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13206.030.13206-90001

HP 13206A
2000/ACCESS COMMUNICATIONS
PROCESSOR FIRMWARE KIT
(for HP 2100 Series Computer)
installation manual



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

1. INTRODUCTION

This manual provides field installation instructions for the HP 13206A 2000/Access Communications Processor Firmware Kit, which is an accessory for the Hewlett-Packard 2100 Series Computer. This kit is intended for operation only under control of the HP 22687A 2000/Access Software.

2. DESCRIPTION

This kit provides the computer with the necessary logic to execute the special instructions required by the software. The microprogram is contained in six ROM packs installed in the module 1 position (U25, U26, U27, U35, U37, and U65) on ROM Control Card A2. Mapping to the correct ROM starting address for execution of the floating-point user instructions is accomplished by the proper configuration of jumpers W4 and W5 in the ROM mapper circuits. The configuration of jumpers W1, W2, W3, and W6 in the Non-Existent ROM (NER) FF circuits are also changed to include ROM module 1.

The HP 13206A Kit consists of the following:

- a. Six ROM integrated circuit (IC) packages, part no. 1816-0532 through 1816-0537.
- b. One product identifier, part no. 13206-80001.
- c. *Installation Manual*, part no. 13206-90001.
- d. *Diagnostic Reference Manual*, part no. 13206-90003.
- e. Diagnostic Paper Tape, part no. 13206-16001.

3. UNPACKING AND INSPECTION

If the shipping carton is damaged upon receipt, request that the carrier's agent be present when the parts are unpacked. Inspect the parts for damage (cracked, broken, etc.). If the parts are damaged and fail to meet specifications, notify the carrier and the nearest HP Sales and Service Office immediately. (Sales and Service Offices are listed at the back of this manual.) Retain the shipping container and the packing material for the carrier's inspection. The HP Sales and Service Office will arrange for the repair or replacement of the damaged parts without waiting for any claims against the carrier to be settled.

4. IDENTIFICATION.

Hewlett-Packard uses five digits and a letter (00000A) for standard kit designations. If the designation of your kit

does not agree with that on the title page of this manual, there are differences between your kit and the kit described in this manual. These differences are described in change sheets and manual supplements available at the nearest HP Sales and Service Office.

Printed-circuit card revisions are identified by a letter, a date code, and a division code stamped on the card (e.g., A-1103-22). The letter code identifies the version of the etched trace pattern on the unloaded card. The date code (four middle digits) refers to the electrical characteristics of the loaded card. The division code (last two digits) identifies the Hewlett-Packard division that manufactured the card. If the date code stamped on the printed-circuit card does not agree with the date code shown on the appropriate schematic diagram in the computer *Diagrams Manual*, there are differences between your card and the card described in the *Diagrams Manual*. These differences are described in manual supplements available at the nearest HP Sales and Service Office.

5. INSTALLATION

Install the HP 13206A Kit as follows:

- a. Turn off power at the computer.
- b. Remove the top access cover from the computer.
- c. Remove all cable connectors (if any) attached to the top of the ROM control card (part no. 02100-60002) in slot 2 of the computer.
- d. Remove the ROM control card from slot 2, and check that the proper jumpers are installed on the card. (Refer to table 1. The HP 13206A is installed as module one.)

Table 1. ROM Control Card A2 Jumper Connections for Various Module Configurations

MODULES	JUMPERS TO BE INSTALLED					
	W1	W2	W3	W4	W5	W6
0	A to B	D to K	E to F	in	none	H to L
0, 1 (HP 13206A)	A to B	none	none	in	none	H to L

- e. Insert the six ROM integrated circuits as follows (see figure 1):

- (1) Part no. 1816-0532 into XU 37
- (2) Part no. 1816-0533 into XU35

- (3) Part no. 1816-0534 into XU25
- (4) Part no. 1816-0535 into XU65
- (5) Part no. 1816-0536 into XU27
- (6) Part no. 1816-0537 into XU26

- f. Replace the ROM control card (with HP 13206A ROM's installed) in slot 2 of the computer and install the product identifier (part no. 13206-80001) over connector J2 of the card. (Connector J2 is the connector closest to the back of the computer.)
- g. Replace all cable connectors removed in step c above.
- h. Replace the top access cover of the computer.

6. INSTALLATION CHECKOUT

Turn on power at the computer and perform the diagnostic test as outlined in the *2000/Access Communications Processor Firmware Diagnostic Reference Manual*, part no. 13206-90003. If the diagnostic program is completed without error, the card is installed and operating properly, and is ready for normal program operation. If the diagnostic program indicates errors, halt the computer, turn off power and remove the hardware card. Recheck all installation steps and repeat the diagnostic test.

7. MAINTENANCE

If the diagnostic test indicates that a hardware problem exists, replace the six IC packages.

