

Hose Pump Series

**SP/10, SP/15, SP/20, SP/25, SP/32,
SP/40, SP/50, SP/65, SP/80 and SP/100**

Manual



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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 mentioned on the front cover.

1.2 Other supplied documentation

In this manual the documentation of pump components i.e. engines, etc. is not included. But if the documentation of a certain component is part of this manual, you must respect and act according the instructions as given in the supplied documentation.


1.3 Service and support

For information with respect to specific adjustments, installation, maintenance or repair jobs which fall beyond the scope of this manual, contact your Bredel representative. Make sure you have the following data at hand:

- serial number hose pump
- article number pump hose

You will find these data on the identification plates or stickers of the pumphead and the pump hose. See "Description": "Identification of the product", § 4.1.




1.4 Used products and the environment

	<p>ENVIRONMENT</p> <p>Enquire with your local government about the possibilities for reuse or environment friendly processing of packaging materials, (contaminated) lubricant and oil.</p> <p>Always observe the local rules and regulations with respect to processing (non reusable) parts of the hose pump.</p>
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2 SAFETY

2.1 Pictograms

In this manual the following symbols are used:

	<p>WARNING Procedures which, if not carried out with the necessary care, may result in serious damage to the hose pump or in serious bodily harm.</p>
	<p>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.</p>
	<p>Remarks, suggestions and advice.</p>

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. ⁽¹⁾

The manufacturer cannot be held responsible for damage or harm resulting from this. The hose pump is designed in conformance with the valid standards and directives.


Only use the pump in conformance with the intended use described above. If you want to change the application of your hose pump, contact your Bredel representative first.

① The "Intended use" as laid down in EN 292-1 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. Observing the instructions in the user's documentation also belongs to intended use.

2.3 Responsibility

The manufacturer does not accept any responsibility for damage or harm caused by not (strictly) observing the safety regulations and instructions in this manual and the also 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, if you noticed a potential danger while using your hose pump.

	<p>WARNING The user of the hose pump is always fully responsible for observing the local valid safety regulations and directives. Observe these safety regulations and directives when using the hose pump.</p>
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2.4 Qualification of the user

The installation, use and maintenance of the hose pump is only reserved for well trained and qualified users. Temporary staff and persons in training may only use the hose pump under the supervision and responsibility of well trained and qualified users.

2.5 Regulations and instructions

- Everyone who will work with the hose pump must know the content 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 one-year warranty on proper workmanship of all parts of the hose pump. Exclusion is made for normal wear and tear of consumables, such as pump hoses, lubricant, hose clamps, pressing shoes, ball bearings, wear ring, an seals, or parts which have been misused or damaged through negligence.

This manufacturer's warranty is null and void for any user who has substituted the parts of an alternate manufacturer into a Bredel hose pump.

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 it should be indicated that the equipment has been decontaminated. The safety form is required at all items, even if the parts have not been used.

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

4 DESCRIPTION

4.1 Identification of the product

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

- A. Pump hose
- B. Pumphead
- C. Gearbox
- D. Electric motor
- E. Pump hose

The identification plate on the **pumphead** contains the following data:

- A. Type number
- B. Serial number

If applicable: the identification plate on the **gearbox** contains (depending on the brand) the following data:

- A. Article number
- B. Serial number
- C. Type number
- D. Reduction
- E. Number of rounds per minute
- F. Oil type upon delivery

If applicable: the identification plate on the **electric motor** contains (depending on the brand) the following data:

- A. Type number
- B. Serial number
- C. Article number
- D. Mains
- E. Frequency
- F. Speed
- G. Power
- H. Power factor
- I. Current

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

- A. Order number
- B. Internal diameter
- C. Type of material of inner liner
- D. Maximum permissible working pressure

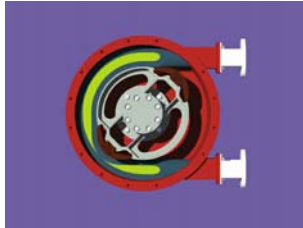
4.2 Construction of the pump

- A. Pump hose
- B. Pump housing
- C. Rotor
- D. Pressing shoes
- E. Cover
- F. Support
- G. Gearbox
- H. Electric motor

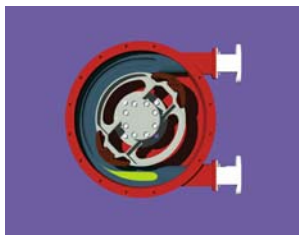
4.3 Operation of the pump

The heart of the pumphead consists of a specially constructed pump hose which lies contorted against the inside of the pump housing. Both ends of the hose are connected to the suction and discharge lines by means of a flange construction. A bearing-mounted rotor with two facing pressing shoes is in the center of the pumphead.

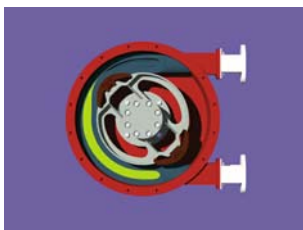
In phase 1 the lower pressing shoe compressed the pump hose by the rotational movement of the rotor, forcing the fluid through the hose. As soon as the pressing shoe has passed, the hose recovers to its original shape due to the mechanical properties of the material.



In phase 2 the product is drawn into the hose by the (continuous) turning motion of the rotor.



In phase 3, the second pressing shoe will subsequently compress the pump hose. Due to the continuous rotating movement of the rotor not only new product is sucked in, but also the already present product is pressed out by the pressing shoe. When the first pressing shoe runs from the pump hose, the second pressing shoe has already closed the pump hose and the product is prevented from flowing back. This method of liquid displacement is also known as the "positive displacement principle".



4.4 Pump hose

4.4.1 General


The pump hose is made of special rubbers, reinforced with nylon cords and is constructed as follows:

- A. Outer extruded layer made of natural rubber
- B. Nylon reinforcement layers
- C. Inner extruded liner

The pump hose liner material should be chemically resistant with the product to be pumped. Dependent on the specific requirements of your application a corresponding pump hose must be selected. For each pump model various hose types are available.

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

Hose type	Material	Colour code
NR	Natural rubber	Purple
NBR	Perbunan	Yellow
EPDM	EPDM	Red
CSM	Hypalon [®]	Blue

	Consult your Bredel representative for more detailed information about the chemical and temperature resistance of pump hoses.
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The Bredel pump hoses have been carefully machined, therefore there are minimum tolerances in wall thickness. It is very important to guarantee the correct compression of the pump hose, because:

- When the compression is too high, it creates a too high load of the pump and pump hose, which will result in a reduction of the life of the pump hose and bearings.
- When the compression is too low, this will result in loss of capacity and backflow. Backflow results in a reduction of the life of the pump hose.

4.4.2 Hose compression force adjustment (shimming). (not applicable for series SP/10, SP/15 and SP/20).

In order to achieve optimal life of the pump hose, the compression force of the pump hose can be adjusted by placing a number of shims under the pressing shoes.

The shims are fitted between the rotor and the pressing shoe. The number of shims will vary for each counter-pressure situation. See “Hose compression force adjustment” § 7.8 and “Shimming table” §10.1.7. Caution: insufficient shimming reduces hose life.

4.4.3 Lubrication and cooling

The pumphead, in which the rotor and pump hose can be found are filled with a special lubricant. The lubricant lubricates the movement between the hose and the pressing shoes and transfers the generated heat from the hose to the pump housing and the cover.

4.4.4 Gearbox

The hose pump types described in this manual use various types of gearbox units. The gearboxes are fitted with a foot rest.

4.4.5 Electric motor

The hose pump type described in this manual use various types of motors. If the pump is to be used in potentially explosive atmospheres, please contact your Bredel representative, as these type of pumps are not in compliance with ATEX.

4.4.6 Available options

The following options are available for the hose pump:

- High (lubricant) level float switch
- Low (lubricant) level float switch (not applicable for SP/10, SP/15 and SP/20)
- Epoxy pressing shoes (not applicable for SP/10, SP/15 and SP/20)
- Stainless steel 316 flanges, flange brackets, hose clamps, supporting and mounting articles

5 INSTALLATION

5.1 Unpacking

When unpacking carefully follow the instructions as given on the packaging or on the hose pump.

5.2 Inspections

Check that your delivery is correct and check it for any transport damage, see "Description: Identification of the product", § 4.1. Report any damage immediately to your Bredel representative.

5.3 Installation conditions

5.3.1 Ambient conditions

Make sure that the hose pump is in an area where the ambient temperature during operation is not lower than -20° and not higher than $+45^{\circ}\text{C}$.

5.3.2 Set-up

- 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 set-up or a salty or aggressive atmosphere. Consult your Bredel representative for more information.
- Make sure that the floor surface is horizontal and has a maximum slope of 1 mm per meter.
- Make sure that there is sufficient room around the pump to carry out the necessary maintenance activities.
- 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.

