

OmegaPUMP

Multiple output electric pump
for grease with controller

Operation and Maintenance Manual

Original Instructions

1. INTRODUCTION
2. GENERAL DESCRIPTION
3. PRODUCT IDENTIFICATION
4. TECHNICAL SPECIFICATIONS
5. COMPONENTS
6. UNPACKING AND INSTALLATION
7. INSTRUCTIONS FOR USE
8. PRINCIPLE OF LUBRICATION CONTROL
9. SETTINGS OF LUBRICATION CONTROL
10. APPLICATION EXAMPLES
11. PROBLEMS AND SOLUTIONS
12. MAINTENANCE PROCEDURES
13. DISPOSAL
14. ORDERING INFORMATION
15. DIMENSIONS
16. HANDLING AND TRANSPORT
17. PRECAUTIONS FOR USE
18. CONTRAINDICATIONS OF USE



C22831E - WK 40/19

Manual drafted in compliance with Machine Directive
EC 06/42

I Dropsa products can be purchased at Dropsa branches and authorised distributors. Go to www.dropsa.com or write to sales@dropsa.com

1. INTRODUCTION

This operation and maintenance manual refers to the **OMEGA pump** electric pump and contains important information for the health and safety of the personnel who uses this equipment.

The most recent version can be obtained by requesting it from the Sales Technical Office or by viewing it 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

The centralized lubrication systems are designed for automatic lubrication of specifically positioned friction points. These systems significantly reduce the maintenance costs of the machinery on which they are installed, eliminating downtime for lubrication operations and extending the useful life of lubricated components. The lubrication systems also allow all the points that require lubrication to be reached, in particular those points that are difficult for an operator to reach.

The pump can be used to power different lubrication systems: centralized (progressive), direct to the point (multi-line) and single line (33V system).

2.1. CENTRALIZED LUBRICATION (*PROGRESSIVE*)

The simplest configuration, consisting of the following components:

- **Electric pump for supply with tank (OmegaPUMP)**
- Primary pipe
- Multi-way distributor
- Secondary pipe

The electric pump supplies a distributor via the primary pipe (from the pumping unit). The distributor is entrusted the task of distributing and metering the flow of lubricant between the various friction points.

The modular system of the progressive feeder has the advantage of providing flexibility for the system design engineers and the advantage of its low maintenance cost.

The progressive system is mainly used for grease lubrication in total-loss oiling systems or in oil recirculation systems. High pressure and operation with very long pipes are common requirements of demanding environmental conditions.

The progressive system can also be used subdivided into zones, when irregular cycle conditions are required for different parts of the machine. The design parameters of a progressive system include many variables, such as the volume and frequency of the grease required for each point, the number of points, the management conditions and the pressure of the pump.

2.2. DIRECT LUBRICATION TO THE POINT (*MULTI-LINE*)

The OmegaPUMP electric pump lubricates the friction point directly, without the need to use other flow metering devices. This means the product can provide economical, versatile and easy-to-use lubrication.

The OmegaPUMP is designed to feed single-point lubrication systems in vehicles, plants and various kinds of machines that use grease.

The pump is designed to be operated using a maximum of 8 pumping units, allowing the feeding of several independent lines.

It is supplied in series without pumping units, which must be ordered separately, selecting the desired flow rate from 5 models.

2.3. SINGLE-LINE LUBRICATION (*33V SYSTEM*)

Using the appropriate vent-valve kit, the pump feeds the metering valves incorporated in the system, pressurizing the circuit and injecting the lubricant at the friction point. Afterwards, when the pump is turned off, the circuit is depressurized, enabling the refilling of the metering chamber for the next cycle.




2.4. FUNCTIONALITY AND BENEFITS

- The OmegaPUMP electric pump is a piston pump activated by an eccentric spring-return system, designed to operate a maximum of 2 progressive pumping units and 8 multi-line pumping units, enabling the feeding of several independent lines. It is supplied as standard without pumping units, so they must be ordered separately.
- In all versions of the tank (with follower plate or cartridge), the pump is equipped with a minimum level sensor.
- The version of the tank with the follower plate is made of a transparent plastic material. The indication of the maximum level visible is guaranteed by a red indicator which once activated ensures the safety of the machine and personnel by releasing excess lubricant into the tank. It is possible to mount a sensor with a special conversion kit in order to indicate the maximum level.
- The tanks/bellows for the cartridge versions are interchangeable, both in terms of thread and size, with others commonly found on the market. The cartridge protection is made of a semi-transparent plastic material. Mounting and replacement of the cartridge is simple and requires no tools, owing to its latch with a bayonet connection.

- The electrical connection provides a DIN 43650 connector for power and two M12 connectors for input and output signals.
- There is an electronic control board that can be used to set different types of lubrication cycles and controls using a touchscreen display interface.
- Its size is greatly reduced, and support distances are interchangeable with several other models (our own and those of our competitors).

3. PRODUCT IDENTIFICATION

A label is located on the pump tank that indicates the product code, the power supply voltages and the basic characteristics.

PRODUCT IDENTIFICATION TEST CERTIFICATE	
PART NUMBER	888580
VAR	
PACK QUANTITY	
GREASE E-PUMP "OMEGA"	
VOLT	12V DC
CURRENT	Max. 4 A
TANK	1,2 L
GREASE	NLGI 000 ÷ NLGI 2
RPM	17±4
PUMPING element	8M + 2P
WO: IT	0001
  Drops SpA, Milan Italy Year: 2017 MADE IN ITALY	
Scan for Info Scannen für Info Télécharger Info Info Prodotto 扫描产品信息 Сканируйте штрих-кода	
	
www.DropsA.com	

4. TECHNICAL SPECIFICATIONS

GENERAL TECHNICAL CHARACTERISTICS		
Pumping system	Type	Cam with spring return
Flow rate *	Multi-line	cm ³ /rev [in ³ /rev] 0,005 - 0,01 - 0,015 - 0,025 - 0,05 [0.0003 - 0.0006 - 0.0009 - 0.0015 - 0.003]
	Progressive	cm ³ /min [in ³ /min] 2,8 - 5,2 [0.17 - 0.31]
	Progressive Reg.	0.4 ~ 2.8 [0.02 ~ 0.17]
Operating pressure	Multi-line	bar 200 [2900]
	Progressive	[psi] 280 [4061]
Number of outputs (pumping)	Multi-line	N° 8
	Progressive	2
Delivery connection (pumping output)	Multi-line	Type G1/8"
	Progressive	G1/4"
Operating temperature	°C [°F]	-20 ~ +70 [-4 ~ +158]
Storage temperature	°C [°F]	-30 ~ +80 [-22 ~ +194]
Net weight	Kg [lb]	3 [6.6]
Relative humidity	%	90
Tank capacity	Follower plate	l 1,2 [0.32]
	Cartridge	[gal US] 0,7 [0.18] 0,4 [0.1]
Lubricant	NLGI	Grease 000 ÷ 2
Protection degree	IP	65
Noise	dB	<70
Power supply voltage	VDC	12 - 24
Maximum absorption	A	4 @12V - 2 @24V
Speed	RPM	17±4

CONNECTOR BASES TECHNICAL CHARACTERISTICS		
Power supply voltage	VDC	12 - 24
Working temperature	°C [°F]	-20 ÷ +70 [-13 ÷ +158]
Storage temperature	°C [°F]	-30 ÷ +80 [-22 ÷ +194]
Hardware characteristics		Motor overload restriction Power transient protection Protection against power supply disturbances (spikes) Remote alarm signalling Cycle control via reed
2 input signals (self-configurable)	PNP - NPN	Self-powered from the same connector V sensors = Power supply voltage - A = 1A max)
2 Output signals (configurable)	PNP - NPN	V outputs = Power supply voltage - A = 1A max per output



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

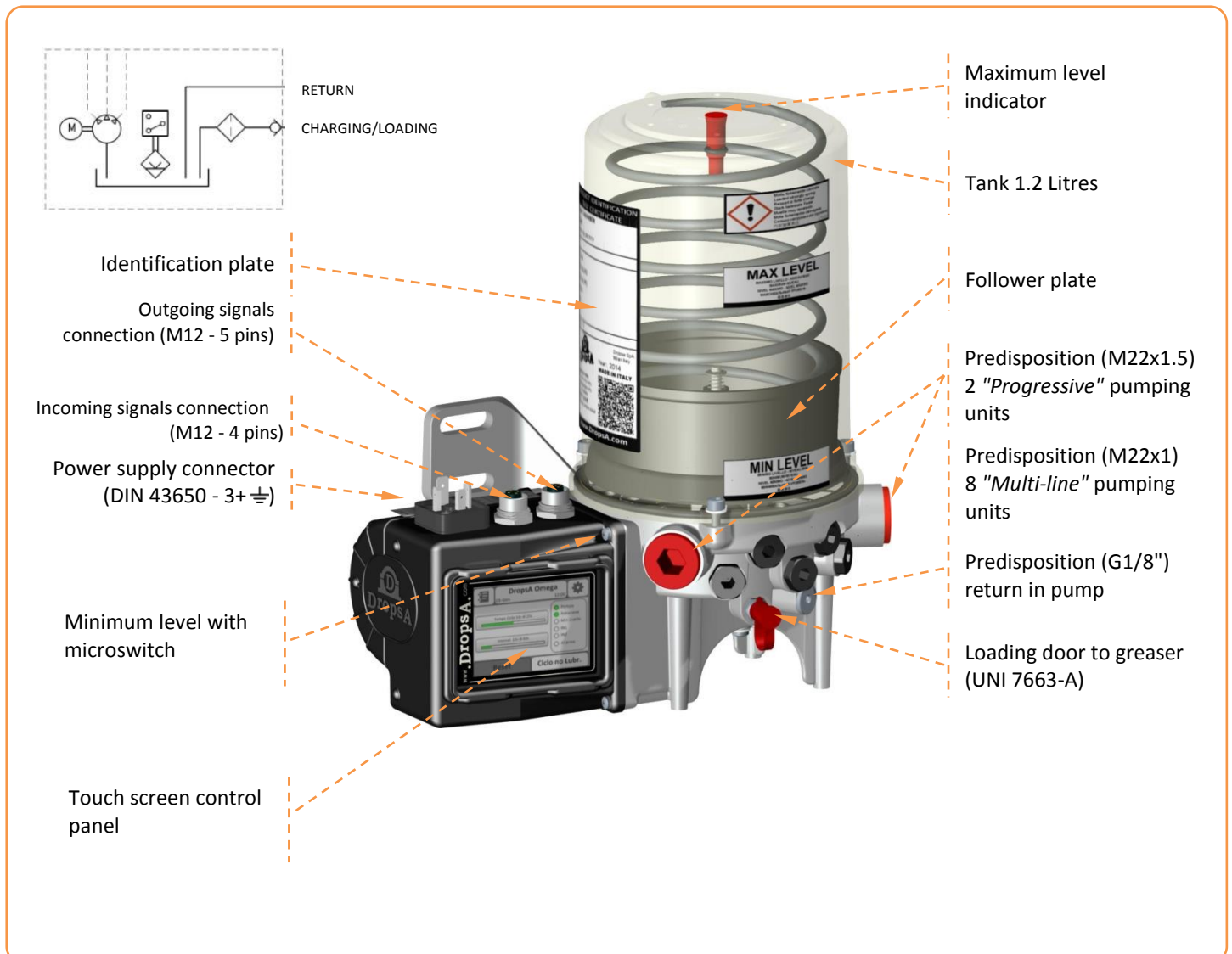


* **NOTE:** The indicated flow rate value refers to the following test conditions: grease with NLGI 2 consistency class, standard environmental conditions (Temperature 20°C [68°F], pressure 1bar [14.5psi]), counter-pressure of 50bar [735psi] and nominal voltage 12VDC and 24VDC.

