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Agilent 16047A TEST FIXTURE
Operation and Service Manual

Manual Change

Agilent Part No. N/A

November 2008

Change 1

Add the note, under Figure 1-3 on page 13.

NOTE

This short bar is not included in 16047A. It is prepared as option of 16047A. Option number is 16047A-701.

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Change 2

Change the part number in Table 2-1 in Page 18, and add footnote to Item 38.

Table 2-1. Replaceable Parts List

Reference Designator	Agilent Part Number	Quantity	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	16047-60016	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	2	SOCKET-RADIAL
24	16061-10031	4	CONTACT-RADIAL
25	1460-0343	4	SPRING
27	16061-10026	4	CONTACT
28	16061-10033	2	CONTACT-AXIAL
29	16061-10032	2	CONTACT-AXIAL
30	16061-50032	2	SOCKET-AXIAL
31	16047-00604	2	CONTACT
34	16047-00605	2	CONTACT
33	16047-40001	2	SOCKET
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)
38	5000-4226	1	Short Bar[1]

1 This short bar is not included in 16047A. It is prepared as option of 16047A. Option number is 16047A-701.

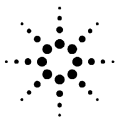
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Agilent 16047A Test Fixture

Operation and Service Manual

Third Edition

Agilent PN 16047-90011



Agilent Technologies
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December 1999

Printed in: Japan

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Component Test PGU-Kobe

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Manual Printing History

The manual's printing date and part number indicate its current edition. The printing date changes when a new edition is printed. (Minor corrections and updates that are incorporated at reprint do not cause the date to change.) The manual part number changes when extensive technical changes are incorporated.

April 1985	First Edition (part number: 16047-90000)
December 1998	Second Edition (part number: 16047-90011)
December 1999	Third Edition (part number: 16047-90011)

Safety Summary

The following general safety precautions must be observed during all phases of operation, service, and repair of this instrument. Failure to comply with these precautions or with specific WARNINGS elsewhere in this manual may impair the protection provided by the equipment. In addition it violates safety standards of design, manufacture, and intended use of the instrument.

The Agilent Technologies assumes no liability for the customer's failure to comply with these requirements.

NOTE 16047A comply with INSTALLATION CATEGORY I and POLLUTION DEGREE 2 in IEC61010-1. 16047A are INDOOR USE product.

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- Ground The Instrument

  To avoid electric shock hazard, the instrument chassis and cabinet must be connected to a safety earth ground by the supplied power cable with earth blade.

- DO NOT Operate In An Explosive Atmosphere

  Do not operate the instrument in the presence of flammable gasses or fumes. Operation of any electrical instrument in such an environment constitutes a definite safety hazard.

- Keep Away From Live Circuits

  Operating personnel must not remove instrument covers. Component replacement and internal adjustments must be made by qualified maintenance personnel. Do not replace components with the power cable connected. Under certain conditions, dangerous voltages may exist even with the power cable removed. To avoid injuries, always disconnect power and discharge circuits before touching them.

- DO NOT Service Or Adjust Alone

  Do not attempt internal service or adjustment unless another person, capable of rendering first aid and resuscitation, is present.

- DO NOT Substitute Parts Or Modify Instrument

  Because of the danger of introducing additional hazards, do not install substitute parts or perform unauthorized modifications to the instrument. Return the instrument to a Agilent Technologies Sales and Service Office for service and repair to ensure that safety features are maintained.

- Dangerous Procedure Warnings

  Warnings, such as the example below, precede potentially dangerous procedures throughout this manual. Instructions contained in the warnings must be followed.

WARNING **Dangerous voltages, capable of causing death, are presenting this instrument. Use extreme caution when handling, testing, and adjusting this instrument.**

Certification

Agilent Technologies certifies that this product met its published specifications at the time of shipment from the factory. Agilent Technologies further certifies that its calibration measurements are traceable to the United States National Institute of Standards and Technology, to the extent allowed by the Institution’s calibration facility, or to the calibration facilities of other International Standards Organization members.

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For warranty service or repair, this product must be returned to a service facility designated by Agilent Technologies. Buyer shall prepay shipping charges to Agilent Technologies and Agilent Technologies shall pay shipping charges to return the product to Buyer. However, Buyer shall pay all shipping charges, duties, and taxes for products returned to Agilent Technologies from another country.

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Limitation Of Warranty

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Assistance

Product maintenance agreements and other customer assistance agreements are available for Agilent Technologies products.

