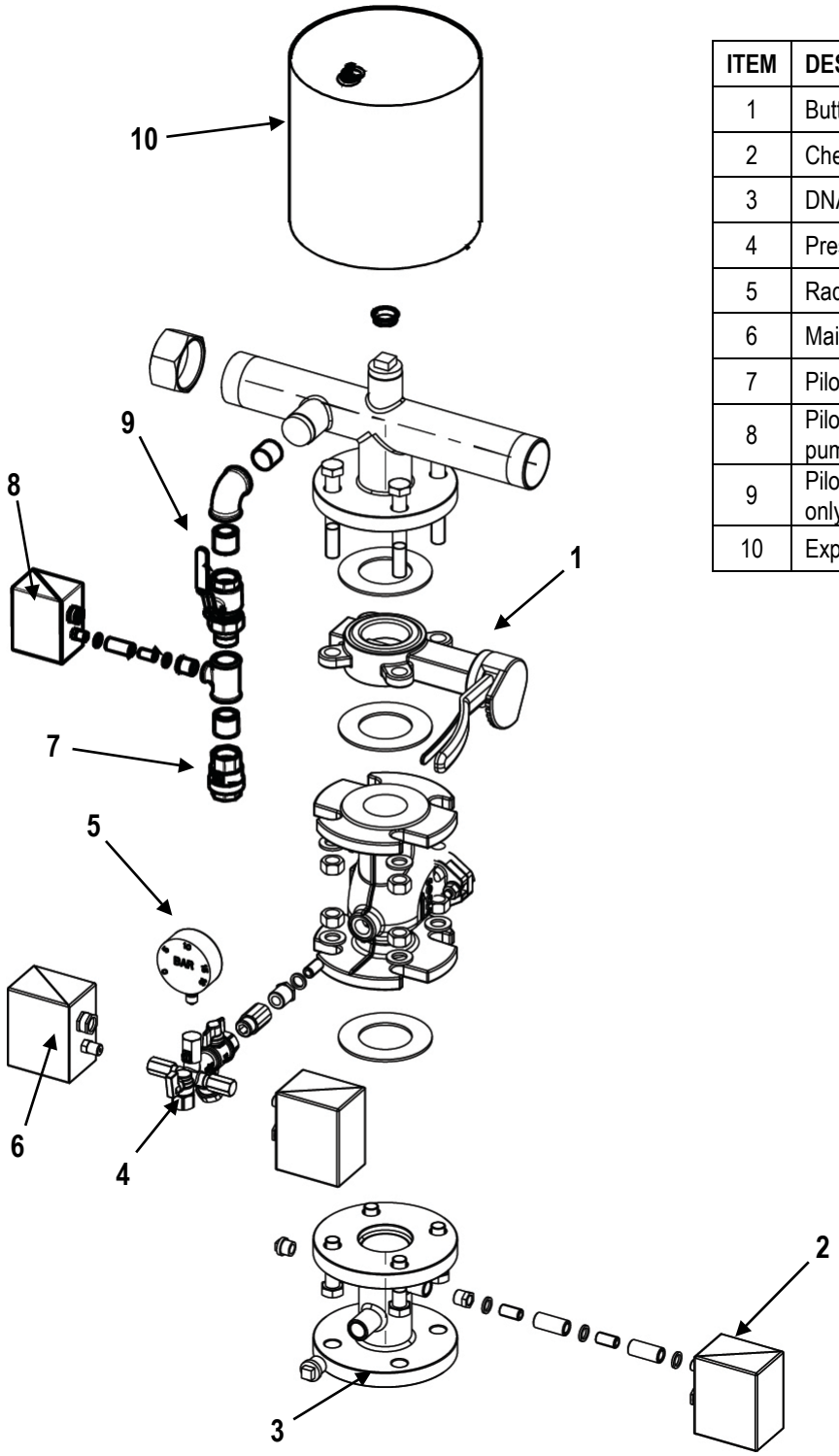
FIRE-FIGHTING SET TO EN 12845 - UNI 10779
with submerged pumps

