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ISSUE

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CHECKED OR  
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BY FRANK BUDGETT'S  
DEPT.

V6

Ref. N. Carter for release

DATE <u>8-11-61</u>		TMC SPECIFICATION NO. <u>S-595</u>
SHEET <u>1</u> OF <u>23</u>		
LB NG AC 16	COMPILED	CHECKED
TITLE: <u>GPT-10K to GPT-40K MODIFICATION KIT</u>		(TMC KIT NO. KIT-105)
APPROVED		

TO BE UPDATED 

I. EQUIPMENT AFFECTED

AN/FRT-39 and - 39A transmitting set, radio, serial No's  
101 thru 196.

II. PURPOSE

Modification Kit to convert existing GPT-10K's to accept  
a 40 kilowatt (PEP) linear radio frequency amplifier.  
Kit will include all the necessary parts, instructions, and  
non-standard tools. Kit 105 covers GPT-10K (AN/FRT-39 and  
39A), serial numbers from 101 to 196.

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COMPILED	CHECKED	TITLE: GPT-10K to GPT-40K MODIFICATION KIT
APPROVED		(TMC KIT NO. KIT-105)

III. MATERIALS SUPPLIED IN KIT

ITEM NO.	DESCRIPTION	REFERENCES	
		PACKED IN CRATE NO.	USED ON SECTION
1a.	One each, TMC No. A2064 Load and Switch Assembly One each Bag, (contains hardware to mount A2064)	19	AX-251
1b.	Four each, TMC No. NTH2520BN14 Nut, Hex.	19	AX-251
1c.	Four each, TMC No. LWS25MRN Lockwasher, Split.	19	AX-251
2a.	One each, TMC No. MS-2338 Plate Bowl, Hole Cover. One each Bag, (contains hardware to mount MS-2338)	1	AX-250
2b.	<del>Twelve</del> each, TMC No. SCBS0832BN8 Screw, Machine.	1	AX-250
2c.	<del>Twelve</del> each, TMC No. LWE08MRN Lockwasher, External.	1	AX-250
2d.	<del>Twelve</del> each, TMC No. NTH0832BN10 Nut, Machine.	1	AX-250
3a.	One each, TMC No. MS-2315 Bracket Emergency Output.	1	AX-251
3b.	One each, TMC No. JJ-137 RF Connector, Female. One each Bag, (contains hardware to mount MS-2315 and JJ-137)	1	AX-251
3c.	Six each, TMC No. SCBS1032BN8 Screw, Machine	1	AX-251
3d.	Four each, TMC No. LWE10MRN Lockwasher, External.	1	AX-251
3e.	Eight each, TMC No. NTH1032BN12 Nut, Machine	1	AX-251
3f.	Two each, TMC No. SCFS1032BN8 Screw, Machine, Flathead.	1	AX-251

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ITEM NO.	DESCRIPTION	REFERENCES	
		PACKED IN CRATE NO.	USED ON SECTION
4a.	Two each, TMC No. SW-230 Switch, Interlock One each Bag, (contains hardware to mount SW-230).	14	AX-251
4b.	Four each, TMC No. SC-131-0632BN5 Screw, Undercut Flathead.	14	AX-251
5a.	One each, TMC No. AC-108 Counter, Mode One each Bag, (contains hardware to mount AC-108).	16	AX-251
5b.	One each, TMC No. GR-116 Gear, Bevel.	16	AX-251
5c.	Two each, TMC No. AN565D8H3 Setscrew.	16	AX-251
6a.	One each, TMC No. A-2065 Switch, Detent Assembly. One each Bag, (contains hardware to mount A-2065).	20	AX-251
6b.	Two each, TMC No. SCBS1032BN8 Screw, Machine.	20	AX-251
6c.	Two each, TMC No. LWE10MRN Lockwasher, External.	20	AX-251
6d.	Two each, TMC No. NTH1032BN12 Nut, Machine.	20	AX-251
7a.	One each, TMC No. PM-657 Shaft, Horizontal Drive.	1	AX-251
7b.	One each, TMC No. PM-639 Shaft, Vertical Drive One each Bag, (contains hardware and parts to make A-2064 operational).	1	AX-251
7c.	One each, TMC No. PM-658 Coupling, Shaft	1	AX-251
7d.	Two each, TMC No. SLHC1032SN4 Screw, Allen	1	AX-251

