

HP 3000 Computer Systems

**SERIES 64A/B and
68A/B/C to SERIES 70**

Hardware Upgrade Installation Manual



19447 PRUNERIDGE AVENUE, CUPERTINO, CA 95014

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Effective Pages	Date
all.....	Apr 1986

PRINTING HISTORY

New editions are complete revisions of the manual. Update packages, which are issued between editions, contain additional and replacement pages to be merged into the manual by the customer. The dates on the title page change only when a new edition or a new update is published. No information is incorporated into a reprinting unless it appears as a prior update; the edition does not change when an update is incorporated.

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First Edition Apr 1986

HARDWARE UPGRADE INSTALLATION INFORMATION

SECTION

1

INTRODUCTION

The HP 3000 Series 64A/B and 68A/B/C Upgrade Installation Manual contains procedures for upgrading an HP 3000 Series 64A/B (HP Upgrade Product No. 30443A/B), Series 68A (HP Upgrade Product No. 30444A) and 68B/C (HP Upgrade Product No. 30444B) Computer System to a Series 70 Computer System. It is intended for Hewlett-Packard Customer Engineers (CEs) trained on the computer. Refer to the Series 64/68/70 Computer Installation Manual (P/N 30140-90007) for additional installation information.

This manual also describes the dismantling and disposition of the existing computer.

NOTE

Minimum MPE v.u.f. and microcode revision numbers must be met for Series 70 operation. The Series 70 must operate on MPE V/E UA-Mit (G.02.A0), which contains microcode revision CX 2604A, or any greater MPE v.u.f.

NOTE

The DCU PCA in the Series 70 must have a minimum ROM Date Code of C.2601 for operation. Refer to DCU UPGRADE INFORMATION in this manual for more information.

UPGRADE INSTALLATION PROCEDURES

The HP 3000 Series 64A/B and 68A/B/C field upgrade kit for HP Product Numbers 30443A/B and HP 30444A/B include the following:

- Series 64A/B and 68A/B/C Upgrade Installation Manual (P/N 30163-90001).
- Cache Controller (CACX) PCA, P/N 30140-60172.
- Cache Memory Array (CMA) PCA, P/N 30140-60173.
- Cache Frontplane PCA, P/N 30140-60174.
- One two-connector flat ribbon cable, P/N 30140-60028.
- FLD flexible disc (HP 150), P/N 32342-13403 (Date/Rev Code is B2610).
- FLD flexible disc (HP 2647F), P/N 32342-13401 (Date/Rev Code is B2610).
- DUS magnetic tape, P/N 32242A (Date Code is 2602).
- Series 70 ID Plate, P/N 30163-40001.
- Bezel, P/N 30140-40007.
- System Upgrade Labels (one each for applicable product number).
- Series 64A/68A to Series 70 Power Supply Adjustment Sheet.

To prepare the existing system for upgrade, verify that the System Operator has backed-up all files, users are logged off, and an MPE system shutdown was performed before powering down system.

To upgrade the existing system, proceed as follows:

1. Set Main POWER Switch to OFF. (For the 64A/68A, it is located on the Power Control Module as shown in Figure 1-1, and for the 64B/68B/68C it is located on the AC Unit as shown in Figure 1-2, both in lower rear of I/O Bay.)
2. Remove rear panels of CPU Bay.

CAUTION

ESD protection requires the use of a grounded wrist strap when handling PCAs. Failure to use the wrist strap may result in PCA component damage.

3. Disconnect the three-connector flat ribbon cable (P/N 30140-60029) that connects the J5 edge connectors of CAC, CMA, and CBI5 PCAs. (See Figure 1-3 for illustration of CAC, CMA, and CBI5 PCA location.) Discard this three-connector flat ribbon cable.

4. Remove the CAC PCA (P/N 30140-60009 or P/N 30140-69009) from slot 17 and the CMA PCA (P/N 30140-60010 or P/N 30140-69010) from slot 18 of CPU card cage. (See Figure 1-3.)
5. Insert the new CACX PCA (P/N 30140-60172) into slot 17 and the new CMAX PCA (P/N 30140-60173) into slot 18 of CPU card cage. (See Figure 1-3.)
6. Connect the two-connector flat ribbon cable (P/N 30140-60028) to the J5 edge connectors of CMAX and CBI5 PCAs. (See Figure 1-3.)
7. Connect Cache Frontplane PCA (P/N 30140-60174) to the J4 edge connectors of CACX and CMAX PCAs. (See Figure 1-3.)
8. Ensure all card cage fans and filters are dust-free and in normal operating condition. Replace as necessary.
9. Perform all steps on the 64A/68A to Series 70 Power Supply Adjustment Sheet (included in HP Product Numbers 30443A and 30444A, only). The power supply adjustment procedures on this sheet are applicable only if the computer system was originally a Series 64A or Series 68A.

