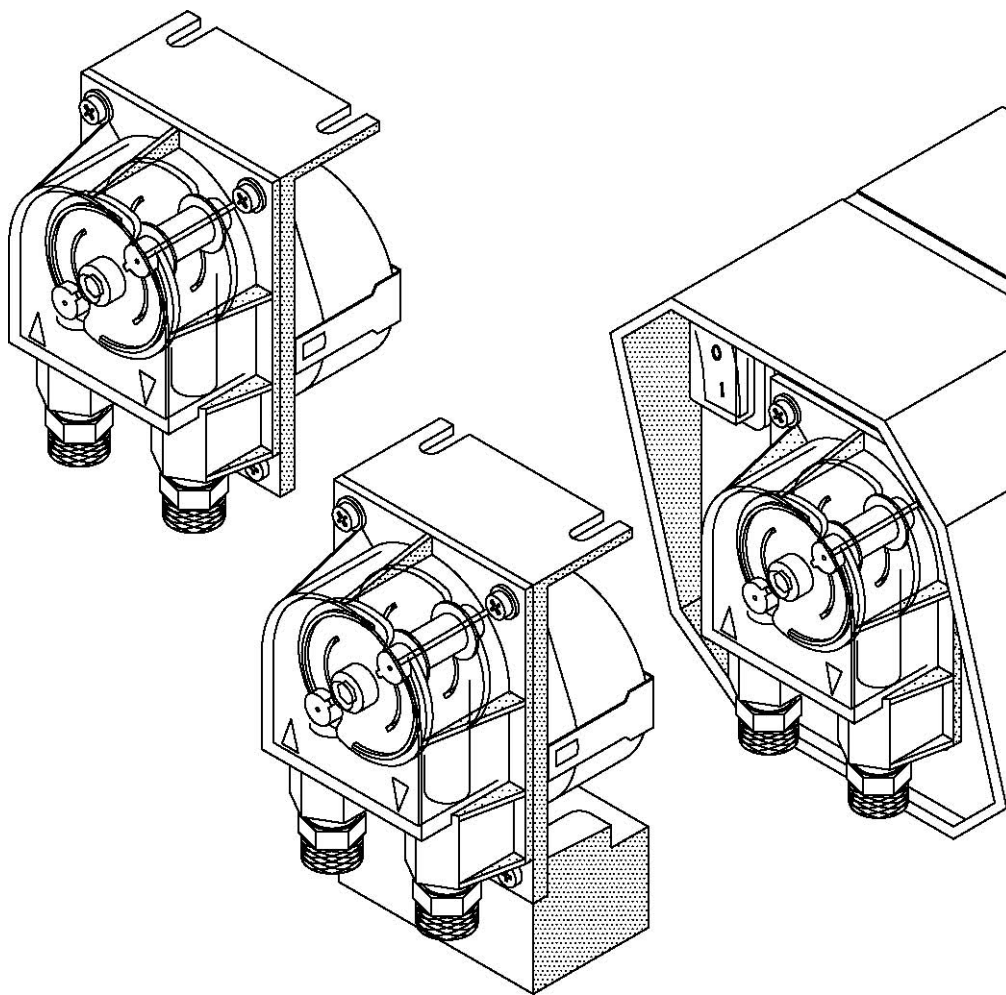


INSTRUCTION MANUAL

Peristaltic Pump for cleansing agents



PROTHO

(Rev. 01 del 151008)

Dear Customer, congratulations for having chosen a quality product that will definitely meet your needs. While thanking you for your choice, we kindly ask you to carefully look at this Instruction manual before using your new peristaltic metering pump.

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1 IMPORTANT DIRECTIONS AND RECOMMENDATIONS

This instruction manual is an integral part of the peristaltic metering pump (also more simply defined in this instruction manual with the terms pump or device) and must be kept for any future consultation.

If the device is sold or transferred to another person, this manual must be handed over to the new user so that she/he will be informed about its functioning and the relative directions.

Read the directions contained in this manual carefully before installing and using the pump. These directions have been drawn up for safety during installation, use and maintenance.

Any directions or diagrams that refer to special models will be supplied enclosed in this manual.

Always remove the plug from the power socket before proceeding with any maintenance or cleaning operation.

Any intervention or modification to the electrical installation that might be necessary, must be carried out exclusively by skilled and qualified personnel.

This pump is only for the dosage of additives (detergent or rinse aid) in dishwashing machines.

Any use of the metering pump that is not the dosage of additives in dishwashing machines is to be considered improper.

