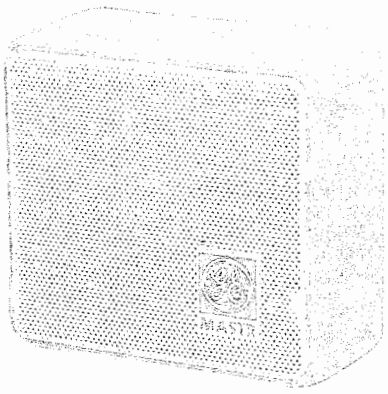
communications

MASTR Progress Line

10-WATT SPEAKER-AMPLIFIER MODEL 4EZ18A10 (OPTION 7003)

Maintenance Manual LBI-3617



SPECIFICATIONS *

Audio Power Output	10 Watts
Audio Input	750 Milliwatts
Power Drain (at Rated Voltage)	Standby: approx. .08 ampere Full power: 6.6 v, 2.8 amperes 13.8 v, 1.5 amperes 28 v, 0.8 ampere
Speaker Impedance	3.2 ohms
Frequency Response	From 300 to 3000 cycles ±3 db with less than 10% distortion (1000 cps reference)
Transistor Complement	2
Used With	6-v, 12-v and 28-v vehicular systems
Ambient Temperature Range	-30°C to +60°C (-22°F to +140°F)
Dimensions: (H x W x D)	5-1/8" x 5-7/16" x 3-3/16"

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

4EZ-18A

GENERAL ELECTRIC

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DESCRIPTION

SPEAKER AMPLIFIER (Option 7003)

General Electric Speaker-Amplifier Model 4EZ18A10 uses two transistors to provide an audio output of 10 watts. The speaker may be used with either 6-volt, 12-volt or 28-volt, positive or negative ground MASTR mobile combinations. Three simple tap changes inside the speaker are required for changes in the operating voltage.

NOTE

The speaker-amplifier is shipped connected for 12-volt, negative ground vehicle systems unless specifically ordered for 6-volt or 28-volt systems. The Outline Diagram on Page 3 shows all connections for 6-volt, 12-volt or 28-volt, positive or negative ground operation.

While designed primarily for use with MASTR Progress Line receivers, the speaker may be used with any unit having an audio output ranging from 750 milliwatts up, and with an output impedance of 3.2 ohms. For speaker inputs over two watts, gain may be reduced by a jumper change in the input circuit as shown on the Schematic Diagram.

WINDOW-MOUNTING KIT 19A121879-G2 (Option 7011)

A coiled extension cord and special mounting bracket are available that enables the speaker to be removed from its vehicle mounting bracket and hung on the vehicle window. This allows the operator to hear incoming calls while away from the vehicle.

INSTALLATION

Mount the speaker where it will direct sound to the operator but not interfere with his vision. In exposed locations or areas of high humidity, mount the speaker so that moisture will not accumulate in the speaker cone.

UNIVERSAL MOUNTING BRACKET

The universal mounting bracket enables the speaker-amplifier to be mounted either on the top or bottom of the instrument panel, on the firewall, above the windshield in trucks, or behind the speaker grille in some vehicles.

To mount the unit, use the bracket as a template and drill three mounting holes with a #29 (9/64-inch) drill. Then attach the mounting bracket to the mounting surface with the two #10 x 5/8-inch screws supplied with the unit.

WINDOW-MOUNTING KIT (OPTION 7011)

To install the window mounting bracket, remove the two screws in each side of the speaker and lift off the front section. Then remove the three plug buttons in the back (louvered) portion of the speaker and attach the window mounting bracket, using the three nuts and lock-washers supplied with the kit. Two knurled knobs are provided with the kit for ease of mounting and removing the speaker from the universal mounting bracket.

Connect the coiled extension cord as shown on the Outline Diagram on Page 3.

CIRCUIT ANALYSIS

The audio signal from the receiver is coupled through transformer T1 to the bases of the Class B, push-pull amplifier transistors Q1 and Q2. Base bias is provided by resistors R4, R5, R8, R9 and RT1. R8 and R9 may be shorted by jumper leads to provide proper bias for the three supply voltages. Thermistor RT1 and resistor R4 form a parallel compensating network which stabilizes the emitter current of Q1 and Q2 under varying temperature conditions.

