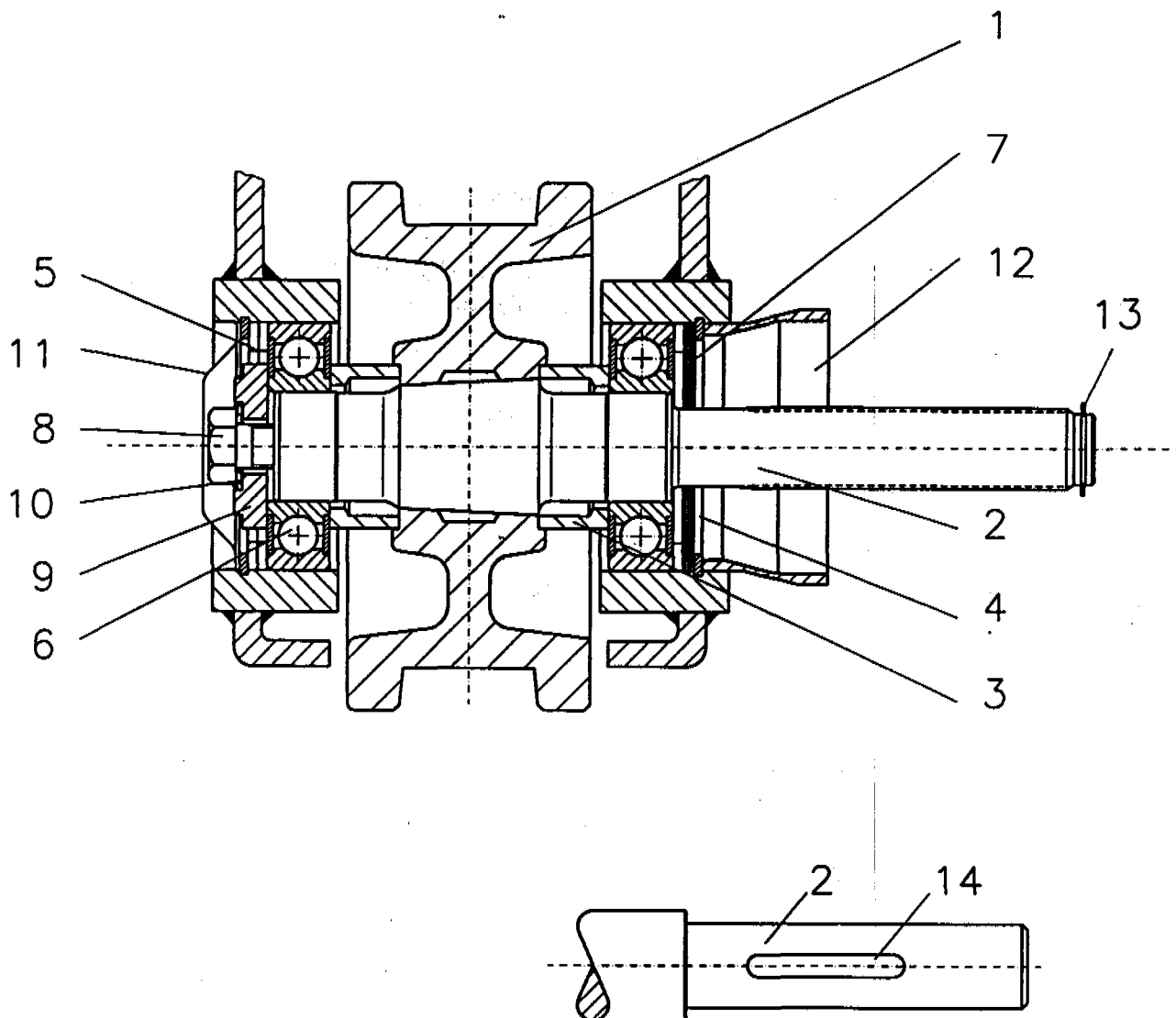


Assembly tube short for RND

	L1	L2	L3	øD1	øD2	øD3
RAD/RND 160	230	3	25	60,3	44,3	50
RAD/RND 250	285	3	35	76,1	60,1	65

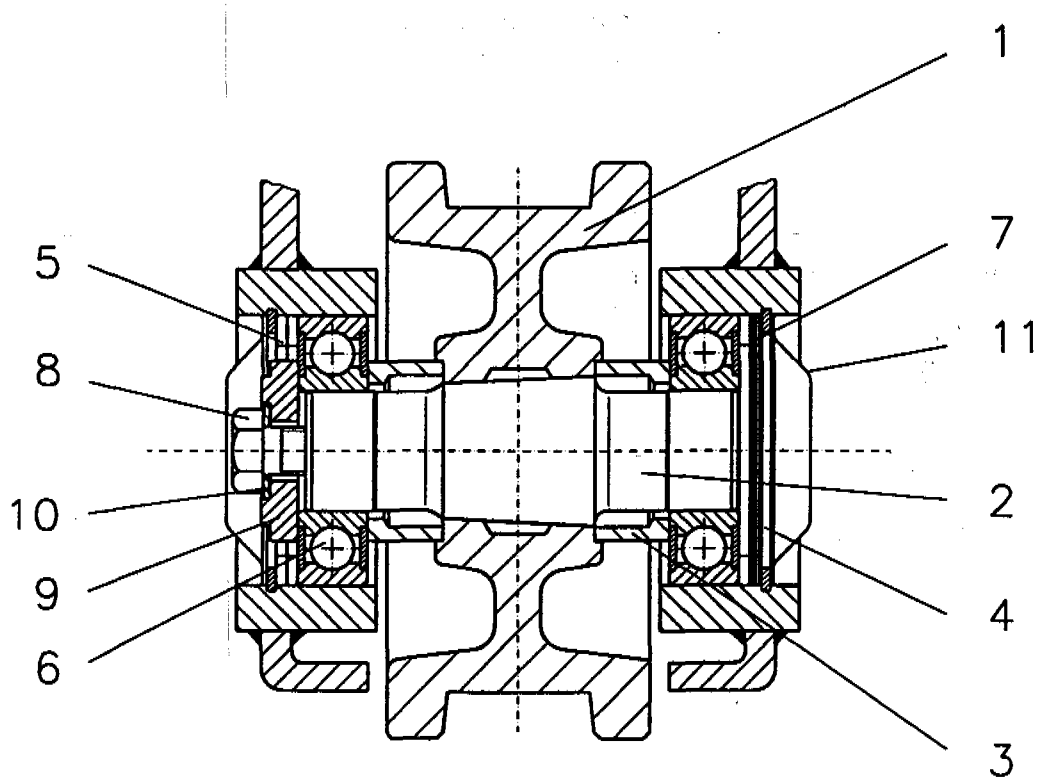
¹⁾ for further information see parts list

