
Keysight 16065A EXT Voltage Bias Fixture

This is the Operation and Service Manual for 16065A EXT Voltage Bias Fixture

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Contents

1 Operation

Introduction

This chapter provides complete information of the 16065A Test Fixture.

Product Description

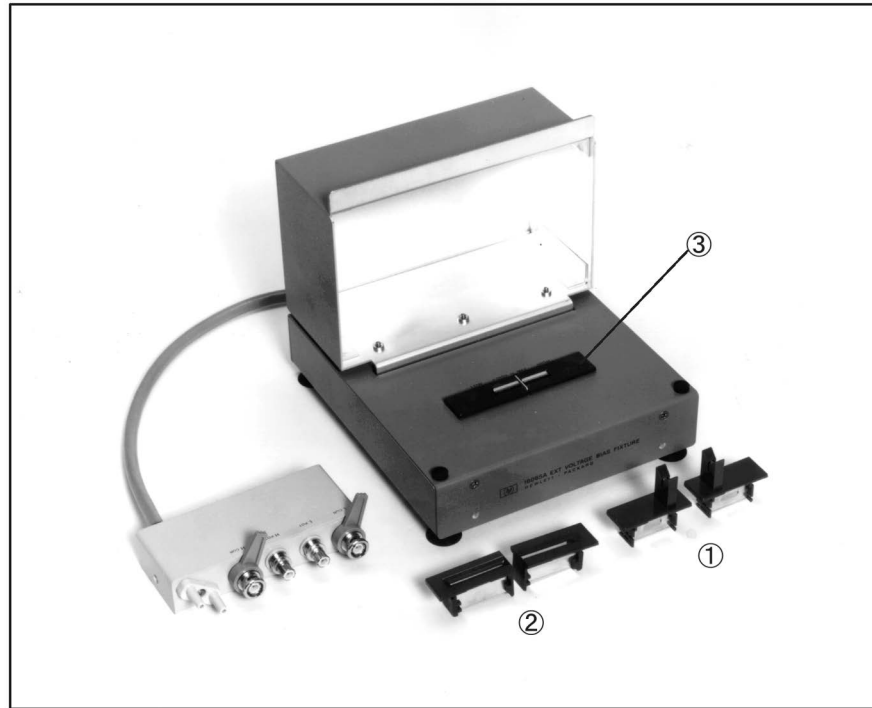
The 16065A is a four-terminal-pair type test fixture designed for use with 4 terminal-pair LCR Meters, Capacitance Meter and Impedance Analyzers.

It is intended specifically for applications in which the DUT must be biased by a dc voltage but where the measuring instrument is either not equipped with an internal dc bias source or not capable of outputting the required voltage.

Components can be biased at up to ± 200 by connecting an external voltage source to the DC BIAS INPUT BNC connector. Also the dc voltage across the DUT can be monitored at the DC BIAS MONITOR BNC connector. Refer to the DC BIAS for further information.

Three kinds of interchangeable contact inserts see **Figure 1-1** are furnished with the 16065A to allow measurement of axial-lead 1 radial-lead 2 or radial, short-lead 3 components.

Figure 1-1 16065A Test Fixture



Contents

Inspect the shipping container for damage. If the shipping container or cushioning material is damaged, it should be kept until the contents of the shipment have been checked for completeness and the 16065A has been checked mechanically and electrically. The contents of the shipment should be as listed in **Table 1-1**. If the contents are incomplete, if there is mechanical damage or defect, notify the nearest Keysight Technologies office. If the shipping container is damaged, or the cushioning material shows signs of unusual stress, notify the carrier as well as the Keysight Technologies office. Keep the shipping materials for the carrier's inspection.

