

Multistage High-pressure Immersion Centrifugal Pump

Installation/Operating Manual
DPVCI



CE

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Original operating manual DPVCI

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Contents

	Glossary.....	5
1	General.....	6
	1.1 Principles	6
	1.2 Installation of partly completed machinery.....	6
	1.3 Target group	6
	1.4 Other applicable documents	6
	1.5 Symbols	7
	1.6 Key to safety symbols/markings	7
2	Safety	8
	2.1 General	8
	2.2 Intended use	8
	2.3 Personnel qualification and training	8
	2.4 Consequences and risks caused by non-compliance with this manual	9
	2.5 Safety awareness	9
	2.6 Safety information for the operator/user	9
	2.7 Safety information for maintenance, inspection and installation	9
	2.8 Unauthorised modes of operation.....	10
3	Transport/Storage/Disposal.....	11
	3.1 Checking the condition upon delivery	11
	3.2 Transport.....	11
	3.3 Storage/preservation.....	12
	3.4 Disposal	13
	3.5 Return to supplier.....	13
4	Description of the Pump (Set)	15
	4.1 General description	15
	4.2 Product information as per Regulation No. 1907/2006 (REACH).....	15
	4.3 Designation	15
	4.4 Name plate.....	15
	4.5 Design details	16
	4.6 Configuration and function	17
	4.7 Scope of supply	18
	4.8 Dimensions and weights	18
5	Installation at Site	19
	5.1 Safety regulations	19
	5.2 Checks to be carried out prior to installation	19
	5.3 Installing the pump set	19
	5.4 Piping	20
	5.4.1 Connecting the piping.....	20
	5.4.2 Permissible forces and moments at the pump nozzles	20
	5.5 Electrical connection	20
	5.6 Checking the direction of rotation	21
6	Commissioning/Start-up/Shutdown.....	22
	6.1 Commissioning/Start-up.....	22
	6.1.1 Prerequisites for commissioning/start-up	22
	6.1.2 Priming and venting the pump.....	23
	6.2 Operating limits	24



6.3	Shutdown/storage/preservation	27
6.3.1	Measures to be taken for shutdown	27
6.4	Returning to service	27
7	Servicing/Maintenance	28
7.1	Safety regulations	28
7.2	Servicing/inspection	28
7.2.1	Supervision of operation	28
7.2.2	Lubrication and lubricant change	29
7.3	Drainage/cleaning	31
7.4	Dismantling the pump set	31
7.4.1	General information/Safety regulations	31
7.4.2	Preparing the pump set	32
7.4.3	Removing the pump set from the tank and piping	32
7.4.4	Removing the motor	32
7.4.5	Removing the mechanical seal	34
7.5	Reassembling the pump set	34
7.5.1	General information/Safety regulations	34
7.5.2	Fitting the mechanical seal	35
7.5.3	Mounting the motor	36
7.6	Tightening torques	37
7.7	Spare parts stock	38
7.7.1	Ordering spare parts	38
8	Trouble-shooting	39
9	Related Documents	41
9.1	General arrangement drawings with list of components	41
9.1.1	DPVCI 2B, 4B, 6B, 10B	41
9.1.2	DPVCI 15C	43
9.2	Exploded views with list of components	44
9.2.1	Drive lantern with mechanical seal	44
9.2.2	Hydraulic system of DPV(C/S)I 2B/4B/6B	45
9.2.3	Hydraulic system of DPV(C/S)I 10B	46
9.2.4	Hydraulic system of DPV(C/S)I 15C	47
9.3	Wiring diagram	48
10	EU Declaration of Conformity	49
11	Certificate of Decontamination	50
	Index	51

Glossary

Certificate of decontamination

A certificate of decontamination is enclosed by the customer when returning the product to the manufacturer to certify that the product has been properly drained to eliminate any environmental and health hazards arising from components in contact with the fluid handled.

Discharge line

The pipeline which is connected to the discharge nozzle

IE3

Efficiency class to IEC 60034-30: 3 = Premium Efficiency (IE = International Efficiency)

Pump

Machine without drive, additional components or accessories

Pump set

Complete pump set consisting of pump, drive, additional components and accessories

1 General

1.1 Principles

This operating manual is valid for the type series and variants indicated on the front cover.

The operating manual describes the proper and safe use of this equipment in all phases of operation.

The name plate indicates the type series and size, the main operating data, the order number and the order item number. The order number and order item number clearly identify the pump set and serve as identification for all further business processes.

In the event of damage, immediately contact your nearest Duijvelaar Pompen B.V. service facility to maintain the right to claim under warranty.

1.2 Installation of partly completed machinery

To install partly completed machinery supplied by Duijvelaar Pompen B.V. refer to the subsections under Servicing/Maintenance.

1.3 Target group

This operating manual is aimed at the target group of trained and qualified specialist technical personnel. [⇒ Section 2.3, Page 8]

1.4 Other applicable documents

Table 1: Overview of other applicable documents

Document	Contents
Data sheet	Description of the technical data of the pump (set)
General arrangement drawing / outline drawing	Description of mating dimensions and installation dimensions for the pump (set), weights
Drawing of auxiliary connections	Description of auxiliary connections
Hydraulic characteristic curve	Characteristic curves showing head, NPSH required, efficiency and power input
General assembly drawing ¹⁾	Sectional drawing of the pump
Sub-supplier product literature ¹⁾	Operating manuals and other product literature describing accessories and integrated machinery components
Spare parts lists ¹⁾	Description of spare parts
Piping layout ¹⁾	Description of auxiliary piping
List of components ¹⁾	Description of all pump components
Assembly drawing ¹⁾	Sectional drawing of the installed shaft seal


6 / 52

For accessories and/or integrated machinery components, observe the relevant manufacturer's product literature.

¹⁾ If included in agreed scope of supply







1.5 Symbols

Table 2: Symbols used in this manual

Symbol	Description
✓	Conditions which need to be fulfilled before proceeding with the step-by-step instructions
▷	Safety instructions
⇒	Result of an action
⇔	Cross-references
1. 2.	Step-by-step instructions
	Note Recommendations and important information on how to handle the product

1.6 Key to safety symbols/markings

Table 3: Definition of safety symbols/markings

Symbol	Description
 DANGER	DANGER This signal word indicates a high-risk hazard which, if not avoided, will result in death or serious injury.
 WARNING	WARNING This signal word indicates a medium-risk hazard which, if not avoided, could result in death or serious injury.
 CAUTION	CAUTION This signal word indicates a hazard which, if not avoided, could result in damage to the machine and its functions.
	General hazard In conjunction with one of the signal words this symbol indicates a hazard which will or could result in death or serious injury.
	Electrical hazard In conjunction with one of the signal words this symbol indicates a hazard involving electrical voltage and identifies information about protection against electrical voltage.
	Machine damage In conjunction with the signal word CAUTION this symbol indicates a hazard for the machine and its functions.

2 Safety



DANGER

All the information contained in this section refers to hazardous situations.

In addition to the present general safety information the action-related safety information given in the other sections must be observed.

2.1 General

- This operating manual contains general installation, operating and maintenance instructions that must be observed to ensure safe operation of the system and prevent personal injury and damage to property.
- Comply with all the safety instructions given in the individual sections of this operating manual.
- The operating manual must be read and understood by the responsible specialist personnel/operators prior to installation and commissioning.
- The contents of this operating manual must be available to the specialist personnel at the site at all times.
- Information and markings attached directly to the product must always be complied with and kept in a perfectly legible condition at all times. This applies to, for example:
 - Arrow indicating the direction of rotation
 - Markings for connections
 - Name plate
- The operator is responsible for ensuring compliance with all local regulations not taken into account.

2.2 Intended use

- The pump (set) must only be operated in the fields of application and within the use limits specified in the other applicable documents. [⇒ Section 1.4, Page 6]
- Only operate pumps/pump sets which are in perfect technical condition.
- Do not operate the pump (set) in partially assembled condition.
- Only use the pump (set) to handle the fluids described in the data sheet or product literature of the pump variant.
- Never operate the pump (set) without the fluid to be handled.
- Observe the minimum flow rate and maximum flow rate indicated in the data sheet or product literature (to prevent overheating, mechanical seal damage, cavitation damage, bearing damage, etc).
- Always operate the pump (set) in the direction of rotation it is intended for.
- Do not throttle the flow rate on the suction side of the pump (to prevent cavitation damage).
- Consult the manufacturer about any use or mode of operation not described in the data sheet or product literature.

8 / 52

2.3 Personnel qualification and training

All personnel involved must be fully qualified to transport, install, operate, maintain and inspect the machinery this manual refers to.

The responsibilities, competence and supervision of all personnel involved in transport, installation, operation, maintenance and inspection must be clearly defined by the operator.

Deficits in knowledge must be rectified by means of training and instruction provided by sufficiently trained specialist personnel. If required, the operator can commission the manufacturer/supplier to train the personnel.

Training on the pump (set) must always be supervised by technical specialist personnel.

2.4 Consequences and risks caused by non-compliance with this manual

- Non-compliance with these operating instructions will lead to forfeiture of warranty cover and of any and all rights to claims for damages.
- Non-compliance can, for example, have the following consequences:
 - Hazards to persons due to electrical, thermal, mechanical and chemical effects and explosions
 - Failure of important product functions
 - Failure of prescribed maintenance and servicing practices
 - Hazard to the environment due to leakage of hazardous substances

2.5 Safety awareness

In addition to the safety information contained in this operating manual and the intended use, the following safety regulations shall be complied with:

- Accident prevention, health regulations and safety regulations
- Explosion protection regulations
- Safety regulations for handling hazardous substances
- Applicable standards, directives and laws

2.6 Safety information for the operator/user

- Fit protective equipment (e.g. contact guards) supplied by the operator for hot, cold or moving parts, and check that the equipment functions properly.
- Do not remove any protective equipment (e.g. contact guards) during operation.
- Provide the personnel with protective equipment and make sure it is used.
- Contain leakages (e.g. at the shaft seal) of hazardous fluids handled (e.g. explosive, toxic, hot) so as to avoid any danger to persons and the environment. Adhere to all relevant laws.
- Eliminate all electrical hazards. (In this respect refer to the applicable national safety regulations and/or regulations issued by the local energy supply companies.)
- If stopping the pump does not increase potential risk, fit an emergency-stop control device in the immediate vicinity of the pump (set) during pump set installation.

2.7 Safety information for maintenance, inspection and installation

- Modifications or alterations of the pump (set) are only permitted with the manufacturer's prior consent.
- Use only original spare parts or parts/components authorised by the manufacturer. The use of other parts/components can invalidate any liability of the manufacturer for resulting damage.
- The operator ensures that maintenance, inspection and installation are performed by authorised, qualified specialist personnel who are thoroughly familiar with the manual.
- Only carry out work on the pump (set) during standstill of the pump.
- Only perform work on the pump set when it has been disconnected from the power supply (de-energised).
- The pump (set) must have cooled down to ambient temperature.
- Pump pressure must have been released and the pump must have been drained.

-
- When taking the pump set out of service always adhere to the procedure described in the manual. [⇒ Section 6.3, Page 27]
 - Decontaminate pumps which handle fluids posing a health hazard. [⇒ Section 7.3, Page 31]
 - As soon as the work has been completed, re-install and re-activate any safety-relevant devices and protective devices. Before returning the product to service, observe all instructions on commissioning. [⇒ Section 6.1, Page 22]

2.8 Unauthorised modes of operation

Never operate the pump (set) outside the limits stated in the data sheet and in this operating manual.

The warranty relating to the operating reliability and safety of the pump (set) supplied is only valid if the equipment is used in accordance with its intended use. [⇒ Section 2.2, Page 8]

3 Transport/Storage/Disposal

3.1 Checking the condition upon delivery

1. On transfer of goods, check each packaging unit for damage.
2. In the event of in-transit damage, assess the exact damage, document it and notify Duijvelaar Pompen B.V. or the supplying dealer and the insurer about the damage in writing immediately.

3.2 Transport

Transporting the pump set



⚠ DANGER

Improper transport

Danger to life from falling parts!

Damage to the pump set!

- Use the attachment point provided for attaching the lifting accessory.
- Never lift the pump set by the electric cables.
- Use the lifting chain/rope included in the scope of supply exclusively for lowering or lifting the pump set into/out of the pump sump.
- Securely attach the lifting chain/rope to the pump and crane.
- Use tested, marked and approved lifting accessories only.
- Observe the regional transport regulations.
- Observe the documentation of the lifting accessory manufacturer.
- The load-carrying capacity of the lifting accessory must be higher than the weight indicated on the name plate of the pump set to be lifted. Take into account any additional system components to be lifted.
- Maintain a safe distance during lifting operations (load may swing when being lifted).



