COMMUNICATIONS

MAINTENANCE MANUAL

10-WATT SPEAKER-AMPLIFIER MODEL 4EZ18A10 (OPTION 7003) & MODEL 4EZ18A11 (OPTION 8003)

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 Specification Sheet for the complete specifications.

EZ-18-A

GENERAL ELECTRIC

DESCRIPTION

SPEAKER AMPLIFIERS

General Electric Speaker-Amplifier Models 4EZ18A10 (Option 7003) and 4EZ18A11 (Option 8003) use two transistors to provide an audio output of 10 watts. Speaker Model 4EZ18A10 may be used with either 6-volt, 12-volt or 28-volt, positive or negative ground MASTR Professional mobile combinations. Three simple tap changes inside the speaker are required for changes in the operating voltage. Speaker Model 4EZ18A11 may be used with 12-volt negative ground supply.

NOTE

Speaker-amplifier Model 4EZ18A10 is shipped connected for 12-volt, negative ground vehicle systems unless specifically ordered for 6-volt or 28-volt systems. The Outline and Schematic Diagrams on Page 3 show 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 4EZ18A10 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

Window-Mounting Kit 19A121879-G2 (Option 7011) is designed for use with Speaker Model 4EZ18A10, and Kit 19A121879-G3 (Option 8011) is designed for use with Speaker Model 4EZ18A11.

Each kit contains an extension cord and special mounting bracket 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

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 extension cord as shown on the applicable Outline Diagram.

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.

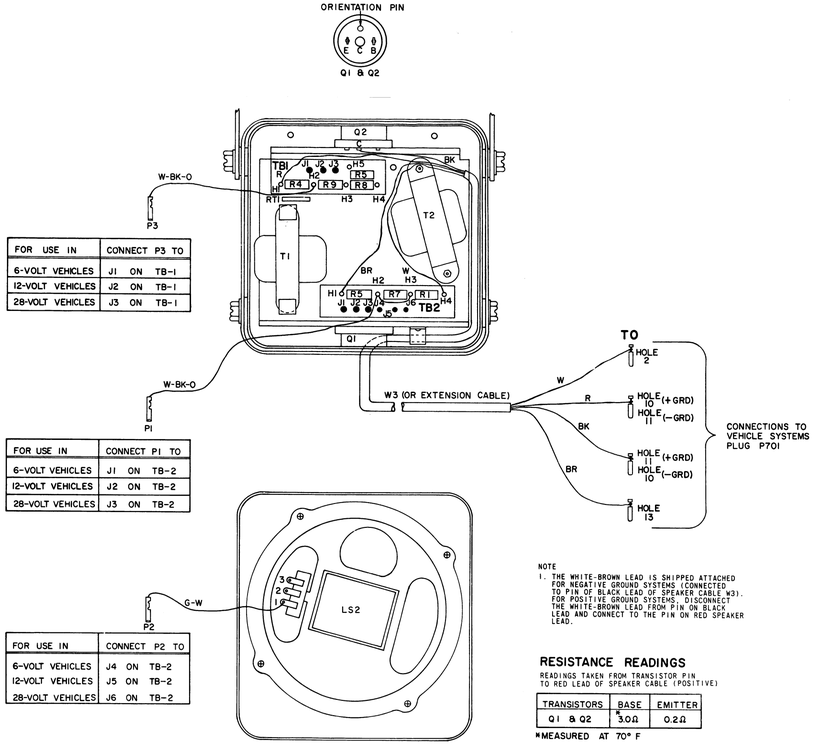
The output taken from the emitters of Q1 and Q2 is fed through impedance matching auto-transformer T2 to speaker LS2. In Model 4EZ18A10, the proper impedance of T2 is provided by plugging the green-white wire (P2) from the speaker into TB2-J4 (6 v), TB2-J5 (12 v) or TB2-J6 (28 v), depending on the system operating voltage. In Model 4EZ18A11, P1, P2 and P3 are connected for 12-volt operation.

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 LEAD IS SHIPPED ATTACHED FOR NEGATIVE GROUND SYSTEMS (CONNECTED TO PIN OF BLACK LEAD OF SPEAKER CABLE W3). FOR POSITIVE GROUND SYSTEMS, DISCONNECT THE WHITE-BROWN LEAD FROM PIN ON BLACK LEAD AND CONNECT TO THE PIN ON RED SPEAKER LEAD.

