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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.

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

KP 38/18 - KP 38/18 pred. - KP 60/6 - KP 60/12: Peripheral pump suitable for domestic use, with limited bulk, capable of generating high heads for water supply, small gardening jobs, draining and filling cisterns. Also suitable for small industrial uses.

KPA 40/20: liquid ring pump with star-shaped impeller, with excellent suction capacities even in the presence of air bubbles or when the fluid to be lifted is not continuously available. Used particularly for supplying water to household systems, for increasing pressure or stabilising the water supply (in compliance with local regulations) and for lifting water from wells. Suitable for small irrigation work in gardens and in general for all applications where a self-priming pump is required. It can also satisfy small industrial applications.

JET 200 - JET 300 - JET 151 - JET 251: Self-priming centrifugal jet pumps with excellent suction capacity, even when gas is present in the water. Particularly suitable for water supply uses and for pressurization in the home. Suitable for small farming applications, market gardens, gardening, emergencies in the home and industrial utilities.

DP 81 - DP 82 - DP 100 - DP 102 - DP 151 - DP 251 - AQUADP 82/20 - AQUADP 102/20 - AQUADP 151/40 - AQUADP 251/40 : Self-priming centrifugal pumps for suction at depths of as many as 30 metres with ejector to be fitted in 4" wells or larger. Used for supplying water to farm houses and in small farming applications.

EURO - EUROINOX and derived models: Self-priming multistage centrifugal pump with horizontal action, suitable for domestic or industrial uses, for water supply systems and pressurization. In farming it is ideal for small irrigation work and for washing tools and machinery. Also suitable for water containing gas. Water is recycled only during the priming stage, after which the maximum flow is made available for use with continuous and constant distribution. These qualities allow vast possibilities for use.

K 20/41 - K 30/70 - K 30/100 - K 36/100 - K 12/200 - K 14/400: Single-impeller centrifugal pumps suitable for lifting water for domestic, industrial and agricultural use. Excellent for transfer and mixing operations.

K 35/40 - K 45/50 - K 55/50 - K 35/100 - K 40/100: Centrifugal pumps characterized by the use of two impellers (opposed for models K 35/40 - K 45/50 - K 5/50), with extremely silent operation. Particularly suitable for use in pressurization units for water supply systems and for feeding autoclaves. Also suitable for sprinkling irrigation and many other uses in the most varied fields of application.

3. PUMPED FLUIDS



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/m³ and a kinematic viscosity of 1 mm²/s, and chemically non-aggressive liquids.

4. TECHNICAL DATA AND RANGE OF USE

- Supply voltage: 220 - 240V 50Hz / 110V 50Hz
115V 60Hz / 230V 60Hz / 230 V3 – 400 V3 50/60Hz
115-127 V 60 Hz / 220-230V 60Hz / 220-277/380-480V 60Hz | see electrical data plate
- Absorbed power: see electrical data plate

- **Delivery:** from 0,06 to 37 m³/h
- **Head up – Hmax (m):** pag. 150
- **Pumped liquid:** clean, free from solid bodies or abrasive substances, non-aggressive.
- **Degree of motor protection:** IP44 (For IP55 see plate on package)
- **Degree of terminal board protection:** IP55
- **Protection class:** F
- **Cable clamp:** PG 11 and/or PG 13.5, depending on models
- **Line fuses AM class:**

