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Title:

RC3787 Flexible Disk Channel
General Information

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Keywords:

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Abstract:

This manual contains general information and specifications for the RC3787 Flexible Disk Channel. Installation instructions for the channel as well as the RC3751 Flexible Disk Drive are also contained in this manual.

(20 printed pages)

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1. GENERAL DESCRIPTION. 1.

The RC3787 Flexible Disk Channel is capable of driving a total of four Double Sided Flexible Disk Drives in single density mode. The four drives are organized in two daisy-chains of two drives each.

Drives connected in daisy chain cannot be operated simultaneously whereas two drives connected to different chains are operated independently in full parallel.

This "two times two" structure is completely invisible to the program; all drives are treated as no dependency existed.

The RC3787 utilizes channel program system interface and hardware code conversion in order to minimize the CPU load. Other features are: Track format commands, multi sector capability (a whole track may be transferred by one command) and bad cylinders handling.

The RC3787 is format compatible to all known IBM single density standards.

2. SPECIFICATIONS. 2.

2.1 Performance specifications. 2.1

Recording Format

Diskettes/drive	1
Surfaces/diskette	1 or 2
Cylinders/diskette	77
Track/Cylinder	1 or 2
Sectors/track (128, 256, 512 bytes/sector)	26, 15, 8
Recording Method	FM
Transfer Rate	31,250 bytes/sec.

Capacities

Bytes/diskette	612,864
Bytes/track	4096
Bytes/cylinder	8192
Bytes/sector	128, 256 or 512

Access Time

Disk Rotation	360 rpm
Average latensy	83.3 msec.
Head positioning time	6 ms/track
Head settling time	14 ms
Head load time	35 ms

2.2 Electrical specifications. 2.2

Power requirements:

RC3787: +5V,5A from controller chassis

RC3751: 220V $\pm$ 10%, 50 HZ $\pm$ 0.5 HZ, 0.5A single fase (via the POW 735 power supply)

I/O bus specifications:

Max. DMA channel latensy: 20 μs

DMA channel load 31 cycles/ms

2.3 Environmental Specifications. 2.3

Heat dissipation:
RC3787: 25 W, 90 KJ/h, 850 BTU/h
RC3751: 68 W, 245 KJ/h, 2300 BTU/h (Figures include Power Supply)

Ambient temperature: 10-40°C (50-104°F)
Relative humidity (no condensation): 20-80%

2.4 Physical Specifications. 2.4

RC3787: Standard Controller Board
RC3751: First unit comprises a flexible disk drive, a chassis and a power supply. The second unit is mounted in the first units housing and comprises a drive only.

Chassis height:	17.8 cm (7 inches)
Chassis weight (inclusive of power supply):	9.8 kg (21.6 pounds)
Drive weight:	5.9 kg (13 pounds)

3. IDENTIFICATION OF ITEM 3.

The list below describes all single items belonging to the RC3787 Flexibel disk Channel:

Item	Reference Number	Description
1	FDC 705	Flexibel Disk Controller
2	CBL 022	Internal Controller Chassis Cable
3	DAT 341	Separate Doc. item for RC3787
4	DDM 074	Device Manual for RC3787

The following lists describe the items belonging to the RC3751 flexibel disk drives connected to the RC3787 channel.

The first RC3751:

Item	Reference Number	Description
1	FDD 705	Flexibel disk drive
2	CHS 712	Drive chassis
3	POW 735	Power supply
4	CBL 847	Signal Cable 3 m
5	AFH 054	Accesories for RC3751
6	DOG 024	Hardware operating guide
7	DOM 065	OEM manual for FDD 705

The second RC3751:

Item	Reference Number	Description
1	FDD 705	Flexibel disk drive
2	CBL 022	Internal Controller Chassis Cable
3	CBL 847	Signal Cable 3 m
4	AFH 054	Accesories for RC3751
5	DOM 065	OEM Manual for FDD 705

The third RC3751:

Item	Reference Number	Description
1	FDD 705	Flexibel disk drive
2	CHS 712	Drive Chassis
3	POW 735	Power supply
4	CBL 372	Daisy Chain Cable 1,5 m
5	TRM 701	Resistor Module
6	AFH 054	Accessories for RC3751
7	DOM 065	OEM Manual for FDD 705

The fourth RC3751:

1	FDD 705	Flexibel Disk Drive
2	CBL 372	Daisy Chain Cable
3	TRM 701	Resistor Module
4	AFH 054	Accesories for RC3751
5	DOM 065	OEM Manual for FDD 705

At the time of delivery some of the items may already be assembled (e.g. the chassis, drive and power supply), thus the number of independent items may be less than the above listed.

