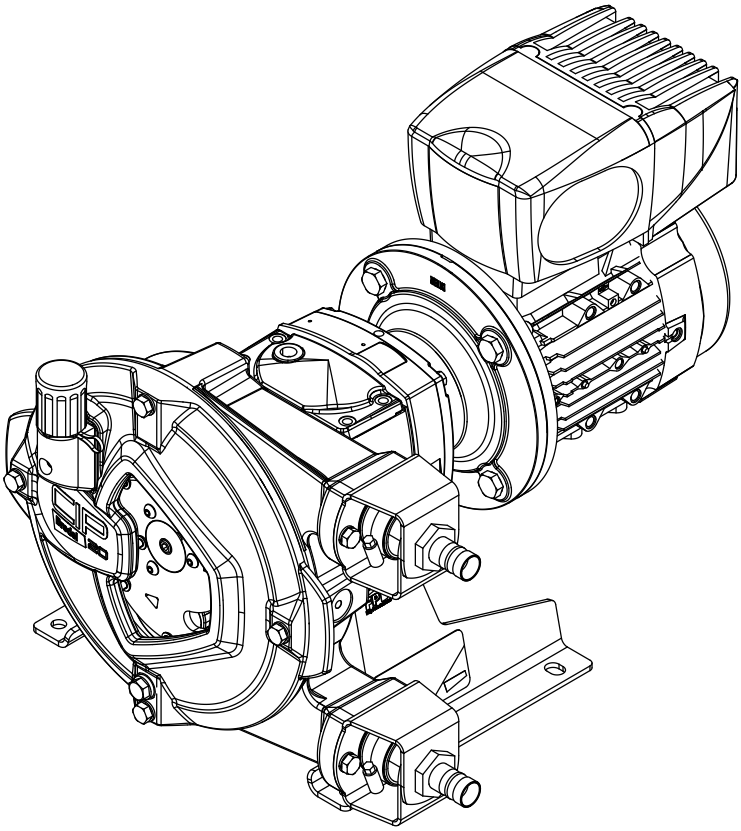
Bredel CIP20 Operating Manual



Contents

Copyright

Disclaimers

The information contained in this document is believed to be correct but Watson-Marlow Bredel B.V. accepts no liability for any errors it contains and reserves the right to alter specifications without notice.

The information provided can be changed without prior notification. Watson-Marlow Bredel B.V. or one of its representatives cannot be held liable for possible damage resulting from use of this manual. This is an extensive limitation of the liability which applies to all damage, inclusive of (without limitation) compensating, direct, indirect or consequential damage, loss of data, income or profit, loss or damage to possessions and claims of third parties.

How to access an available translation

The following documents are available on the website. Enter www.wmfts.com/product-documents into your web browser or scan the QR code found on the pump nameplate:

- User manual
- Quick reference instructions for the replacement of the pump hose

Note: The replacement instructions are only for users that are familiar with the replacement procedures in the user manual.

System requirements

Source	Hardware	Software
Website	PC or tablet	Internet browser PDF reader
QR code	Smartphone or tablet with camera	Internet browser PDF reader App that can scan QR codes

How to use the QR code

1. Scan the QR code with your smartphone or tablet - The app forwards you to the webpage that contains the required language.
2. Open or save the user manual - The PDF reader program shows the selected user manual.

1 General

1.1 How to use this manual

This manual is intended as a reference book by means of which qualified users are able to install, commission and maintain the hose pump Bredel CIP20.

1.2 Original instructions

The original instructions for this manual have been written in English. Other language versions of this manual are a translation of the original instructions.

1.3 Other supplied documentation

Documentation of components such as the gearbox, the motor, and the frequency controller is not included in this manual. However, if additional documentation is supplied, you must follow the instructions in this additional documentation.

1.4 Service and support

Some specific adjustments, installation and maintenance or repair jobs fall beyond the scope of this manual. In case of doubt, consult your Bredel representative.

Make sure that you have the following data at hand:

- Serial number of the hose pump
- Part number of the pump hose
- Part number of the gearbox
- Part number of the electric motor
- Part number of the frequency controller

You will find these data on the identification plates or stickers on the pumphead, the pump hose, the gearbox, and the electric motor.

See also

Refer to "Description" on page 10

1.5 Environment and disposal of waste

Note: Always observe the local rules and regulations with respect to processing (non reusable) parts of the hose pump.

WARNING

Risk of poisoning and environmental damage. Pump parts can get contaminated by pumped liquids to such an extent that cleaning becomes insufficient. Dispose of contaminated parts according to local regulations.

When you discard items, obey these instructions:

- Use suitable personal protective equipment.
- Obey the safety instructions of the working environment.
- Obey the safety, health, and waste sorting instructions of the product.
- Drain, collect, and dispose of the lubricant in accordance with local rules and regulations.
- Collect and dispose of any leaking pumped liquid or oil in accordance with local rules and regulations.
- Neutralize residues of pumped liquid in the pump.
- Dispose of the parts in accordance with local rules and regulations.

Enquire within your local government about the possibilities for reuse or environment-friendly processing of packaging materials, (contaminated) lubricant, and oil.

2 Safety

2.1 Symbols

In this manual the following symbols are used:

WARNING

Procedures which, if not carried out with the necessary care, may result in serious bodily harm.

CAUTION

Procedures which, if not carried out with the necessary care, may result in serious damage to the hose pump, the surrounding area or the environment

Information on environmentally-friendly disposal or recycling of materials.

2.2 Intended use

The hose pump is exclusively designed for pumping suitable products. Every other or further use is not in conformance with the intended use. This is the use for which the technical product is intended in accordance with the specifications of the manufacturer, inclusive of his indications in the sales brochure. In case of doubt it is the use, which appears to be its intended use judging from the construction, execution and function of the product, and its description in the user's documentation.

Only use the pump in conformance with the intended use described above. The manufacturer cannot be held responsible for damage or harm resulting from use that is not in conformance with the intended use. If you want to change the application of your hose pump, contact your Bredel representative first.

WARNING

The pump is configured for use with specific fluids for which the chemical compatibility of the pump materials has been approved. Before using it in any application it is required to check the compatibility of the pump materials. Incompatible pumphead material, hose liner, hose connections and lubricant can lead to serious damage and safety hazards. Always contact your Bredel representative first.

The pumphead and drive mentioned in this manual is not suitable for use in a potentially explosive atmosphere. Contact your Bredel representative for information on Bredel pumps suitable for use in a potentially explosive atmosphere.

2.3 NSF/ANSI 61 certification

For specific combinations of the hose and insert and in combination with certain chemicals, the hose pumps are configured and delivered in compliance with NSF International certification NSF/ANSI Standard 61: Drinking Water System Components – Health Effects and will bear the NSF mark shown below. A list of certified products and relevant chemicals can be found at http://www.nsf.org/certified-products-systems. For further details refer to the Bredel User Guide NSF 61 certified hose pumps supplied with such a pump, which can also be found on the website, or contact your Bredel representative for advice.

2.4 Responsibility

The manufacturer does not accept any responsibility for damage or harm caused by not observing the safety regulations and instructions in this manual and other supplied documentation, or by negligence during installation, use, maintenance and repair of the hose pumps mentioned on the front cover. Depending on the specific working conditions or accessories used, additional safety instructions can be required.

Immediately contact your Bredel representative for advice if you notice a potential danger while using your hose pump.

WARNING

The user of the hose pump is fully responsible for observing local safety regulations and directives. Observe these safety regulations and directives when using the hose pump.

2.5 Qualification of the user

The installation, use and maintenance of the hose pump should only be performed by well-trained and qualified users. Temporary staff and persons in training may use the hose pump only under the supervision and responsibility of trained and qualified users.

2.6 Regulations and instructions

- Ensure this manual can be easily accessed for safe operation and maintenance.
- Everyone who works with the hose pump must be aware of the contents of this manual and observe the instructions with great care.
- Never change the order of the actions to be carried out.

3 Warranty conditions

The manufacturer offers a two-year warranty on all parts of the hose pump. This means that all parts will be repaired or replaced free of charge, with the exception of consumables such as pump hoses, ball bearings, wear rings, seals and compression rings, or parts which have been used wrongly or have been misused, whether or not they have been intentionally damaged. If genuine Watson-Marlow Bredel B.V. (hereafter called Bredel) parts are not used, any warranty claim is void.

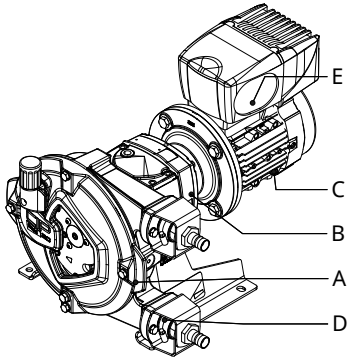
Damaged parts which are covered by the applicable warranty conditions can be returned to the manufacturer. The parts must be accompanied by a fully filled in and signed safety form as present in the back of this manual. The safety form must be applied to the outside of the shipping carton. Parts which have been contaminated or which have been corroded by chemicals or other substances which can pose a health risk must be cleaned before they are returned to the manufacturer. Furthermore, it should be indicated on the safety form which specific cleaning procedure has been followed, and that the equipment has been decontaminated. The safety form is required even if the parts have not been used.

Warranties purporting to be on behalf of Bredel made by any person, including representatives of Bredel, its subsidiaries, or its distributors, which do not accord with the terms of this warranty shall not be binding upon Bredel unless expressly approved in writing by a Director or Manager of Bredel.

4 Description

4.1 Identification of the product

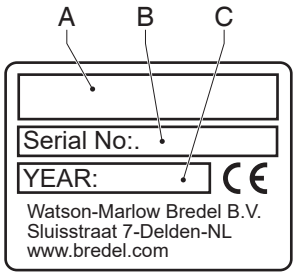
The hose pump can be identified by identification plates or stickers on:



A	Pumphead	D	Pump hose
B	Gearbox	E	Frequency controller (option)
C	Electric motor		

Identification of the pump

The identification plate on the pumphead contains the following data:

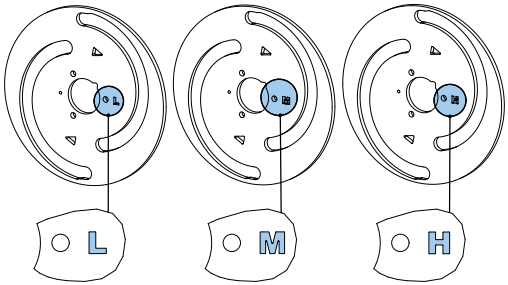


A	Pump type	B	Serial number
C	Year of manufacture		

Identification of the hose compression

Letter	Pressure range	Bredel CIP20
L	≤ 400 kPa	28-1008816
M	400 to 800 kPa	28-1008817
H	> 800 kPa	28-1008818

Identification of the actuation disc for the hose compression (L, M or H)



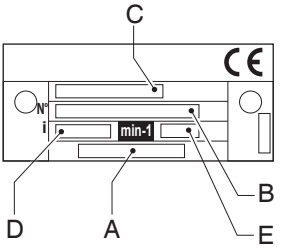
See also

Refer to "Maximum working pressure" on page 64.

Refer to "Pumphead assembly" on page 74.

