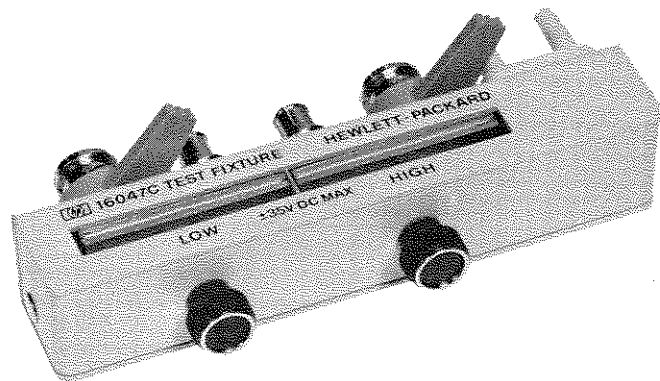


# TEST FIXTURE

16047C



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All Hewlett-Packard products are warranted against defects in materials and workmanship. This warranty applies for one year from the date of delivery, or, in the case of certain major components listed in the operating manual, for the specified period. We will repair or replace products which prove to be defective during the warranty period provided they are returned to Hewlett-Packard. No other warranty is expressed or implied. We are not liable for consequential damages.

For any assistance, contact your nearest Hewlett-Packard Sales and Service Office. Addresses are provided at the back of this manual.

## I. INTRODUCTION

This operating note provides complete information on the Hewlett-Packard Model 16047C Test Fixture. The 16047C 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.

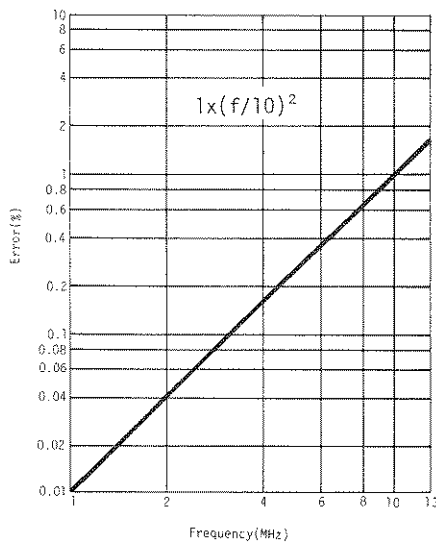
<p>Function: For use with Hewlett-Packard Models 4274A, 4275A, 4276A, 4277A, and 4192A. Permits connecting axial and radial lead components to the UNKNOWN terminals (4-terminal pair configuration) of the 4274A, 4275A, 4276A, 4277A, or 4192A.</p> <p>DC Bias: <math>\pm 35V</math> maximum</p> <p>Dimensions in mm (inches): 128(5.04) x 26(1.02) x 35(1.38)</p> <p>Weight in grams (lbs): 165(0.364)</p>
---

Table 2. Typical Characteristics.

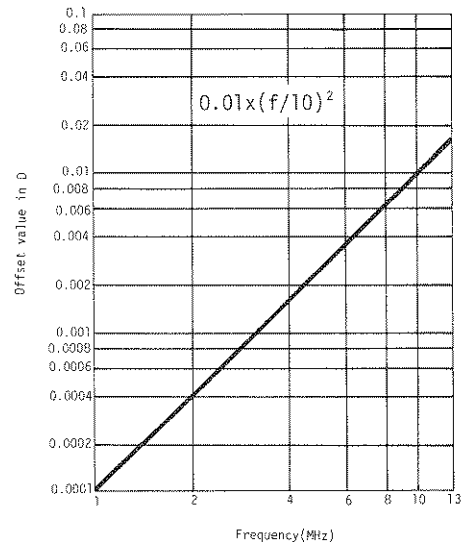
Model	Applicable Measurement Ranges		Incremental error at freq. $\geq 1\text{MHz}$	
	Parameter value	Measurement frequency	Parameter reading error	Offset value for D
4274A*	Full range	Full range	/	
4275A			$\pm 1 \times \left(\frac{f}{10}\right)^2\%$	$\pm 0.01 \times \left(\frac{f}{10}\right)^2$
4192A				

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			±0.01%	±0.0001

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

## 2. DESCRIPTION

The Model 16047C 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 type test fixture that converts the 4-terminal pair configuration of the instrument's UNKNOWN terminals into a 2-terminal configuration. The 16047C should be used when making measurements at high frequencies. Two thumbscrews ensure optimum contact between the component leads and the test fixture's contact plates. The 16047C is useable at all 4274A, 4275A, 4276A, 4277A, and 4192A ranges. DC bias voltage 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 16047C can handle dc bias voltages up to ±40V. The 16047C is shown in Figure 1.

