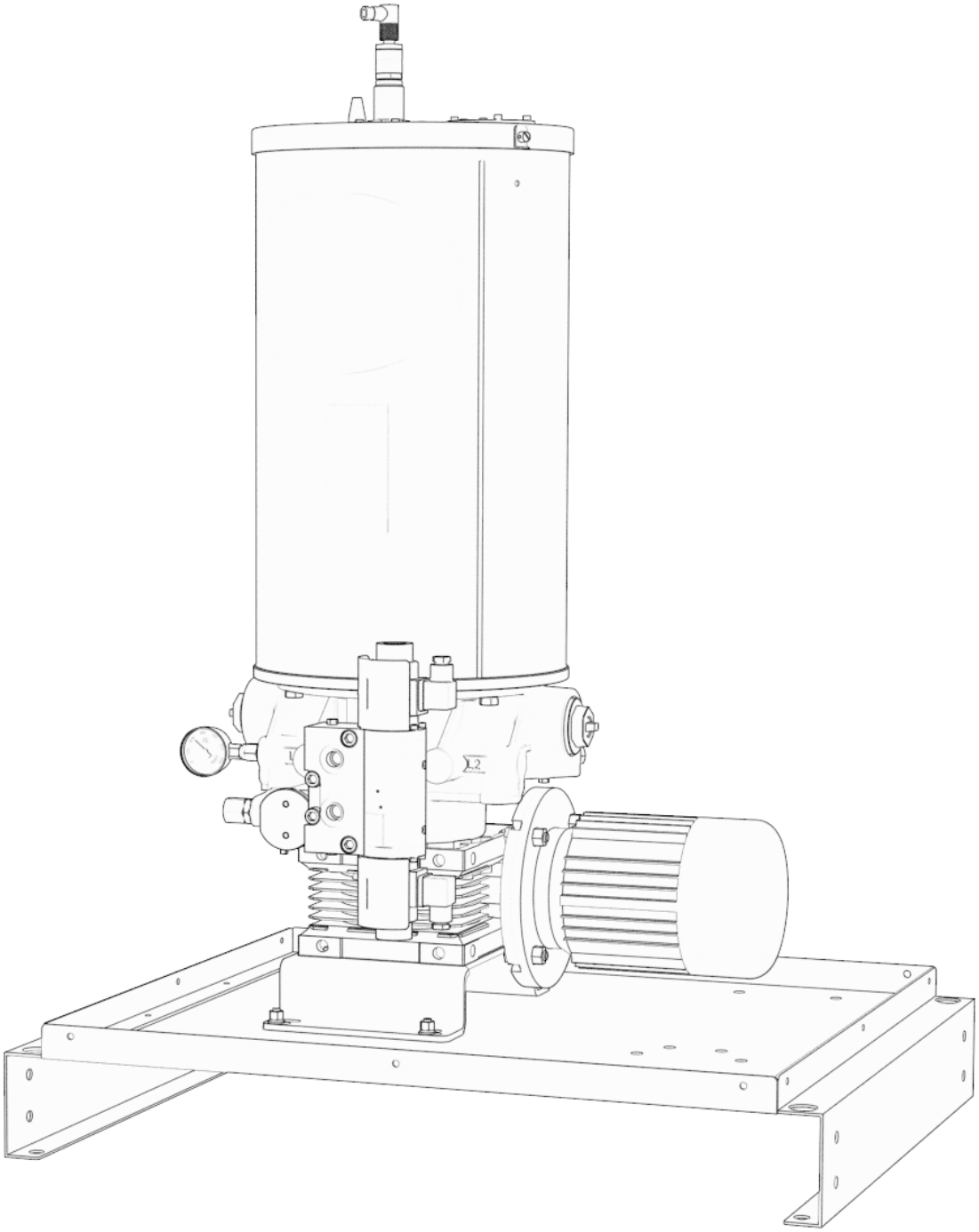
SUMO II PUMP

Operation and maintenance manual

Original instructions



Manual drafted in compliance with directive 2006/42

C2248IE WK 09/20

Summary

1. INTRODUCTION

This User and Maintenance Manual refer to Dropsa's "**SUMO II**".
You can find additional copies and newer revisions of this document from our website http://www.dropsa.com.
Alternatively contact one of our Sales Offices.
This manual contains important information on health and safety issues the personnel. It is recommended to attentively read this manual and carefully keep it in good condition so that it is always available to personnel requiring to consult it.

2. GENERAL DESCRIPTION

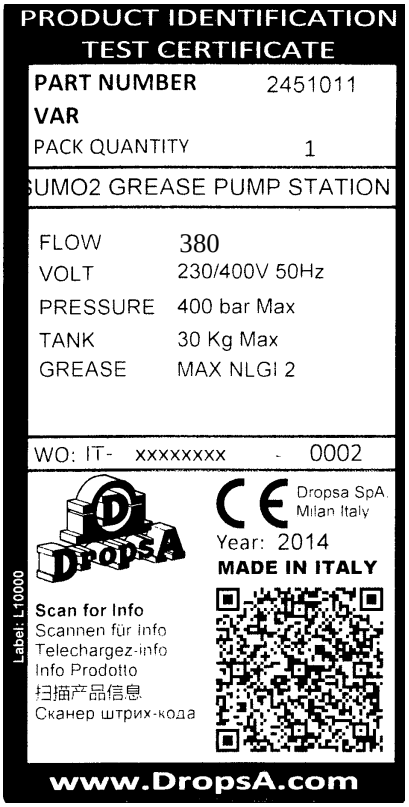
The SUMO II series of lubrication pumps may be adapted to many uses without making any mechanical changes even after it has been installed. In fact, by making a selection from a set of components which are fully compatible and easy to assemble, the pressure, quantity of lubricant delivered, actual type of lubricant or type of distribution can be altered.
This construction technique is essentially based on the following modules:

- Electric motor
- Pump body with integrated reducer
- Two pumping elements
- Reservoir
- Valves and outlet unit (inverter, pressure adjustment valve, etc.).

