

UHF MIXING/SPLITTING NETWORK

MODEL UMN-3

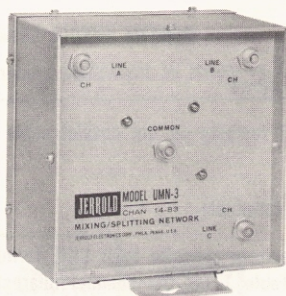


Fig. 1. Model UMN-3

DS-143

DESCRIPTION

Model UMN-3 is designed for combining the r-f outputs of three UHF single-channel devices into a single broadband output, or for splitting the r-f output of a single UHF broadband device into three separate outputs of single-channel bandwidth.

The circuitry consists of three identical cavity-type, double-tuned filter networks, with each cavity tunable to the required UHF channel. The respective cavity terminals are identified as LINE A, LINE B, and LINE C; the broadband range of 470 to 890 MHz is available at or applied to the COMMON terminal.

The channel bandwidth is staggered progressively from 6 MHz at the low end of the frequency range to 12 MHz at the high end; this permits 2-channel guard band spacing at the low end, 3-channel guard band spacing at mid-range, and 5-channel guard band spacing at the high end.

On-site tuning can be done with a field strength meter equipped with a UHF adapter. Three pairs of slug-tuned trimmers, one pair for each cavity, are accessible at the top of the housing, each pair opposite its associated line terminal.

Most accurate tuning can be achieved with sweep-frequency test set-ups; units factory-aligned by this method to channels specified by the customer can be ordered at an additional nominal charge.

All four terminals have an impedance of 75 ohms for coaxial cables equipped with F-59A connectors or F-56 connectors with 1082 ferrules. If, for any reason, one line terminal will not be used temporarily, it should be tuned away from the two in use.

Model UMN-3 is contained in a clear iridized aluminum housing equipped with a mounting bracket having two key-hole slots for surface-mounting. The unit can be installed indoors or outdoors with the two wood screws supplied. In addition, an auxiliary bracket and the necessary hardware are shipped with each UMN-3 to permit mounting on an antenna mast where desired.

SPECIFICATIONS

FREQUENCY RANGE LINES A, B, C	Any UHF channel within 470 to 890 MHz, at channel bandwidths of 6 MHz at the low end to 12 MHz at the high end.
COMMON	470 to 890 MHz.
CHANNEL SPACING	2-ch. guard bands at low end, 3-ch. guard bands at mid-range, 5-ch. guard bands at high end.
IN-BAND LOSS	1 dB maximum.
OUT-OF-BAND REJECTION	19 dB minimum.
TERMINAL IMPEDANCE	75 ohms, at min. return loss of 11 dB for single ch. bandwidth.

TUNING IN THE FIELD

If untuned units are ordered, they can be

A. FIELD STRENGTH METER METHOD

If the unit is to be used as a mixing network proceed as follows:

1. Install F-59A connectors or F-56 connectors with 1082 ferrules on the coaxial cable ends to be connected.
2. Connect one single-channel device to one of the LINE terminals.
3. Remove the caps covering each pair of slug-tuned capacitors opposite their LINE terminals. Set the first pair of slugs to the position listed in Table 1 for the channel nearest the desired one; tune the other two pairs completely away from the desired channel.
4. Connect the UMN-3 COMMON terminal through a 3 dB pad, such as Jerrold Model PDL-3 to the UHF input on a field strength meter tunable to 890 MHz.
5. Tune the meter to the picture carrier of the desired channel and adjust the tuning slugs for maximum meter reading.
6. Disconnect the single-channel device and repeat steps 2 and 5 for the other LINE terminals, without disturbing the previously tuned capacitors.
7. Tune the meter to the sound carrier and touch-up the capacitors for maximum meter reading. Check that the picture carrier level has not been reduced; retune if necessary.
8. Disconnect the single-channel device and repeat steps 2 and 7 for the other LINE terminals.
9. Mark the channel numbers next to CH marked near the LINE terminals.
10. Return the caps to the tuning slugs.
11. Disconnect the meter.
12. Connect the broadband device to the COMMON terminal and the single channel devices to the LINE terminals; hand-tighten then wrench-tighten the connectors not more than 1/6 turn.

TABLE 1

CH.	SLUG TURNS*	DIRECTION
14	4	cw
18	3	cw
23	2	cw
29	1	cw
36	flush	
45	1	ccw
55	2	ccw
68	3	ccw
83	4	ccw

*Turns counted from flush position.

If the unit is to be used as a splitting network, the above procedure applies except that the broadband device is connected to the COMMON terminal in step 2; then the meter is connected to each LINE terminal in turn.

