

# OPERATING INSTRUCTIONS



## HAMPDEN MODEL MVO-1-PB Ground Integrity Tester

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**PLEASE NOTE:**

**For certified recalibration or service,  
return to  
Hampden Engineering Corporation**

**WARNING:**

**All ohms and impedance testing must be  
done on a “dead” line.  
Only millivolt testing can be done  
on a “live” line.**

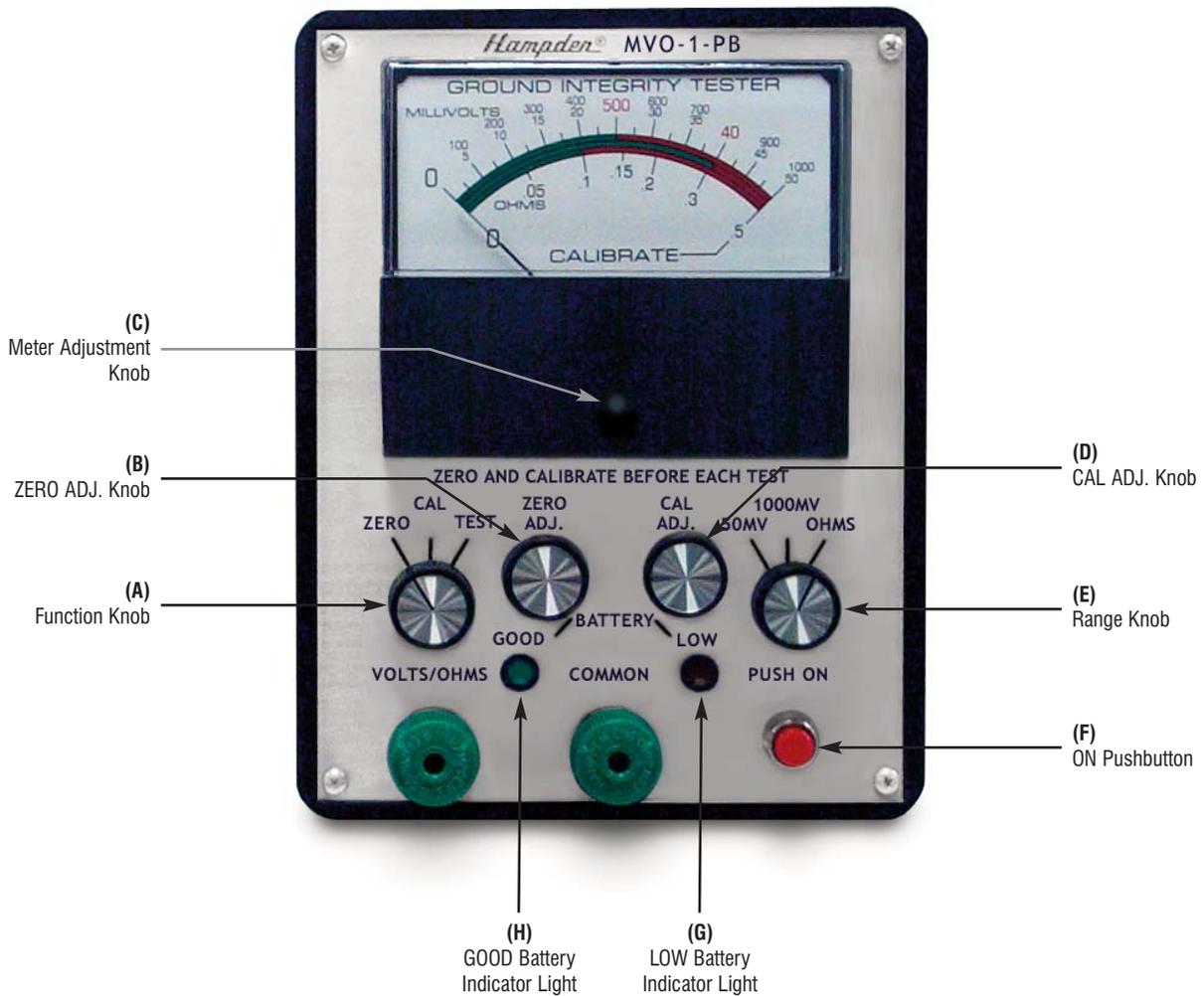
**Follow above guidelines to prevent  
damage to the instruments.**

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# INSTRUMENT LAYOUT



Hampden MVO-1-PB Ground Integrity Tester

# INSTRUCTIONS

## MODEL MVO-1-PB GROUND INTEGRITY TESTER

### Before Use

1. Check that the meter is mechanically zeroed. If it isn't, the needle can be rezeroed by using the adjustment knob on the meter faceplate (C). See Figure 1.



