IBM Maintenance Library

3033 Processor Complex Installation Procedures

A change to the text or to an illustration is indicated by a vertical line to the left of the change.

3033	Part 8271600	EC No.	276474	276707		
		Date	20Jan78	3May78		

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LOGIC	NUMBER	DESCRIPTION	PART NUMBER	EC NUMBER	FEATURE BM
SYSTEMS DIAGRAMS					
	COVER SHT	COVER SHEET	0008271600	000276707	
	INST 010	INSTALLATION PROCEDURE	0008271601	000214694	
	INST 011	INSTALLATION PROCEDURE	0008271665	000214694	
	INST 020	INSTALLATION PROCEDURE	0008271602	000214694	
	INST 030	INSTALLATION PROCEDURE	0008271603	000211786	
	INST 040	INSTALLATION PROCEDURE	0008271604	000213545	
	INST 050	INSTALLATION PROCEDURE	0008271605	000214694	
	INST 060	INSTALLATION PROCEDURE	0008271606	000213545	
	INST 070	INSTALLATION PROCEDURE	0008271607	000213562	
	INST 071	INSTALLION PROCEDURE	0008271673	000213562	
	INST 080	INSTALLATION PROCEDURE	0008271608	000276474	
	INST 082	INSTALLATION PROCEDURE	0004439496	000208332	0004873490
	INST 090	INSTALLATION PROCEDURE	0008271609	000211786	
	INST 100	INSTALLATION PROCEDURE	0008271610	000213545	
	INST 101	INSTALLATION PROCEDURE	0008271661	000278357	
	INST 110	INSTALLATION PROCEDURE	0008271611	000213545	
	INST 120	INSTALLATION PROCEDURE	0008271612	000279895	
	INST 130	INSTALLATION PROCEDURE	0008271613	000208335	
	INST 132	INSTALLATION PROCEDURE	0004439497	000213792	0004873490
	INST 140	INSTALLATION PROCEDURE	0008271614	000213545	
	INST 150	INSTALLATION PROCEDURE	0008271615	000213562	
	INST 155	INSTALLION PROCEDURE	0008271674	000211786	
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INSTALLATION PROCEDURES

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INSTALLATION PROCEDURES

Introduction

GENERAL INFORMATION

These installation procedures are designed to permit efficient installation of the IBM 3033 Processor Complex, the IBM 3033 Multiprocessor Complex, the IBM 3033 Processor Complex Model Groups N and S, and the IBM 3033 Attached Processor Complex. Two dedicated CE teams perform parallel operations by following the flowcharts.

The following apply to the installation procedures:

- The processor complex is usually shipped with covers and top housings installed.
- All floor cutouts have been completed as specified in *IBM 3033 Processor Floor Cutout Aid*, GC22-7067.
- All preinstallation visit checks have been completed as specified in the *IBM System/370 Installation Manual—Physical Planning*, GC22-7004.
- All cables are at the customer location and are sequenced and labeled.
- Open box 1 first; cable sequence number 1 is in this box. See cable chart on INST 170.
- The console is usually shipped in two sections with all parts assembled (display, operator panel, keyboard, and diskette drive).
- All logic manuals and MLMs are in binders and are shipped in carts.

These installation procedures are a guide to installing the following machines:

IBM 3033 Processor Models U, M, and A
IBM 3033 Processor Model Groups N and S
IBM 3036 Console Model 1
IBM 3037 Power and Coolant Distribution Unit Model 1
IBM 3038 Multiprocessor Communication Unit Model 1
IBM 3042 Attached Processor Model 1 or Model 2

These installation procedures contain instructions for assembling the machines, for installing the covers (if not installed) and cables, for connecting the cooling equipment, and for making appropriate tests.

Installation procedures for I/O devices are in the Installation Manual for the particular device.

After completing the installation, retain this manual as part of the System Maintenance Library.

Diskettes and NDM tapes on both sides of an AP or MP complex must have identical part numbers and EC levels to ensure functional compatibility on multiple processor complexes.

MP PREPARATION

Note: In case 1, one processor may have the extended addressing feature and the other may not. The result is an incompatibility. The extended addressing feature must be disabled (see INST 412).

There are three cases for installing an MP:

Case 1: One 3033 Processor was installed previously. Install a 3038 MCU and install one 3033 Processor.

Case 2: Two 3033 Processors were installed previously. Install a 3038 MCU.

Case 3: No 3033 Processors were installed previously. Install two 3033 Processors and a 3038 MCU.

AP PREPARATION

Note: In case 1, one processor may have the extended addressing feature and the other may not. The result is an incompatibility. The extended addressing feature must be disabled (see INST 412).

There are three cases for installing an AP:

Case 1: One 3033 Processor was previously installed. Install a 3038 MCU and install a 3042 Attached Processor.

Case 2: One 3033 Processor and a 3038 MCU were previously installed. Install a 3042 Attached Processor.

Case 3: No processors were installed previously. Install one 3033 Processor, a 3038 MCU, and a 3042 Attached Processor.

FRAME 09 PREPARATION

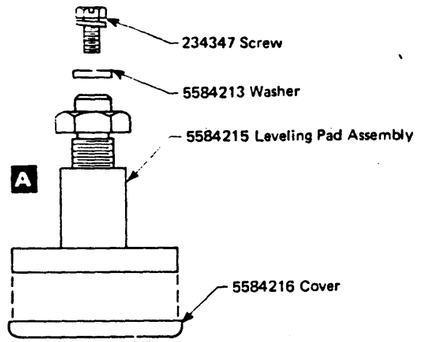
If this installation is installing a frame 09 between two processors, ensure that the space between each frame 08 is 89.75 inches (2 279.65 mm). Note that this clearance is measured between the frame members, not the covers. Extra precaution should be taken to ensure that the frames of the processors are level and at the same height.

Frame 09 is shipped with the spacer frames bolted together. The Q-tailgates are attached to frame 09. The Q-tailgates will have to be moved to the spacer frames.

If special handling was required, the Q-tailgates will be shipped in the spacer frames. The cables from frame 09 will have to be connected to the Q-tailgate.

LEVELING PADS

A For machines installed in areas susceptible to earthquakes, the following may be installed on the leveling pads: cover (part 5584216), screw (part 234347), and washer (part 5584213). The screw and washer are not installed on leveling pads that are not accessible. These parts are in the shipping group under B/M 5610399.



INSPECT THE EMC HARDWARE

- The door seals are made of conductive rubber, and the paint on the frames is conductive. Ensure that the doors contact the strips.
- Ensure that the seals between the frames contact each other.
- Braided straps are installed on frames 05 and 07 (and frame 06, if present). Ensure that the straps are installed.
- Ground straps or ground clamps are installed on the console interframe cables. Ensure that the straps or clamps are installed.
- The interface connectors are plated with aluminum. Ensure that the aluminum plating contacts the metal tailgate.
- Ensure that all tailgate covers are installed.
- Ensure that the bus bars, terminal strips, and tri-lead cables on the power supplies are connected.
- The paint on the perforated metal screens on the top of the frames is conductive. Ensure that the mounting screws are tight.
- Ensure that the braided pigtails to all the shielded interface cables are attached tightly to the metal tailgate.

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INSTALLATION PROCEDURES

Safety

- Observe all safety precautions as stated in *CE Safety Practices,* S229-0230. During installation, practice the following safety regulations:
- Wear safety glasses when using soldering iron, chemicals, solvents, compressed air, or any potentially hazardous materials.
- Do not wear jewelry, watches, or rings during installation or maintenance.
- Do not work alone on equipment when power is on the machines. At least two men should be present when any work is being done with power on.
- Remember that ac power is present in the PDU even when power is turned off. Before working in the power area, disconnect the power connectors from their source.

DANGER
Before customer power is applied to the motor generator, visually check for proper grounding connections at both the PDU and the MG set.

Frames 01, 02, 03, 04, 09, 11, and 12 (unless supported, bolted together, or placed on outriggers) may be tipped over if side pressure is applied.

During the zap test, voltages of 2.5 kV can develop.

CAUTION
The power cord plug supplied with this product must be connected to a properly grounded receptacle to avoid electrical shock. In the United States and Canada, the plug is UL listed and CSA certified for the user's safety[1]; elsewhere, the power cord and plug meet the relevant country standards.

[1]UL: Underwriter's Laboratories. CSA: Canadian Standards Association.

IBM CE SAFETY PRACTICES

All Customer Engineers are expected to take every safety precaution possible and observe the following safety practices while maintaining IBM equipment:

1. You should not work alone under hazardous conditions or around equipment with dangerous voltage. Always advise your manager if you MUST work alone.
2. Remove all power AC and DC when removing or assembling major components, working in immediate area of power supplies, performing mechanical inspection of power supplies and installing changes in machine circuitry.
3. Wall box power switch when turned off should be locked or tagged in off position. "Do not Operate" tags, form 229-1266, affixed when applicable. Pull power supply cord whenever possible.
4. When it is absolutely necessary to work on equipment having exposed operating mechanical parts or exposed live electrical circuitry anywhere in the machine, the following precautions must be followed:
   a. Another person familiar with power off controls must be in immediate vicinity.
   b. Rings, wrist watches, chains, bracelets, metal cuff links, shall not be worn.
   c. Only insulated pliers and screwdrivers shall be used.
   d. Keep one hand in pocket.
   e. When using test instruments be certain controls are set correctly and proper capacity, insulated probes are used
   f. Avoid contacting ground potential (metal floor strips, machine frames, etc. — use suitable rubber mats purchased locally if necessary).
5. Safety Glasses must be worn when:
   a. Using a hammer to drive pins, riveting, staking, etc.
   b. Power hand drilling, reaming, grinding, etc.
   c. Using spring hooks, attaching springs.
   d. Soldering, wire cutting, removing steel bands.
   e. Parts cleaning, using solvents, sprays, cleaners, chemicals, etc.
   f. All other conditions that may be hazardous to your eyes. REMEMBER, THEY ARE YOUR EYES.
6. Special safety instructions such as handling Cathode Ray Tubes and extreme high voltages, must be followed as outlined in CEM's and Safety Section of the Maintenance Manuals.
7. Do not use solvents, chemicals, greases or oils that have not been approved by IBM.
8. Avoid using tools or test equipment that have not been approved by IBM.
9. Replace worn or broken tools and test equipment.
10. The maximum load to be lifted is that which in the opinion of you and management does not jeopardize your own health or well-being or that of other employees.
11. All safety devices such as guards, shields, signs, ground wires, etc. shall be restored after maintenance.

KNOWING SAFETY RULES IS NOT ENOUGH
AN UNSAFE ACT WILL INEVITABLY LEAD TO AN ACCIDENT
USE GOOD JUDGMENT — ELIMINATE UNSAFE ACTS

S229-0230-3

12. Each Customer Engineer is responsible to be certain that no action on his part renders product unsafe or exposes hazards to customer personnel.
13. Place removed machine covers in a safe out-of-the-way place where no one can trip over them.
14. All machine covers must be in place before machine is returned to customer.
15. Always place CE tool kit away from walk areas where no one can trip over it (i.e., under desk or table).
16. Avoid touching mechanical moving parts (i.e., when lubricating, checking for play, etc.).
17. When using straboscope — do not touch ANYTHING — it may be moving.
18. Avoid wearing loose clothing that may be caught in machinery. Shirt sleeves must be left buttoned or rolled above the elbow.
19. Ties must be tucked in shirt or have a tie clasp (preferably nonconductive) approximately 3 inches from end. Tie chains are not recommended.
20. Before starting equipment, make certain fellow CE's and customer personnel are not in a hazardous position.
21. Maintain good housekeeping in area of machines while performing and after completing maintenance.

Rescue Breathing for Children

1. Clear throat of water, mucus, food, etc.
2. Place child's face down, to loosen foreign matter in air passage. Head down position, and pat him firmly on the back. This should take only a few seconds.
3. Lay child on his back.
4. Lift the neck and tilt the head back to open the air passage.
5. Place mouth firmly over child's mouth and nose to prevent air leakage when you blow.
6. Blow smoothly and gently at the same time until his chest rises.
7. Move your free hand to child's abdomen and apply continuous pressure to prevent stomach filling with air.
8. When lungs are filled, remove your lips from child's mouth and nose to allow his lungs to empty naturally.
9. Repeat mouth to mouth breathings 20 times per minute.
10. If you feel resistance — chest does not rise, repeat step #2, then quickly resume mouth to mouth breathings. Continue rescue breathing until he breathes for himself.

Rescue Breathing for Adults Victim on His Back Immediately

1. Clear throat of water, food, or other foreign matter.
2. Lift the neck and tilt the head back to open the air passage.
3. Pinch nostrils to prevent air leakage when you blow.
4. Blow until you see chest rise.
5. Remove your lips and allow lungs to empty.
6. Listen for snoring and gurgling, signs of throat obstruction.
7. Repeat mouth to mouth breathings 10-20 times a minute.

Continue rescue breathing until he breathes for himself.

Mouth to Mouth Resuscitation Position

INSTALLATION PROCEDURES

Preliminary Procedures

CUSTOMER PREINSTALLATION REQUIREMENTS

Before the processor complex arrives, the customer must provide the following:

1. The 415-Hz and 50- or 60-Hz power under the floor at the PDU location. Either 50- or 60-Hz power must be provided under the floor for all I/O devices. All ac power must be checked for correct voltage and phase rotation.
2. Room air conditioning. Air conditioning requirements are described in the Installation Manual—Physical Planning. Some air conditioning adjustment may be necessary after the system power is turned on.
3. Water coolant at the CDU location. The customer supply and return coolant manifolds must be installed near the CDU and must be purged.
4. Cable access holes. The underfloor cable access holes must be provided and marked for each frame in the processor complex.

TOOLS AND TEST EQUIPMENT

The following tools and test equipment are required to install and test the processor complex:

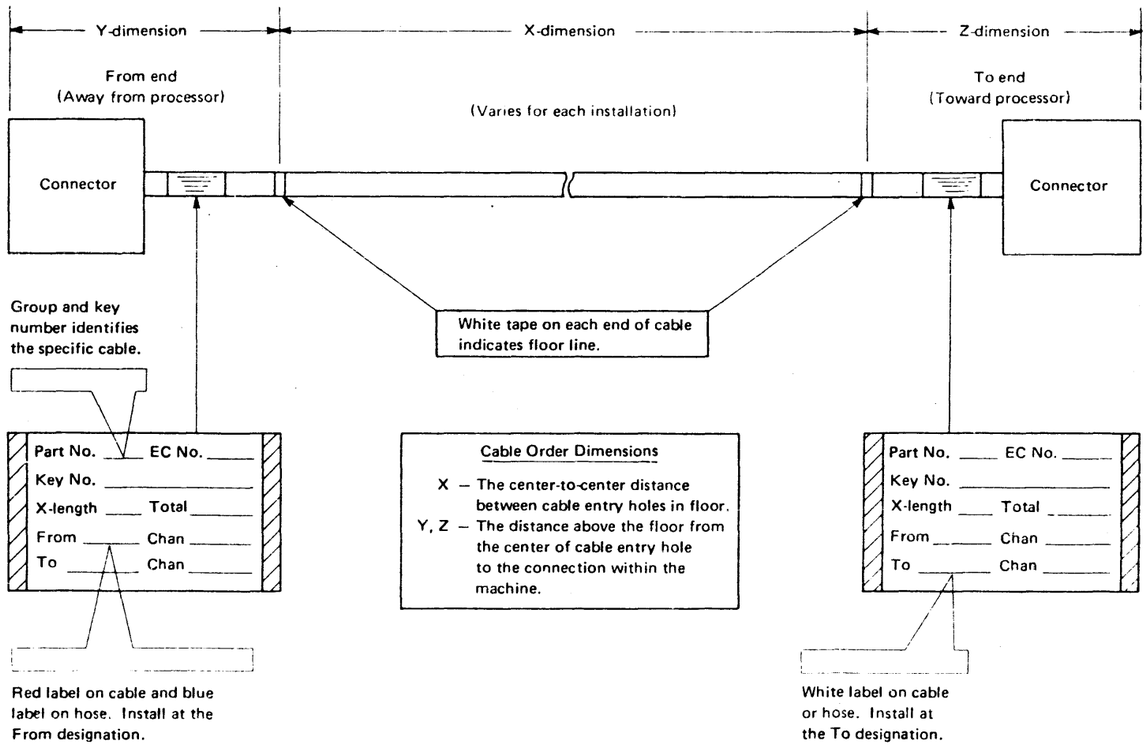
For hookup and cabling:
- CE tool kit
- 1-1/8 inch open-end wrench (part 9525046)
- Four-step ladder stool
- Frame alignment gauge (part 1312055), in tray pack
- Hex-head drivers for attaching tri-lead connectors and adjusting covers (in tray pack)
- Wrench (part 6834434) for adjusting console leveling pads

For testing:
- Tektronix[1] 475A Oscilloscope with DM44 Option or equivalent
- Digital multimeter (part 1749233), Fluke[2] 8600A or similar tool
- ESD simulator (zapper)
- EMC gate test plate
- AC meter (part 460880) or similar tool
- Distilled water

CABLE AND HOSE IDENTIFICATION

External cables and hoses are labeled as follows:

1. A red label on a cable or a blue label on a hose identifies the From end (end away from the processor).
2. A white label on a cable or hose identifies the To end (end toward the processor).
3. Each label contains part number, EC number, key number, length, and From and To designations.



[1]Trademark of Tektronix, Inc.

[2]Trademark of John Fluke Manufacturing Company, Inc.

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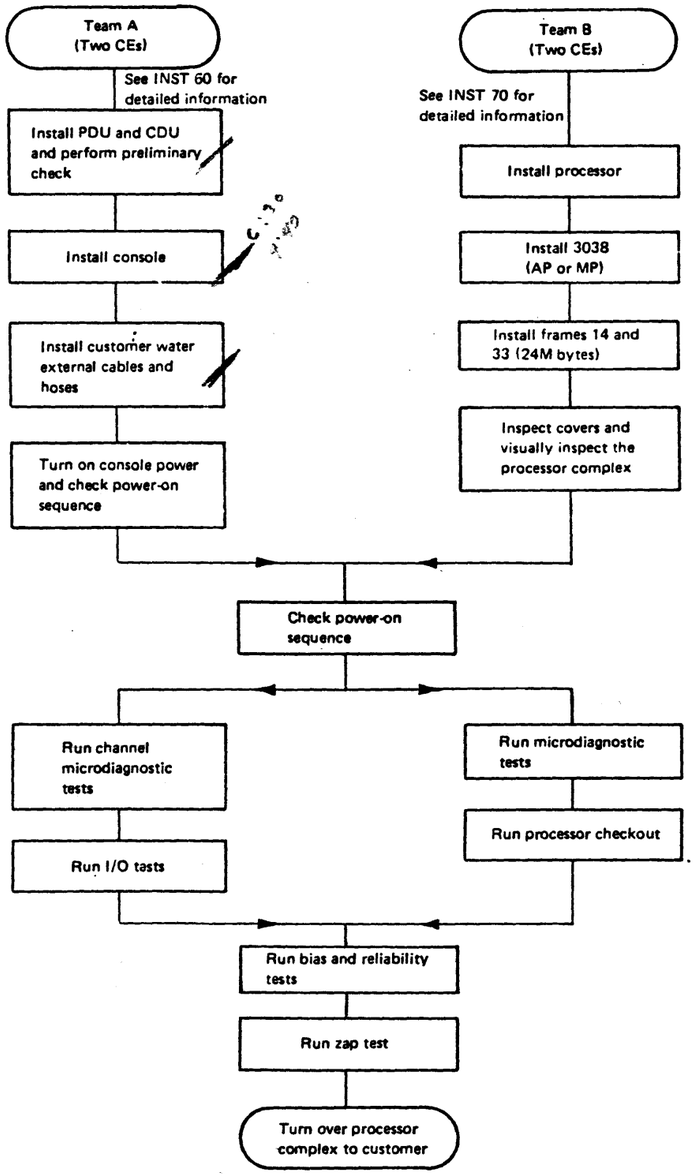
Overall Installation Work Flow



WORK DIVISION CHART

The following chart is recommended to achieve best team use. *Note:* The System/370 CE referred to in the chart should be a product-trained CE.

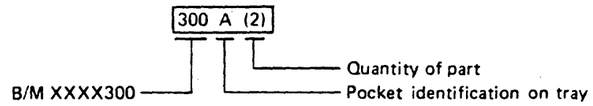
Shift	Team A	Team B
1	1 PST 1 PT or System/370	1 IDT 1 PT or System/370
2	1 PST 1 PT or System/370	1 IDT 1 PT or System/370
3-5	1 PST	1 IDT 1 PT or System/370
6 to completion	1 IDT 1 PST	

Legend:
IDT In-depth trained
PST Product-support trained
PT Product trained

TRAY PACK

The tray pack column shows the location of the parts needed. In the example, the first three digits are the last three digits of the B/M number that is used to select the tray. The letter identifies the pocket in the tray that contains the parts needed for that step. The number in parentheses is the quantity needed for that part.

Example:



Parts that do not fit into the trays are packaged separately.

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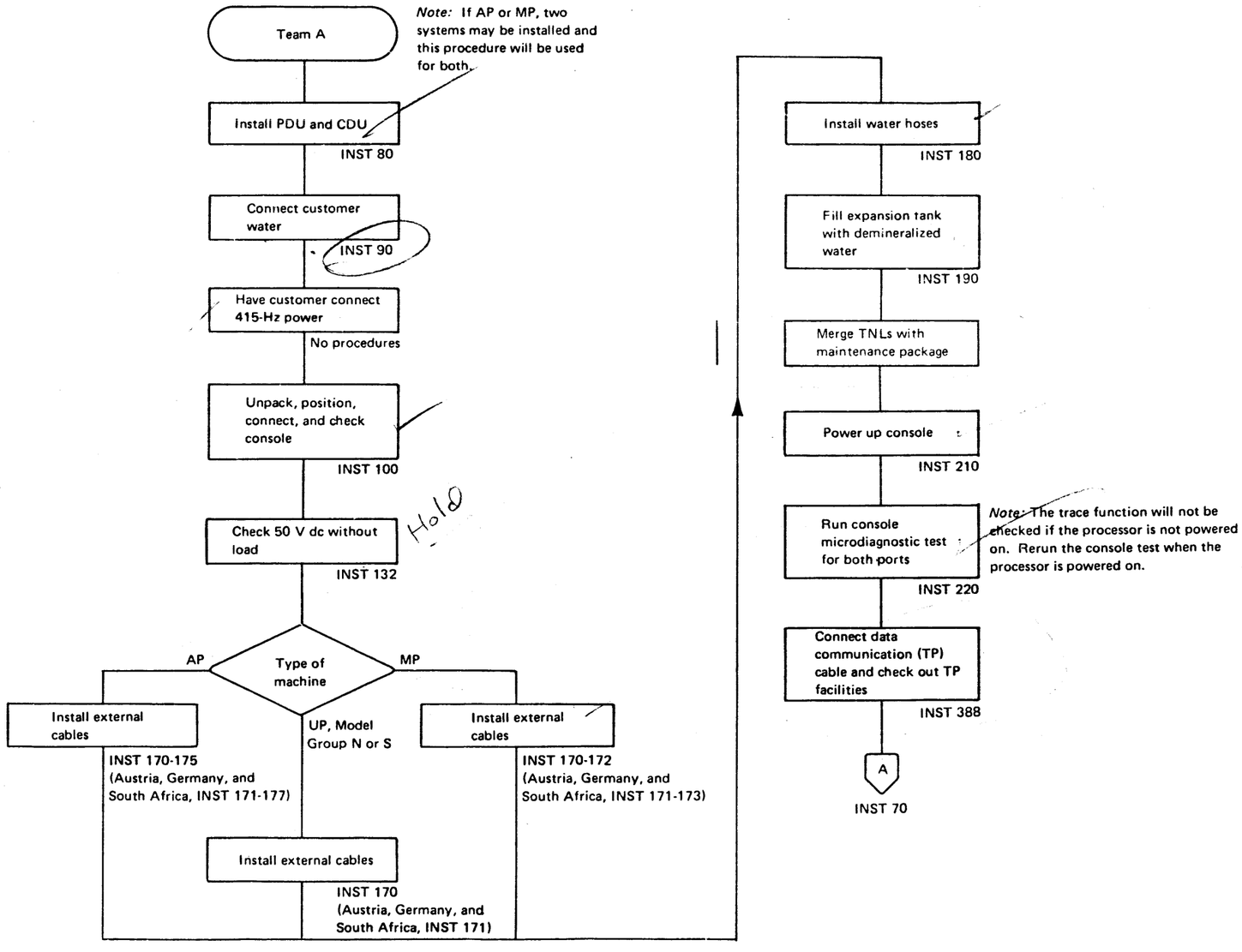
INSTALLATION PROCEDURES

Detailed Work Flow (Part 1 of 2)

TEAM A

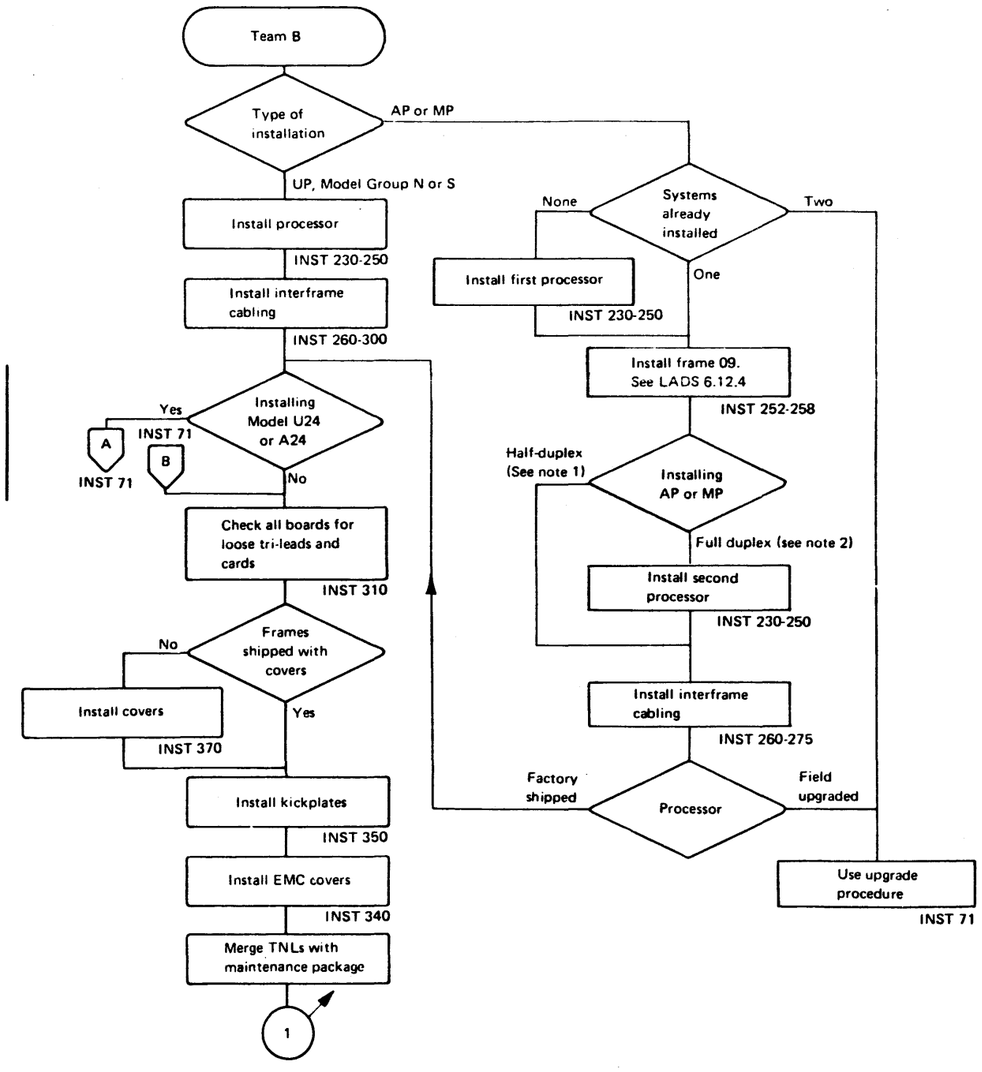


3033	Part	EC No.	276474	276707	278357	388692	388707	211786	213545
	8271606	Date	20Jan78	3May78	19Jul78	10Aug79	1Dec79	5Jan81	15Jun81

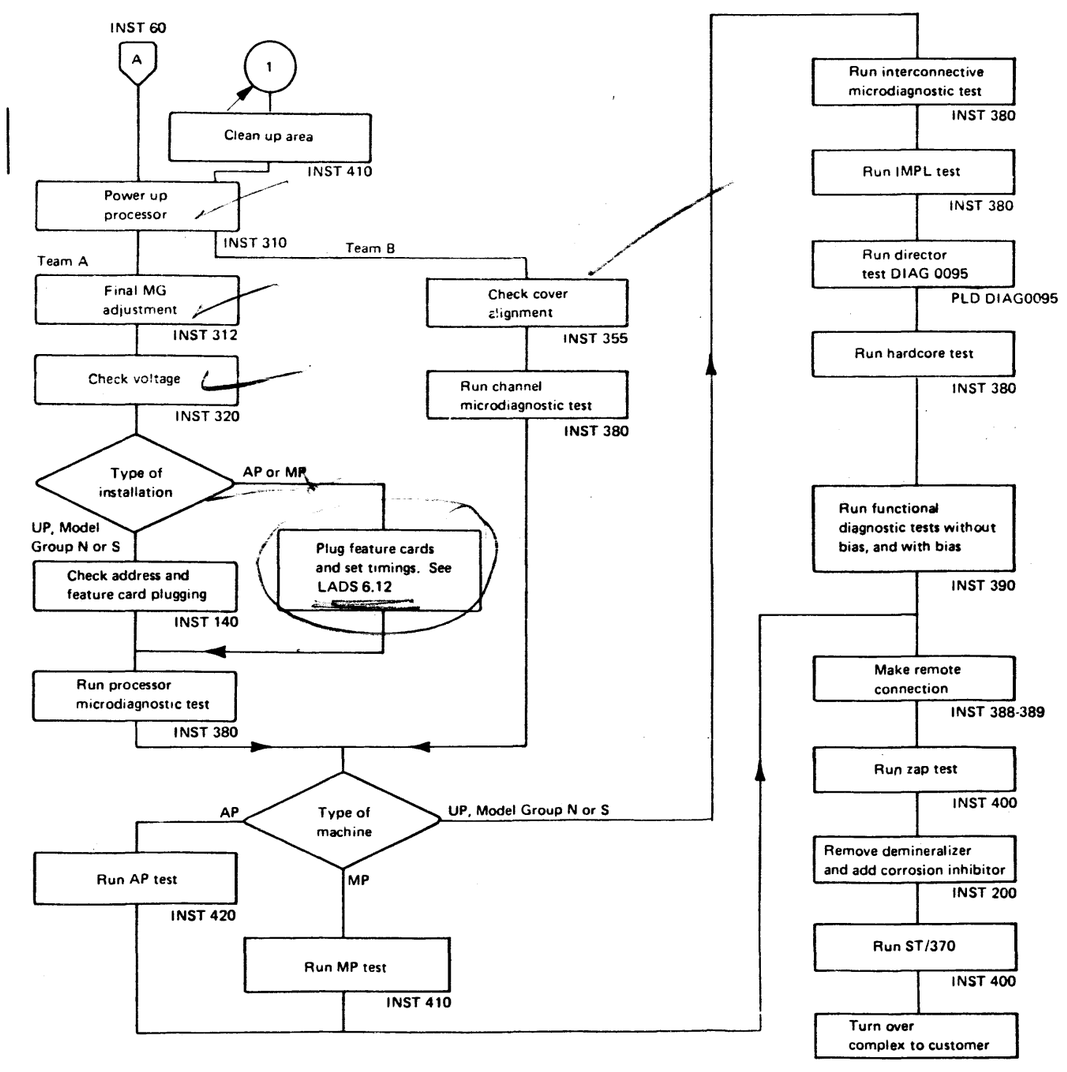
Detailed Work Flow (Part 2 of 2)

Notes:
1. Half-duplex consists of a 3033 and 3038.
2. Full duplex consists of (a) a 3033, 3038, and 3033 or (b) a 3033, 3038, and 3042.

TEAM B

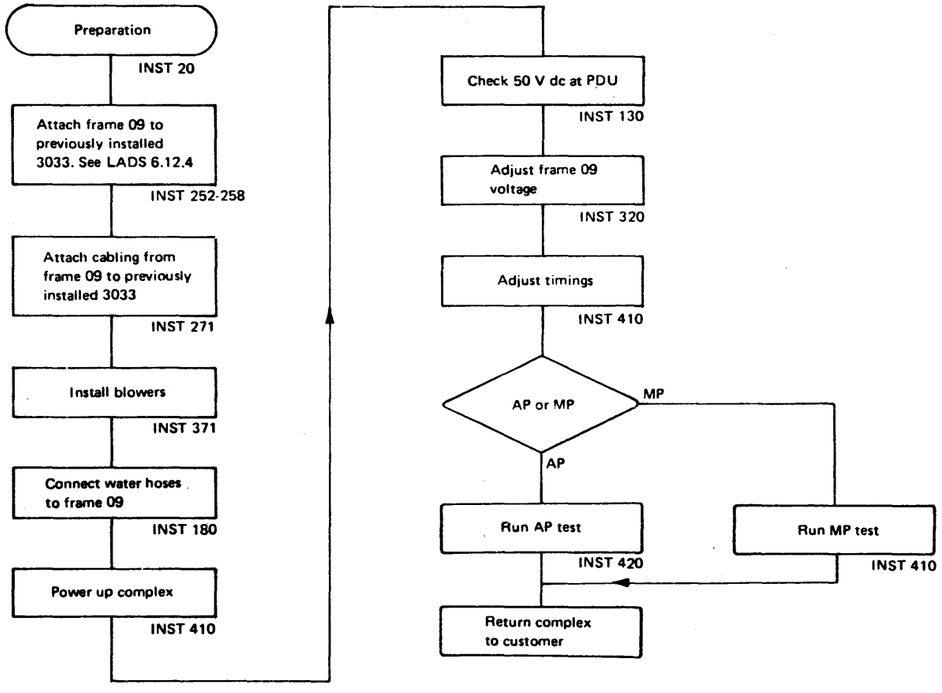


TEAMS A AND B

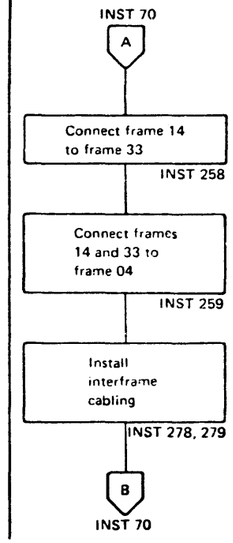


3033	Part	EC No.	276474	279895	388692	388707	208332	208335	211786	213545	213562
	8271607	Date	20Jan78	26Jan79	10Aug79	1Dec79	1Mar80	1Jun80	5Jan81	15Jun81	4Sep81

Frame 09



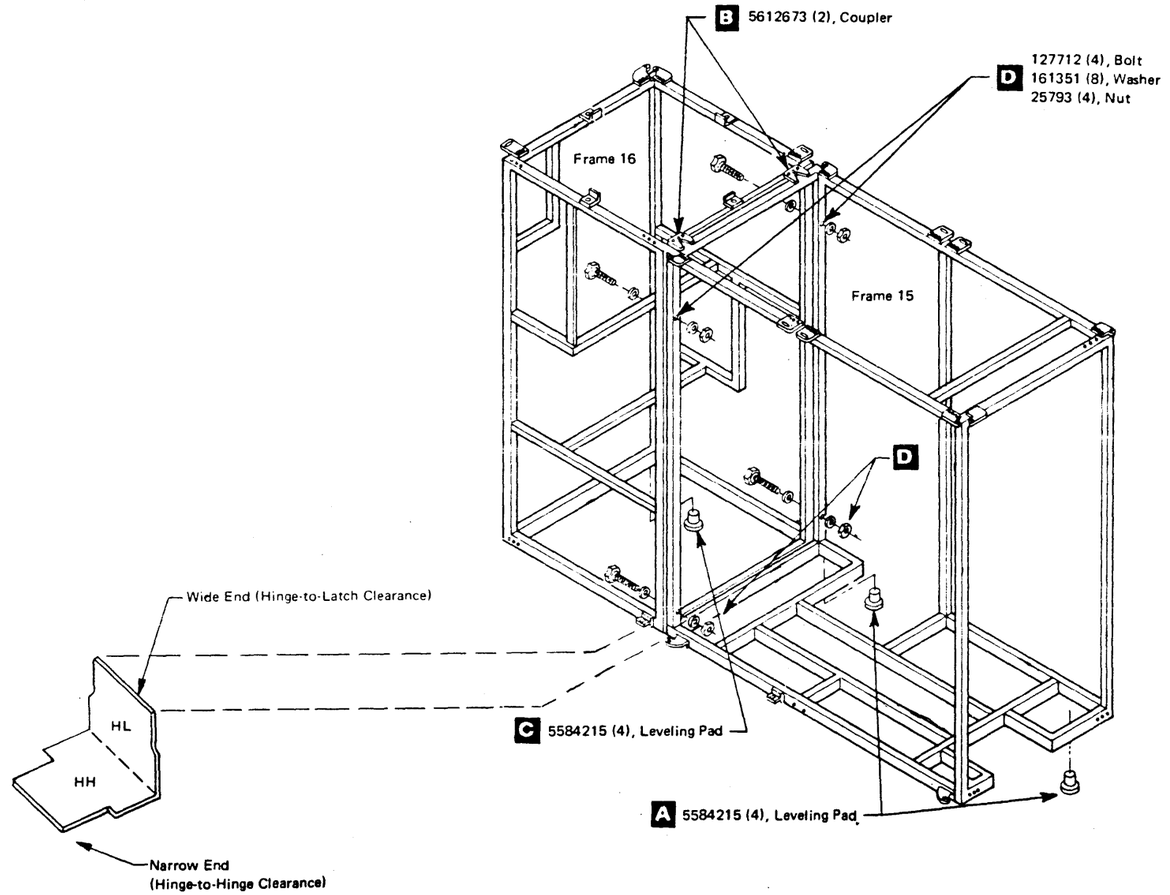
Frames 14 and 33



Part	EC No.	388692	388707	211786	213562
8271673	Date	10Aug79	1Dec79	5Jan81	4Sep81

PDU and CDU

		Step Cplt	Tray Pack (See INST 50)
	1. Position frame 15. *Note:* Leveling pads are to be installed if the floor is not level.	☑	
	2. Remove the side covers (2) next to frame 16 if necessary to facilitate bolting the frames together. If floor is level, go to step 5.	☑	
A	3. Install the leveling pads (part 5584215), as required.	☑	
	4. Level the frame by adjusting the leveling pads.	☑	
B	5. Align frame 16 couplers (part 5612673) with pins in frame 15. If the floor is level, go to step 8.	☑	
C	6. Install the leveling pads (part 5584215), as required.	☑	
	7. Level frame 16 to frame 15 by adjusting the leveling pads.	☑	
D	8. Install the bolts (part 127712), washers (part 161351), and nuts (part 25793) to draw the frames together. The couplers are used to control the top frame-to-frame clearance. The frame alignment gauge is used to adjust the bottom frame-to-frame clearance. Insert the frame alignment gauge between the hinge and latch (or hinge and hinge), and tighten the nut until the gauge is snug. Repeat this procedure for the other side of the frame.	☑	017 P (4) 017 Q (8) 017 O (4)
	9. Install the covers removed in step 2.	☑	
	10. Return to the work flow chart for team A.	☑	



1312055 Frame Alignment Gauge
(Use Only on the Bottom of the Frames)

50-Hz Convenience Outlet Circuit Grounding

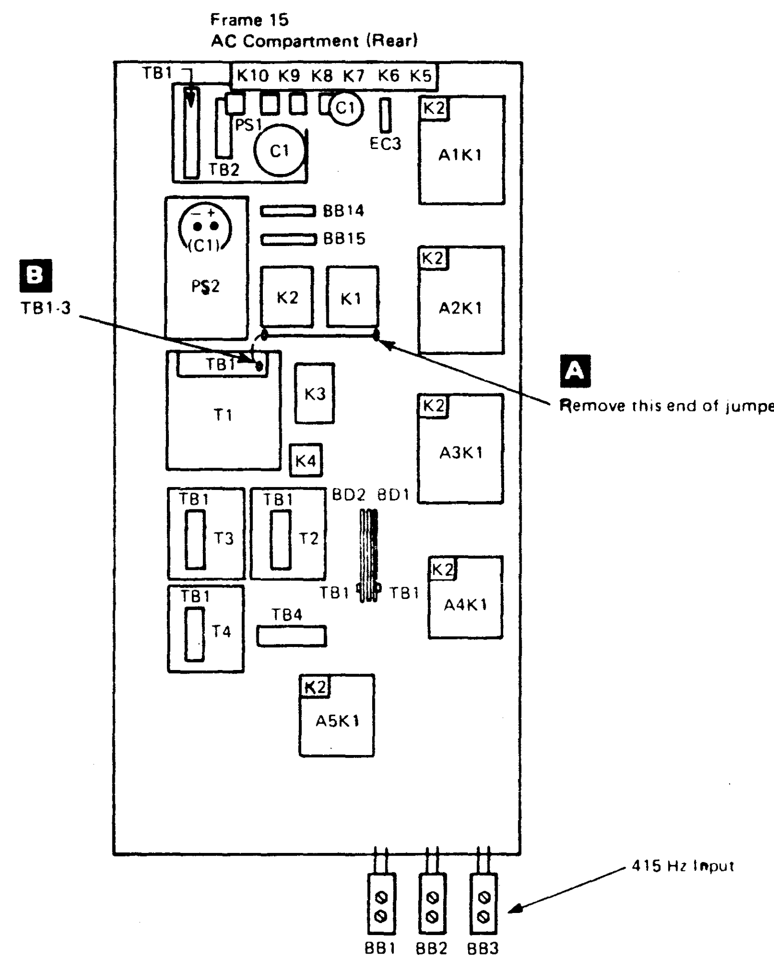
Step Cplt

Some local regulations require that the common output of the convenience outlet transformer (T1) be connected to frame ground. Check the local requirements with your Installation Planning representative.

If local regulations do not require grounding of the T1 common output, return to the work flow chart for team A.

If local regulations require that the common output of T1 be grounded, complete the following steps:

1. Open the cover of the PDU ac compartment. ☐
A 2. A ground jumper is fastened between the lower mounting screws of contactors K1 and K2. Loosen the mounting screw on K2 and remove that end of the jumper from the screw. Retighten the mounting screw. ☐
B 3. Remove the plastic safety shield from T1 TB1 and connect the end of the jumper removed above to T1 TB1-3. Reinstall the plastic safety shield. ☐
4. Return to the work flow chart for team A. ☐



Part 4439496	EC No. Date	208332 1Mar80			

INSTALLATION PROCEDURES

Customer Water for the CDU

CAUTION
Shut off the customer water supply feed valves under the floor before attempting to attach customer water manifold hoses; if not, water will spray out when attachment is attempted. Attachment will be difficult or impossible to complete.

		Step Cplt
A	Route the quick-connect supply and return hoses to the customer's chilled water supply and return manifold. (One end of each hose is already connected to the CDU heat exchanger.)	☐
B	Slide back the insulating sleeves on the hoses to expose the connectors.	☐
C	Connect the supply and return hoses to the customer's water manifold.	☐

CAUTION
When sliding the insulating sleeve over the connectors, check that the female connector is not pushed open by the sleeve.

D	Slide the insulating sleeve over the connector on each hose.	☐
E	Open the valves in the CDU supply and return customer water manifolds.	☐
F	Ask the customer to turn on the water supply to the CDU.	☐
G	Monitor the customer water temperature and flow rate on the two customer gauges that are on the CDU CE panel. *Note:* Customer water temperature and flow rate may be any horizontal line combination shown in the chart. When determining the water flow rate, both the altitude of the installation and the features installed must be considered. Ask the customer to adjust the water temperature or flow rate as required.	☐
H	After temperature and flow rate are adjusted, turn off the customer water at the CDU or ask the customer to turn off the water in the system. Condensation may form if water is allowed to circulate with power off.	☐
J	Turn on the customer water when the CDU and PDU are ready to be powered on.	☐

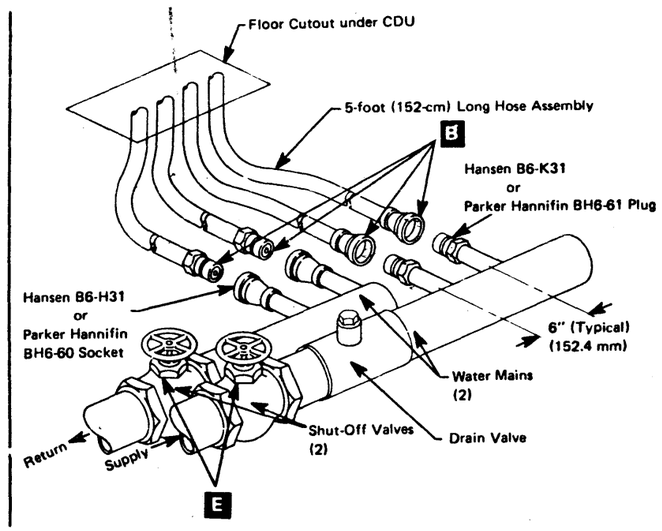
SPECIFICATIONS FOR CUSTOMER-SUPPLIED CHILLED WATER

Maximum pressure on customer-supplied chilled-water lines should not exceed 150 psi (10.5 kgf/cm^2).

Hardness of water shall not exceed 200 ppm calcium and magnesium. Water pH shall be between 7 and 9.

The customer-supplied chilled water may vary ±15% in flow rate and ±7.5°F (±4.2°C) in temperature. However, the 60°F (16°C) maximum temperature may not be exceeded.

Consult your installation planning representative about any problem in this area.



Customer Chilled-Water Requirements

Percentage of Ethylene Glycol Solution	Maximum Temperature °F	(°C)	Sea Level to 3,000-foot (914.4-m) Altitude: Flow Rate gpm	(dm^3/min)	Pressure Drop psi	(kgf/cm^2)	3,000- to 7,000-foot (914.4- to 2 130-m) Altitude: Flow Rate gpm	(dm^3/min)	Pressure Drop psi	(kgf/cm^2)
0	60	(15.6)	22	(83.3)	10	(0.703)	–	–	–	–
	58	(14.4)	19	(71.9)	8	(0.562)	–	–	–	–
	56	(13.3)	17	(64.3)	6	0.422)	–	–	–	–
	54	(12.2)	15	(56.8)	5	0.352)	35	(132.5)	24	(1.687)
	52	(11.1)	13	(49.2)	4	0.281)	29	(109.8)	17	(1.195)
	50	(10.0)	11	(41.6)	3	(0.211)	24	(90.8)	12	(0.844)
	48	(8.9)	10	(37.8)	2	(0.141)	21	(79.5)	9	(0.633)
	46	(7.8)	9	(34.1)	2	(0.141)	18	(68.1)	7	(0.492)
	44	(6.7)	8	(30.2)	2	(0.141)	16	(60.6)	5	(0.352)
	42	(5.6)	8	(30.2)	2	(0.141)	14	(53.0)	4	(0.281)
	40	(4.4)	7	(26.5)	2	(0.141)	12	(45.4)	3	(0.211)
	38	(3.3)	7	(26.5)	2	(0.141)	11	(41.6)	3	(0.211)
20	60	(15.6)	31	(117.3)	22	(1.546)	–	–	–	–
	58	(14.4)	27	(102.1)	17	(1.195)	–	–	–	–
	56	(13.3)	21	(79.5)	10	(0.703)	–	–	–	–
	54	(12.2)	18	(68.1)	8	(0.562)	–	–	–	–
	52	(11.1)	15	(56.8)	5	(0.352)	40	(151.4)	35	(2.461)
	50	(10.0)	13	(49.2)	4	(0.281)	33	(124.9)	25	(1.758)
	48	(8.9)	12	(45.4)	4	(0.281)	27	(102.1)	17	(1.195)
	46	(7.8)	11	(41.6)	3	(0.211)	22	(83.3)	12	(0.844)
	44	(6.7)	10	(37.8)	3	(0.211)	18	(68.1)	8	(0.582)
	42	(5.6)	9	(34.1)	2	(0.141)	15	(56.8)	5	(0.352)
	40	(4.4)	8	(30.2)	2	(0.141)	13	(49.2)	4	(0.281)
	38	(3.3)	7	(26.5)	2	(0.141)	12	(45.4)	3	(0.211)
	36	(2.2)	7	(26.5)	2	(0.141)	11	(41.6)	3	(0.211)
40	60	(15.6)	41	(155.2)	42	(2.953)	–	–	–	–
	58	(14.4)	32	(121.1)	26	(1.828)	–	–	–	–
	56	(13.3)	24	(90.8)	15	(1.055)	–	–	–	–
	54	(12.2)	20	(75.7)	10	(0.703)	–	–	–	–
	52	(11.1)	17	(64.3)	8	(0.562)	–	–	–	–
	50	(10.0)	15	(56.8)	6	(0.422)	–	–	–	–
	48	(8.9)	13	(49.2)	5	(0.352)	35	(132.5)	31	(2.179)
	46	(7.8)	11	(41.6)	4	(0.281)	26	(98.4)	17	(1.195)
	44	(6.7)	10	(37.8)	3	(0.211)	21	(79.5)	12	(0.844)
	42	(5.6)	9	(34.1)	3	(0.211)	18	(68.1)	9	(0.633)
	40	(4.4)	8	(30.2)	3	(0.211)	15	(56.8)	6	(0.422)
	38	(3.3)	8	(30.2)	3	(0.211)	13	(49.2)	5	(0.352)
	36	(2.2)	7	(26.5)	2	(0.141)	12	(45.4)	4	(0.281)
60	58	(14.4)	35	(132.5)	35	(2.461)	–	–	–	–
	56	(13.3)	27	(102.1)	22	(1.547)	–	–	–	–
	54	(12.2)	22	(83.3)	16	(1.125)	–	–	–	–
	52	(11.1)	19	(71.9)	12	(0.844)	–	–	–	–
	50	(10.0)	17	(64.3)	10	(0.703)	–	–	–	–
	48	(8.9)	15	(56.8)	7	10.492)	39	(147.6)	43	(3.023)
	46	(7.8)	13	(49.2)	6	(0.422)	28	(106.0)	24	(1.687)
	44	(6.7)	12	(45.4)	6	(0.422)	23	(87.1)	17	(1.195)
	42	(5.6)	11	(41.6)	5	(0.352)	20	(75.7)	13	(0.914)
	40	(4.4)	10	(37.8)	4	(0.281)	17	(64.3)	10	(0.703)
	38	(3.3)	9	(34.1)	4	(0.281)	14	(53.0)	7	(0.492)
	36	(2.2)	8	(30.2)	3	(0.211)	12	(45.4)	6	(0.422)

Legend:

dm^3/min	cubic decimeters per minute
gpm	gallons per minute
kgf/cm^2	kilogram force per square centimeter
psi	pounds per square inch

Notes:
1. The maximum chilled-water temperature should reflect all possible worst-case conditions.
2. Keep all flow rates in the listing to within ±15%.
3. The values listed in the table are based on a system coolant flow rate of 25 gpm (94.6 dm^3/min).

INSTALLATION PROCEDURES

Frames 10, 11, and 12

Step Colt | Tray Pack (See INST 50)

A 1. Ensure that the shipping braces are removed from gates A and B.

B 2. Position frame 10 and remove the EMC compartment cover from frame 11.

C 3. Bring frame 11 into position next to frame 10 and connect the frames with lockwashers (part 6935), washers (part 3550), and nuts (part 3960). — 255 H (6), 255 J (6), 255 I (6)

Note: Route the cables from the top of frame 10 over the EMC compartment.

D 4. Connect the top of the EMC box with screws (part 2574822). — 255 B (2)

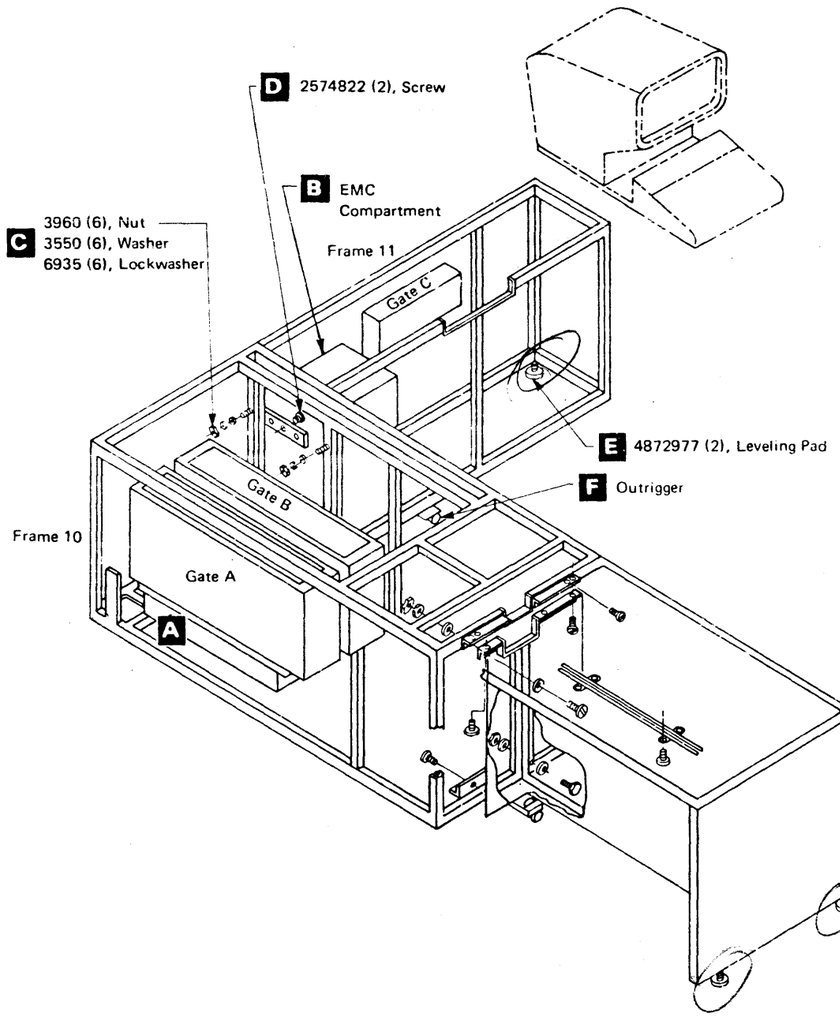
E 5. Remove the casters from frame 11 (and frame 12, if attached). Install the leveling pads (part 4872977) by sliding the corner of the frames over a hole from a removed floor tile.

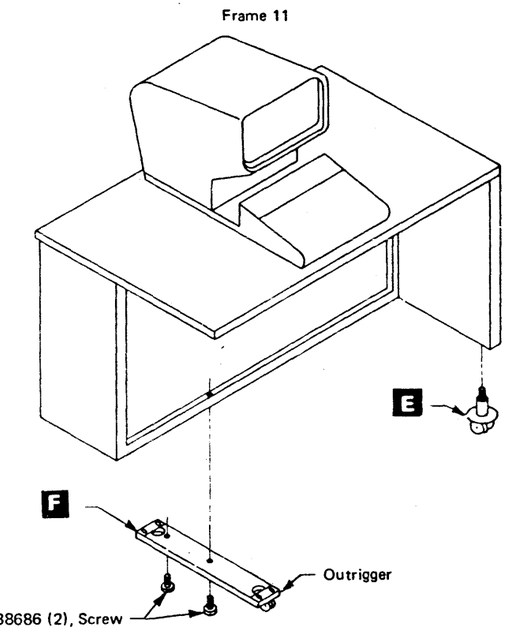
F 6. Remove the outrigger from frame 11 by removing the two bolts from one of the casters and the two bolts attached to the frame. Slide the outrigger out the front of the frame.

7. Position the console assembly and level frames 11 and 12 by adjusting the leveling pads using leveling wrench (part 6834434).

8. If frame 12 is not attached, proceed to INST 101. If frame 12 is attached, proceed to INST 110.

9. Install the covers removed in the previous steps.



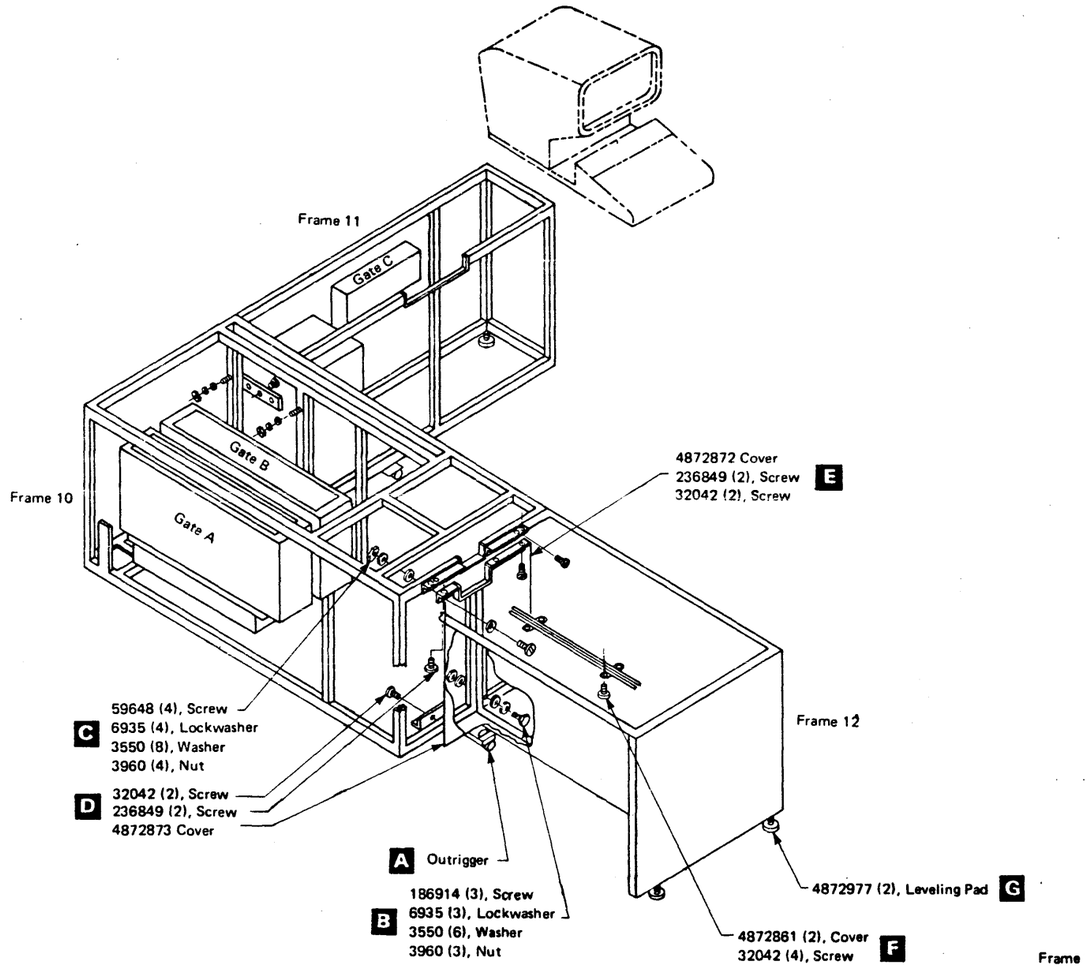


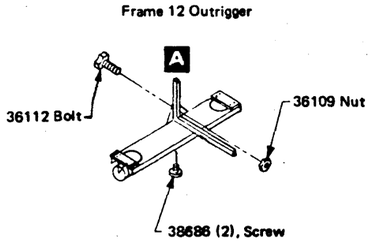
Part	EC No.	276474	276707	278357	388707	213545
8271610	Date	20Jan78	3May78	19Jul78	1Dec79	15Jun81

INSTALLATION PROCEDURES

Frame 12 (Unattached)

		Step Cplt	Tray Pack (See INST 50)
A	1. Remove frame 12 outrigger by removing the two bottom screws (part 38686) and bolt (part 36112), being careful not to tip the frame.	☐	
B	2. Install on the vertical frame member: screws (part 186914), lockwashers (part 6935), washers (part 3550), and nuts (part 3960).	☐	
C	3. Install on the horizontal frame member: screws (part 59648), lockwashers (part 6935), washers (part 3550), and nuts (part 3960).	☐	
	4. Route the cables shown in the figure on INST 110 **G**. Return to this procedure.	☐	Parts are bagged and taped to gate A in frame 10, or they are already mounted.
D	5. Install frame 10 left-rear side cover (part 4872873) with screws (part 32042) for the bottom and screws (part 236849) for the top.	☐	
E	6. Install frame 10 left-front side cover (part 4872872) with screws (part 32042) for the bottom and screws (part 236849) for the top.	☐	
	Note: For ease of cover installation, remove the upper bracket from frame 12 and attach the bracket to the cover; then install the cover.		
F	7. Connect frame 12 front and rear covers (part 4872861) by installing two screws (part 32042) to the top of each cover.	☐	
G	8. Install the leveling pads as directed for frame 11.	☐	
	9. Install covers removed in the previous procedures.	☐	





Part 8271661	EC No. Date	276707 3May78	278357 19Jul78		

INSTALLATION PROCEDURES

Console Cables

Step Cplt

A Install the following gate T cables.

Cable	*Part*
T-02A	4873231
T-02B	4873224
T-03A	4873236
T-03B	4873430
T-04A	4873432
T-04B	4873434

T-01A and T-01B (tri-lead cable)

GATE C POWER

B To install cable (part 4400959), attach wire 1 to bus 1, and wire 2 to bus 2. The buses are on the hinge end of gate C.

DISKETTE DRIVE AND DISPLAY CABLE ROUTING

Note: The following cables are connected on INST 120.

C 1. Route diskette drive cable (part 4873242) along the front top of frame 11 and through the clamp strap as shown.

CAUTION
Ensure that the correct cable is routed. Components can be damaged if the keyboard cable is mistakenly terminated in the diskette drive.

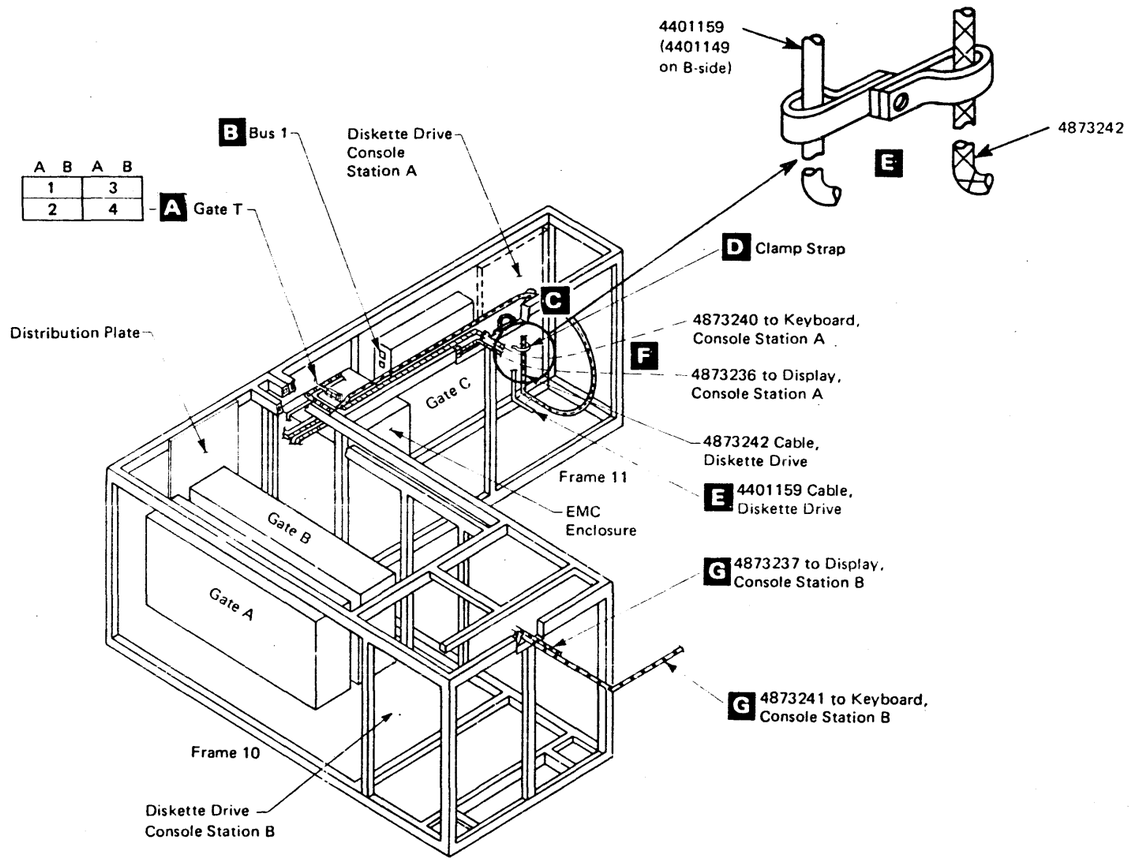
D 2. Connect the clamp strap on the diskette drive frame to the braided area on the cable. Position the clamp to relieve any strain on the cable connector.

E 3. Route diskette drive power cable (part 4401159) along the bottom of the frame and through the clamp strap as shown. Tighten the clamp strap, allowing sufficient slack for strain relief. Push the connector into the cutout on the diskette drive frame. Plug the diskette drive cable into this connector. Attach the ground wire to the clamp that holds cable (part 4873242).

4. Check the resistance of the motor frame to the frame ground screw. If the resistance is greater than 5 ohms, check the ac power plug of the motor for correct connections. (See ALD page YD011.)

F 5. Route cables (parts 4873240 and 4873236) as shown. Install the clamp straps along the top of the frame.

G 6. Route cables (parts 4873237 and 4873241) as shown if frame 12 was not attached to frame 10.



