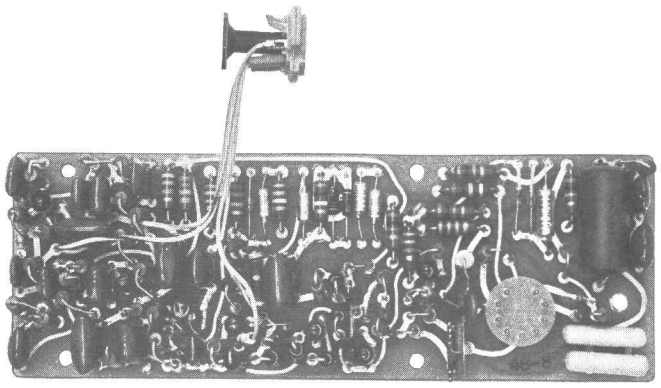
MOBILE RADIO

MAINTENANCE MANUAL

CHANNEL GUARD ENCODER/DECODER MODELS 4EK14B10 & 4EK14B11
CHANNEL GUARD DECODE ONLY (OPTION 8026)
TONE REJECT FILTER 19C317355-G2



SPECIFICATIONS *

Used with 4EK14B10	MASTR® Progress Line Executive Series, Royal Executive Mobile and Station Combinations and MASTR Executive II Mobile and Station Combinations
4EK14B11	MASTR Progress Line Custom Executive Mobile Combinations
Tone Frequencies	71.9 to 203.5 Hertz
Encoder Distortion	Less than 3%
Decoder Response	±1.5 dB from 71.9 to 203.5 Hertz (100 Hz Ref.)
Power Requirements	10 VDC @ 50 Milliamperes
Number of Silicon transistors	8
Temperature Range	-30°C to +60°C (-22°F to 144°F)

hese specifications are intended primarily for the use of the serviceman. Refer to the appropriate Specification Sheet for the complete specifications.

GENERAL ELECTRIC

Maintenance Manual LBI4143J
DATAFILE FOLDER - DF5039
****
EK-14-B

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WARNING

No one should be permitted to handle any portion of the equipment that is supplied with high voltage; or to connect any external apparatus to the units while the units are supplied with power. KEEP AWAY FROM LIVE CIRCUITS.

DESCRIPTION

General Electric Channel Guard Models 4EK14B10 and 4EK14B11 are fully transistorized Encoder/Decoder.

The encoder function provides coded tone modulation for the transmitter.

The decoder function is used with the receiver to eliminate all calls that are not tone coded for the Channel Guard frequency.

The tone frequencies are controlled by plug-in tone networks that are made with precision components for excellent stability and reliability. The Channel Guard board is located in the option area as shown in Figures 1 and 2.

Tone Reject Filter 19C317355G2 is available for use in a non-Channel Guard mobile or station receiving calls that are tone modulated.

INSTALLATION

To install Channel Guard board in the field, refer to the Installation Diagrams listed in the Table of Contents. In 25-50 MHz applications only, the transmitter exciter board has to be modified. When the Channel Guard is installed in MASTR Executive II radios, refer to the applicable Combination Manual.

CIRCUIT ANALYSIS

References to symbol numbers mentioned in the following test are found on the Schematic Diagrams, Outline Diagrams and Parts Lists (see Table of Contents). A block diagram of the Channel Guard is shown in Figure 3.

Cable W603 (W604 for Royal) connects the supply voltage, encoder keying voltage and decoder functions for the Channel Guard board to the system terminal board (TB3). The encoder tone output is connected by a white-black shielded lead to the transmitter exciter board.

ENCODER

The encoder tone is provided by Q604 and Q605 which oscillate at a frequency determined by the tone network. Negative feedback, applied thru the tone network to the base of Q604, prevents any gain in the stage except at the operating frequency.

Keying the transmitter applies +10 Volts to the anode of feedback control diode CR605, causing it to conduct. When conducting, the diode shunts R635 which reduces the impedance of the positive feedback loop (R635, R633 and C617). This provides the necessary gain to the base of Q604 to permit oscillation, and the oscillator locks in on the Channel Guard frequency.

