

Fine Tuner Kits

For STD and MACXLine® 6-1/8", 7-3/16", & 8-3/16" Rigid Coaxial Transmission Lines

Types RLA650B-FTK, RLA675B-FTK, RLA775-FTK and RLA875B-FTK

Description

ERI Fine Tuner Kits are used to improve the VSWR of existing Rigid Coaxial Transmission Lines. The kits, which contain four Fine Tuner assemblies, are intended for single channels or two adjacent channels in the UHF TV frequency band. In some cases, they may provide some improvement at the upper VHF TV channel frequencies (Channels 7 to 13), but their use for the lower VHF TV frequencies and FM is not recommended.

Location

Fine Tuners need to be located as near as practicable to the transmission line component that needs compensation. However, tuners should be located no closer than 2 inches from a flange and all tuners must be located on the same side of any flange. The most distant tuner should be no more than an arms-length from the nearest flange to allow for its insertion from inside the outer conductor.

Number of Tuners

Four tuners are spaced at equal intervals. In circumstances where space limitations restrict the number of tuners, contact ERI for guidance on possible techniques for reducing the number of tuners.

Spacing

The table below gives the recommended spacing.

| Channel | Spacing | Channel | Spacing | Channel | Spacing | Channel | Spacing | Channel | Spacing | Channel | Spacing |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 7 | 8-3/8 | 18 | 2-15/16 | 29 | 2-5/8 | 40 | 2-3/8 | 51 | 2-1/8 | 62 | 1-15/16 |
| 8 | 8 | 19 | 2-15/16 | 30 | 2-9/16 | 41 | 2-5/16 | 52 | 2-1/8 | 63 | 1-15/16 |
| 9 | 7-3/4 | 20 | 2-7/8 | 31 | 2-9/16 | 42 | 2-5/16 | 53 | 2-1/16 | 64 | 1-15/16 |
| 10 | 7-5/8 | 21 | 2-7/8 | 32 | 2-9/16 | 43 | 2-1/4 | 54 | 2-1/16 | 65 | 1-7/8 |
| 11 | 7-3/8 | 22 | 2-13/16 | 33 | 2-1/2 | 44 | 2-1/4 | 55 | 2-1/16 | 66 | 1-7/8 |
| 12 | 7-1/8 | 23 | 2-13/16 | 34 | 2-1/2 | 45 | 2-1/4 | 56 | 2-1/16 | 67 | 1-7/8 |
| 13 | 6-7/8 | 24 | 2-3/4 | 35 | 2-7/16 | 46 | 2-3/16 | 57 | 2 | 68 | 1-7/8 |
| 14 | 3-1/8 | 25 | 2-3/4 | 36 | 2-7/16 | 47 | 2-3/16 | 58 | 2 | 69 | 1-13/16 |
| 15 | 3-1/16 | 26 | 2-11/16 | 37 | 2-7/16 | 48 | 2-3/16 | 59 | 2 | | |
| 16 | 3-1/16 | 27 | 2-11/16 | 38 | 2-3/8 | 49 | 2-3/16 | 60 | 2 | | |
| 17 | 3 | 28 | 2-5/8 | 39 | 2-3/8 | 50 | 2-1/8 | 61 | 1-15/16 | | |

WARNING

The transmission line component into which the Fine Tuners are to be installed must be removed from the system and then have its inner conductor removed. After installation of the Fine Tuners and before reassembly of the component, the Outer Conductor must be thoroughly cleaned of all metal particles remaining from the installation process. Failure to do so is likely to cause system failure. If in doubt about any aspect of the removal or installation of any component, or its dismantling or re-assembly, please contact ERI to obtain appropriate Installation Instructions.

Tools Required

- 3/4" Drill Bit
- 1-1/8" Box Wrench
- 9/16" Open End Wrench
- Flat Screw Driver
- Leak detector liquid
- Scribe or Utility Knife
- Steel Rule

Note: Illustrations are typical. Supplied components may vary in detail.

