

Grease Lubrication

KWP, Bearing Brackets P03ax to P12sx

Supplementary Operating Manual



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Supplementary Operating Manual Grease Lubrication

Original operating manual

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1 Supplementary Operating Manual

1.1 General

This supplementary operating manual accompanies the installation/operating manual. All information contained in the installation/operating manual must be observed.

Table 1: Relevant operating manuals

Type series	Reference number of the operating/installation manual
KWP	2361.8

1.2 Grease lubrication

The bearings are supplied packed with high-quality lithium-soap grease.

1.3 Intervals

- Under suitable operating conditions the grease-lubricated bearings will run for 15,000 operating hours.
Moderately re-lubricate them every 3,000 operating hours.
- Under unfavourable operating conditions (e.g. high room temperature, high atmospheric humidity, dust-laden air, aggressive industrial atmosphere) check the bearings earlier and clean and re-lubricate them if required.
- Replace the grease every 15,000 operating hours or every 2 years of operation.

1.4 Grease quality

Table 2: Grease quality to DIN 51825

Soap basis	NLGI grade	Worked penetration at 25 °C in mm/10	Drop point	Temperature range
Lithium	2 to 3	220-295	≥ 175 °C	-30 °C to 120 °C

1.5 Grease quantities

Table 3: Grease quantities for new grease fill

Bearing bracket	Bearing + cover, pump-end [g]	Bearing+ bearing carrier, drive-end [g]
P03ax	30	45
P04ax	30	100
P05ax	40	150
P06ax	40	150
P08sx	80	180
P10ax/P12sx	90	190