NOTE

This Power Supply Adjustment Sheet doesn't apply to Series 64B, 68B, and 68C system power supplies because they cannot be field adjusted.

10. Using standard field return shipping procedures, return the CAC PCA and CMA PCA (specifying the sales order number of the upgrade on the return shipping paperwork) to:

Hewlett-Packard
Support Materials Roseville (SMR)
3645 Cincinnati Avenue
Rocklin, CA 95677

or for Europe, return to:

HP - France S.A.
Computer Support Grenoble (CSG)
Site Industriel de Grenoble
5, Avenue Raymond Chanès
F - 38320 Eybens, France

11. Ensure that the correct DCU PCA is installed in the system. (Refer to Service Note 32460A-17B.)

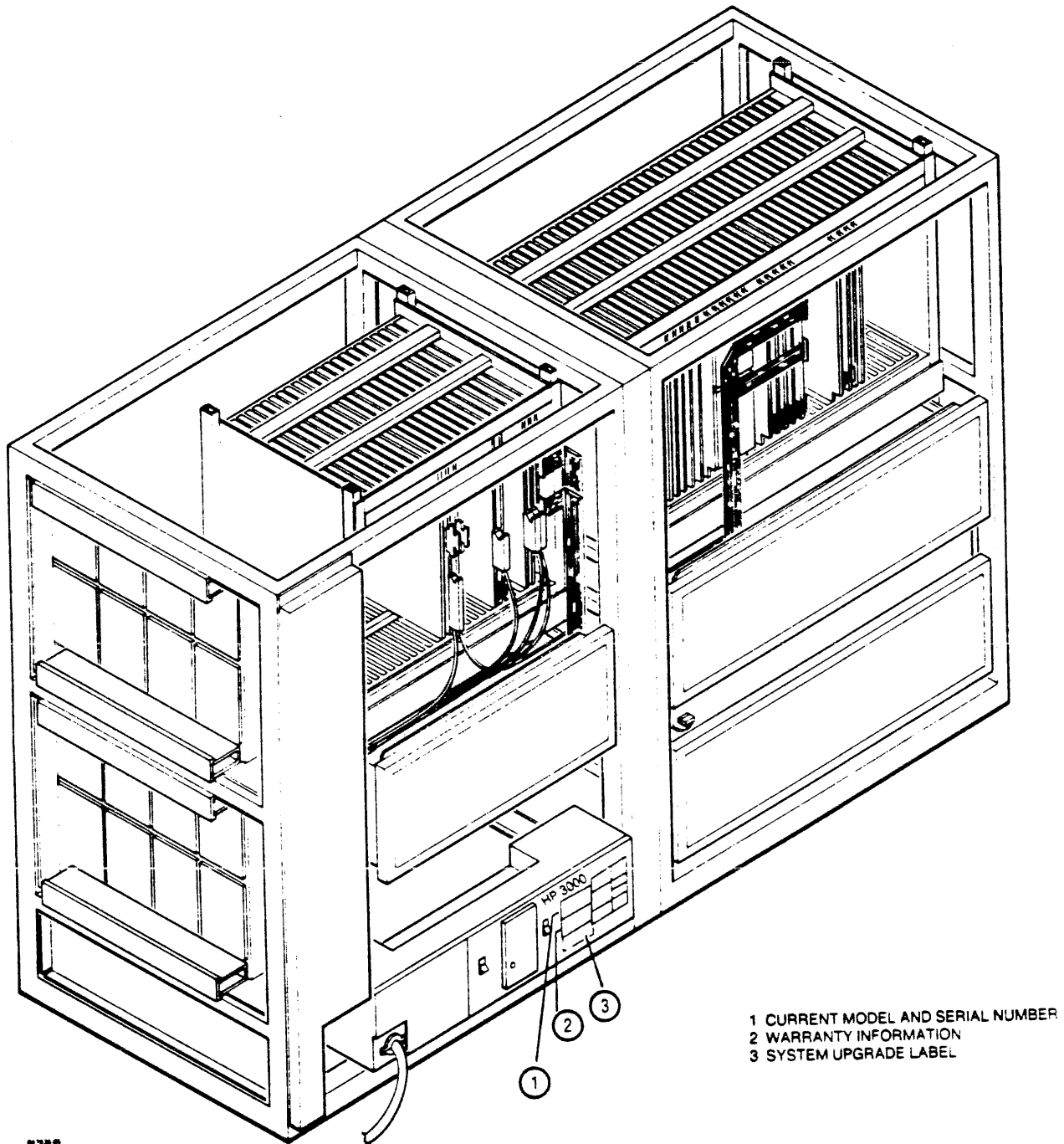


Figure 1-1. SPU Rear View (HP 32460A/68A), Panels Removed.

