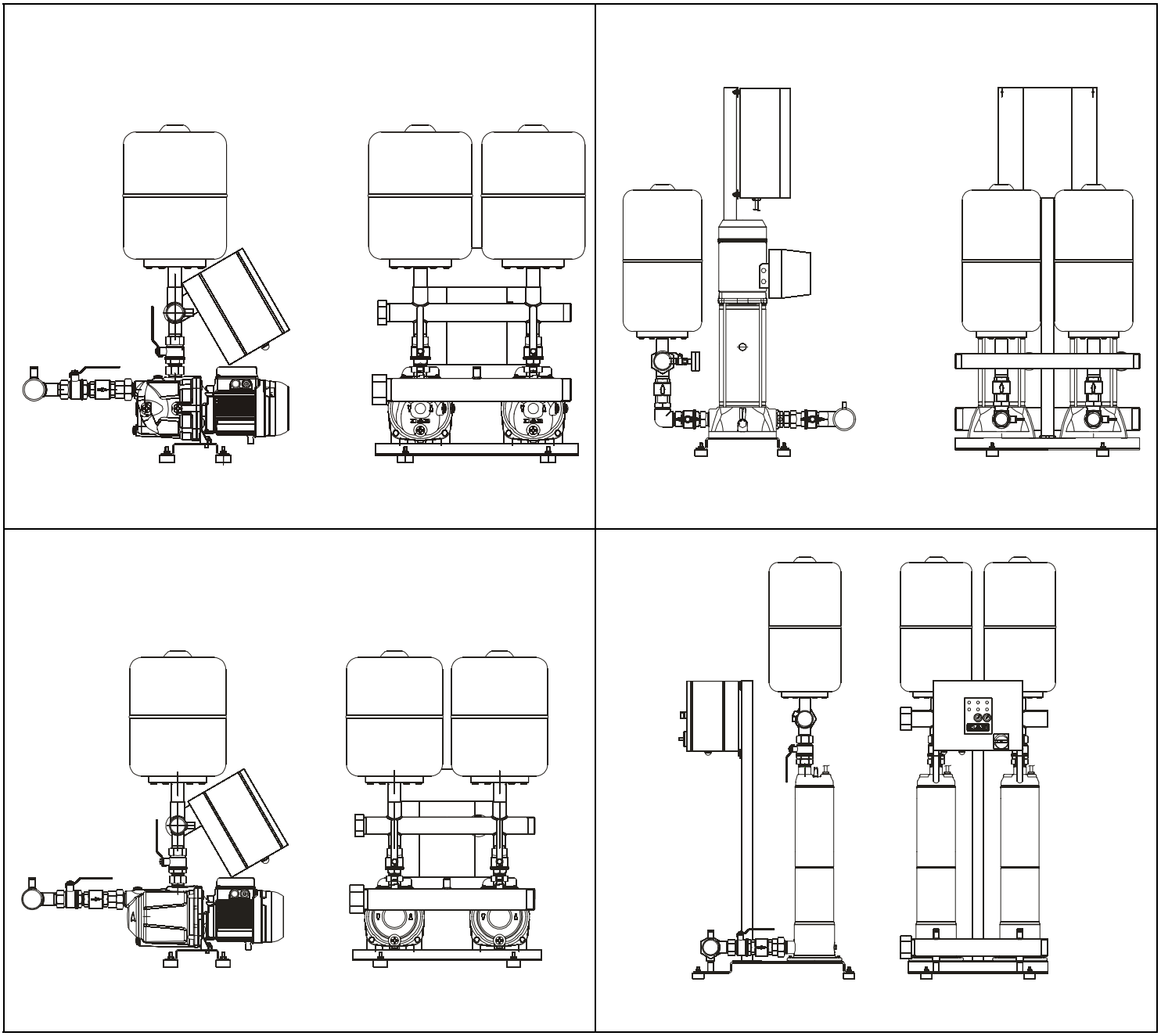
ISTRUZIONI PER L'INSTALLAZIONE E LA MANUTENZIONE
INSTRUCTIONS DE MISE EN SERVICE ET D'ENTRETIEN
INSTRUCTIONS FOR INSTALLATION AND MAINTENANCE
INSTALLATIONSANWEISUNG UND WARTUNG
INSTRUCTIES VOOR INGEBRUIKNAME EN ONDERHOUD
INSTRUCCIONES PARA LA INSTALACION Y EL MANTENIMIENTO
РУКОВОДСТВО ПО МОНТАЖУ И ТЕХНИЧЕСКОМУ ОБСЛУЖИВАНИЮ
INSTALLATIONS - OCH UNDERHÅLLSANVISNING
إرشادات للتركيب والعناية.



МП09

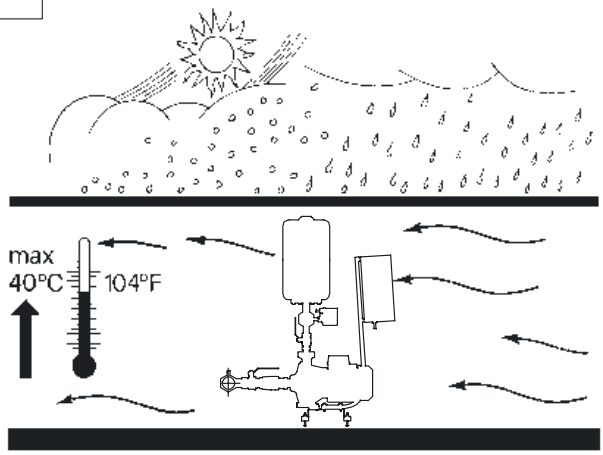
DAB
PUMP PERFORMANCE

2 JET…
2 JETINOX …
2 K …
2 EURO …
2 EUROINOX …

1 PULSAR DRY …
2 PULSAR DRY …

1-2-3 KV 3-6-10
1-2-3 KVCX …
1-2-3 KVC …

1



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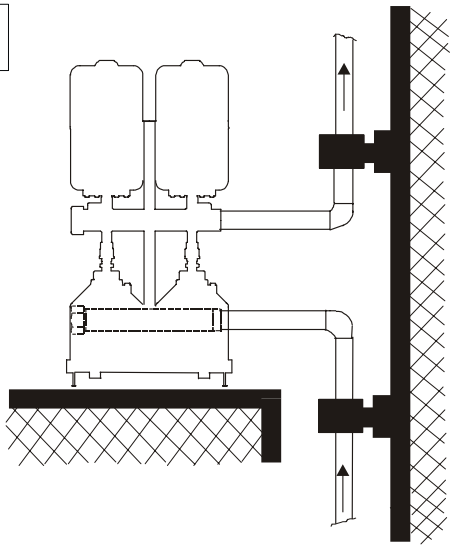