Part	EC No.	276474	276707	278357	278891	279895	211786	213545
8271611	Date	20Jan78	3May78	19Jul78	17Nov78	26Jan79	5Jan81	15Jun81

INSTALLATION PROCEDURES

Console Station A

INSTALL KEYBOARD CABLE

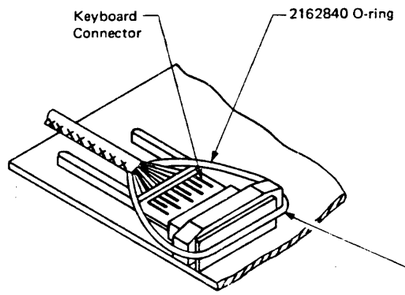
		Step Cplt	Tray Pack (See INST 50)
A	1. Loosen screw (part 4686784).	☐	
B	2. Pivot the keyboard slightly to remove screw (part 81693). Pivot the keyboard the other way to remove the other screw (part 81693). Remove the faceplate (part 1559981).	☐	
C	3. Loosen screws (part 10170), push forward on the faceplate, and remove the faceplate (part 4872798).	☐	
D	4. Remove the pan from under the keyboard by loosening the screws and sliding the pan over the slots.	☐	
E	5. Route cable (part 4873240) through the bracket (part 1559985), into the keyboard, plug the cable into the keyboard connector, and use the O-ring (part 2162840) to hold the connector in the keyboard housing as shown. Connect the ground strap to the exposed braiding on the cable and to the ground pad on the keyboard base.	☐	255 G (1)

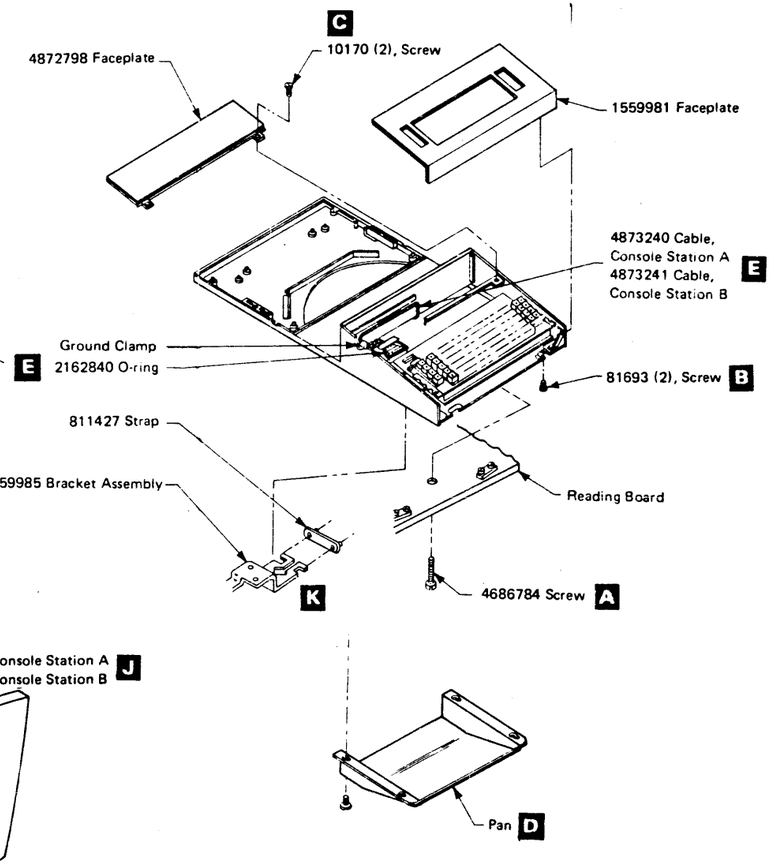
CAUTION
Ensure that the correct cable is routed. Components will be damaged if the diskette drive cable is mistakenly terminated in the keyboard.

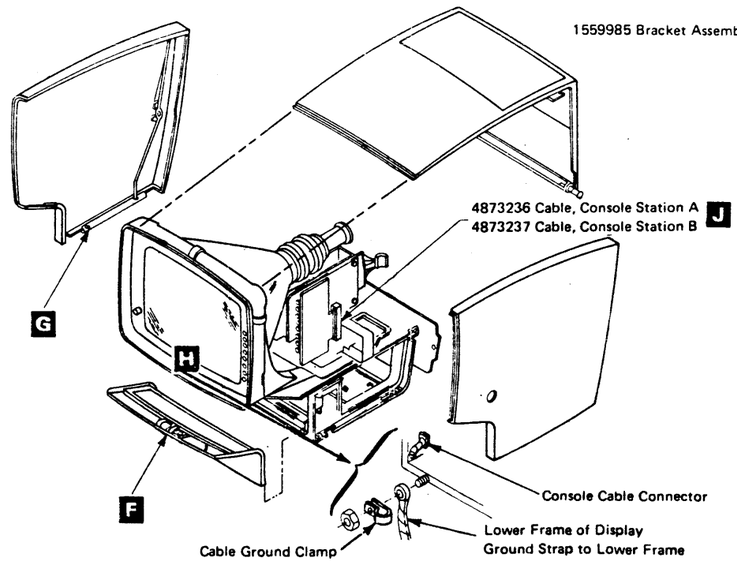
F	6. Install the covers and screws removed in the previous steps.	☐

INSTALL DISPLAY CABLE

F	1. Remove the front cover of the display by pushing down on the latch and pulling forward on the top of the cover.	☐
G	2. Remove the side covers by pushing the lever toward the front with a thin screwdriver and pulling out on the cover at the rear. (The key must be removed from the right side.)	☐
H	3. Route cable (part 4873236) through the same bracket as the keyboard cable. Connect the cable ground clamp to the stud near the display connector. (A ground strap is attached to this stud.) Plug the short end of the cable into the lower left front of the display. Snap on the spring to hold the cable in place.	☐
J	4. Route the other connector through the hole in the center of the display frame, and plug the connector into the LED board.	☐
K	5. Hold the cables in place with strap (part 811427).	☐
	6. Install the covers removed in the previous steps.	☐







3033

Part	EC No.	276474	276707	278891	279895
8271612	Date	20Jan78	3May78	17Nov78	26Jan79

INSTALL FRAME 12 CABLES

Step Cplt ☐

If frame 12 is not attached when it is received, the cables are attached the same as for the other console station. Cable (part 4873237) is connected to the display, and cable (part 4873241) is connected to the keyboard.

3037 Power Connector Safety Check

The 3037 power connector safety check contains the steps to be followed when a customer power cable connector is used for the first time and when doubt exists that a cable connector is wired correctly. This power connector safety check procedure is mandatory for a new machine installation or when a machine is relocated and a new power cable connector is used.

- Read the entire procedure before starting the power connector safety check.
- Remain alert and exercise all possible safety precautions.

DANGER
DO NOT TOUCH the connector until you have completed the following test to ensure that the connector is correctly wired. Line voltage can be present on the metal shell of the customer's power receptacle/connector.

Check with the customer or the Installation Planning Representative (IPR) to locate a reliable building ground (such as an electrical conduit, a water pipe, or another properly grounded IBM machine). For your safety, use a CE meter with insulated test probes. If any problems are encountered at a procedure step, turn *off* primary power, *stop* the installation, and notify the customer. When the customer has corrected the problem, *repeat* the entire checkout procedure.

POWER CONNECTOR SAFETY PROCEDURE

Have the customer locate the branch circuit distribution breaker (wall switch) that supplies power to the 3037 power connector. Instruct the customer to turn *off* this power source CB. Refer to the power connector drawing for the following steps:

Step Cplt

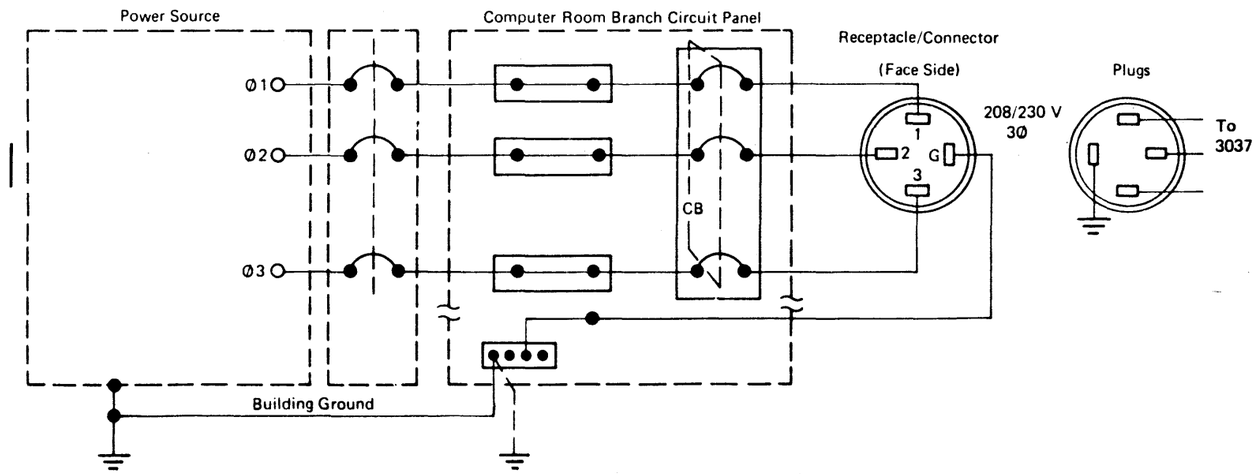
1. Set the multimeter to the 500 Vac range. Check for 0 volts between the *building ground* and the connector shell, between the *building ground* and the three connector voltage contacts, and between the connector shell and the connector ground contact. ☐
2. Set the meter to the RX1 range and zero the meter. Check for a continuity of 1 ohm or less between the *building ground* and the connector shell, and between the connector shell and the connector ground contact. ☐
3. Set the meter to the 500 Vac range. Connect the meter leads between the *building ground* and the connector shell. ☐

Step Cplt

DANGER
The remaining steps of the procedure contain measurements that are taken with power *on*. Remember that lethal voltages are present.

4. Turn *on* the power source CB and check for 0 volts between the *building ground* and the connector shell. ☐
5. Turn *off* the power source CB. Connect the meter leads between the *building ground* and one of the voltage contacts. ☐
6. Turn *on* the power source CB and ensure that line voltage is present. This step also verifies that the correct power panel CB is in use. ☐
7. Turn *off* the power source CB. Connect the meter leads between the connector shell and the connector ground contact. ☐
8. Turn *on* the power source CB and check for 0 volts between the connector shell and the connector ground contact. ☐
9. Turn *off* the power source CB. ☐

The preceding safety procedure must be followed for all power source metal-shell cable connectors that supply power to the machine. Continue the installation/relocation procedures only after all the preceding cable connector safety requirements have been met.



Check ac Compartment Connections

DANGER
Before customer power is applied to the MG, visually check for proper grounding connections at both the PDU and MG ends of the cable.

Step Cplt

A

1. When the electrician has connected the 415-Hz and the 50/60-Hz power to the PDU, with power turned off, visually check that the ac compartment connections are routed through the proper access holes and that the wires are properly connected. ☐
2. Reinstall the cover on the ac compartment with the 24 screws provided. ☐
3. Turn off CB1 through CB5 and CB15 and turn on CB13 on the PDU. ☐
4. Ask the customer to turn on the 50/60-Hz power and the MG 415-Hz power to the PDU. ☐

MG OVERVOLTAGE (PRELIMINARY NO-LOAD OVERVOLTAGE CHECK)

Note: Ask the customer to do steps 1-4.

Ask the customer to first set the MG overvoltage adjustment with the system power turned off. Final overvoltage adjustment is set after processor power is turned on.

1. Set the MG overvoltage adjustment for the highest trip point. ☐
2. Adjust the MG ac output for a reading of +60 V dc at either the MG TB or the +50 V dc test points by using the MG local output control. ☐
3. Change the MG overvoltage trip adjustment until the ac output of the MG drops (overvoltage trip), which causes the dc voltage at the TB to fall below +48 V dc. Bring the MG ac voltage adjustment down slightly. ☐
4. Adjust the MG ac voltage for a reading of +50.0 V dc at the TB. ☐

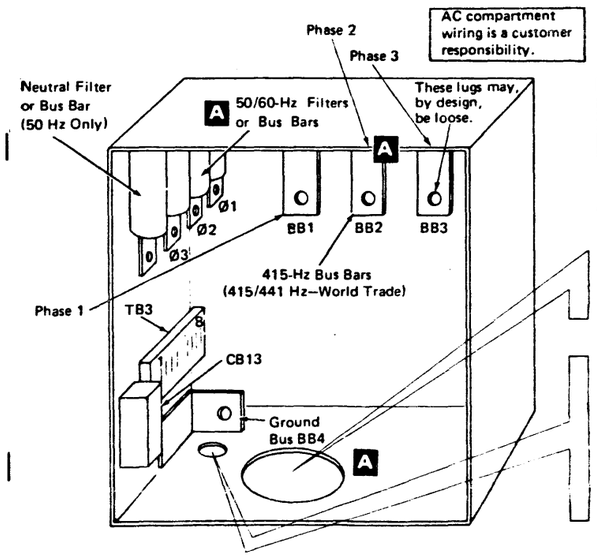
CHECK MG +50 V DC

Machines without Proportional Supply

Note: Ask the customer to do steps 1-3. Step Cplt

Turn off CB1 through CB5 and CB15 and turn on CB13 on the PDU. Ask the customer to adjust the proportional power supply on the MG for an output of +50 V dc with 208 V rms output on the generator. The ac meter used for this adjustment should be accurate to better than ± 1/2%. A digital multimeter (part 1749233) or equivalent should be used.

1. The MG is set for local sensing (Local/Remote switch at the MG) with no load. (Turning off CB1 through CB5 and CB15 removes the system load.) ☐
2. Measure the generator voltage at the MG MS connector with a true rms meter, and set the MG local output control for 208 V rms line-to-line average. Measure the dc voltage at either the MG or the PDU +50 V dc test points, and adjust the MG +50 V dc output control of the proportional supply to +50.0 V dc. Recheck both the ac and dc voltages because interaction may occur between the two adjustments. Lock the +50 V dc adjustment potentiometer. ☐



DANGER
The ac compartment contains hazardous voltages (up to 415 V ac). Be certain that the customer ac power is turned off before connecting ac power wires to the filters and buses in the ac compartment.

DANGER
A voltage phase connected to the ground bus by mistake creates a serious safety hazard. Visually check that the 415-Hz customer power cable has been routed through the access hole, and that the 3-phase wires and ground wire (green, or green with yellow tracer) are properly fastened.

Route the customer MG wires through the access hole and fasten to TB3.

TB3-1	50 V dc (Positive)
TB3-2	50 V dc (Negative)
TB3-3	MG Common
TB3-4	MG Abnormal
TB3-5	Unused by the customer
TB3-6	Remote ac Sense (Phase 1)
TB3-7	Remote ac Sense (Phase 2)
TB3-8	Remote ac Sense (Phase 3)

Connect the 50/60-Hz power cable to the customer underfloor outlet.

Step Cplt

3. Switch the MG to remote sensing. Measure the dc voltage at either the MG or the PDU +50 V dc test points, and adjust the MG remote output control for +50.0 V dc. Lock the MG remote output adjustment potentiometer and leave the MG set for remote sensing. ☐
4. Using a digital multimeter (part 1749233) or equivalent, check for +50 ± 1 V dc at the 50 V dc test points on the PDU (near the 415-HZ ON neon indicator). The voltage tolerance in this step is 10 times better than normal to serve as a calibration check. ☐

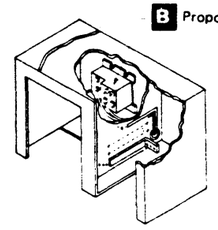
If +50 V dc is out of tolerance, the customer must adjust it (steps 1-3).

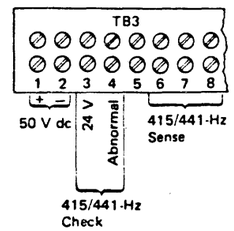
Note: If the 415/441-Hz input source for the 3037 does not meet specifications for the MG used with the 3033 Processor Complex, 3033 Processor Complex Model Groups N and S, 3033 Multiprocessor Complex, and 3033 Attached Processor Complex as shown in this manual, contact your local IBM installation planning representative.

B **Machines with Proportional Supply**

1. Refer to ALD page YC101 for local/remote connections. ☐
2. Attach a digital multimeter (part 1749233) or equivalent to the +50 V dc test jacks on the PDU. ☐
3. Turn the system on and check for 49 V dc to 51 V dc. If the voltage is not between these limits, have the customer adjust the 415-Hz source output up or down as required to meet the limits. ☐

B Proportional Supply





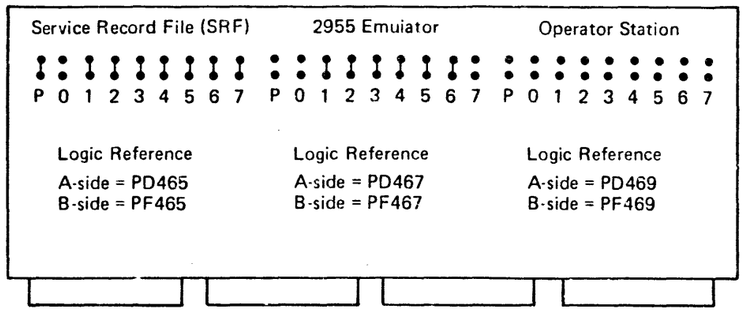
Customer to supply wiring and appropriate connecting hardware to the above terminals.

INSTALLATION PROCEDURES

Address and Feature Card Plugging

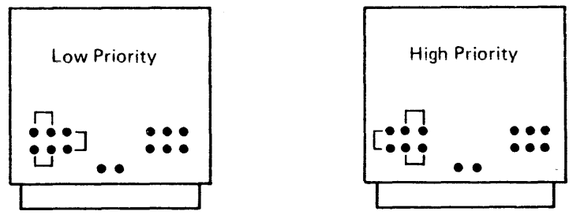
		Step Cplt
	1. Check the feature definition card plugging on LADS page A6012 for Model U, A5999 for Model N, and A6010 for Model S.	☐
	2. Check the failing storage address plugging on card 01A-C3T2 in the instructions on LADS page A6013 for Models N and U, and A6011 for Model S.	☐
A	3. Check the console addresses on cards 10A-B1S2 and 10B-A1S2. (See LADS page PA002.)	☐
B	4. Check that the select-out bypass is plugged for high or low priority on cards 10A-A1B4 and 10A-A1B5. (See LADS page PA003.) Check the card plugging with the customer.	☐
	5. Check the modem jumpers on LADS page PA004.	☐
	6. Check the modem card on LADS page PA005.	☐
	7. Check the director LADS pages for plugging on the following: AA930 for CTCA feature address AA921 for CTCA feature priority and mode selection AA610 for hold-out control AA854 for data-suppression block multiplexer	☐

A Card Location 10B-A1S2 for A-side, 10A-B1S2 for B-side

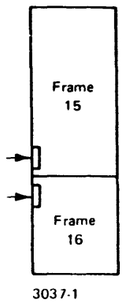


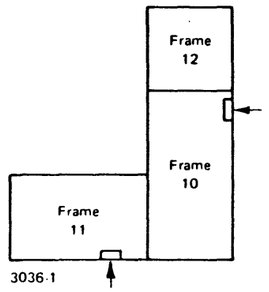
Address Jumpering:
Jumper bits that are off.
Maintain odd parity.
SRF example is address 80.
2955 emulator example is address 81.

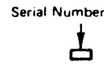
B Card location 10A-A1B4 for A-side, 10A-A1B5 for B-side

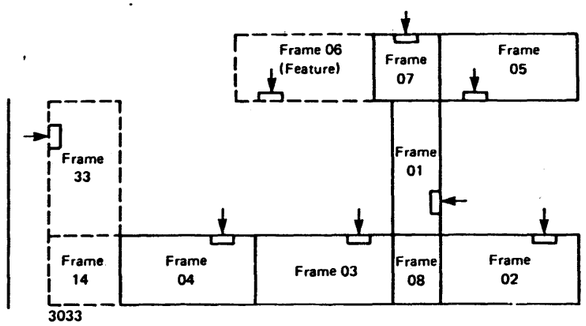


Serial Number Plate Locations for UP and Model Groups N and S

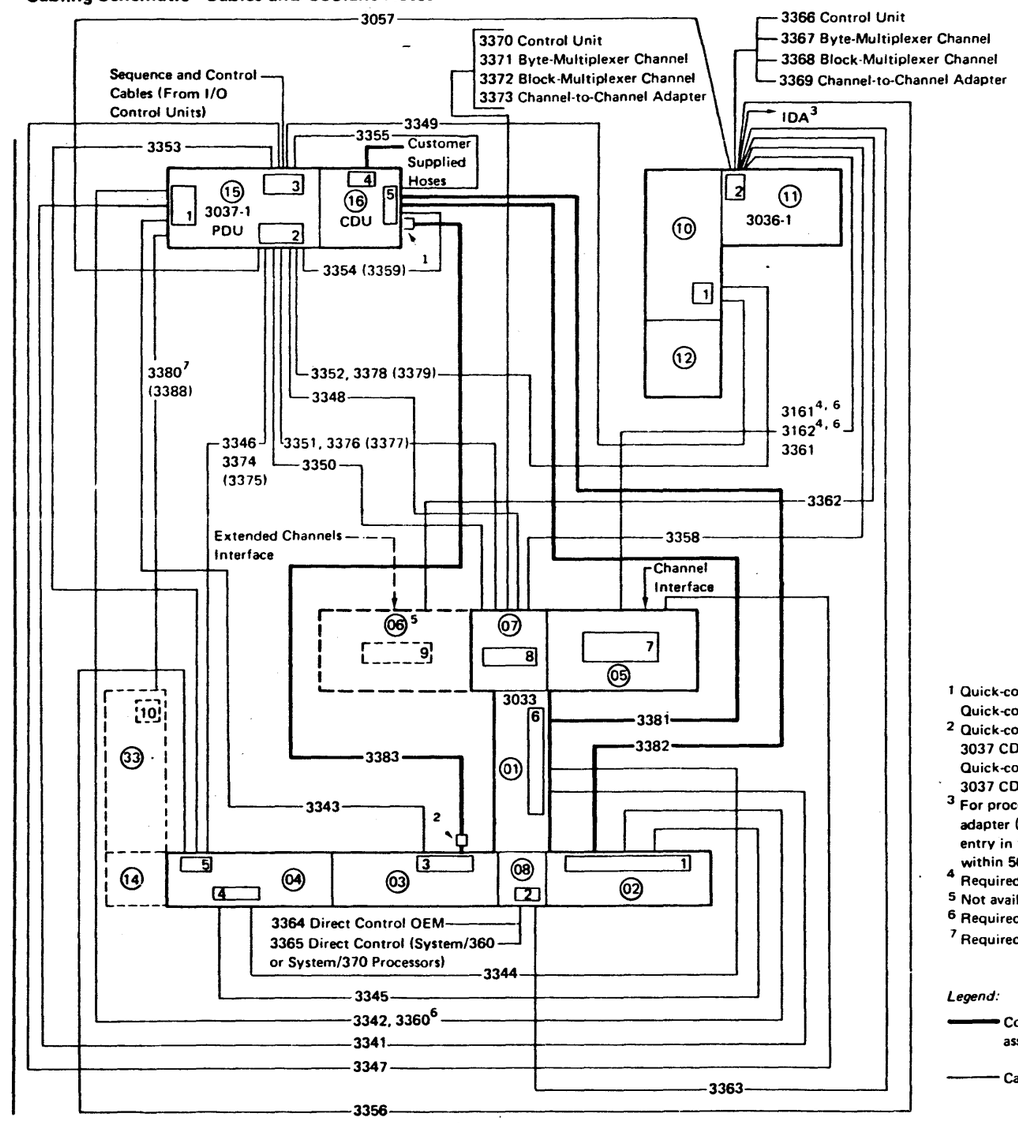








3033 Processor Complex and 3033 Processor Complex Model Groups N and S Cabling Schematic—Cables and Coolant Hoses



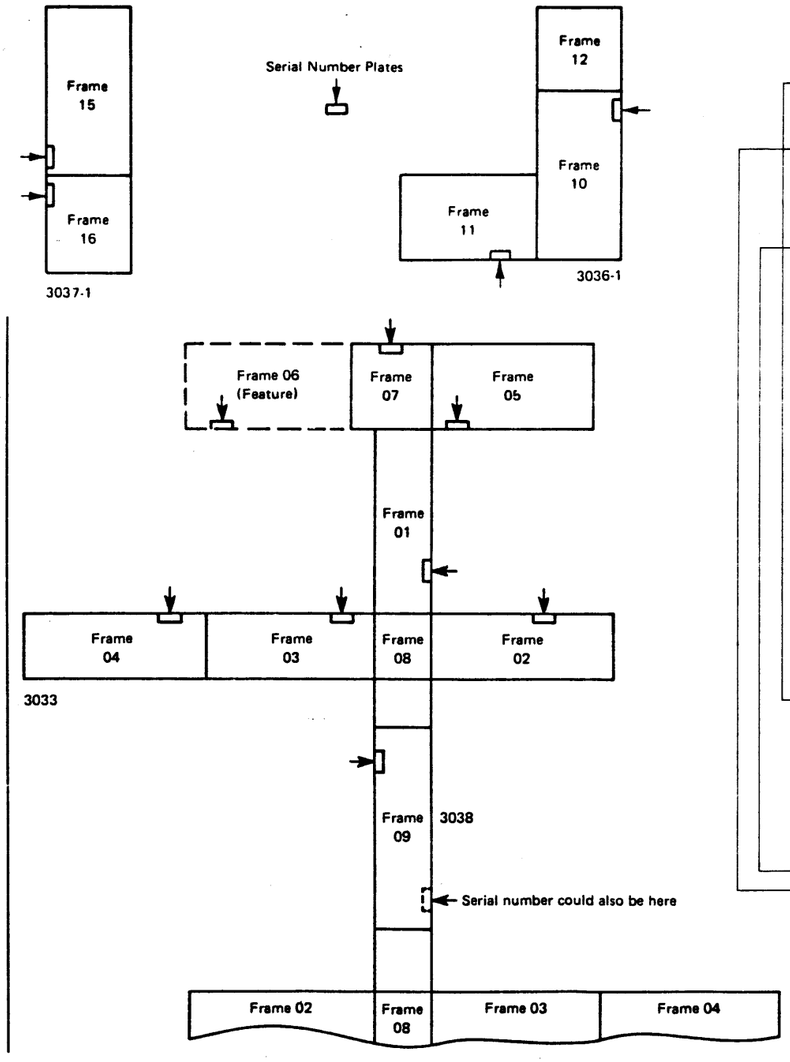
1 Quick-connect sockets are on supply hoses at 3037 CDU end. Quick-connect plugs are on return hoses at 3037 CDU end.
2 Quick-connect plugs are on supply hoses at end away from 3037 CDU.
Quick-connect sockets are on return hoses at end away from 3037 CDU.
3 For processors installed in the U.S. and Canada, integrated data adapter (IDA) cable (provided with the processor) enters cable entry in frame 11. Data Access Arrangement (DAA) must be within 50 feet of cable entry in frame 11.
4 Required for Model Group N.
5 Not available on Model Group S.
6 Required for Model Group S.
7 Required for Models U24 and A24.

Legend:

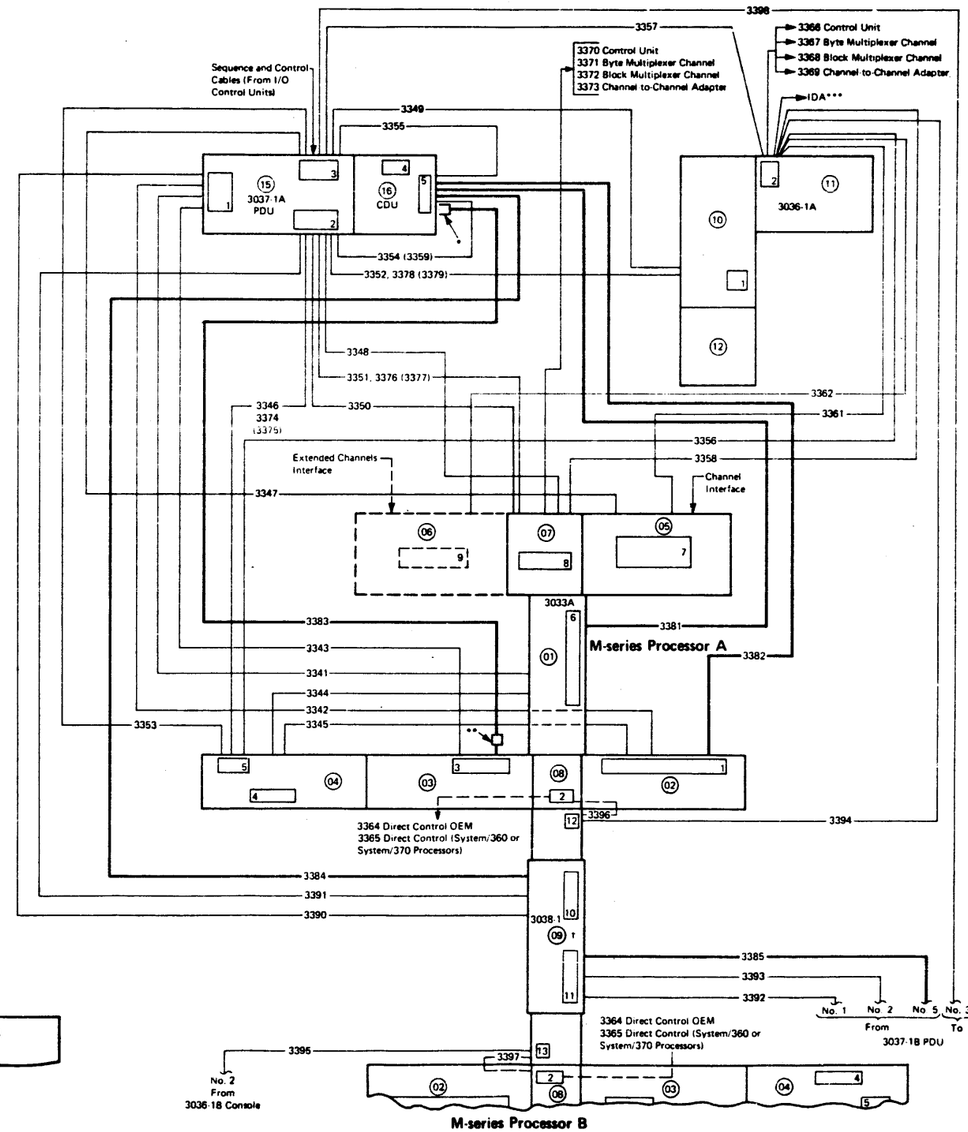
Coolant hoses. (Only supply hoses are shown; assume one return hose for each supply hose.)

Cables

Serial Number Plate Locations for MP



3033 Multiprocessor Complex Cabling Schematic—Cables and Coolant Hoses



Legend:

——— Coolant hoses. (Only supply hoses are shown, assume one return hose for each supply hose.)

——— Cables

*Quick connect sockets are on supply hoses at 3037 CDU end. Quick connect plugs are on return hoses at 3037 CDU end.

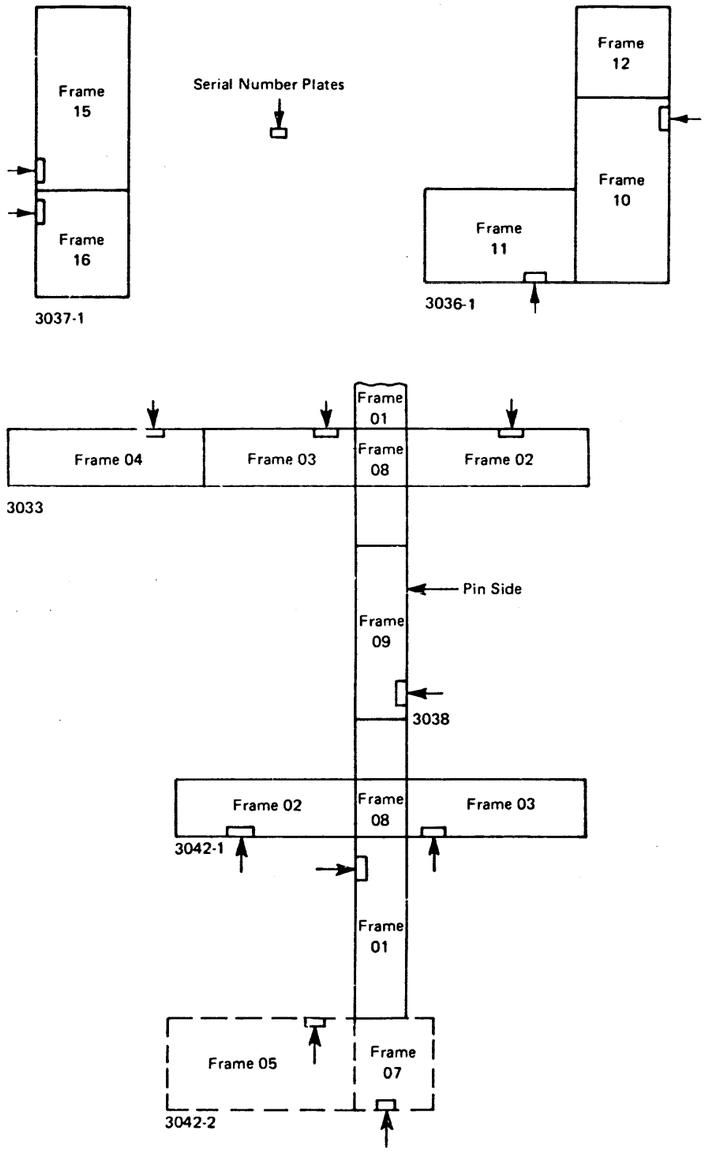
**Quick connect plugs are on supply hoses at end away from 3037 CDU. Quick connect sockets are on return hoses at end away from 3037 CDU.

***For processors installed in U.S. and Canada, integrated data adapter (IDA) cable (provided with the processor) enters cable entry in frame 11. Data Access Arrangement (DAA) type CDT must be within 50 feet of cable entry in frame 11.

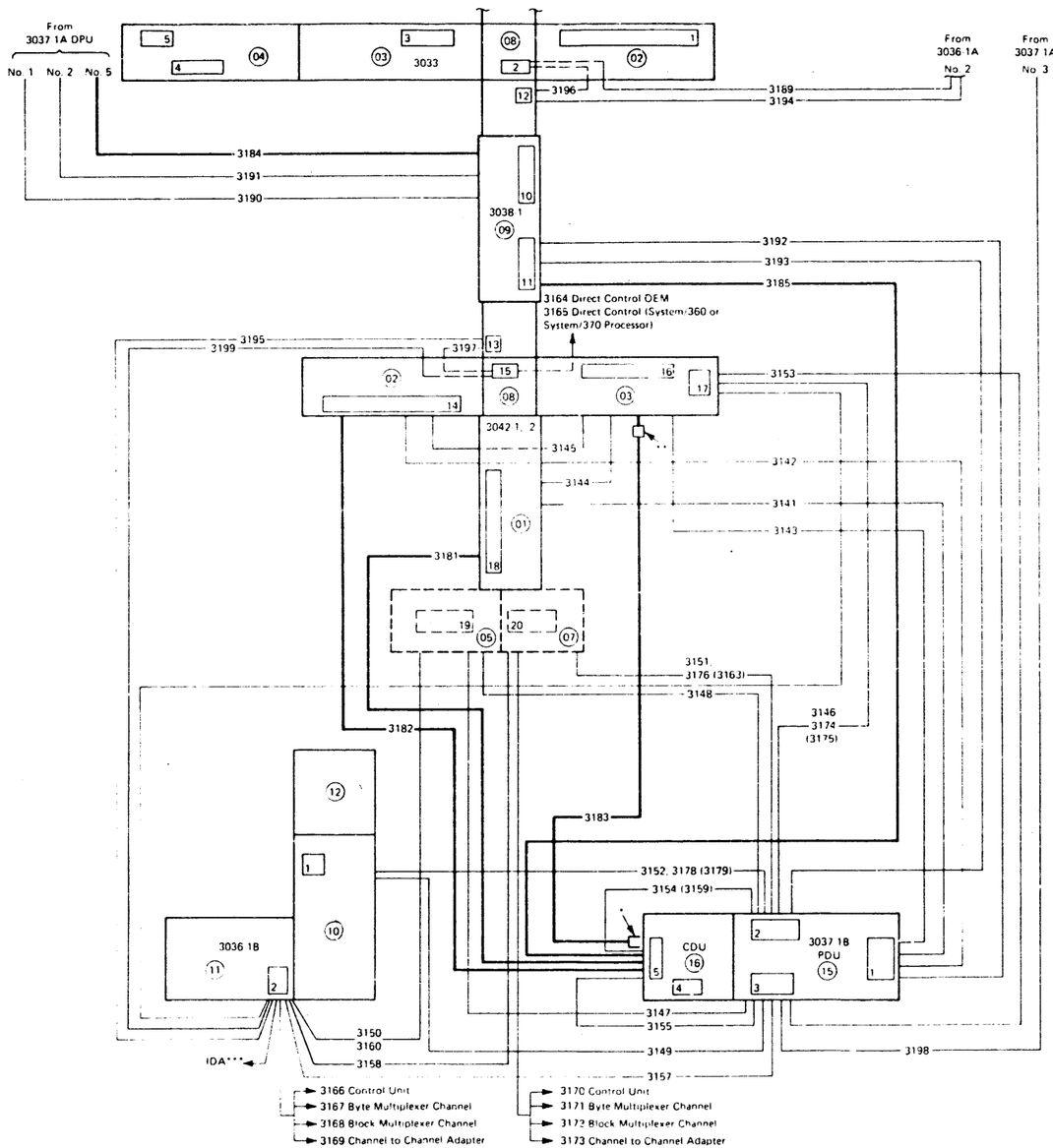
†Frame 09 is considered part of 3033 Processor (M-series).

3033	Part	EC No.	388692	388707	211786	
	8271674	Date	10Aug79	1Dec79	5Jan81	

Serial Number Plate Locations for AP



3033 Attached Processor Complex Cabling Schematic—Cables and Coolant Hoses



Legend:

——— Coolant hoses. (Only supply hoses are shown; assume one return hose for each supply hose.)

——— Cables

*Quick connect sockets are on supply hoses at 3037 CDU end. Quick connect plugs are on return hoses at 3037 CDU end.

**Quick connect plugs are on supply hoses at end away from 3037 CDU. Quick connect sockets are on return hoses at end away from 3037 CDU.

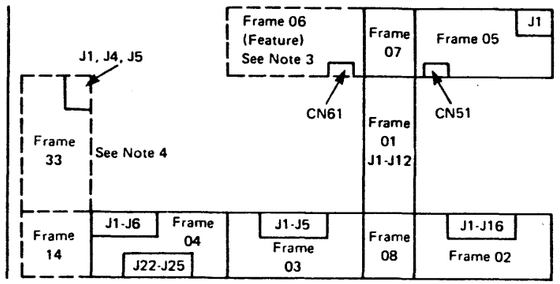
***For processors installed in U.S. and Canada, integrated data adapter (IDA) cable (provided with the processor) enters cable entry in frame 11. Data Access Arrangement (DAA) must be within 50 feet of cable entry in frame 11.

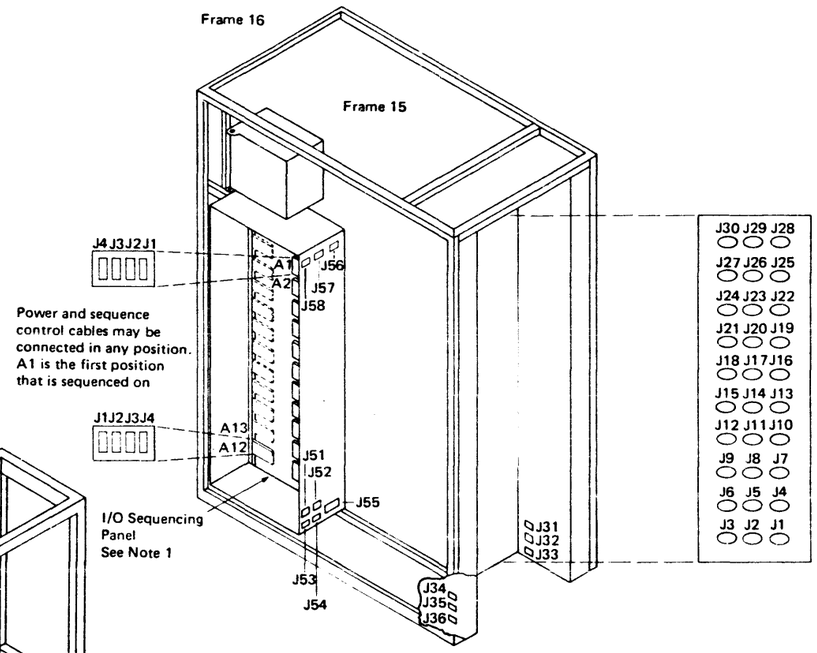
Part	EC No.	388707	208335	211786	213545
8271686	Date	1Dec79	1Jun80	5Jan81	15Jun81

INSTALLATION PROCEDURES

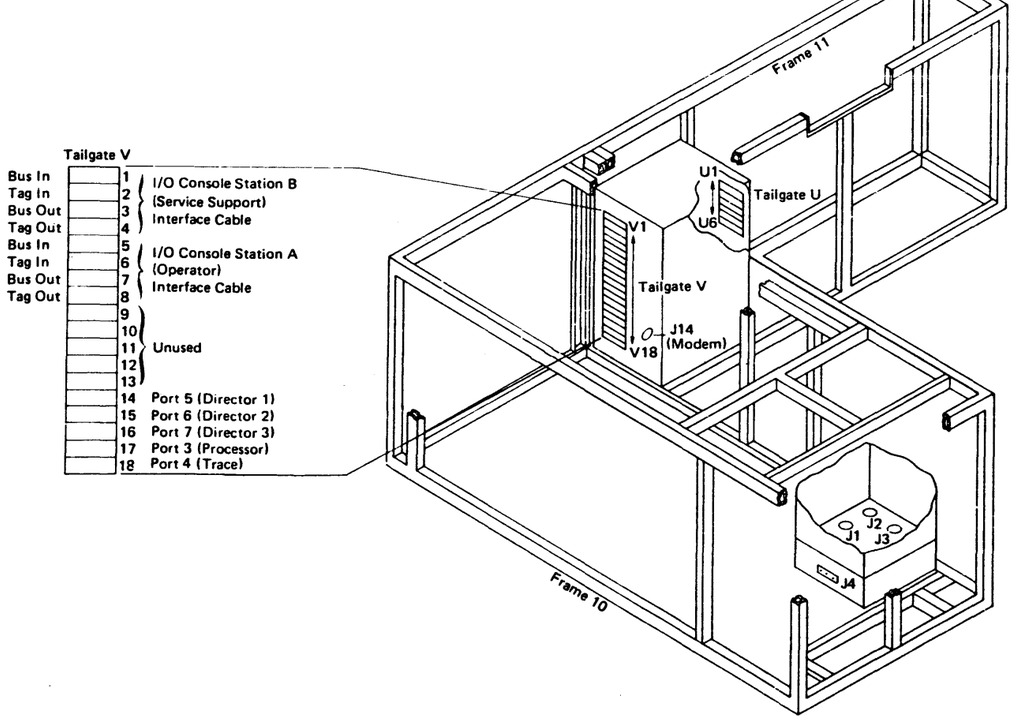
Cable Connector Locations for UP, MP, and Model Groups N and S

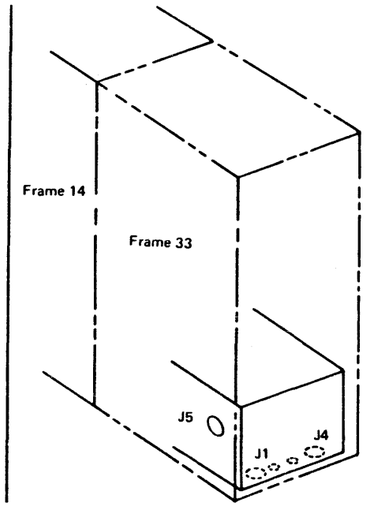
Note: For the 3042 Attached Processor, see INST 165.

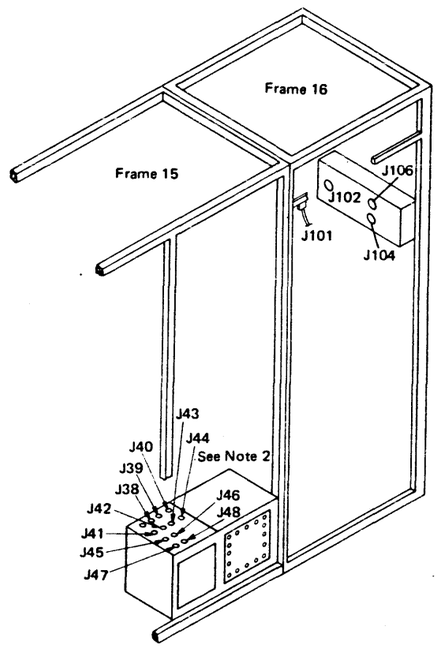




Notes:
1. Dummy connectors (part 5270772) with pin 3 jumpered to pin 4 must be installed in all unused positions.
2. For ease of assembly, install J38 through J48 in sequence.
3. For Model Group S, frame 06 is not available.
4. Frames 14 and 33 are available only with Models U24 and A24.

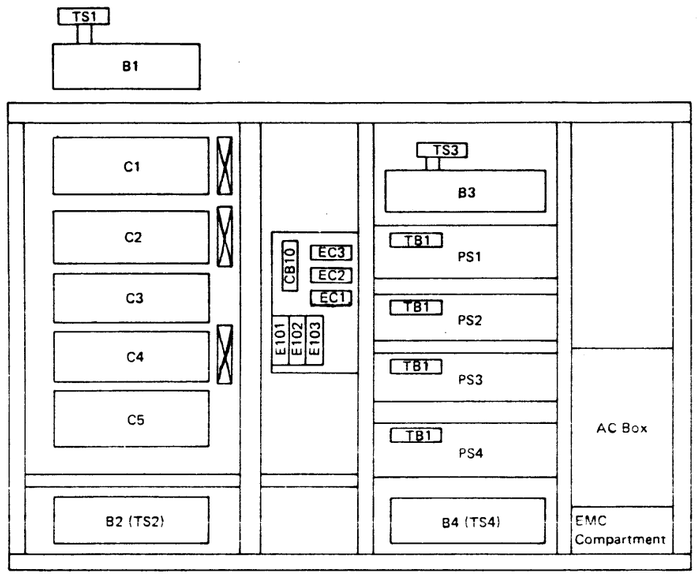




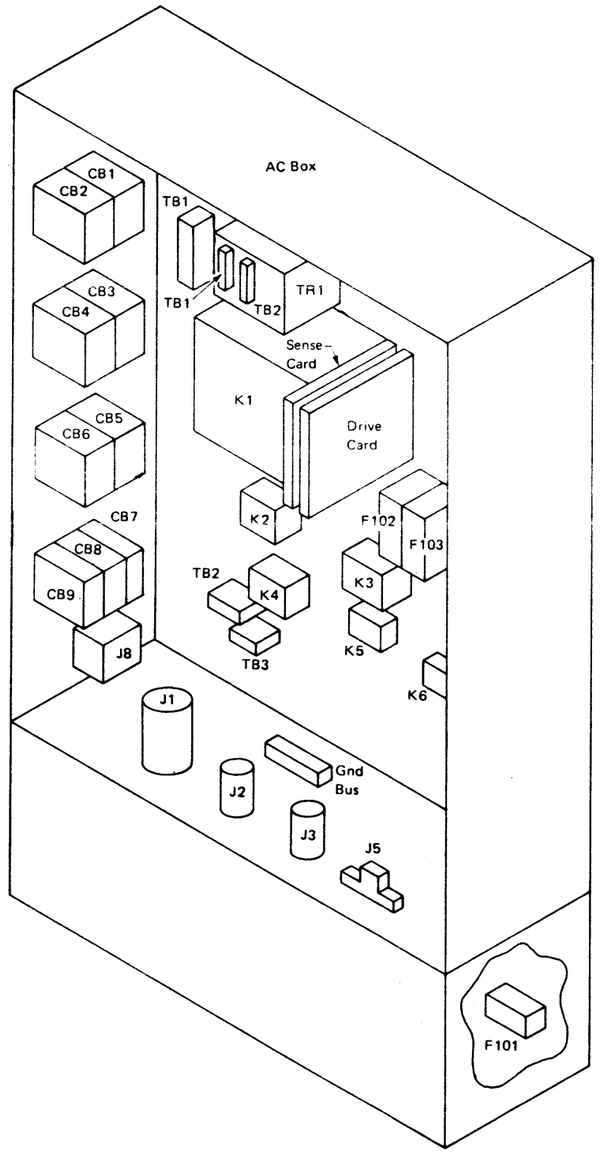


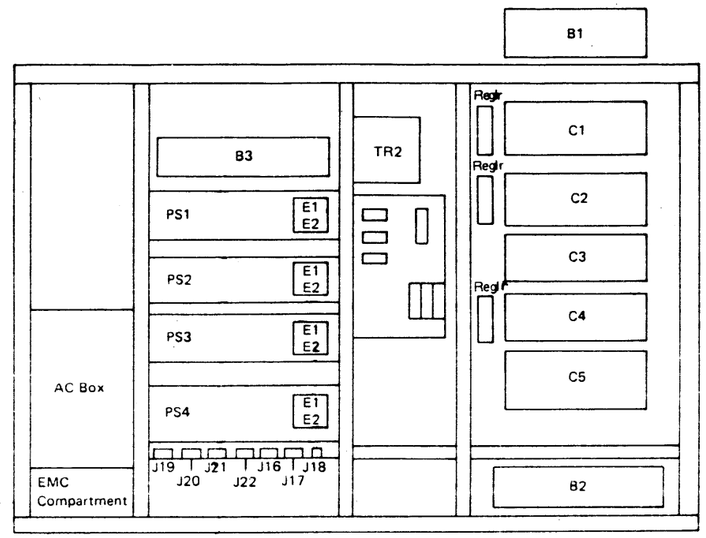
3033	Part	EC No.	276474	276707	388707	211786	213545	213562
	8271616	Date	20Jan78	3May78	1Dec79	5Jan81	15Jun81	4Sep81

Cable Connector Locations for AP

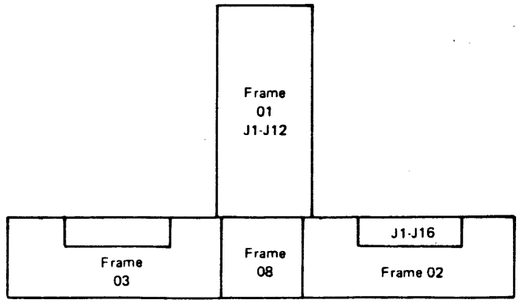


Frame 03, Pin Side





Frame 03, Card Side



Part	EC No.				
8271687	Date	388707 1Dec79			

External Cable Charts for AP, MP, UP, and Model Groups N and S

Remove the EMC covers and install the cables according to the following charts; refer to INST 150 and INST 160 for locations. To reinstall the EMC covers, refer to INST 342.

Notes:

1. Assemble EMC covers tightly with *all* screws provided. Loose covers will lower the machine's zap level.
2. For machines installed in Austria, Germany, and South Africa, use INST 171.

Chart 1. 60-Hz Cables

Cable Group	Key No.	Part	From	To	Seq No.	Note
3343	D	5719799	15 J33	03 J05	1	
3341	F	5719799	15 J32	01 J12	2	5
3341	E	5719799	15 J31	01 J11	3	5
3342	N	5719799	15 J35	02 J16	4	5, 12
3360	M	5719799	15 J35	02 J16	4	5, 13
3342	M	5719799	15 J34	02 J15	5	5, 8, 12
3360	L	5719799	15 J34	02 J15	5	5, 13
3341	A	2574276	15 J01	01 J01	6	
3342	A	2574276	15 J02	02 J07	7	12
3360	A	2574276	15 J02	02 J07	7	13
3342	B	2574276	15 J03	02 J01	8	12
3360	B	2574276	15 J03	02 J01	8	13
3341	B	2574276	15 J04	01 J09	9	
3342	C	2574276	15 J06	02 J14	10	12
3360	C	2574276	15 J06	02 J14	10	13
3340	A	2574276	15 J07	03 J02	11	
3343	B	2574276	15 J08	03 J03	12	
3342	D	2574275	15 J09	02 J02	13	12
3360	D	2574275	15 J09	02 J02	13	13
3341	C	2574276	15 J10	01 J10	14	
3341	D	2574275	15 J11	01 J07	15	
3342	E	2574275	15 J12	02 J13	16	12
3360	E	2574275	15 J12	02 J13	16	13
3343	C	2574275	15 J14	03 J01	17	
3342	F	2574275	15 J15	02 J05	18	12
3360	F	2574275	15 J15	02 J05	18	13
3342	G	2574275	15 J17	02 J03	19	12
3360	G	2574275	15 J17	02 J03	19	13
3342	H	2574275	15 J18	02 J08	20	12
3342	J	2574275	15 J20	02 J04	21	12
3360	H	2574275	15 J20	02 J04	21	13
3342	K	2574275	15 J21	02 J11	22	12
3360	J	2574275	15 J21	02 J11	22	13
3342	L	2574275	15 J24	02 J12	23	12
3360	K	2574275	15 J24	02 J12	23	13
3344	A	2574276	04 J22	01 J05	24	12
3344	B	2574276	04 J23	01 J06	25	12

Chart 1. 60-Hz Cables (Continued)

Cable Group	Key No.	Part	From	To	Seq No.	Note
3345	A	2574276	04 J24	02 J10	26	
3345	B	2574276	04 J25	02 J09	27	
3385	A	5719799	15 J54	16 J101	28	
3347	A	5271716	15 J53	05 J01	29	
3349	A	5271716	15 J52	10 J04	30	
3353	A	5271716	15 J51	04 J05	31	
3357	A	5466456	11 U05	15 J55	32	
3352	B	4401198	15 J38	10 J02	33	
3361	A	5795730	15 J39	07 CN71	34	3
3354	A	5795729	15 J40	16 J102	35	2
3362	A	5795731	15 J41	10 JC1	36	15
3346	A	2555057	15 J42	04 J01	37	
3348	A	2555057	15 J43	05 CN51	38	3
3350	A	2555057	15 J44	06 CN61	39	1, 3, 12
3376	A	4873684	15 J45	10 J03	40	2
3346	B	2574274	15 J46	04 J02	41	
3374	A	4873684	15 J47	04 J03	42	2
3358	A	5466456	11 U04	04 J06	43	
3363	A	4872897	10 V17	08 W1	44	14
3363	B	4872897	10 V18	08 W2	45	7, 14
3358	A	5466456	11 U06	07 TB10	46	
3364	A	2281630	10 V14	05 TE2	47	9, 12
3161	A	2281630	10 V14	05 TE2	47	10, 13
3364	B	2281630	10 V15	05 TK2	48	9, 12
3162	A	2281630	10 V15	05 TK2	48	11

Chart 1. 60-Hz Cables (Continued)

Cable Group	Key No.	Part	From	To	Seq No.	Note
3362	A	2281630	06 TE2	10 V16	49	1, 12
3376	A	4873684	15 J48	07 CN72	50	3
3364	A	5372977	Non-IBM	08 W5	51	Dir ctl
3364	B	5372980	Non-IBM	08 W6	52	Dir ctl
3365	A	5700306	IBM System/360	08 W5 or W6	53	Dir ctl
3366	A	5700306	10 V	Control	54	6
3366	B	5700306	10 V	Control	55	6
3367	A	5700306	10 V	Mpx chan	56	6
3367	B	5700306	10 V	Mpx chan	57	6
3368	A	5700306	10 V	Slr chan	58	6
3368	B	5700306	10 V	Slr chan	59	6
3369	A	5700306	10 V	CTCA	60	4, 6
3369	B	5700306	10 V	CTCA	61	4, 6
3370	A	5700306	07	Ctl cht 3	62	4, 6
3370	B	5700306	07	Ctl cht 3	63	4, 6
3371	A	5700306	07	Mpx cht 3	64	4, 6
3371	B	5700306	07	Mpx cht 3	65	4, 6
3372	A	5700306	07	Slr cht 3	66	4, 6
3372	B	5700306	07	Slr cht 3	67	4, 6
3373	A	5700306	07	CTCA	68	4, 6
3373	B	5700306	07	CTCA	69	4, 6
3380	A	8626691	15 J74	33 J04	70	16
3380	B	4444301	15 J75	33 J05	71	16
3380	C	8626687	15 J76	33 J01	72	16

Chart 2. 50-Hz Cables

Cable Group	Key No.	Part	From	To	Seq No.	Note
3359	A	2564010	15 J40	16 J102	35	
3379	A	4873758	15 J45	10 J03	40	
3375	A	4873758	15 J47	04 J03	42	
3377	A	4873758	15 J48	07 CN72	50	3

Tailgate W on Frame 08

1	10 V17	–	7
2	10 V18	–	8
3	–	–	9
4	–	–	10
5	Direct control	SMI	11
6	Direct control	SMI	12

Chart 3. Tailgate T Cables on Frame 07

	B	A	
CTCA1	Tag in	Tag out	2
	Bus in	Bus out	3
	Tag in	Tag out	4
	Bus in	Bus out	5
	Tag in	Tag out	6
	Bus in	Bus out	7
CTCA2	Tag in	Tag out	8
	Bus in	Bus out	9
	To 11 U06	–	10

Group No.	
3370	Control unit
3371	Byte-multiplexer channel
3372	Selector or block-multiplexer channel
3373	Channel-to-channel adapter

Chart 4. Bus Tag Locations

Bus in		1
Tag in		2
Bus out		3
Tag out		4
Bus in		5
Tag in		6
Bus out		7
Tag out		8

Notes:

1. Extended channels feature for Models U, M, A, and N.
2. For 60-Hz cables only. See Chart 2 for 50-Hz cables.
3. These cables must be clamped in the cable trough in frame 07.
4. Channel-to-channel adapter feature.
5. Install 01J11 and 01J12 after 01J06 and 01J07. Install 02J16 and 02J17 after 02J07 and 02J08.
6. See Chart 4 for bus tag locations.
7. For MP, use key 3394A or 3395A. See INST 172.
8. For AP or MP, install cable group 3390 or 3392 (sequence number 71) next. See INST 172.
9. Not required for Model Group N.
10. Required for Model Group N.
11. Extended channels feature for Model Groups N and S.
12. Not required for Model Group S.
13. Required for Model Group S.
14. For AP, see INST 175.
15. If difficulty is encountered when installing this cable, align the arrow-shaped pin in frame 10 with the arrow-shaped slot in the cable plug.
16. Required for Models U24 and A24 only.

External Cable Charts for AP, MP, UP, and Model Groups N and S (Austria, Germany, and South Africa)

Remove the EMC covers and install the cables according to the following charts; refer to INST 150 and INST 160 for locations. To reinstall the EMC covers, refer to INST 342.

Notes:

1. Assemble EMC covers tightly with *all* screws provided. Loose covers will lower the machine's zap level.
2. For machines installed at all locations except Austria, Germany, and South Africa, use INST 170.

Chart 1. External Cables

Cable Group	Key No.	Part	From	To	Seq No.	Note
3807	D	5719799	15 J33	03 J05	1	15
3819	F	5719799	15 J32	01 J12	2	4, 15
3819	E	5719799	15 J31	01 J11	3	4, 15
3806	N	5719799	15 J35	02 J16	4	4, 11, 15
3842	M	5719799	15 J35	02 J16	4	4, 12, 15
3806	M	5719799	15 J34	02 J15	5	4, 7, 11, 15
3842	L	5719799	15 J34	02 J15	5	4, 12, 15
3819	A	8626696	15 J01	01 J01	6	
3806	A	8626696	15 J02	02 J07	7	11
3842	A	8626696	15 J02	02 J07	7	12
3806	B	8626696	15 J03	02 J01	8	11
3842	B	8626696	15 J03	02 J01	8	12
3819	B	8626696	15 J04	01 J09	9	
3806	C	8626696	15 J06	02 J14	10	11
3842	C	8626696	15 J06	02 J14	10	12
3807	A	8626696	15 J07	03 J02	11	
3807	B	8626696	15 J08	03 J03	12	
3806	D	8626695	15 J09	02 J02	13	11
3842	D	8626695	15 J09	02 J02	13	12
3819	C	8626696	15 J10	01 J10	14	
3819	D	8626695	15 J11	01 J07	15	
3806	E	8626695	15 J12	02 J13	16	11
3842	E	8626695	15 J12	02 J13	16	12
3807	C	8626695	15 J14	03 J01	17	
3806	F	8626695	15 J15	02 J05	18	11
3842	F	8626695	15 J15	02 J05	18	12
3806	G	8626695	15 J17	02 J03	19	11
3842	G	8626695	15 J17	02 J03	19	12
3806	H	8626695	15 J18	02 J08	20	11
3806	J	8626695	15 J20	02 J04	21	11
3842	H	8626695	15 J20	02 J04	21	12
3806	K	8626695	15 J21	02 J11	22	11
3842	J	8626695	15 J21	02 J11	22	12
3806	L	8626695	15 J24	02 J12	23	11
3842	K	8626695	15 J24	02 J12	23	12
3808	A	8626696	04 J22	01 J05	24	11, 16
3808	B	8626696	04 J23	01 J06	25	11, 16

Chart 1. External Cables (Continued)

Cable Group	Key No.	Part	From	To	Seq No.	Note
3809	A	8626696	04 J24	02 J10	26	16
3809	B	8626696	04 J25	02 J09	27	16
3355	A	5719799	15 J54	16 J101	28	
3347	A	5271716	15 J53	05 J01	29	
3349	A	5271716	15 J52	10 J04	30	
3353	A	5271716	15 J51	04 J05	31	
3357	A	5466456	11 U05	15 J55	32	15
3814	B	8626687	15 J38	10 J02	33	
3813	A	8626688	15 J39	07 CN71	34	3
3815	A	8626689	15 J40	16 J102	35	
3814	A	8626690	15 J41	10 J01	36	
3810	A	8626691	15 J42	04 J01	37	
3811	A	8626691	15 J43	05 CN51	38	3
3812	A	8626691	15 J44	06 CN61	39	1, 3, 11
3818	A	8626693	15 J45	10 J03	40	
3810	B	8626692	15 J46	04 J02	41	
3816	A	8626693	15 J47	04 J03	42	
3356	A	5466456	11 U04	04 J06	43	15
3363	A	4872897	10 V17	08 W1	44	13, 15
3363	B	4872897	10 V18	08 W2	45	6, 13, 15
3358	A	5466456	11 U06	07 TB10	46	15
3361	A	2281630	10 V14	05 TE2	47	8, 11, 15
3161	A	2281630	10 V14	05 TE2	47	9, 12, 15
3361	B	2281630	10 V15	05 TK2	48	8, 11, 15
3162	A	2281630	10 V15	05 TK2	48	10, 15

Chart 1. External Cables (Continued)

Cable Group	Key No.	Part	From	To	Seq No.	Note
3362	A	2281630	06 TE2	10 V16	49	1, 11, 15
3817	A	8626697	15 J48	07 CN72	50	3
3364	A	5372977	Non-IBM	08 W5	51	Dir ctl
3364	B	5372980	Non-IBM	08 W6	52	Dir ctl
3365	A	5700306	IBM System/360	08 W5 or W6	53	Dir ctl
3366	A	5700306	10 V	Control	54	5
3366	B	5700306	10 V	Control	55	5
3367	A	5700306	10 V	Mpx chan	56	5
3367	B	5700306	10 V	Mpx chan	57	5
3368	A	5700306	10 V	Slr chan	58	5
3368	B	5700306	10 V	Slr chan	59	5
3369	A	5700306	10 V	CTCA	60	2, 5
3369	B	5700306	10 V	CTCA	61	2, 5
3370	A	5700306	07	Ctl cht 2	62	2, 5
3370	B	5700306	07	Ctl cht 2	63	2, 5
3371	A	5700306	07	Mpx cht 2	64	2, 5
3371	B	5700306	07	Mpx cht 2	65	2, 5
3372	A	5700306	07	Slr cht 2	66	2, 5
3372	B	5700306	07	Slr cht 2	67	2, 5
3373	A	5700306	07	CTCA	68	2, 5
3373	B	5700306	07	CTCA	69	2, 5
3388	A	8626691	15 J74	33 J04	70	14
3388	B	8626693	15 J75	33 J05	71	14
3388	C	8626687	15 J76	33 J01	72	14

Chart 2. Tailgate T Cables on Frame 07

	B	A	
CTCA1	Tag in	Tag out	2
	Bus in	Bus out	3
	Tag in	Tag out	4
	Bus in	Bus out	5
CTCA2	Tag in	Tag out	6
	Bus in	Bus out	7
	Tag in	Tag out	8
	Bus in	Bus out	9
	To 11 U06	–	10

Group No.	
3370	Control unit
3371	Byte-multiplexer channel
3372	Selector or block-multiplexer channel
3373	Channel-to-channel adapter

Chart 3. Bus Tag Locations

Bus in		1
Tag in		2
Bus out		3
Tag out		4
Bus in		5
Tag in		6
Bus out		7
Tag out		8

Chart 4. Tailgate W on Frame 08

1	10 V17	–	7
2	10 V18	–	8
3	–	–	9
4	–	–	10
5	Direct control	SMI	11
6	Direct control	SMI	12

Chart 5. E/ME/A[1] Standard Length Cables

Listed Part	Standard Length Part	Length Feet	Length Meters
5719799	8257568	46	14
5719799	8257567	16	5
8626696	8257569	23	7
5466456	8257564	46	14
4872897	8257552	46	14
2281630	8257545	46	14

[1] IBM World Trade Europe/Middle East/Africa

Notes:

1. Extended channels feature for Models U, A, and M.
2. Channel-to-channel adapter feature.
3. These cables must be clamped in the cable trough in frame 07 at the exposed braiding.
4. Install 01J11 and 01J12 after 01J06 and 01J07. Install 02J16 and 02J17 after 02J07 and 02J08.
5. See Chart 3 for bus tag locations.
6. For MP, use key 3394A or 3395A. See INST 173.
7. For AP or MP, install cable group 3820 or 3821 (sequence number 71) next. See INST 173.
8. Not required for Model Group N.
9. Required for Model Group N.
10. Extended channels feature for Model Groups N and S.
11. Not required for Model Group S.
12. Required for Model Group S.
13. For AP, see INST 177.
14. Required for Models U24 and A24 only.
15. See Chart 5; use the longest length.
16. See Chart 5; use the shortest length.

Additional External Cable Charts for MP

Note: For machines installed in Austria, Germany, and Sourth Africa, use INST 173.

If you are installing frame 09 to one processor only, use the appropriate chart (for processor A or processor B).

Install the following cables in the positions shown:

Frame 09 External Cable Chart for Processor A

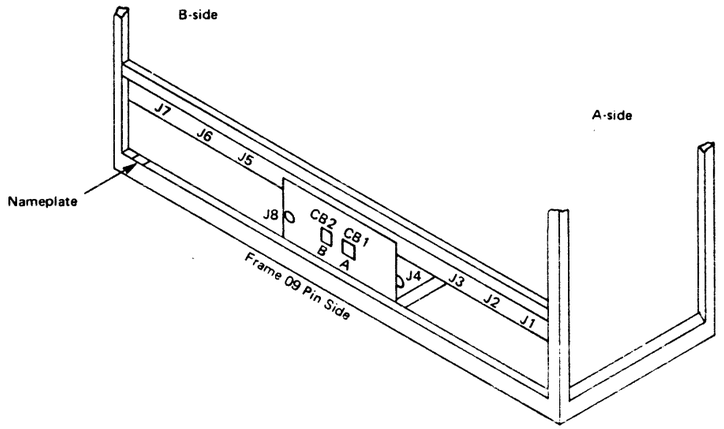
Cable Group	Key	Part	From	To	Seq No.	Note
3398	A	5271798	A15 J57	B15 J57	70	1
3390	A	5719799	A15 J36	A09 J3	71	
3391	A	4417777	A15 J37	A09 J4	72	
3390	C	2574275	A15 J26	A09 J2	73	
3390	B	2574276	A15 J27	A09 J1	74	
3396	A	4872897	A08 W2	A09 R2	75	
3394	A	4872897	A10 V18	A09 R1	76	2
3389	A	4872897	A10 V17	A08 W1	77	

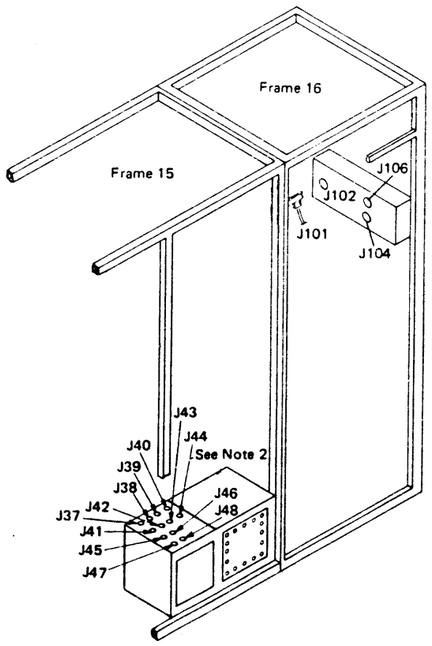
Frame 09 External Cable Chart for Processor B

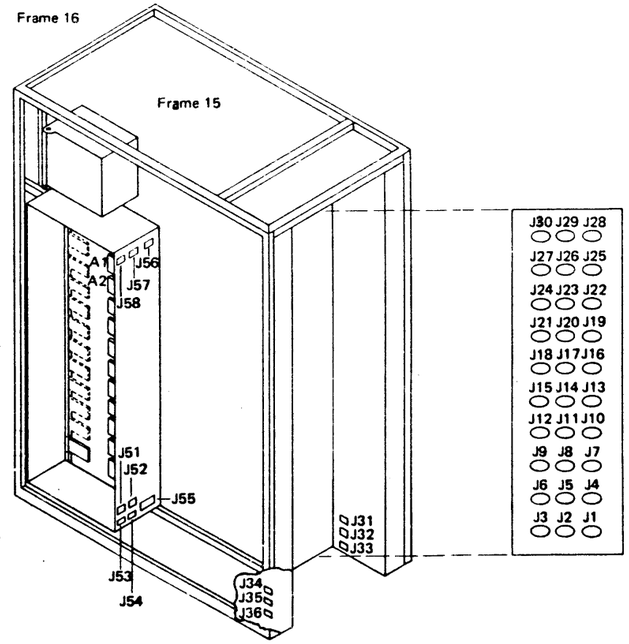
Cable Group	Key	Part	From	To	Seq No.	Note
3392	A	5719799	B15 J36	B09 J7	71	
3393	A	4417777	B15 J37	B09 J8	72	
3392	C	2574275	B15 J26	B09 J6	73	
3392	B	2574276	B15 J27	B09 J5	74	
3397	A	4872897	B08 W2	B09 R2	75	
3395	A	4872897	B10 V18	B09 R1	76	2
3394	A	4872897	B10 V17	B08 W1	77	

Notes:

1. Install this cable only when the power-up tests have been completed on both processors.
2. If you are installing this cable to an existing processor cable group, 3363B will be installed to the console. Use cable group 3363B instead of 3394 and 3395.







