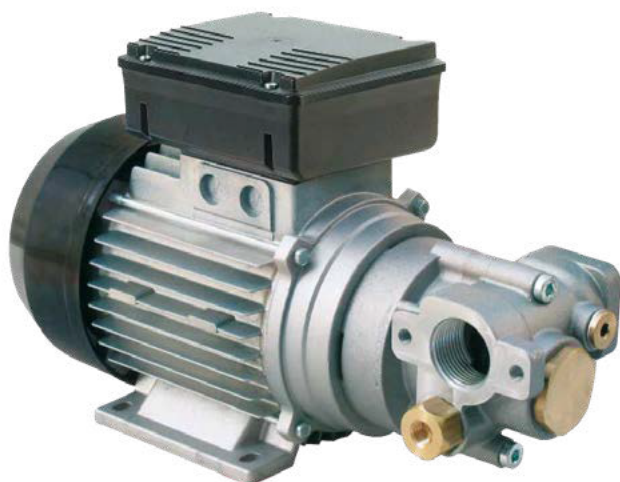


PIUSI



VISCOMAT GEAR



**MADE
IN
ITALY**

Installation, use and maintenance manual

EN

BULLETIN MOO4OE EN_o2

ENGLISH

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BULLETIN MOO4OE

2 MACHINE AND MANUFACTURER IDENTIFICATION



AVAILABLE MODELS

VISCOMAT 200/2:

230 V/50-60 Hz; 400-460 V/50-60 Hz; 120 V/60 Hz; 100 V/50-60 Hz; 200 V/50-60 Hz

VISCOMAT 230/3:

230 V/50 Hz; 400 V/50 Hz

VISCOMAT 350/2:

230 V/50-60 Hz; 400-460 V/50-60 Hz; 200 V/50-60 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: **VISCOMAT GEAR**

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

PUMP MOTOR

Self-priming electric gear pump with built-in adjustable bypass valve.
Asynchronous motor, single-phase or three-phase, 2 or 4 pole, closed type (Protection class IP55 according to regulation EN 60034-5-86), self-ventilating, flange-mounted directly 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.

PACKAGING

The pump is equipped comes packed suitably for shipment.
On the packaging a label shows the following product information:

- name
- code
- weight



MODEL	WEIGHT (Kg)	PACKAGING DIMENSION (mm)
VISCOMAT 200/2	9	350 x 200 x 280
VISCOMAT 230/3	12.5	350 x 200 x 280
VISCOMAT 350/2	12.5	350 x 200 x 280

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



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



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:

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.

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.

Electrocution or death



Turn off and disconnect power cord before servicing equipment.

Connect only to a grounded electrical outlets.

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 or 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!

EQUIPMENT MISUSE

Misuse can cause death or serious injury



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 overbend the hoses or use the hose to pull the device.

TOXIC FLUID OR FUMES HAZARD


Read MSDSs 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.

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

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

Characteristics

Personal

Protective equipment that must be worn



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

The data in the table relate to functioning with 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. VISCOMAT 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					VISCOFLOW-MAT 230/3		VISCOFLOWMAT 350/2		
Voltage (V)	230	400/ 460	120	100	200	230	400	230	400/ 460	200
Frequency (Hz)	50/ 60	50/ 60	60	50/ 60	50/ 60	50	50	50/ 60	50/ 60	50/ 60
Absorption (A)	3.8/ 4.6	1.4/2	15	15.5/ 10.5	2.9/ 3.4	6	2.7	4/6	2.1/2	4.8
Power (W)	800/ 950	600/ 900	1500	1300/ 900	920/ 1000	1250	1200	1000/ 1200	950/ 1100	1100
RPM	1450/ 1750	1450/ 1750	1750	1450/ 1750	1450/ 1750	1450	1450	1450/ 1750	1450/ 1750	1750
Max (bar)	12					16	12	25		
Pressure (psi)	170					227	170	355		
Max (l/min)	9					14	3.7	9	9	9
Flow Rate (bar)	2.4					14	3.7	2.4	2.4	2.4

ATTENTION



The power absorbed by the pump depends on the functioning point and the viscosity of the oil being pumped. The data provided in the Table refer to pumps functioning at the point of maximum compression, with oils of a viscosity equal to approximately 500 cSt.