4. INSTALLATION

4.1 Installation of FDC 705 Flexibel Disk Controller in the Controller Chassis

The flexible disk controller must be mounted in a free slot in a controller chassis. Since the controller performs a relative small load on the DMA channel but still a fast access to the channel is necessary, the controller should be given a high priority in the data channel priority chain.

a. Remove the RC2236 PCB from the position in the card cage where the controller is to be mounted.

b. Mount the label FDC 705 on the right side of the card cage to indicate the position of the controller.

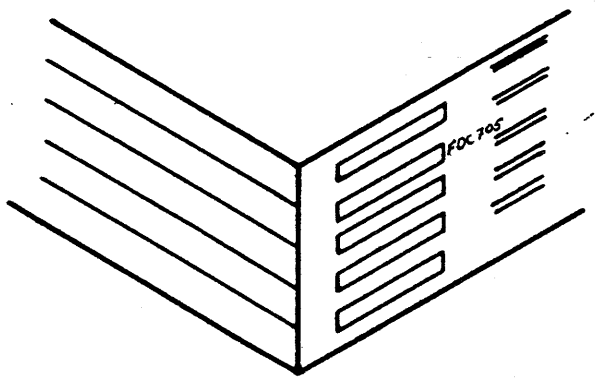


Fig. 4.1 Right front corner of controller chassis.

c. Remove the bottom of the chassis by loosening the two screws on the front and pull it free of the slides.

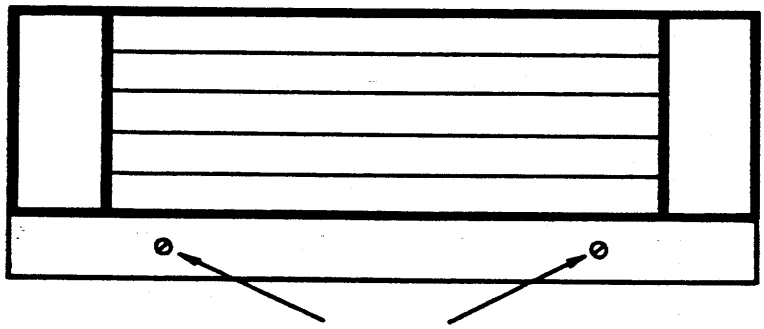


Fig. 4.2. Front view of controller chassis.

d. Mount the CBL 022 internal controller cable in the following order:

1. Mount the bracket with the 52-pin connector at the back of the chassis (A) and connect the chassis terminal.
2. Lead the free end of the CBL 022 through the hole (B) in the chassis.
3. Mount the controller board in the selected position.
4. Plug the edge connector of CBL 022 to the controller (C)
5. Mount the bottom of the chassis.

