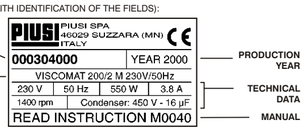
A INDEX

B IDENTIFICATION OF MACHINE AND MANUFACTURER

Available Models:
- **VISCOMAT 200/2** SINGLE-PHASE 230V/50HZ
- **VISCOMAT 200/2** SINGLE-PHASE 230V/60HZ
- **VISCOMAT 350/2** SINGLE-PHASE 230V/50HZ
- **VISCOMAT 350/2** THREE-PHASE 400V/50HZ
- **VISCOMAT 200/2** THREE-PHASE 400V/50HZ

MANUFACTURER: **PIUSI SPA**
VIA PACINOTTI - Z.I. RANGAVINO
46029 SUZZARA (MN)

LABEL (EXAMPLE WITH IDENTIFICATION OF THE FIELDS):



⚠ ATTENTION
Always check that the revision level of the present manual agrees with the revision level indicated on the label.

C DECLARATION OF INCORPORATION OF PARTLY-COMPLETED MACHINERY

The undersigned: **PIUSI S.p.A - Via Pacinotti c.m. - z.i.Rangavino 46029 Suzzara (Mantova) - Italy**

HEREBY STATES under its own responsibility, that the partly-completed machinery:

Description: **Machine 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**

is intended to be incorporated in a machine (or to be with other machines) so as to create a machine to which applies Machine Directive 2006/42/EC, may not be brought into service before the machine into which it is to be incorporated has been declared in conformity with the provisions of the directive 2006/42/EC.

is in conformity with the legal provisions indicated in the directives:

- Machine Directive 2006/42/EC
- Low-Voltage Directive 2006/95/EC
- Electromagnetic Compatibility Directive 2004/108/EC

To which the essential safety requirements have been applied and complied with what indicated on annex I of the machine directive applicable to the product and shown below: 1.1.3 - 1.1.5 - 1.3.1 - 1.3.2 - 1.3.3 - 1.3.4 - 1.3.8 - 1.4.1 - 1.4.2.1 - 1.5.1 - 1.5.2 - 1.5.4 - 1.5.5 - 1.5.8 - 1.5.11 - 1.6.1 - 1.6.3 - 1.6.4 - 1.7.1 - 1.7.2 - 1.7.3 - 1.7.4.

The documentation is at the disposal of the competent authority following motivated request at Piusi S.p.A. or following request sent to the email address: doc_tec@piusi.com
The person authorised to compile the technical file and draw up the declaration is Otto Varini as legal representative.

Suzzara, 29/12/2009

the legal representative

D MACHINE DESCRIPTION

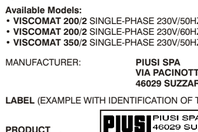
PUMP: Electric self-priming rotary internal gear pump, equipped with a by-pass valve.

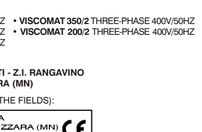
MOTOR: Asynchronous motor, single-phase or three-phase, 2 or 4 pole, closed type (Protection class IP55 according to regulation EN 60034-5-86) self-ventilating, flange-mounted directly to the pump body.

E TECHNICAL INFORMATION

E1 PERFORMANCE

The performance data provided for the various pump models of the VISCOMAT family can be illustrated with curves that show the relationship between the ***flow rate*** supplied and the ***back pressure*** that the pump must overcome.
Diagram **"A"** illustrates a ***flow rate/back pressure curve typical*** of all of the pumps in the VISCOMAT family.





Point "1" is the point at which the pump is functioning with practically no back pressure, in which case the pump supplies the maximum flow rate *(Q max)*.
Point "2" is the functioning point characterized by the maximum back pressure (P max) at which the pump supplies the minimum flow rate *(Q min)*.
When the back pressure exceeds the value *P max*, thanks to the special design of the by-pass, there is a sudden opening of the by-pass, with a consequent sudden reduction of the flow rate supplied.