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

Safety Symbol

General definitions of safety symbols used on the instrument or in manuals are listed below.



Instruction Manual symbol: the product is marked with this symbol when it is necessary for the user to refer to the instrument manual.

WARNING **This warning sign denotes a hazard. It calls attention to a procedure, practice, condition or the like, which, if not correctly performed or adhered to, could result in injury or death to personnel.**

CAUTION This Caution sign denotes a hazard. It calls attention to a procedure, practice, condition or the like, which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the product.

NOTE Note denotes important information. It calls attention to a procedure, practice, condition or the like, which is essential to highlight.

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1 Operation

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Introduction

This chapter provides complete information of the 16047A Test Fixture.

Product Description

The 16047A Test Fixture is designed for use with 4 terminal-pair LCR Meters and Impedance Analyzers.

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 1-1) are available: (1), for measurements on axial components and (2) and (3), for measurements on radial lead components. These parts number is listed in Table 1-1. The dimensions of the contact inserts are given in Table 1-2.

Figure 1-1 **16047A Test Fixture.**

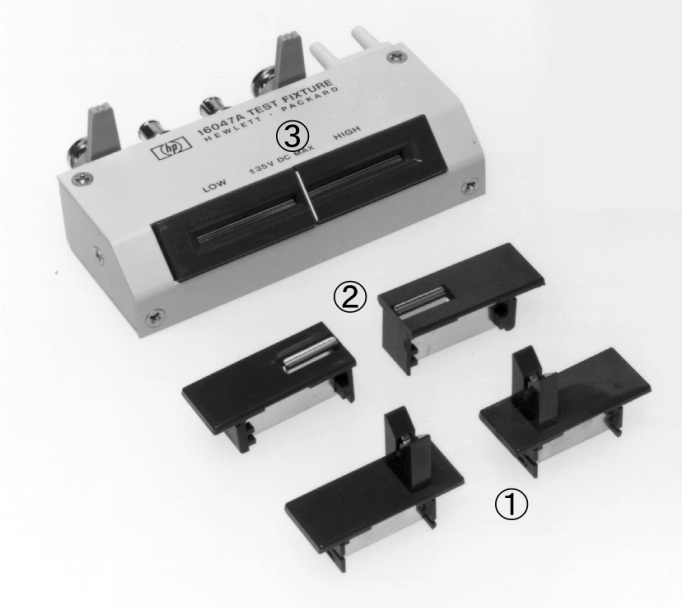


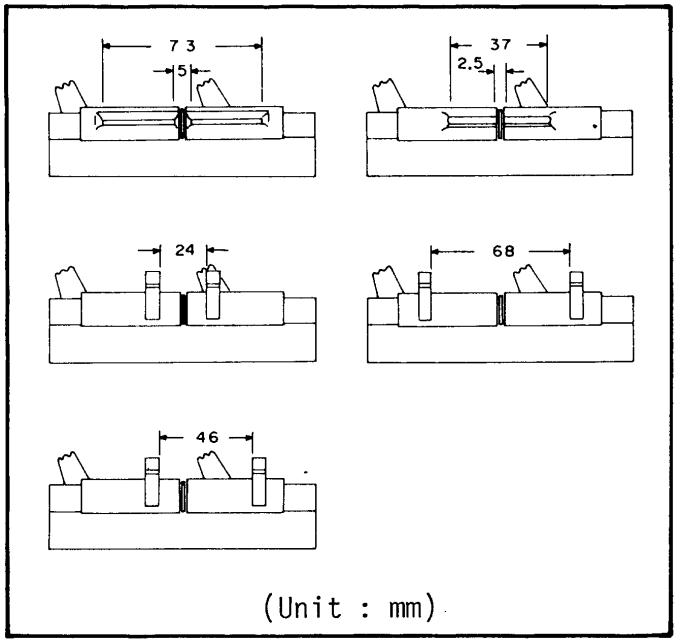
Table 1-1 **Parts number**

	Agilent Part No.
1	16061-70022
2	16047-65001
3	16061-70021

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Specifications

Table 1-2 **Specification of the 16047A**

Function:	For use with 4 terminal-pair LCR Meters and Impedance Analyzers.
Measurable components:	Axial and radial lead components.
Contact inserts:	Three kinds: one for axial lead components, one for radial lead components, and one for radial short lead components.
Dimensions of Test Fixture Contacts:	
Frequency:	≤ 13 MHz
Maximum Voltage:	± 40V peak max. (AC+DC)
Dimensions of test fixture:	124 (W) × 31 (D) × 62 (H) mm
Weight:	205 g
Safety Standards:	EN61010-1:1993 +A2:1995 IEC61010-1:1990 +A1:1992 +A2:1995 CSA C22.2 No.1010.1:1992 INSTALLATION CATEGORY I POLLUTION DEGREE 2 INDOOR USE

