

AC Fuel Transfer Pump User's Manual



 **WARNING:** Read carefully and understand all **INSTRUCTIONS** before operating. Failure to follow the safety rules and other basic safety precautions may result in serious personal injury.

Model No. 17310801, 17311000, 17311200, 17330900, 17331200

A. DECLARATION OF CONFORMITY

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IN CONFORMANCE WITH THE DIRECTIVES
98/37/EEC (MACHINERY)
97/23/EEC (PRESSURE VESSELS)
89/336/EEC (ELECTOR-MAGNETIC COMPATIBILITY)
AND FURTHER MODIFICATIONS)
2000/14 DIRECTIVE ON LIMITATION OF NOISE

DECLARES THAT THE FOLLOWING PUMP MODELS: 17310801, 17311000, 17311200, 17330900, 17331200

To which this declaration refers, conform to the following applicable regulations:

EUROPEAN REGULATIONS:

- EN292-1-92 – Safety of Machinery – General Concepts, basic principles for design – terminology, basic methodology
- EN292-2-92 – Safety of Machinery – General Concepts, basic principles for design – specifications and technical principles
- EN294-93 – Safety of Machinery – safe distances to prevent the operator’s upper limbs from reaching dangerous areas
- EN60034-1-2000 – Rotating electrical Machinery – nominal and functional specifications
- EN60034-5-2001 – Classification of grades of protection for the housings of rotating electrical machinery
- EN61000-6-3 – Electro – magnetic compatibility – generic emission standards
- EN61000-6-1 – Electro – magnetic compatibility – generic immunity standards
- EN55014-1-00(A1/99-A2/99) –Limits and methods for measuring radio disturbance characteristics
- EN55014-2-97 – Electrical motor – operated and thermal appliances for household and similar purposes, electric tools and similar electrical apparatus
- EN60204-1-98 –Safety of machinery – electrical equipment of machines

B. MACHINE DESCRIPTION

- PUMP: Self-priming, volumetric, rotating vane pump, equipped with by-pass valve.
- MOTOR: Asynchronous motor, single-phase, 2 pole, closed type (protection class IP55 in conformance with EN 60034-5-86 regulations) self-ventilated, directly flanged to the pump body.
- FILTER: Inspectable suction filter.

C. TECHNICAL DATA

C1. ELECTRICAL SPECIFICATIONS

PUMP MODEL	ELECTRICAL POWER	Flow Rate	POWER	Connection
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	Current	Voltage(V)	Frequency		Nominal(*) (Watt)	Inlet/outlet
17310801	AC	230	50/60Hz	80LPM	450	1"
17311000	AC	230	50/60Hz	100LPM	750	1"
17311200	AC	230	50/60Hz	120LPM	1100	1"
17330900	AC	120	60Hz	25GPM	450	1"
17331200	AC	120	60Hz	32GPM	1200	1"

D. OPERATING CONDITIONS

D1. ENVIRONMENTAL CONDITIONS

TEMPERATURE: min. -20°C / max. +60°C

RELATIVE HUMIDITY: max. 90%

 **ATTENTION!**

The temperature limits shown apply to the pump components and must be respected to avoid possible damage or malfunction.

D2. ELECTRICAL POWER SUPPLY

Depending on the model, the pump must be supplied by a single-phase alternating current line whose nominal values are shown in the table in Paragraph C1 – ELECTRICAL SPECIFICATIONS.

The maximum acceptable variations from the electrical parameters are:

Voltage: +/-5% of the nominal value

Frequency: +/-2% of the nominal value

 **ATTENTION!**

Power from lines with values outside the indicated limits can damage the electrical components.

D3. WORKING CYCLE

The pumps are designed for continuous use under maximum back pressure.

 **ATTENTION!**

Functioning under by-pass conditions is only allowed for brief periods of time (2-3minutes maximum).

D4. FLUIDS PERMITTED / FLUIDS NOT PERMITTED

PERMITTED

- DIESEL FUEL at a VISCOSITY from 2 to 5.35 cSt (at a temperature of 37.8°C)
- Minimum Flash point (PM): 55°C

NOT PERMITTED

Description	Related Dangers
Gasoline	Fire – Explosion
Inflammable Liquids With Pm<55°C	Fire – Explosion
Liquids With Viscosity>20cst	Motor Overload

Water	Pump Oxidation
Food Liquids	Contamination Of The Same
Corrosive Chemical Products	Pump Corrosion, Injury To Persons
Solvents	Fire – Explosion, Damage To Gasket Seals

E. MOVING AND TRANSPORT

Given the limited weight and size of the pumps (see overall dimensions), moving the pumps does not require the use of lifting devices.

