SPECIFICATIONS

Model	4EC45A13
Description	Control Unit for 4-Frequency Transistorized PROGRESS LINE Two-Way Mobile Radios
Used With	Transistorized PROGRESS LINE Transmitters and Receivers
Controls	VOLUME-OFF SWITCH SQUELCH/STBY PUSH Switch Channel Selector Switch
Indicators	Off-On light (green) Transmit Light (red)

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CONTENTS

ILLUSTRATIONS

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 the installation, operation, or maintenance.

Should further information be desired, or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the nearest General Electric Company District Sales Office.

GENERAL ELECTRIC
TRANSISTORIZED PROGRESS LINE
FOUR-FREQUENCY CONTROL UNIT
MODEL 4EC45A13

Control Unit Model 4EC45A13 is designed for use with four-frequency TPL Two-Way Radio Combinations. The Control Unit contains all of the operating controls, and should be mounted within convenient reach of the operator. Generally, the most satisfactory mounting location is on the underside of the instrument panel. Cable connections to the Speaker-Amplifier, Solenoid Assembly, Microphone and Two-Way Radio are made to jacks on the back of the Control Unit.

Connections from the Control Unit to the Two-Way Radio are made by two cables. The extension control cable terminates in a 21-pin connector, and the oscillator control cable terminates in a 9-pin connector. Both connectors plug into jacks on the front panel of the Two-Way Radio. All connections from the front panel to units in the front section of the Two-Way Radio are made by quick-disconnect plugs.

Instructions for adjusting the SQUELCH/STBY PUSH, and VOLUME/OFF controls as well as the Channel Selector switch are contained in the OPERATOR'S MANUAL for the Radio.

CIRCUIT DESCRIPTION

When the VOLUME-OFF switch is in the OFF position, all power is removed from the Two-Way Radio. Turning the VOLUME-OFF switch to the right applies power to the set. With the SQUELCH/STBY PUSH switch pushed in, power is applied only to the receiver.

NOTE

Note that the receiver draws current through the solenoid. Due to the small current, however, and the low resistance of the solenoid, the relay does not pull in while the receiver is operating.

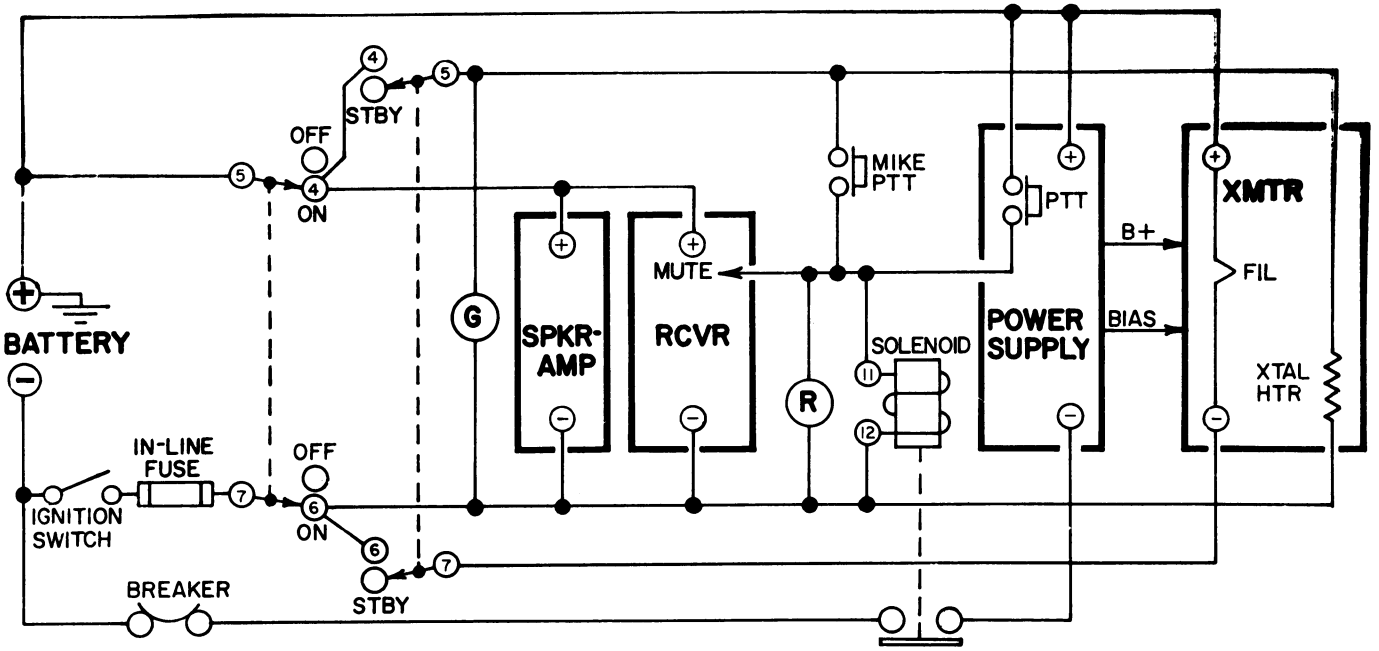
In vehicles in average commercial use, it is entirely feasible to leave the receiver operating continuously on STBY due to the extremely low battery drain. Ignition switch control can therefore be eliminated, if the STBY PUSH switch is pushed in whenever the engine is turned off.

