INSTRUCTIONS FOR MASTR® II STATION INTERCOM KIT MC02 (OPTION 9508)

TABLE OF CONTENTS

DESCRIPTION

The Intercom Board (19C320671) plugs into J934 on the station system board A901. The Intercom Board allows monitoring of the remote audio line and allows intercommunication between the base station and the remote control dispatcher. If the station receiver unsquelches, the received audio will be switched to the station speaker and the receiver audio will override the line audio.

CIRCUIT ANALYSIS

When monitoring the line, both the INTERCOM switch S1 (on the 10 Volt Regulator/Control Board) and the INTERCOM switch on the MASTR® Local Controller are in the OFF (UP) position. The line audio is coupled to the Intercom Board from the compressor amplifier on the Remote Audio Board. FET switch Q6 is normally conducting and the audio is passed to the station receiver audio amplifier through MONITOR LEVEL ADJUST control R15. The amplified audio from the receiver PA is then coupled to the station speaker.

To communicate with the dispatcher from the station, the INTERCOM switch on the MASTR Local Controller or the INTERCOM switch on the 10 Volt Regulator module (when using the local service microphone) is operated to the INTERCOM position. This disables the station transmitter. Depressing the LOCAL PTT switch applies a ground J934-1 on the Intercom Board. CR1 is forward biased, turning off normally-conducting Q5. This allows FET Q4 to conduct. Audio from the local microphone is coupled by means of C1 to pre-amplifier Q1. The MIC LEVEL ADJUST control R33 is in the collector circuit of Q1. The adjusted audio is connected to amplifier Q2-Q3. The INTERCOM AUDIO SWITCH Q4 passes the local microphone audio to the line. The ground from the LPTT lead turns off LOCAL MUTE transistor Q9 to allow Q10 to conduct, grounding the gate of Q6 and disabling the line monitor.

Audio from the station receiver is connected to RX AUDIO SWITCH Q12. Q11 is normally conducting, grounding the gate of Q12. When the receiver unsquelches, a positive CAS voltage turns on Q7. Conduction of Q7 turns off Q11, allowing Q12 to pass the received audio to the line. Conduction of Q7 also grounds the gate of Q6, disabling the monitor function. Thus receiving a signal at the station receiver overrides the INTERCOM function.

When SECUR-IT TONE is detected, in tone applications, the base of Q13 is grounded, turning it OFF. C17 passes the positive pulse, turning on Q14 and grounding the station audio. This removes most of the SECUR-IT TONE and all of the FUNCTION TONE from the station audio.

INSTALLATION

To install the Intercom Board in the MASTR II station, the following modifications must be made.

1. Remove the jumper between H45 and H46 on the station System Board A901.
2. Remove capacitor C635 on the station receiver IFAS Board.
3. Plug the Intercom Board into J934 and J935 on the station System Board A901.

GE Mobile Communications

General Electric Company
Lynchburg, Virginia 24502

Printed in U.S.A.

