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2 MACHINE AND MANUFACTURER IDENTIFICATION

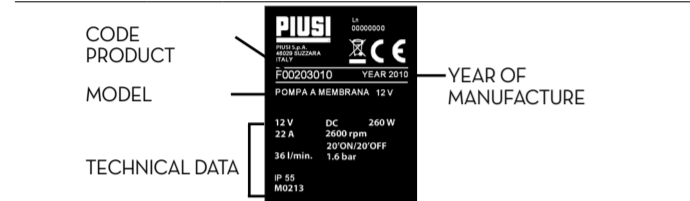


Table with 2 columns: AVAILABLE MODELS, MANUFACTURER. Rows include model numbers and manufacturer details for PIUSI S.p.A.

3 DECLARATION OF CONFORMITY

The undersigned: PIUSI S.p.A. Via Pacinotti 16/A - z.l. Rangovino 46029 Suzzara (MN) Italy. Hereby states under its own responsibility, that the equipment described below: Description: Dispenser Pump for the transfer of Ad-Blue® - AUS32 - WATER - Antifreeze Model: Diaphragm pump...

4 MACHINE DESCRIPTION

PUMP MOTOR: Five-chamber positive-displacement diaphragm pump. Brush motor, DC, low tension with intermittent cycle, closed type in protection class IP55 according to CEI-EN 60034-5, directly fanged to the pump body.

4.1 HANDLING AND TRANSPORT

Foreword: 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. STORAGE: Store in a covered and dry place. Store the unit away from dirt and vibration. ENVIRONMENTAL CONDITIONS: Storage humidity: Max 90%. Storage temperature: min -10 °C / Max +50 °C. PACKAGING: The pump is equipped comes packed suitably for shipment. On the packaging a label shows the following product information:

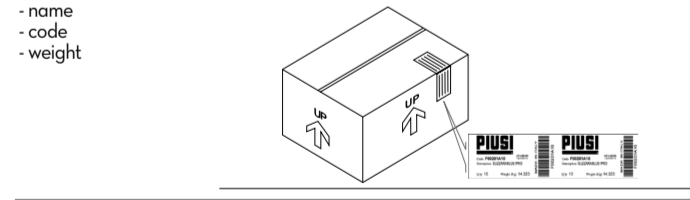


Table with 3 columns: MODEL, WEIGHT (Kg), PACKAGING DIMENSION(mm). Rows for Versione 12V and Versione 24V.

5 GENERAL WARNINGS

Warnings: To ensure operator safety and to protect the dispensing system from potential damage, workers must be fully acquainted with this instruction manual before attempting to operate the dispensing system. Symbols used in the manual: ATTENTION: This symbol indicates safe working practices for operators and/or potentially exposed persons. WARNING: This symbol indicates that there is risk of damage to the equipment and/or its components. NOTE: This symbol indicates useful information. Manual preservation: 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. Reproduction rights: All reproduction rights are reserved by Piusi S.p.A. The text cannot be reprinted without the written permission of Piusi S.p.A. © Piusi S.p.A. THIS MANUAL IS THE PROPERTY OF Piusi S.p.A. ANY REPRODUCTION, EVEN PARTIAL, IS FORBIDDEN.

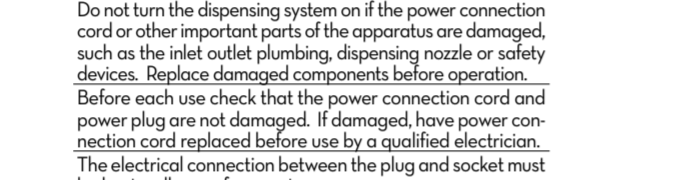
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6 SAFETY INSTRUCTIONS

ATTENTION: You must avoid any contact between the electrical power supply and the fluid that needs to be FILTERED. Mains - preliminary checks before start: Before any checks or maintenance work are carried out, disconnect the power source. FIRE AND EXPLOSION: When flammable fluids are present in the work area, such as gasoline and windshield washer fluid, be aware that flammable fumes can ignite or explode. To help prevent fire and explosion: This equipment must be grounded. Improper grounding, setup or usage of the system can cause electric shock. Electrostatic discharge: Do not plug or unplug power cords or turn lights on or off when flammable fumes are present. Ground all equipment in the work area. Stop operation immediately if static sparking occurs or if you feel a shock. Do not use equipment until you identify and correct the problem. Keep a working fire extinguisher in the work area.