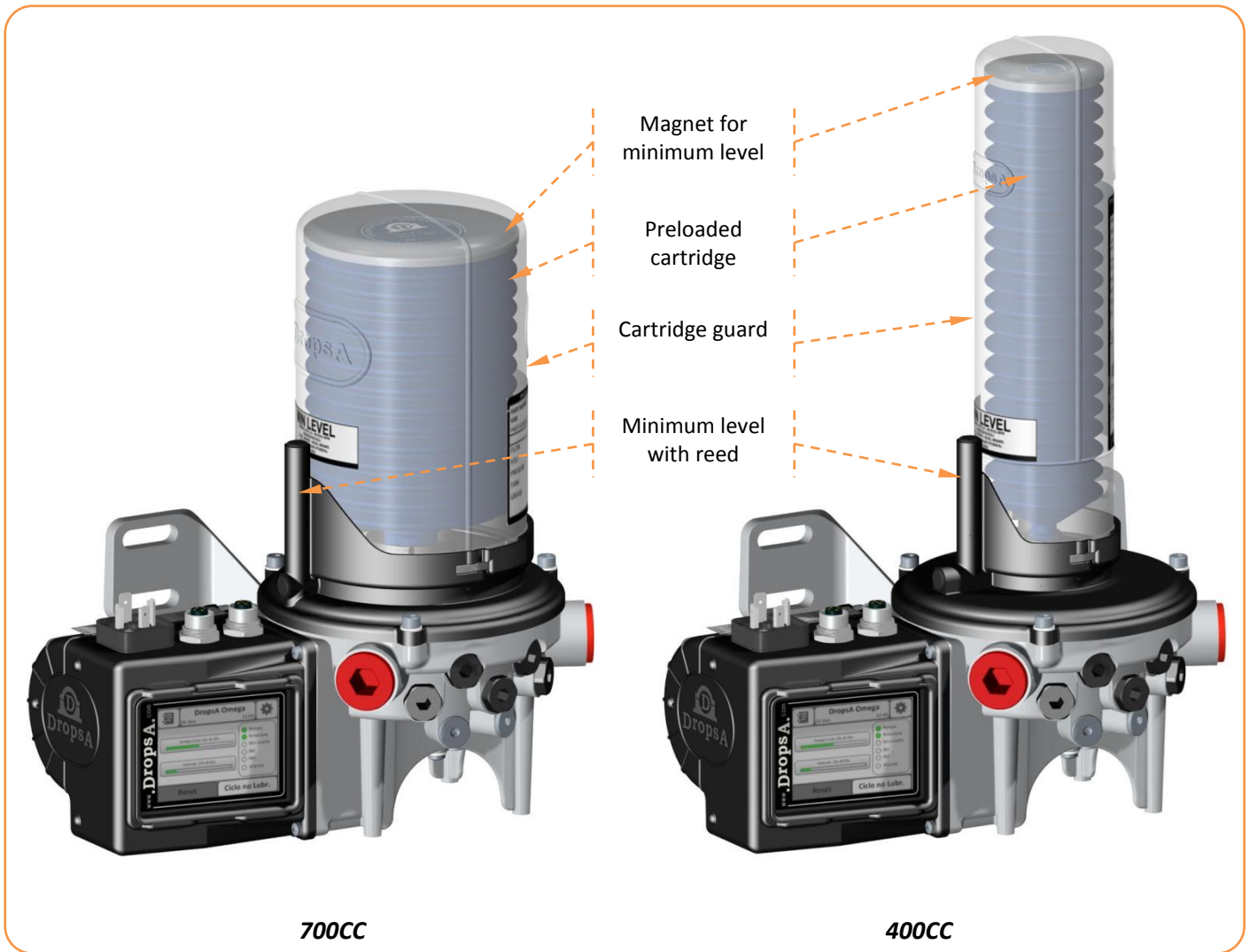
5. COMPONENTS

The main parts, accessories and optional equipment that make up the pump in the various versions are indicated below.

