

**MAINTENANCE MANUAL**  
**CONTROL DISPLAY/PANEL 19B800628G1-G3**  
**(GE-MARC V™ CLASSIC (RM))**

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### DESCRIPTION

The control panel is an integral part of the radio providing the user with the status and control functions required to operate the radio. The standard control unit includes a power control/indicator, volume up/down controls, clear switch and the status and control indicators (WAIT, READY, CALL). Optionally, the following functions may be provided and individually selected: SPL CALL, EXT. ALARM, EXT. SPKR, AREA, and GROUP select.

The control unit also contains a sounder to alert the operator to incoming calls or channel acquisition/inavailability when there is no external speaker or the speaker is not selected.

The control/display panel for the CLASSIC RM (rear mount) is equipped with all operating switches; however, some may not be active (option not provided).

### CIRCUIT ANALYSIS

#### SOUNDER AMPLIFIER

The sounder amplifier consists of dual operational amplifier U3, speaker driver Q1, resistor network R19, the speaker and associated circuitry. The sounder speaker plugs into J5 and is mounted on the bottom of the control unit.

The alert tone generated on the logic board is placed on the filtered volume/squelch HI line, and applied to the input of audio amplifier U3A through J1-1. It is hard limited and applied to the base of speaker driver Q1 which drives the sounder speaker if selected by external speaker switch S4. The sounder is operational only when the external speaker is not selected and the presence of alert tone control voltage at J1-9.

The limiter amplifier is controlled by audio switch U3-B. An alert tone

control signal, generated by the micro-processor, is received from the synthesizer/interconnect board through J1-9. This signal is applied to audio switch U3-B to enable limiter amplifier U3-A.

Fixed resistor R18 controls the volume of the sounder. If the alert tones are too loud, or too soft, adjust the value on R18 to obtain a satisfactory audio level. Acceptable values for R18 range from 39 ohms to 150 ohms.

#### STATUS AND CONTROL INDICATORS

The status indicators include the WAIT/READY, CALL and transmit lights. The WAIT/READY and CALL indicators are controlled by the logic circuitry. The transmit light is controlled by the PTT switch through the antenna relay.

Option switches include the SPL CALL, ALARM, and SPKR switches. These switches are push-to-select, push-to-release. When the external speaker is not selected, audio will only be heard in the handset earpiece.

Area and group tone select switches apply A- to the logic circuitry causing it to advance DS1 or DS2 to the area or tone selected. The binary identification of the area/group tone is applied to the appropriate BCD-7 segment converter and displayed.

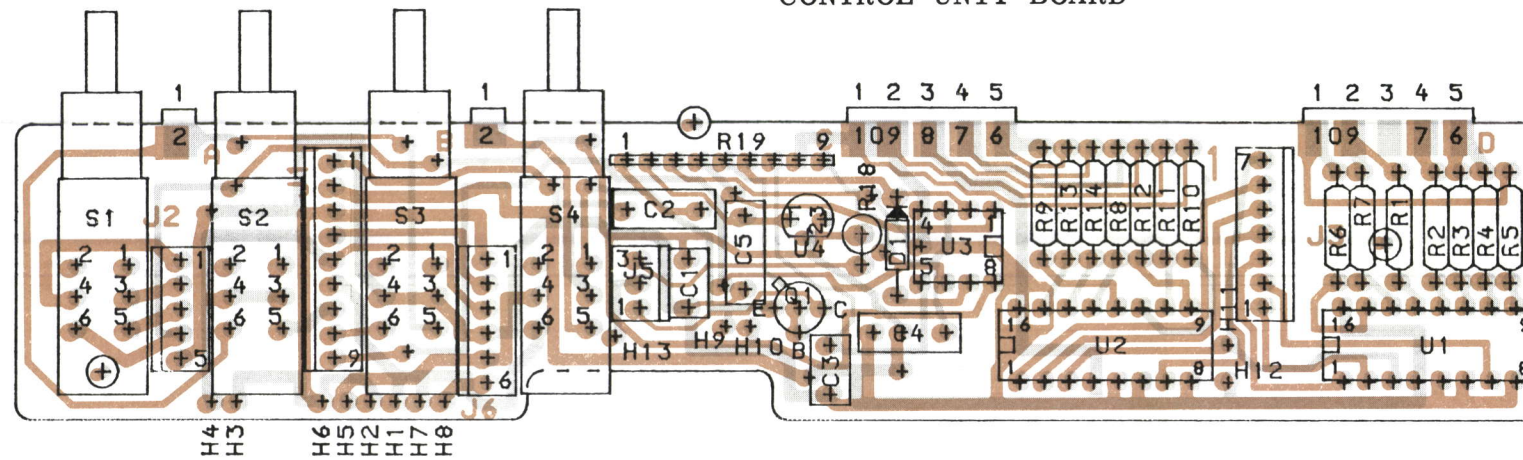
The volume up/down controls apply A- to the logic circuitry through J4-9 and 6. These are momentary contact push-buttons that causes the volume on the external speaker and earpiece to increase or decrease while pressed. One of eight discreet audio levels may be selected.