It has been designed to be used by adults, therefore stop children getting close to it with the intention of playing.

As well as invalidating all forms of the warranty, modifying or trying to modify this device is extremely dangerous.

In order to guarantee the efficiency of the device and for it to function correctly, you must follow the Manufacturer's instructions and have the maintenance done by professionally qualified personnel.

Never try to repair it by yourself because as well as being dangerous, the intervention of people who are not experts can cause or worsen the damage. If there is a fault, contact the distributor who sold it to you or the Manufacturer, who will recommend the nearest Service Centre. We suggest you always ask for original spare parts only.

When the pump has to be demolished, we remind you to make it inoperative removing the power cord (after having disconnected it from the mains supply, of course).

We also remind you to:

- * Avoid throwing the components of the metering pump away into the environment.
- * Arrange for the disposal and the recovery of the materials in accordance with the relevant national laws in force.

For this reason we urge you to give maintenance work and recovery of any replaced components exclusively to authorised service engineers.

2 GENERAL CHARACTERISTICS

2.1 FIELD OF USE

The peristaltic pumps in the "PROTHO" series are available in two versions:

- without the container, for use inside dishwashers.

- With the container, for external use.

The functional characteristics of the metering pumps with the container is, if necessary, completed with different technical solutions that allow a practical and effective regulation of the capacity.

2.2 FUNCTIONING PRINCIPLE

Peristaltic pumps are the best that exist in the metering pumps sector as they do not have valves, which cause considerable problems.

The functioning principle is based on the elasticity of the membrane pipe for pumping and on the alternating sliding compression of the rollers supported by the central rotor of the device. This support, driven by a motor reducer, whilst turning, puts the suction and injection functions into operation simultaneously.

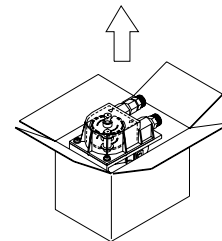
Suction occurs because of depression, after the passage of the rollers, thanks to the elasticity of the pipe, while injection occurs following the sliding compression of the rollers on the pipe which push the product towards the outlet.

2.3 RATING

The voltage, frequency and capacity values are shown on the data plate. Refer to this for all checks and verifications.



3 INSTALLATION



When delivered the metering pump is protected by a cardboard packaging (fig. 1).

Open the cardboard packaging, avoiding the use of unsuitable tools such as knives, penknives, screwdrivers, etc. and make sure the device is intact. If you have any doubts about this, DO NOT USE IT and contact the Distributor or the Manufacturer who sold it to you.

None of the packaging (bags, cardboard, polystyrene foam, staples, straps, etc.) must be left in the reach of children as they are potential sources of danger.

Skilled and qualified personnel must carry out the installation observing the national laws in force and following the Manufacturer's instructions.

Incorrect installation can cause damage to the environment, animals, people and objects, for which the Manufacturer cannot be considered responsible.

3.1 POSITIONING

The device has been designed and manufactured to be installed internally or externally (models with

container) to a dishwashing machine that controls it in order to perform the necessary functions. The device

must be positioned maintaining suitable distances from the other components of the machine in order to allow ease of maintenance. This expedient must also prevent accidental leaks of the product from the pump, following the breakage of the pumping pipe, from damaging the surrounding components.

3.2 CONNECTING TO THE MAINS SUPPLY

The electrical safety of this device is only obtained when it is installed in the dishwashing machine observing the national safety laws in force.

The dishwashing machine must be installed by skilled and qualified personnel.

The Manufacturer cannot be considered responsible for any damage caused by the incompetence or carelessness of the installer.

Check that the electrical capacity of the system is adequate for the maximum power of the metering pump shown on the data plate.

The installer must also make sure that the cross-section of the wires in the electrical system is suitable for the absorbed power of the device.

The peristaltic metering pump for internal fitting has no switch, therefore the supply voltage causes the device to start immediately.

The installer must also find the connection points for the feed to the peristaltic metering pump.

To feed a metering pump for detergent a parallel connection to the rinsing solenoid or an equivalent point must be made.

While for a metering pump for rinse aid a connection to the washing pump of the dishwashing machine or an equivalent point must be made.

If the detergent metering pump is supplied with conductimetric regulation, a detergent sensor will have to be installed and a 12.5 mm Ø hole drilled in the dishwasher tank, below the water level. (If the machine that needs the additive is already in service, remember to empty the washing tank before carrying out the above operation). After drilling the hole position the sensor with the gasket for the hole and tighten the relative nut from the outside of the tank. Do not overtighten in order not to damage the various components.

