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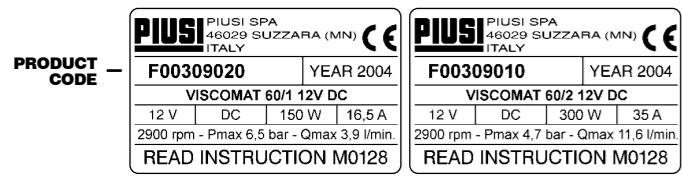
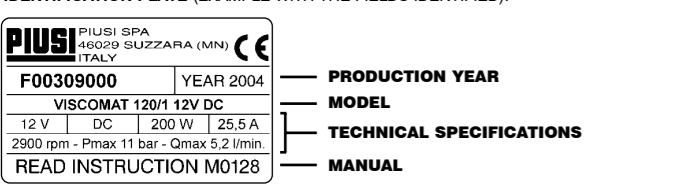
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PUMP MODEL VISCOMAT 120/1 12V VISCOMAT 120/1 24V VISCOMAT 60/1 12V VISCOMAT 60/1 24V VISCOMAT 60/2 12V VISCOMAT 60/2 24V

B MACHINE AND MANUFACTURER IDENTIFICATION

Available models: VISCOMAT 120/1 12V DC - VISCOMAT 60/1 12V DC - VISCOMAT 60/2 12V DC MANUFACTURER: PIUSI SPA - VIA PACINOTTI - Z.L. RANGAVINO - 46029 SUZZARA (MN)



ATTENTION Always check that the revision level of this manual coincides with that is shown on the identification plate.

C DECLARATION OF CONFORMITY

DECLARATION OF CONFORMITY The undersigned, representing the following manufacturer PIUSI S.p.A. o 46029 SUZZARA (MANTOVA) ITALY hereby CERTIFIES that the equipment described below...

ATTENTION

Under different suction conditions higher pressure values can be created that reduce the flow rate compared to the same back pressure values.

F OPERATING CONDITIONS

F1 ENVIRONMENTAL CONDITIONS

TEMPERATURE: min. +5°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.

F2 ELECTRICAL POWER SUPPLY

Depending on the model, the pump must be supplied by a continuous current line whose nominal values are shown in the table in Paragraph E2 - ELECTRICAL SPECIFICATIONS.

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

F3 WORKING CYCLE

The pumps are designed for INTERMITTENT use with a 30 - minute work cycle under conditions of maximum back pressure.

ATTENTION Functioning under by-pass conditions is only allowed for brief periods of time (2-3 minutes maximum). After a work cycle of 30 minutes, wait for the motor to cool.

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H4 HYDRAULIC CONNECTION

- 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,

The MINIMUM recommended characteristics for hoses are as follows:

SUCTION HOSE - diameter: 20 mm -nominal pressure: twice the P bypass pressure (see table, par. E1) -appropriate for use with suction DELIVERY HOSE - diameter: 1/2" for versions 60/1 and 60/2 - diameter: 3/4" for version 120/1 twice the P bypass pressure (see table, par. E1)

ATTENTION It is the installer's responsibility to use tubing with adequate characteristics. The use of hoses that are inappropriate for use with oil can cause damage to the pump or people as well as pollution.

H5 CONSIDERATIONS REGARDING DELIVERY AND SUCTION 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.

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.

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.

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.

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.

H6 LINE ACCESSORIES

- The pumps are supplied without line accessories. The most common line accessories DELIVERY Easy Oil nozzles Meters Flexible tubing

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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.

In the priming phase the pump must blow the air that was initially present in the tubing into the line. Therefore, it is necessary to keep the

delivery open. When the tube is filled with oil, the purging phase is concluded.

ATTENTION If a foot valve was not installed, install the pump in a position so that oil is always present in the gear chamber (see chapter H3).

The priming phase may last from several seconds to a few minutes, depending on the characteristics of the system.

the pump is functioning within the expected 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 - CONSIDERATIONS REGARDING SUCTION AND 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 DAILY USE

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

- Close the delivery nozzle or the line valve to stop delivery. The pump will automatically enter by-pass mode.

ATTENTION Functioning with the delivery closed is only allowed for brief periods (2 to 3 minutes maximum). Functioning under nominal conditions is limited to a work cycle of 30 minutes. If this time is exceeded, you have to turn off the pump and wait for it to cool.

M PROBLEMS AND SOLUTIONS

Table with 3 columns: Problems, Possible cause, Corrective action. Rows include: THE MOTOR IS NOT TURNING, THE MOTOR TURNS SLOWLY WHEN STARTING, LOW OR NO FLOW RATE, INCREASED PUMP NOISE, LEAKAGE FROM THE PUMP BODY, HIGH ABSORPTION.

And is in conformity with the following Italian National Decrees: MD 31.07.1934 -Heading 1 No. XVII Approval of the Applicable Safety Rules for the Storing, Use and Transport of Mineral Oils.

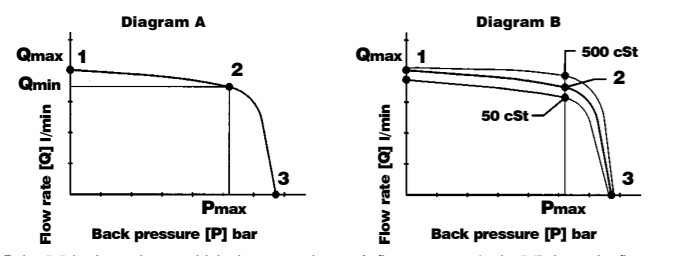


D MACHINE DESCRIPTION

PUMP: Electric self-priming rotary external gear pump, equipped with a by-pass valve. MOTOR: Brush motor powered by continuous current, low voltage, with intermittent cycle, closed type, IP55 protection class according to CEI EN 60034-5, flange-mounted directly to the pump body.