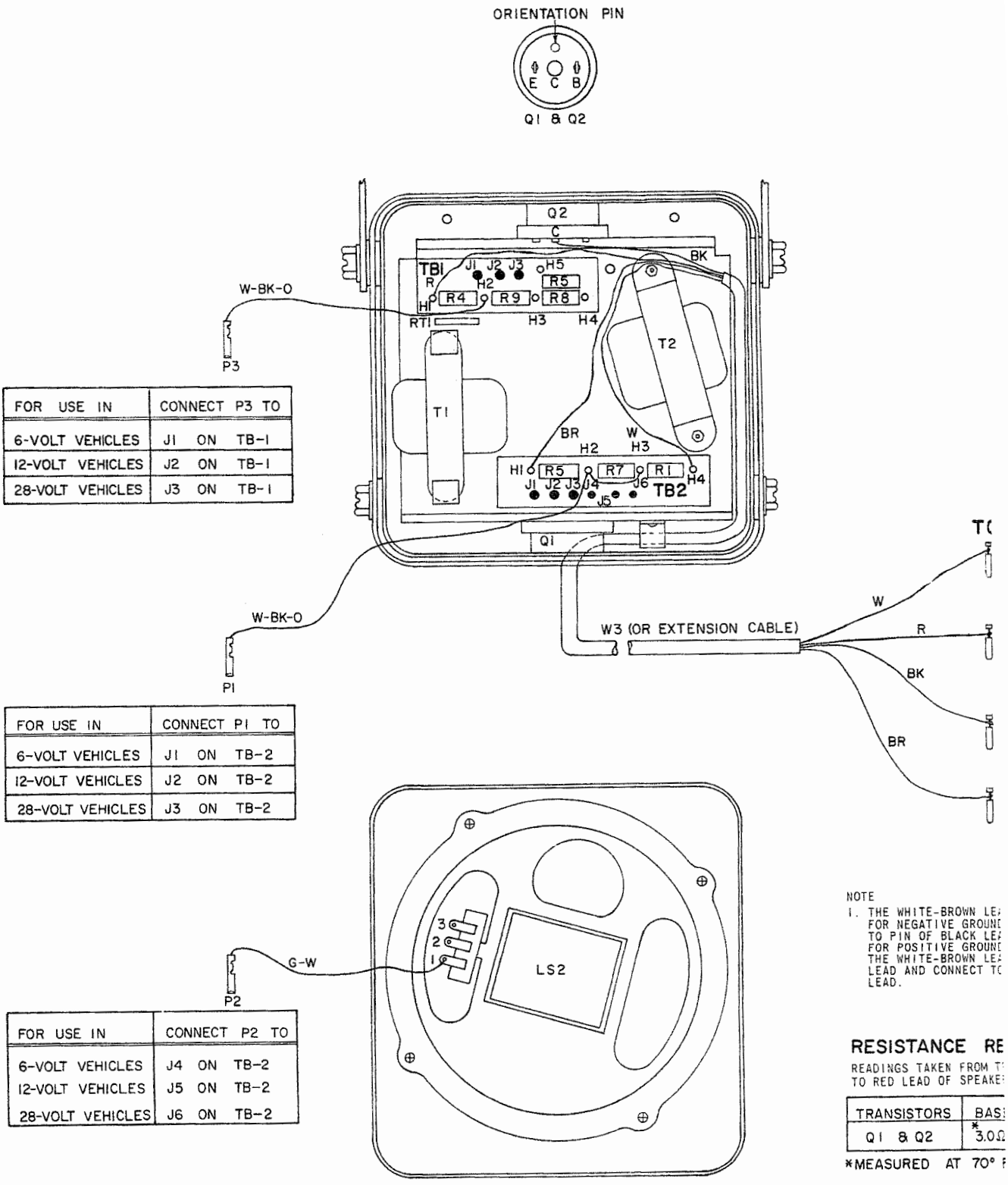
The output taken from the emitters of Q1 and Q2 is fed through impedance matching auto-transformer T2 to speaker LS2. The proper impedance of T2 is provided by plugging the green-white wire (P2) from the speaker into TB2-J4 (6 v), TB2-J5 (12 v) or TB2-J6 (28 v), depending on the system operating voltage.

When the receiver is squelched, the speaker draws only .080 ampere for maximum battery life.