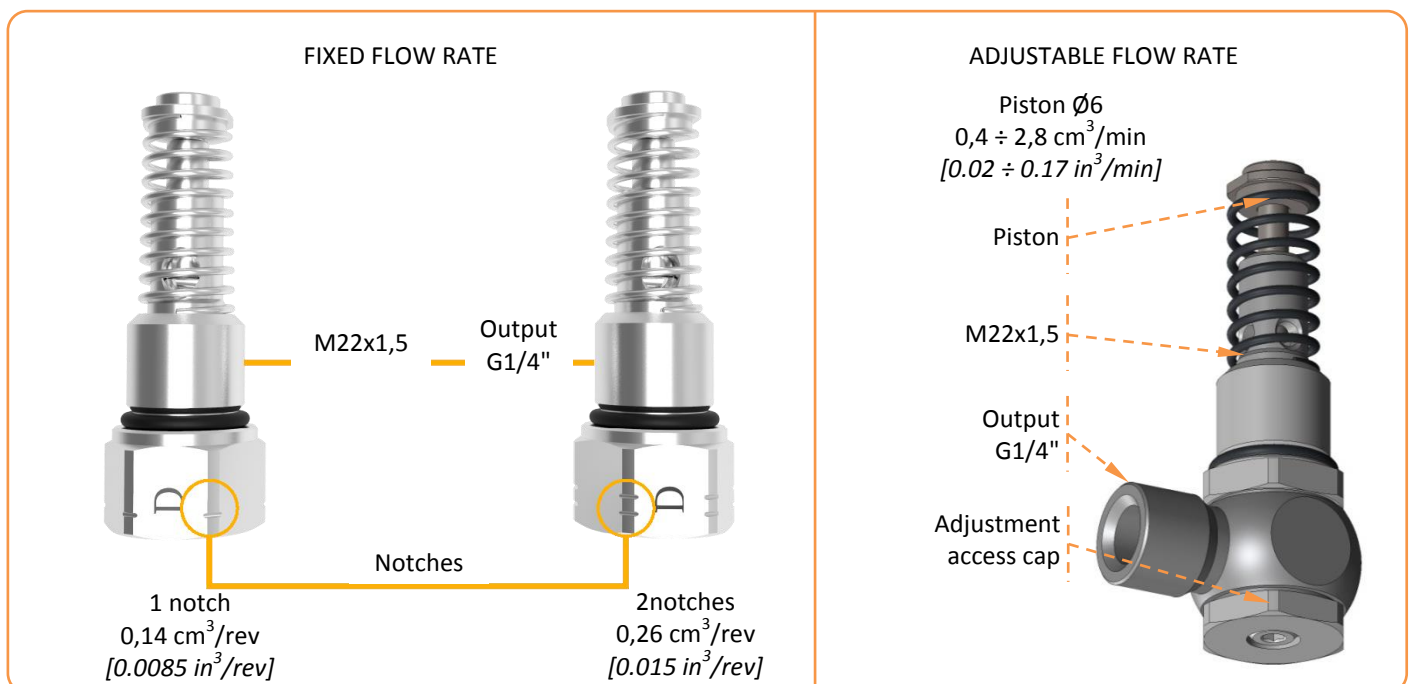
5.1. OMEGA PUMP WITH FOLLOWER PLATE



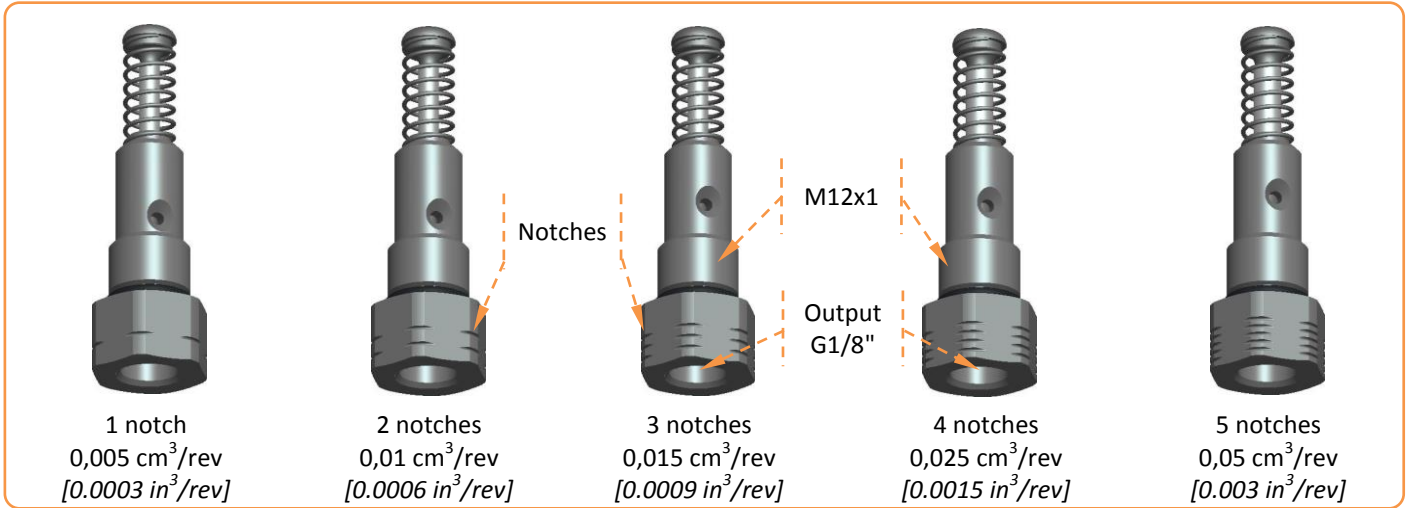
5.2. OMEGA PUMP WITH CARTRIDGE



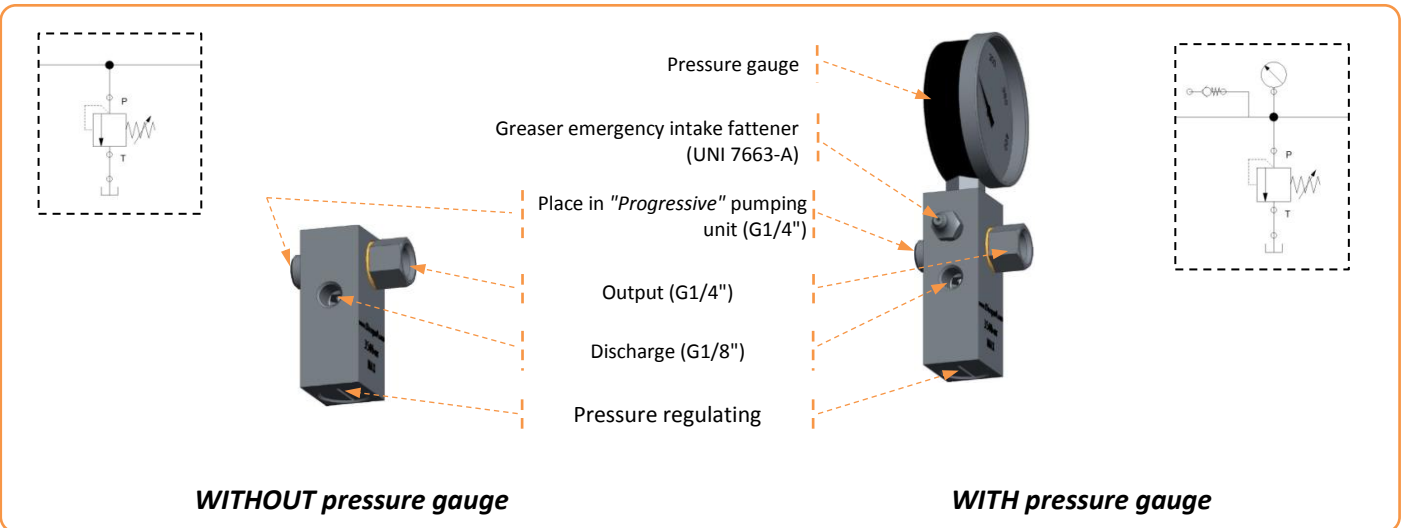
5.3. "PROGRESSIVE" PUMPING UNIT



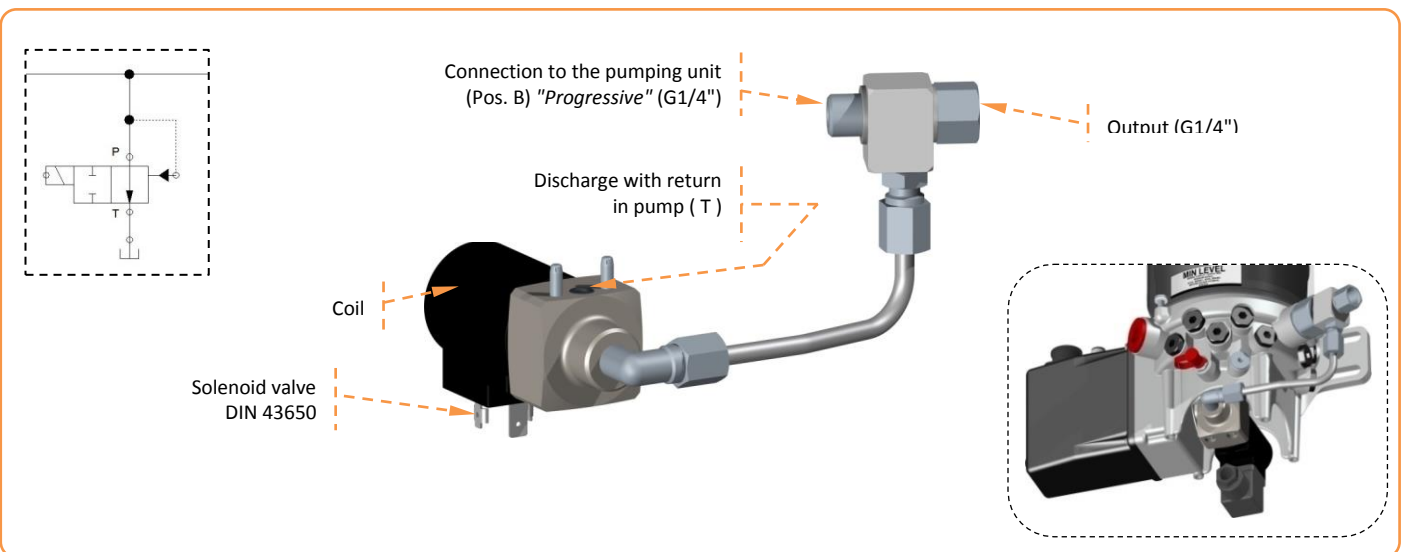
5.4. MULTI-LINE" PUMPING UNIT



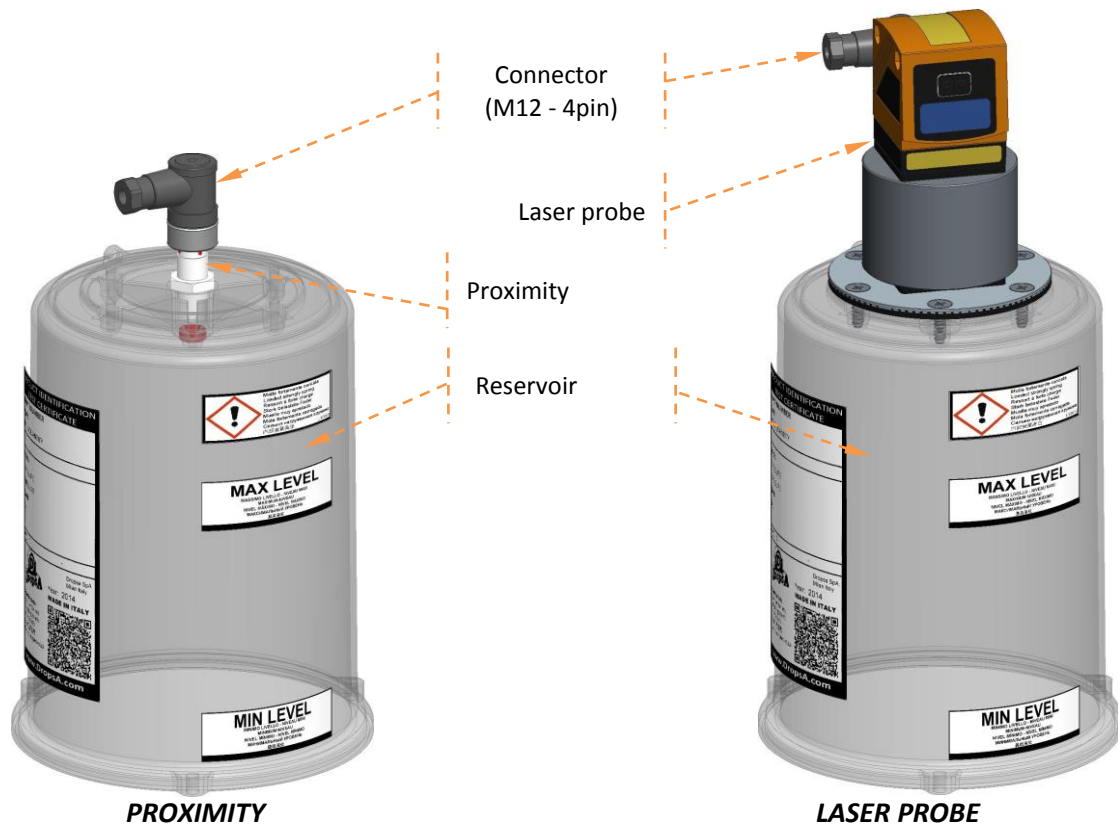
5.5. KIT BY-PASS (OPTIONAL)



5.6. KIT VENT-VALVE (OPTIONAL)



5.7. RESERVOIR MAXIMUM LEVEL SENSOR KIT (OPTIONAL)



6. UNPACKING AND INSTALLATION

6.1. UNPACKING

Once the suitable installation location has been identified, open the packaging, remove the pump and ensure that it has not been damaged 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 THE PUMP

- Position the electric pump and secure it to its support using the specific $\varnothing 9\text{mm}$ (0.354in) slots with 4 suitable screws.
- Mount the pump so that the greaser for filling the tank and the control panel are easily accessible.
- Leave at least 100 mm (3.94 in) perimeter distance from other equipment or obstacles that prevent access to the pump.
- Mount 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 particularly aggressive environments.
- Do not install the pump in environments where there are explosive or flammable mixtures.
- Do not install the pump near heat sources or electrical equipment that may disrupt correct operation of the electronics.
- Ensure that pipes and cables are appropriately secured and protected from any impact.
- Ensure that the lubricant used is suitable for the operating temperature, especially below 0°C . For the correct choice of lubricant, contact our Sales Technical Office.

6.3. PLUMBING CONNECTIONS

The plumbing connection point to install the pump to the system is located on the pumping body with G1/4" thread for "Progressive" pumping units and G1/8" for "Multi-line" pumping units. The possibility of having the return in pump with G1/8" thread is provided.



WARNING: The piping must reach the point to be lubricated by the shortest possible route.

6.4. ELECTRICAL CONNECTION

The electrical connection is the responsibility of the user who must provide unequivocal identification of the power supply connection, inlet and output signals.

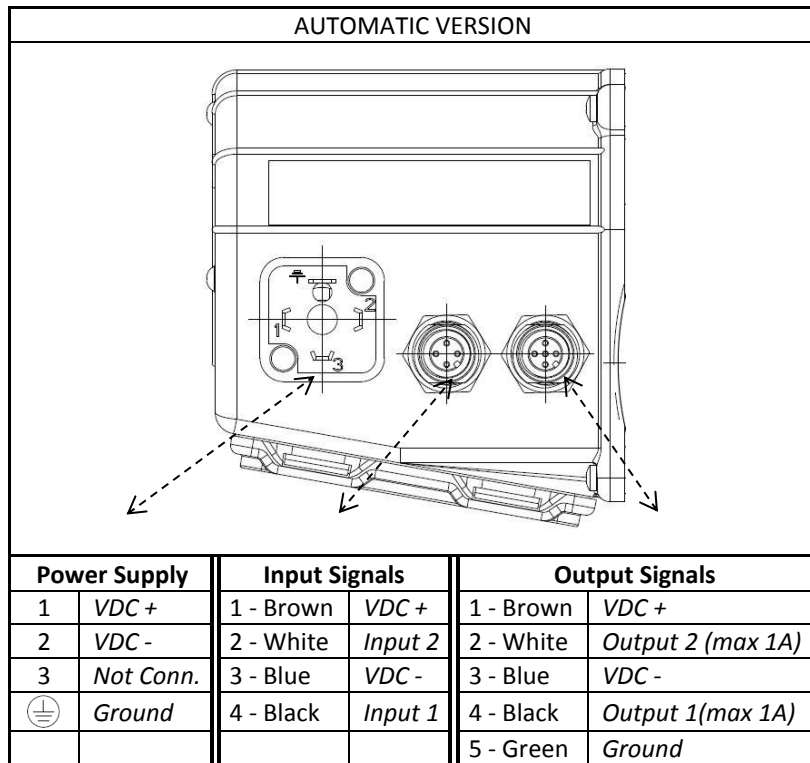
Connect the machine to the electrical line as indicated in this manual.

The power supply cable must be a suitable gauge for the absorption of the machine and it must be a type compliant with the prevailing regulations. This can be ordered separately (See [14.ORDER INFORMATION](#))



ATTENTION: Ensure that the pump electrical power supply corresponds with that of the machine (label applied to the side of the reservoir).

6.4.1. CONNECTION DIAGRAM



Input signals					
Omega connector			System sensors		
Pin	Description	Connection	NPN	PNP	CONTATTO
1	+				
3	-				
2	Input 2				
4	Input 1				

Input signals					
Omega connector			System sensors		
Pin	Description	Connection	Out P	Out N	
1	+				
3	-				
2	output signal 2				
4	output signal 1				
5	PE				



1 and 3 pin of inlet and output connectors provides the some power at heads of supply connector (2A max for each connector). This voltage can be used directly to supply sudden change in voltage (Eg sensors, light bulbs, relays ..).

6.5. INSTALLATION OF PUMPING UNITS / PLUGS

The pumping units are not included in the pump and must be selected and purchased separately. The plugs are included in the pump and already mounted in the pumping holes.

To mount the pumping units, proceed as indicated below:

- Identify the most correct position, distributing them evenly on the holes.
- Remove the plugs from the holes using a 16-mm fixed wrench or a 6 mm Allen wrench for Multi-line systems and 12 mm Allen wrench for progressive systems.
- Screw in the pumping units and tighten to a torque of 12Nm (Multi-line) and 20 Nm (Progressive) using a 16 mm (Multi-line) and 27 mm (Progressive) fixed wrench.



WARNING: Introduce the pumping unit into the pre-established output, taking particular care for correct engagement in the threading.

7. INSTRUCTIONS FOR USE

7.1. OPERATIONS TO CARRY OUT BEFORE START-UP

- The unit can be started up only by specialized personnel.
- Using the pump submerged in fluids or in particularly aggressive or explosive/flammable elements 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 follow sanitary regulations.
- Always use suitable piping for the operating pressure.
- Check the integrity of the pump.
- Check the lubricant level in the tank (min/max indication on the tank). If the level is low, proceed as described in section 7.2.1. Filling the tank.
- Ensure that the pump operates at the operating temperature and that the piping is free of any air bubbles.
- Check for proper connection of the electrical devices.