Table 1-1

Contents

Description	Part Number	Qty
Test Fixture (16065A)	-	1
Electrode for Radial Lead	16061-70021	1
Electrode for Axial Lead	16061-70022	1
Electrode for Short Radial Lead	16047-65001	1
Shorting Bar	5000-4226	1
Operation and Service Manual	Option ABA ¹	1

1. The manual is furnished only when Option ABA is ordered.

Specifications

Table 1-2 Specifications of the 16065A

Function:	Four-terminal-pair type test fixture in applications requiring dc biasing from an external dc voltage source. Contact inserts for axial-lead, radial-lead, and radial, short-lead components are furnished.
Applicable Instruments	LCR meters and Impedance Analyzers with four-terminals ¹
External DC Bias:	Up to ± 200 V can be applied to the DC BIAS INPUT BNC
Input Resistance:	$100\text{ k}\Omega \pm 2\%$
Frequency Range:	50 Hz to 2 MHz
Series Capacitor:	$5.6\ \mu\text{F}$ ($560\ \Omega$ at 50 Hz)
Cable Length:	Approximately 40 cm
Dimensions:	180 (W) x 120 (H) x 200 (D) mm
Weight:	1500 g

1. When using the 16065A with the 4284A or E4980A Option 001, zener diode limits the signal level to AC max 7 V.

NOTE

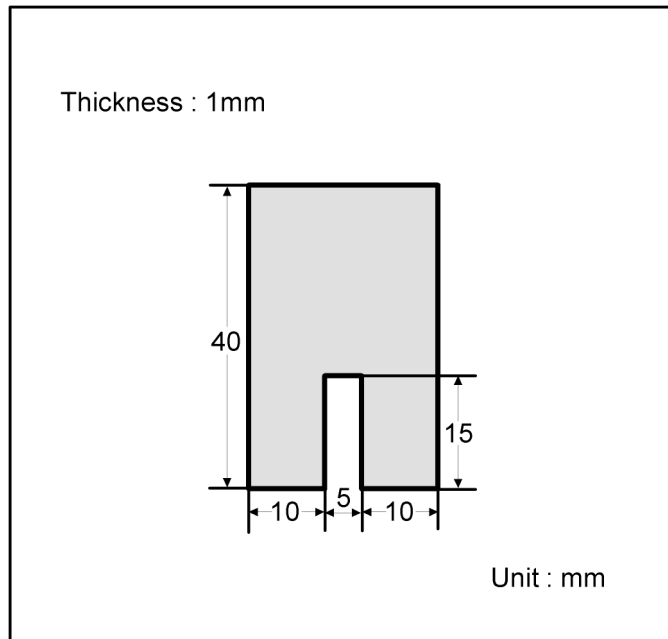
The signal level that is applied to the DUT, is affected by the series capacitor. In most cases, the applied signal level is not the same as the setting value.

Compensation for Fixture Residual Impedance Error

The 16065A 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. When performing SHORT compensation, use the furnished shorting bar. **Figure 1-2** shows the shape and dimensions of the shorting bar.

Figure 1-2

Shorting-bar Dimensions.



Operation

Step-by-step instructions on how to make a measurement with the 16065A are given below.

1. Set the measuring instrument's CABLE LENGTH to 1m.
2. Connect the 16065A directly to the measuring instrument's UNKNOWN terminals.
3. Connect the dc voltage source to the 16065A's DC BIAS INPUT BNC connector, and, if necessary, connect a voltage monitor to the DC BIAS MONITOR BNC connector. Do not turn on the voltage source.
4. Perform OPEN and SHORT compensation as described in the measuring instrument's manual.
5. Insert the DUT into the test fixture and close the test fixture lid.

CAUTION

Do not short the high and low terminals.

CAUTION

When a positive bias voltage is used, the positive terminal of electrolytic capacitors must be connected to the instrument's high terminal. When using a negative bias voltage, connect the capacitor's negative terminal to the instrument's low terminal.

6. Turn on the dc voltage source and adjust it to the desired output voltage.

NOTE

When measuring large value capacitors, allow sufficient time for the capacitor to charge to the applied voltage.

NOTE

When the 16065A's lid is opened, dc bias voltage from the external voltage source and any charge present on the DUT are shunted to ground through two paralleled 20Ω resistors.

NOTE

The test signal will appear at the DC BIAS MONITOR connector. This does not affect measurement results, however.

DC BIAS

The 16065A contains a 5.6 μF capacitor series connected between the H terminal and the DUT. Its function is to block the applied dc from flowing back into the measuring instrument. Also, because of its location this capacitor makes it impossible to bias samples from the measuring instrument's internal bias source. Thus the 16065A can not be used for applications in which the instrument's internal bias source is used. For these applications use the 16047B Test Fixture.