MAINTENANCE

DISASSEMBLY

1. Remove the two screws on each side of the speaker case.
2. Lift off the front section of the speaker housing.



FOR USE IN	CONNECT P3 TO
6-VOLT VEHICLES	J1 ON TB-1
12-VOLT VEHICLES	J2 ON TB-1
28-VOLT VEHICLES	J3 ON TB-1

FOR USE IN	CONNECT P1 TO
6-VOLT VEHICLES	J1 ON TB-2
12-VOLT VEHICLES	J2 ON TB-2
28-VOLT VEHICLES	J3 ON TB-2

FOR USE IN	CONNECT P2 TO
6-VOLT VEHICLES	J4 ON TB-2
12-VOLT VEHICLES	J5 ON TB-2
28-VOLT VEHICLES	J6 ON TB-2

NOTE

1. THE WHITE-BROWN LE
FOR NEGATIVE GROUNI
TO PIN OF BLACK LE
FOR POSITIVE GROUNI
THE WHITE-BROWN LE
LEAD AND CONNECT TO
LEAD.

RESISTANCE RE

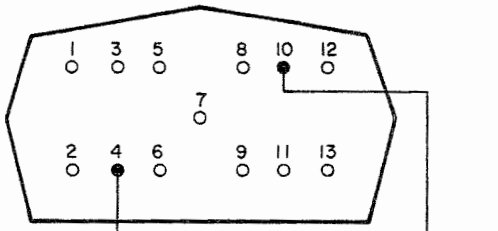
READINGS TAKEN FROM T
TO RED LEAD OF SPEAKE

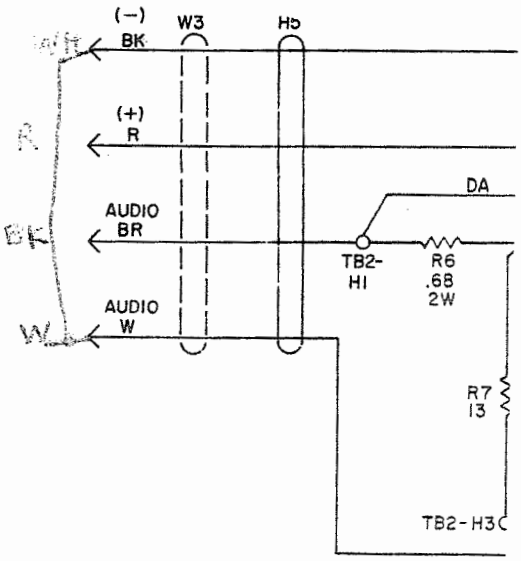
TRANSISTORS	BAS
Q1 & Q2	* 3.0Ω

*MEASURED AT 70° F

5304

SPEAKER
CONNECTIONS FOR 12-VOLT SYSTEMS
VEHICLE SYSTEMS PLUG P701





O

HOLE 2

HOLE 10 (+GRD)
HOLE 11 (-GRD)

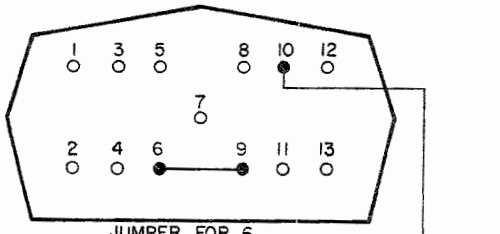
HOLE 11 (+GRD)
HOLE 10 (-GRD)

HOLE 13

CONNECTIONS TO VEHICLE SYSTEMS PLUG P701

EAD IS SHIPPED ATTACHED
ND SYSTEMS (CONNECTED
EAD OF SPEAKER CABLE W3).
ND SYSTEMS, DISCONNECT
EAD FROM PIN ON BLACK
TO THE PIN ON RED SPEAKER