⚠ WARNING

Improper lifting/moving of heavy assemblies or components

Personal injury and damage to property!

- Use suitable transport devices, lifting equipment and lifting tackle to move heavy assemblies or components.

To transport the pump/pump set suspend it from the lifting tackle as shown.

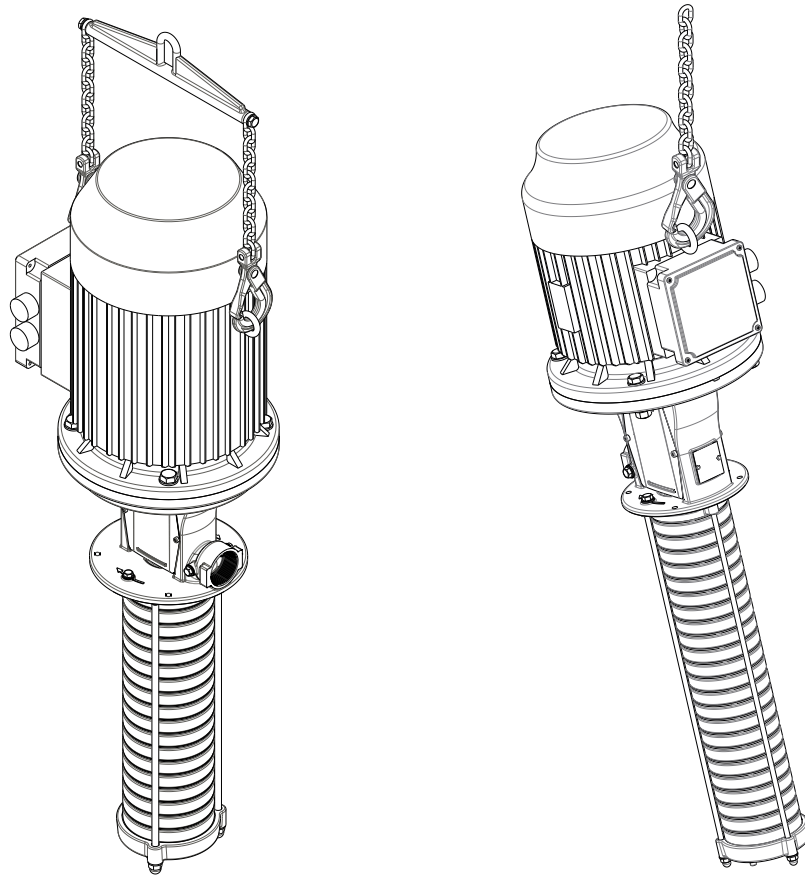


Fig. 1 [TPG-20111092/TPG-20111080-C]: Transporting the pump set

Placing down the pump set



WARNING

Incorrect positioning/placing down

Personal injury and damage to property!

- Position the pump set vertically with the motor on top.
- Use appropriate means to secure the pump set against tilting and tipping over.
- Refer to the weights given in the data sheet/on the name plate.

3.3 Storage/preservation

If commissioning is to take place some time after delivery, take the following measures:



CAUTION

Damage during storage due to humidity, dirt or vermin

Corrosion/contamination of pump (set)!

- For outdoor storage cover the pump (set) or the packaged pump (set) and accessories with waterproof material.

- Store the pump set in dry, vibration-free conditions and in its original packaging.
- Fill some antifreeze (e.g. ethylene glycol) into the pump to protect it from frost/freezing.
- Manually rotate the shaft once every three months as well as shortly before start-up.
- Spray the inside of the mechanical seal chamber with a preservative to prevent seizure of the mechanical seal.

Table 4: Ambient conditions for storage

Ambient condition	Value
Relative humidity	5 % to 80 % ²⁾ (non-condensing)
Ambient temperature	-10 °C to +40 °C ³⁾

3.4 Disposal



WARNING

Fluids handled, consumables and supplies which are hot and/or pose a health hazard

Hazard to persons and the environment!

- Collect and properly dispose of flushing fluid and any fluid residues.
- Wear safety clothing and a protective mask if required.
- Observe all legal regulations on the disposal of fluids posing a health hazard.

1. Dismantle the pump (set).
Collect greases and other lubricants during dismantling.
2. Separate and sort the pump materials, e.g. by:
 - Metals
 - Plastics
 - Electronic waste
 - Greases and other lubricants
3. Dispose of materials in accordance with local regulations or in another controlled manner.

3.5 Return to supplier

1. Drain the pump properly. [⇒ Section 7.3, Page 31]
2. Flush and clean the pump, particularly if it has been used for handling noxious, explosive, hot or other hazardous fluids.

² At +20 °C

³ Optional: -10 °C to +55 °C

3. If the pump has handled fluids whose residues could lead to corrosion damage in the presence of atmospheric humidity or could ignite upon contact with oxygen, the pump must also be neutralised, and anhydrous inert gas must be blown through the pump to ensure drying.
4. Always complete and enclose a certificate of decontamination when returning the pump. Indicate any safety measures and decontamination measures taken.
[⇒ Section 11, Page 50]

**NOTE**

If required, a blank certificate of decontamination can be downloaded from the following web site: www.dp.nl/certificates-of-decontamination

4 Description of the Pump (Set)

4.1 General description

- Multistage high-pressure immersion centrifugal pump

Pump for handling liquids connected with machine tools, transporting condensate and transporting liquids in industrial washing machines or similar applications.

4.2 Product information as per Regulation No. 1907/2006 (REACH)

For information as per chemicals Regulation (EC) No. 1907/2006 (REACH), see <https://www.dp.nl/reach>.

4.3 Designation

Example: DPVCI 15/17(19)B

Table 5 [TPG-20220236]: Designation key

Code	Description
DP	Label
VC	Material variant
V	Hydraulic system: stainless steel 1.4301/pump foot: stainless steel/upper holder: grey cast iron EN-GJL-250
VC	Hydraulic system: stainless steel 1.4301/pump foot, upper holder: grey cast iron EN-GJL-250
I	Connections
I	Oval flange with 5/4-inch internal thread
15	Size (flow rate in m ³ /h at Q _{BEP})
/17	Number of impellers
(19)	Number of stages, e.g. 10
B	Version
B	
C	

4.4 Name plate

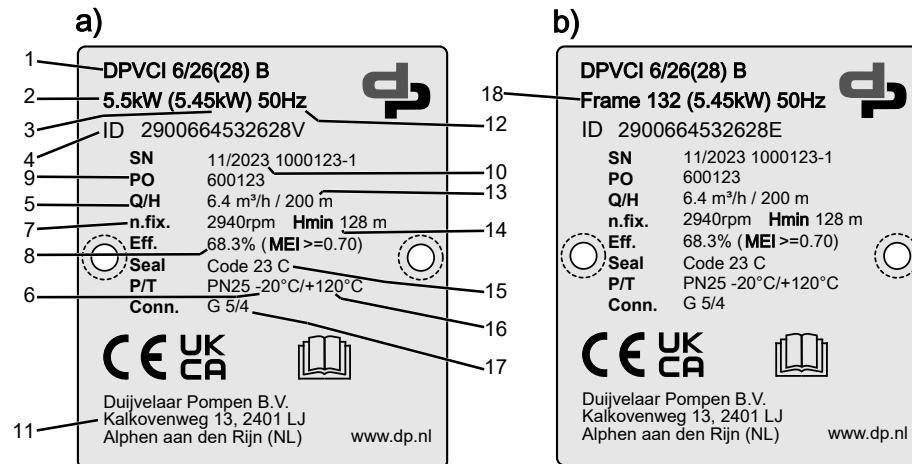


Fig. 2 [TPG-20100944-O]: Name plate (example) a) Pump with motor b) Pump without motor

1	Designation	2	Rated motor power
3	Power required	4	Duijvelaar Pompen B.V. order number
5	Flow rate ⁴⁾	6	Maximum pressure at specified temperature
7	Rated speed	8	Efficiency
9	Duijvelaar Pompen B.V. purchase order number	10	Month of production / year of production, consecutive number
11	Manufacturer's address	12	Rated frequency
13	Head ⁴⁾	14	Minimum head
15	Mechanical seal (code, design)	16	Maximum temperature at specified pressure
17	Connection	18	Frame size

4.5 Design details

Design

- Multistage high-pressure immersion centrifugal pump

Optional:

- Blind stages

Installation

- Vertical installation

Drive

- Surface-cooled Duijvelaar Pompen B.V. squirrel-cage motor
- Thermal class F to IEC 34-1
- Efficiency class IE3 to IEC 60034-30 (≥ 0.75 kW)
- Enclosure IP55
- Frequency 50 Hz/60 Hz

Optional:

- Harting connector, type HAN 10E

Bearings

- Plain bearings

Shaft seal

- Uncooled, maintenance-free mechanical seal in cartridge design

⁴ At best efficiency point (QBEP)

4.6 Configuration and function

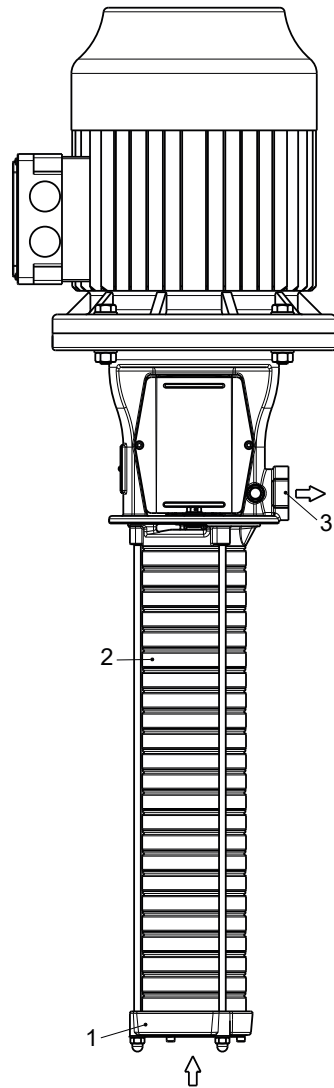


Fig. 3 [TPG-20111081-A]: Sectional drawing

1	Suction nozzle	2	Stage casing
3	Discharge nozzle		

Design The pump set is designed with an axial fluid inlet and a radial outlet. The length of the stage casing depends on the number of stages. The pump set is mounted on the cover plate of a tank.

As an option the stage casing can be extended by one or more blind stages for flexible immersion depths in the tank.



NOTE

Blind stages can cause a slight loss of pressure.

Function The fluid enters the pump via the suction nozzle and is accelerated outward in a cylindrical flow by the rotating impellers. In the flow passage of the stage casing the kinetic energy of the fluid is converted into pressure energy. The fluid is pumped to the discharge nozzle, where it leaves the pump.

Sealing The pump is sealed by a standardised mechanical seal.

4.7 Scope of supply

Depending on the model, the following items are included in the scope of supply:

- Pump
- Electric motor

4.8 Dimensions and weights

For dimensions and weights refer to the general arrangement drawing/outline drawing or data sheet of the pump set.

5 Installation at Site

5.1 Safety regulations



⚠ DANGER

Installing electric equipment (motors) in potentially explosive atmospheres

Risk of explosion!

- Comply with the applicable local explosion protection regulations.
- Verify the test certificate of the motor.
- Keep the test certificate close to the location of operation (e.g. in the foreman's office).

5.2 Checks to be carried out prior to installation

Check the structural requirements.

The structural work required must have been prepared in accordance with the dimensions stated in the outline drawing and/or general arrangement drawing.

5.3 Installing the pump set

The pump is designed for vertical installation in a tank.

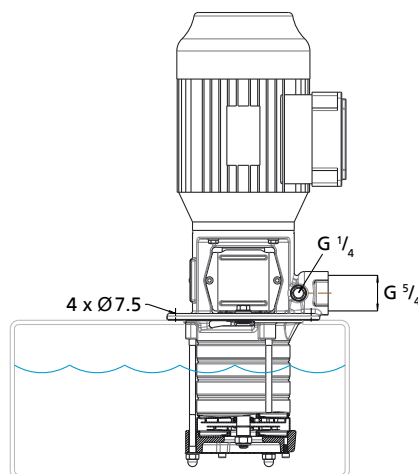


Fig. 4 [TPG-20130303-A]: Installing the pump set in a vertical position

- ✓ The tank has been installed properly.
- 1. Place the gasket on the installation opening of the tank cover.
- 2. Position the pump set on the gasket.
- 3. Fasten the supporting flange of the pump set to the tank cover with four hexagon head bolts.

