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**Warnings for the safety of individuals and things.**

**Please pay careful attention to the following signs and indications.**



**DANGER**  
Electric shock risk

Warns that the failure to follow directions may cause electric shock.



**DANGER**

Warns that failure to follow directions could cause serious risk to persons or things.



**WARNING**

Warns that failure to follow directions could damage the pump or installation.

**WARNING: Before installing this pump read this manual carefully. Any damage caused by failure to observe any directions in this manual will not be covered by warranty.**

## CH. 1 FEATURES

Electric pumps in the **PGA**, **DELTA OIL** and **DIESEL LINE** series are suitable for transferring water. They are also suitable for pumping diesel fuel.

The electric pumps in these series are volumetric with a liquid ring. The blade impeller is made entirely of brass.

These electric pumps, depending on the requested model, can be equipped with a power supply cord, switch and handle.

Upon request it is possible to obtain some accessories for the pumps: suction kit consisting of a 4 meter pipe complete with a foot valve, plastic fitting and clamps, fluid meter to check the delivered litres, delivery kit consisting of a 4 meter pipe, a delivery gun as well as a plastic fitting and clamp.

Each electric pump is electrically tested and packed by trained personnel.

Please ensure that the electropump has not been damaged during transport; if this occurs please phone the dealer, within 8 days from purchase date.

## CH. 2 LIMITATIONS



**WARNING**

**The pumps cannot be used in explosive environments, they are only suitable for use in well-ventilated areas.**



**WARNING**

**Electropump cannot be used to move inflammable or dangerous liquids.**



**WARNING**

**Ensure electropump never runs dry.**

|  |  |
|--|--|
| MAX. TEMPERATURE OF LIQUID.....          | 50°C continuous operation                  |
| MAX. TEMPERATURE OF LIQUID.....          | 40°C if pumping diesel fuel                |
| MAX. ROOM TEMPERATURE.....               | 40°C                                       |
| MAX.ON/OFF CYCLES/HOUR.....              | 30 equally spaced                          |
| MAXIMUM SUCTION HEIGHT (with water)..... | 5 m including load losses                  |
| MAXIMUM WORKING PRESSURE.....            | 3 bar PGA 40/30, DELTA OIL and DIESEL LINE |
| MAXIMUM WORKING PRESSURE.....            | 4 bar PGA 60/40                            |

### CH. 3 INSTALLATION (See Fig. 1)



**DANGER**  
Risk of electric shock

**When installing, please ensure electropump is disconnected from electrical supply.**



**WARNING**

**Protect the electropump and all pipes from bad weather or freezing conditions.**

#### Use with water

If the electropump is to be installed a suction pipe should be used with a diameter equal to that of the suction duct for electropump. If the suction height is over 4 meters use a tube with a larger diameter. The suction pipe must not have “goose-necks” or be inclined improperly in order to avoid the formation of air pockets which would not permit priming.

Make sure that the pipe is perfectly air tight and that there is not infiltration.

At one end of the suction tube install a foot valve with filter. The pipe should be submerged at least 50 cm. into the liquid to be pumped, in order to avoid the formation of whirlwinds.

To avoid load loss on delivery, a pipe with a diameter equal to or greater than the intake of electropump should be used.

It is advisable to install a non-return valve directly on the delivery pipe, this makes it possible to eliminate any damage water hammers may cause to the electropump. The pipes must be placed so that their weight does not interfere with the electropump. The delivery and suction pipes must travel the shortest distance with the fewest possible number of bends.

If the installation is fixed then the electropump should be blocked on the support surface. In order to reduce installation vibration the electric pump should be connected with a joint or a flexible pipe and a layer of rubber or other anti-vibration material should be inserted between the electric pump and the support surface.

Make sure that the motor is well ventilated.



**DANGER**  
Risk of electric shock

**Carefully read the instructions regarding use with diesel fuel.**

#### **WARNING !!!**

#### Use with diesel fuel

The pump must be installed under the water level, the liquid must drop into the pump body.

The pump should not run dry even for short periods of time; in order to do this check that the diesel fuel is constantly being pumped during the entire working period of the pump.

As requested by the STANDARDISED REGULATIONS we advise the user to connect a recovery pipe with the drain pipe in the lower part of the pump and let it drain into a collection tank, in order to prevent diesel fuel leakage if the seal wears or breaks.

