

(Air Force) T.O. 33A1-3-358-11
(Army) TM 11-6625-842-15
(Navy) NAVAIR 16-30APM239-2

TECHNICAL MANUAL

OPERATION AND SERVICE/ORGANIZATIONAL, GS
AND DEPOT MAINTENANCE MANUAL
WITH
ILLUSTRATED PARTS BREAKDOWN

TEST SET, TRANSPONDER SET
AN/APM-239A

Hazeltine Corporation
F33657-67-C-1319

This copy is a reprint which includes current pages
from Changes 1 through 9.

Each transmittal of this document outside of the Department of Defense must have approval of the issuing Service.

Published under authority of the Secretaries of the Air Force, Army, and Navy.

“LIBRARIAN: CHECK FOLD-OUT PAGE FILING SEQUENCE”

1 APRIL 1968

TABLE OF CONTENTS

Section		Page
I	INTRODUCTION AND DESCRIPTION	1-1
	1-1 Scope	1-1
	1-3 Purpose of Equipment	1-1
	1-5 General Description	1-1
	1-7 Electrical and Mechanical Characteristics	1-1
	1-9 Equipment Supplied	1-1
	1-12 Index to Publications, Forms, and Records	1-6
	1-16 Forms and Records	1-6
II	PREPARATION FOR USE	2-1
	2-1 Scope	2-1
	2-3 Unpacking	2-1
	2-5 Siting	2-1
	2-7 Power Connector Assembly.	2-1
	2-9 Front Panel Connectors	2-1
	2-11 Pre-Operational Checks	2-1
III	OPERATING INSTRUCTIONS.	3-1
	3-1 Introduction	3-1
	3-3 Controls, Indicators and Connectors.	3-1
	3-5 Multimeter ME-358/APM-239A	3-4
	3-7 IF Amplifier Extension Assembly	3-4
	3-9 Coaxial Adapters	3-4
	3-11 Extender Boards	3-4
	3-13 Cables	3-4
	3-15 Operating Procedure	3-7
	3-17 Preliminary Control Settings	3-7
	3-19 Interconnection Information	3-8
	3-25 Use of Extender Cables and Adapters	3-10
	3-27 Use of Extender Boards	3-10
	3-31 Energizing the Test Set	3-11
	3-33 De-Energizing Instructions	3-11
IV	MAINTENANCE INSTRUCTIONS	4-1
	4-1 Scope	4-1
	4-3 Functional Description	4-1
	4-4 General	4-1
	4-6 A-C and D-C Controls	4-1
	4-7 Power Supply Circuit	4-1
	4-8 A-C and D-C Voltmeter and Ammeter Circuits	4-1
	4-10 Reference Regulator,	4-1
	4-11 Mode C Encoder Simulator.	4-3
	4-12 Mode 4 Reply Circuit	4-3
	4-13 Controls, Indicators, and Connectors	4-3
	4-15 Test Equipment Required	4-3
	4-17 Checkout Procedure	4-3
	4-19 Preventive Maintenance	4-4
	4-21 Calibration Checks	4-4
	4-23 Zeroing of Meters	4-4
	4-24 Fault Isolation Meter Check.	4-5
	4-24A Fault Isolation Meter Check (Air Force)	4-5
	4-25 Voltmeter and Ammeter Check	4-5
	4-26 Troubleshooting	4-5
	4-27 General	4-5
	4-28 Visual Inspection	4-5
	4-29 Localization Procedures	4-6

T.O. 33A1-3-358-11/TM 11-6625-842-15
NAVAIR 16-30APM239-2

TABLE OF CONTENTS (cont)

Section		Page
IV (cont)	4-30 Disassembly and Assembly	4-7
	4-31 Transponder Set Contra,	4-7
	4-32 Test Set Front Panel	4-7
	4-33 Fault Isolation Meter	4-7
	4-34 Component Removal	4-7
	4-35 Reassembly	4-7
	4-36 Schematic Diagrams	4-7
V	PARTS LIST	5-1
	5-1 Introduction	5-1
	5-4 Illustrations	5-1
	5-6 Parts Listing	5-1
	5-12 Numerical Index	5-1
	5-14 Provisioning Codes	5-1
	5-16 Air Force Source Codes and Definitions	5-1
	5-23 Navy Source Codes and Definitions	5-4
	5-31 How to Use This Parts List	5-6
	5-33 Vendor's Codes	5-6
VI	DEPOT OVERHAUL STANDARDS	6-1
	6-1 Introduction	6-1
	6-3 Applicable References	6-1
	6-7 Test Facilities Required	6-1
	6-9 General Test Requirements	6-1
	6-13 Tests	6-1
	6-20 Continuity Checks	6-5
	6-22 Accessory Cables	6-6
VII	SHIPMENT AND LIMITED STORAGE AND DEMOLITION TO PREVENT ENEMY USE	7-1
	7-1 Shipment and Limited Storage	7-1
	7-7 Demolition of Material to Prevent Enemy Use	7-1
Appendix A	REFERENCES	A-1/A-2
Appendix B	BASIC ISSUE ITEMS	B-1
	Section I Introduction	B-1
	B-1 General	B-1
	B-2 Explanation of Columns	B-1
	B-3 Federal Supply Codes	B-2
	Section II Basic Issue Items List	B-3
Appendix C	MAINTENANCE ALLOCATION.	C-1
	Section I Introduction	C-1
	C-1 General	C-1
	C-2 Explanation of Format for Maintenance Allocation Chart	C-1
	C-3 Explanation of Format for Tool and Test Equipment Requirements	C-1
	Section II Maintenance Assignment	C-2