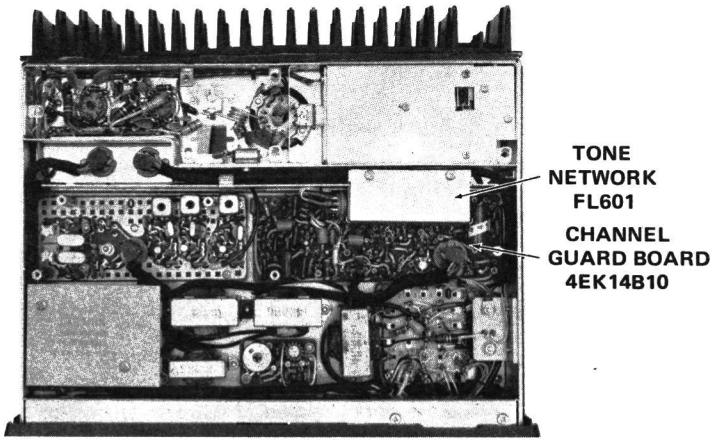

Figure 1 - Executive & Royal Executive

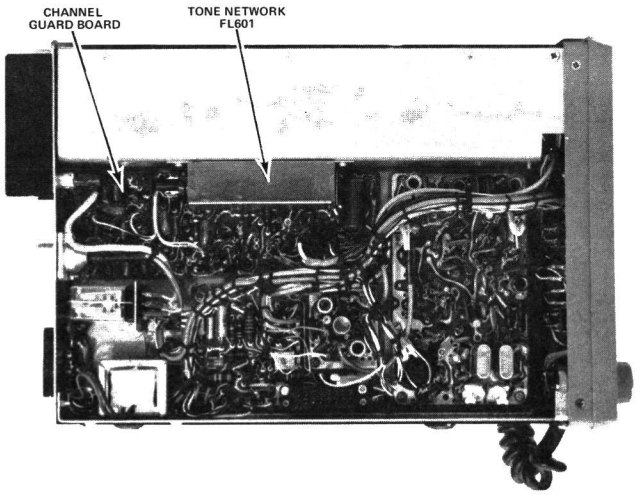

Figure 2 - Custom Executive

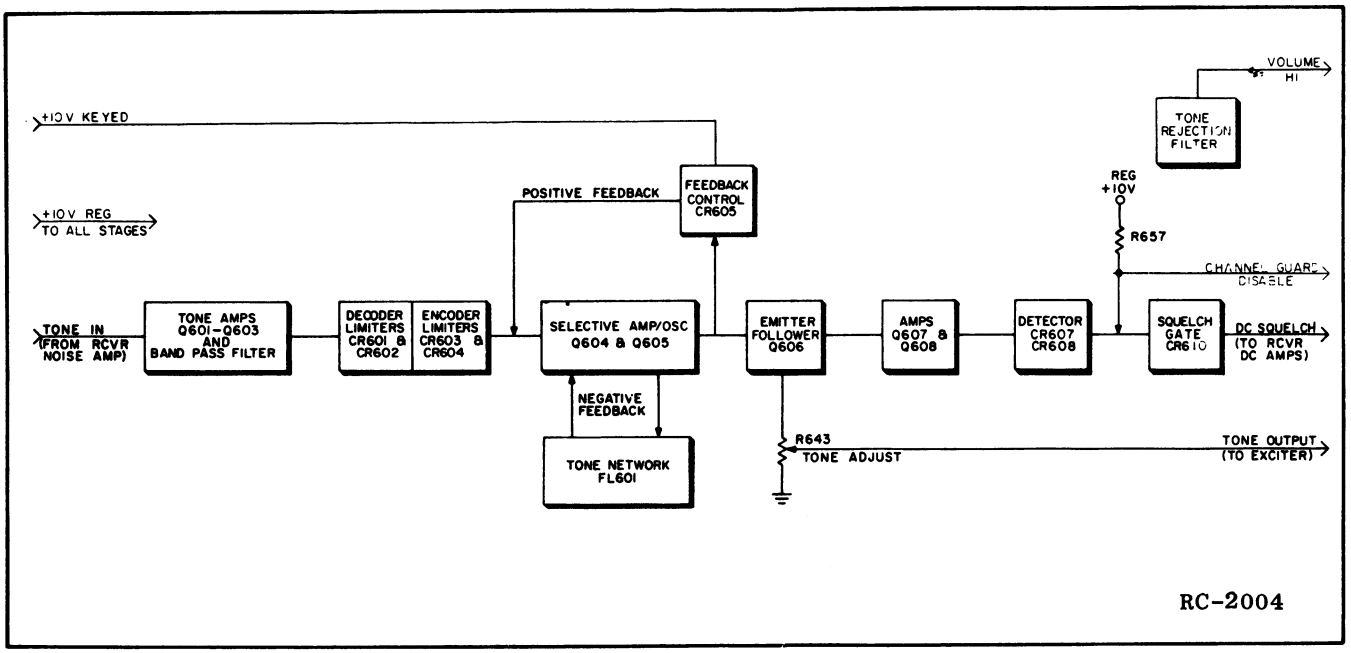

Figure 3 - Channel Guard Block Diagram

An extremely fast starting time for the encoder tone is provided by a starting network consisting of R641, C618, C619 and CR606. This network utilizes a positive pulse from the +10 Volts keying voltage to provide the positive feedback required to start oscillation.

Thermistor-resistor combination R663-RT604 provides temperature compensation for the oscillator output, and limiter diodes CR603 and CR604 keep the amplitude of the tone constant.

The oscillator output is fed to emitter-follower Q606, and then to TONE ADJUST potentiometer R643. This control is normally set for a ±0.75 kHz deviation as outlined in the Transmitter Modulation Adjustment Procedure.

The encoder tone is applied to the modulator stage on the transmitter exciter board.

DECODER

The decoder function is designed to eliminate all calls that are not tone coded for the Channel Guard Frequency. As long as the MONITOR switch is not depressed, all signals are locked out except those from transmitters that are continuously tone coded for positive identification by the receiver. Pressing the MONITOR switch instantly disables the Channel Board and noise squelch circuits so that all calls on the channel can be heard.

Audio, tone and noise are taken from the collector of audio-noise amplifier Q316 in the receiver and is fed thru J601-4 to three tone amplifier and bandpass filter circuits. The filters remove the audio and high-frequency noise from the signal, and the tone amplifiers provide sufficient gain of all Channel Guard tones to insure clipping by limiter diodes CR601 and CR602. The clipping action eliminates variation in the squelch performance due to changes in tone deviation.

The signal is then applied to selective amplifiers Q604 and Q605, which amplify only the tone determined by the tone network.

The output of the selective amplifier is applied through emitter-follower Q606 to the high gain, broad-band tone amplifiers Q607 and Q608. The output of Q608 is rectified by detector diodes CR607 and CR608, and the resulting negative DC voltage controls the squelch gate. Q607 is normally biased for low gain. When the tone is detected by CR607 and CR608, feedback is provided through R655 to quickly change the bias on Q607 for full gain. This ensures a more positive "unsquelching" action.

Squelch gate diode CR610 is normally forward biased by a positive DC voltage (approximately 1.5 Volts) fed through R657. The forward bias causes CR610 to conduct, feeding a DC voltage to the base of noise amplifiers Q320 and Q321 in the receiver. This removes the bias on the receiver audio stages and holds them off.

When the proper tone is applied to the decoder, the negative DC voltage from the detector diodes CR607 & CR608 back-biases squelch gate diode CR610, and cuts off the positive bias to the DC amplifiers. However, the receiver noise squelch circuit continues to operate until a carrier quiets the receiver.

Pressing the MONITOR switch on the control unit grounds the base biasing circuit of the DC amplifiers and disables both the Channel Guard and noise squelch circuits. If the optional hookswitch is provided, removing the microphone from its hanger automatically disables Channel Guard while maintaining normal noise squelch operation.

A tone rejection filter connected in parallel with the VOLUME control bypasses the tone to ground, thereby attenuating the tone level reaching the audio circuits. The filter is composed of L601, C624, C626, C629, C630 and R659.

ADJUSTMENT

The decode function and the tone reject filter function requires no adjustment. To adjust the tone level of the encode function, proceed as follows:

1. Connect a deviation monitor to the transmitter output.
2. Key the transmitter and adjust R643 on the Channel Guard board for ±0.75 kHz deviation.

DECODE ONLY (MASTR EXECUTIVE II)

In MASTR Executive II Applications where the "decode only" function is desired, clip the W-BK wire connected to P907-6 between the connector body and sleeve.

INSTALLATION

Installation instructions for MASTR Progress Line series and Royal Executive mobile and station combinations are contained in this manual. For MASTR Executive II applications, refer to the Applicable Combination Manual.

GENERAL ELECTRIC COMPANY • MOBILE COMMUNICATIONS DIVISION
WORLD HEADQUARTERS • LYNCHBURG, VIRGINIA 24502 U.S.A.

