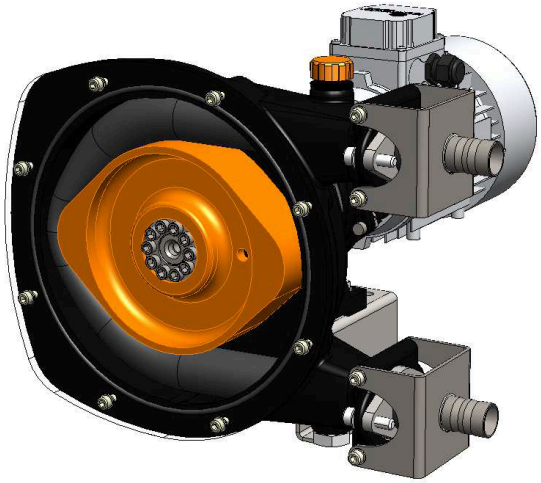
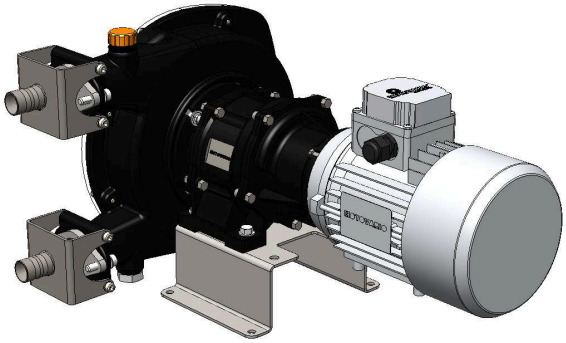
ABAQUE

INSTRUCTIONS 1101-U00e
Section 1101
Effective May 2016
Replaces November 2015

PUMPS:

HDN10
HDN15
HDN20





PERISTALTIC HOSE PUMPS

INSTALLATION, OPERATION, AND MAINTENANCE INSTRUCTIONS

Neptune™

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1 SAFETY INFORMATION

These are the SAFETY ALERT SYMBOLS.

DANGER

When you see this symbol on the product, or in the manual, look for one of the following signal words and be alert to the potential for personal injury, death or major property damage.

WARNING

Warns of hazards that WILL cause serious personal injury, death or major property damage.

CAUTION

Warns of hazards that CAN cause serious personal injury, death or major property damage.

NOTICE

Indicates special instructions that are very important and must be followed.

Additional notes:

The numbers after part names correspond to reference numbers in the spare parts lists.

Photos and drawings used in this IOM are not contractual.

This IOM manual is specifically designed for the installation, startup and maintenance of the Abaque peristaltic hose pump. It should be kept readily available fro the pump user's reference.

The Abaque peristaltic hose pump should be only installed and maintained by qualified personnel who have read and thoroughly familiarized themselves with the IOM manual. Pump installation must comply with all local and federal codes and regulations.

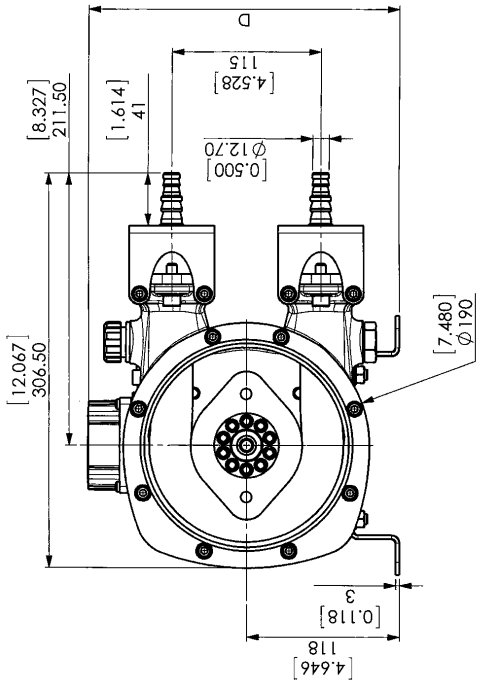
Do not remove any warning and use stickers from the pumps.

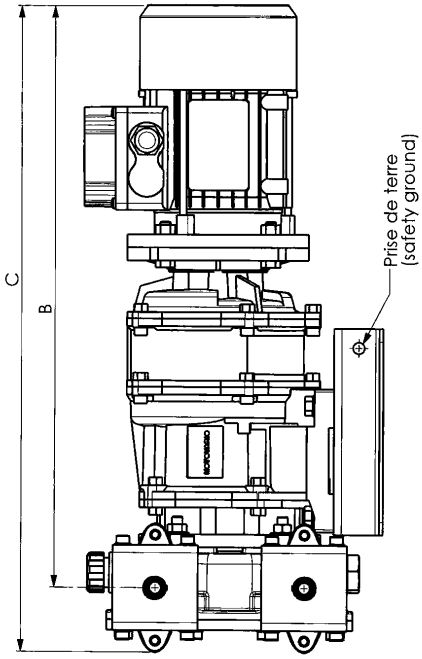
1.1 Technical Characteristics

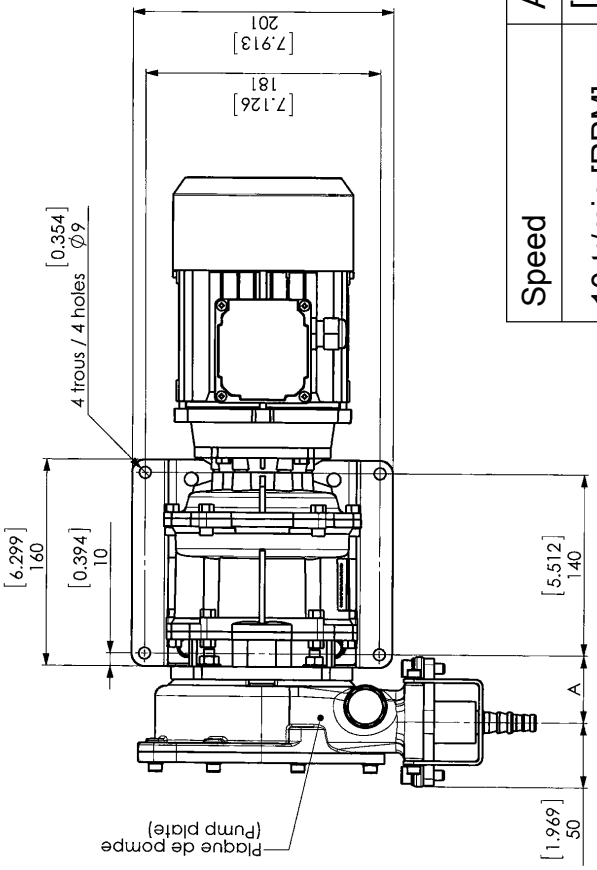
Maximum flow rate:	
Intermittent service	
HDN10……..	135 L/h (0.59 GPM)
HDN15……..	450 L/h (1.98 GPM)
HDN20……..	750 L/h (3.30 GPM)
Continuous service	
HDN10……..	105 L/h (0.46 GPM)
HDN15……..	340 L/h (1.50 GPM)
HDN20……..	580 L/h (2.55 GPM)
Maximum rotation speed:	
Intermittent service……	90 RPM
Continuous service	
HDN10……..	70 RPM
HDN15 – HDN20……	68 RPM
Maximum running temperature:	
Hose NR – NBR – NBR FDA – Hypalon……	70°C (158°F)
Hose EPDM……	80°C (176°F)
Minimum operating temperature:…… (Using standard Neptune lubricant)	-29°C (-20°F)
Minimum suction pressure: ……	-9 bar (-13 psi)
Maximum discharge pressure: ……	7.5 bar (109 psi)
Maximum viscosity:	
HDN10……..	13,000 cPs
HDN15……..	16,000 cPs
HDN20……..	27,000 cPs

