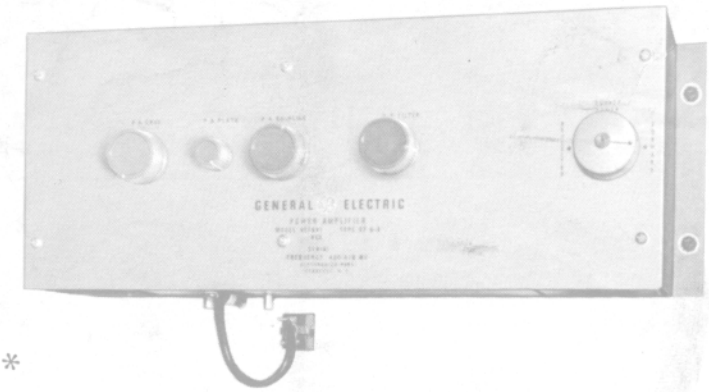
MOBILE RADIO

MASTR® Progress Line

POWER AMPLIFIER MODEL 4EF6A1



SPECIFICATIONS *

Model Number	**4EF6A1**
FCC Type Number	EF-6-A: Power Amplifier
Frequency Range	406-470 MHz
Used with	Exciter Type ET-59-B and Power Supply Type EP-6-A & B to provide a 250-Watt transmitter
Power Input	117 VAC, 50/60 Hz Standby: 2 Amps Transmit: 9 Amps
Power Output	250 Watts
Tube Complement	(1) 4CX300A ceramic tetrode
AM Hum and Noise Level	Down 34 dB
Rated Duty Cycle	Continuous -- Blower recommended for cabinet ventilation under conditions of high ambient temperatures or continuous duty operation
Ambient Temperature Range	-30°C to +60°C (-22°F to +140°F)
Dimensions (H x W x D)	7" x 19" x 11"
Weight	22 pounds

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

EF-6-A

GENERAL ELECTRIC

TABLE OF CONTENTS

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

General Electric 225-Watt Power Amplifier Model 4EF6A1 has been designed for use in fixed stations operating in the 406 to 470 megahertz band, using an external exciter and power supply. The amplifier employs a 4CX300A as a Power Amplifier, with forced-air cooling provided by a blower mounted on the power supply. Standard RETMA rack-mounting dimensions are used. The tuning controls most frequently used are located on the front of the unit.

All the power connections, except the high voltage connection, are made with a 6-pin plug from the front of the unit. High voltage is brought to the plate at the rear of the plate compartment.

Antenna relay keying voltage connections are made behind the Output Power Indicator, using screw connections. The RF drive connection is made by an RG-58/U cable plugged into the exciter from the front of the unit.

CIRCUIT ANALYSIS

Excitation to the Power Amplifier at P482 is fed to coupling loop L482 and coupled to coil L484, which, with C481, forms the grid tank of the amplifier. By adjusting the PA GRID control (C481), the grid tank may be tuned to the operating frequency.

Heater voltage on the Power Amplifier tube V481 may be varied on the power supply chassis. C482, C483 and C484 are RF by-pass capacitors and R481 is used as a screen RF de-coupling resistor. Coil L481 isolates RF from the power cable. Built into the tube socket, XV481, is a ringtype capacitor which is used as a screen grid by-pass.

All input voltage connections to the Power Amplifier, except the B-plus voltage connection, are made at P481 on the front side of the panel. The 2000-volt B-plus lead is connected at terminal PO-2 located in the rear on the plate cavity cover. C492 and C493 provide by-passing for the B-plus and L485 is an RF choke. The plate tank is composed of C488 and the transmission line section formed by the inner and outer boxes of the plate cavity. The plate tank is tuned to the operating frequency by adjusting the PA PLATE control C488. C488 is formed by a flat ring around the tube and by the plate.

Adjusting the PA COUPLING control varies the coupling from the plate to the output by controlling the amount of magnetic flux linking the plate line to the filter line. L483 couples energy from the PA FILTER cavity to J481. The signal from J481 is connected to the antenna through P1 and P2 on the Reflectometer and through the contacts on the antenna relay K482.

OUTPUT POWER METER

The Output Power Meter (Reflectometer) indicates forward and reflected power output when used with a 0-3 VDC meter (use external probe from meter switching unit).

The meter is calibrated with a wattmeter at the factory, and a calibration chart is attached to the inside of the cabinet. The calibration chart provides a reference to convert the output meter voltage to the actual power output in watts.

The probe samples the magnetic field caused by current in the transmission line and the electrical field from the voltage on the line. On a properly matched line, these two voltages are equal and cancel each other when reading REFLECTED power ("0" reflected power). When the probe is rotated 180°, these two voltages add to indicate FORWARD power.

When the load is not matched, these two voltages become unequal and provide a ratio of incident (forward) to reflected power. Any significant change in this ratio (if other than 1:1) after initial installation and check out, should be cause for examination of the antenna and feed line. Actual V.S.W.R. as measured on a calibrated bridge, should remain below 1.5:1 at all times.

ANTENNA RELAY

K482, the antenna relay, switches the antenna from the receiver to the transmitter when the transmitter is keyed.

MAINTENANCE

PREVENTIVE MAINTENANCE

To obtain optimum performance from the equipment, a program of regular preventive maintenance should be followed. This preventive maintenance should include the following:

1. A check of the operating frequency as required by the Federal Communications Commission.

2. A check of the PA PLATE current, Power Amplifier GRID current and PA PLATE voltage meter readings.

3. A check of the PA PLATE tuning and reflected power (if any) and realignment if improper operation is indicated.

4. A check for loose nuts, screws, cables and parts.

5. An inspection of the high- and low-voltage connections.

POWER AMPLIFIER TUBE REPLACEMENT

To remove the Power Amplifier tube, proceed as follows:

1. Remove the high-voltage lead from PO-2, located on the rear of the Power Amplifier.

2. Loosen the screws holding the rear cover plate to the assembly.

3. Slide off the rear cover plate.

4. Insert the prongs of the tube extractor (included with the station equipment) between the cooling fins of the PA tube plate.

5. Rotate the PA tube 30 degrees counterclockwise; then gently pull the tube straight out from the socket.

To reinsert the Power Amplifier tube, proceed as follows:

1. Insert the prongs of the tube extractor between the cooling fins of the PA tube plate.

2. Gently insert the tube into the socket so that the tube contacts clear the socket contacts.

3. Push the PA tube all the way into the socket and gently rotate the tube 30 degrees clockwise.

4. *Check filament resistance to make sure* that the tube is properly seated.

CAUTION

Be careful not to exert excessive pressure while performing Step 3 so that damage will not result to the tube and socket contacts.

5. Replace the rear cover plate of the Power Amplifier.

6. Tighten the screws on the rear cover plate.

7. Replace the high-voltage lead to PO-2 on the rear of the Power Amplifier.

NEUTRALIZING ASSEMBLY REPLACEMENT

If it should become necessary to replace any part of the neutralizing assembly, it is recommended that the entire assembly be replaced.

To replace the assembly proceed as follows:

1. Remove all four knobs on the front of the power amplifier.

2. Remove the 6 screws holding the outer front plate, and remove plate.

3. Remove the 14 hex-head screws holding the inner front plate (left side), and remove the plate.

4. Remove the 2 screws holding the neutralizing assembly in place.

5. Unsolder the wire from the spade bolt on the neutralizing assembly and remove the assembly.

6. Install the new assembly.

MOBILE RADIO DEPARTMENT
GENERAL ELECTRIC COMPANY • LYNCHBURG, VIRGINIA 24502

GENERAL ELECTRIC

ALIGNMENT PROCEDURE

This Alignment Procedure is provided for completely realigning and loading Power Amplifier Model 4EF6A1, using the ET-59-D as the Exciter unit.