10 OPERATING CONDITIONS

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 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 TECHNICAL DATA. The maximum acceptable variations from the electrical parameters are:

Voltage: $\pm$ 5% of the nominal value

Frequency: $\pm$ 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 - INFLAMMABLE LIQUIDS with PM < 55°C - WATER - FOOD LIQUIDS - CORROSIVE CHEMICAL PRODUCTS - SOLVENTS	- FIRE - EXPLOSION - FIRE - EXPLOSION - PUMP OXIDATION - CONTAMINATION OF THE SAME - PUMP CORROSION - INJURY TO PERSONS - 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**

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-EXPLOSIVE-TYPE.

DO NOT install them where inflammable vapours could be present.

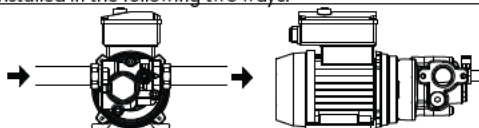
It is the responsibility of the installer to provide the necessary line accessories to ensure the correct and safe operation of the pump. The accessories that are not suitable to be used with the previously indicated material could damage the pump and/or cause injury to persons, as well as causing pollution..

To maximise performance and prevent damage that could affect pump operation, always demand original accessories.

The Viscomat series pumps can be installed in the following two ways:

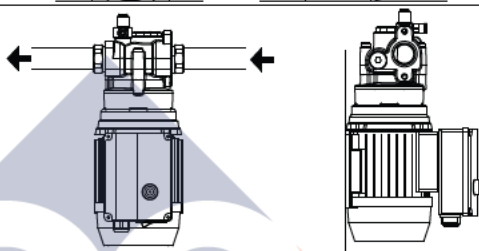
1

On an horizontal base:



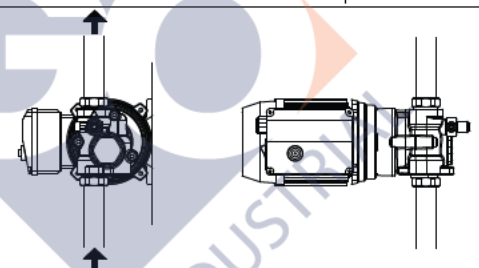
2

To the wall, with pump body upwards:



3

To the wall, with pump body aside:


NOTE


It is recommended to install a non-return valve in order to resume the system operation quickly and easily even after the first priming.

ATTENTION


DO NOT install the pump vertically with the pump body downwards. If absolutely necessary, install a foot-valve and fill the suction tube with oil during the first priming phase.

Fix the pump using screws of a diameter suitable for the provided fixing holes as indicated in the drawing "Dimensions and weights". To make the installation easier, the VISCOMAT pump body has been provided with two inlet openings:

1 - Opening "IN1" is aligned with the delivery opening "OUT".

2 - Opening "IN2" is parallel to the motor axis and, therefore, at a 90° angle with respect to the outlet opening "OUT".

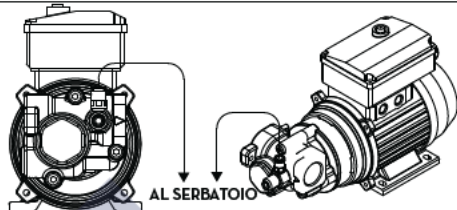
As delivered, the opening "IN2" is closed with a threaded plug provided with a O-Ring seal, and the pump is predisposed to be installed using opening "IN1". If you wish to use the opening "IN2" it is necessary to remove the threaded plug and the O-ring seal from the opening "IN2" and install them on the opening "IN1".

ATTENTION

The use of one inlet opening or the other has no effect on the performance of the pump, which remains practically unchanged in either case. It should, nevertheless, be remembered that the type of installation should be chosen so as to make the suction line between the tank and the pump as short and **direct as possible for the purpose of optimising suction conditions.**

PRIMING DEVICE

The Viscomat series pumps are equipped with a priming device installed on the delivery opening "OUT" which operates during the priming phase of the pump by purging any air present in the suction tube. Such device is provided with a 1.5 m rubber hose to be connected to the suction tank.



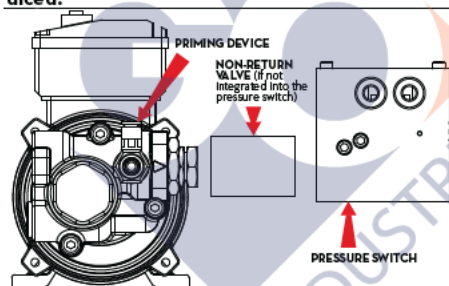
If the system is equipped with a foot valve, the priming device can be closed once the starting phase has been completed (see paragraph "13"). If you wish to leave the purge valve always open, remember that a small quantity of oil re-circulates in the tank at a 0.5-1 l/min flow rate.