The CLEAR switch applies A- to the logic circuitry, returns the radio to the idle mode and turns off the CALL light.

In the Set-up/Test Mode the CLEAR switch operates the same as Function Step switch on the Test Set.

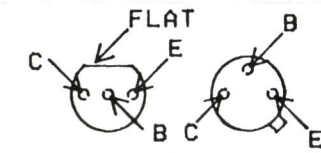
GENERAL ELECTRIC COMPANY • MOBILE COMMUNICATIONS DIVISION  
WORLD HEADQUARTERS • LYNCHBURG, VIRGINIA 24502 U.S.A.

## CONTROL UNIT BOARD



(19D900223, Rev. 2)  
(19A701482, Sh. 1, Rev. 1)  
(19A701482, Sh. 2, Rev. 1)

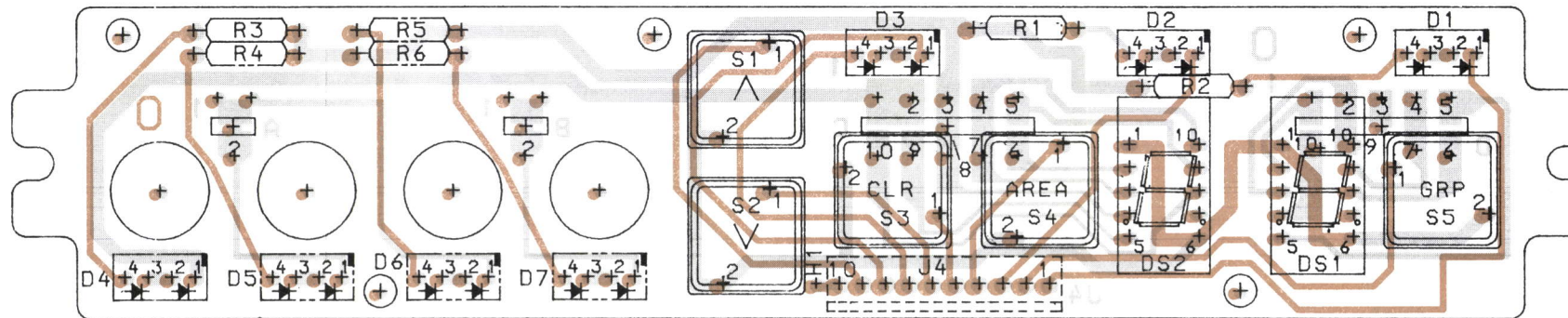
LEAD IDENTIFICATION  
FOR Q1



IN-LINE OR TRIANGULAR  
TOP VIEW

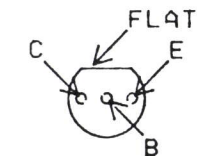
NOTE: LEAD ARRANGEMENT, AND NOT CASE SHAPE, IS DETERMINING FACTOR FOR LEAD IDENTIFICATION.

