CHOOSING A MEGGER® INSULATION TESTER

With over 30 models to choose from, selecting the proper MEGGER insulation tester can appear a bewildering task at first. Actually all the process requires is a little organization. All MEGGER insulation testers perform essentially the same test in fundamentally the same manner — accurately and reliably. Refinements and added features, however, separate one model from another in application and operator appeal.

Make a check list of important or essential features and specifications. This should automatically reduce the choices to a workable number from which personal preferences can easily determine the final selection.

Test Voltage(s) - An electrician interested in only installation and proof testing may need only a single voltage. A repair or maintenance man, however, may want the diagnostic capabilities that derive from comparing tests at different voltages. Base your voltage requirement(s) on the rated voltage of the equipment to be tested, then decide if you want to test at rated, or perform stress tests at **higher** voltages. Do you want to carry out Step Voltage Tests?

Remember, pervasive insulation damage, like moisture and oil soaks, is revealed at any voltage while mechanical damage, like pinholes, may require voltages high enough to arc an air gap in order to be detected. Test instrumentation commonly makes a quantum leap from 1 kV to 5 kV so this may be your most critical voltage determination and most significant decision in selecting a tester.

Measurement Range - For an electrician or repairman interested only in proofing, infinity (∀) readings may be sufficient. For predictive maintenance, however, it is critical to be able to see the change in resistance between successive measurements even though the actual values remain exceedingly high. Don't limit your testing capabilities with a short-range model. The newest technologies permit resistance measurements to the teraohm (T!) range! Try to determine the insulation resistance values of your equipment when new, then select a tester that can actually measure to these values.

Power Source - The test is the same, irrespective of the power source. Not everyone believes you can get 1000 volts out of "AA" batteries but you can! Current limitation is the means. Batteries free the operator from the extra work of cranking, while hand cranks relieve dependence on batteries and the possibility of human error. Remember, if you plan to do Polarization Index (PI) testing, you don't want to crank for 10 minutes. Rechargeable batteries are the most convenient, but throwaway batteries are ready when you are without having to be charged overnight.

Voltage Detection - Most models feature detection of unwanted voltage on the test item. Electricians may want an audible signal for rapid troubleshooting that is not dependent on visually monitoring the display. For large equipment, maintenance men will want to be able to see high-voltage capacitive charges decay at the conclusion of a test.

Display - Digital or analog is largely a matter of preference, but some models combine both capabilities in a single, convenient display.

! /k! Ranges - Generally referred to as "continuity" and "resistance" ranges, these are low-voltage, mid- to low-range functions that add greatly to the depth of testing capabilities that your tester offers. They can make the selective difference between several models that are similar in the more apparent functions and should not be overlooked. Ohm (!) ranges can be used to verify integrity of circuits and connections, while kilohm (k!) ranges are useful in locating areas of insulation deterioration. Components and subassemblies, because they will not be directly handled during operation, may only require electrical insulation from neighboring circuitry. Such insulation may require only k! values, which can be readily checked with this extra range. The electrician will want an ! range, the maintenance man will want k! , and the repairman will want both!

Guard Terminal - This third terminal shunts the measurement function. It is useful in eliminating certain components of leakage from the measurement and provides a valuable extra tool in analytical work. The electrician *may* need it, but the maintenance man *should*, and the repairman *will*.

Data Storage/Download Capability - New models now include capabilities for data storage and downloading. This isn't a core function of insulation testing but an enhanced convenience. Test records can be stored and organized such as by panel board and circuit, recalled for comparison to present results, and printed out in graphics or as test reports.

Multimeter Functions - Microcircuitry has permitted the inclusion of so many functions that a small, hand-held model may now offer full multimeter capabilities as well. Look for a millivolt input. With this, appropriate transducers can be connected that will expand the tester's applications into HVAC, telecommunications, and process control.

In addition to having to acquire and carry only one unit, test time is saved when performing all tests without having to change testers, and regular calibration and maintenance responsibilities can be reduced to a single unit.

Price - MEGGER Insulation Testers range in price from a few hundred to several thousand dollars. Regardless of your budget, there is a model that will fit and offer a surprising range of features as well.