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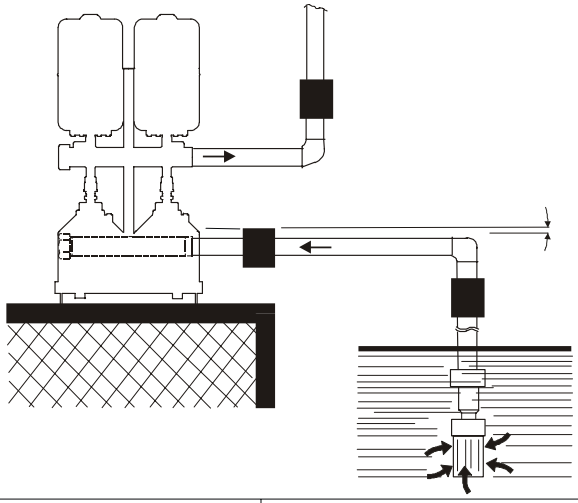

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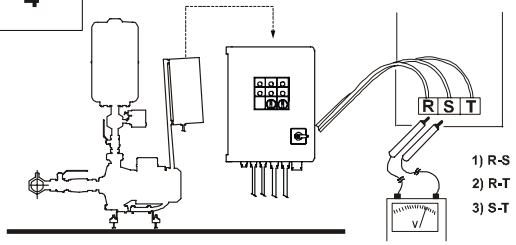

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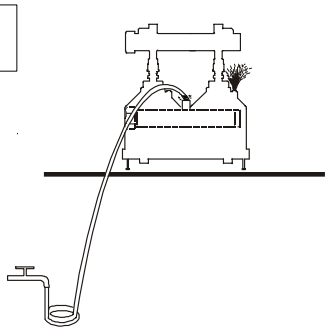

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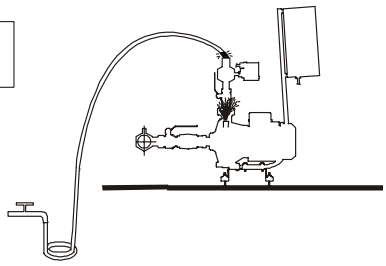

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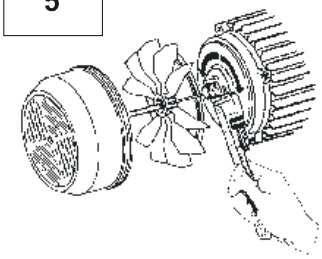

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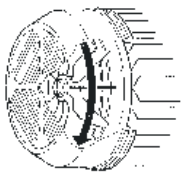

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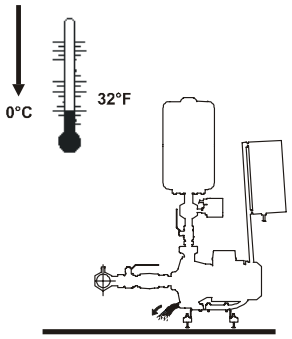

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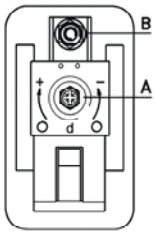

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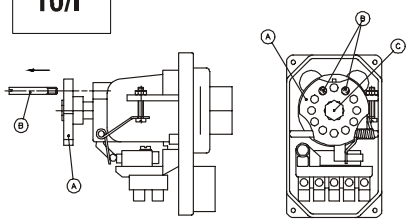

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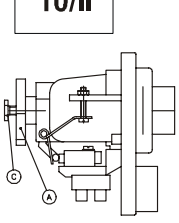

DICHIARAZIONE DI CONFORMITÀ

La Ditta DAB PUMPS s.p.a. - Via M. Polo,14 - Mestrino (PD) - ITALY - sotto la propria esclusiva responsabilità dichiara che i prodotti summenzionati sono conformi a:

- Direttiva del Consiglio n° 2006/42/CE concernente il riavvicinamento delle legislazioni degli Stati membri CEE relative alle macchine e successive modifiche.
- Direttiva della Compatibilità elettromagnetica 2004/108/CE e successive modifiche.
- Direttiva Bassa Tensione 2006/95/CE e successive modifiche.

DECLARATION OF CONFORMITY

The Company DAB PUMPS s.p.a. - Via M. Polo,14 - Mestrino (PD) - ITALY - declares under its own responsibility that the above-mentioned products comply with:

- Council Directive no. 2006/42/CE concerning the reconciliation of the legislations of EEC Member Countries with relation to machines and subsequent modifications .
- Directive on electromagnetic compatibility no. 2004/108/CE and subsequent modifications .
- Directive on low voltage no. 2006/95/CE and subsequent modifications .

CONFORMITEITSVERKLARING

De firma DAB PUMPS s.p.a. - Via M. Polo, 14 Mestrino (PD) - Italië, verklaart hierbij onder haar verantwoording dat hierbovengenoemde produkten conform zijn aan

- de Richtlijn van de Raad nr. 2006/42/CE betreffende harmonisatie van de wetgeving in de EEG-lidstaten t.a.v. machines en daaropvolgende wijzigingen.
- De richtlijnen van de elektromagnetische overeenstemming 2004/108/CE en latere veranderingen.
- De richtlijnen voor lage druk 2006/95/CE en latere veranderingen

ЗАЯВЛЕНИЕ О СООТВЕТСТВИИ

Фирма DAB PUMPS s.p.a. – Via Marco Polo, 14 Mestrino (PD) ИТАЛИЯ- под собственную исключительную ответственность заявляет, что вышеуказанные агрегаты соответствуют:

- Директиве Совета n° 2006/42/CE касательно сближения законодательств Государств членов ЕЭС в области агрегатов и последующим поправкам.
- Директиве об Электромагнитной совместимости 2004/108/CE и последующим поправкам.
- Директиве о низком напряжении 2006/95/CE и последующим поправкам.

DÈCLARATION DE CONFORMITÈ

L'entreprise DAB PUMPS s.p.a. - Via M. Polo,14 - Mestrino (PD) - ITALIE - déclare sous sa responsabilité exclusive que les produits susmentionnés sont conformes à:

- la Directive du Conseil n° 2006/42/CE concernant l'harmonisation des législations des Etats membres de la CEE relatives aux machines et ses modifications successives .
- la Directive de la compatibilité électromagnétique 2004/108/CE et ses modifications successives .
- la Directive basse tension 2006/95/CE et ses modifications successives.