Now connect the wires that come out of the pump container:

- * one to earth (to the casing of the machine)
- * the other to the fastener on the detergent sensor previously installed.

We remind you to protect the metering pump feed wires making sure that they do not get squashed or damaged in any way.

Read the following directions carefully

Using the metering pump, as with any other electrical device, entails complying with some fundamental rules, such as:

- * Do not touch it with damp or wet hands and feet
- * Do not use it when you are bare-footed

- * Do not use extension cables in rooms used as kitchens, bathrooms or shower rooms
- * Never pull the power cable to disconnect it from the mains supply
- * Do not let children or mentally incompetent people use it.

Before carrying out any cleaning or maintenance operations disconnect the machine that controls the metering pump from the electrical supply and remove the plug from the power socket.

If there is a fault on the device or it functions poorly, turn it off following the procedure described above and do not carry out any improvised repairs or direct interventions. Instead, contact professionally qualified personnel only and demand the use of only original spare parts. Failure to comply with what is written above, besides invalidating all forms of the warranty, can seriously jeopardise the correct functioning of the device.

3.3 WATER CONNECTIONS

This peristaltic metering pump is only meant for the dosage of additives in dishwashing machines.

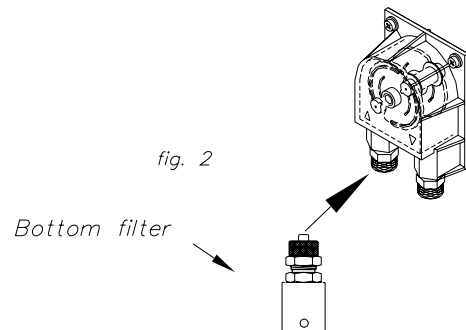
Skilled and professionally qualified personnel must make the water connections following the Manufacturer's instructions and using the components supplied in the kit specifically for installation.

These connections are divided into two distinct stages:

- 1) Suction circuit
- 2) Injection circuit

1) Connecting the suction circuit (fig. 2)

- Connect the suction pipe to the pipe fitting (see indicating arrow) and then reach the tank with the product that has to be sucked up with the other end.
- Cut off any excess pipe and install the bottom filter provided.
- Then put the bottom filter into the tank.



2) Connecting the injection circuit

Depending on the product to be injected, connecting the injection circuit is divided into:

- a) Injecting the detergent
- b) Injecting the rinse aid

a) Connecting the detergent injection circuit (fig. 3)

- To install the relevant pipe fitting, drill a 12.5 mm Ø hole in the tank above the water level in a favourable position.
- Push the threaded part of the union elbow through the previously drilled hole from the outside of the tank (if necessary use a file to remove any burrs that might prevent the gasket from sealing).
- Put the gasket on the thread of the union elbow from the inside of the tank and then carefully tighten the relevant bolt. Do not overtighten in order not to damage the components of the union elbow.
- Connect the pump's injection pipe fitting to the union elbow previously installed in the tank using the special pipe supplied.

a) Connecting the rinse aid injection circuit (fig. 4)

When there is this type of installation you have to identify the ideal point for fitting the components, considering their dimensions and easy access for being able to install them readily.

- Remove the rubber pipe into which the product will be injected.
- Push the end of the previously cut pipe onto the union tee (T Venturi) making sure that the water flow follows the direction stamped on the union tee itself.
- Block the rubber pipes previously fitted onto the union tee with two metal clamps (not supplied).

If the dishwasher machine is already fitted with a special injection pipe fitting, a rinse aid injection valve that allows you to eliminate the operations described above, is available on request.

- Using the pipe supplied (made of polyethylene) connect the delivery pipe fitting of the pump to the injection pipe fitting, with a nonreturn valve, locking the threaded locking rings carefully.

4 STARTING

Once the electrical and water connections of the metering pump are complete you can proceed to starting it. **When starting the pump for the first time, the dishwasher machine has to perform several washing cycles on empty to allow the device to fill the pipes in the injection circuit.**

This snag can be overcome by manually priming the pump as follows:

ATTENTION!!
 This operation is valid only for models with asynchronous motors (motors without brushes). On the other hand in the other models, with motor in continuous cycle (with brushes), it is NOT POSSIBLE to make this operation.