SPEAKER
CONNECTIONS FOR 6/28-VOLT SYSTEMS
VEHICLE SYSTEMS PLUG P701



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

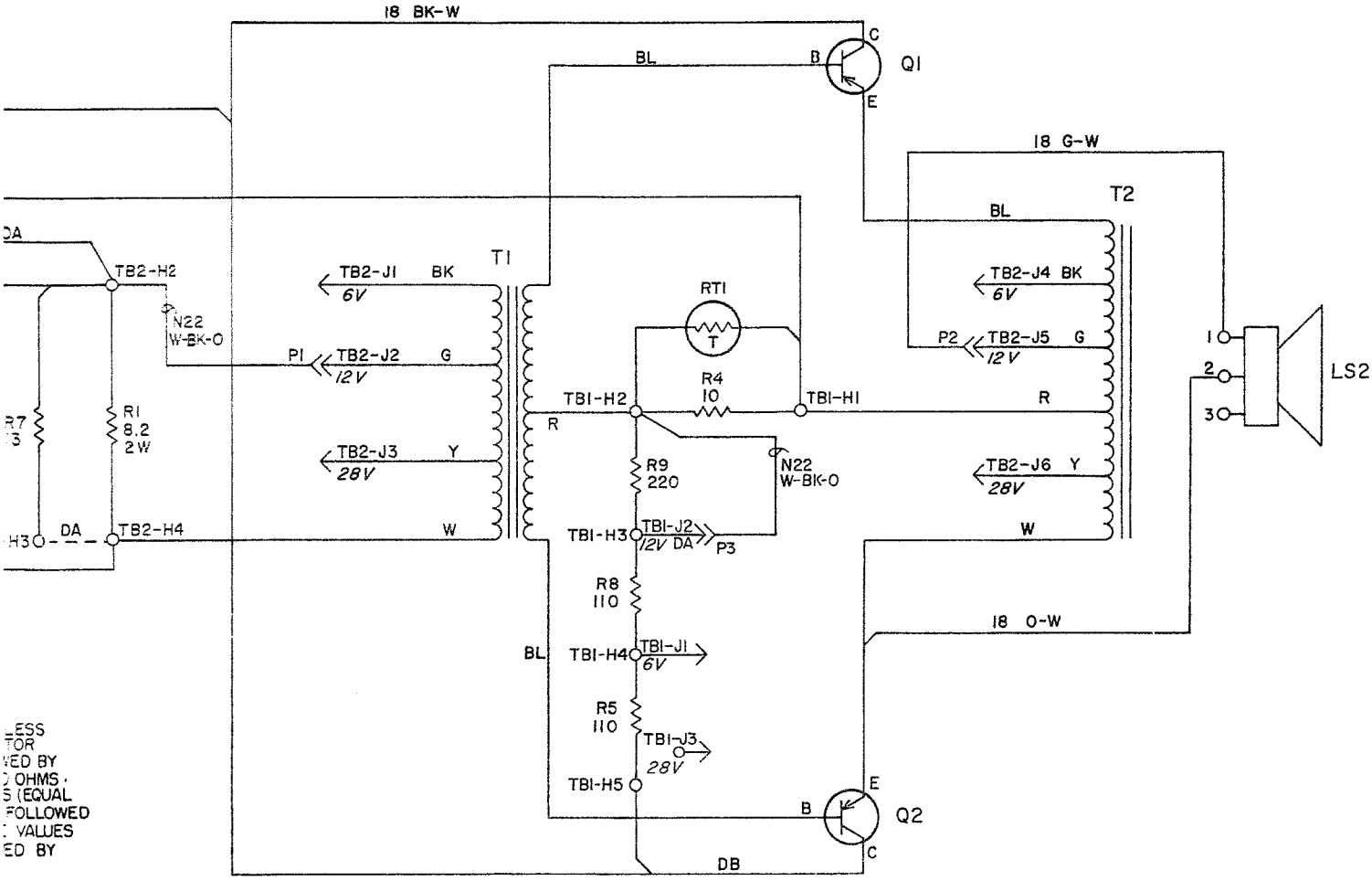
IN ORDER TO RETAIN RATED EQU
PERFORMANCE, REPLACEMENT
SERVICE PART SHOULD BE MADE ON
A COMPONENT HAVING THE SPECIFI
SHOWN ON THE PARTS LIST FOR THA

READINGS

TRANSISTOR PIN
KER CABLE (POSITIVE).

SE	EMITTER
Ω	0.2Ω

F



FOR OPERATION AT REDUCED GAIN,

REMOVE DA JUMPER BETWEEN TB2-J1 & H2

AND ADD DA JUMPER BETWEEN TB2-H3 & H4.

(19C303616, Rev. 2)

OUTLINE & SCHEMATIC DIAGRAM

10-WATT SPEAKER-AMPLIFIER
MODEL 4EZ18A10 (OPTION 7003)