Technical construction RAD 160 / 250



- | | |
|----------------------------|----------------------------|
| 1 Crane wheel | 8 Hexagon head screw |
| 2 Drive shaft | 9 Tightening disc |
| 3 Spacer | 10 Disc spring |
| 4 Circlip | 11 Cover, without borehole |
| 5 Compensating disc, 3.5mm | 12 Protective bellow |
| 6 Grooved ball bearing | 15 Circlip |
| 7 Compensating disc, 1mm | 14 Feather key |

Technical construction RND 160 / 250



- 1 Crane wheel
- 2 Idler shaft
- 3 Spacer
- 4 Circlip
- 5 Compensating disc, 3.5mm
- 6 Grooved ball bearing
- 7 Compensating disc, 1mm
- 8 Hexagon head screw
- 9 Tightening disc
- 10 Disc spring
- 11 Cover, without borehole

Assembly and disassembly

General

An assembly set (see page 3) is required for assembly respectively disassembly of the wheel sets RAD / RND 160 / 250. Delivery does not include these instruments.

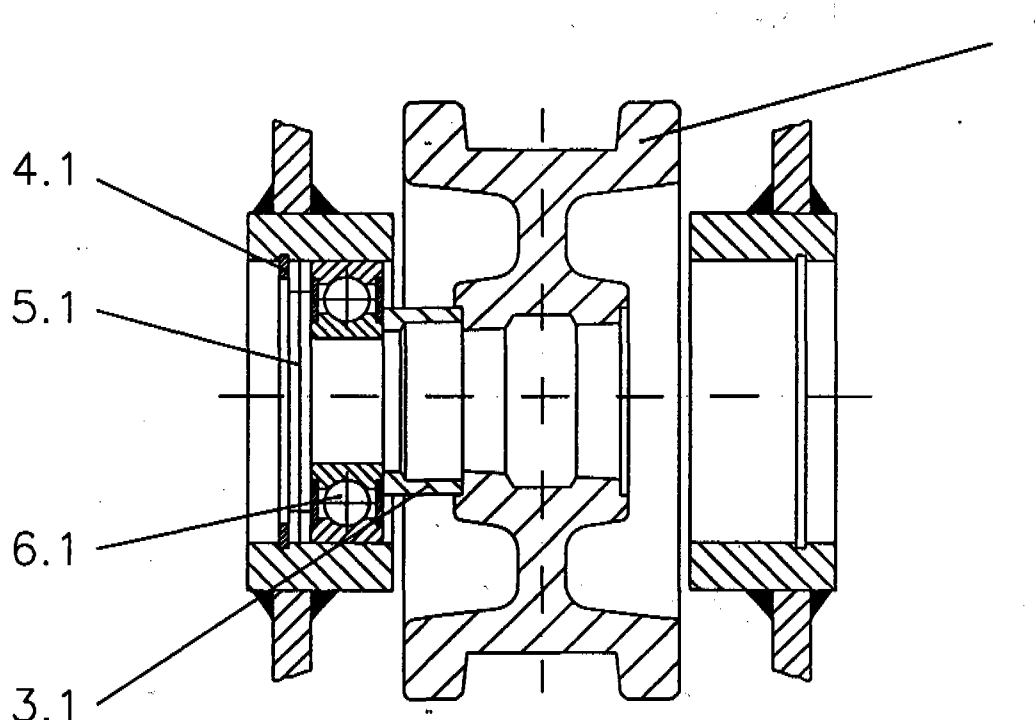
Attention

Some component parts have a high deadweight!

Hoists are to be used for assembly and the relevant safety regulations (UVV) are to be observed.

Assembly instructions

The following steps are to be made for assembly:

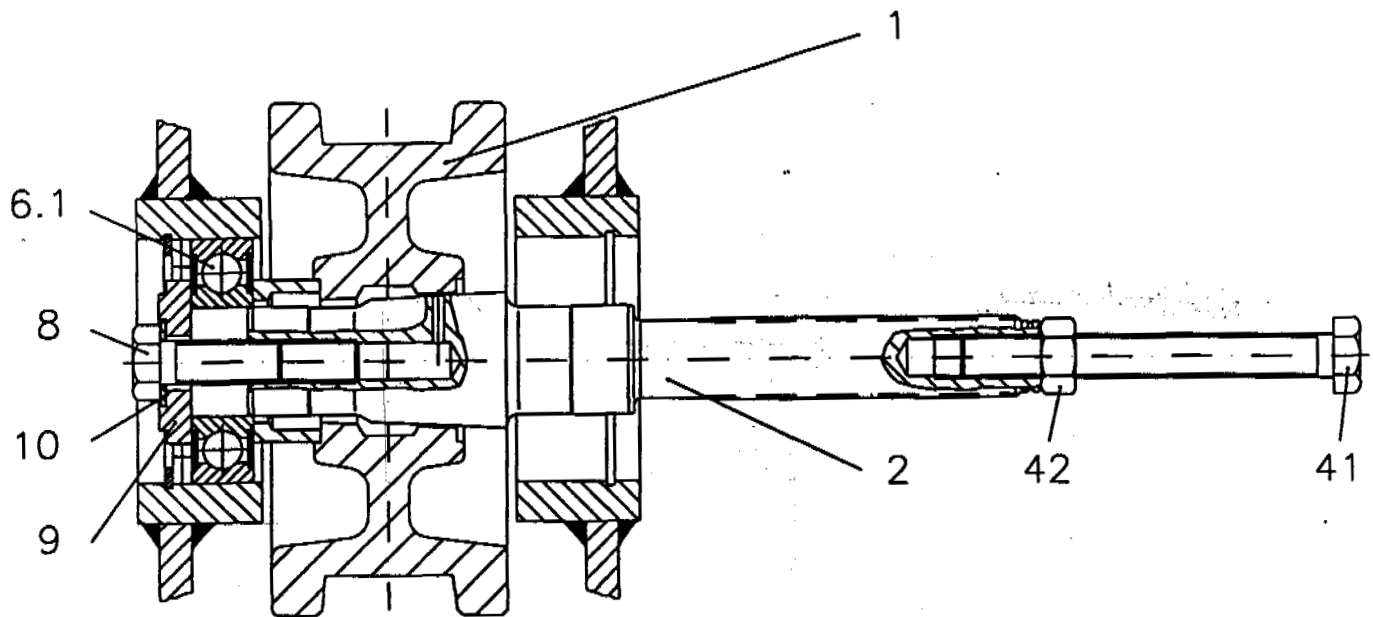


1. Insert the grooved ball bearing (6.1) and the compensating discs (5.1) (see table 1) into the carriage girder and assemble the circlip (4.1).

	5.1	5.2	7
RAD / RND 160	2 x 3,5 mm thick	1 x 3,5 mm thick	4 x 1 mm thick
RAD / RND 250	3 x 3,5 mm thick	2 x 3,5 mm thick	4 x 1 mm thick

