# VPER2 - VPESR


PERISTALTIC METERING PUMP

EN

OPERATING MANUAL

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.

Information and specifications on this manual could be uncorrect or could have printing errors. Specifications are subject to change without notice.

Version: R1-02-13

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**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**

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**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 use the following safety message icon:

**Danger!**
Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

**Warning!**
Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

**Important** - A practice not related to personal injury or additional information.

**Cross reference** - An instance which refers to related information elsewhere in the same document

**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.

**Keep the pump protected from sun and water. Avoid water splashes.**

**In emergencies the pump should be switched off immediately. Disconnect the power cable from the power supply.**

**When using pump with aggressive chemicals observe the regulations concerning the transport and storage of aggressive fluids.**

**When installing always observe national regulations.**

**Manufacturer is not liable for any unauthorized use or misuse of this product that may cause injury, damage to persons or materials.**

**Pump must be accessible at all times for both operating and servicing. Access must not be obstructed in any way.**

**Feeder should be interlocked with a no-flow protection device.**

**Pump and accessories must be serviced and repaired by qualified and authorized personnel only.**

**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.**

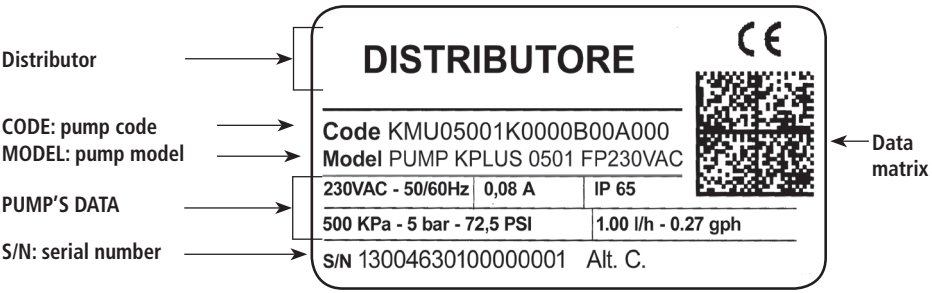
**Environmental safety**

**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.

**LABEL**




**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.

**Transportation and storage**

**A not suitable transportation or storage can cause damages.**

**Use origianal 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)

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**Included into package**

| QUANTITY | CONTENT | **VPER2** |
|---|---|---|
| n. 4 | ø6 dibbles | ● |
| n. 4 | 4,5 x 40 self tapping screws | ● |
| n. 1 | 5 X 20 delayed fuse | ● |
| n. 1 | level probe with axial foot filter (PVDF) | ● |
| n. 1 | 0,3 bar injection valve (PVDF) | ● |
| m 4 | suction/delivery hose (4x6 PVC) | ● |
| m 2 | discharge hose (PVC 4x6 transparent) | ● |
| n.1 | operating manual | ● |

## DESCRIPTION

**VPER2 Series** VPER2 series is a peristaltic series dosing pump with ON/OFF flow adjustment.

**VPESR Series** VPESR series is a peristaltic series dosing pump without flow regulation. It has any control panel.

**Some functions described into this manual may need accessories not included into the pump packaging.**

PLEASE DO NOT TRASH PACKAGING. IT CAN BE USED TO RETURN THE PUMP.

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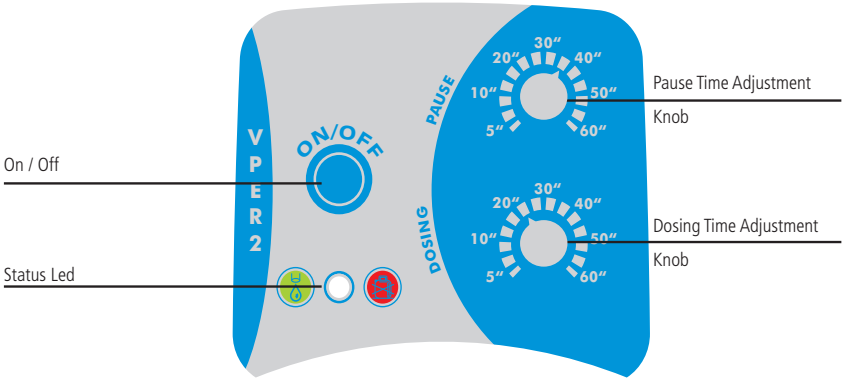
**VPER2 control panel**




