

Field Feature Bill of Material (FFBM)

PN 71F9879

CONVERT an IBM 3745 Model 210 to 310

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3745 FFBM	PN 71F9879 1 of 20	See EC History	EC C38411 18JUN93	EC D55799 16SEP94	EC D55883 11MAY95	EC E27926 14MAR97
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3745
FFBM

PN 71F9879 2 of 20

See EC History

EC C38411 18JUN93

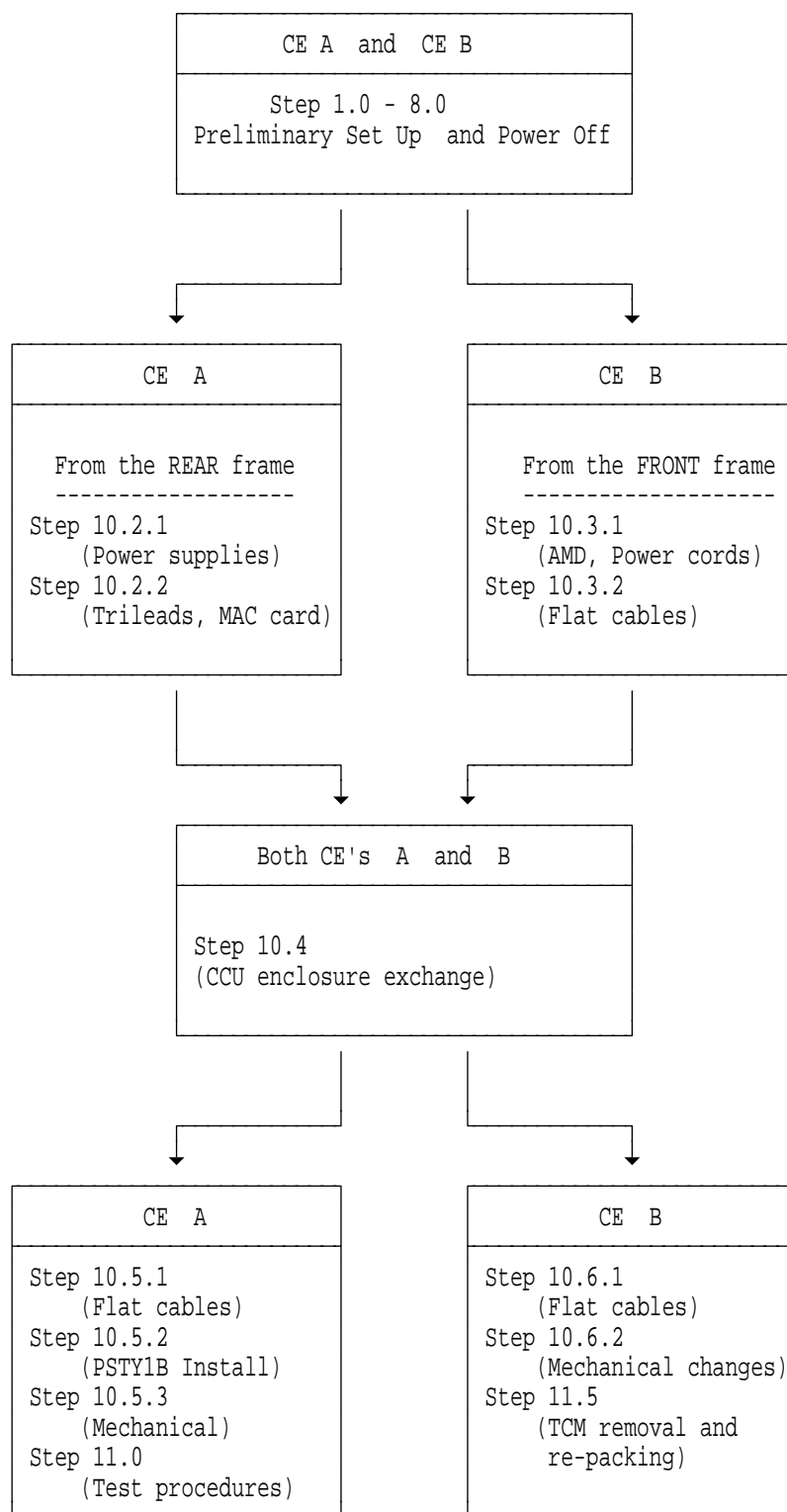
EC D55799 16SEP94

EC D55883 11MAY95

EC E27926 14MAR97

Because these instructions are divided in two procedures, 2 CEs may be used for the complete installation.

When installing a model conversion an additional person may be needed because of the weight of the enclosure unit.



Before Installation (Steps 1-8)

Net Priced Feature

All parts removed from this machine are IBM property and must be returned to IBM.

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 BMs and ECs

2.1 Prerequisites

(Must be installed prior to this installation)

- Microcode level C37967.
Checkpoint: Perform MLT function on MOSS.
- Documentation level C37859.
Checkpoint: Check level on PRD sheet (Vol 3).
- TRM card P/N 09G2777 or later. (If Token Ring feature is installed)
Checkpoint: Check TRM card P/N on board 01G-A1.
- NCP V5R4 or later must be installed and validated before starting installation.
Checkpoint: Perform MLT function on MOSS.

3.0 FFBMs to be Installed

Install one of the following BMs:

Note: In the following: DMSW means HPTSS feature present, DMSW card installed in the CCU.
STO A means Storage increment feature installed in CCU A.

- FFBM 71F9928 - Convert a 3745 210 to model 310 Without DMSW, without STO A.
- FFBM 71F9929 - Convert a 3745 210 to model 310 Without DMSW, with STO A.
- FFBM 71F9930 - Convert a 3745 210 to model 310 With DMSW, without STO A.
- FFBM 71F9931 - Convert a 3745 210 to model 310 With DMSW and STO A.
- 71F9879 - Installation instructions.

As required FFB/M(s):

- FFBM 80G5106 - CSP Card Exchange
- FFBM 80G5108 - CAL (CADS) Card Exchange
- FFBM 80G5110 - TRM Card Exchange
- FFBM 80G5119 - Install Microcode level C37967.
- FFBM 80G5123 - Install Documentation level C37859.

4.0 Preparation

- Familiarize yourself with the purpose and details of the installation instruction before negotiating machine time with the customer.
- Check all items listed on the BM(s) to determine that all parts have been received.
- Ensure that RETAIN search has been performed and all Pre-reqs have been installed. Perform a search using **3745CCUPGRADE** as **SAS keyword**.
- Follow the unpacking instructions attached to the case to unpack the MES material. Do not damage the packing boxes, they will be used for repacking.
- Before starting model conversion ensure that the complete 3745 is available.
- To support the new model, customer must be aware, that ACF/NCP V5R4 must be installed.
- Prerequisite microcode EC and NCP level must be installed and tested before starting MES installation.**

Additional Info:

3745 FFBM	PN 71F9879 4 of 20	See EC History	EC C38411 18JUN93	EC D55799 16SEP94	EC D55883 11MAY95	EC E27926 14MAR97
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- All parts should be removed and handled carefully. Returnable parts must be received at the factory in good working order.
- To save installation time and machine down time, some tasks will be performed after the General IPL section (Step 11.4).
- When hardware installation is over, and before starting the test procedure section (11.0), each CE should cross-check the part of the other CE.