Before tuning the Power Amplifier, the Exciter multiplier stages must be aligned according to the procedure in the SERVICE OUTLINE or the ALIGNMENT PROCEDURE for the Exciter.

1. Connect the antenna or some other suitable 50-ohm load to the top jack on the Power Amplifier antenna relay.

2. Turn the PLATE switch OFF on the PA Power Supply.

3. Turn the SCREEN adjust on the PA Power Supply fully counterclockwise.

NOTE

If it has not already been done, remove the fuse and make jumper connections on Power Supply EP-38-A as indicated in the maintenance manual for the EP-38-A. This will limit plate voltage on the ET-59-D to 300 Volts, which is proper for exciter service.

4. Place the power switches located on the Control Panel, Exciter Power Supply to the ON position. Turn the PA Power Supply CONTROL switch to the ON position. Allow 15-minutes for warmup.

5. Connect a microphone to the MIKE jack on the Exciter Power Supply for keying the transmitter or use the PTT button on the exciter.

6. Pull PA COUPLING control out to its limit. Turn control clockwise until it engages with the coupling window. Push control in to 1/4 of its extended length.

7. Carefully turn control counterclockwise to disengage it from the internal coupling window. Push the disengaged control in to its back limit.

8. Connect the red probe from Meter Switching Panel to Grid jack on PA Power Supply and switch to external probe.

9. While keying the Exciter, tune the PA GRID and EXCITER OUTPUT FILTER for maximum PA GRID current at the GRID jack (J452-green located on the PA Power Supply). A minimum reading of 20 mA (2.0 V) should be obtained on the TRANSMITTER METER. If the reading is low, refer to the TRANSMITTER ALIGNMENT PROCEDURE.

10. Neutralize PA as follows:

a. Turn the Power Switch OFF on the Exciter Power Supply

b. Disconnect the PA input cable from the output jack of the exciter.

c. Open the rear door and block the contacts CLOSED on the PA antenna relay. (Use a piece of tape to hold contacts in in KEYED position).

d. Disconnect the antenna cable from the ANT jack (top) of the PA antenna relay.

e. Turn the PA NEUTRALIZING CONTROL to its maximum counterclockwise position.

f. Connect a 50-ohm coaxial cable of sufficient length from the ANT jack on the antenna relay to the ANT jack on the Exciter. This cable is used temporarily for neutralization only.

CAUTION

Failure to have the PLATE Switch of the PA in the OFF position when performing steps (g) through (l) below, may result in damage to the equipment.

g. Turn the Exciter Power Switch ON. DO NOT turn on the Plate switch on the PA Power Supply.

h. Insert the negative lead of a 0-60 microampere DC meter (0-60 uA scale of a multimeter) into the GRID jack (J452-Green) located on the PA Power Supply. Connect the positive meter lead to ground.

i. Key the Exciter and adjust the PA PLATE, PA FILTER, and PA GRID controls for maximum meter reading. Alternately tune each of these controls until no further increase in meter reading can be obtained.

j. Rotate the PA NEUTRALIZING CONTROL from its maximum counterclockwise position in a clockwise direction until a null (about 4 to 7 uA) is obtained. At this null, the PA is neutralized. This may have to be done from the rest of the cabinet. Interlock rear door.

NOTE

If a null of less than 10 uA cannot be obtained, it is likely the PA tube is improperly seated in its socket, and should be carefully repositioned. This should be followed by repeating steps (i) and (j).

k. Turn the Power Switch OFF on the Exciter Power Supply.

l. Open the rear door on the cabinet, remove the block (tape) from the PA antenna relay; disconnect the temporary coaxial cable and replace the PA antenna cable (with coaxial cable or other suitable 50-ohm load). Then connect PA input cable back on the Exciter output jack.

m. Close the rear door.

n. Turn the Exciter Power switch ON.

o. Repeat Step 8 and 9.

11. Turn the PLATE switch on the PA Power Supply to the ON position.

12. While keying the exciter, adjust the PA PLATE control for a minimum reading at the PA PLATE Current meter.

NOTE

While keying the exciter, do not exceed 250 mA of PA plate current. If the power supply is in Revision D or later (or has been modified according to DATAFILE Bulletin 0036-5), both PA screen current (approximately 25 mA) and PA plate current pass through the PA PLATE current meter. To obtain actual PA plate current, subtract 25 mA from the meter reading. For example, 250 mA of plate current will be indicated as 275 mA on the meter. If the power supply is in Revision C or earlier (and has not been modified according to DATAFILE Bulletin 0036-5) the meter measures PA current directly.

13. Connect the red lead from the Meter Switching Panel to the jack on the front of the REFLECTOMETER. Rotate REFLECTOMETER to the FORWARD position.

14. While keying the Exciter, adjust the PA FILTER for maximum meter reading at the REFLECTOMETER jack.

15. While keying the Exciter, increase the SCREEN control for a maximum reading of 175 mA at the PA PLATE CURRENT meter and repeat Steps 12 and 14.

16. While keying the Exciter, increase SCREEN Control for a maximum reading of 225 mA and repeat Steps 12 and 14.

17. While keying the Exciter, increase SCREEN Control for a maximum reading of 275 mA and repeat Steps 12 and 14.

18. If the output power at this point is not 225 watts or 275 mA is not obtained, increase the PA coupling slightly and repeat Step 17.

19. Hold exciter and PA keyed for 5 minutes. After this time repeat steps 17 and 18 until no further power increase can be obtained. Do not exceed 250 mA of PA PLATE current (see note following step 12).

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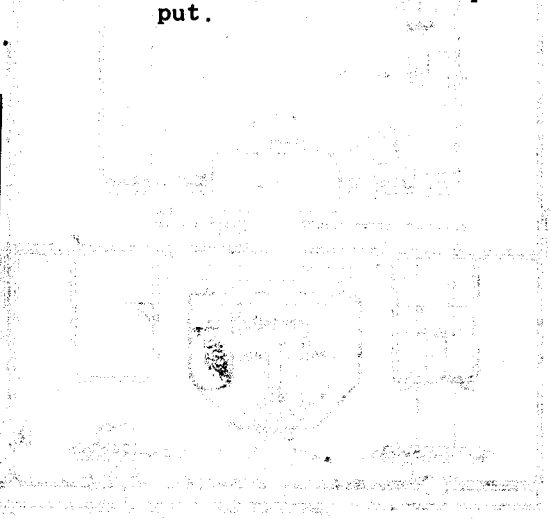
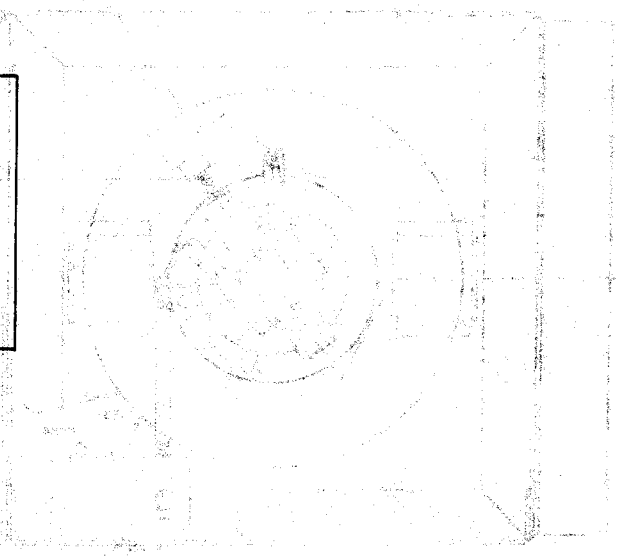
REDUCED POWER OUTPUT