- Take the utmost care to check the direction of rotation of the pump, since an incorrect manoeuvre could irreparably damage the motor reducer of the device.
- Turn the rollers support rotor in the direction of rotation of the pump (see arrow) using a 6 mm setscrew (Allen) wrench in the hexagonal hole on the device until the circuit is completely full (fig. 5).

This operation must be carried out by skilled and qualified personnel only when the pump is started for the first time and after each time the pumping pipe is replaced.

- Check that there are no leaks from the water connections.

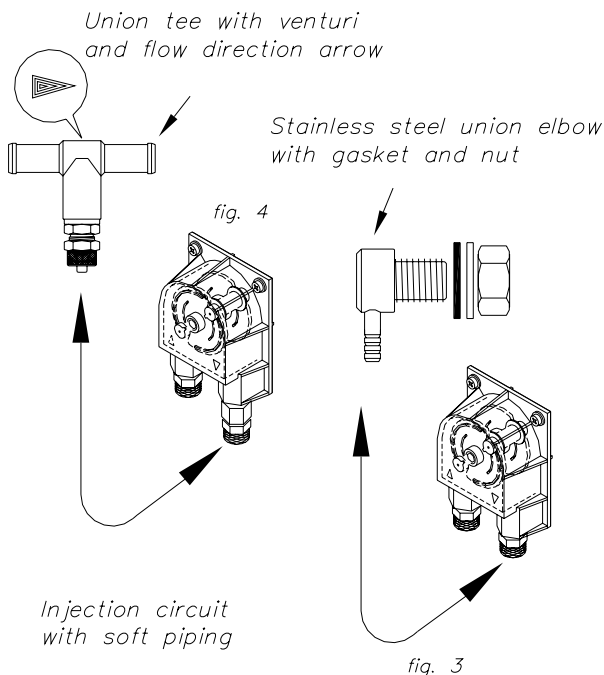
4.1 REGULATING THE CAPACITY

The functional characteristics of the metering pump are completed with some technical solutions:

- **intermittent electronic regulation (fig. 6)**
 this regulation allows you to vary the capacity of the pump quickly and rapidly by turning a special knob on the front of the container of the device.

- **conductimetric electronic regulation (fig. 7)**
 this regulation, on the other hand, allows you to keep the concentration of the detergent in the water of the dishwasher's washing tank constant. To increase or decrease the dosage, turn the knob on the front of the container of the metering pump manually.

Specialised personnel must do these regulations as several checks must be done on site, such as: the type of detergent used and any hardness in the water, etc.



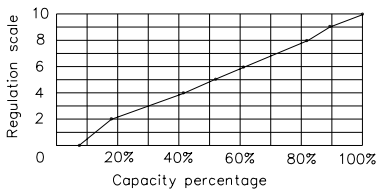
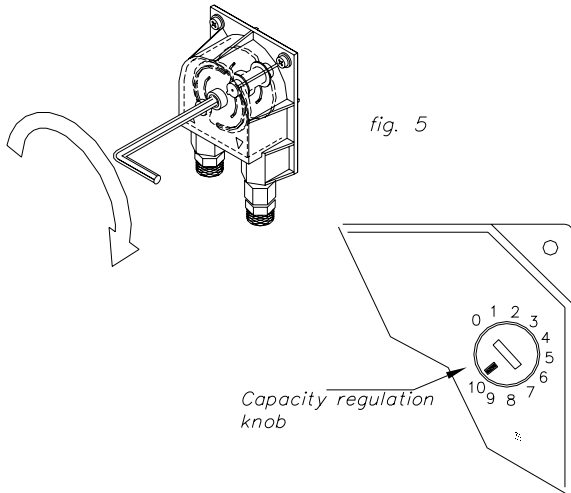


fig. 6

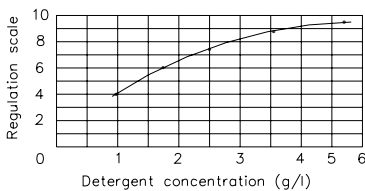


fig. 7

5 MAIN CAUSES OF FAILURE TO FUNCTION

If the additive is not injected the User must verify and check:

- whether there is any of the product to be consumed in the storage tank
- whether the filter is blocked
- whether the electric current is on

If faults occur or are found that are different to the above, such as:

- difficulty in sucking up the product to be injected
- rapid and continuing emptying of the suction pipe after each functioning
- breakage of the pumping pipe
- breakage of the motor reducer
- breakage of the electronic card

It is a good idea to contact a Service Centre as maintenance is necessary.