Pulling the STBY PUSH switch out applies filament voltage to the tubes in the transmitter, activates the push-to-talk (PTT) circuit, and lights up the green pilot light. After a short warm-up time, the PTT button on the microphone may be pressed to key the transmitter.

Pressing the PTT switch changes the voltage of the muting circuit from negative to positive. This positive voltage cuts off an audio stage muting the receiver. At the same time, it energizes the solenoid and lights the red pilot light. When the solenoid contacts close, power is applied to the power supply, which provides B-plus and bias voltages for the transmitter, putting the transmitter on the air.

TPL TRUNK-MOUNT POWER-DISTRIBUTION DIAGRAM

POSITIVE GROUND



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NEGATIVE GROUND

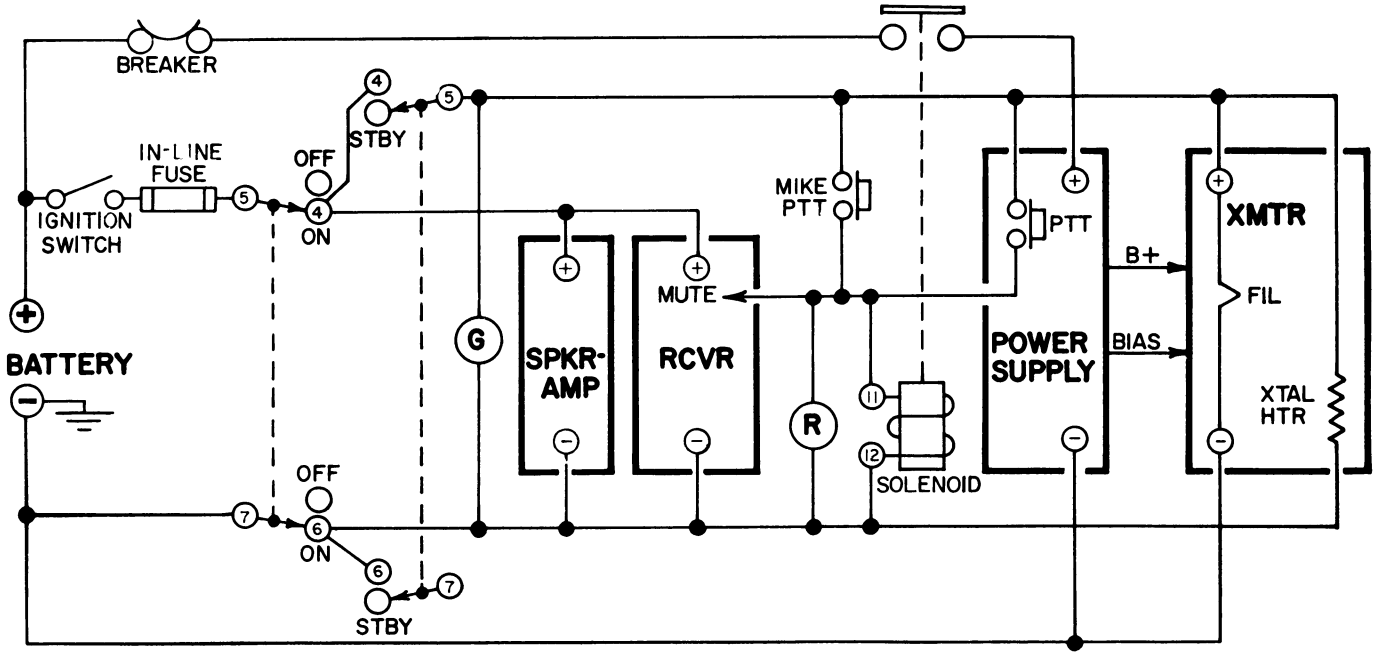

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Figure 1

Any of the four operating frequencies are selected by switching the Channel Selector switch (S714) on the Control Unit. This connects the emitter of the selected transmitter oscillator to ground, and the receiver lst oscillator to the positive side of the supply voltage so that the unit will operate on the frequency determined by the two particular oscillators.

