RAIN BIRD®

TI-TPK Tone & Probe Kit

OPERATING INSTRUCTIONS & TROUBLESHOOTING GUIDE

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FOR TECHNICAL SUPPORT
800-247-3782 (USA and Canada only)

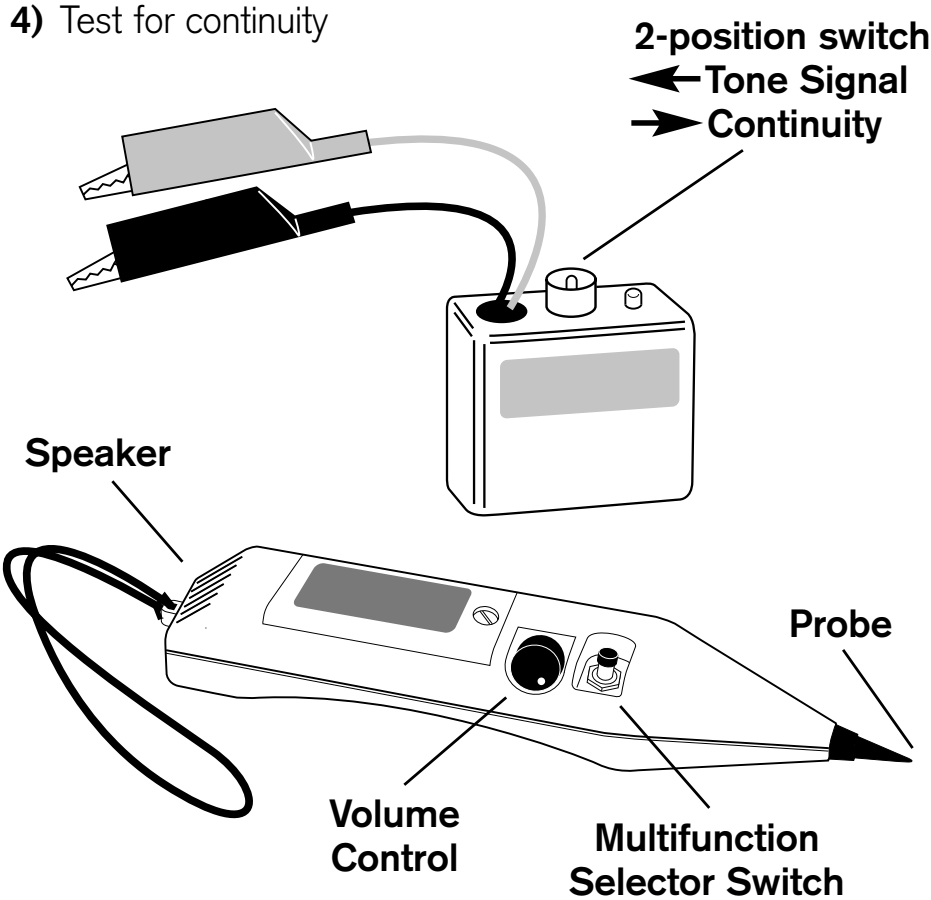
RAIN BIRD®

The World's Leader in Irrigation

Introduction

When you are experiencing problems with an irrigation system that indicate that a station wire may be broken or if you are having trouble locating a wire within a group of wires, the Rain Bird TI-TPK Tone and Probe Kit is the perfect tool to assist you. The Rain Bird TI-TPK Tone and Probe Kit has two components, the Tone Generator Test Set and the Noise Resistant Probe. The Rain Bird TI-TPK Tone and Probe Kit can be used to:

1) Identify wires.
2) Locate a break in a wire
3) Locate wires
4) Test for continuity



WARNING

Before using the TI-TPK all wiring that will be sorted must be de-energized and disconnected. The leads can be tested with a multimeter (TI-DM200, TI-DM-400, or TI-DSA50) as detailed on page 11 of this document.