Identification of the gearbox

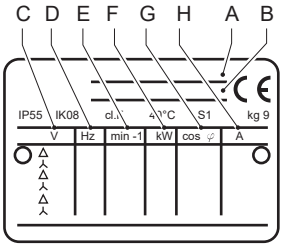
The identification plate on the gearbox contains the following data:



A	Part number	D	Reduction ratio
B	Serial number	E	Number of revolutions per minute
C	Type number		

Identification of the electric motor

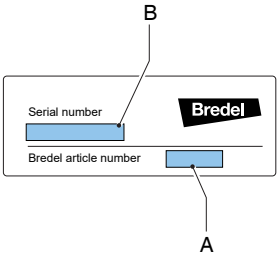
The identification plate on the electric motor contains the following data:



A	Part number	E	Speed
B	Serial number	F	Power
C	Mains	G	Power factor
D	Frequency	H	Current

Identification of the frequency controller

The identification of the Bredel Variable Frequency Drive (VFD) can be found inside the VFD. Remove the cover by loosening the two screws. The identification sticker contains the following data:



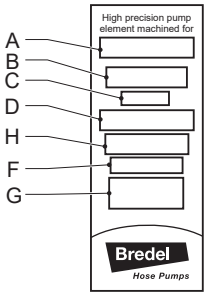
A Part number

B Manufacturer's serial number

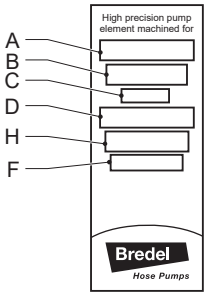
Identification of the hose

The identification sticker on the pump hose contains the following data:

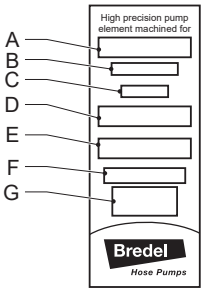
NR Metering hose



NR Transfer hose



Other hoses



A Pump type

B Part number

C Internal diameter

D Type of material of inner liner

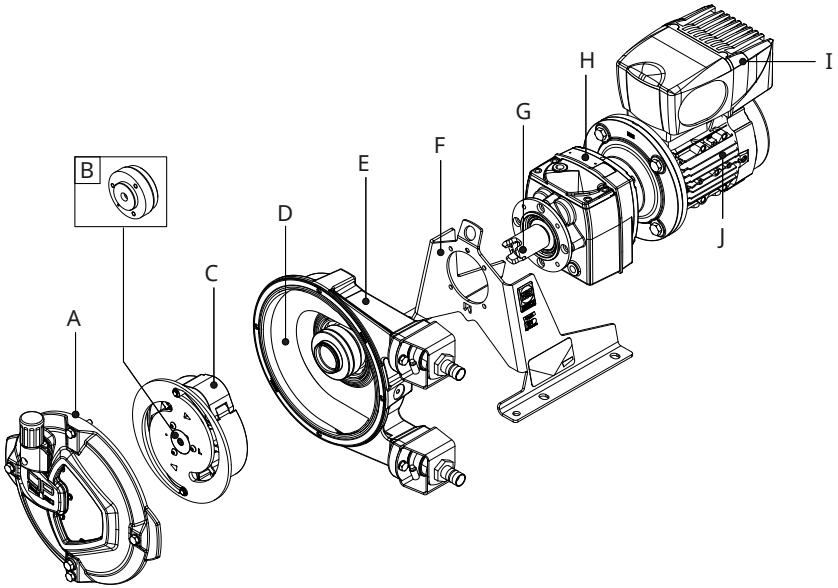
E Remarks, if applicable

F Maximum permissible working pressure

G Production code

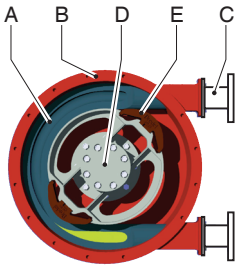
H Hose type

4.2 Construction of the pump



A	CIP cover	F	Support
B	Drive shaft	G	Coupling bush
C	CIP rotor	H	Gearbox
D	Hose	I	Frequency controller
E	Pump housing	J	Electric motor

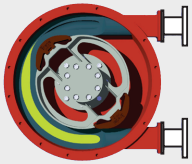
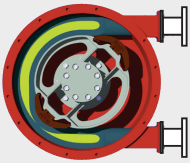
4.3 Operation of the pump



The heart of the pumphead consists of a specially constructed hose (A) which lies against the inside of the pump housing (B).

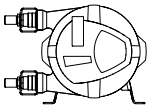
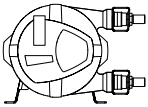
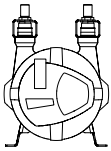
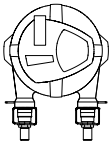
The ends of the hose are connected to the suction and discharge lines (C).

A rotor (D) with two facing pressing shoes (E) is in the centre of the pumphead. In this example, it rotates clockwise.

Phase	Description	Pump layout
1	The lower pressing shoe compresses the hose by the rotational movement of the rotor, forcing the fluid through the hose. As soon as the pressing shoe has passed, the hose recovers to its original shape sucking in new fluid.	
2	When the first pressing shoe leaves the pump hose, the second pressing shoe has already occluded the hose and fluid is prevented from flowing back. This method of liquid displacement is known as the "positive displacement principle".	

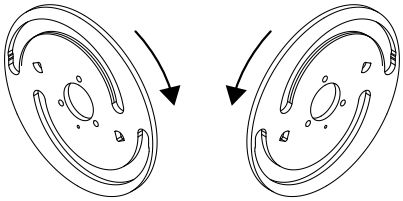
4.4 Pump installation positions

The pump can be delivered with the following possible pumphead installation positions:

Position	Description	Pump layout
1	Pump ports at left hand side when facing the pump at the cover.	
2	Pump ports at right hand side when facing the pump at the cover.	
3	Pump ports facing upwards.	
4	Pump ports facing downwards.	

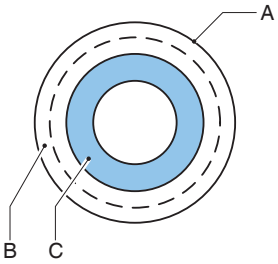
An accurate reading of the lubricant level through the inspection window is possible at every pump position.

The pump operational direction is determined by the configuration of the CIP rotor. By flipping the actuator disc the operation direction can be changed.



4.5 Hose

General



A Extruded or wrapped outer layer made of Natural Rubber
B Nylon reinforcement layers
C Extruded or wrapped inner liner

The hose liner material should be chemically resistant to the process fluid being pumped. For each pump model various hose types are available. Choose the most appropriate for your application.

The material of the inner liner of the hose determines the hose type. Each hose type is marked by a unique colour code.

Note: Contact your Bredel representative for advice about the chemical and temperature resistance of the hoses.

The Bredel hoses are carefully manufactured and quality checked to achieve minimum tolerances in wall thickness.

It is very important to guarantee the correct compression of the hose, because:

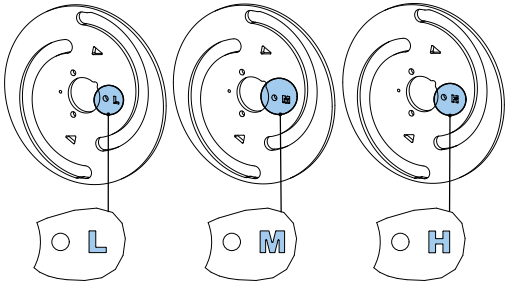
- When the compression is too high, it creates an excessive load on the pump and hose, which may reduce the life of the hose and bearings.
- When the compression is too low, it cuts capacity and causes backflow. Backflow reduces the life of the hose.

Hose compression force adjustment

To achieve optimal pump hose life within allowable pressure range, match operating pressure to hose compression by installing corresponding actuation disc (L, M or H).

Letter	Pressure range	Bredel CIP20
L	≤ 400 kPa	28-1008816
M	400 to 800 kPa	28-1008817
H	> 800 kPa	28-1008818

Identification of the actuation disc for the hose compression (L, M or H)



See also

Refer to "Maximum working pressure" on page 64.

Refer to "Pumphead assembly" on page 74.

Lubrication and cooling

The pumphead is filled with Bredel Genuine Hose Lubricant. This lubricant lubricates the pressing shoes and dissipates the generated heat via the pump and the cover.

The user is responsible to ensure the chemical compatibility of the lubricant with the fluid to be pumped.

See also

Refer to "Lubricant table pump" on page 67 for the required quantity and NSF registration.

Refer to "Hose failure" on page 31 for the consequences of a hose failure.

Note: Consult your Bredel representative for advice on lubrication when operating the hose pump below 2 rpm.

4.6 Gearbox

The hose pump types described in this manual use helical gearbox units.

The gearboxes are fitted with a flange connection.

See also

Refer to "Gearbox" on page 69

4.7 Electric motor

If the electric motor has been standard supplied by the manufacturer, it is a standardized squirrel-cage motor.

See also

Refer to "Specifications" on page 63

4.8 Frequency controller

Refer to the documentation supplied by the manufacturer.

See also

Refer to "Specifications" on page 63

Use of electric and electronic devices like electric motor and frequency controller require special configurations. Sometimes use is limited to non-ATEX only. In case of doubt, consult your Bredel representative..

4.9 Available options

The following options are available for the hose pump:

- High (lubricant) level float switch
- Revolution counter
- Sanitary hose connection
- Low, medium, or high pressure actuation disc
- Frequency controller
- Special configuration for NSF
- Stainlees steel support
- Corrosion protection acc. ISO 12944/6-C4M, C4H or C5M

5 Installation

5.1 Unpacking and inspection

Unpacking

1. Unpack all parts carefully.
2. Retaining packaging until inspection is complete.

Inspection

1. Check all components present
2. Inspect components for damage in transit
3. Report missing components or damage to your local Bredel representative immediately

Packaging disposal

Dispose of packaging materials:

1. Safely
2. Responsibly
3. Recycle outer carton (corrugated cardboard)
4. Compliant to all relevant regulations

5.2 Installation conditions

Ambient conditions

Make sure that the hose pump is in an area where the ambient temperature during operation is not lower than -20 °C and not higher than +45 °C.

Installation site

Installation specifications	
Do not exceed ambient operating air temperature range (°C)	-20 °C to +45 °C
Maximum floor slope (mm per metre)	50

Note: Pump is suitable for indoor use. In case of outdoor use contact your Bredel representative for advice.

Installation site requirements:

- Flat
- Horizontal
- Rigid surface
- Rated to support full weight of complete assembly and pumped product
- Allow a free flow of air around the pump, gearbox and electric motor to dissipate heat
- Ensure sufficient access for all maintenance
- Free from excessive vibration

Pipework

- The bore size of the suction and discharge lines must be larger than the bore size of the pump hose. In case of doubt, consult your Bredel representative.
- Avoid sharp bends in the discharge line. Make sure that the radius of the bent discharge line is as large as possible. It is recommended to use Y-connections instead of T-connections.
- Keep the delivery and suction lines as short and direct as possible.
- Select the correct mounting material for flexible hoses and make sure that the installation is suited for the design pressure of the system.
- Do not exceed the maximum working pressure of the hose pump.
- Prevent the valves in the suction and discharge lines from being shut while the pump is running.

See also

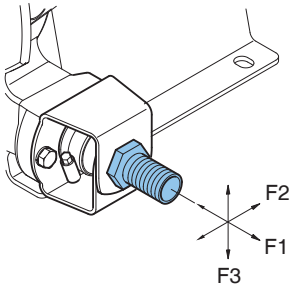
Refer to "Performance" on page 63

CAUTION

Consider the maximum permissible working pressure on the discharge side. Exceeding the maximum working pressure may lead to serious damage to the pump.

- Contact your Bredel representative for advice on mounting pulsation dampening devices. A pulsation dampener and/or inlet pulse accumulator may be necessary if the relative density and pump speed is high and the line lengths are long.
- The self-priming and positive displacement nature of peristaltic pumps means that valves are not required. If for whatever reason valves are fitted into the system, they must have a straight fluid path and cause minimum restriction to flow in the pumping circuit. Note that the presence of check valves directly in the process stream may increase pulsation and negatively impact hose life.
- For the ease of hose changing and some pulsation suppression, it is recommended to use a segment of flexible hose between the pump flange and hard piping of the suction and/or discharge line. A segment of three quarters (3/4) of the pump hose length for the flexible pipe work is recommended. Bredel also recommends installing an isolation valve and pipedrain in the suction and discharge pipework to allow fluid isolation and drainage from the pump during maintenance. Following these recommendations will help to minimize the exposure of process fluid to maintenance personnel.

- Make sure that the maximum forces on the flanges are not exceeded. The permissible loads are given in the following table.



Maximum permissible loads [N] on the pump flange	
Force	**Bredel CIP20**
F1	600
F2	300
F3	120

Frequency controller

WARNING

A frequency controller that is fitted without manual control can start the pump automatically when power is applied.

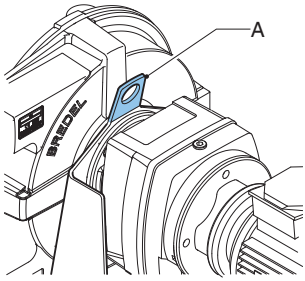
If the hose pump is fitted with a frequency controller, consider the following points:

- Take precautions so the motor does not restart automatically after an unscheduled stop. In the event of a power or mechanical failure, the frequency controller stops the motor. When the cause of the failure is removed, the motor can restart automatically. The automatic restart can be dangerous in certain pump installations.
- All control cables outside the enclosure must be shielded and have a cross sectional area of at least 0.22mm^2. The shielding must be connected to earth at one end. In case of doubt, contact your Bredel representative for advice.

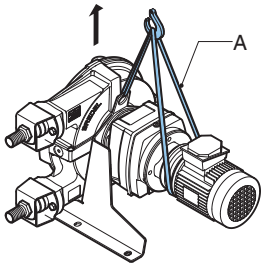
5.3 Lifting and moving the pump

Lifting should be performed according to standard Health and Safety guidelines and should be performed by qualified personnel only.

Use the lifting eye (A) on the pump support to lift and move the hose pump.



The complete hose pump (the pumphead, gearbox and electric motor) must be lifted using the lifting eye plus additional support using suitably rated straps or slings (A).