MAINTENANCE

Access to the inside of the Control Unit can be easily obtained by removing the two Phillips-head screws in the bottom of the Control Unit, and sliding the chassis out of the Control housing. Then remove the screws on the back of the chassis that hold the lid on the chassis.

If it becomes necessary to move the two-way radio and Control Unit to another vehicle, the 21-pin plastic plug on the Extension Control Cable may need to be disassembled before the Extension Cable can be removed. To remove the pins from the plug, use the extraction tool (part of Control Unit Mounting Hardware Kit) as shown in Figure 2 to compress the pin flanges so that the pins can be pulled out of the plug. For reassembling the plug, refer to Figure 3.

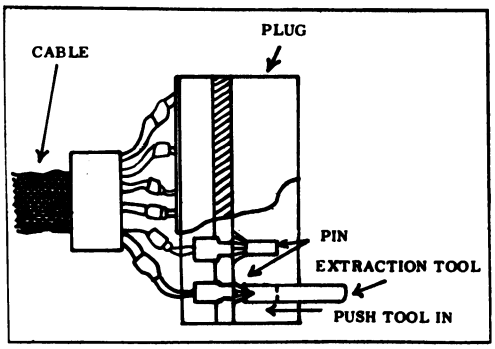
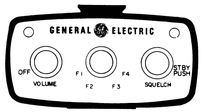


Figure 2 - Plug Disassembly

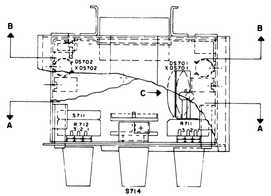
CONNECTIONS					
PIN NO.	WIRE COLOR	HOLE	PIN NO.	WIRE COLOR	HOLE
1	WHITE	A-1	12	ORANGE - RED	G-2
2	BLACK	A-2	13	BROWN	C-3
3	SHIELD OF WHITE & BLACK WIRES ABOVE	A-3	14	RED - BLACK	F-1
4	BLUE - WHITE	B-3	15	BLUE	G-3
5	RED - WHITE	C-1	15	SHIELD FROM BROWN WIRE ABOVE	G-3
6	BLACK - WHITE	F-3	16	BLACK - RED	F-2
7	GREEN - WHITE	G-1	17	WHITE - BLACK	D-1
8	ORANGE	C-2	18	BLUE - BLACK	D-2
9	WHITE - RED	C-2	19	SHIELD OF RED AND GREEN WIRES BELOW	D-3
10	GREEN - BLACK	B-1	20	RED	E-1
11	ORANGE - BLACK	B-2	21	GREEN	E-2

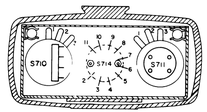
Figure 3 - Plug Connections

CONTROL UNIT
MODEL 4EC45A13

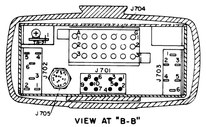


FRONT VIEW

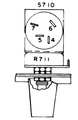




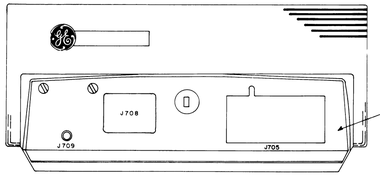
VIEW AT "A-A"



VIEW AT "B-B"

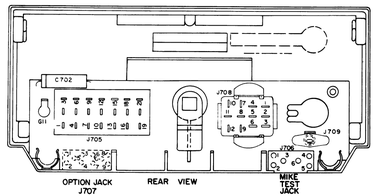


VIEW AT "C"