Table 1: Number and thickness of the compensating discs

2. Roll the crane wheel (1) with the spacer (3.1) into the carriage.

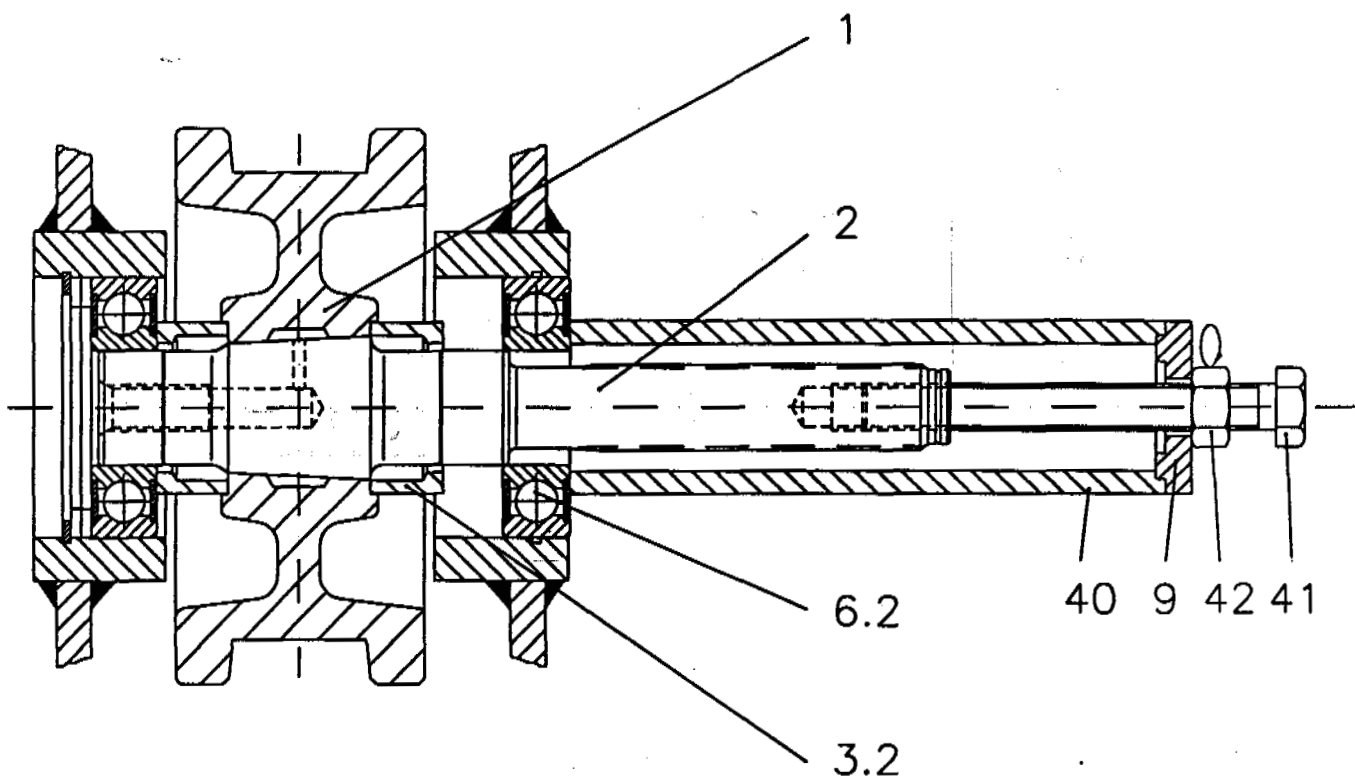


3. Push the crane wheel shaft (2) into the crane wheel (1).

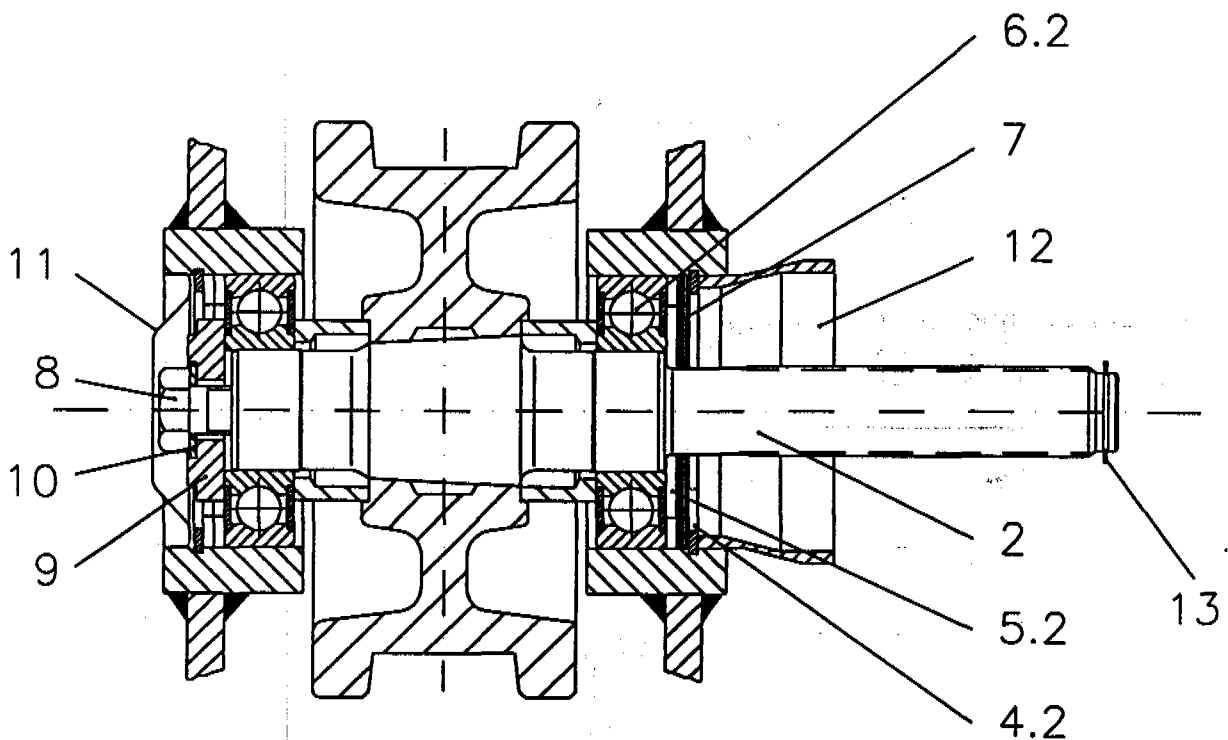
Attention

The crane wheel cone and the crane wheel shaft are specially coated. Attention is to be paid that the coating is not damaged when assembling the crane wheel shaft. In case of damage the coating is to be renewed. (Coating with Molykote sliding varnish 321 R. The instructions of the manufacturer are to be observed!). Crane wheel cone and shaft cone should not get into contact with oil or grease.

4. Insert the tightening disc (9) and the disc spring (10) and tighten the shaft (2) by the hexagon head screw (8) into the bearing (6.1). For counteracting, screw the hexagon head screw (41) on the opposite side into the shaft (2) and lock it with the hexagon head nut (42). Tighten the hexagon head screw (8) by a torque wrench to 290 Nm.



5. If the crane wheel is tightly at the stop of the shaft, the hexagon head screw (8) is to be detached again and is to be removed together with the tightening disc (9) and the disc spring (10).
6. Insert spacer (3.2) as well as the grooved ball bearing (6.2). The grooved ball bearing (6.2) is to be pressed on the crane wheel shaft (2) to the stop at the spacer (3.2) by assembly tube (40), tightening disc (9), hexagon head screw (41) and hexagon head nut (42).
7. Remove the assembly tube (40), tightening disc (9) and hexagon head screw (41) with hexagon head nut (42).



