



\* LOW BATT. INDICATES 9 V BATTERY SHOULD BE REPLACED.

### SHORTED CASING DETECTOR TEST INSTRUMENT INSTRUCTIONS

1. Check instrument batteries. The **METER SELECT** switch must be in the **BATT TEST** position. The **RANGE** select switch should be in the **(CHARGER)12V** position, the **POWER** switch must be in the **ON** position. Meter reading should be approximately 12 volts. When the battery voltage is less than 11 volts, the batteries will require charging. Plug the charger into a wall socket and insert the connector into the **CHARGER** socket to the left of the meter. The **RANGE** select switch must be in the **(CHARGER)12V** position. The red indicator lamp will glow indicating the batteries are charging. The battery voltage can be checked periodically by removing the charger and following the instructions above.
2. With the **POWER** switch in the **OFF** position connect the **ELECTRODE**, **PIPE**, both **CASING**, and **TEMPORARY STRUCTURE** (stainless steel pins) as shown in the drawing.
3. Take initial site readings with the **RANGE** select switch in the **OFF** position. Move the **METER SELECT** switch to the **PIPE** position and record the pipe-to-soil voltage. Move the **METER SELECT** switch to the **CASING** position and record the casing-to-soil voltage. Move the **METER SELECT** switch to the **CURRENT** position and record the output current.

4. Move the **CURRENT ADJUST** knob to the lowest setting. Move the **RANGE** selector switch to the **(CHARGER)12V** position and adjust the **CURRENT ADJUST** knob to either a "even current setting" or a "even number setting on the dial".  
If the circuit resistance is too high to obtain a nominal current reading, place the **RANGE** selector switch in the **24V** position. This will provide a higher current output.
5. Move the **METER SELECT** switch to the **PIPE** position and record the pipe-to-soil voltage. Move the **METER SELECT** switch to the **CASING** position and record the casing-to-soil voltage. Move the **METER SELECT** switch to the **CURRENT** position and record the output current.  
Readings should be taken within 3 seconds. Prolong operation will cause inaccuracies and will drain the batteries needlessly.
6. Rotate **CURRENT ADJUST** knob to a new position and repeat step four with increased current. Five sets of readings are recommended, but are not necessary.  
If the circuit resistance is too high to obtain a nominal current reading, place the **RANGE** selector switch in the **24V** position. This will provide a higher current output.
7. Casing to carrier pipe nominal resistance can be determined for each set of readings using the following formula. Resistance greater than .08 ohms is considered **NOT SHORTED** or **FREE OF METALLIC CONTACT**.

$$\text{RESISTANCE} = \frac{(PS - PS/I) - (CS - CS/I)}{\text{CURRENT}}$$

See example below:

TEST NUMBER	INITIAL SITE READINGS		SITE READINGS WITH CURRENT		CURRENT APPLIED
	PS	CS	PS/I	CS/I	
1	-1.288	-1.194	-1.272	+0.218	0.397

FORMULA:

$$\frac{(PS - PS/I) - (CS - CS/I)}{\text{CURRENT}}$$

PS = -1.288	CS = -1.194
PS/I = -1.272	CS/I = +0.218
DIFF. = -0.016	DIFF. = -1.412

$$\frac{(PS - PS/I) - (CS - CS/I)}{\text{CURRENT}} = \frac{-0.016 - (-1.412)}{0.397} = \frac{1.396}{0.397} = 3.52 \text{ OHMS RESISTANCE}$$