## CH. 4 ELECTRICAL CONNECTION

|  |                                      |  |
|--|--------------------------------------|--|
|  | <b>WARNING</b>                       | Ensure tension and frequency of electropump (read plate) and power supply are same.  |
|  | <b>DANGER</b><br>Electric shock risk | Installer must make sure that electric current network has ground wire conforming to current laws.                             |
|  | <b>DANGER</b><br>Electric shock risk | Make sure that electric current network is provided with a high-sensitivity circuit breaker $\Delta=30$ mA (DIN VDE 0100T739). |

The single phase motors are protected from overloads by a thermal device installed in the winding. The protection for the three phase motor must be installed by the user.

The following must be used as a conductor for the connection:

- outdoors → cable H07RN-F
- in inside areas → cable H05RN-F or H07RN-F

For connecting single phase motors see Fig. 2

For connecting three phase motors see Fig. 3

For connecting double voltage single phase motors see Fig. 4

## CH. 5 STARTING THE UNIT (See Fig. 1)

|  |                |   |
|--|----------------|---|
|  | <b>WARNING</b> | Use the electric pump for the type of uses listed on the plate.   |
|  | <b>WARNING</b> | Do not let electric pump run dry, the hydraulic parts and seal could be damaged and if it is used with diesel fuel, the heat which develops could create a fire risk. |
|  | <b>WARNING</b> | Do not run the electric pump with the delivery or the interception valve closed, if it is used with diesel fuel, the heat which develops could create a fire risk.    |

Before starting the electropump fill the suction pipe and the electropump body by using the filling cap, making sure that there are no leaks, close the cap and start the electropump. Check that it rotates clockwise when looking at the electropump from the side of the motor fan. For the three phase electric pumps it is possible to invert the rotation by changing the order of two phases, in order to do this disconnect the pump from electric power supply.

If the electric pump does not work for long periods of time repeat the filling operations before starting it up.

## CH. 6 MAINTENANCE AND TROUBLE SHOOTING

|  |                                      |   |
|--|--------------------------------------|---|
|  | <b>DANGER</b><br>Electric shock risk | Before doing any operation, make sure machine is disconnected from electric power supply. |
|--|--------------------------------------|---|

Under normal conditions **PGA, DELTA OIL** and **DIESEL LINE** electropumps do not need any type of maintenance. In order to avoid possible failures, it is advisable to periodically check the pressure supplied and current absorption. A decrease in pressure is a symptom of wear. An increase in the current absorption is a sign of abnormal mechanical friction in the electric pump.

If the electropump is not going to be used for long periods of time (e.g. an entire season) it should be emptied completely, rinsed with clean water and put in a dry place.

| PROBLEM   | POSSIBLE CAUSE   | REMEDY  |
|---|--|---|
| <b>THE ELECTROPUMP DOES NOT PUMP WATER THE MOTOR DOES NOT RUN</b>   | 1) No power.<br>2) Motor protection tripped.<br>3) Defective condenser.<br>4) Shaft or impeller blocked.                         | 1) Check if there is power and if the plug is plugged in properly.<br>2) Wait until the motor cools down.<br>3) Replace the condenser.<br>4) Verify the cause and unblock the electropump.                                |
| <b>THE MOTOR RUNS BUT THE ELECTROPUMP DOES NOT PUMP LIQUID</b>  | 1) It is taking on air.<br>2) Suction height is excessive.<br>3) Filter or valve obstructed.<br>4) Wrong rotation direction.     | 1) Make sure that the joints are airtight.<br>2) Check that the level of liquid has not dropped below the foot valve.<br>3) Check that the foot valve is airtight and is not blocked.<br>4) Reset the rotation direction. |
| <b>THE ELECTROPUMP STOPS AFTER RUNNING FOR A SHORT PERIOD OF TIME BECAUSE ONE OF THE THERMAL MOTOR PROTECTION DEVICES TRIPS</b> | 1) Power supply does not conform to data on plate.<br>2) A solid object is blocking the impeller.<br>3) The liquid is too thick. | 1) Check the voltage on the power supply conductor cables.<br>2) Dismantle the electropump and clean it.<br>3) Change electropump type.   |
| <b>DIESEL FUEL LEAKAGE FROM THE DRAIN PIPE</b>  | 1) Seal worn or broken.  | 1) Stop using the pump and disconnect the electrical power supply. Call the technical Assistance Centre.  |

If the problem has not been eliminated after carrying out the above operations contact the closest service centre.