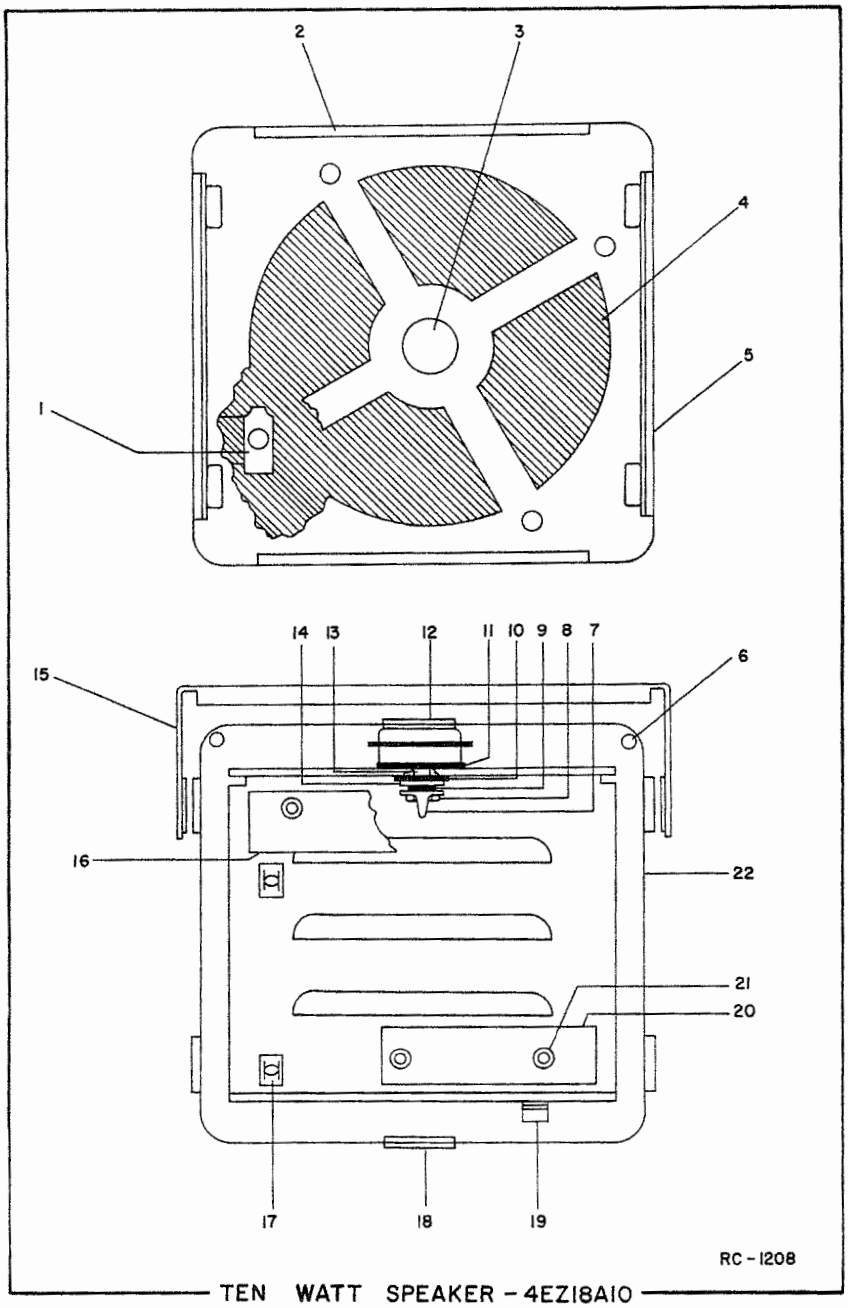
PARTS LIST

LBI-3600

10-WATT SPEAKER
MODEL 4EZ18A10
(PL-19D402449-G3)

