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This operating instructions contains safety information that if ignored can endanger life or result in serious injury.

Read these instructions carefully before use and keep them for future reference. The original instruction is in English. All non-English instructions are translations of the original instruction.

Information and specifications on this manual could be uncorrect or could have printing errors.

Specifications are subject to change without notice.

Version: R1-01-15

### NORME CE
### EC RULES (STANDARD EC)
### NORMAS DE LA CE

- Direttiva Basso Voltaggio
- Low Voltage Directive
- Directiva de baja tensión

2006/95/CE

- Direttiva EMC Compatibilità Elettromagnetica
- EMC electromagnetic compatibility directive
- EMC directiva de compatibilidad electromagnética

2004/108/CE

- Norme armonizzate europee nell’ambito della direttiva
- European harmonized standards underdirective
- Las normas europeas armonizadas conforme a la directiva

2006/42/CE
1. GENERAL SAFETY GUIDELINES

Operating, installing, or maintaining the unit in any way that is not covered in this manual could cause death, serious personal injury, or damage to the equipment.

**ICON**

This manual uses the following safety message icon:

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="danger-icon.png" alt="Danger" /></td>
<td>Indicates a hazardous situation which, if not avoided, will result in death or serious injury.</td>
</tr>
<tr>
<td><img src="warning-icon.png" alt="Warning" /></td>
<td>Indicates a hazardous situation which, if not avoided, could result in death or serious injury.</td>
</tr>
<tr>
<td><img src="important-icon.png" alt="Important" /></td>
<td>A practice not related to personal injury or additional information.</td>
</tr>
<tr>
<td><img src="cross-reference-icon.png" alt="Cross reference" /></td>
<td>An instance which refers to related information elsewhere in the same document</td>
</tr>
</tbody>
</table>
2. PURPOSE OF USE AND SAFETY

METERING PUMP IS INTENDED FOR CHEMICAL DOSING.

Do not use in explosive area (EX).

Do not use with flammable chemicals.

Do not use with radioactive chemicals.

Use after a proper installation.

Use the pump in accordance with the data and specifications printed on the label.

Do not modify or use in a manner inconsistent with the provisions of the operating manual.

<table>
<thead>
<tr>
<th></th>
<th>Keep the pump protected from sun and water. Avoid water splashes.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In emergencies the pump should be switched off immediately. Disconnect the power cable from the power supply.</td>
</tr>
<tr>
<td></td>
<td>When using pump with aggressive chemicals observe the regulations concerning the transport and storage of aggressive fluids.</td>
</tr>
<tr>
<td></td>
<td>When installing always observe national regulations.</td>
</tr>
<tr>
<td></td>
<td>Manufacturer is not liable for any unauthorized use or misuse of this product that may cause injury, damage to persons or materials.</td>
</tr>
<tr>
<td></td>
<td>Pump must be accessible at all times for both operating and servicing. Access must not be obstructed in any way.</td>
</tr>
<tr>
<td></td>
<td>Feeder should be interlocked with a no-flow protection device to automatically shut-off the pumps when there is no flow!</td>
</tr>
<tr>
<td></td>
<td>Adequate measures shall be taken to prevent cross connection of chemicals!</td>
</tr>
<tr>
<td></td>
<td>Chemical feeding must be stopped during backwash cycles and periods of noflow as these conditions may introduce the potential for chemical overdosing. Not doing so may result in elevated chemical concentrations and hazardous gas introduction into the pool or spa.</td>
</tr>
<tr>
<td></td>
<td>Pump and accessories must be serviced and repaired by qualified and authorized personnel only.</td>
</tr>
</tbody>
</table>
⚠️ Before any operation:

- always read chemical Material Safety Data Sheet (MSDS);
- always wear protective clothing;
- always discharge the liquid end before servicing the pump.
- empty and rinse the liquid end before work on a pump which has been used with hazardous or unknown chemicals.
3. ENVIRONMENTAL SAFETY

Work area
Always keep the pump area clean to avoid and/or discover emissions.

Recycling guidelines
Always recycle according to these guidelines:

1. If the unit or parts are accepted by an authorized recycling company, then follow local recycling laws and regulations.

2. If the unit or parts are not accepted by an authorized recycling company, then return them to the nearest representative.

Waste and emissions regulations
Observe these safety regulations regarding waste and emissions:

- Dispose appropriately of all waste.
- Handle and dispose of the dosed chemical in compliance with applicable environmental regulations.
- Clean up all spills in accordance with safety and environmental procedures.
- Report all environmental emissions to the appropriate authorities.
4. LABEL
5. SPARE PARTS

For spare parts orders or any other communication, refer to the pump’s label. Code (CODE) and serial number (S / N) uniquely identify the pump.

Figure 1 WQA label.

| THIS METERING PUMP IS TESTED AND CERTIFIED BY WQA TO NSF/ANSI 50 AND 61 FOR MATERIALS SAFETY. |

Transportation and Storage

A not suitable transportation or storage can cause damages. Use original box to pack the pump. Observe storage conditions also for transportation. Although packed, always protect the unit against humidity and the action of chemicals.

Before return the dosing pump to the manufacturer Repair service, drain the chemical from pump head and rinse it. Refer to Shutdown procedure. Fill the PRODUCT SERVICE REPAIR FORM and send it with the dosing pump. Repair service is not accepted if PRODUCT SERVICE REPAIR FORM is missing.

DO NOT TRASH PACKAGING. USE IT TO RETURN THE PUMP.

