



INSTALLATION INSTRUCTIONS
FOR
CHANNEL GUARD AND TONE REJECT FILTER MODIFICATION KITS
19A127767G10 thru G21

(For MASTR Professional Series, Royal Professional Mobile, MASTR Imperial and
MASTR Professional Series Station Combinations)

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DESCRIPTION

Channel Guard Encoder and Tone Reject Filter Modification Kits 19A127767G10 through G21 provide the wiring harnesses and modification components for installing Channel Guard Encoder, Tone Reject Filter, and Exciter Modification in MASTR Professional Series, MASTR Imperial and Royal Professional Mobile and MASTR Professional Series Station Combinations.

NOTE

Channel Guard Encoder Tone Network FL1 is not included in the Modification Kit.
The Tone Network must be ordered separately.

The application of the different kits is shown in the following chart:

MODIFICATION KIT	INCLUDES THE FOLLOWING:				
	USED WITH MASTR COMBINATION	TONE REJECT FILTER 19C311797G2 WITH INSTALLATION KIT 19A127178G4	ENCODER FOR PROF. SERIES 4EH17A10 WITH INSTALLATION KIT 19A127174G1	ENCODER FOR ROYAL PROF. 4EH18A10 WITH CABLE LISTED BELOW	EXCITER MOD. KITS
19A127767G10	Tone Reject Filter Professional Series (All)	X			
19A127767G11	25-33 MHz Encode only & 2nd Freq. C.G. Professional Series Tubes (Non ICOM)	X	X		19A122313G7
19A127767G12	33-42 MHz Encode only & 2nd Freq. C.G. Professional Series Tubed (Non ICOM)	X	X		19A122313G8
19A127767G13	42-50 MHz Encode only & 2nd Freq. C.G. Professional Series Tubed (Non ICOM)	X	X		19A122313G9
19A127767G14	66-88 MHz Encode only & 2nd Freq. C.G. Professional Series Tubed (Non ICOM)	X	X		19A122313G10
19A127767G15	130-150.8 MHz and 406-420 MHz Encode only & 2nd Freq. C.G. Professional Series Tubed (Non ICOM)	X	X		19A122313G5
19A127767G16	150.8-174 MHz and 450-470 MHz Encode only & 2nd Freq. C.G. Professional Series Tubed (Non ICOM)	X	X		19A122313G6
19A127767G17	130-174 MHz and 406-470 MHz Encode only & 2nd Freq. C.G. Professional Series Tubed (With ICOM)	X	X		19A127078G1
19A127767G18	25-50 MHz Encode only & 2nd Freq. C.G. Royal Professional (Non ICOM) MASTR Imperial (Non ICOM)	X		19B216463G1	19A122552G1
19A127767G19	130-174 MHz Encode only & 2nd Freq. C.G. Royal Professional (With ICOM)	X		19B216186G1	19A127242G1
19A127767G20	130-150.8 MHz and 406-420 MHz Encode/Decode Professional Series Tubed (Non ICOM)	TONE REJECT FILTER 19C311802G1 WITH INSTALLATION KIT 19A127174G2			19A122313G11
19A127767G21	150.8-174 MHz and 450-470 MHz Encode/Decode Professional Series Tubed (Non ICOM)	TONE REJECT FILTER 19C311802G1 WITH INSTALLATION KIT 19A127174G2			19A122313G12

INSTALLATION

TONE REJECT FILTER

Tone Reject Filter 19C311797G2 (used with 19A127767G10-19) or 19C311802G1 (used with 19A127767G20, G21) mounts on the underside of the receiver next to the audio board (see Figure 1). The parts list for the Tone Reject Filter Board is found in the applicable receiver maintenance manual. Install the Tone Reject Filter board using Installation Kit indicated in Table above.

1. Remove and discard the spring nut and replace with the hinge supplied in the kit (see Figure 1). Use existing hardware for mounting ☐
2. Mount the Tone Reject Filter board to the hinges as shown ☐
3. In station combinations only; Remove L1 from the Channel Guard board and replace with coil 19A115690-P3 ☐
4. Use the wiring harness supplied with this kit to make the interconnection between the Tone Reject Filter board, the Audio board and TB2 as shown in the chart below:

WIRE COLOR	FROM	TO TONE FILTER BOARD	FUNCTION
W-R-G	J12 - Audio Bd.	J6	TONE FILTER
W-O	TB2-1	J7	SYSTEM NEGATIVE

5. Swing the channel guard board into the receiver frame and fasten with the screws provided. Discard metal plate located near TB2. ☐

