

# C DECLARATION OF INCORPORATION OF PARTLY-COMPLETED MACHINERY

The undersigned: PIUSI S.p.A - Via Pacinotti c.m. - z.i.Rangavino 46029 Suzzara (Mantova) - Italy

HEREBY STATES under its own responsibility, that the partly-completed machinery: Machine designed for the transfer of diesel fuel Description:

E80 - E120 Model: Serial number: refer to Lot Number shown on CE plate affixed to product Year of manufacture: refer to the year of production shown on the CE plate affixed to the

product is intended to be incorporated in a machine (or to be with other machines) so as to create a machine to which applies Machine Directive 2006/42/EC, may not be brought into service before the machine into which it is to be incorporated has been declared in conformity with the provisions of the directive 2006/42/EC.

is in conformity with the legal provisions indicated in the directives.

- Machine Directive 2006/42/EC

# - Low-Voltage Directive 2006/95/EC - Electromagnetic Compatibility Directive 2004/108/EC

To which the essential safety requirements have been applied and complied with what indicated 1.32 - 1.33 - 1.34 - 1.38 - 1.41 - 1.4.21 - 1.5.1 - 1.5.2 - 1.5.4 - 1.5.5 - 1.5.8 - 1.5.11 - 1.6.1 - 1.6.3 - 1.6.4 - 1.7.1 - 1.7.2 - 1.7.3 - 1.7.4.

The documentation is at the disposal of the competent authority following motivated request at Piusi S.p.A. or following request sent to the email address: doc tec@piusi.com The person authorised to compile the technical file and draw up the declaration is Otto Varini as legal representative. Atoloriu Suzzara, 29/12/2009

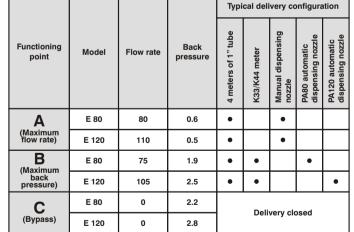
**D** MACHINE DESCRIPTION

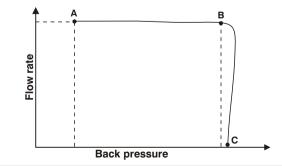
- Self-Priming, volumetric, rotating electric vane pump, equipped with by-pass PUMP: valve.
- MOTOR: Asynchronous motor, single-phase and three-phase, 4 pole, closed type (protection class IP55 in conformance with EN 60034-5-86 regulations) self-ventilated, directly flanged to the pump body.

## **TECHNICAL SPECIFICATIONS**

E.1 PERFORMANCE SPECIFICATIONS

# The performance diagram shows flow rate as a function of back pressure





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# The curve refers to the following operating conditions: Fluid: Diesel fuel

20°C The tube and the pump position relative to the fluid level is such that a pressure of 0.3 bar is generated at the nominal Suction conditions: flow rate.

Under different suction condi tions higher pressure values can be created that reduc the flow rate compared to the same back pressure values.

To obtain the best performance, it is very important to reduce loss of suction pressure as much as possible by following these instruct • Shorten the suction tube as much as possible

Avoid useless elbows or throttling in the tubes

Keep the suction filter clean
Use a tube with a diameter equal to, or greater than, indicated (see Installation)

# **ENGLISH** (Translated from Italian)

# E.2 ELECTRICAL SPECIFICATIONS

	ELECTRICAL POWER			CURRENT
PUMP MODEL	Current	Voltage (V)	Frequency (Hz)	Max. absorption (*) (Amp)
E80 M	AC	230	50	3.5
E120 M	AC	230	50	6
E80 T	AC	400	50	1.6
E120 T	AC	400	50	2.5
E80 110V	AC	110	60	10
E120 110V	AC	110	60	9.5

# F OPERATING CONDITIONS

#### **F.1 ENVIRONMENTAL CONDITIONS**

TEMPERATURE: **RELATIVE HUMIDITY:** 

min. -20°C / max. +60°C

/!\ WARNING

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

max. 90%

#### F.2 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 E.2 - ELECTRICAL SPECIFICATIONS.. he maximum acceptable variations from the electrical parameters are:

#### Voltage: +/- 5% of the nominal value

Frequency: +/- 2% of the nominal value

# <u>/!</u> WARNING

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

#### F.3 WORKING CYCLE

The pumps are designed for continuous use under conditions of maximum back pressure

/!\ WABNING ioning under by-pass conditions is only allowed for brief periods of time