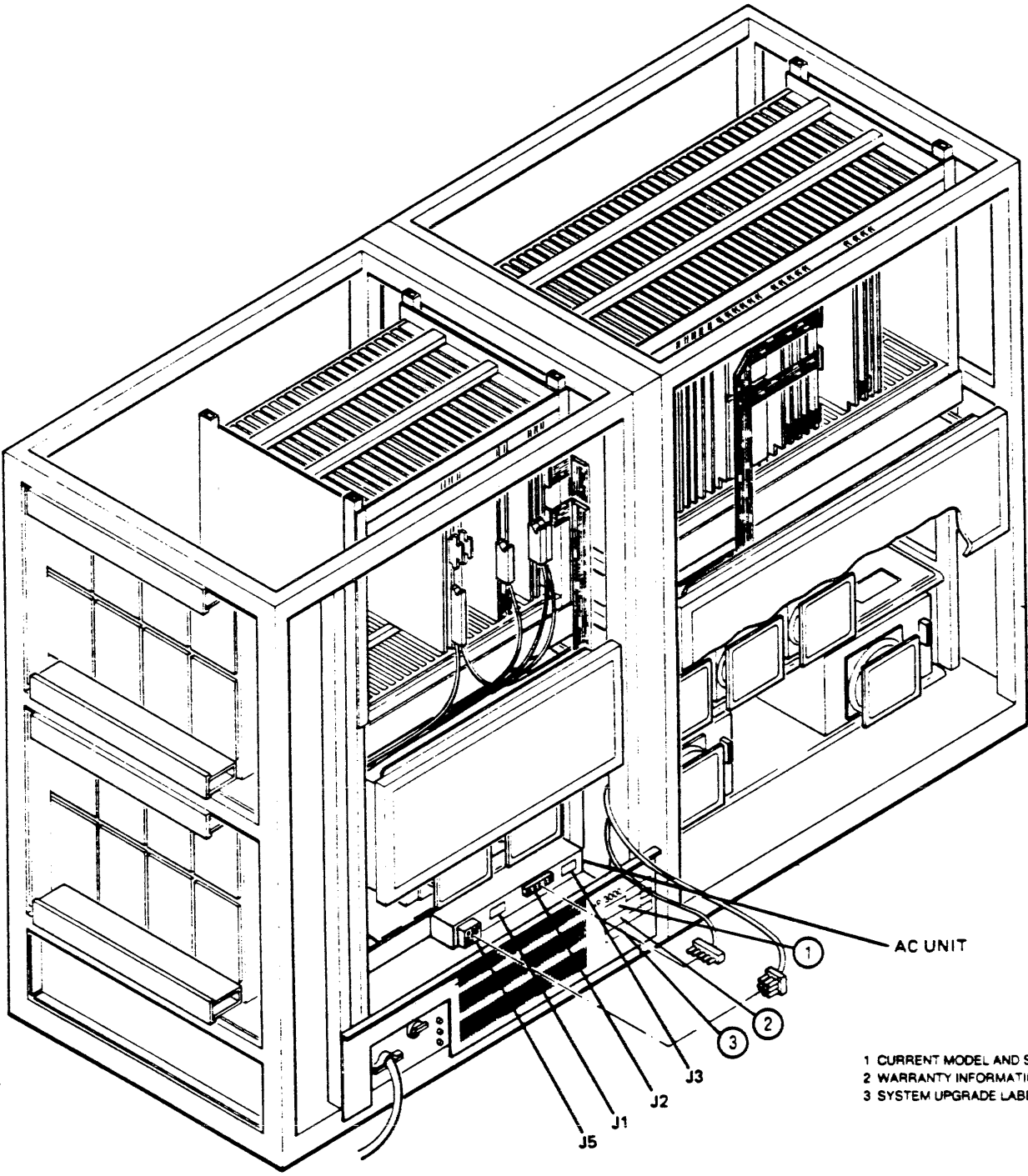


Figure 1-2. SPU Rear View (HP 32460B/32468B/32468C), Panels Removed.

