

Field Feature Bill of Material (FFBM)

PN 66X1123

**CONVERT an IBM 3745 Model
210 to 410**

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3745 FFBM	PN 66X1123 1 of 26	See EC History	EC A73200 20JAN89	EC A98108 31MAY90	EC A98108A 21JUN90	EC E27926 14MAR97
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3745
FFBM

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See EC History

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Before Installation (Steps 1 - 8)

1.0 Machines Affected.

3745 Model 210

This feature should only be applied on the machine serial for which it is specified.

2.0 Related B/Ms and ECs.

2.1 Prerequisites.

- IOSW Card P/N 03F8120 or later (Ref ZZ001).
Checkpoint: IOSW Card on 01B-A1N0 (CCUA)
- CSP Card P/N 11F5035 or later (REF ZZ001)
Checkpoint: CSP CARD(S) on 01G-A1.
- CAL Card P/N 11F6090 or later (REF ZZ001)
Checkpoint: CAL CARD(S) on 01L-A1.
- MICROCODE level A47006B or higher.
Checkpoint: Microcode installed in 3475.
- DOCUMENTATION level A47339 or higher.
Checkpoint: YZ Pages.
- MOSS EPROM P/N 11F5058 or later (REF ZZ001)
Checkpoint: MOSS EPROM Card on 01A-X0E4

2.2 Concurrent

(Must be installed together)

None.

2.3 Companion

(May be installed separately)

None.

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3.0 B/M(s) to be Installed.

Note: Review each numbered item in this section to determine your needs.

FFB/M(s) to be installed.

FFB/M	Feature Description
66X1122	3745 MODEL 210 conversion to model 410
66X1123	Installation Instructions.

As required FFB/M(s)

FFB/M	Feature Description
66X1101	DMSW Card Installation. when a HPTSS is installed in base frame: (Check in MLC if feature 4740 is installed)
80G5106	CSP Card Exchange
80G5108	CADS Card Exchange
80G5116	IOSW Card Exchange

4.0 Preparation.

- Familiarize yourself with the purpose and details of this installation instruction.
- Check all items and count parts listed on the FFB/Ms to be installed to determine that all parts were received.
- **Warning:** Always be aware that the TCM is susceptible to mechanical shock damage. Before starting this installation carefully observe handling instructions and keep the TCM in its shipping container whenever it is not in the machine.

Visually check that the TCM, the TCM board and the trileads cables are not damaged before starting the installation.

5.0 Program Update.

5.1 Diagnostic Programs.

CDF to reflect this change will be performed in 11.2, "Update the Configuration Data File (CDF)." on page 23. This is essential to allow internal diagnostics to be run properly.

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5.2 System Programs.

The customer has to update the control program to implement this change.

6.0 Purpose and Description.

6.1 purpose.

Convert a 3745 Model 210 to Model 410.

6.2 Description.

Installation of a second CCU (TCM) and associated hardware.

7.0 Installation Time.

To be reported as MES.

FFB/M	Machine Hrs	System Hrs	Nbr of CE
66X1122	7.0	0.0	1

8.0 Special Tools and/or Materials Required.

P/N	Name
69X7667	TCM Tool Kit
6428316	ESD Kit
	Freon TF or isopropyl alcohol.

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Installation (Steps 9 - 11)

9.0 Safety.

Remove all electrical power from the machine and associated machines before starting the hardware installation in Step 10.2. This can be done by turning OFF CB1.

Review the **Safety Inspection Procedures** located at the beginning of the *3745 Maintenance Information Procedure (MIP)* manual.

10.0 Details of installation.

Before proceeding with any physical installation, the following steps must be performed:

- Ask customer to set all lines and channel addresses offline for this controller.
- Make sure that no error is reported.
- Ask customer for **Maintenance Password**.
- Ask customer to logoff the console if not already done.

10.1 Checking, Diagnostics, Power OFF.

10.1.1 On Control Panel:

- ___ 1. Check that the **Power Control** indicator displays 3.
If not, record the value __. Then, press **Power Control** key until 3 is displayed.
Press **Validate** key.

10.1.2 On Local Console Powered ON :

- ___ 1. On **Interface Display** screen, record **Enabled Channel Adapters**. Then, disable all channel adapters.
- ___ 2. Wait for **Interface Status disabled** for all CA's. Then, press F4.
- ___ 3. Enter the **Maintenance Password** (Provided by customer). Then, press **SEND**.
- ___ 4. Enter **RST** to reset the CCU. MOSS goes in **MOSS alone** state.

10.1.3 Display the Configuration Data File (CDF) on Local Console.

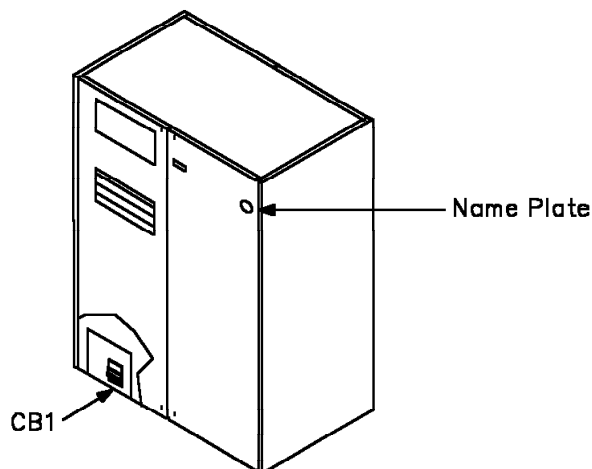
- ___ 1. Enter **CDF**. Then, press **SEND**.
- ___ 2. Select **DISPLAY/UPDATE**, enter **1**. Then, press **SEND**.
- ___ 3. Select **CCU**, enter **4**. Then, press **SEND**.
- ___ 4. Record information concerning CCU
- ___ 5. Display shows presence of CCU **A** only.
- ___ 6. Press **F1**.

