

HP 16047A
Test Fixture
Operating Note

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1042 Plummer Cir. SW
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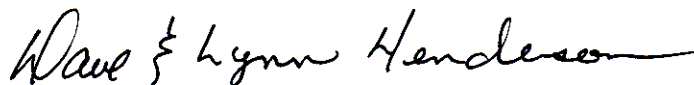
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Thanks



Dave & Lynn Henderson
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1. INTRODUCTION

This operating note provides complete information on the Hewlett-Packard Model 16047A Test Fixture. The 16047A is shown pictorially on the front-cover, its physical dimensions are given in Table 1, and typical characteristics related to offset error are given in Table 2. To order additional copies of this operating note, use the part number listed on the rear cover.

Table 1. Specifications.

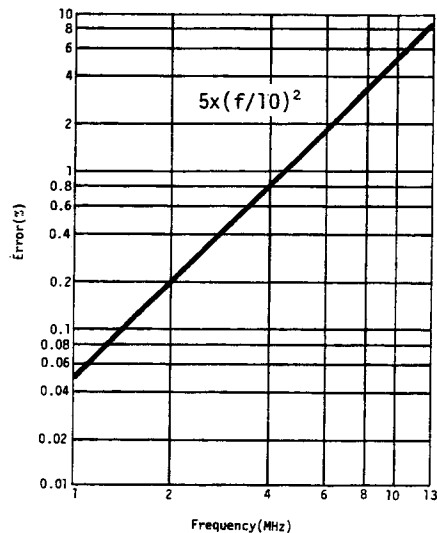
<p>Function: For use with Hewlett-Packard Models 4274A, 4275A, 4276A, 4277A, and 4192A. Permits connecting axial and radial lead components to the UNKNOWN terminals (4-terminal pair configuration) of the 4274A, 4275A, 4276A, 4277A, or 4192A.</p> <p>Contact Inserts: Three kinds: one for axial lead components, one for radial lead components, and one for radial short lead components.</p> <p>Dimensions in mm (inches): 124(4.9) x 31(1.2) x 62(2.4)</p> <p>Weight in grams (lbs): 205(0.45)</p>
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Table 2. Typical Characteristics.

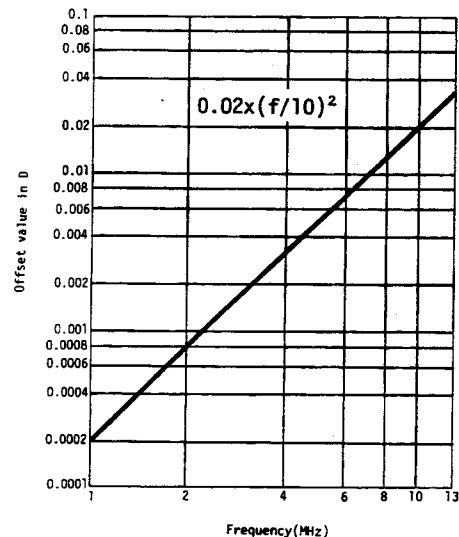
Model	Applicable Measurement Ranges		Incremental error at freq. \geq 1MHz	
	Parameter value	Measurement frequency	Parameter reading error	Offset value for D
4274A*	Full range	Full range	/	
4275A			$\pm 5 \times \left(\frac{f}{10}\right)^2 \%$	$\pm 0.02 \times \left(\frac{f}{10}\right)^2$
4192A				

Note: f is the measurement frequency in megahertz. The incremental errors calculated from the equation in the table for measurements at frequencies above 1MHz are additive.

*: The maximum frequency of the 4274A is 100kHz.



Parameter reading error vs frequency.



Offset value in D vs frequency.

Table 2. Typical Characteristics (cont'd).

