JERROLD®

INSTRUCTION SHEET

435-278
PART A

"RANGER"

LINE EXTENSION AMPLIFIERS, Models RLE-1 AND RLE-2

INSTALLATION and OPERATION

1.0 INTRODUCTION

1.1 This instruction sheet covers mainly the installation and operational set-up of both amplifier Models RLE-1 and RLE-2. Maintenance and alignment of the equipment is covered by part B of this instruction sheet.

2.0 DESCRIPTION

2.1 Both Models RLE-1 and RLE-2 are single-stage, low-gain, broadband line extension amplifiers used in short runs of distribution lines. Both units have a gain of 9 dB but Model RLE-2 can handle a larger input signal than Model RLE-1, while still maintaining the specified cross-modulation level. Further, Model RLE-1 will work from an a.c. input ranging from 18 to 30 V, while Model RLE-2 has to be adjusted for working either from an 18 to 24 V range or a 23 to 30 V range. Adjustment is done by cutting the "LOCAL" strap in the power supply circuit for an 18 to 24 V range; for a 23 to 30 V range the strap is left uncut.

2.2 Each model has a printed circuit board which includes a fixed cable equalizer, a single transistor amplifier; a line-powered, balanced, full-wave, regulated power supply; and an a.c. passing and blocking circuit. By cutting out choke L4 in Model RLE-1, and by cutting the "A. C." strap in Model RLE-2, a.c. will not be passed to the output terminal.

2.3 The board is mounted in an all-weather, cast aluminum housing equipped with a single clamp and bolt assembly for messenger mounting. The lid is secured to the housing by four captive screws. Auxiliary hanger brackets are available for extended suspension from the messenger. Two special QF-412 cable fittings are supplied with the unit for direct introduction of coaxial cable ends into the housing where the center conductors are connected to screw and crown washer terminals.

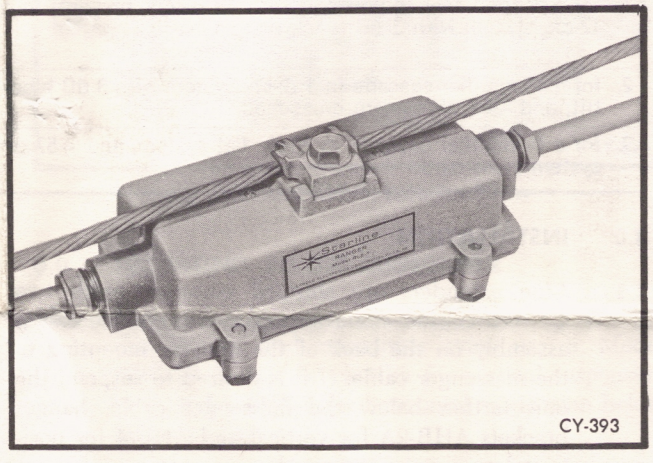


Fig. 1 Model RLE-1, Messenger-Mounted

2.4 The printed circuit board of the RLE-2 can be removed from the housing by simply loosening six-hex-head captive screws. The RLE-1, however, requires removal of the cables from the unit and removal of four Phillips head screws before the board can be removed.

