Hose Pump
PetroProof Series

PetroProof 10-10
PetroProof 10-15
PetroProof 15-15
PetroProof 15-20
PetroProof 25-25

Manual

Contents

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

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

2 SAFETY

2.1 Pictograms

In this manual the following symbols are used:

	**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.

	**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.

	Remarks, suggestions and advice.

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.

	**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.

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

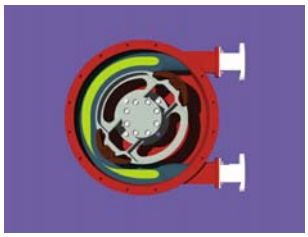
4.2 Construction of the pump

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

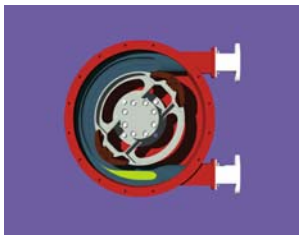
4.3 Operation of the pump

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.

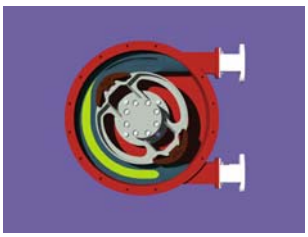
In phase 1 the lower pressing shoe compressed the pump hose by the rotational movement of the rotor, forcing the fluid through the hose. As soon as the pressing shoe has passed, the hose recovers to its original shape due to the mechanical properties of the material.



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 PetroProof hose is non-reinforced and made of a special elastomer. The hose material is very chemical resistant, especially to hydrocarbons.

The pump hose 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.

	Consult your Bredel representative for more detailed information about the chemical and temperature resistance of the PetroProof hoses.

4.4.2 Lubrication and cooling

The pump head, 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 bulges on the rotor and transfers the generated heat from the hose to the pump housing and the cover.

4.4.3 Gearbox

The hose pump types described in this manual use various types of gearbox units. The gearboxes are fitted with a foot rest. If the pump is to be used in potentially explosive atmospheres, please contact your Bredel representative.

4.4.4 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.

4.4.5 Available options

The following options are available for the hose pump:

- High (lubricant) level float switch
- Stainless steel hose clamps and fasteners.

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°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.

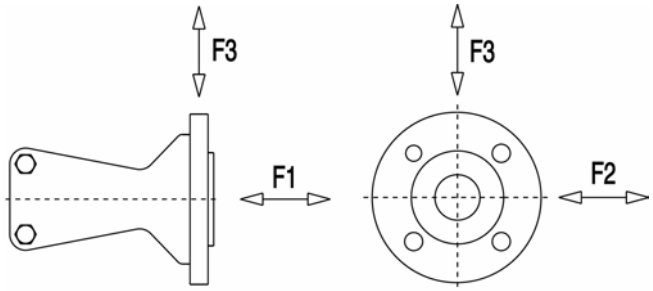
5.3.3 Pipework

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]	PetroProof				
	10-10	10-15	15-15	15-20	25-25
F1	600	600	600	600	1000
F2	120	120	120	120	200
F3	300	300	300	300	500

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

5.3.5 Pumping pressure (counter pressure)

Should not go over maximum allowance; 5 bar. 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.

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

⚠	**WARNING** 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”.

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 2nd 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

- Remove the hose and drain via the lower port (series PetroProof 10-10 / 10-15 / 15-15 / 15-20).
  Place a tray under the drain plug (PetroProof 25-25) 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.
- 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 SP25 P 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 PetroProof 10-10 / 10-15 / 15-15 / 15-20; 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 (PetroProof 10-10 / 10-15 / 15-15 / 15-20) by removing the flanges (PetroProof 25-25) on both the suction and discharge port.

7.5.6 Removal of flange brackets and rubber bushes

Remove the flange bracket (PetroProof 25-25) or flange bracket-insert (PetroProof 10-10 / 10-15 / 15-15 / 15-20) and rubber bush 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).

⚠	**WARNING** Never remove the pump cover whilst the hose is in place. The front covers of the series PetroProof 25-25 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.

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 PetroProof 10-10 / 10-15 / 15-15 / 15-20)

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.

