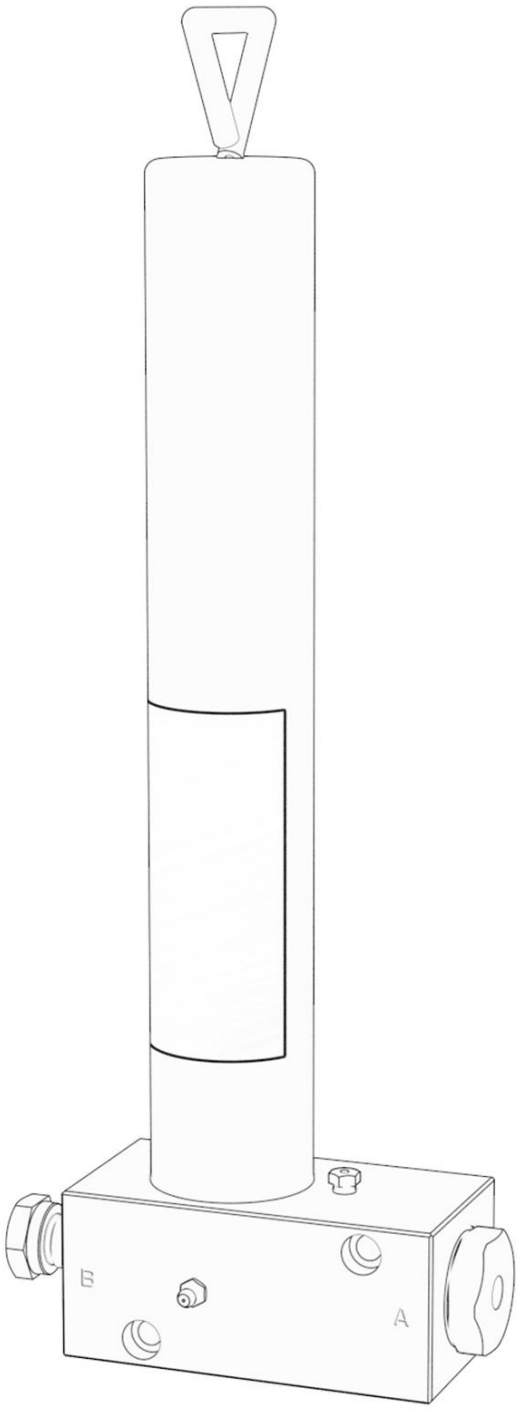
Hydraulic pump

Hydraulically controlled pump for oil

Operation and maintenance manual

Original instructions



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1. INTRODUCTION

This operation and maintenance manual refers to the hydraulic pump and contains important information for the health and safety protection of the personnel who use this equipment.
The most recent version can be obtained by requesting it from the Sales Technical Office or online at http://www.dropsa.com.

This manual must be read carefully and kept so that it is always available to the operators who want to consult it.

2. GENERAL INFORMATION

2.1. Features and Benefits

The pump can be used on machinery in the agricultural sector.

- The hydraulic cartridge pump is a pump with a piston driven by hydraulic oil with spring return.
- The pump can house 400 cc cartridges.
- The pump has a flow rate adjustment.

3. Product Identification

A label is located on the pump reservoir that indicates the product part number, the power supply voltages and the basic features.

4. Technical Specifications

GENERAL TECHNICAL SPECIFICATIONS		
Pumping system	Type	*Piston*
Flow rate	cm^3/stroke [in^3/rev]	*0.2 ~ 2 see diagram (Fig. 1)* *[0.012 ~ 0.12]*
Operating pressure		*See diagram (Fig. 2)*
Hydraulic pressure	bar [psi]	*100~300 [1450~4351]*
Hydraulic connection	Type	*G1/4"*
Lubricant outlet connection	Type	*G1/4"*
Operating Temperature	°C [°F]	*-10 ÷ +70 [-14 ÷ +158]*
Storage temperature	°C [°F]	*-30 ÷ +90 [-22 ÷ +194]*
Net weight	Kg [lb]	*7 [15.4]*
Relative humidity	%	*90*
Cartridge capacity	g [lb]	*400 [0.88]*
Drive fluid		*Hydraulic oil*
Lubricant	NLGI	*Grease 000 ~ 2*

