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TECHNICAL MANUAL

ORGANIZATIONAL/INTERMEDIATE MAINTENANCE
WITH
DEPOT OVERHAUL INSTRUCTIONS
AND
ILLUSTRATED PARTS BREAKDOWN

TRANSPONDER SET TEST SET
TS - 1843A/APX
(P/N 01A233750-21-11,-12)

(STEWART-WARNER)

(F33657-63-C-1265)

(F33657-71- C -0752)

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Page No.	Change No.
*Title	4
*A	4
i - iii	0
1-0	0
1-1 - 1-6	0
2-1	0
2-2 Blank	0
3-1/4-2 - 4-4	0
5-1 - 5-2	0
5-3	3
5-4	0
5-5	3
5-6 - 5-7/6-1	0
6-2	0
7-1	1
7-2 - 7-4	0
8-1 - 8-7	0
8-8	1
8-9 - 8-15	0
8-16 Blank	0
9-1 - 9-5	0
9-6	1
9-7 - 9-20	0
9-21	1
9-22	0
10-1/11-1 - 11-16	0
11-17	2
11-18 - 11-28	0
*11-29	4
11-30- 11-32	0
11-33	2
11-34 - 11-36	0
A-1	0
A-2 Blank	0
B-1 - B-4	0
FO-1	3
FO-2 Blank	0
FO-3	0
FO-4 Blank	0
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TABLE OF CONTENTS

Section		Page
	List of Illustrations	ii
	List of Tables	ii
	Introduction	iii
I	DESCRIPTION AND LEADING PARTICULARS	1-1
	1-1. General	1-1
	1-3. Purpose of Equipment	1-1
	1-5. Description of Equipment	1-1
	1-7. General Principles of Operation	1-1
	1-10. Installation	1-3
	1-12. Leading Particulars	1-3
	1-14. Semiconductor Complement	1-3
	1-16. Indexes of Publications (Army)	1-3
	1-19. Forms and Records (Army)	1-3
II	SHIPMENT AND LIMITED STORAGE AND DEMOLITION TO PREVENT ENEMY USE (Army Use Only)	2-1/2-2
	2-1. Shipment and Limited Storage	2-1/2-2
	2-4. Demolition of Material to Prevent Enemy Use	2-1/2-2
III	PREPARATION FOR MAINTENANCE	3-1/4-1
	3-1. General	3-1/4-1
	3-3. Preparation for Organizational Maintenance	3-1/4-1
	3-5. Preparation for Intermediate Maintenance.	3-1/4-1
IV	TEST EQUIPMENT AND TOOLS.	3-1/4-1
	4-1. General	3-1/4-1
	4-3. Test Equipment Required	3-1/4-1
	4-5. Special Tools Required	3-1/4-1
V	THEORY OF OPERATION	5-1
	5-1. General	5-1
	5-3. Test Point Identification	5-1
	5-6. Logic and Timing Diagram Analysis	5-1
	5-17. Detailed Circuit Analysis .	5-4
VI	DESCRIPTION OF SYSTEM TIE-IN OF EQUIPMENT	5-7/6-1
	6-1. General	5-7/6-1
	6-3. Equipment Tie-in	5-7/6-1
VII	CHECKOUT AND ANALYSIS	7-1
	7-1, General	7-1
	7-3. Checkout	7-1
	7-5. Comparator-Decoder (A4) Alignment	7-3
VIII	ORGANIZATIONAL AND INTERMEDIATE MAINTENANCE	8-1
	8-1. General	8-1
	8-3. Organizational Maintenance (Army Only)	8-1
	8-6. Intermediate Maintenance	8-1
IX	DEPOT OVERHAUL INSTRUCTIONS	9-1
	9-1. General Information	9-1
	9-3. Special Tools and Test . Equipment	9-1
	9-5. Disassembly	9-1
	9-8. Inspection, Repair and Replacement	9-2
	9-12. Testing	.9-3
	9-15. Waveguide Slotted Line MX-9052,/APMI-362 Adjustment	9-4
	9-17. TS-1843A,/APX Adjustment	9-4
	9-19. Radio Frequency Assembly (A1A1) Alignment	9-21
X	DEPOT MAINTENANCE (Army Use Only)	10-1/11-1
	10-1. General	10-1/11-1
	10-4. Depot Maintenance .	10-1/11-1
	10-9. References and Maintenance Allocation	10-1/11-1
XI	ILLUSTRATED PARTS BREAKDOWN.	10-1/11-1
	11-1. General	10-1/11-1
	11-5. Group Assembly Parts List	10-1/11-1
	11-18 Numerical	Index11-3
	11-60. Reference Designation Index	11-6
APPENDIX A	REFERENCES	A-1,A-2
APPENDIX B	MAINTENANCE ALLOCATION (Army Use Only)	B-1

LIST OF ILLUSTRATIONS

Figure	Title	Page
1-1	Test Set, Transponder Set TS-1843A APX and Mounting MT-3513A APX	1-0
1-2	Test Set Transponder Set TS-1843A, APX (Rear View), Service Adjustments	1-1
1-3	Test Set Transponder Set TS-1843A/APX, Outline Dimension Drawing .	1-2
4-1	Transponder Test Set Test Set, AN APM-362	4-3
4-2	Module Extractor Tool Fabrication	4-4
5-1	Timing Diagram for Mode Generator (A2)	5-2
6-1	System Tie-in	6-2
7-1	Bench Test Set-up	7-1
7-2	Bracket Spacing Alignment Set-up	7-2
7-3	Bracket Spacing Alignment Waveforms	7-3
8-1	Assembly Locations	8-2
8-2	Mode Generator Assembly (01A233756-21-11) (A2), Component Locations	8-3
8-3	Power Supply and Reply Evaluator Assembly (01A233757-21-11) (A3), Component Locations	8-4
8-4	Comparator-Decoder Assembly (01A233758-21-11, -12) (A4), Component Locations (Sheet 1 of 2)	8-5
8-4	Comparator-Decoder Assembly (01A233758-22-11) (A4), Component Locations (Sheet 2 of 2)	8-6
8-5	Test Point and Adjustment Locations	8-7
8-6	Troubleshooting Chart (Sheet 1 of 2)	8-8
8-6	Troubleshooting Chart (Sheet 2 of 2)	8-9
8-7	TS-1843A APX. Exploded View	8-14
8-8	Use of Module Extractor Tool.	8-15/8-16
9-1	Radio Frequency Assembly (A1A1), Removal	9-1
9-2	Radio Frequency Assembly (A1A1), Disassembly	9-2
9-3	Checkout Test Connections	9-3
9-4	Waveguide Slotted Line Adjustment	9-4
9-5	Troubleshooting Waveforms	9-16
9-6	Power Coupler Assembly (A1A1A2). Component Locations	9-17
9-7	Frequency Coupler Assembly (A1A1A3),Component Locations	9-17
9-8	Generator Coupler Assembly (A1A1A4), Component Locations	9-18
9-9	Generator Assembly (A1A1A5), Component Locations	9-18
9-10	Radio Frequency Assembly (A1A1) Alignment Set-up	9-21
11-1	Test Set. Transponder Set TS-1843A APX, Exploded View	11-10
11-2	Mode Generator Assembly (A2)	11-13
11-3.	Power Supply and Reply Evaluator Assembly (A3)	11-16
11-4.	Comparator-Decoder Assembly (A4) (Code A, B) (Sheet 1 of 2)	11-19
11-4.	Comparator-Decoder Assembly (A4) (Code C) (Sheet 2 of 2)	11-20
11-5.	Radio Frequency Assembly (A1A1)	11-23
FO-1	Logic Diagram	FO-1/FO-2
FO-2	Mode Generator (A2), Schematic Diagram	FO-3/FO-4
FO-3	Comparator-Decoder (A4), Schematic Diagram	FO-5/FO-6
FO-4	Power Supply and Reply Evaluator (A3), Schematic Diagram	FO-7/FO-8
FO-5	Main Frame Assembly (Al), Schematic Diagram	FO-9/FO-10
FO-6	Main Frame Assembly (Al), Wiring Diagram	FO-11/FO-12

LIST OF TABLES

Number	Title	Page
1-1	Leading Particulars	1-3
1-2	Semiconductor Complement	1-4
4-1	Standard Test Equipment Required	4-2
4-2	Special Test Equipment Required	4-3
4-3	Special Tools	4-3
8-1	Test Point Indications	8-10
8-2	Power Supply (A3), Troubleshooting	8-11
8-3	Comparator-Decoder (A4), Troubleshooting	8-11
8-4	Monitor Reply Evaluator (A3), Troubleshooting	8-12
8-5	Mode Generator (A2), Troubleshooting	8-12
8-6	In-Flight Test Mode Reply Evaluator (A3), Troubleshooting	8-13
9-1	Checkout	9-5
9-2	Troubleshooting	9-11
9-3	Adjustment	9-19
11-1	Abbreviations	11-2
11-2	Manufacturers' Codes	11-2

INTRODUCTION

This manual provides organization and Intermediate maintenance. depot overhaul instructions, and illustrated parts breakdown. The information contained herein includes description and leading particulars, major electrical characteristics, and functional theory of operation as well as equipment and module trouble analysis and maintenance.

This technical manual and the prime equipment covered herein is configured for interservice use and maintainability by direction of the Department of Defense AIMS System Program Office (DOD AIMS SPO). No changes shall be made to the equipment or the technical manual without the approval of the DOD AIMS SPO.

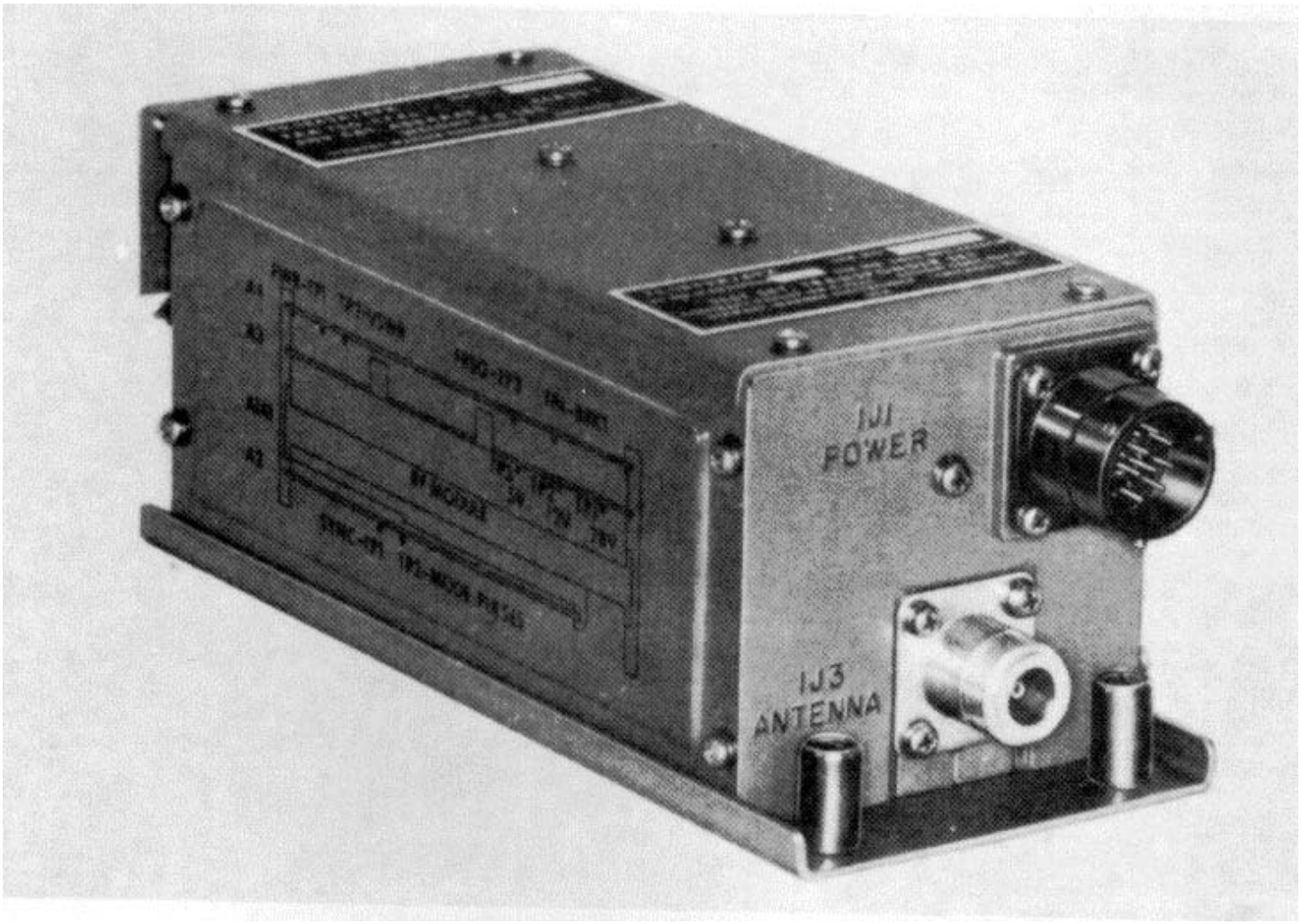


Figure 1-1. Test Set, Transponder Set TS-1843A APX and Mounting MT-3513A APX

SECTION I
DESCRIPTION AND LEADING PARTICULARS

1-1. GENERAL.

1-2. This technical manual consists of Instructions and procedures for use by experienced personnel in the performance of intermediate maintenance and depot overhaul of Test Set, Transponder Set TS1843A,,APX manufactured by Stewart-Warner Electronics under contracts F33657-68-C-1265 and F33657-71-C-0752 (figure 1-1). An illustrated parts breakdown is also provided in this manual.

1-3. PURPOSE OF EQUIPMENT.

1-4. The TS-1843A is designed to be used with an airborne SIF IFF transponder system. The Test Set evaluates the performance characteristics of the transponder system and provides a go, no-go indication. The Test Set operates in either of two modes: monitor or test.

1-5. DESCRIPTION OF EQUIPMENT.

1-6. The TS-1843A is comprised of four major assemblies: mode generator assembly (A2), comparator-decoder assembly (A4), and power supply and reply evaluator assembly (A3), all of which plug-in to the main frame assembly (Al). The overall dimensions of the TS-1843A are approximately 7-55 64 by 3 by 3-3 64 In.; weight is approximately 2 lb. 8 oz. Located on the ends of the main frame assembly are two R-F connectors, a power and control connector, and three service adjustments. The service adjustments are located under an access cover (figure 1-2). The R-F connectors are utilized to connect the test set in a direct line between the antenna system and the Receiver-Transmitter. The power and control connector serve as a means of connection from the Transponder Set Control unit and primary power source to the test set. The test set is enclosed by four plates which are mounted directly to the main frame assembly. The test set is secured to the aircraft by a mount assembly (MT-3513A APX). The mount assembly measures approximately 7-25 64 by 3-1 4 in. and weighs approximately 0.8 oz. The test set Is so designed that by removing and rotating the bottom plate 180° and remounts the plate. the test set can be secured to
the mount assembly in the opposite direction.

1-7. GENERAL PRINCIPLES OF OPERATION.

1-8. GO, NO-GO CHECK. The TS-1843A evaluates the following characteristics of the transponder on a go. no-go basis.

a. Receiver sensitivity
b. Receiver frequency
c. Decoding
d. Reply frequency
e. Reply-code bracket-pulse spacing

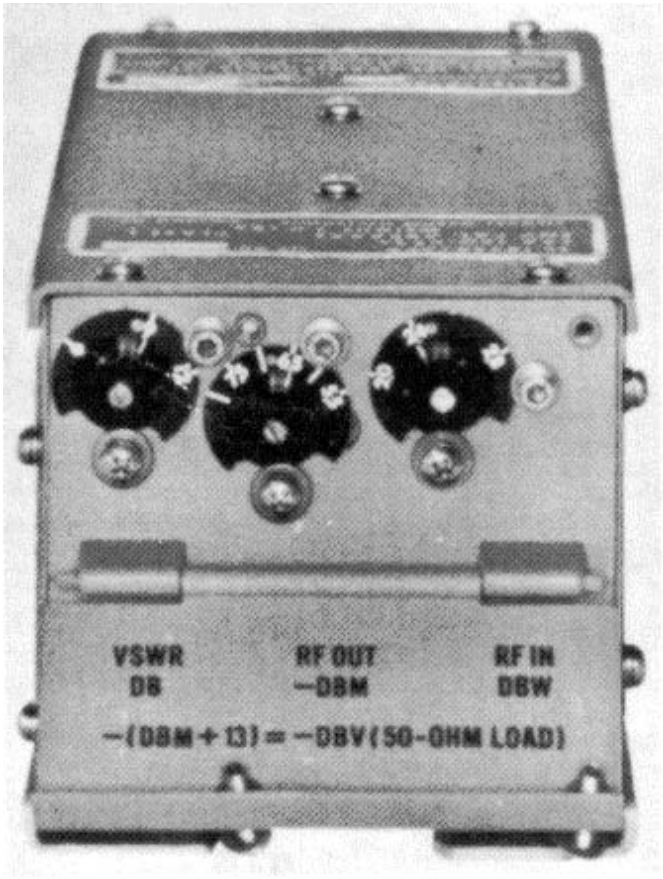


Figure 1-2. Test Set Transponder Set TS-1843A, APX (Rear View), Service Adjustments

f. Reply peak-pulse power
g. Antenna VSWR
h. Reply rate (per cent)

The above characteristics must be within a specified set of limits to achieve a go condition. If any one or more of these characteristics fall to fall within the specified limits, a no-go condition will result. In the test function a go condition is indicated by an Illuminated indicator lamp located on the associated Transponder Set Control. In the monitor function, a go indication is determined by the indicator lamp illuminating for a minimum of two seconds and then extinguishing. This process will be repeated as long as there Is a proper input being applied to the test set. A no-go condition is indicated by failure of the indicator lamp to illuminate.

1-9. IN-FLIGHT FUNCTION. The TS-1843Aprovides the following dual functions while in flight.

a. Test Function. The test set, when functioning as an in-flight tester, generates R-F interrogation pulse pairs upon activation of momentary contact switches

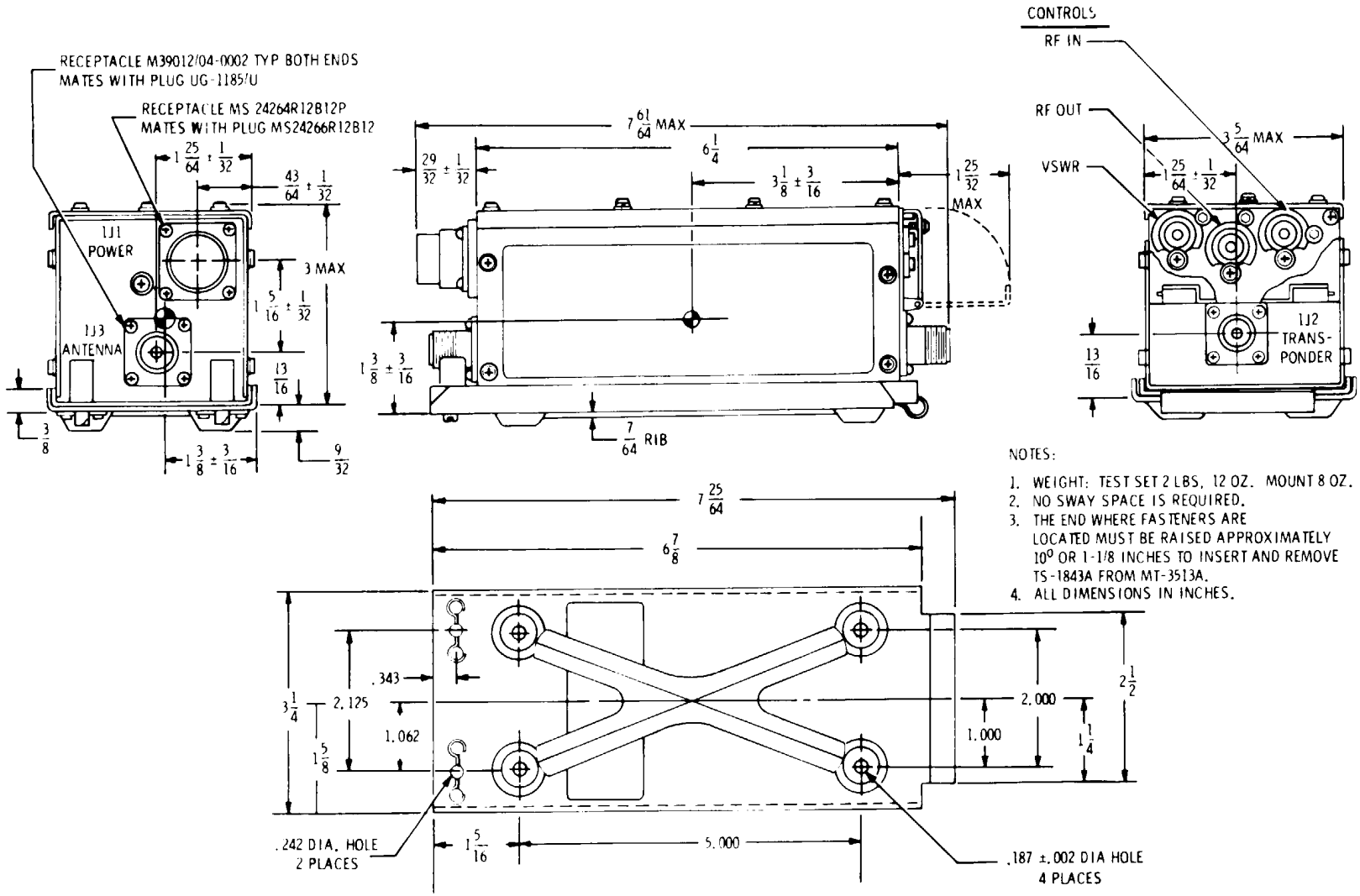


Figure 1-3. Test Set Transponder Set TS-13.13A/APX. Outline Dimensions Drawing

on the associated Transponder Set Control (MODE 1, 2. 3 A or C in TEST position). These Interrogation pulses are routed to the transponder, which in turn will reply If the receiver frequency, sensitivity, and decoding are proper. The test set will receive the transponder reply and proceed to analyze the reply for proper bracket pulse spacing, frequency, power, reply rate and antenna VSWR. If the transponder reply is within the desired tolerances, a go indication is given. An improper reply will give a no-go indication.

b. Monitor Function. The test set, when functioning as a monitoring device, analyzes the transponder replies to interrogations transmitted by external interrogators. The transponder replies are analyzed for proper bracket pulse spacing. frequency, power and antenna VSWR. The evaluation of the transponder Is indicated by a GO. NO-GO indication.

1-10. INSTALLATION.

1-11. The installation instructions for the TS-1843A (figure 1-3) are not specified, due to the inconsistency in the type of aircraft that the test set is to be Installed in. The variety of associated transponders that can be used with the test set also greatly affect the installation instructions. For detailed installation instructions. reference can be made to the specific aircraft and transponder manuals.

1-12. LEADING PARTICULARS.

1-13. The leading particulars pertinent to the test set are listed in table 1-1.

1-14. SEMICONDUCTOR COMPLEMENT.

1-15. A list of the semiconductors used in the test set, along with their respective reference designation part number, and function, are listed in table 1-2.

1-16. INDEXES OF PUBLICATIONS (ARMY).

1-17. Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions. changes, or additional publications pertaining to the equipment.

1-18. Refer to the latest issue of DA Pam 310-7 to determine whether there are modification work orders (MWOs) pertaining to the equipment.

1-19. FORM AND RECORDS (ARMY).

1-20. REPORTS OF MAINTENANCE AND UNSATISFACTORY EQUIPMENT. Use equipment forms and records In accordance with Instructions In TM38-750.

1-21. REPORT OF PACKAGING AND HANDLING DEFICIENCIES (ARMY). Fill out and forward DD Form 6 (Reporting of Packaging and Handling Deficiencies) as prescribed In AR 700-58.

1-22. DISCREPANCY IN SHIPMENT REPORT (DISREP) (SF 361) (ARMY). Fill out and forward Discrepancy In Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38.

1-23. REPORTING OF IMPROVEMENTS FOR EQUIPMENT MANUALS (ARMY). Reporting of errors. omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028. DA Form 2028 will be forwarded direct to Commanding General. U.S. Army Electronics Command, ATTN: AMSEL-ME-NMP-AN, Fort Monmouth. New Jersey 07703.

Table 1-1. Leading Particulars

ITEM		CHARACTERISTICS	TOLERANCE
Interrogation Output			
Frequency		1030 MHz	±0.5 MHz
Modes 1		2 pulses spaced 3 usec	±0.1 usec
2		2 pulses spaced 5 usec	±0.1 usec
3 A		2 pulses spaced 8 usec	±0.1 usec
C		2 pulses spaced 21 usec	±0.1 usec
Output level		-54 to -81 dbm (-67 to -94 dbv)	±2 db
Rate		400 pps	±50 pps
Reply Analyzer			
Frequency	GO	1090 MHz	±3.0 MHz
	NO-GO	1090 MHz ±4.0 MHz	
Bracket Spacing	GO	20.3 usec ±0.15 usec	
	NO-GO	20.3 usec	±0.3 usec
Power	GO	20 to 28 dbw	+2 dbw or greater than control setting (RF IN. figure 1-2)
	NO-GO	20 to 28 dbw	-2 dbw or less of control setting (RF IN, figure 1-2)

Table 1-1. Leading Particulars (Continued)

ITEM	CHARACTERISTICS	TOLERANCE
Antenna System VSWR		
GO	Dial set at 6	±1.5 db
	Dial set at 9	±1.5 db
	Dial set at 12	±2.0 db
NO-GO	Dial set at 6	7.5 db or greater
	Dial set at 9	10.5 db or greater
	Dial set at 12	14.0 db or greater
Primary Power	Nominal: 27.5 vdc Limits: 21 to 29 vdc	15 W max.
Secondary Power	-11.7 vdc	±0.3 V
	+ 5.1 vdc	±0.3 V
Weight		
TS-1843A APX	2 lb. 12 oz.	
MT-3513A APX	8 oz.	
Dimensions		
TS-1843A APX	Height: 3 in. Width: 3-3 64 in. Length: 7-61 '64 in.	
MT-3513A APX 7	-25 64 by 3-1 4 in. overall	
Service Conditions		
Altitude	100.000 ft.	
Temperature		
Operation	-54°C to +95-C	
Operating with Degradation of Performance	-95°C to 125 C	
Non-operating	-64°C to +150°C	
Humidity	100 percent	
Vibration	MIL-R-5400G Curve IV	

Table 1-2. Semiconductor Complement

REFERENCE DESIGNATION	PART NUMBER	FUNCTION
Main Frame Assembly Al		
A1A1CR1	5082-2800	VSWR Detector
A1A2CR1	5082-2800	Power Detector
A1A3CR1	5082-2800	Frequency Detector
A1A4CR1	5082-0112	Varactor Multiplier
A1A4CR2	MA-47041	Pin Modulator
A1A5CR1	1N914	Gate Input
A1A5Q1	2N706	Oscillator
A2Q1	2N4231	Series DC Regulator
A4A1CR1	1N914	Diode OR Circuit
A4A1CR2	1N914	Diode OR Circuit
A4A1CR3	1N914	Diode OR Circuit
A4A1CR4	1N914	Diode OR Circuit
A4A1CR5	1N914	Diode OR Circuit
A4A2CR1	1N914	Limiting Switch

Table 1-2. Semiconductor Complement (Continued)

REFERENCE DESIGNATION	PART NUMBER	FUNCTION
	Mode Generator Assembly A2	
A1	SW930-1P	Dual 4 Input NAND with AND Expansion Terminals
A2	SW936-1P	Hex Inverter
A3	SW946-1P	Quadruple 2 Input NAND
A4	SW705-1P	Dual JK Flip-Flop
A5	SW705-1P	Dual JK Flip-Flop
A6	SW705-1P	Dual JK Flip-Flop
A7	SW705-1P	Dual JK Flip-Flop
A8	SW778-1P	Dual 4 Input NAND/GATE
A9	SW778-1P	Dual 4 Input NAND/GATE
A10	SW962-1P	Triple 3 Input NAND
A11	SW930-1P	Dual 4 Input NAND with AND Expansion Terminals
Q1	2N1671	400 Hz Oscillator
Q2	2N706	Trigger Amplifier
Q3	2N706	Squaring Amplifier
Q4	2N706	Pulse Amplifier
Q5	2N706	DC Regulator
Q6	2N706	Output Amplifier
	Power Supply and Reply Evaluator Assembly A3	
CR1	UZ7836L	Transient Diode
CR2	1N3826A	5.1 V Zener Diode
CR3	lN941B	11.8 V Zener Diode
CR4	1N914	Compensating Diode
CR5	1N914	Compensating Diode
CR6	1N914	Gate Control Diode
CR7	1N914	Charging Diode
CR8	1N914	Charging Diode
CR9	1N914	Not Used
CR10	1N914	Gate Control Diode
CR11	1N914	Gate Control Diode
CR12	1N914	Diode OR Circuit
CR13	1N914	Diode OR Circuit
CR14	1N914	Discharge Diode
CR15	1N914	Compensating Diode
Q1	2N2219	Base Drive Ret. Amplifier
Q2	2N2219	Power Control Switch
Q3	2N706	Comparator Input Amplifier
Q4	2N4948	Counter
Q5	2N706	Flip- Flop
Q6	2N706	Flip- Flop
Q7	2N706	Test Gate Control Switch
Q8	2N706	Monitor Gate Control Switch
Q9	2N706	Integrator Follower
Q10	2N706	Schmitt Trigger
Q11	2N706	Schmitt Trigger
Q12	2N708	Reply Amplifier
Q13	2N718A	Reply Inverter
Q14	2N2906	Reply Light Driver

Table 1-2. Semiconductor Complement (Continued)

REFERENCE DESIGNATION	PART NUMBER	FUNCTION
Comparator-Decoder Assembly A4		
A1	SW946-1P	Quadruple 2 Input NAND
A2	SW951-1P	Monostable Multivibrator
A3	SW962-1P	Triple 3 Input NAND
A4	SW951-1P	Monostable Multivibrator
A5	SW951-1P	Monostable Multivibrator
A6	SW728-1P	Monostable Multivibrator
CR1	1N914	Gate Control Diode
CR2	1N914	Compensating Diode
CR3	1N914	Compensating Diode
CR4	1N914	Pulse Clipper
Q1	2N706	Comparator Power
Q2	2N706	Comparator VSWR
Q3	2N706	Emitter Follower
Q4	2N706	Output Amplifier
Q5	2N2222	Oscillator. Ringing
Q6	2N706	Emitter Follower
Q7	2N706	Monostable Pulse Generator
Q8	2N706	Monostable Pulse Generator
Q9	2N706	Comparator, Power
Q10	2N706	Comparator. Frequency
Q11	2N706	Emitter Follower
Q12	2N706	Output Amplifier
Q13	2N706	Schmitt Trigger
Q14	2N706	Schmitt Trigger
Q15	2N706	Amplifier
Q16	2N706	Pulse Shaper
Q17	2N706	Amplifier
Q18	2N706	Amplifier

SECTION II

SHIPMENT AND LIMITED STORAGE AND DEMOLITION
TO PREVENT ENEMY USE
(ARMY USE ONLY)

2-1. SHIPMENT AND LIMITED STORAGE.

2-2. DISASSEMBLY OF EQUIPMENT. Prepare the TS-1843A APX for shipment and storage per paragraph 3-4.

2-3. REPACKING FOR SHIPMENT AND LIMITED STORAGE. The exact procedure for repackaging depends on the materials available and the conditions under which the equipment Is to be shipped (b. below) or stored (c, below). Adapt the procedures outlined below whenever circumstances permit.

a. Material Requirements. The following materials are required for packaging the TS-1843A APX for shipment. For stock numbers of materials, consult applicable manual.

Material	Quantity
Carton, corrugated. type 1. class II	
Material, filler type 2, class A.	
Tape. gummed paper	

b. Packaging for Shipment. Use the original packing materials if available; if not. proceed as follows:

1. Place a layer of filler material on the bottom of the corrugated carton.
2. Cushion the equipment on all outside surfaces with pads of filler material.
3. Place the cushioned equipment within the corrugated carton and add additional filler material as required.
4. Secure the carton with gummed tape.

c. Packaging for Limited Storage. The TS-1843A, APX case provides adequate protection for its contents and is sufficiently sturdy to require no additional protection during limited storage.

2-4. DEMOLITION OF MATERIAL TO PREVENT ENEMY USE.

2-5. AUTHORITY FOR DEMOLITION. The demolition procedures given in paragraph 2-6 will be used to prevent the enemy from using or salvaging this equipment. Demolition of the equipment will be accomplished only upon the order of the commander.

2-6. METHODS OF DESTRUCTION. Any of the methods of destruction given below may be used. The time available and the tactical situation will determine the method to be used when destruction of the equipment is ordered.

1. Smash. Smash the front panel case cover, switches, and controls; open the case, remove and smash all circuit boards and other components; use sledges, axes. hammers. crowbars, and any other heavy tool available.
2. Cut. Cut the interconnecting cables; use axes. handaxes. machetes, or other similar tools.

WARNING

Be extremely careful with explosives and incendiary devices. Use these items only when the need is urgent.

3. Burn. Burn the technical manual first. Burn as much of the equipment as possible; use gasoline, oil, flame throwers, and similar tools. Use incendiary grenades to complete the destruction of unit interiors.
4. Bend. Bend panels and cabinets.
5. Explode. If explosives are necessary, use firearms. grenades, or TNT.
6. Dispose. Bury or scatter the destroyed parts in slit trenches or foxholes, or throw them into nearby streams.

SECTION III

PREPARATION FOR MAINTENANCE

3-1. GENERAL.

3-2 This section contains information pertinent to preparation of the test set prior to performing maintenance procedures specified in following sections of this manual.

3-3. PREPARATION FOR ORGANIZATIONAL MAINTENANCE.

CAUTION

A spring wedge secures the rear of the unit to the mount. To avoid damage to the unit and/ or mount during removal or installation, the front of the unit must be raised until the unit clears the spring wedge.

3-4. If the TS-1843A is installed in an aircraft, disconnect all interconnecting cables and loosen the two Dzus fasteners at the front of the case to disengage the unit from the mount at that point. Slightly raise the front of the unit and pull forward until the test set is disengaged from the mount and can be removed.

3-5. PREPARATION FOR INTERMEDIATE MAINTENANCE.

3-6. Place the test set on a bench and remove the eleven screws attaching the bottom cover to the main frame assembly. Remove bottom cover. Next, remove the six screws and associated locking washers attaching the top cover to the main frame assembly. Remove the top cover. Replace two screws holding interconnecting board assembly to the RF module casting. The test set is now ready for maintenance.

SECTION IV

TEST EQUIPMENT AND SPECIAL TOOLS

4-1. GENERAL.

4-2. This section lists all special tools, and test equipment required to perform the disassembly, reassembly, testing, and alignment procedures specified in following sections of this manual.

4-3. TEST EQUIPMENT REQUIRED.

4-4. Standard test equipment required for maintenance of TS-1843A are listed in table 4-1; equivalent test equipment may be used. Special test equipment required are listed in table 4-2 and illustrated in figures 4-1 and 4-2.

4-5. SPECIAL TOOLS REQUIRED.

4-6. Special tools required for maintenance are listed in table 4-3. In addition an extraction tool, MS24256R-20, insertion tool, MS24256-A-20, crimping tool, MS3191 (CLASS 1), and crimping tool checker, MS3196-20-A (or equivalent) are standard tools required to extract and replace contacts in the MS24264 type electrical connector. A module extractor for the removal of modules A2 through A4 must be fabricated as shown in figure 4-3.

Table 4-1. Standard Test Equipment Required

Name	AN Type Designation			Alternate	Use
	Air Force	Navy	Army		Intermediate and Depot
Transponder Set	AN/APX-64(V) or AN/APX-72 Receiver-Trans-mitter	AN/APX-64(V) or AN/APX-72 Receiver-Trans-mitter	RT-859/APX-72 AN/APX-64(V) (Alternate)	RT-859/APX-72	Hot mock-up operation.
Transponder Test Set	AN/APM-123(V)-3 maintenance.	AN/APM-123(V)-2	AN/APM-123(V)-1	Organizational level	
Slotted Line (2 required)	Hewlett-Packard 805A	Hewlett-Packard 805A	IM-92( ) 805C	Hewlett-Packard Depot.	VSWR simulation/
Standing Wave Indicator	AN/USM-37( ) 415BR	Hewlett-Packard 415B	IM-175/U Depot.	Hewlett-Packard	VSWR measurements/
R. F. Termination, 50 ohms	Weinschel 569A mediate and Depot.	Weinschel 569A	Load simulation/Inter-		
Test Set, Trans-ponder Set AN/APM-239A	AN/APM-239A of interconnection/ Intermediate.	AN/APM-239A	AN/APM-239A	Provides power and means	
Multimeter AN/PSM-6 (Alternate)	AN/PSM-6 Intermediate and Depot.	AN/PSM-6	AN/USM-223	AN/USM-223	Voltage measurement/
Oscilloscope with 1A2 and 1L30 plug-into	MIL-0-9960 mediate and Depot.	AN/USM-140	AN/USM-281A	Tektronix 545A	Troubleshooting/Inter-
Radar Test Set Intermediate and Depot.	AN/UPM-98A	AN/UPM-98A	AN/UPM-98A	AN/UPM-137	General servicing/
Double Stub Tuner 872A	Microlab N300A Depot checkout.	Microlab N300A	Hewlett-Packard	VSWR Measurement/	
Signal Generator 612A	MIL-G-9997	MIL-G-9997	Hewlett-Packard	Depot checkout.	
Frequency Counter 524D	MIL-C-9988A ment.	MIL-C-9988A	MIL-C-9988A	Hewlett-Packard	Depot frequency measure-

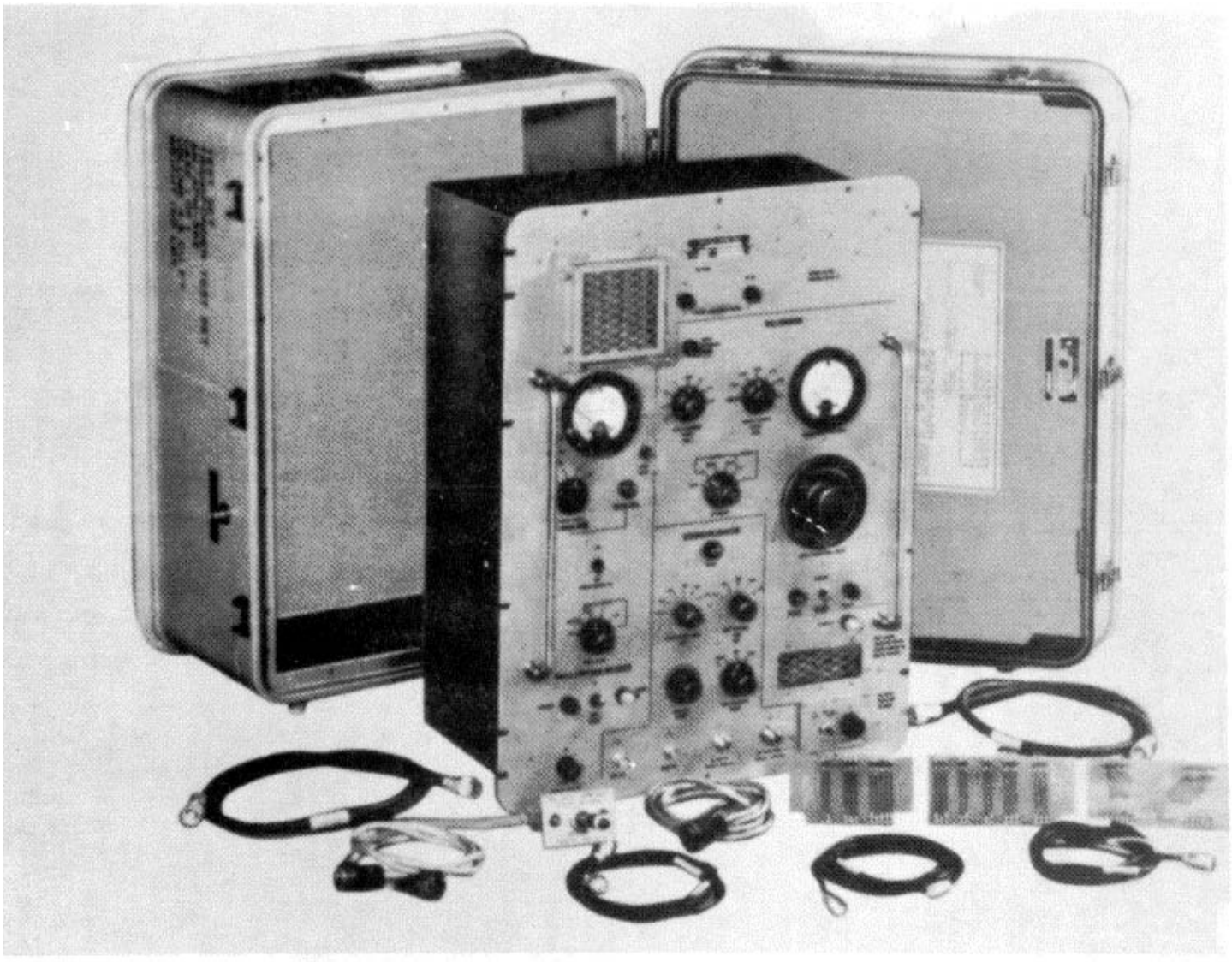


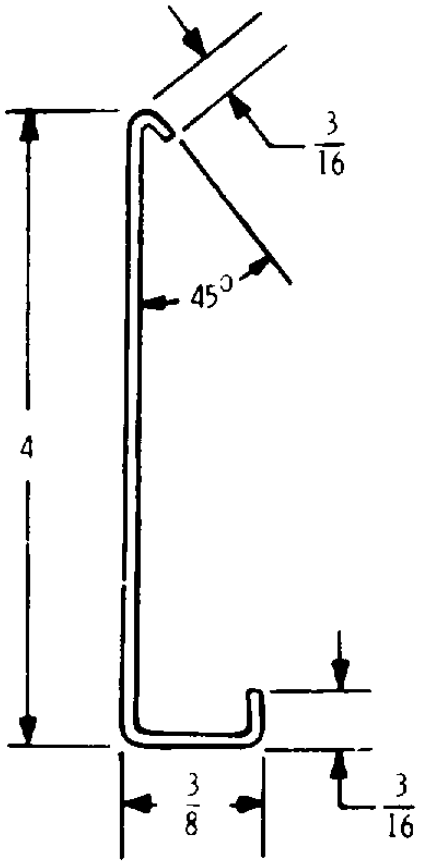
Figure 4-1. Transponder Test Set Test Set. AN APM-362

Table 4-2. Special Test Equipment Required

Figure No.	Name	Mfr. Part No.	Use
4-1	Transponder Test Set Test Set, AN/APM-362	01a236150	Complete bench check of TS-1843A/APX at depot.

Table 4-3. Special Tool

PART NUMBER	NOMENCI.ATURIE	USE AND APPIICATION
01A236185-21-11	Electronic Test Extender Card MX-9053 APM-362	Extension for A2 module
01A236186-21-11	Electronic Test Extender Card MX-9054 APM-362	Extension for A3 module
01A236187-21-11	Electronic Test Extender Card MX-9055 APM-362	Extension for A4 module



NOTES: 1. MATERIAL: BRAZING ROD, 1/16 IN. DIAMETER, GAUGE 6 OR EQUIVALENT.
2. ALL DIMENSIONS ARE IN INCHES.

Figure 4-2. Module Extractor Tool Fabrication

SECTION V
THEORY OF OPERATION
INDEX OF DIAGRAMS

Figure	Title	Page
5-1	Timing Diagram for Mode Generator (A2)	5-2

5-1. GENERAL.
5-2. This section contains the circuit description of the TS-1843A APX. The circuit description is divided into logic discussion covering the In-Flight Test mode and Monitor mode, and detailed circuit analysis of the various circuitry.

5-3. TEST POINT IDENTIFICATION.
5-4. MAJOR TEST POINTS. The major test points of the TS-1843A APX are identified on schematic diagrams by a star-encircled arabic numeral. These major test points represent the primary inputs and outputs of the major assemblies of the TS-1843A APX.
5-5. SECONDARY TEST POINTS. The secondary test points of the TS-1843A APX are identified on schematic diagrams by all encircled alphabetical character. These secondary test points represent those primary test points which will enable a qualified technician to effectively troubleshoot a particular circuit within an assembly.
5-6. LOGIC AND TIMING DIAGRAM ANALYSIS (See figures FO-1 and 5-1).
5-7. During the In-Flight Test mode of operation. the test set generates interrogation pulse pairs In the desired mode and applies this signal at a preset power level to the aircraft transponder at a frequency of 1030 ±0.5 MHz. The test set then analyzes the transponder replies to assure that the power level, reply center frequency. l)racket pulse spacing. reply percentage. and the VSWR of the antenna circuit are all above the preset minimum acceptable standard. If all parameters are within the preset limits, the test set causes a TEST lamp on the external control unit to illuminate. indicating a go indicator. If any of the above parameters are not within prescribed limits. the TEST lamp will not Illuminate indicating that a no-go (improper operation) condition exists. Since the basic operation of the In-Flight Test mode is the same for all modes, the following functional discussion will cover only the Mode 1 operation.
5-8. Placing the RAD TEST-MON switch in OUT position and MODE 1 switch on the control unit in the TEST position, two basic functions are initiated: (1) Actuating the MODE 1 switch to the TEST position grounds the switch lead to the power supply and places the test set In an energized state. This same action can also be accomplished by placing the RAD TEST-MON switch of the control unit In MON position. (2) Simultaneously. when the switch lead to the power supply is grounded, one of the four input leads to mode enable NAND gate (A2AlA) is grounded. A2A1A serves as an input enabling gate for the mode generator (A2). The output of A2A1A is routed to A3Q8 of the reply evaluator circuitry which provides a low path to ground for A3Q3 preventing operation of the monitor circuitry and allows RF transmission. The same output of A2A1A is simultaneously routed to the PRF enable NAND gate, A2A3A.
5-9. At the same instant of time when the MODE 1 switch is placed in the TEST position, the 400 PRF generator is energized. The output of the PRF generator is inverted and then routed to the PRF enable NAND gate. The output of the PRF enable NAND gate is a trigger which triggers the clock gate, A2A4. A2A4 provides a low output to the test gate control switch A3Q7 and a high output to the clock enable NAND gate, A2A3B. The 1 MHz clock generator, which was energized at the same instant of time as the PRF generator. provides an input for the pulse shaper amplifier A2Q3. A2Q3 provides the second input for the clock enable NAND gate which inverts the pulse. The negative transition of the output of A2A3B is used to start the ripple-thru counter (A2A5AA2A7B) counting.
5-10. The ripple-thru counter is composed of five flip-flops requiring a negative-going pulse (low) to trigger them. Each flip-flop triggers sequentially upon receiving a negative trigger from the preceeding flip-flop. The output of each flip-flop forms a set of binary spaced pulses (figure 5-1) which are routed to three time enable NAND gates A2A9A, A2A8C, and A2A8A. The outputs of the time enable NAND gates along with the outputs of the ripple-thru counter are routed to four mode selection enable NAND gates, A2A9C, A2AllA, A2AlIB, and A2A1B, a zero reference pulse enable NAND gate A2A1OA, sync enable NAND gates A2A3C, A2A3D, and A2A2F, and a reset enable NAND gate A2A1OB. Depending on the desired mode of operation, the associated mode selection enable NAND gates and reference pulse enable NAND gate will be enabled, thus providing an input to A2A9D which inverts the signal. The high output of A2A9D is routed to the clock output enable NAND gate A2A1OC.