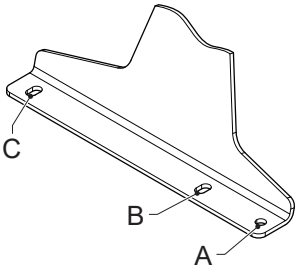


5.4 Placing the pump

Do not use holes (B) when the pump is placed on the leveling elements. This can cause the pump to tilt.

Do not use the holes in the pump supports to lift the hose pump.

The pump can be fixed to the floor using anchors. Alternatively the pump can be placed on the floor using levelling elements.



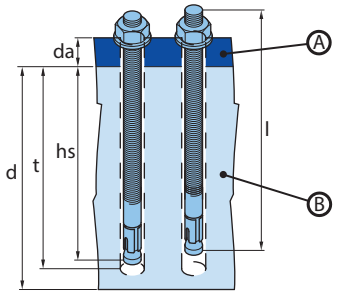
- In case of fixing to the floor use holes (A) or (B) and holes (C) at both sides of the pump.
- In case of levelling elements, use holes (A) and holes (C) at both sides of the pump.

Note: If the pump installation position is in position 4, then the use of levelling elements is not possible.

Using anchor bolts

Position the pump on a horizontal surface. Use suitable anchor bolts to attach the pump to the floor surface.

Follow the next steps to make sure the anchor bolts are used properly. Use the specifications below.



A. Pump support

B. Foundation

1. Drill the holes.
2. Clean the bore holes.
3. Use a hammer to drive the anchor bolt into the bore.
4. Tighten the bolt to the applicable torque setting (MD).

Item	Unit	Bredel CIP20
Flange thickness (d_a)	mm	4
Flange hole diameter	mm	12 x 16
Bredel part no.	-	28-F550016
Bolt thread	-	M10
Bolt length (l)	mm	85
Minimum foundation height (d)	mm	200
Drill diameter	mm	10
Minimum drill depth (h)	mm	70
Mounting depth (hs)	mm	60
Torque setting (MD)	Nm	30

Using levelling elements

Use four suitable levelling elements to place the pump on a horizontal surface. Adjust the elements such that the pump does not wobble and the weight of the pump is evenly spread over the elements at left hand and right hand sides.

Pump	Diameter holes (A) [mm]	Size holes (C) [mm]	Element thread diameter	Rated load capacity per element [kg]
Bredel CIP20	11	18x12	M10	70

6 Commissioning

6.1 Preparations

WARNING

A frequency controller that is fitted without manual control can start the pump automatically when power is applied.

WARNING

Disconnect and lock the power supply to the pump drive before any work is carried out. In case the motor is fitted with a frequency controller and has a single-phase power supply, wait two minutes to make sure that the capacitors have discharged.

1. Connect the electric motor and, if present, the frequency controller in conformance with the locally applicable rules and regulations. Have the electrical installation work carried out by qualified personnel.
2. Check that the lubricant level is above the minimum level line in the inspection window. If necessary refill with Bredel Genuine Hose Lubricant via the breather plug.

See also

Refer to "Frequency controller" on page 23

Refer to "Changing lubricant" on page 37

6.2 Commissioning

1. Connect the pipework.

CAUTION

Make sure that there are no obstructions such as closed valves.

2. Connect the pump to the electrical supply.
3. Switch on the electrical supply.
4. Check the rotation of the rotor.
5. Make sure that hose clamps are correctly fitted.
6. Check the capacity of the hose pump. If the capacity differs from your specification, follow the instructions in Troubleshooting or contact your Bredel representative for advice.
7. If a frequency controller is present, check the capacity range. In case of any deviations consult the supplier's documentation.
8. Check the hose pump in accordance with points 2 to 4 of the maintenance table.

See also

Refer to "Maintenance and periodic inspections" on page 34

Refer to "Tightening the hose clamps " on page 44 for how to tighten the hose clamps

Refer to "Troubleshooting" on page 57

7 Operation

7.1 Temperature

The pump will heat up during normal operation. This will result in a temperature higher than the ambient temperature.

WARNING

Avoid contact with the casing and cover under conditions of high pressure and running speed.

7.2 Power rating

Drive power and reduction ratio determine the pump operating condition.

See also

Refer to "Performance graphs" below to determine the required power.

WARNING

Overloading the motor can lead to serious motor damage. Do not exceed the maximum power rating of the motor.

WARNING

Overloading the gearbox leads to increased tooth wear and shortened bearing life. This can lead to serious gearbox damage. Do not exceed the maximum power rating of the gearbox.

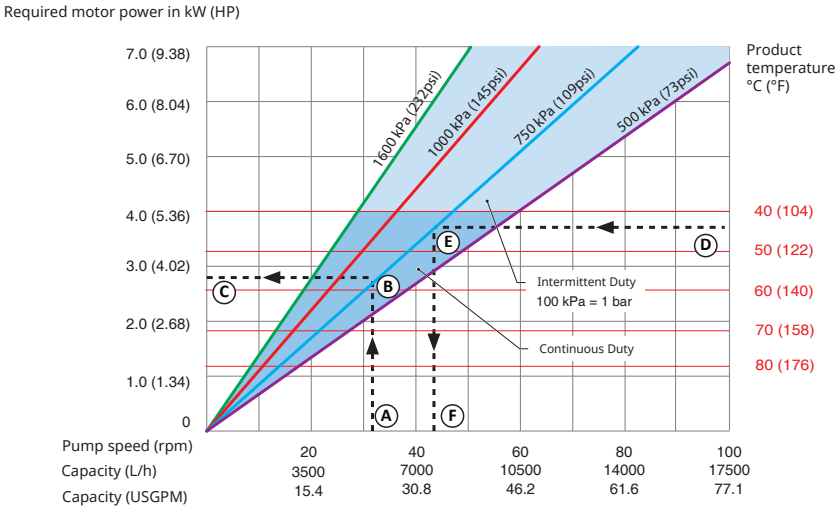
7.3 Performance graphs

The pump and hose are designed to handle a discharge pressure up to 1000 kPa. The triangular area between the 0 kPa and the 1000 kPa lines describes the allowed performance area. The required duty points have to fall within this area. For discharge pressures lower than 0 kPa use the 0 kPa line.

In the direction of higher speeds and powers, pump operation is limited by the heat generated, the product temperature and the ambient temperature. Product temperature lines determine a distinction between areas of continuous operation and intermittent operation in the graphs. The graphs apply for a maximum ambient temperature of 45 °C.

If the duty for an application is specified in the area of intermittent operation, let the pump stand still to cool down for at least one hour after two hours of operation.

How to use the graphs



A	Required flow or pump speed	D	Product temperature
B	Required discharge pressure	E	Required discharge pressure
C	Required motor power	F	Maximum allowed pump speed

Refer to the graph to understand how to use the graphs to determine the required motor power or the maximum allowed pump speed.

To determine the required motor power:

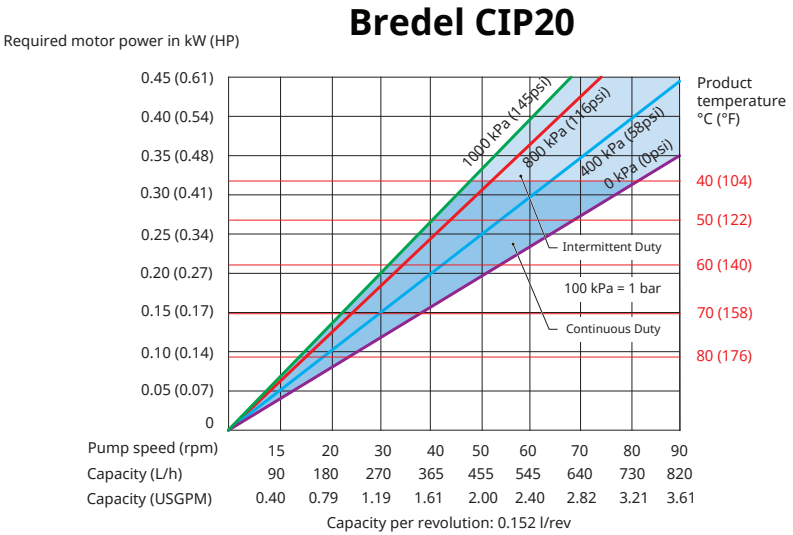
1. Start at the required flow or pump speed (A).
2. Meet the line of the required discharge pressure (B).
3. Read the required motor power (C).

To determine the maximum allowed pump speed:

1. Start at the product temperature (D)
2. Meet the line of the required discharge pressure (E).
3. Read the maximum allowed pump speed (F).

Note: Pump stroke volume is based on new hoses and flooded suction. Actual stroke volume may vary.

Performance graph Bredel CIP20



7.4 Dry running

Dry running is a running condition of the pump when no fluid is flowing through the hose. Bredel hose pumps allow dry running for limited periods.

Dry running imposes an additional thermal load on the hose.

To minimise the extra wear, limit dry running periods to less than one minute at a time.

7.5 Hose failure

Cause of a hose failure

The hose in a peristaltic pump has to withstand many load cycles of compression. The repetitive stress cycles will cause the hose to deteriorate and eventually fail.

Result of a hose failure

A hose failure will result in direct contact between the pumped fluid and the pump lubricant, the internal parts, and the dynamic seal.

Consequences of a hose failure

Process fluid can enter and contaminate the pump housing and lubricant. Thoroughly clean the interior before installing a new hose.

In general, this will not cause a hazardous situation because the Bredel Genuine Hose Lubricant is harmless (approved by the United States Food and Drug Administration). However, there is an exception in case of pumping a strong oxidiser or a strong acid. For example, sodium hypochlorite (NaClO), this can lead to exothermal reaction.

In case of doubt contact your Bredel representative.

See also

WARNING

Avoid direct contact between a strong oxidiser or a strong acid and Bredel Genuine Hose Lubricant. This can cause unwanted chemical reactions. Use an alternative lubricant to avoid hazardous situations. In case of doubt, consult your Bredel representative..

Note: Regularly replace the hose to avoid hose failure and additional downtime. Hose life depends on the operating condition, process fluid and hose material. The end-user should be aware of this and establish the frequency of preventive hose replacement. In case of doubt, consult your Bredel representative.

Large spill of product

Stop pump imsmediately.

Operation after hose failure can lead to large spill of product.

It is strongly recommended to install a high level float switch.

See also

Refer to "Fitting options" on page 53

Install a check valve to prevent reverse flow when all following conditions occur simultaneously

- Hose fails
- Pump stops
- Process pressure exceeds ambient levels

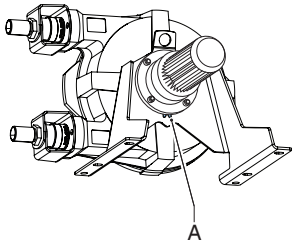
7.6 Fluid leakage

The pump uses a lubricated rotor to compress the hose. This means the pumphead must be filled with sufficient lubricant during operation. This lubricant is contained in the pump housing by the front cover and by a dynamic seal on the back. The gearbox is filled with gearbox lubricant.

Seal damage can occur due to normal wear in time, but is seriously accelerated if the seal gets in contact with contaminated lubricant. Thorough cleaning of the pump housing after a hose failure and regular replacement of the lubricant is strongly advised.

Note: Regularly check the pumphead for any leakage around the cover, the hose connections, and the rear of the pumphead.

The pumphead and gearbox are directly coupled to each other. A special feature is included in the pumphead to allow early detection of seal damage of the pump or gearbox.



This feature is called the leakage zone (A). Drops of lubricant visible at the back of the pump indicate likely seal failure. To avoid consequential damage, the pump must be stopped and lubricant levels of the pumphead and gearbox must be checked. The damaged seal should be replaced.

WARNING

Risk of injury from falling! Process fluid mixed with pump lubricant that is leaking from the pump can make floors slippery.

8 Maintenance

8.1 General

WARNING

Disconnect and lock the power supply to the pump drive before any work is carried out. In case the motor is fitted with a frequency controller and has a single-phase power supply, wait two minutes to make sure that the capacitors have discharged.

WARNING

Do not remove the pump cover if the power cable is connected to the motor. Do not connect the power cable to the motor if the pump cover is removed.

CAUTION

Only use original Bredel parts when maintaining the hose pump. Bredel cannot guarantee correct operation and any consequential damage that occurs from the use of non-original Bredel components.

CAUTION

Check that all components are present. Inspect components for damage in transit. If anything is missing or damaged, contact your distributor immediately.

Note: Do not install damaged parts. If in doubt, contact your Bredel representative for advice.

8.2 Maintenance and periodic inspections

The following maintenance schedule shows the maintenance and periodic inspection that need to be carried out on the hose pump to guarantee optimal safety, operation and life of the pump.

