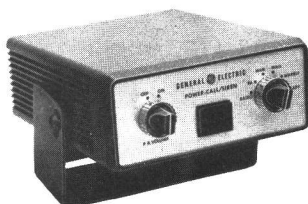


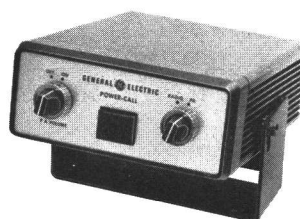
# MAINTENANCE MANUAL

## POWER CALL and POWER CALL/SIREN

### MODELS 4EA22A10 AND 4EA22B10



POWER CALL/SIREN  
MODEL 4EA22B10



POWER CALL  
MODEL 4EA22A10

### SPECIFICATIONS \*

Model Numbers 4EA22A10 (Power Call) & 4EA22B10 (Power Call/Siren)

Current Drain & Power Output (measured across resistive load)

Speakers	Watts	Power Call	Watts	Power Call/Siren
1	35	5.3 amps @ 13.6 VDC	55	6.5 amps @ 13.6 VDC
2	45	6.5 amps @ 13.6 VDC	85	10.0 amps @ 13.6 VDC
1	35	2.8 amps @ 28.0 VDC	55	3.2 amps @ 28.0 VDC
2	45	3.5 amps @ 28.0 VDC	100	5.5 amps @ 28.0 VDC
1	20	6.5 amps @ 6.6 VDC	35	10.0 amps @ 6.6 VDC

Standby Drain 0.85 amps.

Frequency Response       $\pm 3$  dB from 300 to 3000 Hz

Output Impedance      5 ohms

Duty Cycle      Continuous in all positions

Transistors      7 -- Amplifier Circuit  
6 -- Siren Circuit

Temperature Range       $-30^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$  ( $-22^{\circ}\text{F}$  to  $+140^{\circ}\text{F}$ )

Dimensions (H x W x D)      2-3/4" x 6-1/2" x 7-1/2"

Weight      7 pounds, 10 ounces

\*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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**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

The General Electric Power Call and Power Call/Siren are designed to operate as mobile public address systems, and high power amplifiers for two-way radio receivers. The Power Call/Siren includes an electronic siren with four modes of operation. The units can be used in 6-, 12- or 28-volt vehicles with either positive or negative battery ground.

### NOTE

The Power Call and Power Call/Siren units are shipped wired for 12-volt operation. Refer to MAINTENANCE for 6- and 28-volt system circuit changes.

The Power Call and Power Call/Siren are capable of continuous operation as a 45-watt amplifier. The Power Call/Siren is also capable of continuous operation as a 100-watt siren. The amplifier unit is completely housed in a compact, splash-proof case. The speaker is a re-entrant weatherproof horn with a cast base to provide greater strength and ease in mounting. The speaker cable is connected under the base of the speaker for protection against weather and vandalism.

### MODES OF OPERATION

A Selector Switch is located on the front of the control panel which provides radio and PA positions, as well as the four modes of siren operation for the Power Call/Siren. The Selector Switch positions are described as follows:

Switch Position	Function
RADIO	Calls received on mobile radio can be heard from weatherproof speaker by operator while outside vehicle.
PA	Mobile radio microphone can be used for a public address system.
MAN Siren	Provides a siren tone that builds up from 0 to 1000 Hz when the red pushbutton (S1502) is depressed. The build-up time is 6-seconds and the decay time to cutoff is 12 seconds, when pushbutton is released.
WAIL Siren	Provides a continuously varying tone from 650 Hz to 1000 Hz at a rate of 6 cycles per minute.
WARBLE Siren	Provides a continuously rapid warble tone from 0 to 1000 Hz at a warble rate of 2 Hz.
STEADY Siren	Provides a steady, continuous 1000-Hz tone.

With the Selector Switch on the Power Call/Siren in the MANual position, the siren is started by pressing the red rectangular pushbutton (pilot light). Holding the pushbutton in causes the siren to build-up and remain on a steady audio pitch as long as the pushbutton is held depressed. When the pushbutton is released, the siren tone decays to a frequency approximately one-half the maximum frequency before cutting off. Depressing the pushbutton with the Selector Switch in the WAIL position overrides the

siren signal, causing a rapid build-up to the maximum frequency. The siren will start automatically when the Selector Switch is turned to the WARBLE, WAIL or STEADY siren positions.

### CONNECTOR PANEL

The microphone, mobile radio, power input, and speaker cables connect to jacks on the unit connector panel. (Refer to the

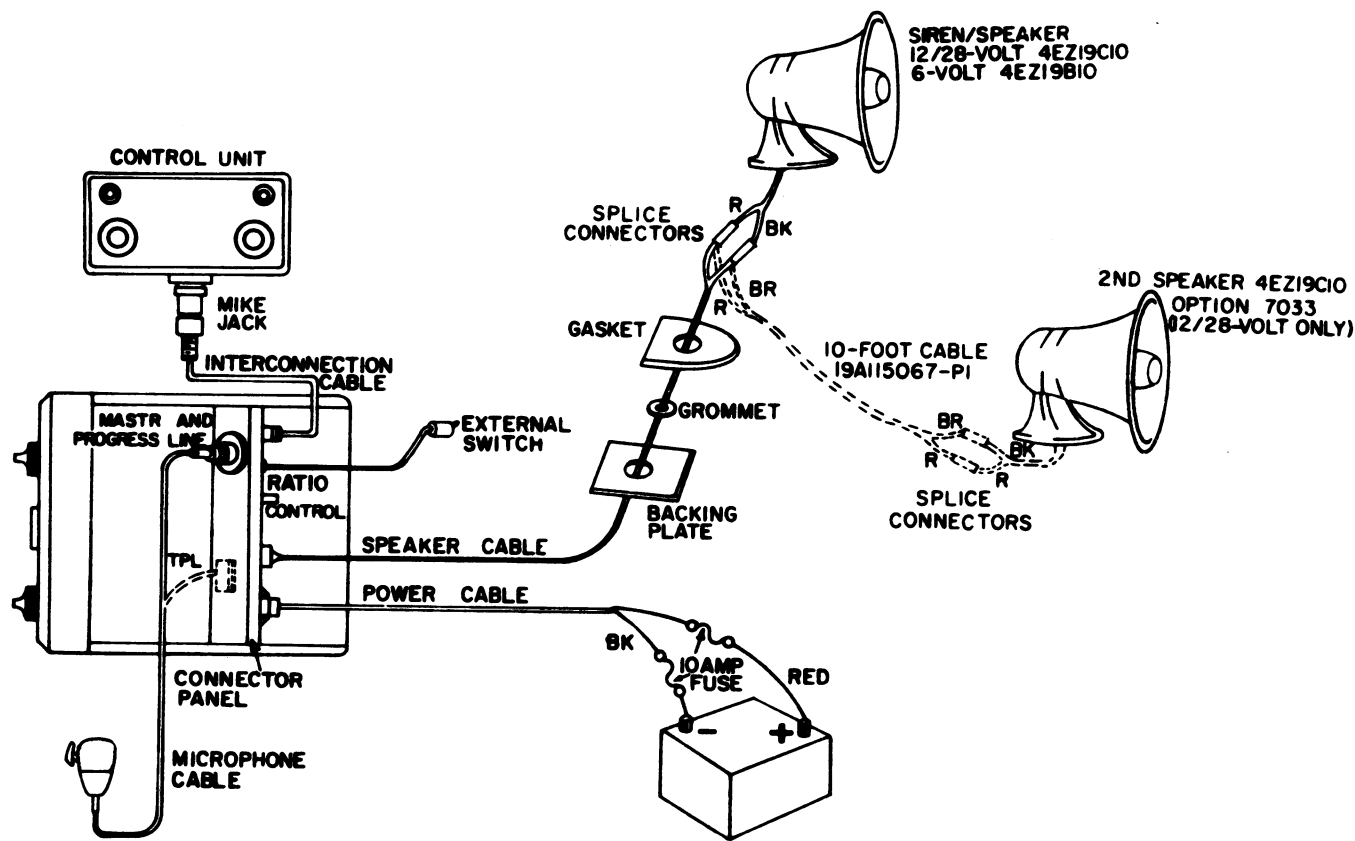


Figure 1 - Cabling Diagram

RC-1354A

#### OUTLINE AND TROUBLESHOOTING DIAGRAM for connector panel jack locations.)

#### MICROPHONES

MASTR Professional Series and Executive Series, Transistorized Progress Line, Progress Line, and Business Mate microphones may be used with the Power Call and Power Call/Siren.

The mobile /PA microphone will transmit over the mobile radio with the Selector Switch in any position except the PA position. With the Selector Switch in the PA position, the output is heard only over the PA system.

For MASTR Professional Series combinations, with military microphones, solder the two connector pins (supplied in hardware kit) to a piece of insulated wire and jumper pins 3 and 12 on the 13-pin vehicle systems connector.

For Progress Line combinations, jumper the 2200-ohm resistor connected to pin 4 of the Control Unit microphone jack.

For Transistorized Progress Line combinations, jumper the 2200-ohm resistor connected to pin 5 of the Control Unit microphone jack. Also solder a jumper wire across the points marked "C-C" on the amplifier circuit board.

#### SPEAKERS

Speakers furnished with the Power Call and Power Call/Siren include Model 4EZ19C10 (12- and 28-volt systems) or Model 4EZ19B10 (6-volt systems). These same speakers are also available in a chrome-plated version (Models 4EZ19E10 for 12- and 28-volts and 4EZ19D10 (6-volts).

Other available speakers are Models 4EZ19G10 for 12- and 28-volt systems, 4EZ19F10 for 6-volt systems (low profile type), and Models 4EZ19J10 for 12- and 28-volt systems, and 4EZ19H10 for 6-volt systems (short length type).

## SECOND SPEAKER

A second speaker can be used with 12- and 28-volt systems. Connect the second speaker in parallel and in phase with the first speaker for optimum performance. Connect the speakers as shown in Figure 1.

