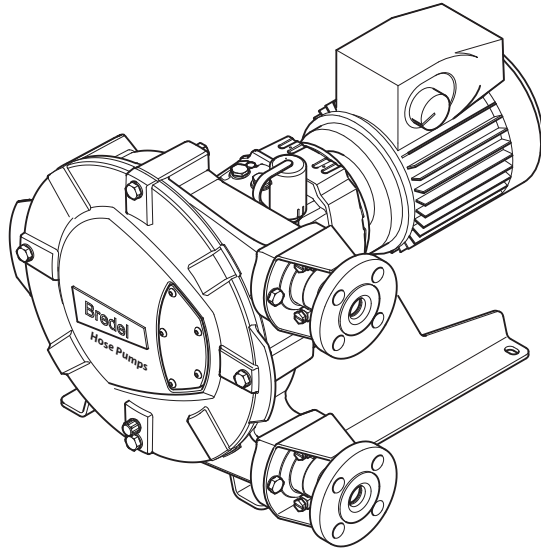


Bredel 25-32 Operating Manual



	ISO 9001 Quality Management	ISO 14001 Environmental Management	OHSAS 18001 Occupational Health & Safety Management
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QR code



English	To get the translation of the manual in your language, scan the QR code.
Nederlands	Scan de QR code om de vertaling van de handleiding in uw taal te krijgen.
Deutsch	Um die Übersetzung des Handbuchs in Ihrer Sprache zu erhalten, scannen Sie den QR-Code.
Português	Para obter a tradução do manual no seu idioma, faça a leitura do código QR.
Español	P ara obtener la traducción del manual en su idioma, escanee el código QR.
Français	Pour accéder à la traduction du manuel dans votre langue, scannez le code QR.
Italiano	Per ottenere la traduzione del manuale nella propria lingua, acquisire il codice QR.
Česky	Chcete-li získat překlad příručky ve vašem jazyce, naskenujte QR kód.
Magyar	Ha a kézikönyvet saját nyelvén szeretné, akkor használja a lemezt vagy szkennelje be a QR kódot.
Polski	Aby pobrać instrukcję przetłumaczoną na Państwa język, płyty lub zeskanować kod QR.
Русский	Для получения руководства на своем языке установите диск или отсканируйте QR-код.
Dansk	For at se en oversættelse af vejledningen på dit sprog, scanne QR-koden.
Suomi	Saadaksesi käyttöoppaan omalla kielelläsi, skannaa QR-koodi.
Norsk	F or å lese håndboken oversatt til ditt eget språk, scan QRkoden.
Svenska	För att få en översättning av handboken på ditt språk, skanna QR-koden.
中国	要获取本手册以您的语言呈现的译本，使用光盘或扫描QR代码。

How to access an available translation

The following documents are available on the website:

- User manual in multiple languages
- 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 website

1. Go to the website www.wmfts.com and select the 'Literature' tab.
2. Select Brand 'Bredel' and Document Type 'Manual' and then the required language.
3. Open or save the user manual.

The PDF reader program shows the selected user manual.

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 pumps Bredel 25 and Bredel 32.

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 17

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.



Procedures, remarks, suggestions or advice which refer to use in potentially explosive atmospheres in accordance with the ATEX Directive 2014/34/EU.

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 pumpehead material, hose liner, hose connections and lubricant can lead to serious damage and safety hazards. Always contact your Bredel representative first.

2.3 Use in potentially explosive atmospheres

The pumphead and drive mentioned in this manual may be configured to be suitable for use in a potentially explosive atmosphere. Such a pump meets the requirements as stated in the European Directive 2014/34/EU (ATEX Directive). These pumps have a maximum safety level of: Group II Appliances, category 2 GD bck T5. The actual safety level (ATEX code) depends on the options that are installed on the pump.



Use in potentially explosive atmospheres requires special configuration of the pump.

If the pump is to be used in potentially explosive atmospheres, contact your Bredel representative.

See also

Dedicated ATEX manual, part number 28-29210322.

2.4 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.



Certified to
NSF/ANSI 61

2.5 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.

2.6 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.

2.7 Regulations and instructions

- 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.
- Always store the manual near the hose pump.

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.

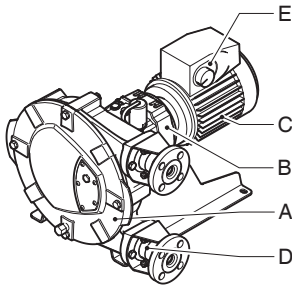
Damaged parts which are covered by the applicable warranty conditions can be returned to the manufacturer. The parts must be accompanied by a fully filled in and signed safety form as present in the back of this manual. The safety form must be applied to the outside of the shipping carton. Parts which 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

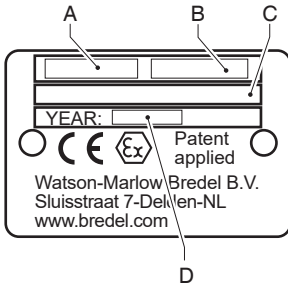
The hose pump can be identified by identification plates or stickers on:



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

Identification of the pump

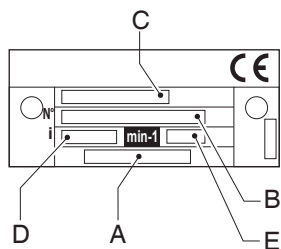
The identification plate on the pumphead contains the following data:



- | | | | |
|---|---|---|---------------------|
| A | Pump type and rotor type (low or medium pressure) | B | Serial number |
| C | ATEX code and document number, if applicable | D | Year of manufacture |

Identification of the gearbox

The identification plate on the gearbox contains the following data:



A Part number

B Serial number

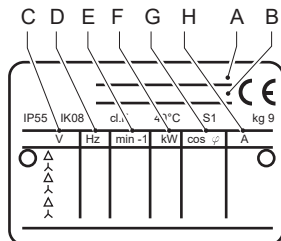
C Type number

D Reduction ratio

E Number of revolutions per minute

Identification of the electric motor

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

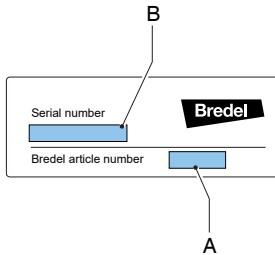


- A Part number
- B Serial number
- C Mains
- D Frequency

- E Speed
- F Power
- G Power factor
- 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:



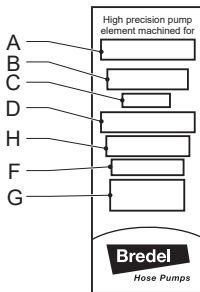
A Part number

B Manufacturer's serial number

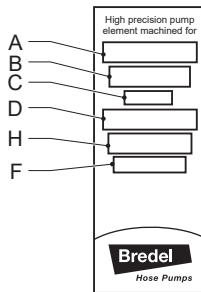
Identification of the hose

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

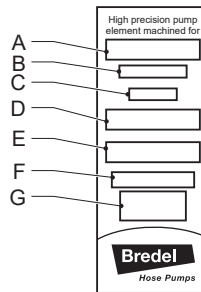
NR Metering hose



NR Transfer hose



Other hoses



A Pump type

B Part number

C Internal diameter

D Type of material of inner liner

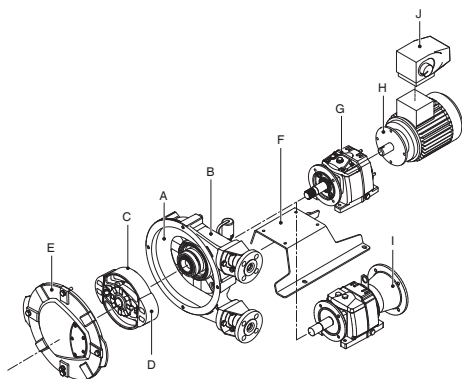
E Remarks, if applicable

F Maximum permissible working pressure

G Production code

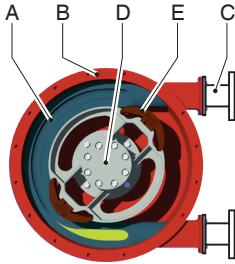
H Hose type, transfer or metering

4.2 Construction of the pump



- | | | | |
|---|----------------|---|--------------------------------|
| A | Hose | F | Support |
| B | Pump housing | G | Gearbox |
| C | Rotor | H | Electric motor |
| D | Pressing shoes | I | Adapter without motor (option) |
| E | Cover | J | Frequency controller (option) |

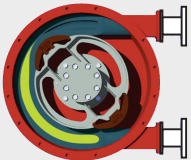
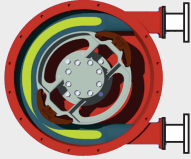
4.3 Operation of the pump



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

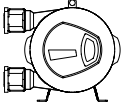
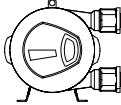
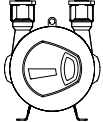
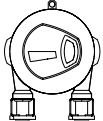
The ends of the hose are connected to the suction and discharge lines by means of a flange construction (C).

A bearing-mounted 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:

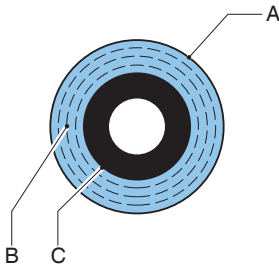
Position	Description	Pump layout
1	Pump ports at left hand side when facing the pump at the cover.	
2	Pump ports at right hand side when facing the pump at the cover.	
3	Pump ports facing upwards.	
4	Pump ports facing downwards.	

Concerning pumps Bredel 25 and Bredel 32 the position of the cover is equal for all pump positions, as indicated by the position of the inspection window in the illustrations above. An accurate reading of the lubricant level through the inspection window is possible at every pump position.

At every pump position, operational rotation of the rotor is possible in both directions. In this manual the illustrations are based on pumphead position 2.

4.5 Hose

General



- A Extruded or wrapped outer layer made of natural rubber C Extruded or wrapped inner liner
 B Nylon reinforcement layers

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.

Hose type	Material	Colour code
NR Metering and NR Transfer	Natural rubber	None
		Purple
		Purple/Green
NBR	Nitrile rubber	Yellow
NBR for food*	Nitrile rubber	Yellow
F-NBR for food (white inner liner)*	Nitrile rubber	Yellow
EPDM	EPDM	Red
CSM	CSM	Blue

*See also

Dedicated manuals:

NBR hoses for food contact, part number 28-29211330

F-NBR hoses for food contact, part number 28-29211322

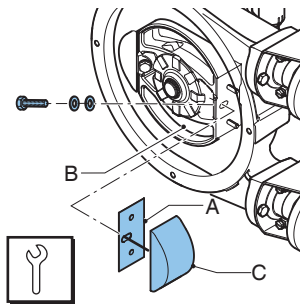
Note: Contact your Bredel representative for advice about the chemical and temperature resistance of the hoses.