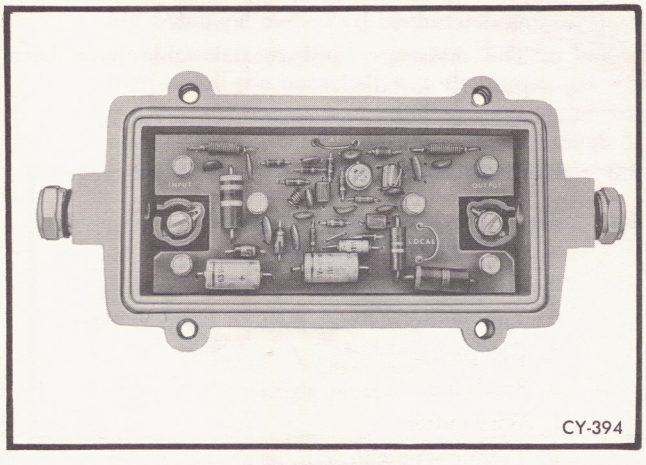


Fig. 2 Model RLE-2, Interior View

3.0 SPECIFICATIONS

	RLE-1	RLE-2
FREQUENCY RANGE	50 to 240 MHz	
GAIN	9 ±0.5 dB, fixed	
RESPONSE FLATNESS	±0.75 dB	
OUTPUT CAPABILITY FOR 0.14% (—57 dB) CROSS MOD., OR BETTER	35 dBmV per channel for 12 channels with 3 dB block tilt.	41 dBmV per channel for 12 channels with 3 dB block tilt.
EQUALIZATION	10 dB of cable at 240 MHz	
NOISE FIGURE	10 dB at channel 13, and 11 dB at 240 MHz	
HUM LEVEL	—50 dB at 18 V rms power input	
IMPEDANCE	75 ohms, input and output	
MATCH	16 dB minimum return loss (VSWR 1.38:1, max.), input and output	
POWER REQUIREMENTS	18 to 30 V at 110 mA, maximum	18 to 24, or 23 to 30 V, at 125 mA, maximum
RECOMMENDED OPERATING OUTPUT LEVELS: 1. for a loaded feeder line end with 19 dBmV present, in a 12-ch. system with 3 dB block tilt:	+28 dBmV, with an ampl. cross-mod. contribution of of —71 dB	N. A.
2. for a 4-amplifier cascade in a 12-ch. system with 3 dB block tilt, and —57 dB system cross-mod.	+29 dBmV	+35 dBmV
3. for a 4-amplifier cascade in 20 ch. flat system, and —57 dB system cross-mod.	+25.5 dBmV	+31 dBmV

4.0 INSTALLATION

4.1 Line extenders are shipped complete with two QF-412 coaxial cable fittings and the cable clamp assembly on the back of the unit for mounting to the messenger cable. If it is desired to suspend the unit farther below the messenger cable, hanger brackets AHB-2A for vertical and AHB-4 for horizontal suspension are used.

4.2 It is assumed that:

a. The mounting location has been determined by system lay-out. For quick identification by installers, it is convenient to mark the location numbers on the outside of each housing before the units are loaded on the installer's vehicle.

b. The unit has been adjusted as described in paras. 2.1 and 2.2 for application of a.c. power as determined by system lay-out.

c. The messenger and coaxial cable have been properly installed.

d. No A.C. power is present on the cable.

4.3 PREPARATION OF CABLE

4.4 The following tools are required:

a. Scale with ⅛" divisions.

b. Sharp knife.

c. Tube cutter (Rigid #10, or equivalent).

d. Gas pliers.

e. Small file.

f. Wire cutter.

g. Torque wrench.

4.5 Cut the coaxial cable flush at the chosen mounting point.

4.6 Cut the lashing wire and remove sufficient lengths from both ends to permit forming expansion loops on the cable ends; then fasten the ends of the lashing wires with clamps (regular hardware type) to the messenger wire.

4.7 If a Xelon-jacketed cable (JT-1412J) is used remove 1⅞" of the jacket from each cable end with a knife.

4.8 Measure off ⅝" from each cable end and mark the sheaths.

4.9 Use the tube cutter for cutting almost through the aluminum sheaths at the pencil marks; then use the knife for cutting completely through the aluminum sheaths and almost through the dielectric around the center conductors. Do not nick the center conductors!

4.10 Use the pair of pliers for gripping the sections to be removed; then, with a twisting motion, pull the sections free, exposing the center conductors in this process.

4.11 Scrape any fuzz from the surface of the exposed center conductors and file any burrs from their ends. Do not bend the center conductors!

4.12 PREPARATION OF UNIT

4.13 At each aperture install a QF-412 ensuring that the tapered end of the ferrule is seated in the end of the gland nut, and that the nut of the fitting is loosely threaded into the housing aperture.

4.14 Loosen the hex-head bolt on the messenger clamp so that it can slip over the wire. If hanger brackets are used, remove the loose top clamp and bolt from the back of the housing; then attach the bracket to the housing with the two hex-socket screws supplied. Finally mount the bottom clamp (supplied with the bracket) together with the top clamp and bolt on the auxiliary bracket.

4.15 Remove the lid by loosening the four hex-head captive screws; then loosen the screws of the input-output crown-washer terminal assemblies so that the conductors of the cables will slide smoothly into position for good contact.

4.16 MOUNTING THE UNIT ON THE MESSENGER

4.17 Position the unit on the messenger so that the arrow cast into the housing points in the direction of signal flow; then slip the clamp on the back of the unit over the messenger. The clamp bolt should be tightened only enough to permit movement for proper positioning of the unit.

4.18 Coat the exposed center conductors with silicone grease; on aluminum-sheathed cables also coat 1 inch of the sheath.

4.19 Feed the cable ends all the way through the QF-412 fittings until the bare center conductors are visible beyond the crown washers in the terminal assemblies.

4.20 Use a nut driver or a screwdriver for firm tightening of the slotted hex-head machine screws in the terminal assemblies.