KONFORMITÄTSERKLÄRUNG

Die Firma DAB PUMPS s.p.a. - Via M. Polo,14 - Mestrino (PD) - ITALY - erklärt unter ihrer eigenen, ausschließlichen Verantwortung, daß die genannten Produkte den folgenden Verordnungen entsprechen:

- Ratsverordnung Nr. 2006/42/CE über die Angleichung der Gesetzgebung der CEE-Staaten über Maschinen und folgende Abänderungen
- Verordnung über die elektromagnetische Kompatibilität 2004/108/CE und folgende Abänderungen.
- Verordnung über Schwachstrom 2006/95/CE und folgende Abänderungen.

DECLARACION DE CONFORMIDAD

La Empresa DAB PUMPS s.p.a. - Via M. Polo,14 - Mestrino (PD) - ITALY - bajo su propia y exclusiva responsabilidad declara que los productos anteriormente mencionados respetan:

- Las Directrices del Consejo n° 2006/42/CE referentes a la homogeneización de las legislaciones de los Estados miembros de la CEE relativas a las máquinas y sucesivas modificaciones
- Directriz de la Compatibilidad electromagnética 2004/108/CE y sucesivas modificaciones
- Directriz Baja Tensión 2006/95/CE y sucesivas modificaciones

FÖRSÄKRAN OM ÖVERENSSTÄMMELSE

Bolaget DAB PUMPS s.p.a. - Via M. Polo,14 - Mestrino (PD) - ITALIEN - intygar på eget ansvar att ovannämnda produkter är i enlighet med:

- Rådets direktiv nr. 2006/42/CE och efterföljande ändringar som innehåller en jämkning av EU-ländernas lagstiftning beträffande maskiner.
- EMC-direktivet nr. 2004/108/CE och efterföljande ändringar.
- Lågspänningsdirektiv nr. 2006/95/CE och efterföljande ändringar.

شهادة مطابقة

الشركة DAB PUMPS S.p.A.

VIA M. POLO 14

MESTRINO (PD)

ITALY

تحت مسؤوليتها الخاصة تشهد بأن المنتجات المذكورة أعلاه صنعت مطابقة إلى:

- قانون مجلس الوزراء المؤرخ رقم 2006/42/CE وما لحقه من تغييرات.

- القانون الخاص بالمطابقة الإلكترومغناطيسية 2004/108/CE وما لحقه من تغييرات.

- القانون الخاص بالجهد المنخفض 2006/95/CE وما لحقه من تغييرات.

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2 JETINOX …
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1 PULSAR DRY …
2 PULSAR DRY ...

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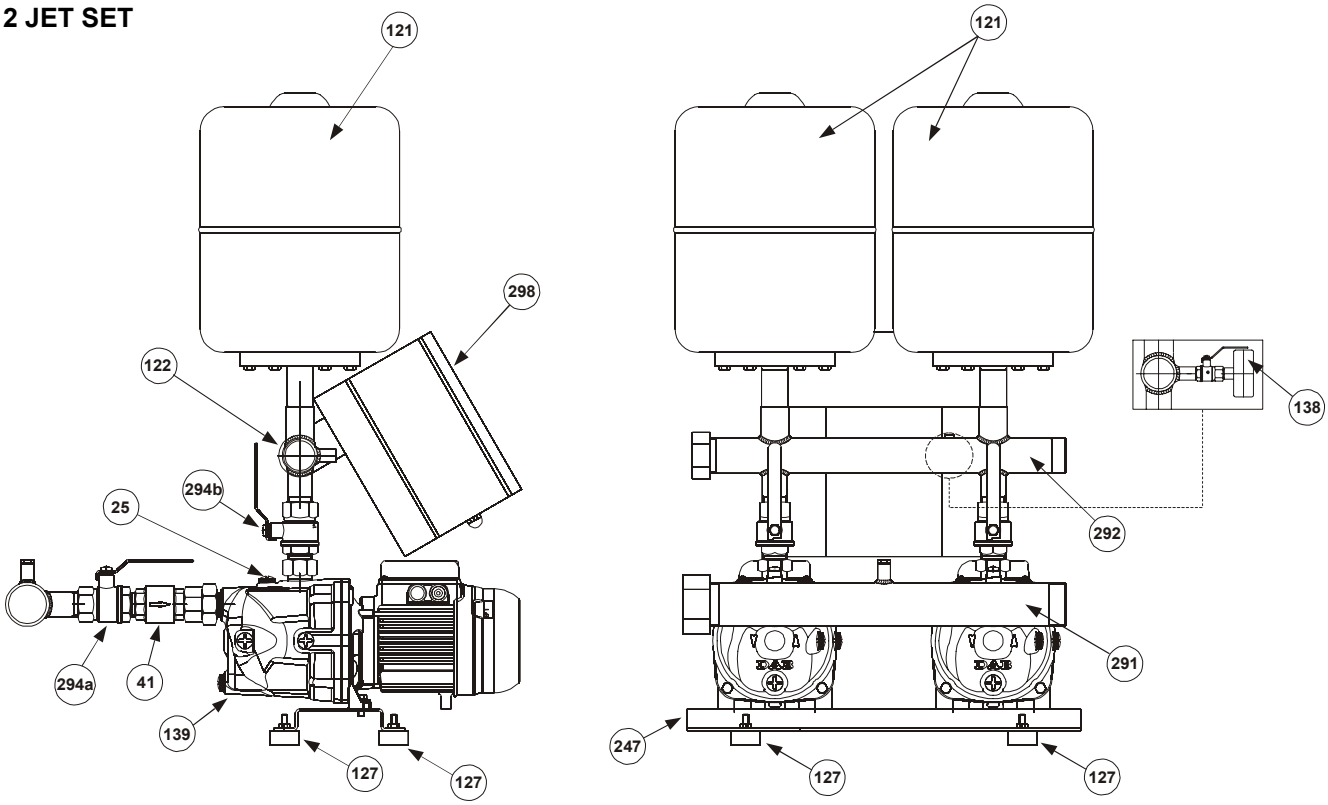
1-2-3 KVCX …
1-2-3 KVC ...

