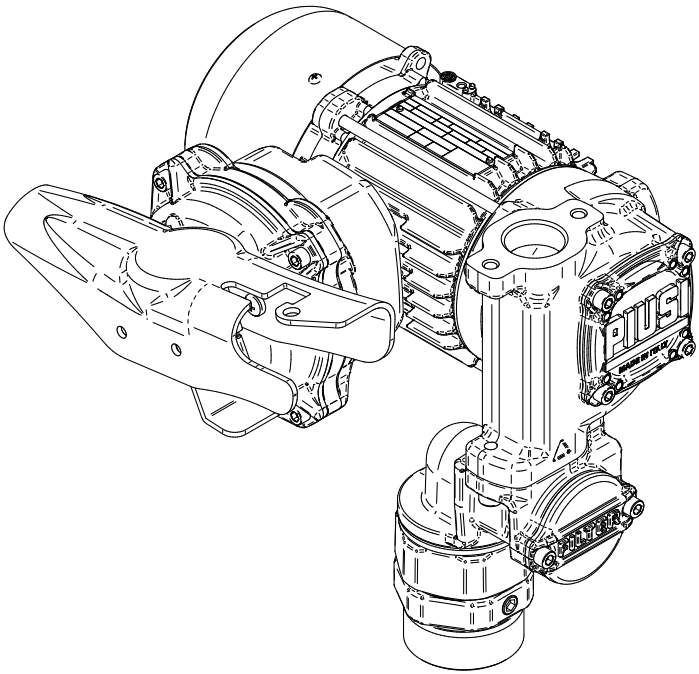
PIUSI Fluid Handling Innovation

PANTHER EX



MADE IN ITALY

Manuale di Installazione, uso e manutenzione IT

Installation, use and maintenance manual EN

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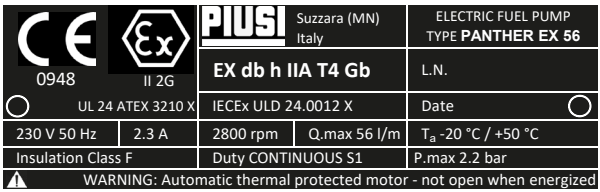
ENGLISH

Bulletin MO725

CONTENTS

1 MACHINE AND MANUFACTURER IDENTIFICATION



Example of technical data plate. The values vary depending on the model purchased.

AVAILABLE MODELS:	**Panther EX 56 230/50** **Panther EX 56 230/60** **Panther EX 56 240/50**
MANUFACTURER:	PIUSI S.p.A. , Via Pacinotti 16/A – z.i. Rangavino 46029 Suzzara - (MN) - Italy

THE PUMPS BEAR THE FOLLOWING ATEX/IECEX MARKING

Ex		Electrical apparatus constructed and tested for use in an explosive atmosphere, in accordance with Annex II of Directive 2014/34/EU.
II	GROUP II	Equipment intended for use in places with presence of explosive atmosphere, other than underground sites, mines, tunnels, etc., identified according to the criteria of the Directive 2014/34/EU (ATEX).
2	CATEGORY 2	Equipment designed to be capable of functioning in conformity with the operating parameters established by the manufacturer and ensuring a high level of protection.
G	TYPE OF EXPLOSIVE ATMOSPHERE	Equipment intended for use in the presence of gas; Equipment suitable for installation in Zone 1.
Ex	PERMANENT PREFIX	Equipment designed and made in accordance with harmonized standards EN/IEC 60079 and EN ISO / ISO 80079 (for presumption of conformity with 2014/34/EU), providing a level of protection against ignition in explosive atmospheres suitable for the installation in the declared Zone.
db	PROTECTION METHOD	Electrical apparatus not able to ignite a potentially explosive atmosphere because compliant with the requirement of IEC 60079-1 & EN 60079-1.
h	PROTECTION METHOD	Non-electrical apparatus not able to ignite a potentially explosive atmosphere because compliant with the requirements of ISO 80079-36 & ISO 80079-37 and EN ISO 80079-36 & EN ISO 80079-37 (Type 'C').
IIA	GAS CLASS	Group II. Equipment intended for use in places with presence of explosive gas atmosphere other than mines susceptible to firedamps. Group Subdivision IIA: a typical gas is propane.
T4	TEMPERA-TURE CLASS	Temperature class T4 = Maximum surface temperature 135°C.
Gb	EQUIPMENT PROTECTION LEVEL	Level of protection "b" - EPL "Gb": the equipment is not a source of ignition in normal operations and expected malfunction. It is suitable for the installation in Zone 1.

2 CONFORMITY

WARNING		**SEE "DECLARATION OF CONFORMITY" SHEET.**

3 MACHINE DESCRIPTION

PUMP	Self-priming, volumetric, rotating electric vane pump, equipped with by-pass valve.
MOTOR	Induction motor powered by alternate current, with continuous cycle, closed type, IP55 protection class according to **CEI EN 60034-5**, flange-mounted directly to the pump body.

