INSTALLATION INSTRUCTIONS
FOR
CHANNEL GUARD MODIFICATION KIT 19A127767-G1 through G9

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

CONTENTS

DESCRIPTION

Channel Guard Modification Kits 19A127767-G1 through -G9 provide the necessary components for installing Channel Guard in MASTR Professional Series, Royal Professional and MASTR Imperial mobile combinations and MASTR Professional Series station combinations.

The modification kits include, installing the Encoder/Decoder board in the 5 watt receivers, modifying the transmitter exciter board and installing the Low-Pass Filter in the transmitter. The application of the different kits is shown in the following chart.

NOTE

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

MODIFICATION KIT	INCLUDES THE FOLLOWING:			
	USED WITH MASTR COMBINATION	ENCODER/DECODER 4EK16A10 WITH INSTALLATION KIT 19A127178-G3	LOW-PASS FILTER (G101) 19C311802-G1 WITH INSTALLATION KIT 19A127174-G2	EXCITER MOD. KITS
19A127767-G1	25-33 MHz Prof. Series	X	X	19A122313-G7
19A127767-G2	33-42 MHz Prof. Series	X	X	19A122313-G8
19A127767-G3	42-50 MHz Prof. Series	X	X	19A122313-G9
19A127767-G4	66-88 MHz Prof. Series	X	X	19A122313-G10
19A127767-G5	130-150.8 MHz and 406-420 MHz Prof. Series (Non ICOM)	X	X	19A122313-G5
19A127767-G20				19A122313-G11
19A127767-G6	150.8-174 MHz and 450-470 MHz Prof. Series (Non ICOM)	X	X	19A122313-G6
19A127767-G21				19A122313-G12
19A127767-G7	130-174 MHz and 406-470 MHz Prof. Series (with ICOMS)	X	X	19A127078-G1
19A127767-G8	130-174 MHz Royal Prof. (with ICOMS)	X		19A127242-G1
19A127767-G9	25-50 MHz Royal Prof.	X		19A122552-G1

