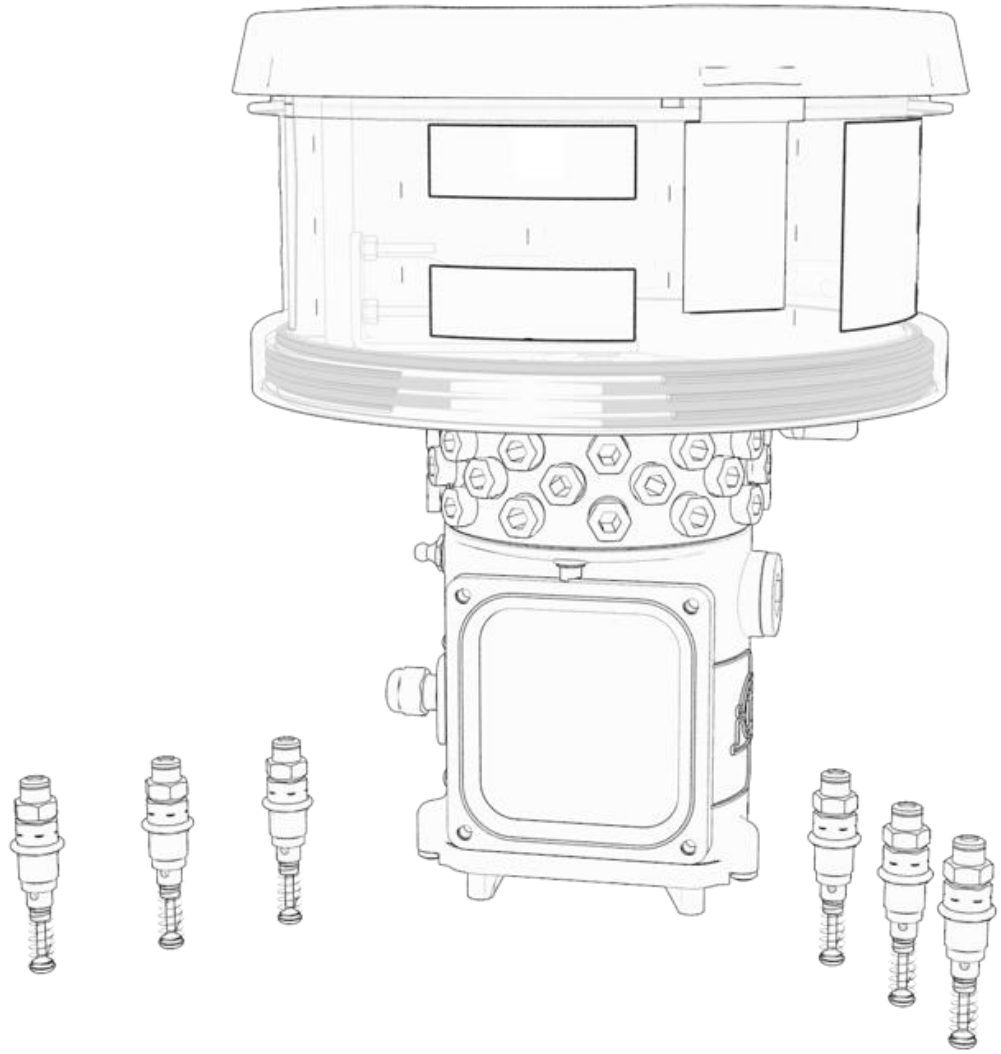
PoliPUMP eco

Multi-line electric pump for grease

User Operating and Maintenance Manual

Original Instructions



Manual drawn up in accordance with EC Directive 06/42

C2291IE - WK 24/19

Sommario

1. INTRODUCTION

This operation and maintenance manual refers to "**PoliPUMP** eco" **electric 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 DESCRIPTION