1.2 Dimensional Drawings

1.2.1 HDN10



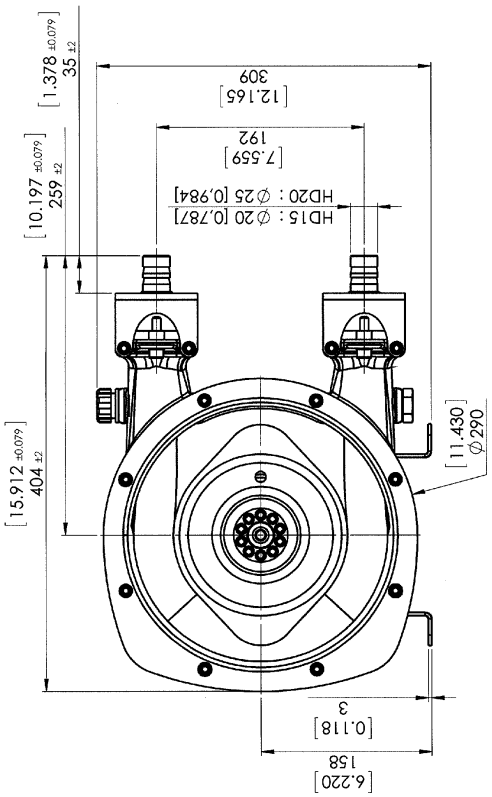


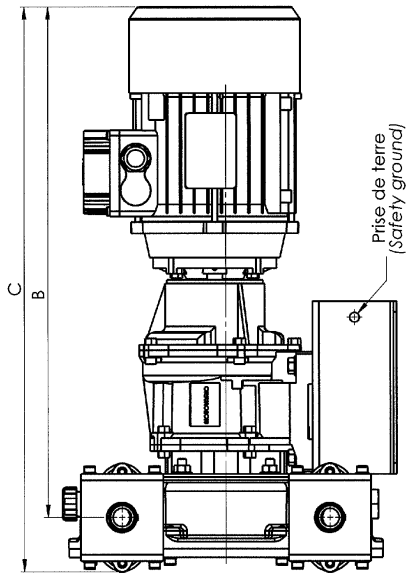


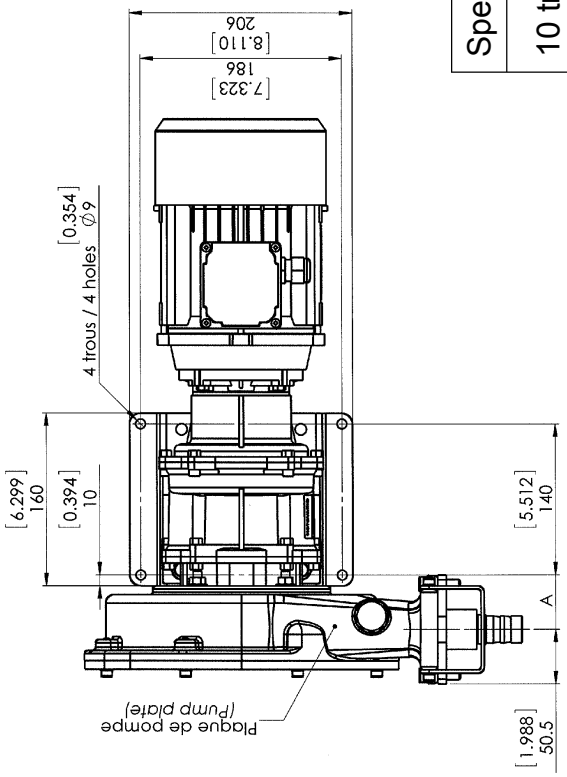
Weight	kg (lb)
HDN10	15-19 (33-42)

Speed	A	B	C	D
10 tr/min [RPM]	[2,028]	[17,762]	[19,74]	[9,904]
	51.5	451	501.1	231
25-40 tr/min [RPM]	[2,028]	[16,482]	[18,451]	[9,449]
	51.5	418.6	468.6	240

1.2.2 HDN15 & HDN20







Weight	kg (lb)
HDN15	26-32 (57-70)
HDN20	26-32 (57-70)

Speed	A	B	C
10 tr/min [RPM]	[1,988]	[17,756]	[19,744]
	50.5	451	501.5
25-40 tr/min [RPM]	[1,988]	[16,476]	[18,465]
	50.5	418.5	469
60 tr/min [RPM]	[1,988]	[18,642]	[20,630]
	50.5	473.5	524

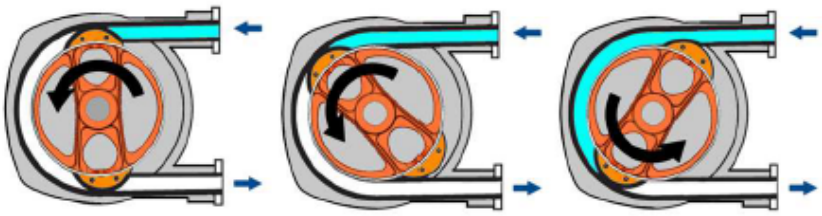
2 INSTALLATION

2.1 Operating Principle

The pump operates by alternating contraction and relaxation of a specially designed elastomeric hose.

Two shoes attached 180° apart to a central rotor compress the hose against the pump body in a fluid tight manner.

Rotation of the rotor causes a flow by displacing the pro- duct into the hose. The pump body is filled with special lubricant allowing shoes to slide easily over the hose, which avoids overheating.



2.2 Hose Compression

On these pumps sizes, shoes and rotor are a single part.

2.3 Pumped Liquid

Under normal operation, the pumped liquid is only in contact with the hose and the inserts. Chemical compatibility between pumped liquid and these two parts must therefore be carefully checked.

Five different elastomeric hoses materials are available:

- NR (natural rubber)
- NBR (Buna-N)
- NBR FDA (Buna-N with FDA liner)
- EPDM
- Hypalon

Inserts are available in ANSI 316 stainless steel, polypropylene (PPH), and polypropylene fluoride (PVDF).

This pumping technology is specially adapted to handle abrasive and solid loaded liquids.

During the compression stage, abrasive particles may penetrate the hose wall without damaging it. Immediately after, these particles are released into the liquid (the size of particles does not however have to exceed 15% of the internal diameter of the hose).

Contact Neptune or your local Neptune representative or distributor any time you require additional information.

2.4 Piping Installation

	**HAZARDOUS PRESSURE CAN CAUSE PERSONAL INJURY OR PROPERTY DAMAGE.** FAILURE TO RELIEVE THE SYSTEM PRESSURE PRIOR TO PREFORMING ANY WORK ON THE PUMP OR THE INSTALLATION CAN CAUSE PERSONAL INJURY OR PROPERTY DAMAGE.

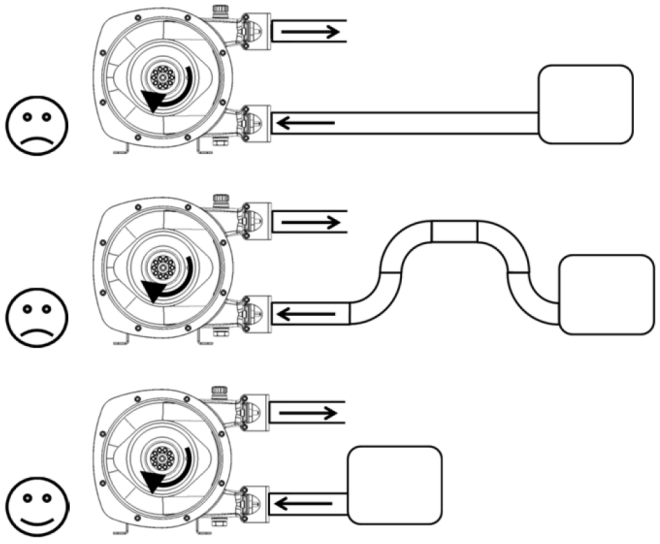
Whenever possible, siphons and reverse slopes in the suction piping should be avoided and gaskets carefully installed to prevent air from entering the piping.

The elbows must always be large in radius and should not be installed too close to the pump suction or discharge flanges. The stresses exerted by the piping on the pump can deform the pump parts, increase wear, misalign the bearings and possibly cause parts to break.

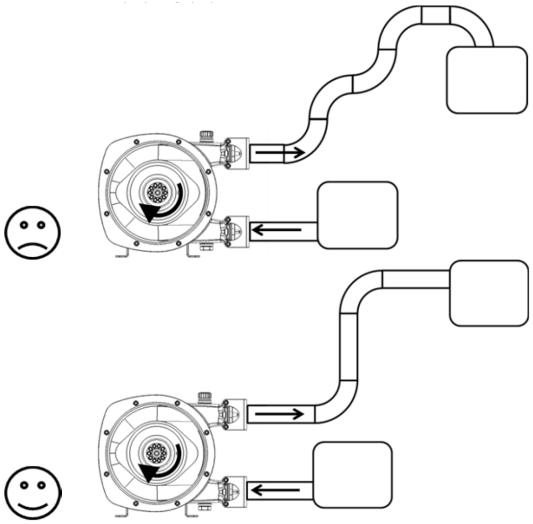
The piping system must be designed to allow thermal expansion and contraction and be firmly secured. The use of flexible connections and expansion loops is highly recommended. We suggest installing isolating valves close to the pump flanges to facilitate dismantling and replacement without having to drain the installation. These valves should have the same diameter as the pipes, and preferably, be a full bore model.