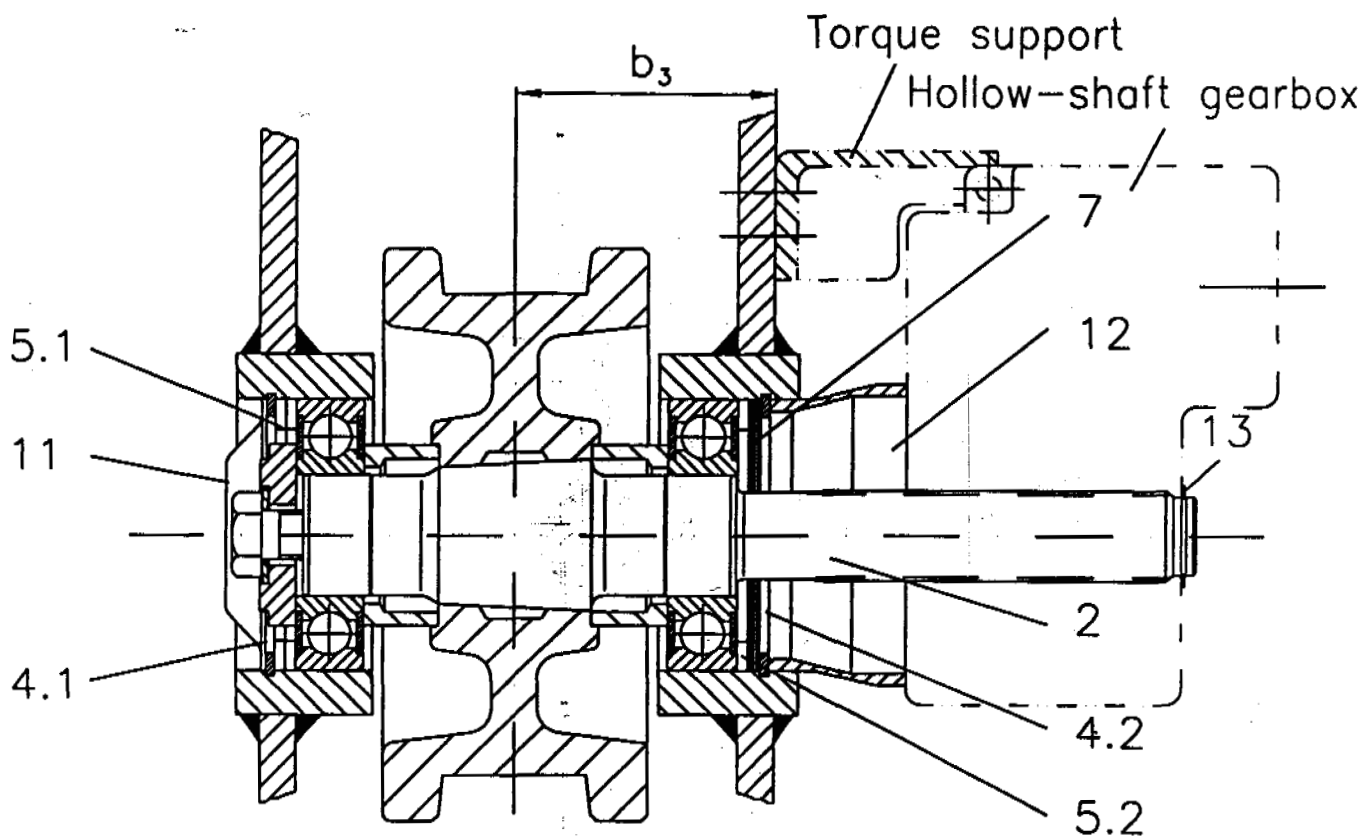
8. Insert the tightening disc (9) and the disc spring (10) and screw the hexagon head screw (8).
9. Tighten the hexagon head screw (8) by a torque wrench to 290 Nm.
10. Insert the remaining compensating discs (5.2, 7) (see table 1) until the hollow-space between grooved ball bearing (6.2) and circlip groove is filled up. Assemble the circlip (4.2). Assemble the cover (11) by light hammer blows on the centre edge. Insert the protective bellow (12).
11. Push the drive on the drive shaft (2), assemble the circlip (13) and fasten the drive at the torque support according to manufacturer's instruction.

Attention:

Pay attention to greatest possible cleanliness when assembling. The cone borehole of the crane wheel and the taper of the shaft have to be free from contamination. The roller bearings as well are to be preserved from any dirt and dust.

Proceed analogous for assembly of the wheel set RAD, but use a shorter assembly tube.

Correction of the middle track width



1. Detach the hollow-shaft gearbox at the torque support, remove the circlip (13) and draw the drive off the drive shaft (2).
2. Remove the cover (11) and the protective bellow (12).
3. Jack up the crane to relieve the crane wheels.
4. Remove the circlips (4.1, 4.2) and take out the required number of compensating discs (5.1, 5.2, 7).

Move the entire driving unit by the required dimension to the right or to the left.

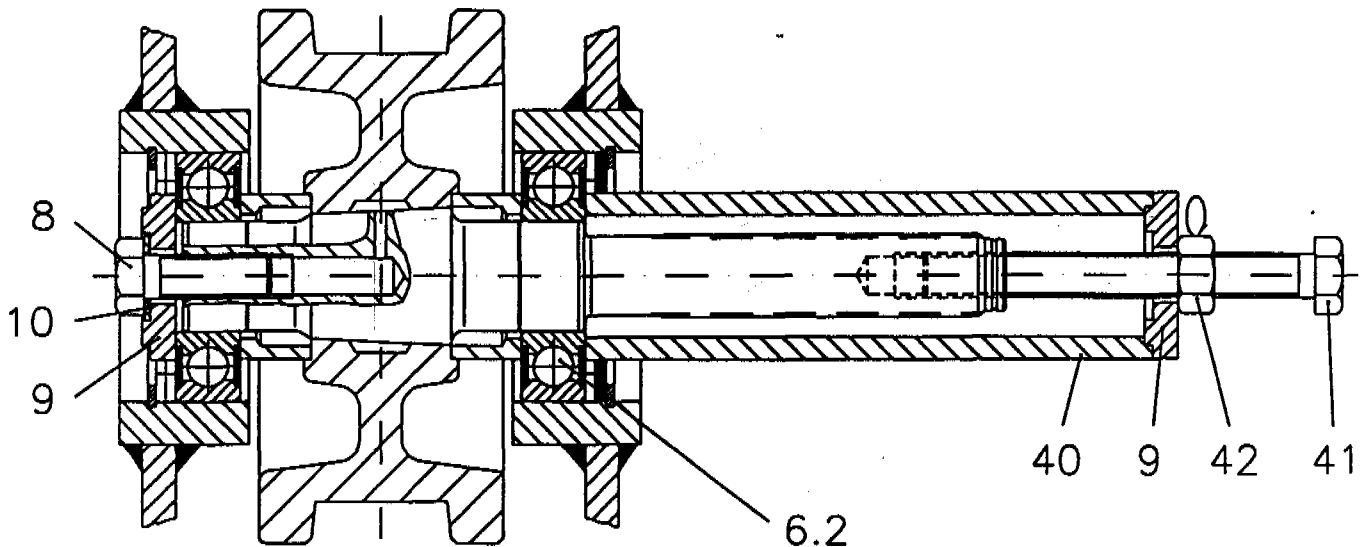
Maximum traversing possibility of the dimension "b₃":

RAD / RND 160:	85	± 7	mm
RAD / RND 250:	110	± 10,5	mm

5. Fill up the hollow-space between grooved ball bearing and circlip grooves with compensating discs (5.1, 5.2, 7) according to the traversing way and assemble the circlips (4.1, 4.2).
6. Insert the cover (11) and the protective bellow (12).
7. Push the drive on the drive shaft (2), assemble the circlip (13) and screw the hollow-shaft gearbox at the torque support.