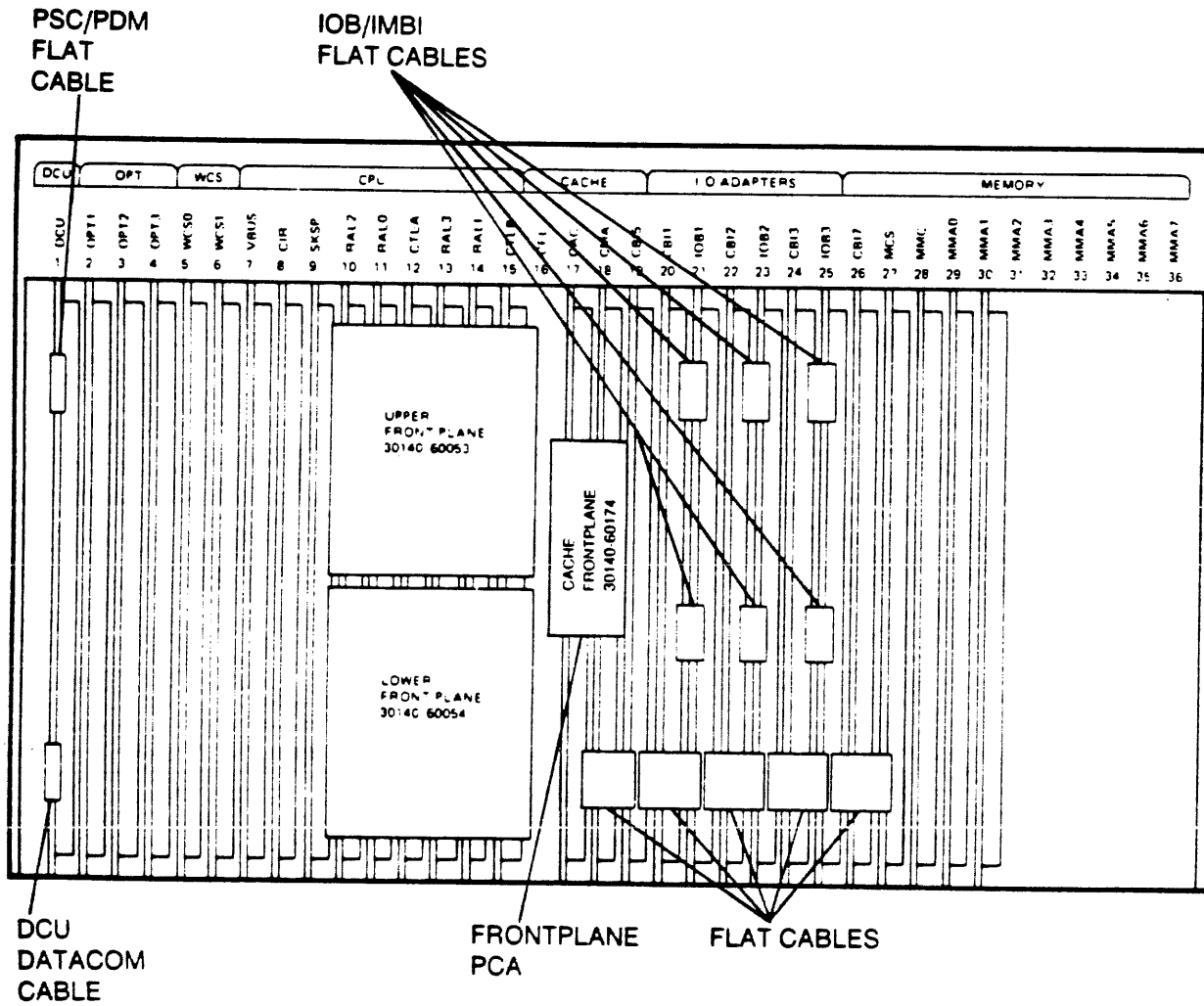


Figure 1-3. CPU Card Cage Assignment, Rear View.