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COMPILED	CHECKED	TITLE: <u>GPT-10K to GPT-40K MODIFICATION KIT</u>	
APPROVED		(TMC KIT NO. KIT-105)	
ITEM NO.	DESCRIPTION	REFERENCES	
		PACKED IN CRATE NO.	USED ON SECTION
7e.	One each, TMC No. GR-145 Gear, Bevel 3/8 I.D.	1	AX-251
7f.	One each, TMC No. GR-155 Gear, Bevel 1/2 I.D.	1	AX-251
7g.	Four each, TMC No. AN565D8H4 Screw, Allen	1	AX-251
7h.	One each, TMC No. KY-102-2-0.75SS Key, 1/8 by 1/8.	1	AX-251
7i.	Five each, TMC No. BB-106-3 Washer, Bearing	1	AX-251
8a.	One each, TMC No. CA-532 Cable, Interconnect. One each Bag, (contains hardware and parts to mount CA-532.	1	AX-251
8b.	Three each, TMC No. CU-102-3 Clamp, Plastic.	1	AX-251
8c.	Three each, TMC No. SCFS0632BN8 Screw, Flathead Machine.	1	AX-251
8d.	Three each, TMC No. LWE06MRN Lockwasher, External.	1	AX-251
8e.	Three each, TMC No. NTH0632BN8 Nut, Machine.	1	AX-251
8f.	Seven (feet), TMC No. CD-101-1-MW Cord, Lacing.	1	AX-251
9a.	One each, TMC No. MS-2535 Strap, 40K R.F. Input.	1	AX-251
9b.	One each, TMC No. NTH2520BN14 Used to mount MS-2535 to unit.	1	AX-251
9c.	One each, TMC No. LWS25MRN Used to mount MS-2535 to unit.	1	AX-251

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APPROVED		(TMC KIT NO. KIT-105)	
ITEM NO.	DESCRIPTION	REFERENCES	
		PACKED IN CRATE NO.	USED ON SECTION
10a.	One each, TMC No. MS-1996 Base.	3	AX-251
10b.	One each, TMC No. MS-1999 Shield, Base, mounted to base for shipping purposes.	3	AX-251
10c.	Four each, TMC No. SCFS0832BN6 Screw, Machine, Flathead.	3	AX-251
10d.	One each, TMC No. MS-2326 Cover AC access, mounted to MS-1996.	3	AX-251
10e.	Two each, TMC No. MS-1850-S Door access, Steel.	3	AX-251
10f.	Fourteen each, TMC No. SCHH2520SS Nut, Hex., (to mount MS-1850-S).	3	AX-251
11a.	One each, TMC No. AP-106 Final Frame Assembly, shields MS-1993, MS-2186 included. One each Bag, (contains hardware to mount frame to frame)	14	KIT-105
11b.	Thirty each, TMC No. SCHH3118SN16 Screw, Machine.	2	AX-251
11c.	Thirty each, TMC No. LWS31MSN Lockwasher, Split.	2	AX-251
11d.	Ten each, TMC No. NTH3118SN20 Nut, Machine	2	AX-251
11e.	Thirty each, TMC No. FW31HBN Washer, Flat.	2	AX-251
12a.	One each, TMC No. AP-103 Power, Supply Final Assembly.	16	KIT-105
13a.	Three each, TMC No. TF-211 Transformer, HV. Hardware to mount transformer is mounted in existing holes in AP-103.	5,6,7	AP-103
13b.	Twelve each, TMC No. FW37HSN Washer, Flat, 3/8		AP-103
13c.	Twelve each, TMC No. LWS37MSN Lockwasher, Split, 3/8		AP-103
13d.	Twelve each, TMC No. SCHH3716SN32 Hexagon 3/8-16-2"		AP-103

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COMPILED	CHECKED	TITLE: <u>GPT-10K to GPT-40K MODIFICATION KIT</u>	
APPROVED		(TMC KIT NO. KIT-105)	
ITEM NO.	DESCRIPTION	REFERENCES	
		PACKED IN CRATE NO.	USED ON SECTION
14a.	One each, TMC No. PM-603 Bar, Support Transformer, PS Frame.	16	AP-103
15a.	Two each, TMC No. CP-107 Capacitor, Fixed Oil Filled, 4 mfd.	10	AP-103
16a.	One each, TMC No. TF-5016 Coil Filter Hardware to mount located on TF-5016.	11	AP-103
16b.	Four each, TMC No. FW31HBN Washer, Flat.		AP-103
16c.	Four each, TMC No. LWS31MSN Lockwasher, Split.		AP-103
16d.	Four each, TMC No. NTH3118SH Nut, Machine.		AP-103
17a.	Two each, TMC No. CB-149 Capacitor Vacuum, Variable 25-450 mmfd.	1	AX-244
17b.	Two each, TMC No. PM-588 Crated with CB-149.	1	AX-244
18a.	One each, TMC No. CB-158 Capacitor Vacuum Variable 30-750 mmfd.	1	AX-244
18b.	One each, TMC No. PM-588 Crated with CB-158	1	AX-244
18c.	One each, TMC No. CJ-102-1-21.00	1	AX-244
19a.	One each, TMC No. ML-6697	12	AX-244
20a.	One each, TMC No. AS-120 Assembly Bandswitch Packed with AS-120 is bag with mounting hardware:	15	AX-244
20b.	Six each, TMC No. SCBS1032BN24 Screw, Machine.		AX-244
20c.	Six each, TMC No. LWE10MRN Lockwasher, External.		AX-244
20d.	Six each, TMC No. NTH1032BN12 Nut, Machine.		AX-244