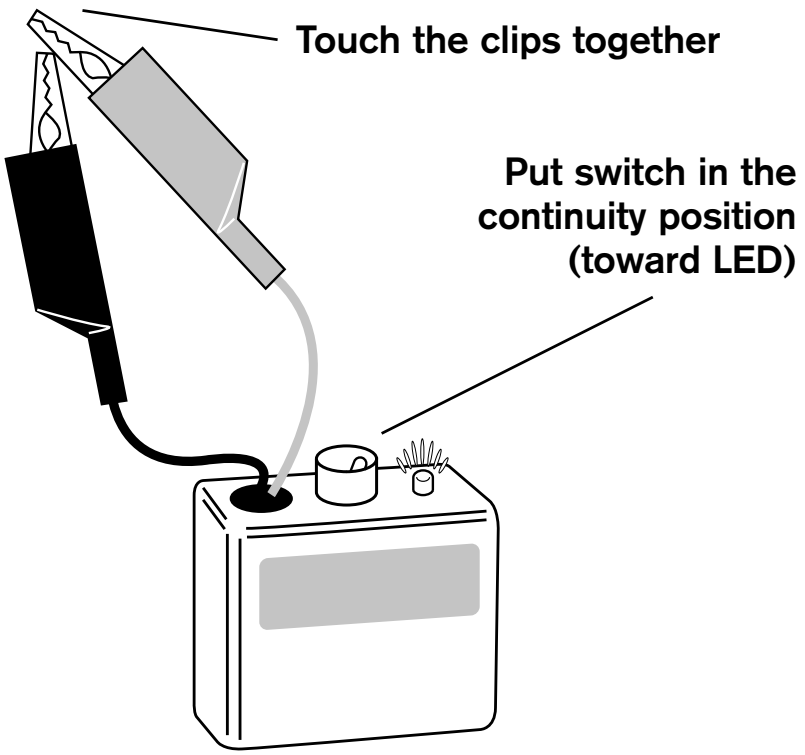
Testing the Tone Generator

The Tone and Probe units work together. The Tone Generator Test Set places a signal on the wire you are attempting to locate or identify at the other end. The Speaker Probe detects that tone and provides an audible indication when the tone has been detected. Sudden changes in the strength of the audible tone indicate broken wires.

Note: Before using the Tone Generator Test Set check to make sure the Tone Generator battery is good. This can be accomplished by putting the switch in the continuity position (towards the LED) and touching the two clips together. The LED will light up green if the battery is good.

CAUTION: Never touch the metal tip of the Probe to exposed power sources such as electrical outlets. The probe only needs to be held near a noise source to check operation.

CAUTION: Never connect a test probe across an energized wire. This will damage the Probe unit.



Operation of the Noise-Resistant Probe

The inductive pickup on the Noise Resistant Probe identifies signals with a frequency between 0 and 5000 hertz. The signals are received and amplified through an output speaker. The unfiltered output includes all signals (AC harmonics, EMI, RFI etc.). The filtered output is “tuned” to a center frequency of 1000 hertz and provides reduction in interference from unwanted AC harmonics and other EMI or RFI signals while using the tone generator.

The Noise Resistant Probe is equipped with a multifunction selector switch (button), volume control and non-conductive pickup tip. The multifunction switch provides “ON-OFF” and two output mode (filtered or non-filtered) conditions. The probe is equipped with an automatic shut off (90 seconds) function.

Turning Probe On

The Noise Resistant Probe is operated by turning the vo1ume knob to about its midpoint and depressing the multifunction switch once for about three seconds to turn it on. “White noise” will then be heard if the unit is placed next to a live AC circuit, otherwise, no noise will be heard from the speaker.

Changing Operational Mode

UNFILTERED: The signal received will include all interference from unwanted sources. This can be useful to trace live AC wiring behind sheetrock walls or data cables within the ceiling. In this mode, the probe will receive tones from most industry standard tone generators.

FILTERED: The signal received will be filtered from much of the normal AC harmonics and other EMI or RFI interference. The probe is optimized to receive signals between 950 and 1050 hertz that are used by tone generators. Other signals will still be received, but at a much reduced volume.

After the unit is turned ON, the Noise Resistant Probe automatically operates in the UNFILTERED mode. To change

to the FILTERED mode, depress the multifunction switch twice in a 3-second period. An immediate reduction in background noise will be noticed. To switch back to the UNFILTERED mode, again depress the multifunction switch once.

