

MAINTENANCE MANUAL

TYPE 99 TONE DECODER

MODEL 4EJ17A10-13



Maintenance Manual LBI-3839 D
DF-5035

SPECIFICATIONS *

Combination and Model Numbers	<u>2-Reed</u>	<u>4-Reed</u>
Mobile	D22 (4EJ17A10)	D24 (4EJ17A11)
Station	D42 (4EJ17A12)	D44 (4EJ17A13)
Tone Frequencies	517.5 to 997.5 Hz	
Tone Input	20 millivolts to 6 volts RMS	
Voltage Requirements		
Mobile	13 VDC	
Station	117 VAC, 50/60 Hz	
Temperature Range	-30°C to +60°C (-22°F to 144°F)	

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

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INSTALLATION INSTRUCTIONS (Application Kits)	
MASTR Progress Line Mobiles, Professional & Executive	RC-1285
MASTR Progress Line Stations, Desk Mate & Desk Top	RC-1286
Progress Line	RC-1150
Transistorized Progress Line	RC-1151
Accent 450 and GE Pacer	RC-1152
Transistorized Control Console and Remote Control Unit RC4	RC-1149
Deskon Remote Control Unit	RC-1833
MASTR II Microphone Handset/Hookswitch	RC-2673
Schematic Service Outline & Parts List	RC-2675

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 Type 99 Decoders are transistorized sequential tone decoders for mobile and station applications. The decoders will operate with any encoders providing two-tone sequential signaling. These include the General Electric Type 99 Encoders (100, 400 and 900 Call Encoders and Dial Page Terminals).

The mobile decoders are supplied in a compact housing that is equipped with a mounting bracket for installation in 12-volt vehicles. Station decoders are supplied with a larger housing which contains a 117-volt AC power supply.

INSTALLATION

MOBILE DECODER

Install the Mobile Decoder where it will be within convenient reach of the operator, and where it will not interfere with the safe operation of the vehicle. Use the mounting bracket as a template, and drill pilot holes with a #29 (9/64-inch) drill. Attach the bracket to the mounting surface with the two #10 x 5/8-inch self tapping screws provided.

Connections for different mobile installations are shown on the appropriate Application Kit as listed in the Table of Contents.

STATION DECODER

The Station Decoder should be located near a 117 VAC, 50/60 Hz source, and where the control cable will reach the station. Connections for the different station installations are shown on the appropriate Application Kit as listed in the Table of Contents.

BUZZER AND HOOKSWITCH OPTIONS

Instructions for installing and connecting the buzzer or hookswitch options are shown on the Outline and Schematic Diagram for the Decoder.

JUMPER CONNECTIONS

Refer to the Jumper Option Chart on the Outline Diagram for a description of the options and the proper jumper connections.

OPERATION

Operating controls for the decoders are located on the front panel. The controls include a RESET button, a CALL lamp and an EXTERNAL ALARM switch marked LIGHT-OFF-HORN.

MOBILE DECODER

The basic mobile decoder is supplied with one output relay K1401. When a signal that is modulated by the proper sequential tone code is received, relay K1401 locks up and the CALL lamp lights. Pressing the RESET button unlocks the relay and cuts off the CALL lamp. If desired, one set of contacts on K1401 can be used to activate an external alarm. The position of the EXTERNAL ALARM switch determines which external alarm (LIGHT or HORN) will operate.

An optional relay (K1402) can be plugged into the socket provided on the circuit board. The optional relay permits relay K1401 to be connected for timed operation (3 to 5 seconds), and K1402 to operate locked to the reset button. Other options include a hookswitch for either a handset or military microphone for off-hood monitoring and reset, and a buzzer that is activated by the timed relay.

STATION DECODER

The basic station decoder is supplied with both relays, a timed buzzer, an internal CALL light, and provision for an external alarm (LIGHT or HORN). Options include the microphone or handset hookswitch for off-hood monitoring and reset. No provision is made for monitoring the base station when speaker muting is used.

CIRCUIT ANALYSIS

Audio from the output transformer of the mobile or station receiver is passed through T1401 (which provides DC isolation and voltage gain between the receiver output and the input circuit of the decoder) to a pair of clipping diodes CR1401 and CR1402. These diodes limit the input to the reed drive amplifiers (Q1401 and Q1402) to approximately 300 millivolts. A Zener regulator VR1401 holds the supply voltage constant to the amplifier. Thus a constant drive voltage is applied across the reeds. If speaker muting is employed, the radio receiver output transformer is loaded by R1401 when the speaker is disconnected from the transformer.

Model 4EJ17A12 and A13 contain the AC power supply. A full-wave bridge (CR1450-CR1453) rectifies the 117-volts AC applied across (T1450). Filtering is accomplished by the dial-section capacitor (C1450) and R1450. Zener diode CR1454 provides a regulated 11-volts DC at the output terminals. An unregulated tap at R1450-2 provides 15-VDC for operating the CALL lamp, buzzer and K1402.

TWO-REED DECODERS

Models 4EJ17A10 & 12 are 2-reed decoders which respond to one combination of sequential

tones. When the first tone of a two-tone sequential call is received, reed FL1401 responds. (The reed is an electro-mechanical device resonant only to the desired first tone of the selective-calling code). The contacts of FL1401 close, charging C1410 from the positive supply and turning Q1409 OFF.

After Q1409 turns OFF, C1409 charges from the positive supply voltage through R1432 and contacts of FL1401. In approximately 500 milliseconds, the positive charge on C1409 is sufficient to turn Q1407 ON. Current flow in the collector circuit of Q1407 produces a forward bias on the base of Q1408 allowing it to conduct and clamp the base of Q1406 to positive. Capacitor C1408 charges in a negative direction through R1429, CR1408 and Q1407, but Q1406 is held at cut-off by the positive voltage applied to its base through Q1408.

When the first tone is removed, contacts of FL1401 open. C1410 discharges through R1437, forward biasing Q1409 allowing it to conduct. This turns Q1407 and Q1408 OFF. When Q1408 turns OFF, the positive voltage is removed from the base of Q1406 and the negative charge on C1408 turns Q1406 ON.

The charge on C1408 keeps Q1406 ON for approximately 1-second, holding the base of Q1405 negative. If the second tone is received during this time interval, the positive supply is connected through contacts of FL1402 to the emitter of Q1405 and this transistor conducts. Current flows in the collector circuit of Q1405 to forward bias Q1404, turning it ON. The resulting current flow in the collector circuit of Q1404 forward biases Q1403 allowing it to conduct and operate relay K1401.

K1401 normally locks up through its own contacts 9 and 10. K1401 contacts 12 and 13 close to turn on CALL lamp DS1401. RESET switch S1402 must be depressed momentarily to unlock K1401. If the 19C303571G1 Hookswitch is used, K1401 may be locked-up under the control of the hookswitch, S1402 or both.

K1401 may also be timed for a 3 to 5 second interval. In this case, C1406 discharges into the base of Q1404 through R1424 and R1420. Q1404 conducts, causing Q1403 to conduct for the timing period.

If K1402 is used, contacts 15 and 16 of K1401 close the path to K1402, permitting this relay to operate. K1402 is always wired for locked operation. K1401 will always be wired for timed operation under these conditions. K1402 may be locked under the control of S1402, the hookswitch or both.

Switch S1401 determines which external alarm will be operated. Contacts on K1401, K1402 or both may be used for external alarm, depending on jumper connections. Refer to the Option Chart 19B204844 on the Outline Diagram to determine the connections used. A momentary closure is used for external horn while a locked closure is used for external light.

FOUR-REED DECODERS

Models 4EJ17A11 and A13 are 4-reed decoders which can respond to more than one combination of sequential tones. Their operation is similar to the 2-reed decoders, except for a bistable multivibrator circuit (Q1410 & Q1411) which prevents the decoder from responding to an incorrect code. The 4-reed decoders are designed so that FL1401 operates with FL1402 and FL1403 operates with FL1404 when the multivibrator circuit is used.

If the first tone of a two-tone sequential code operates FL1401, Q1410 of the multivibrator conducts. A negative potential is connected through Q1410 to the reed terminal of FL1404, disabling this reed circuit. Thus, the second tone of this particular sequence must operate FL1402 before the decoder can respond.

If FL1403 responds to the first tone, Q1411 operates and disables the FL1402 reed circuit. Now FL1404 must respond to the second tone of this particular sequence before the decoder can operate.

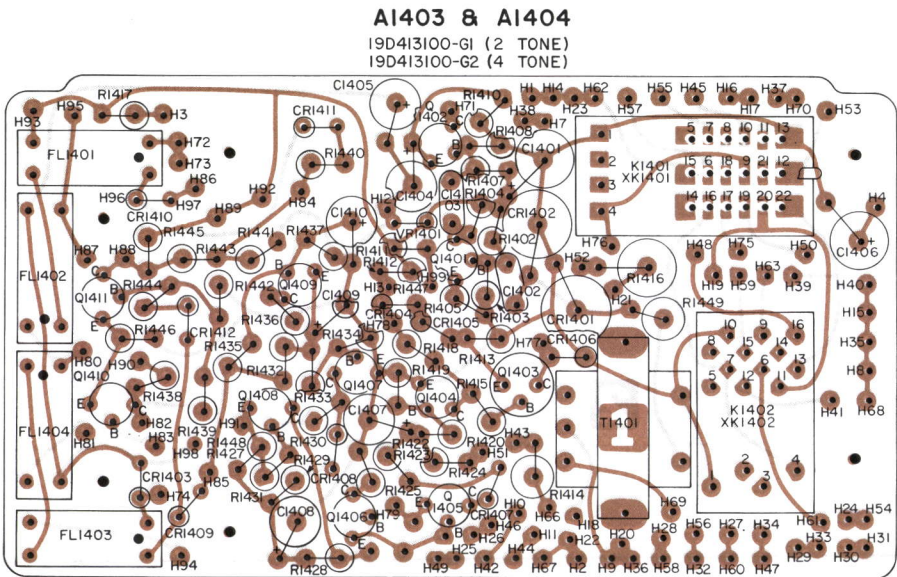
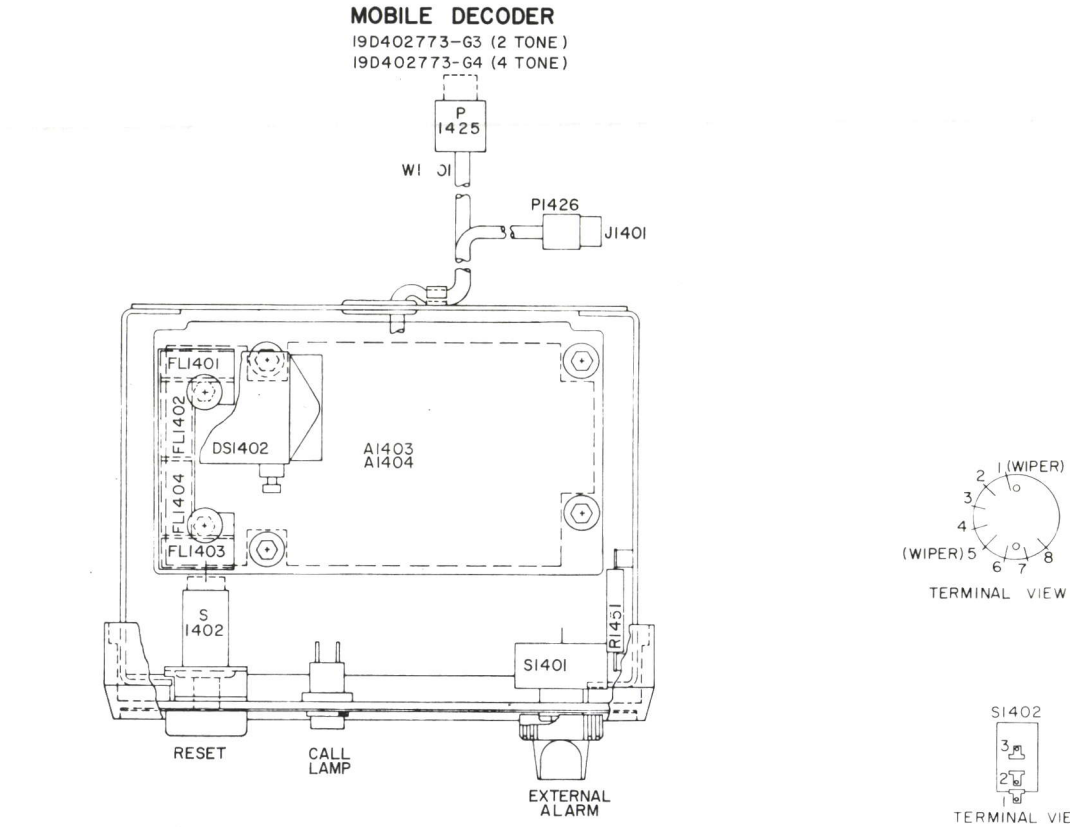
NOTE

A 2-code decoder must be modified to disable the logic circuitry whenever the first tone or the second tone reed in each of the two codes is the same frequency. Refer to Note 3 of CALL SEQUENCE instructions on the Decoder Outline Diagram.

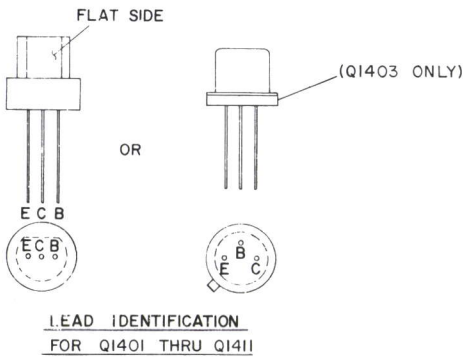
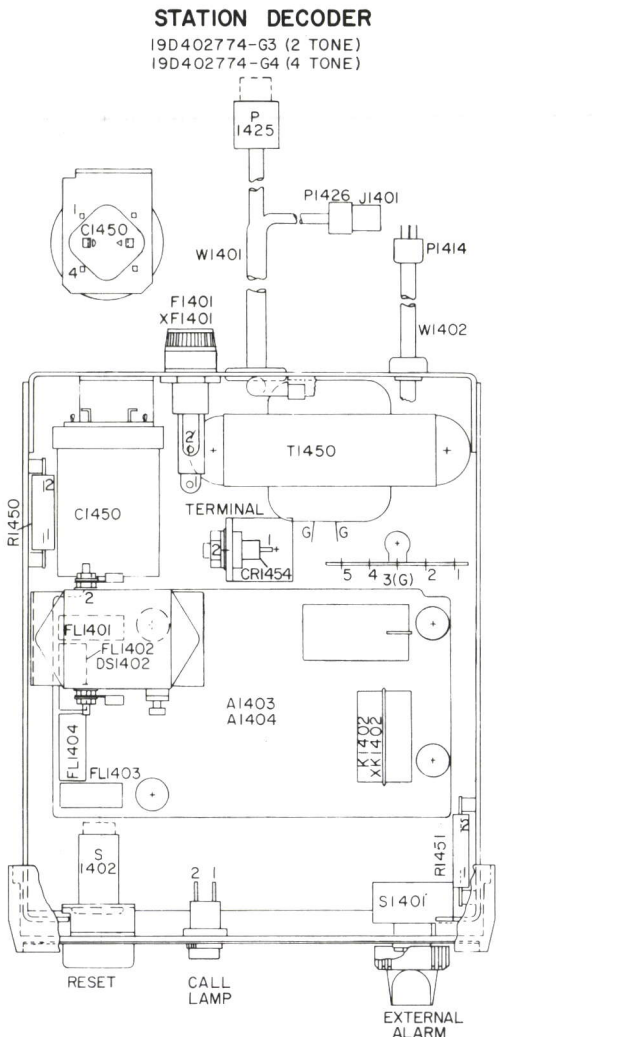
MAINTENANCE

To remove the chassis for servicing, remove the four screws in the back of the decoder and pull the chassis out of the housing. Refer to the voltage readings on the Outline Diagram for troubleshooting the unit.

