

# Cannon-Hydraulic Pump

Hydraulic barrel pump

## User Operating and Maintenance Manual

Original text translation

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Manual compiled in accordance with Directive  
CE 06/42

C2201IE– WK 11/12

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## 1. INTRODUCTION

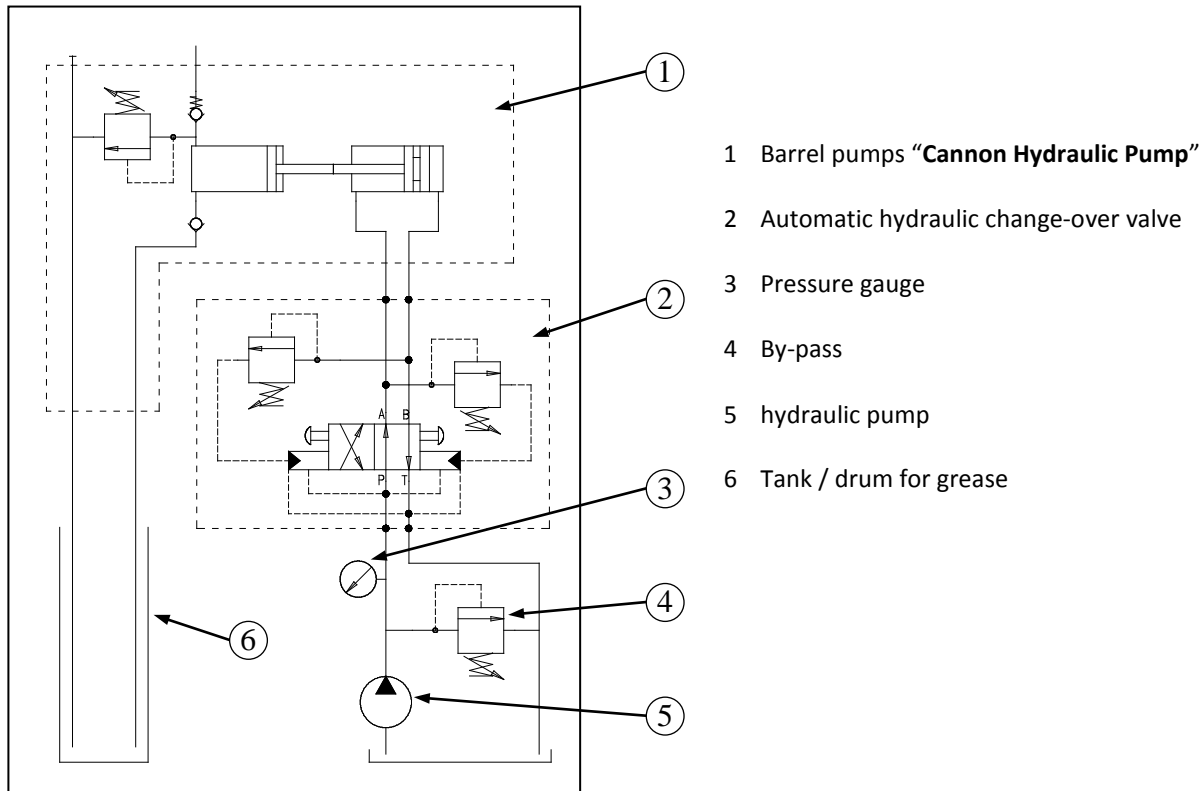
This is the operating and user manual for the Dropsa " **Cannon Hydraulic Pump**".

It is possible to obtain the latest documentation by visiting our website, [www.dropsa.com](http://www.dropsa.com)

This manual contains important operating and safety information for users of this product. It is essential that you carefully read this manual and conserve a copy with the product so that other users may consult it at any time.

## 2. GENERAL DESCRIPTION

**HydMin Pump** is a hydraulically driven piston pump, powered by an external oil pump and an change-over valve. The Following is a typical installation example.



**HydMin Pump** is suited to automatic lubrication system for mobile and fixed systems where no electrical power is present. Typical such applications require that grease is pumped at pressure (for example bearings, hubs, studs, joints, etc..) in quarries, mines, industrial and manufacturing applications.

