SMART 2
Oil Lubrication Electro-Pump

User and
Maintenance Manual

Warranty information

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Manual drawn up in accordance with EC Directive 06/42

http://www.dropsa.com
1. INTRODUCTION

This User and Maintenance Manual refers to SMART2 - Oil Lubrication Electro-Pump. 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 for 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

Oil lubrication pump SMART2 has been designed for industry machine tools. The electric gear-pump was designed to work with Single Line Injectors and Valves 33.

SMART2 is available in two versions:
- Manual SMART2, manually controlled via the PLC of the machine tool;
- Automatic SMART2, automatically controlled via built-in VIP05 controller.

2.1 LUBRICATION CONTROL SYSTEM - PRINCIPLES OF OPERATION

AUTOMATIC SMART 2 operates on the principle of intermittent lubrication which involves the following three steps:
- Prelube
- Lube (lube – wait)
- Standby

2.1.1 PRELUBE

This step is made up of a set of cycles (max 999 cycles) during which the lubrication system runs a series of lubrication cycles (lubrication will be described in paragraph 2.1.2) necessary to vent air from the pump and check lubrication functions.

Prelube takes place:
- on POWER-ON;
- on RESET;
- Any time new parameters are set.

When prelube is set to “0”, Intermittent Lubrication will only consist in the lube – standby/standby - lube phases (see START mode).

2.1.2 LUBE

This step is made up of a set of cycles (max 999 cycles) during which lubrication is carried out. Each cycle consists of two sub-cycles (lube and wait) and involves the monitoring of timers and/or inputs:
- during lube, system delivers lubricant to the lubrication points;
- during wait, a timer defines the wait time between two or more lube cycles or before the beginning of the standby phase (in case only 1 lube cycle was set).

There are three types of lube:
- TIMER: Lubricant delivery is simply regulated by a timer;
- PS: Lubricant delivery is carried out only if the system is in pressure;
- SEP: Lubricant delivery is carried out only the system detects three changes in the position of the mechanical piston. The conditions of: pressure-no pressure-pressure (or no pressure-pressure- no pressure)

2.1.3 STANDBY

During this step lubrication system is idle until the next lubrication cycle. There are three ways to regulate standby:
- TIMER: a timer regulate system idling;
- PULSE: a pulse counter regulate system idling;
- BOTH: both a timer and a pulse counter regulate system idling. The type of standby will depend on which of these two events will start first.
3. PRODUCT-MACHINE IDENTIFICATION

Machine identification yellow 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 SPECIFICATIONS

4.1 General technical specifications

<table>
<thead>
<tr>
<th>Lubricant</th>
<th>Mineral Oil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lubricant Viscosity at usage temperature</td>
<td>68 ÷ 320 cSt (320 ÷ 1480 SUS)</td>
</tr>
<tr>
<td>Working Temperature</td>
<td>+5°C ÷ +60°C (+41°F ÷ +140°F)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-20°C ÷ +60°C (-4°F ÷ +140°F)</td>
</tr>
<tr>
<td>Working Humidity</td>
<td>90% max</td>
</tr>
<tr>
<td>Mechanical Protection Grade</td>
<td>IP-55</td>
</tr>
<tr>
<td>Sound Pressure Level</td>
<td>&lt;70 dB (A)</td>
</tr>
</tbody>
</table>

4.2 Electric gear pump

<table>
<thead>
<tr>
<th>Voltage</th>
<th>110V/50Hz</th>
<th>110V/60Hz</th>
<th>230V/50Hz</th>
<th>230V/60Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power absorption</td>
<td>162 W</td>
<td>155 W</td>
<td>150 W</td>
<td>148 W</td>
</tr>
<tr>
<td>Nominal current</td>
<td>1.48A</td>
<td>0.69A</td>
<td>0.70A</td>
<td></td>
</tr>
<tr>
<td>Pump flowrate</td>
<td>180 cm³/min (10.98 cu.in.)/min</td>
<td>220 cm³/min (13.42 cu.in.)/min</td>
<td>180 cm³/min (10.98 cu.in.)/min</td>
<td>220 cm³/min (13.42 cu.in.)/min</td>
</tr>
<tr>
<td>Maximum Pressure</td>
<td>30 bar (411psi)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reservoir Capacity</td>
<td>3 litres (0.66 gals)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>By-pass Calibration</td>
<td>25 bar (367.5 psi)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressure-Switch calibration</td>
<td>18 bar (264.6 psi)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insulation Class</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotation direction</td>
<td>Clockwise</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revolutions/min</td>
<td>2900</td>
<td>3500</td>
<td>2900</td>
<td>3500</td>
</tr>
<tr>
<td>Max working time in continuous</td>
<td>2 minutes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MIN STANDBY time</td>
<td>5 times MIN setup time</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** pump output is energized.

