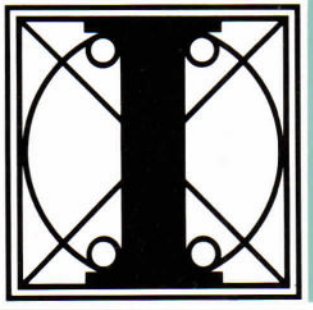
L1

Hardware Configuration Guide

M54 - M64 - M70



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L1 - HARDWARE CONFIGURATION GUIDE

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L1

Hardware Configuration Guide

M54 - M64 - M70

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PREFACE

This manual indicates the various available hardware components of M54, M64, M70, M70/2 e M70/3 systems operating in BCOS II, COSMOS DP/DE, MOS software environments. The information in this manual helps in setting up the correct system configuration and to fill out the order form correctly.

SUMMARY

This manual presents:

- L1 system components
- magnetic storage units mounted in the basic unit and in the specific expansion cabinets
- alphanumeric and the alphanumeric-graphic work stations
- printers and optional modules connected to work station or to system basic unit directly
- internal/external line controllers for on-line connections, cluster configurations and local networks
- main characteristics of power supply units and the power consumptions of hardware modules
- some configuration examples in the different software environments (BCOS II, COSMOS DP/DE, MOS)
- a general list of hardware modules with relevant denominations and random codes
- a list illustrating all the variable characteristics to be indicated in the order form.

REFERENCES:

- L1 BCOS II Environment - System Summary - Code 3933280 F
- Multifunctional L1 COSMOS Environment - System Summary - Code 3988460 C
- L1 MOS Environment - System Summary - Code 4036140 Z

DISTRIBUTION: B1 L1 CONF and B2 L1 CONF Mailing Lists

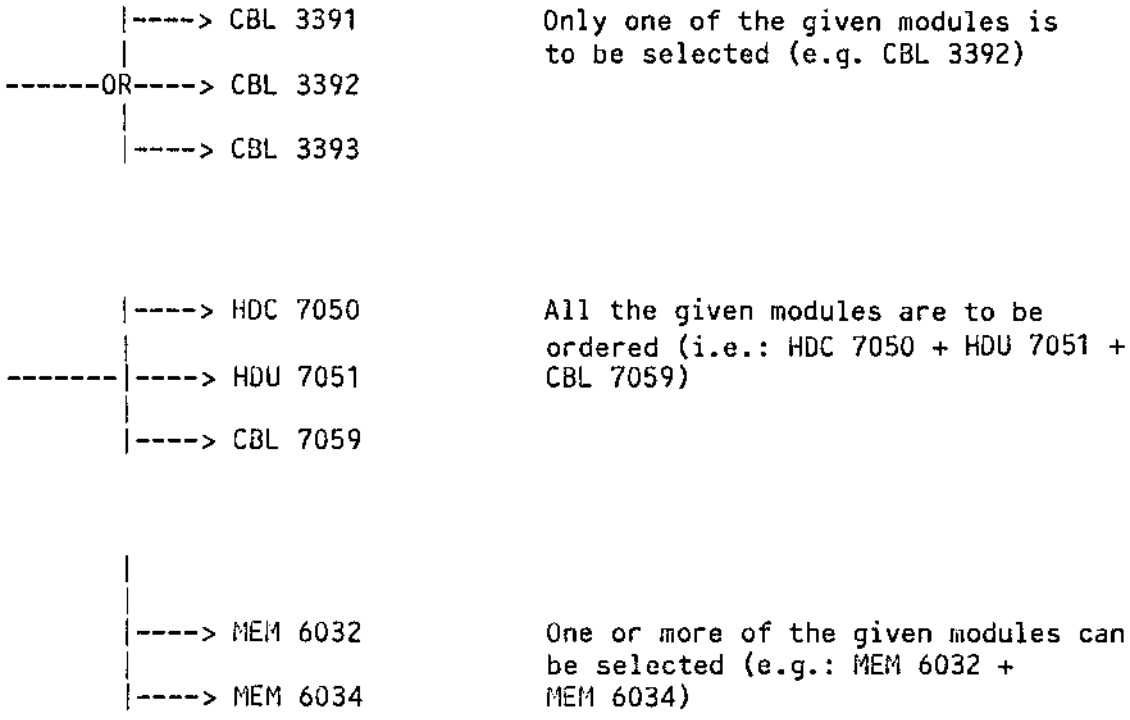
FIRST EDITION: January 1987

SECOND EDITION: July 1987

CONTENTS

NOTATION - CONVENTIONS

The symbols used in this manual have the following meaning:



Any exception to these rules are indicated clearly inside the description of the module or at the bottom of the page (e.g.: the ELB 3684 work station can connect .....). Please pay attention to notes that you may find in the manual.

Remember that to order a system module correctly, the following must always be indicated:

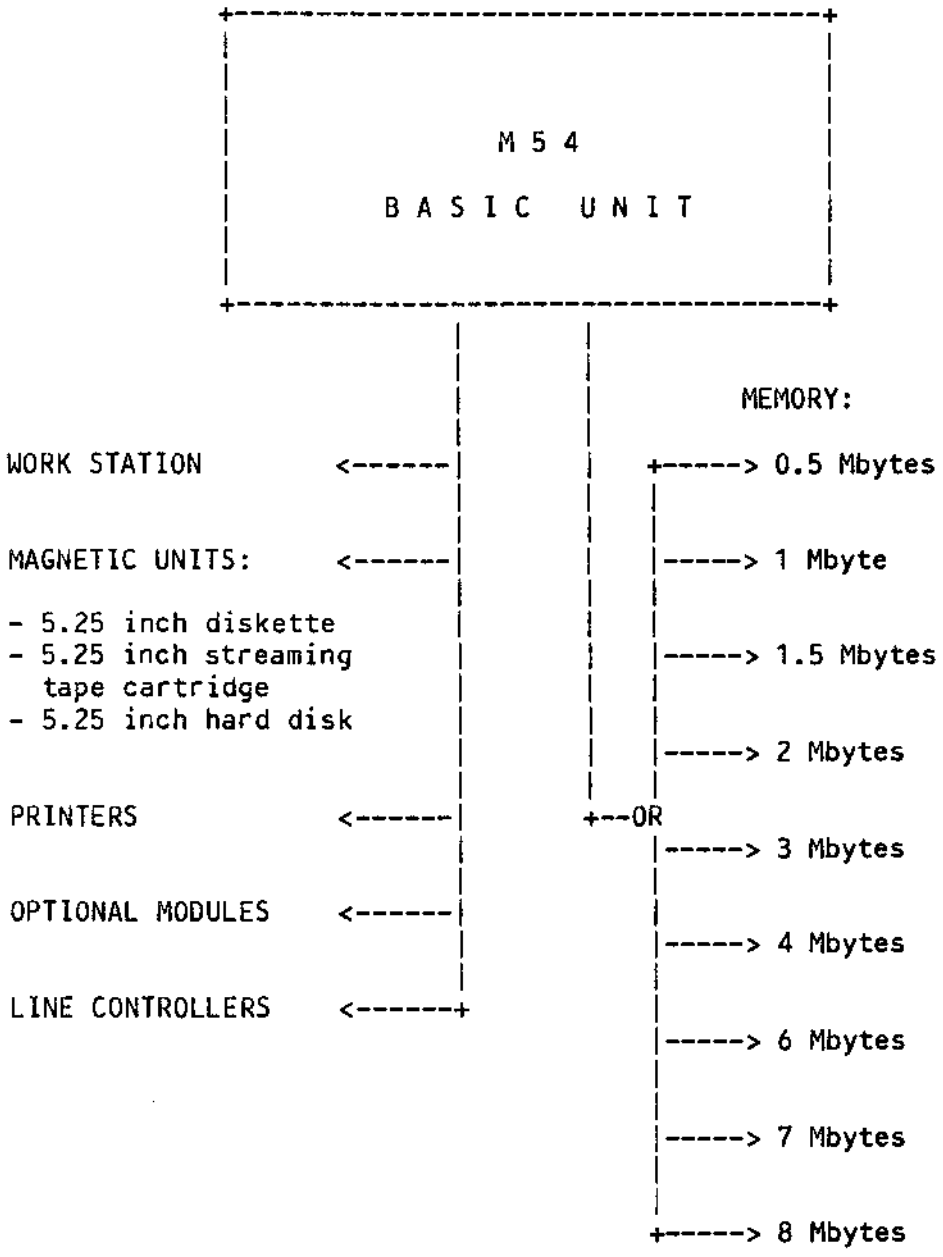
a) the **DENOMINATION** (e.g.: BU 5425)

b) the **RANDOM CODE** (e.g.: 54025 M)

