

CR, CRI, CRN

Installation and operating instructions



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**Warning**

Prior to installation, read these installation and operating instructions. Installation and operation must comply with local regulations and accepted codes of good practice.

1. Symbols used in this document

**Warning**

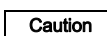
If these safety instructions are not observed, it may result in personal injury.

**Warning**

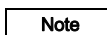
If these instructions are not observed, it may lead to electric shock with consequent risk of serious personal injury or death.

**Warning**

The surface of the product may be so hot that it may cause burns or personal injury.

**Caution**

If these safety instructions are not observed, it may result in malfunction or damage to the equipment.

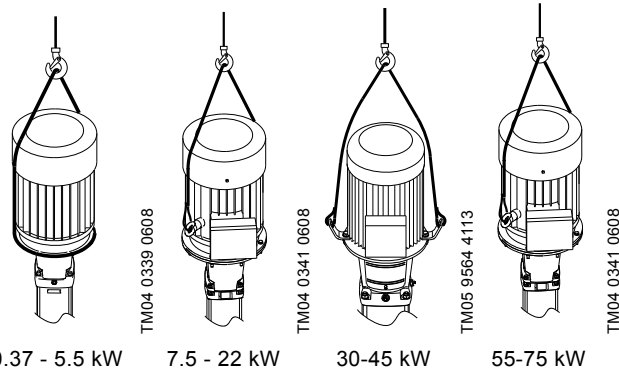
**Note**

Notes or instructions that make the job easier and ensure safe operation.

2. Handling

When lifting the entire pump with motor, follow these instructions:

- Pump with motor sizes 0.37 - 5.5 kW:
Lift the pump in the motor flange by means of straps or the like.
- Pump with motor sizes 7.5 - 22 kW:
Lift the pump by means of the motor eyebolts.
- Pump with motor sizes 30-45 kW:
Lift the pump by means of the lifting brackets on the motor flange.
- Pump with motor sizes 55-75 kW:
Lift the pump by means of the eyebolts on the motor side.



0.37 - 5.5 kW

7.5 - 22 kW

30-45 kW

55-75 kW

Fig. 1 Correct lifting of a CR pump

In case of CR, CRI and CRN pumps with other motors than MG or Siemens, we recommend that you to lift the pump by means of the straps in the motor flange.

**Warning**

Make sure that the pump remains in a stable position during unpacking and installation by means of the straps used for lifting the pump.

Note that typically the centre of gravity of the pump is close to the motor.

3. Type designation

3.1 Type key for CR, CRI, CRN 1s, 1, 3, 5, 10, 15 and 20

Example	CR	3-	10	X-	X-	X-	X-	XXXX
Type range: CR, CRI, CRN								
Rated flow rate in m ³ /h								
Number of impellers								
Code for pump version								
Code for pipework connection								
Code for materials								
Code for rubber pump parts								
Code for shaft seal								

3.2 Type key for CR, CRN 32, 45, 64, 90, 120 and 150

Example	CR	32-	2	1-	X-	X-	X-	X-	XXXX
Type range: CR, CRN									
Rated flow rate in m ³ /h									
Number of stages									
Number of impellers with reduced diameter									
Code for pump version									
Code for pipework connection									
Code for materials									
Code for rubber pump parts									
Code for shaft seal									

4. Applications

Grundfos multistage in-line centrifugal pumps, types CR, CRI and CRN, are designed for a wide range of applications.

CR, CRI, CRN

CR, CRI and CRN pumps are suitable for liquid transfer, circulation and pressure boosting of cold or hot clean liquids.

CRN

Use CRN pumps in systems where all parts in contact with the liquid are made of high-grade stainless steel.

Pumped liquids



Warning

The pumping media is not suitable for the pump as it can cause injury to persons or damage to the equipment.

Thin, clean, non-flammable, non-combustible or non-explosive liquids, not containing solid particles or fibres. The liquid must not attack the pump materials chemically.

When pumping liquids with a density and/or viscosity higher than that of water, use motors with correspondingly higher outputs, if required.

5. Technical data

5.1 Ambient temperature and altitude

Motor power [kW]	Motor make	Motor efficiency class	Maximum ambient temperature [°C]	Maximum altitude above sea level [m]
0.37 - 0.55	Grundfos MG	-	+40	1000
0.75 - 22	Grundfos MG	IE3	+60	3500
30-75	Siemens	IE3	+55	2750

If the ambient temperature exceeds the above temperature values or the pump is installed at an altitude exceeding the above altitude values, the motor must not be fully loaded due to the risk of overheating. Overheating may result from excessive ambient temperatures or the low density and consequently low cooling effect of the air.

In such cases, it may be necessary to use a motor with a higher rated output.

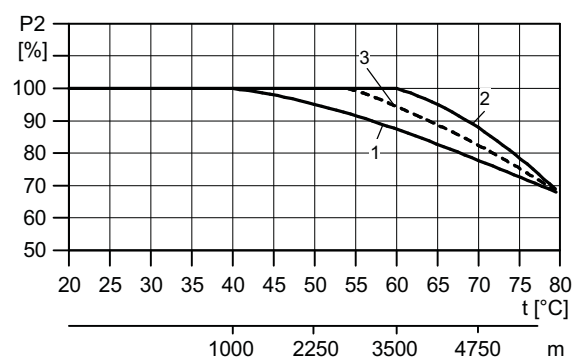


Fig. 2 Motor output depends on temperature/altitude

Pos.	Motor power [kW]	Motor make
1	0.37 - 0.55	MG
	0.37 - 22	MGE
2	0.75 - 22	MG
3	30-75	Siemens

Example

Figure 2 shows that the load of an IE3 motor at an ambient temperature of 70 °C must not be loaded more than 89 % of the rated output. If the pump is installed 4750 metres above sea level, the motor must not be loaded more than 89 % of the rated output.

In cases where both the maximum temperature and the maximum altitude are exceeded, the derating factors must be multiplied ($0.89 \times 0.89 = 0.79$).

Note

For motor bearing maintenance at ambient temperatures above 40 °C, see section [9. Maintenance](#).

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5.2 Liquid temperature

The table on page 16 states the relationship between liquid temperature range and maximum permissible operating pressure.

Note The maximum permissible operating pressure and liquid temperature ranges apply to the pump only.

5.3 Maximum permissible operating pressure and liquid temperature for the shaft seal

Note The diagram below applies to clean water and water containing anti-freeze liquids.

CR, CRI, CRN 1s to 20 and CR, CRN 32 to 150

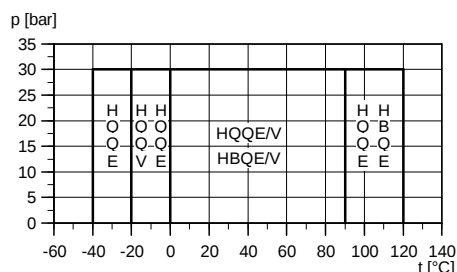


Fig. 3 Maximum permissible operating pressure and liquid temperature

Standard shaft seal	Motor [kW]	Max. temperature range [°C]
HQQE	0.37 - 45	-40 - 120 °C
HBQE	55-75	0-120 °C
HQQV	0.37 - 45	-20 - 90 °C
HBQV	55-75	0-90 °C

You can clean CRI and CRN pumps in place (CIP) with a type H shaft seal with EPDM rubber parts, HxxE and liquids up to 150 °C for maximum 15 minutes.

Note The pumping of liquids above +120 °C may result in periodical noise and reduced pump life.

CR, CRI, CRN pumps are not suitable for the pumping of liquids above 120 °C for long periods.

5.4 Minimum inlet pressure

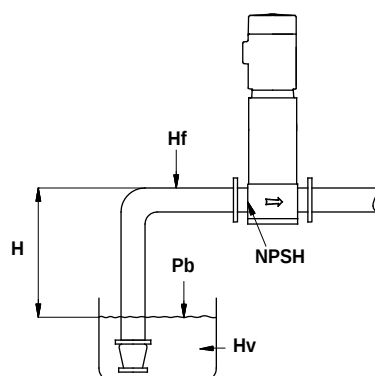


Fig. 4 Schematic view of open system with a CR pump

Calculate the maximum suction lift "H" in metres head as follows:

$$H = p_b \times 10.2 - \text{NPSH} - H_f - H_v - H_s$$

p_b = Barometric pressure in bar.

Barometric pressure can be set to 1 bar.

In closed systems, p_b indicates the system pressure in bar.

NPSH = Net Positive Suction Head in metres head.

To be read from the NPSH curve on page 14 at the highest flow the pump will be delivering.

H_f = Friction loss in inlet pipe in metres head at the highest flow the pump will be delivering.

H_v = Vapour pressure in metres head, see fig. E on page 19.
 t_m = liquid temperature.

H_s = Safety margin = minimum 0.5 metres head.

If the calculated "H" is positive, the pump can operate at a suction lift of maximum "H" metres head.

If the calculated "H" is negative, an inlet pressure of minimum "H" metres head is required. There must be a pressure equal to the calculated "H" during operation.

Example

$p_b = 1$ bar.

Pump type: CR 15, 50 Hz.

Flow rate: 15 m³/h.

NPSH (from page 14): 1.1 metres head.

$H_f = 3.0$ metres head.

Liquid temperature: +60 °C.

H_v (from fig. E, page 19): 2.1 metres head.

$$H = p_b \times 10.2 - \text{NPSH} - H_f - H_v - H_s \text{ [metres head]}$$

$$H = 1 \times 10.2 - 1.1 - 3.0 - 2.1 - 0.5 = 3.5 \text{ metres head.}$$

This means that the pump can operate at a suction lift of maximum 3.5 metres head.

Pressure calculated in bar: $3.5 \times 0.0981 = 0.343$ bar.

Pressure calculated in kPa: $3.5 \times 9.81 = 34.3$ kPa.

5.5 Minimum inlet pressure

The table on page 17 states the maximum permissible inlet pressure. However, the actual inlet pressure + maximum pump pressure (at no flow) must always be lower than the values stated in fig. A, page 16.

The pumps are pressure-tested at a pressure of 1.5 times the values stated in fig. B, page 17.

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5.6 Minimum flow rate

Due to the risk of overheating, do not use the pump at flows below the minimum flow rate.

The curves below show the minimum flow rate as a percentage of the rated flow rate in relation to the liquid temperature.

---- = air-cooled top.

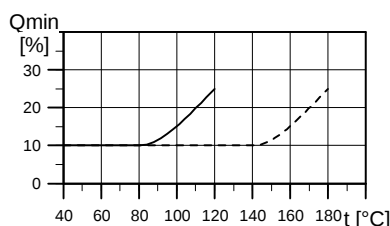


Fig. 5 Minimum flow rate

Caution The pump must not run against a closed outlet valve.

5.7 Electrical data

See motor nameplate.

5.8 Frequency of starts and stops

Motor size [kW]	Maximum number of starts per hour
≤ 2.2	250
3-4	100
5.5 - 11	50
18.5 - 22	40
30	90
37	50
45	80
55	50
75	50

5.9 Dimensions and weights

Dimensions: See fig. C, page 18.

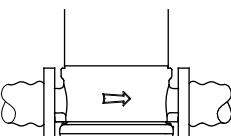
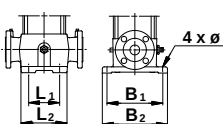
Weights: See label on the packing.

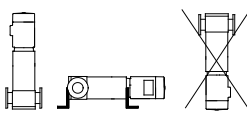
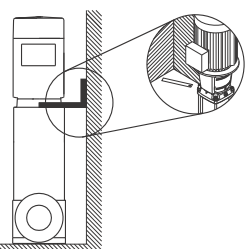
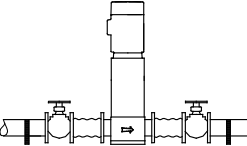
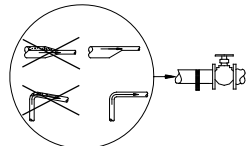
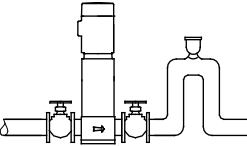
5.10 Sound pressure level

See fig. D, page 19.

6. Installation

The pump must be secured to a horizontal, plane and solid foundation by bolts through the holes in the base plate. When installing the pump, follow the procedure below in order to avoid damaging the pump.

Step	Action
1	 Arrows on the pump base show the direction of flow of liquid through the pump.
2	This information is stated on page 18: • port-to-port lengths • dimensions of the base • pipework connections • diameter and position of foundation bolts. 

Step	Action
3	 You can install the pump vertically or horizontally. CR, CRN 120 and 150, 75 kW, only vertically. However, the motor must neither fall below the horizontal plane nor be installed upside down. Make sure that an adequate supply of cool air reaches the motor cooling fan. Motors above 4 kW must be supported.
3a	 Additional support. As the centre of gravity on the pump is relative high, we recommend that pumps installed on ships, in areas with risk of earth quake or in systems which has to be moved are equipped with additional support brackets. You can fit the bracket from the motor stool to the bulkhead of the ship, a rigid wall in a building or to a rigid part.
4	 To minimise possible noise from the pump, we advise you to fit expansion joints on either side of the pump. Carry out the foundation or installation as described in section 6.1 <i>Foundation</i>. Fit the isolating valves on either side of the pump to avoid draining the system if the pump needs to be removed for cleaning, repair or replacement. Always protect the pump against backflow by means of a non-return valve.
5	 Install the pipes so that air locks do not occur, especially on the inlet side of the pump.
6	 Fit a vacuum valve close to the pump if the installation has one of these characteristics: • The outlet pipe slopes downwards away from the pump. • There is a risk of siphon effect. • Protection against backflow of unclean liquids is needed.

6.1 Foundation



Warning

To avoid personal injury, make sure that the pump is mounted securely in all conditions.



Warning

Carry out the foundation or installation in accordance with the following instructions.

Grundfos recommends that you install the pump on a concrete foundation which is heavy enough to provide permanent and rigid support to the entire pump. The foundation must be capable of absorbing any vibration, normal strain or shock. The concrete foundation must have an absolutely level and even surface.

Place the pump on the foundation, and fasten it. The base plate must be supported on the whole area.

The following instruction applies when mounting the pump in vertical or horizontal position.

Place the pump on the foundation, and fasten it. See fig. 6.

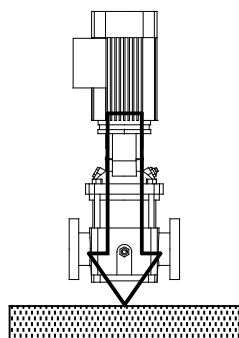


Fig. 6 Correct installation

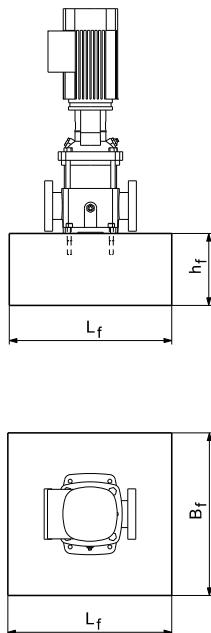


Fig. 7 Foundation, vertical mounting

The recommended length and width are shown in fig. 7. Note that the length and width of the foundation for pumps with motor size below or equal to 30 kW must be 200 mm larger than the base plate.

For pumps with motor size above or equal to 37 kW, the length and width must always be 1.5 x 1.5 (L_f x B_f) metres.

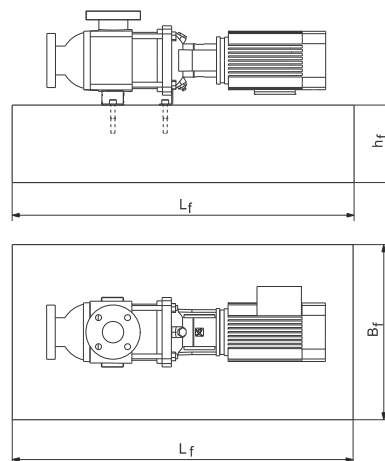


Fig. 8 Foundation, horizontal mounting

The foundation length and width must always be 200 mm larger than the length and width of the pump. See fig. 8.

The mass of the foundation must be at least 1.5 times the total mass of the pump. The minimum height of the foundation (h_f) can then be calculated:

$$h_f = \frac{m_{\text{pump}} \times 1.5}{L_f \times B_f \times \delta_{\text{concrete}}}$$

The density (δ) of concrete is usually taken as 2200 kg/m³.

In installations where noise-less operation is particularly important, we recommend that you use a foundation with a mass up to 5 times that of the pump.

The foundation must be provided with bolts for fixing the base plate. See fig. 9.

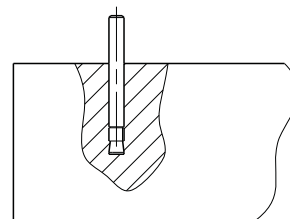


Fig. 9 Bolt in foundation

When the foundation bolts are in position, place the pump on the foundation. Then align the base plate using shims, if necessary, so that it is completely horizontal. See fig. 10.

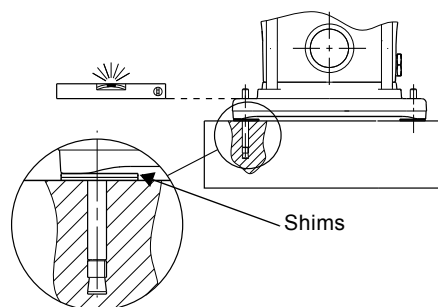


Fig. 10 Alignment with shims

6.2 Vibration dampening

If you use vibration dampers, install them under the foundation. Pumps with motor size below or equal to 30 kW can use vibration dampers as shown in fig. 11.

For pumps with motor sizes above or equal to 37 kW, use a Sylomer® plate as shown in fig. 12.

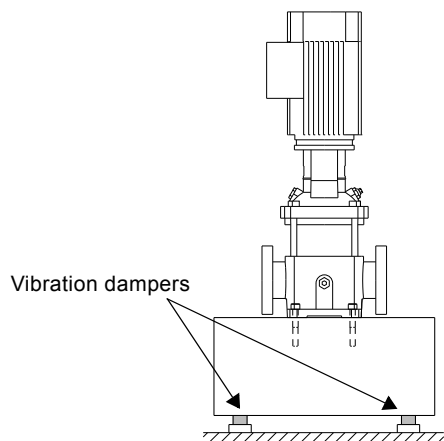


Fig. 11 Pump on vibration dampers

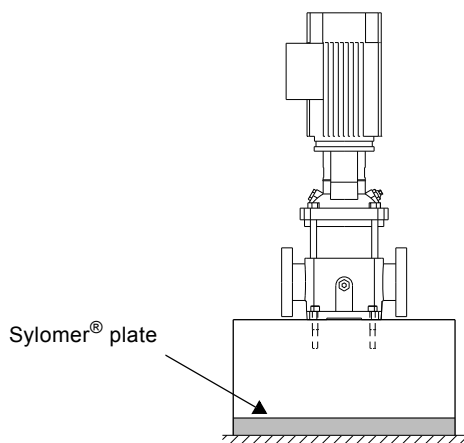


Fig. 12 Pump on Sylomer® plate

6.3 Outdoor installation

When installed outdoors, we recommend that you provide the motor with a rain cover. We also recommend that you open one of the drain holes in the motor flange.

6.4 Hot or cold surfaces



Warning

When pumping hot or cold liquids, make sure that persons cannot accidentally come into contact with hot or cold surfaces.

Figure 13 shows which pump parts get as hot or cold as the pumped liquid.

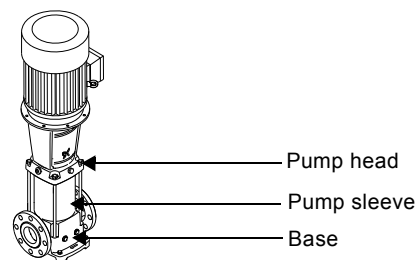


Fig. 13 Hot or cold surfaces on a CR, CRI, CRN pump

6.5 Torques

Caution

To minimize risk of damage to the equipment, make sure to tighten bolts according to recommendations.

The table shows the recommended torques for bolts in base and flanges.

CR, CRI, CRN	Base [Nm]	Flange [Nm]		
		DIN, JIS, ANSI	Oval	
1s-5	40	M10	-	50-60
10-20	50	M12	60	60-70
32-150	70	M16	100	70-80
		M20	150	-
		M24	200	-

The bolt quality must be minimum 8.8.

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6.6 Flange forces and torques

If not all loads reach the maximum permissible value stated in the tables below, one of these values may exceed the normal limit. Contact Grundfos for further information.

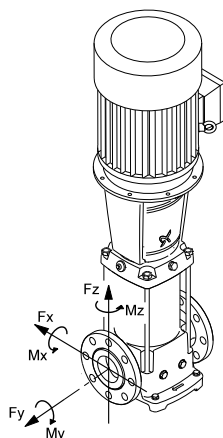


Fig. 14 Flange forces and torques

Y-direction: Inlet/outlet

Z-direction: Direction of chamber stack

X-direction: 90 ° from inlet/outlet

Forces

The following tables represent values that applies according to the material quality.

Force limits for CR cast-iron pump housing

Flange, DN [mm]	CR	Force, Y-direction [N]	Force, Z-direction [N]	Force, X-direction [N]
25/32	1s-5	338	394	319
40	10	413	469	375
50	15 and 20	563	581	506
65	32	694	788	638
80	45	938	769	844
100	64 and 90	1256	1013	1125
125/150	120 and 150	1256	1013	1125

Torque limits to CR cast-iron pump housing

Flange, DN [mm]	CR	Torque, Y-direction [Nm]	Torque, Z-direction [Nm]	Torque, X-direction [Nm]
25/32	1s-5	300	175	125
40	10	400	275	200
50	15 and 20	450	325	250
65	32	500	350	300
80	45	325	400	550
100	64 and 90	375	475	625
125/150	120 and 150	375	475	625

Force limits for CRI, CRN stainless-steel pumps housing

Flange, DN [mm]	CRI, CRN	Force, Y-direction [N]	Force, Z-direction [N]	Force, X-direction [N]
25/32	1s-5	675	788	638
40	10	825	938	750
50	15 and 20	1125	1163	1013
65	32	1388	1575	1275
80	45	1875	1538	1688
100	64 and 90	2513	2025	2250
125/150	120 and 150	2513	2025	2250

Torque limits to CRI, CRN stainless steel pump housing

Flange, DN [mm]	CRI, CRN	Torque, Y-direction [Nm]	Torque, Z-direction [Nm]	Torque, X-direction [Nm]
25/32	1s-5	600	350	250
40	10	800	550	400
50	15 and 20	900	650	500
65	32	1000	700	600
80	45	650	800	1100
100	64 and 90	750	950	1250
125/150	120 and 150	750	950	1250

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7. Electrical connection

The electrical connection must be carried out by an authorised electrician in accordance with local regulations.