Model	Applicable Measurement Ranges		Incremental error at 1MHz	
	Parameter value	Measurement frequency	Parameter reading error	Offset value for D
4276A**	Full range	Full range	/	
4277A			±0.05%	±0.0002

** : The maximum frequency of the 4276A is 20kHz.

2. DESCRIPTION

The Model 16047A Test Fixture is designed for use with the following instruments:

- Model 4192A LF Impedance Analyzer
- Model 4274A Multi-Frequency LCR Meter
- Model 4275A Multi-Frequency LCR Meter
- Model 4276A LCZ Meter
- Model 4277A LCZ Meter

It is a direct attachment, 4-terminal pair configuration type test fixture for measurements on both axial and radial lead components. Three contact inserts — labelled ①, ②, and ③ in Figure 1 — are available: one, ①, for measurements on axial components and two, ② and ③, for measurements on radial lead components. DC bias levels up to ±35V can be applied to the device under test (DUT) through this test fixture. When used with the 4276A or 4277A, however, the 16047A can handle dc bias voltages up to ±40V. The dimensions of the contact inserts are given in Figure 2.

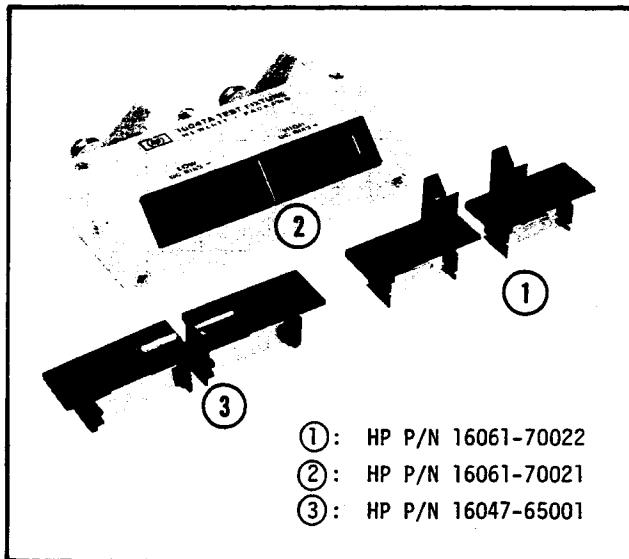


Figure 1. 16047A Test Fixture.

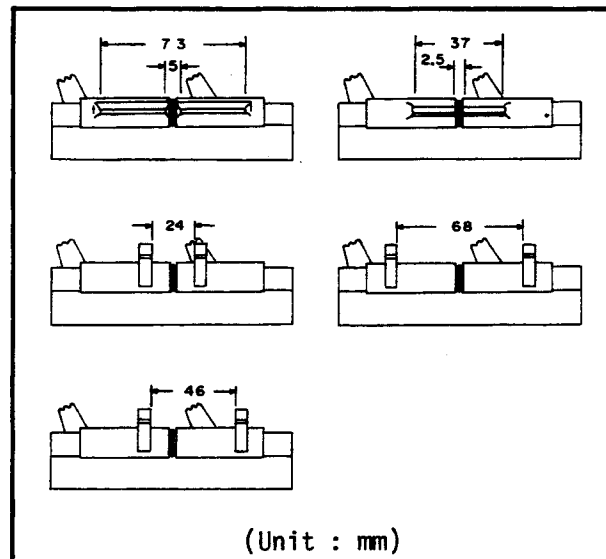


Figure 2. Dimensions of Test Fixture Contacts.

3. ZERO OFFSET ADJUSTMENT

The 16047A has inherent stray capacitance, residual inductance, and residual resistance that affect the accuracy of measured values. To compensate for, or negate, these residuals to minimize measurement error, the instrument's zero offset adjustment procedure should be performed. The procedure is given in Section III of the instrument's operating manual. For SHORT zero offset adjustments a low impedance copper or phosphor bronze shorting bar such as the one shown in Figure 3 is recommended.

