Baker AT101-ZTX

Expands testing capabilities to include DC motors and other low impedance coils.

The AT101-ZTX high-current surge test adaptor has been designed to successfully test DC motors, form coils and other low impedance windings with an AWAIV-6, AWAIV-12 or AWAIV-12H0 tester.

The lower impedance of series-wound armatures makes it difficult to surge test bar-to-bar. A higher surge test current is needed to produce the necessary bar-to-bar voltage differences. Standard surge testers can not produce the higher currents required to test low impedance windings.

The AT101-ZTX high current surge test adaptor uses an exclusively designed impedance transformer that allows the 6 kv and 12 kV AWAIV to be used for these specialized tests. The AT101-ZTX offers higher test current at voltages from 0-700 volts and includes an adjustable armature test fixture and foot switch.

Accuracy and convenience

The AT101-ZTX includes a hand-held armature contactor with safety ground to simplify surge testing the commutator. This contactor measures the surge voltage wave at the commutator via a separate shielded cable, reducing errors in reading test voltages. The test waveform is displayed on the AWAIV.

When surge testing a commutator bar, the waveform should be the same amplitude and shape compared to the adjacent bars. A bar circuit short will be indicated by a lower amplitude waveform. Testing bars individually allows the easy location of shorted bars. A foot switch is included to speed testing.

Applications

The AT101-ZTX was designed specifically for traction motors, generator manufacturing

and repair facilities. Higher current capabilities allows the user to detect a TIG weld shoot-through and riser high-resistance joints.

The added current of the AT101-ZTX helps burn away commutator spurs after undercutting. On assembled motors, the probe and clip fixtures provide easier access through inspection plates and convenience when testing field pieces or interpoles.

Bar-to-bar vs. Span testing

Manufacturing and rebuilders of industrial DC motors generally prefer the bar-to-bar test method over span testing for improved quality control. The bar-to-bar method provides a higher resolution insulation test than other techniques provided the tester can produce the necessary output current to achieve the appropriate test voltage level.

Alternatively, the span test method compares "spans" of several bars. Each span is defined by the number of bars necessary to increase impedance enough to generate the desired bar-to-bar voltage. Testing many bars connected together makes fault isolation more difficult, and may not excite each bar to a sufficient voltage. To generate a minimum 350 volts bar-to-bar with a 10-bar span test, the potential to ground at the first bar is 3,500 volts. The higher voltage may break down the ground insulation at the first coil.

Baker's bar-to-bar advantage

The Baker bar-to-bar method overcomes span testing limitations by applying sufficient current to provide a specific controlled, lower voltage test to each bar individually, and measures the surge voltage through the same test fixture. This method also addresses the significantly reduced impedances that equalizer windings can create during armature testing.

	AWAIV-6	AWAIV-12	AWAIV-12H0
Source:			
Maximum voltage	500 V	1,200 V	1,200 V
Maximum current	700 A	1,600 A	2,300 A
Test Inductance			
Maximum	20 µH		
Minimum	0.4 µH		
Physical characteristics			
Weight	15 lb (7 kg)		
Dimensions	9 x 6 x 12 in. (235 x 150 x 300 mm)		

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