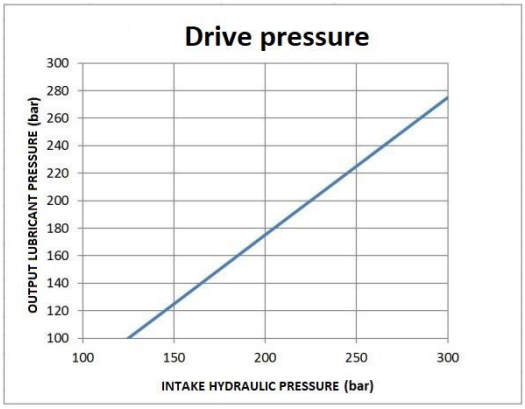


Fig. 1

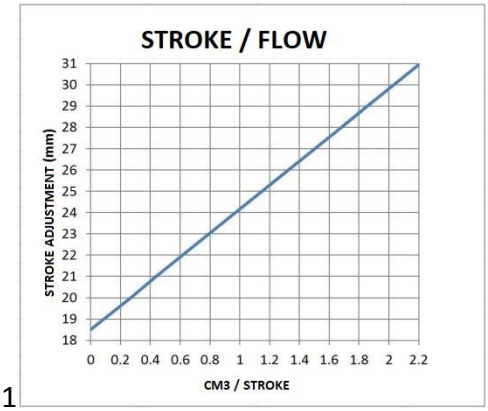
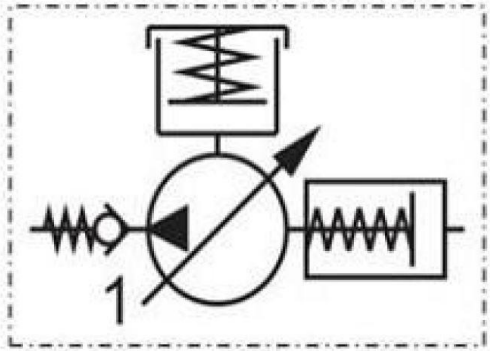


Fig. 2

*** NOTE: The indicated flow rate value refers to the following test conditions: grease with NLGI 2 consistency class, standard environmental conditions (Temperature 20°C [68°F], pressure 1bar [14.5psi]).**