10.1.4 Run Diagnostics.

- ___ 1. Select **ODG**. Then, press **SEND**
- ___ 2. Select **CCU**, enter **2**. Then, press **SEND**.
If any error is reported, go to *Maintenance Information Procedure (MIP)* Chapter 2 and follow appropriate procedure(s).
- ___ 3. Select **IOC**, enter **3**. Then, press **SEND**.
If any error is reported, go to *Maintenance Information Procedure (MIP)* Chapter 2 and follow appropriate procedure(s).
- ___ 4. If no error is reported, press **F1**.

10.1.5 Power OFF

- ___ 1. Power OFF the machine from the Control Panel.
- ___ 2. Open system covers front and rear. Then, switch OFF CB1.



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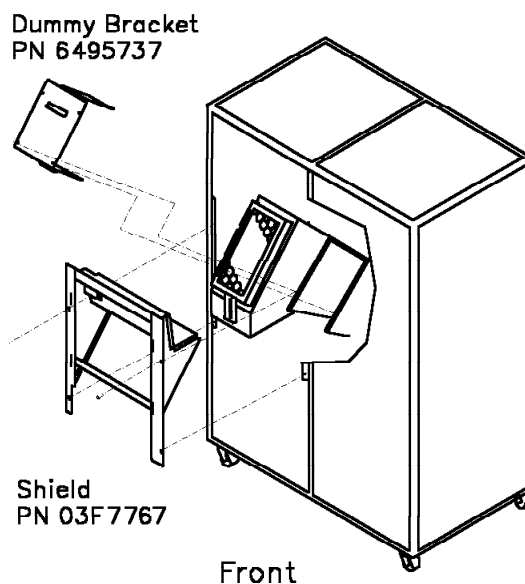
10.2 Hardware Installation.

Warning: Follow existing ESD procedures when handling logic parts.

10.2.1 TCM Board Installation.

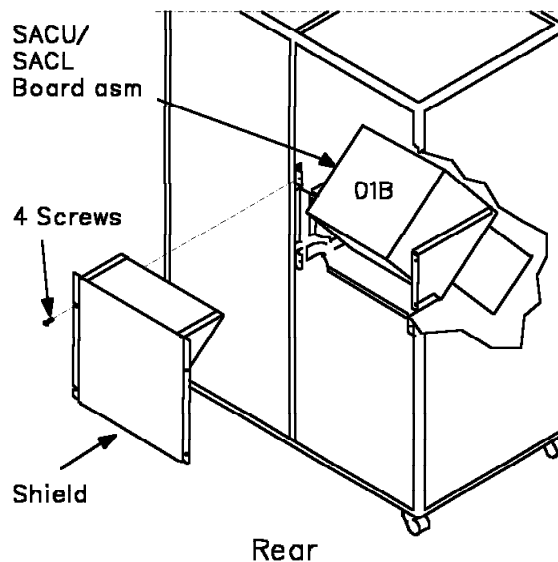
From the front of the machine (Use tools from TCM tool kit)

- ___ 1. Remove the shield P/N 03F7767 with its 4 screws. Save parts.
- ___ 2. Remove dummy bracket P/N 6495737 With its 4 screws. Save parts.

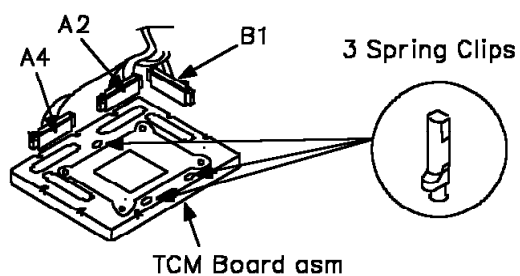


From the rear of the machine.

- ___ 3. Remove shield (If installed) P/N 58X9288 with its 4 screws. Save parts.
- ___ 4. Locate SACU/SACL board asm in 01B and the CCU B board area in 01D.

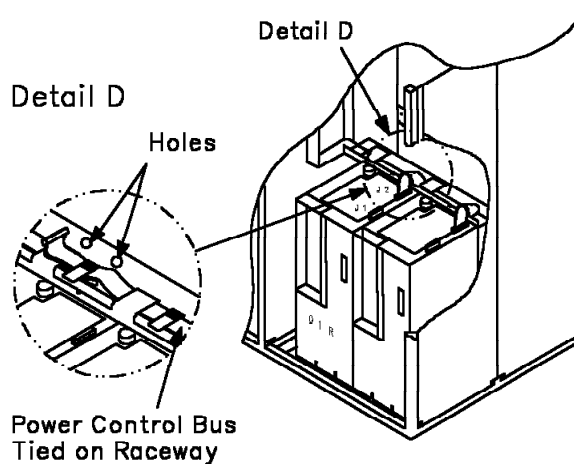


- 5. Install the 3 spring clips shipped with the board asm (Provided by FFB/M 66X1149) on the board.



Warning: Prior to install the TCM board inspect the connector for debris or damage.

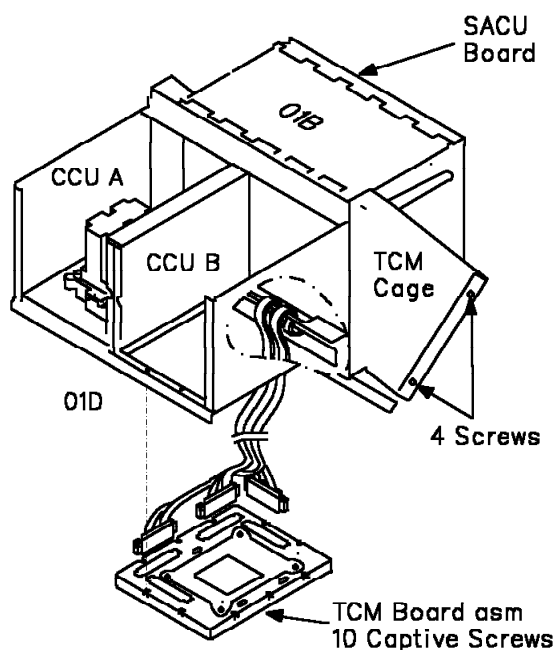
- 6. Look at the raceway below the TCM cage.