Warning

Connect the CR pump to an external mains switch placed close to the pump and to a motor-protective circuit breaker or a CUE frequency converter. Make sure you can lock the mains switch in OFF position (isolated). Type and requirements as specified in EN 60204-1, 5.3.2.



Warning

Before removing the terminal box cover and before removing or dismantling the pump, make sure that the power supply has been switched off and that it cannot be accidentally switched on.

Caution

Consider whether it is necessary to install an emergency stop switch.

The operating voltage and frequency are marked on the motor nameplate. Make sure that the motor is suitable for the power supply on which it will be used and the motor terminal connection is correct. You will find a wiring diagram in the terminal box.

7.1 Cable entry/screwed connection

All motors are supplied without screwed cable entries. The table below shows the numbers and sizes of cable entry holes of the terminal box (standard EN 50262).

Motor [kW]	Number and size of cable entries	Description
0.25 - 0.55	2 x M20 x 1.5	The holes have precast threads and are closed with knock-out cable entries
0.75 - 3.0	2 x M20	The holes are closed with knock-out cable entries
4.0 - 7.5	4 x M25	The holes are closed with knock-out cable entries
11-22	2 x M20 4 x M40	The holes are closed with knock-out cable entries
30-45	2 x M50 x 1.5	Blanking plug
55-75	2 x M63 x 1.5	Blanking plug

7.2 Three-phase connection

	Mains supply [V]	
	Delta connection	Star connection
50 Hz	220-240	/ 380-415
	380-415	/ 660-690
60 Hz	220-277	/ 380-480 ¹⁾
	380-480	/ 660-690

¹⁾ 60 Hz motors, 0.37 - 1.1 kW: 220-277/380-440 V.

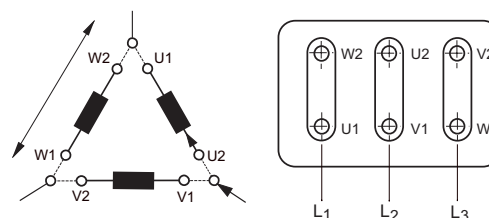


Fig. 15 Delta connection

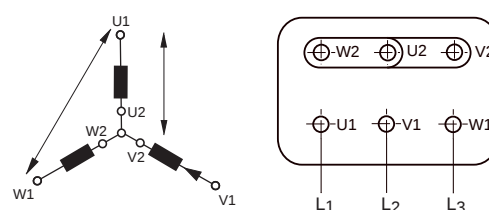


Fig. 16 Star connection

If the motor is provided with PTC sensors or PTO contacts, the connection must be in accordance with the wiring diagram in the terminal box.

Connect three-phase motors to a motor-protective circuit breaker.

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7.3 Single-phase connection

	Mains supply [V]	
	"Low voltage"	"High voltage"
50 Hz	220-230	/ 240

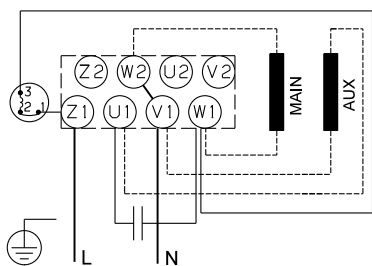


Fig. 17 Connection, "low voltage", 0.37 - 0.75 kW

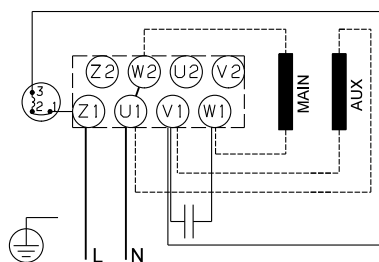


Fig. 18 Connection, "high voltage", 0.37 - 0.75 kW

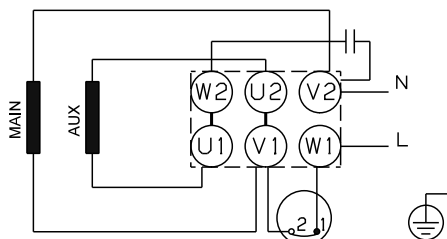


Fig. 19 Connection, "low voltage", 1.1 - 2.2 kW

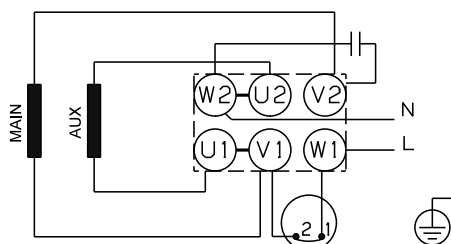


Fig. 20 Connection, "high voltage", 1.1 - 2.2 kW

Single-phase Grundfos motors incorporate a thermal switch and require no additional motor protection.

7.4 Terminal box positions

You can turn the terminal box to four positions, in 90 ° steps. Follow this procedure:

1. If necessary, remove the coupling guards. Do not remove the coupling.
2. Remove the bolts securing the motor to the pump.
3. Turn the motor to the required position.
4. Replace and tighten the bolts.
5. Replace the coupling guards.

Carry out the electrical connection as shown in the diagram inside the terminal box cover.

7.5 Frequency converter operation

You can use 3-phase motors for frequency converter operation following the conditions below. This section applies to motors defined in IEC 60034.

7.5.1 General conditions

Protect all motors used with frequency converters against voltage peaks and dU/dt according to IEC 60034-17. Grundfos recommends that you use insulated bearings for motors from frame size 225 (45 kW/2-pole, 30 kW/4-pole and 22 kW/6-pole).

Mains voltage dependent conditions

200-240 V

No output filters are required for frequency converter operated motors with mains voltages up to 240 V.

380-500 V

For frequency converter operated motors with motor cable length less than 25 metres and mains supply up to 460 V. No additional motor protection against voltage peaks is required. For frequency converter operated motors with motor cable length of more than 25 metres or mains supply higher than 460 V, sine-wave filters are required.

500 V and higher

Always use sine-wave filters for motors marked with 500 V or higher voltages. *

Exception

- Protect Grundfos motors types MG 71 and MG 80 (up to 1.1 kW/2-pole and up to 0.75 kW/4-pole) for supply voltages up to and including 440 V without phase insulation against voltage peaks above 650 V between the supply terminals.
- If you use MG 71 and MG 80 without phase insulation for input voltages above 240 V, it requires that you use sine wave filters at the output of the frequency converter.
- MG 71 and MG 80 with phase insulation for use with variable frequency drives are available as standard products.

* Motors with reinforced insulation can be supplied as an option. These motors are according to IEC 60034-25 and therefore there is no need for sine-wave filters. This does not eliminate the requirement for insulated bearings from frame size 225.

7.5.2 Motors supplied by Grundfos

You can connect all three-phase MG motors with phase insulation to a frequency converter.

TM04 1693 1008

TM04 1694 1008

TM04 0345 0608

TM04 0344 0608

7.5.3 Phase insulation, MG 71 and 80

MG motors, frame sizes 71 and 80, do not have phase insulation as standard. The motors are not suitable for frequency converter operation as they are not protected against the voltage peaks caused by the frequency converter operation. Only motors with a rated voltage equal to or above 460 V have phase insulation.

Caution

Frequency converter operation of MG motors without phase insulation will cause damage to the motor.

We recommend that you protect all other motors against voltage peaks higher than 1200 V by 2000 V/ μ sec.

You can eliminate the above disturbances, i.e. both increased acoustic noise and detrimental voltage peaks by fitting an LC filter between the frequency converter and the motor.

For further information, contact the frequency converter or motor supplier.

7.5.4 Other motor makes than those supplied by Grundfos

Contact Grundfos or the motor manufacturer.

8. Startup

Caution

Do not start the pump until it has been filled with liquid and vented. If the pump runs dry, the pump bearings and the shaft seal may be damaged.

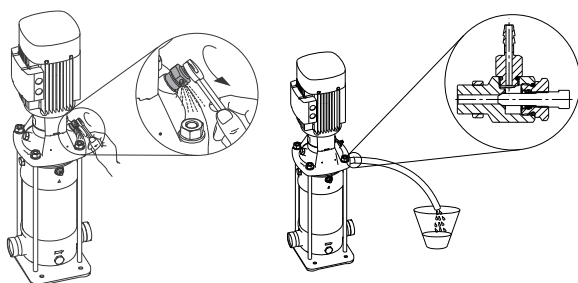


Fig. 21 Vent valve, standard and an optional solution with hose connection

TM05 1160 0611 - TM05 8098 1913



Warning

Pay attention to the direction of the vent hole and make sure that the escaping water does not cause injury to persons or damage to the motor or other components.

In hot-water installations, pay special attention to the risk of injury caused by scalding hot water.

Follow the instructions on page 34.

CR, CRI, CRN 1s to 5

For these pumps, we advise you to open the bypass valve during startup. See fig. 22 for bypass valve location. The bypass valve connects the inlet and outlet sides of the pump, thus making the filling procedure easier. Close the bypass valve again when the operation is stable.

When pumping liquids containing air, we advise you to leave the bypass valve open if the operating pressure is lower than 6 bar.

Close the bypass valve if the operating pressure constantly exceeds 6 bar. Otherwise the material at the opening will be worn because of the high liquid velocity.

8.1 Shaft seal run-in



Warning

Make sure that a leakage does not cause injury to persons or damage to the equipment.

The seal faces are lubricated by the pumped liquid, meaning that there may be a certain amount of leakage from the shaft seal.

When you start the pump for the first time, or when you install a new shaft seal, a certain run-in period is required before the leakage is reduced to an acceptable level. The time required for this depends on the operating conditions, i.e. every time the operating conditions change, a new run-in period will be started.

Under normal conditions, the leaking liquid will evaporate. As a result, no leakage will be detected.

9. Maintenance



Warning

Before starting work on the pump, make sure that all power supplies to the pump have been switched off and that they cannot be accidentally switched on.

Pump bearings and shaft seal are maintenance-free.

Motor bearings

Motors not fitted with grease nipples are maintenance-free.

Motors fitted with grease nipples must be lubricated with a high-temperature, lithium-based grease. See the instructions on the fan cover.

In the case of seasonal operation where the motor is idle for more than 6 months of the year, we recommend that you grease the motor when you take the pump out of operation.

Depending on the ambient temperature, replace or lubricate the motor bearings according to the table below. The table applies to 2-pole motors. The number of operating hours stated for bearing replacement are guidelines only.

Motor size [kW]	Bearing replacement interval [operating hours]				
	40 °C	45 °C	50 °C	55 °C	60 °C
0.37 - 0.75	18000	-	-	-	-
1.1 - 7.5	20000	15500	12500	10000	7500
Motor size [kW]	Lubrication interval [operating hours]				
	40 °C	45 °C	50 °C	55 °C	60 °C
11 - 18.5	4500	3400	2500	1700	1100
22	4000	3100	2300	1500	1000
30-55	4000	3000	2000	1500	-
75	2000	1500	1000	500	-

Intervals for 4-pole motors are twice as long as those for 2-pole motors.

If the ambient temperature is lower than 40 °C, then replace or lubricate the bearings at the intervals mentioned under 40 °C.

10. Frost protection

Drain pumps which are not being used during periods of frost to avoid damage.

Drain the pump by loosening the vent screw in the pump head and by removing the drain plug from the base.

Warning



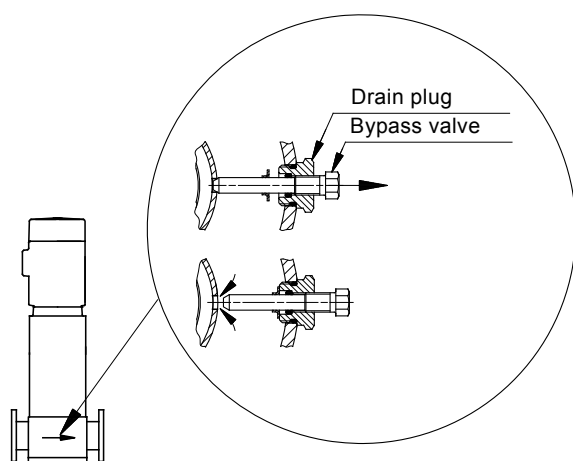
Pay attention to the direction of the vent hole and make sure that the escaping water does not cause injury to persons or damage to the motor or other components.

In hot-water installations, pay special attention to the risk of injury caused by scalding hot water.

Do not tighten the vent screw and replace the drain plug until the pump is to be used again.

CR, CRI, CRN 1s to 5

Before replacing the drain plug in the base, screw the bypass valve out against the stop. See fig. 22.



TM01 1243 4 097

Fig. 22 Location of drain plug and bypass valve

Fit the drain plug by tightening the large union nut followed by the bypass valve.

11. Service

We recommend that you repair pumps with motors of 7.5 kW and up at pump site. Necessary lifting equipment must be available.

Note

If you have used a pump for a liquid which is toxic or injurious to health, the pump will be classified as contaminated.

If Grundfos is requested to service the pump, contact Grundfos with details about the pumped liquid, etc. before the pump is returned for service. Otherwise, Grundfos can refuse to accept the pump for service.

Possible costs of returning the pump are to be paid by the customer.

However, any application for service, no matter to whom it may be made), must include details about the pumped liquid if you have used the pump for liquids which are toxic or injurious to health.

11.1 Service kits and manuals

Service documentation is available in Grundfos Product Center (<http://product-selection.grundfos.com/>).

If you have any questions, please contact the nearest Grundfos company or service workshop.

12. Fault finding



Warning

Before removing the terminal box cover and before removing or dismantling the pump, make sure that the power supply has been switched off and that it cannot be accidentally switched on.

Fault	Cause	Remedy
1. Motor does not run when started.	a) Supply failure.	Connect the power supply.
	b) The fuses are blown.	Replace fuses.
	c) The motor-protective circuit breaker has tripped.	Reactivate the motor-protective circuit breaker.
	d) The thermal protection has tripped.	Reactivate the thermal protection.
	e) The main contacts in the motor-protective circuit breaker are not making contact or the coil is faulty.	Replace contacts or magnetic coil.
	f) The control circuit is defective.	Repair the control circuit.
	g) The motor is defective.	Replace the motor.
2. Motor-protective circuit breaker trips immediately when power supply is switched on.	a) One fuse is blown or the automatic circuit breaker is tripped.	Replace the fuse or cut in the circuit breaker.
	b) The contacts in the motor-protective circuit breaker are faulty.	Replace motor-protective circuit breaker contacts.
	c) The cable connection is loose or faulty.	Fasten or replace the cable connection.
	d) The motor winding is defective.	Replace the motor.
	e) The pump is mechanically blocked.	Remove the mechanical blocking of the pump.
	f) The motor-protective circuit breaker setting is too low.	Set the motor-protective circuit breaker correctly.
3. Motor-protective circuit breaker trips occasionally.	a) The motor-protective circuit breaker setting is too low.	Set the motor-protective circuit breaker correctly.
	b) Low voltage at peak times.	Check the power supply.
4. Motor-protective circuit breaker has not tripped but the pump does not run.	a) Check 1 a), b), d), e) and f).	
5. Pump performance not constant.	a) The pump inlet pressure is too low (cavitation).	Check the inlet conditions.
	b) The inlet pipe or pump is partly blocked by impurities.	Clean the inlet pipe or pump.
	c) The pump draws in air.	Check the inlet conditions.
6. Pump runs but gives no water.	a) The inlet pipe or pump is blocked by impurities.	Clean the inlet pipe or pump.
	b) The foot or non-return valve is blocked in closed position.	Repair the foot or non-return valve.
	c) There is a leakage in the inlet pipe.	Repair the inlet pipe.
	d) There is air in the inlet pipe or pump.	Check the inlet conditions.
	e) The motor runs in the wrong direction of rotation.	Change the direction of rotation of the motor.
7. Pump runs backwards when switched off.	a) There is a leakage in the inlet pipe.	Repair the inlet pipe.
	b) The foot or non-return valve is defective.	Repair the foot or non-return valve.
8. Leakage in shaft seal.	a) The shaft seal is defective.	Replace the shaft seal.
9. Noise.	a) Cavitation.	Check the inlet conditions.
	b) The pump does not rotate freely due to frictional resistance, as a result of incorrect pump shaft position.	Adjust the pump shaft. Follow the procedure in fig. F, G or H at the end of these instructions.
	c) Frequency converter operation.	See section 7.5 Frequency converter operation .

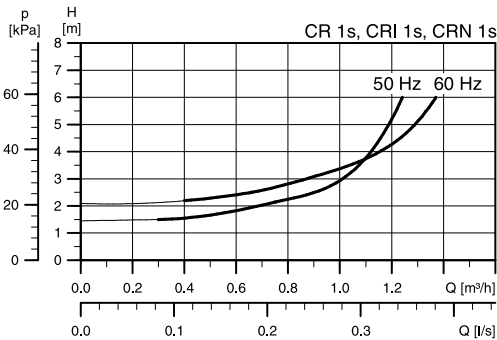
13. Disposing of the product

This product or parts of it must be disposed of in an environmentally sound way:

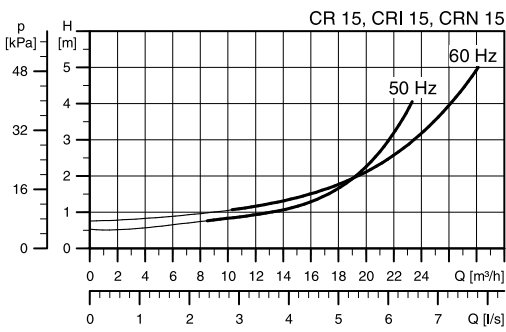
1. Use the public or private waste collection service.
2. If this is not possible, contact the nearest Grundfos company or service workshop.

Appendix

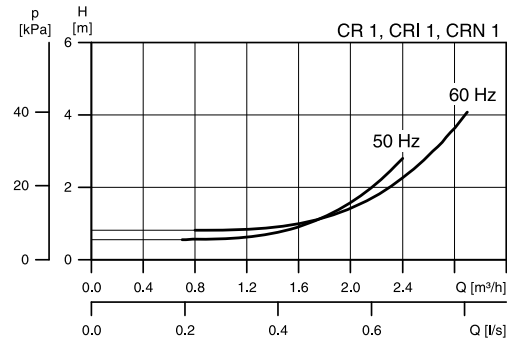
NPSH



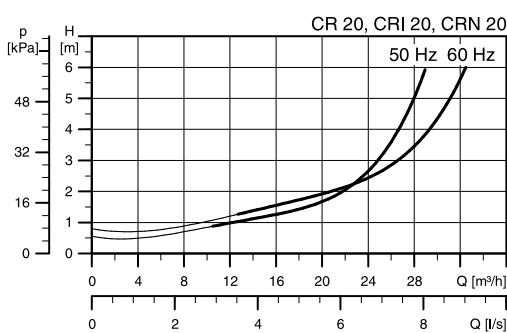
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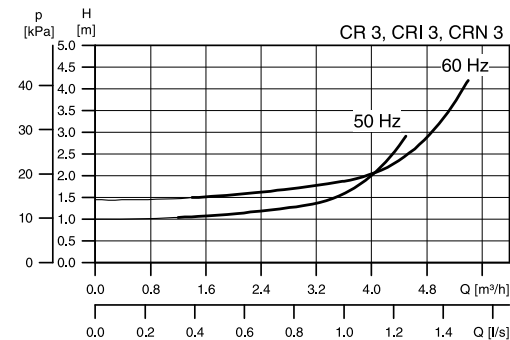
TM02 7126 2703



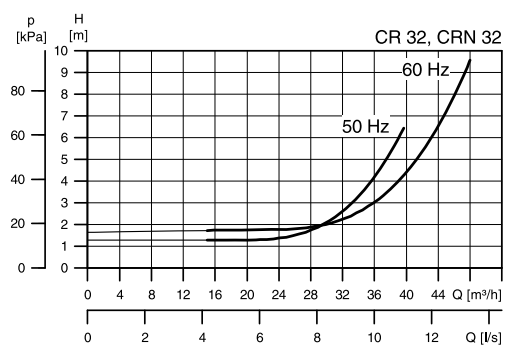
TM01 9882 3801



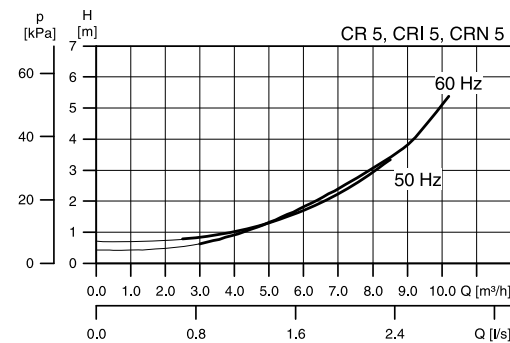
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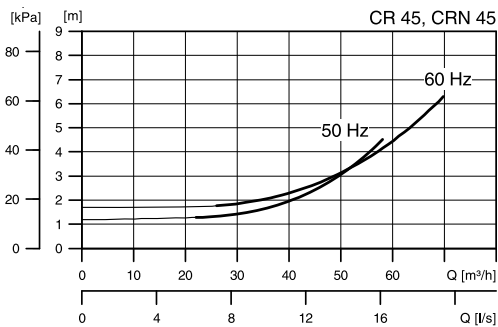
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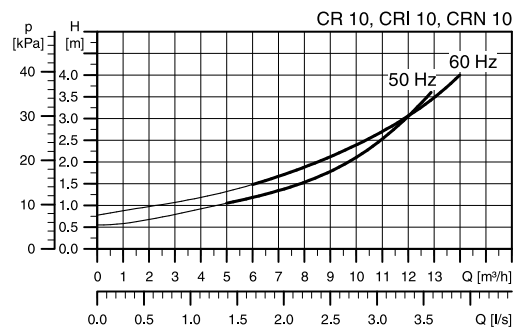
TM01 1934 0899



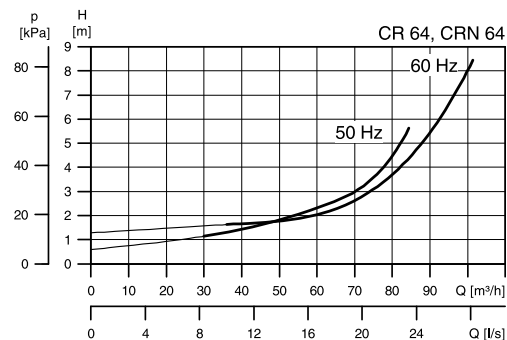
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TM01 1935 0899