⚠	**WARNING** Be carefull during jogging; The hose can be pushed out of the pump with high speed and force.

- 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

	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 (PetroProof 25-25)

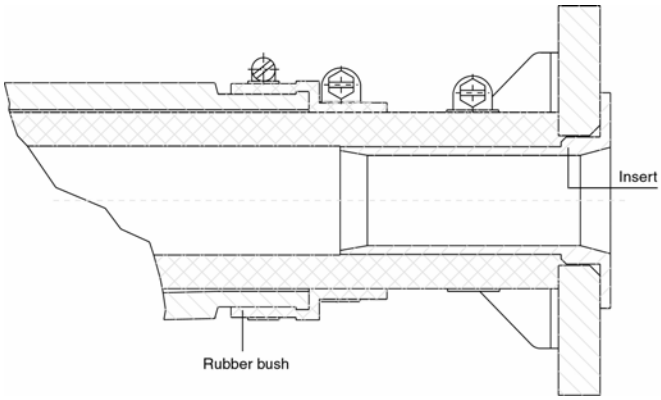
- Mount the flange brackets on the suction port by replacing the bolts.
- Do not tighten the bolts at this stage!
- Mount the flange and the insert
- Mount the suction line

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 PetroProof 10-10 / 10-15 / 15-15 / 15-20) to vent the pump housing.
- Add lubricant until ½ 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 PetroProof 10-10 / 10-15 / 15-15 / 15-20).
- 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 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 PetroProof 25-25, or joint ring and safety ring for PetroProof 10-10 / 10-15 / 15-15 / 15-20.
- 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 Fitting options

7.8.1 Fitting a high-level float switch

- 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.

7.8.2 Fitting a low level float switch (not applicable for PetroProof 10-10 / 10-15 / 15-15 / 15-20)

- 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.
	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	10-10	10-15	15-15	15-20	25-25
Max. capacity, continuous [l/h]	131	216	378	540	825
Max, capacity, intermittent [l/h]	209	346	605	864	1320
Capacity per revolution [ml/rev.]	29	48	84	120	275
Max. allowable discharge pressure [kPa]	500				
Allowable ambient temperature range [°C]	-20 to +45				
Max. allowable product temperature range [°C]	40				
Sound level at 1 m [dB(A)]	60				

10.1.2 Materials

Description	Material
Pump housing	Cast-iron
Cover	Mild steel
Pump rotor	Cast-iron
Pump support	Mild steel, galvanized
Bracket / Insert	Stainless steel (AISI 316)
Mounting material of pump cover	Mild steel, galvanized
Mounting material of pump support	Mild steel, galvanized
Seals	Nitrile
Bush	NBR ACN28%

10.1.3 Lubricant

Required quantity of lubricant [Liters]				
10-10	10-15	15-15	15-20	25-25
0,25	0,25	0,5	0.5	2

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.