9 TECHNICAL DATA

Table with 5 columns: Functioning Point, Flow Rate, Voltage (V), Absorption (A), Typical Delivery Configuration. Rows A (Maximum flow rate), B (High flow rate), C (Normal conditions), D (By pass).



10 ELECTRICAL DATA

Table with 4 columns: PUMP MODEL, POWER SUPPLY, CURRENT. Rows for 12V version and 24V version, showing DC voltage, frequency, and max current.

11 OPERATING CONDITIONS

11.1 ENVIRONMENTAL CONDITIONS: TEMPERATURE: min. +23 °F / max. +104 °F min. -5 °C / max. +40 °C max. 90% RELATIVE HUMIDITY ATTENTION: The temperature limits shown apply to the pump components and must be respected to avoid possible damage or malfunction.

11.2 ELECTRICAL POWER SUPPLY

NOTE: N.B. THE PUMP SHOULD BE POWERED BY A SAFE SOURCE. BATTERY OR POWER SUPPLY 12/24V WITH SAFETY TRANSFORMER. In accordance with the model, the pump must be powered by a direct current line, the nominal values of which are indicated on the table in the paragraph "ELECTRICAL DATA". The maximum acceptable variations from the electrical parameters are: Voltage: +/- 10% of the nominal value. ATTENTION: Power supply from lines with values that do not fall within the indicated limits could cause damage to the electrical components and reduction of working performance.

11.3 DUTY CYCLE

NOTE: The pumps have been designed for intermittent use and a 20-minute duty cycle under conditions of maximum back pressure. ATTENTION: Functioning under by-pass conditions is only allowed for short periods of time (max. 3 minutes).

11.4 PERMITTED AND NON-PERMITTED FLUIDS

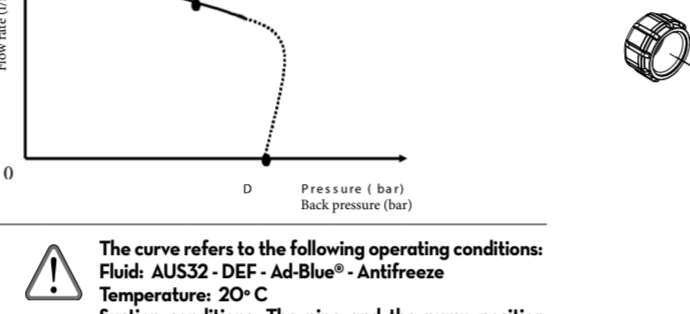
Table with 2 columns: FLUIDS PERMITTED, FLUIDS NON-PERMITTED AND RELATED DANGERS. Lists allowed fluids like AUS32, water, antifreeze and prohibited fluids like diesel fuel, petrol, inflammable liquids, corrosive chemical products, solvents, liquids with viscosity >20 cst.

12 INSTALLATION

ATTENTION: The pump must never be operated before the delivery and suction lines have been connected. 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 those indicated on the data plate. Always install in an illuminated area. Install the pump at a height of min. 80 cm.

12.1 POSITIONING, CONFIGURATIONS AND ACCESSORIES

NOTE: In the case of installation in the open air, proceed to protect the pump by providing a protection roof. ATTENTION: The pump must be secured in a stable way using the holes on the bed of the motor and vibration damping devices. THE MOTORS ARE NOT OF THE ANTI-EXPLOSIVE-TYPE. DO NOT install them where inflammable vapours could be present. NOTE: The broad range of pump accessories make it suitable for many different uses, installations and applications. The supporting base can be positioned in different ways. It is the responsibility of the installer to provide the necessary line accessories to ensure the correct and safe operation 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. ATTENTION: To maximise performance and prevent damage that could affect pump operation, always demand original accessories.