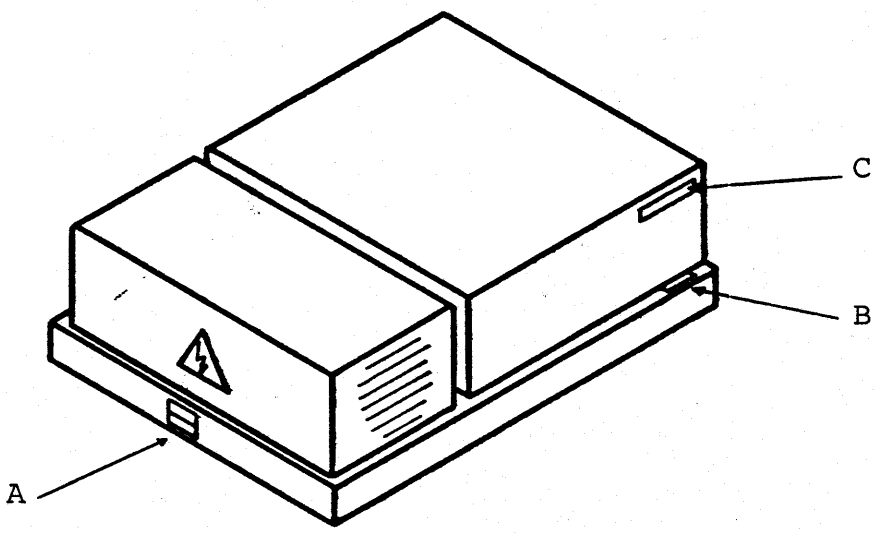


Fig. 4.3 Rear and side view of controller chassis

4.2 Installation of FDD 705 Flexibel Disk Drive in CHS 712 Chassis 4.2

The procedure for installation of the first drive in the chassis is described in section 4.2.1 and the installation procedure for the second is described in section 4.2.2.

4.2.1 Installation of the first FDD 705 in CHS 712 4.2.1

a. Remove the four fastening screws from the Drive (fig. 4.4)
b. Place the four washers on the chassis, each centering one of the four fastening holes
c. Carefully insert the drive in the chassis without moving the washers.
d. Fasten the drive to the chassis using the four screws. (fig. 4.5)
e. Mount the POW 735 power supply (if not already mounted) using 4 mm screws
f. Plug the POW 735 AC and DC supply lines to the drive (cable labeled "LEFT", two plugs)
g. If only one drive is to be mounted, strap the unused supply cables to the chassis at the edge of the rectangular aperture.

4.2.2 Installation of the second FDD 705 in CHS 712 4.2.2

a. Remove the front plate cover
b. Mount the drive as described in section 4.2.1 point a to d
c. Plug the POW 735 AC and DC supply lines to the drive (cable labeled "RIGHT", two plugs)