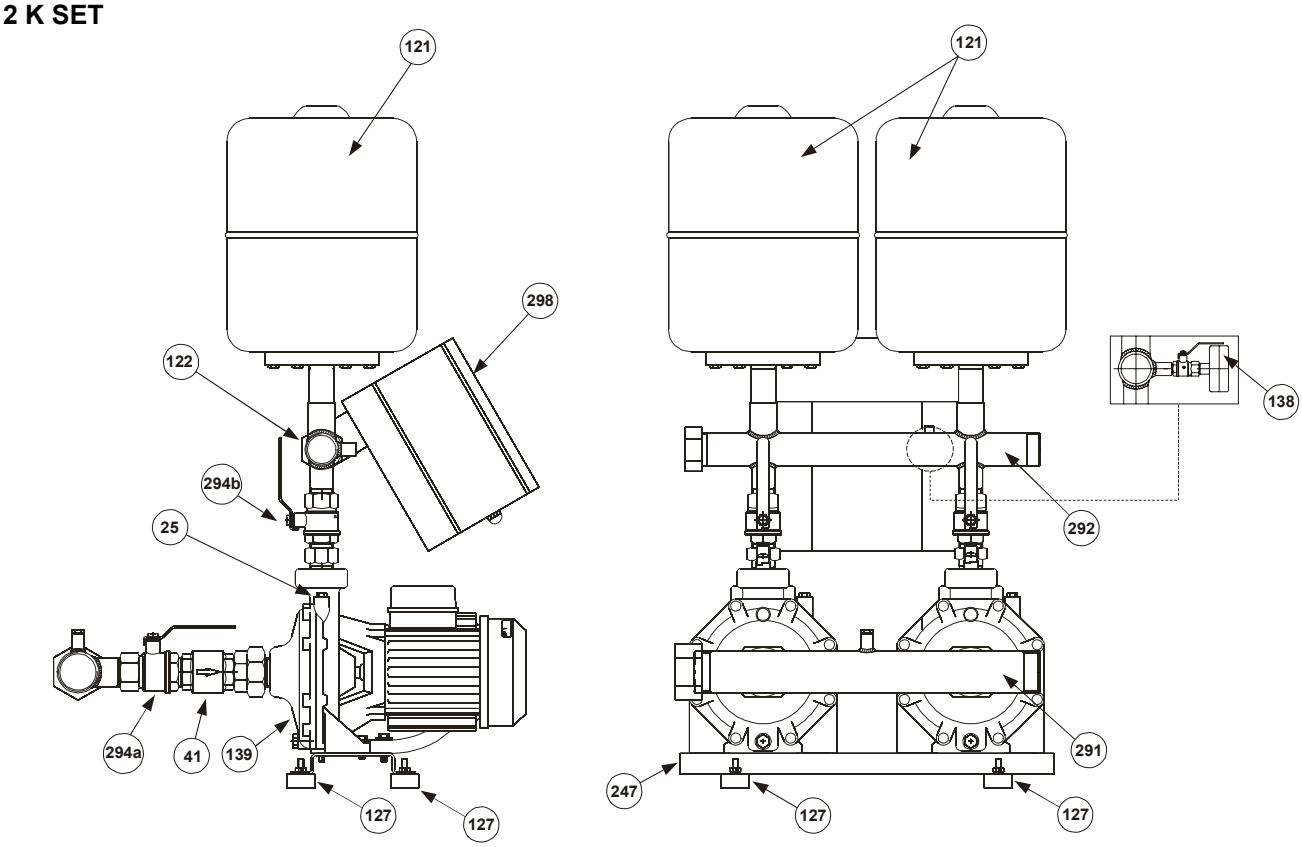
Mestrino (PD), 08/07/2009

Francesco Sinico
Technical Director

2 JET SET



2 K SET



25 - Electropump filling cap

41 - Non return valve

121 – Expansion vessel

122 – Pressure transmitter

127 - Vibration-damping foot

138 - Pressure gauge

139 - Electropump

247 - Base

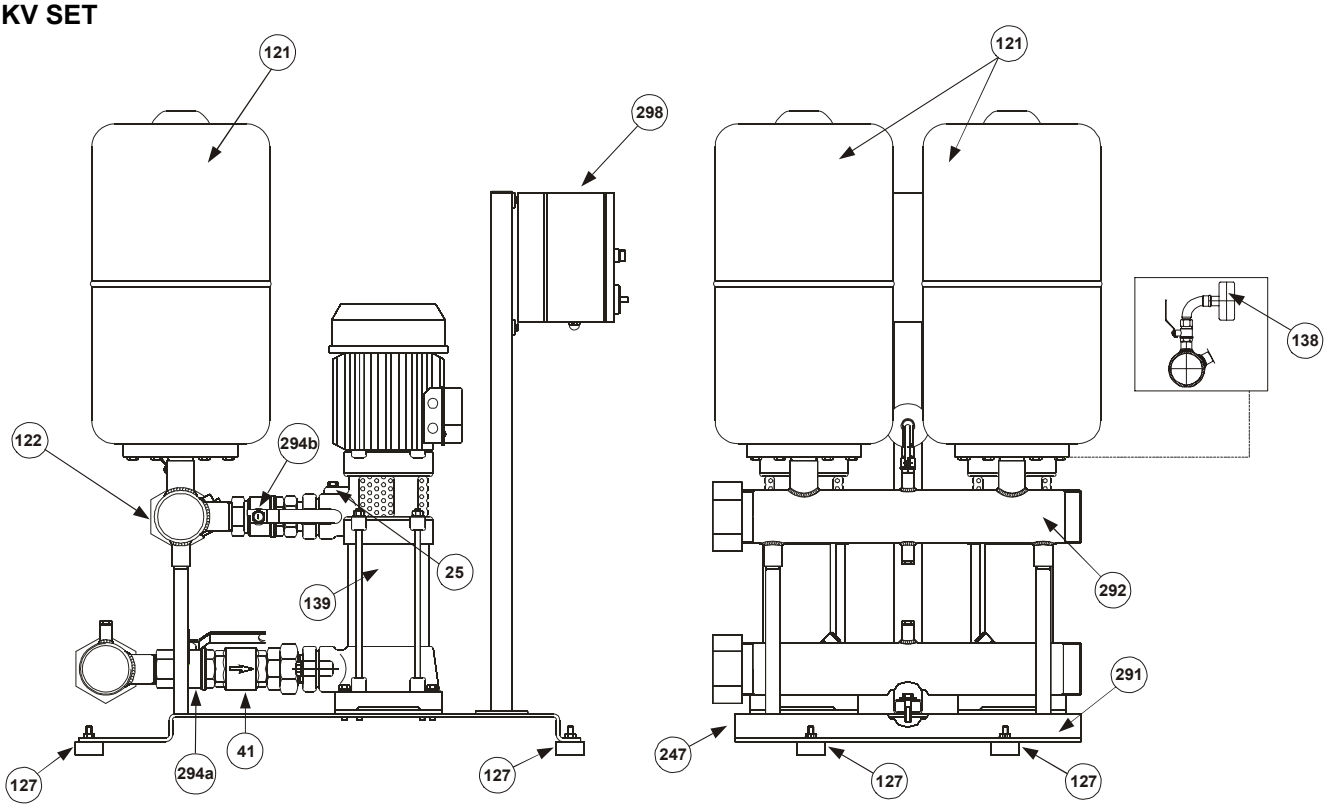
291 - Suction manifold

292 - Delivery manifold

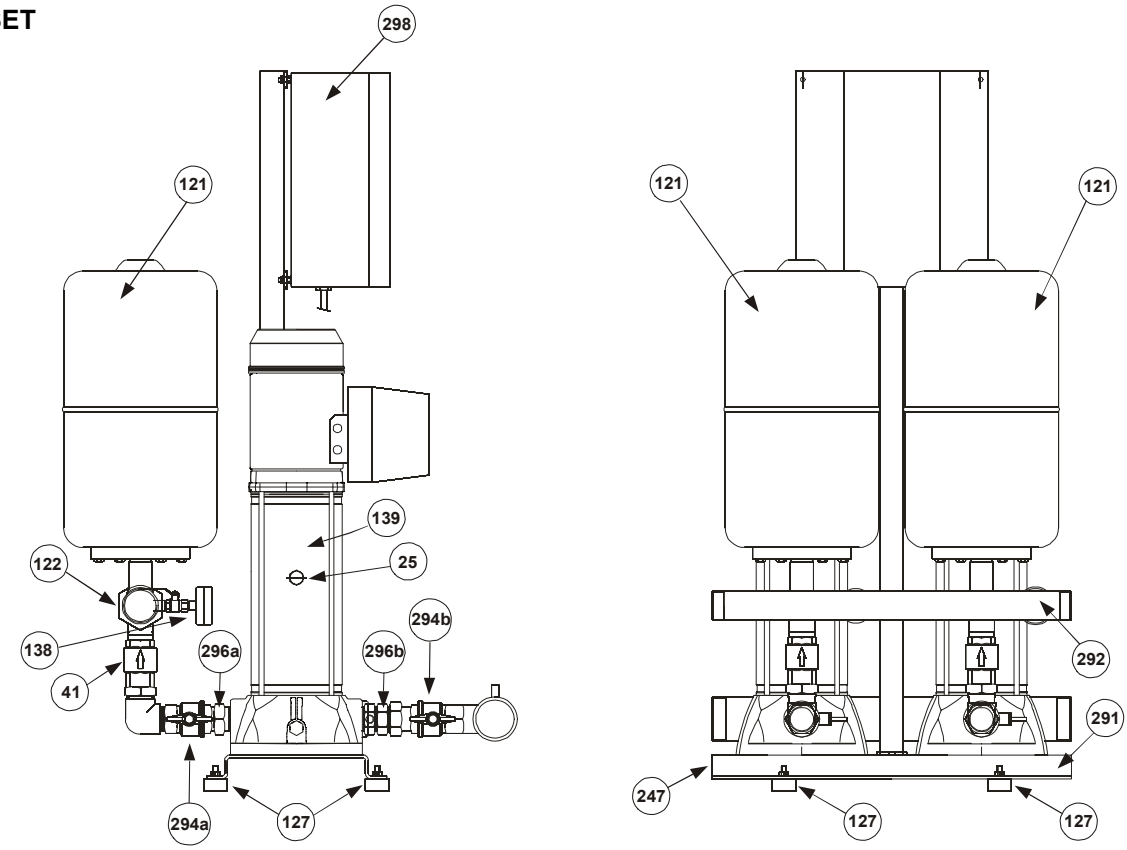
294a/294b - Interception valve

298 - Electric panel

2 KV SET



2 KVC SET



25 – Electropump filling cap

41 - Non return valve

121 – Expansion vessel

122 – Pressure transmitter

127 - Vibration-damping foot

138 - Pressure gauge

139 - Electropump

247 - Base

291 - Suction manifold

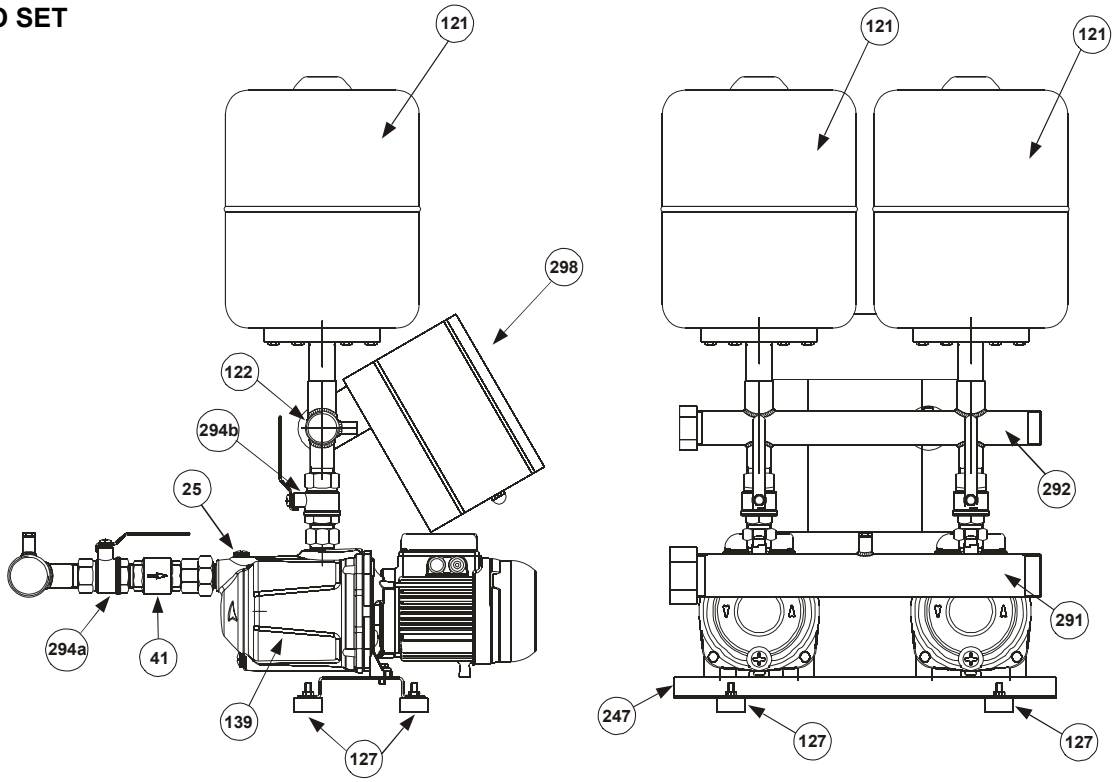
292 - Delivery manifold

294a/294b - Interception valve

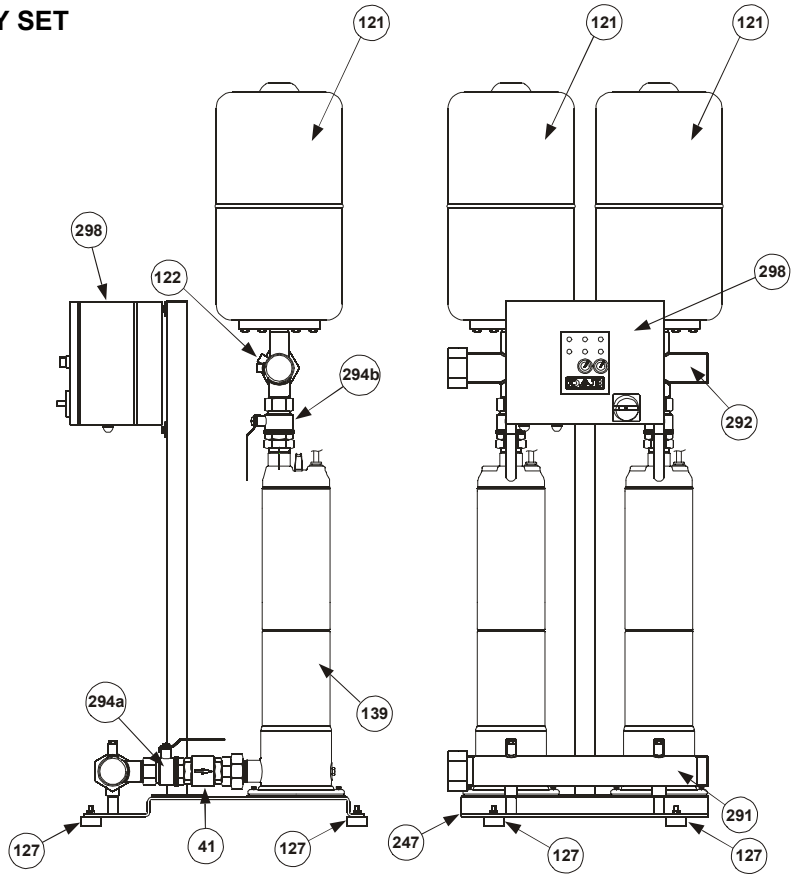
296a/296b - 3-piece coupling

298 - Electric panel

2 EURO SET



2 PULSAR DRY SET



25 - Electropump filling cap

41 - Non return valve

121 – Expansion vessel

122 – Pressure transmitter

127 - Vibration-damping foot

139 - Electropump

247 - Base

291 - Suction manifold

292 - Delivery manifold

294a/294b - Interception valve

298 - Electric panel

1. GENERAL

Read this documentation carefully before installation. Installation and functioning must comply with the safety regulations in force in the country in which the product is installed. The entire operation must be carried out in a workmanlike manner and exclusively by skilled technical personnel (paragraph 2.1.) in possession of the qualifications requested by the regulations in force. Failure to comply with the safety regulations not only causes risk to personal safety and damage to the equipment, but invalidates every right to assistance under guarantee.