Turning Probe Off

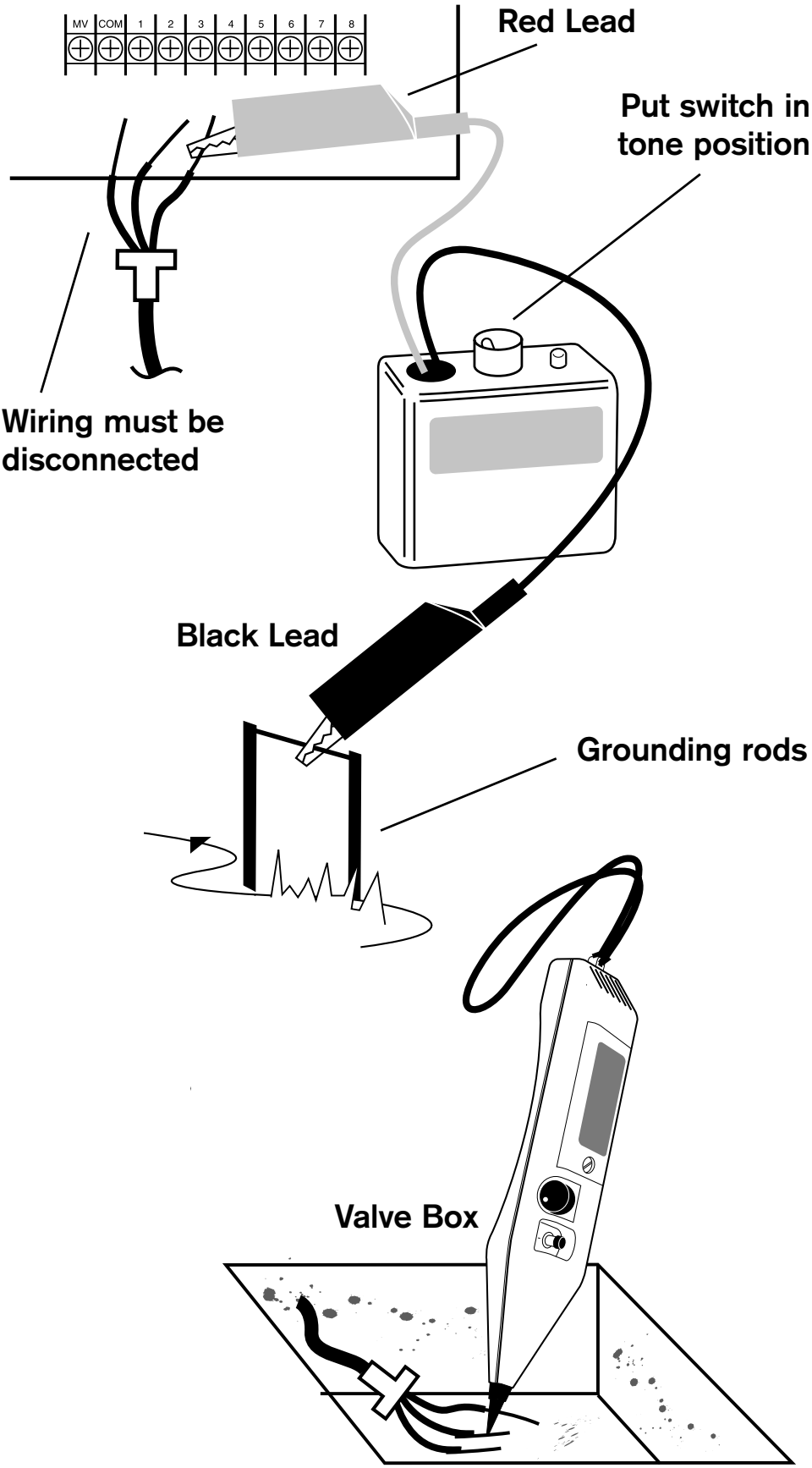
To switch the unit OFF, depress and hold the multifunction switch for 5 seconds. The unit will switch OFF. If the unit is left untouched for 90 seconds, the unit will automatically shut off.

Identifying Wiring or Cabling

Connect the Red lead from the Tone Generator to the wire you intend to locate or identify elsewhere (make sure this wire is disconnected from the controller and not energized). You can send the tone from either the controller or the valve station. It is important to disconnect the station wire from the controller and from the valve solenoid. Connect the Black lead to earth-ground (do not use the valve common wire).

When you are ready to locate the wire, turn the tone signal on by toggling the switch to the position near the test lead wires and then move to the location where you desire to identify or locate the wire.

Identify a specific wire from among a large number of wires by inserting the test probe into groups of wires until the tone is heard. Once generally located, touch the individual wires with probe tip until a tone is distinctly heard. This indicates that you have identified the wire being tested.