Manufactured in high quality carbon steel, the pump design features allow it to work with viscous lubricants without any additional complicated priming procedures. The pump, when combined with a suitable grease follower plate will be able to operate and pump the grease inside the drum without creating air pockets or other such problems associated with these kind of systems.

### 2.1 Dual Line Systems

Lubrication systems engineered with the Dual Line system are generally used on large scale machinery and in harsh operating conditions to lubricate multiple points on large machines. The system can grow to a very complex one with a length that often can exceed 60 meters. The large section of pump packages together with many custom design options allows any lubrication system to be developed reliably and cost-effectively.

DropsA skilled engineers are available to design large scale project and provide installation, commissioning, support and training anywhere in the world.

**These pumps are supplied without accessories. It is the responsibility of the installer to ensure that the pump is suitable protected with any necessary electrical or mechanical accessory (e.g. Fuses, emergency stop switches etc).**

**The follower plate:** It is necessary to use a follower plate to correctly pump heavy grease (e.g. NLGI 2). The plate is manufactured in 10mm/0.39" thick steel and has a lip seal around the edge and an O Seal along the central shaft to avoid grease leak-through. The follower plate:

- Compresses grease thereby avoiding air pockets;
- Allows effective emptying of the barrel by wiping grease from the side of the barrel that would otherwise go to waste.

**The Barrel Cover** reduces the possible contamination of the grease in the barrel. It is supplied with retaining screws and also has the purpose of holding the pump in a correct vertical configuration.