Note: It is also necessary to carry out periodic inspection of the gearbox and the electric motor. Consult their separate manuals to guarantee an optimal safety, operation and life of the gearbox and the electric motor.

Item	Action	To be carried out	Remark
1.	Check the lubricant level.	Before start-up of the pump and at scheduled intervals during operation.	Check that the lubricant level is above the minimum level line in the inspection window. If necessary refill with Bredel Genuine Hose Lubricant via the breather plug. Refer to "Changing lubricant" on page 37
2.	Regularly check the pumphead for any leakage around the cover, the hose connections, and the rear of the pumphead.	Before start-up of the pump and at scheduled intervals during operation.	Refer to "Troubleshooting" on page 57
3.	Check the gearbox for any leakage.	Before start-up of the pump and at scheduled intervals during operation.	In case of doubt, consult your Bredel representative.
4.	Check the pump for deviating temperature or strange noises.	At scheduled intervals during operation.	Refer to "Troubleshooting" on page 57
5.		When replacing the hose.	Refer to "Fitting the hose — Standard flange bracket" on page 42
6.	Check the roller bushings and actuator disc for excessive wear.	When replacing the hose.	Refer to "Changing the hose" on page 38
7.	Internal cleaning of the hose.	Cleaning of the system or fluid change.	Refer to "Cleaning the hose" on the next page
8.	Replace the hose.	Preventive, this means after 75% of the hose life of the first hose.	Refer to "Changing the hose" on page 38

Item	Action	To be carried out	Remark
9.	Change the lubricant.	After every second hose change, after 5000 service hours, after a year or after hose rupture whichever comes first.	Refer to "Changing lubricant" on page 37
10.	Replace the seal ring	If necessary	Refer to "Exchanging replacement parts" on page 45
11.	Replace the roller bushings.	If there is wear on the running surface of the bushings.	Under normal operating conditions replacement is hardly required. Refer to "Exchanging replacement parts" on page 45
12.	Replace the actuation disc.	If the bushings need replacement and the disc surface is severely worn.	Refer to "Exchanging replacement parts" on page 45
13.	Replace the bearings.	If necessary.	Refer to "Exchanging replacement parts" on page 45

8.3 Cleaning the hose

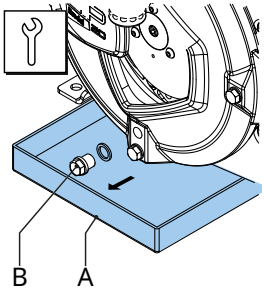
With a lot of product fluids it is necessary to have the hose cleaned immediately after the pumping process to avoid hardening of the fluid inside. The inside of the hose can be easily cleaned by rinsing the pump with clean water. If a cleaning agent is added to the water, check if the hose liner material is resistant to it. Also check if the hose can resist the cleaning temperature. Special cleaning sponge balls are also available. Refer to the documentation of the cleaning products and the hose for more information.

A proper result of a cleaning process in this way is not guaranteed by Bredel, while it strongly depends on the type of pumped fluid and the cleaning fluid applied.

For food applications, cleaning procedures are more strict. Refer to the documentation supplied with the food hose.

In case of doubt, consult your Bredel representative.

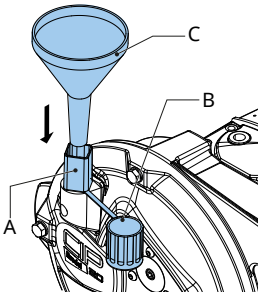
8.4 Changing lubricant



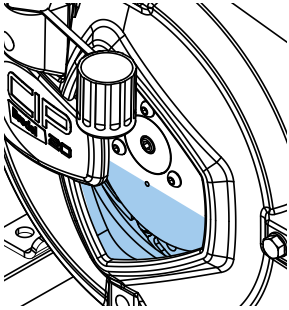
Note: The drain plug is in the cover of the pump.

1. Place a tray (A) under the drain plug. The tray must be large enough to contain the lubricant, possibly contaminated with product fluid, from the pumphead. Remove the drain plug (B). Collect the lubricant from the pump housing in the tray.

2. Position the drain plug and tighten it to the specified torque.



3. The pump housing can be filled with lubricant via the breather (A). For this purpose remove the breather cap (B) and position a funnel (C) in the breather.Pour the lubricant into the pump housing through the funnel.



4. Place back the breather cap.

See also

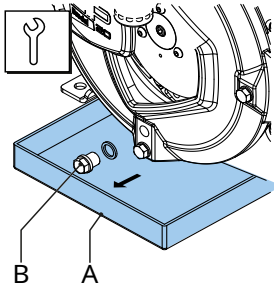
For the required quantity of lubricant, Refer to "Lubricant table pump" on page 67

Refer to "Torque figures" on page 68

8.5 Changing the hose

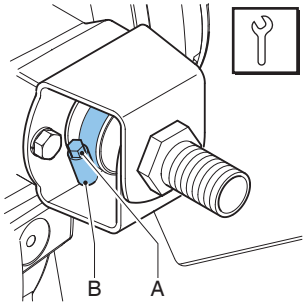
Removing the hose

1. Isolate the pump from the electrical supply.
2. Close any shut-off valves in the suction and discharge line to minimise the loss of process fluid.

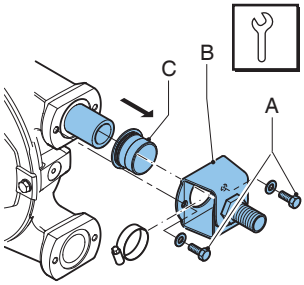


Note: The drain plug is in the cover of the pump.

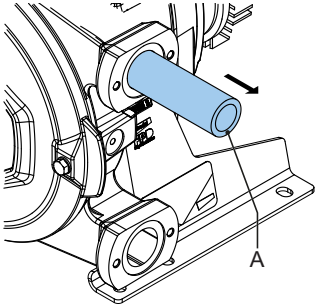
3. Place a tray (A) under the drain plug. The tray must be large enough to contain the lubricant, possibly contaminated with product fluid, from the pumphead. Remove the drain plug (B). Collect the lubricant from the pump housing in the tray.
4. Position the drain plug and tighten it to the specified torque.
5. Disconnect the suction and discharge lines.



6. Loosen the hose clamp (A) of both the inlet and outlet ports by loosening the retaining bolt (B).



7. Loosen the retaining bolts (A) of the bracket (B) and remove the bolts.
8. Pull the bracket and the hose clamp from the hose. Then pull off the rubber bush (C). Do steps 7 and 8 both for the inlet and the outlet ports.
9. Connect the pump to the electrical supply.
10. Switch on the electrical supply.



11. Power out the hose (A) from the pump chamber by jogging the drive motor in pump direction.

WARNING

During jogging the drive:

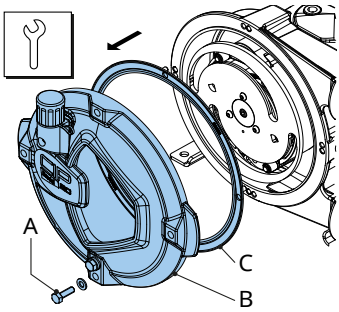
- **Do not stand in front of the pump ports.**
- **Do not try to guide the hose by hand.**
- **Keep loose clothing and long hair away from pump ports and any moving parts.**

See also

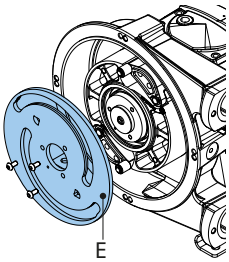
Refer to "Torque figures" on page 68

Cleaning the pumphead

1. Isolate the pump from the electrical supply.



2. Remove the cover (B) by loosening the retaining bolts (A).
3. Check the gasket (C) for damage and replace it if necessary.



4. Remove actuator disc (E). Check slots and roller bushings for signs of damage. Carefully clean exposed seal.
5. Rinse the pumphead with clean water and remove all residues. Make sure that no rinsing water remains in the pumphead.
6. Check rotor shoes for wear or damage and replace if necessary.

See also

Refer to "Maintenance and periodic inspections" on page 34

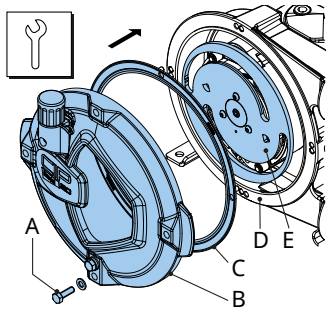
CAUTION

When the pressing shoes and/or actuation disc and/or roller bushings are worn the compression force of the hose decreases.

If the compression force is too low, this results in a loss of capacity by the backflow of the liquid to be pumped.

Backflow results in a reduction of the life of the hose.

Do not use high pressure cleaner.



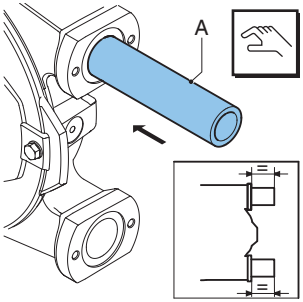
7. Mount the actuator disc (E). Make sure the rotation direction on the disc corresponds with the pump rotation direction.
8. Place the gasket (C) on the pump housing (D).
9. Mount cover (B).
10. Connect the pump to the electrical supply.
11. Switch on the electrical supply.

See also

Refer to "Torque figures" on page 68

Fitting the hose — Standard flange bracket

1. Clean the (new) hose on the outside and fully lubricate the outside with Bredel Genuine Hose Lubricant.



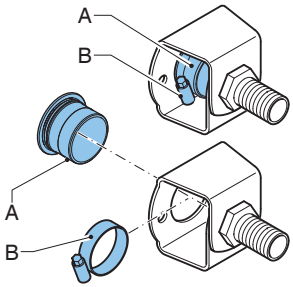
2. Make sure CIP rotor is in PUMP mode
3. Fit the hose (A) via the inlet port.

4. Run the motor so that the rotor pulls the hose into the pump housing. Stop the motor when the hose sticks out equally from both sides of the pump housing.

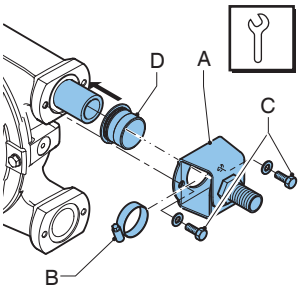
WARNING

During jogging the drive:

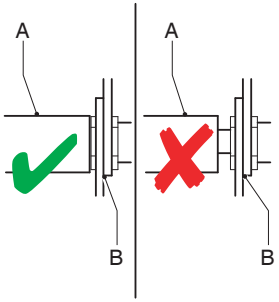
- **Do not stand in front of the pump ports.**
- **Do not try to guide the hose by hand.**
- **Keep loose clothing and long hair away from pump ports and any moving parts.**



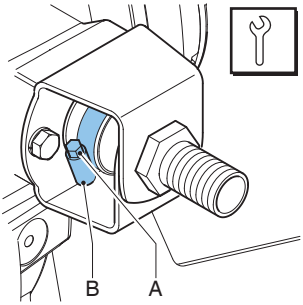
5. Check that the rubber bushes (A) are not deformed or damaged and replace them if necessary.



6. Check that the hose clamps (B) are not damaged and replace them if necessary.
7. First fit the inlet port. Slide the rubber bush (D) over the hose. Push the bracket (A) and the hose clamp (B) together over the hose. Align the holes in the bracket with the holes at the front of the port.
8. Position the retaining bolts (C) and tighten them to the specified torque.



9. Turn the rotor in such a way that the hose (A) is pressed firmly against the bracket (B).



10. Tighten the bolt (A) of the hose clamp (B).
11. Now fit the other port. For this port proceed in the same way as described above for the inlet port.
12. Fill the pump housing with Bredel Genuine Hose Lubricant.
13. Connect the suction and discharge lines.

See also

Refer to "Torque figures" on page 68

Refer to "Removing the hose" on page 38

Refer to "Changing lubricant" on page 37

Tightening the hose clamps

How to tighten hose clamps in combination with steel inserts

In some cases, an adjustment to the specified torque values is required. This can be due to excessive friction between the thread of the tightening bolt and the clamp. The actual clamping force needed can deviate from the clamping force derived from the specified torque values. To minimize this risk, it is advised to grease the clamping bolts.

If the specified torque values lead to a leaking hose connection, it is advised to carefully increase the bolt torque until a sealed situation is obtained. Here the absolute torque value is of less importance.