5.3.3 Pipework

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

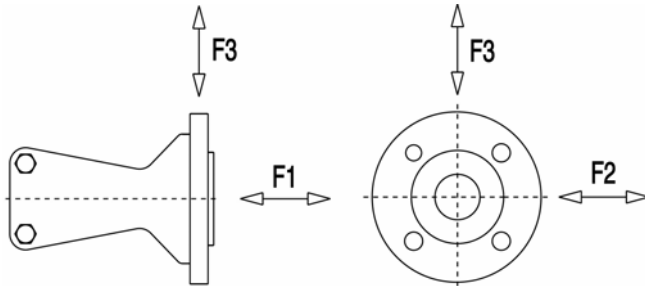
- The bore size of the suction line must be larger than the bore size of the pump hose. The bore size of the discharge line must be minimal or larger than the bore size of the pump hose. For more information consult your Bredel representative.
- Limit the presence of sharp bends. Make sure that the radius of the bends are as large as possible (preferably 5S). It is recommended to use Y-connections instead of T-connections.
- It is recommended to use a minimum of three quarter (3/4) of the hose length as flexible hose in the suction or discharge line. In this way you prevent that connection lines must be removed when changing a pump hose.
- Keep the delivery and suction lines as short and direct as possible.
- Prevent any possibilities of exceeding the maximum working pressure of the hose pump, see "Specifications": "Performance", § 10.1.1. If necessary fit an overpressure valve.



CAUTION

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

- Make sure that the maximum forces on the flanges are not exceeded. The maximum permissible loads on the pump flange are given in the table below:



Force F1 [N]	SP/10	SP/15	SP/20	SP/25	SP/32	SP/40	SP/50	SP/65	SP/80	SP/100
F1	600	600	600	1000	1000	1000	1400	1400	2000	2000
F2	120	120	120	200	200	200	300	300	400	400
F3	300	300	300	500	500	500	700	700	1000	1000

5.3.4 Pulsating flow

Hose pumps have a pulsating flow that can result in vibrations of pump and lines under the following circumstances:

- suction and discharge lines are not fixed correctly
- high pump speed in combination with long suction and discharge lines or high specific gravity of the product
- diameter of suction and/or discharge line too small

In case of unacceptable pulsations, dampeners for suction and/or discharge line can be supplied for the pump series SP/25 to SP/100. Please consult your Bredel representative for literature on Inlet Pulsation Accumulators (IPA) or Pulsation Dampeners (PD). These accumulators and dampeners are **not available** for SP/10, SP15 and SP/20.

5.3.5 Pumping pressure (counter pressure)

Should not go over maximum allowance (7,5 bar for SP/10, SP/15 and SP/20; 16 bar for bigger models). If hose failure looks like explosion, check system for blocked lines, closed valves or failing pressure relief valves.

5.4 Lifting and moving the pump

For lifting and moving the **pumphead**, it has been fitted with a lifting strip. This lifting strip is fitted on the rear of the pumphead. For the weights of the pump, see “Specifications”: “Weights”, § 10.1.5.

The complete hose pump, i.e. pumphead, gearbox and electric motor, must be lifted using the lifting eyes in the pump support plus additional support on gearbox and motor using suitably rated straps or slings, see “Specifications”: Weights, § 10.1.5.

**WARNING**

If the pump is to be lifted ensure that all standard lifting practices are adhered to and carried out by qualified personnel only.

5.5 Placing the pump

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

6 COMMISSIONING


6.1 Preparations

- Connect the electric motor in conformance with the locally applicable rules and regulations. Have the electrical installation work be carried out by qualified personnel.
- The pump casing is filled to half way level with a specially compounded hose lubricant. If necessary refill Bredel lubricant via the breather/vent plug (also see: “Maintenance”: “Changing lubricant”, § 7.3).
- Check the rotation of the rotor.
- Check that the correct number of shims (series SP/25 to SP/100) corresponds with your application, see “Specifications”: “Shimming”, § 10.1.7.
- For adjusting the compression force of the hose, see “Maintenance”: “Hose compression force adjustment (shimming)”, § 7.8.

6.2 Commissioning

- Connect the pipework. Make sure that there are no obstructions such as closed valves.
- Switch on the hose pump.
- Check the rotation of the rotor.
- Check the capacity of the hose pump. If the capacity differs from your specification, follow the instructions in chapter 9 “Troubleshooting” or consult your Bredel representative.
- Check the hose pump in accordance with points 1 to 4 of the maintenance table from section “Maintenance and periodic inspections”, § 7.1.

7 MAINTENANCE

	<p>WARNING</p> <p>Only use original Bredel parts when maintaining the hose pump. Bredel cannot guarantee a correct functioning and any consequential damage that occurs from the use of non-original Bredel components, also see: "Safety" and "Warranties".</p>
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7.1 Maintenance and periodic inspections

In the diagram below it is indicated which maintenance and periodic inspections need to be carried out on the hose pump to guarantee an optimal safety, operation and life of the pump.

Point	Action	To be carried out	Remark
1	Check the lubricant level	Before start up of the pump and on a scheduled interval during operation.	Make sure that the pump casing is filled to half way level with a specially compounded hose lubricant. If necessary refill the lubricant (also see "Maintenance": "Changing lubricant").
2	Check the pumphead for any leakage of lubricant around the cover and the flanges.	Before start up of the pump and on a scheduled interval during operation.	See "Troubleshooting".
3	Check pump for deviating temperature or strange noises.	On a scheduled interval during operation.	See "Troubleshooting".
4	Check pressing shoes for excessive damage.	When replacing the pump hose.	See "Replacing pump hose".
5	Internal cleaning of the pump hose.	Cleaning of the system or product change.	See "Cleaning pump hose".
6	Replacing pump hose.	Preventive, this means after 75% of the hose life of the first hose.	See "Replacing pump hose".
7	Changing lubricant	After every 2 nd hose change or after 5,000 service hours, whichever comes first or after hose rupture.	See "Changing lubricant".
8	Replacing pump seal.	If necessary.	See "Replacing seal ring, bearings and wear ring".
9	Replacing pressing shoes.	Wear on the running surface.	See "Replacing pressing shoes".
10	Replacing bearings.	If necessary.	See "Replacing pressing shoes".

7.2 Cleaning pump hose

With a lot of products it is necessary to have the pump hose cleaned immediately after pumping to avoid hardening of the product inside. The inside of the pump hose can be easily cleaned by rinsing the pump with clean water. If a cleaning fluid is added to the water, it must be checked that the hose liner material is resistant to that. Also note that the pump hose can resist the cleaning temperature. Special cleaning balls are also available; please consult your Bredel representative).

7.3 Changing lubricant

- Place a tray under the drain plug (series SP/25 to SP/100) in the cover of the pump. Remove the drain plug. Catch the lubricant from the pump housing in the tray. Position the drain plug and tighten it firmly. In case of SP/10, SP/15 and SP/20 pumps: remove the hose and drain via the lower port.
- The pump housing can be filled with lubricant via the breather/vent on the cover. For this purpose remove the breather cap and position a funnel in the breather. In order to facilitate the filling with lubricant for the series SP/25 to SP/100 it is advised to remove one or two bolts in the inspection window. Pour the lubricant in the pump housing via the funnel.
- Keep on pouring until the lubricant level has risen at approx. half way of the pump casing, or that the specified quantity has been filled. See “Lubricant” § 10.1.3.

7.4 Changing oil in gearbox

For information regarding the changing of oil in the gearbox and the type of oil to be used we refer to the documentation of the manufacturer of this item.

7.5 Replacing pump hose

7.5.1 Hose removal

The pump hose can be changed without removing the pump cover. If applicable, close the isolation valves on both the inlet and discharge of the pump to minimize fluid loss.

7.5.2 Removal of lubricant

Place a lubricant tray of sufficient capacity to contain the hose lubricant plus any process fluid that might be contained within the pump housing. Remove the drain plug (not applicable for SP/10, SP/15 and SP/20; lubricant will flow when hose is removed) . Ensure that the breather vent in front is not blocked.

7.5.3 Removal of piping

Shut off the valves on both suction and discharge side and disconnect the piping of both the ports.

7.5.4 Loosening of hose clamps

Loosen all hose clamps on both suction and discharge ports.

7.5.5 Removal of flanges and/or inserts

Pull the inserts from the hose (SP/10, SP/15 and SP/20) by removing the flanges (SP/25-SP/100) on both the suction and discharge port.

7.5.6 Removal of flange brackets


Remove the flange bracket (SP/25-SP/100) or flange bracket and insert (SP/10, SP/15 and SP/20) on both suction and discharge port.

7.5.7 Removal of the hose

The hose can be removed without removing the pump cover. Simply remove the hose by jogging the drive motor.