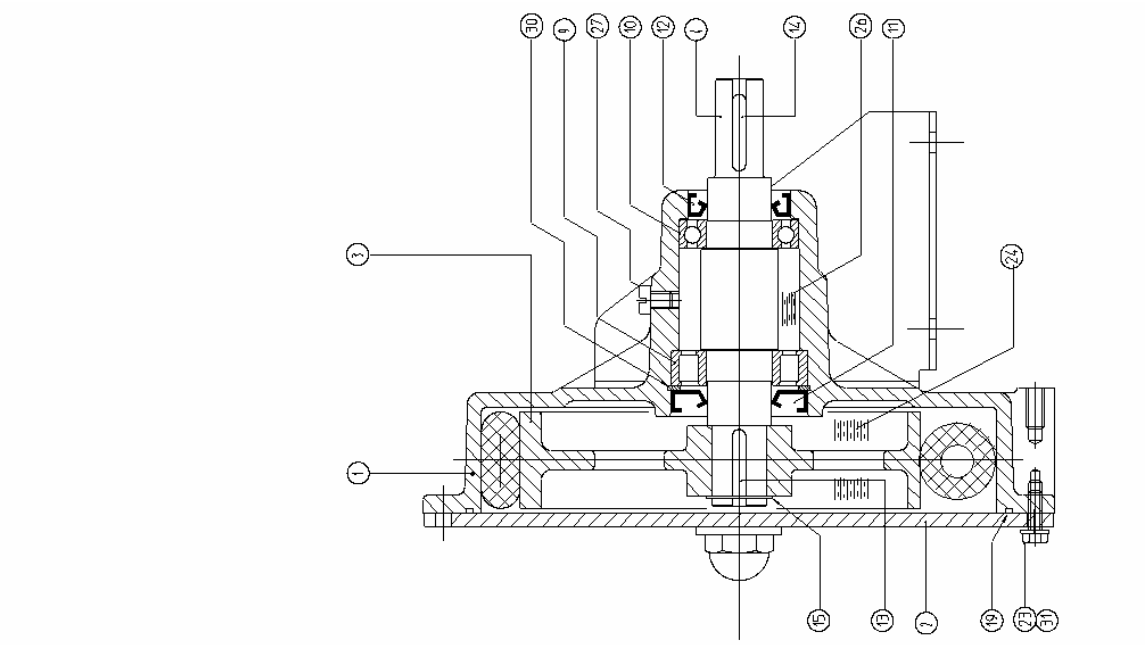
10.1.5 Weights and dimensions

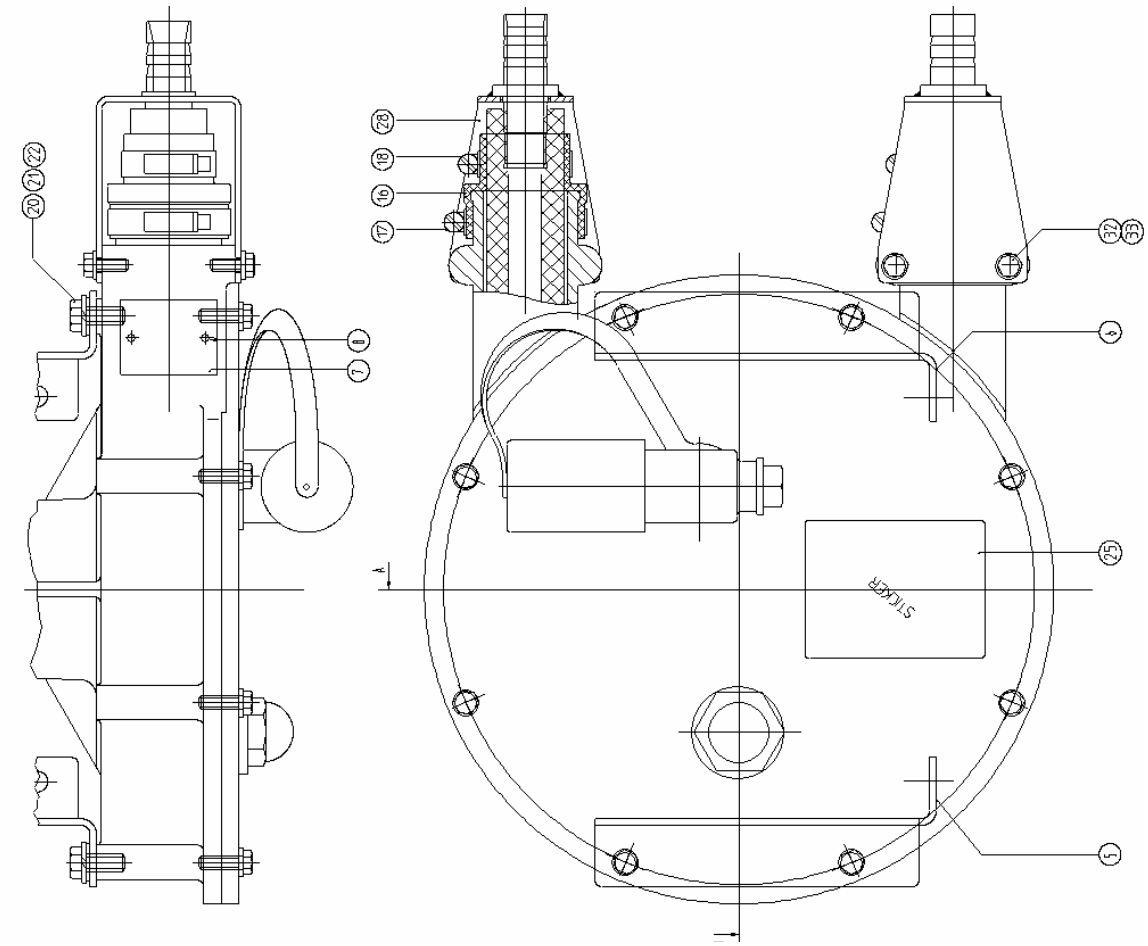
Description	Weights and dimensions per pump model				
series	10-10	10-15	15-15	15-20	25-25
Net weight pump (kg)	11	11	20	20	63
Gross weight pump (kg)	11	11	20	20	84
Dimensions crate (cm)	30x26x27	30x26x27	37x32x28	37x32x28	72x56x55
Dimension pump hose (mm)	10x31x510	10x31x510	15x36x755	19x36x755	25x53x1005
Weight pump hose (kg)	0,35	0,35	0,70	0,70	2
Quantity lubricant required (litres)	0,25	0,25	0,50	0,50	2
Weight lubricant (kg)	0,30	0,30	0,60	0,60	2,5
Weight supports [set] (kg)	0,75	0,75	1,60	1,60	17
Weight pump shaft (kg)	0,50	0,50	0,90	0,90	2
Weight rotor (kg)	1,2	1,2	2,50	2,50	8
Weight pump cover (kg)	1.2	1.2	1.7	1.7	7
Weight pump housing (kg)	5,70	5,70	10,7	10,7	21
Flange connection, without inserts [set] (kg)	1,47	1,47	1,72	1,90	2,98
Insert [set] (kg)	0,04	0,04	0,05	0,07	0,13