2.1 DIRECT-POINT LUBRICATION

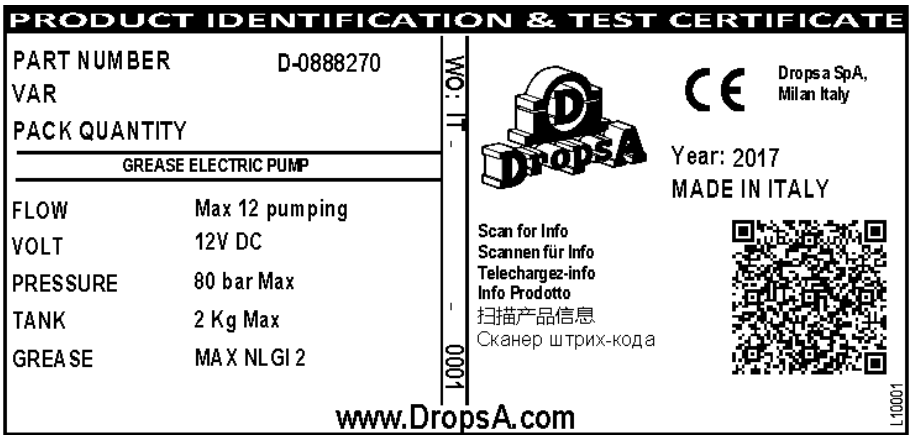
The **PoliPUMP** eco electric pump directly lubricates friction points without needing to use other flow-rate dosing devices. This allows you to have a product for inexpensive lubrication that is versatile and easy to use.
PoliPUMP eco was developed to supply lubrication systems at a single point in vehicles, in installations and in various types of machinery, for use with grease. Any use other than the use intended shall be deemed to be in non-compliance with requirements.

2.2 SPECIFICATIONS

The **PoliPUMP eco** electric pump is a piston pump driven by an eccentric system, designed to be operated with a maximum of 35 pumping elements, allowing several independent lines to be supplied.
It is supplied as a standard without pumping elements, which must be ordered separately by choosing the desired flow between six models that can be identified by pairing different colours. La standard version has a reservoir with a capacity of 2 litres.
A contoured stirring paddle and reservoir wiper set eliminate the presence of air bubbles in the lubricant contained within the pump, thereby ensuring proper operation, even at low temperatures.
The pump is driven by a 12 or 24V DC gear motor.

3. PRODUCT IDENTIFICATION

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



4. TECHNICAL CHARACTERISTICS

GENERAL TECHNICAL CHARACTERISTICS		
Pumping system	***With single acting pumping systems with cam drive***	
Drive assembly	***DC motor with reducer***	
Motor power-supply voltage	***12V DC***	***24V DC***
Net weight standard version	*3 Kg (6.6 lb)*	
Max. number of outlets/pumping elements	*12 – 24 – 36*	
Delivery connection (pumping element outlet)	*Push-in Ø4mm (5/32in)*	
Nominal flow rate for single pumping element *	*0.02cc/stroke – RED (1 notch)* *0.03 cc/stroke – GREEN (2 notches)* *0.04 cc/stroke – YELLOW (3 notches)* *0.08 cc/stroke – BLUE (4 notches)* *0.10 cc/stroke – GREY (5 notches)* *0.13 cc/stroke – BLACK (6 notches)*	
Rotation speed (cycle)	*3 RPM*	
Maximum reachable pressure on the outlet of the pumping element	***80bar** (1,160psi)***	
Reservoir capacity	*2 litres (0.53 gallons)*	
Grease consistency	*NLGI00 ÷ NLGI2*	
Protection degree	*IP 69*	
Temperature of use	*-10°C ÷ +60°C (14°F ÷ 140°F)*	
Storage temperature	*-20°C ÷ +80°C (-4°F ÷ 176°F)*	
Max. relative humidity without operating condensation	*90%*	
Sound pressure level	*< 70 db (A)*	
Electrical connection terminal	*1.5mm² max.*	