7.5.8 Cleaning of pump casing

Flush out casing cavity to remove any contaminants. If necessary remove the pump cover to clean casing completely (but isolate the pump from the electrical supply first).

	<p>WARNING <u>Never remove the pump cover whilst the hose is in place.</u> The front covers of the series SP/25 to SP/100 should not be removed whilst the hose is in place. This can cause a deformation of the pump casing and a non straight tension of the bolts. After fitting the cover and starting up the pump, the bolts can be extremely forced and break.</p>
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When the pump cover was removed for cleaning purposes, **refit it before installing the hose** Check the cover O-ring for damage and replace if necessary. Make sure that the bolts are refitted and that they are tightened in the correct order, diagonally opposite each other, see “Specifications”: “Torques”, § 10.1.6.

7.5.9 Tighten drain plug (not applicable for SP/10, SP/15 and SP/20)

Before the hose can be loaded the drain plug has to be mounted. Make sure that the drain plug is mounted in such a way that no leakage of lubricant can occur.

7.5.10 Preparation of pump hose

Clean the outside of the pump hose and thoroughly lubricate the external surface of the hose with the Bredel hose lubricant.

7.5.11 Insertion of the hose

- Switch on the electrical supply again and insert the hose into the upper port.
- Jog the drive motor to feed the hose through the housing.
- If necessary, help by pressing the hose firmly into the port opening.
- Stop the drive when the hose is equally extended from the ports.

7.5.12 Place hose clamps

Place on both the suction and discharge port the bushes, all hose clamps (do not tighten yet!), the brackets, the flanges and the inserts.

7.6 Hose connection

Note: Always start hose connection at one port and finalize these actions completely. Then repeat these actions for the other port. In this instruction we start from the suction port.

7.6.1 Mount flange brackets (SP/25 to SP/100)

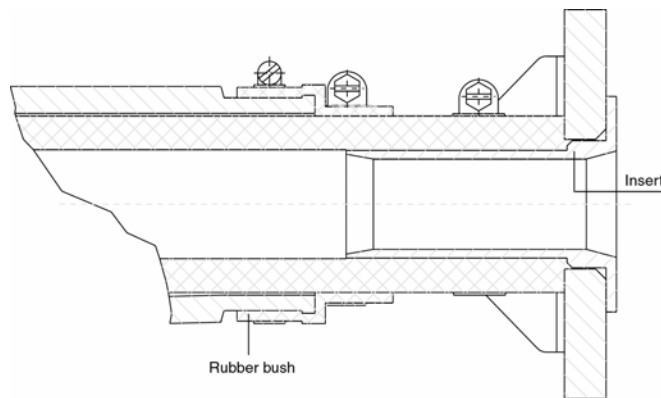
- Mount the flange brackets on the suction port by replacing the bolts.
- Do not tighten the bolts at this stage!
- Mount the flange and the insert
- Mount the suction line

7.6.2 Positioning of pump hose

Jog the motor in the direction of the suction port to drive the hose against the flange face. Ensure that the hose butts up against the flange face and that the insert is seated correctly.

7.6.3 Tighten hose clamps

- Tighten all the hose clamps.
- Make sure that hose clamp is mounted directly against the vertical part of the rubber bush.



Now repeat step 7.6.1 to 7.6.3 for the discharge port

7.6.4 Tighten bolts of all flange brackets

Now tighten the bolts of all flange brackets.

7.6.5 Filling with lubricant

- Remove one screw from the inspection window (not applicable for SP/10, SP/15 and SP/20) to vent the pump housing.
- Add lubricant until $\frac{1}{2}$ of the pump housing is filled. See "Specifications", "Lubricant", § 10.1.3 for the required quantity of lubricant per pump type.

7.6.6 Finally

- Replace removed bolt(s) in inspection window (not applicable for SP/10, SP/15 and SP/20).
- Open the suction and discharge valves.
- Switch on the electrical supply.

**CAUTION**

When the pressing shoes are worn the compression force of the hose could decrease. 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 pump hose.

7.7 Exchanging replacement parts

7.7.1 Replacing pressing shoes (not applicable for SP/10, SP/15 and SP/20)

- Remove the pump hose and cover. See paragraph 7.5.1 through 7.5.8
- Loosen the retaining bolt(s) of the pressing shoe a few turns. Remove the shims.
- Loosen the retaining bolt(s) of pressing shoe completely and remove the pressing shoe.
- Fit the eventually removed shims again. Position the (new) pressing shoe, tighten the retaining bolt(s), see “Specifications”: “Torques”, § 10.1.6.
- Repeat the procedure for removing and fitting the second pressing shoe by repeating above mentioned steps.

**WARNING**

Never remove the pump cover whilst the hose is in place. The front covers of the series SP/25 to SP/100 should not be removed whilst the hose is in place. This can cause a deformation of the pump casing and a non straight tension of the bolts. After fitting the cover and starting up the pump, the bolts can be extremely forced and break.

- Check the cover O-ring for damage and replace if necessary. Refit the cover. Make sure that the bolts are refitted and that they are tightened in the correct order, diagonally opposite each other, see “Specifications”: “Torques”, § 10.1.6.
- Switch on the electrical supply.
- Replace hose and refill the lubricant, see paragraph 7.5.9 through 7.6.5


7.7.2 Replacing seal and bearings

- Remove the pump hose and cover, see paragraph 7.5.1 through 7.5.8
- Isolate the pump from the electrical supply.
- Loosen coupling on drive end of shaft.
- Remove rotor retaining ring and pull rotor off shaft.
- Remove bearing cover for SP/25 to SP/100, or joint ring and safety ring for SP/10, SP/15 and SP/20.
- Pull shaft assembly out at rotor side.
- Use arbor press and V-block to remove both bearings from shaft. Use file to deburr key ways.
- Remove lip seals from housing and bearing cover. It is recommended to replace seals whenever shaft has been removed.


- Pre-grease bearings with lithium grease.
- Use arbor press and press new bearings on shaft. Coat shaft areas with anti-seize compound to facilitate assembly.
- Press oil seal into housing.
- Insert joint ring into bearing cover groove.
- Press shaft assembly into housing.
- Add grease through grease fitting and fill housing cavity until grease is forced through the exposed front bearing. Then take away grease nipple and plug the hole.
- Assemble bearing cover to housing to secure shaft assembly for SP/25 to SP/100. Assemble safety ring and press in joint ring for SP/10, SP/15 and SP/20.
- Place rotor key and assemble rotor. Secure with retainer ring.
- Check the cover O- ring for damage and replace if necessary. Refit the cover. Make sure that the bolts are refitted and that they are tightened in the correct order, diagonally opposite each other, see “Specifications”: “Torques”, § 10.1.6.
- Switch on the electrical supply to the pump.
- Fit the (new) pump hose, see 7.5.9 through 7.6.5

7.8 Hose compression force adjustment (shimming) (not applicable for SP/10, SP/15 and SP/20).

Fitting and removing shims is a simple action which can be carried out via the inspection window on the front of the pump housing. The pump hose or the pump cover does not need to be removed. In order to determine the correct number of shims for your specific application see “Specifications”: “Shimming”, § 10.1.7.

	<p>CAUTION</p> <p>Too many shims, this means a too high compression force on the pump hose, will create a too high load of the pumphead and pump hose, which may result in a reduction of the life of the pump hose. Too few shims, this means a too low compression force on the pump hose, create a loss of capacity and backflow. Backflow results in a reduction of the life of the pump hose.</p>
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- Jog the motor until the pressing shoe is positioned in view of the inspection window.
- Isolate the pump from the electrical supply.
- Loosen the retaining bolts of the inspection window and remove the bolts.
- Remove the inspection window. Care must be taken not to damage the gasket.
- Loosen the retaining bolt(s) of the pressing shoe a few turns.
- Fit the shims or remove them until the correct number of shims is present (see “Specifications”: “Shimming”, § 10.1.7). To aid in assembly, preform shim around rotor. Then insert with slot oriented around bolt.
- Fasten the retaining bolt(s) of the pressing shoe with the correct torque (see “Specifications”: “Torques”, § 10.1.6).

	<p>CAUTION</p> <p>When maximum suction capability is required, the pump shimming must be as for minimum 5 bar counter pressure at corresponding speed.</p>
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- Refit the inspection window. Check the gasket for damage and replace if necessary. Make sure that all bolts are refitted and that they are tightened in the correct order, diagonally opposite each other, see “Specifications”: “Torques”, § 10.1.6.
- Switch on the electrical supply.

7.9 Fitting options

7.9.1 Fitting a high-level float switch

- Note: in case of series SP/10, SP/15 and SP/20 another type of cover is required.
- Dismount the standard breather on the cover of the pump
- Slide the standard breather cap from breather.
- Replace the standard breather cap with the breather cap with high level float switch and slide it over breather.
- Mount the breather on the cover of the pump.
- Connect the high-level float switch to the electrical supply. Bear in mind that the electrical contact of the float switch is normally closed (NC). When the lubricant level is (too) high the contact will open.