To determine the maximum operating pressure, you must know the pressure drop for the piping connected to the pumping units based on the length, operating temperature and type of lubricant.

Based on these variables for correct distribution to the point, you must always ensure that the piping pressure loss, summed with the pressure required on the point to be lubricated, is not higher than the maximum potential pressure at the pump delivery.

7.2. LOADING LUBRICANT

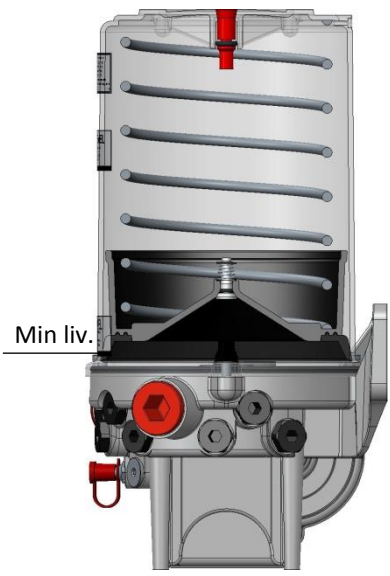
Ensure that all the pumping unit / plug lodging holes have been occupied.



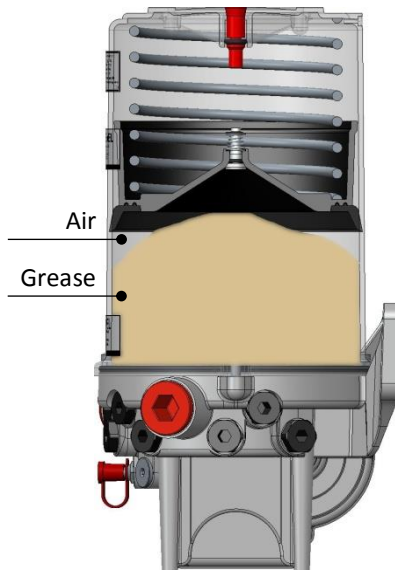
WARNING: In order to prevent any malfunctions and voiding of the warranty, we recommend topping up the lubricant without impurities exclusively from the dedicated loading system.

7.2.1. FILLING THE TANK (FOLLOWER PLATE VERSION)

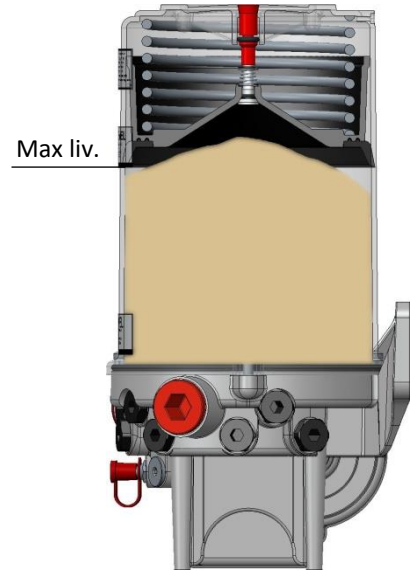
The feeder is filled using a dedicated device complete with a filter. In case it is necessary to perform the initial filling (with the pump completely empty and no remaining grease from the previous load), the pump must be positioned vertically to remove the air in the tank until the vent point corresponding to the red maximum level indicator is reached (the lubricant is supplied from the base). To speed up the air bleeding operation, we recommend pressing the indicator until all the air is evacuated, releasing it at the same time as interrupting the filling of the tank. Subsequently, filling can be performed based on different guidelines, checking that the maximum level line is not exceeded. If the line is exceeded, lifting of the maximum level will be indicated up to a maximum of 10mm (0.39"). After that, if filling is not interrupted, a leakage of lubricant will be noticed from the central part of the follower plate (air vent). This will not cause a problem or malfunctioning, but grease may leak from the drain hole of the tank if there is an excessive amount.



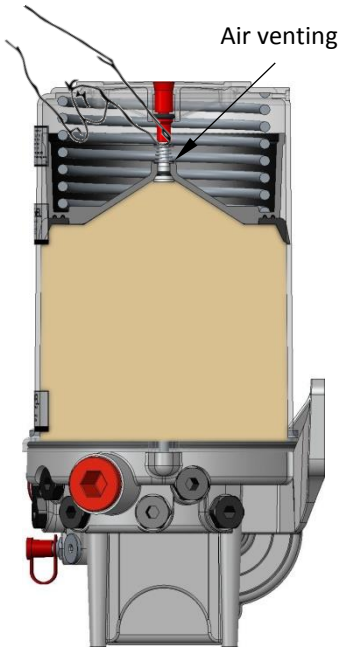
EMPTY



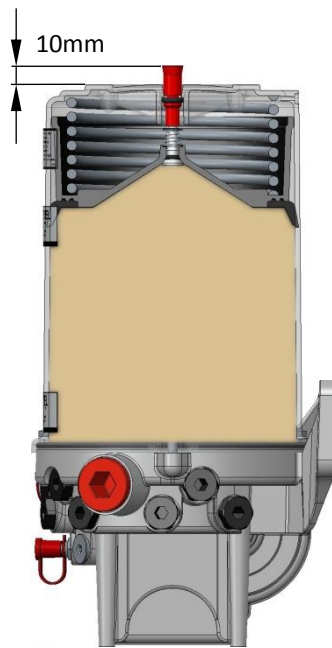
LOADING



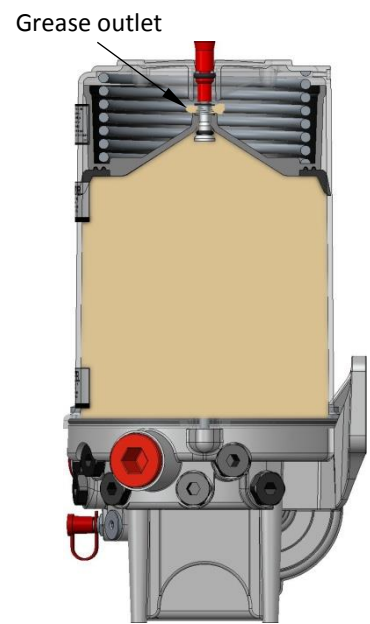
MAXIMUM LEVEL (with air)



MAXIMUM LEVEL (without air)



OVER MAXIMUM LEVEL



SAFETY DISCHARGE

7.2.2. FIRST FILLING/REPLACEMENT OF PRELOADED CARTRIDGE (CARTRIDGE VERSION)

The pump is supplied without a cartridge and completely empty. When the pump is ordered, the cartridges that will be used must also be ordered based on the type of grease foreseen. Provide an extra cartridge which will be used for the first filling.

For the first filling (with pump completely empty), you must proceed as follows:

- Remove the cartridge guard with bayonet fastening.
- Remove the cartridge plug.
- Screw the cartridge onto the pump all the way, tightening it moderately.
- Unscrew and remove the plug or pumping unit if present in “C” position. (See 14 chap. ORDERING INFORMATION.
- Keep the pump in horizontal position.
- Press the cartridge manually and gradually, sending the grease into the pump and evacuating the air.
- as soon as you notice the grease coming out of the hole where the previously removed plug was, stop pushing on the cartridge.
- Screw on and tighten the plug previously removed.

For replacement, you must proceed as follows:

- Remove the cartridge guard with bayonet fastening.
- Unscrew and remove the empty cartridge.
- Recover the magnet from the empty cartridge (used to signal the minimum level).
- Insert the magnet on the new cartridge.
- Remove the cartridge plug and remove the protection film (if present).
- Press the cartridge slightly so that a small quantity of grease comes out, ensuring that you evacuate all the air in the mouth.
- Taking care not to allow the air to come back in, screw the cartridge onto the pump all the way, tightening it moderately.
- Insert the magnet in the new cartridge.
- Refit the guard with bayonet fastening.

7.3. SETTING OF ADJUSTABLE PUMPING UNIT

To set the progressive pumping unit with adjustable flow, proceed as follows:

- Ensure there is no residual pressure in the pressure line.
- Remove the adjustment access cap using a 4mm Allen wrench (see 5.3. “Progressive” PUMPING UNIT).
- Rotate the jacket of the pumping unit using a 4 mm Allen wrench inserted in the internal grub screw.
- Each complete rotation of the Allen wrench is approximately 0.6cc/min. Setting range from 0.4 to 2.8 cc/min. for a total of 4 rotations.
- Check the presence and conformity of the copper gasket (replace if necessary).
- Replace the cap using a 4 mm Allen wrench.

7.4. VENT VALVE KIT INSTALLATION (OPTIONAL)

The optional vent-valve (release valve) kit is designed for use with the fixed-flow pumping unit in position B. However, in case of a new pipe for the installer, it can be used with different solutions (see 5.6.VENT-VALVE KIT).

For assembly and use, proceed as follows:

- Remove the screw with a gasket on the lower part of the pump.
- Screw the two self-tapping screws into the holes provided, ensuring the presence of the central gasket.
- Tighten the union on the pump in position B.
- The free connector and the power cord must be of an adequate size and type, in compliance with applicable provisions. This can be ordered separately (see 11. ORDER INFORMATION).

8. PRINCIPLE OF LUBRICATION CONTROL

This version of the pump includes an electronic card for control of lubrication.

The control board located inside the motor housing guarantees full autonomy in the management of pump lubrication cycles, alarms and controls. Additionally, the pump is equipped with two *digital inputs*, for control of the lubrication cycle, and two *digital outputs* for monitoring lubrication status and alarms.

The **Omega** automatic lubrication control unit can be programmed to operate according to the principle of **intermittent lubrication**.

This principle is based on three basic concepts:

- A) **Prelube** → Pre-lubrication
- B) **Lube (work – wait)** → Lubrication
- C) **Standby**

A) PRELUBE

This phase consists of a set of lubrication cycles necessary for venting air from the system and controlling all the lubrication functions.

Pre-lubrication takes place when the system is started.

If pre-lubrication is set to the "0" value, intermittent lubrication will only consist of the lubrication phase.

B) LUBE

This phase consists of a set of cycles during which the device performs the lubrication. Each cycle is, in turn, divided into two sub-cycles (*work and wait*) and involves the monitoring timers, counters or/and inputs:

- During the *work* phase, the system sends the lubricant to the lubrication points.
- During the *wait* phase, the system remains on hold before the start of the next lubrication cycle or the standby phase (if only one lubrication cycle is set).

The lube can be adjusted in five ways:

- **PS/SEP**: Discharging of lubricant is controlled by the pressure switch or by the Progressive System.
- **PULSES COUNT**: Discharging of lubricant is controlled by a **pulse-counter**.
- **ROTATION**: Release of lubricant is controlled by the number of motor **rotations**.
- **TIME**: Release of lubricant is controlled by a timer.
- **EXTERNAL ENABLING**: Release of lubricant is controlled by an external controller.

C) STANDBY

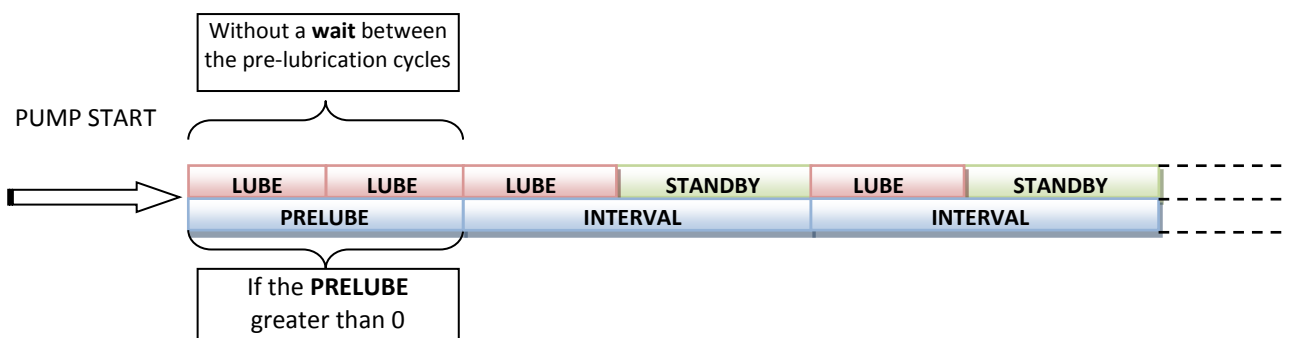
In this phase, the lubrication system is idle until the next phase of lubrication.