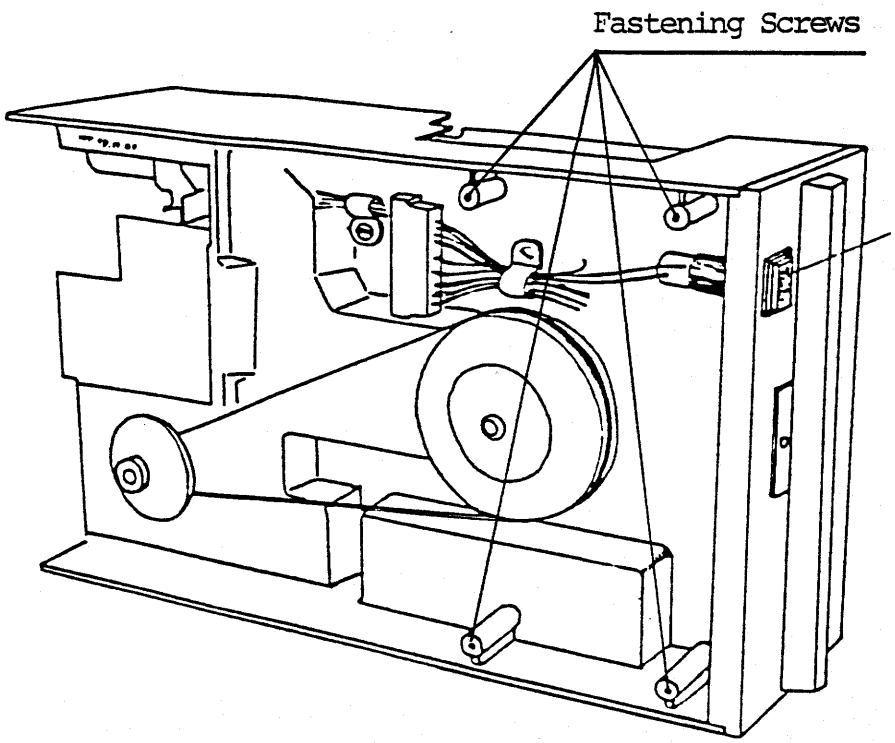


Fig. 4.4 FDD705 bottom view

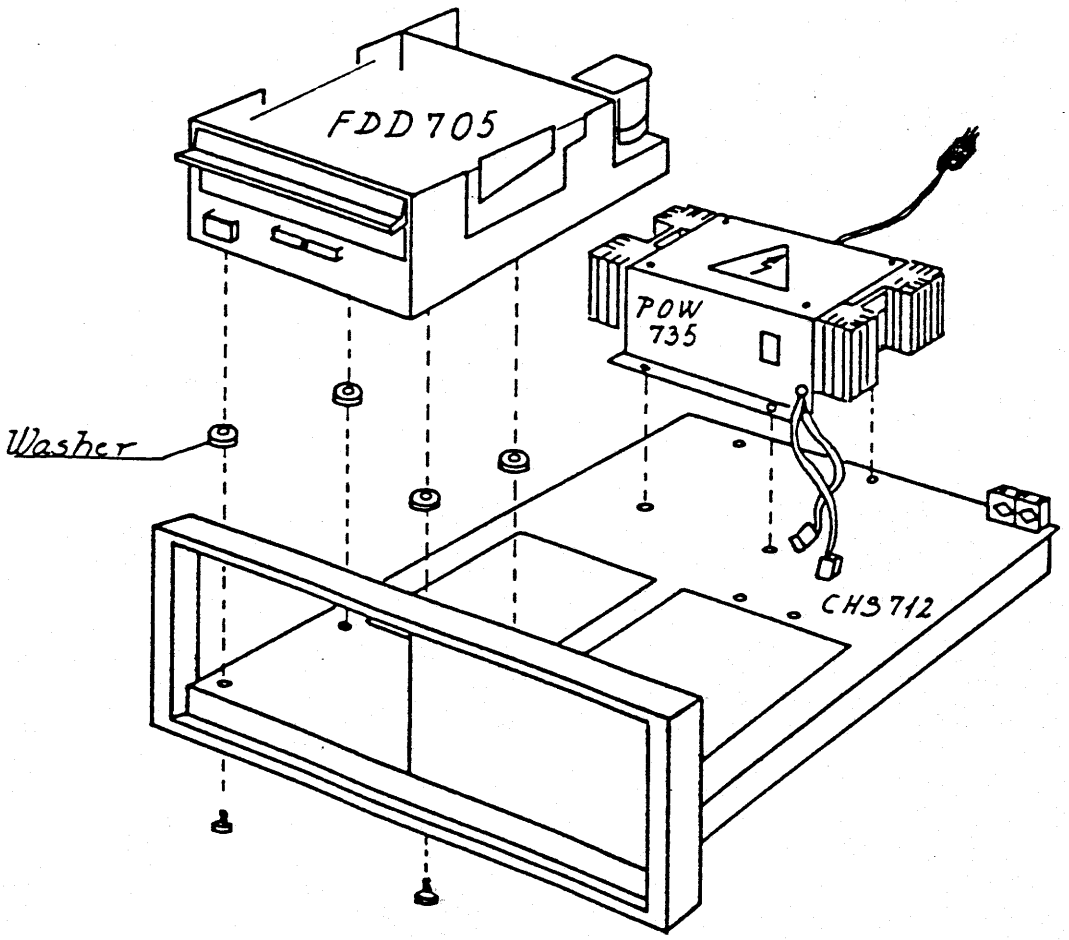


Fig. 4.5 Installation of FDD705 and POW735

4.3 Interconnection of Units

4.3

In the following sections the interconnection of the units is described for the first, the second, the third and the fourth RC3751.