7.9.2 Fitting a low level float switch (not applicable for SP/10, SP/15 and SP/20)

- If the pump is filled with lubricant this must be removed first. Place a tray under the drain plug in the desaeration pipe on the cover of the pump. Remove the drain plug. Catch the lubricant from the pump housing in the tray.
- Replace the drain plug by a low level floater.
- Connect the 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 low level float switch opens at a (too) low lubricant level.
- Make sure the lubricant returns to the prescribed level, see: “Maintenance”: “Changing lubricant”, § 7.3.

8 STORAGE

8.1 Hose pump

Store the hose pump or pump parts in a dry area. Make sure that the hose pump or pump parts are not exposed to temperatures lower than - 40 °C or higher than + 70 °C.

Cover the openings of the inlet and outlet ports.

Prevent corrosion of untreated parts. For this purpose use the correct protection or packaging means.

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.

8.2 Pump hose

Store the pump hose in a cool and dark room. Pump hoses have a limited storage life. After 2 years the hose material will age, which will reduce the life of the hose.

9 TROUBLESHOOTING

If the hose pump does not function (correctly), consult the following checklist to see if you can remedy the error yourself. If this is not the case, please contact your Bredel representative.

Problem	Possible Cause	Correction
Failure to operate	No voltage	Check that the supply power switch is on. Check the electrical supply is available at the pump.
	Stalled rotor	Check that the pump is stalled by incorrect fitting of the hose.
	Lubricant level monitoring system has been activated.	Check that the lubricant level monitoring system has stalled the pump. Check the functioning of the lubricant level monitoring system, or check the lubricant level.
High pump temperature.	Non standard hose lubricant used.	Consult the Bredel representative for the correct lubricant.
	Low lubricant level.	Add Bredel lubricant, see for the required amount of lubricant "Maintenance": "Changing lubricant".
	Product temperature too high.	Consult the Bredel representative about the maximum temperature range of the product.
	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 (not for SP/10, SP/15 and SP/20)	Consult the diagram, see "Specifications": "Shims specifications". Remove excess shims.
	High pump speed.	Reduce pump speed to a minimum. Consult with your Bredel pump representative for advice on optimum pump speeds.
Low capacity/pressure	Shut-off valve in the suction line (partly) closed.	Fully open the valve.
	Under shimming of the pressing shoes.	Consult the diagram (see "Specifications": "Shims specifications"). Fit the correct number of shims.
	Hose rupture or badly worn hose	Replace hose, see "Maintenance": "Replacing pump hose".
	(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.

	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.	Consult your Bredel representative for a recommendation.
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 product specific gravity or a combination of these factors.	Reduce pump speed. Reduce the line lengths on both suction and discharge where possible. Consult your Bredel representative for a recommendation.
	Too narrow diameter of suction and/or discharge line	Increase the diameter of the suction/discharge lines.
Broken front cover bolts	Pump cover (dis)mounted with the hose in the pump	Never (dis)mount the pump cover when the hose is still in the pump
Short hose life.	Chemical attack of the hose.	Check the compatibility of the hose material with the product to be pumped. Consult your Bredel representative for correct hose selection.
	High pump speed.	Reduce pump speed.
	High discharge pressures.	Maximum working pressure 16 bar. 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.	Consult your Bredel representative for correct hose selection.
	High pulsations.	Restructure the discharge and inlet conditions.
Hose pulled into the pump.	Insufficient or no hose lubricant in the pumphead.	Add extra lubricant, see "Maintenance": "Changing lubricant".
	No original Bredel lubricant.	Consult the Bredel representative for the correct lubricant.
	Extremely high inlet pressure - larger than 300 Kpa.	Reduce the inlet pressure.
Lubricant leakage at flange bracket.	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.
	Bolts of flange bracket loose.	Tighten to the specified torque settings (see 'Torques'). settings, see "Specifications": "Torques".
	Bolts of hose clamps loose.	Tighten to the specified torque settings (see 'Torques'). settings, see "Torques".

10 SPECIFICATIONS

10.1 Pumphead

10.1.1 Performance

Description	SP/10	SP/15	SP/20	SP/25	SP/32	SP/40	SP/50	SP/65	SP/80	SP/100
Max. capacity, continuous [m ³ /h]	0,11	0,38	0,62	1,80	3,25	6,0	10,5	20,0	28,0	36,0
Max. capacity, intermittently [m ³ /h] ◇	0,16	0,60	1,09	2,88	5,25	9,6	17,5	32,0	42,0	60,0
Capacity per revolution [l/rev]	0,022	0,083	0,152	0,30	0,625	1,33	2,9	6,7	11,7	20,0
Max. permissible discharge pressure [kPa]	750	750	750	1600	1600	1600	1600	1600	1600	1600
Permissible ambient temperature [°C]	- 20 to + 45									
Permissible product temperature [°C]	- 10 to + 80									
Sound level on 1m [dB(A)]	60	60	60	70	70	70	70	70	70	70

◇ Intermittent duty: "Let the pump stand still to cool down for at least 1 hour after 2 hours of operation".

10.1.2 Materials

Description	Material
Pump housing	Cast-iron
Cover	SP/10, SP/15: synthetic optional: mild steel SP/20 to SP/100: steel
Pump rotor	Cast-iron
Pressing shoe	Aluminum (not applicable for SP/10, SP/15 and SP/20)
Pump support	Mild steel, galvanized
Flange bracket	Mild steel, galvanized
Mounting material of pump cover	Mild steel, galvanized
Mounting material of pump support	Mild steel, galvanized
Seals	Nitrile
Bush	Neoprene

10.1.3 Lubricant

Required quantity of lubricant [Liters]									
SP/10	SP/15	SP/20	SP/25	SP/32	SP/40	SP/50	SP/65	SP/80	SP100
0,25	0,50	0,50	2	3	5	10	20	40	60

10.1.4 Surface treatment

The pumphead is provided with a two component epoxy base coat. After drying the layer thickness must be at least 30 microns.

Subsequently these components are provided with a two component polyurethane top coat, in the RAL 5017 colour blue and with a 100% gloss rate. After this coat of paint has dried the layer thickness must be at least 30 microns.

All galvanized parts, exclusive of mounting articles, have been provided with an electrolytic zinc layer of 15 –20 microns.