5.0 Programming

5.1 Diagnostic Programs

CDF to reflect this change will be performed in step 11.0. This is essential to allow internal diagnostics to be run properly.

5.2 System Programs

The customer must update the control program to implement this change.
ACF/NCP V5R4 is required to support model 310.

6.0 Purpose and Description

6.1 Purpose

To convert a 3745 210 to a 3745 310.

6.2 Description

- Remove the TCM CCU enclosure, PSTY1, Air Moving Device, and associated cabling.
- Install a new CCU enclosure with Fan, new PSTY1B, and associated cabling.

Note: Logic cards will not be re-used.

7.0 Installation Time

To be reported as MES.

FFB/M	Machine Hrs.	System Hrs.	Nbr of CE
71F9928 or 71F9929 or 71F9930 or 71F9931	3.15	0.0	2

8.0 Tools/Materials Required

- ESD kit (PN 6428316)
- TCM tool kit (PN 69X7667)
- Isopropyl alcohol.

3745 FFBM	PN 71F9879 5 of 20	See EC History	EC C38411 18JUN93	EC D55799 16SEP94	EC D55883 11MAY95	EC E27926 14MAR97
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Installation (Steps 9-11)

9.0 Safety

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

10.0 Details of Installation

Before proceeding with installation the following steps must be performed:

- Ask customer to set all lines and channel addresses off-line for this controller.
- Ask customer for **Maintenance Password**.
- Ask customer to logoff the console if not already done.

10.1 Checking, Diagnostics

10.1.1 MOSS IML

On control panel:

- ___ 1. Check that **Power Control** indicator displays **3**. If not, record the value ___, then press **power control** key until **3** is displayed. Then, press **validate** key.
- ___ 2. Press **Service mode** key until a flashing **1** is displayed. Then, press **validate** key.
- ___ 3. Press **Function** key until a flashing **1** is displayed. Then, press **Validate** key.
- ___ 4. MOSS IML is performed.

On local console:

- ___ 5. From interface display screen, record **Enabled Channel Adapters** then **Disable** all channel adapters.
- ___ 6. Wait for **Interface Status Disabled** for all CA's. Then, press **F4**.
- ___ 7. Enter the **Maintenance Password**, press **SEND**.

If MOSS is in **MOSS ALONE** state, skip to 10.1.3.(CDF verify)

If NCP loaded and CCU running, enter **RST** to reset the CCU.
MOSS goes in **MOSS Alone** state.
Press **F1**.

10.1.2 Verify the CDF

- ___ 1. Enter **CDF**, Press **SEND**.
- ___ 2. Select **Verify**, Press **SEND**.
The value from the disk and the machine should be identical. If there are discrepancies, physically verify features and, if correct update the CDF with machine values, enter 2, press **Send**.
When function completed, msg **CDF verify completed**, is displayed.
- ___ 3. Press **F1**.

10.1.3 Run Diagnostics

- ___ 1. Enter **ODG**, Press **SEND**.
- ___ 2. Select **IOCB**, Enter **3**, Press **SEND**.
 - If any error is reported, go to *Maintenance Information Procedure (MIP)* chapter 1 and follow appropriate procedure.
 - If no error reported, Press **F1**.

10.1.4 Power OFF

Note

Remove all electrical power from the machine and associated machines prior to beginning hardware installation.

- ___ 1. Power off the 3745 from control panel.
- ___ 2. Open the front system cover, then switch off **CB1**.

Follow flow chart on page 2 for 2 CE/FE activity.

10.2 CE 'A' Tasks

Place a check mark in the blank space as each section is completed.

Warning: Follow existing ESD procedures when handling logic parts

10.2.1 Power Supplies

Open the rear system doors, disconnect the ground wire(s) (if present) from the right door and remove the door.

Note: To provide clearance for easier door removal, you may have to loosen two screws securing the end cover.

- ___ 1. From the rear, remove the shield **1** over the CCU cards if present.
- ___ 2. Locate the PSTY1 in location 01Q and remove the plastic cover from the power TB..**2**.
Disconnect all FDS cables from the TB.

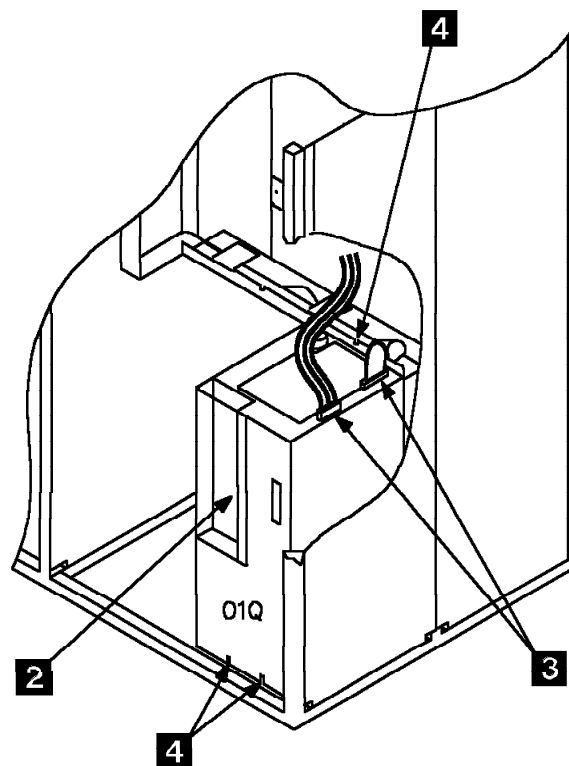
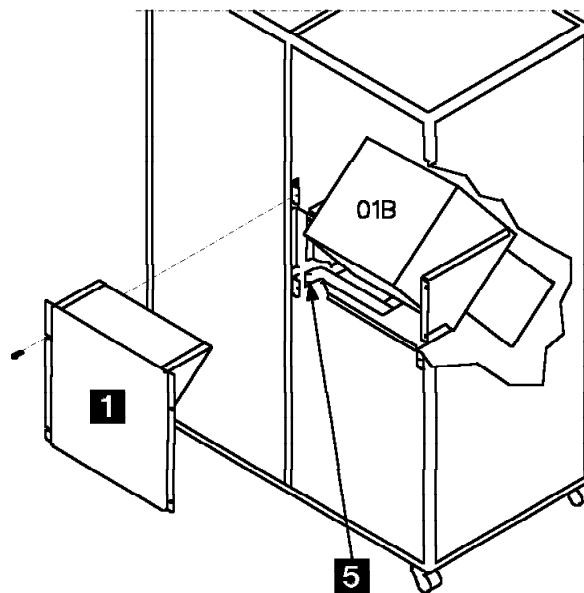
Tape the FDS cable ends to the enclosure (use tape provided for repacking).