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Typical Characteristics

Table 1-3 **Typical characteristics**

Incremental Error at f ≥1 MHz	
Parameter reading error	Offset Value for D
$\pm 5 \times \left(\frac{f}{10}\right)^2$	

NOTE f is the measurement frequency in MHz. The incremental errors calculated from the equation in the table for measurements at frequencies above l MHz are additive.

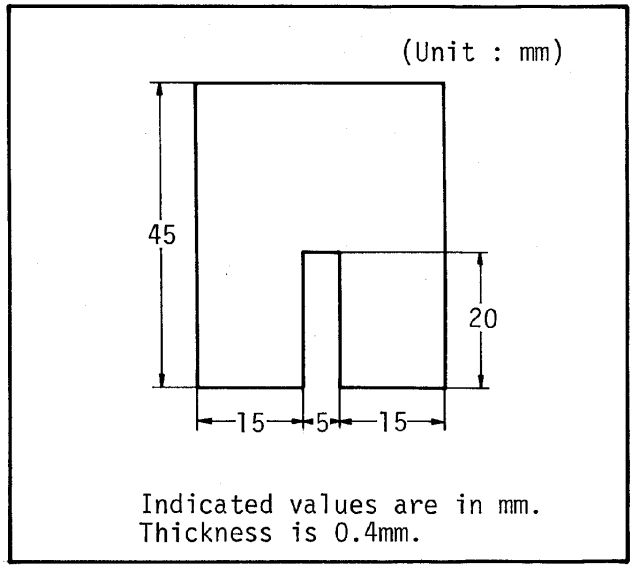
Figure 1-2 **Incremental error at frequency above 1 MHz.**

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Compensation for Fixture Residual Impedance Error

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 Open/Short compensation procedure should be performed. The procedure is given in the instrument's operating manual. For SHORT compensation a low impedance copper or phosphor bronze shorting bar such as the one shown in Figure 1-3 is recommended.

Figure 1-3 Shorting-bar dimensions.



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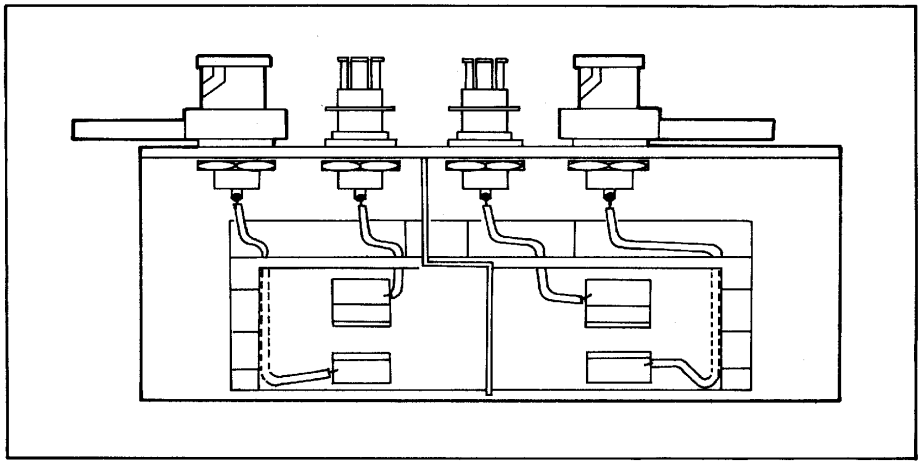
2 Service