5.4 Piping

5.4.1 Connecting the piping



⚠ DANGER

Impermissible loads acting on the pump nozzles

Danger to life from leakage of hot, toxic, corrosive or flammable fluids!

- ▷ Do not use the pump as an anchorage point for the piping.
- ▷ Anchor the pipes in close proximity to the pump and connect them properly without transmitting any stresses or strains.
- ▷ Take appropriate measures to compensate for thermal expansion of the piping.



CAUTION

Incorrect earthing during welding work at the piping

Destruction of rolling element bearings (pitting effect)!

- ▷ Never earth the electric welding equipment on the pump or baseplate.
- ▷ Prevent current flowing through the rolling element bearings.



NOTE

Installing check and shut-off elements in the system is recommended, depending on the type of plant and pump. However, such elements must not obstruct proper drainage or hinder disassembly of the pump.

- ✓ The nominal diameters of the pipelines are equal to or greater than the nominal diameters of the pump nozzles.
 - ✓ To prevent excessive pressure losses, adapters to larger diameters have a diffuser angle of approx. 8°.
 - ✓ The pipeline is anchored in close proximity to the discharge flange and connected without transmitting any stresses or strains. Its weight must not be carried by the pump discharge flange.
1. Thoroughly clean, flush and blow through all vessels, pipelines and connections (especially of new installations).

5.4.2 Permissible forces and moments at the pump nozzles

No piping-induced forces and moments (from warped pipelines or thermal expansion, for example) must act on the pump.

5.5 Electrical connection



⚠ DANGER

Electrical connection work by unqualified personnel

Danger of death from electric shock and explosion!



- ▷ Always have the electrical connections installed by an electrically qualified person.
- ▷ Observe regulations IEC 60364 and, for explosion-proof versions, EN 60079 .



WARNING

Incorrect connection to the mains

Damage to the power supply network, short circuit!

- Observe the technical specifications of the local energy supply companies.

1. Check the available mains voltage against the data on the name plate.
2. Select an appropriate start-up method.



NOTE

Installing a motor protection device is recommended.

5.6 Checking the direction of rotation



WARNING

Hands inside the pump casing

Risk of injuries, damage to the pump!

- Always disconnect the pump set from the power supply and secure it against unintentional start-up before inserting your hands or other objects into the pump.



WARNING

Reaching into the tank

Risk of personal injury!

- When the cover plate is removed, never reach into the uncovered tank.



CAUTION

Drive and pump running in the wrong direction of rotation

Damage to the pump!

- Refer to the arrow indicating the direction of rotation on the pump.
- Check the direction of rotation. If required, check the electrical connection and correct the direction of rotation.

The correct direction of rotation of motor and pump is clockwise (seen from the motor end).

1. Start the pump set and stop it again immediately to determine the motor's direction of rotation.
2. Check the direction of rotation.
The motor's direction of rotation must match the arrow indicating the direction of rotation on the motor stool/bearing lantern.
3. If the motor runs in the wrong direction of rotation, check the electrical connection of the motor and the control system, if applicable.

6 Commissioning/Start-up/Shutdown

6.1 Commissioning/Start-up

6.1.1 Prerequisites for commissioning/start-up

Before commissioning/starting up the pump set, make sure that the following conditions are met:

- The pump set has been flushed and disinfected in accordance with local requirements.
- The pump set has been properly connected mechanically.
- The pump set has been properly connected to the power supply and is equipped with all protection devices.
- The pump has been filled with the fluid to be handled. The pump has been vented.
- The direction of rotation has been checked. [⇒ Section 5.6, Page 21]
- All auxiliary connections required are connected and operational.
- The lubricants have been checked.
- After prolonged shutdown of the pump (set), the activities required for returning the equipment to service have been carried out. [⇒ Section 6.4, Page 27]

6.1.2 Priming and venting the pump

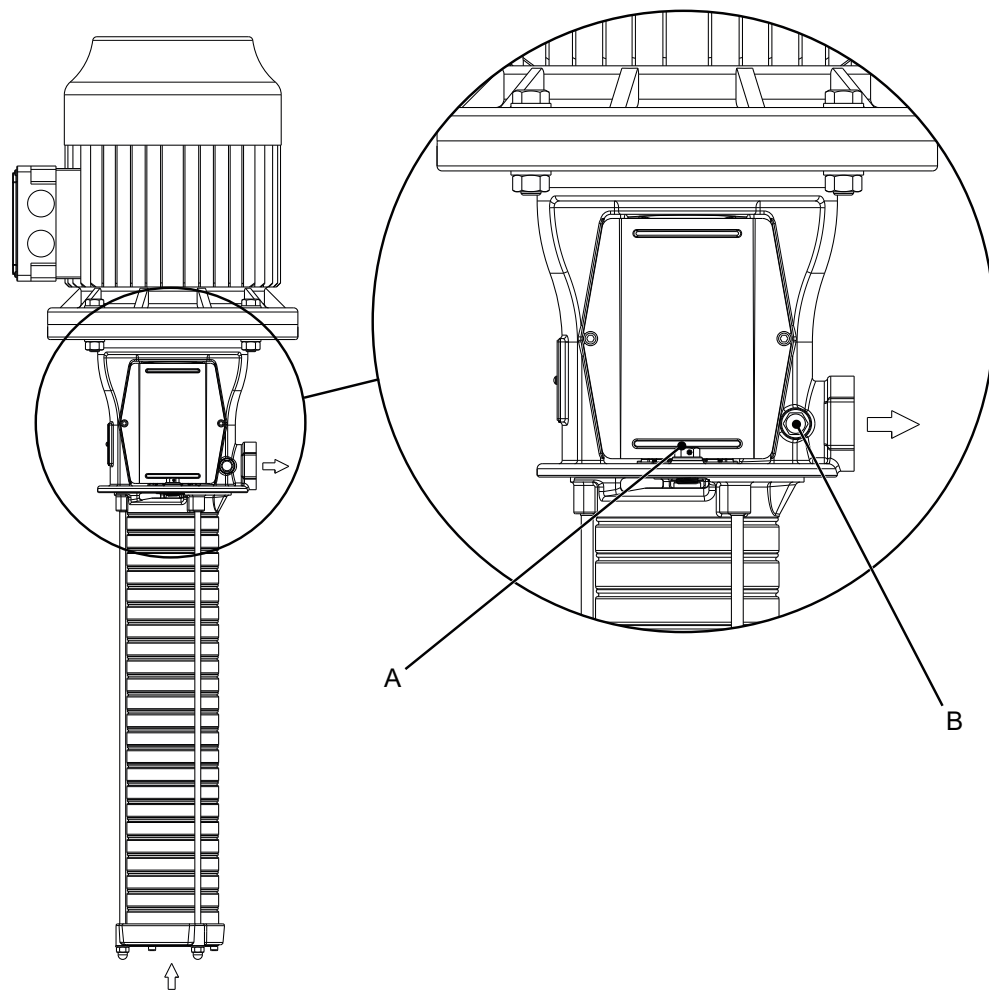


Fig. 5 [TPG-20111081-A]: Priming and venting the pump set

A	Vent valve for venting the tank	B	Vent valve for venting the pump set
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Filling and venting the tank


1. Close the shut-off element on the discharge side.
2. Open vent valve A.
3. Open the tank inlet line.
 - ⇒ The fluid to be handled starts flowing into the tank.
4. Monitor the fluid level to prevent overflowing of the tank.
5. Close vent valve A.

Priming and venting the pump set

- ✓ The shut-off element in the discharge line is closed.
 - ✓ The tank has been filled with the fluid to be handled.
1. Open vent valve B.
 2. Start up the pump set.
 3. Slightly open the shut-off element in the discharge line.
 - ⇒ The pump set is vented in this process.
 4. Close vent valve B.

5. Monitor the fluid level and verify the minimum fluid level.
6. Fully open the shut-off element in the discharge line.

6.2 Operating limits



⚠ DANGER

Non-compliance with operating limits

Damage to the pump set!

- ▷ Comply with the operating data indicated in the data sheet.
- ▷ Avoid operation below Q_{min} .
- ▷ Never operate the pump set outside the limits specified below.

Table 6 [TPG-20210029-B]: Specified operating range

Characteristic	Operating range
Fluid temperature [°C] ⁵⁾	-10 to 120
Fluid temperature [°C] ⁶⁾	-20 to 40
Maximum operating pressure	See name plate [⇒ Section 4.4, Page 15]
Viscosity [cSt] ⁷⁾	1 - 100
Density [kg/m ³] ⁷⁾	1000 - 2500
Frequency [Hz] ⁸⁾	10 - 60
Maximum number of starts per hour	300 ⁹⁾
Permissible particle size	0.5 µm - 1 mm

Minimum installation height

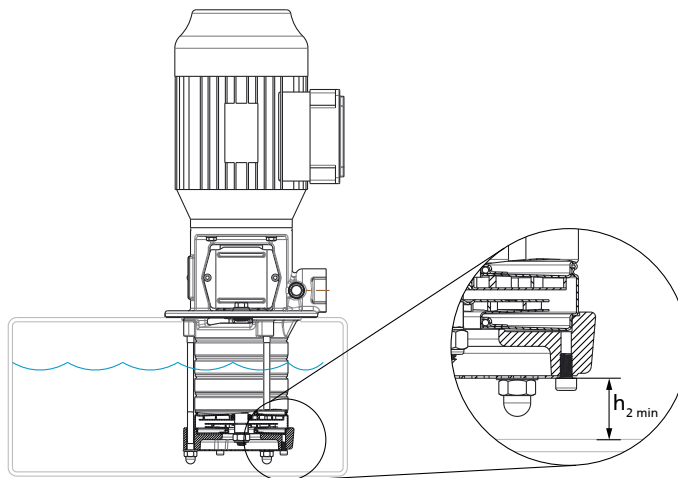


Fig. 6 [TPG-20130303-A]: Minimum installation height

⁵ At lower pressures, higher temperatures are permissible on request.

⁶ If the ambient temperature exceeds the permissible maximum or if the motor is located more than 1000 m above sea level, the motor cooling is less effective. The motor might have to be de-rated. The motor load depends on the installation altitude above sea level or on the ambient temperature. For detailed recommendations please contact Duijvelaar Pompen B.V..

⁷ Fluctuations could require de-rating of the motor. For more detailed recommendations please contact Duijvelaar Pompen B.V..

⁸ Pumps which are selected for 50 Hz must not be connected to a 60 Hz mains.

⁹ For motors > 11 kW: 200 starts

Table 7: Minimum installation height ($h_{2\ min}$)

Size	$h_{2\ min}$
	[mm]
2B	25
4B	25
6B	25
10B	40
15C	40

Minimum level of fluid handled

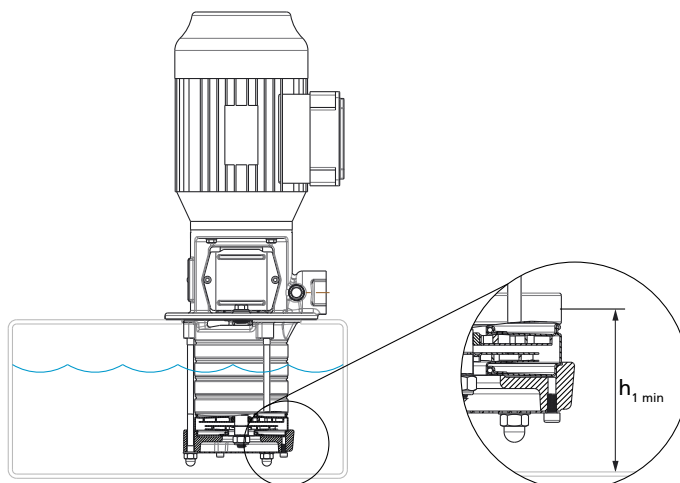


Fig. 7 [TPG-20130303-A]: Minimum level of fluid handled

Table 8: Minimum level of fluid handled ($h_{1\ min}$)

Size	$h_{1\ min}$
	[mm]
2B	61
4B	61
6B	61
10B	82
15C	82

Minimum flow rate

Table 9 [TPG-20191080-A]: Minimum flow rate (Q_{min}) at a fluid temperature of 20 °C

Size	Q_{min}	
	50 Hz	60 Hz
	2 poles	2 poles
	[m³/h]	[m³/h]
2B	0,2	0,2
4B	0,4	0,5
6B	0,6	0,8
10B	1,1	1,3
15C	1,9	2,3