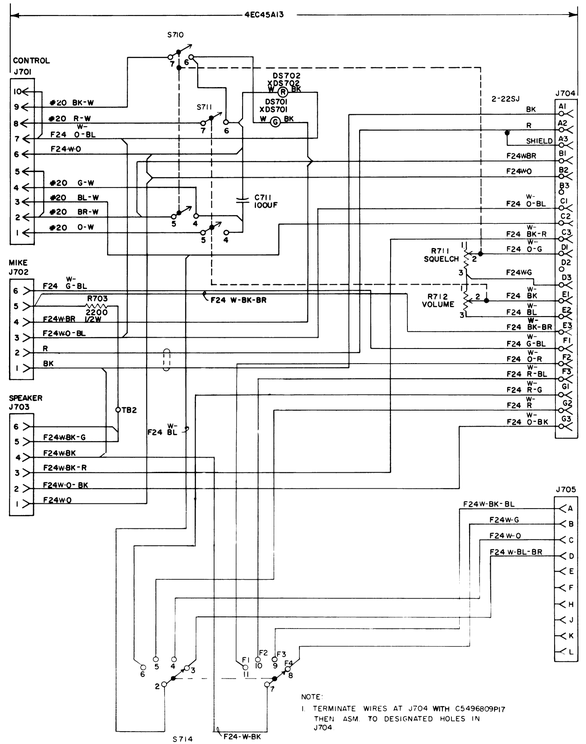
FRONT VIEW

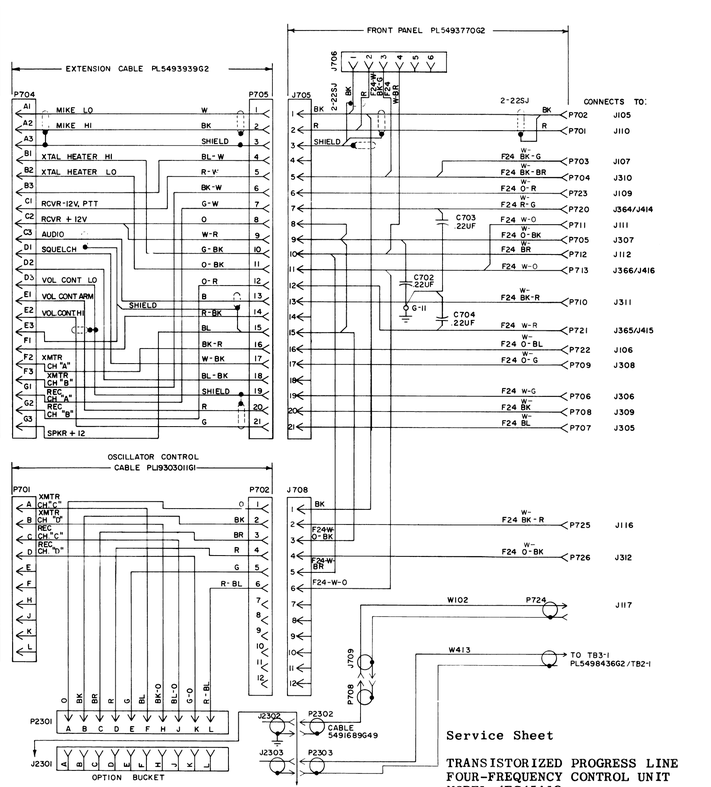
FRONT PANEL
PL 5493770-G2



OPTION JACK J707 — REAR VIEW — MIKE TEST JACK J706

(19D402555, Rev. 0)





(19D402464, Rev. 3)

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Service Sheet

TRANSISTORIZED PROGRESS LINE FOUR-FREQUENCY CONTROL UNIT MODEL 4EC45A13

(RC-1130)

PARTS LIST

CONTROL UNIT MODEL 4EC45A13
FRONT PANEL PL-5493770-G2

SYMBOL	G-E PART NO.	DESCRIPTION
		CAPACITORS
C711*	7489483-P18	Electrolytic; 85°C operation; 100 mf +100% -10%, 25 VDCW; Sim to Sprague 30D188A1. Added by Rev. B.
		INDICATING DEVICES
DS701 and DS702	19C307037-P3	Lamp, incandescent: (Min bayonet base); design volts 14.50, design current 0.12 amps. (Uses G-3-1/2 size bulb). Sim to G.E. 53.
		JACKS AND RECEPTACLES
J701	5493545-P2	Connector, plug: Black phenolic insulation 10-male contacts (brass), max rating 1,000 VDC (contact to contact), max current 5 amps Sim to Component Mfg. Service Inc. 6601-CM10.
J702	5493545-P3	Connector, socket: black phenolic insulation; 6-female contacts (brass) max rating 1,000 VDC (contact to contact), max current 5 amps Sim to Component Mfg. Service 6601-CF6.
J703	5493545-P4	Connector, socket: Black phenolic insulation 6-female contacts (brass), max rating 1,000 VDC (contact to contact), max current 5 amps Sim to Component Mfg. Service 6601-CF6A.
J704	5496809-P114	Connector, receptacle: phenolic, 21 circuits. Sim to Molex Products Co. 1053821.
J705	198209001-P1	Connector, receptacle: 10 contacts, 5 amps, 500 VRMS.
		RESISTORS
R703	3R77-P222K	Fixed composition: 2,200 ohms ±10%, 1/2 w.
R711	5496870-P6	Variable, carbon film; 15,000 ohms ±20%, linear taper, 1w. Includes switch S710, DPST, 6 amp, 125 VAC. Sim to MALLORY LC(1)6) PP(OAC-2).
R712	5496870-P5	Variable, carbon film; 2,500 ohms ±20%, 1/2 w. Includes switch S711, DPST, 6 amp, 125 VAC. Sim to MALLORY LC(2500) OAC-2.
		SWITCHES
S710	--	Part of R711.
S711	--	Part of R712.
S714	5495454-P2	Rotary; 2-pole, 4 position, 2 amp @ 25 VDC, lamp 110 VAC, non-shorting contacts. Sim to Oak Type A, or CENTRALAB Series 100.
		SOCKETS
XDS701 and XDS702	4032220-P1	Socket, lamp; Min bayonet base; plastic insulating sleeve, 6-inch leads. Sim to Drake Mfg. Co. 7317.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