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



In order to achieve optimal life of the hose, the compression force of the pump hose can be adjusted by placing a number of shims under the pressing shoes. The shims (A) are fitted between the rotor (B) and the pressing shoe (C). The number of shims will vary for each counterpressure situation.

See also

Refer to "Adjust the compression force (shimming)" on page 66 for how to select and install the shims.

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 lubricant is food grade. 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 83 for the required quantity and NSF registration.

Refer to "Hose failure" on page 38 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 co-axial gearbox units.

The gearboxes are fitted with a foot rest. The outgoing shaft has been fitted with a spline.

See also

Refer to "Changing oil in the gearbox" on page 46

Refer to "Gearbox" on page 87

If the pump is to be used in potentially explosive atmospheres: Refer to "Use in potentially explosive atmospheres" on page 14

4.7 Electric motor

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

See also

If the pump is to be used in potentially explosive atmospheres, Refer to "Use in potentially explosive atmospheres" on page 14

Refer to "Specifications" on page 81

4.8 Frequency controller

Refer to the documentation supplied by the manufacturer.

See also

If the pump is to be used in potentially explosive atmospheres, Refer to "Use in potentially explosive atmospheres" on page 14

Refer to "Specifications" on page 81

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
- Low (lubricant) level float switch
- Revolution counter
- Epoxy pressing shoes
- Stainless steel flanges, flange brackets, hose clamps, support and mounting parts
- Pump support for non-standard gearbox types
- Special configuration for use in potentially explosive atmospheres



The high level float switch is mandatory for use in potentially explosive atmospheres. If the pump is to be used in potentially explosive atmospheres, contact your Bredel representative.

5 Installation

5.1 Unpacking

Unpack all parts carefully, retaining the packaging until you are sure all components are present and in good order. Check against the components supplied list, below.

Packaging disposal

Dispose of packaging materials safely, and in accordance with regulations in your area. The outer carton is made of corrugated cardboard and can be recycled.

5.2 Inspection

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

Report any damage immediately to your Bredel representative.

5.3 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.

The minimum start-up temperature for the gearbox is -10 °C. A heater is required for temperatures below -10 °C.

Set-up

It is recommended that the pump is sited on a flat, horizontal, rigid surface, free from excessive vibration, to ensure the correct lubrication of the gearbox and correct pumphead operation. Allow a free flow of air around the pump to ensure that heat can be dissipated. Ensure that the ambient temperature around the pump does not exceed the recommended maximum operating temperature.

The pump materials and protective layers are suitable for indoor set-up and a protected outdoor set-up. Under certain conditions the pump is suitable for limited outdoor setup or a salty or aggressive atmosphere. Contact your Bredel representative for advice.

Ensure sufficient room around the pump to carry out the necessary maintenance.

Make sure that the room is sufficiently ventilated, so that the heat developed by the pump and drive can be discharged. Keep some distance between the ventilation cover of the electric motor and wall to enable the supply of necessary cooling air.

Installation specifications

Recommended operating temperature range (°C)	-20 to 45
Maximum floor slope (mm per metre)	50

Pipework

When determining and connecting suction and discharge lines consider the following points:

- 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 81

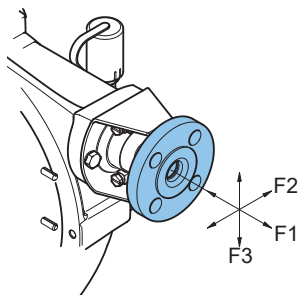


CAUTION

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

- 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 25	Bredel 32
F1	600	600
F2	500	500
F3	200	200

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:

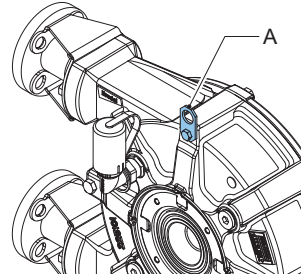
- Take precautions so the motor does not restart automatically after an unscheduled stop. In the event of a power or mechanical failure, the frequency controller stops the motor. When the cause of the failure is removed, the motor can restart automatically. The automatic restart can be dangerous in certain pump installations.
- All control cables outside the enclosure must be shielded and have a cross sectional area of at least 0.22mm². The shielding must be connected to earth at one end. In case of doubt, contact your Bredel representative for advice.

5.4 Lifting and moving the pump

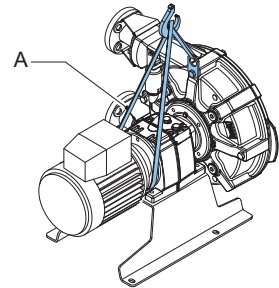


Lifting should be performed according to standard Health and Safety guidelines and should be performed by qualified personnel only.

Use the lifting eye (A) on the pump housing 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).



5.5 Placing the pump

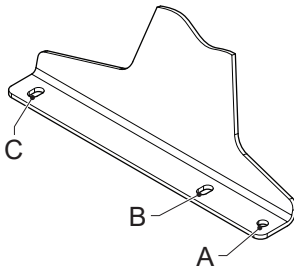


Do not use holes (B) when the pump is placed on the levelling elements. This can cause the pump to tilt.



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.



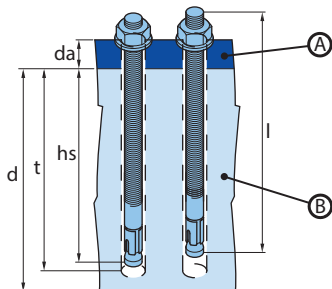
- In case of fixing to the floor use holes (A) or (B) and holes (C) at both sides of the pump.
- In case of levelling elements, use holes (A) and holes (C) at both sides of the pump.

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 25	Bredel 32
Flange thickness (d_a)	mm	5	5
Flange hole diameter	mm	12 x 18	12 x 18
Anchor bolt part number	-	28-F550016	28-F550016
Bolt thread	-	M10	M10
Bolt length (l)	mm	85	85
Minimum foundation height (d)	mm	200	200
Drill diameter	mm	10	10
Minimum drill depth (t)	mm	70	70
Mounting depth (h _s)	mm	60	60

Item	Unit	Bredel 25	Bredel 32
Torque setting (MD)	Nm	30	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 25	11	18x12	M10	110
Bredel 32	11	18x12	M10	150

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.
3. Check that the correct number of shims corresponds with your application.

See also

Refer to "Frequency controller" on page 30

Refer to "Changing lubricant" on page 45

Refer to "Specifications" on page 81

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 the hose clamps are fitted properly.
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 41

Refer to "Tightening the hose clamps" on page 54 for how to tighten the hose clamps

Refer to "Troubleshooting" on page 76

7 Operation

7.1 Temperature

The pump will heat up during normal operation. Heat is generated as the pump hose is compressed and released. The heat is removed by the lubricant and transported to the pump housing and cover. 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

The pump requires a certain amount of power for the specified operating condition(s). The gearbox and motor are sized to deliver that power at the given revolution speeds.

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 operating window can be found in the performance graphs in which discharge-pressure curves are displayed in a speed-power diagram.

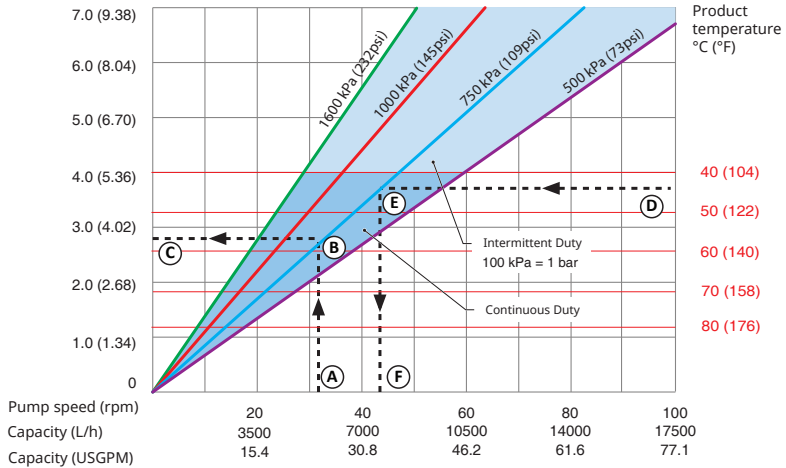
The pump and hose are designed to handle a discharge pressure up to 1600 kPa. The triangular area between the 500 kPa and the 1600 kPa lines describes the allowed performance area. The required duty points have to fall within this area. For discharge pressures lower than 500 kPa use the 500 kPa line.

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 three hours of operation.

How to use the graphs

Required motor power in kW (HP)



- | | | | |
|---|-----------------------------|---|-----------------------------|
| 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:

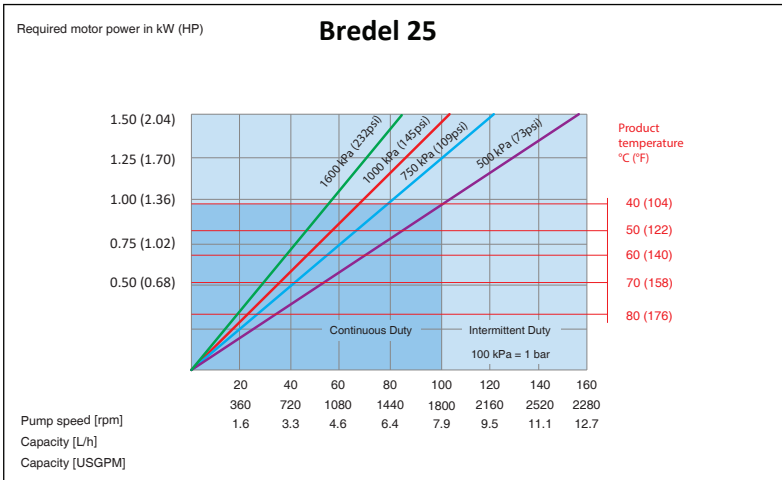
1. Start at the required flow or pump speed (A).
2. Meet the line of the required discharge pressure (B).
3. Read the required motor power (C).

To determine the maximum allowed pump speed:

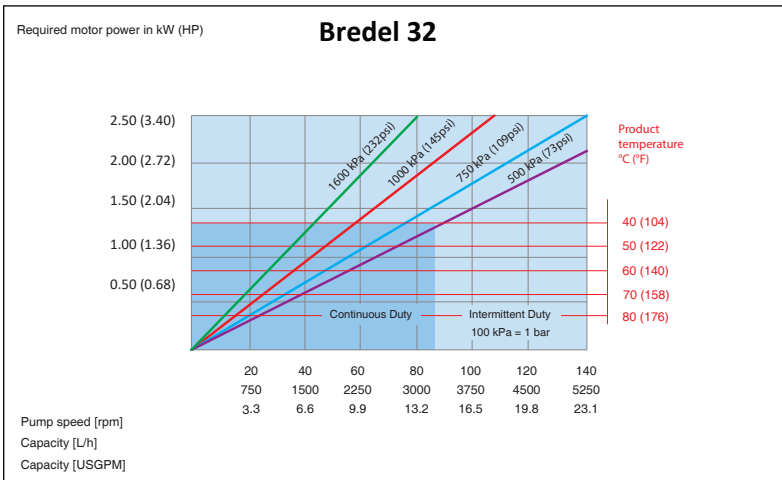
1. Start at the product temperature (D)
2. Meet the line of the required discharge pressure (E).
3. Read the maximum allowed pump speed (F).

