

	<b>CONTENTS</b>	<b>pag.</b>
1.	<b>GENERAL</b>	15
2.	<b>APPLICATIONS</b>	15
3.	<b>PUMPED FLUIDS</b>	15
4.	<b>TECHNICAL DATA AND RANGE OF USE</b>	15
5.	<b>MANAGEMENT</b>	16
5.1.	<b>Storage</b>	16
5.2.	<b>Dimensions and weights</b>	16
6.	<b>WARNINGS</b>	16
6.1.	<b>Skilled personnel</b>	16
6.2.	<b>Safety</b>	16
6.3.	<b>Responsibility</b>	17
6.4.	<b>OPERATION</b>	17
6.5.	<b>CAUTION</b>	17
7.	<b>INSTALLATION</b>	17
8.	<b>ELECTRICAL CONNECTION</b>	18
9.	<b>STARTING UP</b>	18
10.	<b>PRECAUTIONS</b>	19
11.	<b>MAINTENANCE AND CLEANING</b>	19
12.	<b>MODIFICATIONS AND SPARE PARTS</b>	19
13.	<b>TROUBLESHOOTING</b>	19
14.	<b>PART DRAWINGS</b>	47

1. **GENERAL**



**Read this documentation carefully before installation.** Installation and maintenance must be carried out by skilled personnel in conformity 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. 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.

2. **APPLICATIONS**

Automatic water pumping units, complementary to traditional systems, particularly suitable for domestic use, small systems for civil agricultural and industrial purposes and for hobby applications where pressure stability and small bulk are required.

3. **PUMPED LIQUID**



**The machine has been designed and built for pumping water, free from explosive substances and solid particles or fibres, with a density of 1000 kg/m<sup>3</sup> and a kinematic viscosity of 1 mm<sup>2</sup>/s, and chemically non-aggressive liquids.**

4. **TECHNICAL DATA AND LIMITS ON USE**

SUPPLY VOLTAGE: 220 - 240 V 50Hz | (see electrical data plate)  
230V 60Hz

ABSORBED POWER: see electric data plate

LINE FUSES AM CLASS:

Modello	Fusibili di linea (Ampere)
	220-240V 50Hz 230V 60Hz
AUTO JET 81;	4
AUTO JETINOX 90; AUTO K INOX 30/30;	6
AUTO JET 100; AUTO KH 30/90; AUTO K 30/70; AUTO K 35/40;	6
AUTO JETINOX 110;	8
AUTO 25/30 - 30/30; AUTO-INOX 25/30 - 30/30;	4
AUTO 40/30 - 30/50 - 40/50 - 25/80 - 30/80; AUTO-INOX 40/30 - 30/50 - 40/50 - 25/80 - 30/80;	6
AUTO 50/50 - 40/80; AUTO-INOX 50/50 - 40/80;	8

OPERATING RANGE:	from 0.3 to 8.4 m <sup>3</sup> /h, with head up to 72 m
LIQUID TEMPERATURE RANGE:	from 0°C to +35°C for domestic use (safety standards EN 60335-2-41)
STORAGE TEMPERATURE:	-10°C to +40°C
MAXIMUM WORKING PRESSURE:	6 bar (600 kPa):
MAXIMUM SUCTION PRESSURE:	1.5 bar (150 kPa)
DEGREE OF MOTOR PROTECTION:	IP44
DEGREE OF TERMINAL BOARD PROTECTION:	IP55
THERMAL CLASS:	F
POWER CABLE CLAMP:	PG 11
PROBES CABLE CLAMP:	PG 9
RELATIVE HUMIDITY OF THE AIR:	MAX. 95%
NOISE LEVEL:	Falls within the limits envisaged by EC Directive 89/392/EEC and subsequent modifications.

Built-in thermal overload protection and permanently in-circuit capacitor.