TM02 7125 2703



TM01 1936 0899

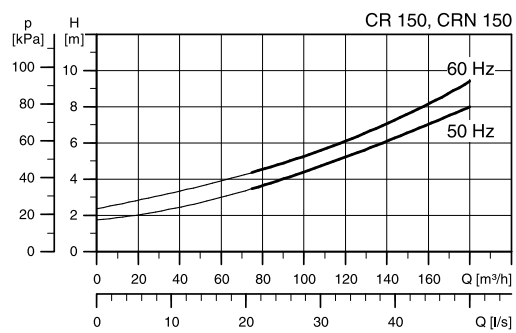
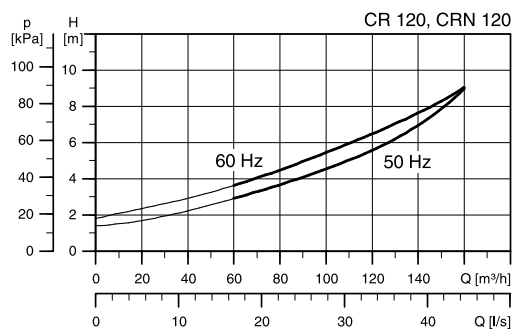
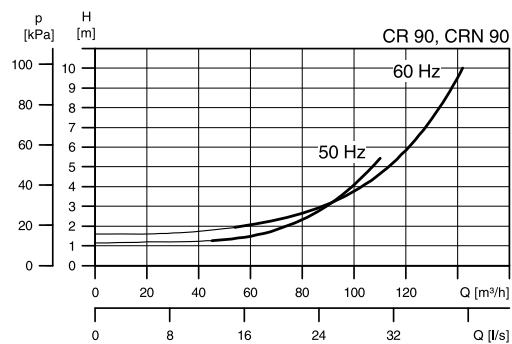


Fig. A

Maximum permissible operating pressure / liquid temperature range

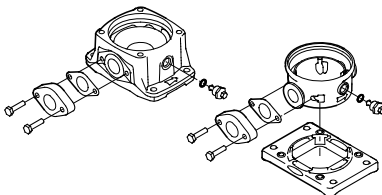
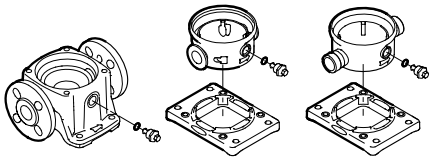
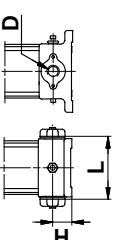
		Oval		PJE - CLAMP - CA - UNION DIN - FGJ	
					
		Operating pressure	Liquid temperature range	Operating pressure	Liquid temperature range
50 Hz	CR, CRI, CRN 1s	16 bar	-20 °C to +120 °C	25 bar	-20 °C to +120 °C
	CR, CRI, CRN 1	16 bar	-20 °C to +120 °C	25 bar	-20 °C to +120 °C
	CR, CRI, CRN 3	16 bar	-20 °C to +120 °C	25 bar	-20 °C to +120 °C
	CR, CRI, CRN 5	16 bar	-20 °C to +120 °C	25 bar	-20 °C to +120 °C
	CR, CRI 10-1 → 10-16	16 bar	-20 °C to +120 °C	16 bar	-20 °C to +120 °C
	CR, CRI 10-17 → 10-22	-	-	25 bar	-20 °C to +120 °C
	CRN 10	-	-	25 bar	-20 °C to +120 °C
	CR, CRI 15-1 → 15-7	10 bar	-20 °C to +120 °C	-	-
	CR, CRI 15-1 → 15-10	-	-	16 bar	-20 °C to +120 °C
	CR, CRI 15-12 → 15-17	-	-	25 bar	-20 °C to +120 °C
	CRN 15	-	-	25 bar	-20 °C to +120 °C
	CR, CRI 20-1 → 20-7	10 bar	-20 °C to +120 °C	-	-
	CR, CRI 20-1 → 20-10	-	-	16 bar	-20 °C to +120 °C
	CR, CRI 20-12 → 20-17	-	-	25 bar	-20 °C to +120 °C
	CRN 20	-	-	25 bar	-20 °C to +120 °C
	CR, CRN 32-1-1 → 32-7	-	-	16 bar	-30 °C to +120 °C
	CR, CRN 32-8-2 → 32-14	-	-	30 bar	-30 °C to +120 °C
	CR, CRN 45-1-1 → 45-5	-	-	16 bar	-30 °C to +120 °C
	CR, CRN 45-6-2 → 45-11	-	-	30 bar	-30 °C to +120 °C
	CR, CRN 45-12-2 → 45-13-2	-	-	33 bar	-30 °C to +120 °C
	CR, CRN 64-1-1 → 64-5	-	-	16 bar	-30 °C to +120 °C
	CR, CRN 64-6-2 → 64-8-1	-	-	30 bar	-30 °C to +120 °C
	CR, CRN 90-1-1 → 90-4	-	-	16 bar	-30 °C to +120 °C
	CR, CRN 90-5-2 → 90-6	-	-	30 bar	-30 °C to +120 °C
	CR, CRN 120	-	-	30 bar	-30 °C to +120 °C
	CR, CRN 150	-	-	30 bar	-30 °C to +120 °C
60 Hz	CR, CRI, CRN 1s	16 bar	-20 °C to +120 °C	25 bar	-20 °C to +120 °C
	CR, CRI, CRN 1	16 bar	-20 °C to +120 °C	25 bar	-20 °C to +120 °C
	CR, CRI, CRN 3	16 bar	-20 °C to +120 °C	25 bar	-20 °C to +120 °C
	CR, CRI, CRN 5	16 bar	-20 °C to +120 °C	25 bar	-20 °C to +120 °C
	CR, CRI 10-1 → 10-10	16 bar	-20 °C to +120 °C	16 bar	-20 °C to +120 °C
	CR, CRI 10-12 → 10-17	-	-	25 bar	-20 °C to +120 °C
	CRN 10	16 bar	-20 °C to +120 °C	25 bar	-20 °C to +120 °C
	CR, CRI 15-1 → 15-5	10 bar	-20 °C to +120 °C	-	-
	CR, CRI 15-1 → 15-8	-	-	16 bar	-20 °C to +120 °C
	CR, CRI 15-9 → 15-12	-	-	25 bar	-20 °C to +120 °C
	CRN 15	10 bar	-20 °C to +120 °C	25 bar	-20 °C to +120 °C
	CR, CRI 20-1 → 20-5	10 bar	-20 °C to +120 °C	-	-
	CR, CRI 20-1 → 20-7	-	-	16 bar	-20 °C to +120 °C
	CR, CRI 20-8 → 20-10	-	-	25 bar	-20 °C to +120 °C
	CRN 20	10 bar	-20 °C to +120 °C	25 bar	-20 °C to +120 °C
	CR, CRN 32-1-1 → 32-5	-	-	16 bar	-30 °C to +120 °C
	CR, CRN 32-6-2 → 32-10-2	-	-	30 bar	-30 °C to +120 °C
	CR, CRN 45-1-1 → 45-4	-	-	16 bar	-30 °C to +120 °C
	CR, CRN 45-5-2 → 45-7	-	-	30 bar	-30 °C to +120 °C
	CR, CRN 64-1-1 → 64-3	-	-	16 bar	-30 °C to +120 °C
	CR, CRN 64-4-2 → 64-5-2	-	-	30 bar	-30 °C to +120 °C
	CR, CRN 90-1-1 → 90-3	-	-	16 bar	-30 °C to +120 °C
	CR, CRN 90-4-2	-	-	30 bar	-30 °C to +120 °C
	CR, CRN 120	-	-	30 bar	-30 °C to +120 °C
	CR, CRN 150	-	-	30 bar	-30 °C to +120 °C

Fig. B

Maximum inlet pressure for CR, CRI and CRN

50 Hz		60 Hz	
CR, CRI, CRN 1s			
CR, CRI, CRN 1s-2 → CR, CRI, CRN 1s-36	10 bar	CR, CRI, CRN 1s-2 → CR, CRI, CRN 1s-27	10 bar
CR, CRI, CRN 1			
CR, CRI, CRN 1-2 → CR, CRI, CRN 1-36	10 bar	CR, CRI, CRN 1-2 → CR, CRI, CRN 1-25 CR, CRI, CRN 1-27	10 bar 15 bar
CR, CRI, CRN 3			
CR, CRI, CRN 3-2 → CR, CRI, CRN 3-29 CR, CRI, CRN 3-31 → CR, CRI, CRN 3-36	10 bar 15 bar	CR, CRI, CRN 3-2 → CR, CRI, CRN 3-15 CR, CRI, CRN 3-17 → CR, CRI, CRN 3-25	10 bar 15 bar
CR, CRI, CRN 5			
CR, CRI, CRN 5-2 → CR, CRI, CRN 5-16 CR, CRI, CRN 5-18 → CR, CRI, CRN 5-36	10 bar 15 bar	CR, CRI, CRN 5-2 → CR, CRI, CRN 5-9 CR, CRI, CRN 5-10 → CR, CRI, CRN 5-24	10 bar 15 bar
CR, CRI, CRN 10			
CR, CRI, CRN 10-1 → CR, CRI, CRN 10-6 CR, CRI, CRN 10-7 → CR, CRI, CRN 10-22	8 bar 10 bar	CR, CRI, CRN 10-1 → CR, CRI, CRN 10-5 CR, CRI, CRN 10-6 → CR, CRI, CRN 10-17	8 bar 10 bar
CR, CRI, CRN 15			
CR, CRI, CRN 15-1 → CR, CRI, CRN 15-3 CR, CRI, CRN 15-4 → CR, CRI, CRN 15-17	8 bar 10 bar	CR, CRI, CRN 15-1 → CR, CRI, CRN 15-2 CR, CRI, CRN 15-3 → CR, CRI, CRN 15-12	8 bar 10 bar
CR, CRI, CRN 20			
CR, CRI, CRN 20-1 → CR, CRI, CRN 20-3 CR, CRI, CRN 20-4 → CR, CRI, CRN 20-17	8 bar 10 bar	CR, CRI, CRN 20-1 CR, CRI, CRN 20-2 → CR, CRI, CRN 20-10	8 bar 10 bar
CR, CRN 32			
CR, CRN 32-1-1 → CR, CRN 32-4 CR, CRN 32-5-2 → CR, CRN 32-10 CR, CRN 32-11-2 → CR, CRN 32-14	4 bar 10 bar 15 bar	CR, CRN 32-1-1 → CR, CRN 32-2 CR, CRN 32-3-2 → CR, CRN 32-6 CR, CRN 32-7-2 → CR, CRN 32-10-2	4 bar 10 bar 15 bar
CR, CRN 45			
CR, CRN 45-1-1 → CR, CRN 45-2 CR, CRN 45-3-2 → CR, CRN 45-5 CR, CRN 45-6-2 → CR, CRN 45-13-2	4 bar 10 bar 15 bar	CR, CRN 45-1-1 → CR, CRN 45-1 CR, CRN 45-2-2 → CR, CRN 45-3 CR, CRN 45-4-2 → CR, CRN 45-7	4 bar 10 bar 15 bar
CR, CRN 64			
CR, CRN 64-1-1 → CR, CRN 64-2-2 CR, CRN 64-2-1 → CR, CRN 64-4-2 CR, CRN 64-4-1 → CR, CRN 64-8-1	4 bar 10 bar 15 bar	CR, CRN 64-1-1 CR, CRN 64-1 → CR, CRN 64-2-1 CR, CRN 64-2 → CR, CRN 64-5-2	4 bar 10 bar 15 bar
CR, CRN 90			
CR, CRN 90-1-1 → CR, CRN 90-1 CR, CRN 90-2-2 → CR, CRN 90-3-2 CR, CRN 90-3 → CR, CRN 90-6	4 bar 10 bar 15 bar	CR, CRN 90-1-1 → CR, CRN 90-2-2 CR, CRN 90-2-1 → CR, CRN 90-4-2	10 bar 15 bar
CR, CRN 120			
CR, CRN 120-1 → CR, CRN 120-2-1 CR, CRN 120-2 → CR, CRN 120-5-1 CR, CRN 120-6-1 → CR, CRN 120-7	10 bar 15 bar 20 bar	CR, CRN 120-1 CR, CRN 120-2-2 → CR, CRN 120-3 CR, CRN 120-4-1 → CR, CRN 120-5-2	10 bar 15 bar 20 bar
CR, CRN 150			
CR, CRN 150-1-1 → CR, CRN 150-1 CR, CRN 150-2-1 → CR, CRN 150-4-1 CR, CRN 150-5-2 → CR, CRN 150-6	10 bar 15 bar 20 bar	CR, CRN 150-1-1 CR, CRN 150-1 → CR, CRN 150-2 CR, CRN 150-3-2 → CR, CRN 150-4-2	10 bar 15 bar 20 bar

Fig. C

Pump Type	Oval				PJE				CLAMP - FlexiClamp				UNION				DIN - FGJ				Ø [mm]	
	L [mm]	H [mm]	D [Rp]	D [mm]	L [mm]	H [mm]	D [mm]	L [mm]	H [mm]	D [mm]	L [mm]	H [mm]	D [G]	L [mm]	H [mm]	DN	L ₁ [mm]	L ₂ [mm]	B ₁ [mm]	B ₂ [mm]		
	CR 1 s	160	50	1	-	-	-	-	-	-	-	-	-	-	-	25/32	100	145	180	220	13	
	CRI, CRN 1 s	-	-	-	42.2	50	50	42.2	162	50	30	228	50	2	250	75	25/32	100	150	180	220	13
	CR 1	160	50	1	-	-	-	-	-	-	-	-	-	-	250	75	25/32	100	145	180	220	13
	CRI, CRN 1	-	-	-	42.2	50	50	42.2	162	50	30	228	50	2	250	75	25/32	100	150	180	220	13
	CR 3	160	50	1	-	-	-	-	-	-	-	-	-	-	250	75	25/32	100	145	180	220	13
	CRI, CRN 3	-	-	-	42.2	50	50	42.2	162	50	30	228	50	2	250	75	25/32	100	150	180	220	13
	CR 5	160	50	1 1/4	-	-	-	-	-	-	-	-	-	-	250	75	25/32	100	145	180	220	13
	CRI, CRN 5	-	-	-	42.2	50	50	42.2	162	50	30	228	50	2	250	75	25/32	100	150	180	220	13
	CR 10	200	80	1 1/2	-	-	-	-	-	-	-	-	-	-	280	80	40	130	178	215	256	13.5
	CRI, CRN 10	-	-	-	60.1	80	80	60.1	202	80	50	-	-	-	280	80	40	130	200	215	248	13
	CR 15	200	80 90	2	-	-	-	-	-	-	-	-	-	-	300	90	50	130	176	215	256	13.5
	CRI, CRN 15	-	-	-	60.1	90	90	60.1	202	90	50	-	-	-	300	90	50	130	200	215	248	13
	CR 20	200	80 90	2	-	-	-	-	-	-	-	-	-	-	300	90	50	130	176	215	256	13.5
	CRI, CRN 20	-	-	-	60.1	90	90	60.1	202	90	50	-	-	-	300	90	50	130	200	215	248	13
	CR 32	-	-	-	-	-	-	-	-	-	-	-	-	-	320	105	65	170	223	240	298	14
	CRN 32	-	-	-	88.9	105	105	88.9	-	-	-	-	-	-	320	105	65	170	226	240	298	14
	CR 45	-	-	-	-	-	-	-	-	-	-	-	-	-	365	140	80	190	248	266	331	14
	CRN 45	-	-	-	114.3 135	135 114.3	135 114.3	114.3 135	-	-	-	-	-	-	365	140	80	190	251	266	331	14
CR 64	-	-	-	-	-	-	-	-	-	-	-	-	-	365	140	100	190	248	266	331	14	
CRN 64	-	-	-	114.3 135	135 114.3	135 114.3	114.3 135	-	-	-	-	-	-	365	140	100	190	251	266	331	14	
CR 90	-	-	-	-	-	-	-	-	-	-	-	-	-	380	140	100	199	261	280	348	14	
CRN 90	-	-	-	114.3 135	135 114.3	135 114.3	114.3 135	-	-	-	-	-	-	380	140	100	199	261	280	348	14	
CR 120	-	-	-	-	-	-	-	-	-	-	-	-	-	380	180	125	275	344	380	472	18	
CRN 120	-	-	-	114.3 180	180 114.3	180 114.3	114.3 180	-	-	-	-	-	-	380	180	125	275	344	380	472	18	
CR 150	-	-	-	-	-	-	-	-	-	-	-	-	-	380	180	125	275	344	380	472	18	
CRN 150	-	-	-	114.3 180	180 114.3	180 114.3	114.3 180	-	-	-	-	-	-	380	180	125	275	344	380	472	18	

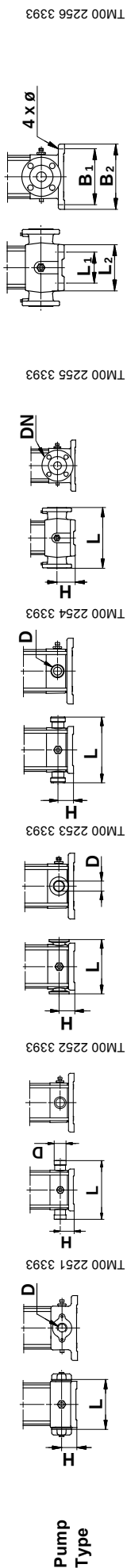
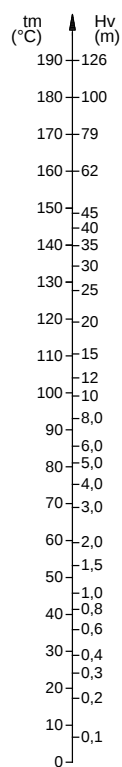


Fig. D

Airborne noise emitted by pumps with motors fitted by Grundfos

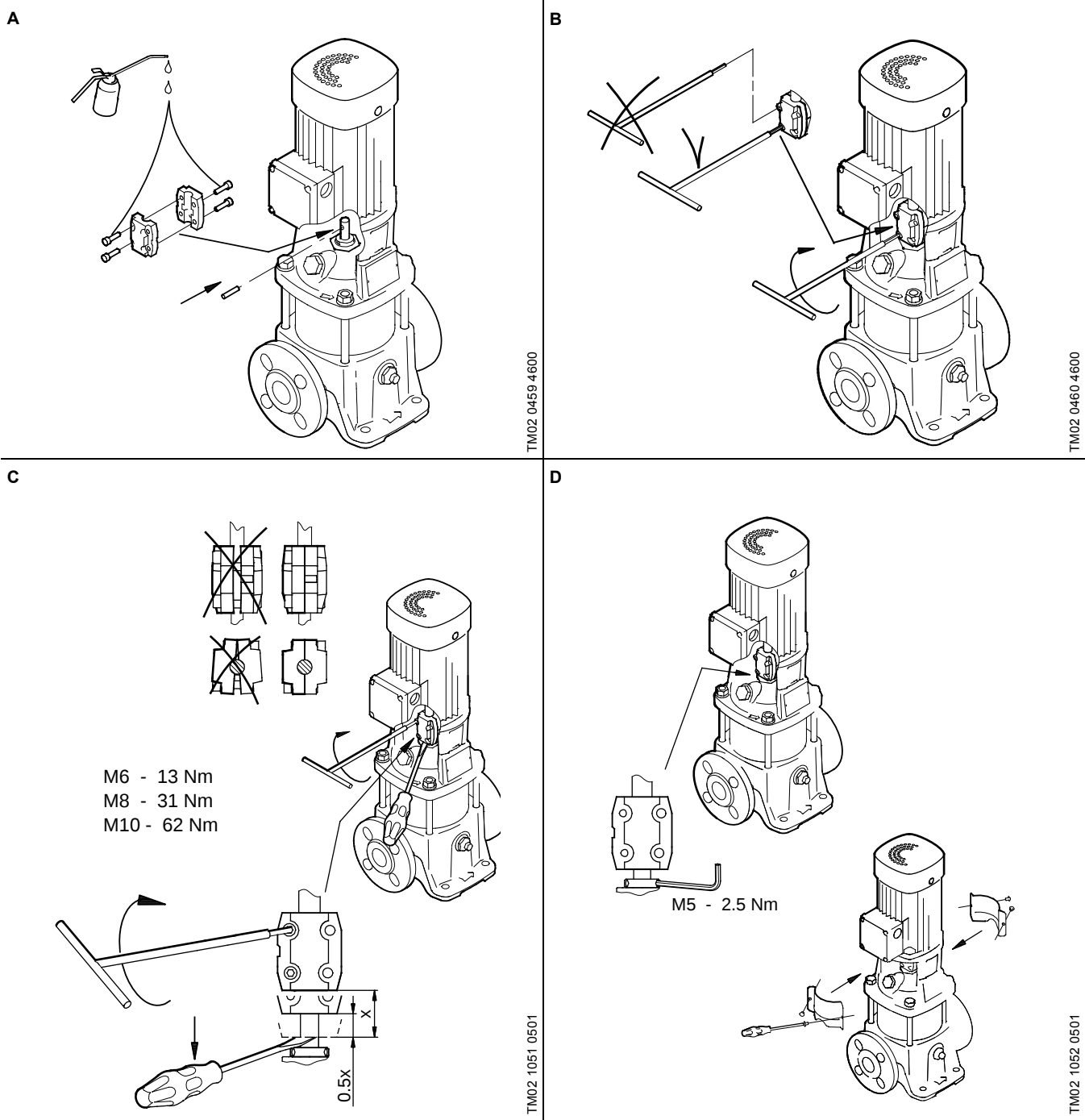
Motor [kW]	50 Hz	60 Hz
	$\bar{L}_{pA}$ [dB(A)]	$\bar{L}_{pA}$ [dB(A)]
0.37	50	55
0.55	50	53
0.75	50	54
1.1	52	57
1.5	54	59
2.2	54	59
3.0	55	60
4.0	62	66
5.5	60	65
7.5	60	65
11	60	65
15	60	65
18.5	60	65
22	66	70
30	71	75
37	71	75
45	71	75
55	71	75
75	73	77