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

Performance graph Breidel 25



Performance graph Breidel 32



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, because a part of the internal heat associated with repetitive hose compression is normally removed by the process fluid. So dry running increases the wear on the hose.

The thermal load depends on the running speed of the pump, as well as the rotor type (low pressure or medium pressure).

To minimise the extra wear, it is advisable to minimise dry running periods to less than a 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

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.

See also

Refer to "Lubricant table pump" on page 83 for the required quantity and NSF registration.

Hazardous situations



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..

Additional downtime

Hose failure will result in additional downtime, because you must clean the pump before a new hose installation.

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

In case the pressure in the process line (reservoir) is above the pressure in the pump housing (ambient pressure), the process fluid can enter the pump housing. If there is no check valve in the process line fluid can flow from the reservoir into the pump housing and escape through the breather onto the floor. This could lead to a large spill of product outside the pump. Reversed flow protection is advised. This is not part of the scope of delivery.

A high-level float switch can be applied to detect fluid escaping through the breather.

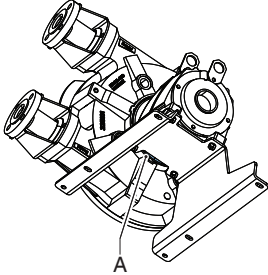
See also

Refer to "Fitting options" on page 69

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.	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. Refer to "Changing lubricant" on page 45
3.	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 76
4.	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.
5.	Check the pump for deviating temperature or strange noises.	At scheduled intervals during operation.	Refer to "Troubleshooting" on page 76
6.	Check the pressing shoes for excessive wear or damage.	When replacing the hose.	Refer to "Changing the hose" on page 46
7.	Internal cleaning of the hose.	Cleaning of the system or fluid change.	Refer to "Cleaning the hose" on page 44
8.	Replace the hose.	Preventive, this means after 75% of the hose life of the first hose.	Refer to "Changing the hose" on page 46
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 45

Item	Action	To be carried out	Remark
10.	Change the oil in the gearbox.	Refer to "Lubricant for gearbox" on page 87	Refer to "Changing oil in the gearbox" on page 46
11.	Replace the pump seal.	If necessary.	Refer to "Exchanging replacement parts" on page 57
12.	Replace the wear ring.	If necessary.	Refer to "Exchanging replacement parts" on page 57
13.	Replace the pressing shoes.	Wear on the running surface.	Refer to "Exchanging replacement parts" on page 57
14.	Replace the bearings.	If necessary.	Refer to "Exchanging replacement parts" on page 57
15.	Maintenance and periodic inspection of the gearbox and motor.	Before start-up of the pump and at scheduled intervals during operation.	Refer to the manuals of the gearbox and the motor.

8.3 Additional maintenance in potentially explosive environments

The following maintenance scheme shows the additional maintenance and periodic inspections that need to be carried out on the hose pump to guarantee an optimal safety, operation and life of the pump in a potentially explosive environment. Refer to the separate ATEX manual, part number 28-29210322.

Action	To be carried out	Remark
Replace the bearings.	According to ATEX regulations after 20,000 hrs. service or when damage is suspected.	Refer to "Exchanging replacement parts" on page 57
Clean the hose pump.	In potentially explosive (dust) atmospheres, the dust must be removed regularly.	

8.4 Cleaning the hose

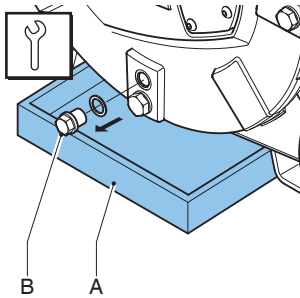
With a lot of product fluids it is necessary to have the hose cleaned immediately after the pumping process to avoid hardening of the fluid inside. The inside of the hose can be easily cleaned by rinsing the pump with clean water. If a cleaning agent is added to the water, check if the hose liner material 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.

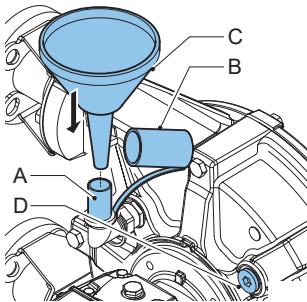
In case of doubt, consult your Bredel representative.

8.5 Changing lubricant

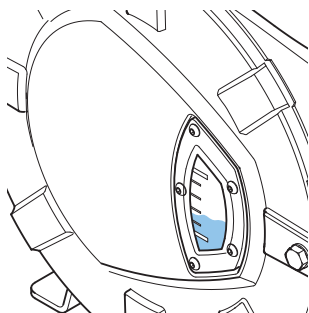


Note: The drain plug is in the cover of the pump.

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. In order to facilitate the filling, the plug (D) on the rear of the pump housing can be removed. Pour the lubricant into the pump housing through the funnel.



4. Keep on pouring until the lubricant level has risen above the level line in the inspection window. Place back the breather cap.

See also

For the required quantity of lubricant, Refer to "Lubricant table pump" on page 83

Refer to "Torque figures" on page 85

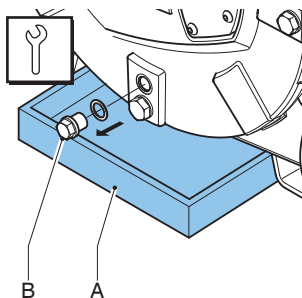
8.6 Changing oil in the gearbox

1. Refer to documentation supplied with the motor and gearbox for the procedure on oil change.

8.7 Changing the hose

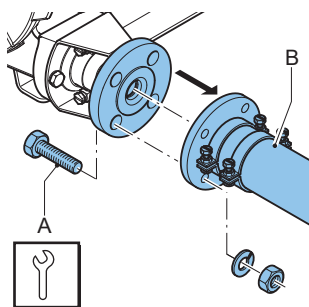
Removing the hose

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.

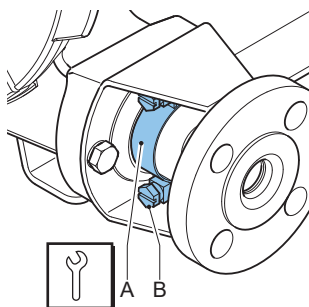


Note: The drain plug is in the cover of the pump.

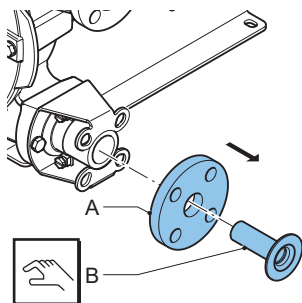
3. Place a tray (A) under the drain plug. The tray must be large enough to contain the lubricant, possibly contaminated with product fluid, from the pumphead. Remove the drain plug (E). Collect the lubricant from the pump housing in the tray.
4. Check that the breather vent mounted on the rear is not obscured.
5. Position the drain plug and tighten it to the specified torque.



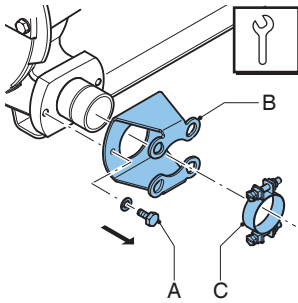
6. Loosen the retaining bolts (A) of both the suction and discharge line (B). Disconnect the suction and discharge lines.



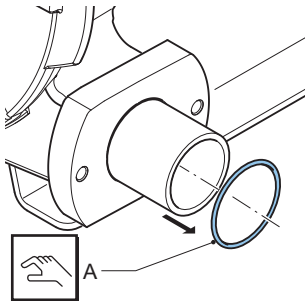
7. Loosen the hose clamp (A) of both the inlet and outlet ports by loosening the retaining bolt (B).



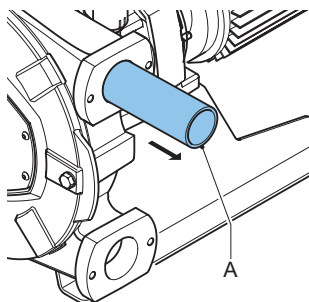
8. Pull the insert (B) from the hose and remove the flanges (A). Carry out this procedure both for the inlet and outlet ports.



9. Loosen the retaining bolts (A) of the flange bracket (B) and remove the bolts. Slide the flange bracket and the hose clamp (C) off the hose. Carry out this procedure both for the inlet and outlet ports.



10. Slide off the sealing ring (A). Check that the sealing ring is not deformed or damaged and replace it if necessary. Carry out this procedure both for the inlet and outlet ports.
11. Connect the pump to the electrical supply.
12. Switch on the electrical supply.



13. Power out the hose (A) from the pump chamber by jogging the drive motor.

WARNING



During jogging the drive:

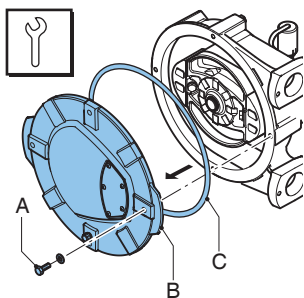
- Do not stand in front of the pump ports.
- Do not try to guide the hose by hand.

See also

Refer to "Torque figures" on page 85

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 sealing ring (C) is not damaged and replace it if necessary.

4. Rinse the pumphead with clean water and remove all residues. Make sure that no rinsing water remains in the pumphead.
5. Check the pressing shoes for wear or damage and replace them if necessary.

See also

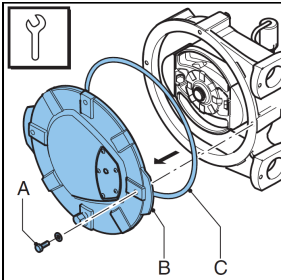
Refer to "Maintenance and periodic inspections" on page 41



CAUTION

When the pressing shoes 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.



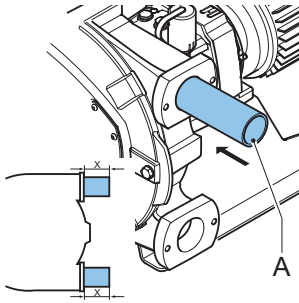
6. Place the seal ring (C) in the groove of the cover (B).
7. Refit the cover (B). Make sure that the four bolts (A) are refitted and that they are tightened in the correct order, diagonally opposite each other.
8. Connect the pump to the electrical supply.
9. Switch on the electrical supply.

See also

Refer to "Torque figures" on page 85

Fitting the hose

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



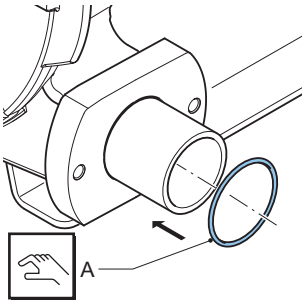
2. Fit the hose (A) via one of the ports.
3. Run the motor so that the rotor pulls the hose into the pump housing. Stop the motor when the hose sticks out equally from both sides of the pump housing.