There is only one bearing structure for all versions, with the dual pumping element constituting the essential module.
The pump unit possesses one single output, because the deliveries from the two pumping elements flow into a manifold unit.
Two types of tank for grease and two for oil with different volumes (of 30 or 100 kg) with stirring paddle and level indicators can be arranged on the pump body.
The SUMO II electric pump is fully protected against the external environment and can operate without difficulty under the most severe environmental conditions.

3. PRODUCT IDENTIFICATION

Machine identification label is located on the front side of the reservoir and contains product serial number, input voltage and details of the operating parameters.



4. TECHNICAL CHARACTERISTICS

GENERAL CHARACTERISTICS	
Empty weight (30 Kg reservoir)	85 Kg ÷ *187 lb*
Empty weight (100 Kg reservoir)	100 Kg ÷ *220 lb*
ELECTRICAL CHARACTERISTICS	
Motor power supply	230-400V - ±5% 50Hz 280-480V - ±5% 60Hz Insulation class F
Rated motor power	0,75 Kw
Motor degree of protection	IP 55
Minimum level	Laser (grease) - floating (Oil)
Maximum level	floating (Oil and grease)
HYDRAULIC CHARACTERISTICS	
Pumping system	Piston
Flow rate (per pumping element)	22.8 cu. in (190 cc/min)
Maximum operating pressures	5880 psi (400 bar)
Outlet connection	G3/8" BSP
Tank capacity	30-100 Kg (66-220 lb)
Loading filter	Degree of filtering 400 µ
By-pass	Adjustable 0÷400 bar – precalibrated 300 bar
Temperature of use	14 ÷ 122 °F (-10 ÷ 50 °C)
Operating humidity	rel. humidity 90 %
Permitted lubricants [5]	Mineral lubricating oil min 32 cSt; grease max NLGI2
Pumping system	- 40 ÷ + 149 °F (-40 ÷ +65 °C)
Flow rate (per pumping element)	< 70 dB(A)

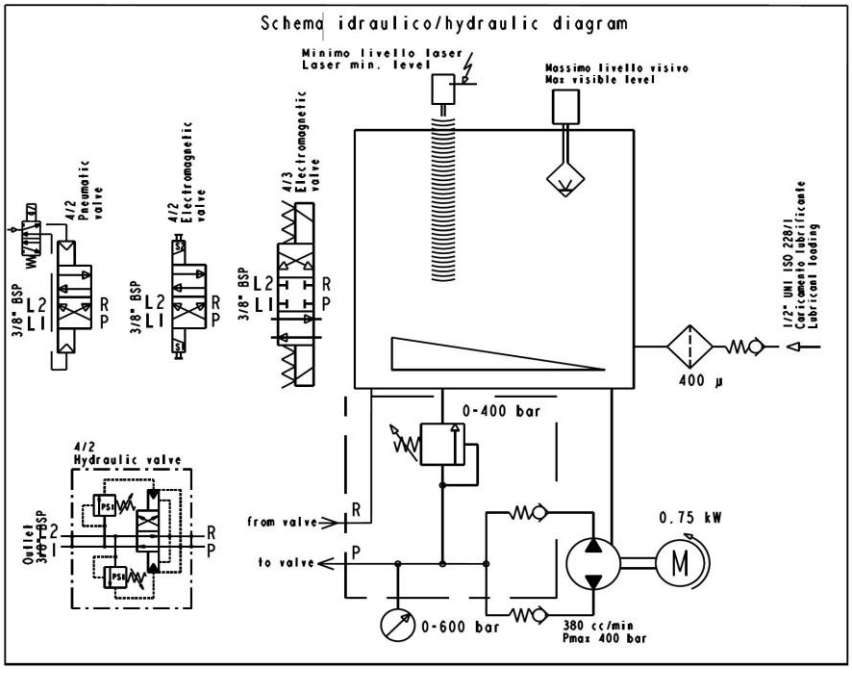
N.b. The specifications refer to the temperature of use of +20°C (+68°F)

(1) If a different product is used, please contact Dropsa S.p.A. to ensure it is suitable for use.

N.B.: do not supply the machine with voltages and pressures different from those indicated on the plate.