INSTALLATION

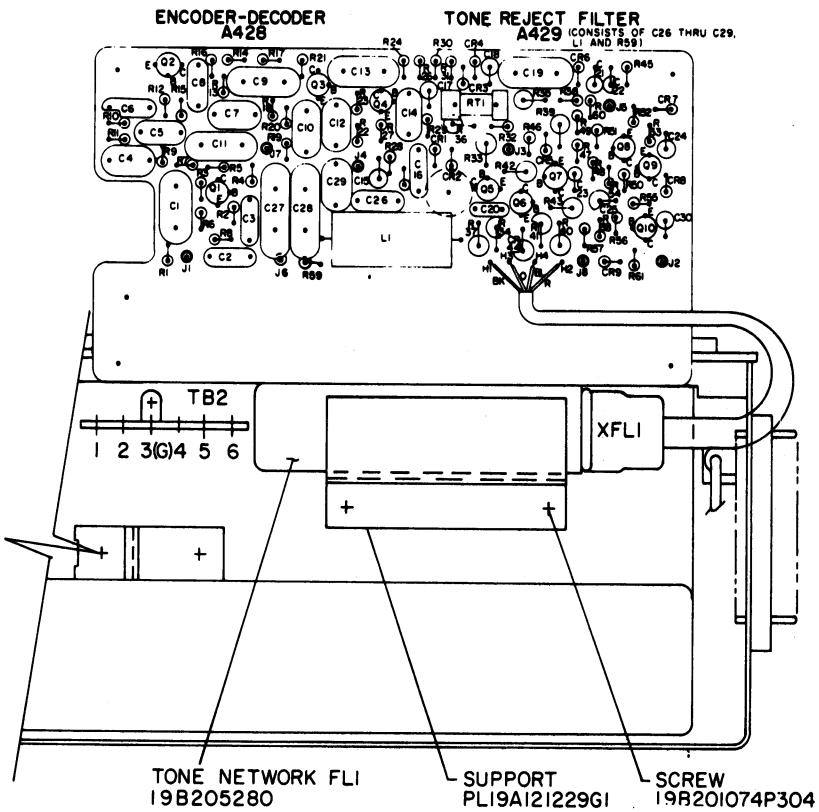
ENCODER/DECODER

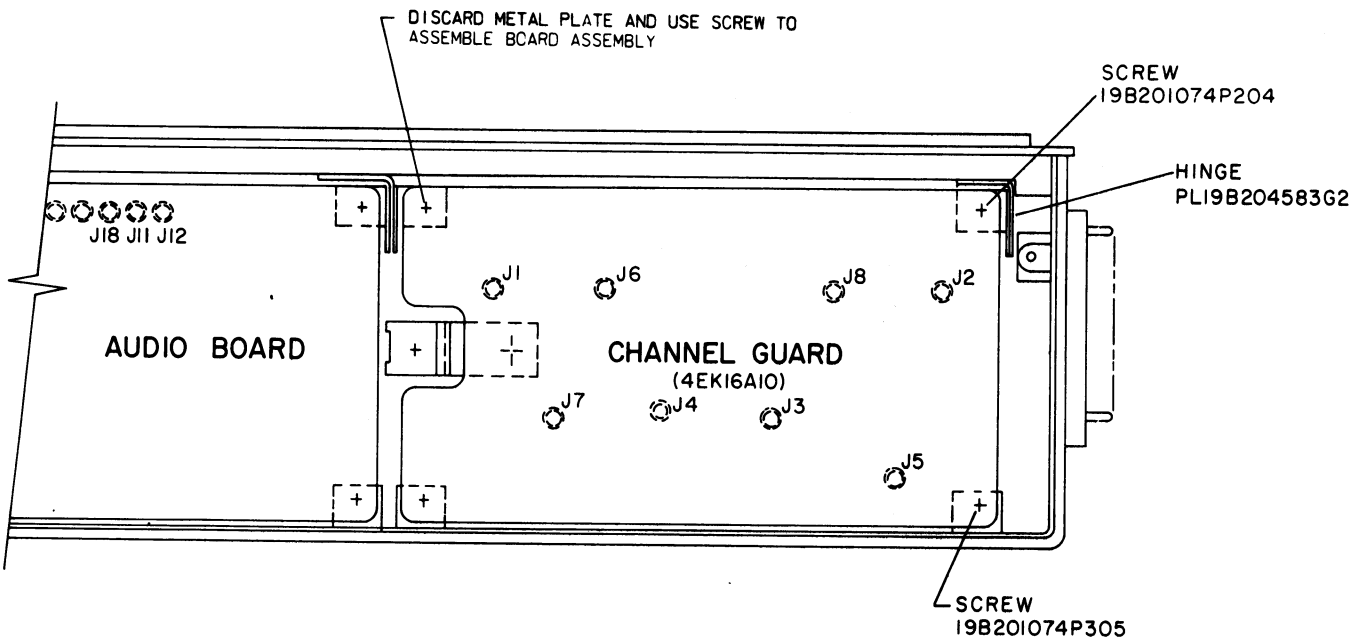
Encoder/Decoder Model 4EK16A10 mounts on the underside of the receiver next to the audio board (see Figure 1). The Parts List for the Encoder/Decoder board is found in the applicable receiver Maintenance Manual. Install the Encoder/Decoder board using Installation Kit 19A127178G1,G3 as follows:

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. Install the Tone Network and support as shown..... ☐
3. Mount the 4EK16A10 board to the hinges as shown..... ☐
4. In station combinations only; remove L1 from the Channel Guard board and replace with coil 19A115690P3 supplied in the kit..... ☐
5. Use the wiring harness supplied with this kit to make the interconnection between the Channel Guard board, the Audio board and TB2 as shown in the chart below:

WIRE COLOR	FROM	TO CHANNEL GUARD BOARD	FUNCTION	
W-O-BL	J18-Audio Bd.	J1	Decoder Input	
W-BK-BL	J11-Audio Bd.	J2	Squelch Control	
W	TB2-6	J3	Encode Tone	
W-R	TB2-2	J4	+10V	
W-BR-R	TB2-4	J5	Rec. Mute (+10V)	
W-R-G	J12-Audio Bd.	J6	Tone Filter	
W-O	TB2-1	J7	System Negative	
W-BK-G	TB2-5	J8	C.G. On-Off (HS)	