## INSTALLATION NOTE

The Power Call/Siren carries Class A acceptance from the Department of California Highway Patrol (with speakers 4EZ19C10 or 4EZ19E10). Similarly, other states have requirements with which your installation may have to comply. Because the effectiveness of the generated signal may be affected by the location of the speaker(s), familiarity with the requirements of your particular state will permit you to make a compliant installation. Mounting the speaker(s) in an open location normally provides the greatest sound level.

## EXTERNAL SWITCH (MODEL 4EA22B10)

A foot switch, vehicle horn-ring, or other types of external switches may be used to manually operate the siren. Connect a two-wire extension cable to TB1504-1 and -2 in the amplifier unit. Bring the wires out through the hole in the connector panel and connect them to the external switch. If one side of the external switch is grounded, a relay must be used to provide switching for the circuit.

## ADJUSTMENTS

## RADIO/PA INPUT LEVEL

The Radio/PA input level is adjusted by the Ratio Control (R1504) located on the connector panel and is used to obtain the desired ratio of audio output between the mobile speaker and the external PA speaker.

To adjust the Radio/PA input level:

1. Turn the Power Call or Power Call/Siren OFF, and set the mobile radio VOLUME control to the desired listening level inside the vehicle.
2. Turn the Power Call or Power Call/Siren ON, and set the Selector Switch to the RADIO position. Then set the Ratio Control (R1504) for the outside audio level required for the PA system.

Increasing or decreasing the mobile audio level with the mobile radio VOLUME control will simultaneously change audio level of the mobile speaker and Power Call or Power Call/Siren speaker at the same ratio.

## BIAS ADJUST

The "A" and "B" bias voltage readings should be checked and adjusted if necessary, when the power input (6, 12 or 28-Volts) is changed. Bias adjustments are measured with the Selector Switch in the PA position. (Refer to "Bias Adjustments" on the OUTLINE AND TROUBLESHOOTING DIAGRAM.)

## CIRCUIT ANALYSIS

## AUDIO AMPLIFIER

The Power Call and Power Call/Siren Amplifier circuits consists of a pre-amplifier, common emitter and emitter follower circuits, a Class B push-pull power output amplifier, and a tapped output choke.

The 6, 12 or 28-volt battery connects to J1505. J1505-2 is connected to the negative side of the battery and J1505-3 is connected to the positive side of the battery. Vehicle ground connections may be disregarded as the amplifier circuitry does not depend on a vehicle ground.

Bias for Q1, Q2, Q3, Q4 and Q1501 is

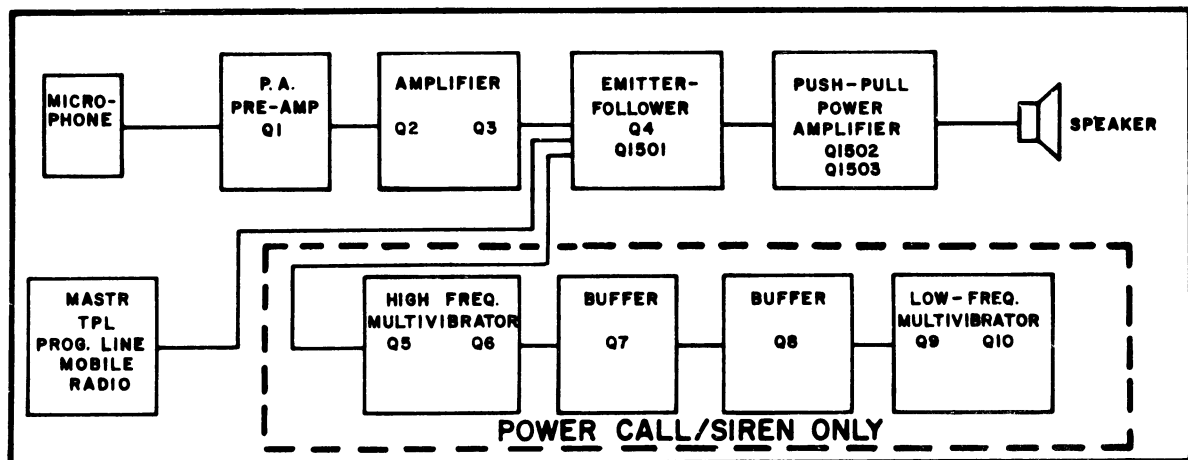


Figure 2 - Block Diagram

regulated through a bias circuit composed of CR1, CR2, CR3 and CR4. The bias for Q1 is filtered by the R14-C13 network.

The audio signal from the mobile radio is coupled through the radio/amplifier cable to J1503-D on the amplifier. The signal level is adjustable by the radio volume control R1504. The output is connected through S1503B-13L-8S (S1504B-4S-7S on Power Call) to T1. With S1503 in this position, the base of Q2 is shorted, thereby reducing the direct current in the T1 primary to a minimum. The output of T1 is coupled to emitter follower amplifier Q4-A1501 to produce the power gain necessary to drive the Class B push-pull amplifier Q1502 and Q1503. The amplifier output is coupled through choke T1502 to speaker output jack J1504-1-2.

In the PA position, the microphone low and high wires are connected from J1501 or J1502, pins 1 and 2 to S1503A, B-13L and 9S (S1504A-2L-3S on Power Call). The signal is coupled through capacitor C1 to the base of pre-amp Q1. The pre-amp output is taken off PA volume control R1501 and coupled through C3 (and S1503B-2S-6L Power Call/Siren) to the common emitter amplifier circuit Q2-Q3. The signal is connected to the primary of T1 from Q2 and Q3. The secondary of T1 drives the base of Q4-Q1501.

#### POWER CALL/SIREN

The siren circuit consists of a high

frequency multivibrator (Q5-Q6) and a low frequency multivibrator (Q9-Q10). The frequency of the high frequency multivibrator is controlled by the time period of the low frequency multivibrator in the WAIL and WARBLE positions. The resultant signal produces typical siren audio characteristics.

#### High Frequency Multivibrator

The astable multivibrator (Q5-Q6) is essentially a nonsinusoidal two-stage oscillator in which one stage conducts while the other is cut off, until a point is reached at which the stages reverse their conditions.

When power is applied to the multivibrator, one of the transistors will conduct more than the other due to variations in component tolerances. Assuming that Q5 is conducting more than Q6, the negative-going collector voltage of Q5 is coupled through C4 to the base of Q6, decreasing the conduction of Q6. The positive-going collector voltage of Q6 is coupled through C5 to the base of Q5, aiding the increase in conduction of Q5. Q5 quickly saturates under these conditions and Q6 is turned off. C4 now begins to discharge through R31 and R33. After C4 has discharged to zero, it immediately starts to charge positive through R33. This positive-going voltage at the base of Q6 starts Q6 conducting. The negative-going collector voltage of Q6 is coupled through C5 to the base of Q5. Q5 starts to turn off. The positive-going collector voltage of Q5 is coupled to the