WARNING

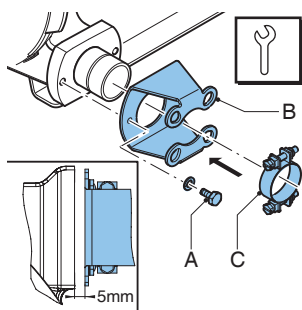


During jogging the drive:

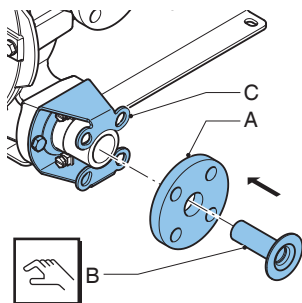
- **Do not stand in front of the pump ports.**
- **Do not try to guide the hose by hand.**



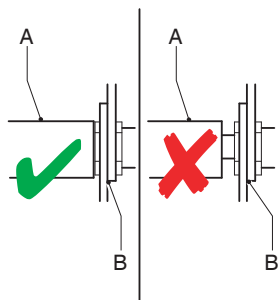
4. First fit the inlet port. Check the sealing ring (A) is not damaged and replace it if necessary. Fit the sealing ring.



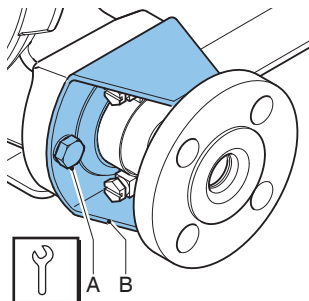
5. Check that the hose clamps (C) are not damaged and replace them if necessary.
6. Slide the flange bracket (B) and the hose clamp (C) over the hose together. Align the holes in the flange bracket with the ones at the front of the port. Position the retaining bolts (A) and tighten them until they are approx. 5 mm from the port, so that the gap between the flange bracket and the port remains.



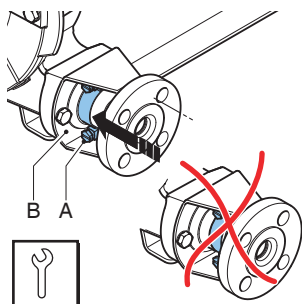
7. Slide insert (B) in flange (A) and press the insert in the hose. If necessary lubricate the insert with Bredel Genuine Hose Lubricant in order to simplify mounting. Make sure that the holes in flange (A) are aligned with the holes in flange bracket (C). Check that the insert is in the correct place. If the insert is not positioned correctly, the product to be pumped or the lubricant may leak.



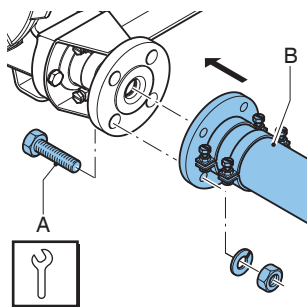
8. Turn the rotor in such a way that the hose (A) is pressed firmly against the flange surface (B).



9. Fully tighten the retaining bolts (A) of the flange bracket (B). Make sure that the bolts are tightened to the specified torque.



10. Position the hose clamp (A) against the O-ring chamber of the flange bracket (B) and fasten the retaining bolt.
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 (B).
14. Position the retaining bolts (A) and tighten them to the specified torque.

See also

Refer to "Torque figures" on page 85

Refer to "Changing lubricant" on page 45

Refer to "Changing lubricant" on page 45

Refer to "Tightening the hose clamps" below

Tightening the hose clamps

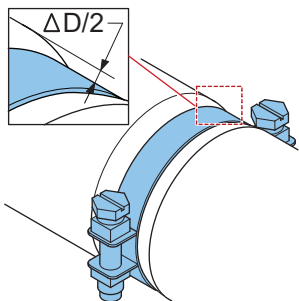
How to tighten hose clamps in combination with steel inserts

As a first step, apply the initial setup torque value as advised in the table below. 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. The maximum allowable amount of clamping is indicated in the table below as a minimum allowable outer diameter of the clamp (OD). A suitable indication is the difference between hose outer diameter and clamp outer diameter ΔD .

Description	Bredel 25	Bredel 32
Initial setup torque, steel inserts [Nm]	20	20
Initial setup distance $\Delta D/2$ * [mm]	0	0
Minimum allowable clamp outer diameter (OD) [mm]	50	57
Approximate maximum distance $\Delta D/2$ * [mm]	2	2.5

* ΔD = difference of hose outer diameter and clamp outer diameter



How to tighten hose clamps in combination with plastic inserts

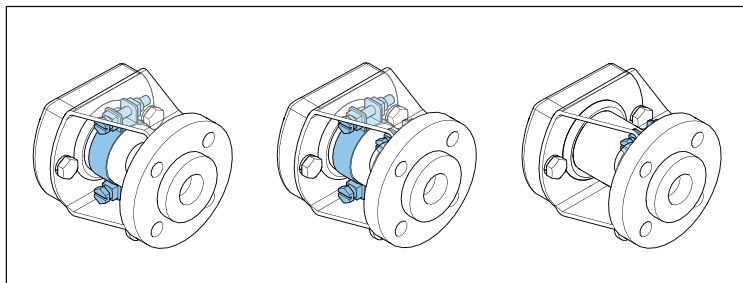
Bredel pumps are supplied with one clamp per hose end as standard. The clamp is positioned close to the pump side to assure a sanitary connection between hose and insert. In case of plastic inserts, the amount of clamping must be limited to avoid deformation of the plastic insert which would lead to leakage instead.

As a first step apply the initial setup torque value as advised in the table below. Then carefully increase the torque and keeping the $\Delta D/2$ within the range specified. For operating pressures above 8 bar it is strongly recommended to place a second clamp close to the flange. This clamp can be tightened to seal up to 16 bar.

Description	Bredel 25	Bredel 32
Initial setup torque (plastic inserts)[Nm]	10	10
Initial setup distance $\Delta D/2$ * [mm]	0	0
Approximate maximum distance $\Delta D/2$ * at 0–8 bar (clamp near pump housing) [mm]	0.5	0.5
Approximate maximum distance $\Delta D/2$ * at 8–16 bar (clamp near flange) [mm]	1	1

* ΔD = difference of hose outer diameter and clamp outer diameter

Alternatively in case a sanitary connection is not required the single clamp can be repositioned close to the flange and tightened to seal up to 16 bar.



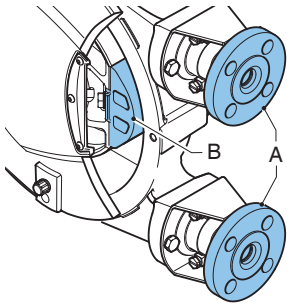
Left: Standard arrangement with one hose clamp near the pump housing. For low pressure demand.

Centre: Alternative arrangement with two hose clamps. For high pressure and sanitary demand.

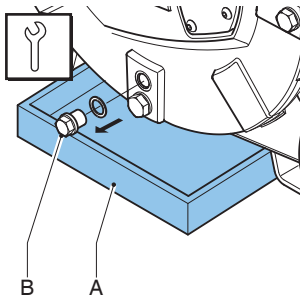
Right: Alternative arrangement with one hose clamp near the flange. Only for high pressure demand.

8.8 Exchanging replacement parts

Replacing the pressing shoes

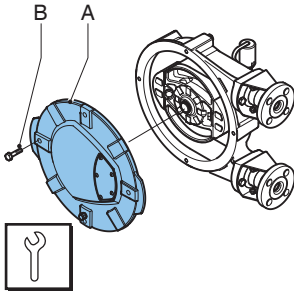


1. Jog the motor until the pressing shoe (B) is positioned between the inlet and outlet ports (A).
2. Isolate the pump from the electrical supply.

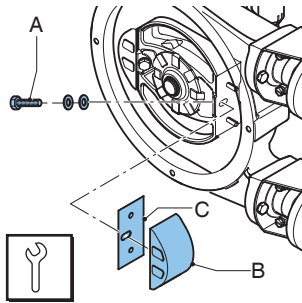


Note: The drain plug is in the cover of the pump.

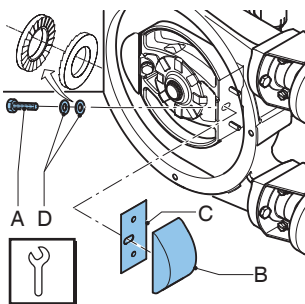
3. Place a tray (A) under the drain plug. The tray must be large enough to contain the lubricant, possibly contaminated with product fluid, from the pumphead. Remove the drain plug (B). Collect the lubricant from the pump housing in the tray.
4. Position the drain plug and tighten it to the specified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



5. Remove the cover (A) by loosening the retaining bolts (B).



6. Loosen the retaining bolt (A) of the pressing shoe (B) and remove the shoe. Remove the shims (C) if present.



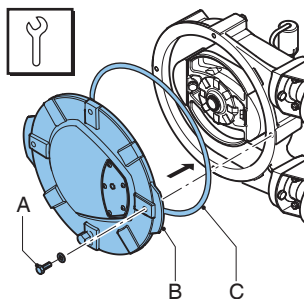
7. Fit the shims (A) . Tighten the retaining bolt(s) (B) with the specified torque.

See also

In order to determine the correct number of shims for your specific application Refer to "Shims specifications" on page 85.

Refer to "Torque figures" on page 85

8. Position the (new) pressing shoe (B).
9. Check that the Nord-Lock® rings (D) have been positioned correctly and tighten the retaining bolt(s) (A) to the specified torque.



10. Check the gasket (C) for damage and replace it if necessary.
11. Refit the cover (B). Make sure that the four bolts (A) are refitted and that they are tightened in the correct order, diagonally opposite each other.

12. Connect the pump to the electrical supply.
13. Switch on the electrical supply.
14. Jog the motor until the pressing shoe is positioned between the inlet and outlet ports.
15. Isolate the pump from the electrical supply.
16. Repeat the procedure for removing and fitting this second pressing shoe.
17. Refill the lubricant.

See also

Refer to "Torque figures" on page 85

Refer to "Shims specifications" on page 85

Refer to "Changing lubricant" on page 45

For the required quantity of lubricant, Refer to "Lubricant table pump" on page 83

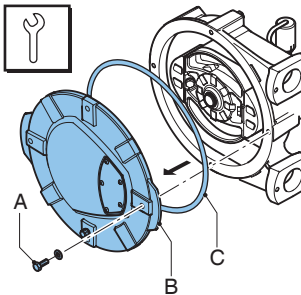
Replacing the rotor, bearings, and seal ring

1. Remove the pump hose.

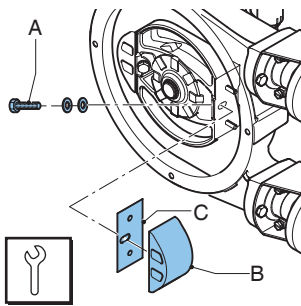
See also

Refer to "Changing the hose" on page 46

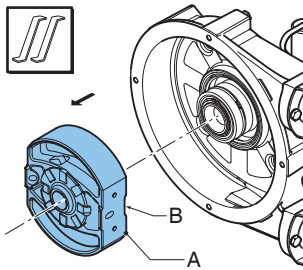
2. Isolate the pump from the electrical supply.