Transportation and storage temperature...... 10 ÷ 50°C (32 ÷ 122°F)
Umidity........................................................... 95% relative humidity (not condensed)
### 5.1. Included Into Package

<table>
<thead>
<tr>
<th>QUANTITY</th>
<th>CONTENT</th>
<th>VPO</th>
</tr>
</thead>
<tbody>
<tr>
<td>n. 2</td>
<td>ø6 dibbles</td>
<td>●</td>
</tr>
<tr>
<td>n. 2</td>
<td>4,5 x 40 self tapping screws</td>
<td>●</td>
</tr>
<tr>
<td>n. 1</td>
<td>5 X 20 delayed fuse</td>
<td>●</td>
</tr>
<tr>
<td>n. 1</td>
<td>level probe with axial foot filter (PVDF)</td>
<td>●</td>
</tr>
<tr>
<td>n. 1</td>
<td>0,3 bar injection valve (PVDF)</td>
<td>●</td>
</tr>
<tr>
<td>m 2</td>
<td>delivery hose (PVDF)</td>
<td>●</td>
</tr>
<tr>
<td>m 2</td>
<td>suction hose (PE)</td>
<td>●</td>
</tr>
<tr>
<td>m 2</td>
<td>discharge hose (PVC 4x6 transparent)</td>
<td>●</td>
</tr>
<tr>
<td>m 2,5</td>
<td>input signal cable</td>
<td>●</td>
</tr>
<tr>
<td>n. 1</td>
<td>operating manual</td>
<td>●</td>
</tr>
</tbody>
</table>
6. DESCRIPTION

6.1. VPO

VPO is a proportional dosing pump with level control.

It is driven by internal built-in pH or Redox (ORP) meter (electrode not included).

Ranges:

pH: 0 ÷ 14 pH
ORP: -999mV ÷ +999mV

FEATURES

Select pH or ORP parameter by menu: choose MODE and set pH or ORP.
In both modes, the pump can be set to dose in on / off or proportional.
In On / Off mode, the pump operates in two values (set-point)
In proportional mode the pump doses proportionally into the set point.

Fast calibration

You can perform a fast calibration on standard value.
7.0 and 4.0 for pH, 650 mV for ORP. For different value proceed to a full calibration.

Restore last calibration

If an error occur during calibration you can restore last calibration saved.

Alarms

Dosing, reading (probe failure), level and stand-by.

Alarm output status: N.O. or N.C.

DELAY

Programmable delay at dosing start up.
RESTORE FACTORY

Restore factory value (default value).

PASSWORD AND LANGUAGE

Settable password and language (EN or FR).

STAND-BY

Stand-by INPUT.

<table>
<thead>
<tr>
<th>VERIFY CHEMICAL COMPATIBILITY OF PUMP HEAD, O-RING AND HOSES BEFORE USE.</th>
</tr>
</thead>
</table>

⚠️ Refer to Chemical Compatibility table.
### 6.2. Features

<table>
<thead>
<tr>
<th>Power Supply</th>
<th>Fuse</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>230 VAC (180-270 VAC)</td>
<td>800 mA</td>
<td></td>
</tr>
<tr>
<td>115 VAC (90-135 VAC)</td>
<td>400 mA</td>
<td>50/60 Hz</td>
</tr>
<tr>
<td>24 VAC (20-32 VAC)</td>
<td>2 A</td>
<td></td>
</tr>
<tr>
<td>12 VDC (10-16 VDC)</td>
<td>3.15 A</td>
<td>/</td>
</tr>
</tbody>
</table>

Environment temperature: 10 ÷ 45°C (32 ÷ 113°F)
Chemical temperature: 0 ÷ 50°C (32 ÷ 122°F)
Transportation and storage temperature: 10 ÷ 50°C (32 ÷ 122°F)
Installation class: II
Pollution level 2
Audible noise 73dB
Protection degree IP 65
Dimensions 225x215x125mm
Max installation height 1.5 m
Capacity

Table 1 Capacity (manual models)

<table>
<thead>
<tr>
<th>Model</th>
<th>FLOW</th>
<th>Cc per STROKE</th>
<th>Maximum pressure</th>
<th>Hoses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>min cc/h</td>
<td>max l/h</td>
<td>Min GPH</td>
<td>Max GPH</td>
</tr>
<tr>
<td>2001</td>
<td>30</td>
<td>1</td>
<td>0.008</td>
<td>0.26</td>
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<tr>
<td>1802</td>
<td>60</td>
<td>2</td>
<td>0.02</td>
<td>0.52</td>
</tr>
<tr>
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<td>110</td>
<td>4</td>
<td>0.03</td>
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</tr>
<tr>
<td>1502</td>
<td>60</td>
<td>2</td>
<td>0.02</td>
<td>0.52</td>
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<tr>
<td>1504</td>
<td>110</td>
<td>4</td>
<td>0.03</td>
<td>1.05</td>
</tr>
<tr>
<td>1505</td>
<td>140</td>
<td>5</td>
<td>0.04</td>
<td>1.32</td>
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<td>1004</td>
<td>110</td>
<td>4</td>
<td>0.03</td>
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<tr>
<td>1005</td>
<td>140</td>
<td>5</td>
<td>0.04</td>
<td>1.32</td>
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<tr>
<td>1010</td>
<td>280</td>
<td>10</td>
<td>0.07</td>
<td>2.64</td>
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<tr>
<td>0706</td>
<td>170</td>
<td>6</td>
<td>0.04</td>
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<td>0510</td>
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<tr>
<td>0512</td>
<td>330</td>
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<td>0408</td>
<td>220</td>
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<td>17</td>
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<td>0116</td>
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<td>16</td>
<td>0.11</td>
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Table 2 Capacity (self venting models)