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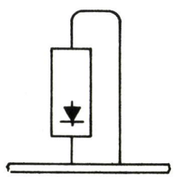
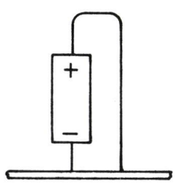
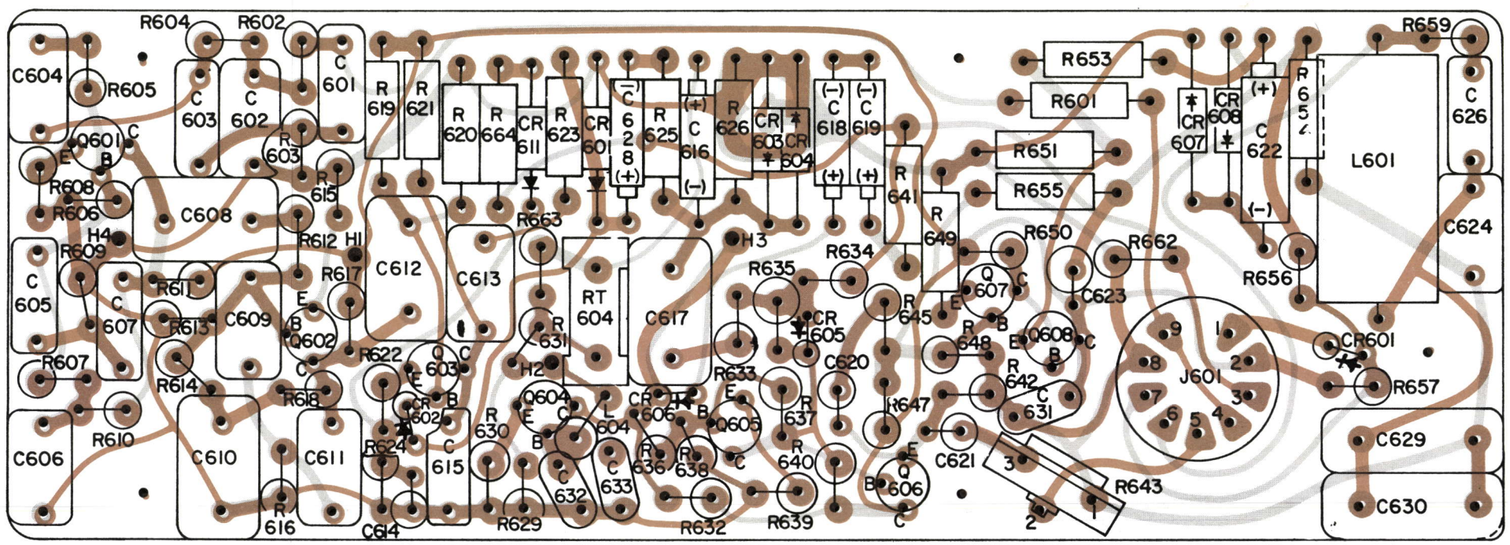
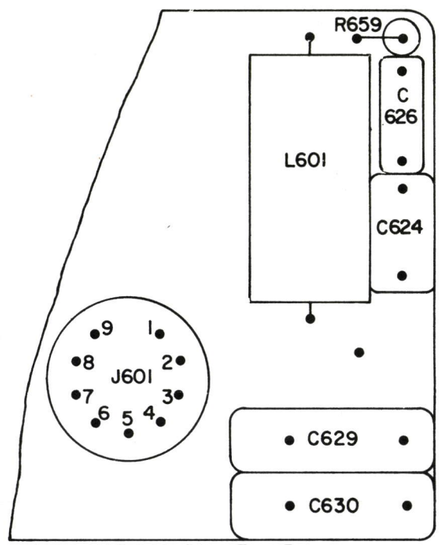


CR602
CR605
CR606
CR610



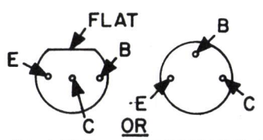
C614
C620
C621
C623





TONE REJECT FILTER
19C317355G2

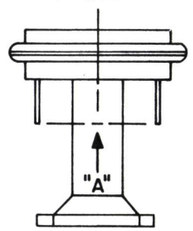
LEAD IDENTIFICATION
FOR Q601-Q608



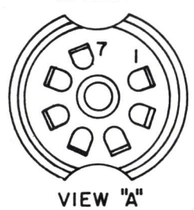
IN-LINE TRIANGULAR
VIEW FROM LEAD END

NOTE: LEAD ARRANGEMENT, AND NOT CASE SHAPE, IS DETERMINING FACTOR FOR LEAD IDENTIFICATION.

XFL601

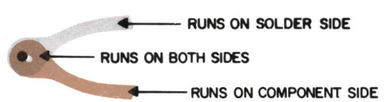


XFL601



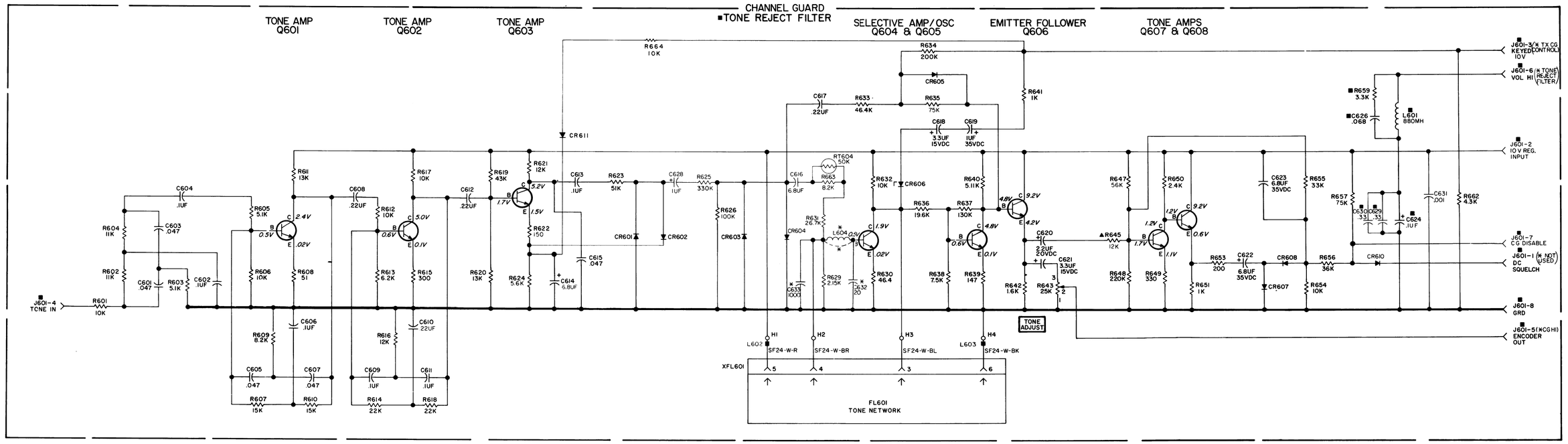
VIEW "A"

(19C317634, Rev. 4)
(19B216922, Sh. 1, Rev. 4)
(19B216922, Sh. 2, Rev. 3)



OUTLINE DIAGRAM

CHANNEL GUARD ENCODER/DECODER
MODELS 4EK14B10 AND 4EK14B11



SEE APPLICABLE PRODUCTION CHANGE SHEETS IN INSTRUCTION BOOK SECTION DEALING WITH THIS UNIT, FOR DESCRIPTION OF CHANGES UNDER EACH REVISION LETTER.	
THIS ELEM DIAG APPLIES TO	
MODEL NO	REV LETTER
4EK14B10	C
4EK14B11	B

▲VALUE OF R645 IS DETERMINED BY TEST (SEE TEST SPECS)
*REPLACE L604 WITH DA WIRE FOR 4EK14B10. L604, C632, & C633 USED IN 4EK14B11 ONLY.