Part	EC No.				
8271675	388692	388707	208332		
	10Aug79	1Dec79	1Mar80		

Additional External Cable Charts for MP (Austria, Germany, and South Africa)

Note: For machines installed at all locations except Austria, Germany, and South Africa, use INST 172.

If you are installing frame 09 to one processor only, use the appropriate chart (for processor A or processor B).

Install the following cables in the positions shown:

Frame 09 External Cable Chart for Processor A

Cable Group	Key	Part	From	To	Seq No.	Note
3398	A	5271798	A15 J57	B15 J57	70	1
3820	A	5719799	A15 J36	A09 J3	71	3
3822	A	8631148	A15 J37	A09 J4	72	
3820	C	8626695	A15 J26	A09 J2	73	
3830	B	8626696	A15 J27	A09 J1	74	
3396	A	4872897	A08 W2	A09 R2	75	4
3394	A	4872897	A10 V18	A09 R1	76	2, 3
3389	A	4872897	A10 V17	A08 W1	77	3

Frame 09 External Cable Chart for Processor B

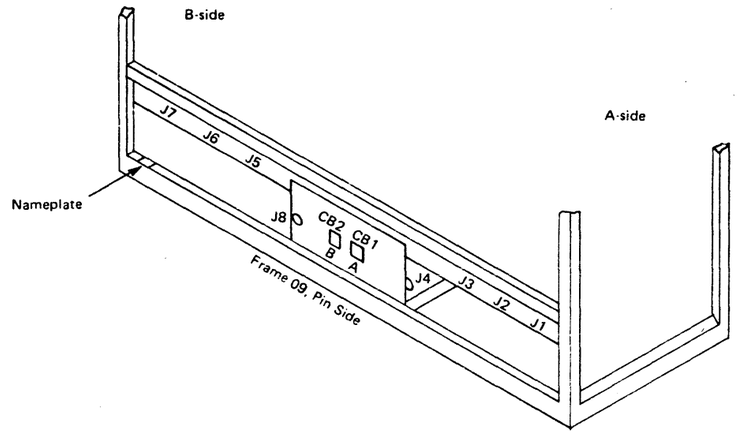
Cable Group	Key	Part	From	To	Seq No.	Note
3821	A	5719799	B15 J36	B09 J7	71	3
3823	A	8631148	B15 J37	B09 J8	72	
3821	C	8626695	B15 J26	B09 J6	73	
3821	B	8626696	B15 J27	B09 J5	74	
3397	A	4872897	B08 W2	B09 R2	75	4
3395	A	4872897	B10 V18	B09 R1	76	2, 3
3399	A	4872897	B10 V17	B08 W1	77	3

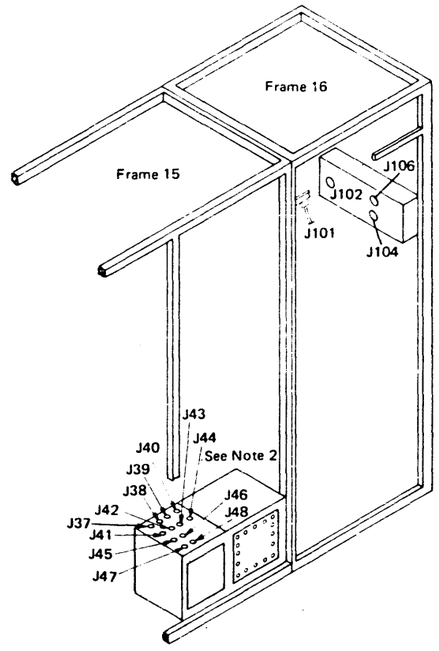
Notes:

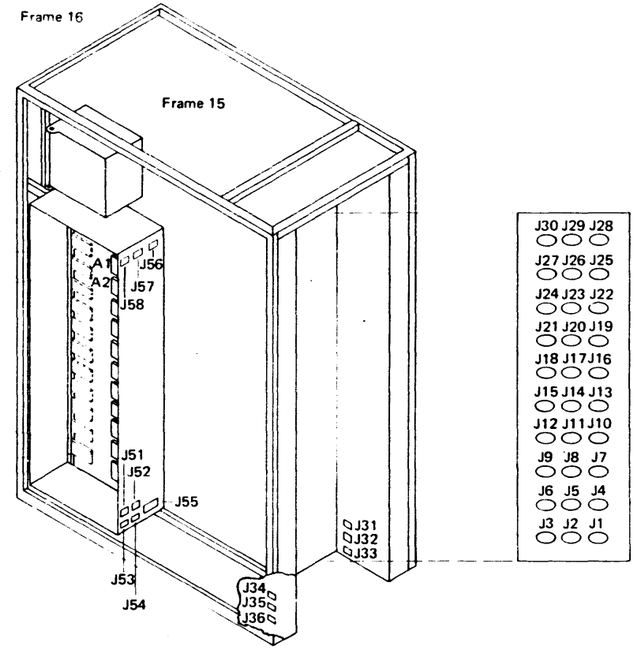
1. Install this cable only when the power-up tests have been completed on both processors.
2. If you are installing this cable to an existing processor cable group, 3363B will be installed to console port 4. Use cable group 3363B instead of 3394 and 3395.
3. See E/ME/A Standard Length Cables chart on this page. Use longest length.
4. See E/ME/A Standard Length Cables chart on this page. Use shortest length.

E/ME/A Standard Length Cables

Listed Part	Standard Length Part	Length Feet	Length Meters
5719799	8257568	46	14
4872897	8257552	46	14
4872897	8257551	9	3







Part	EC Nr	388692	388707	208332	213562
8271676	Date	10Aug79	1Dec79	1Mar80	4Sep81

External Cable Charts for 3042 AP

Remove the EMC covers and install the cables according to the following charts; refer to INST 157, INST 160, and INST 165 for locations. To reinstall the EMC covers, refer to INST 342.

Note: For machines installed in Austria, Germany, and South Africa, use INST 176.

Chart 1. 60-Hz Cables

Cable Group	Key	Part	From	To	Seq No.	Note
3143	3143C	5719799	B15 J33	APU 03 J18	1	
3141	3141F	5719799	B15 J32	APU 01 J12	2	1
3141	3141E	5719799	B15 J31	APU 01 J11	3	1
3142	3142N	5719799	B15 J35	APU 02 J16	4	1
3142	3142M	5719799	B15 J34	APU 02 J15	5	1, 2
3141	3141A	2574276	B15 J01	APU 01 J01	6	
3142	3142A	2574276	B15 J02	APU 02 J07	7	
3142	3142B	2574276	B15 J03	APU 02 J01	8	
3141	3141B	2574276	B15 J04	APU 01 J09	9	
3142	3142C	2574276	B15 J06	APU 02 J14	10	
3143	3143A	2574276	B15 J07	APU 03 J16	11	
3143	3143B	2574276	B15 J08	APU 03 J17	12	
3142	3142D	2574275	B15 J09	APU 02 J02	13	
3141	3141C	2574276	B15 J10	APU 01 J10	14	
3141	3141D	2574275	B15 J11	APU 01 J07	15	
3142	3142E	2574275	B15 J12	APU 02 J13	16	
3142	3142F	2574275	B15 J15	APU 02 J05	17	
3142	3142G	2574275	B15 J17	APU 02 J03	18	
3142	3142H	2574275	B15 J18	APU 02 J08	19	
3142	3142J	2574275	B15 J20	APU 02 J04	20	
3142	3142K	2574275	B15 J21	APU 02 J11	21	
3142	3142L	2574275	B15 J24	APU 02 J12	22	

Chart 1. 60-Hz Cables (Continued)

Cable Group	Key	Part	From	To	Seq. No.	Note
3155	3155A	5719799	B15 J54	B16 J101	23	
3147	3147A	5271716	B15 J53	APU 05 J01	24	5
3149	3149A	5271716	B15 J52	B10 J04	25	
3153	3153A	5271716	B15 J51	APU 03 J05	26	
3157	3157A	5466456	B11 U05	B15 J55	27	
3152	3152B	4401198	B15 J38	B10 J02	28	
3151	3151A	5795730	B15 J39	APU 07 CN71	29	5
3154	3154A	5795729	B15 J40	B16 J102	30	
3152	3152A	5795731	B15 J41	B10 J01	31	
3146	3146A	2555057	B15 J42	APU 03 J01	32	
3148	3148A	2555057	B15 J43	APU 05 CN51	33	5
3178	3178A	4873684	B15 J45	B10 J03	34	
3146	3146B	2574274	B15 J46	APU 03 J02	35	4
3174	3174A	4873684	B15 J47	APU 03 J03	36	
3156	3156A	5466456	B11 U04	APU 03 F101	37	
3158	3158A	5466456	B11 U06	APU 07 TB10	38	5
3160	3160A	2281630	B10 V14	APU 05 TE2	39	5
3150	3150A	2281630	B10 V15	APU 05 TK2	40	5
3144	3144A	2574276	APU 01 J05	APU 03 J19	41	4
3144	3144B	2574276	APU 01 J06	APU 03 J20	42	
3145	3145A	2574276	APU 02 J10	APU 03 J21	43	4
3145	3145B	2574276	APU 02 J09	APU 03 J22	44	
3176	3176A	4873684	B15 J48	APU 07 CN72	45	4, 5
3164	3164A	5372977	Non-IBM	APU 08 W5	46	Dir ctrl
3164	3164B	5372980	Non-IBM	APU 08 W6	47	Dir ctrl
3165	3165A	5700306	To IBM System/360's	APU 08 W5 or W6	48	

Chart 1. 60-Hz Cables (Continued)

Cable Group	Key	Part	From	To	Seq. No.	Note
3166	3166A	5700306	B10 V	Ctrl chart 3	49	3
3166	3166B	5700306	B10 V	Ctrl chart 3	50	3
3167	3167A	5700306	B10 V	Mpx chart 3	51	3
3167	3167B	5700306	B10 V	Mpx chart 3	52	3
3168	3168A	5700306	B10 V	Slr chan	53	3
3168	3168B	5700306	B10 V	Slr chan	54	3
3169	3169A	5700306	B10 V	CTCA	55	3
3169	3169B	5700306	B10 V	CTCA	56	3
3170	3170A	5700306	APU 07 –	Ctrl chart 3	57	3, 5
3170	3170B	5700306	APU 07 –	Ctrl chart 3	58	3, 5
3171	3171A	5700306	APU 07 –	Mpx chart 3	59	3, 5
3171	3171B	5700306	APU 07 –	Mpx chart 3	60	3, 5
3172	3172A	5700306	APU 07 –	Slr chart 3	61	3, 5
3172	3172B	5700306	APU 07 –	Slr chart 3	62	3, 5
3173	3173A	5700306	APU 07 –	CTCA	63	3, 5
3173	3173B	5700306	APU 07 –	CTCA	64	3, 5

Notes:
1. Install 01J11 and 01J12 after 01J06 and 01J07. Install 02J16 and 02J17 after 02J07 and 02J08.
2. Install cable group 3192 (sequence number 65) next. See INST 175.
3. See Chart 3 for bus tag locations.
4. For 60-Hz cables only. See Chart 2 for 50-Hz cables.
5. Required for 3042 Model 2 only.

Chart 2. 50-Hz Cables

Cable Group	Key	Part	From	To	Seq. No.	Note
3159	3159A	2564010	B15 J40	B16 J102	30	
3179	3179A	4873758	B15 J45	B10 J03	34	
3175	3175A	4873758	B15 J47	APU 03 J03	36	
3163	3163A	4873758	B15 J48	APU 07 CN72	45	5

Tailgate W on Frame 08

1	10 V17	–	7
2	10 V18	–	8
3	–	–	9
4	–	–	10
5	Direct control	SMI	11
6	Direct control	SMI	12

Chart 3. Bus Tag Locations

Bus in		1
Tag in		2
Bus out		3
Tag out		4
Bus in		5
Tag in		6
Bus out		7
Tag out		8

3033	Part 8271696	EC No. Date	388707 1Dec79	208332 1Mar80	208335 1Jun80	211786 5Jan81

Additional External Cable Charts for 3042 AP

Note: For machines installed in Austria, Germany, and South Africa, use INST 176.

If you are installing frame 09 to one processor only, use the appropriate chart (for processor A or processor B).

Install plug (part 2671901) in position B15 J53 if installing a 3042 Model 1. Plug is in the 3042 shipping group.

Install the following cables in the positions shown:

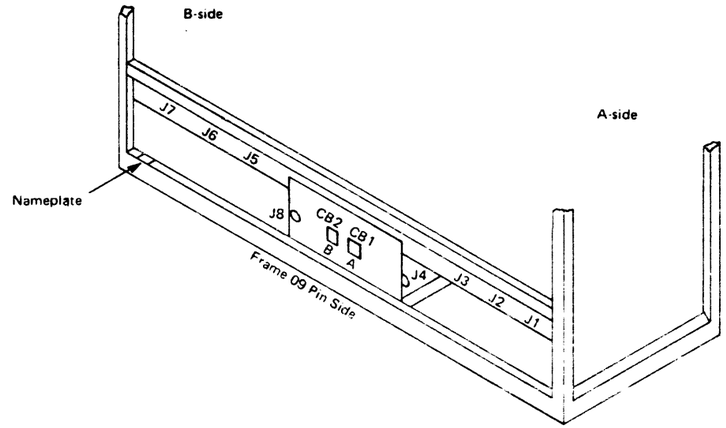
Frame 09 External Cable Chart for Processor A

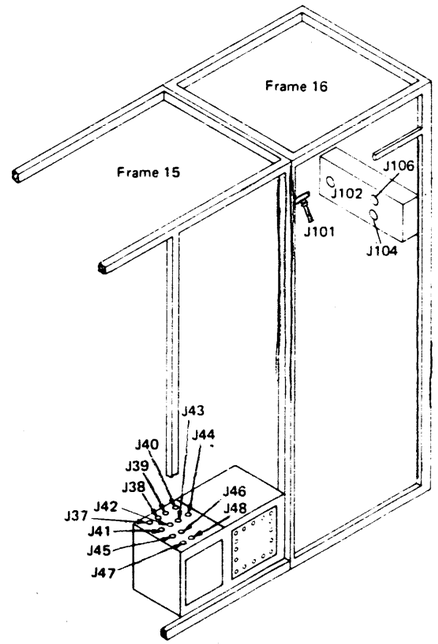
Cable Group	Key	Part	From		To		Seq. No.	
3198	3198A	5271798	A15	J57	B15	J57	57	Note
3190	3190A	5719799	A15	J36	A09	J03	58	
3191	3191A	4417777	A15	J37	A09	J04	59	
3190	3190C	2574275	A15	J26	A09	J02	60	
3190	3190B	2574276	A15	J27	A09	J01	61	
3196	3196A	4872897	08	W2	A09	R02	62	
3194	3194A	4872897	A10	V18	A09	R01	63	
3189	3189A	4872897	A10	V17	A08	W1	64	

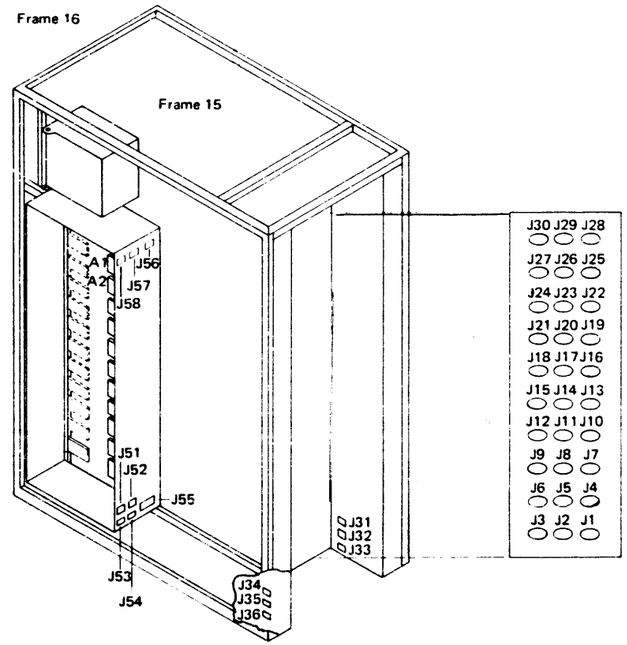
Frame 09 External Cable Chart for Processor B

Cable Group	Key	Part	From		To		Seq. No.	
3192	3192A	5719799	B15	J36	B09	J07	65	
3193	3193A	4417777	B15	J37	B09	J08	66	
3192	3192C	2574275	B15	J26	B09	J06	67	
3192	3192B	2574276	B15	J27	B09	J05	68	
3197	3197A	4872897	APU08	W2	B09	R02	69	
3195	3195A	4872897	B10	V18	B09	R01	70	
3199	3199A	4872897	B10	V17	B08	W1	71	

Note: Install this cable only when the power-up tests have been completed on both processors.







3033	Part 8271697	EC No. Date	388707 1Dec79	208332 1Mar80	208335 1Jun80	211786 5Jan81

INSTALLATION PROCEDURES

External Cable Charts for 3042 AP (Austria, Germany, and South Africa)

Remove the EMC covers and install the cables according to the following charts; refer to INST 157, INST 160, and INST 165 for locations. To reinstall the EMC covers, refer to INST 342.

Note: For machines installed at all locations except Austria, Germany, and South Africa, use INST 174.

Chart 1. 60-Hz Cables

Cable Group	Key	Part	From	To	Seq No.	Note
3827	C	5719799	B15 J33	APU 03 J18	1	5
3825	F	5719799	B15 J32	APU 01 J12	2	1, 5
3825	E	5719799	B15 J31	APU 01 J11	3	1, 5
3826	N	5719799	B15 J35	APU 02 J16	4	1, 5
3826	M	5719799	B15 J34	APU 02 J15	5	1, 2, 5
3825	A	8626696	B15 J01	APU 01 J01	6	
3826	A	8626696	B15 J02	APU 02 J07	7	
3826	B	8626696	B15 J03	APU 02 J01	8	
3825	B	8626696	B15 J04	APU 01 J09	9	
3826	C	8626696	B15 J06	APU 02 J14	10	
3827	A	8626696	B15 J07	APU 03 J16	11	
3827	B	8626696	B15 J08	APU 03 J17	12	
3826	D	8626695	B15 J09	APU 02 J02	13	
3825	C	8626696	B15 J10	APU 01 J10	14	
3825	D	8626695	B15 J11	APU 01 J07	15	
3826	E	8626695	B15 J12	APU 02 J13	16	
3826	F	8626695	B15 J15	APU 02 J05	17	
3826	G	8626695	B15 J17	APU 02 J03	18	
3826	H	8626695	B15 J18	APU 02 J08	19	
3826	J	8626695	B15 J20	APU 02 J04	20	
3826	K	8626695	B15 J21	APU 02 J11	21	
3826	L	8626695	B15 J24	APU 02 J12	22	

Chart 1. 60-Hz Cables (Continued)

Cable Group	Key	Part	From	To	Seq No	Note
3155	A	5719799	B15 J54	B16 J101	23	6
3147	A	5271716	B15 J53	APU 05 J01	24	4
3149	A	5271716	B15 J52	B10 J04	25	
3133	A	5271716	B15 J51	APU 03 J05	26	
3157	A	5466456	B11 U05	B15 J55	27	5
3832	B	8626687	B15 J38	B10 J02	28	
3151	A	5795730	B15 J39	APU 07 CN71	29	4
3834	A	8626689	B15 J40	B16 J102	30	
3832	A	8626690	B15 J41	B10 J01	31	
3830	A	8626691	B15 J42	APU 03 J01	32	
3148	A	2555057	B15 J43	APU 05 CN51	33	4
3833	A	8626693	B15 J45	B10 J03	34	
3830	B	8626692	B15 J46	APU 03 J02	35	
3831	A	8626693	B15 J47	APU 03 J03	36	
3156	A	5466456	B11 U04	APU 03 F101	37	5
3158	A	5466456	B11 U06	APU 07 TB10	38	4, 5
3160	A	2281630	B10 V14	APU 05 TE2	39	4, 5
3150	A	2281630	B10 V15	APU 05 TK2	40	4, 5
3828	A	8626696	APU 01 J05	APU 03 J19	41	6
3828	B	8626696	APU 01 J06	APU 03 J20	42	6
3829	A	8626696	APU 02 J10	APU 03 J21	43	6
3829	B	8626696	APU 02 J09	APU 03 J22	44	6
3163	A	4873758	B15 J48	APU 07 CN72	45	4
3164	A	5372977	APU 08 W5	Non-IBM	46	Dir ctrl
3164	B	5372977	APU 08 W6	Non-IBM	47	Dir ctrl
3165	A	5372980	To IBM System/360's	APU 08 W5 or W6	48	

Chart 1. 60-Hz Cables (Continued)

Cable Group	Key	Part	From	To	Seq No.	Note
3166	A	5700306	B10 V	Ctrl chart 3	49	3
3166	B	5700306	B10 V	Ctrl chart 3	50	3
3167	A	5700306	B10 V	Mpx chart 3	51	3
3167	B	5700306	B10 V	Mpx chart 3	52	3
3168	A	5700306	B10 V	Slr chan	53	3
3168	B	5700306	B10 V	Slr chan	54	3
3169	A	5700306	B10 V	CTCA	55	3
3169	B	5700306	B10 V	CTCA	56	3
3170	A	5700306	APU 07 –	Ctrl chart 3	57	3, 4
3170	B	5700306	APU 07 –	Ctrl chart 3	58	3, 4
3171	A	5700306	APU 07 –	Mpx chart 3	59	3, 4
3171	B	5700306	APU 07 –	Mpx chart 3	60	3, 4
3172	A	5700306	APU 07 –	Slr chart 3	61	3, 4
3172	B	5700306	APU 07 –	Slr chart 3	62	3, 4
3173	A	5700306	APU 07 –	CTCA	63	3, 4
3173	B	5700306	APU 07 –	CTCA	64	3, 4

Chart 2. Tailgate W on Frame 08

1	10 V17	–	7
2	10 V18	–	8
3	–	–	9
4	–	–	10
5	Direct control	SMI	11
6	Direct control	SMI	12

Chart 3. Bus Tag Locations

Bus in		1
Tag in		2
Bus out		3
Tag out		4
Bus in		5
Tag in		6
Bus out		7
Tag out		8

Chart 4. E/ME/A Standard Length Cables

Listed Part	Standard Length Part	Length Feet	Length Meters
5719799	8257568	46	14
5719799	8257567	16	5
5466456	8257564	46	14
2281630	8257545	46	14
8626696	8257569	23	7

Notes:
1. Install 01J11 and 01J12 after 01J06 and 01J07. Install 02J16 and 02J17 after 02J07 and 02J08.
2. Install cable group 3837 (sequence number 65) next. See INST 177.
3. See Chart 2 for bus tag locations.
4. Required for 3042 Model 2 only.
5. See Chart 4. Use longest length.
6. See Chart 4. Use shortest length.

Additional External Cable Charts for 3042 AP (Austria, Germany, and South Africa)

Note: For machines installed at all locations except Austria, Germany, and South Africa, use INST 174.

Install plug (part 2671901) in position B15 J53 if installing a 3042 Model 1. Plug is in the 3042 shipping group.

Install the following cables in the positions shown:

Frame 09 External Cable Chart for Processor A

Cable Group	Key	Part	From		To		Seq No.	Note
3198	3198A	5271798	A15	J57	B15	J57	57	1
3835	3835A	5719799	A15	J36	A09	J03	58	2
3836	3836A	8631148	A15	J37	A09	J04	59	
3835	3835C	8626696	A15	J26	A09	J02	60	
3835	3835B	8626696	A15	J27	A09	J01	61	2
3196	3196A	4872897	08	W2	A09	R02	62	3
3194	3194A	4872897	A10	V18	R09	R01	63	2
3189	3189A	4872897	A10	V17	A08	W1	64	2

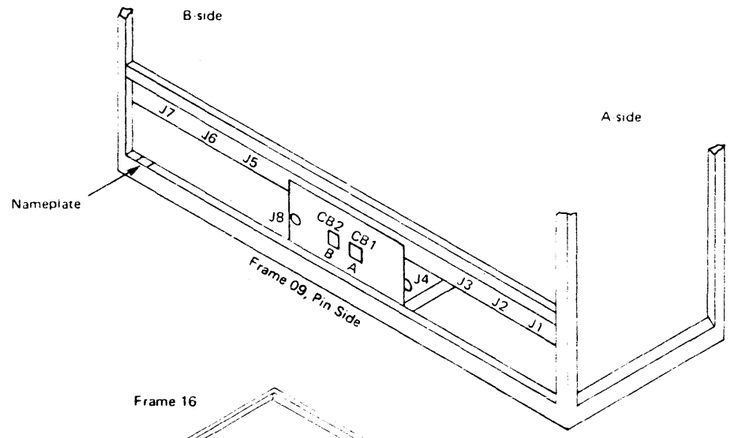
Frame 09 External Cable Chart for Processor B

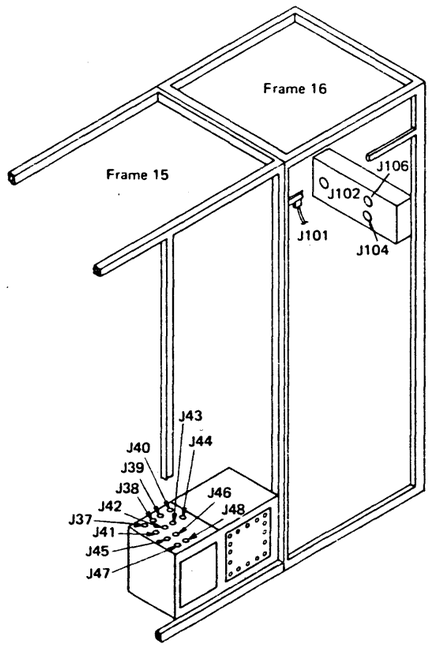
Cable Group	Key	Part	From		To		Seq No.	
3837	3837A	5719799	B15	J36	B09	J07	65	2
3838	3838A	8631148	B15	J37	B09	J08	66	
3837	3837C	8626696	B15	J26	B09	J06	67	
3837	3837B	8626696	B15	J27	B09	J05	68	2
3197	3197A	4872897	APU08	W2	B09	R02	69	3
3195	3195A	4872897	B10	V18	B09	R01	70	2
3199	3199A	4872897	B10	V17	B08	W1	71	2

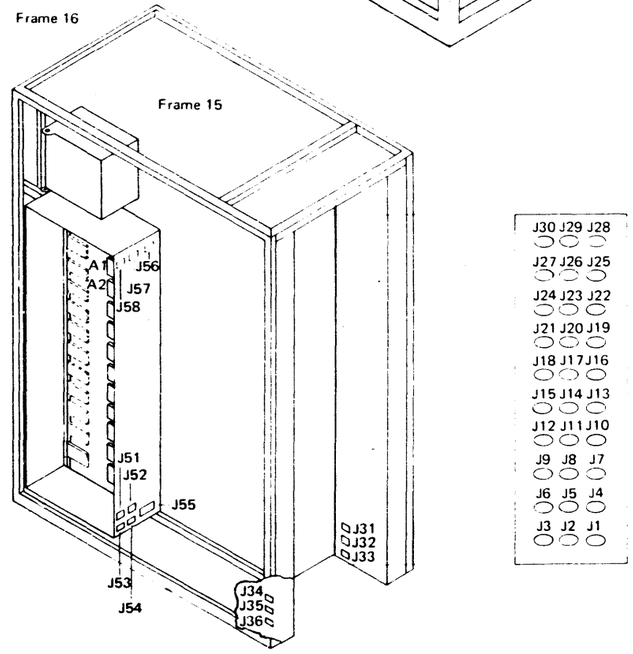
Notes:
1. Install this cable only when the power-up tests have been completed on both processors.
2. See E/ME/A Standard Length Cables chart on this page. Use longest length.
3. See E/ME/A Standard Length Cables chart on this page. Use shortest length.

E/ME/A Standard Length Cables

Listed Part	Standard Length Part	Length	
		Feet	Meters
5719799	8257568	46	14
4872897	8257552	46	14
4872897	8257551	9	3







Part	EC No.	388707	208332	208335	211786	213562
8271699	Date	1Dec79	1Mar80	1Jun80	5Jan81	4Sep81

Install Water Hoses for AP, MP, UP, and Model Groups N and S

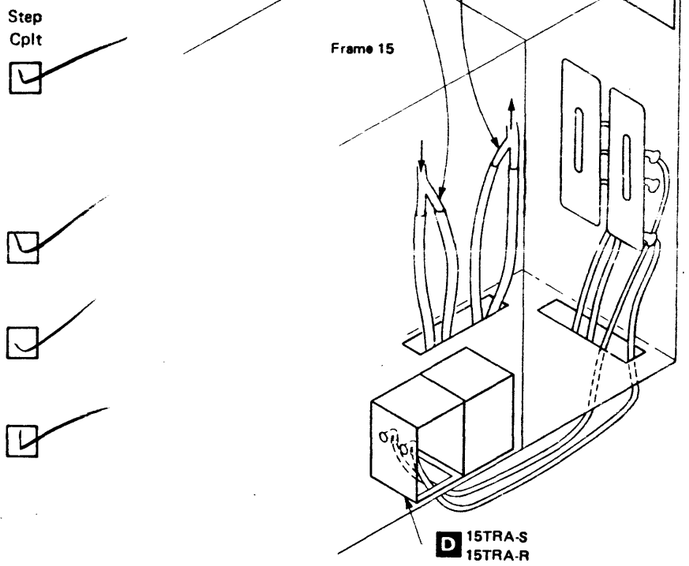
Note: For 3042 AP, see INST 185.

For AP, MP, UP, and Model Groups N and S, install water hoses according to the following charts and diagrams:

Part	From	To	
1312707	16-5S	15TRA-S	D
1312707	16-5R	15TRA-R	D

Group No.	Key No.	Part	From	To	
3383	A	2566671	16-4-S	3AB-S	A
3383	B	2566671	16-4-R	3AB-R	A
3383	C	2566671	16-8-S	3CD-S	A
3383	D	2566671	16-8-R	3CD-R	A
3382	A	2566671	16-3-S	2AB-S	B
3382	B	2566671	16-3-R	2AB-R	B
3382	C	2566671	16-7-S	2CD-S	B
3382	D	2566671	16-7-R	2CD-R	B
3381	A	2566671	16-2-S	1AB-S	C
3381	B	2566671	16-2-R	1AB-R	C
3381	C	2566671	16-6-S	1CD-S	C
3381	D	2566671	16-6-R	1CD-R	C

Step Cplt



Note: To prevent water flow restriction, ensure that water hoses are not under other cables.

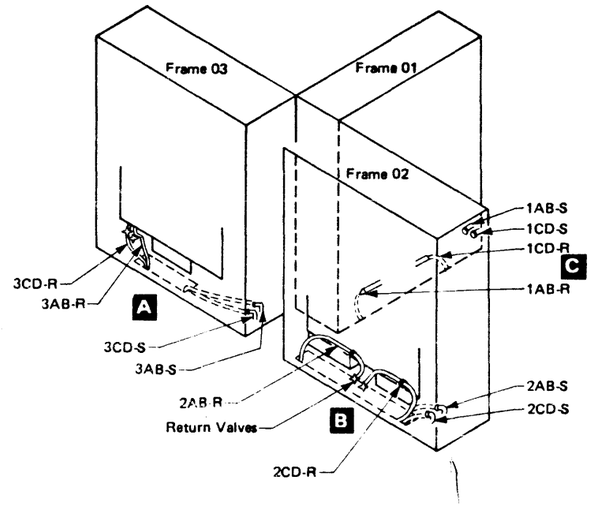
For AP and MP, install the water hoses as follows:

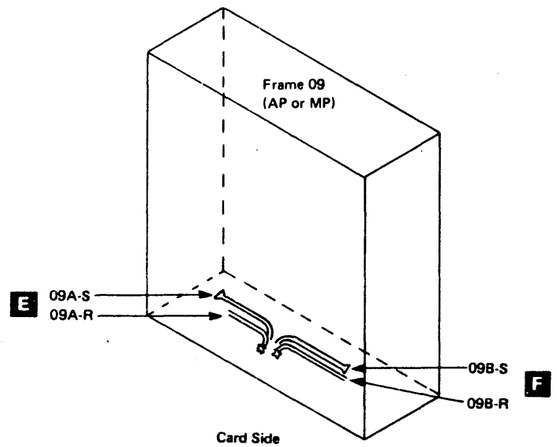
Frame 09 Hose Chart for Processor A

Group No.	Key No.	Part	From	To	
3384	A	2566671	16A-1S	09A-S	E
3384	B	2566671	16A-1R	09A-R	E

Frame 09 Hose Chart for Processor B

Group No.	Key No.	Part	From	To	
3385	A	2566671	16B-1S	09B-S	F
3385	B	2566671	16B-1R	09B-R	F





3033	Part	EC No.	276474	276707	388692	388707	208332	208335	211786
	8271618	Date	20Jan78	3May78	10Aug79	1Dec79	1Mar80	1Jun80	5Jan81

Install Water Hoses for 3042 AP

Note: For AP, MP, UP, and Model Groups N and S, see INST 180.

For 3042 AP, install water hoses according to the following charts and diagrams:

Part	From	To		Step Cplt
1312707	16-5S	15TRA-S	D	☐
1312707	16-5R	15TRA-R		

Group No.	Key No.	Part	From	To		
3183	A	2566671	16-8-S	3C-S	A	☐
3183	B	2566671	16-8-R	3C-R		
3182	A	2566671	16-3-S	2AB-S	B	☐
3182	B	2566671	16-3-R	2AB-R		
3182	C	2566671	16-7-S	2CD-S		
3182	D	2566671	16-7-R	2CD-R		
3181	A	2566671	16-2-S	1AB-S	C	☐
3181	B	2566671	16-2-R	1AB-R		
3181	C	2566671	16-6-S	1CD-S		
3181	D	2566671	16-6-R	1CD-R		

Note: To prevent water flow restriction, ensure that water hoses are not under other cables.

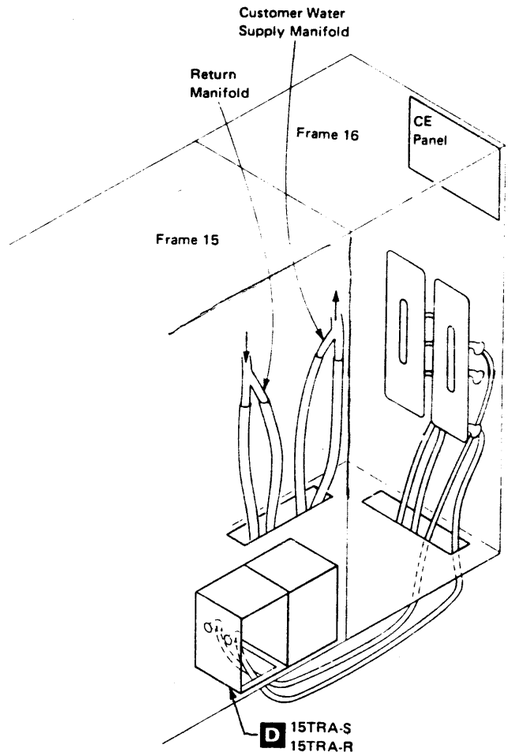
For 3042 AP, install the water hoses as follows:

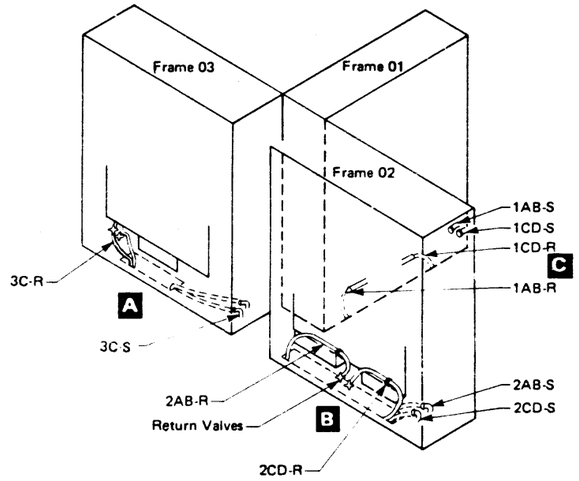
Frame 09 Hose Chart for Processor A

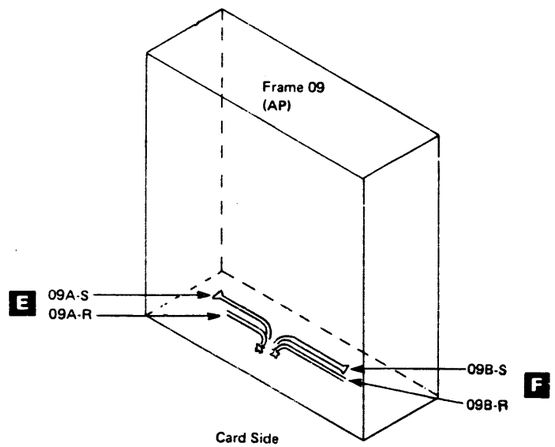
Group No.	Key No.	Part	From	To		
3184	A	2566671	16A-1S	09A-S	E	☐
3184	B	2566671	16A-1R	09A-R		

Frame 09 Hose Chart for Processor B

Group No.	Key No.	Part	From	To		
3185	A	2566671	16B-1S	09B-S	F	☐
3185	B	2566671	16B-1R	09B-R		







Part	EC No.	388707	208332	208335	211786
8271688	Date	1Dec79	1Mar80	1Jun80	5Jan81

INSTALLATION PROCEDURES

Fill Expansion Tank and Check Pump Rotation

FILL EXPANSION TANK

	Step Cplt
1. Verify that all PDU CBs are on.	☐
2. Verify that the CDU CBs are on.	☐
3. Ask the customer to turn on the 50/60-Hz and 415-Hz power to the PDU.	☐
4. Verify that the customer 50/60-Hz power is present.	☐
5. Open the pump inlet and discharge gate valves in the CDU. (See INST 200.)	☐
6. Open the valves in frames 01, 02, 03, 09, and 15. Frames 01, 02, 03, and 09 each have two valves. Frame 15 has one valve.	☐
7. Fill the expansion tank with purified water to 4 inches (101.6 mm) from the top.	☐

a. When purging the air from the system, keep filling the expansion tank as necessary.
b. Watch for leaks throughout the complex.
c. Check pump rotation.

Approximately 15 gallons (56.8 dm^3) of purified water are required to fill the system.

The purified water should be obtained locally through the branch office. Water is purified by distillation or deionization.

CHECK PUMP ROTATION

1. Turn the Local/Remote switch to the Local position.	☐
2. Turn the Pump Available switch to the A or B position.	☐
3. Check the rotation of pump A by turning the Local Pump Select switch from Off/Reset to A; then quickly turn the switch back to Off/Reset. The shaft coupling between the pump and the motor is exposed, and the rotation direction is indicated by an arrow on the pump. If the rotation is wrong, check the 50/60-Hz phasing at the filters in the PDU ac compartment.	☐
4. Repeat this procedure for pump B by turning Local Pump Select switch to the B position.	☐

ADJUST WATER TEMPERATURE

	Step Cplt
1. Set the CDU controller to either 75°F (24°C) if the installation is below 3,000-foot (914.4-m) altitude or 65°F (18°C) if the installation is above 3,000-foot (914.4-m) altitude. Verify that the system water temperature gauge (on the CDU CE panel) limit hands are set properly.	☐
2. Set the red hand to 5°F (3°C) above and set the green hand to 5°F (3°C) below the nominal system water temperature. Adjust the hands by turning the two concentric knobs in the center of the system water temperature gauge; the small knob adjusts the red hand. These hands set the system high and low temperature switches.	☐
3. Ensure that the flush control switch is in the NORM. position.	☐

CHECK QUALITY OF WATER

Water should be marked as follows:

Distilled Water U.S.P. (United States Pharmacopeia), which is:

Water quality:	pH at 20C equals 5-9
Conductivity:	micromhos per centimeter at 20C equals less than 100
Turbidity:	less than 10 turbidity units (Sormazin)
Chloride:	Cl less than 5 ppm
Sulfate:	SO_4^{-2} less than 10 ppm
Copper:	Cu^{+2} less than 1 ppm
Zinc:	Zn^{+2} less than 5 ppm
Hardness:	$CaCO_3$ less than 5 ppm

Water that is marked Distilled Water, Deionized Water, or Distilled and Deionized Water is acceptable if it is in sealed containers. It should be used only if U.S.P. grade water cannot be obtained. Tap water, bottled spring water, or bottled drinking water should not be used.

BACKFLUSH FLOW LOOPS

	Step Cplt
If the 3033 is received from the factory, go to INST 200.	
If the 3033 is being relocated, perform the following procedure:	
Backflush each flow loop for 4 hours. The backflush procedure is discussed in MM Volume 2, "Obstructed Flow Loop–Backflushing," Chapter 7.	☐

Note: For a significant time savings, backflush all seven flow loops simultaneously.

The following parts are required to backflush all loops simultaneously:

Part	*Quantity*
Filter assembly, 1840738	7
Adapter, 2565739	7
Cartridge, 8818213	7

Go to INST 200.

INSTALLATION PROCEDURES

DEMINERALIZE SYSTEM WATER

Step Cplt

The following parts are required for this procedure:

1841597	Holder
1841596	Hose
1841604	Hose
1841599	Cartridge

☐ Demineralize the system water by using the demineralizer equipment that is shipped with the system. The demineralizer also deionizes the water. A period of 24 hours is required for demineralization with the system power on.

☐ 1. Remove the cartridge (part 1841599) from the carton and check the date on the wrapping. Do not use a cartridge that is more than one year old. Insert the cartridge into the demineralizer holder as follows.

Note: Steps a through g are required for the holder style shown. Step d is required for the holder style that unscrews. Step c is required for both holder styles.

a. Release the clamp and remove the clamp assembly.
b. Lift the head assembly off the demineralizer.
c. Remove the plastic sealing caps from both ends of the cartridge.
d. Insert the new cartridge with the large opening toward the bottom of the demineralizer holder.
e. Lubricate the inside of the clamp assembly, the outside of the rubber gasket, and the O-ring inside the head assembly with the lubricant supplied.
f. Replace the head assembly and ensure that the rubber gasket is between the groove in the head assembly and the groove in the demineralizer.
g. Place the clamp assembly in the two grooves and latch the clamp closed.

☐ 2. Connect the two hoses (supplied with the demineralizer) as follows:
A a. Hose (part 1841604) to the heat exchanger cover on the CDU.
B b. Hose (part 1841596) to the discharge side of the operating pump (at the check valve and bleed fitting, above the pump).

☐ 3. Place the demineralizer inside the CDU frame to the right of the system inlet manifold.
C a. Connect the loose end of the hose from the heat exchanger cover to the outlet connection on the demineralizer.
D b. Connect the loose end of the hose from the discharge side of the pump to the inlet connection on the demineralizer.

☐ 4. Check to ensure that there is water flow. If no flow exists, check the following:
a. The male quick connect (if frozen, rap sharply with a hammer).
b. The hoses for a restriction.
c. The orifice (located under the clamp on the hose) for a clogged condition.

☐ 5. Leave the demineralizer connected to the system for a continuous period of 24 hours. After two hours of operation, switch the alternate pump on for 15 minutes (there will be no flow through the demineralizer); then switch back to the first pump.

☐ 6. Disconnect the demineralizer after 24 hours by disconnecting the inlet hose (connected to the pump discharge side) from the demineralizer; then disconnect the outlet hose from the demineralizer. Leave the hoses connected to the CDU.

CAUTION
The demineralizer must be depressurized (pressure gauge must read 0) before removing the locking collar.

To depressurize the demineralizer, disconnect it from the system as follows:
a. Disconnect the inlet hose from the demineralizer.
b. Disconnect the outlet hose from the demineralizer.
c. Pressure gauge should read 0. If not, relieve the pressure by pressing the demineralizer quick-connector.

Do not remove the locking collar until the pressure is relieved.

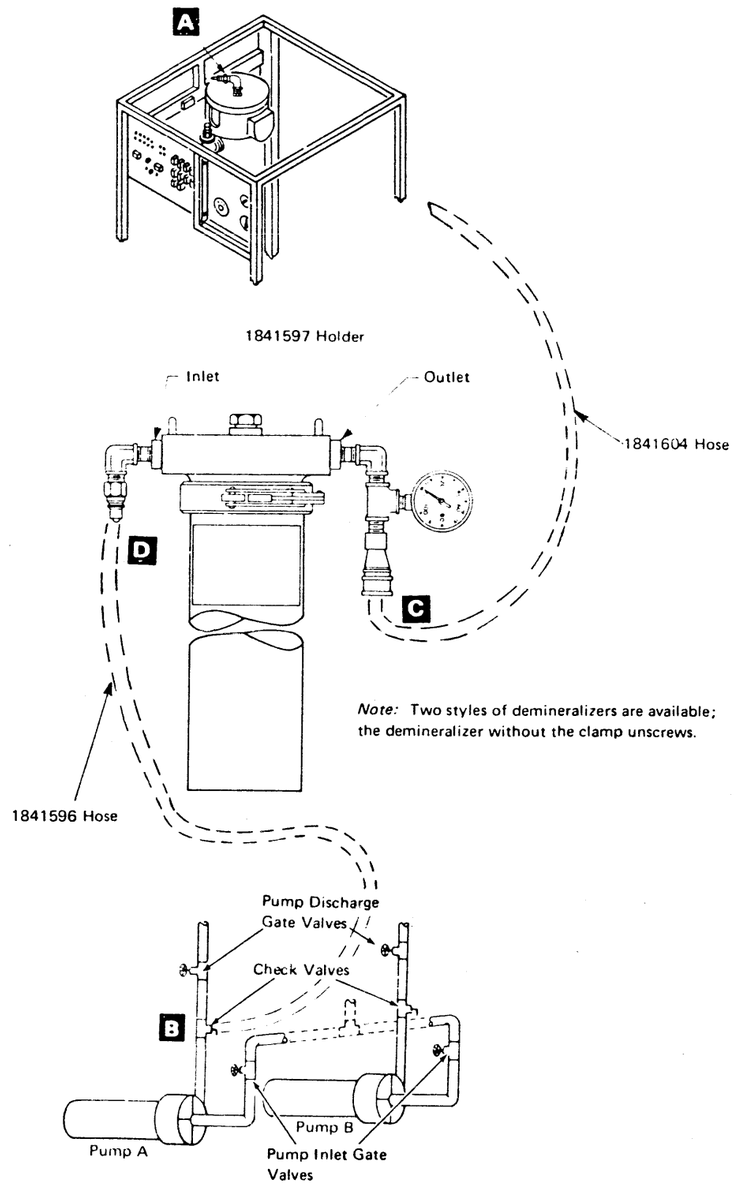
☐ 7. Remove the cartridge from the demineralizer by releasing the clamp, removing the clamp assembly, and removing the head assembly. Remove the cartridge and discard it. Empty the remaining water out of the demineralizer and reassemble it without inserting a cartridge.

ADD CORROSION INHIBITOR

The "Demineralize System Water" procedure must be completed before adding the corrosion inhibitor. If the corrosion inhibitor is left in the CDU, the filter removes it.

☐ 1. Shake the powdered contents of the plastic bottle (part 1835426) vigorously until all clumps appear dispersed.

☐ 2. With the CDU pump on (water circulating), slowly pour the contents of the bottle into the expansion tank in three increments over a 15-minute period.
a. This procedure should be repeated following every demineralization of the system water.
b. Ensure that the cover of the expansion tank is sealed properly to prevent air from leaking in.



Note: Two styles of demineralizers are available; the demineralizer without the clamp unscrews.

Part	EC No.	276474	276707	279895	213545
8271620	Date	20Jan78	3May78	26Jan79	15Jun81

INSTALLATION PROCEDURES

Power Up the Console

Step Cplt

1. Turn off the following CBs:

Frame	*CBs*
15	1, 2, 3, and 11
04	3 through 11
05	501, 502, 503, 506, 507, and 508
06	605, 606, and 607

(INST 310 covers turning on the CBs.)

2. Ensure that 415-Hz power is on.
3. Turn the CDU Local/Remote switch to Remote.
4. Check the CDU customer flow rate. (See the chart on INST 90.)
5. Open all the water valves on the frames to be powered up (if not previously opened on INST 190).
6. Insert the operational diskette into diskette drive A or B.
7. Turn the Power Select switch to Console.
8. Turn the Operator Console on IMPL switch to A (or to B, if using console station B).
9. Check the diskette drive motors for proper ground.

DANGER
Line voltage can be present on the metal housing of the diskette drive motors if the motor power plug is wired incorrectly. DO NOT TOUCH the metal motor housings until you have completed the following procedure.

Note: The correct power plug wiring for the diskette motor is shown on ALD page YD011.

a. Set the CE meter to the 150 V ac scale. With the console power on, check for 0 volts between the machine frame and the motor ground screws of both diskette drives.
b. Press the IPC Reset pushbutton and then the Power On pushbutton. The console power should come on.
c. If the diskette motor ground is correct, proceed to the next step.

10. Check operation of the blowers in gates A and B.

Step Cplt

11. Check all dc voltages and adjust if necessary. (See the following chart.) Also see ALD pages YD037 and YD039.

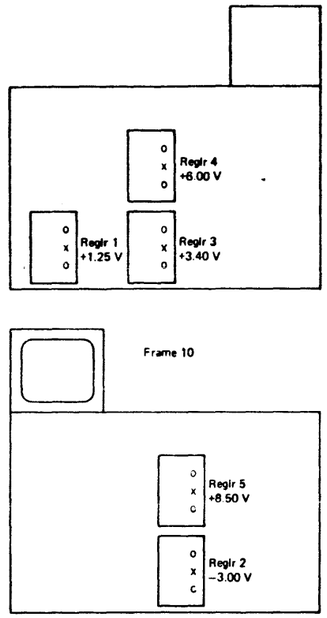
CAUTION
Adjust only the potentiometers marked with an X in the figures. Do not adjust any potentiometers that are sealed.

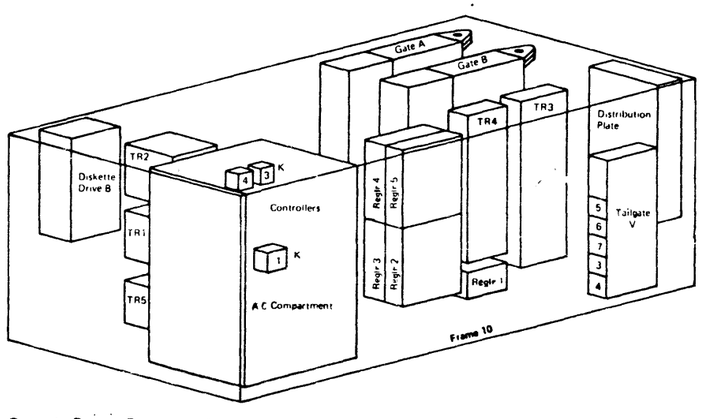
12. Test the LEDs on the CRT bezel and the hand-held indicator box by pressing the IMPL pushbutton for the station being tested.

Supply	Voltage	Tolerance (mV)	Test Points From	Test Points To
TR1	+5.0	±500	11C-A1 bus (on the end of gate C)	11C-A2 bus
TR2	+18.0	±2,160	TR2 TB2-3	TB2-6
	+5.0	± 400	TR2 TB2-3	TB2-5
	−5.0	+ 1,000 −500	TR2 TB2-3	TB2-1
TR3	−4.0	±320	Pin B06 on all boards except 11C-A1	Pin D08
	−4.0	±320		
	−4.0	±320		
TR4	+12	±1,200	TR4 TB3-3	TB3-2
	−12	±1,200	TR4 TB3-3	TB3-6
	+24	±2,880	TR4 TB2-8	TB2-7
	−5	± 500	10A-A1U2G06	Pin D08
	+5	± 500	TR4 TB2-3	TB2-1
TR5	+34	±3,400	TR5 TB2-1	TB2-2
Regltr 1	+1.25	±20	10A-A1K2M11	10A-A1K2D08
Regltr 2	−3.0	±50	10A-A1H2S09	10A-A1H2D08
Regltr 3	+3.4	±50	10A-B1B2U12 10B-A1B2U12[1]	10A-B1B2D08 10B-A1B2D08
Regltr 4	+6.0	±100	10A-B1T2G11 10B-A1T2G11[1]	10A-B1T2D08 10B-A1T2D08
Regltr 5	+8.5	±50	10A-B1B2U07 10B-A1B2U07	10A-B1B2D08 10B-A1B2D08

[1] Balance voltage settings between the two test points.

Note: The TR supplies have no adjustment potentiometer. Change the transformer taps to adjust the TR supply output voltage. (See ALD page YD047.)





Console Power Components

Console Microdiagnostic Tests

Step Cplt

1. Insert the console diagnostic diskettes into diskette drive A and drive B. ☐
2. Set the Operator Console on IMPL switch to A. ☐
3. Press the IMPL A pushbutton. ☐

Note: The following codes are set in the sequence indicators:

Code	*Meaning*
0	Successful load of tracks 0 and 1
1	Unsuccessful branch to 24k addressing (SAR bits 0 and 1 not equal to 11)
2	Cannot read track 1
3	No diskette mounted (not ready)
4	Security key off
5	Cannot read track 0
6	Start looking for index
7	Start looking for strobe (read data is ready)

Details on the console microdiagnostic tests are in MM Volume 1.

Station A or B will enter maintenance operator (MO) state and begin running console microdiagnostic tests. The station not in MO state will display OTHER STATION HAS ASSUMED ALL CONSOLE FUNCTIONS message and will be in the maintenance service (MS) state.

CAUTION
Power to the processor complex must be turned off before loading the diagnostic program into the service support station. No power microcode is loaded.

Step Cplt

4. Execute the following tests: ☐

Name	*Function*
01 Basic test	Data flow test
02 Parity test	Error checking circuitry test
03 Storage test	Self-explanatory
04 Timer test	Self-explanatory
05 File test	Self-explanatory
06 Interrupt test	Self-explanatory
07 Keyboard test	Self-explanatory
08 Align patterns	Self-explanatory
09 Communication register test	Communication register test must be loaded on service support station at the same time
10 Modem test	Station B only
11 Clock test	Self-explanatory
12 Panel test	Self-explanatory
13 3056 tests	If remote console RPQ is installed

5. Set the Operator Console on IMPL switch to B. ☐
6. Press the IMPL B pushbutton. ☐
7. Execute the tests listed under step 4. ☐
8. Insert the operational diskette into diskette drives A and B. ☐

Test the Unit Emergency Switch

Step Cplt

1. Set the Power Select switch to Console. ☐
2. Turn off the console power; press the Power Off pushbutton. ☐
3. Set the Unit Emergency switch to Power Off. ☐
4. Attempt a power-on sequence. The console should not power up. ☐
5. Release the mechanical interlock to reset the Unit Emergency switch. Reengage the mechanical interlock. (The control panel swings down from the top.) ☐
6. Repeat steps 1-5 to test the Unit Emergency switch on the PDU, frame 04, and directors. ☐
7. Return to the work flow chart for team A (INST 60). ☐

Install the Batteries

	Step Cplt	Tray Pack (See INST 50)
Install the batteries (part 1582546) in the control panel.	☐	255 D (2)

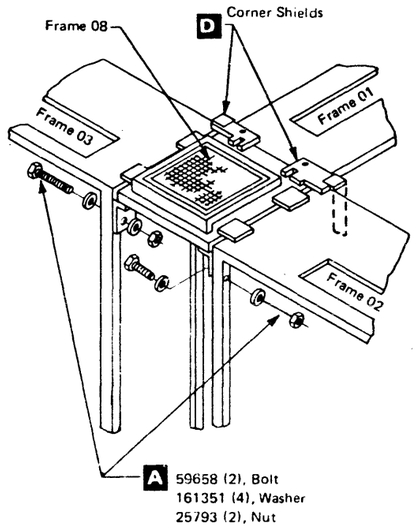
Part	EC No.	276474	276707	388162	388692	208335	213545
8271622	Date	20Jan78	3May78	23Feb79	10Aug79	1Jun80	15Jun81

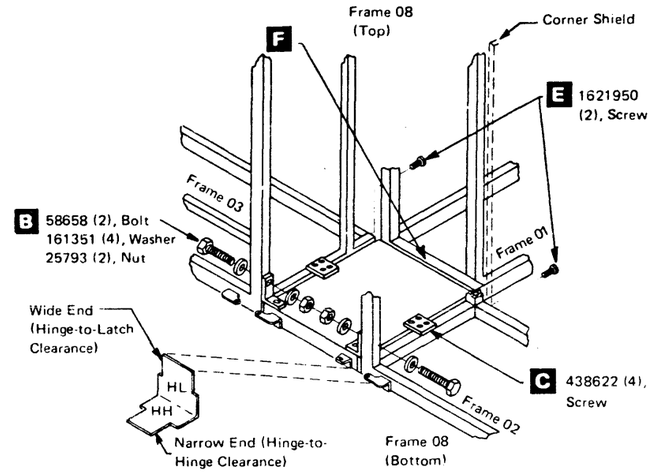
INSTALLATION PROCEDURES

Install the 3033 Processor

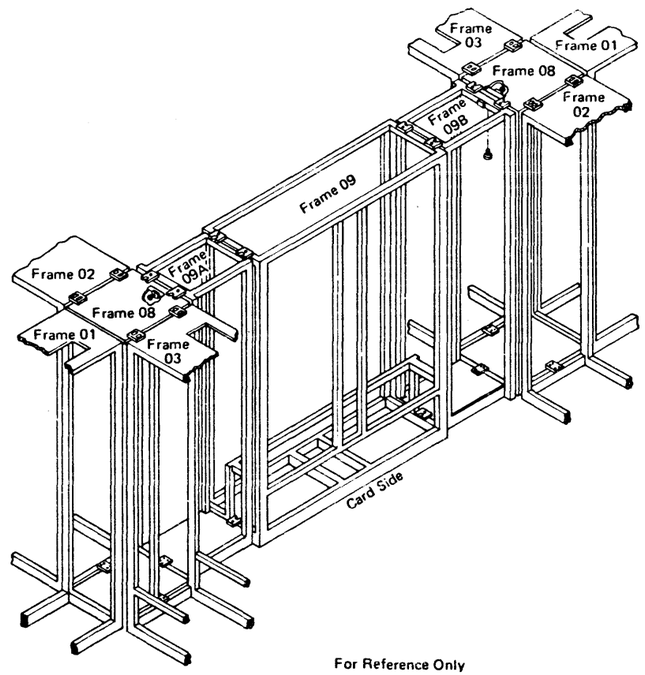
		Step Cplt	Tray Pack (See INST 50)
	CAUTION When bolting the frames together, ensure that no cables are pinched between the frames.		
	1. If the processor has adjustable outriggers, adjust them for 2-3/4 inches (70 mm) from the bottom of the frames to the floor. Remove covers as required for frame-to-frame connections.	☐	
	2. Place frame 02.	☐	
	Note: The frames are adjusted for an even line across the top housings. Do *not* install the leveling pads at this time.		
A	3. Set the top of frame 08 (part 4873266) on the frame 02 pins and connect the angle bracket to frame 02 with bolt (part 59658), washers (part 161351), and nut (part 25793).	☐	XXX[1] D (1) XXX[1] A (2) XXX[1] H (1)
	If you are installing a second processor to frame 09, align frame 08 to frame 09.		XXX[1] D (1) XXX[1] A (2) XXX[1] H (1)
A	4. Place frame 03 and connect the top of frame 08 to frame 03 with bolt (part 59658), washers (part 161351), and nut (part 25793).	☐	
B	5. Place the bottom of frame 08 between frames 02 and 03. (Bring the frame up from the bottom.) Attach the angle brackets to frames 02 and 03 as was done for the top of frame 08.	☐	XXX[1] D (2) XXX[1] A (4) XXX[1] H (2)
	6. Remove the cable connectors with the shipping holder from frame 02.	☐	
	Note: Do not remove the cable holders if they are permanently mounted (bolted to the frames).		
C	7. Connect the flat brackets from frame 08 to frames 02 and 03 with screws (part 438622). Use the alignment gauge to align the frames. To provide correct frame clearance, lower frame 02 onto the leveling pads, if necessary.	☐	XXX[1] I (4)
	If installing the second processor of an AP or MP complex, see INST 255 for frame 09 attachment. Do steps 3 through 9 and return here.		
	The couplers are used to control the top frame-to-frame clearance. The frame alignment gauge is used to adjust the bottom frame-to-frame clearance.		
	Insert the frame alignment gauge between the hinge and latch (or hinge and hinge), and tighten the nut until the gauge is snug.		
D	8. Place frame 01 so that the corner shields on frame 01 are aligned with the pins in frame 08. Use the outriggers (adjustable outriggers only) to adjust the frame, if necessary.	☐	
E	9. Connect the shields on frame 01 to the bottom of frames 02 and 03 with screws (part 1621950).	☐	XXX[1] C (2)

[1] XXX is 056 for 3042 Model 1.
690 for 3042 Model 2.
300 for 3033.





1312055 Frame Alignment Gauge
(Use Only on the Bottom of the Frames)



For Reference Only

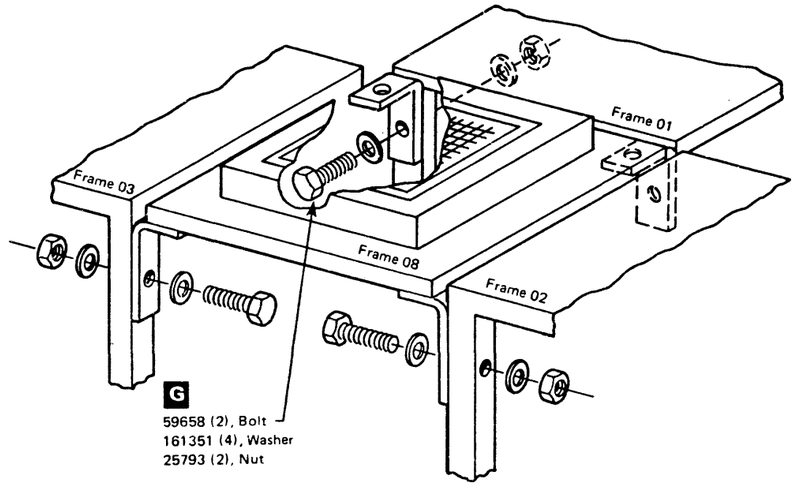
3033	Part	EC No.	276474	276707	278891	388692	388707	208332	211786	213562
	8271623	Date	20Jan78	3May78	17Nov78	10Aug79	1Dec79	1Mar80	5Jan81	4Sep81

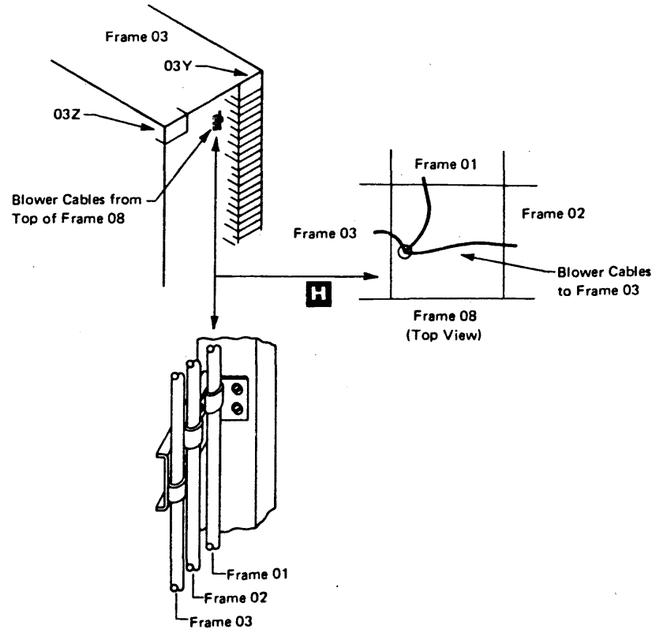
Install the 3033 Processor (Continued)

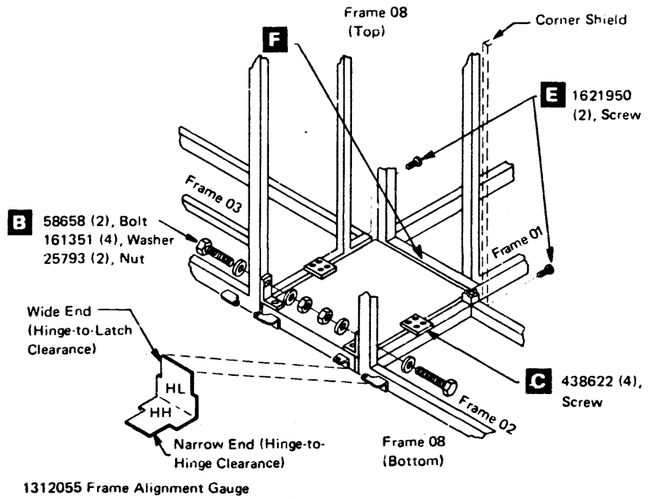
			Step Cplt	Tray Pack (See INST 50)
F	10.	Use the leveling pads as necessary to get the lower frame clearance. (Seals touching and frames aligned).	☐	
G	11.	Connect the top of frame 08 to frame 01 using angle brackets with bolts (part 59658), washers (part 161351), and nuts (part 25793).	☐	XXX[1] D (2) XXX[1] A (4) XXX[1] H (2)
H	12.	Route and connect the blower cables as shown.	☐	
	13.	Check the alignment of frames 01 and 02 and frames 03 and 02. check visually along the top housings. *Note:* Leveling pads are to be installed if EC 275469 is not installed. (Frames 01, 02, and 03 have permanent casters if EC 275469 is installed.)	☐	
	14.	Install and tighten the leveling pads (part 5584215) if the frames are not aligned at the top.	☐	
	15.	Remove the outriggers. The instructions are on INST 240.	☐	

[1] XXX is 056 for 3042 Model 1.
690 for 3042 Model 2.
300 for 3033.

