ACROMET

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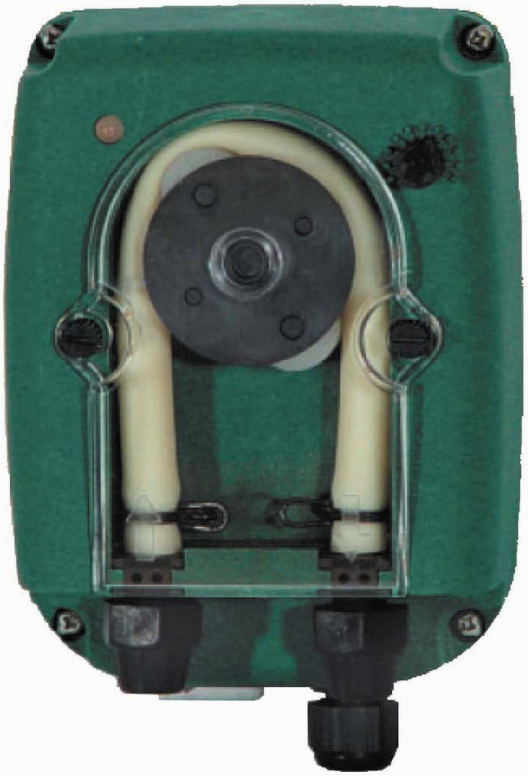
B SERIES PERISTALTIC PUMP

OPERATING INSTRUCTIONS AND MAINTENANCE



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1.0 HINTS AND WARNINGS

Please read the warning notices given in this section very carefully, because they provide important information regarding safety in installation, use and maintenance of the pump.

Keep this manual in a safe place, so that it will always be available for further consultation.

The pump complies with EEC directives No. 89/336 regarding "electromagnetic compatibility" and No. 73/23 regarding "low voltages", as also the subsequent modification No. 93/68.

NB: ***The pump has been constructed in accordance with best practice. Both its life and its electrical and mechanical reliability will be enhanced if it is correctly used and subjected to regular maintenance.***

1.1 WARNING:

Any intervention or repair to the internal parts of the pump must be carried out by qualified and authorised personnel. The manufacturers decline all responsibility for the consequences of failure to respect this rule.

GUARANTEE: 1 year (the normal wearing parts are excluded, i.e.: valves, nipples, tube nuts, tubing, filter and injection valve). Improper use of the equipment invalidates the above guarantee. The guarantee is ex-factory or authorised distributors.

1.2 SHIPPING AND TRANSPORTING THE PUMP

No matter what the means of transport employed, delivery of the pump, even when free to the purchaser's or the addressee's domicile, is always at the purchaser's risk. Claims for any missing materials must be made within 10 (ten) days of arrival, while claims for defective materials will be considered up to the 30th (thirtieth) day following receipt. Return of pumps or other materials to us or the authorised distributor must be agreed beforehand with the responsible personnel.

1.3 PROPER USE OF THE PUMP

The pump should be used only for the purpose for which it has been expressly designed, namely the dosing of liquid additives. Any different use is to be considered improper and therefore dangerous. The pump should not therefore be used for applications that were not allowed for in its design. In case of doubt, please contact our offices for further information about the characteristics of the pump and its proper use.

The manufactures cannot be held responsible for damage deriving from improper, erroneous or unreasonable use of the pump.

1.4 RISKS

- After unpacking the pump, make sure it is completely sound. In case of doubt, do not use the pump and contact qualified personnel. The packing materials (especially bags made of plastics, polystyrene, etc) should be kept out of the reach of children: they constitute potential sources of danger.
- Before you connect the pump, make sure that the voltage ratings, etc, correspond to your particular power supply. You will find these values on the rating plate attached to the pump.
- The electrical installation to which the pump is connected must comply with the standards and good practice rule in force in the country under consideration.
- Use of electrical equipment always implies observance of some basic rules;
  In particular:
  1. do not touch the equipment with wet or damp hands or feet;
  2. do not operate the pump with bare feet (example: swimming pool equipment);
  3. do not leave the equipment exposed to the action of the atmospheric agents;
  4. do not allow the pump to be used by children or unskilled individuals without supervision;