VOLTAGE READINGS

VOLTAGE READINGS ARE TYPICAL READINGS MEASURED FROM TRANSISTOR PIN TO GROUND WITH A 20,000 OHM-PER-VOLT METER, AND WITH NO TONE INPUT AND THE ENCODER NOT KEYED.

■ COMPONENTS THAT ARE COMMON TO CHANNEL GUARD & TONE REJECT FILTER.

* ALTERNATE FUNCTION WHEN USED WITH THE EXECUTIVE II RADIO

ALL RESISTORS ARE 1/2 WATT UNLESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K=1000 OHMS OR MEG=1,000,000 OHMS. CAPACITOR VALUES IN PICOFARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF= MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH= MILLIHENRYS OR H=HENRYS.

(19R621326, Rev. 5)

SCHEMATIC DIAGRAM

CHANNEL GUARD ENCODER/DECODER
MODELS 4EK14B10 AND 4EK14B11

PARTS LIST

LBI4142D

CHANNEL GUARD ENCODER/DECODER
4EK14B10 (19C317355G1)
4EK14B11 (19C317355G3)

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C601	19A116080P205	Polyester: 0.047 uF ±5%, 50 VDCW.
C602	19A116080P207	Polyester: 0.1 uF ±5%, 50 VDCW.
C603	19A116080P205	Polyester: 0.047 uF ±5%, 50 VDCW.
C604	19A116080P7	Polyester: 0.1 uF ±20%, 50 VDCW.
C605	19A116080P205	Polyester: 0.047 uF ±5%, 50 VDCW.
C606	19A116080P207	Polyester: 0.1 uF ±5%, 50 VDCW.
C607	19A116080P205	Polyester: 0.047 uF ±5%, 50 VDCW.
C608	19A116080P9	Polyester: 0.22 uF ±20%, 50 VDCW.
C609	19A116080P207	Polyester: 0.1 uF ±5%, 50 VDCW.
C610	19A116080P109	Polyester: 0.22 uF ±10%, 50 VDCW.
C611	19A116080P207	Polyester: 0.1 uF ±5%, 50 VDCW.
C612	19A116080P9	Polyester: 0.22 uF ±20%, 50 VDCW.
C613	19A116080P7	Polyester: 0.1 uF ±20%, 50 VDCW.
C614	19A134202P1	Tantalum: 6.8 uF ±20%, 6 VDCW.
C615	19A116080P5	Polyester: 0.047 uF ±20%, 50 VDCW.
C616	5496267P1	Tantalum: 6.8 uF ±20%, 6 VDCW; sim to Sprague Type 150D.
C617	19A116080P9	Polyester: 0.22 uF ±20%, 50 VDCW.
C618	5496267P9	Tantalum: 3.3 uF ±20%, 15 VDCW; sim to Sprague Type 150D.
C619	5496267P17	Tantalum: 1.0 uF ±20%, 35 VDCW; sim to Sprague Type 150D.
C620	19A134202P7	Tantalum: 2.2 uF ±20%, 20 VDCW.
C621	19A134202P5	Tantalum: 3.3 uF ±20%, 15 VDCW.
C622	5496267P18	Tantalum: 6.8 uF ±20%, 35 VDCW; sim to Sprague Type 150D.
C623	19A134202P15	Tantalum: 6.8 uF ±20%, 35 VDCW.
C624	19A116080P107	Polyester: 0.1 uF ±10%, 50 VDCW.
C626	19A116080P206	Polyester: 0.068 uF ±5%, 50 VDCW.
C628	5496267P17	Tantalum: 1.0 uF ±20%, 35 VDCW; sim to Sprague Type 150D.
C629 and C630	19A116080P110	Polyester: 0.33 uF ±10%, 50 VDCW.
C631	5494481P111	Ceramic disc: 1000 pF ±20%, 1000 VDCW; sim to RMC Type JF Discap.
C632*	5496218P46	Ceramic disc: 20 pF ±5%, 500 VDCW, temp coef 0 PPM. Added by REV A in Model 4EK14B11 only).
C633*	5494481P112	Ceramic disc: 1000 pF ±10%, 1000 VDCW; sim to RMC Type JF Discap. Added by REV A in Model 4EK14B11 only).
		- - - - - - - - DIODES AND RECTIFIERS - - - - - - - -
CR601 and CR602	19A115250P1	Silicon, fast recovery, 225 mA, 50 PIV.
CR603 and CR604	5494922P1	Silicon: sim to Hughes 1N456.
CR605	19A115250P1	Silicon, fast recovery, 225 mA, 50 PIV.
CR606	4036887P3	Silicon, zener diode; sim to 1N5228B.
CR607 and CR608	19A115250P1	Silicon, fast recovery, 225 mA, 50 PIV.
CR610	19A115250P1	Silicon, fast recovery, 225 mA, 50 PIV.
CR611*	19A115250P1	Silicon, fast recovery, 225 mA, 50 PIV. Added to 4EK14B10 by REV C; Added to 4EK14B11 by REV B.
		- - - - - - - - JACKS AND RECEPTACLES - - - - - - - -
J601	19B209303P1	Plug, phenolic: 9 pins.
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L601	19A115690P1	Reactor: 880 mH ±10%, sim to Artted AC5672.
L602* and L603*	19A115700P2	Core, torridal: sim to Fair-Rite SL207. Added by REV A in Model 4EK14B10 only.
L604*	19A700024P25	Coil, RF: 10.0 uH ±10%, 3.70 ohms DC res max. Added by REV A in Model 4EK14B11 only.
		- - - - - - - - - - TRANSISTORS - - - - - - - - - -
Q601	19A115362P1	Silicon, NPN; sim to Type 2N2925.
Q602 and Q603	19A115123P1	Silicon, NPN; sim to Type 2N3702.
Q604 thru Q607	19A115362P1	Silicon, NPN; sim to Type 2N2925.
Q608	19A115123P1	Silicon, NPN; sim to Type 2N3702.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R601	3R77P103K	Composition: 10K ohms ±10%, 1/2 w.
R602	3R77P113J	Composition: 11K ohms ±5%, 1/2 w.
R603	3R77P512J	Composition: 5.1K ohms ±5%, 1/2 w.
R604	3R77P113J	Composition: 11K ohms ±5%, 1/2 w.
R605	3R77P512J	Composition: 5.1K ohms ±5%, 1/2 w.
R606	19A700113P87	Composition: 10K ohms ±5%, 1/2 w.
R607	19A700113P91	Composition: 15K ohms ±5%, 1/2 w.
R608	19A700113P32	Composition: 51 ohms ±5%, 1/2 w.
R609	19A700113P85	Composition: 8.2K ohms ±5%, 1/2 w.
R610	19A700113P91	Composition: 15K ohms ±5%, 1/2 w.
R611	3R77P133J	Composition: 13K ohms ±5%, 1/2 w.
R612	19A700113P87	Composition: 10K ohms ±5%, 1/2 w.
R613	3R77P622J	Composition: 6.2K ohms ±5%, 1/2 w.
R614	19A700113P95	Composition: 22K ohms ±5%, 1/2 w.
R615	3R77P301J	Composition: 300 ohms ±5%, 1/2 w.
R616	19A700113P89	Composition: 12K ohms ±5%, 1/2 w.
R617	19A700113P87	Composition: 10K ohms ±5%, 1/2 w.
R618	19A700113P95	Composition: 22K ohms ±5%, 1/2 w.
R619	3R77P433J	Composition: 43K ohms ±5%, 1/2 w.
R620	3R77P133J	Composition: 13K ohms ±5%, 1/2 w.