Figure 1

2. Press and hold the ON pushbutton (F). See Figure 2.



Figure 2

If the GOOD indicator (H) lights, the battery is good. See Figure 3.



Figure 3

If the **LOW** indicator (**G**) starts blinking, the battery is weak and should be replaced. See Figure 4.

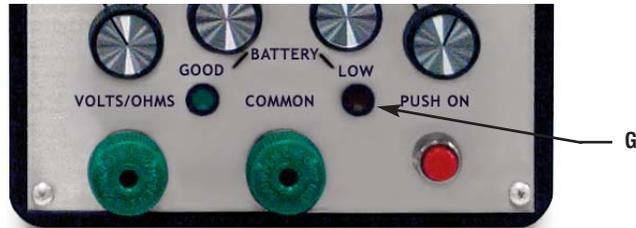


Figure 4

If neither indicator lights, the battery is dead. The battery is a 9 volt alkaline (Mallory #MN1604 or equivalent). It is easily accessible by removing the four mounting screws in the front panel.

3. Release the **ON** pushbutton.

## Electrical Zero

1. With the function knob (**A**) on **ZERO** and the range knob (**E**) on the appropriate range, press and hold the **ON** pushbutton (**F**), using the **ZERO ADJ.** knob (**B**) to bring the meter to a zero reading. See Figure 5.

**NOTE:** You may notice the needle initially deflect to the left when the button is pushed. This is a normal effect from the internal operational amplifier.

2. Release the **ON** pushbutton.



Figure 5

## Calibration

1. With the function knob (A) on **CAL** and the range knob (E) on the appropriate range, press and hold the **ON** pushbutton (F), using the **CAL ADJ.** knob (D) to bring the meter to a calibrate reading. See Figure 6.
2. Release the **ON** pushbutton.



Figure 6

## Ohms Measurement *(For proper reading ohms measurement must be done on a “dead” line.)*

1. Zero and calibrate the ohms range (as previously instructed).
2. Place the function knob (A) on **TEST** and the range knob (E) on **OHMS**.
3. Make the required ground resistance connections using the special leads (I) provided. (The meter is internally adjusted for these leads. See the note on the next page.) See Figure 8.
4. Pressing the **ON** pushbutton (F), the resistance measurement may be read on the lower meter scale. A reading greater than 0.5 ohms will read off scale to the right. See Figures 6 and 7.

**NOTE:** You may notice the needle initially deflect to the left when the on button is pushed. This is a normal effect from the internal operational amplifier.