Disassembly instructions

1. Detach the hollow-shaft gearbox at the torque support, remove the circlip (13) and draw the drive off the drive shaft (2).
2. Remove the cover (11) and the protective bellow (12).
3. Jack up the crane to relieve the crane wheels.

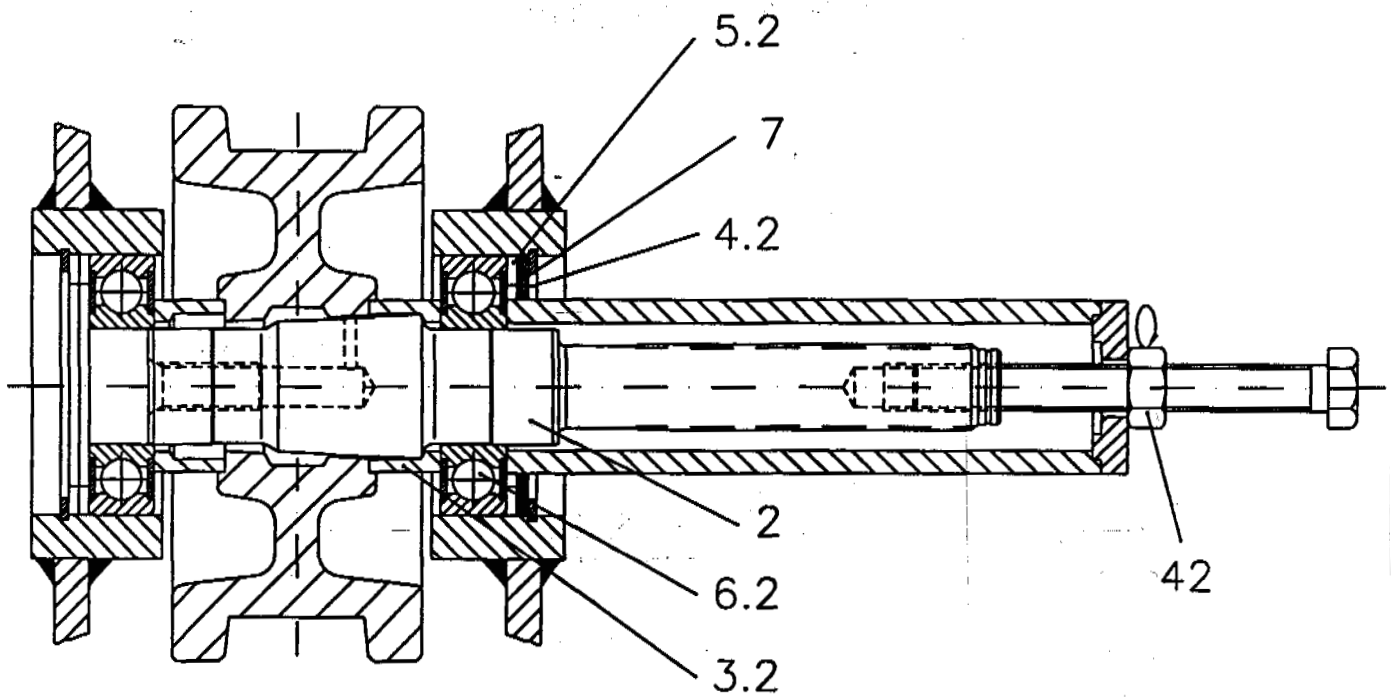


4. Detach the hexagon head screw (8) and remove it with disc spring (10) and tightening disc (9).
5. Fasten the assembly tube (40) and the tightening disc (9) by the hexagon head screw (41) and the hexagon head nut (42) against the grooved ball bearing (6.2).