3033	Part	EC No.				
	8271677	Date	388692 10Aug79	208332 1Mar80	211786 5Jan81	213562 4Sep81







1312055 Frame Alignment Gauge
(Use Only on the Bottom of the Frames)

INSTALLATION PROCEDURES

Install Frame 04

Note: Skip this page if you are installing the second processor of an attached processor complex.

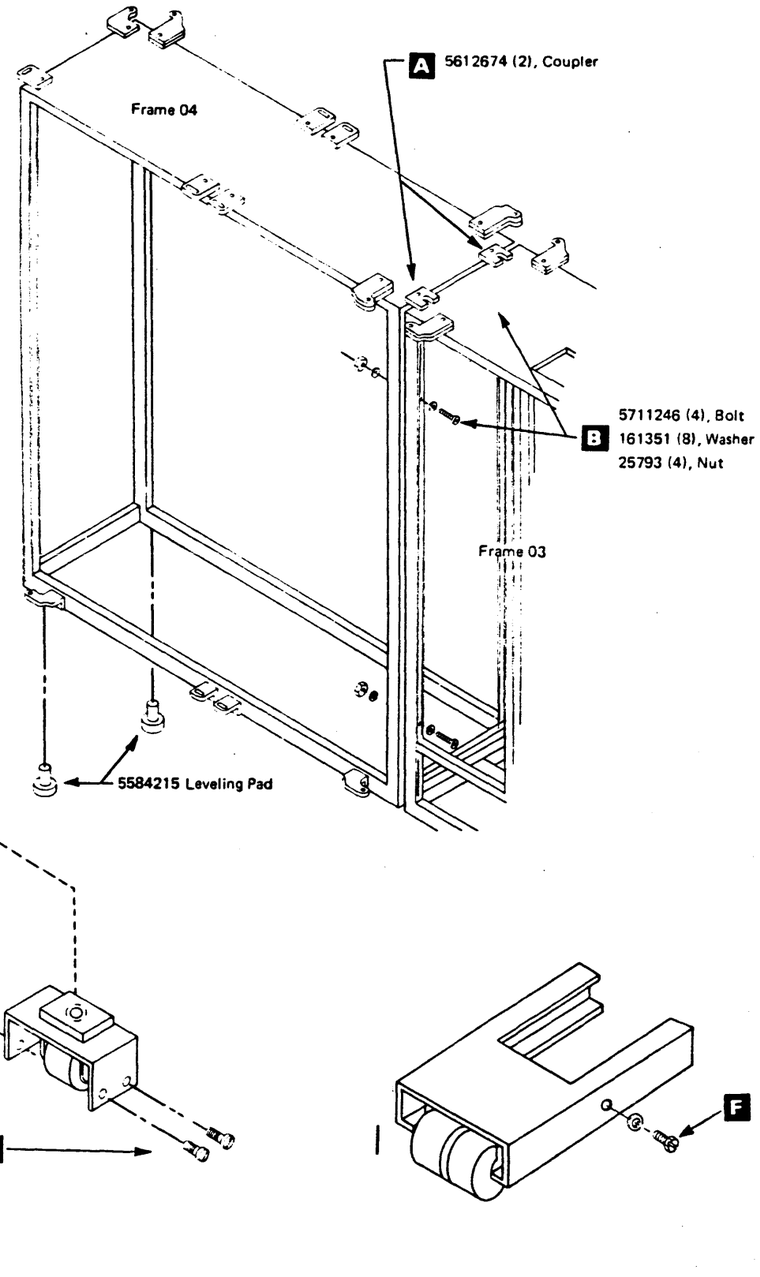
		Step Cplt	Tray Pack (See INST 50)
A	1. Push frame 04 to engage the couplers (part 5612674) with the pins in frame 03. Use the outriggers to adjust the height, if necessary (only if frame has adjustable outriggers).	☐	
B	2. Install bolts (part 5711246), washers (part 161351), and nuts (part 25793) to connect frame 04 to frame 03. The upper bolts are tightened fully. The lower bolts are tightened to the frame alignment gauge. (See INST 230.)	☐	300 L (4) 300 A (8) 300 H (4)
	3. Visually check alignment of the top of the frames. If the frames are not even, install and tighten the leveling pads (part 5584215).	☐	
	Note: Install the leveling pads if EC 275525 is not installed and if the floor is not level.	☐	
	4. Remove the outriggers.	☐	

REMOVE THE OUTRIGGERS

Two styles of outriggers may be installed on the processor. To remove the first style:

C	1. Remove the four screws from the frame.	☐
D	2. Remove the four screws from one side of the outrigger.	☐
E	3. Slide out the outrigger and assemble it so that the parts will not be misplaced.	☐
F	To remove the other style, remove the two screws and lockwashers from each outrigger and slide out the outrigger.	☐

Note: Assemble the outriggers and put them in the shipping group.



Part	EC No.	276474	276707	388707	214694
8271624	Date	20Jan78	3May78	1Dec79	9Apr82

INSTALLATION PROCEDURES

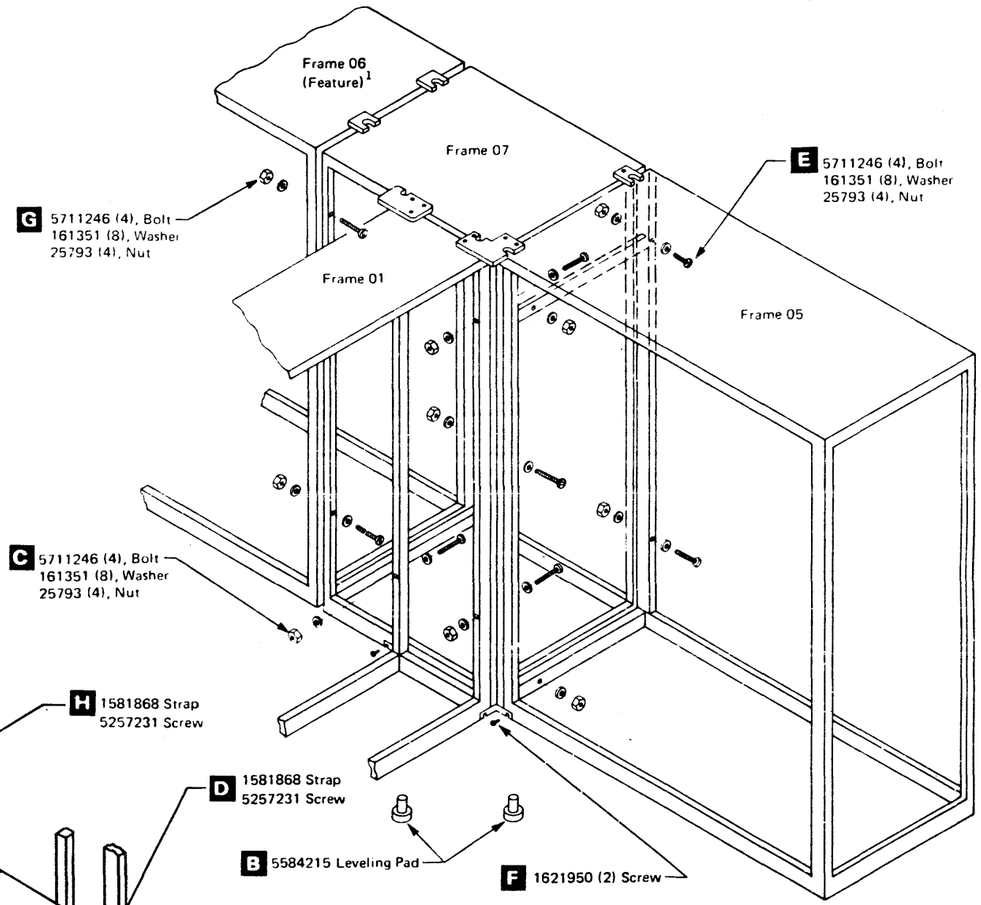
Install the Channels

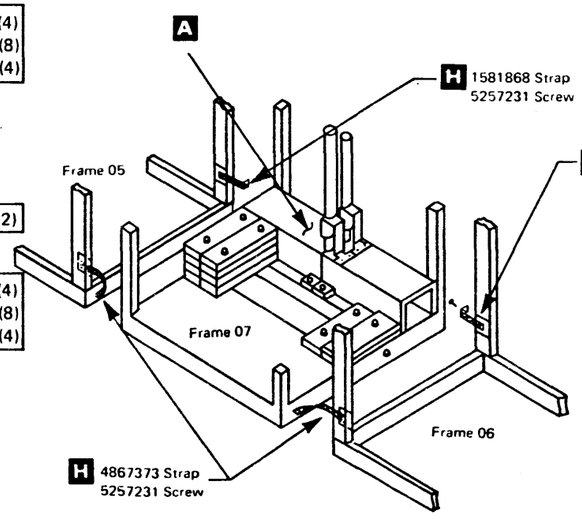
Note: If you are installing a 3042 Model 2 or a 3033, continue with this page. Skip this page if you are installing a 3042 Model 1.

			Step Cplt	Tray Pack (See INST 50)
A	1.	Remove the cable-entry hole covers from frame 07.	☐	
	2.	Remove the connectors with the shipping holder from frame 01.	☐	
B	3.	Place the leveling pads (part 5584215) under frame 07. *Note:* Install the leveling pads only if the floor is not level.	☐	
	4.	Align frames 07 and 01 by adjusting the leveing pads.	☐	
C	5.	Connect frame 01 to frame 07 with bolts (part 5711246), washers (part 161351), and nuts (part 25793).	☐	XXX[2] L (4) XXX[2] A (8) XXX[2] H (4)
	6.	Place frame 05 on frame 07 by pushing the couplers into the pins.	☐	
	7.	Place the leveling pads (part 5584215) under frame 05, if necessary. Align frames 05 and 07 by adjusting the leveling pads if the floor is not level or if the frames are not aligned. *Note:* To install the bottom frame member bolt (part 5711246) in the following step, loosen the frame 07 counterweight mounting bolts and shift the counterweights toward the center of the frame.	☐	
D	8.	If frames 05 and 07 were shipped disconnected, install the ground strap between frame 05 and 07.	☐	
E	9.	If frames 05 and 07 were shipped disconnected, connect frame 05 to frame 07 with bolts (part 5711246), washers (part 161351), and nuts (part 25793). Use the frame alignment gauge to adjust the clearance between the bottom of frames 05 and 07. (Gauge usage is described on INST 80.)	☐	XXX[2] L (4) XXX[2] A (8) XXX[2] H (4)
	10.	Shift the counterweights back into place and tighten the counterweight mounting bolts.	☐	
F	11.	Connect the shields on frame 01 to the bottom of frames 05 and 07 with screws (part 1621950).	☐	XXX[2] C (2)
G	12.	Install frame 06 (feature)[1] in the same manner as frame 05 using bolts (part 5711246), washers (part 161351), and nuts (part 25793).	☐	XXX[2] L (4) XXX[2] A (8) XXX[2] H (4)
H	13.	Install the ground straps (parts 1581868 and 4867373) with screws (part 5257231). Screws are in the frame.	☐	

[1] Frame 06 is not available on the 3033 Processor Model Group S or 3042 Model 2.

[2] XXX is 690 for 3042 Model 2.
300 for 3033.





3033	Part	EC No.	276474	276707	278357	278891	279895	388707	208332	208335	211786	213545	213562
	8271625	Date	20Jan78	3May78	19Jul78	17Nov78	26Jan79	1Dec79	1Mar80	1Jun80	5Jan81	15Jun81	4Sep81

Install the Spacer Frame for AP or MP

Notes:

1. If special handling was required for frame 09, the Q-tailgates will be shipped in the spacer frames. This will require the tri-lead cables from frame 09 to be connected to the Q-tailgates.
2. If frame 09 is to be installed between two preset processors, attach one spacer frame. Attach the other spacer frame after frame 09 is attached to one processor.

CAUTION

Steps 4-8 require two CEs.

Install the spacer frame as follows:

Step Cplt

1. Remove the covers from the spacer frames. ☐

A 2. Position leveling pads in the holes under the spacer frames. The leveling pads will support the spacer frames while the outriggers are removed. ☐

B 3. Remove the outriggers from the spacer frames. ☐

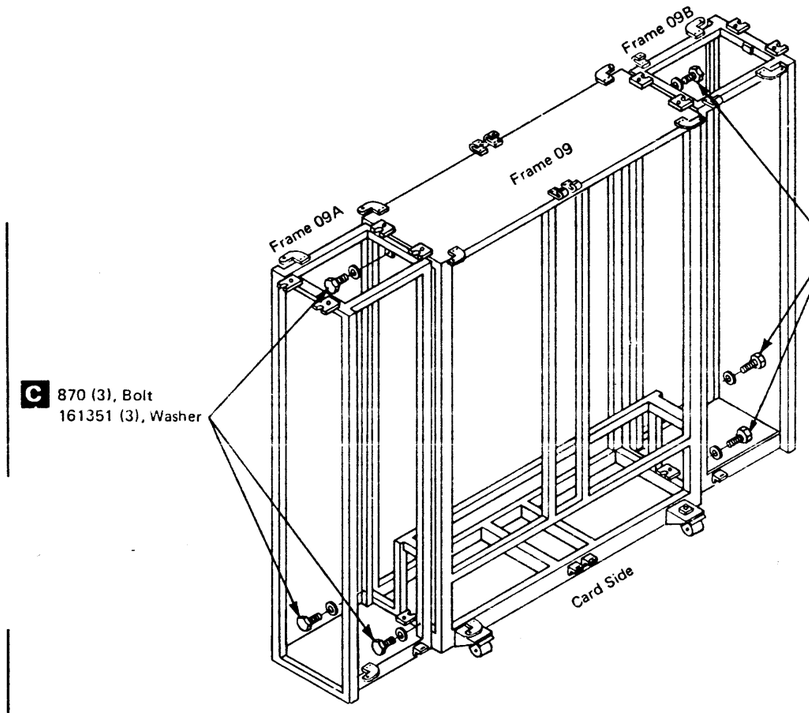
4. Lift the spacer frames from the leveling pads and place the frames on the floor. ☐

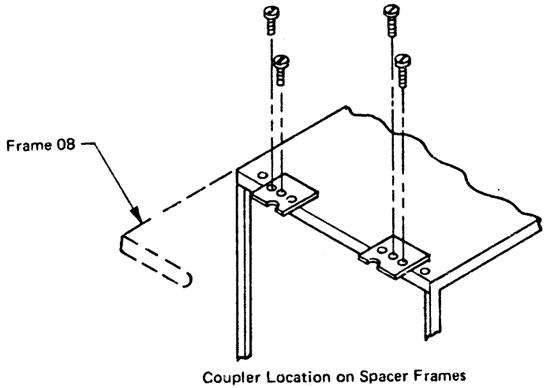
5. Unbolt the spacer frames from each other. ☐

C 6. Using leveling pads to support and to adjust the height of the spacer frames, attach the spacer frame with the hardware as shown. The spacer frames are identical, and they can be installed on either end of frame 09. ☐

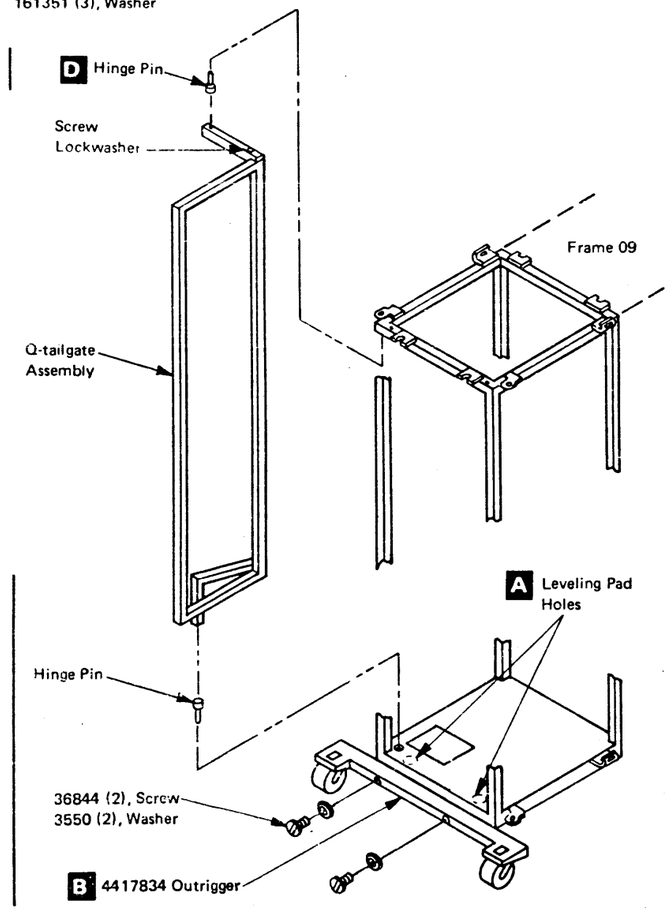
D 7. Remove the two hinge pins in the Q-tailgate mounted in frame 09, and move the tailgate into the spacer frame. Reinstall the hinge pins. ☐

8. If attaching both spacer frames, attach the other spacer frame to frame 09. ☐





Coupler Location on Spacer Frames



Part	EC No.	388692	388707	213545	
8271678	Date	10Aug79	1Dec79	15Jun81	

Install Frame 09 to Frame 08 for AP or MP

Notes: Pins (part 5612672) are supplied in the 3038 shipping group.

Step Cplt

1. Install locating pins (part 5612672) in frame 08. ☐

   Note: When installing frame 09 for an AP complex, position frame 09 so that the A-side of frame 09 is toward the 3033.

A 2. Position frame 09. Engage the couplers of the spacer frame to the pins on frame 08. Adjust the outriggers on frame 09 as required to engage the pins in the top of frame 08. ☐

B 3. Attach the top of the spacer frame to frame 08 using bracket (part 4417848) and screws (part 38686). ☐

C 4. Attach the bottom of frame 09 to frame 08 using screws (part 438622). The bottom of frame 08 may be adjusted up or down if necessary. ☐

D 5. Adjust the outriggers so that the top couplers engage the pins and the bottom seals are compressed. The gaps at the top and bottom should be equal, and the tops of the frames should be equal also. ☐

E 6. Install the leveling pads. ☐

F 7. Remove the outriggers. ☐

G 8. Pivot the Q-tailgate into frame 08. ☐

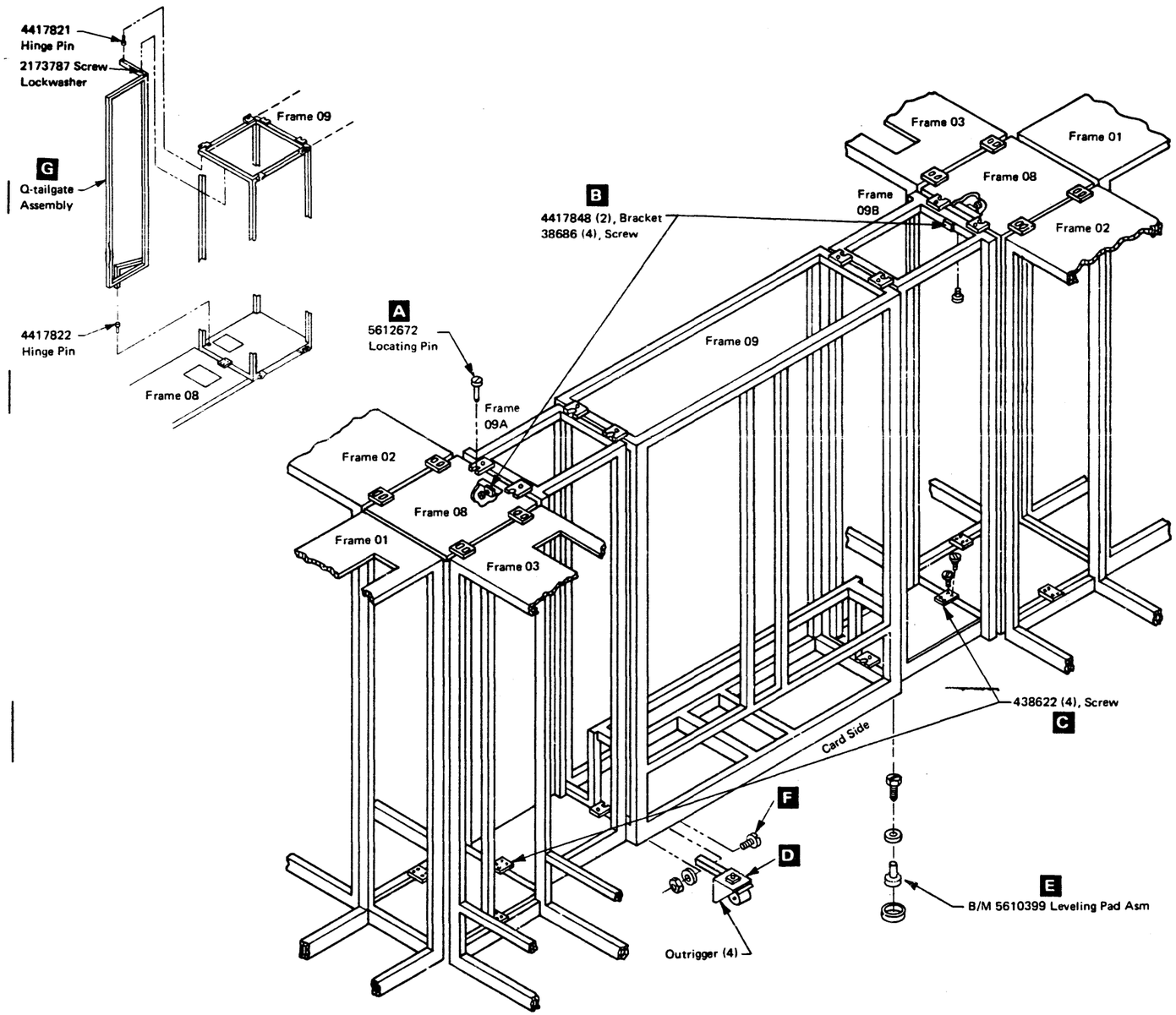
   Remove the two lower mounting screws that mount the bottom bracket of the 03J tailgate. Slide the 03J tailgate to the inner side of frame 08.

   Note: Be careful not to damage the 03J cables and frame 09 tri-leads.

   Remove screw (part 2173787) and pivot the Q-tailgate into frame 08. Replace the screw in the Q-tailgate.

   Reinstall the 03J tailgate.

9. Connect the clock panel tri-lead to 01A-B3H2D05. ☐



Part	EC No.	388692	388707	208335	211786
8271679	Date	10Aug79	1Dec79	1Jun80	5Jan81

Install the Remaining Spacer Frame for AP or MP

This procedure is used when converting a 3033 Processor to a Model A or a Model M in the field, with two processors previously set in place (89.75 inches [2 279.65 mm] apart).

Step Cplt

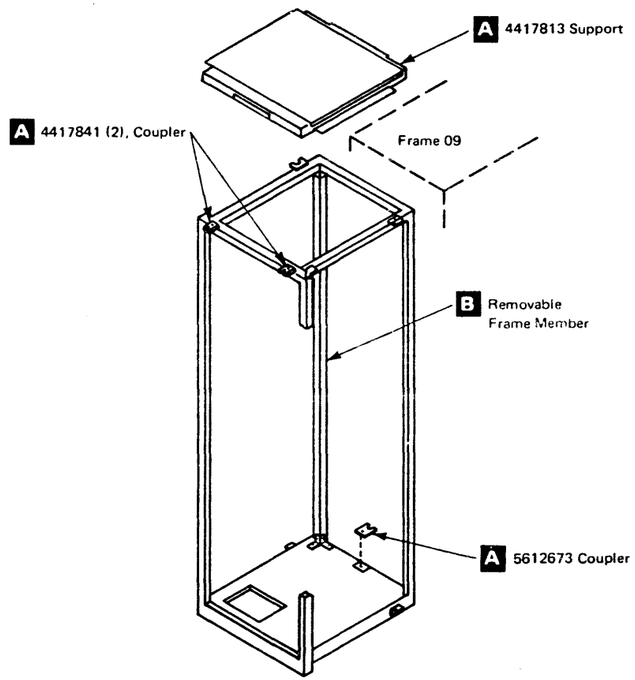
A 1. Remove the hardware from the spacer frame as shown. Retain all parts removed. ☐

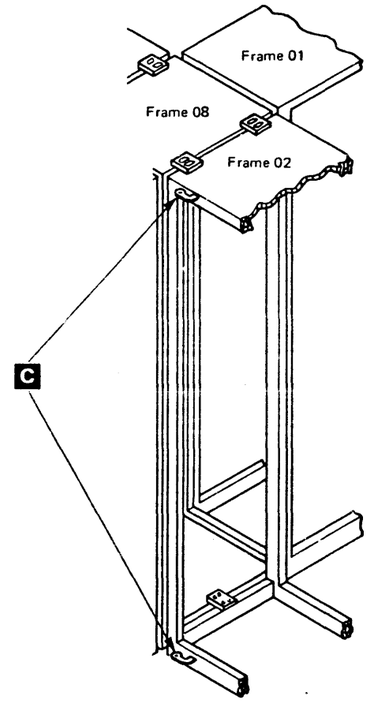
B 2. Remove the frame member from the spacer frame as shown. Retain all parts removed. ☐

3. Remove the frame 02 cover (next to frame 08). ☐

C 4. Remove the cover hardware from frame 02. ☐

Continued on INST 257.





Install the Remaining Spacer Frame for AP or MP (Continued)

Step Cplt

D 5. Insert the spacer frame between frame 09 and frame 08. Connect frame 09 to the spacer frame with bolts (part 870) and washers (part 161351). ☐

E 6. Install pin (part 5612672) in frame 08. Pins are supplied in the 3038 shipping group. ☐

7. Install the previously removed couplers in the spacer frame and engage the pins on frame 08. Adjust the outriggers on frame 09 so that the pins on the top of frame 08 engage. ☐

F 8. Attach the top of the spacer frame to frame 08 using bracket (part 4417848) and screws (part 38686). ☐

G 9. Attach the bottom of frame 09 to frame 08 using the previously removed bracket and screws (part 438622). The bottom of frame 08 may be adjusted up or down if necessary. ☐

10. Adjust the outriggers so that the top couplers engage the pins and the bottom seals are compressed. The gaps at the top and bottom should be equal, and the tops of the frames should be equal also. ☐

H 11. Install the leveling pads and remove the outriggers from frame 09. ☐

12. Reinstall the parts removed in steps 1 and 2. ☐

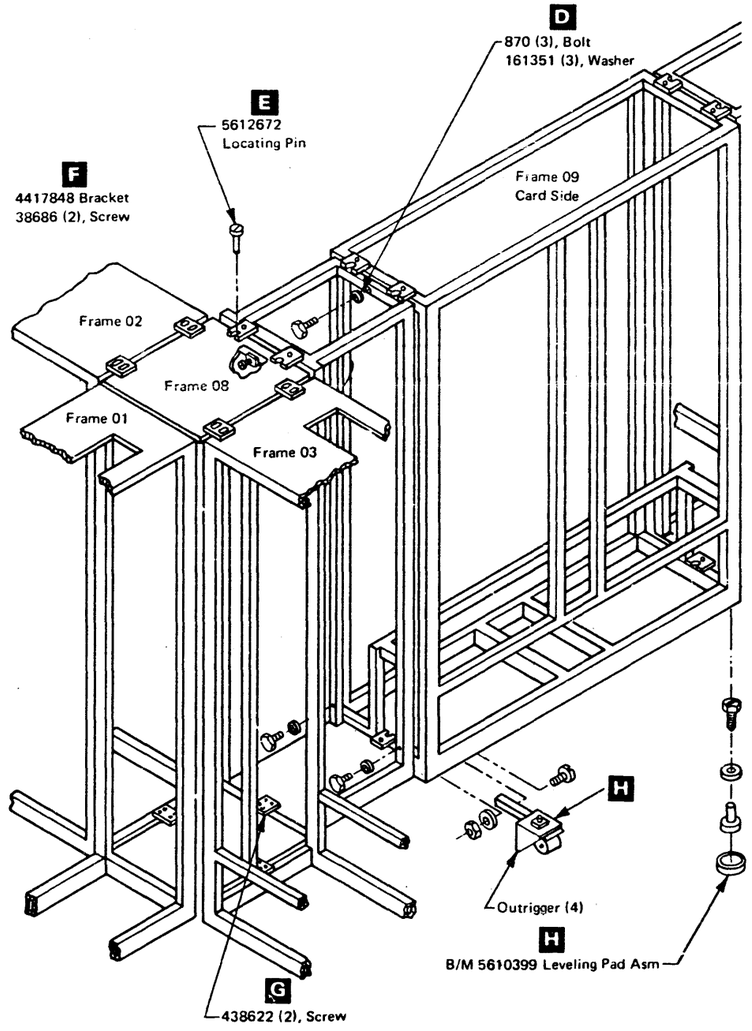
J 13 Pivot the Q-tailgate into frame 08. ☐

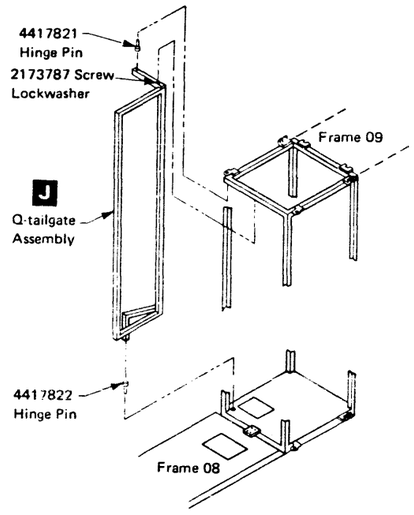
Remove the two lower mounting screws that mount the bottom bracket to the 03J tailgate. Slide the 03J tailgate to the inner side of frame 08.

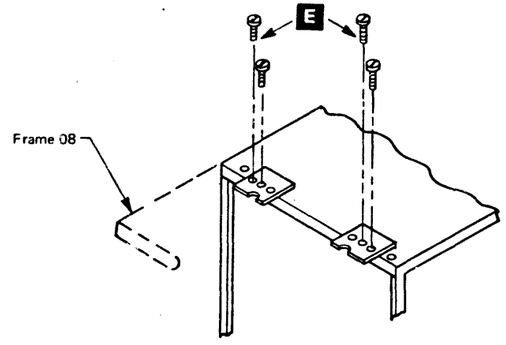
Note: Be careful not to damage the 03J cables and frame 09 tri-leads.

Remove screw (part 2173787) and pivot the Q-tailgate into frame 08. Replace the screw in the Q-tailgate.

Reinstall the 03J tailgate.







Coupler Location on Spacer Frames

Part	EC No.	388692	388707	213545	213562
8271680	Date	10Aug79	1Dec79	15Jun81	4Sep81

Install Frames 14 and 33

CAUTION
Steps 1 through 6 require two CEs. One CE should support frame 14 to keep it steady.

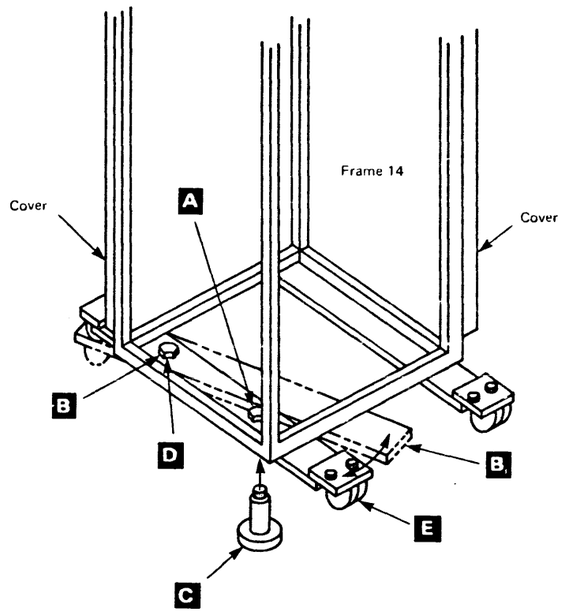
REPOSITION OUTRIGGERS

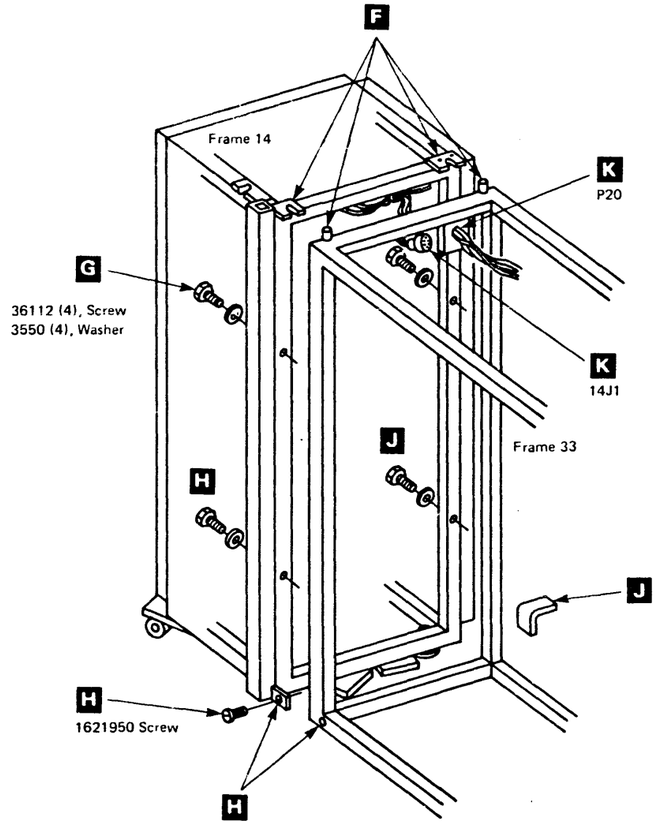
Step Cplt

- **A** 1. Remove the screw holding the outrigger to the bottom of frame 14. ☐
- **B** 2. Loosen the other screw just enough to allow swinging in the outriggers as shown. Swing the outrigger into the center just enough to clear the hole for the leveling pad. ☐
- **C** 3. Install the leveling pad (part 5584215). ☐
- **D** 4. Swing the outrigger to the approximate center of the frame. Tighten the screw so that the outrigger does not swing back and forth freely. ☐
- 5. Repeat steps 1 through 4 for the other outrigger. ☐
- **E** 6. Remove the casters from this end of the outriggers only. ☐

CONNECT FRAME 33 TO FRAME 14

- **F** 1. Move frame 33 to engage the pins to the couplers in frame 14. Use the leveling pads to adjust the height of frame 14, if necessary. ☐
- **G** 2. Install four screws (part 36112) and four washers (part 3550) to connect frame 33 to frame 14. The upper screws are tightened fully. ☐
- **H** 3. Tighten the lower screw which is closest to the corner shield so that the screw hole at the bottom of the corner shield aligns with the threaded hole in frame 33, and install the corner shield screw (part 1621950). ☐
- **J** 4. Tighten the lower screw on the other side of frame 14 to the frame alignment gauge (part 1312055). ☐
- **K** 5. Connect 14J1 of cable assembly (part 4452712) to connector P20 in frame 33. ☐
- 6. Remove the leveling pads from frame 14. ☐





Part	EC No.	388692	388707	208335	213562
8271681	Date	10Aug79	1Dec79	1Jun80	4Sep81

Install Frames 14 and 33 (Continued)

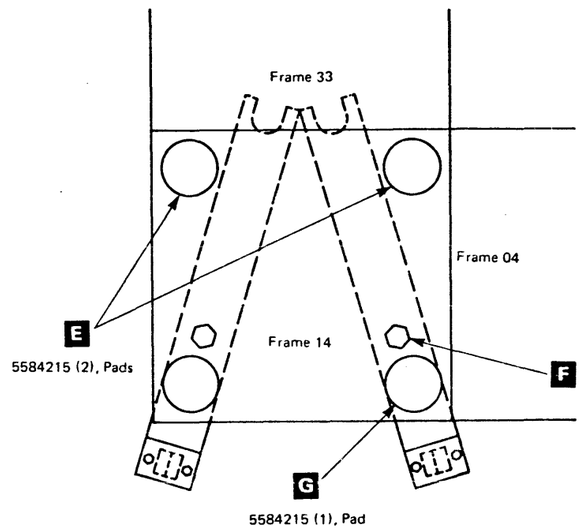
CONNECT FRAMES 33 AND 14 TO FRAME 04

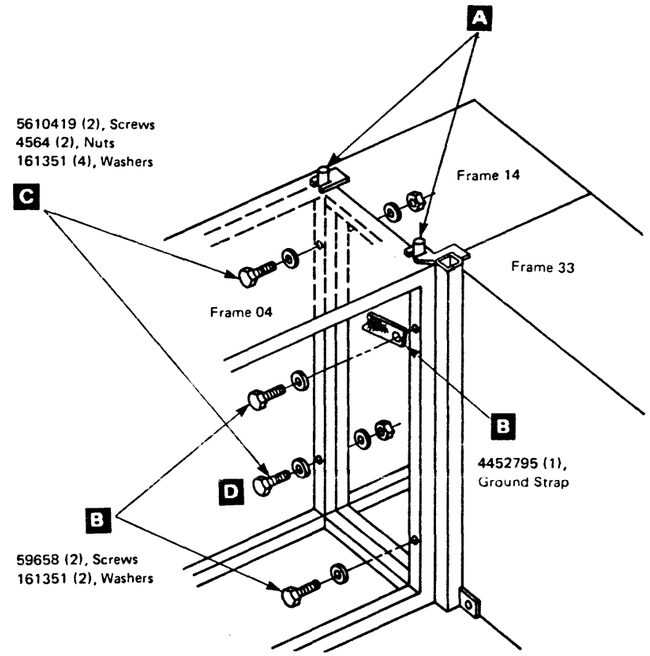
Step Cplt

- [ ] **A** 1. Move frames 14 and 33 to engage the couplers on frame 14 with the pins in frame 04.
- [ ] **B** 2. Install screws (part 59658), and washers (part 161351). Connect the ground strap (part 4452795) to frame 04. Use the large hole in the strap.
- [ ] **C** 3. Install screws (part 5610419), washers (part 161351), and nuts (part 4564).
- [ ] **D** 4. Tighten the two screws (part 59658) and the top screw (part 5610419) fully. Tighten the lower screw (part 5610419) to the frame alignment gauge (part 1312055).

REMOVE OUTRIGGERS

- [ ] **E** 1. Install leveling pads (part 5584215) in frame 14 in the two holes closest to frame 33.
- [ ] **F** 2. Remove the remaining screw from the outrigger closest to frame 04. Slide the outrigger out from under frame 14.
- [ ] **G** 3. Install a leveling pad (part 5584215) under frame 14.
- [ ] 4. Repeat steps 2 and 3 for the other outrigger.





INSTALLATION PROCEDURES

Install the Trace Probe and Scope Assembly

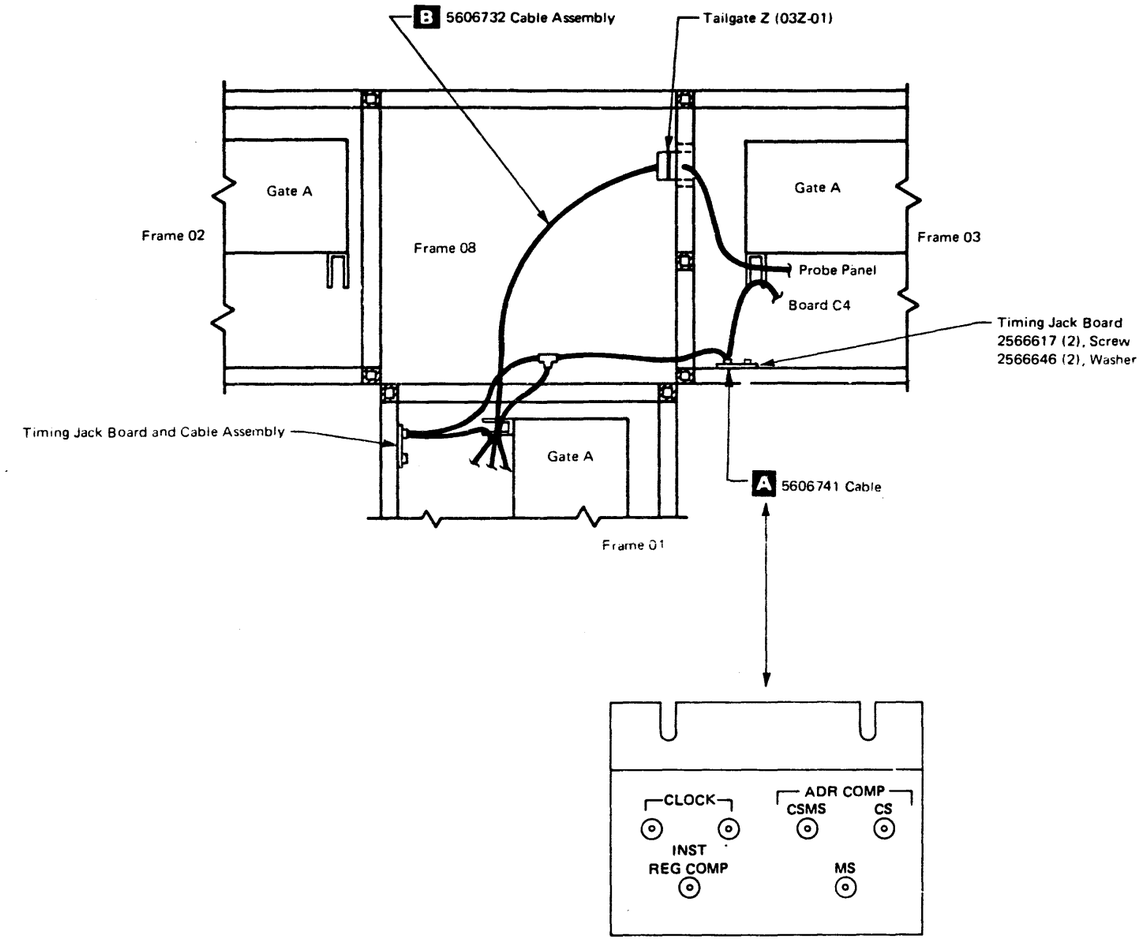
Step Cplt

A 1. Route cable (part 5606741) from frame 01 through frame 08 and terminate in frame 03. See the following chart. ☐

2. Attach cable to frame 03 with screws (part 2566617) and washers (part 2566646) in the position shown. ☐

Test Board Lead No.	Test Board Jack Location	Logic Board Pin Location
5	MS	03A-C4S6A04
6	CS	03A-C4U6D04
7	CSMS	03A-C4T6B02
8	INST REG COMP	03A-C4U6A04

B 3. Cable (part 5606732) is plugged into tailgate 03Z-01. ☐



INSTALLATION PROCEDURES

Interframe Connections on Frame 08 for UP and Model Groups N and S

Notes:
1. If an MP is being installed, go to INST 271.
2. If an AP is being installed, go to INST 275.

Step Cplt

A 1. Route and connect the blower cables at the bottom of the frames. ☐

B 2. Plug the convenience outlet cord into the frame 03 outlet. ☐

CONNECT CABLES TO TAILGATES

C 1. Connect the tailgate connectors. Start at the top of the frame and work down to the bottom. Use the handle and the hex-head driver in the tray pack. ☐

Notes:
1. Seat the connector by hand. Do not use the screw to pull the connector into position.
2. This procedure is for assistance only; the cables to be installed depend on the options installed. All the cables are marked.

Cables from Frame 01 to:

03Y2
09 through 13
16 through 20
23 through 39
43 through 48
61 through 63

Cables from Frame 02 to:

01X2	*03Y2*
01 through 04	01 through 08
09 and 10	14 and 15
13	21 and 22
18 through 22	40 through 42
26 and 27	49 through 60
29 and 30	
32 through 35	
43 through 48	

2. Route the following cables through the connector organizer to relieve the strain on the tri-lead cables: ☐

Cables from Frame 02 to:

01X2
38 through 44
53 through 55

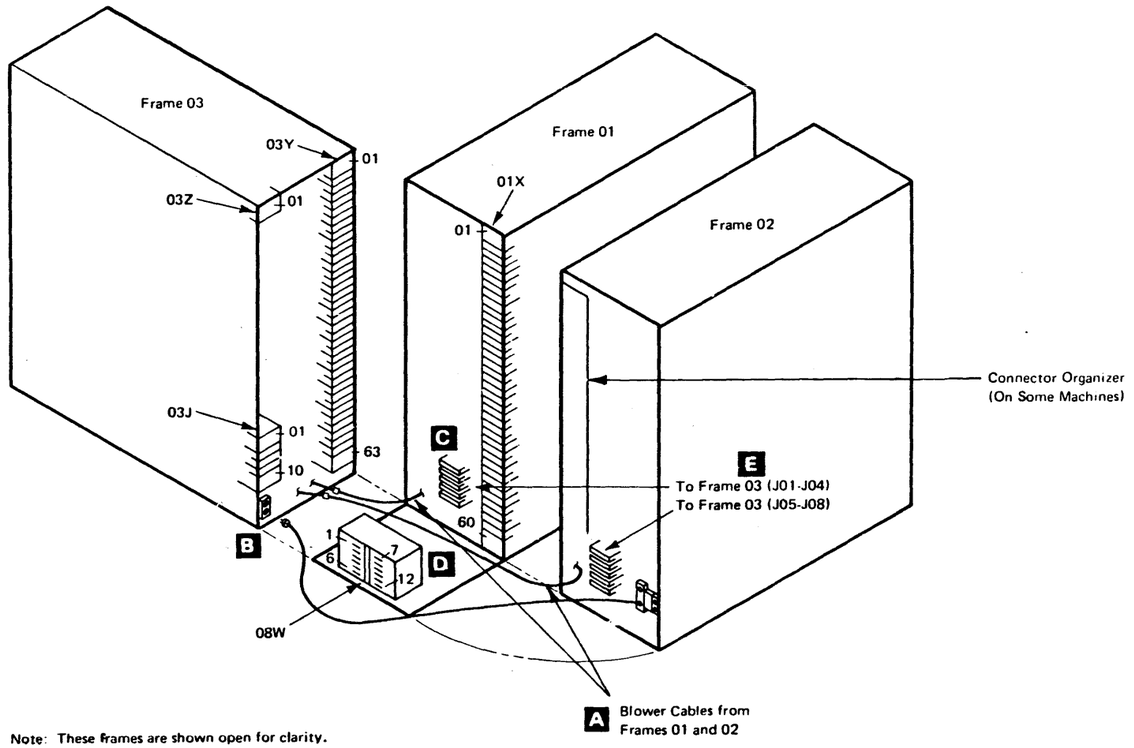
INSTALL FRAME 08 CABLES

Step Cplt

D 1. Install the following cables into tailgate W. Install the lower cables first. ☐

01W-11	02W-12
02W-06	03W-01
02W-05	01W-02

E 2. Install the cables into tailgate 03J. ☐



Note: These frames are shown open for clarity.

Part	EC No.	276474	276707	279895	388692	388707	208332	211786	213545	213562
8271627	Date	20Jan78	3May78	26Jan79	10Aug79	1Dec79	1Mar80	5Jan81	15Jun81	4Sep81

Interframe Connections on Frame 08 for MP or AP

Notes:
1. If a UP is being installed, go to INST 270.
2. If a 3042 is being installed, go to INST 275.

Step Cplt

A 1. Route and connect the blower cables at the bottom of the frames. ☐

B 2. Plug the convenience outlet cord into the frame 03 outlet. ☐

CONNECT CABLES TO TAILGATES

C 1. Connect the tailgate connectors. Start at the top of the frame and work down to the bottom. Use the handle and the hex-head driver in the tray pack. ☐

Notes:
1. Set the connector by hand. Do not use the screw to pull the connector into position.
2. This procedure is for assistance only; the cables to be installed depend on the options installed. All the cables are marked.
3. See INST 277 for suggested routing of cables.

Cables from Frame 01 to:	*Cables from Frame 02 to:*	*Cables from Frame 09 to:*
03Y2	*01X2*	*03Y2*
10 through 12	09 and 10	09 and 13
16 through 20	13	23 and 24
25	18 through 21	26 through 37
38 and 39	29 and 30	
43 through 48	32 through 35	*01X2*
61 through 63	43 through 48	01 through 04
		11 and 12
08Q2		23 through 25
09 and 13	*03Y2*	28 and 31
21 and 24	01 through 08	36 and 37
26 through 37	14 and 15	41
	21 and 22	
	40 through 42	*09R*
	49 through 60	01 and 02
	08Q2	
	01 through 04	
	22 and 23	
	25 and 41	

2. Route the following cables through the connector organizer to ☐ relieve the strain on the tri-lead cables:

Cables from Frame 02 to:

01X2
38 through 40
53 through 55

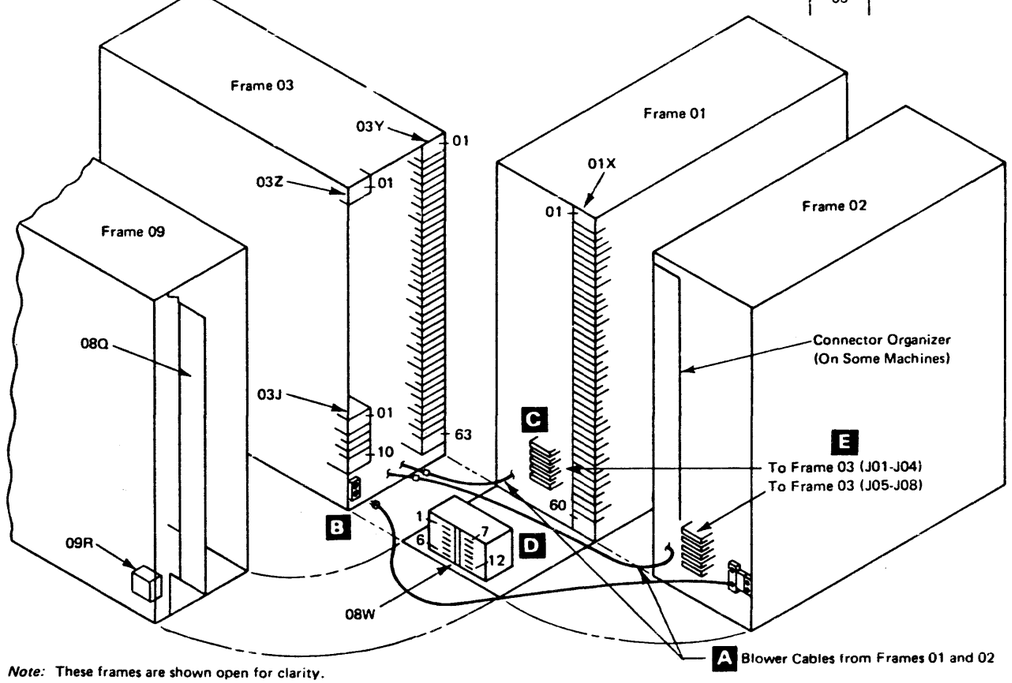
INSTALL FRAME 08 CABLES

Step Cplt

D 1. Install the following cables into tailgate W. Install the lower cables first. ☐

01W-11	02W-12
02W-06	03W-01
02W-05	01W-02

E 2. Install the cables into tailgate 03J. ☐

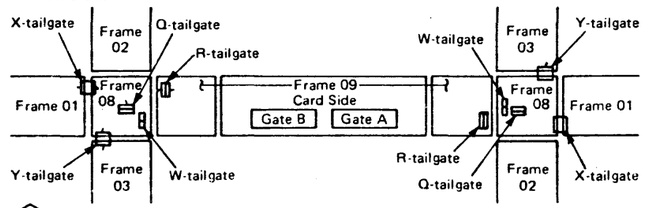


Note: These frames are shown open for clarity.

3. Connect the frame 09 clock panel tri-lead to 01A-B3H2D05. ☐

4. Route the J32 cable (part 4417796) from frame 04 through frame 03 and into the base of frame 08. ☐

5. Plug the J32 cable into cable connector J32 A or B in the base of frame 08. ☐



Part	EC No.	388692	388707	208332	211786	213545	213562
8271682	Date	10Aug79	1Dec79	1Mar80	5Jan81	15Jun81	4Sep81

Interframe Connections on Frame 08 for AP

Notes:

1. If a UP is being installed, go to INST 270.
2. If an MP is being installed, go to INST 271.

Step Cplt

A 1. Route and connect the blower cables at the bottom of the frames. ☐

B 2. Plug the convenience outlet cord into the frame 03 outlet. ☐

CONNECT CABLES TO TAILGATES

C 1. Connect the tailgate connectors. Start at the top of the frame and work down to the bottom. Use the handle and the hex-head driver in the tray pack. ☐

Notes:

1. Set the connector by hand. Do not use the screw to pull the connector into position.
2. This procedure is for assistance only; the cables to be installed depend on the options installed. All the cables are marked.
3. See INST 277 for suggested routing of cables.

Cables from Frame 01 to:	*Cables from Frame 02 to:*	*Cables from Frame 09 to:*
03Y2	*01X2*	*03Y2*
10 through 12	09 and 10	09 and 13
16	13	23 and 24
18 through 20	18 through 21	26 through 37
25	29 and 30	
38 and 39	32 through 35	*01X2*
43 through 48	43 through 48	01 through 04
		11 and 12
08Q2		23 through 25
09 and 13	*03Y2*	28 and 31
21 and 24	01 through 08	36 and 37
26 through 37	14 and 15	41
	21 and 22	*09R*
	40 through 42	01 and 02
	50 through 60	
	08Q2	
	01 through 04	
	22 and 23	
	25 and 41	

2. Route the following cables through the connector organizer to relieve the strain on the tri-lead cables: ☐

Cables from Frame 02 to:

01X2
38 through 40
53 through 55

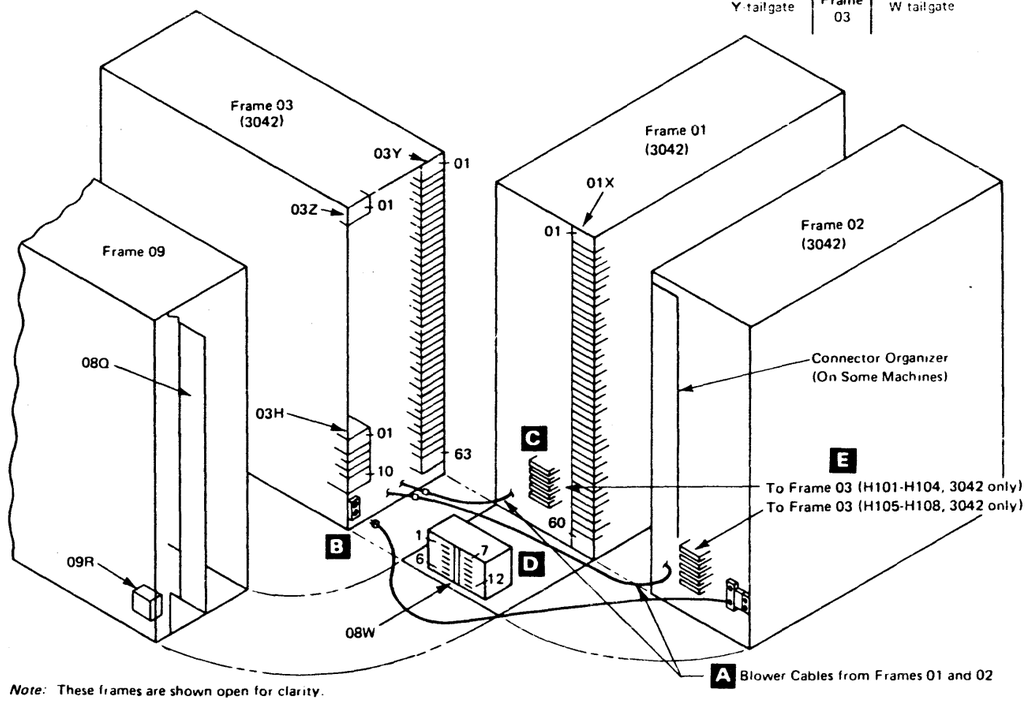
INSTALL FRAME 08 CABLES

Step Cplt

D 1. Install the following cables into tailgate W. Install the lower cables first. ☐

01W-11	02W-12
02W-06	03W-01
02W-05	01W-02

E 2. Install the cables into tailgate 03H of the 3042. (03H is the same as 03J on the 3033 Processors.) ☐



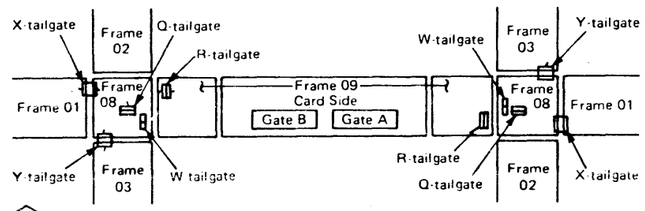
Note: These frames are shown open for clarity.

Step Cplt

3. Connect the frame 09 clock panel tri-lead to 01A-B3H2D05. ☐

4. Route the J32 cable (part 4417796) from frame 04 through frame 03 and into the base of frame 08. ☐

5. Plug the J32 cable into cable connector J32 A or B in the base of frame 08. ☐



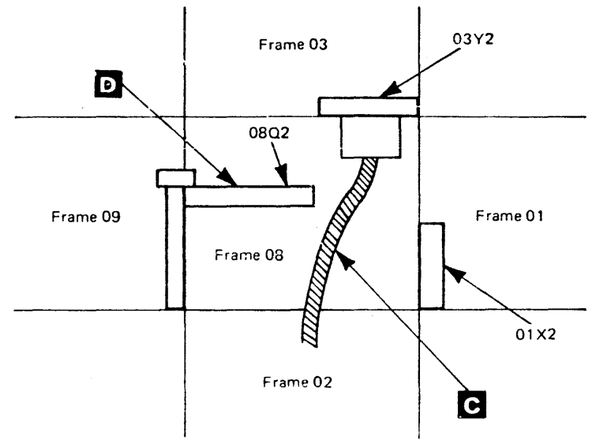
Part	EC No.	388707	208332	208335	211786	213545	213562
4439495	Date	1Dec79	1Mar80	1Jun80	5Jan81	15Jun81	4Sep81

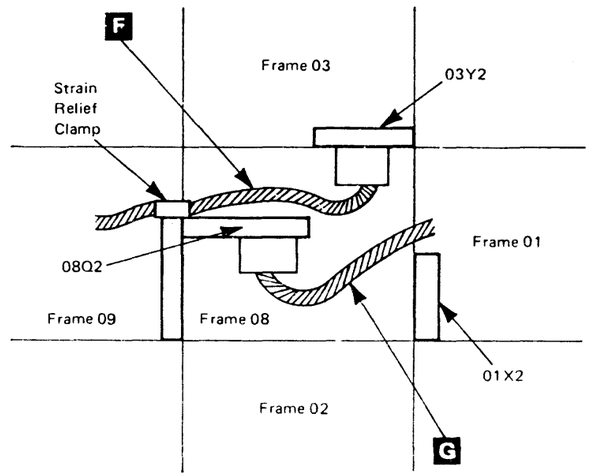
Route and Install Interframe Cables

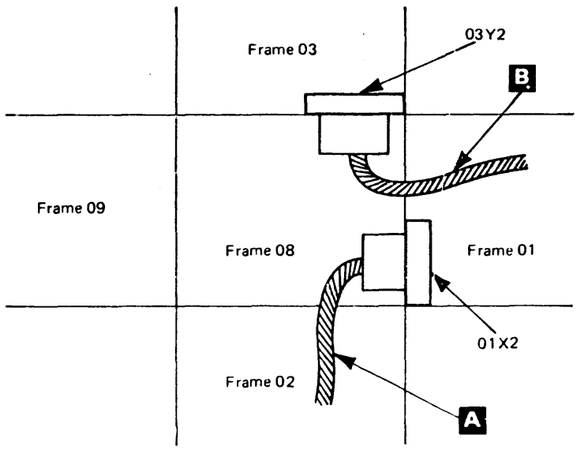
Note: The figures show the suggested routing of the interframe cables, not the actual connector positions on the tailgates.

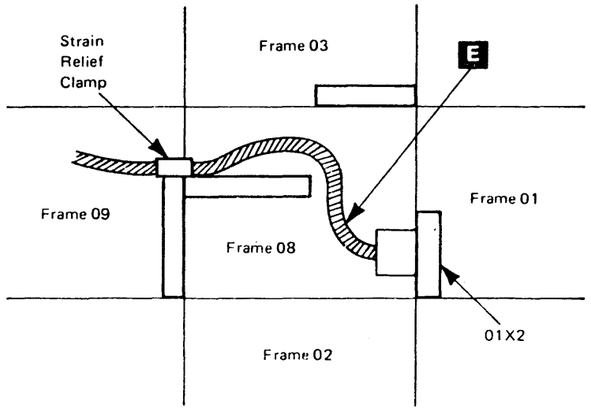
Connect the interframe cables in the following sequence: Step Cplt

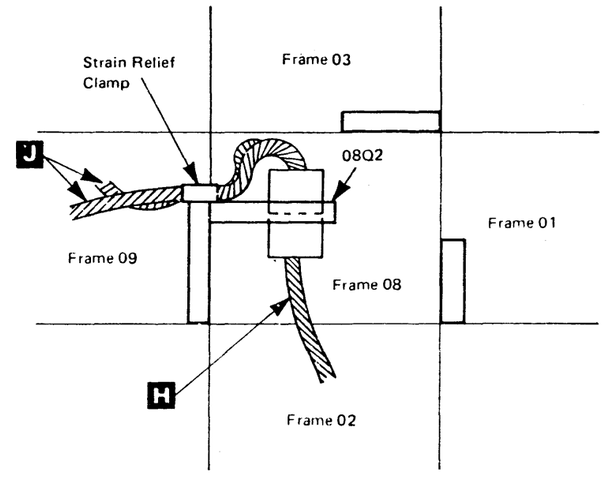
- **A** 1. Connect the cables from frame 02 to tailgate 01X2. ☐
- **B** 2. Connect the cables from frame 01 to tailgate 03Y2. ☐
- **C** 3. Connect the cables from frame 02 to tailgate 03Y2. ☐
- **D** 4. Position tailgate 08Q2 into frame 08. ☐
- **E** 5. Connect the cables from frame 09 to tailgate 01X2. Use the strain relief clamps on tailgate 08Q2. ☐
- **F** 6. Connect the cables from frame 09 to tailgate 03Y2. Use the strain relief clamps on tailgate 08Q2. ☐
- **G** 7. Connect the cables from frame 01 to tailgate 08Q2. ☐
- **H** 8. Connect the cables from frame 02 to tailgate 08Q2. ☐
- **J** 9. Connect the cables from frame 09 to tailgate 08Q2. Use the strain relief clamps on tailgate 08Q2. ☐











Part	EC No.				
4439501	Date	213545 15Jun81			

Install Interframe Cables from Frame 03 to Frame 33

Step Cplt

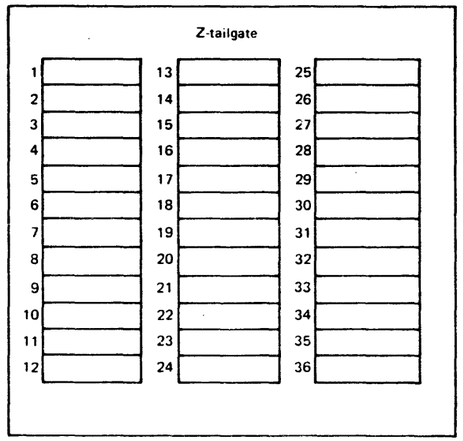
A 1. Remove the cable trough covers in frame 04. ☐
2. Remove the 29 cables from the tri-lead raceways in frame 03. ☐
B 3. Route the cables through the cable trough in frame 04. ☐
C 4. Connect the cables in frame 33 tailgate 33Z2. See the following chart: ☐

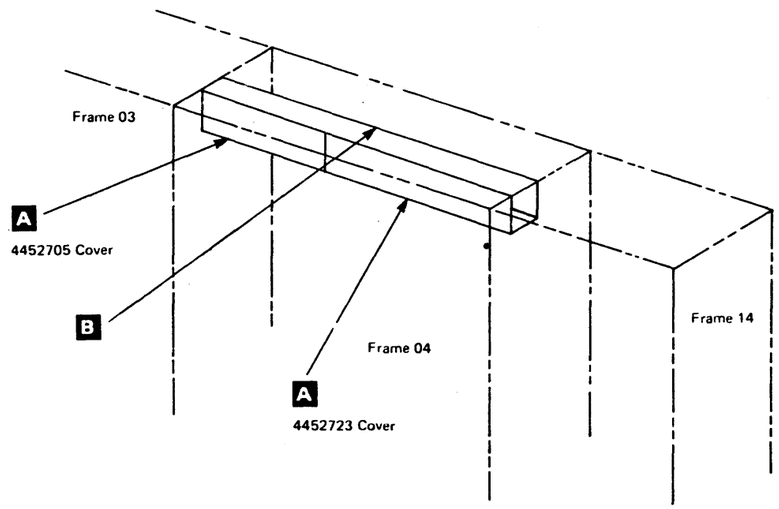
Sequence	Part	To 33Z2-	From 03A-	Cplt
1	4452731	34, 35, 36	B4	
2	4452730	31, 32, 33	A4	
3	4452729	28, 29, 30	B5	
4	4452728	25, 26, 27	A5	
5	4452746	22, 24	C3	
6	4452744	21, 23	C3	
7	4452740	18	See Notes	
8	4452727	10, 11, 12	B1	
9	4452726	7, 8, 9	A1	
10	4452725	4, 5, 6	B2	
11	4452724	1, 2, 3	A2	

Notes:
1. This cable connects to boards 03A-A1, A2, A3, A4, B1, B2, B3, and B4.
2. The leads marked T are ground connections.