Model	Line fuses(Amps)			
	110V 50Hz 115V 60Hz 127 V 60 Hz	220-240V 50Hz 230V 60Hz	230 V3 50/60Hz	400 V3 50/60Hz
KP 38/18, KP 38/18 Pred., KP 60/6, DP 81, DP 82, AQUADP 82/20 K 20/41	8	4	4	2
KPA 40/20	8	6	4	2
KP 60/12;	--	6	4	4
EURO 40/30-40/306 / 30/50-30/506 / 25/80-25/806	10	6	4	4
EUROINOX 40/30-40/306 / 30/50-30/506 / 25/80-25/806				
EUROCOM 25/80-25/806 / 30/50-30/506				
EUROCOM SP 30/50-30/506				
EURO 25/30-25/306 / 30/30-30/306	8	4	4	4
EUROINOX 25/30-25/306 / 30/30-30/306				
EUROCOM 25/30-25/306 / 30/30-30/306				
GARDEN-INOX 30/30				
EURO 40/50-40/506 / 30/80-30/806	12	6	6	4
EUROINOX 40/50-40/506 / 30/80-30/806				
EUROCOM 40/50-40/506 / 30/80-30/806				
EUROCOM SP 40/50-40/506				
GARDEN-INOX 40/50				
EURO 50/50-50/506 / 40/80-40/806	20	8	6	4
EUROINOX 50/50-50/506 / 40/80-40/806				
K 12/200, K 30/70, K 35/40, DP 100, DP 102, AQUADP 102/20, KE 35/40	12	6	6	4
K 30/100	16	8	6	4
JET 151, K 35/100	20	10	6	4
K 40/100, K 36/100, K45/50, DP 151, AQUADP 151/40, KE 45/50	20	10	8	4
JET 200, K 14/400	20	10	8	6
JET 251	25	12	8	6
JET 300, K 55/50, DP 251, AQUADP 251/40, KE 55/50	32	16	10	6
Maximun operating pressure:	6 bar (600 kPa): AQUADP 82/20, AQUADP 102/20 EURO, EUROINOX, EUROCOM, EUROCOM SP, GARDEN-INOX K 35/40, K 35/100, K 40/100, K 20/41, K 30/70, K 30/100, K 36/100, K 12/200, K 14/400, KE 35/40			
	7,5 bar (750 kPa): JET 151, JET 251, JET 200, JET 300 DP 151, DP 251, AQUADP 151/40, AQUADP 251/40			
	8 bar (800 kPa): K 45/50, K 55/50, KE 45/50, KE 55/50			
	10 bar (1000 kPa): KP 60/6, KP 60/12, KP 38/18 KPA 40/20			
Liquid temperature range:	0 ÷ +35°C: For all homologated pumps EN 60335-2-41 (for domestic uses)			
	0 ÷ +40°C: JET 151, JET 251, JET 200, JET 300 DP 81, DP 82, DP 100, DP 102, DP 151, DP 251 AQUADP 82/20, AQUADP 102/20, AQUADP 151/40, AQUADP 251/40			
	-10 ÷ +50°C: K 20/41, K 30/70, K 30/100, K 36/100, K 12/200, K 35/40, K 45/50, K 35/100, K 40/100 KP 38/18, KE 35/40, KE 45/50			
	-10 ÷ +80°C: KP 60/6, KP 60/12 KPA 40/20			
	-15 ÷ +110°C: K 14/400, K 55/50, KE 55/50			

- **Storage temperature:** -10°C to +40°C
- **Relative humidity of the air:** MAX. 95%
- **Noise level:**
 - For pumps intended for outdoor use: noise emission according to Directive 2000/14/CE.
 - For other pumps: noise emission according to Directive EC 89/392/CEE and subsequent amendments.
- **Motor construction in conformity with standards CEI 2-3 - CEI 61-69 (EN 60335-2-41).**
- **The leads of the supply cables must have a rated section no smaller than that illustrated in the following table:**

Rated current: of the appliance A		Rated section mm²
	≤ 0,2	Flat twin tinsel cord ^a
> 0,2	and ≤ 3	0,5 ^a
> 3	and ≤ 6	0,75
> 6	and ≤ 10	1,0 (0,75) ^b
> 10	and ≤ 16	1,5 (1,0) ^b
> 16	and ≤ 25	2,5
> 25	and ≤ 32	4
> 32	and ≤ 40	6
> 40	and ≤ 63	10

a These cables may be used only if their length does not exceed 2 m between the point in which the cable or its sheath enters the appliance and its entry in the plug.

b The cables with the sections indicated in brackets may be used for **mobile appliances** if their length does not exceed 2 m.

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 Transport

Avoid subjecting the products to needless jolts or collisions.

To lift and transport the unit, use lifting equipment and the pallet supplied standard (if applicable).

5.3 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).