If 2 holes are present under the FLAT cables.

___ 7. Install TCM asm.

Use the TORQUE tool to tighten the 10 captive screws. (Pass the tool through the holes in the raceway tight the two bottom screws).

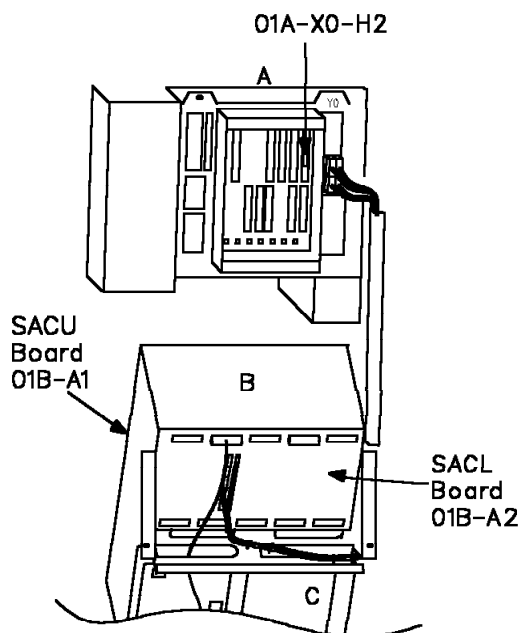


Then go to 10.2.2, "Trileads Cables Installation." on page 11 .

If there are no holes in the raceway below the TCM cage:

- ___ 8. In the rear of the machine, remove the 4 screws holding the TCM cage.
- ___ 9. In MOSS board, unplug the cable in 01A-X0-H2/J1.
- ___ 10. In the front of the machine, loosen the cables going to the TCM cage.

Unplug flat cables from G03 and P03 on 01B-A1 board (SACU board in TCM cage).



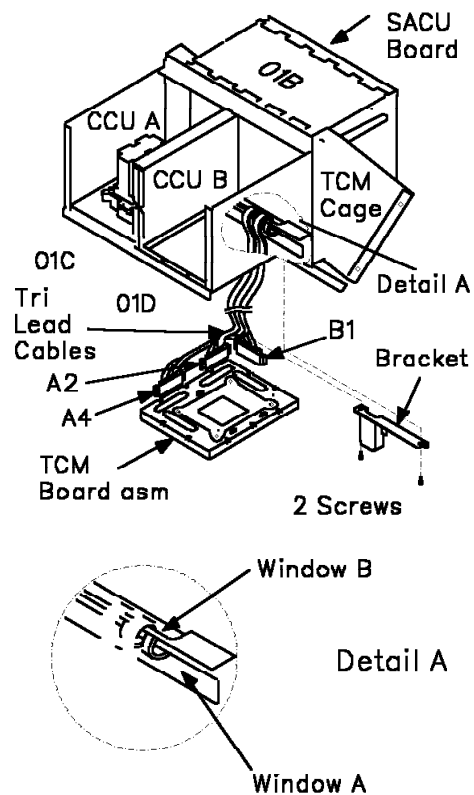
Warning: Prior to install the TCM board inspect the connector for debris or damage.

- ___ 11. Install the TCM board asm. use the torque tool to tighten the 10 captive screws.
- ___ 12. From the rear, slide out the TCM cage far enough to torque the 2 bottom screws on the TCM board.
- ___ 13. Slide the TCM cage back into the machine using care to not damage the cables, loosened in the previous step.
- ___ 14. Replace the cables in the positions removed in the previous step.

10.2.2 Trileads Cables Installation.

- ___ 1. Route the cables P/N 3F4394, 3F4395, and 3F4427 thru the windows a and B of the 01B frame at the bottom of SACL board.
- ___ 2. Plug and secure cables connectors on board (With the torque tool tighten partially each screw of each connector, then tighten completely both screws).

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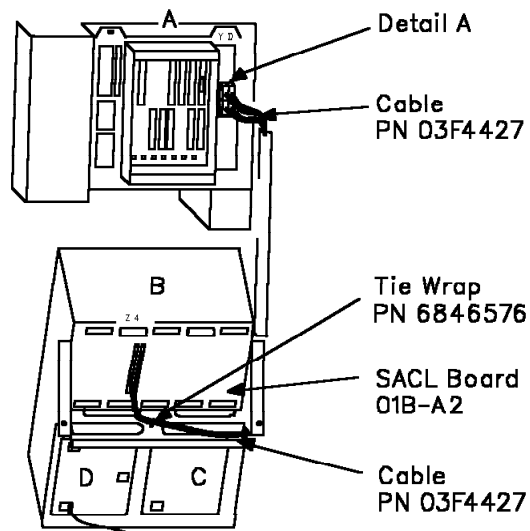
- ___ 3. Route cables, then connect other end of trileads cables on MOSS board and SACL board as shown in the following tables:

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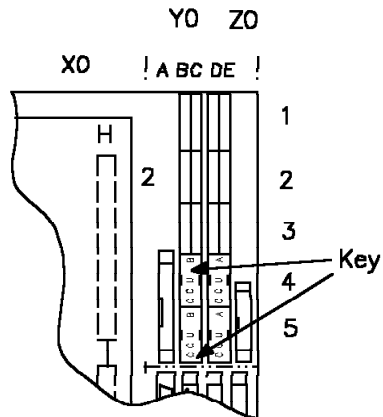
Cable P/N	Logic Cable Connectors		
	From		To
	Socket	TABS	Volume Area
03F4394	B1	A	01B-A2Q0A5 01B-A2Q0D5
		B	01B-A2Q0A4 01B-A2Q0D4
		C	01B-A2Q0A3 01B-A2Q0D3
		D	01B-A2Q0A2 01B-A2Q0D2
		E	01B-A2P0A2 01B-A2P0D1
03F4427	A2		
		C	01A-Y0/B5 01A-Y0/C5
		D	01A-Y0/B4 01A-Y0/C4
		E	01B-A2P0-A1 01B-A2P0-D1

Cable P/N	Logic Cable Connectors		
	From		To
	Socket	TABS	Volume Area
03F4395	B1	A	01B-A2N0-A5 01B-A2N0-D5
		B	01B-A2N0-A1 01B-A2N0-D1
		C	01B-A2N0-A3 01B-A2N0-D3
		C	01B-A2N0-A2 01B-A2N0-D4

See following figure for routing of cable P/N 03F4427.
Respect the KEY on cables connectors for positioning.