WARNING		**Motor equipped with automatic thermal overload protection. Should the protection activated, turn off the pump and wait for it to cool down.**

3.1 DEFINITION OF CLASSIFIED ZONES

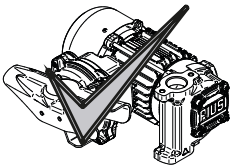
FOREWORD	Definition of zones as shown in directive 99/92/EC.
ZONE 0 	Place where an explosive atmosphere made up of a mix of air and inflammable substances in the form of gas, vapour or mist is continuously present, either for long periods or frequently. Note: Generally speaking, said conditions, when they occur, involve the inside of tanks, pipes and containers, etc.
ZONE 1 	Place where it is probable that an explosive atmosphere, made up of a mix of air and inflammable substances in the form of gas, vapour or mist, can occur occasionally during normal operation. Note: Said zone can also include: - places in the immediate vicinity of zone 0; - places in the immediate vicinity of supply openings; - places in the immediate vicinity of filling and and emptying openings; - places in the immediate vicinity of appliances, protection systems and fragile glass and ceramic components, or components made of other similar materials; - places in the immediate vicinity of inadequately sealed stuffing boxes, e.g. on pumps and valves with stuffing box.
ZONE 2 	Place where it is improbable that an explosive atmosphere, made up of a mix of air and inflammable substances in the form of gas, vapour or mist, can occur during normal operation, but which, if it does occur, only persists for a short time. Note: Said zone can include, among others, places surrounding the zone 0 or 1.
ZONE 20 	Place where an explosive atmosphere in the form of a cloud of combustible powders in the air is continuously present, either for long periods or frequently. Note: Generally speaking, said conditions, when they occur, involve the inside of tanks, pipes and containers, etc.
ZONE 21 	Place where it is probable that an explosive atmosphere, in the form of a cloud of combustible powders in the air, can occur occasionally during normal operation. Note: Said zone can include, for example, among others, places in the immediate vicinity of powder loading and emptying points and places where powder layers form or which, during normal operation, could produce an explosive concentration of combustible powders mixed with the air.

ZONE 22

Place where it is improbable that an explosive atmosphere, in the form of a cloud of combustible powders in the air, occurs during normal operation but which, if it does occur, only persists for a short time.
Note: This zone can comprise, among others, places near appliances, protection systems and components containing powder, out of which the powder may leak with the formation of powder deposits (e.g., milling salt, where the powder comes out of the mills and deposits).

ZONE 1

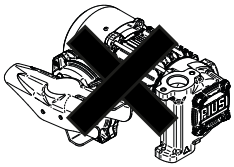
ZONE 2



ZONE 0

ZONE 20

ZONE 21



3.2 IGNITION HAZARDS AND PROTECTIVE MEANS IMPLEMENTED

Hot surfaces	The pump does not reach an external surface temperature of 135°C under any condition of use, either during normal operation or during the following foreseeable malfunctions: dry running and blocked output. A thermal sensor installed on the motor winding has been provided for this purpose, and stops the motor in the event of overheating.
Mechanically generated sparks	Moving parts do not generate sparks (bearings are self-lubricated) This instruction shows how to avoid external impact.
Electrical equipment	All electrical components are located inside the explosion-proof enclosure.
Static electricity	All materials used are in continuity or have a dimension less than 100 mm^2.

3.3 INTENDED USE

AUTHORIZED USE	**PUMP FOR TRANFERRING FUEL SUITABLE FOR OPERATING IN ZONES CLASSIFIED"1"AND "2", ACCORDING TO DIRECTIVE 99/92/EC.** **THE DETERMINATION OF THE AREAS (ZONES) IS TO BE CARRIED OUT BY THE USER.**
FORBIDDEN USE	Using the appliance for fluids other than those listed in paragraph "Fluids permitted" and for uses other than those described at the item "Authorized use" is forbidden.

PLANT OPERATION RESTRICTIONS

IT IS FORBIDDEN:

1	To use the appliance in a construction configuration other than that contemplated by the manufacturer.
2	To use the appliance with fixed guards tampered with or removed.
3	To use the appliance in places where there is risk of explosion and/or fires classified in the following zones: 0; 20; 21; 22.
4	To integrate other systems and/or equipment not considered by the manufacturer in the executive project.
5	To connect the appliance up to energy sources other than those contemplated by the manufacturer.
6	To use the commercial devices for purposes other than those indicated by the manufacturer.
7	To use in case of lightnings.

3.4 HANDLING AND TRANSPORT

Due to the limited weight and dimensions of the pumps, special lifting equipment is not required to handle them. The pumps are carefully packed before dispatch. Check the packing when receiving the material and store in a dry place.