8. SHIPPING AND STORAGE

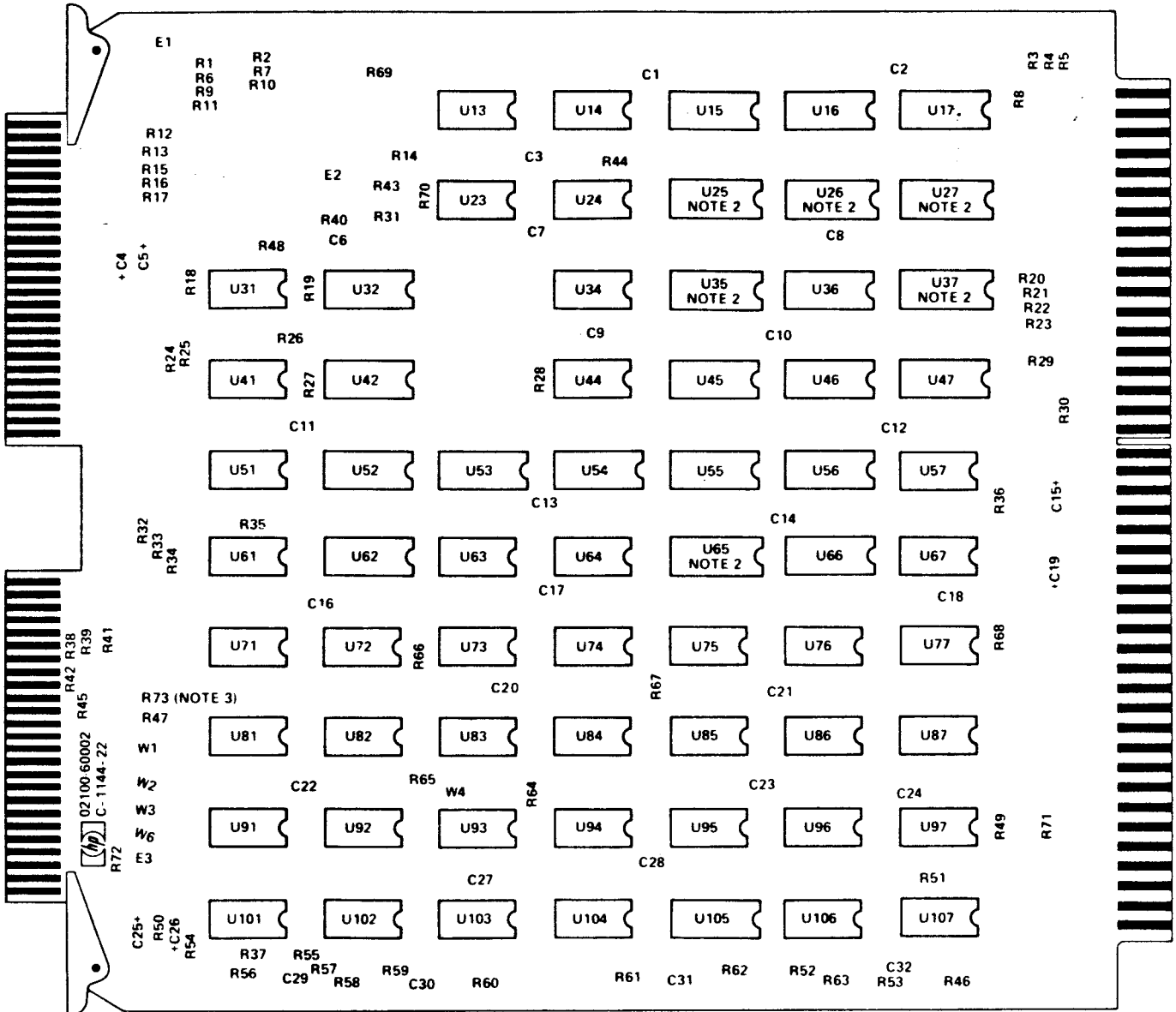
If an item from the kit is to be shipped to Hewlett-Packard for service or repair, attach a tag to the item identifying the owner and indicating the service or repair to be accomplished. Include the number of the kit.

Package the item in the original factory packaging material, if available. If the original material is not available, standard factory packaging material can be obtained from a local Hewlett-Packard Sales and Service Office.

If standard factory packaging material is not used, wrap the item in Air Cap TH-240 cushioning (or equivalent) manufactured by Sealed Air Corp., Hawthorne, N.J., and place in a corrugated carton (200 pound test material). Seal the shipping carton securely and mark it "FRAGILE" to assure careful handling.

Note: In any correspondence, identify the kit by number. Refer any questions to the nearest Hewlett-Packard Sales and Service Office.

If the kit is to be stored before use, package it as described above to prevent accidental damage.



DWG REV. C

NOTES: 1. THIS DIAGRAM ALSO APPLIES TO CARD REV. A-1106-22 AND B-1132-22.

2. U25, U26, U27, U35, U37, AND U65 USED ONLY FOR OPTIONS SUCH AS FLOATING POINT CAPABILITY.

3. R73 FIRST USED ON CARD REV. C-1144-22.

Figure 1. A2 ROM Control Card, Parts Location Diagram

PAPER TAPE NO. 13206-16001

**2000/ACCESS COMMUNICATIONS PROCESSOR FIRMWARE
DIAGNOSTIC**

for

hp-2100 SERIES COMPUTERS



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

**MANUAL PART NO. 13206-90003
MICROFICHE PART NO. 13206-90004**

**Printed: JUN 1975
Printed in U.S.A.**

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SECTION I

INTRODUCTION

1-1. GENERAL

This diagnostic test program confirms proper operation of the HP 13206A 2000/Access Communications Processor Firmware. It operates in the HP 2100 Series Computer with a minimum of 8K words of memory, and is one of the diagnostics executed in conjunction with the HP 2100 Series Computer Diagnostic Configurator. Communication to the operator is accomplished via the Memory Data (T) Register and/or the system console. The only operator input required is through the Switch (S) Register.

The test method consists of executing the instructions under test, and comparing the results to pre-determined or calculated values in memory. Since this diagnostic involves the use of many CPU base set instructions, it should be run only after the following diagnostics have been successfully executed:

- a. Memory Reference Instruction Diagnostic
 - b. Alter-Skip Instruction Diagnostic
 - c. Shift-Rotate Instruction Diagnostic
 - d. I/O Instructions and Interrupt Diagnostic
 - e. Memory Diagnostic
- } Part of HP 2100 Long Diagnostic
(see paragraph 1-3)

1-2. REQUIRED HARDWARE

The following hardware is required:

- a. An HP 2100 Series Computer with at least 8K of memory and with register display capability.
- b. An HP 13206A 2000/Access Processor Firmware Kit installed in computer.
- c. A diagnostic input device:
 - 1. Paper tape reader: HP 2737A/B, HP 2748A/B, HP 2758A (or teleprinter with paper tape reader)
 - 2. Magnetic tape unit: HP 7970B/E (9 track only)
 - 3. Cartridge disc: HP 7900A or HP 7901A (removable platter unit 0)
- d. An HP 12539 Time Base Generator (TBG) is required only for interrupt tests; all other tests may be run without a TBG.

A console device for message reporting is optional.

1-3. REQUIRED SOFTWARE

The following software is required:

- a. HP 2100 Series Computer Diagnostic Configurator
 - Binary Object Tape part no. 24296-60001
 - Manual part no. 02100-90157

- b. HP 13206A 2000/Access Communications Processor Firmware Diagnostic
 - Binary Object Tape part no. 13206-16001
 - Manual part no. 13206-90003

The diagnostic serial number of this diagnostic, which resides in memory location 126 (octal), is 101016.

The following software is recommended:

- HP 2100 Series Computer Long Diagnostic
 - Binary Object Tapes part no. 24390-16001, 16002, 16003
 - Manual part no. 24390-90001

SECTION II

PROGRAM ORGANIZATION

2-1. ORGANIZATION

This diagnostic program consists of 9 tests which test the following 18 microcoded firmware routines:

<u>TEST</u>	<u>ROUTINE</u>
0	CRC Test
1	ENQ, PENQ, and DEQ Tests
2	IAL Test
3	READF, SAVE, AND RESTR Tests
4	LAI and SAI Tests
5	PFREX Test
6	PFREI Test
7	PFRIO Test
8	STORE BYTE, LOAD BYTE, TRSLT, and BMVE Tests
9	MOVE Test

2-2. TEST CONTROL AND EXECUTION

The program outputs a title message to the console device for operator information and then executes the tests according to the options selected on the Switch Register by the operator. The program also keeps count of the number of passes that have been completed and will output the pass count at the completion of each pass. The pass counter will be reset if the program is restarted.