ADJUSTMENT PROCEDURE

MICROPHONE TO LINE

1. Apply 1000 Hertz at 30 millivolts RMS to TB1201-3 & 4 on the rear of the Control Shelf Mother Board.

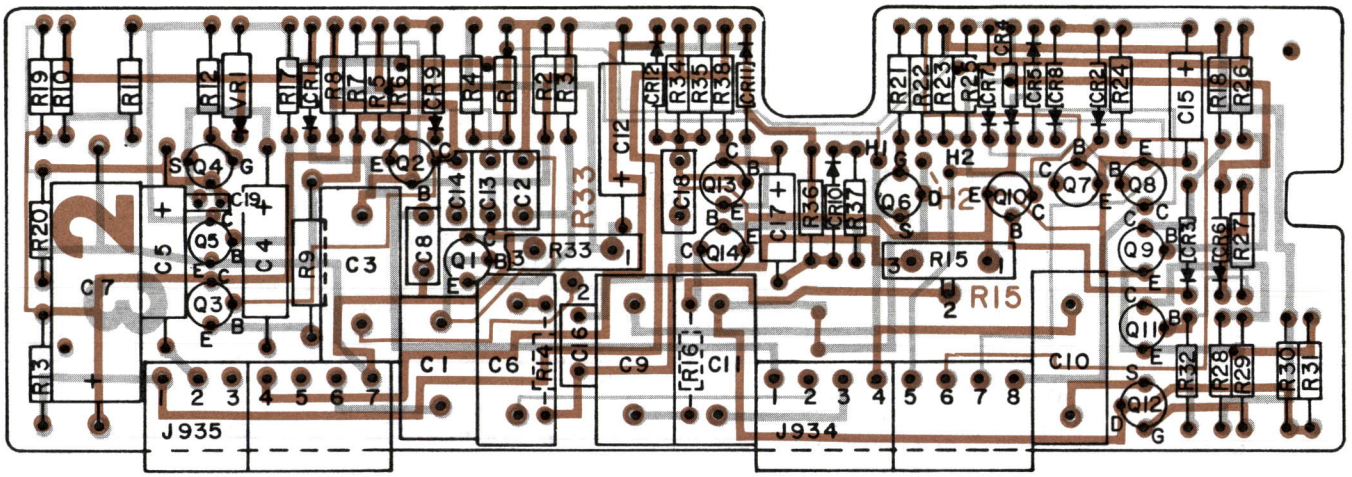
2. Hold switch S1 on the 10 Volt Regulator Control Board in the INTERCOM position and adjust the MIC LEVEL ADJUST control R33 on the Intercom Board for a reading of 2.7 Volts RMS (+11 dBm) as read on a 20,000 ohms-per-volt meter connected to TB1201-10 and 11.

LINE TO SPEAKER INTERCOM AUDIO (LOCAL/REMOTE)

1. With the remote control unit in the Intercom mode and with 1000 Hertz at 0 dBm on the line, adjust the MONITOR LEVEL ADJUST control R15 on the Intercom Board for a reading of 6.3 Volts RMS (+18 dBm) at the station speaker.

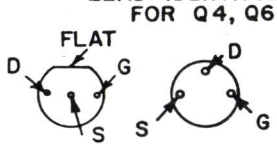
LINE TO SPEAKER INTERCOM AUDIO (REMOTE)

1. With the remote control unit in the Intercom mode and with 1000 Hertz at 0 dBm applied to the line, adjust the MONITOR LEVEL ADJUST control R15 on the Intercom Board for a reading of 2.7 Volts RMS (+11 dBm) at the station speaker.



(19C321454, Rev. 5)
(19C320669, Sh.2, Rev. 3)
(19C320669, Sh.3, Rev. 2)

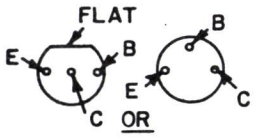
LEAD IDENTIFICATION FOR Q4, Q6 & Q12



IN-LINE OR TRIANGULAR
VIEW FROM LEAD END

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

LEAD IDENTIFICATION FOR Q1-Q3, Q5, Q7-Q11 Q13 & Q14

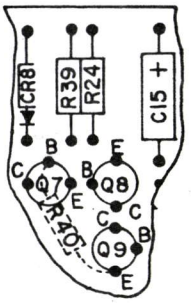


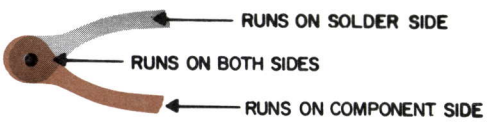
OR

IN-LINE TRIAGULAR
VIEW FROM LEAD END

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

(FOR GROUP-3 ONLY)





OUTLINE DIAGRAM

INTERCOM BOARD 19C320671G1-G3

PRINTED WIRING BOARD

MIC LEVEL ADJUST PRE-AMP

INTERCOM AUDIO SW

10V LINE

INTERCOM MONITOR SW

MONITOR LEVEL ADJUST

RX AUDIO SW

LOCAL MUTE

+10V LINE

+10

4.4V

SEE NOTE 1

SECURIT TONE DET.

LOCAL MIC HI

MIC LO

COMPRESSOR AUDIO

CAS

RX MUTE/CG DEC

SQ DISABLE A

SQ DISABLE B LPTT

GROUND

AUDIO FROM RX

AUDIO TO STATION INTERCON

+10 V

AUDIO TO LINE

1-RECORD
2-AN71650

NOTES:

1. D.A. WIRE FROM H1 TO H2 IS PRESENT IN 4 WIRE AUDIO APPLICATION.
2. ▲ PRESENT IN G2 ONLY.
3. ■ NOT PRESENT IN GROUP 3.
4. ● PRESENT IN G3 ONLY.