Before carrying out any service on the item, check:

1. **Disconnect from the mains by means of two poles circuit breaker, having 3 mm minimum distance between the contacts (Fig 4).**
2. **Relieve all the pressure from the injection tube. In event of possible losses in the hydraulic system of the pump (breakage of the hoses) the pump should immediately be brought to a stop, emptying and depressurising the delivery hose while taking all due safety precautions (gloves, goggles, overalls etc).**

1.5 TOXIC AND/OR DANGEROUS LIQUID DOSAGE

To avoid risk from contact with the hazardous liquids or toxic fumes, always adhere to the notes in this instruction manual:

- Follow the instructions of the dosing liquid manufacturer.
- Check the hydraulic part of the pump and use it only if it is in perfect condition.
- Use only the correct materials for the tubing, valves and seals to suit the liquid to be dosed; where possible shield the tubing with PVC conduit.
- Before disconnecting the metering pump, make sure to flush out and neutralise the pump head with the proper reagent liquid.

1.6 ASSEMBLING AND DISMANTLING THE PUMP

1.6.1 ASSEMBLY

All metering pumps are normally supplied fully assembled. For greater clarity, please consult the exploded view of the pump appended at the end of the manual, which shows all the pump details and a complete overview of all the pump components. These drawings are in any case quite indispensable whenever defective parts have to be re-ordered.

1.6.2 DISMANTLEMENT

Proceed as follows before you dismantle the pump or before performing any other operation on it:

1. Disconnect the plug from the mains or by means of an onnipolar switch with 3 mm minimum distance between the contacts (Fig 4)
2. Relieve all the pressure from the injection tube.

DIMENSIONS

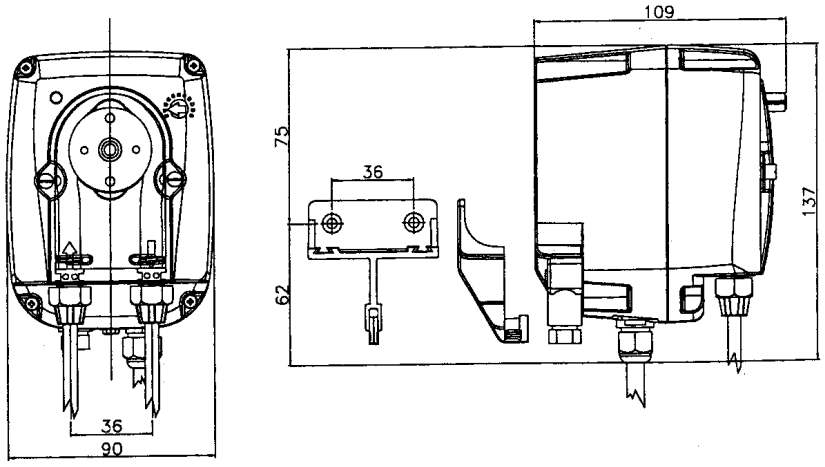


Fig. 1

2.0 PERISTALTIC PUMPS OPERATING PRINCIPLES

Peristalsis is a wave of automatic contractions propelling contents along a channel or tube, this led to a peristaltic action. By mechanical simulation of biological peristalsis rollers crush tube walls together to form a seal while a roller moves along the tube, then the previously compressed tube regains original form and sucks fluid into the formed vacuum. The fluid will follow the roller until tube is not compressed any more, then to avoid a flow back a second roller compresses the tube, pushing the fluid out of the pump and repeating the suction action while the pump continues to operate the rollers which are fitted on a special rotor create suction lift and outlet pressure.

2.1 B-F SERIES

- Peristaltic pump with fixed constant flow.

2.2 B-V SERIES

Peristaltic pump with flow adjustment from 0 to 100%. The flow is controlled adjusting the motor speed by means of a know placed on the front side.