ATTENTION

Make sure that the air discharge tube is not immersed in the oil inside the drawing tank. In this case, the operation of the priming device may be prejudiced.

INSTALLING A PRESSURE SWITCH

If you wish to install a pressure switch for the automatic on/off piloting of the pump electric motor, this is to be installed downstream of the priming device.

**ATTENTION**

If the priming device is not equipped with a non-return valve, it is necessary to install one between the priming device and the pressure switch.

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 maximums (equal to P_{max}), 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 P_{max} .

SUCTION

FOREWORD VISCOMAT 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 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).

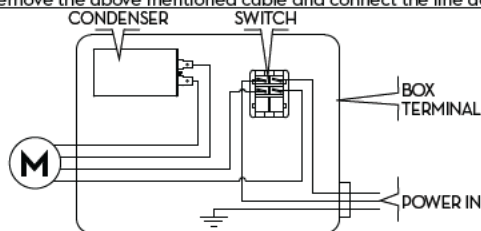
ATTENTION  It is a good system practice to immediately install vacuum and air pressure gauges at the inlets and outlets of the pump which allow verification that operating conditions are within anticipated limits. To avoid emptying the suction hose when the pump is turned off, the installation of a foot valve is recommended.

12 CONNECTIONS

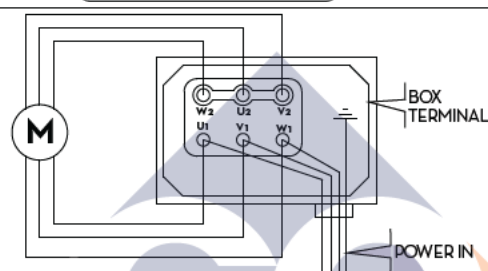
12.1 ELECTRICAL CONNECTIONS

All motors come with a short cable used for production testing. To connect the motor to the line, open the terminal strip cover, remove the above mentioned cable and connect the line according to the following chart:

SINGLE-PHASE MOTORS



THREE-PHASE MOTORS



ATTENTION



IT IS THE INSTALLER'S RESPONSIBILITY TO CARRY OUT THE ELECTRICAL CONNECTIONS IN COMPLIANCE WITH THE RELEVANT STANDARDS.

WARNING



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

Single-phase motors are supplied with a bipolar switch and capacitors wired and installed inside the terminal strip box (see chart). The capacitor characteristics are those indicated on the pump label. 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.

ATTENTION



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

- Employ cables characterized by minimum cross-sections, rated voltages and installation type adequate to the characteristics indicated in paragraph ELECTRICAL SPECIFICATIONS and the installation environment.
- For three-phase motors, ascertain the correct rotation direction by referring to paragraph - DIMENSIONS.
- All motors are equipped with a ground terminal to connect to the ground line of the electrical network.
- Always close the cover of the terminals trip box before turning on the electric power, after checking the integrity of the gasket seals that ensure protection grade IP55

NOTE



The capacitor characteristics are those indicated on the pump label. The switch has the only function of starting/stopping the pump and cannot in any way replace the main power switch required by the relevant standards.

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 connection with respect to the applicable regulations

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 filing 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:
2 times the pressure P bypass

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.

13 INITIAL START-UP

FOREWORD

VISCOMAT 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 2,5 meters.

- 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.

ATTENTION



Wetting the pump. Before starting the pump, wet the inside of the pump body with oil through the inlet and outlet openings. If the pump is already installed, the wetting operation can be performed by unscrewing the threaded plug of the inlet opening (IN-1 or IN-2) not in use, by filling the internal chamber with oil and screwing in the plug, paying attention to the O-ring seal.

In the priming phase the pump must blow the air that was initially present in the suction hose into the line. Therefore, it is necessary to rotate the valve of the priming device anticlockwise to position "19" of the exploded drawing in order to purge the air present in the system. When the tube is filled with oil, the purging phase is concluded.