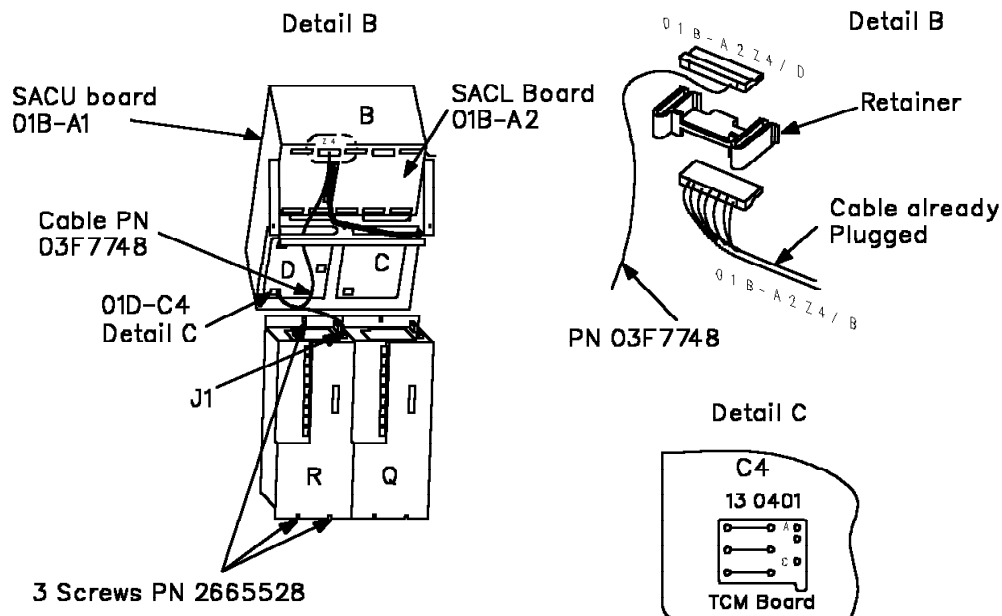
Detail A



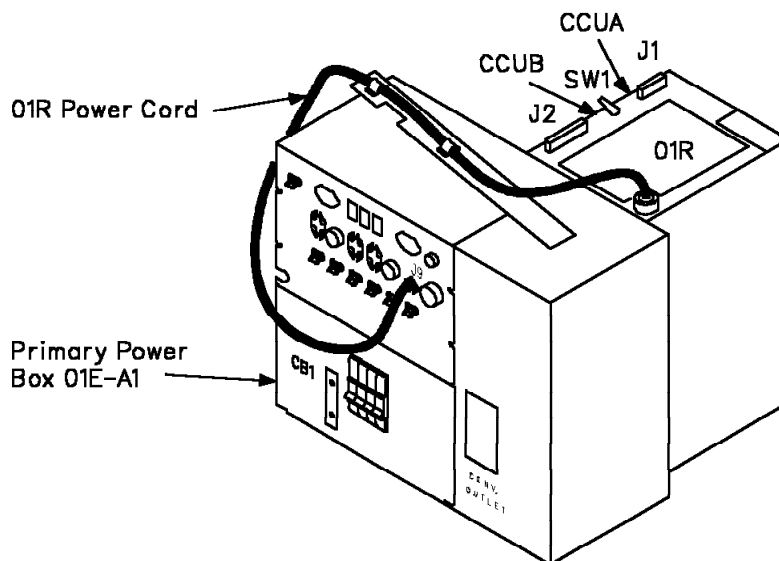
- ___ 4. Install bracket P/N 6495849 with 2 screws P/N 2665527.
Secure trileads cables with 3 tie wraps P/N 6846576

10.2.3 Power ASM (PSTY) Installation.

- ___ 1. Slide the Power ASM P/N 6495666 in location 01R and secure it with 3 screws P/N 2665528.
- ___ 2. Route the Power Cord from the top of the Power to front of the machine and plug it in connector 01E-A1J9 of Primary Power Box.



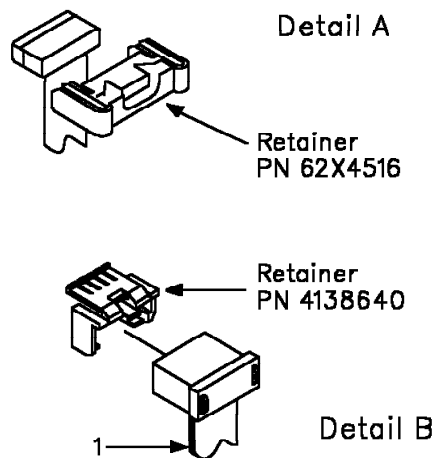
- 3. Install and connect cable P/N 03F7748 from Power Supply connector 01R-J1 to TCM BOARD 01D-C4 pin A01,B01,C01 and to SACU board 01B-A2Z4 row D.
Insert the connector in retainers already installed as shown in the following figure.
- 4. Plug the Power Control Bus cable in socket 01R-J2. (This flat cable is already installed in the machine and is tied at the top of 01R area).
- 5. On power supply set the switch **SW1** to 1 (CCU B).