5. Reinstall the cable trough covers. ☐

C





Install UEPO and Power Adapter Cables

INSTALL UEPO CABLE IN FRAME 04

Step Cplt

A 1. Remove the screws and washers that hold TB3 in place in frame 04 and turn TB3 180° so that it extends into frame 14. Reinstall TB3 on frame 04 using the same screws. ☐

B 2. Remove the UEPO cable (part 4452712) from the frame 14 frame member and connect the wires to TB3 as shown in the following chart: ☐

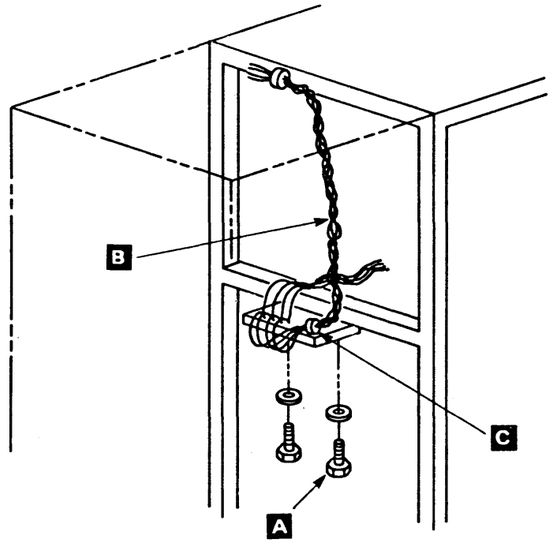
Wire	TB Tab	Cplt
6	2	
2	3	
5	5	
4	6	

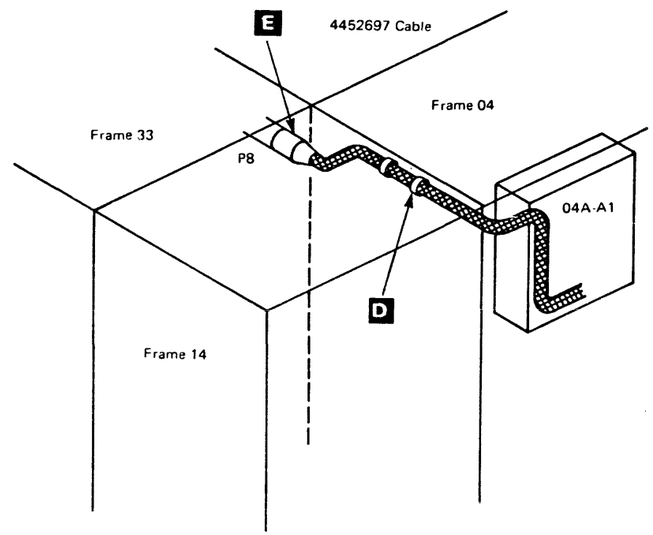
C 3. Secure the cable to TB3 using the cable clamp. ☐

INSTALL POWER ADAPTER CABLE FROM FRAME 04 TO FRAME 33

D 1. Locate the power adapter cable (part 4452697) in frame 04 and route the cable through frame 14 to frame 33. ☐

E 2. Connect the cable to P8 in frame 33. ☐





Install Channel Cables

Note: If you are installing a 3042 Model 2 or a 3033, continue with this page. Skip this page if you are installing a 3042 Model 1.

Step Cplt

1. Connect the following cables from frames 01 and 07 to frame 05: ☐

A

From Frame	*To Frame*
01	05Q-A1 through 05Q-A5
01	05Q-B1 through 05Q-B5
01	05Q-C1 through 05Q-C5 (only with director 2)

2. Connect the following frame 05 cables to frame 07 (cables are in frame 05): ☐

B

Part	*To Frame*
5583801	07 CN73 (60 Hz)
5583899	07 CN73 (50 Hz)
4873951	07 CN74

C The following cables are in the base of frame 07:
Tri-lead cables from frame 07 to 05Q-D3 through 05Q-D5

D

Part	*To Frame*
4873977	05 CN57
4873985	05 CN53
5583893	05 CN54

3. Dress the cables between the frames and tie the cables in place with the cable ties provided. Dress the cables so that they will not interfere with regulator removals. ☐

INSTALL FRAME 06 CABLES (Not available for 3033 Processor Model Group S)

1. Connect the following cables if frame 06 is installed (cables are in the base of frame 06): ☐

Part	*To Frame*
4873952	07 CN76
4873979	05 CN52
4873891	05 CN56
4873956	07 CN75 (60 Hz)
5583898	07 CN75 (50 Hz)

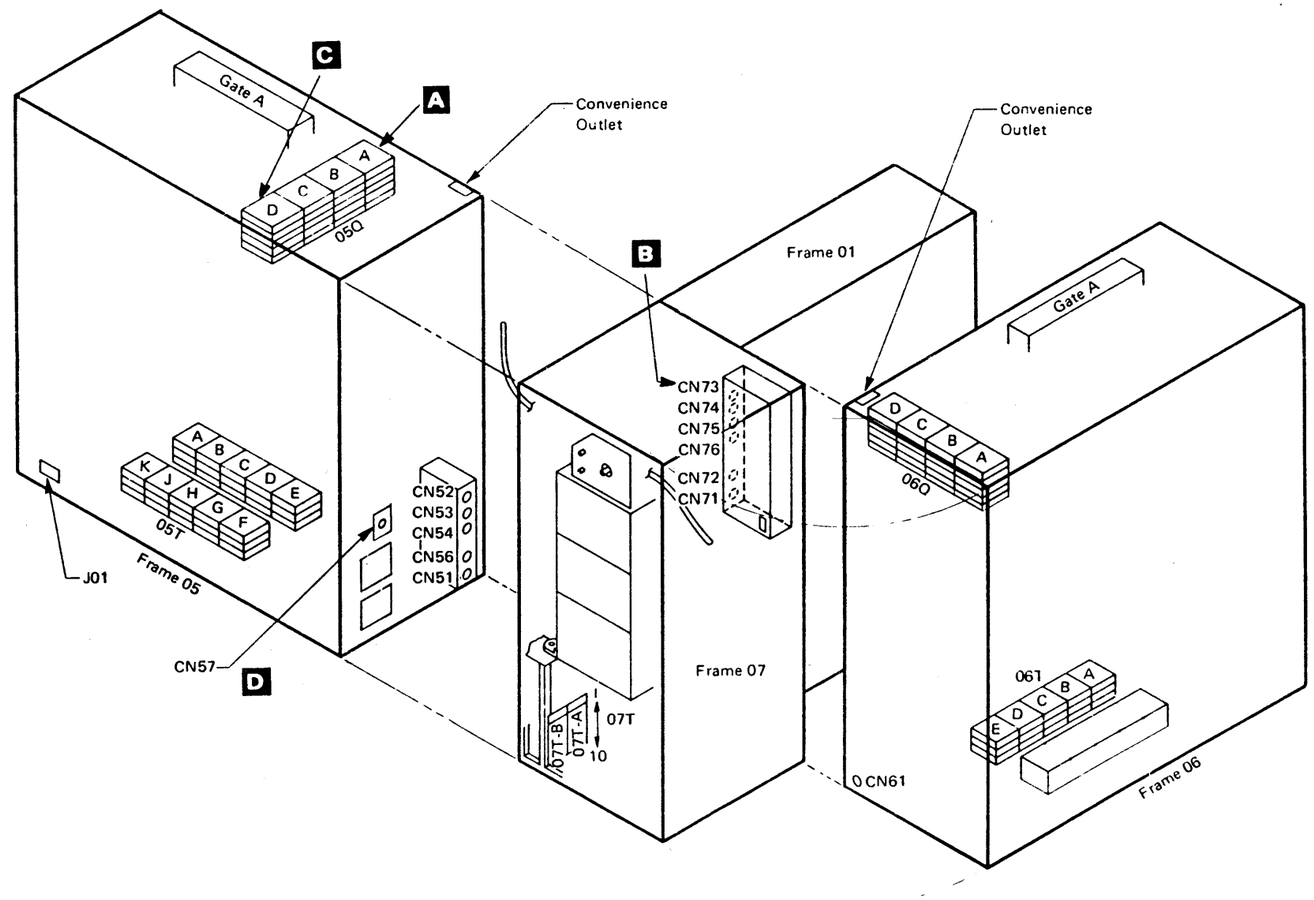
Step Cplt

2. The following cable connectors are marked: ☐

   Route the tri-lead cables from frame 05 through the cable trough in frame 07. Terminate the cables in 06Q-B1 through 06Q-B5.

   Terminate the tri-lead cables from frame 01 to 06Q tailgate:

Part	*To Frame*
5583804	06Q-A4
5583805	06Q-A5



Step Cplt

3. Dress the cables between the frames and tie the cables in place with the cable ties provided. Dress the cables so that the regulators can be removed. ☐

INSTALL CTCA CABLES

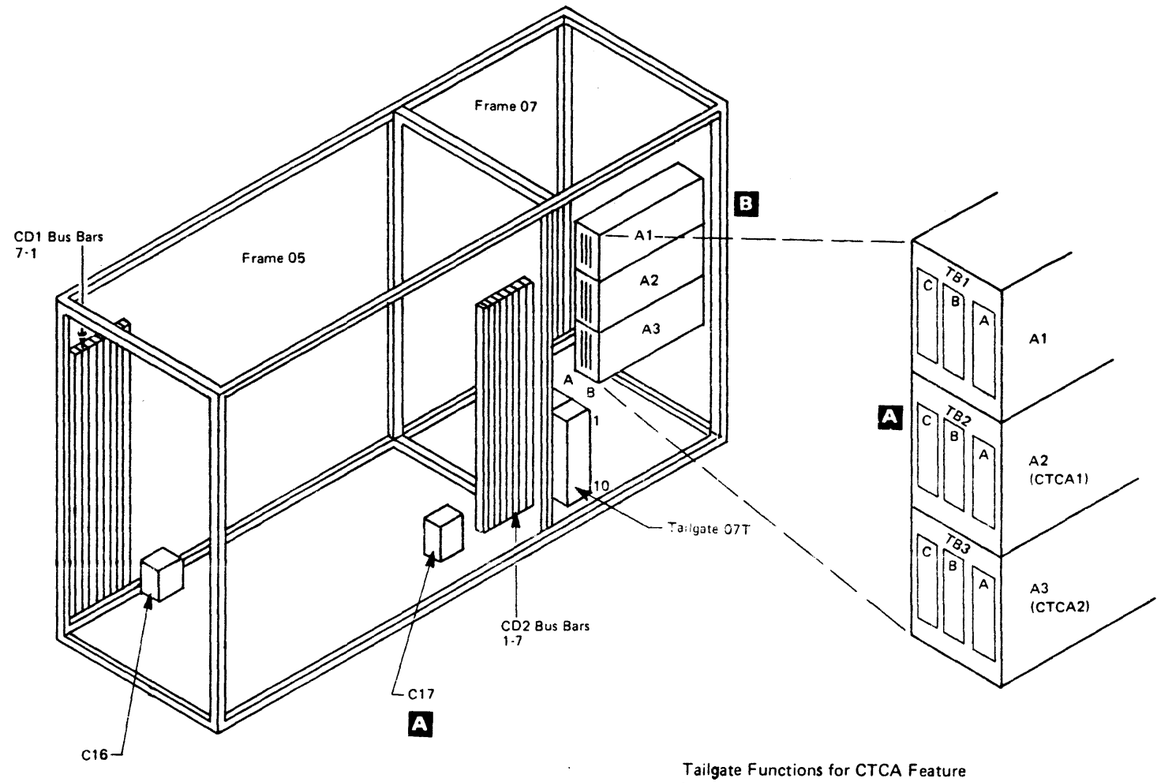
Step Cplt

A 1. Connect the following cables if CTCA1 and/or CTCA2 feature is installed: ☐

Part	*From*	*To*	*Feature*	*Cables Stored in Frame*
4867341	CD1 BB07	07A-TB2 A	CTCA1	05
4867342	CD1 BB06	07A-TB2 B	CTCA1	05
4867262	CD1 BB05	07A-TB2 C	CTCA1	05
4867343	07A A2	05 C16 +	CTCA1	07
4867339	CD2 BB07	07A-TB3 A	CTCA2	05
4867338	CD2 BB06	07A-TB3 B	CTCA2	05
4867263	CD2 BB05	07A-TB3 C	CTCA2	05
4867340	07A A3	05 C17 +	CTCA2	07

B 2. Connect the tri-lead cables (six pack) if CTCA1 and/or CTCA2 feature is installed: ☐

Part	*From*	*To*	*Feature*	*Cables Stored in Frame*
2457155	50X-B4M6E04	07A-A2L1D13	CTCA1	07
2457155	50X-A1B2B08	07A-A2M6E04	CTCA1	07
2457155	50X-B4M6E04	07A-A3L1D13	CTCA2	07
2457155	50X-A1B2B08	07A-A3M6E04	CTCA2	07



Tailgate Functions for CTCA Feature

Tailgate 07T	*Function*	*Feature*
B2	Y-tag in	CTCA1
A2	Y-tag out	CTCA1
B3	Y-bus in	CTCA1
A3	Y-bus out	CTCA1
B4	X-tag in	CTCA1
A4	X-tag out	CTCA1
B5	X-bus in	CTCA1
A5	X-bus out	CTCA1
B6	Y-tag in	CTCA2
A6	Y-tag out	CTCA2
B7	Y-bus in	CTCA2
A7	Y-bus out	CTCA2
B8	X-tag in	CTCA2
A8	X-tag out	CTCA2
B9	X-bus in	CTCA2
A9	X-bus out	CTCA2

INSTALLATION PROCEDURES

Install Cables from Frame 04 Having B/M 4400900 to Frame 03

Note: This page applies to frame 04 having B/M 4400900. See INST 291 for Model Groups N and S and for machines having B/M 8261501 or B/M 8261502.

Step Cplt

A 1. Connect the regulators and the power supplies to the frame 03 bus bars. Note that the bus bars are divided into five sections. The section and bus bar are marked on each cable. The figure will assist in locating the correct position. If two arrows appear next to a cable in the figure, two wires are connected to the same bus bar. Connect the cables by using the cable chart and step 2. ☐

Note: The label on the cables shows the bus bar only, not the section on the bus bar.

The mounting screws are in the dc bus on frame 03.

B 2. Clamp cables (parts 4873706 and 4873707) to frame 04 as shown. ☐

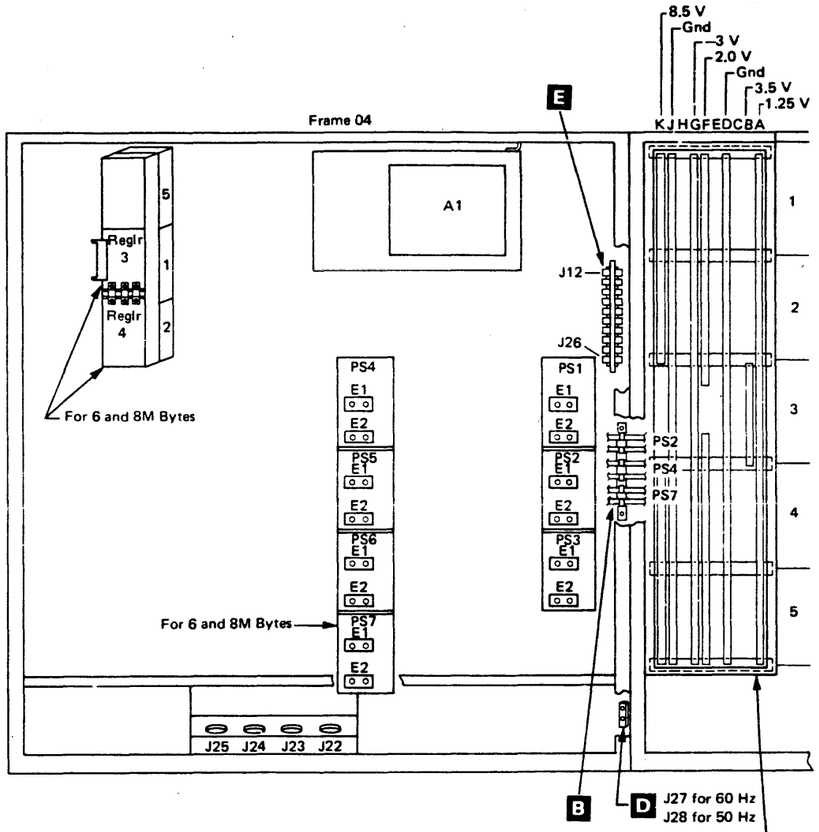
Cable Chart

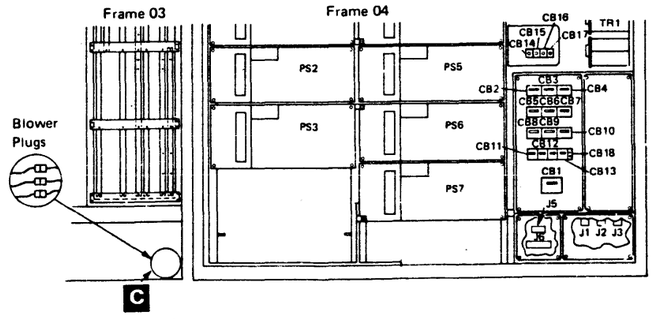
From Frame 04		*To Frame 03 Bus Bars*		*Installed By*	*Checked By*
PS2	E1	J2			
PS2	E1	J3			
PS2	E2	F2			
PS2	E2	F3			
PS4	E1	G3			
PS4	E1	G3			
PS4	E2	A2			
PS4	E2	A3			
PS7	E1	J3	Feature		
PS7	E1	J4	Feature		
PS7	E2	F3	Feature		
PS7	E2	F4	Feature		
Reglr 3 Common		J5	Feature		
Reglr 3 Out		K5	Feature		
PS4	E3	D2			
PS4	E4	D3			
Reglr 1 Common		J1			
Reglr 1 Out		K1			
Reglr 5 Common		A3			
Reglr 5 Out		B3			

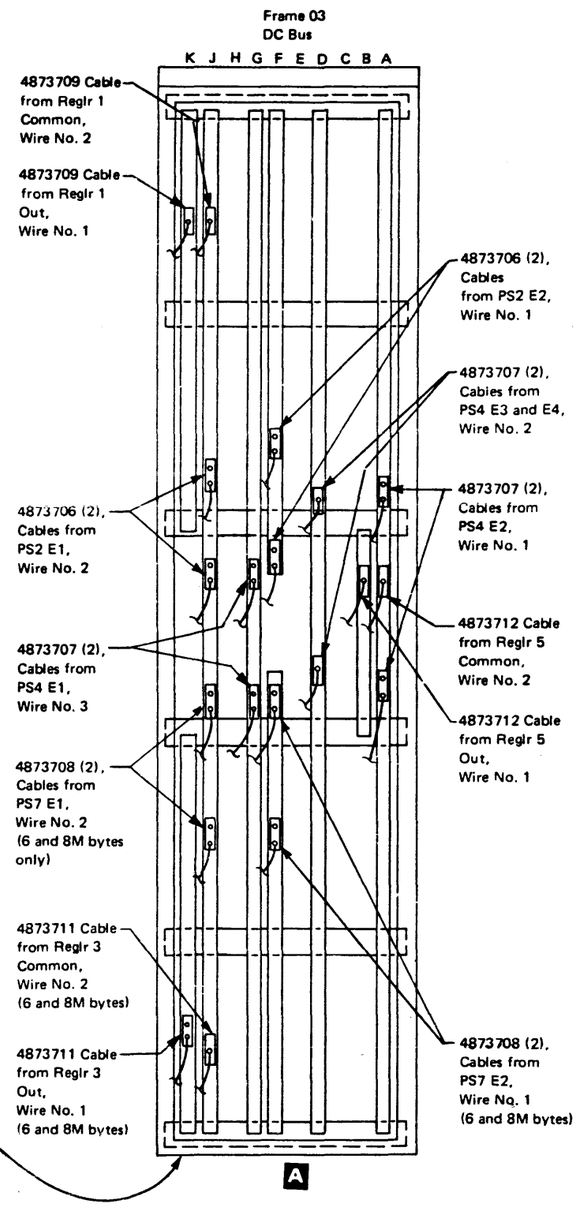
C 3. Route the three bottom blower cables (part 4400845) from frame 04 into frame 03 and plug the cables into the mating cables (part 4400983). ☐

D 4. Plug the convenience outlet cable (part 4400994, 50 Hz or part 4400995, 60 Hz) from frame 03 into the outlet box on frame 04 (J27 or J28). ☐

E 5. Connect the power sense cables from frame 03 to the tailgate connector on frame 04 (J12 through J26). ☐







Part 8271629	EC No. Date	276474 20 Jan 78	276707 3May78	278357 19Jul78	278891 17Nov78	279895 26Jan79	388707 1Dec79	211786 5Jan81

INSTALLATION PROCEDURES

Install Cables from Frame 04 Having B/M 8261501, B/M 8261502, or B/M 5867725 to Frame 03

Note: This page applies to frame 04 having B/M 8261501, B/M 8261502, or B/M 5867725 (Model Group S). This page also applies to frame 04 on a Model Group N. See INST 290 for machines having B/M 4400900.

Step Cplt

A 1. Connect the regulators and the power supplies to the frame 03 bus bars. Note that the bus bars are divided into five sections. The section and bus bar are marked on each cable. The figure will assist in locating the correct position. If two arrows appear next to a cable in the figure, two wires are connected to the same bus bar. Connect the cables by using the cable chart and step 2. ☐

Note: The label on the cables shows the bus bar only, not the section on the bus bar.

The mounting screws are in the dc bus on frame 03.

B 2. Connect cable (part 1312659) to connector J20. Connect cable (part 1312663) to connector J21 (feature). Clamp the cables from PS1, PS5, and PS8 to frame 03 as shown. ☐

Cable Chart

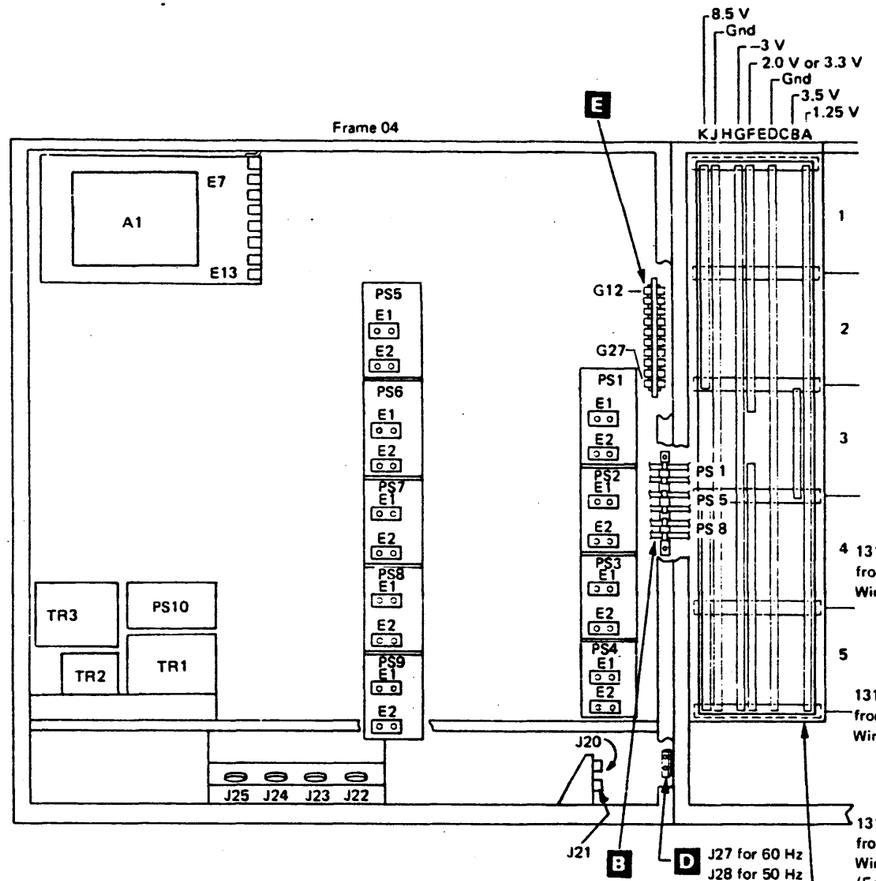
From Frame 04	*To Frame 03 Bus Bars*		*Installed By*	*Checked By*
PS1 E1	G3			
PS1 E1	G3			
PS1 E2	A2			
PS1 E2	A3			
PS1 TB4	D3			
PS1 TB4	D3			
PS5 E1	J2			
PS5 E1	J3			
PS5 E2	F2			
PS5 E2	F3			
PS8 E1	J3	Feature		
PS8 E1	J4	Feature		
PS8 E2	F3	Feature		
PS8 E2	F4	Feature		

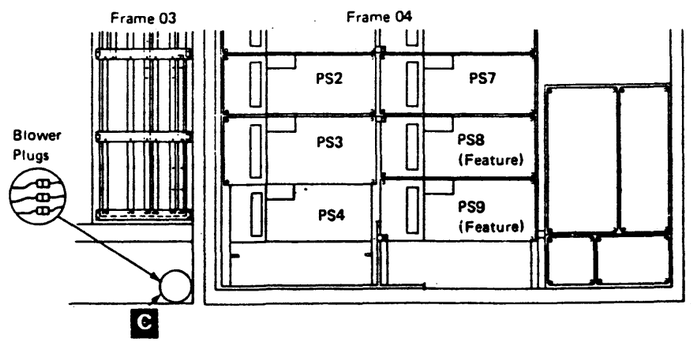
C 3. Route the three bottom blower cables (part 4400845) from frame 04 into frame 03 and plug the cables into the mating cables (part 4400983). ☐

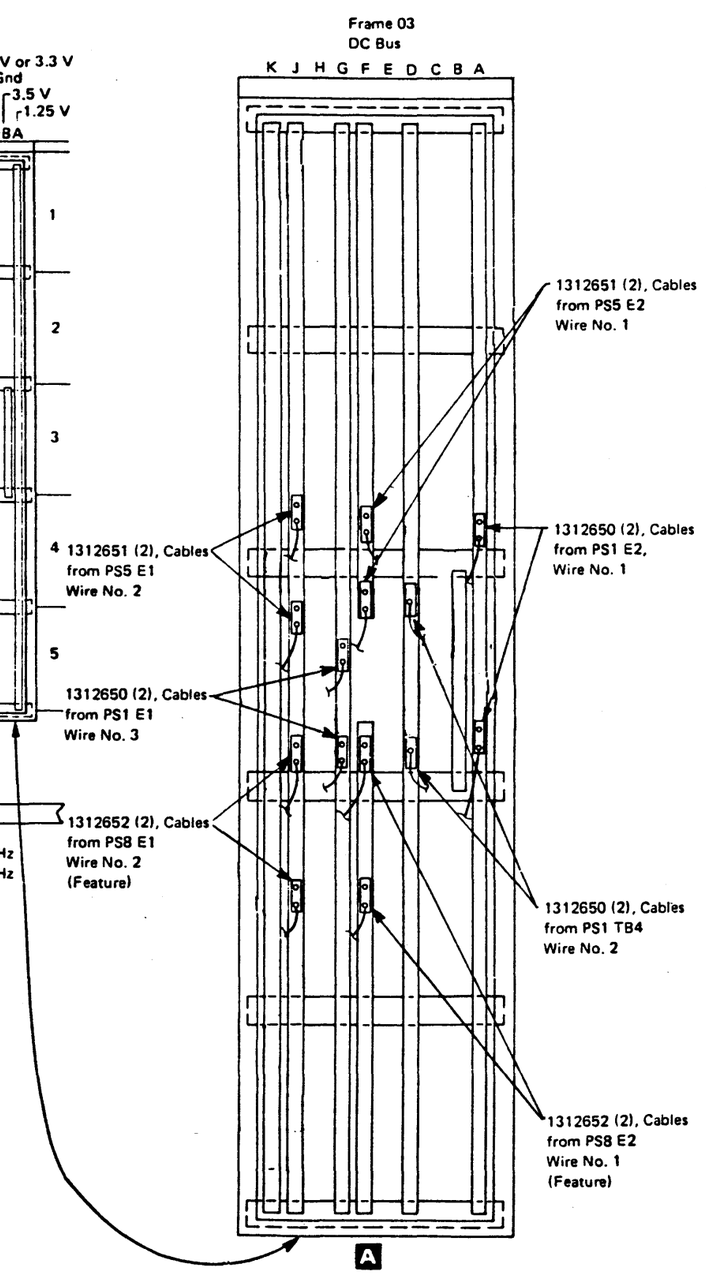
D 4. Plug the convenience outlet cable (part 4400994, 50 Hz or part 4400995, 60 Hz) from frame 03 into the outlet box on frame 04 (J27 or J28). ☐

E 5. Connect the power sense cables from frame 03 to the tailgate connector on frame 04 (G12 through G27). ☐

Note: PS3 and PS6 are not available on 3033 Processor Model Group S.







Part	EC No.	278357	278891	279895	388162	388692	388707	208335	211786	214694
8271668	Date	19Jul78	17Nov78	26Jan79	23Feb79	10Aug79	1Dec79	1Jun80	5Jan81	9Apr82

Interface Cable Chart

Step Cplt

Skip this procedure if I/O equipment is not available and return to INST 70 for team B. ☐

FRAME 05 TAILGATE

05T-A1	Tag channel 3	05T-B1	Bus channel 3
05T-A2	Tag channel 4	05T-B2	Bus channel 4
05T-A3	Tag channel 5	05T-B3	Bus channel 5
05T-C1	Tag channel 0	05T-D1	Bus channel 0
05T-C2	Tag channel 1	05T-D2	Bus channel 1
05T-C3	Tag channel 2	05T-D3	Bus channel 2
05T-E2	Channel interface, group 1		
05T-E3	Two-byte interface, group 1		
05T-F1	Tag channel 9	05T-G1	Bus channel 9
05T-F2	Tag channel 10	05T-G2	Bus channel 10
05T-F3	Tag channel 11	05T-G3	Bus channel 11
05T-H1	Tag channel 6	05T-J1	Bus channel 6
05T-H2	Tag channel 7	05T-J2	Bus channel 7
05T-H3	Tag channel 8	05T-J3	Bus channel 8
05T-K2	Channel interface, group 2		
05T-K3	Two-byte interface, group 2		

INTERFACE CABLES FOR FRAME 06

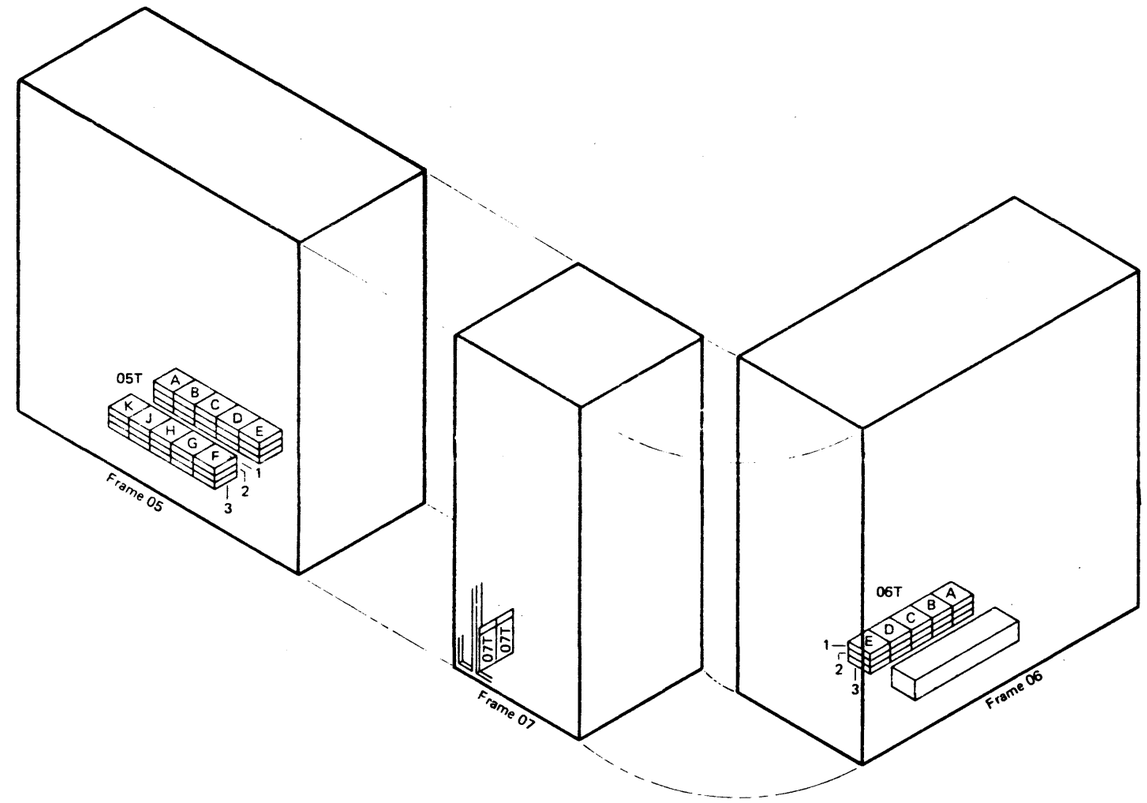
- Positions C1 and D1 are for the first byte-multiplexer channel feature.
- Positions A3 and B3 are for the four block-multiplexer channel optional feature.

06T-A2	Tag channel 14 or 15	06T-B2	Bus channel 14 or 15
06T-A3	Tag channel 15	06T-B3	Bus channel 15
06T-C1	Tag channel 12	06T-D1	Bus channel 12
06T-C2	Tag channel 12 or 13	06T-D2	Bus channel 12 or 13
06T-C3	Tag channel 13 or 14	06T-D3	Bus channel 13 or 14
06T-E2	Channel interface, group 3		
06T-E3	Two-byte interface, group 3		

Note: Channel 12 is either a byte-multiplexer channel or a block-multiplexer channel. Channels 13 through 15 are all block-multiplexer channels.

- Return to INST 70 for team B. ☐

Note: The procedures on this page are used to install external cables.



Part	EC No.	276474	276707		
8271630	Date	20Jan78	3May78		

Inspect Tri-Lead Connections

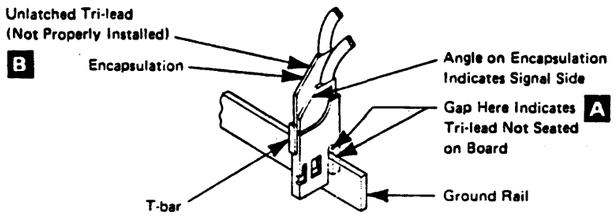
CAUTION
Because electrostatic discharge can damage logic and storage card modules, touch frame ground before handling the cards.

Step Cplt

1. Inspect all tri-lead connections to the MST board to ensure that the tri-leads are properly seated. Use a high intensity lamp to perform the inspection. Record the location of all tri-leads that require reseating. ☐

A a. Ensure that all tri-lead housings are aligned. Reseat any loose tri-leads.

B b. Ensure that the tuning forks are properly seated in the housings and that the angle of the slope of the encapsulation is the same for all tri-leads. If any tri-lead does not meet these conditions, remove the tri-lead and housing. Remove the tri-lead from the housing and inspect for tuning fork damage. If the tuning fork is damaged, replace the tri-lead. If there is no damage, insert the tuning fork into a new housing and replug the tri-lead.



Example of Unseated Tri-Lead

2. Be sure the tri-leads at the following positions are securely connected. ☐

01A-B1	02A-A2	03A-C4	05A-A2
C4	A4		A3
C5	B4		B1
D3	B5		B2
D4	C5		B3
	D3		
	D5		

3. Check all boards for loose cards. ☐

4. Go to INST 70. ☐

Power Up Frames

Step Cplt

1. Ensure that the following CBs are off (from INST 210): ☐

Frame	*CBs*
15	1, 2, 3, and 11
04	3 through 11
05	501, 502, 503, 506, 507, and 508
06	605, 606, and 607

2. IMPL the operational diskettes. Select the PC frame on the operator station. ☐

3. Power up the CDU. For example, key A2B1 and key X. The CDU pump should turn on, and a power fault message should be displayed. ☐

Note: If the processor complex power-on sequence stops with address E44 bit 4 displayed on the console, the 415-Hz phasing is wrong. If it stops with E45 bit 0 displayed, the 50/60-Hz phasing is wrong. In either situation, two of the three phases must be changed by the customer.

4. List the power log (L1 option). Ensure that the power log indicates that CBs 1 and 3 are tripped in the PDU. ☐

5. Turn on the CBs in the PDU. ☐

6. Power up the processor and the directors in the same manner, ensuring that the microcode can indicate each of the tripped circuit breakers. ☐

7. Verify that all the blowers in each machine are running when each machine is powered up. Blowers are on: ☐
   a. Frames 01-03, above and below the MST boards.
   b. Frame 04, two above the TRs: one under the logic gate and one under PS7 (6 and 8M bytes).
   c. Frames 05 and 06, above the TRs on each end of the frames and below each gate.
   d. Frame 07, under the gate.
   e. Frame 15, in ac compartment.
   f. Frame 09 AP or MP if installed.

8. Go to INST 355 for team B and INST 312 for team A. ☐

INSTALLATION PROCEDURES

Final MG Adjustment

WITHOUT PROPORTIONAL SUPPLY

Step Cplt

Note: The customer is responsible for the final adjustment of the MG.

1. Measure the ac voltage at the MG output voltage terminals with the MG set for remote sensing. ☐
2. Turn off the system power. ☐
3. Set the MG for local sensing. Use the MG local ac voltage control to increase the MG ac voltage output until it is 9-10% above the ac voltage measured in step 1. ☐
4. Reduce the MG overvoltage trip adjustment until the MG ac output voltage drops (overvoltage trip). ☐
5. Decrease the local ac voltage slightly and reset the MG from the overvoltage condition. Adjust the MG ac output to the voltage measured in step 1. (This condition allows for a line voltage drop if the MG is used later in a local sense operation.) ☐
6. Set the MG for remote sensing. Turn on the system power and readjust the MG remote output control for +50 ± 1 V at PDU 50 V dc test points. ☐
7. Lock the MG remote output adjustment potentiometer and leave the MG set for remote sensing. ☐

WITH PROPORTIONAL SUPPLY

Step Cplt

DANGER
The voltage level at the test point is potentially hazardous. Avoid contacting the metal portion of the PDU 50 V dc test point.

Note: The customer is responsible for the adjustments of the MG.

1. Measure the ac voltage at the MG output voltage terminals with the MG set for local sensing. ☐
2. Turn off the system power. ☐
3. Use the MG local ac voltage control to increase the MG ac voltage output until it is 9 to 10% above the ac voltage measured in step 1. ☐
4. Reduce the MG overvoltage trip adjustment until the MG ac output voltage drops (overvoltage trip). ☐
5. Decrease the local ac voltage slightly and reset the MG from the overvoltage condition. Adjust the MG ac output to the voltage measured in step 1. (This condition allows for the line voltage drop when the MG is used in a local sense operation.) ☐
6. Turn on the system power and readjust the MG local output control for +50 V ± 1 V at the PDU 50 V dc test point. ☐
7. Lock the MG output adjustment potentiometer and leave the MG set for local sensing. ☐

Part	EC No.				
4439502	Date	213792 11May81	214694 9Apr82		

Voltage Adjustments for Processor Frames

If any voltage is adjusted, the OV/UV and the OC LEDs must be adjusted.

CAUTION
Do not adjust any potentiometers that are factory sealed.

Step Cplt

The OV/UV and OC LED adjustments are identical:

1. If the LED is off, turn the potentiometer clockwise slowly until the LED just turns on. ☐
2. If the LED is on, turn the potentiometer counterclockwise until the LED turns off and then turn the potentiometer clockwise slowly until the LED just turns on. ☐

For additional information about the power supplies, see Diagram 7–101 in MM Volume 2.

Use the voltage monitor test points, if present on frames 01, 02, 03, and 09, to check the following power supplies and regulators.

Note: Before setting any voltages, check the accuracy of the digital voltmeter (DVM).

3. Adjust the output voltages of the board-mounted dual regulators listed in the following chart to the voltages specified: ☐

Frame 01	*Frame 02*	*Frame 03*	*3042 Frame 03*	*Frame 09*
B1 C2 D2	A2* B1 C1 D1	B3 C1	C1	A2 B2
B3 C3 D3	A3 B2 C2 D5	C2	C2	A3 B3
B5 C4* D5	A4 B3 C3	C3	C4	A4 B4
C5 D4**	A5 B4 C4	C4	C5	A5 B5
	B5 C5			

*Does not apply to Model Group S
**Model Group S only

If the dual-level regulator supplies input to the physically lowest populated board (not necessarily located in row 5), its output should be set to:	Nominal Voltage	Remote Sense Point	Tolerance when Setting Voltage (mV)	Tolerance when Checking Voltage (mV)
	+ 1.266	L2J10	± 2	± 12
	– 3.020	L2G06	± 10	± 20
All others	+ 1.250	L2J10	± 2	± 12
	– 3.000	L2G06	± 10	± 20

Measure the voltages as close as possible to the remote sense connections on the board at L2J10 and L2G06.

Notes:
1. For AP frame 03, see INST 325.
2. For Model Group N, see INST 322.

FRAME 04 VOLTAGE ADJUSTMENTS

Check the machine history for installed B/Ms or part number of power supply 5 before making frame 04 voltage adjustments. Refer to the following chart for the frame 04 voltage adjustment page:

B/M Installed	*Part Number Power Supply 5*	*Frame 04 Voltage Adjustment Page*
4400900	5606380 or 4401010	INST 320
8261501	5589220	INST 321
8261502 and Model Group N	5606390	INST 322
5867725 (Model Group S)	5606390	INST 324

Frame 04 Voltage Adjustments for Machines Having B/M 4400900

For machines having B/M 4400900, follow the adjustment order given in the following text.

Step Cplt

Order of Adjustment

Adjust the power supplies in the order given:

1. Monitor 02A-D3E2J10 and ground (E2G11). Adjust PS1 to +1.25 V ± 0.005 V. ☐
2. Monitor 02A-D3E2G06 and ground (E2G11). Adjust PS1 to –3 V ± 0.01 V. ☐
3. Monitor 01A-D4E2D04 and ground (E2B10). Adjust PS3 to +1.25 V ± 0.005 V. ☐
4. Monitor 01A-D4N2S06 and ground (N2S11). Adjust PS3 to –3 V ± 0.01 V. ☐
5. Monitor 02A-D2J2M02 and ground (J2M10). Adjust PS5 to +3.5 V ± 0.01 V. ☐
6. Monitor 01A-D4J2M02 and ground (J2M10). Adjust PS6 to +3.5 V ± 0.01 V. ☐
7. Monitor 03A-B2L4D03 and ground (L4D08). Adjust PS4 to +1.25 V ± 0.005 V. ☐
8. Monitor 03A-B2L4B06 and ground (L4D08). Adjust PS4 to –3 V ± 0.01 V. ☐
9. Note the +1.25 V on boards 03A-A1, A2, A4, and A5 and 03A-B1, B2, B4, and B5 on L4D03 and ground (L4D08). On board 03A-A3, monitor L2J10 and ground (L2G11). Adjust PS4 so that all voltages on monitored boards read within ± 1.5% (0.019 V) of +1.25 V. ☐
10. Note the –3 V on boards 03A-A1, A2, A4, and A5 and 03A-B1, B2, B4, and B5 on L4B06 and ground (L4D08). On board 03A-A3, monitor L2G06 and ground (L2G11). Adjust PS4 so that all voltages on monitored boards read within ± 1% (0.02 V) of -3 V. ☐
11. Monitor 03A-B2L4D04 and ground (L4D08). Adjust regulator 1 to +8.5 V ± 0.01 V. ☐
12. Monitor 03A-B2L4B11 and ground (L4D08). Adjust PS2 to +2 V ± 0.01 V. ☐

Step Cplt

13. Monitor 03A-A3E2M02 and ground (M2B10). Adjust regulator 5 to +3.5 V ± 0.01 V. ☐

Additional Adjustments for 6M-Byte and 8M-Byte Storage Configurations

For 6M-byte and 8M-byte configurations, perform the following adjustments in addition to those required for 4M-byte configurations (preceding steps 1 through 13):

1. Monitor 03A-B4L4B11 and ground (L4D08). Adjust PS7 to +2 V ± 0.01 V. ☐
2. Monitor 03A-B4L4D04 and ground (L4D08). Adjust regulator 3 to +8.5 V ± 0.01 V. ☐

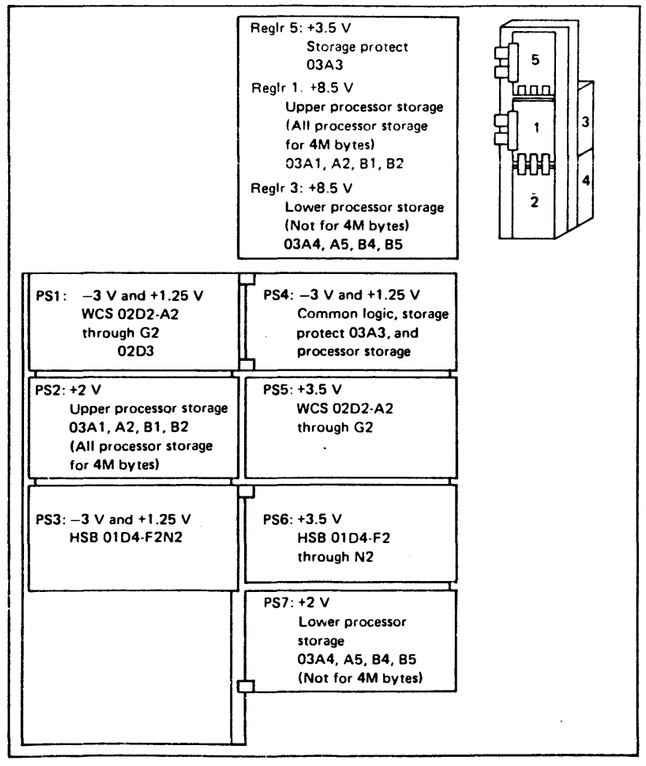


Figure A. Physical Layout of Frame 04 Power Supplies on Machines Having B/M 4400900

Part	EC No.	276474	276707	278357	278891	388162	388692	388707	208332	211786	213562
8271632	Date	20Jan78	3May78	19Jul78	17Nov78	23Feb79	10Aug79	1Dec79	1Mar80	5Jan81	4Sep81

INSTALLATION PROCEDURES

Frame 04 Voltage Adjustments for Machines Having B/M 8261501

Step Cplt

If any voltage is adjusted, the OV/UV and the OC LEDs must be adjusted.

CAUTION
Do not adjust any potentiometers that are factory sealed.

The OV/UV and OC LED adjustments are identical:

1. If the LED is off, turn the potentiometer clockwise slowly until the LED just turns on. ☐
2. If the LED is on, turn the potentiometer counterclockwise until the LED turns off and then turn the potentiometer clockwise slowly until the LED just turns on. ☐
3. In addition for power supplies 4 and 9, turn potentiomenter 1 a full turn counterclockwise. ☐

Order of Adjustment

For machines having B/M 8261501, adjust the power supplies in the order given:

1. Monitor 02A-D3E2J10 and ground (E2G11). Adjust PS2 to +1.25 V ± 0.005 V. ☐
2. Monitor 02A-D3E2G06 and ground (E2G11). Adjust PS2 to −3 V ± 0.01 V. ☐
3. Monitor 01A-D4E2D04 and ground (E2B10). Adjust PS3 to +1.25 V ± 0.005 V. ☐
4. Monitor 01A-D4N2S06 and ground (N2S11). Adjust PS3 to −3 V ± 0.01 V. ☐
5. Monitor 02A-D2J2M02 and ground (J2M10). Adjust PS7 to +3.5 V ± 0.01 V. ☐
6. Monitor 01A-D4J2M02 and ground (J2M10). Adjust PS6 to +3.5 V ± 0.01 V. ☐
7. Monitor 03A-B2L4D03 and ground (L4D08). Adjust PS1 to +1.25 V ± 0.005 V. ☐
8. Monitor 03A-B2L4B06 and ground (L4D08). Adjust PS1 to −3 V ± 0.01 V. ☐
9. Note the +1.25 V on boards 03A-A1, A2, A4, and A5 and 03A-B1, B2, B4, and B5 on L4D03 and ground (L4D08). On board 03A-A3, monitor L2J10 and ground (L2G11). Adjust PS1 so that all voltages on monitored boards read within ±1.5% (0.019 V) of +1.25 V. ☐
10. Note the −3 V on boards 03A-A1, A2, A4, and A5 and 03A-B1, B2, B4, and B5 on L4B06 and ground (L4D08). On board 03A-A3, monitor L2G06 and ground (L2G11). Adjust PS1 so that all voltages on monitored boards read within ±1% (0.02 V) of −3 V. ☐
11. Monitor 03A-B2L4D04 and ground (L4D08). Adjust PS4 to +8.5 V ± 0.01 V. ☐
12. Monitor 03A-B2L4B11 and ground (L4D08). Adjust PS5 to +2 V ± 0.01 V. ☐
13. Monitor 03A-A3E2M02 and ground (M2B10). Adjust PS10 to +3.5 V ± 0.01 V. ☐

Additional Adjustment for 6M-Byte Storage Configurations

For 6M-byte configurations, perform the following adjustment in addition to those required for 4M-byte configurations (preceding steps 1 through 13):

Monitor 03A-B4L4B11 and ground (L4D08). Adjust PS8 to +2 V ± 0.01 V. ☐

Additional Adjustment for 8M-Byte Storage Configurations

For 8M-byte configurations, perform the following adjustment in addition to those required for 4M- and 6M-byte configurations:

Monitor 03A-B4L4D04 and ground (L4D08). Adjust PS9 to +8.5 V ± 0.01 V. ☐

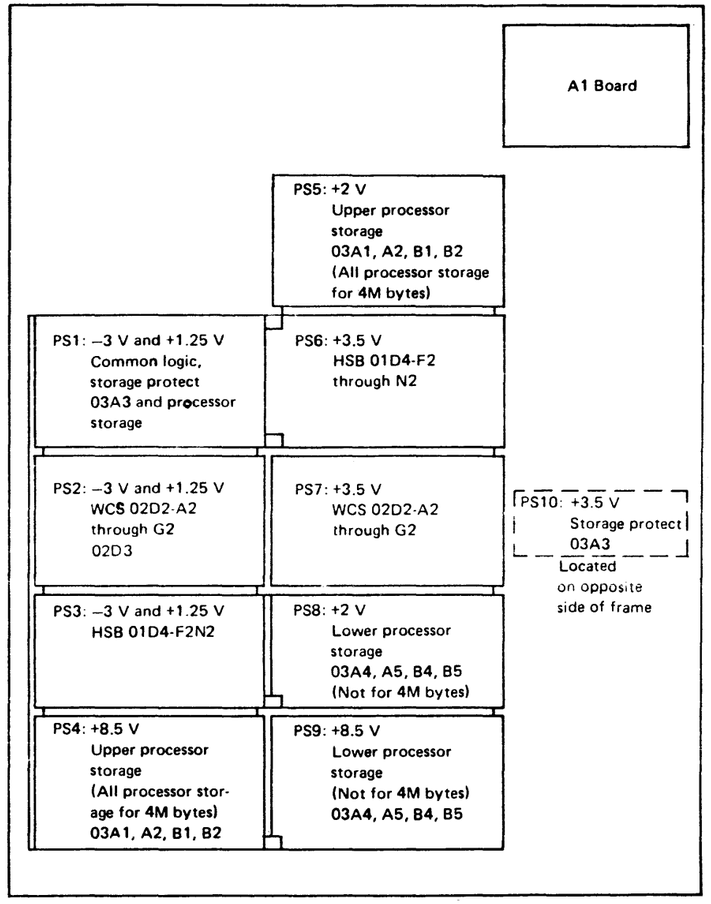


Figure A. Physical Layout of Frame 04 Power Supplies for Machines Having B/M 8261501

Part	EC No.	278357	278891	279895	388162	388692	388707	208335
8271670	Date	19Jul78	17Nov78	26Jan79	23Feb79	10Aug79	1Dec79	1Jun80

INSTALLATION PROCEDURES

Frame 04 Voltage Adjustments for Machines Having B/M 8261502

Step Cplt

Note: This page also applies to frame 04 on a Model Group N.

If any voltage is adjusted, the OV/UV and the OC LEDs must be adjusted.

CAUTION
Do not adjust any potentiometers that are factory sealed.

The OV/UV and OC LED adjustments are identical:

1. If the LED is off, turn the potentiometer clockwise slowly until the LED just turns on.
2. If the LED is on, turn the potentiometer counterclockwise until the LED turns off and then turn the potentiometer clockwise slowly until the LED just turns on.

Order of Adjustment

For machines having B/M 8261502, adjust the power supplies in the order given.

1. Monitor 02A-D3E2J10 and ground (E2G11). Adjust PS2 to +1.25 V ± 0.005 V.
2. Monitor 02A-D3E2G06 and ground (E2G11). Adjust PS2 to −3 V ± 0.01 V.
3. Monitor 01A-D4E2D04 and ground (E2B10). Adjust PS3 to +1.25 V ± 0.005 V.
4. Monitor 01A-D4N2S06 and ground (N2S11). Adjust PS3 to −3 V ± 0.01 V.
5. Monitor 02A-D2J2M02 and ground (J2M10). Adjust PS7 to +3.5 V ± 0.01 V.
6. Monitor 01A-D4J2M02 and ground (J2M10). Adjust PS6 to +3.5 V ± 0.01 V.

Note: For Model Group N, go to INST 323 to complete adjustments.

7. Monitor 03A-B2L4D03 and ground (L4D08). Adjust PS1 to +1.25 V ± 0.005 V.
8. Monitor 03A-B2 L4B06 and ground (L4D08). Adjust PS1 to −3 V ± 0.01 V.
9. Note the +1.25 V on boards 03A-A1, A2, A4, and A5 and 03A-B1, B2, B4, and B5 on L4D03 and ground (L4D08). On board 03A-A3, monitor L2J10 and ground (L2G11). Adjust PS1 so that all voltages on monitored boards read within ±1.5% (0.019 V) of +1.25 V.
10. Monitor 03A-B2L4D04 and ground (L4D08). Adjust PS4 to +8.5 V ± 0.01 V.
11. Monitor 03A-B2L4B11 and ground (L4D08). Adjust PS5 to +3.3 V ± 0.01 V.
12. Monitor 03A-A3E2M02 and ground (M2B10). Adjust PS10 to +3.5 V ± 0.01 V.

Additional Adjustments for 12M- and 16M-Byte Configurations

For 12M- and 16M-byte configurations, perform the following adjustments in addition to those required for 4M- and 8M-byte configurations (see preceding steps 1 through 13):

1. Monitor 03A-B4L4B11 and ground (L4D08). Adjust PS8 to +3.3 V ± 0.01 V.
2. Monitor 03A-B4L4D04 and ground (L4D08). Adjust PS9 to +8.5 V ± 0.01 V.

Step Cplt

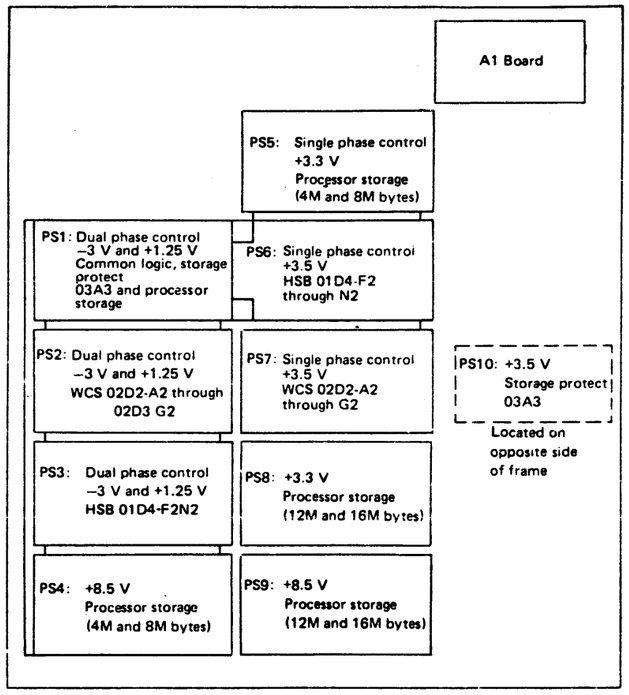


Figure A. Physical Layout of Frame 04 Power Supplies for Machines Having B/M 8261502

Frame 04 Voltage Adjustments for Machines Having B/M 8261502 (Continued)

Model Group N with 4M and 8M Bytes

Step Cplt

7. Monitor 03A-B4L4D03 and ground (L4D08). Adjust PS1 to +1.25 V ± 0.005 V. ☐
8. Monitor 03A-B4L4B06 and ground (L4D08). Adjust PS1 to −3 V ± 0.01 V. ☐
9. Note the +1.25 V on boards 03A-A1, A4, and 03A-B1, B4, and on L4D03 and ground (L4D08). On board 03A-A3, monitor L2J10 and ground (L2G11). Adjust PS1 so that all voltages on monitored boards read within ±1.5% (0.019 V) of +1.25 V. ☐
10. Monitor 03A-B4L4D04 and ground (L4D08). Adjust PS4 to +8.5 V ± 0.01 V. ☐
11. Monitor 03A-B4L4B11 and ground (L4D08). Adjust PS5 to +3.3 V ± 0.01 V. ☐
12. Monitor 03A-A3E2M02 and ground (M2B10). Adjust PS10 to +3.5 V ± 0.01 V. ☐

Model Group N with 12M and 16M Bytes

Step Cplt

7. Monitor 03A-B2L4D03 and ground (L4D08). Adjust PS1 to +1.25 V ± 0.005 V. ☐
8. Monitor 03A-B2L4B06 and ground (L4D08). Adjust PS1 to −3 V ± 0.01 V. ☐
9. Note the +1.25 V on boards 03A-A1, A2, A4, and A5 and 03A-B1, B2, B4, and B5 on L4D03 and ground (L4D08). On board 03A-A3, monitor L2J10 and ground (L2G11). Adjust PS1 so that all voltages on the monitored boards read within +1.5% (0.019 V) of +1.25 V. ☐
10. Monitor 03A-B2L4D04 and ground (L4D08). Adjust PS4 to +8.5 V ± 0.01 V. ☐
11. Monitor 03A-B2L4B11 and ground (L4D08). Adjust PS5 to +3.3 V ± 0.01 V. ☐
12. Monitor 03A-A3E2M02 and ground (M2B10). Adjust PS10 to +3.5 V ± 0.01 V. ☐
13. Monitor 03A-B4L4B11 and ground (L4D08). Adjust PS8 to +3.3 V ± 0.01 V. ☐
14. Monitor 03A-B4L4D04 and ground (L4D08). Adjust PS9 to +8.5 V ± 0.01 V. ☐

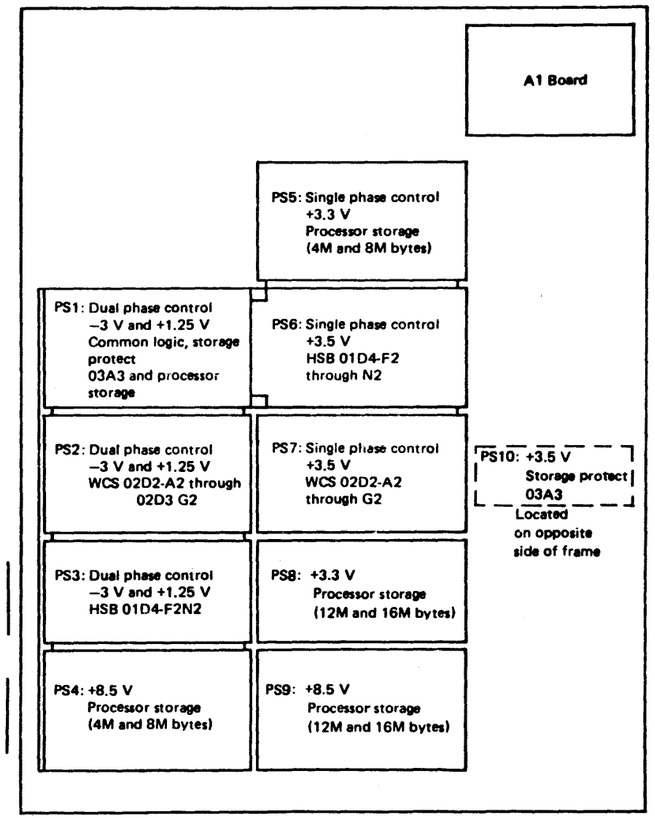


Figure A. Physical Layout of Frame 04 Power Supplies for Machines Having B/M 8261502

Part	EC No.	208335	211786		
4439499	Date	1Jun80	5Jan81		

INSTALLATION PROCEDURES

Frame 04 Voltage Adjustments for Machines Having B/M 5867725 (Model Group S)

Step Cplt

If any voltage is adjusted, the OV/UV and the OC LEDs must be adjusted.

CAUTION
Do not adjust any potentiometers that are factory sealed.

The OV/UV and OC LED adjustments are identical:

1. If the LED is off, turn the potentiometer clockwise slowly until the LED just turns on. ☐
2. If the LED is on, turn the potentiometer counterclockwise until the LED turns off, and then turn the potentiometer clockwise slowly until the LED just turns on. ☐

Order of Adjustment

For machines having B/M 5867725, adjust the power supplies in the order given.

1. Monitor 02A-D3E2J10 and ground (E2G11). Adjust PS2 to + 1.25 V ± 0.005 V. ☐
2. Monitor 02A-D3E2G06 and ground (E2G11). Adjust PS2 to −3 V ± 0.01 V. ☐
3. Monitor 02A-D2J2M02 and ground (J2M10). Adjust PS7 to +3.5 V ± 0.01 V. ☐

Step Cplt

4. Monitor 03A-B4L4D03 and ground (L4D08). Adjust PS1 to + 1.25 V ± 0.005 V. ☐
5. Monitor 03A-B4L4B06 and ground (L4D08). Adjust PS1 to −3 V ± 0.01 V. ☐
6. Note the +1.25 V on boards 03A-A1, A4, B1, and B4 on L4D03 and ground (L4D08). On board 03A-A3, monitor L2J10 and ground (L2G11). Adjust PS1 so that all voltages on monitored boards read within ± 1.5% (0.019 V) of +1.25 V. ☐
7. Monitor 03A-B4L4D04 and ground (L4D08). Adjust PS4 to +8.5 V ± 0.01 V. ☐
8. Monitor 03A-B4L4B11 and ground (L4D08). Adjust PS5 to + 3.3 V ± 0.01 V. ☐
9. Monitor 03A-A3E2M02 and ground (M2B10). Adjust PS10 to +3.5 V ± 0.01 V. ☐

Additional Adjustments for Model Group S for 12M- and 16M-Byte Configurations

10. Monitor 03A-B2L4D03 and ground (L4D08). Adjust PS1 to +1.25 V ± 0.005 V. ☐
11. Monitor 03A-B2L4B06 and ground (L4D08). Adjust PS1 to −3 V ± 0.01 V. ☐
12. Note the +1.25 V on boards 03A-A1, A2, A4, and A5 and 03A-B1, B2, B4, and B5 on L4D03 and ground (L4D08). On board 03A-A3, monitor L2J10 and ground (L2G11). Adjust PS1 so that all voltages on the monitored boards read within +1.5% (0.019 V) of +1.25 V. ☐
13. Monitor 03A-B2L4D04 and ground (L4D08). Adjust PS4 to +8.5 V ± 0.01 V. ☐
14. Monitor 03A-B2L4B11 and ground (L4D08). Adjust PS5 to +3.3 V ± 0.01 V. ☐
15. Monitor 03A-A3E2M02 and ground (M2B10). Adjust PS10 to +3.5 V ± 0.01 V. ☐
16. Monitor 03A-B4L4B11 and ground (L4D08). Adjust PS8 to +3.3 V ± 0.01 V. ☐
17. Monitor 03A-B4L4D04 and ground (L4D08). Adjust PS9 to +8.5 V ± 0.01 V. ☐

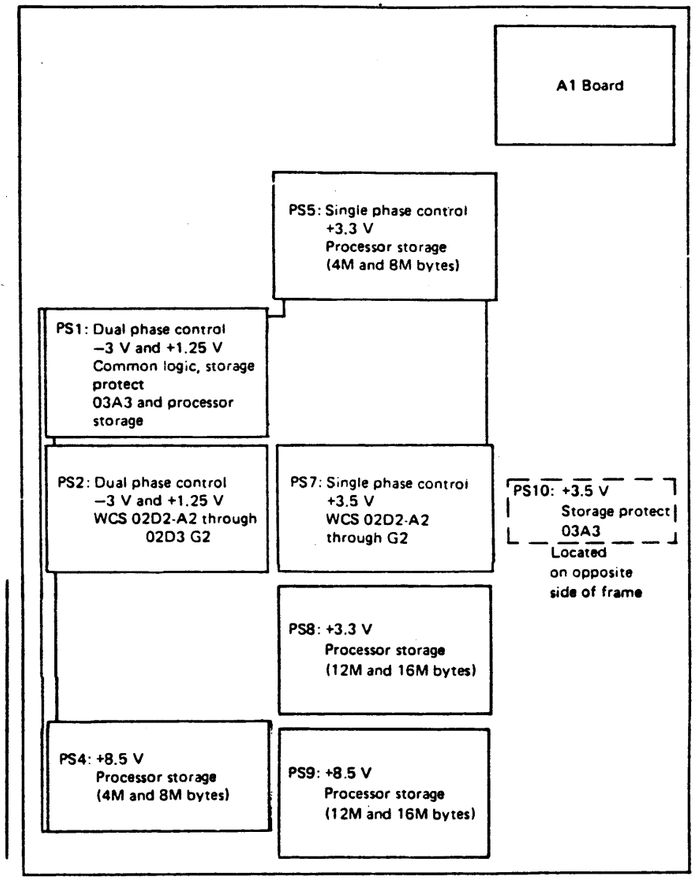


Figure A. Physical Layout of Frame 04 Power Supplies for Machines Having B/M 5867725

INSTALLATION PROCEDURES

FRAME 03 VOLTAGE ADJUSTMENTS FOR AP

Step Cplt

If any voltage is adjusted, the OV/UV and the OC LEDs must be adjusted.

CAUTION
Do not adjust any potentiometers that are factory sealed.

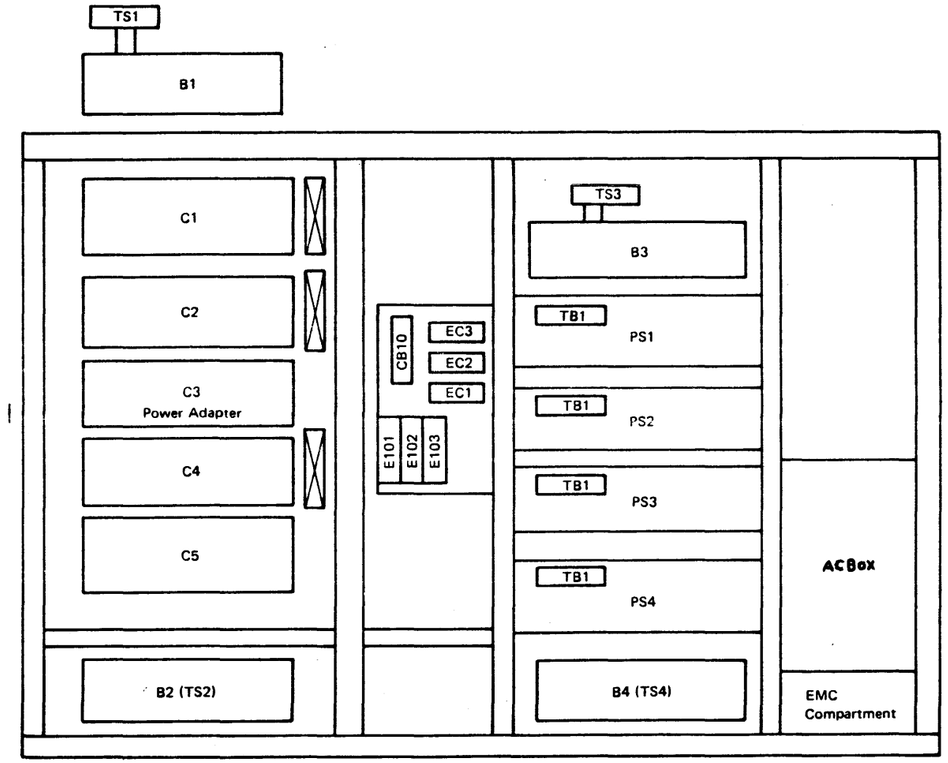
The OV/UV and OC LED adjustments are identical:

1. If the LED is off, turn the potentiometer clockwise slowly until the LED just turns on.
2. If the LED is on, turn the potentiometer counterclockwise until the LED turns off and then turn the potentiomenter clockwise slowly until the LED just turns on.