6. Swing the channel guard board into the receiver frame and fasten with the screws provided..... ☐





(19C311824, Rev. 4)

Figure 1 - Installation Diagram

LOW-PASS FILTER

Low-Pass Filter Model G101 mounts on the underside of the transmitter underneath the exciter board (see Figure 2). The Parts List for the Low-Pass Filter board is found in the applicable transmitter Maintenance Manual. Install the Low-Pass Filter using Installation Kit 19A127174-G2 as follows:

☑

1. Install the wiring harness 19B205480G2 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 Low-Pass Filter Board G101 as shown in Figure 2. Connect the wiring as follows:

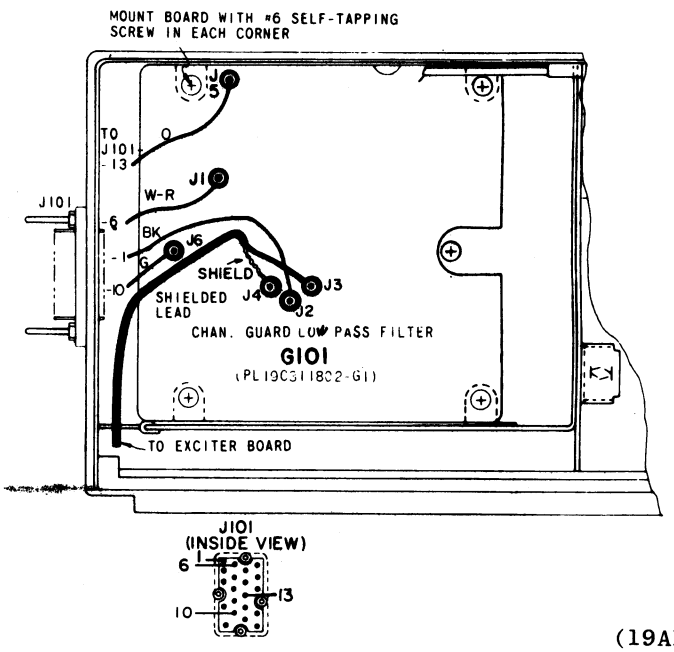
   a. Connect the plug on the white-red lead to J1..... ☐

   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. When used in a repeater control station (Y combination) sleeve J3 and J4 and tie back in harness..... ☐

