

ARMY TM 5-6675-309-14
MARINE CORPS TM 08840A-14/1

TECHNICAL MANUAL

**OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT, AND
GENERAL SUPPORT MAINTENANCE MANUAL**

**TEST SET, POWER SUPPLY, PADS
AN/USM-428**

PART NO 877410-1
NSN 6675-01-075-4033

This manual supersedes TM 5-6675-309-14 dated 7 December 1981

HEADQUARTERS, DEPARTMENTS OF THE ARMY AND THE NAVY
1 AUGUST 1985

TECHNICAL MANUAL

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 1 August 1985

**Operator's, Organizational, Direct Support, and
General Support Maintenance Manual**

**TEST SET, POWER SUPPLY, PADS
AN/USM-428
PART NO. 877410-1
NSN 6675-01-075-4033 (EIC:YOB)**

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistake or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, U.S. Army Troop Support Command, ATTN: AMSTR-MMTS, 4300 Goodfellow Boulevard, St. Louis, MO 63120-1798. A reply will be furnished directly to you.

Marine Corps users should submit NAVMC FORM 10772 "Reporting Errors and Recommending Improvement." Send to Commandant of the Marine Corps Headquarters, Marine Corps, Code LMA-1, Washington, DC 20380. A reply will be sent directly to you.

TABLE OF CONTENTS

			Paragraph	Page
CHAPTER	1.	INTRODUCTION		
Section	I.	General	1-1	1-1
	II.	Description and data	1-7	1-1
CHAPTER	2.	SERVICE UPON RECEIPT AND INSTALLATION		
Section	I.	Site and shelter requirements	2-1	2-1
	II.	Service upon receipt of materiel	2-3	2-1
	III.	Installation instructions	2-5	2-3
	IV.	Preliminary adjustment of equipment	2-6	2-3

TABLE OF CONTENTS (Continued)

			Paragraph	Page
CHAPTER	3.	OPERATING INSTRUCTIONS		
Section	I.	Controls and instruments	3-1	3-1
	II.	Operation under usual conditions	3-4	3-7
	III.	Operation under unusual conditions	3-7	3-8
	IV.	Preparation for movement	3-9	3-8
CHAPTER	4.	OPERATOR/CREW MAINTENANCE INSTRUCTIONS		4-1
	5.	ORGANIZATIONAL MAINTENANCE INSTRUCTIONS		5-1
	6.	FUNCTIONING OF EQUIPMENT		6-1
	7.	DIRECT SUPPORT MAINTENANCE INSTRUCTIONS		7-1
CHAPTER	8.	GENERAL SUPPORT MAINTENANCE INSTRUCTIONS		
Section	I.	General	8-1	8-1
	II.	Tools and equipment	8-6	8-2
	III.	Troubleshooting	8-7	8-42
	IV.	Maintenance of the PSTS	8-9	8-106
	V.	General support testing procedures	8-10	8-132
	VI.	Cable and connector repair	8-12	8-132
CHAPTER	9.	MATERIEL USED IN CONJUNCTION WITH MAJOR ITEM		9-1
APPENDIX	A.	REFERENCES		A-1
APPENDIX	B.	COMPONENTS OF END ITEM LIST		
Section	I.	Introduction	B-1	B-1
	II.	Integral components of end item		B-2
	III.	Basic issue items		B-4
APPENDIX	C.	ADDITIONAL AUTHORIZATION LIST		
Section	I.	Introduction	C-1	C-1
	II.	Additional Authorization List		C-1
APPENDIX	D.	MAINTENANCE ALLOCATION CHART		
Section	I.	Introduction	D-1	D-1
	II.	Maintenance allocation chart		D-3
	III.	Tool and test equipment requirements		D-6
	IV.	Remarks		D-7

TABLE OF CONTENTS (Continued)