LIST OF ILLUSTRATIONS

Figure	Title	Page
1-1	Test Set, Transponder Set AN/APM-239A	1-2
1-2	Table of Specifications,	1-3
1-3	List of Equipment Supplied	1-4
1-4	List of Accessory Equipment.	1-4
2-1	Outline Dimensional Diagram.	2-2
3-1	Controls, Indicators and Connectors	3-1
3-2	Location of Controls, Indicators, and Connectors	3-5
3-3	Normal Meter Readings, Fault Isolation Meter	3-6
3-4	Coaxial Adapter Data	3-6
3-5	Cable Assembly Data	3-6
3-6	Preliminary Control Settings	3-8
3-7	Interconnection Diagram	3-9
3-8	Extender Board Data	3-10
4-1	Functional Block Diagram	4-2
4-2	Maintenance Chart	4-4
4-3	Trouble Shooting Chart	4-6
4-4	Test Set Schematic Diagram	4-8
4-5	Fault Isolation Meter, Schematic Diagram	4-9
4-6	Wire Run List, AN/APM-239A	4-10
5-1	Test Set Assembly	5-8
5-2	Transponder Set Test Set TS-2681/APM-239A.	5-12
5-3	Panel Assembly (Sheet 1 of 2)	5-13
5-3	Panel Assembly (Sheet 2 of 2)	5-14
5-4	Board Assembly	5-18
5-5	Multimeter, ME-358/APM-239A	5-19
5-6	Test Adapters, MX-8202/APM-239A, MX-8203/APM-239A, MX-8204/APM-239A, MX-8205/APM-239A, MX-8206/APM-239A, MX-8207/APM-239A	5-20
5-7	Circuit Card Assembly Extender Boards, MX-8141/APM-239A, MX-8142/APM-239A, MX-8143/APM-239A, MX-8144/APM-239A, MX-8145/APM-239A, MX-8146/APM-239A, MX-8147/APM-239A, MX-8148/APM-239A	5-21
5-8	Electrical Special Purpose Cable Assembly, CX-10905/APM-239A	5-22
5-9	Electrical Special Purpose Cable Assembly, CX-10906/APM-239A	5-23
5-10	Power Electrical Cable Assembly, CX-10926/APM-239A	5-24
5-11	Electrical Special Purpose Cable Assemblies, CX-10921/APM-239A, CX-10923/APM-239A, CX-10925/APM-239A	5-25
5-12	Electrical Special Purpose Cable Assemblies, CX-10922/APM-239A, CX-11734/APM-239A, CX-11735/APM-239A	5-26
5-13	Radio Frequency Cable Assembly, CG-3491/APM-239A	5-27
5-14	Electrical Special Purpose Cable Assembly, CX-10924/APM-239A	5-28
5-15	Electrical Special Purpose Cable Assembly, CX-10908/APM-239A	5-29
5-16	Electrical Special Purpose Cable Assemblies, CX-10909/APM-239A, CX-10911/APM-239A, CX-10912/APM-239A	5-30
5-17	Electrical Special Purpose Cable Assembly, CX-10907/APM-239A	5-31
5-18	Electrical Special Purpose Cable Assembly, CX-10910/APM-239A	5-32
5-19	Electrical Special Purpose Cable Assembly, CG-3470/APM-239A	5-33
6-1	Test Fixture	6-2
6-2	Initial Control Settings	6-3
7-1	Materials Required for Packaging	7-1

SECTION I

INTRODUCTION AND DESCRIPTION

1-1. SCOPE.

1-2. This technical manual contains descriptive and preparation-for-use information, operating instructions, maintenance instructions, depot overhaul standards, and a parts list for Test Set, Transponder Set AN/APM-239A (figure 1-1). The equipment is manufactured by Hazeltine Corporation, Little Neck, New York.

1-3. PURPOSE OF EQUIPMENT.

1-4. Test Set, Transponder Set AN/APM-239A, herein referred to as the over-all test set, is a portable test set designed for the maintenance support of the following equipments:

Receiver-Transmitter	RT-727/APX-64
Receiver-Transmitter	RT-728/APX-64
Receiver-Transmitter	RT-731/APX-64
Receiver-Transmitter	RT-774/APX-68
Receiver-Transmitter	RT-859/APX-72
Receiver-Transmitter	RT-494/APX-44
Transponder Test Set	TS-1843/APX
Transponder Computer	KIT-1A/TSEC
Altitude Encoder	TRU-73/A
Altitude Encoder	CPU-66/A
Altitude Encoder	CPU-46/A
Transponder Set Control	C-2714/APX-44

NOTE

Transponder Set Control C-6280(P)/APX or C-6280A(P)/APX, supplied as part of the over-all test set, is supplied as GFP (Government Furnished Property).

The over-all test set provides power to the equipment under test and provides the means for interconnecting the various units of a transponder set for the purpose of bench testing and adjusting. The over-all test set essentially simulates the wiring harness in the aircraft.

1-5. GENERAL DESCRIPTION.

1-6. The test set and associated accessories are contained in a transit case (figure 1-1) which is a light-weight, portable, aluminum case. The test set is removed from the transit case and is suitable to permit use of the set when placed on a work bench along with associated test equipment and units to be tested. All controls, switches, connectors, and indicators are located on the front panel of the test set. In addition to the test set itself, the transit case has provision for the fault isolation meter, 15 extender boards, accessory and power cables, coaxial adaptors, special tools and the technical manual.

1-7. ELECTRICAL AND MECHANICAL CHARACTERISTICS.

1-8. A list of the electrical and mechanical characteristics is given in figure 1-2.

1-9. EQUIPMENT SUPPLIED.

1-10. A list of the equipment supplied as the over-all test set (excluding accessories) is given in figure 1-3 and illustrated in figure 1-1.