Keep this manual with care for further consultation even after the first installation.

2. WARNINGS

2.1. Skilled technical personnel

It is indispensable that installation be carried out by competent, skilled personnel in possession of the technical qualifications required by the specific legislation in force.
The term **skilled personnel** means persons whose training, experience and instruction, as well as their knowledge of the respective standards and requirements for accident prevention and working conditions, have been approved by the person in charge of plant safety, authorizing them to perform all the necessary activities, during which they are able to recognize and avoid all dangers. (Definition for technical personnel IEC 60634).

2.2. Safety

Use is allowed only if the electric system is in possession of safety precautions in accordance with the regulations in force in the country where the product is installed (for Italy, CEI 64/2).

2.3. Responsibility

The Manufacturer does not vouch for correct operation of the set or for any damage that it may cause if it has been tampered with, modified and/or run outside the recommended work range or without the aid of our control and protection panels.

The Manufacturer declines all responsibility for possible errors in this instructions manual, if due to misprints or errors in copying. The company reserves the right to make any modifications to products that it may consider necessary or useful, without affecting the essential characteristics.

3. INSTALLATION

3.1.

The set must be fitted in a well ventilated place, protected from unfavourable weather conditions and with an environment temperature not exceeding 40°C (fig.1).
Position the set in such a way that any maintenance jobs can be carried out without difficulty.

3.2.

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 (fig.2).

It is also advisable to insert vibration-damping couplings on the system manifolds.

3.3. Make the intake section following all the precautions necessary to keep load losses to a minimum and to avoid the formation of air pockets, for example:

a) Position the set as close as possible to the power supply source.
b) Consider a suction pipe diameter never smaller than that of the manifold.
c) Lay the suction pipe horizontally or sloping slightly upwards towards the set. (fig.3).
d) Avoid using elbows or couplings that cause sudden changes in direction. If necessary, use bends with a wide radius.
e)

Avoid the "siphon" effect at intake: it risks unpriming the pumps!

3.4. Ensure that the characteristics of the water supply source are in proportion to those of the set installed.

a) SUCTION FROM A WELL (PUMP ABOVE HEAD): It is advisable to use protection against dry operation to prevent the set from operating in abnormal conditions.
b) SUCTION FROM A TANK (PUMP BELOW HEAD OR ABOVE HEAD): It is advisable to protect the pump against dry operation, for example using float switches.
c) DIRECT CONNECTION TO THE MAINS: If the pressure could fall to values that are too low, it is advisable to fit a minimum pressure switch on intake to protect the set.

Dry operation damages the electropumps.

4. ELECTRICAL CONNECTION

CAUTION! ALWAYS FOLLOW THE SAFETY REGULATIONS!