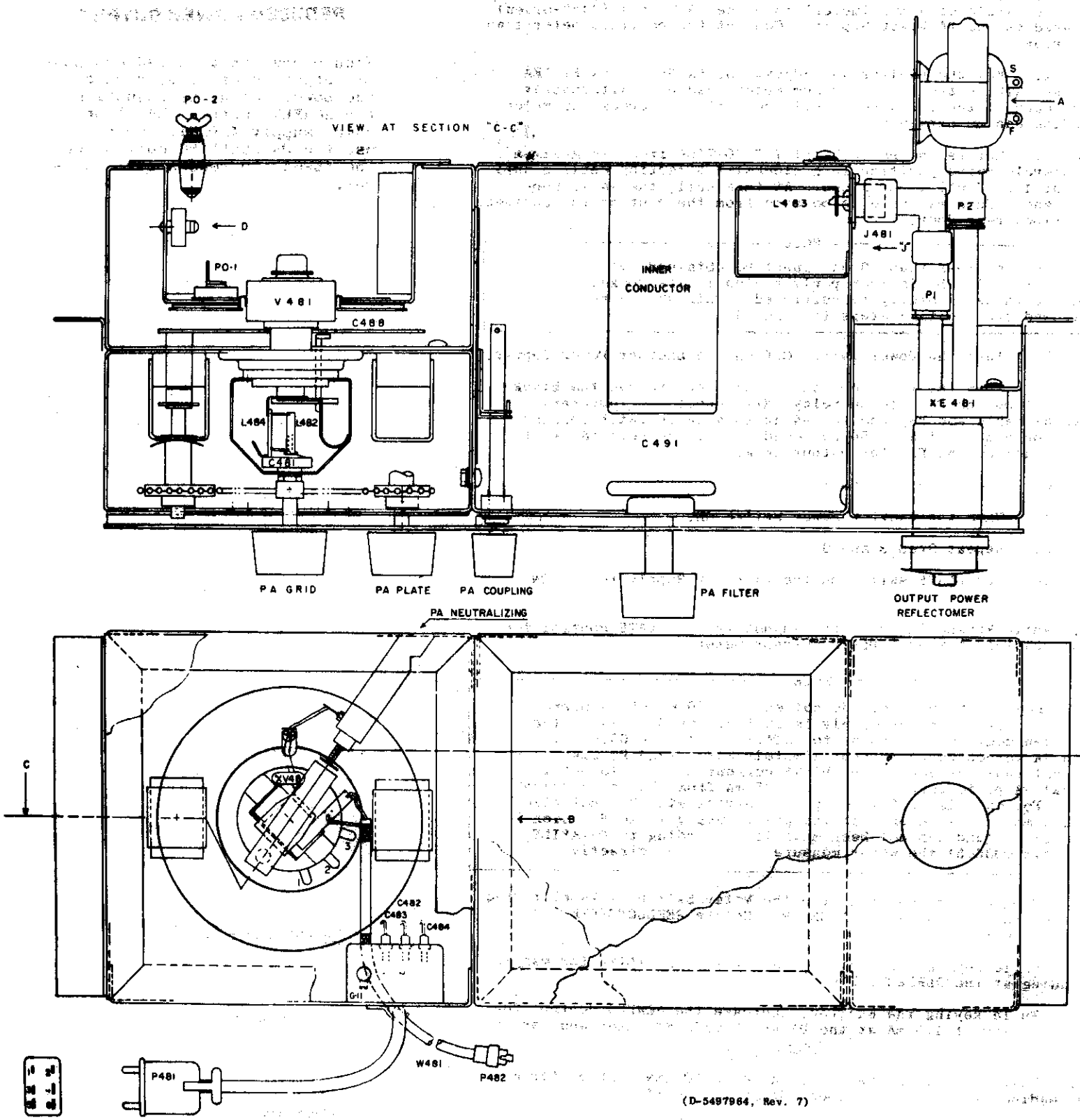
When operation at a reduced power output is desired, reduce the power output by adjusting the SCREEN control (R461) on power supply 4EP6B1. Do not use the PA COUPLING control on the 4EF6A1 to reduce power output.