SEE APPLICABLE PRODUCTION CHANGE SHEETS IN INSTRUCTION BOOK SECTION DEALING WITH THIS UNIT. FOR DES-CRIPTION OF CHANGES UNDER EACH REVISION LETTER.

THIS ELEM DIAG APPLIES TO

MODEL NO	REV LETTER
PL19C320671G1	B
PL19C320671G2	C
PL19C320671G3	A

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.

ALL RESISTORS ARE 1/4 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.

(19D417243, Rev. 7)

SCHEMATIC DIAGRAM

INTERCOM BOARD 19C320671G1-G3

PARTS LIST

LBI-4814F

INTERCOM BOARD
19C320671G1-G3

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C1	19A116080P109	Polyester: 0.22 uF + or - 10%, 50 VDCW.
C2	5494481P111	Ceramic disc: 1000 pF + or - 20%, 1000 VDCW; sim to RMC Type JF Discap.
C3	19A116080P110	Polyester: 0.33 uF + or -10%, 50 VDCW.
C4 and C5	5496267P10	Tantalum: 22 uF + or - 20%, 15 VDCW; sim to Sprague Type 150D.
C6	19A116080P110	Polyester: 0.33 uF + or -10%, 50 VDCW.
C7	19A115680P7	Electrolytic: 100 uF +150-10%, 15 VDCW; sim to Mallory Type TTX.
C8	5494481P111	Ceramic disc: 1000 pF + or - 20%, 1000 VDCW; sim to RMC Type JF Discap.
C9 and C10	19A116080P110	Polyester: 0.33 uF + or -10%, 50 VDCW.
C11	19A116080P111	Polyester: 0.47 uF + or - 10%, 50 VDCW.
C12	5496267P14	Tantalum: 15 uF + or - 20%, 20 VDCW; sim to Sprague Type 150D.
C13	5494481P111	Ceramic disc: 1000 pF + or - 20%, 1000 VDCW; sim to RMC Type JF Discap.
C14	5494481P107	Ceramic disc: 470 pF + or - 20%, 1000 VDCW; sim to RMC Type JF Discap.
C15	5496267P9	Tantalum: 3.3 uF + or - 20%, 15 VDCW; sim to Sprague Type 150D.
C16	19A700005P7	Polyester: 0.01 uF + or -10%, 50 VDCW.
C17	5496267P1	Tantalum: 6.8 uF + or - 20%, 6 VDCW; sim to Sprague Type 150D.
C18	5494481P111	Ceramic disc: 1000 pF + or - 20%, 1000 VDCW; sim to RMC Type JF Discap.
C19	19A700219P44	Ceramic: 27 pF + or -5%, 100 VDCW.
		- - - - - - - - - - RECTIFIERS - - - - - - - - - -
CR1 thru CR12	19A115250P1	Silicon, fast recovery, 225 mA, 50 PIV.
		- - - - - - - - - - JACKS - - - - - - - - - -
J934	19A116659P7	Connector, printed wire: 4 contacts rated at 5 amps; sim to Molex 09-51-3041. (Quantity 2).
J935		Connector. Includes:
	19A116659P7	Connector, printed wire: 4 contacts rated at 5 amps; sim to Molex 09-51-3041.
	19A700102P1	Printed wire: 3 contacts rated at 5 amps; sim to Molex 09-52-3031.
		- - - - - - - - - - TRANSISTORS - - - - - - - - - -
Q1 thru Q3	19A700023P1	Silicon, NPN; sim to Type 2N3904.
Q4	19A134137P4	N Type, field effect; sim to Type 2N3458.
Q5	19A700023P1	Silicon, NPN; sim to Type 2N3904.
Q6	19A134137P4	N Type, field effect; sim to Type 2N3458.
Q7 thru Q11	19A700023P1	Silicon, NPN; sim to Type 2N3904.
Q12	19A134137P4	N Type, field effect; sim to Type 2N3458.
Q13 and Q14	19A700023P1	Silicon, NPN; sim to Type 2N3904.
R1	H212CRP422C	- - - - - - - - - - RESISTORS - - - - - - - - - - Deposited carbon: 0.22M ohms + or -5%, 1/4 w.
R2	H212CRP322C	Deposited carbon: 22K ohms + or -5%, 1/4 w.