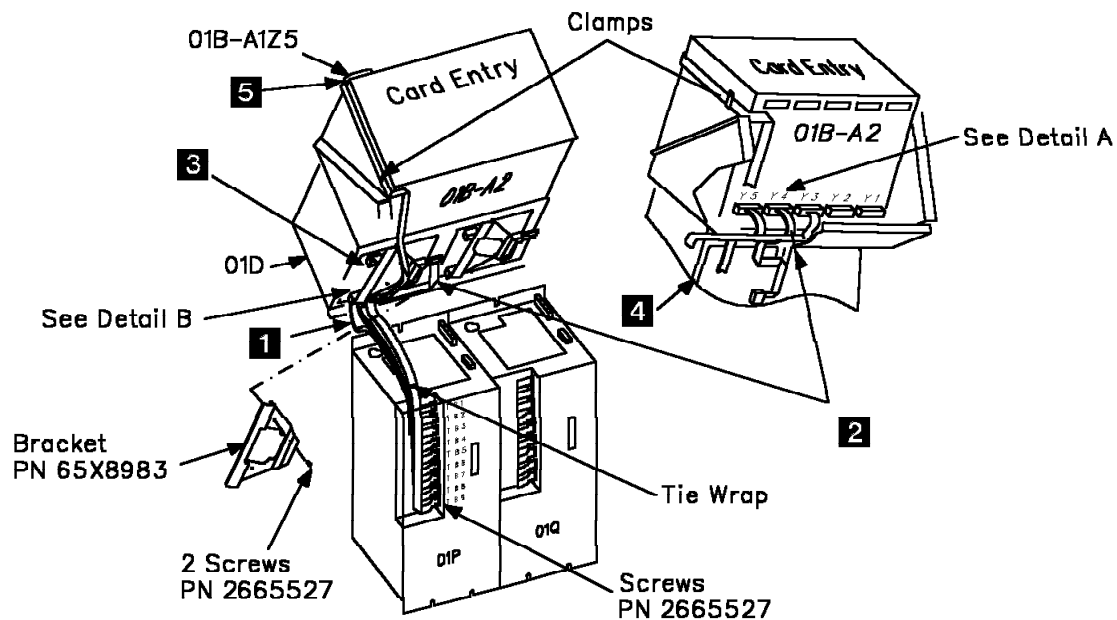
10.2.4 FDS Cables Installation.

- ___ 1. Remove the plastic cover from 01R-TB. Save for reinstallation.
- ___ 2. Install retainer P/N 4138640 on FDS cable P/N 6496016.
- ___ 3. Install 3 retainers P/N 62X4516 on connector end of FDS cables P/N 6496019, 6496018 and 03F4368.

Item	P/N	From	To
1	6486016	01R-TB1 01R-TB2 01R-TB3	01D-C4 01D-C4 01D-C4
2	6486019	01R-TB7 01D-A3	01D-A3 01D-A2-Y4
3	6486017	01R-TB4 01R-TB5 01R-TB6	01D-C1 01D-C1 01D-C1
4	6486018	01R-TB8 01R-TB9	01B-A2-Y5 01B-A2-Y5
5	03F4368	01R-TB9 01R-TB9	01B-A1-Z5 01B-A1-Z5



- ___ 4. Route and connect the FDS cables in the order showed in above table for proper routing. Use screws P/N 2665527 to secure cables on TB.
- ___ 5. Secure FDS cables with tie wraps P/N 6846576.
- ___ 6. Stick a clamp P/N 34F1295 on the left side of CCU cage and secure cable **5** with it.
- ___ 7. Reinstall the plastic cover previously removed on tb.
- ___ 8. Install the bottom TCM board bracket P/N 65X8983 with 2 screws P/N 2665527

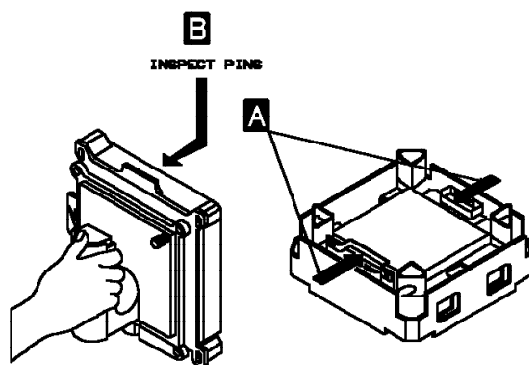
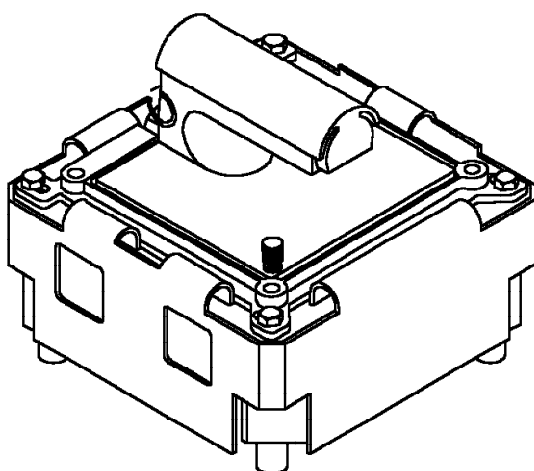