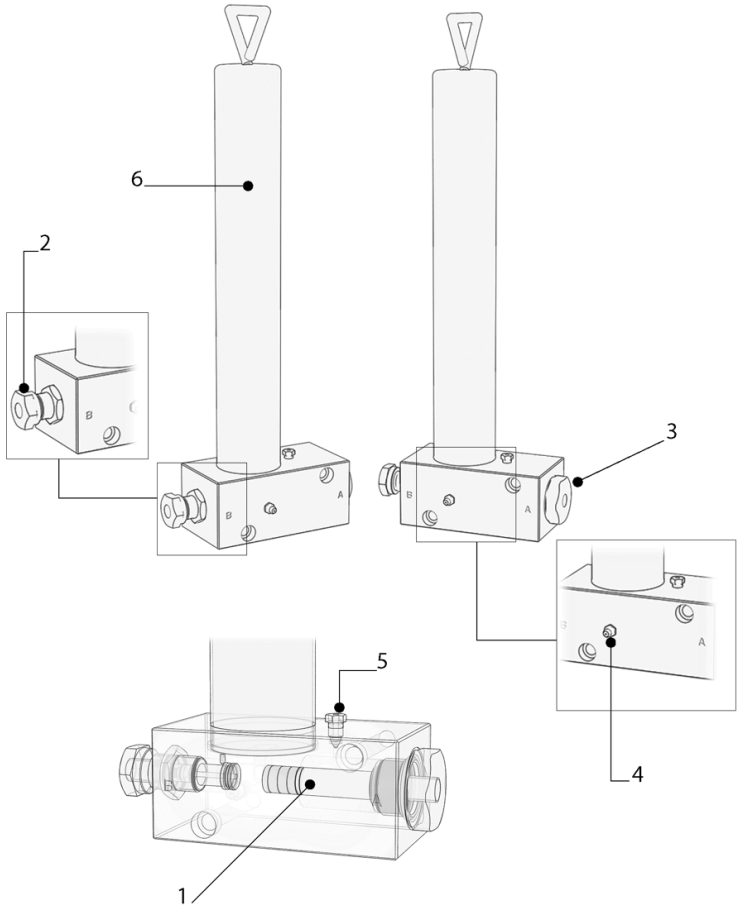
4.1 Hydraulic system

The hydraulic diagram is below:



5. Components

In the following, the main components are indicated that make up the pump in the various versions, accessories and related options.



STANDARD PUMP COMPONENTS			
1	Piston	**4**	Lubricant filling and bleeding
2	Adjustment screw and lubricant outlet	**5**	Hydraulic oil bleeding
3	Hydraulic connection	**6**	Lubricant cartridge housing

6. Unpacking and Installation

6.1 Unpacking

Once you have identified the place suitable for installation, open the packaging, remove the pump and check to ensure that it has not suffered any damage during transportation and storage. The packing material does not require special disposal precautions as it is in no way dangerous or pollutant. For disposal, refer to local regulations.

6.2 Installation of the Pump

- Place the pump and fasten it to its support by using the appropriate Ø9 mm holes (0.354 in), with 2 suitable screws.
- Assemble the pump in such a way that the cartridge housing and the bleed valve are easily accessible.
- Leave at least 100 mm (3.94 in) as a perimeter distance with respect to other equipment or barriers to prevent access to the pump.
- Assemble the pump at “labourer height” in order to prevent abnormal posture or possible impact.
- Do not install the pump submerged in liquids and/or in aggressive environments.
- Do not install the pump in environments where there are explosive or flammable mixtures.
- Do not install the pump near heat sources.
- Verify that the grease used is fit for operating temperatures, especially at temperatures below 0° C. If in doubt, contact our Sales Technical Office for the correct choice of lubricant.

6.3 Hydraulic Connections

The connection with the hydraulic oil is marked with “A” and its size is G1/4”. The connection with the lubricant outlet is marked with “B” and its size is G1/4”.

7. Instructions for use

7.1. Measures to be taken prior to start-up

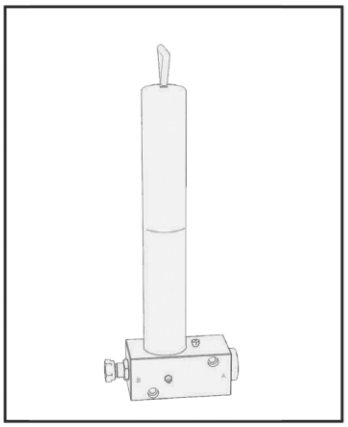
- The unit may be put into operation by specialized personnel.
- Using the pump submerged in fluids or in a particularly aggressive or explosive/flammable environment is prohibited unless it has been prepared ahead of time by the supplier for this purpose.
- Use gloves and eye protection as required by the lubricant safety data sheet.
- DO NOT use lubricants that are aggressive to NBR gaskets. If you are unsure, contact the Dropsa S.p.A technical office for a detailed list of recommended lubricants.
- Never ignore health hazards and always follow sanitary regulations.
- Always use suitable piping for the operating pressure.
- Check the integrity of the pump.
- Ensure that the pump operates at operating temperature and that the pipelines are free of any air bubbles.

To determine the maximum operating pressure, it is necessary to know the pressure drop of the pipeline connected to the pump outlet, depending on the length, temperature and type of lubricant.
Depending on these variables to achieve a proper supply to the delivery point, you must always ensure that the pipeline pressure loss plus the pressure required at the lubrication point does not exceed the maximum pressure supplied for pump delivery.

