

ENGLISH (Translated from Italian)	
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2 MACHINE AND MANUFACTURER IDENTIFICATION	
CODE PRODUCT	PIUSI S.p.A. SUZZARA (MN) ITALY
MODEL	PIUSI S.p.A. SUZZARA (MN) ITALY
TECHNICAL DATA	PIUSI S.p.A. SUZZARA (MN) ITALY

AVAILABLE MODELS	PIUSI S.p.A. SUZZARA (MN) ITALY
VISCOFLOWMAT 200/2, 230 V / 50-60 Hz, 110 V / 60 Hz	PIUSI S.p.A. SUZZARA (MN) ITALY
VISCOFLOWMAT 230/3, 230 V / 50-60 Hz, 110 V / 60 Hz	PIUSI S.p.A. SUZZARA (MN) ITALY
VISCOFLOWMAT 350/2, 230 V / 50-60 Hz, 400 V / 50 Hz, 110 V / 60 Hz	PIUSI S.p.A. SUZZARA (MN) ITALY
MANUFACTURER	PIUSI S.p.A. - Via Pacinotti 16/A - Z.I. Rangavino 46029 Suzzara (MN) - Italy

3 FACSIMILE COPY OF EU DECLARATION OF CONFORMITY	
The undersigned	PIUSI S.p.A. Via Pacinotti 16/A - Z.I. Rangavino 46029 Suzzara - Mantova - Italy
HEREBY STATES under its own responsibility that the equipment described below:	
Model: VISCOFLOWMAT	
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	
complies with the following legislation:	
- Machinery Regulations	
- Electromagnetic compatibility	
The technical file is at the disposal of the competent authority following motivated request at PIUSI S.p.A. or following request sent to the e-mail address: doc.tec@piusi.com.	
THE ORIGINAL DECLARATION OF CONFORMITY IS PROVIDED SEPARATELY WITH THE PRODUCT	

4 MACHINE DESCRIPTION	
WORVORT	The machine consists of the following components.
ELECTRIC PUMP	Self-priming, volumetric, rotating pump with internal gear, equipped with a by-pass valve, connected to an asynchronous motor, single- or three-phase, 4 poles, closed type (Protection Class IP55 in conformance with EN 60034-5-86), self-ventilated, directly flanged to the pump body.
PRESSURE SWITCH	Two pressure sensors and an electronic card, which controls the sensors signal for starting and stopping the electric motor. The pressure switch is provided with a check valve and a safety valve to keep the system pressure down to 70 bar.

4.1 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.
STORAGE	- Store in a covered and dry place. - Store the unit away from dirt and vibration
PACKAGING	ENVIRONMENTAL CONDITIONS: Storage humidity: Max 90% Storage temperature: min -10 °C / Max -50 °C The pump is equipped comes packed suitably for shipment. On the packaging a label shows the following product information:

GENERAL WARNINGS	Warnings
1	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.
2	The following symbols will be used throughout the manual to highlight safety instructions and precautions of particular importance:
3	ATTENTION This symbol indicates safe working practices for operators and/or potentially exposed persons.
4	WARNING This symbol indicates that there is risk of damage to the equipment and/or its components.
5	NOTE This symbol indicates useful information.
6	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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6 SAFETY INSTRUCTIONS	
Mains - pre-liminary checks before installation	ATTENTION You must avoid any contact between the electrical power supply and the fluid that needs to be FILTERED.
Maintenance control	Before any checks or maintenance work are carried out, disconnect the power source.
FIRE AND EXPLOSION	To help prevent fire and explosion: Use equipment only in well ventilated area.
When flammable fluids are present in the work area, such as gasoline and windshield wiper fluid, be aware that flammable fumes can ignite or explode.	Keep work area free of debris, including rags and spilled or open containers of solvent and gasoline. 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.
ELECTRIC SHOCK	This device must be grounded. Improper grounding setup or usage of the system can cause electric shock. Turn off and disconnect power cord before servicing equipment. Connect only to a grounded electrical outlets.
Electrocution or death	Ensure ground prongs are intact on power and extension cords. Outdoors, use only extensions suitable for the specific use, in accordance with the regulations in force. The connection between plug and socket must remain away from water. Never touch the electric plug of socket with wet hands.
	Do not turn the device on if the power connection cord or other important parts of the apparatus are damaged, such as the inlet outlet plumbing, dispensing nozzle or safety devices. Replace damaged components before operation. For safety reasons, we recommend that, in principle, the equipment be used only with a earth-leakage circuit breaker (max 30 mA). Electrical connections must use ground fault circuit interrupter (GFCI).
	Installation operations are carried out with the box open and accessible electrical contacts. All these operations have to be done with the unit isolated from the power supply to prevent electrical shock!
	Do not operate the device when fatigued or under the influence of drugs or alcohol.
	Do not leave the work area while device is energized or under pressure.
	Turn off all device when is not in use.
	Do not alter or modify the device. Alterations or modifications may void agency approvals and create safety hazards.
	Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
	Do not kink or over bend hoses or use hoses to pull device.
	Keep children and animals away from work area.
	Comply with all applicable safety regulations.
	Do not exceed the maximum operating pressure or the temperature of the part with lower nominal value of the system. See Technical Data in all equipment manuals.
	Use fluids and solvents that are compatible with the wetted part of the system. See Technical Data in all equipment manuals. Read the manufacturer's instructions of the fluids and solvents. For more information on the material, request the safety data sheet (MSDS) from the distributor or dealer.
	Check the device every day. Immediately repair or replace worn or damaged parts only with original spare parts of the manufacturer.
	Make sure the equipment is classified and approved compliant with the standards of the environment where it is used.
	Use the equipment only for the intended use. Contact your distributor for more information.
	Keep hoses and cables far from traffic areas, sharp edges, moving parts and hot surfaces.
	Do not bend or over bend the hoses or use the hose to pull the device.
	Read MSDS to know the specific hazards of the fluids you are using.
	Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.
	Prolonged contact with the treated product may cause skin irritation: always wear protective gloves during dispensing.

9 TECHNICAL DATA	
TEMPERATURE	min. -10 °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. It is underlined, nevertheless, that for a given oil, the real functioning temperature range also depends on the variability of the viscosity of the oil itself with the temperature. Specifically: - The minimum temperature allowed (-10°C) could cause the viscosity of some oils to greatly exceed the maximum allowed, with the consequence that the static torque required during the starting of the pump would be excessive, risking overload and damage to the pump. - The maximum temperature allowed (+60°C) could, on the other hand, cause the viscosity of some oils to drop well below the minimum allowed, causing a degradation in performance with obvious reductions in flow rate as the back pressure increases.

10.1 ENVIRONMENTAL CONDITIONS	
TEMPERATURE	min. -10 °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. It is underlined, nevertheless, that for a given oil, the real functioning temperature range also depends on the variability of the viscosity of the oil itself with the temperature. Specifically: - The minimum temperature allowed (-10°C) could cause the viscosity of some oils to greatly exceed the maximum allowed, with the consequence that the static torque required during the starting of the pump would be excessive, risking overload and damage to the pump. - The maximum temperature allowed (+60°C) could, on the other hand, cause the viscosity of some oils to drop well below the minimum allowed, causing a degradation in performance with obvious reductions in flow rate as the back pressure increases.

10.2 ELECTRICAL POWER SUPPLY	
NOTE	Depending on the model, the pump must be fed by three-phase or single-phase alternating current, whose nominal values are those indicated in the Table of paragraph 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.

10.3 WORKING CYCLE	
NOTE	The motors are intended for continuous use. Under normal operating conditions they can function continuously with no limitations
ATTENTION	Functioning under by-pass conditions is only allowed for brief periods of time (2-3 minutes). When a particular installation carries the risk of functioning in by-pass mode for longer periods of time, it is necessary that the by-passed flow not be recirculated inside the pump, but be returned to the suction tank.