### Motor construction in conformity with standards CEI 2-3 pamphlet 1110

Model	AUTO JET 81-100	AUTO K-INOX 30/30	AUTO K 30/70 AUTO K 35/40	AUTO KH 30/90
	AUTO JETINOX 90-110		AUTO	AUTO-INOX
Characteristics	Self - priming	Centrifugal	Centrifugal	Self - priming Centrifugal
Applications	with water from an artesian well or underground tank	Pressurization for domestic use	Pressurization for domestic use	with water from an artesian well or underground tank
Limitations	suction to a depth of 8 metres	water without dissolved gases	water without dissolved gases	AUTO KH suction to a depth of 4m. AUTO-INOX suction to a depth of 8m
Installation conditions	with foot valve	below the head	below the head	with foot valve
Particular characteristics	suitable for pumping water containing air	stainless steel, suitable for pumping water containing air	quiet running, stainless steel	quiet running and suitable for pumping water containing air
Advantages in comparison with traditional systems	Small bulk - greater hygiene - pressure stability - blocks the pump in case of water lack - ensures longer pump life guaranteeing an optimum number of starts per hour.			

## 5. MANAGEMENT

### 5.1 Storage

All the pumps must be stored indoors, in a dry, vibration-free and dust-free environment, possibly with constant air humidity.

They are supplied in their original packaging and must remain there until the time of installation. If this is not possible, the intake and delivery aperture must be accurately closed.

### 5.2 Dimensions and weights

The adhesive label on the package indicates the total weight of the electropump.

## 6. WARNINGS

### 6.1 Skilled technical personnel



**It is advisable that installation be carried out by 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 364).

### 6.2 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).

### 6.3 Responsibility



**The Manufacturer does not vouch for correct operation of the pumps if they are tampered with or modified, run outside the recommended work range or in contrast with the other instructions given in this manual.**

**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.**

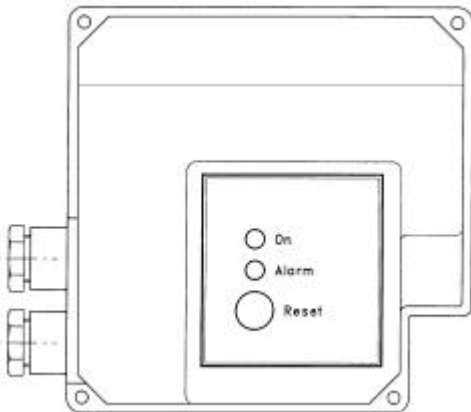
### 6.4 OPERATION

The AUTO automatic control is a device built into the electropump; it controls, manages and commands it automatically, regulates its operation and limits the number of starts; at the same time it guarantees maximum pressure stability inside the hydraulic circuit in which it is fitted.

The AUTO is substantially a device with a dual control system in which an electronic circuit collects the data concerning pressure and water flow in the system; it processes the data and then commands the operation of the electropump so that it works in optimum yield conditions.

The AUTO is the result of a series of studies carried out with the aim of optimizing the efficiency of the system, maintaining the structural characteristics and sturdiness of the existing devices. It is provided already fitted on the electropump that uses it; it requires no adjustment or maintenance of any kind and it considerably reduces bulk.

When a user that draws a minimum amount of water is turned on, the pump starts when the pressure in the system has fallen to the value set by the manufacturer. The pump remains active while the users are turned on so as to avoid extremes of pressure. If the water consumption is lower than 3-4 l/min (e.g. small leaks, dripping), the pump starts and stops alternately. In any case, when the user is turned off, the pump remains operating for 10 more seconds after having pressurized the system so as to limit the number of starts per hour.



In this way water hammer is eliminated because the pump stops only with zero flow, contrary to what happens in traditional systems. If there is no water at suction, the AUTO device blocks the pump 10 seconds after the start of the phenomenon, preventing dry operation. In this case the ALARM led lights up. To reset operation after removing the fault, it is sufficient to press the RESET button on the terminal board cover for a few seconds until the red ALARM led goes out (before carrying out this operation it is advisable to repeat the START procedure). The lighting of the ALARM led may also be caused by the intervention of the motor protector. To reset operation, proceed as described above.

If there is an interruption in the supply voltage, reset will be automatic when power returns.

### 6.5 WARNINGS

**6.5.1** Before installing the pump you must check that the rotating parts turn freely. For this purpose remove the fan cover (13) from its seat in the motor end cover (11). Insert a screwdriver in the notch on the motor shaft from the ventilation side. If there is a blockage, turn the screwdriver, tapping it gently with a hammer.