NAMEPLATE INSTALLATION

Install the Series 70 nameplate assembly, which includes the Series 70 ID Plate (P/N 30163-40001) and bezel (P/N 30140-40007), as follows:

1. Remove front panels of CPU Bay.
2. Remove the two gray flat ribbon cables (wrapped along the top and side frame pieces with cable guides) that are connected to the System Status Display Panel (SSDP) from their guides along the bay frames to obtain more cable slack.
3. Remove the two screws (located on the two metal flaps at the bottom of the SSDP assembly) which hold the SSDP assembly to the bay frame.
4. Rotate the SSDP assembly (while keeping the SSDP assembly underneath the top) upwards and towards the back of the system until the entire assembly is resting on the RFI screen, underneath the top.
5. Remove the left side of the SSDP assembly out from underneath the top, and carefully work the rest of the assembly out until it is clear of the CPU Bay frame.
6. Disconnect the three cable connections to the SSDP.

NOTE

For the Series 64A/68A, these cables are a 16-pin flat cable, a 20-pin flat cable, and a nine-pin mate-n-lock connector.

For the Series 64B/68B/68C, these cables are a 16-pin flat cable, a 20-pin flat cable, and a four-pin mate-n-lock connector.

7. Remove the plastic "Series 64" or "Series 68" nameplate assembly portion of the SSDP assembly by removing the five round-head screws, then discard the original nameplate assembly.
8. Connect the new bezel (P/N 30140-40007) to the PC portion of the SSDP assembly by using the five screws, making sure the status label showing through bezel window is centered.
9. Attach Series 70 ID Plate (P/N 30163-40001) by removing the tape and inserting guides into bezel holes to form the complete SSDP assembly.
10. Reconnect the three cable connections to SSDP. (Refer to NOTE in Step 6.)
11. Reconnect SSDP assembly by reversing this procedure, then place the two gray flat ribbon cables back into their cable guides along the top and side bay frames.
12. Replace front and rear panels of CPU Bay.

LABEL INSTALLATION

The label which identifies the system as an upgrade is placed on the back of the first I/O Bay as follows:

1. Locate the existing printed label for your upgraded Series 64 or Series 68 Computer System marked "HP 3000 Series 64" or "HP 3000 Series 68", on the rear of the first I/O Bay. (For Series 64A/68A it is located to the right of circuit breaker CB2 on the Power Control Module as shown in Figure 1-1, and for Series 64B/68B/68C it is located to the right of the AC input power cord and ON/OFF Switch, as shown in Figure 1-2.)
2. Attach the appropriate system upgrade label that identifies which Series 70 product number the system is upgraded to (marked as Product Number 30443A, 30443B, 30444A, or 30444B). This label must be attached directly underneath the existing two labels that reference (1) the current model and serial number, and (2) the warranty information. (See Figure 1-1 or Figure 1-2, as applicable.)

NOTE

Ensure that the system upgrade label covers no existing labels or markings.

SYSTEM VERIFICATION

Perform system verification as follows:

1. Set Main POWER Switch, located in lower rear of I/O Bay, to ON.
2. Run DCU Self Test.
3. Run Fault Locating Diagnostics (FLDs) with Date/Rev Code B2610.
4. Run the appropriate diagnostics for Series 70, using the Diagnostic and Utility System (DUS) tape.
5. Boot-up MPE. (Refer to HP 3000 Fundamental Operating Software Installation Manual, P/N 32033-90046.)

Refer to the Series 64/68/70 CE Handbook (P/N 30140-90006) or to the Diagnostic Manual Set, Volume 1, (P/N 32342-60001) for additional information on the above tests.

DCU UPGRADE INFORMATION

The Series 70 DCU PCA (P/N 30140-60001) must have a minimum ROM Date Code of 2601. The DCU Exchange PCA (P/N 30140-69179) includes the minimum ROM Date Code of 2601. If necessary, refer to Section IV of the Series 64/68/70 CE Handbook (P/N 30140-90006) for DCU or MPL Error Code information.

READER COMMENT SHEET

HP 3000 Computer Systems

SERIES 64A/B and 68A/B/C to SERIES 70
Hardware Upgrade Installation Manual

30163-90001 April 1986

We welcome your evaluation of this manual. Your comments and suggestions help us to improve our publications. Please explain your answers under Comments, below, and use additional pages if necessary.

Is this manual technically accurate?

Yes No

Are the concepts and wording easy to understand?

Yes No

Is the format of this manual convenient in size, arrangement, and readability?

Yes No

Comments:

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FOLD

SERIES 64A / 68A TO SERIES 70 POWER SUPPLY ADJUSTMENT SHEET

When installing the 30443A or 30444A Series 70 upgrade products, all power supply voltage and current limit specifications must be checked. If these measurements do not fall within the specified ranges, the out-of-range supply must be readjusted.