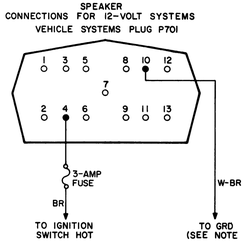
RESISTANCE READINGS

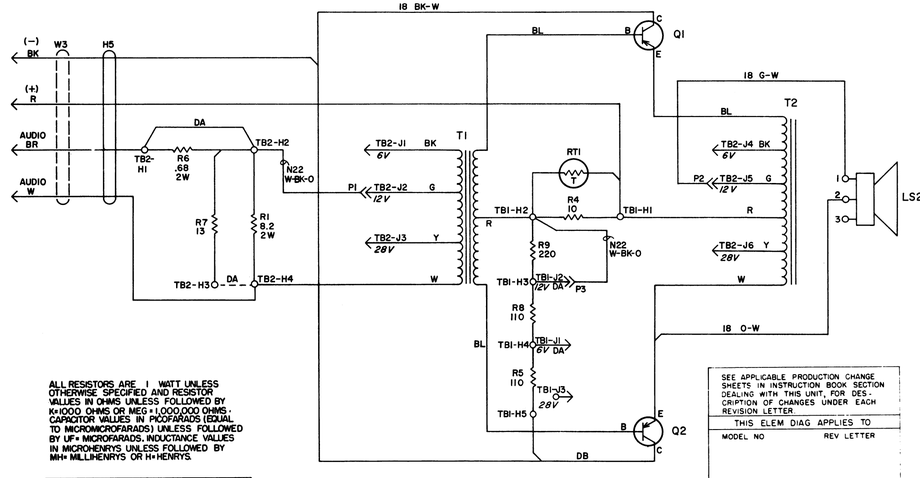
READINGS TAKEN FROM TRANSISTOR PIN TO RED LEAD OF SPEAKER CABLE (POSITIVE)

TRANSISTORS	BASE *	EMITTER
Q1 & Q2	3.0Ω	0.2Ω

*MEASURED AT 70° F

(19D402613, Rev. 0)





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

IN ORDER TO RETAIN RATED EQUIPMENT PERFORMANCE, REPLACEMENT OF ANY SERVICE PART SHOULD BE MADE ONLY WITH A COMPONENT HAVING THE SPECIFICATIONS SHOWN ON THE PARTS LIST FOR THAT PART.

FOR POWER INPUT GREATER THAN 2 WATTS, REMOVE DA JUMPER BETWEEN TB2-H1 & H2 AND ADD DA JUMPER BETWEEN TB2-H3 & H4.

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

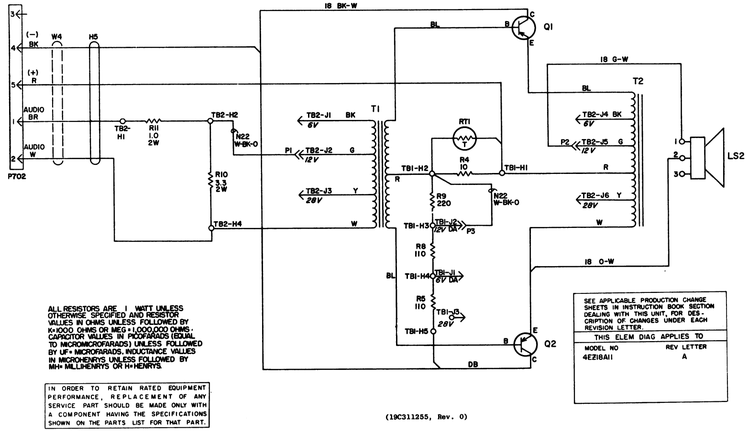
THIS ELEM DIAG APPLIES TO	
MODEL NO	REV LETTER

(19C303616, Rev. 3)

OUTLINE & SCHEMATIC DIAGRAM

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

Issue 2



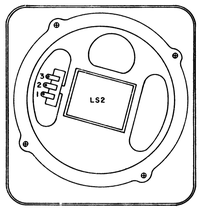
ALL RESISTORS ARE 1 WATT UNLESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K=1000 OHMS OR MEG=1,000,000 OHMS; CAPACITOR VALUES IN MICROFARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF= MICROFARADS, INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH= MILLIHENRYS OR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

IN ORDER TO RETAIN RATED EQUIPMENT PERFORMANCE, REPLACEMENT OF ANY SERVICE PART SHOULD BE MADE ONLY WITH A COMPONENT HAVING THE SPECIFICATIONS SHOWN ON THE PARTS LIST FOR THAT PART.