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APPROVED		(TMC KIT NO. KIT-105)		
ITEM NO.	DESCRIPTION	REFERENCES		
		PACKED IN CRATE NO.	USED ON SECTION	
21a.	One each, TMC No. MS-2018 Shield, Right Side, PS Frame, Shipped mounted to frame.	16	AP-103	
22a.	One each, TMC No. MS-2116 Cover, Right Side.	4	AX-251	
22b.	One each, TMC No. MS-2117 Cover, Left Side.	4	AX-251	
	One each Bag, (contains hardware to mount MS-2116, MS-2117 to Frames).	2	AX-251	
22c.	Twenty each, TMC No. SCHH3118SS24 Screw, Machine.	2	AX-251	
22d.	Twenty each, TMC No. FW31HRN Washer, Flat.	2	AX-251	
22e.	Twenty each, TMC No. LWS31HBN Lockwasher, Split.	2	AX-251	
22f.	Ten each, TMC No. NTH3118SN Nut, Machine.	2	AX-251	
22g.	Twenty-four each, TMC No. HB-101-6 Plug, Button, 7/8.	2	AX-251	
23a.	One each, TMC No. MS-2118 Door Front P.S. Frame	4	AX-251	
23b.	Two each, TMC No. MS-2037 Door Rear, Main and P.S. Frame.	4	AX-251	
23c.	One each, TMC No. MS-2119 Door, Front aux. Frame.	4	AX-251	
23d.	One each, TMC No. MS-2120-1 Door, Front Main Frame.	4	AX-251	
23e.	One each, TMC No. MS-2120-2 Door, Front PA Frame.	4	AX-251	
23f.	Forty-four each, TMC No. SCBS1032BN8 Screw, Machine.	2	AX-251	
24a.	One each, TMC No. TF-215 Transformer, Filament.	13	AP-106	



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APPROVED		<u>(TMC KIT NO. KIT-105)</u>		
ITEM NO.	DESCRIPTION	REFERENCES		
		PACKED IN CRATE NO.	USED ON SECTION	
25a.	One each, TMC No. AP-104 Bias Supply.	8	KIT-105	
26a.	One each, TMC No. AT-102 Antenna Tuning Unit.	18	KIT-105	
27a.	One each, TMC No. AX-212 Crowbar Drawer.	17	KIT-105	
28a.	One each, TMC No. AP-105 Rectifier Drawer.	9	KIT-105	
29a.	One each, TMC No. MS-1997 Cover, Top.	4	AX-251	
	One each Bag, (contains hardware for MS-1997)	2	AX-251	
29b.	Eleven each, TMC No. HB-101-6 Plug, Button, 7/8.	2	AX-251	
29c.	Ten each, TMC No. SCHH2520BN10 Bolt, Hexhead.	2	AX-251	
30a.	One each, TMC No. AR-116 Panel, Relay.	14	KIT-105	
31a.	One each, TMC No. MS-2442 Cover, Bowl Opening.	4	AX-251	
31b.	Four each, TMC No. SCBS0832BN8	2	AX-251	
31c.	Four each, TMC No. LWE08MRN	2	AX-251	
31d.	Four each, TMC No. NTH0832BN10	2	AX-251	
32a.	Three each, TMC No. MS-2042 Bracket, Door Mtg., Right Side.	2	AX-251	
32b.	Three each, TMC No. MS-2041 Bracket, Door Mtg., Left Side.	2	AX-251	
32c.	Twelve each, TMC No. SCHH2520BN8 Screw, Machine.	2	AX-251	
32d.	Twelve each, TMC No. FW25HRN Washer, Flat.	2	AX-251	
32e.	Twelve each, TMC No. LWS25MRN Lockwasher, External.	2	AX-251	

