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Pressman's
Toolbox

In this case, resistance is not futile

By Frank Bourlon

In last month's column, I discussed the voltmeter. This month, let's take a look at the resistance scale (ohm) scale of the device.

Voltmeters come in two flavors: analog and digital. I most often use the analog meter (see Figure 1), but some prefer the digital version because it displays a number rather than a needle movement against a numerical scale.

Fig. 1: An analog voltmeter.

What is resistance? Simply, it's the ability of an object to limit the amount of electricity that passes through it (I am referring to electricity as electrical current).

When the resistance is low (zero ohms or close to zero ohms) electrical current passes easily. An example would be a good fuse, which would show very close to zero ohms, or full meter deflection.

If too much current flows through the fuse, however, the thin wire within the device separates, greatly increasing the current's resistance. Resistance is so high that an ohmmeter can't measure it; electrical current simply can't pass through it.

Close to nothing

A working fuse should measure close to zero ohms (see Figure 2). If the resistance, or ohm value, of the fuse is significantly higher than 1 ohm then the fuse is bad.

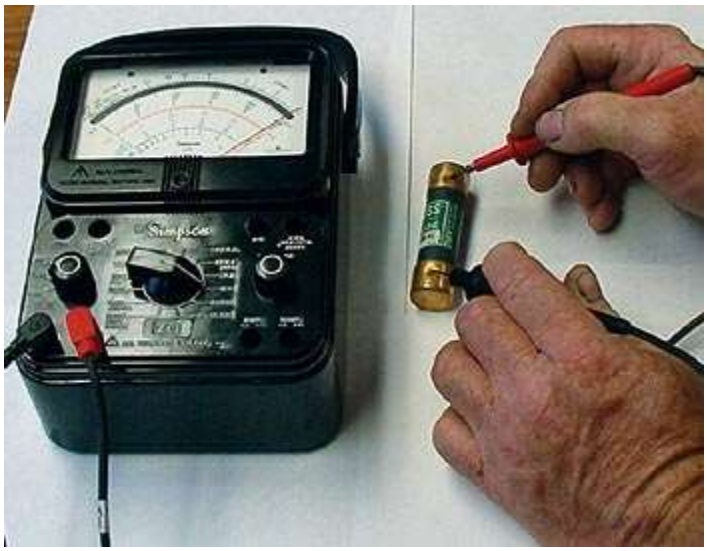

Fig. 2: A working fuse should measure zero ohms.

Figure 3 shows the meter being used to test a light bulb. The ohmmeter is measuring the resistance of the bulb's filament. The resistance of each size light bulb will be different. In this case, a 75-watt bulb has a resistance. A bulb with a resistance of less than 1,000 ohms is usually a good bulb; one with no measurable resistance is bad.

Fig. 3: Testing a light bulb.
Photos: Frank Bourlon

Ohmmeters also are used to test the operation of any mechanical switch, from wall switches to relay contacts.

When the switch is on, the ohmmeter should read zero ohms, meaning the switch will conduct electrical current. When the switch is turned off, resistance increases to infinity and the light or equipment being powered no longer works.

Next month I will details other devices that can be tested with an ohmmeter.

Remember to only use your ohmmeter to test devices when the power source is disconnected. Testing lights, switches, fuses or other devices when the power is on can be hazardous to your health and may also destroy the test instrument.

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I always want to pass along reader comments, especially since they may help another reader. I recently received a letter from Jason Bengston, a press operator at the Iowa City Press-Citizen, disclosing how the paper repairs broken set-screws on its Goss Urbanite press. He writes:

“One of the most trying situations on a Goss Urbanite press occurs when a set-screw for the shaft gear breaks off in one of the units. If the break point is rough enough it can be extracted with a pin-post puller or even a pair of pliers, but this isn’t always the case.

“Because of the harness of the set-screw alloy, drilling them out is a near impossibility for most shops. More than once our shop has had to wait for a machinist to come and extract one of ours. This can be remedied, however, by using a simple Dremel (rotary tool) with reinforced cutting discs. With the Dremel turning at maximum speed (35,000 rpm for ours), the cutting discs will cut a groove into the set-screw with surprising speed.

“It may also groove the shaft slightly, which is inconsequential. Once the groove is made, a little work with a regular-head screwdriver and a pair of vice grips should extract the screw.

“Dremel advertises this ability for standard bolts and screws, but few pressmen would guess that the tool is powerful enough to groove one of these set-screws. As an added bonus, these discs will also cut old bearing sleeves from shafts to which they’ve cemented themselves.”

Fixing gripper jaws

Bengston also writes about repairing a gripper jaw in the event it breaks during a press run:

“We’ve all had part of a unit’s gripper jaw break off during a press run. This is especially frustrating when you only have a few thousand left to finish up.

“Many press operators have tried to fix this situation at least once by using double-sided tape to hold down the tail end of the plate on the side of the cylinder that lost its section of gripper jaw. Invariably, the plate cracks after a thousand impressions or so.

“There is, however, a way around this. The problem is that the gripper jaw allows the tail end of the plate to flex. With double-sided tape placed right next to the gripper jaw that part of the plate can’t flex - so it cracks.

“To keep this from happening, the tape should be placed about one half-inch below the gripper jaw. The plate still should curl into the gripper space. By placing the tape in this fashion, the tail of the plate can flex all the way across and the plate will last through the rest of the run. I have used this method repeatedly with excellent results.”

If you have any suggestions that you would like to share, please send them to nprc@flash.net and they will be included in my next article.

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