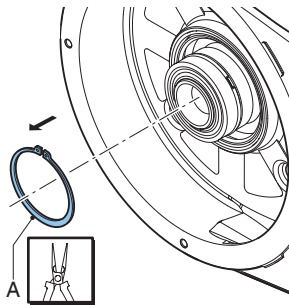
3. Remove the cover (B) by loosening the retaining bolts (A).
4. Check the sealing ring (C) is not damaged and replace it if necessary.



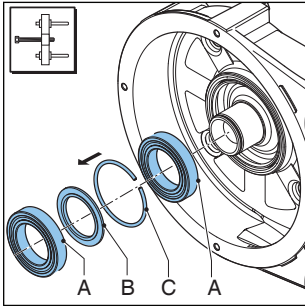
5. Loosen the retaining bolt (A) of both pressing shoes (B). Remove the shims (C) if present.



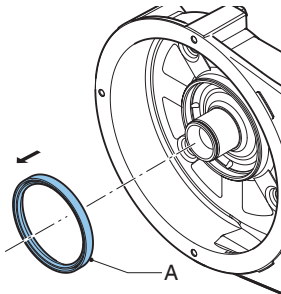
6. Use two crow bars to remove the rotor (A). Position both crow bars behind the recesses (B) in the rotor and push from the hub.



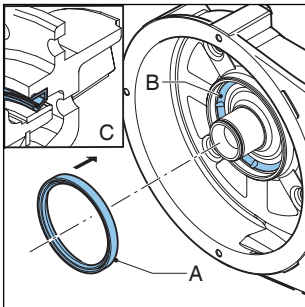
7. Dismount the retaining circlip (A) with the correct tool.



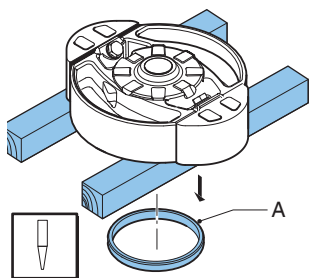
8. Remove the bearings (A), the spacer ring (B) and the retaining ring (C) with the correct tool.



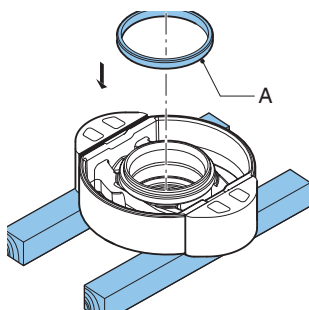
9. Remove the seal ring (A). Clean and degrease the bore.



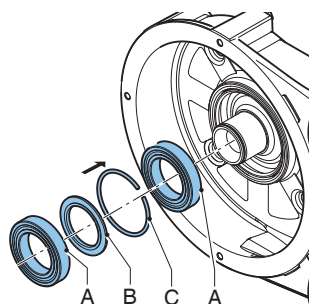
10. Gently press the new seal ring (A) into the cavity. The seal ring must be fitted in the correct orientation (C), with the open side towards the pump cover. If needed for ease of mounting, slightly oil the cavity area (B).
11. Slightly grease the seal lip of the dynamic seal (A).



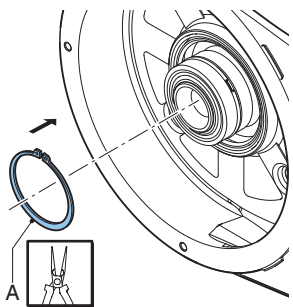
12. Support the rotor with wooden blocks at 90° to the spokes, with the wear ring (A) facing down. Position a suitable punch against the rear of the glued wear ring. Prevent damage to the wear ring seat or other parts.



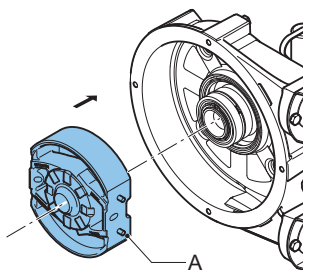
13. Turn the rotor over. Make sure that the seats of the new wear ring (A) and rotor are clean, dry and free of grease. Apply Loctite® type 641 or 603 both on the rotor and the wear ring. Position the new wear ring with the tapered edge facing up. Use a plastic hammer to fit the ring on the rotor until it touches the rotor completely.



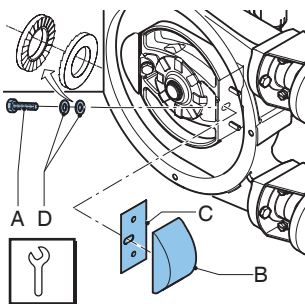
14. Check that the hub is clean and free of grease.
15. Fit the bearings and the rings. The bearings are placed on the hub with a slight interference fit. Use a pressing tool to press the bearings on the hub.



16. Check rotor retaining circlip (A) for any signs of damage and replace if necessary. Mount the retaining circlip (A). Use the correct tools for this purpose.



17. Fit the rotor (A). The rotor is placed on the bearings with a loose fit. Press the rotor on the hub until it clicks on the retaining ring.



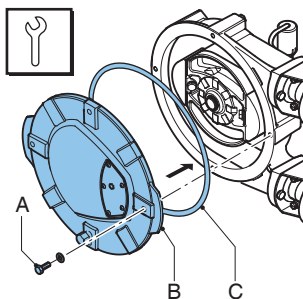
18. Fit the shims (A) . Tighten the retaining bolt(s) (B) with the specified torque.

See also

In order to determine the correct number of shims for your specific application Refer to "Shims specifications" on page 85.

Refer to "Torque figures" on page 85

19. Position the (new) pressing shoe (B).
20. Check that the Nord-Lock® rings (D) have been positioned correctly and tighten the retaining bolt(s) (A) to the specified torque.



21. Check the sealing ring (C) is not damaged and replace it if necessary.
22. Refit the cover (B). Make sure that the four bolts (A) are refitted and that they are tightened in the correct order, diagonally opposite each other.
23. Connect the pump to the electrical supply.
24. Switch on the electrical supply.
25. Fit the (new) pump hose.

See also

Refer to "Torque figures" on page 85

Refer to "Fitting the hose" on page 50

8.9 Adjust the compression force (shimming)

Remove the pump cover before fitting and removing shims.

In order to determine the correct number of shims for your specific application Refer to "Shims specifications" on page 85.



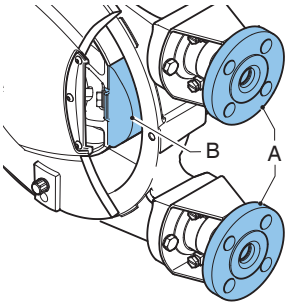
CAUTION

Too many shims, this means a too high compression force on the pump hose, create a too high load on the pumphead and pump hose, which results in a reduction of the life of the pump hose and bearings.

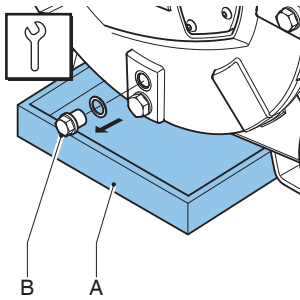


CAUTION

Too few shims, this means a too low compression force on the pump hose, create a loss of yield and slip or backflow. Backflow results in a reduction of the life of the pump hose.

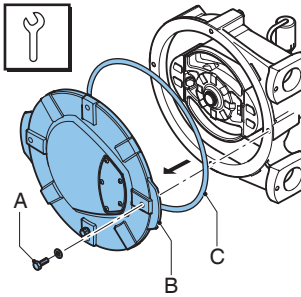


1. Jog the motor until the pressing shoe (B) is positioned between the inlet and outlet ports (A).
2. Isolate the pump from the electrical supply.

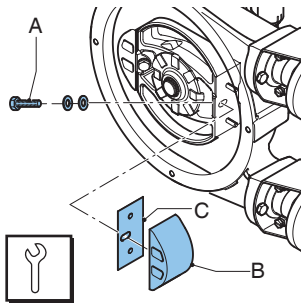


Note: The drain plug is in the cover of the pump.

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.



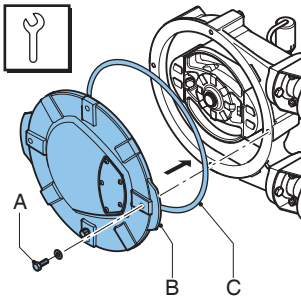
5. Remove the cover (B) by loosening the retaining bolts (A).



6. Loosen the retaining bolt(s) (A) of the pressing shoe (B) a few turns. Fit the shims (C) or remove them, until the correct number of shims is present. Tighten the retaining bolt of the pressing shoe to the specified torque.

See also

Refer to "Torque figures" on page 85



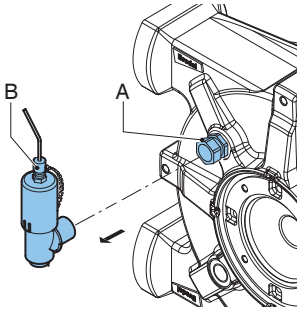
7. Check the gasket (C) for damage and replace it if necessary.
8. Refit the cover (B). Make sure that the four bolts (A) are refitted and that they are tightened in the correct order, diagonally opposite each other.
9. Connect the pump to the electrical supply.
10. Switch on the electrical supply.
11. Jog the motor until the pressing shoe is positioned between the inlet and outlet ports.
12. Isolate the pump from the electrical supply.
13. Repeat the procedure for this second pressing shoe.
14. Refill the lubricant.

See also

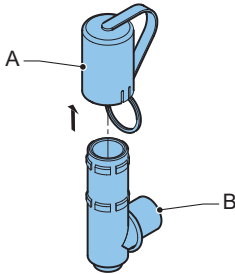
Refer to "Changing lubricant" on page 45

8.10 Fitting options

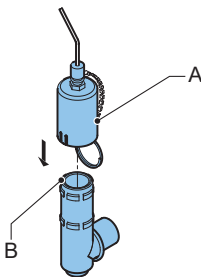
Fitting a high level float switch



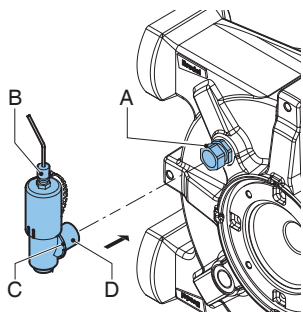
1. Dismount the standard breather (B) rear of the pump, by dismounting it from the crimp connector (A).