2.3 B-FCD SERIES

Peristaltic pump operated by an electronic system which assures a specified concentration of detergent in the basin, automatically reinstating it if such concentration is different from that one previously set by the operator.
Direct function: the pump doses whenever the quantity of detergent in the basin results to be inferior to that one in the solution of reference used to set the calibration.
Inverse function: on request.

2.4 COMMON FEATURES

- The products are manufactured according to CE regulation.
- Plastic housing: Polypropylene with small dimensions, easy-to-install wall mounting system.
- Conductivity range: 3.000 – 20.000 µS (only B-FCD).
- Upon request level control (B-F 12 and 24 V d.c. excluded).
- Standard power supply: 240 V / 50 – 60 Hz.
- Power supply upon request:
  - 12 V d.c. (only B-F Series).
  - 24 V d.c., 24 V / 50- - 60 Hz.
  - 110 V / 60 Hz.
  - 240 V / 50 – 60 Hz

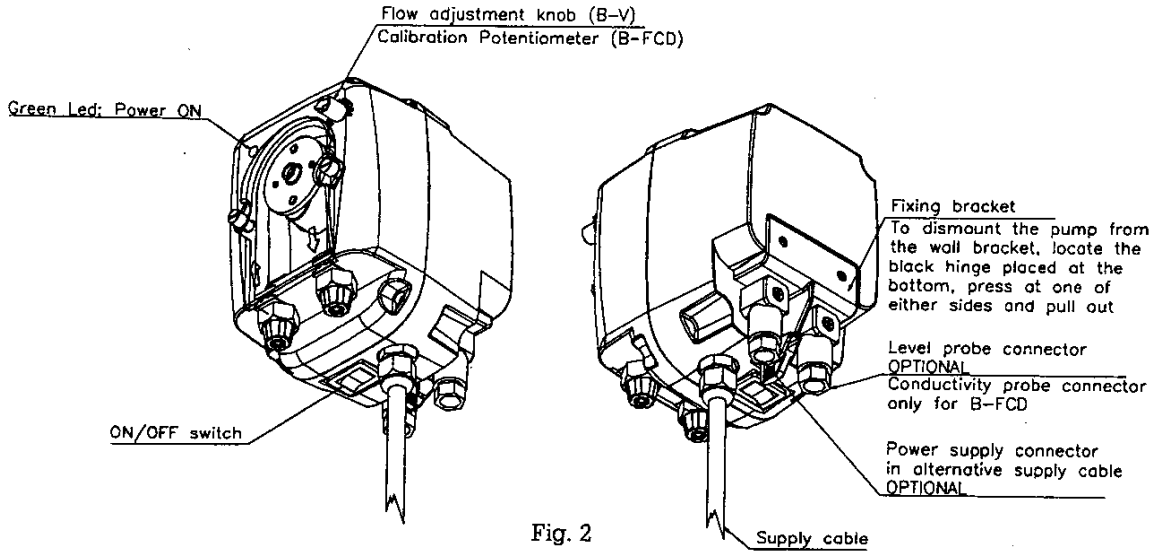


Fig. 2

NOTE: In level probe version the power led (green) turns yellow flashing when the product to be dosed is finished.

TYPE	MAX. FLOW	MAX. PRESSURE	NET WEIGHT		MAX OVERALL DIMENSIONS						ABSORBED POWER	ROTATION SPEED	TUBE SIZE
					Height		Width		Depth				
PERISTALTIC	l/h	bar	kg	lb	mm	in	mm	in	mm	in	Watts	giri/min – rpm	mm
1-3	1	3	0.70	1.54	137	5.40	90	3.50	109	4.30	4.0	25	3.2.x9.6
2-2	2	2	0.70	1.54	137	5.40	90	3.50	109	4.30	4.0	25	3.2x9.6
4-1	4	1	0.70	1.54	137	5.40	90	3.50	109	4.30	4.0	30	6x9
6-1	6	1	0.70	1.54	137	5.40	90	3.50	109	4.30	4.0	50	6x9

Fig. 3

2.5 MATERIALS IN CONTACT WITH THE ADDITIVE

Hose:
Silicone: suggested for brightener and water treatment
Santoprene®: suggested for detergent treatment

Nipples:
Polypropylene.