<table>
<thead>
<tr>
<th>Model</th>
<th>FLOW</th>
<th>Max GPH</th>
<th>Min GPH</th>
<th>Cc per STROKE</th>
<th>pulse/ min</th>
<th>Maximum pressure</th>
<th>Hoses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>min cc/h</td>
<td>max l/h</td>
<td></td>
<td></td>
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<tr>
<td>200.5</td>
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<td>0.5</td>
<td>1.32*10^-5</td>
<td>0.13</td>
<td>0.05</td>
<td>180</td>
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<tr>
<td>1802</td>
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<td>5*10^-5</td>
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<td>1501</td>
<td>0.1</td>
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<td>2.6*10^-5</td>
<td>0.26</td>
<td>0.1</td>
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<td>103.4</td>
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<td>1002</td>
<td>0.19</td>
<td>2</td>
<td>5*10^-5</td>
<td>0.52</td>
<td>0.19</td>
<td>180</td>
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<td>0704</td>
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<td>4</td>
<td>9.8*10^-5</td>
<td>1.05</td>
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<td>13</td>
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<td>0113.5</td>
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<td>1.25</td>
<td>180</td>
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</table>

6.3. Materials

✓: standard

✗: options available

<table>
<thead>
<tr>
<th>PVDF</th>
<th>PP</th>
<th>PPV0</th>
<th>PMMA</th>
<th>PVC</th>
<th>PE</th>
<th>CE</th>
<th>VETRO</th>
<th>PTFE</th>
<th>SS</th>
<th>FKM B</th>
<th>EPDM</th>
<th>WAX</th>
<th>SI</th>
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<td>PUMP HEAD</td>
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<td>O RING</td>
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<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEVEL PROBE/ FOOT FILTER</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEVEL PROBE CABLE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7. INSTALLATION

7.1. How to install metering pump

5 steps to install and start-up the pump:

1. Pump location
2. Piping connections (hoses, level probe, injection valve)
3. Wirings
4. Pump priming
5. Programming and start-up

The operator must be aware of safety precautions to prevent physical injury.

7.2. User health and safety

| **POWER SUPPLY DISCONNECTION** |
| Disconnect power supply before you perform any installation or maintenance tasks. Failure to disconnect power will result in serious physical injury. |

| **SAFETY EQUIPMENT** |
| Use safety equipment according to the company regulations. Use this safety equipment within the work area: |
| ▪ Helmet |
| ▪ Safety goggles (with side shields) |
| ▪ Protective shoes |
| ▪ Protective gloves |
| ▪ Gas mask |
7.3. The work area

THE WORK AREA

Observe these regulations and warnings in the work area:

- Always keep the work area clean.
- Pay attention to the risks presented by gas and vapors in the work area.
- Avoid all electrical dangers. Pay attention to the risks of electric shock or arc flash hazards.
- Avoid water splashes and direct sun!

7.4. Pump location

Pump must be installed on a stable support at a max 1,5 mt height from tank’s bottom.

- Injection point must be higher than tank to avoid accidental chemical injection.
  Otherwise, connect a multifunction valve on delivery pipeline.

- INSTALLATION PUMP GUIDELINES
  Install the pump
  - in a safety place and fixed to the table / wall to avoid vibration problems;
  - in an easy accessible place;
  - in horizontal position.

- Use only hoses compatibles with product to dose.
  See “Chemical compatibility table” page 31.
  If dosing product is not listed please consult full compatibility table or contact chemical’s manufacturer.
7.5. Requirements for product positioning

REQUIREMENTS FOR PRODUCT POSITIONING

Only use fasteners of the proper size and material.

Replace all corroded fasteners.

Make sure that all fasteners are properly tightened and that there are no missing fasteners.

Figure 3 Installation
8. PIPING CONNECTIONS

8.1. Foot filter / Level probe (included only in some models)

Level probe is assembled with a foot filter that avoid sediments priming problems.

Install level probe on the bottom of the tank.

Connect BNC level probe to the pump BNC input.

⚠️ Warning: If there is a mixer installed into tank, install a suction lance instead of level probe / foot filter.

In case of replacement of level probe parts, follow the diagram below.

Figure 4 Level probe assembling diagram.
8.2. **Suction hose connection**

- **Suction piping should be as short as possible and installed in vertical position to avoid air bubbles suction.**
  
  Completely unscrew tightening nut from pump's head and remove assembling components: tightening nut, holding ring and pipe holder.
  
  Assembly as shown in fig. 4.
  
  Insert hose into pipe holder until it reaches the bottom. Lock hose on pump's head by screwing down the tightening nut.

- **Hand-tighten the nuts firmly.**
  
  Do not use tongs or any other tool.

---

**Figure 5 Suction hose assembling**

---

8.3. **Pump head / delivery hose assembling procedure**

- **Suction and delivery valves must be in vertical position.**

- **Delivery hose must be firmly fixed to avoid suddenly movements that could damage near objects.**
Completely unscrew tightening nut from pump’s head and remove assembling components: tightening nut, holding ring and pipe holder.

Assembly as shown in fig.5.

Insert hose into pipe holder until it reaches the bottom. Lock hose on pump’s head by screwing down the tightening nut.

**Hand-tighten the nuts firmly.**

Do not use tongs or any other tool.

Connect the other end of the hose to the injection valve using the same procedure.

---

**Figure 6 Delivery hose / pump head assembling**

**8.4. Injection valve**

Injection valve must be installed on plant from water’s input.

Injection valve will open at pressure greater than 0,3 bar.

On request 1, 2, 3, 4 or 5 bar injection valve are available.
8.5. Discharge hose

Insert one side of discharge hose into discharge connector as shown in fig below. Insert other side of discharge hose into product’s tank. During priming procedure product exceeding will flow into tank.

For priming procedure see PRIMING.

During calibration procedure (“TEST”) insert discharge hose into BECKER test-tube.
8.6. VAPO PH-RH self venting pump head connection

Refer to fig. below for delivery and discharge hose.