   e. Connect the plug on the green lead to J6..... ☐

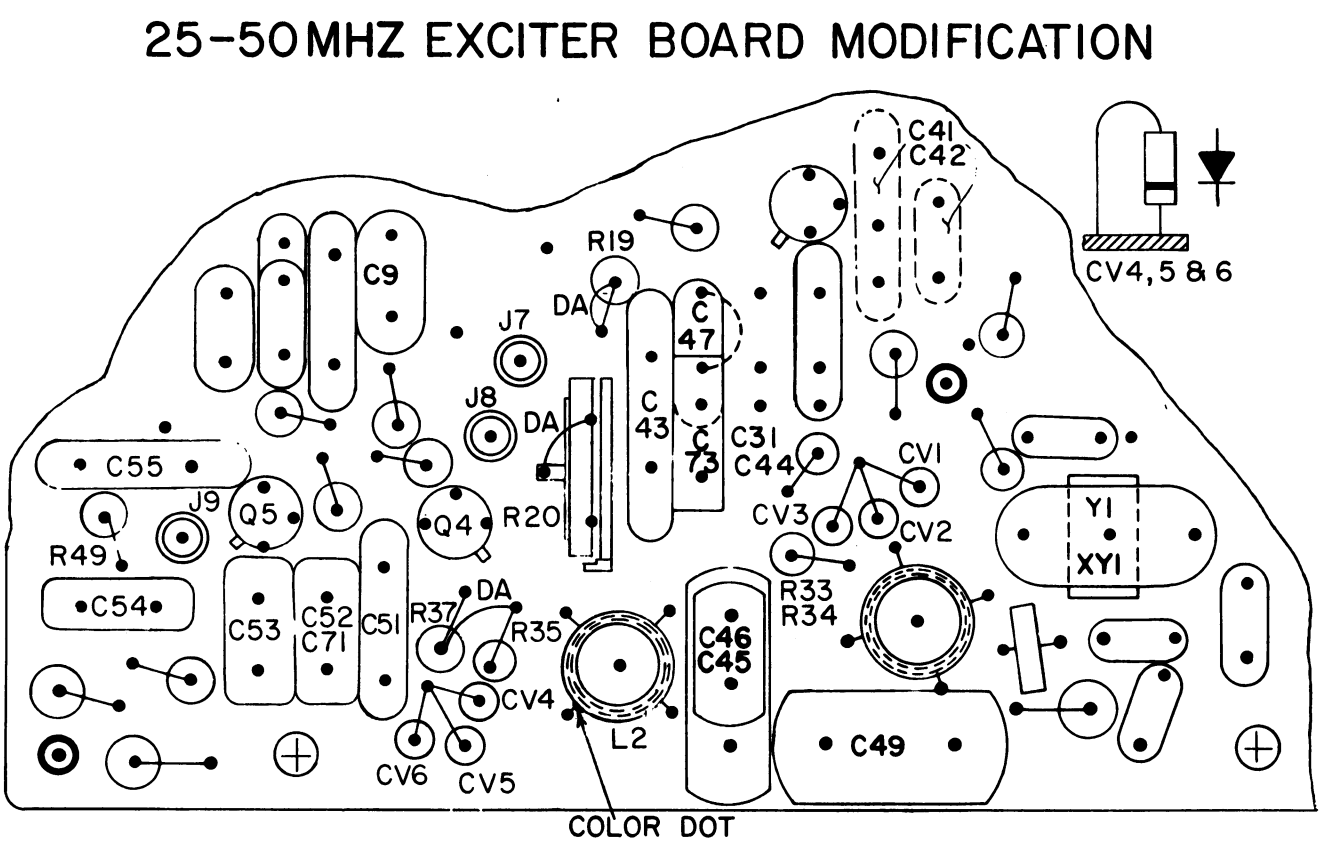


(19A127175, Sh. 2, Rev. O)

Figure 2 - 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 3 below:



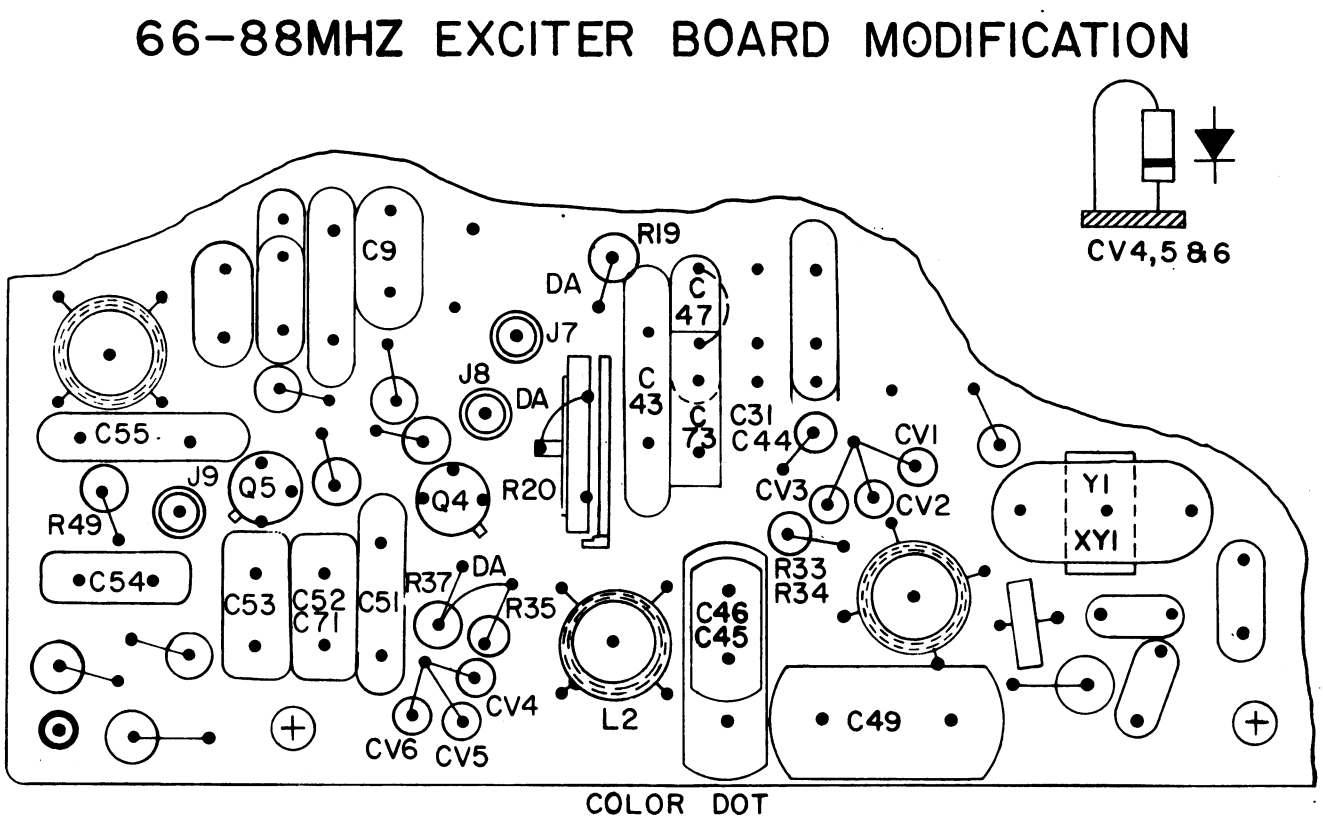
(19B205583, Sh. 1 Rev. 2) ☑

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 3 - 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 4 below:



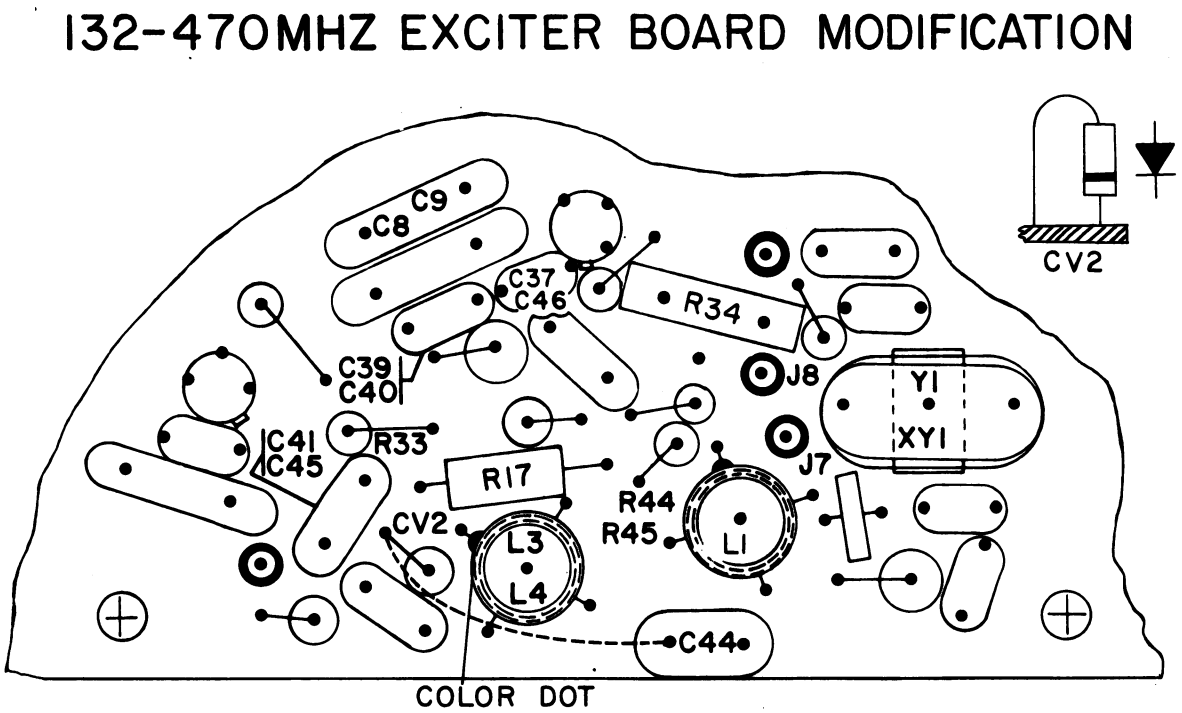
(19B205583, Sh. 2, Rev. 2)