		Paragraph	Page
APPENDIX	E. REPAIR PARTS AND SPECIAL TOOLS LIST		E-1
APPENDIX	F. EXPENDABLE SUPPLIES AND MATERIAL LIST		
Section	I. Introduction	F-1	F-1
	II. Expendable supplies and materials list		F-1
GLOSSARY			GLOSSARY 1
INDEX			INDEX 1

LIST OF ILLUSTRATIONS

Number	Title	Page
1-1.	Power Supply Test Set AN/USM-428.	1-3
2-1.	Typical Packaging Diagram	2-2
3-1.	Power Supply Test Set Controls, Indicators, and Connectors	3-1
3-2.	Self-Test Electrical Connection	3-7
6-1.	Power Supply Test Set Simplified Functional Block Diagram	6-2
6-2.	Power Supply Test Set Power Control Functional Block Diagram	6-3
6-3.	Power Supply Test Set Input Power Switching to the UUT	6-4
6-4.	Battery Charging Test Circuitry	6-5
8-1.	Transistor Diagrams	8-3
8-2.	Diode Diagrams	8-4
8-3.	Relay Diagrams	8-5
8-3A	Connector-Pin Arrangement Diagram	8-6
8-4.	Electrical Connections for Test	8-43
8-5.	Power Supply Test Set Parts Location Diagram	8-44
8-6.	Power Supply Test Set Exploded View	8-110
8-7.	Electronic Component Assembly No. 1 A1 Parts Location Diagram	8-128
8-8.	Electronic Component Assembly No. 2 A2 Parts Location Diagram	8-129
8-9.	Power Supply Test Set Adjustments Location Diagram	8-131
8-10.	Backshell Strap Wrench	8-133
8-11.	Straight Backshell Disassembly/Assembly	8-133
8-12.	Contact Pins and Insertion and Removal Tools	8-135
8-13.	Contact Pin Removal	8-135
8-14.	Contact Pin Insertion Tool Loading	8-136
8-15.	Crimping Tool MS3198-1 with Positioner MS3198-6P	8-137
8-16.	Crimping Tool MS3191-4 with Positioner MS3191-9T	8-138
8-17.	Contact Pin Crimping Tool Operation	8-140
8-18.	Crimping Tool MY28-4	8-141
8-19.	Terminal Lug and Wire Preparation	8-141
8-20.	Cable and Terminal Assembly Crimping	8-142
FO-1.	Power Supply Test Set Functional Block Diagram	FP-1/FP-2
FO-2.	Power Supply Test Set Schematic Diagram	FP-3/FP-4

LIST OF TABLES

Number	Title	Page
1-1.	Performance Data	1-5
1-2	Major Components	1-5
1-3	Cable Assemblies	1-6
1-4	Auxiliary Equipment	1-6
3-1	Controls, Indicators, and Connectors	3-2
3-2	Self-Test	3-9
8-1	Power Supply Test-Set Wire List	8-7
8-2	Cable Assemblies Wire List	8-31
8-3	Power Supply Test Set Preventive Maintenance Checks and Services	8-39
8-4	Tools and Equipment Required for General Support Maintenance	8-40
8-5	Power Supply Test Set Test Procedure	8-50
8-6	Cable and Connector Tooling and Contact Identification	8-139

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope. This manual covers maintenance instructions for Power Supply Test Set AN/USM-428 (PSTS). Unpacking and installation instructions, operating instructions, and functioning of equipment are also included.

1-2. Maintenance Forms and Records. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-750, the Army Maintenance Management System (TAMMS) or TM 4700-15/1, the Marine Corps.

1-3. Destruction of Army Materiel to Prevent Enemy Use. Refer to TM 750-244-2 for procedures for destruction of this equipment to prevent enemy use.

1-4. Administrative Storage. Refer to TM 740-90-1 for procedures, forms, records, and inspections required during administrative storage of the PSTS. Marine Corps users shall refer to MCO 4450.7 for this information.

Calibration. No calibration of the PSTS is required. Specific adjustment procedures are in chapter 8.