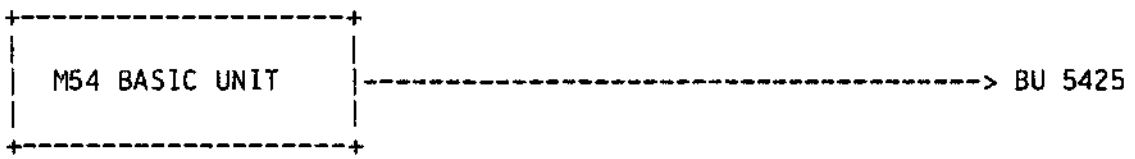
c) and, if any, the **VARIABLE CHARACTERISTICS** selected according to the country where the system will be used (e.g.: TEN 004 to indicate 220V-50Hz) and/or the capabilities required (e.g.: CAV 001 to indicate the 1.10 m display module cable and the 2 m keyboard cable). The variable characteristics are sometimes found under the description of the module, in order to facilitate selection. But to be perfectly sure that the module is ordered with all its necessary variable characteristics, always refer to the table given in Chapter 12.

1. M54 SYSTEM

M54 SYSTEM COMPONENTS



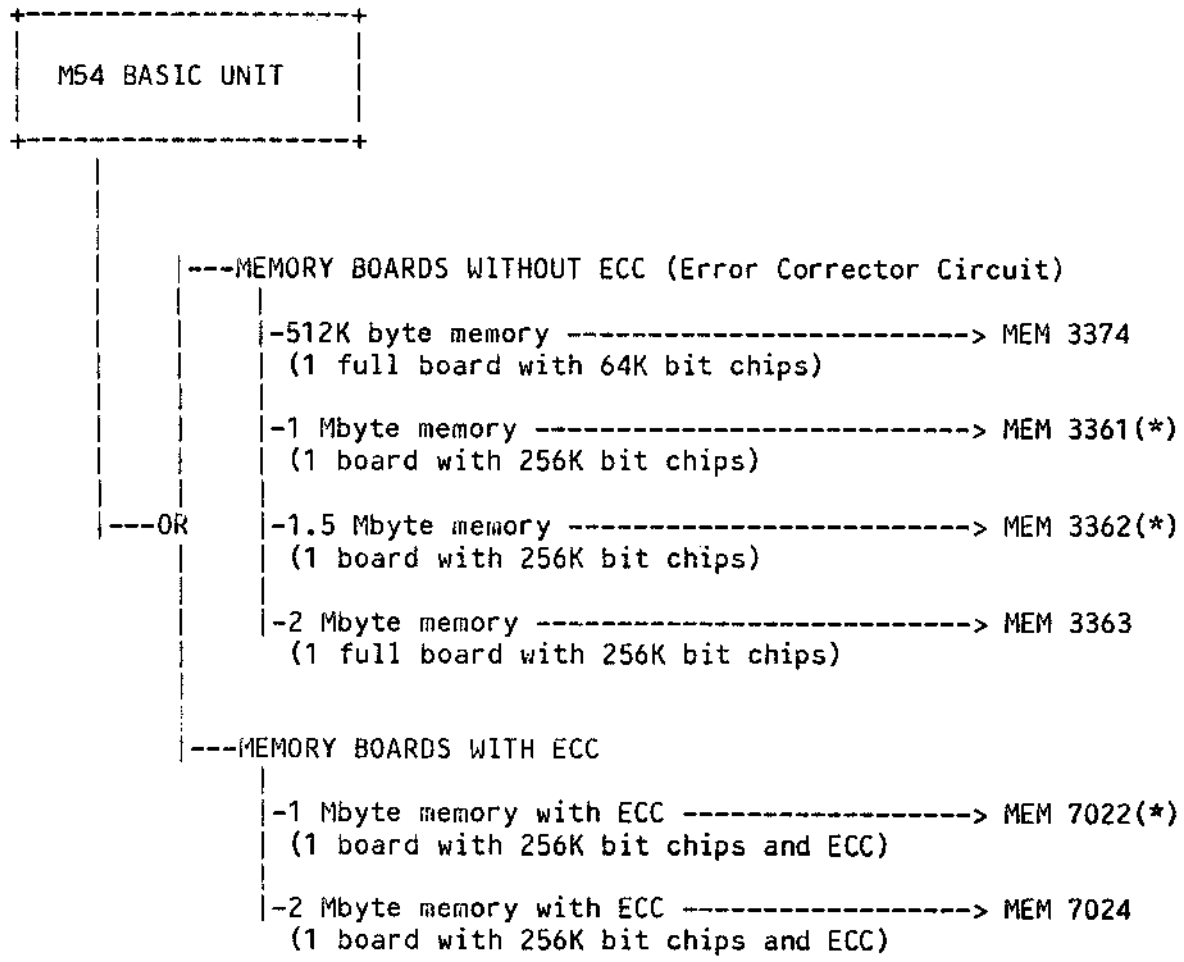
BASIC UNIT



Comprising:

- Box
- 9 slot board rack
- Central Unit board with EAROM, 4K byte cache memory, 2 MMU, 1 RS 232 C interface
- Diagnostic console
- 170 W power supply unit
- Initial system loader switch

RAM MEMORY BOARDS FOR M54



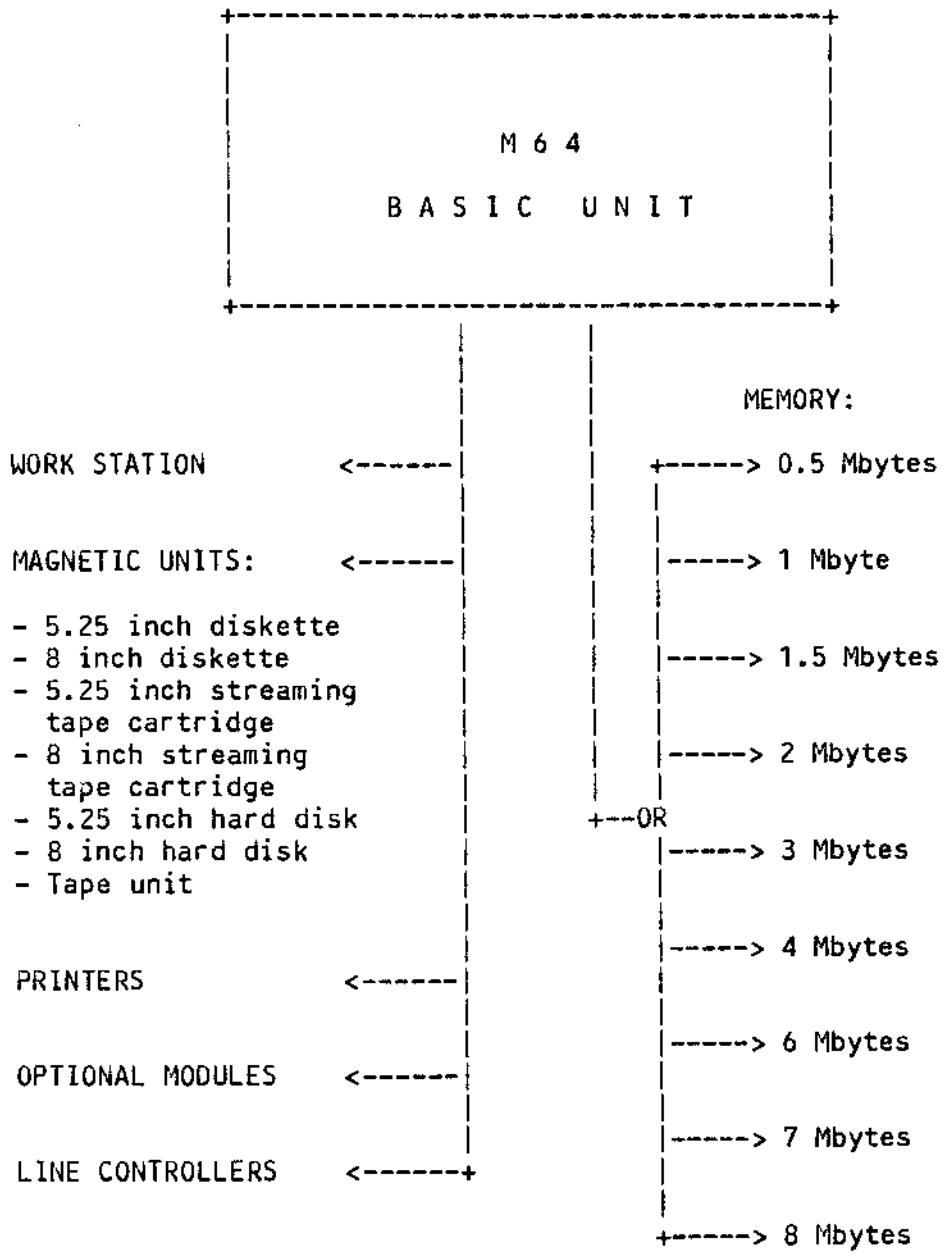
(*) Cannot be upgraded. To increase memory capacity it is necessary to replace the board or insert additional full boards. More than one board can be installed of which only the last one need not be a full board.

