



Service instructions with parts list

MAGdrive
50/60 Hz, 3~

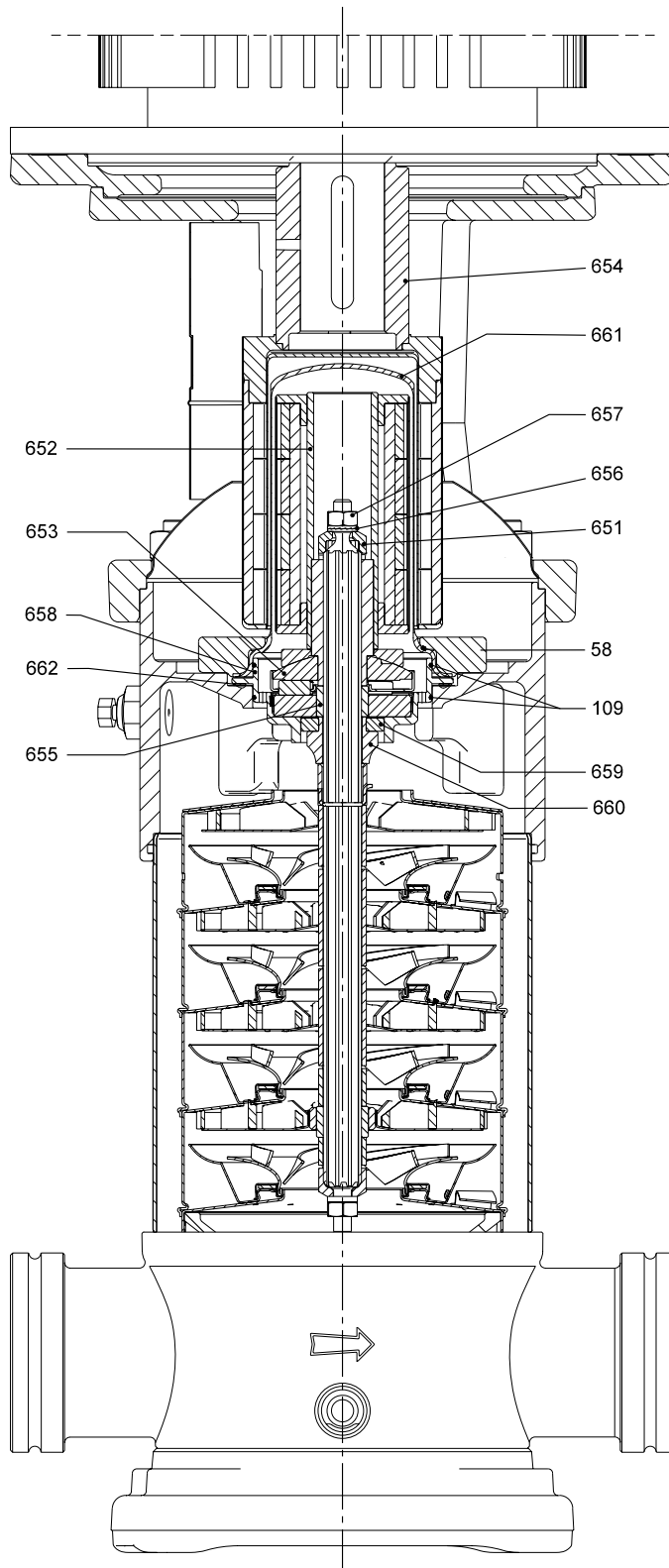
CRN 1, 1s, 3, 5

CRN 10, 15, 20

CRN 32, 45, 64, 90

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Fig. 2 Sectional drawing, CRN 1, 1s, 3, 5, 10, 15, 20

Parts without position numbers, see the parts list of the standard pump in WinCAPS or WebCAPS.

1.2 Parts list

Pos.	Designation	Quantity
51	Shaft	1

Other spare parts and service kits, see Service Kit Catalogue.

