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2 MACHINE AND MANUFACTURER IDENTIFICATION

CODE PRODUCT	PIUSI P1015 SPA SUZZARA (MN) ITALY	YEAR OF MANUFACTURE
MODEL	P0030200D	
TECHNICAL DATA	VISCOFLOWMAT 200/2 M 230 V 50-60 Hz 110 V 60 Hz 230 V 50-60 Hz 110 V 60 Hz 230 V 50-60 Hz 110 V 60 Hz	
AVAILABLE MODELS	VISCOFLOWMAT 200/2: 230 V / 50-60 Hz 110 V / 60 Hz VISCOFLOWMAT 230/3: 230 V / 50-60 Hz 110 V / 60 Hz VISCOFLOWMAT 350/2: 230 V / 50-60 Hz 400 V / 50 Hz 110 V / 60 Hz 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: Description: **Pump for lubricant oil transfer** 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

VORWORT 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

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:

- name	
- code	
- weight	

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.

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

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.

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6 SAFETY INSTRUCTIONS

Mains - preliminary checks before installation This manual belongs to Piusi S.p.A., which is the sole proprietor of all rights indicated by applicable laws, including, by way of example, laws on copyrights. All the rights deriving from such laws are reserved to Piusi S.p.A.: the reproduction, including partial, of this manual, its publication, change, transcription and notification to the public, transmission, including using remote communication media, placing at disposal of the public, distribution, marketing in any form, trading, rental, copying, processing, loan and any other activity reserved by the law to Piusi S.p.A.

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. Use equipment only in well ventilated 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.

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 leak-tight 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 kick 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 overbend the hoses or use the hose to pull the device.

Read MSDS's 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.

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7 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.

When operating the pump and in particular during refuelling, do not smoke and do not use open flame.

SMOKING PROHIBITED

8 GENERAL SAFETY RULES

Essential protective equipment Characteristics Personal protective equipment that must be work

Safety shoes;

Close-fitting clothing;

Protective gloves;

Safety goggles;

Instruction manual

Prolonged contact with the treated product may cause skin irritation: Always use protective gloves when dispensing.

Other Equipment

Protective gloves

9 TECHNICAL DATA

The data in the table relate to functioning with a oil of a viscosity equal to approximately 110cSt (comparable, for example, to oil SAE W80 at a temperature of 22°C). As the viscosity of the oil varies, the variation in the pump's performance will be more noticeable the greater the back pressure against which the pump is working. VISCOFLOWMAT pumps can pump oils of very different viscosities, within the limits indicated in the TECHNICAL INFORMATION without requiring any adjustment of the by-pass.

	VISCOFLOWMAT 200/2		VISCOFLOWMAT 230/3		VISCOFLOWMAT 350/2	
Voltage (V)	230	110	230	110	230	400
Frequency(Hz)	50/60	60	50/60	60	50/60	60
Absorption (A)	3,8/4,6	15	6/6,7	13,5	6/6,5	13
Power (W)	800/1500	1200/1500	1250/1500	1350	1500	750
RPM	1450/1700	1730	1250/1400	1700	1450/1700	1450
Max Pressure (bar)	12	16			25	
Max Flow Rate (l/min)	170	227			355	
Max Flow Rate (bar)	2,4	3,4			9	

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.

10 OPERATING 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 understood, 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 maximum). Whenever 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 PM - 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

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.

THE MOTORS ARE NOT OF THE ANTI-EXPLOSIVE-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 a back pressure greater than the anticipated maximums (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.

HOW TO REDUCE EFFECTS ON FLOW RATE 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.

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 of which cavitation phenomena begin 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 restarting 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.