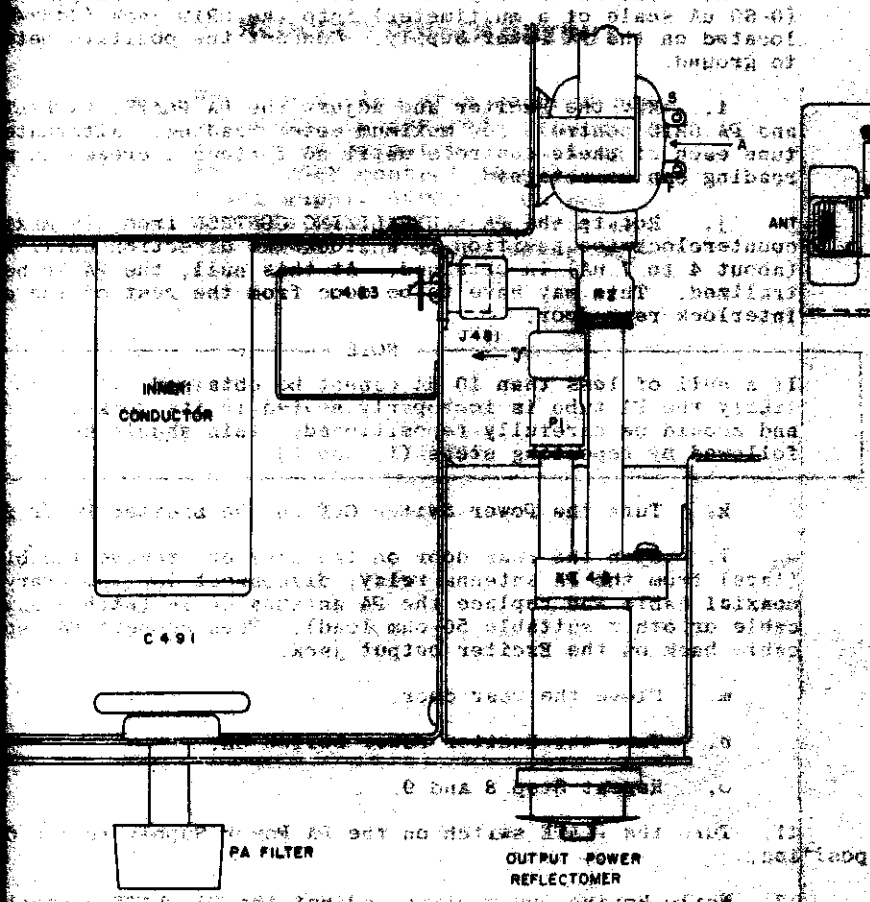
ALIGNMENT PROCEDURE

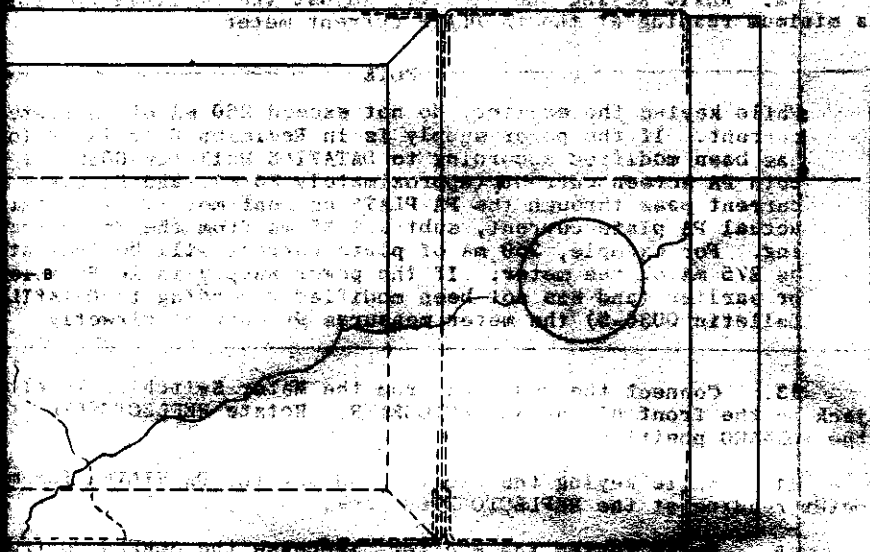
POWER AMPLIFIER
MODEL 4EF6A1



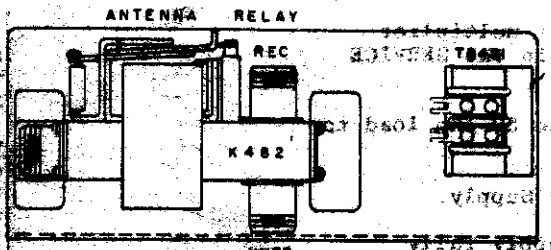
OUTLINE DIAGRAM

POWER AMPLIFIER
MODEL 4EF6A1





(D-5497964, Rev. 7)



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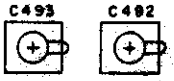

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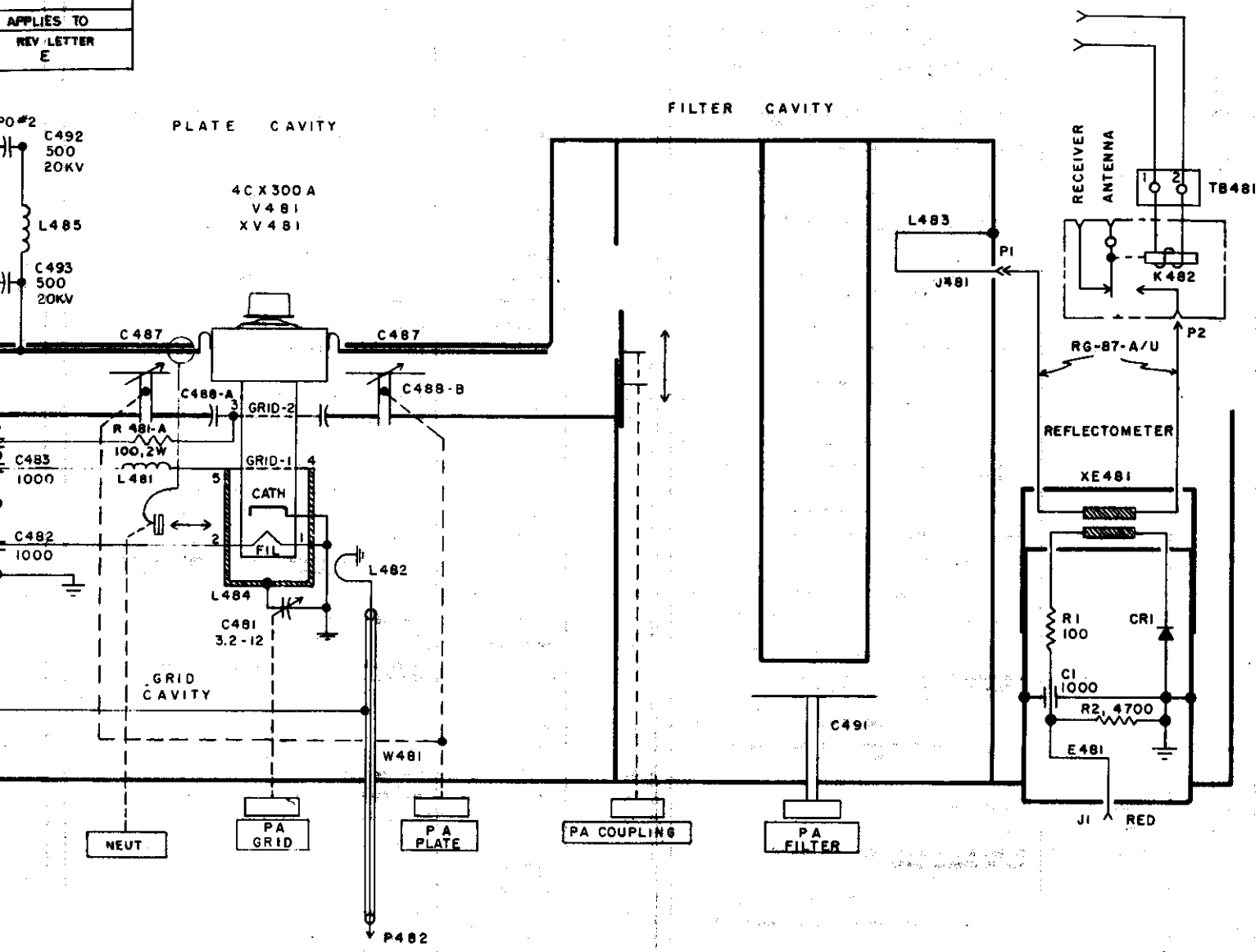

(C-5494399, Rev. 11)