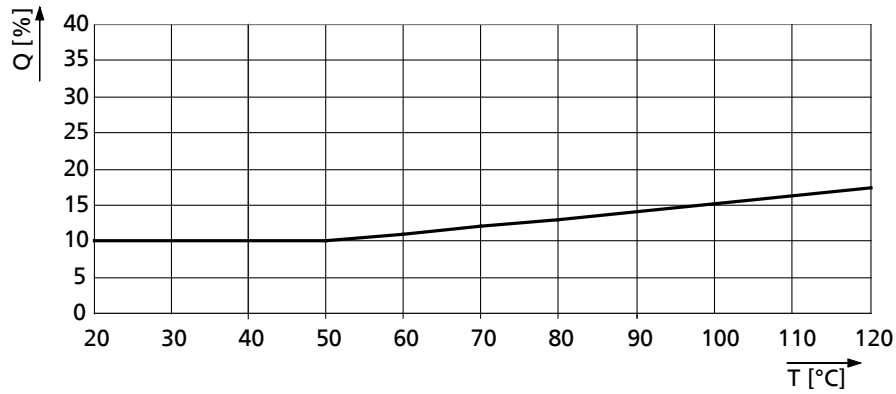


Fig. 8: Required minimum flow rate as a function of the fluid temperature

Table 10 [TPG-20110262-R]: Shaft seal options per pressure and temperature

Seal code	Type	Material					T		Pressure class
		Mechanical seal	Shaft seal, rotor	Shaft seal, stator	Shaft seal, elastomer	Pump elastomer	Min.	Max.	
							[°C]	[°C]	
11	MG12-G60	B Q1 E GG	Ca	SiC	EPDM	EPDM	-20	+100	PN 10
12	MG12-G60	B Q1 V GG	Ca	SiC	FPM	FPM	-20	+120	PN 10
28	MG12-G60	Q1 Q1 X4 GG	SiC	SiC	HNBR	HNBR	-20	+120	PN 10
29	MG12-G60	Q1 Q1 E GG	SiC	SiC	EPDM	EPDM	-20	+100	PN 10
30 ¹ ₀₎	MG12-G60	Q1 Q1 V GG	SiC	SiC	FPM	FPM/PTFE	-20	+120	PN 10
40 ¹ ₁₎	4MC	Q1 Q1 E GG	SiC	SiC	EPDM	EPDM	-20	+120 (+140)	PN 40 (PN 25)
41 ¹ ₁₎	4MC	Q1 A E GG	SiC	Ca	EPDM	EPDM	-20	+120 (+140)	PN 40 (PN 25)
42 ¹ ₁₎	4MC	Q1 Q1 V GG	SiC	SiC	FPM	FPM	-20	+120 (+140)	PN 40 (PN 25)
43 ¹ ₁₎	4MC	Q1 A V GG	SiC	Ca	FPM	FPM	-20	+120 (+140)	PN 40 (PN 25)

Table 11 [TPG-20110262-R]: Key to mechanical seal materials

Description	Code	Code to EN 12756	Material	Note
Primary ring	Ca	B	Carbon graphite	Resin-impregnated
	SiC	Q1	Silicon carbide	Sintered without pressure
	TuC	U3	Tungsten carbide	CrNiMo binder
	eCarb-B	B	Carbon graphite	Resin-impregnated, porous
Mating ring	Ca	A	Carbon graphite	Antimony-impregnated
	Ca	B	Carbon graphite	Resin-impregnated
	SiC	Q1	Silicon carbide	Sintered without pressure
	TuC	U3	Tungsten carbide	CrNiMo binder
	Ce	V	Aluminium oxide	> 99 %
	eSiC-Q7	Q7	Silicon carbide	Porous
Elastomer	EPDM	E	Ethylene propylene rubber	
	NBR	P	Nitrile butadiene rubber	
	FPM	V	Fluorocarbon nitrile rubber	
	HNBR	X4	Hydrogenated nitrile rubber	

¹⁰ Seal variants only

¹¹ Mechanical seal suitable for temperatures from -30 °C to +140 °C at PN25

Description	Code	Code to EN 12756	Material	Note
Spring	AISI 316	G	CrNiMo steel	
	AISI 304	F	CrNi steel	
Other metal parts	AISI 316	G	CrNiMo steel	
	AISI 304	F	CrNi steel	

6.3 Shutdown/storage/preservation

6.3.1 Measures to be taken for shutdown

The pump set remains installed

- ✓ Sufficient fluid is supplied for the functional check run of the pump.
- 1. Start up the pump regularly once a month or once every three months for approximately five minutes during prolonged shutdown periods.
This will prevent the formation of deposits within the pump and the pump intake area.



CAUTION

Danger of freezing during prolonged pump shutdown periods

Damage to the pump!

- The temperature maintenance equipment must remain in operation also during pump shutdown periods.

The pump set is removed from the piping and stored

- ✓ The checks and maintenance operations have been performed.
- 1. Spray-coat the inside wall of the pump casing with a preservative.
- 2. Spray the preservative through the inlet and outlet nozzles of the fluid handled.
It is advisable to close the fluid inlet and outlet nozzles afterwards (e.g. with plastic caps or similar).

Observe any additional instructions and information provided. [⇒ Section 3, Page 11]

6.4 Returning to service

For returning the equipment to service observe the sections on commissioning/start-up and the operating limits. [⇒ Section 6.1, Page 22]

In addition, carry out all servicing/maintenance operations before returning the pump (set) to service. [⇒ Section 7, Page 28]



WARNING

Failure to re-install or re-activate protective devices

Risk of injury from moving parts or escaping fluid!

- As soon as the work is completed, properly re-install and re-activate any safety-relevant devices and protective devices.



NOTE

If the equipment has been out of service for more than one year, replace all elastomer seals.

7 Servicing/Maintenance

7.1 Safety regulations

The operator ensures that maintenance, inspection and installation are performed by authorised, qualified specialist personnel who are thoroughly familiar with the manual.



WARNING

Unintentional starting of the pump set

Risk of injury by moving components and shock currents!

- ▷ Ensure that the pump set cannot be started unintentionally.
- ▷ Always make sure the electrical connections are disconnected before carrying out work on the pump set.



WARNING

Fluids handled, consumables and supplies which are hot and/or pose a health hazard

Risk of injury!

- ▷ Observe all relevant laws.
- ▷ When draining the fluid take appropriate measures to protect persons and the environment.
- ▷ Decontaminate pumps which handle fluids posing a health hazard.



WARNING

Insufficient stability

Risk of crushing hands and feet!

- ▷ During assembly/dismantling, secure the pump (set)/pump parts to prevent tilting or tipping over.

A regular maintenance schedule will help avoid expensive repairs and contribute to trouble-free, reliable operation of the pump, pump set and pump parts with a minimum of servicing/maintenance expenditure and work.



NOTE

All maintenance work, service work and installation work can be carried out by Duijvelaar Pompen B.V. Service or authorised workshops.

Never use force when dismantling and reassembling the pump set.

7.2 Servicing/inspection

7.2.1 Supervision of operation



CAUTION

Increased wear due to dry running

Damage to the pump set!

- ▷ Never operate the pump set without liquid fill.
- ▷ Never close the shut-off element in the suction line and/or supply line during pump operation.



CAUTION

Impermissibly high temperature of fluid handled

Damage to the pump!

- ▷ Prolonged operation against a closed shut-off element is not permitted (heating up of the fluid).
- ▷ Observe the temperature limits in the data sheet and in the section on operating limits.

While the pump is in operation, observe and check the following:

- The pump must run quietly and free from vibrations at all times.
- Check the shaft seal.
- Check the static seals for leakages.
- Check the rolling element bearings for running noises.
Vibrations, noise and an increase in current input occurring during unchanged operating conditions indicate wear.
- Monitor the stand-by pump.
To make sure that the stand-by pumps are ready for operation, start them up once a week.
- Monitor the bearing temperature.
The bearing temperature must not exceed 90 °C (measured on the outside of the motor housing).



CAUTION

Operation outside the permissible bearing temperature

Damage to the pump!

- ▷ The bearing temperature of the pump (set) must never exceed 90 °C (measured on the outside of the motor housing).



NOTE

After commissioning, increased temperatures may occur at grease-lubricated rolling element bearings due to the running-in process. The final bearing temperature is only reached after a certain period of operation (up to 48 hours depending on the conditions).

7.2.2 Lubrication and lubricant change

7.2.2.1 Grease lubrication

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

7.2.2.1.1 Intervals

Depending on the pump size and rotational speed, re-lubricate the rolling element bearings or replace the grease at regular intervals.



NOTE

On some pump designs the rolling element bearings are lubricated for life. These pumps are not provided with a lubricating nipple on the bearing bracket.



NOTE

If re-lubrication intervals are short, we recommend that the grease be completely replaced once a year. Otherwise, the grease fill must be replaced completely every two years. To do so, remove the rolling element bearings, clean and pack with new grease.

Motors and thrust bearing housings (if any) with lubricating nipple must be re-lubricated every 2000 hours.

If the pump is operated under extreme conditions, such as vibrations or high temperatures, the motors and (if applicable) the thrust bearing housing must be re-lubricated more frequently.

7.2.2.1.2 Grease quality

Optimum grease properties for rolling element bearings

- High melting point lithium soap base grease
- Resin-free and acid-free
- Not liable to crumble
- Rust-preventive characteristics

7.2.2.1.3 Grease quantity

Use 15 grams of grease per bearing.

7.2.2.1.4 Re-lubricating with grease



WARNING

Work in the immediate vicinity of rotating parts

Risk of hand injuries!

- Always have this work performed by trained personnel.
- Take particular caution when performing this work.



CAUTION

Contaminated lubricating nipples

Contamination of the lubricating grease!

- Clean the grease lubricating nipples before re-lubricating them.

1. Clean the lubricating nipples, if contaminated.
2. Position the grease press on the lubricating nipple.
3. Press in the grease.

7.3 Drainage/cleaning



⚠ WARNING

Fluids handled, consumables and supplies which are hot and/or pose a health hazard

Hazard to persons and the environment!

- ▷ Collect and properly dispose of flushing fluid and any fluid residues.
- ▷ Wear safety clothing and a protective mask if required.
- ▷ Observe all legal regulations on the disposal of fluids posing a health hazard.

1. Always flush the pump if it has been used for handling noxious, explosive, hot or other hazardous fluids.

Always flush and clean the pump before transporting it to the workshop. Provide a cleaning record for the pump.

7.4 Dismantling the pump set

7.4.1 General information/Safety regulations



⚠ DANGER

Insufficient preparation of work on the pump (set)

Risk of injury!

- ▷ Properly shut down the pump set.
- ▷ Close the shut-off elements in the suction line and discharge line.
- ▷ Drain the pump and release the pump pressure.
[⇒ Section 7.3, Page 31]
- ▷ Shut off any auxiliary feed lines.
- ▷ Allow the pump set to cool down to ambient temperature.



⚠ WARNING

Unqualified personnel performing work on the pump (set)

Risk of injury!

- ▷ Always have repair work and maintenance work performed by specially trained, qualified personnel.



⚠ WARNING

Hot surface

Risk of injury!

- ▷ Allow the pump set to cool down to ambient temperature.



⚠ WARNING

Improper lifting/moving of heavy assemblies or components

Personal injury and damage to property!

- ▷ Use suitable transport devices, lifting equipment and lifting tackle to move heavy assemblies or components.

Always observe the safety instructions and information.

For any work on the motor, observe the instructions of the relevant motor manufacturer.

For dismantling and reassembly observe the exploded views and the general assembly drawing. [⇒ Section 9.1, Page 41]

In the event of damage you can always contact our service departments.



NOTE

After a prolonged period of operation the individual components may be hard to pull off the shaft. If this is the case, use a brand name penetrating agent and/or - if possible - an appropriate puller.

7.4.2 Preparing the pump set



⚠ DANGER

Power supply not disconnected

Danger to life!

- ▷ Disconnect all electrical connections from the power supply and secure against unintentional start-up.

1. De-energise the pump set and secure it against unintentional start-up.

7.4.3 Removing the pump set from the tank and piping

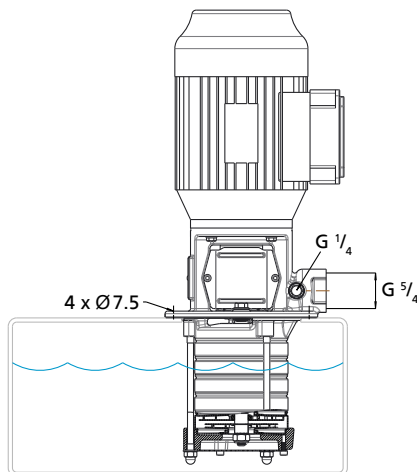


Fig. 9 [TPG-20130303-A]: Removing the pump set from the tank and piping

- ✓ The pump set has been de-energised.
 - ✓ The pump set is secured against unintentional start-up.
1. Close the shut-off element in the discharge line.
 2. Remove the discharge line.
 3. Undo the four hexagon head bolts at the supporting flange.
 4. Lift the pump set out of the tank.
 - ⇒ The pump set is drained in this process.