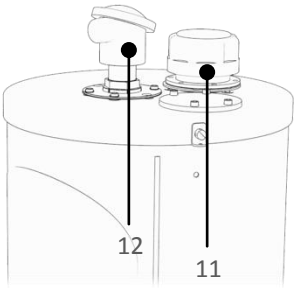
4.1 HYDRAULIC FUNCTION DIAGRAM

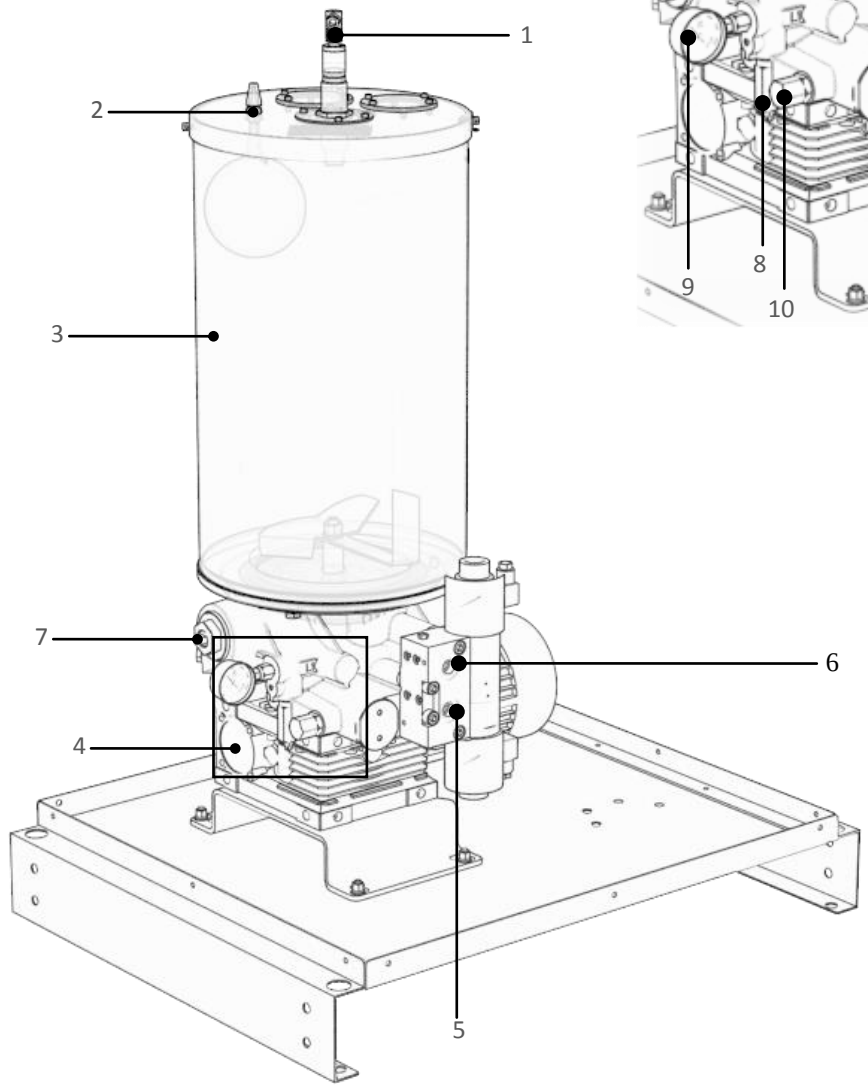
The hydraulic diagrams related to the different configurations that can be obtained using the available accessories are shown below (see paragraph 11)

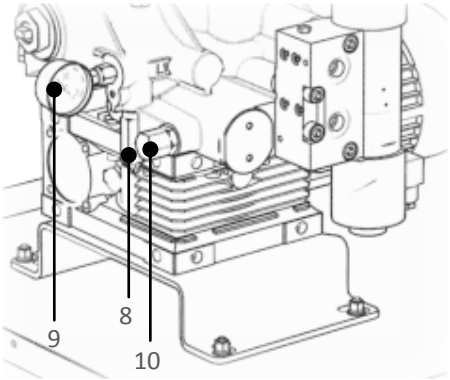


5. COMPONENTS

5.1 STANDARD PUMP COMPONENTS







STANDARD PUMP COMPONENTS			
1	Minimum laser level	7	Pumping system
2	Maximum level	8	By pass
3	Reservoir	9	Pressure gauge
4	Ratio motor	10	Loading (for grease pump)
5	Delivery line 1	11	Minimum tank level (for oil pump)
6	Delivery line 2	12	Lubricant loading cap (for oil pump)

5.1.1 INVERTERS

For technical characteristics and procedures for use of inverters use the product-specific manual attached to the pump.

5.1.2 FIXED DELIVERY PUMPING ELEMENTS

The pump is set with one or two fixed flow rate pumping elements (190 cm^3/ min for each pumping element).
The sealing between piston and pumping body is of dry type, not being provided any gasket in between.
Pumping check valve is tapered seal type. This solution ensures excellent tightness of the system at high operating pressures (max pressure 400 bar – *5800psi*).
Pumping elements are fitted on the pump body without need to disconnect piping of the line with a threaded connection which gives an easy assembly / disassembly.

5.1.3 MAXIMUM AND MINIMUM LEVEL FOR OIL AND GREASE

5.1.3.1 Minimum laser level for grease

When the lubricant reaches minimum level, the laser probe signals the lack of lubricant. The probe has two outputs, the first NO and the second NC when lubricant is present.
For connections and calibration see paragraph7.3.1 and 7.3.2.

5.1.3.2 Maximum/ Minimum floating level for oil

A probe rod with dual float mounted on the pump cover provides a reading of the minimum oil level (reserve) and the maximum level (which allows the automatic refilling of the tank to be halted).
For connections see paragraph 7.3.4.

5.1.3.3 Maximum visual floating level for oil/grease

The phase that the lubricant is loaded in the tank is realised by the operator, who uses a pump.
Once the maximum lubricant level is reached, a rod is activated that indicates that the tank is full.

5.1.4 Stirring paddle for grease and oil (standard version)

Two reservoirs have been allocated with capacities of 30 and 100 kg. (66 – 220 lbs).
As standard, the reservoirs have a stirring paddle and scraper that do not need to be disassembled in the event of disassembly and replacement thereof. As standard equipment, under the stirring paddle there is an electro galvanised steel mesh with 0.5 mm (0.02 in.) holes. The pump is thereby protected from any foreign objects that could be inadvertently present during the reservoir filling phase.

5.2 ELECTRICAL CONTROL PANEL

"DROPSA" electrical control panel has been designed to provide a system complete with all the controls necessary for automatic functioning controlled by safety signals from centralized lubrication installations. The primary voltage is 400 VAC and 50 Hz, the other voltages are on request.