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,C45,B,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 4 - Installation Diagram

Exciter Board Modification Kit 19A122313-G5, 11 and 6, 12 contains all the components necessary to convert the 132-174 MHz or 406-470 MHz exciter 19D402308 for Channel Guard operation. To install the kit, refer to Figure 5 below:



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

Figure 5 - Installation Diagram

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 3 and the following instructions:

✓

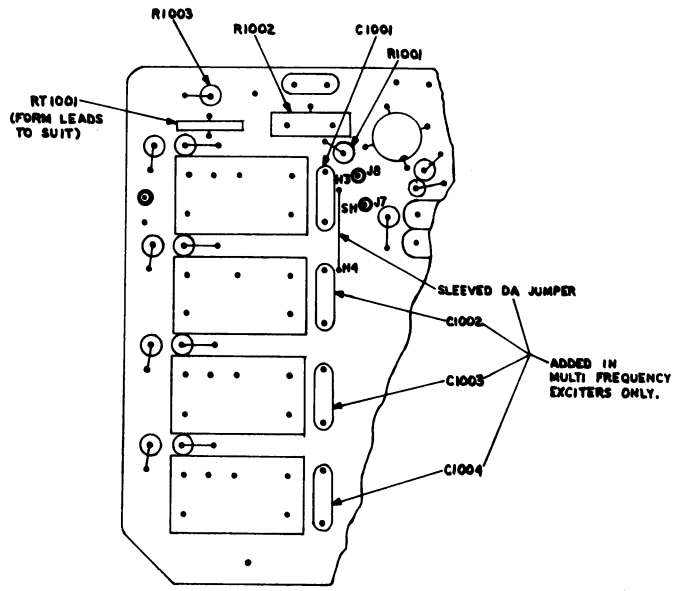
1. Install C1001, R1001, R1002, R1003, and RT1001 as shown ..... ☐

2. For multi-frequency exciters install C1002, C1003, C1004 and DA jumper 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:

From	To
19D402884-G1	19D402884-G5
19D402884-G2	19D402884-G6
19D402884-G3	19D402884-G7
19D402884-G4	19D402884-G8 ..... ☐



(19B216063, Rev. 3)