SCHEMATIC DIAGRAM

POWER AMPLIFIER
MODEL 4E[illegible]1

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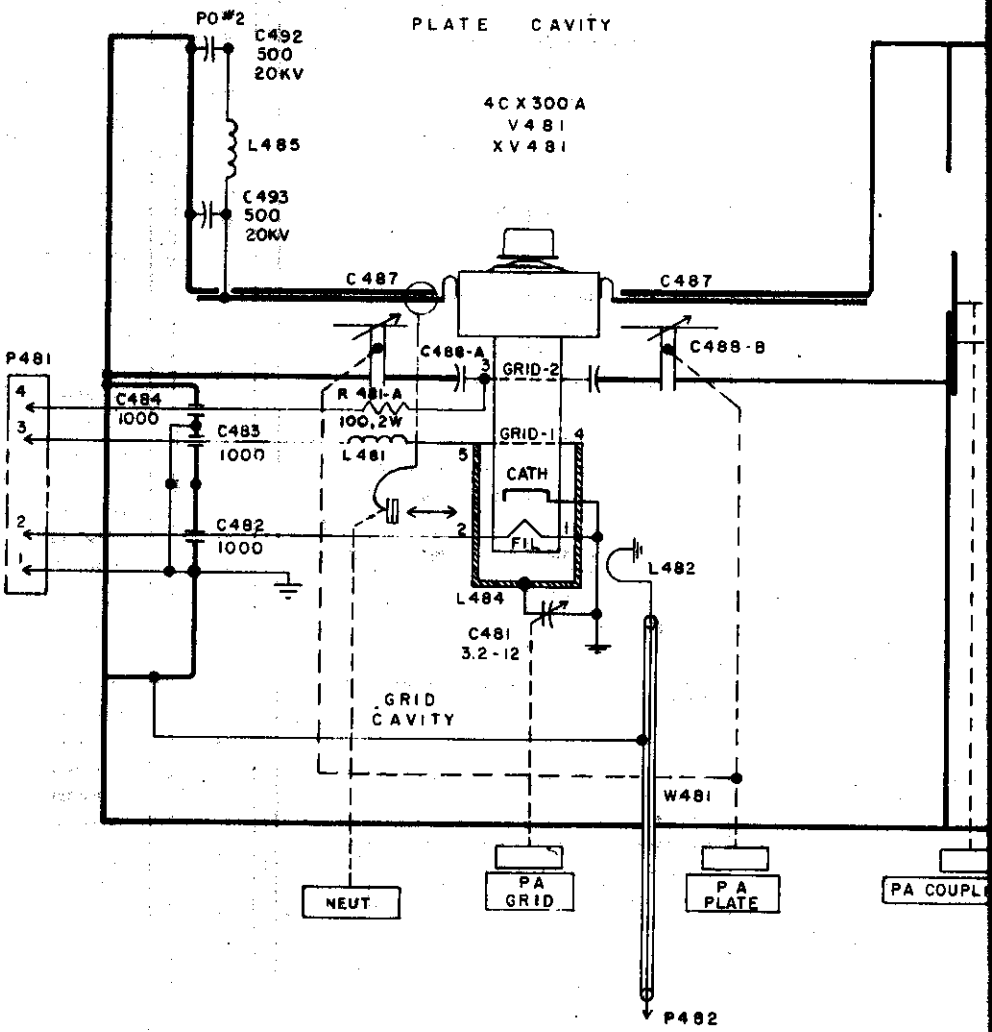


PARTS LIST

KBI41669D

POWER AMPLIFIER
MODEL 4EF6A1

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C481	4029647P2	Variable, air: 3.6 to 12 pf; sim to Cambion T-9905 (modified).
C482 thru C484	7485975P19	Ceramic, feed-thru: 1000 pf ±20%, 500 VDCW; sim to Erie Style 327.
C485*	3E31P9	Mica, molded case: 1000 pf ±10%, 2500 VDCW; sim to EIA Style 45 & 50. Deleted by REV A.
C487 and C488		Part of Mechanical construction.
C491		Part of Mechanical construction.
C492* and C493*	5490306P2	Ceramic: 500 pf +50% -20%, 20,000 VDCW; sim to Sprague 20D. Added by REV A.
		REFLECTOMETER PROBE 4029829G1
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C1	7160807P1	Ceramic, feed-thru: 1000 µf +100% -0%, 500 VDCW.
		- - - - - - - - DIODES AND RECTIFIERS - - - - - - - -
CR1	7777146P22	Germanium.
		- - - - - - - - JACKS AND RECEPTACLES - - - - - - - -
J1	7150763P2	Jack, tip, stake-in: red nylon; sim to Alden Products 110BC1.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1	3R77P101J	Composition: 100 ohms ±5%, 1/2 w.
R2	3R77P472J	Composition: 4.7K ohms ±5%, 1/2 w.
		- - - - - - - - JACKS AND RECEPTACLES - - - - - - - -
J481	7777145P5	Receptacle, Type UG-58A/U. Series N.
		- - - - - - - - - - RELAYS - - - - - - - - - -
K482	7479680P3	Armature, coaxial: 7000 ohms ±10% coil res, 1 form C contact; sim to Amphenol 300-11292.
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L481	7488079P9	Choke, RF: 0.22 µh ±20%, .04 ohm DC res max; sim to Jeffers 4411-2M.
L482	4029604P1	Input loop.
L483	4029438P1	Output loop.
L484	4029360P1	Grid loop.
L485	7772834P7	Choke, RF: 0.2 µh ±10%, .034 ohm DC resmax; sim to Ohmite Z-480.
		- - - - - - - - - - PLUGS - - - - - - - - - -
P481	7473192P25	Plug: 6 pin male, cable clamp in cap; sim to HB Jones P261-31-06-030.
P482		(Part of W481).
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R481	3E79P101K	Composition: 100 ohms ±10%, 2 w.
		- - - - - - - - TERMINAL BOARDS - - - - - - - - -
TB481	19C301088P9	Phen: 2 terminals; sim to GE CR151D.

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - TUBES - - - - - - - - - -
V481		Type 4CX300A.
		- - - - - - - - - - CABLES - - - - - - - - - -
W481	5491689P54	Cable, RF: coaxial, approx 32.75 inches long with phono plug molded on one end.
		- - - - - - - - - - SOCKETS - - - - - - - - - -
XE481	5490188G1	Reflectometer housing. Includes:
P1 and P2	5490383P1	Connector, plug; sim to Industrial Prods. Co. No. 91525.
XV481	5490190P1	Tube.
		- - - - - - - - - - MISCELLANEOUS - - - - - - - - - -
	402982P2	Tube extractor; sim to Eitel-McCullough SK601.
	19B216737G1	Neutralizing Assembly.
		MECHANICAL PARTS (SEE RC3112)
1	5490329P2	Plate.
2	N81P13005C6	Machine screw: No. 6-32 x 5/16.
3	N414P13	Lockwasher, internal tooth: No. 6.
4	4032516P1	Support.
5	N80P5005C13	Machine screw: No. 2-56 x 5/16.
6	N414P8	Lockwasher, internal tooth: No. 2.
7	7143206P6	Terminal, standoff.
8	N83P13008	Machine screw: No. 6-32 x 1/2.
9	7146362P2	Bolt, spade: brass, 4-40 thread.
10	19A121586P1	Probe.
11	N207P9	Hex nut.: No. 4-40.
12	N80P13016C13	Machine screw, phillips head: No. 6-32 x 1.
13	N404P13	Lockwasher, internal tooth: No. 6.
14	19A121567P1	Support.
15	4037466P2	Clip, spring tension: 6-32 thread; sim to Tinnerman C13296-017-4.
16	4029935P2	Support.
17	4029895P2	Bushing.
18	402977463	Stud.
19	5495048P1	Conductor, outer: sim to Marathon Metal Prod, MMP46921.
20	5490194G1	Housing.
21	5490363G1	Plate.
22	4029768G2	Support.
23	4029771G1	Bushing.
24	19B209103P504	Tap screw: No. 10-32 x 1/4.
25	19B209103P508	Tap screw: No. 10-32 x 3/8.
26	N405P9C	Lockwasher, spring type.
27	4029354P1	Clamp spring.
28	4029784G1	Plate.
29	7135118P1	Solderless terminal.
30	N81P15010	Machine screw: No. 8-32 x 5/8.
31	N207P13C6	Hex nut: No. 6-32.
32	7160508P2	Nut, sheet spring: sim to Tinnerman C1356-632-24.
33	19B209103P510	Tap screw: No. 10-32 x 5/8.
34	5490329P1	Plate.
35	4029710G1	Can.
36	7142162P51	Spacer, sleeve: No. 6-32 x 3/8.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