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ITEM NO.	DESCRIPTION	REFERENCES	
		PACKED IN CRATE NO.	USED ON SECTION
33a.	Four each, TMC No. MS-2122 Latch, Plate Bottom.	2	AX-251
33b.	Four each, TMC No. MS-2123 Bracket Bottom.	2	AX-251
33c.	Four each, TMC No. MS-1660 Latch Plate, Top.	2	AX-251
33d.	Four each, TMC No. MS-1661 Bracket, Top.	2	AX-251
33e.	One each, TMC No. MS-2533 Bracket, Alternate 3" top hats. One each Bag, (contains hardware to mount brackets and latches).	2	AX-251
33f.	Sixteen each, TMC No. SCFS1032BN8 Screw, Machine.	2	AX-251
33g.	Sixteen each, TMC No. NTH1032BN12 Nut, Machine.	2	AX-251
33h.	Sixteen each, TMC No. SCBS1032BN10 Screw, Machine.	2	AX-251
33i.	Sixteen each, TMC No. LW10MRN Lockwasher, External.	2	AX-251
33j.	Sixteen each, TMC No. FW10HBN Washer, Flat.	2	AX-251
33k.	Sixteen each, TMC No. FW25HBN Washer, Flat.	2	AX-251
34a.	One each, TMC No. MS-2052 Trim, Rear, Left Side PA Frame.	4	AX-251
34b.	One each, TMC No. MS-2051 Trim, Right Side, Rear, PA Frame.	4	AX-251
34c.	One each, TMC No. MS-1637 Trim, Hinged, Right Side Aux. Frame.	4	AX-251
34d.	One each, TMC No. MS-2025 Trim, Right Side, PS Frame.	4	AX-251

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ITEM NO.	DESCRIPTION	REFERENCES	
		PACKED IN CRATE NO.	USED ON SECTION
34e.	One each, TMC No. MS-2027 Trim, PS and PA Front.	4	AX-251
34f.	One each, TMC No. MS-2026 Trim, Front, Left Side, Main Frame.	4	AX-251
34g.	One each, TMC No. MS-2029 Trim Front, Bottom.	4	AX-251
34h.	One each, TMC No. MS-2028 Trim Front, Top.	4	AX-251
34i.	Two each, TMC No. MS-2053 Trim, Top and Bottom, Rear.	4	AX-251
34j.	One each, TMC No. MS-1671 Trim, Rear, PS Frame.	4	AX-251
34k.	One each, TMC No. MS-1636 Trim, Bottom.	4	AX-251
34L.	One each, TMC No. MS-1634 Trim, Left Side, Hinged Main Frame.	4	AX-251
34m.	One each, TMC No. MS-1920 Trim, Hinged, Aux. Frame.	4	AX-251
34n.	One each, TMC No. MS-1635 Trim, Front Top, 10K Section. One each Bag, (contains hardware to mount trims).	4	AX-251
34o.	Thirty-two each, TMC No. NT-108-5 Speed Nut.	4	AX-251
34p.	Fifty-four each, TMC No. SCBS0832BN6 Screw, Machine.	2	AX-251
35a.	Twelve each, TMC No. MS-2532 Top Hats, 2 inches. One each Bag, (contains hardware to mount MS-2532).	2	AX-251
35b.	Twelve each, TMC No. SCBS1032BN6 Screw, Machine.	2	AX-251
36a.	One each, TMC No. CO-106-1000-30C Capacitor, Fixed, Vacuum.	1	AX-251

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ITEM NO.	DESCRIPTION	REFERENCES	
		PACKED IN CRATE NO.	USED ON SECTION
37a.	One each, 3 inch Greenlee Chassis Punch.	2	AX-251
37b.	One each, 7/8 inch Greenlee Chassis Punch.	2	AX-251
37c.	Three each, 10-32 Taps.	2	AX-251
37d.	One each, Center Punch.	2	AX-251
37e.	One each, Countersink for 6-32 F.H.S.	2	AX-251
37f.	Two each, #21 Drill.	2	AX-251
37g.	Two each, 7/32 inch Drill.	2	AX-251
37h.	One each, 1/4 inch Drill.	2	AX-251
37i.	One each, 3/8 inch Drill.	2	AX-251
38a.	One each, TMC No. NP-360-3 Nameplate, Modification	1	AX-251

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## IV. TOOLS REQUIRED

A. To be provided by installing activity.

1. Pliers, 6 inch longnose.
2. Pliers, 6 inch diagonal Cutting.
3. Screwdriver, 5 inch.
4. Allen Wrench, 6-32.
5. Allen Wrench, 8-32.
6. Allen Wrench, 10-32.
7. Wrench open end, 3/8 - 7/16.
8. Wrench, crescent, 10 inch.
9. Wrench, socket, 7/16.
10. Wrenches, socket, 5/8.
11. Soldering Iron, 75 watt.

## V. PROCEDURES

Kit is assembled in five procedures.