Filter:
Stainless Steel/Polypropylene with no return valve.

2.6 STANDARD ACCESSORIES

- 1 flexible PVC suction hose, transparent type, length 2m;
- 1 semirigid polyethylene discharge hose, white, length 2m;
- 1 injection valve (PP/Viton®);
- 1 foot filter (PP);
- 1 instructions/operating booklet.

2.7 DETERGENT ACCESSORIES

- 1 flexible PVC suction/discharge hose, transparent type, length 4m;
- 1 90º polypropylene injection fitting;
- 1 foot filter (S.S./PP/Dutral);
- 1 conductivity probe (only B-FCD series);
- 1 instructions/operating booklet.

2.8 BRIGHTENER ACCESSORIES

- 1 flexible PVC suction hose, transparent type, length 2m;
- 1 semirigid polyethylene discharge hose, white, length 3m;
- 1 nickel plated brass injection valve 1/8 BSP (Viton® Valve);
- 1 foot filter;
- 1 "T" connection;
- 1 instructions/operating booklet.

3.0 INSTALLATION

a. Install the pump in a dry place and well away from sources of heat and, in all cases, at environmental temperatures not exceeding 40ºC. The minimum operating temperature depends on the liquid to be pumped, bearing in mind that it must always remain in a liquid state.

b. Carefully observe the regulations in force in the various countries with regards to electrical installations (Fig. 4). **When the supply cable is devoid of a plug, the equipment should be connected to the supply mains by means of a single-pole circuit breaker having a minimum distance of 3mm between the contacts. Before accessing any of the electrical parts, make sure that all the supply circuits are open.**

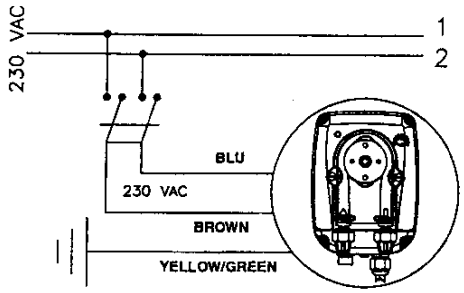


Fig. 4

c. Locate the pump as shown in Fig. 5 bearing in mind that it may be installed either below or above the level of the liquid to be dosed, though the level difference should not exceed 2 meters. In case of liquids that generate aggressive vapours, **do not** install the pump above the storage tank unless the latter is hermetically sealed.

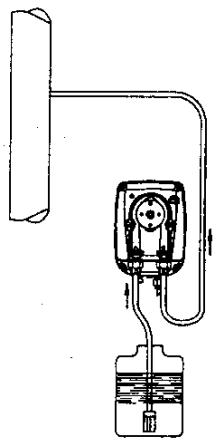


Fig. 5

d. Slide the hoses over the connectors, pushing them right home, and then fix them with appropriate tube nuts (Fig. 6).