## CONTROL PANEL



(19D900224, Rev. 0)  
(19A701481, Sh. 1, Rev. 0)  
(19A701481, Sh. 2, Rev. 0)

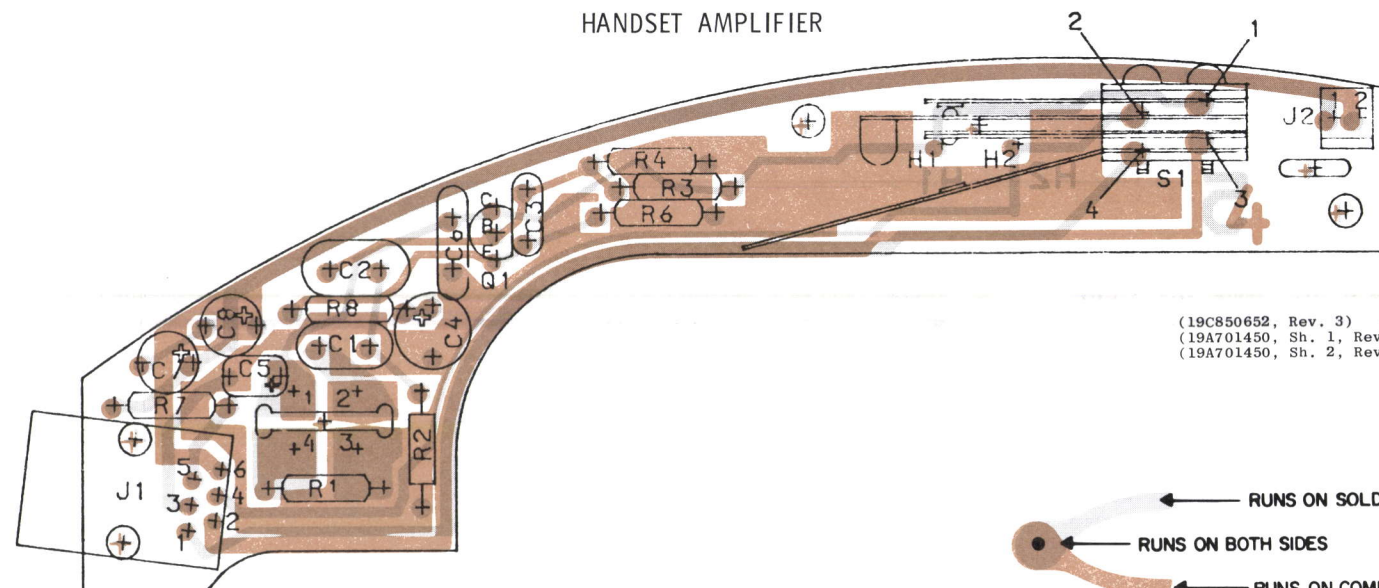
LEAD IDENTIFICATION  
FOR Q1



IN-LINE  
TOP VIEW

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

## HANDSET AMPLIFIER



(19C850652, Rev. 3)  
(19A701450, Sh. 1, Rev. 4)  
(19A701450, Sh. 2, Rev. 5)