JUMPER CHART



(19C311765, Sh. 1, Rev. 1)
(19C311765, Sh. 2, Rev. 2)



(19D413118, Rev. 5)

- CALL SEQUENCE**
1. INDIVIDUAL CALL ONLY (2 REEDS)
MODELS 4EJ17A10 & A12 (PL 19D402773-G3 & PL 19D402774-G3)
1ST TONE FL1401 2ND TONE FL1402
 2. INDIVIDUAL CALL WITH ALL OR GROUP CALL (4 REEDS)
MODELS 4EJ17A11 & A13 (PL 19D402773-G4 & PL 19D402774-G4)
INDIVIDUAL CALL
SAME AS 1 ABOVE
ALL OR GROUP CALL SEQUENCE
1ST TONE FL1403 2ND TONE FL1404
 3. INDIVIDUAL CALL WITH ALL AND GROUP CALL (4 REEDS)
INDIVIDUAL CALL AND ALL CALL
SAME AS 2 ABOVE
GROUP CALL SEQUENCE
REMOVE JUMPER BETWEEN H82-H81
REMOVE JUMPER BETWEEN H88-H87
ADD JUMPER BETWEEN H89-H95
ADD DA WIRE BETWEEN H95-H81
1ST TONE FL1401 2ND TONE FL1404
IN ADDITION THERE IS A DERIVED CODE
CONSISTING OF FL1403 & FL1402
 4. IF EITHER FIRST TWO TONES OR SECOND TWO TONES IN A 4 REED
DECODER ARE THE SAME, PERFORM THE OPERATIONS CALLED FOR
IN NOTE 3.

VOLTAGE READINGS

1. DECODER (POWER SUPPLY 13.6 VOLT BATTERY)
ALL READINGS TAKEN WITH 20,000 OHMS PER VOLT METER TO
NEGATIVE COMMON (H12)

NO TONE	PROPER TONE CODE BEING RECEIVED
Q1401 E-0 2 VOLT B-0 7 VOLT C-2 3 VOLTS	NO CHANGE ↓ NO CHANGE
Q1402 E-7 7 VOLTS B-8 2 VOLTS C-8 8 VOLTS	NO CHANGE ↓ NO CHANGE
Q1403 E-12 4 VOLTS B-13.6 VOLTS C-0	SWINGS DOWN TO 11.8 V SWINGS DOWN TO 11.5 V SWINGS UP TO 7.5 V MOMENTARILY

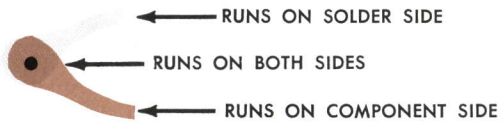
- WITH 20 MILLIVOLTS RMS OF TONE AT INPUT TO DECODER, AC RMS VOLTAGE
FROM Q1402 COLLECTOR TO COMMON NEGATIVE SHOULD READ BETWEEN
1.0 AND 1.4 VOLTS
WITH 1.0 VOLT RMS OF TONE AT INPUT TO DECODER, OUTPUT
SHOULD READ BETWEEN 1.0 AND 1.4 VOLTS RMS
2. AC POWER SUPPLY (117 VOLTS AC 50 60 CPS)
READINGS TAKEN WITH 20,000 OHMS PER VOLT METER, CHASSIS
COMMON
R501 2 (RED) 14 B 17 2 VOLTS DC
R501 1 (ORANGE) 10 3 11 8 VOLTS DC
THE LATTER READING SHOULD NOT CHANGE MORE THAN 0.5 VOLT
FROM NO LOAD TO FULL LOAD CONDITIONS

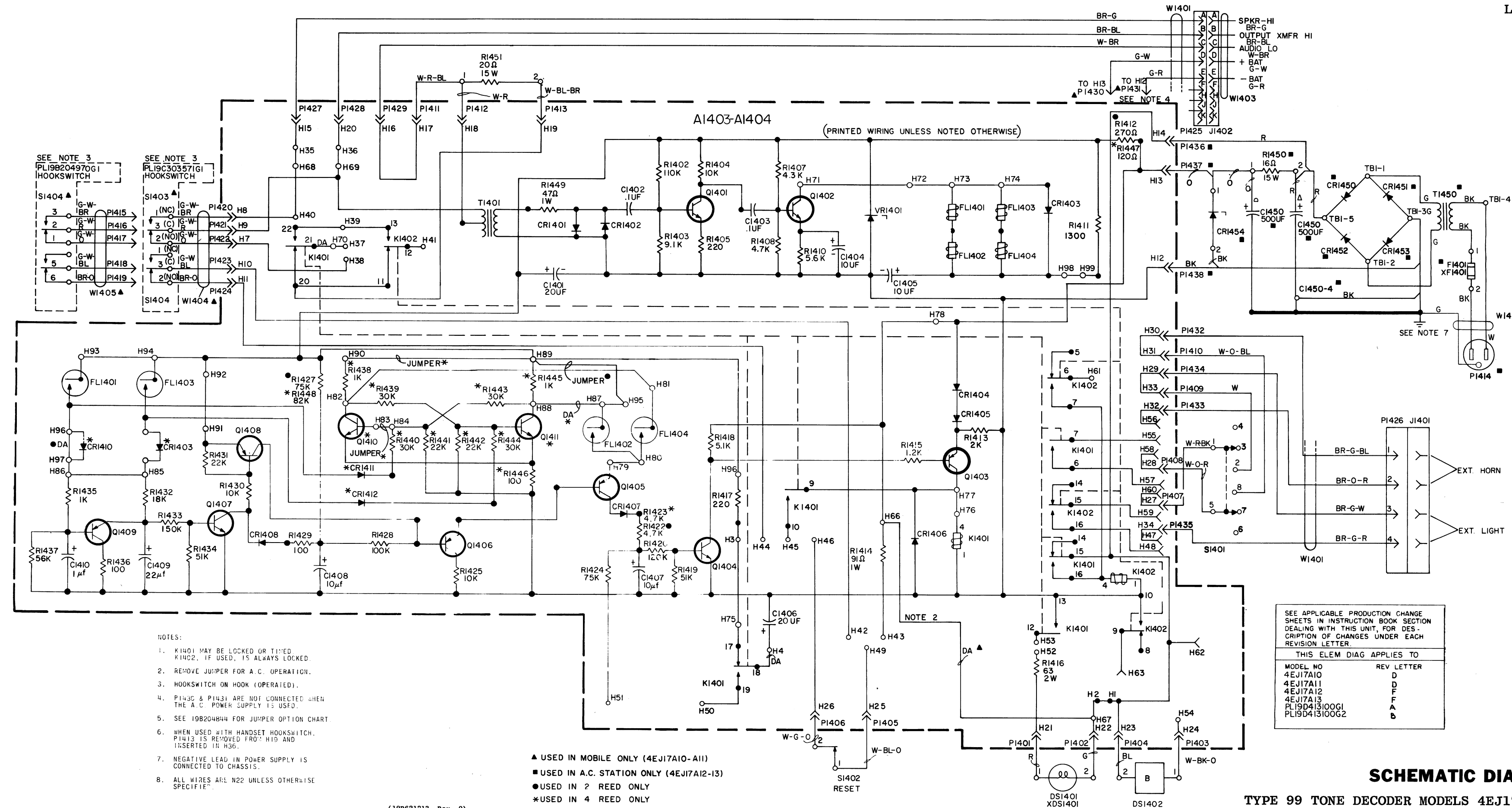
CHART		
OPTION	DESCRIPTION	JUMPERS
Basic Unit (Mobile)	No Speaker Muting	H35-H36
	One Relay (K1401), locked to reset button	H49-H43, H46-H45
	Internal call light	H52-H53
Basic Unit (AC)	External call light	H55-H60, H57-H47
	No speaker muting	H35-H36
	K1401 timed	H50-H51
Option 4096 Only	K1402 locked to reset button	H61-H49, H46-H62
	Timed buzzer	H54-H53
	External momentary alarm	H55-H56, H57-H58
Option 4092 Only	Internal call light	H63-H52
	External call light	H59-H60, H48-H47
Option 4093 Only	No Speaker muting	H35-H36
	K1401 Timed	H50-H51
	K1402 locked to reset button	H61-H49, H46-H62
Options 4096 & 4092	Timed buzzer	H54-H53
	External horn	H55-H56, H57-H58
	Internal call light	H63-H52
Option 4094 Only	External call light	H59-H60, H48-H47
	External horn	H55-H56, H57-H58
	Extension Cable option (19A121588G1)	If no other options are included, jumper for basic unit.
Option 4093 Only	Speaker unmuted by Mil. hookswitch or K1401	H39-H40, H37-H38
	K1401 locked to Mil. hookswitch or reset button	H42-H43, H44-H49, H45-H46
	External call light	H55-H60, H57-H47
Option 4094 Only	Internal call light	H63-H52
	External call light	H59-H60, H48-H47
	External horn	H55-H56, H57-H58
Option 4093 Only	Speaker unmuted by Handset Hookswitch or K1401	H39-H40, H37-H38
	K1401 locked to handset Hookswitch or Reset Button	H42-H43, H44-H49, H45-H46
	External call light	H55-H60, H57-H47
Option 4094 Only	Internal call light	H63-H52
	External call light	H59-H60, H48-H47
	Remove P1413 from H19 and insert in H36	

(19B204844, Sh. 1, Rev. 5)
(19B204844, Sh. 2, Rev. 0)

OUTLINE DIAGRAM

TYPE 99 TONE DECODER
MODELS 4EJ17A10-13





PARTS LIST		
LBI-3838C		
TYPE 99 DECODER		
MODELS 4EJ17A10, 11 (19D40277G3, 4) MODELS 4EJ17A12, 13 (19D40277G3, 4)		
SYMBOL	GE PART NO.	DESCRIPTION
A1403 and A1404		COMPONENT BOARD A1403 19D413100G1 (Models 4EJ17A10, 12) A1404 19D413100G2 (Models 4EJ17A11, 13)
		----- CAPACITORS -----
	C1401	19A115680P3 Electrolytic: 20 μ f +150%-10%, 25 VDCW; sim to Mallory Type TT.
	C1402 and C1403	19A116080P107 Polyester: 0.1 μ f \pm 10%, 50 VDCW.
	C1404 and C1405	19A115680P8 Electrolytic: 10 μ f +150%-10%, 25 VDCW; sim to Mallory Type TTX.
	C1406	19A115680P3 Electrolytic: 20 μ f \pm 150%-10%, 25 VDCW; sim to Mallory Type TTX.
	C1407 thru C1408	19A115680P8 Electrolytic: 10 μ f \pm 150%-10%, 25 VDCW; sim to Mallory Type TTX.
	C1409*	5496267P19 Tantalum: 22 μ f \pm 20%, 35 VDCW; sim to Sprague Type 150D. Added by REV C to 4EJ17A10, 11; by REV D to 4EJ17A12, 13.
	C1410*	5496267P17 Tantalum: 1.0 μ f \pm 20%, 35 VDCW; sim to Sprague Type 150D.
		In Models 4EJ17A10, 11 of REV B and earlier: In Models 4EJ17A12, 13 of REV C and earlier:
CR1401 and CR1402		Electrolytic: 5 μ f +150%-10%, 25 VDCW; sim to Mallory Type TTX.
		----- DIODES AND RECTIFIERS -----
	5495920P1	Germanium; sim to Type 1N91.
	CR1403	19A115250P1 Silicon.
	CR1404 thru CR1406	4037822P1 Silicon.
	CR1407 thru CR1412	19A115250P1 Silicon.
		----- TONE NETWORKS -----
	FL1401 thru FL1404	19C300580 Tone Detector. (Check group numbers for desired frequency).
	G1	517.5 Hz
	G2	532.5 Hz
	G3	547.5 Hz
	G4	562.5 Hz
	G5	577.5 Hz
	G6	592.5 Hz
	G7	607.5 Hz
	G8	622.5 Hz
	G9	637.5 Hz
	G10	652.5 Hz
	G11	667.5 Hz
	G12	682.5 Hz
	G13	697.5 Hz
	G14	712.5 Hz
	G15	727.5 Hz
	G16	742.5 Hz
	G17	757.5 Hz
	G18	772.5 Hz
	G19	787.5 Hz
	G20	802.5 Hz
	G21	817.5 Hz
	G22	832.5 Hz
	G23	847.5 Hz
	G24	862.5 Hz
	G25	877.5 Hz
	G26	892.5 Hz
	G27	907.5 Hz
	G28	922.5 Hz
	G29	937.5 Hz
	G30	952.5 Hz
	G31	967.5 Hz
	G32	982.5 Hz
	G33	997.5 Hz

SYMBOL	GE PART NO.	DESCRIPTION
		----- RELAYS -----
K1401	19C307010P7	Armature: 11 VDC nominal, 1.5 w max operating, 900 ohms \pm 10% coil res, 3 form A, 3 form C contacts; sim to Allied Control T154-X-458.
K1402	19C300957P2	Miniature, plug-in: 12 VDC nominal, 1.5 w max operating, 185 ohms \pm 10% coil res, 4 form C contacts; sim to Allied Control T154-X-316.
		----- TRANSISTORS -----
Q1401 and Q1402	19A115123P1	Silicon, NPN.
Q1403	19A115562P1	Silicon, PNP.
Q1404	19A115123P1	Silicon, NPN.
Q1405 and Q1406	19A115768P1	Silicon, PNP; sim to Type 2N3702.
Q1407*	19A115362P1	Silicon, NPN; sim to Type 2N2925.
		In Models 4EJ17A10, 11 earlier than REV A; 4EJ17A12, 13 of REV A and earlier:
Q1408 and Q1409	19A115123P1	Silicon, NPN.
	19A115768P1	Silicon, PNP; sim to Type 2N3702.
Q1410 and Q1411	19A115123P1	Silicon, NPN.
		----- RESISTORS -----
R1402	3R77P114J	Composition: 0.11 megohm \pm 5%, 1/2 w.
R1403	3R77P912J	Composition: 9100 ohms \pm 5%, 1/2 w.
R1404	3R77P103K	Composition: 10,000 ohms \pm 10%, 1/2 w.
R1405	3R77P221K	Composition: 220 ohms \pm 10%, 1/2 w.
R1406*	3R77P272K	Composition: 2700 ohms \pm 10%, 1/2 w. Deleted in G1 by REV A.
R1407*	3R77P432J	Composition: 4300 ohms \pm 5%, 1/2 w. Added to G1 by REV A.
R1408*	3R77P472J	Composition: 4700 ohms \pm 5%, 1/2 w.
		In G1 earlier than REV A: In G2 of REV A and earlier:
	3R77P103K	Composition: 10,000 ohms \pm 10%, 1/2 w.
R1409*	3R77P752J	Composition: 7500 ohms \pm 5%, 1/2 w. Deleted in G1 by REV A.
R1410*	3R77P562J	Composition: 5600 ohms \pm 5%, 1/2 w. Added to G1 by REV A.
		Earlier than REV A:
	3R77P332J	Composition: 3300 ohms \pm 5%, 1/2 w.
R1411	3R77P132J	Composition: 1300 ohms \pm 5%, 1/2 w.
R1412	3R77P271K	Composition: 270 ohms \pm 10%, 1/2 w.
R1413	3R77P202J	Composition: 2000 ohms \pm 5%, 1/2 w.
R1414	3R78P910J	Composition: 91 ohms \pm 5%, 1/2 w.
R1415	3R77P122K	Composition: 1200 ohms \pm 10%, 1/2 w.
R1416	3R79P620J	Composition: 62 ohms \pm 5%, 2 w.
R1417	3R77P221K	Composition: 220 ohms \pm 10%, 1/2 w.
R1418	3R77P512J	Composition: 5100 ohms \pm 5%, 1/2 w.
R1419	3R77P513J	Composition: 51,000 ohms \pm 5%, 1/2 w.
R1420*	3R77P124J	Composition: 120,000 ohms \pm 5%, 1/2 w.
		In Models 4EJ17A10, 11 of REV B and earlier: In Models 4EJ17A12, 13 of REV C and earlier:
	3R77P753J	Composition: 75,000 ohms \pm 5%, 1/2 w.
R1421*	3R77P223K	Composition: 22,000 ohms \pm 10%, 1/2 w. Deleted in Models 4EJ17A10, 11 by REV C and 4EJ17A12, 13 by REV D.
R1422*	3R77P472J	Composition: 4700 ohms \pm 5%, 1/2 w.
		In Models 4EJ17A10, 11 of REV A; 4EJ17A12, 13 of REV B and earlier:
	3R77P203J	Composition: 20,000 ohms \pm 5%, 1/2 w.