This phase cannot be controlled directly; however, the Lubrication *interval* can be controlled.

Lubrication Interval means the period between the start of two Lube phases.

The Lubrication Interval can be controlled in four ways:

- **TIME**: The Lubrication Interval is controlled by a timer.
- **PULSES COUNT**: The Lubrication Interval is controlled by a pulse-counter.
- **TIME&PULSES**: The Lubrication Interval is controlled by a pulse-counter. Everything depends on which of the two types of controls intervene first.
- **PULSE&TIMEOUT**: The Lubrication Interval is controlled by a pulse-counter. In contrast to the Time&Pulse mode, an alarm is generated if the timeout period is exceeded.

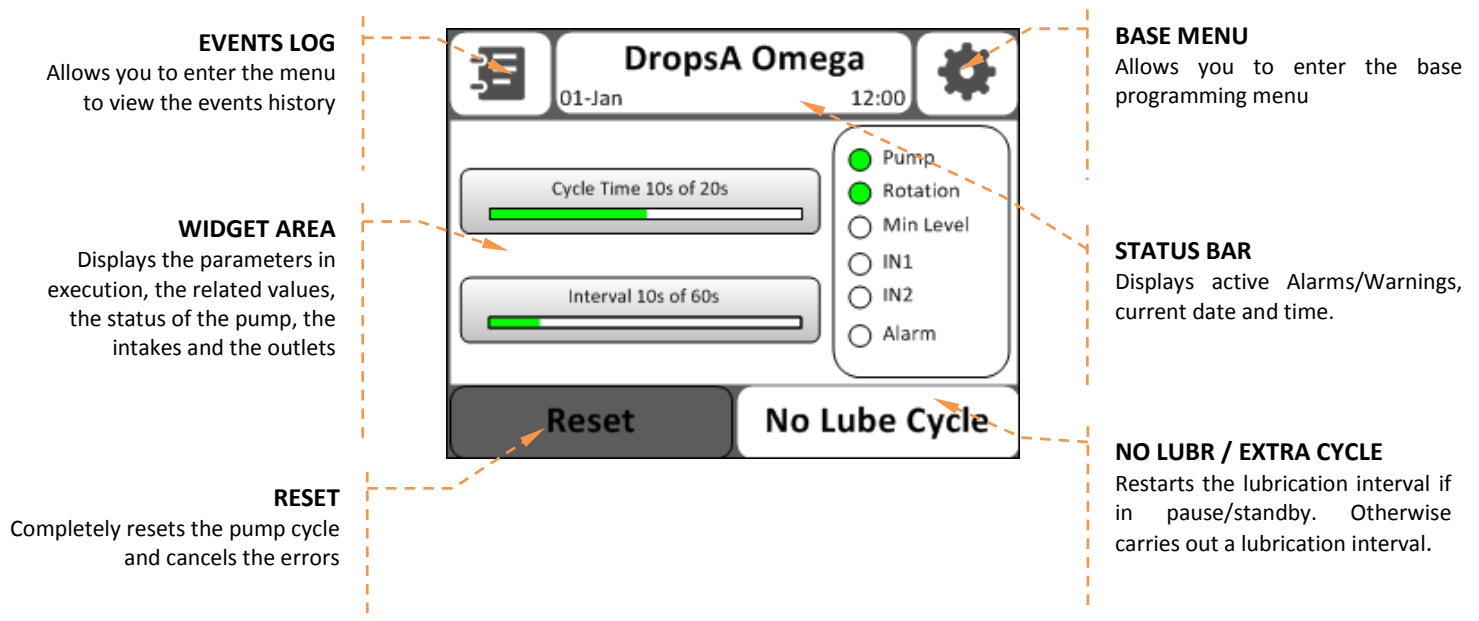


For the conditions of use and programming of cycles see paragraph 7.5.4.

9. SETTINGS OF LUBRICATION CONTROL

9.1 DESCRIPTION OF THE CONTROL PANEL

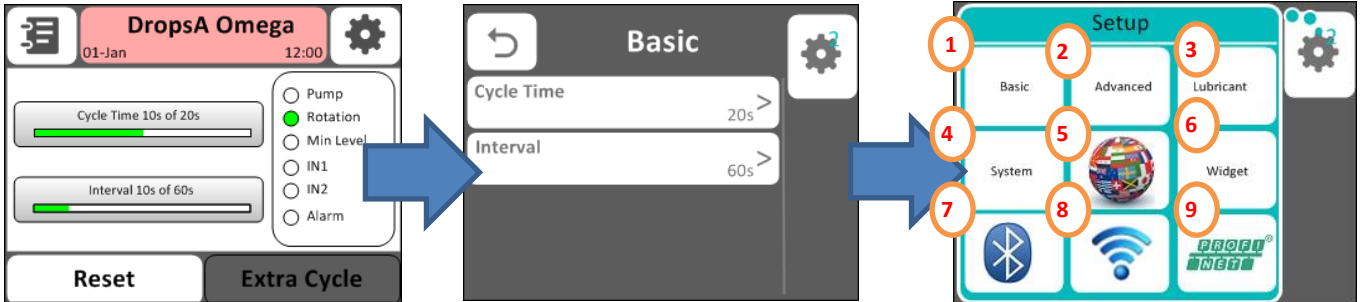
The pump is supplied with a display TOUCH SCREEN for the interaction with the user. Following are the MAIN PARTS OF THE PANEL of initial planning.



Pressing the central part of the screen (Widget Area), you can view other statuses of the pump. On the other hand, pressing the upper part of the screen (Status bar), you can view additional information concerning the status of the alarm/warning present.

9.2 NAVIGATION BETWEEN THE VARIOUS MENUS

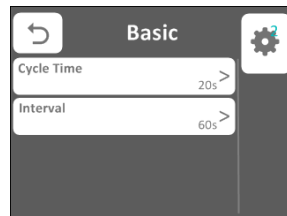
Settings of the complete operating modes can be set up entering the *Advanced* menu where you can set all the parameters of the **Omega** in order to be able to implement all the possible control logics. For the complete list of advanced parameters that can be set in the Advanced menu, see the table in sect. 7.5.4.4. To access in **ADVANCED MENU** CLICK two times on the wheel at the top right.



Below are the screens that can be selected from the various menus

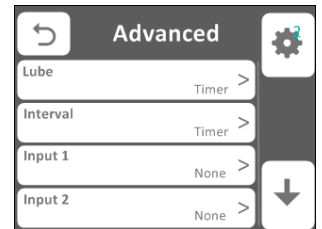
1. **BASIC MENU:**

In this section, you can set only the most used parameters for the type of system selected.



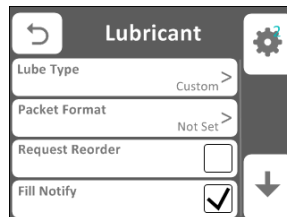
2. **ADVANCED MENU**

In this section, you can set all the parameters related to the entire system



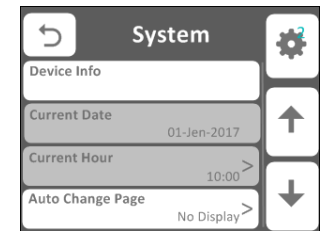
3. **LUBRICANT**

From the "Lubricant" menu, it is possible to activate/deactivate notifications corresponding to filling and/or reorganization of the lubricant contained in the pump.



4. **SYSTEM MENU**

Allow to set up general system datas (e.g. dates, hour.)



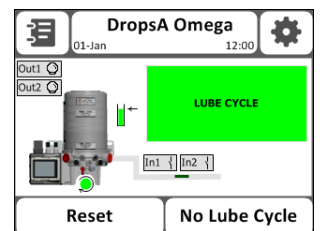
5. **LANGUAGE**

Allow to set up the language simply clicking on the state flag.



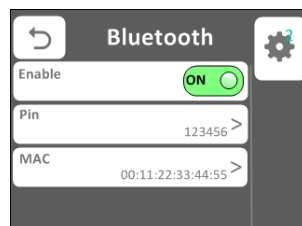
6. **WIDGET**

From the "Widget" menu, it is possible to change graphic components in the Widget Area of the home screen (described in paragraph 7.5.1.).



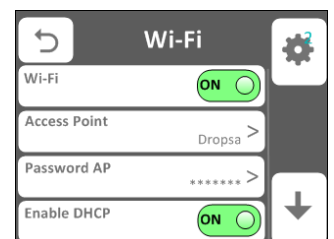
7. **BLUETOOTH**

To start or cut the connection between the pump and a mobile



8. **WIRELESS**

You can change the settings for Wi-Fi connection. With the wifi connection you can access the dropsa cloud that allows you to check the pump, view errors and request direct assistance to dropsa.



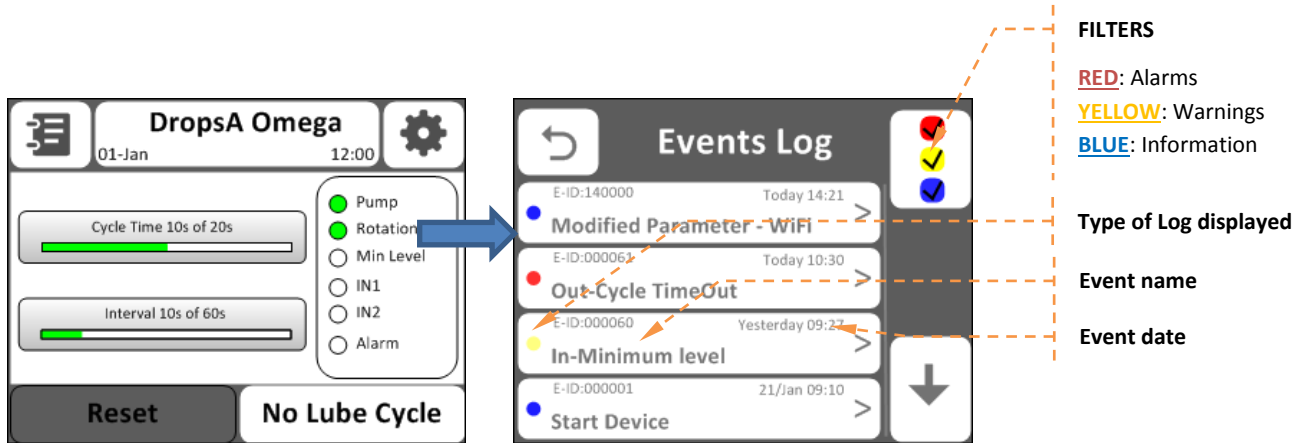
9. **LAN/PROFINET SETTINGS**

The "LAN/PROFINET" menu and its functionality is not available on the **Omega** pump.

9.3 DESCRIPTION OF THE “EVENTS LOG” DISPLAY

Clicking on the button at the top left, you can view the “events log” menu. This menu lets you view all the operations carried out on the pump, also allowing you to filter the events by alarm.

For example, clicking on the red dot, only the events connected with alarms, the yellow includes both events related to alarms and those related to warnings such as the minimum level signal and filtering the blue colour, all of the operations that have been carried out will be displayed.



