

TECHNICAL MANUAL
OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT, AND
GENERAL SUPPORT MAINTENANCE MANUAL
INCLUDING REPAIR PARTS AND SPECIAL TOOLS LISTS
FOR
TELEPHONE TEST OSCILLATOR TS-3329/U
(NSN 6625-00-251-5211)
(HEWLETT-PACKARD MODEL 236A)

H E A D Q U A R T E R S , D E P A R T M E N T O F T H E A R M Y

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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), or DA Form 2028-2 located in back of the manual direct to: Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth NJ 07703.

In either case a reply will be furnished direct to you.

This manual is an authentication of the manufacturer's commercial literature which, through usage, has been found to cover the data required to operate and maintain this equipment. Since the manual was not prepared in accordance with military specifications and AR 310-3, the format has not been structured to consider levels of maintenance.

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SECTION 0 INTRODUCTION

0-1. Scope

This manual applies to HP Model 236A, telephone test oscillator, Serial Numbers: 1107A6774 and greater. See Appendix A to adapt manual to earlier serial numbers. The equipment will be referred to as the Oscillator throughout the manual.

0-2. Indexes of Publications

a. *DA Pam 310-4.* 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.

b. *DA Pam 310-7.* Refer to DA Pam 310-7 to determine whether there are modification work orders (MWO's) pertaining to the equipment.

0-3. Maintenance Forms, Records and Reports

a. *Report 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.

b. *Report of Packaging and Handling Deficiencies.* Fill out and forward DD Form 6 (Packaging Improvement Report) as prescribed in AR 700-58/NAVSUPINST/4030.29/AFR 71-12/MCO P4030.29A, and DLAR4145.8.

c. *Discrepancy in Shipment Report (DISREP) (SF361).* Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33B/AFR 75-18/MCOP4610.19C and DLAR 4500.15.

0-4. Reporting Equipment Improvement Recommendations (EIR)

If your TS-3329/U 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 us at Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703. A reply will be furnished to you

0-5. Administrative Storage

Administrative storage of equipment issued to and used by Army activities shall be in accordance with TM 740-90-1.

0-6. Destruction of Army Electronics Materiel

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

**SECTION I
GENERAL INFORMATION**

1-1. INSTRUMENT DESCRIPTION.

1-2. The -hp- Model 236A Oscillator generates sine wave signals from 50 Hz to 560 kHz at an output level adjustable from + 10 dBm to - 31 dBm in steps of 10, 1, and 0.1 dBm. The frequency is controlled by the position of the FREQUENCY dial, multiplied by the setting of the FREQ RANGE switch Specifications for this Oscillator are given in Table 1-1

1-3. The FUNCTION switch selects a balanced output with impedance of 600 or 900 ohms from 50 Hz to 20 kHz and 135 ohms from 5 kHz to 560 kHz The first position of the FUNCTION switch, designated DIAL/DC, connects the DC TEST meter to the power supply for checking the battery or the ac power supply in this position of the FUNCTION switch, the DIAL terminals are connected to the OUTPUT terminals for dial through operation The FUNCTION switch also provides a HOLD position for 600 and 900 ohm OUTPUT impedance's to simulate an OFF-HOOK condition The added path furnishes a shunt for dc but offers high impedance to the oscillator signal.

1-4. The impedance's designated on the positions of

the FUNCTION switch are held constant with variations the OUTPUT LEVEL control

1-5. INSTRUMENT IDENTIFICATION.

1-6. Hewlett-Packard uses a two-section serial number The first section (prefix) identifies a sense of instruments. The last section (suffix) identifies a particular instrument within the series if a letter is included with the serial number, it identifies the country in which the instrument was manufactured if the serial number of your instrument is lower than the one on the title page of this manual, refer to Appendix A for backdating information that will adapt this manual to your instrument. All correspondence with Hewlett-Packard should include the complete serial number

1-7. APPLICATIONS.

1-8. This Oscillator is specifically designed to be used by telephone and communication companies. The OUTPUT impedance's, OUTPUT connectors, DIAL connectors and the frequency range of the Oscillator make it applicable for telephone system testing and troubleshooting.

Table 1-1. Specifications.

Frequency Range: 50 Hz to 560 kHz in 4 ranges. Frequency Dial Accuracy: ± 3% Frequency Response 135 Ω 5 kHz to 560 kHz ± 5 dB 600 Ω and 900Ω*: 50 Hz to 20 kHz ± 3 dB *With Hold on accuracy only specified from 100 Hz to 20 kHz Output Power: + 10 to - 31 dBm in 0.1 dBm steps Output Level Accuracy: Absolute Accuracy ± 0.2 dB. (1 kHz reference) Attenuator Relative Accuracy Each attenuator ± 0.5dB.	Distortion: At least 40 dB below fundamental output Noise: At least 65 dB below total output, or below - 90 dBm, whichever noise is greater Output Balance: 135 ohms: >50 dB at 5 kHz >30 dB at 560 kHz 600 and 900 ohms: >70 dB at 100 Hz > 55dB at 3 kHz Output Impedance: 135 ohms ± 10%, 5 kHz to 560 kHz 600 and 900 ohms ± 5%, 50 Hz to 20 kHz
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Table 1-2. General Information.

Hold Circuit 600 and 900 ohms only Applied loop currents of over 60 mA will degrade accuracy specifications Hold coil used, ≈ 10 Henry, dc resistance 700 Ω ± 10% Output Circuit Balanced and Floating Metallic (Tip to Ring) 150 V peak Longitudinal (Tip or Ring to ground) ± 200 V dc plus 200 V rms Output Connectors Jacks to accept Western Electric 241, 309, and 310 plugs. Binding posts accept Banana Plugs, Spade Lugs, Phone Tips, or Bare Wires	Dial/AC Monitor Jacks Will accept Western Electric 309 and 310 Plugs Accepts WE 1011 B Linemans Handset or Type 52 Headsets Power Requirements Internal Battery Single NEDA 202 45 V "B" Battery furnished. Expected battery life is 180 hours at 3 hours per day discharge cycle at 70° F (21° C) AC: 115V or 230V ± 10%, 48-440 Hz, 10vA Dimensions 7-3/4" wide x 10-1/2" high x 8-1/16": deep (196,9 x 266,7 x 204,8 MM) Weight: Net: 13.5 lbs (6,2 KG) Shipping 18.5 lbs (8,3 KG).
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