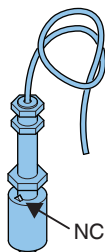
2. Slide the standard breather cap (A) from the breather (B).



3. Replace the standard breather cap with the breather cap with a high-level float switch (A) and slide it over the breather (B).



- Place the ring (C) at the chain's end around tube (D). Mount the breather to the crimp connector (A) on the rear of the pump. Tighten the nut of the crimp connector gently.



- Connect the high-level float switch to the auxiliary power circuit via the 2 metre long PVC cable ($2 \times 0.34 \text{ mm}^2$). 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.

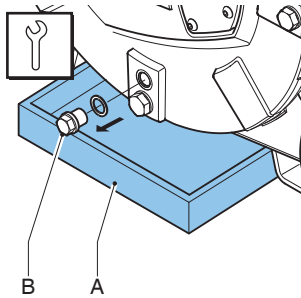
Specifications*

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.

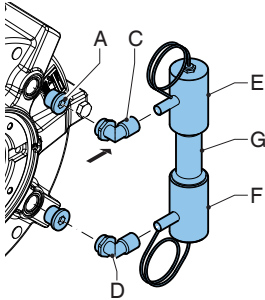
Fitting a high and low-level float switch



1. If the pump is filled with lubricant this must be removed first.

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

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



4. Dismount the plugs (A) and (B) on the rear of the pumphead.
5. Position the quick couplings (C) and (D) in both openings.
6. Clamp both connection tubes (E) and (F) on the riser pipe (G) and the quick links (C, D).
7. Connect the high and low level float switch to the electrical supply. Bear in mind that the electrical contact of the float switch is normally closed (NC). This means that:
 - the contact of the high level float switch opens at a (too) high lubricant level
 - the contact of the low level float switch opens at a (too) low lubricant level
8. Make sure the lubricant returns to the prescribed level.

See also

Refer to "Changing lubricant" on page 45

Specifications*

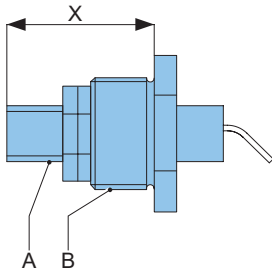
Voltage	Max. 230 V AC/DC
Current	Max. 2 A
Power	Max. 40 VA

*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.

Replacing a revolution counter

For revolution counting the pump must be prepared with a sensor and a pressing shoe with a magnet. The sensor generates one pulse per revolution. Consult your Bredel representative for more information. This section describes the replacement of the sensor only.



1. Fit the inductive sensor (A) in stop (B) and adjust it to dimension "X" as indicated in the table below. Tighten the adjusting nuts with a torque of 25 Nm.

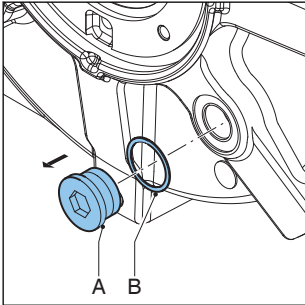
Dimension "X" ± 0.1 mm

Bredel 25

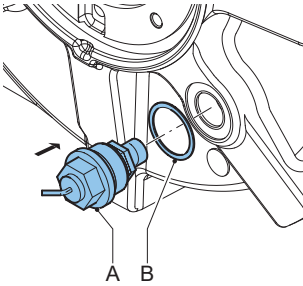
26 mm

Bredel 32

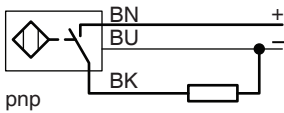
28.5 mm



2. Dismount stop (A) at the rear of the pump housing. Check that the sealing ring (B) is not damaged and replace it if necessary.



3. Fit the stop with the inductive sensor (A) together with sealing ring (B) on the pump housing.



4. Connect the sensor via the 2- metre long PVC cable (3 x 0.34 mm²).

Specifications*

Voltage	10-30 VDC
Current	max. 150 mA

*For use in non-explosive atmospheres

5. Make sure that the lubricant returns to the prescribed level.

See also

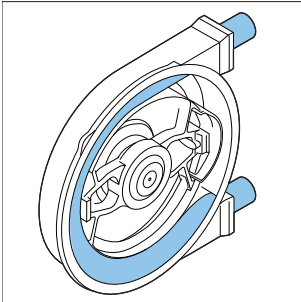
Refer to "Changing lubricant" on page 45

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 $-40\text{ }^{\circ}\text{C}$ or higher than $+70\text{ }^{\circ}\text{C}$.
- Cover the openings of the inlet and outlet ports.
- Prevent corrosion of untreated parts. For this purpose use the correct protection or packaging.
- After a long period of standstill or storage, the static load on the pump hose may have caused permanent deformation, which will reduce the life of the pump hose and may cause difficulty in starting.

To prevent deformation of the hose, remove a pressing shoe. Jog the rotor until the second pressing shoe is positioned between the inlet and the outlet port. In this way there is no load put on the pump hose.



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 $0\text{ }^{\circ}\text{C}$ and $40\text{ }^{\circ}\text{C}$. 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.
Lubricant level monitoring system has been activated.	Lubricant level monitoring system has been activated.	Check the frequency controller settings, if applicable.
		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.

Problem	Possible cause	Correction
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 Refer to "Lubricant table pump" on page 83
	Product temperature too high.	Check the performance graph. Refer to "Performance graphs" on page 35
	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.
	Over-shimming of the pump rotor shoes.	Consult the diagram. Refer to "Shims specifications" on page 85 . Remove excess shims.
	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.
	Under-shimming of the pressure shoes.	Fit the correct number of shims.
	Hose rupture or badly worn hose.	Replace the hose. Refer to "Changing the hose" on page 46
	(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 pressing shoes	Check surface condition of the pressing shoes. Replace if necessary.
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.

Problem	Possible cause	Correction
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.	Maximum working pressure depends on the hose type. 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.
Hose pulled into the pump.	Insufficient or no hose lubricant in the pumphead.	Add extra lubricant. Refer to "Changing lubricant" on page 45.
	Incorrect lubricant: no Bredel Genuine Hose Lubricant in the pumphead.	In case of doubt, consult your Bredel representative.
	Extremely high inlet pressure - larger than 300 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.
	Poor suction conditions, highly viscous flow, or flow with high solid content.	Attach a second hose clamp per hose end. This hose clamp must be tightened to the maximum value. Refer to "Tightening the hose clamps" on page 54.

Problem	Possible cause	Correction
Lubricant leakage at bracket.	Bolts of the bracket are loose.	Tighten to the specified torque settings. Refer to "Torque figures" on page 85
	Bolts of the hose clamps are loose.	Tighten the hose clamps. Refer to "Tightening the hose clamps" on page 54
Leakage from the rear of the pump housing "Buffer zone".	Damaged wear or seal ring.	Replace wear or seal ring.
Motor functions, but rotor does not.	Broken fracture surface on rotor.	Replace the rotor.
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 54 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 54
Lubricant leakage between the pump housing and the hose.	Steel insert: the hose clamp is tightened too much.	Refer to "Tightening the hose clamps" on page 54
	The O-ring in the bracket is damaged, or not correctly positioned in the bracket.	Inspect the O-ring and replace it if necessary. Lubricate the O-ring before installation with Bredel Genuine Hose Lubricant. Refer to "Fitting the hose" on page 50
	Plastic insert: the hose clamp is tightened too much and as a result the insert is deformed.	Inspect the insert and replace it if necessary. Tighten the hose clamp. Refer to "Tightening the hose clamps" on page 54.

11 Specifications

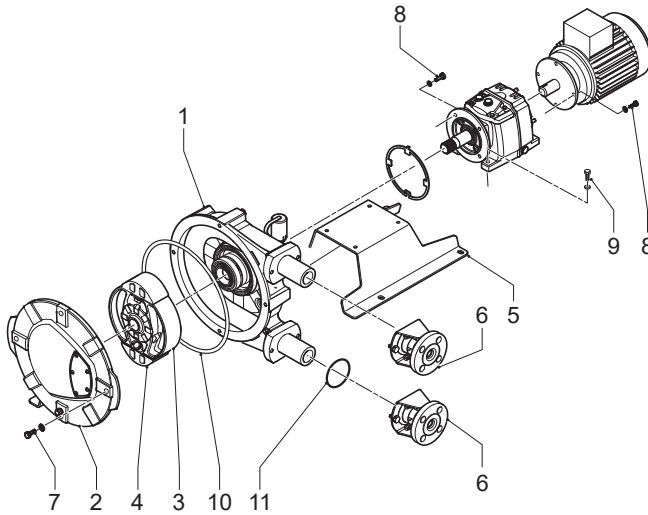
11.1 Pumphead

Performance

Description	Bredel 25	Bredel 32
Max. capacity, continuous [m ³ /h]	1.80	3.25
Max. capacity, intermittent [m ³ /h]*	2.88	5.25
Capacity per revolution [l/rev]	0.300	0.625
Max. permissible inlet pressure [kPa]	350	300
Max. permissible working pressure [kPa]	1600	
Permissible ambient temperature [°C] -20	-20 to +45	
Permissible fluid temperature [°C]	-10 to +80	
Sound level at 1 m [dB(A)]	70	

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

Materials



Pos	Description	Material
1	Pump housing	Cast iron
2	Cover	Cast iron
3	Pump rotor	Cast iron
4	Pressing shoe	Aluminium
5	Pump support	Mild steel, galvanised
6	Flange bracket	Mild steel, galvanised
7	Mounting material of pump cover	Mild steel, galvanised
8	Mounting material of drive system	Mild steel, galvanised
9	Mounting material of pump support	Mild steel, galvanised
10	Cover seal	EPDM
11	Bracket seals	NBR

- After surface preparation, one layer of two-component acrylate is used for surface protection. Standard colour is RAL 3011, other colours are optional. Contact your Bredel representative for advice on surface treatment.
- All galvanised parts have an electrolytic zinc layer of 15 - 20 µm.

Lubricant table pump

Item	Bredel 25	Bredel 32
Lubricant	Bredel Genuine Hose Lubricant	Bredel Genuine Hose Lubricant
Required quantity [litres]	2	3.5

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 ₃ H ₈ O ₃)	50-100% w/w
Glycol	(C ₃ H ₈ O ₂)	2.5-10% w/w
Water	(H ₂ O)	

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.