ATTENTION



If no foot valve is installed, it is advisable to leave the purge valve always open so that once the device is re-started again, it is ready to purge the air present in the suction tube. Please consider that during the operation, a small part of oil re-circulates in the tank. If a foot-valve is installed, close the air purge valve by turning it clockwise, so that no oil circulates in the tank. If the foot-valve seal is not perfectly tight, the suction tube may be emptied and the purging operation described above must be repeated.

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.

The priming phase may last from several seconds to a few minutes, depending on the characteristics of the system. If this phase is excessively prolonged, stop the pump and verify:

- That the pump is not running completely 'dry'.
- That the suction hose guarantees against air infiltration and is correctly immersed in the fluid to be drawn.
- That any filters installed are not blocked.
- That the delivery hose allows for the easy evacuation of the air.
- That the priming height is not greater than 2,5 meters;

When priming has occurred, after reattaching the delivery gun, verify that the pump is functioning within the anticipated ranges, possibly checking:

- 1 That under conditions of maximum back pressure, the power absorption of the motor stays within the values shown on the identification plate
- 2 that the suction pressure does not exceed the limits indicated in paragraph CONSIDERATIONS REGARDING SUCTION & DELIVERY LINES
- 3 that the back pressure in the delivery line does not exceed the values indicated in paragraph CONSIDERATIONS REGARDING SUCTION & DELIVERY LINES.

14 EVERY DAY USE

FOREWORD

No particular preliminary operation is required for every day use of VISCOMAT pumps.

MANUAL OPERATION

- 1 Before starting the pump, make sure that the ultimate shut-off device (delivery nozzle or line valve) is closed. If the delivery has no shut-off device (free delivery) make sure that it is correctly positioned and appropriately attached to the delivery tank.
- 2 turn the on-switch present on some pump models (single-phase) or the start/stop switch installed on the electrical power line.
- 3 make sure that the tank is filled with a quantity of oil greater than the quantity to be supplied (running dry could damage the pump).

ATTENTION



Never start the pump by simply inserting the plug in the outlet.

- 4 Open the delivery valve or activate the delivery gun, gripping it securely.

ATTENTION



Fluid exits at high pressure from a delivery gun fed by a VISCOMAT pump. Never point the outlet of the gun towards any part of the body.

- 5 Close the delivery gun or the line valve to stop delivery. The pump will immediately enter by-pass mode.

ATTENTION



Running in by-pass mode with the delivery closed is only allowed for brief periods (2 to 3 minutes maximum). When the thermo-protector trips, turn-off the electric power and wait for the motor to cool.

- 6 Stop the pump.

AUTOMATIC OPERATION

In certain applications it can be advantageous to provide for the automatic starting/stopping of the pump by means of a pressure switch that monitors the pressure of the delivery line. The functional logic of this type of installation is as follows:

- 1 the pump is stopped, the delivery gun is closed and the delivery line is under pressure.
- 2 the delivery gun is then opened, with the consequent sudden lowering of pressure in the delivery line.
- 3 the pressure switch, at the moment that the pressure drops below the value "Pm" automatically starts the pump allowing delivery.
- 4 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".
- 5 at the moment the delivery gun is closed, the pressure will increase rapidly and the pressure switch, at the moment in which the pressure exceeds the value "Pa" will automatically stop the pump.

The values of "Pa" and "Pm" are characteristics of the pressure switch used and are often adjustable within a certain range. For the safe and proper functioning of the pump in these types of applications it is absolutely indispensable to make sure that:

- 1 "Pa" is sufficiently lower than the bypass pressure, to assure that the pump will stop as soon as the gun is closed and that the pump will not run a long time in by-pass mode.
- 2 "Pm" is several bar lower than "Pa" to avoid the pump starting when not wanted due to small pressure drops not caused by opening the gun.
- 3 the foot valve guarantees an effective seal, to avoid frequent unwanted cycling on and off caused by its leakage.
- 4 whenever the system is entirely composed of metal tubing, or, at any rate, of highly rigid tubing, one should consider installing an accumulator capable of preventing small leaks (from the foot valve, for example) from causing a pressure drop sufficient to automatically start the pump.

ATTENTION



Failure to comply with the above can damage the pump.

15 MAINTENANCE

Safety instructions

VISCOMAT 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 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.

ONCE A WEEK

- On a weekly basis, check that the tubing joints have not loosened, to avoid any leakage.

ONCE A

MONTH

- 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.