MV
COM
1
2
3
4
5
6
7
8
Red Lead
Put switch in tone position
Wiring must be disconnected
Black Lead
Grounding rods
Valve Box

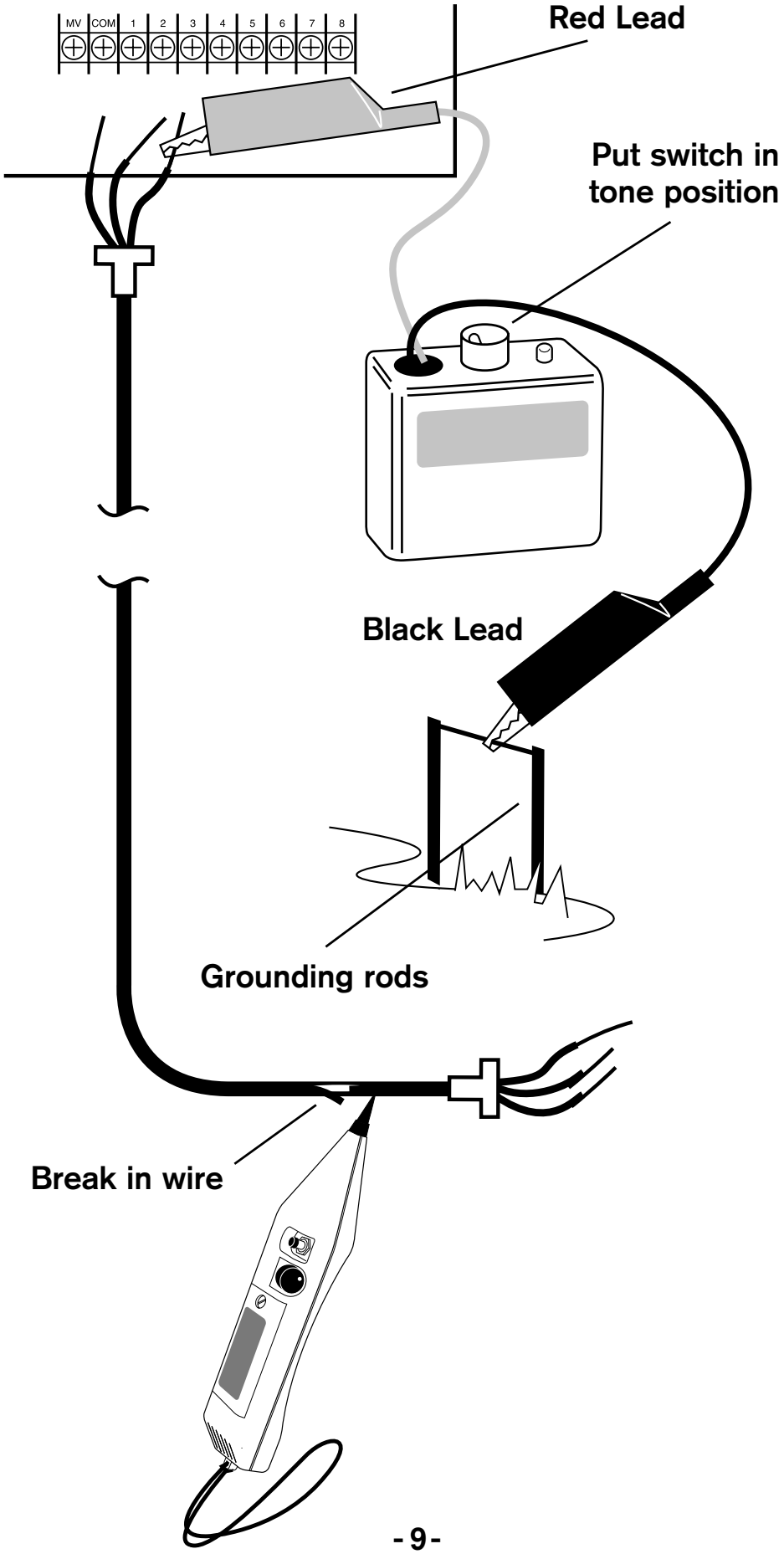
Locating Broken Wires

Locating broken wires with the test probe is done in a manner similar to identifying conductor pairs. With the tone applied to the conductive wire, move the test probe along the conductive wire until a definite attenuation of the tone is heard. This indicates that a break in the wire has been passed.