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

THIS ELEM DIAG APPLIES TO	
MODEL NO	REV LETTER
4EZ18A11	A

(19C311255, Rev. 0)

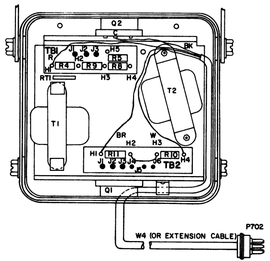


RESISTANCE READINGS

READINGS TAKEN FROM TRANSISTOR PIN TO RED LEAD OF SPEAKER CABLE (POSITIVE).

TRANSISTORS	BASE	EMITTER
Q1 & Q2	3.0Ω	0.2Ω

*MEASURED AT 70° F AMBIENT



(19C303995, Rev. 4)

ORIENTATION PIN

OUTLINE & SCHEMATIC DIAGRAM

10-WATT SPEAKER-AMPLIFIER
MODEL 4EZ18A11 (OPTION 8003)

PARTS LIST

LBI-3600A

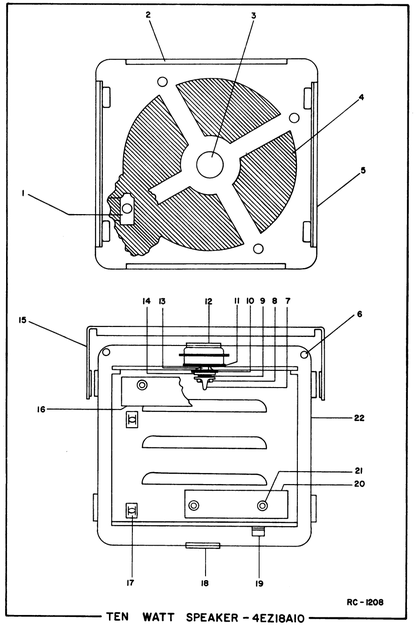
10-WATT SPEAKER

MODEL 4EZ18A10 (PL-19D402448-G3)
MODEL 4EZ18A11 (PL-19D402448-G5) REV A

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 PS-VAS12761.
		---------- PLUGS ----------
P1	4036731-P1	Contact, friction: sim to Bead Chain M152-30.
P2	4029840-P1	Contact, electrical: sim to AMP 41854.
P3	4029840-P2	Contact, electrical: sim to AMP 42827-2.
		---------- TRANSISTORS ----------
Q1 and Q2	5490810-P1	Germanium, PNP.
		---------- RESISTORS ----------
R1	19B209022-P137	Wirewound: 8.2 ohms ±10%, 2 w; sim to IRC Type BWH. (Used in Model 4EZ18A10).
R4	3R78-P100J	Fixed composition: 10 ohms ±5%, 1 w.
R5	3R78-P111J	Fixed composition: 110 ohms ±5%, 1 w.
R6	19B209022-P111	Wirewound: 0.68 ohm ±10%, 2 w; sim to IRC Type BWH. (Used in Model 4EZ18A10).
R7	3R78-P130J	Fixed composition: 13 ohms ±5%, 1 w. (Used in Model 4EZ18A10).
R8	3R78-P111J	Fixed composition: 110 ohms ±5%, 1 w.
R9	3R78-P221J	Fixed composition: 220 ohms ±5%, 1 w.
R10	19B209022-P127	Wirewound: 3.3 ohms ±10%, 2 w; sim to IRC Type BWH. (Used in Model 4EZ18A11).
R11	19B209022-P115	Wirewound: 1 ohm ±10%, 2 w; sim to IRC Type BWH. (Used in Model 4EZ18A11).
		---------- THERMISTORS ----------
RT1	19C300048-P3	Disc: 1 ohm ±10%.
		---------- TRANSFORMERS ----------
T1	19B209220-P1	Audio freq: 0.3-3 KC freq range nominal, Pri: 0.17 ohm DC res max, Sec: 5.2 ohms DC res max.
T2	19B209218-P1	Audio freq: 0.3-3 KC freq range nominal, 0.3 ohm DC res max.
		---------- TERMINAL BOARDS ----------
TB1		BOARD PL-19A121707-G1
J1 thru J3	4033513-P4	---------- JACKS AND RECEPTACLES ---------- Contact, electrical: sim to Bead Chain L93-3.
TB2		BOARD PL-19A121291-G1
J1 thru J3	4033513-P12	---------- JACKS AND RECEPTACLES ---------- Contact, electrical: sim to Bead Chain R125-17.
J4 thru J6	4033513-P4	Contact, electrical: sim to Bead Chain L93-3.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