At flow rate zero (point "3") the entire flow rate supplied by the pump is recirculated in the by-pass, and the pressure in the delivery line reaches the value of *P by-pass*.
VISCOMAT pumps can, therefore, function in the face of any back pressure between zero and *P max*, supplying a flow rate varying little as a function of the back pressure between the values of *Q max* and *Q min*.
The values for *Q min* , *Q max* , *P max* and *P by-pass* are provided for each model of pump in the Table below:

PUMP MODEL	Q max. (liters/min)	Q min. (liters/min)	P max. (bar)	P by-pass (bar)
VISCOMAT 200/2 SINGLE-PHASE 230V/50HZ	12	9	11	15
VISCOMAT 200/2 SINGLE-PHASE 230V/60HZ	12	9	11	15
VISCOMAT 200/2 THREE-PHASE 400V/50HZ	12	9	11	15
VISCOMAT 350/2 SINGLE-PHASE 230V/50HZ	12	9	25	30
VISCOMAT 350/2 THREE-PHASE 400V/50HZ	12	9	25	30
VISCOMAT 230/3 230V/50HZ	15	13.5	16	19
VISCOMAT 230/3 400V/50HZ	15	13.5	16	19

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.

The characteristic flow rate/back pressure curve illustrated in diagram **"A"** relates to functioning with oil ***of a viscosity equal to approximately 110cSt*** (comparable, for example, to oil SAE W80 at a temperature of 45°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.

Diagram **"B"** illustrates how the characteristic curve changes in the case of the maximum and minimum viscosities (respectively equal to 50 cSt and 500 cSt), showing that, at the maximum working back pressure *(Pmax)*, the flow rate *Q min* suffers a ***variation of between 10% and 15%*** with respect to the value relative to a viscosity of 110 cSt.

E2 ELECTRICAL INFORMATION

PUMP MODEL	ELECTRIC POWER SUPPLY			POWER	CURRENT	SPEED
	Current	Voltage (V)	Frequency (Hz)	Rated (Watt)	Maximum (Amp)	Rated (g/m)
VISCOMAT 200/2 SINGLE-PHASE 230V/50HZ	AC	230	50	550	4	1450
VISCOMAT 200/2 SINGLE-PHASE 230V/60HZ	AC	230	60	550	4.7	1700
VISCOMAT 200/2 THREE-PHASE 400V/50HZ	AC	400	50	550	1.5	1450
VISCOMAT 350/2 SINGLE-PHASE 230V/50HZ	AC	230	50	900	6.3	1450
VISCOMAT 350/2 THREE-PHASE 400V/50HZ	AC	400	50	750	2.5	1450
VISCOMAT 230/3 230V/50HZ	AC	230	50	900	6	1400
VISCOMAT 230/3 400V/50HZ	15	400	50	750	2.7	1400

⚠ 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 P max, with oils of a viscosity equal to approximately **500 cSt**.

F OPERATING CONDITIONS

F1 ENVIRONMENTAL CONDITIONS

TEMPERATURE: min. -10°C / max. +60°C

RELATIVE HUMIDITY: max. 90%

⚠ ATTENTION
The temperature limits indicated are applied 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.

F2 ELECTRICAL POWER

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 E2 - ELECTRICAL INFORMATION. The maximum acceptable variations from the electrical parameters are:
voltage: +/- 5% of the nominal value
frequency: +/- 2% of the nominal value

⚠ ATTENTION
Electrical power from lines with values outside the limits indicated can cause damage to the electrical components.

F3 WORKING CYCLE

The motors are intended for continuous use.
Under normal operating conditions they can function continuously with no limitations.