The appliance is not intended to be used by persons (including children) with reduced physical, sensory or mental capacities, or who lack experience or knowledge, unless, through the mediation of a person responsible for their safety, they have had the benefit of supervision or of instructions on the use of the appliance. Children should be supervised to ensure that they do not play with the appliance.

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 Checking motor shaft rotation

Before installing the pump you must check that the rotating parts turn freely. For this purpose remove the fan cover from its seat in the motor end cover. 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. **FIG. A**

6.4 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.

7. INSTALLATION

**The pumps may contain small quantities of residual water from testing.
We advise flushing them briefly with clean water before their final 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. **Fig.B**
- 7.2 A firm anchoring of the pump to the bearing surface favours the absorption of any vibrations caused by pump operation. **Fig. C**
- 7.3 Ensure that the metal pipes do not exert undue strain on the apertures, thus preventing deformations or breakages. **Fig. C**
- 7.4 **It is always good practice to place the pump as close as possible to the liquid to be pumped.** The pump must be installed only in horizontal position. The internal diameters of the pipes must never be smaller than that of the mouth of the electropump. It is advisable to fit a foot valve on suction. **Fig. D** For suction depths of over four metres or with long horizontal stretches it is advisable to use an intake hose with a diameter larger than that of the intake aperture of the pump. To prevent the formation of air pockets, the intake hose must slope slightly upwards towards the pump. **Fig. D**
- 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 The lifting and carrying handle **must always be present and well fixed to the support** on all pumps produced in the portable version.
- 7.7 **Pumps that are to be used in fountains for outdoor use, in garden ponds and similar places, must be fed by means of a circuit equipped with a differential current device, the rated operating differential current of which is not higher than 30 mA.**

8. ELECTRICAL CONNECTION

Caution! always follow the safety regulations.



Scrupulously follow the wiring diagrams inside the terminal board box.

- 8.1 **Electric installation must be carried out by skilled and authorized electrician who accepts all the responsibility for the job.**
- 8.2 Ensure that the mains voltage is the same as the value shown on the motor plate and that there is the possibility of **MAKING A GOOD EARTH CONNECTION (Fig. E)**, in particular the earth terminal must be connected to the yellow/green lead of the power cable. The earth lead used must be longer than the phase leads so that it does not disconnect first when subject to traction.
- 8.3 In fixed installations, International Safety Standards require the use of isolating switches with a fuse-carrier base.
- 8.4 Single-phase motors are provided with built-in thermal overload protection and may be connected directly to the mains. Three-phase motors must be protected with an automatic switch (e.g. overload protection) set at the values on the electropump data plate, or with fuses of the size indicated in chapter 4.

- 8.5 In the power mains there must be a device that ensures complete disconnection in overvoltage category III conditions.

9. STARTING UP



Do not start the pump unless it has been completely filled with fluid.

Before starting up, check that the pump is properly primed; fill it completely with clean water by means of the hole provided after having removed the filler cap on the pump body. This ensures that the mechanical seal is well lubricated and that the pump immediately starts to work regularly. **(Fig. F). Dry operation causes irreparable damage to the mechanical seal.** The filling cap must then be screwed back on carefully.

- 9.2 Switch on the power and check, on the three-phase version, that the motor is turning in the correct direction; this should be in a clockwise direction, looking at the motor from the impeller side. **Fig. G** If it is turning in the wrong direction, invert the connections of any two wires on the terminal board, after having disconnected the pump from the power mains.

10. PRECAUTIONS

- 10.1 The electropump should not be started more than 20 times in one hour so as not to subject the motor to excessive thermal shock.

- 10.2 **DANGER OF FROST:** 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 **Fig. H**, to prevent possible cracking of the hydraulic components. This operation is advisable even in the event of prolonged inactivity at normal temperature.

- 10.3 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.

12.1 Removal and replacement of the supply cable

Before starting, ensure that the electropump is not connected to the power network.

A) For versions without a pressure switch

Remove the condenser cover, unscrewing the four screws on it. Unscrew the three terminals L - N - \ominus and disconnect the brown lead, the blue lead and the yellow-green lead, coming from the supply cable, after having slackened the grommet.