10.1.6 Torques

Description	Torques in [Nm] per pump type				
series	10-10	10-15	15-15	15-20	25-25
Cover	3,5	3,5	3,5	10	25
Inspection window	-	-	-	-	1,75
Hose clamp	2	2	2	2	12
Rubber bush clamp	1,75	1,75	1,75	1,75	1,75
Flange bracket	10	10	10	10	25
Support	25	25	25	25	50

10.1.7 Parts list: PetroProof 10-10 / 10-15 / 15-15 / 15-20

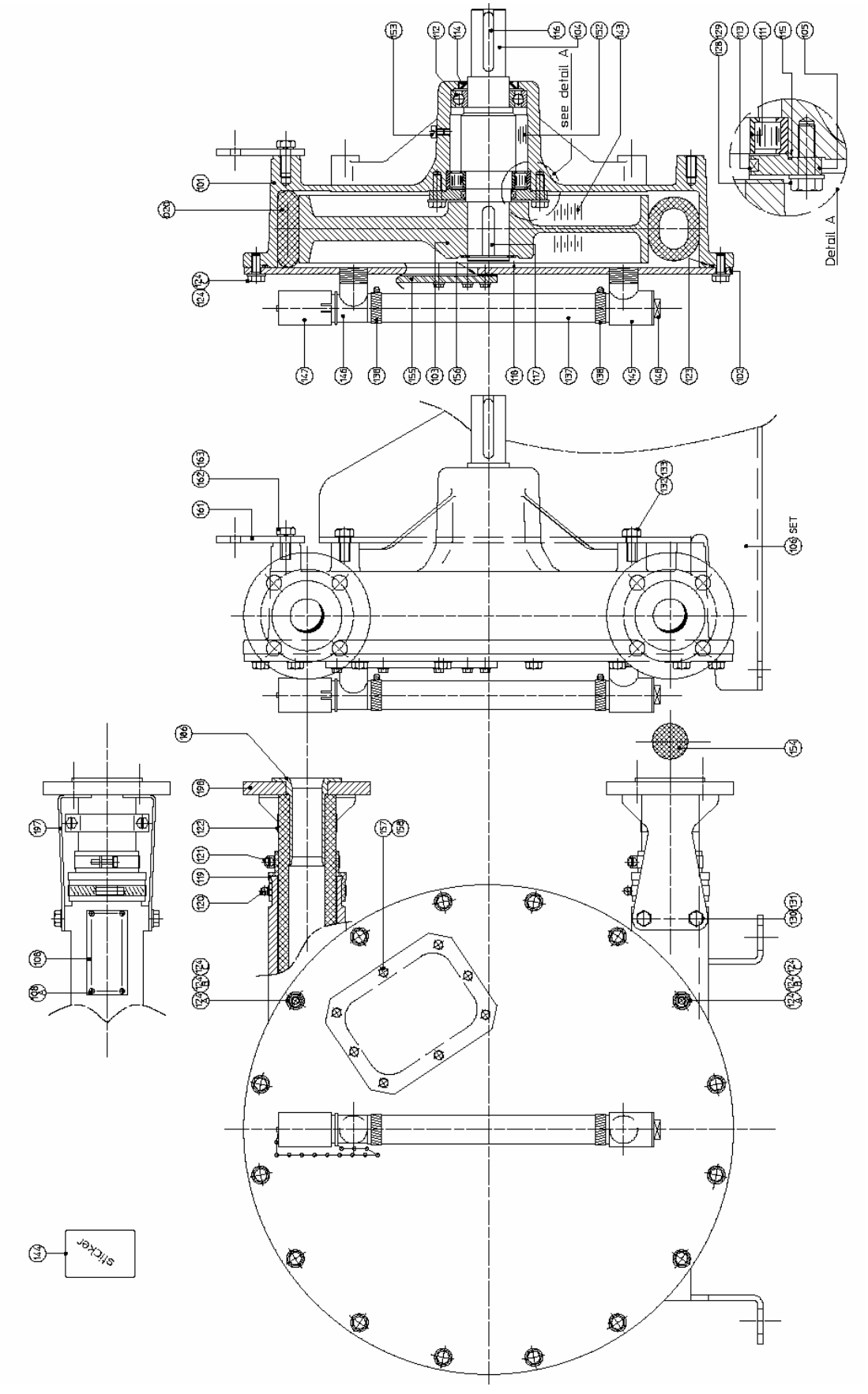




Parts list:

Pos	Pcs	Description	10-10	10-15	15-15	15-20
1	1	Pump housing	010101	010101	015101	015101
2	1	Pump cover	010102STD	010102STD	015102STD	015102STD
3	1	Rotor	010103P10	010103P15	020103P	020103P
4	1	Pump shaft	010104	010104	015104	015104
5	1	Mounting support Right	010106R	010106R	015106R	015106R
6	1	Mounting support Left	010106L	010106L	015106L	015106L
7	1	Name plate	Z010108P	Z010108P	Z015108P	Z020108P
8	2	Pin screw	F419001	F419001	F419001	F419001
9	1	Cylinder roller bearing	B220520	B220520	B220620	B220620
10	1	Deep groove ball bearing	B140500	B140500	B140600	B140600
11	1	Joint ring	S240240	S240240	S240290	S240290
12	1	Oil seal	S210240	S210240	S210290	S210290
13	1	Drive key	F436055	F436055	F436055	F436055
14	1	Rotor key	F436052	F436052	F436076	F436076
15	1	Snap ring	F343017	F343017	F343022	F343022
16	2	Rubber bush	010119P10	010119P15	015119P	020119P
17	2	Hose clip	C111508	C111508	C111510	C111510
18	2	Hose clip	C111506	C111506	C111508	C111508
19	1	O-ring	S121641	S121641	S121771	S121771
20	4	Hexagon screw	F111071	F111071	F111071	F111071
21	4	Spring washer	F336011	F336011	F336011	F336011
22	4	Plain washer	F322012	F322012	F322012	F322012
23	8	Hexagon screw	F111040	F111040	F111040	F111040
24	0,5 l	Lubricant	901143	901143	901143	901143
25	1	Sticker "Caution"	29082235	29082235	29082235	29082235
26	0,04 kg	Grease	Z010152	Z010152		
	0,06 kg	Grease			Z010152	Z010152
27	1	Hexagon screw	F401097	F401097	F401097	F401097
28	2	Bracket + insert	010184P10	010184P15	015184P	020184P
30	1	Snap ring	F344044	F344044	F344052	F344052
31	8	Spring washer	F336009	F336009	F336009	F336009
32	8	Hexagon screw	F111038	F111038	F111038	F111038
33	8	Spring washer	F336009	F336009	F336009	F336009