5. MACHINE COMPONENTS

The following main components are assembled to the **baseplate**:

- **A reservoir**, made of transparent plastic material;
- **An electric gear-pump**, with high performance and minimum power consumption;
- **A SAMBA level sensor**, which indicates lubricant minimum level via a **N.O. electric contact** (reservoir empty). To reverse N.O. to N.C., please contact Dropsa Eng. Dept.;
- **A pressure gauge**;
- **A N.O. Pressure-switch**, which detects system in pressure;
- **A printed circuit for user connections** (see 6.4.2)
5.1 MANUAL SMART2

The electronic board, located under the cover of manual SMART2, allows pressure-switch and electric level contact management both independent and serial.

On the front panel there are:
- Push-button for manual control, “MANUAL”;
- LED indicator for “PUMP ON”. (Green, normally off)

5.2 AUTOMATIC SMART2

VIP05 Controller, located under the cover of automatic SMART2, allows pump total autonomy both in cycle times, alarms or checks.

On the front panel there are:
- LCD display 16x2 types;
- Push-buttons: three for control/management and one RESET button.
- LED indicator for “POWER ON” (Green, always on)
6. UNPACKING AND INSTALLING THE PUMP

6.1 UNPACKING
Once a suitable location has been found to install the unit, remove the pump from package. Check the unit has not been damaged during transportation or storage. No particular disposal procedures are necessary as package materials are no dangerous for health or environment. However, package should be disposed of in accordance with regulations that may be in force in your area or state.

6.2 INSTALLING THE PUMP
➢ In order to facilitate any maintenance intervention, to avoid unnatural posture for personnel during machine operation or the possibility of sustaining impacts, install the machine in a comfortable and easy-to-reach location.
➢ Allow sufficient space for the installation, leaving minimum 100 mm (3.9 in.) around the unit.
➢ Do not install the unit in aggressive or explosive/inflammable environments or on vibrating surfaces.
➢ To install the pump, use only the supplied bracket provided with two holes for Ø6 mm (Ø 0.2 in.) screws (see Dimensions, ch. 12).

6.3 HYDRAULIC CONNECTION
Connect SMART2 to the system via the hydraulic connection located on the baseplate, on the right side of the pump: standard thread ¼ BSP.

6.4 ELECTRIC WIRING

6.4.1 ELECTRIC DIAGRAM
Here follows the general electric diagram for both automatic and manual SMART2:

![Diagram of SMART2 electric connections]

NOTICE: Pressure can be monitored by a micro-switch or a NPN/PNP proximity sensor.
6.4.2 USER CONNECTIONS
The following picture shows the printed circuit for user connections, where the user has to connect power supply and external outputs for the correct functioning of both automatic and manual SMART2. For details about connections, please refer to special paragraphs. (Printed circuit serigraphy only refers to automatic SMART2. For the manual version there is a white label as showed in Fig. 2)

Fig. 1
Automatic version

Fig. 2
Manual version

6.4.3. CONNECTIONS FOR MANUAL SMART2
Here follows user connections for power supply (terminal M1), pressure-switch and electric level contact (independent or serial), and the manual push-button (terminal M2). Furthermore, it is also shown how to change the type of connection (independent or serial) for the pressure-switch and electric level contact, by acting on the jumper located on the electronic board of manual SMART2.