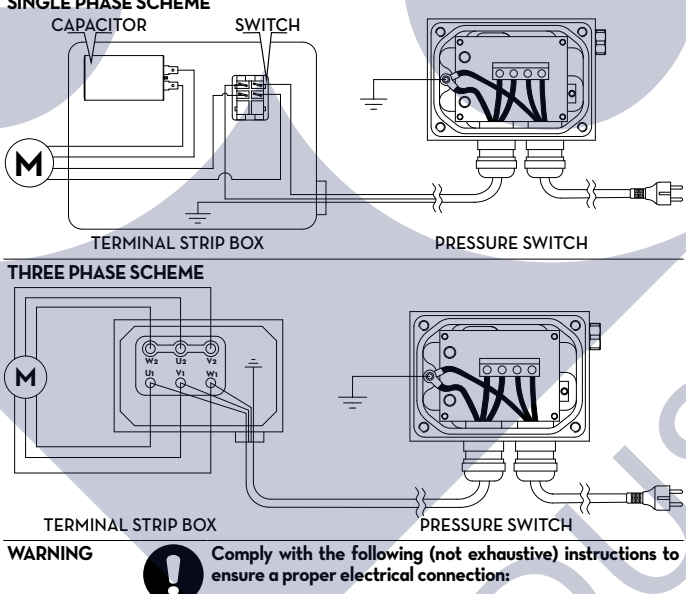
The motor connected to the pump is supplied with a bipolar switch and capacitors wired and installed inside the terminal strip box (see chart).

Matrs 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.



WARNING Comply with the following (not exhaustive) instructions to ensure a proper electrical connection:

During installation and maintenance make sure that power to the electric lines has been 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.

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 gns) 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
- Minimum nominal diameter: 1/2"