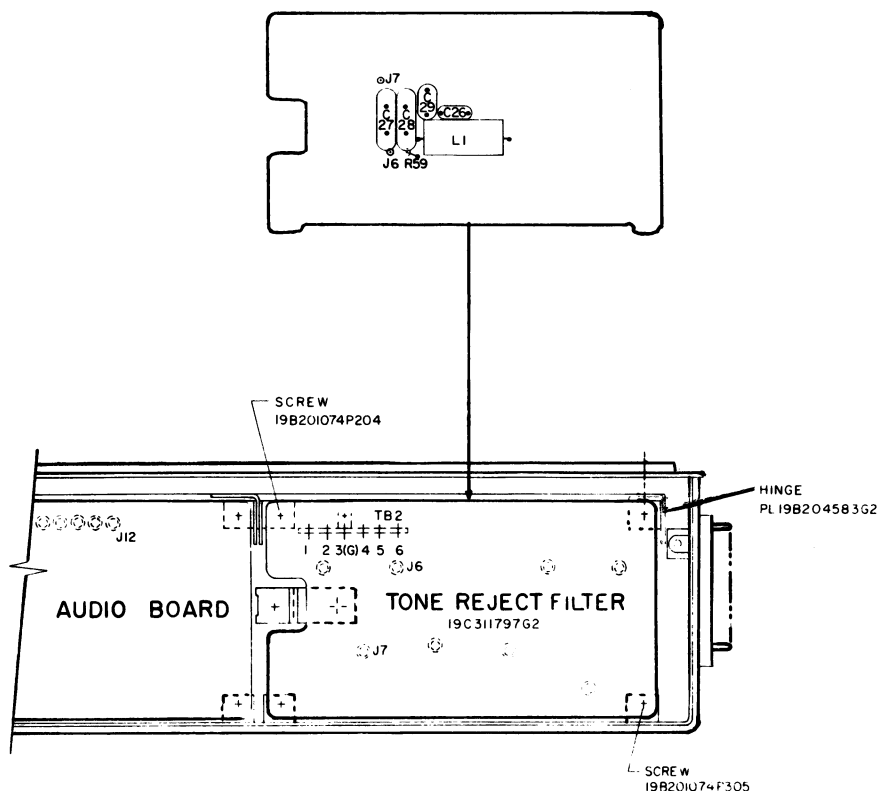


Figure 1 - Installation Diagram

(19C311825, Rev. 3)

ENCODER FOR PROFESSIONAL SERIES

Channel Guard Encoder model 4EH17A10 mounts in the transmitter underneath the exciter board (see Figure 2). The parts list for the Channel Guard Encoder is found in the applicable transmitter maintenance manual. Install the Channel Guard Encoder board using installation kit 19A127174-G1 as shown:

1. Install the wiring harness 19B205480-G2 as shown in Figure 2. Connect the wiring as follows:
 - a. Solder the black lead (ground) to J101-1 ☐
 - b. Solder the white-red lead (+10 volts) to J101-6 ☐
 - c. Solder the orange lead (system negative) to J101-13 ☐
 - d. Connect the center conductor of shielded wire to J8, and shield to J7 on exciter board. (See Exciter Decal) ☐
 - e. Solder the green lead (Tone In) to J101-10 ☐
 - f. Tie the wiring harness to the main harness ☐
2. Install the Channel Guard Encoder Board G102 and Encoder Network FL1 as shown in Figure 2. Connect the wiring as follows:
 - a. Connect the plug on the white-red lead to J1 ☐

INSTALLATION

- b. Connect the plug on the black lead to J2 ☐
- c. Connect the plug on the orange lead to J5 ☐
- d. Connect the center conductor of the shielded wire to J3, and shield to J4 ☐
- e. Connect the plug on the green lead to J6 ☐

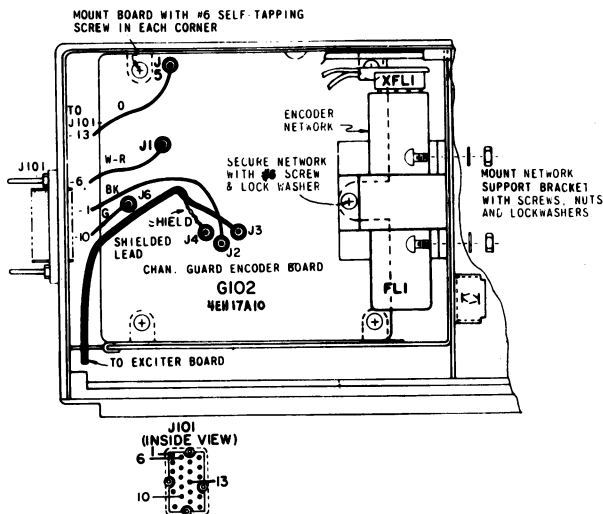


Figure 2 - Installation Diagram

(19A127173, Sh. 2, Rev. 0)

ENCODER FOR ROYAL PROFESSIONAL

Channel Guard Encoder model 4EH18A10 mounts on the bottom side of the transmitter as shown in Figure 3 and 4. The parts list for the Channel Guard Encoder is found in the applicable transmitter maintenance manual. Install the Encoder as follows:

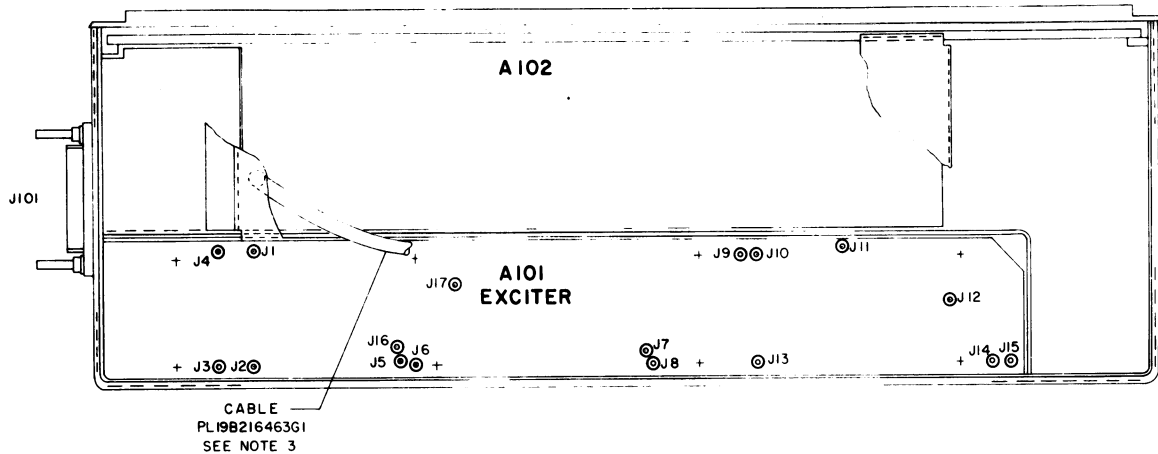
1. Mount the Channel Guard Encoder board (G101) and Tone network FL1 as shown, using proper holes for G101 ☐
2. Remove the White-Blue wire from J7 (J8 for 25-50 MHz) and the shield from J8 (J9 for 25-50 MHz). Tape each wire separately to prevent a short circuit. ☐
3. Install the 19B216186-G1 cable (19B216463-G1 for 25-50 MHz) as shown in the following connection chart:

FROM A101		WIRE COLOR	TO G101
25-50 MHz	130-174 MHz		
J7	J8	Center conductor White-Green	J3
J8	J9	Shield of above	J4
J101-6	J17	Red	J1
J101-1	J18	Black/White	J2

4. Dress the cable neatly and tie as required

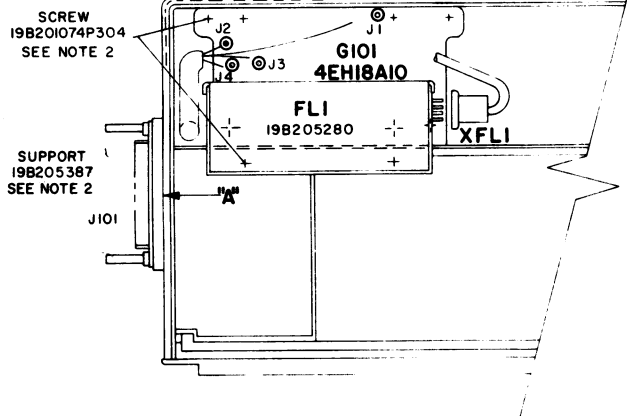


TOP VIEW



CONNECTION CHART		
FROM	WIRE COLOR	TO
A101- J7	N22 SJ-W-G CENTER CONDUCTOR	J3
A101- J8	SHIELD OF ABOVE WIRE	J4
J101- 6	R	J1
J101- 1	BK	J2

BOTTOM VIEW



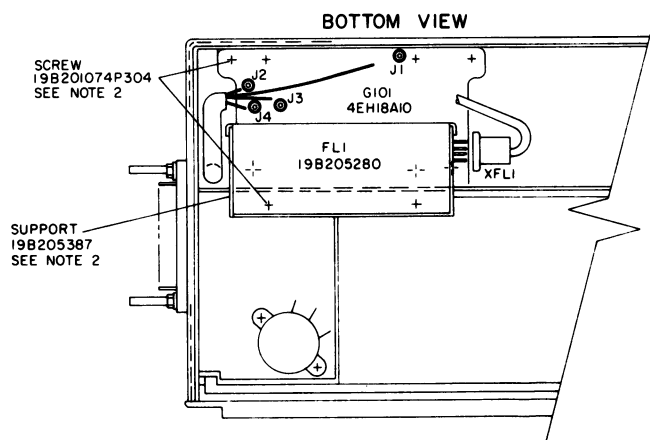
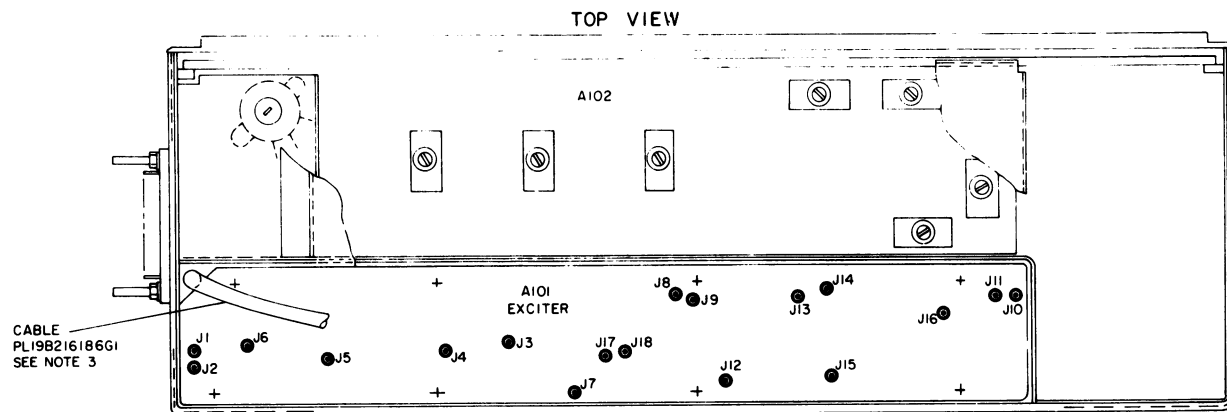
VIEW AT "A"