Locating Wires

The procedure for locating wires with the Tone and Probe Kit is the same as the procedure for locating Opens (above). Connect the Red lead is from the Tone Generator to the wire you intend to locate or identify elsewhere. You can send the tone from either the controller or the valve station. It is important to disconnect the station wire from the controller and from the valve solenoid. Connect the Black lead to ground (do not use the valve common wire).

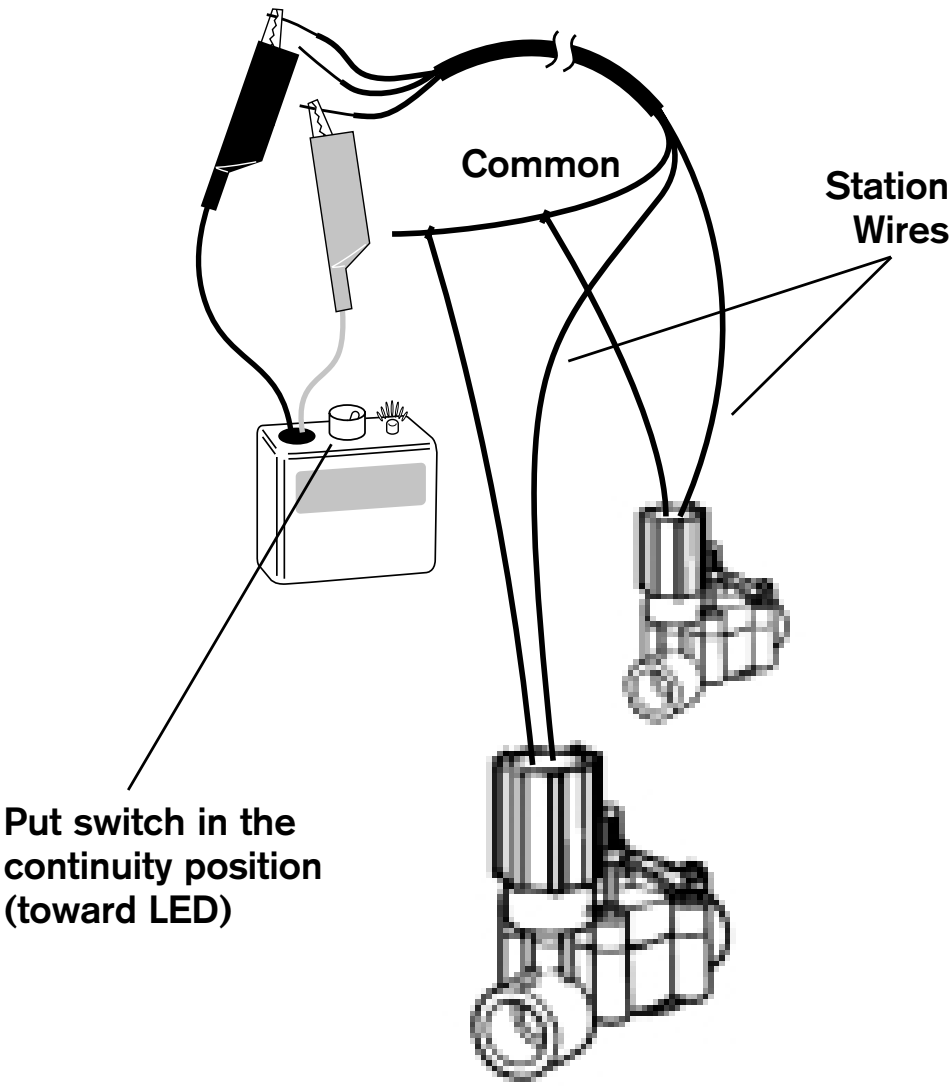
When you are ready to locate the wire, turn the tone signal on by toggling the switch to the position near the test lead wires and then move to the location where you can begin to trace the wire in question. By running the Speaker Probe along the path of the wire, you will continue to hear the tone. If the tone gets weaker or cannot be heard, return to the last known location of the wire and search for other possible paths by moving the Speaker Probe around that area. If you are able to find a strong signal, continue in that direction. If you are unable to locate a path for the wire beyond the last known location, the wire may be broken or the wire may be shielded sufficiently so that the Speaker Probe can no longer detect the signal.