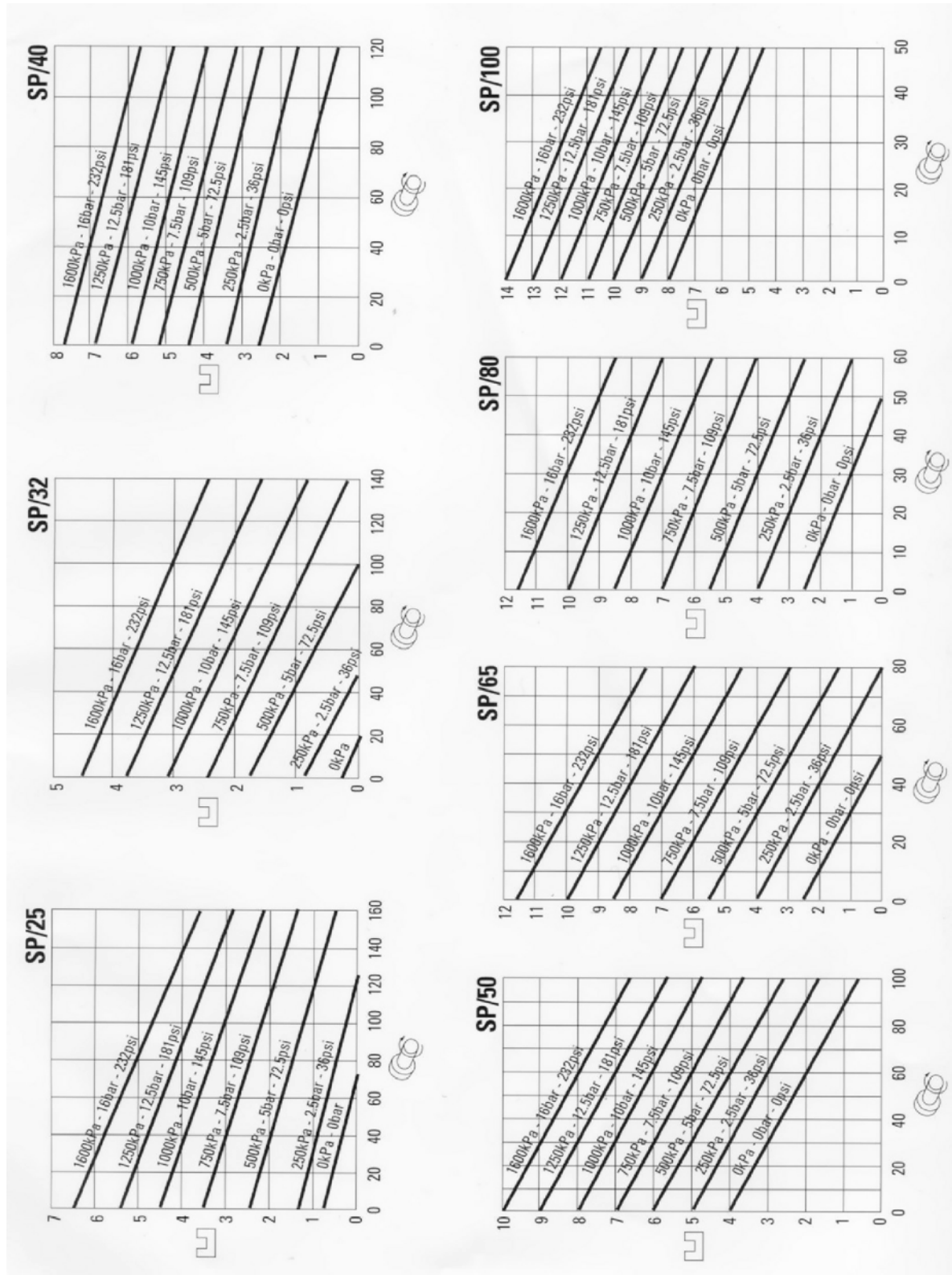
10.1.5 Weights and dimensions

Description	Weights and dimensions per pump model									
	series	SP/10	SP/15	SP/20	SP/25	SP/32	SP/40	SP/50	SP/65	SP/80
Net weight pump (kg)	10	19	19	59	85	139	195	395	600	955
Gross weight pump (kg)	10	19	19	80	125	175	265	450	680	1055
Dimensions crate (cm)	30x26x27	37x32x28	37x32x28	72x56x55	87x62x65	87x76x63	106x90x68	127x105x84	148x124x93	170x145x107
Cubage (m ³)	-	-	-	0,222	0,35	0,42	0,65	1,12	1,71	2,64
Dimension pump hose (mm)	10x31x510	15x36x755	19x36x755	25x53x1005	32x61x1250	40x66x1490	50x80x1820	65x99x2335	80x120x2780	100x144x3275
Weight pump hose (kg)	0,35	0,70	0,70	2	3	3,80	6,40	11,50	21	31
Quantity lubricant required (litres)	0,25	0,50	0,50	2	3	5	10	20	40	60
Weight lubricant (kg)	0,30	0,60	0,60	2,5	3,6	6	13	26	52	78
Weight supports [set] (kg)	0,75	1,60	1,60	17	24	43	56	50	92	160
Weight pump shaft (kg)	0,50	0,90	0,90	2	5	5	9,50	18	39	53
Weight rotor (kg)	0,75	2,50	2,50	4	8	12	24	44	69	108
Weight pressing shoes [set] (kg)	-	-	-	0,70	1,10	2	2,50	5	8	13
Weight pump cover (kg)	0,2	0,65	0,65	7	10	16	24	54	89	123
Weight pump housing (kg)	5,70	10,7	10,7	21	40	50,50	82	170	238	390
Flange connection, without inserts [set] (kg)	1,47	1,72	1,90	2,98	4,26	4,88	6,38	7,80	11,4	14,9
Insert [set] (kg)	0,04	0,05	0,07	0,13	0,18	0,34	0,46	3,13	4,06	5,69

10.1.6 Torques

Description	Torques in [Nm] per pump type									
	SP/10	SP/15	SP/20	SP/25	SP/32	SP/40	SP/50	SP/65	SP/80	SP/100
Pressing shoe	-	-	-	30	40	120	160	160	160	160
Cover	3,5	3,5	10	25	50	50	50	50	50	85
Inspection window	-	-	-	1,75	1,75	1,75	1,75	1,75	3,5	3,5
Hose clamp	2	2	2	12	12	12	12	12	12	12
Rubber bush clamp	1,75	1,75	1,75	1,75	1,75	1,75	1,75	1,75	1,75	1,75
Flange bracket	10	10	10	25	50	50	50	85	210	210
Support	25	25	25	50	85	85	85	210	410	710

10.1.7 Shimming



When the temperatures are above 60 °C (140 °F) always use one shim less than indicated. Always round up in number of shims.

Parts list: SP/10-SP/15

Pos	Pcs	Description	SP/10	SP/15
101	1	Pump housing	010101	015101
102	1	Pump cover	010102	015102
103	1	Rotor	010103	015103
104	1	Pump shaft	010104	015104
106R	1	Mounting support Right	010106R	015106R
106L	1	Mounting support Left	010106L	015106L
108	1	Name tag	Z010108	Z015108
108A	2	Pin screw	F419001	F419001
111	1	Cylinder roller bearing	B220520	B220620
112	1	Deep groove ball bearing	B140500	B140600
113	1	Joint ring	S240240	S240290
114	1	Oil seal	S210240	S210290
116	1	Drive key	F436055	F436055
117	1	Rotor key	F436052	F436076
118	1	Snap ring	F343017	F343022
119	2	Rubber bush	010119	015119
120	2	Hose clip	C111508	C111510
121	2	Hose clip	C111506	C111508
123	1	O-ring	S121641	S121771
130	8	Hexagon screw	F111038	F111038
131	8	Spring washer	F531008	F531008
132	4	Hexagon screw	F111071	F111071
133	4	Spring washer	F336011	F336011
134	8	Hexagon screw	F111040	F111040
143	1	Lubricant	901143	901143
144	1	Sticker "Caution"	29082235	29082235
151	1	Air breather cap	29040223	29040223
152	0,04 Kg	Grease	Z010152	
152	0,06 Kg	Grease		Z010152
153	1	Screw	F401097	F401097
154	1	Cleaning sponge	010154	015154
184	2	Insert retaining flange	010184	015184
186	1	Insert stainless steel	010186	015186
188	1	Insert Teflon/PTFE	010188	015188
190	1	Insert PVDF	010190	015190
191	2	Circlips	F543013	F543017
192	1	Circlips	F344044	F344052
194	8	Washer	F326005	F326005

Parts list: SP/20 H-L

Pos	Pcs	Description	SP/20 H	SP/20 L
1	1	Pump housing	15101	15101
2	1	Pump cover	015102STD	015102STD
3	1	Rotor	020103H	020103L
4	1	Pump shaft	15104	15104
5	1	Mounting support Right	015106R	015106R
6	1	Mounting support Left	015106L	015106L
7	1	Name tag	Z020108H	Z020108L
8	2	Pin screw	F419001	F419001
9	1	Cylinder roller bearing	B220620	B220620
10	1	Deep groove ball bearing	B140600	B140600
11	1	Joint ring	S240290	S240290
12	1	Oil seal	S210290	S210290
13	1	Drive key	F436055	F436055
14	1	Rotor key	F436076	F436076
15	1	Snap ring	F343022	F343022
16	2	Rubber bush	15119	15119
17	2	Hose clip	C111510	C111510
18	2	Hose clip	C111508	C111508
19	1	O-ring	S121771	S121771
20	4	Hexagon screw	F111071	F111071
21	4	Spring washer	F336011	F336011
22	4	Plain washer	F322012	F322012
23	8	Hexagon screw	F111040	F111040
24	0,5 L	Lubricant	901143	901143
25	1	Sticker "Caution"	29082235	29082235
26	0,06 Kg	Grease	Z010152	Z010152
27	1	Hexagon screw	F401097	F401097
28	2	Insert retaining flange	W015184	W015184
29	2	Snap ring	F543019	F543019
30	1	Snap ring	F344052	F344052
31	8	Spring washer	F336009	F336009
32	8	Hexagon screw	F111038	F111038
33	8	Spring washer	F336009	F336009
34	1	Air breather cap	29065223	29065223
35	1	Bend, 90 °	29011242	29011242
36	1	Cat eye	29036274	29036274