Not recommended To be avoided, if possible Preferred

Make the suction line as short and straight as possible.



Avoid multiplying pipe bends.

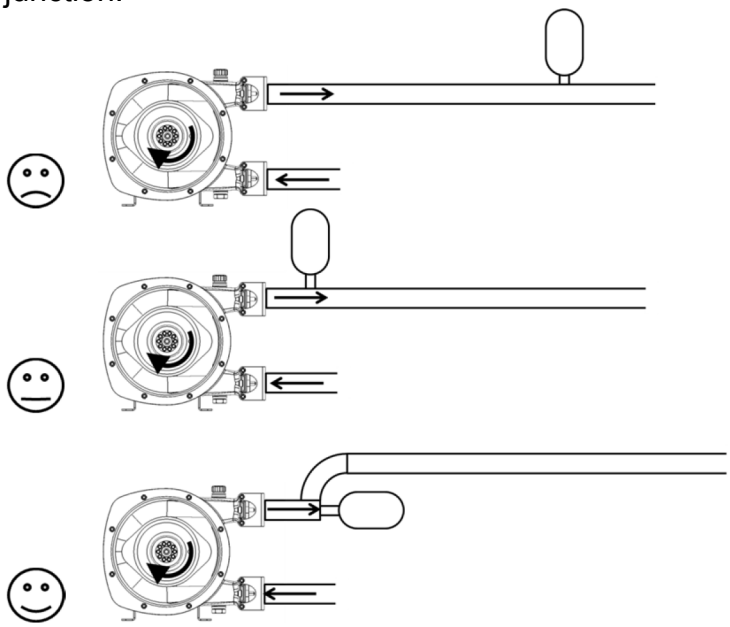


If the pumped fluid could freeze or solidify, prepare for draining the piping by installing drain taps at the low points and air vents at the high points.

In the case of a very high intake or if you wish to prevent the piping from emptying at shutdown, you can install a foot valve. It should have a large diameter so to not generate additional head loss.

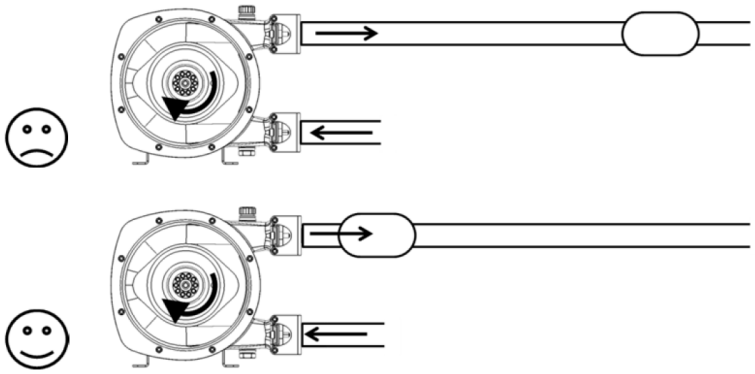
2.4.1 Using a Dead-End Pulsation Dampener

To obtain a maximum efficiency of the dampener, it should be placed as closed as possible to pump port, and with inlet port facing full flow rather than being on a T-junction.

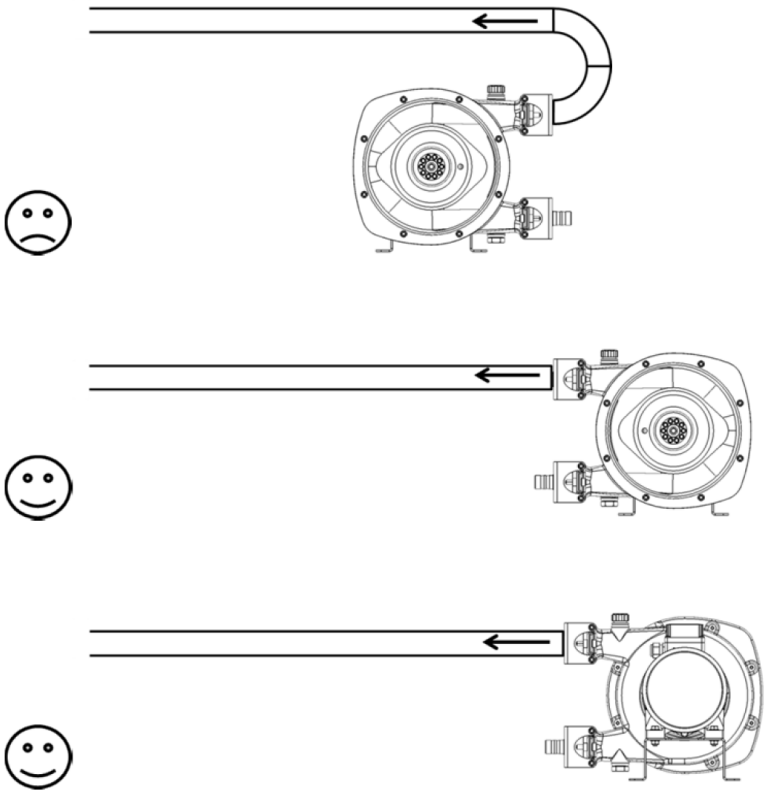


2.4.2 Using an In-Line Pulsation Dampener

To obtain a maximum efficiency of the dampener, it should be placed as close as possible to pump port.



Changing pumping set or pump ports position rather than multiplying pipe bends.

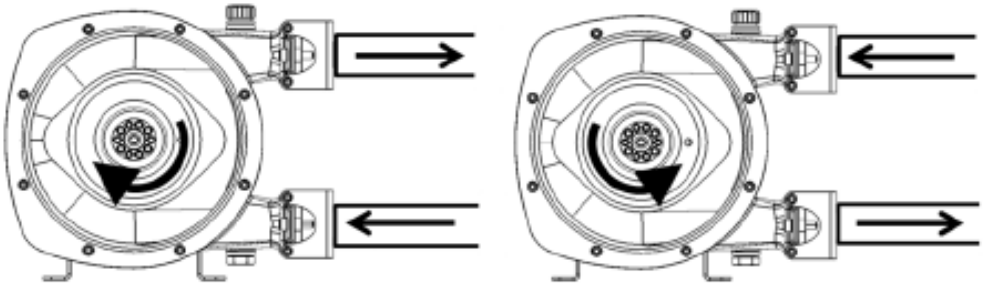


2.5 Rotation Direction

	**HAZARDOUS PRESSURE CAN CAUSE PERSONAL INJURY OR PROPERTY DAMAGE.** FAILURE TO RELIEVE THE SYSTEM PRESSURE PRIOR TO PREFORMING ANY WORK ON THE PUMP OR THE INSTALLATION CAN CAUSE PERSONAL INJURY OR PROPERTY DAMAGE.

The Abaque pump is reversible; this allows it to always circulate the liquid in the desired direction by choosing the corresponding direction of rotation.

The intake and discharge sides are determined as follows: When an observer is placed on pump cover side (opposite to the shaft output), if rotation takes place clockwise, the intake is on the bottom, on the contrary if the rotation is anticlockwise, the intake is on the top.



2.6 Liquid Containing Particulates and Solids

In applications where the pumped fluid contains particulate matter or small solids use the upper flanges the pump inlet connection.

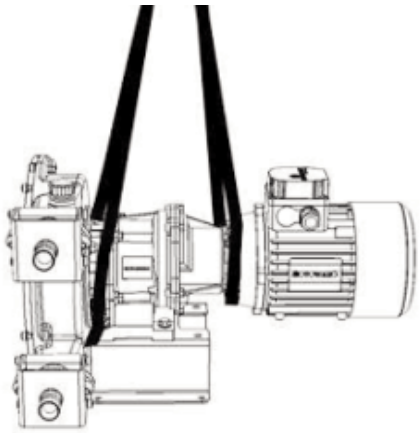
This allows gravity to assist in moving particles and solids through the pump, thereby reducing friction between hoses and shoes.

When pumping solids the pump can typically be restarted more easily when it is piped in this configuration.

2.7 Operation with Vacuum on Suction

Because of the operating principle of the pump, using it with suction pressure lower than the atmospheric pressure will cause a resulting loss of flow more or les in-line with the conditions of the application (i.e., hose material, rotation speed, temperature, etc.).