The adjustment specifications and procedures for the Series 70 are identical to the Series 64A / 68A except for the items listed below. The specifications and procedures for the Series 64A/ 68A are located in the Series 64 C.E. handbook (P/N 30140-90006).

When performing the adjustment procedures in the Series 64 C.E. Handbook the following exception for power supplies 2 and 3 must be adhered to for the Series 70:

- Set power supply 2 and power supply 3 current limits to their maximum values.
- Measuring the current limit values at the IREF terminals, lower the current limit of each supply by 7.00mv. Thus, the current limit for each supply should read: maximum current limit minus 7.00 mv.
- Perform the voltage adjustment procedures for power supplies 2 and 3 exactly as stated in the Series 64 C.E. Handbook.
- Measure the voltage across the IREF and IMON terminals on power supply 2. The difference between IREF and IMON must be 7.00mv or greater ($IREF-IMON \geq 7.00mv$). If this difference is less than 7.00mv, raise the current limit of power supply 2 (IREF) until the IREF-IMON difference measures 7.00 mv.

32460B-13C

SERVICE NOTE

MODEL(S) AFFECTED

All HP3000 Series 6X Computers

ASSEMBLIES AFFECTED

DCU P/N 30140-60001
Date Codes prior to 2628

Exchange DCU PCA P/N

30140-69109
30140-69119
30140-69129
30140-69139
30140-69159
30140-69169

New DCU Exchange P/N 30140-69189

Series 70 Upgrade: DCU Replacement Authorization

PURPOSE

This service note documents an update to the Series 6X DCU PCA. This update to the DCU is necessary to allow the Series 70 to function properly. The Series 70 will not operate with an old DCU, therefore FSI must be rolled over to the updated DCU immediately to prepare for Series 70 shipments. Any system that will be upgrading to a Series 70 must also have an updated DCU. This service note covers PART'S ONLY WARRANTY for the DCU PCA required during the Series 70 upgrade. See "WARRANTY" for specific billing information.

The TECHNICAL INFORMATION section at the end of this service note provides more detailed information on the changes in the new DCU.

By: JT

PCD # 9/25/86

Supersedes: 3246DA-17B/13B
3246BC-1B

APPLIES TO	See text <input type="checkbox"/>	See text on <input type="checkbox"/>
PERFORM	See text <input type="checkbox"/>	See text on <input type="checkbox"/>
WARRANTY	EXTENDED <input type="checkbox"/>	NORMAL <input type="checkbox"/>
LABOR		X
PARTS	See text	
TRAVEL		X
SERVICE	Return for upgrade <input type="checkbox"/>	See text <input type="checkbox"/>
INVENTORY	Return for storage <input type="checkbox"/>	See text <input type="checkbox"/>
WARRANTY EXTENDED UNTIL	1/6/88	

ACTION

Field Service Inventory

Any of the following DCU PCAs in FSI should be returned to CSR/CSE for credit immediately, and an updated DCU PCA (P/N 30140-69189) should be ordered to replace it.

30140-60001
30140-69109
30140-69119
30140-69129
30140-69139
30140-69159
30140-69169

Installed Base

The HP3000 Customer Engineer should only replace the existing DCU PCA in a Series 64/68 system, with the updated DCU PCA (P/N 30140-69189), if either of the following conditions is met.

- 1) There is a DCU failure.
- 2) The system is being upgraded to a Series 70, and the system does not currently have one of the following DCU PCAs installed.
 - a) DCU P/N 30140-60001 with a date code of at least 2628
 - b) DCU P/N 30140-69189

INSTALLATION PROCEDURE

ESD Protection is a must! Use a grounded conductive mat and wrist strap when handling PCAs.

- 1) Ensure that the customer's system is fully backed up and perform a system shutdown. Turn off the system main power switch.
- 2) Connect the ESD wrist strap and conductive mat leads to system ground.
- 3) Remove the DCU PCA and place it on the grounded conductive mat.
- 4) Insert the updated DCU PCA (P/N 30140-69189) into the Series 64/68, and make sure the DCU cables are attached correctly.