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
THE MOTOR IS NOT TURNING	Lack of electric power	Check the electrical connections and the safety systems.
	Rotor jammed	Check for possible damage or obstruction of the rotating components.
	The motor protecting thermal switch has tripped	Wait until the motor cools, verify that it starts again, look for the cause of overheating
THE MOTOR TURNS SLOWLY WHEN STARTING	Motor problems	Contact the Service Department
	Low voltage in the electric power line	Bring the voltage back within the anticipated limits
LOW OR NO FLOW RATE	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
	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
	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
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

18 DEMOLITION AND DISPOSAL

Foreword

Disposing of packing Materials Metal parts disposal Disposal of electric and electronic components



Information regarding the environment for clients residing within the european union

Miscellaneous parts disposal

If the system needs to be disposed, the parts which make it up must be delivered to companies that specialize in the recycling and disposal of industrial waste and, in particular: The packaging consists of biodegradable cardboard which can be delivered to companies for normal recycling of cellulose.

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

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 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 refuse collection structures indicated by the government or the local governing authorities.

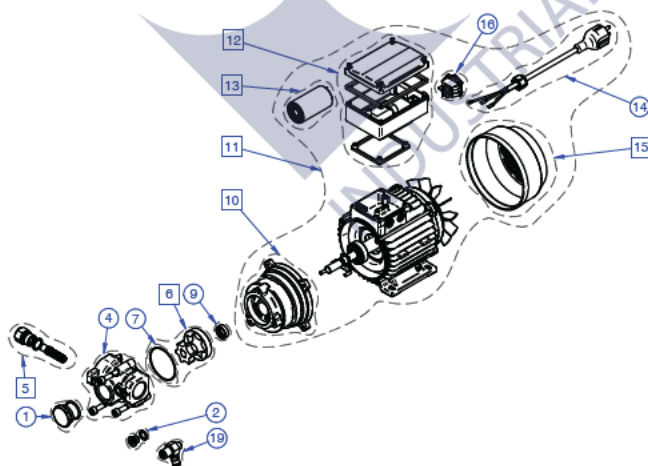
Disposing of RAEE equipment as household wastes is strictly forbidden. Such wastes must be disposed of separately.

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.

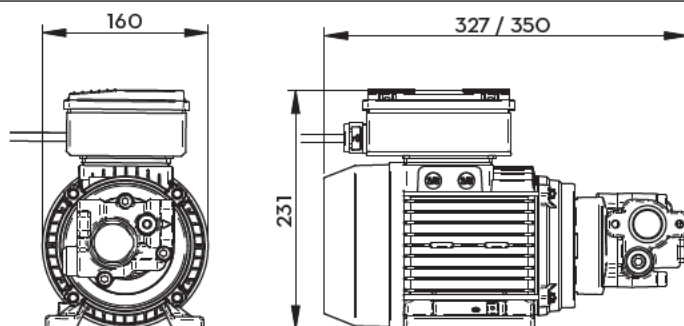
In case of the unlawful disposal of said wastes, fines will be applicable as defined by the laws in force.

Other components, such as pipes, rubber gaskets, plastic parts and wires, must be disposed of by companies specialising in the disposal of industrial waste.

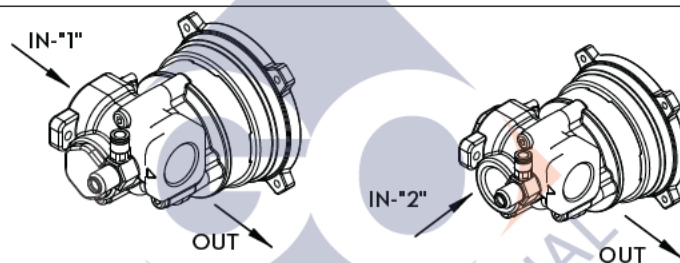
19 EXPLODED DIAGRAMS



20 DIMENSIONS



21 CONFIGURATION OF DELIVERY AND SUCTION











IT Scarica il manuale nella tua lingua
EN Download the manual in your language
CS Stáhnout příručku ve vašem jazyce
DA Download manualen på dit sprog
DE Laden Sie das Handbuch in Ihrer Sprache herunter
ES ¡Descarga el manual en tu idioma!
FI Lataa käsikirja omalla kielelläsi!
FR Téléchargez le manuel dans votre langue
NL Download de handleiding in uw taal
PL Pobierz instrukcję w swoim języku
PT Baixe o manual em seu idioma
RU Загрузите руководство на вашем языке