1-6. Reporting Equipment Improvement Recommendations (EIR). EIRs can and must be submitted by anyone who is aware of an unsatisfactory condition with

the equipment design or use. It is not necessary to show a new design or list a better way to perform a procedure, just tell why the design is unfavorable or why a procedure is difficult. EIRs may be submitted on SF (Standard Form) 368 (Quality Deficiency Report). Mail directly to:

Commander, U.S. Army Troop Support Command
ATTN: AMSTR-MOF
4300 Goodfellow Blvd.
St. Louis, MO 63120-1798

Marine Corps users shall submit NAVMC FORM 10772 "Reporting Errors and Recommending Improvements." Send to:

Commandant of Marine Corps
Headquarters, Marine Corps
Code LMA-1
Washington, DC 20380

A reply will be sent directly to you.

Section II. DESCRIPTION AND DATA

1-7. Purpose and Use.

a. Purpose. The PSTS is specifically designed for testing and troubleshooting Power Supply PP-7352/USQ-70 and computer power supply (part of Computer CP-1283/USQ-70). Both power supplies are part of the Position and Azimuth Determining System AN/USQ-70. These equipments are referred to herein as PADS PS (or PS), and PADS COMP PS (or COMP PS). Although both power supplies are tested on the PSTS, only one can be connected and tested at any given time. A fixed 28-VDC power source and a variable 0-to 40-VDC power source are required to supplement the PSTS testing of the power supplies. These power sources are switched within the PSTS.

b. Use.

(1) The PSTS is used to verify a fault, isolate the fault to a plug-in module or chassis-mounted component, and to verify correct operation after repair.

(2) The PSTS tests for proper operation of over-voltage, undervoltage, and overcurrent circuitry in the unit under test (UUT). Each test is made using various loads, input voltages, or control signals. The UUT monitor and control signals are tested by controls, indicators, and test jacks on the PSTS front panel. The test jacks are monitored using the GFE oscilloscope or multimeter.

1-8. Description.

a. General. The PSTS, as illustrated in figure 1-1 and listed in table 1-2, consists of a transit case containing the power supply test set and a transit case containing a cable assembly set and a copy of this manual.

b. Power Supply Test Set. The PSTS consists of an instrument case containing a front panel, a mounting plate, and shrouds to which its components are attached. The instrument case includes hinged covers on each side so that either the front panel or the mounting plate may be accessed. All operating controls, indicators, and connectors are on the front panel.

c. Cable Assembly Set, Electrical. Cable assemblies W301 through W306, and W309 through W311 make

up the electrical cable assembly set. Each cable has a straight-bayonet coupling plug at each end except for W306 and W311 which have two lugs at one end.

d. Transit Cases. Two transit cases are provided for transporting the PSTS or for long-term storage. Cases are watertight and dusttight and are fitted with pressure relief valves.

1-9. Differences Between Models. There is only one model of Power Supply Test Set AN/USM-428.

1-10. Tabulated Data. PSTS performance characteristics are given in table 1-1.

1-11. Items Comprising an Operable Equipment. Items comprising an operable PSTS are illustrated in figure 1-1 and listed in tables 1-2, 1-3, and 1-4.

Legend for Figure 1-1

1. Power Supply Test Set TS-3618/USM-428	7. Cable Assembly, Electrical, W304
2. Power Supply Test Set Case CY-7564/USM-428	8. Cable Assembly, Electrical, W305
3. Test Set Accessories Case CY-7610/USM-428	9. Cable Assembly, Electrical, W306
4. Cable Assembly, Electrical, W301	10. Cable Assembly, Electrical, W309
5. Cable Assembly, Electrical, W302	11. Cable Assembly, Electrical, W310
6. Cable Assembly, Electrical, W303	12. Cable Assembly, Electrical, W311
	13. Maintenance Manual TM 5-6675-309-14
	14. RPSTL TM 5-6675-309-24P
	15. Card Extractor

