INSTRUCTIONS

FOR

TRANSISTOR-POWERED LOUDSPEAKER

MODEL 4EZ7A1, REV. A

LBI-3022B

15360

COMMUNICATION PRODUCTS DEPARTMENT
GENERAL ELECTRIC COMPANY
LYNCHBURG, VIRGINIA

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INSTRUCTIONS FOR MODEL 4EZ7A1 TRANSISTOR-POWERED SPEAKER

DESCRIPTION

The General Electric Model 4EZ7A1 Transistor-Powered Speaker is a light weight, compact unit designed to provide audio power of 5 watts for 6-volt operation and 15 watts for 12-volt operation with any make of mobile radio having an output impedance of 3.2 ohms.

Model 4EZ7A1 allows the operator to be away from the vehicle, by amplifying incoming calls without distortion. An extension cord and special mounting brackets enables the speaker to be removed from its mounting and hung on the vehicle window. The sound level from the speaker is adjusted to the desired level by means of the mobile system volume control.

The speaker can be used on either 6-volt or 12-volt positive or negative ground systems. The unit is shipped connected for 12-volt operation with an output impedance of 3.2 ohms. A tap is provided on the output transformer to match the output impedance to 3.2 ohms when used on 6-volt systems. See Elementary Diagram RC-512. An internal/external speaker selector switch (PL-7146329-G4) is available for the control unit when it is desired to switch from the system speaker to the transistor-powered speaker.

SPECIFICATIONS

Power Output	5 watts at 6-volts 15 watts at 12-volts*
Input Impedance	3.2 ohms
Output Impedance	3.2 ohms* or 16 ohms
Gain	10 db
Distortion	less than 10%
Maximum allowable Input	2.8 volts RMS
Frequency Response	Within ± 2 db between 200 and 4000 cps
Hum & Noise Level	45 db down from rated output
Transistor Compliment	DT41 (2 each)

* As shipped.

INSTALLATION

The package may be installed by its bracket to a mounting surface or hung from a vehicle window. To mount the bracket, use the bracket as a template and drill two holes with a #19 or 5/32 drill and use the #12 thread-forming screws packaged with the unit. Alternatively, the holes may be drilled with a letter drill "A" or 15/64" drill and the #12 screws, nuts and lockwashers may be used.

Connections

1. Replace the in-line fuse in the battery lead from the control unit with the 2-amp fuse supplied with the unit.

2. If the Internal/External speaker selector switch is to be used (PL-7146329-G4), it should be installed in the control unit according to its own installation instructions.

3. If the Transistor-Powered Speaker is to be operated from a 6-volt battery system, or if a speaker having an impedance other than the 3.2-ohm speaker in the unit is to be used, change the top on output transformer T2, as indicated in the table on the Elementary Diagram.

Trunk-Mount Connections

1. Determine whether the vehicle has a positive-grounded or a negative-grounded battery system.

CAUTION

The red (+) lead from the amplifier must be connected to the positive side of the power source. Reversing the polarity may damage the amplifier.

2. For Control Unit EC-27-A, when not wired for other options:

   a. Pass the ends of the conductors from the amplifier into the Control Unit and connect them to the following points:

	If vehicle has negative-grounded battery system	If vehicle has positive-grounded battery system
Black wire (-) Red wire (+)	J702-1 (ground) J704-8 (battery).	J704-8 (battery). J702-1 (ground).
Green Wire ("6") White wire ("5")	To J703-6 (HI) To J703-5 (LO)	

b. Remove the wire which is connected between J704-7 and J704-8 in the Control Unit.

c. Connect J704-8 to S702-4 (the load side of the ON-OFF switch).

3. For Control unit EC-27-A, when wired for other options:

a. Connect the short black lead and red lead supplied with the mounting hardware to the points indicated below:

	If vehicle has negative-grounded battery system	If vehicle has positive-grounded battery system
Black lead (-) Red lead (+)	Ground #2 S702-4 (battery)	S702-4 (battery) Ground #2

b. Pass the ends of the conductors from the amplifier into the Control Unit and connect them to the following points:

Connect green wire with marker pin "6" to J703-6.
Connect white wire with marker pin "5" to J703-5.
Connect red wire with marker pin "+" to red lead (added in Step 3a).
Connect black wire with marker pin "-" to black lead (added in Step 3a).