- Nominal recommended pressure: 70 bar

DELIVERY HOSE

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.

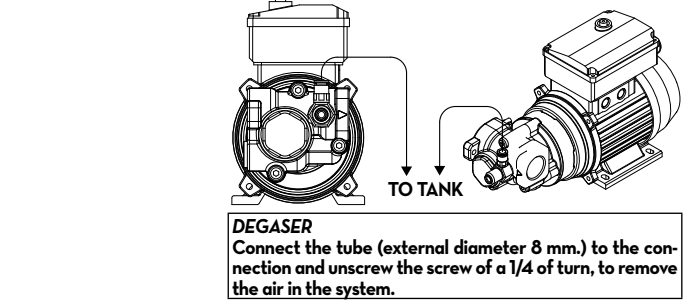
The loosening of connections (threaded connections, flanges, gasket seals) can likewise cause damage to objects or people as well as pollution.

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 suction phase.

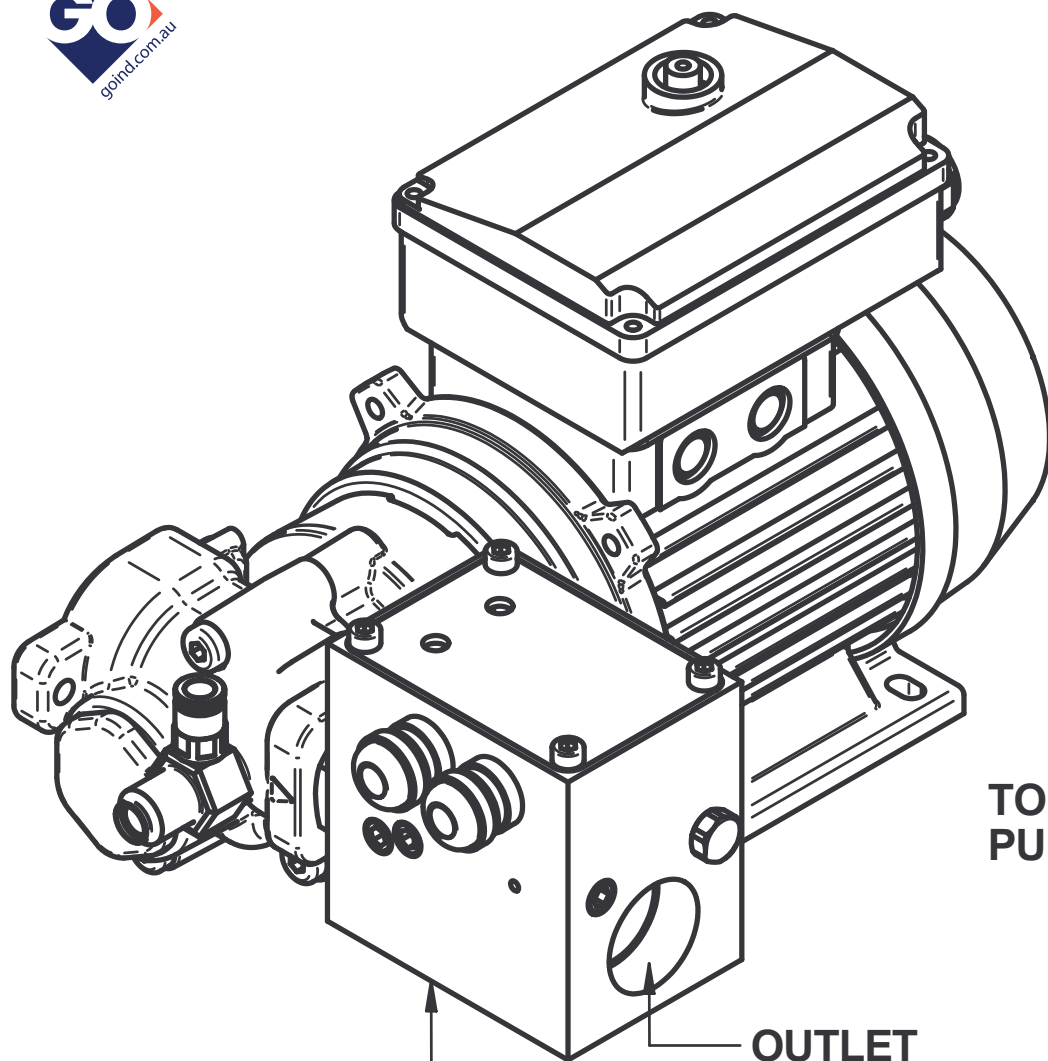
Should the valve be left open during operation, a small part of the fluid is recycled in the tank causing a reduction in flow rate. When the valve is open the device also operates as an anti-siphon system.