Parts list: SP/25, SP/32, SP/40 and SP/50

Pos	Pcs	Description	SP/25	SP/32	SP/40	SP/50
101	1	Pump housing	025101	032101	040101	050101
102	1	Pump cover	025102	032102	040102	050102
103	1	Rotor	025103	032103	040103	050103
104	1	Pump shaft	025104	9298104	9298104	050104
105	1	Bearing cover	025105	9140105	9140105	050105
106R	1	Mounting support Right	025106R	032106R	040106R	050106R
106L	1	Mounting support Left	025106L	032106L	040106L	050106L
106B	1	Mounting support	025106B	032106B	040106B	050106B
106S	1	Mounting support	-	-	040106S	050106S
107	14	Shim	025107			
107	10	Shim		032107		
107	16	Shim			040107	
107	20	Shim				050107
108	1	Name tag	Z025108	Z032108	Z040108	Z050108
108A	4	Pin screw	F419001	F419001	F419001	F419001
110	2	Pressing shoe	025110	032110	040110	050110
111	1	Cylinder roller bearing	B220820	B221120	B221120	B221420
112	1	Deep groove ball bearing	B150700	B151000	B151000	B151200
113	1	Joint ring	S200400	S200550	S200550	S200700
114	1	Oil seal	S210350	S210500	S210500	S210600
115	1	O-ring	S120411	S120441	S120441	S121571
116	1	Drive key	F436084	F436128	F436128	F436148
117	1	Rotor key	F436101	F436901	F436901	F436902
118	1	Snap ring	F343032	F343043	F343043	F343053
119	2	Rubber bush	025119	032119	040119	050119
120	2	Hoseclip	C111512	C111513	C111513	C111515
121	2	Hoseclip	C121006	C121008	C121010	C121014
122	2	Hoseclip	C122005	C122005	C122007	C122009
123	1	Rubber cord for cover	025123	032123	040123	050123
124	10	Hexagon screw	F111071	F111096		
124	14	Hexagon screw			F111096	
124	16	Hexagon screw				F111096
124A	2	Screw with cuppoint	-	F429014	F429014	F429014
124B	2	Hexagon nut	-	F301007	F301007	F301007
124C	10	Plain washer	F322012	F322013	F322013	F322013
125	2	Hexagon bolt	F111096	F111134	F111186	F101173
126	2	Spring washer	F336012	F336013	F336015	F336017
127	2	Pin	F415083	F415083	F415083	F415112
128	4	Hexagon screw	F111073	F111098	F111098	F111098
129	4	Spring washer	F336011	F336012	F336012	F336012
130	8	Hexagon screw	F111069	F111093	F111093	F111093
131	8	Spring washer	F336011	F336012	F336012	F336012
132	4	Hexagon screw	F111096	F111130	F111130	F111130

Pos	Pcs	Description	SP/25	SP/32	SP/40	SP/50
133	4	Spring washer	F336012	F336013	F336013	F336013
137	1	PVC Hose	025137	032137	040137	050137
138	2	Hose clip	C111506	C111506	C111506	C111506
143	1	Lubricant	902143	908143	903143	904143
144	1	Sticker "Caution"	29082235	29082235	29082235	29082235
145	1	T with hose nipple	29010241	29010241	29010241	29010241
146	1	Desaeration pipe with hose nipple	29010242	29010242	29010242	29010242
147	1	Air breather cap	29065223	29065223	29065223	29065223
148	1	Drain plug	A131008	A131008	A131008	A131008
152	0,14 Kg	Grease	Z010152			
152	0,29 Kg	Grease		Z010152	Z010152	
152	0,59 Kg	Grease				Z010152
153	1	Screw	F401097	F401097	F401097	F401097
154	1	Cleaning sponge	025154	032154	040154	050154
155	1	Inspection window	025155	032155	040155	050155
156	1	Gasket	025156	032156	040156	050156
157	8	Hexagon Screw	F111038	F111040	F111040	F111040
158	8	Washer	F322009	F322009	F322009	F322009
161	1	Eye bolt	-	09100161	09100161	09100161
162	1	Hexagon screw	-	F111130	F111130	F111130
163	1	Spring washer	-	F336013	F336013	F336013
197	4	Flange bracket	025197	032197	040197	050197
198	2	Flange steel	025198	032198	040198	050198
Option	1	Floater in desaeration pipe	29104610	29104610	29104610	29104610
Option	1	Floater in drain plug	29104611	29104611	29104611	29104611

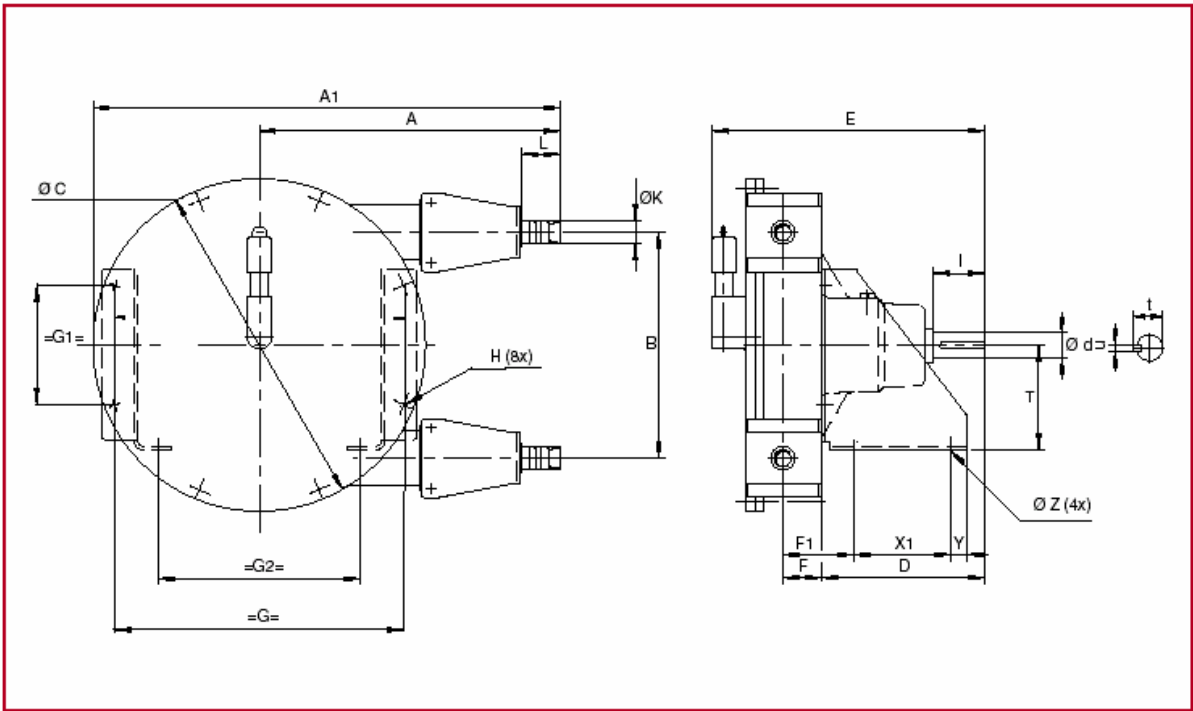
Parts list: SP/65, SP/80 and SP/100

Pos	Pcs	Description	SP/65	SP/80	SP/100
101	1	Pump housing	065101	080101	100101
102	1	Pump cover	065102	080102	100102
103	1	Rotor	065103	080103	100103
104	1	Pump shaft	065104	080104	100104
105	1	Bearing cover	065105	080105	100105
106	2	Mounting support	065106		
106	1	Mounting support - Right		080106R	100106R
106	1	Mounting support - Left	-	080106L	100106L
107	24	Shim	065107	080107	
107	28	Shim			100107
108	1	Name tag	Z065108	Z080108	Z100108
108A	4	Pin screw	F419001	F419001	F419001
110	2	Pressing shoe	065110	080110	100110
111	1	Cylinder roller bearing	B221720	B222020	B222420
112	1	Deep groove ball bearing	B151500	B151800	B152100
113	1	Joint ring	S200850	S201000	S201200
114	1	Oil seal	S210750	S210900	S211050
115	1	O-ring	S121621	S121671	S121721
116	1	Drive key	F436173	F436180	F436186
117	1	Rotor key	F436903	F436904	F436905
118	1	Snap ring	F343061	F343068	F343115
119	2	Rubber bush	065119	080119	100119
120	2	Hose clip	C111516	C111517	C111518
121	2	Hose clip	C121020	C121025	C121028
122	4	Hose clip	C122014	C122019	
122	6	Hose clip			C122024
123	1	Rubber cord for cover	065123	080123	100123
124	22	Hexagon screw	F111098		
124	26	Hexagon screw		F111098	
124	28	Hexagon screw			F111130
124A	2	Screw with cup point	F429014	F429014	F429024
124B	2	Hexagon nut	F301007	F301007	F301008
124C	24	Plain washer	F322013		
124C	28	Plain washer		F322013	
124C	32	Plain washer			F322015
125	2	Hexagon bolt	F101175		
125	4	Hexagon bolt		F101175	F101175
126	2	Spring washer	F336017		
126	4	Spring washer		F336017	F336017
127	2	Pin	F415112	-	-
Pos	Pcs	Description	SP/65	SP/80	SP/100