SYMBOL	GE PART NO.	DESCRIPTION
R1423*	3R77P472J	Composition: 4700 ohms \pm 5%, 1/2 w.
		In Models 4EJ17A10, 11 of REV A; 4EJ17A12, 13 of REV B and earlier:
	3R77P912J	Composition: 9100 ohms \pm 5%, 1/2 w.
R1424	3R77P753J	Composition: 75,000 ohms \pm 5%, 1/2 w.
R1425	3R77P103K	Composition: 10,000 ohms \pm 10%, 1/2 w.
R1426*	3R77P223K	Composition: 22,000 ohms \pm 10%, 1/2 w. Deleted in Models 4EJ17A10, 11 by REV C and 4EJ17A12, 13 by REV D.
R1427	3R77P753J	Composition: 75,000 ohms \pm 5%, 1/2 w.
R1428	3R77P104K	Composition: 0.1 megohm \pm 10%, 1/2 w.
R1429	3R77P101K	Composition: 100 ohms \pm 10%, 1/2 w.
R1430	3R77P103K	Composition: 10,000 ohms \pm 10%, 1/2 w.
R1431	3R77P223K	Composition: 22,000 ohms \pm 10%, 1/2 w.
R1432*	3R77P183J	Composition: 18,000 ohms \pm 5%, 1/2 w.
		In Models 4EJ17A10, 11 of REV B and earlier: In Models 4EJ17A12, 13 of REV C and earlier:
	3R77P363J	Composition: 36,000 ohms \pm 5%, 1/2 w.
R1433	3R77P154J	Composition: 0.15 megohm \pm 5%, 1/2 w.
R1434	3R77P513J	Composition: 51,000 ohms \pm 5%, 1/2 w.
R1435	3R77P102K	Composition: 1000 ohms \pm 10%, 1/2 w.
R1436	3R77P101K	Composition: 100 ohms \pm 10%, 1/2 w.
R1437*	3R77P563J	Composition: 56,000 ohms \pm 5%, 1/2 w.
		In Models 4EJ17A10, 11 of REV B and earlier: In Models 4EJ17A12, 13 of REV C and earlier:
	3R77P113J	Composition: 11,000 ohms \pm 5%, 1/2 w.
R1438	3R77P102K	Composition: 1000 ohms \pm 10%, 1/2 w.
R1439 and R1440	3R77P303J	Composition: 30,000 ohms \pm 5%, 1/2 w.
R1441 and R1442	3R77P223K	Composition: 22,000 ohms \pm 10%, 1/2 w.
R1443 and R1444	3R77P303J	Composition: 30,000 ohms \pm 5%, 1/2 w.
R1445	3R77P102K	Composition: 1000 ohms \pm 10%, 1/2 w.
R1446	3R77P101K	Composition: 100 ohms \pm 10%, 1/2 w.
R1447	3R77P121K	Composition: 120 ohms \pm 10%, 1/2 w.
R1448	3R77P823J	Composition: 82,000 ohms \pm 5%, 1/2 w.
R1449	3R78P470J	Composition: 47 ohms \pm 5%, 1 w.
		----- TRANSFORMERS -----
T1401	5491609P1	Audio: 0.3 to 3 kHz freq range, 6 VDC operating, Pri: 500 ohms \pm 10% imp CT, 28 ohms \pm 10% DC res, Sec: 500 ohms \pm 10% imp, 22 ohms \pm 10% DC res.
		----- VOLTAGE REGULATORS -----
VR1401	4036887P8	Silicon, Zener.
		----- SOCKETS -----
XX1401	19B209172P1	Relay, phen: 22 contacts; sim to Allied Control 30054-24.
XX1402	5491595P7	Relay: 10 contacts; sim to Allied Control 30054-4.
		----- CAPACITORS -----
C1450	7770994P28	Electrolytic, twist-prong: 500-500 μ f +250% -10%, 25-25 VDCW; sim to Mallory Type WP.
		----- DIODES AND RECTIFIERS -----
CR1450 thru CR1453	4037822P1	Silicon.

SYMBOL	GE PART NO.	DESCRIPTION
CR1454*	5495912P2	Silicon, Zener.
		In Models 4EJ17A12, 13 earlier than REV A:
	5495912P1	Silicon, Zener.
		----- INDICATING DEVICES -----
DS1401	19B201122P1	Lamp, indicator: 6 v; sim to GE 1768.
DS1402	19B200788P3	Buzzer: 12 VDC or 12-16 VAC nominal, 200 ma DC operating; sim to Line Electric BD-1. (Used in Models 4EJ17A12, 13).
DS1402	19A121997G1	Buzzer: 12 VDC or 12-16 VAC nominal, 100 ma DC operating; sim to Line Electric BD-0. (Used in Models 4EJ17A10, 11).
		----- FUSES -----
F1401	7487942P1	Slow blowing: 1/4 amp at 250 v; sim to Busman MDL-1/4.
		----- PLUGS -----
P1401 thru P1413	4036634P1	Contact, electrical: sim to AMP 42428-2.
P1436 thru P1438	4036634P1	Contact, electrical: sim to AMP 42428-2.
		----- RESISTORS -----
R1401*	5496941P21	Wirewound: 10 ohms \pm 5%, 15 w; sim to Tru-Ohm Type MOR-15. Deleted in 4EJ17A10, 11 by REV D. Deleted in 4EJ17A12, 13 by REV E.
R1450	5496941P23	Wirewound: 16 ohms \pm 5%, 15 w; sim to Tru-Ohm Type MOR-15.
R1451*	5496941P24	Wirewound: 20 ohms \pm 5%, 15 w; sim to Tru-Ohm Type MOR-15. Added to 4EJ17A10, 11 by REV D. Added to 4EJ17A12, 13 by REV E.
		----- SWITCHES -----
S1401	5495454P23	Rotary: 1 section, 2 poles, 2 positions, non-shorting contacts, 2 amps at 25 VDC or 1 amp at 110 VAC; sim to Oak Type A or Centralab Series 100.
S1402	19B209292P2	Push: SPDT, 10 amps at 250 VAC; sim to Micro Switch 13DM1-B1.
		----- TRANSFORMERS -----
T1450	5493743P1	Power: step-down, Pri: 117 v, 50/60 Hz, Sec 1: 12.6 v \pm 3%, 2 amps.
		----- TERMINAL BOARDS -----
TB1	7775500P11	Phen: 5 terminals.
		----- CABLES -----
W1401		CABLE 19B204739G1
		----- JACKS AND RECEPTACLES -----
J1401	5492497P24	Shell, connector: 4 circuits; sim to AMP 480134-1.
		----- PLUGS -----
P1425	7489183P10	Plastic: 9 contacts; sim to Winchester M9P-LR-H19C.
P1426	5492497P14	Shell, connector: 4 circuits; sim to AMP 480135-1.
P1427 thru P1435	4036634P1	Contact, electrical: sim to AMP 42428-2.
		----- MISCELLANEOUS -----
	5492497P1	Contact: lock spring; sim to AMP 42485-1. (Used with J1401).
W1402*	19A116740P2	Power: approx 8 feet long; sim to Belden 17239.
		In 4EJ17A12, 13 of REV E and earlier:
	4036441P8	Power: approx 8 feet, with 2-contact plug (P1414). Type AWG 18.

SYMBOL	GE PART NO.	DESCRIPTION
W1403		CABLE 19A121588G1
		----- JACKS AND RECEPTACLES -----
J1402	7489183P7	Socket, plastic: 9 contacts; sim to Winchester M9S-LR-H19C.
		----- SOCKETS -----
XD81401	19B201122P2	Lampholder: sim to Drake Series 121.
XF1401	19B209005P1	Fuseholder, post type, phen: 15 amps at 250 v; sim to Littelfuse 342012.
		----- ASSOCIATED ASSEMBLIES -----
		MICROPHONE HOOKSWITCH 19C303571G1 (Used in Models 4EJ17A10, 11)
		----- SWITCHES -----
S1403 and S1404	19B209099P1	Sensitive: SPDT, 10.1 amps at 125 VAC; sim to Cherry Electrical Products K62-10A.
		----- CABLES -----
W1404	19B204731G1	Cable. Includes:
P1420 thru P1424	4036634P2	Contact, electrical: sim to AMP 42429-2.
		----- SWITCHES -----
S1405	19A121612P1	Holder, handset: 2 form C contacts, 1 amp at 125 v max; sim to Telephone Components Brook-Tel 10108 (modified).
		----- CABLES -----
W1405	19B204731G1	Cable. Includes:
P1415 thru P1419	4036634P2	Contact, electrical: sim to AMP 42429-2.
		----- MISCELLANEOUS -----
	5491595P9	Retainer, spring: sim to Allied Control 30040-2. (Used with K1402 in 19D413100G1, 2).
	4036040P1	Pin, contact: sim to American Brass 724. (Used with FL1401 and FL1402 in 19D13100G1, 2).
	4036555P1	Insulator, washer: nylon. (Used with Q1403 in 19D413100G1, 2).
	19A115368P1	Retainer, spring: sim to Allied Control 30040-3. (Used with K1401 in 19D413100G1, 2).
	19B205063G4	Chassis. (Used in Models 4EJ17A10, 11).
	19B205063G3	Chassis. (Used in Models 4EJ17A12, 13).
	19B205054P1	Front cap.
	NP249051P1	Nameplate. (Used with front cap).
	19B205111G1	Knob. (Used with S1401).
	19B201122P6	Cap, lens: yellow translucent nylon, 3/8 inch diameter. (Used with DS1401).
	7763541P4	Clip, spring tension. (Used with W1401).
	5490407P8	Grommet, rubber. (Used with W1401 in Models 4EJ17A10, 11).
	5490407P6	Grommet, rubber. (Used with W1401 in Models 4EJ17A12, 13).
	7491987P6	Bushing, strain relief: sim to Hyco SR-3P-1. (Used with W1402 in Models 4EJ17A12, 13).
	19A121584G2	Jumper, option.
	NP243580	Decal, call number.

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 descriptions of parts affected by these revisions.

REV. A - Models 4EJ17A12, 13

To increase power supply regulation. Changed CR1454.

REV. A - Models 4EJ17A10, 11
REV. B - Models 4EJ17A12, 13

To incorporate a higher gain transistor. Changed Q1407.

REV. B - Model 4EJ17A10, 11
REV. C - Models 4EJ17A12, 13

To decrease decoder response time to the second tone. Changed R1422 (Models 4EJ17A10 & 12) or R1423 (Models 4EJ17A11 & 13).

REV. C - Models 4EJ17A10, 11
REV. D - Models 4EJ17A12, 13

To allow operation of decoder with reeds that have aged. Changed C1409, C1410, R1420, R1421, R1426, R1432, and R1437.

REV. D - Models 4EJ17A10, A11
REV. E - Models 4EJ17A12, A13

To allow decoders to operate with increased audio power input. Changed R1701.

REV. F - Model 4EJ17A12, A13

To incorporate a new three wire AC power cord. Changed W1402.

REV. A - Component Board 19D413100G2

Incorporated in initial shipment.

REV. B - To increase drive to tone needs.

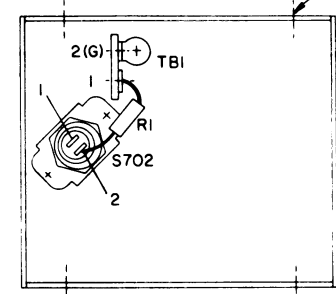
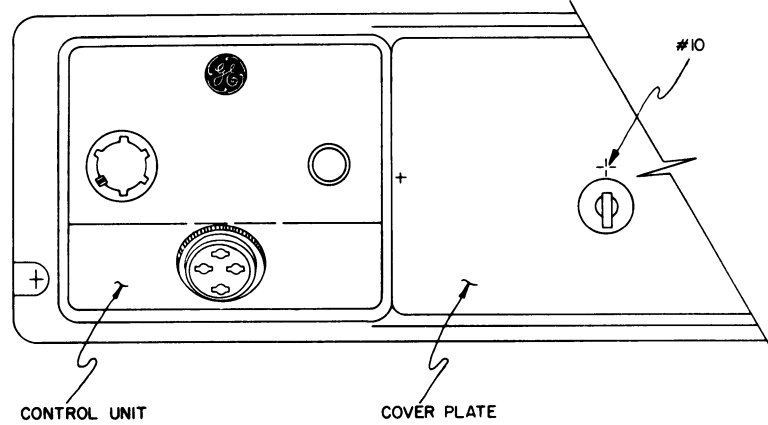
Changed R1408 and deleted R1406 and R1409.

REV. A - Component Board 19D413100G1

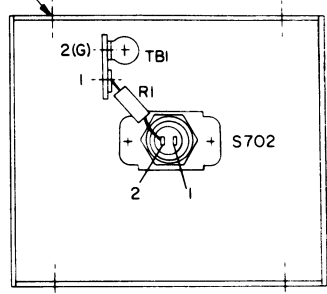
To increase drive to tone needs. Changed R1408 added R1407 and R1410 and deleted R1406 and R1409.

MASTR EXECUTIVE SERIES
MOBILE APPLICATION KIT 19A122352-G2

TRUNK-MOUNT



BACK VIEW OF CONTROL UNIT
4EC68A10



BACK VIEW OF CONTROL UNIT
4EC68A11 & A12

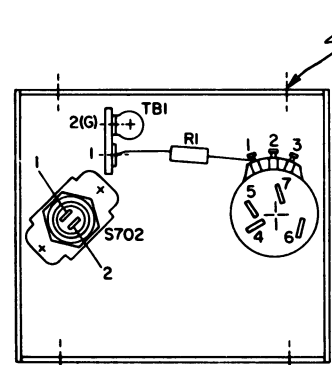
INSTRUCTIONS FOR 4EC68A10 12:

1. REMOVE COVER PLATE.
2. REMOVE #10 SCREW & REMOVE FRONT CASTING FROM FRAME.
3. REMOVE CONTROL UNIT & SWING TOWARD OUTSIDE TO EXPOSE BACK SIDE.
4. CLIP OUT DA JUMPER BETWEEN TBI-1 & S702-2 AND SOLDER R1 (22Ω) RESISTOR IN ITS PLACE.
5. REASSEMBLE CONTROL UNIT.
6. REASSEMBLE FRONT CASTING.
7. REASSEMBLE COVER PLATE.
8. ASSEMBLE ADAPTER CABLE (PL19B205414G1) BETWEEN SPEAKER & SPEAKER JACK ON UNIT.
9. PLUG TONE DECODER INTO ADAPTER CABLE.

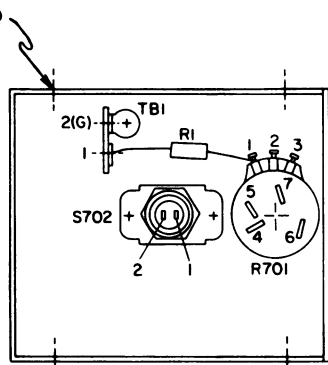
INSTRUCTIONS FOR 4EC68B10 12:

1. STEPS 1-3 ABOVE.
2. REMOVE #22 BX WIRE FROM R701-1 TO TBI-1. SOLDER R1 (22Ω) BETWEEN THESE POINTS.
3. STEPS 5-9 ABOVE.