8.6 Exchanging replacement parts

Replacing rotor, seal and bearings of pump casing

See also

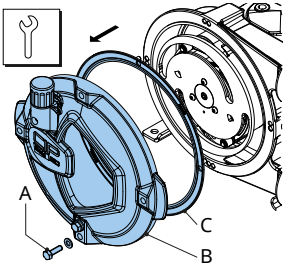
Refer to "Torque figures" on page 68

Refer to "Changing the hose" on page 38

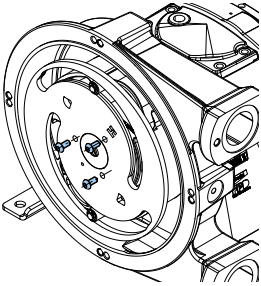
Refer to "Fitting the hose — Standard flange bracket" on page 42

Remove rotor

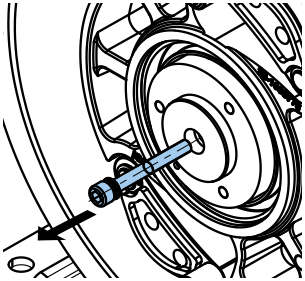
1. Remove the pump hose.
2. Isolate the pump from the electrical supply.



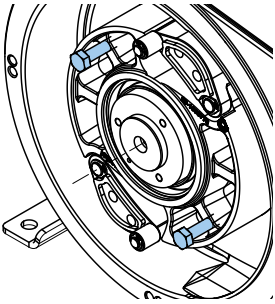
3. Remove the cover (B) by loosening the retaining bolts (A).
4. Check the gasket (C) for damage and replace it if necessary.



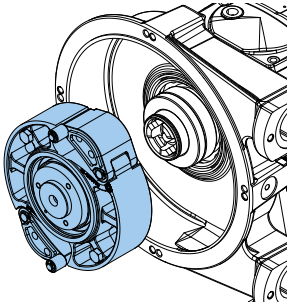
5. Remove the 3 bolts and gently pull out the actuation disc



6. Remove centre locking bolt of the drive shaft

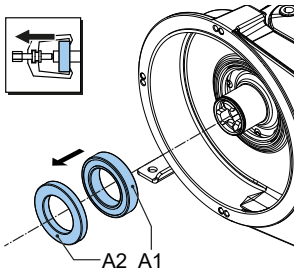


7. Place two M8x100 bolts into rotor.



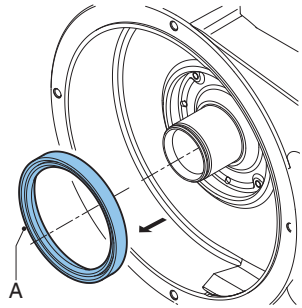
8. Tighten bolts to gently push out the rotor assembly and drive shaft.

Remove/Refit bearings and seal

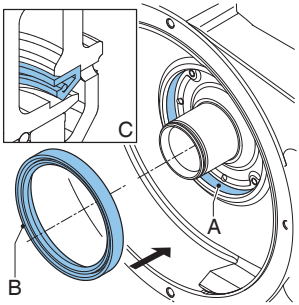


9. Remove the bearings A2 followed by A1.

10. Check that the hub is clean and free of grease.

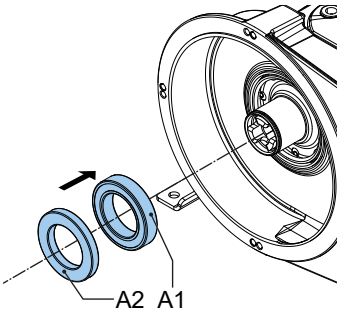


11. Remove the seal ring (A). Clean and degrease the bore.



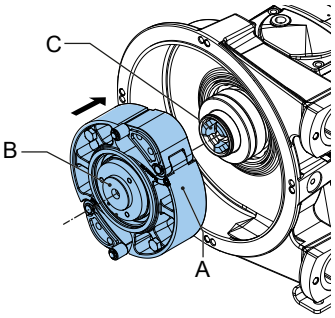
12. Gently press the new seal ring (B) into the cavity. The seal ring must be fitted in the correct orientation (C), with the open side towards the pump cover. If needed for ease of mounting, slightly oil the cavity area (A).

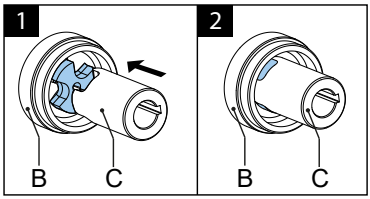
13. Slightly grease the seal lip of the dynamic seal (B).



14. Slightly oil the inner ring of the (new) bearings and the seat on the hub. Fit bearing A1 followed by smaller A2. The bearings are placed on the hub with a slight interference fit. Use a pressing tool to press the bearings on the hub.

Refit rotor

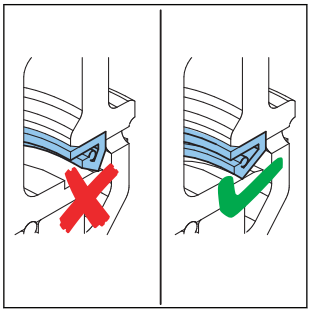




15. Fit CIP rotor (A). The rotor is placed on the bearings with a sliding fit. Push rotor onto hub until it can slide no further. As seen from the reverse side of rotor in diagram 1 and 2, make sure drive shaft (B) star section is aligned with coupling bush (C) star section.

WARNING

If coupling bush star section is not aligned properly with drive shaft it will be pushed out from the rotor base during assembly. If this happens, reposition drive shaft and gently push it back into main rotor.

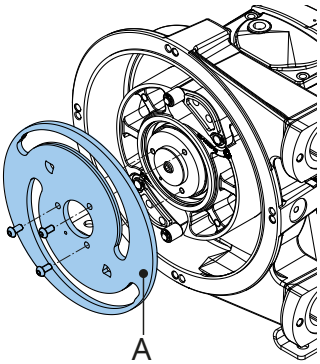


16. Check if the rotor can be turned by hand easily. If so, skip the next 2 steps. If turning requires excessive force, the lip of the seal is not properly positioned on the rotor seal area. Continue to the next step.
17. Remove the rotor.
18. Check seal for damage. No damage—refit rotor. Damaged—replace seal, then refit rotor.

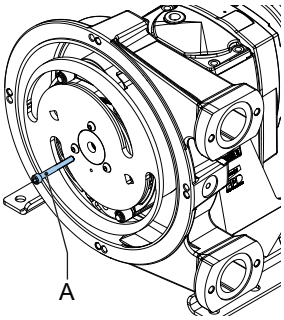
See also

Refer to "Refit rotor" on the previous page

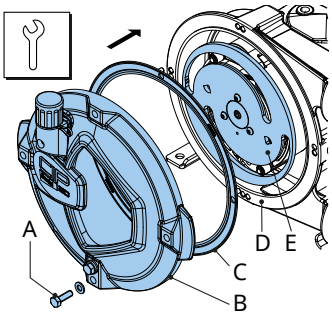
Refer to "Remove/Refit bearings and seal" on page 46



19. Install actuator disc by mounting the 3 bolts. Ensure arrow on the disc (A) corresponds to pump rotation direction. Make sure actuation bushings are in the slots of actuator disc.



20. Mount centre bolt (A).



21. Place the seal (C) on the pump housing (D).
22. Mount cover (B) by tightening bolts (A).
23. Connect the pump to the electrical supply.
24. Switch on the electrical supply.
25. Fit the (new) pump hose.

Replacing the seal and bearing of the base rotor

1. Remove the pump hose.

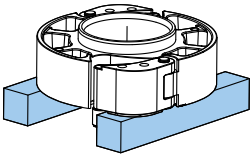
See also

Refer to "Changing the hose" on page 38

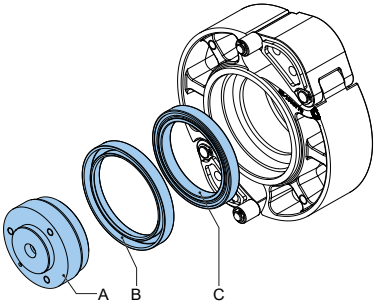
2. Isolate the pump from the electrical supply.
3. Remove the cover.
4. Remove the actuation disc and rotor assembly.

See also

Refer to "Replacing rotor, seal and bearings of pump casing" on page 45



5. Put the rotor on blocks and gently push out the drive shaft.



6. Using a hammer to lightly hit a drift OD 69mm, push out seal (B) and bearing (C) simultaneously.
7. Using a hammer to lightly hit a drift OD 84mm and ID 75mm, install new bearing (C) followed by new seal (B).
8. Grease the lip of the seal and gently place the drive shaft into the rotor. Rotate the drive shaft to make sure parts are assembled correctly.
9. Mount the rotor assembly.

See also

Refer to "Replacing rotor, seal and bearings of pump casing" on page 45

Replacing shoes and roller bushings

1. Remove the pump hose.

See also

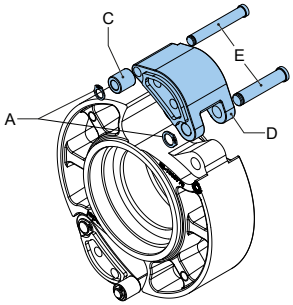
Refer to "Changing the hose" on page 38

2. Isolate the pump from the electrical supply.
3. Remove the cover.
4. Remove the actuation disc and rotor assembly.

See also

Refer to "Replacing rotor, seal and bearings of pump casing" on page 45

5. Lay the rotor on a flat surface with the roller bush facing upward.



6. Remove bolt (E) in the shoe and Spring (F).
7. Remove the circlips (A and H) and the roller bush (B) and shim ring (G).
8. Pull out both pins (D and J).
9. Exchange shoe (C) and replace the pins (D and J).
10. Place a new roller bush (B) and ring (G) and mount the circlips (A and H). Replace the circlips if needed.
11. Replace bolt (E) in the shoe and Spring (F).
12. Repeat steps for other shoe.
13. Mount the rotor assembly

See also

Refer to "Replacing rotor, seal and bearings of pump casing" on page 45

Bredel 20 retrofit of CIP rotor

The Bredel 20 pump can be turned into a CIP 20 by replacing existing rotor, bearings, seal and front cover.

1. Referring to Bredel 20 manual, remove Bredel 20 rotor, bearings and seal.
2. Install new bearings and seal and CIP rotor.

See also

Refer to "Replacing rotor, seal and bearings of pump casing" on page 45

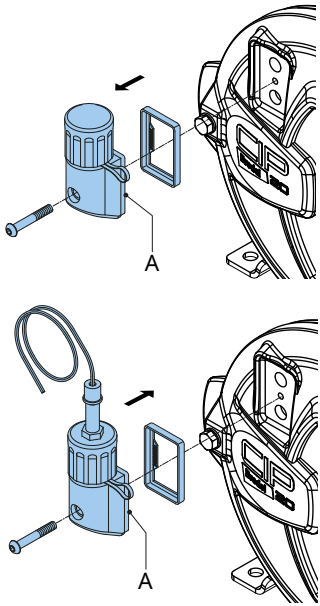
3. Remove breather and breather seal from Bredel 20 cover.
4. Mount breather with breather seal to new CIP20 cover.
5. Check cover seal for damage. Replace if needed. Install cover seal together with new cover.

After the upgrade the following parts are redundant:

- Two used bearing
- Used seal
- Rotor retaining ring
- Bredel 20 rotor
- Bredel 20 front cover

8.7 Fitting options

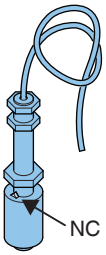
Fitting a high level float switch



1. Mount the breather (A) with high-level float switch. Tighten the bolt to the specified torque.

See also

Refer to "Torque figures" on page 68



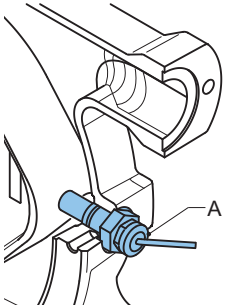
2. Connect the high-level float switch to the auxiliary power circuit via the 2 metre long PVC cable (2 x 0.34 mm^2). Bear in mind that the electrical contact of the float switch is normally closed (NC). The knob is upwards for normally closed operation. When the lubricant level is (too) high the contact will open.

Specifications*	
Voltage	Max. 230 V AC/DC
Current	Max. 2 A
Power	Max. 40 VA

*For use in non-explosive atmospheres.

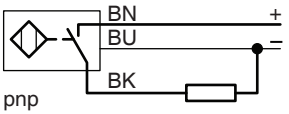
Note: Where the float switch is constructed to stop the equipment, operating has to be arranged so that the stop function locks out, preventing the equipment from being restarted without resetting. Check if the float switch is mounted with the NC sign at the top.

Fitting a revolution counter



For feedback of the pump revolutions signal to an "intelligent" system, the pump can be equipped with an inductive sensor (A). This sensor is mounted between the two ports.

Connection of the revolution counter

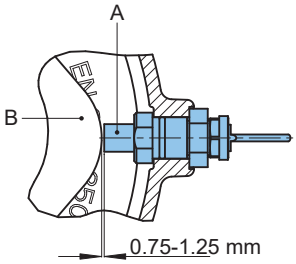


The speed sensor can be connected via the 2 meter long PVC cable (3 x 0.34 mm^2).