For a rapid and efficient intervention it is important when calling to indicate precisely the model of the pump, which can be seen on the data plate.

6 MAINTENANCE AND CLEANING

Before carrying out any type of maintenance work on the device you must turn off the power and remove the plug from its socket.

The component that needs maintenance is:

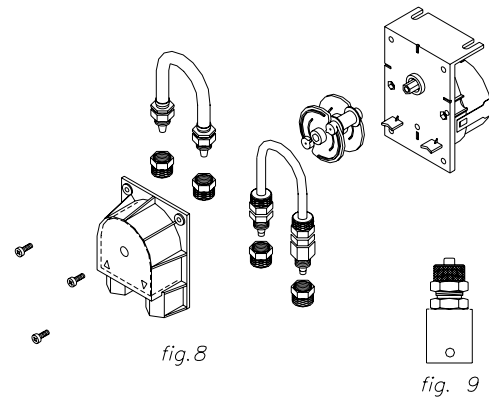
- the pumping pipe (fig. 8)

the efficiency of the pump is linked to this component so it must be periodically replaced, at least every 3 months, in order to guarantee a constant capacity to the device itself. This also prevents the pipe from breaking through wear. Maintenance on this component must be carried out by competent and professionally qualified personnel from a Service Centre and demanding the use of original spare parts.

The component that needs cleaning is:

- the suction filter (fig. 9)

The filter will have to be periodically washed in case the additives used contain sediments that prevent the product being sucked up to the pump itself. The state of the filter must be checked each time the pump is refilled with the product. When cleaning the filter protect your hands with rubber gloves.



6.1 PERIODICAL CHECKS

The device must be periodically checked and if necessary refilled with the consumed product. Also verify that there are no leaks in the water circuit.

7 PERIODS OF NON-OPERATION

If a long period of non-operation is expected, when the pump is going to be used again an extra repair must be carried out, replacing the pumping pipe (fig. 8)

This operation is necessary because the product that has remained in the pipe tends to solidify removing the natural elasticity of the pumping pipe.

Skilled and qualified personnel must carry out this maintenance.

8 DIRECTIONS FOR THE MAINTENANCE FITTER

All the operations that entail working on circuits or internal parts, for the performance of which electrical protection devices have to be removed, must be carried out with the device stopped and only after having turned off the voltage.

The device can only be energised for starting once the operations are concluded and once you have moved away from the device

9 WARRANTY TERMS

- **This peristaltic metering pump (defined in the following points more simply as pump or device) is guaranteed for a period of one year from the date of purchase which is proved by a document valid for fiscal purposes issued by the Retailer or the Manufacturer, which shows the date in which the purchase was made.**
- The fiscal document that proves the date of purchase, issued by the Retailer or the Manufacturer, must be kept together with this instruction manual; both must be exhibited to the technical personnel in the case of work done in the warranty period.
- Warranty is understood to be the free replacement or repair of the parts that prove to be defective in origin or because of manufacturing flaws.
- The user is obliged to pay the "fixed call-out fee" should she/he require the work to be done at her/his own home.
- All the parts that prove to be defective due to the carelessness or negligence in use (failure to comply with the instructions for the operation of the device), or incorrect installation and maintenance carried out

by personnel that are not professionally qualified, transport damages, that is due to circumstances that in any case cannot be traced back to manufacturing defects in the device are not covered by the warranty.

- Work inherent to the installation and the connection of supply systems as well as the maintenance mentioned in this instruction manual are also excluded from the warranty services.
- The warranty is also excluded in all cases of improper use of the pump.
- **The Manufacturer declines all responsibility for any damages that might, directly or indirectly, be caused to people, objects and animals as a result of the failure to comply with the directions indicated in this instruction manual and especially those which concern the directions about the installation, use and maintenance of the device.**
- If the device is repaired at an Authorised Service Centre or by the Manufacturer, the transport risks are at the expense of the User. In any case, the transport costs are understood to be at the expense of the User.
- In any circumstance the extension of the warranty in the event that a fault should occur is excluded.