# F.4 FLUIDS PERMITTED / FLUIDS NOT PERMITTED

#### PERMITTED:

SOLVENTS

• DIESEL FUEL at a viscosity of from 2 to 5.35 cSt (at a temperature of 37.8°C) Minimum flash point (PM): 55°C NOT PERMITTED: GASOLINE • INFLAMMABLE LIQUIDS WITH PM < 55°C • LIQUIDS WITH VISCOSITY > 20 cSt FOOD LIQUIDS CORROSIVE CHEMICAL PRODUCTS

 FIRE - EXPLOSION FIRE - EXPLOSION MOTOR OVERLOAD PUMP OXIDATION CONTAMINATION OF THE SAME PUMP CORROSION INJURY TO PERSONS FIRE - EXPLOSION DAMAGE TO GASKET SEALS

**RELATED DANGERS:** 

## G 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 shipmen Check the packing material on delivery and store in a dry place.



#### H.1 DISPOSAL

The components must be given to companies that specialise in the disposal and recycling of industrial waste and, in particular, the

DISPOSAL OF PACKAGING: The packaging consists of biodegradable cardboard which can be delivered to companies for normal recycling of cellulose.

#### **DISPOSAL OF METAL COMPONENTS:**

Metal parts, whether paint-finished or in stainless steel, can be consigned to scrap metal

#### DISPOSAL OF ELECTRIC AND ELECTRONIC COMPONENTS:

these have to be disposed by companies that are specialised in the disposal of electronic components, in accordance with the instructions of 2002/96/EC (see text of Directive below). ENVIRONMENTAL INFORMATION FOR CUSTOMERS IN THE EUROPEAN



European Directive 2002/96/EC requires that the equipment bearing this symbol on the product and/or its packaging must not be disposed of with unsorted municipal waste. The symbol indicates that this product should be disposed of separately from regular household waste streams.

It is your responsibility to dispose of this and other electric and electronic equipment via designated collection facilities appointed by the government or local authorities.

#### DISPOSAL OF OTHER PARTS: The disposal of other parts such as pipes, rubber seals, plastic components and cables should

be entrusted to companies that special in the disposal of industrial waste.

# **DISPOSAL OF PACKAGING:**

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

#### H.2 PRELIMINARY INSPECTION

• Check that the machine has not suffered any damage during transport or storage.

Make sure that the motor shaft turns freely.

Clean the inlet and outlet openings, removing any dust or residual packing material.

• Check that the electrical specifications correspond to those shown on the identification plate.

# H.3 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).

#### /!\ WARNING

THE MOTORS ARE NOT OF AN ANTI-EXPLOSIVE TYPE.

# **ENGLISH** (Translated from Italian)

# **H.4 CONNECTING THE TUBING**

· Before connection, make sure that the tubing and the suction tank are free of dirt and thread sidue that could damage the pump and its accessories. · Before connecting the delivery tube, partially fill the pump body with diesel fuel to facilitate

. Do not use conical threaded joints that could damage the threaded pump openings if excessively tightened.

#### SUCTION TUBING

- Minimum recommended nominal diameter: 1-1/4" (model E80) 1-1/2" (model E120) Nominal recommended pressure: 10 bar
- Use tubing suitable for functioning under suction pressure

DELIVERY TUBING - Minimum recommended nominal diameter: 1" - Nominal recommended pressure: 10 I 10 bar

#### /!\ WARNING

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, injur persons and cause pollution.

Loosening of the connections (threaded connections, flanging, gasket seals) can cause serious ecological and safety problems.. Check all the connections after the initial installation and on a daily basis after that. Tighten the connections, if necessary.

# H.5 CONSIDERATIONS REGARDING DELIVERY AND SUCTION LINES

DELIVERY

The choice of pump model 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

system resistance.

/!\ WARNING

DELIVERY:

Flexible tubing

/!\ WARNING

E80/E120 WILL BE USED:

SINGLE-PHASE MOTORS

following diagram:

Meter

an antisiphon components.

• Automatic dispensing nozzle

Manual dispensing nozzle

H.6 LINE ACCESSORIES

E 80 / E120 pumps are self-priming 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 presence 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 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 ninimum and using suction filters of wide cross-section and foot valves with the lowest possible resistance. It is very important to keep the suction filters clean because, once clogged, they increase

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

In the case that the suction tank is higher than the pump, it is advisable to install

The pumps are furnished without line accessories. Following is a list of the most common line

SUCTION:

It is the installer's responsibility to provide the line accessories necessary for the safe

and proper functioning of the pump. The use of accessories unsuitable for use with diesel fuel can damage the pum injure persons and cause pollution..