- ___ 3. From the top of PSTY1, unplug the Power Control Bus cable from connector J2 and the Power On Reset cable from J1..**3**.

Warning

Secure the power bus cable in its raceway to prevent damage during CCU enclosure exchange.

- ___ 4. Remove 3 screws **4**, then remove the PSTY1 from the 3745. (The power cord has been routed back by CE 'B').
- ___ 5. Disconnect the FDS ground cable attached to the frame..**5**.
Save screws.



3745 FFBM	PN 71F9879 7 of 20	See EC History	EC C38411 18JUN93	EC D55799 16SEP94	EC D55883 11MAY95	EC E27926 14MAR97
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10.2.2 Tri-leads Cables, MAC Card Exchange

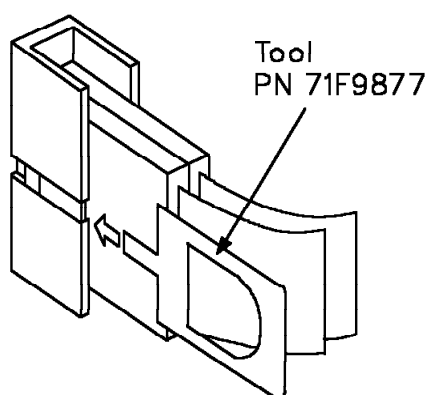
Note:

1. Locate the MOSS board in 01A, and the tri-leads cables connected in 01A-Y0D4/D5 and E4/E5..1.

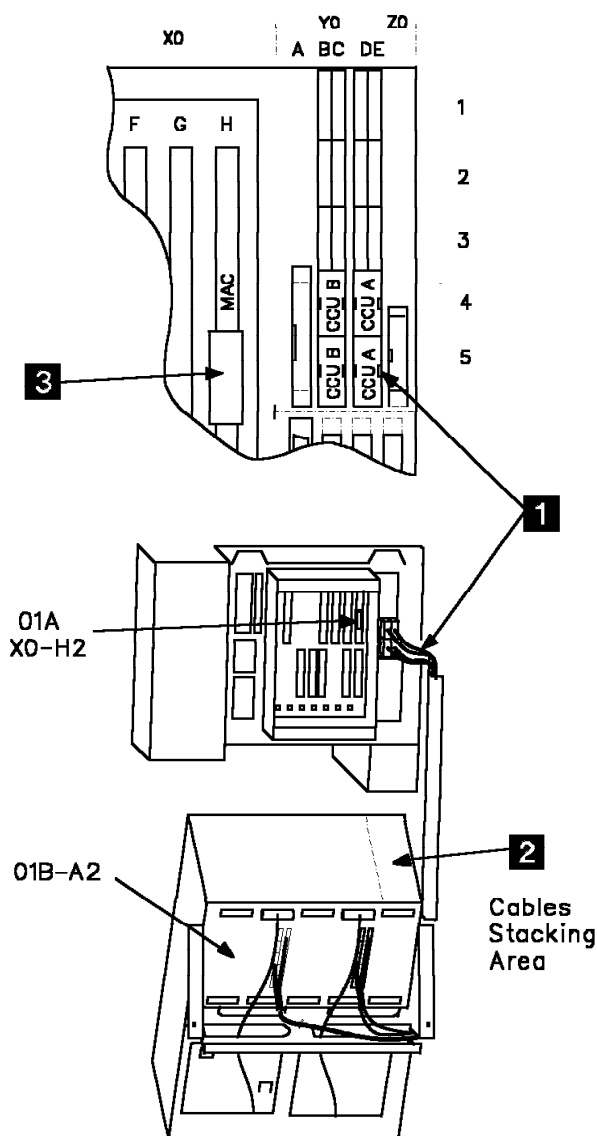
Note

To prevent damage to cables and board, use the tool P/N 71F9877 to unlock the connector as shown on the figure below.

Gently, insert the blade, then pull on cable housing to remove the cable.



2. Unplug the cables and route them back to the CCU enclosure. Secure tri-leads cables in the right side of CCU cage. .2.
3. In MOSS board, locate the MAC card in 01A-X0H2, and remove the cable connected to the MAC card. .3. Route the cable back to the CCU enclosure, and secure it in the right side of CCU cage. .2.
4. Remove the spring clips securing the locks of MAC card.
5. Remove the MAC card.
6. Install the new MAC card provided by the FFB/M in same position.
7. Reinstall the spring clips on MAC card then, take 'H' label off the old card and put it on new card.



10.3 CE 'B' Tasks

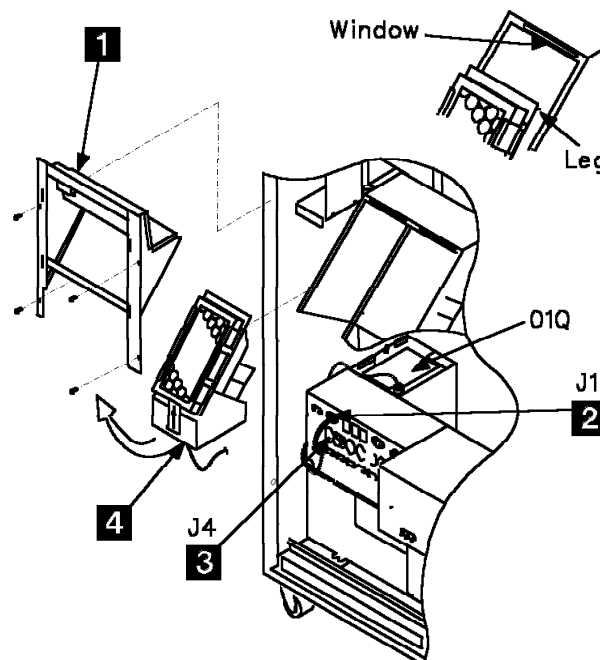
Place a check mark in the blank space as each section is completed.

Warning: Follow existing ESD procedures when handling logic parts

10.3.1 AMD, Power Cords

1. From the front of the 3745 remove 4 screws and remove the shield .1. (will not be re-used) over the AMD.(Air Moving Device).
 2. Unplug the AMD power cable from primary power box connector J1. .2.
 3. Remove 4 screws securing the AMD. Then, remove the AMD from the machine. .4.
- Note:** Swing out the bottom of AMD to disengage the top leg.
4. Unplug the PSTY1 power cable from connector J4 and route it to the rear of 3745. .3.
 5. Remove the dummy AMD bracket placed over the empty CCUB TCM location.

4. Attach the handhold P/N 76F9077 .2. with 2 screws as shown on figure on next page.(view A), on the 2 top holes of AMD asms.