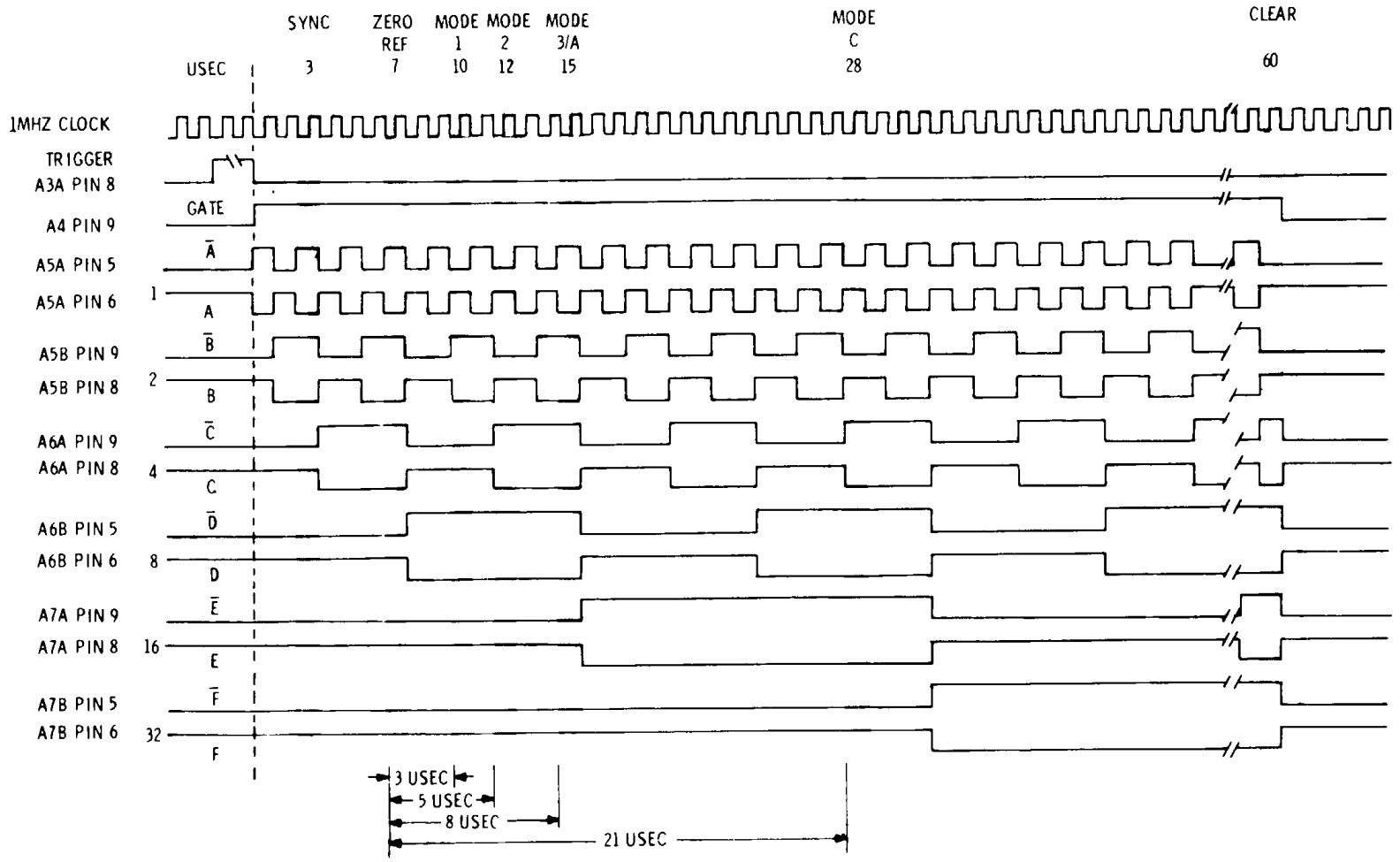


Figure 5-1. Timing Diagram for Mode Generator (A2)

The positive-going transition of the clock pulse pair from A2A3B is also applied to A2A1OC. At this instant in time the output of A2A1OB is also high and is routed to A2A1OC. A2A1OC is enabled and the output is shaped by transistor stages A2Q4 and A2Q5. The 0.83 usec shaped pulse pair is amplified and routed to the RF assembly (A1A1). When the last flip-flop is triggered, the high output is routed to A2A1OB. When the other inputs to A2A1OB are high, A2A1OB is enabled. The low output of A2A1OB disables A2A1OC, and clears the clock gate and ripple-thru counter.

5-11. In the RF assembly, an 85.8333 MHz signal is generated by a crystal controlled oscillator which is activated when the power supply is energized. The output of the crystal controlled oscillator is fed to a step recovery diode A1AlA4CR1 which multiplies the 85.8333 MHz signal by 12 with a resulting frequency of 1030 MHz. The pin type diode A1AlA4CR2 is normally at a 0 volt potential thus preventing any RF transmission. The output of A2Q6 is applied across the strip line type directional coupler (AlA1A4) to short AlAlA4CR2 thus allowing RF transmission. The 1030 MHz signal is then transmitted through the variable directional coupler to the primary transmission line (A1A1A1). The transponder receives the pulse pair as a Mode 1 interrogation. If the transponder frequency, sensitivity, and Mode 1 decoder are within the prescribed tolerances, the transponder will reply with a Mode 1 reply. The frequency of this reply is sampled by the directional coupler AlAlA3 (strip line type) and coupled to a three section bandpass filter. The received transponder reply is then detected and routed to the comparator and power level detector circuits. The VSWR coupler is a directional air dielectric type which samples the RF energy reflected back by the antenna. The VSWR is also detected and routed to the comparator circuits.

5-12. The comparator and power level detector circuit (A4) measures and evaluates any change in the proportional amplitudes of the input power, frequency, and VSWR. All other factors remaining constant, if the power pulse amplitude changes, both VSWR and frequency pulse amplitudes will change proportionately. However, if the input power pulse remains constant and either VSWR or frequency pulse amplitude change as a result of being out of the bandpass, the change will be measured and evaluated in the comparators. The go, no-go evaluation for the comparator networks are: (1) For the power and VSWR comparator (A4Q1. A4Q2), when the power pulse amplitude exceeds the VSWR pulse amplitude, a go indication is present (comparator output pulse). If VSWR exceeds power, a no-go indication is present (no comparator output pulse is present). The VSWR control, A1Rl, sets the input level of the VSWR pulse amplitude. (2) For the power and frequency comparator (A4Q9, A4Q10), when the power pulse amplitude exceeds the frequency pulse amplitude, a no-go indication is present (no comparator output). When the frequency pulse amplitude is greater than the power monitor pulse amplitude, a go indication is present (comparator output). The output of the power monitor pulse detector is also routed to the power level detector circuit. The power level detector circuit is a simple Schmitt trigger (A4Q13, A4Q14) which produces an output from 0 to +4 volt when the input reaches a pre-set level or above. The power level threshold is set by the RF IN control (A1R2). The output of the Schmitt trigger is routed to the bracket decoding network.

5-13. Located at the input of the bracket decoding circuit is a trigger gate (A4A1B, pin 5). The trigger gate receives and inverts the power monitor pulse from the Schmitt trigger which has been amplified and shaped by A4Q15 and A4Q16. The inverted pulse is then fed to a monostable multivibrator (A4A2). The high output of A4A2, pin 6, is a positive 19 usec pulse which is routed to A4A1C, pin 9 and 10, and inverted at pin 8. The inverted 19 usec pulse is fed to another inverter, (A4A1D, pin 12 and 13). The pulse is stretched at pin 13 input of A4A1D by a pulse stretching, network to approximately 24 usec. The positive 24 usec pulse is inverted once again at pins 1 and 2 of A4A1A. The resulting 24 usec negative pulse is applied to the trigger gate and prevents the trigger gate from operating for a 24 usec period. This same 24 usec negative pulse is used to gate the ringing oscillator (A4Q5) which oscillates at approximately 540 KHz. This frequency gives the bracket decoding pulses a spacing greater than 1.45 usec. The output of the ringing oscillator is amplified and shaped by A4Q6 and A4Q18 and routed to a monostable multivibrator (A4Q7, A4Q8). The multivibrator shapes the pulse to approximately +5 volts amplitude and 0.35 usec width which serves as one of the three inputs to the decoding gate, A4A3A. The second input to the decoding gate is from the low output of A4A2 and the third input is the power monitor pulse from the Schmitt trigger. The bracket spacing is decoded when the 19 usec pulse ends and a trigger pulse coincides with the 0.35 usec pulse. A negative pulse is then present at the output of the decoding gate and applied to pulse shaper A4A4. A4A4 generates a 0.2 usec pulse which is routed to the output NAND gate, A4A3B. The output from the power and frequency comparator (amplified by A4Qll and A4Q12) along with the output from the VSWR and power comparator (amplified by A4Q3 and A4Q4 and shaped by pulse shaper A4A6), are also routed to the output NAND gate. The resulting pulse is routed to output pulse shaper A4A5. The high output from A4A5 is applied to another NAND gate (A4A3C, pin 3).

5-14. With a high input at the base of A3Q8 from A2A1A, A3Q8 is turned on. With A3Q8 energized, A3Q7 is now allowed to amplify and invert the test gate from A2A4. This inverted gate is applied to the NAND gate in the comparator-decoder module (A4A3C, pins 4, 5) along with the high output of A4A5 which is also located on the comparator-decoder module (A4). The NAND gate allows only those transponder replies which are synchronous with the interrogation pulse pairs generated in the mode generator to be evaluated. The output of the NAND gate is now applied to the In-Flight test evaluator. In-Flight test evaluator determines the average D.C. level of the input pulse repetition rate. If the input pulse repetition rate is 80 percent or greater of the internal interrogation rate, the D.C. level at the integration network on A3

module would decrease at a rate proportional to the repetition rate of the incoming replies; until a level is reached to force A3Q9 into cut off. The output of A3Qll is applied to the lamp enable OR gate. The resulting output will energize the lamp driver circuit which turns the indicator lamp on.

5-15. The Monitor mode is initiated by placing the RAD TEST-MON switch on the control unit in the MON position. As mentioned previously, this will ground the switch lead to the power supply through a diode and place the test set in an energized state. With the mode switches in the OUT position, the mode generator is deactivated and a +5 volts forward bias CR1 of AlAlA5 and back bias the step recovery diode CR1 of AlAlA4, thus preventing any RF transmission during the Monitor mode. The theory of operation of the comparator, power detector, and bracket decoding circuits in the Monitor mode is the same as that of the In-Flight Test mode.

5-16. The remaining circuitry, the reply evaluator, can be, divided into two distinct operations, the In-Flight Test mode evaluator (which has been discussed previously) and the Monitor mode evaluator. If the output of NAND gate, A4A3C, is a negative pulse, A3Q3 is turned off for the duration of the pulse and will return to the normal state (on) until another pulse is applied to A3Q3. After six or more pulses have been applied to A3Q3, A3Q4 will energize, as a result of the charging action within the Monitor mode evaluator. The output of A3Q4 will change the state of the flip-flop (A3Q5, A3Q6) producing an output from A3Q6. The output of A3Q6 is applied to the lamp enable OR gate. The output of A3Q5 is fed back to the Monitor mode evaluator which will keep A3Q3 on and prevent any incoming pulse from retriggering A3Q4 for a minimum of two seconds. At the end of this time duration. A3Q4 will energize again (due to the feedback from A3Q5) and turn A3Q6 off, thus turning the indicator lamp off.

5-17. DETAILED CIRCUIT ANALYSIS.

5-18. MODE GENERATOR (A2) (See figure FO-2). Since the operation of all four In-Flight modes (Modes 1, 2, 3/A and C) are similar, a detailed step by step analysis of mode 1 operation will be covered only. With a low signal applied to pin 2 of A2A1A (mode enable NAND gate) the resulting high signal (pin 6) is applied to A2A3A, pin 10. The positive-going transition of the output of A2Q2 (PRF generator pulse) is also applied to A2A3A at pin 9. The two high signals combined enable A2A3A The resulting low signal is routed to pin 13 of flip-flop A2A4. A2A4, initial state, has a high output at pin 8 and a low output at pin 9. The low input pulse at A2A4, pin 13, triggers A2A4, changing the outputs at pins 8 and 9 to low and high, respectively. The low output at A2A4 (pin 8) is routed to A3Q7 (paragraph 5-28). The high output of A2A4 (pin 9) is fed to A2A3B (pin 13) (clock enable NAND gate). The high output applied to A2A3B (pin 13) and the high output of A2Q3, applied to pin 12 enables A2A3B. When the clock enable gate is held on by the high pulse applied to pin 13 from A2A4, the resultant output at pin 11 of A2A3B will now follow the 1 MHz clock. The output at pin 11 of A2A3B will be pulses, at the clock rate, going from a high level to a low level and then to a high. This will repeat for 60 usec, then the clock gate (A2A4) is cleared to stop the clock pulses at the output of A2A3B (pin 11). The negative-going transitions of the clock pulse will start the ripple-thru counter counting. The positive going transitions of the clock pulse and the duration of the pulse when it is high will be applied to pin 9 of A2A1OC (clock output enable NAND gate).

5-19. When a negative-going (low) transition of the clock pulse is applied to flip-flop A2A5A, pin 1, the output of pin 6 goes low and pin 5 goes high. The positive-going (high) transition of the clock pulse has no effect on the flip-flop. On the next low transition of the clock pulse (one usec after the first), the outputs at pins 6 and 5 are reversed (high and low, respectively) therefore causing the output at pin 5 to go high for one usec and low for one usec, while the output at pin 6 is the opposite of that at pin 5. The low from A2A5A, pin 5, is applied to pin 13 of flip-flop A2A5B, causing the output of pin 9 to go high. As with A2A5A, the positive-going (high) excursion has no effect on the flip-flop. Two usec after the first low, the next low causes the output at pin 9 to go low and a two usec pulse is generated. Flip-flops A2A6B, A2A6A, A2A7B and A2A7A operate in the same manner as A2A5A and A2A5B. The duration of the pulses generated by A2A6B, A2A6A, A2A7B and A2A7A are four, eight, 16, and 32 usec, respectively, and form a set of binary spaced pulse trains (see figure 5-1).

5-20. The high outputs of A2A5A, A2A5B, A2A7B and A2A7A (A, B, E, and F, respectively, figures FO-1 and 5-1) are applied to A2A9A, the time enable NAND gate, and inverted to a low. The low output of A2A9A is then applied to A2A9B, inverted to a high and in turn, applied to A2A1B, pin 10, A2A1OA, pin 13 and A2A3C, pin 5. The high output of A2A6B (D, figures FO-1 and 5-1) is applied to A2A1OA, pin2 and pin 1 of A2A3D, the sync time enable NAND gate. The other input to A2A3D, pin 2, is the high from A2A6A (C, figures FO-1 and 5-1). With both inputs to A2A3D being high, the resultant low output is inverted by A2A2F. The high output from A2A2F completes the enablement of A2A3C, the sync enable NAND gate, which occurs three usec after the clock enable NAND gate, A2A3B, is enabled. Immediately after the sync is enabled, the output of A2A6A (C, figures FO-1 and 5-1), goes high and stays high for four usec. During these four usec A2A5B (B) output goes low for two usec and then back to high for two usec; the output of A2A5A (A) goes low and then high, once every two usec. These high outputs of A2A5A, and A2A5B along with the high from A2A7A (E), and A2A7B (F) enable A2A9A and appear at A2A1OA pin 13 as a high. At this same time A2AlOA, pin 1 is high (output of A2A6A (C)) as is pin 2 (output of A2A6B (D)). With all inputs to A2A1OA high, a low output is produced; thus, four usec after the sync is enabled, the zero reference pulse is enabled.

5-21. Immediately after the zero reference pulse is enabled, the outputs of A2A6B and A2A6A (D and C figures FO-1 and 5-1) applied to A2A8A pins 10, and 11, go high for eight and four usec respectively.

During the first two usec, the output of A2A5B (B) applied to A2A8A, pin 12, is low, then goes high for two usec. During the last two usec, the output of A2A5A (A) goes high for one usec and low for one usec, with the high enabling A2A8A. The resultant low is inverted by A2A8B and the high applied to mode 1 enable NAND gate A2A9C, pin 3. At this time, the signal levels applied to A2A9C. pins 1, 2, and 4 are high and with the high from A2A8B applied. A2A9C is enabled. Thus. three usec after the zero reference pulse. the mode 1 pulse is generated.

5-22. The low output from A2A9C is fed to, and inverted to a high by, A2A9D and then applied to A2A1OC pin 11. The output of A2AlOB, applied to A2A1OC pin 10 Is high (when one or more inputs to a NAND gate are low, the resultant output is always high). and the signal level on pin 9 becomes high enabling A2A1OC. The inverted output, a low, is then applied to a pulse shaper (A2Q4 and A2Q5). A2Q4 is normally conducting and A2Q5 is used to stabilize the D.C. bias. The low signal applied to the base of A2Q4 will turn A2Q4 off. At the same time, A2C5 is discharged by the conduction of A2A1OC. When the clock pulse changes to a low, the output of A2A1OC at pin 8 goes high. A2C5 is now able to charge through A2R7 and through the internal resistance of A2A1OC for a period of time; until a level is reached, when A2Q4 starts to conduct. This extended time is used to set the pulse width to 0.83 usec. The 0.83 usec pulse is applied to the base of A2Q6 causing an output across emitter resistor A2R13. The resistor and capacitor network (A2R14, A2R15. A2C6 and A2C7) provides for D.C. isolation to the RF generator while supplying a video pulse of proper characteristics. Commutating capacitor A2C7 allows for fast rise time, while A2C6 isolates the D.C. A2C6 also provides a negative spike on the trailing edge of the output pulse. This negative spike back biases the RF modulator diode between pulses thereby reducing any residual continuous waste signals from the RF generator.

5-23. When A2A7B is triggered (31 usec from time zero) the high output from pin 5 (F) is applied to the reset enable NAND gate, A2A1OB, pin 3. The output of A2A7B. pin 5 stays high for 32 usec. 16 usec after A2A7B, pin 5, goes high, the output of A2A7A pin 9 goes high for 16 usec and is applied to A2A1OB, pin 4; pin 5 of A2AIOB goes high 13 usec later (output of A2A8D) and is enabled. The inverted output, a low, is applied to A2A1OC causing A2A1OC output to go high. The low output of A2A1OB is also routed to flip-flops A2A4 and A2A5A through A2A7B, causing the flip-flops to clear. This sequential operation of the mode generator assembly (A2) takes place every 30 usec after A2A3B has been enabled.

5-24. COMPARA1'OR-DECODER (A4) (See figure FO-3). The power and VSWR comparator network is a differential amplifier circuit. composed of A4Q1 and A4Q2. The output of the video power detector is applied to the base of A4Q1. The input to the base of A4Q2 Is the VSWR pulse received from the VSWR control (AlR1). A1R1 determines the pulse amplitude of the pulse applied to A4Q2 base. The output from the collector of A4Q2 is a negative pulse developed across A4R7. The output from the collector of A4Q1 is also a negative pulse developed across A4R5. If the input to A4Q1 is greater than the input to A4Q2, the difference is a negative pulse on the collector of A4Q1 and is applied to the base of A4Q3. If the input amplitude to A4Q2 is greater than that to A4Q1, there will be no pulse output present at the collector of A4Q1. When there is a pulse it is amplified by A4Q3 and applied to the base of A4Q4 and again amplified. The output at the collector of A4Q4 is now a positive pulse which is routed to a monostable multivibrator (A4A6). A4A6 develops a 0.1 usec pulse which is then applied to NAND gate A4A3B, pin 13.

5-25. The power and frequency comparator is also a differential amplifier made up of A4Q9 and A4Q10. The operation of the frequency power comparator is similar to the operation of the power and VSWR comparator. A4Q10 receives its information from the frequency detector. The negative output pulse of the differential amplifier is taken from the collector of A4Q10. when the input amplitude applied to A4Q10 is greater than that applied to A2Q9. The output of A4Q10 is amplified by A4Qll and A4Q12 and then applied to NAND gate A4A3B, pin 1.

5-26. The power level detector circuit is a Schmitt trigger composed of A4Q13 and A4Q14. When the input to the base of A4Q13 reaches a positive threshold, which is preset by RF IN control A1R2, A4Q13 will trigger and apply a negative power monitor pulse to the base of A4Q14 which, in turn, inverts the power monitor pulse. The positive power monitor pulse is then applied to the base of A4Q15 and inverted and amplified. A4Q16 amplifies and inverts the resulting negative output pulse from A4Q15. With power setting being satisfied, the positive pulse is then applied to decode NAND gate A4A3A, pin 11 in the bracket decoding network.

5-27. The bracket decoding network is activated by the positive power monitor pulse from the collector of A4Q16. The positive power monitor pulse is routed to trigger gate A4A1B, pin 5, inverted and applied as a low (negative pulse) to A4A2 (monostable multivibrator). The high output of A4A2 (pin 6), a positive 19 usec pulse is routed to inverter A4A1C. The negative 19usec pulse output of A4A1C is then stretched by A4R39 and A4C18 to 24 usec and inverted by A4A1D. The high output of A4A1D is then inverted by A4A1A to A low. The low 24 usec pulse is routed back to trigger gate A4AlB to prevent a power monitor pulse from enabling A4A1B for a 24 usec period. The low output of A4A2 (pin 1) is routed to A4A3A, pin 10.

5-28. The low 24 usec pulse output of A4A1A is also routed to the base of A4Q17, cutting off A4Q17. When A4Q17 is in cutoff, the low path to ground through A4CR1 is removed and the ringing oscillator, A4Q5 and associated components, is now able to oscillate. The sinusoidal 540 KHz output of the ringing oscillator is isolated by emitter follower A4Q6 and routed to the base of A4Q18. The negative-going portions of the 540 KHz signal are clipped off by A4CR4 at the base of A4Q18. The remaining portion of the 540 KHz signal is shaped and inverted. The output at the collector of A4Q18, a seven volt peak-to-peak negative-going

pulse, is routed to a monostable multivibrator (A4Q7 and A4Q8). A4Q8 is normally on with A4Q7 being normally off. When the negative-going pulse is applied to the collector of A4Q7 and the base of A4Q8, A4Q7 is turned on and A4Q8 off. The output of A4Q7 developed across A4R25, is +5 volts in amplitude and 0.35 usec in width. The positive-going 0.35 usec pulse is applied to decoding gate A4A3A, pin 9. Also applied to the three input NAND gate is the 19 usec negative-going gate (paragraph 5-27) from A4A2 at pin 10 and the power monitor trigger pulse at pin 11 (paragraph 5-26). The bracket spacing is decoded when the 19 usec negative gate is gone and the power monitor trigger pulse coincides with the 0.35 usec pulse. A negative-going pulse is developed and is applied to the output pulse shaper A4A4, a monostable multivibrator. A4A4 generates a 0.45 usec pulse which, along with the high output of A4A6 and the high output of the frequency power comparator, is routed to the output enable NAND gate A4A3B, pins 1, 2, and 13. The negative-going pulse output of A4A3B is routed to pulse shaper A4A5, a monostable multivibrator. The positive 25 usec high output of A4A5 is routed to a three input NAND gate A4A3C, pin 3. The output of A4A3C is then applied to A3Q3.

5-29. POWER SUPPLY AND REPLY EVALUATOR (A3) (See figure FO-4). The input to the Monitor mode reply evaluator, a negative-going 25 usec pulse, drives the base of A3Q3 towards zero cutting off A3Q3. This allows A3C4 to charge through A3Rll for the duration of the pulse. A3C4 charges to approximately 0.3 volts during this 25 usec period. At the end of the 25 usec period A3Q3 is turned on, back biasing A3CR7 and holding the charge on A3C4 constant. When the next pulse is received, the process is repeated with the charge produced being added to the charge already present on A3C4 from the previous pulse. After seven or more consecutive pulses occur at a repetition rate of 100 pulses per second, the voltage at the emitter of unijunction transistor A3Q4 will be sufficient to trigger A3Q4, discharging A3C4 and generating a pulse across A3R17. With the monostable multivabrator in the state of A3Q5 on and A3Q6 off, diodes A3CR6 and A3CR8 are back biased allowing A3C4 to charge as described above. When a pulse is applied to the emitter of A3Q5 and A3Q6, A3Q5 is turned off and A3Q6 is turned on. When A3Q5 is turned off A3CR6 is forward biased through A3R12 and A3R19 preventing any incoming pulses from affecting A3Q3. A3C5 is also allowed to charge through A3R12 and A3R19 until the charge across A3C5 is sufficient to trigger A3Q4 again through A3CR8. When A3Q6 is turned on A3CR13 of the lamp enable OR gate will be forward biased for a minimum of two seconds. When A3Q4 triggers for the second time, a pulse is generated across A3R17 which re-sets A3Q5 and A3Q6 to their original states as well as back biasing A3CR6 and A3CR8. This action will also back bias A3CR13 of the lamp enable OR gate.

5-30. When any of the mode selector switches on the Control Unit are depressed, a high input is applied to the base A3Q8, causing A3Q8 to conduct. With A3Q8 conducting, a low path to ground through A3CR10 is provided for A3Q3, thus preventing A3Q3 from charging A3C4 and disabling the operation of the Monitor mode reply evaluator. A3Q7 will also be provided a low impedance path to ground, causing A3Q7 to conduct. The test gate input from the mode generator at the base of A3Q7 is amplified and inverted. The inverted gate is applied to a three input NAND gate (A4A3C, pins 4 and 5) in the comparator-decoder module (A4). The output of the NAND gate is then routed to the In-Flight test reply evaluator.

5-31. In the In-Flight test reply evaluator, with no signal applied, A3CRll is back biased by +5 volt allowing A3C8 to charge through A3R21 and A3RT1 driving A3Q9 into conduction. This action sets the Schmitt trigger so that A3Q10 is on and A3Qll is off, back biasing A3CR12 of the time enable OR gate by 12 volts, preventing operation of the lamp driver network. When an input pulse is applied, the back bias is removed from A3CRll allowing A3C8 to discharge. At the end of the pulse A3CRll is back biased and A3C8 charges again at a rate that produces a. sawtooth waveform. When the input interrogation rate is at least 80 percent of the 400 PRF internal interrogation, the D.C. level of the sawtooth waveform will lower sufficiently to cutoff A3Q9, causing the Schmitt trigger to abruptly change states, removing the back bias on A3CR12.

5-32. In the lamp driver circuit, A3CR12 and A3CR13 (lamp enable OR gate), are normally back biased allowing A3Q12 to conduct. This keeps A3Q13 off which removes the ground circuit for the base of A3Q14 and keeps the lamp switching transistor A3Q14 and indicator lamp off. When either A3CR12 or A3CR13 are forward biased, A3Q12 is turned off allowing A3Q13 to conduct. This provides a low path to ground for the base-emitter junction of A3Q14 allowing A3Q14 to conduct for the duration of the forward bias state of A3CR12 or A3CR13, and providing 28 volts for illuminating the TEST lamp.

5-33. POWER SUPPLY (See figure FO-4). The power supply for the TS-1843A is a combination series hunt type voltage regulator with two outputs of +12 and +5 volts. Transient diode A3CR1 is located at the input of the power supply and has a dual purpose function. A3CR1 clips any negative transient through ground and prevents any voltage above +36 v from entering the power supply. The control amplifier, A3Q2 is normally on, holding the voltage across the 11.8 volt zener diode, A3CR3 and the base of A3Q1 to approximately zero. When either the RAD TEST-MON switch or one of the mode switches are depressed, the switch lead to the power supply is grounded through a diode in each switch lead, grounding the base of A3Q2. A3Q2 is then turned off and allows the voltage across A3CR3 to rise to approximately 13 volts. Shunt diodes A3CR4 and A3CR5 compensate for temperature changes in A3Q1 and A3Q2 as well as compensating for the voltage loss across the emitters of A3Q1 and A1A2Q1. With 13 volts applied to the base of A3Q1, A3Q1 is allowed to conduct. The output at the emitter of A3Ql is approximately 12.5 volts and is applied to the base of AlA2Ql causing AlA2Ql to conduct, +12 volts is then available at the emitter of AlA2Q1l. The +12 volts is routed to A3R4 where

approximately 6.5 volts are dropped. The remaining 5 volts is applied to the cathode of the 5.1 volts zener diode A3CR2. A3CR2 maintains a constant 5.1 volts output with variations in the 5.1 volt current demand.

5-34. RF GENERATOR (A1A1) (See figure FO-5). RF generation is accomplished by the use of a colpitts crystal controlled oscillator with in-phase capacitor feedback. The oscillator is free running at 85.833 MHz whenever the power supply is activated. The output of the oscillator is applied to a step recovery diode A1A1A4CR1. A1A1A4CR1 acts as a frequency multiplier providing a large number of harmonics. The one quarter wave guide selects the 12th harmonic, 1030 MHz, and applies the signal to A1A1A4CR2. A1A1A4CR2 is normally at a 0 volt potential until a pulse from the mode generator applies voltage across A1A1A4CR2. When A1A1A4CR2 conducts, RF transmission across the mechanical variable directional coupler (strip line type) is achieved. In the Monitor mode of operation AlAlA5CR1 is forward biased by a +5 volt output from A3Q8. When AlAlA5CR1 is forward biased A1AlA4CR1 is reverse biased by +5 volts, thus preventing any RF generation.

5-35. PRF GENERATOR (See figure FO-2) Part of Mode Generator (A2). The PRF generator. A2Q1 Is activated whenever the power supply is energized. A2Q1 is a unijunction transistor which conducts when the voltage across A2C1 reaches the triggering level of A2Q1. The charge rate of A2C1 and the frequency of repetition is determined by A2R1. When the charge across A2C1 is sufficient to fire A2Q1, a positive pulse is developed across A2R2, and applied to the base of A2Q2. A2Q2 amplifies and Inverts the pulse and routes the pulse to the PRF enable NAND gate A2A3A, pin 9.

5-36. CLOCK GENERATOR (See figure FO-2) Part of Mode Generator (A2). The one MHz clock source is provided by a crystal controlled oscillator. The clock generator is energized whenever the power supply is activated. Oscillation is maintained as a result of regenerative feedback through inverter A2A2E. A2Q3 provides isolation and some gain between the oscillator and the clock NAND gate. The output of the clock generator is a string of positive-going square wave pulses spaced one-half usec apart going from approximately a +5 v as a high to approximately ground potential (0.5 to 0.7 vdc) as a low.

SECTION VI

DESCRIPTION OF SYSTEM TIE-IN OF EQUIPMENT

INDEX OF DIAGRAMS

Figure	Title	Page
6-1	System Tie-in.....	6-2

6-1. GENERAL.

6-2. This section describes the integration of the Transponder Set, Test Set TS-1843A/APX into an operational IFF/SIF transponder system. The TS1843A/APX, at the present time, is intended for use with Transponder Sets AN/APX-64 and AN/APX-72, but will perform satisfactorily with any equipment compatible with the AIMS transponder characteristics.

6-3. EQUIPMENT TIE-IN.

6-4. The TS-1843A/APX provides both In-Flight-testing and monitoring of an IFF/SIF transponder system. The test set is installed between the aircraft antenna system and transponder set (figure 6-l)and controlled externally by a control unit. The control unit provides the means of selecting the desired mode of operation. The performance of the transponder system Is evaluated on a go. no-go basis by sampling and analyzing the transponder replies. The go or no-go indication is provided by a TEST lamp also located on the control unit.

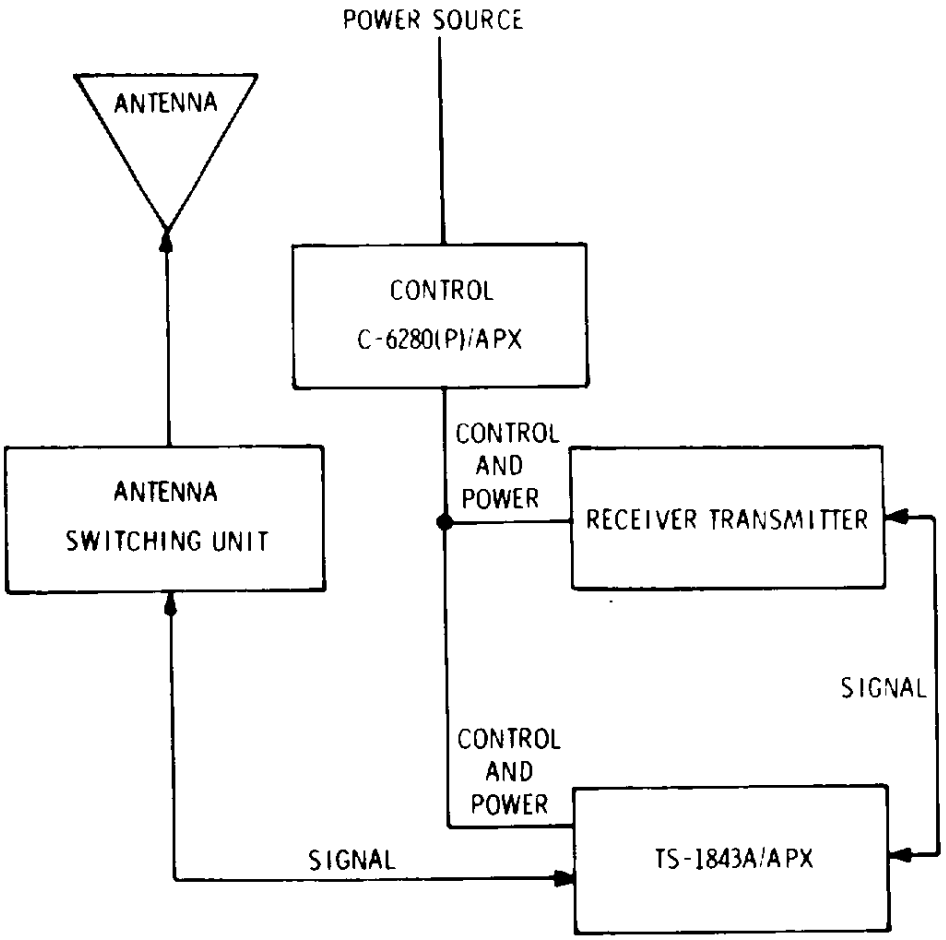


Figure 6-1. System Tie-in

SECTION VII

CHECKOUT AND ANALYSIS

7-1. GENERAL.

7-2. This section contains intermediate maintenance procedures for checkout and alignment.

7-3. CHECKOUT.

7-4. Checkout the TS-1843A/APX using the following procedure. If the correct results are not obtained, refer to section VIII for troubleshooting and maintenance procedures. Proceed as follows:

1. Make test connections per figure 7-1.
2. Place AN/UPM-98A switches and controls in the following positions:

POWER (2 switches)	ON
CAL-CONTROL panel METER 500 PRF SELECT	
XTAL MARK & SYNC panel	
PRF	Adjust for CAL-CONTROL meter indication of 400.
SYNC SELECT	INT
SIF CODER panel	
CODE A through D	0
SUB PULSE SELECT	OFF
FUNCTION	N
LEVEL	HI
PULSE WIDTH	.45
AMPLITUDE	Fully Clockwise

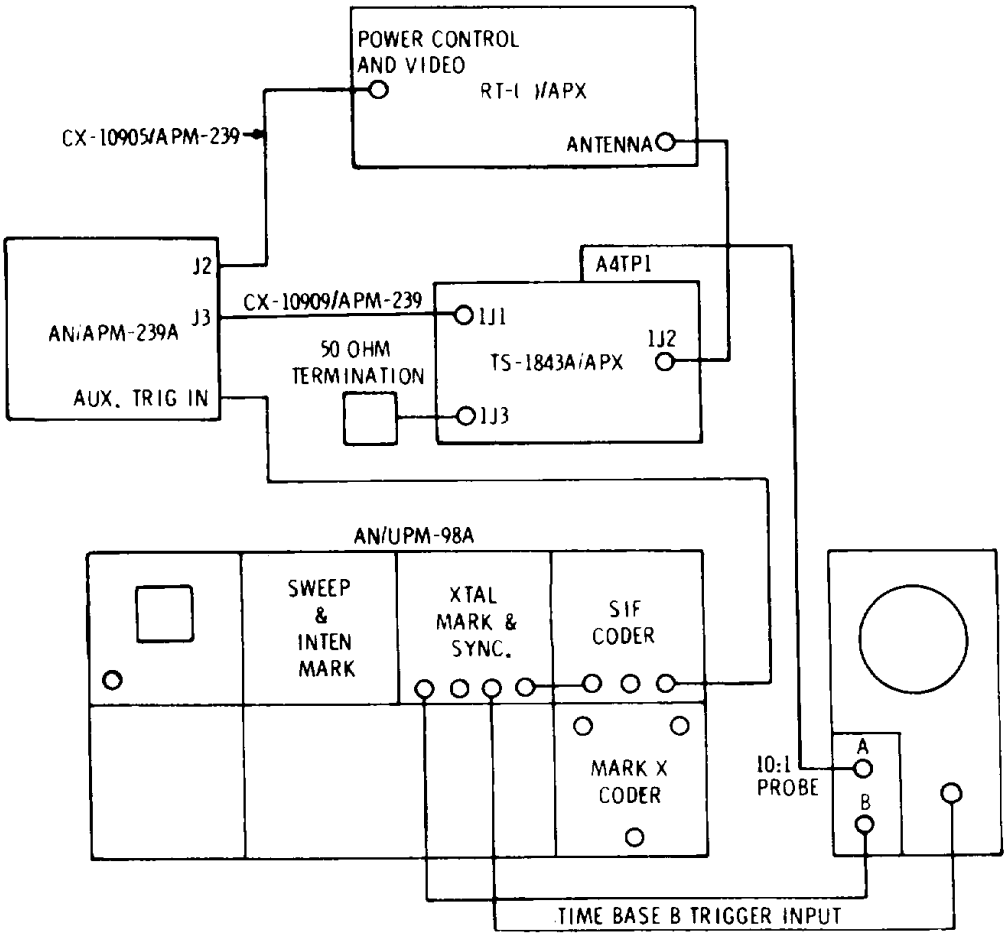


Figure 7-1. Bench Test Set-up

3. Place AN/APM-239A controls and switches in the following positions:

POWER MODE	AC/DC
6 AMP POWER circuit breaker	ON
METER SELECT	DC
DC CONTROL	Adjust for 28 volts dc.
METER SELECT	AC
AC CONTROL	Adjust for 115 volts ac.
TEST CONDITION	VOLTS
ALTITUDE DIGITIZER	OUT

4. Place C-6280(P)/APX or C-6280A(P)/APX controls and switches in the following positions:

MASTER	STBY
IDENT/OUT/MIC	OUT
M-1/ON/OUT	ON
M-2/ON/OUT	ON
M-3/A/ON/OUT	ON
M-C/ON/OUT	ON
MODE 1	73
MODE 3/A	7700
RAD TEST/OUT/MON	MON

5. Move C-6280(P)/APX or C-6280A(P)/APX MASTER switch to NORM position. C-6280(P)/APX or C-6280A(P)/APX TEST indicator lights.

6. On AN/UPM-98A, adjust XTAL MARK & SYNC panel PRF control to obtain 100 indication on CAL-CONTROL panel meter. C-6280(P)/APX or C-6280A(P)/APX TEST indicator cycles on and off.

7. On AN/UPM-98A, readjust XTAL MARK & SYNC panel PRF control to obtain 400 indication on CAL-CONTROL panel meter.

8. Disconnect cable from AN/APM-239A AUX TRIG IN connector.

9. Move C-6280(P)/APX or C-6280A(P)/APX M-I/ ON/OUT switch to M-1 position. TEST indicator lights.

10. Return C-6280(P)/APX or C-6280A(P)/APX M-I switch to OUT position. TEST indicator goes out.

11. Repeat steps 9 and 10 for C-6280(P)/APX or C-6280A(P)/APX M-2/ON/OUT, M-3/A/ON/OUT, and M-C/ON/OUT switches.

12. Move AN/UPM-98A POWER switches and AN/APM-239A 6 AMP CIRCUIT BREAKER to OFF positions. Disconnect test connections.

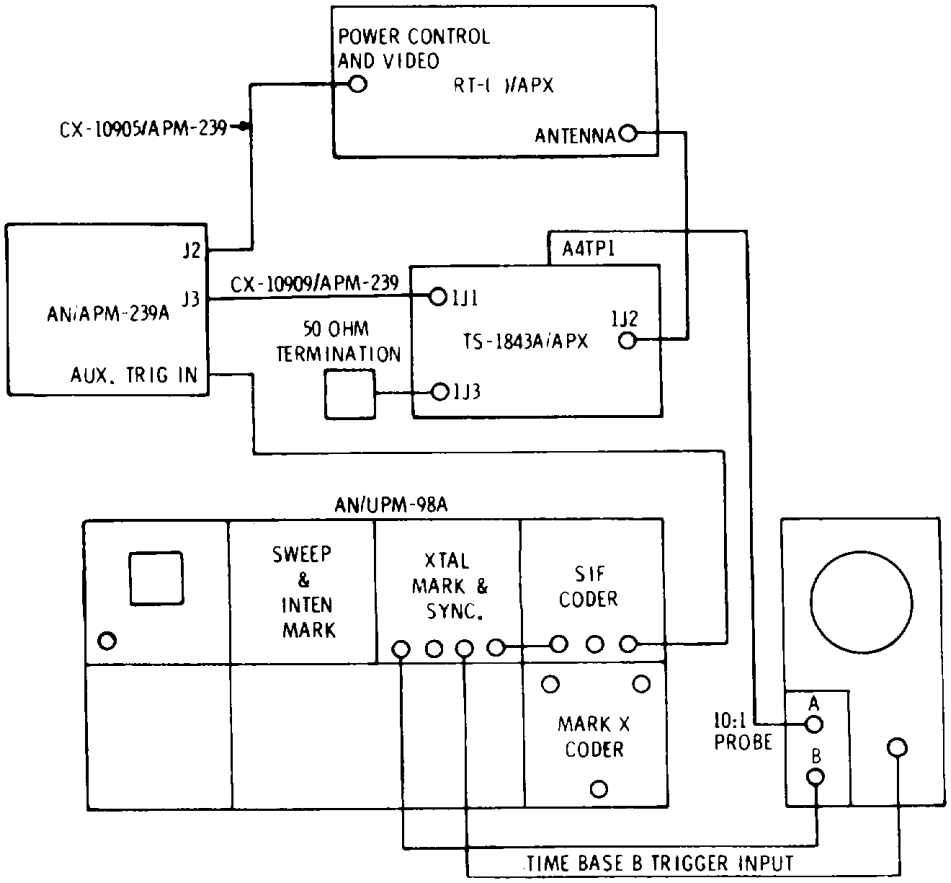


Figure 7-2. Bracket Spacing Alignment Set-up

7-5. COMPARATOR-DECODER (A4) ALIGNMENT.

7-6. Comparator-decoder (A4) alignment must be performed when a new A4 module is installed into the TS-1843A APX. Proceed as follows:

NOTE

While performing the alignment procedure the extender card for A4 must not be used and the TS843A APX side covers must be in place.

1. Make test connections per figure 7-2.
2. Place AN UPM-98A switches and controls in the following positions:

POWER (2 switches)	ON
CAL-CONTROL panel	500 PRF
METER SELECT	
XTAL MARK & SYNC panel	
PRF	Adjust for CAL-
CONTROL panel meter indication of 400.	
SYNC SELECT	INT
TRIGGER DELAY RANGE	1-11
TRIGGER DELAY FINE	1
SIF CODER panel	
CODE A through D	0
SUB PULSE SELECT	SP
FUNCTION	N
LEVEL	HI
PULSE WIDTH	.45
AMPLITUDE	8

3. Set oscilloscope controls as follows:

TIME BASE A	
TRIGGERING MODE	EXT.
TRIGGERING LEVEL	Fully clockwise
TIME CM	.1 usec
TIME BASE B	
TRIGGERING MODE	EXT.
TRIGGERING LEVEL	Fully clockwise
TIME CM OR DELAY TIME	20 usec
HORIZONTAL DISPLAY	"'A" DEL/D BY "B"
DELAY-TIME MULTIPLIER	0.3
PLUG-IN UNIT MODE	ALT

4. Place AN/APM-239A controls and switches in the following positions:

POWER MODE	AC DC
6 AMP POWER circuit breaker	ON
METER SELECT	DC
DC CONTROL	Adjust for 28 volts dc.
METER SELECT	AC
AC CONTROL	Adjust for 115 volts ac.
TEST CONDITION	VOLTS
ALTITUDE DIGITIZER	OUT

5. Place C-6280(P) APX or C-6280A(P) APX controls and switches in the following positions:

MASTER	STBY
IDENT OUT MIC	OUT
M-1	ON
M-2	ON
M-3 A	ON
M-C	ON
MODE 1	73
MODE 3 A	7700
RAD	MON

6. Observe the first bracket pulse on oscilloscope. Vary AN UPM-98A XTAL MARK & SYNC panel TRIGGER DELAY and the oscilloscope DELAY TIME MULTIPLIER controls until waveform A (figure 7-3) is displayed at a convenient reference point on oscilloscope.