2-3. SELECTION OF TESTS BY OPERATOR

The operator has the capability to select one particular test or a sequence of tests. Paragraph 3-4 outlines the operator test selection capability.

2-4. MESSAGE REPORTING

There are two types of messages output for diagnostics: error and information. Error messages are used to inform the operator when the device fails to respond to a given instruction or control sequence. Information messages are used to inform the operator of the progress of the diagnostic. If a console device is used, the printed message will be preceded by the letter E (error) or the letter

H (information) and a number (in octal). The number is also related to the halt code when a console device is not available. Examples of error and information messages are as follows (specific meanings are listed in section III):

Example — Error with halt

Message: E113 STACK POINTER BAD AFTER SAVE

Halt Code: 106013 (octal) (T-Register)

Example — Information with halt

Message: H030 CRC TEST

Halt Code: 102030 (octal)

Error messages can be suppressed by setting Switch Register bit 11 and error halts can be suppressed by setting Switch Register bit 14. This is useful when looping on a single section that has several errors. Information messages are suppressed by setting Switch Register bit 10.

2-5. LIMITATIONS

All microcode failure types are detected by the diagnostic except:

- a. If the microcode does not return control to the diagnostic program, test validity cannot be assured. This situation results in the cessation of messages to the operator. Pressing HALT on the computer will usually not halt the computer. The only remedy is to turn the computer power off.
- b. If the microcode returns control to the diagnostic program but not to the proper location, the effects are unpredictable and the results are meaningless.

SECTION III

OPERATING PROCEDURE

3-1. OPERATING PROCEDURES

A flowchart of the operating procedures for loading the Diagnostic Configurator and this diagnostic is provided in figure 3-1.

If an unconfigured Diagnostic Configurator is available, start at entry point A on the flowchart.

If a configured Diagnostic Configurator is available, start at entry point B on the flowchart.

If a combined configured Diagnostic Configurator and an unconfigured Diagnostic is available, start at entry point C on the flowchart.

If a combined configured Diagnostic Configurator and a configured Diagnostic is available, start at entry point D on the flowchart.

3-2. RUNNING THE DIAGNOSTIC

- a. If the interruptibility tests are to be executed, go to step b. Otherwise, select the P-register for display in the Display Register. Enter 2000 (octal) into the Display Register. Press PRESET (INTERNAL and EXTERNAL) and to to step d.
- b. Select the P-register for display in the Display Register. Enter 100 (octal) into the Display Register. Select the S-register for display in the Display Register. Enter into bits 5-0 of the Display Register the select code of the time base generator (TBG) to be used for the Interruptibility test.
- c. Press PRESET (INTERNAL and EXTERNAL) and RUN. The computer will come to a halt 102074 (octal).
- d. Select the S-register for display in the Display Register. Enter the program options into the Display Register. (See Table 3-1.)
- e. Press RUN. The following message will be printed on the console:
2100 2000-ACCESS COMM. PROC. FIRMWARE DIAGNOSTIC

At this point the diagnostic will come to a halt 102075 (octal) if Switch Register bit 9 was set to allow the operator to select a group of tests. (See paragraph 3-4.) After the operator has made his selection, automatic execution of all selected tests begins.