---

### INDEPENDENT CONNECTIONS
PRESSURE-SWITCH AND MINIMUM LEVEL

<table>
<thead>
<tr>
<th>M2</th>
<th></th>
<th>M1</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMON</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>LEVEL CONTACT</td>
<td>9</td>
<td>110V</td>
</tr>
<tr>
<td>PRESSURE-SWITCH</td>
<td>8</td>
<td>220V</td>
</tr>
<tr>
<td>MANUAL PUSH-BUTTON</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>NOT TO BE CONNECTED</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

*JUMPER UPWARDS 6 5*  
*ALL CONTACTS MUST BE INTENDED “DOWN” IF LUBRICANT IS ABSENT*
6.4.4 CONNECTIONS FOR AUTOMATIC SMART2

Here follows user connections for power supply (terminal board M1), external alarm (terminals 6-7) and proximity sensor or micro-switch (terminals 8-9-10). These last terminals have the function of stopping the timer or to register the pulse in order to define the standby duration. (See table A).

![PROXIMITY/MICRO SWITCH CONNECTIONS](image)

Input/output electrical specifications:

<table>
<thead>
<tr>
<th>Power</th>
<th>See: 4.1 General technical specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input signal</td>
<td>PNP proximity or N.O. free contacts input.</td>
</tr>
<tr>
<td>Alarm Output</td>
<td>Free contact:</td>
</tr>
<tr>
<td></td>
<td>250VAC –150 mA</td>
</tr>
<tr>
<td></td>
<td>125VAC/110VDC –300 mA</td>
</tr>
<tr>
<td></td>
<td>30VDC –1A</td>
</tr>
</tbody>
</table>

**Table A**

<table>
<thead>
<tr>
<th>MODE</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAND BY TIMER</td>
<td>Stops the timer for standby duration</td>
</tr>
<tr>
<td>STAND BY PULSE</td>
<td>Decrements the pulse counter that defines standby duration (this function doesn’t stop the timer)</td>
</tr>
<tr>
<td>STAND BY BOTH</td>
<td>Decrements the pulse counter that defines standby duration (this function doesn’t stop the timer)</td>
</tr>
</tbody>
</table>
6.4.5 POWER-SUPPLY SWITCH AND VARIABLE RESISTOR

- **WARNING:** Jumpers set up only refers to electronic board.

**VARIABLE RESISTOR**
It allows to regulate display brightness.

- **WARNING:** Each time a power failure occurs, Date and Time are reset. It is recommended to setup Date and Time.

6.4.6. PRECAUTIONS TO BE TAKEN DURING CONNECTING PROCEDURE

- Prior to any operation, verify the voltage of the machine on the product label.
- In order to prevent dangers of electric shocks due to direct or indirect contact with the energized parts, electrical power supply line must be protected by a suitable magneto-thermal circuit breaker with an intervention threshold of 0.03 Ampere and 1 second minimum operating time. Circuit breaker power must be $= 10 \text{ kA}$ and nominal power in $\geq 4 \text{ A}$.

- **NOTE:** At the end of all connecting operations, make sure that pipes and wires are safe from impacts and carefully fixed.
7. INSTRUCTIONS FOR USE

7.1 Manual SMART2
When the unit is equipped with the manual system, located on the frontal side panel you find the PUMP-ON indicator which is on when the pump is operating. Remote control is via external timer or PLC.

WARNING: Manual control device (reset button) connects the common signals to a line that can be used as remote indication to PLC (or to another control system). It can be used, for instance, as indication to restart the lube cycle or to cancel an error on the pump. Max power absorption of 400mA.

7.2 Automatic SMART2
When the unit is equipped with an automatic control, all the pump functions and checks are carried out through the built-in VIP05 controller, alarms and external signals included. Timers are also controlled by the system. For details about machine operation, please refer to par. 7.4.

7.3 Machine operations

7.3.1 Prior to machine start-up
- Verify the unit is undamaged.
- Check that hydraulic and electric connections have been carefully carried out.
- Refill the reservoir with compatible lubricant.
- Verify the voltage: MAX 230VAC.

RESERVOIR REFILL
Use ONLY compatible lubricant and refill the reservoir by means of the oil refill plug provided with a filter. Do not pour lubricant directly into the reservoir without using this oil refill plug.