Fig. E



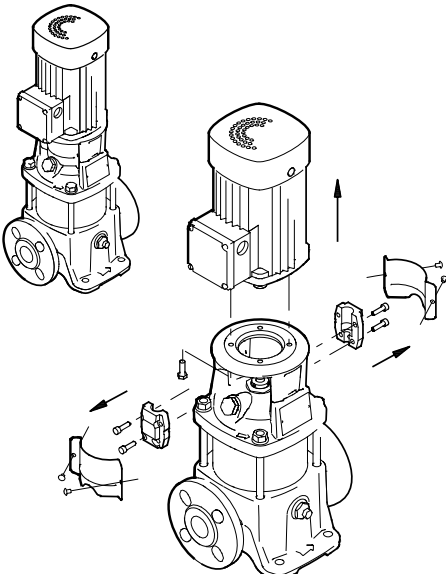
TM02 7445 3503

CR, CRI, CRN 1s, 1, 3 and 5
Fig. F



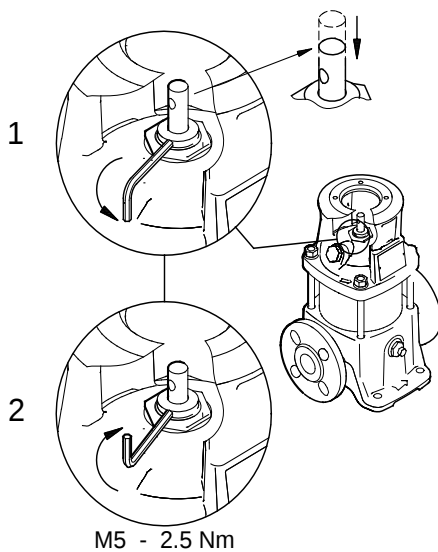
CR, CRI, CRN 10, 15 and 20
Fig. G

A



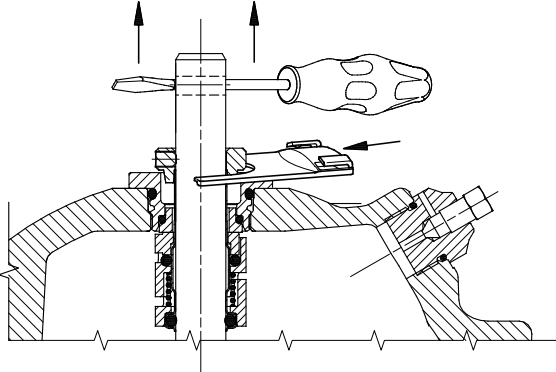
TM02 1045 0501

B



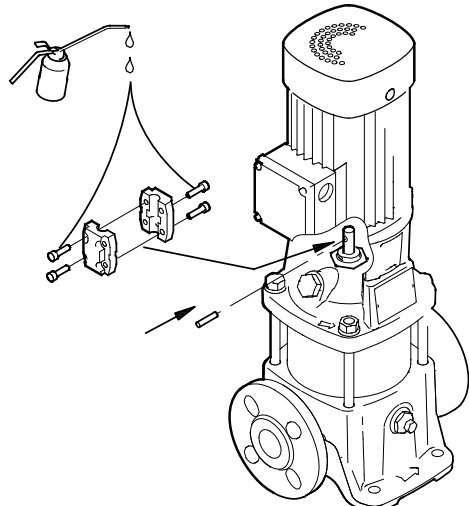
TM02 8500 0304

C



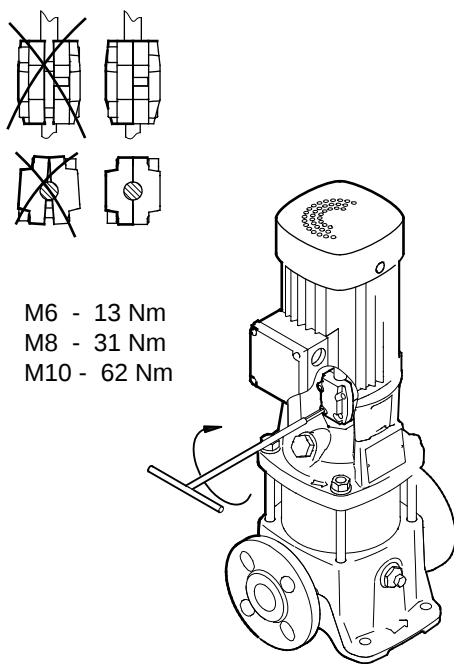
TM02 7923 4403

D



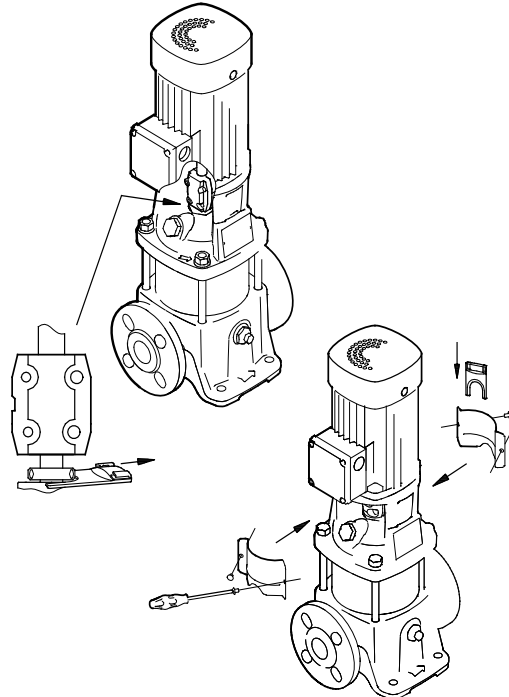
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E



TM02 8542 0404

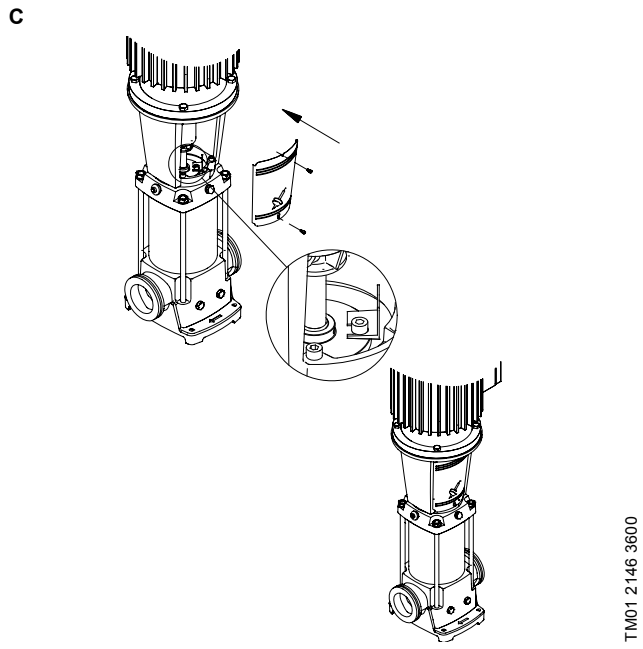
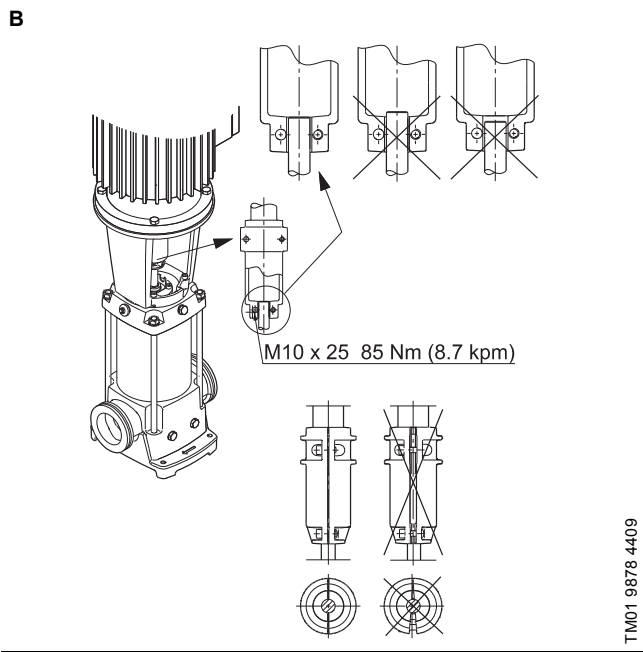
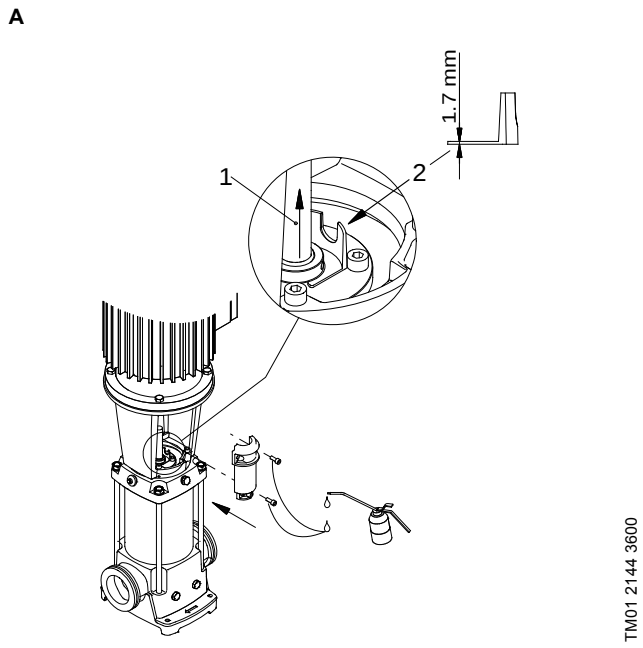
F



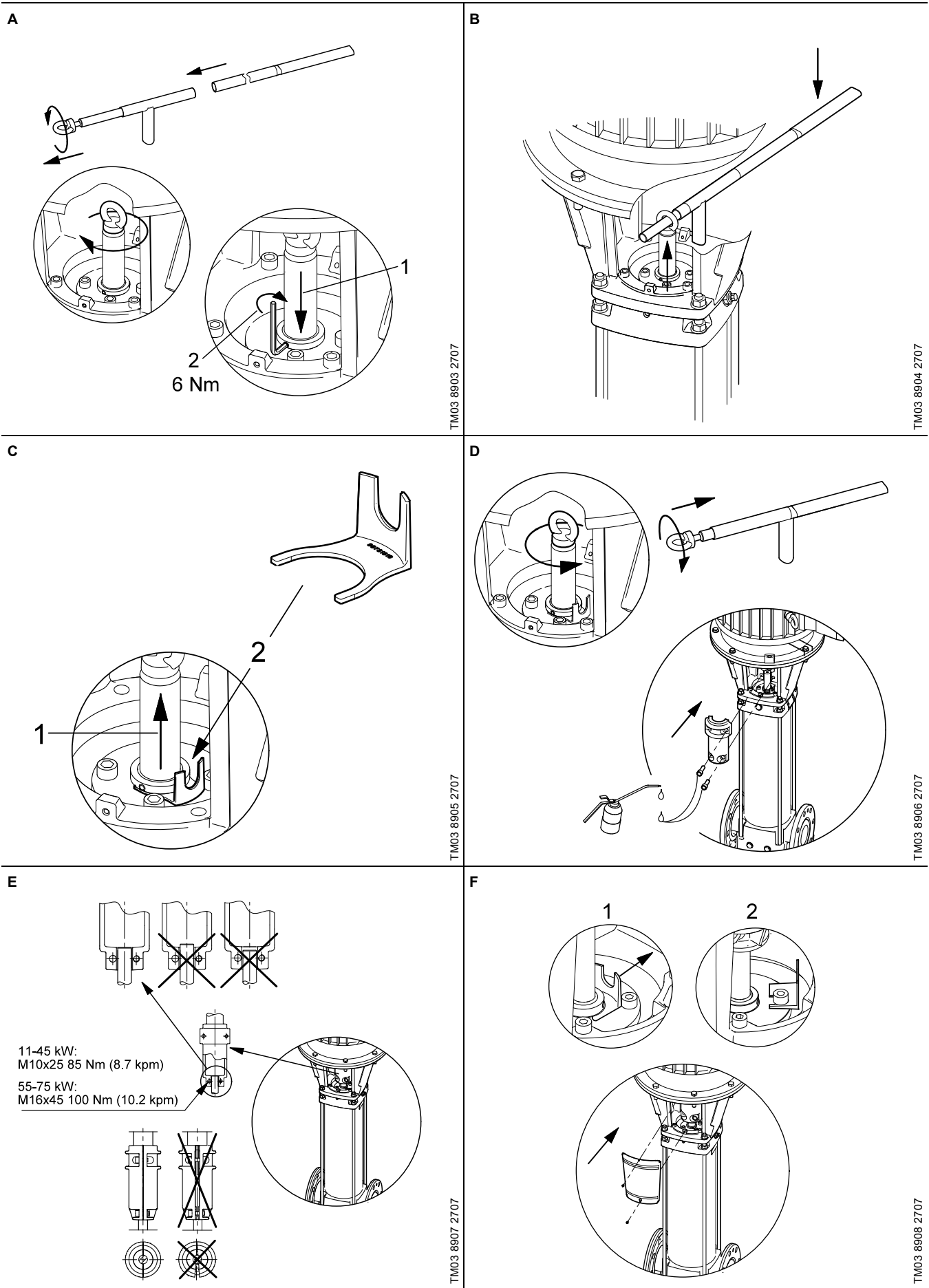
TM02 8515 0304

CR, CRN 32, 45, 64, 90

Fig. H



CR, CRN 120 and 150
Fig. I



Pos.	Designation					
	GB	BG	CZ	DE	DK	EE
1	Adapter flange	Преходен фланец	Mezipříruba	Zwischenflansch	Mellemlange	Ülemineku äärik
1a	Motor stool	Столче на двигателя	Lucernatý motoru	Laterne	Mellemstykke	Mootoripukk
2	Pump head	Глава на помпата	Hlava čerpadla	Kopfstück	Topstykke	Pumba pea
3	Chamber, top	Горна камера	Horní článek	Oberste Kammer	Kammer, øverste	Ülemine vahepesa
3a	Chamber without neck ring	Камера без пръстен	Článek bez mezerového kroužku	Kammer ohne Spaltring	Kammer uden tætningsring	Tihendusrõngata vahepesa
4	Chamber complete	Камера - комплект	Kompletní článek	Kammer komplett	Kammer komplet	Komplektne vahepesa
4a	Chamber with bearing ring	Камера с лагерен пръстен	Článek s kroužkem ložiska	Kammer mit Lagerring	Kammer med lejering	Laagriga vahepesa
5a	Chamber complete	Камера - комплект	Kompletní článek	Kammer komplett	Kammer komplet	Komplektne vahepesa
6	Base	Основа	Patka	Fußstück	Fodstykke	Alus
6a	Stop pin	Шплент	Zarážkový kolík	Sperrzapfen	Rotationslås	Lukustustihvt
6d	Guide plate for base	Водеща плоча за основата	Vodící deska patky	Führungsplatte für Fußstück	Styreplade til fodstykke	Aluse juhtplaat
6g	Bearing ring	Ролков лагер	Kroužek ložiska	Lagerring	Lejering	Alumine laager
7	Coupling guard	Предпазен капак на съединителя	Kryt spojky	Schutzschirm	Skærm	Ühendusmuhvi kate
7a	Screw	Винт	Šroub	Schraube	Skrue	Kruvi
8	Coupling complete	Съединител - комплект	Kompletní spojka	Kupplung komplett	Kobling komplet	Komplektne ühendusmuhv
9	Screw	Винт	Šroub	Schraube	Skrue	Kruvi
10	Shaft pin	Шплент на вала	Válcový kolík	Zylinderstift	Stift	Võlli tihvt
10a	Coupling half					
12	Flange (oval)					
18	Air vent screw	Винт за обезвъздушаване	Odvzdušňovací šroub	Entlüftungsschraube	Luftskrue	Õhutusventiil
19	Pipe plug	Тапа на тръбата	Zátka	Stopfen	Rørprop	Ääriku kork
21	Plug	Пробка	Zátka	Stopfen	Prop	Kork
23	Plug	Пробка	Zátka	Stopfen	Prop	Kork
25	Drain plug	Пробка за дренране	Vypouštěcí zátka	Entleerungsstopfen	Tømmeprop	Tühendusava kork
26	Staybolt	Шпилка	Rozpěrný šroub	Stehbolzen	Støttebolt	Distantspolt
26a	Strap	Лента	Stahovací pás	Spannband	Spændebånd	Klamber
26b	Screw	Винт	Šroub	Schraube	Skrue	Kruvi
26c	Washer	Шайба	Podložka	Unterlegscheibe	Spændeskive	Seib
28	Screw	Винт	Šroub	Schraube	Skrue	Kruvi
28a	Screw	Винт	Šroub	Schraube	Skrue	Kruvi
31	Screw	Винт	Šroub	Schraube	Skrue	Kruvi
32	Washer					
32a	Washer	Шайба	Podložka	Unterlegscheibe	Spændeskive	Seib
35	Screw	Винт	Šroub	Schraube	Skrue	Kruvi
36	Nut	Гайка	Matice	Mutter	Møtrik	Mutter
36a	Nut	Гайка	Matice	Mutter	Møtrik	Mutter
37	O-ring/gasket	О-пръстен/уплътнение	O-kroužek/těsnicí kroužek	O-Ring/Dichtung	O-ring/pakning	O-ring/tihend
38	O-ring	О-пръстен	O-kroužek	O-Ring	O-ring	O-ring
38a	O-ring	О-пръстен	O-kroužek	O-Ring	O-ring	O-ring
39	Gasket					
44	Inlet part complete	Входяща част - комплект	Kompletní vtoková část	Einlaufteil komplett	Indløbsdel komplet	Komplektne imiosa
44a	Inlet part upper					
44b	Inlet part lower					
45	Neck ring	Пръстен	Mezerový kroužek	Spaltring	Tætningsring	Tihendusrõngas
45a	Neck ring complete	Пръстен - комплект	Kompletní mezerový kroužek	Spaltring komplett	Tætningsring komplet	Tihendusrõngas
47	Bearing ring	Търкалящ лагер	Kroužek ložiska	Lagerring	Lejering	Laager
47a	Bearing with driver	Търкалящ лагер с винт за застопоряване	Ložisko s unašečem	Lager mit Mitnehmer	Leje med medbringer	Juhikuga vahelaager
47b	Bearing ring, rotating	Търкалящ лагер - въртящ	Kroužek ložiska otočný	Lagerring, rotierend	Lejering, roterende	Laager, pöörlev
47c	Bush	Лагерна втулка	Pouzdro	Buchse	Bøsning	Puks
47d	Retaining ring	Спирателен пръстен	Přidržený kroužek	Haltering	Låsering	Lukustusrõngas
47e	Retaining ring	Спирателен пръстен	Přidržený kroužek	Haltering	Låsering	Lukustusrõngas
48	Split cone nut	Гайка на разрязания конус	Matice upínacího pouzdra	Mutter für Klemmbuchse	Møtrik for klembøsning	Lõhismutter
49	Impeller	Работно колело	Oběžné kolo	Laufgrad	Løber	Tööratas
49a	Impeller	Работно колело	Oběžné kolo	Laufgrad	Løber	Tööratas
49b	Split cone	Разрязан конус	Upínací pouzdro	Klemmbuchse	Klembøsning	Survepuks
49c	Wear ring	Износващ се пръстен	Těsnicí kruh	Verschleißring	Slidring	Kulutusrõngas
50a	Outlet part/top guide vanes					
51	Pump shaft	Вал на помпата	Hřídel čerpadla	Pumpenwelle	Pumpeaksel	Pumba võll
55	Sleeve	Външна втулка	Vnější plášť	Mantel	Svøb	Kattesärk
56	Base plate	Основна плоча	Základová deska	Grundplatte	Fodplade	Alusplaat
56a	Base plate	Основна плоча	Základová deska	Grundplatte	Fodplade	Alusplaat
56c	Screw	Винт	Šroub	Schraube	Skrue	Kruvi
56d	Washer	Шайба	Podložka	Unterlegscheibe	Spændeskive	Seib
57	O-ring	О-пръстен	O-kroužek	O-Ring	O-ring	O-ring
58	Seal carrier	Носач на уплътнението	Unašeč ucpávky	Halter für Wellenabdichtung	Holder for akseltætning	Tihendi kandur
58a	Screw	Винт	Šroub	Schraube	Skrue	Kruvi
60	Spring	Пружина	Pružina	Feder	Fjeder	Vedru
61	Seal driver	Водач	Unašeč	Mitnehmer	Medbringer	Võllitihendi juhik
62	Stop ring	Зегерка	Dorazový kroužek	Stopring	Stopring	Lukustusrõngas
64	Spacing pipe	Дистанционна тръба	Distanční pouzdro	Distanzhülse	Afstandsbøsning	Distantspuks
64a	Spacing pipe	Дистанционна тръба	Distanční pouzdro	Distanzhülse	Afstandsbøsning	Distantspuks
64b	Spacing pipe					
64c	Clamp, splined	Шлицова клема	Drážková spona	Spannstück, Vielnut	Spændestykke, spline	Soontega puks
64d	Spacing pipe	Дистанционна тръба	Distanční pouzdro	Distanzhülse	Afstandsbøsning	Distantspuks
65	Neck ring retainer	Държач на пръстена	Přidrčka mezerového kroužku	Halter für Spaltring	Holder for tætningsring	Tihendusrõnga klamber
66	Washer	Шайба	Podložka	Unterlegscheibe	Spændeskive	Seib
66a	Washer	Шайба	Podložka	Unterlegscheibe	Spændeskive	Seib

Pos.	Designation					
	GB	BG	CZ	DE	DK	EE
66b	Lock washer	Контра - шайба	Pojistná podložka	Sicherungsblech	Läseskive	Vedruselib
67	Nut/screw	Гайка/Винт	Matice/Šroub	Mutter/Schraube	Møtrik/Skrue	Mutter/Kruvi
69	Spacing pipe	Дистанционная труба	Distanční pouzdro	Distanzhülse	Afstandsbøsning	Distantspuks
76	Nameplate set	Табела - комплект	Sada štítků	Schildersatz	Skiltesæt	Pumba sildik
76a	Rivet					
77	Pump head cover					
100	O-ring	O-пръстен	O-kroužek	O-Ring	O-ring	O-ring
105	Shaft seal	Уплътнение на вала	Hřidelová ucpávka	Wellenabdichtung	Akseltætning	Võllitihend
201	Flange	Фланец	Příruba	Flansch	Flange	Aärak
203	Retaining ring	Спирателен пръстен	Přidrzný kroužek	Haltering	Låsering	Lukustusrõngas