NOTES:

1. THIS INSTRUCTION IS FOR INSTALLING SOLID STATE ENCODER OPTION IN SOLID STATE LOW BAND ROYAL PRO TRANSMITTER WITH EXCITERS MODIFIED PER 19C311899.
2. MOUNT GIOI BOARD AND FLI NETWORK AS SHOWN, USING PROPER HOLES FOR GIOI. SUPPORT AND SCREWS ARE CALLED FOR ON PL19B216161.
3. REMOVE N22 SJ-W-BL WIRE FROM J7 AND SHIELD FROM J8 AND TAPE INDIVIDUALLY TO PREVENT SHORT CIRCUIT INSTALL CABLE PER CONNECTION CHART AND SPOT TIE AS REQUIRED

(19D413142, Sh. 2, Rev. 5)

Figure 3 - 25-50 MHz Installation Diagram



CONNECTIONS CHART		
FROM A101	WIRE COLOR	TO G101
J8	N22 SJ-W-G CENTER CONDUCTOR	J3
J9	SHIELD OF ABOVE WIRE	J4
J17	R	J1
J18	W	J2

NOTES:

1. THIS INSTRUCTION IS FOR INSTALLING SOLID STATE ENCODER OPTION IN SOLID STATE HIGH BAND ROYAL PRO TRANSMITTER WITH EXCITERS MODIFIED PER 19C311650.
2. MOUNT G101 BOARD AND FL1 NETWORK AS SHOWN, USING PROPER HOLES FOR G101, SUPPORT AND SCREWS ARE CALLED FOR ON PL19B216161.
3. REMOVE N22 SJ-W-BL WIRE FROM J8 AND SHIELD FROM J9 AND TAPE INDIVIDUALLY TO PREVENT SHORT CIRCUIT. INSTALL CABLE PER CONNECTION CHART AND SPOT TIE AS REQUIRED.

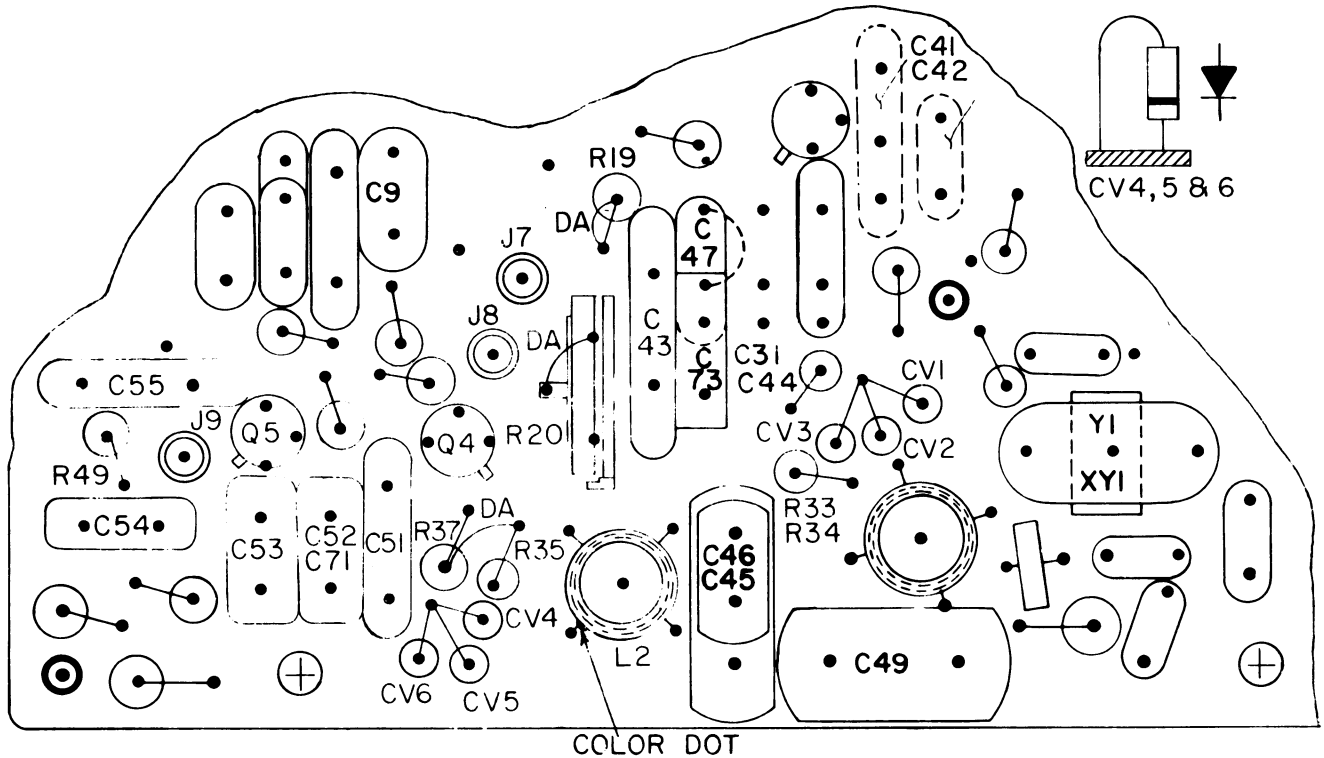
(19D413142, Sh. 1, Rev. 4)