7. Vary oscilloscope DELAY TIME MULTIPLIER control counting the number of time marks passing the oscilloscope reference point. Align the 20th time mark 50 c point on the oscilloscope reference point. Note that the DELAY TIME MULTIPLIER control is positioned at approximately 1.3. This point is exactly 20.0 usec from the first bracket pulse. The second bracket pulse should be visible.

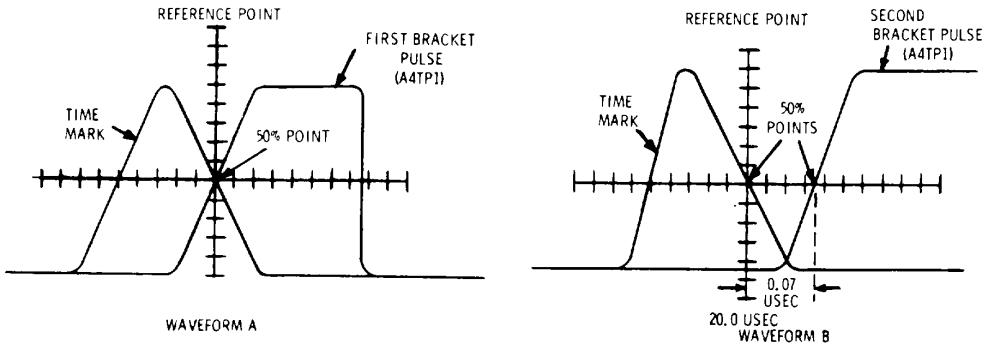


Figure 7-3. Bracket Spacing Alignment Waveforms

8. Vary AN/UPM-98A SIF CODER panel SUB PULSE POS control to vary 20th time mark from 20.3 (±0.3) usec from first time mark. Observe that C-6280(P)./ APX or C-6280A(P),/APX TEST indicator is not on below 20.0 usec or above 20.6 usec. If correct results are not obtained perform steps 9 through 11. If correct results are obtained turn off test equipment and disconnect alignment connections.

9. Vary AN,/UPM-98A SIF CODER panel SUB PULSE POS control to obtain 0.07 usec spacing between oscilloscope reference point and the 50% point of the second bracket pulse. waveform B (figure 7-3). 10. Adjust TS-1843A/APX A4C6 until C-6280(P)/ APX or C-6280A(P) APX TEST indicator just lights. 11. Repeat step 8.

SECTION VIII

ORGANIZATIONAL AND INTERMEDIATE MAINTENANCE

8-1. GENERAL.

8-2. This section contains instructions for performance of organizational and intermediate maintenance on Transponder Set, Test Set TS-1843A/APX. Organizational maintenance consists of a performance check with the equipment installed in the aircraft and removal and replacement of the test set, if defective, from the aircraft. Intermediate maintenance consists of performing an operational bench check, and certain repair procedures authorized at field level.

8-3. ORGANIZATIONAL MAINTENANCE (ARMY ONLY).

8-4. Organizational maintenance consists of running a performance check utilizing the AN,"APM-123(V) with the equipment installed in the aircraft and interconnected as shown In figure 6-1. Since operational procedures will vary with the type of transponder being used, refer to the AN/APM-123(V) technical manual (TM-11-6625-667-12) and the applicable transponder maintenance manual.

8-5. PROCEDURE. If indications specified below are not obtained, check to ensure that primary power is applied to the system. Check for proper seating of the RF connectors and the multi-pin connector. Check the antenna cable and antenna since a high VSWR will cause a no-go indication. If these checks indicate that the remainder of the system is functioning properly, replace the TS-1843A.

1. Set-up the AN, APM-123(V) Test Set as instructed in paragraphs 2-7 and 2-8 of TM 11-6625667-12.
2. Set the controls of the AN APM-123(V) to interrogate the transponder for Mode 1 as instructed in paragraph 2-10 of TM 11-6625-667-12.
3. Apply power to the transponder set and place the transponder control MON-RAD Switch to the MON position. Set all other controls for normal Mode 1 operation. The TEST indicator light on the transponder control and the ACCEPT indicator light on the AN APM-123(V) should illuminate indicating a go condition.
4. Set the controls of the AN APM-123(V) and the transponder control for Mode 2 Interrogation. The TEST indicator light on the transponder control and the ACCEPT indicator light on the AN/iAPM-123(V) should Illuminate indicating a go condition.
5. Set the controls of the AN,/APM-123(V) and the transponder control for Mode 3 'A interrogation. The TEST indicator light on the transponder control and the ACCEPT indicator light on the AN/APM-123(V) should illuminate indicating a go condition.
6. If the aircraft is equipped with an altitude digitizer, proceed with the following check. If it is not so equipped proceed to step 7 below.

a. Set BARO SET on the Altimeter/Digitizer to 29.92 and read and record the altitude indicated on the altimeter.

b. Set the AN/APM-123(V) mode switch to C, and the FUNCTION switch to SYSTEM.

c. Set the transponder control MC switch to ON, and set all mode switches to OUT.

d. Set the CODE control setting to the altitude recorded in step a above. Refer to the chart In paragraph 2-10e of TM 11-6625-667-12 for the reply code setting. The TEST indicator light on the transponder control and the ACCEPT indicator light on the AN/ APM-123(V) should illuminate indicating a go condition.

7. If in any of the above checks, the TEST indicator light fails to Illuminate and the ACCEPT indicator illuminates, the TS-1843A is defective. If the TEST indicator light illuminates and the REJECT indicator light illuminates, both the TS-1843A and transponder set are defective. If the TEST indicator light falls to illuminate and the REJECT indicator light illuminates, the transponder system is defective.
8. Remove the AN,/APM-123(V) from the test set-up. Place the transponder set control MODE 1 switch In the TEST position; the TEST indicator light should illuminate.
9. Similarly, place the MODE 2, MODE 3/'A, and MODE C (if an altitude digitizer is used in the installation) to the TEST position. The TEST indicator light should illuminate.
10. If the TEST indicator light fails to illuminate In steps 8 and 9, the TS-1843A is defective.

8-6. INTERMEDIATE MAINTENANCE.

8-7. This portion of section VIII contains information required by the electronics technician to ensure proper operation, repair. and adjustment of the TS1843A and to enable the technician to use a logical system of troubleshooting. To fully understand and perform the troubleshooting procedures, the technician should understand the theory of operation given in section V. The TS-1843A plug-in assembly locations are shown in figure 8-1; location of components mounted on these plug-in assemblies are shown in figures 8-2 through 8-4. Locations of test points is shown In figure 8-5; access to these test points is gained by removing the bottom cover of the unit.

8-8. TROUBLESHOOTING. The troubleshooting chart, figure 8-6, is designed to provide a systematic method of locating a faulty module or part within the TS-1843A/APX. The basic bench test set-up for troubleshooting the TS-1843A/'APX is shown in figure 7-1. The test point indications are listed in table 8-1.

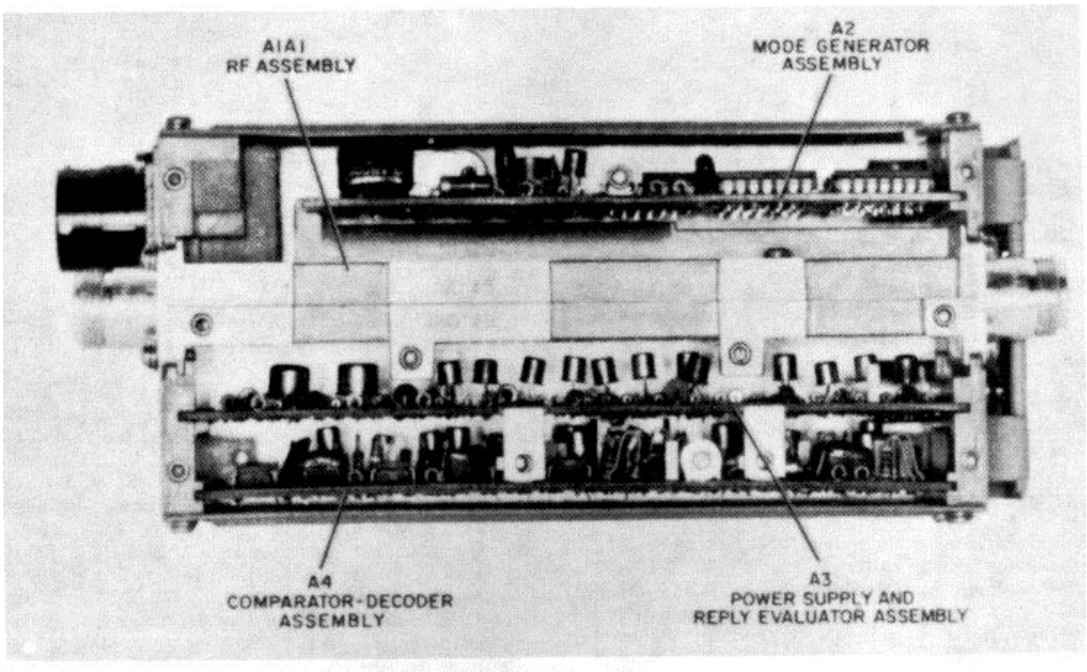


Figure 8-1. Assembly Locations

Each block in figure 8-6 contains specific instructions which, when followed, will result in one of the conditions indicated by a line. By following the line indicating the observed condition the technician will be let to a faulty circuit board which should be replaced or in some cases to a troubleshooting table. The troubleshooting table will enable the technician to perform a limited amount of maintenance. The chart will also point out those faulty indications for which repair is restricted to depot maintenance. After the faulty assembly has been repaired or replaced, return to the starting point. To perform the troubleshooting procedures of figure 8-6. proceed as follows:

1. Prepare the TS-1843A,'APX for troubleshooting (refer to section III).
2. Connect equipment as Illustrated in figure 7-1. Turn on test equipment and allow adequate warm-up time per manufacturer's instructions. Position controls on C-6280(P), APX or C-6280A(P)/APX as follows:

MASTER	NORM
IDENT OUT/MIC	OUT
M-1/ON/OUT	ON
M-2/ON/OUT	ON
M-3/A/ON/OUT	ON
M-C/ON/OUT	ON
MODE 1 CODE	73
MODE 3/A/CODE	7700
RAD TEST/OUT/MON	MON

3. Place AN APM-239A controls and switches in the following positions:

ALTITUDE DIGITIZER	OUT
POWER MODE	AC, DC
6 AMP POWER circuit breaker	ON
METER SELECT	DC
DC CONTROL	Adjust for 28 volts dc.
METER SELECT	AC
AC CONTROL	Adjust for 115 volts ac.
TEST CONDITION	VOLTS

4. To troubleshoot assemblies A2 thru A4 use the extender cards.
5. When operating the TS-1843A/APX in the monitor mode, position controls on AN/UPM-98A as follows:

POWER Switches	ON
CAL-CONTROL panel	
METER SELECT	500 PRF
XTAL MARK & SYNC panel	
PRF	Adjust for CAL-CONTROL meter indication of 400.
SYNC	INT.
SIF CODER panel	
CODE A through D	0
SUB PULSE SELECT	OFF
FUNCTION	N
LEVEL	HI
PULSE WIDTH	.45
AMPLITUDE	8

6. Perform troubleshooting in accordance with figure 8-6

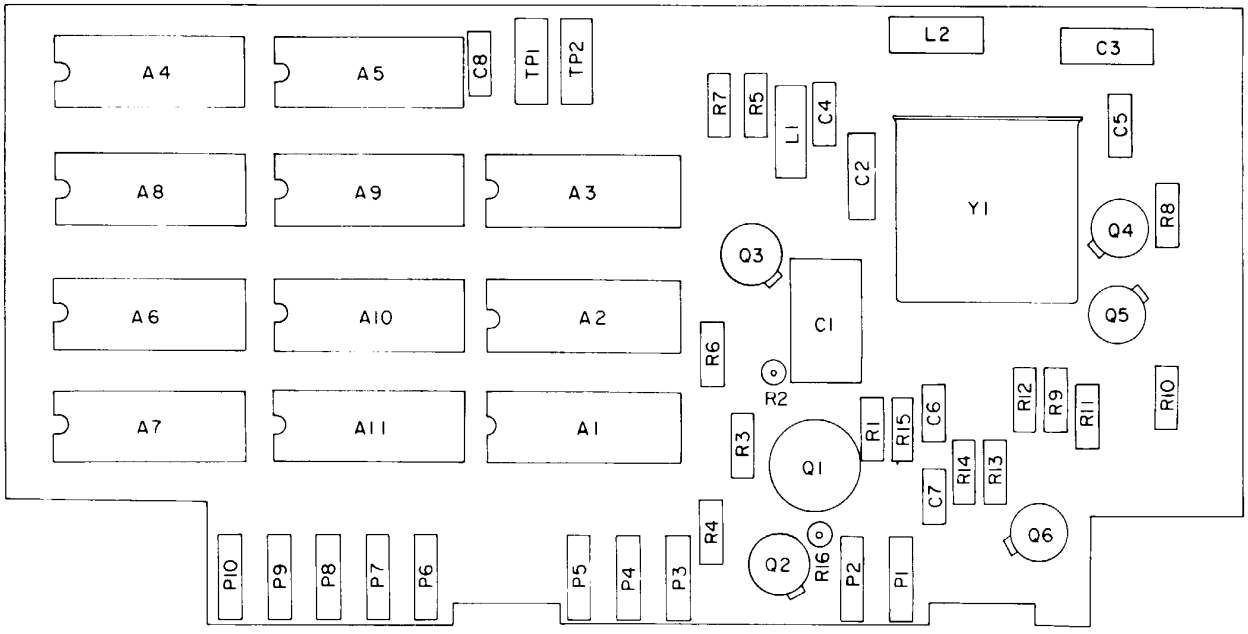


Figure 8-2. Mode Generator Assembly (01A233756-21-11) (A2), Component Locations

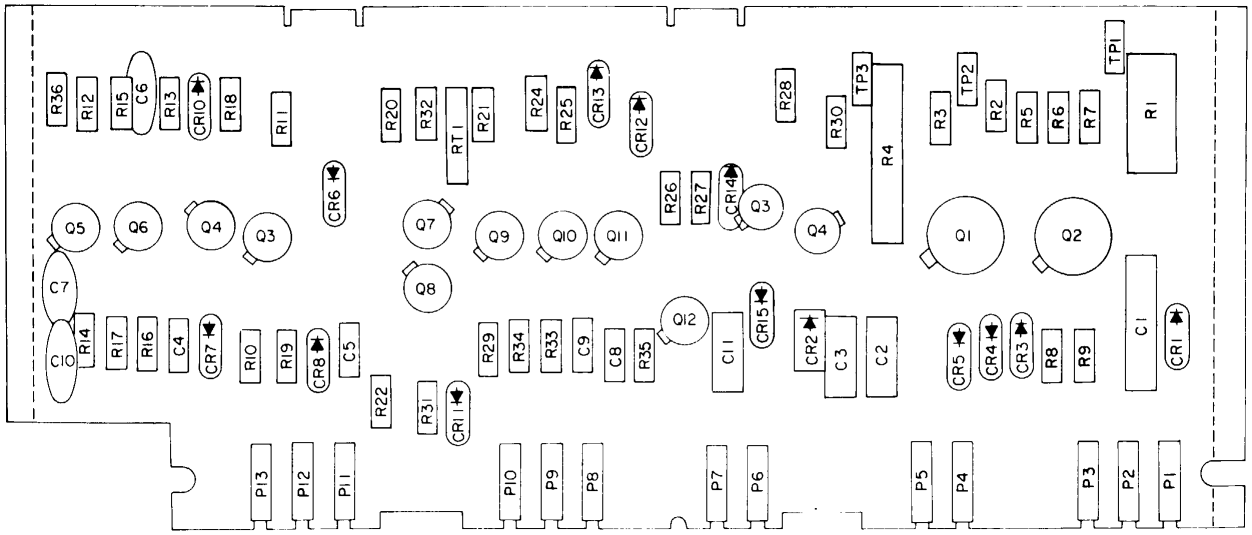


Figure 8-3. Power Supply and Reply Evaluator Assembly (01A233757-21-11) (A3), Component Locations

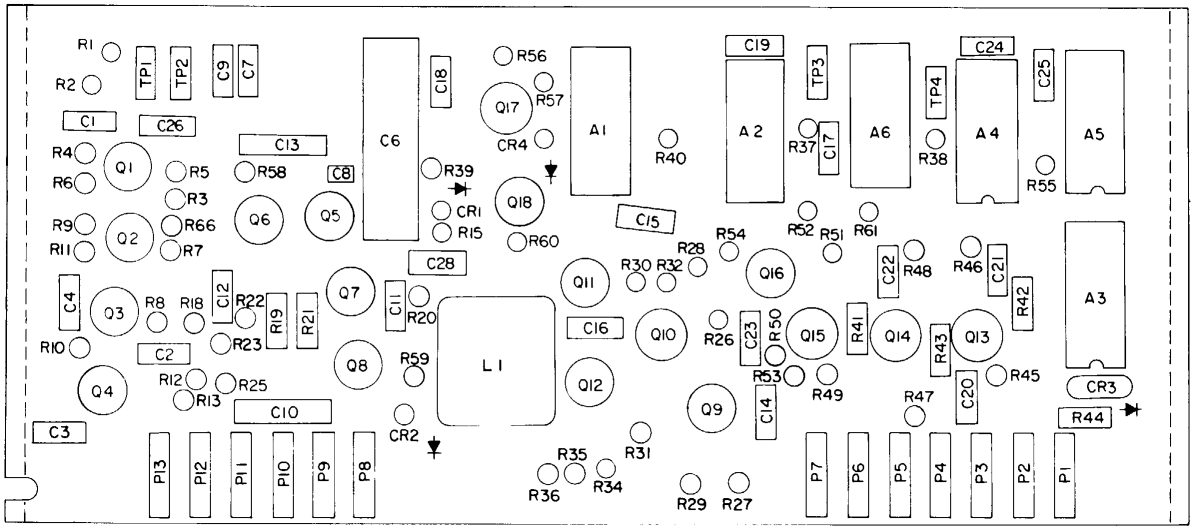


Figure 8-4. Comparator-Decoder Assembly (01A233758-21-11, -12) (A4), Component Locations (Sheet 1 of 2)

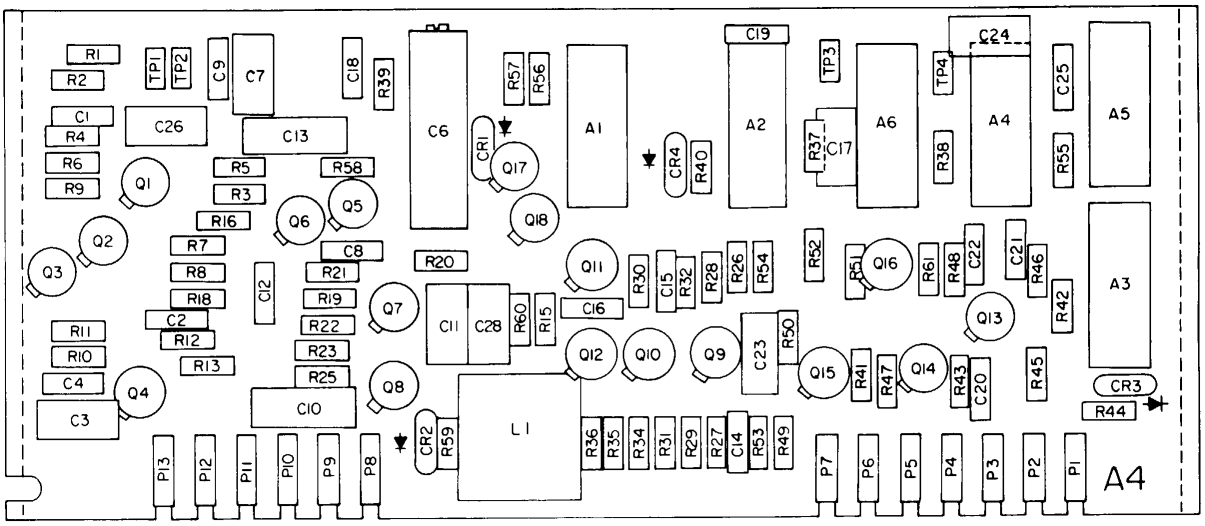


Figure 8-4. Comparator-Decoder Assembly (01A233758-22-11) (A4), Component Locations (Sheet 2 of 2)

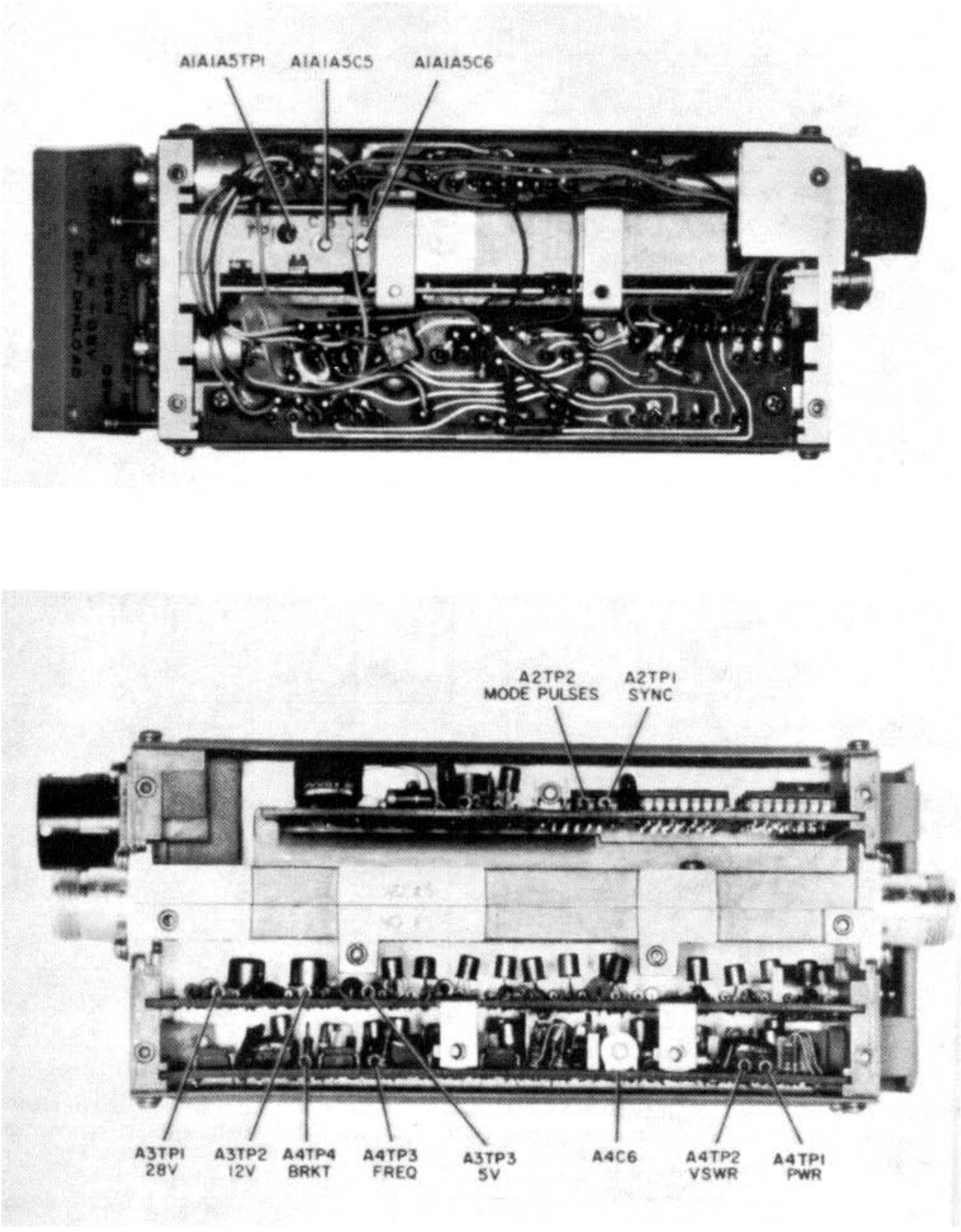


Figure 8-5. Test Point and Adjustment Locations

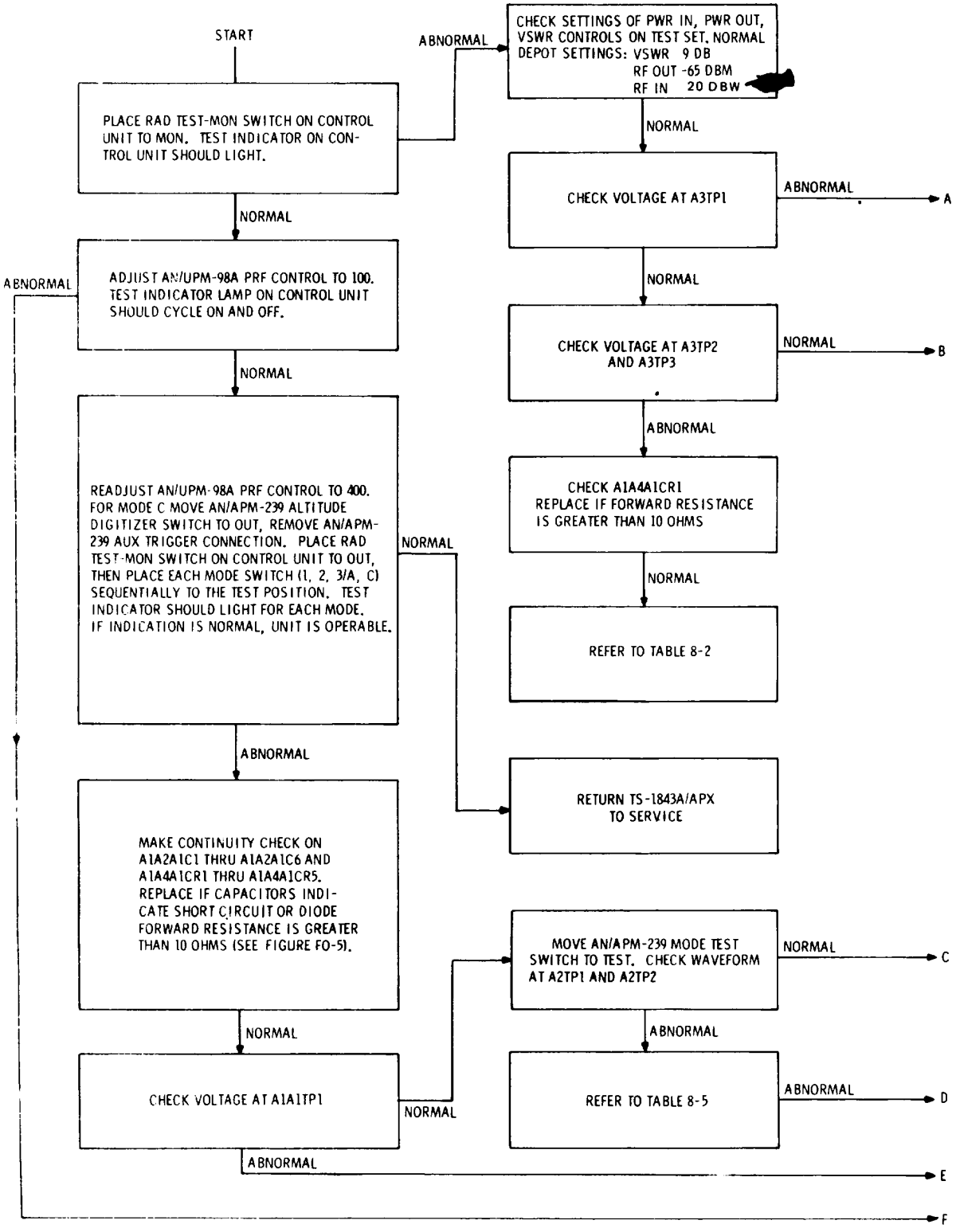


Figure 8-6. Troubleshooting Chart (Sheet 1 of 2)

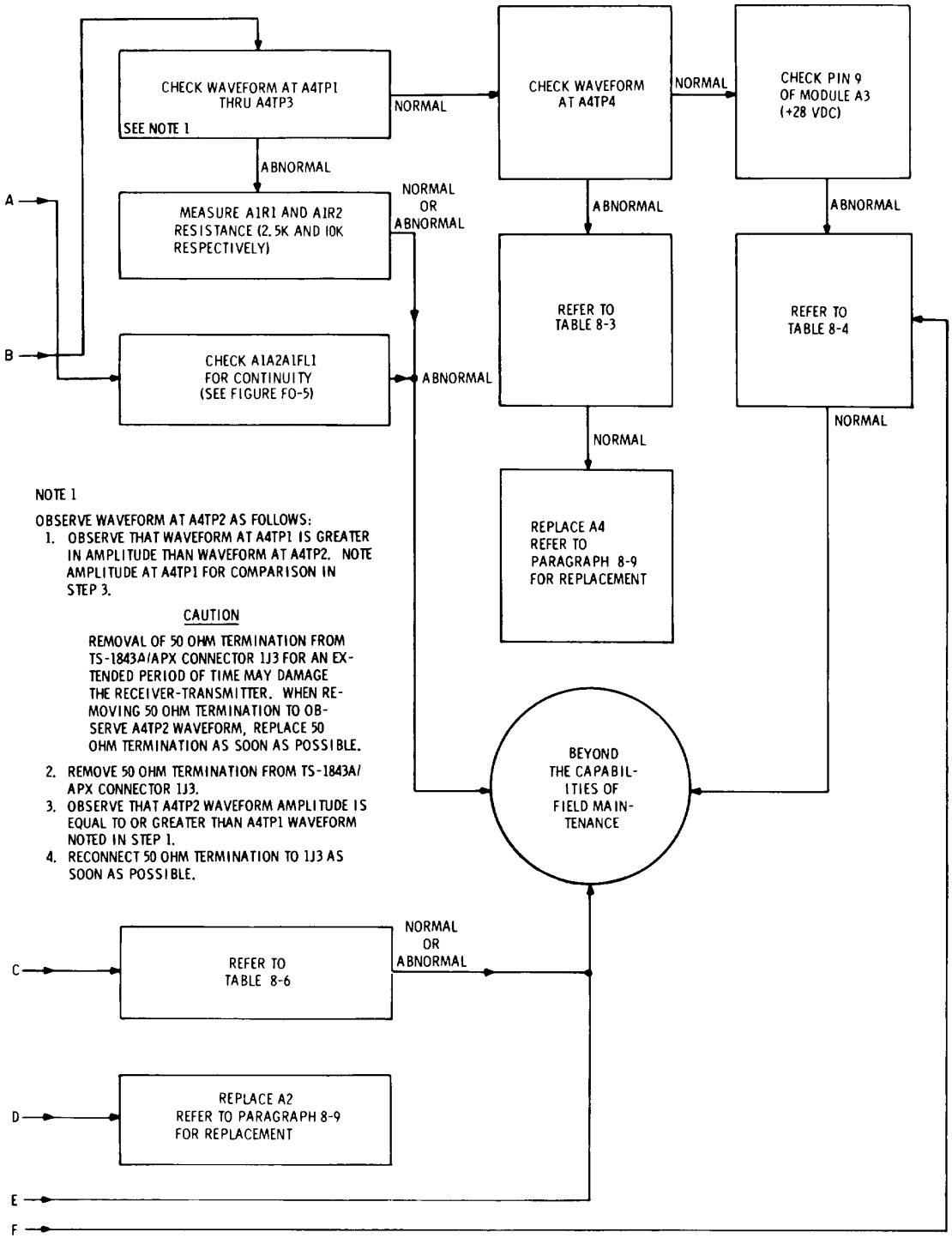


Figure 8-6. Troubleshooting Chart (Sheet 2 of 2)

Table 8-1. Test Point Indications

ASSEMBLY NO.	TEST POINT	INDICATION	ASSEMBLY NO.	TEST POINT	INDICATION
A1A1	TP1	(MONITOR MODE) +5 VDC (TEST MODE) 0.1V APPROX.	A4	TP1	* 1.5V P.P. .45 USEC
A2	TP1	1 USEC, TEST MODE, 5V P.P.		TP2	* 2V P.P. .45 USEC
	TP2	TEST MODE, 5V P.P., .83 USEC		TP3	* 2V P.P. .45 USEC
	(A)	2.3V, .5 USEC		TP4	5V P.P. .2 USEC
	(B)	12 USEC, 5V P.P.		(H)	2V MIN.
A3	TP1 TP2 TP3 (C)	+28 VDC +12 VDC +5 VDC +12.3 VDC		(I)	2V MAX. .45 USEC
	(D)	25 USEC, 5V		(J)	2V MAX. .45 USEC
	(E)	1V		(K)	23 USEC, 5V
	(F)	1 VDC MAX		(L)	4V .375 USEC

* VALUES WILL VARY DUE TO SETTING OF TS-1843A/APX VSWR AND PWR CONTROLS AND TRANSPONDER CHARACTERISTICS. WAVEFORMS SHOWN ARE ONLY FOR NOMINAL CONDITIONS.

Table 8-2. Power Supply (A3), Troubleshooting (See figure FO-4)

Step	Test Point	Test Equipment	Control Settings and Instructions	Normal Indication	If Indication Is Normal	If Indication Is Abnormal
1	TP1 (4)	Test set-up(figure 7-1) Voltmeter and A3 extender board.	Place RAD TEST- MON switch on C-6280 in MON position. Voltmeter on X10 range.	Refer to table 8-1.	Proceed to step 2.	Check CR1, C1, and R1; replace defective component(s)
2	Emitter of Q1. (C)	Same as step 1	Same as step 1.	Same as step 1.	Proceed to step 3.	Check Q1, Q2 and associated components; replace defective component(s)
3	TP2 (5)	Same as step 1	Same as step 1.	Same as step 1.	Proceed to step 4.	Depot level maintenance required.
4	TP3 (6)	Same as step 1	Same as step 1.	Same as step 1.	Proceed with trouble shooting procedures on on A3 module.	Check CR2, R4, and C3; replace defective component(s)

Table 8-3. Comparator-Decoder (A4), Troubleshooting (See figure FO-3)

Step	Test Point	Test Equipment	Control Settings and Instructions	Normal Indication	If Indication Is Normal	If Indication Is Abnormal
1	Collector of Q16. (H)	Test set-up (figure 7-1) and A4 extender board	Set-up oscilloscope for external triggering place RAD TEST MON switch on C-6280 in MON position. Set-up AN/UPM-98A controls per para-graph 8-8, step 5.	Refer to table 8-1.	Proceed to Step 2.	Check Q13, Q14, Q15, and associated components. Replace Defective components(s)
2	Collector of Q12. (I)	Same as step 1	Same as step 1.	Refer to table 8-1.	Proceed to step 3.	Check Q9, Q10, Q11 and associated components. Replace defective component(s)
3	Collector of Q4. (J)	Same as step 1	Same as step 1.	Refer to table 8-1.	Proceed to step 4.	Check Q1, Q2, Q3 and associated components. Replace defective component(s)
4	Base of Q17. (K)	Same as step 1.	Same as step 1.	Refer to table 8-1.	Proceed to step 5.	Replace A4 module. Depot level maintenance required.
5	Collector of Q8. (L)	Same as step 1.	Same as step 1.	Refer to table 8-1.	Proceed with Routine trouble-ing procedures on A4 module.	Check Q5, Q6, Q7, Q8 and associated components. Replace defective component(s).

Table 8-4. Monitor Reply Evaluator (A3), Troubleshooting (See figure FO-4)

Step	Test Point	Test Equipment	Control Settings and Instructions	Normal Indication	If Indication Is Normal	If Indication Is Abnormal
1	P13 of A3 (D)	Test set-up (figure 7-1) and A3 extender board.	Set-up oscillo-scope for external triggering; place RAD TEST-MON switch on C-6280 in MON position. Set-up AN/UPM-98A controls per paragraph 8-8, step 5.	Refer to table 8-1.	Proceed to step 2.	Replace A4 module. Depot level maintenance re-quired.
2	B1 of Q4 (E)	Same as step 1	Same as step 1.	Same as step 1.	Proceed to step 3.	Check Q3, Q4, Q8 and as-sociated components. Replace defective com-ponent(s).
3	Collector of Q6	Same as step 1	Same as step 1.	2 SEC MIN	Proceed to step 4.	Check Q3 thru Q8 and as-sociated components. Replace defective com-ponent(s).
4	Base of Q12 (F)	Same as step 1	Same as step 1.	Same as step 1.	Proceed to step 5.	Check CR12, Q9 thru Q11 and associated components. Replace defective com-ponent(s).
5	Visual	None	None	Indicator remains on for a minimum of two seconds.	Proceed with routine troubleshoot-ing pro-cedures on A3 module.	Check Q12, Q13, Q14 and associated components. Replace defective com-ponent(s).

Table 8-5. Mode Generator (A2), Troubleshooting (See figure FO-2)

Step	Test Point	Test Equipment	Control Settings and Instructions	Normal Indication	If Indication Is Normal	If Indication Is Abnormal
1	Collector of Q3 (A)	Test set-up (figure 7-1) and A2 extender board	Place RAD TEST-MON switch on C-6280 in OUT position. Place one of the MODE selector switches in TEST position.	Refer to table 8-1.	Proceed to step 2.	Check Q3, Y1 and associ-ated components. Replace defective component(s). If Q3, Y1 and associated com-ponents are okay, replace A2 module. Depot level maintenance required.
2	Collector of Q2 (B)	Same as step 1	Same as step 1.	Same as step 1.	Proceed to step 3.	Check Q1, Q2 and associ-ated components. Replace defective component(s).
3	TP1 (2)	Same as step 1	Same as step 1.	Same as step 1.	Proceed to step 4.	Replace A2 module. Depot level maintenance required.
4	TP2 (3)	Same as step 1	Same as step 1.	Same as step 1.	Proceed with routine troubleshoot-ing pro-cedures on A2 module.	Check Q4, Q5, Q6 and as-sociated components. Re-place defective com-ponent(s).

Table 8-6. In-Flight Test Mode Reply Evaluator (A3), Troubleshooting (See figure FO-4)

Step	Test Point	Test Equipment	Control Settings and Instructions	Normal Indication	If Indication Is Normal	If Indication Is Abnormal
1	Visual	Test set-up (figure 7-1)	Place RAD TEST-MON switch on C-6280 in OUT position. Place one of the MODE selector switches in TEST position.	Indicator illumi-nates.	Proceed with routine troubleshoot-ing pro-cedures.	Check Q7-Q10, CR11, CR12 and associated components. Replace defective component(s).

8-9. REMOVAL AND REPLACEMENT OF ASSEMBLIES A2 THROUGH A4 (See figure 8-7). Removal of assemblies A2 through A4 requires the use of the two extraction tools fabricated per instructions contained in section IV. Assemblies A2 through A4 are held in place by channel guides cast into the end plates of the main frame assembly and by contacts on the bottom of the assemblies. These contacts attach to associated receptacles located on subassemblies A1A4A1 and A1A4A2. To remove and replace the covers and the assemblies, perform the following procedures:

1. Remove 11 screws (1, figure 8-7) attaching bottom cover (2) to main frame. Note different screw lengths (three screws) (see figure 8-7).
2. To remove assembly A2, place the hook shaped end of one extraction tool through the self-locking nut plate. Gently rock and pull up on the extraction tool until contacts on the bottom of the assembly disengage from their receptacles. Carefully lift assembly out of main frame assembly.
3. To remove assembly A3, hold two extraction tools with the "L" shaped ends under the angle brackets as illustrated in figure 8-8 (A). Gently rock assembly back and forth while pulling up until contacts on the bottom of the assembly disengage from their receptacles. Carefully lift assembly out of main frame assembly.
4. To remove assembly A4, hold two extraction tools with the tips of the hook shaped ends through the self-locking nut plates as illustrated in figure 8-8 (B). Gently rock assembly back and forth while pulling up until contacts on the bottom of the assembly disengage from their receptacles. Carefully lift assembly out of main frame assembly.
5. To remove top cover (6) remove six screws (7) and lock washers (8).
6. If necessary to remove side covers (9), remove four each screws (10), flat washers (11) and lock washers (12) attaching each cover to main frame assembly.
7. To replace top and side covers, reverse procedures in steps 4 and 5.
8. To replace assemblies A2 (3), A3 (4), and A4 (5), first insert A4 (5) into proper channel guide, press simultaneously on both ends of A4 to ensure proper contact seating. Then insert A3 (4), then A2 (3), repeating above procedure.

CAUTION

When replacing bottom cover, note that three holes are always left open. These three holes will always be located on the right side (viewed from adjustment end of unit, see figure 8-7) of the bottom cover regardless of the mounting direction desired. If a screw is forced into any of these mounting holes, damage to component parts mounted on the plug-in assemblies may result.

9. Replace bottom cover, inserting proper length screws in applicable holes (see figure 8-7).

LEGEND

1. Screw
2. Bottom Cover
3. Mode Generator (A2)
4. Reply Evaluator (A3)
5. Comparator-Decoder (A4)
6. Top Cover
7. Screw
8. Lock Washer
9. Side Cover
10. Screw
11. Flat Washer
12. Lock Washer

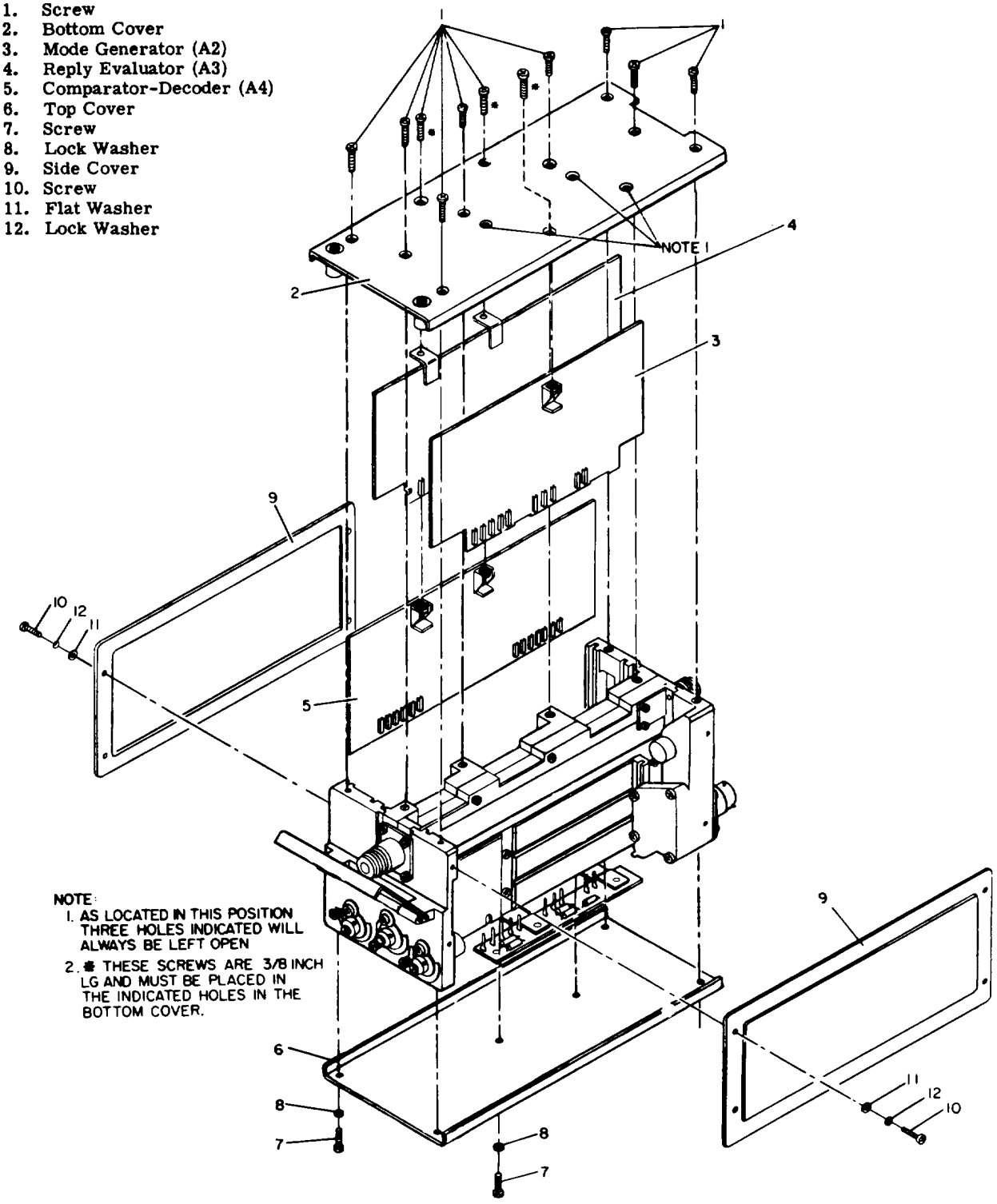


Figure 8-7. TS-1843A/APX, Exploded View

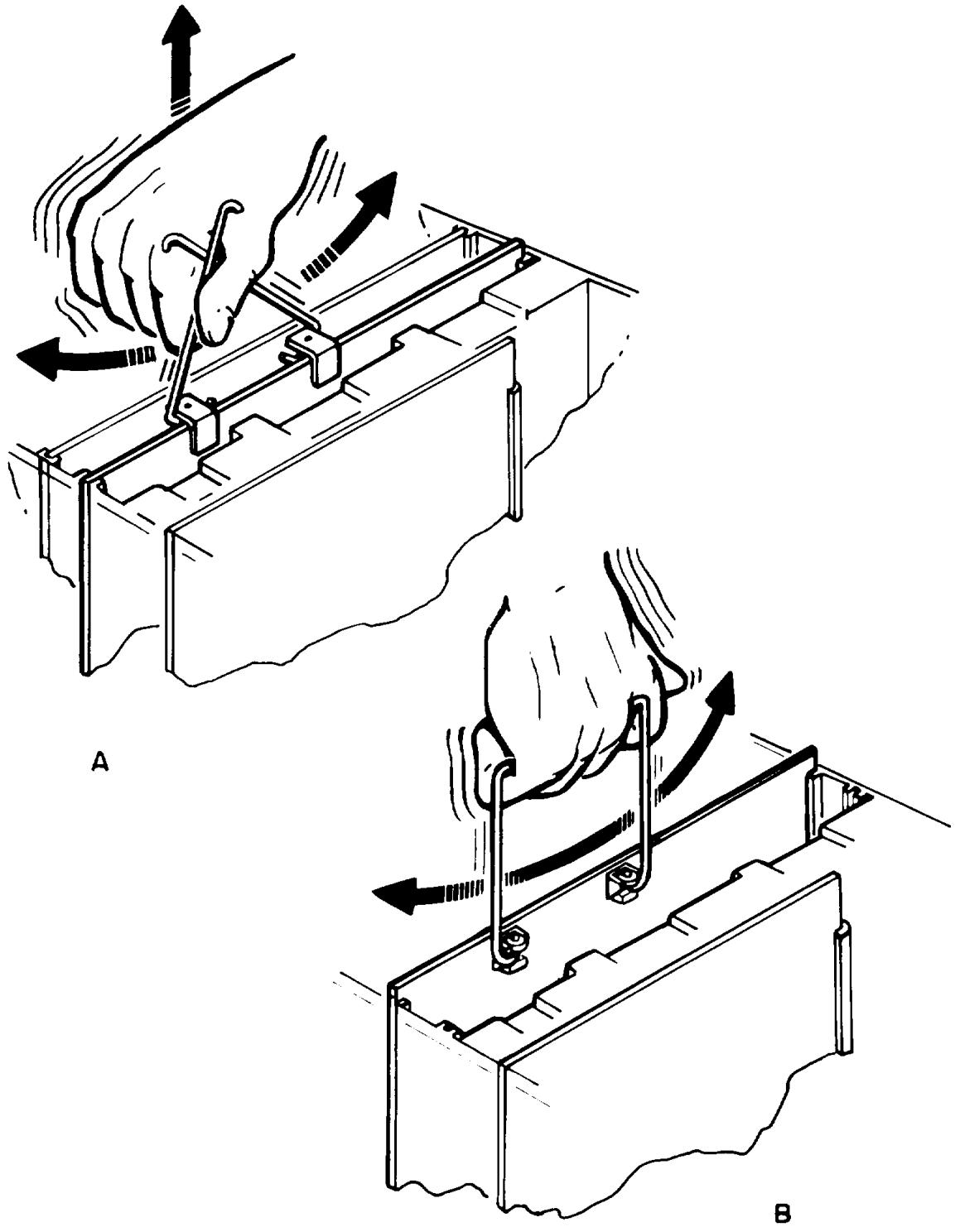


Figure 8-8. Use of Module Extractor Tool

9-1. GENERAL INFORMATION

9-2. Refer to section I for transponder set test set description and leading particulars.

