

### 3.2. Three-phase pumps MXS

Install in the control box an overload-protective device in accordance with the name-plate current.

### 4. Starting

**With a three-phase power supply make sure the direction of rotation is correct.**

For this purpose, with the gate valve at any aperture position, check with pressure (with the pressure gauge), or flow rate (sight check) after starting. Switch off power, invert the connections of two phases on the control panel, re-start and check pressure or flow rate capacity again.

Make sure the pump is operating within its range of rated performance and that the absorbed current indicated on the name-plate is not exceeded. Otherwise, adjust the delivery gate valve or the setting of pressure switches if installed.

**ATTENTION: never allow the pump to run for more than five minutes with a closed gate valve.**  
**ATTENTION: never run the pump dry, not even for a short trial run.**  
Never start the pump before it has been immersed to a depth of at least 100mm.

### Construction with float switch:

The float switch, connected directly to the pump, controls starting and stopping. Check that the float switch is free from any obstacle. If necessary, adjust the float-switch cable.

### 5. Maintenance

Under normal operating conditions the pump will not require maintenance.



**Disconnect electrical power before any servicing operation and make sure the pump cannot be accidentally switched on.**

### 6. Dismantling

#### 6.1. Checking rotation on the shaft

Refer to the drawing on page 3. While the pump is positioned horizontally, remove the screws (14.24), the square nuts (14.28) and suction strainer (15.50). Hold the first stage casing (25.01) tightly with one hand so that it does not rotate and, with a wrench on the nut (28.04), turn the shaft in the anti-clockwise direction.

If the shaft is blocked and cannot be freed, dismantling should continue until the cause has been found and removed.

#### 6.2. Inspection of the hydraulic parts

The O-ring (14.20) and then the complete motor assembly with all internal pump parts are removed from the external jacket (14.02).

The first impeller can be inspected by removing the first stage casing (25.01).

Once the nuts (28.04) and washer (28.08) are removed the spacer sleeves (64.15), impellers (28.00) and the other stage casings (25.02 and 25.05) can be dismantled one after the other. Other parts should not be dismantled. The motor group and pump functions can be impaired by erroneous procedure or tampering with internal parts.

### 6.3. Oil chamber

If the oil chamber has to be inspected, follow these instructions:



**CAUTION: there may be slight pressure in the oil chamber.**

Care must be taken to avoid a sudden spurting of oil. Wait until the oil chamber cover (34.03) has cooled down.

Before removing the mechanical seal (36.00), loosen the screws (70.18) and raise the cover (34.03), applying force simultaneously on two opposite points of the cover rim, to let off pressure from the oil chamber. Carry out this operation while holding the motor in the upturned vertical position.

When refilling the chamber use only white oil suitable for food machinery and pharmaceutical use (quantity = 35g). First, mount the fixed parts of the seal (36.00) on the oil chamber cover (34.00) and then the oil chamber cover (34.03) on the motor cover (70.00) with the O-ring (70.09).

### 7. Spare parts

When ordering spare parts, please quote their designation, position number in the cross section drawing and rated data from the pump name plate (type, date and serial number).

Any pumps that require inspection / repair must be sent back complete with cable and electric control box.

## Close coupled multi-stage submersible pumps with / without Float Switch

# MXS

## OPERATING INSTRUCTIONS

### 1. Operating Instructions

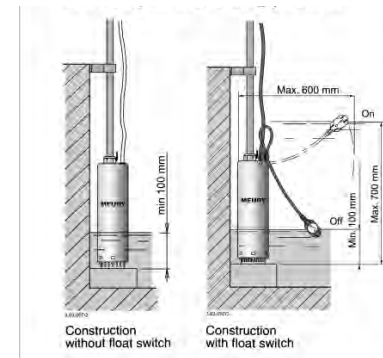
Standard Construction

- Maximum temperature of 35°C and maximum sediment content of 60/m<sup>3</sup>.
- Minimum immersion depth: 100mm.
- Maximum submersible depth: 20m (with suitable cable length).
- Maximum starts/hour: 30 at regular intervals.
- Sound pressure at minimum immersion depth: < 70dB (A).
- Noise disappears when the pump is dispersed.