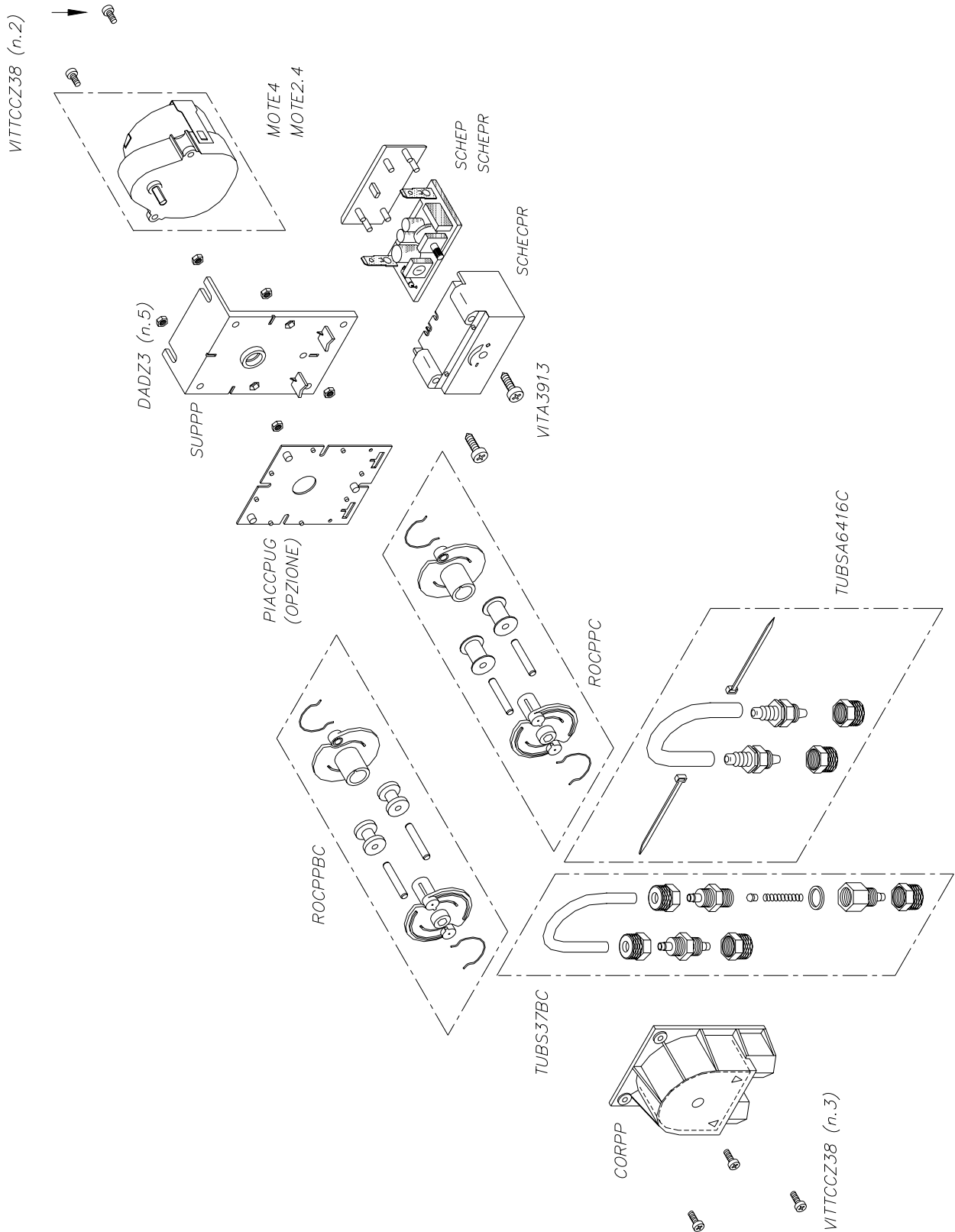
10 TECHNICAL INFORMATION

Some models in our range of products

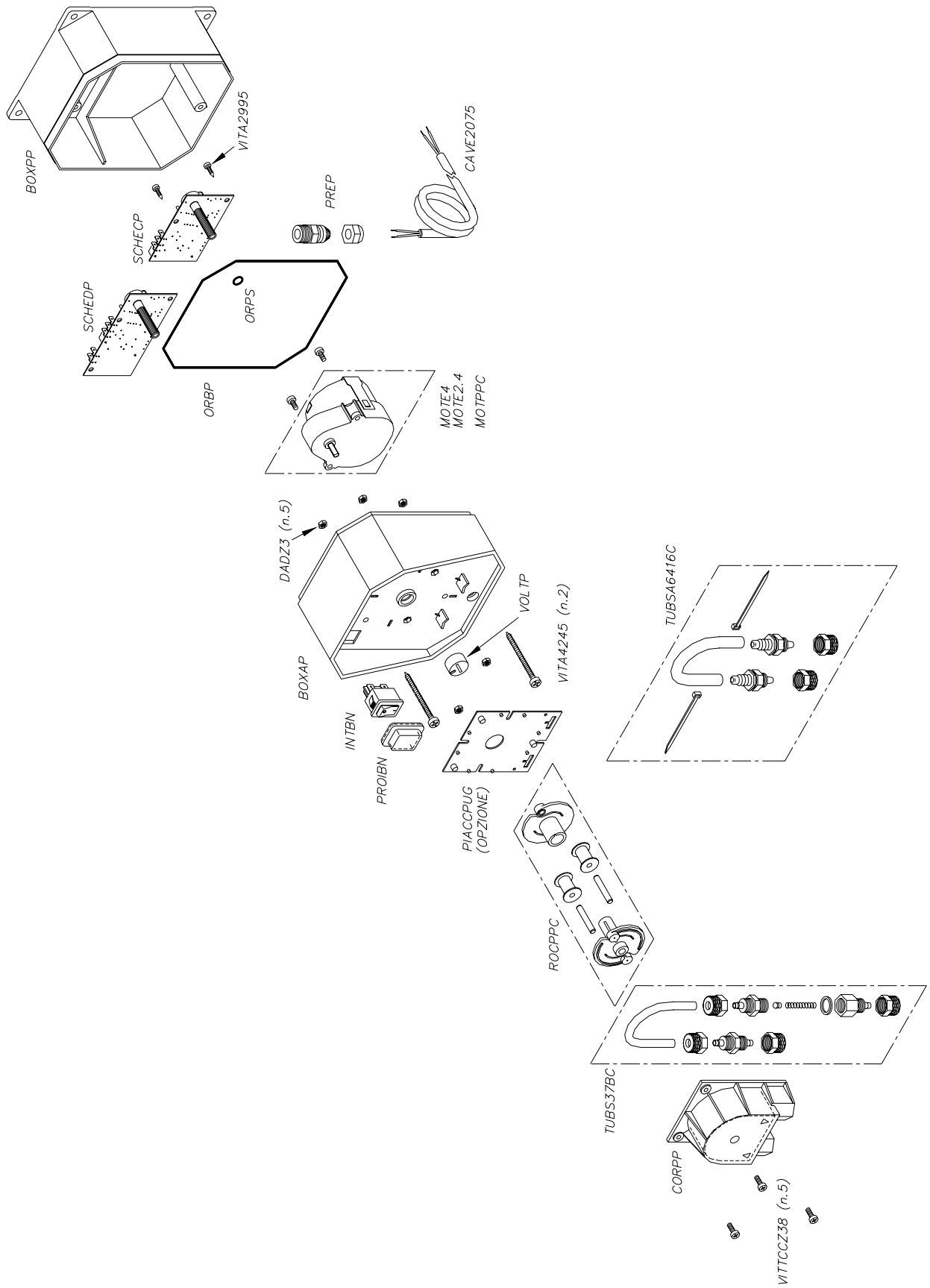
Model	Capacity		Tube diameter	Pressur bar	Product	
	cc/”	l/h			Detergent	Rinseaid
PD1.5	0.41	1.5	6.4x1.6	0.1	*	
PD2.0	0.56	2.0	6.4x1.6	0.1	*	
PD3.3	0.92	3.3	6.4x1.6	0.1	*	
PB0.4	0.11	0.4	3.2x6.4	3		*
PD3.3E	0.92	3.3	6.4x1.6	0.1	*	
PD3.3ER	0.92	3.3	6.4x1.6	0.1	*	
PB1.0E	0.28	1.0	3.2x6.4	3		*
PB1.0ET	0.28	1.0	3.2x6.4	3		
PDF2.0	0.56	2.0	6.4x1.6	0.1	*	
PBF0.4	0.11	0.4	3.2x6.4	3		*
PDE3.3	0.92	3.3	6.4x1.6	0.1	*	
PDE4.0	1.12	4.0	6.4x1.6	0.1		