4.1. 

The electrical installation must be carried out by a qualified, skilled electrician (see point 2.1.) in compliance with the Safety Regulations in force in the country where the product is installed.

4.2. 

Check the power supply voltage and frequency (fig.4).
Values differing from those on the motor plate could cause irremediable damage.

4.3. 

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 respective informative notes, see the enclosed documentation.

5. STARTING

To start the set correctly, perform the procedure below following the sequence indicated:

5.1. 

Perform the following operation without switching on the power to the panel.

Check that the moving parts turn freely. To do this, remove the fan cover and, if necessary, the fan; then turn the shaft with a suitable tool (screw driver, offset adjustable spanner, etc.). (fig. 5)
If it is blocked, tap lightly with a hammer on the end of the tool, then try to turn the shaft again.

5.2. 

Perform the following operation without switching on the power to the panel.

Prime the set as follows:

a) Slowly pour in clean water through a sleeve of the suction manifold, keeping open the filling cap (ref.25) of one of the electropumps to allow the air inside to get out, until the manifold is filled (fig.6/I).
b) Slowly pour in clean water through a sleeve of the delivery manifold (for example, the expansion vessel connecting sleeve.), until water comes out of the pump filling hole from which the tap has previously been removed. (fig.6/II)

5.3. 

Perform the following operation without switching on the power to the panel.

Fit the expansion vessels on the special sleeves of the delivery manifold.
It is possible to increase the storage capacity by connecting other tanks to "T" couplings, fitted beforehand between the sleeves and the expansion vessels.

5.4. **Sets with one or three three-phase pumps:**
Open the electric panel and check that the overload protection switches of the electropumps have been calibrated according to the following value:
rated current In (shown on the pump data plate) increased by 10%.

Sets with one or three single-phase pumps:
Single-phase electropumps are already self-protected. The electric panel contains overload protection switches that do not need regulating.

Sets with two single-phase or three-phase pumps:
See the enclosed instructions booklet of the E-BOX electric panel (Imax regulating trimmer)
For other data on the electric connection, supply and starting of the set, always see the enclosed electric panel instructions booklet.

5.5. 

Check that the pumps are turning in the correct direction (Only for three-phase motors).

Start each pump manually for a few moments using the AUT-0-MAN selector (or with the MAN button in the case of sets of two pumps) and check that, when viewed from the fan side, the motor is turning in a clockwise direction.
If not, exchange any two leads of the power supply cable on the terminal board.
The electric panels of the sets with two or more pumps manage the change-over of the starting of the respective pumps, so as obtain uniform use.

5.6. CHECKING CALIBRATION OF THE PUMP CONTROL PRESSURE SWITCHES **(only for sets with three pumps*):**
Proceed as follows:

a) Switch off the electric power supply, turning the main switch to "0" and open the panel.
b) Remove the automatic inverter SZ3 and connect the connectors XC1 and XC2 together.
c) Close the electric panel and switch the power on again, turning the main switch to "1".
d) Turn the AUT-0-MAN selector of pump 1 to AUT and the selectors of pumps 2 and 3 to 0.
e) Partly turn on the flow at delivery (*) and wait for pressure switch No. 1 to give the command to start pump No. 1. On the pressure gauge, check that that the pump starting pressure is as required..
f) Turn off the flow, checking that the pump stops at the required pressure (**).
g) Turn the AUT-0-MAN selector of pump 2 to AUT and the selectors of pumps 1 and 3 to 0.
h) Partly turn on the flow at delivery (*) and wait for pressure switch No. 2 to give the command to start pump No. 2. On the pressure gauge, check that that the pump starting pressure is as required.
i) Turn off the flow, checking that the pump stops at the required pressure (**).
l) Turn the AUT-0-MAN selector of pump 3 to AUT and the selectors of pumps 1 and 2 to 0.
m) Partly turn on the flow at delivery (*) and wait for pressure switch No. 3 to give the command to start pump No. 3. On the pressure gauge, check that that the pump starting pressure is as required.
n) Turn off the flow, checking that the pump stops at the required pressure (**).

o) 

- **Switch off the electric power supply, turning the main switch to "0", open the electric panel, disconnect the connectors XC1 and XC2 and reconnect them to the automatic inverter SZ3.**

- **Close the electric panel and switch the power on again, turning the main switch to 1 (ON).**

p) 

Check that all the AUT-0-MAN selectors of the pumps have been turned back to "AUT".

q) 

Completely reopen all the interception valves that may have been choked.

CHECKING CALIBRATION OF PUMP CONTROL PRESSURE SWITCHES (only for sets with one pump*)
Partly open the supply on delivery and wait for the pressure switch to start the pump. Check the pressure gauge to ensure that the starting pressure is as requested.

CHECKING PRESSURE CALIBRATION FOR SETS WITH TWO PUMPS
Sets with two pumps work by means of a pressure transmitter connected to the E-BOX panel.
To calibrate the pump starting and stopping pressures, see the enclosed instructions booklet for the E-BOX electric panel. To change from 0 to AUT, press the buttons P1 and P2.

(*) When turned on only partly the pressure in the system will decrease slowly and gradually, allowing a more precise reading of the pressure gauge at the time of closing the pressure switch.
(**) If the operating electropump puts the system back under pressure too quickly, partly turn off the interception valve on the delivery of the pump. In this way the pressure will increase slowly and gradually, allowing a more precise reading of the pressure gauge at the time of opening the pressure switch.

6. INSTRUCTIONS FOR RUNNING THE SET

6.1. 
Each pump in the set should not be started more than 20 times in one hour to avoid subjecting the motor to excessive thermal stress.

6.2. 
If the set should remain inactive for long periods, periodically perform manual starting of the set to check its state of efficiency.

6.3. 
When the set remains inactive for long periods at a temperature below 0°C, it must be drained completely. (fig.8)

6.4. 
Each year, with the system empty, check the preloading of the expansion vessels, ensuring that it remains 0.2-0.3 bar below the lowest of the starting pressures of the electropumps The frequency of this check must be increased, the greater the frequency of starting and the maximum working pressure of the set.

7. REGULATING THE SET

7.1. CALIBRATION OF THE PRESSURE SWITCHES (only for sets with one or three pumps)
If you wish to obtain a calibration of the pressure switches different that from that performed in the factory, during testing of the booster set, follow the instructions below, considering:

- the type of pressure switch installed in the booster set;
- the pressure limits indicated n the data plates of each pump;
- the preloading of the expansions vessels.