7.3.2 Machine start-up
In order to avoid damage to the machine, the unit must start operating at a minimum working temperature of +5°C (+41°F).
- Switch ON the unit (Green LED on)
- Verify unit start-up.
- Verify piping are air-bubble-free.
- Adjust pressure.
- Set-up machine parameters.
- Verify machine correct operation: pump must carry out lubrication correctly and according to parameters setup.

AIR VENTING
Pump well-functioning is not affected by presence of air in the system. However, it is advisable to vent air by starting the pump until lubricant comes out air-bubbles-free. (It is recommended to avoid pump operation when lubricant is below the minimum level).

PRESSURE REGULATION
Pressure can be verified via pressure gauge. It is possible to regulate pressure by acting on the screw located on the frontal side of the baseplate.
- To increase pressure: turn the screw clockwise.
- To decrease pressure: turn the screw anticlockwise.

NOTE: In case of doubts as to correct machine functioning, it is recommended to contact our Eng. Dept. to request testing procedures.
7.4 *SMART2* with built-in VIP05 controller operation

7.4.1 Typical working session

Notice: prelube is always carried out according to prelube cycles set-up: if prelube cycles = ‘0’, no prelube is run and the system will start operating either in standby or lube according to the pre-set start mode.

7.4.2 Typical system start-up

**PRELUBE** will be carried out only when prelube cycles are set (*PRELUBE ≠ 0*).

Whether prelube has been completely carried out (*PRELUBE ≠ 0*) or no prelube was set (*PRELUBE = 0*), **LUBE** or **STANDBY** will start (see start mode).

During standby, you can also see date and time when the function is enabled (see setup).
7.4.3 Setup session

**BACK TO STANDBY OR ALARM (IF ACTIVATED)**

- **SET UP?**  
  - **YES**  
  - **NO**

**LUBE Time**  
**SET**  
**00m05s**  
**NEXT**

**STANDBY**  
**SET**  
**01m00s**  
**NEXT**

**STANDBY**  
**SET**  
**99i**  
**NEXT**

**EXTENDED MENU?**  
**SET**  
**YES**  
**NO**

**STANDBY**  
**SET**  
**TIMER**  
**NEXT**

**LUBE Type**  
**SET**  
**TIMER**  
**NEXT**

**DELAY Time**  
**SET**  
**00m10s**  
**NEXT**

**LUBE Cycles**  
**SET**  
**2i**  
**NEXT**

**PRELUBE**  
**SET**  
**0i**  
**NEXT**

**WAIT Time**  
**SET**  
**00m10s**  
**NEXT**

**START**  
**SET**  
**IN LUBRIC.**  
**NEXT**

**ALARM**  
**SET**  
**Norm.Open**  
**NEXT**

**Date & Time**  
**SET**  
**Disabled**  
**NEXT**

- **Date & Time**  
  - **Enabled**  
  - **NEXT**

**Day**  
**SET**  
**1**  
**NEXT**

**Month**  
**SET**  
**1**  
**NEXT**

**Year**  
**SET**  
**2004**  
**NEXT**

**Hour**  
**SET**  
**0**  
**NEXT**

**Minute**  
**SET**  
**0**  
**NEXT**

**MACHINE RE-INITIALIZATION**

To modify **STANDBY Time**, when this function is controlled by a timer (**STANDBY: Timer**).

Press **SET** to enter **LUBE Time** setup; use “-” and “+” to change the value and **SAVE** to save the new setting. Push **NEXT** to go to the next setup.

To modify **STANDBY pulse** when this function is controlled by a pulse register (**STANDBY: pulse**). This parameter can be set only if **STANDBY type** is **pulse** or **both**.

Press **YES** to enter the **EXTENDED MENU**. Press **NO** to re-initialize the machine.

Press **SET** to enter **STANDBY Type** setup; use “-” and “+” to select **Timer – Pulse - Both** and **SAVE** to save the new setting.

To select **LUBE Type**: **Timer – PS - SEP**.

**ONLY for PS**: To modify **DELAY Time** for pump-OFF.

To modify **LUBE Cycle**.

To modify **PRELUBE Cycle**.

