MOBILE RADIO

INSTRUCTIONS
FOR
HIGH STABILITY TRANSMITTER OSCILLATOR
OPTIONS 9612—9616

(FOR MASTR® II STATIONS)

LBI30441A
(DF8414)

CONTENTS

DESCRIPTION

The High Stability Transmitter Oscillator Options convert continuous Duty MASTR® II station transmitters from ±2 Parts Per Million (PPM) Oscillator Frequency Stability to ±.05 PPM. The application of each option is shown in the following chart.

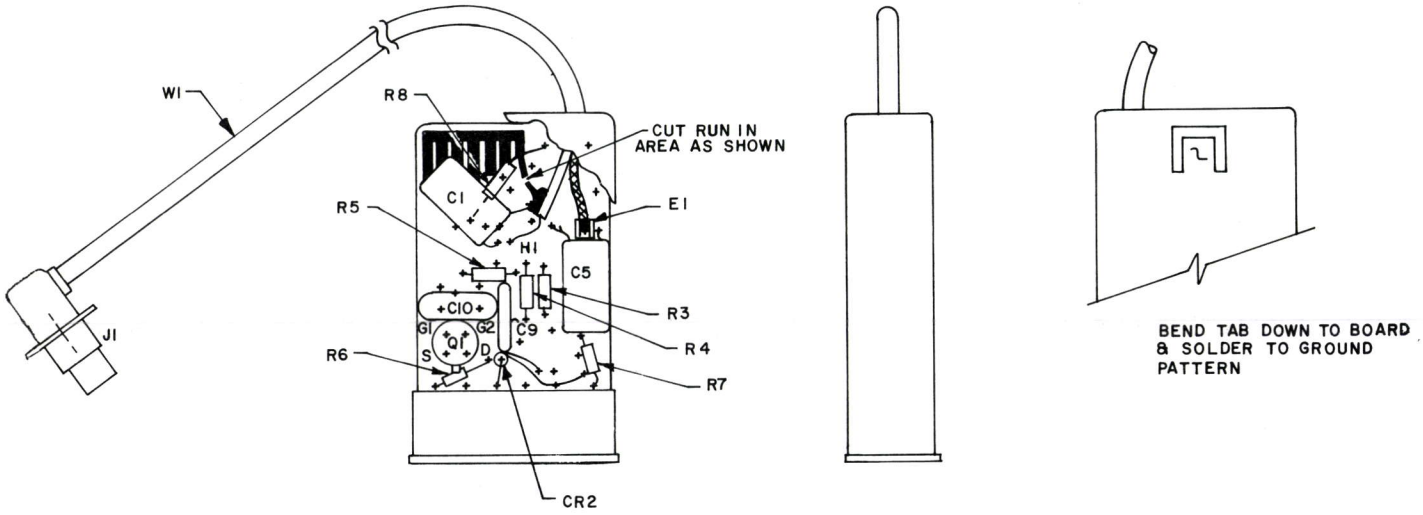
OPTION	POWER OUT	BAND	CONVERTS FROM	CONVERTS TO
9612	110 Watts	150.8-174 MHz	KT-49-C	KT-49-E
9613	250 Watts	150.8-174 MHz	KT-78-A	KT-78-E
9614	300 Watts	150.8-174 MHz	KT-79-A	KT-79-E
9615	100 Watts	450-512 MHz	KT-114-C	KT-114-E
9616	200 Watts	450-512 MHz	KT-88-C	KT-88-E