1.3 Dismantling and assembly

1.3.1 Permanent magnets



Persons with pacemaker or other magnet-sensitive medical devices **must not** handle this pump. They must keep a distance of at least 1 metre from the pump, as there is a risk of influence from the magnetic fields of the pump.

Credit cards, computers, watches and other magnet-sensitive objects should not be kept close to the pump.



The pump contains powerful magnets that may pose a risk of personal injury when servicing the pump. The pump should therefore only be dismantled and assembled by authorised personnel.

1.3.2 General information

See the service instructions of the standard pump if the pump is damaged or clogged.

Position numbers of parts (digits) refer to drawings and parts lists; position numbers of tools (letters) refer to section [3. Service tools](#).

Before dismantling

- Disconnect the electricity supply to the motor.
- Close the isolating valves, if fitted, to avoid draining the system.
- Remove the electric cable in accordance with local regulations.
- Note the centre of gravity of the pump to prevent it from overturning. This is especially important in the case of high pumps.

Before assembly

- Clean and check all parts.
- Replace defective parts by new parts.
- Order the necessary service kits.
- Always replace gaskets and O-rings when the pump is serviced.

During assembly

- Lubricate O-rings, threads and the bearing system with grease, type Rocol 22, part number RM2924 (1 kg).
- Tighten screws and nuts to the correct torque.

1.3.3 Dismantling

1. Remove the coupling guards (pos. 7).
2. Remove the nuts (pos. 36) from the staybolts (pos. 26).
3. Remove the motor with outer drive (pos. 654) and motor stool (pos. 1a) (it may be necessary to use eyebolts in the motor and a crane).
4. Remove the screws (pos. 58a) from the clamping ring (pos. 58), and take out the clamping ring.
5. Remove the can (pos. 661).
6. Loosen the inner drive (pos. 652) by tightening a strap wrench around it and removing the nut (pos. 657) in the centre of the inner drive.
7. Remove the inner drive and the thrust bearing (pos. 653). The distance piece (pos. 651) and the lock washer (pos. 656) are inside the inner drive.
8. Prise the bearing housing (pos. 658) out of the seat of the pump head (pos. 2) by means of two screwdrivers.
9. Remove the O-rings (pos. 109) from the bearing housing.
10. Take out the spacer ring (pos. 662).
11. Remove the radial bearing (pos. 655) from the shaft.
12. Pull the supporting bush (pos. 660) with upthrust bearing (pos. 659) off the shaft.

1.3.4 Assembly

1. Mount the service flange (pos. A) on the pump head (pos. 2), and tighten the nuts (pos. 36) on the staybolts (pos. 26) to 60 Nm (M12) and 100 Nm (M16).
2. Fit the supporting bush (pos. 660) with upthrust bearing (pos. 659) on the shaft.
3. Fit the bearing housing (pos. 658) without spacer ring (pos. 662) and O-rings (pos. 109) into the pump head (pos. 2), and press it home.
4. Fit the radial bearing (pos. 655) on the shaft.
5. Fit the thrust bearing (pos. 653) on the shaft.
6. Fit the inner drive (pos. 652) on the shaft, and turn it to ensure that its pins have engaged with the slots of the thrust bearing. It may be necessary to hold the thrust bearing with a screwdriver or similar tool to prevent it from turning.
7. Place the distance piece (pos. 651) and the lock washers (pos. 656) on the shaft in the centre of the inner drive.
8. Fit the nut (pos. 657) on the shaft, and tighten it.
9. Press home the inner drive and shaft.
10. Measure the distance from the top of the inner drive to the service flange using a depth gauge (measurement 1).
11. Raise the inner drive, and measure the distance again (measurement 2).
12. The two measurements must differ by 1.5 to 2.5 mm (measurement 2 minus measurement 1). If the difference is greater, select a spacer ring (pos. 662). Subtract the thickness of the spacer ring from the difference to obtain a difference between 1.5 and 2.5 mm.
13. Remove the inner drive, thrust bearing, radial bearing and bearing housing again.
14. Fit the spacer ring (if required) and new O-rings (pos. 109) on the bearing housing, lubricate the O-rings with Rocol, and fit the bearing housing in the pump head.
15. Fit the radial bearing and thrust bearing on the shaft.
16. Lubricate the thread of the shaft end with Rocol, and refit the inner drive on the shaft. Turn the inner drive to ensure that its pins have engaged with the slots of the thrust bearing.
17. Fit the distance piece, lock washers and nut on the shaft. Figure 3 shows the correct fitting of the lock washers.