NOTE 1 - The memory boards with 256K bit chips can be used together with 64K bit-chip boards.

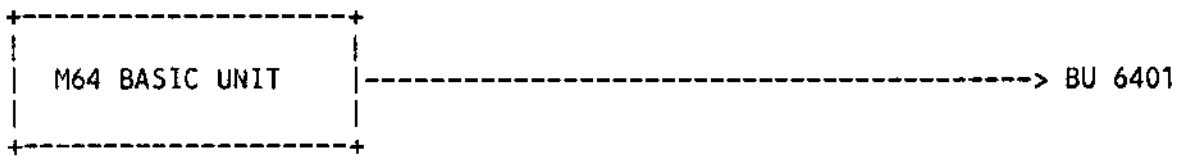
NOTE 2 - It is not possible to mix ECC memories with non-ECC memories.

2. M64 SYSTEM

M64 SYSTEM COMPONENTS



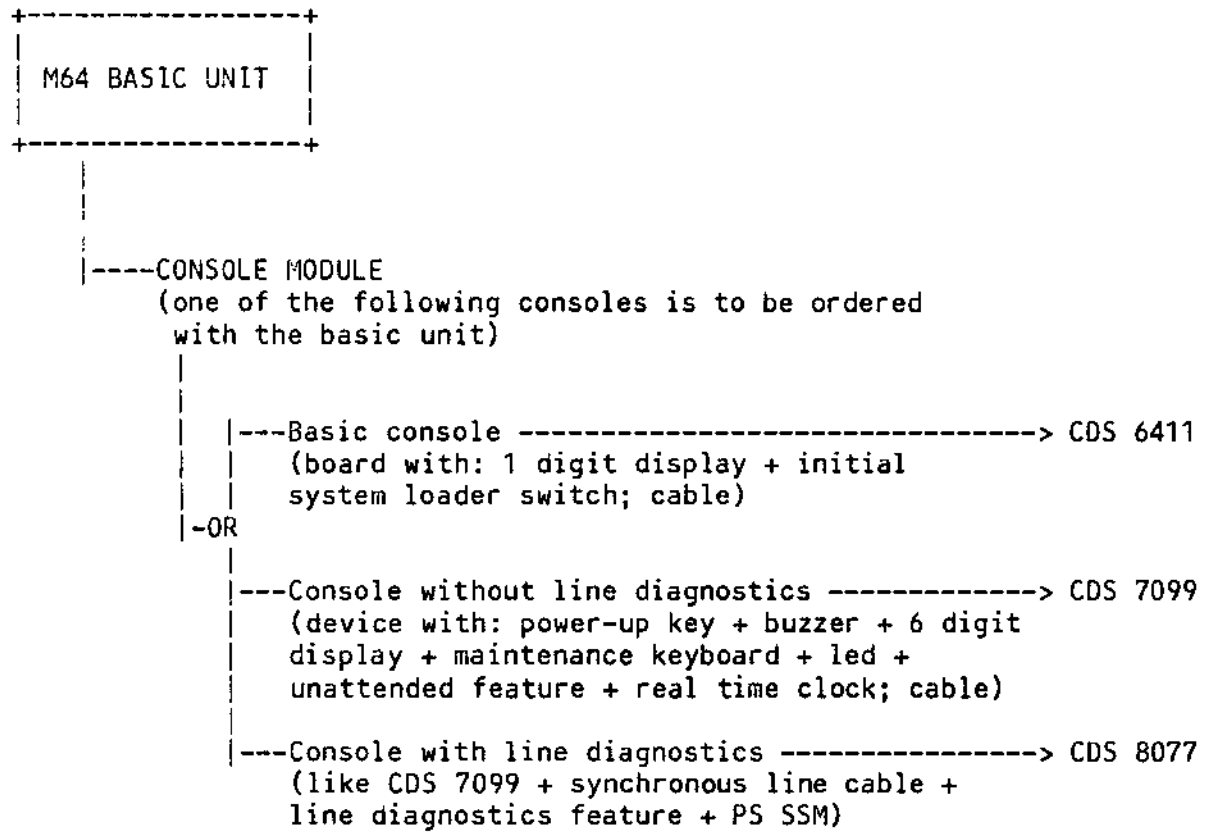
BASIC UNIT



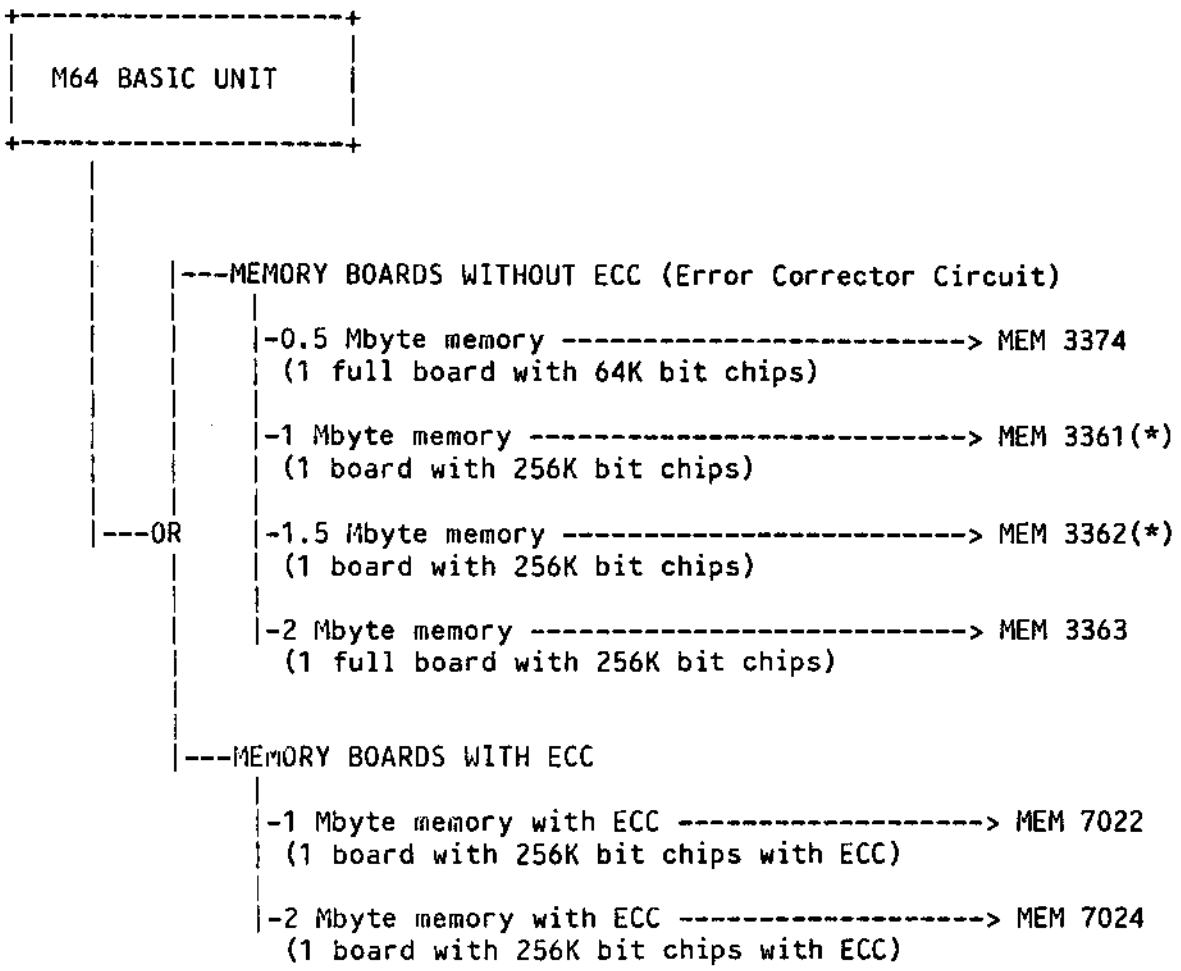
Comprising:

- Basic cabinet
- 11 slot board rack
- Central unit board with EAROM, 4K byte cache memory, 2 MMU, 1 RS 232 C interface
- 350 W power supply unit
- Cables
- Network and fans

Console Module



RAM MEMORY BOARDS FOR M64



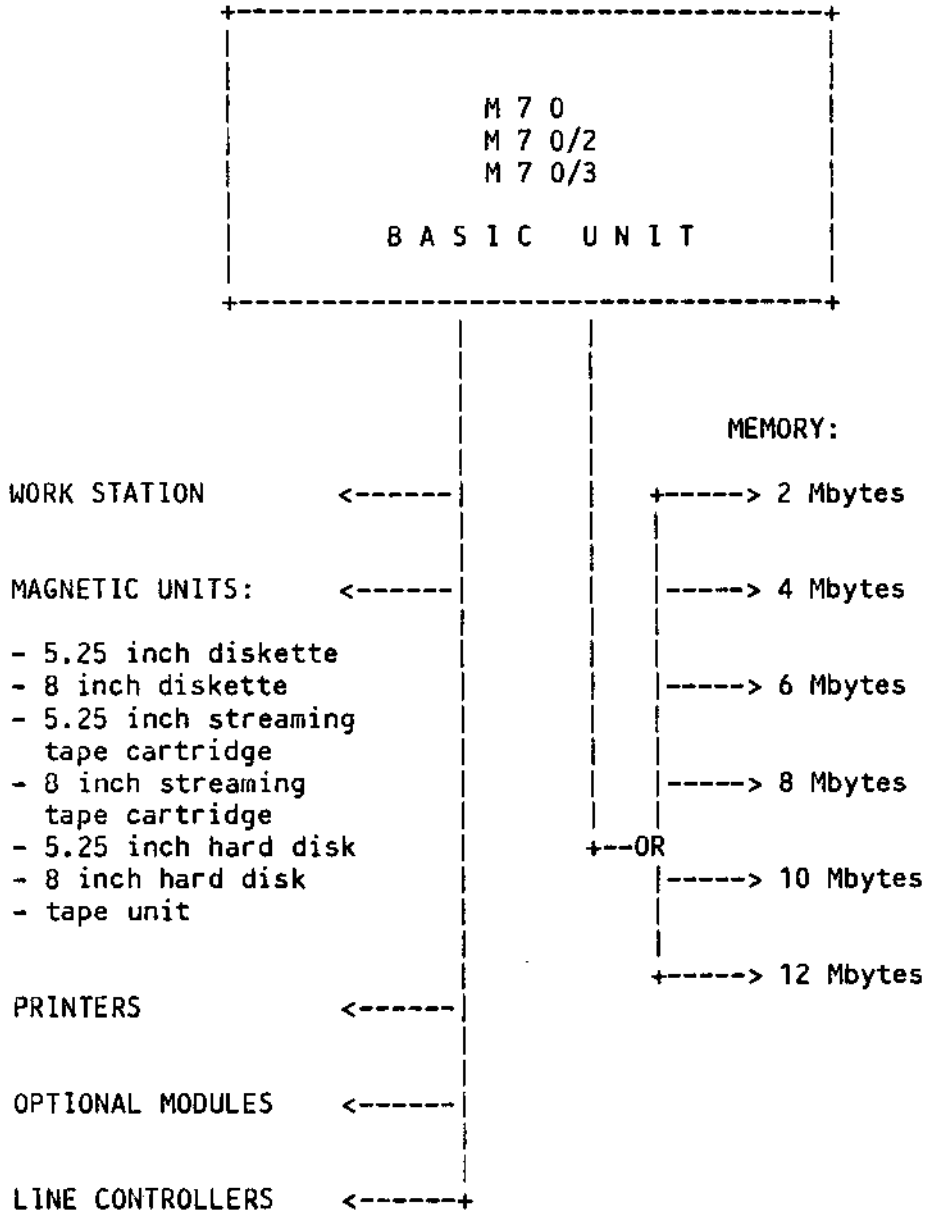
(*) Cannot be upgraded. To increase the capacity of the memory it is necessary to replace the board or insert additional full boards. More than one board can be installed of which only the last one can be a non full board.

NOTA 1 - The memory boards with 256K bit chips can be used together with the 64K bit-chip boards.

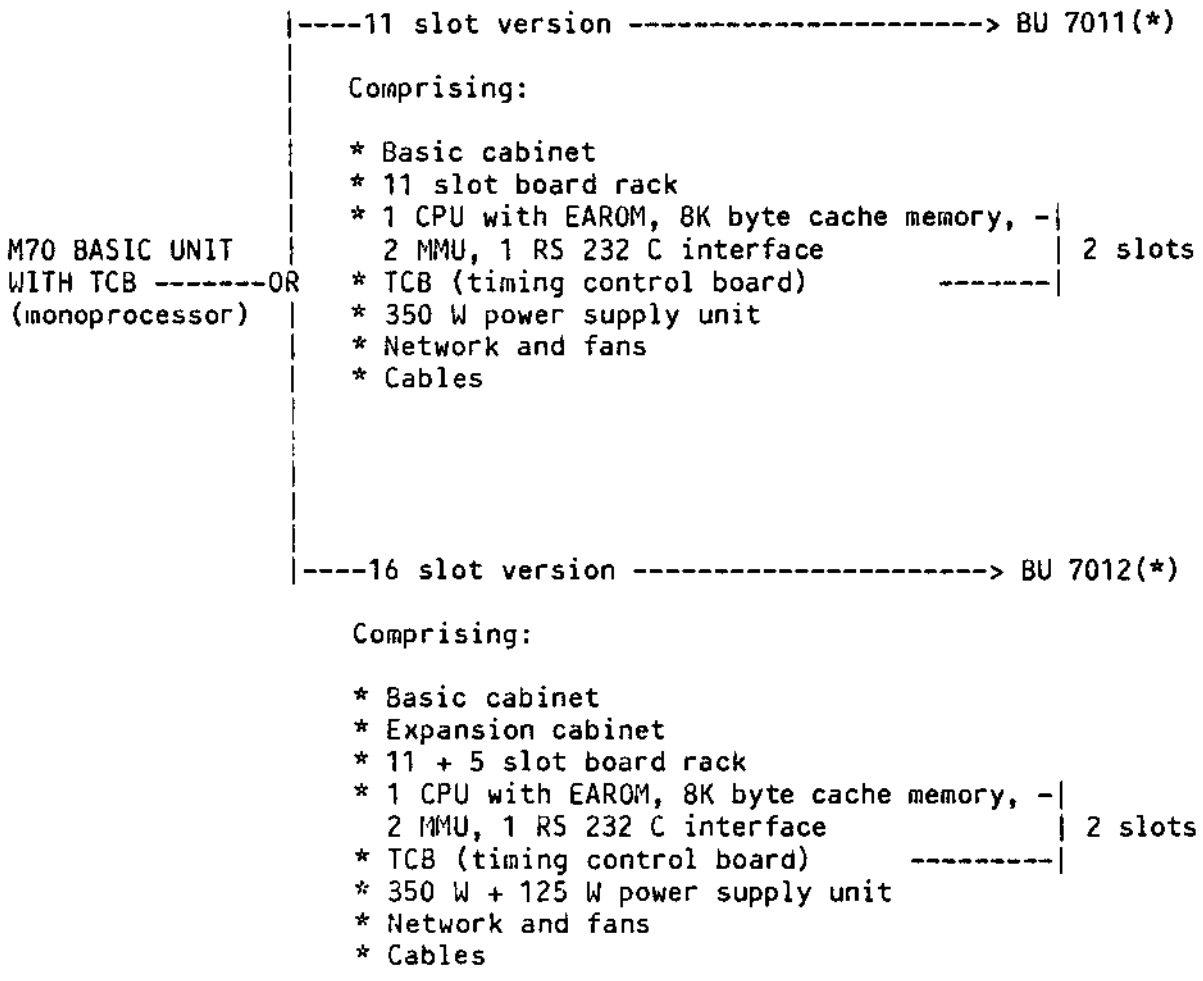
NOTA 2 - It is not possible to mix ECC memories with non-ECC memories.