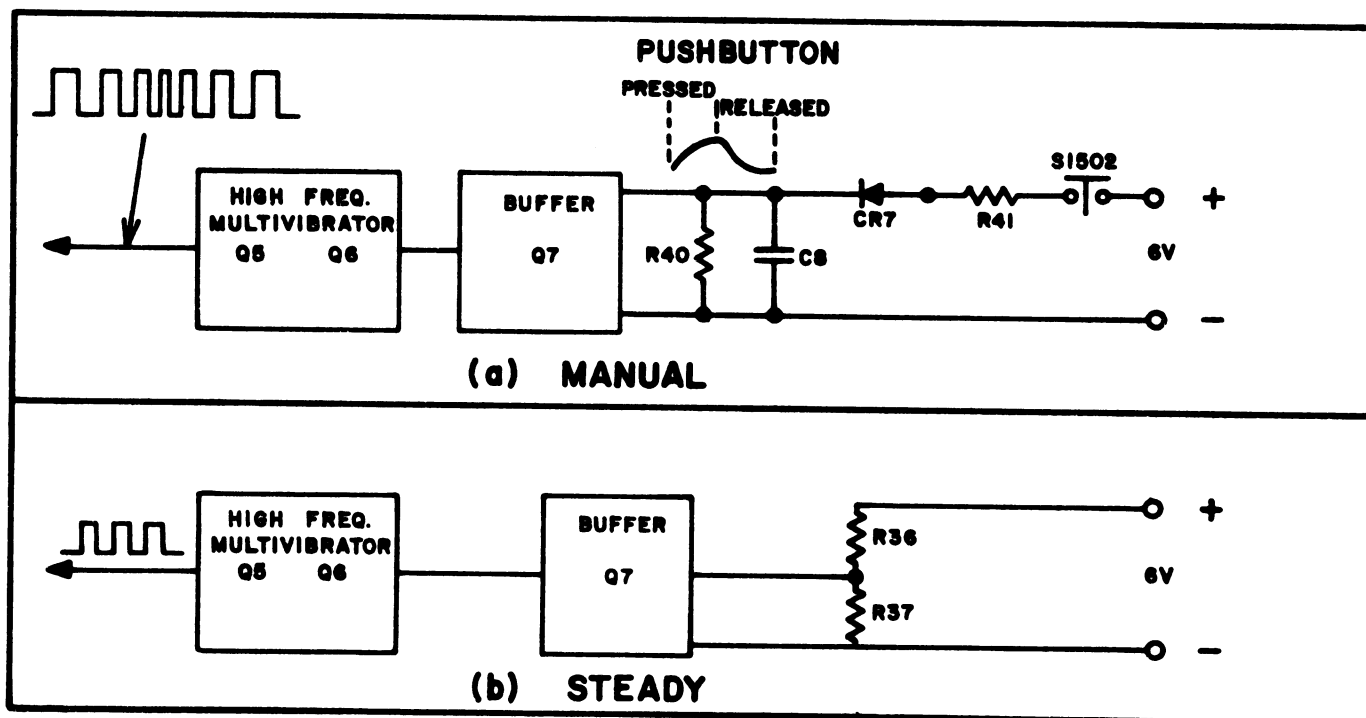


Figure 3 - Manual and Steady Siren Circuit

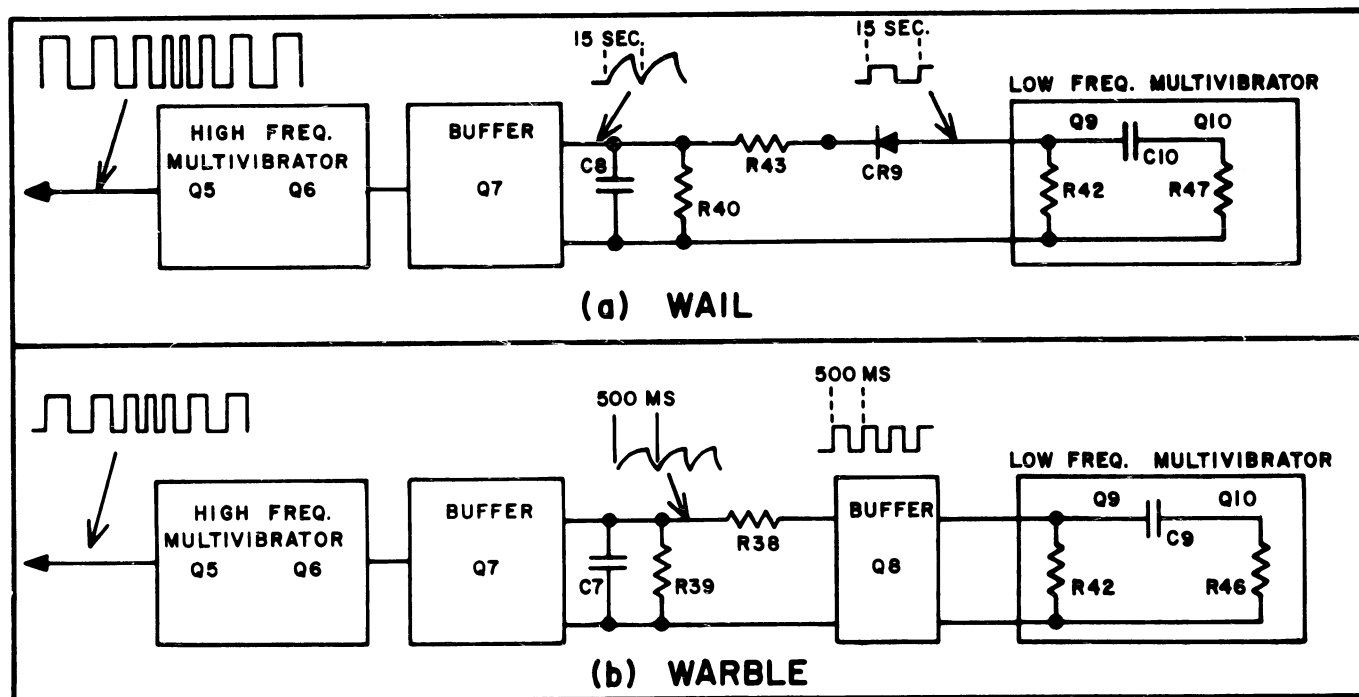


Figure 4 - Wail and Warble Siren Circuit

base of Q6 through C4, aiding the increase in conduction of Q6. Q6 quickly saturates and Q5 turns off.

The multivibrator has now returned to its original state, and the cycle will repeat as long as power is applied to the circuit.

The output of the multivibrator to the amplifier stage is essentially a square wave; the frequency of oscillation is determined by the RC time constants of the siren circuit, and the DC voltage level fed to the control point by Q7.

This control voltage is determined by the charging circuit R41-C8 in MANUAL position (Figure 3a), by voltage divider R36-R37 in STEADY position (Figure 3b), or by a varying voltage derived from low frequency multivibrator Q9-Q10 in WAIL and WARBLE modes.

#### Low Frequency Multivibrator

The low-frequency multivibrator (Q9-Q10) provides an immediate siren build-up as soon as voltage is applied across the multivibrator circuit. Voltage is applied by switching S1503 to WAIL or WARBLE positions. Initially, both Q9 and Q10 conduct, and C9 or C10 have no charge. The proportioning of voltage and resistor values of R47 and R42 for WAIL, and R46 and R42 for WARBLE are such that saturation does not occur under these conditions.

When an unstable condition occurs, the emitter voltage of Q9 rises to the full multivibrator supply. C9 remains initially uncharged as the supply voltage appears across R46, causing Q10 to cut off. In the WARBLE position, C9 becomes charged through R46 and Q9. In the WAIL position, C10 is charged through R47 and Q9.

The charging voltage terminates when the voltage across R46 or R47 equals the divider voltage on R45 and R48 minus the voltage drop of the Q10 base-emitter junction. Then Q10 begins to conduct. Q10 is now conducting and Q9 is cut off. C9 or C10 discharges through R42 and the Q10 emitter resistance. Q9 remains cut off until C9 or C10 discharges. The multivibrator cycling continues as long as the Selector Switch (S1503) is in the WARBLE or WAIL position.

The WAIL rate is determined by the frequency of Q9-Q10 and established by the time constant of C10-R47 (Figure 4a). Pressing pushbutton S1502 causes C8 to charge at a faster rate through CR7 and R41. This causes the audio build-up to the high frequency rate, and will occur even if C8 is building up or decaying normally.

In the WARBLE position, the low frequency rate of Q9-Q10 is established by the time constant of C9 and R46 with the output applied to buffer C8 through R38, R39 and C7 (Figure 4b). This causes the output signal to build-up and decay to produce the desired WARBLE characteristics.

## MAINTENANCE

### DISASSEMBLY

To service the amplifier unit, remove the top cover and the circuit board as follows:

1. Remove hex-head screws holding amplifier unit to mounting bracket and slide unit forward off bracket.
2. Remove two screws on rear of unit.

3. Lift up top cover and slide off.
4. Remove four screws holding circuit board. Lift circuit board out to approximately a 150° angle.

### VOLTAGE CONVERSIONS (for 6-, 12- or 28-volt Battery Systems)

The following circuit changes must be made before plugging the battery cable into J1505 when converting the unit from a 6-, 12- or 28-volt battery system:

#### 6-VOLT OPERATION

1. Remove top cover. Remove all jumpers from "12" and/or "12-24" volt designations. Solder jumpers across all "6" volt designations.
2. Remove circuit board and replace pilot lamp with 6-volt lamp #755.
3. Solder insulated jumpers across resistors R1502 and R1503.
4. Converting from 28-volt systems -- Unsolder orange wire from TB1503-1 and solder it to Q1502 collector.

#### 12-VOLT OPERATION

1. Remove top cover. Remove all jumpers from "6" designations, if converting from 6-volts. Solder jumper across "12" volt designation and the "12-24" designation, if not already jumpered.
2. Remove circuit board and replace pilot lamp with a 12-volt lamp #756.
3. Converting from a 6-volt system -- Remove jumper across R1502 and R1503.
4. Converting from a 28-volt system -- Unsolder orange wire from TB1503-1 and solder it to Q1502 collector.

#### 28-VOLT OPERATION

1. Remove top cover. Remove all jumpers across "6" and "12" designations. Solder jumper across the "12-24" volt designation (if not already jumpered).
2. Remove circuit board and replace pilot lamp with 28-volt lamp #757.
3. Unsolder orange wire from collector of Q1502 and solder it to TB1503-1.
4. If converting from 6-volt system, unsolder jumper wires from across R1502 and R1503.

#### CAUTION

Check for proper connections before connecting battery cable to amplifier, otherwise damage to transistors, pilot lights, and other components will result.



### POWER CALL/SIREN FREQUENCY & CYCLING CHANGES

The Power Call siren frequency, build-up and decay times may be varied by changing appropriate components on the circuit board. The changes for each siren mode are listed below:

CHANGING BUILD-UP TIME (MANUAL)	FOR BUILD-UP TIME OF:	CHANGE R41 TO:
By increasing R41, the rise rate of the manual siren tone will be slowed. The fall rate of the siren is determined by R40. However, R40 also controls fall rate in the WAIL position and if changed, should be adjusted for a satisfactory decay rate in WAIL position.	2.0 sec.	5 kilohms
	3.0 "	10 kilohms
	4.0 "	15 kilohms
	5.0 "	*30 kilohms
	6.0 "	62 kilohms
	7.0 "	82 kilohms
CHANGING CYCLE (WAIL)	PERIOD OF CYCLE	CHANGE C10 TO:
Changing C10 changes the period of the low frequency multivibrator Q9/Q10 in WAIL mode. As the period is made considerably longer, the siren pitch will rise to and stabilize at a steady high tone at the top of each cycle. If it is desired to counteract this effect, R43 may be increased to slow the rate of rise of the siren tone. Likewise, R40 may be increased to slow the rate of fall and thus prevent the siren tone from going undesirably low at the bottom of each WAIL cycle. Note however, that R40 also controls fall rate in the MANUAL position.	12 sec.	120 $\mu$ f
	10 "	*100 $\mu$ f
	7 "	68 $\mu$ f
CHANGING CYCLE (WARBLE)	PERIOD OF CYCLE	CHANGE C9 TO:
The WARBLE period is controlled by C9. As in the case of WAIL, if the WARBLE period is changed, tone rise rate and fall rate may also be adjusted (R38 and R39 respectively) to achieve the desired effect. Changes of R38 and R39 will not affect operation of any other siren mode.	300 ms	3.3 $\mu$ f
	400 ms	4.7 $\mu$ f
	500 ms	*6.8 $\mu$ f
CHANGING FREQUENCY (STEADY)	FOR BUILD-UP TIME OF:	CHANGE R36 TO:
Frequency of the STEADY siren is determined by the constant voltage applied to the multivibrator by R36.	1200 Hz	4.7 kilohms
	1100 Hz	8.2 kilohms
	1000 Hz	*18.0 kilohms
	900 Hz	22.0 kilohms
	800 Hz	33.0 kilohms

\* Denotes component value shipped from the factory.