9-3. SPECIAL TOOLS AND TEST EQUIPMENT.

9-4. Refer to section IV for special tools and test equipment.

9-5. DISASSEMBLY.

9-6. This procedure provides instructions to gain access to the radio frequency module, A1A1, components mounted on the A1A1 module, and A1A1 subassemblies. After performing steps 1 thru 8 in paragraph 9-7 to gain access to the A1A1 module, perform only the required steps listed below to gain access to the desired subassembly or component.

PARA. 9-7 STEP NO.	SUBASSEMBLY/COMPONENT (INDEX NUMBER)
9	Frequency stub (2 and 3)
	Stub support (4)
10, 11	Capacitor disc (9)
	Disc insulator (10)
	Feed-thru insulator terminal (11)
12, 13	Generator assembly, AlAlA5 (15)
12 thru 19	End seal disc (26)
	Diode, AlAlAlCR1 (27)
	Secondary radio frequency transmission line (28)
	Resistor, AlAlA1R1 (29)
	Electrical contact (30)
	Primary radio frequency transmission line (31)
	Bushing insulator (32)
	Connector (33)
	Power coupler assembly, AlA1A2 (34)
	Frequency coupler assembly, A1A1A3 (35)
	Generator coupler assembly, A1AlA4 (36)

9-7. Perform disassembly as follows:
1. Remove modules, A2 through A4, sides and top cover per paragraph 8-9.
2. Remove screw (1, figure 9-1), lock washer (2), and flat washer (3).

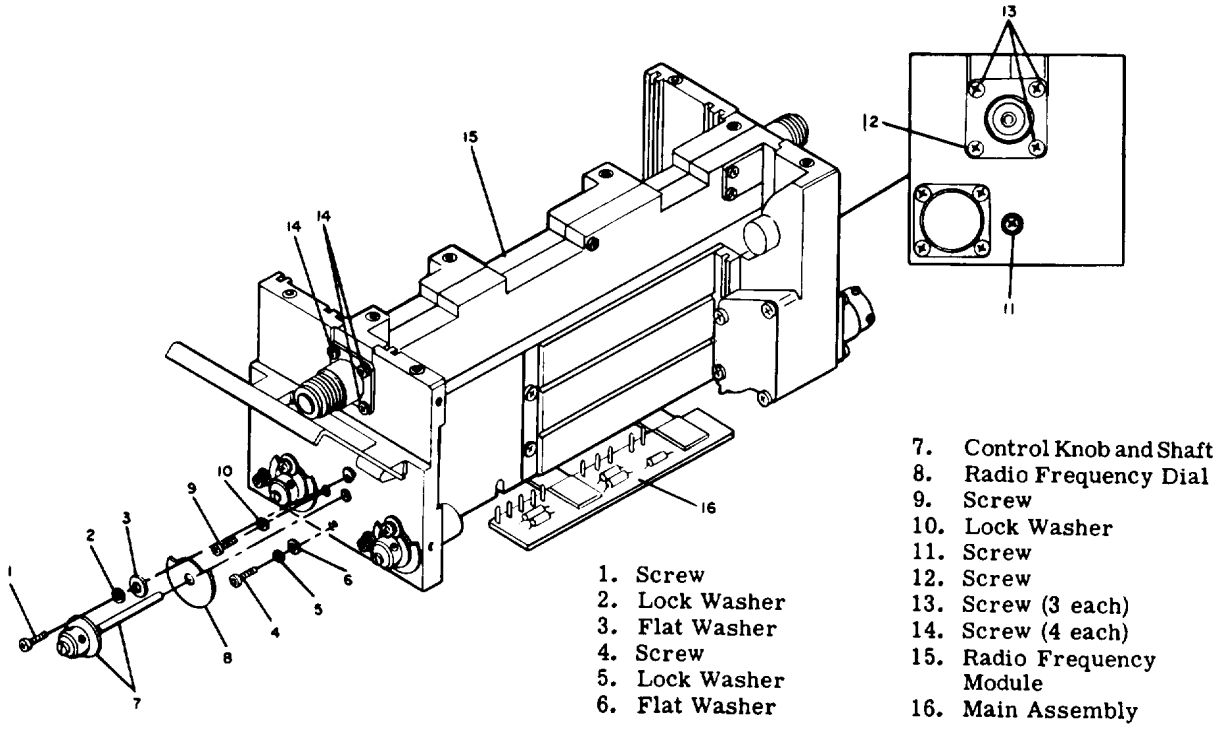
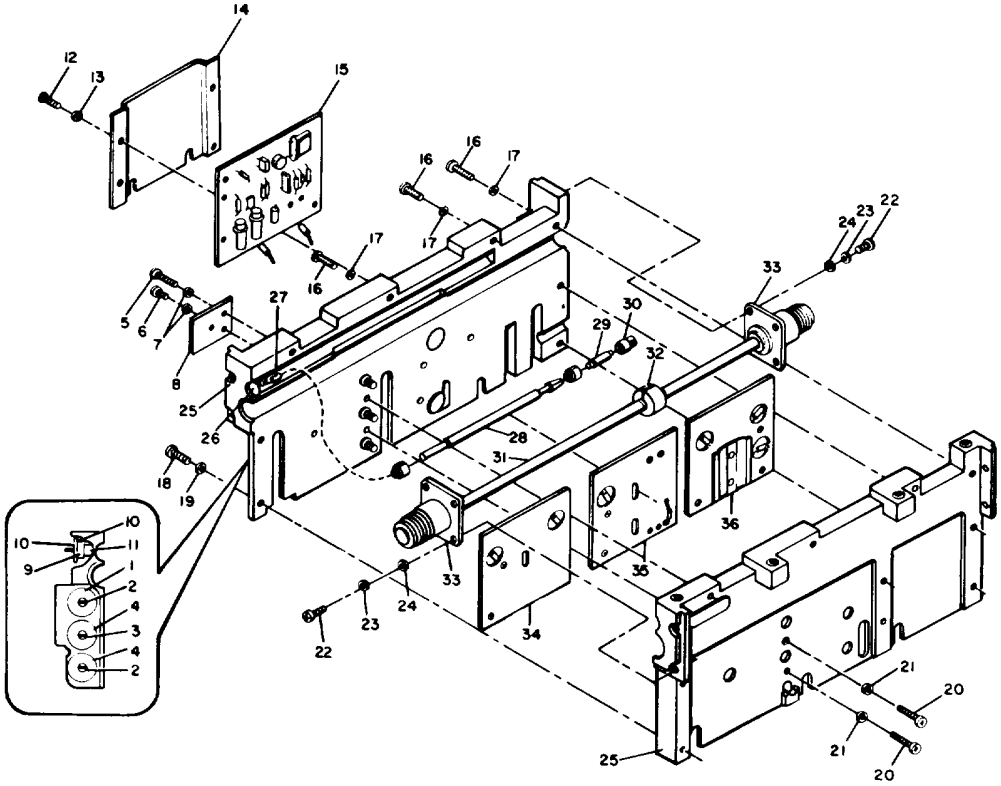


Figure 9-1. Radio Frequency Assembly (A1A1), Removal

3. Remove screw (4), lock washer (5), and flat washer (6).
4. Remove control knob and shaft (7) and radio frequency dial (8).
5. Remove screw (9) and lock washer (10); remove screw (11) and associated lock washer and flat washer.
6. Remove screw (12) and associated lock washer and flatwasher; loosen but do not remove seven screws (13 and 14).
7. Tag and unsolder six wires (red and white, blue, yellow, green, purple, and white) connecting radio frequency module (15) to main assembly (16).
8. Remove radio frequency module.
9. Remove aluminum tape (1, figure 9-2).
10. Remove two screws (5 and 6) and lock washers (7).
11. Remove capacitor cover (8).
12. Remove four screws (12) and lock washers (13).
13. Remove generator cover (14)
14. Remove three screws (16) and lock washers (17).
15. Remove screw (5) and lock washer (7).
16. Remove two screws (18) and lock washers (19).
17. Remove two screws (20) and lock washers (21).
18. Remove seven screws (22), lock washers (23) and washers (24).
19. Separate radio frequency plate (25).

9-8. INSPECTION, REPAIR AND REPLACEMENT.

9-9. INSPECTION. Visually inspect transponder set test set connectors 1J1 through 1J3 for broken or bent pins or center conductors. Open control plate cover and visually inspect control knobs and control knob dials for damage.



1. Aluminum Tape
2. Frequency Stub
3. Frequency Stub
4. Stub Support
5. Screw
6. Screw
7. Lock Washer
8. Capacitor Cover
9. Capacitor Disc
10. Disc Insulator
11. Feed-thru Insulator Terminal
12. Screw
13. Lock Washer
14. Generator Cover
15. Generator Assembly (A1A1A5)
16. Screw
17. Lock Washer
18. Screw
19. Lock Washer
20. Screw
21. Lock Washer
22. Screw
23. Lock Washer
24. Washer
25. Radio Frequency Plate
26. End Seal Disc
27. Diode, A1A1A1CR1
28. Secondary Radio Frequency Transmission Line
29. Resistor, A1A1A1R1
30. Electrical Contact
31. Primary Radio Frequency Transmission Line
32. Bushing Insulator
33. Connector
34. Power Coupler Assembly, A1A1A2
35. Frequency Coupler Assembly, A1A1A3
36. Generator Coupler Assembly, A1A1A4

Figure 9-2. Radio Frequency Assembly (A1A1), Disassembly

9-10. REPAIR AND REPLACEMENT. Repair consists of removal and replacement of faulty components isolated by routine troubleshooting procedures. No special repair instructions are required other than those used by experienced electronics technicians. Following component removal and replacement, replace potting compound, where required, using General Electric RTV 118 or equivalent. Following repair perform checkout procedures per paragraph 9-13 to ensure the transponder set test set is operating properly.

9-11. ASSEMBLY. Assembly of the transponder set test set is the reverse of disassembly procedures.

9-12. TESTING.

9-13. CHECKOUT. Transponder set test set simulator checkout is used as an aid to troubleshooting and to ensure the unit is operating properly following repair. Circuit functions tested are identified throughout the checkout procedure. Refer to section IV for test equipment required for checkout and section VIII for test point locations and instructions to gain access to test points. Checkout the transponder set test set per table 9-1.

9-14. TROUBLESHOOTING. Troubleshooting procedures are used to isolate a fault to a replaceable component. Checkout procedures may be used as an aid to isolate a fault to a circuit. Refer to section V for theory of operation data to determine circuit dependencies when troubleshooting using checkout procedure results. Refer to section IV for test equipment required for troubleshooting. Refer to section VIII for component locations on modules A2 through A4. See figures 9-6 through 9-9 for component locations on modules AlA1A2 through AlAlA5 respectively. Troubleshoot the transponder set test set per table 9-2.

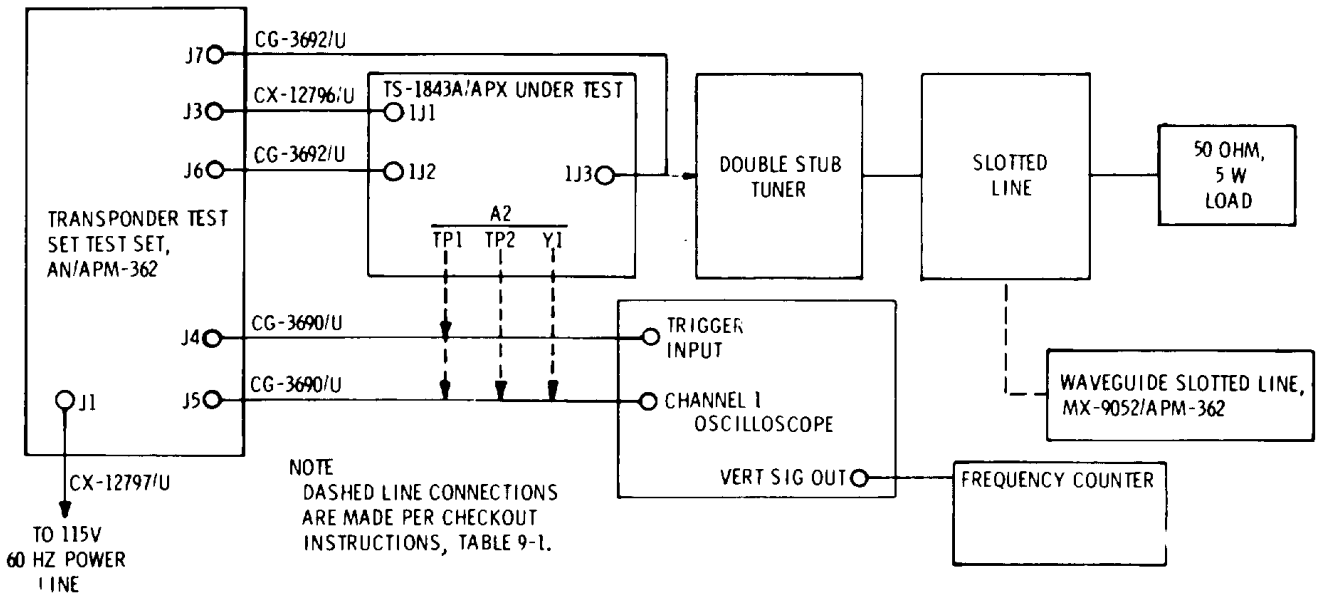


Figure 9-3. Checkout Test Connections

9-15. WAVEGUIDE SLOTTED LINE, MX-9052/APM-362 ADJUSTMENT.

9-16. The following procedure is to be used to adjust the waveguide slotted line used to check TS-1843A/ APX voltage standing wave ratio detector. Two adjustments are required. One adjustment tunes the double stub tuner to obtain a voltage standing wave ratio of 1.03 to 1 over the entire length of the slotted line. The second adjustment is to obtain waveguide slotted line settings that produce mismatches of 7.5 db and 10.5 db. Proceed as follows:

1. Make adjustment connections per figure 9-4. Do not insert waveguide slotted line at this time.
2. Turn on test equipment and allow adequate warmup time per manufacturer's instructions.
3. Adjust signal generator for output frequency of 1090 MHz and internal modulation frequency of 1 KHz. Apply power to signal generator; adjust modulation to 70% to 80%.
4. Place standing wave indicator controls in the following positions:

INPUT SELECTOR - 200 K
RANGE - 50
METER SCALE - NORMAL
GAIN - Adjust for approximate center scale meter deflection.

5. Move detector probe on slotted line no. 2 to right end of slotted line.
6. Adjust slotted line no. 1 detector probe to obtain the greater of two standing wave ratio deflections on standing wave SWR scale.

NOTE

The detector probe on waveguide slotted line must be moved over 180 electrical degrees as indicated on slotted line to obtain maximum and minimum indications.

7. Slide detector probe to obtain maximum standing wave indication SWR scale deflection.
8. Adjust standing wave indicator GAIN control to place meter indicator at convenient reference point on SWR scale. Note reference point.
9. Slide detector probe to obtain minimum standing wave indicator SWR scale deflection.
10. Adjust double stub tuner for standing wave indicator meter deflection approximately halfway between maximum and minimum deflection points.
11. Repeat steps 8 through 10 until difference between maximum and minimum deflection point is 1.03 or less. As final check adjust standing wave indicator GAIN control until maximum deflection indication is at 1 on SWR scale. Slide detector probe; minimum deflection point should be 1.03 or less on standing wave indicator SWR scale. Lock double stub tuner.
12. Insert waveguide slotted line into slotted line no. 2.
13. Slide waveguide slotted line for maximum deflection on standing wave indicator DB scale. Adjust standing wave indicator GAIN control to obtain 0 on DB scale.
14. Slide waveguide slotted line for minimum deflection on standing wave indicator DB scale. Adjust waveguide slotted line vernier to obtain approximately 7.5 DB indication on standing wave indicator.
15. Repeat steps 13 and 14 until standing wave indicator meter indications are 0 and 7.5 on DB scale as waveguide slotted line is moved along slotted line. Record waveguide slotted line vernier setting as the setting that produces a 7.5 db mismatch.
16. Repeat steps 13 through 15 to obtain waveguide slotted line vernier setting that produces a 10.5 db mismatch and record. Change RANGE scale to 60 to confirm 10.5 db mismatch.
17. Remove power from signal generator and standing wave indicator. Disconnect signal generator, standing wave indicator and slotted line no. 1 from double stub tuner. Waveguide slotted line adjustment is complete.

9-17. TS-1843A/APX ADJUSTMENT.

9-18. Following replacement of the comparator-decoder assembly (A4) or repair of the ringing oscillator circuit, adjustment of A4C6 must be accomplished. During A4C6 adjustment, the comparator-decoder assembly must be inserted into the TS-1843A/ APX and the side covers must be in place. Perform A4C6 adjustment per table 9-3.

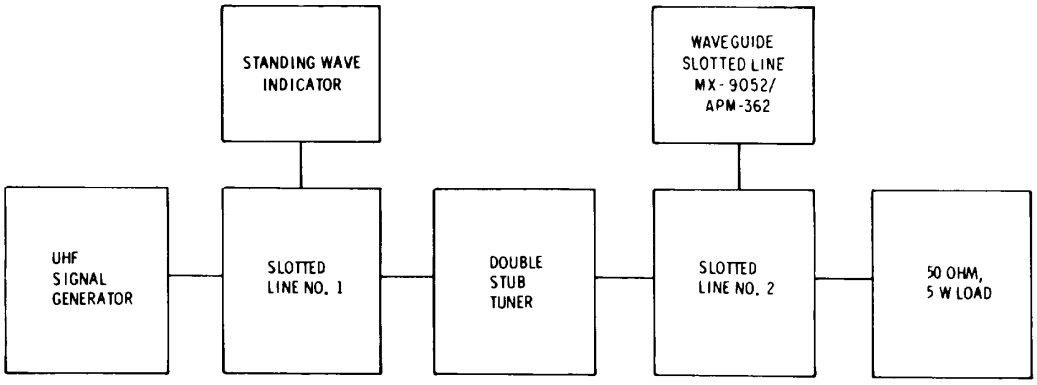


Figure 9-4. Waveguide Slotted Line Adjustment

Table 9-1. Checkout

STEP NO.	SWITCH POSITION	PROCEDURE	INDICATION	CIRCUIT FUNCTION TESTED
	NOTE Unless noted otherwise all switches and indicators are located on the Transponder Test Set Test Set, AN/APM-362.			
1.	REPLY FREQUENCY SELECT MHZ - 1090 BRACKET SPACING SELECT MICROSECONDS - 20.30 PRF SELECT - STDBY INTERROGATION LEVEL DBM - -65 BEAT FREQUENCY SELECT - OFF OPERATE/STANDBY- STANDBY ON/OFF (located at J1) - OFF TS 1843( )/APX LINE VOLTAGE SELECT - 28 MODE C CIRCUIT TEST - OFF MODE SELECT - OFF POWER - OFF S13 (located on rear of chassis) - J1	Make test connections per figure 9-3		Initial test equipment control settings.
2.	ON/OFF - ON POWER - ON MODE SELECT - MONITOR PRF SELECT - 400 OPERATE/STANDBY - OPERATE		POWER ON and STANDBY indicators light POWER ON indicator lights TEST SET CURRENT meter indicates approximately 270 ma. After approximately 60 seconds: GO and OPERATE indicators light	Test equipment input power. DC power control TS-1843A/APX input current Time delay
3.	VOLTAGE CHECK - pressed momentarily		TEST SET CURRENT meter indicates approximately 320 ma. TEST SET CURRENT meter indicates 28 (+0. 56) vdc.	TS-1843A/APX primary current. TS-1843A/APX input voltage.
4.	TS-1843A/AI'X RF IN DBW - 2 .	Slowly reduce OUTPUT POWER LEVEL ADJUST until NO-GO indicator lights for two seconds minimum.		Power detection circuit

Table 9-1. Checkout (Continued)

STEP NO.	SWITCH POSITION	PROCEDURE	INDICATION	CIRCUIT FUNCTION TESTED
5.		Slowly increase OUTPUT POWER LEVEL ADJUST until GO indicator lights.	OUTPUT PEAK POWER LEVEL indicates as follows:	Power detection circuit.
		If desired indication is not obtained, slightly increase (or decrease as required) TS-1843A/APX RF IN DBW knob and repeat steps 4 and 5. After desired indication is obtained, align TS-1843A/APX RF IN DBW dial 20 position to knob pointer and lock.	TS-1843A/APX RF IN DIAL SETTINGS 20 20 (+1.5) DBW 24 24 (±1.5) DBW 28 28 (±1.5) DBW	OUTPUT POWER LEVEL METER
6.	REPLY FREQUENCY SELECT MHz - all positions		Go indicator lights for each switch position.	Reply frequency.
7.	REPLY FREQUENCY SELECT MHz - 1090 BRACKET SPACING SELECT MICROSECONDS - all positions except 20.07 ALIGN POS.		Go indicator lights for each switch position.	Bracket spacing.
8.	PRF SELECT - 100/10 BRACKET SPACING SELECT MICROSECONDS - 20.30		Go indicator cycles once every four seconds and should be lighted at least two seconds minimum during each cycle.	Monitor mode evaluator.
9.	PRF SELECT - 100/5		GO indicator lights continuously.	Monitor mode evaluator.
10.	MODE SELECT - 1 PRF SELECT - 80%	Adjust VIDEO GAIN ADJUST to obtain GO indication.	GO indicator lights.	Test mode evaluator.
11.	PRF SELECT - 50%		GO indicator lights.	Test mode evaluator.

Table 9-1. Checkout (Continued)

STEP NO.	SWITCH POSITION	PROCEDURE	INDICATION	CIRCUIT FUNCTION TESTED
12.	PRF SELECT - 80%	Connect cable CG-3691/U to oscilloscope TRIGGER and A2TP1 and ground on TS-1843A/APX. Synchronize oscilloscope.	Displayed pulses are displaced by 3.0 μsec (nominal).	Mode I timing.
13.	MODE SELECT - 2		Displayed pulses are displaced by 5.0 μsec (nominal).	Mode 2 timing.
14.	MODE SELECT - 3/A		Displayed pulses are displaced by 8.0 μsec (nominal).	Mode 3/A timing.
15.	MODE SELECT - C MODE C CIRCUIT TEST - ON		Displayed pulses are displaced by 21.0 μsec (nominal).	Mode C timing.
16.	MODE SELECT - 1 MODE C CIRCUIT TEST - OFF		Pulse width at 50% amplitude is 0.8 (+0. 1) μsec.	Timing pulses.
			Rise time between 10% and 90% amplitude points is 0.1 μsec maximum.	Timing pulses.
			Decay time between 90% and 10% amplitude points is 0.2 μsec maximum.	Timing pulses.
17.		Oscilloscope TRIGGER SLOPE - INT. + Change TS-1843A/APX A2TP1 connection to A2TP2. Connect oscilloscope VERT. SIG. OUT to counter.	Counter displays 800 (±100) hertz.	Timing generation.
18.		Change TS-1843A/APX A2TP2 connection to A2Y1.	Counter displays 1.0 MHz (±4. 762 KHz).	Timing generation.

Table 9-1. Checkout (Continued)

STEP NO.	SWITCH POSITION	PROCEDURE	INDICATION	CIRCUIT FUNCTION TESTED
19.	BEAT FREQUENCY SELECT - PULSE MODE SELECT - 2 OPERATE/STANDBY - STANDBY Oscilloscope VARIABLE TIME/CM - 1 μsec TRIGGER SLOPE - EXT. TS-1843A/APX RF OUT -DBM - 65	Connect J5 to oscilloscope CHANNEL 1 using cable CG-3690/U. Change TS-1843A/APX A2TP2 connection to A2TP1. Synchronize oscilloscope. Vary INTERROGATION LEVEL DBM until observed pulses are of the same amplitude. If desired results are not obtained set INTERROGATION LEVEL DBM to -65. Adjust TS-1843A/APX RF OUT - DBM until observed pulses are of the same magnitude. Align TS-1843A/APX RF OUT - DBM dial 65 position to knob pointer and lock.	Interrogation level. INTERROGATION LEVEL DBM dial setting is -65 (+2) db.	 1030 MHz frequency generator control. 1030 MHz frequency generator control.
20.	BEAT FREQUENCY SELECT - BEAT	Adjust BEAT FREQUENCY TUNE MHz switch to approach zero beat display on oscilloscope.	BEAT FREQUENCY TUNE MHz switch is positioned between +0. 5 and -0. 5.	1030 MHz frequency generator control.
21.		Adjust test equipment per paragraph 9-15.		
22.	MODE SELECT - MONITOR PRF SELECT - 400 BEAT FREQUENCY SELECT - OFF OPERATE/STANDBY - OPERATE TS-1843A VSWR DB-9	Adjust OUTPUT POWER LEVEL ADJUST to obtain 28 dbw.	OUTPUT PEAK POWER LEVEL meter indicates 28 dbw.	Test equipment settings.

Table 9-1. Checkout (Continued)

STEP NO.	SWITCH POSITION	PROCEDURE	INDICATION	CIRCUIT FUNCTION TESTED
23.	OPERATE/STANDBY - STANDBY	Disconnect CG-3692/U from TS-1843A/APX and connect TS-1843A/APX directly to double stub tuner. CAUTION Do not drop or jar waveguide slotted line or readjustment may be required.	Test equipment settings.	
24.	OPERATE/STANDBY - OPERATE	Adjust waveguide slotted line for the recorded setting corresponding to 7. 5 db mismatch. Insert waveguide slotted line into slotted line and move slowly across slotted line. Do not tilt waveguide slotted line during movement. If proper results are not obtained during steps 24 and 25 adjust TS-1843A/APX VSWR control as follows: Turn clockwise to turn on GO indicator with a 7.5 db mismatch. Turn clockwise to turn off GO indicator with a 10. 5 db mismatch. Continue to adjust VSWR control until proper results are obtained. Align VSWR DB control dial 9 position to knob pointer and lock.	GO indicator lights.	VSWR DB dial setting.

Table 9-1. Checkout (Continued)

STEP NO.	SWITCH POSITION	PROCEDURE	INDICATION	CIRCUIT FUNCTION TESTED
25.		Adjust waveguide slotted line for the recorded setting corresponding to 10. 5 db mismatch. Insert waveguide slotted line into slotted line and move slowly across line.	NO-GO indicator lights.	VSWR DB dial setting.
26.	OPERATE/STANDBY - STANDBY POWER - OFF ON/OFF - OFF.	Disconnect test equipment. Checkout has been completed.		

Table 9-2. Troubleshooting

STEP	CIRCUIT FUNCTION	AN/APM-362 CONTROLS	TEST POINT	TEST EQUIPMENT	NORMAL INDICATION	IF INDICATION IS ABNORMAL
1		Refer to table 9-1, initial switch positions				
2	POWER SUPPLY	Table 9-1, steps 1 thru 3.	A3TP1	Multimeter	28 vdc	Check continuity between 1Jl and A3P1. a. No continuity - Repair open circuit. b. Continuity - Check A3R1, A3CR1, and A3C1.
			A3TP2	Multimeter	12 vdc.	a. Check A1A1, A2, A3 (reply evaluator portion) and A4 12 vdc buses for short circuits. b. Check A3Q1, A3Q2, and associated circuit components.
			A1A2Q1 Emitter	Multimeter	12 vdc.	Replace A1A2Q1
			A3TP3	Multimeter	5 vdc.	a. Check A2, A3 (reply evaluator portion), and A4 5 vdc buses for short circuits. b. Check A3CR2, A3R4, A3C2, and A3C3.
					NOTE All waveforms used in troubleshooting are shown in figure 9-5.	
3	MONITOR MODE EVALUATOR	Table 9-1,steps 1, 2, 8, and 9.	A4A5-6	Oscilloscope	Figure 9-5, waveform 1.	Check waveforms at A4A3-13, A4A3-1, and A4A3-2.
			A4A3-6	Oscilloscope	Waveform 1, inverted.	Replace A4A3.
			A4Q4 Base	Oscilloscope	Waveform 2.	Check A4Q4 and associated circuit components.

Table 9-2. Troubleshooting (Continued)

STEP	CIRCUIT FUNCTION	AN/APM-362 CONTROLS	TEST POINT	TEST EQUIPMENT	NORMAL INDICATION	IF INDICATION IS ABNORMAL
3 (Cont.)		PRF SELECT-100/10	None	None	Go indicator cycles on and off once every four seconds and is lighted at least two seconds of each cycle.	Check A3Q9 thru A3Qll and associated circuit components.
4	TEST MODE EVALUATOR	Table 9-1, steps 1, 2, 10, and 11. PRF SELECT-80% MODE - 1	None	None	Go indicator lights.	a. Check A3Q4 thru A3Q6 and associated circuit components. b. Check A3CR12, A3CR13, A3Q12 thru A3Q14 and associated circuit components.
5	VSWR	Table 9-1, steps 1 and 2.	A4A3-13	Oscilloscope	Waveform 3.	If indication is normal, replace A4A5, A4A3.
		PRF SELECT-400 MODE - MONITOR	A4Q4 Collector	Oscilloscope	Waveform 4.	a. If indication is normal, replace A4A6. b. Check VSWR directional coupler, AlAlAICR1, A4Q9 thru A4Q12 and associated circuit components.
			A4A3-1	Oscilloscope	Waveform 4.	a. If indication is normal, replace A4A5, A4A3. b. Check power directional coupler, A1A1A1CR1, A4Q9 thru A4Q12, and associated circuit components.
6	BRACKET SPACING	Table 9-1, steps 1, 2, and 7.	A4A3-2	Oscilloscope	Waveform 5.	If indication is normal, replace A4A5, A4A3.
			A4A3-11	Oscilloscope	Waveform 6.	Check A1A1A1R2, A4Q13 thru A4Q16, and associated circuit components.
			A4A3-10	Oscilloscope	Waveform 8.	Replace A4A2, A4A1.
			A4A1-8	Oscilloscope	Waveform 8.	Replace A4A1.
			A4A1-12	Oscilloscope	Waveform 7.	Check A4C18 and A4R39.
			A4A-11	Oscilloscope	Waveform 7, inverted.	Replace A4A1.

Table 9-2. Troubleshooting (Continued)

STEP	CIRCUIT FUNCTION	AN/APM-362 CONTROLS	TEST POINT	TEST EQUIPMENT	NORMAL INDICATION	IF INDICATION IS ABNORMAL
6 (Cont.)			A4A1-3	Oscilloscope	Waveform 7.	Replace A4A1.
			A4A3-9	Oscilloscope	Waveform 9.	Check A4Q5 thru A4Q8, A4Q17, A4Q18, and associated circuit components.
7	TIMING GENERATION	Table 9-1, steps 1, 2 except MODE SELECT to 1.	A2A3-9	Oscilloscope	Waveform 10.	Check A2Q1, A2Q2, and associated circuit components
			A2A3-10	Multimeter	4. 3 to 4. 9 V.	Replace A2A1.
			A2A3-8	Oscilloscope	Waveform 10.	Replace A2A3.
			A2A3-13	Oscilloscope	Waveform 11.	Replace A2A4.
			A2A3-12	Oscilloscope	Waveform 12.	Check A2Q3 and associated circuit components.
			A2A3-11	Oscilloscope	Waveform 13.	Replace A2A3.
			A2TP2	Oscilloscope	Waveform 14.	Check A2Q4 thru A2Q6 and associated circuit components.
			A3Q8 Collector	Multimeter	0 V.	Check AlAlA5, A3Q3, A3Q7, and A3Q8 and associated circuit components.
8	RIPPLE THRU COUNTER		A2A5-1	Oscilloscope	Waveform 13.	Check timing source
			A2A5-4	Oscilloscope	Waveform 15.	Replace A2A4.
			A2A5-6	Oscilloscope	Waveform 16.	Replace A2A5.
			A2A5-8	Oscilloscope	Waveform 17.	Replace A2A5.
			A2A6-8	Oscilloscope	Waveform 18.	Replace A2A6.
			A2A6-6	Oscilloscope	Waveform 19.	Replace A2A6.
			A2A7-8	Oscilloscope	Waveform 20.	Replace A2A7.
			A2A7-6	Oscilloscope	Waveform 21.	Replace A2A7.

Table 9-2. Troubleshooting (Continued)

STEP	CIRCUIT FUNCTION	AN/APM-362 CONTROLS	TEST POINT	TEST EQUIPMENT	NORMAL INDICATION	IF INDICATION IS ABNORMAL
9	TIME ENABLE		A2A9-8	Oscilloscope	Waveform 22.	Replace A2A9.
	GATES		A2A8-6	Oscilloscope	Waveform 23.	Replace A2A8.
			A2AU-8	Oscilloscope	Waveform 23.	Replace A2A8.
10	REFERENCE ENABLE GATE		A2A9-5	Oscilloscope	Waveform 24.	Replace A2A10.
	SYNC ENABLE GATE		A2A3-3	Oscilloscope	Waveform 25.	Replace A2A3.
			A2A2-10	Oscilloscope	Waveform 25, inverted.	Replace A2A2.
			A2TPI	Oscilloscope	Waveform 15.	Replace A2A3.
	MODE 1 GATE		A2A9-4	Multimeter	4.3 to 4.9 V.	Replace A2A2.
			A2A9-5	Oscilloscope	Waveform 24, inverted.	Replace A2A9.
	MODE 2 GATE	MODE SELECT 2	A2A1-9	Multimeter	4. 3 to 4. 9 V.	Replace A2A2.
			A2A1-8	Oscilloscope	Waveform 26.	Replace A2All.
	MODE 3/A GATE	MODE SELECT 3/A	A2AI-9	Multimeter	4. 3 to 4. 9 V.	Replace A2A2.
			A2A1-8	Oscilloscope	Waveform 27.	Replace A2A1.
	MODE C GATE	MODE SELECT C	A2A1-5	Multimeter	4. 3 to 4. 9 V.	Replace A2A2.
		MODE C CIRCUIT TEST - ON	A2A11-6	Oscilloscope	Waveform 28.	Replace A2A11.

Table 9-2. Troubleshooting (Continued)

STEP	CIRCUIT FUNCTION	AN/APM-362 CONTROL	TEST POINT	TEST EQUIPMENT	NORMAL INDICATION	IF INDICATION IS ABNORMAL
10 (Cont.)	OUTPUT CUIT TEST -	MODE C CIR- OFF	A2A9-6	Oscilloscope	Waveform 24.	Replace A2A9.
		MODE SELECT- 1	A2A10-8	Oscilloscope	Waveform 24, inverted.	Replace A2A10.
			A2TP2	Oscilloscope	Waveform 29.	Check A2Q4 thru A2Q6 and associated circuit components.

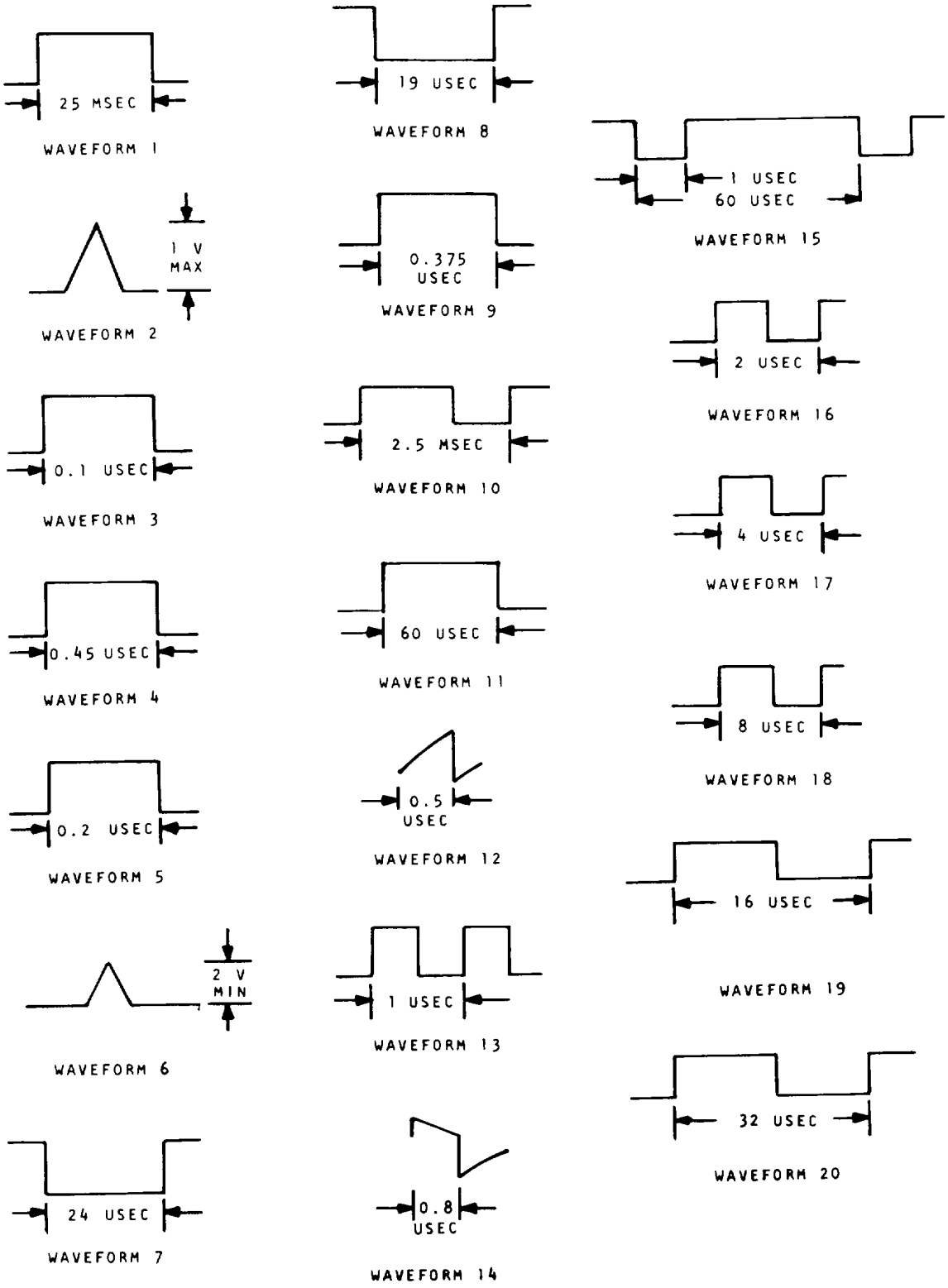


Figure 9-5. Troubleshooting Waveforms (Sheet 1 of 2)

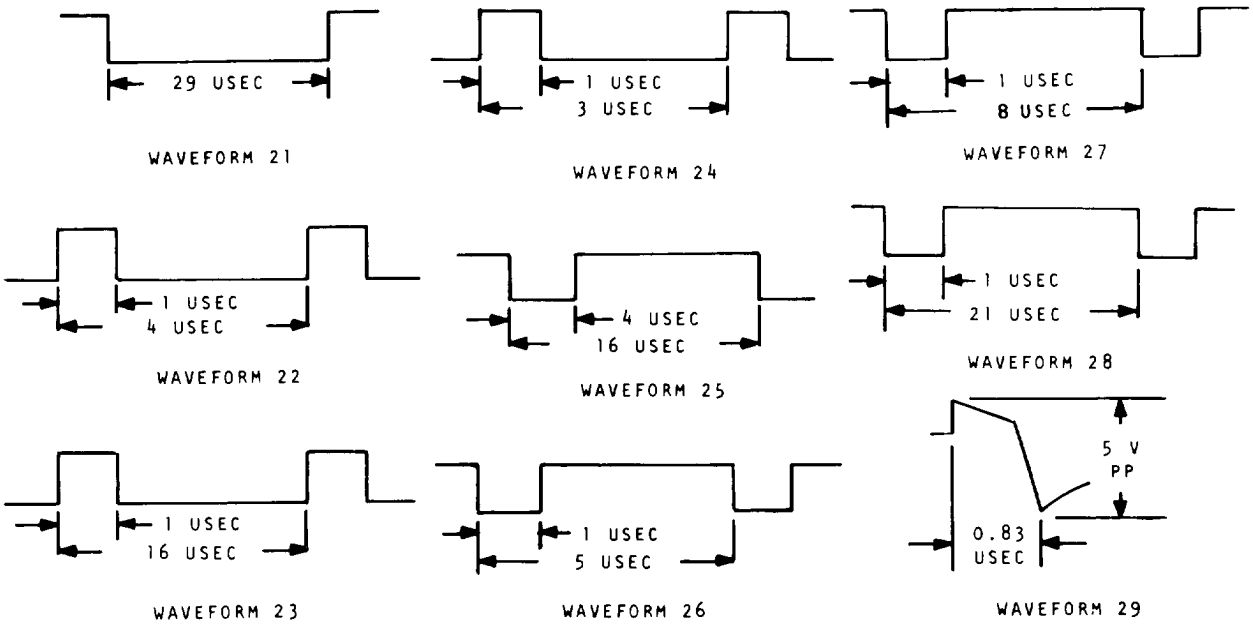


Figure 9-5. Troubleshooting Waveforms (Sheet 2 of 2)

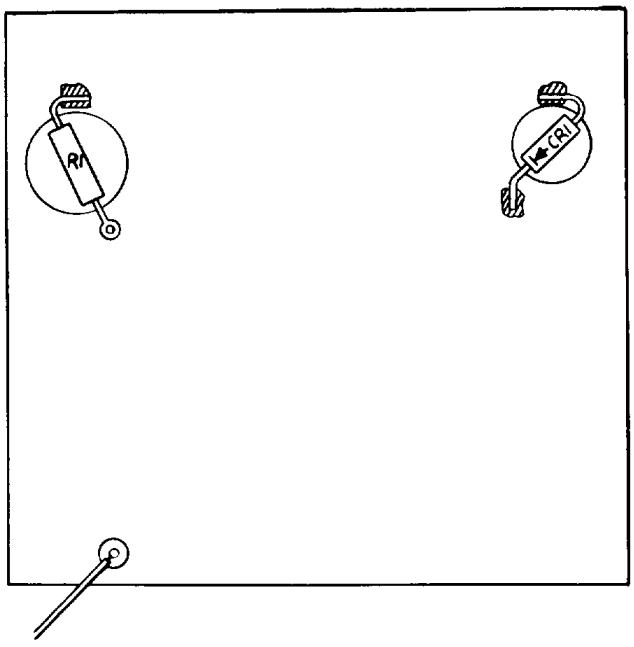


Figure 9-6. Power Coupler Assembly (A1A1A2), Component Locations

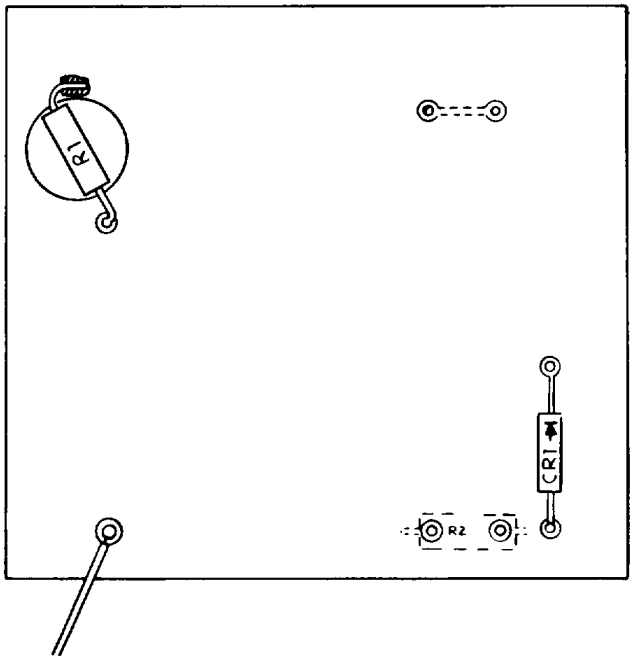


Figure 9-7. Frequency Coupler Assembly (A1A1A3), Component Locations

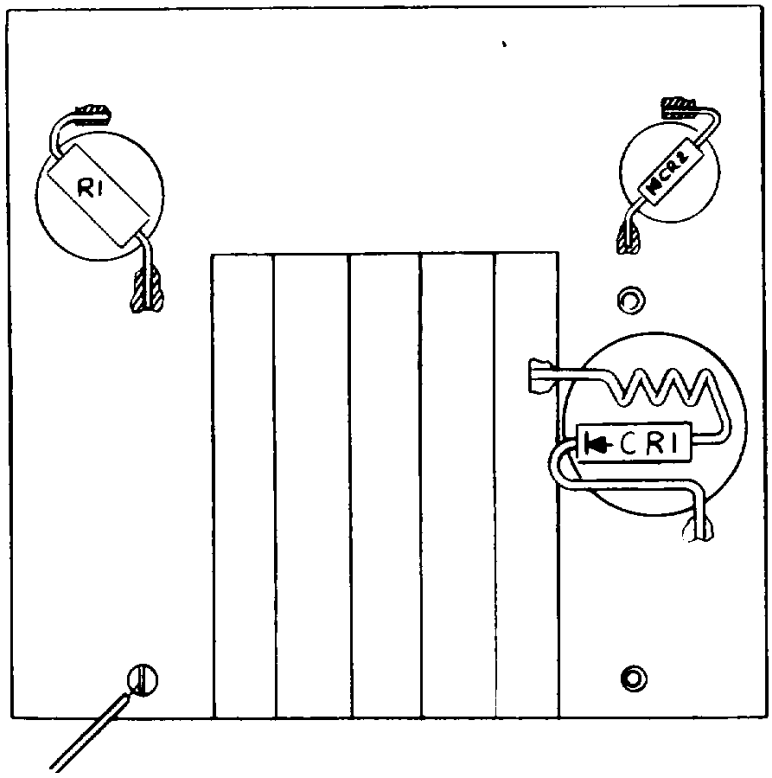


Figure 9-8. Generator Coupler Assembly (A1A1A4), Component Locations

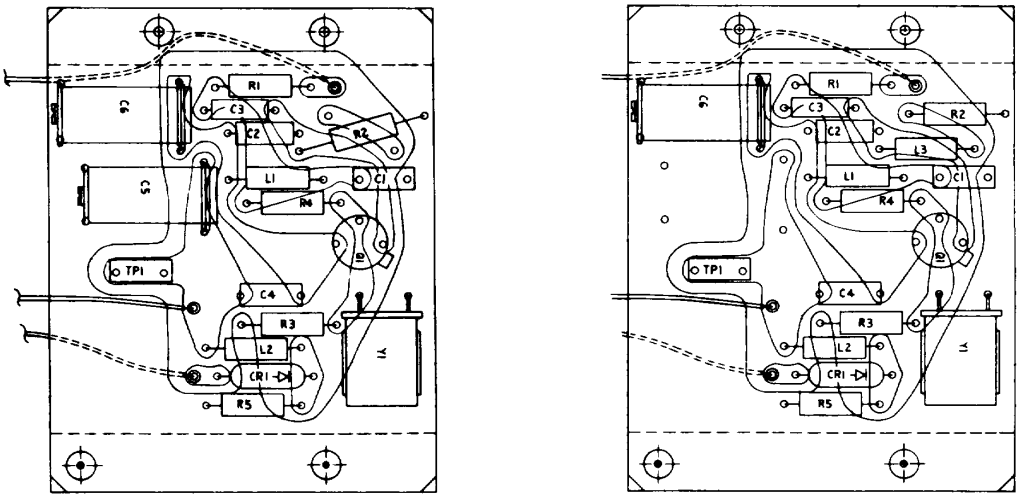


Figure 9-9. Generator Assembly (A1A1A5), Component Locations

Table 9-3. Adjustment

STEP NO.	SWITCH POSITION	PROCEDURE	INDICATION	ADJUSTMENT
	NOTE **Unless noted otherwise all switches and indicaters are located on the Transponder Test Set Test Set, AN/APM-362.**			
1	REPLY FREQUENCY SELECT MHZ - 1090 BRACKET SPACING SELECT MICROSECONDS - 20.30 PRF SELECT - STDBY INTERROGATION LEVEL - -65 BEAT FREQUENCY SELECT - OFF OPERATE/STANDBY- STANDBY ON/OFF - OFF TS-1843( )/APX LINE VOLTAGE SELECT - 28 MODE C CIRCUIT TEST - OFF MODE SELECT - OFF POWER - OFF	Make test connections per figure 9-3.		
2	INPUT POWER CONNECTOR SELECT (located on rear of chassis) - J1 ON/OFF - ON POWER - ON MODE SELECT - MONITOR PRF SELECT - 400 OPERATE/STANDBY - OPFRATE		POWER ON (2) and STANDBY indicators light. TEST SET CURRENT meter indicates 270 ma.	
3	BRACKET SPACING SELECT MICROSECONDS - All positions except 20. 07 ALIGN POS.		GO indicator lights for each switch position.	If GO indicator does not light for each switch position adjust TS-1843A/APX A4C6.
4	BRACKET SPACING SELECT MICROSECONDS - 20.07 ALIGN POS.		GO indicator lights.	If GO indicator does not light adjust TS-1843A/APX A4C6 until GO indicator lights.