4.3.1 Installation of Unit 0

4.3.1

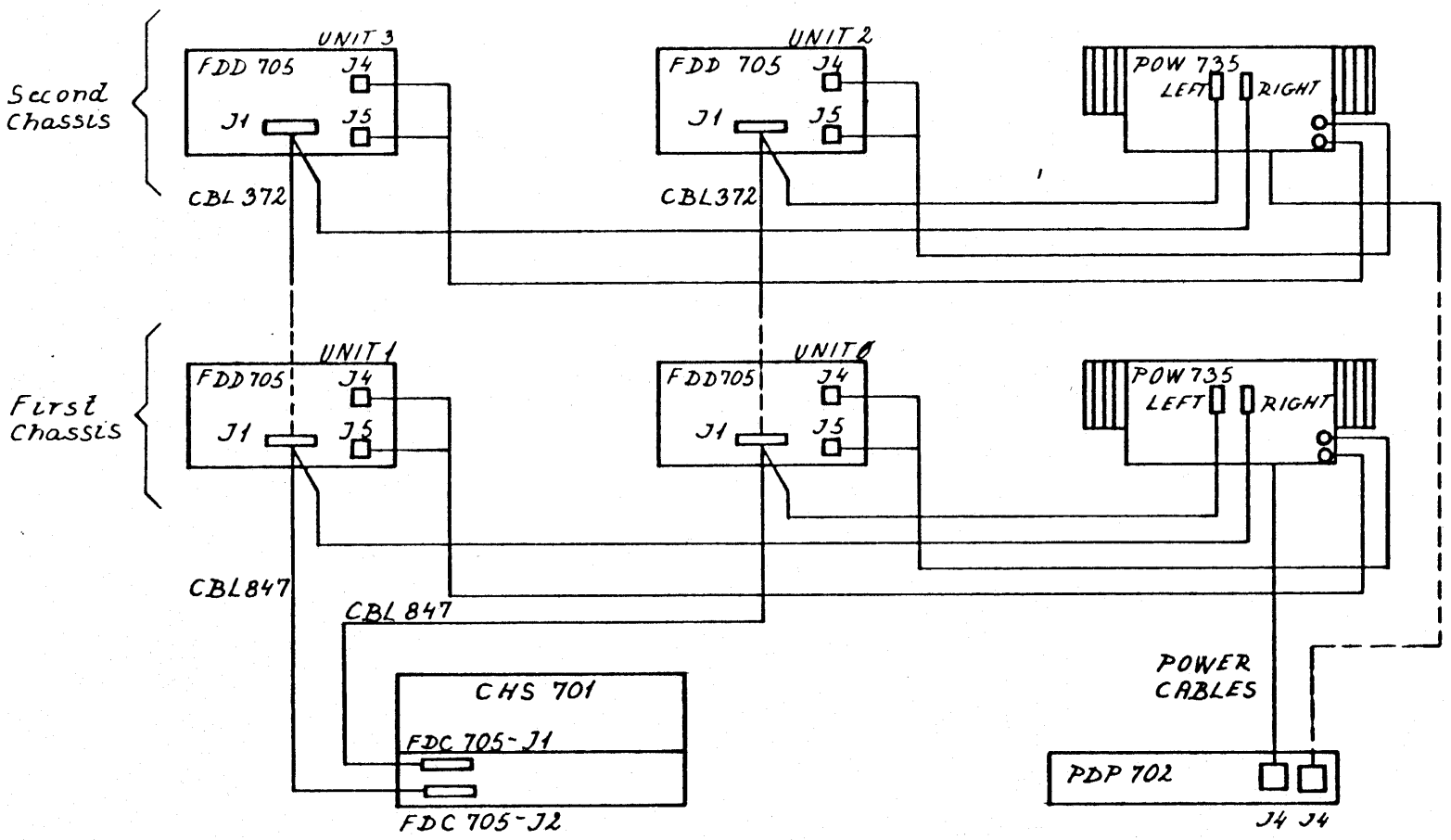
1. Mount the FDD 705 flexibel disk drive and the POW 735 power supply in the CHS 712 chassis as described in section 4.2.1
2. Connect CBL 847 signal cable to the rear chassis signal plug FDC 705-J1
3. Plug the socket edge connector of CBL 847 to the PC-board of the drive
4. Plug the small 5 pin connector of CBL 847 to the POW 735 power supply (socket marked "LEFT")
5. Clamp the CBL 847 signal cable to the CHS 712 using the left cable clamp (front view)
6. Connect the AC power plug of POW 735 to the PDP 702 power distribution panel.

