



NOTES

1-CAPACITORS INDICATED IN MICROFARADS.

2-RESISTORS INDICATED IN OHMS.

K=1,000 OHMS

*-VALUES SHOWN ARE FOR 72 Ω LINE.

*-WHEN USING A 52 Ω LINE, VALUES

OF R-1 AND R-2 ARE 160 Ω .

SERVICE HINTS

TROUBLE SHOOTING CHART

If the instructions and diagrams were followed carefully, the reflectometer should operate properly. One incorrect or poorly soldered connection can cause the reflectometer to be inoperative. A careful check of your wiring may reveal a wiring error or shorted connection.

The following Troubleshooting Chart will help you service your instrument.

TROUBLE	POSSIBLE CAUSE	SERVICE PROCEDURE
No reading in either switch position	Open circuit	Check continuity between J-1 and J-2. Check soldering of metal rod to J-1 and J-2.
	Sensitivity control set too low	Check setting of control.
	Defective meter	Unsolder the black lead from S-1. Check continuity from terminal 1 of the switch to ground. The reading should vary with the setting of the sensitivity control. If not the meter is defective.
Meter reads forward in the reverse position and reverse in the forward	Switch wired incorrectly	Check switch wiring. Check cable connections to pick-up unit.
	Pick-up unit connections reversed	Check to see that J-1 is connected to the transmitter and J-2 to the antenna.

TROUBLE SHOOTING CHART

TROUBLE	POSSIBLE CAUSE	SERVICE PROCEDURE
Meter reads backward (downscale) in the forward position	CR-1 polarity reversed	Check wiring of CR-1.
Meter reads backward (downscale) in the reverse position	CR-2 polarity reversed	Check wiring of CR-2.
Meter reads Backward (downscale) in both switch positions	CR-1 and CR-2 polarities reversed	Check wiring of CR-1 and CR-2.
	Meter polarity reversed	Check meter connections.
Meter pegs	Sensitivity control set too high	Check setting of control. Check for open control.

TROUBLE	POSSIBLE CAUSE	SERVICE PROCEDURE
No meter reading in forward position	Poor connection to switch	Check connection to terminal 1 of switch.
	Defective sensitivity control	Unsolder the black lead from S-1. Check continuity from terminal 1 of the switch to ground with the sensitivity control all the way to the left. The reading should be 25K and decrease as the sensitivity control is rotated to the right. Be careful not to peg the needle of the meter.
	Defective component in the pick-up unit	With the black lead disconnected from S-1 check the resistance of R-2. If defected replace. If R-2 checks okay replace C-1 with C-2 or another .001 μ f, 600 volt capacitor. If this fails to remove the trouble then the defective component is CR-1.

TROUBLE SHOOTING CHART

TROUBLE	POSSIBLE CAUSE	SERVICE PROCEDURE
No meter reading in the reverse position	Poor switch connection	Check connection to terminal 3 of the switch.
	Defective sensitivity control	Unsolder the red lead from S-1. Check continuity from terminal 3 of the switch to ground with the sensitivity control all the way to the left. The reading should be 25K and decrease as the sensitivity control is rotated to the right. Be careful not to peg the meter.
	Defective component in the pick-up unit	With the red lead disconnected from S-1. Check the resistance of R-1. If defective replace. If R-1 checks okay, replace C-2 with C-1 or another .001 μ f, 600 volt capacitor. If this fails to remove the trouble then CR-2 is defective.

TROUBLE	POSSIBLE CAUSE	SERVICE PROCEDURE
Can not read zero, when aligning in the forward position when using a dummy load	Improper dummy load	Check value of dummy load (52 Ω with 160 Ω resistors and 72 Ω with 100 Ω resistors). Be sure carbon resistors with short leads are used for the dummy load.
	R-2 incorrect	Be sure that R-2 is the correct value, depending on the coaxial line used, and is within 5% tolerance.
	Incorrect coax line	Check that correct impedance coax line is used.

TROUBLE SHOOTING CHART

CIRCUIT DESCRIPTION

TROUBLE	POSSIBLE CAUSE	SERVICE PROCEDURE
Can not read zero when aligning in the reverse position when using a dummy load	Improper dummy load	Check value of dummy load (52Ω with 160Ω resistors 72Ω with 100Ω resistors. Be sure carbon resistors with short leads are used for the dummy load.
	Incorrect coax line	Check that correct impedance coax line is used.
	R-1 Incorrect	Be sure that R-1 is the correct value, depending on the coax line used, and is within 5% tolerance.
Can not read zero with an antenna	Unmatched antenna	Check for antenna mismatch as outlined under "Antenna Matching" in this book.
	Mismatch from a filter used for TVI reduction (if used)	Remove the filter from the line and check the meter reading. Check that the filter impedance is the same as that of the line.

The P-2 Reflectometer is simply a piece of transmission line to which a linear conductor is closely coupled. In this case the section of transmission line is the hollow metal rod and the linear conductor is the piece of pick-up wire on either side of the rod. The combination of the inductive and capacitive voltage is such that the incident RF voltage on the line is balanced out, leaving only the reflected portion to be read on the meter. The circuit uses two bridge circuits (each pick-up wire comprises a separate inductor) so that either the reflected or incident component may be read.

The current flow through the meter will vary with the operating frequency of the transmitter, because of the variation in coupling impedance. A control (R-3) is used to keep the readings in the desired section of the meter scale. This avoids the necessity of adjusting the transmitter level to an "on scale" reading.