



# Baker D85R

## The effective solution for large motor testing

The D85R brings you the latest innovations in the testing of electrical insulation systems. This tester features the proven accuracy and reliability of over 40 years of experience.

Specifically designed for shop performance, this digital instrument provides a cost-effective solution to large motor testing. The D85R represents Baker Instrument Company's on-going commitment to quality in the design of high performance test equipment.

The D85R is a high performance standalone instrument specifically designed to diagnose faults in very large electrical motors and windings, thereby improving quality in the shop and reducing necessary and costly downtime in the field. The 30 kV output allows you to thoroughly test larger windings with lower impedance and higher capacitance. The D85R satisfies the requirements of testing the windings of both AC motors and DC armatures by producing a surge with higher voltage and instantaneous current.

The D85R offers you all of the convenient features of digital technology. It performs Resistance, DC HiPot and Surge tests along with incorporating a supply monitor for safe operation from a well grounded source. Additional safety features include a front panel emergency stop switch, zero-start interlock, and a test conclusion forced ground relay on output leads. The control and display module provides the user with comprehensive testing results.

The Resistance Test verifies the existence of dead shorts within the turn-to-turn coils, shows any imbalances between phases due

to turn count differences, along with local poor wire connections or contacts.

The DC high potential (HiPot) test can also be done using the D85R. Test voltage is set by the output control from 500 up to 30,000 V. Current is displayed and an over-current trip circuit monitors the test. If current exceeds the trip level, the test is automatically halted. In its most sensitive setting, the protective circuit will operate as low as 10  $\mu$ A.

The key element of the Surge test is a grounded grid hydrogen thyratron tube. The tube conducts very high peak current (rated up to 20,000 A). Such high instantaneous currents are needed to fully test the very low impedance windings of large motors or form wound coils. This current is only produced for a few microseconds by the discharge of a 0.1  $\mu$ F capacitor.





The Surge Test's voltage rise time is 100 to 200 ns (0.1 to 0.2  $\mu$ s), so the D30R complies with IEEE Standard 522-1992 and IEC Standard 34-15 when testing motor windings and coils.

The D85 is housed in a new mobile case with the control unit permanently affixed to the upper face. 60 kV high voltage test leads are provided along with dedicated Kelvin Resistance test leads for convenient portable testing. These features along with the unsurpassed testing capabilities make the D85R a powerful and technically advanced tester for in-house shop or field environments.

Manufacturers and rebuilders of industrial DC motors prefer the bar-to-bar test method over span testing to preserve qual-

ity control. When attempting to surge test lower impedance devices (i.e. lift truck, transit, traction armatures, fields, interpoles), a tester may lack the necessary output current to achieve appropriate coil test voltage levels. The bar-to-bar method provides a higher energy insulation test than any other technique.

The span test has been used in the past to test armatures; however, it has limitations due to the necessity of increasing impedance enough to generate the desired bar-to-bar voltage.

The bar-to-bar method used in the D85R overcomes span testing limitations by applying a specific controlled, lower voltage test, and measures the surge voltage at the commutator bar-to-bar.

#### Surge test

Maximum output voltage	30,000 V
Maximum output current	1,800 to 2,000 A peak
Maximum pulse energy	45 J
Impulse rise time	0.1 to 0.2 $\mu$ s
Impulse repetition rate	0.5 Hz
Minimum test inductance	24 $\mu$ H
Discharge capacitance	0.1 $\mu$ F

#### DC high potential test

Maximum output voltage	30,000 V
Maximum output current	1,000 $\mu$ A
Overcurrent trip	10/100/1,000 $\mu$ A
Current resolution	1/10/100 $\mu$ A

#### Resistance test

0.0008 to 216  $\Omega$

#### Bar to bar test

Maximum voltage	3,200 V no load
Maximum current	10,000 A
Maximum pulse energy	45 J
Maximum test inductance	20 $\mu$ H
Minimum test inductance	0.4 $\mu$ H

#### Physical characteristics

Weight	305 lbs
Dimensions	24x55x26 in.
Power requirements	110 V single phase 1,000 W, 60 Hz

6 in. solid rubber wheels

Three phase selector switch is standard on this unit

#### Option

Power Requirements	220 V/50 Hz
8 in. pneumatic wheels with transport lifting strap kit.	

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