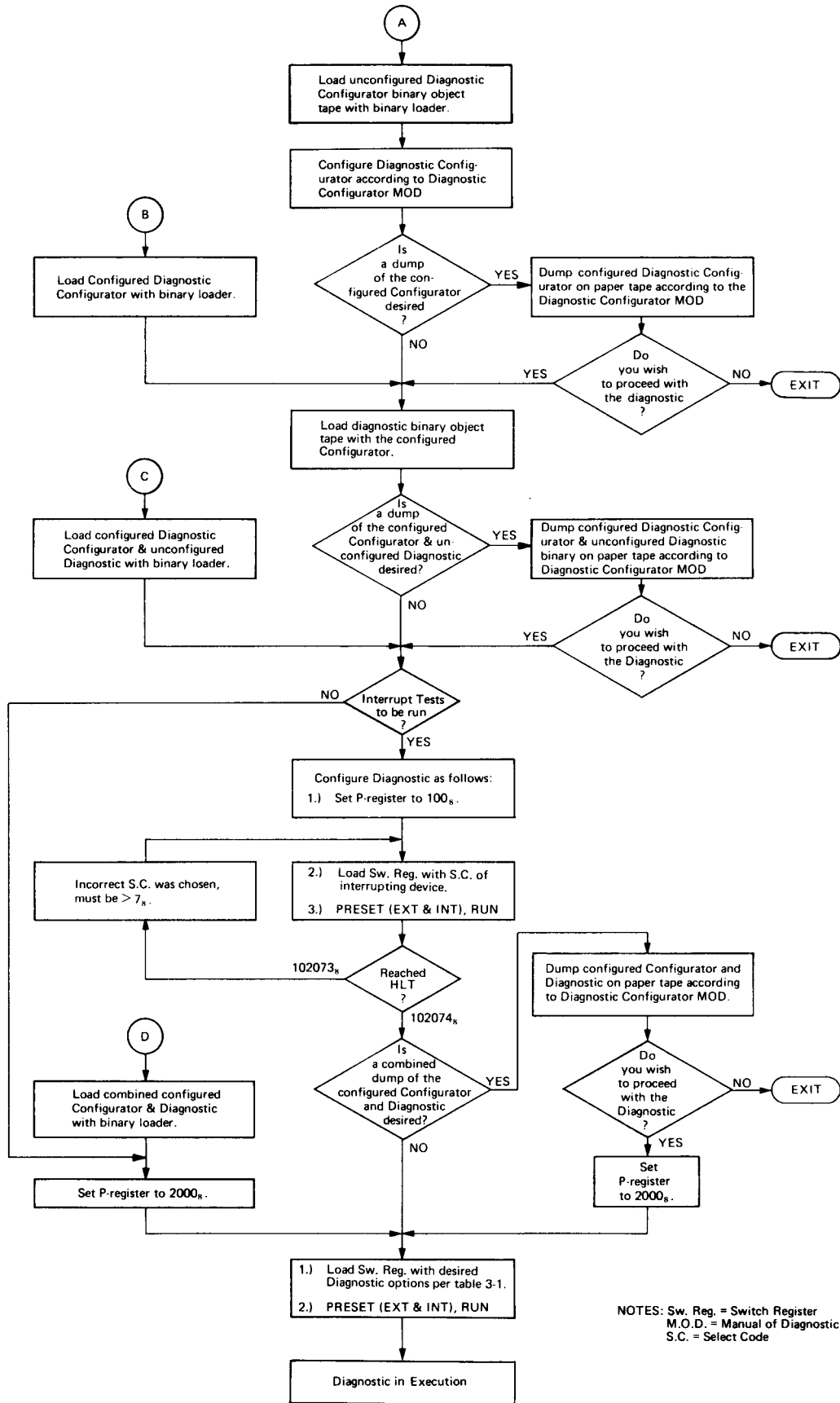


Figure 3-1. Operating Procedure Flowchart

If Switch Register bit 9 was not set, the diagnostic will not halt but will start automatic execution of all tests. Each test is preceded with a test title message. (See table 3-2.) Appropriate error messages are printed for software detected test failures. (See table 3-4.) After printing an error message, the diagnostic will halt with the appropriate halt code, unless the error halts are suppressed by Switch Register bit 14.

At the completion of all selected tests, the message PASS nnnnnn is printed, where nnnnnn is the octal pass count. A halt 102077 (octal) follows. The pass count will also be in the A-register.

NOTE: Any time during diagnostic execution when Switch Register bit 9 is set, the test run aborts at the end of the current test with a halt 102075 (octal). This gives the operator the opportunity to specify a different group of tests. (See paragraph 3-4.) Switch Register bits 10 through 15 can be set/reset any time during diagnostic execution. The effects of these switch register settings are described in table 3-1.

Table 3-1. Switch Register Options

BIT	MEANING IF SET
15	Halt (102076) at the end of each test; the A-register will contain the octal equivalent of the test just completed.
14	Suppress error halts.
13	Repeat last test executed (loop on test).
12	Repeat all selected tests after diagnostic run is complete without halting. The end of pass message "PASS XXXXX" will be output before looping.
11	Suppress error messages.
10	Suppress information messages.
9	Abort the current diagnostic execution and halt (102075); user may at this time specify a new set of tests in the A-register, clear bit 9 of the Switch Register, and press RUN.
8-6	Reserved.
5-0	Select code of interface board ; used only for interrupt capability test.

3-3. RESTARTING THE DIAGNOSTIC

After the computer comes to a halt 102077 (octal) at completion of the diagnostic run, the operator can restart the diagnostic by selecting one of the following procedures.

- a. If the operator wishes to repeat the diagnostic as configured, press RUN.

- b. If the operator wishes to change only the set of tests, he does the following:
 1. Set bit 9 of the Switch Register
 2. Press RUN
 3. A halt 102075 (octal) will occur; execute the procedure described in paragraph 3-4.
- c. If the operator wishes to run the diagnostic *with* Interruptibility tests, while the previous run was executed *without* these tests, he must go to paragraph 3-2a.
- d. If the operator wishes to run the diagnostic *without* Interruptibility tests, while the previous run was executed *with* these tests, he must proceed to paragraph 3-1.

3-4. TEST SELECTION

This diagnostic program provides the operator with a method to select a single test or sequence of tests to be run. The operator sets Switch Register bit 9 to indicate that a selection is desired. If the computer is halted, press RUN. The computer will come to a halt 102075 (octal) to indicate ready for selection. If the diagnostic is running, the test in progress will be completed; then the program will halt. Test control messages and halts are listed in table 3-3.

After the halt, the operator may select the desired test(s) by setting the A-register value equal to the desired test numbers. A-register bit 0 represents Test 0, bit 1 represents Test 1, etc. The operator now must clear Switch Register bit 9 and press RUN. The selected test(s) will then be run.

Table 3-2. Test Messages

COMMUNICATION MESSAGE	COMMENTS
2100 2000-ACCESS COMM. PROC. FIRMWARE DIAGNOSTIC	Introductory message output before pass 1.
H030 CRC TEST	Start Test 0
H040 ENQ, PENQ AND DEQ TESTS	Start Test 1
H060 IAL TEST	Start Test 2
H110 READF, SAVE AND RESTR TESTS	Start Test 3
H120 LAI AND SAI TESTS	Start Test 4
H130 PFREX TEST	Start Test 5
H140 PFREI TEST	Start Test 6
H150 PFRIO TEST	Start Test 7
H160 STORE-LOAD BYTE, TRSLT, AND MOVE BYTE TESTS	Start Test 8
H170 WORD MOVE TEST	Start Test 9

Table 3-3. Test Control Messages and Halts

HALT CODE	MESSAGE	MEANING
102074	None	Halt to allow input of the S.C. of the interface board to be used in the Interruptibility tests
102075	None	Halt to allow test selection.
102076	None	End of test section; A-register holds test number just completed.
102077	PASS xxxxxx	Diagnostic run completed; A-register holds octal number of passes completed.
106077	None	Halt stored in location 2-77 to trap interrupts which may occur unexpectedly because of hardware malfunctions. M-register contains the select code of the I/O slot which interrupted. Diagnostic may be partially destroyed if halt occurs. The program may have to be reloaded; the problem should be corrected before proceeding.