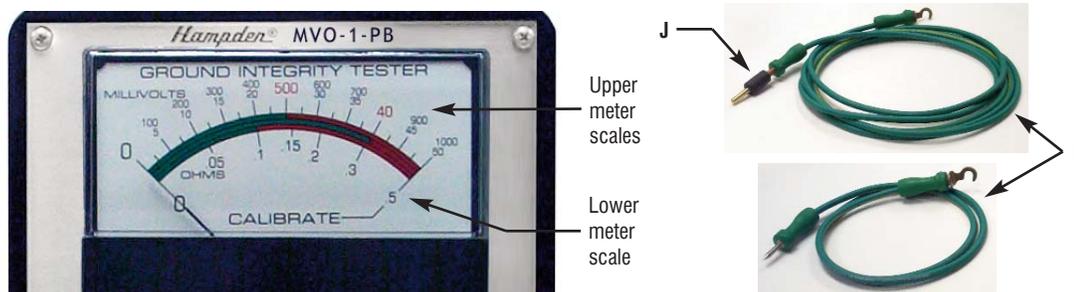


Figure 7

DC OHMS AND MILLIVOLT  
MEASUREMENT

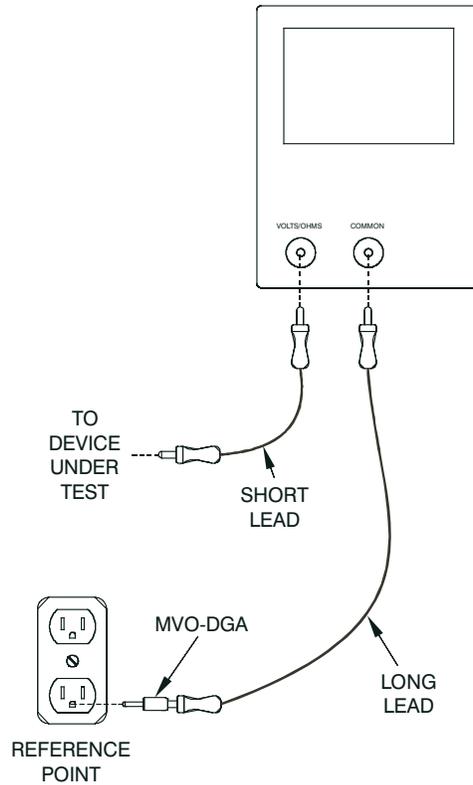


Figure 8

**Millivolt Measurement** *(A successful ohms test must be performed prior to doing a “live” circuit millivolt test.)*

1. Zero and calibrate the proper range (as previously instructed).
2. Place the function knob (A) on **TEST** and the range knob (E) on either **50MV** or **1000MV**.
3. Make the required connections using the special leads (I) provided. (See the note below.)
4. Pressing the **ON** pushbutton (F), the required ground voltage measurement can be made.
5. The true R.M.S. voltage is read on the upper meter scales. A voltage greater than the range will read off scale to the right. See Figures 6 and 7.

**Note:** The ground common cord is meant to be connected to a Hampden SLR-3S receptacle. If a Hampden SLR-3S receptacle is not available, connect the Hampden MVO-DGA Duplex Ground Adapter (J, supplied) to the common cord end and use a duplex receptacle as your common ground. See Figure 7.