4 GENERAL WARNINGS

Important precautions

To ensure operator safety and to protect the pump from potential damage, workers must be fully acquainted with this instruction manual before performing any operation.

Symbols used in the manual

The following symbols will be used throughout the manual to highlight safety information and precautions of particular importance.

WARNING	**WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.**
NOTE	**NOTE is used for information not relating to personnel safety**

Manual storage

This manual should be complete and legible throughout. It should remain available to end users and specialist installation and maintenance technicians for consultation at any time.

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NOTE	**THIS MANUAL IS VALID ONLY FOR AC PUMPS.**
	ALWAYS USE THE RIGHT VOLTAGES TO CONNECT THE PUMPS.
WARNING	**USE THE PUMP ONLY WITH FLUIDS PERMITTED. DO NOT USE WITH FLUIDS NOT PERMITTED TO AVOID DAMAGING THE PUMP. THE GUARANTEE LAPSES IN CASE OF MISUSE OF THE FLUID.**
	DO NOT USE THE PUMP WITH LIQUID FOOD PRODUCTS AND/OR WATER-BASED FLUIDS.
	DO NOT OPERATE THE PUMP DRY TO AVOID DAMAGE.
	Before connection, make sure that the piping and the suction tank are free of dirt and solid residue that could damage the pump and its accessories. Never collect the fluid from the bottom of the tank since it may contain impurities.
	Keep a working fire extinguisher in the work area.
	Do not operate the unit when fatigued or under the influence of drugs or alcohol.
	Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
	Keep children and animals away from the work area.
	Comply with all applicable safety regulations.
	Do not use in case of lightnings.
	WHILE USING THE PUMP SWITCH OFF ALL THE ELECTRONIC DEVICES (I.E. MOBILE PHONES, BEEPERS, ETC.).

5 FIRST AID RULES

Contact with the product	For problems arising from the treated fluid in case of contact with eyes and skin or in case of inhalation or ingestion, refer to the MSDS of the fluid used.
Persons who have suffered electric shock	• Disconnect the power source, or use a dry insulator to protect yourself while you move the injured person away from any electrical conductor. • Avoid touching the injured person with your bare hands until he is far away from any conductor. • Immediately call for help from qualified and trained personnel. • Do not operate switches with wet hands.
NOTE	**Please refer to the MSDS for the product.**
SMOKING PROHIBITED	**DO NOT SMOKE NEAR THE PUMP AND DO NOT USE THE PUMP NEAR FLAMES.**

6 GENERAL SAFETY RULES

USER'S RESPONSI-BILITY	**IT IS ESSENTIAL TO GET TO KNOW AND UNDERSTAND THE INFORMATION CONTAINED IN THIS MANUAL.** **IT IS ESSENTIAL TO GET TO KNOW AND OBSERVE THE SAFETY SPECIFICATIONS FOR FLAMMABLE LIQUIDS.** **BEFORE USING THE PUMP IT'S IMPORTANT TO TRAIN OPERATORS, INSTALLERS AND MAINTENANCE STAFF TO LET THEM WORK IN AN AREA CLASSIFIED "1" AS MENTIONED BY DIRECTIVE 99/92/EC .**
Essential protective equipment characteristics	In case of contact with the product and for good standard of behaviour, wear protective equipment which is: • suited to the operations that need to be performed; • resistant to products used To do so, please refer to the relevant technical datasheets of the fluid used.
Personal protective equipment that must be worn	safety shoes. close-fitting clothing. protection gloves. safety goggles.
Other devices	instructions manual.
Protective gloves	Prolonged contact with the treated product may cause skin irritation; always wear protective gloves during dispensing.
NOTE	**To prevent electric shock and detonation of sparks, the entire pumping system must have proper grounding, including tank and any accessories.**

WARNING		Enforce regulations for electrical installation.
		All wiring and electrical connections must be performed by authorized and suitably trained personnel.
		Never touch the electric plug or socket with wet hands.
		Do not switch the dispensing system on if the network connection cable or important parts of the apparatus are damaged, such as the inlet/outlet pipe, nozzle or safety devices. Replace the damaged pipe immediately.
IMPORTANT WARNING		The electrical connection between the plug and socket must be kept well away from water.
		The pump is equipped with current-sensing protection. If it activates turn off the pump immediately.
		The pump is equipped with protection against overheating and overload risks. Should such devices activate, the pump switches off automatically, but the master switch is not turned off. It is important to turn the pump off using its switch. The pump restarts after its normal operating conditions have been restored.
WARNING		Failure to observe the above mentioned rules can cause serious accidents.
		Should the heat sensor activate under normal use conditions, please contact the technical support.
		DO NOT OPEN THE WIRING BOX IN A CLASSIFIED AREA.
WARNING	 	Pay attention to hot surfaces.

