

## Pump Manual

### Model Numbers:

SOP12V  
SOP24V

### Product Names:

12V Oil Pump  
24V Oil Pump





## **WARNING**

**Read carefully and understand all INSTRUCTIONS before operating. Failure to follow the safety rules and other basic safety precautions may result in serious personal injury. Save these instructions in a safe place and on hand so that they can be read when required.**

## **A. DECLARATION OF CONFORMITY**

**DECLARATION OF CONFORMITY**  
IN CONFORMANCE WITH THE DIRECTIVES  
98/37/EEC (MACHINERY)  
73/23/EEC (PRESSURE VESSELS)  
89/336/EEC (ELECTOR-MAGNETIC COMPATIBILITY)

DECLARES THAT THE FOLLOWING PUMP MODELS: SOP12V, SOP24V

CONFORMS TO THE FOLLOWING EUROPEAN REGULATIONS:

**EN292-1-92** – Safety of Machinery – General Concepts, basic principles for design – terminology, basic methodology

**EN292-2-92** – Safety of Machinery – General Concepts, basic principles for design – specifications and technical principles

**EN294-93** – Safety of Machinery – safe distances to prevent the operator's upper limbs from reaching dangerous areas

**EN60034-1-2000** – Rotating electrical Machinery – nominal and functional specifications

**EN60034-5-2001** – Classification of grades of protection for the housings of rotating electrical machinery

**EN61000-6-3** – Electro – magnetic compatibility – generic emission standards

**EN61000-6-1** – Electro – magnetic compatibility – generic immunity standards

**EN55014-1-00(A1/99-A2/99)** –Limits and methods for measuring radio disturbance characteristics

**EN55014-2-97** – Electrical motor – operated and thermal appliances for household and similar purposes, electric tools and similar electrical apparatus

**EN60204-1-98** –Safety of machinery – electrical equipment of machines

## **B. 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.

## C. TECHNICAL INFORMATION

Model	SOP12V	SOP24V
Voltage	12V	24V
Current	40A	30A
Flow Rate	10LPM	10LPM
Pressure	4Bar/60PSI	4Bar/60PSI
Inlet/Outlet	3/4"	3/4"
Rated Speed	2900 RPM	2900 RPM

## D. OPERATING CONDITIONS

### D.1 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.

### D.2 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 C-TECHNICAL INFORMATION.

The maximum acceptable variations from the electrical parameters are:

**Voltage: +/-5%of the nominal value**

#### **ATTENTION!**

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

### D.3 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(2-3minutes maximum).after a work cycle of 30 minutes, wait for the motor to cool.

### D.4 FLUID ALLOWED/FLUID NOT ALLOWED

**ALLOWED:** Oil with a Viscosity from 50 to 600cst (at working temperature)

NOT ALLOWED	RELATED DANGER
Gasoline (Petrol)	Fire - explosion
Inflammable liquids with PM < 55°C	Fire - explosion
Water	Oxidation of the pump
Liquid food products	Contamination of same
Corrosive Chemicals	Corrosion of the pump Injury to people
Solvents	Fire – explosion Damage to gasket seals