4.21 On each QF-fitting hand-tighten, then wrench-tighten the gland nut until the collapsible ferrule is felt to break; the gland nut will again become loose. Continue to tighten the gland nut to a recommended final closing torque of 10 ft. lbs. (120 inch-lbs.)

4.22 Position the housing on the messenger wire so that expansion loops of symmetrical shape can be formed with the cable. Loops on aluminum sheath cable should have been preformed by a special jig. Tighten the messenger cable clamp.

4.23 Lash all cables to the messenger where they meet the messenger.

5.0 OPERATION

5.1 This equipment has fixed gain and tilt so that the only set-up is the a-c power routing. Switch on power at the a.c. source and connect the r-f signal source to the cable.

5.2 With an rms voltmeter check the voltage present at both terminals if the unit has to pass power, or at the terminal where a.c. is applied.

5.3 Replace the lid and tighten the four hex-head bolts to a torque of 5 ft. lbs. (60 inch-lbs.).

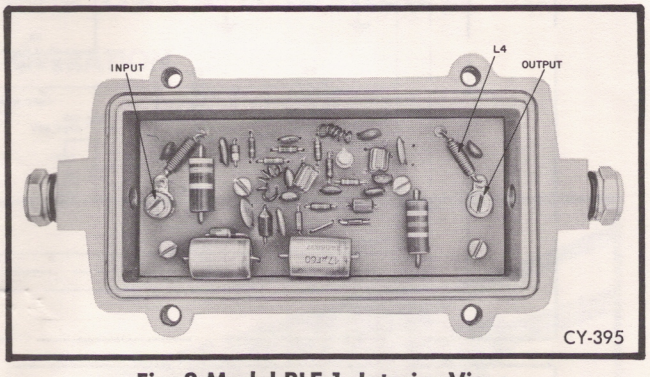


Fig. 3 Model RLE-1, Interior View

6.0 MOUNTING BELOW MESSENGER

6.1 Where it is necessary to obtain clearance between the Ranger and messenger wire use a Model AHB-2A hanger bracket kit for vertical suspension or a Model AHB-4 for horizontal suspension below the messenger.

6.2 Remove the clamp bolt and outer clamp jaw from the rear of the Ranger housing.

6.3 Use the removed bolt and clamp together with the inner clamp jaw and the two hex-head socket screws supplied with the hanger bracket kit to make up a messenger clamp assembly; install the assembly on the hanger bracket.

6.4 Mount the bracket on the rear of the Ranger housing with two of the three slotted round-head screws and washers supplied with the hanger bracket; then install the housing below the messenger wire, connect the cables and apply power in the same manner as described under para's 4.16 through 5.3.