1. Procedure #1.  
Preliminary dis-assembly of GPT-10K in field.
2. Procedure #2.  
Final Electro-Mechanical dis-assembly.
3. Procedure #3.  
Preparation & Alteration of field GPT-10K to accept modification.
4. Procedure #4.  
Preliminary re-assembly.
5. Procedure #5.  
Final re-assembly.

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## PROCEDURE NUMBER ONE

Case marked number two contains drawings, instructions and manual.

## REFERENCES

AX-214  
IN-1060 assembly instructions  
Drawing Model GPT-10K (old version)

or

IN-1098 assembly instructions  
Drawing Model GPT-10K (newer version)

1. Remove AC power from unit.
2. Remove relay panel, front window, driver draw and HVR draw from main frame and place aside for later use.
3. Referring to AX-214 10K should be place to allow clearance to accept the 40K amplifier section.
4. Referring to IN-1060,(old version) or IN-1098, (new version) remove the following:
  - A. MS-1646, door, front main frame - discard.
  - B. MS-1647, door, rear main frame - save.
  - C. MS-1460, panel, right side, main frame - discard.
  - D. MS-1696, on new version, MS-1697 on old version 10K, MS-1830, shield outer, right side main frame - save.
  - E. MS-1592, shield, inner, right side main frame - save.
  - F. Remove connecting leads for BI-106 (HV on) from terminal strip, E3003 mounted on the top of auxiliary frame behind meter panel. Now TS-138 can be removed with next step and save for later use.
  - G. MS-1699, panel, top - save.
  - H. MS-1648, door, rear, auxiliary frame - save.
  - I. MS-1594, shield rear, main frame - save.
  - J. MS-1605, bracket, connector, unbal. output - discard.
  - K. MS-1645, door, front, aux. frame - discard.
  - L. MS-1465, panel, left, aux. frame - discard.
  - M. MS-1634, trim, front, left side main frame - discard.
  - N. MS-1633, trim, front, right side main frame - discard.
  - O. MS-1636, trim, front, bottom - discard.
  - P. MS-1635, trim, front, top - discard.
  - Q. MS-1671, trim, rear, main frame - discard.

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## PROCEDURE NUMBER TWO

1. Referring to figure 2 remove MS-1544, main control panel R.F. shield and place aside for later use.
2. Referring to figure 2 remove connections from C927 PA tune capacitor, remove capacitor for later use.
3. Referring to figure 2 remove connections from C916, output balance capacitor, remove capacitor for later use.
4. Referring to figure 2 remove connections from C928, PA load capacitor, remove capacitor for later use.
5. Referring to figure 2 remove connections from C1019, and C1020.
6. Referring to figure 2 for disassembly of antenna tuner, remove MS-1538, bracket, support, right angle drive and leave in place for later use.
7. Referring to figure 2 remove MS-1537, bracket support, right angle drive and discard.
8. Referring to figure 2 remove PM-547, vertical drive shaft antenna tuner.
9. Remove output load knob on main control panel and save. Now referring to figure 2 remove PM-549 and discard.
10. Remove output load counter, discard counter but retain mounting hardware.
11. Remove all external connections from antenna tuner.
12. Located on top of GPT-10K main frame is four 1/4-20 bolts that hold antenna tuner in place, antenna tuner must be held in place while removing the 1/4-20 bolts, then the antenna tuner assembly can be removed to be replaced later by a switch and load assembly, A-2064.
13. Remove both bowl assemblies to be replaced later by blank cover, MS-2338.

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GPT-10K to GPT-40K MODIFICATION KIT

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## PROCEDURE NUMBER THREE

REFERENCE ID-244 Sheet 1 of 2  
ID-244 Sheet 2 of 2

1. Alteration for mounting of trims.  
On earlier models the mounting of the front trim strips was achieved by using 11/16 by 3/4 standoffs, later versions the standoff was replaced by three inch top hats, the latest version is now two inch top hats.
  - A. Units with 11/16 by 3/4 inch standoffs have to be modified to accept 2 inch top hats. Referring to ID-244 sheet 1 Drill and tap A holes with #21 Drill and 10-32 tap furnished by vendor, tools are located in Crate marked number one (1). On Detail E, drill and tap 10-32 hole (1/2 plus 1-3/8) 1-7/8 on units with two inch top hats. Units with 3 inch top hats drill and tap 1032 hole 1-3/8 inches.
2. Modify top cover MS-1699 with 7/32 drill, 7/8 inch greenlee Punch and 3/8 inch drill.
3. Shields.
  - A. Modify MS-1592, shield, right side, top inside, main frame with 3/8 inch drill, 7/8 inch, Greenlee, and 3 inch, Greenlee furnished with Kit.
  - B. On older version the outside shielding were achieved by having two shields MS-1696 and MS-1697, later version this shielding is done in one piece MS-1830. Both versions are indexed from the same point and require 3 (three) D holes modified with same tools as in step A of Paragraph 3.