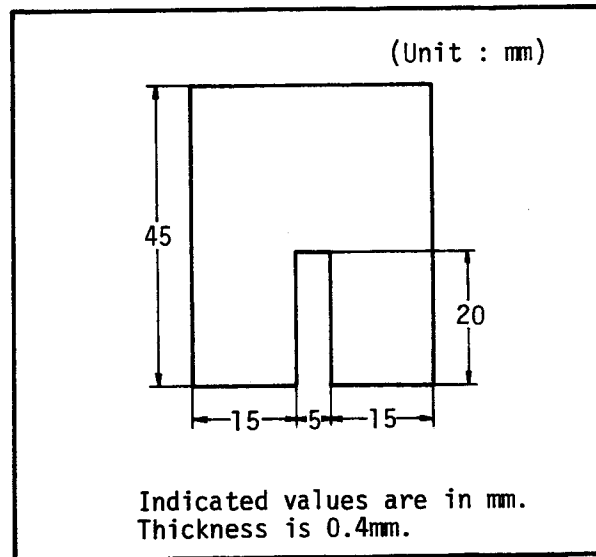


Figure 3. Shorting-bar dimensions.

5. MAINTENANCE

The internal wiring of the 16047A is shown in Figure 4 and an exploded view — for parts identification — in Figure 5. Do not disassemble any further than shown. Maintenance consists principally of cleaning contacts and replacing worn or damaged parts. Take special care when cleaning contacts. To order parts, use the Hewlett-Packard part numbers listed in Figure 5. If a faulty part is located in an assembly that cannot be disassembled, order the next higher assembly or return the whole device to the nearest Hewlett-Packard Sales/Service Office for repair or replacement.