HYDRAULICS
Preassembled manifold with:
flanged connection for each pump, pressure gauge, pump running indicator pressure switch, check valve, butterfly stop-valve, delivery manifold with pressure gauges and two pump starter pressure switches, pressure switch test circuit and expansion tank (for pilot pump). **NB. DAB PUMPS does not supply the electric and water system connections.**



ITEM	DESCRIPTION
1	Butterfly stop valve
2	Check valve
3	DNA pipe
4	Pressure switch manual testing valve
5	Radial pressure gauge
6	Main pump starting pressure switch
7	Pilot pump check valve
8	Pilot pump pressure switch (version with pilot pump only)
9	Pilot pump stop valve (version with pilot pump only)
10	Expansion tank

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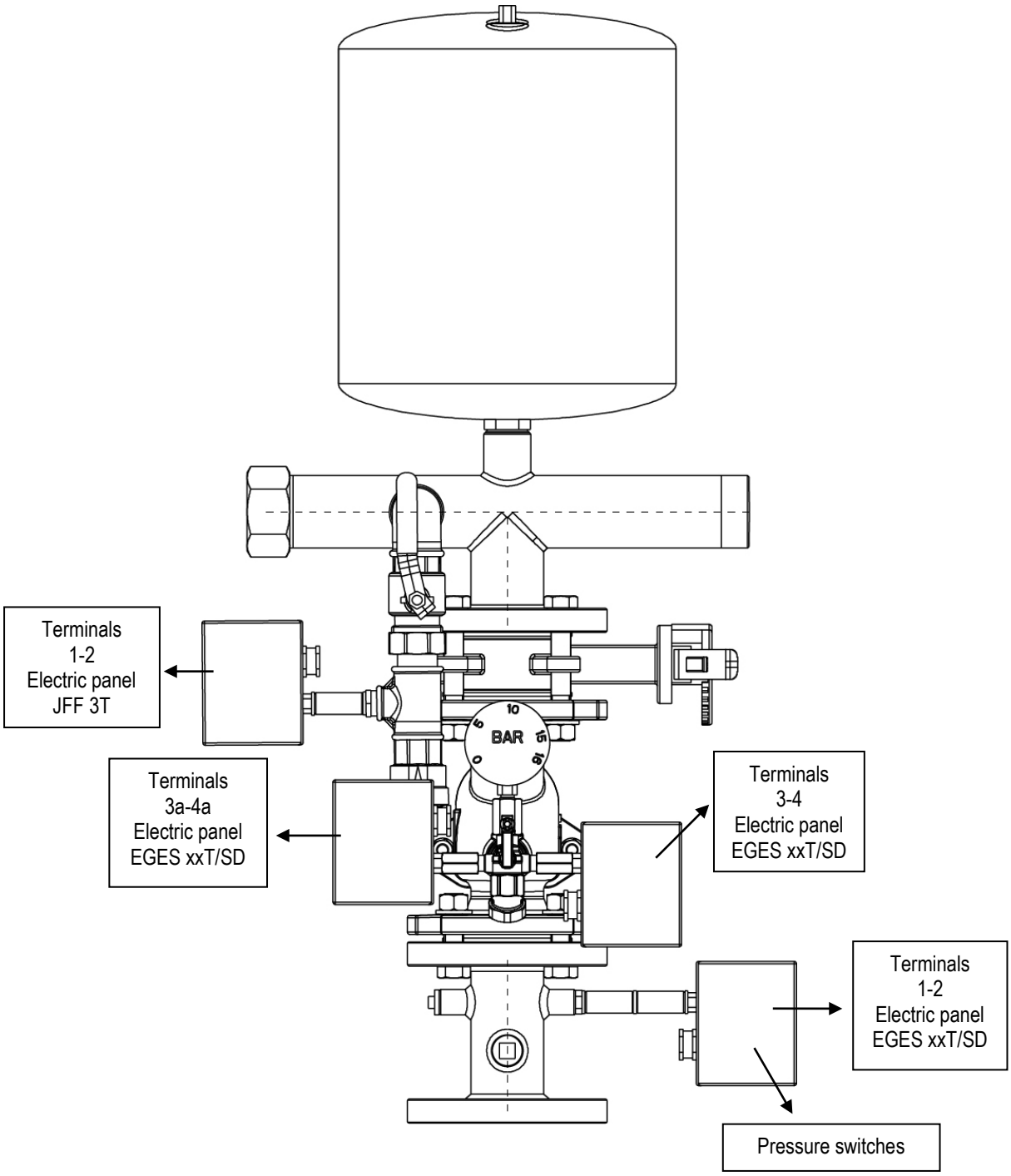
CONNECTION OF PRESSURE SWITCHES AND PUMP MOTOR TO ELECTRIC PANEL