Order of Adjustment

Adjust the power supplies in the order given:

1. Monitor 02A-D3E2J10 and ground (E2G11). Adjust PS4 to +1.25 V ± 0.005 V.
2. Montior 02A-D3E2G06 and ground (E2G11). Adjust PS4 to −3V ± 0.01 V.
3. Monitor 01A-D4E2D04 and ground (E2B10). Adjust PS3 to +1.25 V ± 0.005 V.
4. Monitor 01A-D4N2S06 and ground (N2S11). Adjust PS3 to −3 V ± 0.01 V.
5. Monitor 02A-D2J2M02 and ground (J2M10). Adjust PS2 to +3.5 V ± 0.01 V.
6. Monitor 01A-D4J2M02 and ground (J2M10). Adjust PS1 to +3.5 V ± 0.01 V.



Frame 03, Pin Side

Part	EC No.				
8271689	Date	388707 1Dec79	208332 1Mar80		

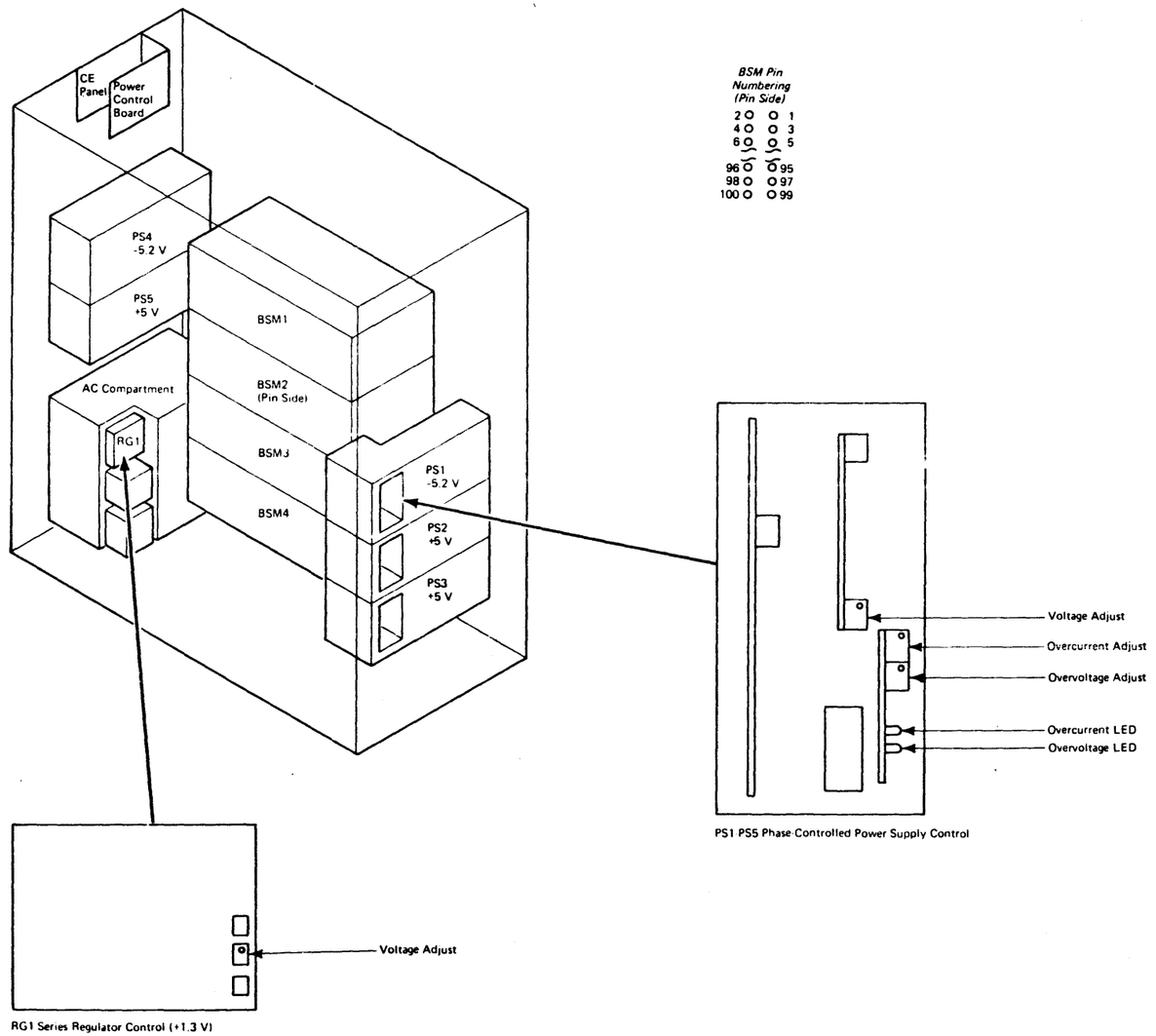
Voltage Adjustments for Frame 33

Adjust the frame 33 power supplies as follows:

Step Cplt	
☐	1. Monitor 33A-A436-14 and ground (A436-01). Adjust RG1 to +1.3 V ± 0.01 V.
☐	2. Monitor 33A-A405-05 and reference pin (A405-14). Adjust PS1 to −5.2 V ± 0.01 V.
☐	3. Monitor 33A-A305-18 and reference pin (A305-14). Adjust PS2 to +5 V ± 0.01 V.
☐	4. Monitor 33A-A427-18 and reference pin (A427-14). Adjust PS3 to +5 V ± 0.01 V.
☐	5. Monitor 33A-A105-05 and reference pin (A105-14). Adjust PS4 to −5.2 V ± 0.01 V.
☐	6. Monitor 33A-A205-18 and reference pin (A205-14). Adjust PS5 to +5 V ± 0.01 V.

If any voltage is adjusted, the OV/OC LEDs must be adjusted. Adjust the OV and OC as follows:

☐	1. If the OV LED is off, turn the OV potentiometer clockwise until the OV LED barely turns on.
☐	2. If the OC LED is off, turn the OC potentiometer clockwise until the OC LED barely turns on.
☐	3. If the OV LED is on, turn the OV potentiometer counterclockwise until the OV LED turns off, and then turn the potentiometer clockwise until the OV LED barely turns on.
☐	4. If the OC LED is on, turn the OC potentiometer counterclockwise until the OC LED turns off, and then turn the potentiometer clockwise until the OC LED barely turns on.



Power Supply Adjustment Locations for Frame 33

Part	EC No.				
4439507	Date	213562 4Sep81			

INSTALLATION PROCEDURES

Voltage Adjustments for Processor Channel Frames

Step Cplt

If any voltage is adjusted, the OV/UV and the OC LEDs must be adjusted as follows:

CAUTION
Do not adjust any potentiometers that are factory sealed.

The OV/UV and OC LED adjustments are identical:

1. If the LED is off, turn the potentiometer clockwise slowly until the LED just turns on. ☐
2. If the LED is on, turn the potentiometer counterclockwise until the LED turns off and then turn the potentiometer clockwise slowly until the LED just turns on. ☐
3. Adjust the channel power supplies according to the charts on this page. ☐
4. Go to INST 210. ☐

Channel Director 1

Regulator (Power Supply)	Voltage (V)	Tolerance When Adjusting (mV)	Tolerance When Checking (mV)	Test Point
PS504	+6.0	±10	±100	Monitor panel
PS501	+1.25 −3.0[1]	±1 ±10	±10 ±20	Monitor panel Monitor panel
PS502	+1.25 −3.0[1]	±1 ±10	±10 ±20	Monitor panel Monitor panel
PS502 and PS503	+3.5[2]	±10	±20	Monitor panel
PS503	+2.25	±10	±20	Monitor panel

[1] The negative voltage on PS501 and PS502 will read as a positive voltage on the meter.

[2] Adjust PS502 to +1.25 V before adjusting PS503.

Channel Director 2 (Feature for 3033 Processor Model Groups N and S and 3042 Model 2)

Regulator (Power Supply)	Voltage (V)	Tolerance When Adjusting (mV)	Tolerance When Checking (mV)	Test Point
PS505	+1.25 −3.0[1]	±1 ±10	±10 ±20	Monitor panel Monitor panel
PS506	+1.25 −3.0[1]	±1 ±10	±10 ±20	Monitor panel Monitor panel
PS506 and PS507	+3.5[2]	±10	±20	Monitor panel
PS508	+6.0	±10	±100	Monitor panel
PS507	+2.25	±10	±20	Monitor panel

[1] The negative voltage on PS505 and PS506 will read as a positive voltage on the meter.

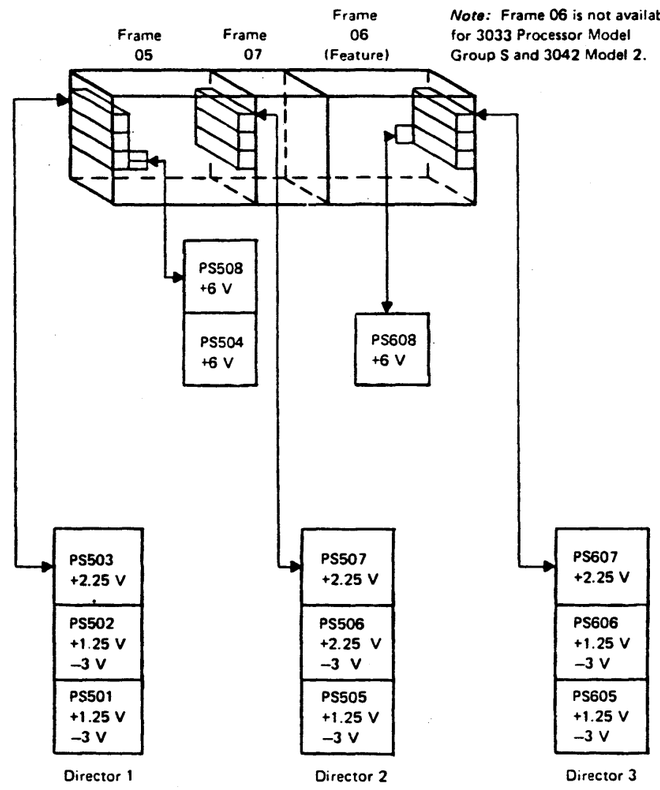
[2] Adjust PS506 to +1.25 V before adjusting PS507.

Channel Director 3 (Feature for 3033 Processor; not available for 3033 Processor Model Group S and 3042 Model 2)

Regulator (Power Supply)	Voltage (V)	Tolerance When Adjusting (mV)	Tolerance When Checking (mV)	Test Point
PS605	+1.25 −3.0[1]	±1 ±10	±10 ±20	Monitor panel Monitor panel
PS606	+1.25 −3.0[1]	±1 ±10	±10 ±20	Monitor panel Monitor panel
PS606 and PS607	+3.5[2]	±10	±20	Monitor panel
PS608	+6.0	±10	±100	Monitor panel
PS607	+2.25	±10	±20	Monitor panel

[1] The negative voltage on PS605 and PS606 will read as a positive voltage on the meter.

[2] Adjust PS606 to +1.25 V before adjusting PS607.



Note: Frame 06 is not available for 3033 Processor Model Group S and 3042 Model 2.

INSTALLATION PROCEDURES

Test Power-On Sequence

Step Cplt

1. When all power is up on the processor complex, press the Power Off pushbutton on the console. The Power On pushbutton should change from white to red and extinguish at the end of the power-off sequence. ☐

   Ensure that the system (including the console) power sequences down correctly. The processor and console blowers continue to run for approximately 30 seconds after all processor power has sequenced down.

   If a director is in local mode and powered down, the backlight will remain red until all devices on the system have powered up.

2. Set the Power Select switch on the console to System and press the Power On pushbutton. ☐

   Check that the Power On pushbutton is backlighted white when power is sequenced on to all the frames.

Install Covers on Frame 08 (From INST 350)

Step Cplt

A 1. Install the EMC cover (part 4872957) in tailgate W on frame 08. Assemble the cover tightly with *all* screws provided. A loose cover will lower the machine's zap level. ☐

2. Install the EMC covers as described on INST 342 and return to this procedure. ☐

3. Install the external cover on frame 08. (See INST 350 and INST 355.) If the cover does not latch, raise or lower frame 08 bottom as required. This is done by loosening the L-brackets that connect frame 08 to frames 02 and 03. ☐

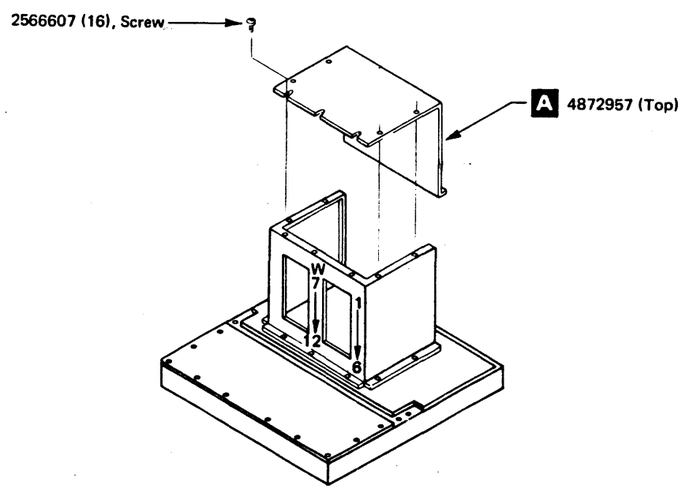
4. Install any covers that were removed and clean the area. If the processor complex was shipped without covers, install them. (See INST 350 and INST 355.) ☐

5. Mark and keep the outriggers, casters, and other hardware used for shipping. ☐

External Covers on Frame 08

Painted Assemblies (Includes Hardware)

White	Rose	Blue	Yellow	Gray	Brown	Green
5609618	5609656	5609684	5609712	5612534	5612580	5612616



Tailgate W on Frame 08

Dispose of Shipping Material

Step Cplt

1. Dispose of all wooden braces and wooden protectors locally. ☐

2. Keep all shipping casters, tri-lead connector brackets, tray packs, and outriggers for relocation/removal. ☐

3. The fiberboard logic carts are for shipping purposes only and are not authorized for permanent use in a customer account. They are to be replaced with metal logic carts (part 453147 and part 453149). The fiberboard carts are to be disposed of locally. ☐

4. Return to INST 70. ☐

INSTALLATION PROCEDURES

Install the EMC Covers (From INST 340)

Note: Assemble EMC covers tightly with *all* screws provided. Loose screws will lower the machine's zap level.

Step Cplt — Tray Pack (See INST 50)

A 1. Use the following parts to attach the EMC covers over the cable entry holes in frames 01-04: ☐

Frame	*Part*	Tray Pack (See INST 50)
01	6816646 cover 2566617 (8), screw 2575295 (8), screw	300 B (8) 300 E (8)
02	6816647 cover 2566617 (9), screw 2575295 (9), screw	300 B (9) 300 E (9)
03	6816648 cover 2566617 (4), screw 2575295 (4), screw	300 B (4) 300 E (4)
04	6816649 cover 2566617 (4), screw 2575295 (4), screw	300 B (4) 300 E (4)
09	4417849 (2), plate 2566604 (16), screw	

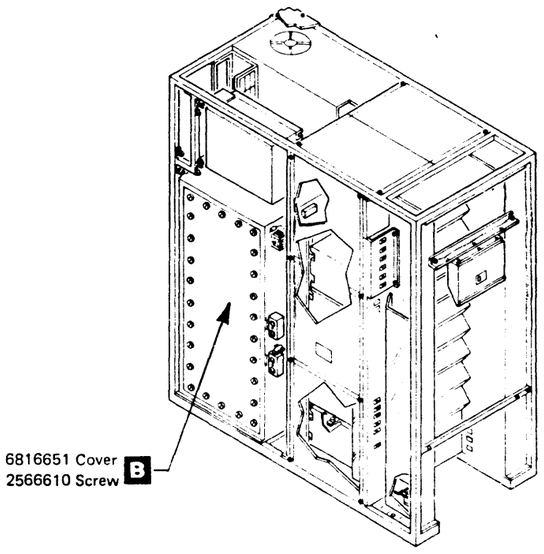
2. Use the following parts to attach the EMC covers in frame 15: ☐

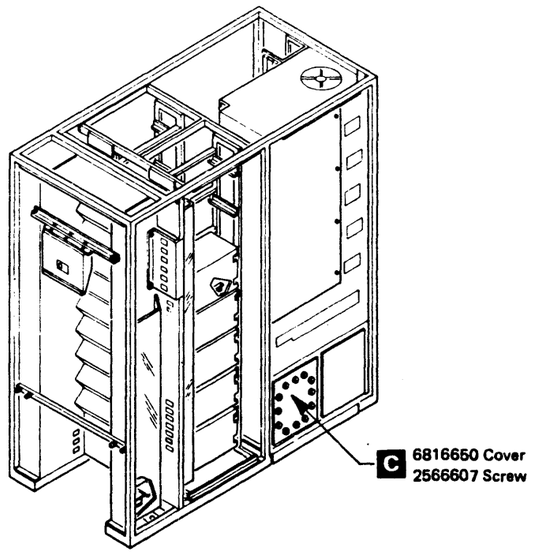
Frame	*Part*	
15	**B** 6816651 cover 2566610 (28), screw	017 N (28)
	C 6816650 cover 2566607 (12), screw	017 M (12)

3. Use the following parts to attach the console EMC cover over the cable entry compartment in frame 11. ☐

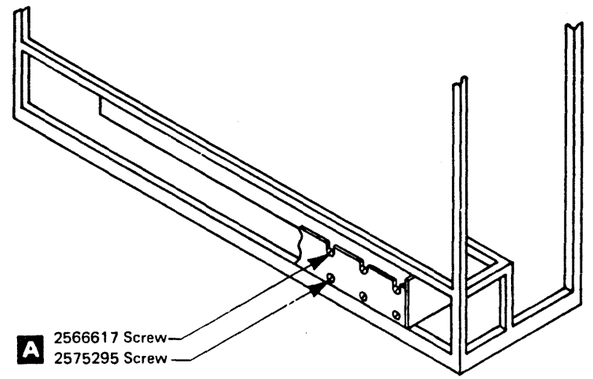
Frame	*Part*
15	**D** 4872896 cover 2574822 (10), screw 2566607 (4), screw

4. Return to INST 340. ☐

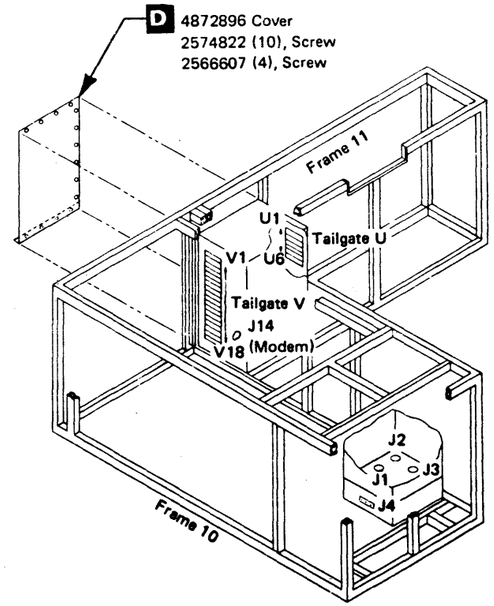




Frame 15



Typical mounting for frames 01-04 and 09



3033

Part	EC No.	276707	279895	388707	208335
8271663	Date	3May78	26Jan79	1Dec79	1Jun80

INSTALLATION PROCEDURES

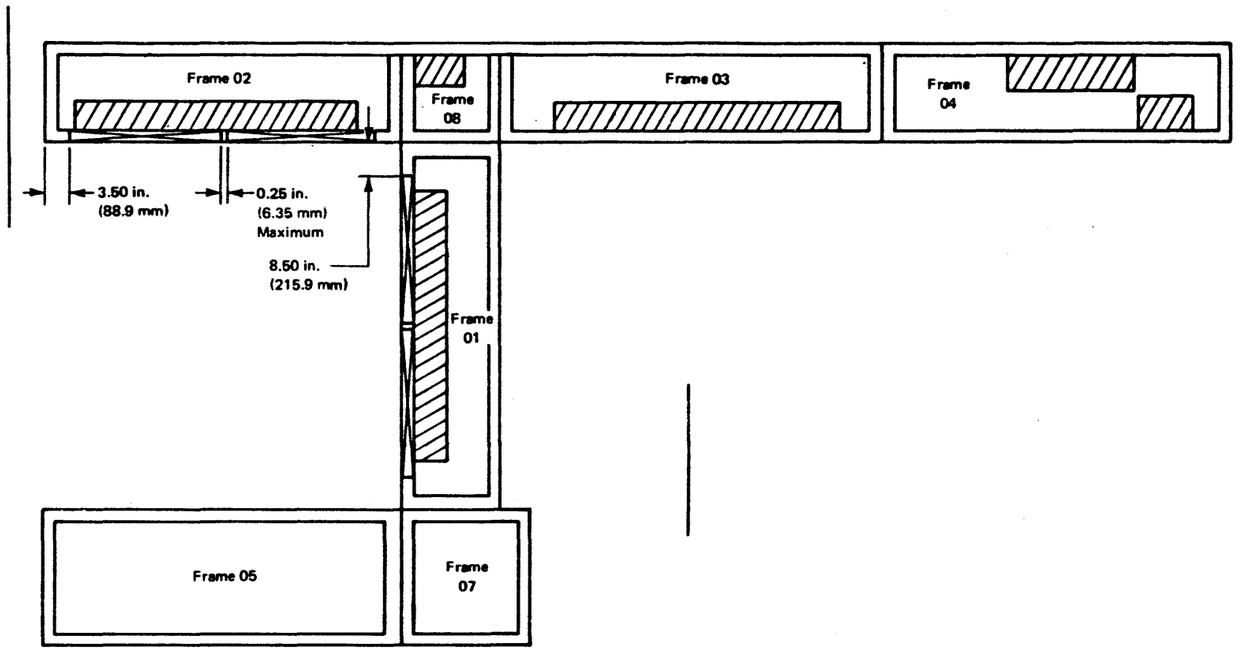
Install the Kickplates on the Processor Complex (From INST 340)

Step Cplt

Note: The kickplates cover the cable openings.

1. Connect the mount assemblies (part 4417838) to the base of the frames as shown in the figures. ☐
2. Install the kickplates (part 4417839) as shown in Figure A. ☐
3. Return to INST 340. ☐

Figure A

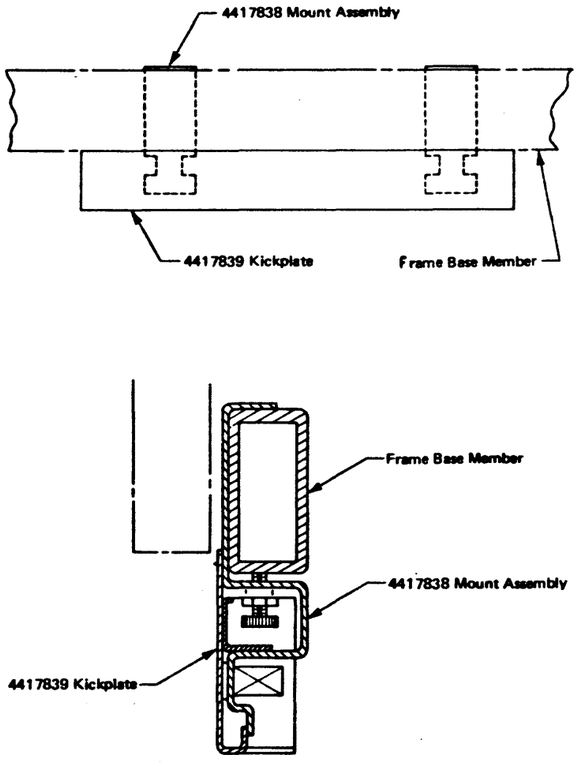


Kickplate Locations

Cable Entry and Exit Areas

Kickplate

Figure B



3033	Part 8271835	EC No.	276474	276707	278357	
		Date	20Jan78	3May78	19Jul78	

Align the Covers and Inspect the EMC Hardware

CHECK ALIGNMENT OF THE COVERS

Step Cplt

1. All the hinges should be installed and tightened using the locating screw and the two mounting screws. ☐
2. All the latch plates should be installed and tightened. ☐
3. Covers should be installed and visually checked for alignment and gap. ☐
4. Latches should engage and hold. ☐

ALIGN THE COVERS VERTICALLY

A The vertical gap between the covers should be equal from top to bottom, and the gaps between all the covers should be consistent. This gap is 0.33 inch (8.5 mm). A variation between gaps of ± 0.06 inch (± 1.5 mm) is permissible. ☐

Align the covers vertically by adjusting the leveling pads. Use this method before adjusting the hinges. This method adjusts the frame to the covers and compensates for frame deflection (sag) or twisting because of floors that are not even.

ALIGN THE COVERS HORIZONTALLY

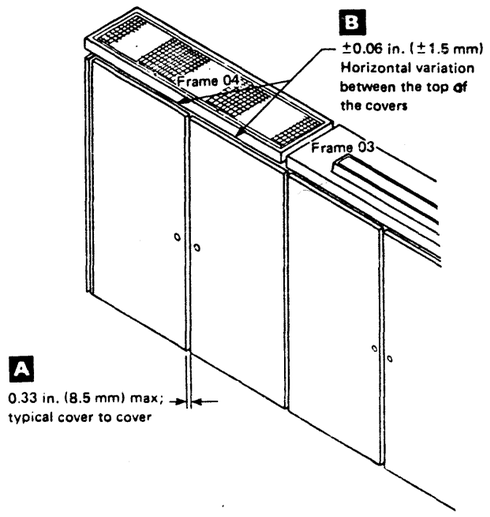
B Horizontal alignment of the covers need not be maintained to a perfect ground level. The top surface of the covers on a frame group should be aligned within ±0.06 inch (±1.5 mm). This dimension should be noncumulative across a series of covers. ☐

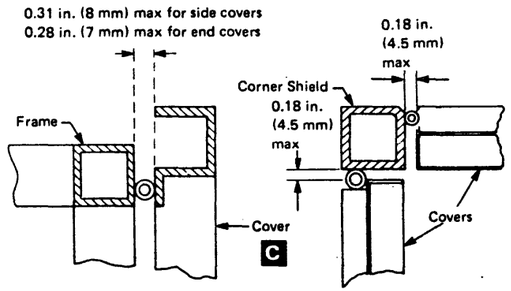
The slots in the hinges permit the covers to be shifted ±0.16 inch (±4.1 mm), which permits some rotation of a cover if a corner of a cover is too high or too low. This is accomplished by removing the center locating screw in the hinge and adjusting the hinge through its slots.

ADJUST THE COVER GAPS

C Hinge-end adjustment: Loosen the top hinge mounting screws and rotate the hinge pivot hole. Retighten the screws. ☐

Strike-end adjustment: Loosen the top strike mounting screws and slide the strike. Retighten the screws. ☐





Top View of the Covers

CHECK THE COVER LATCHES

Step Cplt

When the covers are adjusted correctly, the top and bottom latch bolts should slide up the strike and engage their slots and strikes without the use of the center coin actuator. Ensure full closure and latching. See "Adjust the Cover Latches" on this page. ☐

Part	EC No.	276474	276707	388692	
8271636	Date	20Jan78	3May78	10Aug79	

ADJUST THE COVER LATCHES

Step Cplt

1. Loosen the locking nut on the bolt rod. ☐
2. Turn the bolt rod to advance or retract the latch bolt. ☐
3. Check the adjustment. (See "Check the Cover Latches" on this page.) ☐
   a. If the bolt hits the frame-mounted strike without sliding up the strike, retract the bolt farther.
   b. If the bolt does not engage the strike with the cover fully closed, advance the bolt.
4. Recheck and tighten the locking nut. ☐
5. If full adjustment is not possible, use the coin actuator to close the covers. Apply pressure to the top and bottom of the covers by using your hand and knee, while turning the coin actuator. ☐

INSPECT THE EMC HARDWARE

1. The door seals are made of conductive rubber, and the paint on the frames is conductive. Ensure that the door seals touch the frames properly. See adjustments on this page. ☐
2. Ensure that the seals between the frames touch each other. ☐
3. Braided straps are installed on frames 05 and 07 (and frame 06, if present). Ensure that the straps are installed. ☐
4. Ground straps or ground clamps are installed on the console inter-frame cables. Ensure that the straps or clamps are installed. ☐
5. The interface connectors are plated with aluminum. Ensure that the aluminum plating contacts the metal tailgate. ☐
6. Ensure that all tailgate covers are installed. ☐
7. Ensure that the bus bars, terminal strips, and tri-lead cables on the power supplies are connected. ☐
8. The paint on the perforated metal screens on the top of the frames is conductive. Ensure that the mounting screws are tight. ☐
9. Ensure that the braided pigtails to all the shielded interface cables are attached tightly to the metal tailgate. ☐
10. Ensure that the seal on the IPO panel touches the covers. ☐

INSTALLATION PROCEDURES

Install the Blower Assemblies

CAUTION
Check that the thermal switches, located on the screen of blower (part 1574861, 50 Hz or part 1574864, 60 Hz) for frame 03, are marked 130°F. Blowers for the other frames have thermal switches marked 115°F.

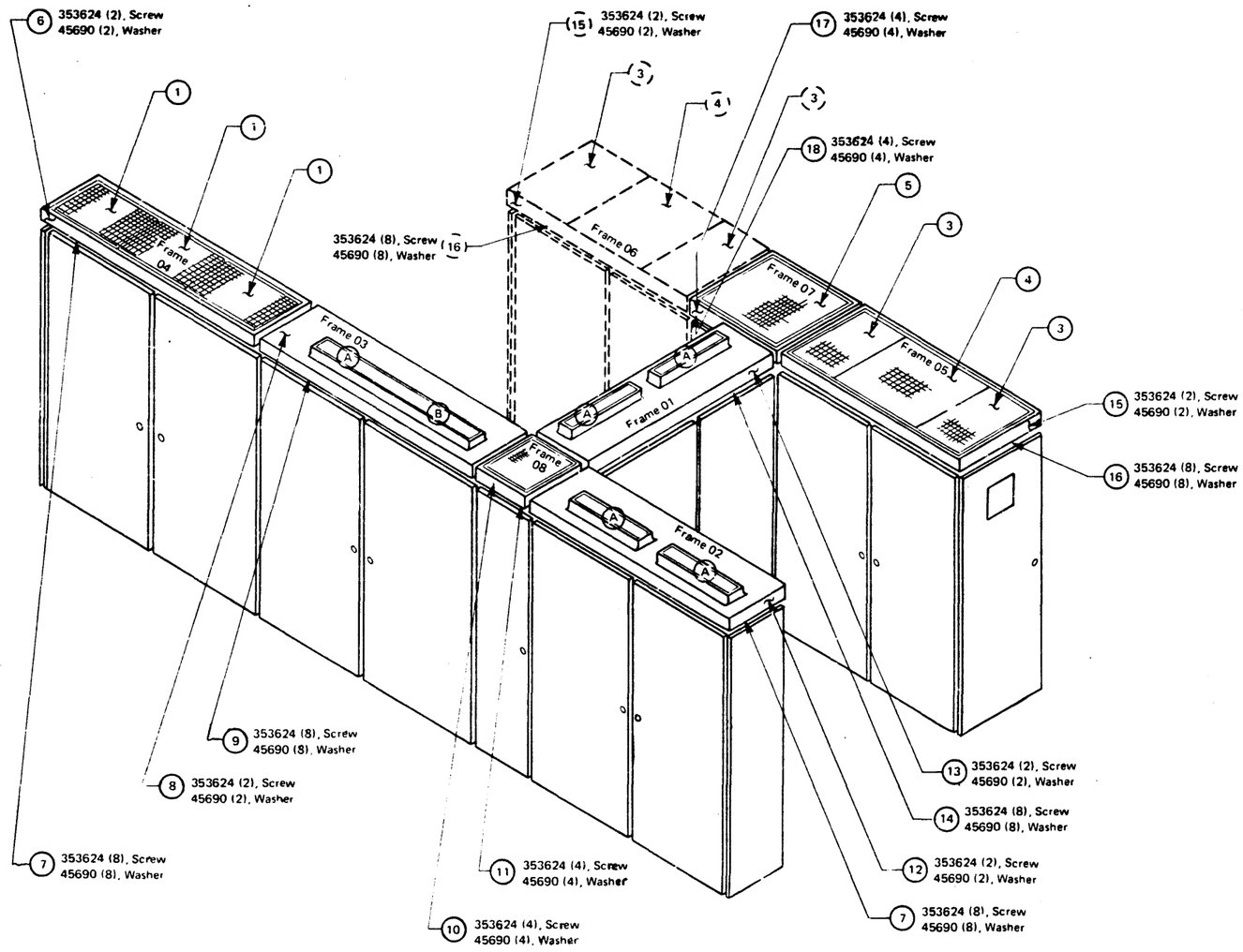
Step Cplt

1. Install the blowers (part 1574861, 50 Hz or part 1574864, 60 Hz) in positions marked (A). ☐
2. Install the blower (part 1574925, 50 Hz or part 1574924, 60 Hz) in the position marked (B). ☐
3. See INST 370 to install the covers. ☐

Install the Top Housings

If the complex was received without the top housings installed, connect them with the parts shown in the accompanying chart. Connect the blower cables. (See INST 231, step 12.) ☐

	Housings, Grids, and Supports for 3033 and 3042 Model 2				3042 Model 1			Extended Channels Feature		
Loc	Part	Qty	Description	Location	Part	Qty	Location	Part	Qty	Location
(1)	4872942	3	Grid	Frame 04	–		–	–	–	–
(2)	4872943	1	Grid	Frame 08	4872943	3	Frame 03, 08	–	–	–
(3)	1835319	2	Grid	Frame 05	–		–	1835319	2	Frame 06
(4)	1835318	1	Grid	Frame 05	–		–	1835318	1	Frame 06
(5)	4872944	2	Grid	Frame 07	–		–	4872949	1	Frame 07
(6)	4872959	1	Top housing	Frame 04	–		–	–	–	–
(7)	4872936	2	Housing support	Frame 02-04	4872936	1	Frame 02	–	–	–
(8)	4872947	1	Top housing asm	Frame 03	4432065	1	Frame 03	–	–	–
(9)	4872937	1	Housing support	Frame 03	443042	1	Frame 03	–	–	–
(10)	4872948	1	Top housing	Frame 08	4872948	1	Frame 08	–	–	–
(11)	4872940	1	Housing support	Frame 08	4872940	1	Frame 08	–	–	–
(12)	4872946	1	Top housing asm	Frame 02	4872946	1	Frame 02	–	–	–
(13)	4872945	1	Top housing asm	Frame 01	4432066	1	Frame 01	–	–	–
(14)	4872938	1	Housing support	Frame 01	4432064	1	Frame 01	–	–	–
(15)	4872934	1	Top housing	Frame 05	–		–	4872934	1	Frame 06
(16)	4872939	1	Housing support	Frame 05	–		–	4872939	1	Frame 06
(17)	4872933	1	Top housing	Frame 07	–		–	4873279	1	Frame 07
(18)	4872941	1	Housing support	Frame 07	–		–	–	–	–



3033 | Part 8271637 |

EC No.	276474	276707	278357	208335	211786
Date	20Jan78	3May78	19Jul78	1Jun80	5Jan81

INSTALLATION PROCEDURES

Install the Covers on the Processor Complex and the Multiprocessor Complex

Step Cplt

1. Install the covers using the charts. ☐

   Note: The covers should be aligned across the top and with an even gap between each cover. (See INST 355.)

   Use the leveling pads to adjust the height; adjust the hinges for an even gap between the covers.

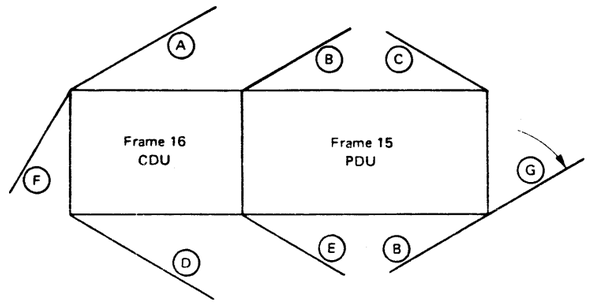
2. Return to INST 350. ☐

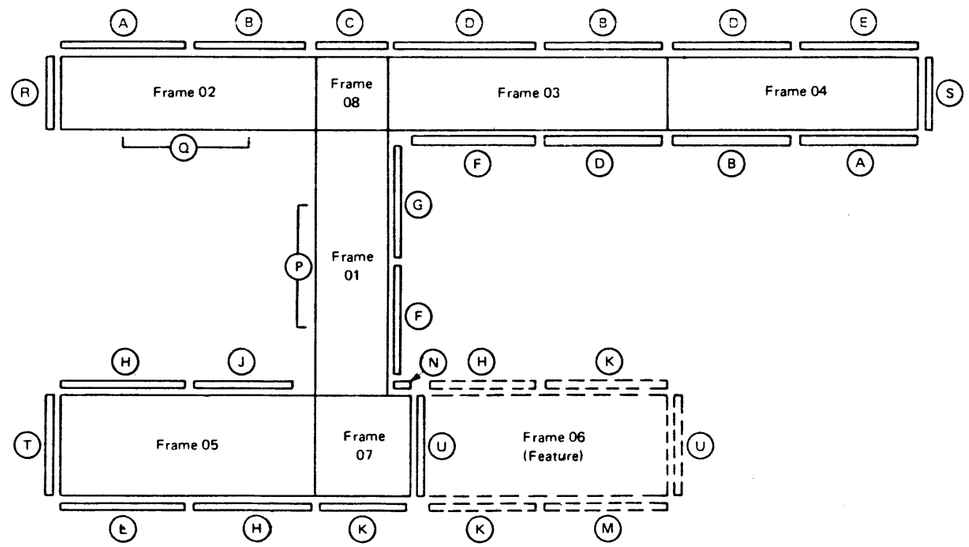
Processor Cover Location Chart

Det Loc	Painted Assemblies (Includes Hardware)							Basic Mach Qty	Extended Channels Feature Qty
	White	Rose	Blue	Yellow	Gray	Brown	Green		
(A)	5609614	5609652	5609680	5609708	5612530	5612576	5612612	2	–
(B)	5609616	5609654	5609682	5609710	5612532	5612578	5612614	3	–
(C)	5609618	5609656	5609684	5609712	5612534	5612580	5612616	1	–
(D)	5609620	5609658	5609686	5609714	5612536	5612582	5612618	3	–
(E)	5609622	5609660	5609688	5609716	5612538	5612584	5612620	1	–
(F)	5609624	5609662	5609690	5609718	5612540	5612586	5612622	2	–
(G)	5609626	5609664	5609692	5609720	5612542	5612588	5612624	1	–
(H)	5609628	5609666	5609694	5609722	5612544	5612590	5612626	2	1
(J)	5609630	5609668	5609696	5609724	5612546	5612592	5612628	1	–
(K)	5609632	5609670	5609698	5609726	5612548	5612594	5612630	1	2
(L)	5609634	5609672	5609700	5609728	5612550	5612596	5612632	1	–
(M)	5609636	5609674	5609702	5609730	5612552	5612598	5612634	0	1
(N)	5609638	5609676	5609704	5609732	5612554	5612600	5612636	1	–
(P)	5609639	5609677	5609705	5609733	5612565	5612570	5612647	1	–
(Q)	5609641	5609678	5609706	5609734	5612560	5612571	5612648	1	–
(R)	5609644	5609644	5609644	5609644	5609644	5609644	5609644	1	–
(S)	5609646	5609646	5609646	5609646	5609646	5609646	5609646	1	–
(T)	5612668	5612668	5612668	5612668	5612668	5612668	5612668	1	–
(U)	5609650	5609650	5609650	5609650	5609650	5609650	5609650	1	–

CDU and PDU Cover Location Chart

Det Loc	Painted Assemblies							Basic Mach Qty
	White	Rose	Blue	Yellow	Gray	Brown	Green	
(A)	5609626	5609664	5609692	5609720	5612542	5612588	5612624	1
(B)	5609628	5609666	5609694	5609722	5612544	5612590	5612626	2
(C)	5609634	5609672	5609700	5609728	5612550	5612596	5612632	1
(D)	5609736	5609738	5609740	5609742	5612556	5612602	5612638	1
(E)	5609632	5609670	5609698	5609726	5612548	5612594	5612630	1
(F)	5609650	5609650	5609650	5609650	5609650	5609650	5609650	1
(G)	5609648	5609648	5609648	5609648	5609648	5609648	5609648	1





Cover Location

Install the Blowers and Top Housings for the 3038

Step Cplt

Note: If blowers and top housings were previously installed, disregard this procedure.

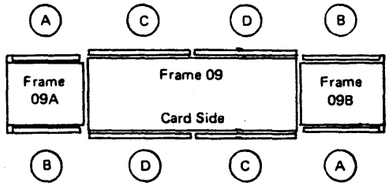
1. Install the blowers (part 1574917, 50 Hz, or part 1574918, 60 Hz). ☐
2. Connect the blower power connectors. ☐
3. Install the top housings. ☐
4. Install the top housings with the parts shown. ☐

INSTALL THE COVERS

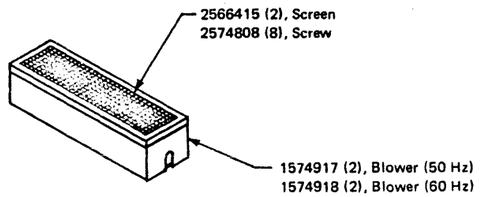
Install the covers in the positions shown. ☐

Cover Location Chart

Detail Location	Painted Assemblies (Includes Hardware)							Mach Qty
	White	Rose	Blue	Yellow	Gray	Brown	Green	
(A)	1312075	1312077	1312079	1312081	1312083	1312085	1312087	2
(B)	5609618	5609656	5609684	5609712	5612534	5612580	5612616	2
(C)	8324729	8324731	8324733	8324735	8324737	8324739	8324741	2
(D)	8324743	8324745	8324747	8324749	8324751	8324753	8324755	2

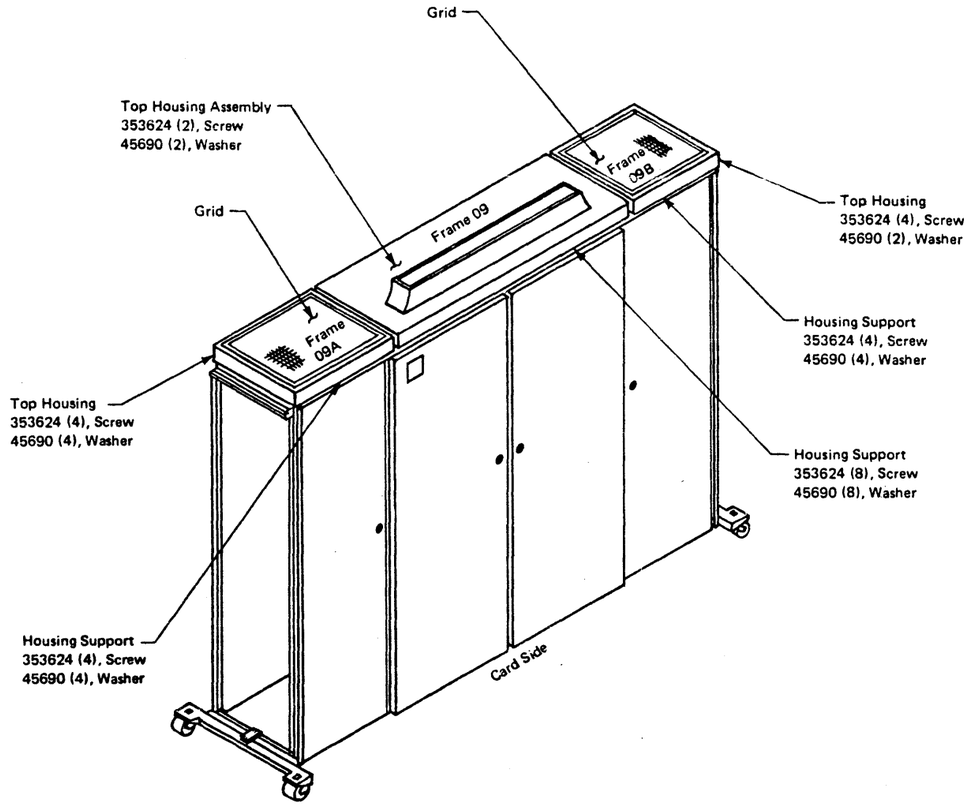


Frame 09
Cover Location



Housings, Grids, and Supports

Qty	Part	Description	Location
2	4872943	Grid	Frame 09A & B
2	4872948	Top Housing	Frame 09A & B
2	4417813	Housing Support	Frame 09A & B
1	4417843	Top Housing Assembly	Frame 09
1	4417814	Housing Support	Frame 09



Part 8271683	EC No.	388692			
	Date	10Aug79			

Install the Covers on the Attached Processor Complex

Step Cplt

1. Install the covers using the charts. ☐

   Note: The covers should be aligned across the top and with an even gap between each cover. (See INST 355.)

   Use the leveling pads to adjust the height; adjust the hinges for an even gap between the covers.

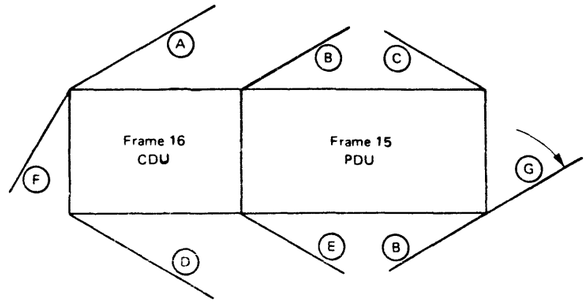
2. Return to INST 350. ☐

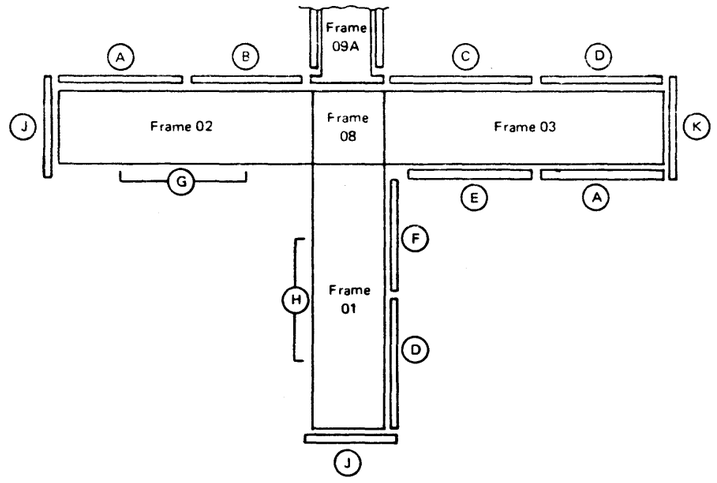
Processor Cover Location Chart

Det Loc	Painted Assemblies (Includes Hardware)							Basic Mach Qty
	White	Rose	Blue	Yellow	Gray	Brown	Green	
(A)	5609614	5609652	5609680	5609708	5612530	5612576	5612612	2
(B)	5609616	5609654	5609682	5609710	5612532	5612578	5612614	1
(C)	5609620	5609658	5609686	5609714	5612536	5612582	5612618	1
(D)	5609622	5609660	5609688	5609716	5612538	5612584	5612620	2
(E)	5609624	5609662	5609690	5609718	5612540	5612586	5612622	1
(F)	5609626	5609664	5609692	5609720	5612542	5612588	5612624	1
(G)	5609641	5609678	5609706	5609734	5612566	5612571	5612648	1
(H)	8324813	8324814	8324815	8324816	8324817	8324818	8324819	1
(J)	5609644	5609644	5609644	5609644	5609644	5609644	5609644	2
(K)	5609646	5609646	5609646	5609646	5609646	5609646	5609646	1

CDU and PDU Cover Location Chart

Det Loc	Painted Assemblies							Basic Mach Qty
	White	Rose	Blue	Yellow	Gray	Brown	Green	
(A)	5609626	5609664	5609692	5609720	5612542	5612588	5612624	1
(B)	5609628	5609666	5609694	5609722	5612544	5612590	5612626	2
(C)	5609634	5609672	5609700	5609728	5612550	5612596	5612632	1
(D)	5609736	5609738	5609740	5609742	5612556	5612602	5612638	1
(E)	5609632	5609670	5609698	5609726	5612548	5612594	5612630	1
(F)	5609650	5609650	5609650	5609650	5609650	5609650	5609650	1
(G)	5609648	5609648	5609648	5609648	5609648	5609648	5609648	1





Run the Microdiagnostic Tests

Step Cplt

Note: See the *3033 CPU Microdiagnostic User's Guide* (part 5608767, or part 4466131 for the extended addressing feature) if problems are encountered in the following steps.

1. IMPL the first 3033 Processor microdiagnostic diskette. The PROCESSOR MICRODIAGNOSTIC SUPERVISOR frame appears on the display. ☐
2. Set PORTS THIS SIDE on the C1 frame to 0, 2, 3, and 4. ☐
3. Set CURRENT ARRAY on the C2 frame according to the following chart. ☐

   Note: The remote array will appear blanked if the remote processor is powered down or not installed. The following examples are for a 24M-byte UP or AP complex or for an MP complex with 16M bytes of storage on each side. If less storage is installed, the maximum storage size will appear.

UP, Model Groups N and S	*MP* 3033	*MP* 3033	*AP* 3042	*AP* 3033
L00=P00	L00=PR0	L00=PR0	L00=PI	L00=P00
L02=P02	L02=PL2	L02=PL2	L02=PI	L02=P02
L04=P04	L04=PR4	L04=PR4	L04=PI	L04=P04
L06=P06	L06=PL6	L06=PL6	L06=PI	L06=P06
L08=P08	L08=PR8	L08=PR8	L08=PI	L08=P08
L0A=P0A	L0A=PLA	L0A=PLA	L0A=PI	L0A=P0A
L0C=P0C	L0C=PRC	L0C=PRC	L0C=PI	L0C=P0C
L0E=P0E	L0E=PLE	L0E=PLE	L0E=PI	L0E=P0E
With extended addressing feature:				
L10=P10	L10=PL0	L10=PL0	L10=PI	L10=P10
L12=P12	L12=PR2	L12=PR2	L12=PI	L12=P12
L14=P14	L14=PL4	L14=PL4	L14=PI	L14=P14
L16=P16	L16=PR6	L16=PR6	L16=PI	L16=P16
L18=PI	L18=PL8	L18=PL8	L18=PI	L18=PI
L1A=PI	L1A=PRA	L1A=PRA	L1A=PI	L1A=PI
L1C=PI	L1C=PLC	L1C=PLC	L1C=PI	L1C=PI
L1E=PI	L1E=PRE	L1E=PRE	L1E=PI	L1E=PI

4. Select the MICRODIAGNOSTIC frame. ☐
5. To run the test, key M5, RX (RXV for extended addressing feature) and press ENTER. (Refer to the *3033 CPU Microdiagnostic User's Guide* for automatic bias/slue options.) ☐

Step Cplt

6. When the test is complete, load diskette 2 and repeat steps 4 and 5. ☐
7. When the test is complete, load diskette 3 and repeat steps 4 and 5. ☐
8. Repeat steps 4 through 7 with +120 mV and –90 mV bias. ☐
9. When the test is complete, perform an IMPL of either diskette TMAP1 for the 3033 Models U and N or diskette TMAPS for the 3033 Model S. Microdiagnostic test P3F8 and the trace function diagnostic test are run. ☐
10. When the trace function is complete, go to the next section. ☐

RUN THE SYSTEM IMPL TESTS

1. Insert the system diskette into each diskette drive. ☐
2. Set the Operator Console on IMPL switch to A. ☐
3. Set the Power Select switch to System. ☐
4. Press the Power On pushbutton and check that the switch is backlighted white. ☐

   Note: An IMPL is performed automatically on both console stations.

5. Ensure that console station A is displaying the PR frame and that console station B is displaying the CD frame. ☐

RUN THE CHANNEL MICRODIAGNOSTIC TESTS

Step Cplt

Note: Do not perform an IMPL on one console station until the IMPL is completed on the other station.

1. Perform an IMPL with the channel microdiagnostic diskettes and run all the internal channel microdiagnostic tests. ☐
2. Select and run director-to-processor interconnection microdiagnostic tests PC00 through PC80 (third processor diskette). ☐
3. If the CTCA feature is installed, run channel-to-channel adapter microdiagnostic tests. (See INST 381.) ☐

RUN THE HARDCORE TESTS

1. Configure the UCWs using the CD frame. Refer to MM Volume 1. ☐
2. Select the OP frame. ☐
3. Set the load unit address and IPL the hardcore program into processor storage. ☐
4. Verify that the hardcore program runs error free. ☐

   Note: Errors are indicated when the processor enters the wait state. Reference must be made to the program listing and the failing test. Some failures require a scoping loop to be prepared manually. Other tests will enter a tight loop when an external interruption is executed.

5. When hardcore testing is completed, the NDM must be loaded successfully. The SRT, DM I/O, SDT, and CMT configurations are prepared automatically within the monitor. ☐

INSTALLATION PROCEDURES

TEST THE CHANNEL-TO-CHANNEL ADAPTER FEATURE (CTCA1 AND CTCA2)

Use the following procedure to run the CTCA tests on CTCA1:

Step Cplt

1. Refer to LADS page AA930 and plug the device unit address. ☐
2. Refer to LADS page AA921 and plug the CTCA for not data in mode. ☐
3. Connect the wrap cables (part 4867253) as shown in MM Volume 1, Diagram 2–409. ☐
4. Load microdiagnostic diskette DIRUD. ☐
5. Refer to microdiagnostic listing to find operating procedure for test ANP and run tests ANP through ANW. ☐
6. When the tests run successfully, remove the wrap cables and connect the channels for normal system configuration. ☐
7. Refer to LADS page AA921 and plug CTCA. ☐

Note: For a 3033 CTCA connection to an IBM 2860 Selector Channel (with or without the 3803 Model 2 attachment feature), plug mode selection for NO DATA-IN MODE.

Use the following procedure to run the CTCA tests on CTCA2:

Step Cplt

1. Refer to LADS page AA930 and plug the device unit address. ☐
2. Refer to LADS page AA921 and plug the CTCA for not data in mode. ☐
3. Connect the wrap cables (part 4867253) as shown in MM Volume 1, Diagram 2–409. ☐
4. Load microdiagnostic diskette DIRUD. ☐
5. Refer to microdiagnostic listing to find operating procedure for test ANP and run tests ANP through ANW. ☐
6. When the tests run successfully, remove the wrap cables and connect the channels for normal system configuration. ☐
7. Refer to LADS page AA921 and plug CTCA. ☐

Note: For a 3033 CTCA connection to an IBM 2860 Selector Channel (with or without the 3803 Model 2 attachment feature), plug mode selection for NO DATA-IN MODE.

INSTALLATION PROCEDURES

Connect the Data Communications (TP) Cable and Check Out the TP Facilities

TP HARDWARE DEFINITION

The type of data communications hardware (modems, cables, etc.) required depends on the country in which the 3036 is being installed.

The four basic TP hardware packages are used in:
1. United States and Canada
2. Japan
3. Italy
4. Other world trade countries

Note: The J14 connector, referred to in following text, is in the EMC enclosure of frame 11.

United States and Canada

An IBM modem (38LS), included under the covers of the 3036 (location 10A-A1U2), utilizes a two-wire transmit-receive interface to the type of CDT used for data access arrangement. (CDT is a universal service-order code used by common carriers to designate a form of data coupler.)

A two-wire cable is provided to connect J14 to the data access arrangement.

Step Cplt

Installation Steps

1. Ensure that the modem wrap test runs error free. ☐
2. Install the cable (part 1311356) from J14 to the telephone data coupler. ☐
3. Check the card plugging. ☐
   a. Ensure that the modem control card (10A-A1T2) is plugged. See LADs page PA003.
4. Check the transmit level. ☐
   a. Ensure that the switches on the modem card (10A-A1U2) are set up. See LADs page PA004.

   Note: The transmit-level switches on the modem card should be set to the value that the common carrier has marked on the cover of the data coupler. See LADs page PA005.

Check Out Procedure

See "Common TP Check Out Procedure" in INST 389.

Japan

The modem used in Japan utilizes only the switched-network backup portion of the leased-line modem for attachment to the switched network. Connection to the telephone line is by means of the Japanese-supplied network control unit (NTT-NCU, type MM2) which includes the telephone set and data coupler functions.

Step Cplt

Installation Steps

1. Ensure that the modem wrap tests run error free. ☐
2. Install cable (part 1311357) from J14 to the telephone set. ☐
3. Check the card plugging. ☐
   a. Ensure that the switches on the modem card (10A-A1U2) are set up. See LADs page PA004.
   b. Ensure that the plugs on the modem control card (10A-A1T2) are set up. See LADs page PA003.
4. Check the transmit level. ☐
   a. Set up the transmit-level switches as necessary to meet local requirements. See LADs page PA005.

Check Out Procedure

See "Common TP Check Out Procedure" in INST 389.

Italy

The modem used in Italy is intended for use in Italy only, but it may ultimately be used in other countries.

The World Trade public switched-network adapter (line plate) connects the IBM-integrated modem to the two-wire telephone line of the public switched network; the adapter controls the switching of the telephone line between the telephone and the modem. The adapter and the modem are under the covers of the 3036.

Installation Steps

1. Ensure that the modem wrap test runs error free. The wrap test for this configuration checks out the modem card with or without the line plate and telephone set attached. ☐

   Note: The wrap test will fail if the line plate is connected to J14 and the telephone set when the telephone is off the hook. The test must be run with the telephone on the hook.
2. Install the modem cable. ☐
   a. Connect the line plate cable (part 1311370) to the line plate and J14 connector. The line plate is mounted in the EMC enclosure.
   b. Install cable (part 1311371) from the line plate to the telephone set.

Line Name and Card Pin		*Cable Connections (part 1311370)*	
Line Name	*38LS Pin 10A-A1U2*	*P14 Pin*	*Line Plate Connector Pin (See Note)*
Data Tip	D05/D06	9	A08
Data Ring	D08	10	B08
Transfer Relay	G03	4	B05
Current Detect 1	G10	5	B01
Current Detect 2	G13	22	A02
+8.5 Volts	G11	21	B03
–3.5 Volts	J09	6	B07
Data Indicate	N/A	11	A04

Figure A. Connections, 38LS to Line Plate (For Reference Only)

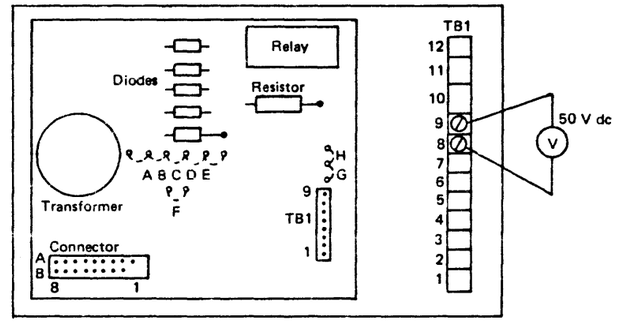


Figure B. Line Box (Part 1734232)

Telephone Connections

TB1-6 and TB1-7 – Telephone set
TB1-8 and TB1-9 – Telephone line

Step Cplt

After making preceding telephone connections, perform the following checks:

1. Check the card plugging. ☐
   a. Ensure that the switches on the 38LS modem are set up. See 3036 LADs page PA004.
   b. Check the plugs on the modem control card (10A-A1T2). See LADs page PA003.
2. Check the transmit level. ☐
   a. Check that the transmit-level switches meet local requirements. See LADs page PA005.

   Note: When the transmit level on this configuration is being set, a line-plate insertion loss of 1.5 DBM must be compensated for.
3. Check the line-plate plugs. The label on the line-plate cover provides the correct setting. ☐

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Connect the Data Communication (TP) Cable and Check Out the TP Facilities (Continued)

Step Cplt

Italy (Continued)

4. The telephone line dc level is adjusted between 20 mA and 70 mA. Balance the line between talk status and data status as follows:
   a. Using a voltmeter on the 50 V dc scale, monitor between TB1-8 and 9. ☐
   b. Set the data station to talk status and remove the handset from the dataphone. ☐
   c. Record the monitored voltage level. ☐
   d. Select a strap from those listed in Figure A. ☐
   e. Set the data station to data status. ☐
   f. If the monitored voltage level is different from step 3, use the strap positions between the parentheses to achieve the best possible voltage balance. ☐
   g. Replace the handset on the telephone and set the data station to talk status. ☐

Select status by executing the appropriate sequence.

Talk Status:

1. From the UT frame, select port 0. ☐
2. Enter and execute put command 5C with data equal to 01. This resets 'data terminal ready' and places the line plate in talk status (R1 not picked). ☐

Data Status:

(TP Active–Key Reset pushbutton backlight on)

1. From the UT frame, select port 0. ☐
2. Enter and execute put command 5C with data equal to 08. This sets 'data terminal ready'. ☐
3. Remove the handset from the telephone. Relay R1 on the line plate is energized and the DATA SET READY LED on the display bezel turns on. The DATA SET READY LED indicates that 'data status' is active. ☐

Voltage Level (V)	*Strap to Be Selected*
0.5 - 2	F
2 - 3.5	E (F)
3.5 - 4	E (C)
4 - 6	E (C,D)
6 - 8	C (E,D,B)
8 - 9	C (E,D,B,A)
9 - 14	D (E,C,B,A)
14 - 26	B (C,D,A)
26 - 37	A (D,B)
37 - 50	A (B)

Note: The strap positions given between parentheses can be used in data status to refine the strap selection. Use only the indicated strap positions.

Figure A. Line-Plate Strapping Table

Part 8271667	EC No. Date	278357 19Jul78	388692 10Aug79	208332 1Mar80	213562 4Sep81

Checkout Procedure (Italy)

Step Cplt

1. Ensure that the telephone operates normally for voice communications. ☐
2. Activate the Activate TP switch on the console operator panel. ☐
3. At console station B, select the UT frame. ☐
4. Select port 0; insert and execute a put command 5C with data equal to 09. This activates 'data terminal ready' to the modem card. ☐
5. With 'data terminal ready' active, remove the handset from the telephone. The DATA SET READY LED should be lighted on the display, and the telephone handset should not be connected to the line. (The telephone handset should be dead.) ☐
6. On the UT frame, change the put data to 01 and again execute the put command. (Resets 'data terminal ready'.) ☐
7. The DATA SET READY LED should go off, and the telephone should operate normally. ☐
8. Reset the TP Active--Key Reset pushbutton on the console operator panel. ☐
9. Continue with "Common TP Checkout Procedure" in this Installation Procedure. ☐

World Trade Countries Using External Modems

The configuration used in some World Trade countries utilizes an external modem interface card (10A-A1U2) that interfaces to the external modem(s) required for specific countries using a 25-pin cable.

Installation Steps

1. Ensure that the modem wrap test runs error free. ☐

   Note: In this configuration, the modem wrap test checks out the TP hardware up to the line drivers and receivers on the EIA/CCITT interface card (10A-A1U2). The wrap test does not check out the external modem.

2. Install the modem cable (part 1311366) from J14 to the external modem. Two types of cable are used with this configuration. A special cable is provided to meet requirements within the United Kingdom. (See "United Kingdom Only" in following text.) ☐
3. Plug the cards:
   a. Check the plugging for the modem control card (10A-A1T2) on LADS page PA004. ☐
   b. Check the plugging for the EIA/CCITT interface card (10A-A1U2) on LADS page PA004. ☐

Checkout Procedure

See "Common TP Checkout Procedure" in following text.

Step Cplt

Common TP Checkout Procedure

Before an attempt is made to establish a data link, the diskette used must be initialized on the TP frame. Follow the instructions in Volume 1 of the maintenance manual under "TP Link Frame" to initialize the ID record and the customer security level.

1. Ensure that the Activate TP switch on the console operator panel is in the off position. ☐
2. Select the TP frame on console station B. ☐
3. From the dial telephone, dial another telephone accessible to you. Answer the other telephone and leave it off the hook. ☐
4. Activate the Activate TP switch on the operator panel. ☐
5. On the TP frame, select C1, which activates 'request to send' and 'data terminal ready' to the modem. ☐

   Note: Locations (for example, Italy) utilizing the hardware configuration consisting of the integrated World Trade 38LS and line plate should ignore step 6.

6. Place the data-access arrangement in data mode. ☐
7. Check that the carrier tone can be heard on the dialed telephone. ☐
8. Reselect C1 on the TP frame. (This drops 'request to send' and 'data terminal ready'.) Ensure that the carrier tone is no longer present on the dialed telephone. ☐
9. Reset 'TP active' and hang up both telephones. Place the data-access arrangement in talk mode if applicable. ☐
10. Call your remote software and hardware support location and establish a data link. ☐

United Kingdom Only

On the modem used in the United Kingdom, the cable (part 1311368) that connects J14 to the external modem is designed with an electrical safety barrier built into the cable assembly. The 3036 is received with the barrier assembly mounted in the EMC enclosure. Attach the other end of this cable (part 1311368) to the external modem:

1. Check the card plugging:
   a. Check the plugging for the modem control card (10A-A1T2) on LADS page PA003. ☐
   b. Check the plugging for EIA/CCITT interface card (10A-A1U2) on LADS page PA003. ☐
2. See "Common TP Checkout Procedure" in preceding text. ☐

INSTALLATION PROCEDURES

Processor Functional Diagnostic Tests

Run all functional diagnostic tests at normal voltage. Refer to INST 395 and run vibration test. Return here and run functional diagnostic tests with bias. Set the margin controls to +120 mV and –90 mV on the VM frame.

Note: See the *NDM User's Guide* for more information. The functional diagnostic tests are on microfiche.

Step Cplt ☐

Run the following tests:

Test	*Description*	*Normal*	*+120 mV*	*–90 mV*
B105	BC mode interruptions	✓	✓	✓
B109	CEDA0	✓	✓	✓
B10A	CEDA1	✓	✓	✓
B10B	CEDA2	✓	✓	✓
B10C	CEDA3	✓	✓	✓
B10D	CEDA4	✓	✓	✓
B10E	CEDA5	✓	✓	✓
B10F	CEDA6	✓	✓	✓
B311	Program store compare and IPPF	✓	✓	✓
B347	Retry	✓	✓	✓
B352	Multiply	✓	✓	✓
B354	Extended precision and rounding	✓	✓	✓
B360	EC mode interruptions	✓	✓	✓
B381	Timing facilities	✓	✓	✓

If the extended addressing feature is installed, run stand-alone test B3E1 (refer to the microfiche listing). ✓

STORAGE FUNCTIONAL DIAGNOSTIC TESTS

Notes:
1. Ensure that all storage is online.
2. When making bias runs, bypass long-running routines by turning on SS19 for test 3A6, 3AA, or 3AB; SS10 for test 3CC or SS8 for test 3CF.

Step Cplt ☑

Run the following tests:

Extended Addressing Feature	*3033 Processor Test*	*Processor Model Group N Test*	*Processor Model Group S Test*	*Description*	*Normal*	*+120 mV*	*–90 mV*
B390[1]	B390	B390	B390	PSCF address translation	✓	✓	✓
B392[1]	B392	B393	B394	PSCF buffer and addressing	✓	✓	✓
B3A6[1] B3A7[1] (Above 16M bytes)	B3A6	B3AA	B3A8	FET storage	✓	See Note 2	See Note 2
B3CF[1]	B3CC	B3CC	B3CC	Storage protect	✓	See Note 2	See Note 2

[1]If Model U24 or A24 is installed, bias frame 33 simultaneously with the other frames in the processor complex as described in the charts under "Bias Frame 33."

BIAS FRAME 33

Bias frame 33 by manually adjusting the power supplies as shown in Chart 1 and by monitoring the voltage as shown in Chart 2. See INST 326 for locations.