(19C311064, Rev. 3)

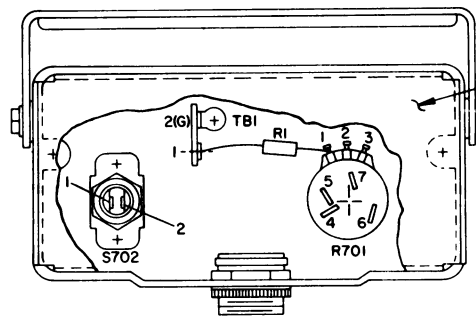


BACK VIEW OF CONTROL UNIT
4EC68B10

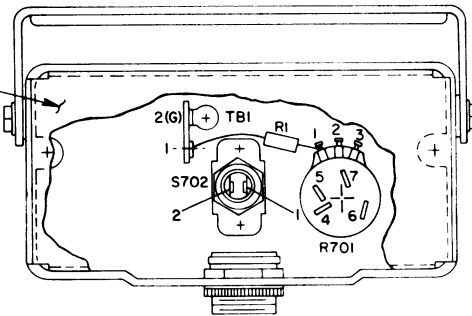


BACK VIEW OF CONTROL UNIT
4EC68B11 & B12

FRONT-MOUNT

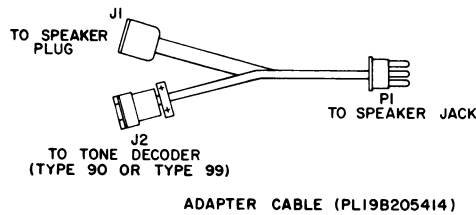


BACK VIEW OF CONTROL UNIT
4EC67A10



BACK VIEW OF CONTROL UNIT
4EC67A11 & A12

(19C311065, Rev. 3)

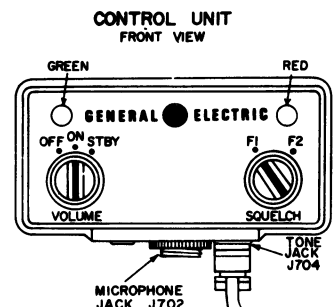


INSTRUCTIONS

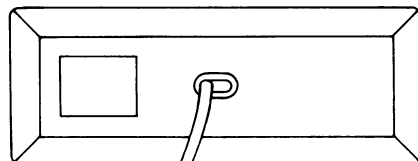
1. REMOVE BACK PLATE FROM CONTROL UNIT TO GAIN ACCESS TO TBI & S702.
2. DISCONNECT SHIELD OF TWISTED PAIR CABLE FROM R701-1 AND CONNECT TO TBI-1.
3. SOLDER R1 (22Ω) FROM R701-1 TO TBI-1.
4. REASSEMBLE BACK PLATE.
5. ASSEMBLE ADAPTER CABLE (PL19B205414G1) BETWEEN SPEAKER & SPEAKER JACK ON CONTROL UNIT.
6. PLUG TONE DECODER INTO ADAPTER CABLE.

MASTR PROFESSIONAL SERIES

MOBILE APPLICATION



MOBILE DECODER
REAR VIEW



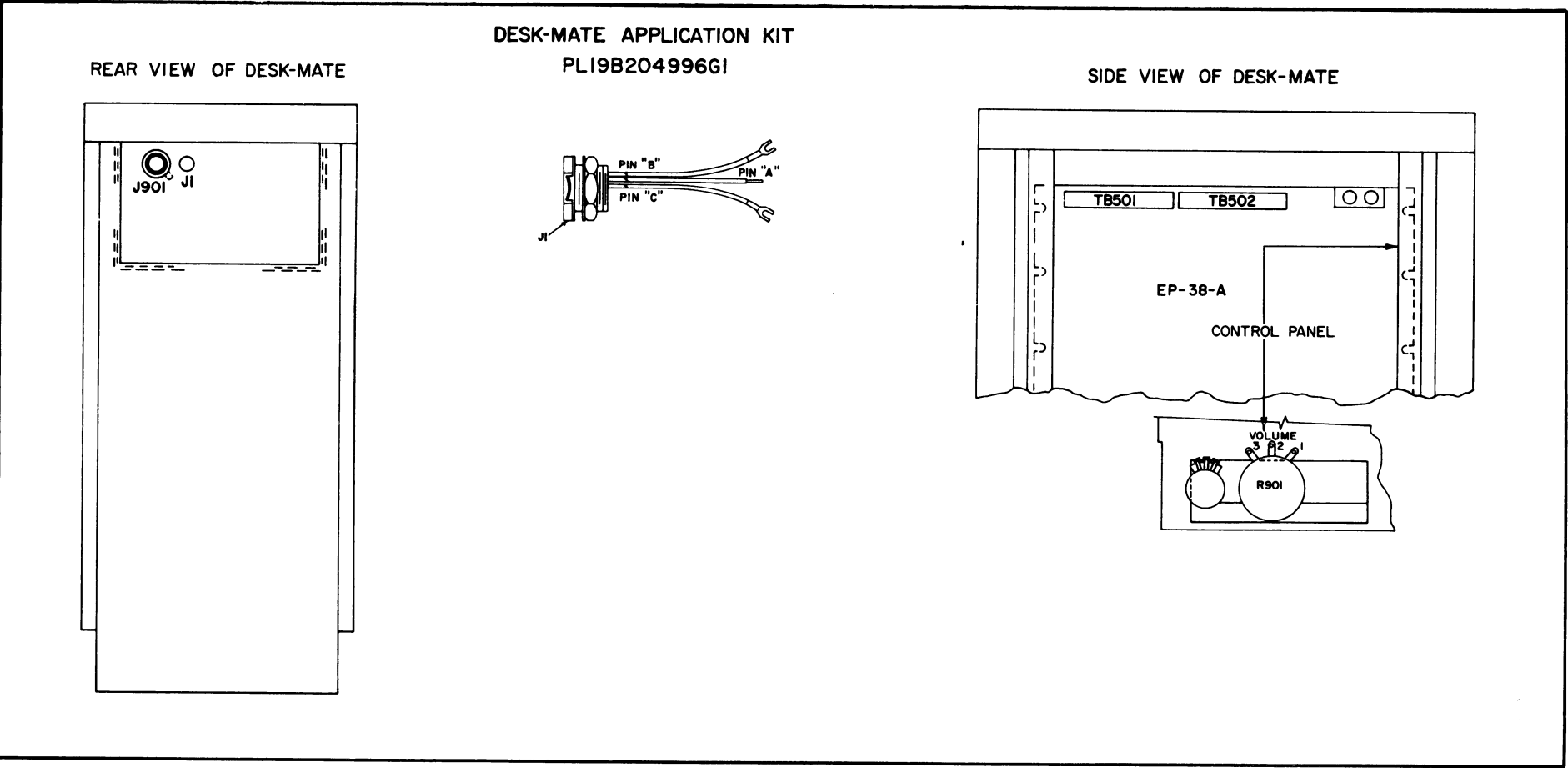
TO EXTERNAL
ALARM

DECODER CABLE

CONNECT PLUG ON DECODER CABLE TO TONE JACK
J704 ON MASTR CONTROL UNIT.

INSTALLATION INSTRUCTIONS

TONE APPLICATION KITS FOR
MASTR PROGRESS LINE MOBILES
PROFESSIONAL & EXECUTIVE SERIES



DM AND DT LOCAL CONTROL STATIONS

- STEP 1 Mount J1 in cutout beside mike jack (J901) in the cabinet rear grill using hardware furnished.
- STEP 2 Remove harness wire 20 between TB502-5 on EP-38A and R901-1 on Control Panel.
- STEP 3 Connect green-white wire (from Pin B on J1) to TB502-5 on EP-38-A.
- STEP 4 Solder brown-white wire (from Pin A on J1) to R901-1 on Control Panel.
- STEP 5 Connect black-white wire (from Pin C on J1) to TB501-12 on EP-38-A.
- STEP 6 Dress these wires alongside existing harness and spot tie as required for neat cable dress.
- STEP 7 Connect cable from Decoder to J1.

DM LOCAL/REMOTE STATIONS

- STEP 1 Mount J1 in cutout beside mike jack (J901) in the cabinet rear grill using hardware furnished.
- STEP 2 Remove harness wire 59 between TB701-7 on the KC-16-A and R901-1 on Control Panel.
- STEP 3 Connect the green-white wire (from Pin B on J1) to TB701-7 on the KC-16-A.
- STEP 4 Solder brown-white wire (from Pin A on J1) to R901-1 on Control Panel.
- STEP 5 Connect black-white wire (from Pin C on J1) to TB501-12 on EP-38-A.
- STEP 6 Dress these wires alongside existing harness and spot tie as required for neat cable dress.
- STEP 7 Connect cable from Decoder to J1.

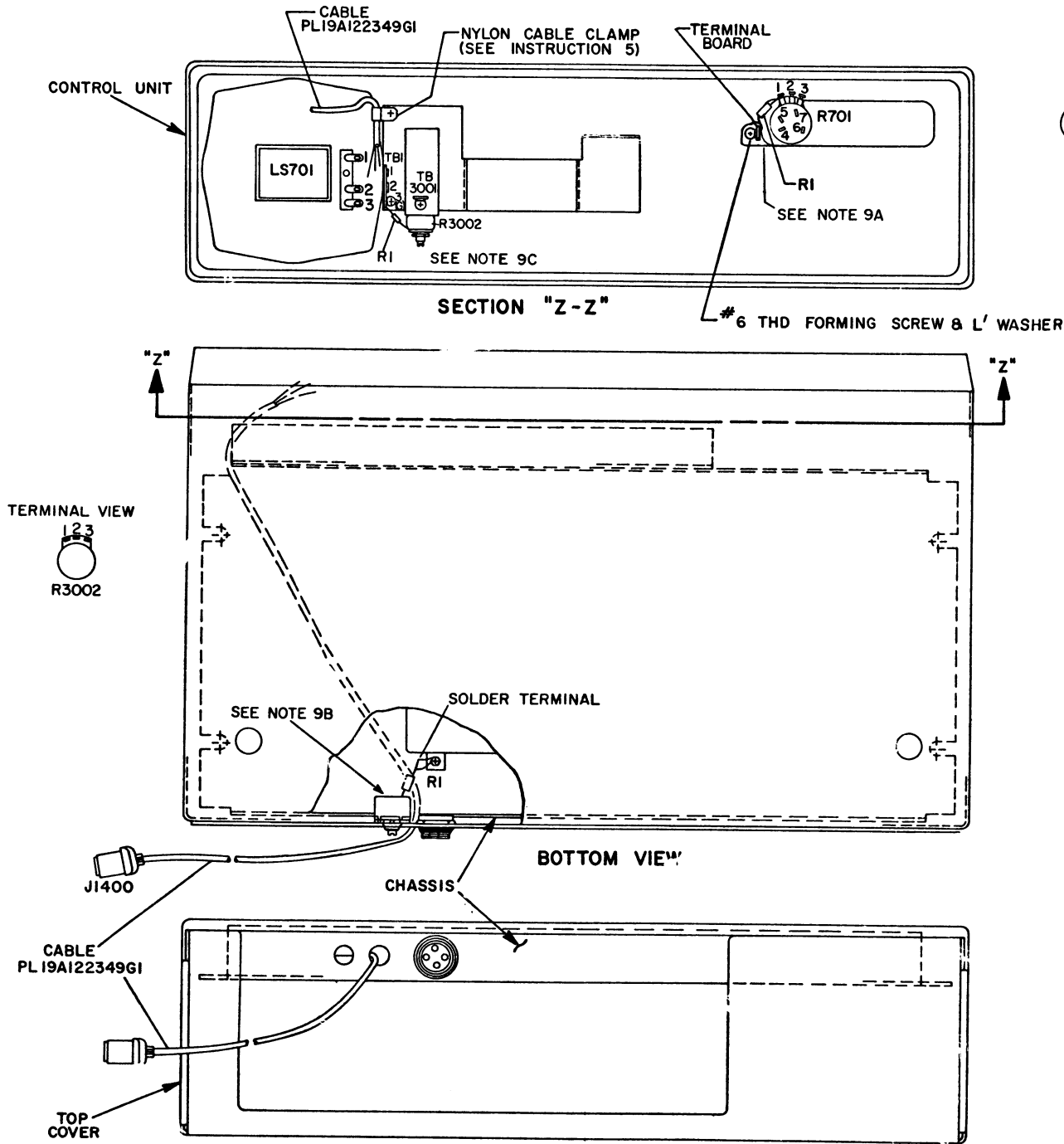
DT LOCAL/REMOTE STATIONS

- STEP 1 Mount J1 in cutout beside mike jack (J901) in the cabinet rear grill using hardware furnished.
- STEP 2 Remove harness wire 59 between P902-7 of the station harness and R901-1 on Control Panel.
- STEP 3 Install terminal 5496809P17 on the green-white wire (from Pin B on J1) and insert terminal into P902-7 in the same location that wire 59 was previously located.
- STEP 4 Solder brown-white wire (from Pin A on J1) to R901-1 on Control Panel.
- STEP 5 Connect black-white wire (from Pin C on J1) to TB501-12 on EP-38-A.
- STEP 6 Dress these wires adjacent to existing harness and spot tie as required for neat cable dress.
- STEP 7 Connect cable from Decoder to J1.

INSTALLATION INSTRUCTIONS

TONE APPLICATION KIT FOR
MASTR PROGRESS LINE
DESK MATE & DESK TOP STATIONS

(RC-1286F)

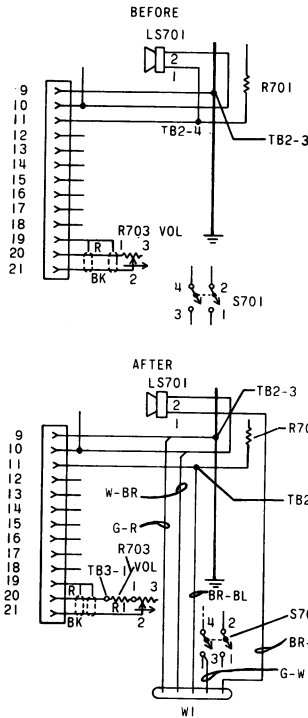


- ① INSTRUCTIONS FOR TONE DECODER OPTION:
1. REMOVE TOP COVER.
 2. REMOVE CONTROL UNIT FROM BOTTOM COVER (5 SCREWS) & LAY FACE DOWN.
 3. REMOVE CHASSIS MOUNTING HARDWARE.
 4. INSERT CABLE THROUGH HOLE IN REAR OF CHASSIS & RAISE CHASSIS SO THAT CABLE CAN BE ROUTED UNDER BOTTOM SIDE & UP TO CONTROL UNIT AS SHOWN.
 5. ASSEMBLE CABLE CLAMP TO CABLE & MOUNT CLAMP UNDER HARDWARE THAT MOUNTS SUPPORT AS SHOWN.
 6. REASSEMBLE CHASSIS.
 7. IN CONTROL UNIT REMOVE DA JUMPER BETWEEN LS701-2 & LS701-3 WHEN HOOKSWITCH MUTE IS DESIRED.
 8. FROM CABLE (PL19A122349G1): SOLDER RED WIRE TO LS701-3; SOLDER BLACK WIRE TO LS701-2; AND SOLDER SHIELD WIRE TO LS701-1.
 - 9A. FOR LOCAL CONTROL ONLY (FM__L__OR FK__L__): IN CONTROL UNIT DISCONNECT SHIELD WIRE & N22-G-W-R WIRE FROM R701-1 & CONNECT TO TERMINAL BOARD (WHICH IS TO BE ASSEMBLED AS SHOWN). SOLDER R1 (22Ω) RESISTOR FROM TERMINAL BOARD TO R701-1 AS SHOWN (N22 G-W-R WIRE IS IN TUBED STATION ONLY).
 - 9B. FOR TUBE REMOTE ONLY (FM__R__): IN POWER SUPPLY MOUNT SOLDER TERMINAL UNDER NUT HOLDING PRE AMP AS SHOWN. DISCONNECT SHIELD FROM R3002-1 AND CONNECT TO SOLDER TERMINAL. CONNECT R1 (22Ω) FROM R3002-1 TO SOLDER TERMINAL.
 - 9C. FOR ROYAL REMOTE CONTROL ONLY (FK__R__): IN CONTROL UNIT DISCONNECT SHIELD AND CONNECT TO TB1-3 (G). CONNECT R1 (22Ω) FROM R3002-1 TO TB1-3 (G).
 10. REASSEMBLE CONTROL UNIT TO BOTTOM COVER.
 11. REASSEMBLE TOP COVER.
 12. PLUG TONE DECODER INTO CABLE.