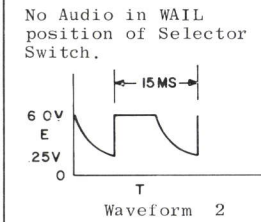
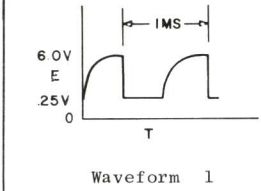


TROUBLESHOOTING PROCEDURE

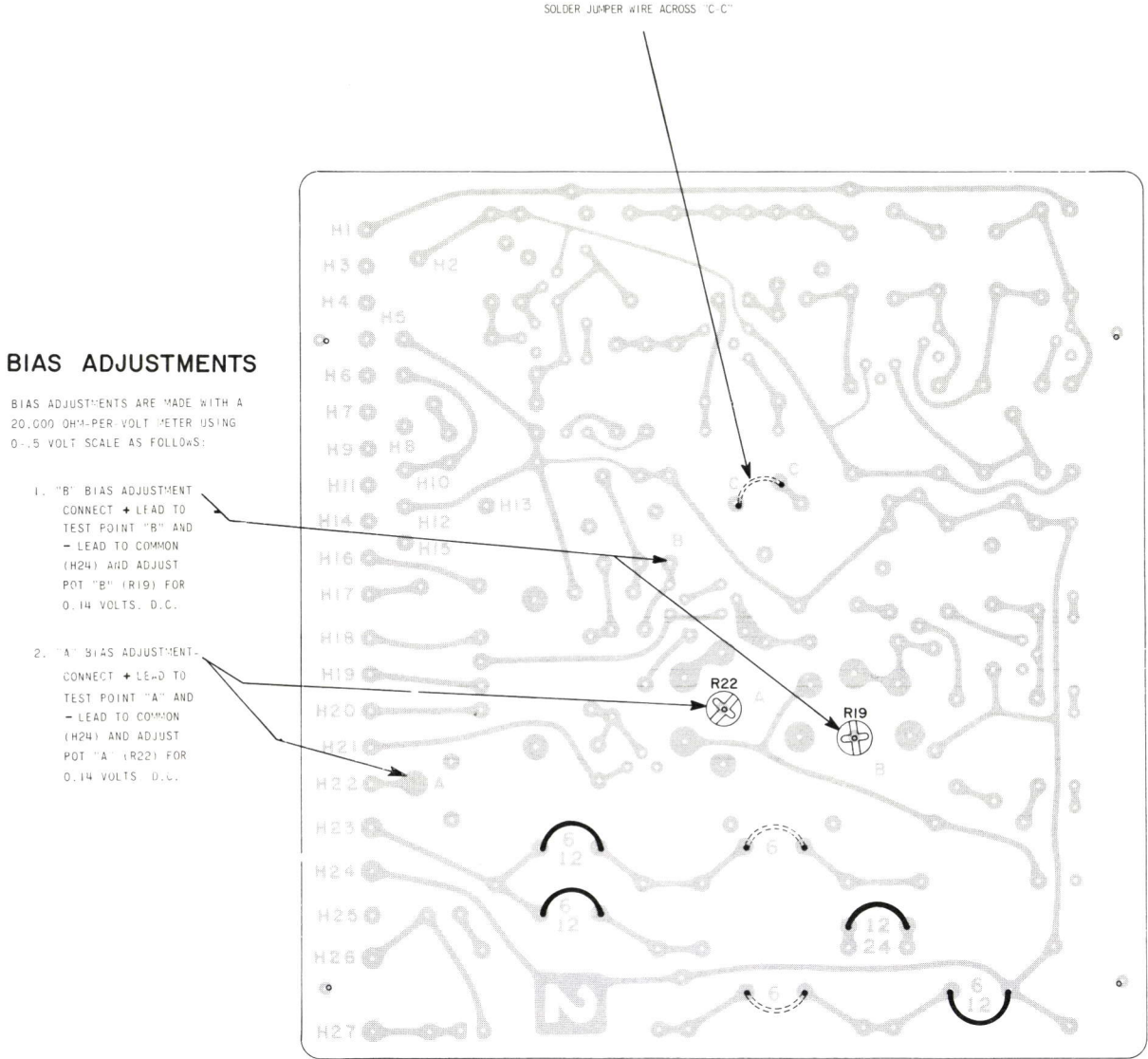
The Power Call and Power Call/Siren have "built-in" troubleshooting system. Use the "Quick Checks" to quickly locate faulty circuits. Certain parts of the circuit are common to all modes of operation, therefore audio circuits are checked out first before the siren circuits (in Power Call/Siren) are tested.

SYMPTOM	CHECK THE FOLLOWING IN SEQUENCE
No Audio in any position of Selector Switch	Turn Selector Switch to RADIO. 1. Make sure all jumpers on the circuit board are correct for the voltage being used. 2. Check speaker for open or short. 3. Turn ON-OFF switch ON. If pilot lamp is not at normal brilliance, check for correct lamp for voltage being used. 4. Measure B-plus voltage from J1505-3 to J1505-2. 4a. If voltage is present, check S1501. 4b. If voltage is not present, check plug P1501, both fuses, and connection to battery. 5. If unit repeatedly blows fuses, check for shorted load or transistor. 6. Measure voltage at Test Point "A" for approximately 0.14 volts. 6a. If no voltage at Test Point "A", measure voltage at anode of CR1 for approximately 2.5 volts. 6b. If voltage is present at CR1 anode, go to Step 7. 6c. If no voltage at CR1 anode, check CR1, CR2, CR3, CR4, R8, R9, R10, Q4, and Q1501 for opens or shorts. 7. Measure voltage at Q4 collector for 6.6 volts (approximately). 7a. If voltage is 6.6 volts, go to Step 8. 7b. If voltage is not present, check R5, R6, R7, Q4 and Q1501 for opens or shorts.
	8. Measure voltage from battery positive (TB1501-1) to emitter of Q1502, Q1503 for .05 volts (approx.) 8a. If present, go to Step 9. 8b. If not present, check Q1502, Q1503, R1 through R5, RT1501 for opens and shorts. 9. Connect audio generator to J1503-D-H. Set generator to 1000 Hz. 9a. If audio is not heard through speaker, move generator to H19-H20. 9b. If audio is present, check lead from H19 and H20 to J1503-D-H. 9c. If not present, check T1.

SYMPTOM	CHECK THE FOLLOWING IN SEQUENCE
No Audio in PA (or Siren) positions of Selector Switch but OK in RADIO position	Turn Selector Switch to PA and measure voltage at Test Point "B" for 0.14 volts (approximately). Set by R19 labeled "B". If correct, check input wire from H15 to S1503B-6L. (C3 Power Call). If not correct, check Q2, Q3, and T1.
No Audio in PA position of Selector Switch. Audio in all other positions.	Turn Selector Switch to PA and measure voltage at Q1 emitter for .5 volts (approximately). a. If correct, check leads from microphone connections to Q1 input and Q1 output to H15. b. If not correct, check R1501, R14, Q1, R15, R16, and R17.
SIREN POSITIONS No Audio in Siren Positions of Selector Switch. Audio in RADIO and PA positions.	Connect voltmeter to TB1502-5 and H2 and measure for 6.6 volts (approximately) with the Selector Switch in MAN, WAIL, WARBLE, and STEADY positions. a. If voltage is in all positions, turn to STEADY position, attach scope to emitter of Q5 and common (TB1502-5) and check for waveform #1. b. If waveform is correct, check H1 to H15 for open. c. If no waveform appears, jumper H3 to H2. d. If waveform then appears, check H3 to H4 for open and correct voltage at H4 (approximately 4.5 volts). e. If waveform is not present when H2 is shorted to H3, check voltage at Q7 emitter for 6 volts (approximately) when H2 is shorted to H3. f. If voltage is present, check Q5 and Q6 for opens or shorts.
No Audio in MAN position of Selector Switch. Audio in RADIO, PA, WAIL, WARBLE and STEADY positions.	Turn Selector Switch to MAN, and measure voltage from TB1502-5 to H2 for 6.6 volts (approximately). With S1502 depressed, measure voltage at TB1502-5 to H7 for 6.6 volts (approximately). 1a. If not present, check S1502. b. If present, check CR7, R41, wire H9 to S1503.
	2. Turn Selector Switch to STEADY and measure voltage at H4 for 4.5 volts (approximately). 2a. If not present, check R36, R37, C6. 2b. If present, check wire from H4 to H3.
No Audio in WAIL position of Selector Switch.	Turn Selector Switch to WAIL and check waveform #2 at Q9 emitter. a. If waveform is correct, check CR9 and R43. b. If not as shown, check Q9, Q10, R42, C10 wire from H6 to H10.
No Audio in WARBLE position of Selector Switch.	Turn Selector Switch to WARBLE, and check for waveform #2 at Q9 emitter. a. If present, check Q8, R38, R39, C7, wire from H5 to H3. b. If not present, check C9, R46, wire from H6 to H8.



FOR TPL MICROPHONE



BIAS ADJUSTMENTS

BIAS ADJUSTMENTS ARE MADE WITH A 20,000 OHM PER VOLT METER USING 0-.5 VOLT SCALE AS FOLLOWS:

1. "B" BIAS ADJUSTMENT: CONNECT + LEAD TO TEST POINT "B" AND - LEAD TO COMMON (H2N) AND ADJUST POT "B" (R19) FOR 0.14 VOLTS D.C.
2. "A" BIAS ADJUSTMENT: CONNECT + LEAD TO TEST POINT "A" AND - LEAD TO COMMON (H2N) AND ADJUST POT "A" (R22) FOR 0.14 VOLTS D.C.