CIRCUIT ANALYSIS

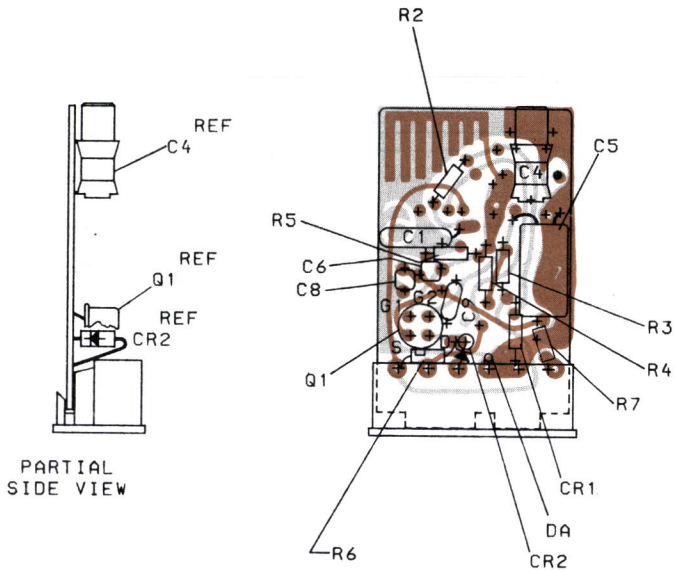
The 19A134449P1 Oscillator provides a highly Frequency stable output of approximately one Volt RMS voltage to the 19B219669G7 Oscillator Switch Module. The voltage is coupled through W1 and C1 to Gate 1 of Field Effect transistor Q1. With the Frequency Select lead (Pin 6) grounded and the transmitter oscillator control voltage applied to the Exciter, Q1 conducts passing the voltage to Pin 3 (output). The remaining part of the exciter functions as described in the Exciter Maintenance Manual.

MOBILE RADIO DEPARTMENT
GENERAL ELECTRIC COMPANY • LYNCHBURG, VIRGINIA 24502

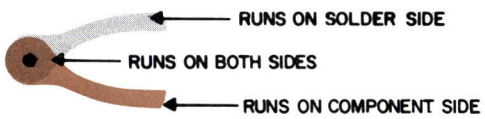
GENERAL ELECTRIC



(19B232173, Rev. 0)

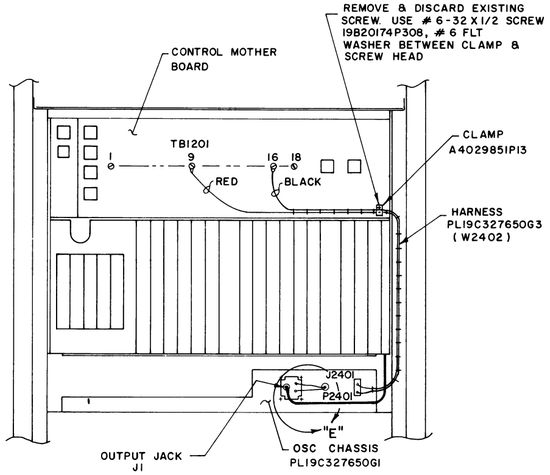


(19B232172, Rev. 2)
(19B219655, Sh. 2, Rev. 6)
(19B219655, Sh. 3, Rev. 7)