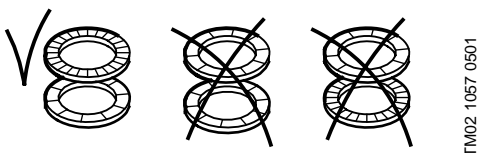


Fig. 3 Fitting the lock washers

18. Tighten the nut in the inner drive to 16 Nm.
19. If you replaced the spacer ring, then repeat point 9. to 11. in order to check the measurement. The difference must be 1.5 to 2.5 mm.

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20. Turn the inner drive with your hand to check that it rotates freely.
 21. Press the can (pos. 661) down on the bearing housing.
 22. Fit the clamping ring (pos. 58), lubricate the screws (pos. 58a), and tighten them to 6 Nm (M6) or 16 Nm (M8).
 23. Remove the service flange.
 24. Check the motor bearings by "rocking" the outer drive (pos. 654) from side to side (there must be no play).
Replace the bearings if they are too worn (see the service instructions of the motor).
 25. Fit the motor with motor stool (pos. 1a) on the pump head.
Note: When the outer drive comes close to the can, the magnets of the outer and inner drive may cause the motor and motor stool to "jump" into position.
 26. Lubricate the thread of the staybolts (pos. 26), fit the nuts (pos. 36), and cross-tighten them to 60 Nm (M12) or 100 Nm (M16).
 27. Turn the outer drive (pos. 654) with your hand to check that it does not drag on the can.
 28. Fit the coupling guards (pos. 7).

1.3.5 Replacing the outer drive

1. Slacken the set screws (pos. 9) fixing the outer drive (pos. 654) on the motor shaft.
2. Pull the outer drive off the motor shaft.
3. Lubricate the motor shaft with Rocol.
4. Fit the new outer drive on the shaft, and press it home.
5. Tighten the set screws to 6 Nm.