POWER SYSTEM CIRCUIT MODIFICATIONS

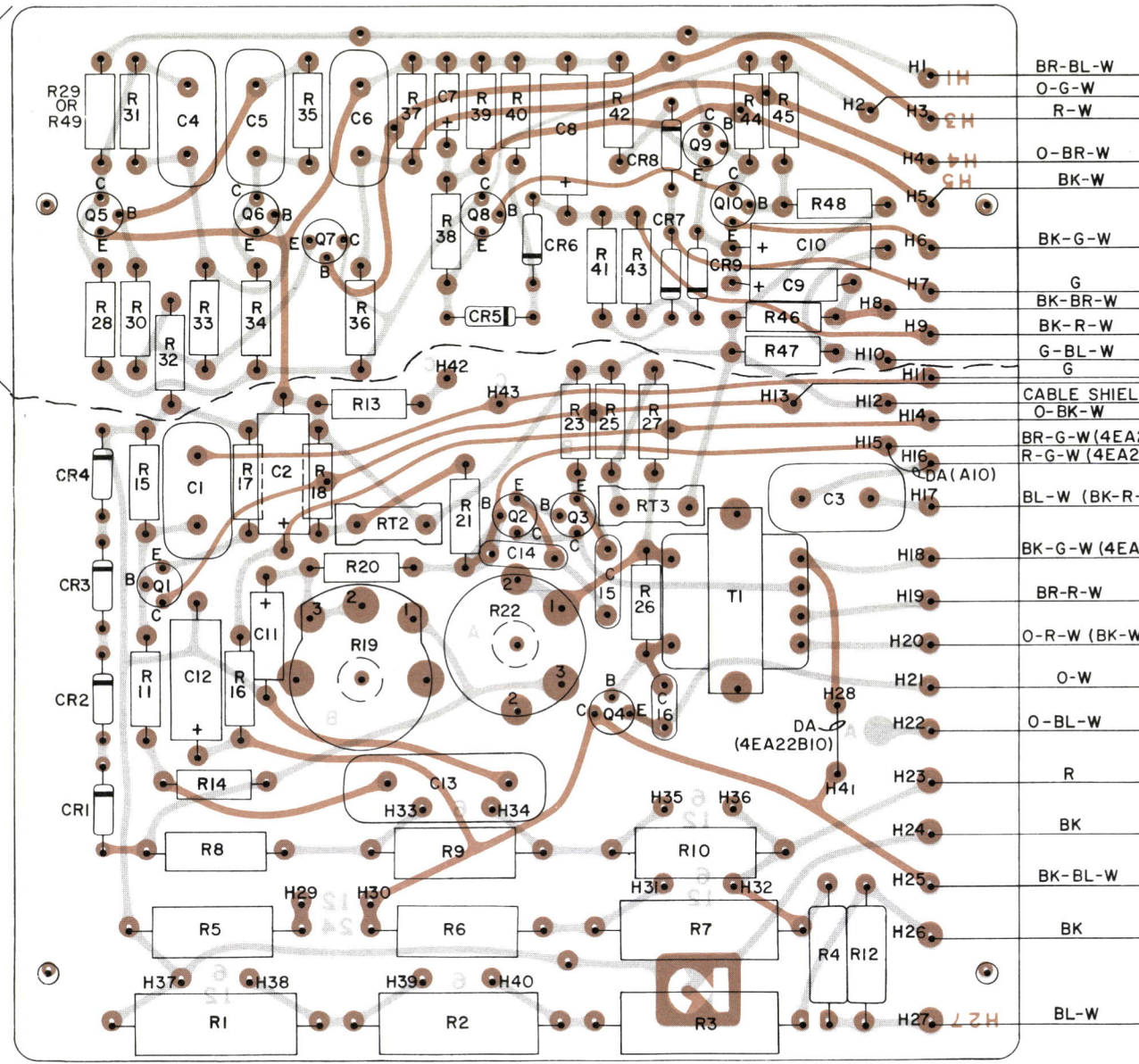
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12 VOLT SYSTEMS: UNIT IS SHIPPED WITH JUMPERS SOLDERED ACROSS 12" VOLT DESIGNATIONS AND PILOT LIGHT EQUIPPED WITH A .755 LAMP.

6 VOLT SYSTEMS: DELETE JUMPER ACROSS "12-24" DESIGNATION. ADD JUMPERS ACROSS REMAINING TWO "6" VOLT DESIGNATIONS. SOLDER .755 AMPER JUMPERS ACROSS R1502 AND R1503. REPLACE PILOT LAMP WITH A .755 LAMP.

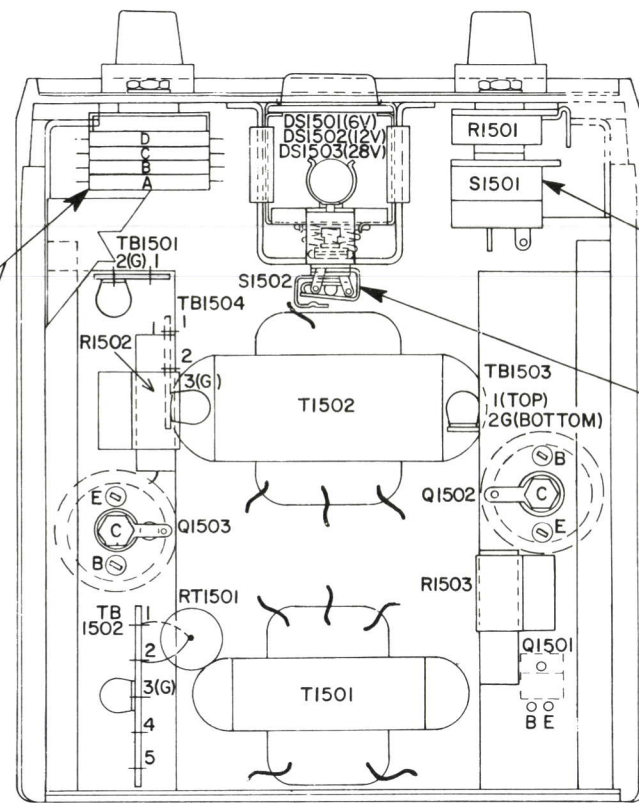
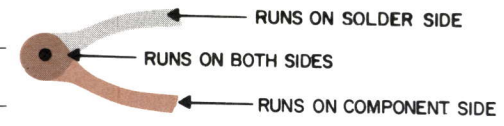
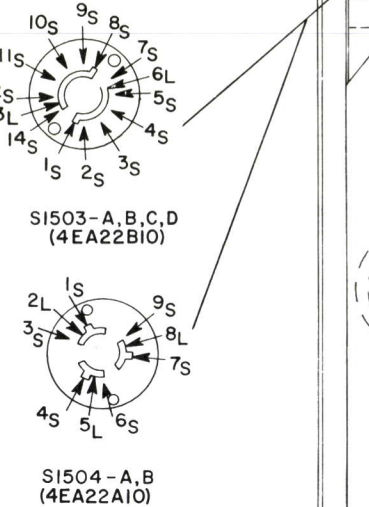
24 VOLT SYSTEMS: DELETE ALL JUMPERS EXCEPT JUMPER ACROSS "12-24" DESIGNATION. UNSOLDER ORANGE WIRE FROM COLLECTOR OF POWER TRANSISTOR Q1502 AND SOLDER IT TO TB1503-1. REPLACE PILOT LAMP WITH A .757 LAMP.

PRESENT ON POWER CALL/SIREN ONLY.

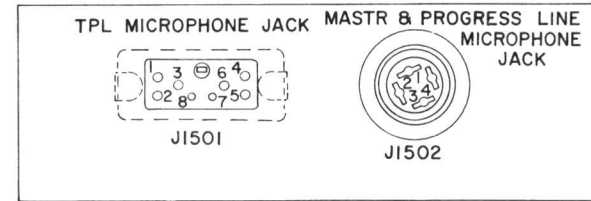


COMPONENT BOARD

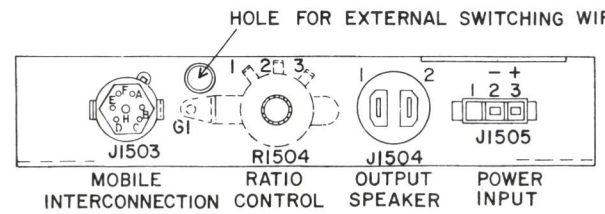
(19C303664, Sh. 1, Rev. 2)  
 (19C303664, Sh. 2, Rev. 2)



AMPLIFIER ASSEMBLY (TOP VIEW)