SYMBOL	GE PART NO.	DESCRIPTION
37	2R53P16	Grommet: rubber.
38	7763541P5	Retainer strap.
39	7878455P2	Solderless terminal.
40	19A122963P1	Grommet.
41	N81P5003	Machine screw: No. 2-56 x 3/16.
42	N81P9006C13	Machine screw: No. 4-40 x 3/8.
43	N414P11	Lockwasher, internal tooth: No. 4.
44	4037687P1	Knob, screw on: sim to Dimco-Gray 597.
45	N401P7	Flatwasher: No. 6.
46	7479752P1	Bushing.
47	4035306P2	Washer, fiber.
48	7479752P11	Bushing.
49	4035306P53	Washer, fiber.
50	N80P13024C13	Machine screw, Phillips head: No. 6-32 x 1/2.
51	N83P9004	Machine screw: No. 4-40 x 1/4.
52	N81P13006	Machine screw, Phillips head: No. 6-32 x 3/8.
53	7777145P4	Connector, plug: sim to Amphenol 82-98 or Military UG-27B/U.
54	4029245G1	Conductor, inner.
55	4029421P1	Disk.
56	19A127386P1	Spring.
57	19B200525P152	Rivet, tubular. (Secures item 56).
58	N83P8003C	Machine screw: No. 4-40 x 3/16.
59	7487773P6	Knob, set screw.
60	N401P41	Flatwasher: .250 I.D., .750 O.D.
61	4029424P1	Support.
62	19A127387P1	Disc.
63	19A127388P1	Disc.
64	N413P16C13	Lockwasher, external tooth, bronze : No. 8.
65	N83P15008	Machine screw: No. 8-32 x 1/2.
66	7487773P5	Knob, set screw.
67	4029954P2	Support.
68	7165075P2	Hex nut, brass: No. 3/8-32.
69	N70P1503C13	Set screw: No. 8-32 x 3/16.
70	7115130P9	Lockwasher: 3/8; sim to Shapeproof 1220-2.
71	4031530P1	Bushing.
72	4029818P1	Support.
73	N76P1302C	Set screw: No. 6-32 x 1/8.
74	4031997P1	Set screw: No. 6-32 x 3/16.
75	4029954P1	Support.
76	4029956P1	Sprocket.
77	4029955P2	Plate.
78	4029870P1	Bead chain.
79	4029810P2	Coupling.
80	5495048P1	Grid cavity.
81	7160815P3	Washer, spring tension.
82	7109043P3	Retaining ring.
83	4029601P1	Stud.
84	N900P50C	Retaining ring.
85	4029712G1	Disc assembly.
86	19B216034P1	Insulator.
87	4029246G1	Plate.
88	5490189P1	Printed board.

SYMBOL	GE PART NO.	DESCRIPTION
89	4035306P50	Washer, fiber: .719 dia.
90	4029112P1	Insulator, disc.
91	N401P8	Flatwasher: No. 8.
92	7135118P2	Solderless terminal.
93	N207P15	Hex nut: No. 8-32.
94	N83P15012	Machine screw: No. 8-32 x 3/4.
95	N414P16	Lockwasher, internal tooth: No. 8.
96	4035306P20	Washer, fiber: .188 dia.
97	5494530G1	Conductor.
98	5490364P1	Plate.
99	N83P13016	Machine screw: No. 6-32 x 1.
100	N81P15005	Machine screw: No. 8-32 x 5/16.
101	4029361P1	Support.
102	4029605G1	Block.
103	4029892P2	Extractor, electron tube. (Taped to back of cover for shipment).

PRODUCTION CHANGES

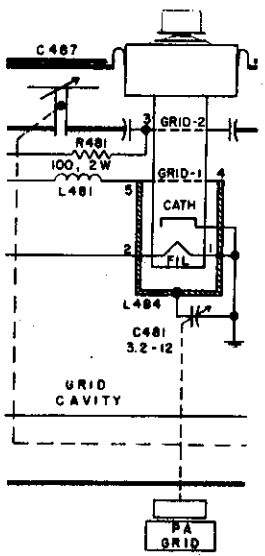
Changes in the equipment to improve performance or to simplify circuits are identified by a "Revision Letter", which is stamped after the model number of the unit. The revision stamped on the unit includes all previous revisions. Refer to the Parts List for descriptions of parts affected by these revisions.

REV. A — To provide better RF by-pass for meter. Deleted C485 and added C492 and C493.

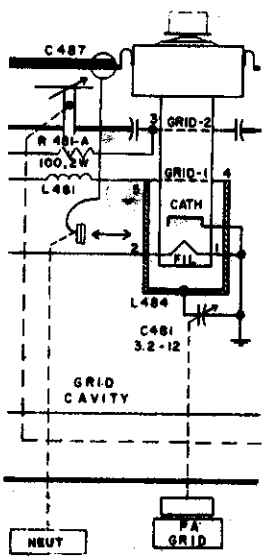
REV. B — To increase amplifier stability. Added mechanical neutralizing assembly from grid to plate circuit of power amplifier.

SCHEMATIC DIAGRAM CHANGES

WAS



CHANGED TO



REV. C — To eliminate unstable meter readings and to improve the action of the neutralizing capacitor. Changed material of rod used to adjust the coupling window from brass to laminated phenolic. Both elements of the neutralizing capacitor were mounted to the grid cavity.

REV. D — To increase mechanical and electrical stability of the neutralizer. Replaced the cam-operated neutralizer.

REV. E — To increase tuning range. Changed mechanical neutralizing assembly.

PARTS LIST

EBI-41669C

POWER AMPLIFIER
MODEL 4EF6A1

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C481	4029647P2	Variable, air: 3.6 to 12 pf; sim to Cambion T-9905 (modified).
C482 thru C484	7485975P19	Ceramic, feed-thru: 1000 pf ±20%, 500 VDCW; sim to Erie Style 327.
C485*	3R31P9	Deleted by REV A.
C487 and C488		Part of Mechanical construction.
C491		Part of Mechanical construction.
C492* and C493*	5490306P2	Ceramic: 500 pf +50% -20%, 20,000 VDCW; sim to Sprague 20D. Added by REV A.
A481		REFLECTOMETER PROBE 4029629G1
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C1	7160807P1	Ceramic, feed-thru: 1000 µf +100% -0%, 500 VDCW.
		- - - - - - - - DIODES AND RECTIFIERS - - - - - - - -
CR1	7777146P22	Germanium.
		- - - - - - - - JACKS AND RECEPTACLES - - - - - - - -
J1	7150763P2	Jack, tip, stake-in: red nylon; sim to Alden Products 110BC1.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1	3R77P101J	Composition: 100 ohms ±5%, 1/2 w.
R2	3R77P472J	Composition: 4700 ohms ±5%, 1/2 w.
		- - - - - - - - JACKS AND RECEPTACLES - - - - - - - -
J481	7777145P5	Receptacle, Type UG-58A/U, Series N.
		- - - - - - - - - - RELAYS - - - - - - - - - -
K482	7479680P3	Armature, coaxial: 7000 ohms ±10% coil res, 1 form C contact; sim to Amphenol 300-11282.
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L481	7488079P2	Choke, RF: 0.22 µh ±20%, .04 ohm DC res max; sim to Jeffers 4411-2M.
L482	4029604P1	Input loop.
L483	4029435P1	Output loop.
L484	4029360P1	Grid loop.
L485	7772834P7	Choke, RF: 0.2 µh ±10%, .034 ohm DC res max; sim to Ohmite Z-460.
		- - - - - - - - - - PLUGS - - - - - - - - - -
P481	7473192P25	Plug: 6 pin male, cable clamp in cap; sim to HH Jones P261-31-06-030.
P482		(Part of W481).
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R481	3R79P101K	Composition: 100 ohms ±10%, 2 w.
		- - - - - - - - TERMINAL BOARDS - - - - - - - - -
TB481	19C301088P9	Phen: 2 terminals; sim to GE CR151D.