13 INITIAL START-UP

FOREWORD 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

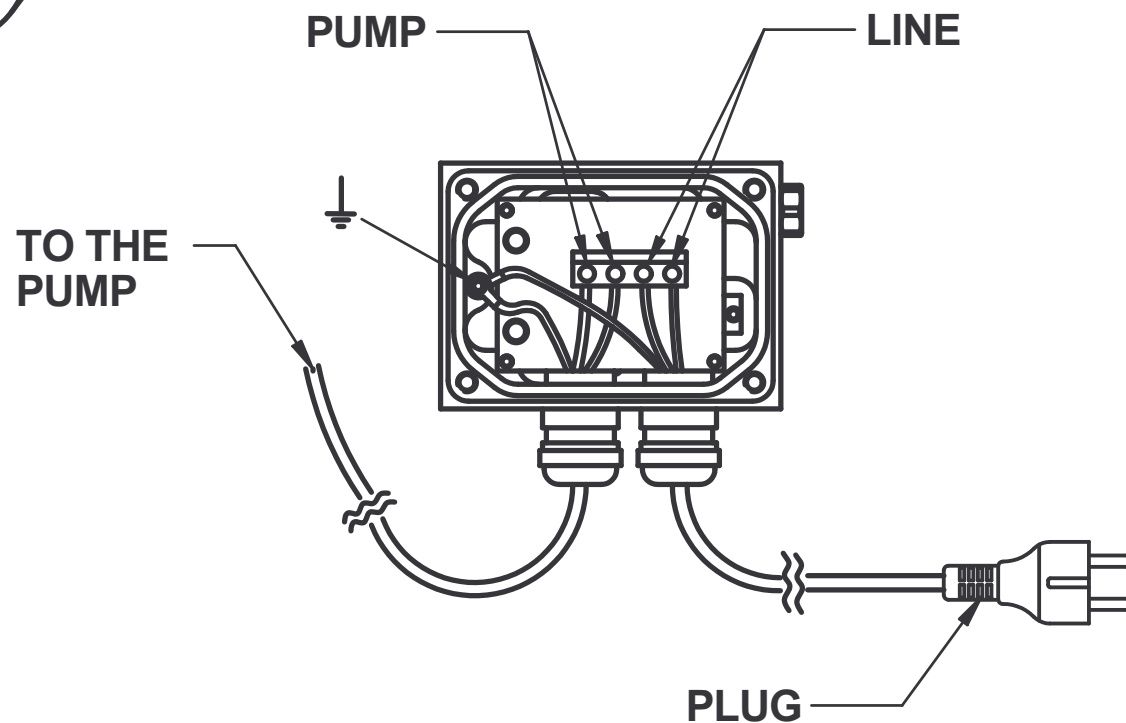
PRESSURE SWITCH OPTION

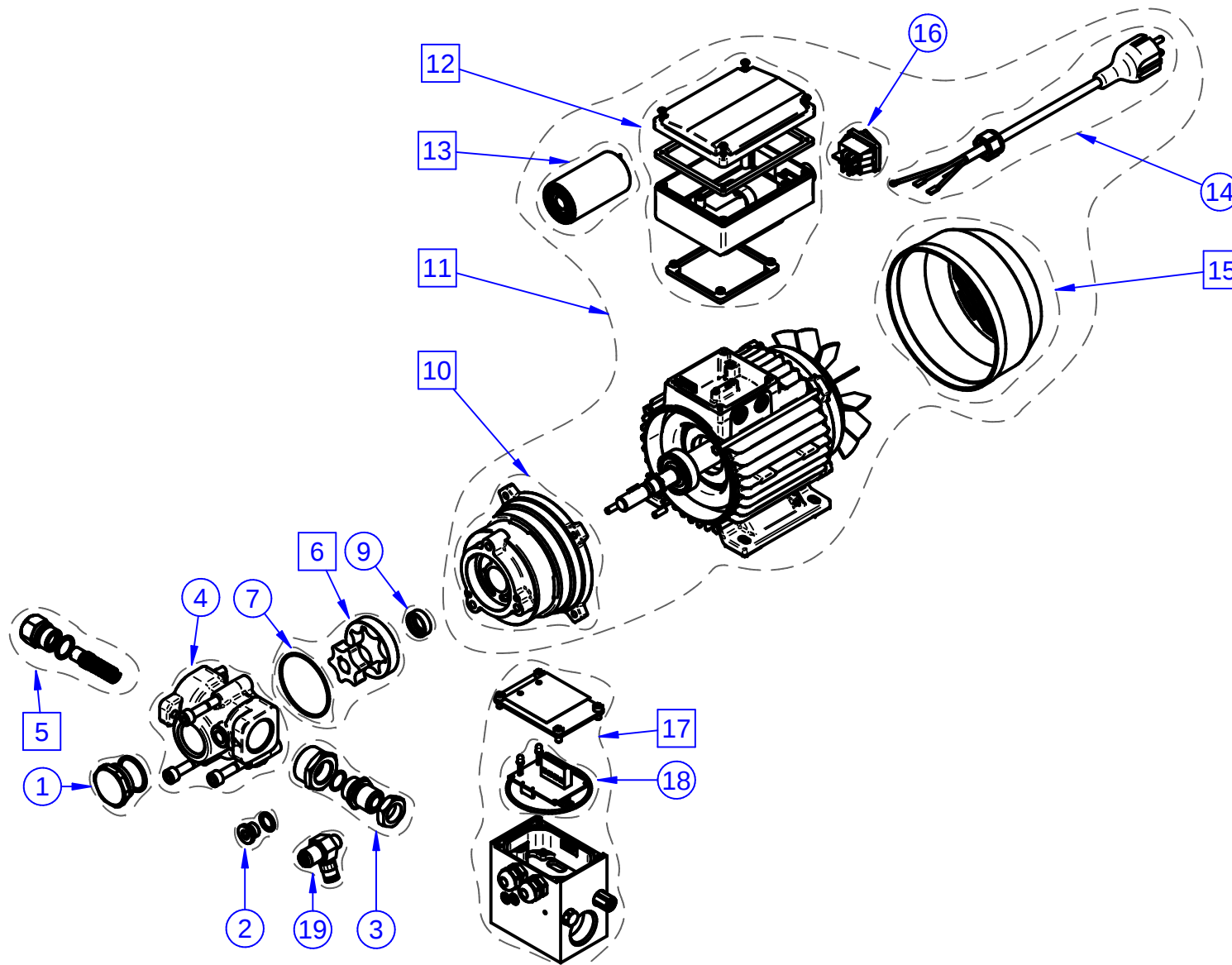


OUTLET
THREAD
1" GAS

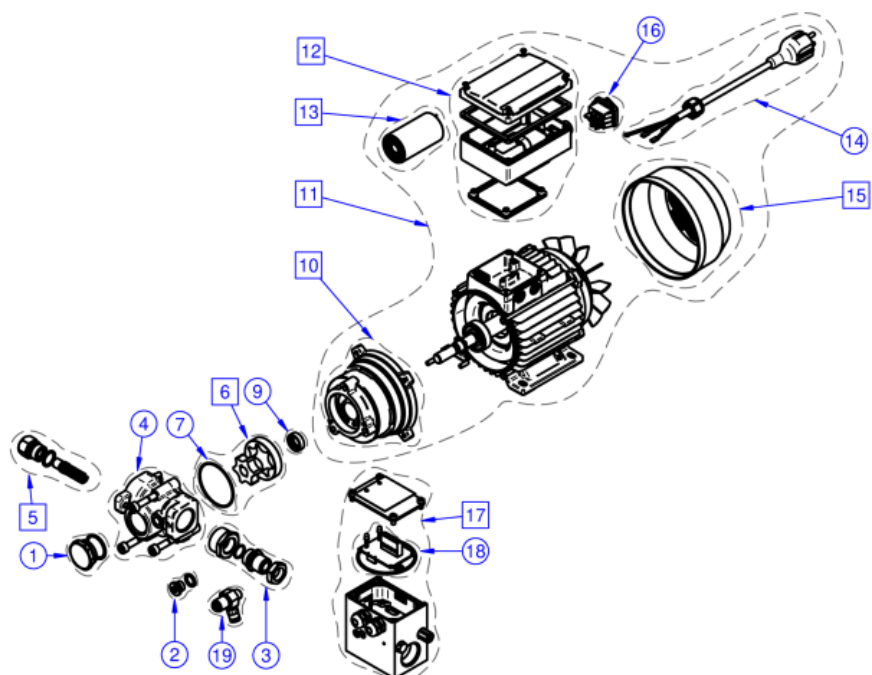
PRESSURE SWITCH
WITH NO BACK
VALVE INTEGRATED

PRESSURE SWITCH ELECTRIC DIAGRAM





Some components may vary in shape and color or not be present. Always follow codes and quantity shown in list. ○ fixed components □ variable components - - - only reference



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SPARE PART 1
R13851000
GROUP PLUG 1G + GASKET

SPARE PART 2
R13852000
KIT PLUG 1/4G + WASHER

SPARE PART 3
R13863000
KIT CONNECTION PUMP/FLOWMAT

SPARE PART 4
R13853000
KIT HEAD GEAR PUMP 350/2- 200/2-230/3

SPARE PART 5
R13864000
KIT ADJUSTING BY-PASS VALVE

SPARE PART 6
R13858000
KIT ROTOR VISCOMAT 230/3

SPARE PART 7
R10273000
GASKET O-RING (d.60,05 sp.1,78) 70 SH

SPARE PART 9
R14984000
SEAL BABSL 14x24x7/7,5 72 NBR 902



SPARE PART 10
R22714000
KIT ASSEMBLING MEC80 230/3

SPARE PART 12
R0819600A
KIT TERMINAL BOX 1HP 230V / 50Hz

SPARE PART 13
R12987000
CONDENSER 40 microF

SPARE PART 14
F1290900A
SUPPLY CABLE WITH PLUG

SPARE PART 15
R08182000
KIT FAN COVER MOTOR MEC 80



PRODUCTS



SPARE PART 17
R0030004A
PRESSURE SWITCH ADJ. 230V/50-60Hz 16bar

SPARE PART 18
R13867000
ELECTRONIC BOARD FLOWMAT 230V/50Hz

SPARE PART 19
R1127400A
KIT PRIMING DEVICE G1/4in