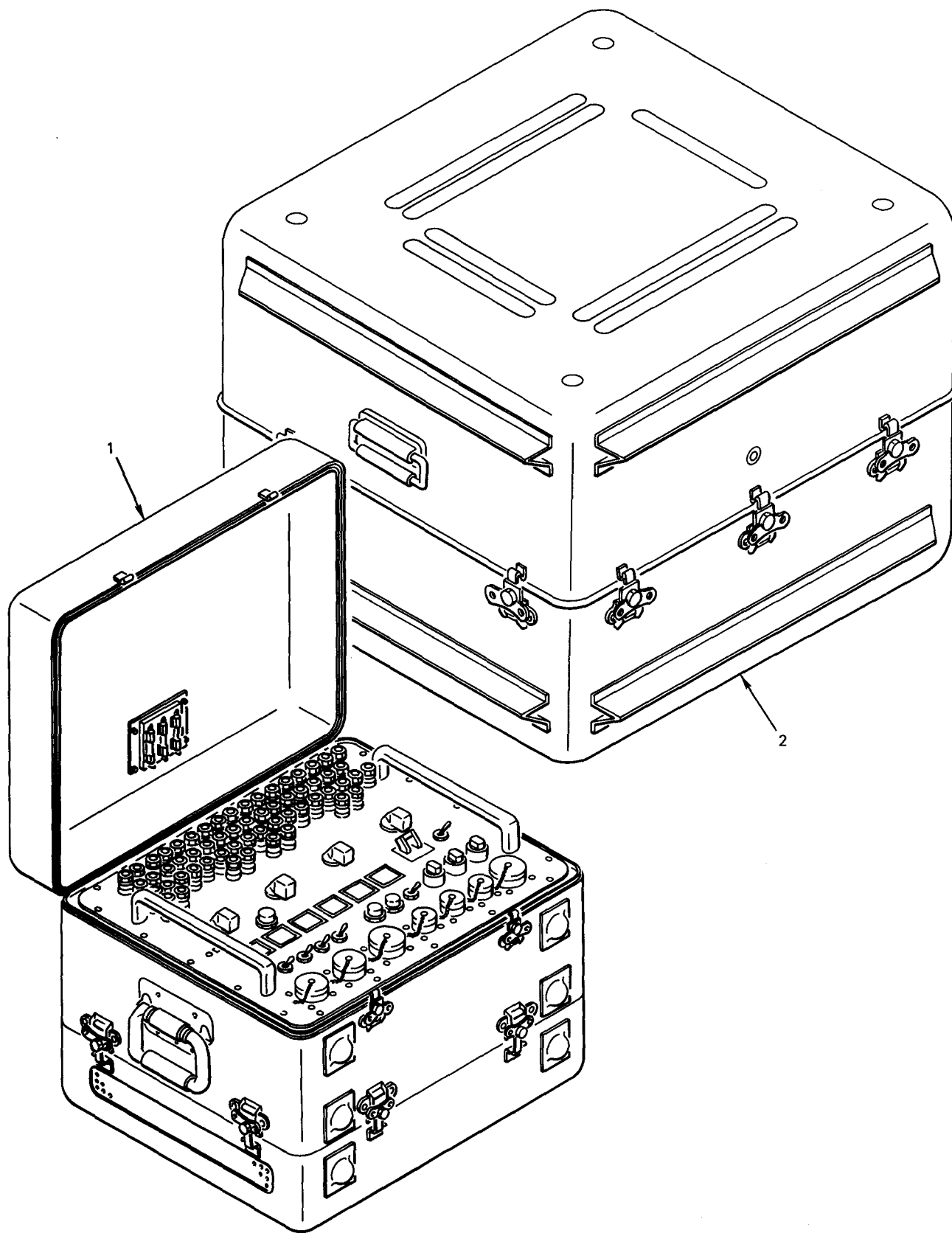


Figure 1-1. Power Supply Test Set AN/USM-428 (Sheet 1 of 2)

44-903-03-1