7 TECHNICAL DATA

Model	Voltage (V)	Frequency (Hz)	Max. Absorption (A)	RPM	Nominal flow rate (l/min)	Maximum pressure (bar)	By-pass pressure (bar)	Type of Service (S1-continuous; S3-periodic intermittent)
Panther EX 56 230 V/50 Hz	230	50	2.3	2800	56	1.8	2.2	S1
Panther EX 56 230 V/60 Hz	230	60	2.3	3400	56	1.8	2.2	S1
Panther EX 56 240 V/50 Hz	240	50	2.7	2800	56	1.8	2.2	S1

POWER CORD INPUT

3/4" - 14 NPT
USE CABLE GLANDS WITH THE APPROPRIATE DEGREE OF PROTECTION.

WARNING

IF YOU NEED TO INSTALL A THREAD ADAPTOR IN THE CABLE INPUT HOLE, IT IS NECESSARY TO MAKE SURE THAT IT FEATURES A SUITABLE PROTECTION AND THE CABLE GLAND INSTALLED MUST HAVE MINIMUM 5 FULL THREADS ENGAGED.

POWER CORD

Minimum section recommended for cables up to 6 m:
1 mm^2 or **18 AWG.**
Recommended sheath: HO5BN4-F T90°C, SJTW T90°C.

8 OPERATING CONDITIONS

8.1 ENVIRONMENTAL CONDITIONS

AMBIENT TEMPERATURE

min. -4 °F / max +122 °F
min. -20 °C / max +50 °C

FLUID TEMPERATURE

min. -4 °F / max +122 °F
min. -20 °C / max +50 °C

RELATIVE HUMIDITY

max. 90%

WARNING

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

8.2 ELECTRICAL POWER SUPPLY

NOTE 	**The pump must be powered by AC line, the nominal values of which are indicated on the table in the paragraph "TECHNICAL DATA". The maximum acceptable variations from the electrical parameters are: Voltage: +/- 5% of the nominal value Frequency: +/- 2% of the nominal value**
WARNING 	**Power supply from lines with values that do not fall within the indicated limits may damage the electrical and electronic components.**

8.3 ELECTRONIC ENGINE CONTROL

NOTE 	The pump is equipped with a motor driving board, operated by a magnetic switch.

The table shows the technical specifications of the motor driving card and the magnetic drive.

Specification	Value
Supply	See table paragraph 7
Max. current	See table paragraph 7
Type of load	Ohmic inductive
Operating temperature	-25 °C / +65 °C (-13 °F / +149 °F)
Purpose of the control	Operational control
Control construction	Integrated control
Type of control	Type 1
Degree of pollution	2
Impulse voltage	1500 V

WARNING 	**The magnetic switch does not have the function of cutting off the power. High voltage may still be present inside the terminal block if the electrical power supply is cut only by moving the magnetic switch to the OFF position.**

8.4 FLUIDS PERMITTED

WARNING 	**THE PUMP CAN BE USED ONLY WITH THE FOLLOWING FLUIDS: - DIESEL up to B20 - KEROSENE - PETROL up to E15 (15% max. ethyl alcohol) - ASPEN 2/4 -Paraffinic HVO/XTL: EN 15940**

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9 INSTALLATION

WARNING		**AUTOMATICALLY PROTECTED THERMAL MOTOR - DO NOT OPEN WHEN ENERGIZED.**
		DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE IS PRESENT.
WARNING		**Before any operation, ensure to be out of potentially explosive areas.**
		The pump must never be operated before the delivery and suction lines have been connected.
		Tighten the electrical box to ensure protection against the risk of explosion The right screw tightening torque that grants this protection is 10 Nm.
		Provide for the installation of a 10 A delayed fuse on the supply line.

PRELIMINARY INSPECTION

- Verify that all components are present. Request any missing parts from the manufacturer.
- Check that the pump has not suffered any damage during transport or storage.
- Carefully clean the suction and delivery inlets and outlets, removing any dust or other packaging material that may be present.
- Check that the electrical data corresponds to the data indicated on the data plate.

WARNING		**If valves are to be installed in the circuit, make sure they are equipped with overpressure system.**
		Clean the tank and make sure it is well-ventilated (recommended opening pressure: 200/250 mbar).
		Apply the quick coupling to the tank correctly and safely.
		Do not block the drainage holes.

9.1 POSITIONING, CONFIGURATIONS AND ACCESSORIES

NOTE		**The pump must be secured in a stable manner.**
WARNING		**It is the installer's responsibility to provide the line accessories necessary for the safe and proper functioning of the pump. The accessories that are not suitable to be used with the previously indicated material could damage the pump and/or cause injury to persons, as well as causing pollution.**
		To maximise performance and prevent damage that could affect pump operation, always demand original accessories.