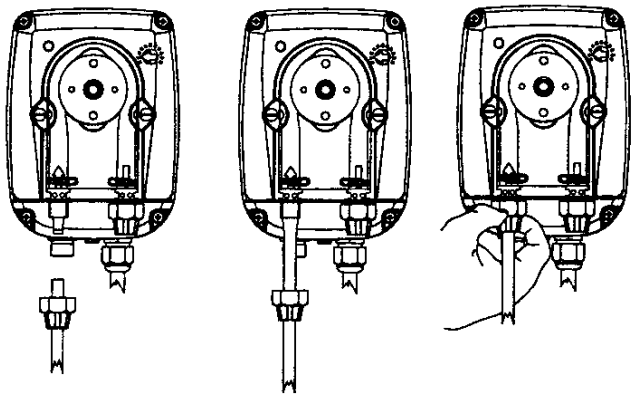


Fig. 6

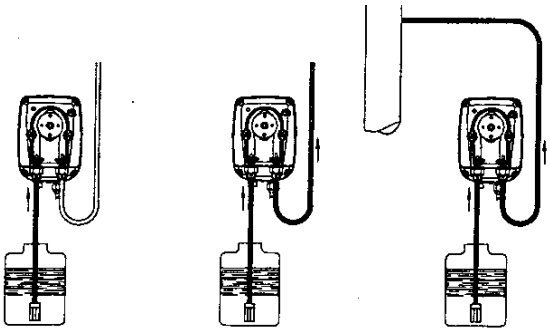


Fig. 7

Before attaching the delivery hose to the plant, prime the metering pump by going through the sequence shown in Fig. 7. In case of priming difficulties, use a normal syringe to suck liquid from the discharge nipple while the pump is in operation, continuing until you actually see the liquid rise in the syringe. Use a short length of suction hose to connect the syringe to the discharge nipple.

e. Try to keep both the suction and discharge hose as straight as possible, avoiding all unnecessary bends.

f. Apply the 90º injection fitting (A) to the basin of the machine at a higher water level after having made a 12 mm hole.

3.1 TYPICAL INSTALLATION B-V (Fig. 8)

A Detergent injection fitting;
B Brightener injection valve;
C Power supply;
D Foot filter;
E Chemical tank.

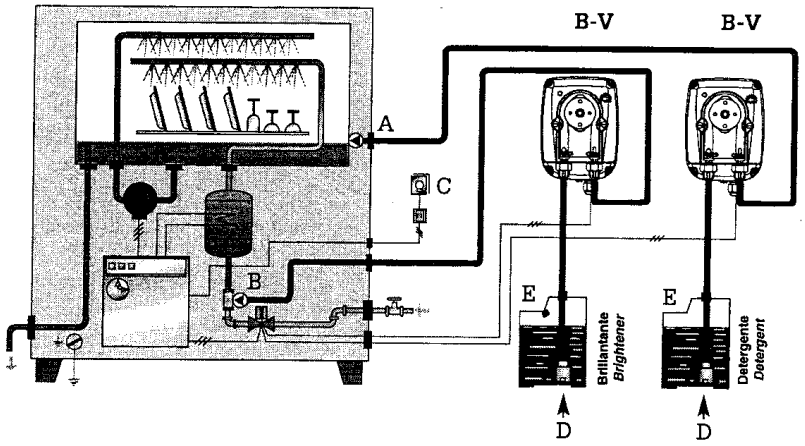


Fig. 8

3.2 B-FCD PUMP CALIBRATION

- Make a solution that contains the required quantity of detergent.
- Dip the conductivity probe K1 in the solution, rotate the calibration potentiometer clockwise or anticlockwise in order to reach the pump standby.
- After the calibration set the probe in the plant and proceed with the dosing operations.

3.3 EXAMPLE OF APPLICATION OF B-FCD AND B-V DOSING PUMPS

The timer "T" controls the opening of solenoid valve allowing fresh, clean water, via the loading tube M, into the machine drum W. The B-FCD pump by means of its probe S controls the conductivity, displacing detergent into drum W until concentration reaches the value preset by the operator.

Once the washing cycle ends, timer "T" controls the rinse cycle, opening the solenoid valve E2, allowing new fresh water and activating the B-V dosing pump (brightener). The fresh water passes through the boiler B and after being heated and mixed with the brightener it is used for rinsing.