Specifications	
Voltage	10-65 V DC
Current	Max. 200 mA

*For use in non-explosive atmospheres.

Sensor adjustment



The sensor (A) must be adjusted at an offset of 0.75 - 1.25 mm to the extended pressing shoe (B).

9 Storage

9.1 Hose pump

- Store the hose pump and pump parts in a dry area. Make sure that the hose pump and pump parts are not exposed to temperatures lower than -40 °C or higher than +70 °C.
- Cover the openings of the inlet and outlet ports.
- Prevent corrosion of untreated parts. For this purpose use the correct protection or packaging.
- Before a long period of standstill or storage, put pump in CIP mode to prevent permanent hose deformation

WARNING

Do not jog rotors with the electrical drive when the front cover is removed.

9.2 Hose

- The maximum shelf life for the hose is 2 years. Store the hose in a dark and dry place with temperatures between 0 °C and 40 °C. After two years the hose material will age, which will reduce the life of the hose.

9.3 Lubricant

- Replace the pump lubricant in case of failure of the pump hose and in any case after one year.
- Use the lubricant before the best-before date marked on the container.
- The lubricant must be stored in closed bottles or cans to avoid absorption of moisture.

10 Troubleshooting

WARNING

Disconnect and lock out the power supply to the pump drive before any work is carried out. In case the motor is fitted with a frequency controller and has a single-phase power supply, wait two minutes to make sure that the capacitors have discharged.

If the hose pump does not function (correctly), consult the following check list to see if you can remedy the error yourself. If you cannot, contact your Bredel representative for advice.

Problem	Possible cause	Correction
Failure to operate.	No voltage.	Check if the power supply switch is on.
		Check if the electrical supply is available at the pump.
	Stalled rotor.	Check if the pump is stalled by incorrect fitting of the hose. Check any possible blockage inside the hose. Check the frequency controller settings, if applicable.
	Lubricant level monitoring system has been activated.	Check if the lubricant level monitoring system has stalled the pump.
		Check the functioning of the lubricant level monitoring system, and check the lubricant level.
High pump temperature.	Non-standard hose lubricant used.	In case of doubt, consult your Bredel representative.
	Low lubricant level.	Add Bredel Genuine Hose Lubricant. For the required amount of lubricant
	Product temperature too high.	Check the performance graph. Refer to "How to use the graphs" on page 30
	Internal friction on the hose caused by blocked or poor suction characteristics.	Check pipework/ valves for blockages. Ensure that the suction pipework is as short as possible and that the diameter is large enough.
	High pump speed.	Reduce pump speed to a minimum. Contact your Bredel representative for advice on optimum pump speeds.

Problem	Possible cause	Correction
Low capacity / pressure.	Shut-off valve in the suction line (partly) closed.	Fully open the shutoff valve.
	Hose rupture or badly worn hose.	Replace the hose. Refer to "Changing the hose" on page 38
	(Partial) blockage of the suction line or too little product on the suction side.	Ensure that the suction line is clear of blockages and that sufficient product is available.
	Connections and hose clamps not correctly mounted, which makes the pump suck air.	Check the connections and the hose clamps. Tighten if necessary.
	The filling degree of the pump hose is too low, because the speed is too high in relation to the viscosity of the product to be pumped and the inlet pressure. The suction line can be too long or too narrow or a combination of these factors.	In case of doubt, consult your Bredel representative.
	Severely worn pump rotor	Check dimensions and surface condition of shoes, actuator disc and roller bush. Replace if necessary.
	Wrong type of actuation disc.	Check if marking on disc match with operating pressure L, M or H.
	Wrong orientation of actuation disc.	Check if arrow on actuation disc corresponds to pump operational direction.
	PUMP mode not fully engaged.	Large resistance to rotate actuation disc relative to rotor due to worn seal and damaged bearing. Replace if necessary. Large resistance to rotate actuation disc relative to rotor due to worn actuation disc and roller bushings. Replace if necessary.

Problem	Possible cause	Correction
Vibration of the pump and pipework.	Suction and discharge lines are not secured correctly.	Check and secure pipework.
	High pump speed with long suction and discharge lines or high relative density or a combination of these factors.	Reduce pump speed. Reduce the line lengths on both suction and discharge where possible. In case of doubt, consult your Bredel representative.
	Too narrow diameter of suction and/or discharge line.	Increase the diameter of the suction/ discharge lines.
Short hose life.	Chemical attack of the hose.	Check the compatibility of the hose material with the product to be pumped. In case of doubt, consult your Bredel representative.
	High pump speed.	Reduce pump speed.
	High discharge pressures.	Check that the discharge line is not blocked, the shut-off valves are fully opened and the pressure relief valve functions properly (if present in the discharge line).
	High product temperature.	In case of doubt, consult your Bredel representative.
	High pulsations.	Restructure the discharge and inlet conditions.
	Too much hose compression.	Check if actuation disc corresponds to operating pressure L, M and H.

Problem	Possible cause	Correction
Hose pulled into the pump.	Insufficient or no hose lubricant in the pumphead.	Add extra lubricant. Refer to "Changing lubricant" on page 37.
	Incorrect lubricant: no Bredel Genuine Hose Lubricant in the pumphead.	In case of doubt, consult your Bredel representative.
	hose clamp insufficiently tightened.	Adjust specified torque. Refer to "Tightening the hose clamps " on page 44.
	Too high inlet pressure - larger than 200 kPa.	Reduce the inlet pressure.
	Hose blocked by an incompressible object in the hose. The hose cannot be compressed and will be pulled into the pump housing.	Remove hose, check for blockages and replace if necessary.
Lubricant leakage at bracket.	Bolts of the bracket are loose.	Tighten to the specified torque settings. Refer to "Torque figures" on page 68
	Bolts of the hose clamps are loose.	Tighten the hose clamps. Refer to "Tightening the hose clamps " on page 44
	Rubber bush damaged or not properly positioned in the bracket.	Inspect rubber bush and replace if necessary. Lubricate the bush with Bredel Genuine Hose Lubricant before installation. Tighten the clamp according instructions. Refer to Refer to "Tightening the hose clamps " on page 44
Leakage from the rear of the pump housing "Buffer zone".	Damaged seal ring.	Replace seal ring.

Problem	Possible cause	Correction
Leakage of product medium between the hose and the insert.	Steel insert: the hose clamp is not tightened strong enough.	Refer to "Tightening the hose clamps " on page 44 for the procedure and correct torque value.
	Plastic insert: the hose clamp is tightened too much and as a result the insert is deformed.	Loosen the hose clamp and inspect the insert. Replace the insert if necessary. Refer to "Tightening the hose clamps " on page 44

11 Specifications

11.1 Pumphead

Performance

Description	Bredel CIP20
Hose inner diameter [mm]	20
Max. capacity, continuous [m^3/h]	0.60
Max. capacity, intermittent [m^3/h] *	0.82
Capacity per revolution [l/ rev]	0.152
Max. permissible inlet pressure [kPa]	200
Max. working pressure [kPa]	Refer to "Maximum working pressure" on the next page
Permissible ambient temperature min [°C]	-20
Permissible ambient temperature max [°C]	45
Permissible product temperature min [°C]	-10
Permissible product temperature max [°C]	80
Sound level at 1m [dB(A)]	60

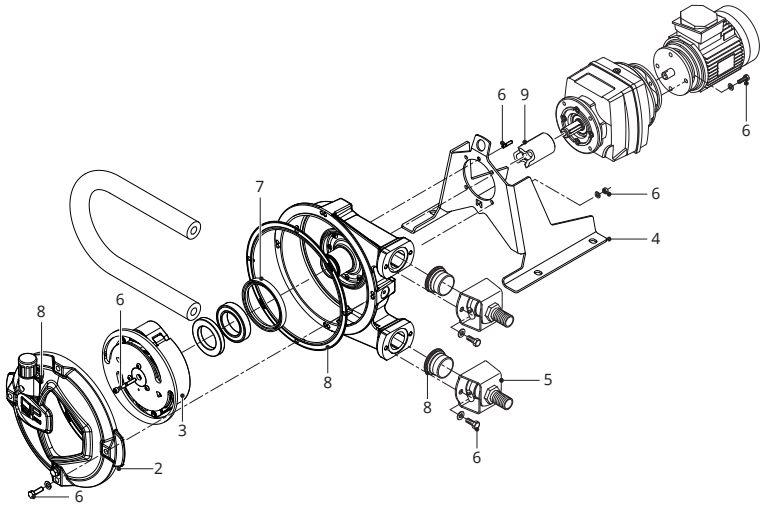
* Intermittent duty: Let the pump stand still to cool down for at least one hour after hours of operation.

Maximum working pressure

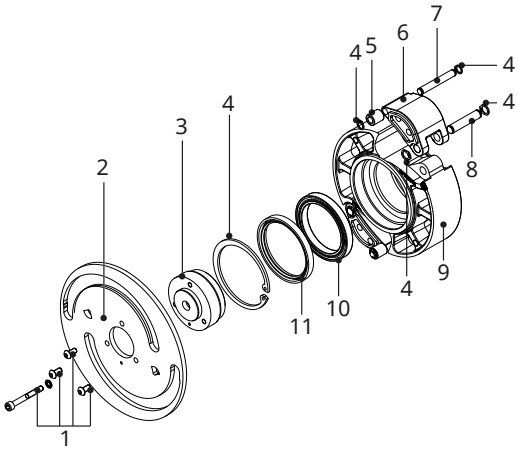
Description		Maximum working pressure [kPa]		
Rotor pressure range*		Low	Medium	High
Hose type	NR Metering	400	800	1000
	NR Transfer	400	800	—
	NBR	400	800	1000
	F-NBR	400	800	1000
	EPDM	400	800	1000
	CSM	400	800	1000

*By actuation disc (L, M or H).

Materials



Pos.	Description	Material
1	Pump housing	Cast-iron
2	Cover	Cast-iron
3	CIP rotor	See exploded view of rotor below
4	Pump support	Galvanised steel (AISI 316 optional)
5	Brackets	AISI 316
6	Fasteners	AISI 316
7	Seals, gaskets	NBR
8	Seals, gaskets	EPDM
9	Coupling	Steel



Pos.	Description	Material
1	Fastener	Steel
2	Actuation disc	Steel
3	Drive shaft	Steel
4	Circlip	Steel
5	Roller bush	Steel
6	Pump shoe	Cast-iron
7	Shoe actuation pin	Steel
8	Shoe pivot pin	Steel
9	Base rotor	Cast-iron
10	Bearing	Steel
11	Seal ring	NBR

Surface treatment

After surface preparation, two layers of two-component water born paint is used for surface protection. Standard colour is RAL9010. Contact your Bredel representative for advice on surface treatment.

Lubricant table pump

Item	Bredel CIP20
Lubricant	Bredel Genuine Hose Lubricant
Required quantity [litres]	0.7

*Bredel Genuine Hose Lubricant is registered at NSF: NSF Registration No 123204; Category Code H1. Also refer to: www.nsf.org/certified-products-systems, and search for 'Bredel'.

Components		
Glycerol	($C_3H_8O_3$)	50-100% w/w
Glycol	($C_3H_8O_2$)	2.5-10% w/w
Water	(H_2O)	

Note: Contact your Bredel representative for advice if you require additional information with respect to the safety data sheet.

WARNING

It is the users responsibility to ensure the chemical compatibility of the fluid to be pumped with the lubricant in the pumphead. Obey the local Health and Safety regulations.

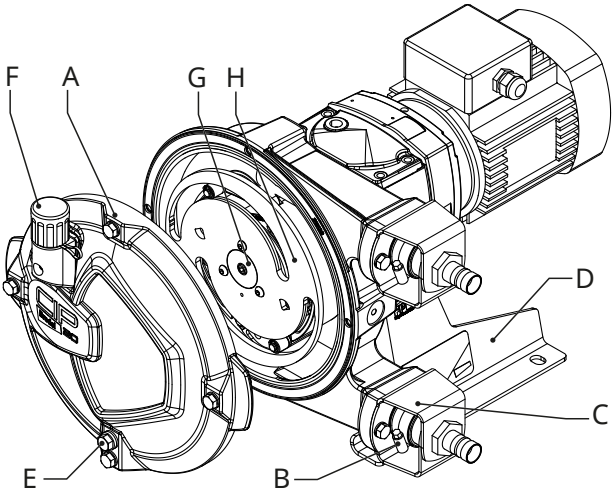
An alternative lubricant is available based on silicone. Also compatibility with this lubricant must be checked if applied. Refer to the chemical compatibility chart at www.wmfts.com/en/support/chemical-compatibility-guide/ or contact your Bredel representative for advice.