10.4 PERMITTED AND NON-PERMITTED FLUIDS	
FLUIDS PERMITTED	OIL, with a VISCOSITY from 50 to 2000 cSt (at working temperature)
FLUIDS NON PERMITTED AND RELATED DANGERS	- GASOLINE - FIRE - EXPLOSION - INFLAMMABLE LIQUIDS with Pn > 55°C - FIRE - EXPLOSION - WATER - PUMP OXIDATION - FOOD LIQUIDS - CONTAMINATION OF THE SAME - CORROSIVE CHEMICAL PRODUCTS - PUMP CORROSION - INJURY TO PERSONS - SOLVENTS - FIRE - EXPLOSION - DAMAGE TO GASKET SEALS

11 FIRST AID RULES	
Electrocution	disconnect the unit from the mains, or use a dry insulator as protection while moving the electrocuted person far from any conductor. Do not touch the electrocuted person with bare hands until he/she is far from any conductor. Ask qualified and trained people for help immediately.
SMOKING PROHIBITED	When operating the pump and in particular during refuelling, do not smoke and do not use open flame.

8 GENERAL SAFETY RULES	
Essential protective equipment	Wear protective equipment that is: - suited to the operations that need to be performed; - resistant to cleaning products.
Characteristics	
Personal protective equipment that must be work	Safety shoes; Close-fitting clothing; Protective gloves; Safety goggles;
Other Equipment	Instruction manual
Protective gloves	Prolonged contact with the treated product may cause skin irritation; Always use protective gloves when dispensing.

9 TECHNICAL DATA	
TEMPERATURE	min. -10 °C / max +60 °C
RELATIVE HUMIDITY	max. 90%
ATTENTION	The power absorbed by the pump depends on the functioning point and the viscosity of the oil being pumped. The data for MAXIMUM CURRENT provided in the Table refer to pumps functioning at the point of maximum compression Pmax, with oils of a viscosity equal to approximately 500 cSt.

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TEMPERATURE	min. -10 °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. It is underlined, nevertheless, that for a given oil, the real functioning temperature range also depends on the variability of the viscosity of the oil itself with the temperature. Specifically: - The minimum temperature allowed (-10°C) could cause the viscosity of some oils to greatly exceed the maximum allowed, with the consequence that the static torque required during the starting of the pump would be excessive, risking overload and damage to the pump. - The maximum temperature allowed (+60°C) could, on the other hand, cause the viscosity of some oils to drop well below the minimum allowed, causing a degradation in performance with obvious reductions in flow rate as the back pressure increases.

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

10.3 WORKING CYCLE	
NOTE	The motors are intended for continuous use. Under normal operating conditions they can function continuously with no limitations
ATTENTION	Functioning under by-pass conditions is only allowed for brief periods of time (2-3 minutes). When a particular installation carries the risk of functioning in by-pass mode for longer periods of time, it is necessary that the by-passed flow not be recirculated inside the pump, but be returned to the suction tank.

10.4 PERMITTED AND NON-PERMITTED FLUIDS	
FLUIDS PERMITTED	OIL, with a VISCOSITY from 50 to 2000 cSt (at working temperature)
FLUIDS NON PERMITTED AND RELATED DANGERS	- GASOLINE - FIRE - EXPLOSION - INFLAMMABLE LIQUIDS with Pn > 55°C - FIRE - EXPLOSION - WATER - PUMP OXIDATION - FOOD LIQUIDS - CONTAMINATION OF THE SAME - CORROSIVE CHEMICAL PRODUCTS - PUMP CORROSION - INJURY TO PERSONS - SOLVENTS - FIRE - EXPLOSION - DAMAGE TO GASKET SEALS

11 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. - Make sure that the motor shaft turns freely.

11.1 POSITIONING, CONFIGURATIONS AND ACCESSORIES	
NOTE	VISCOFLOWMAT series pumps can be installed in any position (pump axis vertical or horizontal). Fasten the pump using screws of adequate diameter for the fixing holes provided in the base of the pump. In the case of installation in the open air, proceed to protect the pump by providing a protection roof. The pump can be installed in any position (horizontal or vertical axis pump). The pump must be secured in a stable way using the holes on the bed of the motor and vibration damping devices.
ATTENTION	THE MOTORS ARE NOT OF THE ANTI-EXPLOSION TYPE. DO NOT install them where inflammable vapours could be present. 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. To maximise performance and prevent damage that could affect pump operation, always demand original accessories.