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - TUBES - - - - - - - - - -
V481		Type 4CX300A.
		- - - - - - - - - - CABLES - - - - - - - - - -
W481	5491669P54	Cable, RF: coaxial, approx 32.75 inches long with phono plug molded on one end.
		- - - - - - - - - - SOCKETS - - - - - - - - - -
XE481	5490188G1	Reflectometer housing.
XV481	5490190P1	Tube.
		- - - - - - - - - - MISCELLANEOUS - - - - - - - - - -
	4029892P2	Tube extractor; sim to Eitel-McCullough SK601.
	19B216737G1	Neutralizing Assembly.
		MECHANICAL PARTS (SEE RC-3112)
1	5490329P2	Plate.
2	N81P13005C6	Machine screw: No. 6-32 x 5/16.
3	N414P13	Lockwasher, internal tooth: No. 6.
4	4032516P1	Support.
5	N80P5005C13	Machine screw: No. 2-56 x 5/16.
6	N414P8	Lockwasher, internal tooth: No. 2.
7	7142206P6	Terminal, standoff.
8	N83P13008	Machine screw: No. 6-32 x 1/2.
9	7146362P2	Bolt, spade: brass, 4-40 thread.
10	19A121586P1	Probe.
11	N207P9	Hexnut: No. 4-40.
12	N80P13016C13	Machine screw, phillips head: No. 6-32 x 1.
13	N404P13	Lockwasher, internal tooth: No. 6.
14	19A121587P1	Support.
15	4037486P2	Clip, spring tension: 6-32 thread; sim to Tinnerman C13296-017-4.
16	4029935P2	Support.
17	4029895P2	Bushing.
18	4029774G3	Stud.
19	5495046P1	Conductor, outer: sim to Marathon Metal Prod. MMP46921.
20	5490194G1	Housing.
21	5490363G1	Plate.
22	4029768G2	Support.
23	4029771G1	Bushing.
24	19B209103P504	Tap screw: No. 10-32 x 1/4.
25	19B209103P506	Tap screw: No. 10-32 x 3/8.
26	N405P9C	Lockwasher, spring type.
27	4029384P1	Clamp spring.
28	4029784G1	Plate.
29	7135118P1	Solderless terminal.
30	N81P15010	Machine screw: No. 8-32 x 5/8.
31	N207P13C6	Hex nut: No. 6-32.
32	7160508P2	Nut, sheet spring: sim to Tinnerman C1356-632-24.
33	19B209103P510	Tap screw: No. 10-32 x 5/8.
34	5490329P1	Plate.
35	4029710G1	Can.
36	7142162P51	Spacer, sleeve: No. 6-32 x 3/8.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

SYMBOL	GE PART NO.	DESCRIPTION
37	2R53P16	Grommet: rubber.
38	7763541P5	Retainer strap.
39	7878455P2	Solderless terminal.
40	19A122963P1	Grommet.
41	N81P6003	Machine screw: No. 2-56 x 3/16.
42	N81P8006C13	Machine screw: No. 4-40 x 3/8.
43	N414P11	Lockwasher, internal tooth: No. 4.
44	4037657P1	Knob, screw on: sim to Dimco-Gray 597.
45	N401P7	Flatwasher: No. 6.
46	7479752P1	Bushing.
47	4035306P2	Washer, fiber.
48	7479752P11	Bushing.
49	4035306P53	Washer, fiber.
50	N80P13024C13	Machine screw, Phillips head: No. 6-32 x 1/2.
51	N83P9004	Machine screw: No. 4-40 x 1/4.
52	N81P13006	Machine screw, Phillips head: No. 6-32 x 3/8.
53	7777146P4	Connector, plug: sim to Amphenol 82-98 or Military UG-27B/U.
54	4029245G1	Conductor, inner.
55	4029421P1	Disk.
56	19A127386P1	Spring.
57	19B200525P152	Rivet, tubular. (Secures item 56).
58	N83P9003C	Machine screw: No. 4-40 x 3/16.
59	7487773P6	Knob, set screw.
60	N401P41	Flatwasher: .250 I.D., .750 O.D.
61	4029424P1	Support.
62	19A127387P1	Disc.
63	19A127388P1	Disc.
64	N413P16C13	Lockwasher, external tooth, bronze : No. 8.
65	N83P15008	Machine screw: No. 8-32 x 1/2.
66	7487773P5	Knob, set screw.
67	4029954P2	Support.
68	7165075P2	Hex nut, brass: No. 3/8-32.
69	N70P1503C13	Set screw: No. 8-32 x 3/16.
70	7115130P9	Lockwasher: 3/8; sim to Shakeproof 1220-2.
71	4031530P1	Bushing.
72	4029618P1	Support.
73	N70P1302C	Set screw: No. 6-32 x 1/8.
74	4031997P1	Set screw: No. 6-32 x 3/16.
75	4029954P1	Support.
76	4029956P1	Sprocket.
77	4029955P2	Plate.
78	4029870P1	Bead chain.
79	4029810P2	Coupling.
80	5495048P1	Grid cavity.
81	7160815P3	Washer, spring tension.
82	7109043P3	Retaining ring.
83	4029601P1	Stud.
84	N900P50C	Retaining ring.
85	4029712G1	Disc assembly.
86	19B216034P1	Insulator.
87	4029246G1	Plate.
88	5490189P1	Printed board.