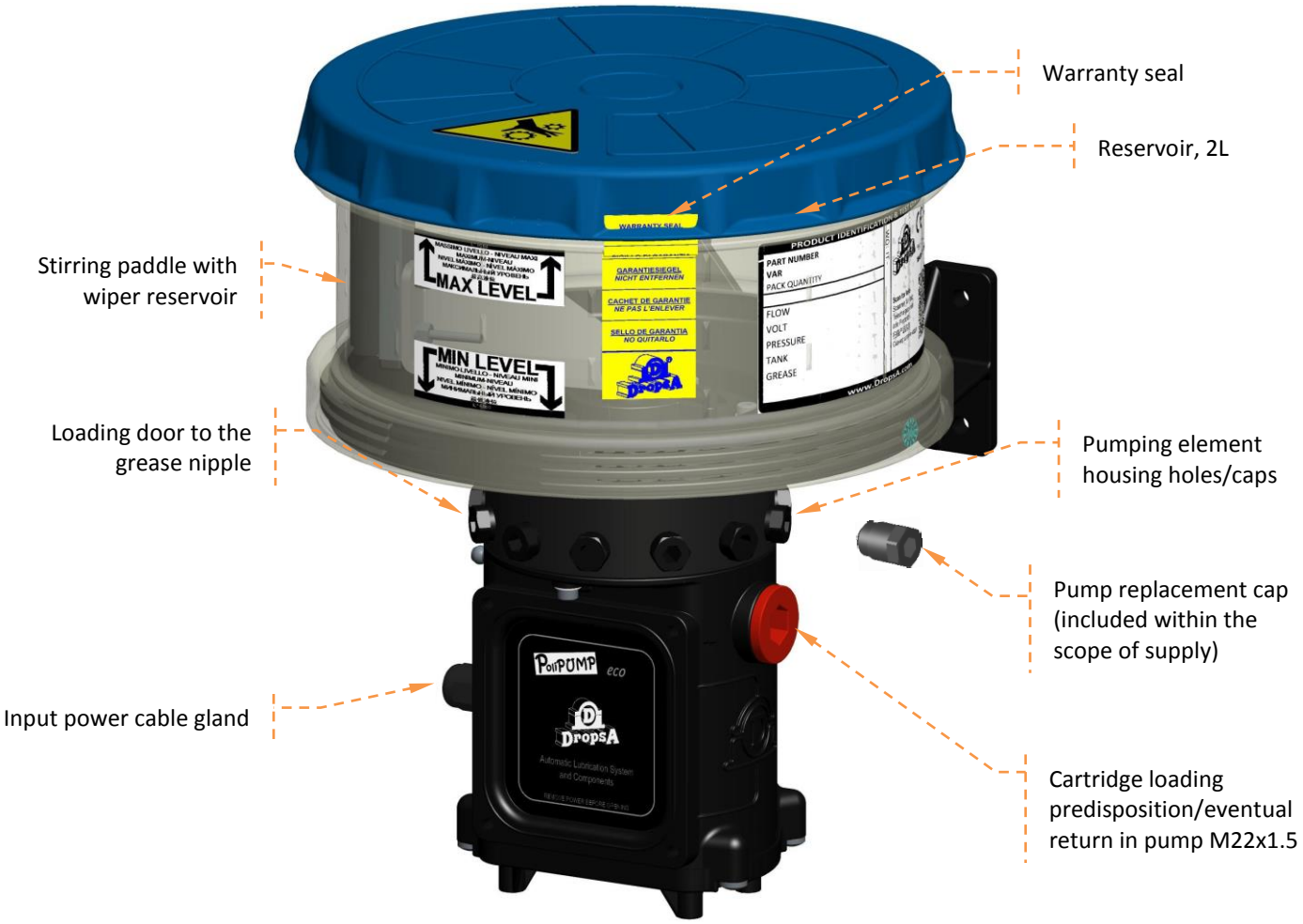
ATTENTION: **Do not power the machine with voltage different than what is indicated on the label.**

*** NOTE:**
The flow rate indicated refers to the following test conditions: grease with NLGI class 00; ambient temperature 20° C (68° F); ambient pressure 1 bar (14.5 psi); back pressure of 5 bar (72.5 psi).

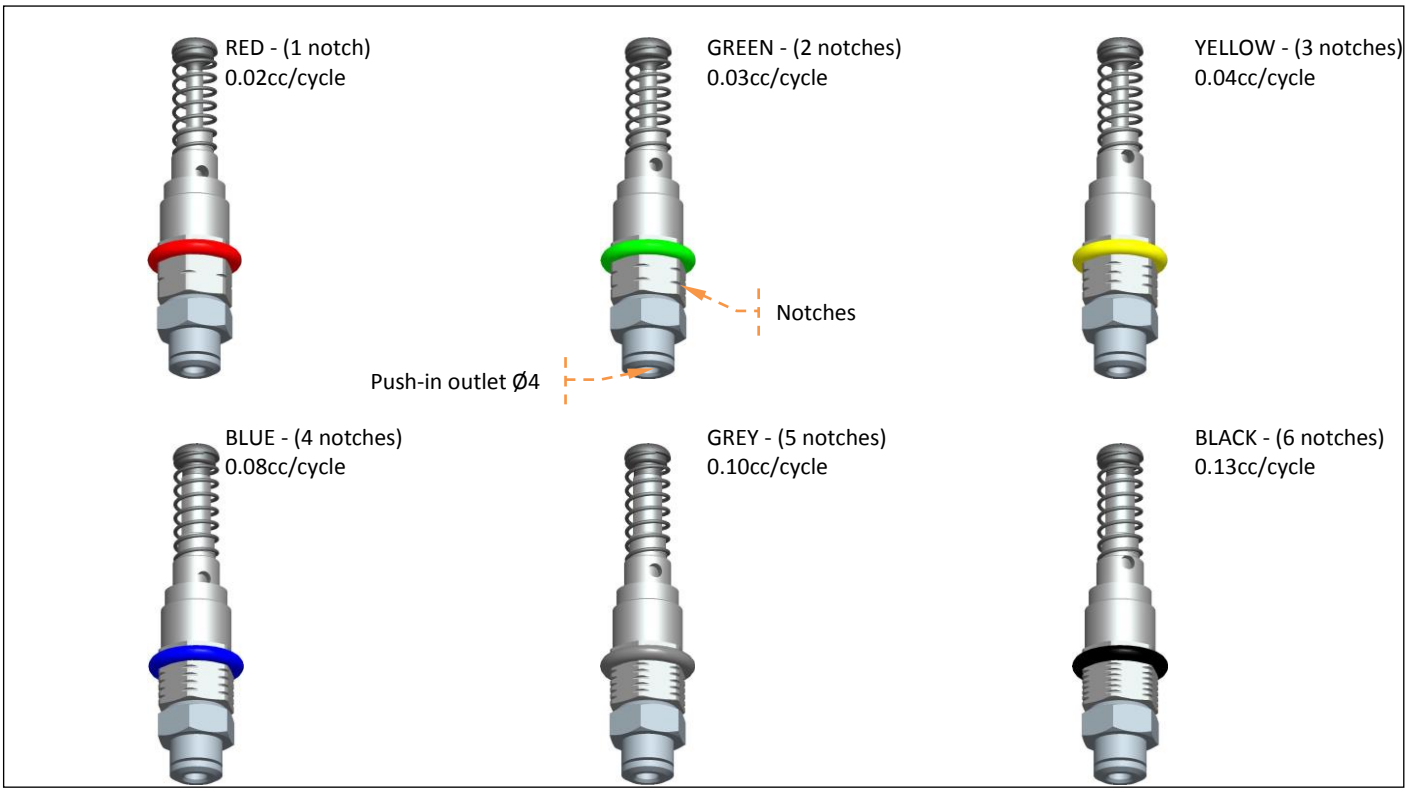
**** NOTE:**
The date refers to the maximum operating pressure of the single pumping element. The maximum pressure supplied by the pump depends on several variables (number of pumping elements used, type of grease, operating temperature, see Section 7).

5. COMPONENTS

PoliPUMP (standard)



PUMPING ELEMENTS



6. UNPACKING AND INSTALLATION

6.1 UNPACKING

Once you have identified the suitable place for installation, open the package and remove the pump and check that it has not suffered any damages during transport 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 PUMPING ELEMENTS / CAPS

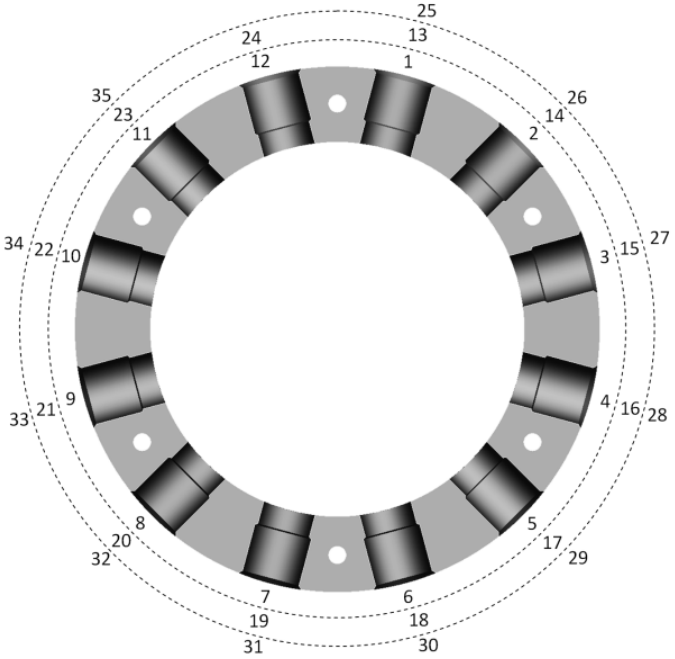
The pumping elements are not included in the pump, they must be purchased separately by selecting the appropriate part numbers. The caps are included in the packaging; to be inserted into the holes that are not being used by the pumping elements.

To assemble the pumping elements, proceed as follows:

- Locate the correct position by distributing them evenly over the holes on the pumping element holder cylinder.

No.	MOUNTING POSITIONS	No.	MOUNTING POSITIONS	No.	MOUNTING POSITIONS
1	1	***13***	13	***25***	25
2	1-7	***14***	13-19	***26***	25-31
3	1, -5, -9	***15***	13, -17, -21	***27***	25, -29, -33
4	1-4-7-10	***16***	13-16-19-22	***28***	25-28-31-34
5	1-2-4-7-10	***17***	13-14-16-19-22	***29***	25-26-28-31-34
6	1-3-5-7-9-11	***18***	13-15-17-19-21-23	***30***	25-27-29-31-33-35
7	1-2-4-5-7-9-11	***19***	13-14-16-17-19-21-23	***31***	25-26-28-29-31-33-35
8	1-2-4-5-7-8-10-11	***20***	13-14-16-17-19-20-22-23	***32***	25-26-28-29-31-32-34-35
9	1-2-3-5-6-7-9-10-11	***21***	13-14-15-17-18-19-21-22-23	***33***	25-26-27-29-30-31-33-34-35
10	1-2-3-4-5-6-7-9-10-11	***22***	13-14-15-16-17-18-19-21-22-23	***34***	25-26-27-28-29-30-31-33-34-35
11	1-2-3-4-5-6-7-8-9-10-11	***23***	13-14-15-16-17-18-19-20-21-22-23	***35***	25-26-27-28-29-30-31-32-33-34-35
12	1-2-3-4-5-6-7-8-9-10-11-12	***24***	13-14-15-16-17-18-19-20-21-22-23-24	***36***	25-26-27-28-29-30-31-32-33-34-35-36

Positioning of pumping elements



- Screw in the pumping elements and tighten with a torque of 10 Nm using a 12mm socket spanner.
- Screw in the caps into the remaining holes and tighten with a torque of 10 Nm using a 12mm socket spanner or a 6mm Allen wrench.

ATTENTION: **Introduce the pumping element into the predetermined output pumping element paying particular attention to correct engagement into the thread.**

6.3 INSTALLATION OF THE PUMP

- Place the pump and fasten to its support by using the appropriate Ø6.5 mm holes (0.256in), with 4 suitable screws.
- Assemble the pump in such a way that the grease nipple for filling the reservoir is easily accessible.
- Leave at least 100 mm (3.93 in) as a perimeter distance with respect to other equipment or barriers to prevent access to the pump (in the case of cartridge filling, provide for adequate distances).
- 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 sources of heat or near electrical equipment that can disturb the electronics and prevent them from functioning properly.
- Ensure that the pipes and wires have been properly fastened and protected from any possible impact.
- 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.

6.4 HYDRAULIC CONNECTIONS

The hydraulic connection between the pump and the system is on the pumping element with a pipe push-in Ø4mm (5/32in). The return to pump can be carried out through the M22x1 threading that is present.

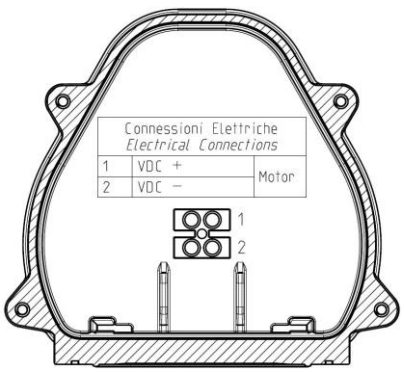
ATTENTION: **The pipeline must reach the point of lubrication along the shortest route possible.**

6.5 ELECTRICAL CONNECTION

ATTENTION: **Verify the correspondence between the electrical power supply of the pump and of the machine (label affixed to the side of the pump.)**

The electrical connection is the responsibility of the user and must provide for the unique identification of the power connection.
Connect the machine to the electrical power line as indicated in the present manual.
The power cable must have suitable thickness with regard to the absorption of the machine and type in accordance with regulations in force.

6.5.1 Connection diagram



7. OPERATING INSTRUCTIONS

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;
- Check the lubricant level in the reservoir (min/max indication on the reservoir), in case of low level, proceed as described in Section *7.3 Filling the reservoir*;
- Ensure that the pump operates at operating temperature and that the pipelines are free of any air bubbles;
- Check the correct connection of electrical devices.

To determine the maximum operating pressure, it is necessary to know the pressure drop of the pipeline connected to the pumping elements.

As an example, the following diagram shows the pressure drop of the delivery pipeline flow by unit length depending on the operating temperature and for a particular type of lubricant (in this case NLGI 00 grease with 160cSt base oil and NLGI2 grease with a 180 cSt base oil)

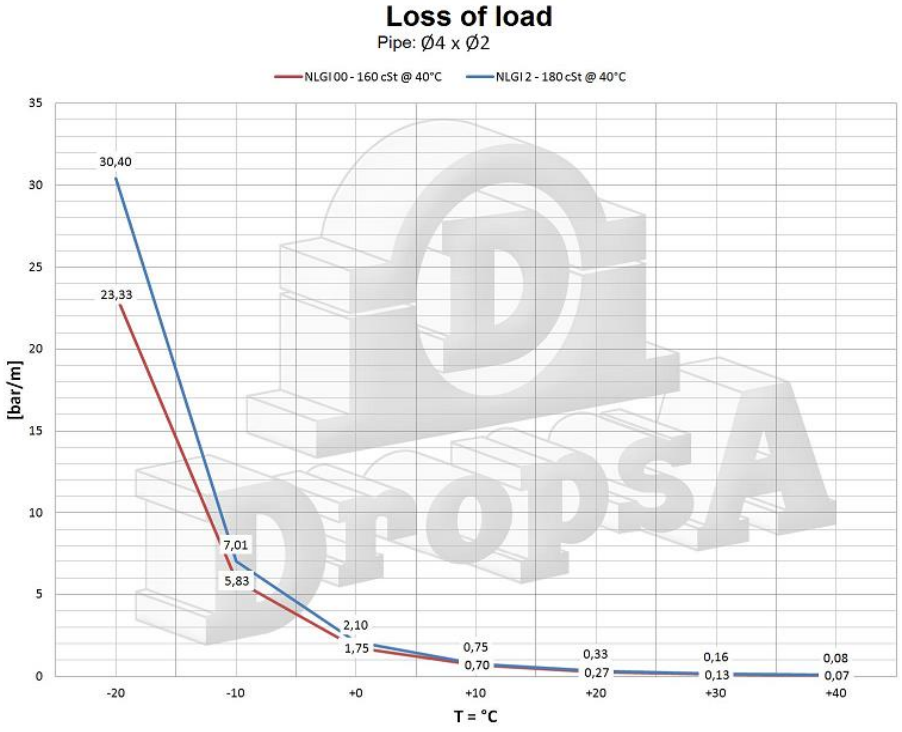
Depending on these variables to achieve a proper supply to the delivery point, it is always necessary to ensure that the pipeline pressure loss plus the pressure required at the lubrication point does not exceed the maximum pressure supplied for pump delivery.

The maximum pressures corresponding to the delivery point of the pumping element, taking into consideration the most severe operating conditions are as follows, taking the toughest operating conditions into consideration:

1÷12 pumping elements = 80 bar (1160 psi)

13÷24 pumping elements = 50 bar (725 psi)

25÷36 pumping elements = 35 bar (507 psi)

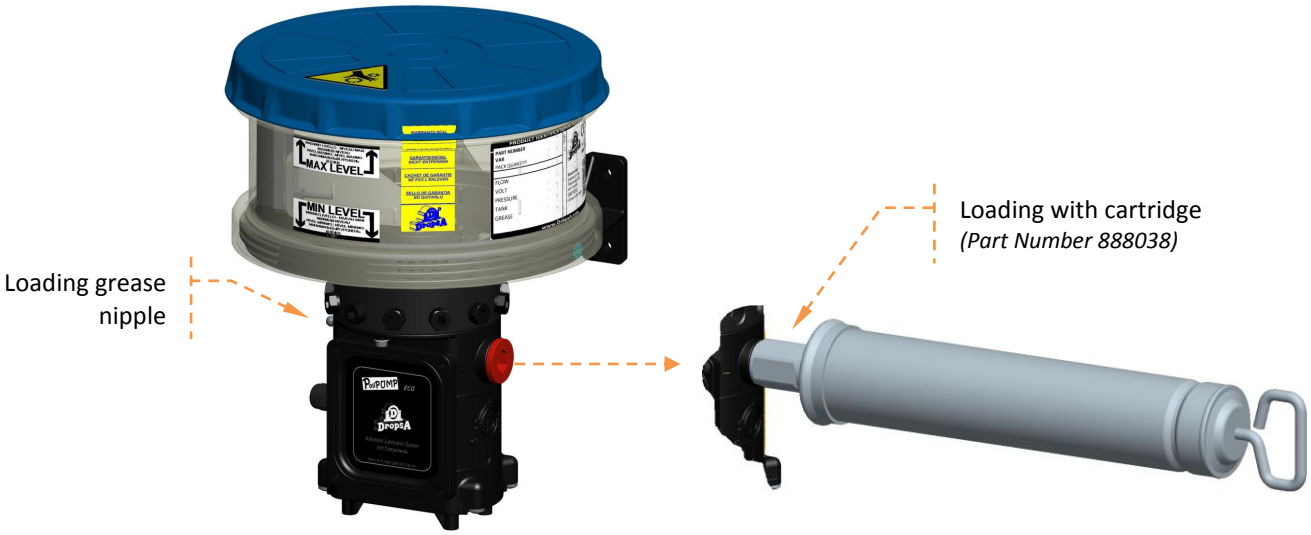


7.2 USE

- Check the setting data indicated on the control panel (if present);
- Press the start button on the machine where the pump is connected;
- Ensure that the pump starts;
- Ensure the adequate lubrication of the machine (if there are doubts on correct operation, you can contact the Dropsa S.p.A. Technical Office and ask for the testing procedure).

7.3 FILLING THE RESERVOIR

Check that all the pump housing holes/caps are occupied.
Filling the reservoir is carried out by means of the fully dedicated filter devices. Proceed with filling, ensuring not to exceed the maximum level line. If this happens, you will note a spill of lubricant from the underside of the lid, which acts as an air vent.



ATTENTION: **To avoid any malfunctions and to prevent the warranty from becoming void, we recommend filling the lubricant without impurities, exclusively from dedicated loading system.**
Please refer to Section 14.2 Lubricants for the lubricant specifications to be used.

7.4 HOW TO USE

If there are no regulations foreseen, the pump is electrically powered by a system that controls the drive and that handles the minimum level contact. For the operation of the lubrication system, refer to the machine's management and control instructions where the pump is installed.

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 motor does not work.	No current present.	Check the power supply.
	The gear motor does not work.	Replace the gear motor ⚠.
	Operating temperatures are too low for the type of grease used.	Preheat lubricant with a heating element on the reservoir.
		Replace the liquid with one fit for pumpability at low temperatures.
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.	Incorrectly set cycle time.	Reprogram the cycle time.
The pump begins the greasing phase but ends it immediately	Defective motor or high output absorption.	Allow to cool for a few minutes and try again. If the problem persists, replace the gear motor ⚠.
	Operating temperatures are too low for the type of grease used.	Preheat lubricant with a heating element on the reservoir.
		Replace the liquid with one fit for pumpability at low temperatures.
FAULT	**CAUSE**	**REMEDIAL ACTION TO BE TAKEN**
The pump does not dispense lubricant.	The reservoir is empty.	Fill the reservoir with clean lubricant;
	Air bubbles in the lubricant.	Disconnect the pipeline from the connection for the pumping element. Activate the pump by pressing the reset button for carrying out an extra cycle until lubricant comes out of the connection without any air bubbles.
	Use of unsuitable lubricant.	Empty the reservoir and refill it with a suitable lubricant again.
	Suction of blocked pumping element	Dissemble the pumping element and re-clean the suction pipes.
	The piston of the pumping element is worn out.	Replace the pumping element.
	The delivery valve of the blocked pumping element.	Replace the pumping element.

⚠ **: Operation may only be carried out by Dropsa specialised personnel (send the product to Dropsa headquarters).**

9. MAINTENANCE PROCEDURES

ATTENTION: **Before any maintenance or cleaning operation, make sure that hydraulic feed and electric power are disconnected.**

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.

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.

CHECK	*FREQUENCY*	*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.
Reservoir level	As required	Restore the lubricant level in the reservoir.
Filling filter	As required	Check and possibly replace.

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. ORDER INFORMATION

PUMPS			
Power zione	Max. number of PUMPING ELEMENTS		
	12	24	36
12VDC	0888270-ECO	0888271-ECO	0888272-ECO
24VDC	0888273-ECO	0888274-ECO	0888275-ECO