9.2 NOTES ON SUCTION AND DELIVERY LINES

DELIVERY

The selection of the pump model must be made taking into account the characteristics of the system.
The combination of: the length of the pipe, the diameter of the pipe, the flow rate, as well as the accessories installed, could create back pressures that are greater than the maximum predicted pressure, thereby causing the pump's electronic controls to intervene and reducing the dispensed flow considerably.
In these cases, to guarantee correct operation of the pump, it is necessary to reduce the resistance of the system using pipes that are shorter or that have a greater diameter, as well as line accessories with smaller resistance (e.g. an automatic dispensing nozzle with greater flow rate capacity).

SUCTION

Self-priming pumps are characterized by excellent suction capacity.
During the start-up phase, when the suction pipe is empty and the pump is wet with the fluid, the electric pump unit is able to suck liquid from a maximum vertical distance of 2 m.
It is important to note that it could take up to 1 minute for the pump to prime and that the presence of an automatic dispensing nozzle on the delivery side will prevent the air trapped during the installation from being released and, therefore, the correct priming of the pump. For this reason, it is always advisable to prime the pump without an automatic delivery nozzle, verifying the proper wetting of the pump.
Always install a foot valve to prevent the suction pipe from being emptied and to keep the pump wet at all times. In this way, the pump will always start up immediately the next times it is used. When the system is in operation, the pump can operate with back pressures of up to 0.5 bars on the suction inlet; beyond this point, the pump may begin to cavitate resulting in a drop of the flow rate and an increase in the noise levels of the system.
Thus, it is important to guarantee small back pressures on the suction side, by using short pipes with diameters that are equal to or larger than those recommended, reducing bends to a minimum, and using filters with a large cross-section and foot valves with minimum possible resistance on the suction side. It is very important to keep the suction filters clean because, when they become clogged, they increase the resistance of the system.
The vertical distance between the pump and the fluid must be kept as short as possible, and not longer than max. 2 m required for priming. If the distance is greater, a foot valve must be installed to allow the suction pipes to fill up and the pipe diameter must be larger. It is however recommended that the pump is not installed if the vertical distance is greater than 3 m.

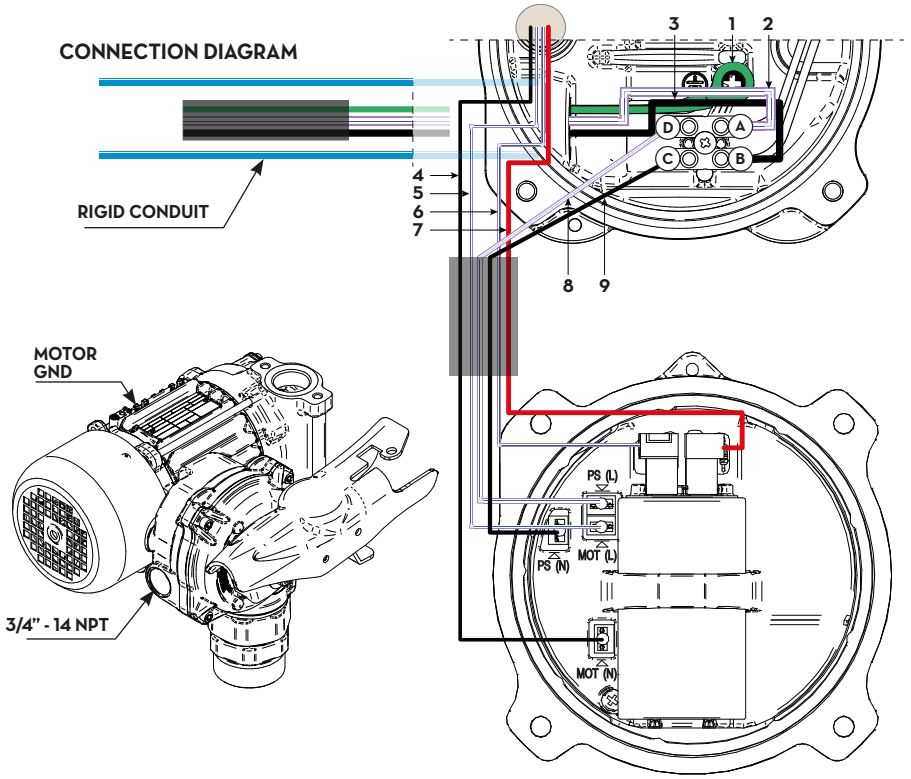
WARNING	
	If the suction tank is higher than the pump, an anti-siphon valve should be installed to prevent accidental diesel fuel leaks. Dimension the installation in order to control the back pressures due to water hammering.
	It is a good system practice to install vacuum and air pressure gauges right at the inlets and outlets of the pump, to allow verification that operating conditions are within specified limits. To prevent the suction pipes from being emptied when the pump stops, a foot valve should be installed.
	THE INSTALLER IS RECOMMENDED TO INSTALL A SUCTION FILTER.