## 4. Brackets and Interlocks.

REFERENCE ID-244 Sheet 2

- A. On MS-1548 Drill F and G holes to accept emergency output bracket.
- B. On MS-1547 Drill H and J holes.
- C. On Detail K and L Drill holes to accept the front and rear Interlock Switches.



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PROCEDURE NUMBER FOUR

REFERENCES ID-248 - Cable Installation  
 AX-250, (8 ID-247) Modification Assembly

NOTE: Crate marked number two contains all the parts to modify GPT-10K.

1. Remove MS-2338 (cover, bowl hole) from crate and mount using hardware in appropriately marked bag.
2. Mount A-2064, load and switch assembly in same four holes vacated by antenna tuner. Mounting hardware in appropriately marked bag.
3. Mount JJ-137, RF connector to bracket MS-2315 and then mount bracket to MS-1548 using hardware in appropriately marked bag.
4. Mount the two interlock switches SW-230 located with hardware in appropriately marked bag.
5. Crate #16 contains AC-108 and GR-116. Mount GR-116 on to AC-108, mode counter. Mount counter in place vacated by output load counter. Use same hardware in the dismantle of old counter to mount AC-108, REF. AX-247.
6. Referring to ID-248, mount CA-532, lacing to existing cable with CD-101-3 furnished by Kit. Clamp down cable extending to rear interlock using the three (3) CU-102-3 (cable clamps).
7. Mount A-2065, detent switch assembly using hardware in appropriately marked bag, in case #20. Mount output loading knob on PM-691 extending thru front panel. Set AC-108 to tune position, and WS-109 to tune position and mesh the two GR-116. Referring to WS-109 wiring detail wire CA-532 to WS-109 using resin core solder.
8. Mount PM-658 to PM-691, PM-658 is located in appropriately marked bag, in case #1. Connect PM-657 to PM-658, slide GR-145, (teeth facing toward the front) onto PM-657 behind GR-145 slide on five (5) BB-106-3 and leave loose. Insert PM-639 thru BB-121 mounted on MS-1538, place gear, GR-145 on PM-639 and insert key, KY-102-2-0.75SS and lock with set screws in GR-145.
9. Referring to AX-247, place wiper of mode switch to tune. The vertical drive shaft PM-639 keyway should align with the mode switch shaft keyway, insert item 7H located in case #1 KY-102-2-0.75SS and slide coupling, PM-638 down and tighten setscrews. Now tighten down MS-1538 as original, mesh gears GR-145 and GR-155 and tighten. Check work and tighten all loose hardware. By turning output loading knob from tune to oper. and then to emergency, both the small wafer WS-109 and the large mode switch must correspond to mode counter AC-108 indication..

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PROCEDURE NUMBER FOUR CONTINUED

10. Referring to ID-248, connect the two red leads on the rear interlock to common and normally open. On the front interlock connect the red leads to the common and the normally open.
11. Referring to ID-248, connect the Blue and Black/White wire marked 220 VAC to the 0-220 VAC primary position on T800, High Voltage Transformer.
12. Remove the bottom connections on the high voltage on and off switch, replace with White/Violet wire with lug. Remove lug from wires previously taken away from switch, connect the White/Yellow to them and insulate with tape.
13. Remove PA monitor from bottom of 4CX5000 tube compartment and connect IPA monitor cable to its place. Now referring to ID-248 connect RG-174 terminated with JJ-172, RF connector to the PA monitor cable. Now the PA monitor, monitors the 40KW amplifier and the IPA monitors the 10KW amplifier, the driver is no longer monitored.

Check the whole interconnect cable with ohmmeter referring to CK.

14. Replace PA tune, C927 and connect as usual. Replace PA load, C928, connect as usual, then connect lead from C911 to top with lead from bandswitch. Replace output balance, C916 and connect lead from operate position of mode switch to the top of C916.

Connect lead from emergency position of mode switch to JJ-137, emergency output connector.

Connect leads from L916 and L917 to C1019 and C1020 back of meter panel.