R621	19A700113P89	Composition: 12K ohms ±5%, 1/2 w.
R622	19A700113P43	Composition: 150 ohms ±5%, 1/2 w.
R623	3R77P513J	Composition: 51K ohms ±5%,, 1/2 w.
R624	19A700113P81	Composition: 5.6K ohms ±5%, 1/2 w.
R625	3R77P334J	Composition: 330K ohms ±5%, 1/2 w.
R626	19A700113P111	Composition: 100K ohms ±5%, 1/2 w.
R629	19A116278P233	Metal film: 2150 ohms ±2%, 1/2 w.
R630	19A116278P65	Metal film: 46.4 ohms ±2%, 1/2 w.
R631	19A116278P342	Metal film: 26.7K ohms ±2%, 1/2 w.
R632	19A116278P301	Metal film: 10K ohms ±2%, 1/2 w.
R633	19A116278P365	Metal film: 46.4K ohms ±2%, 1/2 w.
R634	3R77P204J	Composition: 200K ohms ±5%, 1/2 w.
R635	19A116278P385	Metal film: 75K ohms ±2%, 1/2 w.
R636	19A116278P329	Metal film: 19.6K ohms ±2%, 1/2 w.
R637	19A116278P412	Metal film: 130K ohms ±2%, 1/2 w.
R638	19A116278P285	Metal film: 7500 ohms ±2%, 1/2 w.
R639	19A116278P117	Metal film: 147 ohms ±2%, 1/2 w.
R640	19A116278P269	Metal film: 5110 ohms ±2%, 1/2 w.
R641	19A700113P63	Composition: 1K ohms ±5%, 1/2 w.
R642	3R77P162J	Composition: 1.6K ohms ±5%, 1/2 s.
R643	19B209358P107	Variable, carbon film: approx 800 to 25K ohms ±10%, 1/4 w; sim to CTS Type X-201.
R645A	19A700113P85	Composition: 8.2K ohms ±5%, 1/2 w.
R645B	3R77P912J	Composition: 9.1K ohms ±5%, 1/2 w.
R645C	19A700113P87	Composition: 10K ohms ±5%, 1/2 w.
R645D	3R77P113J	Composition: 11K ohms ±5%, 1/2 w.
R645E	19A700113P89	Composition: 12K ohms ±5%, 1/2 w.
R645F	3R77P133J	Composition: 13K ohms ±5%, 1/2 w.
R645G	19A700113P91	Composition: 15K ohms ±5%, 1/2 w.
R645H	3R77P752J	Composition: 7.5K ohms ±5%, 1/2 w.
R647	19A700113P105	Composition: 56K ohms ±5%, 1/2 w.
R648	3R77P224J	Composition: 220K ohms ±5%, 1/2 w.
R649	19A700113P51	Composition: 330 ohms ±5%, 1/2 w.
R650	3R77P242J	Composition: 2.4K ohms ±5%, 1/2 w.
R651	19A700113P63	Composition: 1K ohms ±5%, 1/2 w.
R653	19A700113P46	Composition: 200 ohms ±5%, 1/2 w.
R654	19A700113P87	Composition: 10K ohms ±5%, 1/2 w.
R655	19A700113P99	Composition: 33K ohms ±5%, 1/2 w.
R656	3R77P363J	Composition: 36K ohms ±5%, 1/2 w.
R657	3R77P753J	Composition: 75K ohms ±5%, 1/2 w.
R659	19A700113P75	Composition: 3.3K ohms ±5%, 1/2 w.
R662	3R77P432J	Composition: 4.3K ohms ±5%, 1/2 w.
R663	19A700113P85	Composition: 8.2K ohms ±5%, 1/2 w.
R664*	19A700113P87	Composition: 10K ohms ±5%, 1/2 w. Added to 4EK14B10 by REV C, Added to 4EK14B11 by REV B.
		- - - - - - - - - - THERMISTORS - - - - - - - - - -
RT604	5490828P22	Thermistor: 50K ohms ±10%, color code yellow: sim to Carborundum Type 763H-J4.
		- - - - - - - - - - SOCKETS - - - - - - - - - -
XFL601	19B209341P1	Socket, tube: 7 pins, sim to EBY Corp. 9713-349-02(W/o saddle).
		- - - - - - - - - - MISCELLANEOUS - - - - - - - - - -
	19A122138P1	Knob. (Used with XFL601).
	N197P408C13	Wood screw, steel: No. 4 x 1/2. (Used with XFL601 in Tubed and Royal Executive only).
	N80P9005C13	Machine screw, phillips head: No. 4-40 x 5/16. (Mounts printed circuit board).
	N404P11C13	Lockwasher, internal tooth: No. 4. (Mounts printed circuit board in Tubed and Royal Executive only).
	19B201074P304	Tap screw, Phillips POZIDRIV®: No. 6-32 x 1/4. (Mounts 19B205387P1 support in Tubed and Royal Executive only).
	19B205387P1	Support. (Mounts FL601 in Tubed and Royal Executive only).
	4032591P28	Pressure sensitive pad. (Used with 19B205387P1 support in Tubed and Royal Executive only).
	19D416585P5	Support. (Used with XFL601 in Custom Executive)
	19B201074P205	Tap screw, Phillips POZIDRIV®: No. 4-40 x 5/16. (Secures XFL601 in Custom Executive).
	19B201074P204	Tap screw, Phillips POZIDRIV®: No. 4-40 x 1/4. (Secures printed wiring board in Custom Executive).
	19A122213G1	Cover Kit. Includes:
	19B209209P305	Tap screw, Phillips POZIDRIV®: No. 6-32 x 5/16. (Mounts cover thru the side rail).
	19B201074P305	Tap screw, Phillips POZIDRIV®: No. 6-32 x 5/16. (Mounts cover to Tone Network).
		ASSOCIATED ASSEMBLIES
W601		CABLE ASSEMBLY 19B226872G2
		- - - - - - - - - - PLUGS - - - - - - - - - -
P601	19B209341P2	Socket, tube: 9 pins, sim to EBY Corp. 9713-349-02(W/o saddle).
P907		Connector. Includes:
	19A116659P81	Shell.
	19A116781P6	Contact, electrical: wire range No. 22-26 AWG; sim to Molex 08-50-0108. (Quantity 7).
	19A116781P5	Contact, electrical: wire range No. 18-24 AWG; sim to Molex 08-50-0106. (Quantity 1).
	19A134048P1	Wood screw, phillips head: No. 4 x 1/2 inch long.
	19A122138P1	Knob.
W603	19B205345G2	Channel Guard Cable, Tubed Executive combinations
W604	19B216090G2	Channel Guard Cable, Royal Executive combinations
		- - - - - - - - - - TONE NETWORKS - - - - - - - - - -
FL601	19B205280	Tone Detector. (Check group numbers for desired frequency).
	G1	71.9 Hz
	G2	77.0 Hz
	G3	82.5 Hz
	G4	88.5 Hz
	G5	94.8 Hz
	G6	100.0 Hz
	G7	103.5 Hz
	G8	107.2 Hz
	G9	110.9 Hz
	G10	114.8 Hz
	G11	118.8 Hz
	G12	123.0 Hz
	G13	127.3 Hz
	G14	131.8 Hz
	G15	136.5 Hz
	G16	141.3 Hz
	G17	146.2 Hz
	G18	151.4 Hz
	G19	156.7 Hz
	G20	162.2 Hz
	G21	167.9 Hz
	G22	173.8 Hz
	G23	179.9 Hz
	G24	186.2 Hz
	G25	192.8 Hz
	G26	203.5 Hz
	G30	74.4 Hz
	G31	79.7 Hz
	G32	85.4 Hz
	G33	91.5 Hz
	G34	97.4 Hz