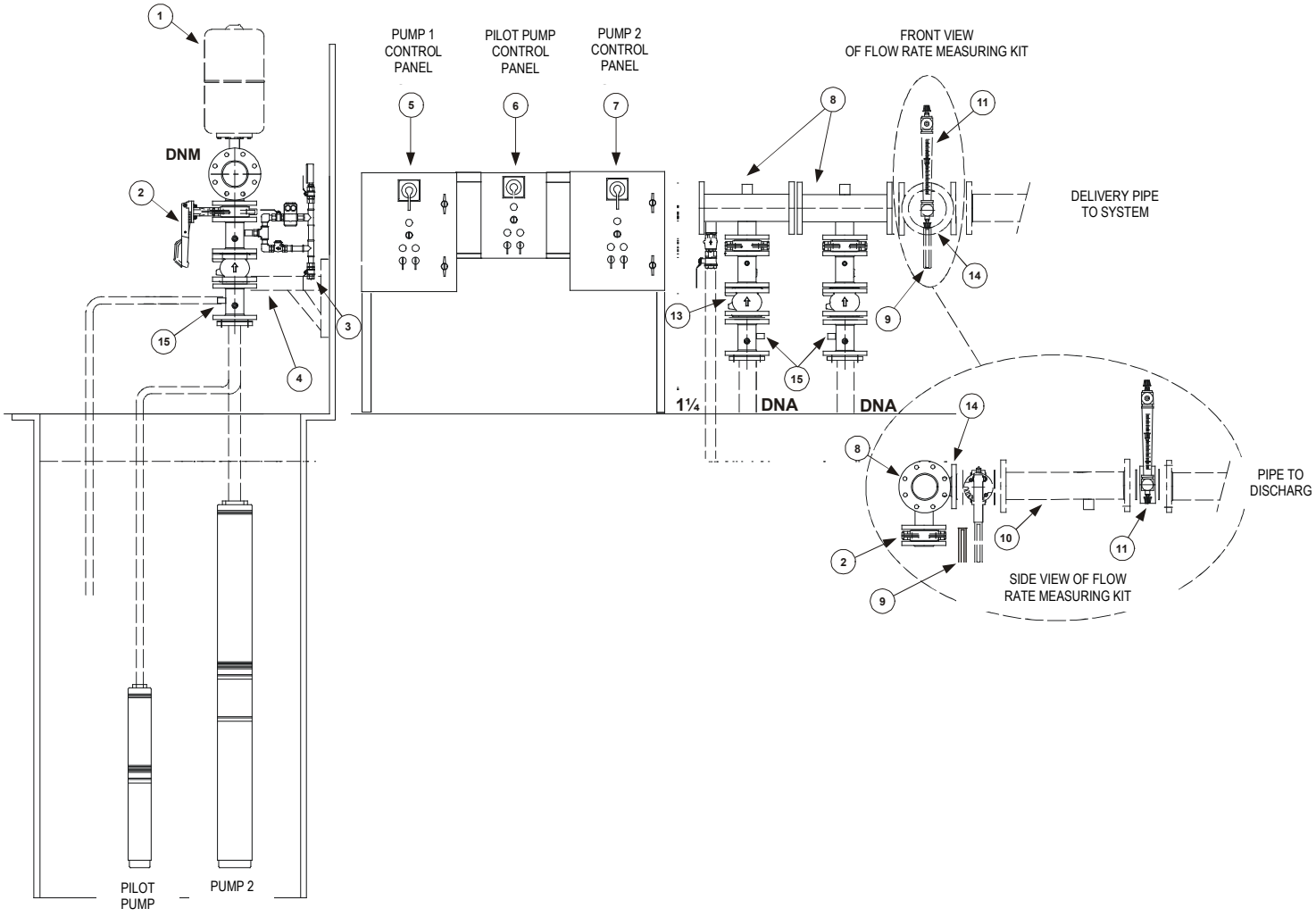


CABLE CONNECTION SEQUENCE FOR SUBMERGED ELECTROPUMPS WITH STARTING:

DIRECT ON LINE (DOL)		
MOTOR POWER UP TO 7.5 KW	**EGESXX T PANEL TERMINAL BOARD**	**SUBMERGED ELECTROPUMP CABLE COLOUR**
	U1	BLACK
	V1	BLUE or GREY
	W1	BROWN

STAR-DELTA		
MOTOR POWER OVER 7.5 KW	**EGESXX T SD PANEL TERMINAL BOARD**	**SUBMERGED ELECTROPUMP CABLE COLOUR**
	U1	BLACK
	V1	BLUE or GREY
	W1	BROWN
	U2	BROWN
	V2	BLACK
	W2	BLUE or GREY

INSTRUCTIONS FOR CONNECTING SETS TO STANDARDS EN 12845 – UNI 10779
WITH SUBMERGED PUMPS 4" – 6" – 8"



1 – Diaphragm expansion tank	**8 – Delivery manifold**
2 – Interception valve	**9 – Flow rate measuring device interception valve (optional)**
3 – Manual test valve ½"	**10 – Flow rate measuring device test pipe (optional)**
4 – Manual test valve ½" (not supplied bu DAB)	**11 – Flow meter – flow rate measuring device (optional)**
5 – Electropump n.1 control panel	**12 – Pressure switches for starting the pump** **Put the contacts of the 2 pressure switches in series (contacts are normally open with system unloaded, zero pressure) and connect the two remaining leads to the teminals 3 – 4 of the DAB electric panel**
6 – Pilot electropump control panel	**13 – Non-return valve**
7 – Electropump n.2 control panel	**14 – "TI" flow rate measuring device**
	15 – Red sleeve 3/8"-water recirculating and air discarge

Dimensions DN A (pump connection)

Electropumps 4"	Electropumps 6"	Electropumps 8"
DN 50	DN 80	DN 100

Dimensions DN M (delivery manifold to system)

Electropumps 4"	Electropumps 6"	Electropumps 8"
2"	DN 80	DN 100

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1. INSTALLATION

1.1. The set must be fitted in a well ventilated place, protected from unfavourable weather conditions, and with an environment temperature not less than 4°C (10°C if motor pumps are installed too), and not exceeding 40°C. Position the set in such a way that any maintenance jobs can be carried out without difficulty.

1.2. Ensure that the system pipes are independently supported and do not weigh down on the set manifolds so as to avoid deformation or breaking of any of its components.

1.3. It is advisable to connect the delivery pipes to the system inserting vibration-damping couplings.

1.4. Ensure that the characteristics of the water supply source are such as always to guarantee the flow rate required in the expected operating conditions.

2. ELECTRICAL CONNECTION

ATTENTION: RESPECT THE SAFETY REGULATIONS IN FORCE

2.1. Check the power supply voltage and frequency. Values differing from those on the motor plate could cause irremediable damage.

2.2. Connect the leads of the power supply cable to the terminal board on the control panel, **giving priority to the earth lead.**

For the wiring diagram of the control panel and the pilot pump control unit, with respective informative notes, see the enclosed documentation.