Figure 4 - 130-174 MHz Installation Diagram

EXCITER MODIFICATION

Exciter Board Modification Kit 19A122313-G7-9 contains all the components necessary to convert the 25-50 MHz Exciter for Channel Guard operation. To install the kit, refer to Figure 5 below:

25-50MHz EXCITER BOARD MODIFICATION



(19B205583, Sh. 1, Rev. 2)

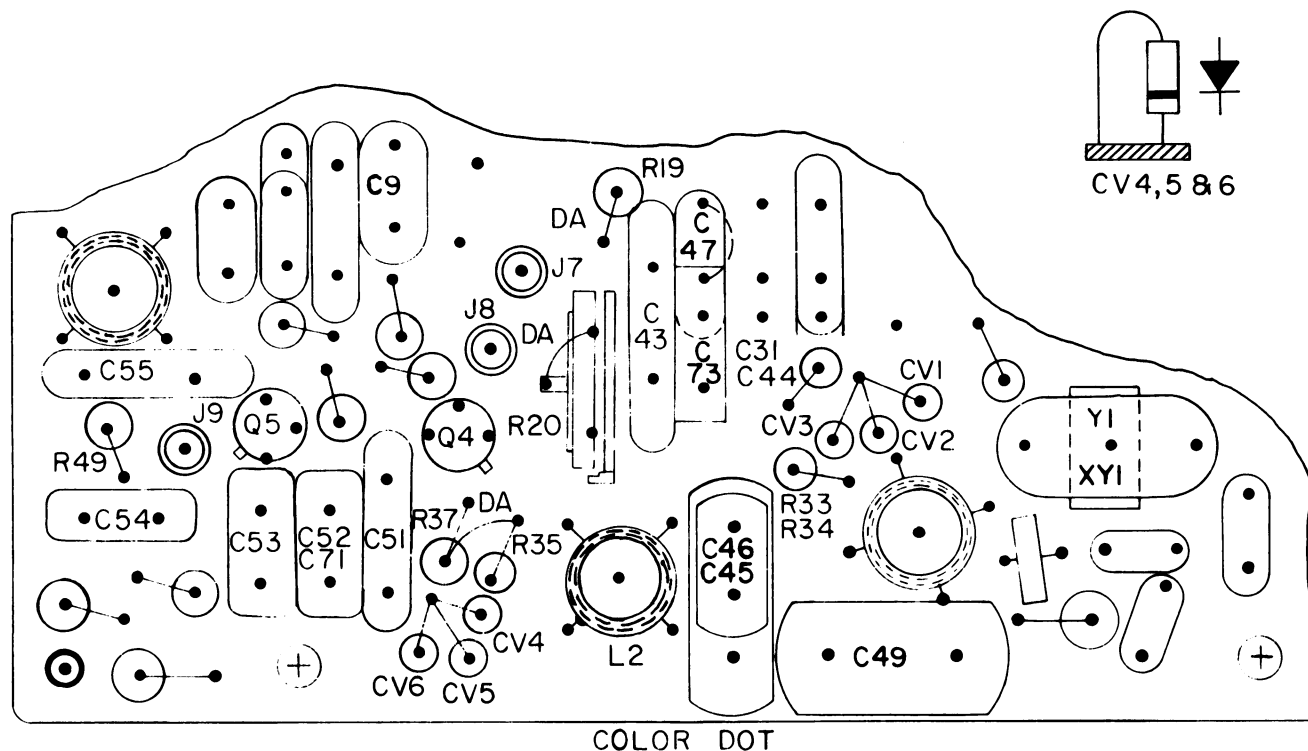
For Frequency Range Of:	25 - 33 MHz	33 - 42 MHz	42 - 50 MHz
Use Exciter Modification Kit:	PL-19A122313-G7	PL-19A122313-G8	PL-19A122313-G9
Apply To Exciter Board:	19D402385-G1,6,11 Note 2	19D402385-G2, 7 Note 2 19D402385-G12 Note 3	19D402385-G3,8,13 Note 3
1. Remove Jumper From:	R37 to R35	R37 to R35	R37 to R35
2. Remove Jumper From Location Of:	C47	C47	C47
3. Remove Jumper From Location Of:	R20	R20	R20
4. Remove:	C9, C45A, C71A, C73A, R19, R33A	C9, C45B, C71A, C73A, R19, R33B	C9, C41B, C44B, C45B, C71B, C73B, R19, R33C
5. Insert Jumper in place of:	R19	R19	R19
6. Insert:	C46A, C47, C49, C52A, R20, R34A, R35A, R37	C46B, C47, C49, C52A, R20, R34B, R35A, R37	C31, C42A, C46B, C47, C49, C52B, R20, R34C, R35B, R37
7. Insert:	CV4, CV5, CV6, and L2A	CV4, CV5, CV6, and L2B	CV4, CV5, CV6, and L2C
8. Change Board Number From:	G1 to G16 G6 to G21 G11 to G26	G2 to G17 G7 to G22 G12 to G27	G3 to G18 G8 to G23 G13 to G28