NOTE

If the INTERNAL-EXTERNAL speaker -- selector switch is used, the green and white wires should be connected to J703-7 and 8, instead of J703-5 and 6.

Front-Mount Connections (EC-29-A)

1. Cut the marker pins off the ends of the wires which are connected to the amplifier.

2. Remove the #22 black wire from between terminal 1 of loudspeaker LS701 in the Control Unit and TB2-4.

3. Determine whether the vehicle has a positive-grounded or negative-grounded battery system.

CAUTION

The red (+) lead from the amplifier must be connected to the positive side of the power source. Reversing the polarity may damage the amplifier.

4. Pass the ends of the conductors from the amplifier into the Control Unit and connect them to the following points:

	If vehicle has negative-grounded battery system	If vehicle has positive-grounded battery system
Black wire (-)	TB1-4 (ground)	S701-3 (load side of ON-OFF switch)
Red wire (+)	S701-3 (load side of ON-OFF switch	TB1-4 (ground)
White wire Green wire	To TB2-4 (VC HI) To LS701-2 (VC LO)	

NOTE

If the INTERNAL-EXTERNAL speaker-selector switch is used, the white and green wires may be connected to pins 1 and 2 (respectively) of plug P703 supplied with the INT-EXT Switch Kit.

SERVICING TRANSISTOR CIRCUITS

Although troubleshooting of transistor circuits is similar to that for other electronic circuits, reasonable care should be exercised to prevent accidently damaging a transistor. This is apt to happen if the transistor is allowed to overheat, if voltages greater than 21 volts a-c are applied across a transistor from emitter or base to collector, or if voltages of improper polarity are applied to the transistor. The following service techniques should help to prevent this:

1. If the leads from the transistors are disconnected, be SURE THAT EACH WIRE IS RECONNECTED TO ITS PROPER PLACE. Otherwise, voltages of reversed polarity may be applied across a transistor which may damage it before a fuse can blow.

2. Before doing any repair work on the amplifier, remove the transistors from the unit or use a soldering iron operated from an isolation transformer (such as a "soldering gun") or a battery. Otherwise, if there is a current leak, from the heater element of the iron to the soldering tip, voltage high enough to damage a transistor may be applied across it.

3. When making voltage or resistance checks in transistor circuits, do not use a-c instruments. Use a battery-operated type VTVM or a multimeter such as the Triplett Model 630 or the Simpson Model 260.

4. Remember that the amplifier chassis is insulated from the speaker case.

TRANSISTOR TESTING

A transistor can best be tested by evaluating its operation in its circuit. When measured out of its circuit, however, the emitter-to-collector resistance of one of these transistors will usually be approximately 100 to 300 ohms in one direction and 1000 to 5000 ohms in the reverse direction.