9.4 PROGRAMMING THE PUMP

The following section describes: the main graphic components of the interface, navigation between the settings menus and it contains a detailed explanation of every parameter and the possible values that they can assume.

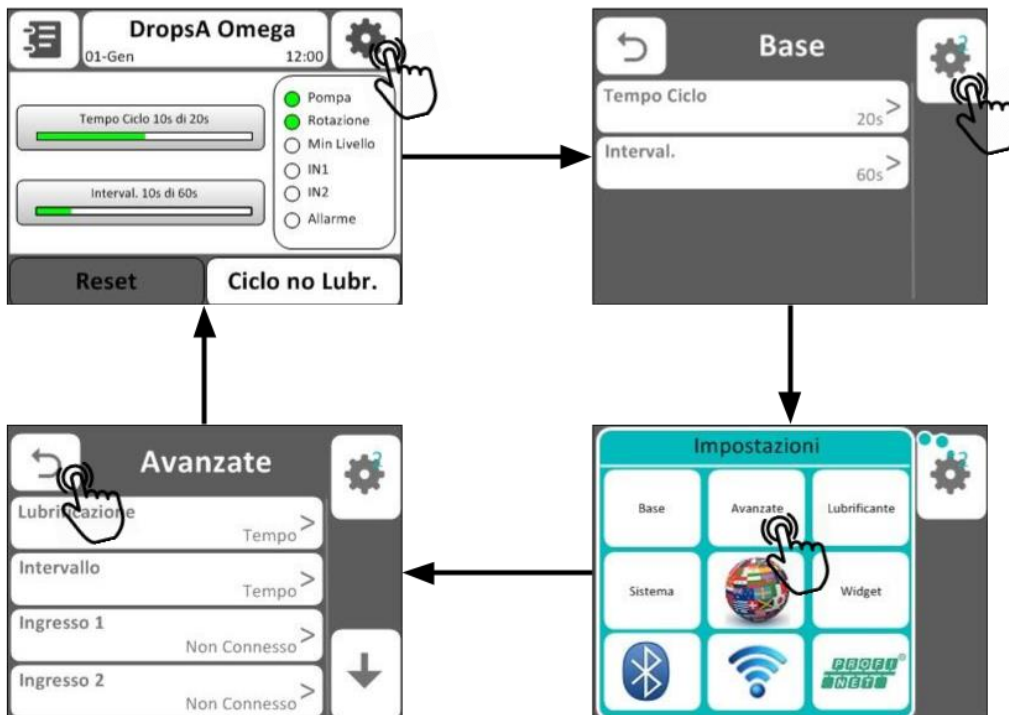
The pump can be managed with 2 MAIN MENU:

- **BASIC MENU**
- **ADVANCED MENU**

9.4.1. NAVIGATION BETWEEN THE VARIOUS MENUS

To access the menus click on the gear in the upper right corner, from the initial screen, in this way you enter directly into the basic menu. Press on the gear in the upper right corner to display the menu selection pop-up. Press one of the nine buttons to use the desired menu.

To return to the home screen and exit the menu, press the arrow in the upper left corner. Below is shown the common navigation modes in the Basic and Advanced setting menus.



9.4.1 BASE MENU

The **BASE MENU** allows the operator to carry out a quick initial system setting.

In this menu are shown only the basic parameters relating to the type of system set, with the parameters in the advanced menu.

9.1.1. ADVANCED MENU

The **ADVANCED MENU** allows the installer a quickly configure the system.

This menu also displays the parameters of the basic menu.

The main parameters to configure a system are:

- Lubrication
- Range
- Inlet 1
- Inlet 2

By changing the value of any parameter it is possible that other parameters will be shown in red colors "Parameter error". "Parameter error" means that the combination of parameters is not correct and consequently the pump does not start the lubrication cycle.

To resolve this error you need to change the parameter (s) with a correct combination of parameters.

9.1.1.1. PARAMETERS RELATING TO THE OPERATING MODE

The following table shows the operating parameters relating to the operating modes and possible settable values.

Name	Full name	Default value	Description	Values
Lubrication	Lubrication	PS/SEP	<i>Lubrication phase adjustment</i>	PS/SEP Pulse counting Rotation Time External enabling
Range	Lubrication range	Time	<i>Lubrication range adjustment</i>	Time Pulse counting Time&Pulses Pulses &TOut
Inlet 1	Inlet 1	SEP/PROX	<i>Type of sensor connected to input 1</i>	Disconnect PS SEP/PROX Pulse counting Suspension External enabling
Inlet 2	Inlet 2	Stand by	<i>Type of sensor connected to input 2</i>	Disconnect PS SEP/PROX Pulse counting Suspension External enabling

9.4.2.1 OPERATING MODE – PROGRAMMING CYCLES

The **Omega** pump has 17 operating modes:

Each operating mode is connected to the two digital inputs selected (*Input 1* and *Input 2*).

Following the combinations for each operating mode.

OPERATING MODES	LUBRICATION (LUBE)	LUBRICATION INTERVAL	COMBINATIONS		
			INPUT 1	INPUT 2	
1	Pressure switch (PS) or Progressive system (SEP)	Time	Not Connected	PS	
			Not Connected	SEP/PROX	
			PS	PS	
			PS	Suspensions	
			SEP/PROX	SEP/PROX	
			SEP/PROX	Suspensions	
2		Pulse count	PS	Pulse Count	
			SEP/PROX	Pulse Count	
3		Time&Pulses	PS	Pulse Count	
			SEP/PROX	Pulse Count	
4		Pulses/Timeout	PS	Pulse Count	
			SEP/PROX	Pulse Count	
5	Pulse count	Time	Not Connected	Pulse Count	
			Pulse Count	Suspensions	
6		Pulse count	Not Connected	Pulse Count	
			Pulse Count	Suspensions	
7		Time&Pulses	Not Connected	Pulse Count	
			Pulse Count	Suspensions	
8		Pulses/Timeout	Not Connected	Pulse Count	
			Pulse Count	Suspensions	
9	Rotation	Time	Not Connected	Not Connected	
			Not Connected	Suspensions	
10		Pulse count	Not Connected	Pulse Count	
			Pulse Count	Suspensions	
11		Time&Pulses	Not Connected	Pulse Count	
			Pulse Count	Suspensions	
12		Pulses/Timeout	Not Connected	Pulse Count	
			Pulse Count	Suspensions	
13		Time	Time	Not Connected	Not Connected
				Not Connected	Suspensions
14			Pulse count	Not Connected	Pulse Count
				Pulse Count	Suspensions
15	Time&Pulses		Not Connected	Pulse Count	
			Pulse Count	Suspensions	
16	Pulses/Timeout		Not Connected	Pulse Count	
			Pulse Count	Suspensions	
17	External enabling		-	Not Connected	Pulse Count
				Pulse Count	Suspensions

9.4.2.3 OTHER ADVANCED PARAMETERS

The following table illustrates the remaining Advanced parameters and possible values that can be set.

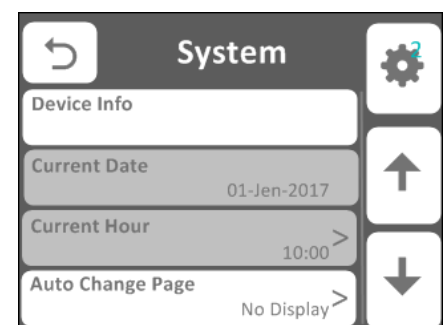
NAME	FULL NAME	DEFAULT VALUE	DESCRIPTION	VALUES/INTERVAL
Suspension	Suspension	Always	<i>Phase in which suspension is enabled</i>	Paused
				During lubrication
				Always
Suspension contact	Suspension contact	Normal. Open	<i>Suspension signal type</i>	Normal. Open
				Normal. Closed
Starting from	Starting from	Lubrication	<i>Phase performed when the pump is started</i>	Lubrication
				Non-Lub. Cycle
				Last Status
Number of Prelub. Cycles	Number of Prelub. Cycles	0	<i>Number of cycles during the pre-lubrication phase</i>	0 - 250
Deact. Min. Lev.	Deactivate minimum level	<input type="checkbox"/>	<i>Alarm deactivation corresponding to minimum level</i>	<input checked="" type="checkbox"/> Ticked
				<input type="checkbox"/> Not ticked
Lub. status output	Lubrication status output	Lubr.(fixed) e Pause(lamp)	<i>Conduct of lubrication status output</i>	Only lubrication
				Lub. (fixed) and Pause (lamp)
Lub. status output	Lubrication output status contact	Type P	<i>Lubrication Status Output signal type</i>	Type N
				Type P
Alarm status output	Alarm status output	Alarm (fixed) and Warn. (lamp)	<i>Conduct of alarm status output</i>	Alarm only
				Alarm coding
				Alarm and Warn. coding
				Alarm (fixed) and Warn. (lamp)
Alarm status output	Conduct of alarm status output	Type P	<i>Alarm Status Output signal type</i>	Type N
				Type P
Tank type	Tank type	Unconfigured	<i>Tank type installed on pump (Note: once setting is no longer displayed)</i>	Unconfigured
				Follower plate
				Cart. 400cc
				Cart. 700cc

9.4.3 SYSTEM MENU

Allows setup of all the general data of the pump (e.g. date, time, FW update etc.)

This menu lets you set up 3 types of password:

- Base menu password -> access ONLY to the base menu programming
- Advanced menu password -> access BOTH to the base menu AND to the advanced menu programming
- System menu password -> access to all programming levels



The table below shows all the values that can be set from this menu.

NAME	FULL NAME	DEFAULT VALUE	DESCRIPTION	VALUES/INTERVAL
Stores All logs	Stores all Logs	<input type="checkbox"/>	<i>Enabling the recording of all events (logs) relating to pump status (Pause, lubrication, etc.)</i>	<input checked="" type="checkbox"/> Ticked
				<input type="checkbox"/> Not ticked
Synchronize Date	Synchronize Date	<input checked="" type="checkbox"/>	<i>Enabling synchronization of date/time from the Internet</i>	<input checked="" type="checkbox"/> Ticked
				<input type="checkbox"/> Not ticked
Save Screen	Save Screen	0s	<i>Display-backlight deactivation time</i>	0s-1,800s
Basic password	Basic password	0000	<i>Password for accessing basic settings</i>	0000-9999
Advanced password	Advanced password	0000	<i>Password for accessing advanced settings</i>	0000-9999
System password	System password	0000	<i>System settings access password</i>	0000-9999
Lock Screen	Lock Screen	1m	<i>Period of time after which the password protection in a menu is activated</i>	30s
				1m
				10m
				30m
				60m
FW Update	Firmware update	-	<i>Button for the firmware update request (Internet connection required)</i>	-
Reboot Device	Reboot Device	-	<i>Device reboot button</i>	-
Time zone	Time zone	+2H 00M	<i>Time zone setting</i>	-12H 00M ÷ +12H 00M
Device Info	Device Info	-	<i>Pump general information display button</i>	-
Current date	Current date	-	<i>Setting of current date</i>	-
Current time	Current time	-	<i>Setting current time</i>	00:00 – 23:59
Page Change	Page Change	No Display	<i>Setting of page change following an alarm and/or warning</i>	No Display
				Only Alarms
				Alarms and Warnings
Page Change Duration	Page Change Duration	10s	<i>Duration of the page transition following an alarm and/or warning</i>	0s-10m

9.5 FIRST START-UP

Before beginning to program the pump, remember to fill the lubricant reservoir, following the instructions in section 7.2.1. and proceed as follows:

1. If there are signal connectors, they should be disconnected before switching on the pump;
2. Connect the pump to the power supply and switch it on;
3. When it starts, the main screen will appear (see 9.1.) in alarm status;
4. Set the language (see section 9.2 ADVANCED SETTINGS)
5. Depending on the lubrication system present, set the parameters referring to the OPERATING MODES section (SECTION 9.4.2.1)
6. Connect the previously prepared signal cables (if present)

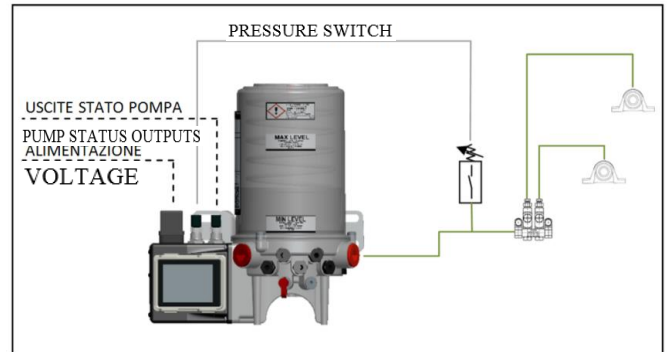
10. APPLICATION EXAMPLES

The following describes some examples of use of the operating mode described in the above paragraphs. This section will introduce some of the pump's main basic and advanced parameters. For a complete description of the parameters, refer to the tables in paragraph 7.5.4.5.