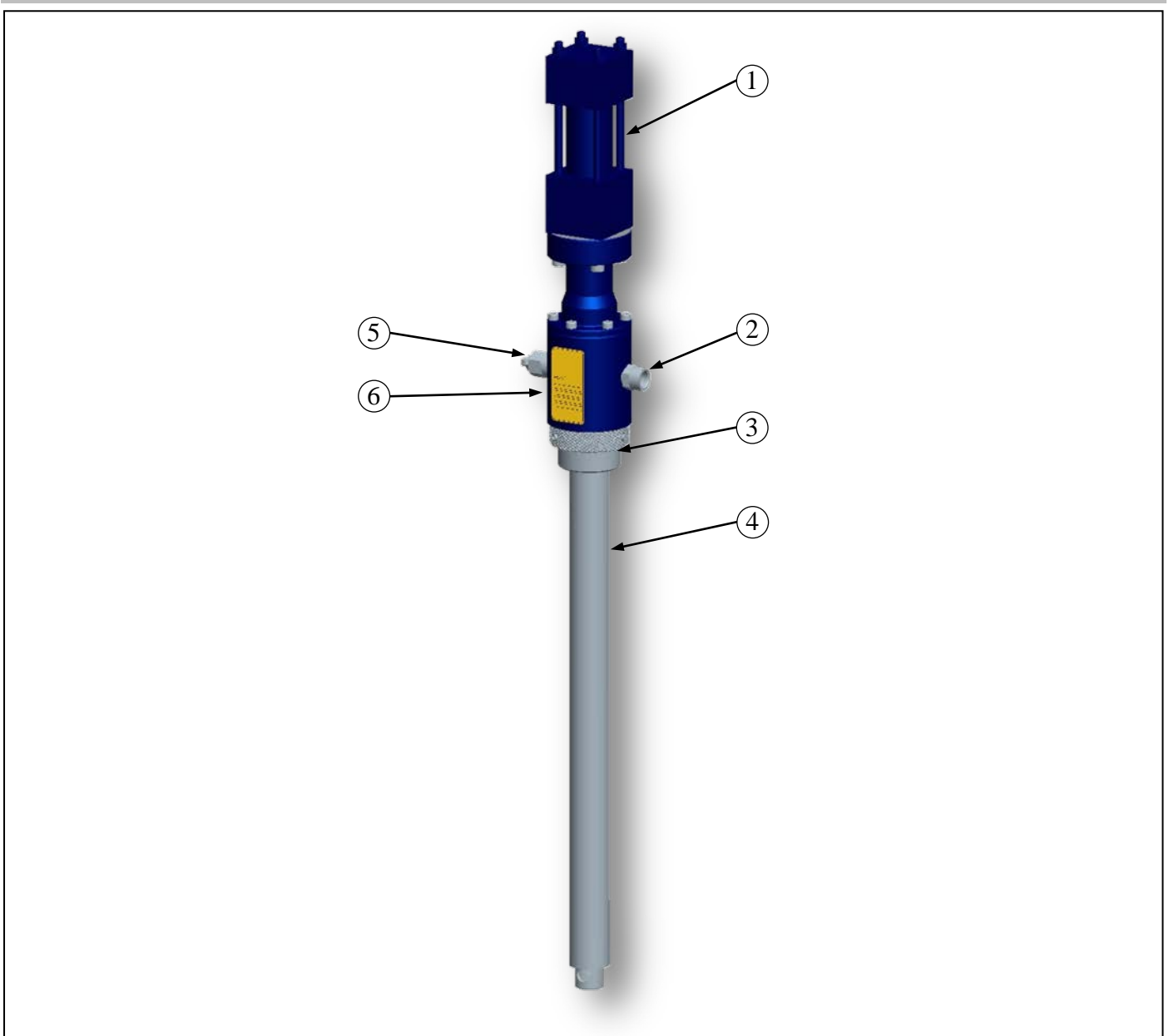
### 3. IDENTIFICATION OF THE MACHINE

On the pump cover there is a product identification label that indicates the part number and characteristic of the pump. Always ensure you have the correct product for your application.

### 4. TECHNICAL FEATURES

GENERAL CHARACTERISTICS		
Pumping System	Hydraulically activated Piston mechanism	
Lubricant Outlet Port	3/8" BSP ( UNI ISO 228/1 )	
Return Line Port	1/4" BSP (UNI ISO 228/1 )	
Hydraulic Feed/Return Port Connection (A – B)	3/8" BSP (UNI ISO 228/1)	
Cover Plate Pump stem passage (removable)	Rc 2" (UNI-ISO 7/1)	
Maximum working pressure	400bar - 5800 PSI	
By Pass pressure	Adjustable 80 bar ÷ 450 bar (1160 psi ÷ 6526 psi)	
Usable Grease Index Range	NLGI 000 – NLGI 2	
Nominal Output per Pump Stroke	5cc/stroke	
Minimum Hydraulic input pressure	30bar – 400 PSI	
Oil flow requirement per stroke	83.5 cc	
Pump Pressure Ratio	10:1	
Maximum operating frequency	100 strokes per minute	
Hydraulic fluid cleanliness requirement	ISO 4406:1999 class 20/18/15	
Hydraulic circuit oil viscosity range	10cSt ÷ 400cSt	
Storage Temperature	-30°C ÷ +90°C	
Operating Temperature	+5°C ÷ +60°C	
Noise Level	< 70 db (A)	
Compatible Barrel Sizes	20/25Kg – 50Kg – 180/200 Kg	
Weight	Models for 20/25Kg barrel	10,7Kg
	MOdels for 50Kg Barrels	11,2Kg
	Models for 180/200Kg	12Kg

## 5. COMPONENTS



PUMP COMPONENTS	
1	Hydraulic cylinder
2	Lubricant Pump Outlet
3	Threaded fixing lock ring
4	Suction stem
5	Pressure By-pass valve
6	Return Line (plugged)

## 6. UNPACKING AND INSTALLATION

### 6.1 UNPACKING

Once a suitable installation position has been identified, unpack the pump and prepare for installation. It is important to inspect the pump to ensure that there has been no damage during transportation. The packaging material used does not require any special disposal procedures. You should refer to your regional requirements.

## 6.2 INSTALLATION

Allow sufficient space for the installation, leaving minimum 100 mm (3.94 in.) around the pump.  
Place the pump at shoulder height to avoid an unnatural posture or possibility of sustaining impacts.

**Hyd-min PUMP** must be installed vertically inserting the shank into the grease barrel until it reaches the bottom of the drum.

It is possible to use the threaded fixing lockring for mounting in a 2" threaded hole (standard for trade drums). To adjust the hole height is enough unscrew the grains radially existing at the lockring, placing them at desired height and tighten the grains previously unscrewed. The fixing lockring is equipped by gasket for pressurize the tank (see reservoir features).

Purchasing separately the pump and the follower plate with cover, is necessary to remove the fixing lockring by the stem, insert the cover and follower plate in the correct direction ( lip seal upward) and then insert the limit ring at the stem extremity.