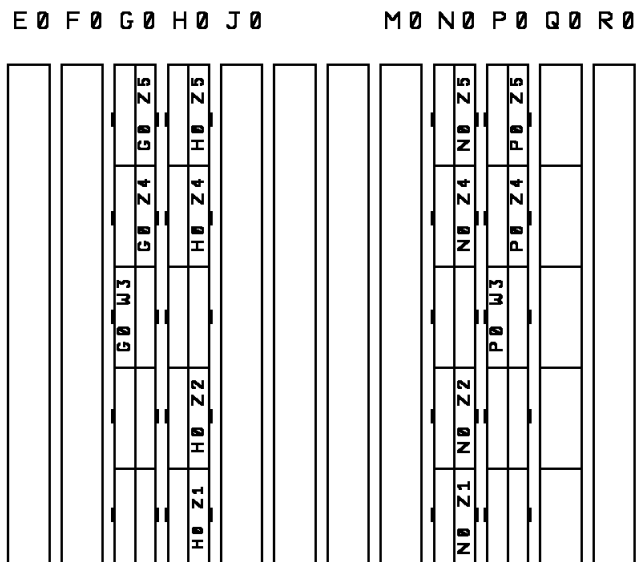
10.3.2 Flat Cables

1. Open the operator panel gate.

Note

To prevent damage to cables and board, use the tool P/N 71F9877 to unlock the connector as shown on the figure on previous page. Gently, insert the blade, then pull on the cable.

2. Check that all cables connected to the **SACU** board are correctly labelled. Rewrite plug location on cables if not readable.
3. Unplug the flat cables from the **SACU** board.



10.4 CCU Enclosure Exchange

CAUTION:

CCU enclosure can weight up to 37 kg.(81.5 lb)

When installing a model conversion MES, an additional person may be needed because of the weight of the enclosure unit.

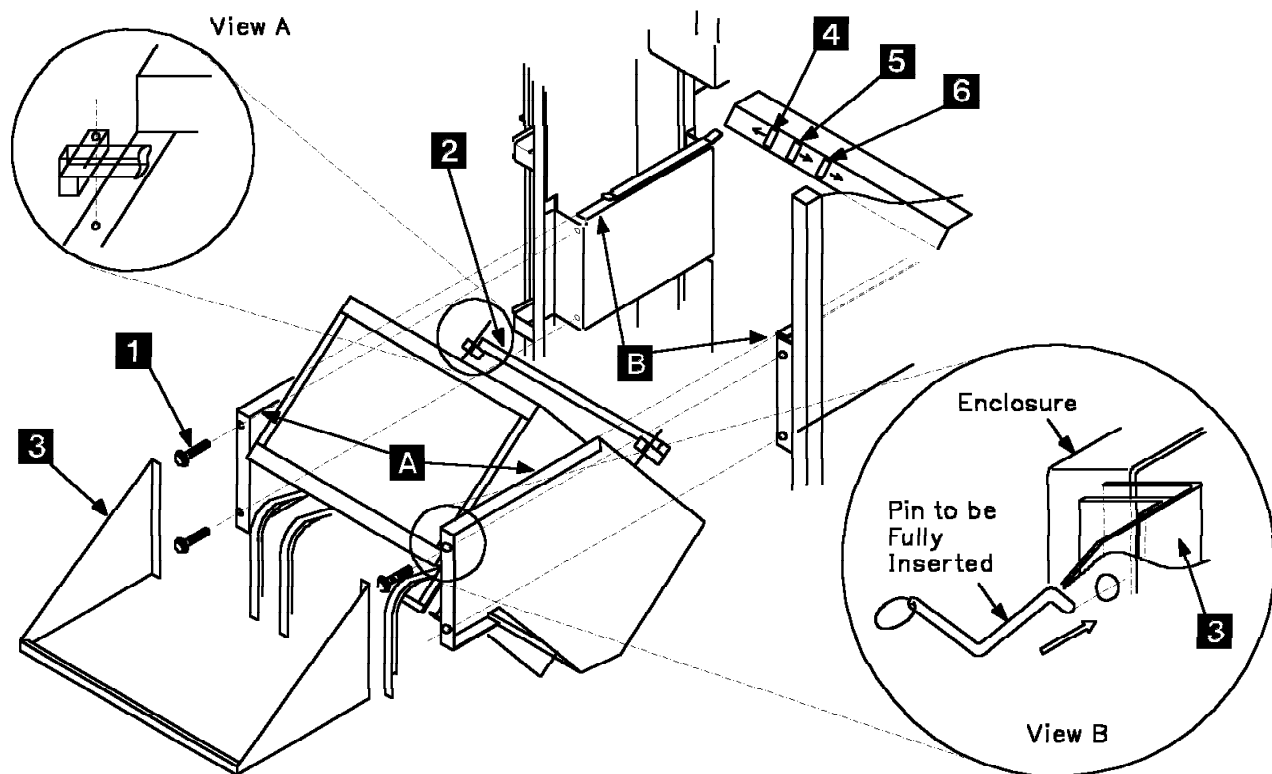
The first person is placed on the right side of the enclosure, the second on the left side, and the third, if needed, at the front of the enclosure using the provided handhold.

Note: Ensure that all flat cables are protected from damage during CCU enclosure exchange.

10.4.1 TCM Enclosure Removal

- 1. Remove the 4 screws .1. securing the CCU enclosure.
- 2. Pull the complete enclosure partially out of the 3745. (Approximately 15 cm).

- 3. From the rear of the 3745, attach the handhold P/N 76F9076 .3. to the enclosure as shown on figure below. This will allow the third person involvement. The handhold is clipped to the right and left sides of the CCU enclosure. (See view B) .Secure the handhold with the attached pins.
- 4. 2 CEs grasp the enclosure asm by the handhold .2., and at SACL board, the third one, if needed, grasps the front handhold .3. Slide the asm out of the 3745.
- 5. Put the enclosure in a safe place.
- 6. Install 3 clamps P/N 34F1295 as follows:
Remove the clamp .4., and stick a clamp 9 cm (3.5 in) to the left.
Remove the clamp .5. and stick a clamp 3 cm (1.1 in) to the right.
Remove the clamp .6. and stick a clamp 1 cm (0.4 in) to the right.