FRONT CONNECTOR PANEL



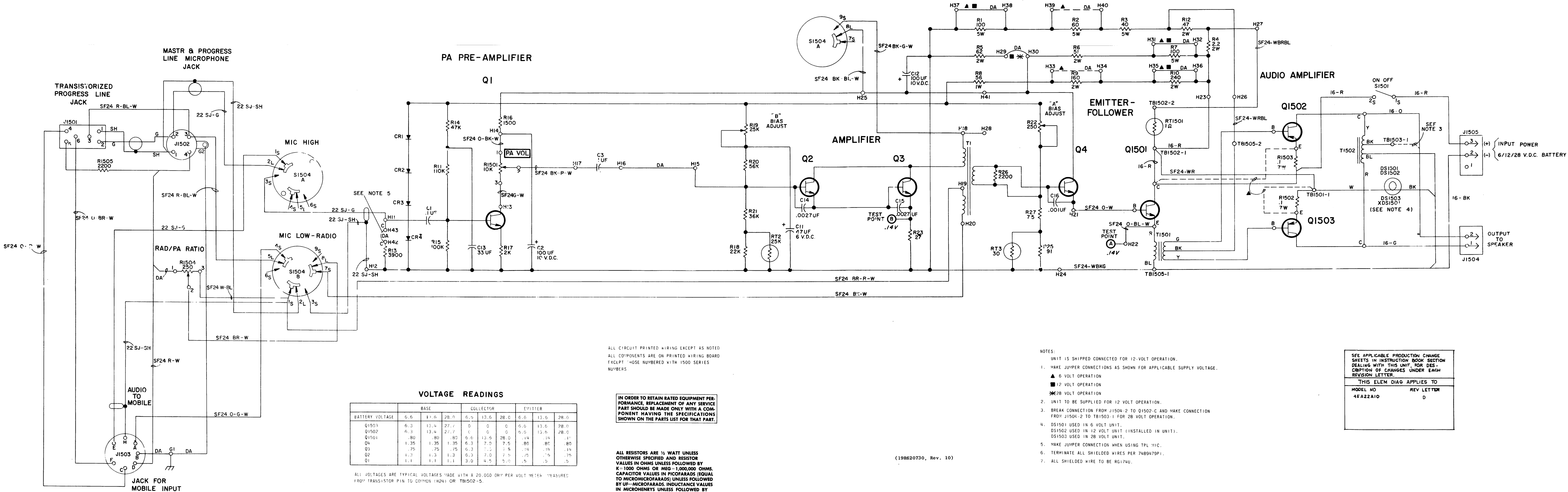
REAR CONNECTOR PANEL

OUTLINE & TROUBLESHOOTING DIAGRAM

POWER CALL — MODEL 4EA22A10  
 POWER CALL/SIREN — MODEL 4EA22B10



(DR-8397)



SCHEMATIC DIAGRAM

POWER CALL  
MODEL 4EA22A10

PARTS LIST

LBI-3647F  
POWER CALL  
MODEL 4BA22A10

SYMBOL	GE PART NO.	DESCRIPTION
AI501		COMPONENT BOARD ASSEMBLY 19D402489G1
		- - - - - CAPACITORS - - - - -
C1	19A115028P114	Polyester: 0.1 µf ±20%, 200 VDCW.
C2	5496267P7	Tantalum: 100 µf ±20%, 10 VDCW.
C3	19A115028P114	Polyester: 0.1 µf ±20%, 200 VDCW.
Cl1	5496267P2	Tantalum: 47 µf ±20%, 6 VDCW.
Cl2	5496267P7	Tantalum: 100 µf ±20%, 10 VDCW.
Cl3	19A115028P117	Polyester: 0.33 µf ±20%, 100 VDCW.
C14* and C15*	5494481P127	Ceramic disc: 2700 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap. Added by REV B.
C16*	5494481P111	Ceramic disc: 1000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap. Added by REV B.
		- - - - - DIODES AND RECTIFIERS - - - - -
CR1 thru CR4	19A115439P1	Silicon.
		- - - - - TRANSISTORS - - - - -
Q1 thru Q4	19A115123P1	Silicon, NPN.
		- - - - - RESISTORS - - - - -
R1	5493035P13	Wirewound, ceramic: 100 ohms ±5%, 5 w; sim to Hamilton Hall Type HR.
R2	5493035P12	Wirewound, ceramic: 60 ohms ±5%, 5 w; sim to Hamilton Hall Type HR.
R3	5493035P11	Wirewound, ceramic: 40 ohms ±5%, 5 w; sim to Hamilton Hall Type HR.
R4	19B209022P23	Wirewound, phen: 2.2 ohms ±5%, 2 w.
R5	3R79P620J	Composition: 62 ohms ±5%, 2 w.
R6	3R79P510J	Composition: 51 ohms ±5%, 2 w.
R7	5493035P13	Wirewound, ceramic: 100 ohms ±5%, 5 w; sim to Hamilton Hall Type HR.
R8	3R78P560J	Composition: 56 ohms ±5%, 1 w.
R9	3R79P161J	Composition: 160 ohms ±5%, 2 w.
R10	3R79P241J	Composition: 240 ohms ±5%, 2 w.
R11	3R77P114J	Composition: 0.11 megohm ±5%, 1/2 w.
R12	19B209022P7	Wirewound, phen: 0.47 ohms ±5%, 2 w.
R13	3R77P392J	Composition: 3900 ohms ±5%, 1/2 w.
R14	3R77P473J	Composition: 47,000 ohms ±5%, 1/2 w.
R15	3R77P104J	Composition: 0.10 megohm ±5%, 1/2 w.
R16	3R77P152J	Composition: 1500 ohms ±5%, 1/2 w.
R17	3R77P202J	Composition: 2000 ohms ±5%, 1/2 w.
R18	3R77P223J	Composition: 22,000 ohms ±5%, 1/2 w.
R19	19B209115P2	Variable, carbon film: 25,000 ohms ±20%; sim to UPE-70.
R20	3R77P563J	Composition: 56,000 ohms ±5%, 1/2 w.
R21	3R77P363J	Composition: 36,000 ohms ±5%, 1/2 w.
R22	19B209113P1	Variable, wirewound: 250 ohms ±20%, 2.5 w.
R23	3R77P270J	Composition: 27 ohms ±5%, 1/2 w.

SYMBOL	GE PART NO.	DESCRIPTION
R25	3R77P910J	Composition: 91 ohms ±5%, 1/2 w.
R26	3R77P222J	Composition: 2200 ohms ±5%, 1/2 w.
R27	3R77P750J	Composition: 75 ohms ±5%, 1/2 w.
		- - - - - THERMISTORS - - - - -
RT2	5490828P12	Rod: 25,000 ohms ±10%, temp coef 3900 ±5%; sim to Global 783H-2.
RT3	5490828P2	Rod: 30 ohms ±10%, temp coef 1500 ±10%; sim to Global 783F-2.
		- - - - - TRANSFORMERS - - - - -
T1	19B209219P1	Audio freq: 300 to 3000 Hz, Pri 1: 36 ohms ±10% DC res, Pri 2: 17 ohms ±10% DC res, Sec: 100 ohms ±10% DC res.
		AMPLIFIER ASSEMBLY 19D402487G1
		- - - - - INDICATING DEVICES - - - - -
DS1501	19C307037P18	Lamp, incandescent: 6.3 v; sim to GE 755.
DS1502	19C307037P19	Lamp, incandescent: 14 v; sim to GE 756.
DS1503	19C307037P20	Lamp, incandescent: 28 v; sim to GE 757.
		- - - - - JACKS AND RECEPTACLES - - - - -
J1501	5495345P6	Socket, phen: 8 contacts rated at 5 amps max.
J1502		Connector. Includes:
	19A116061P2	Connector: 4 female contacts; sim to Amphenol Type 91-PW4F-1000.
	19A116061P4	Lockwasher.
	19A116061P5	Nut, knurled.
J1503	7489183P8	Plug: 7 contacts rated at 7.5 amps max.
J1504*	19A134156P1	Connector, receptacle: sim to Heyco DC-68-2-2 with 2 brass terminals No. T-202-S.
	5492450P2	In REV C and earlier:
J1505		Connector: 2 female contacts; sim to Heyman DC-202-1.
	5492497P20	Includes:
	5492497P2	Shell, connector: 3 circuits; sim to Amp 480059-1.
		Contact (2), crimp, with lock spring; sim to Amp 42641-1.
		- - - - - TRANSISTORS - - - - -
Q1501*	19A116118P3	Silicon, NPN.
		In REV B:
	19A115527P1	Silicon, NPN.
		In Models of REV A and earlier:
	19A115246P1	Silicon, NPN.
Q1502 and Q1503	5490810P1	Germanium, PNP.
		- - - - - RESISTORS - - - - -
R1501	19C307089P13	(Part of S1501).
R1502 and R1503	5493035P14	Wirewound, ceramic: 0.1 ohm ±10%, 7 w; sim to Hamilton Hall Type HR.
R1504	19B209114P2	Variable, wirewound: 250 ohms ±20%, 2.25 w; sim to CTS Series 117.
R1505	3R77P222K	Composition: 2200 ohms ±10%, 1/2 w.
		- - - - - THERMISTORS - - - - -
RT1501	19C300048P3	Disc: 1 ohm ±10% at 25°C.
		- - - - - SWITCHES - - - - -
S1501	19C307089P13	Switch/Resistor: includes Switch, rotary, 1 pole 2 positions, non-shorting contacts; Resistor (R1501), variable, 10,000 ohms ±10%, 1/2 w; sim to Mallory Type LC10K.

SYMBOL	GE PART NO.	DESCRIPTION
S1504	19C307060P2	Switch, rotary: 2 sections, 8 poles, 6 positions, non-shorting contacts, 0.5 amps at 125 VAC.
		- - - - - TRANSFORMERS - - - - -
T1501	19B209216P1	Audio freq: 200 to 5000 Hz, Pri: 42 ohms ±5% imp, 1.25 ohms ±15% DC res, Sec: 40 ohms imp, 1.7 ohms DC res.
T1502	19B209221P1	Autotransformer.
TB1501	7775500P1	Phen: 2 terminals.
TB1502	7775500P5	Phen: 3 terminals.
TB1503	7775500P144	Phen: 2 terminals.
TB1505	7775500P147	Phen: 5 terminals.
		- - - - - SOCKETS - - - - -
XDS1501	4032220P3	Lamp, miniature; sim to Drake N517.
		HARNESS ASSEMBLY 19D402487G4
		(Include DS1501-DS1503, J1501, J1502, J1505, R1501, R1504, R1505, S1501, S1504, TB1501, XDS1501).
		- - - - - MISCELLANEOUS - - - - -
	19A121733G1	Mounting bracket.
	19A121771G1	Speaker Cable, 20 ft.
	19B204987G1	Power Cable, with fuse holders and fuses.
	7484390P1	Fuse, 10-amp.
	19A121683G1	Support, pushbutton.
	19A121684G1	Support, pilot lamp, with spring clips.
	19B204907P2	Lens cap, red, pushbutton.
	19A122754G1	Microphone adaptor. (PORTA-MOBIL).

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.