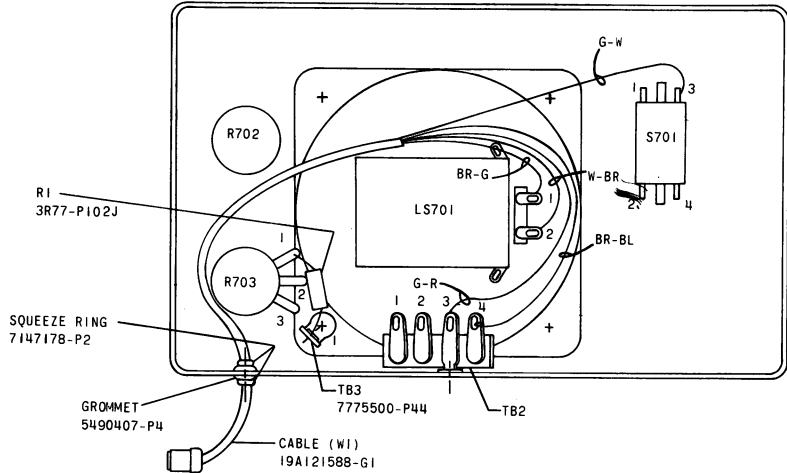
PROGRESS LINE APPLICATIONS

MOBILE APPLICATION KITS

FRONT-MOUNT APPLICATION KIT
PL-19A121863-G1
(MODEL 4EC29A2 CONTROL UNIT)

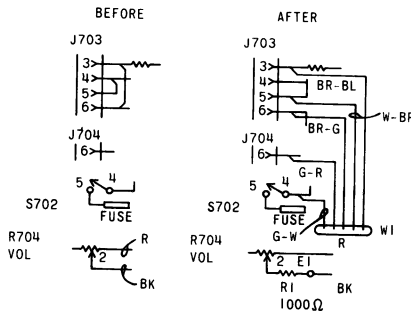


- STEP 1: REMOVE EXISTING GROMMET FROM HOLE JUST BEHIND POWER CABLE HOLE ON CONTROL UNIT. ASSEMBLE GROMMET FROM KIT INTO THIS HOLE AND INSERT CABLE (W1) THRU GROMMET LEAVING APPROXIMATELY 2.5 INCHES BETWEEN END OF PLUG & GROMMET.
- STEP 2: ATTACH SQUEEZE RINGS ON EITHER SIDE OF GROMMET FOR MINIMUM PLAY. OVERLAP ENDS OF RINGS TO INSURE TIGHT FIT.
- STEP 3: ASSEMBLE TB3 TO SPEAKER, USING #4-40 HARDWARE OF SPEAKER NEAREST R703 RESISTOR.

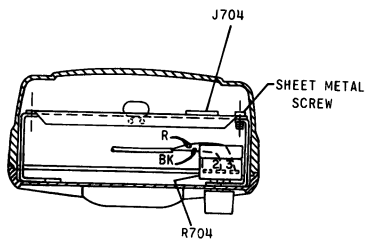


- STEP 4: UNSOLDER RED WIRE AT R703-1 AND SOLDER TO TB3-1. SOLDER R1 (1000Ω) FROM TB3-1 TO R703-1. REMOVE BLACK WIRE BETWEEN TB2-4 & LS701-1.
- STEP 5: SOLDER ALL WIRES FROM CABLE W1 AND MAKE ALL OTHER CONNECTIONS AS SHOWN IN DIAGRAM AT LEFT.

TRUNK-MOUNT APPLICATION KIT
PL-19A121840-G1
(MODEL 4EC27A CONTROL UNIT)

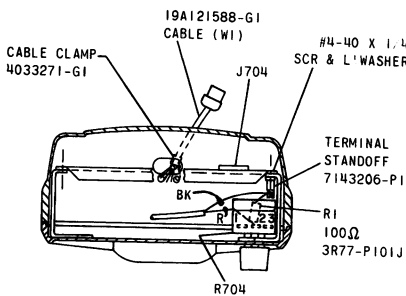


- STEP 1: REMOVE SHEET METAL SCREW NEAREST J704-3, USING #4/40 X 1/4 SCREW & LOCKWASHER MOUNT TERMINAL STANDOFF IN HOLE VACATED BY SHEET METAL SCREW.
- STEP 2: UNSOLDER BLACK WIRE FROM TERMINAL #2 OF R704 AND SOLDER TO TERMINAL STANDOFF. SOLDER R1 (1000Ω) BETWEEN TERMINAL #2 OF R704 AND TERMINAL STANDOFF.



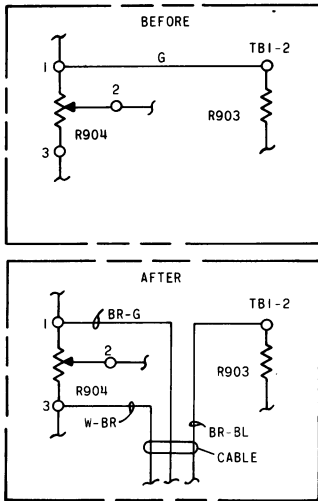
- STEP 4: REMOVE JUMPER WIRE BETWEEN J703-3 & J703-6 AND SOLDER WIRES FROM W1 AS SHOWN IN DIAGRAM AT LEFT.

- STEP 3: ATTACH CABLE CLAMP TO CABLE W1 AT END OF BRAIDED AREA. RUN W1 THRU CABLE-ENTRANCE HOLE IN CASE AND ATTACH CABLE-CLAMP HOOK THRU SMALL HOLE.

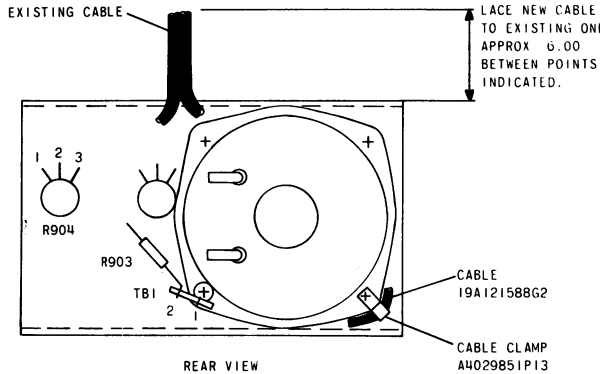


STATION APPLICATION KITS

DO STATION APPLICATION KIT
PL-19A121914-G1

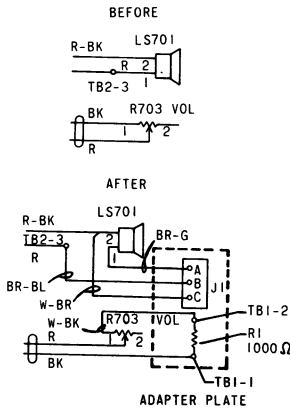


- STEP 1: MOUNT CABLE CLAMP UNDER BOLT HOLDING SPEAKER AND INSERT CABLE 12 INCHES FROM WIRE ENDS.

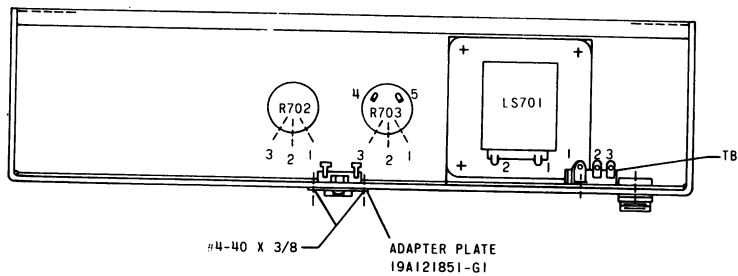


- STEP 2: SOLDER CONNECTIONS AS FOLLOWS (SEE DIAGRAM AT LEFT)
BR-G WIRE TO R904-1
BR-BL WIRE TO TB1-2
W-BR WIRE TO R904-3
REMOVE GREEN WIRE BETWEEN R904-1 & TB1-2.

TI STATION APPLICATION KIT
PL-19A121855-G1
(MODEL 4EC39A10 CONTROL UNIT)



- STEP 1: PLACE ADAPTER PLATE OVER RECTANGULAR CUTOUT NEAR CENTER BOTTOM OF CONTROL UNIT. WITH TERMINAL STRIP TB1 TO REAR OF UNIT AND ASSEMBLE WITH #4-40 HARDWARE AS SHOWN.



- STEP 2: REMOVE RED WIRE BETWEEN LS701-1 & TB2-3.
- STEP 3: UNSOLDER BLACK WIRE FROM R703-1 AND SOLDER TO TB1-1 OF ADAPTOR PLATE.
- STEP 4: SOLDER ALL WIRES FROM ADAPTOR PLATE AS SHOWN IN DIAGRAM AT LEFT.

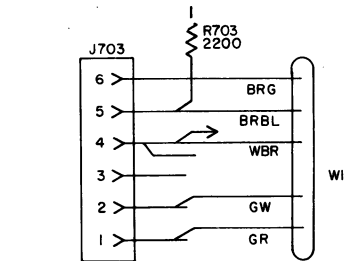
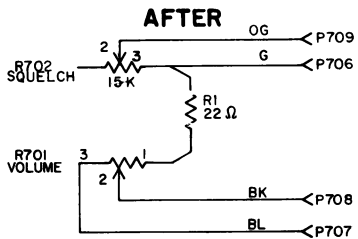
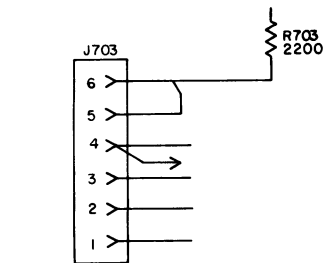
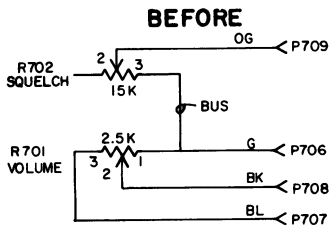
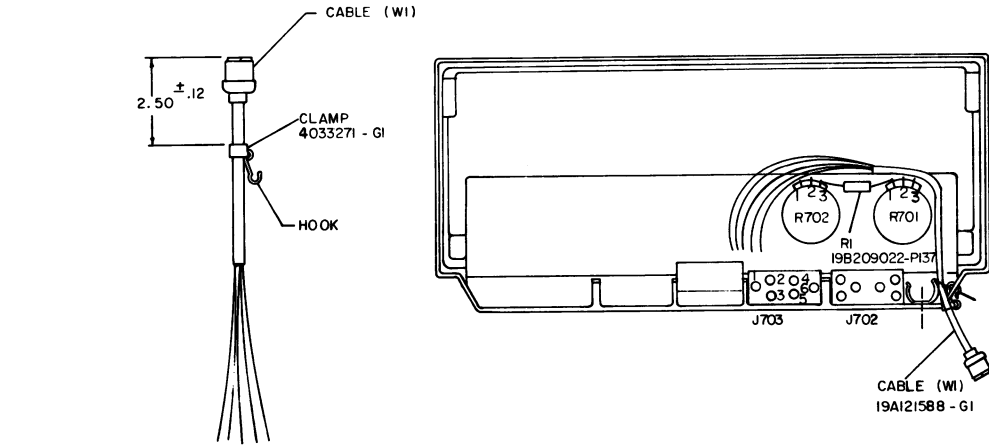
INSTALLATION INSTRUCTIONS

TONE APPLICATION KITS FOR
PROGRESS LINE

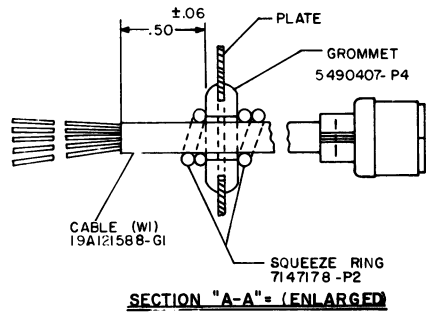
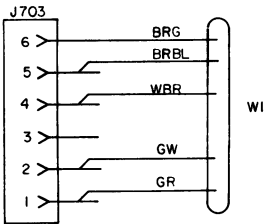
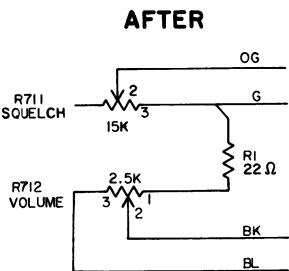
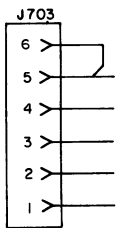
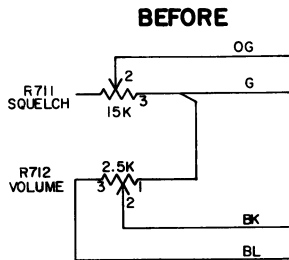
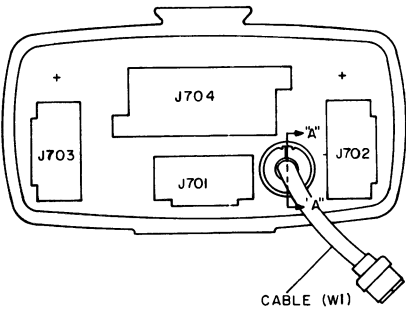
(RC-1150A)

TPL- FRONT - MOUNT APPLICATION KIT
PL-19A121841 - G1

TPL TRUCK - MOUNT APPLICATION KIT
PL-19A121845 - G1



- STEP 1: PREPARE CABLE (W1) BY ASSEMBLING CLAMP TO IT AS SHOWN.
- STEP 2: ATTACH CABLE TO CONTROL UNIT BY INSERTING HOOK (FROM INSIDE) THROUGH SMALL HOLE IN UNIT.
- STEP 3: ROUTE CABLE AROUND R701 & R702 AS INDICATED AND SOLDER WIRES TO J703 AS SHOWN BY WIRING DIAGRAM.
- STEP 4: REMOVE JUMPER BETWEEN R701-1 & R702-3 AND TRANSFER GREEN WIRE FROM R701-1 TO R702-3. SOLDER R1 (22Ω) FROM R701-1 TO R702-3.
- STEP 5: REMOVE JUMPER BETWEEN J703-5 & J703-6. UNSOLDER R703 FROM J703-6 & SOLDER TO J703-5.
- STEP 6: MAKE ALL OTHER WIRING CHANGES AS SHOWN BY WIRING DIAGRAM. SOLDER ALL ELECTRICAL CONNECTIONS.



- STEP 1: REMOVE PLUG BUTTON FROM HOLE (WHERE CABLE IS NOW SHOWN) AND DISCARD. PLACE GROMMET IN HOLE VACATED BY BUTTON. INSERT CABLE THROUGH GROMMET AND ATTACH SQUEEZE RINGS FOR MINIMUM PLAY ON EITHER SIDE OF GROMMET. OVERLAY ENDS OF RINGS TO INSURE TIGHT FIT.
- STEP 2: REMOVE JUMP WIRE BETWEEN R711-3 & R712-1 AND SOLDER R1 (22Ω) RESISTOR IN ITS PLACE AS SHOWN IN WIRING DIAGRAM.
- STEP 3: REMOVE JUMPER BETWEEN J703-5 & J703-6 AND SOLDER WIRES OF CABLE (W1) TO J703 AS SHOWN BY WIRING DIAGRAM.