3745 FFBM	PN 71F9879 10 of 20	See EC History	EC C38411 18JUN93	EC D55799 16SEP94	EC D55883 11MAY95	EC E27926 14MAR97
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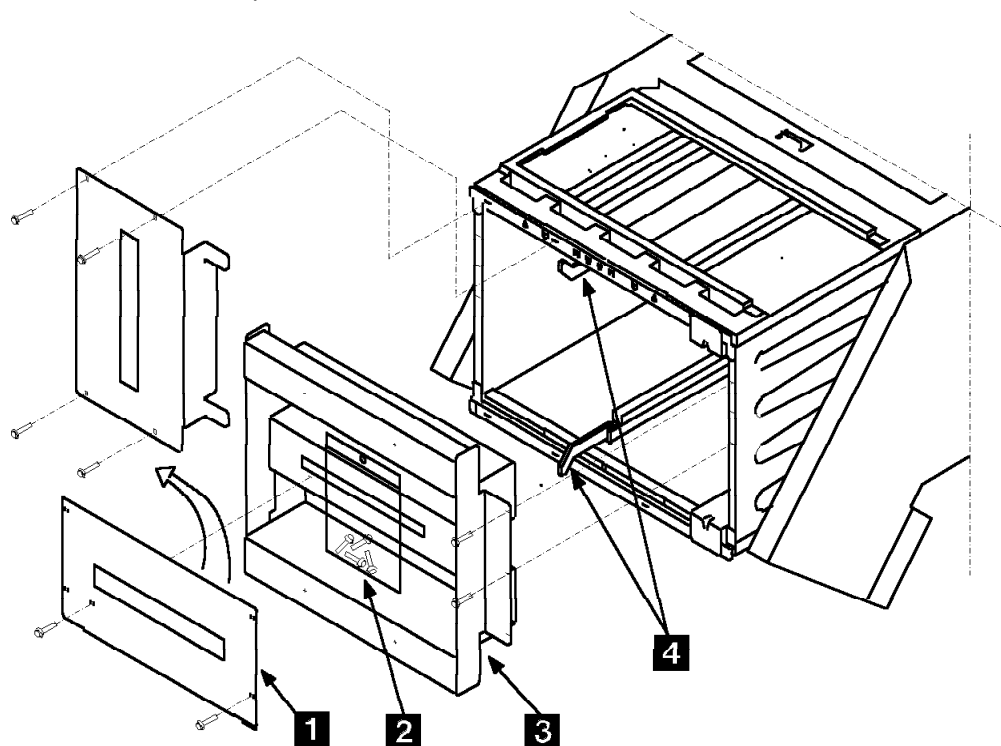
10.4.2 New CCU Enclosure Installation

- 1. Move the new CCU enclosure, still sitting on its shipping pallet assembly, close to the machine.
- 2. If a third person is needed, remove the handhold P/N 76F9076 from the TCM CCU enclosure and attach it to the new CCU enclosure.(need to tilt the enclosure on the shipping pallet)
- 3. Lift the enclosure from the shipping pallet using the enclosure top bar and put the part of the enclosure marked **.B.** on the slides **.C.** in 3745. (Refer to figure on previous page.)
Slide the enclosure partially in 3745.

Note

When the enclosure is put on its slides in 3745, check from the front of the 3745 there is no risk of damaging flat cables, FDS cables and FAN power cords.

- 4. Remove the handhold and slide the enclosure in place.



10.4.3 Card Locking

- 1. Remove 4 screws securing the red bracket **.3.** and remove it. Place it on a table.
- 2. Remove the plate **.1.** which is shipped attached to the Red Bracket. Save screws and plate for re-use.
- 3. Secure the enclosure with the screws provided in the bag attached to the red bracket. **.2.**
Save the Red Bracket for re-install.
- 4. On each card, move levers **.4.** inwards simultaneously.

Note: In order to improve contact, operate the levers 3 times.

- 5. Position the plate **.1.** to lock **STER** cards and block card locations which are used for CCU B cards.
Secure with 4 screws saved in previous steps 1 and/or 2.

3745 FFBM	PN 71F9879 11 of 20	See EC History	EC C38411 18JUN93	EC D55799 16SEP94	EC D55883 11MAY95	EC E27926 14MAR97
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10.5 CE 'A' Tasks

10.5.1 Flat Cables

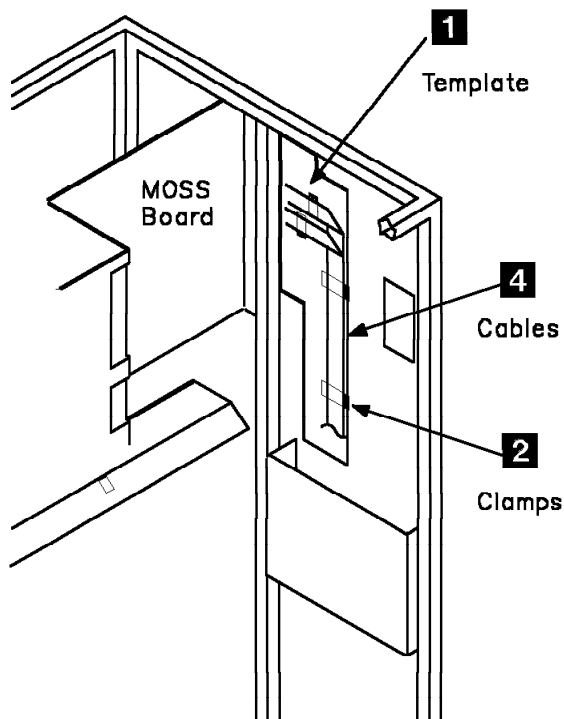
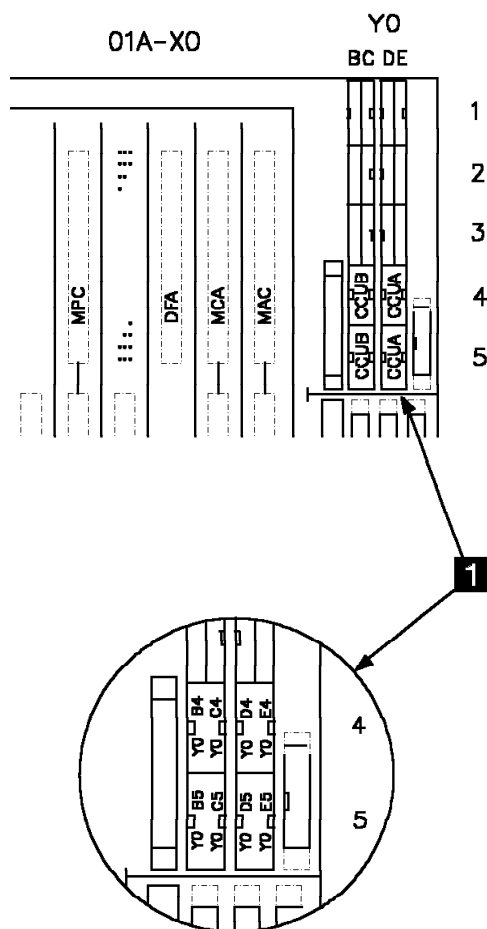
1. Place the template P/N 76F8595 **1**, as shown on figure. Template should be positioned as far up and left as permitted by the frame.

Note: Remove existing cable clamps which interfere with the correct placement of the template.

2. Attach 4 clamps P/N 34F1295 in the windows of the template. **2**

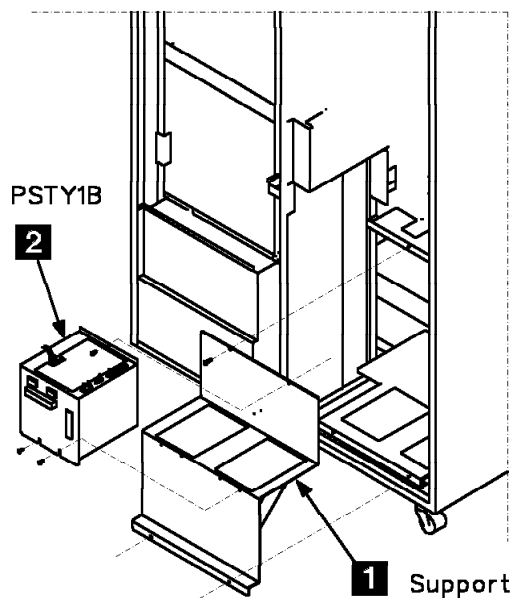
Note: Place the clamps as shown on the template.