3. M70 SYSTEM

M70, M70/2, M70/3 SYSTEM COMPONENTS

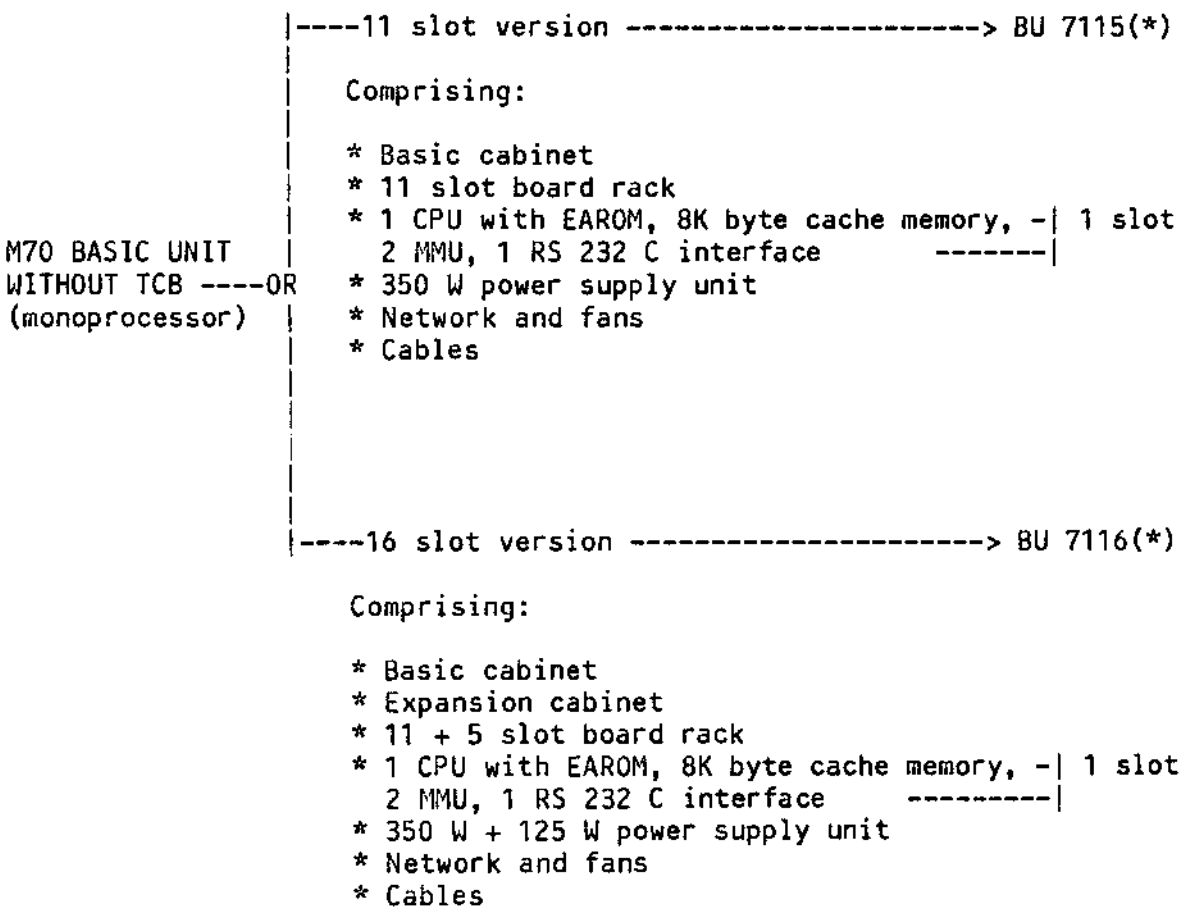


M70 BASIC UNIT WITH TCB (MONOPROCESSOR)



(*) With the basic unit it is necessary to order the basic software License SWB 6061 (MOS run-time operating system) and console.

M70 BASIC UNIT WITHOUT TCB (MONOPROCESSOR)



(*) With the basic unit it is necessary to order the basic software License SWB 6061 (MOS run-time operating system) and console.

UPGRADING AN M70 MONOPROCESSOR TO M70 MULTIPROCESSOR

Set to transform an M70 monoprocessor into ----------> APU 7070(*)
an M70 multiprocessor: M70/2 (biprocessor),
M70/3 (triprocessor)

Comprising:

* APU (Auxiliary Processing Unit) board
  made up of: CPU, EAROM, 8K byte cache
  memory, 2 MMU, 1 RS 232 C interface
* Cable
* Label plate: M70/2 and M70/3

(*) Order for the M70 Multiprocessor configuration:

- **1 APU 7070 module for M70/2 (dual processor), or**
- **2 APU 7070 modules for M70/3 (triprocessor).**

NOTA 1 - If the APU 7070 upgrading modules are ordered together with BU 70XX, they are supplied already installed on the basic unit.

M70 UPGRADING - from 11 to 16 Slot Board Rack

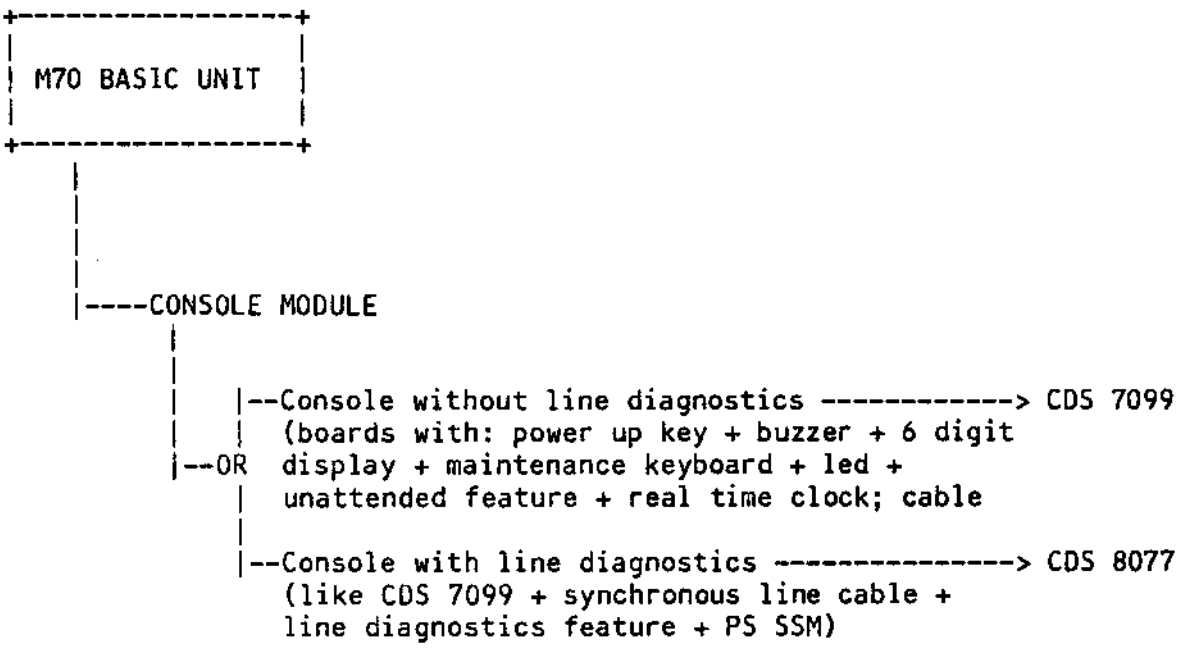
Set to change an M70 with an 11 slot board rack --------> SET 7072(**)
into an M70 with a 16 slot board rack