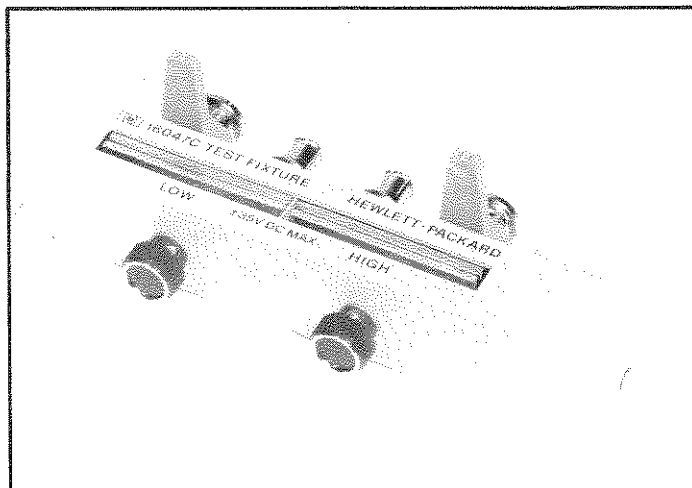


Figure 1. 16047C Test Fixture.

### 3. ZERO OFFSET ADJUSTMENT

The 16047C 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 2 is recommended.

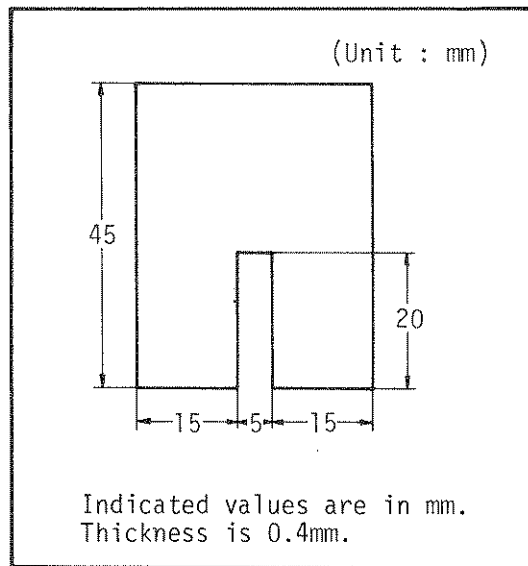


Figure 2. Shorting-bar dimensions.

#### 4. OPERATION

Setup and measurement procedure is as follows:

- a. Set the CABLE LENGTH switch (4275A, 4277A and 4192A only) on the instrument's front-panel to 0m.
- b. Connect the 16047C directly to the UNKNOWN terminals of the instrument.
- c. Perform ZERO OFFSET ADJUSTMENT as described in Section III of the instrument's operating manual.
- d. Insert the DUT into the test fixture.

## 5. MAINTENANCE

An exploded view of the 16047C — for parts identification — is shown in Figure 3. 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 3. 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.