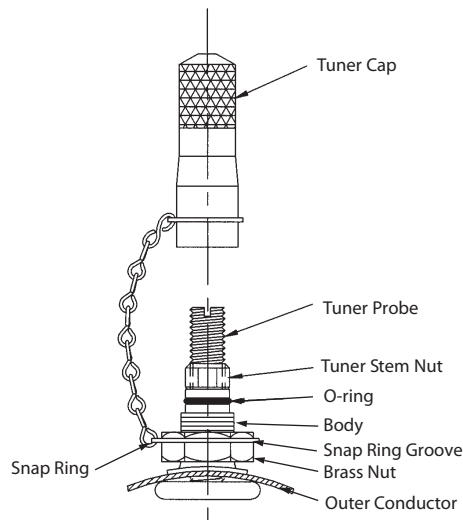


Figure 1

Installation

1. Remove the component from the transmission line system.
2. Carefully remove the inner conductor from the component.
3. Scribe a line longitudinally on the surface of the outer conductor. Mark the locations of the tuners in accordance with the location and Spacing instructions on page 1.
4. Drill a $\frac{3}{4}$ inch diameter hole at each location. Preferably, the hole should be no more than 0.006 oversize. Use a deburring tool or utility knife to remove any burrs or sharp edges.
5. Clean out all metal chips from the outer conductor.
6. Remove the cap and $\frac{3}{4}$ brass nut from the tuner. Be careful not to damage the neoprene O-ring. Insert the Tuner Body into the hole from inside the outer conductor. Replace the brass nut. Note: The groove in the brass nut should be away from the outer conductor.
7. Tighten the nut until the head of the Tuner Body deforms and cuts into the inner surface of the outer conductor at all places around its circumference.
8. Screw on the cap and hand tighten. Press the snap-ring at the end of its chain into the nut groove.
9. Follow steps 6 - 8 for the remaining Tuners.
10. Reinstall the inner conductor.
11. Reinstall the component in the transmission line system. Check the flange O-rings. If they are damaged they have to be replaced.

Tuner Adjustment

See Figure 1. Tuner probes are adjusted manually and secured by tightening the tuner lock nut while restraining the tuner probe with a screwdriver or any flat object such as a coin. The tuner lock nut is tightened to 6 lb-in with a small adjustable wrench or a $\frac{9}{16}$ " open end wrench.

The tuner cap seals the assembly to hold pressure at initial contact with the O-ring. The tuner cap requires no more than 6 lb-in of torque, which is hand tight. **DO NOT OVER TIGHTEN!**

After reinstallation of the fine tuner section into the system, use the following steps to adjust the tuner probes in preparation for final tuning. This procedure sets all the probes approximately 0.070" away from contacting the outer conductor and establishes the starting point for tuning the assembled system.

1. Remove the tuner cap.
2. Loosen the tuner lock nut.
3. Rotate the tuner probe counterclockwise until it touches the inside of the outer conductor.
4. Rotate the tuner probe clockwise one full revolution.
5. Tighten the tuner lock nut as described above.
6. Repeat the steps above until all the probes are set.
7. Line tuning can now take place. On completion of tuning:
8. Replace the tuner caps.

Pressure Check

Pressurize the line and use a leak detector liquid to verify seal integrity. If a leak is detected near the brass nut, the nut must be made more snug. If a leak is detected from under the tuner cap, remove the cap and inspect the O-ring for dirt or damage. Carefully clean off the O-ring with a clean damp cloth (do not use silicone grease); if the leak persists replace the O-ring.

NOTICE

The installation, maintenance, or removal of antenna systems requires qualified, experienced personnel. Antenna systems should be inspected once per year by qualified personnel to verify proper installation, maintenance, and condition of equipment. ERI DISCLAIMS LIABILITY OR RESPONSIBILITY FOR THE RESULTS OF IMPROPER OR UNSAFE INSTALLATION PRACTICES.

For Technical Support contact ERI at 877 ERI-LINE (toll-free), +1 812 925-6000 (international), or www.eriinc.com (online).

All designs, specifications, and availabilities of products and services presented in this publication are subject to change without notice.

Copyright © 2007 Electronics Research, Inc. Chandler, Indiana 47610-9219 USA