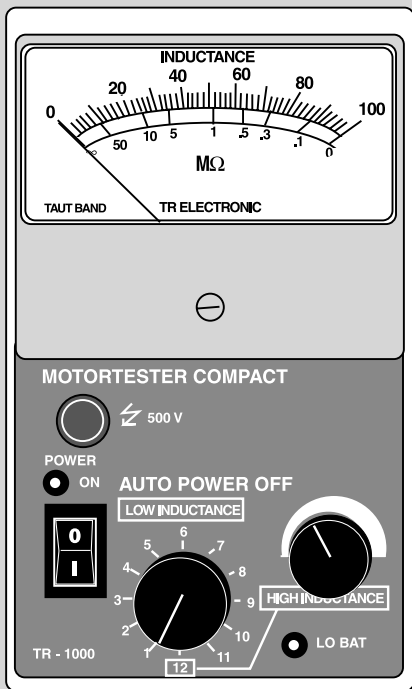


MOTORTESTER COMPACT TR-1000



USER'S MANUAL

GENERAL

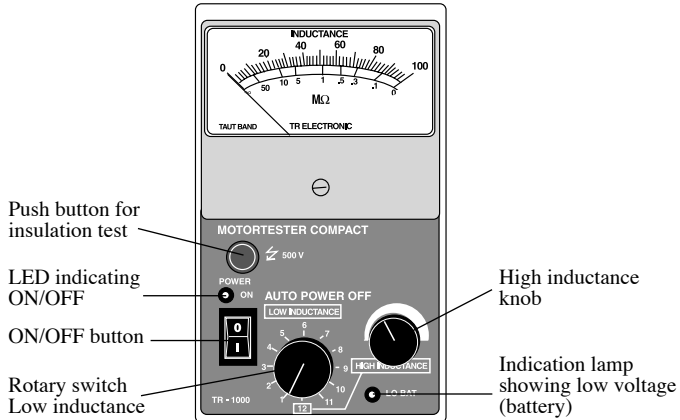
MOTORTESTER COMPACT TR 1000 is an instrument unequalled for safe and fast fault-tracing of electric motors, stators and rotors. The principle of measurement is simple and errors are identified by comparative measurements. Reference values are not needed. The instrument measures the current penetrating the object with a high frequency current and a special form of waves. At a short circuit on one or more windings the measurement values will differ considerably. Dismounting the object is not necessary. Measuring the inductance (comparative measuring) and testing the insulation are done where the access is easiest, for instance at the motor clutch base, the motor protector, the contactor or the starting device. The point of measuring can be several hundred yards away from the object. It is possible to carry out diode tests and through tests of circuits.

MOTORTESTER COMPACT TR 1000 has two scales of measuring, one for measuring the inductance and one for testing the insulation. The rotary switch **LOW INDUCTANCE** and the knob **HIGH INDUCTANCE** are used in conjunction with the inductance scale. The red push button is used for testing the insulation in conjunction with the $M\Omega$ scale.

LOW INDUCTANCE is used with motors larger than 5 - 7,5 kW. The larger the motor the lower the setting of **LOW INDUCTANCE**.

To measure **HIGH INDUCTANCE**, set **LOW INDUCTANCE** switch to 12 and then use **HIGH INDUCTANCE** knob for final measurement.

The instrument has a timer circuit that automatically switches it off after approx. 12 minutes.



SAFETY REGULATIONS

The TR 1000, must only be used by competent and trained personnel and in strict accordance with the instructions. The manufacturers and representatives of the TR 1000 claim no responsibility for injury or harm in conjunction with the use of the TR 1000.

CAUTION! All measurements taken with this instrument must be carried out with the motor power switched off.

Before using the MOTORTESTER COMPACT TR 1000, please check that there is no voltage in the wiring or in the connections, using a voltmeter.

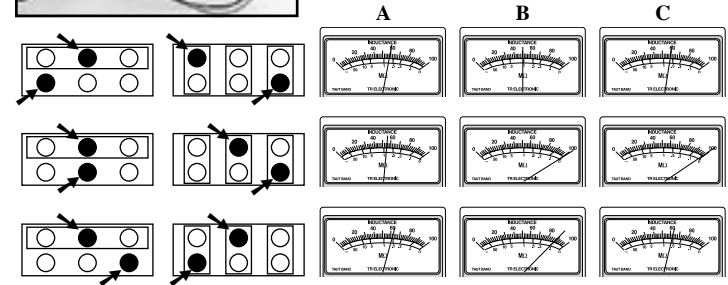
For your own safety, use insulated gloves, safety glasses and protective clothing, when working with high voltage.

Always start the measuring by setting the ON/OFF button to ON. The LED is on. NOTE: The LED is on even if a fuse is out of order. Set the switch **LOW INDUCTANCE** to position 1, then connect the test cables to the object for measuring. Now rotate **LOW INDUCTANCE** until you get an acceptable value, for instance in the middle of the scale. If you do not obtain a measurement value when reaching position 11, go on to position 12 and use the knob **HIGH INDUCTANCE**. Start all measurements in this way.