10.1 SYSTEMS WITH SYSTEM 33/LINE PRESSURE SWITCH

In the case of systems using System 33 or a line Pressure Switch, a typical application can be implemented using operating mode 1 ("PS/SEP - Time") with the following settings:

- Basic parameters
 - o Interval Pulses: 6m 00s
- Advanced Parameters
 - o Input 1: Pressure switch (PS):
 - o Input 2: Not connected
 - o PS delay: 5s
 - o Number of cycles 1
 - o Cycle Timeout: 30s



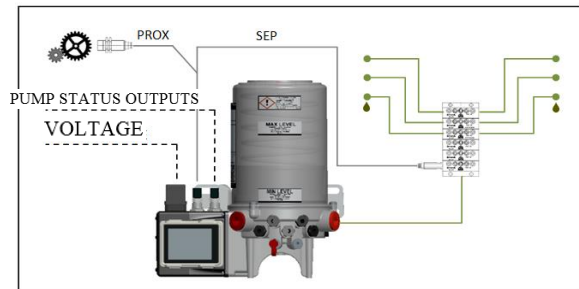
With this configuration, the lubrication phase is formed of a single cycle (Number of cycles: 1) that starts every 6m 00s (Interval Time: 6m 00s) and finishes once the line pressure is reached, which must occur within 30 seconds of the start of the lubrication cycle (Cycle Timeout: 30s). Otherwise, a cycle alarm is generated.

For the pressure switch signal applied to Input 1 to be considered valid, it must be stable for at least 5s (PS Delay: 5s).

10.2 PROGRESSIVE SYSTEMS

In the case of Progressive Systems (SEP), a typical application can be implemented using operating mode 2 ("PS/SEP - Pulses") with the following settings:

- Basic parameters
 - o Interval Pulses: 2
- Advanced Parameters
 - o Input 1: Pulses Count
 - o Input 2: SEP/PROX
 - o Number of cycles 1
 - o Cycle Timeout: 30s



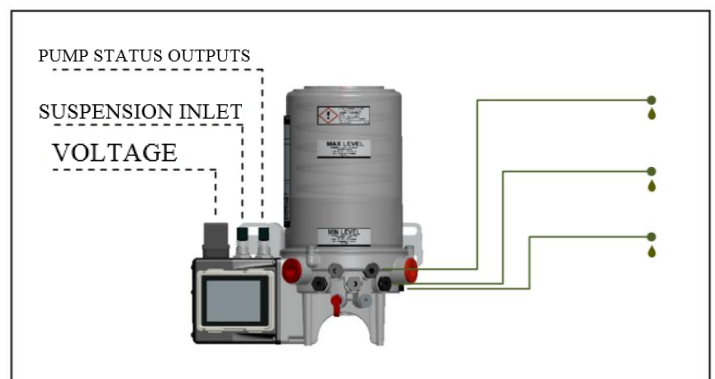
With this configuration, the lubrication phase is formed of a single cycle (Number of cycles: 1) that starts every 2 pulse signals (Interval Pulses: 2) arriving on Input 1 (Input 1: Pulses Count).

The lubricating phase finishes with the transition 0 → 1 → 0 (or 1 → 0 → 1) on Input 2 (Input 2: SEP/PROX), which must occur within 30 seconds of the start of the lubrication cycle (Cycle Timeout: 30s). Otherwise, a cycle alarm is generated.

10.3 TIMED SYSTEMS

It is possible to implement applications with timed lubrication. A typical application can be implemented using operating mode 13 ("Time-Time") with the following settings:

- Basic parameters
 - o Cycle Time: 30s
 - o Interval Time: 6m 00s
- Advanced Parameters
 - o Input 1: Suspension
 - o Input 2: Not connected
 - o Number of cycles 2
 - o Pause between cycles: 10s



With this configuration, the lubrication phase is formed of two cycles (Number of cycles: 2) that start every 6m 00s (Interval Time: 6m 00s). The two lubrication cycles, with a duration of 30s each (Cycle time: 30s), are separated by a 10s pause (Pause between cycles: 10s).

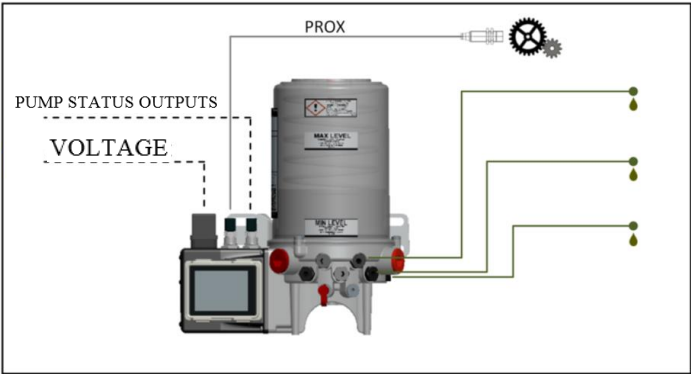
The lubrication phase finishes when the end of the second lubrication cycle is reached (Number of cycles: 2).

Input 1, if activated, switches the pump into *Suspension* mode (Input 1: Suspension.) This mode suspends the operation of the pump for the duration for which Input 1 is active. After deactivation of Input 1, the pump's operation resumes from the point where it was suspended.

10.4 MULTI-LINE SYSTEMS

It is possible to implement applications controlled by the engine pump rotation sensor. This sensor can be useful, as a full rotation of the motor ensures that all pistons installed in the pump have delivered the corresponding amount of lubricant. A typical application can be implemented using operating mode 11 ("Rotations-Time&Pulses") with the following settings:

- Basic parameters
 - o Pulses/Rotation cycle: 2
 - o Interval Pulses: 10
 - o Interval Time: 6m 00s
- Advanced Parameters
 - o Input 1: Pulses Count
 - o Input 2: Not connected
 - o Number of cycles 1



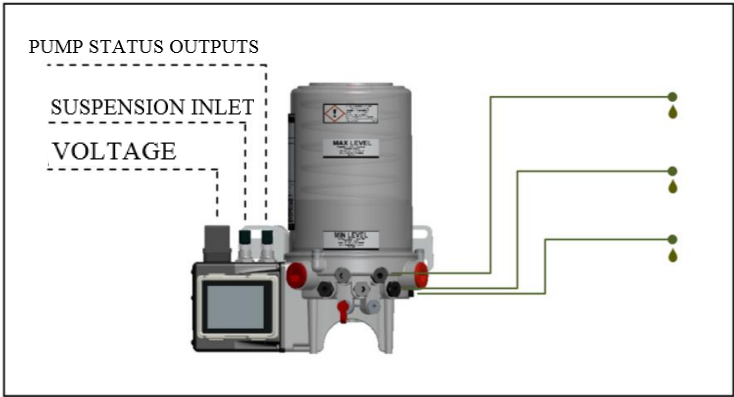
With this configuration, the lubrication phase is formed of a single cycle (Number of cycles: 1) that starts every 6m 00s (Interval Time: 6m 00s) or every 10 pulse signals (Interval Pulses: 10) arriving on Input 1 (Input 1: Pulses Count). The lubrication phase finishes on the achievement of 2 complete revolutions of the pump motor (Cycle Rotations/Pulses: 2).

10.5 SYSTEMS WITH EXTERNAL CONTROLLER

It is possible to implement applications regulated by an external controller (e.g. PLC).

A typical application can be implemented using operating mode 17 ("External Enabling") with the following settings:

- Advanced Parameters
 - o Input 1: External enabling
 - o Input 2: Not connected






With this configuration, the lubrication phase is regulated from Input 1 (Input 1: External Enabling). When Input 1 is active, the pump delivers lubricant, otherwise the pump remains in standby mode.

11. PROBLEMS AND SOLUTIONS

A diagnostics table is illustrated below, where the main faults, probable causes and possible solutions to be immediately activated are indicated (contact Dropsa).

In case of any issues and/or problems that cannot be resolved, contact the Dropsa Engineering Department rather than searching for the fault by disassembling components of the pump.

TROUBLESHOOTING TABLE		
FAULT	FAULT	FAULT
The pump motor does not work	No current arrives.	Check the electrical power supply system.
	The electronic control board is not working.	Replace the electronic control board  .
	The motor does not work.	Replace the motor  .
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.
	Progressive distributor blocked	Clean or replace the distributor
The lubricant is distributed to the lubrication points in irregular doses.	The distributor is not connected correctly to the lubrication points.	Check the dosages against the system diagram.
	Incorrect setting of the pause time.	Re-programme the pause time.
The display is off.	The supply voltage is not correct.	Check that the supply voltage is indicated on the identification plate.
Touch screen does not respond correctly	Non-calibrated touch screen	To re-calibrate the touch-screen, you must: <ul style="list-style-type: none"> • Turn off the pump • Press the touch-screen • Turn the pump back on • 3 seconds after switching on the display, release the touch-screen Perform the operations shown on the display
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 motor  .
The pump does not dispense lubricant.	The reservoir is empty.	Fill the reservoir with clean lubricant.
	The cartridge is empty.	Replace the cartridge and if necessary remove as indicated for the 1 st filling.
	Air bubbles in the lubricant.	Disconnect the primary line from the pump connection fitting. Activate the pump according to the manual operating cycle until lubricant comes out of the fitting without any air bubbles.
	Use of unsuitable lubricant.	Empty the tank and refill it with suitable lubricant.
	Pumping suction clogged.	Disassemble the pumping unit and clean the suction inlets.
	The pumping unit piston is worn.	Replace the pumping unit.
	The pumping unit lubricant pump outlet is blocked.	Replace the pumping unit.



Operations that can be carried out only be specialized Dropsa personnel.

12. MAINTENANCE PROCEDURES

The pump does not require special tools for any check and/or maintenance operations. In any case, we recommend using tools and personal protective equipment suitable for the use (gloves, eye protection, etc.) and in good condition in accordance with prevailing regulations in order to prevent damage to people or parts of the pump.

The unit was designed and built in a way to require minimum maintenance operations. In any case, we recommend always keeping the body of the equipment clean and periodically checking the line joints in order to promptly detect any leaks.



ATTENTION: Before any maintenance or cleaning operation, ensure that the hydraulic and electrical supplies are disconnected.

12.1. SCHEDULED MAINTENANCE

The periodic checks are listed on the table below, as well as the frequency and the operation that maintenance personnel must carry out in order to guarantee the efficiency of the system over time.

CHECK	FREQUENCY	OPERATION
Fixing of the lines	After the first 500 hours Every 1500 hours	Check the fitting connection. Check fixing to the parts of the machine.
Tank level	As required	Restore the lubricant level in the tank.
Filling filter	As required	Check and replace if necessary.