2.8 Lifting



CAUTION	**PRECAUTION!** USE SUITABLE LIFTING DEVICES FOR HANDLING.

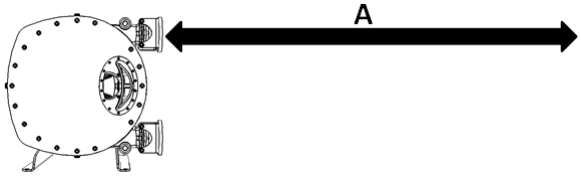
Pass a strap between pump body and gear reducer. Pass another one between gear reducer and motor and put all straps on a common hook.

For maximum pump weight, refer to Dimensional Drawings**.**

2.9 Pump Location

Allow sufficient clearance around the pump to permit routine maintenance and for replacing the hose.

The distance between the pump flanges and the closest obstacle must allow sufficient space for the hose to be remove, as shown below.



Distance A: 500 mm (19.69 in)

2.10 Anchoring the Pump

Use appropriate anchor bolts to secure the pump to a concrete pad (or other level surface) that is fully capable of supporting the pump when in operation.

Failure to adequately support and/or shim the pump properly can lead to stress and deformation that could lead to operating problem and shorten pump life.

2.11 Electric Motor

 	**DANGEROUS VOLTAGE. CAN CAUSE INJURY OR DEATH.** DISCONNECT AND LOCKOUT THE POWER SUPPY BEFORE PERFORMING ANY MAINTENANCE OPERATION.

Check that the supply voltage matches the indications on the motor rating plate.

Comply with the wiring diagram, make sure the wires are rated for the power and take care with the contacts and ensure they are thoroughly tightened.

The motors must be protected by appropriate circuit breakers and fuses. Connect the regulatory ground connections.

Check the direction of rotation.

 	**DO NOT OPERATE WITHOUT GUARD IN PLACE.** OPERATION WITHOUT THE SHAFT PROTECTOR CAN CAUSE SERIOUS PERSONAL INJURY, MAJOR PROPERTY DAMAGE OR DEATH.

This fundamental checking of the pump must be done without any product, with the inlet and outlet circuit open to the air, for example, to avoid any risk of an unexpected pressure rise. Start the pump empty to check the correct operation of the connections and check that the direction of rotation corresponds to installation's inlet and outlet direction.

Refer to the motor manufacturers wiring connection diagram or written instructions when it is necessary to change the direction of rotation of the pump.

3 OPERATION

3.1 Pump Storage

If the pump will remain idle for more than three (3) months, we strongly suggest that you remove the hose or shows. Extended periods of pump inactivity can lead to permanent hose deformation as a result of static shoe compression. If you do not remove the hoses or shoes, you must operate the pump for five (5) minutes once a week.

For storage temperatures below 0°C (32°F), specific precautions must be taken.

3.2 Hose Storage

Hose shelf life is limited to two (2) years from the date of purchase.

The hoses must be stored in a cool place protected from light. Exposure to ultraviolet rays accelerates deterioration of the material, thus reducing shelf life.

3.3 Hot Liquids Pumping

 CAUTION	**EXCESSIVE TEMPERATURE CAN CAUSE INJURY OR SEVERE DAMAGE.** THE SURFACES OF THE PUMP CAN BE AT A TEMPERATURE LIABLE TO CAUSE INJURY OR SEVERE DAMAGE.

When pumping products at high temperatures, take care when starting the pump for the first time, tighten the bolts to compensate for expansion effects.

3.4 Pump Stopped with Liquid Inside

In the case where the pumping circuit is situated between isolating valves and/or has a check valve, you must bear in mind the variations in temperature that can occur, leading in particular to the expansion of the product in the circuit. In this case, provide a means of releasing the expansion volume. The use of a relief valve can suffice for this function. The opening pressure of this valve must be compatible with the pressure allowed by the parts composing the circuit. With products including particles that settle at shutdown, it is necessary to ensure that the consistency of the deposited products will not affect the start-up of the pump.

3.5 Starting the Pump

	**HAZARDOUS PRESSURE CAN CAUSE PERSONAL INJURY OR PROPERTY DAMAGE.** FAILURE TO RELIEVE THE SYSTEM PRESSURE PRIOR TO PREFORMING ANY WORK ON THE PUMP OR THE INSTALLATION CAN CAUSE PERSONAL INJURY OR PROPERTY DAMAGE.

	**DO NOT OPERATE WITHOUT GUARD IN PLACE.** OPERATION WITHOUT THE SHAFT PROTECTOR CAN CAUSE SERIOUS PERSONAL INJURY, MAJOR PROPERTY DAMAGE OR DEATH.

Before starting up the pump, always ensure that:

- Pump lubricant level is correct
- The breathers on the rear of the pump and on the gearbox are free from any obstruction
- The gearbox has been filled with oil and that the oil level is correct
- All valves open on both suction and discharge lines
- No other item is obstructing suction and discharge lines

For use at temperatures below 0°C (32°F), specific precautions must be taken. See Lubricant Replacement.

3.6 Stopping the Pump

When stopping the pump, we recommend waiting for the pump to stop completely before closing any valve on both suction and discharge lines.

3.7 Hose Burst

	**HAZARDOUS PRESSURE CAN CAUSE PERSONAL INJURY OR PROPERTY DAMAGE.** THE CASING MAY BE FILLED WITH THE PUMPED FLUID. IF THE PUMP IS LOADED AT INTAKE OR DISCHARGE, ALL THE FLUID MAY BE EVACUATED THROUGH A HOLE IN THE HOSE IN THE PUMP BODY.

When the hose breaks, there is a risk that the pumped liquid may contaminate lubricant.

3.8 Scrapping

The pump must be scrapped in compliance with applicable regulations. During this operation, particular care must be paid to the drainage stages of the pump (pumped product).

4 MAINTENANCE

 	**DANGEROUS VOLTAGE. CAN CAUSE INJURY OR DEATH.** DISCONNECT AND LOCKOUT THE POWER SUPPY BEFORE PERFORMING ANY MAINTENANCE OPERATION.
 	**DO NOT OPERATE WITHOUT GUARD IN PLACE.** OPERATION WITHOUT THE SHAFT PROTECTOR CAN CAUSE SERIOUS PERSONAL INJURY, MAJOR PROPERTY DAMAGE OR DEATH.

Before proceeding to any maintenance operation, carefully check that:

- Pump has been drained from pumped liquid
- There is no inside residual pressure left
- Isolation valves are closed
- Power supply is switched off and disconnected

SUGGESTED PARTS TO ORDER FOR EACH OPERATION:

The table below lists the minimum part list to have before beginning any maintenance operation. Depending upon the condition of the pump, additional parts may need replacement.

Lubricant replacement:

- Lubricant can

Hose replacement:

- Lubricant can
- x1 hose (16)
- x2 gaskets (1105)

Rotor assembly removal:

- Lubricant can
- x1 hose (16)
- x2 gaskets (1105)
- x1 cover gasket (10)

Shaft seal replacement:

- Lubricant can
- x1 hose (16)
- x2 gaskets (1105)
- x1 cover gasket (10)
- x1 shaft seal (26)
- x1 friction ring (27)

HAZARDOUS OR TOXIC FLUIDS CAN CAUSE SERIOUS INJURY.

IF PUMPING HAZARDOUS OR TOXIC FLUIDS, THE SYSTEM MUST BE FLUSHED PRIOR TO PERFORMANCE ANY SERVICE OPERATION.

HAZARDOUS PRESSURE CAN CAUSE PERSONAL INJURY OR PROPERTY DAMAGE.

HYDRAULIC PRESSURE MUST BE FULLY RELEASED BEFORE MAINTENANCE OPERATIONS IN ORDER TO PREVENT PERSONAL INJURY OR PROPERTY DAMAGE.

TIGHTENING TORQUES

PART NO.	DESCRIPTION	TORQUE (N•m)	TORQUE (ft-lb)
19	Rotor hub	17	12
33	Cover screw	8	6
42	Gear reduction/pump body nut	19	14
48	Bracket screw	8	6
61	Gear reducer/baseplate nut	19	14
1106	Pressing gland screw	15 ± 2	11 ± 1

4.1 Lubricant Replacement

The standard lubricant supplied by Neptune is a special formulation of glycerin and glycol suitable for cold weather operation. The use of genuine Neptune lubricant is recommended for maximum hose service life.