INSTALLATION INSTRUCTIONS

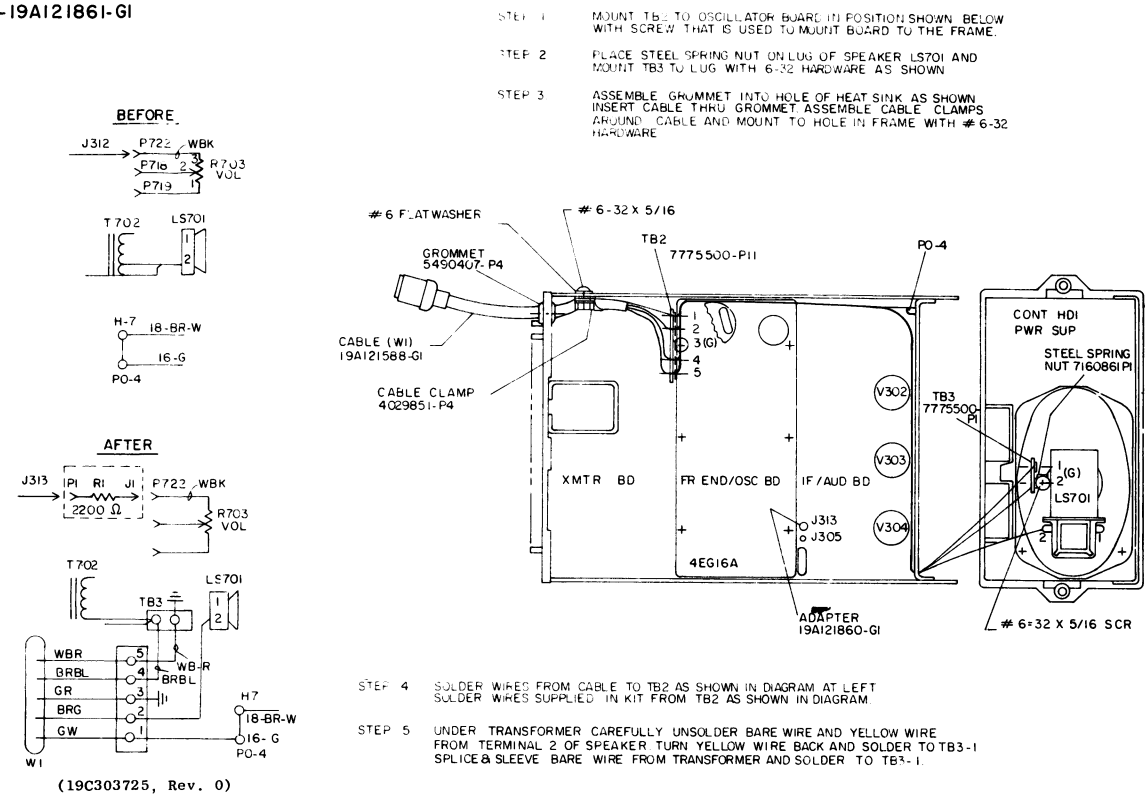
TONE APPLICATION KITS FOR TPL

(RC-1151A)

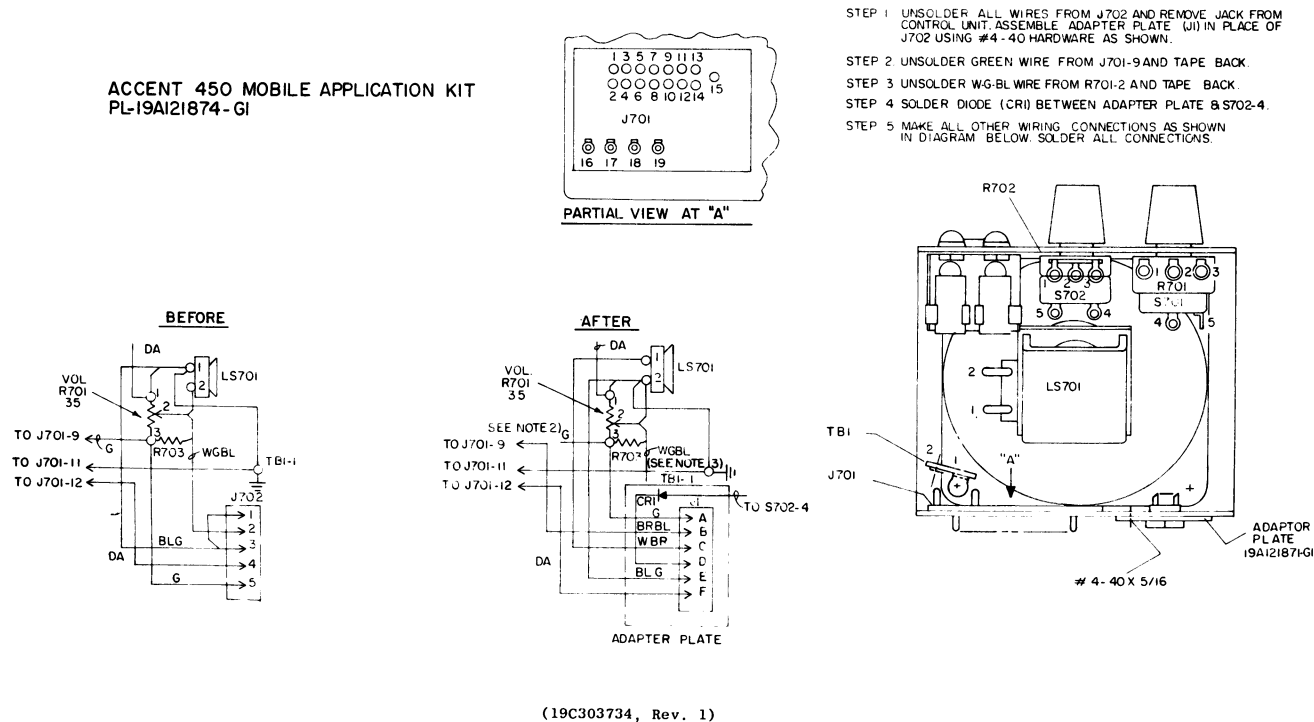
PACER & ACCENT 450 APPLICATIONS

MOBILE APPLICATION KITS

PACER MOBILE APPLICATION KIT
PL-19A121861-G1

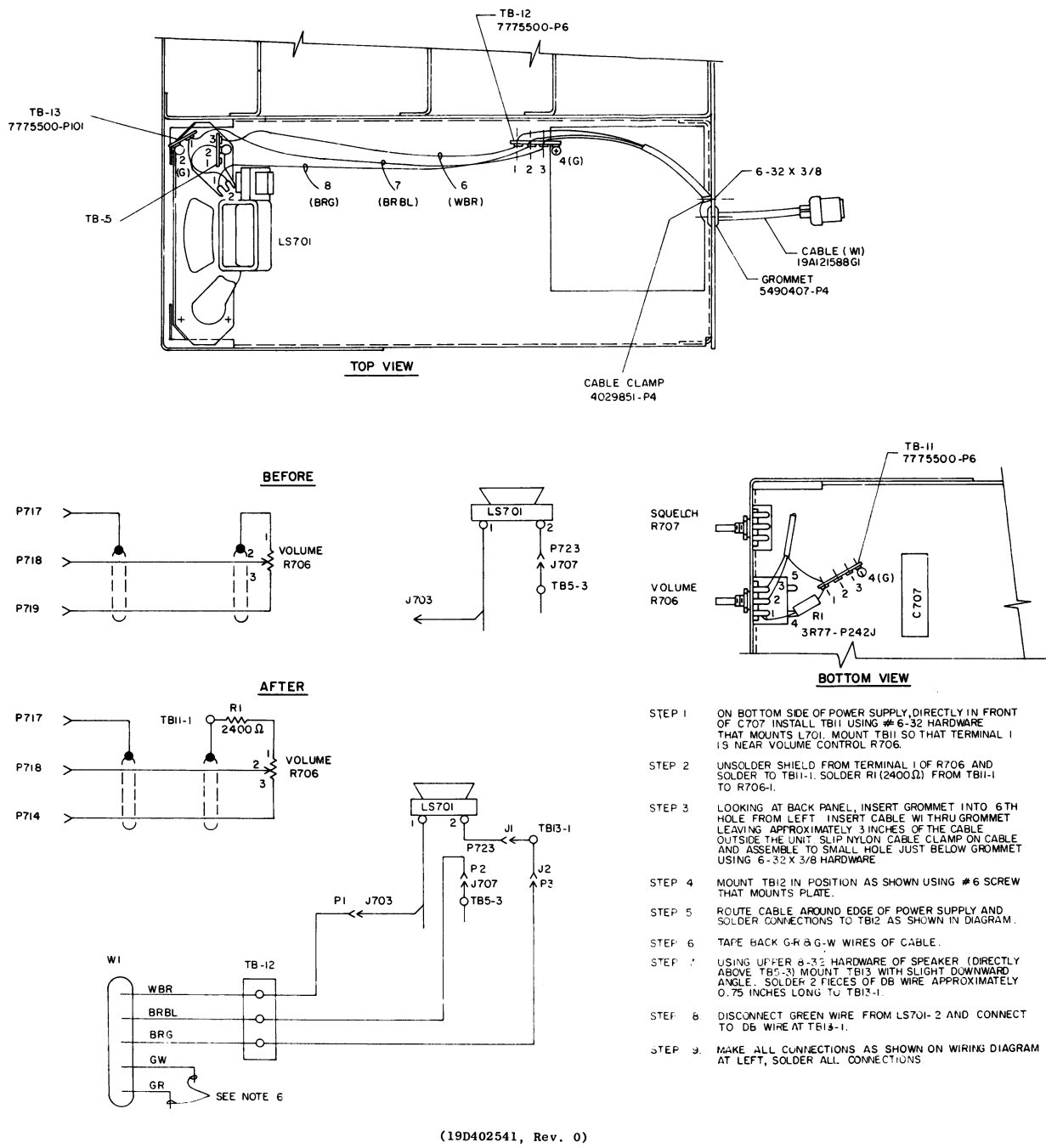


ACCENT 450 MOBILE APPLICATION KIT
PL-19A121874-G1

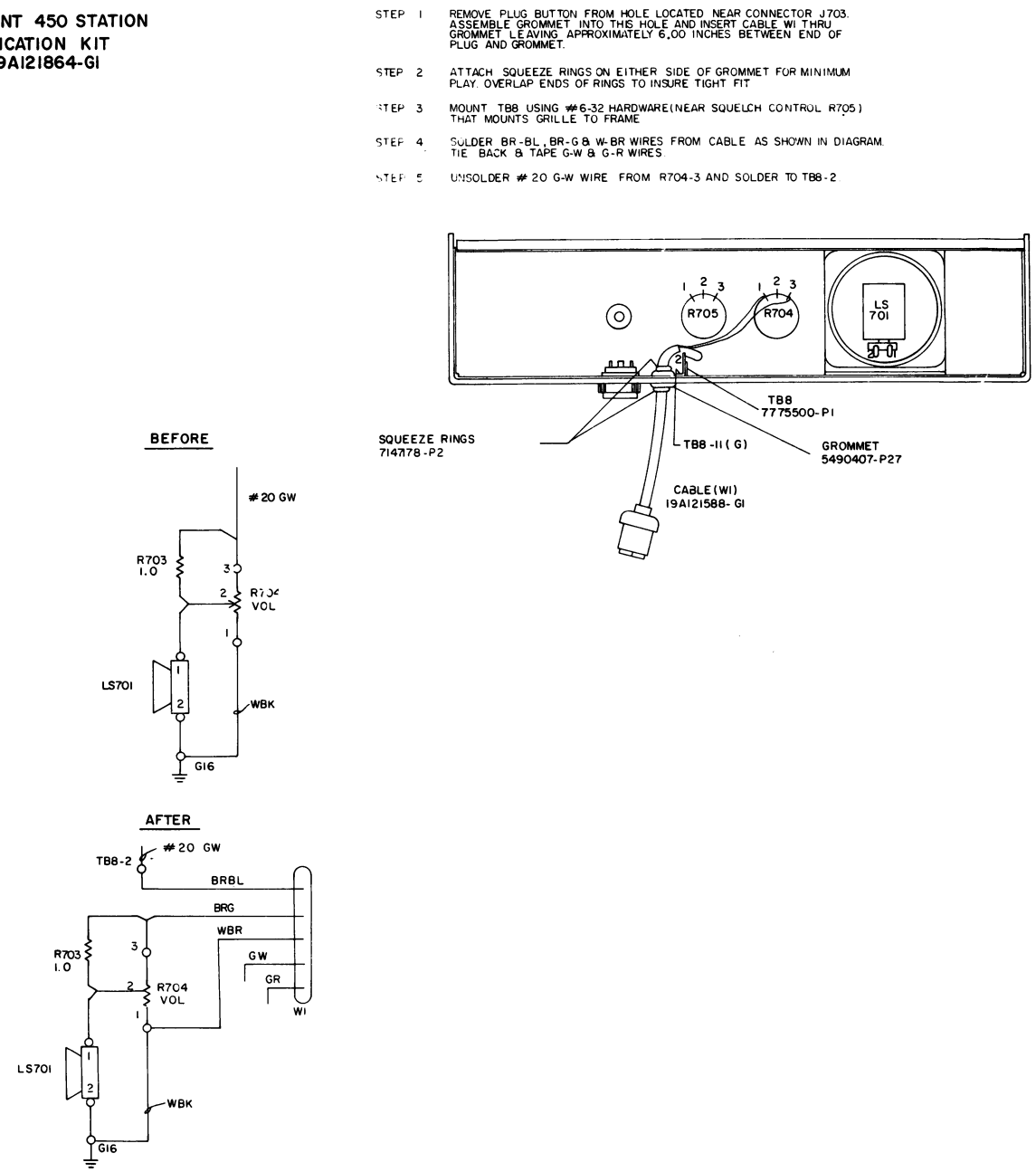


STATION APPLICATION KITS

PACER STATION APPLICATION KIT
PL-19A121903-G1



ACCENT 450 STATION
APPLICATION KIT
PL-19A121864-G1



INSTALLATION INSTRUCTIONS

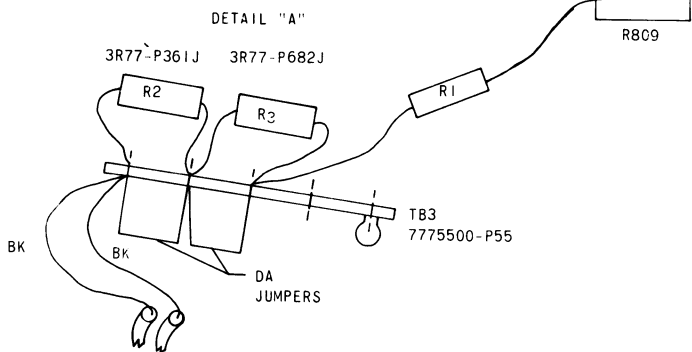
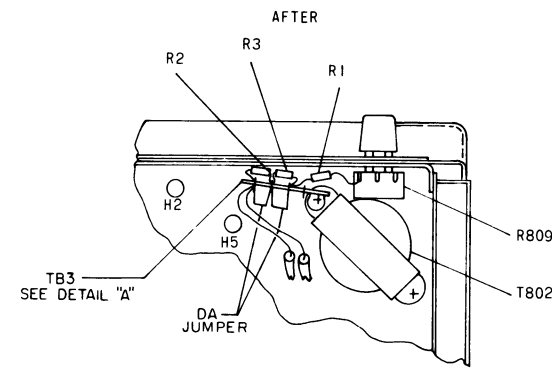
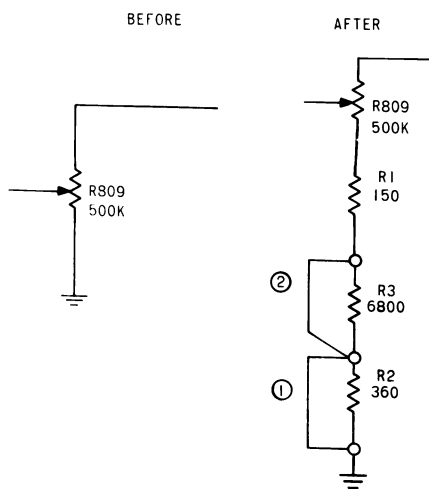
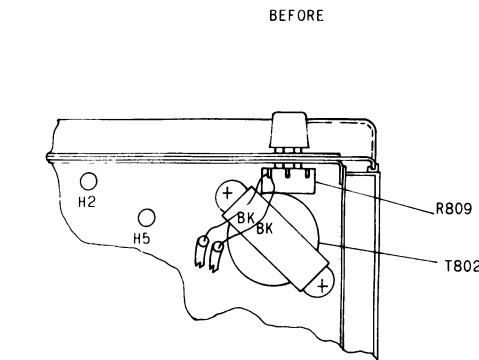
TONE APPLICATION KITS FOR
GE PACER & ACCENT 450

RC4 APPLICATION KIT
PL-19A121908-G1
(REMOTE CONTROL UNIT MODEL 4EC28A1)

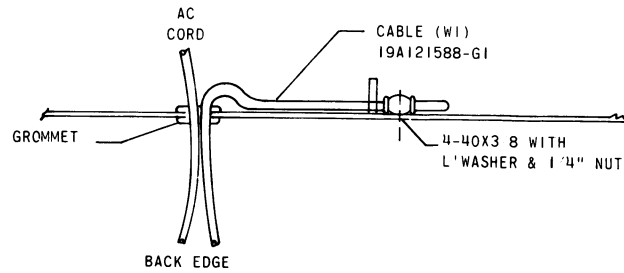
STEP 1: ASSEMBLE TERMINAL BOARD TB3 AND RESISTORS R1, R2 AND R3 INSTALL WITH JUMPERS ON THE OUTSIDE UNDER SCREW HOLDING TRANSFORMER T802 (NEAR VOLUME CONTROL)

STEP 2: DISCONNECT BLACK WIRE (2) FROM VOLUME CONTROL (R809) AND ATTACH TO TOP TERMINAL OF BOARD (TB3).