2. CRN 32, 45, 64, 90

2.1 Drawings

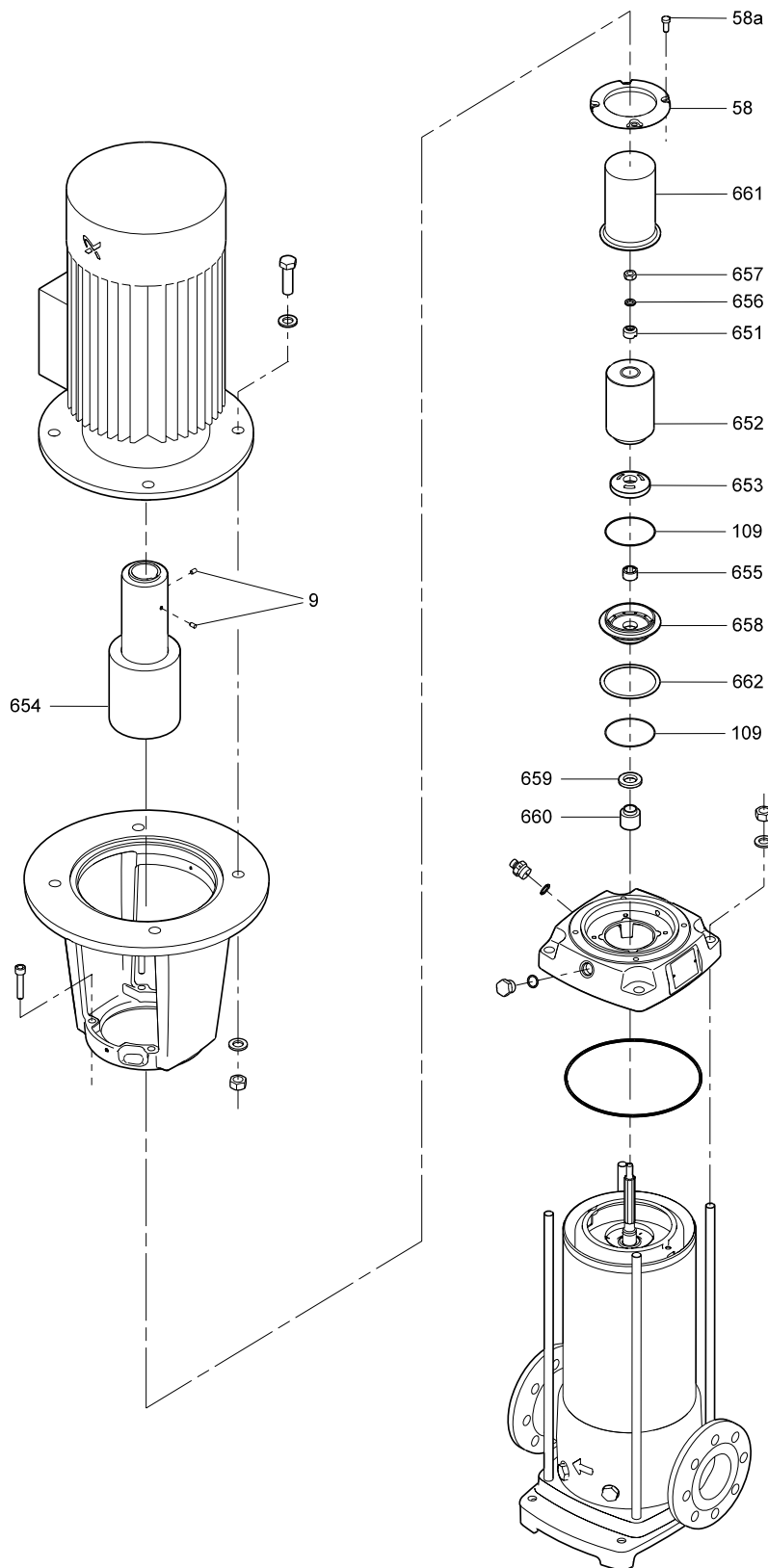


Fig. 4 Exploded view, CRN 32, 45, 64, 90

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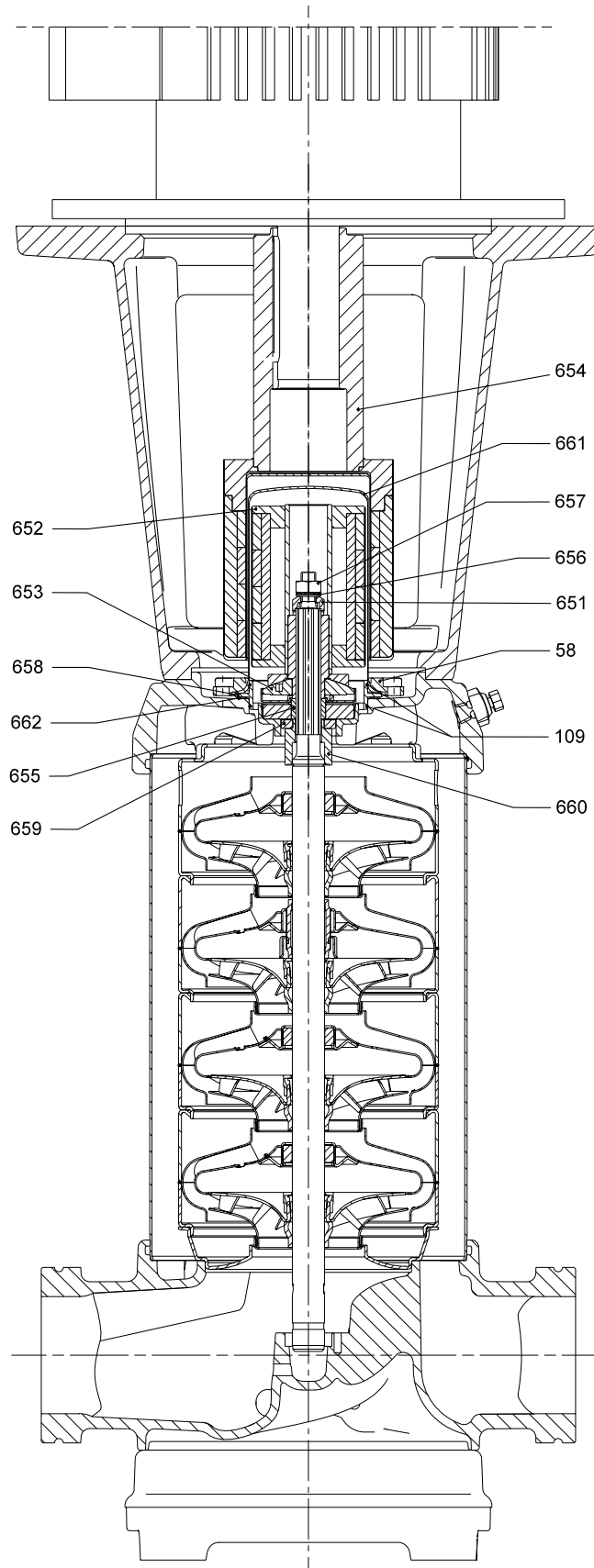


Fig. 5 Sectional drawing, CRN 32, 45, 64, 90
 Parts without position numbers, see the parts list of the standard pump in WinCAPS or WebCAPS.

TM03 9359 3807

2.2 Parts list

Pos.	Designation	Quantity
51	Shaft	1

Other spare parts and service kits, see Service Kit Catalogue.

2.3 Dismantling and assembly

2.3.1 Permanent magnets



Persons with pacemaker or other magnet-sensitive medical devices **must not** handle this pump. They must keep a distance of at least 1 metre from the pump, as there is a risk of influence from the magnetic fields of the pump.

Credit cards, computers, watches and other magnet-sensitive objects should not be kept close to the pump.



The pump contains powerful magnets that may pose a risk of personal injury when servicing the pump. The pump should therefore only be dismantled and assembled by authorised personnel.

2.3.2 General information

See the service instructions of the standard pump if the pump is damaged or clogged.

Position numbers of parts (digits) refer to drawings and parts lists; position numbers of tools (letters) refer to section [3. Service tools](#).

Before dismantling

- Disconnect the electricity supply to the motor.
- Close the isolating valves, if fitted, to avoid draining the system.
- Remove the electric cable in accordance with local regulations.