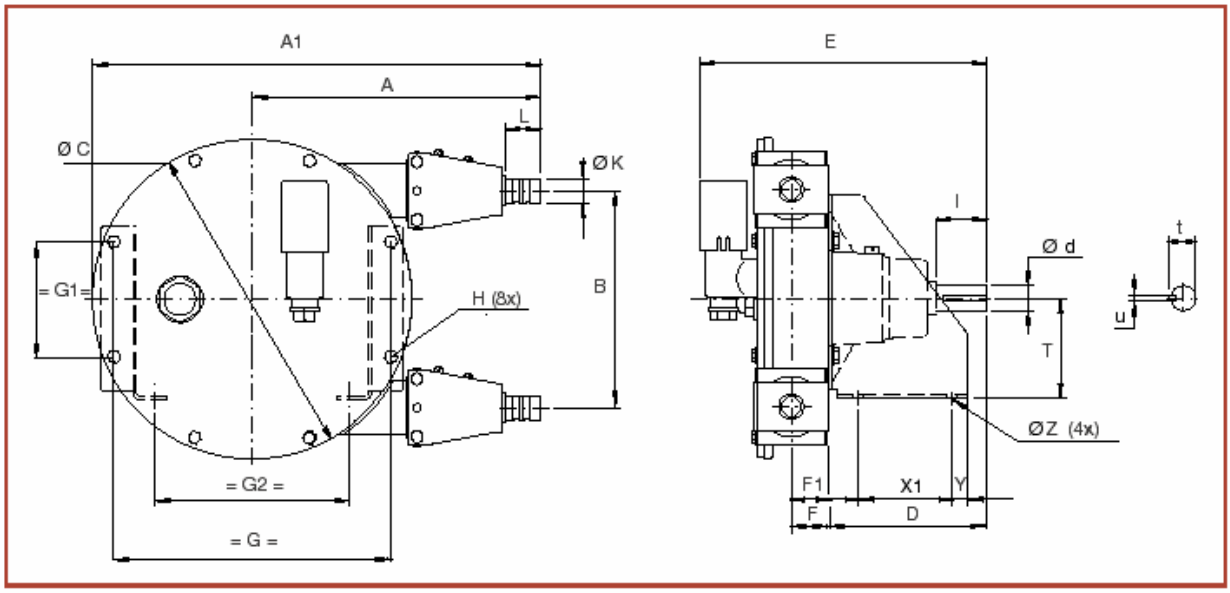
10.1.8 Partslist: PetroProof 25-25



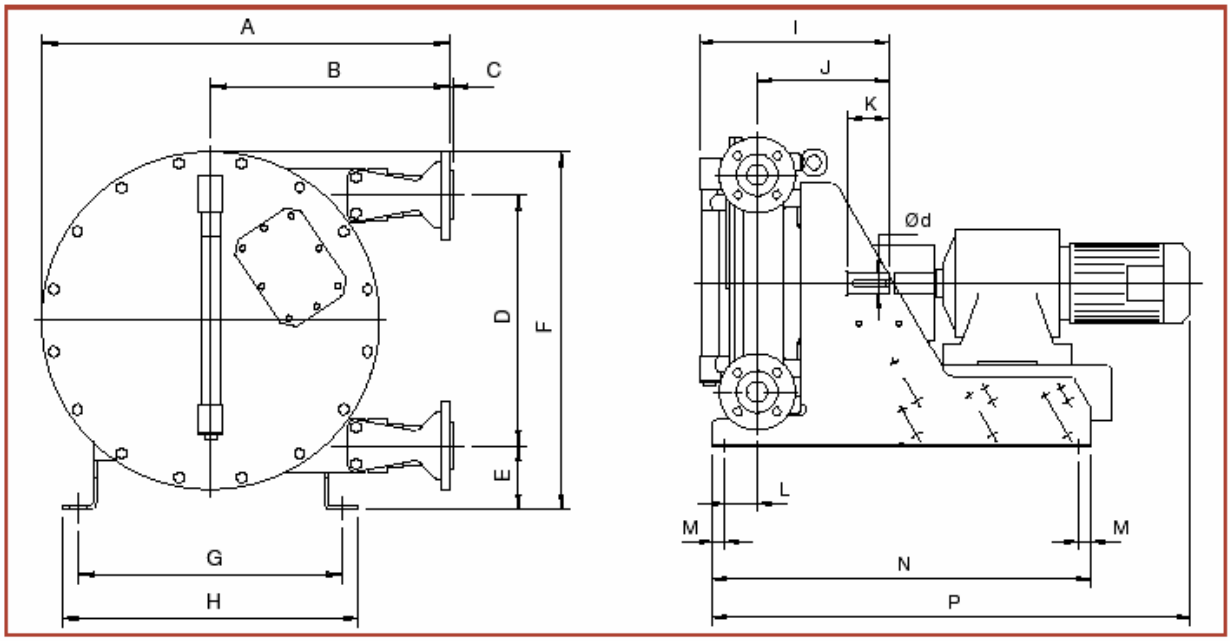
Parts list PetroProof 25-25:

Pos	Pcs	Description	25-25
101	1	Pump housing	025101
102	1	Pump cover	025102
103	1	Rotor	025103P
104	1	Pump shaft	025104
105	1	Bearing cover	025105
106R	1	Mounting support Right	025106R
106L	1	Mounting support Left	025106L
106B	1	Mounting support	025106B
108	1	Name tag	Z025108P
108A	4	Pin screw	F419001
111	1	Cylinder roller bearing	B220820
112	1	Deep groove ball bearing	B150700
113	1	Joint ring	S200400
114	1	Oil seal	S210350
115	1	O-ring	S120411
116	1	Drive key	F436084
117	1	Rotor key	F436101
118	1	Snap ring	F343032
119	2	Rubber bush	025199P
120	2	Hoseclip	C111512
121	2	Hoseclip	C121006
122	2	Hoseclip	C122005
123	1	Rubber cord for cover	025123
124	10	Hexagon screw	F111071
124C	10	Plain washer	F322012
128	4	Hexagon screw	F111073
129	4	Spring washer	F336011
130	8	Hexagon screw	F111069
131	8	Spring washer	F336011
132	4	Hexagon screw	F111096
133	4	Spring washer	F336012
137	1	PVC Hose	025137
138	2	Hose clip	C111506
143	1	Lubricant	902143
144	1	Sticker "Caution"	29082235
145	1	T with hose nipple	29010241
146	1	Desaeration pipe with hose nipple	29010242
147	1	Air breather cap	29065223
148	1	Drain plug	A131008
152	0,14 Kg	Grease	Z010152
153	1	Screw	F401097
154	1	Cleaning sponge	025154
155	1	Inspection window	025155
156	1	Gasket	025156
157	8	Hexagon Screw	F111038
158	8	Washer	F322009
186	2	Insert SP25 P	025186P
197	4	Flange bracket	025197
198	2	Flange steel	025198

Dimensional drawings



Type	A	A1	B	C	D	E	F	F1	G	G1	G2	H	K	L	T	X1	Y	Z	d	I	u	t
10-10	196	293	116	ø194	117	220	28	55	162.6	67.4	175	M8	ø16	27	90-120	85	14	ø9.0	ø18k6	39	6	20.5
10-15	201	298	116	ø194	117	220	28	55	162.6	67.4	175		ø20	32	90-120	85	14	ø9.0	ø18k6	39	6	20.5
15-15	260	403	195	ø288	142	257	33	60	249.5	103.4	175		ø20	32	90-120	85	14	ø9.5	ø22k6	45	6	24.5
15-20	263	406	195	ø288	142	257	33	60	249.5	103.4	175		ø22	33	90-120	85	14	ø9.5	ø22k6	45	6	24.5



Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	d	P
25-25	490	304	2,5	264	98	416	322	366	285	192	60	51	25	600	30k6	*

* contact your representative

11 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 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

12 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

13 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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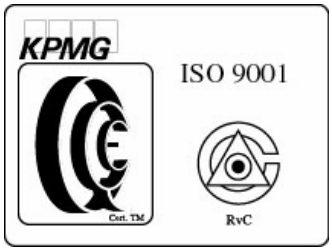

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