**6.5.2** The Manufacturer does not vouch for correct operation of the pump if it is tampered with or modified

**6.5.3** The AUTO device is calibrated during construction by the manufacturer, so no further regulation is required.

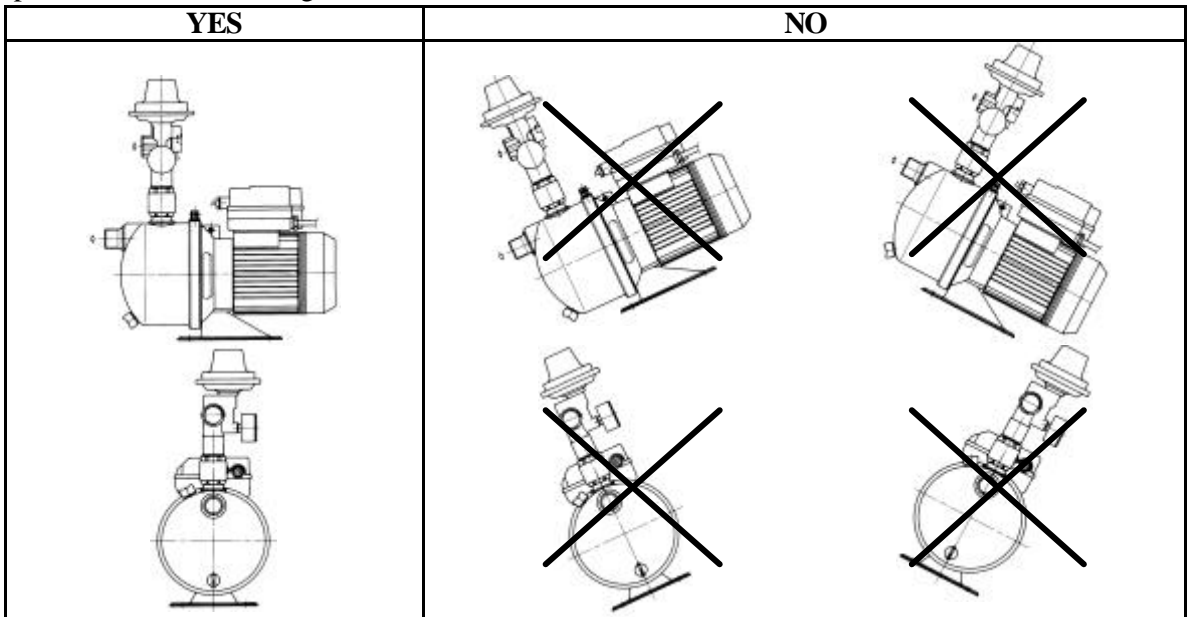
**6.5.4** It is indispensable to use the check valve supplied as a standard feature to guarantee automatic functioning of the system. It must be kept in the position in which it was fitted by the manufacturer.

### 7. INSTALLATION

**7.1** The electropump must be fitted in a well ventilated place, protected from unfavourable weather conditions and with an environment temperature not exceeding 40°C

**7.2** A firm anchoring of the pump to the bearing surface favours the absorption of any vibrations caused by pump operation.

- 7.3 Ensure that the metal pipes do not weigh down on the pump apertures, transmitting undue strain, so as to avoid causing deformations or breakages. If possible, anchor the pipes separately.
- 7.4 The pump must be installed only in horizontal position with the flow switch unit (178) in vertical position, See the drawings below:



The internal diameter of the pipes must never be smaller than that of the apertures of the pump. **It is indispensable to fit a foot valve (complete with filter) at intake and to fill the intake pipe and the pump body completely.**

The intake pipe must be as short as possible. For suction depths of over four metres or with long horizontal stretches it is advisable to use an intake pipe with a diameter larger than that of the intake aperture of the pump. To prevent the formation of air pockets, the intake pipe must slope slightly upwards towards the pump