11.2 CONSIDERATIONS REGARDING DELIVERY AND SUCTION LINES	
DELIVERY FOREWORD	The choice of pump model to use should be made keeping in mind the viscosity of the oil to be pumped and the characteristics of the system attached to the delivery of the pump.
EFFECTS ON FLOW RATE	The combination of the oil viscosity and the characteristics of the system could, in fact, create back pressure greater than the anticipated maximum (equal to Pmax), so as to cause the (partial) opening of the pump by-pass with a consequent noticeable reduction of the flow rate supplied. In such a case, in order to permit the correct functioning of the pump equal to the viscosity of the oil being pumped, it will be necessary to reduce resistance in the system by employing shorter hoses and/or of larger diameter. On the other hand, if the system cannot be modified it will be necessary to select a pump model with a higher Pmax.
HOW TO REDUCE EFFECTS ON FLOW RATE	

ENGLISH (Translated from Italian)	
SUCTION FOREWORD	VISCOFLOWMAT series pumps are characterized by excellent suction capacity. In fact, the characteristic flow rate/back pressure curve remains unchanged even at high pump suction pressure values. In the case of oils with viscosity not greater than 100 cSt the suction pressure can reach values on the order of 0.7 - 0.8 bar without compromising the proper functioning of the pump. Beyond these suction pressure values, cavitation phenomena begin as evidenced by accentuated running noise that over time can cause pump damage, not to mention a degradation of pump performance. As viscosity increases, the suction pressure at which cavitation phenomena begins decreases. In the case of oils with viscosities equal to approximately 500 cSt, the suction pressure must not exceed values of the order of 0.3 - 0.5 bar to avoid triggering cavitation phenomena. The values indicated above refer to the suction of oil that is substantially free of air.
ATTENTION	If the oil being pumped is mixed with air, the cavitation phenomena can begin at lower suction pressures.
HOW TO PREVENT CAVITATION	It is important to ensure low vacuums at suction mouth by using: - Short pipes with larger or identical diameter to that recommended. - Reduce bends to the utmost - Use large-section suction filters - Use foot valves with minimum possible resistance - Keep the suction filters clean because, when they become clogged, they increase the resistance of the system.
WARNING	In any case, for as much as was said above, it is important to guarantee low suction pressures (short hoses and possibly of larger diameter than the inlet opening of the pump, fewer curves, filters of wide cross-section and kept clean).
ATTENTION	It is a good system practice to immediately install vacuum and air pressure gauges at the inlets and outlets of the pump which allow verification that operating conditions are within anticipated limits. To avoid emptying the suction hose when the pump is turned off, the installation of a foot valve is recommended.

12 CONNECTIONS	
12.1 ELECTRICAL CONNECTIONS	VISCOFLOWMAT units are provided with a bipolar plug to be connected to the power supply system and to the grounding connection.
ATTENTION	Pumps are supplied without electrical safety devices such as fuses, motor protectors, and systems to prevent accidental re-starting after periods of power failure or any other kind. IT IS THE INSTALLER'S RESPONSIBILITY TO CARRY OUT THE ELECTRICAL CONNECTIONS IN COMPLIANCE WITH THE RELEVANT STANDARDS. The motor connected to the pump is supplied with a bipolar switch and capacitors wired and installed inside the terminal strip (see chart). Motors are also equipped with an automatic reset thermal protector. The characteristics of the capacitors for each pump model are shown on the identification plate. The switch has the function of starting/stopping the pump and cannot in any way replace the main power switch required by the applicable regulations. The pressure switch is equipped with an electronic card for the control of the starting and stopping operations of the pump according to the pressure detected by the two sensors. To gain access to the card during maintenance operations remove the cover and check the cable connection to the powersupply connector. Should an electronic card not be working, contact the Service Department.