Table 9-3. Adjustment

STEP NO.	SWITCH POSITION	PROCEDURE	INDICATION	ADJUSTMENT	
	NOTE				
5		Repeat steps 3 and 4 until GO indicator lights for all BRACKET SPACING SELECT MICRO-SECONDS switch positions.			
6		Disconnect test connections. Adjustment is completed.			

9-19. RADIO FREQUENCY ASSEMBLY (A1A1) ALIGNMENT.

9-20. Radio frequency assembly alignment must be performed following repair or replacement of subassemblies AlAlA2 through AlAlA5. Following alignment perform a complete checkout per paragraph 9-13. Proceed as follows:

1. Turn on test equipment and allow adequate warm-up time per manufacturer's instructions.
2. Perform reply frequency alignment as follows:

a. Place transponder test set test setAN/APM-362 controls in the following positions:

OPERATE/STANDBY - STANDBY
TS1843( )/APX POWER AND CONTROL -OFF
MODE SELECT - MONITOR
PRF SELECT - 400
BRACKET SPACING SELECT USEC - 20.30
REPLY FREQUENCY SELECT MHZ - 1090

b. Move TS-1843A/APX RF IN DBW control to 20. Remove power supply and reply evaluator assembly (A3) and comparator and decoder assembly (A4) from TS- 1843A/APX.

c. Make test connections per figure 9-10. Connect oscilloscope probe to A1A4J7 (mates with A4-P7) and operate with internal sync.

d. Place transponder test settestsetAN/APM-362 controls in the following positions:

TS1843( )/APX POWER AND CONTROL- ON
OPERATE/STANDBY - OPERATE
OUTPUT POWER LEVEL ADJUST - Adjust for OUTPUT PEAK POWER LEVEL indication of 28 DBW.

e. Adjust A1A1Z1, A1A1Z2, and A1A1Z3 to obtain an oscilloscope display of two pulses with an amplitude of 3.5 (*0.2) volts. If pulse amplitude is not 3.5 (*0.2) volts, loosen both A1A1 FREQ ADJ screws. Move frequency coupler assembly (AlA1A3) to obtain the correct pulse amplitude. Tighten both A1A1 FREQ ADJ screws.

f. Move transponder test set test setAN/APM-362 REPLY FREQUENCY SELECT MHZ control to-4then to +4 positions. Pulse amplitude should be approximately the same at the -4 and +4 switch positions. Adjust A1A1z1, A1A1Z2, and A1AlZ3 to ensure pulse amplitude is approximately the same. Pulse amplitudes should be approximately 1.7 (*0.2) volts.

g. Place transponder test settest setAN/APM-362 controls in the following positions:

OPERATE/STANDBY - STANDBY
TS1843( )/APX POWER AND CONTROL - OFF

3. Perform reply power alignment as follows:

a. Place transponder test settestsetAN/APM-362 controls in the following positions:

OPERATE/STANDBY- STANDBY
TS1843( )/APX POWER AND CONTROL -OFF
REPLY FREQUENCY SELECT MHZ - 1090

NOTE

Prior to installation of electronic test extender cards a hole must be drilled through the electronic test extender cards to permit access to A1A1 PWR ADJ adjustment screw.

b. If necessary, drill holes in electronic test extender cards to gain access to A1A1 PWR ADJ adjustment screw.

c. Install electronic test extender card MX-9054/ APM-362 in place of A3 module and MX-9055/APM362 in place of A4. Install A3 and A4 modules on the extender boards.

d. Place transponder test settestsetAN/APM-362 controls in the following positions:

TS1843( )/APX POWER AND CONTROL - ON
OPERATE/STANDBY - OPERATE

e. Make test connections per figure 9-10. Connect oscilloscope probe to A4TP1. Oscilloscope display shall be two pulses with an amplitude of 2 (*0.2) volts. If pulse amplitude is not 2 (*0.2) volts loosen AIA1 PWR ADJ adjustment screw. Move power coupler assembly (AlAlA2) to obtain correct pulse amplitude. Tighten A1A1 PWR ADJ adjustment screw.

f. Place transponder test set testsetAN/APM-362 controls in the following positions:

TS1843( )/APX POWER AND CONTROL - OFF
OPERATE/STANDBY - STANDBY

g. Remove electronic test extender cards (MX9054/APM-362 and MX-9055/APM-362) from TS1843A/APX. Install A3 and A4 modules into the TS- 1843A/APX.

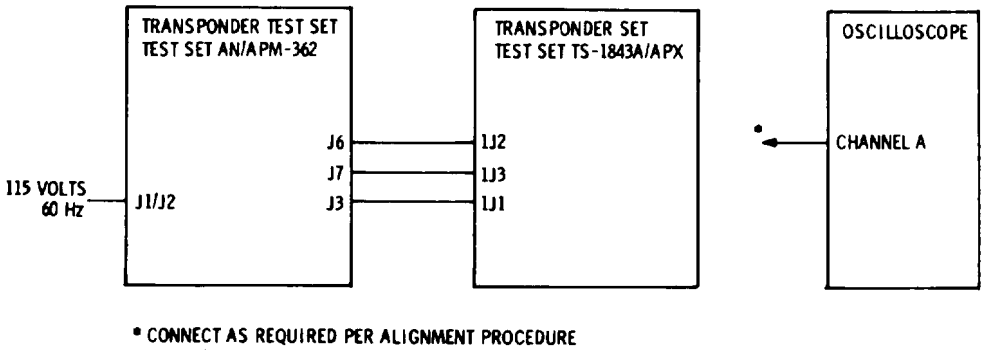


Figure 9-10. Radio Frequency Assembly (A1Al) Alignment Test Connections

4. Perform interrogation level alignment as follows:

a. Place transponder test set test set AN/APM-362 controls in the following positions:

OPERATE/STANDBY - STANDBY
TS1843( )/APX POWER AND CONTROL -OFF
PRF SELECT - 80%
BEAT FREQUENCY SELECT - OFF
VIDEO GAIN ADJUST - INC
MODE SELECT - 2

b. Make test connections per figure 9-10. Connect oscilloscope probe to transponder test set test set AN/APM-362 connector J5.

c. Move transponder test set testsetAN/APM-362 TS1843( )/APX POWER AND CONTROL switch ON. Adjust VIDEO GAIN ADJUST control for oscilloscope display of two pulses spaced five microseconds apart with an amplitude of 1 volt (approximate).

NOTE

An intermittent GO, NO GO may be displayed on the transponder test set test set AN/APM362 when adjusting AlAAS5C5 (01A23375021-11 only) and AlAlA5C6 at the *3 MHz points. When an intermittent condition is encountered, alignment should be repeated until the GO indicator is on steady.

d. Adjust AlAlA5C5 (01A233750-21-11 only) and AAlA5C6 for maximum pulse amplitude display on oscilloscope.

e. Move transponder test set testsetAN/APM-362 TS1843( )/APX POWER AND CONTROL switch to OFF. Disconnect alignment connections; alignment is complete.

SECTION X
DEPOT MAINTENANCE
(ARMY USE ONLY)

10-1. GENERAL.
10-2. SCOPE. This section provides depot maintenance procedures. Depot maintenance consists of alignment and isolation of a fault to a replaceable component. Depot overhaul standards are provided to ensure the TS-1843A/APX is in proper operating condition following repair.
10-3. SPECIAL TOOLS AND TEST EQUIPMENT.
Special tools and test equipment required for depot maintenance are listed in Appendix B.
10-4. DEPOT MAINTENANCE.
10-5. INSPECTION, REPAIR, AND REPLACEMENT.
Refer to paragraph 9-8 for inspection, repair, and replacement procedures.
10-6. TROUBLESHOOTING. Refer to paragraph 9-14 for troubleshooting procedures.
10-7. ADJUSTMENT. Refer to paragraph 9-17 for adjustment procedures.
10-8. DEPOT OVERHAUL STANDARDS. Refer to paragraph 9-13 for checkout procedures.
10-9. REFERENCES AND MAINTENANCE ALLOCATION.
10-10. REFERENCES. Refer to Appendix A for publications containing information applicable to TS-1843A/APX operation and maintenance.
10-11. MAINTENANCE ALLOCATION. Refer to Appendix B for the TS-1843A/APX maintenance operation summary.

SECTION XI
ILLUSTRATED PARTS BREAKDOWN
Part A
Introduction

11-1. GENERAL.
11-2. This section lists, illustrates, and describes the electrical and mechanical component parts of the various items comprising Transponder Set Test Set TS-1843A/APX manufactured by Stewart-Warner Electronics, Division of Stewart-Warner Corporation.
11-3. The policy of including and updating stock numbers information in Illustrated Parts Breakdown manuals has been discontinued. Federal Stock Numbers for kits and non-kitted parts listed in the parts breakdown will be found in the Air Force S-00-1-1 and Navy C0006 Master Cross Reference Index.
11-4. This manual consists of four parts: Part A, Introduction, contains information on the use of this manual; Part B, Group Assembly Parts List, contains the breakdown of assemblies, subassemblies and detail parts of the components comprising Transponder Set Test Set TS-1843A/APX; Part C, Numerical Index, is an alpha-numerical listing of all part numbers referenced in Part B, Group Assembly Parts List; Part D, Reference Designation Index, is a listing of all reference designations assigned to electrical parts.
11-5. GROUP ASSEMBLY PARTS LIST.
11-6. Part B, Group Assembly Parts List, consists of illustrations and parts listing of the various items comprising the TS-1843A/APX. The parts breakdown for each unit is presented in the order of disassembly and every item is indented to show the relationship between the particular item and the next higher assembly.
11-7. In instances where it is impractical, because of space limitations, to show all the detail parts of a subassembly on one illustration, the subassembly may be shown completely assembled on this illustration, and a notation made in the DESCRIPTION column referring to the applicable figure number where the detail parts are illustrated and listed.
11-8. Attaching parts are listed immediately after the part or parts which they attach. When an attaching part is used to attach a group of identical or similar items, the quantity required to attach any one item is the quantity shown in the UNITS PER ASSY column divided by the total number of attached parts. Attaching parts are always listed before the detail parts of the item, if any. When the attaching parts can be seen, and space on the illustration permits, separate

arrows are used to indicate them. In instances, however, where the attaching parts cannot be seen they are not assigned an index number, but are listed immediately under the item(s) which they attach.

11-9. Items which are made from raw stock, such as cut lengths of wire, solder, varnish, lacing cord, and flexible tubing are not included in the Group Assembly Parts List.

11-10. FIGURE AND INDEX NUMBER COLUMN. In this column the digits preceding the hyphen refer to the figure number where the part is illustrated, the digits following the hyphen are the index numbers assigned to procurable and nonprocurable parts and assemblies and refer to the location of the part on the particular illustration. Index numbers are numerically arranged and are mainly used to assist in locating a part in the Group Assembly Parts List after it has been found in the Numerical Index and/or the Reference Designation Index.

11-11. PART NUMBER COLUMN. In this column are listed either the standard numbers of AN, JAN, MIL, or MS specifications, or in their absence those of the design manufacturer of the part. In instances where the design manufacturer's part number is listed, his name or code is given in the DESCRIPTION column; however, in instances where no code is given for a particular part, this part is manufactured by Stewart Warner Electronics. The manufacturers' codes are explained in paragraph 11-15.

11-12. Items for which no part number has been assigned have a "No Number" entry in the PART NUMBER column. These parts have been listed for reference purposes only and are not procurable as separate items.

11-13. In the PART NUMBER column the symbol "COML" is used. This symbol indicates that the part may be procured from commercial sources by the use of the information contained in the DESCRIPTION column.

11-14. DESCRIPTION COLUMN. In this column are listed the item name, as required by Federal Item Identification Cataloging Handbook H6-1, with brief electrical and/or physical descriptions following. Following the description of the item the manufacturer's code will appear. In instances where such a code does not appear for an item this shall mean that this particular item is manufactured by Stewart Warner Electronics. When applicable, Stewart-Warner Electronics Division (SWED) specification control drawing numbers are listed when a vendor part number appears in the PART NUMBER column. Abbreviations are in accordance with MIL-STD-12C. (Refer to table 11-1 for an explanation of all abbreviations used in this section.)

11-15. MANUFACTURERS' CODE. Listed in table 11-2 are the manufacturers' code symbols used in this manual, arranged in numerical sequence.

Table 11-1. Abbreviations

Abbreviation	Definition
Brs	Brass
C	Centigrade
Cad.	Cadmuim
COML	Commercial
Cres	Corrosion Resistant Steel
Deg	Degree
Dia	Diameter
Dwg	Drawing
In.	Inch
Lg	Long
MHz	Megahertz
NHA	Next higher assembly
No.	Number
Pct	Percent
P1	Plate
PORM	Plus or Minus
Ref	Reference
Spec	Specification
uh	Microhenry
uf	Microfarad
VDCW	Volts, direct current working
W	Watt
*	Alternate part

Table 11-2. Manufacturers' Codes

Code Symbol	Name and Address
00141	PIC Design Corp. 477 Atlantic Ave. East Rockaway, N. Y. 11518
00779	AMP Inc. P.O. Box 3608 Harrisburg, Pa. 17105
00799	Hubbard Instrument Co. 4 West Park Road Iowa City, Iowa 52241
02114	Ferroxcube Corporation of America Mt. Marion Rd. Saugerties, N.Y. 12477
03508	General Electric Co. Semi-Conductor Products Department Electronics Park Syracuse, N.Y. 13201
04397	Hill Electronics, Inc. 300 N. Chestnut St. Mechanicsburg, Pa. 17055

Table 11-2. Manufacturers' Codes (Cont.)

Code Symbol	Name and Address
04713	Motorola Semiconductor Products, Inc. 5005 East McDowell Road Phoenix, Arizona 85008
06694	Perfection Mica Co. 1324 N. Elston Avenue Chicago, Ill. 60622
23200	Snowden-Pencer Corp. P.O. Box 186 Los Gatos, Calif.
28480	Hewlett-Packard Co. 1501 Page Mill Road Palo Alto, Calif. 94304
61957	United Shoe Machinery Corp. Boston, Mass.
71279	Cambridge Thermionic Corp. 430 Concord Ave. Cambridge, Mass.
72259	Nytronics, Inc. 550 Springfield Ave. Berkeley Heights, N.Y. 07922
72794	Dzus Fastener Co., Inc. 125 Union St. West Islip, N. Y.
72962	Elastic Stop Nut Corp. of America 2330 Vauxhall Road Union, New Jersey 07083
88245	Litton Industries USECO Division 13536 Saticoy St. Van Nuys, California
91506	Augat, Inc. 33 Perry Ave. Attleboro, Mass. 02703
91546	Bridgeport Brass Company Philadelphia, Pennsylvania
96341	Microwave Associates, Inc. South Ave. Burlington, Mass. 01801
98291	Sealectro Corporation 225 Hoyt Mamaroneck, N.Y. 10544

NOTE

The prime contractor's code symbol (98738) will not appear in the Group Assembly Parts List.

11-16. UNITS PER ASSEMBLY COLUMN. Quantities specified in the UNITS PER ASSY column are the total number of each part required per assembly or subassembly and are not necessarily the total number used in the complete equipment. Refer to the Numerical Index, Part C, for the total quantities used. The letters "AR" denote that the selection of a part or parts should be made "as required". "REF" refers to an assembly which is completely assembled on a preceding illustration, and is now exploded on the illustration on which it is referenced. In this case the description has a notation which refers to the illustration on which the assembly is shown completely assembled and indexed.

11-17. USABLE ON CODE COLUMN. This column indicates by the use of a letter code, parts used on specific models of the various items comprising the TS-1843A/APX. In instances where no code is given for a particular item, this shall mean that this item is used on all models of the TS-1843A/APX. Usable on codes are:

CONTRACT NUMBER/SERIAL NUMBER	USABLE ON CODE
F33657-68-C-1265/1 THRU 899	A
F33657-68-C-1265/900 AND ON	B
F33657-71-C-0752/ALL	C

11-18. NUMERICAL INDEX.

11-19. GENERAL. Part C, Numerical Index, is compiled in accordance with the numerical part number filing system described below:

a. Part number numerical arrangement starts in the left-hand column and continues from left to right, one column at a time, until part number numerical arrangement is determined.

b. The order of precedence beginning on the extreme left hand (front) position in part number numerical arrangement is as follows:

Letters A through Z
Numerals 0 through 9 (Alphabetical o's are considered as numerical zeros.)

c. The order of precedence in continuing the part number arrangement in the second and succeeding positions of the part number from left to right is as follows:

Space (blank column)
Diagonal (slant) /
Point (period) .
Dash (-)
Letters A through Z
Numerals 0 through 9 (Alphabetical o's are considered as numerical zeros.)

11-20. MFR PART NUMBER COLUMN. This column contains all part numbers that appear in the Group Assembly Parts List, and superseded parts if any.

11-21. When a part has been superseded by another part and the superseded part is not listed in the Group Assembly Parts List, the superseded part number is listed in the part number column and a note in the FIGURE AND INDEX NO. and QTY PER ARTICLE columns reads "USE (new number)".

11-22. Stewart-Warner Electronics specification control drawing numbers are shown in their proper numerical sequence, with a note referring to the vendor's part number.
11-23. FIGURE AND INDEX NUMBER COLUMN.
This column contains the figure and index numbers of the illustration where the particular part is located.
11-24. QUANTITY PER ARTICLE COLUMN. In this column is listed the total quantity of parts or assemblies per unit of equipment. Where the total quantity of a part is not the same for the different models of equipment covered by this Parts Breakdown, the largest quantity for any one unit is shown.
11-25. SOURCE CODE COLUMN - AIR FORCE. In this column is listed the Source code for each item, wherever available, as assigned by Department representatives.

NOTE

Policies, general information, and procedures for changing source and maintenance coding are contained in T.O. 00-25-195. Generally, the source codes, and maintenance repair level codes, herein, (see Source Code and Repair Code columns) were assigned by Air Force personnel when this equipment was purchased. Assignment of codes was influenced by (a) maintenance policies of the Air Force base self-sufficiency program, (b) predicted maintenance actions, (c) base facilities and capabilities, (d) economic considerations. Definitions of these codes follow in paragraphs 11-26 through 11-49.

11-26. SOURCE CODES - AIR FORCE.
11-27. CODE "P" PARTS UNDER INVENTORY STOCK CONTROL. Code "P" identifies parts which may be requisitioned and installed by any level of maintenance consistent with the command' s authorized scope of maintenance. Code "P" is applied to parts the usage of which is anticipated or known.
11-28. Code "PD" identifies parts which may be requisitioned and installed by Air Force activities authorized depot-level maintenance only. Restricted (emergency) service-manufacture of "PD" coded parts is considered practicable, but may be accomplished only after confirmation of nonavailability from supply sources.
11-29. Code "Pi" identifies parts which may be requisitioned and installed by any maintenance level consistent with the command's authorized scope of maintenance. This code is applied to parts which are impracticable to service-manufacture.
11-30. Code "P1D" identifies parts which may be requisitioned and installed by Air Force activities authorized depot-level maintenance only. This code is applied to parts which are impracticable to service-manufacture.
11-31. Code "P2" identifies insurance-type spare parts which can be installed by any Air Force activity consistent with the command's authorized scope of maintenance. This code is applied to parts which are basically structural, and for which no usage is anticipated or known; which require special tools, templates, and/or jigs; and which are very difficult, impracticable, or uneconomical to manufacture by Air Force activities. These items are not subject to periodic replacement or wearout, but may require infrequent replacement as a result of accidents or other unexpected occurrences. Delayed procurement items, as defined in AMCM 400-1 are included under this code.
11-32. Code "P2D" identifies insurance-type parts which may be installed by Air Force activities which are authorized depot-level maintenance only. This code is applied to parts as described under Code "P2" and to delayed procurement items.
11-33. CODE "M" - MANUFACTURE, PARTS NOT PROCURED. Code "M" identifies parts the manufacture and installation of which are within the capabilities of field-maintenance activities, and to which all of the following conditions apply:
a. Procurement is not justified because of low usage or peculiar storage and installation factors. Needs are to be met by local manufacture only as required.
b. Manufacture does not require tools, equipment, or skills not normally authorized at field-maintenance level.
c. Manufacture does not require test equipment not normally authorized at field-maintenance level.
d. Manufacture does not require material not normally available in Air Force inventory.
11-34. Code "MI" indicates parts which can be manufactured at activities authorized depot-level only, and to which all of the following conditions apply:
a. Procurement is not justified because of low usage or peculiar storage and installation factors. The needs of base activities are to be met by requisitioning from the geographical AMA for nonweapon systems designated in AFM 67-1, Volume XX.
b. Manufacture is beyond the capabilities of field-maintenance activities as outlined above.
c. Manufacture does not require tools or equipment not normally authorized at all AMA's.
11-35. CODE "A" - ASSEMBLE, ASSEMBLY NOT PROCURED. Code "A" identifies items capable of being assembled at any level of maintenance, and is applied to assemblies of two or more parts, the majority of which are purchased and/or service-manufactured.
11-36. Code "AI" identifies assemblies which can be assembled at Air Force activities authorized depot-level maintenance only, and is applied to assemblies described under "A" code.
11-37. CODE "X" - PARTS CONSIDERED IMPRACTICABLE FOR SERVICE-MANUFACTURE OR PROCUREMENT AND FOR WHICH NO USAGE IS ANTICIPATED. Code "X" is applied to main structural members or similar parts, which, if

required, would suggest extensive repair. The need for apartor parts coded "X" (wing spars, center section structure, etc.) should normally result in a recommendation to retire the article from service.

11-38. Code "Xl" identifies parts applicable at any level of maintenance consistent with the command's authorized scope of maintenance, and for which procurement of the next higher assembly so coded "P1" is normally justified; for example, an integral detail part such as a welded segment inseparable from its assembly; a part machined in a matched set; or a part of an assembly which, if required, would suggest extensive reconditioning of the assembly. In some cases, "XI" may be used to indicate an integral detail part of an assembly for which there is no anticipated usage, and as an assembly was coded "M" or "Mi", to be manufactured as a matched set, welded assembly, etc.

11-39. Code "X1D" identifies parts described under the "XI" code but which are applicable to Air Force activities authorized depot-level of maintenance only.

11-40. Code "X2" identifies parts applicable at any level of maintenance consistent with the command's authorized scope of maintenance, the usage of which is not anticipated, and which are impracticable for service-manufacture. This type of item will not be stocked. Such parts shall be obtained from reclamation or requisitioned through normal supply channels. with supporting justification for one-time procurement and immediate issue. Repeated requests shall justify a change to a "P1" or "P2" code, as applicable, if considered economical to procure and stock such parts.

11-41. Code "X2D" identifies parts described under the "X2" code but which are applicable to Air Force activities authorized depot-level maintenance only. Repeated requests for such parts shall justify a change to a "PID" or "P2D" code, as applicable, if considered economical and feasible to procure and stock such parts.

11-42. CODE "U" PARTS NOT PROCURED, MANUFACTURED, OR STOCKED. Code "U" is applied to installation drawings, diagrams, instruction sheets, field-service drawing numbers, and parts not otherwise of supply significance, including obsolete parts, which cannot be procured or service-manufactured.

11-43. CODE "C" CURE-DATED COMPONENT REPAIR KIT. Code "C" is applied to kits containing replacements for parts subject to deterioration due to aging or exposure to aromatic fuels, such as rubber gaskets, seals, and "O" rings. C-kit is available to maintenance activities authorized to replace expired cure-dated parts as necessary to overhaul, minor repair, or other items as required by pertinent directives. This kit may include noncure-datedgaskets, packing, etc. necessary for reassembly after technical order compliance or repair.

11-44. CODE "D" MAJOR OVERHAUL REPAIR KIT. Code "D" is applied to kits which are available only to maintenance activities authorized to perform depot or major overhaul. These kits do not contain cure-dated parts.

11-45. CODE "F" MINOR OR FIELD REPAIR KIT. Code "F" is applied to kits which are available to maintenance activities authorized to perform minor or field repair, including overhaul activities in support of field activities. These kits do not contain cure-dated parts.

11-46. CODE "KC" COMPONENT OF C-KIT. Code "KC" is applied to items which are components of a C-kit, also, stocked separately in the appropriate class if followed by the letter "P".

11-47. CODE "KD" COMPONENT OF D-KIT. Code "KD" is applied to items which are components of a D-kit, also, stocked separately in the appropriate class if followed by the letter "P".

11-48. CODE "KF" COMPONENT OF F-KIT. Code "KF" is applied to items which are components of an F-kit, also, stocked separately in the appropriate class if followed by the letter "P".

11-49. CODE "KFD" COMPONENT OF BOTH F-KIT AND D-KIT. Code "KFD" is applied to items which are components of both an F-kit and a D-kit, also, stocked separately in the appropriate class if followed by the letter "P".

11-50. REPAIR CODE COLUMN AIR FORCE. In this column is listed the repair code for each item, wherever available, which is assigned by Department representatives. The definitions for the various repair codes are given in paragraphs 11-51 through 11-57.

11-51. CODE "S" - NO REPAIR. Code "S" identifies items which are nonrepairable and have no reclamation value. When these items fail, they will be disposed of at user level as condemned material.

11-52. CODE "B" - NO REPAIR: RECONDITION.
Code "B" identifies assemblies or parts that will be reconditioned at the user level by adjusting, cleaning, soldering broken connections, etc. If these items cannot be returned to serviceable condition by such means they will be disposed of at user level as condemned material. No repair parts or tools are specially procured for maintenance of these items.

11-53. CODE "F" FIELD LEVEL MAINTENANCE. Code "F" identifies items which will be repaired by the field level maintenance activities or contracted for repair at base level in accordance with T.O. 00-25-68. Normal servicing will be done by organizational level maintenance. Selected parts, tools, and technical order data are procured and provided to applicable field level maintenance activities for repair of these items. No specialized repair activity (SRA) is established for these items. If they cannot be returned to serviceable condition by the field level maintenance activity with the parts

and tools provided they will be disposed of as condemned material. Hi Valu and Critical items, however, will be turned in to supply and disposition instructions obtained from the applicable IM.

11-54. CODE "D" LIMITED FIELD REPAIR DEPOT OVERHAUL. Code "D" identifies items on which a limited degree of repair can be accomplished by field level maintenance activities. Normal servicing will be done at organizational level. SRA is established for overhaul of these items. A range of repair parts, tools, and technical order data consistent with the capability of repair are procured and provided to applicable field maintenance activities. Because of the design characteristics and complexity of repair, the degree of repair which is authorized on these items at field maintenance level is necessarily determined by the degree of technical skills required and the cost of special tools, special test equipment, spare parts, and the predicted frequency of failure generation. If these items cannot be returned to serviceable condition with authorized parts and tools they will be returned to supply for shipment to the designated SRA.

11-55. CODE "DM" LIMITED FIELD REPAIR: MOBILE DEPOT OVERHAUL. Code "DM" identifies items to which all the conditions of code "D" apply except that repair beyond field capability will be done by the Mobile Depot Activity (MDA). If the MDA cannot repair these items, they will determine whether these items should be condemned or sent to the SRA.

11-56. CODE "L" DEPOT LEVEL MAINTENANCE ONLY. Code "L" identifies items that will be repaired only at designated SRA. Repair parts and tools for repair are procured and provided only to these authorized activities. Required functional checkout and bench check equipment may be provided to applicable organizational and field level maintenance activities for accomplishing external adjustment or calibration and for verifying serviceability of these items. If they are found unserviceable they will be turned in to supply for shipment to the SRA.

11-57. CODE "LM" - DEPOT LEVEL MAINTENANCE ONLY: MOBILE DEPOT ACTIVITY. Code "LM" identifies items to which all conditions of Code "L" apply except that repair will be accomplished by MDA. If MDA cannot repair these items, they will determine whether these items should be condemned or sent to the SRA.

11-58. SOURCE CODE COLUMN NAVY. In this column is listed the Source code for each item, wherever available, as assigned by the Procuring Department. Refer to the applicable Navy publication for source code definitions.

11-59. ACCT/REC CODE COLUMN NAVY. The codes in this column reflect the recoverability characteristics of items removed from equipment at the time of maintenance, repair, or overhaul. Refer to the applicable Navy publication for recoverability code definitions.

11-60. REFERENCE DESIGNATION INDEX.

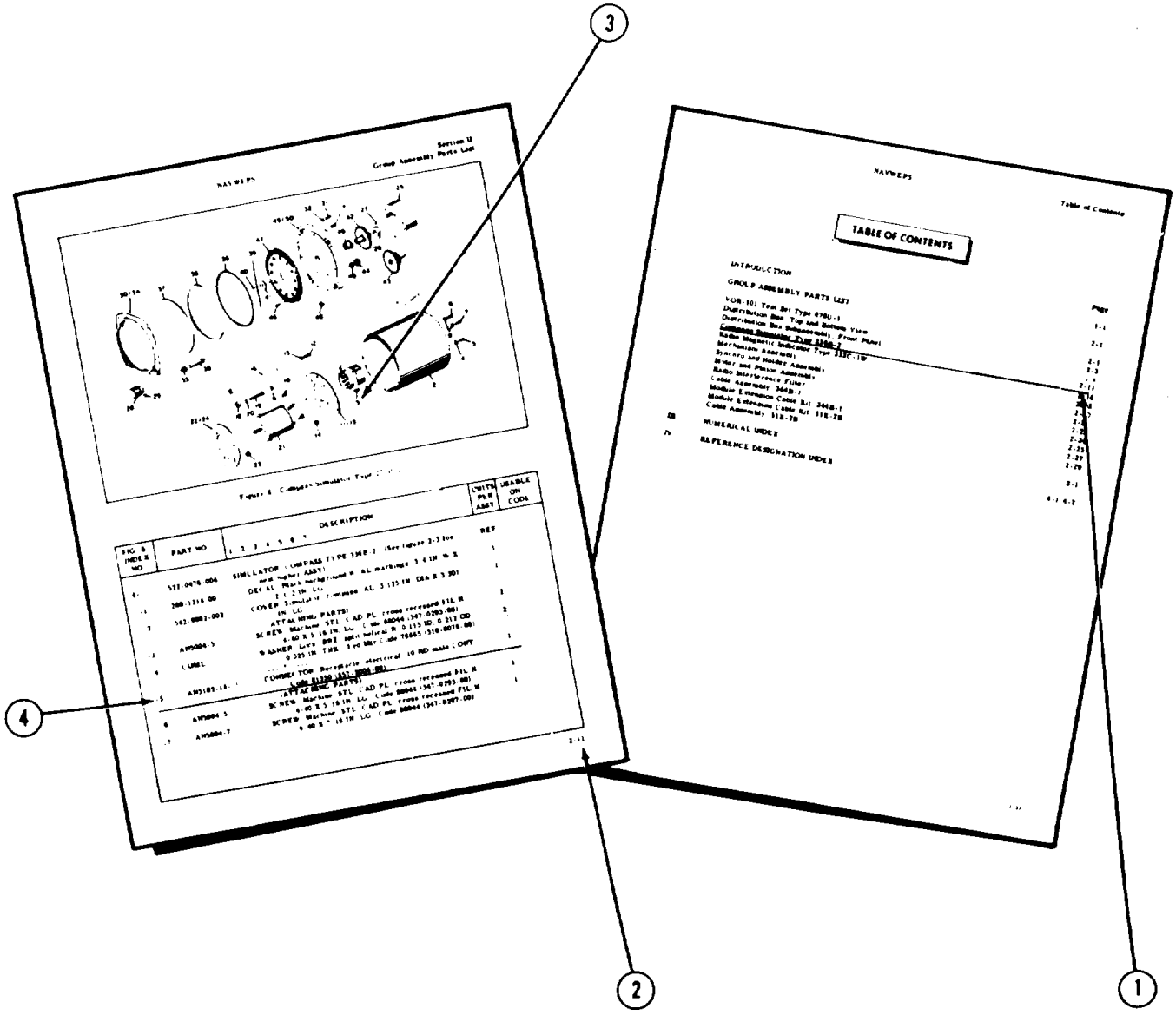
11-61. GENERAL. The Reference Designation Index, Part D, lists reference designation symbols which have been established for any electrical or electronic parts of the equipment covered.

11-62. REFERENCE DESIGNATION COLUMN. In this column are listed the assigned reference designation symbols, arranged in alphabetical-numerical sequence. The column contains all reference designation symbols shown on schematic diagrams and contained in the Maintenance manual pertaining to the equipment covered by the Illustrated Parts Breakdown.

11-63. FIGURE-INDEX NUMBER COLUMNS. This column contains figure and index numbers assigned to reference designation items.

11-64. MFR PART NUMBER COLUMN. In this column are listed the part numbers of those parts which have been assigned reference designation symbols.

HOW TO USE THIS ILLUSTRATED PARTS BREAKDOWN
SHEET 1 OF 2



WHEN THE PART NUMBER IS NOT KNOWN

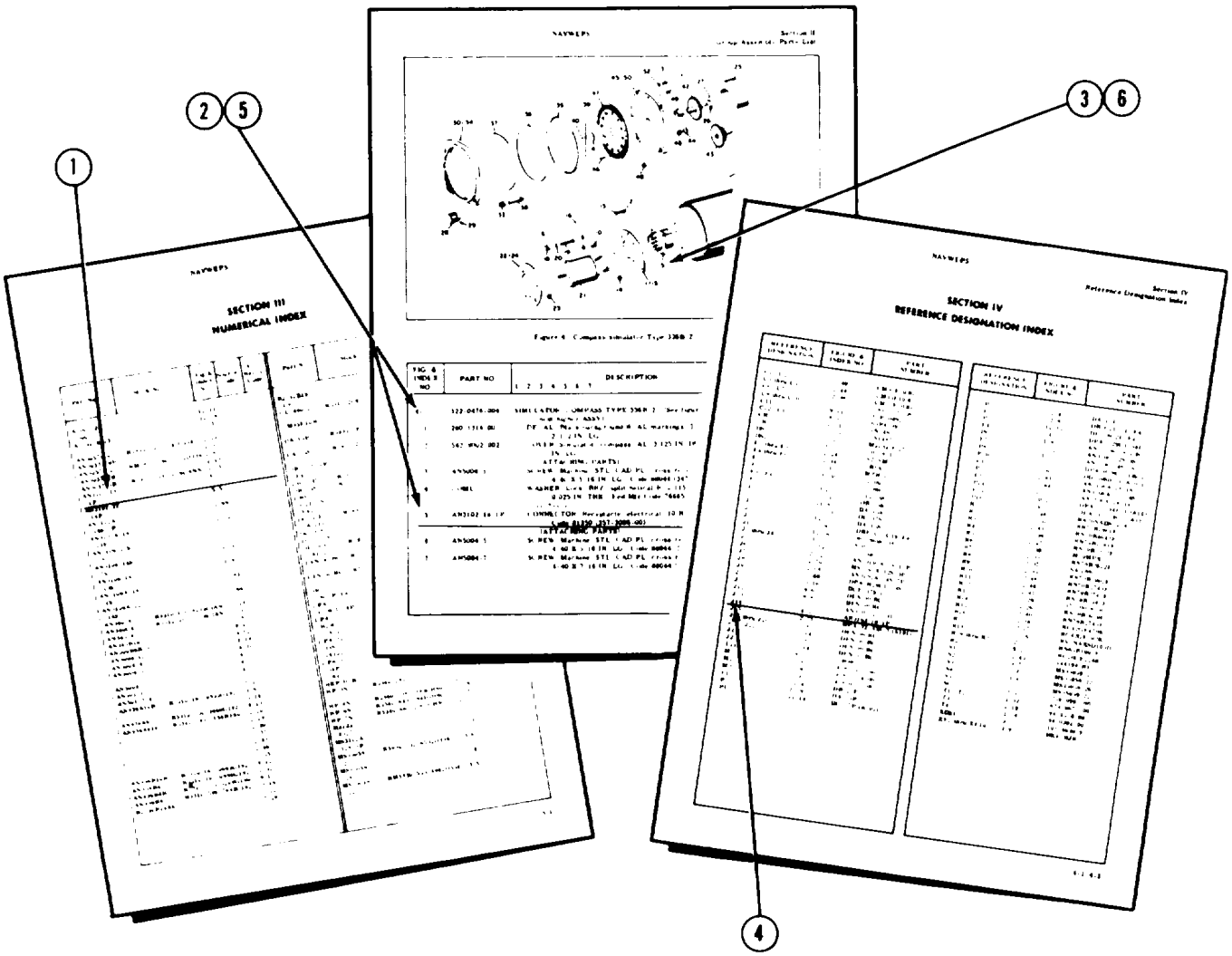
(1) Turn to the Table of Contents and find the page number for the Major Assembly, or System, in which the part is used.

(2) Turn to the page determined in step (1).

(3) Locate the part and its index number on the illustration.

(4) Refer to the same index number on the Group Assembly Parts List page to determine specific information regarding the part.

HOW TO USE THIS ILLUSTRATED PARTS BREAKDOWN
SHEET 2 OF 2



WHEN THE PART NUMBER OR REFERENCE DESIGNATION IS KNOWN

(1) When the part number is known, refer to Part C, the Numerical Index, to find the part number. Note the figure and index number assigned to the part number.

(2) Turn to the figure indicated and locate the index number referenced in the Numerical Index.

(3) If a pictorial representation of the part, or its location, is desired, refer to the same index number on the accompanying illustration.

(4) When the reference designation is known, refer to Part D, the Reference Designation Index, to locate the reference designation symbol. Note the figure and index number, and the part number.

(5) Turn to the figure indicated and locate the index number referenced in the Reference Designation Index.

(6) If a pictorial representation of the part, or its location, is desired, refer to the same index number on the accompanying illustration.