NOTE: 1. Refer to Wiring Diagram 19R620712
2. Use these instructions on exciter Revision D and later.
3. Use these instructions on exciter Revision C and later.

Figure 5 - Installation Diagram

Exciter Board Modification Kit 19A122313-G10 contains all the components necessary to convert the 66-88 MHz Exciter for Channel Guard operation. To install the kit, refer to Figure 6 below:

66-88MHZ EXCITER BOARD MODIFICATION



(19B205583, Sh. 2, Rev. 2)

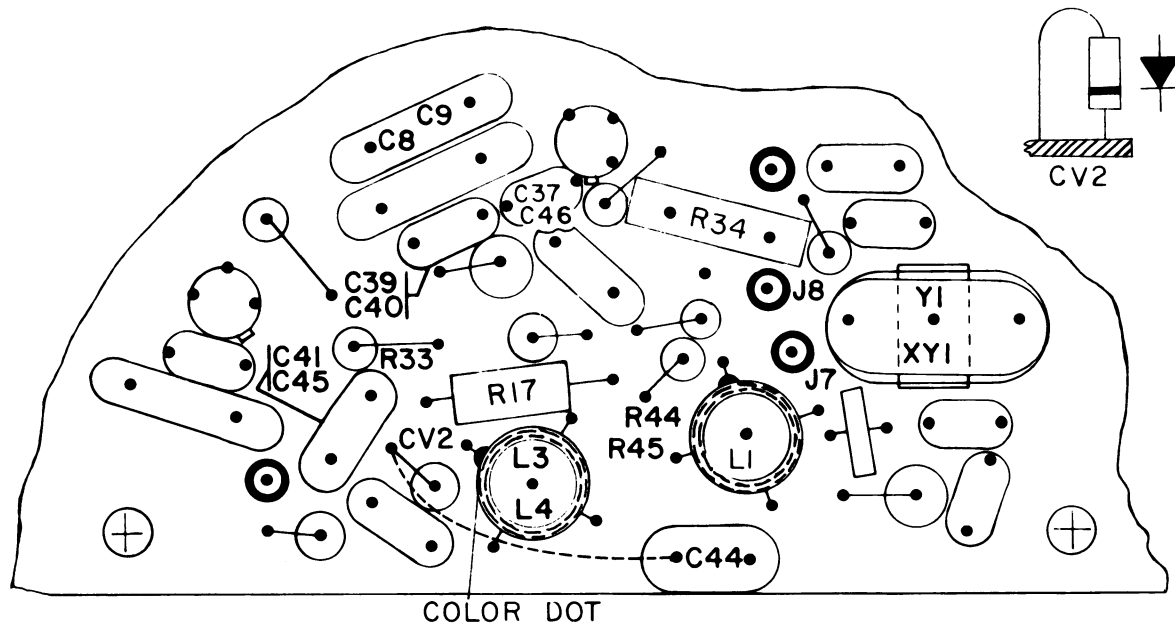
For Frequency Range Of:	66-88 MHz
Use Exciter Modification Kit:	PL-19A122313-G10 Note 2
Apply to Exciter Board:	19D402385-G4,5,9,10,14,15
1. Remove Jumper From:	R37 to R35
2. Remove Jumper From Location Of:	C47
3. Remove Jumper From Location Of:	R20
4. Remove:	C9,C45B,C71B,C73C,R19,R33D
5. Insert Jumper in place of:	R19
6. Insert:	C46B,C47,C49,C52B,R20,R34C, R35B,R37
7. Insert:	CV4, CV5, CV6 and L2D
8. Change Board number From:	G4 to G19 G10 to G25 G5 to G20 G14 to G29 G9 to G24 G15 to G30

NOTE: 1. Refer to Wiring Diagram 19R620714. 2. Use these instructions on exciter Revision C and later.