SINGLE PHASE SCHEME	THREE PHASE SCHEME
WARNING	Comply with the following (not exhaustive) instructions to ensure a proper electrical connection:
	During installation and maintenance make sure that power to the electrical system is not turned off.
	Employ cables characterised by minimum cross-sections, rated voltages and installation type adequate to the characteristics indicated in paragraph E2 - ELECTRICAL INFORMATION and the installation environment.
	All motors are equipped with a grounding terminal that is to be connected to the ground line of the electrical system.
	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.

12.2 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 lines.
ATTENTION	Wrong connection can cause serious pump damage.
CONNEXION	Make sure that the hoses and the suction tank are free of dirt and filling residue that might damage the pump and accessories. Always install a metal mesh filter in the suction hose. Before connecting the delivery hose, partially fill the pump body with oil to avoid the pump running dry during the priming phase. When connecting pump models furnished with BSP threading (cylindrical gas) do not use joints with a conical thread. Excessive tightening of these could cause damage to the pump openings.
THE MINIMUM recommended characteristics for hoses are as follows:	
SUCTION HOSE	- Minimum nominal diameter: 1" - Nominal recommended pressure: 2 times the pressure P bypass - appropriate for use with suction
DELIVERY HOSE	- Minimum nominal diameter: 1/2" - Nominal recommended pressure: 70 bar
ATTENTION	The use of hoses and/or line components that are inappropriate for use with oil or have inadequate nominal pressures can cause damage to objects or people as well as pollution. The loosening of connections (threaded connections, flanges, gasket seals) can likewise cause damage to objects or people as well as pollution. Check all of the connections after installation and on a regular on-going basis with adequate frequency.
PRIMING DEVICE	The pump body is provided with a priming device, which during the initial start-up phase purges the air present in the tube. The device is equipped with a plastic tube (diameter 8 mm, length 1.5 m) to be connected to the tank. The device has a valve, which can be closed again after the purging phase.

ENGLISH (Translated from Italian)	
13 INITIAL START-UP	VISCOFLOWMAT series pumps are self-priming and, therefore, able to draw oil from the tank even when the suction hose is empty on start-up. The priming height (distance between the surface of the oil and the inlet opening) must not exceed 2 meters. Should the priming height exceed 2 meters, fill the suction hose with oil and install a foot valve.
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. Connect the plug to the electric power line. Make sure the pump switch is closed.
ATTENTION	Running dry can cause serious pump damage. Before turning it on, make sure there is a small quantity of oil in the pump body.
	The pump will immediately start, putting the system under pressure.

13.1 DELIVERY PRESSURE CONFIGURATION	
1- SETTING THE BYPASS PRESSURE BY MEANS OF THE VBYPASS VALVE	FOREWORD: The Bypass valve is set at the maximum pressure of 13 bar. The adjusting screw of the bypass of the "Bypass" pump is completely screwed.
PROCEDURE:	- Switch on the pump. - Close the valve "N1". - Screw off the adjusting screw of the "Bypass" until the desired bypass pressure is displayed on the manometer.
2- SETTING THE SHUTOFF PRESSURE BY MEANS OF THE Vp2 VALVE	FOREWORD: The shutoff pressure of the pressure switch is set at the maximum pressure. The adjusting screw of the "Bypass" pump is completely screwed. The shutoff pressure must be set to a lower or equal value than that of the bypass pressure.
PROCEDURE:	- Switch on the pump. - Close the valve "N1". - Screw off the adjusting screw of the "Vp2" valve until the RED led on pressure switch flashes.

KEY	Vbypass: By-pass Valve Vp2: Shut-off Valve M1: Manometer N1: Closing Valve ON: network present; RED LED: ON PERMANENTLY: delivery in progress. ON FLASHING: pressure on the delivery line exceeded the "Pm" value and the pressure switch sent the end of delivery command. OFF: delivery stopped and motor off.
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13.2 STARTING	- 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. - Open the valve of the priming device to purge the air present in the suction hose. - Open the dispensing nozzle to fill the system with oil. - When the oil is flowing regularly from the dispensing nozzle, close the nozzle. Once the Pm pressure is reached, the pump will automatically cut out.
ATTENTION	If there is a dispensing nozzle equipped with an automatic no-drip valve on the delivery line at the time of initial start-up, priming could be difficult, even with the nozzle open, because of the back pressure generated by the no-drip valve. Temporarily disconnect the dispensing nozzle (or just the automatic no-drip valve) in the start-up phase.