PRODUCTION CHANGES

Changes in the equipment to improve performance or to simplify circuits are identified by a "Revision Letter", which is stamped after the model number of the unit. The revision stamped on the unit includes all previous revisions. Refer to the Parts List for description of parts affected by these revisions.

REV. A - Model 4EK14B10 only

To eliminate RF interference. Added L602 and L603.

REV. A - Model 4EK14B11 only

REV. B - Model 4EK14B10 only

To eliminate RF interference in Custom Executive applications Added C362, C363 and L604.

REV. C - Model 4EK14B10 only

REV. B - Model 4EK14B11 only

To stabilize encoder frequency.
Added CR611 and R664.

PARTS LIST

LBI4171C

TONE REJECT FILTER
19C317355G2

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C624	19A116080P107	Polyester: 0.1 uF ±10%, 50 VDCW.
C626	19A116080P206	Polyester: 0.068 uF ±5%, 50 VDCW.
C629 and C630	19A116080P110	Polyester: 0.33 uF ±10%, 50 VDCW.
		- - - - - - - - JACKS AND RECEPTACLES - - - - - - - -
J601	19B209303P1	Plug, phenolic: 9 pins.
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L601	19A115690P1	Reactor: 880 MH ±10%, sim to Artted AC5672.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R659	19A700113P75	Composition: 3.3K ohms ±5%, 1/2 w.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	N80P9005C13	Machine screw, phillips head: No. 4-40 x 5/16. (Mounts printed circuit board).
	N404P11C13	Lockwasher, internal tooth: No. 4. (Mounts printed circuit board).
	19A122213G1	Cover Kit. Includes:
	19B209209P305	Tap screw, Phillips POZIDRIV®: No. 6-32 x 5/16. (Mounts cover thru the side rail).
	19B201074P305	Tap screw, Phillips POZIDRIV®: No. 6-32 x 5/16. (Mounts cover to Tone Network).
W601		CABLE ASSEMBLY 19B226872G2
		- - - - - - - - - - PLUGS - - - - - - - - - -
P601	19B209341P2	Socket, tube: 9 pins, sim to EBY Corp. 9713-349-02(W/o saddle).
P907		Connector. Includes:
	19A116659P81	Shell.
	19A116781P6	Contact, electrical: wire range No. 22-26 AWG; sim to Molex 08-50-0108. (Quantity 7).
	19A116781P5	Contact, electrical: wire range No. 18-24 AWG; sim to Molex 08-50-0106. (Quantity 1).
	19A134048P1	Wood screw, phillips head: No. 4 x 1/2.
	19A122138P1	Knob.
W603	19B205345G2	Channel Guard Cable, Tubed Executive combinations
W604	19B216090G2	Channel Guard Cable, Royal Executive combinations

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

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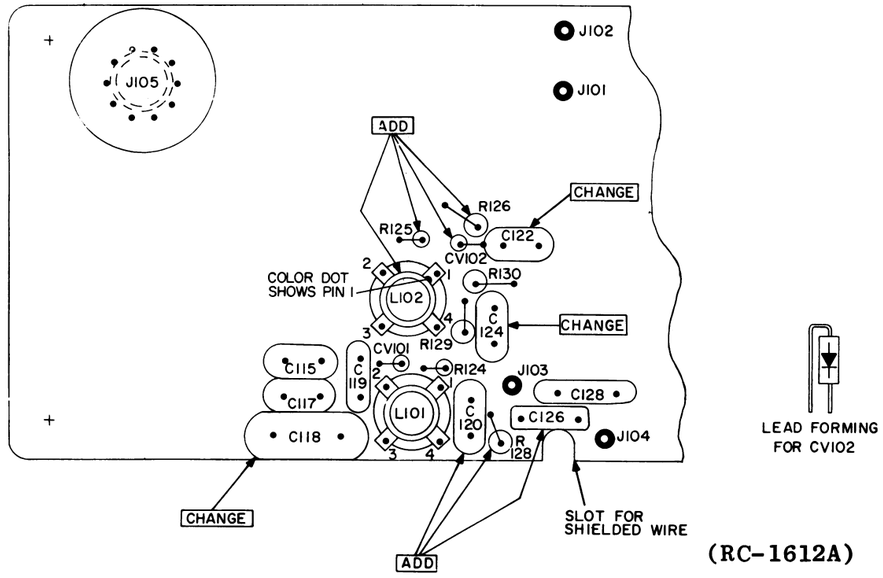


Figure 1 - Component Location (Exciter Board)