It is recommended to change the lubricant when:

- Replacing the hose
- After 2,000 hours of operation

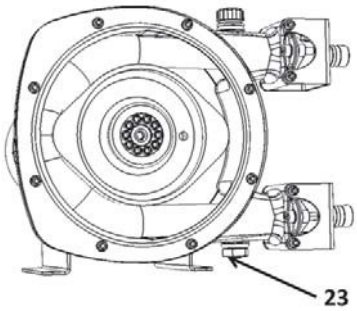
The minimum recommended operating temperature for the pump when using the standard Neptune lubricant is -29°C (-20°F).

For use or storage at lower ambient temperatures, it is necessary to add ethylene glycol to the Abaque lubricant. To maintain optimum lubrication, the volume of ethylene glycol should remain between 4% and 6% of the total volume of lubricant, and the total quantity of lubricant present in the pump must be in compliance with the value specified above. In any case, the ambient temperature should never be lower than -20°C (-4°F).

DO NOT USE VEGETABLE, MINERAL OR SYNTHETIC OIL AS A LUBRICANT AS IT WILL RAPIDLY ACCELERATE HOSE WEAR.

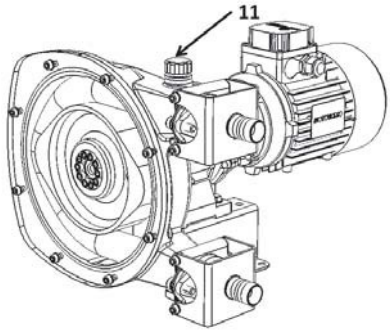
4.1.1 Draining

1. Put a drain tray below plug (23).
2. Unscrew plug (23) and wait for complete lubricant draining.
3. Clean and degrease plug (23).
4. Wrap it with PTFE tape.
5. Screw plug (23) in the pump body.



4.1.2 Lubricant Filling

1. Remove breather (11).



2. Fill the pump with corresponding volume of lubricant:
   - HDN10……0.2 L (0.052 gal)
   - HDN15 – HDN20……..0.6 L (0.185 gal)
3. Put back breather (11).

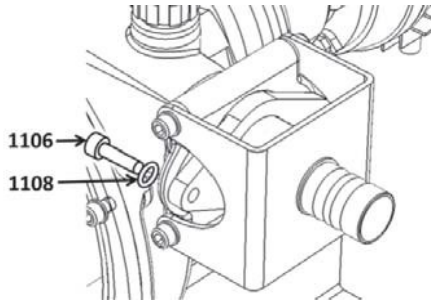
4.2 Hose Replacement

It is recommended that the pump user develop a preventative maintenance program based on the actual operating experiences of their specific application. In this way, hose replacement can be scheduled before a breakdown might occur.

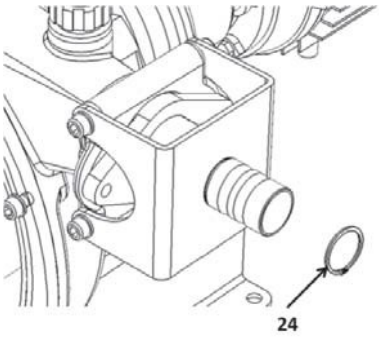
4.2.1 Hose Removal

1. Drain lubricant (see Lubrication Replacement). Disconnect suction and discharge ports.

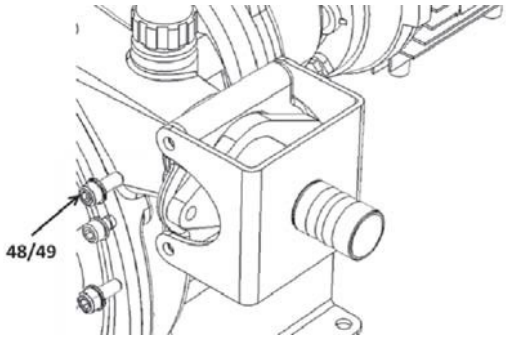
2. Disconnect power supply.
3. Make sure there is enough space beside pump to let hose coming out. See Pump Location.
4. Unscrew and remove pressing gland screws (1106) and their washers (1108).



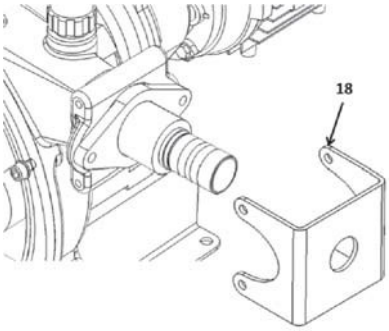
5. Remove circlips (24).



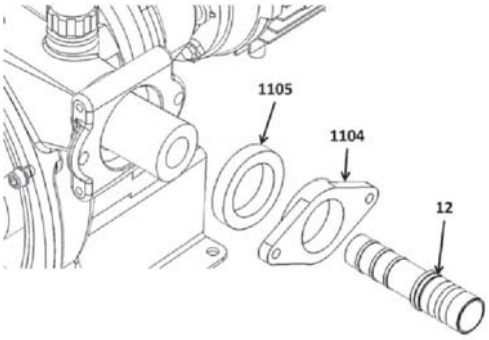
6. Remove the four screws (48) and washers (49).



7. Remove bracket (18).



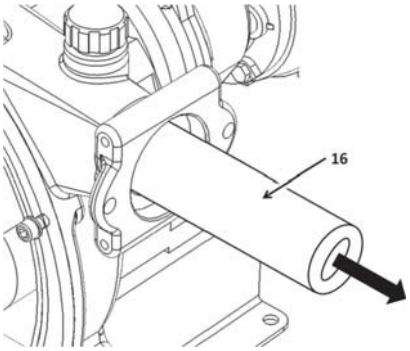
8. Remove insert (12), pressing gland (1104) and gasket (1105).



9. Put a drain tray under bottom port and repeat the same operations on bottom port.

WARNING	**HAZARDOUS MACHINERY CAN CAUSE SEVERE PERSONAL INJURY OR PROPERTY DAMAGE.** THE HOSE CAN COME OUT OF PUMP VIOLENTLY. BE SURE NO ONE IS IN FRONT OF PUMP PORTS.

10. Connect power supply.
11. Rotate the pump intermittently until the hose (16) is completely outside pump body.



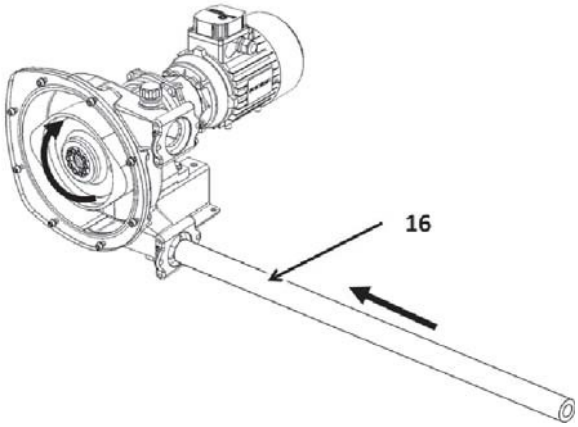
WARNING	**DANGEROUS VOLTAGE. CAN CAUSE INJURY AND DEATH.** DISCONNECT AND LOCKOUT THE POWER SUPPLY BEFORE PERFORMING ANY MAINTENANCE OPERATION.

12. Disconnect power supply.

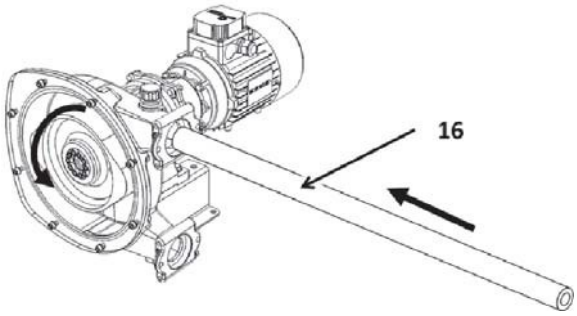
4.2.2 Hose Refitting

WARNING	**DO NOT OPERATE WITHOUT GUARD IN PLACE.** NEVER INSERT THE HOSE OR RUN THE PUMP WITHOUT ITS COVER AND ITS WINDOW IN PLACE.

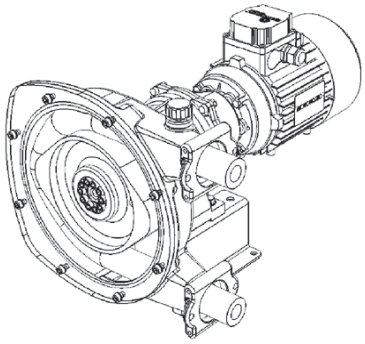
1. Clean the hose (16) to eliminate any particles that may have adhered to it (i.e., gravel, etc.).
2. Generously coat the hose with lubricant. Connect power supply.
3. Insert one end of the hose (16) in the suction port.
   a. If pump rotates clockwise, suction is on the bottom port.



   b. If pump rotates counterclockwise, suction is on the top port.