TYPE OF PROBE	TYPE OF INVERTER*	VOLTAGE V**	CODE ELECTRICAL APPARATUS VIP5 PRO	CODE ELECTRICAL APPARATUS VIP5 PLUS	CODE ELECTRICAL APPARATUS WITH PLC
LASER PROBE or FLOATING (24V cc standard version) Out NO e NC (1 threshold)	4/2 Electromagnetic or hydraulic valve	24 VDC	1639211	1639210	1637008
	4/2 Electro pneumatic hydraulic valve				1637011
LASER PROBE or FLOATING 24V cc Out 4÷20mA/2 NO (4 thresholds)	4/2 Electromagnetic hydraulic valve	24 VDC			1637001
	4/2 Electro pneumatic hydraulic valve				1637005

*** For control equipment with 4/3 inverters contact the Dropsa Technical Sales.**
**** Contact the sales office Dropsa for other primary and the inverter supply voltages**

6. UNPACKING AND INSTALLATION

6.1 UNPACKING

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

6.2 INSTALLATION

No pump assembly operations are envisaged. The pump is fixed on a metal pallet, which allows safe handling using a transpallet or forklift truck. This pallet has been designed so that it can be installed in the installation, being equipped with 4 (four) holes of Ø 14 mm suitable for fixing to the floor. Provide adequate space (as shown on the installation diagram) to avoid abnormal posture or possible impact. Then, as described previously, the pump must be connected hydraulically to the machine and then connected to the control panel.

7. OPERATING INSTRUCTIONS

7.1 START-UP OF THE PUMP

Before using the product, a few preliminary checks must be performed:

- Check the integrity of the supply cable and the unit prior to use;
- If the supply cable or the unit is damaged, do not start up the system!
- Replace the damaged supply cable with a new one;
- The unit can be opened and repaired only by specialist personnel;
- In order to prevent the danger of electrocution due to direct or indirect contact with live parts the electric supply line must be adequately protected by an appropriate magnetothermal differential switch with threshold of intervention of 0.03 ampere and max intervention time of 1 second;

The interruption power of the switch must be ≤ 10 kA and rated current In = 6 A.

- It is prohibited to use the pump if submersed in fluids or in a particularly aggressive or explosive/inflammable environment if not previously prepared for that purpose by the supplier.
- Use safety gloves or glasses as specified in the safety sheet for the lubricating oil
- Do NOT use lubricants which are aggressive towards NBR gaskets, and if in doubt consult the Dropsa SpA technical office which will supply a detailed list of the recommended oils;
- Do not ignore dangers to health and comply with health and safety regulations;

Warning! All the electric components must be earthed. This applies to both the electric components, and to the control devices. To this end make sure that the earth wire is connected correctly. For safety reasons the earth conductor must be approximately 100 mm longer than the phase conductors. If the cable is accidentally removed, the earth terminal must be the last one to be removed.

- Check the integrity of the pump.
- Check that the pump is at working temperature and that there are no air pockets in the pipes.
- Check that the electric connection has been carried out correctly.
- Once the pump has started, check that the direction of rotation of the electric motor is as indicated by the arrow on the motor's protective casing; if it rotates backward; reconnect it as shown in the wiring diagram provided with the motor.

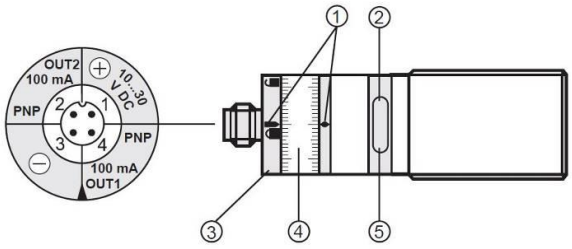
7.2 INSTRUCTIONS FOR USE

Press the start button on the machine to which the SUMO II pump is connected.

1) Check pump start-up.
2) To change the pressure value, turn the by-pass adjustment screw (see Chap. 5). Turn it clockwise to increase the pressure or counter clockwise to decrease it;
3) Check that the machine is adequately lubricated (if there are still some doubts about its correct functioning you can contact the Dropsa S.p.A Technical Office and request a test procedure).

7.3 ADJUSTMENT/ CALIBRATION OF LEVEL PROBES

7.3.1 LASER PROBE SETTING 0295131, 24V cc Out NO and NC (1 threshold)

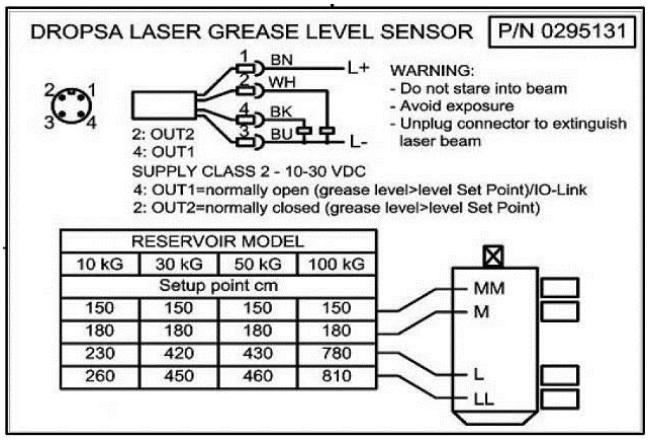


1. Reference notch
2. Yellow led: lights when the set value is reached, (outlet=ON).
3. Lock ring
4. Setting lock ring (be adjusted manually after unlocking).
5. Green led: indicates the correct power supply (24V cc).

* To obtain a correct setting bring the lock ring to maximum setting value and then down to desire value.

On the pump is placed a label that shows the wiring diagram and setting values. The pump is normally equipped with pre setting sensor to "L" thresholds (minimum level). Whereas other thresholds: MM (absolute maximum level), M (absolute level), LL (absolute minimum level), can be set

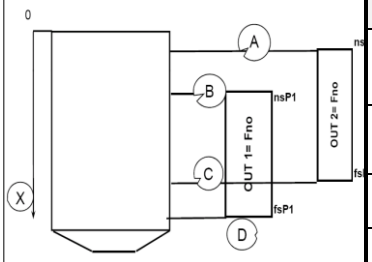
Attention ***you can only set one thresholds at a time***



7.3.2 Procedure for calibrating the laser probe 0295130, 24V cc Out 4÷20mA/2 NO (4 thresholds)

The laser probe possesses a representative and programming display mounted on board. It is possible to operate in analogue mode (with signal from 4 to 20 mA) or in digital mode (two outputs and four intervention thresholds).
We attach a table showing the calibration parameters for the laser probe.