To modify **WAIT Time** for the next lube cycle.  
**Note**: this parameter is displayed only if Lube or Prelube ≠ 0

To select **START mode** system: **START IN LUBRIC. / START IN STANDBY**.

To select the type of alarm electric contact: **Norm. Close/ Norm.Open**.

To enable/disable **Date and Time** function

To set the **day (DATE)**.

To set the **month (DATE)**.

To set the **year (DATE)**.

To set the **hour (TIME)**.

To set the **minutes (TIME)**.
## 7.4.4 Operative parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Operative range</th>
<th>Dropsa setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LUBE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timer</td>
<td>A timer defines lube duration</td>
<td>00m01s ÷ 4m59s</td>
<td></td>
</tr>
<tr>
<td>PS</td>
<td>Lube starts when system is in pressure (Pressure is monitored by a pressure-switch)</td>
<td>10s ÷ 99 min.</td>
<td>00m:05s</td>
</tr>
<tr>
<td>SEP</td>
<td>A proximity sensor detects the changes of position of the piston: after three changes a lube cycle is completed (*)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>STANDBY</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timer</td>
<td>A timer defines standby duration (system idle)</td>
<td>01m00s ÷ 999h59m59s</td>
<td>01m:00s</td>
</tr>
<tr>
<td>Pulse</td>
<td>A pulse register defines standby duration (system idle)</td>
<td>1i ÷ 9,999,999i</td>
<td>99i</td>
</tr>
<tr>
<td>Both</td>
<td>Standby duration (system idle) is defined by both standby timers (timer and pulse), whichever occurs first.</td>
<td>See Standby Timer and pulse</td>
<td>01m:00s 99i</td>
</tr>
<tr>
<td><strong>STANDBY</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It allows to choose the type of standby.</td>
<td></td>
<td>Timer Pulse Both</td>
<td>Pulse</td>
</tr>
<tr>
<td><strong>Lube type</strong></td>
<td>It allows to choose the type of standby.</td>
<td>Timer Pulse Both</td>
<td>PS</td>
</tr>
<tr>
<td><strong>DELAY TIME</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(FOR PS ONLY)</td>
<td>A timer defines the duration of PUMP ON (time lag for pump OFF) once the system goes in pressure</td>
<td>01s ÷ 99 min.</td>
<td>00m:10s</td>
</tr>
<tr>
<td><strong>LUBE Cycles</strong></td>
<td>Number of lube cycles to be carried out by the system</td>
<td>01 ÷ 999</td>
<td>2</td>
</tr>
<tr>
<td><strong>PRELUBE cycles</strong></td>
<td>Number of prelube cycles, which will be carried out before the lube cycles</td>
<td>1 ÷ 999</td>
<td>0</td>
</tr>
<tr>
<td><strong>WAIT Time</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A timer defines the duration of a pause time between each lube process. <strong>ONLY for 'LUBE type: SEP': Set 00m00s for continuous service</strong></td>
<td>01s ÷ 16m39s</td>
<td>01m:00s</td>
<td></td>
</tr>
<tr>
<td><strong>START MODE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It allows to choose how to start the working session</td>
<td></td>
<td>START IN LUBRIC. START IN STANDBY</td>
<td>START IN LUBRIC.</td>
</tr>
<tr>
<td><strong>Alarm</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It allows to choose the type of alarm electric contact</td>
<td></td>
<td>Norm. Open Norm. Close</td>
<td>Norm. Open</td>
</tr>
<tr>
<td><strong>Date &amp; Time</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It allows to enable/disable Date &amp; time display and setup</td>
<td></td>
<td>Enabled/Disabled</td>
<td>Enabled</td>
</tr>
<tr>
<td>Day</td>
<td>It allows to set the day</td>
<td>1-31</td>
<td>1</td>
</tr>
<tr>
<td>Month</td>
<td>It allows to set the month</td>
<td>1-12</td>
<td>1</td>
</tr>
<tr>
<td>Year</td>
<td>It allows to set the year</td>
<td>2000-2099</td>
<td>2000</td>
</tr>
<tr>
<td>Hour</td>
<td>It allows to set the hour</td>
<td>0-23</td>
<td>0</td>
</tr>
<tr>
<td>Minute</td>
<td>It allows to set the minutes</td>
<td>00-59</td>
<td>00</td>
</tr>
</tbody>
</table>

(*) Please see the Electric Diagram at page 5
8. TROUBLESHOOTING

**WARNING:** This unit can be opened and repaired by Dropsa personnel only

The following diagnostic table indicates the main anomalies which may be encountered, the probable causes and possible solutions. If you cannot solve the problem, do not attempt to disassemble the unit, but contact the Engineering Department of DROPSA S.p.A.