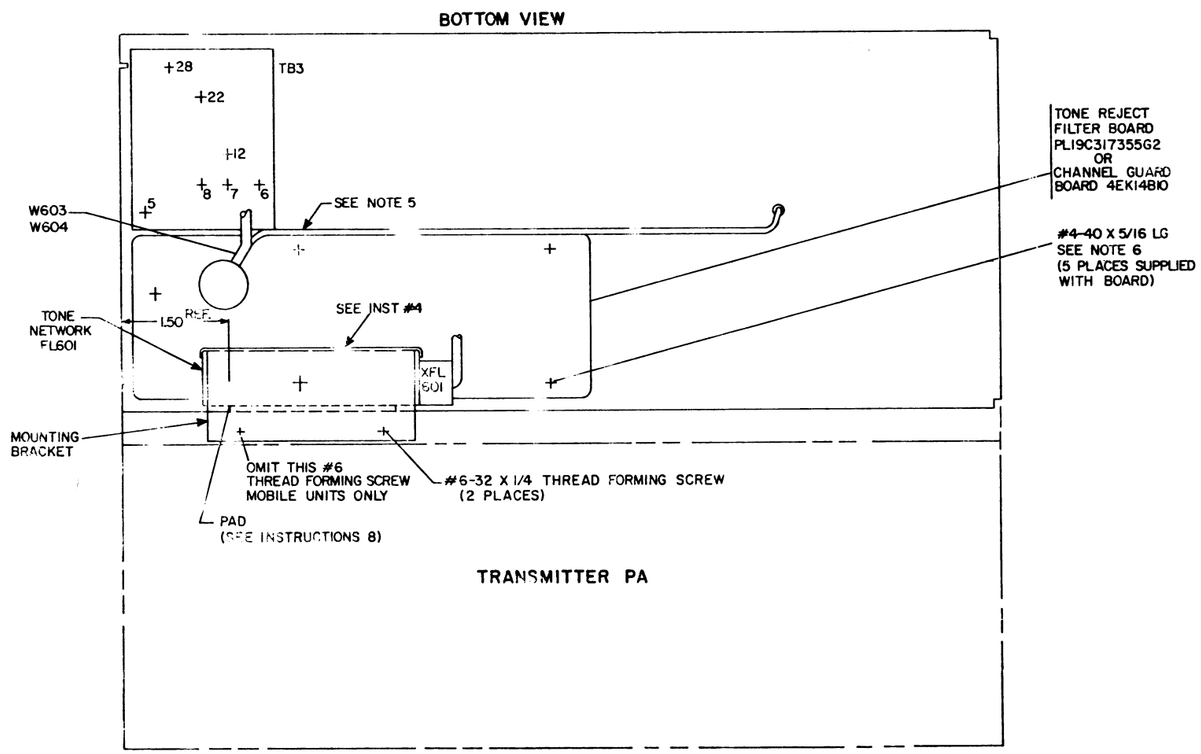
PROCEDURE

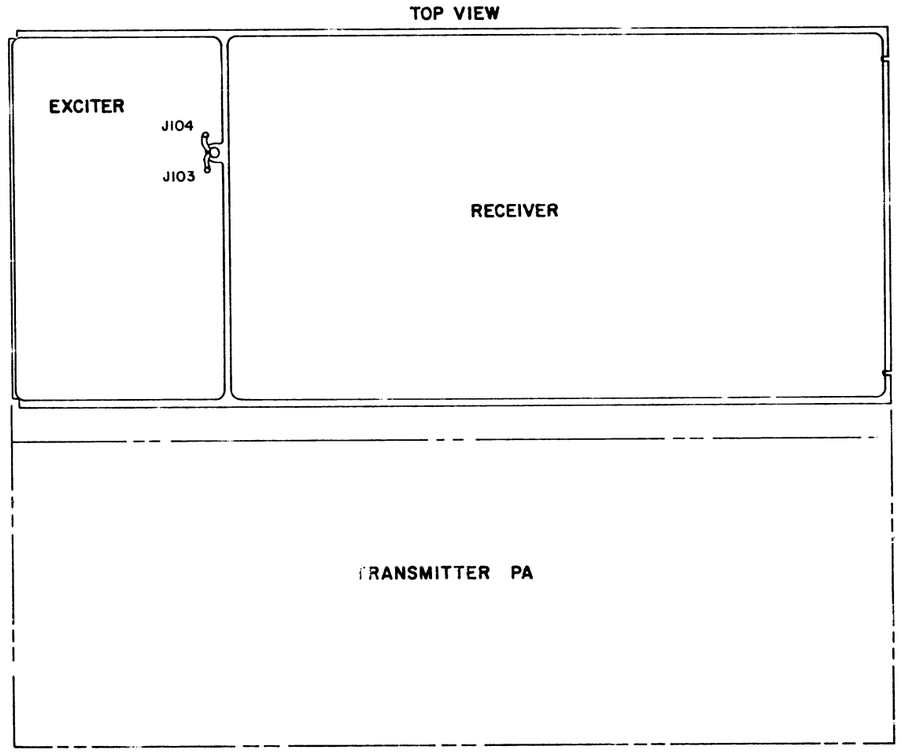
1. Remove the four screws holding the transmitter exciter. Then remove connections from J101, J102 and J105 and remove the exciter board.

2. Modify the exciter board using appropriate kit (19A122624G1 thru G3) as instructed in Table 1. Component location is shown in Figure 1.

EXCITER MODEL NUMBER	MODIFICATION KIT NUMBER	ADD	REPLACE	CHANGE MODEL NUMBER FROM	CHANGE MODEL NUMBER TO
4EG21A10 4EG21A12	19A122624-G1 Service Parts Kit #0035	C120 (470 pf, 100 VDCW) C126 (0.01 µf, 40 VDCW) CV102 L102A R125 A (0.15 megohm. 1/4w) R126 (10,000 ohms, 1/2 w) R128 (15,000 ohms, 1/2 w)	C125 with C118 A (.0015 µf, 100 VDCW); C121 with C122 A (220 pf, 500 VDCW); and C123 with C124 (150 pf, 100 VDCW)	4EG21A10 4EG21A12	4EG21A11 3EG21A13
4EG21B10 4EG21B12	19A122624-G2 Service Parts Kit #0036	C120 (470 pf, 100 VDCW) C126 (0.01 µf, 40 VDCW) CV102 L102B R125 B (0.12 megohm, 1/4w) R126 (10,000 ohms, 1/2 w) R128 (15,000 ohms, 1/2 w)	C125 with C118 A (.0015 µf, 100 VDCW); C121 with C122 A (220 pf, 500 VDCW); and C123 with C124 (150 pf, 100 VDCW)	4EG21B10 4EG21B12	4EG21B11 4EG21B13
4EG21C10 4EG21C12	19A122624-G3 Service Parts Kit #0037	C120 (470 pf, 100 VDCW) C126 (0.01 µf, 40 VDCW) CV102 L102 C R125 C (0.1 megohm, 1/4w) R126 (10,000 ohms, 1/2 w) R128 (15,000 ohms, 1/2 w)	C125 with C118 A (.001 µf, 100 VDCW); C121 with C122 B (180 pf, 500 VDCW); and C123 with C124 (150 pf, 100 VDCW)	4EG21C10 4EG21C12	4EG21C11 4EG21C13

Table 1 - Exciter Board Modification





(1)

CONNECTIONS CHART FOR MASTR PROGRESS LINE EXECUTIVE SERIES		
FROM	WIRE COLOR	TO
W603	G	STATION TB8-1 MOBILE TB3-17
W603	BR	TB3-23
W603	W-O-R	TB3-6
W603 CENTER CONDUCTOR	W-BL	TB3-7
W603-SHIELD OF ABOVE		TB3-8
W603	BK	TB3-22
W603 CENTER CONDUCTOR	W-BK	EXCITER-J103
W603-SHIELD OF ABOVE		EXCITER-J104
W603	V	TB3-5
W603	W-R-G	TB3-12