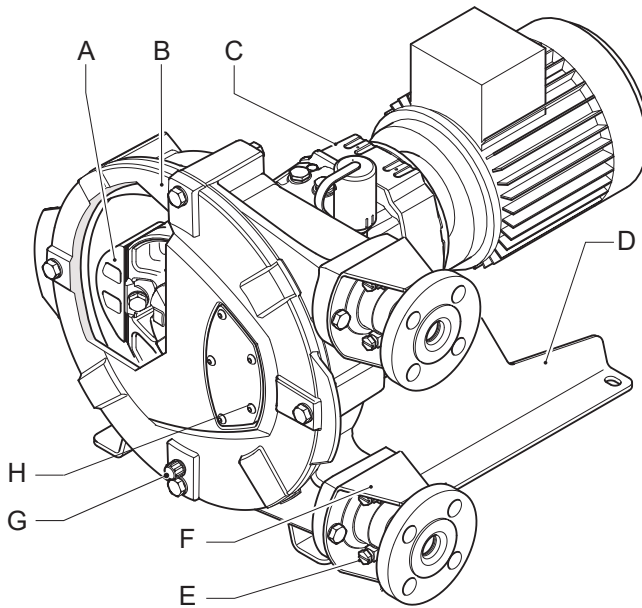
An alternative lubricant is available based on silicone. Also compatibility with this lubricant must be checked if applied. Refer to the chemical compatibility chart at www.wmftg.com/chemical or contact your Bredel representative for advice.

Weights

Description	Weight [kg]	
	Bredel 25	Bredel 32
Pumphead	39	58.5
Flange connection (2x), without inserts	3.72	5.52

Description	Weight [kg]	
	Bredel 25	Bredel 32
Stainless steel insert (2x)	0.26	0.36
Hose	2	3
Lubricant	2.5	4.4
Sub total pumphead	47.5	71.8
Pump support	5.7	7.1
Mounting material gearbox to pumphead	0.3	0.3
Gearbox	15.5	21
Electric motor	17.3	25.7
Variable Frequency Drive	3	3
Total weight of unit	89.3	128.9
Pump cover (with inspection window)	9.4	12.5
Rotor	5.4	8.3
Pressing shoe	0.4	0.7

Torque figures



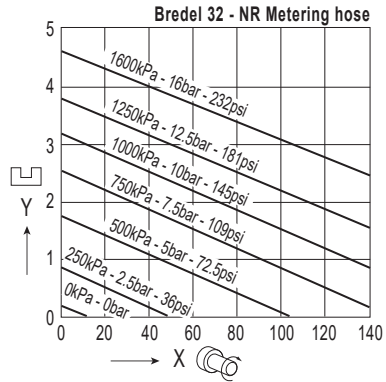
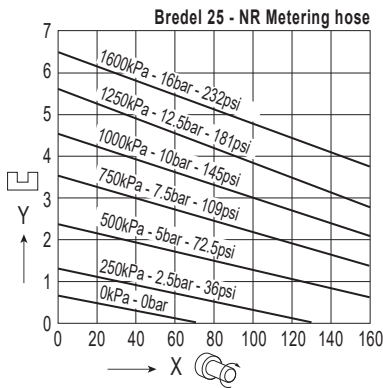
Pos	Description	Torque [Nm]	
		Bredel 25	Bredel 32
A	Pressing shoe	50	50
B	Cover	50	50
C	Gearbox	25	50
D	Support	25	85
E	Hose clamp	20	20
F	Flange bracket	50	50
G	Drain plug	10	10
H	Inspection window	2.5	2.5

Shims specifications

How to use the diagrams:

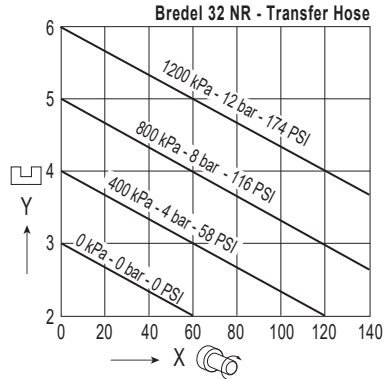
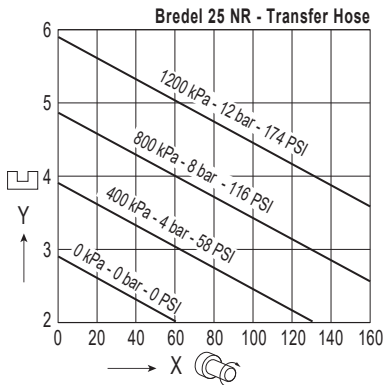
Note: Specifications only valid for genuine Bredel hoses.

1. Find the pump speed in [rpm] on the horizontal axis.
 2. Go straight up and meet the proper discharge-pressure line.
 3. At that point, go straight to the left and read the number of shims Y on the vertical axis.
 4. Always round up the number of shims.
- When the product temperatures are above 60 °C always use one shim less than indicated in the diagrams.
 - Each diagram gives the number of shims per pressing shoe.
 - Shim both pressing shoes identically.



X = Pump speed

Y = Number of shims per shoe



X = Pump speed

Y = Number of shims per shoe

Lubricant for gearbox

In the majority of the cases a mineral oil ISO VG 150 or ISO VG 220 is recommended. In case of very low ambient temperatures a mineral ISO VG 100 is advised. In case of high ambient temperatures or a relatively wide range of ambient temperatures a synthetic oil is recommended. Also in case of very high loads, resulting in high operating temperatures a synthetic oil is to be preferred.

Use of oil with EP (Extreme Pressure) additives is strongly recommended. Do not mix oils of different types, i.e. mineral, polyglycol and other synthetic lubricant. Refer to the documentation supplied with the gearbox for how to care about lubrication. For the food industry as well as for agricultural areas and nature reserves, special grade lubricants are available.

The table below is an indication for proper viscosity values.

If you have any questions, contact your Bredel representative for advice.

Recommended lubricant parameters for the Bredel gearboxes

	Mineral Oil			Synthetic oil
Ambient temperature	-20 to +5 °C	+5 to +30 °C	+30 to +50 °C	-30 to +65 °C
Viscosity acc. to ISO 3448	VG 100	VG 150-220	VG 320	VG 150-220
Oil change interval	5,000 hours			20,000 hours

Gearbox

Co-axial gearbox with helical gears. Standard as a 2 and 3 stage version.

Mounting position	IM 2001 (IM B35) foot flange gearbox with splined 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.

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

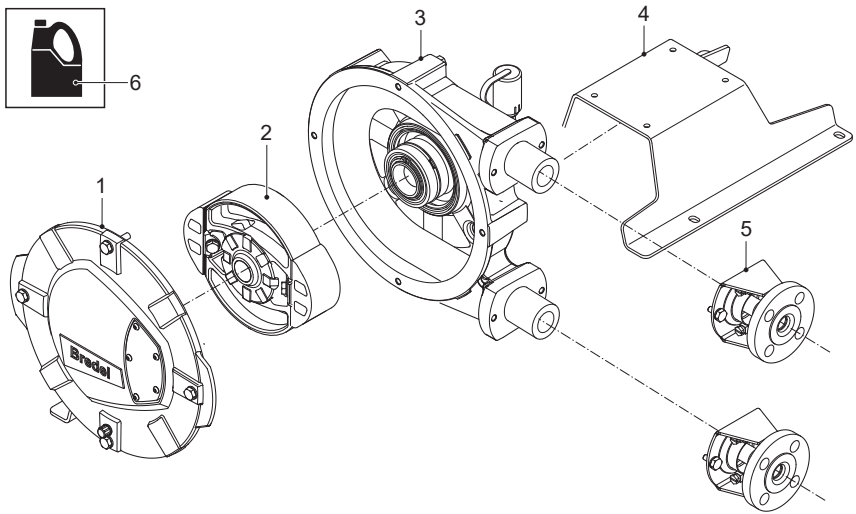
Bredel Variable Frequency Drive (VFD) (optional)

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: <ul style="list-style-type: none">• 200-240 V \pm 10%; 50/60 Hz \pm 5%; 1 ph• 200-240 V \pm 10%; 50/60 Hz \pm 5%; 3 ph• 400-480 V \pm 10%; 50/60 Hz \pm 5%; 3 ph

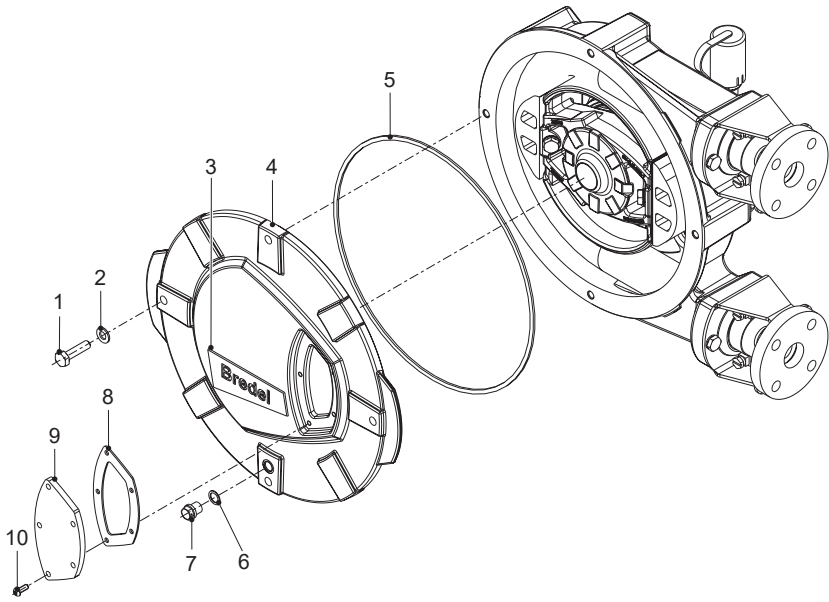
11.2 Parts list

Overview



Pos.	Description
1	Cover assembly. Refer to "Cover assembly" on the next page
2	Rotor assembly. Refer to "Rotor assembly" on page 92
3	Pump housing assembly. Refer to "Pump housing assembly" on page 94
4	Pump support assembly. Refer to "Pump support assembly" on page 97
5	Flange assembly. Refer to "Flange assembly" on page 99
6	Lubricant. Refer to "Lubricant" on page 102

Cover assembly



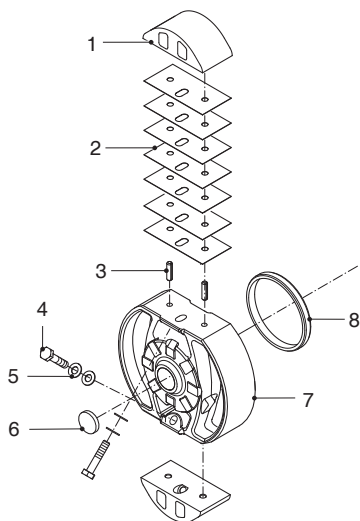
Bredel 25

Pos.	Qty.	Description	Product code
1	4	Bolt, hex. head	28-F101058
2	4	Washer	28-F322013
3	1	Sticker	28-225238
4	1	Cover	28-225102
5	1	Quad ring	28-225123
6	1	Gasket	28-F342019
7	1	Drain cap	28-F911502
8	1	Gasket	28-225156
9	1	Inspection window	28-225155
10	5	Round head screw	28-F552036