3. CHECKING OPERATION OF THE SET

3.1. CHECKING OPERATION OF THE ELECTROPUMP

a) Turn the main switch on the electropump panel to ON.
Check the direction of rotation of the electropump, starting it **for a few moments** with the START**.**
Keep the delivery line closed and check the pump performance on the pressure gauge which must correspond to the hydraulic data, otherwise invert the electrical connections.
b) Turn the selector on the electropump panel to AUT position.
c) Open a valve in the system (or the pump manual start valve, located near the pressure switches)
d) Check that the electropump starts.
e) Close the valve in the system (or the pump manual start valve, located near the pressure switches)
f) Put the system under pressure.
g) Stop the electropump with the STOP button on the electric panel.

To check failed starting of the electric pump see the electropump instructions manual.

ATTENTION: DURING OPERATION OF THE ELECTROPUMP:

- Check for any water leaks in the system and stop the electropump if necessary.
- The contact that indicates when the electropump is running closes and may activate any connected alarms.

3.2. CHECKING OPERATION OF THE COMPENSATING ELECTROPUMP (PILOT PUMP)

The compensating pump (or pilot pump) is an auxiliary pump which intervenes to draw small amounts of water.
It starts at a pressure higher than the starting pressure of the main pumps and stops when the pressure in the system is restored.
It is not obligatory, but it is recommended in order to avoid needless starts of the main pumps in the case of leaks in the system.

a) Turn the main switch on the electropump panel to ON.
b) Keep the delivery line closed and check the pump performance on the pressure gauge which must correspond to the hydraulic data, otherwise invert the electrical connections.

3.3. SETS WITH SEVERAL PUMPS

Standard EN 12845 – UNI 10779 contemplates various solutions with one or more pumps having similar characteristics:

– if TWO pumps are installed, each pump supplies the total flow rate of the system (100%),
– if THREE pumps are installed, each pump supplies 50% of the total flow rate.

DAB supplies the sets in a "modular" version, in separate units, so as to be able to make up all the versions mentioned above. By means of the JOINING MANIFOLD it is possible to join the manifolds so as to obtain a single delivery manifold.
The electrical panels remain separate as required by EN 12845 - UNI 10779.

4. PERIODIC MAINTENANCE

The whole fire-fighting system to standard EN 12845 – UNI 10779, including the set of fire-fighting pumps, **must always be kept in perfect working order.** For this reason, regular maintenance is of particular importance.
According to standard EN 12845 point 20.1.1 – UNI 10779, the user must:

- carry out a programme of inspections and checks;
- arrange a testing, assistance and maintenance programme,
- document and record the activities, filing the documents in a special register kept in the building.

The user must ensure that the testing, assistance and maintenance programme is carried out under contract by the installer of the system or by a company with the same qualifications.

4.1. WEEKLY CHECK (to be carried out at intervals of no more than 7 days)

The weekly check of the fire-fighting set to standard EN 12845 – UNI 10779 contemplates checking and noting down the following values:

– pressure of pressure gauges,
– water level in the tanks – water reserves,
– correct position of the interception valves.

To test the automatic starting of the pumps, proceed as described below:

– Open the pump manual start valve (ref. 5).
– Check that the pump starts and make a note of the starting pressure.
– Close the manual start valve.

4.2. QUARTERLY CHECK (at intervals of no more than 13 weeks – see EN 12845 point 20.3.2 – UNI 10779)

– Check for any changes in the system, changed class of risk, etc.
– Check sprinklers, pipes, pipe supports (see EN 12845 point 20.3.3.2 – UNI 10779).
– Start the pumps and check the pressure and the flow rate.
– Check the operation of any generators – generating sets.
– Check the correct position of the interception valves.
– Check the correct operation of the secondary electric power supply coming from Diesel generators.

4.3. HALF-YEARLY CHECK (at intervals of no more than 6 months – see EN 12845 point 20.3.3 – UNI 10779)

– Check the dry alarm valves (in the system).
– Check the operation of the alarms in the control room and/or at the Fire Station.