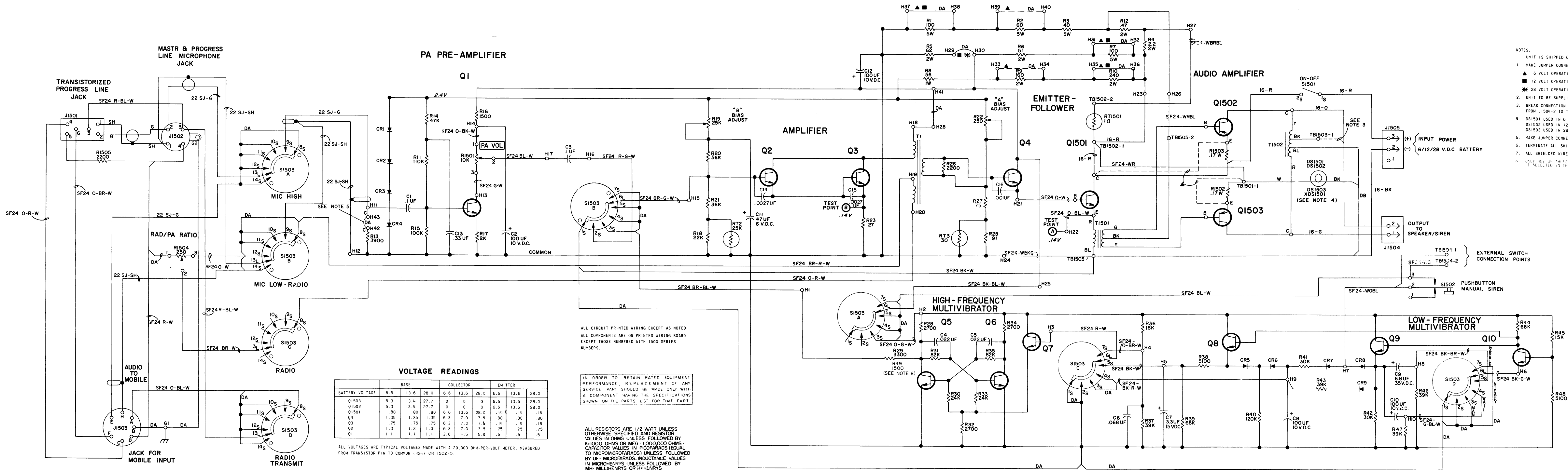
REV. A - To standardize transistors. Changed Q1501.

REV. B - To reduce ignition noise in speaker, when used in vehicles without noise suppression. Added C14, C15 and C16.

REV. C - To incorporate a new transistor. Changed Q1501.

REV. D - To incorporate an improved speaker connector. Changed J1504.

(DF-8397)



(198620729, Rev. 13)

SCHEMATIC DIAGRAM

POWER CALL/SIREN  
MODEL 4EA22B10

SYMBOL	GE PART NO.	DESCRIPTION
A1502		COMPONENT BOARD ASSEMBLY 19D402489G2
		----- CAPACITORS -----
C1	19A115028P114	Polyester: 0.1 $\mu$ f $\pm$ 20%, 200 VDCW.
C2	5496267P7	Tantalum: 100 $\mu$ f $\pm$ 20%, 10 VDCW.
C3	19A115028P114	Polyester: 0.1 $\mu$ f $\pm$ 20%, 200 VDCW.
C4 and C5	19A115028P509	Polyester: 0.022 $\mu$ f $\pm$ 5%, 200 VDCW.
C6	19A115028P112	Polyester: .068 $\mu$ f $\pm$ 20%, 200 VDCW.
C7	5496267P9	Tantalum: 3.3 $\mu$ f $\pm$ 20%, 15 VDCW.
C8	5496267P7	Tantalum: 100 $\mu$ f $\pm$ 20%, 10 VDCW.
C9	5496267P18	Tantalum: 6.8 $\mu$ f $\pm$ 20%, 35 VDCW.
C10	5496267P7	Tantalum: 100 $\mu$ f $\pm$ 20%, 10 VDCW.
C11	5496267P2	Tantalum: 47 $\mu$ f $\pm$ 20%, 6 VDCW.
C12	5496267P7	Tantalum: 100 $\mu$ f $\pm$ 20%, 10 VDCW.
C13	19A115028P117	Polyester: 0.33 $\mu$ f $\pm$ 20%, 100 VDCW.
C14* and C15*	5494481P127	Ceramic disc: 2700 pf $\pm$ 20%, 1000 VDCW; sim to RMC Type JF Discap. Added by REV C.
C16*	5494481P111	Ceramic disc: 1000 pf $\pm$ 20%, 1000 VDCW; sim to RMC Type JF Discap. Added by REV C.
		----- DIODES AND RECTIFIERS -----
CR1 thru CR4	19A115439P1	Silicon.
CR5 thru CR9	19A115250P1	Silicon.
		----- TRANSISTORS -----
Q1 thru Q10	19A115123P1	Silicon, NPN.
		----- RESISTORS -----
R1	5493035P13	Wirewound, ceramic: 100 ohms $\pm$ 5%, 5 w; sim to Hamilton Hall Type HR.
R2	5493035P12	Wirewound, ceramic: 60 ohms $\pm$ 5%, 5 w; sim to Hamilton Hall Type HR.
R3	5493035P11	Wirewound, ceramic: 40 ohms $\pm$ 5%, 5 w; sim to Hamilton Hall Type HR.
R4	19B209022P23	Wirewound, phen: 2.2 ohms $\pm$ 5%, 2 w.
R5	3R79P620J	Composition: 62 ohms $\pm$ 5%, 2 w.
R6	3R79P510J	Composition: 51 ohms $\pm$ 5%, 2 w.
R7	5493035P13	Wirewound, ceramic: 100 ohms $\pm$ 5%, 5 w; sim to Hamilton Hall Type HR.
R8	3R78P960J	Composition: 56 ohms $\pm$ 5%, 1 w.
R9	3R79P161J	Composition: 160 ohms $\pm$ 5%, 2 w.
R10	3R79P241J	Composition: 240 ohms $\pm$ 5%, 2 w.
R11	3R77P114J	Composition: 0.11 megohm $\pm$ 5%, 1/2 w.
R12	19B209022P7	Wirewound, phen: 0.47 ohms $\pm$ 5%, 2 w.
R13	3R77P392J	Composition: 3900 ohms $\pm$ 5%, 1/2 w.
R14	3R77P473J	Composition: 47,000 ohms $\pm$ 5%, 1/2 w.
R15	3R77P104J	Composition: 0.10 megohm $\pm$ 5%, 1/2 w.

PARTS LIST

LBI-3648E  
POWER CALL/SIREN  
MODEL 45A22B10

SYMBOL	GE PART NO.	DESCRIPTION
R16	3R77P152J	Composition: 1500 ohms $\pm$ 5%, 1/2 w.
R17	3R77P202J	Composition: 2000 ohms $\pm$ 5%, 1/2 w.
R18	3R77P223J	Composition: 22,000 ohms $\pm$ 5%, 1/2 w.
R19	19B209115P2	Variable, carbon film: 25,000 ohms $\pm$ 20%; sim to UPE-70.
R20	3R77P563J	Composition: 56,000 ohms $\pm$ 5%, 1/2 w.
R21	3R77P363J	Composition: 36,000 ohms $\pm$ 5%, 1/2 w.
R22	19B209113P1	Variable, wirewound: 250 ohms $\pm$ 20%, 2.5 w.
R23	3R77P270J	Composition: 27 ohms $\pm$ 5%, 1/2 w.
R25	3R77P910J	Composition: 91 ohms $\pm$ 5%, 1/2 w.
R26	3R77P222J	Composition: 2200 ohms $\pm$ 5%, 1/2 w.
R27	3R77P750J	Composition: 75 ohms $\pm$ 5%, 1/2 w.
R28	3R77P272J	Composition: 2700 ohms $\pm$ 5%, 1/2 w.
R29*	3R77P332J	Composition: 3300 ohms $\pm$ 5%, 1/2 w. In Models earlier than REV A: Composition: 8200 ohms $\pm$ 5%, 1/2 w.
R30	3R77P243J	Composition: 24,000 ohms $\pm$ 5%, 1/2 w.
R31	3R77P823K	Composition: 82,000 ohms $\pm$ 10%, 1/2 w.
R32	3R77P272K	Composition: 2700 ohms $\pm$ 10%, 1/2 w.
R33	3R77P243J	Composition: 24,000 ohms $\pm$ 5%, 1/2 w.
R34	3R77P272J	Composition: 2700 ohms $\pm$ 5%, 1/2 w.
R35	3R77P823J	Composition: 82,000 ohms $\pm$ 5%, 1/2 w.
R36	3R77P183K	Composition: 18,000 ohms $\pm$ 10%, 1/2 w.
R37	3R77P393K	Composition: 39,000 ohms $\pm$ 10%, 1/2 w.
R38	3R77P512J	Composition: 5100 ohms $\pm$ 5%, 1/2 w.
R39	3R77P683K	Composition: 68,000 ohms $\pm$ 10%, 1/2 w.
R40	3R77P124K	Composition: 0.12 megohm $\pm$ 10%, 1/2 w.
R41 and R42	3R77P303J	Composition: 30,000 ohms $\pm$ 5%, 1/2 w.
R43	3R77P393K	Composition: 39,000 ohms $\pm$ 10%, 1/2 w.
R44	3R77P683K	Composition: 68,000 ohms $\pm$ 10%, 1/2 w.
R45	3R77P153K	Composition: 15,000 ohms $\pm$ 10%, 1/2 w.
R46 and R47	3R77P393K	Composition: 39,000 ohms $\pm$ 10%, 1/2 w.
R48	3R77P512J	Composition: 5100 ohms $\pm$ 5%, 1/2 w.
R49	3R77P152J	Composition: 1500 ohms $\pm$ 5%, 1/2 w.
RT2	5490828P12	Rod: 25,000 ohms $\pm$ 10%, temp coef 3900 $\pm$ 5%; sim to Globar 783H-2.
RT3	5490828P2	Rod: 30 ohms $\pm$ 10%, temp coef 1500 $\pm$ 10%; sim to Globar 783F-2.
		----- TRANSFORMERS -----
T1	19B209219P1	Audio freq: 300 to 3000 Hz, Pri 1: 36 ohms $\pm$ 10% DC res, Pri 2: 17 ohms $\pm$ 10% DC res, Sec: 100 ohms $\pm$ 10% DC res.
		AMPLIFIER ASSEMBLY 19D402487G2
		----- INDICATING DEVICES -----
DS1501	19C307037P18	Lamp, incandescent: 6.3 v; sim to GE 755.
DS1502	19C307037P19	Lamp, incandescent: 14 v; sim to GE 756.
DS1503	19C307037P20	Lamp, incandescent: 28 v; sim to GE 757.
		----- JACKS AND RECEPTACLES -----
J1501	5495345P6	Socket, phen: 8 contacts rated at 5 amps max.