Bredel 32

Pos.	Qty.	Description	Product code
1	4	Bolt, hex. head	28-F101058
2	4	Washer	28-F322013
3	1	Sticker	28-232238
4	1	Cover	28-232102
5	1	Quad ring	28-232123
6	1	Gasket	28-F342019
7	1	Drain cap	28-F911502
8	1	Gasket	28-232156
9	1	Inspection window	28-232155
10	6	Round head screw	28-F552036

Rotor assembly



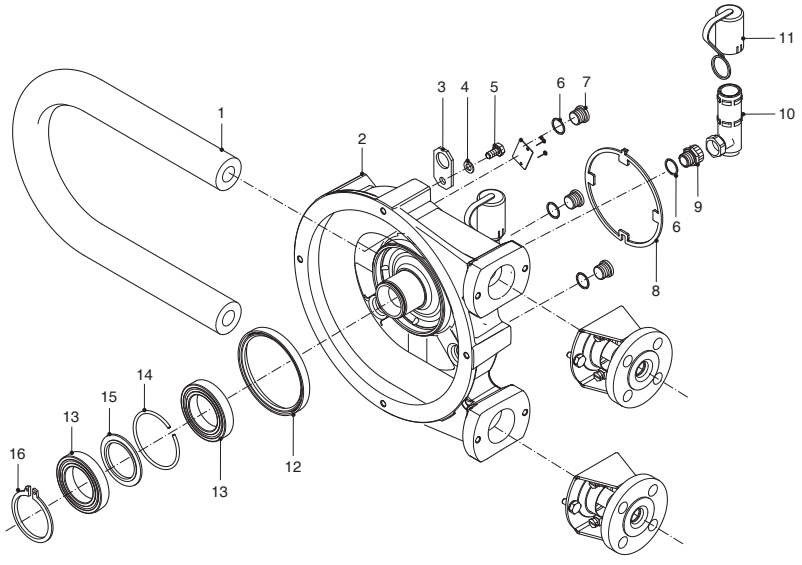
Bredel 25

Pos.	Qty.	Description	Product code
1	2	Pressing shoe	28-225110
2	14	Shim	28-225107
3	4	Spiral clamping bush	28-F415084
4	2	Bolt, hex. head	28-F101060
5	2	Nord-Lock ring	28-F349006
6	1	Sealing cap	28-S417007
7	1	Rotor	28-225103
8	1	Wear ring	28-29120202

Bredel 32

Pos.	Qty.	Description	Product code
1	2	Pressing shoe	28-232110
2	10	Shim	28-232107
3	4	Spiral clamping bush	28-F415084
4	2	Bolt, hex. head	28-F101060
5	2	Nord-Lock ring	28-F349006
6	1	Sealing cap	28-S417007
7	1	Rotor	28-232103
8	1	Wear ring	28-29120202

Pump housing assembly



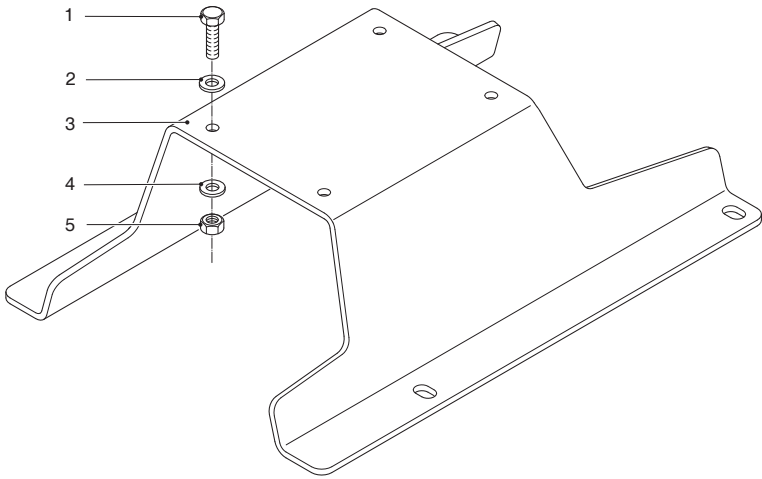
Bredel 25

Pos.	Qty	Description	Product code
1	1	NR Transfer	28-1007881
	1	NR Metering	28-1000059
	1	Hose NBR	28-025040
	1	Hose CSM	28-025070
	1	Hose EPDM	28-025075
	1	Hose NBR Food	28-025061
	1	Hose F-NBR	28-025065
2	1	Pump housing	28-225101
3	1	Lifting strip	28-29065361
4	1	Washer, Spring Lock	28-F336012
5	1	Bolt	28-F111096
6	4	Gasket	28-F342027
7	3	Stop	28-F901004
8	1	Seal	28-225114
9	1	Crimp connector	28-F602504
10	1	Breather	28-29095146
11	1	Breather cap	28-29065223
12	1	Seal	28-S212411
13	2	Bearing	28-B141260
14	1	Retaining circlip	28-29095297
15	1	Spacer ring	28-29085201
16	1	Retaining circlip	28-F343049

Bredel 32

Pos.	Qty	Description	Product code
1	1	NR Transfer	28-1007882
	1	NR Metering	28-1000061
	1	Hose NBR	28-032040
	1	Hose NBR Food	28-032061
	1	Hose F-NBR	28-032065
	1	Hose CSM	28-032070
	1	Hose EPDM	28-032075
2	1	Pump housing	28-232101
3	1	Lifting strip	28-29065361
4	1	Washer, Spring Lock	28-F336012
5	1	Bolt	28-F111096
6	4	Gasket	28-F342027
7	3	Stop	28-F901004
8	1	Seal	28-232114
9	1	Crimp connector	28-F602504
10	1	Breather	28-29095146
11	1	Breather cap	28-29065223
12	1	Seal	28-S212411
13	2	Bearing	28-B141260
14	1	Retaining circlip	28-29095297
15	1	Spacer ring	28-29085201
16	1	Retaining circlip	28-F343049

Pump support assembly



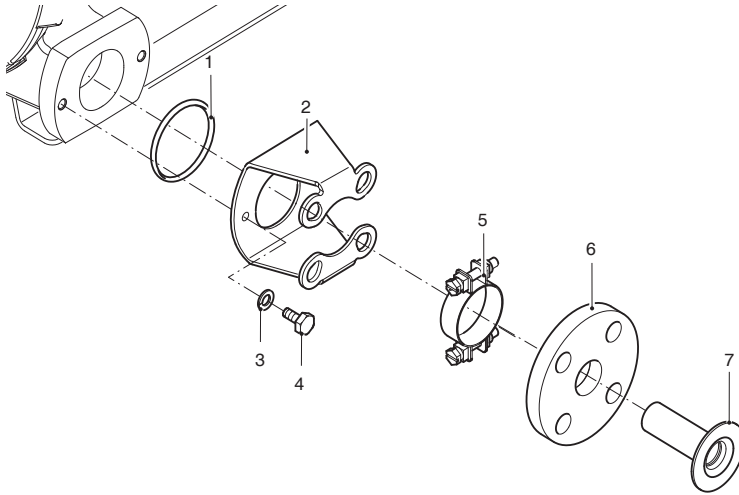
Bredel 25

Pos.	Qty	Description	Product code
1	4	Bolt	28-F111076
2	4	Washer	28-F322012
3	1	Pump support (standard)	28-225106
4	4	Spring washer	28-F336011
5	4	Nut	28-F301006

Bredel 32

Pos.	Qty	Description	Product code
1	4	Bolt	28-F101080
2	4	Washer	28-F322015
3	1	Pump support (standard)	28-232106
4	4	Spring washer	28-F336013
5	4	Nut	28-F301008

Flange assembly



Bredel 25

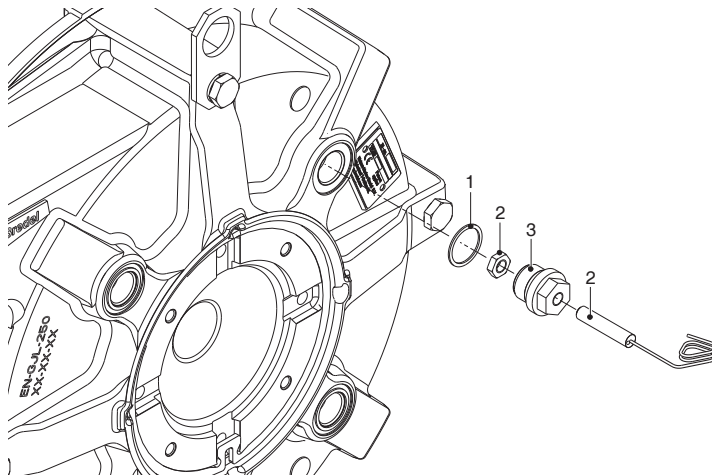
Pos.	Qty	Description	Product code
1	2	O-ring	28-S112231
2	2	Flange bracket, Steel	28-225197
	2	Flange bracket, SS	28-225197A
3	4	Washer, Spring Lock	28-F336012
4	4	Bolt	28-F111096
5	2	Hose clamp	28-C122004
6	2	Flange, DIN Steel	28-025198
	2	Flange, DIN SS	28-225199
	2	Flange, ANSI Steel	28-025198A
	2	Flange, ANSI SS	28-225199A
7	2	Insert, SS	28-025186
	2	Insert, PVC	28-025187
	2	Insert, PP	28-025189
	2	Insert PVDF	28-025190

Bredel 32

Pos.	Qty	Description	Product code
1	2	O-ring	28-S112271
2	2	Flange bracket, Steel	28-232197
	2	Flange bracket, SS	28-232197A
3	4	Washer, Spring Lock	28-F336012
4	4	Bolt	28-F111096
5	2	Hose clamp	28-C121006

Pos.	Qty	Description	Product code
6	2	Flange, DIN Steel	28-032198
	2	Flange, DIN SS	28-232199
	2	Flange, ANSI Steel	28-032198A
	2	Flange, ANSI SS	28-232199A
7	2	Insert, SS	28-032186
	2	Insert, PVC	28-032187
	2	Insert, PP	28-032189
	2	Insert PVDF	28-032190

Revolution counter assembly



Bredel 25

Pos.	Qty.	Description	Product code
1	1	Gasket	28-F342027
2	1	Revolution counter	28-29040462
3	1	Adapter	28-29027248

Bredel 32

Pos.	Qty.	Description	Product code
1	1	Gasket	28-F342027
2	1	Revolution counter	28-29040462
3	1	Adapter	28-29027248

Lubricant**Bredel 25**

Pos.	Qty.	Description	Product code
-	1	2 l can Bredel Genuine Hose Lubricant	28-902143

Bredel 32

Pos.	Qty.	Description	Product code
-	1	3 l can Bredel Genuine Hose Lubricant	28-908143
-	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 25, Bredel 32

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 January 2023

J. van den Heuvel, Managing Director, Watson-Marlow Bredel B.V.
Watson-Marlow Fluid Technology Solutions, telephone +31(0) 74 377 0000
A Spirax-Sarco Engineering plc company

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.

RGK/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.

.....
.....
.....
.....