Assembling procedures are the same described before.

Figure 8 Self-venting models pump head

---

Suction, delivery and discharge valve are different.
9. WIRING

9.1. Preliminary checks

The electrical wirings should be carried out by authorized and qualified personnel only in accordance with local regulations.

Before to proceed, verify the following steps:

1. Verify the data on nameplate.
   Make sure that the electrical data on the nameplate of the motor corresponds to the electrical supply.

2. Verify the grounded power outlet.
   The pump must be plugged to a grounded power outlet. Pump must be connected to a motor protection switch (Residual Current Circuit Breaker - MCCB).

3. Install a relay switch. Do not install it in parallel with heavy inductance load (for example: engines). See fig. below.

Figure 9 Electrical installation.

4. Verify peak Amps. 115 or 230 VAC pumps do not use motor overload protection.

<table>
<thead>
<tr>
<th>Power supply</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 VDC</td>
<td>Connect the pump to a 55 Ah-12VDC battery</td>
</tr>
<tr>
<td>24 VDC</td>
<td>Connect the pump to a 200W stabilized power supply (verify peak Amps)</td>
</tr>
</tbody>
</table>

5. Verify level probe “BNC” is connected as described in “Foot filter / Level probe”.

P - Dosing pump
R - Relay
I - Switch or safety device
E - Electrovalve or inductance load
A - Power supply
9.2. **Pump's wiring**

Connect pH or ORP probe “BNC” to pump probe input.

Connect level probe to pump level probe input.

**Figure 10 Wirings**
10. PRIMING

10.1. Warnings

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>⚠️</td>
<td>Feeder should be interlocked with a no-flow protection device to automatically shut-off the pumps when there is no flow!</td>
</tr>
<tr>
<td>⚠️</td>
<td>Adequate measures shall be taken to prevent cross connection of chemicals!</td>
</tr>
<tr>
<td>⚠️</td>
<td>Chemical feeding must be stopped during backwash cycles and periods of noflow as these conditions may introduce the potential for chemical overdosing. Not doing so may result in elevated chemical concentrations and hazardous gas introduction into the pool or spa.</td>
</tr>
<tr>
<td>⚠️</td>
<td>Never operate any pumping system with a blocked suction and discharge. You must take all necessary measures to avoid this condition.</td>
</tr>
</tbody>
</table>

**SAFETY EQUIPMENT**

Use safety equipment according to the company regulations. Use this safety equipment within the work area:

- Helmet
- Safety goggles (with side shields)
- Protective shoes
- Protective gloves
- Gas mask
10.2. Pump's priming

To prime the pump:

1. Perform all pipings (delivery, suction and discharge hose);
2. Turn completely the discharge knob to open discharge valve;
3. Supply the pump and turn on
4. Set MANUAL (refer to Setting menu).
5. When the product will start to flow into discharge hose, close the discharge valve turning the knob (not for self-venting model).

For viscous liquids, to facilitate priming: insert a 20 cc syringe on venting pipe and suck;
When syringe is almost full close the discharge valve turning the knob.
11. VPO CONTROL PANEL

11.1. Keyboard function

<table>
<thead>
<tr>
<th>Key</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>↑</td>
<td>SCREENS SCROLL / NUMBER INCREASING</td>
</tr>
<tr>
<td>➡</td>
<td>CHANGE FIELD ON THE SAME SCREEN</td>
</tr>
<tr>
<td>ESC</td>
<td>ON/OFF / EXIT OR BACK WITHOUT SAVE</td>
</tr>
<tr>
<td>E</td>
<td>SELECT / CONFIRM / SAVE</td>
</tr>
</tbody>
</table>
12. PROGRAMMING THE PUMP

12.1. Start/Power off

Connect power supply cable and start the pump with ON/OFF key.

Display will be on (default settings).

Mode OFF: press OFF to switch off the pump.

Unplug power supply to complete the power off.

12.2. Default settings

<table>
<thead>
<tr>
<th>PASSW</th>
<th>PASSWORD</th>
<th>0000</th>
</tr>
</thead>
<tbody>
<tr>
<td>LANG</td>
<td>LANGUAGE</td>
<td>FRENCH</td>
</tr>
<tr>
<td>OUT AL</td>
<td>OUT ALARM</td>
<td>N.O.</td>
</tr>
<tr>
<td>STAND-BY</td>
<td>STAND-BY</td>
<td>DISABLE TIME 00 MIN</td>
</tr>
<tr>
<td>DOS AL</td>
<td>DOSING ALARM</td>
<td>TIME 0h 00min - STOP no</td>
</tr>
<tr>
<td>READ AL</td>
<td>READING ALARM</td>
<td>TIME 0h 00min - STOP no</td>
</tr>
<tr>
<td>SET P pH</td>
<td>SETPOINT pH</td>
<td>PROP - pH1 7,5 50% - pH2 7,3 0%</td>
</tr>
<tr>
<td>SET P ORP</td>
<td>SETPOINT ORP</td>
<td>PROP - ORP1 700 50% - ORP2 730 0%</td>
</tr>
</tbody>
</table>

12.3. Main menu

Use ↑ to scroll main menu.

Main screen

Setpoint 1

Setpoint 2

Supply voltage

Alarms
Table 3 Symbols on display

<table>
<thead>
<tr>
<th>#</th>
<th>one or more alarms occur (ALARMS).</th>
</tr>
</thead>
</table>

Press ↑ to delete alarm messages on display.

12.4. Setting menu

Settings

12.5. MODE

Set the pump working mode between pH and ORP.
12.6. SET P

Set the pump working mode between ON/OFF or PROPORTIONAL and the ranges for on/off dosing or proportional dosing. % refer to pump stroke/minute.

In ON/OFF mode the pump works using two set values that enable or disable the pump.