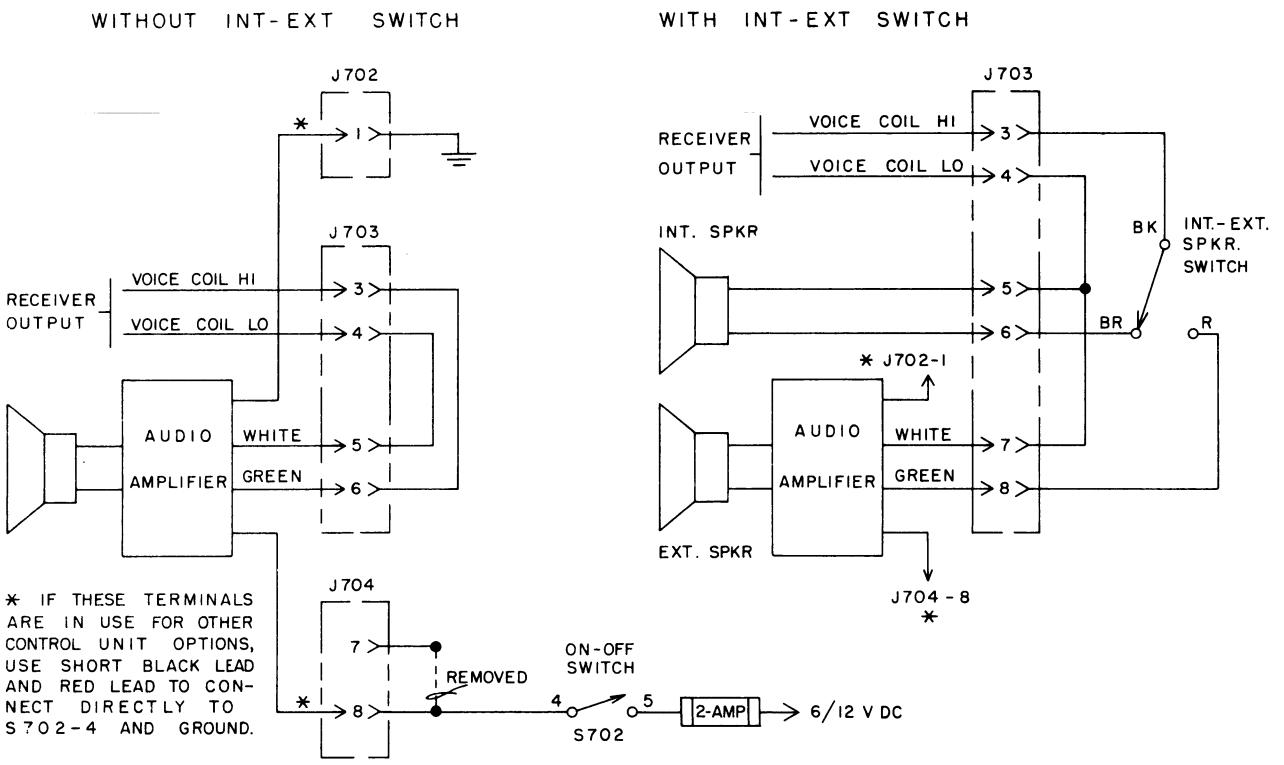
A resistance of less than 100 ohms indicates a poor transistor. When found to be shorted or completely open, the transistor is defective. The base-to-collector resistance will be approximately 1 or 2 ohms in one direction and approximately 20,000 ohms in the reverse direction.

PARTS LIST

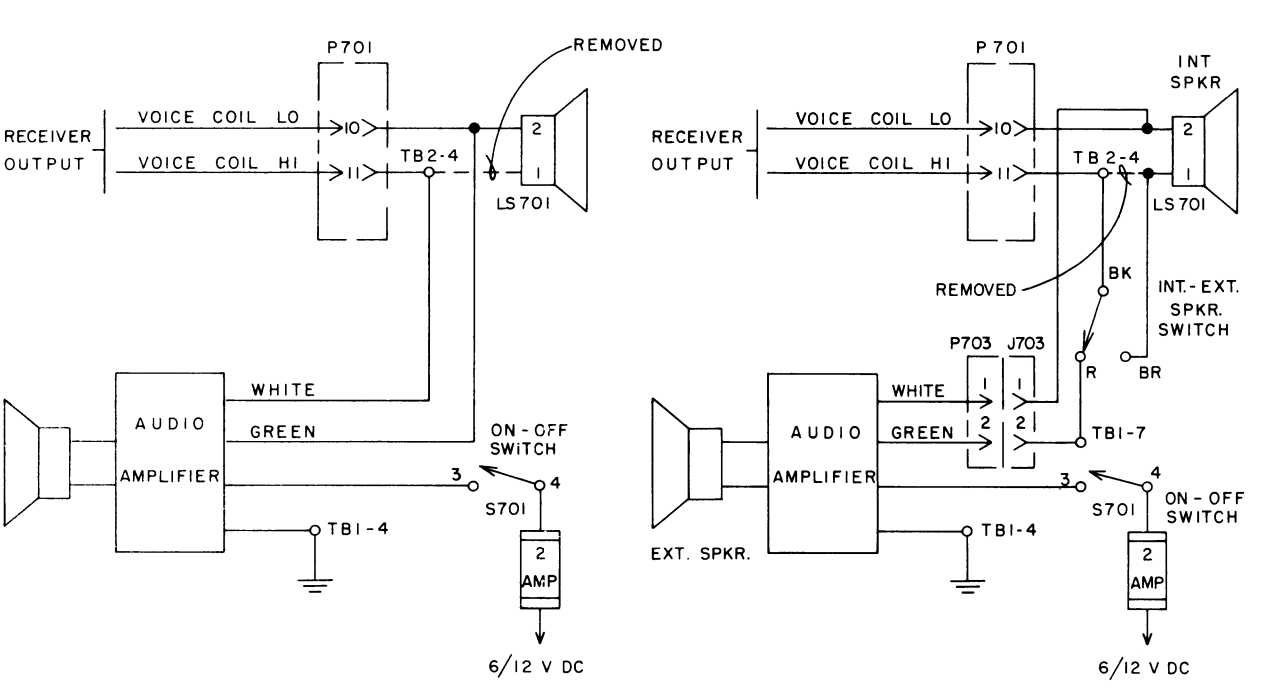
Symbol	Description	G-E Drawing and Part No.
	TRANSISTORS	
Q1 and Q2	Transistors: Type CBS DT41.	
	RESISTORS	
R1	Composition, 270 ohms ± 5%, 1 w.	C-3R78-P271J
R2	Wirewound, 2.7 ohms ± 5%, 1 w.	P-3R19-P66
R3 and R4	Wirewound, 0.33 ohms ± 10%, 1/2 w. May be part of output transformer impedance.	P-3R18-P2
R5#	Wirewound, insulated; 1.0 ohms ± 5%, 1/2 w. Added by Rev. A.	P-3R18-P57
R6#	Wirewound, insulated; 9.10 ohms ± 5%, 1/2 w. Added by Rev. A.	P-3R18-P80
	TRANSFORMERS	
T1	Input transformer. Pri: 3.2 ohms; Sec: 450 ohms ct.	A-4031652-P4
T2	Output transformer. Pri: 15 ohms ct. Sec: 32-16-8-4 ohms.	A-4031652-P5
	SOCKETS	
XQ1 and XQ2	Transistor sockets.	A-4031652-P6