- Note the centre of gravity of the pump to prevent it from overturning. This is especially important in the case of high pumps.

Before assembly

- Clean and check all parts.
- Replace defective parts by new parts.
- Order the necessary service kits.
- Always replace gaskets and O-rings when the pump is serviced.

During assembly

- Lubricate O-rings and the bearing system with grease, type Rocol 22, part number RM2924 (1 kg).
- Tighten screws and nuts to the correct torque.

2.3.3 Dismantling the pump

1. Remove the coupling guards (pos. 7).
2. Screw eyebolts into the motor, and hook the crane to the eyebolts.
3. Remove the screws (pos. 28) between motor stool (pos. 1a) and pump head (pos. 2).
4. Lift off the motor with motor stool and outer drive (654), and put it aside.
5. Unscrew the screws (pos. 58a) of the clamping ring (pos. 58), and remove the clamping ring.
6. Remove the can (pos. 661).
7. Loosen the inner drive (pos. 652) by tightening a strap wrench around it and removing the nut (pos. 657) in the centre of the inner drive.
8. Remove the inner drive and the thrust bearing (pos. 653). The distance piece (pos. 651) and the lock washer (pos. 656) are inside the inner drive.
9. Prise the bearing housing (pos. 658) out of the seat of the pump head (pos. 2) by means of two screwdrivers.
10. Remove the O-rings (pos. 109) from the bearing housing.
11. Take out the spacer ring (pos. 662).
12. Remove the radial bearing (pos. 655) from the shaft.
13. Pull the supporting bush (pos. 660) with upthrust bearing (pos. 659) off the shaft.