3. Remove the template.
4. Install the pre-folded flat cables P/N 76F8591 in the clamps.
5. Plug the flat cables, one at a time, on MOSS board **3**, in the following sequence:
 - Y0E4, Y0D4, Y0E5, Y0D5.
6. Route the flat cables thru the machine to CE 'B'. **4**



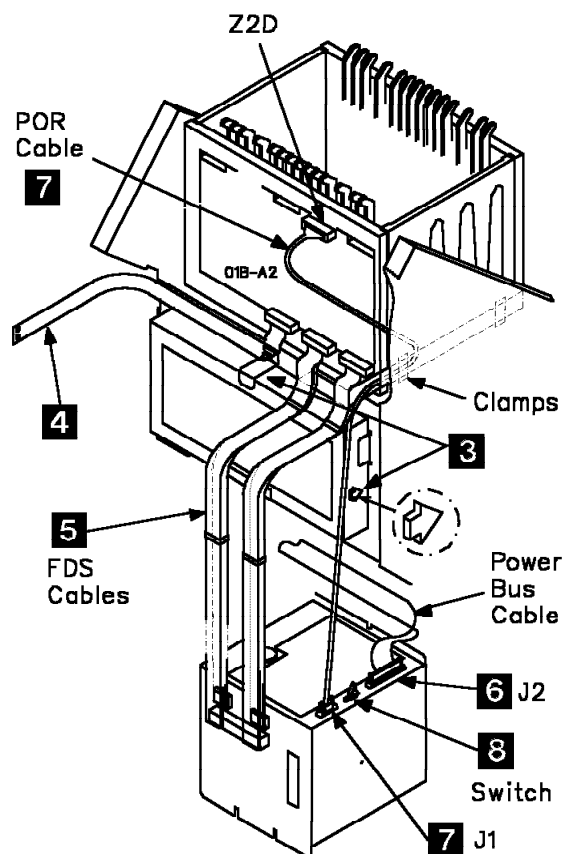
10.5.2 PSTY1B Installation

1. Install the PSTY1B support asm P/N 71F9950, **1** and **secure it at the bottom and at the top left** with 3 screws provided in the bag attached to it.
Do not tighten the screws.
2. Install the PSTY1B P/N 26F1733 **2** with 3 screws P/N 2665528 provided in the bag attached to the support bracket.
3. Tighten the bottom screws of the power supply bracket.
Feed the PSTY1B power cable to the front of the machine.



4. Loosen the screw securing the bracket **3** that secures the air filter and install the air filter P/N 58X9295 under the CCU enclosure.
Note the arrow direction for air flow.
Tighten the screw.
5. Connect the FDS ground cable **4** to the frame. Secure it with the screws saved in step 10.2.1.

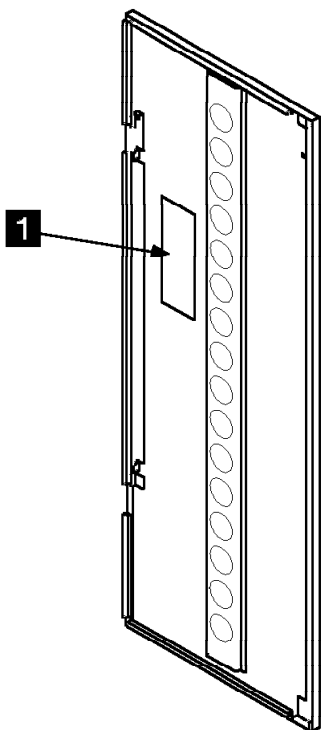
6. Connect the FDS cables **5** to the PSTY1B with screws P/N 61F4511 provided in a bag attached to the power supply.
(Connect cables on TB1/TB2 first).
7. Connect the power control bus cable to connector J2 of power supply. **6**.
8. Locate the Power On Reset cable P/N 61F4448 connected in SACL 01B-A1Z2-D. Route the cable to PSTY1B and connect it connector J1. **7**.
9. On PSTY1B, check that the switch 1 is set to A.(CCUA) **8**.



10.5.3 Mechanical

- ___ 1. Re-install shield over CCU board (if used).
- ___ 2. Re-install the rear door removed in step 10.2.1.

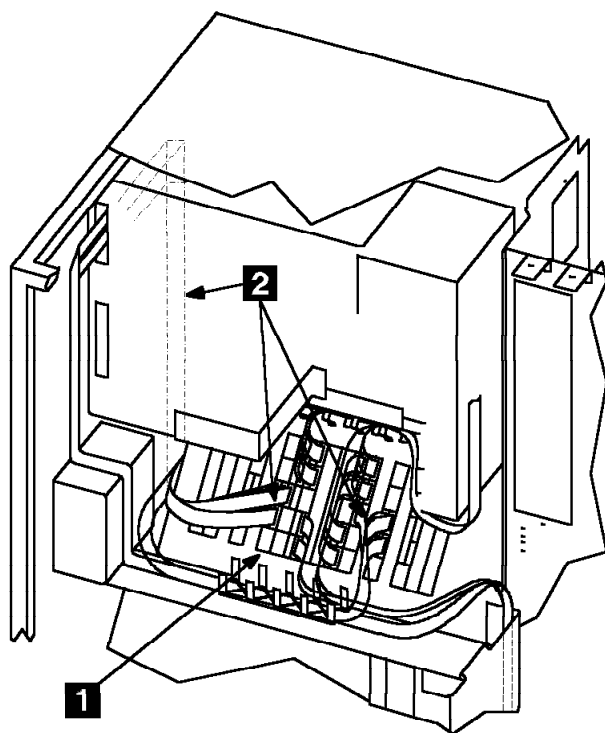
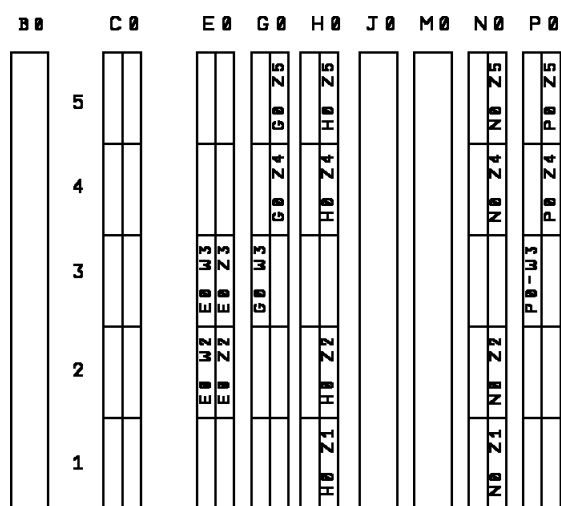
Note: Tighten end cover screws if they were loosened in step 10.2.1
- ___ 3. Re-connect the ground wires (if present).
- ___ 4. Attach label P/N 71F9997 over the existing label on the door. **1.**
Close the door.