Regulate Low value on 0% for pump off. Only in exceptional cases and for special applications regulate low value on a percentage different from 0%.

If pH pump:

If ORP pump:

12.7. Example

Pump working in ON/OFF mode:
In PROPORTIONAL mode the pump works proportionally in the set range.

Regulate Low value on 0% for pump off. Only in exceptional cases and for special applications regulate low value on a percentage different from 0%.

If pH pump:

If ORP pump:

12.8. Example

Pump working in PROPORTIONAL mode
12.9. FAST CAL

Set FAST CAL to perform a fast calibration on standard value: 7pH and 4ph or 650mV.

In order to perform a fast calibration, you need:

- 7 pH buffer solution
- 4 pH buffer solution

or

- 650 mV buffer solution

If pH pump:

If ORP pump:
12.10.CAL

Set CAL to perform a classic calibration on 2 points if pH pump or on 1 point if ORP pump.

In order to perform a complete calibration, you need:

- two pH buffer solutions

or

- a mV buffer solution.

If pH pump:

If ORP pump:

12.11.REST CAL

Set REST CAL to restore the LAST calibration saved.

12.12.DOS AL

DOSING ALARM set a maximum dosing time alarm (max 9 h 99 min). This alarm prevents the pump to dose if a set time is reached.

If pump doses over the time, an alarm occurs.

If the dosing alarm occurs, the pump can be stopped or not (select STOP YES or NO).
12.13. READ AL

READING ALARM set a probe reading alarm (max 9 h 99 min). This alarm prevents against probes failures.

If the value read by probe does not change for the time set, an alarm occurs.

If the reading alarm occurs, the pump can be stopped or not (select STOP YES or NO).

12.14. STAND-BY

STAND-BY set an input to stop the pump.

Set a delay (max 99 min) to wait a reasonable time after alert.

The stand by input can be set on:

- "Direct" (N.O.) activates the standard input;
- "Reverse" the digital logic is inverted;
- "Disable" the input is not enabled.
12.15. OUT AL

OUT AL set alarm relais status. This contact can be set as:

- N.O. contact;
- N.C. contact.

12.16. DELAY

DELAY set a waiting time after pump supply. It is suggested to wait a reasonable time for probe polarization. You can interrupt this delay by pressing ESC key to cancel the remaining time. Max delay 99 minutes.

12.17. FACTORY

Set FACTORY to restore the default settings (refer to Default settings).

12.18. PASSW

Set PASSWORD to change default password (0000).
12.19. LANG
Set LANG to change language (ENGLISH or FRENCH).

12.20. MANUAL
MANUAL set pump manual dosing up to 99 minutes and 99 seconds. This menu allows to prime the pump.
12.21. ALARMS

If one or more alarms occur, they are listed on main menu.

Solve the problem and delete the alarm message pressing ↑.
Documented alarms are:

<table>
<thead>
<tr>
<th>ALARM</th>
<th>CAUSE</th>
<th>SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOSING</td>
<td>Dosing time over the limit (refer to DOS AL into Setting menu).</td>
<td>Check the probe</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clean and calibrate.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Eventually replace with a new probe</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check pump: no/not enough feeding</td>
</tr>
<tr>
<td></td>
<td>Probe reading is not reliable. A probe failure is probable (refer to READ AL into Setting menu).</td>
<td>Check the probe</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clean and calibrate.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Eventually replace with a new probe</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check probe holder</td>
</tr>
<tr>
<td></td>
<td>No water flow.</td>
<td>Check probe holder</td>
</tr>
<tr>
<td></td>
<td>Empty tank</td>
<td>Check probe holder</td>
</tr>
<tr>
<td></td>
<td>Fill the tank</td>
<td>Check probe holder</td>
</tr>
<tr>
<td></td>
<td>Restoring flow into probe holder</td>
<td>Clean and calibrate.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Eventually replace with a new probe</td>
</tr>
<tr>
<td>LEVEL</td>
<td>Supply voltage over the limit (refer to the label)</td>
<td>Check supply voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Delete alarm on display pressing ⬆</td>
</tr>
</tbody>
</table>

Not documented alarms

<table>
<thead>
<tr>
<th>ALARM</th>
<th>CAUSE</th>
<th>SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH PROBE READING</td>
<td>pH over the limit (0/14 pH)</td>
<td>Clean and calibrate.</td>
</tr>
<tr>
<td>READING BLINKS ON</td>
<td></td>
<td>Eventually replace with a new probe</td>
</tr>
<tr>
<td>DISPLAY</td>
<td>Check probe</td>
<td></td>
</tr>
<tr>
<td>ORP PROBE READING</td>
<td>ORP over the limit (-999/ +999 mV)</td>
<td>Clean and calibrate.</td>
</tr>
<tr>
<td>READING BLINKS ON</td>
<td></td>
<td>Eventually replace with a new probe</td>
</tr>
<tr>
<td>DISPLAY</td>
<td>Check probe</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check pump: too feeding</td>
<td>Control pump settings</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Control and clean injection valve</td>
</tr>
</tbody>
</table>
### 13. TROUBLESHOOTING