Weights

Description		Weight [kg]
		Bredel CIP20
Pumphead complete*		25.2
Pump support		2.4
Hose		0.8
Lubricant		0.6
Pump cover (complete)		6.2
Coupling		0.4
Gearbox	28-GA52...	9.5
	28-GA53...	10
Electric motor		6.5

*Weight of a completely mounted pumphead with standard flange brackets (including hose, lubricant and standard supports).

Torque figures



Pos.	Description	Torque [Nm]
		Bredel CIP20
A	Cover	25
B	Hose clamp	3
C	Bracket	25
D	Support	10
E	Drain plug	2
F	Breather	5
G	Drive shaft	4
H	Actuator disc	10

11.2 Gearbox

Type	Co-axial gearbox with helical gears.
Number of stages	Two or three.
Lubrication	Lubricated for life (refill is possible).
Mounting position	IM 2001 (IM B5) flanged gearbox with keyed shaft in horizontal position.
Motor adapter	Electric motor has been integrated in the gearbox housing, by which the smallest possible dimension is achieved.
Optional motor adapter	Adapters in conformance with IEC-B5 or NEMA TC.

Lubricant for gearbox

The standard gearbox is lubricated for life. If specific information about the lubricant is required, check the documentation that is supplied with the gearbox. Be aware that the type of lubricant depends on running conditions and ambient conditions. Special features might be required to keep the gearbox temperatures within limits. In case of doubt, contact your Bredel representative for advice.

11.3 Electric motor

The standard electric motor is an enclosed three-phase asynchronous motor, suitable for use in combination with a frequency inverter. As a standard, PTC temperature sensors are built-in.

Note: In case of doubt about the local applicable regulations for the drive connection, contact your Bredel representative.

Protection class	IP55/IK08
Insulation class	F
Increase in temperature	Within class B
Voltage/frequency	230/400 V - 3 phases - 50 Hz

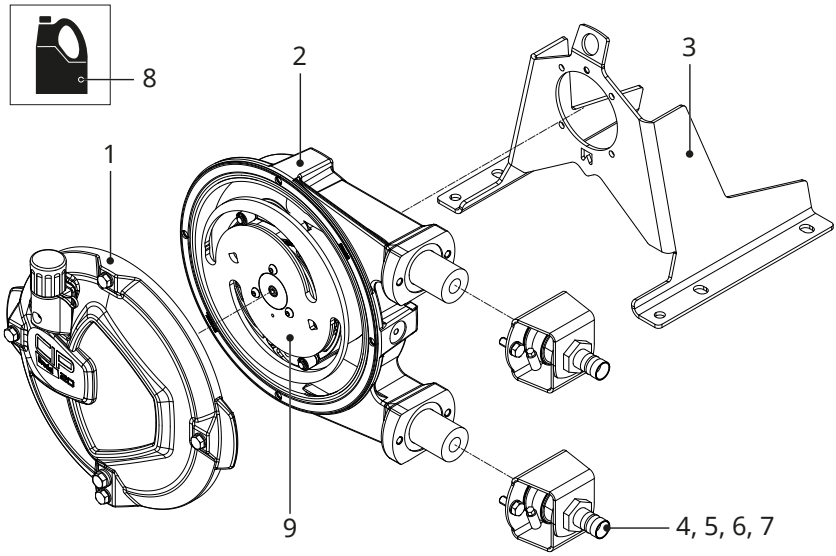
11.4 Bredel Variable Frequency Drive (VFD) (optional)

The Bredel Variable Frequency Drive (VFD) has been preprogrammed and only needs to be connected to the mains.

RFI filter	Integrated RFI filter B (industrial applications).
Control	Manual control for setting the speed and the keys for starting forward, stop and starting reverse. More options are available.
Protection class	IP55
Mains power supply	Several types are available; the choice depends on the power and the local electricity grid: • 200-240 V ± 10%; 50/60 Hz ± 5%; 1 ph • 200-240 V ± 10%; 50/60 Hz ± 5%; 3 ph • 400-480 V ± 10%; 50/60 Hz ± 5%; 3 ph

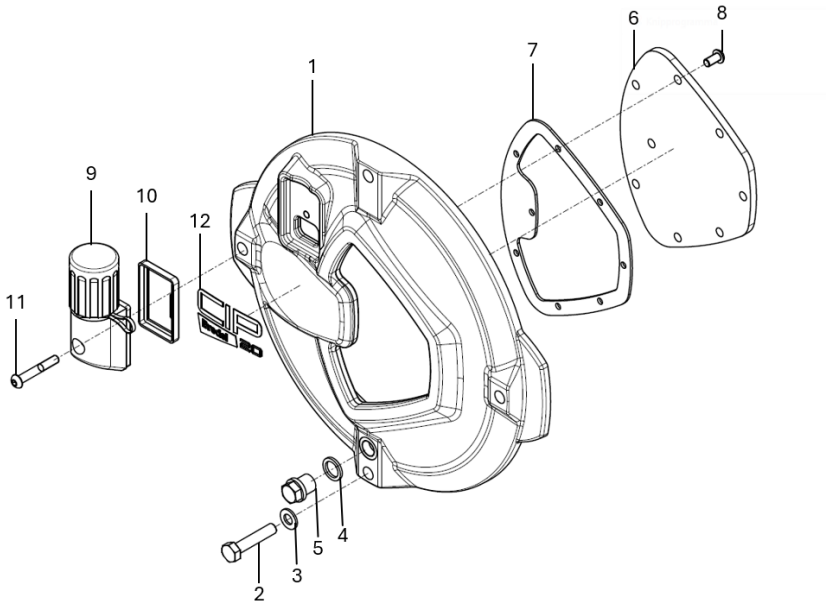
11.5 Parts list

Overview



Pos.	Description
1	Refer to "Cover assembly" on the next page.
2	Refer to "Pumphead assembly" on page 74
3	Refer to "Support assembly" on page 78
4	Refer to "Barbed nipple assembly (PTFE/PVDF)" on page 79
5	Refer to "Barbed or threaded nipple or sanitary assembly (stainless steel)" on page 80
6	Refer to "Flange assembly (1)" on page 82
7	Refer to "Flange assembly (2)" on page 83
8	Refer to "Lubricant" on page 85
9	Refer to "Replacing rotor, seal and bearings of pump casing" on page 45 Refer to "Replacing the seal and bearing of the base rotor" on page 50 Refer to "Replacing shoes and roller bushings" on page 51 Refer to "Bredel 20 retrofit of CIP rotor" on page 52

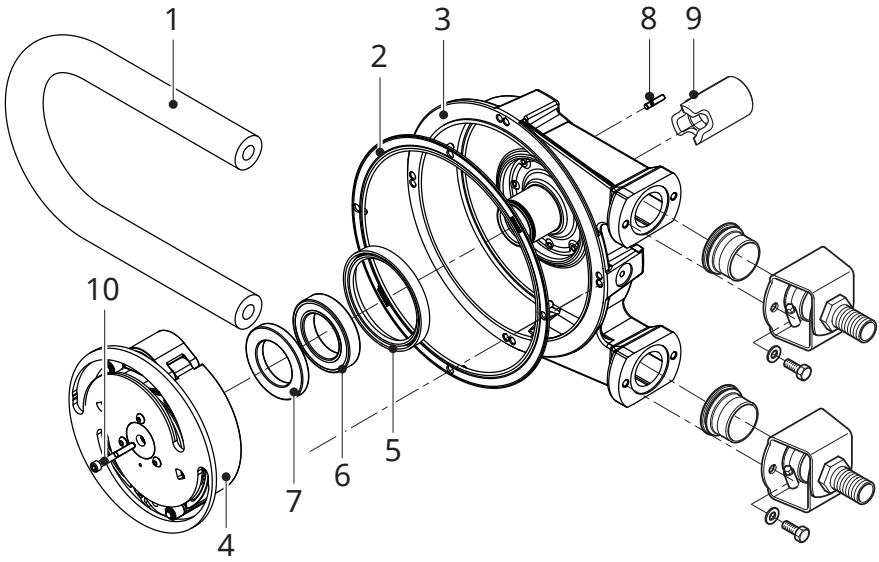
Cover assembly



Bredel CIP20

Pos.	Qty.	Description	Part number
1	1	Cover, Bredel CIP20	28-1008815
2	4	Bolt, hex. head	28-F504058
3	4	Washer	28-F523012
4	1	Drain plug	28-F911502
5	1	Gasket	28-S120131
6	1	Inspection window	28-1008828
7	1	Gasket	28-1008829
8	8	Round head screw	28-F552535
9	1	Breather	28-1000051
10	1	Gasket	28-29056334-1
11	1	Round head screw	28-F552535
12	1	Sticker, Bredel CIP20	28-1008830

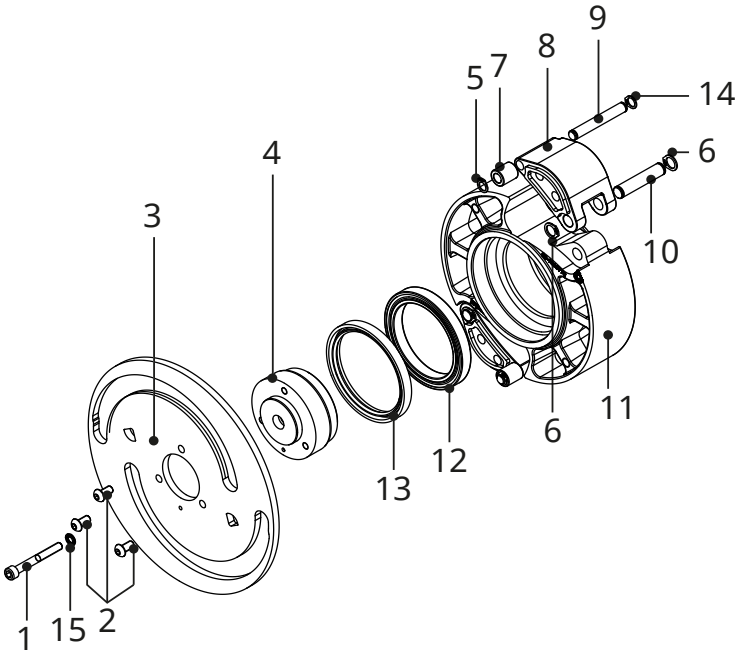
Pumphead assembly



Bredel CIP20

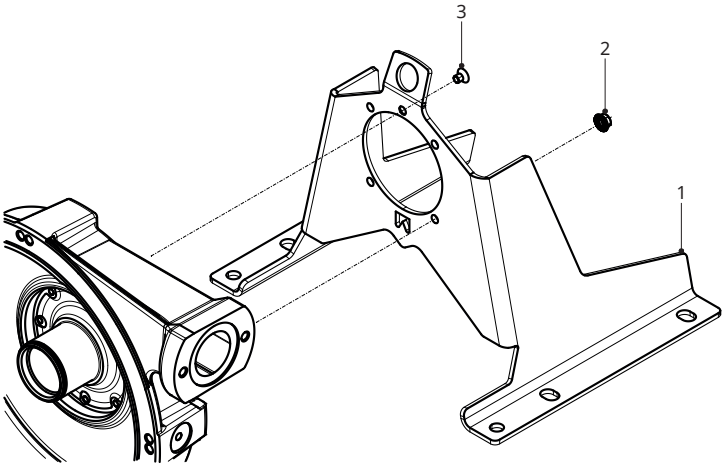
Pos.	Qty.	Description	Part number
1	1	Hose NR Metering	28-1000057
		Hose NR Transfer	28-1007880
		Hose NBR	28-020040
		Hose NBR Food	28-020061
		Hose F-NBR	28-020065
		Hose EPDM	28-020075
		Hose CSM	28-020070
2	1	Pump housing	28-215101
3	1	Gasket	28-215123
4	1	CIP Rotor	28-1008968
5	1	Seal ring	28-S211811
6	1	Bearing	28-B141060
7	1	Bearing	28-1008833
8	4	Stud	28-F511001
9	1	Coupling bush, Ø 20 x 63 mm	28-29063255
		Coupling bush, Ø 20 x 68 mm	28-29068255
		Coupling bush, Ø 25 x 63 mm	28-29064255
		Coupling bush, Ø 25 x 68 mm	28-29069255
10	1	Mounting bolt	28-F552541

Rotor assembly



Pos.	Qty.	Description	Part number
1	1	Mounting bolt	28-F552541
2	3	Mounting bolt	28-F552535
3	1	Actuation disc (Low)	28-1008816
		Actuation disc (Medium)	28-1008817
		Actuation disc (High)	28-1008818
4	1	Drive shaft	28-1008819
5	2	Circlip	28-F543005
6	4	Circlip	28-F543007
7	2	Roller bush	28-1008822
8	2	Pressing shoe	28-1008831
9	2	Actuation pin	28-1008821
10	2	Pivot pin	28-1008820
11	1	Base rotor	28-1008778
12	1	Bearing	28-1008833
13	1	Seal Ring	28-1007612
14	2	Circlip	28-F546002
15	1	Dowty seal	28-1008888