Comprising:

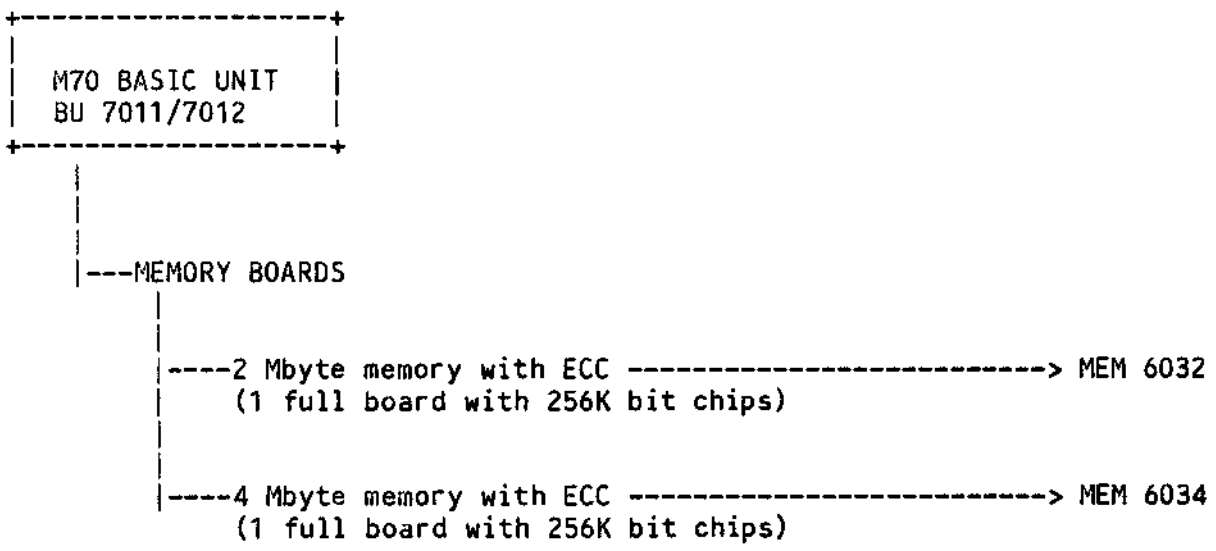
- 11 + 5 slot board rack
- 16 slot board backplane
- Expansion cabinet network
  and fans
- 125 W power supply unit (for expansion)
- Cables

(**) Prerequisite: CAB 8093 cabinet.

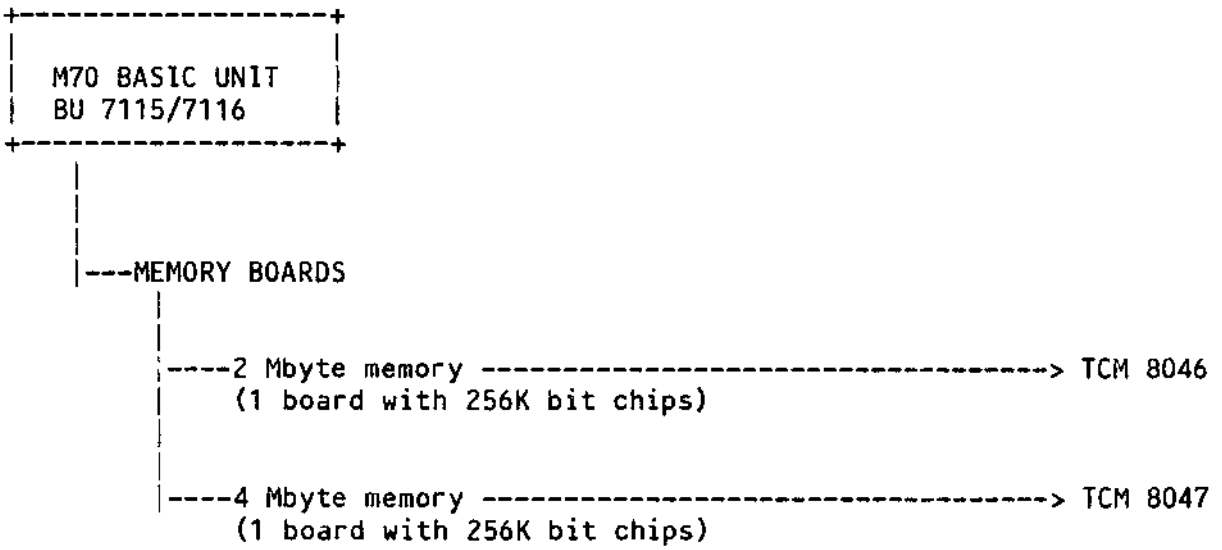
CONSOLE MODULE



RAM MEMORY BOARDS FOR M70



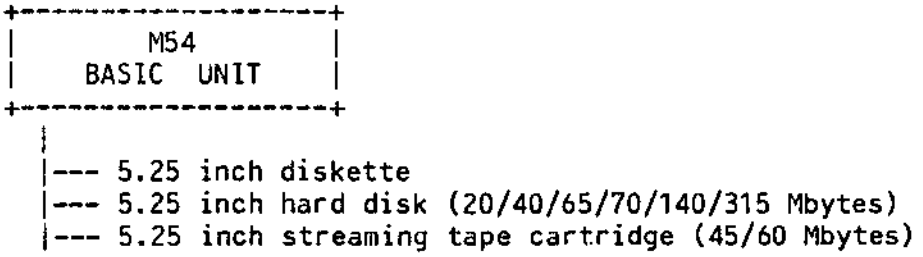
NOTE 1 - Maximum memory capacity is 8 Mbytes.



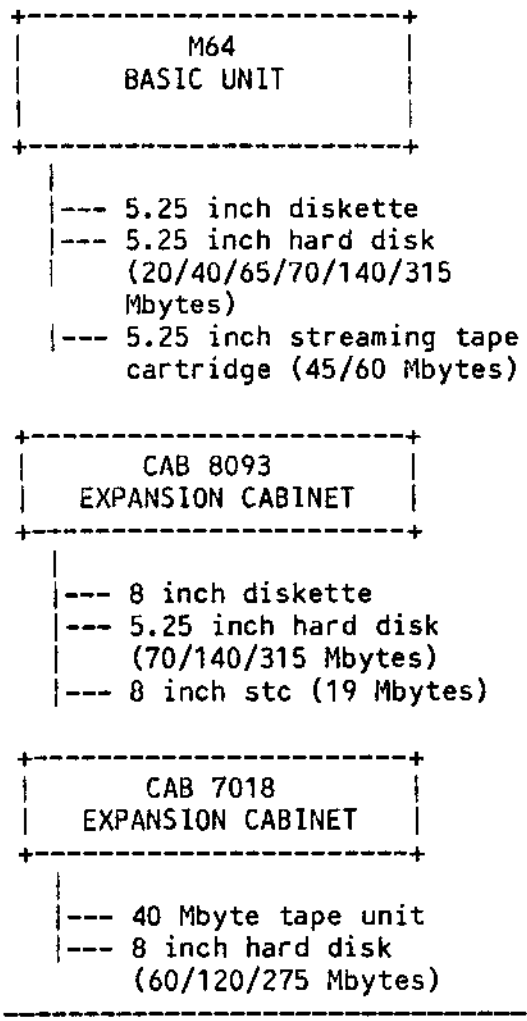
NOTE 1 - Maximum memory capacity is 12 Mbytes.