1	that under conditions of maximum flow the energy drawn by the motor falls within the values indicated on the label
2	that the suction pressure does not exceed the limits indicated in paragraph SUCTION & DELIVERY LINES
3	that the back pressure in the delivery line does not exceed the Pm max. value. The pressure switch may otherwise prevent the pump from working. For a correct and thorough check of points 2) and 3) the installation of vacuum and pressure gauges at the inlets and outlets of the pump is recommended.

14 EVERY DAY USE	
OPERATION	The volumetric gear pump features a constant flow rate and can manage even very high operating pressures, which vary according to the motor power available. The pump is directly connected to the electric motor providing power for fluid transfer operations. The starting and stopping operations of the motor are carried out through a pressure switch, by means of two sensors designed for a minimum start pressure (Po) and a maximum stop pressure (Pm). The pressure switch has a check valve which constantly keeps the system under pressure. When the stop valve is open (i.e. the dispensing nozzle), the pressure in the system decreases. Once the minimum pressure is reached (Po), the pressure switch starts the pump. Closing the final stop valve, the pump keeps on working and raises the system pressure until the by-pass valve inside the pump opens. This pressure increase causes the pressure relief sensor (Pm) to come on. The electric card on board the pressure switch activates the shutdown process of the pump with a 10 second delay, thus allowing for topping-up.
	No particular preliminary operation is required for every day use of VISCOFLOWMAT pumps.
	- The pump is stopped, the dispensing nozzle is closed and the delivery line is under pressure. - The dispensing nozzle is then opened, with the consequent sudden lowering of pressure in the delivery line - the dispensing nozzle is then opened, with the consequent sudden lowering of pressure in the delivery line - during delivery the pump delivers against a back pressure that, depending on the conditions of the delivery line, could turn out to be higher or lower than the pressure "Pm" - at the moment the dispensing nozzle is closed, the pressure will increase rapidly and the pressure switch, at the moment in which the pressure exceeds the "Pm" value, will automatically stop the pumps.
	Failure to comply with the above can damage the pump. When the machine remains unattended (e.g. at the end of a working day) disconnect the system suspending the electric power supply. Any breakage of the tubing or the shut-off valve would cause the pump to start and an uncontrolled emptying of the tank.

15 MAINTENANCE	
Safety instructions	VISCOFLOWMAT series pumps are designed and constructed to require a minimal amount of maintenance. Before carrying out any maintenance work, disconnect the dispensing system from any electrical and hydraulic sources. 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: 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. - 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 clean the filters placed at the pump inlet. - On a monthly basis, check that the electric power supply cables are in good condition.
ONCE A WEEK	
ONCE A MONTH	

16 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.

17 PROBLEMS AND SOLUTIONS		
For any problems contact the authorised dealer nearest to you.		
PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
	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 IS NOT TURNING	The motor protecting thermals witch has tripped	Wait until the motor cools, verify that it starts again, look for the cause of overheating
	Motor problems	Contact the Service Department
	low voltage in the electric power line	Bring the voltage back within the anticipated limits
THE MOTOR TURNS SLOWLY WHEN STARTING	Excessive oil viscosity	Verify the oil temperature and warm it to reduce the excessive viscosity
	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
	Bypass valve blocked	Dismantle the valve, clean and/or replace it
	Air entering the pump or the suction piping	Check the seals of the connections
	A 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
	Excessive oil viscosity	Verify the oil temperature and warm it to reduce the excessive viscosity
LOW OR NO FLOW RATE		
	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
	Seal damaged	Check and replace the seal
INCREASED PUMP NOISE		
LEAKAGE FROM THE PUMP BODY		

PIUSI

Fluid Handling Innovation

VISCO

FLOWMAT

MADE IN ITALY

Installation, use and maintenance manual

Installations; Gebrauchs- und Wartungsanleitung

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