1. MOUNT CHANNEL GUARD BOARD OR TONE REJECT FILTER BOARD AS SHOW USING #4 HARDWARE.
2. ADD CABLE (W603) FROM CHANNEL GUARD BOARD OR TONE REJECT FILTER BOARD TO TB3 AND EXCITER BOARD AND MAKE CONNECTIONS PER CHART. EXCITER BOARD MUST BE REMOVED TO FEED SHIELDED WIRE THRU HOLE IN CHASSIS AND SLOT IN BOARD. (W604 FOR SOLID STATE)
3. ASSEMBLE TONE NETWORK INTO MOUNTING BRACKET, PLUG SOCKET (XFL6C1) FROM CHANNEL GUARD BOARD INTO TONE NETWORK & MOUNT AS SHOWN WITH TWO #6 THREAD FORMING SCREWS.
4. TONE NETWORK TO BE ORIENTED SO MARKING APPEARS ON THIS SURFACE.
5. WHEN DECODE ONLY OPTION OR TONE REJECT FILTER BOARD IS PRESENT, CUT OFF AND DISCARD SHIELDED WIRE WHICH NORMALLY GOES TO EXCITER BOARD. (FOR PT. 3 ONLY)
6. STAKE MTG. HARDWARE IN CHANNEL GUARD BOARD OR TONE REJECT FILTER BOARD PER CPD PROCESS P7C-EA123.
7. ASM. PAD (A4032591P28) ON CHASSIS AS SHOWN & APPROX. 30 DOWN FROM MOUNTING SUPPORT OF TONE NETWORK.

(2)

CONNECTION CHART FOR MASTR PROGRESS LINE ROYAL EXECUTIVE		
FROM	WIRE COLOR	TO
W604	W-G-O	TB3-27
W604	BR	TB3-41
W604	W-O-R	TB3-26
W604 CENTER CONDUCTOR	W-BL	TB3-37
SHIELD OF ABOVE		TB3-44
W604 CENTER CONDUCTOR	W-BK	EXCITER-J103
SHIELD OF ABOVE		EXCITER-J104
W604	R	TB3-5
W604	G	TB3-29

(3)

SEE NOTE 5

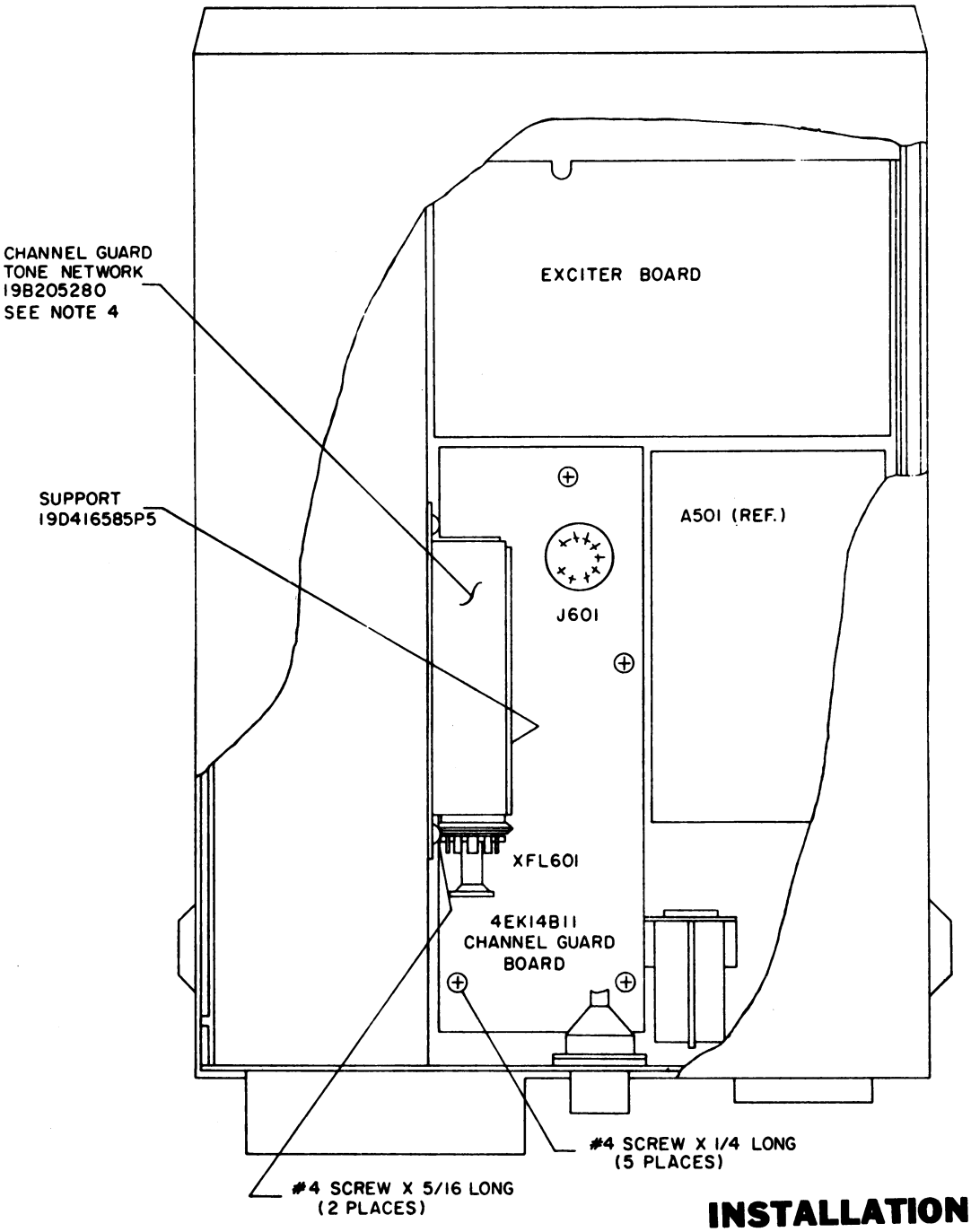
(19D413570, Rev. 3)

INSTALLATION DIAGRAM

CHANNEL GUARD MODEL 4EK14B10 MASTR EXECUTIVE, EXECUTIVE AND ROYAL EXECUTIVE MOBILE AND STATION COMBINATIONS

NOTES:

1. MOUNT CHANNEL GUARD BOARD ON CHASSIS AS SHOWN.
2. CUT SPOT TIE HOLDING P601 TO HARNESS & PLUG INTO J601.
3. ASSEMBLE TONE NETWORK INTO MOUNTING BRACKET, PLUG SOCKET (XFL601) FROM CHANNEL GUARD BOARD INTO TONE NETWORK & MOUNT AS SHOWN.
4. TONE NETWORK TO BE ORIENTED SO MARKING APPEARS ON THIS SURFACE.



(19C320202, Rev. 1)

INSTALLATION DIAGRAM

CHANNEL GUARD MODEL 4EK14B11

Issue 1