⚠ ATTENTION
Functioning in by-pass conditions is only allowed for brief periods (2 to 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.**

F4 FLUIDS ALLOWED / FLUIDS NOT ALLOWED

ALLOWED:
- OIL with a VISCOSITY from 50 to 2000 cSt (at working temperature)

NOT ALLOWED:
- GASOLINE (PETROL)
- INFLAMMABLE LIQUIDS with PM < 55°C
- WATER
- LIQUID FOOD
- CORROSIVE CHEMICALS PRODUCTS
- SOLVENTS

RELATED DANGER:
- FIRE - EXPLOSION
- FIRE - EXPLOSION
- OXIDATION OF THE PUMP
- CONTAMINATION OF SAME
- CORROSION OF THE PUMP INJURY TO PEOPLE
- FIRE - EXPLOSION DAMAGE TO GASKET SEALS

G MOVING AND TRANSPORTING

Given the limited weight and size of the pumps (see DIMENSIONS AND WEIGHTS), ***moving the pumps does not require the use of lifting equipment***.

The pumps are carefully packed before shipment.
On receipt, check the packing materials and store in a dry place.

H INSTALLATION

H1 DISPOSING OF THE PACKING MATERIALS

The packing material does not require any special precautions in its disposal, not being in any way dangerous or polluting.
For disposal, refer to local regulations.

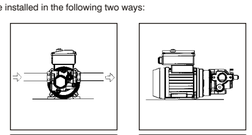
H2 PRELIMINARY INSPECTION

- Check that the machine has not suffered any damage during its transport or warehousing.
- Clean the inlet and outlet openings with care, removing any dust or packing residue.
- Make sure that the motor shaft turns freely,
- Check that the electrical information corresponds with what is shown on the label.

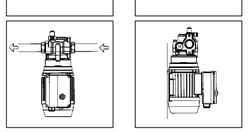
H3 MECHANICAL INSTALLATION

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

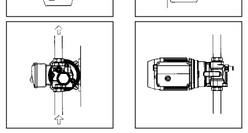
a) On an horizontal base:



b) To the wall, with pump body upwards:



c) To the wall, with pump body aside:



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:

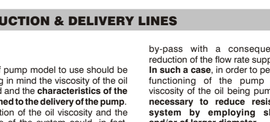
- Opening "IN1" is aligned with the delivery opening "OUT".
- Opening "IN2" is parallel to the motor axis and, therefore, at a 90° angle with respect to the outlet opening "OUT".

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.



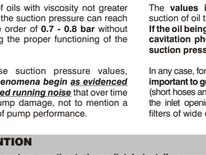
If the system is equipped with a foot valve, the priming device can be closed once the starting phase has been completed (see paragraph "I").

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.

H4 HYDRAULIC CONNECTION

- 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
- diameter: **1"**
- nominal pressure: **2 times the pressure P bypass** (see the Table in paragraph E1 - PERFORMANCE)
- appropriate for use with suction

DELIVERY HOSE
- diameter: **1/2"**
- nominal pressure: **2 times the pressure P bypass** (see the Table in paragraph E1 - PERFORMANCE)

⚠ 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.

H5 SUCTION & DELIVERY LINES

DELIVERY

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**. 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.
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

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.
If the oil being pumped is mixed with air, the cavitation phenomena can begin at lower suction pressures.

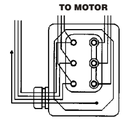
In any case, for as much as was said above, **it is important to guarantee low suction pressures** (short hoses and possibly of larger diameter than the inlet opening of the pump, fewer curves, filters of wide cross-section and kept clean).

⚠ 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.

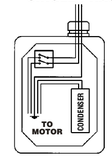
H6 ELECTRICAL CONNECTIONS

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.

THREE PHASE A.C. LINE



SINGLE PHASE



Single-phase motors are supplied with a bipolar switch and capacitors wired and installed inside the terminal strip box (see chart). Motors are likewise equipped with an automatic reset thermo-protector.

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
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.

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 characterized by minimum cross-sections, rated voltages and installation type adequate to the characteristics indicated in paragraph E2 - ELECTRICAL INFORMATION and the installation environment.
- For three-phase motors, ascertain the correct rotation direction by referring to paragraph R - DIMENSIONS AND WEIGHTS.
- 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 turning on the electric power, after checking the integrity of the gasket seals that ensure protection grade IP55.

I INITIAL START-UP

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.

⚠ 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 "32" 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.