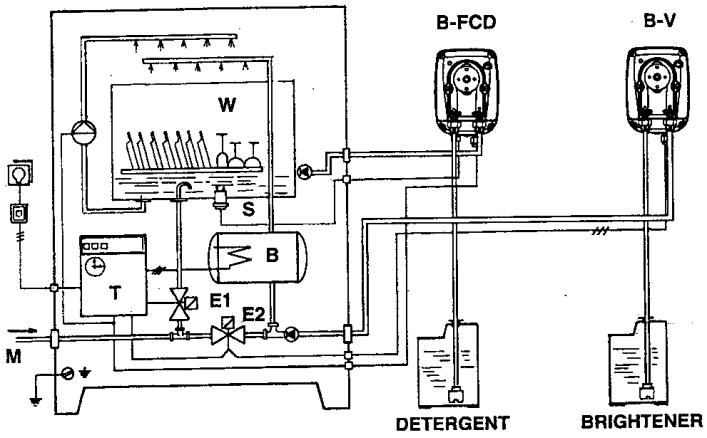


Fig. 9

3.4 SERVICE CONNECTOR WIRING DIAGRAM AND FUNCTIONS

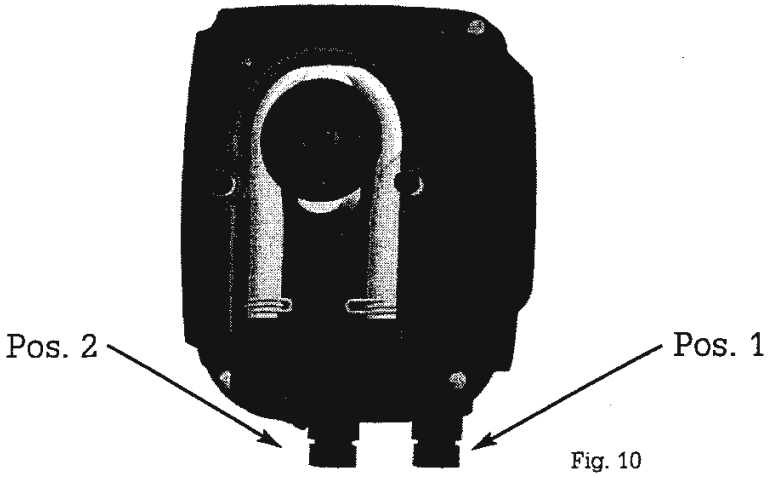
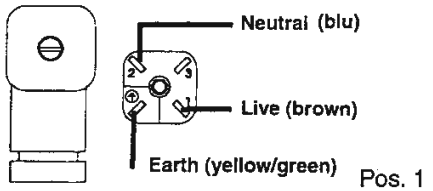
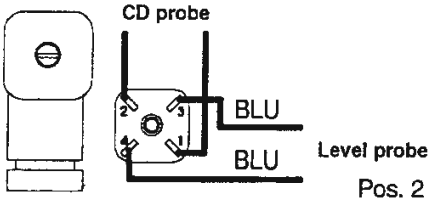


Fig. 10

Model	*Female service connector wire assembly*	*Functions and technical informations*
B-F B-V B-FCD		***Power supply*** *connection* *Configuration:* *Pin* ***1*** *= Live (brown)* *"* ***2*** *= Neutral (blu)* *"* ***3*** *= No connection* ⏚ *= Earth (yellow/green)*
B-F B-V B-FCD		***Level probe and/or CD probe*** *connection* *Configuration:* *Pin* ***1*** *= CD probe wire* *"* ***2*** *= CD probe wire* *"* ***3*** *= Level probe wire* *"* ***4*** *= Level probe wire*

4.0 MAINTENANCE

1. Periodically check the chemical tank level so as to avoid the pump operating without liquid. This would not damage the pump, but may damage the process plant due to lack of chemical.

2. Check the pump operating condition at least every 6 months, pump head position, screws, bolts and seals; check more frequently where aggressive chemicals are pumped, especially:
   - the additive concentration in the process plant; a reduction of this concentration could be caused by the wearing of the hose, in which case it needs to be replaced or by the clogging of the filter which then has to be cleaned as in point 3 below.

3. The Company suggests periodically cleaning off the hydraulic parts (valves and filter). We cannot say how often this cleaning should be done as it depends on the type of application, we also cannot suggest what cleaning agent to use as this will depend on the additive used.