— RUNS ON SOLDER SIDE

— RUNS ON BOTH SIDES

— RUNS ON COMPONENT SIDE

## OUTLINE DIAGRAMS

CONTROL UNIT BOARD CONTROL  
PANEL & HANDSET AMPLIFIER

## PARTS LIST

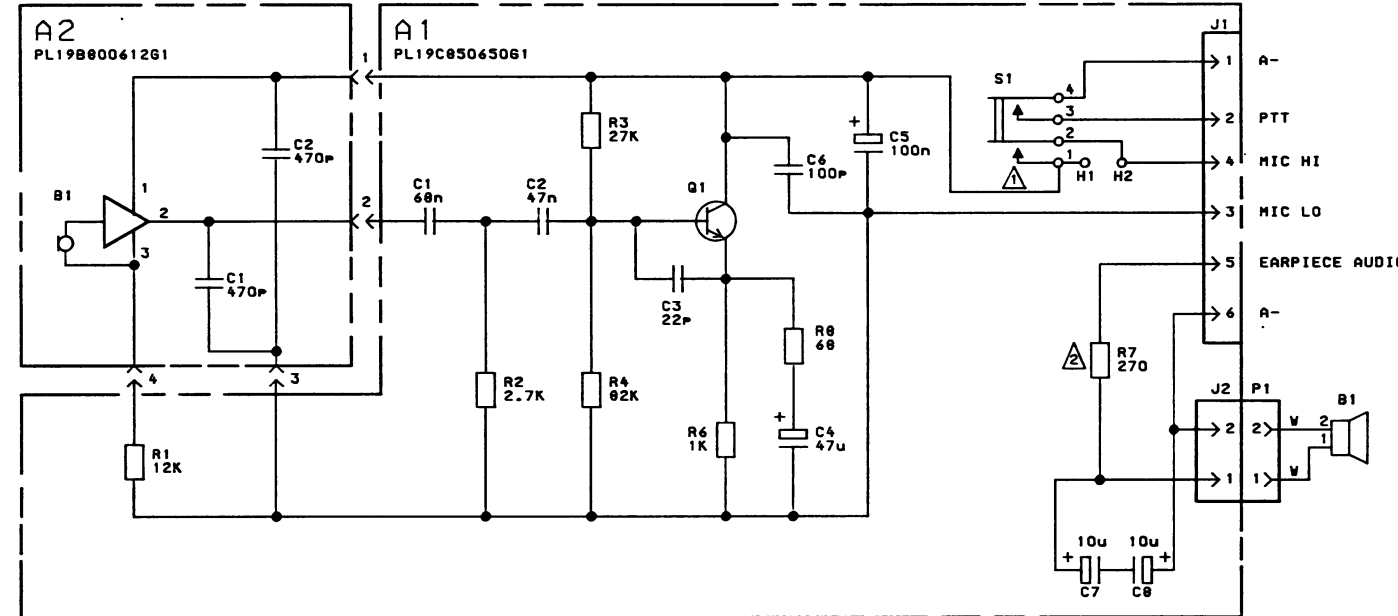
HANDSET  
19C850651G1 BLACK  
19C850651G2 PEBBLE  
19C850651G3 SADDLE BROWN  
ISSUE 3

SYMBOL	GE PART NO.	DESCRIPTION
B1 and P1	19A701703P1	Cartridge. Connector. Includes: Shell. Contact: sim to Molex 08-50-0113. (Quantity 2).
A1	19A700041P28 19A700041P26	HANDSET BOARD 19B800614G1 REV. B AMPLIFIER 19C850650C1
C1 and C2	19A700234P11	Polyester: 0.047 uF ±10%, 50 VDCW.
C3	19A700235P17	Ceramic: 22 pF ±5%, 50 VDCW.
C4	19A701534P9	Tantalum: 47 uF ±20%, 6.3 VDCW.
C5	19A701352P7	Aluminum: 1.0 uF ±20%, 16 VDCW.
C6	19A700235P25	Ceramic: 100 pF ±5%, 50 VDCW.
C7 and C8	19A701534P7	Tantalum: 10 uF ±20%, 16 VDCW.
J1	19J706197P1	Connector: 6 position, 6 contacts rated 100 mA at 6 VAC; sim to AMP 520250-3.
J2	19A7000722P28	Printed wire: 2 contacts rated @ 2.5 amps; sim to Molex 22-27-2021.
Q1	19A700023P1	Silicon, NPN; sim to Type 2N3904.
R1	19A700019P50	Deposited carbon: 12K ohms ±5%, 1/4 w.
R2	19A700019P42	Deposited carbon: 2.7K ohms ±5%, 1/4 w.
R3	19A700019P47	Deposited carbon: 6.8K ohms ±5%, 1/4 w.
R4	19A700019P64	Deposited carbon: 0.18M ohms ±5%, 1/4 w.
R6	19A700019P37	Deposited carbon: 1K ohms ±5%, 1/4 w.
R7	19A700019P30	Deposited carbon: 270 ohms ±5%, 1/4 w.
S1	19B800606P2	Push: rated 2.5 mA at 5 VDC; sim to Switchcraft 254258.
A2		HANDSET MUX BOARD 19B800612G1
B1	19J706041P1	Microphone cartridge: 200-850 ohms output imp., 1.5 to 10 VDC; sim to Primo EM-60.
C1 and C2	19A700233P5	Ceramic: 470 pF ±20%, 50 VDCW.