#### Table 4 Guide to troubleshooting

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>CAUSE</th>
<th>REMEDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump does not start</td>
<td>※ Pump not powered</td>
<td>Collegare la pompa alla rete elettrica</td>
</tr>
<tr>
<td></td>
<td>※ Protection fuse</td>
<td>Replace fuse ☮ Fuse replacement procedure.</td>
</tr>
<tr>
<td></td>
<td>※ Main board</td>
<td>Replace main board ☮ Main board replacement procedure.</td>
</tr>
<tr>
<td>Pump does not feed but solenoid runs</td>
<td>※ Foot filter obstruction</td>
<td>Clean the foot filter</td>
</tr>
<tr>
<td></td>
<td>※ Pump head empty (suction pipe empty)</td>
<td>Prime the pump ☮ PRIMING</td>
</tr>
<tr>
<td></td>
<td>※ Air bubbles into pump head or into suction pipe</td>
<td>Check valves, pipes and fittings</td>
</tr>
<tr>
<td></td>
<td>※ Product generates gas</td>
<td>Open discharge knob and let air flow out. Use a self-venting pump head.</td>
</tr>
<tr>
<td>Pump does not feed, solenoid does not run or</td>
<td>※ Valves and/or ball valves blocked</td>
<td>Clean valves and ball valve. Feed 2-3 litres of water to wash valves and</td>
</tr>
<tr>
<td>slightly run</td>
<td>※ Injection valve obstruction</td>
<td>pump head</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Change valves</td>
</tr>
</tbody>
</table>

If the problem cannot be solved, please contact after-sales service or return the dosing pump to the manufacturer.

#### 13.1. Repair service

⚠ **Before return the dosing pump to the manufacturer Repair service, drain the chemical from pump head and rinse it. Refer to ☮ Shutdown procedure.**

If there is the possibility that residual corrosive liquid into pump head could cause damages, declare it on REPAIR FORM.

⚠ Fill the PRODUCT SERVICE REPAIR FORM and send it with the dosing pump.

Repair service is not accepted if PRODUCT SERVICE REPAIR FORM is missing.
13.2. Fuse replacement procedure

| ☭ | Make sure that the product is isolated from the power supply and cannot be powered by mistake. |
| ☭ | This procedure SHOULD BE CARRIED OUT BY AUTHORIZED AND QUALIFIED PERSONNEL |

In order to replace fuse, you need these tools:

- a 3x16 screwdriver
- a 3x15 screwdriver
- fuse (see Features)
  - Unplug power supply and pipings.
  - Remove screws on the back of the pump.
  - Pull back cover until it’s completed separated from pump’s front. Be careful of the knob’s spring.
  - Locate the fuse and replace with a new one.
  - Reassemble the pump.
  - Reinsert screws

13.3. Main board replacement procedure

| ☭ | Make sure that the product is isolated from the power supply and cannot be powered by mistake. |
| ☭ | This procedure SHOULD BE CARRIED OUT BY AUTHORIZED AND QUALIFIED PERSONNEL |

In order to replace main board, you need these tools:

- a 3x16 screwdriver
- a 3x15 screwdriver
- new main board.
- Unplug power supply and pipings.
- Remove screws on the back of the pump.
- Pull back cover until it's completely separated from pump's front. Be careful of the knob's spring.
- Remove boards screws.
- Completely disconnect wires from main board and replace it. Reinsert screws.
- Reconnect wires to the main board (Figure 11 Main board scheme).
- Reassemble the pump.
- Reinsert screws.

### 13.4. Main board

Figure 11 Main board scheme
14. MAINTENANCE

14.1. Maintenance schedule

⚠️ In order to ensure the requirements of potable drinking water treated and the maintenance of the improvements as declared by the manufacturer, this equipment must be checked at least once a month.

⚠️ OPERATOR PROTECTION

Use safety equipment according to the company regulations.

Use this safety equipment within the work area during installation, service and when handling chemicals:

- protective mask
- protective gloves
- safety goggles
- ear plugs or hear muffs
- further security device, if necessary.

⚠️ POWER SUPPLY DISCONNECTION

Always disconnect power before you perform any installation or maintenance tasks. Failure to disconnect power will result in serious physical injury.

⚠️ Installation and maintenance tasks should be carried out by AUTHORIZED AND QUALIFIED PERSONNEL only in accordance with local regulations.

ℹ️ Use original spare parts.

14.2. Maintenance inspection

⚠️ Shutdown the dosing pump before any maintenance operation  ❣️ Shutdown procedure.
A maintenance schedule includes these types of inspections:

- Routine maintenance and inspections
- Three-month inspections
- Annual inspections

Shorten the inspection intervals appropriately if the pumped chemical is abrasive or corrosive.

**Routine maintenance and inspections**

Perform these tasks whenever you perform routine maintenance:

- Inspect the seal. Ensure that there are no leaks from the mechanical seal.
- Check electrical wiring
- Check for unusual noise and vibration (noise allowed 73 dbA; ± 5 dB).
- Check the pump and piping for leaks.
- Check for corrosion on parts of the pump and / or on hoses.

**Three-month inspections**

Perform these tasks every three months:

- Check that the tightenings.
- Check the mechanical seal if the pump has been left idle.

**Annual inspections**

Perform these inspections one time each year:

- Check the pump capacity (as per nameplate).
- Check the pump pressure (as per nameplate).
- Check the pump power (as per nameplate).

If the pump performance does not satisfy your process requirements, and the process requirements have not changed, then perform these steps:

1. Disassemble the pump.
2. Inspect it.
3. Replace worn parts.
### 14.3. Shutdown procedure

| ![Warning] | This procedure SHOULD BE CARRIED OUT BY AUTHORIZED AND QUALIFIED PERSONNEL |
| ![Warning] | OPERATOR PROTECTION |
| Use safety equipment according to the company regulations. |
| Use this safety equipment within the work area during installation, service and when handling chemicals: |
| • protective mask |
| • protective gloves |
| • safety goggles |
| • ear plugs or hear muffs |
| • further security device, if necessary. |

Shutdown the dosing pump **before any maintenance operation or before long downtimes.**

Disconnect power and ensure it cannot be restarted

| ![Warning] | Depressurize the system. The liquid may leak splashing. |

Drain the chemical from pump head.

Release the pressure and disconnect the discharge pipe from the discharge valve.