The pumps were carefully packed before shipment. Check the packing material on delivery and store in the dry place.

F. INSTALLATION

F1. DISPOSING OF THE PACKING MATERIAL

The packing material does not require special precautions, not being in any way dangerous or polluting.
Refer to local regulations for its disposal.

F2. PRELIMINARY INSPECTION

- Check that the machine has not suffered any damage during transport or storage.
- Clean the inlet and outlet openings, removing any dust or residual packing material.
- Make sure that the motor shaft turns freely.
- Check that the electrical specifications correspond to those shown on the identification plate.

F3. POSITIONING THE PUMP

- The pump can be installed in any position (pump axis vertical or horizontal)
- Attach the pump using screws of adequate diameter for the attachment holes provided in the base of the pump (see the section “OVERALL DIMENSIONS” for their position and dimension).

 **ATTENTION!**

THE MOTORS ARE NOT OF AN ANTI-EXPLOSIVE TYPE. Do not install them where inflammable vapours can be present.

F4. CONNECTING THE TUBING

- Before connection, make sure that the tubing and the suction tank are free of dirt and thread residue that could damage the pump and its accessories.
- Before connecting the delivery tube, partially fill the pump body with diesel fuel to facilitate priming.
- Do not use conical threaded joints that could damage the threaded pump openings if excessively tightened.

SUCTION TUBING:

- Minimum recommended nominal diameter: 1”
- Nominal recommended pressure: 10bar / 145psi
- Use tubing suitable for functioning under suction pressure

DELIVERY TUBING:

- Minimum recommended nominal diameter: 1"
- Nominal recommended pressure: 10bar/145psi

 ATTENTION!

It is the installer's responsibility to use tubing with adequate characteristics.

The use of tubing unsuitable for use with diesel fuel can damage the pump, injure persons and cause pollution.

Loosening of the connections (threaded connections, flanging, gasket seals) can cause serious ecological and safety problem.

Check all the connections after the initial installation and on a daily basis after that.

Tighten the connections, if necessary.

F5. CONSIDERATIONS REGARDING DELIVERY AND SUCTION LINES

DELIVERY

The choice of pump mode must be made keeping the characteristics of the system in mind.

The combination of the length of the tubing, the diameter of the tubing, the flow rate of the diesel fuel and the line accessories installed can create back pressure greater than the maximums anticipated such as to cause the (partial) opening of the pump by-pass with the consequent noticeable reduction of the flow rate supplied.

In such cases, to allow correct functioning of the pump, it is necessary to reduce system resistance, using shorter tubing and/or of wider diameter and line accessories with less resistance (e.g. an automatic dispensing nozzle for greater flow rates).

SUCTION

All pumps are self-priming pump and characterized by good suction capacity.

During the start-up phase, with an empty suction tube and the pump wetted with fluid, the electric pump unit is capable of suctioning the liquid with a maximum difference in height of 2 meters. It is important to point out that the priming time can be as long as one minute and the pressure of an automatic dispensing nozzle on the delivery line prevents the evacuation of air from the installation, and, therefore, prevents proper priming.

For this reason, it is always advisable to prime the pump without an automatic delivery nozzle, verifying the proper wetting of the pump. The installation of a foot valve is recommended to prevent the emptying of the suction tube and to keep the pump wet. In this way, the pump will subsequently always start up immediately.

When the system is functioning, the pump can work with pressure at the inlet as high as 0.5 bar, beyond which cavitation phenomena can begin, with a consequent loss of flow rate and increase of system noise.

As we have said up to this point, it is important to guarantee low suction pressure by using short tubing of a diameter equal to or larger than recommended, reducing curves to a minimum and using suction filter of wide cross-section and foot valves with the lowest possible resistance.

The difference in height between the pump and the fluid level must be kept as small as possible and, at any rate, within the 2 meters anticipated for the priming phase.

If this height is exceeded, it will always be necessary to install a foot valve to allow for the filling of the suction tube and provide tubing of wider diameter. It is recommended that the pump not be installed at a difference in height greater than 3 meters.

 ATTENTION!

In the case that the suction tank is higher than the pump, it is advisable to install an anti-siphon valve to prevent accidental diesel fuel leaks.

G. INITIAL START-UP

- Check that the quantity of diesel fuel in the suction tank is greater than the amount you wish to transfer.
- Make sure that the residual capacity of the delivery tank is greater than the quantity you wish to transfer.
- Do not run the pump dry. This can cause serious damage to its components.
- Make sure that the tubing and line accessories are in good condition. Diesel fuel leak can damage objects and injure person.
- Never start or stop the pump by inserting or removing any plugs.
- Do not operate switches with wet hands.
- Prolonged contact with diesel fuel can damage the skin. The use of glasses and gloves is recommended.