\*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

SYMBOL	GE PART NO.	DESCRIPTION
		TOP HOUSING 19C850651G1 BLACK 19C850651G2 PEBBLE 19C850651G3 SADDLE BROWN
	19B800623G1	Handset retaining spring.
	19B800597P1	Switch button. (Quantity 2).
	19B800596P1	Switch actuator.
	19A700140P2	Compression spring.
	N145AP904B	Screw, Phillips POZIDRIVE: thd. forming No. 4-24 x 1/4. (Secures switch actuator).
		----- MISCELLANEOUS -----
	19D900169P1	Handset case, top, black.
	19D900169P2	Handset case, top, pebble.
	19D900169P3	Handset case, top, saddle brown.
	19D900170P1	Handset case, bottom, black.
	19D900170P2	Handset case, bottom, pebble.
	19D900170P3	Handset case, bottom, saddle brown.
	19B800609P1	Printed board. (Located in grip of handset).
	19A701476P1	Support, handset board.
	19A701847P305	Screw, thd. forming. (Holds top & bottom cases together).
	19J706212P203	Screw, thd. forming: No. 4 x 7.94MM. (Secures A1 & A2).
	19J706212P202	Screw, thd. forming: No. 4 x 6.35MM. (Secures speaker handset).
	19A701485P1	Rubber washer. (Located between case & A1).
	19D900123P1	Cover, top & bottom. (BLACK).
	19D900123P2	Cover, top & bottom. (PEBBLE).
	19D900123P3	Cover, top & bottom (SADDLE BROWN).
	19D900164P1	Bottom housing. (BLACK).
	19D900164P2	Bottom housing. (PEBBLE).
	19D900164P3	Bottom housing. (SADDLE BROWN).
	19A701530G1	Transmit/Receive shield.
	19A701531G1	Shield. (Located over Synthesizer board).
	19A701508P1	Handset cable, black: 6 conductor, includes (1) 641089 AMP & (1) 09-50-3081 Molex connector. (Includes P1 & P2).
	19A701508P2	Handset cable, ivory: 6 conductor, includes (1) 641089 AMP & (1) 09-50-3081 Molex connector. (Includes P1 & P2).
	19A701508P3	Handset, cable, brown: 6 conductor, includes (1) 641089 AMP & (1) 09-50-3081 Molex connector. (Includes P1 & P2).
	19A700036P508	Screw, thd. forming: No. 3.5-0.6 x 8. (Secures front cap).
	19A701312P5	Flatwasher: M3.5. (Secures front cap).
	19A700031P308	Machine screw, metric: M2.5-.45 x 8. (Secures faceplate).
	19A116773P206	Screw, thd. forming: No. M4.2-1.4 x 10. (Secures Control Unit bottom - forward edge - Quantity 3).
	19A116733P212	Screw, thd. forming: No. M4.2-1.4 x 10. (Secures Control Unit bottom - rear edge - Quantity 2).
	N145AP1304B	Screw, thd. forming: No. M3.5-1.27 x 6. (Secures Hookswitch).
	19A700036P920	Screw, thd. forming: No. M3.5-0.6 x 20. (Secures shields).
	19A700031P410	Machine screw: No. M3-0.5 x 10. (Secures J601 & covers at rear of radio).
	19A701312P4	Flatwasher: 3.2 ID. (Secures covers at rear of radio).
	19A700032P5	Lockwasher, internal tooth: No. 3MM. (Secures J601).