[https://www.piusi.com/
support/se-arch-manuals](https://www.piusi.com/support/se-arch-manuals)

piusi.com
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VISCOMAT 230/3 MONOFASE 230V/50Hz
 VISCOMAT 230/3 TRIFASE 400V/50Hz
 VISCOMAT 350/2 MONOFASE 230V/50Hz
 VISCOMAT 350/2 TRIFASE 400V/50Hz
 VISCOMAT 200/2 MONOFASE 230V/50Hz
 VISCOMAT 200/2 TRIFASE 400V/50Hz

SUBENTRO TENUTA A LABBRO POS. 9 COD. R14984000:

MOTORE MEC 71:

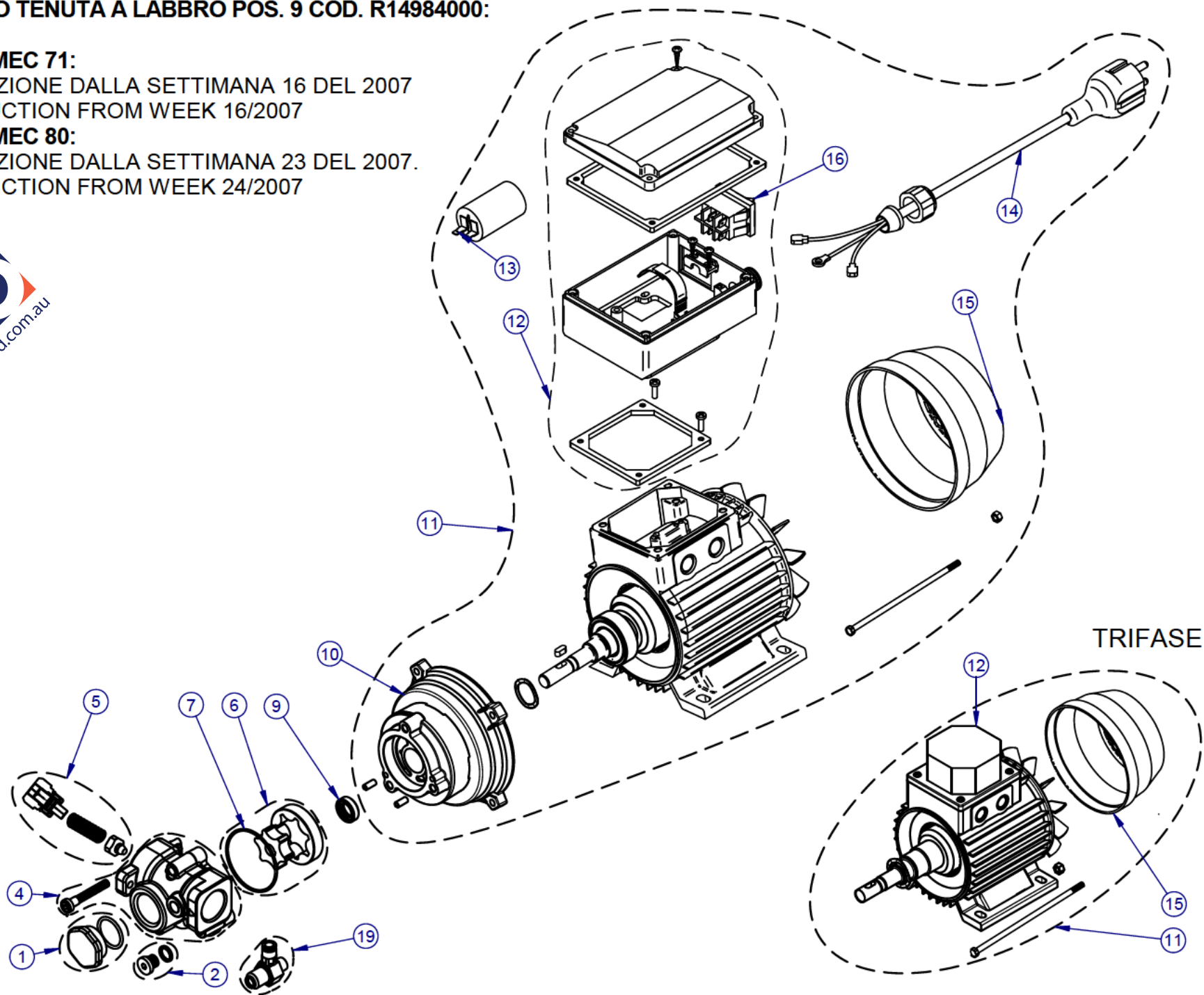
IN PRODUZIONE DALLA SETTIMANA 16 DEL 2007

IN PRODUCTION FROM WEEK 16/2007

MOTORE MEC 80:

IN PRODUZIONE DALLA SETTIMANA 23 DEL 2007.