Rinse the pump head and clean all valves.

### 14.4. Delivery curves

Flow rate indicated is for H₂O at 20°C at the rated pressure.

Dosing accuracy ± 2% at constant pressure ± 0.5 bar.
Figure 12 VPO delivery curves

2001: l/h 1 bar 20  
Pump head mod. J

1804: l/h 4 bar 18  
Pump head mod. K

1802: l/h 2 bar 18  
Pump head mod. K

1504: l/h 4 bar 15  
Pump head mod. K

1502: l/h 2 bar 15  
Pump head mod. K

1010: l/h 10 bar 10  
Pump head mod. K

1005: l/h 5 bar 10  
Pump head mod. K

1004: l/h 4 bar 10  
Pump head mod. K
0706: l/h 6 bar 7
Pump head mod. K

0510: l/h 5 bar 10
Pump head mod. K

0408: l/h 8 bar 4
Pump head mod. K

0310: l/h 10 bar 3
Pump head mod. K

0217: l/h 17 bar 2
Pump head mod. K

0116: l/h 16 bar 1
Pump head mod. K
Figure 13 VAPO delivery curves

200.5: l/h 0.5 bar 20
Pump head mod. JA

1802: l/h 2 bar 18
Pump head mod. KA

1503: l/h 3 bar 15
Pump head mod. KA

1501: l/h 1 bar 15
Pump head mod. KA

103.4: l/h 3.4 bar 10
Pump head mod. KA

1002: l/h 2 bar 10
Pump head mod. KA

0704: l/h 4 bar 7
Pump head mod. KA

057.5: l/h 7.5 bar 5
Pump head mod. KA
045.5: l/h 5.5 bar 4
Pump head mod. KA

0307: l/h 7 bar 3
Pump head mod. KA
14.5. Dimensions

Figure 14 Dimensions

<table>
<thead>
<tr>
<th>DIMENSIONS</th>
<th>mm</th>
<th>inch</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>106.96</td>
<td>4.21</td>
</tr>
<tr>
<td>B</td>
<td>210.44</td>
<td>8.28</td>
</tr>
<tr>
<td>C</td>
<td>199.44</td>
<td>7.85</td>
</tr>
<tr>
<td>D</td>
<td>114.50</td>
<td>4.50</td>
</tr>
<tr>
<td>E</td>
<td>187.96</td>
<td>7.40</td>
</tr>
<tr>
<td>F</td>
<td>97.00</td>
<td>3.81</td>
</tr>
<tr>
<td>G</td>
<td>106.96</td>
<td>4.21</td>
</tr>
<tr>
<td>H</td>
<td>125.47</td>
<td>4.93</td>
</tr>
<tr>
<td>L</td>
<td>50.00</td>
<td>1.96</td>
</tr>
<tr>
<td>M</td>
<td>201.00</td>
<td>7.91</td>
</tr>
</tbody>
</table>
15. COMPATIBILITY TABLE

15.1. Chemical compatibility table

Solenoid driven metering pumps are widely used to dose chemical fluids and it is important that the most suitable material in contact with fluid is selected for each application. This compatibility table serves as a useful help in this respect. All the informations in this list are verified periodically and believed to be correct on the date of issuance. All the informations in this list are based on manufacturer’s data and its own experience but since the resistance of any material depends by several factors this list is supplied only as an initial guide, in no way manufacturer makes warranties of any matter respect to the informations provided in this list.

Table 5 Chemical compatibility table.

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>Formula</th>
<th>Ceram.</th>
<th>PVDF</th>
<th>PP</th>
<th>PVC</th>
<th>SS 316</th>
<th>PMMA</th>
<th>Hastel</th>
<th>PTFE</th>
<th>FPM</th>
<th>EPDM</th>
<th>NBR</th>
<th>PE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic Acid, Max 75%</td>
<td>CH3COOH</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Hydrochloric Acid, Concentrate</td>
<td>HCl</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Hydrofluoric Acid 40%</td>
<td>HF2</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Phosphoric Acid, 50%</td>
<td>H3PO4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Nitric Acid, 65%</td>
<td>HNO3</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Sulphuric Acid, 85%</td>
<td>H2SO4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Sulphuric Acid, 98.5%</td>
<td>H2SO4</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Amines</td>
<td>R-NH2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Sodium Bisulphite</td>
<td>NaHSO3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Sodium Carbonate (Soda)</td>
<td>Na2CO3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Ferric Chloride</td>
<td>FeCl3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Calcium Hydroxide (Slaked Lime)</td>
<td>Ca(OH)2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Sodium Hydroxide (Caustic Soda)</td>
<td>NaOH</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Calcium Hypochlor.(Chlor. ted Lime)</td>
<td>Ca(OCl)2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Calcium hypochlorite (Chlorinated lime)</td>
<td>Ca(OCl)2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>
### Sodium Hypochlorite, 12.5%

<table>
<thead>
<tr>
<th>Material</th>
<th>Resistance Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>NaOCl + NaCl</td>
<td>1 1 2 1 3 1 1 1 1 1 2 3</td>
</tr>
</tbody>
</table>

### Potassium Permanganate, 10%

<table>
<thead>
<tr>
<th>Material</th>
<th>Resistance Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>KMnO4</td>
<td>1 1 1 1 1 1 1 1 1 3 1</td>
</tr>
</tbody>
</table>

### Hydrogen Peroxide, 30% (Perydrol)

<table>
<thead>
<tr>
<th>Material</th>
<th>Resistance Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>H2O2</td>
<td>1 1 1 1 1 3 1 1 1 3 3 1</td>
</tr>
</tbody>
</table>

### Aluminium Sulphate

<table>
<thead>
<tr>
<th>Material</th>
<th>Resistance Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al2(SO4)3</td>
<td>1 1 1 1 1 1 1 1 1 1 1</td>
</tr>
</tbody>
</table>

### Copper-II-Sulphate (Roman Vitriol)

<table>
<thead>
<tr>
<th>Material</th>
<th>Resistance Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>CuSO4</td>
<td>1 1 1 1 1 1 1 1 1 1 1</td>
</tr>
</tbody>
</table>

1 - Good resistance rating  
2 - Fairly resistance rating  
3- Not resistant

### 15.2. Materials

<table>
<thead>
<tr>
<th>Material</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyvinylidene fluoride (PVDF)</td>
<td>Pump heads, Valves, Fittings</td>
</tr>
<tr>
<td>Polypropylene (PP)</td>
<td>Pump heads, Valves, Fittings</td>
</tr>
<tr>
<td>PVC</td>
<td>Pump heads</td>
</tr>
<tr>
<td>Stainless steel (SS 316)</td>
<td>Pump heads, Valves</td>
</tr>
<tr>
<td>Polymethyl Metacrilate Acrylic (PMMA)</td>
<td>Pump heads</td>
</tr>
<tr>
<td>Polytetrafluoroethylene (PTFE)</td>
<td>Diaphragm</td>
</tr>
<tr>
<td>Fluorocarbon (FPM)</td>
<td>O-ring</td>
</tr>
<tr>
<td>Ethylene propylene (EPDM)</td>
<td>O-ring</td>
</tr>
<tr>
<td>Nitrile (NBR)</td>
<td>O-ring</td>
</tr>
</tbody>
</table>

### 15.3. Hose resistance table

Hose features are very important for a reliable dosage. Every pump’s model is made to work in the best way using selected hoses according to pump’s capacity / model. Information reported here are intended for standard use only. For extended information ask to hose’s manufacturer.
### Table 6 Hoses features

<table>
<thead>
<tr>
<th>Suction / Delivery Hose</th>
<th>4x6 mm PVC (transparent)</th>
<th>4x8 mm PE (opaque)</th>
<th>6x8 mm PE (opaque)</th>
<th>8x12 mm PVC (transparent)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Delivery Hose</strong></td>
<td><strong>Working Pressure</strong></td>
<td><strong>Breaking pressure</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4x6 mm PE 230 (opaque)</td>
<td>20°C 12 bar, 30°C 10.5 bar, 40°C 8.5 bar, 50°C 6.2 bar</td>
<td>20°C 36 bar, 30°C 31.5 bar, 40°C 25.5 bar, 50°C 18.2 bar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4x8 mm PE 230 (opaque)</td>
<td>20°C 19 bar, 30°C 15.7 bar, 40°C 12 bar, 50°C 7.5 bar</td>
<td>20°C 57 bar, 30°C 47 bar, 40°C 36 bar, 50°C 22.5 bar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6x8 mm PE 230 (opaque)</td>
<td>20°C 8.6 bar, 30°C 6.8 bar, 40°C 4.8 bar, 50°C 2.3 bar</td>
<td>20°C 26 bar, 30°C 20.5 bar, 40°C 14.5 bar, 50°C 7 bar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8x12 mm PE 230 (opaque)</td>
<td>20°C 12 bar, 30°C 10.5 bar, 40°C 8.5 bar, 50°C 6.2 bar</td>
<td>20°C 36 bar, 30°C 31.5 bar, 40°C 25.5 bar, 50°C 18.2 bar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4x6 mm PVDF Flex 2800 (opaque)</td>
<td>20°C 20 bar, 30°C 34 bar, 40°C 30 bar, 50°C 27 bar</td>
<td>20°C 60°C, 30°C 24.8 bar, 40°C 20 bar, 50°C 10 bar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6x8 mm PVDF Flex 2800 (opaque)</td>
<td>20°C 20°C, 30°C 25.5 bar, 40°C 22 bar, 50°C 20 bar</td>
<td>20°C 60°C, 30°C 18 bar, 40°C 14.5 bar, 50°C 7.3 bar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8x10 mm PVDF Flex 2800 (opaque)</td>
<td>20°C 18 bar, 30°C 15.5 bar, 40°C 13.5 bar, 50°C 12.5 bar</td>
<td>20°C 60°C, 30°C 11.2 bar, 40°C 9 bar, 50°C 4.5 bar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/4 PE 230 (opaque)</td>
<td>20°C 20°C, 1.5 bar</td>
<td>20°C 17.6 bar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3/8 PE 230 (opaque)</td>
<td>20°C 20°C, 1.5 bar</td>
<td>20°C 10.6 bar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/2 PE 230 (opaque)</td>
<td>20°C 20°C, 1.5 bar</td>
<td>20°C 10.6 bar</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
PRODUCT SERVICE REPAIR FORM

ENCLOSE THE PRESENT FORM TO THE DELIVERY NOTE

DATE

SENDER
Company name
Address
Phone no.
Contact person

PRODUCT TYPE (see product label)
DEVICE CODE
S/N (serial number)

OPERATING CONDITIONS
Location/Installation description
Chemical
Start-up (date) Running time (approx. hours)

REMOVE ALL THE LIQUID INTO THE PUMP HEAD AND DRY IT BEFORE PACKAGING IN ITS ORIGINAL BOX.

DESCRIPTION OF PROBLEM

☐ MECHANICAL
Wear parts
Breakage/other damages
Corrosion
Other

☐ ELECTRICAL
Connections, connector, cables
Operating controls (keyboard, display, etc.)
Electronics
Other

☐ LEAKS
Connections
Pump head

☐ NOT OR INADEQUATE FUNCTION/OTHER

I declare that the dosing pump is free of any hazardous chemical.

___________________________  ___________________________
Signature of the compiler     Company stamp