Pos.	Designation				
	ES	FI	FR	GR	HR
1	Brida acoplamiento	Välilaippa	Bride d'adaptation	Φλάντζα προσαρμογής	međuprirubnica
1a	Acoplamiento	Moottorin jalusta	Lanterne moteur	Στήριγμα κινητήρα	međukomad
2	Cabezal bomba	Pumppupää	Tête de pompe	Κεφαλή αντλίας	glava crpke
3	Cámara superior	Pesäilylin	Chambre supérieure	Θάλαμος, άνω	gornja komora
3a	Cámara sin anillo de junta	Pesä, ilman kaularengasta	Chambre sans bague d'étanchéité	Θάλαμος χωρίς δακτύλιο λαίμου	komora bez rascijepljenog prstena
4	Cámara completa	Täydellinen pesä	Chambre complète	Θάλαμος πλήρης	kompletna komora
4a	Cámara con anillo cojinete	Pesä laakerirenkailla	Chambre avec bague de palier	Θάλαμος με δακτύλιο εδράνου	komora s ležajnim prstenom
5a	Cámara completa	Täydellinen pesä	Chambre complète	Θάλαμος πλήρης	kompletna komora
6	Base	Jalkakappale	Pied de pompe	Βάση	nožni dio
6a	Pasador tope	Pidätintappi, lukitustappi	Goupille d'arrêt	Πείρος συγκράτησης	zatic
6d	Placa guía para base	Ohjauslevy jalustaan	Plaque pour pied de pompe	Πλάκα οδηγός για τη βάση	vodilica za nožni dio
6g	Anillo cojinete	Laakerirengas	Joint de palier	Δακτύλιος εδράνου	prsten ležaja
7	Protector acoplamiento	Kytkimien suoja	Protège-accouplement	Προφυλακτήρας συνδέσμου	zaštitna spojke
7a	Tornillo	Ruuvi	Vis	Κοχλίας	vijak
8	Acoplamiento completo	Täydellinen kytkin	Accouplement complet	Σύνδεσμος πλήρης	spojka kompletna
9	Tornillo	Ruuvi	Vis	Κοχλίας	vijak
10	Pasador eje	Akselitappi	Goupille cylindrique	Πείρος άξονα	zatic vratila
18	Tornillo purga aire	Iltmausruuvi	Vis de purge	Τάπα εξαερισμού	odzračni vijak
19	Tapón tubería	Putkitulppa	Bouchon	Τάπα σωλήνα	čep
21	Tapón	Tulppa	Bouchon	Τάπα	čep
23	Tapón	Tulppa	Bouchon	Τάπα	čep
25	Tapón purga	Tyhjennystulppa	Bouchon de vidange	Τάπα αποστράγγισης	čep za pražnjenje
26	Espárrago sujeción	Pinnapultti	Goujon	Κοχλίες συγκράτησης	sprežni vijak
26a	Tirante	Haka (säppi)	Tirant d'assemblage	Τιράντα	zatezna traka
26b	Tornillo	Ruuvi	Vis	Κοχλίας	vijak
26c	Arandela	Aluslevy	Rondelle	Ροδέλα	podložna pločica
28	Tornillo	Ruuvi	Vis	Κοχλίας	vijak
28a	Tornillo	Ruuvi	Vis	Κοχλίας	vijak
31	Tornillo	Ruuvi	Vis	Κοχλίας	vijak
32a	Arandela	Aluslevy	Rondelle	Ροδέλα	podložna pločica
35	Tornillo	Ruuvi	Vis	Κοχλίας	vijak
36	Tuerca	Mutteri	Ecrou	Περικόχλιο	matica
36a	Tuerca	Mutteri	Ecrou	Περικόχλιο	matica
37	Junta tórica/junta	O-rengas tiiviste	Joint/bague	Δακτύλιος-Ο/παρέμβυσμα	O-prsten/brtva
38	Junta tórica	O-rengas	Joint	Δακτύλιος-Ο	O-prsten
38a	Junta tórica	O-rengas	Joint	Δακτύλιος-Ο	O-prsten
44	Parte aspiración completa	Täydellinen sisäosa	Partie aspiration complète	Πλήρες εσωτερικό μέρος	ulazni dio kompletan
45	Anillo tope	Kaularengas	Bague d'étanchéité	Δακτύλιος λαίμου	rascijepljeni prsten
45a	Anillo tope completo	Täydellinen kaularengas	Bague d'étanchéité complète	Δακτύλιος λαίμου πλήρης	rascijepljeni prsten kompletan
47	Anillo cojinete	Laakerirengas	Bague de palier	Δακτύλιος εδράνου	prsten ležaja
47a	Cojinete con engranaje	Ohjainlaakeri	Bague de palier avec driver	Εδρανο με οδηγό	prsten ležaja sa zahvatnikom
47b	Anillo cojinete giratorio	Laakerirengas, pyörivä	Bague de palier tournante	Δακτύλιος εδράνου στρεφόμενος	prsten ležaja, rotirajući
47c	Manguito	Holkki	Douille	Φωλιά	tuljak
47d	Anillo cierre	Lukitusrengas	Bague de blocage	Δακτύλιος συγκράτησης	pidržni prsten
47e	Anillo cierre	Lukitusrengas	Bague de blocage	Δακτύλιος συγκράτησης	pidržni prsten
48	Tuerca casquillo cónico	Kartioholkki Mutteri	Ecrou de cône de serrage	Περικόχλιο διαιρούμενου κώνου	matica za konusni prsten
49	Impulsor	Juoksupyörä	Roue	Πτερωτή	rotor
49a	Impulsor	Juoksupyörä	Roue	Πτερωτή	rotor
49b	Casquillo cónico	Kartioholkki	Cône de serrage	Διαιρούμενος κώνος	konusni prsten
49c	Anillo desgaste	Kulutusringas	Bague d'usure	Δακτύλιος φθοράς	potrošni prsten
51	Eje bomba	Pumppuakseli	Arbre de pompe	Άξονας αντλίας	vratilo crpke
55	Camisa exterior	Ulompi vaippa	Chemise	Εξωτερικό χιτώνιο	plašt
56	Placa base	Jalustalevy	Plaque de base	Πλάκα βάσης	osnovna ploča
56a	Placa base	Jalustalevy	Plaque de base	Πλάκα βάσης	osnovna ploča
56c	Tornillo	Ruuvi	Vis	Κοχλίας	vijak
56d	Arandela	Aluslevy	Rondelle	Ροδέλα	podložna pločica
57	Junta tórica	O-rengas	Joint	Δακτύλιος-Ο	O-prsten
58	Soporte cierre	Tiivistekannatin	Toc d'entraînement	Φορέας στυπιοθλίπτη	držač brtve
58a	Tornillo	Ruuvi	Vis	Κοχλίας	vijak
60	Muelle	Jousi	Ressort	Ελατήριο	opruga
61	Guía de cierre	Tiivisteen vetotappi	Toc d'entraînement	Οδηγός στεγανοποιητικού	zahvatnik
62	anillo de tope	Pysäytinrengas	Bague d'arrêt	Τερματικός δακτύλιος	zaustavni prsten
64	Casquillo espaciador	Väliholkki	Douille d'entretoise	Αποστάτης	odstojnik
64a	Casquillo espaciador	Väliholkki	Douille d'entretoise	Αποστάτης	odstojnik
64c	Casquillo ranurado	Kiristin, rihlattu	Pièce de serrage	Στεφάνη με εγκοπές	zatezni komad, višeutorni
64d	Casquillo espaciador	Väliholkki	Douille entretoise	Αποστάτης	odstojnik
65	Retén anillo junta	Kaulusrenkaan pidin	Support pour bague d'étanchéité	Στήριγμα δακτύλιου λαίμου	držač za rascijepljeni prsten

Pos.	Designation				
	ES	FI	FR	GR	HR
66	Arandela	Aluslevy	Rondelle	Ροδέλα	podložna pločica
66a	Arandela	Aluslevy	Rondelle	Ροδέλα	podložna pločica
66b	Arandela cierre	Lukitusaluslevy	Rondelle de blocage	Συγκράτηση ροδέλας	sigurnosna pločica
67	Tuerca/Tornillo	Mutteri/Ruuvii	Ecrou/Vis	Περικόχλιο/Κοχλίας	matica/vijak
69	Casquillo espaciador	Väliholkki	Douille entretoise	Αποστάτης	odstojnik
76	Juego placa identificación	Ärvokilpisarja	Plaque d'identification	Σετ πινακίδας	natpisne pločice
100	Junta tórica	O-rengas	Joint	Δακτύλιος-O	O-prsten
105	Cierre	Akselitiiviste	Garniture mécanique	Στυπιοθλίπτης	brtva vratila
201	Brida	Laippa	Bride	Φλάντζα	prirubnica
203	Anillo cierre	Lukitusrengas	Bague de blocage	Δακτύλιος συγκράτησης	pridržni prsten

Pos.	Designation				
	HU	IT	LT	NL	PL
1	csatlakozó karima	Flangie adattatrici	Tarpinis flanšas	Adapterflens	Kołnierz przejściowy
1a	motortartó közdarab	Lanterna del motore	Variklio atrama	Lantaarnstuk	Podstawa silnika
2	szivattyúfej	Testa pompa	Siurblio galvutė	Pompkop	Głowica pompy
3	felső kamra	Camera superiore	Viršutinė kamera	Bovenste kamer	Komora górna
3a	közkamra résgyűrű nélkül	Camera senza collarino	Kamera be kaklelio žiedo	Kamer zonder spaltring	Komora bez pierścienia bieżnego
4	komplett közkamra	Camera completa	Kamera	Kamer compleet	Komora, kompletna
4a	csapágys közkamra	Camera con cuscinetto	Kamera su guolio žiedu	Kamer met lager	Komora z pierścieniem oporowym łożyska
5a	komplett közkamra	Camera completa	Kamera	Kamer compleet	Komora, kompletna
6	talp	Base	Korpusas	Voetstuk	Podstawa
6a	rögzítő túske	Molla di arresto	Fiksatorius	Anti rotatie stift	Kolek ustalający
6d	áramlásrendező tányér	Guida per basamento	Korpuso centravimo plokštelė	Geleideplaat voor voetstuk	Dolna płyta kierująca
6g	csapágygyűrű	Cuscinetto	Atraminis guolis	Lager	Pierścień oporowy łożyska
7	tengelykapcsoló burkolat	Giunti di protezione	Movos apsauga	Koppeling beschermer	Ośłona sprzęgła
7a	csavar	Vite	Varžtas	Schroef	Śruba
8	komplett tengelykapcsoló	Giunto completo	Visa mova	Koppeling compleet	Sprzęgło, komplet
9	csavar	Vite	Varžtas	Schroef	Śruba
10	tengelyretesz	Molla albero	Veleno kaištis	Stift	Klin mocujący wału
18	légtelenítő csavar	Vite della ventola	Oro išleidimo angos varžtas	Ontluchtungs-schroef	Śruba odpowietrzająca
19	karima zárócsavar	Tappo	Vamzdžio kamštelis	Plug	Korek
21	zárócsavar	Tappo	Kamštelis	Plug	Korek
23	zárócsavar	Tappo	Kamštelis	Plug	Korek
25	űrítőcsavar	Tappo spurgo	Skysčio išleidimo kamštelis	Aftapplug	Korek spustowy
26	összefogó rúd	Tiranti	Sąvarža	Trekstag	Śruba ściągająca
26a	összefogó pánt	Tirante	Juostinė apkaba	Spanband	Ściąg
26b	csavar	Vite	Varžtas	Schroef	Śruba
26c	távtartó	Rondella	Poveržlė	Sluitring	Podkładka
28	csavar	Vite	Varžtas	Schroef	Śruba
28a	csavar	Vite	Varžtas	Schroef	Śruba
31	csavar	Vite	Varžtas	Schroef	Śruba
32a	távtartó	Rondella	Poveržlė	Sluitring	Podkładka
35	csavar	Vite	Varžtas	Schroef	Śruba
36	csavaranya	Dado	Veržlė	Moer	Nakrętka
36a	csavaranya	Dado	Veržlė	Moer	Nakrętka
37	O-gyűrű/tömítés	O ring/guranizione	Žiedas/tarpiklis	O-ring pakking	Pierścień O-ring/uszczelka
38	O-gyűrű	O ring	Žiedas	O-ring	Pierścień O-ring
38a	O-gyűrű	O ring	Žiedas	O-ring	Pierścień O-ring
44	komplett belső rész	Parte interna completa	Visa įsiurbimo dalis	Inlaatdeel compleet	Komora wlotowa
45	résgyűrű	Collarino	Kakliuko žiedas	Spaltring	Pierścień bieżny
45a	komplett résgyűrű	Collarino completo	Visas kakliuko žiedas	Spaltring compleet	Pierścień bieżny, obrotowy
47	csapágygyűrű	Cuscinetto	Guolis	Lager	Pierścień oporowy łożyska
47a	csapágy, megvezetővel	Cuscinetto con guida	Ištātoma guolis	Lager met meenemer	Łożysko z zabierakiem
47b	csapágygyűrű, forgórész	Cuscinetto rotante	Besisukantis guolis	Lager roterend	Pierścień łożyskowy
47c	persely	Boccola	Įvorė	Bus	Tulejka
47d	rögzítő gyűrű	Anello di arresto	Laikantysis žiedas	Borgring	Pierścień mocujący
47e	rögzítő gyűrű	Anello di arresto	Laikantysis žiedas	Borgring	Pierścień mocujący
48	szorítókúp anyá	Dado bussola conica	Skelta kūginė veržlė	Klembusmoer	Nakrętka tulei stożkowej
49	járókerék	Girante	Darbaratis	Waaier	Wirnik
49a	járókerék	Girante	Darbaratis	Waaier	Wirnik
49b	szorítókúp	Bussola conica	Skelta kūginė įvorė	Klembus	Tuleja stożkowa
49c	kopógyűrű	Anello di usura	Dėvėjimosi žiedas	Slijtring	Pierścień bieżny
51	szivattyú tengely	Albero pompa	Siurblio velenas	Pompas	Wał pompy
55	köpenycső	Camicia esterna	Išorinis cilindras	Mantel	Plaszcz
56	alaplapp	Basamento	Korpuso pagrindas	Voetplaat	Podstawa
56a	alaplapp	Basamento	Korpuso pagrindas	Voetplaat	Podstawa
56c	csavar	Vite	Varžtas	Schroef	Śruba
56d	távtartó	Rondella	Poveržlė	Sluitring	Podkładka
57	O-gyűrű	O ring	Žiedas	O-ring	Pierścień O-ring
58	tömítés zárófedél	Porta tenuta	Riebokšlio laikiklis	Houder voor asafdichting	Mocowanie uszczelnienia
58a	csavar	Vite	Varžtas	Schroef	Śruba
60	rugó	Molla	Spyruoklė	Veer	Sprężyna
61	vezető gyűrű	Guida guarnizione	Riebokšlio tarpiklis	Meenemer	Zabierak
62	stopgyűrű	Anello di arresto	Fiksavimo žiedas	Stopring	Pierścień stopowy
64	távtartó gyűrű	Tubo distanziale	Tarpinė įvorė	Afstandsbus	Tulejka dystansowa
64a	távtartó gyűrű	Tubo distanziale	Tarpinė įvorė	Afstandsbus	Tulejka dystansowa
64c	hornyos rögzítőgyűrű	Giunto	Apkaba, skelta	Spanstuk, splined	Tulejka wielowypustowa
64d	távtartó gyűrű	Tubo distanziale	Tarpinė įvorė	Afstandsbus	Tulejka dystansowa
65	résgyűrű rögzítő	Fermo per collarino	Kakliuko žiedo laikiklis	Houder voor spaltring	Tulejka dystansowa

Pos.	Designation				
	HU	IT	LT	NL	PL
66	távtartó	Rondella	Poveržlė	Sluitring	Podkładka
66a	távtartó	Rondella	Poveržlė	Sluitring	Podkładka
66b	rögzítő alátét	Blocco per rondella	Fiksuojamoji poveržlė	Borgring	Podkładka zabezpieczająca
67	csavaranya/csavar	Dado/Vite	Fiksuojamoji veržlė/Varžtas	Moer/Schroef	Nakrętka/Śruba
69	távtartó gyűrű	Tubo distanziale	Tarpinė įvorė	Afstandsbus	Tulejka dystansowa
76	adattábla készlet	Targhetta	Vardinė plokštelė	Typeplaat set	Tabliczka znamionowa
100	O-gyűrű	O ring	Žiedas	O-ring	Pierścień O-ring
105	tengelytömítés	Tenuta meccanica	Riebokšlis	Asafdichting	Uszczelnienie wału
201	karima	Flangia	Flanšas	Flens	Kolnierz
203	rögzítő gyűrű	Blocca flangia	Laikantysis žiedas	Borgring	Pierścień mocujący

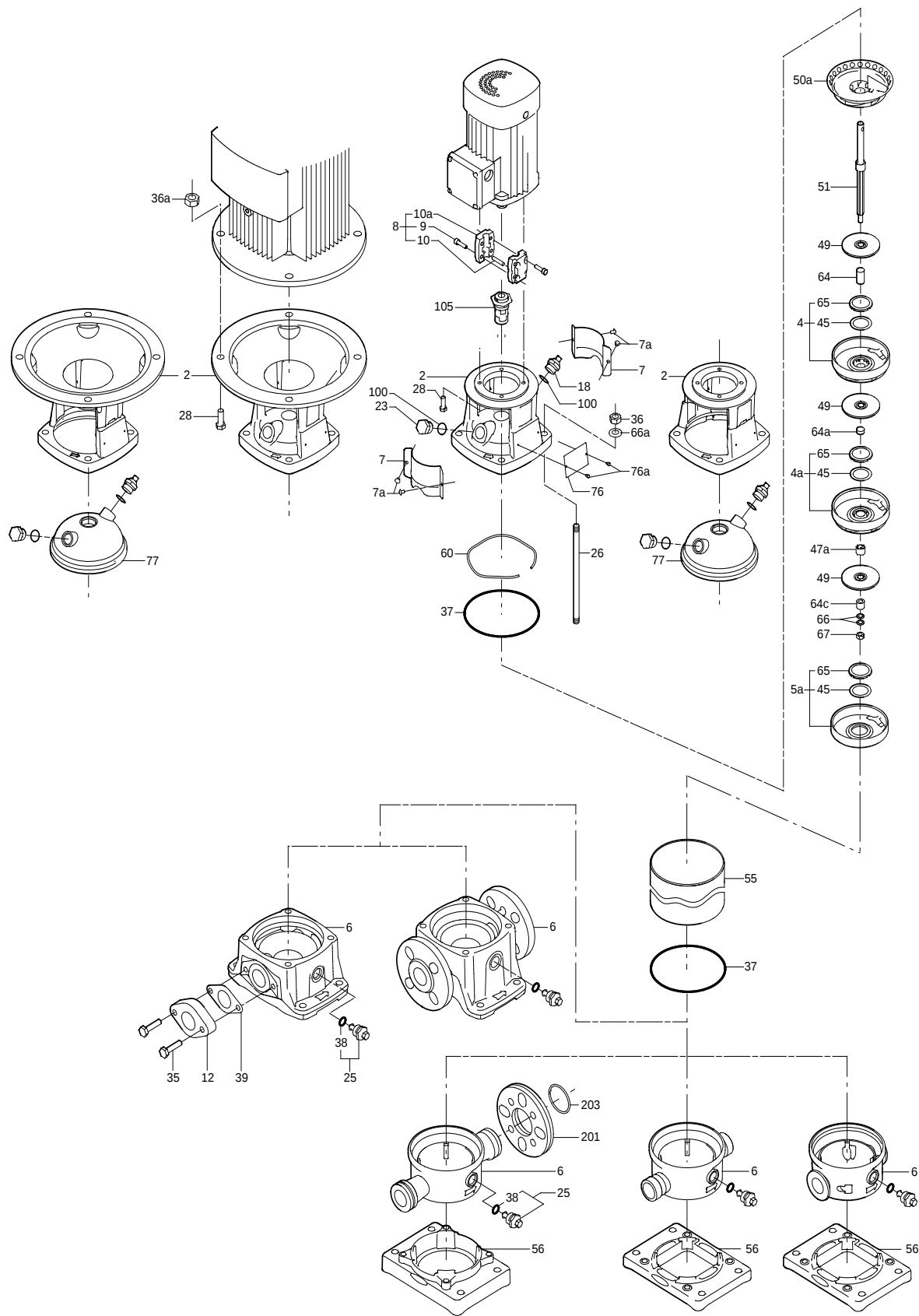
Pos.	Designation				
	PT	RO	RS	RU	SE
1	Flange do adaptador	Flanșa de adaptare	Prirubnica podešavanja	Промежуточный фланец	Mellanfläns
1a	Adaptador do motor	Scaunul motorului	Oslonac motora	Фонарь	Mellanstycke
2	Cabeça da bomba	Capul pompei	Glava pumpe	Головная часть насоса	Toppstycke
3	Câmara superior	Camera superioară	Gornje kućište	Верхняя камера	Kammare, övre
3a	Câmara sem aro	Camera fără inel de uzură	Kućište bez oslonog prstena	Камера без щелевого уплотнения	Mallankammare utan tättningsring
4	Câmara completa	Camera completă	Kompletno kućište	Камера в сборе	Kammare komplett
4a	Câmara com casquilho	Camera cu lagăr	Kućište sa ležišnim prstenom	Камера с подшипниковым кольцом	Mellankammare med lager
5a	Câmara completa	Camera completă	Kompletno kućište	Камера в сборе	Kammare komplett
6	Base	Baza pompei	Element oslonca	Основание	Fotstycke
6a	Pino	Știft de blocare	Zaustavni štift	Стопорный штифт	Stoppsprint
6d	Prato-guia da base	Placa de ghidaj pentru baza pompei	Vodeča ploča osnove	Направляющая плита для опоры/лапы	Styrplatta till fotstycke
6g	Casquilho	Lagăr	Prsten kugličnog ležaja	Подшипниковое кольцо	Bottenlager
7	Protecção do acoplamento	Apărătoare de protecție	Zaštita spojnice	Защитный кожух	Kopplingsskärm
7a	Parafuso	Șurub	Zavrtanj	Винт	Skruv
8	Acoplamento completo	Cuplaj complet	Komplet spojnice	Муфта в сборе	Koppling komplett
9	Parafuso	Șurub	Zavrtanj	Винт	Skruv
10	Pino do veio	Știftul axului	Cilindrični štift	Цилиндрический штифт	Cylinderstift
18	Parafuso de purga	Șurub de aerisire	Zavrtanj za odzračivanje	Винт вентиляционного отверстия	Luftskruv
19	Bujão da tubagem	Dop filetat pentru țeavă	Žep cevi	Заглушка	Rörpropp
21	Bujão da tubagem	Dop	Čep	Заглушка	Propp
23	Bujão da tubagem	Dop	Čep	Заглушка	Propp
25	Bujão de drenagem	Dop (bușon) de golire	Drenažni čep	Заглушка сливного отверстия	Tömningspropp
26	Perno	Prezoane	Osnovni zavrtanj	Стяжной болт	Stödbult
26a	Tirante	Clemă	Osigurač	Стяжная лента	Spännband
26b	Parafuso	Șurub	Zavrtanj	Винт	Skruv
26c	Anilha	Șaibă	Podloška	Шайба	Bricka
28	Parafuso	Șurub	Zavrtanj	Винт	Skruv
28a	Parafuso	Șurub	Zavrtanj	Винт	Skruv
31	Parafuso	Șurub	Zavrtanj	Śruba	Skruv
32a	Anilha	Șaibă	Podloška	Шайба	Bricka
35	Parafuso	Șurub	Zavrtanj	Винт	Skruv
36	Fêmea	Piuliță	Matica	Гайка	Mutter
36a	Fêmea	Piuliță	Matica	Гайка	Mutter
37	O-ring/junta	O-ring/garnitură	O-zaptivni prsten	Уплотнительное кольцо круглого сечения/прокладка	O-ring/packning
38	O-ring	O-ring	O-prsten	Уплотнительное кольцо круглого сечения	O-ring
38a	O-ring	O-ring	O-prsten	Уплотнительное кольцо круглого сечения	O-ring
44	Aspiração completa	Parte de intrare completă	Komplet ulazni deo	Деталь всасывающей полости в сборе	Inloppsdel komplett
45	Aro	Inel de etanșare	Osloni prsten	Щелевое уплотнение	Tättningsring
45a	Aro completo	Inel de etanșare complet	Komplet oslonog prstena	Щелевое уплотнение в сборе	Tättningsring, komplett
47	Casquilho	Lagăr	Prsten kugličnog ležaja	Кольцо подшипника	Lager
47a	Casquilho com guia	Lagăr cu cuzinet	Kuglični ležaj sa prstenom	Подшипник с "поводком"	Lager med medbringare
47b	Casquilho rotativo	Lagăr rotativ	Kuglični ležaj rotirajući	Вращающееся кольцо подшипника	Lagerring, roterande
47c	Manga	Bucșa	Čaura	Втулка	Bussning
47d	Retentor	Inel de blocare	Noseći prsten	Стопорное кольцо	Låsbricka
47e	Retentor	Inel de blocare	Noseći prsten	Стопорное кольцо	Låsbricka
48	Fêmea cônica	Piuliță cu strângere pe con	Matica konusne čaure	Гайка для зажимной втулки	Mutter för klämbussning
49	Impulsor	Rotor	Obrtno kolo pumpe	Рабочее колесо	Pumphjul
49a	Impulsor	Rotor	Obrtno kolo pumpe	Рабочее колесо	Pumphjul
49b	Casquilho cónico	Con de strângere	Konusna čaura	Разжимная втулка	Klämbussning
49c	Aro de desgaste	Inel de uzură	Habajući prsten	Антифрикционное кольцо	Slitring
51	Veio	Axul pompei	Osovina pumpe	Вал насоса	Pumpaxel
55	Camisa exterior	Manta exterioră	Spoljna zaštita	Кожух	Mantel
56	Base	Placa de bază	Osnovna ploča	Плита-основание	Fotstycke
56a	Base	Placa de bază	Osnovna ploča	Плита-основание	Fotstycke
56c	Parafuso	Șurub	Zavrtanj	Śruba	Skruv
56d	Anilha	Șaibă	Podloška	Шайба	Bricka
57	O-ring	O-ring	O-prsten	Уплотнительное кольцо круглого сечения	O-ring
58	Suporte do empanque	Suport pentru etanșare	Kućište zaptivanja osovine	Базовая деталь уплотнения вала	Hållare för axeltätning
58a	Parafuso	Șurub	Zavrtanj	Винт	Skruv
60	Mola	Arc	Opruga	Пружина	Fjäder
61	Batente do espaçador	Distanțier pentru etanșarea mecanică	Pogonaš zaptivaca	Пружина торцового уплотнения	Medbringare
62	Mola de encosto	Semering	Zaustavni prsten	Стопорное кольцо	Stoppring
64	Espaçador	Tub distanțier	Odstojna čaura	Промежуточная втулка	Avståndsbussning
64a	Espaçador	Tub distanțier	Odstojna čaura	Промежуточная втулка	Avståndsbussning
64c	Casquilho escatelado	Suport canelat	Osigurač saumetkom	Шлицевая зажимная гильза	Avståndsbussning (spline)
64d	Espaçador	Tub distanțier	Odstojna čaura	Промежуточная втулка	Avståndsbussning
65	Retentor do aro	Suport pentru inel de etanșare	Držač oslonog prstena	Базовая деталь щелевого уплотнения	Hållare för tättningsring