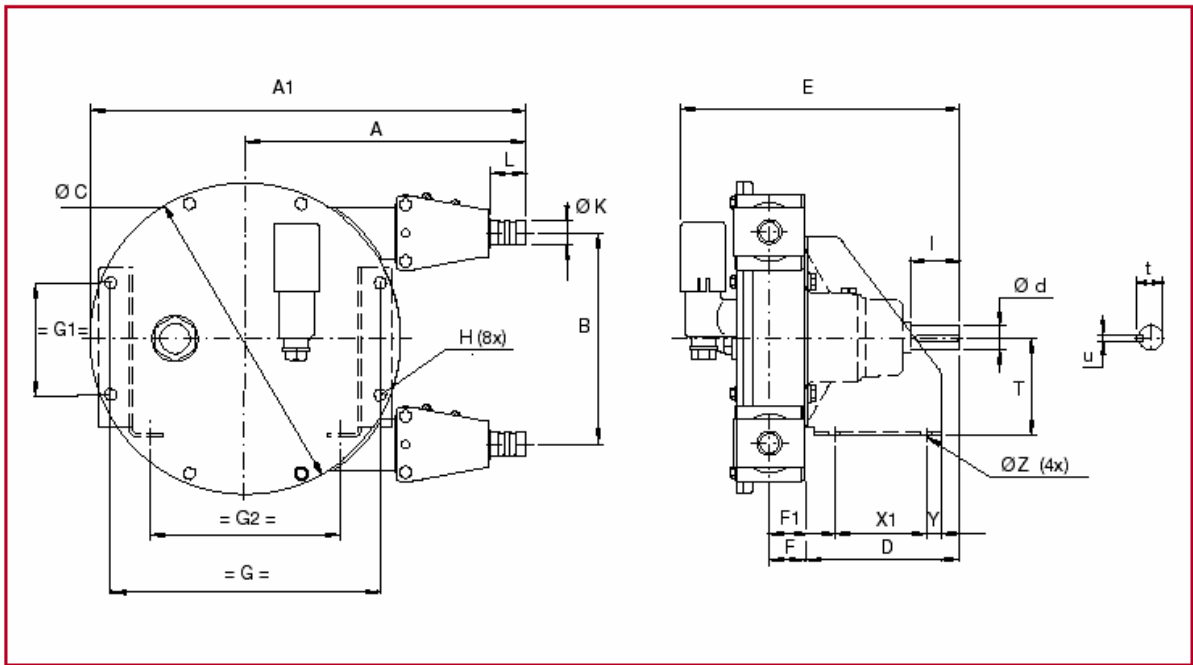
128	6	Hexagon screw	F111100		
128	8	Hexagon screw		F111100	F111132
129	6	Spring washer	F336012		
129	8	Spring washer		F336012	F336013
130	8	Hexagon screw	F111128	F111180	F111180
131	8	Spring washer	F336013	F336015	F336015
132	4	Hexagon screw	F111182	F111217	F111244
133	4	Spring washer	F336015	F336017	F336019
133A	4	Square taper washer	-	F339005	F339007
136	2	Hose nipple	A101018	A103019	A103019
138	2	Hose clip	C111506	C111509	C111509
139	1	Drain plug	A124006	A124008	A124008
140	1	Pipe nipple	09088140	09100140	09100140
143	1	Lubricant	905143	905143	905143
144	1	Sticker "Caution"	29082235	29082235	29082235
151	1	Air breather cap	09087151	09086151	09086151
152	1,00 Kg	Grease	Z010152		
152	1,55 Kg	Grease		Z010152	
152	3,36 Kg	Grease			Z010152
153	1	Screw	F401097	F401097	F401097
154	1	Cleaning sponge	065154	080154	100154
155	1	Inspection window	065155	09325155	09325155
156	1	Gasket	065156	09325156	09325156
157	10	Hexagon Screw	F111042		
157	14	Hexagon Screw		F111073	F111073
158	10	Washer	F322009		
158	14	Washer		F322012	F322012
159	1	Plug	A124006	A124008	A124008
161	1	Eye bolt	065161	080161	100161
162	1	Hexagon screw	F111183	F111217	F111244
163	1	Spring washer	F336015	F336017	F336019
164	2	Pipe nipple	065164	A127064	A127064
165	2	T 90°	A126006	A126008	A126008
166	1	PVC Hose	065166	080166	100166
168	1	Reducing nipple	A122013	A122013	A122013
168A	1	Reducing nipple	-	A122020	A122020
169	1	T 90°	A126004	A126004	A126004
170	1	Reducing bush	A122005	A122005	A122005
171	1	Bend 90°	A128006	A128008	A128008
172	1	Hexagon nipple	A121004	A121004	A121004
173	1	Vacuum gauge	A220051	A220051	A220051
175	2	Check valve	A107002	A107002	A107002
176	1	Hose nipple	A101012	A101012	A101012
177	1	PVC Hose	065177	080177	100177
178	1	Hose nipple with nut	A102012	A102012	A102012
Pos	Pcs	Description	SP/65	SP/80	SP/100

178A	1	Hexagon nipple	A105004	A105004	A105004
179	1	Plug steel	A124004	A124004	A124004
180	1	Pipe nipple steel	A127024	A127024	A127024
181	2	Hose clip	C111502	C111502	C111502
197	4	Flange bracket	065197	080197	100197
198	2	Flange steel	065198	080198	100198
Option	1	Floater in desaeration pipe	29105610	29124610	29124610
Option	1	Floater in drain plug	29106611	29105611	29105611

10.1.12 Dimensional drawings



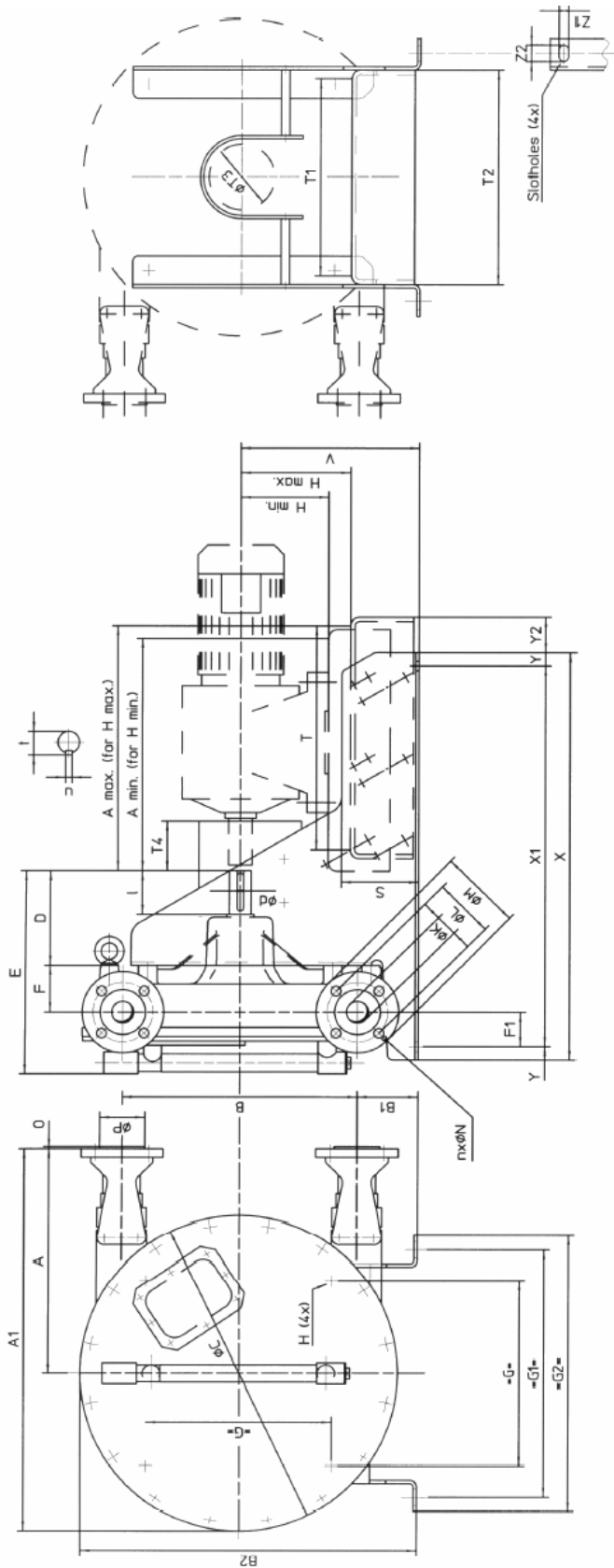
Type	A	A1	B	C	D	E	F	F1	G	G1	G2	H	K	L	T	X1	Y	Z	d	l	u	t
SP/10	196	293	116	$\varnothing 194$	117	200	28	55	162.6	67.4	175	M8	$\varnothing 16$	28	90-120	85	14	$\varnothing 9.0$	$\varnothing 18k6$	39	6	20.5
SP/15	260	403	195	$\varnothing 288$	142	235	33	60	249.5	103.4	175		$\varnothing 20$	33	90-120	85	14	$\varnothing 9.5$	$\varnothing 22k6$	45	6	24.5