**WARNING:** When using a grease follower plate, it is recommended to check for crushes on drum sides which could prevent the follower plate from descending into the barrel. Use only intact drums with no defects.

## 6.3 HYDRAULIC CONNECTIONS

Ensure that all pipes and fittings are suitable for the pressure and the fluid used and connect the oil supply to the pump hydraulic cylinder and the flow barrel pump to the system.

The user may opt to use the following hydraulic changeover valves:

Valves usually used are:

- *Automatic hydraulic change-over:* when the pilot pressure of the valve is reached point the valve automatically switches the direction of the oil from P-A to P-B and vice-versa (as a diagram show in Paragraph 2).
- *Electrical Inverter:* the electrically controlled valve switches the flow of oil from P-A to P-B and vice-versa. The user must not use a operating frequency less than 0.5 sec per change-over.

Always ensure the integrity of pipes and fittings before operating the pump.



**Contact Dropsa for technical items regarding the type of valve to be used.**

## 7. INSTRUCTIONS FOR USE

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### 7.1 ACTIONS TO BE MADE BEFORE STARTING

- The unit should be operated only by qualified personnel.
- The pump should never be used in hazardous environments or immersed in any fluids.
- Always use safety gloves and glasses when handling lubricants.
- Do not use lubricants that may contains substances incompatible with NBR Rubber, if in doubt consult the Dropsa technical department which will provide a detailed documentation about lubricants recommended.
- Follow all health and safety rules required by law.
- Always use pipes suitable for operating pressures.
- Check the integrity of the pump; ensure there is no physical damage.
- Check that pump pressure supply is correct.
- Fill the Oil reservoir with suitable lubricant.
- Ensure that the pump is within the specified ambient temperature.
- Check electrical and hydraulic connections have been carried out correctly.

### 7.2 PUMP USE

- Switch on the pump by pressing the start button on the control system in use;
- Check that the pump is running;
- Adjust the pressure by pass to the desired setting;
- Verify that lubricant is correctly dispensed the lubrication system is functioning correctly.

## 8. PROBLEMS AND SOLUTIONS



**WARNING:** The machine can be opened and repaired only by Dropsa authorized staff.

The following is a diagnostic table showing possible problems, causes and solutions.

Having consulted the following table, if problems still exist you should contact a specialized Dropsa technical support point for assistance in resolving any remaining problems.

PROBLEM	POSSIBLE CAUSE	SOLUTIONS
The pump does not deliver lubricant	Air trapped in the outlet or in the lubricant pumping chamber.	Disconnect the outlet tubing and cycle the pump until clean grease with no air bubbles is pumped from the outlet. Reconnect as appropriate.
The pump is working but no grease arrives at the lubrication point.	Leaking fitting.	Check the distribution system to ensure that no leaks are present and that the distribution system is functioning correctly.
The pump starts briefly but then stops.	High valve switch frequency	Check the pump flow rate or the electrical inverter switch frequency.



**CAUTION:** Make sure the hydraulic supply is disconnected before performing any maintenance.

## 9. MAINTENANCE PROCEDURES

The machine does not require any special tool for check or maintenance tasks. However, it is recommended the use only of appropriate and in good conditions tooling, protective devices (gloves) and clothing to avoid injury to persons or damage to machine parts.

That pump has been designed and manufactured to require the minimum maintenance. Anyway, it is recommended To keep the unit clean and periodically to check pipe joints to readily detect possible leaks.

## 10. DISPOSAL

The unit does not contain any harmful substances and should be disposed of following local regulations, including any recycling information indicated on the components themselves.

Upon demolition of the machine you must destroy the identification label and any other document.

## 11. ORDER INFORMATION

### 11.1 PUMPS

PART NUMBER	DRUM DELIVERY- Kg [Lb]	STEM LENGH (X see p.8 – mm [in])
0234560	20/25 [44/55]	550 [21.6]
0234561	50 [110]	750 [29.5]
0234562	180/200 [397/441]	930 [36.6]

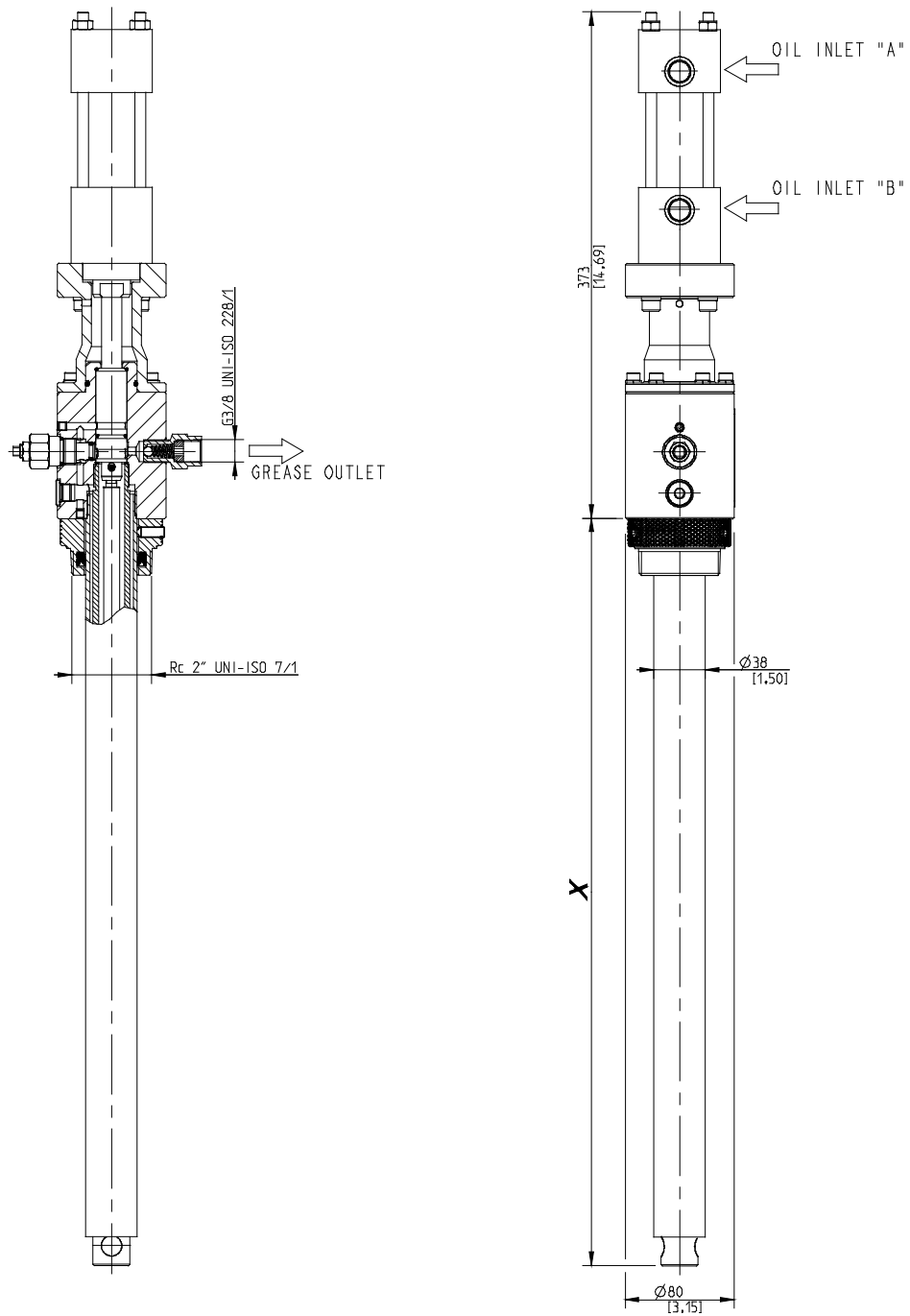
### 11.2 SPARE PARTS

PART NUMBER	DESCRIPTION
1141601	COVER -20KG D315
1141606	COVER -25KG D345
1141603	COVER -50KG D400
1141605	COVER -200KG D600
1141600	FOLLOWER PLATE -20KG D280
1141607	FOLLOWER PLATE -25KG D.320
1141602	FOLLOWER PLATE -50KG D375
1141604	FOLLOWER PLATE 200KG D580
3005141	LOCK RING
0234570	HYD. INVERT. - AUTOMATIC - CETOP 3
0234571	ELE. INVERT. - 24VDC - CETOP 3
0234572	ELE. INVERT. - 12VDC - CETOP 3
0234569	BASE FOR INVERTER CETOP 3
0234573	HYD. INVERT. - AUTOMATIC - CETOP 3 WITH BASE
0234574	ELE. INVERT. - 24VDC - CETOP 3 WITH BASE
0234575	ELE. INVERT. - 12VDC - CETOP 3 WITH BASE
3133456	200 KG DRUM LIFT KIT

### 11.3 ACCESSORIES

PART NUMBER	DESCRIPTION
0234496	ADJUSTABLE BY-PASS VALVE
0234556	LUBRICANT PUMP OUTLET
0234565	HYDRAULIC CYLINDER

## 12. DIMENSIONS



Dimensions in mm [in].



## 13. HANDLING AND TRANSPORT

Prior to shipping, the equipment is carefully packed in cardboard package. During transportation and storage, always maintain the pump the right way up as indicated on the box. On receipt check that package has not been damaged. Then, storage the machine in a dry location.



**Lift the packaging taking note of the orientation of the pump.**  
The product can withstand a storage temperature between -20 to + 50 °C; however it is necessary to ensure that the product has stabilized at a minimum temperature of +5 °C before putting it into operation

## 14. PRECAUTIONS FOR USE



**WARNING:** It's necessary read carefully the warnings about the risks involving the use of a pump for lubricants. The user must know the operation through the User Manual and Maintenance.

### 14.1 HYDRAULIC SUPPLY

Any type of intervention must not be carried out before the unplugging of the machine from hydraulic supply.

### 14.2 FLAMMABILITY

The lubricant generally used in lubrication systems is not normally flammable.

However, it is advised to avoid contact with extremely hot substances or naked flames.

### 14.3 PRESSURE

Prior to any intervention, check the absence of residual pressure in any branch of the lubricant circuit as it may cause oil sprays when disassembling components or fittings.

### 14.4 Noise

The pump does not produce excessive noise (less than 70 dB(A) ) at the distance of 1 m (39.3 inches) from the pump.

## LUBRICANTS



**NOTE:**  
The pump has been designed to work with greases with a maximum viscosity of NLGI 2  
Always use lubricants that are compatible with NBR Rubber.  
The lubricant used during final testing of the unit is a NLGI 2 grease.

The following is a comparison table between NLGI (National Lubricating Grease Institute) and ASTM (American Society for Testing and Materials) for greases, showing the permissible values for the Hyd-min PUMP

GREASES	
NLGI	ASTM
000	445 – 475
00	400 – 430
0	355 – 385
1	310 – 340
2	265 – 295

For more information on technical and security measures, see the Security tab of the Product (Directive 93/112/EEC) relating to the type of lubricant chosen and supplied by the manufacturer.

## 15. OPERATIONAL HAZARDS

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Verification and assessment relative to machine safety have been carried out according to the guidelines set out within the European Machine Directive using a matrix evaluation schematic with the generation of technical file as required by the directive.

The lists used are of two types:

- Risk evaluation (UNI EN ISO 14121-1).
- Conformity to essential safety requisites (Machine Directive –CE 06/42).

**The following hazards have been identified as a result and must be considered during operation.**

- During maintenance oil may be discharged at low pressures (oil squirt). To counter this, maintenance must be carried wearing appropriate personal protective clothing and glasses.
- Electrocution: This can occur if the user does not securely connected the wires inside the terminal box. Electrical connections must therefore be carried out only by a competent electrician.
- Physical Strain due to poor positioning of the unit. Detailed Dimensional information is given in this manual to avoid poor positioning.
- Use of incorrect lubricant or fluids. Lubricant information is contained in this manual and on the pump itself.

FLUIDS NOT ALLOWED	
FLUIDS	DANGERS
Lubricants with abrasive additives	wear of pump internal components
Lubricants with silicone lubricant additives	Seizure of pumping element
Petrol - solvents - flammable liquid	Fire - explosion - damage to seals
Corrosive products	Corrosion of the pump - damage to people
Water	Oxidation of the pump
Food	Contamination