Symbol	Description	G-E Drawing and Part No.
	LOUDSPEAKER	
LS101	Speaker, 5-inch pin cushion; voice coil impedance 3.2 ohms ± 10%. Similar to Jensen Model P5VA. Spec No. C6207 with 1.47 oz. magnet.	B-5491260-P1
	FUSE	
F1	2 amp at 250 V type 3AG, quick to medium blowing. Similar to Littelfuse Cat. #312002. Bussman Cat. #AGC-2.	K-1R16-P5

TRUNK MOUNT (EC-27-A)

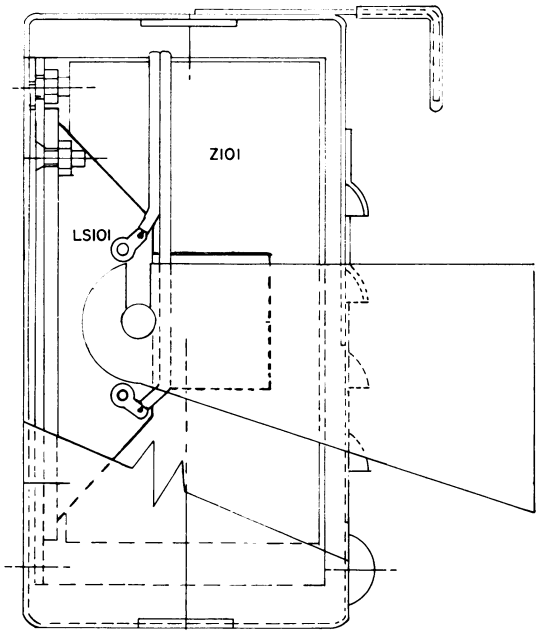


FRONT MOUNT (EC-29-A)