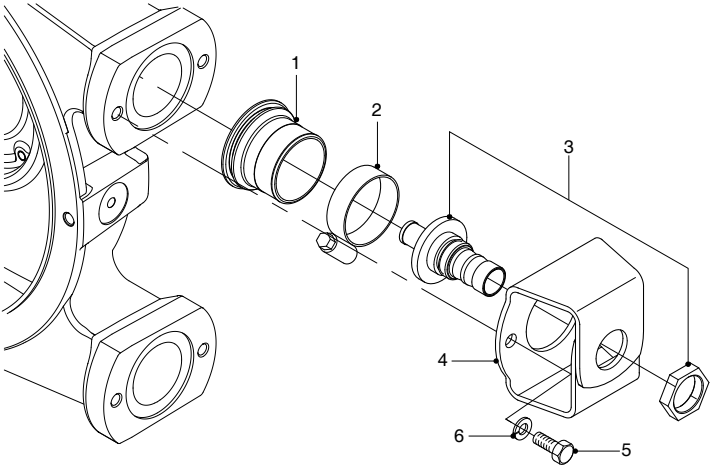
Support assembly



Bredel CIP20

Pos.	Qty.	Description	Part number
1	1	Pump support	28-215106
2	4	Hexagon flange nut with serration	28-1008148
3	1	Screw, countersunk head	28-F507040

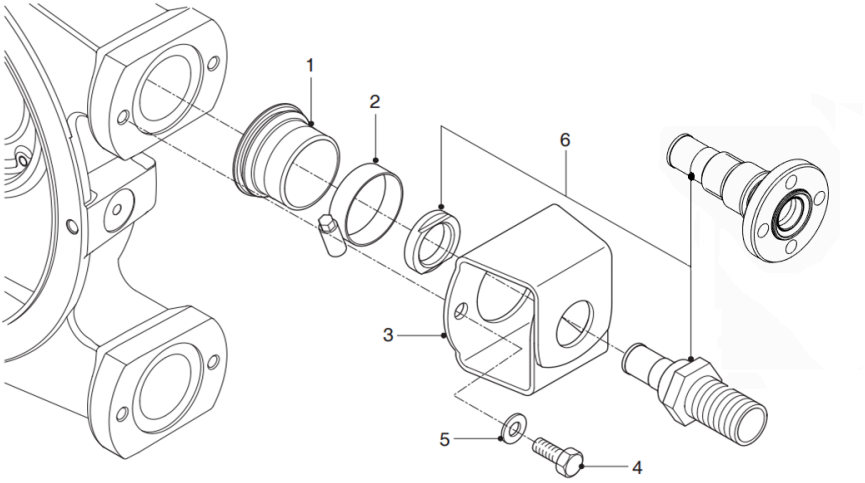
Barbed nipple assembly (PTFE/PVDF)



Bredel CIP20

Pos.	Qty.	Description	Part number
1	2	Rubber bush	28-215119
2	2	Hose clamp	28-C112508
3	2	Barbed nipple PTFE	28-215688020
		Barbed nipple PVDF	28-215690020
4	2	Bracket	28-215197
5	4	Bolt, Hex. head	28-F504054
6	4	Washer	28-F532009

Barbed or threaded nipple or sanitary assembly (stainless steel)

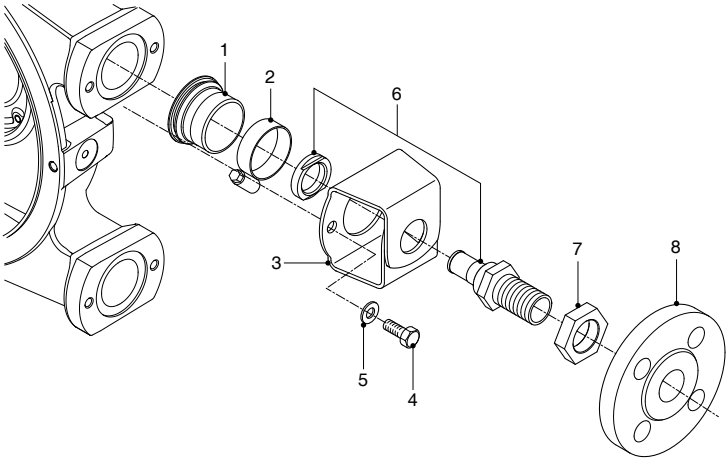


Bredel CIP20

Pos.	Qty.	Description	Part number
1	2	Rubber bush	28-215119
2	2	Hose clamp	28-C112508
3	2	Bracket	28-215197
4	4	Bolt, Hex. head	28-F504054
5	4	Washer	28-F532009
6	2	Threaded nipple (BSP) SS	28-215693020
		Barbed nipple SS[1]	28-215686020
		Threaded nipple (NPT) PP	28-215696020
		Threaded nipple (NPT) PVC	28-215697020
		Threaded nipple (NPT) SS	28-215698020
		Sanitary connector DIN 11851	28-215702020
		Sanitary connector Tri-clamp 1"	28-215704020
		Sanitary connector DIN 11864-1-A	28-1000276
		Sanitary connector DIN11864-2-A	28-1000278

1. The barbed nipple SS for the Bredel 20 has an outer diameter of 25 mm.

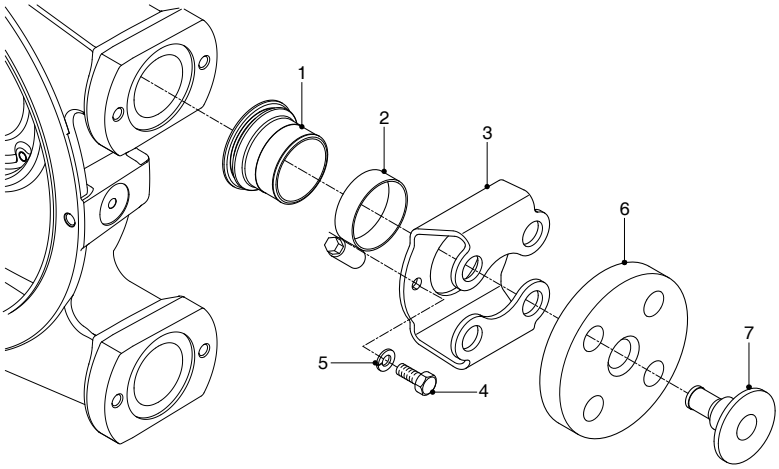
Flange assembly (1)



Bredel CIP20

Pos.	Qty.	Description	Part number
1	2	Rubber bush	28-215119
2	2	Hose clamp	28-C112508
3	2	Bracket	28-215197
4	4	Bolt, Hex. head	28-F504054
5	4	Washer	28-F532009
6	2	Threaded nipple (BSP) SS	28-215693020
7	2	Nut	28-F519004
8	2	Threaded flange EN SS	28-29105325
		Threaded flange ANSI SS	28-29098325

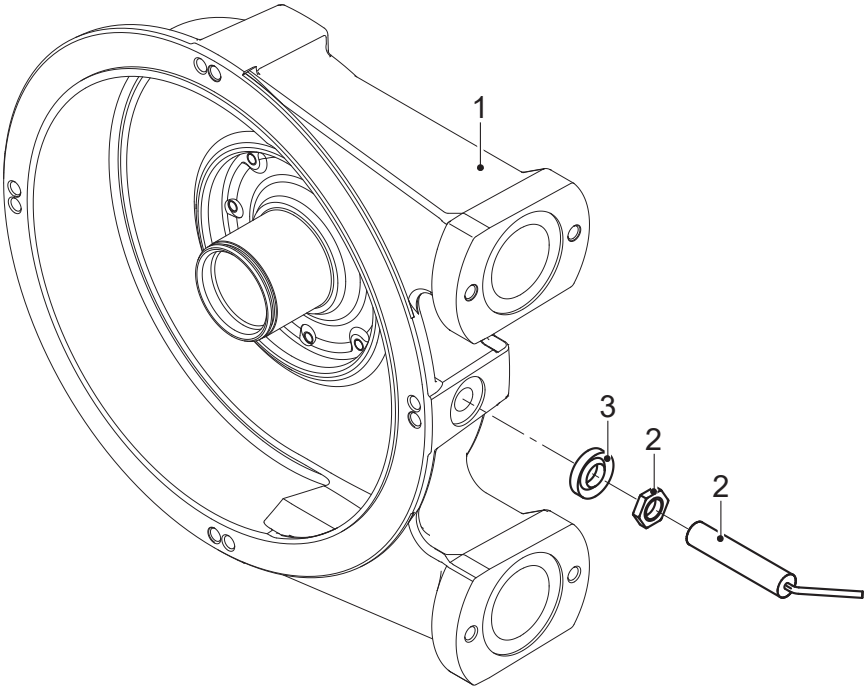
Flange assembly (2)



Bredel CIP20

Pos.	Qty.	Description	Part number
1	2	Rubber bush	28-215119
2	2	Hose clamp	28-C112508
3	2	Flange bracket	28-215197A
4	4	Bolt, Hex. head	28-F504054
5	4	Washer	28-F532009
6	2	Flange EN	28-215199
		Flange ANSI	28-215199A
7	2	Insert SS	28-220186
		Insert PP	28-220189

Revolution counter assembly



Bredel CIP20

Pos.	Qty.	Description	Part number
1	1	Pump housing	28-215101A
2	1	Revolution counter	28-29060367
3	1	Gasket ring	28-F724009

Lubricant

Pos.	Qty.	Description	Part number
-	1	0.5 l can Bredel Genuine Hose Lubricant	28-901143

Declaration of conformity

1. Manufacturer:

   Watson-Marlow Bredel B.V.,

   Sluisstraat 7, NL-7491 GA Delden, The Netherlands.

2. Object of the Declaration:

Product:	Bredel hose pump series
Type designation:	Bredel 10, Bredel 15, Bredel 20, Bredel CIP20

3. This declaration of conformity is issued under the sole responsibility of the manufacturer.

4. The object of the declaration described above is in conformity with the relevant harmonisation legislation:

EU directive:	*Machinery Directive 2006/42/EC*
UKCA directive:	*Supply of Machinery (Safety) Regulations 2008*

5. The Object of this Declaration is in conformity with the applicable requirements of the following harmonised standards and technical specifications:

BS EN 809: 1998+A1:2009	*Pumps and pump units for liquids - Common safety requirements*
BS EN ISO 12100:2010	*Safety of machinery - General principles for design - Risk assessment and risk reduction*
BS EN ISO 60240-1: 2018	*Safety of machinery - Electrical equipment of machines*

On behalf of:
Watson-Marlow Bredel B.V.
Delden, 01 March 2025

J. van den Heuvel, Managing Director, Watson-Marlow Bredel B.V.
Watson-Marlow Fluid Technology Solutions, telephone +31(0) 74 377 0000
Part of Spirax Group

12 Safety form

Product Use and Decontamination Declaration

In compliance with the Health and Safety Regulations, the user is required to declare those substances that have been in contact with the item(s) you are returning to Watson-Marlow Bredel B.V. or any of its subsidiaries or distributors. Failure to do so will cause delays in servicing the item or in issuing a response. Therefore, **please complete this form** to make sure we have the information before receipt of the item(s) being returned. A completed copy must be attached to **the outside of the packaging** containing the item(s). You, the user, are responsible for cleaning and decontaminating the item(s) before returning them.

Please complete a separate Decontamination Certificate for each item returned.

RGA/KBR no.....

1 Company .....
Address .....

Telephone ..... Postal code .....
Fax number .....

2 Product .....

2.1 Serial Number .....

2.2 Has the Product been used?

YES ☐ NO ☐

If yes, please complete all the following paragraphs.

If no, please complete paragraph 5 only

3 Details of substances pumped

3.1 Chemical Names

a) .....

b) .....

c) .....

d) .....

3.2 Precautions to be taken in handling these substances:

a) .....

b) .....

c) .....

d) .....

3.3 Action to be taken in the event of human contact:

a) .....

b) .....

c) .....

d) .....

3.4 Cleaning fluid to be used if residue of chemical is found during servicing;

a) .....

b) .....

c) .....

d) .....

4 I hereby confirm that the only substances(s) that the equipment specified has pumped or come into contact with are those named, that the information given is correct, and the carrier has been informed if the consignment is of a hazardous nature.

5 Signed .....

Name .....

Position .....

Date .....

Note:
To assist us in our servicing please describe any fault condition you have witnessed.

.....

.....

.....

.....

.....