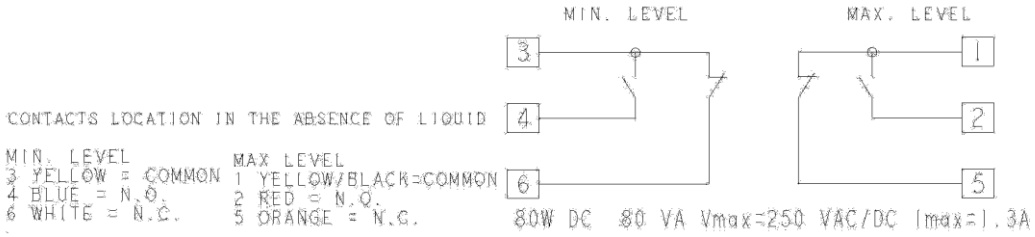
Image 6



LASER PROBE CALIBRATION							
				100 kg reservoir		30 kg reservoir	
Pos.	**Level**	**Output signal**	**set-up**	**height X [mm]**	**Quantity of grease [kg]**	**height X [mm]**	**Quantity of grease [kg]**
A	Maximum absolute level	OUT 2= Fno	nsP2	220	90	220	23
C	Minimum level		fsP2	300	17	490	5
B	Maximum level	OUT 1= Fno	nsP1	250	86	250	21
D	Minimum absolute level		fsP1	330	14	520	3

NOTE: **To change calibration thresholds of laser and ultrasound probes contact DROPSA staff**

7.3.3 Floating connection REED 0295150/0295160



8. PROBLEMS AND SOLUTIONS

***ATTENTION*: The unit may only be opened and repaired by authorised Dropsa personnel.**

A diagnostics table is provided below that indicates the main anomalies, the probable causes and the possible solutions.
If you were not able to solve the problem after consulting the diagnostics table, do not try to find the fault by disassembling machine parts but contact the Dropsa technical office and report the discovered anomalies, with a detailed description.

PROBLEM	POSSIBLE CAUSE	REMEDIAL ACTION
The electric pump is not delivering any lubricant.	The electric motor is not functioning.	Check the connection between motor and electric supply line. Check the motor winding. Check that the connection plates for the motor terminal box are positioned in accordance with the supply voltage.
	The tank is empty.	Fill the tank. N.B.: If the tank was emptied without the electric signal for reaching the minimum level being given, the minimum level contact must be checked.
	The pump is not triggered. Causes of the pump's failure to trigger: • The motor is turning in an inverted direction (clockwise); • The motor is turning in the right direction but the stirring paddle is not turning; • Presence of air bubbles in the lubricant.	Remove the cover from the tank and check that the stirring paddle is turning anticlockwise and that the lubricant is moving; if not invert two of the three motor phases. See above.
	The pressure adjustment valve (bypass) has been calibrated at too low a value Presence of dirt in the non-return valve.	Remove the pump delivery pipe and drain off the lubricant until the air bubbles have been eliminated.
The pump will not go under pressure.	Possible dirt on the cone of the pump stop valve	Clean the cone and the pumping element stop valve housing, draining off the lubricant. Replace the gasket (code 3190489).
No signal indicating minimum level when there is no lubricant in the tank.	Incorrect adjustment of minimum level.	Check the correct functioning of the level probe in the following way: Dismantle the minimum level unit and recalibrate the capacitive probe.
Selection of minimum level, with lubricant below the minimum and pump working.	Incorrect adjustment of minimum level.	The light on the control panel is still on: check the electric connection and, if necessary, replace the capacitive probe.

9. MAINTENANCE PROCEDURE

The pump was designed and built in order to minimise maintenance requirements.
To simplify maintenance, it is recommended to install it in an easy to reach position.

- Periodically check the pipe joints to detect any leaks. Furthermore, always keep the pump clean to be able to quickly detect any leaks or defects.
- Check if the loading filter is clean after every 2000 hours of operation.

The machine does not require any special equipment for any control and/or maintenance activity. It is recommended to use tools and personal protective devices suitable for use (gloves) and that are in good condition according to current regulations to prevent damage to people or machine parts.

> ***ATTENTION*: Make sure that the electric and hydraulic power supplies are disconnected before carrying out any maintenance work.**

In the case of doubts and/or problems that cannot be solved, do not try to discover the reason by disassembling machine parts, but contact the DROPSA S.p.A technical office.

9.1 REPLACEMENT OF ELECTRICAL INVERTER COILS

If the inverter coil must be replaced on the 100 kg SUMOII pumps, use the following procedure:
• Ensure that there is no residual pressure in the pump, checking the pressure values on the pressure gauge.
In the event that there is pressure in the system, loosen the plugs indicated (Fig. 1 and 2) to discharge the pressure. Take care for the slight lubricant leak. Once the residual pressure has been eliminated, close the plugs.
• Unscrew the inverter's four fixing screws (Fig. 3).
• Remove the inverter and disassemble the coil.