### 8.1 PUMP DIAGNOSTICS (MANUAL AND AUTOMATIC SMART2)

<table>
<thead>
<tr>
<th>ANOMALY</th>
<th>PROBABLE CAUSE</th>
<th>SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump does not deliver lubricant.</td>
<td>Pump draws off air because the reservoir is empty.</td>
<td>→ Refill the reservoir and vent air from the system.</td>
</tr>
<tr>
<td>Pump does not deliver the fixed amount of lubricant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pump delivers oil at an improper pressure.</td>
<td>• Loosened inner fittings.</td>
<td>→ Retighten all the fittings. Be sure there are no Leakages.</td>
</tr>
<tr>
<td>The system stays in pressure at the end of the lube cycle</td>
<td>• Vent valve damaged or dirty.</td>
<td>→ Inspect and clean the valve. Replace it, if necessary.</td>
</tr>
<tr>
<td></td>
<td>• Wear of the pump.</td>
<td>→ Replace the pump.</td>
</tr>
<tr>
<td></td>
<td>• Wrong calibration of the by-pass valve.</td>
<td>→ Install a pressure gauge to adjust by-pass at the proper pressure.</td>
</tr>
</tbody>
</table>

### 8.2 VIPS05 CONTROLLER ALARMS (AUTOMATIC SMART2)

When an alarm occurs, an external signal is ON. The display will show one of the following alarms for two seconds:

- **ALARM 01 - TIMER FAULT**
  - Internal process error during *lube by timer*.
- **ALARM 02 - PX VENT FAILED**
  - At the beginning of *lube by PS*: it was detected that the system has not vented air.
- **ALARM 04 PS - PRESSURE ALARM**
  - During *lube by PS*, it was detected that the system never goes in pressure.
- **ALARM 06 PS - PRESSURE LOSS**
  - During *lube by PS*, even though the pump is operating, the system loses pressure.
- **ALARM 08 PS - GENERAL FAULT**
  - Internal process error during *lube by PS*.
- **ALARM 09 SEP - CYCLE TIMEOUT**
  - During *lube by SEP*: the sensor cannot detect 3 changes system pressure state:
    - system goes not in pressure
    - system goes in pressure but does not loses pressure
    - the system After losing pressure does not go back in pressure
- **ALARM 10 SEP - GENERAL FAULT**
  - Internal process error during *lube by SEP*.
- **ALARM 11 - LOW LEVEL**
  - The Samba Level Sensor detected low level: Refill the reservoir.

### 8.3 RESTART/RESET the system

Once one of the above alarm status occurs, another display will be shown:

For example:

```
ALARM 11                          setup  reset
```

There are two ways to restore machine operating:

⇒ By pressing **setup** (left push-button), the system will enter the setup session to modify, at any rate, parameters and re-start the machine.

⇒ By pressing **reset for two seconds** (right push-button or RESET button), the system will be reset and the machine will be re-initialized and will operate according to the last saved data setup.
9. MAINTENANCE PROCEDURE

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

WARNING: Prior to any maintenance, be sure that the power and the hydraulic supplies are off and there is no residual pressure in the main/branch pipe.

SMART2 has been designed and manufactured to require the minimum maintenance. Anyway, it is recommended:

- To keep the unit clean and periodically to check pipe joints to readily detect possible leaks.

WARNING: It is recommended the use of impurity-free lubricant.