10.2.5 TCM Installation

Warning

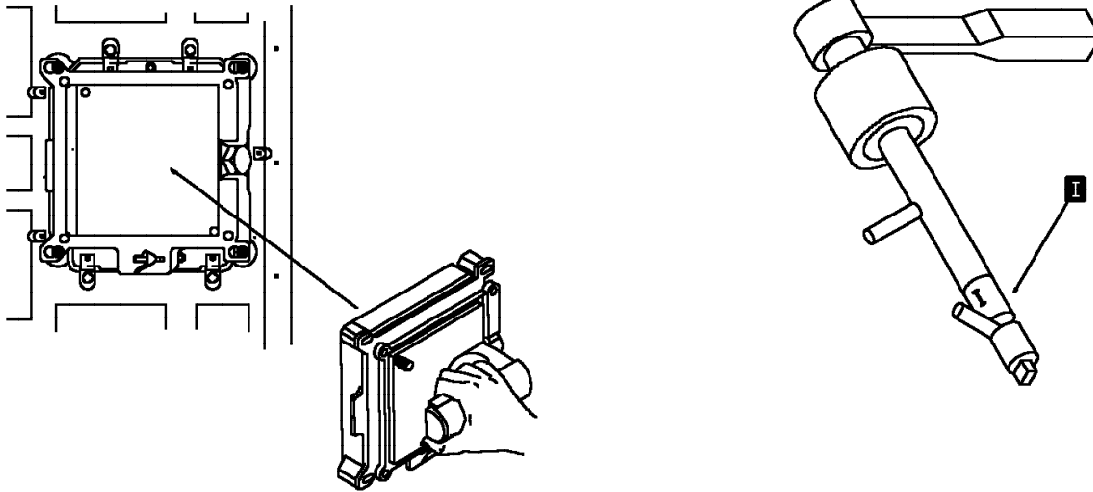
- When handling be extremely careful not to drop or bump the assembly.
- Do not install the TCM if any pins are damaged.
- Inspect the TCM board for debris or damage.

1. Using the TCM handle, take the TCM out of the container.
2. Squeeze at the arrows to remove the clip-on cover.
3. Inspect TCM pins for damage or debris.

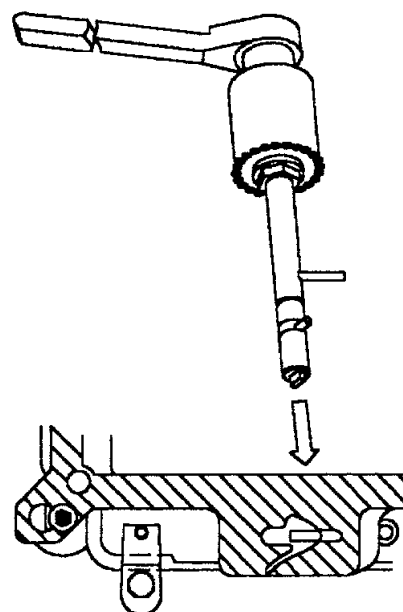
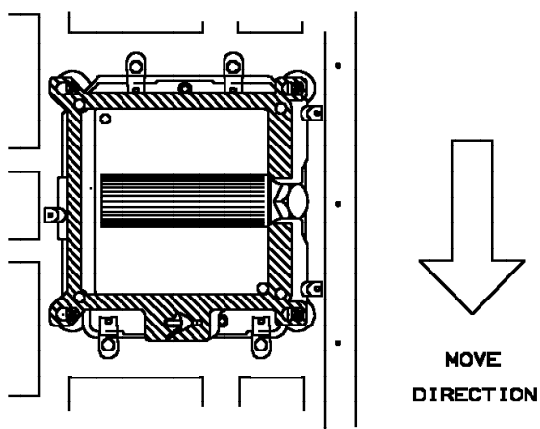


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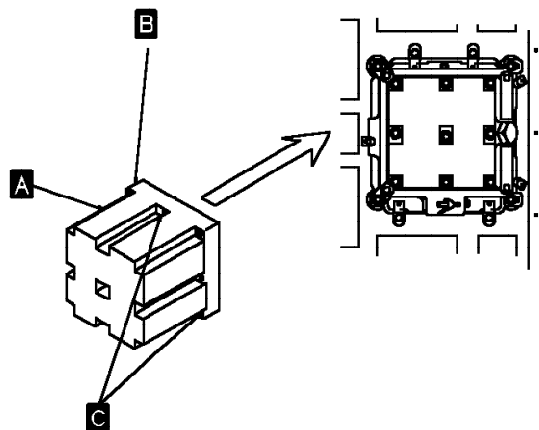
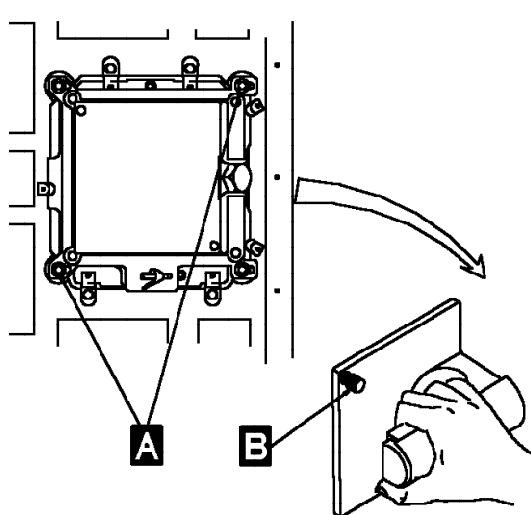
- ___ 4. Install template P/N 4447370 onto TCM pins to insure alignment of TCM pins.
- ___ 5. Align the template so that the large hole in the template coincides with the cam hole in the TCM.
- ___ 6. Carefully align the gauge with the guide pins on the TCM base plate
If it does not fit properly, use the module pin aligner to straighten the bent pins.
- ___ 7. Hold the TCM by the handle and carefully install it on 01D board.
- ___ 8. Firmly maintain the TCM module in place and latch the three spring clip retainers by lifting and rotating.
- ___ 9. Be sure that the detent pin of actuating tool is on I.



- ___ 10. Push the cam guard to the left.
- ___ 11. Insert the tip of actuating tool into the module with indicator pin pointing to uncammed position (11 o'clock) (detent pin horizontal to left at 9 o'clock).
- ___ 12. Turn the actuating tool clockwise until the clutch is activated.
- ___ 13. Remove the actuating tool.
- ___ 14. With the TCM cam gauge check if the TCM is cammed into position.
The red line should not be visible.
- ___ 15. Push the cam guard in the most right limit and tighten the 4 TCM retaining screws (Use the TCM tool).