Chart 1

Frame 33 Regulator or PS	Nominal Starting Voltage	+3% Bias	–3% Bias	Restore Nominal Voltage
PS2 PS3 PS5	+5.000 ± 0.010 V dc	+5.150	+4.850	+5.000
RG1	+1.300 ± 0.010 V dc	+1.339	+1.261	+1.300

Chart 2

Regulator or PS	Voltage ±0.01 V	Voltage Pin	Reference Pin
RG1	+1.3	33A-A436-14	33A-A436-01
PS2	+5	33A-A305-18	33A-A305-14
PS3	+5	33A-A427-18	33A-A427-14
PS5	+5	33A-A205-18	33A-A205-14

PROCESSOR SPECIAL FUNCTIONAL DIAGNOSTIC TESTS

Step Cplt ☑

Run the following tests.

Note: Ensure that the directors are in process mode.

Test	*Description*	*Normal*	*+120 mV*	*–90 mV*
B3E7[1]	DAT random	✓	✓	✓
B3E8[1]	DAT random comparer (with extended addressing feature)	✓	✓	✓
B3F2	Console processor functional diagnostic			
F4E1	Direct control—wrap system to system (requires test cable, part 2227492) Connect the cable in frame 08 tailgate, W5 to W6			
F4E3	Direct control			

[1]If Model U24 or A24 is installed, bias frame 33 simultaneously with the other frames in the processor complex as described in the charts under "Bias Frame 33."

PROCESSOR MAINTENANCE MODE DIAGNOSTIC TESTS

☑

Under control of the PT and C2 frames, run NDM functional diagnostic tests B101 through B3E7 (B101 through B3E8 with extended addressing feature) once for each function combination shown in the following chart:

Run	1	2	3	4	5	6
ECC	E	E	E	E	E	E
INT TIMER	D	E	D	D	D	E
I/E OVLAP	D	E	D	D	E	D
BUFFER	D	E	D	E	D	D
RETRY	D	E	E	D	D	D
DLAT/STOK	D	E	D	E	E	D
INTERLEAVE MODE	I	S	I	I	I	I

Run these tests as required.

Legend:
E Enabled
D Disabled
I 8-way, 4-way for Model Groups N and S
S Serial

INSTALLATION PROCEDURES

Perform the Card Vibration Test

GENERAL INSTRUCTIONS

1. The vibration test should be performed after running all diagnostic tests error free and before running the diagnostic tests with bias.
2. The minimum vibration time should be 1 minute for each board.
3. All logic and power adapter cards should be vibrated.
4. If an error is encountered during the vibration test, reseat the suspected card and revibrate all cards in the failing board.
5. If the suspected card is still vibration sensitive, replace the card and revibrate all cards in the board.
6. If possible, an I/O device should be attached to each channel. If no I/O device is available, do not vibrate the cards in the following director boards: 50W-A2, A3, B1, B2, and B3.
7. Run the selected functional diagnostic tests in hard-stop mode during the vibration tests.
8. The tool used for vibrating the cards in the 3033 complex is the felt-tipped vibration tool (part 8679242). The vibration tool is provided with the console shipping group.
9. To vibrate the cards, strike the center section of the card holder at least three times with a short crisp blow; use wrist action only. To vibrate the end cards (board positions B and U), use the handle of the vibration tool.
10. Adhere to the power-caution labels when reseating or replacing the cards.

Perform the following procedure.

CAUTION
Because electrostatic discharges can damage logic and storage card modules, touch frame ground before handling the cards.

Note: After vibrating each board, ensure that all cards are properly seated.

	Step Cplt
1. Power system: With full system power up, vibrate the power adapter cards in frames 04, 07, and 15 and in console board 11C-A1.	☐
2. Logic cards: Configure the console to the A-side and run diagnostic test B3E7 with sense switch 8 (continuous run) on; vibrate all cards in the following locations:	☐
a. Console boards 10A-A1, 10A-B1, and 10B-A1	☐
b. All cards in frames 01, 02, and 03	☐
Note: Observe general instruction 6 when vibrating the director cards.	
c. All cards in frames 05 and 06 as installed	☐
3. Console B-side: Reconfigure the console to the B-side, restart diagnostic test B3E7, and vibrate all cards in console board 10A-B1.	☐
4. Trace board: Run diagnostic test B3F8 and vibrate all cards in the trace board (03A-A1).	☐
5. 3033 AP and MP: Use the same procedure as for 3033 UP, but include all logic and power adapter cards in frame 09.	☐

Return to INST 390 and run functional diagnostic tests with bias.

INSTALLATION PROCEDURES

Gate EMC Test Plate Zap Procedure

Step Cplt

Go to INST 401 for the frame 33 zapping procedure.

DANGER
Because the simulator can develop 2.5 kV, avoid touching the vanes or probe tip while the simulator is operating.
Do not leave the simulator unattended while power is on. Turn off the power before moving the simulator to the next test position.
Do not apply simulator voltage to the equipment circuitry.

PROCEDURE

Follow the zapping procedure as described in the *Gate–EMC Test Plate: Theory of Operation and Parts Catalog,* S226-3946. To establish a run level, the system must operate error free for 3 minutes while running the B3E7 diagnostic program. Record the run/fail level and error condition on the *3033/3042 Gate–EMC Test Plate Data Sheet,* S229-3275.

DEFINITION

The minimum run level is the lowest simulator voltage level at which the system should operate error free for 3 minutes, while it is running a specific system diagnostic program.

ERROR DEFINITION

Power: Any detected fault or noise is considered to be an error. Monitor the POWER CONTROL frame so that these errors are not overlooked.

Logic: Any error encountered while running test B3E7 without retry.

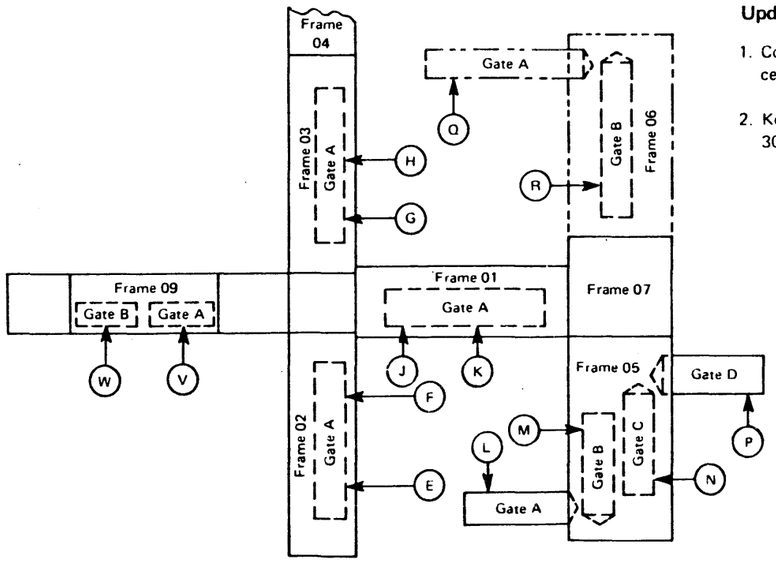
REFERENCES

- *Training Course # 57427,* SR23-4588
  EMC Simulator (Type 1) for Figure of Merit Determination
- *EMC Simulator (Type 1) Operation Manual,* SY27-0109
- *Gate–EMC Test Plate: Theory of Operation and Parts Catalog,* S226-3946

Run test B3E7 for 3 minutes at each test point. Each test point is identified by an unpainted circle or a cross-hatched circle on the EMC test plate. ☐

In addition to recording zap test data on the *3033/3042 Gate–EMC Test Plate Data Sheet,* S229-3275, record the voltage levels and the type of failure on the following chart, as part of the installation record:

Test Point	Board Location	Voltage Run	Voltage Fail	Error at Failure
(E)	C4			
(F)	A4			
(G)	A4			
(H)	C4			
(J)	D4			
(K)	B4			
(L)	A3			
(M)	B3			
(N)	B3			
(P)	A3			
(Q)	B3			
(R)	A3			
(S)	B1			
(T)	A1			
(U)	A1			
(V)	A4			
(W)	B4			



Final Test

Step Cplt

Run test B3E7 for a minimum period of 4 hours, and a maximum period of 12 hours. The test must run error free. ☐

Note: If frame 33 is installed, ensure that the processor complex is in the 2K-key mode. To permit the setting of 2K-key mode, configure storage as follows:

L00=P00	L08=P08
L02=P02	L0A=P0A
L04=P04	L0C=P0C
L06=P06	L0E=P0E

Run ST/370, OLTSEP, and OLTEP until performance is satisfactory. ☐

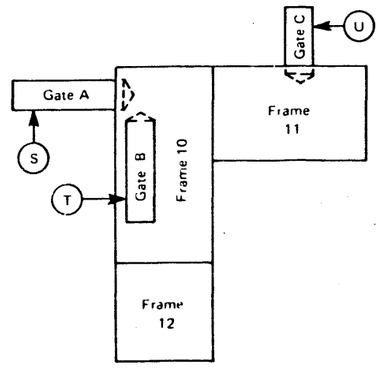
Ensure that the demineralizer is removed and that the corrosion inhibitor is added as directed on INST 200. ☐

When this machine installation is completed, initialize the MCH (machine check handler) and CCH (channel check handler) frame record format data on the SYS1.LOGREC data set to ensure proper EREP output of MCH and CCH data. ☐

Notify the customer that this system has a service record file and that the frame data needs to be placed on the SYS1.LOGREC data set by using the *IFCDIP00 Service Aid* as a guide. (See GC28-0677 for additional information.) ☐

Update Records

1. Complete all the installation records as shown in the existing procedures. ☐
2. Keep these Installation Procedures in the logic rack with the other 3033 Maintenance Library manuals. ☐



INSTALLATION PROCEDURES

Zap Test for Frame 33

DANGER

Because the simulator can develop 2.5 kV, avoid touching the vanes or probe tip while the simulator is operating.

Do not leave the simulator unattended while power is on. Turn off the power before moving the simulator to the next test position.

Do not apply simulator voltage to the equipment circuitry.

ZAP TEST PROCEDURE

1. Open or remove the covers as necessary to expose the vertical frame members for zapping test points 1, 2, and 3.
2. Set up the EMC simulator (type 1) with probe extender (part 5997540). Attach the extender to the vanes so that the probe point is 18 inches (458 mm) above the floor.
3. Zap each designated frame member while running diagnostic test 83E7, with the processor complex and directors in hard-stop mode, and with sense switch 8 set on.

   To do this, insert the probe point through the paint, perpendicular to the member surface. Run the simulator for 3 minutes at the voltage level specified on the EMC data sheet. The processor complex should run error free at that level.

Notes:

1. Consult RETAIN for the latest technical data.
2. Be sure the probe point is contacting the base metal by monitoring the simulator output, at the vanes, with an oscilloscope.

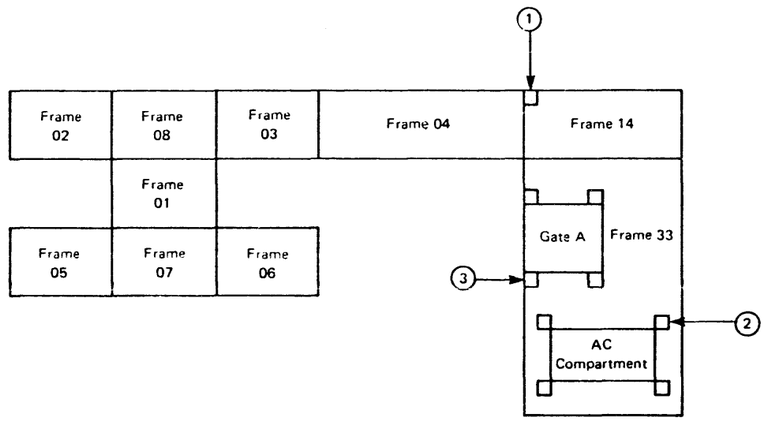
Point	Tested Level
1	
2	
3	

Step Cplt

☐

☐

☐



Part 4439508	EC No.	213562			
	Date	4Sep81			

Testing for MP

Note: If one processor has the extended addressing feature and the other does not, the extended addressing feature must be disabled (see INST 412).

POWER UP FRAME 09

Step Cplt

1. Ensure that all previously removed safety covers are reinstalled. ☐
2. Ensure that all water valves in the complex are turned on. ☐
3. Fill the CDU expansion tank with distilled water to within 4 inches (101.6 mm) from the top. ☐
4. Check all water connections for leaks. ☐
5. Have the customer turn on the 415-Hz and 60-Hz power supplies. ☐
6. Turn on the customer water supply. ☐
7. Turn the console Power Select switch to the Console position. ☐
8. Press the Power On pushbutton. ☐
9. Turn the CDU Local/Remote switch to the Local position. ☐
10. Turn the Local Pump Select switch to the A or B position. The selected pump should run. ☐
11. Check the water level. Fill the expansion tank with distilled water to 4 inches (101.6 mm) from the top. ☐
12. Check for water leaks at all connections. ☐

Note: If the corrosion inhibitor was installed on feature 5050 MES, skip to step 14. If not, continue at step 13.

13. Demineralize the system water and add the corrosion inhibitor (see INST 200). ☐
14. Return the Local Pump Select switch to the Off/Reset position. ☐
15. Return the CDU Local/Remote switch to the Remote position. ☐

TEST THE POWER-ON SEQUENCE

Step Cplt

1. Insert processor microdiagnostic diskette DIAG 1. ☐
2. Select the PC frame. ☐
3. Power up the complex, including frame 09. Select DIAG POWER ON on the PC–POWER CONTROL frame at the operator station. ☐
4. Check motor-generator output (see INST 132). ☐
5. Power down the complex. ☐
6. Install EPO cable key 3398 (see INST 172). ☐
7. Set the console Unit Emergency switch to Power Off. ☐
8. Attempt a power-on sequence on both processors. Neither processor should power up. ☐
9. Release the mechanical interlock to reset the Unit Emergency switch. ☐
10. Repeat steps 7 through 9 to test the Unit Emergency switch on the other complex. ☐
11. Power up the complex. ☐
12. Check that the Power On pushbutton is backlighted white when power is sequenced on to all the frames. ☐

ADJUST THE VOLTAGE

Adjust the board-mounted regulators on frame 09 (see INST 320). ☐

ADJUST THE TIMING

Step Cplt

Note: If the local or remote oscillators cannot be set, run PD00.

1. Plug the feature cards and set the timings using LADS section 6.12. ☐
2. Run diagnostic test PD00 on processor microdiagnostic diskette P3 in UP mode. ☐

RUN THE DIAGNOSTIC TESTS IN UNIPROCESSOR MODE

1. Perform an IMPL with the customer diskette. If the other processor is not installed or powered down, key in X in response to the prompting message which appears on the NS console. ☐
2. Select the C2 frame on the NS console. ☐
3. Configure the system according to the following chart: ☐

Function	*Indication*
SYSTEM MODE SELECT	UP MODE
LOCAL PROC-MCU	ENABLED
OSCILLATOR CONTROL	LOCAL MODE
CNSL COMMUNICATION	DISABLED
MCU/MCU COMM PATH	DISABLED

Storage on the local processor should be configured as follows.

Note: The remote array will appear blanked if the remote processor is powered down or not installed. The following example is for a 16M-byte processor. If fewer than 16M bytes are installed, the maximum storage size will appear.

Part	EC No.	388692	388707	208332	213791	214694
8271684	Date	10Aug79	1Dec79	1Mar80	28Aug81	9Apr82

Testing for MP (Continued)

Local Array Processor 1 (or 0) Current Build	*Remote Array Processor 0 (or 1)*
L00=PL0	L00=PR0
L02=PL2	L02=PR2
L04=PL4	L04=PR4
L06=PL6	L06=PR6
L08=PL8	L08=PR8
L0A=PLA	L0A=PRA
L0C=PLC	L0C=PRC
L0E=PLE	L0E=PRE
With extended addressing feature:	
L10=PI	L10=PI
L12=PI	L12=PI
L14=PI	L14=PI
L16=PI	L16=PI
L18=PI	L18=PI
L1A=PI	L1A=PI
L1C=PI	L1C=PI
L1E=PI	L1E=PI

If storage must be configured, key in M1, configure to the above chart, and press the A key in response to A–ACTIVATE. System mode should appear as valid.

Step Cplt

1. Run the channel microdiagnostic test on all channels attached to the local processor (see INST 380). ☐
2. Run all microdiagnostic tests (see INST 380). ☐
3. Run the IMPL test (see INST 380). ☐
4. Run the hardcore tests using NDM (see INST 380). ☐
5. Run the functional tests (see INST 390) and the card vibration test (see INST 395). ☐

If you are installing a half-duplex MP, skip to "Run the Diagnostic Tests with Bias." If not, continue.

6. Repeat steps 1 through 4 using the other processor as the local processor. ☐

RUN THE DIAGNOSTIC TESTS FOR MP (CROSS-CONFIGURED)

Configure the MP complex to UP mode (cross-configured) as follows:

1. Select the C2 frame on the NS console of both processors. ☐
2. Select OSCILLATOR CONTROL 02 (local side system oscillator) on one processor. ☐
3. Ensure that the following are enabled: ☐
   MCU MCU COMM PATH
   REMOTE PROC-MCU
   LOCAL PROC-MCU
   CNSL COMMUNICATION
4. Key M1, and then configure storage as follows: ☐

Note: The following example is for two 16M-byte processors. If less storage is installed, configure to the maximum storage size:

Local Array Processor 1 (or 0) Current Build	*Remote Array Processor 0 (or 1) Current Build*
L0=PR0	L0=PL0
L2=PL2	L2=PR2
L4=PR4	L4=PL4
L6=PL6	L6=PR6
L8=PR8	L8=PL8
LA=PLA	LA=PRA
LC=PRC	LC=PLC
LE=PLE	LE=PRE
With extended addressing feature:	
L10=PI	L10=PI
L12=PI	L12=PI
L14=PI	L14=PI
L16=PI	L16=PI
L18=PI	L18=PI
L1A=PI	L1A=PI
L1C=PI	L1C=PI
L1E=PI	L1E=PI

Step Cplt

1. After entering the above, press the X key to enter the configuration. The system mode select should appear VALID, and UP MODE CROSS-CONFIGURED. ☐
2. Run all microdiagnostic tests (see INST 380). ☐
3. Run the IMPL test (see INST 380). ☐
4. Run the hardcore tests using NDM (see INST 380). ☐
5. Run the functional tests (see INST 390). ☐

RUN THE DIAGNOSTIC TESTS IN MULTIPROCESSOR MODE

1. Configure the processor complex to MP mode as follows: ☐
   a. Select the C2 frame on the NS console of both processors.
   b. Key in S2 (MP MODE) on one console.
   c. Configure storage as follows (the example is for a 16M-byte storage size):

Local Array Processor 1 (or 0) Current Build	*Remote Array Processor 0 (or 1) Current Build*
L00=PR0	L00=PR0
L02=PL2	L02=PL2
L04=PR4	L04=PR4
L06=PL6	L06=PL6
L08=PR8	L08=PR8
L0A=PLA	L0A=PLA
L0C=PRC	L0C=PRC
L0E=PLE	L0E=PLE
With extended addressing feature:	
L10=PL0	L10=PL0
L12=PR2	L12=PR2
L14=PL4	L14=PL4
L16=PR6	L16=PR6
L18=PL8	L18=PL8
L1A=PRA	L1A=PRA
L1C=PLC	L1C=PLC
L1E=PRE	L1E=PRE

Testing for MP (Continued)

Step Cplt

2. Press the A key to activate the configuration. ☐

3. Run the following MP functional diagnostic tests on processor 0 with processor 1 quiesced. (To quiesce, perform a system reset from the PT frame.) ☐

   Load MP functional diagnostic tests B3E9 through B3F0 and set DM sense switch 24 on.

   MP Functional Diagnostic Tests
   B3E9
   B3EA
   B3EB
   B3EC
   B3ED
   B3F0

RUN THE DIAGNOSTIC TESTS WITH BIAS

1. Set the marginal controls on the VM frame to +120 mV and −90 mV. (Refer to the *NDM User's Guide* for automatic bias/slue options.) ☐

2. Run the previous MP functional diagnostic tests on both processors with bias, processor 1 quiesced, and then run the tests on processor 1 with processor 0 quiesced. ☐

REVIEW

Review all the work flow charts to ensure that all required steps were completed. ☐

Disable the Extended Addressing Feature

3033 PROCESSOR AND 3042 ATTACHED PROCESSOR

Note: Perform the following steps on the side of an AP/MP processor complex that has the extended addressing feature installed.

Step Cplt

1. Unplug the extended addressing feature from rail 427 using LADS page A6012 as a guide. ☐

2. Relocate the tri-lead cable ends according to the following chart: ☐

From	*To*
02A-B2P3B10	02A-B3R4B12
02A-B3R4B12	02A-B1D2D10
02A-C1Q4B11	02A-C1M5D12

3. Add the following tri-leads: ☐

Part	*From*	*To*	*Net*
817007	01A-C3J5D09	01A-C3C4B07	FE303BK1
817003	03A-A3H3D06	03A-A3J5B05	FE253BH6 (Does not apply to 3042)

ADDITIONAL STEPS FOR THE 3042 ATTACHED PROCESSOR ONLY

1. Plug the following configuration: ☐

Card	*Plug*
01A-C3P2	X23 to Y23
	123 to 223
01A-C2K2	350 to 351

2. Disable the 24M-byte feature indicators as follows: ☐

Card	*Plug*
01A-B3S2	109 to Z09

Enable the Extended Addressing Feature

3033 PROCESSOR AND 3042 ATTACHED PROCESSOR

Step Cplt

1. Plug rail 427 (extended addressing feature) using LADS page A6012 as a guide. ☐

2. Relocate the tri-lead cable ends according to the following chart: ☐

From	*To*
02A-B1D2D10	02A-B3R4B12
02A-B3R4B12	02A-B2P3B10
02A-C1M5D12	02A-C1Q4B11

3. Delete the following tri-leads: ☐

From	*To*	*Net*
01A-C3J5D09	01A-C3C4B07	FE303BK1
03A-A3H3D06	03A-A3J5B05	FE253BH6 (Does not apply to 3042)

ADDITIONAL STEPS FOR THE 3042 ATTACHED PROCESSOR ONLY

1. Plug the 3042 as required for your processor complex configuration using LADS page A6014 as a guide. ☐

Testing for AP

Note: If one processor has the extended addressing feature and the other does not, the extended addressing feature must be disabled (see INST 412).

POWER UP FRAME 09

Step Cplt

1. Ensure that all previously removed safety covers are reinstalled. ☐
2. Ensure that all water valves in the complex are turned on. ☐
3. Fill the CDU expansion tank with distilled water to within 4 inches (101.6 mm) from the top. ☐
4. Check all water connections for leaks. ☐
5. Have the customer turn on the 415-Hz and 60-Hz power supplies. ☐
6. Turn on the customer water supply. ☐
7. Turn the console Power Select switch to the Console position. ☐
8. Press the Power On pushbutton. ☐
9. Turn the CDU Local/Remote switch to the Local position. ☐
10. Turn the Local Pump Select switch to the A or B position. The selected pump should run. ☐
11. Check the water level. Fill the expansion tank with distilled water to 4 inches (101.6 mm) from the top. ☐
12. Check for water leaks at all connections. ☐

Note: If the corrosion inhibitor was installed on feature 5050 MES, skip to step 14. If not, continue at step 13.

13. Demineralize the system water and add the corrosion inhibitor (see INST 200). ☐
14. Return the Local Pump Select switch to the Off/Reset position. ☐
15. Return the CDU Local/Remote switch to the Remote position. ☐

TEST THE POWER-ON SEQUENCE

Step Cplt

1. Insert processor microdiagnostic diskette DIAG 1. ☐
2. Select the PC frame. ☐
3. Power up the complex, including frame 09. Select DIAG POWER ON on the PC–POWER CONTROL frame at the operator station. ☐
4. Check motor-generator output (see INST 132). ☐
5. Power down the complex. ☐
6. Install EPO cable key 3398 (see INST 172). ☐
7. Set the console Unit Emergency switch to Power Off. ☐
8. Attempt a power-on sequence on both processors. Neither processor should power up. ☐
9. Release the mechanical interlock to reset the Unit Emergency switch. ☐
10. Repeat steps 7 through 9 to test the Unit Emergency switch on the other complex. ☐
11. Power up the complex. ☐
12. Check that the Power On pushbutton is backlighted white when power is sequenced on to all the frames. ☐

ADJUST THE VOLTAGE

Adjust the board-mounted regulators on frame 09 (see INST 320). ☐

ADJUST THE TIMING

Note: If the local or remote oscillators cannot be set, run PD00.

1. Plug the feature cards and set the timings using LADS section 6.12. ☐
2. Run diagnostic test PD00 on processor microdiagnostic diskette P3 in UP mode. ☐

RUN THE DIAGNOSTIC TESTS IN UNIPROCESSOR MODE

Step Cplt

1. Perform an IMPL with the customer diskette. If the other processor is not installed or powered down, key in X in response to the prompting message which appears on the NS console. ☐
2. Select the C2 frame on the NS console. ☐
3. Configure the system according to the following chart: ☐

Function	*Indication*
SYSTEM MODE SELECT	UP MODE
LOCAL PROC-MCU	ENABLED
OSCILLATOR CONTROL	LOCAL MODE
CNSL COMMUNICATION	DISABLED
MCU/MCU COMM PATH	DISABLED

Storage on the local processor should be configured as follows.

Note: The remote array will appear blanked if the remote processor is powered down or not installed. The following example is for a 24M-byte processor. If fewer than 24M bytes are installed, the maximum storage size will appear.

3033	*3042*
Local Array	*Remote Array*
Processor 1 (or 0)	*Processor 0 (or 1)*
Current Build	*Current Build*
L00=P00	L00=PI
L02=P02	L02=PI
L04=P04	L04=PI
L06=P06	L06=PI
L08=P08	L08=PI
L0A=P0A	L0A=PI
L0C=P0C	L0C=PI
L0E=P0E	L0E=PI
With extended addressing feature:	
L10=P10	L10=PI
L12=P12	L12=PI
L14=P14	L14=PI
L16=P16	L16=PI
L18=PI	L18=PI
L1A=PI	L1A=PI
L1C=PI	L1C=PI
L1E=PI	L1E=PI

Part	EC No.	388707	208332	213791	213562	214694
8271691	Date	1Dec79	1Mar80	28Aug81	4Sep81	9Apr82

Testing for AP (Continued)

Note: If a 3042 Model 2 is being tested, cross-configure 2M bytes of the customer's unused storage in UP mode and perform steps 1 through 5.

If storage must be configured, key in M1, configure to the above chart, and press the A key in response to A–ACTIVATE. System mode should appear as valid.

1. Run the channel microdiagnostic test on all channels attached to the local processor (see INST 380).
2. Run all microdiagnostic tests (see INST 380).
3. Run the IMPL test (see INST 380).
4. Run the hardcore tests using NDM (see INST 380).
5. Run the functional tests, including the MP functional diagnostic test B3E9 (see INST 390), and the card vibration test (see INST 395).

If you are installing a half-duplex AP, skip to "Run the Diagnostic Tests with Bias." If not, continue.

6. Repeat steps 1 through 4 using the other processor as the local processor.

RUN THE DIAGNOSTIC TESTS IN MULTIPROCESSOR MODE

Configure the AP complex to MP mode as follows:

1. Select the C2 frame on the NS console of both processors.
2. Select OSCILLATOR CONTROL 02 (local side system oscillator) on one processor.

   Skip to step 6 if installing a 3042 Model 2. If not, continue.

3. Select the C2 frame and key in C2 to reverse the channels; then, perform a system reset.
4. Ensure that the following are enabled:

   MCU-MCU COMM PATH
   REMOTE PROC-MCU
   LOCAL PROC-MCU
   CNSL COMMUNICATION

5. Select the MP frame and ensure RCS CONN TO LPU, to indicate that the channels are reversed.

Step Cplt

6. Key M1, and then configure storage as follows:

   Note: The following example is for a 24M-byte processor. If less storage is installed, configure to the maximum storage size:

3042 *Local Array* *Processor 1 (or 0)*	*3033* *Remote Array* *Processor 0 (or 1)*
Current Build	*Current Build*
L00=P00	L00=P00
L02=P02	L02=P02
L04=P04	L04=P04
L06=P06	L06=P06
L08=P08	L08=P08
L0A=P0A	L0A=P0A
L0C=P0C	L0C=P0C
L0E=P0E	L0E=P0E
With extended addressing feature:	
L10=P10	L10=P10
L12=P12	L12=P12
L14=P14	L14=P14
L16=P16	L16=P16
L18=PI	L18=PI
L1A=PI	L1A=PI
L1C=PI	L1C=PI
L1E=PI	L1E=PI

7. After entering the above, press the X or A key to enter the configuration.

   The system mode select should appear VALID and MP MODE.

8. Run the channel microdiagnostic test on all channels attached to the local processor (see INST 380) if installing a 3042 Model 2. If not, skip to step 9.
9. Run all microdiagnostic tests (see INST 380).
10. Run the IMPL test (see INST 380).
11. Run the hardcore tests using NDM (see INST 380).
12. Run the functional tests (see INST 390).

Step Cplt

13. Run the following MP functional diagnostic tests on the attached processor with the 3033 Processor quiesced. (To quiesce, perform a processor reset from the PT frame.)

    Load MP functional diagnostic tests B3E9 through B3F0 and set DM sense switch 24 on.

MP Functional Diagnostic Tests
B3E9
B3EA
B3EB
B3EC
B3ED
B3F0

RUN THE DIAGNOSTIC TESTS WITH BIAS

1. Set the marginal controls on the VM frame to +120 mV and −90 mV. (Refer to the *NDM User's Guide* for automatic bias/slue options.)
2. Run the previous MP functional diagnostic tests on both processors with bias.

REVIEW

Review all the work flow charts to ensure that all required steps were completed.

RELOCATION/REMOVAL PROCEDURES

Preparation for Reshipment

Use the following procedure to reship the 3033 Processor Models U, M, and A; the 3033 Processor Model Groups N and S, the 3036 Console; the 3037 Power and Coolant Distribution Unit; the 3038 Multiprocessor Communication Unit; and the 3042 Attached Processor.

Note: Allow 24 hours for system water demineralization.

DANGER
If frames 01, 02, 03, 04, 09, 11, and 12 are not supported or bolted together or on outriggers, they may tip over if side pressure is used.

CAUTION

Use pressurized gas to drain the coolant because the machines could be exposed to freezing temperatures during storage or transit.

Fasten all the cables so that they do not extend beyond the outer edge of the frames. When storing and fastening the cables, for example, power cables and coaxial cables, fasten them so that they will not be damaged by other parts of the machine during shipment.

Ship all manuals for the complex in the cable cartons provided in the packing group.

During disassembly, put all nuts, bolts, and washers in their associated slots in the tray pack.

ITEMS REQUIRED

Compressed nitrogen cylinder assembly (part 5476490)
Shipping group that was received with the complex:
- Casters
- Outriggers
- Tray packs
- Tri-lead connector shipping brackets

Packing group B/M (see the chart)
Three-step stepladder
Pail
Corrosion inhibitor (part 1835426)
Filter assembly (part 1840738)
Adapter (part 2565739)
Cartridge (part 8818213)

COOLANT BACKFLUSHING

Before the complex is powered down, perform the following steps:

Step Cplt

1. ☐ Add corrosion inhibitor (part 1835426). See INST 200 for the procedure.
2. ☐ Backflush all flow loops for 30 minutes. For the backflush procedure, see MM Volume 2, "Obstructed Flow Loop—Backflushing," Chapter 7.

Note: For a significant time savings, backflush all eight flow loops simultaneously.

The following parts are required to backflush all flow loops simultaneously:

Part	*Quantity*
Filter assembly, 1840738	8
Adapter, 2565739	8
Cartridge, 8818213	8

DEMINERALIZE SYSTEM WATER

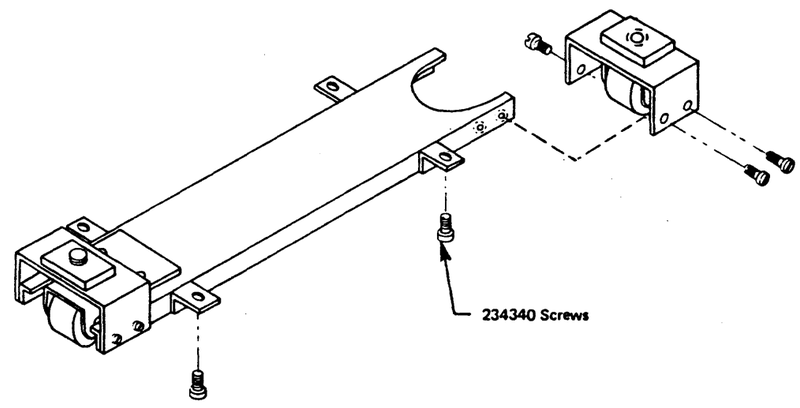
Demineralization of system water requires 24 hours.

Step Cplt

1. ☐ Demineralize the system water. See INST 200 for the procedure.
2. ☐ Seal the used cartridge in a plastic bag (purchased locally) and discard.

CABLE CONNECTORS

When the external cables are disconnected during physical disassembly, protect the cable connectors by wrapping them in cushioning material; then tape the cushioning material around the connectors and fasten the tape to the cables.



Two Outriggers (Part 4872905)

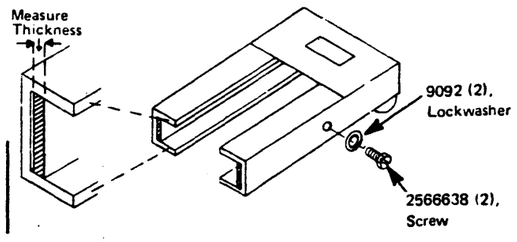
Packing Group B/M Chart

Frame	Padded Van B/M	Airfreight B/M
3033 Processor 01, 02, 03, 04, 05, 07, and 08	7331309	7331310
3033 Processor Model Groups N and S 01, 02, 03, 04, 05, 07, 08	7331309	7331310
3036 Console 10 and 12 (attached)	7331319	7331320
3036 Console		
10	7331313	7331314
11	7331315	7331316
12	7331317	7331318
3037 Power and Coolant Distribution Unit 15 and 16	7331321	7331322
3033 Processor 06 (feature)	7331311	7331312
3038 Multiprocessor Communication Unit 09 (feature)	7331398	7331399
3042 Attached Processor 01, 02, 03, 08	7331309	7331310
3033 Processor Models U24 and A24 14 and 33	7331429	None

OUTRIGGERS

Examine the outriggers for frames 01, 02, 03, and 04. If the outriggers are part 5609853 (see the figure, on this page), measure as follows: Measure the thickness of the bar in the channel of an outrigger. If the bar is 0.25 inch (6.35 mm) thick, it is correct. If the bar is 0.120 inch (3.04 mm) thick, order B/M 5657796 which supplies four outriggers and mounting hardware for one frame.

Two types of outriggers may be installed on frames 01-04: Two outriggers (part 4872905) are installed on the bottom of each frame, or four outriggers (part 5609853) are installed on the bottom of each frame. Install the outriggers with the parts shown in the figures.



Four Outriggers (Part 5609853)

RELOCATION/REMOVAL PROCEDURES

TURN OFF THE SYSTEM POWER AND THE CUSTOMER WATER SUPPLY

Step Cplt

1. Turn off the system power. ☐
2. Ask the customer to turn off the 415-Hz and 50/60-Hz power at the wall circuit breakers and to disconnect the power cables at frame 15. ☐
3. Ask the customer to turn off the water supply to frame 16 and to disconnect the water hoses. ☐

DRAIN THE WATER FROM THE PROCESSOR COMPLEX

Frame 16 holds approximately 7 gallons (26.5 dm^3) of water, and each flow loop in frame 15 and the processor holds approximately 1 gallon (3.8 dm^3) of water.

To drain the water from any portion of the processor complex:

1. Isolate that portion from the rest of the processor complex (close the valves). ☐
2. Vent a high point in that portion to the atmosphere. ☐
3. Connect a drain hose to that portion and collect the drained water. ☐
4. Use pressurized nitrogen (40 to 60 psi [2.8 to 4.2 kgf/cm^2]) at the vents to remove any remaining water. Use pressure source (part 5476490). ☐

Drain the Water from Frame 15

A 1. Connect a drain hose to the quick-connect socket on the valve block at the top center of frame 15. This hose serves as an air vent. ☐

B 2. Connect a drain hose and collect the water at the quick-connect socket in the cable compartment on frame 15. ☐

3. Connect the pressure source, as needed, to remove any remaining water. ☐

Drain the System Water from Frame 16

Step Cplt

Frame 16 holds approximately 7 gallons (26.5 dm^3) of water. To drain the water:

C 1. Disconnect all the external hoses from the supply and return manifolds on frame 16. Collect and discard the water. ☐

2. Open all the valves. ☐

D 3. Connect the vent hose to the top of the heat exchanger. ☐

4. Connect a drain hose to the bottom male quick-connect socket on the supply manifold. Collect and discard the water. ☐

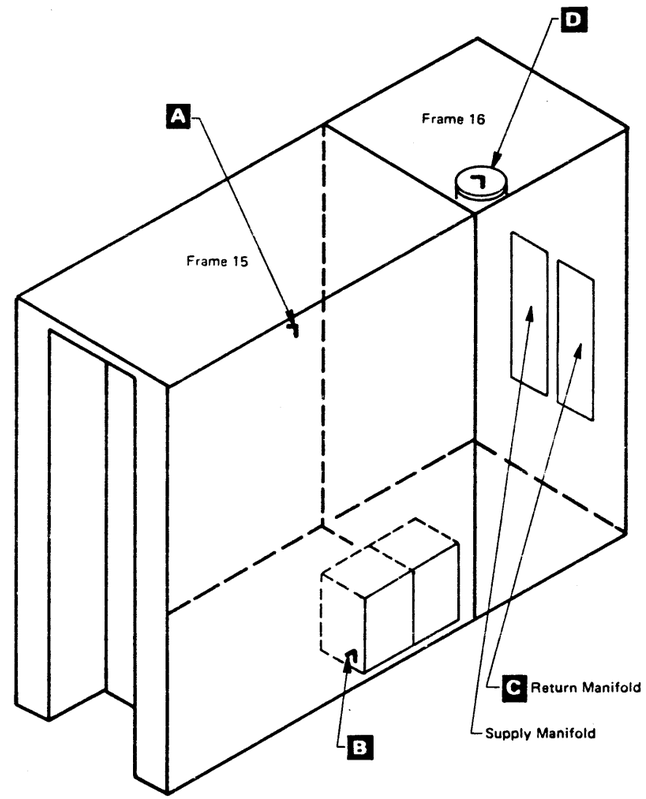
E 5. Connect a drain hose to the socket on each check valve (above the pumps). Collect and discard the water. ☐

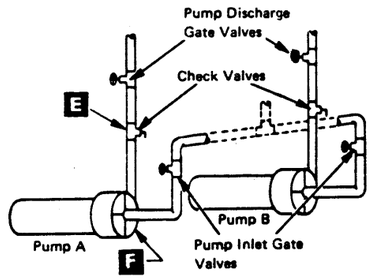
6. Connect a drain hose to the socket on each pump. Collect and discard the water. ☐

F 7. Attach the pressure source to the vent-tube opening and repeat steps 4-6 until all the water is drained. ☐

Drain the Customer Water from Frame 16

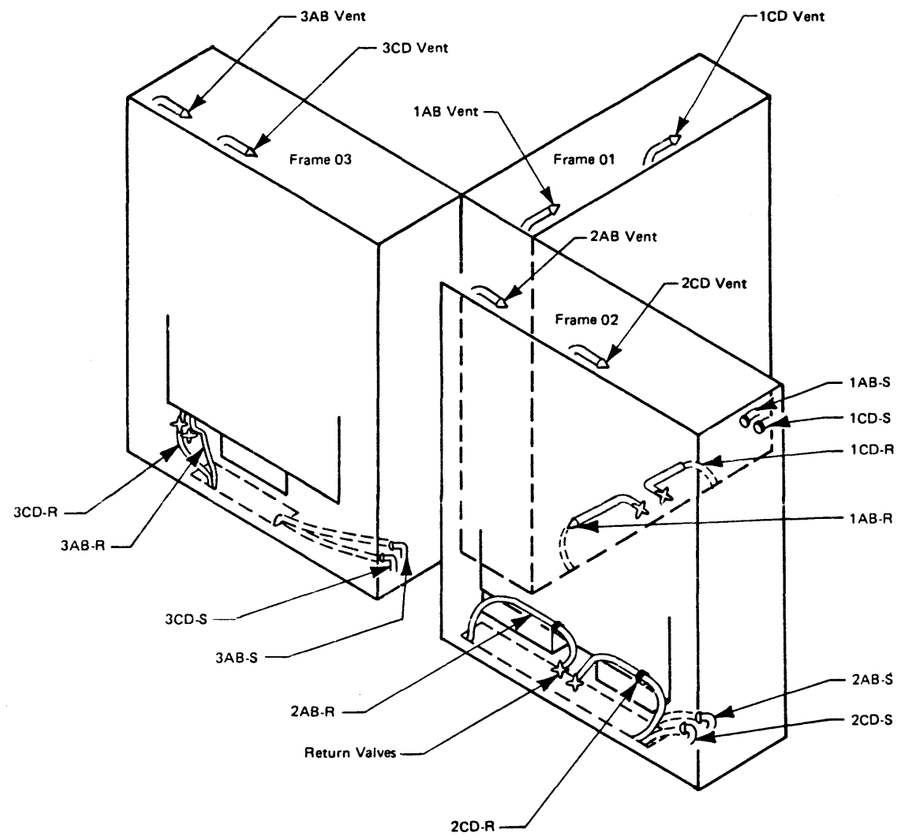
1. Connect a drain hose to the customer supply and return lines on frame 16. ☐
2. Connect the pressure source to the top bleed quick-connect socket on the end of the heat exchanger. ☐
3. Use pressure, as needed, and collect the water. Draining is now complete for frame 16. ☐





Drain the Water from Frames 01-03

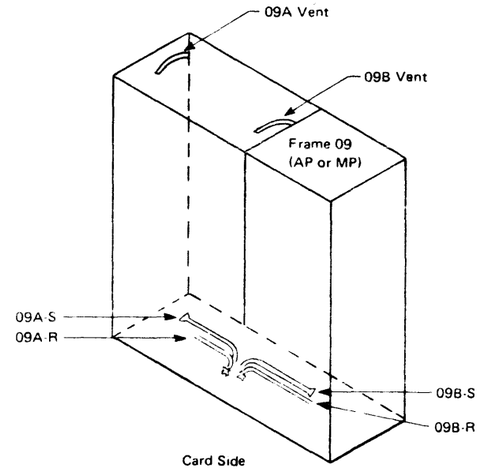
	Step Cplt
1. Disconnect the supply and return hoses below each frame: a. To drain regulator columns A and B (labeled AB on the figure) and the top two heat exchangers, disconnect the supply and return hoses labeled AB. b. To drain regulator columns C and D (labeled CD on the figure) and the bottom two heat exchangers, disconnect the supply and return hoses labeled CD.	☐
2. Vent the high point of the flow loop to the atmosphere by connecting an air-bleed hose to the drain vent (labeled AB or CD on the figure) at the top of each frame.	☐
3. With the valve open, drain the frames by attaching drain hoses to the supply and return connections on each frame (labeled AB or CD on the figure; the one that is vented).	☐
4. Allow the water to drain from each side of each frame.	☐
5. Remove the hose from the vent and connect the pressure source in its place. Use pressure, as needed, to remove any remaining water; then remove the pressure source. Draining is now complete for frames 01-03.	☐



Drain the Water from Frame 09

Step Cplt

1. Disconnect the supply and return hoses below from frame 09:
   a. To drain regulator column A (labeled 09A on the figure) and the top two heat exchangers, disconnect the supply and return hoses labeled 09A.
   b. To drain regulator column B (labeled 09B on the figure) and the bottom two heat exchangers, disconnect the supply and return hoses labeled 09B.
2. Vent the high point of the flow loop to the atmosphere by connecting an air-bleed hose to the drain vent (labeled 09A or 09B on the figure) at the top of each frame.
3. With the valve open, drain the frames by attaching drain hoses to the supply and return connections on each frame (labeled 09A or 09B on the figure; the one that is vented).
4. Allow the water to drain from each side of each frame.
5. Remove the hose from the vent and connect the pressure source in its place. Use pressure, as needed, to remove any remaining water; then remove the pressure source. Draining is now complete for frame 09.



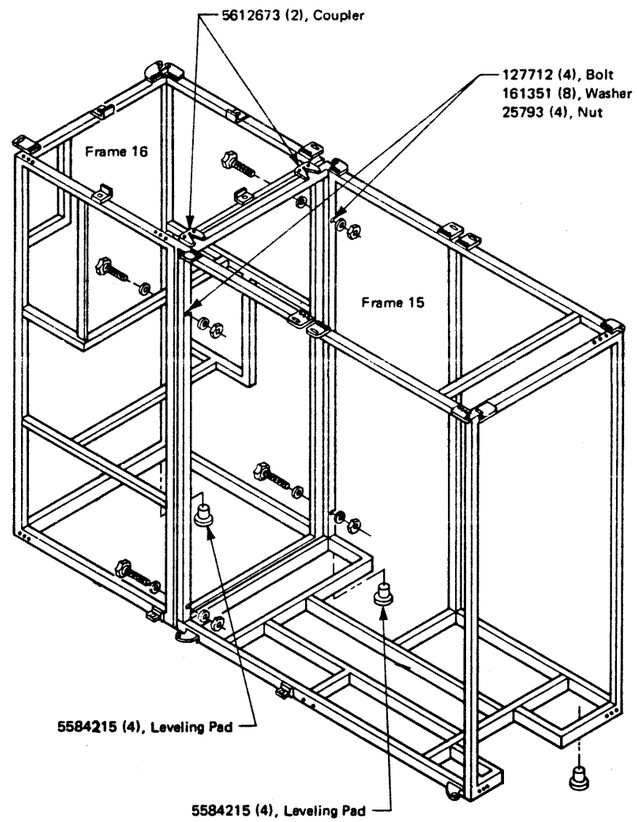
Part	EC No.				
8271693	Date	388707 1Dec79			

DISCONNECT THE PROCESSOR AND THE POWER AND COOLANT DISTRIBUTION UNIT

Step Cplt

Disconnect Frames 15 and 16

1. Disconnect all the external cables. ☐
2. Roll the power cable and tape it inside the opening for the supply and return hoses. ☐
3. Lower frames 15 and 16 onto the casters and remove the leveling pads. ☐
4. Physically disconnect frame 15 from frame 16 as shown in the figure. ☐



RELOCATION/REMOVAL PROCEDURES

Disconnect Frame 04 Having B/M 4400900

Step Cplt

This page applies to frame 04 having B/M 4400900. See REMOV 51 for frame 04 having B/M 8261501, B/M 8261502, or B/M 5867725 (Model Group S).

1. Disconnect the external cables. Store the cables in the floor opening. ☐

A 2. Disconnect the power jumper cables from the frame 03 bus bars as shown in the figure. Replace the screws and washers in the same bus bar from which they were removed. Coil and store the cables in frame 04. ☐

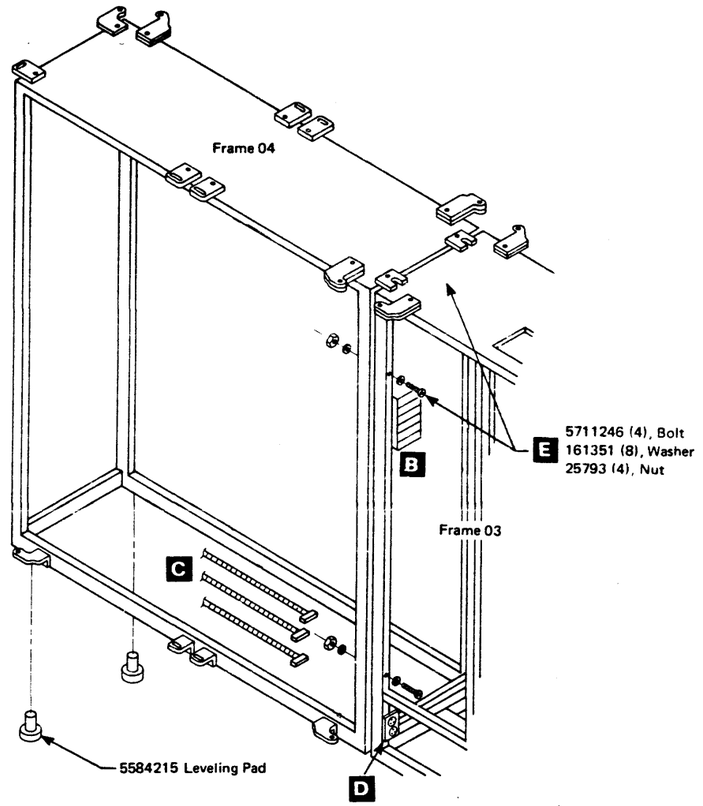
B 3. Remove the cables from the J12-to-J26-adapter connector blocks on the frame 04 interface tailgate. Protect the connectors and store them in frame 03. ☐

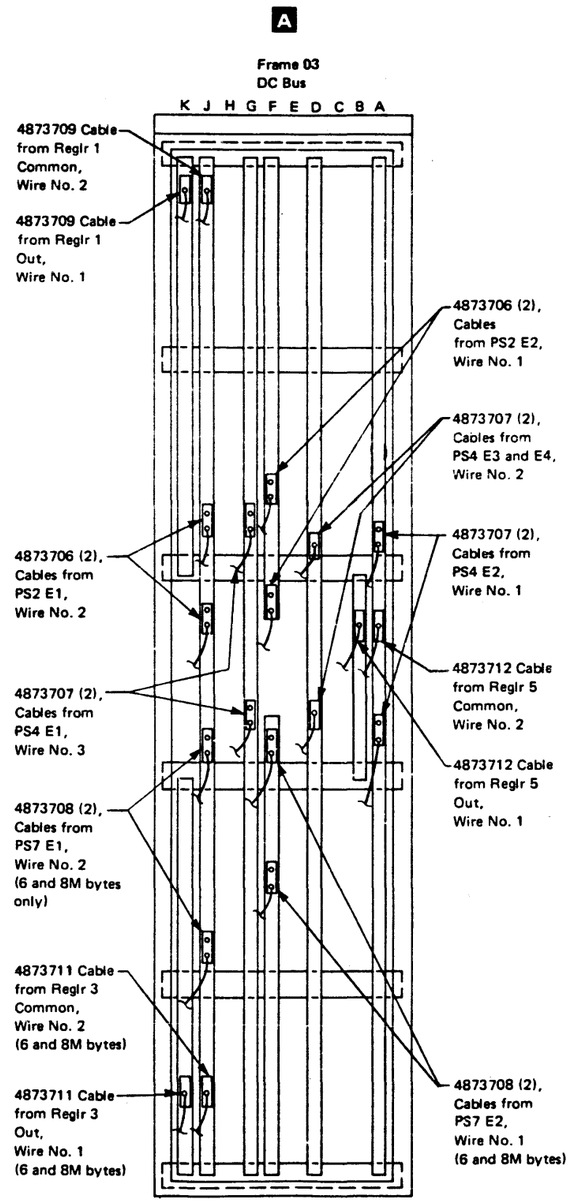
C 4. Disconnect the blower cables between frames 03 and 04. Coil and store the cables inside their respective frames. ☐

D 5. Disconnect the convenience outlet cable in the bottom of frame 04. Coil and store the cable inside frame 03. ☐

6. Install the outriggers on frames 03 and 04. Remove the leveling pads (if installed), and lower the frames onto the casters. ☐

E 7. Physically disconnect frame 04 from frame 03 as shown in the figure. ☐





Part 8271646	EC No.	276474	278357	279895	211786
	Date	20Jan78	19Jul78	26Jan79	5Jan81

RELOCATION/REMOVAL PROCEDURES

Disconnect Frame 04 Having B/M 8261501, B/M 8261502, or B/M 5867725 (Model Group S)

This page applies to frame 04 having B/M 8261501, B/M 8261502, or B/M 5867725 (Model Group S).

Step Cplt

1. Disconnect the external cables. Store the cables in the floor opening. ☐

A 2. Disconnect the power jumper cables from the frame 03 bus bars as shown in the figure. Replace the screws and washers in the same bus bar from which they were removed. Remove the connectors from J20 and J21. Coil and store the cables in frame 04. ☐

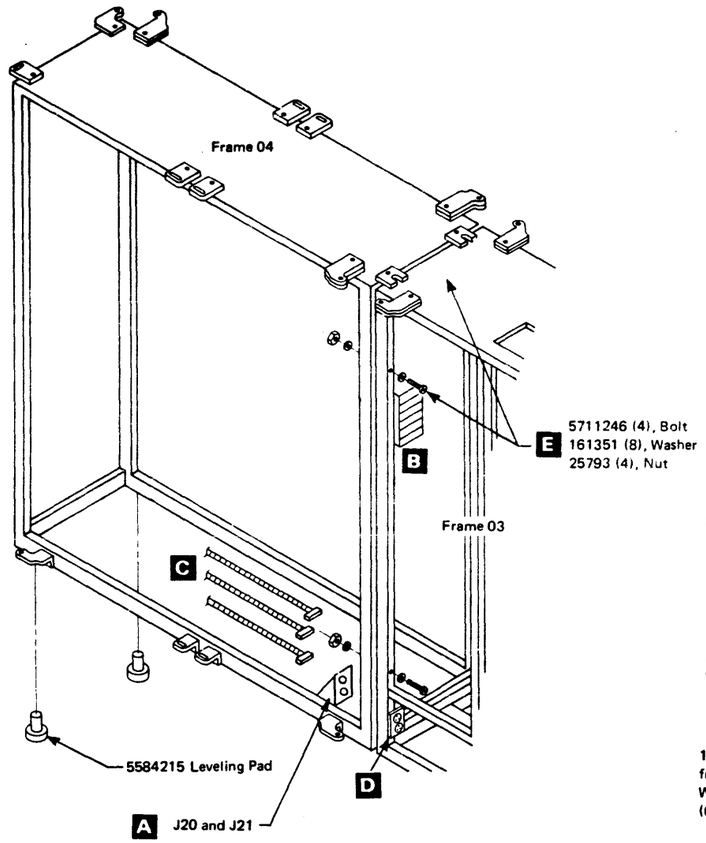
B 3. Remove the cables from the G12-to-G27-adapter connector blocks on the frame 04 interface tailgate. Protect the connectors and store them in frame 03. ☐

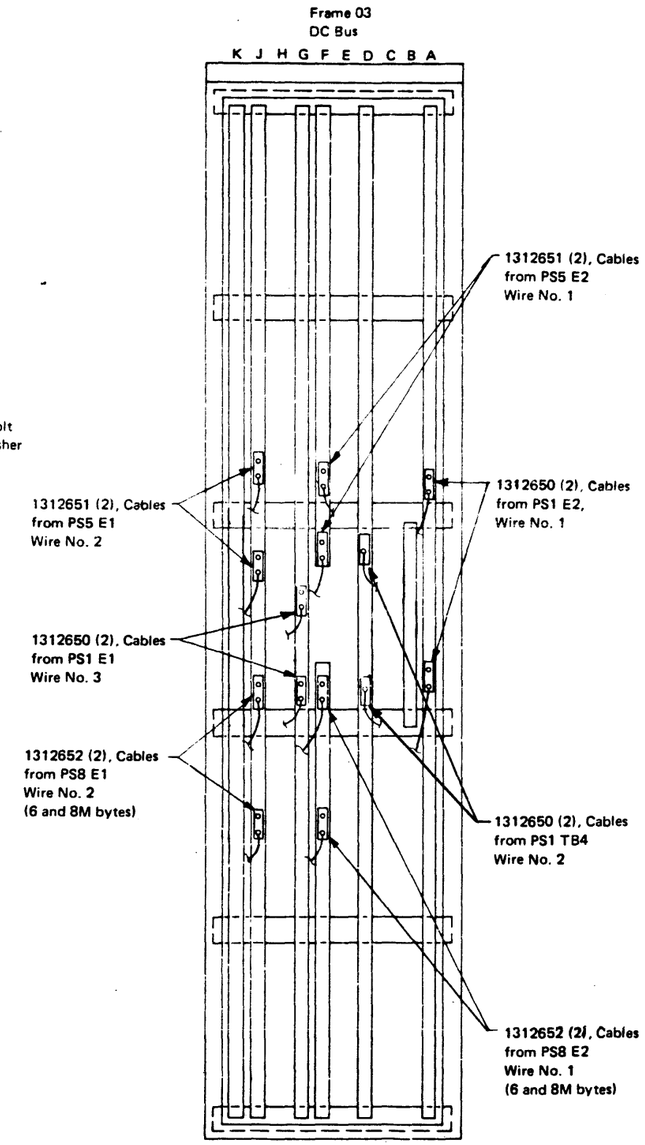
C 4. Disconnect the blower cables between frames 03 and 04. Coil and store the cables inside their respective frames. ☐

D 5. Disconnect the convenience outlet cable in the bottom of frame 04. Coil and store the cable inside frame 03. ☐

6. Install the outriggers on frames 03 and 04. Remove the leveling pads (if installed), and lower the frames onto the casters. ☐

E 7. Physically disconnect frame 04 from frame 03 as shown in the figure. ☐





Part	EC No.	278357	279895	211786	
8271669	Date	19Jul78	26Jan79	5Jan81	

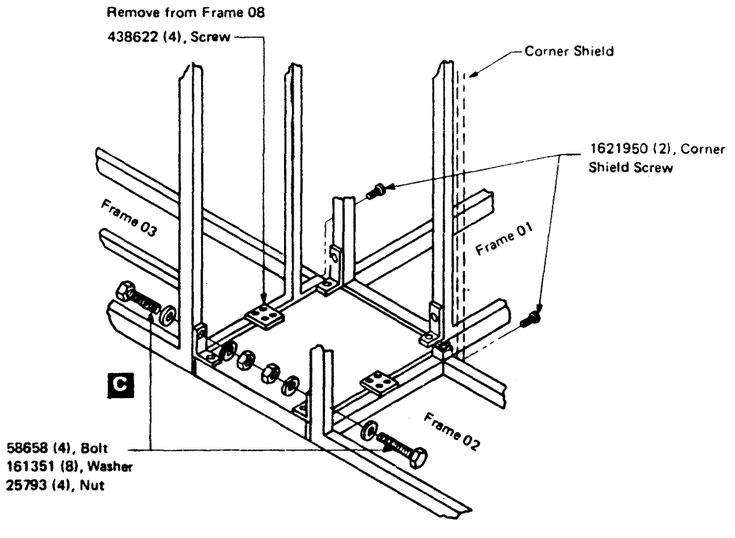
RELOCATION/REMOVAL PROCEDURES

Disconnect Frames 02, 03, and 08

	Step Cplt
1. Disconnect the external cables from frames 02 and 03. Store the cables under the floor.	☐
2. Disconnect the external cables at tailgate W on frame 08.	☐
3. Get the tri-lead connector shipping brackets (part 7331308) from the shipping group that was received with the processor. Attach the tri-lead shipping brackets to frames 01 and 02 with tape. *Note:* The brackets may be permanently mounted.	☐
4. Disconnect the tri-lead connectors from frames 01-03. Connect the tri-lead connectors to the shipping brackets on each frame. Do not tangle the wires.	☐
5. Disconnect the convenience outlet cable in the bottom of frame 03. Coil and store the cable in frame 02.	☐
A 6. Disconnect the console processor probe and scope assembly from frame 03. See the chart.	☐
B 7. Disconnect the cable assembly from the top of frame 03 and tape the cable assembly to gate A (pin side, upper left corner) of frame 01. Tighten the screws.	☐
8. Disconnect the bottom blower cables from the blowers in frames 01 and 02. Coil and store the cables in frame 03.	☐
9. Disconnect the upper blower cables from the blowers in frames 01-03. Coil and store the cables in their respective frames.	☐
10. Install the outriggers on frames 01 and 02. Remove the leveling pads (if installed), and lower the frames onto the casters.	☐
C 11. Physically disconnect frame 03 from frame 08 as shown in the figure.	☐
12. Roll frame 03 away and disconnect the top and bottom of frame 08 from frames 01 and 02.	☐

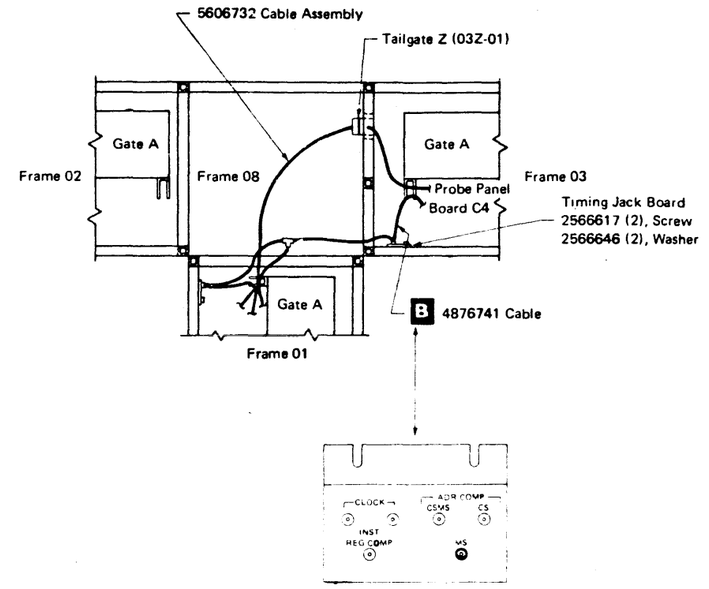
A

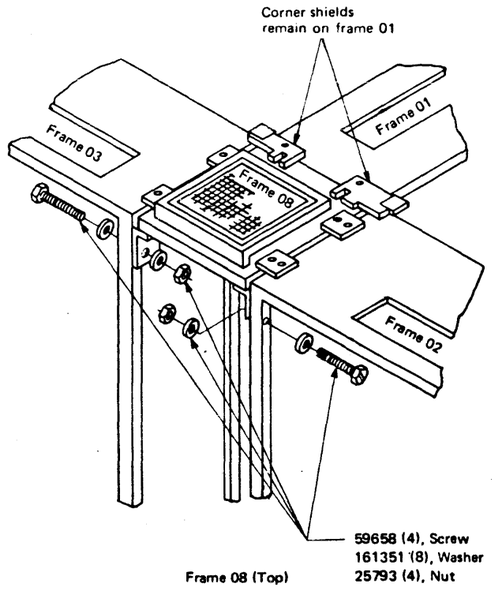
Test Board Lead No.	Test Board Jack Location	Logic Board Pin Location
5	MS	03A-C4S6A04
6	CS	03A-C4U6D04
7	CSMS	03A-C4T6B02
8	INST REG COMP	03A-C4U6A04



Frame 08 (Bottom)

Part	EC No.	276474	276707	278891	
8271647	Date	20Jan78	3May78	17Nov78	





Frame 08 (Top)

RELOCATION/REMOVAL PROCEDURES

Disconnect Frame 01

Step Cplt

1. Disconnect the external cables. ☐
2. Disconnect the tri-lead connectors from the frame 07 tailgate. Protect and store the connectors in frame 01. ☐
3. Disconnect the tri-lead connectors from the frame 05 (and frame 06, if installed) tailgates. Protect and store the connectors in frame 01. ☐

Disconnect Frames 05-07

1. Disconnect the external cables to frames 05 and 07. ☐
2. Disconnect the cables at CN73 and CN74 in frame 07. Coil and store the cables in frame 05. ☐
3. Disconnect the cables from frames 01, 05, and 07, if frame 06 is installed. Coil and store the cables in their respective frames. ☐
4. Disconnect the cables to tailgate Q on frame 05 from frame 07, and disconnect the cables from CN53 and CN54. Coil and store the cables in frame 07 ☐
5. If CTCA feature is installed: ☐
   a. Identify disconnected tri-leads for termination location.
   b. Disconnect cables according to Charts 1 and 2.
   c. Coil and store the cables in the designated frames.

A 6. Disconnect the ground straps from the frame 07 side only. Reinstall the screws into frame 07 after removing the ground straps. ☐

Note: To remove the bottom frame member bolt (part 5711246) in the following step, loosen the frame 07 counterweight mounting bolts and shift the counterweights toward the center of the frame.

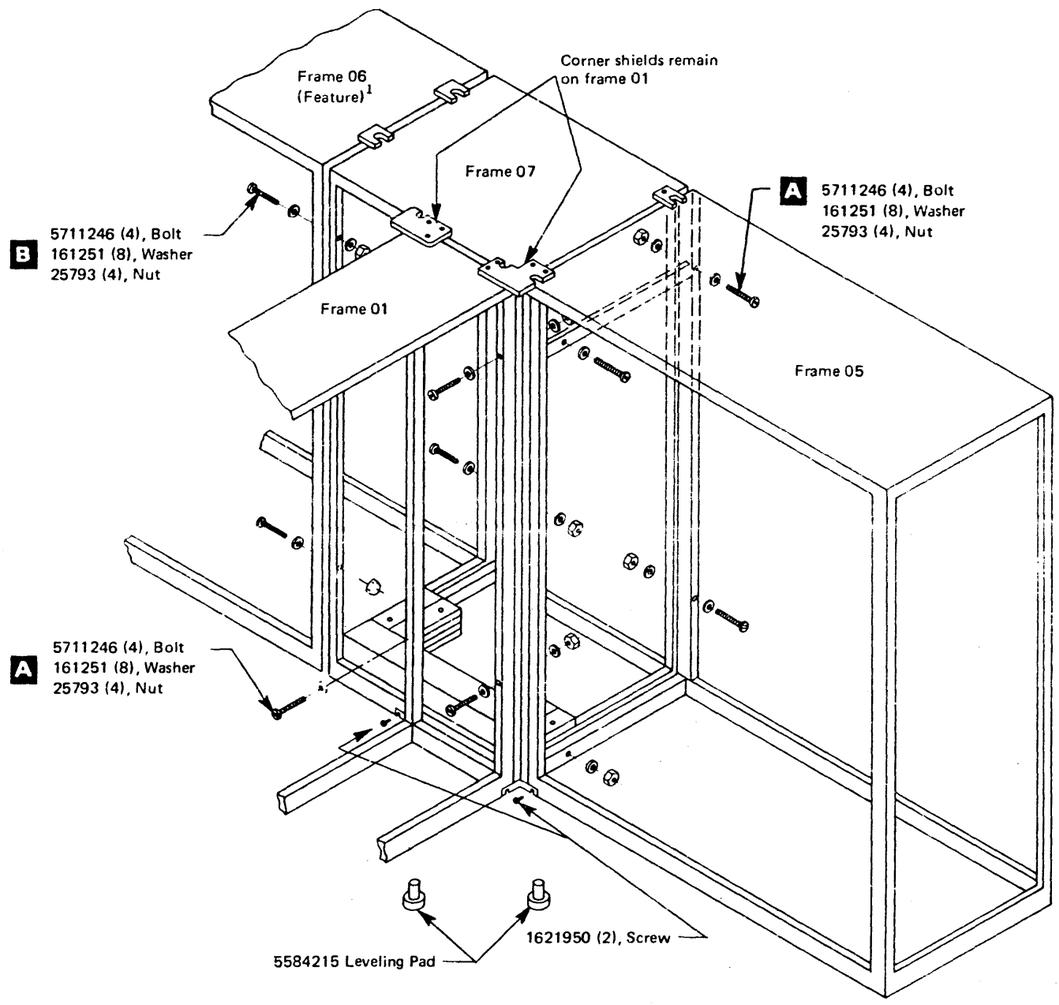
7. Physically disconnect frame 07 from frame 05 and frame 07 from frame 01 as shown in the figure. Remove the leveling pads (if installed), and lower the frames onto the casters. ☐
8. Shift the counterweights back into place and tighten the counterweight mounting bolts. ☐

Disconnect Frame 06 (Feature)[1]

1. Disconnect the external cables. ☐

B 2. Physically disconnect frame 06. ☐

[1] Frame 06 is not available on the 3033 Processor Model Group S.



