



# VISCOMAT 70-90

**USE AND  
MAINTENANCE  
MANUAL**

ENGLISH

**BEDIENUNGS-  
UND  
WARTUNGSANLEITUNG**

DEUTSCH

**F OPERATING CONDITIONS**

**F1 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

**F2 ELECTRICAL POWER SUPPLY**

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 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.

**F3 WORKING CYCLE**

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.

**F4 FLUIDS PERMITTED / FLUIDS NOT PERMITTED**

**PERMITTED:**

- OIL with a VISCOSITY from 50 to 500 cSt (at working temperature)

**NOT PERMITTED:**

- GASOLINE
- INFLAMMABLE LIQUIDS with PM < 55°C
- WATER
- FOOD LIQUIDS
- CORROSIVE CHEMICAL PRODUCTS
- SOLVENTS

**RELATED DANGERS:**

- FIRE - EXPLOSION
- FIRE - EXPLOSION
- PUMP OXIDATION
- CONTAMINATION OF THE SAME
- PUMP CORROSION
- INJURY TO PERSONS
- FIRE - EXPLOSION
- DAMAGE TO GASKET SEALS

**G MOVING AND TRANSPORT**

Given the limited weight and size of the pumps (see paragraph R - DIMENSIONS AND WEIGHTS), moving the pumps does not require the use of lifting devices.

The pumps were carefully packed before shipment.

Check the packing material on delivery and store in a dry place.

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 SPECIFICATIONS 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 ground terminal to connect to the ground line of the electrical network.
- 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.



### 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.

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



### DAILY 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 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.
- 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 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-pas 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 AND SOLUTIONS

Problems	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
	Motor problems	Contact the Service Department
THE MOTOR TURNS SLOWLY WHEN STARTING	Low voltage in the electric power line	Bring the voltage back within the anticipated limits
	Excessive oil viscosity	Verify the oil temperature and warm it to reduce the excessive viscosity
LOW OR NO FLOW RATE	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 tubing
	High loss of head in the delivery circuit (working with the by-pass open)	Use shorter tubing or of greater diameter
	By-pass valve blocked	Dismantle the valve, clean and/or replace it
	Air entering the pump or the suction tubing	Check the seals of the connections
	A narrowing in the suction tubing	Use tubing 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 tubing is resting on the bottom of the tank	Raise the tubing
	Excessive oil viscosity	Verify the oil temperature and warm it to reduce the excessive viscosity