ATTENTION!

Extreme operating conditions can raise the motor temperature and, consequently, cause the thermal protection switch to stop it.

Turn off the pump and wait for it to cool before resuming use.

The thermal protection automatically turns off when the motor is sufficiently cool.

In the priming phase the pump must blow the air initially present in the entire installation out of the delivery line.

Therefore it is necessary to keep the outlet open to permit the evacuation of the air.

ATTENTION!

If an automatic type dispensing nozzle is installed at the end of the delivery line, the evacuation of the air will be difficult because of the automatic stopping device that keeps the valve closed when the line pressure is too low. It is recommended that the automatic dispensing nozzle be temporarily disconnected during the initial start-up phase.

The priming phase can last from several seconds to a few minutes, as a function of the characteristics of the system. If this phase is prolonged, stop the pump and verify:

- That the pump is not running completely dry;
- That the suction tubing is not allowing air to seep in;
- That the suction filter is not clogged;
- That the suction height does not exceed 2m. (if the height exceeds 2m, fill the suction hose with fluid);
- That the delivery tube is allowing the evacuation of the air.

When priming has occurred, verify that the pump is operating within the anticipated range, in particular:

- That under conditions of maximum back pressure, the power absorption of the motor stays within the values shown on the identification plate;
- That the suction pressure is not greater than 0.5 bar;
- That the back pressure in the delivery line is not greater than the maximum back pressure foreseen for the pump.

H. DAILY USE

- a. If using flexible tubing, attach the ends of the tubing to the tanks. In the absence of an appropriate slot, solidly grasp the delivery tube before beginning dispensing.
- b. Before starting the pump, make sure that the delivery valve is closed (dispensing nozzle or line valve).
- c. Turn the ON/OFF switch to ON. The by-pass valve allows functioning with the delivery closed only for brief periods.
- d. Open the delivery valve, solidly grasping the end of the tubing.
- e. Close the delivery valve to stop dispensing.
- f. When dispensing is finished, turn off the pump.

 **ATTENTION!**

Function with the delivery closed is only allowed for brief periods (2-3 minutes maximum).
After use, make sure the pump is turned off.

I. PROBLEMS AND SOLUTIONS

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
The Motor is not turning	Lack of electric power	Check the electrical connecting
	Rotor Jammed	Check for possible damage or obstruction of the rotating components
	Motor Problems	Contact the Service Department
The motor turns slowly when starting	Low voltage in the electric power line	Bring the voltage back within the anticipated limits
Low or no flow rate	Low level in the suction tank	Refill the tank
	Foot valve blocked	Clean and/or replace the valve
	Filter clogged	Clean the filter
	Excessive suction pressure	Lower the pump with respect to the level of the tank or increase the cross-section of the tubing
	High loss of head in the delivery circuit (working with the by-pass open)	Use shorter tubing or of greater diameter
	By-pass valve blocked	Dismantle the valve, clean and/or replace it.
	Air entering the pump or the suction tubing	Check the seals of the Connections
	A narrowing in the suction tubing	Use tubing suitable for working under suction pressure
	Low rotation speed	Check the voltage at the pump. Adjust the voltage and/or use cables of greater cross-section
	The suction tubing is resting on the bottom of the tank	Raise the tubing

Increased pump noise	Cavitation occurring	Reduce suction pressure
	Irregular functioning of the by-pass	Dispense fuel until the air is purged from the by-pass system
	Air present in the diesel fuel	Verify the suction connection
Leakage from the pump body	Seal Damaged	Check and replace the seal

J. MAINTENANCE

All models are designed and constructed to require a minimum of maintenance.

- In any case always bear in mind the following basic recommendations for a good functioning of the pump:
- On a weekly basis, check that the tubing joints have not loosened, to avoid any leakage.
 - On a monthly basis, check the pump body and keep it clean of any impurities.
 - On a weekly basis, check and keep clean the line suction filter.
 - On a monthly basis, check that the electric power supply cables are in good condition.
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K. NOISE LEVEL

Under normal working conditions the noise emission from all models does not exceed the value of **70 db at a distance of 1 meter** from the electric pump.

L. DISPOSING OF CONTAMINATED MATERIALS

In the event of maintenance or demolition of the machine, do not disperse contaminated parts into the environment.
Refer to local regulations for their proper disposal.

M. DIAGRAM AND PARTS LIST