E TECHNICAL SPECIFICATIONS

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.



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).

Table with 7 columns: PUMP MODEL, Q max (litres/min), Q min (litres/min), P max (bar), P by-pass (bar), Current Max (A)*

data refer to pump performance with oil of viscosity 500cSt * refers to functioning with maximum back pressure. 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.

F4 FLUIDS PERMITTED / FLUIDS NOT PERMITTED

- PERMITTED: Oil with a viscosity from 50 to 2000 cSt (at working temperature) (viscosity from 50 to 600 cSt for Viscomat 600/2 12V) NOT PERMITTED: GASOLINE INFLAMMABLE LIQUIDS with PM < 55°C WATER FOOD LIQUIDS CORROSIVE CHEMICAL PRODUCTS SOLVENTS

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.

H INSTALLATION

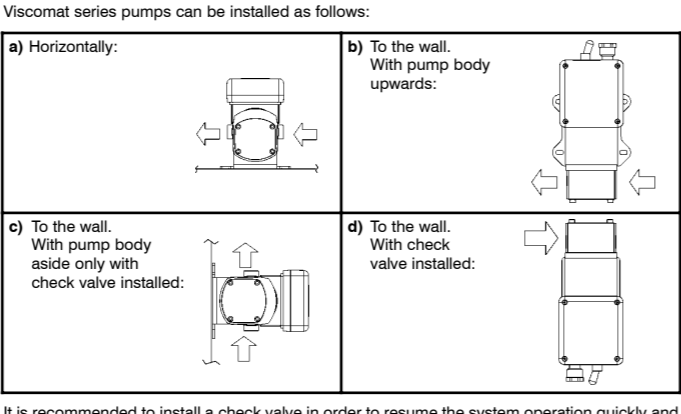
H1 DISPOSING OF THE PACKING MATERIAL

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

H2 PRELIMINARY INSPECTION

- Check that the machine has not suffered any damage during transport or storage. Clean the inlet and outlet openings, removing any dust or residual packing material. Make sure that the motor shaft turns freely. Check that the electrical specifications correspond to those shown on the identification plate.

H3 MECHANICAL INSTALLATION



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

ATTENTION Under conditions C and D, a check valve is to be installed. Moreover, during the initial start-up phase, the suction tube is to be filled with oil.

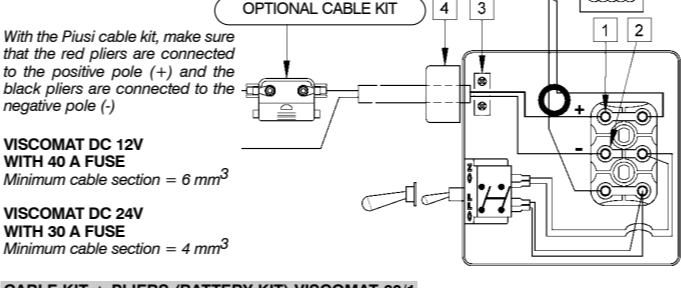
ATTENTION THE MOTORS ARE NOT OF AN ANTI-EXPLOSIVE TYPE Do not install them where inflammable vapours could be present.

H7 ELECTRICAL CONNECTIONS

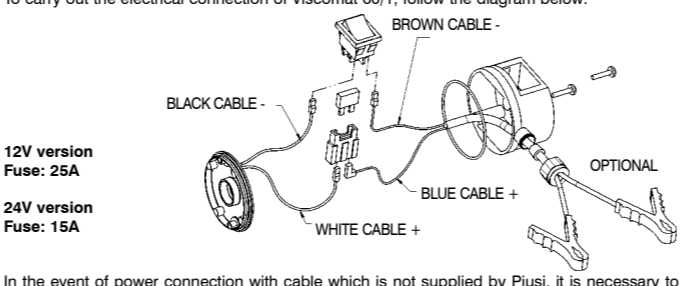
It is the installer's responsibility to provide the line accessories necessary for the safe and proper functioning of the pump.

THE MOTOR IS NOT TURNING

- With the Piusi cable kit, make sure that the red pliers are connected to the positive pole (+) and the black pliers are connected to the negative pole (-).



- CABLE KIT + PLIERS (BATTERY KIT) VISCOMAT 60/1 Cables fitted with faston type plugs for power connection; WHITE cable (or BROWN): positive pole (+); BLACK cable (or BLUE): negative pole (-); Terminal strip box (protection IP55 in conformance with EN 60034-5-97 regulations) complete with: start/stop switch; protection fuse against short circuits and overloads with following features: 25A for 12V models o 15A for 24V models.



In the event of power connection with cable which is not supplied by Piusi, it is necessary to observe the following characteristics: for Viscomat DC 12V - use a bipolar cable with minimum section of 6 mm² for Viscomat DC 24V - use a bipolar cable with minimum section of 4 mm²

ATTENTION It is important to use fuses as indicated in paragraph E, to prevent the pump motor from being damaged in the event of a short circuit. It is the installer's responsibility to carry out the electrical connection with respect to the applicable regulations.

- During installation and maintenance make sure that power to the electric lines has been turned off. Use cables characterized by the minimum sections, nominal voltages and wiring-type adequate to the electrical characteristics shown in Paragraph E2 - Electrical Specifications and the installation environment. Always close the cover of the strip box before supplying electrical power.

N MAINTENANCE

VISCOMAT series pumps are designed and constructed to require a minimal amount of maintenance. On a weekly basis, check that the tubing joints have not loosened, to avoid any leakage. On a monthly basis, check that the electric power supply 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 DISPOSING 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.



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