R3	19A143400P35	Deposited carbon: 750 ohms + or - 5%, 1/4 w.
R4	H212CRP210C	Deposited carbon: 1K ohms + or -5%, 1/4 w.
R5	H212CRP415C	Deposited carbon: 0.15M ohms + or -5%, 1/4 w.
R6	H212CRP310C	Deposited carbon: 10K ohms + or - 5%, 1/4 w.
R7	H212CRP210C	Deposited carbon: 1K ohms + or -5%, 1/4 w.
R8	H212CRP268C	Deposited carbon: 6.8K ohms + or -5%, 1/4 w.
R9	19A700113P63	Composition: 1K ohms + or - 5%, 1/2 w.
R10	H212CRP310C	Deposited carbon: 10K ohms + or - 5%, 1/4 w.
R11	H212CRP412C	Deposited carbon: 0.12M ohms + or -5%, 1/4 w.
R12	H212CRP447C	Deposited carbon: 0.47M + or -5%, 1/4 w.
R13	H212CRP068C	Deposited carbon: 68 ohms + or -5%, 1/4 w.
R14	H212CRP268C	Deposited carbon: 6.8K ohms + or -5%, 1/4 w.
R15	19B209358P105	Variable, carbon film: approx 200 to 5K ohms + or -10%, 1/4 w; sim to CTS Type X-201.
R16	19A143400P42	Deposited carbon: 3K ohms + or - 5%, 250 VDCW, 1/4 w.
R17 and R18	H212CRP310C	Deposited carbon: 10K ohms + or - 5%, 1/4 w.
R19	H212CRP382C	Deposited carbon: 82K ohms + or -5%, 1/4 w.
R20	H212CRP433C	Deposited carbon: 0.33M + or -5%, 1/4 w.
R21 and R22	19A143400P64	Deposited carbon: 200K ohms + or - 5%, 1/4 w.
R23	H212CRP210C	Deposited carbon: 1K ohms + or -5%, 1/4 w.
R24	H212CRP327C	Deposited carbon: 27K ohms + or -5%, 1/4 w.
R24	H212CRP239C	Deposited carbon: 3.9K ohms + or -5%, 1/4 w.
R25	19A143400P52	Deposited carbon: 20K ohms + or - 5%, 1/4 w.
R26	H212CRP310C	Deposited carbon: 10K ohms + or - 5%, 1/4 w.
R27	19A143400P52	Deposited carbon: 20K ohms + or - 5%, 1/4 w.
R28	H212CRP310C	Deposited carbon: 10K ohms + or - 5%, 1/4 w.
R29	H212CRP447C	Deposited carbon: 0.47M + or -5%, 1/4 w.
R30	H212CRP382C	Deposited carbon: 82K ohms + or -5%, 1/4 w.
R31	H212CRP433C	Deposited carbon: 0.33M + or -5%, 1/4 w.
R32	H212CRP410C	Deposited carbon: 0.1M ohms + or -5%, 1/4 w.
R33	19B209358P106	Variable, carbon film: approx 300 to 10K ohms + or -10%, 1/4 w; sim to CTS Type X-201.
R34 and R35	H212CRP310C	Deposited carbon: 10K ohms + or - 5%, 1/4 w.
R36	H212CRP318C	Deposited carbon: 18K ohms + or -5%, 1/4 w.
R37	H212CRP310C	Deposited carbon: 10K ohms + or - 5%, 1/4 w.
R38	H212CRP210C	Deposited carbon: 1K ohms + or -5%, 1/4 w.
R39	H212CRP327C	Deposited carbon: 27K ohms + or -5%, 1/4 w.
R40	H212CRP310C	Deposited carbon: 10K ohms + or - 5%, 1/4 w.
		- - - - - - - - VOLTAGE REGULATORS - - - - - - -
VR1	4036887P4	Zener: 500 mW, 4.4 v. nominal.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

PRODUCTION CHANGES

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

REV. A - 19C320671G2

Reduce size of timing resistor to improve audio time recovery.
Changed value of R36.

REV. B - 19C320671G1
REV. C - 19C320671G2

To prevent audio switching transistor from oscillating.
Added C19.

REV. A - 19C320671G3 STATION INTERCOM KIT

To improve operation of intercom control switch Q7.
Added resistors R24,R39, and R40.