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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)

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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.

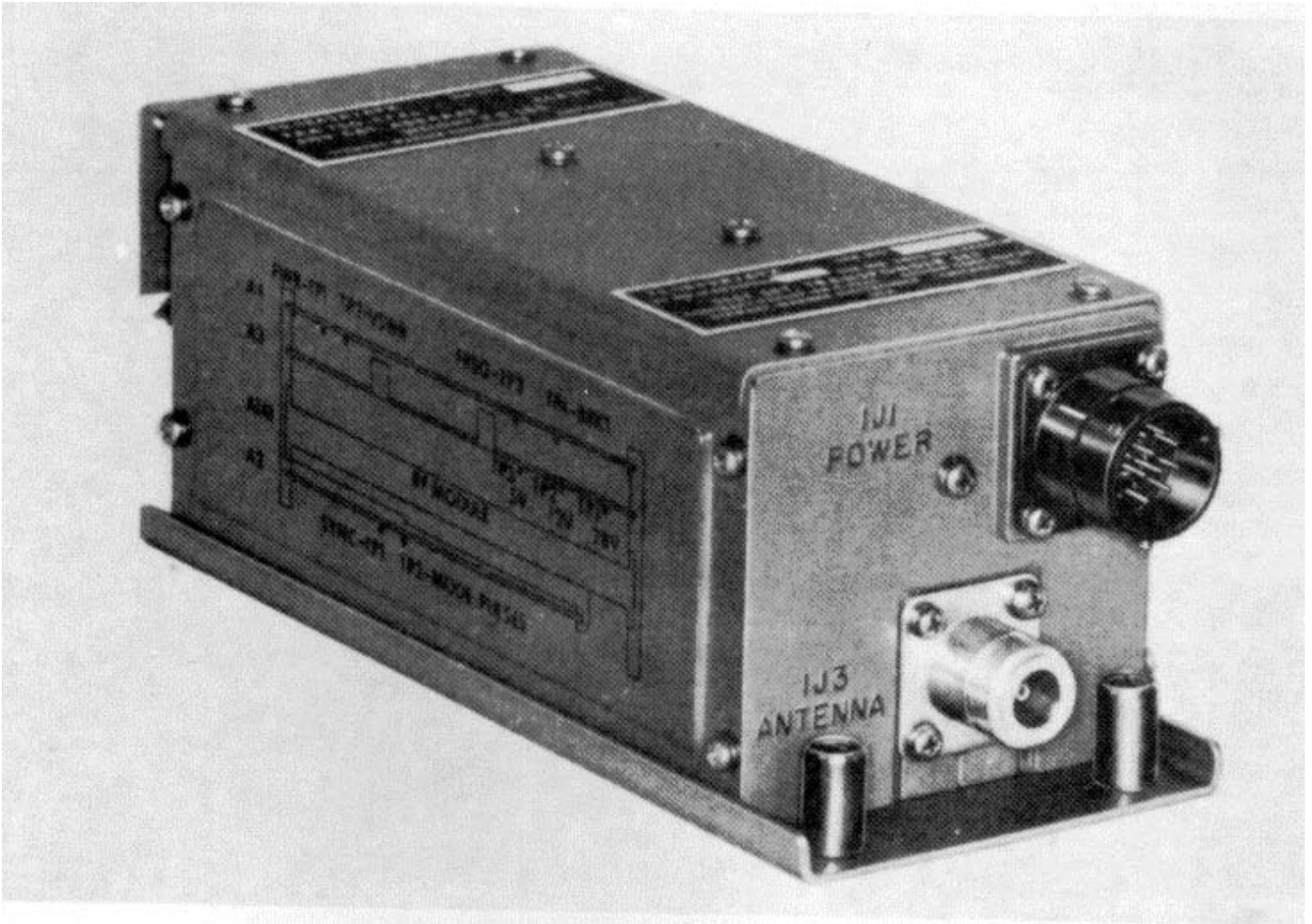


Figure 1-1. Test Set, Transponder Set TS-1843A APX and Mounting MT-3513A APX

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 (A1). 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

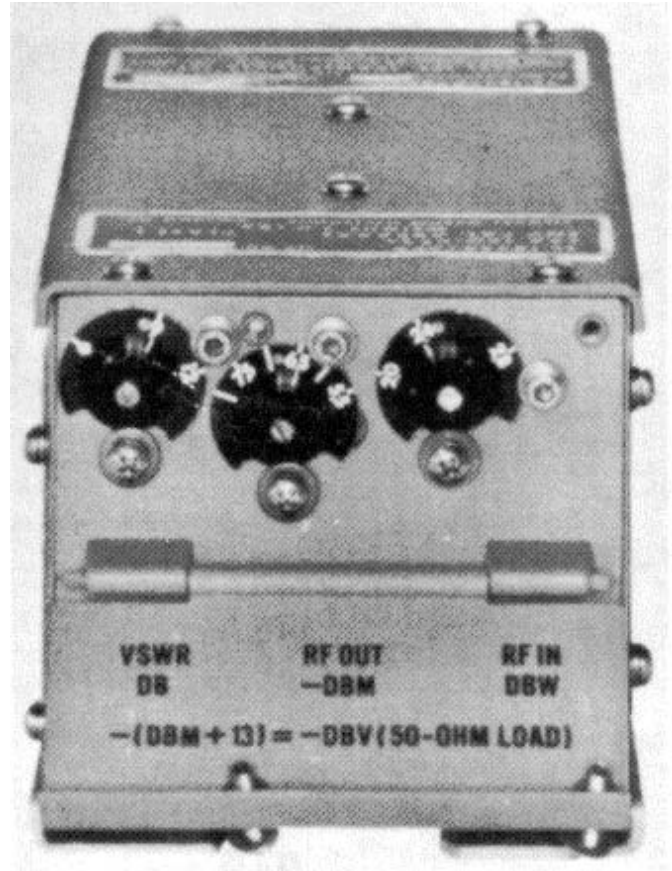


Figure 1-2. Test Set Transponder Set TS-1843A, APX (Rear View), Service Adjustments

- 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-1843A provides 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