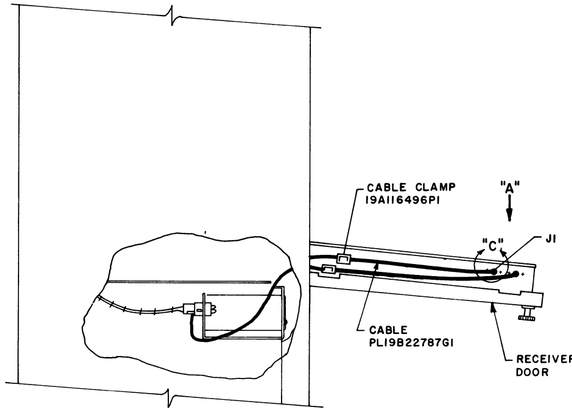


OUTLINE DIAGRAM

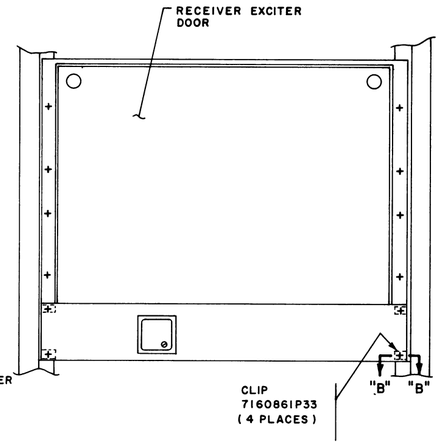
HIGH STABILITY TRANSMITTER OSCILLATOR



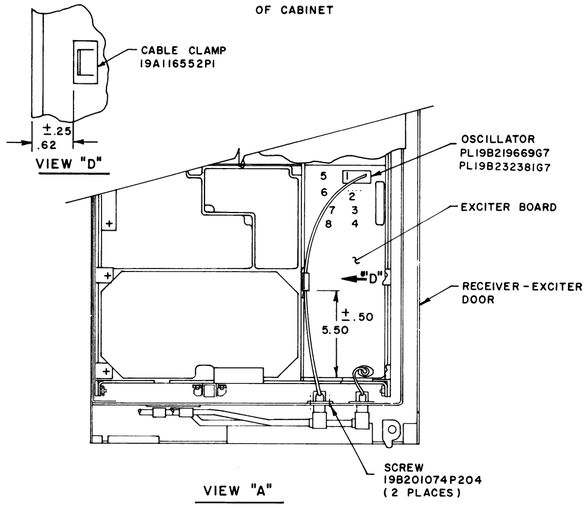
BACK VIEW
OF CABINET



SIDE VIEW
OF CABINET



FRONT VIEW
OF CABINET

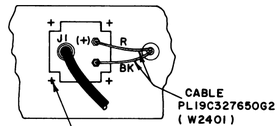


VIEW "A"

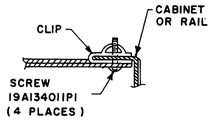
(PARTIAL, SHOWN WITH COVER REMOVED)

THESE INSTRUCTIONS COVER THE INSTALLATION OF THE 19C327650 OSC CHASSIS 19A134449 HIGH STABILITY OSCILLATOR & 19A136977 OR 19A137765 HARDWARE KIT IN MASTR II STATIONS.

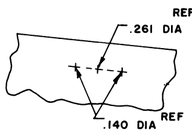
1. USING A .500 DIA CHASSIS PUNCH; ENLARGE THE .261 DIA HOLE IN THE SIDE OF THE RECEIVER EXCITER DOOR. (SEE DETAIL C)
2. MOUNT THE 19A116552P1 CABLE CLAMP INSIDE EXCITER COMPARTMENT AS SHOWN IN VIEWS A & D.
3. MOUNT PHONO CONNECTOR (J1) OF 19B219669G7 OR 19B232381G7 OSCILLATOR TO RCVR EXCITER DOOR USING TWO 19B201074P204 SCREWS AS SHOWN IN VIEW A.
4. ROUTE CABLE THRU CLAMP & PLUG OSCILLATOR IN F1 POSITION ON EXCITER BD AS SHOWN IN VIEW "A".
5. MOUNT CABLE CLAMP 19A116496P1 TO SIDE OF RCVR EXCITER DOOR JUST ABOVE AND NEXT TO EXISTING CLAMP AS SHOWN IN SIDE VIEW OF CABINET.
6. MOUNT 19A134449 OSCILLATOR TO CHASSIS USING FOUR 6-32 NUTS & LOCK WASHERS. SOLDER RED LEAD OF 19C327650G2 HARNESS TO "+" TERMINAL OF OSC & BLACK LEAD TO OTHER TERMINAL. (SEE DETAIL "E")
7. USING FOUR 7160861P33 CLIPS AND FOUR 19A134011P1 SCREWS MOUNT 19C327650 CHASSIS FROM FRONT OF CABINET AND DIRECTLY BELOW RADIO HOUSING.
8. ROUTE CABLE 19B227857 AS SHOWN. CONNECT AT J1 ON RCVR EXCITER DOOR AND AT OUTPUT JACK (J1) OF HIGH STABILITY OSCILLATOR.
9. CONNECT RED LEAD OF 19C327650G3 CABLE TO TB1201-9 ON MOTHER BOARD AND BLACK LEAD TO TB1201-16.
10. ROUTE CABLE AS SHOWN AND MAKE J2401 P2401 CONNECTION.