1.6 Dismantling the bearings

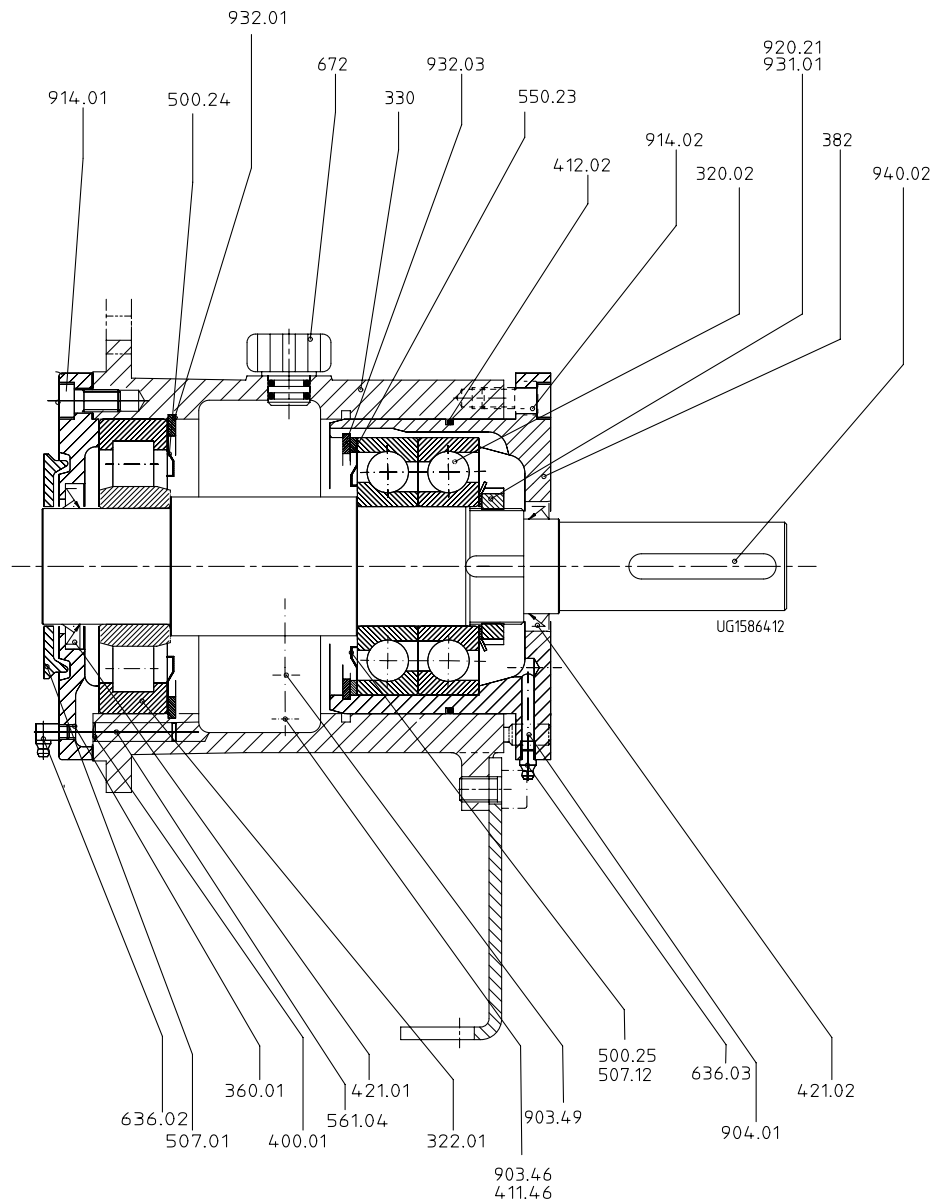



Fig. 1: Bearing bracket with grease lubrication


- ✓ The back pull-out unit of the pump has been removed in accordance with the operating manual.
 - ✓ The impeller, discharge cover, shaft seal and bearing bracket lantern have been removed in accordance with the operating manual. The shaft protecting sleeve has been pulled off the shaft.
1. Bend open and pull off thrower 507.01
 2. Undo the hexagon socket head cap screw in the coupling hub.
 3. Pull the coupling hub off shaft 210 with a puller.
 4. Remove key 940.02.
 5. Undo hexagon socket head cap screws 914.01/914.02. Then remove bearing cover 360.01 with gasket 400.01, shaft seal ring 421.01 and lubricating nipple 636.02 at the pump end.
 6. **Bearing brackets P08sx/P10ax/P12sx only:** remove V-ring 411.77. Undo hexagon socket head cap screws 914.01. Remove bearing cover 360.01 with gasket 400.01 and lubricating nipple 636.02.

7. Use grub screws 904.01 (for bearing brackets P08sx/P10ax/P12sx: forcing screws 901.91) to carefully drive shaft 210 with bearing carrier 382, angular contact ball bearing 320.02 and the inner ring of cylindrical roller bearing 322.01 out of bearing bracket 330 towards the drive end.
8. Place shaft 210 with the rolling element bearing on a suitable surface.
9. Remove circlips 932.01/932.03, support disc 550.23 and Nilos rings 500.24/500.25 (for P03ax: 500.24/507.12).
10. **Bearing brackets P08sx/P10ax/P12sx only:** remove V-ring 411.78.
11. Remove the outer ring of cylindrical roller bearing 322.01 (roller cage) from bearing bracket 330.
12. Pull bearing carrier 382 with O-ring 412.02, shaft seal ring 421.01 and lubricating nipple 636.03 off angular contact ball bearing 320.02.
13. Bend open lock washer 931.01.
14. Undo slotted round nut 920.21 (right-hand thread!)
15. Remove lock washer 931.01.

	! WARNING
	<p>Hot surfaces due to heating of components for assembly/dismantling Risk of burns!</p> <ul style="list-style-type: none"> ▷ Wear heat-resistant protective gloves. ▷ Remove flammable substances from the danger zone.

16. Heat up angular contact ball bearing 320.02 and the inner ring of cylindrical roller bearing 322.01 to 80 °C, and pull them off shaft 210.



1.7 Changing the grease

	CAUTION
	<p>Mixing greases of differing soap bases Changed lubricating qualities!</p> <ul style="list-style-type: none"> ▷ Thoroughly clean the bearings. ▷ Adjust the re-lubrication intervals to the grease used.