2.3.4 Assembly

1. Fit the supporting bush (pos. 660) with upthrust bearing (pos. 659) on the shaft.
2. Fit the radial bearing (pos. 655) on the shaft.
3. Fit the bearing housing (pos. 658) without spacer ring (pos. 662) and O-rings (pos. 109) into the pump head (pos. 2), and press it home.
4. Fit the thrust bearing (pos. 653) on the shaft.
5. Fit the inner drive (pos. 652) on the shaft, and turn it to ensure that its pins have engaged with the slots of the thrust bearing. It may be necessary to hold the thrust bearing with a screwdriver or similar tool to prevent it from turning.
6. Place the distance piece (pos. 651) and the lock washers (pos. 656) on the shaft in the centre of the inner drive.
7. Fit the nut (pos. 657) on the shaft, and tighten it.
8. Press home the inner drive and shaft.
9. Measure the distance from the top of the inner drive to the pump head using a depth gauge (measurement 1).
10. Raise the inner drive, and measure the distance again (measurement 2).
11. The two measurements must differ by 1.5 to 2.5 mm (measurement 2 minus measurement 1). If the difference is greater, select a spacer ring (pos. 662). Subtract the thickness of the spacer ring from the difference to obtain a difference between 1.5 and 2.5 mm.
12. Remove the inner drive, thrust bearing, radial bearing and bearing housing again.
13. Fit the spacer ring (if required) and new O-rings (pos. 109) on the bearing housing, lubricate the O-rings with Rocol, and fit the bearing housing in the pump head.
14. Fit the radial bearing and thrust bearing on the shaft.
15. Lubricate the thread of the shaft end with Rocol, and refit the inner drive on the shaft. Turn the inner drive to ensure that its pins have engaged with the slots of the thrust bearing.
16. Fit the distance piece, lock washers and nut on the shaft. Figure 6 shows the correct fitting of the lock washers.

