



Route 79, Marlboro, New Jersey 07746 • (201) 462-1880

# INSTRUCTION BOOK

FOR

CAT. NO. 526-509

406-470 MHz

470-512 MHz

DUPLEXER

GENERAL DESCRIPTION

This duplexer consists of six cavities, normally arranged with three cavities in each of the two frequency channels being combined. At 5 MHz spacings used in the 406-470 MHz range the unit provides in excess of 120 dB isolation in either channel with an insertion loss of 1 dB. In addition the unique circuitry used provides decoupling between the two channels, at all frequencies between those being used, in excess of 80 dB. For the 3 MHz spacings used at 470-512 MHz the isolation is 100 dB, insertion loss 1 dB and decoupling between channels is 65 dB. The graph in Figure 3 shows the performance at 3 MHz spacing. Pass and reject adjustments are provided on each of the six cavities.

TUNING INSTRUCTIONS

The units are normally supplied tuned to the desired frequencies and no readjustment should be required unless there has been a change in frequency.

The following equipment will be required to tune the duplexer:

1. A 50 ohm signal generator with variable attenuator which covers the desired transmit and receive frequencies.
2. A 50 ohm input receiver tuned to the desired transmit frequency.
3. A 50 ohm input receiver tuned to the desired receive frequency.
4. Two six dB attenuators to place in the lines to the receivers.

NOTE: Separate transmitter and receiver cables to duplexer to maintain isolation. Separation to be twelve inches minimum. The use of double shielded or solid outer jacket cable is strongly recommended.

The reject or notch frequency will maintain its spacing to the pass frequency when the pass adjustment of a cavity (the large central screw) is moved several MHz. For example a system operating at 455 and 460 which is moved to 460 and 465 will require a minimum of readjustment if the pass adjustment is made first. It is therefore recommended that the pass adjustments be made first and that the following step by step procedure be adhered to.

1. Place the duplexer on the bench with the notching screws on top (See Fig. 1). This will place the transmitter terminal (in normally transmit low systems) at the left and the receiver terminal at the right.

Remove cables from the duplexer, noting the position of each to permit reassembly in the same manner.

NOTE: In the following adjustments, the Signal Generator output must be adjusted to prevent saturation of the first limiter in the receivers.

## 2. TRANSMITTER SIDE

a. Connect the 3 resonators, one by one, between a Signal Generator tuned to the transmit frequency and a 50 ohm receiver tuned to the transmit frequency. Turn the large central tuning screw for a maximum transfer of signal at the transmitter frequency.

b. now connect the 3 resonators, one by one, between a Signal Generator now tuned to the receive frequency and a 50 ohm receiver tuned to the receive frequency. TURN the off-center notching adjustment for minimum transfer of signal at the receiver frequency.

c. Repeat above steps 2a and 2b on all 3 transmitter resonators, especially if the pass frequency has been moved more than 3 MHz or the pass-stop spacing changed significantly.

## 3. RECEIVER SIDE

a. Connect the 3 resonators, one by one, between a Signal Generator now tuned to the receive frequency and a 50 ohm receiver tuned to the receive frequency. TURN the large central tuning screw for a maximum transfer of signal at the receive frequency.

b. Now connect the 3 resonators, one by one, between a Signal Generator now tuned to the transmit frequency and a 50 ohm receiver tuned to the transmit frequency and a 50 ohm receiver tuned to the transmit frequency. Turn the off-center notching adjustment for minimum transfer of signal at the transmit frequency.

c. Repeat above Steps 3a and 3b on all 3 receiver resonators, especially if the pass frequency has been moved more than 3 MHz or the pass-stop spacing changed significantly.

NOTE: In any of the above steps, the last adjustment that should be made is the notching adjustment. The notching adjustment will affect the pass only slightly and then only when a large frequency change is made.

4. Re-connect the cables to the duplexer. It may now be placed back into operation.

FIGURE 1 - OUTLINE DRAWING OF CAT. 526-509 DUPLEXER

NOTE: THIS DUPLEXER HAS BEEN FACTORY TUNED TO THE FREQUENCIES MARKED ON THE FRONT COVER OF THIS INSTRUCTION BOOK. THESE FREQUENCIES ARE ALSO ON THE BACK OF THE FRONT PANEL OF THE DUPLEXER. THE TRANSMIT FREQUENCY IS AT THE TRANSMIT END OF THE PANEL AND THE RECEIVE FREQUENCY IS AT THE RECEIVE END.