- ✓ The pump has been dismantled for changing the grease.
 1. Only half-fill the bearing cavities with grease.
 2. Fill the cavities in the bearing cover until they are about 1/3 full.

1.8 Installing the bearings

- ✓ The individual parts have been placed in a clean and level assembly area.
- ✓ All dismantled parts have been cleaned and checked for wear.
- ✓ Any damaged or worn parts have been replaced by original spare parts.
- ✓ The sealing surfaces have been cleaned.
- ✓ The installation steps to be completed before installing the bearings have been carried out in accordance with the operating manual.

	 WARNING
	<p>Hot surfaces due to heating of components for assembly/dismantling Risk of burns!</p> <ul style="list-style-type: none"> ▷ Wear heat-resistant protective gloves. ▷ Remove flammable substances from the danger zone.

1. Heat up angular contact ball bearing 320.02 and the inner ring of cylindrical roller bearing 322.01 to approx. 80 °C in an oil bath.
2. Slide angular contact ball bearing 320.02 and the inner ring of cylindrical roller bearing 322.01 onto shaft 210 until they will not go any further.

	NOTE
	<p>Angular contact ball bearings must be installed in back-to-back arrangement. Angular contact ball bearings installed in pairs must always be from the same manufacturer.</p>

3. Use a C-spanner to tighten slotted round nut 920.21 without lock washer 931.01.
4. Let angular contact ball bearing 320.02 cool down to approximately 5 °C above ambient temperature.
5. Re-tighten slotted round nut 920.21, then unscrew it again.
6. Apply a few spots of a suitable lubricant (e.g. Molykote) to the contact faces of lock washer 931.01 and slotted round nut 920.21.
7. Fit lock washer 931.01.
8. Tighten slotted round nut 920.21.
9. Bend back lock washer 931.01.
10. Pull bearing carrier 382 onto angular contact ball bearing 320.02.
11. Fit ring 500.25 (for P03ax: 507.12).
12. Fit support disc 550.23.
For bearing brackets P08sx/P10ax/P12sx only: when replacing the bearings, verify the support disc width and adjust it if required.
13. Fit ring 500.24.
14. Fit circlips 932.01/932.03 in the bearing bracket / bearing carrier.
15. Fit the outer ring of angular contact ball bearing 322.01.
16. Carefully slide pre-assembled shaft 210 with bearing carrier 382, O-ring 412.02 and lip seal 421.02 from the drive end into bearing bracket 330 until it will not go any further.
Verify that the oil return bores are positioned correctly. The grooves of the oil return bores must point upwards.
17. Tighten hexagon socket head cap screws 914.02 (bearing brackets P08sx/P10ax/P12sx: hexagon head bolt 901.95).
See the operating manual for the tightening torque.
18. Insert studs 902.04.
19. **Bearing brackets P08sx/P10ax/P12sx only:** fit V-ring 411.78 and hexagon forcing screws 901.91.
Make sure the external surfaces of V-rings 411.77/78 are flush with the external surface of the bearing cover/bearing carrier.
20. Fit pump-end bearing cover 360.01 with joint ring 400.01; take care not to damage lip seal 421.01. In bearing bracket 330 the oil return bores must be closed with grooved pins.
For bearing brackets P08sx/P10ax/P12sx only: fit V-ring 411.77 instead of lip seal.
21. Tighten hexagon socket head cap screws 914.01 at the pump end.
See the operating manual for the tightening torque.

22. Fit lubricating nipple 636.02/.03.
23. Fit bearing bracket lantern 344 with studs 902.04.
24. Tighten hexagon nuts 920.04 at the flange of bearing bracket 330.
25. Fit keys 940.02.
26. Slide the coupling hub onto the shaft end.
27. Secure the coupling hub with an adjusting screw.
28. Fit thrower 507.01, if any.



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