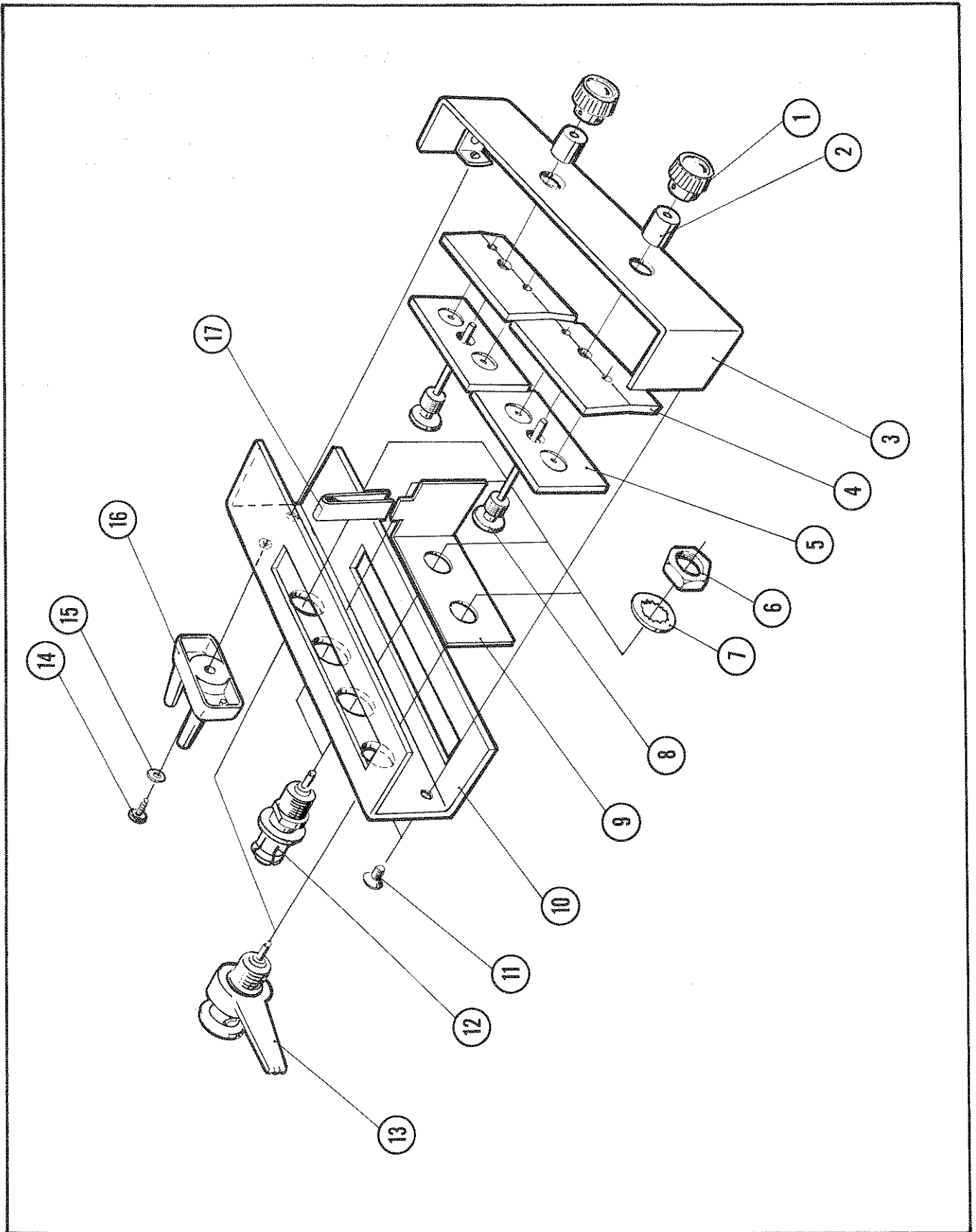


Figure 3. Parts Identification for 16047C (Sheet 1 of 2).



Reference	HP Part No.	Qty	Description
1	0370-2446	2	KNOB
2	16047-25001	2	INSULATOR
3	16047-04008	1	COVER-BOTTOM
4	16047-00610	2	CONTACT
5	16047-00609	2	CONTACT
6	2950-0043	4	NUT
7	2190-0016	4	WASHER
8	16047-23001	2	SHAFT
9	16047-00611	1	SHIELD PLATE
10	16047-04007	1	COVER-TOP
11	2360-0192	2	SCREW
12	1250-1798	2	CONNECTOR-BNC
13	16012-7122	2	CONNECTOR-BNC
14	2200-0105	1	SCREW
15	3050-0229	1	WASHER
16	16047-40000	1	STOPPER
17	16047-09001	1	INSULATOR

Figure 3. Parts Identification for 16047C (Sheet 2 of 2).



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