THE CABLES BETWEEN TERMINALS OF THE DUPLEXER ARE CUT TO SPECIFIC LENGTHS AND MUST NOT BE CHANGED.

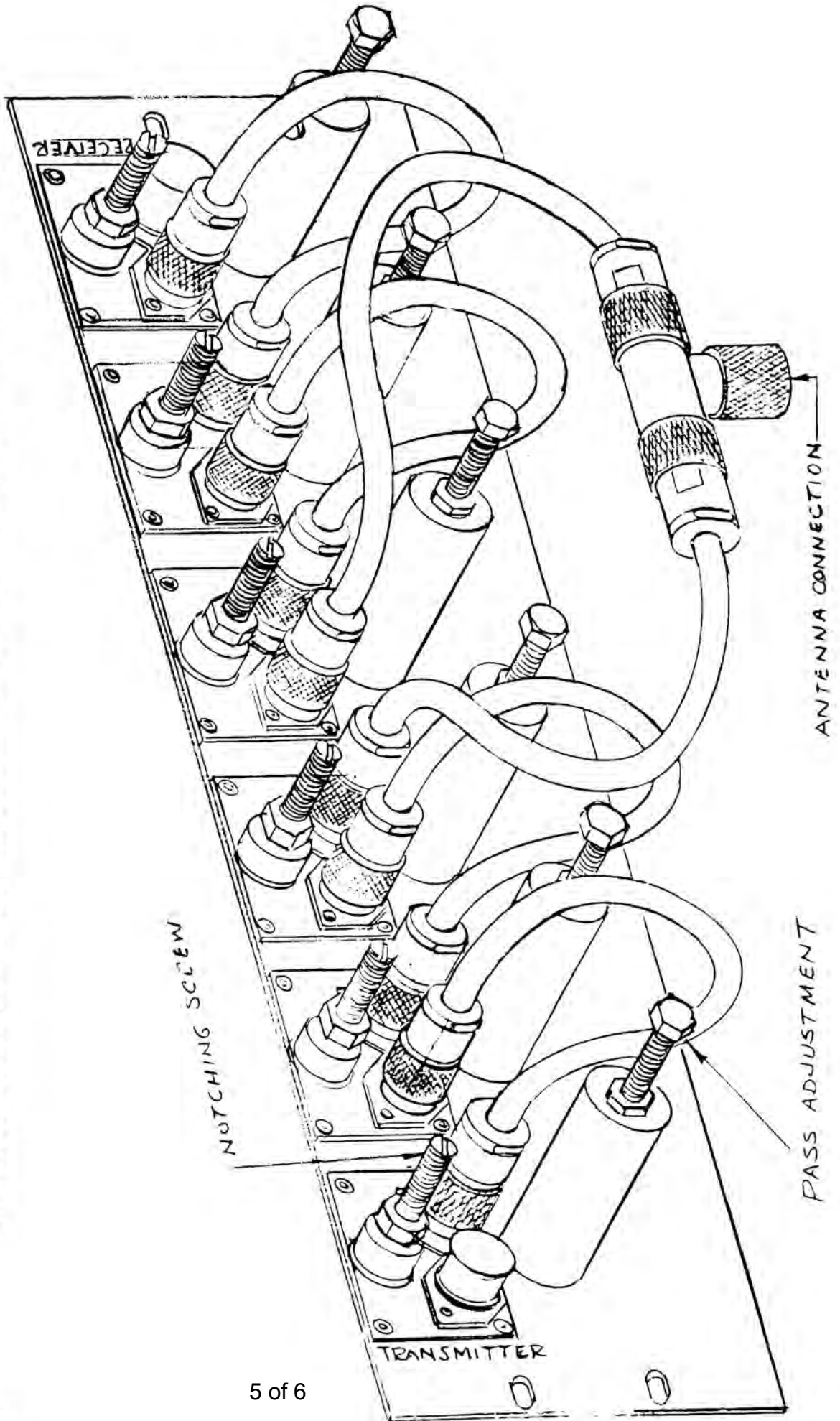




FIG. 3 CAT. NO. 526-509 ADJUSTED FOR 3 MHz FREQUENCY SPACINGS.