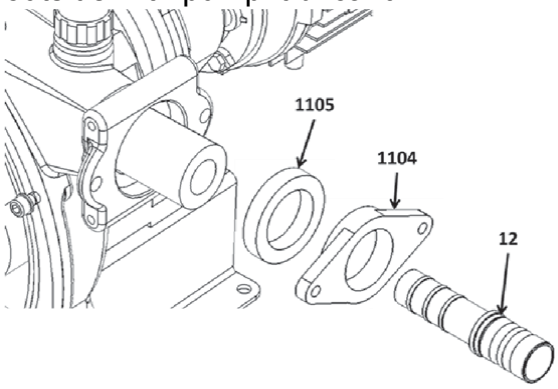
4. Rotate the pump intermittently until the hose (16) is completely inserted in the body and shows equal lengths outside the body on both parts.



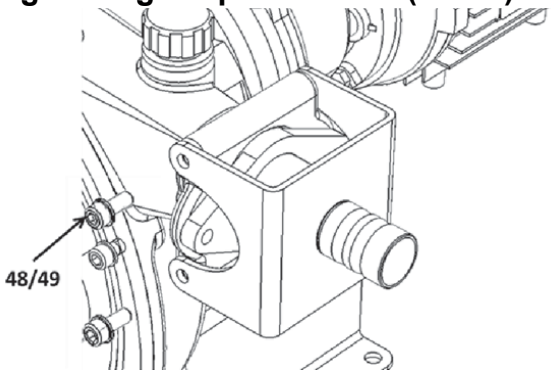
WARNING	**DANGEROUS VOLTAGE. CAN CAUSE INJURY AND DEATH.** DISCONNECT AND LOCKOUT THE POWER SUPPLY BEFORE PERFORMING ANY MAINTENANCE OPERATION.

5. Disconnect the power supply.
6. On one port:

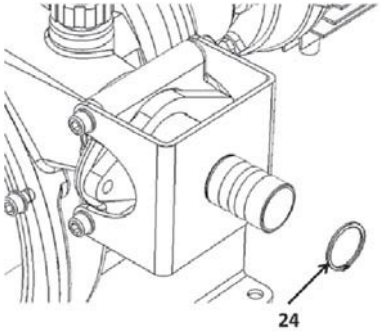
   a. Place gasket (1105), pressing gland (1104) and insert (12) after coating its outside with pump lubricant.



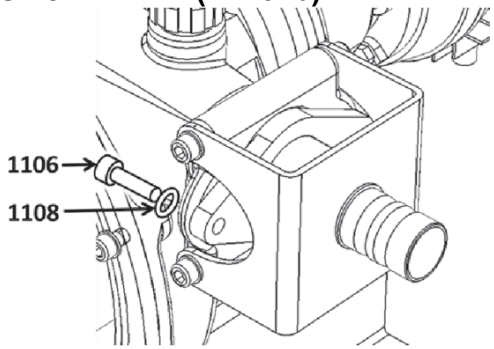
   b. Place brackets. Screw and tighten the four screws (48) with their washers (49).
   Tightening torque is 8 N•m (6 ft-lb).



   c. Place circlips (24).



d. Fit screws (1106) with their washers and tighten them. **Tightening torque is 15 ± 2 N•m (11 ft-lb).**



7. Repeat operations 6a through 6d on the other port.
8. Fill the pump with lubricant (see Lubricant Replacement). Connect power supply.
9. Rotate pump and check that there is no visible axial movement of the hose or lubricant leakage.

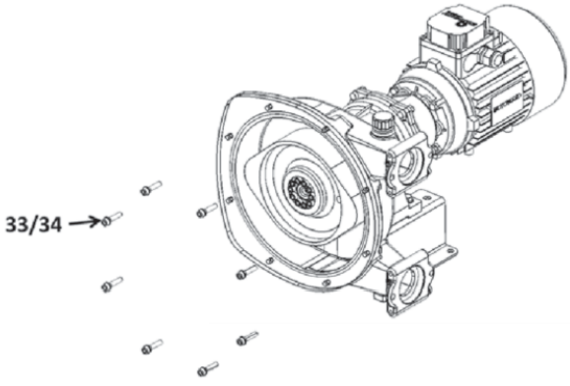
4.3 Rotor Assembly

Disassembly and reassembly of the rotor (3) are required when:

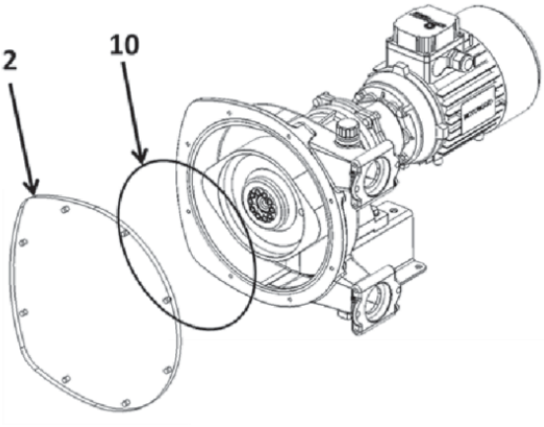
- Replacing the shaft seal (26)
- Performing a complete overhaul
- Disassembling or replacing the gear reducer

4.3.1 Rotor Assembly Removal

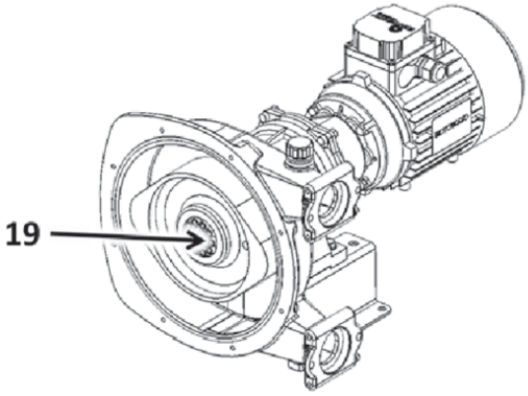
1. Drain lubricant (see Lubricant Replacement) and remove hose (see Hose Replacement).
2. Loosen screws (33) with their washers (34).



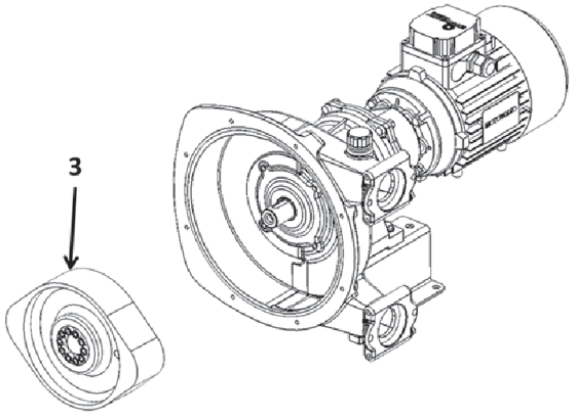
3. Remove cover (2) with its gasket (10).



4. On rotor hub (19), loosen all screws without removing them. Put five screws in the extraction threading to loosen the hub.