**LED** Led blinks in different ways described in the tables:

| **RED LED** | STATE | SOLUTION |
|---|---|---|
| Permanent on | Product end (if present a level probe) / tank empty | Fill the tank. |

| **GREEN LED** | STATE |
|---|---|
| 1 blink every 2 seconds. | Pump OFF. |
| Permanent on | Pump ON. |

**Features**

| Power Supply | Fuse |
|---|---|
| 230 VAC (180-270 VAC) | 200 mA |

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 ..... 68dbA
Protection degree ..... IP 54
Max installation height ..... 1,5 m

Tab. 1. Capacity

| CAPACITY | |
|---|---|
| **1,503** | 3 l/h @ 1,5 bar |

Dosing accuracy is ± 2% l/h at constant maximum counterpressure and 1 cPs flow (**max viscosity: 60 cPs**).Warning: Counterpressure changes or viscosity changes at the same stroke number may change the single stroke injection quantity

**Materials**

✓ : standard
✗: options available

| | PVDF | PP | PPV0 | PMMA | PVC | PE |
|---|---|---|---|---|---|---|
| BOX | | ✓ | ✗ | | | |
| PUMP HEAD | ✓ | | | ✗ | | |
| SUCTION HOSE | | | | | | ✓ |
| DELIVERY HOSE | | | | | | ✓ |
| DISCHARGE HOSE | | | | | | ✓ |
| LEVEL PROBE/ FOOT FILTER | ✓ | ✗ | | | | |
| LEVEL PROBE CABLE | | | | | | ✓ |

## INSTALLATION

**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. Start-up

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

**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**

**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 splashs and direct sun!**

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**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".**
**If dosing product is not listed please consult full compatibility table or contact chemical's manufacturer.**

**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.**

## PIPING CONNECTIONS

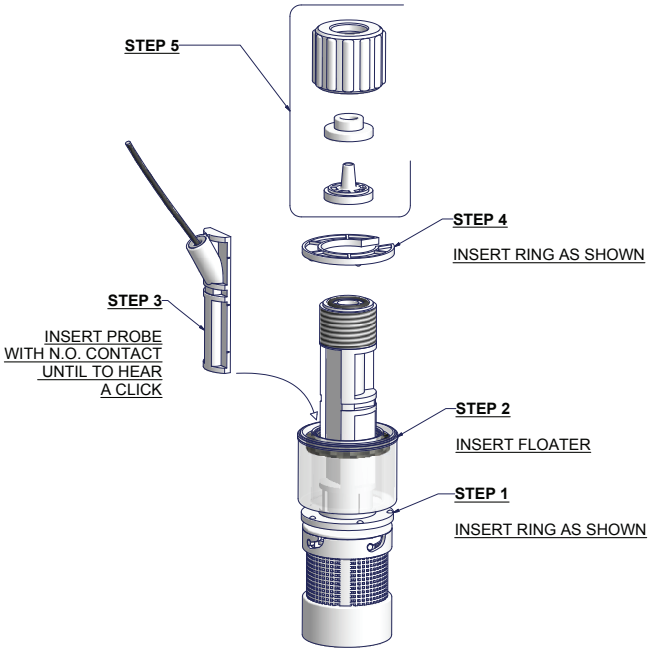
**Foot filter / Level probe**

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

Fig. 1. Level probe assembling diagram.




**Delivery and suction hose assembling procedure**

**Suction and delivery hoses must be in vertical position.**

**Suction and 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.
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 delivery hose end to injection valve using the same procedure.

**Preliminary checks**

**THE ELECTRICAL WIRINGS SHOULD BE CARRIED OUT BY AUTHORIZED AND QUALIFIED PERSONNEL ONLY IN ACCORDANCE WITH LOCAL REGULATIONS.**

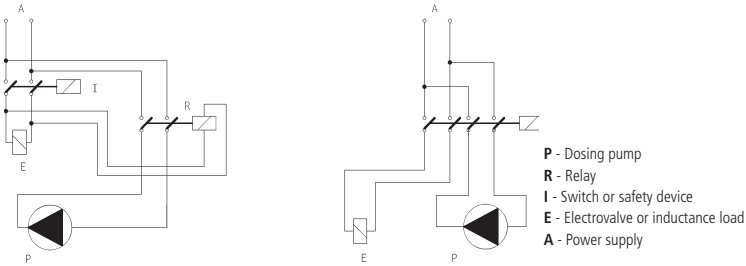
Before to proceed, verify the following steps:

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. 2.**

Fig. 2. Electrical installation.