7.4.4 Removing the motor



⚠ WARNING

Motor tipping over

Risk of crushing hands and feet!

- ▷ Suspend or support the motor to prevent it from tipping over.

✓ The pump set has been de-energised.

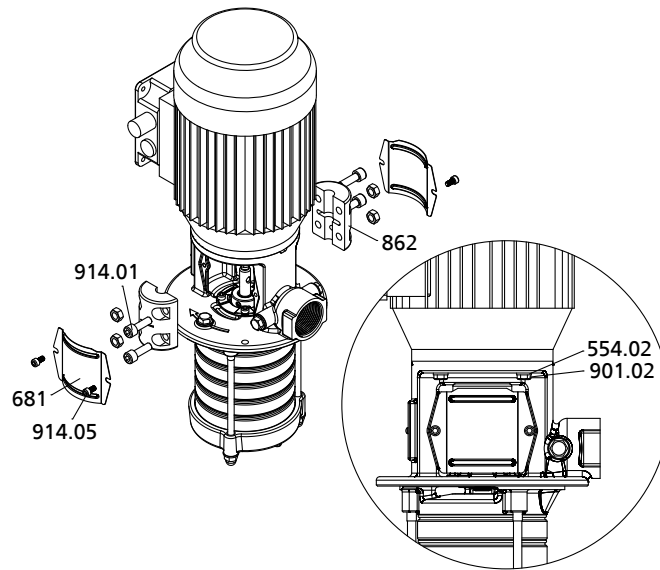


Fig. 10 [TPG-20120135-B]: Removing the motor

1. Undo hexagon socket head cap screws 914.05.
2. Remove coupling guard 681.
3. Undo hexagon socket head cap screws 914.01.
4. Remove coupling 862.
5. Undo hexagon head bolts 901.02 and remove them together with washers 554.02.
6. Lift the motor off the pump.

7.4.5 Removing the mechanical seal

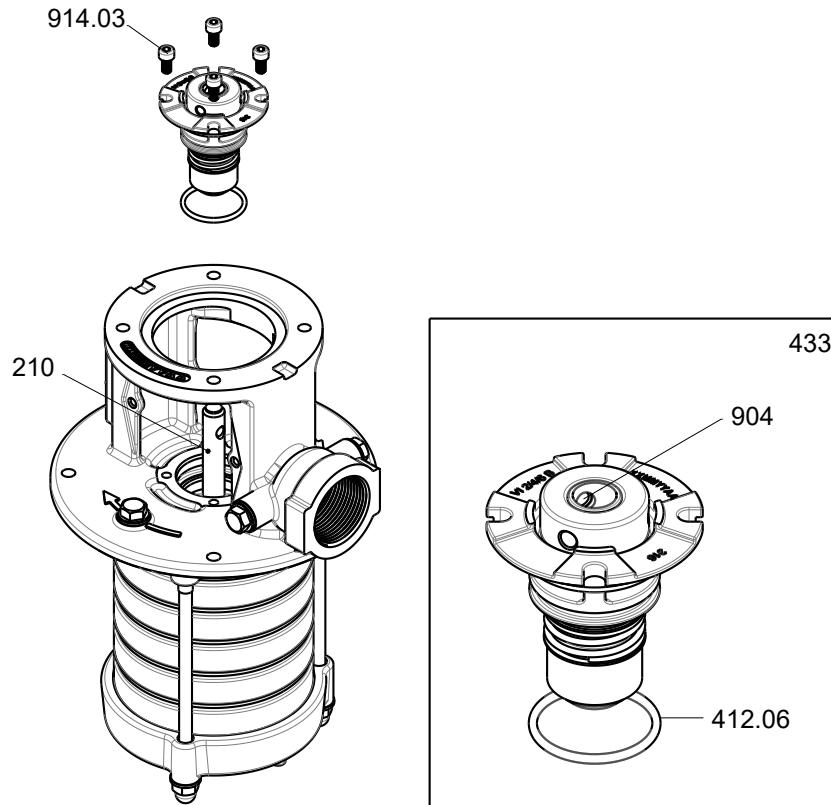


Fig. 11 [TPG-20120136-C]: Removing the mechanical seal

- ✓ The motor has been removed.
- 1. Undo hexagon socket head cap screws 914.03.
- 2. Take out mechanical seal 433.
- 3. Remove O-ring 412.06.

7.5 Reassembling the pump set

7.5.1 General information/Safety regulations



WARNING

Improper lifting/moving of heavy assemblies or components

Personal injury and damage to property!

- Use suitable transport devices, lifting equipment and lifting tackle to move heavy assemblies or components.



CAUTION

Improper reassembly

Damage to the pump!

- Reassemble the pump (set) in accordance with the general rules of sound engineering practice.
- Use original spare parts only.



NOTE

Use suitable tools for setting the pump shaft.
If necessary, contact Duijvelaar Pompen B.V..

- Sequence** Always reassemble the pump set in accordance with the corresponding general assembly drawing.
- Sealing elements**
- O-rings
 - Check O-rings for any damage and replace by new O-rings, if required.
 - Assembly adhesives
 - Avoid the use of assembly adhesives, if possible.
- Tightening torques** For reassembly, tighten all screws and bolts as specified in this manual.

7.5.2 Fitting the mechanical seal



CAUTION

Incorrect installation of mechanical seal

Damage to the machinery!

- Installation should only be carried out by qualified specialist personnel.

Installing the mechanical seal

The following rules must be observed when installing the mechanical seal:

- Work cleanly and accurately.
- Only remove the protective wrapping of the contact faces immediately before installation takes place.
- Prevent any damage to the sealing surfaces or O-rings.

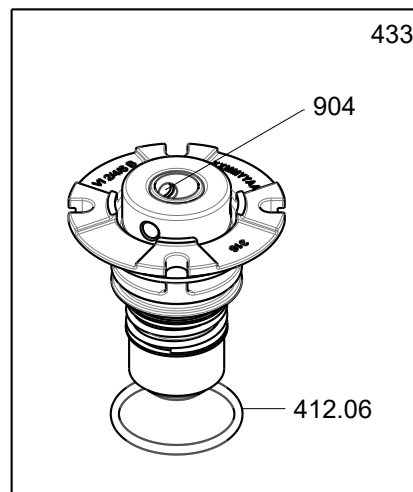
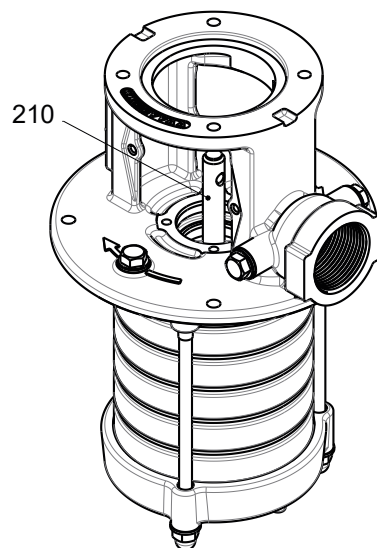
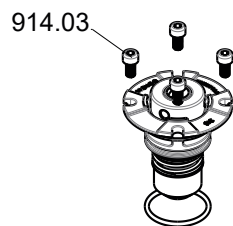


Fig. 12 [TPG-20120136-C]: Fitting the mechanical seal

1. Insert O-ring 412.06.
2. Insert mechanical seal 433.
3. Screw in hexagon socket head cap screws 914.03.
4. Adjust mechanical seal 433.

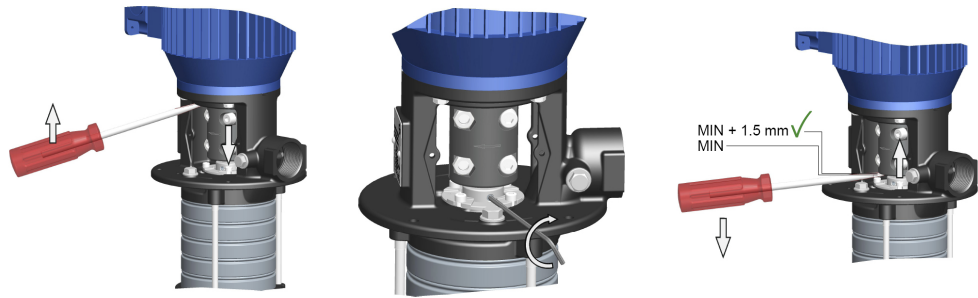


Fig. 13 [TPG-20120137, TPG-20120138, TPG-20120139]: Adjusting the mechanical seal

7.5.3 Mounting the motor



⚠ WARNING

Motor tipping over

Risk of crushing hands and feet!

- Suspend or support the motor to prevent it from tipping over.



NOTE

Using a specially designed Duijvelaar Pompen B.V. motor is recommended.

The motor must meet the following conditions:

- Reinforced bearing at the drive end
(to absorb the axial force)
- Motor fastened axially
(to minimise the axial clearance of the hydraulic system of the pump)
- Non-keywayed shaft
(to improve the coupling connection and the smooth running of the motor)
- The rated power must be suitable for the relevant operating frequency.
- The frame size must be suitable for connecting the motor to the drive lantern.

Table 12 [TPG-20101096-K]: Recommended motor bearings at the drive end

Motor rating [kW]	1-phase 50 Hz	3-phase 50/ 60 Hz	
		2 poles	4 poles
0,25	-	-	6203-2Z-C3
0,37	6202-2Z-C3	6203-2Z-C3	6203-2Z-C3
0,55	6202-2Z-C3	6203-2Z-C3	6204-2Z-C3
0,75	6204-2Z-C3	6204-2Z-C3	6204-2Z-C3
1,1	6305-2Z-C3	6204-2Z-C3	6305-2Z-C3
1,5	6305-2Z-C3	6305-2Z-C3	6305-2Z-C3
2,2	6305-2Z-C3	6305-2Z-C3	6306-2Z-C3
3,0	-	6306-2Z-C3	6306-2Z-C3
4,0	-	6306-2Z-C3	6306-2Z-C3
5,5	-	6308-2Z-C3	6308-2Z-C3
7,5	-	6308-2Z-C3	6308-2Z-C3
11,0	-	7309-BEP	-
15,0	-	7309-BEP	-
18,5	-	7309-BEP	-
22,0	-	7311-BEP	-

Motor rating [kW]	1-phase 50 Hz	3-phase 50/ 60 Hz	
		2 poles	4 poles
30,0	-	7312-BEP	-
37,0	-	7312-BEP	-
45,0	-	7313-BEP	-

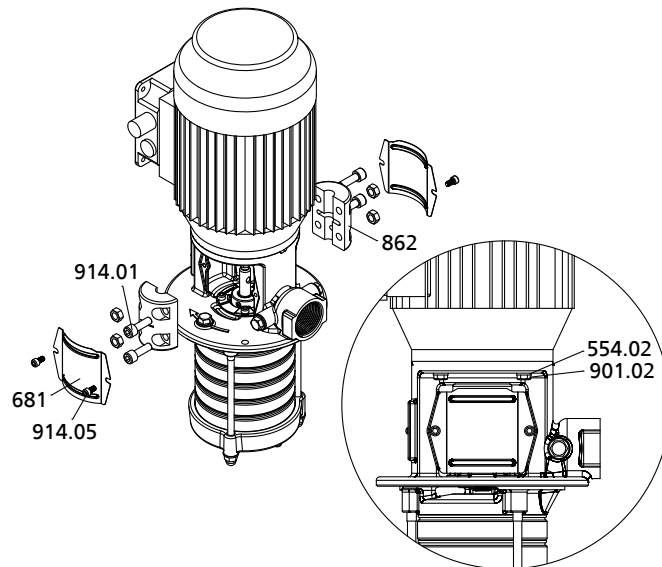


Fig. 14 [TPG-20120135-B]: Mounting the motor

1. Align the motor on the drive lantern.
2. Fit hexagon head bolts 901.02 and washers 554.02. Tighten the bolts.



CAUTION

Incorrect installation of coupling

Damage to the machinery!

- The coupling must be installed by qualified specialist personnel.

3. Insert coupling 862.
4. Screw in hexagon socket head cap screws 914.01.
5. Fit coupling guard 681.
6. Screw in hexagon socket head cap screws 914.05.