### E. 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.

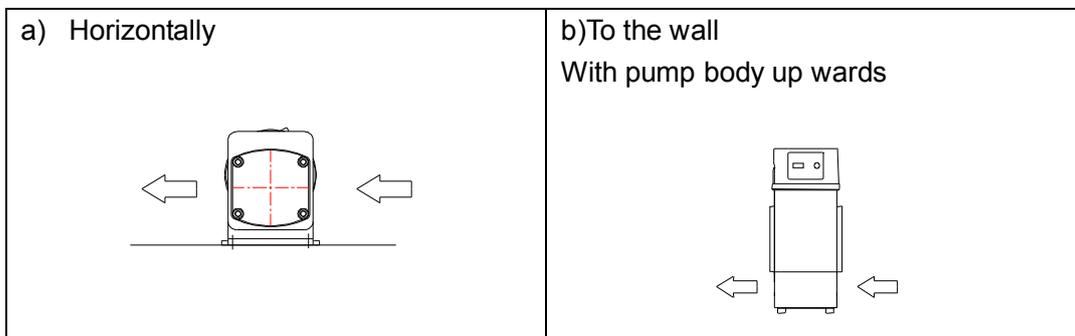
### F. INSTALLATION

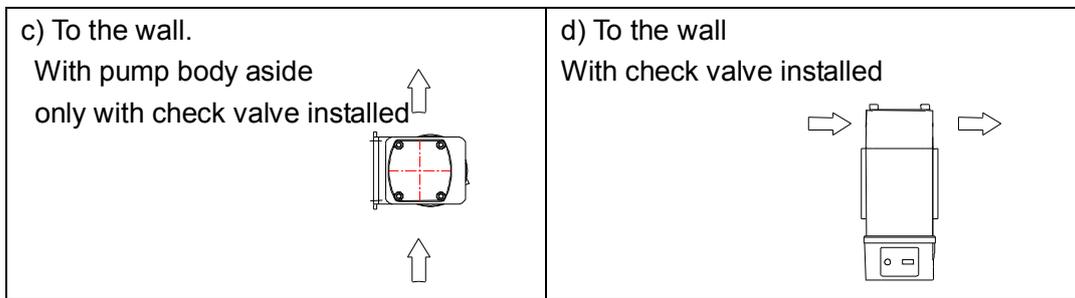
#### F.1 Preliminary Inspection

- 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.

#### F.2 MECHANICAL INSTALLATION

The pumps can be installed as follows:





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.

Fix the pump using screws of a diameter suitable for the provided fixing holes as indicated in the drawing “Dimensions and weights”.

**⚠ ATTENTION!**

**THE MOTORS ARE NOT OF AN ANTI-EXPLOSIVE TYPE**

Do not install them where inflammable vapours could be present.

**⚠ ATTENTION!**

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

The use of accessories that are inappropriate for use with oil can cause damage to the pump or people as well as pollution

**G. INITIAL START-UP**

The 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 operation can be performed by removing the cover of the chamber filling the internal chamber with oil and placing the cover again, paying attention to the O-ring seal.

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. If the foot-valve seal is not perfectly tight, the suction tube may be emptied and the operation of initial start-up

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 the filter in the suction circuit, if any, is 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
- The exact rotation direction of the motor: it must be in a counter-clockwise considering the motor from pos. 1 of the exploded diagram.

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

that under conditions of maximum flow the energy drawn by the motor falls within the values indicated on the label

## H. DAILY USE

NO particular preliminary operation is required for every day use of these pumps.

- 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)
- Turn the on-switch present on some pump models or the start/stop switch installed on the electrical power line
- Open the delivery valve or activate the delivery nozzle, gripping it securely

### **ATTENTION!**

Fluid exits at high pressure from a delivery nozzle fed by the 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 3minutes maximum). functioning under nominal conditions in limited to a work cycle of 30 minutes. If this time is exceeded, you have to run off the pump and wait for it to cool after use, make sure the pump us turned off.

Stop the pump.

## I. PROBLEMS AND SOLUTIONS

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
Motor does not turn	Lack of electric power	Check electrical connections and the safety systems
	Rotor jammed	Check for possible damage or obstruction of the rotating components
	Motor problems	Contact the service department
	Fuse burnt out	Replace the fuse
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 in 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 connection
	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
	Excessive oil viscosity	Verify the oil temperature and warm it to reduce the excessive viscosity
HIGHER PUMP NOISE	Cavitations	Reduce the suction pressure
	Irregular by-pass functioning	Deliver until the air in the by-pass system is purged
	Presence of the 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
HIGH ABSORPTION	The cover is screwed too tightly	Loosen the screws of the cover

	Excessive oil viscosity	Verify the oil temperature and warm it to reduce the excessive viscosity
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## J. 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.

## K. 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.

## L. EXPLODED DIAGRAMS AND SPARE PARTS

o.	Description	Qty
1	SCREW M6x10	4
2	Gear coverplate	1
3	O-RING 58.42x2.62	1
4	Driver key	1
5	Gear	2
6	Axile bush	2
7	Pump body	1
8	Oil seal	1
9	elastic collar	1
10	ball bearing	1
11	Motor	1
12	SCREW M5X10	2
13	bracket	1
14	Valve plug	2
15	O-RING 11.1*1.78	2
16	compression helical spring	1
17	by-pass valve	1