10 CONNECTIONS
10.1 ELECTRICAL CONNECTIONS

WARNING	**Before any operation, ensure to be out of potentially explosive areas.**
	It is the installer's responsibility to carry out the electrical connections in compliance with the relevant standards.
	Comply with the following (not exhaustive) instructions to ensure a proper electrical connection:

- During installation and maintenance make sure that power supply to the electric lines has been turned off.
- Use cables with minimum sections, rated voltages and installation type that are suitable for the characteristics indicated in paragraph "TECHNICAL DATA" and the installation environment.
- Always make sure that the cover of the terminal strip box is closed before switching on the power supply, after having checked the integrity of the seal gaskets that ensure the IP55 protection grade. For those screws use a 10 Nm tightening torque.

WARNING	**All motors are equipped with a grounding terminal. Make sure the entire plant is properly grounded.**
	THE EXTERNAL GROUNDING CABLE MUST HAVE A MINIMUM SECTION OF 4 mm^2.
	THE INTERNAL GROUNDING CABLE MUST HAVE A MINIMUM SECTION OF 1 mm^2.
	MAKE SURE TO USE A CABLE GLAND, WITH SUFFICIENT PROTECTION GRADE (SEE ATEX ZONE CLASSIFICATION CH. 3.1).
WARNING	**IF YOU NEED TO INSTALL A THREADED ADAPTER IN THE CABLE ENTRY HOLE, YOU MUST ENSURE THAT IT IS ATEX CERTIFIED WITH ADEQUATE PROTECTION METHOD AND THAT DURING INSTALLATION THE CABLE GLAND IS 3/4"- 14 NPT, WITH AT LEAST 5 THREADS IN THE SOCKET.**
NOTE	**In the event of installation in zones which are not classified, it is sufficient to observe the minimum safety standards already mentioned in this manual.**
	- The owner has the responsibility to verify that all the local and national regulations have been observed. - Ensure that the connection cable to the power supply is protected from all heat sources and sharp edges.
WARNING	**Failure to observe the above mentioned rules can cause serious accidents.**
	Always provide a disconnect switch upstream of the electrical system.



CABLE NO.	COLOUR	SECTION	IN	OUT	CABLE GROUP
1	Green	16 AWG (1.5 mm)	⏚		Power Supply Cable
2	White	16 AWG (1.5 mm)	A		
3	Black	16 AWG (1.5 mm)	B		
4	Black	18 AWG (1 mm)	MOT (L)	MOTOR	Motor Cable
5	White	18 AWG (1 mm)	MOT (N)	MOTOR	
6	White	18 AWG (1 mm)	Capacitor	MOTOR	Capacitor Cable
7	Red	18 AWG (1 mm)	Capacitor	MOTOR	
8	White	14 AWG (2 mm)	D	PS (N)	Internal Wiring
9	Black	14 AWG (2 mm)	C	PS (L)	

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10.2 PIPING CONNECTIONS

FOREWORD - Before carrying out any connection, refer to the visual indications i.e. arrow on the pump head, to identify suction and delivery.

WARNING		**Wrong connection can cause serious pump damage.**

PRELIMINARY INSPECTION - Before connection, make sure that the piping and the suction tank are free of dirt and solid residue that could damage the pump and its accessories. Never collect the fluid from the bottom of the tank since it may contain impurities.
- Before connecting the delivery pipe, partially fill the pump body, from delivery side, with the liquid that needs to be pumped in order to facilitate priming.
- Do not use conical threaded fittings, which could damage the threaded inlet or outlet openings of the pump if excessively tightened.

11 INITIAL START-UP

FOREWORD - Check that the quantity of fluid 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.
- Make sure that the piping and line accessories are in good condition.

NOTE		**THE PUMP DELIVERY AND PRESSURE CANNOT BE ADJUSTED.**
WARNING		**Fluid leaks can damage objects and injure persons.**
NOTE		**- Never start or stop the pump by connecting or cutting off the power supply.** **- Prolonged contact with some fluids can damage the skin. The use of goggles and gloves is recommended.**

IF THE PUMP DOES NOT PRIME Depending on the system characteristics, the priming phase can last from several seconds to a few minutes. If this phase is prolonged, stop the pump and verify:
- that the pump is not running completely dry (fill with fluid from the delivery line);
- hat the suction pipe guarantees there is no air infiltration;
- that the suction filter is not clogged;
- that the suction height does not exceed 2.5 m;
- that all air has been released from the delivery pipe.

AT THE END OF THE INITIAL START-UP 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 delivery back pressure does not exceed the maximum back pressure for the pump.

12 EVERYDAY USE

USE PROCEDURE

1. If flexible pipes are used, attach the ends of the pipings to the tanks. In the absence of an appropriate slot, solidly grasp the delivery pipe before beginning dispensing.
2. Before starting the pump make sure that the delivery valve is closed (dispensing nozzle or line valve).
3. Turn the ON/OFF switch on.
4. Open the delivery valve, solidly grasping the pipe.
5. While dispensing, do not inhale the pumped product.
6. If any treated fluid leaks out during dispensing, take all steps necessary to ensure the leaked fluid is cleaned up and safe as specified on the product technical sheet.
7. Close the delivery valve to stop dispensing.
8. When dispensing is finished, turn off the pump.