7.6 Tightening torques

Table 13 [TPG-95000697-BG]: Tightening torques¹²⁾

Size	Part No.	Description	Thread	Tightening torque
				[Nm]
2B, 4B, 6B, 10B, 15C	914.03	Hexagon socket head cap screw	M5	4 ⁺²
2B, 4B, 6B, 10B	920.02	Nut	M10	28
15C			M12	38
2B, 4B, 6B	920.03	Nut	M8	12
10B, 15C	920.03	Nut	M12	40

¹²⁾ Any parts which are not listed in this table shall be tightened hand-tight.

7.7 Spare parts stock

7.7.1 Ordering spare parts

Always quote the following data when ordering replacement or spare parts:

- Order number
- Order item number
- Consecutive number
- Type series
- Size
- Material variant
- Seal code
- Year of construction

Refer to the name plate for all data.

Also specify the following data:

- Part No. and description [⇒ Section 9.1, Page 41]
- Quantity of spare parts
- Shipping address
- Mode of dispatch (freight, mail, express freight, air freight)

8 Trouble-shooting



⚠ WARNING Improper work to remedy faults

Risk of injury!

- ▷ For any work performed to remedy faults, observe the relevant information given in this operating manual and/or in the product literature provided by the accessories manufacturer.

If problems occur that are not described in the following table, consultation with the Duijvelaar Pompen B.V. service is required.

Table 14: Trouble-shooting

Problem	Possible cause	Remedy
Leakage along the shaft	Seal faces of the mechanical seal worn or damaged	<ul style="list-style-type: none"> – Replace the shaft seal. – Check pump for impurities.
	Axial movement of the mechanical seal is restricted because it is stuck.	<ul style="list-style-type: none"> – Quickly open and close the discharge-side valve during operation.
	Shaft seal fitted incorrectly	<ul style="list-style-type: none"> – Re-install shaft seal correctly (use water and soap as a lubricant).
	Elastomers damaged by the fluid handled	<ul style="list-style-type: none"> – Use a suitable elastomer for the shaft seal.
	Total operating pressure too high	<ul style="list-style-type: none"> – Use a shaft seal with suitable pressure class.
	Shaft is damaged.	<ul style="list-style-type: none"> – Replace the shaft.
	Pump running dry	<ul style="list-style-type: none"> – Replace the shaft seal.
Leakage at the stage casing	O-ring worn	<ul style="list-style-type: none"> – Replace the O-ring.
	O-ring not resistant to fluid handled	<ul style="list-style-type: none"> – Replace O-ring with O-ring made of suitable material.
Pump vibrates and causes running noises.	Coupling fitted incorrectly	<ul style="list-style-type: none"> – Make sure the coupling halves are parallel.
	Rotor adjusted incorrectly	<ul style="list-style-type: none"> – Re-adjust rotor.
	Pump not primed	<ul style="list-style-type: none"> – Prime and vent the pump.
	No or insufficient inflow	<ul style="list-style-type: none"> – Provide sufficient supply. – Check inlet line for clogging.
	Bearings of pump and/or motor defective	<ul style="list-style-type: none"> – Replace bearings.
	NPSH available too low (cavitation)	<ul style="list-style-type: none"> – Improve suction conditions.
	Pump not working in its operating range	<ul style="list-style-type: none"> – Adjust system to comply with pump operating range or select different pump.
	Pump clogged	<ul style="list-style-type: none"> – Clean the pump.
	Flange connection uneven	<ul style="list-style-type: none"> – Level the surface and rigidly fasten pump to casing cover.
	Pump draws in foaming fluid.	<ul style="list-style-type: none"> – Observe the minimum level of fluid handled. – Reduce formation of foam.
Pump does not start.	No voltage at the terminals	<ul style="list-style-type: none"> – Check power supply (circuit, master switch, fuses).
	Thermal motor protection device has tripped.	<ul style="list-style-type: none"> – Re-set thermal motor protection (I_{nom} see name plate).
Motor is running but pump does not start.	Motor shaft defective	<ul style="list-style-type: none"> – Contact supplier.
	Pump shaft defective	<ul style="list-style-type: none"> – Contact supplier.
	Shaft coupling has loosened.	<ul style="list-style-type: none"> – Tighten the fastening screws.
Insufficient delivery and/or insufficient pressure	Valves in suction and/or discharge lines closed	<ul style="list-style-type: none"> – Open the shut-off elements.

Problem	Possible cause	Remedy
	Air in the pump	– Vent the pump.
	Insufficient inlet pressure	– Increase inlet pressure.
	Wrong direction of rotation	– Check electrical connection.
	Pump draws in foaming fluid.	– Observe the minimum level of fluid handled. Reduce formation of foam.
	Insufficient flow rate leads to air remaining in the pump.	– Use smaller pump. – Increase the (volume) flow rate.
	Impeller or diffuser clogged	– Clean the pump.
	O-ring not resistant to fluid handled	– Replace O-ring with O-ring made of suitable material.

9 Related Documents

9.1 General arrangement drawings with list of components

9.1.1 DPVCI 2B, 4B, 6B, 10B

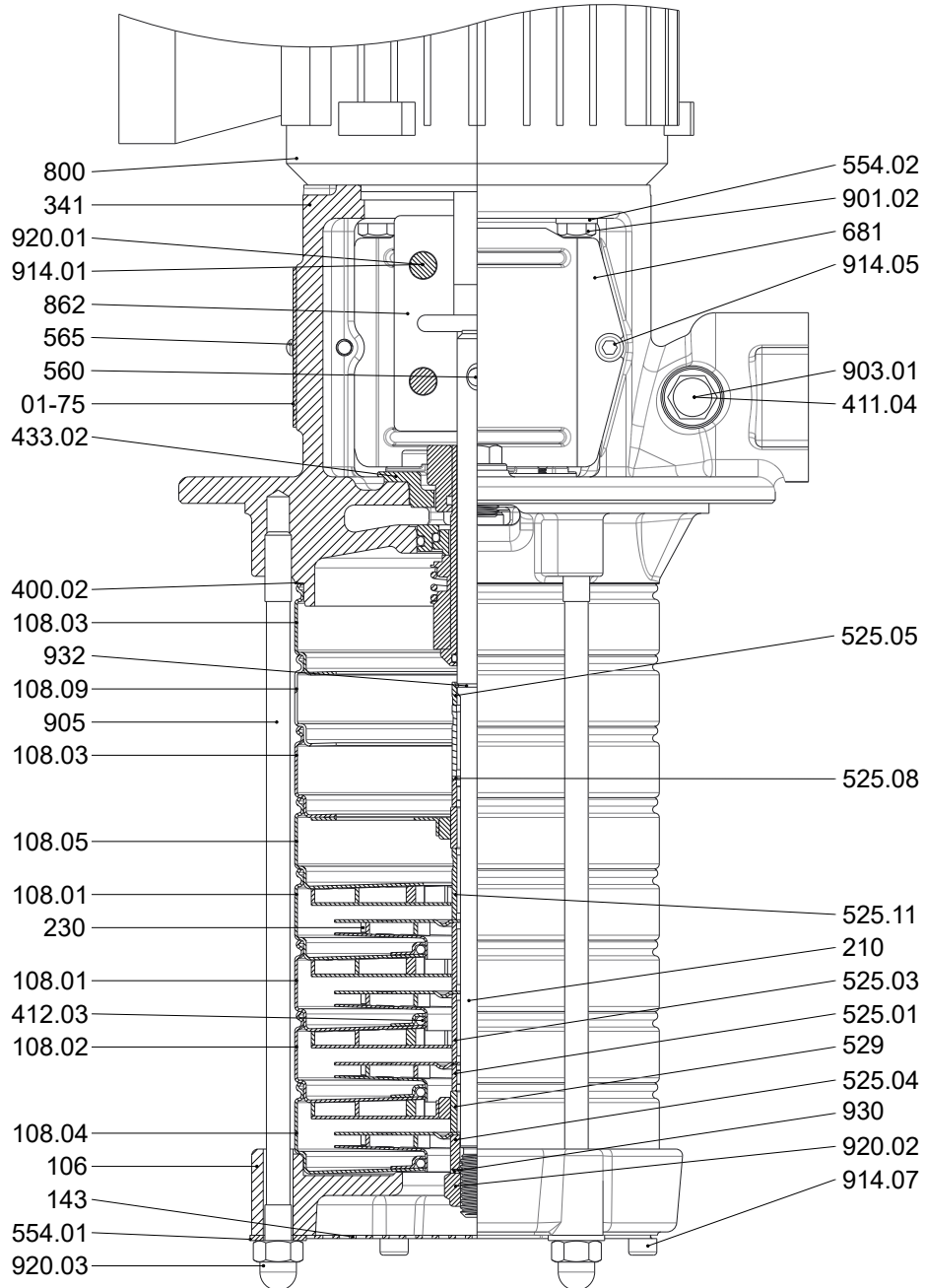


Fig. 15 [TPG-20120197]: General assembly drawing

Table 15: List of components

Part No.	Description	Part No.	Description
01-75	Name plate	554.01/02	Washer
106	Suction casing	560	Pin
108.01/02/03/04/05/09	Stage casing	565	Rivet



Part No.	Description	Part No.	Description
143	Suction strainer	681	Coupling guard
210	Shaft	800	Motor
230	Impeller	862	Coupling shell
341	Drive lantern	901.02	Hexagon head bolt
400.02	Gasket	903.01	Screw plug
411.04	Joint ring	905	Tie bolt
412.03	O-ring	914.01/.05/.07	Hexagon socket head cap screw
433.02	Mechanical seal	920.01/.03	Nut
525.01/.03/.04/.05/.08/.11	Spacer sleeve	930.02	Safety device
529	Bearing sleeve	932	Circlip