- 7.5 If the intake pipe is made of rubber or flexible material, always check that it is of the reinforced type to avoid throttling due to suction.
- 7.6 In conformity with standard EN 60335-2-41, AUTO JET 100M, AUTO JETINOX 110M, AUTO KH 30/90M, AUTO K 30/70M, AUTO K 35/40M, AUTO 40/50M – 50/50M – 30/80M – 40/80M, AUTO-INOX 40/50M – 50/50M – 30/80M – 40/80M electropompums type for outdoor use, fit supply cable type H07 RN-F with some cable terminal. Modification must be carried out only by skilled technical personnel

**8. ELECTRIC CONNECTION**

**CAUTION! ALWAYS FOLLOW THE SAFETY REGULATIONS.**

- 8.1 Do not the start the pump unless it has been completely filled with liquid.
- 8.2 **Electric installation must be carried out by skilled and authorized electrician who accepts all the responsibility for the job.**
- 8.3 Ensure that the mains voltage is the same as the value shown on the motor plate.

8.4



**THE SYSTEM MUST BE CORRECTLY AND SAFELY EARTHED.**

- 8.5 In fixed installations, International Safety Standards require the use of isolating switches with a fuse-carrier base.

- 8.6 The motor is provided with built-in thermal overload protection.

**9. STARTING UP**

9.1



**Before starting, completely fill the pump body and the intake pipe with liquid through the filling cap (25) on the pump body. Once this operation is complete, close the filling cap (25).**

**THE PERFECT PERFORMANCE OF THE OPERATION DESCRIBED ABOVE IS INDISPENSABLE FOR PUMP OPERATION.**

- 9.2 Switch on the power and turn on a user so as to allow all the air present in the system to escape. If the pump does not start to deliver within 10 seconds the system goes into alarm status which is signalled by the red **ALARM** led. It is then indispensable to hold down the **RESET** button until

the red **ALARM** led goes off. The time taken to complete this operation depends on the suction depth and **it may even take some minutes if the intake pipe has not been completely filled**. Turn on a user to ensure that all the air has been ejected from the system.

**9.3** The pump remains operating until the system is under pressure and then for a further 10 seconds. The "ON" led remains lit even during the stage when the pump is stopped.

**10. PRECAUTIONS**

**10.1** When the pump remains inactive for a long time at temperatures of less than 0°C, the pump body must be completely emptied through the drain cap (26), to prevent possible cracking of the hydraulic components. The system must be drained through the cap (26A) on the flow switch unit (178), after turning on a user to discharge the residual pressure. This operation is advisable even in the event of prolonged inactivity at normal temperature.

**10.2** **When starting after long periods of inactivity, the starting-up operations listed above must be repeated.**

**11. MAINTENANCE AND CLEANING**



In normal operation, the pump does not require any specific maintenance. However, it may be necessary to clean the hydraulic parts when a fall in yield is observed. **The electropump must not be dismantled unless by skilled personnel in possession of the qualifications required by the regulations in force.** In any case, all repairs and maintenance jobs must be carried out **only after having disconnected the pump from the power mains.**

**12. MODIFICATIONS AND SPARE PARTS**



Any modification not authorized beforehand relieves the manufacturer of all responsibility. All the spare parts used in repairs must be original ones and the accessories must be approved by the manufacturer so as to be able to guarantee maximum safety of the machines and systems in which they may be fitted..



**In the event of damage to the power cable of this appliance, the repair must be carried out by skilled personnel, in order to prevent all risks.**

**ATTENTION:** depending on the installation and if the pumps have no cable, fit supply cables type H05 RN-F for indoor use and type H07 RN-F for outdoor use, complete with plug (standards 61-69). For power cables without a plug, provide a device for cutting off the mains (e.g. magnetothermal device) with separating contacts of at least 3 mm for each pole.

