

# TM 11-6625-1514-15

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

---

ORGANIZATIONAL, DS, GS,  
AND DEPOT MAINTENANCE MANUAL

HEWLETT-PACKARD VACUUM TUBE  
VOLTMETER MODELS  
400D, 400H, 4001 AND H02-400D

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

---

HEADQUARTERS, DEPARTMENT OF THE ARMY  
23 MAY 1967

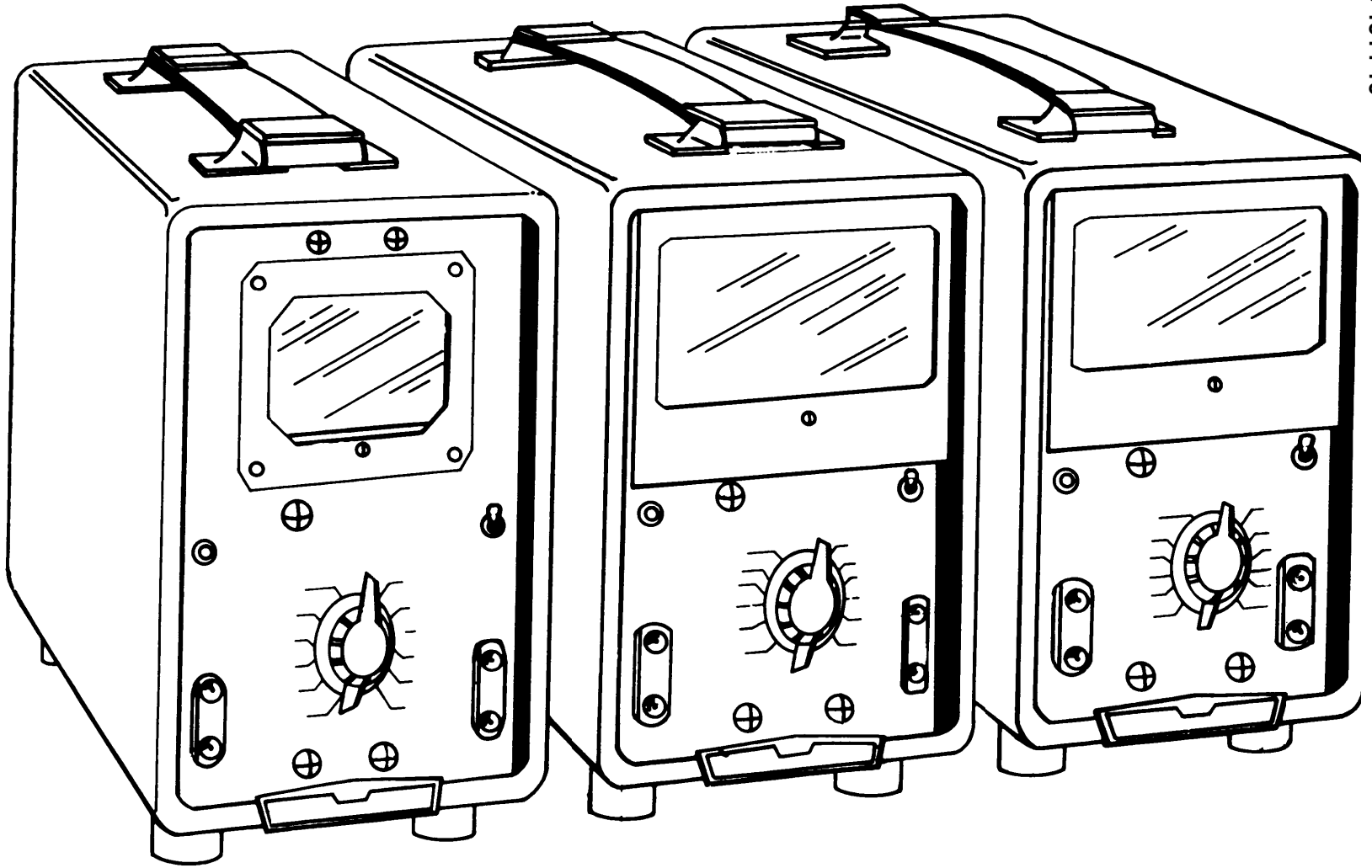
Technical Manual }  
 No. 11-6625-1514-15 }

HEADQUARTERS  
 DEPARTMENT OF THE ARMY  
 Washington, DC, 23 May 1967

**ORGANIZATIONAL, DIRECT SUPPORT, GENERAL SUPPORT AND  
 DEPOT MAINTENANCE MANUAL  
 HEWLETT-PACKARD VACUUM TUBE VOLTMETER MODELS  
 400D, 400H, 400L, AND H02-400D  
 (NSN 6625-00-643-1670)**