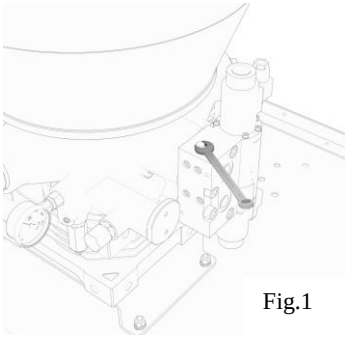


Fig.1

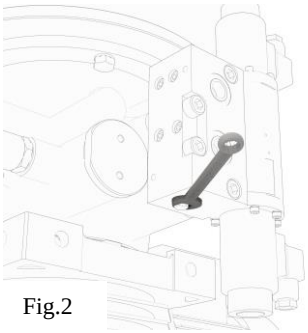


Fig.2

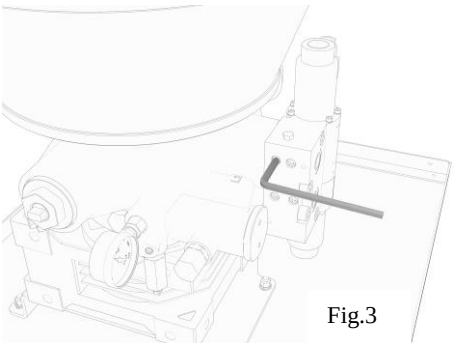


Fig.3

10. DISPOSAL

During maintenance or disposal of the machine care should be taken to properly dispose of environmentally sensitive items such as oils or other lubricants. Refer to local regulations in force in your area. When disposing of this unit, it is important to ensure that the identification label and all the other relative documents are also destroyed.

11. ORDERING INFORMATION

11.1 STANDARD VERSION

N.B. The part number of the pump is composed by 11 numbers.

Standard

SUMO II PUMP			Data	4°	5°/6	7°	8°	9°	10°	11°
			245	0	00	0	0	0	0	0
	Description	**DROPSA P.No.**	**COD**							
Reservoir	-	-	0							
	30kg	**0295080**	1							
	100kg	**0295090**	2							
Triphase electric motor	MOTOR NOT PRESENT	-	00							
	STANDARD IE3 2230/400V 50Hz - 280/480V 60Hz	**3301081**	01							
	440 V 60 Hz	**3301650**	02							
	440 V 60 Hz with anti-condensation heater 110V AC	**3301651**	03							
	460 V 60 Hz	**3301652**	04							
	575 V 60 Hz	**3301653**	05							
	500 V 50 Hz	**3301654**	06							
	525 V 50 Hz	**3301655**	07							
	550 V 50 Hz	**3301656**	08							
	380 V 60 Hz	**3301659**	09							
	UL and CSA standard with IE3 230/ 400V 50 Hz - 280/480V 60Hz	**3301528**	50							
	440 V 60 Hz	**3301670**	51							
	460 V 60 Hz	**3301671**	52							
	460V 60Hz standard with anti-condensation heater 120V	**3301556**	53							
	575 V 60 Hz	**3301672**	54							
	500 V 50 Hz	**3301673**	55							
	550 V 50 Hz	**3301674**	56							
	UL and NEMA standard 230/460V 60 Hz	**On request**	80							
Pneumatic motor		**3301539**	95							
	Inverter NOT PRESENT	-	0							
4/3 Valve Electromagnetic	24 V DC	**0083550**	1							
4/2 Electromagnetic inverter	24 V DC	**0083560**	2							
4/2 electro pneumatic inverter	24 V DC	**0083580**	3							
Hydraulic inverter		**0086450**	4							

Optional			
Minimum Level	Laser level standard 24V cc Out NO e NC (1 threshold)	**0295131**	0
	Laser with 2 outlets digital configurable and 4÷20mA	**0295130**	1
	*Float Reed for oil 30kg	**0295150+3130138**	2
	*Float Reed for oil 100kg	**0295160+3130138**	3
Maximum Level	Floating visual level	**0295100**	0
	Laser 24V cc Out NO and NC (1 threshold)	**0295131 (for 30kg and 100kg)**	1
Heating Band	Heating Band NOT PRESENT	-	0
	100 kg Pump Heating Band	**0295065**	1
	30 kg Pump Heating Band	**0295066**	2
Pumping elements	The pump is equipped with 2 pumping elements with fixed flow rate	**0296090**	**0**
	1 pumping element with fixed flow rate	**0296090+0295049 +3190489-3190491**	**1**

*** The oil floating level indicate both minimum and maximum level**
For special versions (e.g. version with separate outlets) contact our DropsA Technical Sales Department.