- ___ 16. Remove the handle by loosening the 2 thumbscrews.
- ___ 17. Install the head sink P/N 6103789 with the two cut corners on the left. Use the torque tool to tighten the 9 screws.

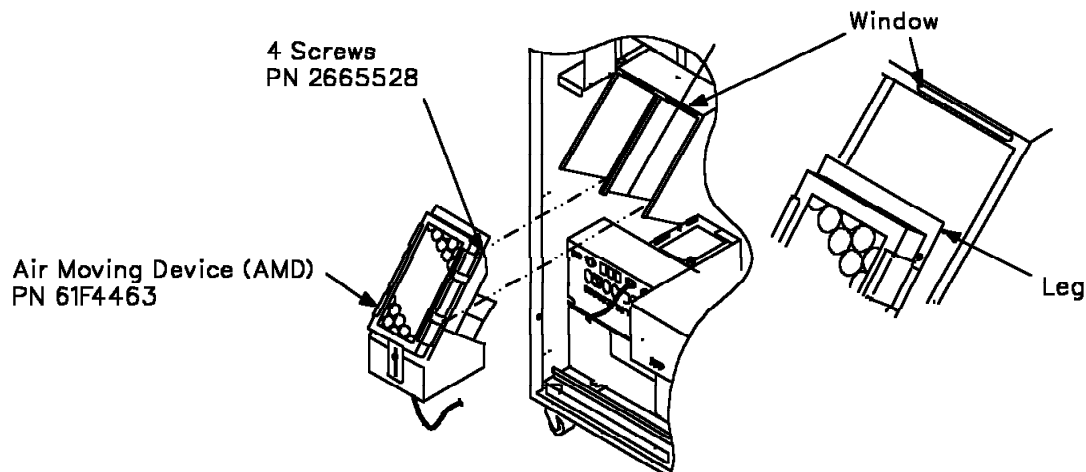


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10.2.6 Air Moving Device Installation (AMD).

From the front of the machine:

- ___ 1. Insert the top leg of AMD ASM P/N 6495698 in the small window of 01B frame. Then, swing the bottom of the ASM.
- ___ 2. Tighten the four mounting screws saved in step 10.2.1
- ___ 3. Route and plug AMD Power Cord in the 01E-A1J2 connector of primary Power Box.



10.2.7 Cards Installation.

Using the following procedure carefully insert cards provided by FFB/M 66X1125 in SACU/SACL board ASM as follow:

- ___ 1. At position R0, Q0, and n0 move levers A and B outwards and carefully remove the dummy cards.
- ___ 2. Carefully insert the cards into their slots and push them until the end of the slots
- ___ 3. Press in catches C and D and push the handle until it locks into position.
- ___ 4. Using both hands move levers A and B inwards simultaneously.

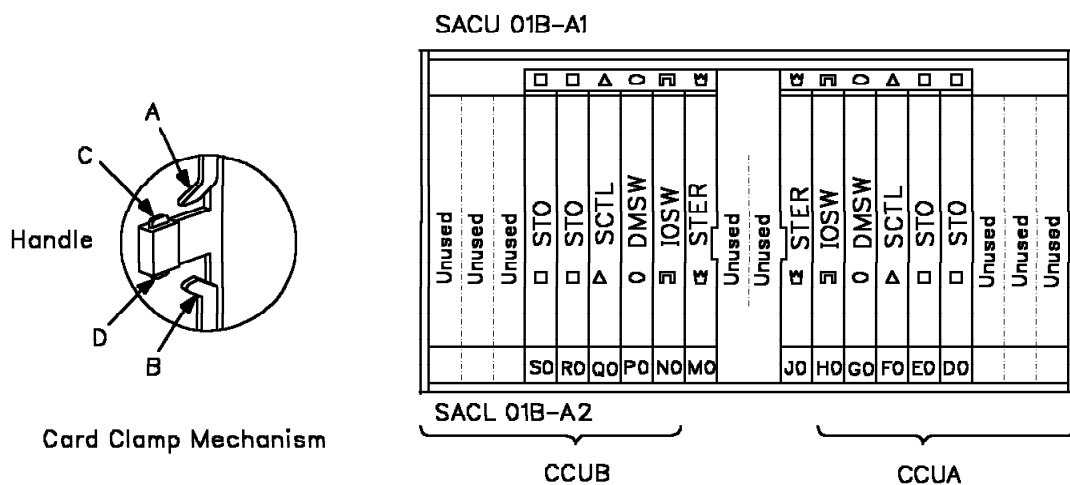
STO card in position R0
 SCTL card in position Q0
 IOSW card in position N0

10.2.8 DMSW Card

If a HPTSS adapter is installed in base frame (check for Feat Code 4740), a DMSW card is required for CCU B.

If you do not have a HPTSS installed, skip to 10.2.9, "SACU/SACL Hardware." on page 21.

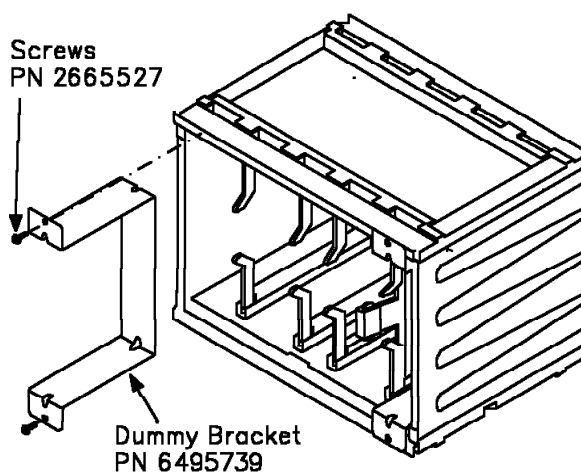
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1. At position P0 of SACU/SACL board assembly move levers A and B outwards and carefully remove the dummy card.
2. Carefully Insert the DMSW card provided by card group B/M 66X0060 from FFB/M 66X1101, in slot P0 of SACU/SACL board assembly as described in previous step.

