

How to test an electric motor?

All types

- Check the appearance of the motor. Check for body damage or damage to the cooling fan blade or shaft.
- Manually rotate the shaft to check the bearing condition. Check for free & smooth rotation.
- Note the motor data from the motor NAME PLATE .
- **Earth Continuity:** Use your ohmmeter to verify the resistance between earth and motor frame is less than **0.5 Ω**.
- **Power supply** – correct voltage (230 volts per line), 415 v between L1 to L2, L2 to L3, and, L3 to L1,

Three Phase

- Ensure the terminal for power supply is in good condition. Check the connection bar for terminal (U, V, W). Connection type - **STAR OR DELTA**.
- Confirm the power supply VOLTAGE for electric motor. 230/400.
- Using the multimeter, check the continuity of winding from phase to phase (**U to V, V to W , W to U**).Each phase to phase must have a continuity if winding is OK.
- Check the motor winding ohms reading using multimeter or ohmmeter for phase to phase terminal(**U to V, V to W , W to U**).The ohms reading for each winding must be the same (or nearly the same).
- **Insulation resistance** of motor winding using Insulation tester meter set to the 500 Volt scale (1000v DC). 1. Check from phase to phase (**U to V, V to W, W to U**) and 2. check from phase to earthing (**U to E, V to E , W to E**). Minimum test value of the electric motor is **1 Meg Ohm (1 MΩ)**.
- With the motor running, check the running amps of the motor using Clamp on meter. Compare to the FLA on the name plate of motor.
- If every step is completed, decide the condition of electrical motor either OK or NEED TO REPAIR.

Single Phase

- Check the motor winding ohms reading using multimeter or ohmmeter.(**C to S, C to R, S to R**).The reading for start to run should be equal to C to S + C to R.

Correct electrical terminal identification: There are three terminal connections on a hermetically sealed motor compressor and are as follows: Common (C), Start (S) and Run (R). To identify the correct terminal connection the following procedure applies:

- The highest resistance reading is between the start and run terminals
- The middle resistance reading is between the start and common terminals.
- The lowest resistance reading is between the run and common terminals.

- **Insulation resistance** of motor winding using Insulation tester meter set to the 500 Volt scale. Check from windings to earth (**C to E, S to E, R to E**) Minimum test value of the **electric motor** is **1 Meg Ohm (1 MΩ)**.
- With the motor running, check the running amps of the motor using **Clamp on meter**. Compare to the FLA on the **name plate of motor**.

If every step is completed - decide the condition of the electrical motor:

OK or NEED TO REPAIR.