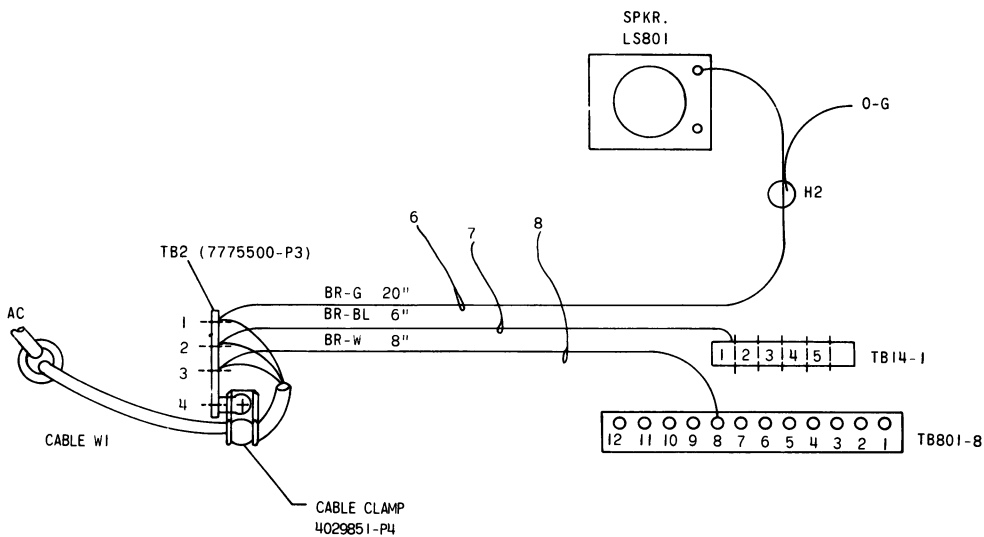
STEP 3: RUN CABLE THRU GROMMET WITH AC WIRE.



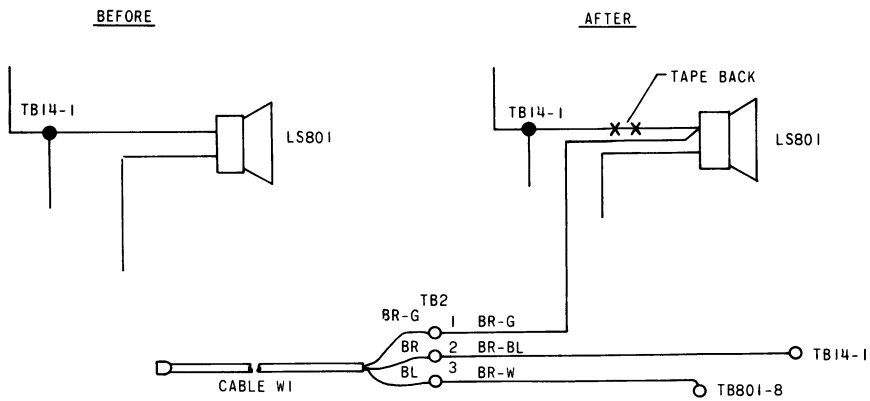
INPUT LEVEL	CLIP JUMPER
+ 10 & ABOVE	NONE
0 TO + 10	①
-12 TO 0	① & ②



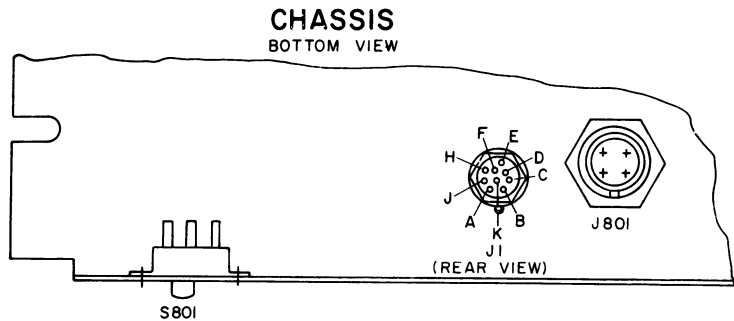
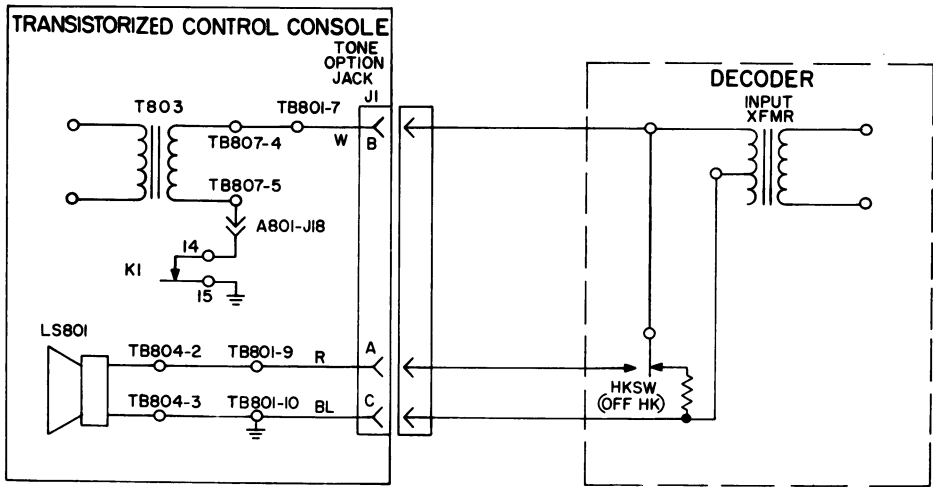
STEP 4: REMOVE SCREW NEAREST GROMMET AND INSTALL TERMINAL BOARD TB2 AND CABLE CLAMP. INSERT END OF BRAIDED PORTION IN CLAMP AND TIGHTEN. CUT WIRE TO LENGTH, FOLDING AND TAPING REMAINING WIRE.



STEP 5: ATTACH WIRE TO TERMINAL OF BOARD TB2 AS SHOWN. ATTACH SAME COLOR WIRE TO APPROPRIATE TERMINAL. DISCONNECT ORANGE AND BLUE WIRE AT SPEAKER TERMINAL AND TAPE BACK. TO THIS TERMINAL ON SPEAKER SOLDER THE BR-G WIRE. CONNECT THE BR-BL WIRE TO TB14-1 & THE BR-W WIRE TO TB801-8.



TRANSISTORIZED CONTROL CONSOLE
APPLICATION KIT PL-19A122250-G17
(MODEL 4EC71A10)



CONNECTIONS CHART		
FROM	TO	LEAD COLOR
J1	TB801-7	WHITE
J1	TB801-9	RED
J1	TB801-10	BLUE

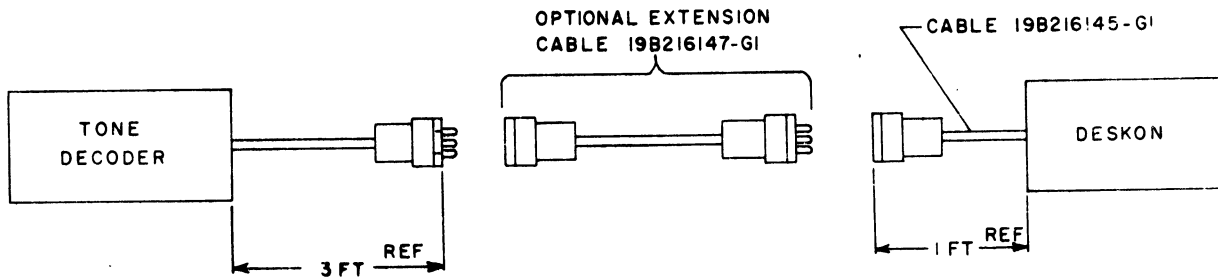
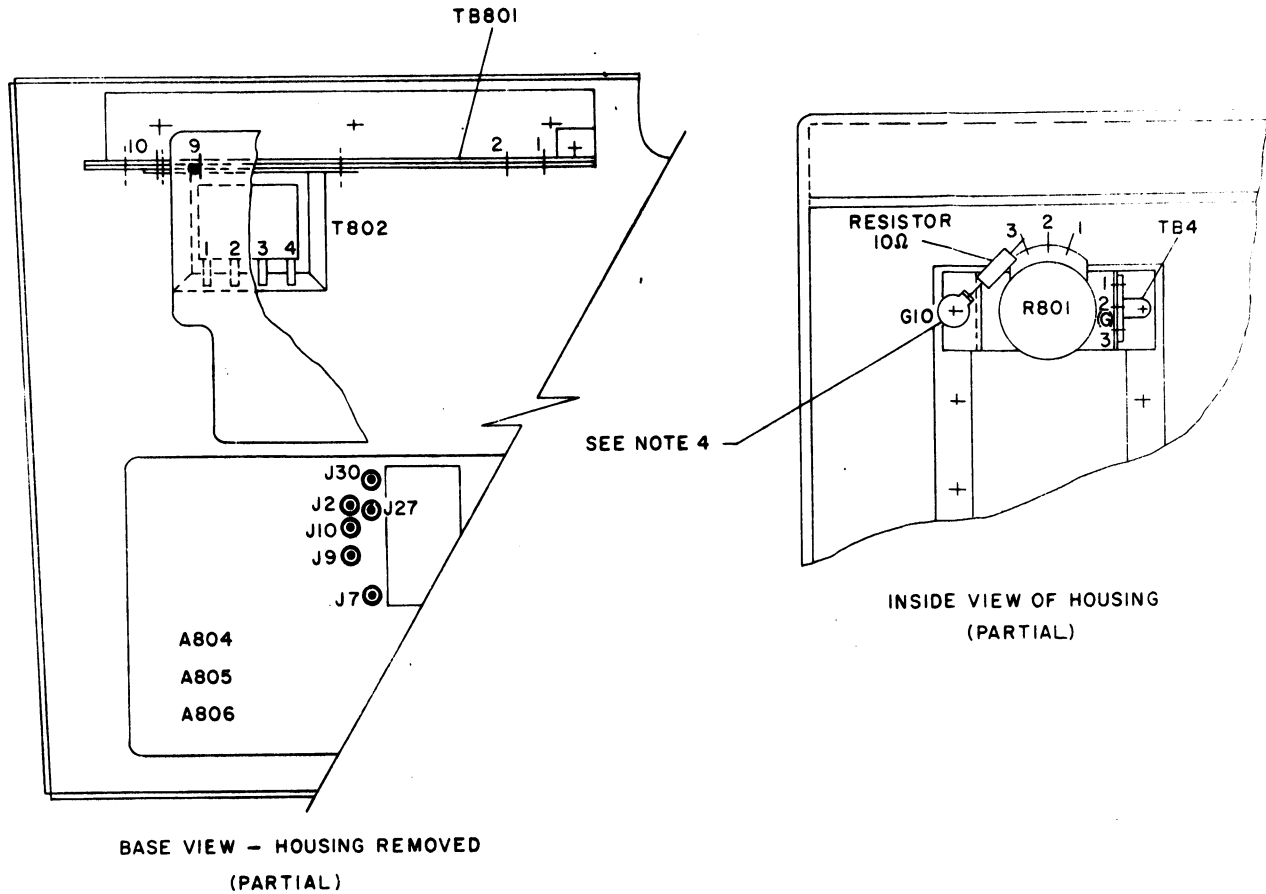
INSTALLATION INSTRUCTIONS

TONE APPLICATION KIT
FOR TCC & RC4

(RC-1149B)

DESKON REMOTE CONTROL UNIT
TONE APPLICATION KIT 19A127156G1

LBI-3839



INSTRUCTIONS:

1. CLIP OUT WHITE-BLACK WIRE BETWEEN TB801-10 AND TB02-2.
2. ASSEMBLE WHITE-BLACK WIRE (19A127156G1) FROM TB801-10 TO A804-A805 A806-J10.
3. ASSEMBLE CABLE (19B216145G1) RED LEAD TO TB801-7 AND BLACK LEAD TO TB801-10.
4. ASSEMBLE G10 (A4036835P4) AS SHOWN
5. REMOVE SHIELD FROM R801 (VOLUME CONTROL) AND CONNECT TO G10.
6. ASSEMBLE 10Ω RESISTOR (C3R77P100K) BETWEEN G10 AND R801-3 (VOLUME CONTROL).
7. RE-ASSEMBLE HOUSING TO BASE & ROUTE CABLE THRU SLOT AT REAR OR END OF HOUSING

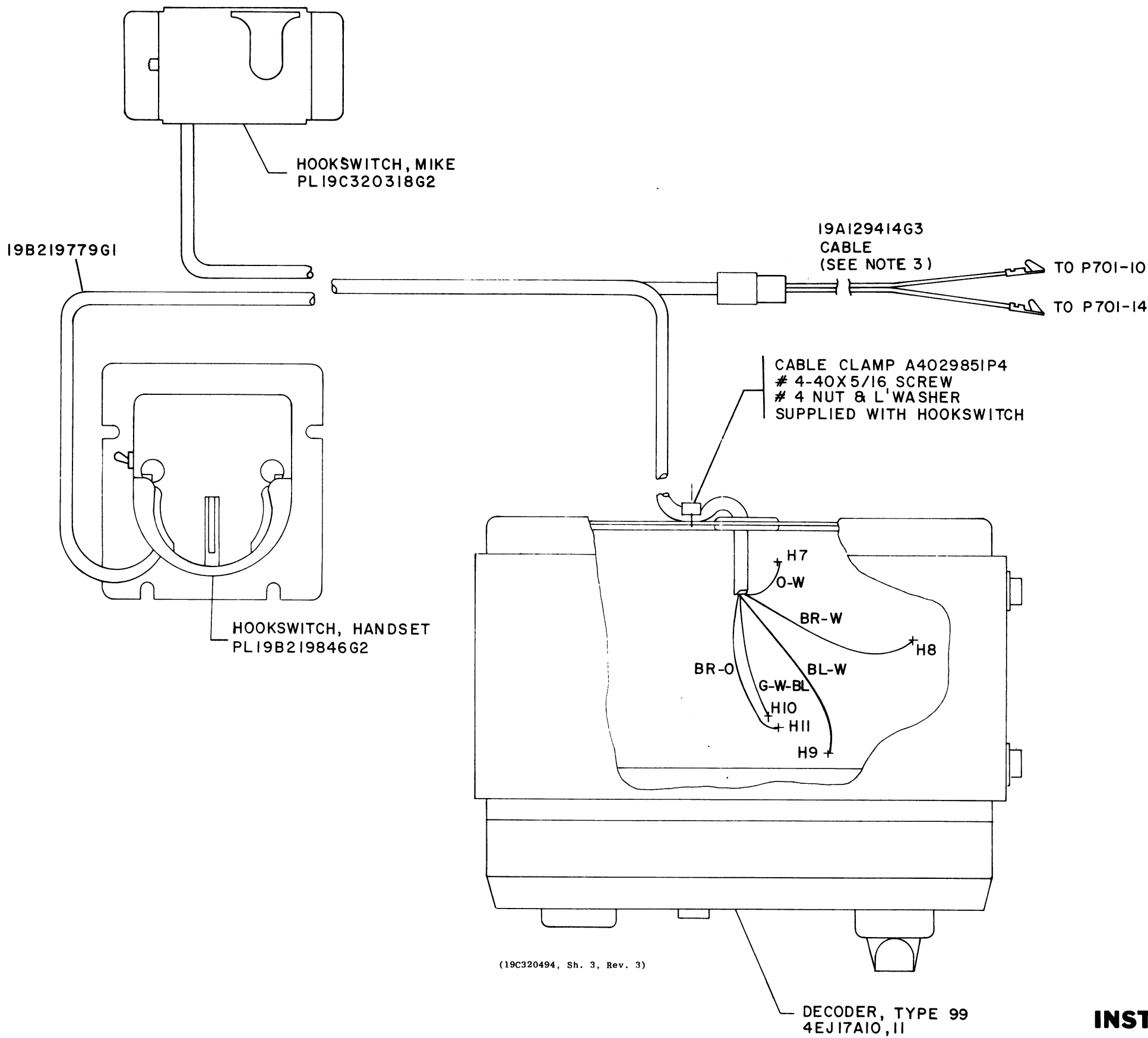
(DF-5031)