10.6 CE 'B' Tasks

10.6.1 Flat cables.

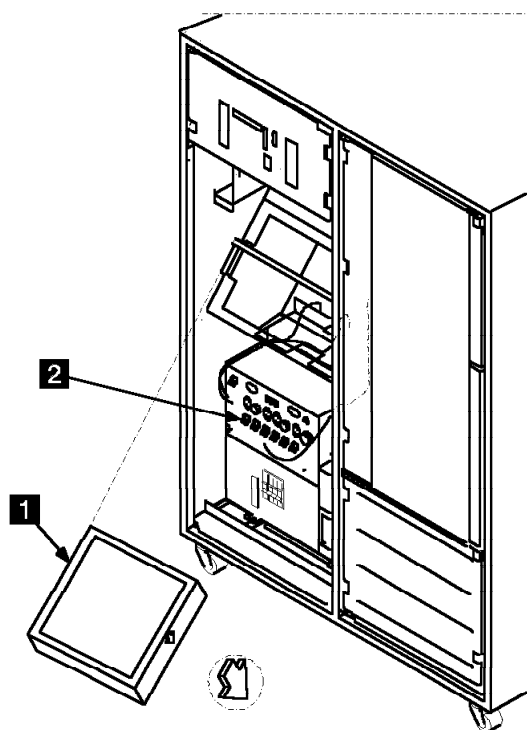
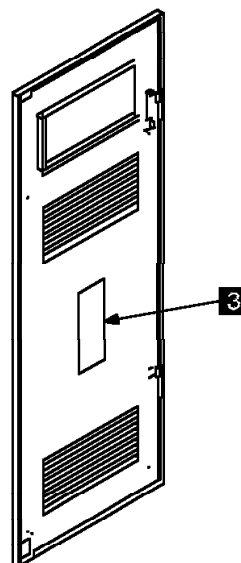
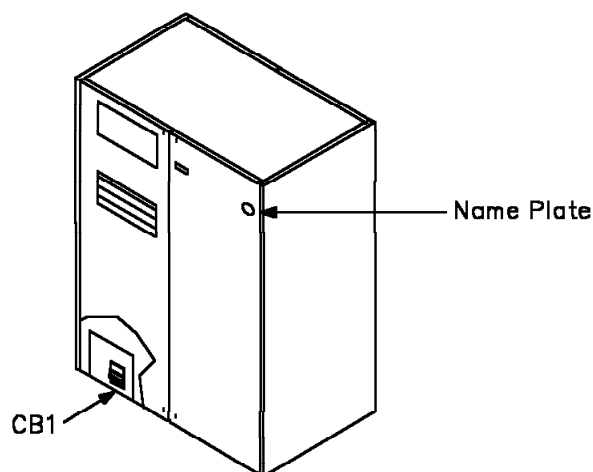
- 1. Reconnect flat cables to SACU board. **1.**
Refer to the template on the SACU board.
- 2. Route and connect to the SACU board flat cable group P/N 76F8591 which was prepared by CE 'A'. **2.**



10.6.2 Mechanical Changes

- 1. Install the air- filter P/N 58X9296 .**1** on the CCU enclosure. Note the arrow direction for air flow. Secure it with the bottom bracket.
- 2. Plug the power cords in primary power box as follow: **2**.

PSTY1B 01Q Connector J4
 FAN CCU Connector J1
- 3. Attach label P/N 71F9996 over existing labels in front door. **3**.
- 4. Remove the name plate from the front system cover(s), and clean any adhesive residue from the recessed area with Isopropyl alcohol. **4**.
Remove the paper from the back of new name plate P/N 71F9545 and attach the plate.
- 5. Strike out the model number on the S/N label, only the nameplate will identify the model type from now on.



11.0 Test Procedures

Note: Ensure that each CE has verified the other's work before powering on the 3745.

11.1 Power ON

Switch **CB1** in 3745 **ON** and close the system cover(s).

On control panel:

- ___ 1. Check that **Service mode** indicator displays 1.
- ___ 2. Press **Function** key until a flashing 1 is displayed.
Press **Validate** key.
- ___ 3. Press **Power On** key.
A **MOSS IML** is performed.

11.2 On Local Console

- ___ 1. When **CA interface display screen** is displayed, press **F4**.
- ___ 2. Enter **Maintenance Password**, press **SEND**.

11.2.1 Update the CDF

- ___ 1. Enter **CDF**, Press **SEND**.
- ___ 2. Select **Verify**, Press **SEND**.
The value from the disk and the machine should be identical except for the new hardware installed.
To update the CDF with machine values, enter 2, press **Send**.

When **CDF verify completed** is displayed, Press **F1**.

11.2.2 MOSS IML

On control panel:

- ___ 1. Press **Power OFF** key.
- ___ 2. Press **Function** key until a flashing 1 is displayed.
Press **Validate** key.
- ___ 3. Press **Power On** key.

MOSS IML starts.

- ___ 4. When **CA interface display screen** is displayed, press **F4**.
- ___ 5. Enter **Maintenance Password**, press **SEND**.

11.2.3 Run Diagnostics

- ___ 1. Enter **ODG**, Press **SEND**.
- ___ 2. Select **CCU**, Enter **2**,
Press **SEND**.
 - If any error is reported, go to **Maintenance Information Procedure (MIP)** chapter 1 and follow appropriate procedure.
 - If no error reported, proceed.
- ___ 3. Select **IOCB**, Enter **3**,
Press **SEND**.
 - If any error is reported, go to **Maintenance Information Procedure (MIP)** chapter 1 and follow appropriate procedure.
 - If no error reported, Proceed.
- ___ 4. If HPTSS feature is installed in your 3745, run HPTSS diags on at least one HPTSS on each DMA bus (Adp 1-4 and 5-8) with HPTSS adapter.
If no HPTSS, press **F1** and go to next step.
 - If any error is reported, go to **Maintenance Information Procedure (MIP)** chapter 1 and follow appropriate procedure.
 - If no error reported, Press **F1**.

11.2.4 Air Filter Acknowledge

- ___ 1. Check all frame filters. replace if needed.
- ___ 2. Enter **POS**, press **Enter**.
- ___ 3. Select option **A**, press **Enter**.
- ___ 4. Select option **F** (Acknowledge Air Filter change), press **Enter**.
- ___ 5. Enter a **Y** to confirm, press **Enter**. When completed, press **F1**.

11.2.5 Logoff Local Console

Enter **OFF**, Press **Send**.

Re-enable all channel adapters disabled in step 10.1.2

11.3 General IPL

On control Panel:

- ___ 1. Set the Power control indicator to its original value recorded in step 10.1.1
- ___ 2. Set the **Function** indicator to **0**. Press **Validate** key.
- ___ 3. Set the **Service Mode** indicator to **0**. Press **Validate** key.
- ___ 4. General IPL starts.