SYMBOL	GE PART NO.	DESCRIPTION
89	4035306P50	Washer, fiber: .719 dia.
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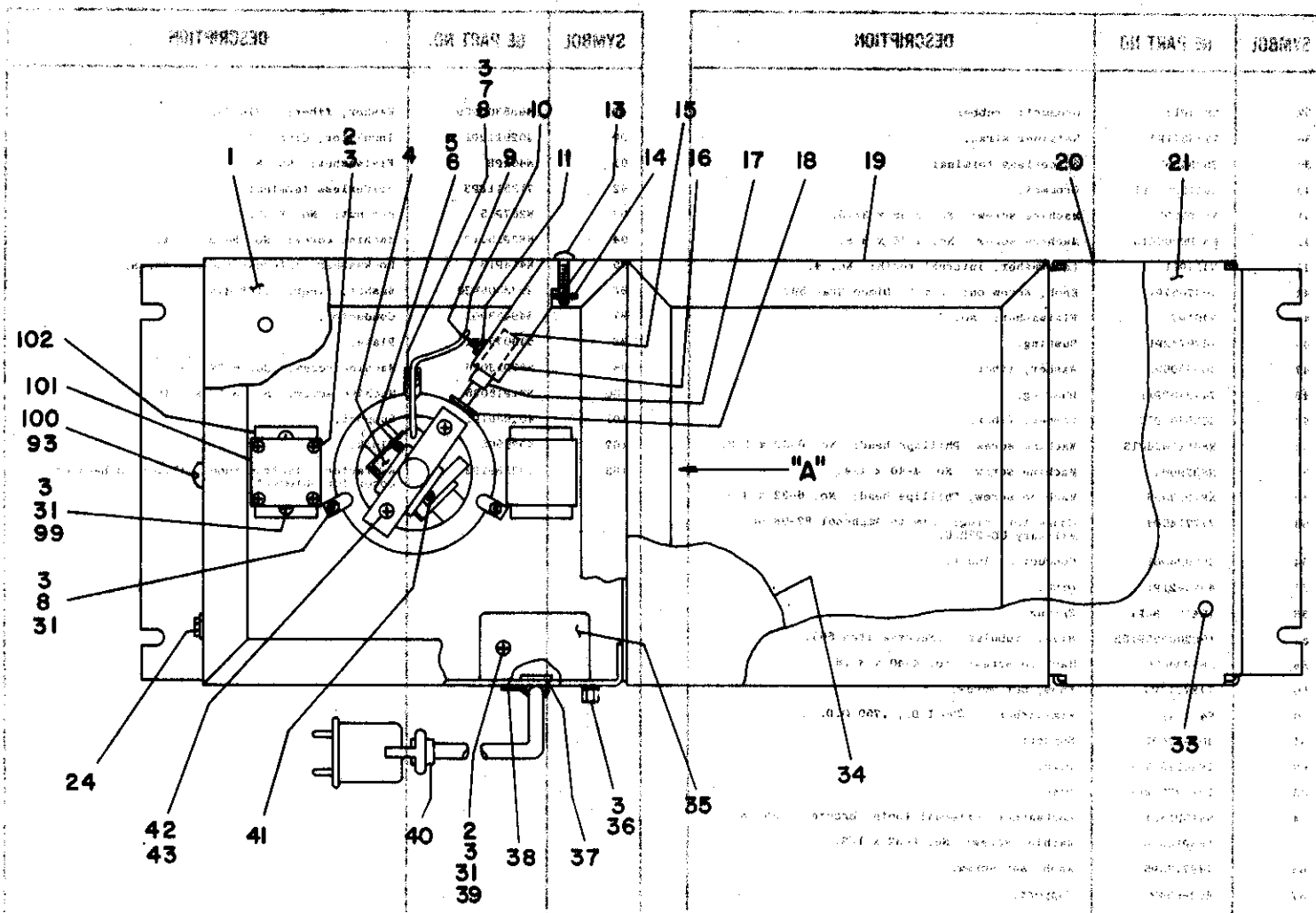
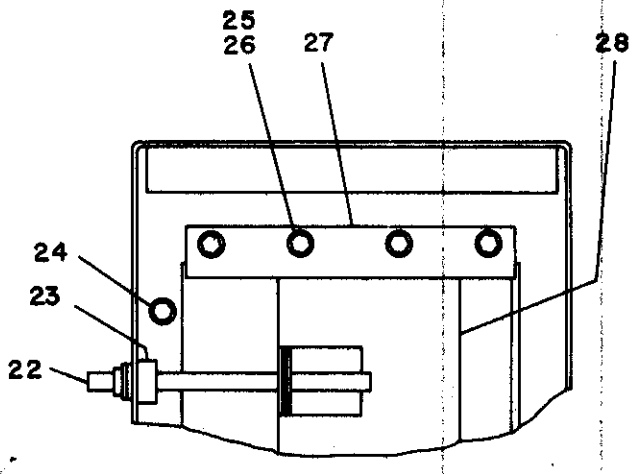
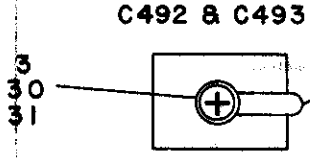
102	4029605G1	Block.
103	4029892P2	Extractor, electron tube. (Taped to back of cover for shipment).

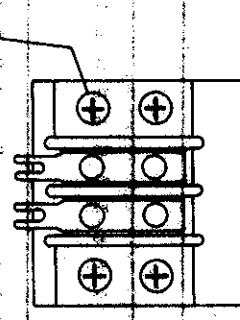
REAR VIEW





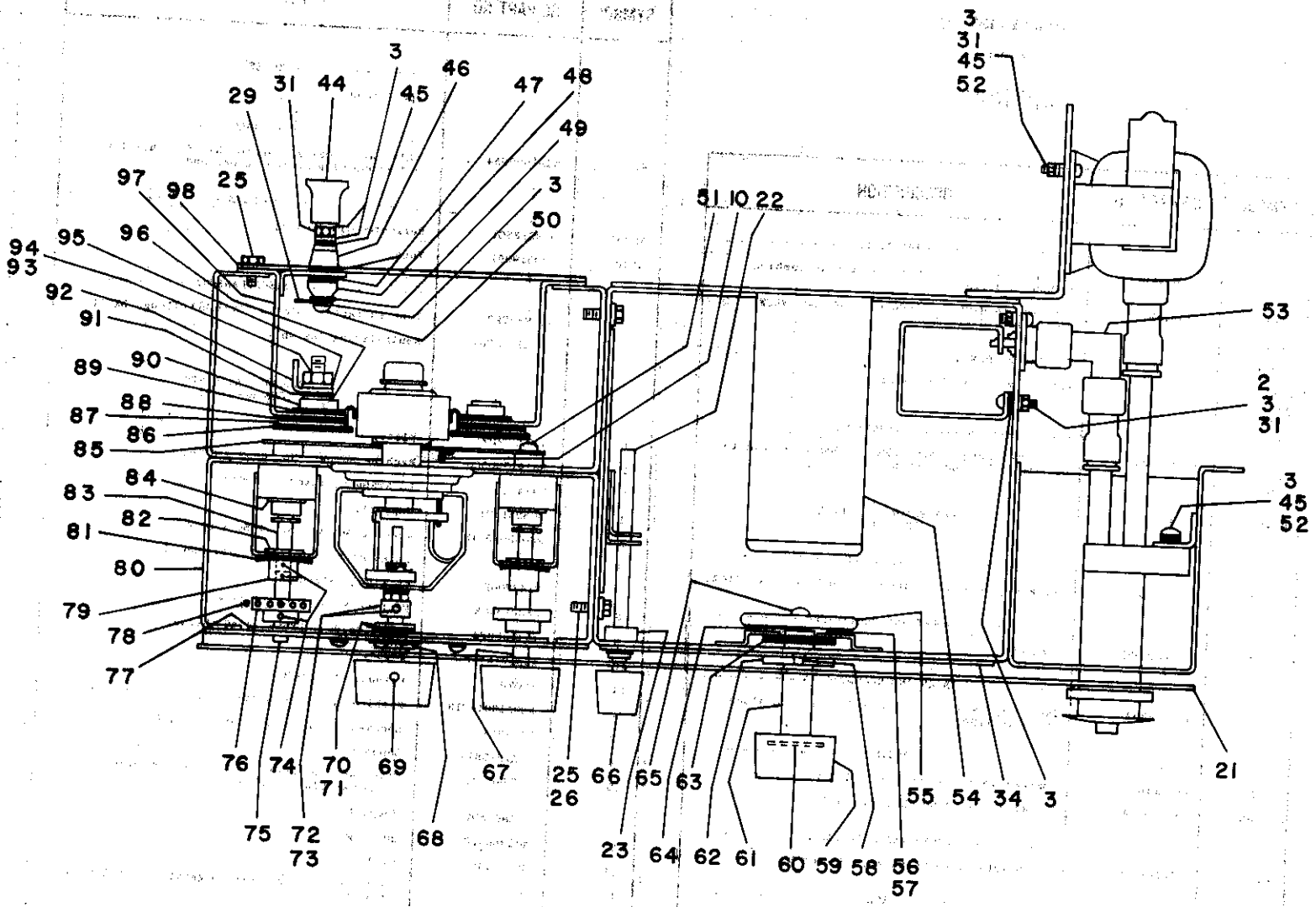
VIEW "A"



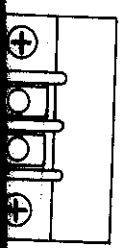


TB481

TOP VIEW



ITEM 103 TUBE EXTRACTOR TAPED TO BACK COVER



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MECHANICAL BREAKDOWN

POWER AMPLIFIER
MODEL 4EF6A1

(RC-3112)