The external dc voltage source used for biasing samples connected to the 16065A must be capable of outputting 2mA at 200V. Also the 16065A's DC BIAS INPUT has a 100 $\text{k}\Omega$ current limiting resistance which is in series with the DUT. The time required for a capacitive component to charge through this resistance is calculated as

$$T(\text{s}) = 3.5 + (0.5 \times C)$$

Where C is the capacitance of the sample in microfarads (μF).

2 Service

Introduction

This chapter gives the service information for the 16065A EXT Voltage Bias Fixture.

Serial Number for Non-RoHS 16065A:
“MY441xxxx and below /SG441xxxx and below”

Serial Number for RoHS 16065A:
“MY442xxxx and above, SG442xxxx and above”

Maintenance

Shown are the supported parts and their respective RoHS compliant replacement support part. RoHS conversion involves with design and dimension change which result in the RoHS support part backward incompatible with non-RoHS 16065A. Special handling is needed while using the RoHS replacement part on non-RoHS 16065A. The original support part number is replaced by the respective “RoHS Compliant Upper Level Assembly Replacement Part”.

The schematic diagram of the 16065A is given in **Figure 2-3**. Component locations are shown in **Figure 2-4**.

Table 2-1 list the replaceable parts. 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 Keysight Technologies part numbers listed in the **Table 2-1**. If a faulty part is located in an assembly that cannot disassembled order the next higher assembly or return the whole device to the nearest Keysight Technologies Sales/Service office for repair or replacement.

Figure 2-1

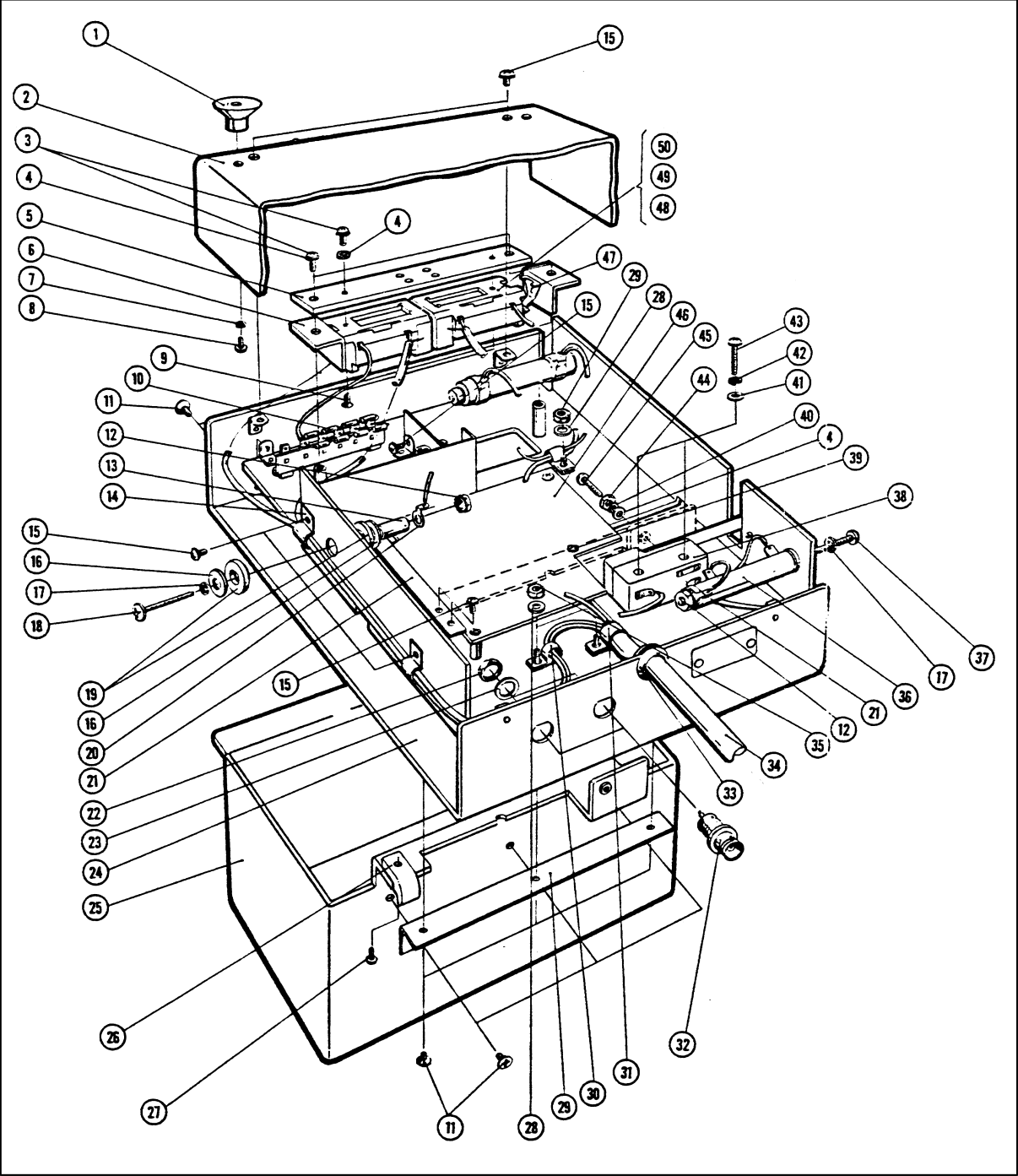


Figure 2-2

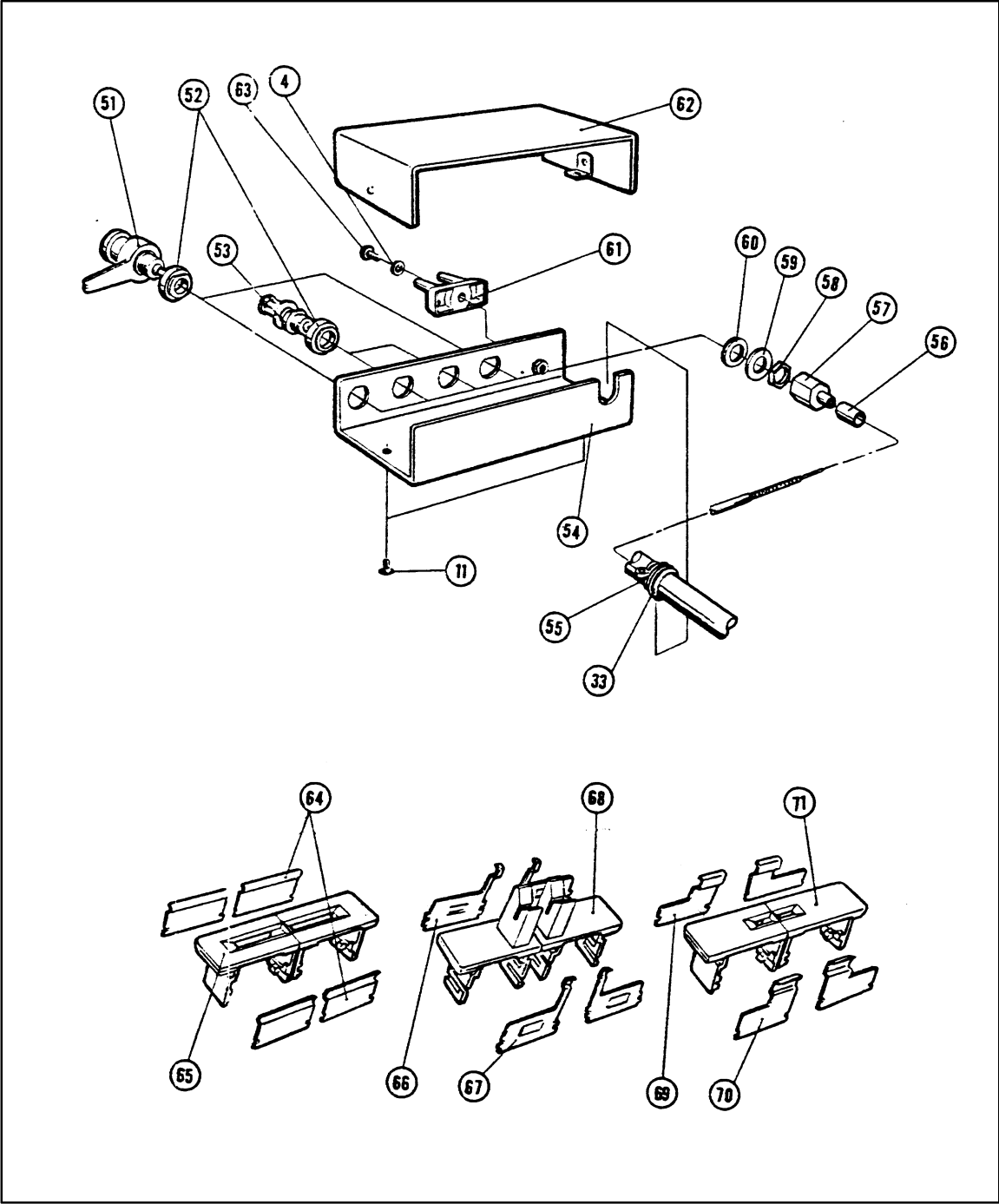


Table 2-1

Replaceable Part List

Ref /D	Non-RoHS Part Number	Qty	Description	RoHS Compliant Replacement Part	Qty
1	16015-8522 (5012-8753)	4	BUMPER FOOT	16065-60071	1
2	16047-04005	1	COVER BOTTOM	16065-60071	1
3	2200-0109	2	SCREW MACH 4-40	16065-60071	1
4	2190-0206	4	WSHR-FLAT MET	16065-60071	1
5	16047-25000 (16047-25002)	1	PLATE	16047-25002	1
6	Unassigned	2	ANGLE	16065-60071	1
7	2190-0226 (2190-0584)	4	WSHR-LK HLCL MET	16065-60071	1
8	0515-0924	4	SCREW MACH M3-0.5	16065-60071	1
9	2200-0165	2	SCREW MACH 4-40	16065-60071	1
10	1901-1065	8	DIODE POWER CR9-CR16		
11	2360-0192	10	SCREW MACH 6-32	16065-60071	1
12	2580-0006	3	NUT-HEX-W/LKWR	16065-60071	1
13	0380-0009	1	SPACER-RND.562LG	0380-0009	1
14	1400-0015	2	CLAMP CABLE	1400-0015	2
15	2360-0113	9	SCREW MACH 6-32	16065-60071	1
16	3050-0139	4	WSHR-FL MTLC	16065-60071	1
17	2190-0017	3	WSHR-LK HLCL	16065-60071	1
18	2510-0059	1	SCREW MACH 8-32	16065-60071	1
19	0340-0100 (5188-4496)	2	INSULATOR-BDG POST	5188-4496	2
20	0360-0007	2	TERM SOLDER LUG	0360-0007	2
21	16047-00606	1	CONTACT	16047-00606	1
22	2950-0001	2	NUT-HEX-DBL-CHAM	2950-0001	2
23	2190-0016	2	WSHR-LK INTL T	2190-0016	2

Table 2-1

Replaceable Part List

Ref /D	Non-RoHS Part Number	Qty	Description	RoHS Compliant Replacement Part	Qty
24	16065-04011	1	COVER TOP	16065-60071	1
25	16065-60011	1	COVER	16065-60071	1
26	16047-40003	1	CAM	16047-40003	1
27	0624-0097	1	SCREW TPG 4-40	0624-0097	1
28	3050-0066	3	WSHR-FL MTLC	16065-60071	1
29	16047-09000	1	HINGE	16065-60071	1
30	1400-0053	2	CLAMP CABLE	1400-0053	2
31	1400-0017	1	CLAMP CABLE	1400-0017	1
32	1250-0118	2	CONNECTOR RF BNC	1250-0118	2
33	0400-0011	2	GROMMET ROUND	0400-0011	2
34	*	1	CABLE-UNSHIELDED	16065-60071	1
35	2420-0006	3	NUT-HEX-W/LKWR	16065-60071	1
36	0811-1156	2	RESISTOR 20Ω 5% 20W	16065-60071	1
37	2510-0136	2	SCREW MACH 8-32	16065-60071	1
38	3101-0301	1	SWITCH SENSITI-E	3101-0301	1
39	2200-0103	4	SCREW-MACH 4-40	16065-60071	1
40	2190-0108 (2190-0584)	1	WSHR-LK HLCL	16065-60071	1
41	3050-0010	4	WSHR-FL MTLC	16065-60071	1
42	2190-0918	2	WSHR-LK HLCL	16065-60071	1
43	2360-0209	2	SCREW MACH 6-32	16065-60071	1
44	2260-0001	1	NUT-HEX-DBL-CHAM	16065-60071	1
45	2200-0147	1	SCREW MACH 4-0	16065-60071	1
46	16065-66501 (16065-66502)	1	PC BOARD ASSY DC-CUT	16065-60071	1
47	16061-10027	2	SPRING-LEAF		
48	1460-0343	4	SPRING CPRSN-CYL	1460-0343	4

Table 2-1

Replaceable Part List

Ref /D	Non-RoHS Part Number	Qty	Description	RoHS Compliant Replacement Part	Qty
49	16061-10026	4	CONTACT	16061-10026	4
50	16047-40004 (16061-50024)	2	SOCKET	16061-50024	2
51	*	2	BNC-ASSY	16065-60071	1
52	*	4	INSULATOR	16065-60071	1
53	*	2	CONNECTOR BNC	16065-60071	1
54	*	1	CO-ER-BOTTOM	16065-60071	1
55	1400-0719 (1400-3284)	2	CABLE TIE	1400-3284	2
56	*	4	SLEEVE-METAL	16065-60071	1
57	*	4	NUT	16065-60071	1
58	*	4	NUT-HEX-DBL-CHAM	16065-60071	1
59	*	4	WSHR-FL MTLC	16065-60071	1
60	*	4	WSHR-FL NM	16065-60071	1
61	16047-40000	1	STOPPER		
62	16065-04012	1	COVER TOP	16065-60071	1
63	2200-0103	1	SCREW MACH 4-40		
64	16061-10031	4	CONTACT RADIAL	16061-10031	4
65	16061-50031	2	SOCKET RADIAL	16061-50031	2
66	16061-10032	2	CONTACT AXIAL	16061-10032	2
67	16061-10033	2	CONTACT AXIAL	16061-10033	2
68	16061-50032	2	SOCKET AXIAL	16061-50032	2
69	16047-00605	2	CONTACT AXIAL	16047-00605	2
70	16047-00604	2	CONTACT AXIAL	16047-00604	2
71	16047-40001	2	SOCKET AXIAL	16047-40001	2
	16065-60200	1	CABLE ASSY with UNKNOWN BOX	16065-60271	1

Table 2-1

Replaceable Part List

Ref /D	Non-RoHS Part Number	Qty	Description	RoHS Compliant Replacement Part	Qty
	16065-60100	1	TEST FIXTURE excluding LID and COVER BOTTOM	16065-60171	1
	16065-60001	1	TEST FIXTURE (1 thru 63)	16065-60071	1

* NOT SEPARATELY REPLACEABLE. ORDER 16065-60200 (16065-60271).

Figure 2-3

16065A Schematic Diagram

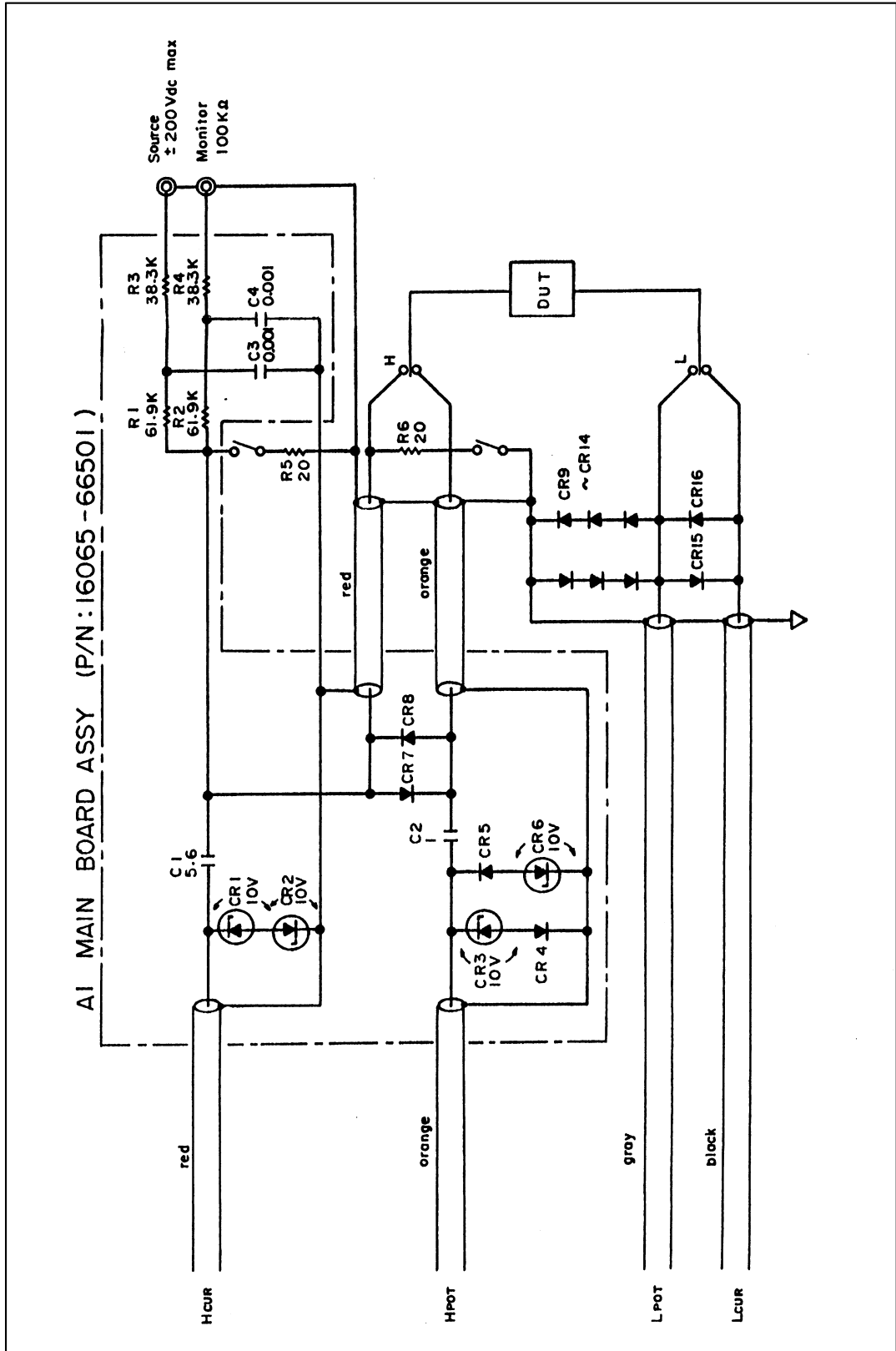
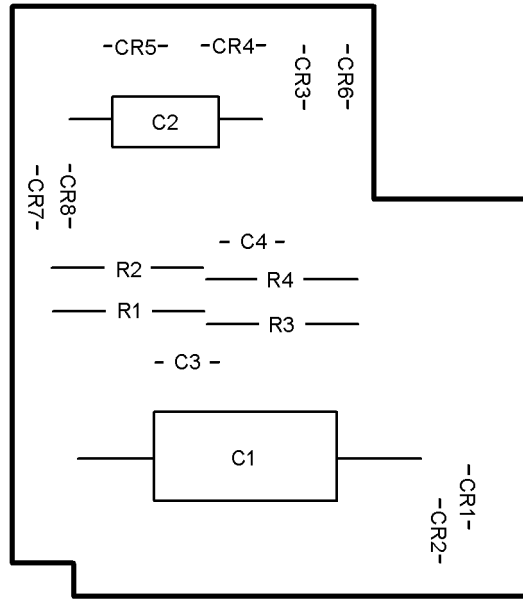


Figure 2-4

A1 Main Board Assembly Component Location



Service
Maintenance

This information is subject to change without notice.

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