PDER3.3	0.92	3.3	6.4x1.6	0.1	*	
PBE1.0	0.28	1.0	3.2x6.4	3		*
PDE8.0	2.24	8.0	6.4x1.6	0.1	*	
PDE8.024	2.24	8.0	6.4x1.6	0.1	*	
PDER8.024	2.24	8.0	6.4x1.6	0.1	*	
PBE2.0	0.56	2.0	3.2x6.4	3		*
PBE2.024	0.56	2.0	3.2x6.4	3		*
PDS4.0	1.12	4.0	6.4x1.6	0.1	*	
PDS8.0	2.24	8.0	6.4x1.6	0.1	*	
PDS8.024	2.24	8.0	6.4x1.6	0.1	*	
PDBE3/1	0.84 - 0.28	3 - 1	6.4x1.6 3.2x6.4	0.1 - 3	*	*
PDBER3/1	0.84 - 0.28	3 - 1	6.4x1.6 3.2x6.4	0.1 - 3	*	*
PDSBE8/2	2.24 - 0.56	8 - 2	6.4x1.6 3.2x6.4	0.1 - 3	*	*
PDBER8/224	2.24 - 0.56	8 - 2	6.4x1.6 3.2x6.4	0.1 - 3	*	*
PDSBE8/224	2.24 0.56	8 - 2	6.4x1.6 3.2x6.4	0.1 - 3	*	*