WARNING		**THE WORKING OPERATIONS MUST ALWAYS BE GUARDED BY THE OPERATOR.**
		The by-pass valve allows functioning with delivery closed only for short periods (max. 3 minutes).
		To avoid damaging the pump, after use, make sure the pump is off.
		In case of a power break, switch the pump off straight away.
		Should any sealants be used on the suction and delivery circuit of the pump, make sure that these products are not released inside the pump.
		Foreign bodies in the suction and delivery circuit of the pump could cause malfunctioning and breakage of the pump components.
WARNING **Specific conditions of use**		**The class of the screws used for the assembly of explosion-proof enclosures must be of quality higher or equal to 8.8 (ISO 898-1).**
		Flameproof joints are not intended to be repaired.
		Fluid temperature range shall be from -20°C to +50°C.

13 MAINTENANCE

Safety instructions	The pump is designed and constructed to require minimum maintenance. Before carrying out any maintenance work, disconnect the pump from any electrical and hydraulic power source. During maintenance, the use of personal protective equipment (PPE) is compulsory. In any case always bear in mind the following basic recommendations for a good functioning of the pump.
WARNING 	**BEFORE ANY MAINTENANCE OPERATION, ENSURE TO BE OUT OF POTENTIALLY EXPLOSIVE AREAS.** **FOR SAFETY REASONS IT IS FORBIDDEN TO REPAIR FLAMEPATHS. DO NOT REMOVE THE PARTS "BOTTOM PLATE" (1), "MOTOR BOX" (2), "PUMP BODY" (3) AND "TERMINAL BASE" (4).**
Authorized maintenance personnel	All maintenance must be performed by qualified personnel. Tampering can lead to performance degradation, danger to persons and/or property and may result in the warranty and ATEX CERTIFICATION being voided.
Measures to be taken	Check that the labels and plates found on the dispensing system do not deteriorate or become detached over time.
ONCE A WEEK	- Check that the pipe connections are not loose to prevent any leaks; - Check and keep the filter installed on the suction line clean.
ONCE A MONTH	- Check the pump body and keep it clean and free of any impurities; - Check that the electrical supply cables are in good condition.

14 NOISE LEVEL

Under normal operating conditions, noise emission of all models does not exceed 74 dB at a distance of 1 m from the electric pump.

15 PROBLEMS AND SOLUTIONS

For any problems contact the authorized dealer nearest to you.

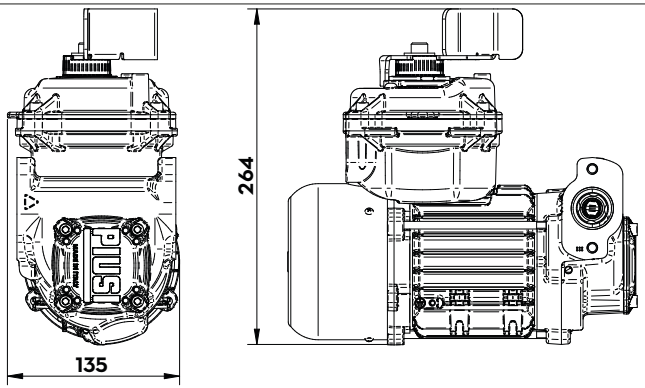
PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
THE MOTOR IS NOT TURNING	Lack of electric power.	Check the electrical connections and the safety systems.
	Rotor jammed.	Check for possible damage or obstruction of the rotating components.
	Motor problems.	Contact the Service Department.
THE MOTOR TURNS SLOWLY WHEN STARTING	Low voltage in the electric power line.	Bring the voltage back within the specified 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 piping.
	High loss of head in the delivery circuit (working with the by-pass open).	Use shorter piping or of greater diameter.
	By-pass valve blocked.	Dismantle the valve, clean and/or replace it.
	Air entering the pump or the suction piping.	Check the seals of the connections.
	Narrowing in the suction piping.	Use piping 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 piping is resting on the bottom of the tank.	Raise the piping.
INCREASED PUMP NOISE	Cavitation occurring.	Reduce suction pressure.
	Irregular functioning of the by-pass.	Dispense until the air is purged from the by-pass system.
	Presence of air in the fluid.	Verify the suction connections.
LEAKAGE FROM THE PUMP BODY	Seal damaged.	Check and replace the seal.
THE PUMP DOES NOT PRIME THE LIQUID	Suction circuit blocked.	Remove the blockage from the suction circuit.
	Malfunction of foot valve fitted on suction circuit.	Replace foot valve.
	The suction chambers are dry.	Add liquid from the pump delivery side.
	The pump chambers are dirty or blocked.	Remove the blockages from the suction and delivery valves.