PERIODICAL MAINTENANCE

<table>
<thead>
<tr>
<th>Inspection</th>
<th>Number of work cycles</th>
<th>Maintenance Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lubrication</td>
<td>1.000</td>
<td>-</td>
</tr>
<tr>
<td>Cleanliness of refill filter</td>
<td>4.000</td>
<td>Replace the refill filter, if necessary</td>
</tr>
<tr>
<td>Cleanliness of reservoir</td>
<td>6.000</td>
<td>Clean the bottom of the reservoir in case of impurities</td>
</tr>
</tbody>
</table>

10. DISPOSAL

During maintenance or disposal of the machine care should be taken to properly dispose of environmentally sensitive items. 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 MANUAL SMART2

<table>
<thead>
<tr>
<th>PART N°</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>3600240</td>
<td>SMART2 ELECTRO-PUMP 110V~ 50 Hz</td>
</tr>
<tr>
<td>3600241</td>
<td>SMART2 ELECTRO-PUMP 110V~ 60 Hz</td>
</tr>
<tr>
<td>3600242</td>
<td>SMART2 ELECTRO-PUMP 230V~ 50 Hz</td>
</tr>
<tr>
<td>3600243</td>
<td>SMART2 ELECTRO-PUMP 230V~ 60 Hz</td>
</tr>
</tbody>
</table>

### 11.2 AUTOMATIC SMART2

<table>
<thead>
<tr>
<th>PART N°</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>3600210</td>
<td>SMART2 ELECTRO-PUMP 110V~ 50 Hz</td>
</tr>
<tr>
<td>3600211</td>
<td>SMART2 ELECTRO-PUMP 110V~ 60 Hz</td>
</tr>
<tr>
<td>3600212</td>
<td>SMART2 ELECTRO-PUMP 230V~ 50 Hz</td>
</tr>
<tr>
<td>3600213</td>
<td>SMART2 ELECTRO-PUMP 230V~ 60 Hz</td>
</tr>
</tbody>
</table>

### 11.3 SPARE PARTS

<table>
<thead>
<tr>
<th>PART N°</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>3132725</td>
<td>Control kit for automatic SMART2 110V~ 50/60Hz</td>
</tr>
<tr>
<td>3132730</td>
<td>Control kit for automatic SMART2 230V~ 50/60Hz</td>
</tr>
<tr>
<td>3132726</td>
<td>Control kit for manual SMART2</td>
</tr>
<tr>
<td>3600903</td>
<td>Motor unit for SMART2 110V/50Hz (automatic and manual)</td>
</tr>
<tr>
<td>3600904</td>
<td>Motor unit for SMART2 110V/60Hz (automatic and manual)</td>
</tr>
<tr>
<td>3600905</td>
<td>Motor unit for SMART2 230V/50Hz (automatic and manual)</td>
</tr>
<tr>
<td>3600906</td>
<td>Motor unit for SMART2 230V/60Hz (automatic and manual)</td>
</tr>
<tr>
<td>6770033</td>
<td>Transparent reservoir 3 litres (0.66 gals)</td>
</tr>
<tr>
<td>3292053</td>
<td>Pressure gauge 60 bar (882 psi) 1/8&quot; cone</td>
</tr>
<tr>
<td>6770070</td>
<td>Refilling Cap (for oil)</td>
</tr>
<tr>
<td>3130101</td>
<td>Refilling filter</td>
</tr>
<tr>
<td>3291048</td>
<td>Pressure-switch 18 bar (264.6 psi)</td>
</tr>
<tr>
<td>1655582</td>
<td>MIN level</td>
</tr>
</tbody>
</table>
13. HANDLING AND TRANSPORTATION

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

⇒ Due to machine contained weight and size, it is not necessary the use of material handling equipment. Anyway, we recommend to lift the equipment observing the right way up shown on the cardboard package.

14. OPERATING HAZARDS

**WARNING:** It is necessary to carefully read about the instructions and the risks involved in the use of lubrication machines. The operator must know the machine functioning through the User and Maintenance Manual.

Power supply
Any type of intervention must not be carried out before unplugging the machine from power supply. Make sure that no one can start it up again during the intervention. All the installed electric and electronic equipment, reservoirs and basic components must be grounded.

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

Noise
Pump does not produce excessive noise, less than 70 dB(A).