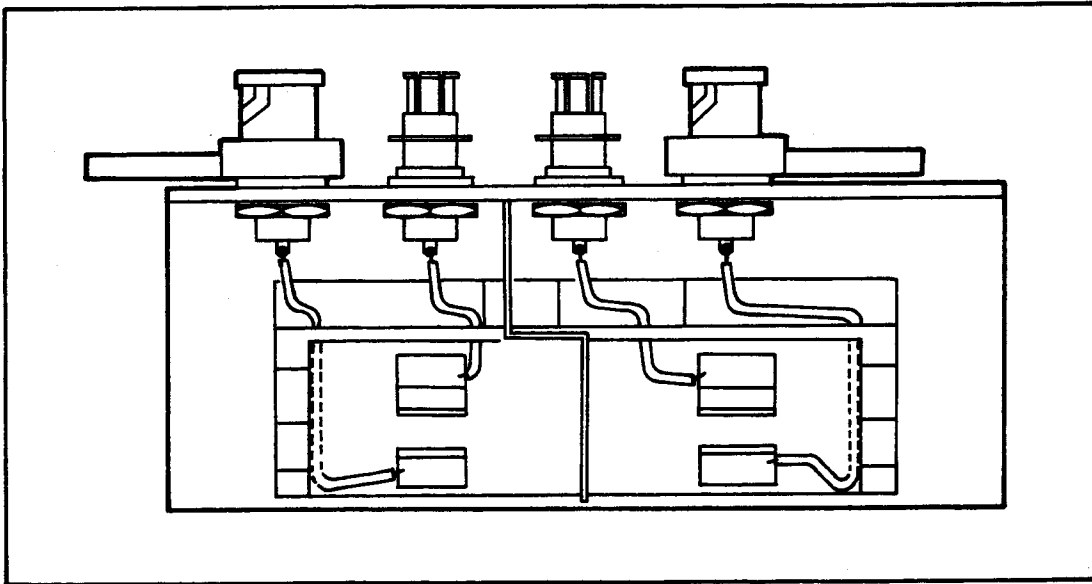
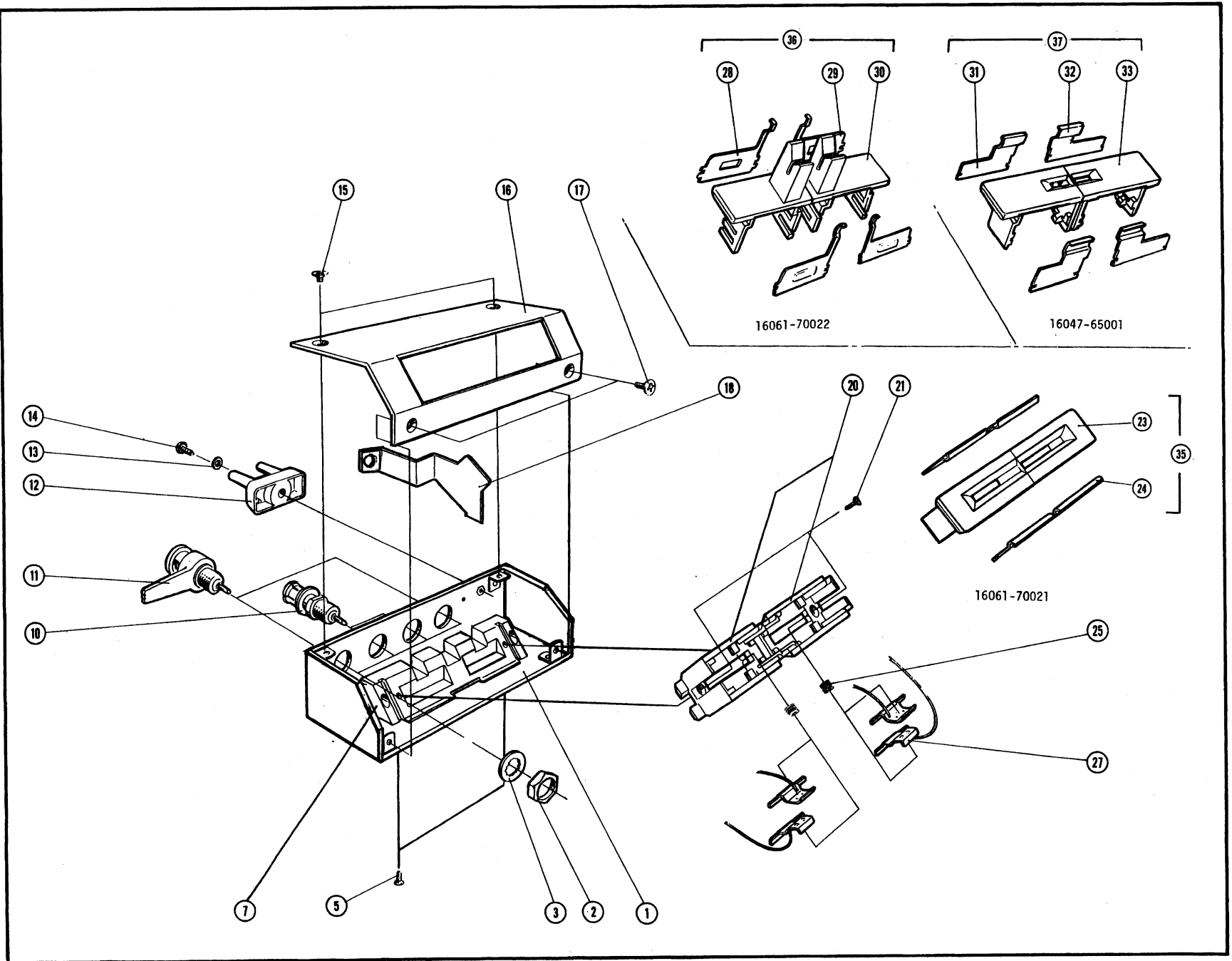


Figure 4. Internal Wiring of 16047A.