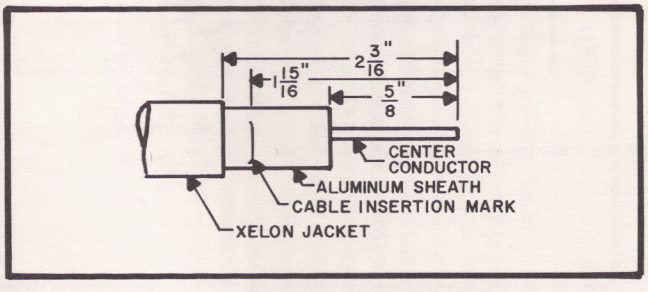
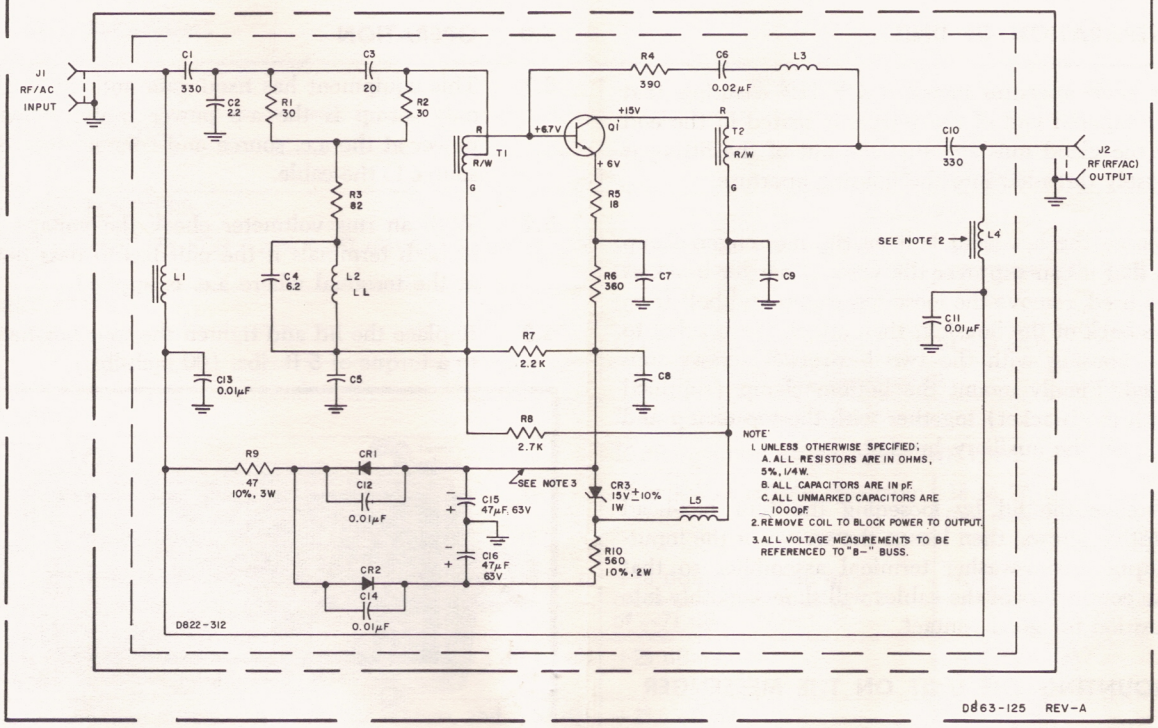
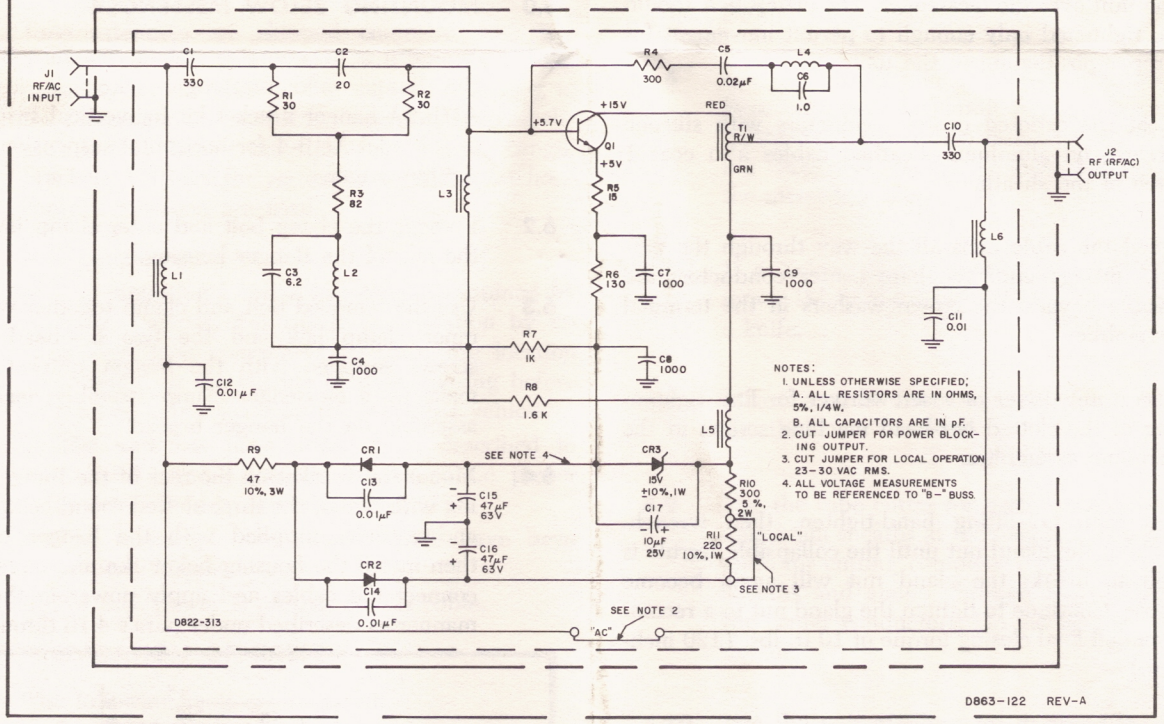


Fig. 4 Preparation of Cable

SCHEMATIC
RANGER MODEL RLE-1



SCHEMATIC
RANGER MODEL RLE-2



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JERROLD ELECTRONICS CORPORATION
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Philadelphia, Pa. 19105

Published by the Jerrold Electronics Corporation, Engineering Laboratory Publications Department
BLM, 10/68 Printed in the U.S.A. 435-278 Part A 2364