MEASURING A Y-CONNECTED AND A D-CONNECTED MOTOR RESPECTIVELY



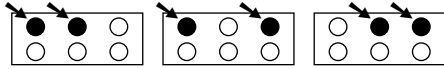
Measuring can be done either on a Y- or D-connected motor. The measuring samples below illustrate 3 different motors A, B and C. The stator winding is measured directly on the motor clutch base. Connect the test cables according to the figures below and compare the phase windings. The measurement values should be almost equal. (A small difference is possible.)



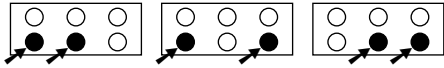
The measurement values may be as above. The motor A, no error, the measurement values could differ a little. The motors B and C have got large discrepancies and are defective.

TESTING A TWO-SPEED MOTOR

Motors with two different windings and pole changing motors respectively. Measuring is done directly on the motor clutch base, see below, or on the starting device of the motor. Compare the phase windings as earlier mentioned. Start with one of the number of poles and then test the next one. If the discrepancies are as in the earlier samples B and C, the motor is defective.



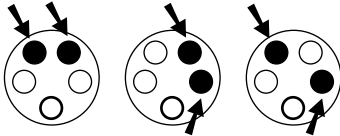
higher revolution
(lower number of poles)



lower revolution
(higher number of poles)

TESTING INACCESSIBLE MOTORS

Remote measurements can be done directly in the motor plug, the motor protector, the contactor or the starting device. The point of measuring can be several hundred yards away from the motor to be tested.

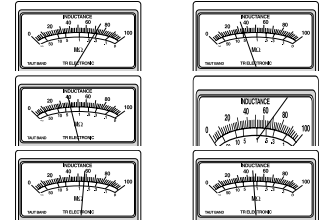


MOTORS WITH THREE DIFFERENT MEASUREMENT VALUES

Three different values can be obtained from both Y- and D-connected motors. As a rule there are no errors in the stator winding. The variations are caused by the rotor.

To test if the discrepancies are in the rotor, rotate the motor shaft a little in accordance with the figure below (if the shaft is inaccessible, give the motor a short locking pulse

so that the rotor changes its position - **CAUTION! Do not forget always to disconnect the test cables before each current pulse.** If the highest value now moves to another phase winding, the variations are caused by the rotor. Large variations (10-80 on the inductance scale) indicate that the rotor is defective.



MOTORS WITH PHASE COMPENSATION

On motors with phase compensation, the capacitors should be taken away before testing the motors.

INSULATION TEST

CAUTION! Always connect test leads to the circuit before pressing the button. Don't touch the test leads, banana plug or alligator clip when carrying out the test.



Connect the black test lead to the cover of the object (earth) and the red one to a winding terminal, block terminal or suchlike. Insulation test can be done directly in the starting device, motor plug or suchlike. Push the red button 500 VDC. Read the instrument - red scale graduated in MΩ. If the insulation value is low the object should be dismantled, cleaned off, dried or possibly rewinded.

NOTE: Some motors - mostly hand tools - can be equipped with electronics which can be damaged.

TESTING MOTORS WITH CARBON-BRUSHES

Hand tools, DC-motors etc.



Connect the test leads to the carbon-brush sockets to test the rotor. Rotate the motor shaft slowly reading the measurement value at the same time. At a short circuit or break the measurement value will differ considerably.



Detach the carbon-brushes to test the field coils. Then compare the values. The measurement values should be the same.



There is another alternative for testing the rotor. Connect the test leads as when testing the field coils, then rotate the motor shaft and read the value. If there is a short circuit in the rotor the value will differ considerably. If there isn't a short circuit the value will be unchanged. NOTE: This method is not revealing a break in the rotor.



By dismantling the motor so that the rotor will be accessible, the rotor winding can be tested via a collector.

CAUTION! Always disconnect the test leads from the object before battery or fuse replacement.

BATTERY REPLACEMENT

Battery replacement should be done when the LED "LO BAT" is on.

FUSE REPLACEMENT

If the instrument is not functioning a fuse could be defective. Test by replacing the fuse. The fuse and a spare one can be found in the bottom part of the instrument. Unscrew the four bottom screws and detach the bottom part of the instrument. The fuse is located on the electronic card. Replace only with the original type 0,1 A/250V quick acting glass fuse.

NOTE: The LED lamp is on even if the fuse is defective.

TECHNICAL FACTS

Inductance measuring voltage:	max. 9V
Insulation measuring voltage:	500V
Battery:	1x9V, 6LR61 alkaline battery
Fuse protection max. 250V RMS:	100 mA quick acting glass tube fuse, 250V
Size:	95x158x50 mm
Weight:	450 grams (battery included)

CAUTION! It is essential to read and understand the SAFETY REGULATIONS. They must be obeyed when using the instrument.