INSTALLATION INSTRUCTIONS

(19C311814, Rev. 5)

DESKON REMOTE CONTROL UNIT

RC-1833A

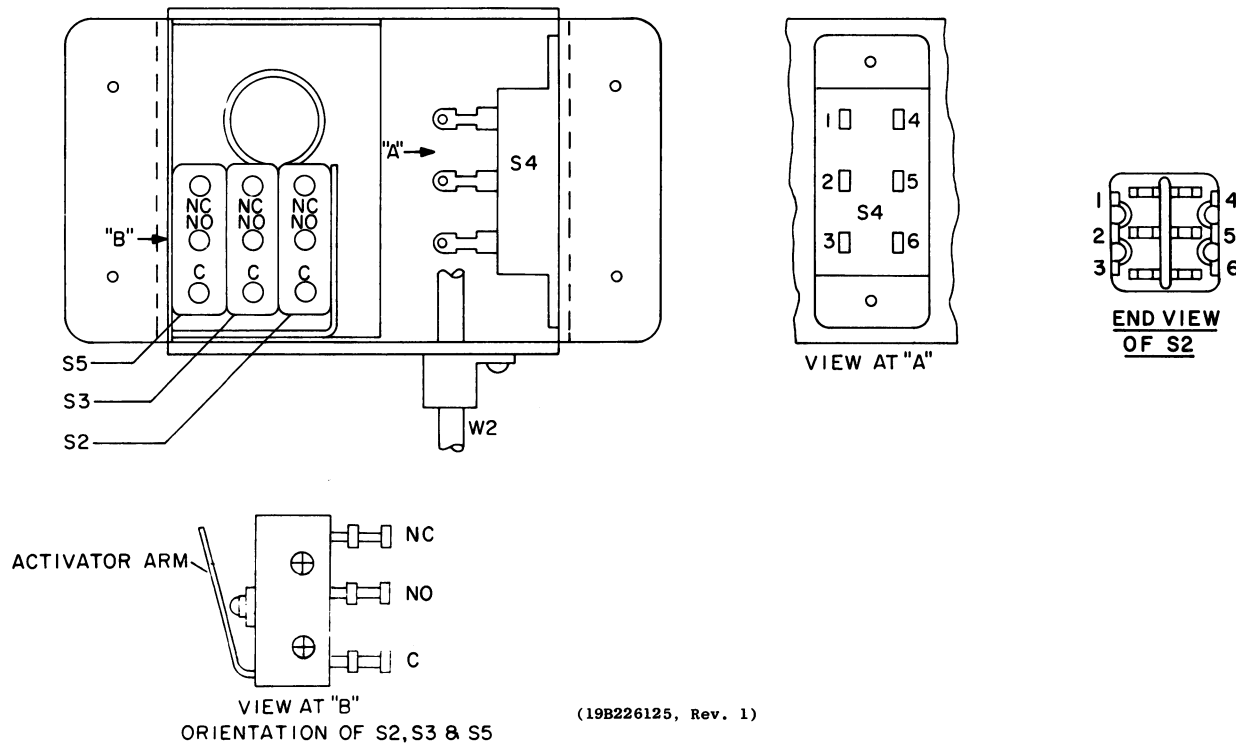


- INSTALLATION INSTRUCTIONS:
1. REMOVE DECODER FROM CASE.
 2. ROUTE CABLE AS SHOWN AND CONNECT AS DIRECTED IN CHART.
 3. USE 19A129414G3 CABLE SUPPLIED WHEN REQUIRED FOR CG DISABLE. CONNECT TO P701-10 & P701-14 ON MASTR II CONTROL UNIT.

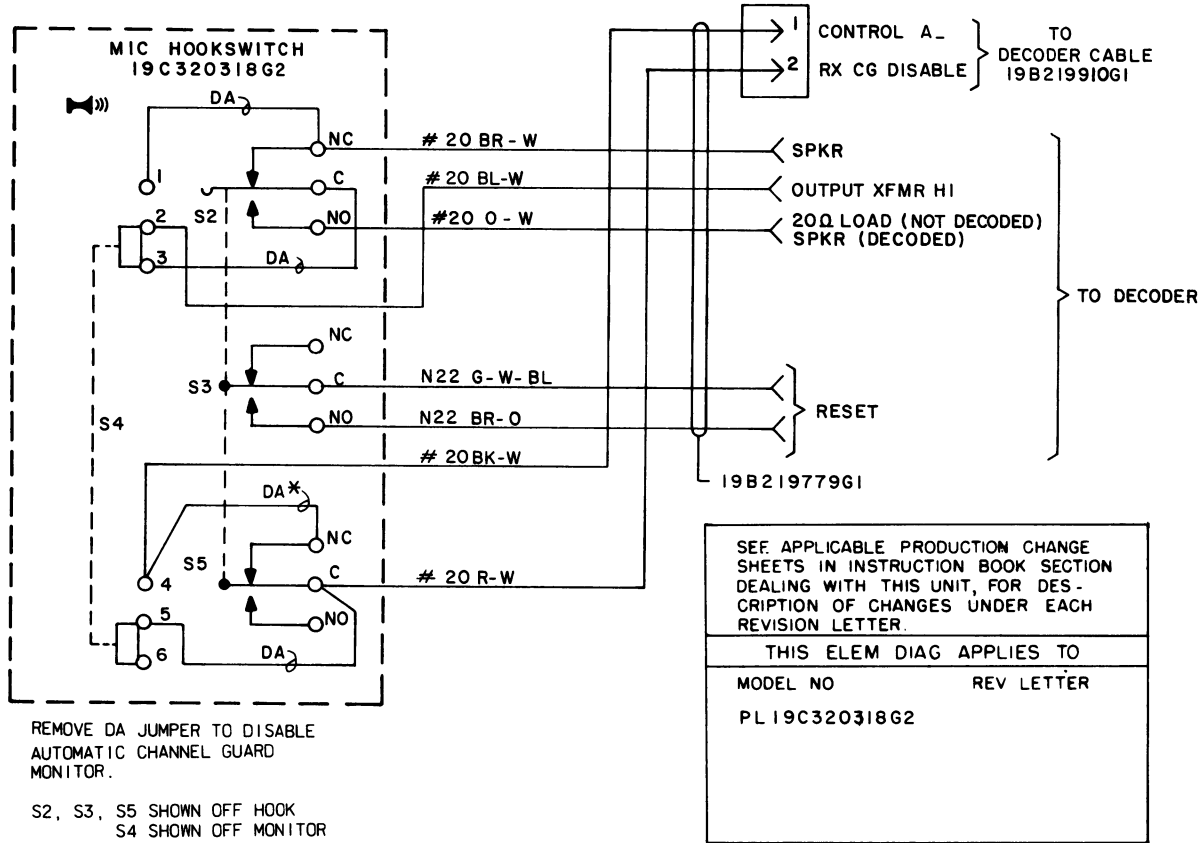
CONNECTION CHART	
WIRE	TO
BR- W	H8
BL- W	H9
O - W	H7
G-W-BL	H10
BR- O	H11

INSTALLATION INSTRUCTIONS
MASTR II MICROPHONE HANDSET/HOOKSWITCH

OUTLINE DIAGRAM

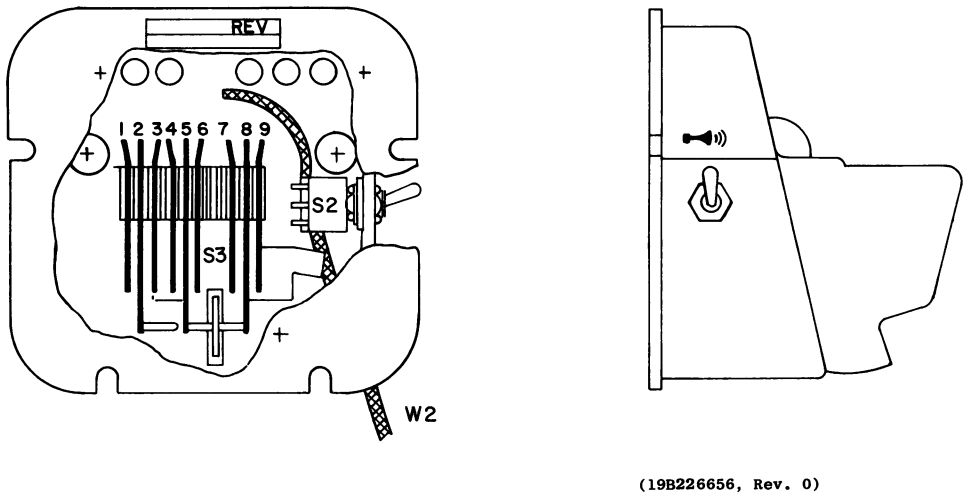


SCHEMATIC DIAGRAM

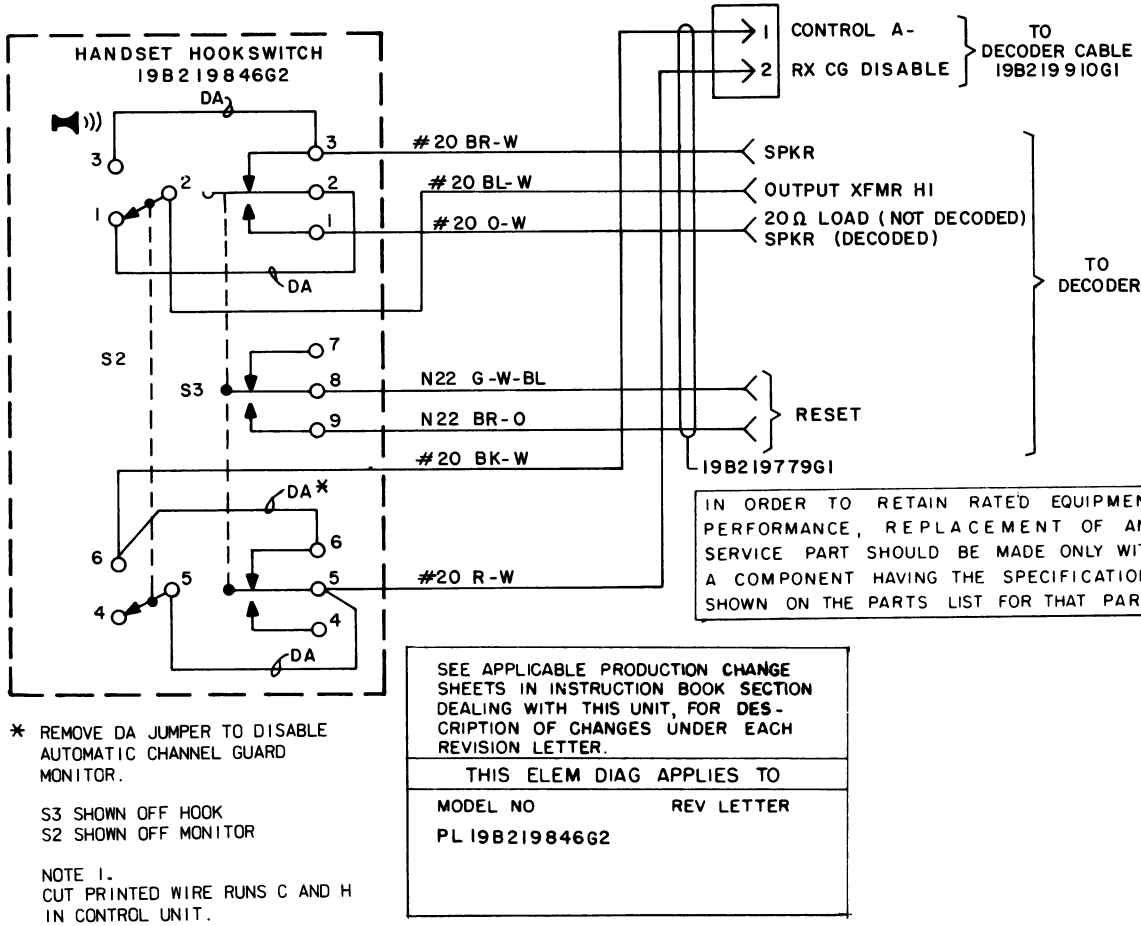


SERVICE SHEET
MASTR II MICROPHONE HANDSET/HOOKSWITCH

OUTLINE DIAGRAM



SCHEMATIC DIAGRAM



PARTS LIST

LBI-4741
MICROPHONE HOOKSWITCH
19C320318G2

SYMBOL	GE PART NO.	DESCRIPTION
S2 and S3	19A116676P1	Switch, sensitive: SPDT, 5 amp at 24 VDC or 5 amp at 250 VRMS; sim to Microswitch 111SM1-T2.
S4	19B219698G2	Slide: DPDT, 3 amp at 125 VAC, 2.2 amp at 14 VAC; sim to Switchcraft 46206LH. (S1 includes switch and housing).
S5	19A116676P1	Switch, sensitive: SPDT, 5 amp at 24 VDC or 5 amp at 250 VRMS; sim to Microswitch 111SM1-T2.
W2	19B219779G1	Cable: approx 50 inches long. Includes (5) 4036634P1 electrical contacts.
	19B219694P1	Base plate.
	N193P1410C	Tap screw; No. 8-18 x 5/8. (Secures base plate to mounting surface).
	7147223P2	Clip, loop. (External strain relief).
	19B201074P304	Tap screw, Phillips POZIDRIV®; No. 6-32 x 1/4. (Secures external strain relief).
	4029851P4	Cable clip; sim to Weckesser Co. 3/16-4-128. (Strain relief for W2).
	N80P9005C6	Machine screw; No. 4-40 x 5/16. (Secures cable clip).
	N404P11C6	Lockwasher; No. 4. (Used with internal cable clip).
	7141225P2	Hexnut; No. 4-40. (Used with internal cable clip).

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

PARTS LIST

LBI-4742
HANDSET HOOKSWITCH
19B219846G2

SYMBOL	GE PART NO.	DESCRIPTION
S2	19A116877P6	Toggle: DPDT, 1 ma at 6 VDC; sim to C and K Components Series Type 7201G. (CHANNEL GUARD DISABLE).
S3	19A129585P2	Hookswitch, Handset: black, 3 form C contacts.
W2	19B219779G1	Cable: approx 50 inches long. Includes (5) 4036634P1 electrical contacts.
	N190P1312C	Tap screw, Phillips POZIDRIV; No. 6 x 3/4. (Secures lower housing to base plate).
	N84P13014C6	Machine screw, phillips; No. 6-32 x 7/8. (Secures upper housing to base plate).
	N8415016C6	Machine screw, phillips; No. 8-32 x 7/8. (Secures bumpers).
	N101P1510P	Tap screw, phillips head; No. 8-15 x 5/8. (Secures plate to mounting surface).
	19B219852P1	Base plate.
	19A129586P1	Bumper, rubber.
	4029851P4	Cable clip; sim to Weckewer Co. 3/16-4-128. (Strain relief for W2).
	N80P9005C6	Machine screw; No. 4-40 x 5/16. (Secures cable clip).
	N404P11C6	Lockwasher; No. 4. (Used with cable clip).
	7141225P2	Hex nut; No. 4-40. (Used with cable clip).

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

ORDERING SERVICE PARTS

Each component appearing on the schematic diagram is identified by a symbol number, to simplify locating it in the parts list. Each component is listed by symbol number, followed by its description and GE Part Number.

Service parts may be obtained from Authorized GE Communication Equipment Service Stations or through any GE Radio Communication Equipment Sales Office. When ordering a part, be sure to give:

1. GE Part Number for component
2. Description of part
3. Model number of equipment
4. Revision letter stamped on unit.

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance.

Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, contact the nearest Radio Communication Equipment Sales Office of the General Electric Company.

MAINTENANCE MANUAL

LBI-3839

**MOBILE RADIO DEPARTMENT
GENERAL ELECTRIC COMPANY • LYNCHBURG, VIRGINIA 24502**



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DF-5035