9.1.2 DPVCI 15C

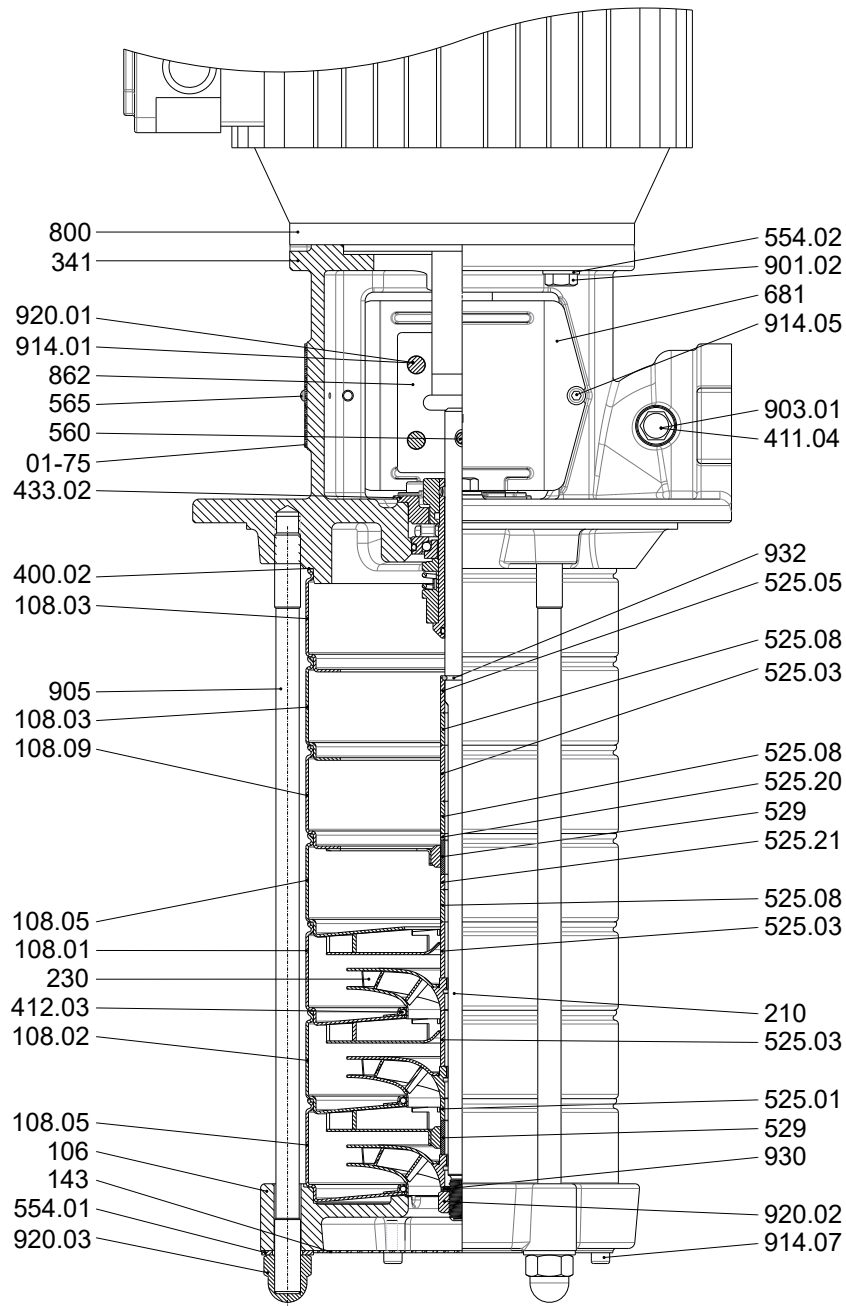


Fig. 16 [TPG-20210411]: General assembly drawing

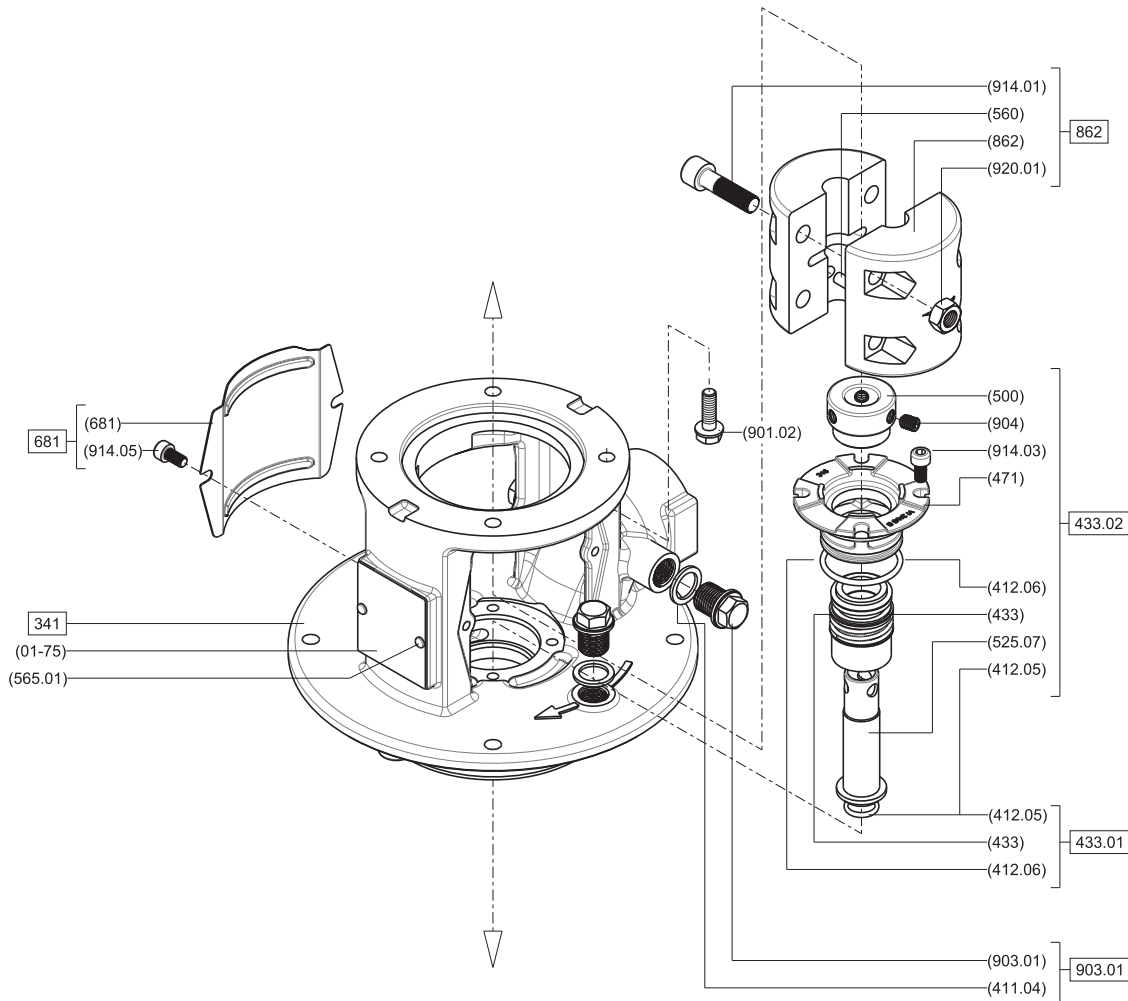
Table 16: List of components

Part No.	Description	Part No.	Description
01-75	Name plate	554.01/.02	Washer
106	Suction casing	560	Pin
108.01/.02/.03/.05/.09	Stage casing	565	Rivet
143	Suction strainer	681	Coupling guard
210	Shaft	800	Motor
230	Impeller	862	Coupling shell
341	Drive lantern	901.02	Hexagon head bolt
400.02	Gasket	903.01	Screw plug
411.04	Joint ring	905	Tie bolt

Part No.	Description	Part No.	Description
412.03	O-ring	914.01/.05/.07	Hexagon socket head cap screw
433.02	Mechanical seal	920.01/.02/.03	Nut
525.01/.03/.05/.08/.20/.21	Spacer sleeve	930	Safety device
529	Bearing sleeve	932	Circlip

9.2 Exploded views with list of components

9.2.1 Drive lantern with mechanical seal



44 / 52 Fig. 17 [TPG-SP3002237-F]: Exploded view of the drive lantern with mechanical seal [parts in square brackets can be supplied in packaging units only]

Table 17: List of components

Part No.	Description	Part No.	Description
01-75	Name plate	560	Pin
341	Drive lantern	681	Coupling guard
411.04	Joint ring	862	Coupling shell
412.05/.06	O-ring	901.02	Hexagon head bolt
433.01/.02	Mechanical seal	903.01	Screw plug
471	Seal cover	904	Grub screw
500	Ring	914.01/.03/.05	Hexagon socket head cap screw
525.07	Spacer sleeve	920.01	Nut

9.2.2 Hydraulic system of DPV(C/S)I 2B/4B/6B

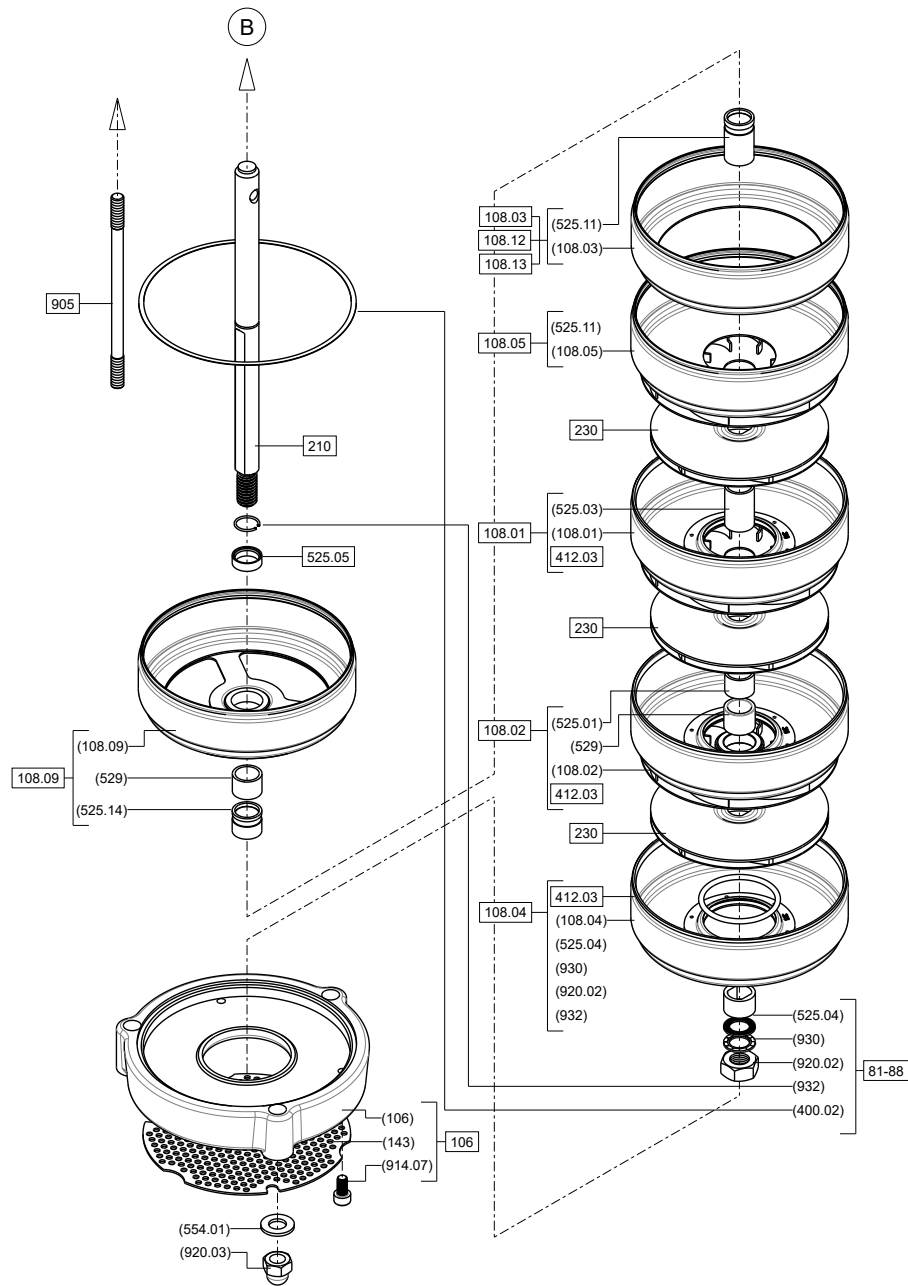


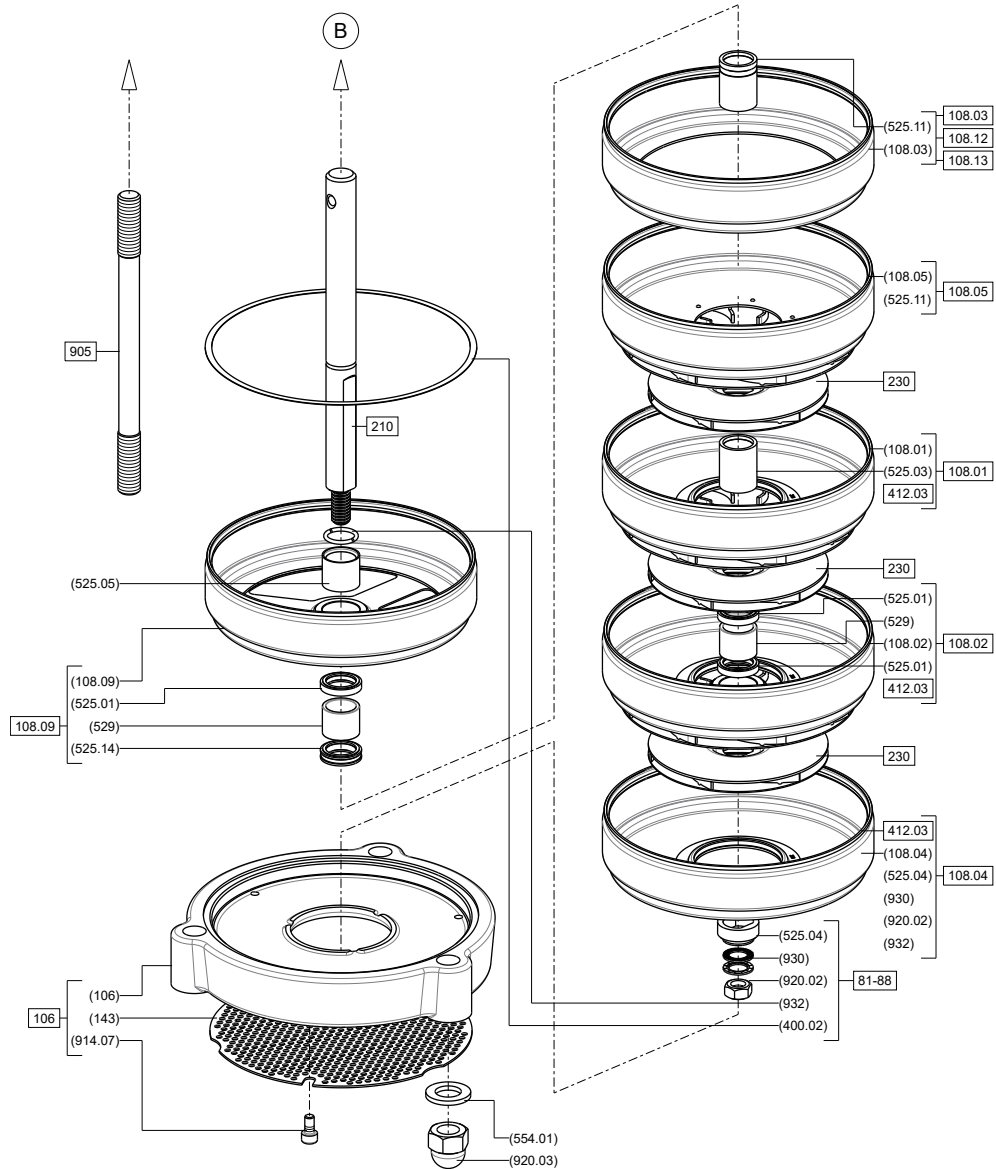
Fig. 18 [TPG-SP3002100-C]: Exploded view of the hydraulic system [parts in square brackets can be supplied in packaging units only]