4. MAGNETIC STORAGE UNITS

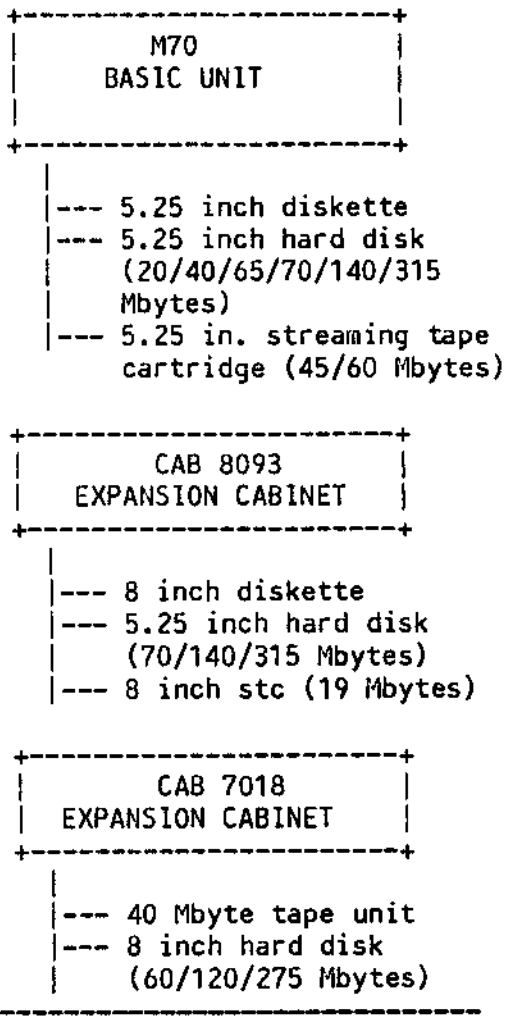
**** M54 Configuration ****



**** M64 Configuration ****

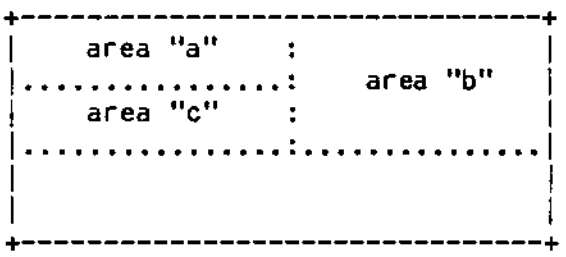


**** M70 Configuration ****



CONFIGURATION OF MAGNETIC STORAGE UNITS FOR M54

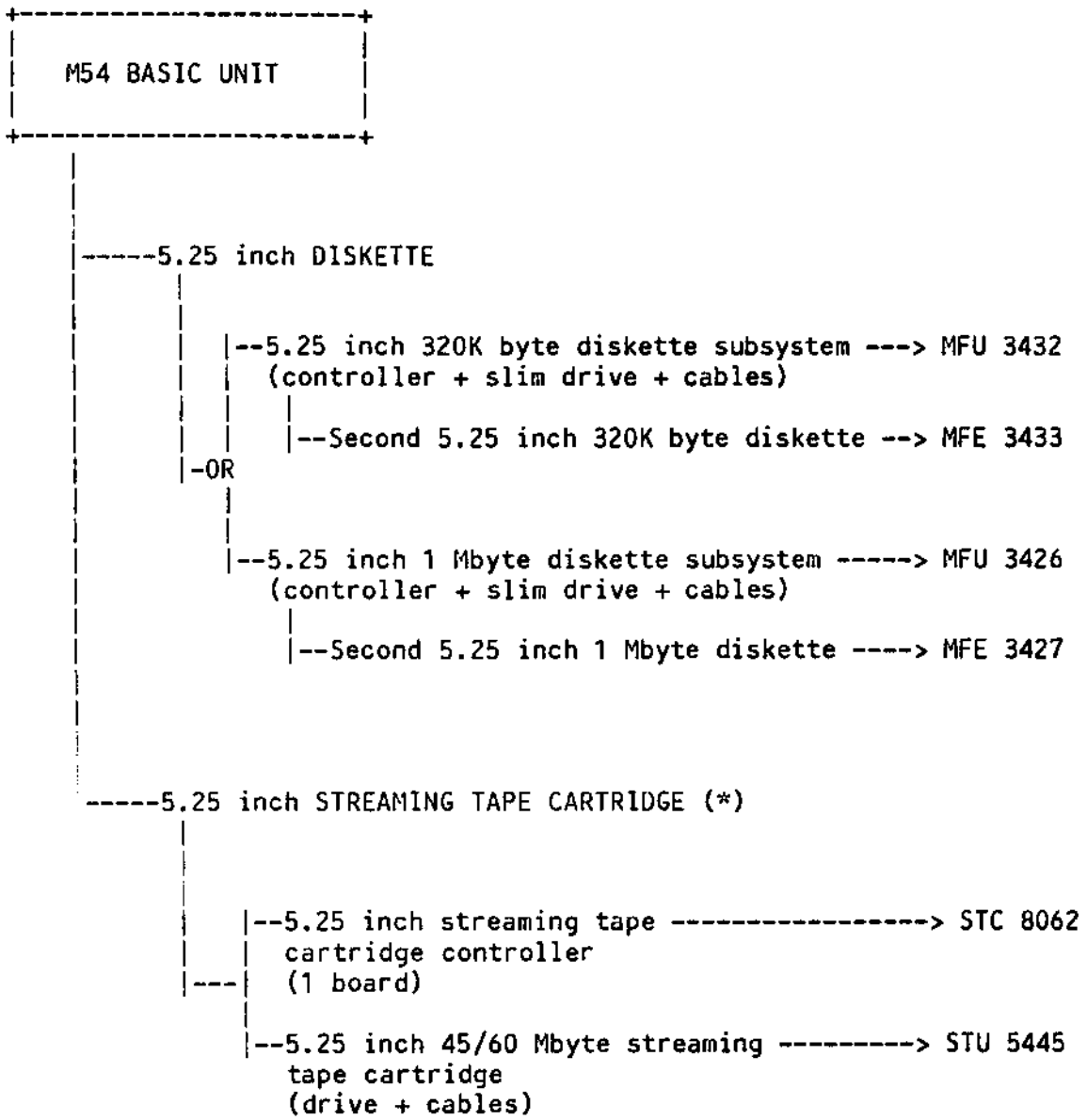
The front structure of the M54 basic unit is the following:



The following table shows different configurations of the M54 magnetic storage units and the upgrading possibilities.