Telemecanique pressure switch type XMP (fig.9)

Slacken the black screw and remove the cover.
When the metal screw “A” in the centre of the pressure switch is turned clockwise, the pump starting and stopping pressures are increased at the same time.
When it is turned counter-clockwise they are decreased.
When the black screw “B” at the end of the pressure switch is turned 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 it is turned counter-clockwise, the differential is decreased.
Replace the cover and tighten the black screw.

Klockner Moeller pressure switch type MCS (fig.10)
Slacken the 4 screws and remove the transparent cover.
Slacken and remove the locking screw "B" positioned in one of the 12 holes in the regulating knob "A". (fig. 10/I)
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.
When the regulating knob "A" is pressed to the bottom and turned counter-clockwise, checking that the screw "C" does not turn, the differential between the starting and the stopping pressure of the pump is increased (the starting pressure decreases while the stopping pressure remains fixed). (fig. 10/II)
When the regulating knob "A" is pressed and turned clockwise, the differential is decreased.
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.
Replace the transparent cover and tighten the 4 screws.

Once the pressure switches have been recalibrated, to check the new starting and stopping pressures of the pumps in the booster set, perform the procedure " Checking calibration of the pressure switches" described on page 24.

In sets with 3 pumps, it is advisable to set pressure switch No.1 with starting and stopping pressures higher than pressure switch No.2, and pressure switch No.2 with starting and stopping pressures higher than pressure switch No.3.

Sets with two pumps work by means of a pressure transmitter connected to the E-BOX panel.
To calibrate the pump starting and stopping pressures, see the enclosed instructions booklet for the E-BOX electric panel.

8. MAINTENANCE

8.1. **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.

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

FAULTS	POSSIBLE CAUSES	REMEDIES
THE SET DOES NOT PRIME.	1. Suction pipe with insufficient diameter; excessive us of couplings which cause sudden variations in direction of the suction pipe; siphon effect. 2. Suction pipe clogged. 3. Air infiltrations in the suction pipe of the set. 4. Foot valve clogged or blocked. 5. Water recycling between the pumps in the set. 6. Interception valves on suction of each pump partly closed.	1. Check that the suction pipe is correctly made, as indicated in the paragraph on "Installation". 2. Clean it or change it. 3. Testing under pressure, check the perfect seal in the couplings, the joins and the pipes. 4. Clean it or change it. 5. Check correct operation of the non return valves on suction of each pipe. 6. Open them completely.
THE SET DOES NOT START.	1. Main motive power switch and/or main auxiliary circuit switch off (in position "0"). 2. No voltage at the auxiliaries. 3. Automatic inverter SZ3 faulty (only for sets with three pumps). 4. Electric power supply is not reaching the pump remote control switches. 5. Electric circuit interrupted.	1. Switch them on, turning them to position "1" and check that the green light comes on indicating that the panel is live. 2. Check the transformer and the fuses. 3. Connect together the input and output connectors XC1 and XC2 of the inverting device and immediately order a new automatic inverter. 4. Check correct operation of the following controls placed in series: remote control; minimum pressure switch; minimum level float. 5. Use a tester to find the point of interruption and repair it.
THE SET DOES NOT STOP.	1. Important water leaks in the system. 2. Pressure switches or pressure transmitter faulty or clogged.	1. Check the joins, couplings and pipes. 2. Clean them or change them.

FAULTS	POSSIBLE CAUSES	REMEDIES
DURING OPERATION OF THE SET THE PUMPS START AND STOP TOO FREQUENTLY.	1. Expansion vessels damaged.	1. Empty them and check the preloading (see paragraph “Instructions for running the set”). Replace the diaphragm if it has a hole.
	2. Starting and stopping pressure calibrations too close.	2. Change the settings (see paragraph “Regulating the set”).
THE SET DOES NOT SUPPLY THE REQUIRED CHARACTERISTICS.	1. The set chosen is undersized for the characteristics of the system.	1. Change it, consulting the Technical Catalogue.
	2. Excessive water consumption for the flow rate of the well (set above head) or of the first collection tank (set below head or above head).	2. Increase the flow rate that can be supplied by the well or by the first collection tank.
	3. Motors turning in inverse direction.	3. Change it, performing the operation described in point 5.5. of the paragraph “Starting up”.
	4. One or more pumps clogged.	4. Dismantle them and clean the pump body and the impellers, ensuring that they are in good condition.
	5. Pipes clogged.	5. Clean them or change them.
	6. Foot valve clogged or blocked (set above head).	6. Clean it or change it.
	7. Water recycling between the pumps in the set.	7. Check correct operation of the non return valves at suction of each pump.
	8. Interception valves at suction and delivery of each pump partly closed.	8. Open them completely.
	9. Air infiltrations in the suction pipe of the set.	9. Testing under pressure, check the perfect seal in the couplings, the joins and the pipes.
ONE OR MORE PUMPS IN THE SET, WHEN STOPPED, TURN IN THE OPPOSITE DIRECTION.	1. The respective non return or foot valves do not close well or are blocked.	1. Check its seal and correct operation.
	2. The respective suction pipe is not hermetically sealed.	2. Testing under pressure, check the seal.
THE MOTOR OF A PUMP IN THE SET IS VIBRATING.	1. Contacts o the respective remote control switch worn or faulty.	1. Change the remote control switch.
	2. Pump blocked.	2. Free it.
	3. Bearings worn.	3. Change it.
	4. Phase missing (only in three-phase).	4. Check the motor power supply.
WATER HAMMER IN THE SYSTEM.	1. Water hammer during operation of the set.	1. Check the non return valve of the hot water distribution mains.
	2. Water hammer when turning off the flow.	2. Install more expansion vessels or water hammer dampers in the pipe concerned.
A PUMP IN THE SET STOPS AND DOES NOT START AGAIN.	1. Tripping of the internal motor protection (only for single-phase pumps).	1. Wait for the motor to cool down.
	Tripping of the motor protection (only for single-phase and three-phase pumps).	See the instructions booklet for the E-BOX Electric Panel.
	2. Excessive energy consumption.	2. The pump turns under excessive force, due to dirt, lack of a phase, dry operation, worn bearings etc… Eliminate the cause.
	3. No current is reaching the coil of the respective remote control switch.	3. Use an tester to check the electric circuit as far as the coil itself and repair any interruption found.
	4. Remote control switch coil interrupted.	4. Change it.
	5. Pressure switches or pressure transmitter faulty or clogged.	5. Clean them or change them.