Figure 6 - Installation Diagram

Exciter Board Modification Kit 19A122313-G5 and 6 contains all the components necessary to convert the 132-174 MHz or 406-470 MHz Exciter for Channel Guard operation. To install the kit refer to Figure 7 below:

132-470MHZ EXCITER BOARD MODIFICATION



(19B205440, Sh. 3, Rev. 2)

For Frequency Range Of:	132-150.8 MHz 406-420 MHz	150.8-174 MHz 450-470 MHz
Use Exciter Modification Kit:	PL-19A122313-G5, 11 (See Note 2)	PL-19A122313-G6, 12 (See Note 2)
Apply To Exciter Board:	19D402308-G1, 3, 5	19D402308-G2, 4, 6
1. Remove Jumper From:	R44 to C41	R44 to C41
2. Remove Jumper From Location Of:	R34	R34
3. Remove:	C9, C37, C39, C41, R44, R53, C77	C9, C37, C39, C41, R44, R53, C77
4. Insert:	C8, C40, C44, C45, C46, R33, R34, R45	C8, C40, C44, C45, C46, R33, R34, R45
5. RELOCATE:	R17	R17
6. Insert:	CV2 and L4	CV2 and L3
7. Change Board Number From:	G1 to G7 G3 to G9 G5 to G11	G2 to G8 G4 to G10 G6 to G12

NOTES: 1. For 132-174 MHz Refer to 19R620703. For 406-470 MHz Refer to 19R620707.
2. Use Modf. Kit PL-19A122313-G5, G6 on Exciter (19D402308) Rev. C or earlier.
Use Modf. Kit PL-19A122313-G11, G12 on Exciter (19D402308) Rev. D or later.

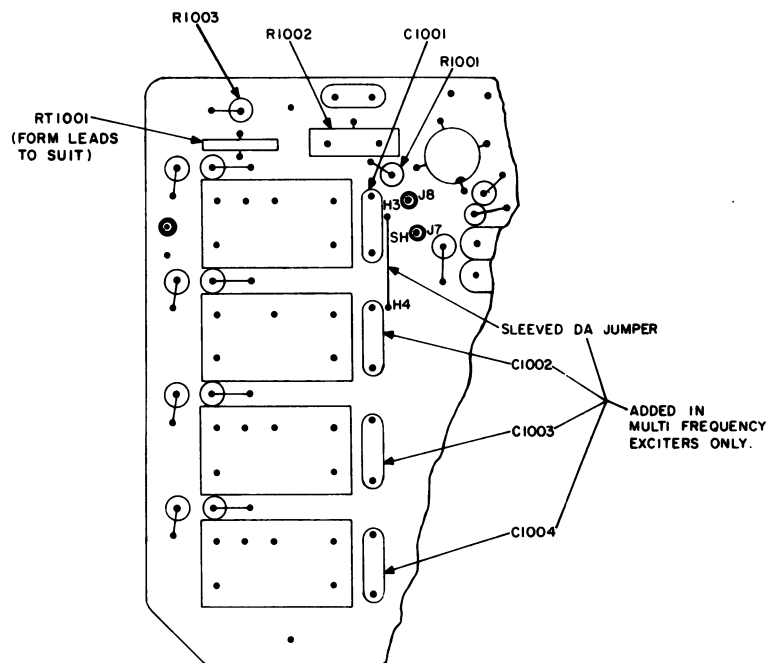
Figure 7 - Installation Diagram

INSTALLATION

Exciter Board Modification Kit 19A127078-G1 contains all the components necessary to convert the High-Band or 450 MHz ICOM Exciter for Channel Guard operation. To install the kit refer to Figure 8 and the following instructions:

1. For single frequency exciters, install C1001, R1001, R1002 and RT1001 as shown ☐
2. For multi-frequency exciters, add C1002, C1003, C1004 and a OA jumper between H3 and H4 as shown ☐
3. Solder all electrical connections and clip-off the excessive lead lengths of the added components on the bottom of the board ☐
4. Change the exciter board number as follows:

<u>From</u>	<u>To</u>	
19D402884-G1	19D402884-G5	
-G2	-G6	
-G3	-G7	
-G4	-G8 <input type="checkbox"/>



(19B216063, Rev. 3)

Figure 8- Installation Diagram

Exciter Board Modification Kit 19A122552-G1 contains all the components necessary to convert the Low-Band Royal Professional and MASTR Imperial Exciters for Channel Guard operation. To install the kit, refer to Figure 9 and the following instructions:

1. On 25-33 MHz Exciters only; replace C33A (680 PF) with 33B (470 PF) ☐
2. Remove the jumper wire (if present) and replace with C38 ☐
3. Install R35 and R36 ☐
4. Install C39 with the negative (-) lead up ☐

5. Change the exciter board number as follows:

<u>From</u>	<u>To</u>
19D413163-G1	19D413163-G10
-G2	-G11
-G3	-G12
-G4	-G13
-G5	-G14
-G6	-G15
-G7	-G16
-G8	-G17
-G9	-G18

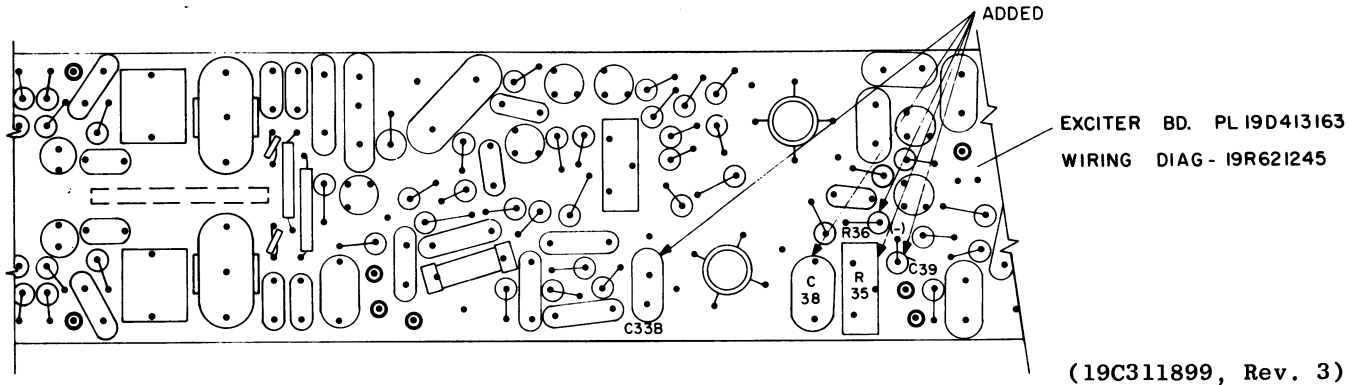


Figure 9 - Installation Diagram

Exciter Board Modification Kit 19A127242-G1 contains all the components necessary to convert the High-Band Royal Professional and High-Band and 450 MASTR Imperial ICOM Exciters for Channel Guard operation. To install the kit, refer to Figure 10 and the following instructions:

1. For single frequency exciters, install C41, R18, R24, R25 and RT2 as shown
2. For multi-frequency exciters, add C42, C43 and C44 as shown
3. Change the exciter board number as follows:

<u>From</u>	<u>To</u>
19D402921-G1	19D402921-G5
-G2	-G6
-G3	-G7
-G4	-G8

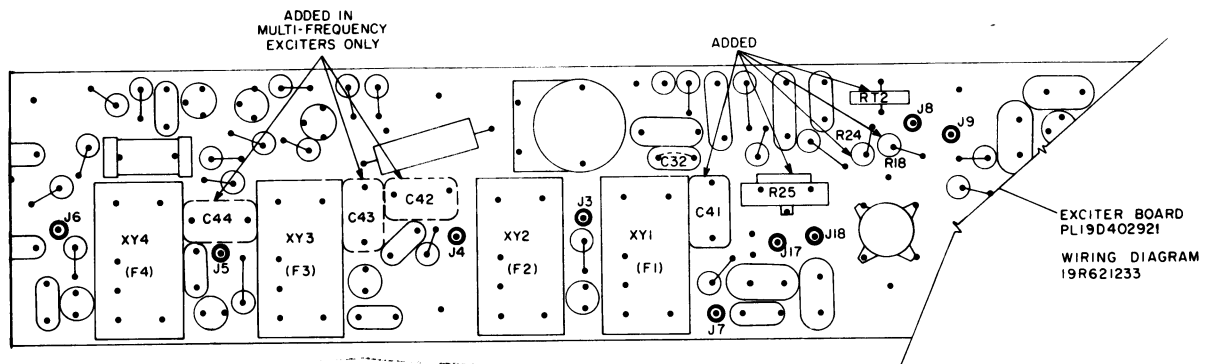


Figure 10 - Installation Diagram

ALIGNMENT

After the Channel Guard Encoder board has been installed, proceed as follows:

1. In MASTR Professional Series transmitters (without ICOMS) repeat Step 1 of the applicable Transmitter Alignment Procedure.
2. In all MASTR Professional and MASTR Imperial transmitters, the modulation level must be readjusted. Refer to the Modulation Level Adjustment section of the transmitter alignment procedure as found in the applicable transmitter maintenance manual.

DF-5040

MOBILE RADIO DEPARTMENT
GENERAL ELECTRIC COMPANY
LYNCHBURG, VIRGINIA 24502