Table 3-4. Error Information Messages and Halt Codes

HALT CODE	PROGRAM SECTION	ERROR MESSAGE
102031	TEST 0	E031 CRC ERROR
102032		E032 REGISTER(S) NOT RESTORED IN CRC
102041	TEST 1	E041 EMPTY QUEUE RETURN TAKEN ON AN NON-EMPTY QUEUE
102042		E042 EMPTY QUEUE RETURN NOT TAKEN ON AN EMPTY QUEUE
102043		E043 QHEAD NOT ZERO IN AN EMPTY QUEUE
102044		E044 QTAIL DOES NOT POINT TO ITSELF IN AN EMPTY QUEUE
102045		E045 ENQ-PENQ ERROR
102046		E046 DEQUE ERROR
102047		E047 REGISTER(S) NOT RESTORED IN ENQ
102051		E051 A, E OR O NOT RESTORED IN DEQ
102061	TEST 2	E061 BAD INDIRECT ADDRESS LIST GENERATED
102062		E062 INDIRECT ADDRESS LIST LONGER THAN REQUESTED
102063		E063 B, E OR O NOT RESTORED IN IAL
106011	TEST 3	E111 INS-READF ERROR
106012		E112 SAVE-RESTR ERROR
106013		E113 STACK POINTER BAD AFTER SAVE
106014		E114 STACK POINTER BAD AFTER RESTORE
106015		E115 REGISTER(S) NOT RESTORED IN INS
106016		E116 B, E OR O NOT RESTORED IN READF
106017		E117 REGISTER(S) NOT RESTORED IN SAVE
106021	TEST 4	E121 SAI ERROR
106022		E122 LAI ERROR
106023		E123 LAI ALTERS DATA READ
106024		E124 B, E OR O NOT RESTORED IN LAI
106025		E125 REGISTER(S) NOT RESTORED IN SAI
106031	TEST 5	E131 PFREX TRANSFER ERROR
106032		E132 ENTRY POINT NOT CLEARED
106033		E133 A, B OR E NOT RESTORED IN PFREX
106041	TEST 6	E141 PFREI TRANSFER ERROR
106042		E142 I-O NOT PERFORMED
106043		E143 SOFTWARE FLAG NOT SET
106044		E144 ENTRY POINT NOT CLEARED
106045		E145 A, B OR E NOT RESTORED IN PFREI
106051	TEST 7	E151 SOFTWARE FLAG NOT SET
106052		A152 I-O NOT PERFORMED
106053		E153 A, B OR E NOT RESTORED IN PFRI0
106061	TEST 8	E161 TRANSLATION ERROR
106062		E162 TRANSLATION TABLE ALTERED
106063		E163 REGISTER(S) NOT RESTORED
106065		E165 TRSLT NOT INTERRUPTIBLE

Table 3-4. Error Information Messages and Halt Codes (Continued)

HALT CODE	PROGRAM SECTION	ERROR MESSAGE
103011	TEST 9	E211 B NOT BUMPED AFTER STORE BYTE
103012		E212 REGISTER(S) NOT RESTORED IN STORE BYTE
103013		E213 STORE BYTE ERROR
103021		E221 B NOT BUMPED AFTER LOAD BYTE
103022		E222 E OR 0 NOT RESTORED IN LOAD BYTE
103023		E223 LOAD BYTE ERROR
103024		E224 LOAD BYTE ALTERS DATA READ
103031		E231 MORE WORDS MOVED THAN REQUESTED
103032		E232 WORD MOVE ERROR
103033		E233 E OR 0 NOT RESTORED IN WORD MOVE
103034		E234 WORD MOVE NOT INTERRUPTIBLE
103036		E236 SOURCE STRING ALTERED IN MOVE
103041		E241 MOVE BYTE ERROR
103042		E242 MORE BYTES MOVED THAN REQUESTED
103043		E243 E OR 0 NOT RESTORED IN MOVE BYTE
103044		E244 MOVE BYTE ALTERS SOURCE BUFFER
103045	E245 BYTE MOVE NOT INTERRUPTIBLE	

S E R V I C E N O T E

2000.100.2000A-02

SUPERSEDES:
NoneHP 2000A TIME SHARE BASIC
INSTALLATION PROCEDURE

This Service Note is a guide to the basic installation procedure for the HP 2000A Time Share Basic System.

Refer to the individual Operation and Maintenance Manuals for more detailed information.

1. Carefully unpack and examine all shipping cartons. If a shipping carton is damaged, require that the carriers agent be present when unpacking. If any instrument or cabinet is damaged or fails to meet specifications, notify the carrier and the nearest HP field office immediately. Retain all shipping cartons and packing material for the carriers inspection.
2. Thoroughly inspect the packing material for small parts, envelopes, shipping tags, etc. Fully assemble all units and, if necessary, attach the rack mounting accessories.
3. Locate and examine the material contained in the envelope labeled "Customer Records". It should contain the following lists:
 - A. Installation Record
 - B. Manual Index
 - C. Software Record

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All hardware, software, and manuals shipped must check with these lists. If any material is missing, notify the division or office where the shipment originated. If a box or carton of material or parts is missing, also notify the carriers agent.

4. Ensure that adequate AC power is available. It is the customer's responsibility to connect AC power to the system cabinets. Refer to the HP 2992Z Operating and Service Manuals for the correct procedures for connecting AC power.
5. Install the Drum/Disc Memory unit into the cabinet as specified in the Disc/Drum Operating and Service Manual. Make sure that the cabinet feet have been locked into position prior to installing the Disc/Drum unit.
6. Check and ensure that all system cables and all AC power plugs are properly installed.
7. Open the HP 2116B Computer and check that all printed circuit boards are properly located and fully inserted. See Table I for standard HP 2000A board locations.
8. Check for proper AC power connections to the system cabinets. Turn the AC power ON and measure all of the systems power supplies. All power supply voltages must be within the tolerances specified in their Operation and Service Manual. If the voltages are not within the specified tolerances, adjust and recheck them.
9. Run all computer and option diagnostics. Refer to Table II for a list of the standard HP 2000A diagnostics. Maintain all diagnostic print out for the customers record.

TABLE II
DIAGNOSTICS

1.	Alter-Skip Instruction Test	HP 20400
2.	Memory Reference Instruction Test	HP 20401
3.	Shift-Rotate Instruction Test	HP 20402
4.	Low Memory Address Test	HP 20403
5.	High Memory Address Test	HP 20404
6.	High Memory Checkerboard Test	HP 20426
7.	Low Memory Checkerboard Test	HP 20427
8.	Interrupt Diagnostic	HP 20415
9.	Tape Reader Test	HP 20408
10.	TTY Diagnostic	HP 20417
11.	2116B Buffered Teleprinter Test	HP 20420
12.	EAU Diagnostic	HP 20422
13.	DMA Diagnostic	HP 20419
14.	2116B Time Base Generator Test	HP 20412
15.	I/O Multiplexor Diagnostic	HP 20439
16.	Power Fail with Auto Restart Test	HP 20428
17.	Drum Diagnostic	HP 20340
18.	Disc Diagnostic	HP 20346

TABLE I
HP 2000A BOARD LOCATIONS
HP 2116B

<u>Location</u>	<u>Description</u>	<u>Board #</u>
A1	Power Fail Interrupt with Auto Restart	12588-6001
A2	Memory Module Decoder	02116-6300
A3	Memory Parity Check	12591-6001
A4,6,16,18	Inhibit Driver	02116-6265
A8,9,14,15	Driver Switch	02116-6266
A10,11,12,13	Sense Amplifier	02116-6298
A20	Direct Memory Logic	02116-6069
A101	Front Panel Coupler	02116-6208
A102,103,104 105	Arithmetic Logic	02116-6026
A106	Timing Generator	02116-6281
A107	Instruction Decoder	02116-6027
A108	Shift Logic	02116-6029
A109	EAU Timing	02116-6196
A110	EAU Logic	02116-6202
A116,117	DMA Word Count	02116-6206
A118	DMA Address Encoder	02116-6205
A119	DMA Control	02116-6204
A120	DMA Character Packer	02116-6203
A121	Overvoltage Protection Assembly	02116-6284
A201	I/O Control	02116-6041
A202	I/O Address	02116-6194
A203	Teleprinter Multiplexor I/O Card	12584-6001
A204	Teleprinter Interface Card	12531-6001
A205	Time Base Generator	02116-6119
A206	Tape Reader Interface Card	12597-6001
A207	Drum Data Interface Card	12610-6001
A208	Drum Command Interface Card	12610-6002