		Paragraph	Page
Section	I. GENERAL DESCRIPTION		
	Scope . . . . .	1-A.1	1-0.1
	Index of Technical Publications . . . . .	1-A.2	1-0.1
	Maintenance Forms, Records, and Reports . . . . .	1-A.3	1-0.1
	Reporting Errors and Recommending Improvements . . . . .	1-A.4	1-0.1
	Reporting Equipment Improvement Recommendations . . . . .	1-A.5	1-0.1
	Administrative Storage. . . . .	1-A.6	1-0.1
	Destruction of Army Electronics Materiel . . . . .	1-A.7	1-0.1
	Introduction . . . . .	1-1	1-1
	Description . . . . .	1-4	1-1
Section	II. INSTALLATION		
	Unpacking and Inspection . . . . .	2-1	2-1
	Line Voltage Requirement . . . . .	2-3	2-1
	Power Line Connections . . . . .	2-5	2-1
	Installation . . . . .	2-8	2-1
	Operation Check . . . . .	2-10	2-1
Section	III. OPERATING INSTRUCTIONS		
	Instrument Turn-On . . . . .	3-1	3-1
	General Operating Information. . . . .	3-3	3-1
	Low-Level Measurements and Ground Currents . . . . .	3-12	3-2
	Measurement of Voltage . . . . .	3-14	3-2
	Measurement of Decibels . . . . .	3-17	3-3
	Impedance Correction Graph . . . . .	3-20	3-3
	Use of Voltmeter Amplifier . . . . .	3-22	3-4
Section	IV. CIRCUIT DESCRIPTION		
	Block Diagram . . . . .	4-1	4-1
	Input Voltage Divider and Step Attenuator . . . . .	4-3	4-1
	Broadband Voltmeter Amplifier . . . . .	4-7	4-1
	Indicating Meter Circuit . . . . .	4-10	4-1
	Power Supply . . . . .	4-14	4-2
Section	V. MAINTENANCE		
	Scope . . . . .	5-1	5-1
	Precautions . . . . .	5-3	5-1
	Test Equipment Required . . . . .	5-5	5-1
	Meter Zero Adjustment . . . . .	5-7	5-1
	Cabinet Removal . . . . .	5-9	5-2
	Tube Replacement . . . . .	5-10	5-2
	Replacement of Special Parts . . . . .	5-13	5-2
	Trouble Shooting . . . . .	5-17	5-3
	Testing the Power Supply . . . . .	5-20	5-3
	Testing Voltmeter Performance . . . . .	5-22	5-5
	Calibration and Frequency Response Adjustments . . . . .	5-24	5-8

			Paragraph	Page
Section	VI.	ILLUSTRATED PARTS BREAKDOWN		
		General . . . . .	6-1	6-1
Section	VII.	GROUP ASSEMBLY PARTS BREAKDOWN		
		Vacuum Tube Voltmeter 400D/H/L . . . . .	7-1	7-1
		Main Chassis Assembly . . . . .	7-2	7-3
		Range Switch Assembly 400D-19A . . . . .	7-3	7-8
		Printed Circuit Board Assembly 400D-75G . . . . .	7-4	7-9
		Printed Circuit Board Assembly 400D-75F . . . . .	7-5	7-10
		Printed Circuit Board Assembly 400D-65C . . . . .	7-6	7-12
Section	VIII.	NUMERICAL INDEXES		
		Part No. Numerical Index . . . . .		8-1
		Hewlett-Packard Stock No. Index . . . . .		8-2
Section	IX.	REFERENCE DESIGNATION INDEX . . . . .		9-1
Section	X.	AUXILIARY EQUIPMENT		
		General . . . . .	10-1	10-1
		Line Matching Transformer Model 11004A . . . . .	10-3	10-1
		Bridging Transformer Model 11005A . . . . .	10-7	10-5
		Final Performance Check . . . . .	10-8	10-5



1-0 Change 1

00102 - 2

Figure 1-1. Vacuum Tube Voltmeters Models 400D, 400H, 400L. ■

## SECTION I GENERAL DESCRIPTION

### 1-A.1. Scope

This manual includes installation and operation instructions and covers operator's, organizational, direct support (DS), general support (GS), and depot maintenance. It describes Hewlett-Packard (Federal Supply Code 28480) Vacuum Tube Voltmeter Models 400D and H02-400D, serial numbers 310-45571 and higher; and Models 400H and 400L, serial numbers 313-22177 and higher. A basic issue items list for this equipment is not included in this manual.

### 1-A.2. Index of Technical Publications

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-A.3. Maintenance Forms, Records, and Reports

*a. Reports of Maintenance and Unsatisfactory Equipment.* Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management System (Army). Air Force personnel will use AFR 66-1 for maintenance reporting and TO-00-35D54 for unsatisfactory equipment reporting.

*b. Report of Packaging and Handling Deficiencies.* Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55/NAVMATINST 4355.73/AFR 400-54/MCO 4430.3E.

*c. Discrepancy in Shipment Report (DISREP) (SF 361).* Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33B/AFR 75-18/MCO P4610.19C/DLAR 4500.15.

### 1-A.4. Reporting Errors and Recommending Improvements

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct to Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703. A reply will be furnished direct to you.

### 1-A.5. Report Equipment Improvement Recommendations (EIR)

If your vacuum tube voltmeter needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Tell us why a procedure is hard to perform. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703. We'll send you a reply.

### 1-A.6. Administrative Storage

Administrative storage of equipment issued to and used by Army activities will have preventive maintenance performed before storing. When removing the equipment from administrative storage, the PMCS should be performed to assure operational readiness.

### 1-A.7. Destruction of Army Electronics Materiel

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.