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PROCEDURE NUMBER FIVE

REFERENCE AX-214

1. Replace the modified inner and outer shield to the 10K.
2. Place item 10A, MS-1996 base next to 10K base, location is determined from items supplied list. Remove base shield item 10B, hardware is used for shipping purposes only. An AC interconnect cable is supplied with the 40K base, if the 10K base has an inlet AC hole the AC inputs can be fed from one source, if not the AC inputs have to be derived from two different sources. After proper grounding and routing of AC input, replace shield, MS-1999.
3. Mount item 11A, AP-106, final frame assembly next to GPT-10K main frame. With hardware supplied in appropriately marked bag, in case #2, bolt frames together, then bolt to base.
4. Mount item 12, AP-103, power supply final assembly to AP-106, and bolt, then bolt to base using hardware supplied in appropriately marked bag.
5. Remove bar support on right side of AP-103 and hardware from base of AP-103, and install the three (3) TF-211, high voltage transformers and bolt down with hardware previously removed. Reinstall bar support. Location of TF-211 can be obtained from item supplied in list.
6. In the rear of AP-103 are two shelves and mounting brackets to mount item #15, CP-107, 4 mfd oil filled fixed capacitor. The symbol numbers C8107, C8108 are stamped on frame. Packing location of CP-107's can be found on items supplied in list.
7. In rear of AP-103 below the shelves for the capacitors, item 16A, TF-5016, filter coil is to be mounted, hardware for mounting is located on TF-5016, packing location can found on items supplied list.
8. INSTALLATION OF VACUUM CAPACITORS, Item 17, C7301, C7303; item 18, C7329; and item 35, C7328.

The following is a step-by-step detail for the installation of the above mentioned capacitors. Refer, as required to Figure 4,5,6, page 4,5,11 of NAVSHIPS 93617 Instruction Manual for positioning of the capacitors and allied parts.

- A. Remove vacuum capacitors from packing Crate. Remove excess packing from capacitors.
- B. Turn capacitor adjustment shafts so that capacitors are at minimum Capacity. (Plates completely open).

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PROCEDURE NUMBER FIVE CONTINUED

- C. Set front panel TUNE and LOAD counters to 000.  
Refer to Figure 4,5,6, page 4,5,11 of NAVSHIPS 93167 for position-  
ing of capacitors.
- D. Insert C7301 into clamping ring. Mesh gears so that capacitor turns smoothly. Tighten clamping ring to secure bottom of capacitor.
- E. Insert C7329 into clamping ring. Feed drive chain over sprocket. Do not tighten clamping ring at this time.
- F. Insert C7303 into clamping ring. Feed drive chain over sprocket. Check for smooth operation of C7302 and 7303. Tighten both bottom clamping rings.  
NOTE: A slight up and down movement of the capacitors may be necessary to assure smooth operation.
- G. Place metal plate, with attached top clamping rings, over the tops of the capacitors. (See figure). Do not secure the plate at this time.
- H. Install C7328 in clamping ring which is in place on the wall of the final tube compartment. Do not tighten clamping ring at this time.
- I. Secure bracket and capacitor clamping ring to capacitor as shown in Figure mentioned above.
- J. Using hardware furnished, fasten bracket to metal plate which is resting on tops of other capacitors.
- K. Adjust height of plate so that C7328 is level and is not under strain.
- L. Tighten front and rear clamping rings of C7328. Tighten top clamping rings of other capacitors.
- M. Install L7312 as per supplied installation drawing.

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## PROCEDURE NUMBER FIVE CONTINUED

### 9. INSTALLATION OF BANDSWITCH ASSEMBLY, Item 20. Ref: ID-258

- A. Remove BANDSWITCH ASSEMBLY from Case. Remove excess packing material, tape, etc. from the assembly. Loose hardware will be found in a bag attached to the assembly.  
The BAND MCS switch on the front panel of the transmitter and the BANDSWITCH ASSEMBLY were set at 19 - 24 mcs before disassembly. (See ID-258 for correct placement of BANDSWITCH rotor, keyway alignment and front panel setting of BAND MCS switch). In the event that the BANDSWITCH rotor and the front panel reading do not agree, it becomes necessary to make them do so. Since it is impossible to change the position of the rotor. See ID-258 for details of how to defeat the bandswitch stop mechanism so that the BAND MCS front panel setting may be varied to match the BANDSWITCH ASSEMBLY rotor setting.
- B. Remove all packing material, tape, loose hardware etc. from the P.A. compartment of the transmitter.
- C. Place BANDSWITCH ASSEMBLY in the transmitter as per position shown in ID-258.  
Keyway in rotor shaft and bottom hub must line up for assembly. Bottom mounting screws for legs are part of the P.A. compartment. Align BANDSWITCH ASSEMBLY leg supports to fit screws.
- D. Connect LOAD CAPACITOR STRAP using the two 1/4-20 bolts supplied. See ID-258 for position of strap. Screws must be very tight for firm connection.
- E. Connect HF COIL to MAIN COIL using two long 1/4-20 bolts which are on one leg of the BANDSWITCH ASSEMBLY. Check other end of connecting strap (in tube compartment) for tight connection.
- F. Connect H.F. "L" section loop to C7325 at top of compartment.
- G. Tighten all screws at base of BANDSWITCH ASSEMBLY legs to secure assembly to transmitter.
- H. Using hardware supplied, fasten fiberglass AIR DUCT (furnished) to side of tube compartment and base of P.A. compartment.