DETAIL "E"



SECTION "B - B"

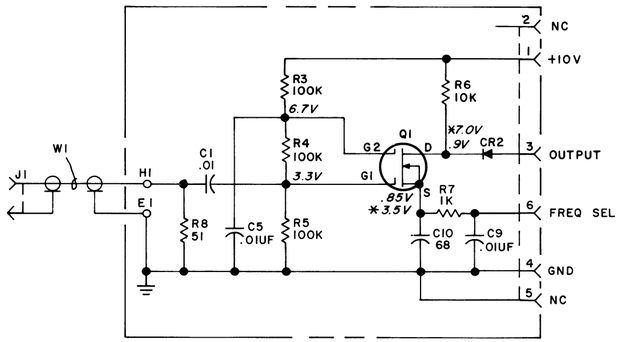


DETAIL "C"
(SHOWING HOLES BEFORE INSTALLATION OF CONNECTOR & PUNCHING OF .500 DIA HOLE)

(19D424639, Rev. 2)

INSTALLATION DIAGRAM

HIGH STABILITY TRANSMITTER OSCILLATOR

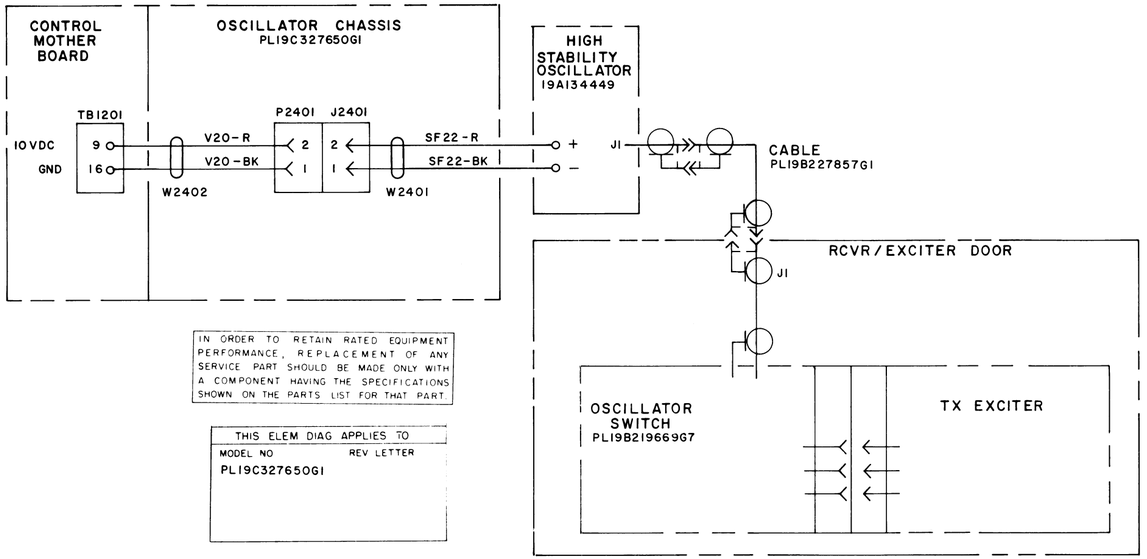


ALL RESISTORS ARE 1/8 WATT UNLESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K=1000 OHMS OR MEG=1,000,000 OHMS. CAPACITOR VALUES IN PICOFARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF= MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH= MILLIHENRYS OR H= HENRYS.

THIS ELEM DIAG APPLIES TO	
MODEL NO	REV LETTER
19B219669G7	

* VOLTAGE READINGS WITH TRANSMITTER KEYED

(19B227616, Rev. 1)



IN ORDER TO RETAIN RATED EQUIPMENT PERFORMANCE, REPLACEMENT OF ANY SERVICE PART SHOULD BE MADE ONLY WITH A COMPONENT HAVING THE SPECIFICATIONS SHOWN ON THE PARTS LIST FOR THAT PART.