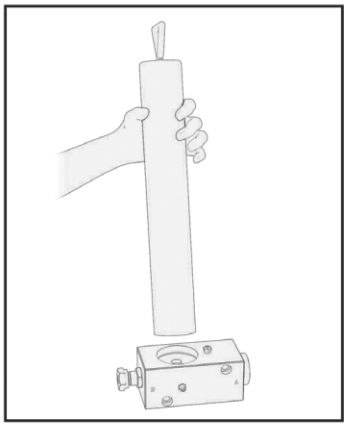
7.2. Lubricant Filling

The pump is supplied without a cartridge and completely empty. The reservoir can house 400 cc cartridges.

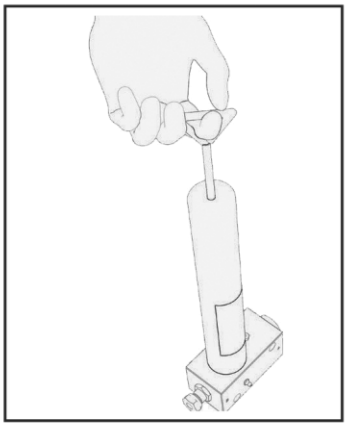
To fill it, you must proceed as follows:



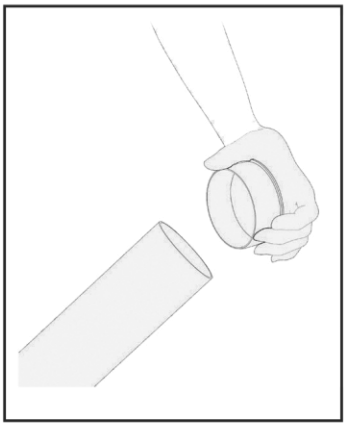
Cartridge Pump



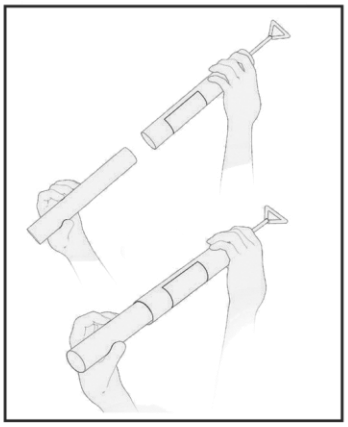
Step1:
Unscrew the reservoir from the base



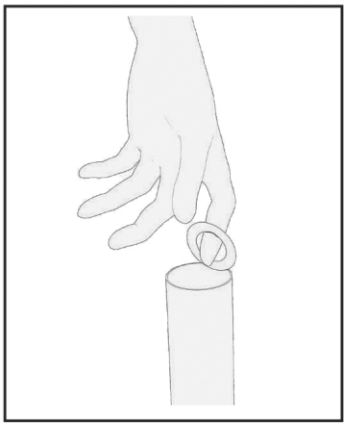
Step2:
pull the reservoir rod upward



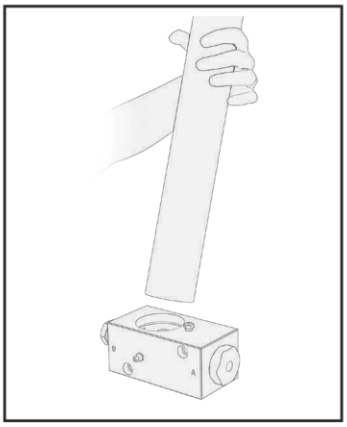
Step3:
Remove the cartridge cap



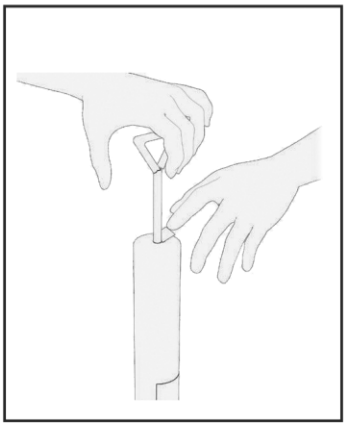
Step4:
Insert the cartridge in the reservoir