Pos.	Designation				
	PT	RO	RS	RU	SE
66	Anilha	Şaibă	Podloška	Шайба	Bricka
66a	Anilha	Şaibă	Podloška	Шайба	Bricka
66b	Anilha retentora	Şaibă de blocare	Osiguravajuća podloška	Стопорная шайба	Låsbricka
67	Fêmea/Parafuso	Piuliţă/Şurub	Matica/Zavrtanj	Гайка/Şruba	Mutter/Skruv
69	Espaçador	Tub distanţier	Odstojna čaura	Промежуточная втулка	Avståndsbusning
76	Chapa de identificação	Eticheta	Pločica označavanja	Фирменная табличка с техническими параметрами в сборе	Typskylt
100	O-ring	O-ring	O-prsten	Уплотнительное кольцо круглого сечения	O-ring
105	Empanque mecânico	Etanşare mecanică	Zaptivač osovine	Уплотнение вала	Axeltätning
201	Flange	Flanşa	Prirubnica	Фланец	Fläns
203	Anel retentor	Inel de blocare	Osioni prsten	Стопорное кольцо	Låsbricka

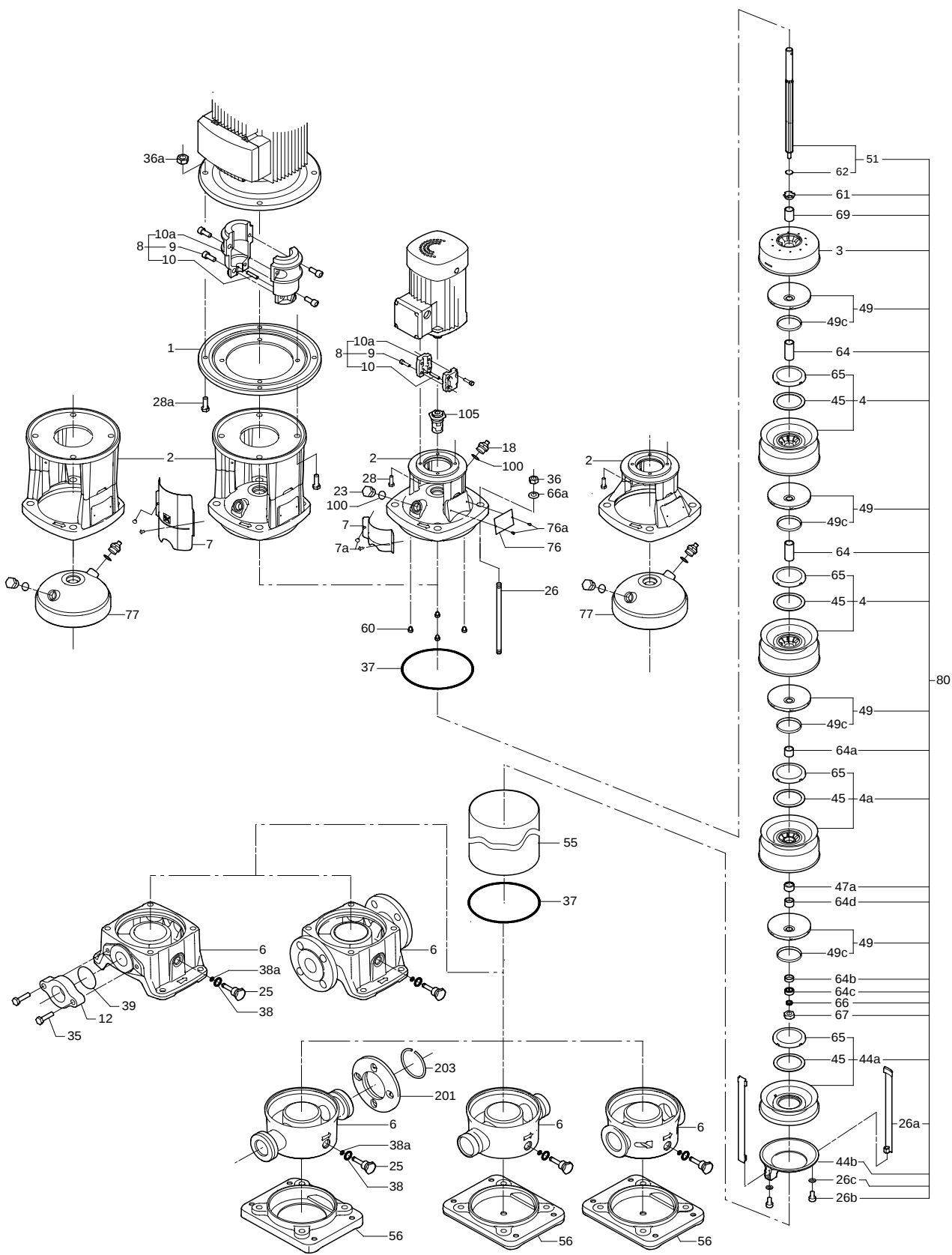
Pos.	Designation				
	SI	SK	TR	UA	KZ
1	Vmesna prirobnica	Medzipríruba	Küçültme flanşı	Перехідник	Аралық фланец
1a	Konzola motorja	Lucerna	Motor oturağı	Опора электродвигуна	Шам
2	Glava črpalke	Horné teleso čerpadla	Pompa başı	Головна частина насоса	Сорғының жоғарғы бөлігі
3	Najvišja stopnja	Horná komora	Bölme, üst	Камера, верх	Жоғарғы камера
3a	Stopnja brez režnega obroča	Komora bez rozperného krúžka	Boyun halkasız bölme	Камера без ущільнювального кільця	Саңылаусыз тығыздау камерасы
4	Stopnja komplet	Kompletná komora	Komple bölme	Набір камер	Жинақталған камера
4a	Stopnja z ležajnim obročom	Komora s ložiskovým krúžkom	Yatak halkalı bölme	Камера з кільцем підшипника	Подшипник сақинасы бар камера
5a	Stopnja komplet	Kompletná komora	Komple bölme	Набір камер	Жинақталған камера
6	Podnožje črpalke	Spodné teleso čerpadla	Taban	Основа	Табаны
6a	Zaporni zatič	Uzáverný kolík	Stop pimi	Штифт зупинки	Ұстағыш штифт
6d	Vodilna plošča za podnožje črpalke	Vodiaca platňa pre spodné teleso	Taban için kılavuz plakası	Направляюча плита для основи	Тіреулердің/аяқтардың бағыттағыш плитасы
6g	Ležajni obroč	Ložiskový krúžok	Yatak halkası	Кільце опори	Подшипник сақина
7	Zaščitni pokrov	Ochranný kryt spojky	Kaplin koruması	Захисний кожух	Қорғағыш қаптама
7a	Vijak	Skrutka	Vida	Гвинт	Винт
8	Sklopka komplet	Kompletná spojka	Komple kaplin	Муфта в сборі	Жинақталған муфта
9	Vijak	Skrutka	Vida	Гвинт	Винт
10	Cilindrični zatič	Zylindrický kolík	Şaft pimi	Штифт валу	Цилиндрлі штифт
18	Odzračevalni vijak	Odvzdušňovacia skrutka	Hava tahliye vidası	Гвинт вентиляційного клапана	Желдету саңылауының винті
19	Čep	Zátka	Boru tapası	Труба заглушка	Тығын
21	Čep	Zátka	Tapa	Кабельний ввід	Тығын
23	Čep	Zátka	Tapa	Кабельний ввід	Тығын
25	Izpraznjevalni čep	Vypúšťacia skrutka	Tahliye tapası	Пробка дренажного отвору	Ағызу саңылауының тығыны
26	přitrževalni vijak	Ťahovacie skrutky	Sürücülü yatak halkası	Шпилька	Тарту бурандасы
26a	Zatezni pas	Ťahovacie spony	Şerit	Стрічка	Тартқыш бау
26b	Vijak	Skrutka	Vida	Гвинт	Винт
26c	Podložka	Podložka	Pul	Шайба	Шайба
28	Vijak	Skrutka	Vida	Гвинт	Винт
28a	Vijak	Skrutka	Vida	Гвинт	Винт
31	Vijak	Skrutka	Vida	Гвинт	Винт
32a	Podložka	Podložka	Pul	Шайба	Шайба
35	Vijak	Skrutka	Vida	Гвинт	Винт
36	Matica	Matica	Somun	Гайка	Гайка
36a	Matica	Matica	Somun	Гайка	Гайка
37	O-tesnilo/ tesnilo	O-krúžok/tesnenie	O-ring/conta	Ущільнювальне кільце/прокладка	Дөңгелек қималы тығыздағыш сақина/ аралық қабат
38	O-tesnilo	O-krúžok	O-ring	Ущільнювальне кільце	Дөңгелек қималы тығыздағыш сақина
38a	O-tesnilo	O-krúžok	O-ring	Ущільнювальне кільце	Дөңгелек қималы тығыздағыш сақина
44	Vstopni del komplet	Vtoková časť komplet	Komple emme kısmı	Всмоктуюча частина повна	Жиналған сорғыш қуыстағы бөлшек
45	Režni obroč	Tesniaci krúžok	Boyun halkası	Ущільнювальне кільце	Саңылау тығыздағыш
45a	Režni obroč komplet	Tesniaci krúžok komplet	Komple boyun halkası	Ущільнювальне кільце повне	Жинақталған саңылау тығыздағыш
47	Ležajni obroč	Ložiskový krúžok	Yatak halkası	Кільце опори	Подшипник сақинасы
47a	Ležaj z nosilcem	Ložisko s unášačom	Sürücülü yatak halkası	Опора з двигуном	"Жібі бар" подшипник
47b	Ležajni obroč, rotirajoč	Ložiskový krúžok, rotujúci	Yatak halkası, döner	Кільце опори, що обертається	Подшипниктің айналыс сақинасы
47c	Puša	Medzikrú-žok/vložka	Burç	Втулка	Втулка
47d	Držalni obroč	Držný krúžok	Tespit halkası	Стопорне кільце	Ұстағыш сақина
47e	Držalni obroč	Držný krúžok	Tespit halkası	Стопорне кільце	Ұстағыш сақина
48	Matica za pritrdilno pušo	Matica so ťahovacou vložkou	Yarık koni somunu	Гайка для розтискної втулки	Қысқыш втулка гайкасы
49	Rotor črpalke	Obežné koleso	Kanat	Робоче колесо	Жұмыс дөңгелегі
49a	Rotor črpalke	Obežné koleso	Kanat	Робоче колесо	Жұмыс дөңгелегі
49b	Pritrdilna puša	Ťahovacia vložka	Kapalı somun	Розтискна втулка	Босату втулкасы
49c	Obrabni obroč	Uzatvárací krúžok	Aşınma halkası	Кільце щілинного ущільнення	Антифрикционная сақина
51	Os črpalke	Hriadeľ	Mil	Вал насоса	Сорғы білігі
55	Plašť	Plášť	Diş ceket	Зовнішня втулка	Қаптама
56	Osnovna plošča	Základová platňa	Şase	Плита-основа	Астыңғы плита
56a	Osnovna plošča	Základová platňa	Şase	Плита-основа	Астыңғы плита
56c	Vijak	Skrutka	Vida	Гвинт	Винт
56d	Podložka	Podložka	Pul	Шайба	Шайба
57	O-tesnilo	O-krúžok	O-ring	Ущільнювальне кільце	Дөңгелек қималы тығыздағыш сақина
58	Držalo drsnega tesnila	Držiak upchávky hriadeľ	Salmastra taşıyıcı	Тримач ущільнення	Білік тығыздағышының негізгі бөлшегі
58a	Vijak	Skrutka	Vida	Гвинт	Винт
60	Vzmet	Spružina	Yay	Пружина	Серпіппе
61	Gonilo tesnila	Unášač	Salmastra yuvası	Оправлення ущільнення	Бүйірлік тығыздау серіппесі
62	Stop prstan	Dorazový krúžok	Kitleme somunu	Стопорне кільце	Ұстағыш сақина
64	Distančník	Dištančné puzdro	Ayar ara parçası	Втулка	Аралық втулка
64a	Distančník	Dištančná puzdro	Ayar ara parçası	Втулка	Аралық втулка
64c	Natezni kos, utorni	Španovací kus, drážkovaný	Kelepçe boru	Шлицевый хомут	Тісті қысқыш гильза
64d	Distančník	Dištančné puzdro	Ayar ara parçası	Втулка	Аралық втулка
65	Držalo režnega obroča	Držiak pre tesniaci krúžok	Boğaz aşınma halkası	Фиксатор ущільнювального кільця	Саңылау тығыздағышының негізгі бөлшегі

Pos.	Designation				
	SI	SK	TR	UA	KZ
66	Podložka	Podložka	Pul	Шайба	Шайба
66a	Podložka	Podložka	Pul	Шайба	Шайба
66b	Varnostna podložka	Zaisťovací plech	Kitleme pulu	Стопорна шайба	Ұстағыш шайба
67	Matica/Vijak	Matica/Skrutka	Somun/Vida	Гайка/гвинт	Гайка/ винт
69	Distančník	Dištančné puzdro	Ayar ara parçası	Втулка	Аралық втулка
76	Tipka ploščica	Štítok čerpadla	Etiket	Шилдик насоса	Жинақталған техникалық параметрлері бар фирмалық тақташа
100	O-tesnilo	O-krúžok	O-ring	Ущільнювальне кільце	Дөңгелек қималы тығыздағыш сақина
105	Dršno tesnilo	Upchávka hriadeľa	Mekanik salmastra	Торцеве ущільнення валу	Білік тығыздағышы
201	Prirobnica	Príruba	Flaş	Фланець	Фланец
203	Držalni obroč	Tesniaci krúžok/tesnenie	Tutucu halka	Стопорне кільце	Ұстағыш сақина

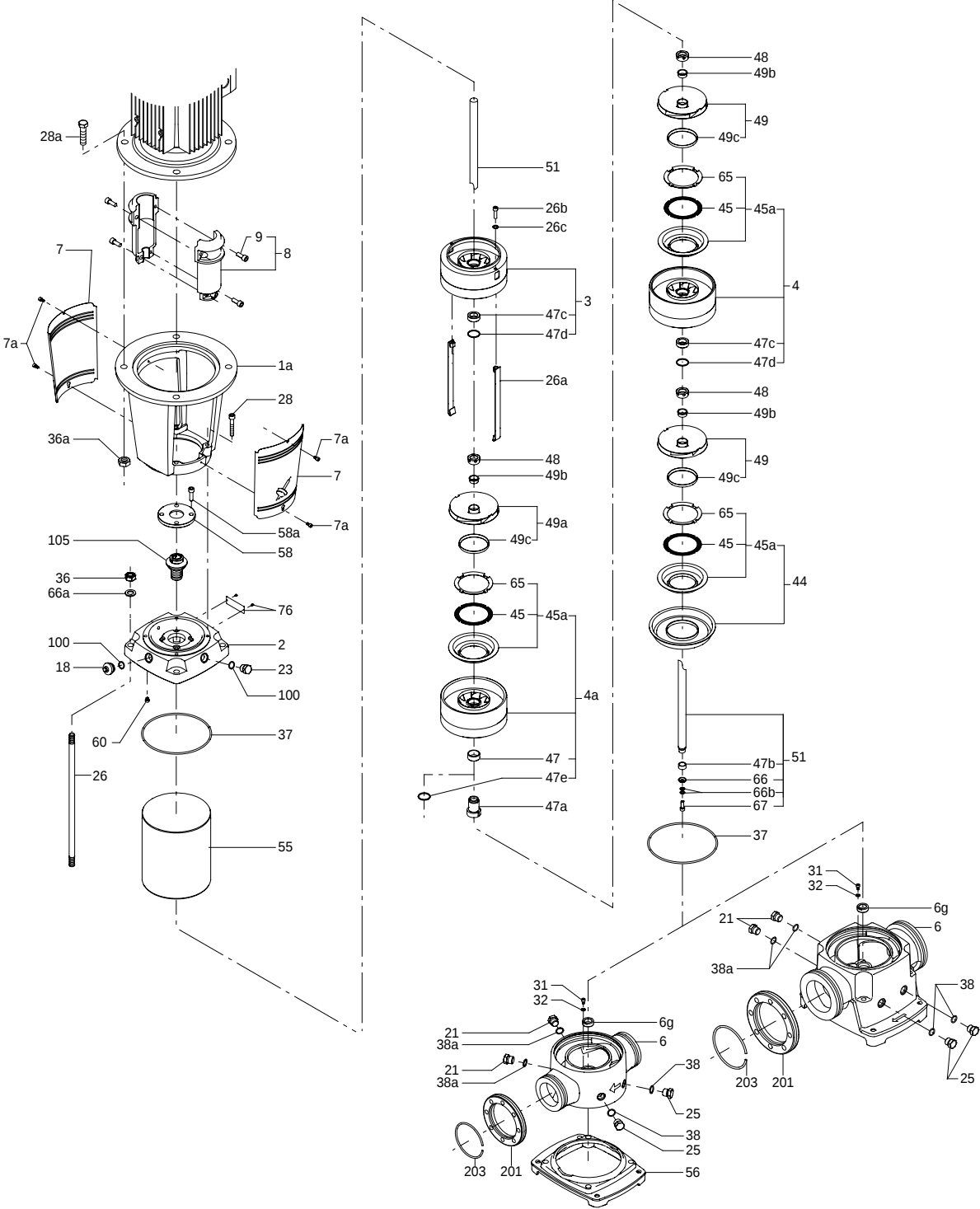
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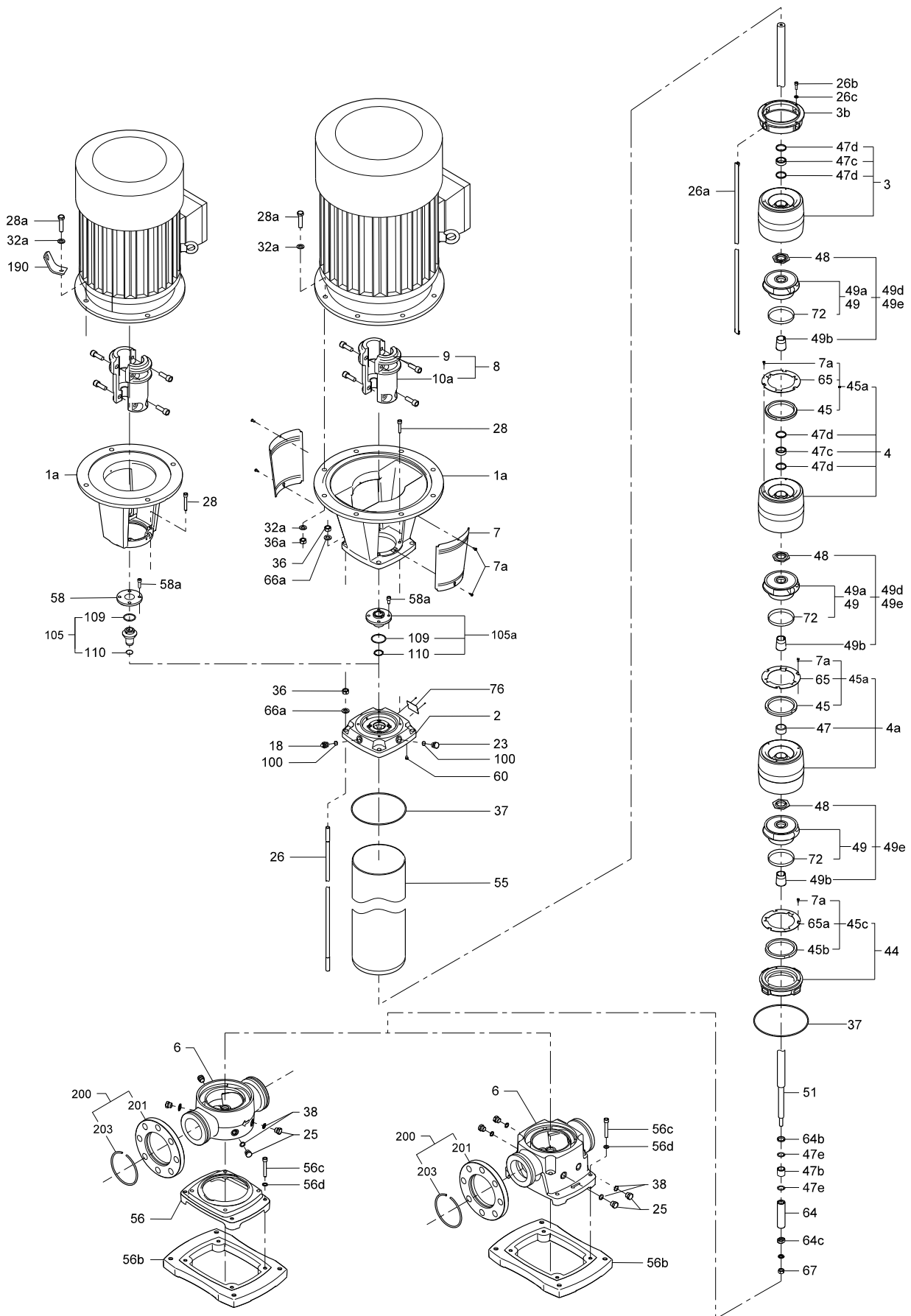