12.2 NOTES ON SUCTION AND DELIVERY LINES

DELIVERY EFFECTS ON FLOW RATE: Length and diameter of pipe, flow rate of dispensed liquid, accessories fitted, can create back pressures above those allowed. HOW TO REDUCE EFFECTS ON FLOW RATE CHARACTERISTICS OF DELIVERY PIPES: The delivery pipe must have the following technical characteristics: - recommended minimum nominal diameter: 3/4" - recommended nominal pressure: 10 bar.

13 CONNECTIONS

13.1 ELECTRICAL CONNECTIONS

GENERAL WARNING: Comply with the following (not exhaustive) instructions to ensure a proper electrical connection: 1. Before installation and maintenance make sure that power supply to the electric lines has been turned off. Use cables with minimum cross-sections, rated voltages and installation type that are suitable for the characteristics indicated in paragraph "ELECTRICAL SPECIFICATIONS". 2. Always close the cover of the terminal strip box before switching on the power supply, after having checked the integrity of the seal gaskets that ensure the IP55 protection grade. For connection the installer shall have to use a cable of adequate diameter for the cable gland to ensure protection grade IP55.

13.2 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). ATTENTION: Wrong connection can cause serious pump damage. PRELIMINARY INSPECTION: Before connecting, make sure that the piping and the suction tank are free of dirt and solid residue that could damage the pump and its accessories. 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. If not already fitted, fit a suction filter.

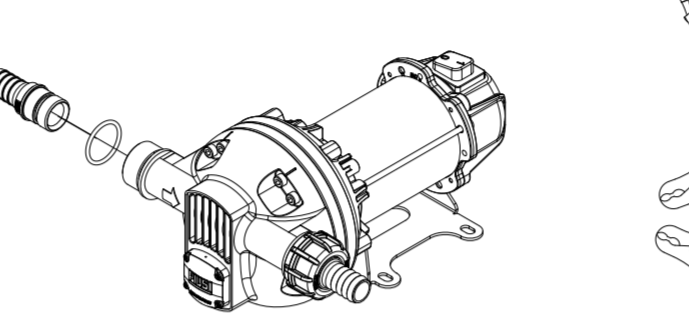
14 INITIAL START-UP

FOREWORD: Check that the quantity of liquid 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. Do not run the pump dry for more than 20 minutes. This can cause serious damage to its components. Fluid leaks can damage objects and injure persons. Never start or stop the pump by connecting or cutting out the power supply. Prolonged contact with some fluids can damage the skin. The use of goggles and gloves is recommended. Extreme operating conditions with duty cycles longer than 20 minutes can cause the motor temperature to rise thus damaging the engine. For each duty cycle of 20 minutes, allow for a rest phase of 20 minutes with motor switched off. During the priming phase, the pump must discharge all the air that is initially present from the delivery line. Therefore it is necessary to keep the outlet open to permit the evacuation of the air. 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. It is recommended that the automatic nozzle be temporarily removed during initial start-up. 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); - that the suction pipe guarantees against air infiltration; - that the suction filter is not clogged; - that the suction height is not higher than 2 m; - that all air has been released from the delivery pipe. 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 delivery back pressure does not exceed the maximum back pressure for the pump.

15 EVERY DAY USE

USE PROCEDURE: 1. If flexible pipes are used, attach the ends of the piping 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. Should you spill any fluid while dispensing, bank it with earth or sand to absorb it and limit its spreading. 7. Close the delivery valve to stop dispensing. 8. When dispensing is finished, turn off the pump.