IT IS THE INSTALLER'S RESPONSIBILITY TO APPLY THE

FOLLOWING SIGNALS ON THE MACHINE ANYWHERE

THREE PHASE

A.C. LINE

TO MOTOR

inside the terminal strip box (see diagram).

/!\ WARNING

for the applicable regulations.

for the main circuit breaker provided for in the applicable regula

Single-phase motors are supplied with a pre-existing 2-meter cable with electric plug.

To change the cable, open the terminal strip cover and connect the line according to the

Single-phase motors are supplied with a bipolar switch and capacitor wired and installed

The characteristics of the capacitor are shown on the identification plate for each pump model.

The switch has the sole function of starting/stopping the pump and cannot in any way substitute

The pumps are supplied without electrical safety equipment such as fuses, motor protectors, systems to prevent accidental restarting after power failures or others. It is indispensable to install an electric panel, upstream from the pump's power supply

It is the installer's responsibility to perform the electrical connections with respect

line, equipped with an appropriate residual current operated circuit breaker.

SINGLE PHASE

H.7 COLLEGAMENTI ELETTRICI

Foot valve with filter

 Rigid and flexible tubing Pump suction filter

accessories whose use is compatible with the proper functioning of the pumps.

installed at a difference in height greater than 3 meters.

ENGLISH	(Tran

#### THREE-PHASE MOTORS

Three-phase motors are supplied with a terminal strip box and terminal strip. To connect the electric motor to the electric power line, open the terminal strip cover and

connect the cables according to the diagram

ted from Italian)

installation

Verify that the terminal strip blades are positioned according to the diagram provided for the available power supply voltage. Verify the correct direction of rotation of the motor (see the paragraph OVERALL

DIMENSIONS), and, if not correct, invert the connection of the two cables in the power supply plug or on the terminal strip.

Respect the following (not exhaustive) instructions to ensure a proper electrical

• During installation and maintenance, make sure that the electric supply lines are not live. · Use cables characterized by the minimum cross-sections, nominal voltages and wiring-type adequate to the electrical characteristics shown in Paragraph E.2 - ELECTRICAL SPECIFICATIONS and the installation environment ..

· In three-phase motors verify the correct direction of rotation (see Paragraph Q - DIMENSIONS AND WEIGHTS). • All motors are equipped with a ground terminal to connect to the ground line of the

electrical network · Always close the cover of the terminal strip box before supplying electrical power, after ascertaining the integrity of the gasket seals that ensure protection grade IP 55.

# 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 leaks can damage objects and injure persons. · Always install a suction filter to protect the pump.

· 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 · Single-phase motors are provided with an automatic thermal protection switch.

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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.

#### **WARNING**

If an automatic type dispensing nozzle is installed on 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 he 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 is not greater than 2 meters (if the height is greater than 2 meters, fill the suction tube 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

• 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 anticipated for the pump.

# DAILY USE

in particular:

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 for only 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.

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

## LACK OF ELECTRIC POWER:

A lack of electric power, with the consequent accidental stopping of the pump, can be caused

- A safety device tripping

- A drop in line voltage

In either case, act as follows

a. Close the delivery valve

 $\boldsymbol{b}.$  Attach the end of the delivery to the slot provided on the tank c. Turn the ON/OFF switch to the OFF position.

Resume operations as described in Paragraph L - DAILY USE, after determining the cause of the stoppage.

M PROBLEMS AND SOLUTIONS		
PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
THE MOTOR IS NOT TURNING	Lack of electric power	Check the electrical connections and the safety systems
	Rotor jammed	Check for possible damage or obstruction of the rotating components
	The motor protecting thermal switch has tripped	Wait for the motor to cool, verify that it restarts, and research the cause of the overheating
	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 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
	Cavitation occurring	Reduce suction pressure
INCREASED PUMP NOISE	Irregular functioning of the by-pass	Dispense until the air is purged from the circuit
	Air present in the diesel fuel	Verify the suction connections
LEAKAGE FROM THE PUMP BODY	Seal damaged	Check and replace the mechanical seal

**ENGLISH** (Translated from Italian)

Bulletin MO064C IT/EN Rev. 1
E80/E120

MANUALE D'USO E MANUTENZIONE	ITALIANO
USE AND MAINTENANCE MANUAL	ENGLISH

E 80 / E 120 pumps are designed and constructed to require a minimum of

• 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 monthly basis, check and keep the pump filter clean and any other filters installed.

• On a monthly basis, check that the electric power supply cables are in good condition

# **O** 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.



# N MAINTENANCE