Reference	HP Part No.	Qty	Description
1	16047-04013	1	COVER-BOTTOM
2	2950-0043	4	NUT
3	2190-0016	4	WASHER
5	0515-1467	2	SCREW
7	16061-50022	1	BASE
10	1250-1798	2	CONNECTOR-BNC
11	16012-7122	2	CONNECTOR-BNC
12	16047-40000	1	STOPPER
13	2190-0206	1	WASHER
14	0515-1550	1	SCREW
15	0515-0914	2	SCREW
16	16047-04011	1	COVER-TOP
17	0515-0914	2	SCREW
18	16047-00618	1	SHIELD PLATE
20	16061-50024	2	SOCKET
21	0515-1467	2	SCREW
23	16061-50031	1	SOCKET-RADIAL
24	16061-10031	4	CONTACT-RADIAL
25	1460-0343	2	SPRING
27	16061-10026	4	CONTACT
28	16061-10033	2	CONTACT-AXIAL
29	16061-10032	2	CONTACT-AXIAL
30	16061-50032	1	SOCKET-AXIAL
31	16047-00604	2	CONTACT
32	16047-00605	2	CONTACT
33	16047-40001	2	SOCKET
34	16047-00602	1	SIDE PLATE (RIGHT)
35	16061-70021	2	SOCKET ASSEMBLY (23 and 24)
36	16061-70022	2	SOCKET ASSEMBLY (28 , 29 and 30)
37	16047-65001	2	SOCKET ASSEMBLY (31 , 32 and 33)

Figure 5. Parts Identification for 16047A (Sheet 2 of 2).

Figure 5. Parts Identification for 16047A (Sheet 1 of 2).



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Australia
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MEDITERRANEAN AND MIDDLE EAST

Hewlett-Packard S.A.
Mediterranean and Middle East
Operations
Atrina Centre
32 Kifissias Avenue
Paradissos-Amarousion, **ATHENS**
Greece
Tel: (30)682 88 11
Telex: 21-6588 HPAT GR
Cable: HEWPACKSA Athens

BENELUX & SCANDINAVIA

Hewlett-Packard S.A.
Uilenstede 475
P.O. Box 999
NL-1183 AG AMSTELVEEN
The Netherlands
Tel: (31)20/43 77 71
Telex: 18 919 hpner nl

SOUTH & EAST EUROPE, AFRICA

Hewlett-Packard S.A.
7 rue du Bois-du-Lan
CH-1217 MEYRIN 2, Geneva
Switzerland
Tel: (41)22/83 12 12
Telex: 27835 hmea
Cable: HEWPACKSA Geneva

FRANCE

Hewlett-Packard France
Parc d'activites du Bois Briard
2, avenue du Lac
91040 EVRY Cedex
Tel: 1 6/077 83 83
Telex: 6923 15F

GERMAN FEDERAL REPUBLIC

Hewlett-Packard GmbH
Hewlett-Packard-Strasse
Postfach 1641
D-6380 BAD HOMBURG
West Germany
Tel: 06172/400-0
Telex: 410 844 hpbhg

ITALY

Hewlett-Packard Italiana S.p.A.
Via G. Di Vittorio 9
**1-20063 CERNUSCO SUL
NAVIGLIO**
(Milano)
Tel: 02/92 36-91
Telex: 334632

UNITED KINGDOM

Hewlett-Packard Ltd.
King Street Lane
Winnersh, **WOKINGHAM**
Berkshire RG11 5AR
Tel: 734/78/ 47 74
Telex: 847178

EASTERN USA

Hewlett-Packard Co.
4 Choke Cherry Road
ROCKVILLE, MD 20850
TEL: (301)670-4300

MIDWESTERN USA

Hewlett-Packard Co.
5201 Tollview Drive
ROLLING MEADOWS, IL 6008
Tel: (312)255-9800

SOUTHERN USA

Hewlett-Packard Co.
2000 South Park Place
P.O. Box 105005
ATLANTA, GA 30348
Tel: (404)955-1500

WESTERN USA

Hewlett-Packard Co.
5161 Lankershim Blvd.
P.O. Box 3919
NO. HOLLYWOOD, CA 91609
Tel: (818)506-3700

OTHER INTERNATIONAL AREAS

Hewlett-Packard Co.
Intercontinental Headquarters
3495 Deer Creek Road
PALO ALTO, CA 94304
Tel: (415)857-1501
Telex: 034-8300
Cable: HEWPACK

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