4.3.2 Installation of Unit 1

4.3.2

1. Mount the CBL 022 internal cable in the controller chassis. The edge connector of CBL 022 is connected to the controller 1001 connector.
2. Mount the FDD 705 flexibel disk drive in the CHS 712 chassis as described in section 4.2.2
3. Connect the CBL 847 signal cable to the rear chassis signal plug FDC 705-J2.
4. Plug the socket edge connector of CBL 847 to the PC-board of the drive
5. Plug the small 5 pin connector of CBL 847 to the POW 735 power supply (socket marked "RIGHT")
6. Clamp the CBL 847 signal cable to the CHS 712 chassis using the right cable clamp (front view)

Interconnection of Units



Notes: 1. All units (expt POW 735) : Rear View
POW 735 : Front View.

2. If Unit 2 is installed the Resistor Pack on the PC Board of Unit 0 must be replaced by TRM 701 (IC position 3H) Similar the Resistor Pack on the PC Board of Unit 1 must be replaced if Unit 3 is installed.

4.3.3 Installation of Unit 2

1. Mount the FDD 705 flexible disk drive and the POW 735 power supply in the CHS 712 chassis as described in section 4.2.1
2. Unplug CBL 847 from unit 0. Plug the socket edge connector of the PCB of CBL 372 to the PC board of unit 0 and connect the CBL 847 to CBL 372
3. Replace the resistor pack terminator on the PCB of unit 0 (position 3H) by the TRM 701 pull up resistor.
4. Plug the CBL 372 to the PCB of unit 2 and to the POW 735 (socket "LEFT")
5. Clamp the CBL 372 to both chassis
6. Connect the AC power plug of POW 735 to the PDP 702 power distribution panel

4.3.4 Installation of Unit 3

1. Mount the FDD 705 flexibel disk drive in the CHS 712 chassis as described in section 4.2.2
2. Unplug CBL 847 from unit 1. Plug the socket edge connector of the PCB of CBL 372 to the PC-board of unit 1 and connect the CBL 847 to CBL 372
3. Replace the resistor pack terminator on the PCB of unit 1 (position 3H) by the TRM 701 pull up resistor.
4. Plug the CBL 372 to the PCB of unit 3 and to the POW 735 (socket "RIGHT")
5. Clamp the CBL 372 to both chassis

4.4 Strapping Possibilities 4.4

The controller board does not contain any straps.

If two controllers are to be used within the same system, the device code for one of the controllers must be changed from 61 to 64 octal. This is done by replacing ROM 491, position 81, by ROM 498.

Strapping of the flexibel disk drive is described in section 2 in the Technical Manual for FDD 705.

5. CHECK OUT PROCEDURES 5.

After installation or repairs of the RC3787 flexibel disk channel and/or the RC3751 drive, the listed check out procedure should be followed.

a. Turn on the system power. Make sure the drive spindle motor is rotating and the Write Protect switch is illuminated when depressed.

b. Leave the doors of all drives open and reset the system by pressing the RESET switch on the control panel. If no reset switch is available, set up the autoload device code 61 octal (switch 0 up) and press AUTOLOAD.

   The RC3787 should respond to the reset pulse by recalibrating all drives (if not already recalibrated).

   Attend that the drive spindle motor of the RC3751 does stop after app. 30 sec.

c. Load the FDC 705 hardware stand alone test program, instal a double sided scratch-diskette in each drive and close the drive door.

   Make sure, the diskettes are not write protected and run the all function test loop (startaddress 400) for at leat 5 passes.

   Then run the format function test (startaddress 406). The test must be carried out for all possible sector length (128,256,512 bytes per sector).

   Finally the multidrive reliability test (startaddress 4o4, operation 2) must run succesfully for at least 10 min.

RETURN LETTER

Title: RC3787 Flexible Disc Channel General Information

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