**13. TROUBLESHOOTING**

FAULT	CHECK (possible causes)	REMEDY
1. The motor does not start and makes no noise	A. Check the electric connections. B. Check that the motor is live. C. Check the protection fuses.	C. If they are burnt-out, change them N.B.: .If the fault is repeated immediately this means that the motor is short-circuiting.
2. The motor does not start but makes noise: the ALARM led is lit.	A. Ensure that the mains voltage corresponds to the voltage on the data plate. B. Check that the connections have been made correctly. C. Look for possible obstructions in the pump or motor. D. Check the condition of the capacitor and/or its connections. E. The motor is not being fed by the card.	B. Correct any errors. C. Remove any obstructions. D. Connect the capacitor or change it. E. Contact the supplier.
3. The pump vibrates and runs noisily.	A. Check that the pump and the pipes are well anchored. B. The pump is cavitating, that is it demands a higher amount of water than it manages to pump, or it is working at values higher than those on its identification plate. C. Check the state of wear of the bearings.	A. Fix any loose parts carefully B. Reduce the suction height or check for load losses. Limiting the delivery capacity may help. C. Change the bearings if they are worn.

FAULT	CHECK (possible causes)	REMEDY
4. The motor turns over with difficulty.	A. The pump has not been correctly primed. B. Check for possible rubbing between moving and fixed parts.	B. Eliminate the cause of the rubbing.
5. The pump does not deliver or delivery is insufficient.	A. The pump has not been correctly primed. B. The diameter of the suction hose is insufficient. C. Foot valve blocked. D. The impeller is worn or blocked. In the self-priming version, part of the venturi-nozzle device may also be blocked.	A. Fill the pump and the suction hose with water. Start the pump. B. Replace the suction hose with one with a larger diameter. C. Clean the foot valve. D. Remove the obstructions or replace the worn parts.
6. The pump does not prime or continuously becomes unprimed and the "ALARM" led lights up.	A. The suction hose or the foot valve is taking in air. B. The negative slope of the suction hose favours the formation of air pockets.	A. Eliminate the phenomenon and repeat the starting operation. B. Correct the slope of the suction hose.
7. The pump starts but does not stop when the users are turned off.	A. There may be a leak in the system that keeps the pump running.  B. Looking inside the delivery mouth, after having dismantled the delivery hose, check that the valve of the flow switch moves freely. C. The sensor ref. (169) is damaged.	A. Switch off the electric power and check whether the pressure gauge indicator goes down. If it does, look for the leak and eliminate the problem. B. Remove any obstructions. C. Contact the supplier.
8. After putting the system under pressure the pump goes into alarm status (red ALARM led lit).	A. The sensor ref. (170) is damaged. B. The vessel ref. (121) is damaged.	A. Contact the supplier. B. Contact the supplier. After having opened a cock to discharge pressure from the system, force the vessel in an anti-clockwise direction with your hand to unscrew it from the flow switch unit (178). Retain the O-ring (95). Change the part and then proceed in inverse order to reassemble, paying particular attention to the positioning of the O-ring (95).
9. The pump keeps turning over and starts again immediately once the system is under pressure.	A. The check valves are not working correctly, probably due to foreign bodies inside them. B. The vessel ref. (121) may be damaged.	A. Carefully clean or replace the valves. B. Contact the supplier (see point 8B).
10. With a flow rate of 10-12 l/min, the pump keeps running.	A. The flow sensor ref. (169) is damaged. B. The faston connections of the flow sensor ref. (169) have not been made correctly.	A. Contact the supplier. B. Check the connections.
11. When there is no water the pump does not stop.	A. Looking inside the delivery mouth, after having dismantled the delivery hose, check that the valve of the flow switch moves freely. B. The flow sensor ref. (169) is damaged. C. The connections of the two cards have been inverted on the electronic card.	A. Remove any obstructions. B. Contact the supplier. C. Insert the cable of the flow sensor ref. (169) in the cable clamp "F" and connect it to the terminals of the card marked "Flow switch". Insert the cable of the pressure sensor ref. (170) in the cable clamp "P" and connect it to the terminals of the card marked "Pressure switch".
12. The pump gives electric shocks.	A. Faulty earth connection.	A. Make a correct and safe connection to the earth system.

**If the pump stops because the device detects abnormal operating conditions (lack of water or unpriming) with consequent lighting of the "ALARM" led, once normal operating conditions have been restored it is necessary to hold down the "RESET" button until the red "ALARM" led goes out.**