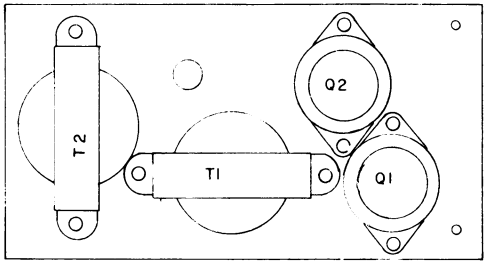


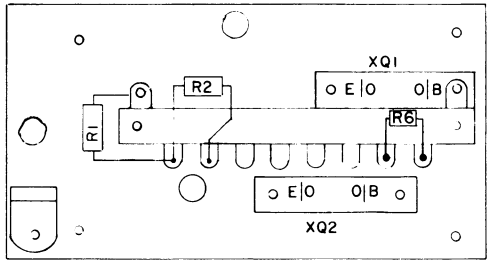
RC-471

INTERCONNECTION DIAGRAM



Z101





	VOLTAGE			RESISTANCE		
Q1 & Q2	B	E	C	B	E	C
NO SIGNAL	13	13	0			
15 W OUT	13	10	0			
PWR. OFF				160	130	0

CONDITIONS OF **MEASUREMENT**

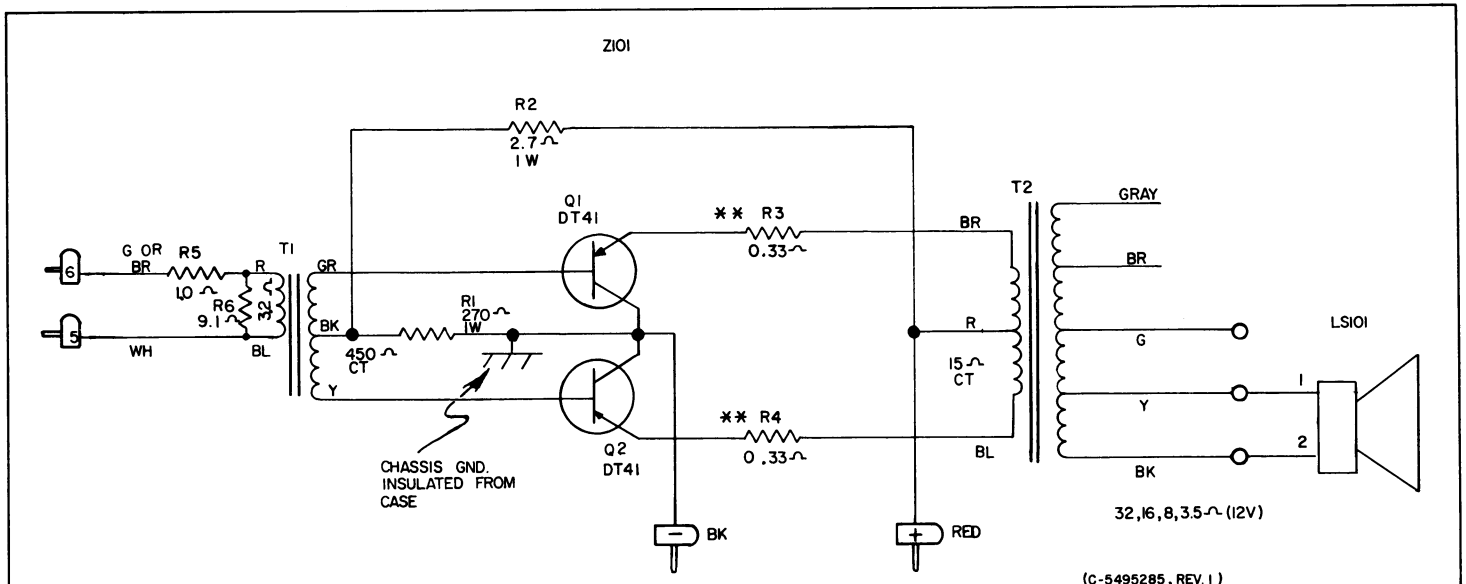
1. BATTERY VOLTAGE - 13.0
2. VOLTAGE READINGS ARE TYPICAL VOLTAGE MEASURED **WITH** A 20,000 **OHMS-PER-VOLT METER**. READINGS ARE TAKEN WITH NEGATIVE METER PROBE CONNECT TO AMPLIFIER CHASSIS.
3. RESISTANCE READINGS ARE TYPICAL RESISTANCE MEASURED WITH POWER OFF.

RC-511 A

OUTLINE DIAGRAM

TRANSISTOR – POWERED SPEAKER MODEL 4EZ7AI

REVISION A



T2 OUTPUT TRANSFORMER CONNECTIONS			
POWER OUTPUT	NOMINAL VOLTAGE	LOAD IMPEDANCE 3.2Ω	LOAD IMPEDANCE 16Ω
15 WATTS	12 WATTS	* Y - BK	BR - BK
5 WATTS	6 VOLTS	G - BK	GRAY - BK

* AS SHIPPED.

** R3 & R4 MAY BE PART OF T2 PRIMARY RESISTANCE.

RC-512 A

ELEMENTARY DIAGRAM

TRANSISTOR - POWERED SPEAKER MODEL 4EZ7A1

REV. A