Table 18: List of components

Part No.	Description	Part No.	Description
106	Suction casing	529	Bearing sleeve
108.01/.02/.03/.04/.05/.09/.12/.13	Stage casing	554.01	Washer
143	Suction strainer	81-88	Shaft end
210	Shaft	905	Tie bolt
230	Impeller	914.07	Hexagon socket head cap screw

Part No.	Description	Part No.	Description
400.02	Gasket	920.02/03	Nut
412.03	O-ring	930	Safety device
525.01/03/04/05/11/14	Spacer sleeve	932	Circlip

9.2.3 Hydraulic system of DPV(C/S)I 10B



46 / 52

Fig. 19 [TPG-SP3011100-D]: Exploded view of the hydraulic system [parts in square brackets can be supplied in packaging units only]

Table 19: List of components

Part No.	Description	Part No.	Description
106	Suction casing	529	Bearing sleeve
108.01/02/03/04/05/09/12/13	Stage casing	554.01	Washer
143	Suction strainer	81-88	Shaft end
210	Shaft	905	Tie bolt
230	Impeller	914.07	Hexagon socket head cap screw

Part No.	Description	Part No.	Description
400.02	Gasket	920.02/03	Nut
412.03	O-ring	930	Safety device
525.01/03/04/05/11/14	Spacer sleeve	932	Circlip

9.2.4 Hydraulic system of DPV(C/S)I 15C

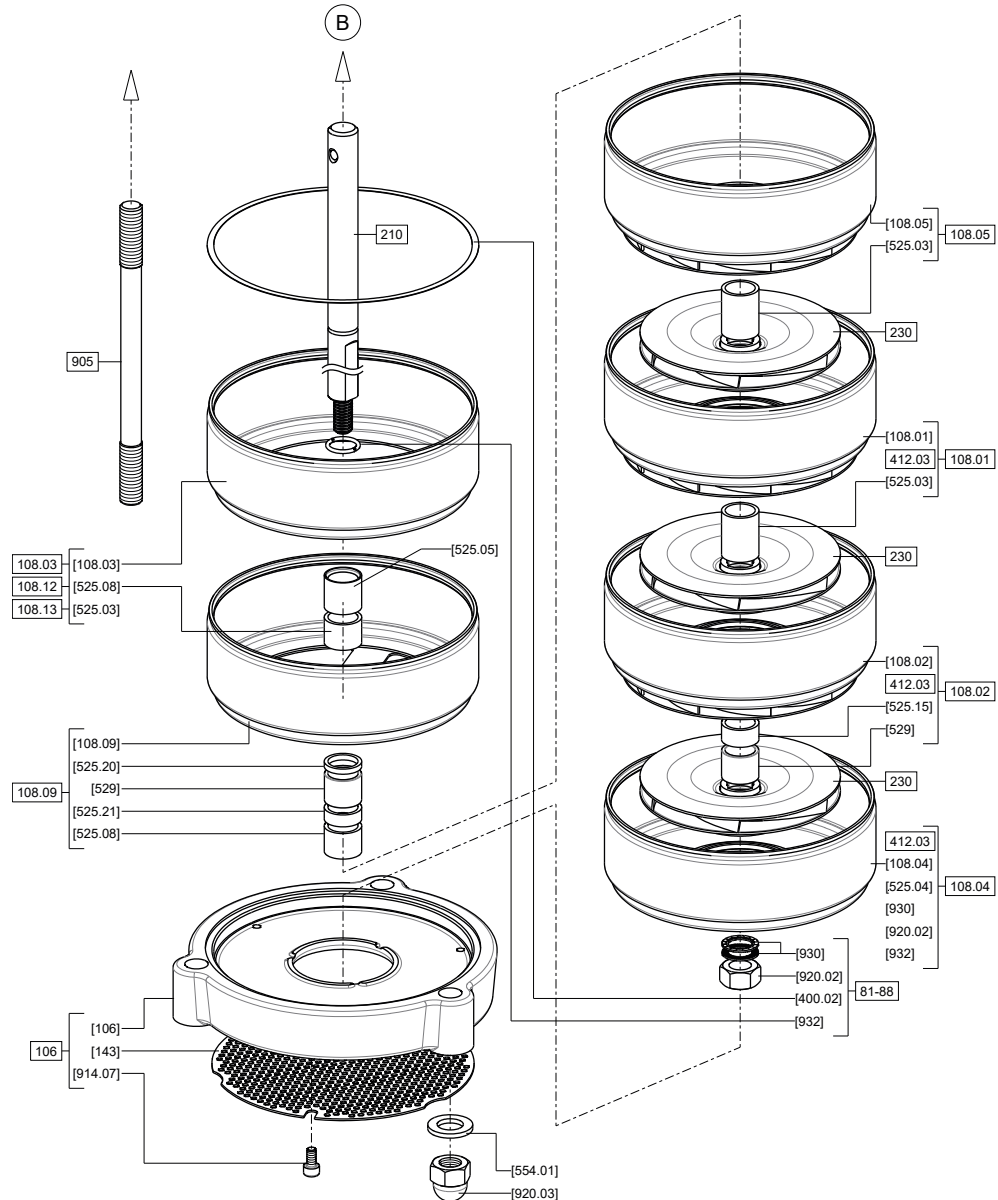


Fig. 20 [TPG-SP3014100-A]: Exploded view of the hydraulic system [parts in square brackets can be supplied in packaging units only]

Table 20: List of components

Part No.	Description	Part No.	Description
106	Suction casing	529	Bearing sleeve
108.01/02/03/04/05/09	Stage casing	554.01	Washer
143	Suction strainer	81-88	Shaft end
210	Shaft	905	Tie bolt
230	Impeller	914.07	Hexagon socket head cap screw

Part No.	Description	Part No.	Description
400.02	Gasket	920.02/03	Nut
412.03	O-ring	930	Safety device
525.03/04/05/08/15/20/21	Spacer sleeve	932	Circlip

9.3 Wiring diagram

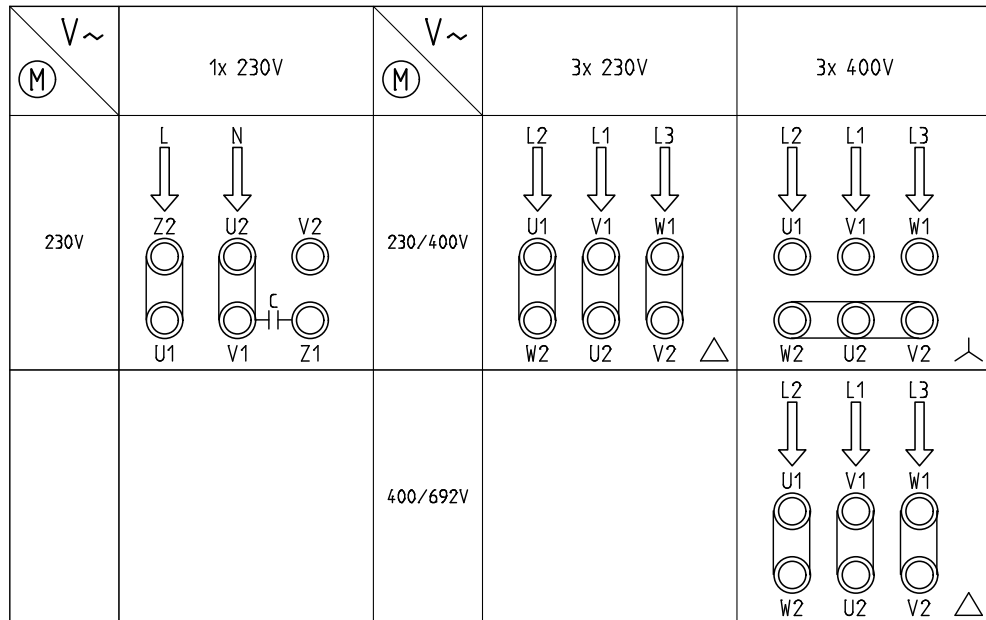


Fig. 21 [TPG-20130499-A]: Wiring diagram, depending on selected motor

10 EU Declaration of Conformity

Manufacturer:

**Duijvelaar Pompen
DP Pumps
Kalkovenweg 13
2401 LJ Alphen aan den Rijn (The Netherlands)**

This EU Declaration of Conformity is issued under the sole responsibility of the manufacturer.

The manufacturer herewith declares that **the product**:

DPVCI B/C

From serial number: 01/2024 1000000-1

- is in conformity with the provisions of the following directives / regulations as amended from time to time:
 - Pump (set): 2006/42/EC Machinery Directive
 - Ecodesign Directive 2009/125/EC, Regulation No. 547/2012 (for water pumps with a maximum shaft power of 150 kW)
 - Electrical components: 2011/65/EU Restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

The manufacturer also declares that

- the following harmonised international standards have been applied:
 - ISO 12100
 - EN 809

Person authorised to compile the technical file:

Ron Bijman
Manager Competence Centre Products
Duijvelaar Pompen B.V.
Kalkovenweg 13
2401 LJ Alphen aan den Rijn (The Netherlands)

The EU Declaration of Conformity was issued in/on:

Alphen aan den Rijn, 1 January 2024



Ron Bijman
Manager Competence Centre Products
Duijvelaar Pompen B.V.
Kalkovenweg 13
2401 LJ Alphen aan den Rijn (The Netherlands)

11 Certificate of Decontamination

Type:

Order number /

Order item number¹³⁾:

Delivery date:

Application:

Fluid handled¹³⁾:

Please tick where applicable¹³⁾:



Corrosive



Oxidising



Flammable



Explosive



Hazardous to health



Seriously hazardous to health



Toxic



Radioactive



Bio-hazardous



Safe

Reason for return:¹³⁾

Comments:

The product / accessories have been carefully drained, cleaned and decontaminated inside and outside prior to dispatch / placing at your disposal.

We herewith declare that this product is free from hazardous chemicals and biological and radioactive substances.

For mag-drive pumps, the inner rotor unit (impeller, casing cover, bearing ring carrier, plain bearing, inner rotor) has been removed from the pump and cleaned. In cases of containment shroud leakage, the outer rotor, bearing bracket lantern, leakage barrier and bearing bracket or intermediate piece have also been cleaned.

For canned motor pumps, the rotor and plain bearing have been removed from the pump for cleaning. In cases of leakage at the stator can, the stator space has been examined for fluid leakage; if fluid handled has penetrated the stator space, it has been removed.

- No special safety precautions are required for further handling.
- The following safety precautions are required for flushing fluids, fluid residues and disposal:

.....

.....

50 / 52

We confirm that the above data and information are correct and complete and that dispatch is effected in accordance with the relevant legal provisions.

.....
Place, date and signature

.....
Address

.....
Company stamp

¹³⁾ Required field

Index

A

Applications 8

B

Bearing temperature 29

Bearings 16

C

Certificate of Decontamination 50

Commissioning 22

D

Design 16, 17

Direction of rotation 21

Dismantling 32

Disposal 13

Drive 16

E

Event of damage 6

Ordering spare parts 38

Exploded view 44, 45, 46, 47

Explosion protection 24

F

Faults

Causes and remedies 39

Function 17

G

Grease lubrication

Grease quality 30

Intervals 29

I

Installation 16, 19

Installation at site 19

Intended use 8

K

Key to safety symbols/markings 7

N

Name plate 15

O

Order number 6

Other applicable documents 6

P

Partly completed machinery 6

Permissible forces at the pump nozzles 20

Piping 20

Preservation 12, 27

Product description 15

R

Reassembly 32

Return to supplier 13

Returning to service 27

S

Safety 8

Safety awareness 9

Scope of supply 18

Servicing 28

Shaft seal 16

Shutdown 27

Spare part

Ordering spare parts 38

Storage 12, 27

T

Transport 11

W

Warnings 7

Warranty claims 6

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