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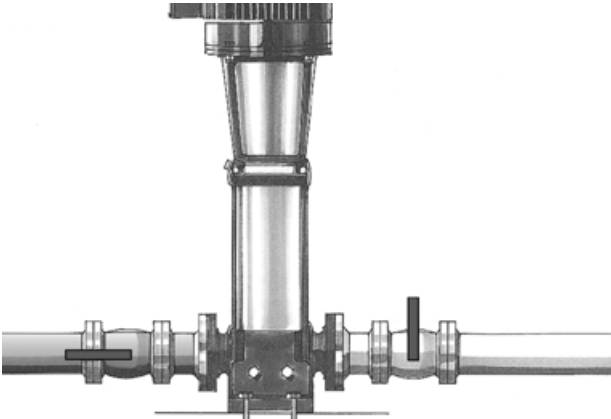
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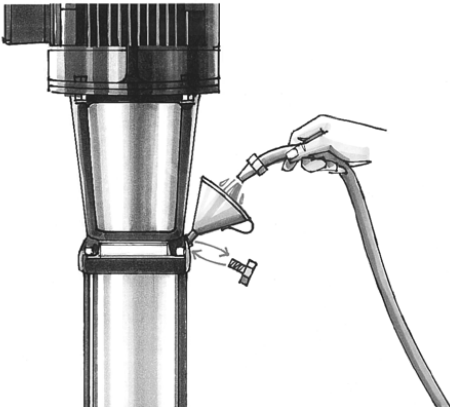
Startup

1



TM01 1403 4497

2



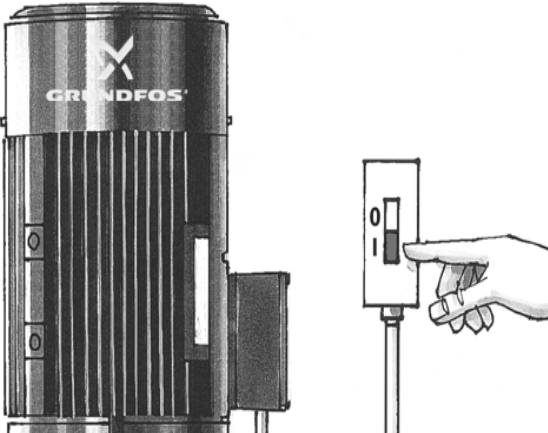
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3



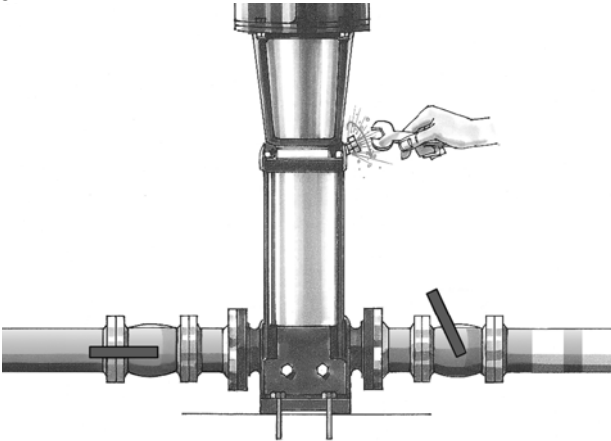
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4



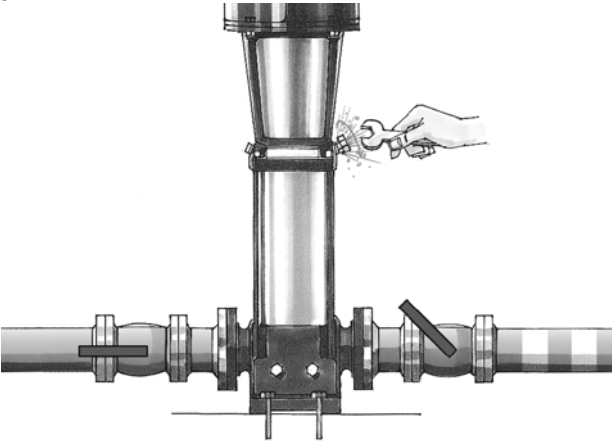
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5



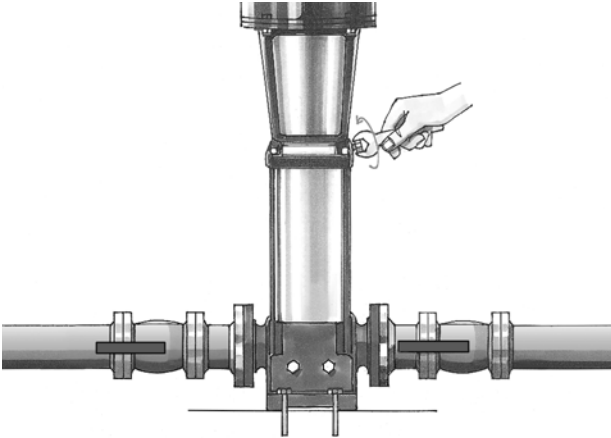
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6



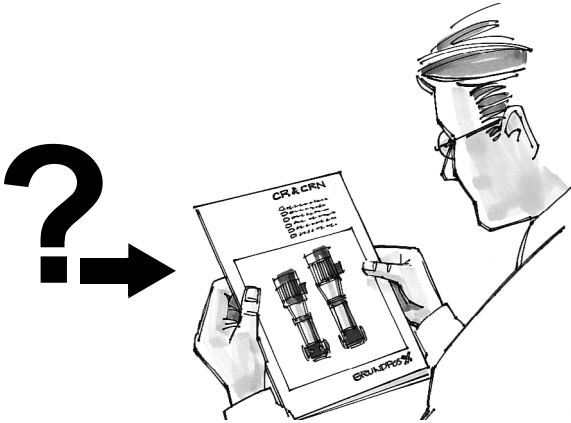
TM01 1408 4497

7



TM01 1409 4497

8



TM01 9988 3600

GB Startup

1 Close the isolating valve on the outlet side of the pump and open the isolating valve on the inlet side.	2 Remove the priming plug from the pump head and slowly fill the pump with liquid. Replace the priming plug and tighten securely.
3 See the correct direction of rotation of the pump on the motor fan cover.	4 Start the pump and check the direction of rotation.
5 Vent the pump by means of the vent valve in the pump head. At the same time, open the outlet isolating valve a little.	6 Continue to vent the pump. At the same time, open the outlet isolating valve a little more.
7 Close the vent valve when a steady stream of liquid runs out of it. Completely open the outlet isolating valve.	8 For further information, see page 11.

BG Пускане в действие

1 Затваря се спирателния кран на напорната страна, а този на смукателната се отваря.	2 Демонтира се пробката за пълнене и помпата бавно се пълни.
3 Вижте правилната посока на въртене на капака на мотора.	4 Включете помпата и проверете правилността на посоката на въртене.
5 Обезвъздушете през обезвъздушителния вентил като същевременно малко отворете крана на напорната страна.	6 Продължете да обезвъздушавате като отваряте крана на напорната страна повече.
7 Затворете обезвъздушителния вентил, когато от него протече флуид. Отворете изцяло крана на напорната страна.	8 За повече информация виж страница 25.

CZ Uvedení do provozu

1 Uzavřete uzavírací armaturu na výtlačné straně čerpadla a otevřete uzavírací armaturu na sací straně čerpadla.	2 Z hlavy čerpadla vyšroubujte plnicí zátku a do čerpadla pomalu nalévejte kapalinu. Plnicí zátku vraťte na své místo a pevně utáhněte.
3 Podle šipky na krytu ventilátoru motoru čerpadla zjistěte směr otáčení hřídele čerpadla.	4 Zapněte čerpadlo a zkontrolujte, zda směr otáčení odpovídá směru uvedenému na krytu ventilátoru motoru.
5 Čerpadlo odvzdušněte pomocí odvzdušňovacího ventilu umístěného ve hlavě čerpadla. Současně mírně pootevřete uzavírací armaturu na výtlačné straně čerpadla.	6 Pokračujte v odvzdušňování čerpadla. Současně otevřete poněkud více uzavírací armaturu na výtlačné straně čerpadla.
7 Odvzdušňovací ventil uzavřete, jakmile jím začne vytékat kapalina bez vzduchu. Otevřete naplno uzavírací armaturu na výtlačné straně čerpadla tak, abyste dosáhli pracovního bodu čerpadla.	8 Další informace viz str. 37.

DK Idriftsætning

1 Luk afspærringsventilen på pumpens afgangsside og åbn afspærringsventilen på pumpens tilgangsside.	2 Afmontér spædeproppen i topstykket og spæd pumpen langsomt. Montér derefter spædeproppen igen.
3 Se pumpens korrekte omdrejningsretning på motorens ventilatorskærm.	4 Start pumpen og kontrollér pumpens omdrejningsretning.
5 Udluft pumpen på udluftningsventilen, som er placeret i topstykket. Åbn samtidig afspærringsventilen på pumpens afgangsside lidt.	6 Fortsæt med at udlufte pumpen. Åbn samtidig afspærringsventilen på pumpens afgangsside lidt mere.
7 Luk udluftningsventilen, når der løber en jævn væskestrøm ud af den. Åbn afspærringsventilen på pumpens afgangsside helt.	8 For yderligere information, se side 61.

DE Inbetriebnahme

1	2
Das druckseitige Absperrventil schließen und das saugseitige Absperrventil öffnen.	Einfüllstopfen demontieren und Pumpe langsam auffüllen. Einfüllstopfen wieder einschrauben und fest anziehen.
3	4
Siehe richtige Drehrichtung auf der Lüfterhaube des Motors.	Pumpe einschalten und Drehrichtung der Pumpe prüfen.
5	6
Pumpe über Entlüftungsventil im Kopfstück der Pumpe entlüften. Gleichzeitig das druckseitige Absperrventil ein wenig öffnen.	Die Entlüftungsvorgehensweise fortsetzen. Gleichzeitig das druckseitige Absperrventil ein bisschen mehr öffnen.
7	8
Entlüftungsventil schließen, wenn das Medium aus dem Ventil herausläuft. Das druckseitige Absperrventil ganz öffnen.	Für weitere Informationen, siehe Seite 49 .

EE Käivitamine

1	2
Sulgege ventiil pumba survepoolel ja avage ventiil pumba imipoolel.	Eemaldage pumbalt täiteava kork ja täitke pump aegamööda vedelikuga. Pange kork tagasi oma kohale ja kinnitage hoolikalt.
3	4
Pöörlemissuund on tähistatud nooltega ventilaatori kattel.	Käivitage pump ja kontrollige selle pöörlemissuunda.
5	6
Ventileerige pumpa selle peas paikneva õhutusventiili abil. Samal ajal avage veidi survepoole ventiili.	Jätkake pumba ventileerimist. Samal ajal avage veelgi rohkem survepoole ventiili.
7	8
Sulgege õhutusventiil niipea, kui vedelik hakkab ühtlaselt välja voolama. Avage survepoole ventiil täielikult.	Edasine informatsioon: vt. lk. 73 .

GR Εκκίνηση

1	2
Κλείστε τη βάνα απομόνωσης στην πλευρά κατάθλιψης της αντλίας και ανοίξτε τη βάνα απομόνωσης στην πλευρά αναρρόφησης.	Αφαιρέστε την τάπα πλήρωσης από την κεφαλή της αντλίας και γεμίστε σιγάσιγά την αντλία με υγρό. Επανατοποθετήστε την τάπα πλήρωσης και σφίγγετε τη καλά.
3	4
Δείτε τη σωστή φορά περιστροφής της αντλίας στο κάλυμμα ανεμιστήρα του κινητήρα.	Θέστε την αντλία σε λειτουργία και ελέγξτε τη φορά περιστροφής.
5	6
Εξαερώστε την αντλία με τη βοήθεια της βαλβίδας εξαέρωσης στην κεφαλή της αντλίας. Ταυτόχρονα, ανοίξτε λίγο τη βάνα απομόνωσης κατάθλιψης.	Συνεχίστε την εξαέρωση της αντλίας. Ταυτόχρονα, ανοίξτε λίγο ακόμη τη βάνα απομόνωσης κατάθλιψης.
7	8
Κλείστε τη βαλβίδα εξαέρωσης όταν πια η ροή του υγρού που εξέρχεται είναι σταθερή. Ανοίξτε τελείως τη βάνα απομόνωσης κατάθλιψης.	Για περισσότερες πληροφορίες, βλέπε σελίδα 121 .

ES Puesta en marcha

1	2
Cerrar la válvula de corte en el lado de descarga de la bomba y abrir la válvula de corte en el lado de aspiración.	Quitar el tapón de cebado del cabezal de la bomba y llenar la bomba despacio de agua. Volver a poner el tapón de cebado y apretarlo bien.
3	4
Comprobar el sentido de giro correcto de la bomba en la tapa del ventilador del motor.	Poner la bomba en marcha y comprobar el sentido de giro.
5	6
Purgar la bomba mediante la válvula de purga en el cabezal de la bomba. Al mismo tiempo, abrir un poco la válvula de corte de la descarga.	Seguir purgando la bomba. Al mismo tiempo abrir un poco más la válvula de corte de la descarga.
7	8
Cerrar la válvula de purga cuando salga por la misma un flujo constante de líquido. Abrir la válvula de corte de la descarga completamente.	Para más información, ver pág. 85 .

FR Mise en route

1 Fermer la vanne d'isolement du côté refoulement et ouvrir la vanne d'isolement du côté aspiration de la pompe.	2 Démonter le bouchon d'amorçage de la tête de pompe et amorcer lentement la pompe. Remettre en place le bouchon d'amorçage.
3 Voir le sens correct de rotation de la pompe sur le capot du ventilateur du moteur.	4 Démarrer la pompe et vérifier son sens de rotation.
5 Purger la pompe par la vis de purge située dans la tête de pompe. Ouvrir simultanément légèrement la vanne d'isolement du côté refoulement.	6 Continuer à purger la pompe. Ouvrir simultanément un peu plus la vanne d'isolement du côté refoulement.
7 Fermer la vis de purge lorsqu'un filet d'eau homogène s'écoule. Ouvrir entièrement la vanne d'isolement du côté refoulement.	8 Pour plus d'informations, voir page 109 .

HR Puštanje u pogon

1 Zatvoriti zaporni ventil na tlačnoj strani a otvoriti zaporni ventil na usisnoj strani.	2 Skinuti čep za punjenje pa crpku polagano napuniti. Ponovno vratiti čep za punjenje te ga čvrsto pritegnuti.
3 Prekontrolirati ispravni smjer vrtnje na poklopcu ventilatora motora.	4 Uključiti crpku pa ispitati ispravni smjer vrtnje crpke.
5 Odzračiti crpku preko odzračnog ventila u glavi crpke. Istovremeno malo otvoriti zaporni ventil na tlačnoj strani.	6 Nastaviti s odzračivanjem. Istovremeno još malo jače otvoriti zaporni ventil na tlačnoj strani.
7 Zatvoriti odzračni ventil kad medij počne izlaziti na ventilu. Potpuno otvoriti zaporni ventil na tlačnoj strani.	8 Za daljnje obavijesti vidi str. 133 .

IT Avviamento

1 Chiudere la valvola di intercettazione sul lato di mandata della pompa e aprire quella sul lato di aspirazione.	2 Rimuovere il tappo di adescamento dalla testa pompa e versare lentamente il liquido nella pompa. Reinserire il tappo e chiuderlo accuratamente.
3 Osservare il corretto senso di rotazione della pompa sul coperchio della ventola motore.	4 Avviare la pompa e controllare il senso di rotazione.
5 Sfiatare la pompa per mezzo della valvola di sfiato sulla testa pompa. Contemporaneamente, aprire leggermente la valvola di mandata.	6 Continuare a sfiatare la pompa, continuando contemporaneamente ad aprire la valvola di mandata.
7 Chiudere la valvola di sfiato quando fuoriesce un flusso di liquido costante. Aprire completamente la valvola di mandata.	8 Per ulteriori informazioni vedere pagina 157 .

KZ Сорғыны іске қосу

1 Қысымды магистральдағы жапқыш вентилін жабыңыз, сорғыш магистральдағы жапқыш вентилін ашыңыз.	2 Ауаны шығару үшін бұранда қақпақты бұраңыз және құятын мойнынан сұйықтықты құйыңыз. Қақпақты қайтадан салып қатты тартыңыз.
3 Сорғының жоғарғы жағында және желдеткіштің сыртында көрсеткімен көрсетілген айналу бағытын дұрыс анықтаңыз.	4 Сорғыны қосып, айнарудың бағытын тексеріңіз.
5 Сорғының жоғарғы жағындағы ауаны шығару үшін сорғыдан ауаны клапан арқылы шығарыңыз. Қысымды магистральдағы жапқыш вентильді бір уақытта кішкене ашыңыз.	6 Ауа шығаруды жалғастырыңыз. Қысымды магистральдағы жапқыш вентильді бір уақытта тағы кішкене ашыңыз.
7 Сұйықтық клапаннан аға бастағанда, оны жабыңыз. Қысымды магистральдағы жапқыш вентильді толығымен ашып тастаңыз.	8 Әрі қарай 315 -беттегі ақпаратты қараңыз.

LT Paleidimas

1 Uždarykite vožtuvą siurblio išvado pusėje ir atidarykite vožtuvą siurblio įvado pusėje.	2 Siurblio galvutėje atsukite pripildymo kamštelį ir siurblij lėtai pripildykite skysčio. Įstatykite pripildymo kamštelį ir gerai užveržkite.
3 Pažiūrėkite ant variklio ventiliatoriaus gaubto, kokia yra teisinga siurblio sukimosi kryptis.	4 Paleiskite siurblij ir patikrinkite sukimosi kryptį.
5 Per siurblio galvutėje esantį oro išleidimo vožtuvą išleiskite iš siurblio orą. Tuo pačiu metu truputį atidarykite išvado vožtuvą.	6 Tęskite oro išleidimą. Tuo pačiu metu truputį daugiau atidarykite išvado vožtuvą.
7 Oro išleidimo vožtuvą uždarykite, kai iš jo pradeda tekėti nusistovėjusi skysčio čiurkšlė. Visiškai atidarykite išvado vožtuvą.	8 Daugiau informacijos pateikta 169 puslapyje.

HU Üzembehelyezés

1 A nyomóoldali elzárószelepet zárjuk el, a szívóoldali elzárószelepet nyissuk ki.	2 A betöltőcsavart vegyük ki és a szivattyút lassan töltjük fel. A betöltőcsavart csavarjuk vissza és szorosan húzzuk meg.
3 Nézzük meg a motor ventillátorfedelén a helyes forgásirányt.	4 Kapcsoljuk be a szivattyút és ellenőrizzük forgásirányát.
5 A szivattyú fejrészén lévő légtelenítőszelepen át légtelenítsük a szivattyút. Egyidejűleg kissé nyissuk meg a nyomóoldali elzárószelepet.	6 Folytassuk a légtelenítést, egyidejűleg kissé jobban nyissuk meg a nyomóoldali elzárószelepet.
7 Amikor a légtelenítőszelepen már a levegőmentes szállított közeg lép ki, zárjuk el a szelepet. A nyomóoldali elzárószelepet teljesen nyissuk ki.	8 Bővebb információ a 145. oldalon.

NL In bedrijf nemen

1 Sluit de scheidingsafsluiter aan de perszijde van de pomp en open de afsluiter aan de zuigzijde.	2 Verwijder de ontluchtingsschroef van de pompkop en vul de pomp langzaam met vloeistof. Breng de ontluchtingsschroef terug op zijn plaats en zorg dat deze stevig vast zit.
3 Kijk of de draairichting van de pomp klopt (zie beschermkap van de motorventilator).	4 Start de pomp en controleer de draairichting.
5 Ontlucht de pomp met behulp van de ontluchtingsklep in de pompkop. Open tegelijkertijd de persafsluiter een beetje.	6 Ontlucht de pomp verder. Doe tegelijkertijd de persafsluiter iets verder open.
7 Sluit de ontluchtingsklep wanneer het medium gelijkmatig uit de ontluchtingsopening stroomt. Open de persafsluiter volledig.	8 Voor verdere informatie zie pagina 181 .