15. PRECAUTIONS

No particular operating hazards characterize the machine, except for the following precautions:

- Operator’s contact with the lubricant in case of piping breaking/opening or during refill/maintenance. -> Protection against direct and indirect contact with the fluid must be provided by the user: the operator must be provided with suitable individual protective clothing and devices.
- Use of incompatible lubricant. Main unauthorized fluids:

<table>
<thead>
<tr>
<th>Fluids</th>
<th>Dangers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lubricants containing abrasive components</td>
<td>Premature wear of pump</td>
</tr>
<tr>
<td>Lubricants containing silicon</td>
<td>Pump failure</td>
</tr>
<tr>
<td>Petrol – solvents – inflammable liquids</td>
<td>Fire – explosion – seal damage</td>
</tr>
<tr>
<td>Corrosive products</td>
<td>Pump damage - danger to persons</td>
</tr>
<tr>
<td>Water</td>
<td>Pump oxidization</td>
</tr>
<tr>
<td>Food Products</td>
<td>Contamination of the product</td>
</tr>
</tbody>
</table>
16. WARRANTY INFORMATION

All products manufactured and marketed by Dropsa are warranted to be free of defects in material or workmanship for a period of at least 12 months from date of delivery. Extended warranty coverage applies as follows:

Complete system installation by Dropsa: 24 Months

All other components: 12 months from date of installation; if installed 6 months or more after ship date, warranty shall be maximum of 18 months from ship date.

If a fault develops, notify us giving a complete description of the alleged:

- malfunction
- part number(s)
- test record number where available (format xxxxxx-xxxxxx)
- date of delivery
- date of installation
- operating conditions of subject product(s)

We will subsequently review this information and, at our option, supply you with either servicing data or shipping instruction and returned materials authorization (RMA) which will have instructions on how to prepare the product for return.

Upon prepaid receipt of subject product to an authorized Dropsa Sales & Service location, we will then either repair or replace such product(s), at our option, and if determined to be a warranted defect, we will perform such necessary product repairs or replace such product(s) at our expense.

Dropsa S.p.A. reserves to right to charge an administration fee if the product(s) returned are found to be not defective.

This limited warranty does not cover any products, damages or injuries resulting from misuse, neglect, normal expected wear, chemically caused corrosion, improper installation or operation contrary to factory recommendation. Nor does it cover equipment that has been modified, tampered with or altered without authorization.

Consumables and perishable products are excluded from this or any other warranty.

No other extended liabilities are states or implied and this warranty in no event covers incidental or consequential damages, injuries or costs resulting from any such defective product(s).

The use of Dropsa product(s) implies the acceptance of our warranty conditions. Modifications to our standard warranty must be in made in writing and approved by Dropsa S.p.A.
17. DECLARATION OF COMPLIANCE WITH CE STANDARDS

DICHIARAZIONE DI CONFORMITÀ/DECLARATION OF COMPLIANCE WITH STANDARDS/
DECLARATION DE CONFORMITÉ/ KONFORMITÄTSERKLÄRUNG DES STANDARDS /DECLARACIÓN DE CONFORMIDAD/ DECLARAÇÃO DE CONFORMIDADE


DICHIARA /CERTIFIES / CERTIFIE/ ZERTIFIZIERT, DASS/ DECLARA/ CERTIFICA:

che la macchina denominata/that the machine named / que la machine dénommée/ Die Maschine mit der Bezeichnung/ que la máquina denominada/ que o equipamento denominado

SMART2, PRISMART
Cod. 3600210, 3600211, 3600212, 3600213, 3600241, 3600242, 3600243, 3600250, 3600251, 3600252, 3600253, 3600450, 3600451, 3600452, 3600453.

è conforme alle condizioni previste dalle Direttive CEE /has been constructed in conformity with the Directives Of The Council Of The European Community on the standardization of the legislations of member states/ a été construite en conformité avec les Directives Du Conseil Des Communautés Europeennes/ Entsprechend den Richtlinien des Rates Der Europäischen Union, für die Standarisierung der Legislative der Mitgliederstaaten, konstruiert wurde/ cumple con las condiciones establecidas por las directivas comunitarias/ foi construído em conformidade com as diretivas do Conselho das Comunidades Europeias:


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