IN PRODUCTION FROM WEEK 24/2007



LR_P00022

SUBENTRO TENUTA A LABBRO POS. 9 COD. R14984000:

MOTORE MEC 71:

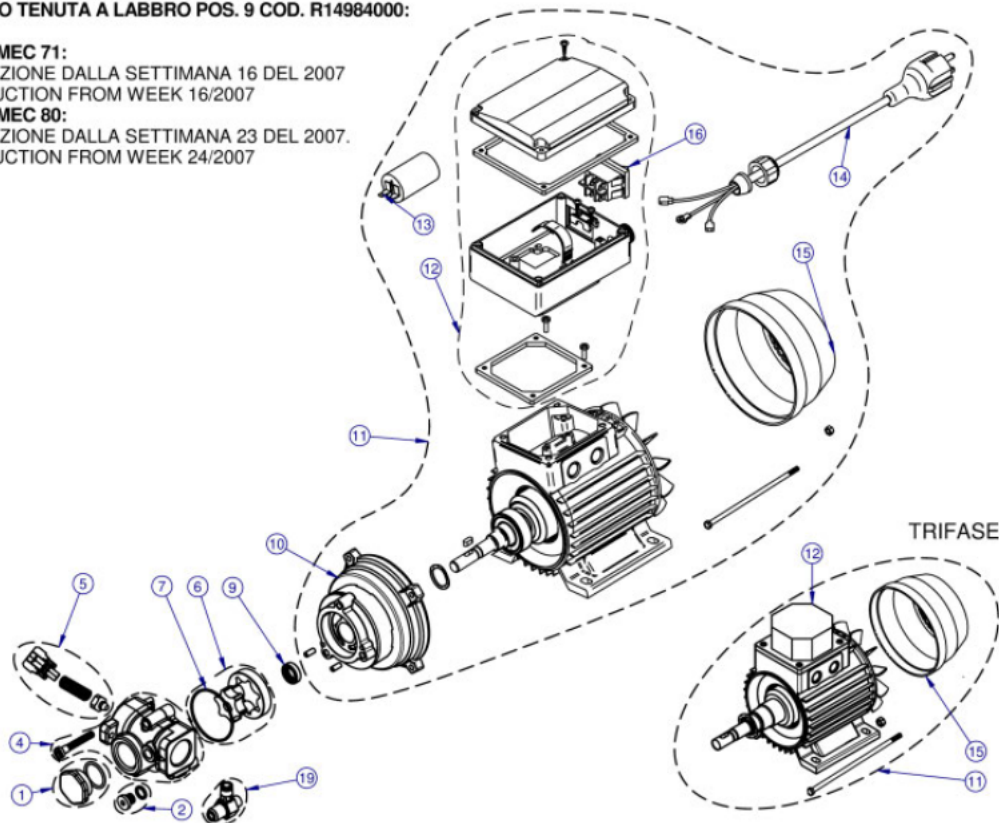
IN PRODUZIONE DALLA SETTIMANA 16 DEL 2007
IN PRODUCTION FROM WEEK 16/2007

MOTORE MEC 80:

IN PRODUZIONE DALLA SETTIMANA 23 DEL 2007.
IN PRODUCTION FROM WEEK 24/2007

VISCOMAT 230/3 MONOFASE 230V/50Hz
VISCOMAT 230/3 TRIFASE 400V/50Hz
VISCOMAT 350/2 MONOFASE 230V/50Hz
VISCOMAT 350/2 TRIFASE 400V/50Hz
VISCOMAT 200/2 MONOFASE 230V/50Hz
VISCOMAT 200/2 TRIFASE 400V/50Hz

PIUSI



SPARE PART 1

R13851000

GROUP PLUG 1G + GASKET

SPARE PART 2

R13852000

KIT PLUG 1/4G + WASHER

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

SPARE PART 16
R16657000
BIPOLAR SWITCH 16A 250V

SPARE PART 19
R1127400A
KIT PRIMING DEVICE G1/4in

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