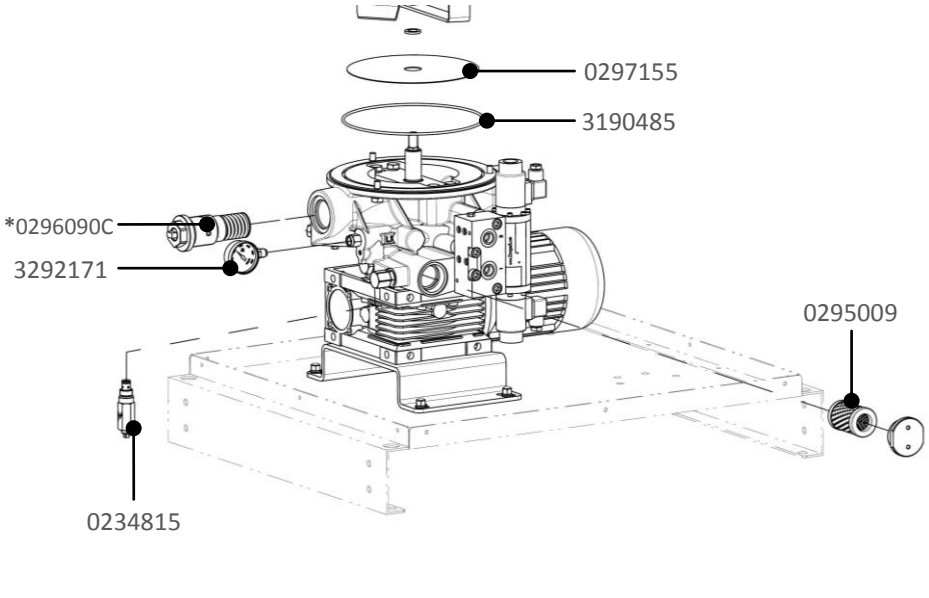
11.2. OPTIONAL

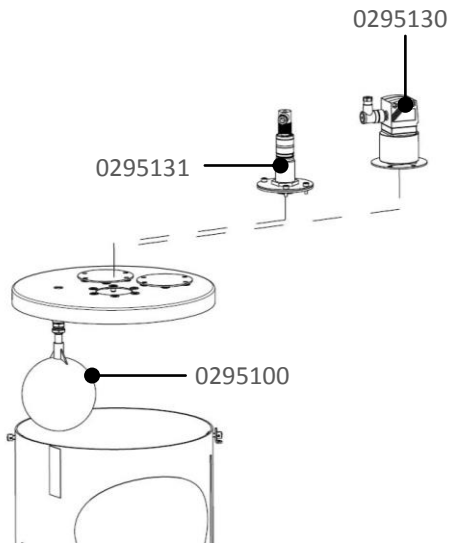
Equipment	Description	Variant	P. No.
Oil conversion	Min/max oil level float kit 30 Kg (66lb) Min/max oil level float kit 100 Kg (220lb) Filling plug with filter		0295150 0295160 3130138
Terminal Box bracket	Bracket for installing a terminal wiring box onto the base pallet		3044455
Terminal	Terminal box		0291655
Electrical control box Bracket	Bracket for installing a control box onto the base pallet		3044456
Metal pallet	Metal Pallet used as the base of the packaging and also for installation of the pump.		0297150

11.3. SPARE PARTS

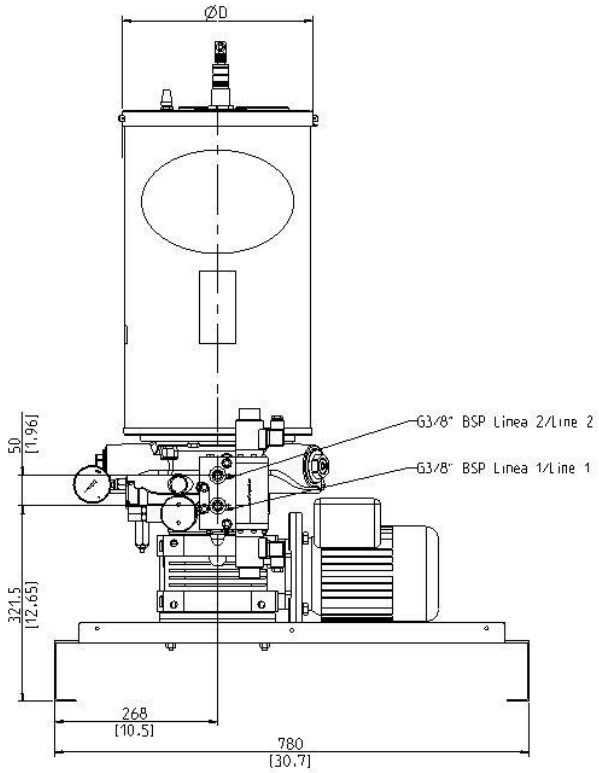
Spare part description		Variant	P.No.
Motors	3Ph - 0,75 Kw IE3- 230Δ/400Y 50Hz 280Δ/480Y 60Hz		3301081
	3Ph UL and CSA - 0,75 Kw IE3- 230Δ/400Y 50Hz - 280Δ/480Y 60Hz		3301528
Reducer i=40			3301608
Maximum mechanical level kit meccanico 30 e 100 Kg (grasso)			0295100
Laser probe assembly 30÷100 Kg - 24V cc Out NO e NC (1 threshold)			0295131
Laser level kit 24V cc Out 4÷20mA/2 NO (4 thresholds) – 30 Kg		VAR2	0295130
Laser level kit 24V cc Out 4÷20mA/2 NO (4 thresholds) – 100 Kg		VAR3	
Minimum level kit (250V AC) 30 kg (grease)			0295121
Minimum level kit (250V AC) 100 kg (grease)			0295122
Grease loading filter			0295009
By-pass			0234815
Pressure gauge 0 - 600 Bar			3292171
Pumping*			0296090C
Metal pallet			0297150

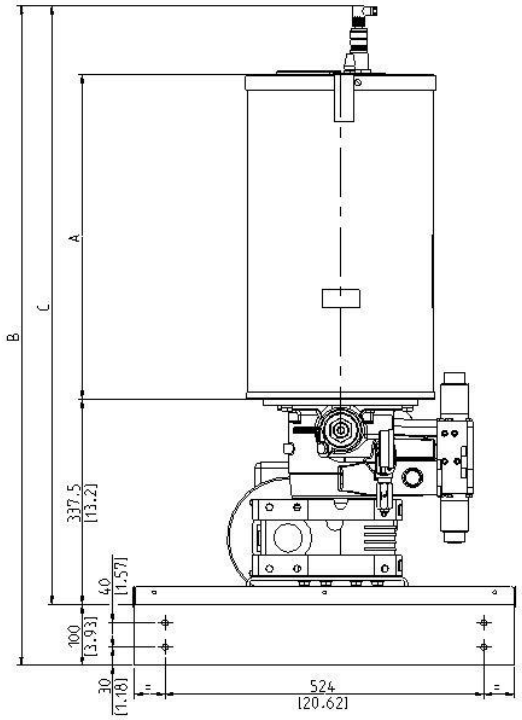
***Attention:**
for pump with pumping element marked "A" the order code is 0296090C
for pump with pumping element without marking, the order code is 0296080C