MV
COM
1
2
3
4
5
6
7
8
Red Lead
Put switch in tone position
Black Lead
Grounding rods
Break in wire

Continuity Test Functions

The Tone Generator Set can be used to test for open circuits. This can be useful for testing Station wires quickly. With the Station wire disconnected from the controller and the switch on the Tone Generator in the CONT position (towards the LED), connect one of the clip leads to the disconnected station wire and the other to the valve Common wire. The LED will light up GREEN if there is continuity through the circuit.

The brightness of the LED varies with resistance in the circuit. A broken wire has a large resistance and the light will be dim or off. A short solenoid has little resistance and the light will be bright.



Verifying System is De-energized

SETTINGS AND CONNECTIONS

Rain Bird Model TI-DM200 Multimeter

SET METER TO	**200V (AC)**	
PROBE CONNECTIONS	**BLACK COM**	**RED V**

Rain Bird Model TI-DM400 Multimeter

SET METER TO	$V_{AC}^{\sim}$	
PROBE CONNECTIONS	**BLACK COM**	**RED VΩ**

Rain Bird Model TI-DSA500 Snap-Around Multimeter

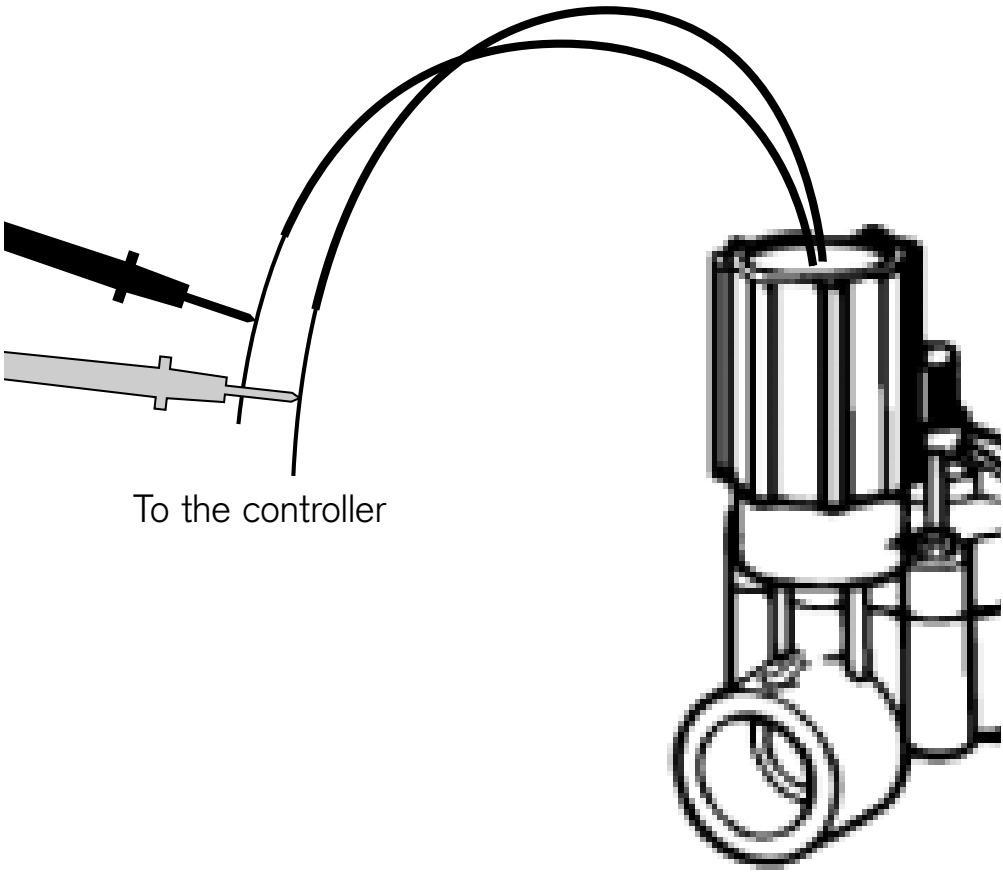
SET METER TO	**600** $V_{AC}^{\sim}$	
PROBE CONNECTIONS	**BLACK COM**	**RED VΩ**

Turn to the back cover for additional instructions.

Verifying System is De-energized (continued)

1) Touch each probe to an exposed part of each of the two splice wires leading in to the solenoid. If it is easier, disconnect the solenoid and just check the voltage drop across the two wires coming rom the controller.
2) Check the reading on your multimeter.

Acceptable range: zero volts AC (0 VAC)



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