B) For versions with a SQUARE D pressure switch

- **Section of cable with plug from the pressure switch:** unscrew the screw from the cover of the pressure switch using a screwdriver and remove the cover. Remove the yellow-green lead, slackening the earth screw, the blue lead and the brown lead from the respective terminals at the side, slackening the screws on the terminals. Remove the cable blocking terminal, slackening the respective screws, and slip off the cable which is now disconnected.
- **Section of cable from the pressure switch to the terminal board:** unscrew the nut from the cover of the pressure switch using a screwdriver and remove the cover. Remove the yellow-green lead, slackening the earth screw, the blue lead and the brown lead from the respective central terminals, slackening the screws on the terminals. Remove the cable blocking terminal, slackening the respective screws, and slip off the cable which is now disconnected. Remove the condenser cover, unscrewing the four screws on it.

Unscrew the three terminals L - N - \oplus and disconnect the brown lead, the blue lead and the yellow-green lead, coming from the pressure switch, after having slackened the grommet.

C) Version with a TELEMECANIQUE / SQUARE D – TELEMECANIQUE / ITALTECNICA pressure switch:

- **Section of cable with plug from the pressure switch:** unscrew the screw from the cover of the pressure switch using a screwdriver and remove the cover, releasing it from the base of the pressure switch. Slip out the yellow-green lead, unscrewing the earth screw on the left side. Still on the same side, slip the blue lead and the brown lead off their terminals, slackening the screws on the terminals. Slacken the cable clamping nut of the pressure switch on the left side and slip off the cable which is now disconnected.
- **Section of cable from the pressure switch to the terminal board:** unscrew the nut on the cover of the pressure switch using a screwdriver and remove the cover, releasing it from the base of the pressure switch. Slip out the yellow-green lead, unscrewing the earth screw on the right side. Still on the same side, slip the blue lead and the brown lead off their terminals, slackening the screws on the terminals. Slacken the cable clamping nut of the pressure switch on the right side and slip off the cable which is now disconnected. Remove the terminal board cover, unscrewing the four screws on it. Unscrew the three terminals L - N - \oplus and disconnect the brown lead, the blue lead and the yellow-green lead, coming from the supply pressure switch, after having slackened the grommet.

When replacing the power cable, a cable of the same type must be used (e.g. H05 RN-F or H07 RN-F depending on the installation) and with the same terminals, proceeding as for disassembly in inverse order.

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 (EN 60335-2-41). 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	CHECKS (possible cause)	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.	A. Ensure that the mains voltage is the same as the value on the plate. B. Ensure that the connections have been made correctly. C. Check that all the phases are present on the terminal board. (3~) D. Look for possible blockages in the pump or motor. E. Check the condition of the capacitor.	B. Correct any errors. C. If not, restore the missing phase. D. Remove the blockage. E. Replace the capacitor.
3. The motor turns with difficulty.	A. Check the voltage which may be insufficient. B. Check whether any moving parts are scraping against fixed parts.	B. Eliminate the cause of the scraping.
4. The pump does not deliver.	A. The pump has not been primed correctly. B. On three-phase motors, check that the direction of rotation is correct. C. The diameter of the intake pipe is insufficient. D. Blocked foot valve.	B. If necessary, invert the connection of two supply wires C. Replace the pipe with one with a larger diameter. D. Clean the foot valve.
5. The pump does not prime.	A. The intake pipe or the foot valve is taking in air. B. The downward slope of the intake pipe favours the formation of air pockets.	A. Eliminate the phenomenon and prime again. B. Correct the inclination of the intake pipe.
6. The pump supplies insufficient flow.	A. Blocked foot valve. B. The impeller is worn or blocked. C. The diameter of the intake pipe is insufficient. D. On three-phase motors, check that the direction of rotation is correct.	A. Clean the foot valve. B. Remove the obstructions or replace the worn parts. C. Replace the pipe with one with a larger diameter. D. If necessary, invert the connection of two supply wires.
7. The pump vibrates and operates noisily.	A. Check that the pump and the pipes are firmly anchored. B. There is cavitation in the pump, that is the demand for water is higher than it is able to pump. C. The pump is running above its plate characteristics.	A. Fix the loose parts more carefully. B. Reduce the intake height or check for load losses. C. It may be useful to limit the flow at delivery.