2000. 100. 2000A - 03

TOM WINKER
NEELY, NO HOLLYWOOD

HP 2000A-3

S E R V I C E N O T E

SUPERSEDES:

None

HP 2000A TIMESHARE
SLEEP VERIFY ON HP 7970
REVISION 'F' SOFTWARE

A modification to the HP 2000A Rev. 'F' software has become necessary due to various design improvements made on the HP 13181 interface for the HP 7970 tape drive. This software modification is compatible with all revision levels of the HP 13181 interface and will prevent the error message "tape bad or too short" from occurring during the verify procedure of a good sleep tape due to an odd byte status being detected in conjunction with an EOF status.

This patch can be implemented in two ways, a mag tape awake or a system update. When the loader is loaded in either case, patch the following instructions in the loader and proceed normally with the loading. The updated loader will be read out to the disc and the system will now use the updated loader during sleep.

2000A LOADER PATCH

(All numbers shown in octal, right justified)

Memory Address	Memory Data
10340	005727
10341	027773
11773	006020
11774	126320
11775	026312

JCS/sa/WN

12/70-22

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S E R V I C E N O T E

2000. 100. 2000F-02A

Supersedes:

2000F-2

HP2000F TIMESHARE SYSTEM

Option 210 and 215

SYSTEM CONFIGURATION AND INSTALLATION

The HP 2000F-210/215 Timeshare System is a multi-processor timeshare system containing a fixed head disc and moving head disc. The system rack configuration is 2 bays for the 215 and 3 bays for the 210. See attached racking diagrams.

The hardware contained in the basic system is as follows:

Qty.	Model Number	Description
1	2100-032	Main System Processor
1	2100-008	I/O Processor
1	2748A/B/with Interface	Paper Tape Reader
1	7970B/with Interface	Magnetic Tape Recorder
1	7900A/with Interface or 2883A/with Interface	Moving Head Disc, Optn 210 Moving Head Disc, Optn 215
1	2885A	Sequencer (Optn 215 only)
1	12920A	Multiplexor (16 ports)
1	2766A/with Interface	Fixed Head Disc

Additional Options to the 2000F-210/215

Optn.	Description
003	Additional 16 terminals to basic system
015	230V, 50HZ Operation - CPU and console only
510	Same as Option 210, except disc operates at 230V, 50HZ
515	Same as Option 215, except disc operates at 230V, 50HZ

Locate the material contained in the envelope labeled "Customer Records". It should contain the following:

BG/jm/WN

6/74-22


HEWLETT **PACKARD**

For more information, call your local HP Sales Office or East (201) 265-5000 • Midwest (312) 677-0400 • South (404) 436-6181 • West (213) 877-1281. Or, write: Hewlett-Packard, 1501 Page Mill Road, Palo Alto, California 94304. In Europe, Post Office Box 85, CH-1217 Meyrin 2, Geneva, Switzerland. In Japan, Yokogawa-Hewlett-Packard, 1-59-1, Yoyogi, Shibuya-Ku, Tokyo, 151.

1. Installation Record
2. Manual Index
3. Software Record

- I. Check the material list to ensure completeness of shipment. If any material is missing, notify the division or office where the shipment originated.
- II. Ensure that adequate AC power is available. The power requirement for the system is a minimum of 120/208 - 3 phase. The current required for the cabinet is 20 amperes per phase.

NOTE: This minimum requirement does not take into consideration any peripherals outside the cabinet, i.e., terminals, line printer, etc.
- III. Check to see if all AC power plugs are securely installed in the power strip.
- IV. Check to ensure all I/O cards and cables are installed and connected per Table 1.
- V. Check for proper AC connection to the system cabinets. Turn on the AC power and measure all system power supplies. All supply voltages must be within the tolerances specified in the Operating and Service Manual.
- VI. On Option 210, slide the 7900A disc out of rack and remove top cover. Remove shipping clip from carriage detent. If installing an Option 215, remove the carriage retainer on 2883A.
- VII. Check alignment of the disc drive(s) and mag tape unit.
- VIII. Run appropriate diagnostics on the system peripherals disc drives, mag tape, etc.
- IX. Install a scratch cartridge or disc pack sent with the system in the 7900A or 2883A respectively and turn on the load switch. After 30 seconds ensure that the heads on the disc load properly.

Initial System Generation

Load the communications processor tape (consisting of two programs) first. Normally this program is loaded only once. It should not have to be reloaded so long as only the ON-OFF switch is used.

1. Press HALT, INTERNAL PRESET, and then EXTERNAL PRESET on the system computer.
2. On the communications processor, press HALT, INTERNAL PRESET, and then EXTERNAL PRESET.

3. Place the communications processor tape (HP 24343-60001) into the paper tape photoreader.
4. Set the system computer BBDL starting address at location 77700_8 .
5. Clear the system computer Switch register and press LOADER ENABLE.
6. Press RUN; the first program on the paper tape will be loaded.
7. After the system computer halts, start the system computer at location.2.
8. Set the communications processor BBL starting address at location 17700_8 .
9. Clear the communications processor Switch register, press LOADER ENABLE.
10. Press RUN; the second program on the paper tape will be loaded.
11. After the communications processor halts, press HALT on the system computer.
12. Start the communications processor at location 2.

The TSB loader generates the main system, initializes vital information, and starts the system running. The operator provides much of this information by typing responses to the loader's questions on the system console. Throughout the loading process, the operator's responses determine the loader's subsequent actions.

13. Enable the BBDL on the system computer.
14. Load the TSB Loader (P/N 24253-16004 for 7900A, P/N 24276-16005 for 2883) tape into the system computer using the BBDL and starting at location 77700_8 . Start executing the loader at location 2000_8 . From this point on, the loading procedure becomes a dialog between the loader program and the operator.
15. The loader starts by printing:

LIBRARY?

asking whether there is a magnetic tape of disc library. Since this is a new system, there is no existing library. Type NO.

16. The loader prints:

SYSTEM IDENTIFICATION?