SYMBOL	G-E PART NO	DESCRIPTION
		MISCELLANEOUS MECHANICAL PARTS
	198200008-P1	Control housing, steel, 2.428 x 2.75 inches dia.
	198201630-G5	Chassis, weld assembly.
	4032248-P1	Clip, mounting; spring steel; annealed carbon. (Used with DS701 & DS702).
	4035746-P1	Jewel, red, #2444 plexiglass, 0.250 dia. x 1.051g.
	4035746-P2	Jewel, green, #2092 Plexiglass.
	19C301564-P1	Knob, Butyrate; red-orange color, for use with flatted shaft. Sim to Eastman Chemical Co. 32599.
	4035711-P2	Clip, spring tension. (Jewel mount).
	5496809-P17	Connector, female. (Used with J704).
		FRONT PANEL PL-5493770-G2
C701	7489483-P18	Electrolytic; 85°C operation, 100 mf +100% -10%, 25 VDCW; Sim to Sprague 30D188A1.
C702	7491930-P10	Capacitor, Mylard, dielectric; 0.22 mf ±20%, 100 VDCW. Sim to Good-All Electric Mfg. Co. 663-UW.
J705	4039092-P1	Receptacle, 21 pin male, Sim to H.B. Jones P-315-AB.
J706	5493545-P3	Connector, socket; black phenolic insulation; 6-female contacts; max rating 1,000 VDC (Contact to Contact), max current 5 amps. Sim to Component Mfg. Service 6601-CF6.
J708	7473192-P7	Connector: 12 terminals; Sim to H. B. Jones S-312-AB.
J709	7104941-P5	Connector, phono: Jack; Sim to Cinch 14H18331.
P701 thru P713	4029840-P1	Terminal: (Plug receptacle for 0.093 inch long pins), brass, 1 contact. Sim to Amp Mfg. Co. 41804. Sim to Hand Tool Amp Mfg. Co. 47745.
	5496771-P1	Control Panel.
	5493765-P3	Plate.
	4032574-P1	Gasket.
	5491682-P2	Lock.
	7878455-P2	Lug, terminal, copper, bent at 90° angle, 0.688 in. lg., 0.25 in.wide, 0.025 in. thick.
	7143206-P4	Terminal, standoff; brass, molded insulation, 0.625 inches long.
P724	4033353-P2	Terminal.
P725 and P726	4033348-P1	Contact, female friction: Brass; Sim to Bead Chain W125-34.
		EXTENSION CABLE ASM. PL-5493939-G2
P704	4037336-P1	Connector, plug, phenolic: 21 contacts. Sim to Molex Products 1053921.
P705	198200895-P24	Socket, phenolic: 21 contacts, 10 amps, 730 VRMS. Sim to HB Jones S321-CCE.
	5496809-P18	Terminal, male: Sim to Molex Products 1380-T.
	7139880-P5	Cable, mv Hi Conductor: 19 conductors, 23 feet, 10 inches long.

SYMBOL	G-E PART NO	DESCRIPTION
		OSCILLATOR CONTROL CABLE PL-19C303011-G1
P701	198209001-P2	Connector, Plug: 10 contacts, 5 amps, 500 VRMS. Sim to Continental Connector Corp. C10-20P-VS.
P702	7473192-P10	Connector, plug, phenolic: 12 contacts, 10 amps, 730 VRMS. Sim to H. B. Jones 361-31-12-CO2.
P2301	198209001-P2	Connector, Plug: 10 contacts, 5 amps, 500 VRMS. Sim to Continental Connector Corp. C10-20P-VS.
	5491775-P9	Cable: Approximately 16 inches long.
	5491775-P10	Cable: Approximately 24-1/2 feet long.