Operating suggestions when dosing sodium hypochlorite (most frequent case):

a. disconnect the pins from the mains or by means of an onnipolar switch with 3 mm minimum distance between the contact.
b. disconnect discharge hose from process plant;
c. remove the suction hose (with filter) from the tank and dip it into clean water;
d. switch on the metering pump and let it operate with water for 5 to 10 minutes;
e. switch OFF the pump, dip the filter into a hydrochloric acid solution and wait until the acid finishes cleaning;
f. switch ON the pump again and operate it with hydrochloric acid for 5 minutes in a closed-circuit, with suction and discharge hose dipped into the same tank;
g. repeat the operation with water;
h. reconnect the metering pump to the process plant.

5.0 PERISTALTIC PUMP TROUBLE-SHOOTING

5.1 MECHANICAL FAULTS

As the system is quite robust there are no apparent mechanical problems. Occasionally there might be a loss of liquid from the nipple because the tube nut has loosened, or more simply the discharge tubing has broken. In this case they have to be replaced. After repair, the metering pump will need to be cleaned of additive residues which can damage the pump casing.

❶ **POWER SWITCH ON (GREEN LED ON), PUMP TURNING BUT THE ADDITIVE IS NOT INJECTED**

a. Check the integrity of suction and discharge tubes. Should the tubes be swollen, check tube material against our chemical resistance compatibility chart.
b. Check clogging of the filter and foot valve.
c. Check clogging of the injection valve.

5.2 ELECTRICAL FAULTS

❶ **POWER SWITCH ON (GREEN LED OFF), PUMP DOES NOT TURN**

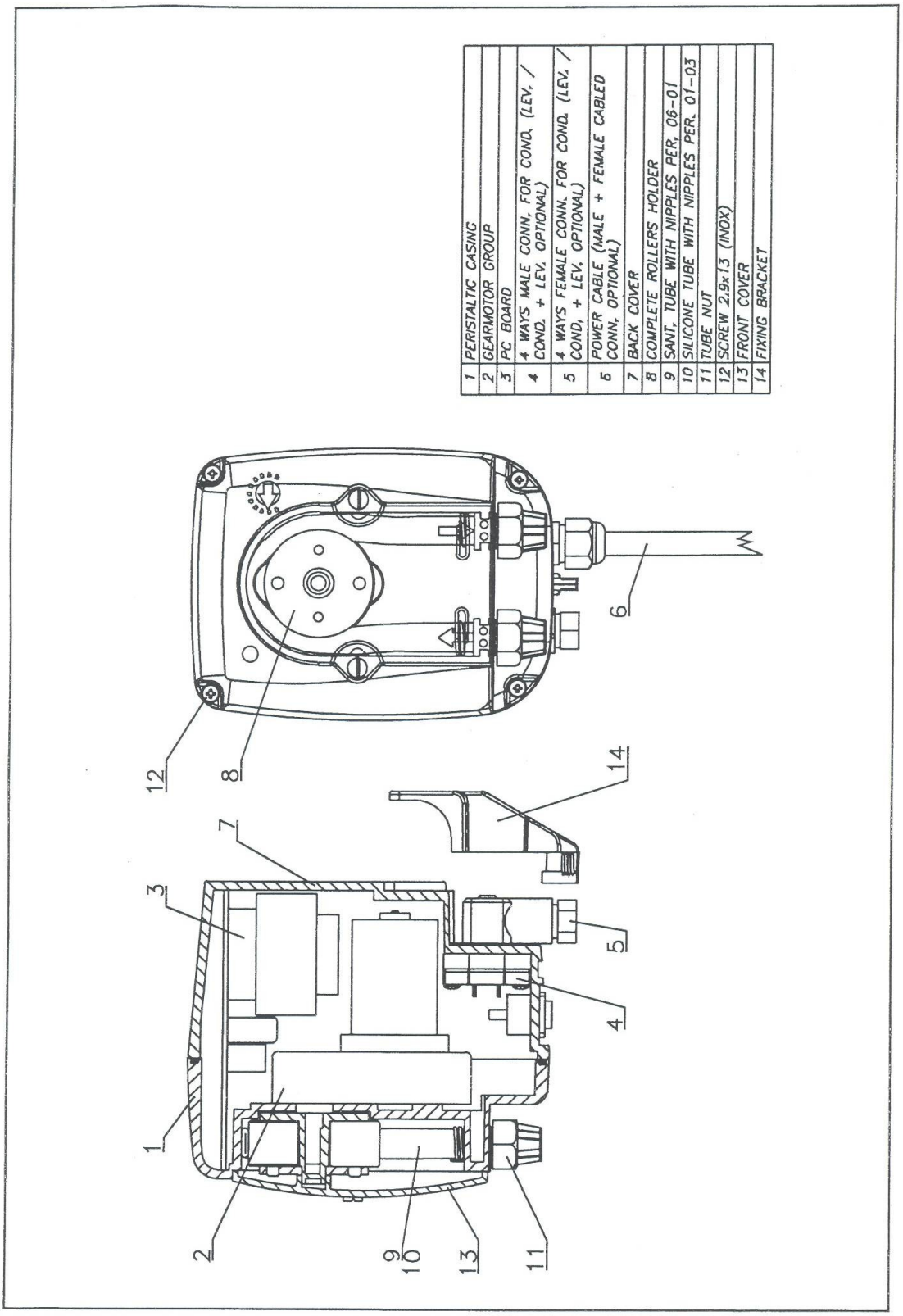
a. Check power supply (socket, plug), if the pump does not work contact manufacturer Customer Service, Dealer or Distributor.