# APPENDIX

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## MODEL MVO-60HZ-IT IMPEDANCE TESTER OPERATING INSTRUCTIONS

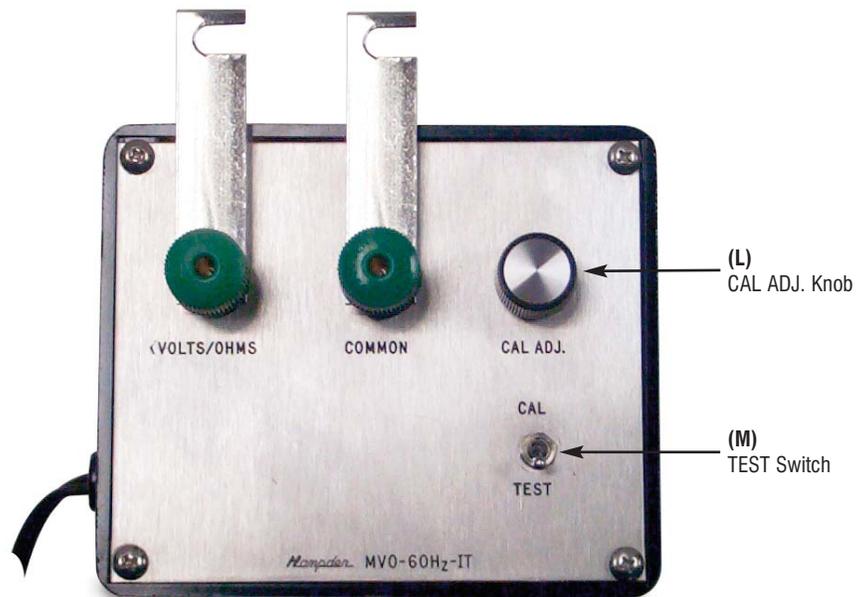


Figure 9  
Hampden MVO-60Hz-IT Impedance Tester

**Refer to Figures 9, 10, and 11.**

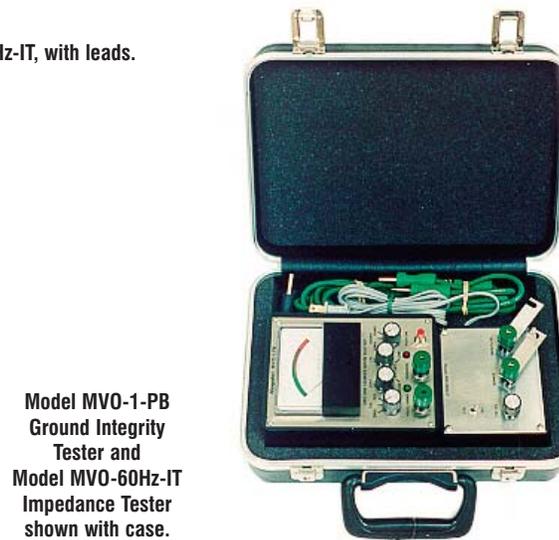
1. Calibrate the MVO-1-PB for the 50mV range (as described on page 8).
2. Attach the MVO-60Hz-IT to the MVO-1-PB.
3. Connect the MVO-60Hz-IT to a 120V–60Hz AC source (**K**).
4. Set the MVO-60Hz-IT test switch (**M**) to the **CAL** position.
5. Press and hold the MVO-1-PB **ON** pushbutton (**F**). Using the MVO-60Hz-IT **CAL ADJ.** knob (**L**), set the meter to read 0.1 ohm (the MVO-1-PB should be set to the 50mV range and in the **TEST** position).
6. Release the **ON** pushbutton (**F**).
7. Set the MVO-60Hz-IT test switch (**M**) to the **TEST** position.
8. Connect the leads (**I**) supplied with the MVO-1-PB to the MVO-60Hz-IT. See Figure 11.
9. Connect the other end of the leads (**I**) between the reference ground and the grounding contact (see note on page 8).
10. Check the AC impedance by pushing the **ON** button (**F**).
11. After taking a reading, release the **ON** pushbutton (**F**) **before removing the test lead.**

**Note 1:** The AC impedance is read on the ohms scale.

**Note 2:** The AC impedance test must be done on a “dead” line.



**Figure 10**  
Hampden Model MVO-1-PB connected to Model MVO-60Hz-IT, with leads.



**Model MVO-1-PB**  
**Ground Integrity**  
**Tester and**  
**Model MVO-60Hz-IT**  
**Impedance Tester**  
**shown with case.**

60Hz MEASUREMENT  
WITH MVO-60Hz-IT

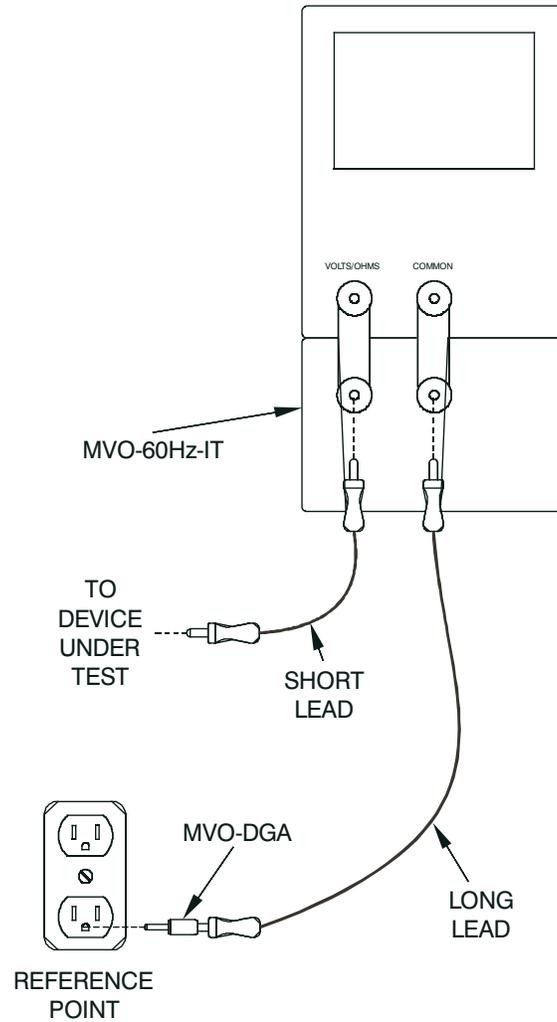


Figure 11