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PROCEDURE NUMBER FIVE CONTINUED

10. INSTALLATION OF THE FINAL P.A. TUBE (ML-6697), Item 19. Ref: ID-258.

The following is a step-by-step procedure for the installation of the FINAL P.A. TUBE ML-6697.

Carefully unpack Case which contains ML-6697. Remove excess packing material, tape etc. from the tube. Inspect packing material for any loose items which it may contain. Set tube aside until called for in step 10H of these instructions.

The following steps are performed from the rear of the transmitter in the top compartment of the second frame from the left facing the rear of the transmitter.

- A. Remove and retain the two 10-32 screws which hold the TUBE BASE STRAP around the AIR DUCT TUBE BASE.
- B. Remove SPRING CLIPS at the base of the AIR DUCT TUBE BASE.
- C. Lift up and remove the AIR DUCT TUBE BASE from the transmitter.
- D. Remove and retain screws, nuts and lockwashers which hold front section of GRID SCREEN in place.
- E. Remove and retain front section of GRID SCREEN.
- F. Place AIR DUCT TUBE BASE on table which is strong enough to support at least 100 pounds.
- G. Remove six SPRING CONNECTORS and six L shaped ANODE CONNECTORS from top of the AIR DUCT TUBE BASE.  
NOTE: The AIR DUCT TUBE BASE is now ready to receive the FINAL TUBE.
- H. Holding FINAL TUBE with glass section up, slip tube very carefully into AIR DUCT TUBE BASE.
- I. Replace six SPRING CONNECTORS and six ANODE CONNECTORS at top of AIR DUCT TUBE BASE.  
NOTE: Due to tube manufacturers height tolerances, the ANODE CONNECTORS may have to be bent down slightly to make firm contact with FINAL TUBE.
- J. Using extreme caution replace FINAL TUBE and AIR DUCT TUBE BASE in the transmitter.  
NOTE: CAPACITOR STRAP at bottom of AIR DUCT TUBE BASE must be in position shown in ID-258.

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- K. Slip CAPACITOR C7326 into CAPACITOR SOCKET as shown in ID-258.
  - L. Slip CAPACITOR STRAP over top end of CAPACITOR C7326 as shown in ID-258.
  - M. Tighten top and bottom clamps to secure CAPACITOR C7326.
  - N. Replace 10-32 screws in TUBE BASE STRAP and tighten to secure AIR DUCT TUBE BASE.
  - P. Replace SPRING CLIPS at bottom of AIR DUCT TUBE BASE.
  - R. Place FILAMENT RINGS (furnished) over top of FINAL TUBE as shown in ID-258.
  - S. Tighten allen screws in FILAMENT RINGS for snug fit.  
NOTE: Due to possible damage to the FINAL TUBE, the FILAMENT RINGS must not be too tight. Consider snug fit to mean that FILAMENT RINGS cannot be slipped off by hand.
  - T. Loosen GRID RING as much as possible.
  - U. Replace front section of GRID SCREEN.  
NOTE: Before fastening GRID SCREEN in place, make sure GRID CONNECTORS are under GRID RING as shown in ID-258.
  - V. Replace and tighten all GRID SCREEN hardware.  
The FINAL TUBE is now ready for electrical testing.
11. Install item 24, TF-215, filament transformer in the base of AP-106, mounting hardware is located in mounting holes.
  12. Install item 25, AP-104, bias supply below main control panel in AP-106.
  13. Install item 26, AT-102, antenna tuning unit of AP-103 after installation of bowl assemblies located in crate.
  14. Install item 27, AX-212, crowbar drawer below antenna tuning unit.
  15. Install item 28, AP-105, rectifier drawer below crowbar drawer.
  16. Bring plug on CA-532 10K thru 3 inch hole on 10K outer shield and connect to J7103 on 10K interconnect box located above TF-215, filament transformer.

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17. Connect item 9, MS-2535, 40K RF input strap from the operate position to the 40K input, feedthru insulator NS-112; NS-112 is dismantle for shipping and is located in Box.
18. After all electrical and mechanical items are in place, it would be advisable to check the operation of all control circuits before the completion of procedure, that is, the mounting of doors, trims and panels.
19. Referring to AX-214, 40K assembly point mount items 21 thru 35. Mounting hardware is located with items involved.
20. Affix Modification nameplate, item No. 38a conveniently near existing system nameplate, on the 10KW Relay Panel Cover.