UA Запуск

1 Закрити запірний кран на виході насоса та відкрити запірний кран на всмоктувальному трубопроводі.	2 Викрутити заглушку з верхньої частини насоса та повільно заповнити насос рідиною. Вкрутити заглушку.
3 Перевірити правильний напрямок обертання насоса, що вказаний на кришці вентилятора.	4 Запустити насос та перевірити напрямок обертання.
5 Видалити повітря з насоса з допомогою повітряного клапана в верхній частині насоса. Одночасно привідкрити вихідний запірний кран.	6 Продовжувати видаляти повітря з насоса. Одночасно відкрити вихідний кран ще трохи більше.
7 Закрити повітряний клапан, коли постійний потік рідини потече з насоса. Повністю відкрити вихідний запірний кран.	8 Далі див. стор. 303 .

PL Uruchomienie

1 Zamknąć zawór odcinający na tłoczeniu pompy i otworzyć zawór odcinający na ssaniu.	2 Z głowicy pompy zdjąć korek zalewowy i napęlnić pompę cieczą. Założyć korek i dokręcić go mocno.
3 Poprzez pokrywę wentylatora silnika sprawdzić, czy kierunek obrotów pompy jest prawidłowy.	4 Uruchomić pompę i jeszcze raz sprawdzić kierunek obrotów.
5 Poprzez otwór odpowietrzający na głowicy pompy odpowietrzyć pompę. Jednocześnie lekko otworzyć zawór odcinający na tłoczeniu.	6 Dalej odpowietrzać pompę. Jednocześnie jeszcze trochę otworzyć zawór odcinający na tłoczeniu.
7 Gdy z otworu odpowietrzającego zacznie wypływać stały strumień cieczy, zamknąć go. Całkowicie otworzyć zawór odcinający na tłoczeniu.	8 Dalsze informacje, patrz str. 193 .

PT Arranque inicial

1 Feche a válvula de seccionamento do lado da descarga e abra a válvula de seccionamento do lado da aspiração.	2 Retire o bujão de purga da cabeça da bomba e lentamente encha esta com o líquido. Monte o bujão de purga.
3 Certifique-se de que o sentido de rotação da bomba está correcto, i.e., está de acordo com o que se indica na tampa do ventilador do motor.	4 Efectue o arranque da bomba e verifique o sentido de rotação.
5 Purgue a bomba por meio da respectiva válvula, existente na cabeça da bomba. Ao mesmo tempo, abra ligeiramente a válvula de seccionamento do lado da descarga.	6 Continue a purgar a bomba. Ao mesmo tempo, abra um pouco mais a válvula de seccionamento do lado da descarga.
7 Feche a válvula de purga quando um caudal uniforme começar a sair por ela. Abra agora completamente a válvula de seccionamento do lado da descarga.	8 Para mais informação, consulte a página 205 .

RU Ввод насоса в эксплуатацию

1 Запорный вентиль в напорной магистрали закрыть, а запорный вентиль во всасывающей магистрали открыть.	2 Отвернуть резьбовую пробку отверстия для удаления воздуха и медленно залить через заправочную горловину жидкость. Снова вставить пробку для выпуска воздуха и прочно затянуть.
3 Определить правильное направление вращения, указанное стрелкой на головной части насоса и на кожухе вентилятора.	4 Включить насос и проверить направление вращения.
5 Удалить из насоса воздух через клапан для удаления воздуха в головной части насоса. Одновременно немного открыть запорный вентиль в напорной магистрали.	6 Продолжать операцию удаления воздуха. Одновременно еще немного приоткрыть запорный вентиль в напорной магистрали.
7 Когда жидкость начнет вытекать через клапан для удаления воздуха, закрыть его. Полностью открыть запорный вентиль в напорной магистрали.	8 Далее смотрите информацию на стр. 241 .

RO Punerea în funcțiune

1 Închideți vana de refulare și deschideți vana de aspirație complet.	2 Desfaceți ventilul de amorsare din capul pompei și încet umpleți pompa cu lichid. Strângeți bine ventilul după umplere.
3 Urmăriți sensul corect de rotație al pompei indicat la partea superioară a motorului la ventilator.	4 Porniți pompa și verificați sensul de rotație.
5 Aerisiți pompa prin intermediul ventilului de aerisire situat în capul pompei. În același timp deschideți vana de refulare.	6 Continuați să aerisiți pompa. În același timp deschideți vana de refulare progresiv.
7 Inchideți ventilul de aerisire când apa începe să arunce prin orificiu. Se va deschide complet vana de refulare.	8 Pentru mai multe informații vedeți pagina 217 .

SK Uvedenie do prevádzky

1 Uzavrite uzatváraciu armatúru na výtlačnej strane čerpadla a otvorte uzatváraciu armatúru na sacej strane čerpadla.	2 Z hlavy čerpadla vyskrutkujte plniacu zátku a do čerpadla pomaly nalievajte kvapalinu. Plniacu zátku naskrutkujte späť a pevne ju dotiahnite.
3 Podľa šípky na kryte ventilátora motora čerpadla zistite smer otáčania sa hriadeľa čerpadla.	4 Zapnite čerpadlo a skontrolujte, či smer otáčania sa hriadeľa zodpovedá smeru uvedenom na kryte ventilátora motora.
5 Čerpadlo odvzdušnite pomocou odvzdušňovacieho ventilu umiestneného v hlave čerpadla. Súčasne mierne pootvorte uzatváraciu armatúru na výtlačnej strane čerpadla.	6 Pokračujte v odvzdušňovaní čerpadla. Súčasne trochu pootvorte uzatváraciu armatúru na výtlačnej strane čerpadla.
7 Odvzdušňovací ventil uzatvorte akonáhle z neho začne vytekať kvapalina. Naplno otvorte uzatváraciu armatúru na výtlačnej strane čerpadla tak, aby ste dosiahli pracovný bod čerpadla.	8 Dalšie informácie, viď. str. 278 .

SI Zagon

1 Tlačni zaporni ventil zapreti in odpreti sesalni zaporni ventil.	2 Čep odprtine za nalivanje odpreti in črpalko počasi napolniti. Ponovno priviti čep in močno pritegniti.
3 Kontrolirati je potrebno pravilno smer vrtenja na pokrovu hlajenja motorja.	4 Vklpiti črpalko in preveriti smer vrtenja črpalke.
5 Črpalko odzračiti s pomočjo odzračevalnega ventila na glavi črpalke. Istočasno nekoliko odpreti zaporni ventil na tlačni strani.	6 Odzračevalni postopek nadaljevati. Istočasno na tlačni strani še bolj odpreti zaporni ventil.
7 Odzračevalni ventil zapreti, ko prične iztekati medij. Zaporni ventil na tlačni strani popolnoma odpreti.	8 Za obširnejše informacije glej stran 266 .

RS Puštanje u rad

1 Zatvoriti zaustavni ventil na potisnoj strani i otvoriti zaustavni ventil na usisnoj strani.	2 Demontirati ulivni priključak i polako napuniti pumpu. Ponovo ušrafiti ulivni priključak i čvrsto ga pritegnuti.
3 Uočiti pravilan smer obrtanja na poklopcu ventilatora motora.	4 Uključiti pumpu i proveriti smer obrtanja pumpe.
5 Odzračiti pumpu preko odzračnog ventila na glavi pumpe. Istovremeno malo otvoriti zaustavni ventil na potisnoj strani.	6 Nastaviti sa postupkom odzračivanja. Istovremeno zaustavni ventil na potisnoj strani otvoriti još malo više.
7 Kada radni fluid počne da ističe iz ventila zatvoriti odzračni ventil. Zaustavni ventil na potisnoj strani potpuno otvoriti.	8 Za dalje informacije, vidi stranu 229 .

FI Käyttöönotto

1	2
Sulje pumpun painepuolen sulkuventtiili ja avaa tulopuolen sulkuventtiili.	Irroita pumpun yläkappaleen täyttötulppa ja täytä pumpu hitaasti. Asenna täyttötulppa tämän jälkeen.
3	4
Tarkista tuuletinkannesta pumpun oikea pyörimissuunta.	Käynnistä pumpu ja varmista oikea pyörimissuunta.
5	6
Ilmaa pumpu yläkappaleessa sijaitsevan ilmausruuvien kautta. Aukaise samalla hiukan pumpun painepuolen sulkuventtiiliä.	Jatka pumpun ilmaamista ja avaa pumpun painepuolen sulkuventtiiliä hiukan enemmän.
7	8
Sulje ilmausventtiili kun siitä suihkuu tasainen vesivirta. Aukaise pumpun painepuolen sulkuventtiili kokonaan.	Lisätietoja sivuilla 97 .

SE Igångkörning

1	2
Stäng avstängningsventilen på pumpens trycksida och öppna avstängningsventilen på sugsidan.	Avlägsna spädproppen i toppstycket och fyll pumpen långsamt. Sätt sedan tillbaka proppen.
3	4
Kontrollera rätt rotationsriktning enligt motorns fläktkåpa.	Starta pumpen och kontrollera pumpens rotationsriktning.
5	6
Avlufta pumpen med hjälp av ventilen på toppstycket. Öppna samtidigt avstängningsventilen på pumpens trycksida något.	Fortsätt avlufta pumpen. Öppna samtidigt avstängningsventilen på trycksidan lite till.
7	8
Stäng avluftningsventilen när en jämn vätskeström kommer ut ur den. Öppna avstängningsventilen på trycksidan helt.	För ytterligare information, se sida 254 .

TR İlk çalıştırma

1	2
Pompanın basma tarafındaki izolasyon vanasını kapatın ve emme tarafındaki izolasyon vanasını açın.	Doldurma tapasını pompa başından sökün ve pompayı sıvı ile doldurun. Doldurma tapasını tekrar yerine takın ve sağlam bir şekilde sıkın.
3	4
Motor fan kapağında bulunan doğru pompa dönüş yönüne bakın.	Pompayı çalıştırın ve dönüş yönünü kontrol edin.
5	6
Pompa başında bulunan tahliye valfi yardımıyla pompanın havasını alın. Aynı anda, basma izolasyon valfini biraz açın.	Pompanın havasını almaya devam edin. Aynı anda, basma izolasyon valfini biraz daha açın.
7	8
Düzenli bir sıvı akışı gerçekleştiğinde, tahliye valfini kapatın. Basma izolasyon valfini tamamen açın.	İlave bilgiler için, sayfa 290 'e bakın.

Declaration of conformity

GB: EC/EU declaration of conformity

We, Grundfos, declare under our sole responsibility that the products CR, CRI, CRN to which the declaration below relates, are in conformity with the Council Directives listed below on the approximation of the laws of the EC/EU member states.

CZ: Prohlášení o shodě EU

My firma Grundfos prohlašujeme na svou plnou odpovědnost, že výrobky CR, CRI, CRN, na které se toto prohlášení vztahuje, jsou v souladu s níže uvedenými ustanoveními směrnice Rady pro sblížení právních předpisů členských států Evropského společenství.

DK: EF/EU-overensstemmelseserklæring

Vi, Grundfos, erklærer under ansvar at produkterne CR, CRI, CRN som erklæringen nedenfor omhandler, er i overensstemmelse med Rådets direktiver der er nævnt nedenfor, om indbyrdes tilnærmelse til EF/EU-medlemsstaternes lovgivning.

ES: Declaración de conformidad de la CE/UE

Grundfos declara, bajo su exclusiva responsabilidad, que los productos CR, CRI, CRN a los que hace referencia la siguiente declaración cumplen lo establecido por las siguientes Directivas del Consejo sobre la aproximación de las legislaciones de los Estados miembros de la CE/UE.

FR: Déclaration de conformité CE/UE

Nous, Grundfos, déclarons sous notre seule responsabilité, que les produits CR, CRI, CRN, auxquels se réfère cette déclaration, sont conformes aux Directives du Conseil concernant le rapprochement des législations des États membres CE/UE relatives aux normes énoncées ci-dessous.

HR: EC/EU deklaracija sukladnosti

Mi, Grundfos, izjavljujemo s punom odgovornošću da su proizvodi CR, CRI, CRN, na koja se izjava odnosi u nastavku, u skladu s direktivama Vijeća dolje navedene o usklađivanju zakona država članica EZ-a / EU-a.

IT: Dichiarazione di conformità CE/UE

Grundfos dichiara sotto la sua esclusiva responsabilità che i prodotti CR, CRI, CRN, ai quali si riferisce questa dichiarazione, sono conformi alle seguenti direttive del Consiglio riguardanti il riavvicinamento delle legislazioni degli Stati membri CE/UE.

NL: EG/EU-conformiteitsverklaring

Wij, Grundfos, verklaren geheel onder eigen verantwoordelijkheid dat de producten CR, CRI, CRN, waarop de onderstaande verklaring betrekking heeft, in overeenstemming zijn met de onderstaande Richtlijnen van de Raad inzake de onderlinge aanpassing van de wetgeving van de EG-/EU-lidstaten.

PT: Declaração de conformidade CE/UE

A Grundfos declara sob sua única responsabilidade que os produtos CR, CRI, CRN, aos quais diz respeito a declaração abaixo, estão em conformidade com as Directivas do Conselho sobre a aproximação das legislações dos Estados Membros da CE/UE.

RS: Deklaracija o usklađenosti EC/EU

Mi, kompanija Grundfos, izjavljujemo pod punom vlastitom odgovornošću da je proizvod CR, CRI, CRN, na koji se odnosi deklaracija ispod, u skladu sa dole prikazanim direktivama Saveta za usklađivanje zakona država članica EC/EU.

SE: EG/EU-försäkran om överensstämmelse

Vi, Grundfos, försäkrar under ansvar att produkterna CR, CRI, CRN, som omfattas av nedanstående försäkran, är i överensstämmelse med de rådsdirektiv om inbördes närmande till EG/EU-medlemsstaternas lagstiftning som listas nedan.

SK: Prehlásenie o zhode s EC/EU

My, spoločnosť Grundfos, vyhlasujeme na svoju plnú zodpovednosť, že produkty CR, CRI, CRN na ktoré sa vyhlásenie uvedené nižšie vzťahuje, sú v súlade s ustanoveniami nižšie uvedených smerníc Rady pre zblíženie právnych predpisov členských štátov Európskeho spoločenstva/EÚ.

BG: Декларация за съответствие на ЕС/ЕО

Ние, фирма Grundfos, заявяваме с пълна отговорност, че продуктите CR, CRI, CRN за които се отнася настоящата декларация, отговарят на следните директиви на Съвета за еднаквяване на правните разпоредби на държавите-членки на ЕС/ЕО.

DE: EG-/EU-Konformitätserklärung

Wir, Grundfos, erklären in alleiniger Verantwortung, dass die Produkte CR, CRI, CRN, auf die sich diese Erklärung beziehen, mit den folgenden Richtlinien des Rates zur Angleichung der Rechtsvorschriften der EG-/EU-Mitgliedsstaaten übereinstimmen.

EE: EÜ / ELi vastavusdeklaratsioon

Meie, Grundfos, kinnitame ja kanname ainuiskulist vastutust selle eest, et toode CR, CRI, CRN, mille kohta all olev deklaratsioon käib, on kooskõlas Nõukogu Direktiividega, mis on nimetatud all pool vastavalt vastuvõetud õigusaktidele ühtlustamise kohta EÜ / EL liikmesriikides.

FI: EY/EU-vaatimustenmukaisuusvakuutus

Grundfos vakuuttaa omalla vastuullaan, että tuotteet CR, CRI, CRN, joita tämä vakuutus koskee, ovat EY/EU:n jäsenvaltioiden lainsäädännön lähentämiseen tähtäävien Euroopan neuvoston direktiivien vaatimusten mukaisia seuraavasti.

GR: Δήλωση συμμόρφωσης ΕΚ/ΕΕ

Εμείς, η Grundfos, δηλώνουμε με αποκλειστικά δική μας ευθύνη ότι τα προϊόντα CR, CRI, CRN, στα οποία αναφέρεται η παρακάτω δήλωση, συμμορφώνονται με τις παρακάτω Οδηγίες του Συμβουλίου περί προσέγγισης των νομοθεσιών των κρατών μελών της ΕΚ/ΕΕ.

HU: EC/EU megfelelőségi nyilatkozat

Mi, a Grundfos vállalat, teljes felelősséggel kijelentjük, hogy a(z) CR, CRI, CRN termékek, amelyre az alábbi nyilatkozat vonatkozik, megfelelnek az Európai Közösség/Európai Unió tagállamainak jogi irányelveit összehangoló tanács alábbi előírásainak.

LT: EB/ES atitikties deklaracija

Mes, Grundfos, su visa atsakomybe pareiškiame, kad produktai CR, CRI, CRN, kuriems skirta ši deklaracija, atitinka žemiau nurodytas Tarybos Direktyvas dėl EB/ES šalių narių įstatymų suderinimo.

PL: Deklaracja zgodności WE/EU

My, Grundfos, oświadczamy z pełną odpowiedzialnością, że nasze produkty CR, CRI, CRN, których deklaracja niniejsza dotyczy, są zgodne z następującymi dyrektywami Rady w sprawie zbliżenia przepisów prawnych państw członkowskich.

RO: Declarația de conformitate CE/UE

Noi Grundfos declarăm pe propria răspundere că produsele CR, CRI, CRN, la care se referă această declarație, sunt în conformitate cu Directivele de Consiliu specificate mai jos privind armonizarea legilor statelor membre CE/UE.

RU: Декларация о соответствии нормам ЕЭС/ЕС

Мы, компания Grundfos, со всей ответственностью заявляем, что изделия CR, CRI, CRN, к которым относится нижеприведенная декларация, соответствуют нижеприведенным Директивам Совета Евросоюза о тождественности законов стран-членов ЕЭС/ЕС.

SI: Izjava o skladnosti ES/EU

V Grundfosu s polno odgovornostjo izjavljamo, da je izdelek CR, CRI, CRN, na katerega se spodnja izjava nanaša, v skladu s spodnjimi direktivami Sveta o približevanju zakonodaje za izenačevanje pravnih predpisov držav članic ES/EU.

TR: EC/AB uygunluk bildirgesi

Grundfos olarak, aşağıdaki bildirim konusu olan CR, CRI, CRN ürünlerinin, EC/AB Üye ülkelerinin direktiflerinin yakınlaştırılmasıyla ilgili durumun aşağıdaki Konsey Direktifleriyle uyumlu olduğunu ve bununla ilgili olarak tüm sorumluluğun bize ait olduğunu beyan ederiz.

UA: Декларація відповідності директивам ЕС/EU

Ми, компанія Grundfos, під нашу одноосібну відповідальність заявляємо, що вироби CR, CRI, CRN, до яких відноситься нижченаведена декларація, відповідають директивам ЕС/EU, переліченим нижче, щодо тотожності законів країн-членів ЄС.

KZ: Сәйкестік жөніндегі ЕҚ/ЕО декларациясы

Біз, Grundfos, ЕҚ/ЕО мүше елдерінің заңдарына жақын төменде көрсетілген Кеңес директиваларына сәйкес төмендегі декларацияға қатысты CR, CRI, CRN өнімдері біздің жеке жауапкершілігімізде екенін мәлімдейміз.

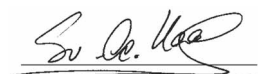
إقرار مطابقة EC/EU

نقرر نحن، جروندفوس، بمقتضى مسؤوليتنا الفردية بأن المنتجين CR, CRI, CRN، اللذين يختص بهما الإقرار أدناه، يكونان مطابقين لتوجيهات المجلس المذكورة أدناه بشأن التقريب بين قوانين الدول أعضاء المجموعة الأوروبية/الاتحاد الأوروبي (EC/EU).

- Machinery Directive (2006/42/EC).
Standard used: EN 809:1998, A1:2009.
- Ecodesign Directive (2009/125/EC).
Electric motors:
Commission Regulation No 640/2009.
Applies only to three-phase Grundfos motors marked IE2 or IE3. See the motor nameplate.
Standard used: EN 60034-30-1:2014.
- Ecodesign Directive (2009/125/EC).
Water pumps:
Commission Regulation No 547/2012.
Applies only to water pumps marked with the minimum efficiency index MEI. See the pump nameplate.

This EC/EU declaration of conformity is only valid when published as part of the Grundfos installation and operating instructions (publication number 96462123 0616 and 97688538 1112).

Bjerringbro, 4 April 2016



Svend Aage Kaae
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Person authorised to compile the technical file and empowered to sign the EC/EU declaration of conformity.

CR, CRI, CRN**Руководство по эксплуатации**

Руководство по эксплуатации на данное изделие является составным и включает в себя несколько частей:

Часть 1: настоящее "Руководство по эксплуатации".

Часть 2: электронная часть "Паспорт. Руководство по монтажу и эксплуатации" размещенная на сайте компании Грундфос:

<http://net.grundfos.com/qr/i/98763042>

Часть 3: информация о сроке изготовления, размещенная на фирменной табличке изделия.

**Декларация о соответствии**

Насосы типов CR, CRI, CRN сертифицированы на соответствие требованиям Технических регламентов Таможенного союза: ТР ТС 004/2011 "О безопасности низковольтного оборудования"; ТР ТС 010/2011 "О безопасности машин и оборудования"; ТР ТС 020/2011 "Электромагнитная совместимость технических средств".

Сертификат соответствия:

№ ТС RU C-DK.АИ30.В.01172, срок действия до 08.12.2019 г.

№ ТС RU C-RU.АИ30.В.01071, срок действия до 09.11.2019 г.

Выдан:

Органом по сертификации продукции "ИВАНОВО-СЕРТИФИКАТ" ООО "Ивановский Фонд Сертификации". Адрес: 153032, Российская Федерация, г. Иваново, ул. Станкостроителей, д.1.

Изделия, произведенные в России, изготавливаются в соответствии с ТУ 3631-001-59379130-2005.

CR, CRI, CRN



Пайдалану бойынша нұсқаулық

Атаулы өнімге арналған пайдалану бойынша нұсқаулық құрамалы болып келеді және келесі бөлімдерден тұрады:

1 бөлім: атаулы "Пайдалану бойынша нұсқаулық"

2 бөлім: Грундфос компаниясының сайтында орналасқан электронды бөлім "Төлқұжат, Құрастыру және пайдалану бойынша нұсқаулық":

<http://net.grundfos.com/qr/i/98763042>

3 бөлім: өнімнің фирмалық тақташасында орналасқан шығарылған уақыты жөніндегі мәлімет



Сәйкестік туралы декларация

CR, CRI, CRN типті сорғылары "Төмен вольтты жабдықтардың қауіпсіздігі туралы" (ТР ТС 004/2011), "Машиналар және жабдықтар қауіпсіздігі туралы" (ТР ТС 010/2011) "Техникалық заттардың электрлі магниттік сәйкестілігі" (ТР ТС 020/2011) Кеден Одағының техникалық регламенттерінің талаптарына сәйкес сертифициатталды.

Сәйкестік сертификаты:

№ ТС RU C-DK.АИ30.В.01172, жарамдылық мерзімі 08.12.2019 жылға дейін.

№ ТС RU C-RU.АИ30.В.01071, жарамдылық мерзімі 09.11.2019 жылға дейін.

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