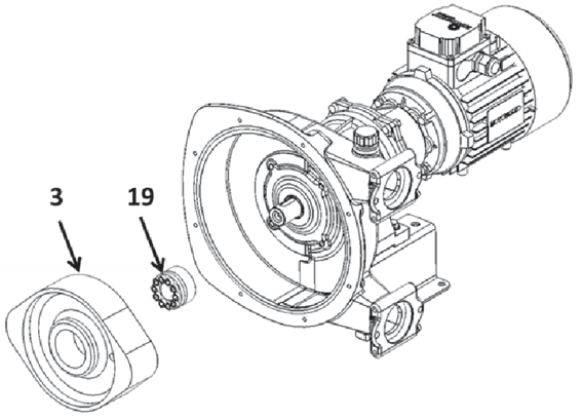


5. Pull out the rotor (3).

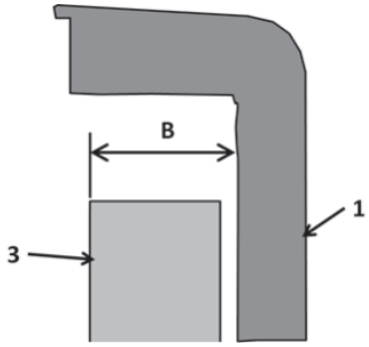


4.3.2 Rotor Assembly Refitting

1. Place the hub (19) and the rotor (3) on gear reducer shaft.



2. Position the rotor face (3) to have distance B between the rotor's outer edge and the casing (1) back wall.



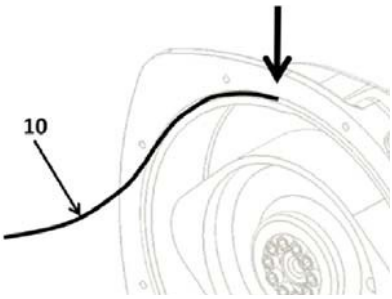
Distance B:

HDN10 ……..39 ± 1 mm (1.535 ± 0.039 in)

HDN15 – HDN20 ……51 ± 1 mm (2.008 ± 0.079 in)

After checking that the expansible hub is properly centered with regard to the wheel thickness, progressively tighten screws (19) while keeping wheel distance correct. **Tightening torque is 17 N•m (12.5 ft-lb).**

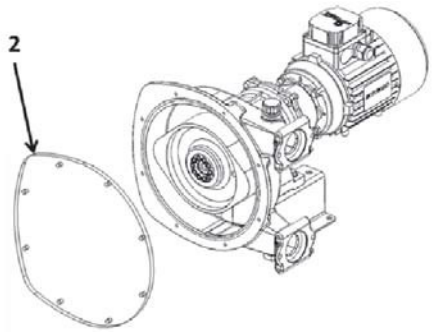
3. Put cover gasket (10) in pump body, starting at the top. Make sure that the two ends of gasket are firmly in contact.



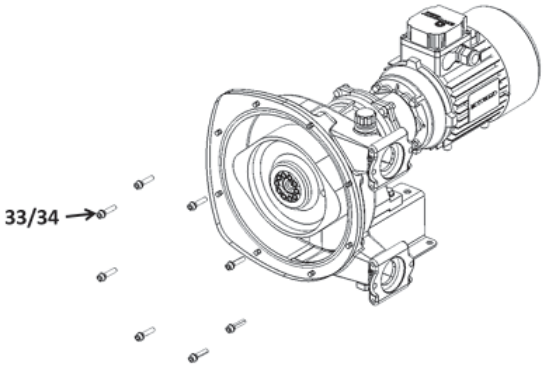
Incorrect Mounting: Risk of Leak

Correct Mounting:

4. Place cover (2) on pump body.



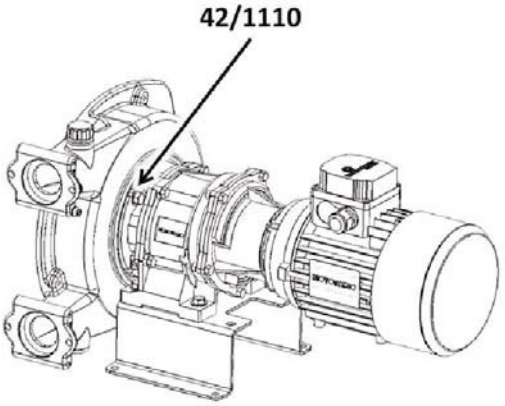
5. Screw and tighten screws (33) and their washers (34), starting by top ones to secure cover assembly. **Tightening torque is 8 N•m (6 ft-lb).**



6. Fit hose in (see Hose Replacement) and fill the pump with lubricant (see Lubricant Replacement).

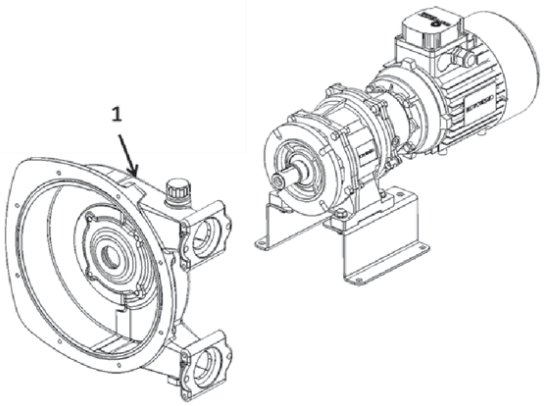
4.4 Shaft Seal Replacement

1. Drain lubricant (see Lubricant Replacement), remove hose (see Hose Replacement) and remove rotor (see Rotor Assembly Removal).
2. Loosen nuts (42) and their washers (1110).

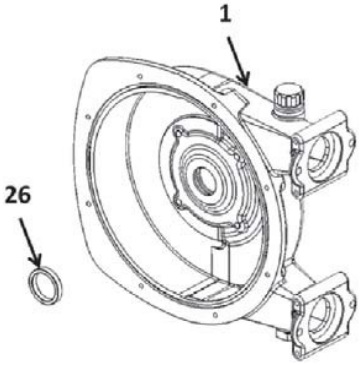


WARNING	**THE WEIGHT OF THE PARTS CAN BE DANGEROUS AND MAY PROVOKE BODILY INJURIES OR MATERIAL DAMAGES.** BE CAREFUL WITH THE WEIGHT OF THE PUMP BODY.

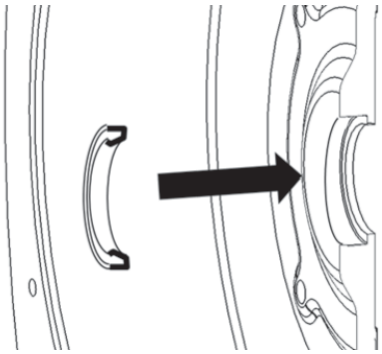
3. Remove pump body.



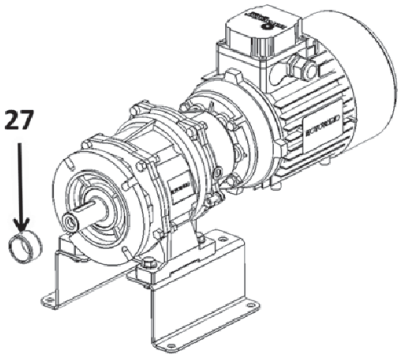
4. Remove shaft seal (26) from pump body. Put new shaft seal (26) in pump body.



5. Make sure the shaft seal is in the right direction.



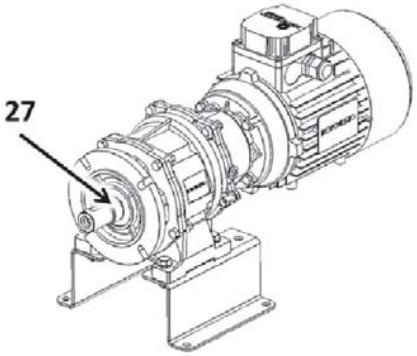
6. If necessary to replace friction ring (27), use a mallet and a chisel, to break and remove friction ring (27).



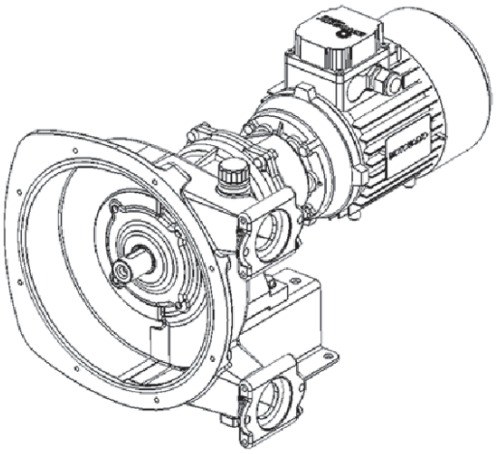
Heat new friction ring at **110 ± 10°C (230 ± 50°F).**

  CAUTION	**EXCESSIVE TEMPERATURE CAN CAUSE INJURY OR SEVERE DAMAGE.** BE CAREFUL WITH THE VERY HIGH TEMPERATURE OF FRICTION RING. USE APPROPRIATE HANDLING DEVICES.

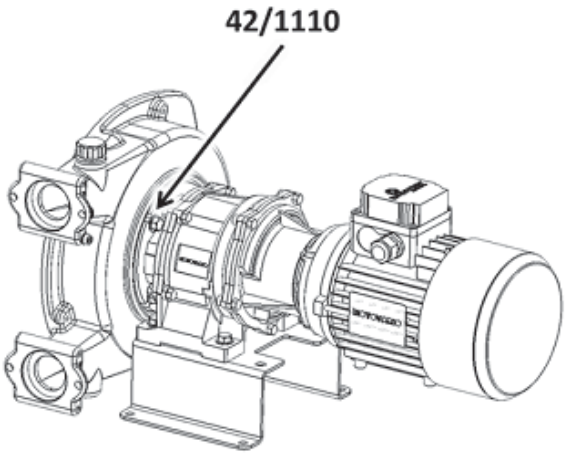
7. Put high temperature sealant Loctite® 648, or equivalent, on reducer shaft from shaft shoulder and on a length corresponding to friction ring width.
8. Put new friction ring on shaft, pushing it against shaft shoulder.