SYMBOL	G-E PART NO	DESCRIPTION
		---------- CABLES ----------
W3	PL-19B204608-G1	Power: 4-conductor (modified). (Used in Model 4EZ18A10). Includes:
	19A121429-P1	Pin.
W4	PL-19B205410-G1	Power: 4-conductor, 300 VRMS, approx 4 feet (modified). (Used in Model 4EZ18A11).
P702*	5493018-P2	Plug, phen: 5 contacts; sim to Cinch 304-31-05-010. In Model 4EZ18A11 earlier than Rev A:
	19B209340-P4	Plug, phen: 4 contacts; sim to Alcon Metal Products MP101.
		MECHANICAL PARTS (SEE RC-1208)
1	19A121175-P2	Insulator: adhesive back.
2	19C303500-P1	Grille: aluminum.
3	PL-19C303504-G1	Housing. (Used in Model 4EZ18A10).
4	PL-19C503504-G3	Housing. (Used in Model 4EZ18A11).
5	4036835-P1	Terminal: solder; sim to Shakeproof 2118-10-01-2520N.
6	4032596-P1	Nut. No. 10-32.
7	N605P9C13	Lockwasher. No. 10.
8	4029851-P5	Clamp, cable: nylon; sim to Weckesser 1/4-4-128.
9	19A115221-P3	Insulator, washer: mica.
10	4031291-P1	Insulator: approx 1-1/8 inch dia.
11	5490407-P6	Grommet, rubber.
12	4034215-P2	Bushing: approx 3/8 inch dia.
13	4034225-P1	Flatwasher: approx 1/2 inch dia.
14	PL-19A121521-G1	Mounting support.
15	19A121711-P1	Insulator: approx 2-1/2 x 3/4 inches.
16	PL-19B204603-G1	Chassis.
17	4038072-P2	Speed nut: sim to Tinnerman C8092-632-1.
18	19A115470-P1	Grommet, rubber: approx 3/4 inch dia; sim to Atlantic India Rubber 2279 (without hole).
19	19B209214-P610	Screw, hex. No. 5/8.
20	19A121645-P1	Insulator.
21	7150186-P105	Spacer.
22	PL-19A121550-G2	Cover, back.
		WINDOW MOUNTING MODIFICATION KIT PL-19A121879-G2 (Used in Model 4EZ18A10) PL-19A121879-G3 (Used in Model 4EZ18A11)
	PL-19A122623-G1	Cord, electrical: 4 conductors; approximate extended length 7 foot (modified). (Used in Model 4EZ18A10).
	PL-19B205412-G1	Cord, electrical: 4 conductors, approximate extended length 7 foot (modified). (Used in Model 4EZ18A11). Includes:
P702	19B209340-P4	Plug, phen: 4 contacts; sim to Alcon Metal Products MP101.
	19A121429-P1	Pin. (Used in Model 4EZ18A10).
	PL-19A121878-G1	Support.
	PL-4037297-G1	Knob.
	7141225-P3	Nut, hex. No. 6-32.
	N604P13C	Lockwasher. No. 6.
	4036835-P1	Terminal: solder; sim to Shakeproof 2118-10-01-2520N. (Used in Model 4EZ18A10).
	4036835-P4	Terminal: solder; sim to Shakeproof 2177-04-000. (Used in Model 4EZ18A10).



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

Progress Is Our Most Important Product

GENERAL ELECTRIC

COMMUNICATION PRODUCTS DEPARTMENT LYNCHBURG, VIRGINIA

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