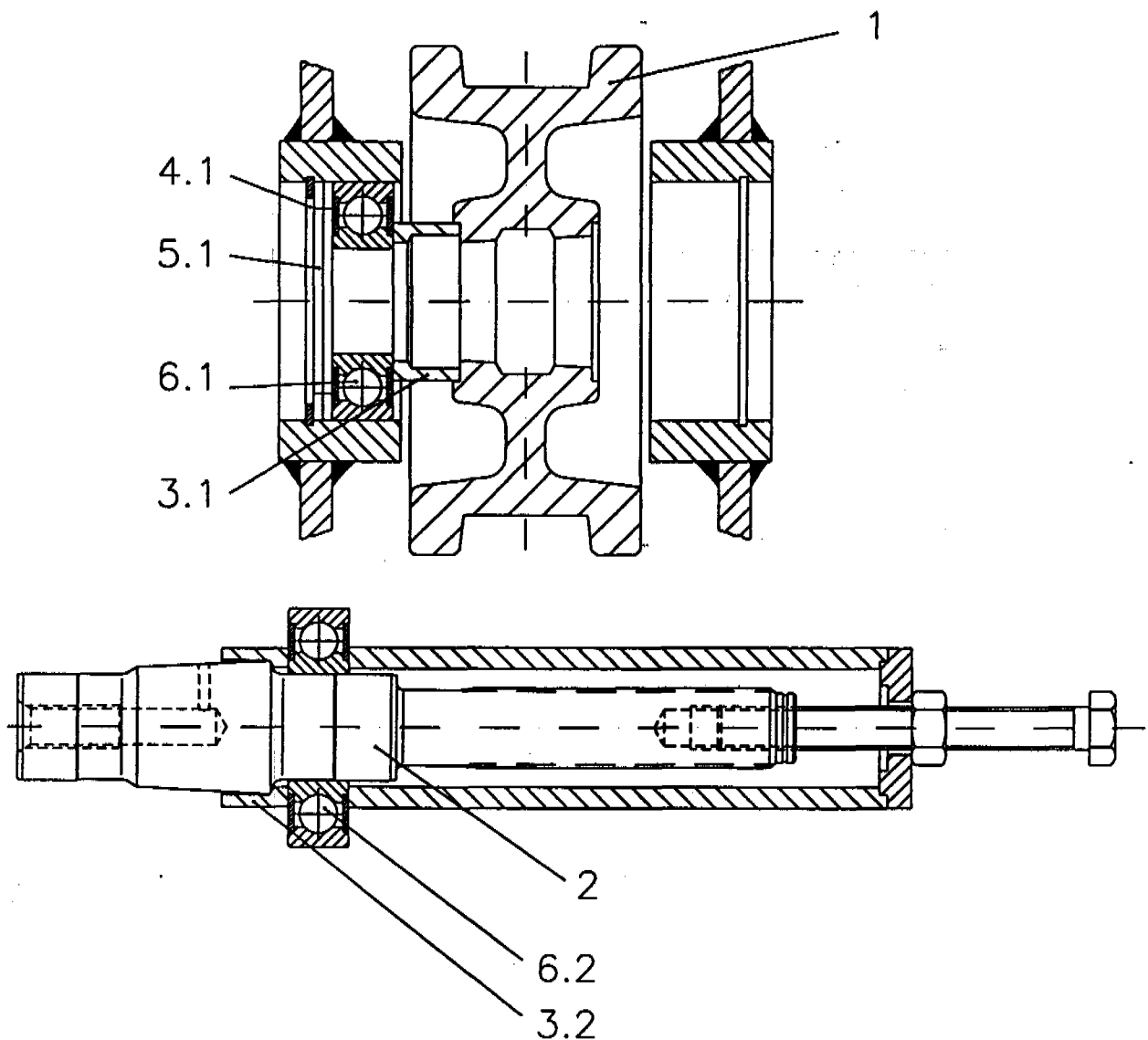
The stressing in the connection can be detached by hammer blows on the running surface of the crane wheel.

Detaching of the taper pressure connection crane wheel - shaft can also be effected hydraulically by the hydraulic pressure connection of the shaft.

Attention: For safety reasons the circlips (4.1, 4.2) and the compensating discs (5.1, 5.2, 7) have to remain installed when detaching the taper pressure connection.



6. Draw the crane wheel shaft (2) by tightening the hexagon head nut (42) until the crane wheel shaft (2) stops at the spacer (3.2).
7. Take out the circlip (4.2) and the compensating discs (5.2, 7).



8. Draw the crane wheel shaft (2) together with the grooved ball bearing (6.2) and the spacer (3.2) entirely out of the crane wheel (1) and the grooved ball bearing (6.1). If necessary, use the assembly set together with the withdrawal pot (44) (fastened against the carriage girder) for this purpose.
9. Roll the crane wheel (1) with the spacer (3.1) out of the carriage girder.

If a replacement of the grooved ball bearing (6.1) is necessary, detach circlip (4.1) first and after that remove the compensating discs (5.1). The grooved ball bearing (6.1) can be pressed out to the inside now.

The grooved ball bearing (6.2) can be drawn by a withdrawal tool off the crane wheel shaft (2).

Proceed analogous for disassembly of the wheel set RAD, but use a shorter assembly tube.

Maintenance

Roller bearings

The grooved ball bearings are greased for service life and therefore they are maintenance-free.

Crane wheel

The running surface and the wheel-flanges are to be examined for wear quarterly. If the wear of the wheel-flanges and the running surface diameter is more than 10 mm, the corresponding crane wheel is to be replaced.

Screwing

The prescribed torque of the hexagon head screw (8) is to be examined after 2 - 3 months, after that yearly within the scope of the recurrent inspection according to UVV - cranes § 26 I (VBG 9) and the principles for expert inspections (ZH1/27).

Torsion angle $\leq 60^\circ$ \Rightarrow screw is all right

Torsion angle $> 60^\circ$ \Rightarrow screw is to be replaced

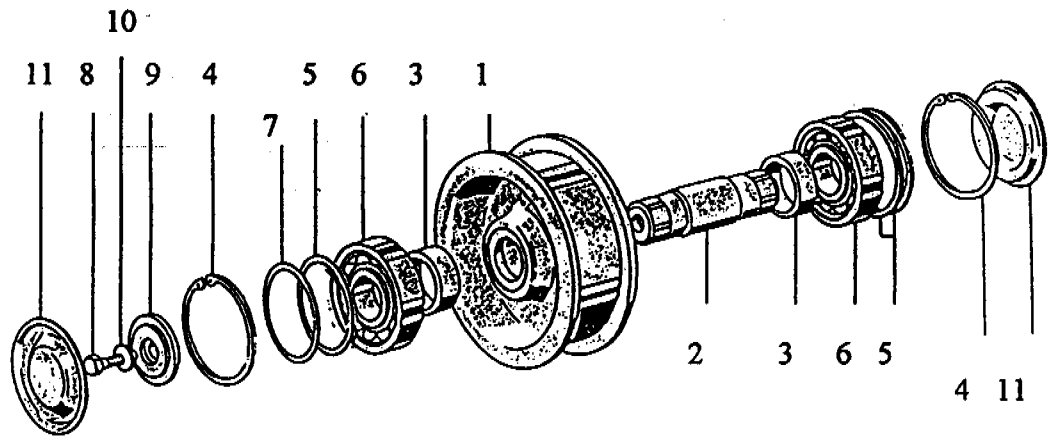
Reference standards and guidelines

DIN 7168	Generally applicable tolerance limits (free-size tolerances), linear and angular measures
DIN 8570	Free-size tolerances for welded structures
Sheet 1	Linear measures and angles
Sheet 3	Form and position
VDI 3571	Manufacturing tolerances for bridge cranes
VDI 3576	Rails for crane installations, rail connections, rail clamps, tolerance limits