❷ **POWER SWITCH ON (GREEN LED ON) PUMP DOES NOT TURN**

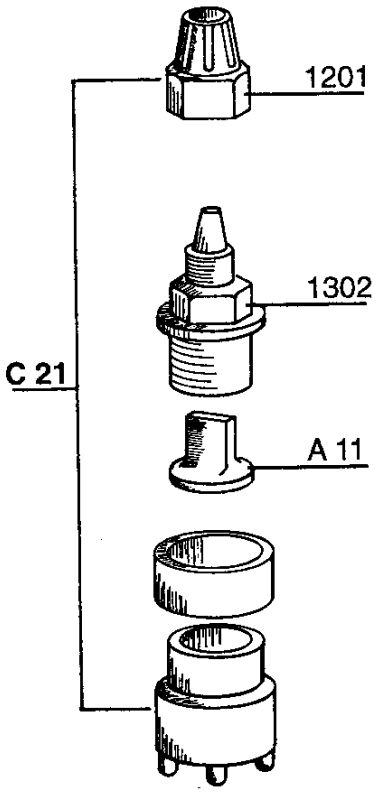
a. Check the correct setting of potentiometer knob. If rotating the know clockwise the pump is still not turning, contact manufacturer Customer Service, Dealer or Distributor.
b. B-FCD dosing pump: check for correct calibration, conductivity probe fault or dirty.

ATTENTION: When removing the metering pump from the plant, be careful as there might be some residual additive in the discharge hose.

SPARE PARTS


1 PERISTALTIC CASING
2 GEARMOTOR GROUP
3 PC BOARD
4 4 WAYS MALE CONN. FOR COND. (LEV. / COND. + LEV. OPTIONAL)
5 4 WAYS FEMALE CONN. FOR COND. (LEV. / COND. + LEV. OPTIONAL)
6 POWER CABLE (MALE + FEMALE CABLED CONN. OPTIONAL)
7 BACK COVER
8 COMPLETE ROLLERS HOLDER
9 SANT. TUBE WITH NIPPLES PER. 06-01
10 SILICONE TUBE WITH NIPPLES PER. 01-03
11 TUBE NUT
12 SCREW 2.9x13 (INOX)
13 FRONT COVER
14 FIXING BRACKET

STAINLESS STEEL FILTER



A11 DUTRAL® LIP VALVE (DETERGENT)

VITON® LIP VALVE (BRIGHTENER)

INJECTION VALVE