Since a new system is being generated, it has no identification. Type any unique name of up to ten printing characters to differentiate this system from any other system that may be run on the same hardware.

17. The loader prints:

CONFIGURATION OPTIONS?

Respond YES. The loader starts a sequence of questions that set up the new system. If NO is typed here, the loader assumes all the default conditions described below and skips to step 23A.

18. The loader starts by printing:

DISC OR DRUM MODIFICATIONS?

Enter any number of DISC or DRUM commands from Section VI of the Operator's Guide. The loader will repeat the question after each command is entered. The sequence of DISC and DRUM commands is terminated by either a NO or a carriage return. At this point, the loader reads the label on each disc and may type messages of the following form:

DISC NUMBER n NOT LABELED FOR TSB
DO YOU WANT IT LABELED?

The loader may print: (NOW LABELED FOR DOS) between the above two lines, indicating that the disc has been used for DOS-M. If the response is YES, logical disc n will be given a TSB label which includes the system ID, logical disc number, and other information. If the response is NO and n=0, the loader will type the message:

DISC 0 MUST BE PRESENT

and repeat the previous question. If n≠0 and the response is NO, the disc will be removed from the system.

19. The loader prints:

LOCK, MLOCK, UNLOCK, OR MUNLOCK COMMANDS?

Enter any number of the specified commands from Section VI of the Operator's Guide. The loader will repeat the question after each command is entered. The sequence is terminated by a NO response or a carriage return.

20. The loader prints:

NUMBER OF PQRTS?

Respond with a decimal integer between 1 and 32, inclusive, to indicate the number of terminals available on the system. A carriage return will be interpreted as a 32.

21. The loader prints:

NUMBER OF DIRECTORY TRACKS PER DISC?

Respond with a decimal integer between 1 and 10, inclusive, to indicate how many drum tracks should be reserved, per disc, for the system directory. The directory can accommodate 682 entries per track. If a carriage return is typed, the default number will be used. For the HP 2870A and HP 7900A drivers, this number is 1. For the HP 2883A driver, it is 6.

22. The loader types:

NUMBER OF ID TRACKS?

Respond with a decimal integer 1, 2, or 3 to specify how many drum tracks should be reserved for the ID table. Each track can accommodate 1024 user IDcodes and related information. A carriage return will be interpreted as a 1.

23. The loader types:

DISC OPERATING SYSTEM PRESENT?

Respond with YES if the Disc Operating System is present on the drum; otherwise, type NO or a simple carriage return.

- 23A. The loader begins to read in the TSB system from paper tape.

If the loader prints:

END OF TAPE

and halts with 102077 in the MEMORY DATA register, place the next system paper tape into the photoreader and press RUN.

24. After all tapes have been read, the loader will print:

DATE?

Enter the date in the following form -- day/year, where day is the decimal day of the year (up to three digits) and year is the year (two digits). June 1, 1973 would be 152/73.

25. The loader prints:

TIME?

Enter time of day as a four digit integer, two each for the hour and minute. Example:

1415 - (2:15 PM)

26. The system will now print:

READY

indicating that loading is complete, and that the system is running.

Table 1
System Processor - I/O Configuration

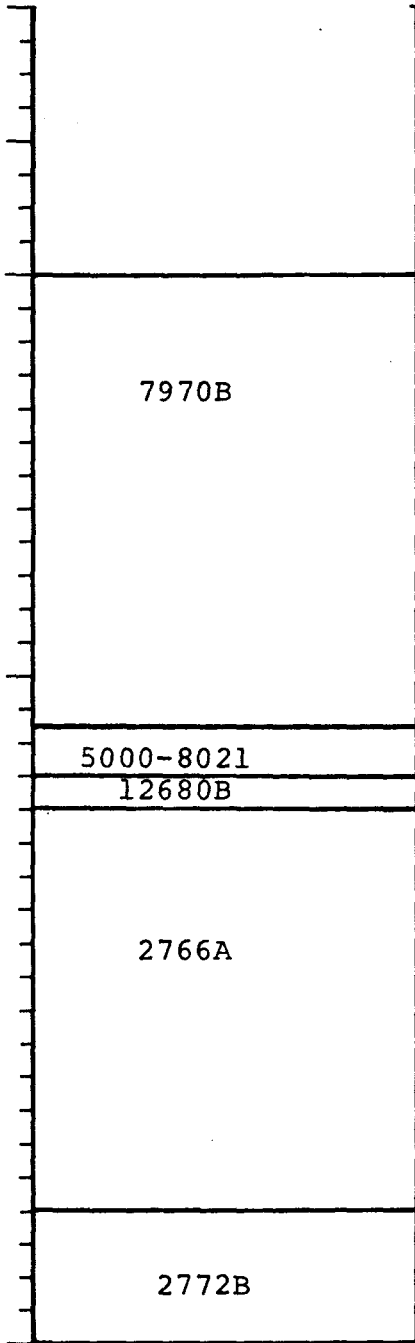
<u>Select Code</u>	<u>I/O Interface Description</u>	<u>Interface Part No.</u>	<u>Cable P/N</u>	<u>Connection</u>
10	Proc. Int A	12566-6001	12875-60001	I/O Proc. Int B
11	Proc. Int B	12566-6001	12875-60001	I/O Proc. Int A
12	Console	12531-6001	.	2754 TTY
13	Photoreader	12597-6001	12597-6004	2748A/B Reader
14	Data	12610-6001	12610-	2766A Fixed
15	Command	12610-6002	6004	Head Disc
16	Timebase Gen.	12539-60003		
Option 210				
17	Disc 1	13210-60004	13210-	7900A Cartridge
20	Disc 2	13210-60000	60003	Disc
Option 215				
	Data	12565-60001	12565-	2883 Disc
	Command	12565-60002	60003	File
21	Mag Tape 1	13181-60070	13181-	7970 Mag
22	Mag Tape 2	13181-60010	60003	Tape