Type	A	A1	B	C	D	E	F	F1	G	G1	G2	H	K	L	T	X1	Y	Z	d	l	u	t
SP/20	260	403	195	$\varnothing 288$	142	257	33	60	249.5	103.4	175	M8	$\varnothing 22$	33	90-120	85	14	$\varnothing 9.5$	$\varnothing 22k6$	45	6	24.5

All dimensions in [mm]

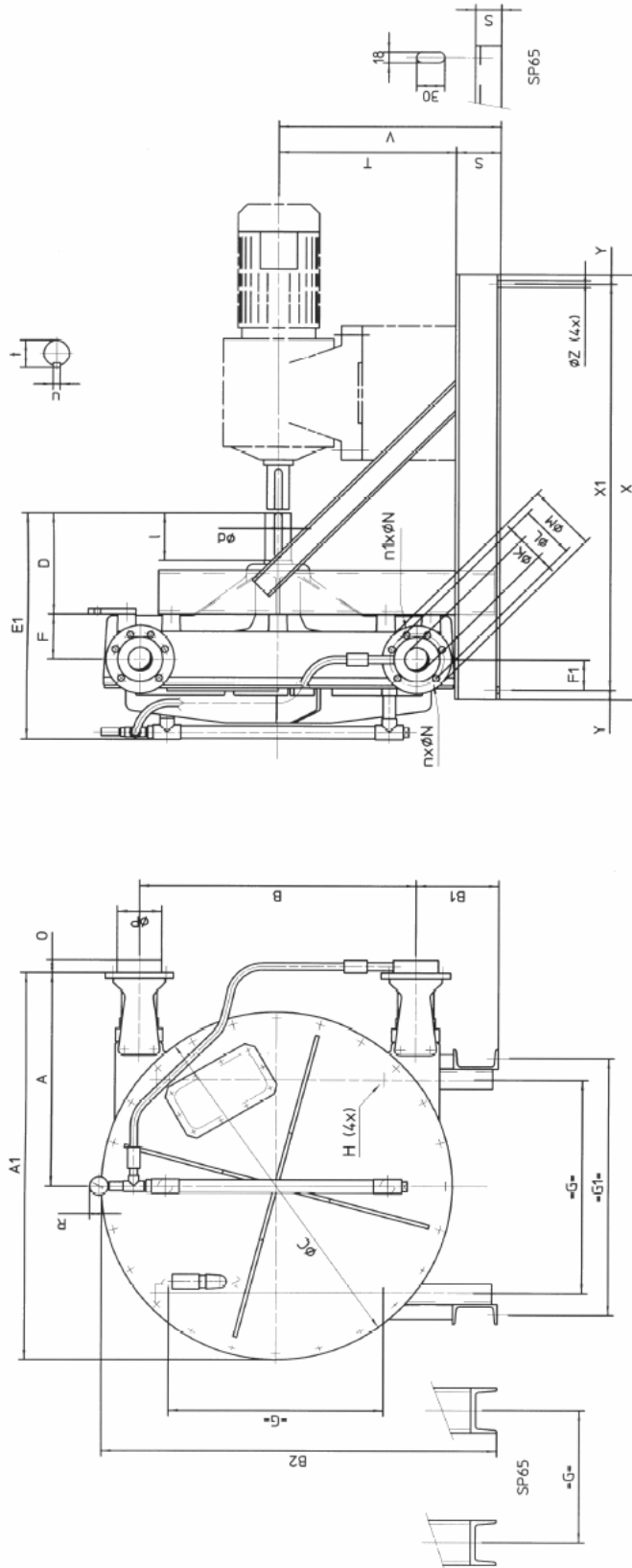
Dimensional drawings SP/25, SP/32, SP/40 and SP/50



TYPE	S	T	T1	T2	T3	max. T3	T4	V	X	X1	Y	Y2	Z1	Z2	Ød	l	U	t
SP/25	102	311	242	266	110	67	230	600	550	25	33	12	18	30k6	60	8	33	
SP/32	120	376	294	318	140	91	270	750	700	25	-	12	18	40k6	80	12	43	
SP/40	140	412	360	392	140	91	325	750	700	25	61	18	30	40k6	80	12	43	
SP/50	172	466	346	380	170	112	400	920	870	25	50	18	30	50k6	100	14	53.5	

TYPE	A	A1	A _{max}	A _{min}	B	B1	B2	C	D	E	F	F1	G	G1	G2	H	H _{max}	H _{min}	K	L	M	n x N	O (insert)	P (insert)		
SP/25	304	490	347	322	264	98	416	372	123	285	69	51	220	322	366	M10	151	109	25	85	115	4x14	2.5	10	64	60
SP/32	375	613	371	336	330	105	508	476	174	365	89	61	266	374	418	M12	181	114	32	100	140	4x18	2.5	10	73	70
SP/40	412	702	446	401	430	110	615	580	174	365	86	64	340	454	508	M12	201	123	40	110	150	4x18	2.5	10	83	80
SP/50	475	835	522	462	554	123	760	720	223	440	102	78	440	444	496	M12	251	149	50	125	165	4x18	3	10	100	90

Dimensional drawings SP/65, SP/80 and SP/100



TYPE	X1	Y	φZ	φd	l	u	t
SP/65	1100	25	-	70 m6	130	20	74.5
SP/80	1150	50	22	80 m6	150	22	85
SP/100	1475	50	26	100 m6	200	28	106

TYPE	A	A1	B	B1	B2	C	D	E1	F	F1	G	G1	H	K	L	M	n x N	n1 x N1	O	φP (insert)			R	S	T	V	X
																				Steel	PVC - PP	PVDF					
SP/65	580	1053	746	153	998	946	277	630	123	82	580	-	M16	65	145	185	4x18	-	35	120	100	100	15	50	475	525	1150
SP/80	700	1253	876	262	1253	1106	298	705	142	83	690	820	M20	80	160	200	-	8x18	35	135	130	125	-	140	560	700	1250
SP/100	815	1463	1042	299	1468	1296	398	880	174	100	820	970	M24	100	180	220	-	8x18	35	150	150	140	180	640	820	1575	

10.1.13 EG-Declaration of Conformity

The undersigned,

Company: Bredel Hose Pumps B.V.
Address: P.O. Box 47
City: NL-7490 AA Delden
Country: The Netherlands

Declares as the manufacturer for his own responsibility that the:

Description: Hose pump
Type/mode: SP series

to which this declaration applies, is in conformance with the conditions of the Machine directive 98/37/CE, annexe IIA : 98/37/EC EN60204-1.

If this hose pump is used as an independent pump then the Machine Directive applies.



Responsible person: Hanjo Krusinga, Managing Director

Company: Bredel Hose Pumps B.V.
Address: P.O. Box 47
City: NL-7490 AA Delden
Country: The Netherlands
Tel.: +31 74 3770000
Fax: +31 74 3761175
Internet: www.bredel.com
E-mail: hosepumps@bredel.com

10.1.14 Manufacturer's Declaration

The undersigned,

Company: Bredel Hose Pumps B.V.
Address: P.O. Box 47
City: NL-7490 AA Delden
Country: The Netherlands

Declares as the manufacturer for his own responsibility that the:

Description : Hose pump
Type/mode : SP series

to which this declaration applies, is in conformance with the conditions of the Machine directive 98/37/CE, annexe IIB ; 98/37/EC EN60204-1.

When this pump unit is to be installed into a machine or is to be assembled with other machines for installations, it must not be put into service until the relevant machinery has been declared in conformity with this Machinery Directive.



Responsible person: Hanjo Kruisinga, Managing Director

Company: Bredel Hose Pumps B.V.
Address: P.O. Box 47
City: NL-7490 AA Delden
Country: The Netherlands
Tel.: +31 74 3770000
Fax: +31 74 3761175
Internet: www.bredel.com
E-mail: hosepumps@bredel.com

10.1.15 Product Use and Decontamination Declaration

Product Use and Decontamination Declaration

In compliance with **Health & Safety Regulations** you, the user are required to declare the substances which have been in contact with the product(s) you are returning to Bredel Hose Pumps BV 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 ensure that we have the information **before** receipt of the item(s) being returned. **A FURTHER COPY MUST BE ATTACHED TO THE OUTSIDE OF THE PACKAGING CONTAINING THE ITEM(S). You, the user, are responsible for cleaning and decontaminating the item(s) before returning them.**

Please complete a separate Decontamination Certificate for each item returned. **RGA No:**

1 Company

Address

Post code

Telephone Fax Number

2 Product

2.1 Serial Number

2.2 Has the Product been used?

YES		NO	
-----	--	----	--

If yes, please complete all the following Sections
 If no, please complete Section 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.

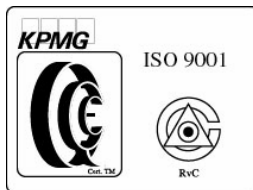
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