SYMBOL	GE PART NO.	DESCRIPTION
	19A702388P1	Threaded block. (Located behind J601).
	19A700036P522	Screw, thd. forming: No. 3.5-0.6 x 22. (Secures Logic Board).
	19B800719P1	Dust pad. (Located behind J601, J910, J911).
	19A137823P2	Plate, insulator. (Used with P907).
	N530P102E	Drive screw: No. 00 x 1/8. (Secures P1 & combination nameplate).
	19D900248P1	Nameplate. (PWR-CLR).
	19D900248P2	Nameplate. (PWR-BASE-CLR).
	19D900248P3	Nameplate. (PWR-ALRM-CLR).
	19D900248P4	Nameplate. (PWR-SPKR-CLR).
	19D900248P5	Nameplate. (PWR-BASE-ALRM-CLR).
	19D900248P6	Nameplate. (PWR-BASE-SPKR-CLR).
	19D900248P7	Nameplate. (PWR-ALRM-SPKR-CLR).
	19D900248P8	Nameplate. (PWR-BASE-ALRM-SPKR-CLR).
	19D900248P9	Nameplate. (PWR-CLR-GRP).
	19D900248P10	Nameplate. (PWR-BASE-CLR-GRP).
	19D900248P11	Nameplate. (PWR-ALRM-CLR-GRP).
	19D900248P12	Nameplate. (PWR-SPKR-CLR-GRP).
	19D900248P13	Nameplate. (PWR-BASE-ALRM-CLR-GRP).
	19D900248P14	Nameplate. (PWR-BASE-SPKR-CLR-GRP).
	19D900248P15	Nameplate. (PWR-ALRM-SPKR-CLR-GRP).
	19D900248P16	Nameplate. (PWR-BASE-ALRM-SPKR-CLR-GRP).
	19D900248P17	Nameplate. (PWR-CLR-AREA-GRP).
	19D900248P18	Nameplate. (PWR-BASE-CLR-AREA-GRP).
	19D900248P19	Nameplate. (PWR-ALRM-CLR-AREA-GRP).
	19D900248P20	Nameplate. (PWR-SPKR-CLR-AREA-GRP).
	19D900248P21	Nameplate. (PWR-BASE-ALRM-CLR-AREA-GRP).
	19D900248P22	Nameplate. (PWR-BASE-SPKR-CLR-AREA-GRP).
	19D900248P23	Nameplate. (PWR-ALRM-SPKR-CLR-AREA-GRP).
	19D900248P24	Nameplate. (PWR-BASE-ALRM-SPKR-CLR-AREA-GRP).