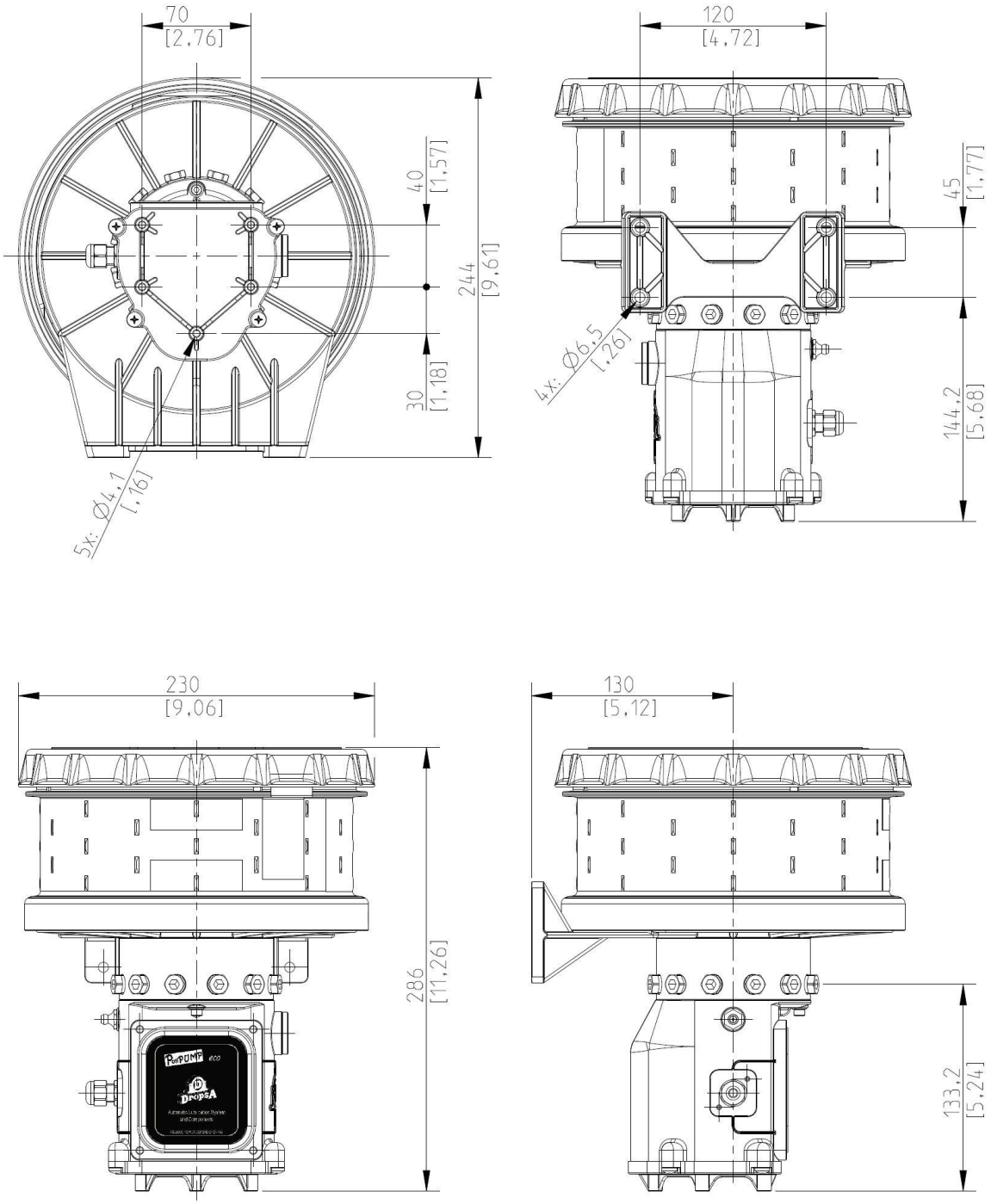
PUMPING ELEMENTS			
CAPACITY	PART NUMBER	CAPACITY	PART NUMBER
0.02cc/cycle	0888451	0.08cc/cycle	0888454
0.03cc/cycle	0888452	0.10cc/cycle	0888455
0.04cc/cycle	0888453	0.13cc/cycle	0888456

OPTIONAL	
PART NUMBER	**DESCRIPTION**
5717300	Nylon tube Ø4x3 (low pressure)
5717218	Nylon tube, Ø4x2, white, 100m
5717258	Nylon tube, Ø4x2, black, 25m
5717259	Nylon tube, Ø4x2, black, 25m, loaded NLGI 00
0888038	Grease filling cartridge kit
3133723	Valved grease filling cartridge kit
3077222	Fitting for loading at 90° M22x1.5

SPARE PARTS	
PART NUMBER	**DESCRIPTION**
0888257	Pump replacement cap
0888116	Reservoir (standard)
3130022	Filling filter

12. DIMENSIONS

PoliPUMP (standard) Dimensions in ***mm [in].***



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

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.

Electrical power supply

No operations must be carried out on the machine before disconnecting it from the electrical power supply and ascertaining that no-one can reconnect it during the operation. All installed equipment (electric and electronic) must be connected to the earthing system.

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).

14.1 LUBRICANTS

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.

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 PoliPUMP pump.

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.

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

15. CONTRAINDICATIONS OF USE

Compliance with the essential safety requirements and machine directive provisions has been checked through the completion of check lists already drafted and contained in the *technical file*.

Three types of lists were used:

- Compliance with essential safety requirements (Machine Directive).
- Risk assessment (EN ISO 12100).
- Electrical safety requirements (EN 60204-1).

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 regulation on proper use according to applicable regulations).
- Impact and crushing. → Moving parts are all enclosed and the designation of such danger has been indicated at the access point.
- Electrocution. → This can occur only in the event of serious negligence by the user who, however, is qualified.
- 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