For installing an F-59A connector on RG-59/U cable consult Fig. 3. Adhere to the dimensions given for the exposed center conductor and the dielectric.

tuned in the field by two methods:

B. SWEEP SIGNAL METHOD

1. Connect equipment as shown in Fig. 2.

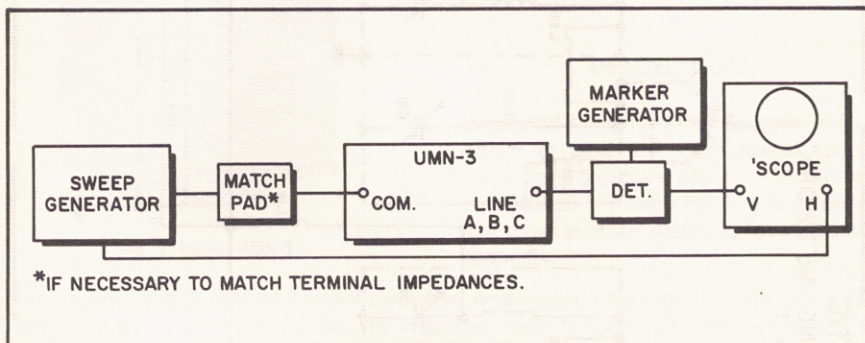


Fig. 2. Setup for Alignment by the Sweep Signal Method

2. Remove the caps covering each pair of slug-tuned capacitors opposite their LINE terminals. Set the first pair of slugs to the position listed in Table 1 for the channel nearest the desired one; tune the other two pairs completely away from the desired channel.
3. Set the generator to sweep the desired channel.
4. Adjust the tuning slugs for a double-peaked response of maximum amplitude. The units are factory-tuned for a 12 MHz bandwidth at the high end of the UHF TV range. If it is desired to realign the units for a 6 MHz bandwidth at the high end, inductors L2, L12, and L22 (see schematic) may be readjusted to reduce the bandwidth.
5. Mark the channel number next to CH marked near the LINE terminal.
6. Repeat the above procedure for the other LINE terminals, without disturbing the previously tuned capacitors.
7. Return the caps to the tuning slugs.

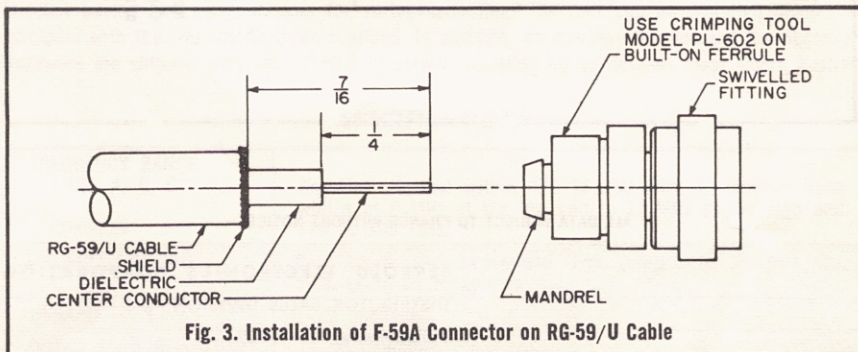
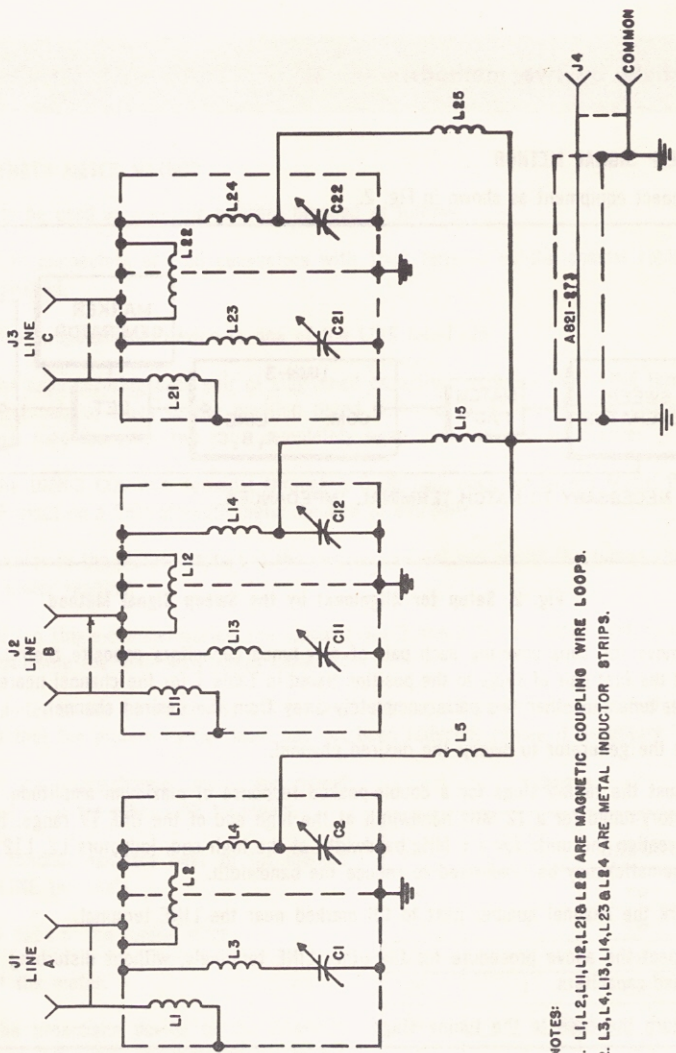


Fig. 3. Installation of F-59A Connector on RG-59/U Cable

SCHEMATIC
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C861-895-0

- NOTES:
1. L1, L2, L11, L12, L21 & L22 ARE MAGNETIC COUPLING WIRE LOOPS.
 2. L3, L4, L13, L14, L23 & L24 ARE METAL INDUCTOR STRIPS.

ALL DATA SUBJECT TO CHANGE WITHOUT NOTICE.

JERROLD ELECTRONICS CORPORATION
DISTRIBUTOR SALES DIVISION
Philadelphia, Pa. 19105