FOR MORE INFORMATION, CALL YOUR LOCAL HP SALES OR SERVICE OFFICE or 800-761-2000 • Monday (3:30-5:00) • 24-hour FAX 800-761-2000 • 24-hour SERVICE OFFICE OR WRITE: Hewlett-Packard, 1520 Embarcadero, Palo Alto, California 94303 • IN EUROPE CALL YOUR LOCAL HP SALES OR SERVICE OFFICE OR WRITE: Hewlett-Packard S.A., P. rue de l'Industrie, P.O. Box, CH 1217 Meyrin 7, Geneva, Switzerland • IN JAPAN: Hewlett-Packard Limited, 1-13-14, 1-chome Sakuragaoka City, Kanagawa Prefecture, Japan 226

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12460B-13C

SERVICE NOTE

MODELS AFFECTED

All HP3000 Series 6X Computers

ASSEMBLIES AFFECTED

DCU P/N 30140-60001
Date Codes prior to 2628

Exchange DCU PCA P/N

- 30140-69109
- 30140-69119
- 30140-69129
- 30140-69139
- 30140-69159
- 30140-69169

New DCU Exchange P/N 30140-69189

Series 70 Upgrade: DCU Replacement Authorization

PURPOSE

This service note documents an update to the Series 6X DCU PCA. This update to the DCU is necessary to allow the Series 70 to function properly. *The Series 70 will not operate with an old DCU, therefore FSI must be rolled over to the updated DCU immediately to prepare for Series 70 shipments.* Any system that will be upgrading to a Series 70 must also have an updated DCU. This service note covers **PART'S ONLY WARRANTY** for the DCU PCA required during the Series 70 upgrade. See "WARRANTY" for specific billing information.

The **TECHNICAL INFORMATION** section at the end of this service note provides more detailed information on the changes in the new DCU.

By: JT

PCO # 9/25/86

Superorder 12460A-17B/13B													
12460C-1B													
APPLIES TO	<input type="checkbox"/> All Models <input type="checkbox"/> All Models Except 1												
PERFORM	<input type="checkbox"/> SEC Immediately <input type="checkbox"/> Perf/Normal Cap <input type="checkbox"/> Perf/Normal Cap <input type="checkbox"/> Installation Date												
WARRANTY	<table border="1"> <tr> <th>EXTENDED</th> <th>NORMAL</th> <th>MOVE</th> </tr> <tr> <td>LABOR</td> <td></td> <td>X</td> </tr> <tr> <td>PARTS: See Text</td> <td></td> <td></td> </tr> <tr> <td>TRAVEL:</td> <td></td> <td>X</td> </tr> </table>	EXTENDED	NORMAL	MOVE	LABOR		X	PARTS: See Text			TRAVEL:		X
EXTENDED	NORMAL	MOVE											
LABOR		X											
PARTS: See Text													
TRAVEL:		X											
SERVICE	<input type="checkbox"/> Repair for update <input type="checkbox"/> See text												
INVENTORY	<input type="checkbox"/> Subject for storage <input type="checkbox"/> See text												
WARRANTY EXTENDED UNTIL	1/6/88												

ACTION

Field Service Inventory

Any of the following DCU PCAs in FSI should be returned to CSR/CSE for credit immediately, and an updated DCU PCA (P/N 30140-69189) should be ordered to replace it.

- 30140-60001
- 30140-69109
- 30140-69119
- 30140-69129
- 30140-69139
- 30140-69159
- 30140-69169

Installed Base

The HP3000 Customer Engineer should only replace the existing DCU PCA in a Series 64/68 system, with the updated DCU PCA (P/N 30140-69189), if either of the following conditions is met.

- 1) There is a DCU failure.
- 2) The system is being upgraded to a Series 70, and the system does not currently have one of the following DCU PCAs installed.
 - a) DCU P/N 30140-60001 with a date code of at least 2628
 - b) DCU P/N 30140-69189

INSTALLATION PROCEDURE

ESD Protection is a must! Use a grounded conductive mat and wrist strap when handling PCAs.

- 1) Ensure that the customer's system is fully backed up and perform a system shutdown. Turn off the system main power switch.
- 2) Connect the ESD wrist strap and conductive mat leads to system ground.
- 3) Remove the DCU PCA and place it on the grounded conductive mat.
- 4) Insert the updated DCU PCA (P/N 30140-69189) into the Series 64/68, and make sure the DCU cables are attached correctly.



FOR MORE INFORMATION, CALL YOUR LOCAL HP SALES OR SERVICE OFFICE or Call 1-800-368-6000 or 1-800-371-3000 or 1-800-455-7500 or 1-800-475-7500 or 1-800-494-9200 OR WRITE: Hewlett-Packard, 1800 Embury Road, Palo Alto, California 94303 or EUROPE: CALL YOUR LOCAL HP SALES OR SERVICE OFFICE OR WRITE: Hewlett-Packard S.A., 7, rue de Bellefleur, P.O. Box, CH 1211 Neuchâtel, Geneva, Switzerland or JAPAN: Hewlett-Packard (Japan) Ltd., 1-21-16, Yoko Building, Chiyoda-ku, Tokyo 100, Japan

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- 5) Test the updated DCU using DCU selftest. To verify that the correct revision PROMs have been installed, use the "PA" DCU command. Refer to the PROM Verification List below for the correct PROM revisions.