4.4. YEARLY CHECK (at intervals of no more than 12 months – see EN 12845 point 20.3.4 – UNI 10779)

– Check the pressure and the flow rate of the pumps against the values given on the technical data plate.

4.5. THREE-YEARLY CHECK

– Check for corrosion outside and INSIDE the tanks, repairing the protection if necessary.
– Check the interception and check valves, replace them if necessary.

4.6. TEN-YEARLY CHECK

After no more than 10 years, clean all the tanks and check the internal structure.

5. REGULATING THE SET

5.1. CALIBRATION OF THE PRESSURE SWITCHES

Standard EN 12845 – UNI 10779 contemplates two pressure switches for each pump, each pressure switch with normally closed contacts connected in series.
Opening any one of the two pressure switches causes the pump to start.
For pressure switch settings different from those carried out in the factory, proceed in accordance with the following instructions during handover testing of the pumping set:

– the type of pressure switch installed in the pump set,
– the pressure limits indicated on the data plates of each pump,
– the limit indicated by standard EN 12845 – UNI 10779 according to which the two pressure switches must be calibrated in such a way as to start the pump at a value **pump pressure with delivery closed x 0.8.**

In the case of sets with two pumps, the second pump will be started at a value **pump pressure with delivery closed x 0.6.**

Danfoss pressure switch type KP

Slacken the 2 screws and remove the cover.

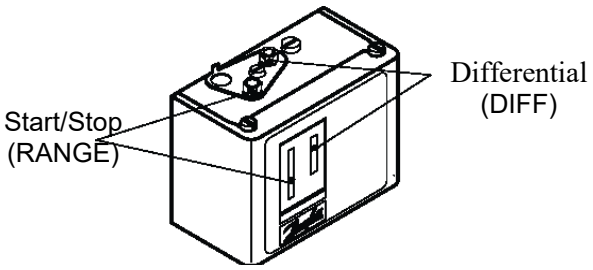
Unscrew the locking screw above the regulating screws.

Set the upper pressure limit on the START-STOP regulating scale (marked RANGE), turning the cross-headed screw.

Then set the lower pressure limit using the differential scale (marked DIFF), turning the hexagonal head screw.

Re-tighten the locking screw.

Replace the cover and tighten the 2 screws.



Klockner Moeller pressure switch type MCS

Undo the 4 screws and remove the cover.

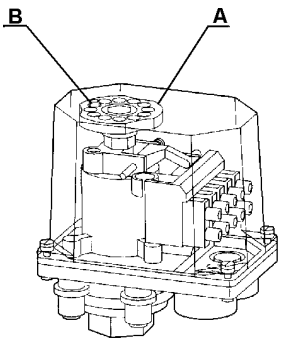
Slacken and remove the locking screw “B” positioned in one of the 12 holes in the regulating knob “A”. (figure 1)

When the regulating knob “A” is turned clockwise, the pump starting and stopping pressures are increased at the same time.
When it is turned counter-clockwise they are decreased. (figure 2)

When the regulating knob “A” is pressed and turned counter-clockwise, the differential between the starting and the stopping pressure of the pump is increased (the starting pressure decreases while the stopping pressure remains fixed).
When the regulating knob “A” is pressed and turned clockwise, the differential is decreased. (figure 3)

Replace and tighten the locking screw “B” in the hole in the regulating knob “A” that is most aligned with one of the two threads under the knob. (figure 4)

Replace the cover and tighten the 4 screws.



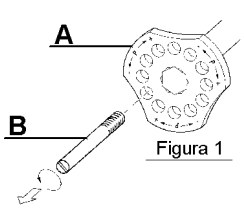


Figura 1

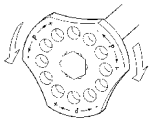


Figura 2

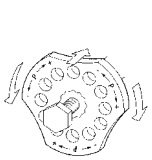


Figura 3

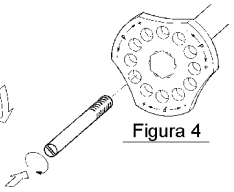


Figura 4

6. COMPENSATING ELECTROPUMP

6.1. The pump sets may be provided with a compensating pump connected to the delivery manifold by means of a check valve and an interception ball valve.
Instead the suction, as in any pump of a set according to standards EN 12845 – UNI 10779, is kept independent.