Communications Processor - I/O Configuration

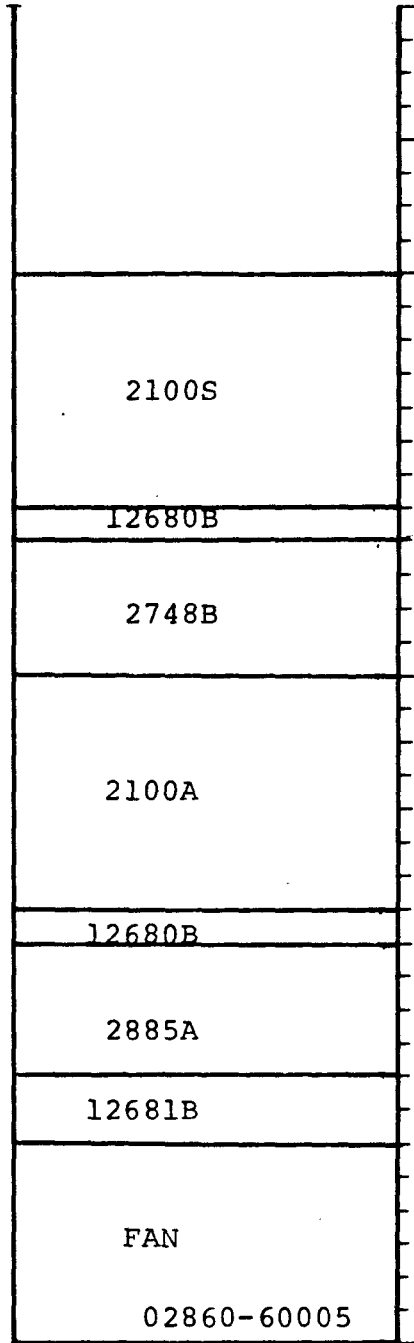
<u>Select Code</u>	<u>I/O Interface Description</u>	<u>Interface Part No.</u>	<u>Cable P/N</u>	<u>Connection</u>
10	Proc. Int A	12566-6001	12875-60001	Main Proc. Int B
11	Proc. Int B	12566-6001	12875-60001	Main Proc. Int A
12	Timebase Gen.	12539-60003		
13	Multiplexor LSC	12921-60002	12921-	Multiplexor
14	Multiplexor USC	12921-60001	60003	Panel J18
15	Multiplexor Cont.	12922-60001	12922-60003	Multiplexor Panel J16&J20
16	Multiplexor LSC*	12921-60002	12921-	*Multiplexor
17	Multiplexor USC*	12921-60001	60003	Panel J18
20	Multiplexor Cont*	12922-60001	12922-60003	*Multiplexor Panel J17&J20

*Option 003 to basic 2000F-210/215 adds additional multiplexor

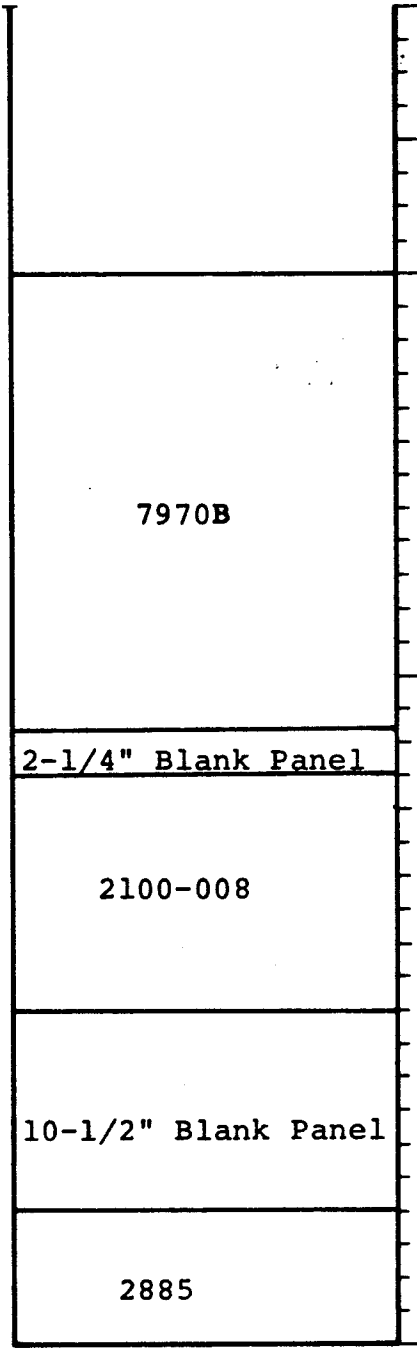
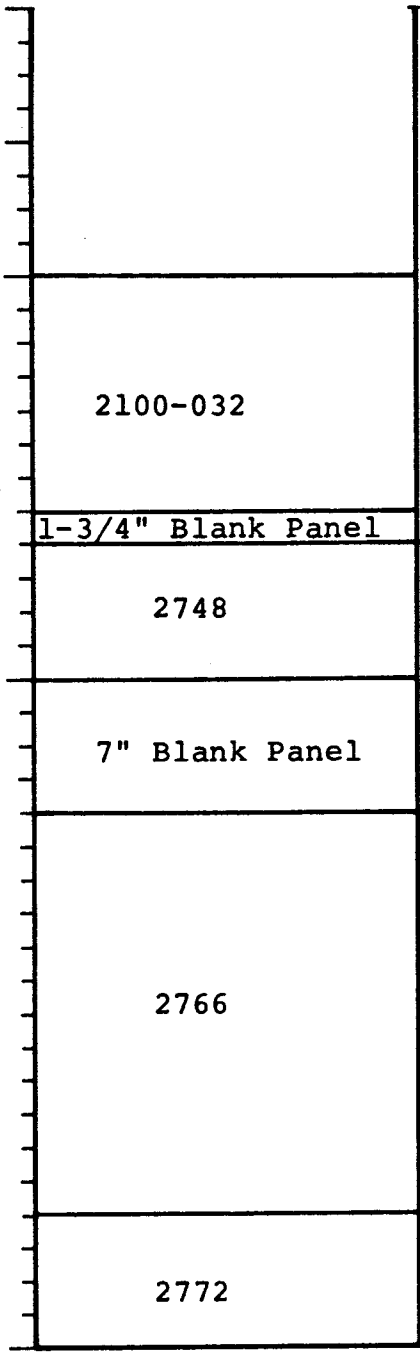
BAY 2



BAY 1



Connect 2885A to Power Control Module as per instructions in manual 02883-90003.



BAY 1

2100S

12680B

7900A

12680B

2748B

13215A

12682B

FAN

02860-60005

BAY 2

2100A

12680B

12685B

12681B

2766A

2772B

BAY 3

7970B

5000-8021

12684B

12685B

12685B

7970	
	2-1/4" Blank Panel
2100-008	
	10-1-1/2" Blank Panel
	7" Blank Panel

8-3/4" Blank Panel	
8-3/4" Blank Panel	
7" Blank Panel	
3-1/2" Blank Panel	
2766	
	2772

2100-032	
	1-3/4" Blank Panel
7900	
	1-3/4" Blank Panel
2748	
	3-1/2" Louverd Panel
13215	
	5-1/4" Blank Panel
	7" Blank Panel