THIS ELEM DIAG APPLIES TO	
MODEL NO	REV LETTER
PLI9C327650G1	

(19C327769, Rev. 1)

SERVICE SHEET

HIGH STABILITY TRANSMITTER OSCILLATOR

PARTS LIST

LBI-30442

HIGH STABILITY TRANSMITTER OSCILLATOR

SYMBOL	GE PART NO.	DESCRIPTION
	19B227857P1	R.F. Cable. (Includes 19A115938P15 connector).
		- - - - - - - - - - OSCILLATORS - - - - - - - - - -
		NOTE: When reordering specify High Stability Oscillator (HSO) Frequency to nine significant digits.
		(High Band) HSO Freq. = Operating Frequency / 12
		(UHF Band) HSO Freq. = Operating Frequency / 36
	19A134449P1	High Stability Oscillator. Internally Compensated, ±.08 PPM. (150-174 MHz High Band, 450-512 MHz UHF Band).
		OSCILLATOR CHASSIS 19C327650G1
W2401		HARNESS 19C327650G2
		- - - - - - - - - JACKS AND RECEPTACLES - - - - - -
J2401		Connector. Includes:
	19B209288P13	Shell.
	5496809P18	Contact, electrical: sim to Molex 1380-T. (Quantity 2).
W2402		HARNESS 19C327650G3
		- - - - - - - - - - - PLUGS - - - - - - - - - - -
P2401		Connector. Includes:
	19B209288P12	Shell.
	5496809P17	Contact, electrical: sim to Molex 1381-T. (Quantity 2).
		- - - - - - - - - - MISCELLANEOUS - - - - - - - - - -
	19B209260P102	Solderless terminal. (Quantity 2).
		HARDWARE KIT 19A136977G1
		OSCILLATOR ASSEMBLY 19B219669G7
		- - - - - - - - - - - CABLES - - - - - - - - - - -
W1	5491689P130	Cable RF: approx 11 inches long.
		OSCILLATOR BOARD 19B219658G2
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C1	19A116080P101	Polyester: 0.01 µf ±10%, 50 VDCW.
C5	19A116080P101	Polyester: 0.01 µf ±10%, 50 VDCW.
C9	19A116080P101	Polyester: 0.01 µf ±10%, 50 VDCW.
C10	7489162P23	Silver mica: 68 pf ±5%, 500 VDCW; sim to Electro Motive Type IM-15.
		- - - - - - - - - DIODES AND RECTIFIERS - - - - - -
CR2	19A115250P1	Silicon.
		- - - - - - - - - - TERMINALS - - - - - - - - - -
E1	19A116815P1	Contact, electrical: sim to Vector Electronics T28.

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - TRANSISTORS - - - - - - - - -
Q1	19A116818P3	N Channel, field effect; sim to Type 3N1877.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R3 thru R5	3R151P104J	Composition: 100,000 ohms ±5%, 1/8 w.
R6	3R151P103J	Composition: 10,000 ohms ±5%, 1/8 w.
R7	3R151P103J	Composition: 10,000 ohms ±5%, 1/8 w.
R8	3R151P510J	Composition: 51 ohms ±5%, 1/8 w.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	5490407P2	Rubber grommet. (Used with W2401).
	19B219495P1	Can. (Mounts over Oscillator Assembly 19B219669-G7).
	19B219625P1	Connector, printed wire. (Oscillator Board 19B219658G2).
	4029851P13	Cable clamp. (Used with W2402).
	19B201074P308	Tap screw, Phillips POZIDRIV®: No. 6-32 x 1/2. (Secures W2402 cable clamp).
	N402P7C6	Flatwasher: No. 6. (Used with W2402 cable clamp).
	19A116552P1	Cable clip. (Used with W1).
	19A116496P1	Cable clip. (Used with RF cable 19B227857G1).
	19B201074P204	Tap screw, Phillips POZIDRIV®: No. 4-40 x 1/4. (Secures J1).
	7160861P33	Nut, sheet spring: sim to Tinnerman C19640-10AB-600. (Secures Panel to Cabinet).
	19A134011P1	Tap screw: No. 10-16 x 3/4. (Secures Panel to Cabinet).

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.