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Maintenance

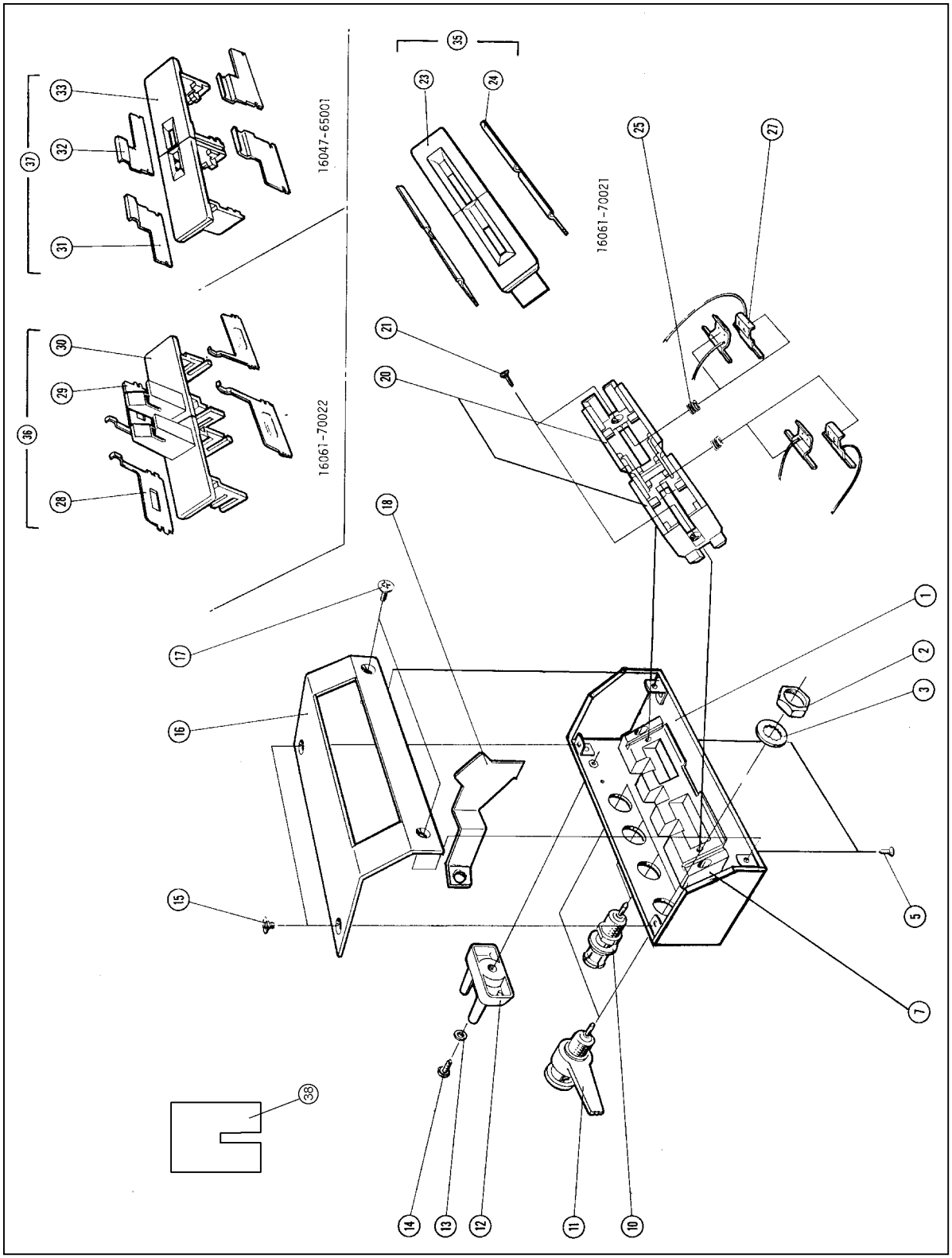
The internal wiring of the 16047A is shown in Figure 2-1 and an exploded View (for parts identification) in Table 2-2. Do not disassemble any further than shown. Maintenance consists principally of cleaning contacts and replacing worn or damaged parts. Take special care when cleaning contacts. To order parts, use the Agilent Technologies part numbers listed in Table 2-1. 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 Agilent Technologies Sales/Service Office for repair or replacement.

Figure 2-1 **Internal Wiring of 16047A.**



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Figure 2-2 Parts Identification



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Table 2-1 **Replaceable Parts List.**

Reference	Agilent 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	2	SOCKET-RADIAL
24	16061-10031	4	CONTACT-RADIAL
25	1460-0343	4	SPRING
27	16061-10026	4	CONTACT
28	16061-10033	2	CONTACT-AXIAL
29	16061-10032	2	CONTACT-AXIAL
30	16061-50032	2	SOCKET-AXIAL
31	16047-00604	2	CONTACT
32	16047-00605	2	CONTACT
33	16047-40001	2	SOCKET
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)
38	5000-4226	1	Short Bar

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