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 priming height is not greater than 2.5 meters
- that the delivery hose allows for the easy evacuation of the air.

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 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 H5 - SUCCTION & DELIVERY LINES
3) that the back pressure in the delivery line does not exceed the values indicated in paragraph H5 - SUCTION & DELIVERY LINES

For a complete and proper verification of points 2) and 3), the installation of vacuum and air pressure gauges at the inlet and outlet of the pump is recommended.

L EVERY DAY USE

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

MANUAL OPERATION
- before starting the pump, make sure that the ultimate shut-off device (delivery gun 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.
- turn the on-switch present on some pump models (single-phase) or the start/stop switch installed on the electrical power line.
- 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.

- 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.

- 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.

- 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:
- the pump is stopped, the delivery gun is closed and the delivery line is under pressure
- the delivery gun is then opened, with the consequent sudden lowering of pressure in the delivery line
- the pressure switch, at the moment that the pressure drops below the value **"Pm"**, automatically starts the pump allowing delivery
- 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 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:
- ***"Pa" is sufficiently lower than the by-pass 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
- ***"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
- the foot valve guarantees an effective seal, to avoid frequent unwanted cycling on and off caused by its leakage
- 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.

M PROBLEMS E SOLUTIONS

Problem	Possible cause	Corrective action
MOTOR DOES NOT TURN	Lack of power	Check electrical connections and safety systems
	Rotor blocked	Check for possible damage or obstruction to rotating parts
	Thermal motor protector has triggered	Wait until the motor cools, verify that it starts again, look for the cause of overheating
	Problems with the motor	Contact technical support
MOTOR TURNS SLOWLY WHEN STARTING	Low voltage from the electrical power supply	Adjust the voltage within anticipated limits
	Excessive oil viscosity	Verify oil temperature and warm it to reduce excessive viscosity
LITTLE OR NO FLOW	Low level in the suction tank	Fill the tank
	Foot valve blocked	Clean and/or replace valve
	Filter blocked	Clean the filter
	Excessive suction pressure	Lower the pump with respect to the level of the tank or increase the cross-section of the hose
	High load loss in the delivery circuit (running with by-pass open)	Use shorter hose or of wider diameter
	By-pass valve blocked	Detach the valve, clean or replace it
	Air in the pump or suction hose	Check the seal of the connections
	Narrowing of the suction hose	Use a hose appropriate for working under suction pressure
	Low rotation speed	Check the voltage at the pump. Adjust the voltage or use cables of greater cross-section
	Suction hose resting on the bottom of the tank	Raise the hose
	Excessive oil viscosity	Verify oil temperature and warm it to reduce excessive viscosity
HIGHER PUMP NOISE	Cavitation	Reduce the suction pressure (see paragraph H5)
	Irregular by-pass functioning	Deliver until the air in the by-pass system is purged
	Presence of air in the oil	Wait for the oil in the tank to settle
LEAKAGE FROM THE PUMP BODY	Damage to the mechanical seal	Check and replace the mechanical seal

N MAINTENANCE

VISCOMAT series pumps are designed and constructed to require a minimal amount of maintenance.
- On a weekly basis check that the hose joints have not loosened, to avoid any leakage.
- On a monthly basis check the pump body and clean it removing 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 cables are in good condition.

O NOISE LEVEL

Under normal operating conditions noise emission for all models does not exceed the value of **70 dB "A" at a distance of 1 Meter from the electric pump**.

P DISPOSAL OF CONTAMINATED MATERIALS

In the case of maintenance or destruction of the machine, do not disperse contaminated parts into the environment.
Refer to local regulations for their proper disposal.