SYMBOL	GE PART NO.	DESCRIPTION
J1502		Connector. Includes: Connector: 4 female contacts; sim to Amphenol Type 91-PW4F-1000. Lockwasher. Nut, knurled. Plug: 7 contacts rated at 7.5 amps max.
J1503	19A116061P2	
J1504*	19A116061P4	
	19A116061P5	
	7489183P8	
	19A134156P1	Connector, receptacle: sim to Heyco DC-68-2-2 with 2 brass terminals No. T-202-S. In REV D and earlier: Connector: 2 female contacts; sim to Heyman DC-202-1. Includes: Shell, connector: 3 circuits; sim to Amp 480059-1. Contact (2), crimp, with lock spring; sim to Amp 42641-1.
	5492450P2	
J1505	5492497P20	
	5492497P2	
		----- TRANSISTORS -----
Q1501*	19A116118P3	Silicon, NPN. In REV B, C, D: Silicon, NPN. In Models of REV A and earlier: Silicon, NPN.
	19A115246P1	
Q1502 and Q1503	5490810P1	Germanium, PNP.
		----- RESISTORS -----
R1501	19C307089P13	(Part of S1501).
R1502 and R1503	5493035P14	Wirewound, ceramic: 0.1 ohm $\pm$ 10%, 7 w; sim to Hamilton Hall Type HR.
R1504	19B209114P2	Variable, wirewound: 250 ohms $\pm$ 20%, 2.25 w; sim to CTS Series 117.
R1505	3R77P222K	Composition: 2200 ohms $\pm$ 10%, 1/2 w.
RT1501	19C300048P3	Disc: 1 ohm $\pm$ 10% at 25°C.
		----- SWITCHES -----
S1501	19C307089P13	Switch/Resistor: includes Switch, rotary, 1 pole 2 positions, non-shortng contacts; Resistor (R1501), variable, 10,000 ohms $\pm$ 10%, 1/2 w; sim to Mallory Type LC10K.
S1502	5490868P1	Switch, Pushbutton: SPDT, 1/4 amp at 120 VAC; sim to Switchcraft Series 963.
S1503	19C307060P1	Switch, rotary: 4 sections, 8 poles, 6 positions non-shortng contacts, 0.5 amps at 125 VAC.
		----- TRANSFORMERS -----
T1501	19B209216P1	Audio freq: 200 to 5000 Hz, Pri: 42 ohms $\pm$ 5% imp, 1.25 ohms $\pm$ 15% DC res, Sec: 40 ohms imp, 1.7 ohms DC res.
T1502	19B209221P1	Autotransformer.
		----- TERMINAL BOARDS -----
TB1501	7775500P1	Phen: 2 terminals.
TB1502	7775500P5	Phen: 3 terminals.
TB1503	7775500P144	Phen: 2 terminals.
TB1504	7775500P102	Phen: 3 terminals.
TB1505	7775500P147	Phen: 5 terminals.
		----- SOCKETS -----
XDS1501	4032220P3	Lamp, miniature; sim to Drake N517.
		HARNES ASSEMBLY 19D402487G3 (Includes DS1501-DS1503, J1501, J1502, J1505, R1501, R1504, R1505, S1501, S1503, TB1501, XDS1501).

SYMBOL	GE PART NO.	DESCRIPTION
	19A121733G1	----- MISCELLANEOUS ----- Mounting bracket.
	19A121771G1	Speaker Cable, 20 ft.
	19B204987G1	Power Cable, with fuse holders and fuses.
	7484390P1	Fuse, 10-amp.
	19A121683G1	Support, pushbutton.
	19A121684G1	Support, pilot lamp, with spring clips.
	19B204907G2	Lens cap, red, pushbutton.
	19A121768P1	Spring, pushbutton.
	7115130P6	Lockwasher, pushbutton.
	19A122754G1	Microphone adaptor. (PORTA-MOBIL).

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 - To increase drive to Q5/Q6. Changed R29.

REV. B - To standardize transistors. Changed Q1501.

REV. C - To reduce ignition noise in speaker, when used in vehicles without noise suppression. Added C14, C15 and C16.

REV. D - To incorporate a new transistor. Changed Q1501.

REV. E - To incorporate an improved speaker connector. Changed J1504.

PARTS LIST

LBI-4365

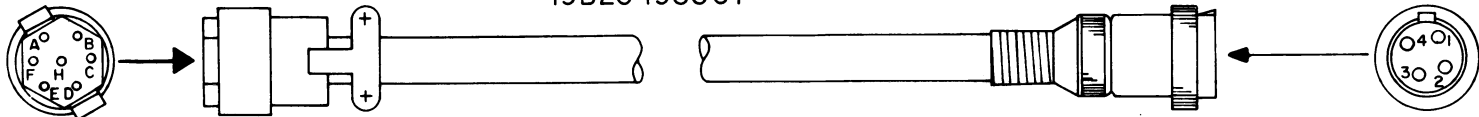
INTERCONNECTION CABLE  
19B204988G1 MASTR AND PROGRESS LINE  
19B204988G2 TPL  
19B204988G3 PORTA-MOBIL

SYMBOL	GE PART NO.	DESCRIPTION
		MASTR AND PROGRESS LINE INTERCONNECTION CABLE 19B204988G1
	7489183P9	Receptacle: 7 contacts rated at 7.5 amps max; sim to Winchester M7S-LS-H19C.
	7478726P6	Plug: 4 male contacts; sim to Amphenol Type 91-MC4M.
	4034669P3	Cable: approx 3 feet. (Specify length).
		TPL INTERCONNECTION CABLE 19B204988G2
	7489183P9	Receptacle: 7 contacts rated at 7.5 amps max; sim to Winchester M7S-LS-H19C.
	5495345P13	Plug: 6 male contacts; sim to Component Mfg Service 6601-M6.
	4034669P3	Cable: approx 3 feet. (Specify length).
	5495345P23	Clip, spring tension. (Used with plug).
	5495345P21	Cover, electrical. (Covers plug).
	5495345P22	Pin, ground. (Used with plug).
		PORTA-MOBIL INTERCONNECTION CABLE 19B204988G3
	7489183P9	Receptacle: 7 contacts rated at 7.5 amps max; sim to Winchester M7S-LS-H19C.
	19B209201P3	Plug: 4 contacts, Delrine; sim to Switchcraft 2504M.
	4034668P4	Cable: approx 3 feet. (Specify length).

\*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

MASTR & PROGRESS LINE CABLE

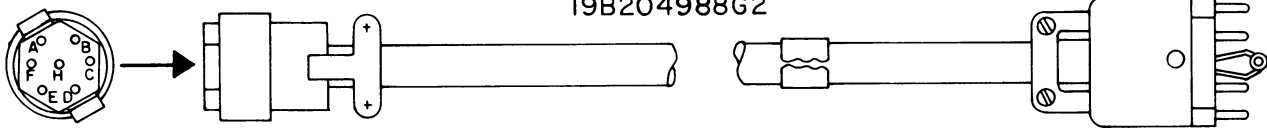
19B204988G1



PIN	WIRE	PIN
A	RED	3
B	BLACK	SHELL
D	WHITE	4
E	GREEN	2
H	SHIELD ON GREEN	1

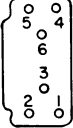
TPL CABLE

19B204988G2



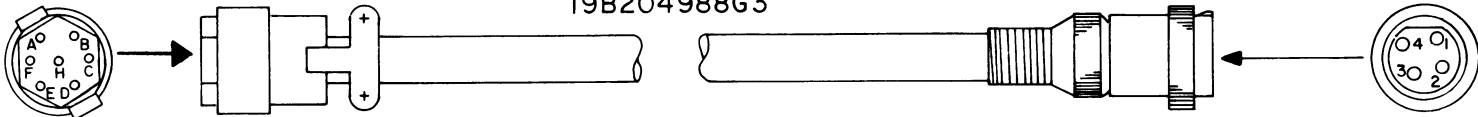
PIN	WIRE	PIN
A	RED	3
C	BLUE	4
D	WHITE	5
E	GREEN	2
F	BLACK	6
H	SHIELD ON GREEN	1

VIEW FROM  
CABLE END



PORTA MOBIL CABLE

19B204988G3



PIN	WIRE	PIN
A	RED	3
B	BLACK	SHELL
D	WHITE	4
E	GREEN	2
H	SHIELD ON GREEN	1

INTERCONNECTION CABLES

MASTR & PROGRESS LINE 19B204988G1  
TPL 19B204988G2  
PORTA-MOBIL 19B204988G3

(19C320349, Rev. 1)

## 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 General Electric Communication Equipment Service Stations or through any General Electric 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

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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.

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# **MAINTENANCE MANUAL**

LBI-3656

DF-8397

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MOBILE RADIO DEPARTMENT  
GENERAL ELECTRIC COMPANY • LYNCHBURG, VIRGINIA 24502

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