Step5:
Remove the cartridge tear cap



Step6:
Screw the cartridge onto the pump all the way, tightening it moderately

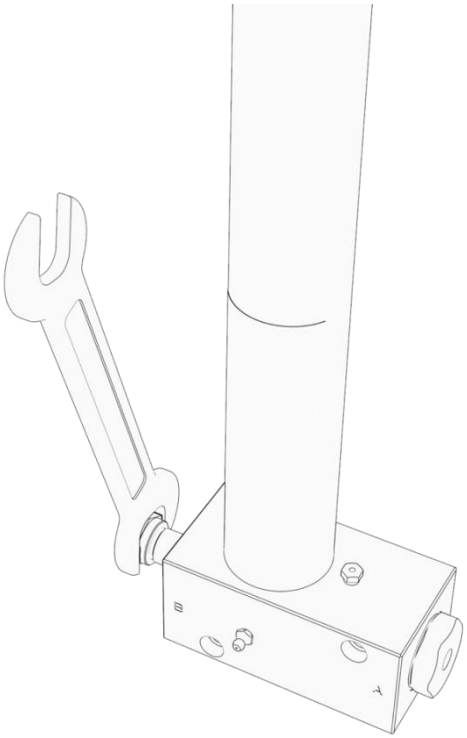


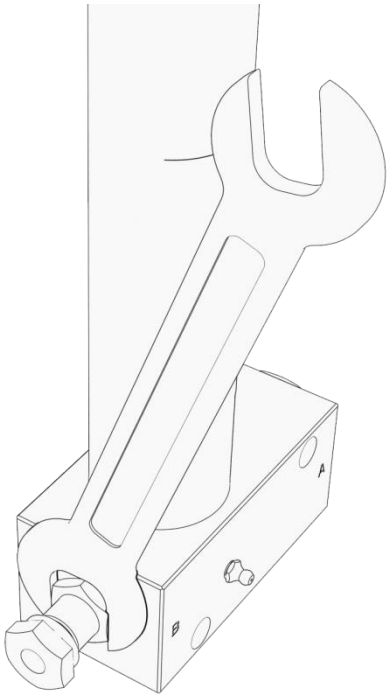
Step7:
Press the tab on the upper part of the reservoir and put the rod back in

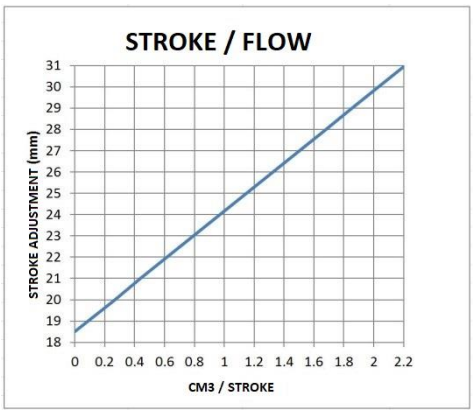
7.3. Flow capacity adjustment

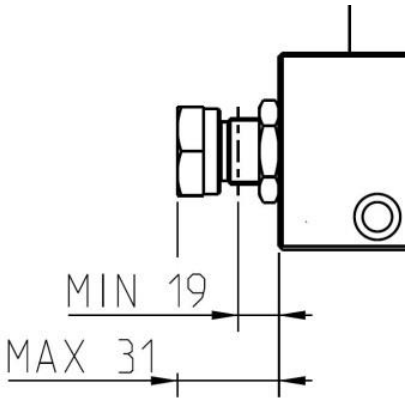
For the adjustment of the flow rate, you must proceed as follows:

- Unscrew the locking nut
- Tighten or loosen the adjustment screw to achieve the desired flow rate (see diagram below).









8. Problems and Solutions

Below is a troubleshooting table where the main faults, probable causes and possible solutions to be carried out immediately are indicated (contact Dropsa).
In the event of doubts and/or irresolvable problems, do not search for the fault disassembling parts of the pump, but rather contact the Dropsa Technical Office.

TROUBLESHOOTING TABLE		
FAULT	**CAUSE**	**REMEDIAL ACTION TO BE TAKEN**
The pump works but lubrication does not arrive at the lubrication points.	Lines disconnected.	Check the condition of the lines and the relative connections to the fittings. Replace worn lines.
The lubricant is distributed to the lubrication points in irregular doses.	The pump is not properly connected to the lubrication points.	Check the dosages with the system diagram.
The pump does not dispense the correct quantity of lubricant.	Air bubbles in the hydraulic control circuit.	Use the bleed screw located on the upper part of the pump to eliminate the air.
The pump does not dispense lubricant.	The reservoir is empty.	Replace the cartridge.
	Air bubbles in the lubricant.	Disconnect the primary pipeline from the connection to the pump. Activate the pump according to the operating cycle until lubricant comes out of the connection without any air bubbles.
	Air bubbles in the hydraulic control circuit.	Use the bleed screw located on the upper part of the pump to eliminate the air.
	Use of unsuitable lubricant.	Replace the inserted cartridge with one with suitable grease.

Operation may only be carried out by Dropsa specialised personnel.

9. Maintenance Procedures

The pump does not require special tools for any check and/or maintenance operations. In any case, it is recommended to use suitable equipment and personal protective equipment (gloves, protection goggles, etc.) that in good condition in accordance with applicable regulations to avoid injury or damage to parts of the pump.
The unit has been designed and built in such a way that it requires a minimum level of required maintenance. Nevertheless, it is recommended to always keep the body of the equipment clean and periodically check the tube joints in order to be able to readily detect any leaks.

ATTENTION: Make sure that hydraulic feed is disconnected prior to any maintenance or cleaning operation.

9.1 Scheduled Maintenance

The following table lists the periodic inspections, the frequency and the intervention that the maintenance will have to carry out in order to ensure the efficiency of the system over time.

3.3. Warning of Residual Risks

in order to prevent any dangerous condition for personnel or damage to the MACHINE caused by residual risks, in other words, those risks that remain despite all the devices adopted, or from less evident potential risks, the MANUFACTURER urges operators, maintenance personnel and all personnel in charge of the MACHINE to strictly adhere to the warnings indicated on the following pages.

CHECK	FREQUENCY INTERVAL	INTERVENTION
Attachment of the lines	After the first 500 hours of operation Every 1500 hours of operation	Check the joint fittings. Check the fastening to the parts of the machine.

10. Disposal

Do not dispose of polluting components in the environment during pump maintenance or in case of demolition; refer to local regulations for correct disposal. Upon demolition of the pump, the identification label and any other document must be destroyed.