Available with voltages of 220 and 24 V ac – 50/60 Hz

11 EXPLODED VIEW OF THE METERING PUMP WITHOUT CONTAINER



12 EXPLODED VIEW OF THE METERING PUMP WITH CONTAINER



13 ACCESSORIES AND SPARE PARTS

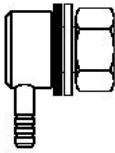
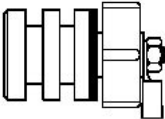

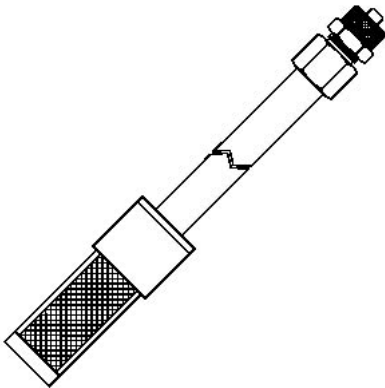

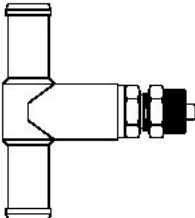
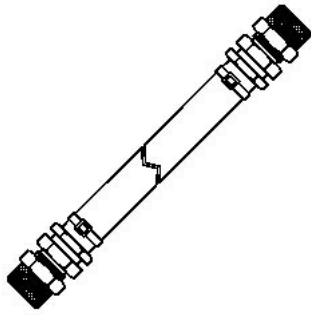
ILLUSTRATION OF THE COMPONENT	CODE	DESCRIPTION
	GOMDIC	Stainless steel union elbow for detergent injection, complete
	SENSC	Sensor for detergent conductimetric control card
	FILFIC VALFC	<ul style="list-style-type: none"> - Stainless steel bottom filter, complete - Stainless steel bottomfilter with non-return valve, complete
	FILTR	Bottom filter with rigid pipe
	VALBD	Non-return valve for rinse aid injection
	TW	T Venturi with non-return valve for rinse and injection

ILLUSTRATION OF THE COMPONENT

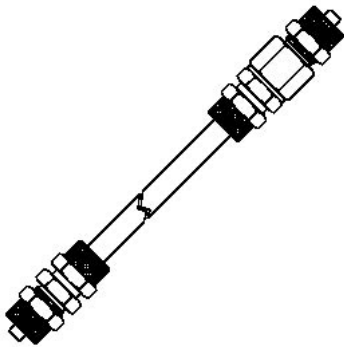
CODE

DESCRIPTION



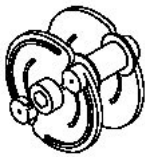
TUBSA6416DRC

Santoprene pipe for detergent complete with pipe fitting



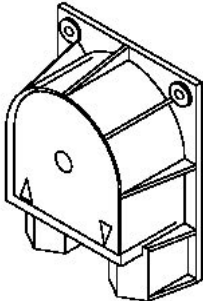
TUBS3264ABC

Silicone pipe for rinse aid complete with pipe fitting with non-return valve



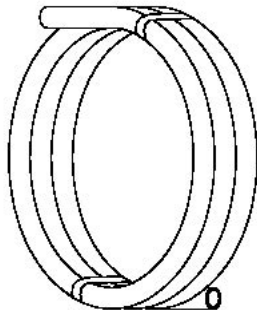
**ROCPPC
ROCPBC**

- Support with Protho rollers, for detergent, complete
- Support with Protho rollers, for rinseaid, complete



CORPPA

Protho pump body



**TUBC46
TUBP46**

- 3 m. Cristal PVC pipe for detergent
- 3 m. polyethylene pipe for rinseaid