ATTENTION: 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. In case of prolonged dry-running of the pump, the suction circuit may be empty and suction may become difficult. If so, fill the suction circuit with demineralised water.



16 MAINTENANCE

Safety instructions: The dispensing system was designed and built to require a minimal amount of maintenance. Before carrying out any maintenance work, disconnect the dispensing system 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: Authorised 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 being voided. Measures to be taken: Whenever there is risk of frost, empty the circuit and the pump, taking care to place the pump in an environment where the temperature is no lower than 0°C/32°F. Check that the labels and plates found on the dispensing system do not deteriorate or become detached over time. Check that the pipe connections are not loose to prevent any leaks; - Check and keep the filter installed on the suction line clean. - Check the pump body and keep it clean and free of any impurities; - Check that the electrical supply cables are in good condition. ONCE A WEEK: Whenever it is thought that the system will remain unused for at least 15 days, it must be emptied in order to prevent the product from crystallising inside. This shall be followed by a washing cycle. In any case, it is recommended to wash the pump with demineralised water.

17 NOISE LEVEL

In normal operating conditions, noise emissions of all models do not exceed 70 dB at a distance of 1 metre from the electric pump.

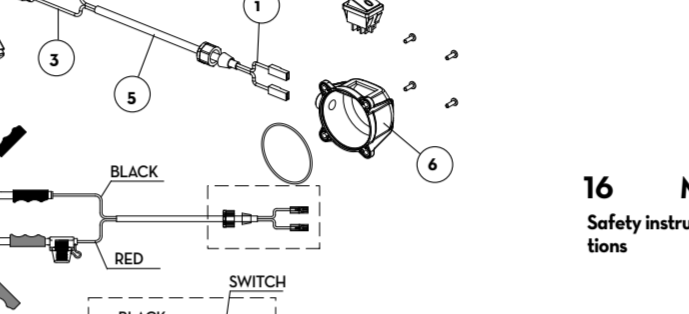
18 PROBLEMS AND SOLUTIONS

Table with 3 columns: PROBLEM, POSSIBLE CAUSE, CORRECTIVE ACTION. Lists various issues like 'THE MOTOR IS NOT TURNING', 'THE MOTOR TURNS SLOWLY WHEN STARTING', 'LOW OR NO FLOW RATE', 'INCREASED PUMP NOISE', 'LEAKAGE FROM THE PUMP BODY', 'THE PUMP DOES NOT PRIME THE LIQUID' and their solutions.

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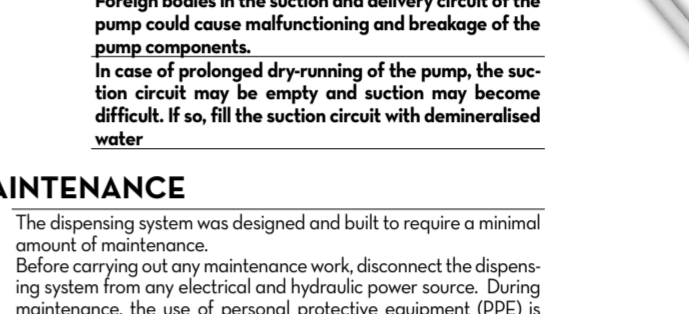
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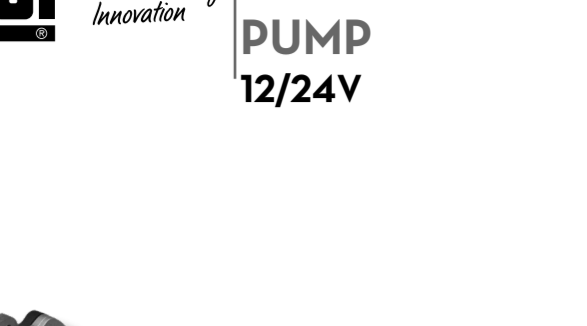
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MADE IN ITALY

Installazione uso e manutenzione IT Installation, use and maintenance EN