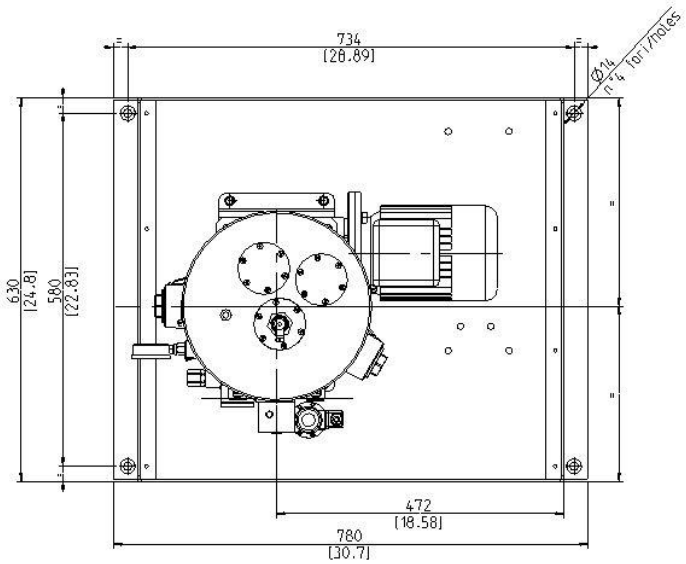




12. DIMENSIONS







	30 Kg		100 Kg	
	mm	in	mm	in
A	533.5	21	983.5	38.7
B	1080	42.5	1530	60.2
C	980	38.58	1430	56.3
D	313	12.32	413	16.25

13. HANDLING AND TRANSPORT

A metal pallet is used for transport and storage with packing at the side and a wooden cover.
The pump is fixed on a metal pallet, which allows safe handling using a transpallet or forklift truck. The metal pallet has been designed so that it can be installed in the installation, being equipped with 4 (four) holes of Ø 14 mm suitable for fixing to the floor.

Lift the equipment according to the direction shown on the cardboard package.
The machine components can support storage temperatures between -40 a + 65 °C *(-40÷149F)*; however in order to avoid damages, the machine must only be started up after the machine has reached a temperature of -10 °C *(+14F).*

14. PRECAUTION

The warnings about the risks involved in using a pump for lubricants must be read.
The operator must understand its operation and clearly understand the hazards connected to pumping pressurised grease.
Therefore we recommend the following:

- Check the chemical compatibility of the material with which the pump is built with the fluid to be pumped (see chap. 4). An incorrect selection could cause, in addition to damaging the pumps and pipes, serious risks for people (spillage of irritating products that are harmful to health) and for the environment.
- Never exceed the maximum operating pressure permitted for the pump and the components connected to it. In the case of doubt, refer to the data specified on the machine plate.
- Only use original spare parts.
- If components must be replaced with others, make sure they are suitable for operating at the pump's maximum operating pressure.

ATTENTION! Never try to stop or deviate any leaks with your hands or other body parts.

Note: Personnel must use protective equipment, garments and tools in compliance with current standards with regard to the location and the use of the pump both during work as well as during maintenance operations.

***ATTENTION*: The warnings about the risks involved in using a pump for lubricants must be read. The user must understand its operation using the user and maintenance manual.**

Power supply
Do not carry out any work on the machine before disconnecting it from the electrical power supply and making sure that no one can reconnect it during the operation. All the installed equipment (electric and electronic), tanks and basic structures must be connected to the ground line.
Flammability
The lubricant generally used in lubrication systems is not normally flammable. However, it is advised to avoid contact with extremely hot substances or naked flames.
Pressure
Before each operation, make sure there in every branch of the lubrication circuit that there is no residual pressure that could cause oil to spray when disassembling fittings or components.
After long periods of inactivity, check the seal of all the parts subject to pressure.
Do not subject the fittings, pipes and pressurised parts to violent impacts.
Damaged flexible pipes or fittings are DANGEROUS and must be replaced.
Only original spare parts should be used.
Noise
Under normal operating conditions, noise emission does not exceed 70 dB “A” at a distance of 1 metre (39.3 inches) from the pump.

NOTE: The pump was designed to operate with lubricants with a maximum rating NLGI 2.
Use lubricants that are compatible with NBR gaskets.
Any internal residual lubricant used for assembly and testing purposes is NLGI 2 grease.

A comparison table is provided between the classification of NLGI lubricants (National Lubricating Grease Institute) and the ASTM classification (American Society for Testing and Materials) for greases for the values that concern the pump.

For further information about the technical specifications and the safety measures to adopt, refer to the product safety sheet (Directive 93/112/EEC) relative to the type of lubricant selected and supplied by the manufacturer.

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

15. CONTRAINDICATIONS FOR USE

The check on compliance with the essential safety requirements and with the stipulations indicated in the machine directives are to be carried out by means of compiling the checklists already made available and contained in the *technical file.*
Three types of lists were used:

- list of dangers (UNI EN ISO 14121-1).
- Application of the essential safety requirements (Machine Dir. – CE 06/42)
- electrical safety stipulations (EN 60204-1)

See below a list of dangers which have not been completely eliminated, but are considered acceptable:

• 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 reservoir. Protection against direct or indirect contact with lubricant must be provided by the user of the machine, referring to the regulations in force on the use of suitable PPE.
• 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 case of any doubt, please contact the Dropsa S.p.A. Technical Office):

FLUIDS EXPLICITY NOT ALLOWED	
Fluid	**Fluid**
Lubricants with abrasive additives	Wear of internal pump components
Lubricants with silicone based additives	Pump seizing
Petrol – solvents – inflammable liquids	Fire - explosion - damage to seals
Corrosive products	Pump corrosion - personal injury
Water	Pump oxidation
Food substances	Contamination thereof

*** For more detailed information regarding product compatibility with particular fluids, contact the Dropsa S.p.A. technical office**

DropsA

Lubrication Systems Specialists

DropsA S.p.A.

Via Benedetto Croce,1
20090 Vimodrone (MI)
Tel: +39 02 250 79 1
Fax: +39 02 250 79 767
www.dropsa.com

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