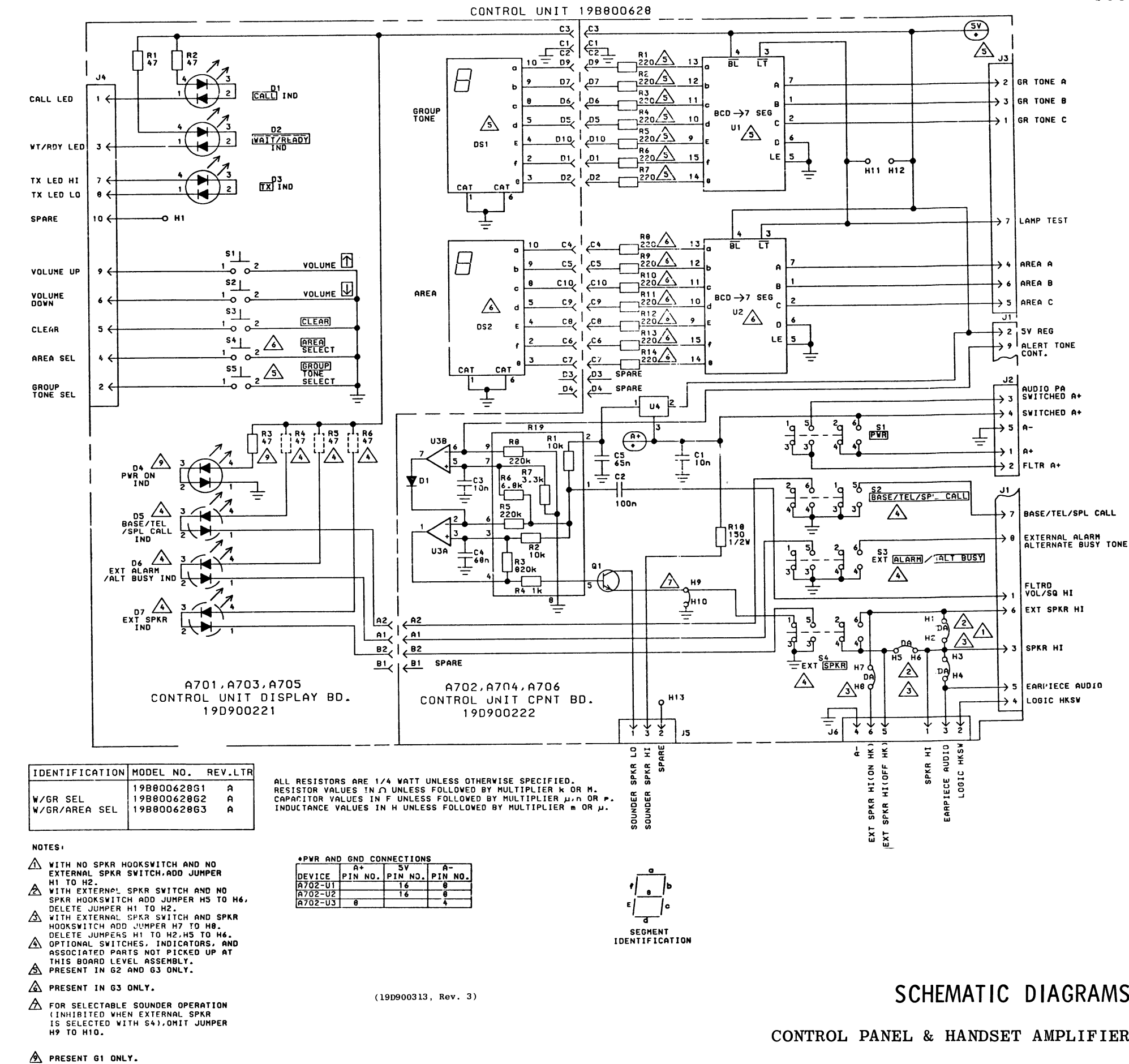


MODEL NO.	REV. LETTER
19C850651G1	B
19C850651G2	B
19C850651G3	B
19B800614G1	C

ALL RESISTORS ARE 1/4 WATT UNLESS OTHERWISE SPECIFIED.  
RESISTOR VALUES IN K UNLESS FOLLOWED BY MULTIPLIER K OR M.  
CAPACITOR VALUES IN F UNLESS FOLLOWED BY MULTIPLIER μ, n OR p.  
INDUCTANCE VALUES IN H UNLESS FOLLOWED BY MULTIPLIER m OR μ.

NOTES:  
⚠ S1-1 MUST MAKE CONTACT TO S1-2 BEFORE S1-3 MAKES CONTACT TO S1-4.  
⚠ TO INCREASE THE AUDIO LEVEL FROM THE EARPIECE WITH THE VOLUME CONTROL SET AT MINIMUM, DECREASE THE VALUE OF R7, TO DECREASE THE AUDIO LEVEL INCREASE THE VALUE OF R7.

(19C850682, Rev. 5)



IDENTIFICATION	MODEL NO.	REV. LTR
W/GR SEL	19B800628G1	A
W/GR/AREA SEL	19B800628G2	A
	19B800628G3	A

## NOTES:

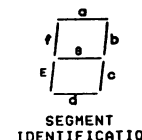
- ⚠ WITH NO SPKR HOOKSWITCH AND NO EXTERNAL SPKR SWITCH, ADD JUMPER H1 TO H2.
- ⚠ WITH EXTERNAL SPKR SWITCH AND NO SPKR HOOKSWITCH, ADD JUMPER H3 TO H4, DELETE JUMPER H1 TO H2.
- ⚠ WITH EXTERNAL SPKR SWITCH AND SPKR HOOKSWITCH, ADD JUMPER H7 TO H8, DELETE JUMPERS H1 TO H2, H3 TO H4.
- ⚠ OPTIONAL SWITCHES, INDICATORS, AND ASSOCIATED PARTS NOT PICKED UP AT THIS BOARD LEVEL ASSEMBLY.
- ⚠ PRESENT IN G2 AND G3 ONLY.
- ⚠ PRESENT IN G3 ONLY.
- ⚠ FOR SELECTABLE SOUNDER OPERATION (INHIBITED WHEN EXTERNAL SPKR IS SELECTED WITH S4), OMIT JUMPER H9 TO H10.

⚠ PRESENT G1 ONLY.

## +PWR AND GND CONNECTIONS

DEVICE	A+	5V	A-
A702-G1	14	8	6
A702-U2	14	8	6
A702-U3	8	4	4

(19D900313, Rev. 3)



SEGMENT IDENTIFICATION

## SCHEMATIC DIAGRAMS

CONTROL PANEL &amp; HANDSET AMPLIFIER

Issue 4

3

ADDENDUM NO.1 TO LBI31006B

This addendum describes Revision Letter changes that are not yet included in the publication.

REV. A- CONTROL PANEL 19B800628G1-3

To improve operation of sounder by removing the A+ connection from U4-3 and connecting regulated 10 volts to U4-1.

NEW SCHEMATIC DIAGRAM IS:

