

HP 12900A
Maintenance and Service
Accessory Kit
service manual



HEWLETT-PACKARD COMPANY
11000 WOLFE ROAD, CUPERTINO, CALIFORNIA, 95014

PART NO. 12900-90001
MICROFICHE PART NO. 12900-90002

PRINTED: OCT 1976
Printed in U.S.A.

NOTICE

The information contained in this document is subject to change without notice.

HEWLETT-PACKARD MAKES NO WARRANTY OF ANY KIND WITH REGARD TO THIS MATERIAL, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Hewlett-Packard shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance or use of this material.

This document contains proprietary information which is protected by copyright. All rights are reserved. No part of this document may be photocopied or reproduced without the prior written consent of Hewlett-Packard Company.

1. INTRODUCTION

This manual describes the contents and use of standard and optional items contained in the Hewlett-Packard 12900A Maintenance and Service Accessory Kit for use by customers during maintenance activity on the HP 2100A/S Computers.

2. STANDARD KIT

The standard kit contains two card extenders, four extension cables, a memory current sense cable, and a lamp replacement tool. (Refer to table 1).

3. CARD EXTENDERS

Two card extenders allow printed circuit cards in the card cage to be extended for troubleshooting. Card extender, part no. 02116-63216, extends the card cage cards; card extender, part no. 02100-60049, extends the power supply cards.

4. EXTENSION CABLES

Three types of extension cables are supplied with the kit. These extension cables allow cards that have a cable connected to their 48-pin or 50-pin connectors to be used with a card extender. Two extension cables, part no. 02100-60066, permit extension of the memory section inhibit driver, inhibit driver load, or data control cards. Extension cable, part no. 02116-63251, permits extension of the memory section X-Y driver/switch or sense amplifier cards. Extension cable, part no. 02115-6047, allows extension of the I/O section cards; this cable permits connection to the I/O interface cable coming from the I/O device.

5. MEMORY CURRENT SENSE CABLE

The memory current sense cable, part no. 02100-60067, permits monitoring (with a current probe) the individual X and Y driver/switch currents between the X-Y driver/switch card and the sense amplifier card.

6. LAMP REPLACEMENT TOOL

The lamp extractor, part no. 8710-1079, aids in replacement of the indicator lamps on the operator panel and controller panel of the 2100A/S Computer.

7. DOCUMENTATION SUPPLIED

The following documentation is supplied with the standard kit:

- a. *HP 12900A Maintenance and Service Accessory Kit Operating and Service Manual*, part no. 12900-90001.
- b. *HP 2100S Programmable Systems Computer Diagnostics Manual*, part no. 02100-90164.
- c. *A Pocket Guide to the 2100 Computer*, part no. 5951-4423.

8. OPTION 001

Option 001 (refer to table 1) consists of replacement cards, cable assemblies, diagnostic manuals and tapes, and other small replacement parts. Most items are contained in a portable case. (Refer to figure 1.) When Option 001 is ordered in addition to the 12900A standard kit, the standard kit is contained in the Option 001 transit case. Some extra space is provided in the kit for additional small items needed for repair and maintenance. In the event that the case or packaging foam should be damaged, replacements may be ordered separately.

9. REPLACEMENT CARDS

Sixteen replacement cards are supplied with the kit. Care should be exercised when handling all cards, in particular the core stack assembly, part no. 5060-8331.

CAUTION

Finger pressure on the core stack may damage it permanently.

10. CABLE ASSEMBLIES

Two cable assemblies, part no. 02100-60018, are included. Each permits interconnection of the Inhibit Driver Card A105, Inhibit Driver Load Card A106 and Inhibit Driver Card A108, or interconnection of Inhibit Driver Card A105, Data Control Card A107, and Inhibit Driver Card A108.

11. CONNECTOR ASSEMBLIES

Connector assemblies, part no. 02100-60052 and 02100-60054, permit interconnection of X-Y Driver/Switch Cards and 8K Stack Sense Amplifier Cards.

12. SMALL PARTS

Miscellaneous small parts used for repair and maintenance include fuses, lamps, front panel switches and key tops, wire jumpers, DC diode pins and jumper pins.

15. REPLACEMENT PARTS

This section contains a list of information for ordering replacement parts. Table 1 lists parts by reference designation. It also provides:

- a. HP stock number
- b. Designation of each item as part of standard kit or Option 001
- c. A general description
- d. Typical manufacturer of the part expressed as a five digit code. (A list of manufacturers and their code numbers appear in table.)
- e. Manufacturer's part number
- f. Total quantities used.

13. DIAGNOSTIC MANUALS AND TAPES

Supplied with Option 001 are *HP 2000 Computer Systems Diagnostic Configurator Reference Manual*, and twelve individual diagnostic reference manuals. These are used in conjunction with absolute binary paper tapes that allow complete checkout of the CPU and memory as well as certain optional features and accessories.

14. OPTION 002

Option 002 is an Underwriters Laboratory approved power supply, part no. 02100-60053 and the *Power Supply Operating and Service Manual*, part no. 5951-3038. The power supply is easily installed by the customer and is boxed separately from the standard kit or Option 001.

Table 1. HP 12900A and 12900A-001 Maintenance and Service Accessory Kit

FIG. 1 REF DESIG	HP PART NO.	STD KIT	OPT 001	DESCRIPTION	MFR CODE	MFR PART NO.	QTY
—	12900A-001			MAINTENANCE AND SERVICE ACCESSORY KIT	28480	12900A-001	1
1	9211-2445		X	* Case, Transit	24995	4246	1
—	7120-0134		X	** Tag, Serial	28480	7120-0134	11
—	7120-5480		X	** Tag, Warranty	28480	7120-5480	10
2	12900-90001	X		** 12900A Maintenance and Service Accessory Kit Operating and Service Manual	28480	12900-90001	1
	5951-4423	X		** Pocket Guide for 2100 Computer	28480	5951-4423	1
	02100-90157		X	** Diagnostic Configurator Reference Manual	28480	02100-90157	1
	02100-90218		X	** Memory Reference Instructions Diagnostic Reference Manual	28480	02100-90218	1
	02100-90211		X	** Alter-Skip Instructions Diagnostic Reference Manual	28480	02100-90211	1
	02100-90212		X	** Shift-Rotate Instructions Diagnostic Reference Manual	28480	02100-90212	1
	02100-90219		X	** Memory Diagnostic Reference Manual	28480	02100-90219	1
	02100-90214		X	** Extended Arithmetic Instructions Diagnostic Reference Manual	28480	02100-90214	1
	24320-90001		X	** 2100-21MX Floating Point Diagnostic Reference Manual	28480	24320-90001	1
	02100-90220		X	** Memory Protect Diagnostic Reference Manual	28480	02100-90220	1
	02100-90221		X	** Memory Parity Diagnostic Reference Manual	28480	02100-90221	1
	02100-90216		X	** Power Fail/Auto Restart Diagnostic Reference Manual	28480	02100-90216	1
	02100-90213		X	** I/O Instructions and Interrupt Diagnostic Reference Manual	28480	02100-90213	1
	24391-90001		X	** General Purpose Register Diagnostic Reference Manual	28480	24391-90001	1
	24322-90002		X	** DMA/DCPC Diagnostic Reference Manual	28480	24322-90002	1
3	02116-63216	X		** Extender, Card	28480	02116-63216	1
4	9222-0538		X	** Envelope, Small Foam	0002W	W-405065	1
5	02100-60049		X	*** Extender, Card	28480	02100-60049	1
6	02100-60015		X	** Panel, Front	28480	02100-60015	1
7	9220-2579		X	** Insert, Foam (Removable)	27463	9220-2579	1
8	9222-0536		X	** Envelope, Large Foam	0002W	W-41009	14
9	02100-60014		X	*** Timing and Control Card (A1)	28480	02100-60014	1
(typ)	02100-60002		X	*** ROM Control Card (A2)	28480	02100-60002	1
	02100-60004		X	*** Microinstruction Decoder 1 Card (A3)	28480	02100-60004	1
	02100-60112 ¹		X	*** Microinstruction Decoder 2 Card (A4)	28480	02100-60112	1
	02100-60001		X	*** ALU Card (A5)	28480	02100-60001	1
	02100-60003		X	*** Instruction Register Decoder Card (A6)	28480	02100-60003	1
	02100-60024		X	*** I/O Control Card (A7)	28480	02100-60024	1
	02100-60007		X	*** I/O Buffer Card (A8)	28480	02100-60007	1
	02100-600060		X	*** I/O Terminator Card (A16)	28480	02100-60060	1
	02100-60012		X	*** X-Y Driver/Switch Card (Designation depends on memory configuration): A101 for 12-32K Memory A104 for 4-32K Memory A109 for 12,24, or 32K Memory A112 for 32K Memory	28480	02100-60012	1
	02100-60008		X	*** Inhibit Driver Card (Designation depends on memory configuration): A105 for 4-8K Memory	28480	02100-60008	1

¹ MID 2, A4 Board (02100-60112), replaces old A4 board (02100-60022) on Computer Serial Prefix 1345A and above. Part no. 02100-60075 continues to be exchange board for part no. 02100-60022.

Table 1. HP 12900A and 12900A-001 Maintenance and Service Accessory Kit (Continued)

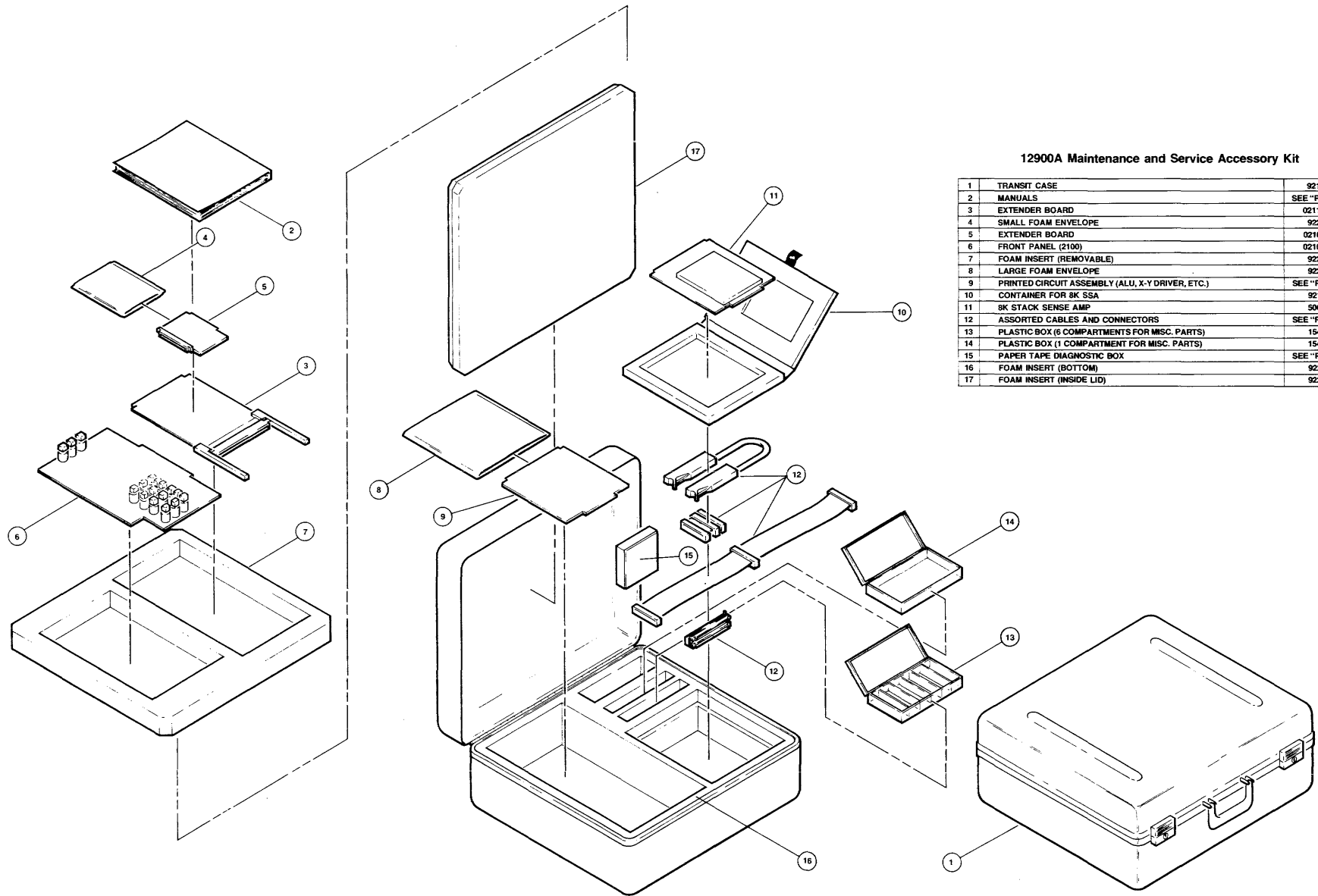
FIG. 1 REF DESIG	HP PART NO.	STD KIT	OPT 001	DESCRIPTION	MFR CODE	MFR PART NO.	QTY
9 (cont) (typ)	02100-60009		X	*** Inhibit Driver Card (Designation depends on memory configuration): A105 for 12-32K Memory A108 for 24K or 32K Memory	28480	02100-60009	1
	02100-60010		X	*** Inhibit Driver Load Card (A106)	28480	02100-60010	1
	02100-60011		X	*** Data Control Card (A107)	28480	02100-60011	1
10	9211-2446		X	** Container, 8K Stack Sense Amplifier	27463	9211-2446	1
11	5060-8331		X	*** 8K Stack Sense Amplifier (Designation depends on memory configuration): A102 for 16-32K Memory A103 for 8-32K Memory A110 for 24 or 32K Memory A111 for 32K Memory	28480	5060-8331	1
12	02100-60066	X		** Cable, Memory Extension	28480	02100-60066	2
	02100-60067	X		** Cable, Memory Current Sense	28480	02100-60067	1
	02116-63251	X		** Cable, Extension	28480	02116-63251	1
	02115-6047	X		** Cable, I/O Extension	28480	02115-6047	1
	02100-60018		X	** Cable Assembly	28480	02100-60018	2
	02100-60052		X	** Connector Assembly, Small	28480	02100-60052	1
	02100-60054		X	** Connector Assembly, Large	28480	02100-60054	1
13	1540-0393		X	** Container, Plastic (6 compartments)	86536	A-203	
	2140-0364		X	*** Lamp	28480	2140-0364	10
	3101-0526		X	*** Key Top	24229	Type K	5
	8710-1079	X		*** Extractor, Lamp	91929	15PA19	1
14	1540-0392		X	** Container, Plastic (1 compartment)	86536	A-206	1
	2110-0001		X	*** Fuse, 1A, 250V, NB	75915	312001	5
	2110-0002		X	*** Fuse, 2A, 250V, NB	75915	312002	5
	2110-0004		X	*** Fuse, 0.25A, 250V, NB	75915	3AC/CAT.312.250	5
	2110-0083		X	*** Fuse, 2.5A, 250V, NB	28480	2110-0083	5
	2110-0249		X	*** Fuse, 12A, 250V, NB	75915	314012	5
	2110-0451		X	*** Fuse, 6A, 250V, NB	75915	314006	5
	3101-1531		X	*** Switch, Reed	28480	3101-1531	5
	8159-0005		X	*** Wire, Jumper	0073G	L-2007-1	10
	0960-0412		X	*** Pin, DC Diode	00779	350661-1	5
	0960-0411		X	*** Pin, Jumper	00779	350662-1	5
15	24296-60001		X	** Binary Configurator Tape	28480	24296-60001	1
	24396-12001		X	** Multiple File Binary Tape I	28480	24396-12001	1
	24396-12002		X	** Multiple File Binary Tape II	28480	24396-12002	1
	24396-12003		X	** Multiple File Binary Tape III	28480	24396-12003	1
16	9220-2580		X	** Insert, Foam (Bottom)	27463	9220-2580	1
17	9220-2581		X	** Insert, Foam (Inside Lid)	27463	9220-2581	1
—	02100-90164	X		* Diagrams Manual, Model 2100S Program- mable Systems Computer	28480	02100-90164	1

Table 2. Code List of Manufacturers

The following code numbers are from the Federal Supply Code for Manufacturers Cataloging Handbooks H4-1 and H4-2, and their latest supplements.					
CODE NO.	MANUFACTURER	ADDRESS	CODE NO.	MANUFACTURER	ADDRESS
0002W	Wescorp Div. Dal Ind., Inc.	Los Altos, Ca.	27463	Tharco Precision, Inc.	Oakland, Ca.
00073	Gettig Engr. and Mfg Co., Inc.	Spring Mills, Pa.	28480	Hewlett-Packard Co.	Palo Alto, Ca.
00779	Amp, Inc.	Harrisburg, Pa.	75915	Littlefuse, Inc.	Des Plains, Il.
24229	George Risk Industries	Columbus, Ne.	86536	Plastic, Inc.	Philadelphia, Pa.
24995	Environmental Container Systems	Palo Alto, Ca.	91929	Honeywell, Inc. Microswitch Div.	Freeport, Il.

12900A Maintenance and Service Accessory Kit

1	TRANSIT CASE	9211-2445
2	MANUALS	SEE "PARTS LIST"
3	EXTENDER BOARD	02116-63216
4	SMALL FOAM ENVELOPE	9222-0538
5	EXTENDER BOARD	02100-60049
6	FRONT PANEL (2100)	02100-60015
7	FOAM INSERT (REMOVABLE)	9220-2579
8	LARGE FOAM ENVELOPE	9222-0536
9	PRINTED CIRCUIT ASSEMBLY (ALU, X-Y DRIVER, ETC.)	SEE "PARTS LIST"
10	CONTAINER FOR 8K SSA	9211-2446
11	8K STACK SENSE AMP	5060-8331
12	ASSORTED CABLES AND CONNECTORS	SEE "PARTS LIST"
13	PLASTIC BOX (6 COMPARTMENTS FOR MISC. PARTS)	1540-0393
14	PLASTIC BOX (1 COMPARTMENT FOR MISC. PARTS)	1540-0392
15	PAPER TAPE DIAGNOSTIC BOX	SEE "PARTS LIST"
16	FOAM INSERT (BOTTOM)	9220-2580
17	FOAM INSERT (INSIDE LID)	9220-2581



12900-01

Figure 1. Maintenance and Service Accessory Kit Exploded View