If control program loads from the hard disk, **000** will be displayed when **IPL** successful.

If FF4 code remains displayed on the control panel, ask the customer to load the control program.

Note

Hex code F64 will be displayed on control panel if a wrong level of NCP is loaded.

11.4 Save the Disk onto Diskettes

When network is restarted, save the hard disk contents on **Back up** set of diskettes.

- ___ 1. Enter **Maintenance Password**, press **Send**.
- ___ 2. Set the MOSS OFF line, enter **MOF**, press **Send**.
- ___ 3. Select **DIF**, Press **Send**.
- ___ 4. Select option 2, Press **Send**.
- ___ 5. Enter the date and save ID, Press **Send**. Follow prompts on console. When function complete, Press **F1**.
- ___ 6. Set the MOSS ON LINE, enter **MON**, press **Send**.
- ___ 7. Logoff local console.

11.5 Re-packing

11.5.1 PSTY1

Re-install all screws on TB and plastic cover on TB.

11.5.2 TCM Enclosure

- ___ 1. Place the TCM enclosure on the shipping pallet assembly provided with the new enclosure.
- ___ 2. Secure it with the screws and nuts.
- ___ 3. Remove the bracket locking the **STER** cards in the TCM enclosure by removing 2 screws.
- ___ 4. Open carefully the **ZIF connectors** on all cards.
- ___ 5. In US, remove all cards from the CCU enclosure and place them in the provided boxes. In EMEA, remove the memory cards from the CCU enclosure and place them in the provided boxes.
- ___ 6. Install the **Red Bracket** removed in step 10.4.3.3 over the CCU cards and secure it with 4 screws.

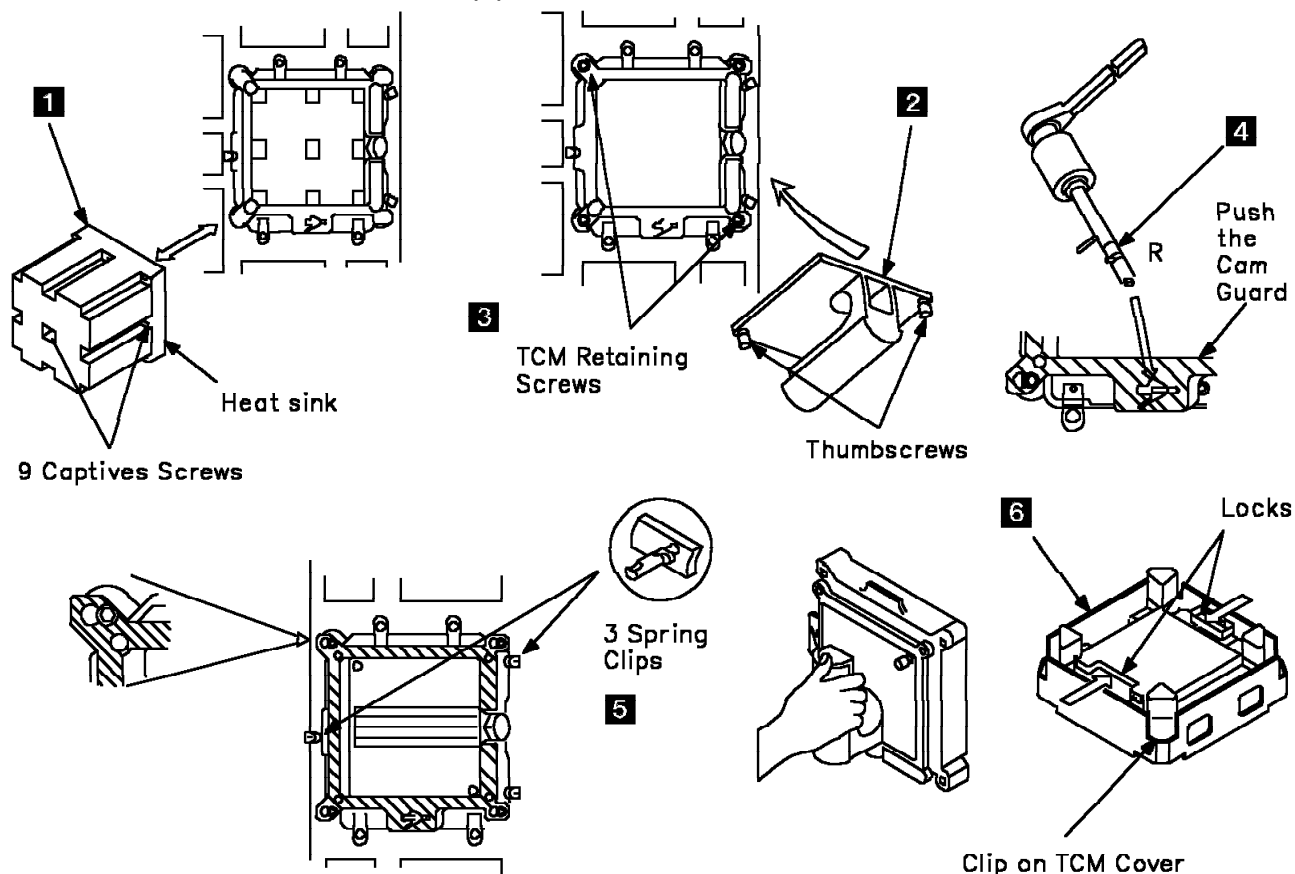
11.5.3 TCM Removal

TCM will be sent back to IBM in the TCM BOX provided by the FFB/M.

Tools to be used in this section are provided by TCM tool kit.

Repeat this procedure for each TCM.

1. Use the torque tool P/N 2360092 to loosen the 9 captives screws securing the TCM heat sink. **1.**
Carefully remove the heat-sink.
2. Install the handle provided by FFB/M. Tighten the 2 thumbscrews. **2.**
3. Use the torque tool P/N 2360092 to loosen completely the four TCM retaining screws. (captives screws).. **3.**
4. Use the TCM actuating tool P/N 5665909 **4.** to remove the TCM as follow:
 - Check that the detent pin in the tool is in the **Removal Position (R)**
5. Unlatch the 3 spring clip retainers **5.**, hold the TCM handle firmly and carefully remove the TCM from the enclosure.
6. Install the **Clip On TCM Cover** **6.** P/N 7331541 on the TCM, then put the TCM in the TCM shipping container.



11.5.4 Re-Packing

Follow the re-packing instructions to send parts back to IBM.

3745 FFBM	PN 71F9879 19 of 20	See EC History	EC C38411 18JUN93	EC D55799 16SEP94	EC D55883 11MAY95	EC E27926 14MAR97
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After Installation (steps 12-15)

12.0 Field Updating

None.

13.0 Publications Update

None.

14.0 Parts Disposition

- For parts listed in the RMER

All these parts become the property of IBM.
 You **MUST RETURN** these parts following the instructions given on the Returned Material Equipment Report (RMER) provided with this FFBM.

- For parts not listed in the RMER

All these parts should be returned according to your local procedure.

15.0 Machine Records

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

End of instructions.