11. Ordering Information

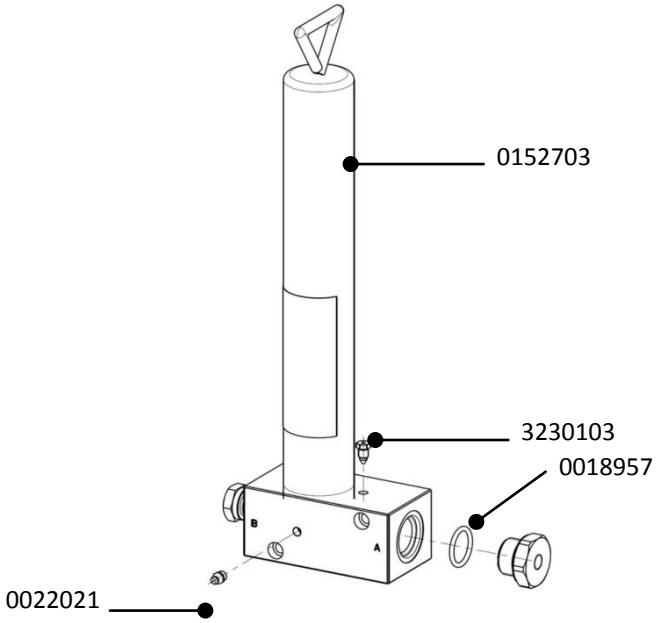
11.1. Standard Versions

STANDARD PUMP	
DESCRIPTION	**PART NUMBER**
HYDRAULIC PUMP 1:1	*3414100*
CARTRIDGE	*1524952*

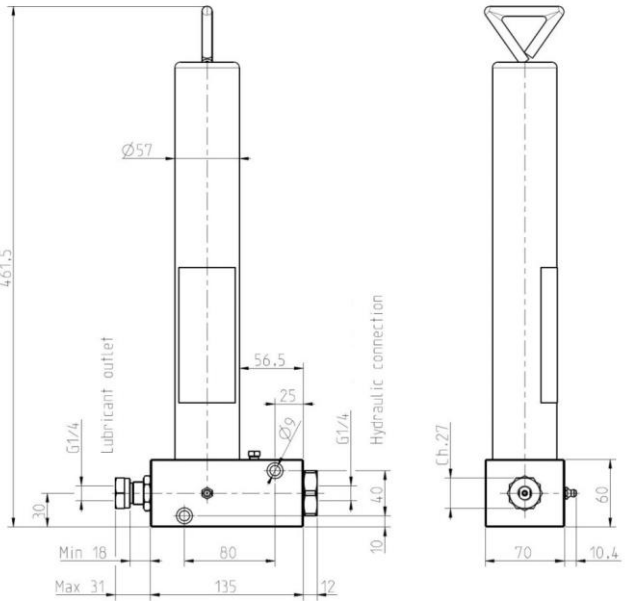
11.2. Spares parts

DESCRIPTION	PART NUMBER
RESERVOIR	*0152703*
EXHAUST AIR SCREW	*3230103*
GREASE NIPPLE	*0022021*
GASKET	*0018957*

DropsA S.p.A. will not be held liable for any worsening of the pump's performance or for damage caused by the pump due to the use of non-original replacement parts.



12. Dimensions



13. Handling and Transport

Before shipment, the pumps are carefully packed inside a cardboard box. During transport and storage of the equipment, pay attention to the direction indicated on the box. Upon receipt, check that the packaging is not damaged and store the pump in a dry place.

14. Precautions for Use

- **Flammability**
  The lubricant generally used in the lubrication circuits is not inflammable fluid. However, it is imperative to take all necessary steps to prevent it from coming into contact with very hot parts or naked flames.
- **VALVE**
  Before any operation, check for the absence of any residual pressure in all branches of the lubricant circuit, that could cause spurts of oil in the event that fittings or components are disassembled.
- **Noise**
  The equipment does not emit noise exceeding 70 dB (A).

ATTENTION: The warnings on risks using a lubricant pump implies must be carefully read. The user must be familiar with operation through the Operation and Maintenance Manual.

14.1. Lubricants

A table is shown that compares the NLGI (National Lubricating Grease Institute) and ASTM (American Society for Testing and Materials) categories for greases, limitedly to the values that involve the OmegaPUMP pump.

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

For further information on the technical characteristics and the safety measures to adopt, see the Product Safety Data Sheet (Directive 93/112/EEC) related to the type of lubricant selected and supplied by the manufacturer.

NOTE: The pump is designed to work with maximum NLGI 2 grade lubricants. Use NBR gasket compatible lubricants. Any residual lubricant inside that was used for assembly and testing is NLGI 2 grade.

15. Contraindications of Use

The hazards that have not been entirely eliminated, but that have been deemed acceptable, are listed below

- During the maintenance phase, low pressure spurts of lubricant are possible. (For this reason, maintenance operations must be carried out using suitable PPE).
- Contact with lubricant during maintenance or filling the reservoir. → Protection from direct or indirect contact with the lubricant must be ensured by the user of the machine. (See the PPE regulation on proper use according to regulations in force).
- Use of unsuitable lubricant. →The characteristics of the lubricant are indicated both on the pump and in this Operation and maintenance manual (in the event of any doubt, contact the Dropsa S.p.A. Technical Office).

PROHIBITED FLUIDS	
FLUIDS	***HAZARDS***
Lubricants with abrasive additives	*High wear of the contaminated parts*
Lubricants with silicon additives	*Seizing of the pump*
Petrol – solvents – flammable liquids	*Fire – explosion – damage to the gaskets*
Corrosive products	*Corrosion of the pump – damage to personnel*
Water	*Oxidation of the pump*
Food substances	*Contamination of the same*