13. DISPOSAL

During maintenance on the pump, or in the event of its demolition, do not dispose of contaminated parts into the environment. See local regulations for their correct disposal. Upon demolition of the pump, the identification label and any other document must be destroyed.

14. ORDERING INFORMATION

STANDARD PUMPS		
PART No	RESERVOIR	POWER SUPPLY
0888586	FOLLOWER PLATE	12VDC
0888587		24VDC
0888588	CARTRIDGE 400CC	12VDC
0888589		24VDC
0888590	CARTRIDGE 700CC	12VDC
0888591		24VDC

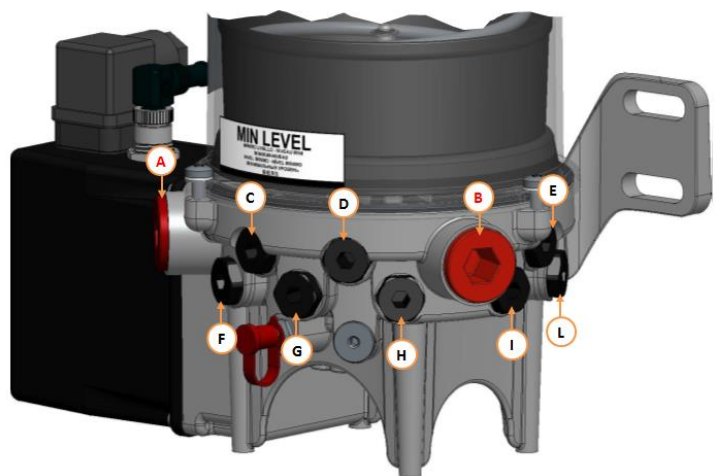
PUMPING ELEMENTS				
PART. No.	TYPE	FLOW RATE	NOTES	ID
0888058C	PROGRESSIVE	2,8cm ³ /min with Int. by-pass	1 NOTCHE	1
0888156		2,8cm ³ /min without by-pass	1 NOTCHE	2
0888391		5,2cm ³ /min without by-pass	2 NOTCHES	3
0888555		0,4 ÷ 2,8cm ³ /min P. Adjustable		4
0888550	MULTI-LINE	0,005cm ³ /giro	1 NOTCHE	1
0888551		0,010cm ³ /giro	2 NOTCHES	2
0888552		0,015cm ³ /giro	3 NOTCHES	3
0888553		0,025cm ³ /giro	4 NOTCHES	4
0888554		0,050cm ³ /giro	5 NOTCHES	5

OPTIONAL KITS and ACCESSORIES	
PART. No.	DESCRIPTION
0888573	400cc Cartridge NLGI 0 grease
0888576	700cc Cartridge NLGI 0 grease
0888572	External by-pass with pressure gauge
0888163	External by-pass without pressure gauge
3133644	Tank maximum level sensor kit
3133645	Laser probe tank kit
3133646	Venting-valve kit (24VDC)
0039976	DIN 43650 connector without cable
0039080	Connector M12 - 90° 4Pins Male cable 3 m
0039082	Connector M12 - 90° 5Pins Male cable 3 m
0039171	Connector M12 - Straight 4Pins Male to be cabled
0039056	Connector M12 - Straight 5Pins Male to be cabled
UE-CVPV038	Connector M12 - 90° 4Pins Male to be cabled
UE-CVPV039	Connector M12 - 90° 5Pins Male to be cabled
UE-CVPR031	Connector M12 A Y 0.3 m 1-Male (Pump Side) to 2-Female (Inputs Side)
0039119	Cavo con connettori M12 <-> DIN43650(A) per Vent valve automatica
UE-COPV036	M12 cap

SPARE PARTS	
PART. No.	DESCRIPTION
3130022	Filling filter
0888183	Tank for follower plate
3133643	Follower plate kit with valve and gasket
0888185	Pumping unit replacement plug (Multi-line)
3234300	Pumping unit replacement plug (Progressive)
0039976	Power supply connector
0039830	4 pin signals connector
0888520	700cc cartridge guard
0888519	400cc cartridge guard
0888527	Magnet for min. level 700cc cartridge
0888526	Magnet for min. level 400cc cartridge
3133642	Gaskets kit version with follower plate
3133641	Gaskets kit version with cartridge

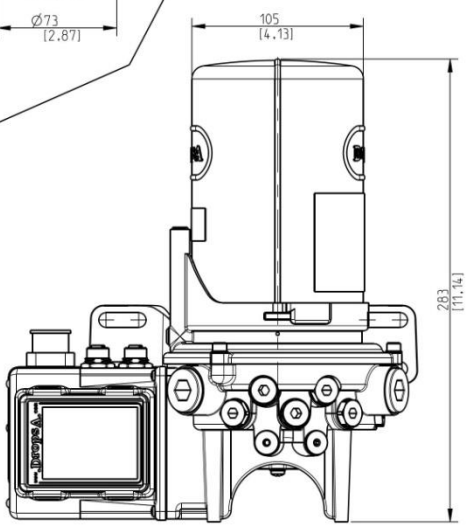
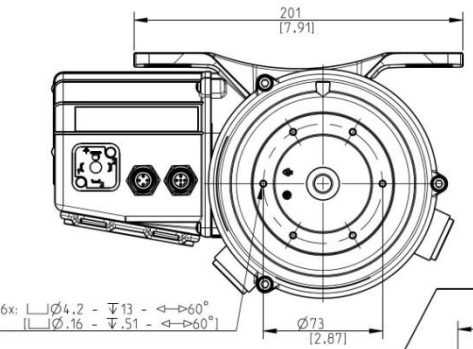
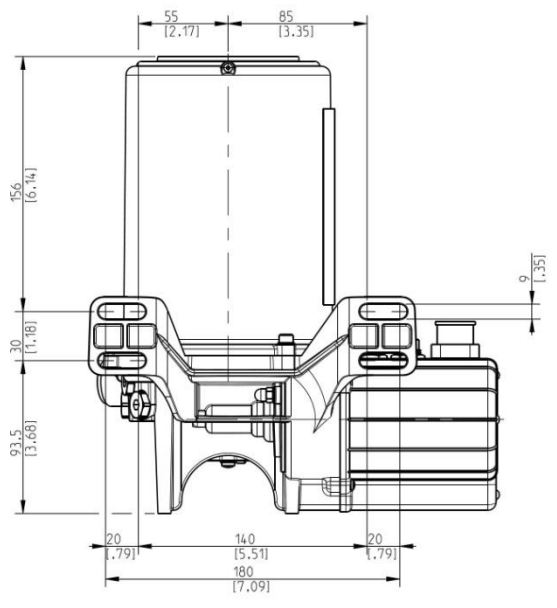
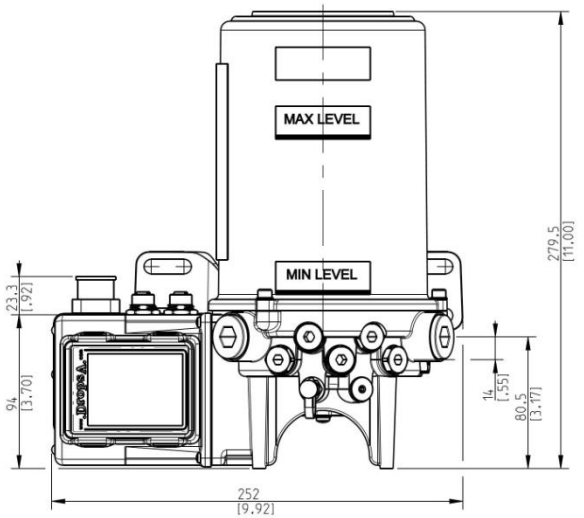
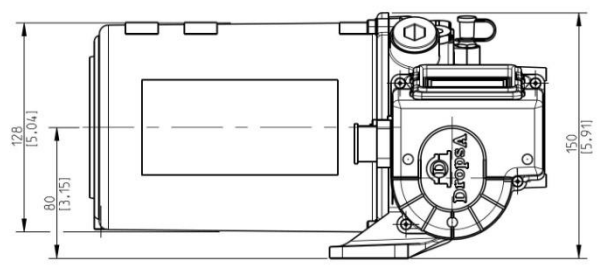
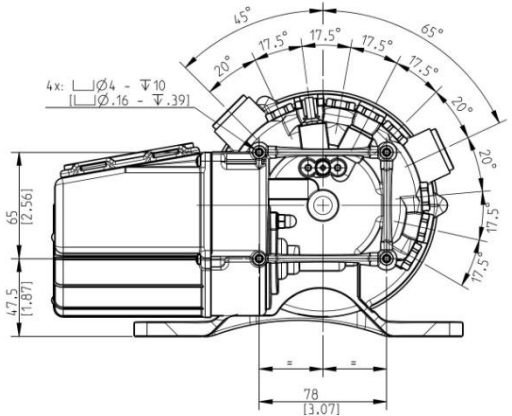
PUMPING UNIT POSITION

In order to better identify the type of pump with the pumping unit, simply indicate the position of the hole followed by the pumping unit ID (see PUMPING UNIT table).

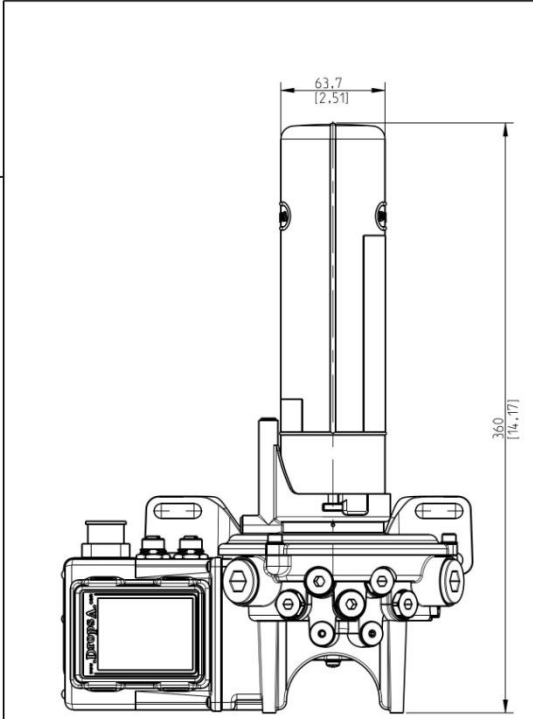


Example of a 12VDC OMEGA pump with follower plate, complete with a 2.8cm³/min Progressive pumping unit with built-in By-pass, mounted in hole (B) and 2 0.025cm³/revolution Multi-line pumping units mounted in holes (F) and (L); the reference string will be: **0888580 - B1-F4-L4**

15. DIMENSIONS



Version: 700cc Cartridge



Version: 400cc Cartridge

Dimensions in:
 mm [in]

16. 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.

17. PRECAUTIONS FOR USE

Electric 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 the installed equipment (electrical and electronic) must be connected to the ground line.

Flammability

The lubricant generally used in the lubrication circuits is not a flammable fluid. In any case, all appropriate measures must be taken to prevent it coming into contact with very hot parts or naked flames.

Pressure

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 levels in excess of 70 dB (A).



WARNING: 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.

17.1. 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 OMEGA 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.

18. 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 Dir.).
- 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 of the tank. → Protection against direct or indirect contact with lubricant must be prepared by the machine user. (See the requirements on the use of suitable PPE in accordance with prevailing regulations).
- 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	<i>High wear of the contaminated parts</i>
Lubricants with silicon additives	<i>Seizing of the pump</i>
Petrol – solvents – flammable liquids	<i>Fire – explosion – damage to the gaskets</i>
Corrosive products	<i>Corrosion of the pump – damage to personnel</i>
Water	<i>Oxidation of the pump</i>
Food substances	<i>Contamination of the same</i>