Figure 6 - Installation Diagram

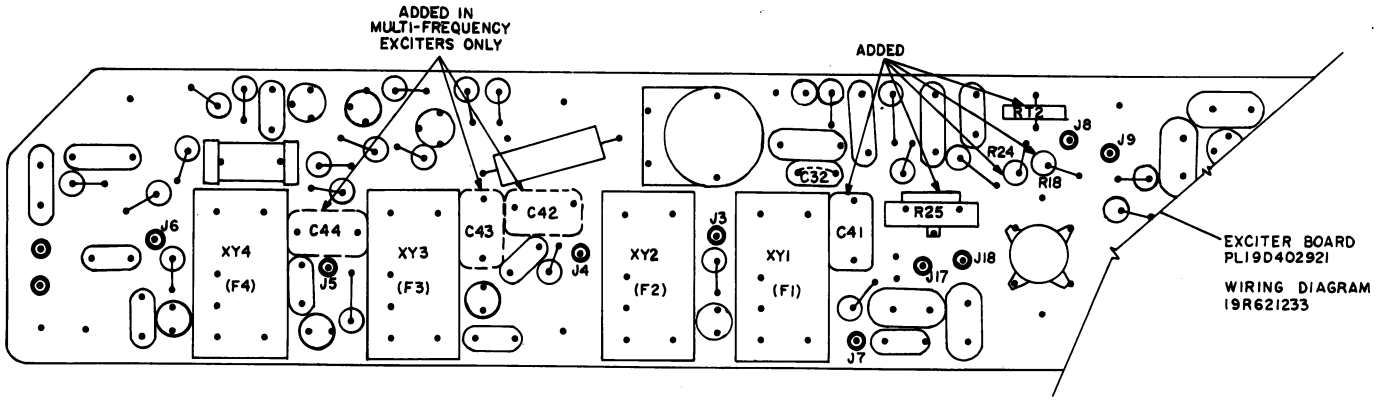
Exciter Board Modification Kit 19A127242-G1 contains all the components necessary to convert the High-Band Royal Professional and MASTR Imperial ICOM Exciters for Channel Guard operation. To install the kit refer to Figure 4 and the following instructions:

1. In Multi-Frequency Exciters only; install C42, C43, and C44 as shown ..... ☐

2. Install R18, R24, R25 and RT2 as shown ..... ☐

3. Change the exciter board number as follows:

From	To
19D402921-G1	19D402921-G5
19D402921-G2	19D402921-G6
19D402921-G3	19D402921-G7
19D402921-G4	19D402921-G8 ..... ☐



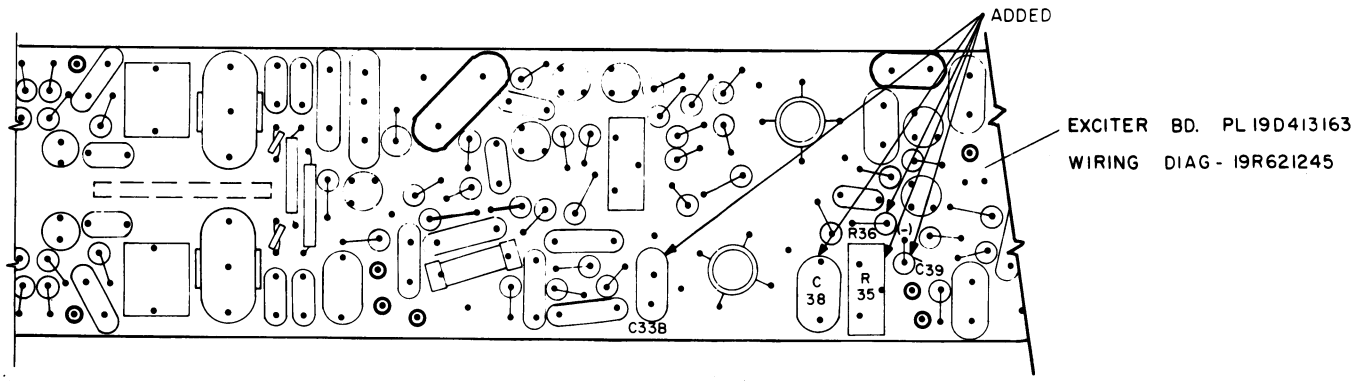
(19C311650, Rev. 3)

Figure 7 - 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 5 and the following instructions:

1. On 25-55 MHz Exciters only; replace C33A (680 PF) with C33B (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: ☑

From	To
19D413163-G1	19D413163-G10
19D413163-G2	19D413163-G11
19D413163-G3	19D413163-G12
19D413163-G4	19D413163-G13
19D413163-G5	19D413163-G14
19D413163-G6	19D413163-G15
19D413163-G7	19D413163-G16
19D413163-G8	19D413163-G17
19D413163-G9	19D413163-G18..... ☐



(19C311899, Rev. 3)

Figure 8 - Installation Diagram

ALIGNMENT

After the Channel Guard 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 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.

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