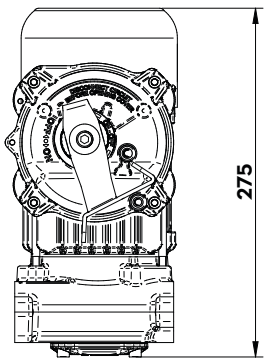
THE HEAT SENSOR ACTIVATES UNDER NORMAL OPERATING CONDITIONS	Ambient temperature too high.	Respect the indications of the maximum ambient temperature.
THE SWITCH LEVER IS BLOCKED	Dust/dirt under the knob.	Open and clear the knob.
	Damaged spring.	Contact the Service Department.
THE SWITCH IS NOT WORKING	Magnets are damaged (corroded or broken) or missing.	Contact the Service Department.
	Electronic board is damaged.	Contact the Service Department.

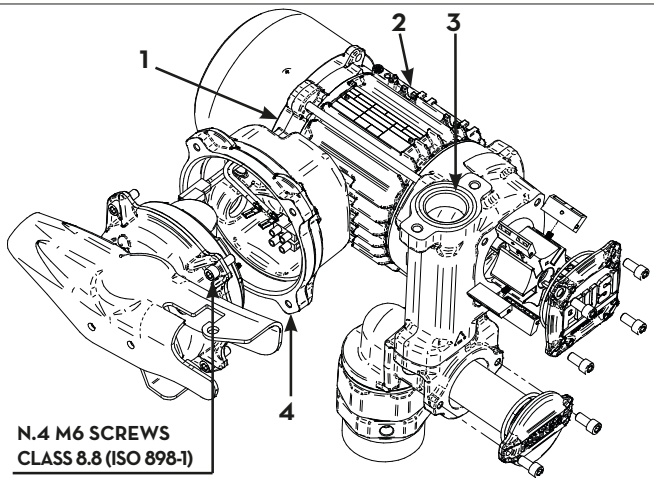
16 DEMOLITION AND DISPOSAL

Foreword	If the system needs to be demolished, the parts which make it up must be delivered to companies that specialize in the recycling and disposal of industrial waste and, in particular:
Disposal of packing materials	The packaging consists of biodegradable cardboard, which can be delivered to companies for standard recycling of cellulose.
Disposal of metal parts	Metal parts, whether paint-finished or in stainless steel, can be recovered by scrap metal collectors.
Disposal of electric and electronic components	These must be disposed of by companies that specialize in the disposal of electronic components, in accordance with the indications of directive 2012/19/EU (see text of directive below).
	European Directive 2012/19/EU requires that all equipment marked with this symbol on the product and/or packaging not be disposed of together with non-differentiated urban waste. The symbol must indicates that this product must not be disposed of together with normal household waste. It is the responsibility of the owner to dispose of these products as well as other electric or electronic equipment by means of the specific collection structures indicated by the government or the local governing authorities.
Information regarding the environment for clients residing within the European Union	Disposing of WEEE equipment as household waste is strictly forbidden. Such waste must be disposed of separately.
	Any hazardous substances in the electrical and electronic appliances and/or the misuse of such appliances can have potentially serious consequences for the environment and human health.
	In case of the unlawful disposal of said waste, fines will be applicable as defined by the laws in force.
Disposal of miscellaneous parts	Other components, such as pipes, rubber gaskets, plastic parts and wires, must be disposed of by companies specializing in the disposal of industrial waste.

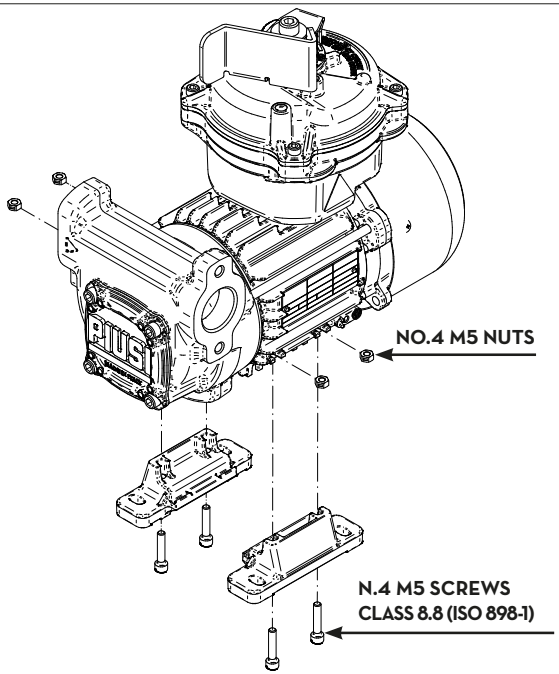
17 DIMENSIONS AND EXPLODED VIEWS







17.1 FEET ASSEMBLY EXPLODED VIEW (where required by model)



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