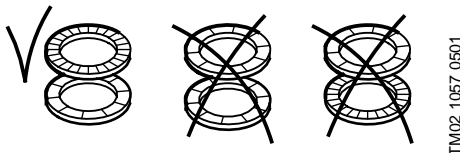
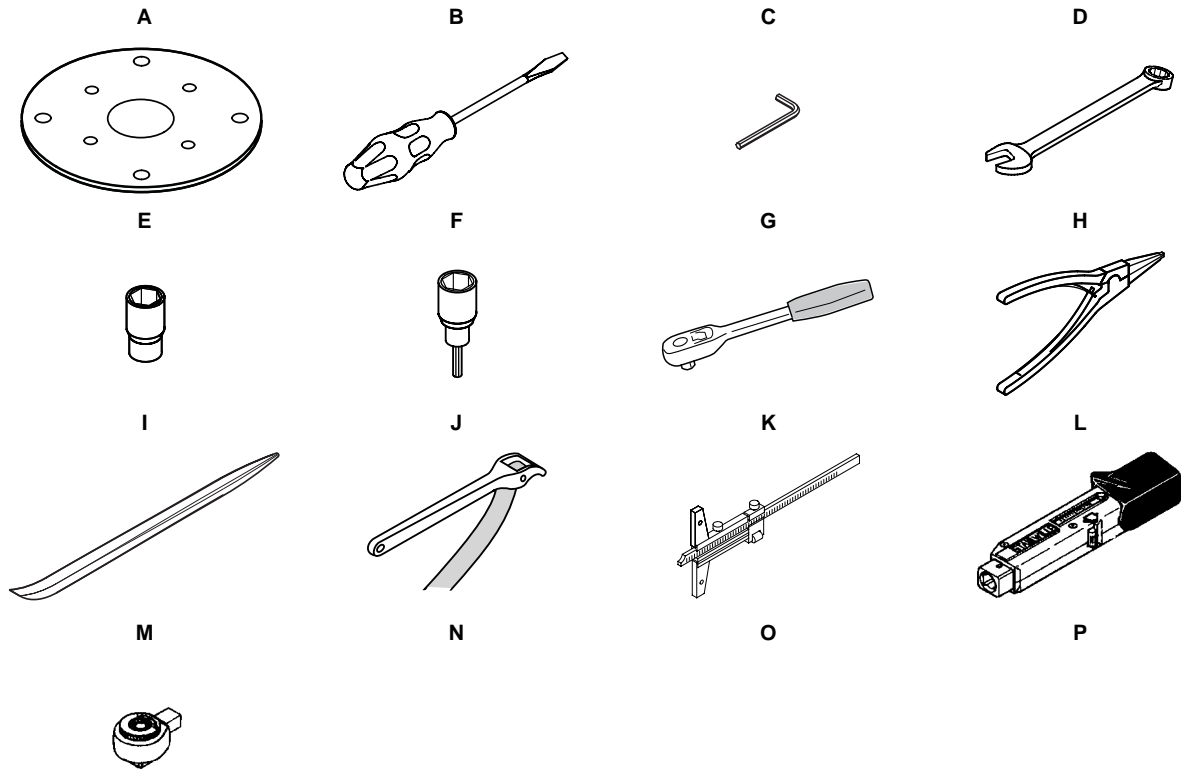


Fig. 6 Fitting the lock washers

17. Tighten the nut in the inner drive to 30 Nm.
18. If you replaced the spacer ring, then repeat point 9. to 11. in order to check the measurement. The difference must be 1.5 to 2.5 mm.
19. Turn the inner drive with your hand to check that it rotates freely.
20. Press the can (pos. 661) down on the bearing housing.
21. Fit the clamping ring (pos. 58), lubricate the screws (pos. 58a), and tighten them to 16 Nm.

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22. Check the motor bearings by "rocking" the outer drive (pos. 654) from side to side (there must be no play).
Replace the bearings if they are too worn (see the service instructions of the motor).
 23. Lift the motor with motor stool (pos. 1a) home on the pump head.
Note: When the outer drive comes close to the can, the magnets of the outer and inner drive may cause the motor and motor stool to "jump" into position.
 24. Lubricate the thread of the screws (pos. 28) between motor stool and pump head, and cross-tighten them to 30 Nm.
 25. Turn the outer drive (pos. 654) with your hand to check that it does not drag on the can.
 26. Fit the coupling guards (pos. 7).

3. Service tools



3.1 Special tools

Pos.	Description	For pos.	Further information	Part number
A	Service flange			96766477

3.2 Standard tools

Pos.	Description	For pos.	Further information	Part number
B	Screwdriver	658	2 pcs	
C	Hexagon key	7a, 28, 58a	2.5 mm 6 mm 8 mm	SV0277 SV0196 SV0032
D	Ring/open-end spanner	36	19 mm 24 mm	SV0054 SV0122
E	Hexagon socket	36, 657	13 mm 17 mm	SV0463 SV0417
F	Hexagon head driver	28, 58a	6 mm 8 mm	SV0297 SV0298
G	Ratchet spanner	E, F		
H	Circlip pliers			
I	Pinch bar	654		SV5201
J	Strap wrench	652	48"	SV0853
K	Depth gauge		300 mm	SV0305

3.3 Torque tools

Pos.	Description	For pos.	Further information	Part number
L	Torque wrench	M	9 x 12 mm - 4-20 Nm 9 x 12 mm - 20-100 Nm	SV2092 SV0269
M	Ratchet insert tool	E, F	9 x 12 mm	SV0295

Rocol MX22, part number RM2924 (1 kg)