10.2.9 SACU/SACL Hardware.

1. Install dummy cards P/N 89X3307 in position S0 and in P0 (if you do not have a HPTSS installed) following the above procedure.
2. Install bracket P/N 6495739 on the left of SACU/SACL board ASM with 2 screws P/N 2665527.



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10.2.10 Shield and Covers

- ___ 1. Reinstall all shields and covers removed in previous steps.
- ___ 2. Remove the name plate from the system cover 'b' and clean any adhesive residue from the recessed area of covers with Freon TF or Isopropyl Alcohol.
- ___ 3. Remove the paper from the back of new name plate P/N 03F7702 and stick the plate in place.

10.2.11 Reconfiguration.

If the system has to be reconfigured after the conversion, you may proceed now. Use provided sheet YZ839 to write down new line numbers.

10.3 Power ON

- ___ 1. Switch CB1 ON and close system covers.

On Control Panel

- ___ 2. Press **Function** key until 1 is displayed. Then, press **Validate** key.
- ___ 3. Press **Power ON** key.

11.0 Test Procedures

On Local Console

- ___ 1. Wait for **CA Interface Display** screen. Then, press **F4**.
- ___ 2. Enter **Maintenance Password**. Then, press **SEND**.

11.1 Re-create the Power Configuration Table.

- ___ 1. Enter **POS**. Then, press **SEND**.
- ___ 2. Enter **C**(Re-create). Then, press **SEND**. :p;When the **Created Power Configuration Table** is displayed, check on **Base Frame** line, that the number **3** is displayed.
- ___ 3. Enter **Y** to confirm. Then, press **SEND**.
- ___ 4. Enter **1** to display base frame power status. Then, press **SEND**.
Power Supply **ID03** is in **DOWN** state.
- ___ 5. Enter **U03** to set the power **UP**.
- ___ 6. Press **F1**.

11.2 Update the Configuration Data File (CDF).

- ___ 1. Enter **CDF**. Then, press **SEND**.
- ___ 2. Select **Verify**, enter **4**. Then, press **SEND**.
The values from the disk and the machine should be identical except for the CCU you have just installed.
- ___ 3. To update the CDF with machine values, enter **2**. Then, press **SEND**.
- ___ 4. When function completed, msg **CDF Verify Completed** is displayed. Press **F6**.
- ___ 5. If the hardware is not recognized go to MIP and follow appropriate procedure.

11.3 Display the Configuration Data File (CDF).

- ___ 1. Select **DISPLAY / UPDATE**, enter **1**. Then, press **SEND**.
- ___ 2. Select **CCU**, enter **4**. Then, press **SEND**.
Information regarding **CCU B** should appear on the right side of the screen.
- ___ 3. Press **F6**.
- ___ 4. Select **DISPLAY / UPDATE**, enter **1**. Then, press **SEND**.
- ___ 5. Select **Switch**, enter **5**. Then, press **SEND**.
Information regarding switch for CCU B and CCU A is displayed for both CCU.
- ___ 6. Check for a **Y** in front of **presence** and in front of **DMA** if you have installed a **DMSW** card.
- ___ 7. Press **F6**.

11.4 Define the CCU Mode.

- ___ 1. Select **DISPLAY / UPDATE**, enter **1**. Then, press **SEND**.
- ___ 2. Select **CCU Operation Mode**, enter **9**. Then, press **SEND**.
- ___ 3. Press **F5** for update.
- ___ 4. Choose the correct mode according to customer request (Default value is TWIN BACK UP). Then, press **SEND**.
- ___ 5. Press **F1**.

11.5 Run Diagnostics.

- ___ 1. Enter **ODG**. Then, press **SEND**.
- ___ 2. Enter **2** (CCU). Then, press **SEND**.
If any error is reported, go to MIP Chapter 2 AND follow appropriate procedures.

- ___ 3. Enter **3** (IOC). Then, press **SEND**.

If any error is reported, go to MIP Chapter 2 AND follow appropriate procedures.

- ___ 4. If no error, press **F1**.

11.6 Save Configuration Data File (CDF) on Normal Diskette.

- ___ 1. Select **DIF**. Then, press **ENTER**
- ___ 2. Select **2**.
- ___ 3. Enter the date and save-ID and press **SEND**.
Follow promptings on console.
- ___ 4. When function Complete, press **F1**.

11.7 Logoff the Console

Re-enable channel adapters disabled in 10.1.2, "On Local Console Powered ON : " on page 6 step 1.

11.8 General IPL

On Control Panel:

- ___ 1. Set the Power Control indicator to its original value, as recorded in 10.1.1, "On Control Panel:" on page 6 step 1.
- ___ 2. Set the function indicator value to **0** (GENERAL IPL).
- ___ 3. Press **Validate** key.

General IPL starts.

If steady **FF4** code is displayed on control panel, ask customer to load the control program.

IF Control Program is loaded from hard disk, **000** will be displayed when IPL Successful.

Note: Control program load can fail if a mismatch exists between control program and hardware configuration.

After Installation (steps 12-15)

12.0 Field Updating

None.

13.0 Publications Update

None.

14.0 Parts Disposition

14.1 Purchased Machines

Refer to the parts ownership matrix to determine the correct owner of removed/unused parts.

- For EMEA/APG/AG Areas, refer to *Hardware and General Service Code Description*.
- For Domestic Areas, return parts to the customer.

All parts determined to be the property of IBM should be processed as stated in the rental machine direction below.

14.2 Rental Machines

- Return parts to the IBM branch office for potential return in accordance with the existing return, recovery and reclamation programs.
- Return to IBM branch office the TCM case, TCM handle and clip-on TCM cover for disposition.

15.0 Machine Records

- Install the new **MACHINE HISTORY** supplied.
- Report installation (As MES activity) and quality to existing procedures.

End of instructions.

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