Disconnect this end.

Chart 1

Part	*From*	*To*	*Feature*	*Cables Stored in Frame*
4867341	CD1 BB07	07A-TB2 A	CTCA1	05
4867342	CD1 BB06	07A-TB2 B	CTCA1	05
4867262	CD1 BB05	07A-TB2 C	CTCA1	05
4867343	07A A2	05 C16 +	CTCA1	07
4867339	CD2 BB07	07A-TB3 A	CTCA2	05
4867338	CD2 BB06	07A-TB3 B	CTCA2	05
4867263	CD2 BB05	07A-TB3 C	CTCA2	05
4867340	07A A3	05 C17 +	CTCA2	07

Disconnect this end.

Chart 2

Part	*From*	*To*	*Feature*	*Cables Stored in Frame*
2457155	50X-B4M6E04	07A-A2L1D13	CTCA1	07
2457155	50X-A1B2B08	07A-A2M6E04	CTCA1	07
2457155	50X-B4M6E04	07A-A3L1D13	CTCA2	07
2457155	50X-A1B2B08	07A-A3M6E04	CTCA2	07

RELOCATION/REMOVAL PROCEDURES

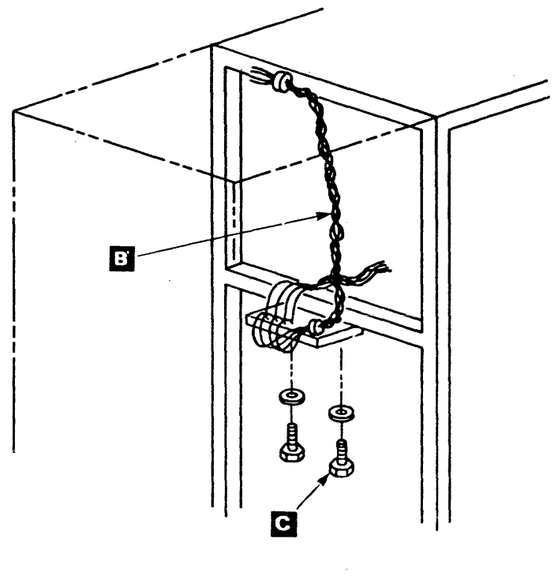
Disconnect Power Adapter Cable

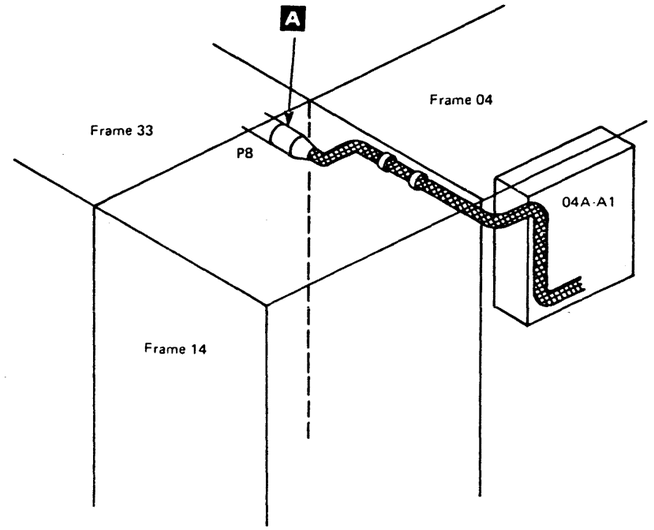
Step Cplt

A 1. Remove the cable from P8 in frame 33. ☐
2. Route and secure the cable in frame 04. ☐

Disconnect UEPO Cable

B 1. Disconnect the four wires labeled 6, 2, 5, and 4 from TB3 and secure them in frame 14. ☐
C 2. Remove the screws and washers that hold TB3 in place and turn TB3 180° so that it extends into frame 04. Reinstall TB3 using the same screws. ☐



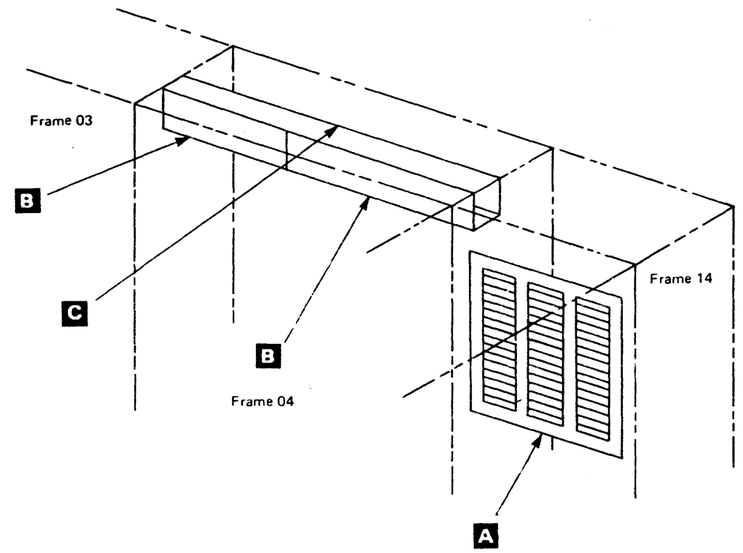


Part	EC No.				
4439510	Date	213562 4Sep81			

RELOCATION/REMOVAL PROCEDURES

Disconnect Frame 33 Interframe Cables

		Step Cplt
A	1. Disconnect the cables from tailgate 33Z2.	☐
B	2. Remove the cable trough covers in frame 04.	☐
C	3. Pull the interframe cables back through the trough and secure them in frame 03.	☐
	4. Reinstall the cable trough covers.	☐



Part	EC No.				
4439511	Date	213562 4Sep81			

RELOCATION/REMOVAL PROCEDURES

Disconnect Frames 14 and 33

Install Outriggers

Step Cplt

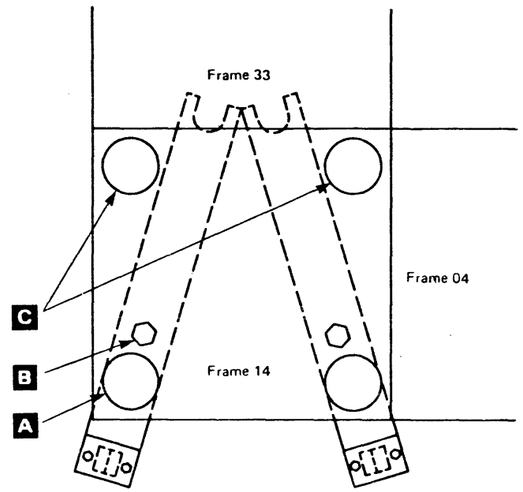
A 1. Remove the caster from one end of the outrigger. ☐
A 2. Remove the leveling pad from frame 14. ☐
B 3. Slide the outrigger under frame 14 as shown and bolt the outrigger to frame 14. ☐
4. Repeat steps 1 through 3 for the other outrigger. ☐

Note: The outriggers should touch in the center to avoid touching the casters in frame 33. Ensure that the screw holding the outrigger is tight so that the outrigger does not rock back and forth.

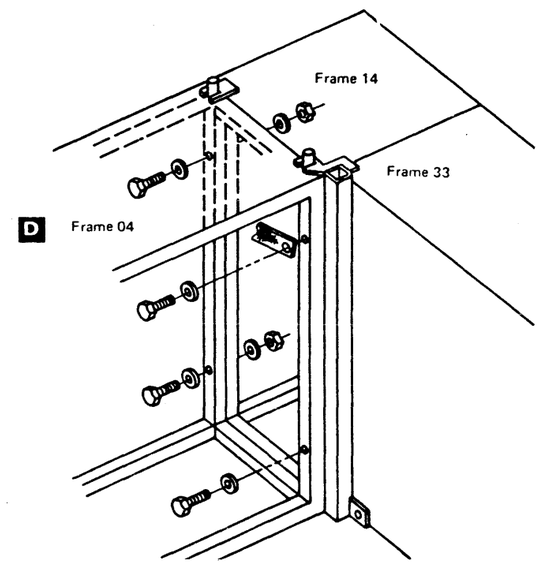
C 5. Remove the remaining leveling pads from frame 14. ☐

Disconnect Frames

D 1. Physically disconnect frames 14 and 33 from frame 04 as shown in the figure. ☐



Part 4439512	EC No. Date	213562 4Sep81			



RELOCATION/REMOVAL PROCEDURES

Disconnect Frames 14 and 33 (Continued)

Disconnect Frame 33 from Frame 14

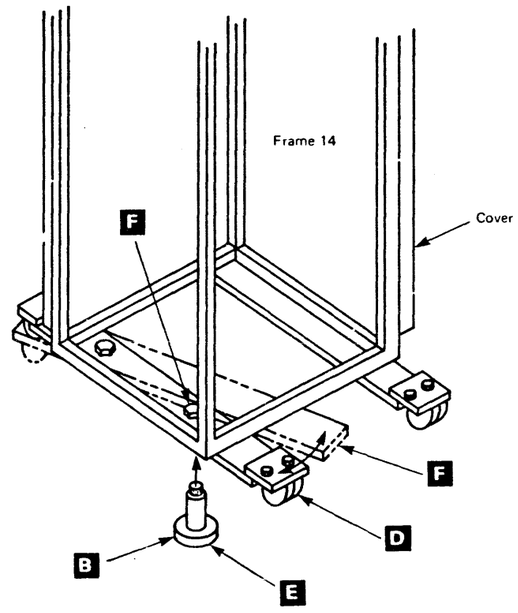
Step Cplt

- **A** 1. Disconnect connector 14J1 from connector P20 and secure the cable in frame 14. ☐
- **B** 2. Install two leveling pads under frame 14. ☐
- **C** 3. Physically disconnect frame 33 from frame 14 as shown in the figure. ☐

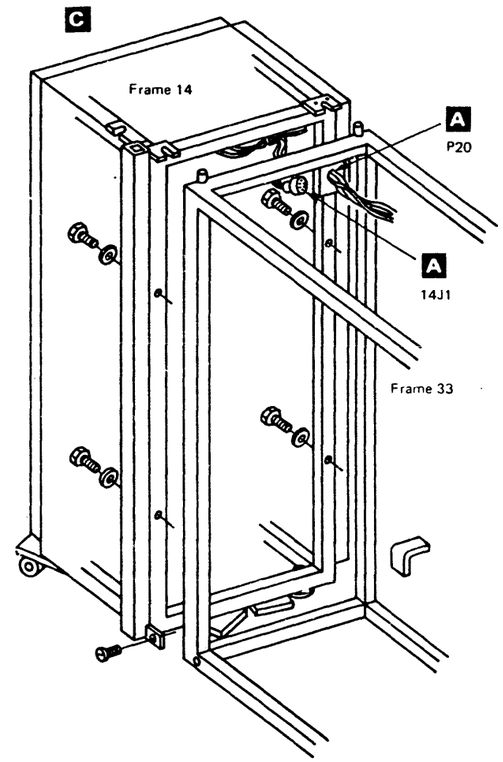
CAUTION
Steps 1 through 3 require two CEs. One CE should support frame 14 to keep it steady.

Reposition Outriggers

- **D** 1. Reinstall the casters on the outriggers. ☐
- **E** 2. Remove the leveling pad. ☐
- **F** 3. Swing the outrigger into position and bolt it to frame 14. ☐
  4. Repeat steps 2 and 3 for the other outrigger. ☐

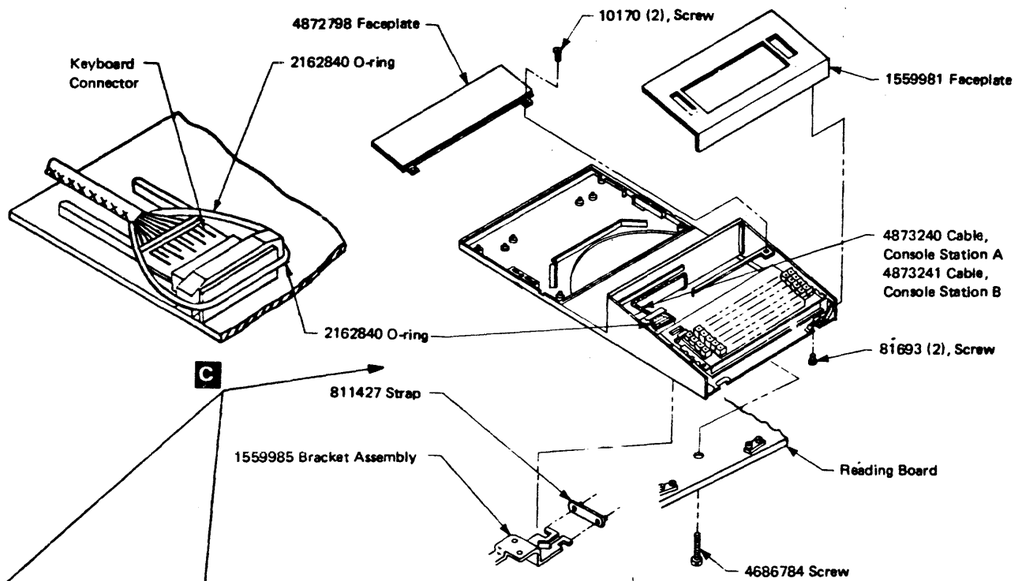


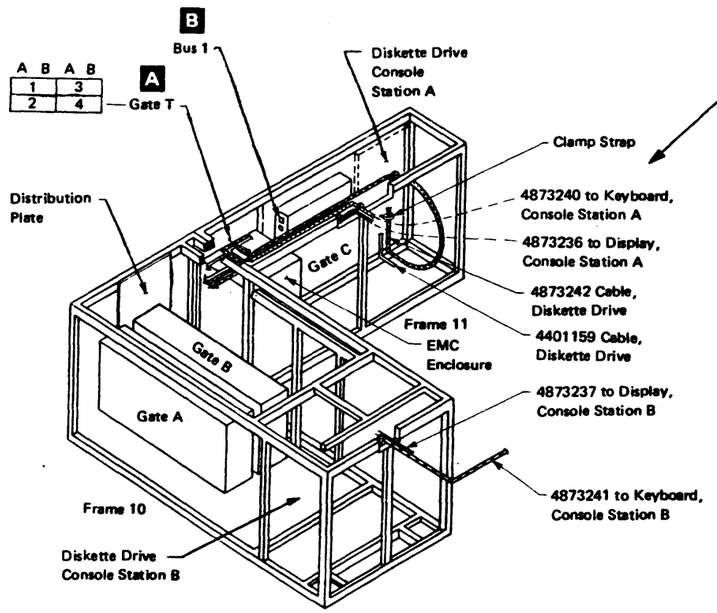
Part	EC No.	213562			
4439513	Date	4Sep81			

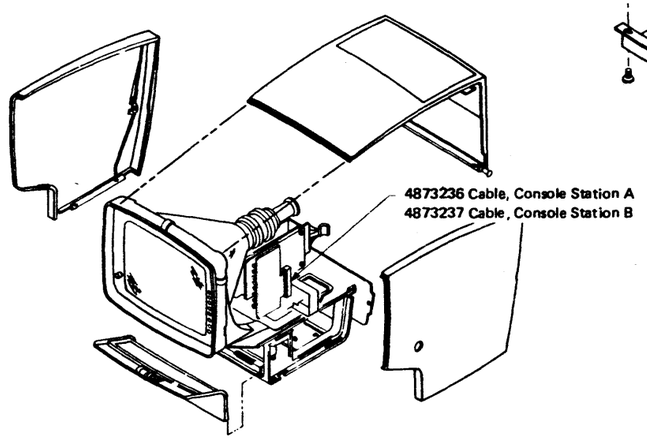


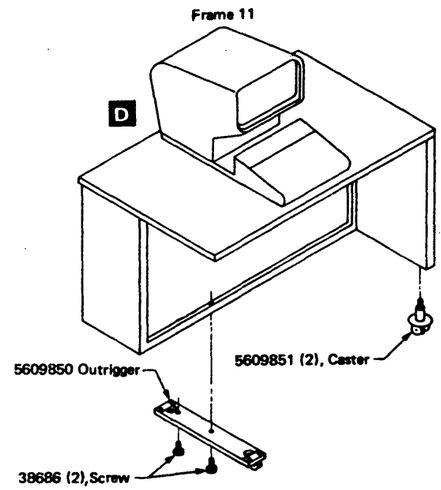
DISCONNECT THE CONSOLE

		Step Cplt
	Disconnect Frame 11	
	1. Disconnect the external cables. Store the cables under the floor.	☐
A	2. Disconnect the connectors from tailgate T. Place the cables on the top of frame 10.	☐
B	3. Disconnect the cable on the hinge end of gate C (wire number 1 on bus 1, and wire number 2 on bus 2). Coil and tape the cable in frame 10.	☐
C	4. Disconnect the cables from the keyboard, the display, and the diskette drive. Coil and tape the cables in frame 10. The parts that must be removed are shown in the figure.	☐
D	5. Connect the outrigger to frame 11 as shown in the figure.	☐









3033	Part 8271649	EC No.	276474	276707		
		Date	20Jan78	3May78		

Disconnect Frame 11 (Continued)

Step Cplt

6. Slide the frames over a hole in the floor and remove the leveling pads from frames 10 and 12. Install the casters. ☐

E 7. Physically disconnect frame 10 from frame 11 as shown in the figure. ☐

Disconnect Frame 12

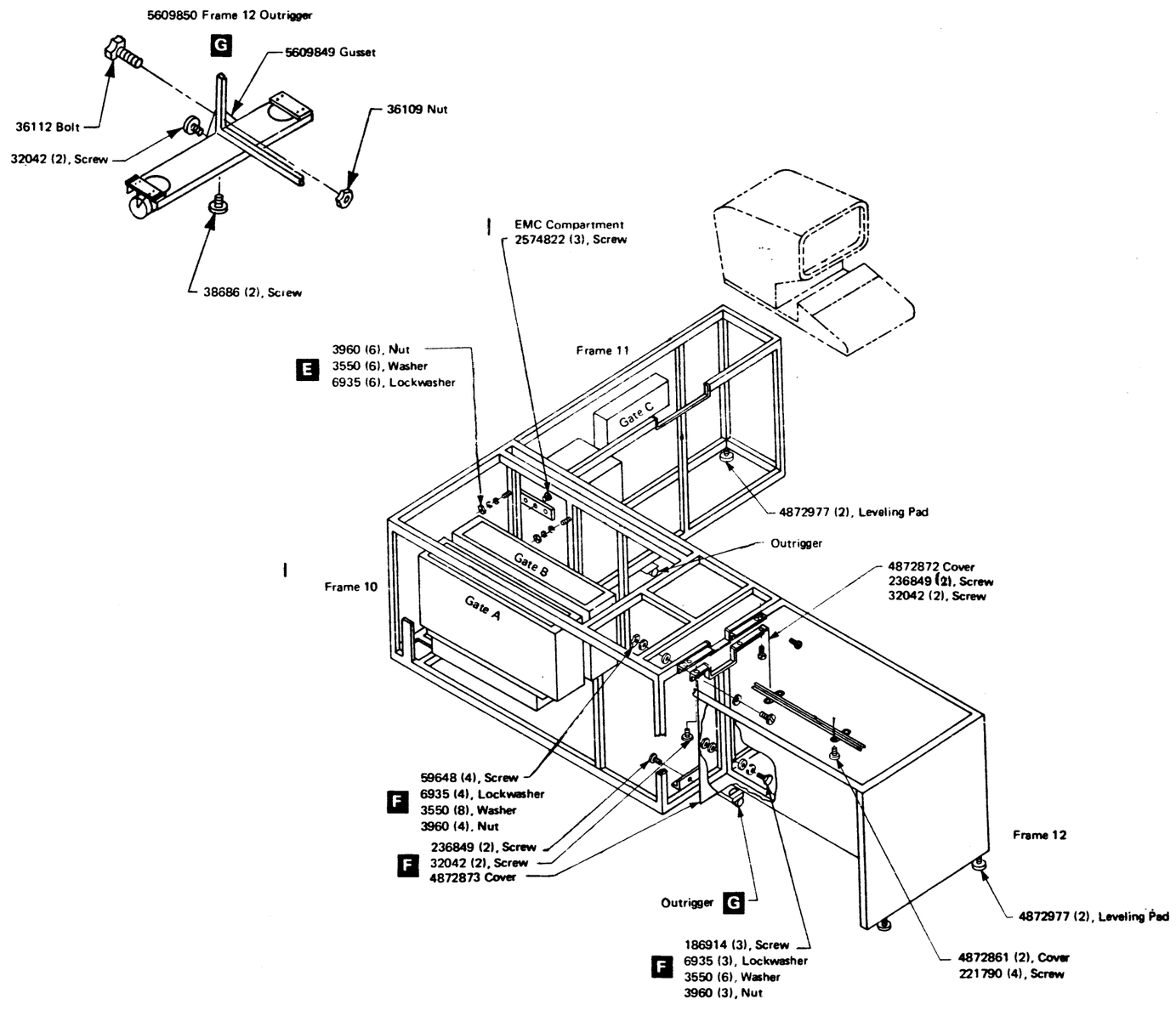
If frame 12 has to be disconnected from frame 10 because the frames are too long to get them to the shipping dock:

1. Disconnect the display and the keyboard cables. Coil and tape the cables in frame 10. ☐

F 2. Physically disconnect frame 12 from frame 10 as shown in the figure. ☐

G 3. Install the frame 12 outrigger that was received with the processor complex. ☐

4. Install the end covers on frame 10; bag the other hardware and tape the bag to gate A in frame 10. ☐



RELOCATION/REMOVAL PROCEDURES

Packing Instructions

PACK THE PROCESSOR FRAMES

Pack Frames 01-04 for Shipment in a Padded Van

Step Cplt

A 1. Secure the coolant hoses to the frames using ties (part 7331381). Attach the end caps (part 7397213) with bolts (part 59668), washers (part 7331451), and nuts (part 24107). An end cap will not be attached on the covered end of frames 02 and 04. ☐

2. Place the ends of each cable that are not attached to the connector bracket in padded bags (part 733107) and tape the bags. Coil each cable and secure it to the end frame using ties (part 7331381). ☐

B 3. Tape each cover spacer block (part 7397216) against the inside of the cover in two places to protect the black filler stock from being crushed when the belts are tightened in the moving van. Do not place tape on the outside of the cover. ☐

C 4. Place cover shims (part 7331331) between the upper hinge plates and the cover seal lips on all covers. Tape the cover shims in place. ☐

5. Place a polyethylene bag (part 7330579) over the frame. ☐

6. Place a corrugated sheet (part 7372412) over the end cap and tape it in place. Tape the IBM CE Unpacking Instructions (part 7331307) to the corrugated sheet on frame 02. ☐

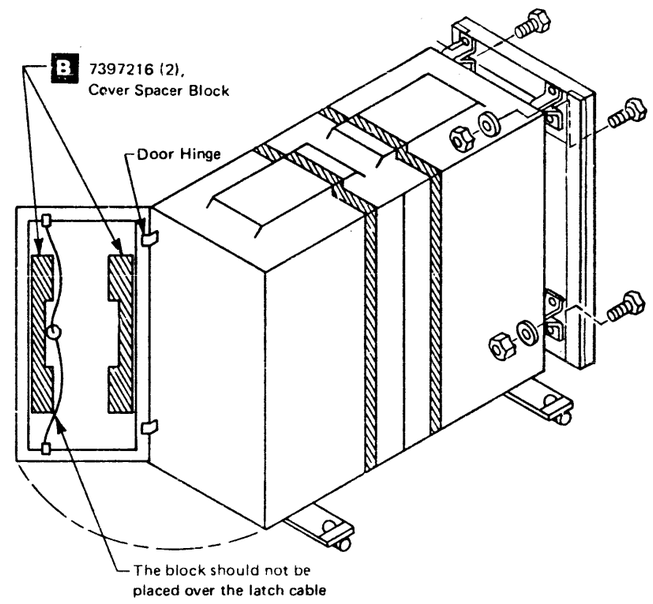
7. Tape two sheets of corrugated covering (part 7372748) on each side of the frame. ☐

D 8. Place two pieces of angle board (part 7397207) on each corner of the frame and tape the boards to the frame. Do not place an angle board on the end caps. ☐

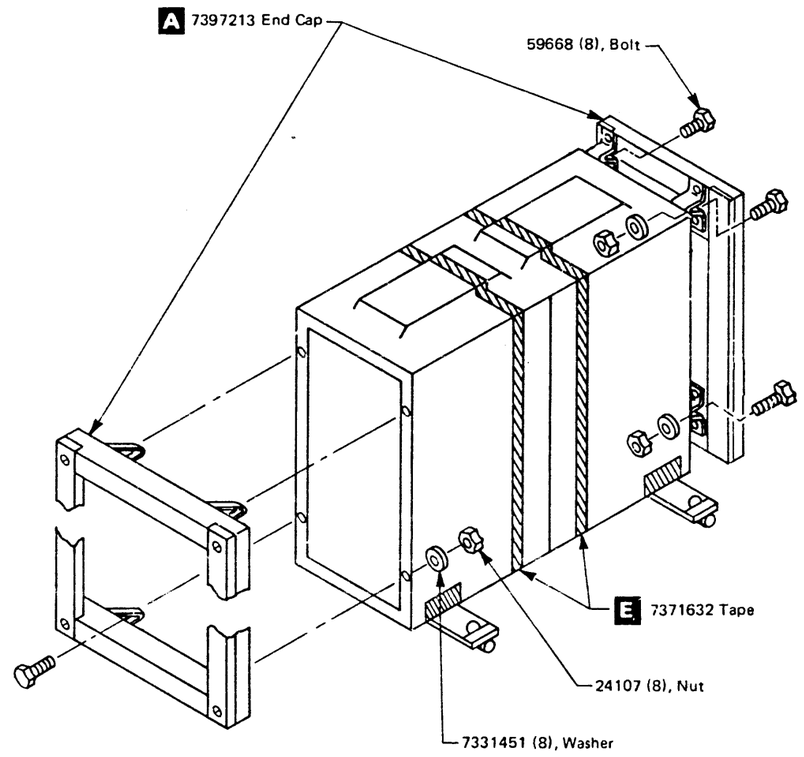
E 9. Tape the side covers as shown. The tape should go completely around the frame in two places. ☐

10. Tape a copy of the Customer Unpacking Instructions (part 7331306) to the outside of the corrugated sheet on frame 02. ☐

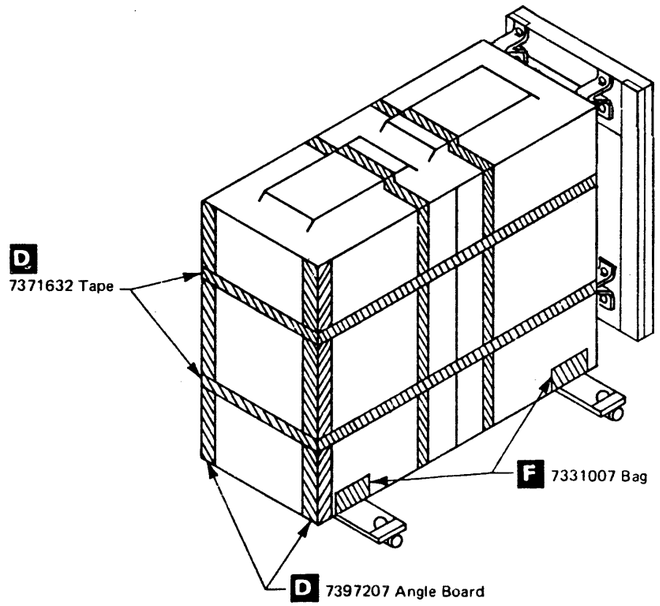
F 11. If the outriggers are black, place a bag (part 7331007) between each outrigger and the cover as shown. ☐

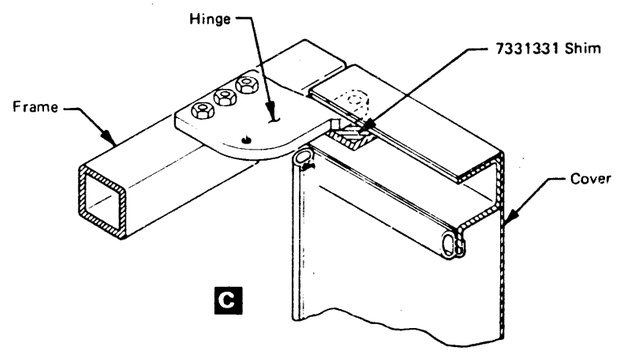


Frames 02 and 04



Frames 01 and 03



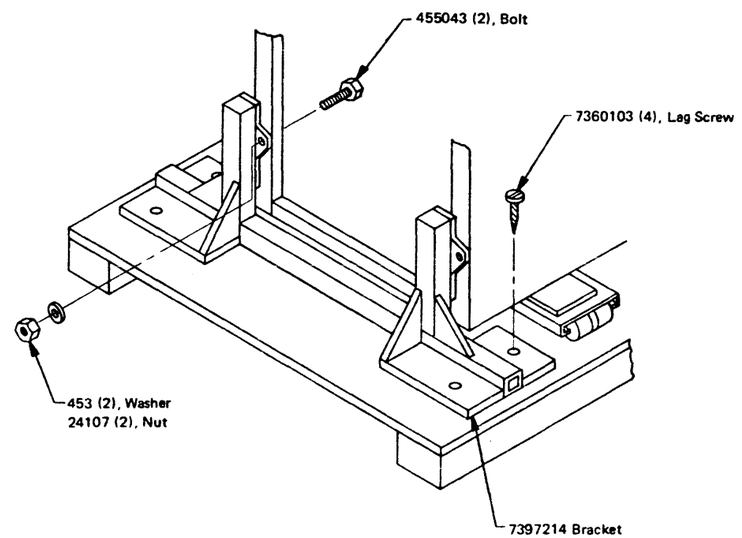


Part 8271651	EC No.	276474	276707	278357	278891	208335	213545
	Date	20Jan78	3May78	19Jul78	17Nov78	1Jun80	15Jun81

RELOCATION/REMOVAL PROCEDURES

Pack Frames 01-04 for Shipment by Airfreight

	Step Cplt
1. Remove the end covers from frames 02 and 04. Tape corrugated sheets around the covers and place the covers in a wire-bound crate.	☐
2. Do steps 2-9 under the packing instructions for shipping frames 01-04 in a padded van.	☐
3. Fasten the frames to the airfreight skids (part 7331368) by attaching the bracket (part 7397214) with bolts (part 455043), washers (part 453), and nuts (part 24107). Connect the bracket to the airfreight skid with lag screws (part 7360103).	☐

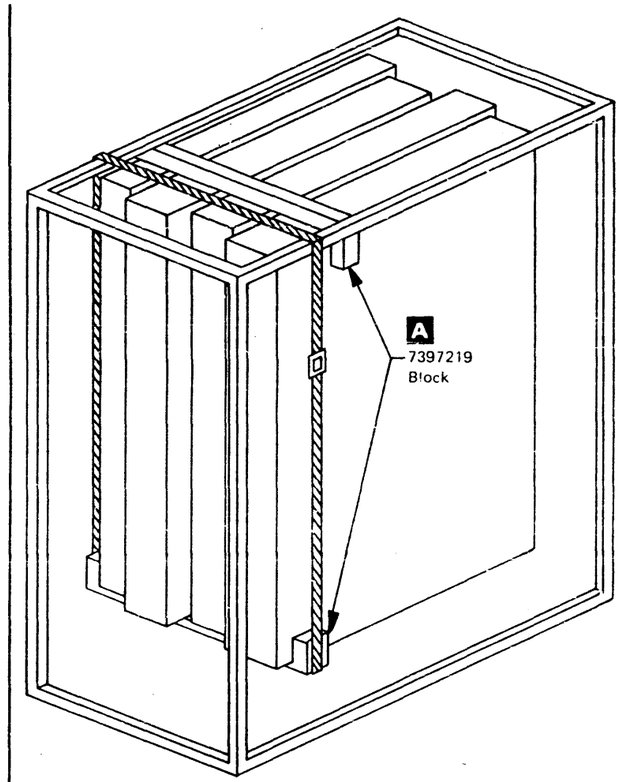


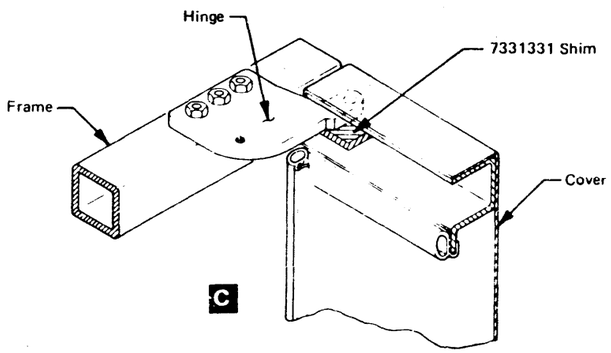
Part 8271652	EC No.	276474	276707	278891	
	Date	20Jan78	3May78	17Nov78	

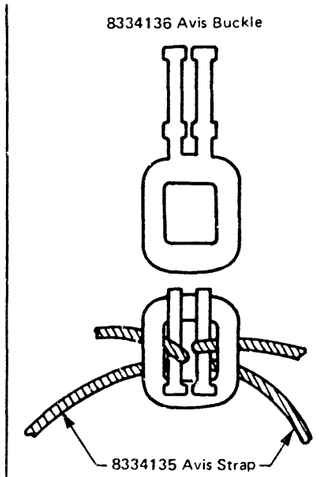
RELOCATION/REMOVAL PROCEDURES

Pack Frame 05 for Shipment in a Padded Van

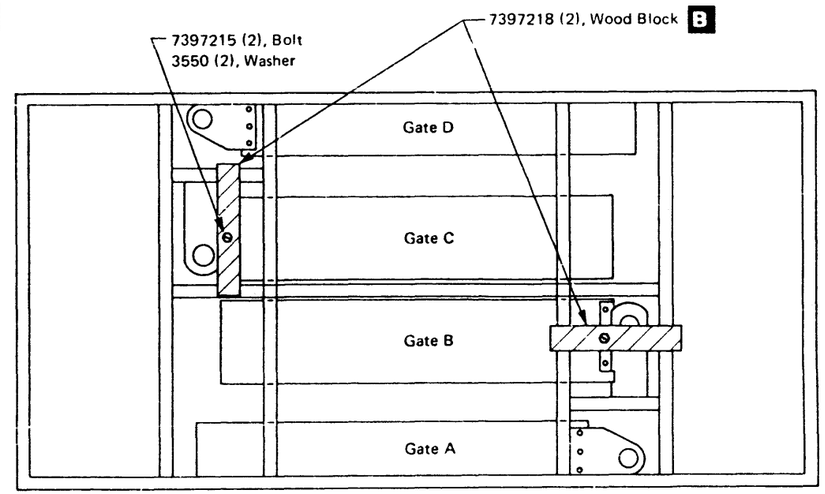
		Step Cplt
A	1. Place a block (part 7397219) above the gates and a block (part 7397219) below the gates and secure the blocks with Avis[1] strap (part 8334135) as shown.	☐
B	2. Support the hinge on both inner gates by removing the center bolts from the hinges. Place the bolts in a cloth bag and secure the bag to a gate latch using a tie (part 7331381). Place wood blocks (part 7397218) on the frame members as shown in the figure. Secure each block with the hex-head bolt and flatwasher provided.	☐
	3. Tape the gates together, close the gates, and tape the latches.	☐
	4. Place the cover spacer blocks (part 7397216) as shown for frames 02 and 04.	☐
C	5. Place cover shims (part 7331331) between the upper hinge plates and the cover seal lips on all covers. Tape the shims in place.	☐
	6. Attach an end cap (part 7397211) with ties (part 7331381), on the other end of the frame.	☐
	7. Place a polyethylene bag (part 7330579) over the frame.	☐
	8. Tape corrugated covering (part 7372748) on each side of the frame.	☐
	9. Place one sheet of corrugated covering (part 7372412) on end caps and tape in place.	☐
	10. Place four angle boards (part 7397207) on each corner of the frame and tape the boards to the frame.	☐
	11. Tape (part 7330562) around the frame at three levels.	☐







Strap is shown narrow for clarity



Frame 05 (Top View)

[1]Trademark of Avis Company

Part 8271653	EC No.	276474	276707	278891	209335	213545
	Date	20Jan78	3May78	17Nov78	1Jun80	15Jun81

RELOCATION/REMOVAL PROCEDURES

Pack Frame 05 for Shipment by Airfreight

	Step Cplt
1. Do steps 1-11 under the packing instructions for shipping frame 05 in a padded van.	☐
2. Fasten the frame to the airfreight skid (part 7330748) by using hold-down method 4.0 as described in the air packing instructions (part 7371311).	☐

Pack Frame 06 (Feature)

The packing instructions for shipment of frame 06 in a padded van or by airfreight are the same as described for frame 05, except that frame 06 has only one double gate. ☐

RELOCATION/REMOVAL PROCEDURES

Pack Frame 07 for Shipment in a Padded Van

Step Cplt

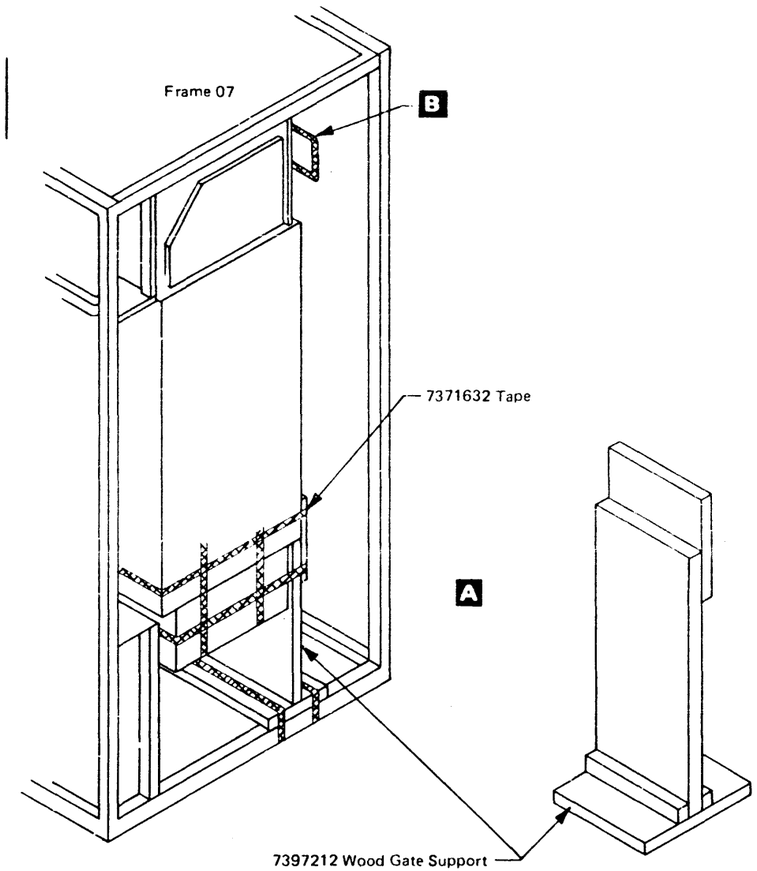
- [ ] **A** 1. Place the ends of each cable in padded bags (part 7331007) and tape (part 7371632) the padded bags. Coil each cable and secure it to the frame with ties (part 7331381).
- [ ] 2. Place a wood gate support (part 7397212) under the gate and tape as shown in the figure. Shim, if necessary, with wood shim (part 7371870).
- [ ] **B** 3. Secure the gate latch to the frame bracket using ties (part 7331381).
- [ ] **C** 4. Place the cover spacer blocks (part 7397216) as shown.
- [ ] **D** 5. Place cover shims (part 7331331) between the upper hinge plates and the cover seal lips on all covers. Tape the shims in place.
- [ ] 6. Attach an end cap (part 7397211) with ties (part 7331381), on the other end of the frame.
- [ ] 7. Place a polyethylene bag (part 7371754) over the frame.
- [ ] 8. Tape corrugated sheets (part 7372748) on each side of the frame and tape corrugated sheets (part 7372412) on each end of the frame.
- [ ] 9. Place four angle boards (part 7397207) on each corner of the frame and tape the boards to the frame.
- [ ] 10. Tape (part 7330562) around the frame at three levels.

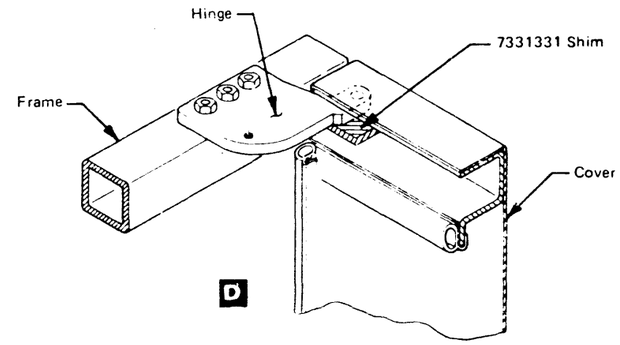
Pack Frame 07 for Shipment by Airfreight

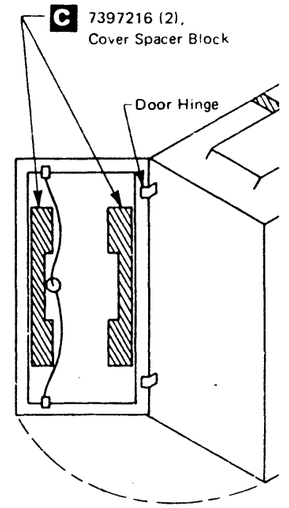
- [ ] 1. Do steps 1-8 of the packing instructions for shipping frame 07 in a padded van.
- [ ] 2. Secure the frame to the airfreight skid (part 7397223) by using hold-down method 4.0 as described in the air packing instructions (part 7371311).

Pack Frame 08

- [ ] Wrap the top and bottom of frame 08 with cushioning material, tape the frame, and place the frame in the container (part 7371780).







3033	Part 8271655	EC No.	276474	276707	278891	208335	213545
		Date	20Jan78	3May78	17Nov78	1Jun80	15Jun81

PACK THE CONSOLE FRAMES

Pack Frames 10 and 12 (Attached) for Shipment in a Padded Van

Step Cplt

1. Place a corrugated protector (part 7331460) on the tabletop. ☐

A 2. Insert one piece of Avis strap (part 8334135) under the console and insert another piece under the keyboard. Leave the strap flat on the table. Place the angle board (part 7397207) and cushioning material next to the display as shown in the figure and tape (part 7371632) it to the console. Place the cushioning material over the keyboard. Tape the cushioning material. Tie the two pieces of Avis strap with the Avis buckle (part 8334136) as shown in the figure. ☐

B 3. Place a corrugated pad (part 7354577), with the slotted edge up, into the diskette drive slot. Close the diskette drive and wedge one folded sheet of Air Cap[1] (part 7397289), plastic bubble padding, between the handle and the diskette drive. Tape (part 7371632) the diskette drive to the two top stop brackets. ☐

Note: Use a protective material before placing tape over decals or labels.

C 4. Open gates A and B and place the block support (part 7397209) on the bottom of the screen in the approximate location shown in the figure. Tape the latch that fastens the two gates. Close the gates and lift them, pulling the block support toward you until it rests on the frame member. Tape the block support to the frame. Shim if necessary with wood shim (part 7371870). ☐

D 5. Wrap the remote control box with cushioning material and place it in the cabinet. Close the cabinet and tape (part 7371632) it. Also, close the panel that is next to the cabinet and secure it with Avis strap (part 8334135). ☐

E 6. Place an angle board (part 7397207) around all the corners of the frame and tape them. Place a piece of corrugated sheet (part 7372412) over the area where frame 11 is attached. ☐

F 7. Wrap the cables with cushioning material and tape the cables as shown in the figure. ☐

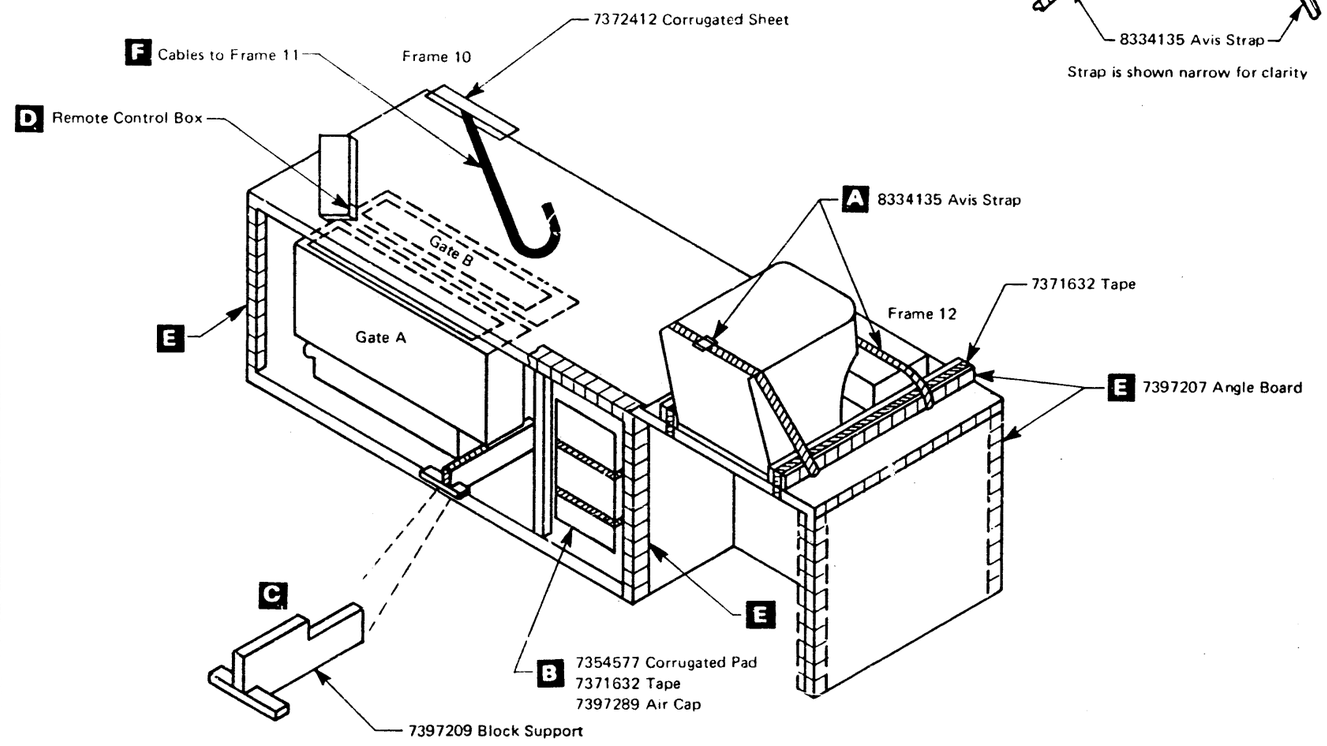
8. Place a polyethylene bag (part 7330579) over the packed frame. Tape around the frame at two levels. ☐

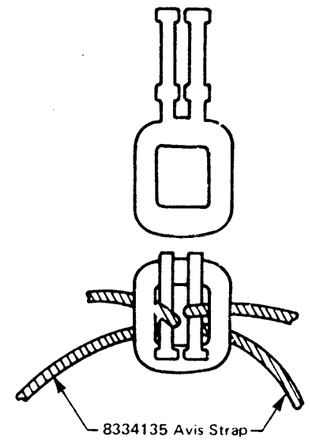
Pack Frames 10 and 12 (Attached) for Shipment by Airfreight

Step Cplt

1. Do steps 1-8 under the packing instructions for shipping frames 10 and 12 in a padded van. ☐

2. Fasten the frame to the airfreight skid (part 8626451) by using hold-down method 4.0 as described in the air packing instructions (part 7371311). ☐





Strap is shown narrow for clarity

[1] Trademark of Sealed Air Corporation

Part	EC No.	276474	276707	278891	208335	213545
8271656	Date	20Jan78	3May78	17Nov78	1Jun80	15Jun81

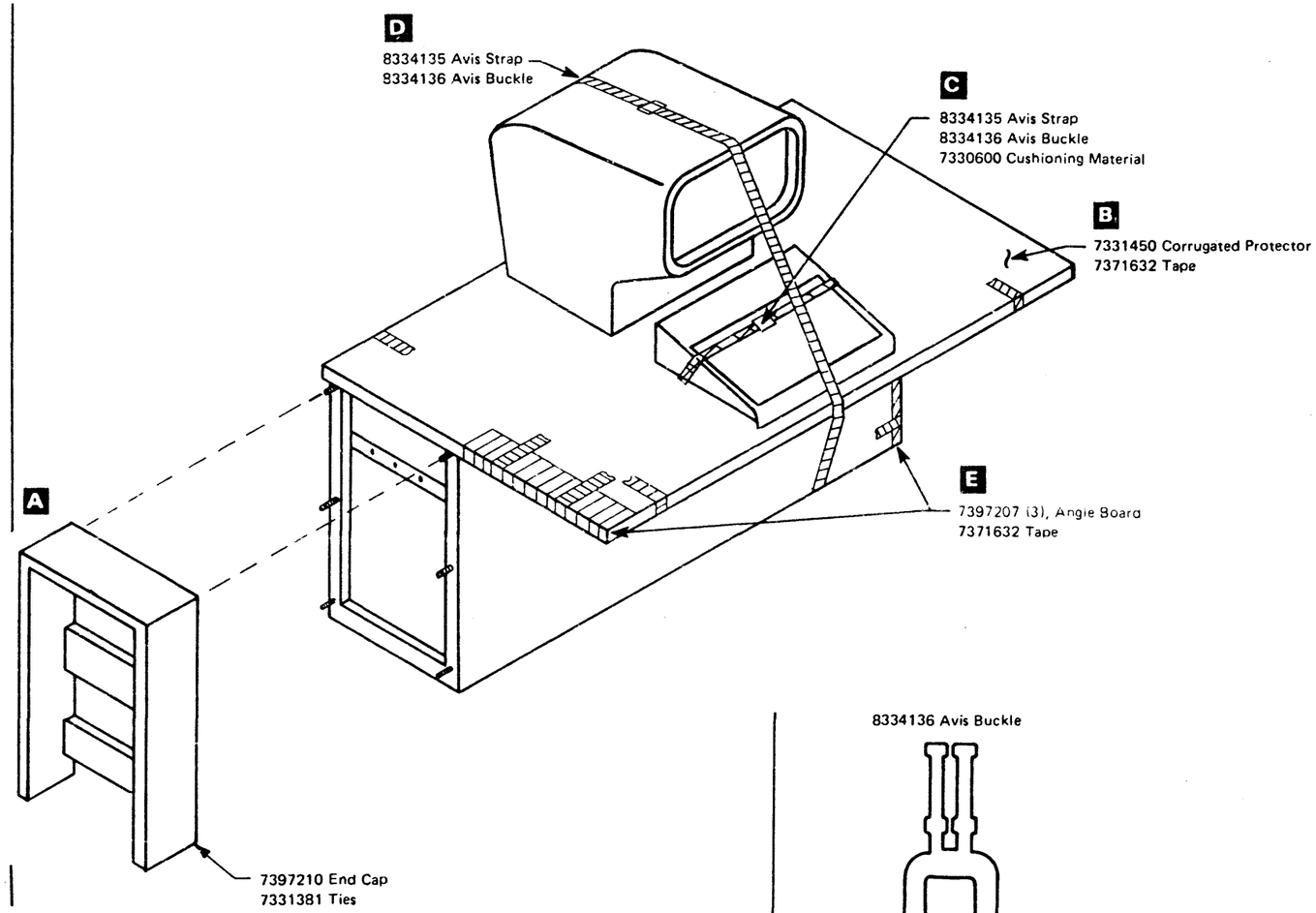
RELOCATION/REMOVAL PROCEDURES

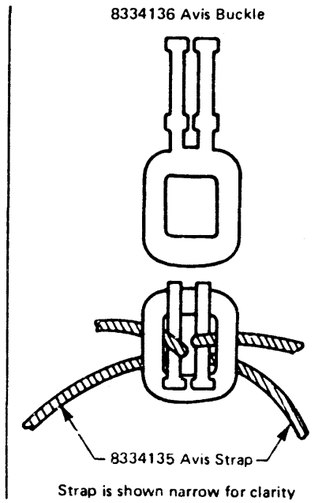
Pack Frame 11 for Shipment in a Padded Van

		Step Cplt
A	1. Place an end cap (part 7397210) as shown in the figure and use ties (part 7331381) to secure the end cap to the frame.	☐
B	2. Place corrugated protector (part 7331450) over the table top and tape (part 7371632) the corrugated protector to the table top.	☐
	3. Tape the gate C latch.	☐
C	4. Insert one piece of Avis strap (part 8334135) under the keyboard. Place cushioning material (part 7330060) over the keyboard and secure the strap over the cushioning material by using Avis buckle (part 8334136).	☐
D	5. Place one piece of Avis strap (part 8334135) over the top of the display and under the base of the frame. Secure the Avis strap with Avis buckle (part 8334136).	☐
	6. Place a corrugated pad (part 7354577), with the slotted edge up, into the diskette drive slot. Close the diskette drive and tape (part 7371632) the diskette drive to the two top stop brackets.	☐
	7. Wedge one folded sheet of Air Cap (part 7397289) between the diskette drive handle and the diskette drive.	☐
E	8. Place an angle board (part 7397207) on the unprotected edge of the table and both exposed corners of the frame. Tape (part 7371632) angle board.	☐
	9. Place a polyethylene bag (part 7331247) over the packed frame. Tape around the frame at two levels.	☐

Pack Frame 11 for Shipment by Airfreight

	1. Do steps 1-9 under the packing instructions for shipping frame 11 in a padded van.	☐
	2. Fasten the frame on the airfreight skid (part 7330748) by using hold-down method 4.0 as described in the air packing instructions (part 7371311).	☐





Strap is shown narrow for clarity

RELOCATION/REMOVAL PROCEDURES

Pack Frame 10 (Stand Alone) for Shipment in a Padded Van

	Step Cplt
1. Pack frame 10 as though it were attached to frame 12.	☐
2. Place a polyethylene bag (part 7372976) over the packed frame.	☐

Pack Frame 10 (Stand Alone) for Shipment by Airfreight

1. Pack frame 10 as though it were attached to frame 12.	☐
2. Fasten the frame to the airfreight skid (part 7330748) by using hold-down method 4.0 as described in the air packing instructions (part 7371311).	☐

Pack Frame 12 (Stand Alone) for Shipment in a Padded Van

	Step Cplt
1. Ensure that the outrigger is installed on frame 12.	☐
2. Pack frame 12 as though it were attached to frame 10.	☐
3. Place a polyethylene bag (part 7372428) over the packed frame.	☐

Pack Frame 12 (Stand Alone) for Shipment by Airfreight

1. Pack frame 12 as though it were attached to frame 10.	☐
2. Fasten the frame on the airfreight skid (part 8626452) by using hold-down method 4.0 as described in the air packing instructions (part 7371311).	☐

RELOCATION/REMOVAL PROCEDURES

PACK THE PDU AND CDU FRAMES

Pack Frame 15 for Shipment in a Padded Van

	Step Cplt
1. Ensure that all water is drained from frame 15.	☐
2. Tape (part 7371632) the panel latch.	☐
3. Place the cover spacer blocks (part 7397216) as shown for frames 02 and 04.	☐
4. Attach an end cap (part 7397211) with tape, on the other end of the frame.	☐
5. Place the cover shims (part 7331331) between the upper hinge plates and the cover seal lips on all covers.	☐
6. Place a polyethylene bag (part 7372193) over the packed frame.	☐
7. Tape a corrugated sheet (part 7372412) on each end of the frame and tape a corrugated sheet (part 7372748) on each side of the frame.	☐
8. Place four angle boards (part 7397210) on each corner of the frame and tape the boards to the frame. Place a corrugated sheet (part 7372412) over the end cap.	☐

Pack Frame 15 for Shipment by Airfreight

1. Do steps 1-7 under the packing instructions for shipping frame 15 in a padded van.	☐
2. Fasten the frame to the airfreight skid (part 7330748) by using hold-down method 4.0 as described in the air packing instructions (part 7371311).	☐

Part	EC No.	276474	276707	208335	213545
8271659	Date	20Jan78	3May78	1Jun80	15Jun81

Pack Frame 16 for Shipment in a Padded Van

	Step Cplt
1. Drain all the water from frame 16.	☐
2. Fasten the water pump mounts to the base of the frame with screws (part 322061) and wood supports (part 7397063) in the four places as shown in the figure.	☐
3. Coil and store all the hoses inside the lower half of the frame. If required, fasten the hoses inside the frame with cushioning material and tape.	☐

CAUTION
Tightly coil the insulated hoses to prevent protrusion of the coils beyond the perimeter of the frame.

If the hoses have to be fastened inside the frame, do not tape them directly to the hose insulation. Separate them with cushioning material.

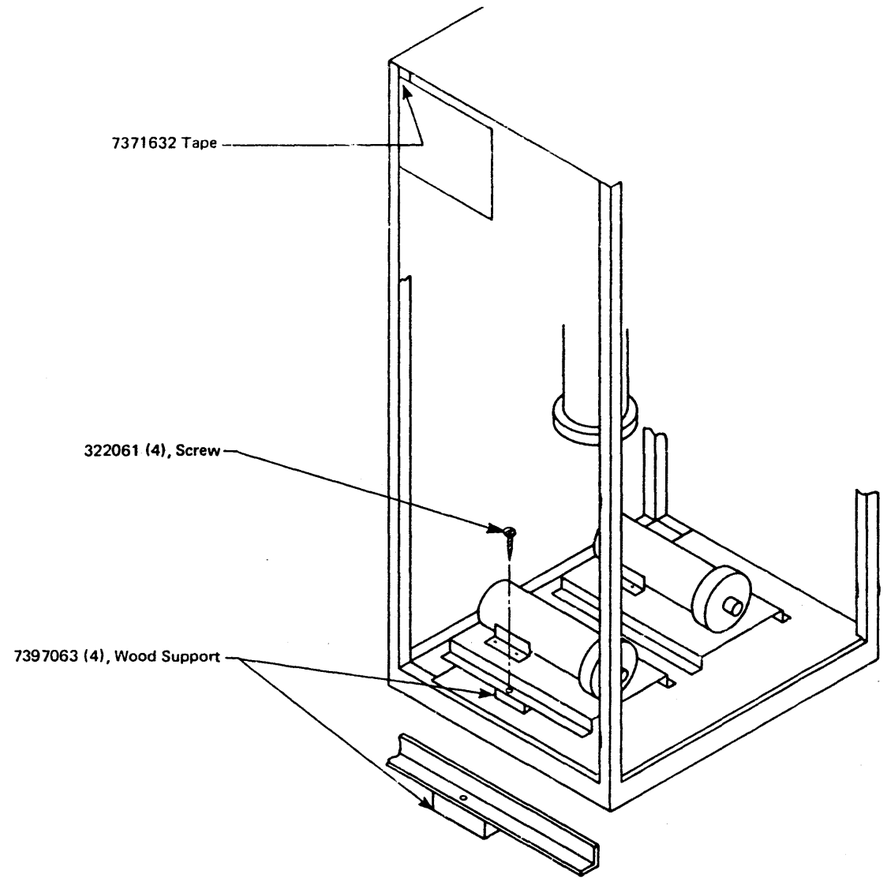
4. Tape the pump select panel latch.	☐
5. Place the cover spacer blocks (part 7397216) as shown for frames 02 and 04.	☐
6. Attach an end cap (part 7397211) on the other end of the frame and secure the end cap with ties (part 7331381). Place a corrugated sheet (part 7372412) over the end cap and sides of the frame.	☐
7. Place a polyethylene bag (part 7371754) over the packed frame.	☐
8. Tape a corrugated sheet (part 7372412) on each side of the frame.	☐
9. Place four angle boards (part 7397210) on each corner of the frame and tape the boards to the frame.	☐

Pack Frame 16 for Shipment by Airfreight

	Step Cplt
1. Do steps 1-8 under the packing instructions for shipping frame 16 in a padded van.	☐
2. Fasten the frame to the airfreight skid (part 7397223) by using hold-down method 4.0 as described in the air packing instructions (part 7371311).	☐

PACK THE CABLES

Coil the cables inside the cable boxes (part 7330620). ☐



3033	Part 8271660	EC No.	276474	276707	208335	213545
		Date	20Jan78	3May78	1Jun80	15Jun81

Pack the MCU Frame

PACK FRAME 09 FOR SHIPMENT IN A PADDED VAN

Spacer Frames

Step Cplt

A 1. If frame 09 is to be shipped with the Q-tailgate attached, remove the Q-tailgates from the spacer frames and install them into frame 09. Secure them with the bolts removed. ☐

B 2. If frame 09 is to be shipped without the Q-tailgate attached, swing the Q-tailgate into its shipping position. Remove the tri-lead cables and place them in the organizers in frame 09. ☐

3. Remove the spacer frame covers. ☐

C 4. Remove the three bolts that hold the spacer frames to frame 09. Remove the spacer frames from frame 09. ☐

5. Bolt the spacer frames together using the bolts just removed. ☐

6. Install the outriggers on the spacer frames. ☐

7. Reinstall the spacer frame covers. ☐

8. If the Q-tailgate is to be shipped in the spacer frames, ensure that the Q-tailgate is locked in the retracted position. ☐

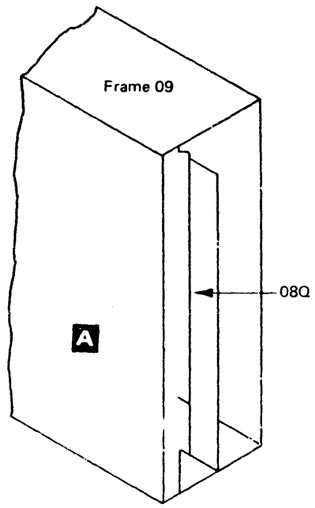
D 9. Place cover shims (part 7331331) between the upper hinge plates and the cover seal lips on all covers. Tape the shims in place. ☐

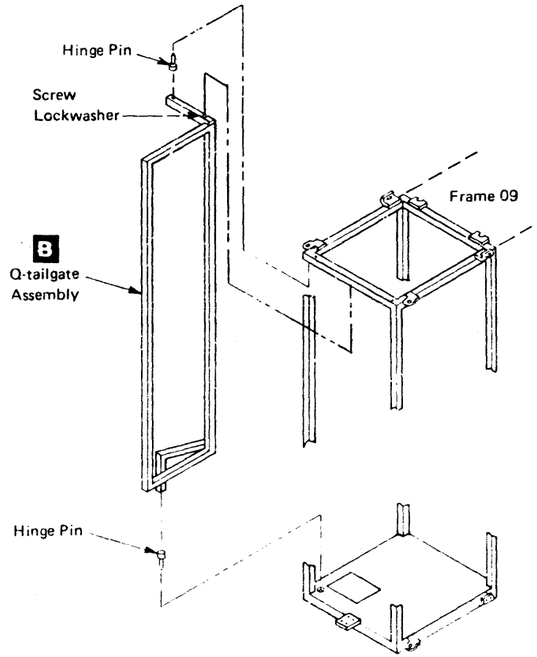
E 10. Bolt end caps (part 7331388) to each end of the spacer frames. ☐

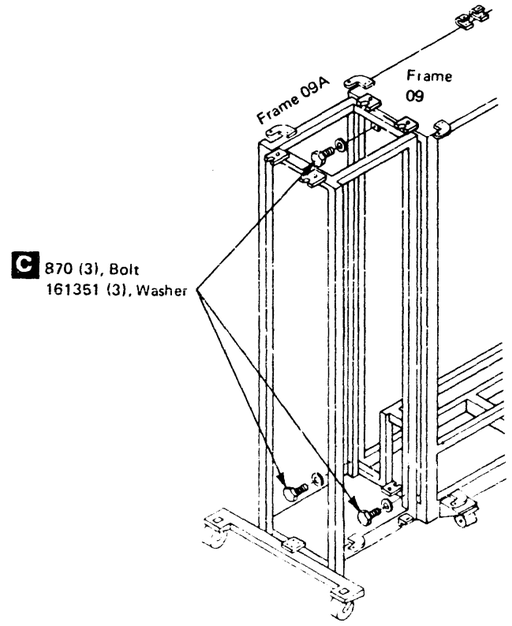
11. Place a polyethylene bag (part 7330589) over the frame. ☐

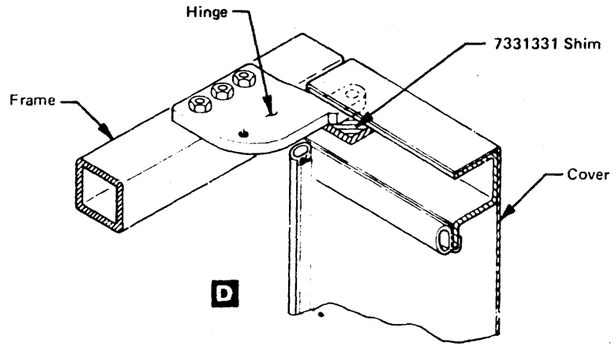
12. Tape corrugated pads (part 7372412) over each end of the frame and tape corrugated pads (part 7372748) on the sides of the frame. ☐

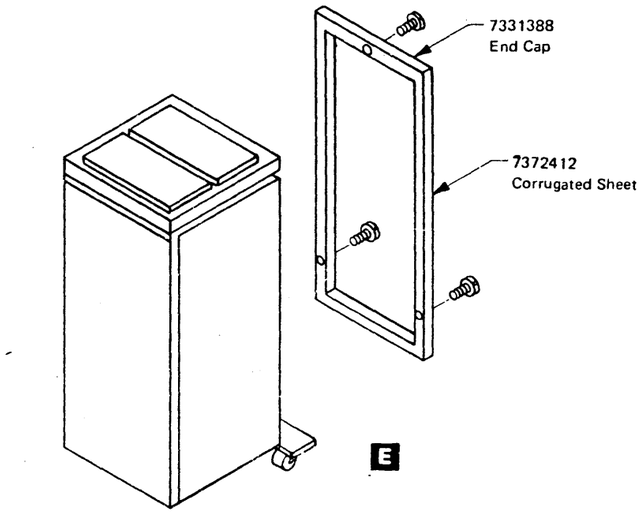
13. Tape (part 7330562) around the frame at three levels. ☐











Part	EC No.				
8271695	Date	388707 1Dec79	213545 15Jun81		

RELOCATION/REMOVAL PROCEDURES

Pack the MCU Frame (Continued)

Frame 09 without Q-tailgate Attached

		Step Cplt
	1. Ensure that all loose connectors have been inserted in the organizers and secured.	☐
A	2. Place cover shims (part 7331331) between the upper hinge plate and the cover seal lips on all covers.	☐
	3. Place a polyethylene bag (part 7330589) over the frame.	☐
B	4. Bolt end caps (part 7331389) to each end of the frame.	☐
	5. Tape corrugated pads (part 7372412) over each end of the frame and tape corrugated pads (part 7372748) over each side of the frame.	☐
	6. Tape (part 7330562) around the frame at three levels.	☐

Frame 09 with Q-tailgate Attached C

	1. Ensure that Q-tailgate is locked in position.	☐
D	2. Bolt end caps (part 7331390) to each end of the frame through the attachment holes.	☐
E	3. Place cover shims (part 7331331) between the upper hinge plates and the cover seal lips on all covers. Tape the shims in place.	☐
	4. Place a polyethylene bag (part 7330579) over the frame.	☐
	5. Tape corrugated pads (part 7372412) over each end of the frame and tape corrugated pads (part 7372748) over each side of the frame.	☐
	6. Tape (part 7330562) around the frame at three levels.	☐