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNIT PER ASSY	USABLE ON CODE
11-1-	01A233750A-21-11	TEST SET, TRANSPONDER SETTS-1843A/APX	1	A, B
	01A233750A-21-12	TEST SET, TRANSPONDER SETTS-1843A/APX	1	C
-1	NAS-813-10	.CAP, PROTECTIVE:	2	
-1A	01A233751A-21-11	.MOUNT ASSEMBLY MT-3513A/APX	1	
-2	33P233782-21-11	..PLATE, IDENTIFICATION	1	
-3	PB3-1-2	..WIRE FORM (72794) (Stewart-Warner spec (control Dwg, 42P233781-23-11) (ATTACHIING PARTS)	2	
-4	MS20426A3-4	..RIVET. SOLID ---*---	4	
-5	01P233780-21-11	..PLATE. MOUNTING	1	
-6	01A233786-21-11	.PLATE, COVER (ATTACHING PARTS)	1	
-7	MS24693C2	.SCREW, MACHINE	8	
-8	MS24693C4	.SCREW, MACHINE ---*---	3	
-9	PF3-1-2-53X545	..STUD, TURNLOCK FASTENER: (72794) (Stewart-Warner Spec Control Dwg 42P233781-24-11)	2	
-10	PS3-1-2X546-1	..SPRIING;, COM PRESSION (72794) (Stewart- Warner Spec Control Dwg- 42P233781-22-11)	2	
-11	PC3-1-2X547-16	..EYELET, TURN LOCK FASTENER (72794) (Stewart -Warner Spec Control Dwg 42P233781-21-11)	2	
-11A	64P233824-21-11	..PLATE, MOUNTING;	1	
-12	33P233783-21-11	.PLATE, IDENTIFICATION	1	
-13	33P233784-21-11	.PLATE, IDENTIFICATION	1	
-14	64P233823-21-11	.PLATE, COVER (ATTACHING PARTS)	1	
-15	MS51957-14	.SCREW MACHINE	6	
-16	MS15795-803	.WASHER, FLAT. ---*---	6	
-17	64P233822-21-11	.PLATE, SIDE .	1	
-18	64P233822-21-12	.PLATE, SIDE (ATTACHING PARTS FOR FIGUIRE & INDEX NO. 11-1-17 & 11-1-18)	1	
-19	MS51957-13	.SCREW. MACHINE	8	
-20	MS35338-135	.WASHER, LOCK	8	
-21	MS15795-803	.WASHER, FLAT ---*---	8	
-22	01A233756-21-11	.MODE:GENERATOR ASSEMBLY (See, figure, 11-2 for parts breakdown)	1	
-23	01A233757-21-11	.POWER SUPPLY AND REPLY EVALUATOR ASSEMBLY (See figure 11-3 for parts breakdown)	1	
-24	01A233758-21-11	.COMPARATOIN AND DECODER ASSEMBLY (See figure 11-4 for parts breakdown)	1	A

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNIT PER ASSY	USABLE ON CODE
1-1-24 (Cont.)	01A233758-21-12	.COMPARATOR AND DECODER ASSEMBLY (See figure 11-4 for parts breakdown)	1	B
	01A233758-22-11	.COMPARATOR AND DECODER ASSEMBLY (See. figure 11-4 for parts breakdown)	1	C
	01A233755-21-11	.MAIN FRAME ASSEMBLY	1	A, B
	01A233755-21-12	.MAIN FRAME ASSEMBLY	1	C
-25	MS51957-18	..SCREW, MACHINE	2	
-26	MS9068-005	..PACKING, PREFORMED	2	
-27	MS35338-135	..WASHER, LOCK	2	
-28	MS15795-803	..WASHER, FLAT	2	
-28A	01A233768-21-11	..INTERCONNECTING BOARD ASSEMBLY	1	A, B
	01A233768-21-12	..INTERCONNECTING BOARD ASSEMBLY (ATTACHING PARTS)	1	C
-29	MS51957-14	..SCREW, MACHINE	2	
-30	MS35338-135	..WASHER, LOCK	2	
-31	MS15795-803	..WASHER, FLAT	2	
		---*---		
-32	07P233777-21-11	...BRACKET, SUPPORT (ATTACHING PARTS)	2	
-33	COML	...RIVET, TUBULAR, Brs, cad pl, 11/64 in. 1g, 0. 123 in. shank dia.	4	
-34	01A233769-21-11	...INTERCONNECTING PRINTED WIRING BOARD ASSEMBLY	1	A, B
	01A233769-22-11	...INTERCONNECTING PRINTED WIRING BOARD ASSEMBLY	1	C
-35	1N914	....SEMICONDUCTOR DEVICE, DIODE	5	
	1N4148*	....SEMICONDUCTOR DEVICE, DIODE	5	
	-36 86147-7	....CONTACT, ELECTRICAL (00779) (Stewart-Warner spec control dwg 29P232852-3)	10	
-37	X2041-B	....TERMINAL, STUD (71279)	14	A, B
	S-6064	....EYELET, METALLIC (61957)	14	C
-38	84P233838-21-11	....PRINTED CIRCUIT BOARD	1	
-39	01A233770-21-11	...INTERCONNECTING PRINTED WIRING BOARD ASSEMBLY	1	A, B
	01A233770-22-11	...INTERCONNECTING PRINTED WIRING BOARD ASSEMBLY	1	C
-40	CK06BX223K	....CAPACITOR, FIXED, CERAMIC	1	
-41	1N914	....SEMICONDUCTOR DEVICE, DIODE	1	
	1N4148*	....SEMICONDUCTOR DEVICE, DIODE	1	
-42	TM1/8	....RESISTOR, THERMAL, 2,200 ohms porm . 10 pct at 25 deg c, 1/8 w (01295) (Stewart-Warner spec control dwg 06P233809-22-11)	1	
-43	RCR07G102JS	....RESISTOR, FIXED, COMPOSITION	1	
-44	86147-7	....CONTACT, ELECTRICAL (00779) (Stewart-Warner spec control dwg 29P232852-3)	26	
-45	X2041-B	....TERMINAL, STUD (71279)	26	A, B
	X2041-B	....TERMINAL, STUD (71279)	3	C
	S-6064	....EYELET, METALLIC (61957)	23	C
-46	84P233839-21-11	....PRINTED CIRCUIT BOARD	1	A, B
	84P233839-22-11	....PRINTED CIRCUIT BOARD	1	C
-47	MS51957-13	..SCREW, MACHINE	3	
-48	MS35338-135	..WASHER, LOCK	3	
		*ALTERNATE PART		

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNIT PER ASSY	USABLE ON CODE
11-1-49	COML	..WASHER, FLAT, Cres, 0.031 in. thk, 0. 119 in. id, 0. 343 in. od	3	
-50	36P233855-21-11	..KNOB, CONTROL	3	
		(ATTACHING PARTS)		
-51	MS51021-9	..SETSCREW	6	
		---*---		
-52	34P233818-23-11	..DIAL, RADIO FREQUENCY	1	
-53	34P233818-22-11	..DIAL, POWER	1	
-54	34P233818-21-11	..DIAL, VSWR	1	
		(ATTACHING PARTS FOR FIGURE & INDEX NO. 11-1-52 THRU 11-1-54)		
-55	MS16995-9	..SCREW, CAP, SOCKET HEAD	3	
-56	MS35338-135	..WASHER, LOCK	3	
-57	MS15795-803	..WASHER, FLAT	3	
		---*---		
-58	F4-2	..SHAFT, PINION (00141)	1	
-59	MS16632-4012	..RING. RETAINING	1	
-60	BB90462	..RESISTOR, VARIABLE, FILM, 10,000 ohms . porm 10 pct (11236) (Stewart-Warner spec control dwg 18P233810-22-11)	1	
-61	BB90461	..RESISTOR, VARIABLE, FILM, 2500 ohms porm 10 pct (11236) (Stewart-Warner spec control dwg 18P233810-21-11)	1	
-62	01A233765-21-11	..CONTROL PLATE ASSEMBLY	1	
		(ATTACHING PARTS)		
-63	MS51957-13	..SCREW, MACHINE	1	
-64	MS35338-135	..WASHER, LOCK .	1	
		---*---		
-65	15P233774-21-11	..COVER, CONTROL PLATE	1	
		(ATTACHING PARTS)		
-66	22P233779-21-11	..PIN, HINGE	1	
		---*---		
-67	01P233813-21-11	...PLATE, END, CONTROL	1	
-68	01A233766-21-11	..CONNECTOR PLATE ASSEMBLY.	1	A, B
	01A233766-21-12	..CONNECTOR PLATE ASSEMBLY	1	C
		(ATTACHING PARTS)		
-69	MS51957-14	..SCREW, MACHINE	2	
-70	MS35338-135	..WASHER, LOCK	2	
-71	MS15795-803	..WASHER, FLAT .	2	
		---*---		
-72	2N4231	...TRANSISTOR, SILICON, POWER (04713) (Stewart-Warner spec control dwg 48P233845-21-11)	1	
		(ATTACHING PARTS)		
-73	MS51957-13	...SCREW, MACHINE	2	
-74	14P233846-21-11	...INSULATOR, BUSHING	2	
-75	29S111221-47	...TERMINAL, LUG	1	
		---*---		
-76	DF-31A	...INSULATOR, TRANSISTOR (06694) (Stewart-Warner spec control dwg 14P233842-21-11)	1	
-77	01A233767-21-11	...FILTER PLATE ASSEMBLY	1	
		(ATTACHING PARTS)		
-78	MS51957-12	...SCREW, MACHINE	4	
		---*---		

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNIT PER ASSY	USABLE ON CODE
11-1-79	100-5064	....FILTER, POWER. ELECTRO- MAGNETIC INTERFERENCE (11872) (Stewart-Warner Spec control dwg 08P233843-21-11)	1	
-80	2482-001	....CAPACITOR, FIXED, CERAMIC DIELECTRIC. 3000 pf -0 to 100 pct, 300 vdcw (72982) (Stewart-Warner spec control d21 P233844-21-11)	6	
-81	10S111236-7	....RING. SOLDER	6	
-82	X2041-A	....TERMINAL, STUD (71279)	1	
-83	64P233820-21-11	....PLATE, FILTER.	1	
-84	MS24264R12B12PNX	...CONNECTOR. RECEPTACLE, ELECTRICAL	1	A, B
	09P233862-21-11	...CONNECTOR SUBASSEMBLY (ATTACHING PARTS)	1	C
-85	MS51957-13	...SCREW, MACHINE	4	
-86	MS35338-135	...WASHER, LOCK ---*---	4	
94012-12-12PN		....CONNECTOR. RECEPTACLE ELECTRICAL (Stewart -, Warner Spec. control dwg 09P233861)	1	C
-87	01P233814-21-11	...PLATE. END. CONNECTOR	1	
-88	01A233760-21-11	.RADIO FREQUENCY ASSEMBLY (See figure 11-5 for parts breakdown)	1	A, B
	01A233760-21-12	..RADIO FREQUENCY ASSEMBL,Y See figure 11-5 for Parts breakdown)	1	C

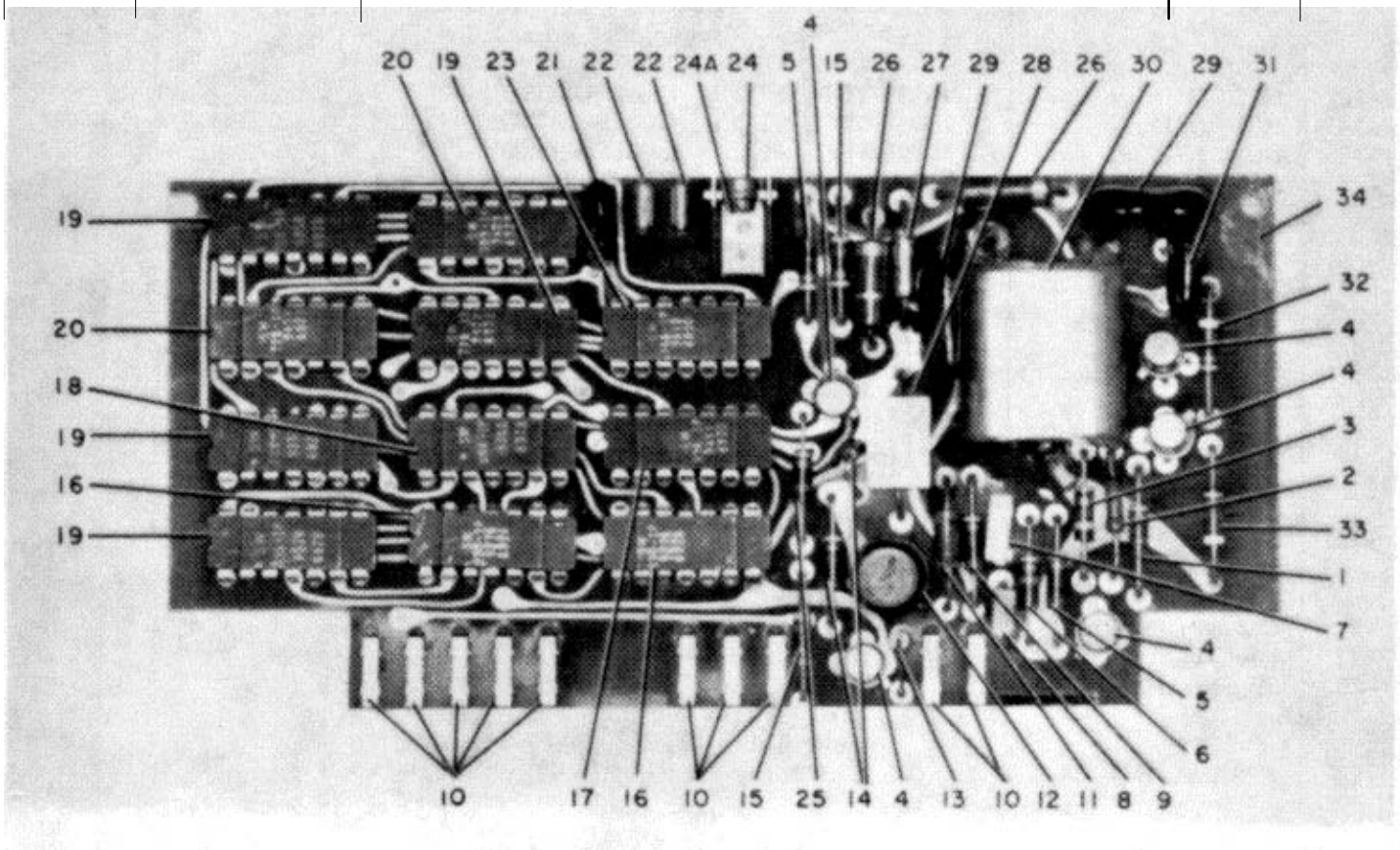


Figure 11-2. Mode Generator Assembly (A2)

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNIT PER ASSY	USABLE ON CODE
11-2-	01A233756-21-11	MODE GENERATOR ASSEMBLY (See figure & index no. 11-1-22 for NHA)	REF	
-1	RCR07G182JS	.RESISTOR, FIXED, COMPOSITION	1	
-2	RN55D5620F	.RESISTOR, FIXED, FILM	1	
-3	RCR07G241JS	.RESISTOR, FIXED, COMPOSITION	1	
-4	2N706	.TRANSISTOR:	5	
-5	RCR07G102JS	.RESISTOR, FIXED, COMPOSITION	2	
-6	RCR07G223JS	.RESISTOR, FIXED, CONIPOSITION	1	
-7	CK06BX103K	.CAPACITOR, FIXED, CERAMIC DIELECTRIC	1	
-8	CK05BX561K	.CAPACITOR, FIXED, CERAMIC DIELECTRIC	1	
-9	RCR07G751JS	.RESISTOR, FIXED, COIPOSITION	1	
-10	85487-2	.CONTACT, ELECTRICAL (00779)	10	
-11	RN55D3922F	.RESISTOR, FIXED, FILM (Select at test)	1	
	RN55D1003F	.RESISTOR, FIXED, FILM (Select at test)	1	
	RN55D1053F	.RESISTOR, FIXED, FILM (Select at test)	1	
	RN55D9532F	.RESISTOR, FIXED, FILM (Select at test)	1	
	RN55D1103F	.RESISTOR, FIXED, FILM (Select at test)	1	
	RN55D1153F	.RESISTOR, FIXED, FILM (Select at test)	1	
	RN55D1213F	.RESISTOR, FIXED, FILM (Select at test)	1	
	RN55D1273F	.RESISTOR, FIXED, FILM (Select at test)	1	
	RN55D1303F	.RESISTOR, FIXED, FILM (Select at test)	1	
	RN55D8062F	.RESISTOR, FIXED, FILM (Select at test)	1	
	RN55D8252F	.RESISTOR, FIXED, FILM (Select at test)	1	
	RN55D8662F	.RESISTOR, FIXED, FILM (Select at test)	1	
	RN55D9092F	.RESISTOR, FIXED, FILM (Select at test)	1	
-12	2N1671	.TRANSISTOR, SILICON. UNIJUNCTION (01295) (Stewart-Warner spec control dwg 48P233854-21-11)	1	
	2N1671*	.TRANSISTOR, SILICON, UNIJUNCTION (03508) (Stewart-Warner spec control dwg 48P233854-21-11)	1	
-13	RCR07G101JS	.RESISTOR, FIXED, COMIPOSITION	1	
-14	RCR07G121JS	.RESISTOR, FIXED, COMPOSITION	2	
-15	RCR07G472JS	.RESISTOR, FIXED. COMPOSITION	2	
-16	SW930-1P	.INTEGRATED CIRCUIT, DUAL 4 INPUT NAND with expansion terminal (27318) (Stewart-Warner spec control dwg 48P233826-21-11)	2	
-17	SW936-1P	.INTEGRATED CIRCUIT, HEXAGONAL INVERTER (27318) (Stewart-Warner spec control dwg 48P233827-21-11)	1	
-18	SW962-1P	.INTEGRATED CIRCUIT, Triple 3 input and (27318) (Stewart-Warner spec control dwg 48P233830-21-11)	1	
-19	SW705-1P	.INTEGRATED CIRCUIT, Dual JK flip flop (27318) (Stewart-Warner spec control dwg 48P233772-21-11)	4	
-20	SW778-1P	.INTEGRATED CIRCUIT, Dual 4 input nand gate (27318) (Stewart-Warner spec control dwg 48P233773-21-11)	2	
-21	CM05FD181J03	.CAPACITOR, FIXED, MICA DIELECTRIC	1	
-22	8046-1	.JACK, TIP (91506)	2	
-23	SW946-1P	.INTEGRATED CIRCUIT, Quadruple 2 input nand (27318) (Stewart-Warner spec control dwg 48P233825-21-11)	1	
-24	F22LHA27M-22-40	.NUT, SEI,F-LOCKING, PLATE (72962)	1	

* ALTERNATE PART

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNIT PER ASSY	USABLE ON CODE
		(ATTACHING PARTS)		
11-2-24 (Cont.)	COML	.RIVET, TUBULAR, Brs, cad pl, 0. 061 in dia shank, 11/64 in. lg	1	
	COML	.RIVET, TUBULAR Brs, cad pl, 0.061 in dia shank, 5/16 in. lg	1	
-24A	46P233856-21-11	.STOP, MOUNTING SCREW	1	
-25	RCR07G272JS	.RESISTOR, FIXED, COMPOSITION	1	
-26	SWD-2200	.COIL, RADIO FREQUENCY, Subminiature (Stewart-Warner spec control dwg24P233787-21-11)	2	
-27	CSR13E125KL	.CAPACITOR, FIXED, TANTALUM	1	
-28	KA3302FX50J	.CAPACITOR, FIXED, METALLIZED POLYCARBONATE DIELECTRIC, 0. 033 uf porm 5 pct, 50 vdcw (05397) (Stewart-Warner spec control dwg 21P233771)	1	
	317B333J	.CAPACITOR, FIXED, METALLIZED POLYCARBONATE DIELECTRIC, 0. 033 uf porm 5 pet, 50 vdcw (72928) (Stewart-Warner spec control dwg 21P233771)	1	
-29	CM06FD471J03	.CAPACITOR, FIXED, MICA DIELECTRIC	2	
-30	XL227-245	.CRYSTAL, QUARTZ, 1 MHz (04397)	1	
-31	CM05FD10J03	.CAPACITOR, FIXED, MICA DIELECTRIC (Select at test)	1	
	CM05FDlllJ03	.CAPACITOR, FIXED, MICA DIELECTRIC (Select at test)	1	
	CM05FD121J03	.CAPACITOR, FIXED, MICA DIELECTRIC (Select at test)	1	
	CM05FD131J03	.CAPACITOR, FIXED, MICA DIELECTRIC (Select at test)	1	
	CM05FD151J03	.CAPACITOR, FIXED, MICA DIELECTRIC (Select at test)	1	
	CM05FD910J03	.CAPACITOR, FIXED, MICA DIELECTRIC (Select at test)	1	
	CM05ED560J03	.CAPACITOR, FIXED, MICA DIELECTRIC (Select at test)	1	
	CM05ED680J03	.CAPACITOR, FIXED, MICA DIELECTRIC (Select at test)	1	
	CM05ED750J03	.CAPACITOR, FIXED, MICA DIELECTRIC (Select at test)	1	
	CM05ED820J03	.CAPACITOR, FIXED, MICA DIELECTRIC (Select at test)	1	
-32	RCR07G910JS	.RESISTOR, FIXED, COMPOSITION	1	
-33	RCR07G911JS	.RESISTOR, FIXED, COMPOSITION	1	
-34	84P233835-21-11	.PRINTED CIRCUIT BOARD	1	

* ALTERNATE PART

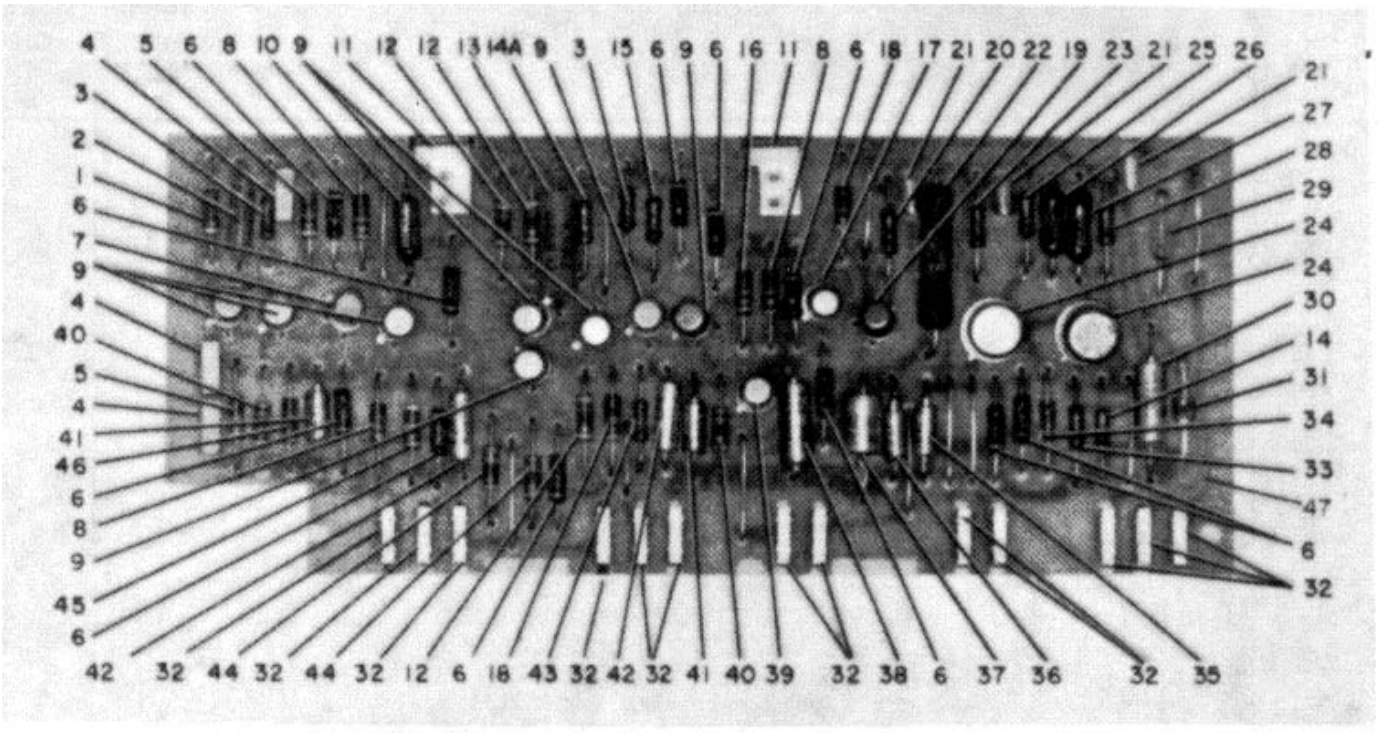


Figure 11-3. Power Supply and Reply Evaluator Assembly (A3)

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNIT PER ASSY	USABLE ON CODE
11-3-	01A233757-21-11	POWER SUPPLY AND REPLY EVALUATOR ..... . ASSEMBLY (See figure & index no. 11-1-23 for NHA)	REF	
-1	RCR07G101JS	.RESISTOR, FIXED, COMPOSITION..... .	1	
-2	RN60D1501F	.RESISTOR, FIXED, FILM..... .	1	
-3	RN55D1501F	.RESISTOR, FIXED, FILM..... .	2	
-4	CK06BX103K	.CAPACITOR, FIXED, CERAMIC DIELECTRIC..... .	3	
-5	RCR07G153JS	.RESISTOR, FIXED, COMPOSITION..... .	2	
-6	1N914	.SEMICONDUCTOR DEVICE, DIODE	11	
	1N4148*	.SEMICONDUCTOR DEVICE, DIODE	11	
-7	2N4948	.TRANSISTOR..... .	1	
-8	RCR07G183JS	.RESISTOR, FIXED, COMPOSITION..... .	3	
-9	2N706	.TRANSISTOR..... .	8	
-10	RN60D1131F	.RESISTOR, FIXED, FILM (Select at test)..... .	1	
	RN60D1211F	.RESISTOR, FIXED, FILM (Select at test)..... .	1	
	RN60D1301F	.RESISTOR, FIXED, FILM (Select at test)..... .	1	
	RN60D1401F	.RESISTOR, FIXED, FILM (Select at test)..... .	1	
	RN60D1501F	.RESISTOR, FIXED, FILM (Select at test)..... .	1	
	RN60D1211F	.RESISTOR, FIXED, FILM (Select at test)..... .	1	
	RN60D1741F	.RESISTOR, FIXED, FILM (Select at test)..... .	1	
	RN60D1871F	.RESISTOR, FIXED, FILM (Select at test)..... .	1	
	RN60D2001F	.RESISTOR, FIXED, FILM (Select at test)..... .	1	
	RN60D2211F	.RESISTOR, FIXED, FILM (Select at test)..... .	1	
	RN60D2261F	.RESISTOR, FIXED, FILM (Select at test)..... .	1	
	RN60D2371F	.RESISTOR, FIXED, FILM (Select at test)..... .	1	
	RN60D2431F	.RESISTOR, FIXED, FILM (Select at test)..... .	1	
	RN60D2551F	.RESISTOR, FIXED, FILM (Select at test)..... .	1	
		* ALTERNATE PART		

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNIT PER ASSY	USABLE ON CODE
11-3-11	07P233840-21-11	.BRACKET, ANGLE	2	
		(ATTACHING PARTS)		
	COML	.RIVET, TUBULAR, Brs, cad pl, 5/32 in. lg, 0. 182 in. dia shank	4	
-12	RCR07G472JS	.RESISTOR, FIXED, COMPOSITION	3	
-13	TM-1/4	.RESISTOR, THERMAL, 10,000 ohms at 25 deg c porm 10 pct (01295) (Stewart-Warner spec control dwg 06P233809-21-11)	1	
-14	RN55D1502F	.RESISTOR, FIXED, FILM	1	
-14A	RN55D1022F	.RESISTOR, FIXED, FILM (Select at test)	1	
	RN55D1152F	.RESISTOR, FIXED, FILM (Select at test)	1	
	RN55D1212F	.RESISTOR, FIXED, FILM (Select at test)	1	
	RN55D1332F	.RESISTOR, FIXED, FILM (Select at test)	1	
	RN55D1502F	.RESISTOR, FIXED, FILM (Select at test)	1	
-15	RN55D3321F	.RESISTOR, FIXED, FILM	1	
-16	RCR07G273JS	.RESISTOR, FIXED, FILM	1	
-17	2N718A	.TRANSISTOR	1	
-18	RCR07G103JS	.RESISTOR, FIXED, COMPOSITION	2	
-19	2N2906	.TRANSISTOR	1	
-20	RN55D5621F	.RESISTOR, FIXED, FILM	1	
-21	8046-1 NATURAL	.JACK, TIP (91506)	3	
-22	G-5A240HMSPORM3 PCT6. 5W	.RESISTOR, FIXED, WIREWOUND, 24 ohms porm 3 pct,6. 5 w (91637) (Stewart-Warner spec control dwg 06P233848-21-11) (Select at test)	1	
	G-5A270HMSPORM3 PCT6. 5W	.RESISTOR, FIXED, WIREWOUND, 27 ohms porm 3 pct, 6. 5 w (91637) (Stewart-Warner spec control dwg 06P233848-22-11)(Select at test)	1	
	G-5A30OHMSPORM3 PCT6. 5W	.RESISTOR, FIXED, WIREWOUND, 30 ohms porm . 3 pct, 6. 5 w (91637) (Stewart-Warner spec control dwg 06P233848-23-11) (Select at test)	1	
	G-5A33OHMSPORM3 PCT6. 5W	.RESISTOR, FIXED, WIREWOUND, 33 ohms porm . 3 pct, 6. 5 w (91637) (Stewart-Warner spec control dwg 06P233848-24-11) (Select at test)	1	
-23	RN55D1001F	.RESISTOR, FIXED, FILM	1	
-24	2N2219	.TRANSISTOR	2	
-25	RN55D75R0F	.RESISTOR, FIXED, FILM	1	
-26	RN60D1211F	.RESISTOR, FIXED, FILM	1	
-27	RN60D6041F	.RESISTOR, FIXED, FILM	1	
-28	RN55D7502F	.RESISTOR, FIXED, FILM	1	
-29	RWR80S2R00FR	.RESISTOR, FIXED, WIREWOUND .	1	
-30	CSR13G475ML	.CAPACITOR, FIXED, ELECTROLYTIC	1	
-31	UZ5836,	.SEMICONDUCTOR DEVICE, DIODE, Silicon zener (12969) (Stewart-Warner spec control dwg 48P233805-21-11)	1	
-32	85487-2	.CONTACT, ELECTRICAL (00779)	13	
-33	RN55D51R1F	.RESISTOR, FIXED, FILM	1	
-34	1N941B	.SEMICONDUCTOR DEVICE, DIODE	1	
-35	CSR13R225ML	.CAPACITOR, FIXED, ELECTROLYTIC	1	
-36	CSR13C475ML	.CAPACITOR, FIXED, ELECTROLYTIC	1	
-37	1N3826A	.SEMICONDUCTOR DEVICE, DIODE	1	
-38	CSR13D226KL	.CAPACITOR, FIXED, ELECTROLYTIC	1	
-39	2N708	.TRANSISTOR	1	
-40	RCR07G330JS	.RESISTOR, FIXED, COMPOSITION	2	
-41	CSR13G224KL	.CAPACITOR, FIXED, ELECTROLYTIC	2	

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNIT PER ASSY	USABLE ON CODE
11-3-42	CSR09D825KM	CAPACITOR, FIXED, ELECTROLYTIC..... .	2	
-43	RN55D6812F	RESISTOR, FIXED, FILM (Select at test)..... .	1	
	RN55D6342F	RESISTOR, FIXED, FILM (Select at test)..... .	1	
	RN55D5762F	RESISTOR, FIXED, FILM (Select at test)..... .	1	
	RN55D5232F	RESISTOR, FIXED, FILM (Select at test)..... .	1	
	RN55D4752F	RESISTOR, FIXED, FILM (Select at test)..... .	1	
	RN55D4532F	RESISTOR, FIXED, FILM (Select at test)..... .	1	
	RN55D4222F	RESISTOR, FIXED, FILM (Select at test)..... .	1	
	RN55D3922F	RESISTOR, FIXED, FILM (Select at test)..... .	1	
	RN55D3652F	RESISTOR, FIXED, FILM (Select at test)..... .	1	
	RN55D3322F	RESISTOR, FIXED, FILM (Select at test)..... .	1	
-44	RCR07G332JS	RESISTOR, FIXED, COMPOSITION..... .	2	
-45	RCR07G564JS	RESISTOR, FIXED, COMPOSITION (Select at test)	1	
	RCR07G684JS	RESISTOR, FIXED, COMPOSITION (Select at test)	1	
	RCR07G474JS	RESISTOR, FIXED, COMPOSITION (Select at test)	1	
-46	RCR07G225JS	RESISTOR, FIXED, COMPOSITION..... .	1	
-47	84P233836-21-11	PRINTED CIRCUIT BOARD..... .	1	
11-4-	01A233758-21-11	CCMPARATOR AND DECODER ASSEMBLY (See ..... . figure and index no. 11-1-24 for NHA)	REF	A
	01A233758-21-12	COMPARATOR AND DECODER ASSEMBLY (See ..... . figure and index no. 11-1-24 for NHA)	REF	B
	01A233758-22-11	COMPARATOR AND DECODER ASSEMBLY (See ..... . figure and index no. 11-1-24 for NHA)	REF	C
-1	RCR07G471JS	RESISTOR, FIXED, COMPOSITION..... .	1	
-2	8046-1 NATURAL	JACK, TIP (91506)..... .	4	
-3	CM05ED680J03	CAPACITOR, FIXED, MICA DIELECTRIC	1	
-4	RCR07G102JS	RESISTOR, FIXED, COMPOSITION..... .	12	
-5	RCR07G273JS	RESISTOR, FIXED, COMPOSITION..... .	5	
-6	8131-100-C0G-12 2G	CAPACITOR, FIXED, CERAMIC DIELECTRIC,..... . 1200 pf porm 2 pct, 100 vdcw (72982) (Stewart-Warner spec control dwg 21P233811-23-11)	1	
-7	CM05FD121J03	CAPACITOR, FIXED, MICA DIELECTRIC ..... . (Select at test)	1	
	CM05FD910J03	CAPACITOR, FIXED, MICA DIELECTRIC ..... . (Select at test)	1	
	CM05FD111J03	CAPACITOR, FIXED, MICA DIELECTRIC ..... . (Select at test)	1	
	CM05ED820J03	CAPACITOR, FIXED, MICA DIELECTRIC ..... . (Select at test)	1	
	CM05ED750J03	CAPACITOR, FIXED, MICA DIELECTRIC ..... . (Select at test)	1	
	CM05ED620J03	CAPACITOR, FIXED, MICA DIELECTRIC ..... . (Select at test)	1	
	CM05ED560J03	CAPACITOR, FIXED, MICA DIELECTRIC ..... . (Select at test)	1	
	CM05ED470J03	CAPACITOR, FIXED, MICA DIELECTRIC ..... . (Select at test)	1	

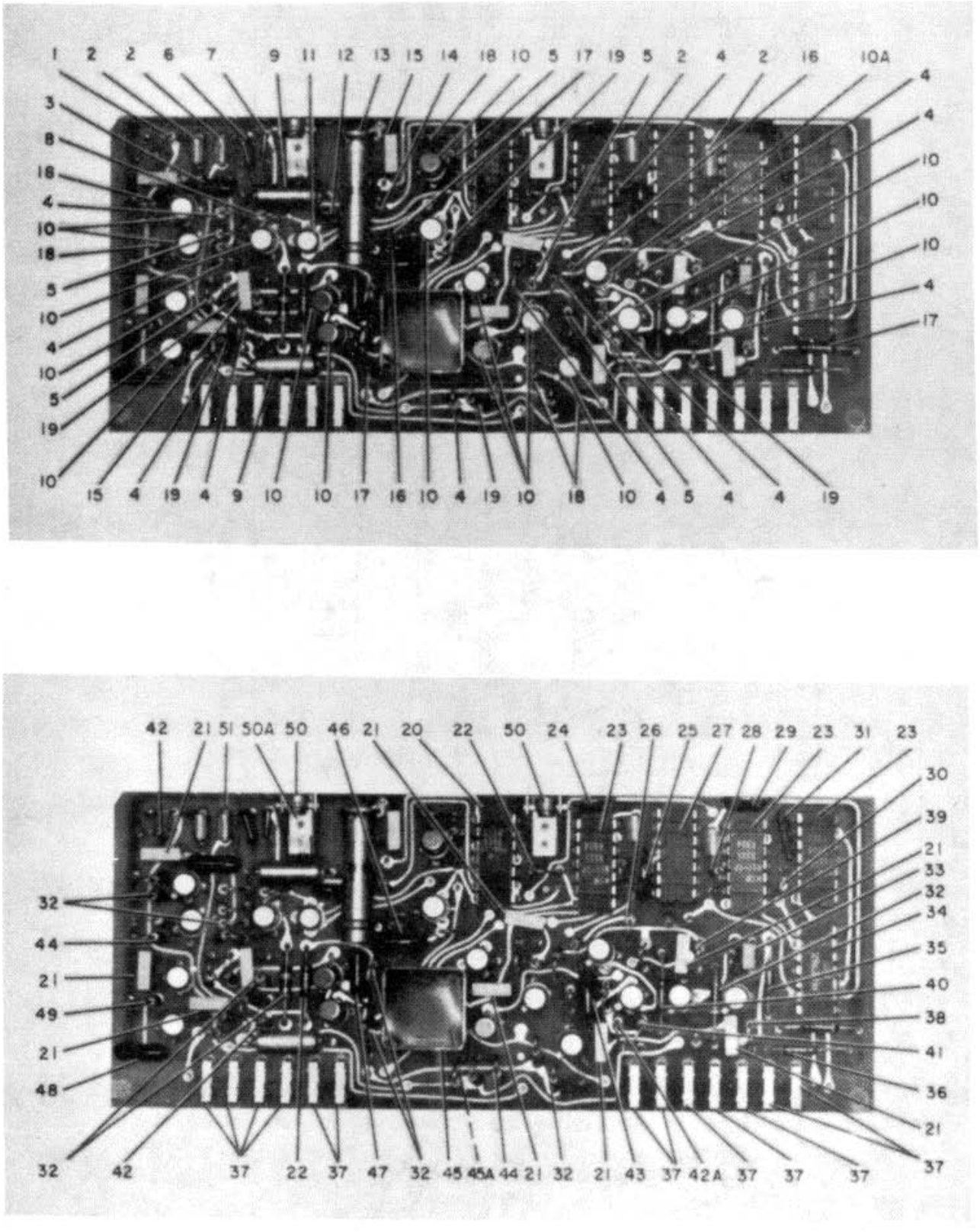


Figure 11-4. Comparator-Decoder Assembly (A4) (Code A, B)
(Sheet 1 of 2)

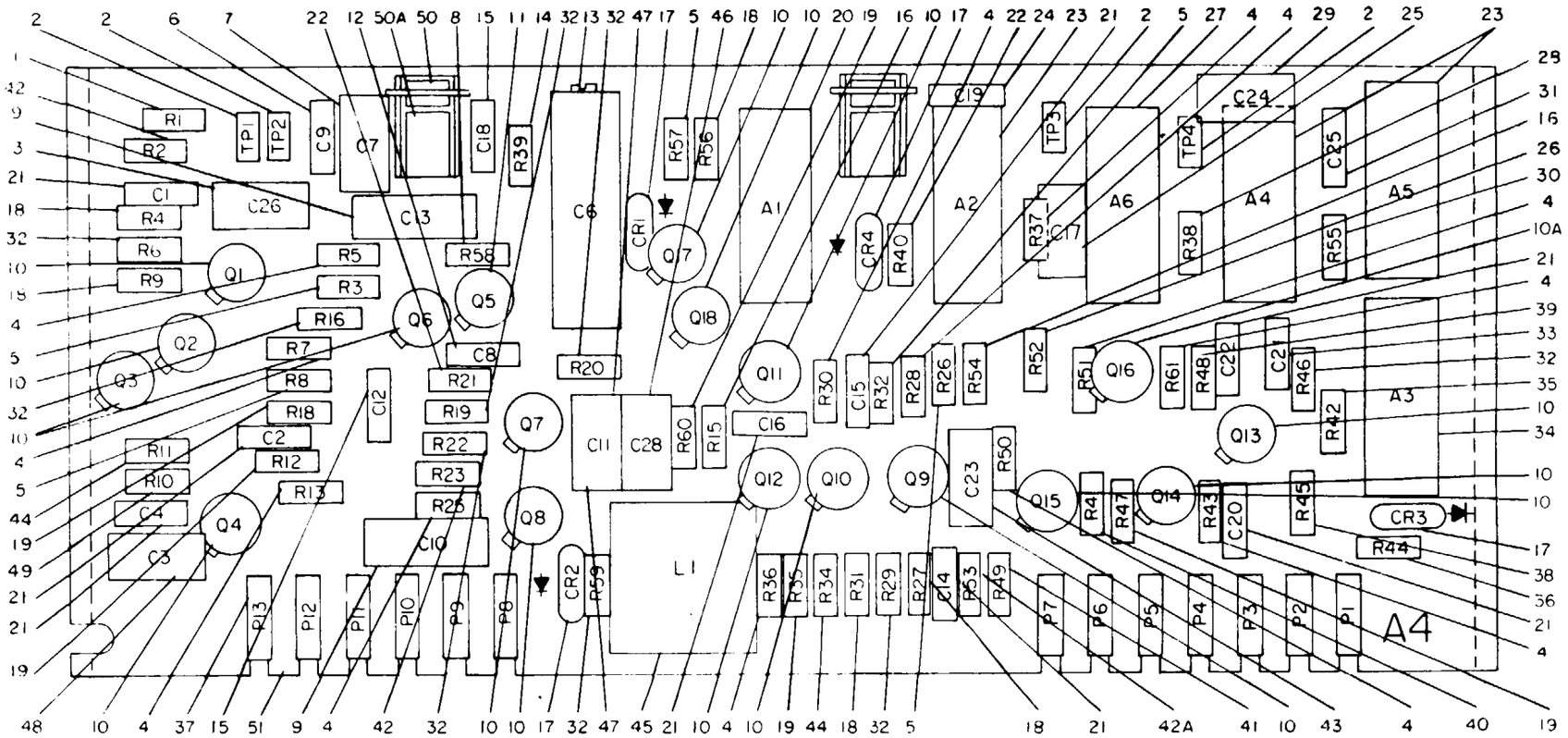


Figure 11-4. Comparator-Decoder Assembly (A4) (Code C) (Sheet 2 of 2)

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNIT PER ASSY	USABLE ON CODE
11-4-7 (Cont.)	CM05ED360J03	.CAPACITOR, FIXED, MICA DIELECTRIC ..... . (Select at test)	1	
	CM05ED270J03	.CAPACITOR, FIXED, MICA DIELECTRIC ..... . (Select at test)	1	
	CM05CD180J03	.CAPACITOR, FIXED, MICA DIELECTRIC ..... . (Select at test)	1	
	CM05CD100D03	.CAPACITOR, FIXED, MICA DIELECTRIC ..... . (Select at test)	1	
	CM05CD050D03	.CAPACITOR, FIXED, MICA DIELECTRIC ..... . (Select at test)	1	
-8	RCR07G332JS	.RESISTOR, FIXED, COMPOSITION..... .	1	
-9	CSR13G475ML	.CAPACITOR, FIXED, ELECTROLYTIC..... .	2	
-10	2N706	.TRANSISTOR..... .	16	
-10A	2N2222	.TRANSISTOR..... .	1	
	2N706*	.TRANSISTOR..... .	1	
-11	2N2222	.TRANSISTOR..... .	1	
-12	8121-100-C0G-102G	.CAPACITOR, FIXED, CERAMIC DIELECTRIC,..... . 1000 pf porm 2 pct, 100 vdcw (72982) (Stewart-Warner spec control dwg 21P233811-21-11)	1	
-13	PC41H180	.CAPACITOR, VARIABLE	1	
-14	RCR07G221JS	.RESISTOR, FIXED, COMPOSITION..... .	1	
-15	CK06BX103K	.CAPACITOR, FIXED, CERAMIC DIELECTRIC	2	
-16	RN55D5620F	.RESISTOR, FIXED, FILM..... .	2	
-17	1N914	.SEMICONDUCTOR DEVICE, DIODE	4	
	1N4148*	.SEMICONDUCTOR DEVICE, DIODE	4	
-18	RCR07G512JS	.RESISTOR, FIXED, COMPOSITION..... .	5	
-19	RCR07G182JS	.RESISTOR, FIXED, COMPOSITION..... .	5	
-20	SW946-1P	.INTEGRATED CIRCUIT, Quadruple 2 input nand..... . (27318) (Stewart-Warner spec control dwg 48P233825-21-11)	1	
-21	CK06BX104K	.CAPACITOR, FIXED, CERAMIC,DIELECTRIC..... .	8	
-22	RN55C7321F	.RESISTOR, FIXED, FILM..... .	2	
-23	SW951-1P	.INTEGRATED CIRCUIT, MONOSTABLE MULTI-..... . .VIBRATOR (27318) (Stewart-Warner spec control dwg 48P233828-21-11)	3	
-24	8131-100-C0G-152G	.CAPACITOR, FIXED, CERAMIC DIELECTRIC,..... . 1500 pf porm 2 pct, 100 vdcw (72982) (Stewart-Warner spec control dwg 21P233811-24-11)	1	
-25	CM05FD131J03	.CAPACITOR, FIXED, MICA DIELECTRIC	1	
-26	RCR07G472JS	.RESISTOR, FIXED, COMPOSITION..... .	1	A
	RCR07G302JS	.RESISTOR, FIXED, COMPOSITION..... .	1	B, C
-27	SW728-1P	.INTEGRATED CIRCUIT, MONOSTABLE MULTI-..... . VIBRATOR (27318) (Stewart-Warner spec dwg 48P233815-21-11)	1	
-28	RN55C2371F	.RESISTOR, FIXED, FILM..... .	1	A, B
	RN55C2371F	.RESISTOR, FIXED, COMPOSITION (Select at test)..... .	1	C
	RN55C2551F	.RESISTOR, FIXED, COMPOSITION (Select at test)..... .	1	C
	RN55C2671F	.RESISTOR, FIXED, COMPOSITION (Select at test)..... .	1	C
	RN55C2801F	.RESISTOR, FIXED, COMPOSITION (Select at test)..... .	1	C
	RN55C2941F	.RESISTOR, FIXED, COMPOSITION (Select at test)..... .	1	C
	RN55C3091F	.RESISTOR, FIXED, COMPOSITION (Select at test)..... .	1	C
-29	CM05ED360J03	.CAPACITOR, FIXED, MICA DIELECTRIC ..... . (Select at test)	1	
	CM05ED470J03	.CAPACITOR, FIXED, MICA DIELECTRIC ..... . (Select at test)	1	

*ALTERNATE PART

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNIT PER ASSY	USABLE ON CODE
11-4-29 (Cont.)	CM05ED560J03	.CAPACITOR. FIXED, MICA DIELECTRIC ..... . (Select at test)	1	
	CM05ED620J03	.CAPACITOR. FIXED. MICA DIELECTRIC ..... . (Select at test)	1	
	CM05ED750J03	.CAPACITOR, FIXED, MICA DIELECTRIC . ... (Select at test)	1	
	CM05ED820J03	.CAPACITOR. FIXED, NIICA DIELECTRIC..... . (Select at test)	1	
	CM05FDlllJ03	.CAPACITOR, FIXED, MICA DIELECTRIC ..... . (Select at test)	1	
	CM05FD121J03	.CAPACITOR, FIXED, MICA DIELECT RIC ..... . (Select at test)	1	
	CM05FD910J03	.CAPACITOR, FIXED, MICA DIELECTRIC ..... . (Select at test)	1	
-30	RN55C8871F	.RESISTOR, FIXED. FILM..... .	1	
-31	8141-100-COG-472J	.CAPACITOR. FIXED, CERAMIC DIELECTRIC,..... . 4700 pf porm 5 pct, 100 vdcw (72982) (Stewart-Warner spec control dwg 21P233811-21-11)	1	
-32	RCR07G242JS	.RESISTOR, FIXED, COMPOSITION..... .	8	
-33	CK05BX121K	.CAPACITOR. FIXED, CERAMIC DIELECTRIC..... .	1	
-34	SW962-1P	.INTEGRATED CIRCUIT. Triple 3 input nand..... . (27318) (Stewart-Warner spec control dwg 48P233830-21-11)	1	
-35	RN55C1501F	.RESISTOR, FIXED, FILM..... .	1	
-36	RN55C1OO1F	.RESISTOR, FIXED, FILM	1	
-37	85487-2	.CONTACT, ELECTRICAL (00779)	13	
-38	RCR07G751JS	.RESISTOR, FIXED, COMPOSITION..... .	1	
-39	RCR07G392JS	.RESISTOR, FIXED, COMPOSITION	1	
-40	RN55C4322F	.RESISTOR, FIXED, FILM..... .	1	
-41	RCR07G563JS	.RESISTOR, FIXED, COMPOSITION..... .	1	
-42	RCR07G152JS	.RESISTOR, FIXED, COMPOSITION..... .	2	
-42A	RCR07G222JS	.RESISTOR, FIXED, COMPOSITION..... .	1	B, C
	RCR07G152JS	.RESISTOR, FIXED, COMPOSITION..... .	1	A
-43	CM05CD100D03	.CAPACITOR, FIXED, MICA DIELECTRIC	1	
-44	RN55D2371F	.RESISTOR, FIXED, FILM	2	
-45	24P233829-21-11	.INDUCTOR, AIR CORE, 170 uh..... .	1	
-45A	05P233858-21-11	.EYELET, METALLIC..... .	4	A, B
-46	CM06FD101J03	.CAPACITOR, FIXED, MICA DIELECTRIC	1	
-47	CM05ED560J03	.CAPACITOR, FIXED, MICA DIELECTRIC	1	
-48	CM05ED390J03	.CAPACITOR, FIXED, MICA DIELECTRIC	1	
-49	RCR07G122JS	.RESISTOR, FIXED, COMPOSITION..... .	1	
-50	F22LHA27M-22-40	.NUT, SELF-LOCKING, PLATE (72962)..... . (ATTACHING PARTS)	2	
	COML	.RIVET, TUBULAR, Brass, cad pl, 0.061 in ..... . dia shank, 11,"64 in. lg	2	
	COML	.RIVET, TUBULAR, Brass, cad pl, 0 061 in ..... . dia shank, 5/16 In. lg.	2	
-50A	46P233856-21-11	.STOP, MOUNTING SCREW	2	
-51	84P233837-21-11	.PRINTED CIRCUIT BOARD..... .	1	A, B
	84P233860-21-11	.PRINTED CIRCUIT BOARD..... .	1	C