Q EXPLODED DIAGRAMS AND SPARE PARTS

VISCOMAT 200/2

Position	Component Description	Quantity
1	SCREW UNI 9327 M8X50-8.8 ZN	3
2	MACHINED PUMP HEAD	1
3	O-RING 3118	1
4	PLUG G1"X15	1
5	O-RING 3068	1
6	SPACER Ø 14	1
7	BY-PASS PLUG	1
8	BY-PASS VALVE	1
9	COMPRESSION HELICAL SPRING	1
10	PIN Ø 5X14	2
11	TIE ROD M5X145	4
12	FLANGE MEC71, TURNED	1
13	MOTOR	1
14	PLASTIC FAN COVER	1
15	TONGUE	1
16	BEARING 6203 WITH TWO PROTECTION SCREENS	1
17	COMPENSATING RING	1
18	THREAD FORMING SCREW M6X25 DIN 7500/C	4
20	PUMP FLANGE	1
21	O-RING 123	1
22	FIXED CHUTE FACE Ø14	1
23	ROTARY CHUTE FACE Ø14	1
24	O-RING 117	1
25	BRASS WASHER	1
26	CONIC SPRING	1
27	SEEGER FOR SHAFT	1
28	EXTERNAL ROTOR H12	1
29	INTERNAL ROTOR H12	1
30	O-RING	1
31	NUT UNI 5588 M5 - 5S ZN	4
32	VENTING KIT	1

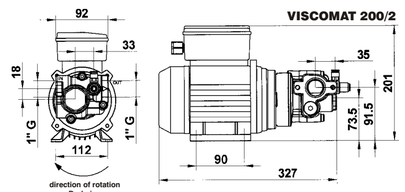
VISCOMAT 350/2

Position	Component Description	Quantity
1	PLUG G1"X15	1
2	O-RING 3118	1
3	MACHINED HEAD PUMP	1
4	BY-PASS VALVE	1
5	COMPRESSION HELICAL SPRING	1
6	O-RING 3068	1
7	SPACER Ø 14	1
8	BY-PASS PLUG	1
9	PIN Ø 5X14	2
10	TIE ROD M5X160	4
11	FLANGE MEC80 TURNED	1
12	THREAD FORMING SCREW M6X25 DIN 7500/C	4
13	MOTOR	1
14	PLASTIC FAN COVER	1
15	TONGUE	1
16	BEARING 6204 WITH TWO PROTECTION SCREENS	1
17	COMPENSATING RING	1
18	PUMP FLANGE	1
19	O-RING 123	1
20	FIXED CHUTE FACE Ø14	1
21	ROTARY CHUTE FACE Ø 14	1
22	O-RING 117	1
23	BRASS WASHER	1
24	CONIC SPRING	1
25	SEEGER FOR SHAFT	1
26	EXTERNAL ROTOR H12	1
27	INTERNAL ROTOR H12	1
28	O-RING	1
29	SCREW UNI 9327 M8X50-8.8 ZN	3
30	NUT UNI 5588 M5 - 5S ZN	4
32	VENTING KIT	1

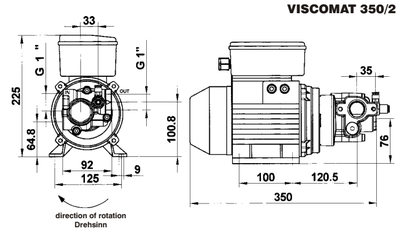
R DIMENSIONS AND WEIGHTS

RAUMBEDARF UND GEWICHTE

VISCOMAT 200/2

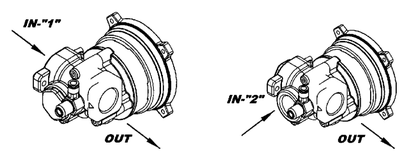


VISCOMAT 350/2



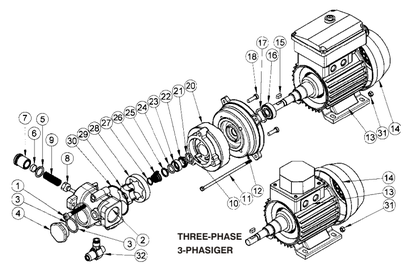
S CONFIGURATION OF DELIVERY AND SUCTION

KONFIGURATION FÖRDERLEISTUNG UND SAUGLEISTUNG



Q EXPLODED DIAGRAMS AND SPARE PARTS

VISCOMAT 200/2



VISCOMAT 350/2