SYMBOL	G-E PART NO.	DESCRIPTION
		- - - - - - - - - LOUDSPEAKERS - - - - - - - -
LS2	5491260-P7	Permanent magnet, 5-inch: 3.2 ohms ±10% voice coil imp, 15 w max operating, 385 cps ±15% resonance, paper dust cap; sim to Jensen Model P5-VAS12761.
		- - - - - - - - - - - PLUGS - - - - - - - - - -
P1	4036731-P1	Contact, friction type: sim to Bead Chain M152-30.
P2	4029840-P1	Contact, electrical: solder coated brass; sim to Amp 41854.
P3	4029840-P2	Contact, electrical: solder coated brass; sim to Amp 42827-2.
		- - - - - - - - - TRANSISTORS - - - - - - - - -
Q1 and Q2	5490810-P1	Germanium, PNP.
		- - - - - - - - - - - RESISTORS - - - - - - - - -
R1	19B209022-P137	Wirewound, phen: 8.2 ohms ±10%, 2 w; sim to IRC Type BWH.
R4	3R78-P100J	Fixed composition: 10 ohms ±5%, 1 w.
R5	3R78-P111J	Fixed composition: 110 ohms ±5%, 1 w.
R6	19B209022-P111	Wirewound, phen: 0.68 ohm ±10%, 2 w; sim to IRC Type BWH.
R7	3R78-P130J	Fixed composition: 13 ohms ±5%, 1 w.
R8	3R78-P111J	Fixed composition: 110 ohms ±5%, 1 w.
R9	3R78-P221J	Fixed composition: 220 ohms ±5%, 1 w.
		- - - - - - - - - - - THERMISTORS - - - - - - - -
RT1	19C300048-P3	Disc: 1 ohm ±10% res at 25°C.
		- - - - - - - - - TRANSFORMERS - - - - - - - -
T1	19B209220-P1	Audio freq: nominal freq range 0.3-3 KC, Pri: 0.17 ohm DC res max, Sec: 5.2 ohms DC res max.
T2	19B209218-P1	Audio freq: nominal freq range 0.3-3 KC, 0.3 ohm DC res max.
		- - - - - - - - - TERMINAL BOARDS - - - - - -
TB1		BOARD ASSEMBLY PL-19A121707-G1
		- - - - - - - - JACKS AND RECEPTACLES - - - -
J1 thru J3	4033513-P4	Contact, electrical: sim to Bead Chain L93-3.
TB2		BOARD ASSEMBLY PL-19A121291-G1
		- - - - - - - - JACKS AND RECEPTACLES - - - -
J1 thru J3	4033513-P12	Contact, electrical: sim to Bead Chain R125-17.
		- - - - - - - - - TERMINAL BOARDS(Cont'd) - - -
		- - - - - - - - JACKS AND RECEPTACLES(Cont'd) -
J4 thru J6	4033513-P4	Contact, electrical: sim to Bead Chain L93-3.
		- - - - - - - - - - - - CABLES - - - - - - - - -
W3	PL-19B204608-G1	Power: four conductor, approx 4 feet long; one conductor, approx 9 feet long.
		MECHANICAL PARTS (SEE RC-1208)
1	7160861-P20	Speed nut: sheet spring; sim to Tinnerman C8104-832-4.
2	19A121623-P1	Insulator: adhesive back, approx 4 x 1/2 x 1/8 inches thick.
3	19A121467-P1	Pad: adhesive back, approx 3/4 inch dia x 1/8 inch thick.
4	19C303500-P1	Aluminum grille: approx 4-7/8 x 4-1/2 inches.
5	PL-19C303504-G1	Can: approx 5-3/8 x 5 x 2 inches.
6	4037072-P10	Nylon plug: sim to Fastex 207-120241-00.
7	4036835-P1	Solder terminal: sim to Shakeproof 214-14-000.
8	4032596-P1	Nut. No. 10-32.
9	N405P9C13	Lockwasher: approx 5/16 inch dia, for No. 10 bolt.
10	19A115221-P3	Washer insulator: mica, approx 9/16 inch dia.
11	4031291-P1	Insulator: approx 1-1/8 inch dia.
12	19A115470-P1	Rubber grommet: approx 3/4 inch dia; sim to Atlantic Rubber 2279 (without hole).
13	4034215-P2	Bushing: approx 3/8 inch dia.
14	4034225-P1	Flatwasher: approx 1/2 inch dia.
15	PL-19A121521-G1	Mounting support.
16	19A121711-P1	Insulator: approx 2-1/2 x 3/4 inches.
17	7160861-P10	Speed nut: sheet spring; sim to Tinnerman C11982-632-157.
18	5490407-P6	Neoprene grommet: approx 13/16 inch dia.
19	4029851-P5	Cable clamp: sim to Weckesser 1/4-4.
20	19A121645-P1	Insulator: approx 3 x 3/4 inches.
21	7150186-P105	Spacer: approx 3/4 x 1/4 inch dia.
22	PL-19B204607-G1	Cover: approx 5-1/4 x 5 x 1 inches.
		WINDOW MOUNTING MODIFICATION KIT PL-19A121879-G2
	5491940-P2	Cable: 4 conductor, 7 ft. long.
	19A121429-P1	Pin: Approx 3/4 inch long.
	PL-19A121878-G1	Support assembly.
	PL-4037297-G1	Knob, gray: Approx 1-6/16 inch dia.
	7141225-P3	Nut, hex head: 6-32.
	N404P13C	Lockwasher, internal tooth: fits #6 screw.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.



TEN WATT SPEAKER - 4EZ18A10

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 G-E Part Number.

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

1. G-E 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-3612

DF-8389 5304

Progress Is Our Most Important Product

GENERAL ELECTRIC

COMMUNICATION PRODUCTS DEPARTMENT LYNCHBURG, VIRGINIA

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