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

5. **Verify level probe "BNC" is connected as described in "Foot filter / Level probe".**

## START-UP

**Start-up**

Connet power supply cable and start the pump with ON/OFF key.
Regulate pump pause time with "Pause Time Adjustment" knob and pump working time with "Dosing Time Adjustment" knob.
Pump will start dosing.
Green led blinks at each stroke.

**Shutdown procedure**

⚠ **This procedure SHOULD BE CARRIED OUT BY AUTHORIZED AND QUALIFIED PERSONNEL**

⚠ **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.

⚠ **Depressurize the system. The liquid may leak splashing.**

Drain the chemical from pump head.
Rinse the pump head.

**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 to the motor 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.**

Use original spare parts.

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**Maintenance inspection**

**Shutdown the dosing pump before any maintenance operation** **Shutdown procedure.**

A maintenance schedule includes these types of inspections:
- Routine maintenance and inspoections
- Three-month inspections
- Annual inspections

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

**Routine maitenance 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
- 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).

f 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.

## COMPATIBILITY TABLE

**Chemical compatibility table**

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.

Tab. 2. Chemical compatibility table.

| Product | Formula | Ceram. | PVDF | PP | PVC | SS 316 | PMMA | Hastel. | PTFE | FPM | EPDM | NBR | PE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Acetic Acid, Max 75% | CH3COOH | 2 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 3 | 1 | 3 | 1 |
| Hydrochloric Acid, Concentrate | HCl | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 1 | 1 | 3 | 3 | 1 |
| Hydrofluoric Acid 40% | H2F2 | 3 | 1 | 3 | 2 | 3 | 3 | 2 | 1 | 1 | 3 | 3 | 1 |
| Phosphoric Acid, 50% | H3PO4 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 3 | 1 |
| Nitric Acid, 65% | HNO3 | 1 | 1 | 2 | 3 | 2 | 3 | 1 | 1 | 1 | 3 | 3 | 2 |
| Sulphuric Acid, 85% | H2SO4 | 1 | 1 | 1 | 1 | 2 | 3 | 1 | 1 | 1 | 3 | 3 | 1 |
| Sulphuric Acid, 98.5% | H2SO4 | 1 | 1 | 3 | 3 | 3 | 3 | 1 | 1 | 1 | 3 | 3 | 3 |
| Amines | R-NH2 | 1 | 2 | 1 | 3 | 1 | - | 1 | 1 | 3 | 3 | 1 | 1 |
| Sodium Bisulphite | NaHSO3 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Sodium Carbonate (Soda) | Na2CO3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 |
| Ferric Chloride | FeCl3 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Calcium Hydroxide (Slaked Lime) | Ca(OH)2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Sodium Hydroxide (Caustic Soda) | NaOH | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 |
| Calcium Hypochlor.(Chlor. ted Lime) | Ca(OCl)2 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 3 | 1 |
| Sodium Hypochlorite, 12.5% | NaOCl + NaCl | 1 | 1 | 2 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 2 | 2 |
| Potassium Permanganate, 10% | KMnO4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1 |
| Hydrogen Peroxide, 30% (Perydrol) | H2O2 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 1 | 3 | 3 | 1 |
| Aluminium Sulphate | Al2(SO4)3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Copper-II-Sulphate (Roman Vitriol) | CuSO4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

1 - Good resistance rating

2 - Fairly resistance rating

3- Not resistant

**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.....
- Brekage/other damages .....
- Corrosion.....
- Other.....

☐ ELECTRICAL
- Connections, connector, cables .....
- Operating controls (keyboard, display, etc.) .....
- Elettronics.....
- 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

When dismantling a pump please separate material types and send them according to local recycling disposal requirements.
We appreciate your efforts in supporting your local Recycle Environmental Program.
Working together we'll form an active union to assure the world's invaluable resources are conserved.