### 2. Installation

The internal diameter of the delivery pipe must never be smaller than the diameter of the pump connection port: G 1 ¼ (DN 32). The pump must be installed in the vertical position with the delivery connection facing upwards. The pump can be installed immersed (min 100mm) or submersed (max 20m) suspended 10mm off the bottom of the tank.

### 2.1. Pump in the resting position



**When sludge deposits are expected to form, mount the pump on a surface raised from the bottom level so that matter is not lifted.**

### 2.2. Pump in the suspended position

The pump can be held in a suspended position by the metal delivery pipe. Tighten the threaded pipe joints firmly to avoid loosening during operation.

A safety rope or chain of non-perishable material should always be used to secure a suspended pump. When a plastic or flexible delivery pipe is used, the safety rope or chain should be utilized for lowering, securing and raising the pump.

**Never use the electric power cable to suspend the pump.**

Attach the power supply cable to the delivery pipe and to the safety rope with cable clamps at intervals of about 3m. The power cable should not be taut: allow for a certain degree of slackness between the clamps to avoid the risk of strain caused by expansion of the pipe during operation.

### 3. Electrical connection



Electrical connection must be carried out by a qualified electrician in accordance with local regulations.  
**Follow all safety standards.**

**The unit must always be earthed, also with a non-metallic delivery pipe.**

**ATTENTION: The earthing (grounding) conductor is useful also to reduce the risk of galvanic corrosion due to electrolytic action, especially with non-metallic delivery pipe and safety rope.**

Make sure the frequency and mains voltage correspond with the name plate data.

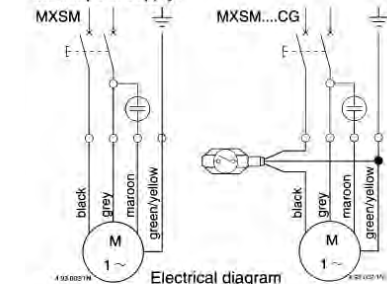
Install a device for disconnection from the mains (switch) with a contact separation of at least 3mm on all poles. The pumps are supplied with power cable type H07 RN-F, 4G1 mm<sup>2</sup>.

When extension cables are used, make sure the cable wires are of adequate size to avoid voltage drops. For connection of cables, use thermo-shrinking sheathes or other methods for submersed cables.

### 3.1. Single-phase pumps MXSM

Supplier with incorporated thermal protector. The motor will stop if overheating is detected. When the windings cool down (after 2 to 4 minutes), the thermal protector enables re-starting.

**Control box with starting capacitor is included in the scope of supply.**





**A Full Stainless Steel Submersible Pump**  
 Designed for Diesel, AdBlue, Chemicals (*with low flash point*)

## 8. Designation of parts

Number	Designation
14.02	External jacket
14.20	O-ring
14.24	Screw
14.28	Square nut
15.54	Wear ring (1)
15.50	Suction strainer
25.01	First stage casing
25.02	Stage casing
25.05	Last stage casing
25.10	Washer for missing impeller
28.00	Impeller
28.04	Impeller nut
28.08	Washer
34.03	Oil chamber cover
36.00	Mechanical seal
36.51	Retaining ring, split
36.52	Shoulder ring
36.54	Spacer
64.15	Spacer sleeve
70.00	Motor cover, pump side
70.05	O-ring
70.09	O-ring
70.10	O-ring
70.12	Cable gland rubber ring
70.13	Washer
70.16	Cable gland
70.18	Screw
72.00	Upper mechanical seal
72.02	Circlip
73.00	Pump side bearing
76.01	Motor jacket with winding
76.60	Float switch
78.00	Shaft with rotor packet
78.12	O-ring
81.00	Bearing
82.01	Motor end-shield, non-drive end
82.02	Screw
82.03	O-ring
82.04	Compensating spring
82.05	Screw
92.00	Tie-bolt
96.00	Cable

## 9. Cross section drawings