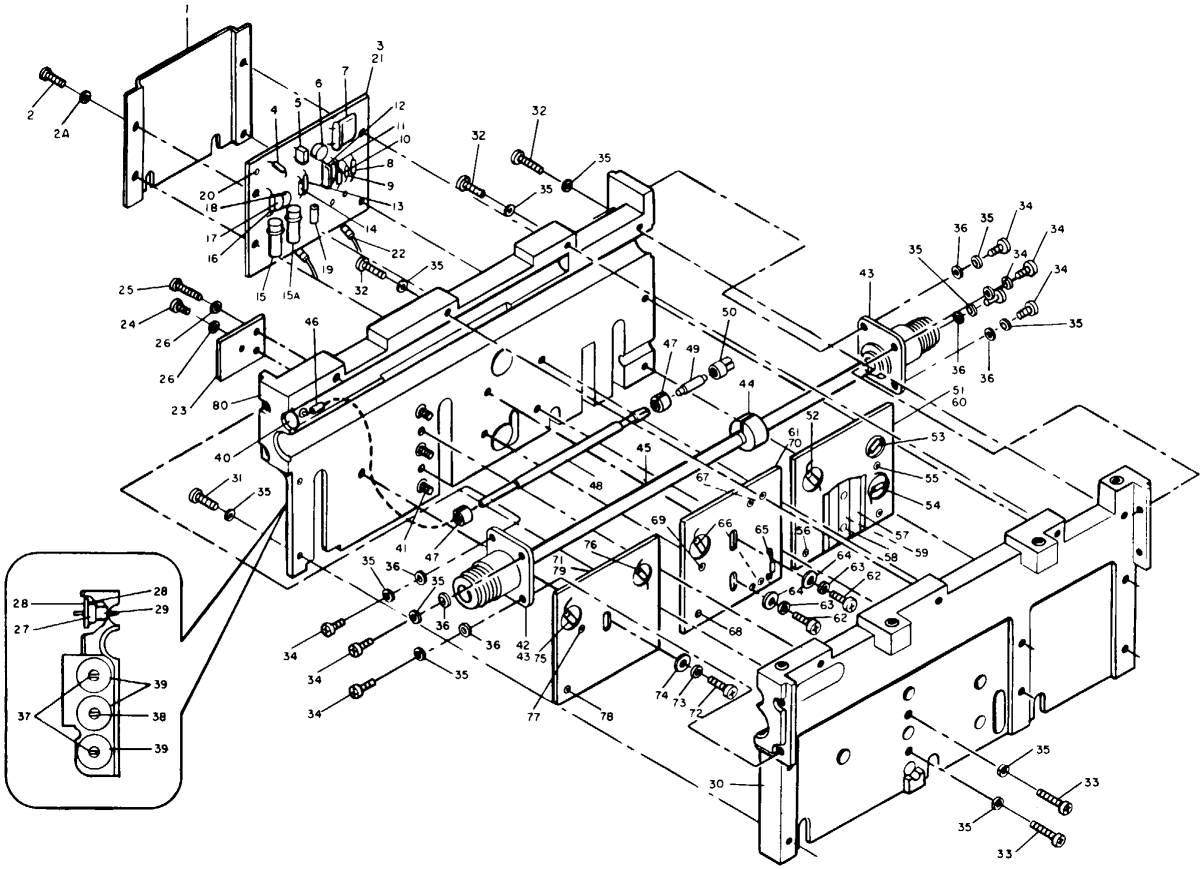


Figure 11-5. Radio Frequency Assembly (A1A1)

FIGURE & INDEX NUMBER	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	QTY PER ASSY	USABLE ON CODE
11-5-	01A233760-21-11	RADIO FREQUENCY ASSEMBLY (See figure and index no. 11-1-88 for NHA)	REF	A, B
	01A233760-21-12	RADIO FREQUENCY ASSEMBLY (See figure and index no. 11-1-88 for NHA)	REF	C
-1	15P233775-21-11	. COVER, GENERATOR (ATTACHING PARTS)	1	
-2	MS51957-19	. SCREW, MACHINE	4	
-2A	MS35338-135	. WASHER, LOCK	4	
-3	01A233764-21-11	. . GENERATOR ASSEMBLY	1	A, B
	01A233764-21-12	. . GENERATOR ASSEMBLY	1	C
-4	RL07S391J	. . RESISTOR, FIXED, FILM	1	A, B
	RL07S241J	. . RESISTOR, FIXED, FILM	1	C
-5	CK06BX103K	. . CAPACITOR, FIXED, CERAMIC DIELECTRIC	1	
-6	2N706	. . TRANSISTOR	1	
-7	CR80/U	. . CRYSTAL, QUARTZ, 85.833333 MHZ	1	
-8	RL07S563J	. . RESISTOR, FIXED, FILM	1	
-9	1N914	. . SEMICONDUCTOR DEVICE, DIODE	1	
	1N4148*	. . SEMICONDUCTOR DEVICE, DIODE	1	
-10	DD-4-7	. . COIL, RADIO FREQUENCY, 4.7 UH (72259) (Stewart-Warner spec control dwg 24P233788-22-11)	1	
-11	RL07S510J	. . RESISTOR, FIXED, FILM	1	
-12	CM05CD050D03	. . CAPACITOR, FIXED, MICA DIELECTRIC	1	
-13	RL07S682J	. . RESISTOR, FIXED, FILM	1	
-14	DD-0-12	. . COIL, RADIO FREQUENCY, 0. 12 UH (72259) (Stewart-Warner spec control dwg 24P233788-21-11)	1	
-15	PC41J8R5	. . CAPACITOR, VARIABLE	1	
-15A	PC41J8R5	. . CAPACITOR, VARIABLE	1	A, B
-16	RL07S681J	. . RESISTOR, FIXED, FILM	1	A, B
	RL07S510J	. . RESISTOR, FIXED, FILM	1	C
-17	CC50UJ270J	. . CAPACITOR, FIXED, CERAMIC DIELECTRIC	1	
-18	CC50UJ240J	. . CAPACITOR, FIXED, CERAMIC DIELECTRIC	1	
-19	8046-1 NATURAL	. . JACK, TIP (91506)	1	
-20	S-6064	. . EYELET, METALLIC (61957)	3	
-21	84P233834-21-11	. . PRINTED CIRCUIT BOARD	1	
-22	5659065/43	SHIELDING, BEAD, FERRITE (02114)	4	
-23	15P233792-21-11	. COVER, CAPACITOR (ATTACHING PARTS)	1	
-24	MS51957-12	. SCREW, MACHINE	1	
-25	MS51957-18	. SCREW, MACHINE	1	
-26	MS35338-135	. WASHER, LOCK	2	
-27	49P233776-21-11	. DISC, CAPACITOR	1	
-28	49P233778-21-11	. INSULATOR, DISC	2	
-29	FT-SM8	. TERMINAL, INSULATOR, FEED-THRU (98291)	1	
-30	01P233790-21-11	PLATE, RADIO FREQUENCY. (ATTACHING PARTS)	1	
-31	MS51957-13	. SCREW, MACHINE	2	
-32	MS51957-17	. SCREW, MACHINE	3	
-33	MS51957-15	. SCREW, MACHINE	2	
-34	MS51957-14	. SCREW, MACHINE	7	
-35	MS35336-135	. WASHER, LOCK	13	
-36	MS15795-803	. WASHER, FLAT	7	

* ALTERNATE PART

FIGURE & INDEX NUMBER	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	QTY PER ASSY	USABLE ON CODE
11-5-37	47P233800-21-11	. STUB, FREQUENCY	2	
-38	47P233800-22-11	. STUB, FREQUENCY	1	
-39	14P233796-21-11	. SUPPORT, STUB	3	
-40	49P233847-21-11	. DISC, END SEAL	1	
-41	MS51021-13	. SETSCREW	3	
-42	01A233761-21-11	. TRAN4SMISSION LINE ASSEMBLY	1	
-43	M39012/04-0002	. . CONNECTOR, RECEPTACLE, ELECTRICAL	2	
-44	14P233794-21-11	. . INSULATOR, BUSHING	1	
-45	47P233797-21-11	. . LINE, RADIO FREQUENCY TRANSMISSION PRIMARY	1	
-46	5082-2800	. SEMICONDUCTOR DEVICE (28480) (Stewart Warner spec control dwg 48P233808-21-11)	1	
-47	14P233795-21-11	. INSULATOR, BUSHING	2	
-48	47P233803-21-11	. LINE, RADIO FREQUENCY TRANSMISSION, SECONDARY	1	
-49	125R500S	. RESISTOR, FIXED, FILM, 50 ohms porm 1 pct, 1 w (03888) (Stewart-Warner spec control dwg 06P233789-21-11)	1	
	TRM-12-50-2*	. RESISTOR, FIXED, FILM, 50 ohms porm 1 pct, 1 w (24602) (Stewart-Warner spec control dwg 06P233789-21-11)	1	
-50	39P233798-21-11	. CONTACT, ELECTRICAL	1	
-51	01A233759-21-11	. GENERATOR COUPLER ASSEMBLY	1	A, B
	01A233759-22-11	. GENERATOR COUPLER ASSEMBLY	1	C
-52	RL07S510J	. . RESISTOR, FIXED, FILM	1	
-53	MA-47041	. . SEMICONDUCTOR DEVICE, DIODE (96341) (Stewart-Warner spec control dwg 48P233807-21-11)	1	
-54	5082-0112	. . SEMICONDUCTOR DEVICE, DIODE (28480) (Stewart-Warner spec control dwg 48P233806-21-11)	1	
-55	S-6064	. . EYELET, METALLIC (61597)	2	
-56	2000-B	. . TERMINAL, STUD (88245)	1	
-57	41P233799-21-11	. . SPRING, FLAT (ATTACHING PARTS)	1	
-58	COML	. . RIVET, TUBULAR, Brs, cad pl, 5/32 in lg, 0. 061 in. shank dia	2	
-59	44P233793-21-11	. . GEAR, RACK	1	
-60	84P233833-21-11	. . PRINTED CIRCUIT BOARD	1	A, B
	84P233833-22-11	. . PRINTED CIRCUIT BOARD	1	C
-61	01A233763-21-11	. FREQUENCY COUPLER ASSEMBLY (ATTACHING PARTS)	1	
-62	MS51957-13	. SCREW, MACHINE	2	
-63	MS35338-135	. WASHER, LOCK	2	
-64	MS15795-804	. WASHER, FLAT	2	
-65	5082-2800	. . SEMICONDUCTOR DEVICE, DIODE (28480) (Stewart-Warner spec control dwg 48P233808-21-11)	1	
-66	RL07S510J	. . RESISTOR, FIXED, FILM	2	
-67	24P233841-21-11	. . LOOP, COUPLING	1	
-68	2000-B	. . TERMINAL, STUD (88245)	3	
-69	S-6064	. . EYELET, METALLIC (61597)	5	
-70	84P233832-21-11	. . PRINTED CIRCUIT BOARD	1	
-71	01A233762-21-11	. . POWER COUPLER ASSEMBLY	1	

*ALTERNATE PART

FIGURE & INDEX NUMBER	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	QTY PER ASSY	USABLE ON CODE
		(ATTACHING PARTS)		
11-5-72	MS51957-13	. SCREW, MACHINE	1	
-73	MS35338-135	. WASHER, LOCK	1	
-74	MS15795-804	. WASHER, FLAT	1	
-75	RL07S510J	. . RESISTOR, FIXED, FILM	1	
-76	5082-2800	. . SEMICONDUCTOR DEVICE, DIODE (28480) (Stewart-Warner spec control dwg 48P233808-21-11)	1	
-77	S-6064	. . EYELET, METALLIC (61597)	1	
-78	2000-B	. . TERMINAL, STUD (88245)	1	
-79	84P233831-21-11	. . PRINTED CIRCUIT BOARD	1	
-80	01P233790-21-11	. PLATE, RADIO FREQUENCY	1	

PART C
NUMERICAL INDEX

PART NO.	FIG. & INDEX NO.	QTY PER ART	AIR FORCE SC	AIR FORCE RC	NAVY SC	NAVY ARC
BB90461	11-1-61	1	P1	S	P1	C
BB90462	11-1-60	1	P1	S	P1	C
CC50UJ240J	11-5-18	1	P1D	S	P1	C
CC50UJ270J	11-5-17	1	P1D	S	P1	C
CK05BX121K	11-4-33	1	P1	S	P1	C
CK05BX561K	11-2-8	2	P1	S	P1	C
CK06BX103K	11-2-7	7	P1	S		P1
	11-3-4					
	11-4-15					
	11-5-5					
CK06BX104K	11-4-21	8	P1	S	P1	C
CK06BX223K	11-1-40	1	P1D	S	P1	C
CM05CD050D03	11-5-12	1	P1D	S	P1	C
CM05CD050D03	11-4-7	1	P1	S	P1	C
CM05CD100D03	11-4-7	2	P1	S	P1	C
	11-4-43					
CM05CD180J03	11-4-7	1	P1	S	P1	C
CM05ED270J03	11-4-7	1	P1	S	P1	C
CM05ED360J03	11-4-7	2	P1	S	P1	C
	11-4-29					
CM05ED390J03	11-4-48	1	P1	S	P1	C
CM05ED470J03	11-4-7	2	P1	S	P1	C
	11-4-29					
CM05ED560J03	11-2-31	4	P1	S	P1	C
	11-4-7					
	11-4-29					
	11-4-47					
CM05ED620J03	11-4-7	2	P1	S	P1	C
	11-4-29					
CM05ED680J03	11-2-31	2	P1	S	P1	C
	11-4-3					
CM05ED750J03	11-2-31	3	P1	S	P1	C
	11-4-7					
	11-4-29					
CM05ED820J03	11-2-31	3	P1	S	P1	C
	11-4-7					
	11-4-29					
CM05FD101J03	11-2-31	2	P1	S	P1	C
	11-4-46					
CM05FD111J03	11-2-31	3	P1	S	P1	C
	11-4-7					
	11-4-29					
CM05FD121J03	11-2-31	3	P1	S	P1	C
	11-4-7					
	11-4-29					
CM05FD131J03	11-2-31	2	P1	S	P1	C
	11-4-25					
CM05FD151J03	11-2-31	1	P1	S	P1	C
CM05FD181J03	11-2-21	1	P1	S	P1	C
CM05FD910J03	11-2-31	3	P1	S	P1	C
	11-4-7					
	11-4-29					
CM06FD471J03	11-2-29	2	P1	S	P1	C
COML	11-1-33	19				
	11-1-49					
	11-2-24					
COML (Cont.)	11-2-24					
	11-3-11					
	11-4-50					
	11-4-50					
	11-5-58					
CR80/U	11-5-7	1	P1D	S	P1	C
CSR09D825KM	11-3-42	2	P1	S	P1	C
CSR13C475ML	11-3-36	1	P1	S	P1	C
CSR13D226KL	11-3-38	1	P1	S	P1	C
CSR13E125KL	11-2-27	1	P1	S	P1	C
CSR13G224KL	11-3-41	2	P1	S	P1	C
CSR13G475ML	11-3-30	3	P1	S	P1	C
	11-4-9					
CSR13R225ML	11-3-35	1	P1	S	P1	C
DD-0-12	11-5-14	1	P1D	S	P1	C
DD-4-7	11-5-10	1	P1D	S	P1	C
DF-31A	11-1-76	1	P1D	S	P1	C
FT-SM8	11-5-29	1	P1D	S	P1	C
F22LHA27M-22-40	11-2-24	3	P1	S	P1	C
	11-4-50					
F4-2	11-1-58	1	X2		X2	
G-5A24OHMSPORM3	11-3-22	1	P1	S	P1	C
G-5A27OHMSPORM3	11-3-22	1	P1	S	P1	C
G-5A30OHMSPORM3	11-3-22	1	P1	S	P1	C
G-5A33OHMSPORM3	11-3-22	1	P1	S	P1	C
KA3302FX50J	11-2-28	1	P1	S	P1	C
MA-47041	11-5-53	1	P1D	S	P1	C
MS15795-803	11-1-16	30	P1D	S	P1	C
	11-1-21					
	11-1-28					
	11-1-31					
	11-1-57					
	11-1-71					
	11-5-36					
MS15795-804	11-5-64	3				
	11-5-74					
MS16632-4012	11-1-59	1	M1		MO	
MS16995-9	11-1-55	3	X2		P1C	
MS20426A3-4	11-1-4	4				
MS24264R12B12PNX	11-1-84	1	P1	S	P1	C
MS24693C2	11-1-7	8	X2		P1	C
MS24693C4	11-1-8	3	X2		P1	C
MS35338-135	11-1-20	46	PID	S	P1	C
	11-1-27					
	11-1-30					
	11-1-48					
	11-1-56					
	11-1-64					
	11-1-70					
	11-1-86					
	11-5-2A					
	11-5-26					
	11-5-35					
	11-5-63					
	11-5-73					
MS51021-13	11-5-41	3	P1D	S	P1	C

PART NO.	FIG. & INDEX NO.	QTY PER ART	AIR FORCE SC	AIR FORCE RC	NAVY SC	NAVY ARC
MS51021-9	11-1-51	6	P1D	S	P1	C
MS51957-12	11-1-78	5	P1D	S	P1	C
	11-5-24					
MS51957-13	11-1-19	23	P1D	S	P1	C
	11-1-47					
	11-1-63					
	11-1-73					
	11-1-85					
	11-5-31					
	11-5-62					
	11-5-72					
MS51957-14	11-1-15	17	P1D	S	P1	C
	11-1-29					
	11-1-69					
	11-5-34					
MS51957-15	11-5-33	2				
MS51957-17	11-5-32	3	P1D	S	P1	C
MS51957-18	11-1-25	3	P1D	S	P1	C
	11-5-25					
MS51957-19	11-5-2	4	P1D	S	P1	C
MS9068-005	11-1-26	2				
M39012/04-0002	11-5-43	2	X1		X1	
NAS-813-10	11-1-1	2	X2		MO	
PB3-1-2	11-1-3	2				
PC3-1-2X547-16	11-1-11	2	P1	S	P1	C
PC41H180	11-4-13	1	P1	S	P1	C
PC41J8R5	11-5-15	2	P1D	S	P1	C
	11-5-15A					
PF3-1-2-53X545	11-1-9	2	P1	S	P1	C
PS3-1-2X546-1	11-1-10	2	P1	S	P1	C
RCR07G101JS	11-2-13	2	P1	S	P1	C
	11-3-1					
RCR07G102JS	11-1-43	15	P1D	S	P1	C
	11-2-5					
	11-4-4					
RCR07G103JS	11-3-18	2	P1	S	P1	C
RCR07G121JS	11-2-14	2	P1	S	P1	C
RCR07G122JS	11-4-49	1	P1	S	P1	C
RCR07G152JS	11-4-42	3	P1	S	P1	C
	11-4-42A					
RCR07G153JS	11-3-5	2	P1	S	P1	C
RCR07G182JS	11-2-1	6	P1	S	P1	C
	11-4-19					
RCR07G183JS	11-3-8	3	P1	S	P1	C
RCR07G221JS	11-4-14	1	P1	S	P1	C
RCR07G222JS	11-4-42A	1	P1	S	P1	C
RCR07G223JS	11-2-6	1	P1	S	P1	C
RCR07G225JS	11-3-46	1	P1	S	P1	C
RCR07G241JS	11-2-3	1	P1	S	P1	C
RCR07G242JS	11-4-32	8	P1	S	P1	C
RCR07G272JS	11-2-25	1	P1	S	P1	C
RCR07G273JS	11-3-16	6	P1	S	P1	C
	11-4-5					
RCR07G302JS	11-4-26	1	P1	S	P1	C
RCR07G330JS	11-3-40	2	P1	S	P1	C
RCR07G332JS	11-3-44	3	P1	S	P1	C
	11-4-8					
RCR07G392JS	11-4-39	1	P1	S	P1	C
RCR07G471JS	11-4-1	1	P1	S	P1	C
RCR07G472JS	11-2-15	6	P1	S	P1	C
	11-3-12					
	11-4-26					
RCR07G474JS	11-3-45	1	P1	S	P1	C
RCR07G512JS	11-4-18	5	P1	S	P1	C
RCR07G563JS	11-4-41	1	P1	S	P1	C
RCR07G564JS	11-3-45	1	P1	S	P1	C
RCR07G684JS	11-3-45	1	P1	S	P1	C
RCR07G751JS	11-2-9	2	P1	S	P1	C
	11-4-38					
RCR07G91OJS	11-2-32	1	P1	S	P1	C
RCR07G91 JS	11-2-33	1	P1	S	P1	C
RIVET 0. 061X11/64	11-2-24	1				
RIVET 0. 061X5/16	11-2-24	1				
RIVET 0. 061X5/32	11-5-58	2				
RIVET 11/64X0. 123	11-1-33	4				
RIVET 5/32X0. 182	11-3-11	4				
RL07S241J	11-5-4	1	P1D	S	P1	C
RL07S391J	11-5-4	1	P1D	S	P1	C
RL07S510J	11-5-11	6	P1D	S	P1	C
	11-5-16					
	11-5-52					
	11-5-66					
	11-5-75					
RL07S563J	11-5-8	1	P1D	S	P1	C
RL07S681J	11-5-16	1	P1D	S	P1	C
RL07S682J	11-5-13	1	P1D	S	P1	C
RN55C1OO1F	11-4-36	1	P1	S	P1	C
RN55C1501F	11-4-35	1	P1	S	P1	C
RN55C2371F	11-4-28	1	P1	S	P1	C
RN55C2551F	11-4-28	1	P1	S	P1	C
RN55C2671F	11-4-28	1	P1	S	P1	C
RN55C2801F	11-4-28	1	P1	S	P1	C
RN55C2941F	11-4-28	1	P1	S	P1	C
RN55C3091F	11-4-28	1	P1	S	P1	C
RN55C4322F	11-4-40	1	P1	S	P1	C
RN55C7321F	11-4-22	2	P1	S	P1	C
RN55C8871F	11-4-30	1	P1	S	P1	C
RN55D10O01F	11-3-23	1	P1	S	P1	C
RN55D1003F	11-2-11	1	P1	S	P1	C
RN55D1022F	11-3-14A	1	P1	S	P1	C
RN55D1053F	11-2-11	1	P1	S	P1	C
RN55D1103F	11-2-11	1	P1	S	P1	C
RN55D1152F	11-3-14A	1	P1	S	P1	C
RN55D1153F	11-2-11	1	P1	S	P1	C
RN55D1212F	11-3-14A	1	P1	S	P1	C
RN55D1213F	11-2-11	1	P1	S	P1	C
RN55D1273F	11-2-11	1	P1	S	P1	C
RN55D1303F	11-2-11	1	P1	S	P1	C
RN55D1332F	11-3-14A	1	P1	S	P1	C
RN55D1501F	11-3-3	2	P1	S	P1	C
RN55D1502F	11-3-14	2	P1	S	P1	C
	11-3-14A					
RN55D2371F	11-4-44	2	P1	S	P1	C
RN55D3321F	11-3-15	1	P1	S	P1	C

PART NO.	FIG. & INDEX NO.	QTY PER ART	AIR FORCE		NAVY	
			S C	R C	S C	A R C
RN55D3322F	11-3-43	1	P1	S	P1	C
RN55D3652F	11-3-43	1	P1	S	P1	C
RN55D3922F	11-2-11	2	P1	S	P1	C
	11-3-43					
RN55D4222F	11-3-43	1	P1	S	P1	C
RN55D4532F	11-3-43	1	P1	S	P1	C
RN55D4752F	11-3-43	1	P1	S	P1	C
RN55D51R1F	11-3-33	1	P1	S	P1	C
RN55D5232F	11-3-43	1	P1	S	P1	C
RN55D5620F	11-2-2	3	P1	S	P1	C
	11-4-16					
RN55D5621F	11-3-20	1	P1	S	P1	C
RN55D5762F	11-3-43	1	P1	S	P1	C
RN55D6342F	11-3-43	1	P1	S	P1	C
RN55D6812F	11-3-43	1	P1	S	P1	C
RN55D75ROF	11-3-25	1	P1	S	P1	C
RN55D7502F	11-3-28	1	P1	S	P1	C
RN55D8062F	11-2-11	1	P1	S	P1	C
RN55D8252F	11-2-11	1	P1	S	P1	C
RN55D8662F	11-2-11	1	P1	S	P1	C
RN55D9092F	11-2-11	1	P1	S	P1	C
RN55D9532F	11-2-11	1	P1	S	P1	C
RN60D1131F	11-3-10	1	P1	S	P1	C
RN60D1211F	11-3-10	2	P1	S	P1	C
	11-3-26					
RN60D1301F	11-3-10	1.	P1	S	P1	C
RN60D1401F	11-3-10	1	P1	S	P1	C
RN60D1501F	11-3-2	2	P1	S	P1	C
	11-3-10					
RN60D1621F	11-3-10	1	P1	S	P1	C
RN60D1741F	11-3-10	1	P1	S	P1	C
RN60D1871F	11-3-10	1	P1	S	P1	C
RN60D2001F	11-3-10	1	P1	S	P1	C
RN60D2211F	11-3-10	1	P1	S	P1	C
RN60D2261F	11-3-10	1	P1	S	P1	C
RN60D2371F	11-3-10	1	P1	S	P1	C
RN60D2431F	11-3-10	1	P1	S	P1	C
RN60D2551F	11-3-10	1	P1	S	P1	C
RN60D6041F	11-3-27	1	P1	S	P1	C
RWR80S2ROOFR	11-3-29	1	P1	S	P1	C
S-6064	11-1-37	48	P1D	S	P1	C
	11-1-45					
	11-5-20					
	11-5-55					
	11-5-69					
	11-5-77					
SWD-2200	11-2-26	2	P1	S	P1	C
SW705-1P	11-2-19	4	P1D	S	P1	C
SW728-1P	11-4-27	1	P1	S	P1	C
SW778-1P	11-2-20	2	P1D	S	P1	C
SW930-1P	11-2-16	2	P1D	S	P1	C
SW936-1P	11-2-17	1	P1D	S	P1	C
SW946-1P	11-2-23	2	P1D	S	P1	C
	11-4-20					
SW951-1P	11-4-23	3	P1D	S	P1	C
SW962-lP	11-2-18	2	P1D	S	P1	C
	11-4-34					

PART NO.	FIG. & INDEX NO.	QTY PER ART	AIR FORCE		NAVY	
			S C	R C	S C	A R C
M-1/4	11-3-13	1	P1	S	P1	C
TM1/8	11-1-42	1	P1D	S	P1	C
TRM-12-50-2*	11-5-49	1	P1D	S	P1	C
UZ5836	11-3-31	1	P1	S	P1	C
WASHER FLAT.031	11-1-49	3				
XL227-245	11-2-30	1	P1	S	P1	C
X2041-A	11-1-82	1	P1D	S	P1	C
X2041-B	11-1-37	40	X1		P1	C
	11-1-45					
01A233750A-21-11	11-1-	1	P1	L	P1	R
01A233750A-21-12	11-1-	1	P1	L	P1	R
01A233751A-21-11	11-l-lA	1		L		
01A233755-21-11	11-1-24	1	P2	L		
01A233755-21-12	11-1-24	1	P2	L		
01A233756-21-11	11-1-22	1	P1	L	P1	R
	11-2-					
01A233757-21-11	11-1-23	1	P1	L	P1	R
	11-3-					
01A233758-21-11	11-1-24	1	P1	L	P1	R
	11-4-					
01A233758-21-12	11-1-24	1	P1	L	P1	R
	11-4-					
01A233758-22-11	11-1-24	1	P1	L	P1	R
	11-4-					
01A233759-21-11	11-5-51	1	P1D	S	P1	C
01A233759-22-11	11-5-51	1	P1D	S	P1	C
01A233760-21-11	11-1-88	1	X1		X1	
	11-5-					
01A233760-21-12	11-1-88	1	X1		X1	
01A233761-21-11	11-5-42	1	P1D	S	P1	C
01A233762-21-11	11-5-71	1	P1D	S	P1	C
01A233763-21-11	11-5-61	1	P1D	S	P1	C
01A233764-21-11	11-5-3	1	P1D	S	P1	R
01A233764-21-12	11-5-3	1	P1D	S	P1	R
01A233765-21-11	11-1-62	1	X2		X2	
01lA233766-21-11	11-1-68	1	P1D	S	P1	R
01A233766-21-12	11-1-68	1	P1D	S	P1	R
01A233767-21-11	11-1-77	1	X2		X2	
01A233768-21-11	11-1-28A	1	P1D	S	P1	C
01A233768-21-12	11-1-28A	1	P1D	S	P1	*C*
01A233769-21-11	11-1-34	1	X1		X1	
01A233769-22-11	11-1-34	1	X1		X1	
01A233770-21-11	11-1-39	1	X1		X1	
01A233770-22-11	11-1-39	1	X1		X1	
01A233786-21-11	11-1-6	1	A		AF	
01P233780-21-11	11-1-5	1				
01P233790-21-11	11-5-80	2	X1			
	11-5-30					
01P233813-21-11	11-1-67	1	X1		X1	
01P233814-21-11	11-1-87	1	X1		X1	
05P233858-21-11	11-4-45A	4				
06P233789-21-11	(SEE TRM-12-50-2*)					
06P233809-21-11	(SEE TM-1/4)					
06P233809-22-11	(SEE TM1/8)					
06P233848-21-11	(SEE G-5A240HMSPORM3PCT)					

*ALTERNATE PART

PART NO.	FIG. & INDEX NO.	QTY PER ART	AIR FORCE SC	AIR FORCE RC	NAVY SC	NAVY ARC
36P233848-22-11	(SEE G-5A33OHMSPORM3PCT)					
36P233848-23-11	(SEE G-5A300OHMSPORM3PCT)					
06P233848-24-11	(SEE G-5A330HMSPORM3PCT)					
07P233777-21-11	11-1-32	2	X1		MO	
07P233840-21-11	11-3-11	2	M		MO	
08P233843-21-11	(SEE 100-5064)					
09P233861	(SEE 94012-12-12PN)					
09P233862-21-11	11-1-84	1				
1N3826A	11-3-37	1	P1	S	P1	C
1N4148*	11-1-35	22	P1D	S	P1	C
	11-1-41					
	11-3-6					
	11-4-17					
	11-5-9					
1N914	11-1-35	22	P1D	S	P1	C
	11-1-41					
	11-3-6					
	11-4-17					
	11-5-9					
1N941B	11-3-34	1	P1	S	P1	C
105111236-7	11-1-81	6	P1D	S	P1	C
100-5064	11-1-79	1	PID	S	P1	C
125R500S	11-5-49	1	PID	S	P1	C
14P233794-21-11	11-5-44	1	X1		X1	
14P233795-21-11	11-5-47	2	P1D	S	P1	C
14P233796-21-11	11-5-39	3	P1D	S	P1	C
14P233842-21-11	(SEE DF-31A)					
14P233846-21-11	11-1-74	2	P1D	S	P1	C
15P233774-21-11	11-1-65	1	M1		MO	
15P233775-21-11	11-5-1	1	M1			
15P233792-21-11	11-5-23	1	M1		MO	
18P233810-21-11	(SEE 8890461)					
18P233810-22-11	(SEE 8890462)					
2N1671	11-2-12	1	P1	S	P1	C
2N1671*	11-2-12	1	P1	S	P1	C
2N2219	11-3-24	2	P1	S	P1	C
2N2222	11-4-10A	2	P1	S	P1	C
	11-4-11					
2N2906	11-3-19	1	P1	S	P1	C
2N4231	11-1-72	1	P1D	S	P1	C
2N4948	11-3-7	1	P1	S	P1	C
2N706	11-2-4	30	P1	S	P1	C
	11-3-9					
	11-4-10					
	11-5-6					
2N706*	11-4-10A	1	P1	S	P1	C
2N708	11-3-39	1	P1	S	P1	C
2N718A	11-3-17	1	P1	S	P1	C
2000-B	11-5-68	5	P1D	S	X1	
	11-5-78					
21P233771	(SEE KA3302FX50J)					
	(SEE 317B333J*)					
21P233811-21-11	(SEE 8141-100-C0G-472J)					
21P233811-22-11	(SEE 8121-100-C0G-102G)					
21P233811-23-11	(SEE 8131-100-C0G-122G)					
21P233811-24-11	(SEE 8131-100-COG-152G)					

* ALTERNATE PART

PART NO.	FIG. & INDEX NO.	QTY PER ART	AIR FORCE SC	AIR FORCE RC	NAVY SC	NAVY ARC
21P233844-21-11	(SEE 2482-001)					
22P233779-21-11	11-1-66	1	M1		MO	
24P233787-21-11	(SEE SWD-2200)					
24P233788-21-11	(SEE DD-0. 12)					
24P233788-22-11	(SEE DD-4-7)					
24P233829-21-11	11-4-45	1	P1	S	P1	C
24P233841-21-11	11-5-67	1	M1		MO	
2482-001	11-1-80	6	P1D	S	P1	C
29P232852-3	(SEE 86147-7)					
29S111221-47	11-1-751					
29S130652-12-9	(SEE FT-SM-8)					
317B333J*	11-2-2'8	1	P1	S	P1	C
33P233782-21-11	11-1-2	1	M		MO	
33P233783-21-11	11-1-12	1	M		MO	
33P233784-21-11	11-1-13	1	M		MO	
34P233818-21-11	11-1-54	1	P1D	S	P1	C
34P233818-22-11	11-1-53	1	P1D	8	P1	C
34P233818-23-11	11-1-52	1	P1D	S	P1	C
36P233855-21-11	11-1-50	3	P1D	8	P1	C
39P233798-21-11	11-5-50	1	P1D	S	P1	C
41P233799-21-11	11-5-57	1	X2 *		X2	
42P233781-21-11	(SEE PC3-1-2X547-16)					
42P233781-22-11	(SEE PS3-1-2X546-1)					
42P233781-23-11	(SEE PB3-1-2)					
42P233781-24-11	(SEE PF3-1-2-53X545)					
44P233793-21-11	11-5-59	1	X2		X2	
46P233856-21-11	11-2-24A	3				
	11-4-50A					
47P233797-21-11	11-5-45	1	X1		X1	
47P233800-21-11	11-5-37	2	P1D	S	P1	C
47P233800-22-11	11-5-38	1	P1D	S	P1	C
47P233803-21-11	11-5-48	1	P1D	S	P1	C
48P233772-21-11	(SEE SW705-1P)					
48P233773-21-11	(SEE SW778-1P)					
48P233805-21-11	(SEE UZ7836L)					
48P233806-21-11	(SEE 5082-0112)					
48P233807-21-11	(SEE MA-47041)					
48P233808-21-11	(SEE 5082-2800)					
48P233815-21-11	(SEE SW728-1P)					
48P233825-21-11	(SEE SW946-1P)					
48P233826-21-11	(SEE SW930-1P)					
48P233827-21-11	(SEE SW936-1P)					
48P233828-21-11	(SEE SW951-1P)					
48P233830-21-11	(SEE 8W962-1P)					
48P233845-21-11	(SEE 2N4231)					
48P233854-21-11	(SEE 2N1671)					
	(SEE 2N1671*)					
49P233776-21-11	11-5-27	1	P1D	S	P1	C
49P233778-21-11	11-5-28	2	P1D	S	P1	C
49P233847-21-11	11-5-40	1	M1		MO	
5082-0112	11-5-54	1	P1D	S	P1	C
5082-2800	11-5-46	3	P1D	S	P1C	
	11-5-65					
	11-5-76					
5659065/43	11-5-22	4				
64P233820-21-11	11-1-83	1	X1		X1	
64P233822-21-11	11-1-17	1	M		MO	
64P233822-21-12	11-1-18	1	M		MO	
64P233823-21-11	11-1-14	1	M		MO	
64P233824-21-11	11-l-11A	1	M		MO	
8046-1	11-2-22	2	P1	S	P1	C

*ALTERNATE PART

PART NO.	FIG. & INDEX NO.	QTY PER ART	AIR FORCE SC	AIR FORCE RC	NAVY SC	NAVY ARC
8046-1 NATURAL	11-3-21 11-4-2 11-5-19	8	P1	S	P1	C
8121-100-COG-102G	11-4-12	1	P1	S	P1	C
8131-100-COG-122G	11-4-6	1	P1	S	P1	C
8131-100-COG-152G	11-4-24	1	P1	S	P1	C
8141-100-COG-472J	11-4-31	1	P1	S	P1	C
84P233831-21-11	11-5-79	1	X1		X1	
84P233832-21-11	11-5-70	1	X1		X1	
84P233833-21-11	11-5-60	1	X1		X1	
84P233833-22-11	11-5-60	1	X1		X1	
84P233834-21-11	11-5-21	1	X1		X1	
84P233835-21-11	11-2-34	1	X1		X1	
84P233836-21-11	11-3-47	1	X1		X1	
84P233837-21-11	11-4-51	1	X1		X1	
84P233838-21-11	11-1-38	1	X1		X1	
84P233839-21-11	11-1-46	1	X1		X1	
84P233839-22-11	11-1-46	1	X1		X1	
84P233860-21-11	11-4-51	1	X1		X1	
85487-2	11-2-10 11-3-32 11-4-37	36	P1	S	P1	C
86147-7	11-1-36 11-1-44	36	X1		X1	
94012-12-12PN	11-1-86	1				

PART D

REFERENCE DESIGNATION INDEX

REFERENCE DESIGNATION	FIGURE & INDEX NUMBER	PART NUMBER
A1	11-1-24	01A233755-21-11
A1	11-1-24	01A233755-21-12
A1A1	11-1-88	01A233760-21-11
A1A1	11-1-88	01A233760-21-12
A1A1	11-5-	01A233760-21-11
A1A1	11-5-	01A233760-21-12
A1A1A1	11-5-42	01A233761-21-11
A1A1A1CR1	11-5-46	5082-2800
A1A1A1R1	11-5-49	125R500S
A1A1A1R1	11-5-49	TR11-12-50-2*
A1A1A2	11-5-71	01A233762-21-11
A1A1A2CR1	11-5-76	5082-2800
A1A1A2R1	11-5-75	RL07S510J
A1A1A3	11-5-61	01A233763-21-11
A1A1A3CR1	11-5-65	5082-2800
A1A1A3R1	11-5-66	RL07S510J
A1A1A3R2	11-5-66	RL07S510J
A1A1A4	11-5-51	01A233759-21-11
A1A1A4	11-5-51	01A233759-22-11
A1A1A4CR1	11-5-54	5082-0112
A1A1A4CR2	11-5-53	MA-47041
A1A1A4R1	11-5-52	RL07S510J
A1A1A5	11-5-3	01A233764-21-11
A1A1A5	11-5-3	01A233764-21-12
A1A1A5CR1	11-5-9	1N914
A1A1A5CR1	11-5-9	1N4148*
A1A1A5C1	11-5-5	CK06BX103K
A1A1A5C2	11-5-18	CC50UJ240J
A1A1A5C3	11-5-17	CC50UJ270J
A1A1A5C4	11-5-12	CM05CD050D03
A1A1A5C5	11-5-15A	PC41J8R5
A1A1A5C6	11-5-15	PC41J8R5
A1A1A5L1	11-5-14	DD-0-12
A1A1A5L2	11-5-10	DD-4-7
A1A1A5Q1	11-5-6	2N706
A1A1A5R1	11-5-16	RL07S681J
A1A1A5R1	11-5-16	RL07S510J
A1A1A5R2	11-5-4	RL07S391J
A1A1A5R2	11-5-4	RL07S241J
A1A1A5R3	11-5-11	RL07S472J
A1A1A5R4	11-5-13	RL07S682J
A1A1A5R5	11-5-8	RL07S563J
A1A1A5TP1	11-5-19	8046-1 NATURAL
A1A1A5ZL1	11-5-22	5659065/43
A1A1A5ZL2	11-5-22	5659065/43
A1A1Y1	11-5-7	CR80/U
A1A2	11-1-68	01A233766-21-11
A1A2	11-1-68	01A233766-21-12
A1A2A1	11-1-77	01A233767-21-11
A1A2A1C1	11-1-80	2482-001
A1A2A1C2	11-1-80	2482-001
A1A2A1C3	11-1-80	2482-001
A1A2A1C4	11-1-80	2482-001
A1A2A1C5	11-1-80	2482-001
A1A2A1C6	11-1-80	2482-001
A1A2A1E1	11-1-82	X2041-A
A1A2A1FL1	11-1-79	100-5064
A1A2AlJ1	11-1-84	MS24264R12B12PNX
A1A2AlJ1	11-1-84	09P233862-21-11
A1A2Q1	11-1-72	2N4231
A1A3	11-1-62	01A233765-21-11
A1A4	11-1-28A	01A233768-21-11
A1A4	11-1-28A	01A233768-21-12
A1A4A1	11-1-34	01A233769-21-11
A1A4A1	11-1-34	01A233769-22-11
A1A4A1CR1	11-1-35	1N914
A1A4A1CR1	11-1-35	1N4148*
A1A4A1CR2	11-1-35	1N914
A1A4A1CR2	11-1-35	1N4148*
A1A4A1CR3	11-1-35	1N914
A1A4A1CR3	11-1-35	1N4148*
A1A4A1CR4	11-1-35	1N914
A1A4A1CR4	11-1-35	1N4148*
A1A4A1CR5	11-1-35	1N914
A1A4A1CR5	11-1-35	1N4148*
A1A4A2	11-1-39	01A233770-21-11
A1A4A2	11-1-39	01A233770-22-11
A1A4A2CR1	11-1-41	1N914
A1A4A2CR1	11-1-41	1N4148*
A1A4A2C1	11-1-40	CK06BX223K
A1A4A2RT1	11-1-42	TM 1/8
A1A4A2R1	11-1-43	RCR07G102JS
A1R1	11-1-61	BB90462
A1R2	11-1-60	BB90461
A2	11-1-22	01A233756-21-11
A2	11-2-	01A233756-21-11
A2A1	11-2-16	SW930-1P
A2A10	11-2-18	SW962-1P
A2A11	11-2-16	SW930-1P
A2A2	11-2-17	SW936-1P
A2A3	11-2-23	SW946-1P
A2A4	11-2-19	SW705-1P
A2A5	11-2-19	SW705-1P
A2A6	11-2-19	SW705-1P
A2A7	11-2-19	SW705-1P
A2A8	11-2-20	SW778-1P
A2A9	11-2-20	SW778-1P
A2C1	11-2-28	KA3302FX50J
A2C1	11-2-28	317B333J*
A2C2	11-2-29	CM06FD471J03
A2C3	11-2-29	CM06FD471J03
A2C4	11-2-27	CSR13E125KL
A2C5	11-2-31	CM05ED560J03
A2C5	11-2-31	CM05ED680J03

REFERENCE DESIGNATION	FIGURE & INDEX NUMBER	PART NUMBER
A2C	11-2-31	CM05ED750J03
A2C5	11-2-31	CM05ED750J03
A2C5	11-2-31	CM05ED820J03
A2C6	11-2-7	CK06BX103K
A2C7	11-2-8	CK05BX561K
A2C8	11-2-21	CM05FD181J03
A2L1	11-2-26	SWD-2200
A2L2	11-2-26	SWD-2200
A2P1	11-2-10	85487-2
A2P10	11-2-10	85487-2
A2P2	11-2-10	85487-2
A2P3	11-2-10	85487-2
A2P4	11-2-10	85487-2
A2P5	11-2-10	85487-2
A2P6	11-2-10	85487-2
A2P7	11-2-10	85487-2
A2P8	11-2-10	8548'7-2
A2P9	11-2-10	85487-2
A2Q1	11-2-12	2N1671
A2Q1	11-2-12	2N1671*
A2Q2	11-2-4	2N706
A2Q3	11-2-4	2N706
A2Q4	11-2-4	2N706
A2Q5	11-2-4	2N706
A2Q6	11-2-4	2N706
A2R1	11-2-11	RN55D3922F
A2R1	11-2-11	RN55D1003F
A2R1	11-2-11	RN55D1053F
A2R1	11-2-11	RN55D9532F
A2R1	11-2-11	RN55D1103F
A2R1	11-2-11	RN55D1153F
A2R1	11-2-11	RN55D1213F
A2R1	11-2-11	RN55D1273F
A2R1	11-2-11	RN55D1303F
A2R1	11-2-11	RN55D8062F
A2R1	11-2-11	RN55D8252F
A2R1	11-2-11	RN55D8662F
A2R1	11-2-11	RN55D9092F
A2R10	11-2-33	RCR07G911JS
A2Rll	11-2-1	RCR07G182JS
A2R12	11-2-3	RCR07G241JS
A2R13	11-2-5	RCR07G102JS
A2R14	11-2-6	RCR07G223JS
A2R15	11-2-9	RCR07G751JS
A2R16	11-2-13	RCR07G101JS
A2R2	11-2-14	RCR07G121JS
A2R3	11-2-14	RCR07G121JS
A2R4	11-2-15	RCR07G472JS
A2R5	11-2-15	RCR07G472JS
A2R6	11-2-25	RCR07G272JS
A2R7	11-2-5	RCR07G102JS
A2R8	11-2-32	RCR07G910OJS
A2R9	11-2-2	RN55D5620F
A2TP1	11-2-22	8046-1
A2TP2	11-2-22	8046-1
A2Y1	11-2-30	XL227-245
A3	11-1-23	01A233757-21-11
A3	11-3-	01A233757-21-11
A3CR1	11-3-31	UZ5836
A3CR10	11-3-6	1N914
A3CR10	11-3-6	1N4148*
A3CR11	11-3-6	1N914
A3CR11	11-3-6	1N4148*
A3CR12	11-3-6	1N914
A3CR12	11-3-6	1N4148*
A3CR13	11-3-6	1N914
A3CR13	11-3-6	1N4148*
A3CR14	11-3-6	1N914
A3CR14	11-3-6	1N4148*
A3CR15	11-3-6	1N914
A3CR15	11-3-6	1N4148*
A3CR2	11-3-37	1N3826A
A3CR3	11-3-34	1N941B
A3CR4	11-3-6	1N914
A3CR4	11-3-6	1N4148*
A3CR5	11-3-6	1N914
A3CR5	11-3-6	1N4148*
A3CR6	11-3-6	1N914
A3CR6	11-3-6	1N4148*
A3CR7	11-3-6	1N914
A3CR7	11-3-6	1N4148*
A3CR8	11-3-6	1N914
A3CR8	11-3-6	1N4148*
A3C1	11-3-36	CSR13C475ML
A3C10	11-3-4	CK06BX103K
A3C11	11-3-38	CSR13D226KL
A3C2	11-3-35	CSR13R225ML
A3C3	11-3-30	CSR13G475ML
A3C4	11-3-41	CSR13G224KL
A3C5	11-3-42	CSR09D825KM
A3C6	11-3-4	CK06BX103K
A3C7	11-3-4	CK06BX103K
A3C8	11-3-41	CSR13G224KL
A3C9	11-3-42	CSR09D825KM
A3P1	11-3-32	85487-2
A3P10	11-3-32	85487-2
A3P11	11-3-32	85487-2
A3P12	11-3-32	85487-2
A3P13	11-3-32	85487-2
A3P2	11-3-32	85487-2
A3P3	11-3-32	85487-2
A3P4	11-3-32	85487-2
A3P5	11-3-32	85487-2
A3P6	11-3-32	85487-2
A3P7	11-3-32	85487-2
A3P8	11-3-32	85487-2
A3P9	11-3-32	85487-2
A3Q1	11-3-24	2N2219
A3Q10	11-3-9	2N706
A3Q11	11-3-9	2N706
A3Q12	11-3-39	2N708
A3Q13	11-3-17	2N718A
A3Q14	11-3-19	2N2906
A3Q2	11-3-24	2N2219
A3Q3	11-3-9	2N706
A3Q4	11-3-7	2N4948
A3Q5	11-3-9	2N706
A3Q6	11-3-9	2N706
A3Q7	11-3-9	2N706
A3Q8	11-3-9	2N706
A3Q9	11-3-9	2N706
A3RT1	11-3-13	TM-1/4
A3R1	11-3-29	RWR80S2R00FR