PROM VERIFICATION LIST

PROM	CHIP	P/N	REV(as of 262H)
1	U86	30140-81062	3
2	U76	30140-81063	1
3	U66	30140-81064	1
4	U56	30140-81065	1
5	846	30140-81066	0
6	U36	30140-81067	1
7	826	30140-81068	3
8	U87	30140-81069	2
9	U77	30140-81070	0

- 6) Return the old DCU PCA to CSR/CSE immediately.

WARRANTY

- 1) The following extended warranty charges will be accepted only for DCUs replaced during a Series 70 upgrade.

Material - DCU PCA (P/N 30140-69189)

- 2) No travel charges will be accepted. The DCU should be replaced during the Series 70 upgrade, so no separate travel charge will be accepted.
- 3) No labor charges will be accepted. The DCU installation labor charge has already been included in the labor charge for the Series 70 upgrade.
- 4) Domestic or Intercontinental offices bill charges to Computer Systems Division (CST), Comsys 4700. European offices bill charges to Boeblingen General Systems Division (BGD), Comsys 8200.
- 5) When submitting customer service orders be sure to reference this service note and the Sales Order Number for the Series 70 upgrade.
- 6) No warranty charges will be accepted for TAC units.

TECHNICAL INFORMATION

Series 70 Implementation

The following modifications were necessary to allow the DCU to control operation of the Series 70 properly.

- 1) The new DCU has firmware to support the implementation of a 128Kbyte cache on the Series 70. The DCU will also support the 8Kbyte cache on current systems. DCU Selftest now also prints a message telling the operator whether 8K or 128K cache boards are installed.
- 2) To support the new DCU firmware, the DCU has nine 64K PROMs that replace the fourteen 32K PROMs on current DCU versions. Two jumper wires have also been added to allow proper addressing of the larger PROMs.
- 3) The shiftstrings can now access either the new CMAX and CACC boards on the 128Kbyte cache, or the CAC and CMA boards on the 8Kbyte cache.
- 4) The checksum test has been rewritten to accommodate the new 64K PROMs.
- 5) Initialization of the cache boards will now be done by the DCU instead of by MPL. This frees MPL space for other microcode needed for implementation of the 128Kbyte cache.
- 6) The time delay between the DCU receiving the Power Fail Warning signal and issuing the POW(low) signal has been increased to allow enough time to flush the new 128Kbyte cache.
- 7) This DCU will not support operation of terminals at baud rates of 110 or 150.
- 8) This DCU is completely backwards compatible with all supported Series 64/66 systems. It is also compatible with all versions of MPE that are supported on these systems.

Enhancements

The new DCU has been enhanced to include the following capabilities.

- 1) The maintenance mode help facility now lists both maintenance mode commands and control mode commands. While in the help facility striking any key except "Q" or "N" will advance to the next screen. Striking "Q", "N" or "control Y" will cause the user to exit the help facility.

- 2) The Dumpstring command "DS" now dumps the following information.

- a) Board Shiftstrings
- b) Firmware and Software Maintenance Screens
- c) DCU Error Log
- d) All Extended Registers
- e) Current MPE Process Stack

- 3) When operating in the maintenance mode while MPE is running, the DCU will ask the user if it is alright to abort MPE when the user tries a command that will cause this to happen.
- 4) Successful STARTs and LOADs are now logged in the DCU error log as well as unsuccessful START and LOAD attempts.
- 5) The DCU now checks for successful flushing of the CMAX and IOA cache before attempting an autorestart.
- 6) The DCU date code is now displayed on the screen when the user executes DCU Selftest or the PA command.

Problem Fixes

The following problems with the old DCU have been fixed on the new DCU.

- 1) The new DCU now successfully logs failures to autorestart after a powerfail.
- 2) When starting or loading MPE and asked if the date and time are correct, the DCU will now initialize the date and time properly if the user types either "Y" or "y".
- 3) On Series 64B and 66B/C systems an invalid "Overvoltage Transient Count" message was occasionally logged. This problem has been removed on the new DCU.
- 4) The new DCU has corrected a problem that caused a terminal hang after running FLDCOPY.