9. Let friction ring cool down before carrying on reassembly. Put back the pump body.



10. Put back nuts (42) and their washers (1110) and tighten them. **Tightening torque 19 N•m (14 ft-lb).**



11. Refit rotor in the pump (see Rotor Removal), refit hose (see Hose Replacement) and fill the pump with lubricant (see Lubricant Replacement).

5 TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
THE PUMP DOES NOT START	Electric power-supply failure.	Check the connections: • There must be 3 phases • The connections are suitable for the voltage (delta-star) • If possible, check the parameters for the different motor frequencies (i.e., starting torque, power input, etc.)
	During an extended shutdown period one of the shoes may have remained out of the lubricant. If the show is no longer lubricated, there will be increased starting resistance	Operate the pump intermittently to try to free the rotor but do not be too insistent to prevent the reduction gear from being damaged. If the rotor remains stuck, contact Neptune or your local distributor for assistance.
	Sediments or other substances have built up inside the hose and are blocking the pump.	Reverse the pump rotation direction or disassemble the hose. If the rotor remains stuck, contact Neptune or your local distributor for assistance.
ABNORMALLY LOW FLOW	The inlet or discharge valve is partially closed.	Open the inlet or discharge valve.
	Air is entering the inlet piping.	Check the inlet line.
	The pumped liquid is too viscous. Significant pressure drop at inlet.	Check the inlet line.
	The pump hose is damaged.	Replace the hose.
ABNORMALLY HIGH TEMPERATURE	The lubricant is not suitable.	Drain the pump body lubricant and replace with genuine Neptune lubricant.
	The lubricant is dirty or too old.	Drain the pump body lubricant and replace with genuine Neptune lubricant.
	Temperature of the pumped fluid is too high.	Check the maximum fluid temperature allowed for the hose material.
	Pump speed too high.	Reduce speed.
ABNORMALLY SHORT HOSE LIFE SPAN	Lubricant is not suitable.	Drain the pump body lubricant and replace with genuine Neptune lubricant.
	Chemical incompatibility between the hose and the pumped fluid.	Check the compatibility of the hose with the fluid and replace the hose with another one made of suitable material.
	Temperature of pumped fluid too high.	Check the maximum temperature permitted for the hose.
	The discharge pressure is too high.	Check the maximum pressure allowed for the pump. Reduce pressure drop at discharge.
	Pump speed is too high.	Reduce speed.
THE HOSE IS PULLED INTO THE PUMP BODY AT INLET	The pumped fluid contains impurities or sediments.	Reverse the pump rotation direction and use the upper port for inlet.
	Pressing gland is not sufficiently tightened.	Retighten the pressing gland.

DECLARATION DE CONFORMITE
CERTIFICATE OF CONFORMITY - KONFORMITÄTSERKLÄRUNG

CE

Neptune, 295 DeKalb Pike, North Wales, PA, 19454, USA, déclare que l'équipement suivant / declares the following equipment / erklärt, dass folgende Ausrüstung:

Modèle : _____
Designation / Bezeichnung

N° de série : _____(A)
Serial N° / Serien Nr

Répondant aux spécifications indiquées dans l'ARC N° : _____(B)
According to the specifications recorded in the acknowledgment of order N°:
Entsprechend den Spezifikationen aus AB-Nr :

Pour la Sté MOUVEX sas, fait à Auxerre le : _____
For Mouvex sas company – Date :
Fur die Fa Mouvex sas - Datum :

Jean-François FOUIN - Responsable Qualité
Quality Manager / Qualitätsbeauftragter

Configuration :
Konfiguration

☐ Pompe / Compresseur arbre nu (Pump / Compressor « bare-shaft ») (Pumpe / Kompressor, freies Wellenende

☐ Groupe de pompage / de compression (Pumping Unit / Compressor Unit) (Pumpen- / Kompressoraggregat)

Type / Geräteart :

☐ Pompe à mvt excentré (Eccentric Disc Pump / Ringkolbenpumpe)
☐ Pompe péristaltique (Peristaltic Pump / Schlauchpumpe)
☐ Pompe centrifuge (Centrifugal Pump / Kreiselpumpe)
☐ Compresseur à Vis (Screws compressor / Schraubenverdichter)
☐ Compresseur à palettes (Vanes compressor / Flügelzellenverdichter)
☐ Refroidisseur Hydraulique (Hydraulic oil cooler / Hydraulikkühler)
☐ Pompe à lobes (Lobes Pump / Drehkolbenpumpe)
☐ Pompe à palettes (Vanes Pump / Flügelzellenpumpe)
☐ Autre pompe (Other Pump / Andere Pumpe)

Est conforme aux dispositions suivantes :

☐ **Directive « MACHINES » 2006/42/CE** et aux législations nationales la transposant, portant sur les dispositifs de sécurité liés aux risques mécaniques et électriques applicables aux machines tournantes.

NF EN 809:2009 NF EN 1672-2:2009 NF EN ISO 13857:2008 NF EN 12162:2009

☐ **Directive « ATEX » 94/9/CE** du 23 mars 1994 et aux législations nationales la transposant, portant sur les appareils destinés à être utilisés en atmosphères explosibles. Conformité obtenue par application des normes :

NF EN 1127-1:1997 NF EN 13463-1:2009 NF EN 13463-5:2009

Certification ATEX délivrée par INERIS*, Organisme Certificateur, et portant le marquage suivant : (C)

Is in conformity with the provisions of the following Directive:

☐ **« MACHINES » Directive 2006/42/EEC** as transposed by the national legislation, concerning safety equipments and arrangements relative to mechanical and electric risks applicable to rotative machines.

NF EN 809:2009 NF EN 1672-2:2009 NF EN ISO 13857:2008 NF EN 12162:2009

☐ **« ATEX » Directive 94/9/EC** (23 march 1994) as transposed by the national legislation, concerning equipment intended to be used in explosive atmospheres. Conformity obtained by application of the standards :

NF EN 1127-1:1997 NF EN 13463-1:2009 NF EN 13463-5:2009

ATEX Certification delivered by INERIS*, Notified Body, and with the following marking: (C)

den Bestimmungen der nachstehenden Richtlinien entspricht:

☐ **„Maschinen-Richtlinie" 2006/42/EEC** wie umgesetzt im nationalen Recht hinsichtlich der Ausrüstungssicherheit und Sicherheitsvorkehrungen bezogen auf mechanische und elektrische Risiken, die für rotierende Maschinen gelten.

NF EN 809:2009 NF EN 1672-2:2009 NF EN ISO 13857:2008 NF EN 12162:2009

☐ **„ATEX" Richtlinie 94/9/EG** (23. März 1994) wie umgesetzt im nationalen Recht in Bezug auf Ausrüstungen für den Einsatz in explosionsgefährdeter Atmosphäre. Die Konformität hat Geltung durch Anwendung folgender Normen:

NF EN 1127-1:1997 NF EN 13463-1:2009 NF EN 13463-5:2009

Die ATEX-Zertifizierung wurde von der benannten Stelle INERIS* erteilt, und mit folgender Kennzeichnung: (C)

Ex II ___G _____II ___ – T ___ Temp Max produit pompé / Max Temp Flow / Max. T° Medium = _____ °C

L'équipement désigné ci-dessus doit être utilisé conformément à l'utilisation qui en a été prévue de par sa conception et sa fabrication, et conformément aux normes en vigueur.

Nous, soussignés, déclarons que l'équipement concerné est conforme aux Directives listées ci-dessus et aux normes applicables s'y rapportant.

The equipment indicated above must be used according to the foreseen use by its design and its manufacturing, and according to the current standards.

We, undersigned, declare that the concerned equipment is in conformity with the Directives listed above and in the applicable standards in force.

Oben stehend bezeichnete Ausrüstung ist entsprechend dem durch Konstruktion und Fabrikation vorgesehenen Verwendungszweck und entsprechend den geltenden Normen einzusetzen.

Die Unterzeichner erklären, dass die bezeichnete Ausrüstung den oben aufgeführten Richtlinien und den diesbezüglich geltenden Normen entspricht.