6.2. Keep the pressure switch that controls the compensating pump always calibrated with starting and stopping pressures **higher** than the others. This is indispensable in order to allow this pump to perform its task of compensating small falls in pressure in the system before starting the main electropump.

7. MAINTENANCE

9.1. **All our sets are subjected to strict testing of both the electrical and the hydraulic part.**
It is unusual for malfunctions to occur, unless due to external or completely accidental causes.

9.2. Below is a table with some suggestions on regulating the set in the event of irregularities in operation.

FAULTS	POSSIBLE CAUSES	REMEDIES
A PUMP IN THE SET DOES NOT START.	1. Main motive power switch and/or main auxiliary circuit switch off (in position "0"). 2. Protection overload switches of the transformer and/or of the auxiliary circuit faulty or tripped. 3. Electric circuit interrupted.	1. Switch them on, turning them to position “1” and check that the two green lights come on indicating that the panel is live. 2. If faulty, change them. If tripped, reset them. 3. Use a tester to find the point of interruption and repair it.
THE STOP BUTTON DOES NOT STOP THE PUMP	1. Important water leaks in the system, so the pressure is not re-established above the opening pressure of the pressure switch (about 1.5 bar above the closing pressure of the pressure switch, that is the starting pressure of the electropump) . 2. A jumper has been fitted on the terminals for connecting the float for the priming tank (to be installed in the event of suction above head)	1. Check the joins, couplings and pipes. 2. Remove the jumper in the event of suction below head. Insert the float for the priming tank in the event of suction above head.

THE SET DOES NOT SUPPLY THE REQUIRED CHARACTERISTICS.	1. The set chosen is undersized for the characteristics of the system. 2. Excessive water consumption for the flow rate that can be supplied by the water supply source (tank, well, mains, etc.) 3. Motors turning in inverse direction. 4. One or more pumps clogged. 5. Pipes clogged. 6. Interception valves at suction and delivery partly closed. 6. Air infiltrations in the suction pipes of the set pumps.	1. Replace it with one that suits the required characteristics. 2. Increase the flow rate that can be supplied by the water supply source. 3. Change it, performing the operation described in the paragraph on “Starting”. 4. Dismantle them and clean the pump body, the impellers and the filter, ensuring that they are 5. in good condition. 6. Clean them or change them. 7. Open them completely. Testing under pressure, check the perfect seal in the couplings, the joins and the pipes.
WHEN STOPPED, ONE OR MORE PUMPS IN THE SET TURN IN INVERSE DIRECTION.	1. The respective not return or foot valves do not close well or are blocked. 2. The respective suction pipe is not airtight.	1. Check seal and correct operation. 2. Check the seal, testing under pressure.
AFTER BEING STOPPED, A PUMP IN THE SET DOES NOT START AGAIN.	1. Motor protection fuses burnt out. 2. No current is reaching the coil of the respective remote control switch. 3. Remote control switch coil interrupted. 4. The system pressure is not reaching the respective control pressure switch. 5. Faulty control pressure switch.	1. Change them. 2. Use a tester to check the electric circuit as far as the coil itself and repair any interruption found. 3. Change it. 4. Remove it and clean the connecting sleeve. 5. Change it.
THE MOTOR OF AN ELECTROPUMP IN THE SET IS VIBRATING.	1. A motor protection fuse has burnt out. 2. Fuse holder base slack or faulty. 3. Contacts of the respective remote control switch worn or faulty. 4. Pump blocked. 5. Bearings worn. 6. Electric wires broken.	1. Change it. 2. Secure it if slack. Change it if faulty. 3. Change the remote control switch. 4. Free it. 5. Change them. 6. Check and repair them.