REFERENCE DESIGNATION	FIGURE & INDEX NUMBER	PART NUMBER
A3R10	11-3-8	RCR07G183JS
A3R11	11-3-10	RN60D1131F
A3Rll	11-3-10	RN60D1211F
A3Rll	11-3-10	RN60D1301F
A3R11	11-3-10	RN60D1401F
A3Rll	11-3-10	RN60D1501F
A3Rll	11-3-10	RN60D1621F
A3Rll	11-3-10	RN60D1741F
A3Rll	11-3-10	RN60D1871F
A3Rll	11-3-10	RN60D2001F
A3Rll	11-3-10	RN60D2211F
A3Rll	11-3-10	RN60D2261F
A3R11	11-3-10	RN60D2371F
A3R11	11-3-10	RN60D2431F
A3R11	11-3-10	RN60D2551F
A3R12	11-3-2	RN60D1501F
A3R13	11-3-5	RCR07G153JS
A3R14	11-3-5	RCR07G153JS
A3R15	11-3-3	RN55D1501F
A3R16	11-3-46	RCR07G225JS
A3R17	11-3-40	RCR07G330JS
A3R18	11-3-8	RCR07G183JS
A3R19	11-3-45	RCR07G564JS
A3R19	11-3-45	RCR07G684JS
A3R19	11-3-45	RCR07G474JS
A3R2	11-3-25	RN55D75ROF
A3R20	11-3-12	RCR07G472JS
A3R21	11-3-14	RN55D1502F
A3R21	11-3-14A	RN55D1022F
A3R21	11-3-14A	RN55D1152F
A3R21	11-3-14A	RN55D1212F
A3R21	11-3-14A	RN55D1332F
A3R21	11-3-14A	RN55D1502F
A3R22	11-3-44	RCR07G332JS
A3R24	11-3-3	RN55D1501F
A3R25	11-3-15	RN55D3321F
A3R26	11-3-16	RCR07G273JS
A3R27	11-3-8	RCR07G183JS
A3R28	11-3-18	RCR07G103JS
A3R29	11-3-12	RCR07G472JS
A3R3	11-3-23	RN55D1001F
A3R30	11-3-20	RN55D5621F
A3R31	11-3-44	RCR07G332JS
A3R32	11-3-12	RCR07G472JS
A3R33	11-3-43	RN55D6812F
A3R33	11-3-43	RN55D6342F
A3R33	11-3-43	RN55D5762F
A3R33	11-3-43	RN55D5232F
A3R33	11-3-43	RN55D4752F
A3R33	11-3-43	RN55D4532F
A3R33	11-3-43	RN55D4222F
A3R33	11-3-43	RN55D3922F
A3R33	11-3-43	RN55D3652F
A3R33	11-3-43	RN55D3322F
A3R34	11-3-18	RCR07G103JS
A3R35	11-3-40	RCR07G330JS
A3R36	11-3-1	RCR07G101JS
A3R4	11-3-22	G-5A240HMSPORM3

REFERENCE DESIGNATION	FIGURE & INDEX NUMBER	PART NUMBER
A3R4	11-3-22	G-5A27OHMSPORM3 PCT6.5W
A3R4	11-3-22	G-5A30OHMSPORM3 PCT6.5W
A3R4	11-3-22	G-5A33OHMSPORM3 PCT6.5W
A3R5	11-3-26	RN60D1211F
A3R6	11-3-27	RN60D6041 F
A3R7	11-3-28	RN55D7502F
A3R8	11-3-33	RN55D51R1F
A3R9	11-3-14	RN55D1502F
A3TP1	11-3-21	8046-1 NATURAL
A3TP2	11-3-21	8046-1 NATURAL
A3TP3	11-3-21	8046-1 NATURAL
A4	11-1-24	01A233758-21-11
A4	11-1-24	01A233758-21-12
A4	11-1-24	01A233758-22-11
A4	11-4-	01A233758-21-11
A4	11-4-	01A233758-21-12
A4	11-4-	01A233758-22-11
A4A1	11-4-20	SW946-1P
A4A2	11-4-23	SW951-1P
A4A3	11-4-34	SW962-1P
A4A4	11-4-23	SW951-1P
A4A5	11-4-23	SW951-1P
A4A6	11-4-27	SW728-1P
A4CR1	11-4-17	1N914
A4CR1	11-4-17	1N4148*
A4CR2	11-4-17	1N914
A4CR2	11-4-17	1N4148*
A4CR3	11-4-17	1N914
A4CR3	11-4-17	1N4148*
A4CR4	11-4-17	1N914
A4CR4	11-4-17	1N4148*
A4C1	11-4-21	CK06BX104K
A4C10	11-4-9	CSR13G475ML
A4C11	11-4-47	CM05ED560J03
A4C12	11-4-15	CK06BX103K
A4C13	11-4-9	CSR13G475ML
A4C14	11-4-21	CK06BX104K
A4C15	11-4-21	CK06BX104K
A4C16	11-4-21	CK06BX104K
A4C17	11-4-25	CM05FD131J03
A4C18	11-4-15	CK06BX103K
A4C19	11-4-24	8131-100-C0G-15 G2
A4C2	11-4-21	CK06BX104K
A4C20	11-4-21'	CK06BX104K
A4C21	11-4-33	CK05BX121K
A4C22	11-4-21	CK06BX104K
A4C23	11-4-43	CM05CD100J03
A4C24	11-4-29	CM05ED360J03
A4C24	11-4-29	CM05ED470J03
A4C24	11-4-29	CM05ED560J03
A4C24	11-4-29	CM05ED620J03
A4C24	11-4-29	CM05ED750J03
A4C24	11-4-29	CM05ED820J03
A4C24	11-4-29	CM05FDlllJ03
A4C24	11-4-29	CM05FD121J03

REFERENCE DESIGNATION	FIGURE & INDEX NUMBER	PART NUMBER
A4C24	11-4-29	CM05FD910J03
A4C25	11-4-31	8141-100-COG-47 2J
A4C26	11-4-3	CM05ED680J03
A4C28	11-4-46	CM05FD101J03
A4C3	11-4-48	CM05ED390J03
A4C4	11-4-21	CK06BX104K
A4C5	11-2-31	CM05FD101J03
A4C5	11-2-31	CM05FDlllJ03
A4C5	11-2-31	CM05FD121J03
A4C5	11-2-31	CM05FD131J03
A4C5	11-2-31	CM05FD151J03
A4C5	11-2-31	CM05FD910J03
A4C6	11-4-13	PC41H180
A4C7	11-4-7	CM05FD121J03
A4C7	11-4-7	CM05FD910J03
A4C7	11-4-7	CM05FDl11J03
A4C7	11-4-7	CM05ED820J03
A4C7	11-4-7	CM05ED750J03
A4C7	11-4-7	CM05ED620J03
A4C7	11-4-7	CM05ED560J03
A4C7	11-4-7	CM05ED470J03
A4C7	11-4-7	CM05ED360J03
A4C7	11-4-7	CM05ED270J03
A4C7	11-4-7	CM05CD180J03
A4C7	11-4-7	CM05CD100J03
A4C7	11-4-7	CM05CD050J03
A4C8	11-4-12	8121-100-COG-10G2
A4C9	11-4-6	8131-100-COG-122G
A4L1	11-4-45	24P233829-21-11
A4P1	11-4-37	85487-2
A4P10	11-4-37	85487-2
A4P11	11-4-37	85487-2
A4P12	11-4-37	85487-2
A4P13	11-4-37	85487-2
A4P2	11-4-37	85487-2
A4P3	11-4-37	85487-2
A4P4	11-4-37	85487-2
A4P5	11-4-37	85487-2
A4P6	11-4-37	85487-2
A4P7	11-4-37	85487-2
A4P8	11-4-37	85487-2
A4P9	11-4-37	85487-2
A4Q1	11-4-10	2N706
A4Q10	11-4-10	2N706
A4Q11	11-4-10	2N706
A4Q12	11-4-10	2N706
A4Q13	11-4-10	2N706
A4Q14	11-4-10	2N706
A4Q15	11-4-10	2N706
A4Q16	11-4-10A	2N2222
A4Q16	11-4-10A	2N706*
A4Q17	11-4-10	2N706
A4Q18	11-4-10	2N706
A4Q2	11-4-10	2N706
A4Q3	11-4-10	2N706
A4Q4	11-4-10	2N706
A4Q5	11-4-11	2N2222
A4Q6	11-4-10	2N706
A4Q7	11-4-10	2N706
A4Q8	11-4-10	2N706
A4Q9	11-4-10	2N706
A4R1	11-4-1	RCR07G471JS
A4R10	11-4-49	RCR07G122JS
A4R1l	11-4-44	RN55D2371F
A4R12	11-4-19	RCR07G182JS
A4R13	11-4-4	RCR07G102JS
A4R15	11-4-16	RN55D5620F
A4R16	11-4-32	RCR07G242JS
A4R18	11-4-19	RCR07G182JS
A4R19	11-4-32	RCR07G242JS
A4R2	11-4-42	RCR07G152JS
A4R20	11-4-32	RCR07G242JS
A4R21	11-4-22	RN55C7321F
A4R22	11-4-32	RCR07G242JS
A4R23	11-4-42	RCR07G152JS
A4R25	11-4-4	RCR07G102JS
A4R26	11-4-5	RCR07G273JS
A4R27	11-4-18	RCR07G512JS
A4R28	11-4-4	RCR07G102JS
A4R29	11-4-32	RCR07G242JS
A4R3	11-4-5	RCR07G273JS
A4R30	11-4-4	RCR07G102JS
A4R31	11-4-18	RCR07G512JS
A4R32	11-4-5	RCR07G273JS
A4R34	11-4-44	RN55D2371F
A4R35	11-4-19	RCR07G182JS
A4R36	11-4-4	RCR07G102JS
A4R37	11-4-4	RCR07G102JS
A4R38	11-4-28	RN55C2371F
A4R38	11-4-28	RN55C2551F
A4R38	11-4-28	RN55C2671F
A4R38	11-4-28	RN55C2801F
A4R38	11-4-28	RN55C2941F
A4R38	11-4-28	RN55C3091F
A4R39	11-4-14	RCR07G221JS
A4R4	11-4-18	RCR07G512JS
A4R40	11-4-22	RN55C7321F
A4R41	11-4-40	RN55C4322F
A4R42	11-4-35	RN55C1501F
A4R43	11-4-4	RCR07G102JS
A4R44	11-4-36	RN55C1001F
A4R45	11-4-38	RCR07G751JS
A4R46	11-4-32	RCR07G242JS
A4R47	11-4-19	RCR07G182JS
A4R48	11-4-39	RCR07G392JS
A4R49	11-4-41	RCR07G563JS
A4R5	11-4-4	RCR07G102JS
A4R50	11-4-4	RCR07G102JS
A4R51	11-4-4	RCR07G102JS
A4R52	11-4-26	RCR07G472JS
A4R52	11-4-26	RCR07G302JS
A4R53	11-4-42A	RCR07G152JS
A4R53	11-4-42A	RCR07G222JS
A4R54	11-4-16	RN55D5620F
A4R55	11-4-30	RN55C8871F

REFERENCE DESIGNATION	FIGURE & INDEX NUMBER	PART NUMBER
A4R56	11-4-18	RCR07G512JS
A4R57	11-4-5	RCR07G273JS
A4R58	11-4-8	RCR07G332JS
A4R59	11-4-32	RCR07G242JS
A4R6	11-4-32	RCR07G242JS
A4R60	11-4-19	RCR07G182JS
A4R61	11-4-4	RCR07G102JS
A4R7	11-4-4	RCR07G102JS
A4R8	11-4-5	RCR07G273JS
A4R9	11-4-18	RCR07G512JS
A4TP1	11-4-2	8046-1 NATURAL
A4TP2	11-4-2	8046-1 NATURAL
A4TP3	11-4-2	8046-1 NATURAL
A4TP4	11-4-2	8046-1 NATURAL

APPENDIX A

REFERENCES

The following publications contain information applicable to the operation and maintenance of the Transponder Test Set, TS-1843A/APX.

NAVSUP-2002, section viii (Navy) DA PAM 310-4 (Army) T.O. 0-1-12 (Air Force)	Index of Technical Bulletins, Technical Manuals, Technical Orders, Illustrated Parts Breakdown, Supply Bulletins, Supply Manuals. Lubrication Orders, and Modification Work Orders
NAVWEPS Form 13070/5 (Navy) TM 38-750 (Army) AFTO Form 29/29A (Air Force) Publication 378 (Navy)	Equipment Record Procedures
AFR 71-4 (Air Force) AR 700-58 (Army) NAVSUP Pub 459 (Navy)	Report of Packaging and Handling Deficiencies (DD Form 6)
AR 55-38 (Army) AFM 75-34 (Air Force) NAVWEPS 16-35C6280-1 (Navy)	Discrepancy in Shipment Report (SF 361)
T.O. 12P4-2APX-142 (Air Force) TM 11-5841-268-25 (Army) NAVSHIPS 0967-217-4010 (Navy)	Control. Transponder Set C-6280(P)/APX
T.O. 12P4-2APX72-2 (Air Force) T.O. 12P4-2APX72-4 (Air Force) TM 11-5895-490-20 (Army) NAVAIR 16-30APM-239-2 (Navy)	Receiver-Transmitter. Radio RT-859/APX-72
T.O. 33A1-3-358-11 (Air Force) TM 11-6625-842-15 (Army) NAVSHIPS 0967-291-0010 (Navy)	Transponder Test Set AN/APM-239A
T.O. 33D9-44-4-11 (Air Force) TM 11-6625-403-15-1 (Army) NAVSHIPS 0969-125-0110 (Navy)	Radar Test Set AN/UPM-98A
T.O. 33A1-13-3861 (Air Force) TM 11-6625-335-12 (Army)	Standing Wave Indicator AN/UPM-108A
T.O. 33A1-12-2-2 (Air Force) TM 11-6625-475-10 (Army)	Multimeter, AN.'PSM-6
NAVAIR 16-30APM123-( ) (Navy)	Test Set, Transponder AN/APM-123(V)2
TM 11-6625-667-12 (Army)	Test Set. Transponder AN/APM-123(V)1
T.O. 33A1-3-367-1 (Air Force)	Test Set, Transponder AN/APM-123(V)3
T.O. 33D7-8-81-1 (Air Force) TM 11-6625-2573-14 (Army) NAVAIR 16-30APM362-1 (Navy)	Test Set, Transponder Test Set AN/APM-362
SB 38-100 (Army)	Preservation, Packaging and Packing Materials, Supplies, and Equipment Used by the Army
TB SIG 364 (Army)	Field Instructions for Painting and Preserving Electronics Command Equipment
TM 9-213 (Army)	Painting Instructions for Field Use

APPENDIX B

MAINTENANCE ALLOCATION
(ARMY USE ONLY)

Section I. INTRODUCTION

B-1. General

This appendix provides a summary of the maintenance operations covered in the equipment literature for the TS-1843A/APX. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

B-2. Maintenance Functions

Maintenance functions will be limited to and defined as follows:

a. INSPECT. To determine serviceability of an item by comparing its physical, mechanical, and electrical characteristics with established standards.

b. TEST. To verify serviceability and to detect incipient electrical or mechanical failure by use of special equipment such as gages, meters. etc. This is accomplished with external test equipment and does not include operation of the equipment and operator type tests using internal motors or indicating devices.

c. SERVICE. To clean. to preserve. to charge. and to add fuel, lubricants, cooling agents, and air. If it is desirable that elements, such as painting and lubricating. be defined separately. they may be so listed.

d. ADJUST. To rectify to the extent necessary to bring into proper operating range.

e. ALIGN. To adjust two or more components or assemblies of an electrical or mechanical system so that their functions are properly synchronized. This does not include setting the frequency control knob of radio receivers or transmitters to the desired frequency.

f. CALIBRATE. To determine the corrections to be made in the readings of instruments or test equipment used in precise measurement. Consists of the comparison of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared with the certified standard.

g. INSTALL. To set up for use in an operational environment such as an encampment, site, or vehicle.

h. REPLACE. To replace unserviceable items with serviceable like items.

i. REPAIR. To restore an item to serviceable condition through correction of a specific failure or unserviceable condition. This function includes, but is not limited to welding, grinding, riveting, straighten-ing, and replacement of parts other than the trial and error replacement of running spare type items such as fuses, lamps. or electron tubes.

j. OVERHAUL. Normally. the highest degree of maintenance performed by the Army In order to minimize time work in process is consistent with quality and economy of operation. It consists of that maintenance necessary to restore an item to completely serviceable condition as prescribed by maintenance standards in technical publications for each item of equipment. Overhaul normally does not re-turn an item to like new, zero mileage, or zero hour condition.

k. REBUILD. The highest degree of material maintenance. It consists of restoring equipment as nearly as possible to new condition in accordance with original manufacturing standards. Rebuild is per-formed only when required by operation considerations or other paramount factors and then only at the depot maintenance category. Rebuild reduces to zero the hours or miles the equipment. or component thereof. has been in use.

l. SYMBOLS. The uppercase letter placed in the appropriate column indicates the lowest level at which that particular maintenance function is to be per-formed.

B-3. Explanation of Format

a. Column 1, group number. Not applicable.

b. Column 2, Functional group: Column 2 lists the noun names of components, assemblies. subassemblies and modules on which maintenance is authorized.

c. Column 3, maintenance functions. Column 3 lists the maintenance category at which performance of the specific maintenance function is authorized. Authorization to perform a function at any category also includes authorization to perform that function at higher categories. The codes used represent the various maintenance categories as follows:

Code	Maintenance Category
C	Operator, Crew
O	Organizational Maintenance
F	Direct Support Maintenance
H	General Support Maintenance
D	Depot Maintenance

d. Column 4, tools and test equipment. Column 4 specifies. by code, those tools and test equipment required to perform the designated function. The numbers appearing in this column refer to specific tools and test equipment which are identified in Table 1.

e. Column 5, Remarks. Self-explanatory.

B-4. Explanation of Format of Table 1, Tool and Test Equipment Requirements.

The columns in Table 1. Tool and Test Equipment Requirements are as follows:

a. Tools and Equipment. The numbers in this column coincide with the numbers used In the tools and equipment column of the Maintenance Allocation Chart. The numbers indicate the applicable tool for the maintenance function.

b. Maintenance Category. The codes in this column Indicate the maintenance category normally allocated the facility.

c. Nomenclature. This column lists tools, test, and maintenance equipment required to perform the maintenance functions.

d. Federal Stock Number. This column lists the Federal stock number of the specific tool or test equipment.

e. Tool Number. Not used.

Nomenclature of End Item or Component: Transponder Set Test Set, TS-1843A/APX

SECTION II - MAINTENANCE ASSIGNMENT

(a) Group Number	(b) Component Assembly Nomenclature	(c) Maintenance Function											(d) Tools and Equipment	(e) Remarks
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	TRANSPONDER SET TEST SET TS-1843A/APX	O	O D		D				O	D	D		1 2 3-17 9, 11, 14 3-17	Visual inspection Operation Black Box Operation Panel adj's, A4 Board Piece Parts

Nomenclature of End Item or Component: Transponder Set Test Set, TS-1843A/APX

SECTION III - TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND EQUPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
1	0	TEST SET TRANSPONDER AN/APM-123(V)1	6625-069-8951	STD A
2	0	TOOL KIT TK-101/G	5180-064-5178	STD A
3	D	RECEIVER-TRANSMITTER, RADIO RT-859/APX-72	5895-089-7179	STD A
4	D	SLOTTED LINE, WAVEGUIDE IM-92( )/U	6625-692-6558	STD A
5	D	INDICATOR, STANDING WAVE, RATIO IM-175/U	6625-892-5670	STD A
6	D	TEST SET, TRANSPONDER SET AN/APM-239A	6625-802-7425	STD A
7	D	MULTIMETER AN/USM-223	6625-999-7465	STD A
8	D	OSCILLOSCOPE AN/USM-281A	6625-228-2201	STD A
9	D	TOOL KIT TK-105/G	5180-610-8177	STD A
10	D	TEST SET, RADAR AN/UPM-98A	6625-912-0429	STD A
11	D	TOOL KIT TK-100/G	5180-605-0079	STD A
12	D	TEST SET, SEMICONDUCTOR DEVICE TS-1836B/U	6625-168-0954	STD A
13	D	TEST SET, CRYSTAL UNIT, QUARTZ TS-268E/U	6625-669-1215	STD A
14	D	TOOL KIT TK-186( )/FRG-81(V)	5180-912-3430	STD A
15	D	RF TERMINATION 50 OHMS (USAF FSN	5985-992-2109	GR 874-W50B
16	D	3 db & 6 db PADS CN-1285/U (USAF FSN	6625-058-2774	HP-8491A
17	D	TEST SET, TRANSPONDER TEST SET, AN/APM-362	6625-466-0554	STEWART-WARNER CHICAGO, ILL. P/N 01A236150
18	D	DOUBLE STUB TUNER	-	MICROLAB N300A
19	D	SIGNAL GENERATOR	-	MIL-G-9997
20	D	FREQUENCY COUNTER	-	MIL-C-9988A

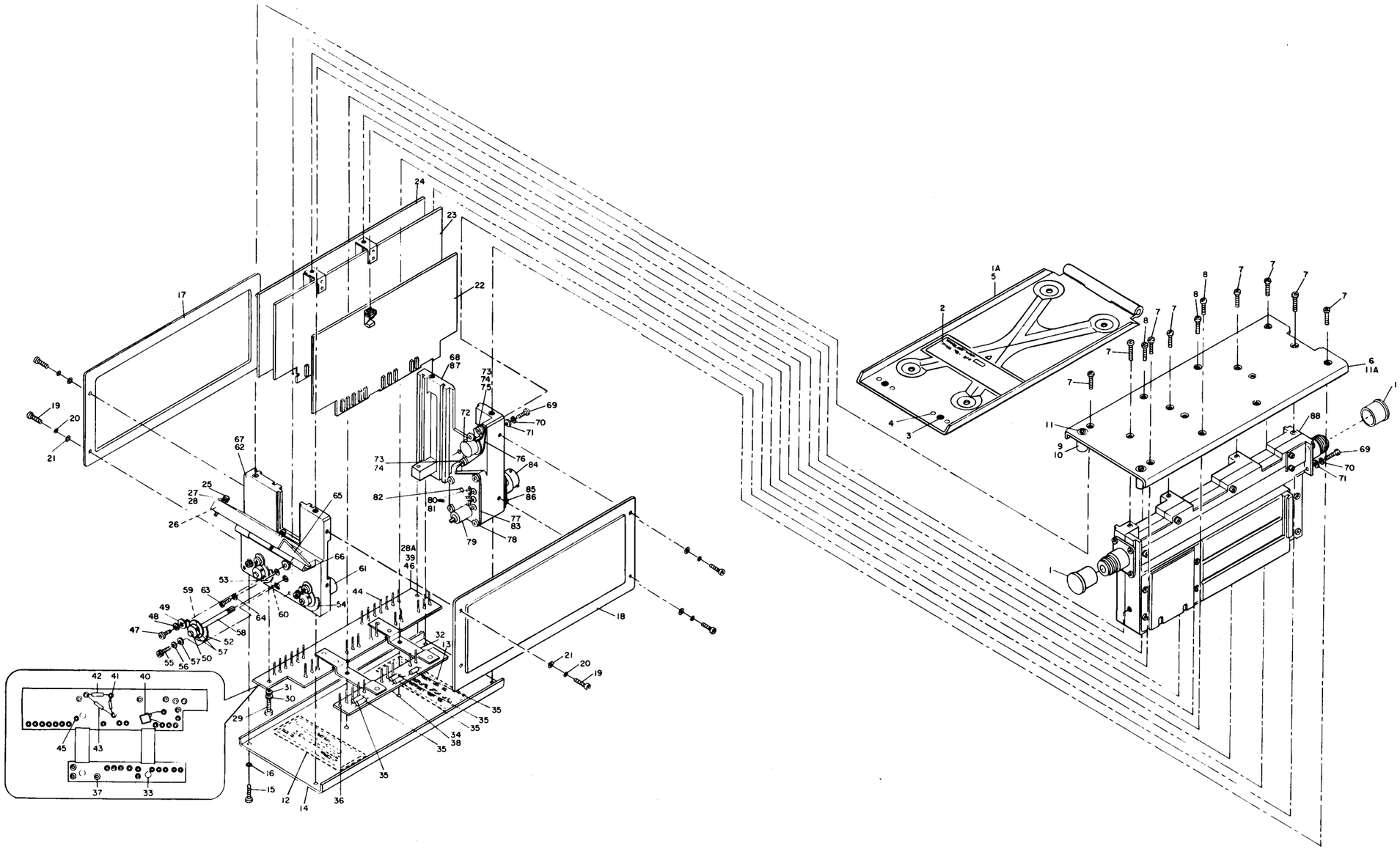


Figure 11-1. Test Set, Transponder Set TS-1843A/APX, Exploded View

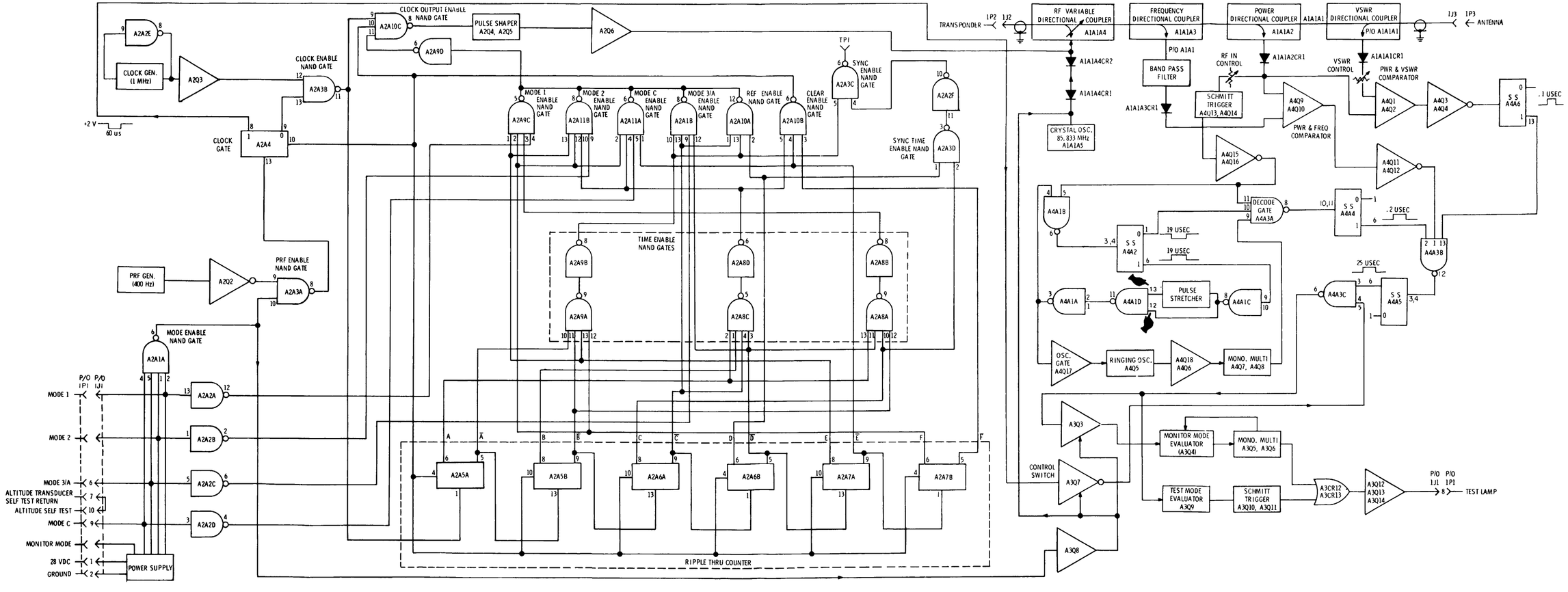
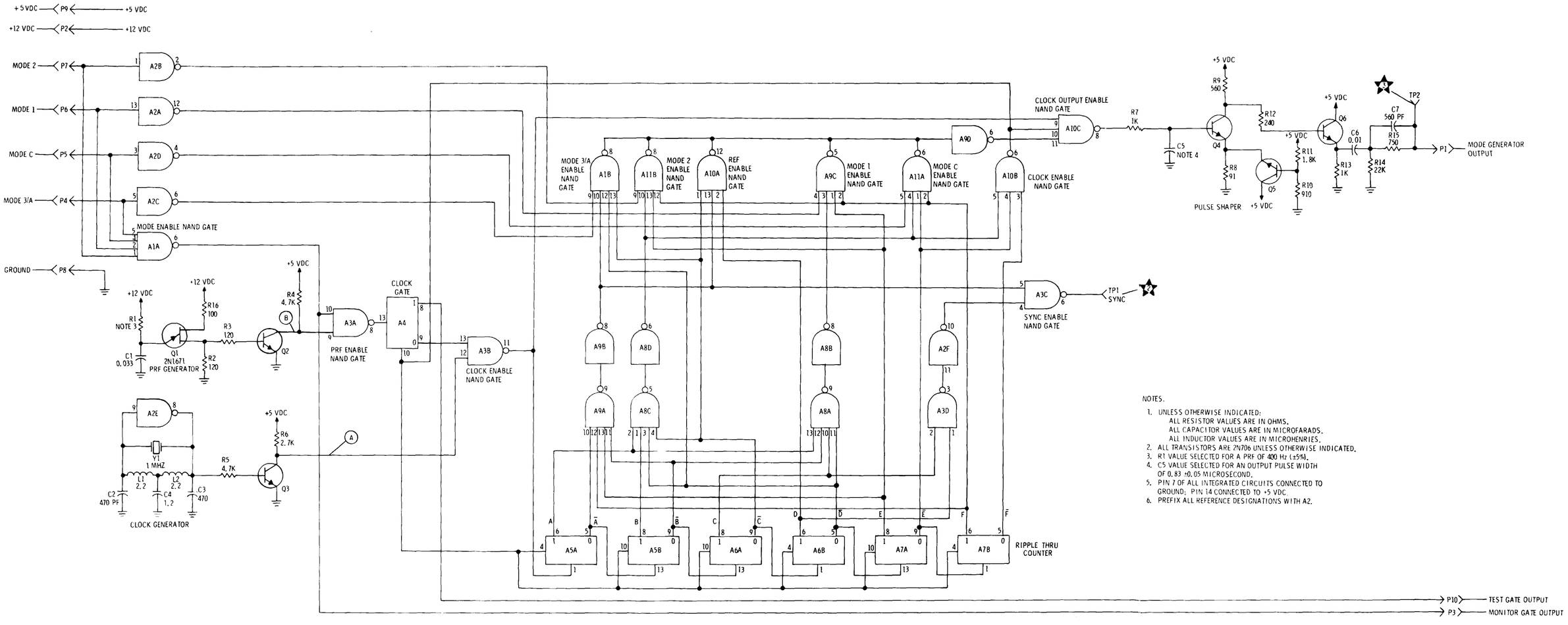


Figure FO-1. Logic Diagram



NOTES.

1. UNLESS OTHERWISE INDICATED:
   ALL RESISTOR VALUES ARE IN OHMS.
   ALL CAPACITOR VALUES ARE IN MICROFARADS.
   ALL INDUCTOR VALUES ARE IN MICROHENRIES.
2. ALL TRANSISTORS ARE 2N706 UNLESS OTHERWISE INDICATED.
3. R1 VALUE SELECTED FOR A PRF OF 400 Hz (±5%).
4. C5 VALUE SELECTED FOR AN OUTPUT PULSE WIDTH OF 0.83 ±0.05 MICROSECOND.
5. PIN 7 OF ALL INTEGRATED CIRCUITS CONNECTED TO GROUND; PIN 14 CONNECTED TO +5 VDC.
6. PREFIX ALL REFERENCE DESIGNATIONS WITH A2.

Figure FO-2. Mode Generator (A2), Schematic Diagram

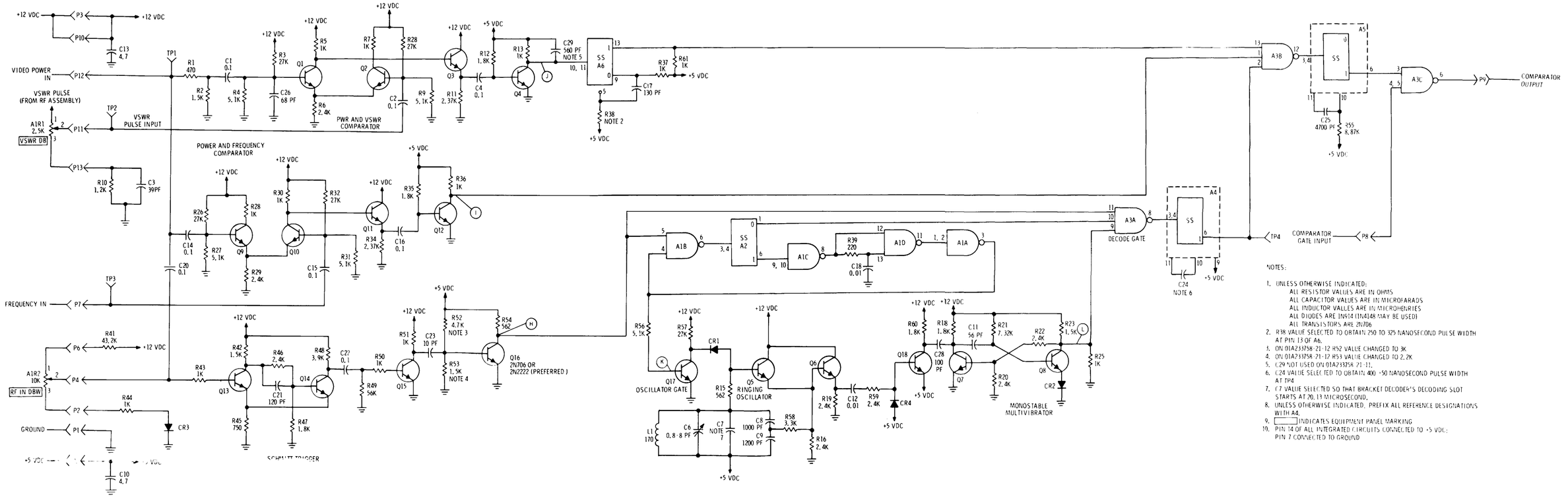


Figure FO-3. Comparator - Decoder (A4), Schematic Diagram

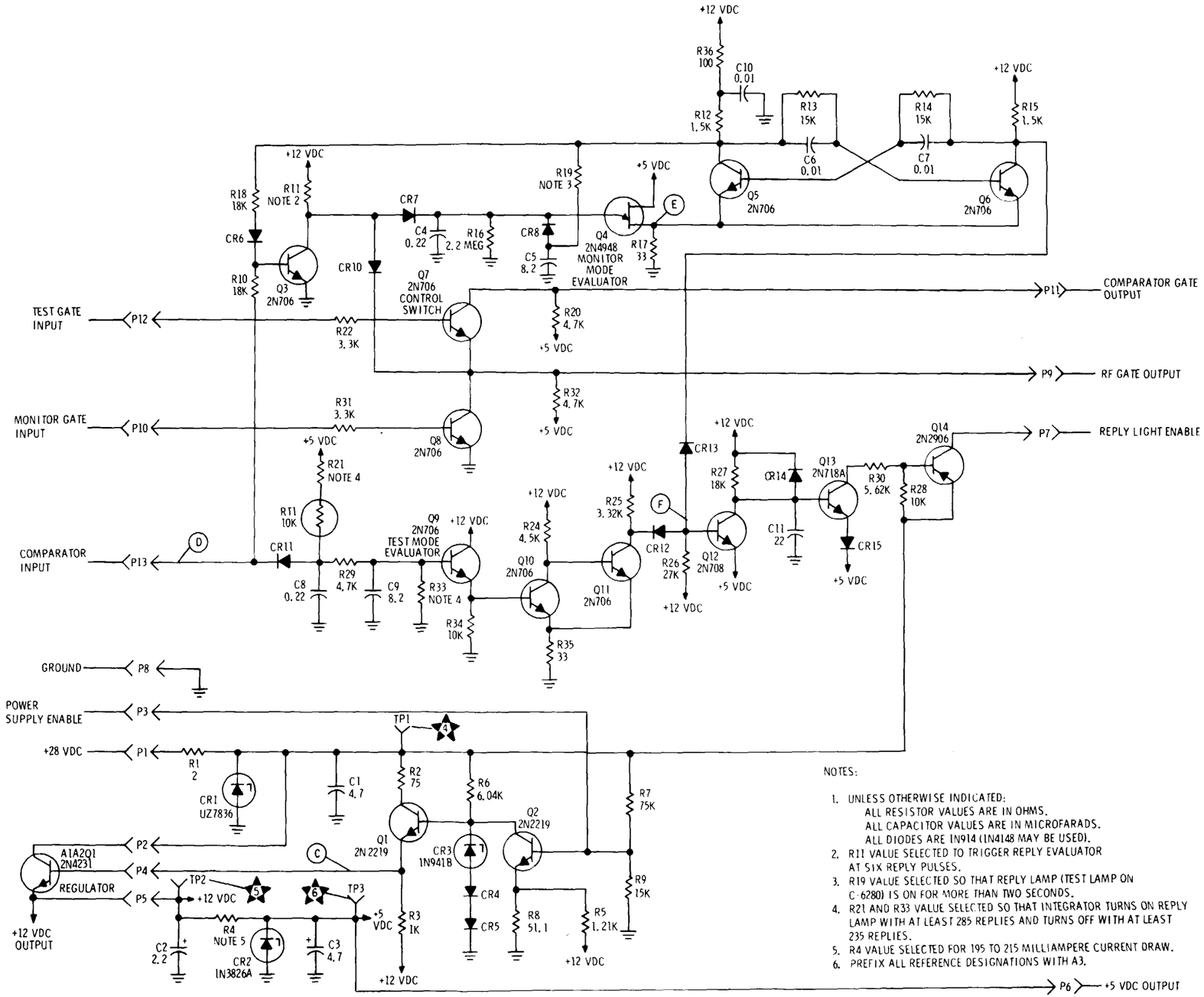


Figure FO-4. Power Supply and Reply Evaluator (A3), Schematic Diagram

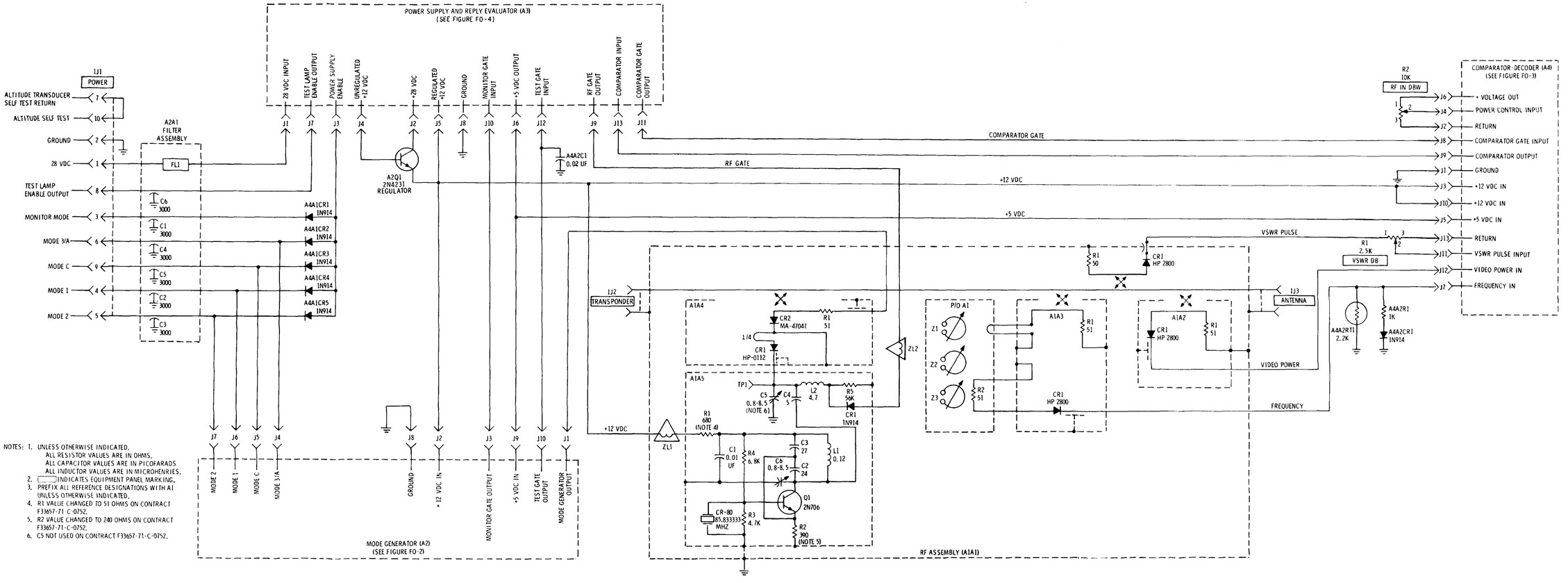


Figure FO-5. Main Frame Assembly (Al), Schematic Diagram

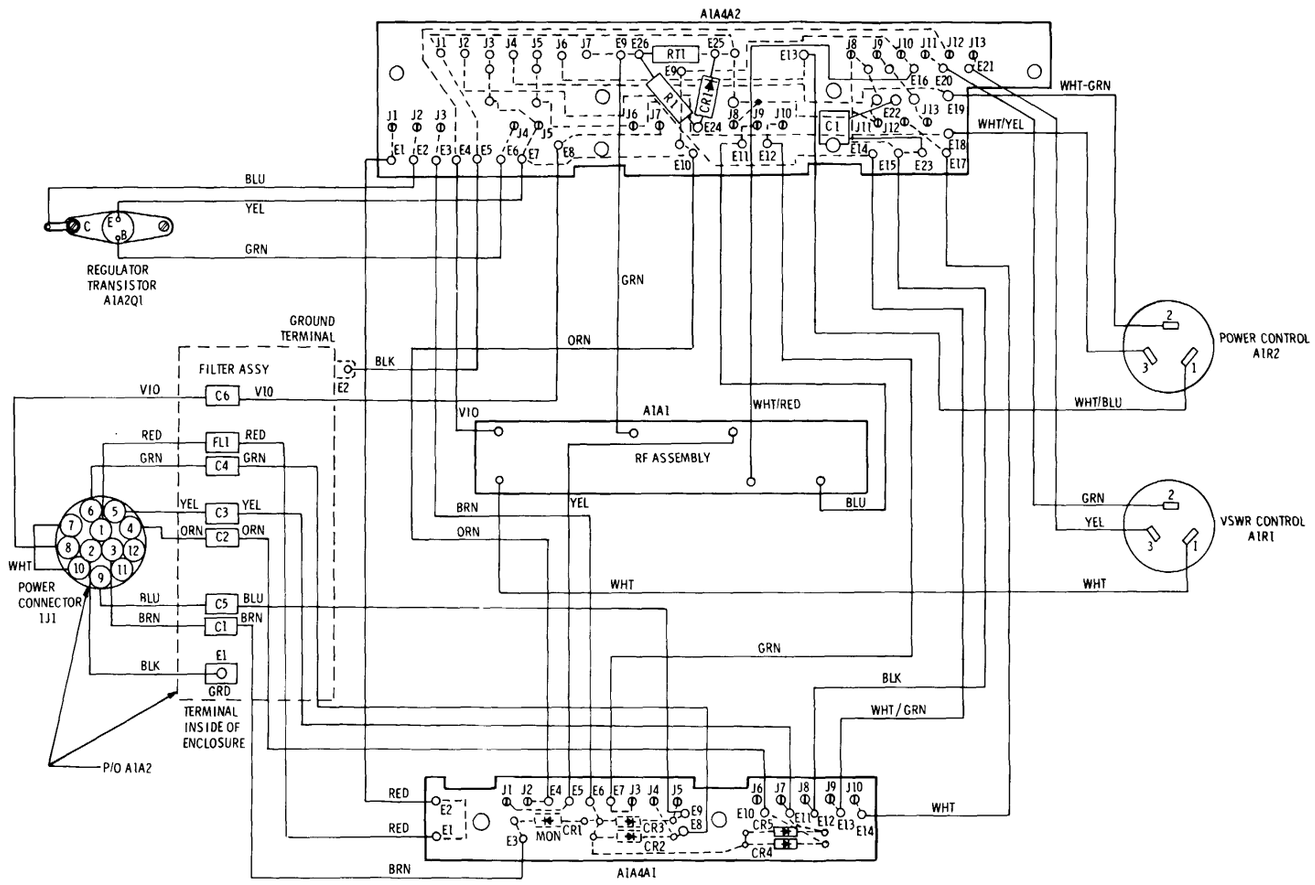


Figure FO-6. Main Frame Assembly (A1), Wiring Diagram

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