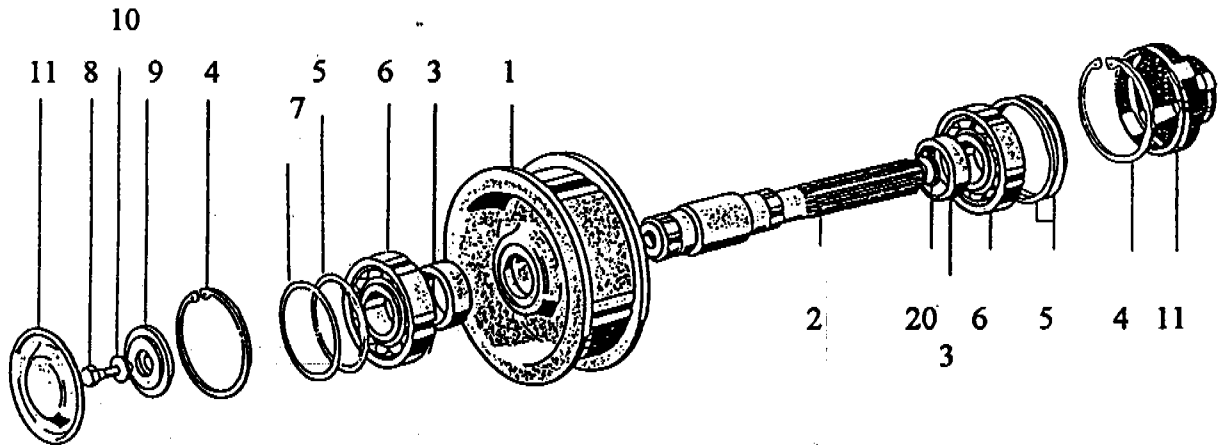
Notes:

Component parts

RND 160 / 250



RAD 160 / 250



Parts list RAD / RND 160

Number of pieces for

Part no. RAD RND

1	1	1	Crane wheel Ø 160 x b ₁	GGG - 70
2	1	-	Drive shaft W 30 x 1,25 x 22 (AF 04) or drive shaft W 35 x 2 x 16 (AF 05) or drive shaft W 35 x 2 x 16 (AF 06) or drive shaft FA 40 or drive shaft FA 60	C 45 C 45 C 45 C 45 C 45
2	-	1	Idler shaft	C 45
3	2	2	Spacer	
4	2	2	Circlip I 90	DIN 472
5	3	3	Compensating disc 90/70 x 3,5	
6	2	2	Grooved ball bearing 6308 - 2 RS	DIN 625
7	4	4	Compensating disc 90/70 x 1	
8	1	1	Hexagon head screw M16 x 45	DIN 933 - 10.9
9	1	1	Tightening disc	
10	1	1	Disc spring A 31,5 x 16,3 x 1,75	DIN 2093
11	1	2	Cover 90, without borehole	
12	1	-	Protective bellow	
13	1	-	Circlip AK 26 (AF 04) or circlip AK 30 (AF 05 / 06)	DIN 983 DIN 983
14	1	-	Feather key A 8 x 7 x 56 (FA 40) or feather key A 12 x 8 x 80 (FA 60)	DIN 6885 DIN 6885
15	1	-	Disc B 17 (FA 40)	DIN 125
16	1	-	Inner hexagon head screw M16 x 30 (FA 40)	DIN 6912 - 8.8

1)

41	1	1	Hexagon head screw M16 x 160 (AF 04, FA 40, FA 60) or hexagon head screw M20 x 160 (AF 05, AF 06, idler shaft)	DIN 933 DIN 933
42	1	1	Hexagon head nut M16 (AF 04, FA 40, FA 60) or hexagon head nut M20 (AF 05, AF 06, idler shaft)	DIN 934 DIN 934

Parts list RAD / RND 250

Number of pieces for

Part no. RAD RND

1	1	1	Crane wheel \varnothing 250 x b ₁	GGG - 70
2	1	-	Drive shaft W 35 x 2 x 16 (AF 05) or drive shaft W 45 x 2 x 21 (AF 06) or drive shaft W 45 x 2 x 21 (AF 08) or drive shaft FA 60 or drive shaft FA 70	C 45 C 45 C 45 C 45 C 45
2	-	1	Idler shaft	C 45
3	2	2	Spacer	
4	2	2	Circlip I 120	DIN 472
5	5	5	Compensating disc 120/100 x 3,5	
6	2	2	Grooved ball bearing 6311 - 2 RS	DIN 625
7	4	4	Compensating disc 120/100 x 1	
8	1	1	Hexagon head screw M16 x 60	DIN 933 - 10.9
9	1	1	Tightening disc	
10	1	1	Disc spring A 31,5 x 16,3 x 1,75	DIN 2093
11	1	2	Cover 120, without borehole	
12	1	-	Protective bellow	
13	1	-	Circlip AK 30 (AF 05) or circlip AK 40 (AF 06 / 08)	DIN 983 DIN 983
14	1	-	Feather key A 12 x 8 x 80 (FA 60) or feather key A 14 x 9 x 90 (FA 70)	DIN 6885 DIN 6885

1)

41	1	1	Hexagon head screw M16 x 200 (FA 60, FA 70) or hexagon head screw M20 x 200 (AF 05, AF 06, AF 08, idler shaft)	DIN 933 DIN 933
42	1	1	Hexagon head nut M16 (FA 60, FA 70) or hexagon head nut M20 (AF 05, AF 06, AF 08, idler shaft)	DIN 934 DIN 934

Notes:



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Subject to alterations by the manufacturer for the purposes of further technical development!

Thus, no claims can be derived from the information, figures and descriptions given in these operating instructions.

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