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## **TECHNICAL DOCUMENTATION**

### **THREE-PHASE MS SERIES INDUCTION MOTORS**

#### **I. Motor type marking**

E.g. **MS 100L1-4**

MS .....three-phase asynchronous motor in an aluminum casing of the MS series,  
100..... mechanical size of the motor (height to the shaft axis in mm),

L..... hull length (S - short, M - medium, L - long),

1..... stator length in the hull (1- short, 2- long, 3- progressive)

- 4... - 4... number of poles..

#### **II. Transportation and storage**

1. Transportation. The motor(s) must be transported on a level and flat surface. Raise and lower the engine slowly when carrying it. Do not throw. Protect against moisture.
2. Storage. The motor should be stored in a dry place airy, free from harmful substances such as gases, dusts and vapours corrosive.

#### **III. Actions before starting the engine**

Activities related to the motor's participation in the network and its first performance should be carried out by professional personnel with the performance of tasks.

1. Checking the insulation resistance. Before starting the motor, check the resistance of the insulation between the winding phases and between the winding and the casing. The check should be made with a 500V inductor. The resistance value should be greater than 10 MΩ. Lower resistance value can indicate damage or moisture in the winding. In this case, the motor should be dried at 110 - 130°C for 6 - 8 hours. If possible, it is recommended to power the motor with a voltage of 1/3 to ½ rated voltage at no-load for 1 hour moisture evaporation.
2. Power check. Check that the value of the rated voltage indicated on on the motor nameplate corresponds to the mains voltage.
3. Checking the circuit breaker. Before starting the motor, check that the circuit breaker used corresponds to the motor parameters stated on the rating plate.

4. Checking the motor environment. Keep the area around the engine free of debris harmful substances such as gases, dusts and caustic vapors as well as moisture, pieces of metal and other materials that may get into the engine during its operation. The engine should be positioned to ensure proper ventilation and heat dissipation.
5. Checking the protective conductor. Check the correctness of the cable connection (grounding or neutral) to ensure safe operation engine.
6. Checking the impeller. Before starting the engine, check the impeller by turning the shaft by hand to make sure it is not blocked. It should also be remembered that excessive tension of the V-belts leads to premature wear of the bearings, may make it difficult to start the engine, in extreme cases cases, it may cause breakage of the working end of the shaft
7. Checking the connection of power cables. Before starting the motor, check whether the connection to the mains is in accordance with the connection diagram in the terminal box.

**Three-phase motors up to and including 3 kW are supplied winding connected in a star, and those with a power of 4 kW and more with a winding connected in triangle. Only motors with delta winding are suitable for the use of a star/delta circuit breaker to reduce the starting current engine. Do not change the connection layout on the terminal board without consult your supplier or distributor!**

To change the direction of rotation of the motor, swap two (of three) phases supplying the motor (preferably on the terminal board).

#### IV. Engine service

1. Engine cleaning. The engine should be kept clean. When cleaning, make sure that no water gets inside the motor.
2. Checking the supply current. When the motor is running, the supply current must not exceed the value stated on the rating plate. In order to protect the motor against the negative effects of drawing more than the rated current, motor thermal protection should be used.
3. Motor volume control. If noises can be heard while the engine is running, which may indicate its incorrect operation, immediately switch off the engine and eliminate the causes of the increased noise before restarting it.
4. Bearing temperature. It should not exceed 95°C when the engine is running.

#### V. Periodic inspections and maintenance

To ensure trouble-free operation of the engine, it must be inspected and maintained at least once a year. During the review, you should check insulation resistance as described in chapter III point 1 and engine cooling efficiency.

After 20,000 hours of engine operation (every 3 years), the bearings must be replaced