CONF.	AREA "a"	AREA "b"	AREA "c"	UPGRADING
A1	1 diskette	--	--	A2, A3, A5
A2	1 diskette	1 diskette	--	--
A3	1 diskette	1 hard disk	--	A5
A4	--	1 hard disk	1 stc	A5
A5	1 diskette	1 hard disk	1 stc	

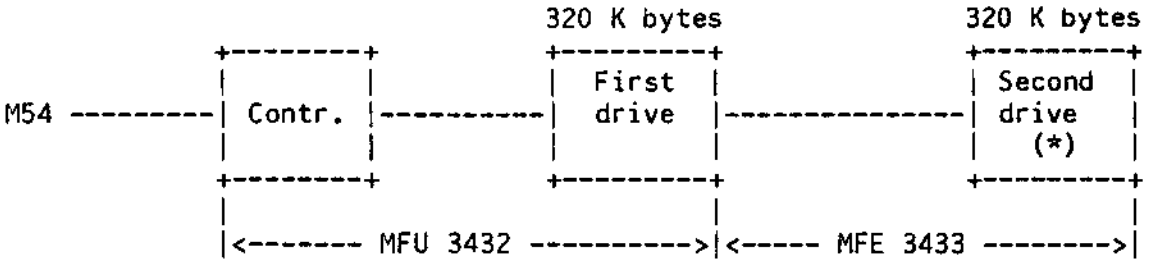
M54 DISKETTE AND STREAMING TAPE CARTRIDGE



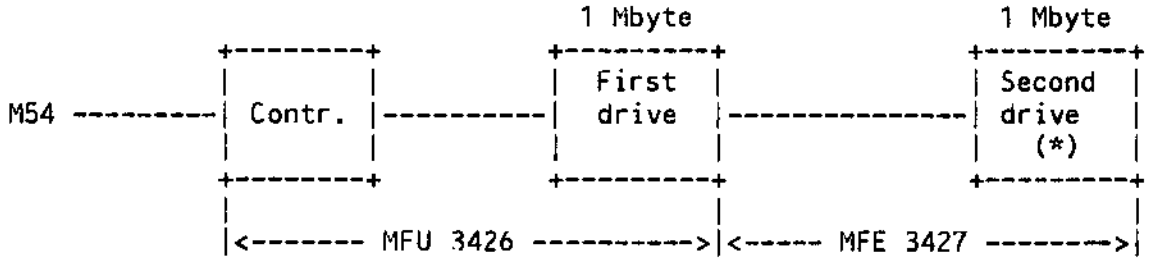
(*) To be used as backup in place of the second 5.25 inch diskette in hard disk configurations (see following pages).

DIAGRAMS ON M54 DISKETTES AND STREAMING TAPE CARTRIDGE

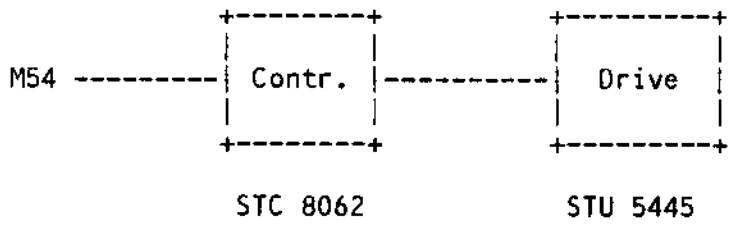
*** FIRST AND SECOND DRIVE FOR 5.25 inch 320K byte DISKETTES ***



*** FIRST AND SECOND DRIVE FOR 5.25 inch 1 Mbyte DISKETTES ***

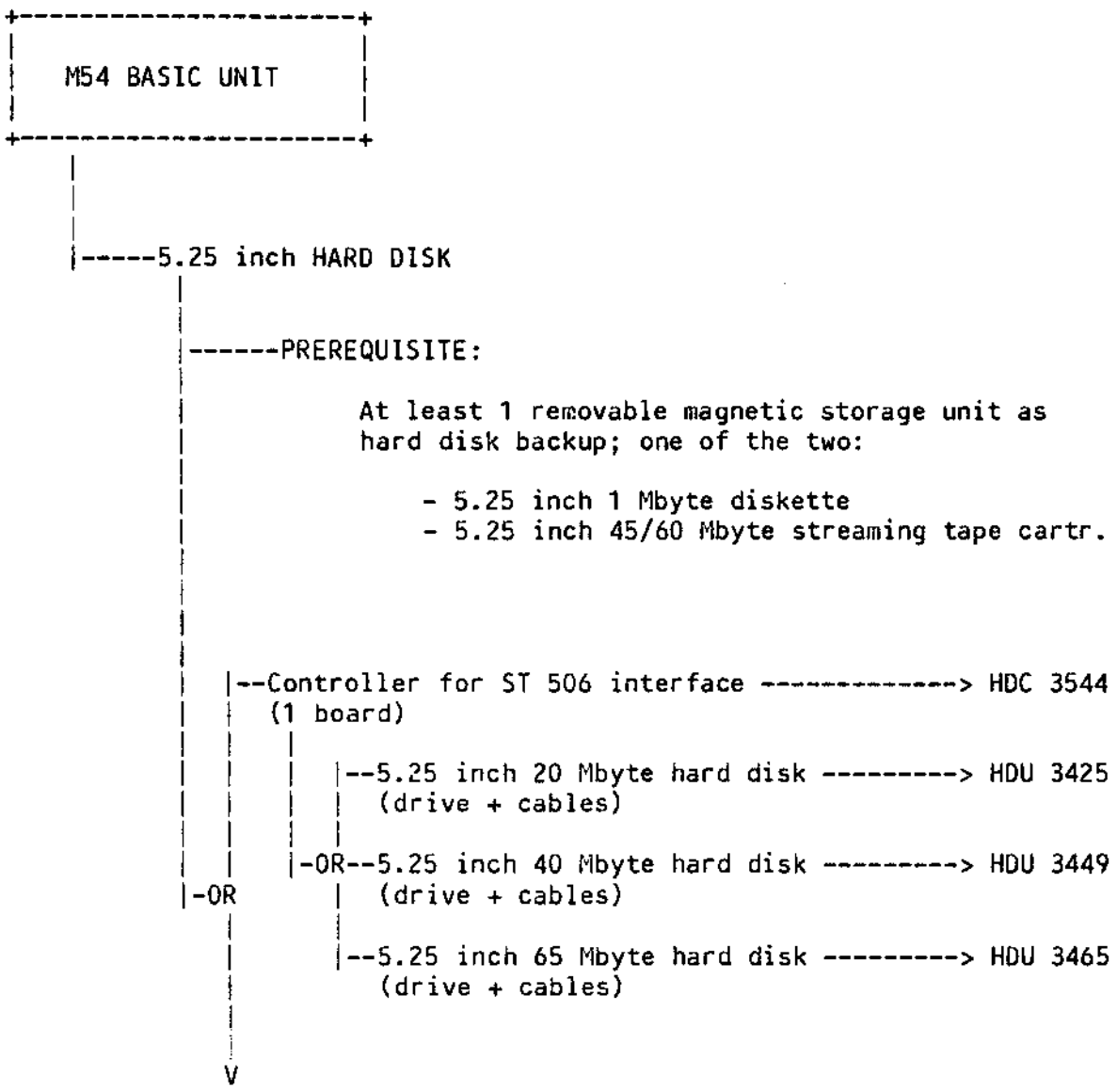


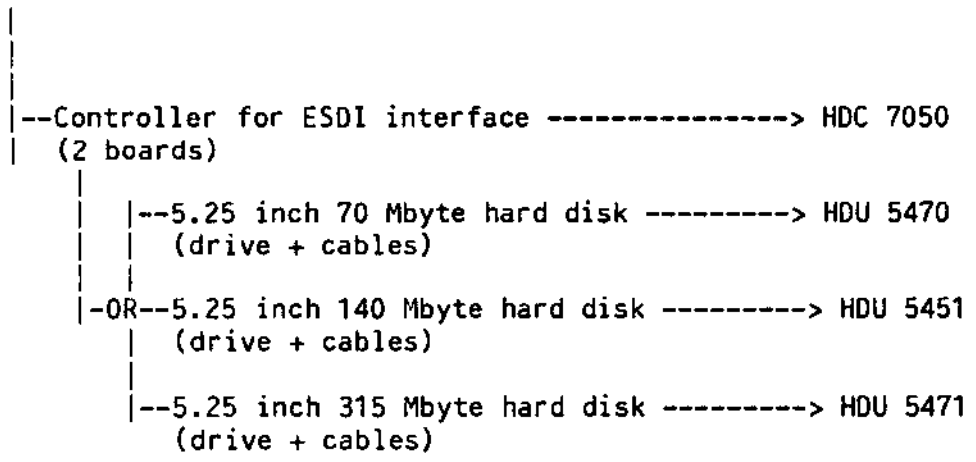
*** 5.25 inch 45/60 Mbyte STREAMING TAPE CARTRIDGE ***



(*) With hard disk configurations there is no second 5.25 inch diskette.

M54 HARD DISK

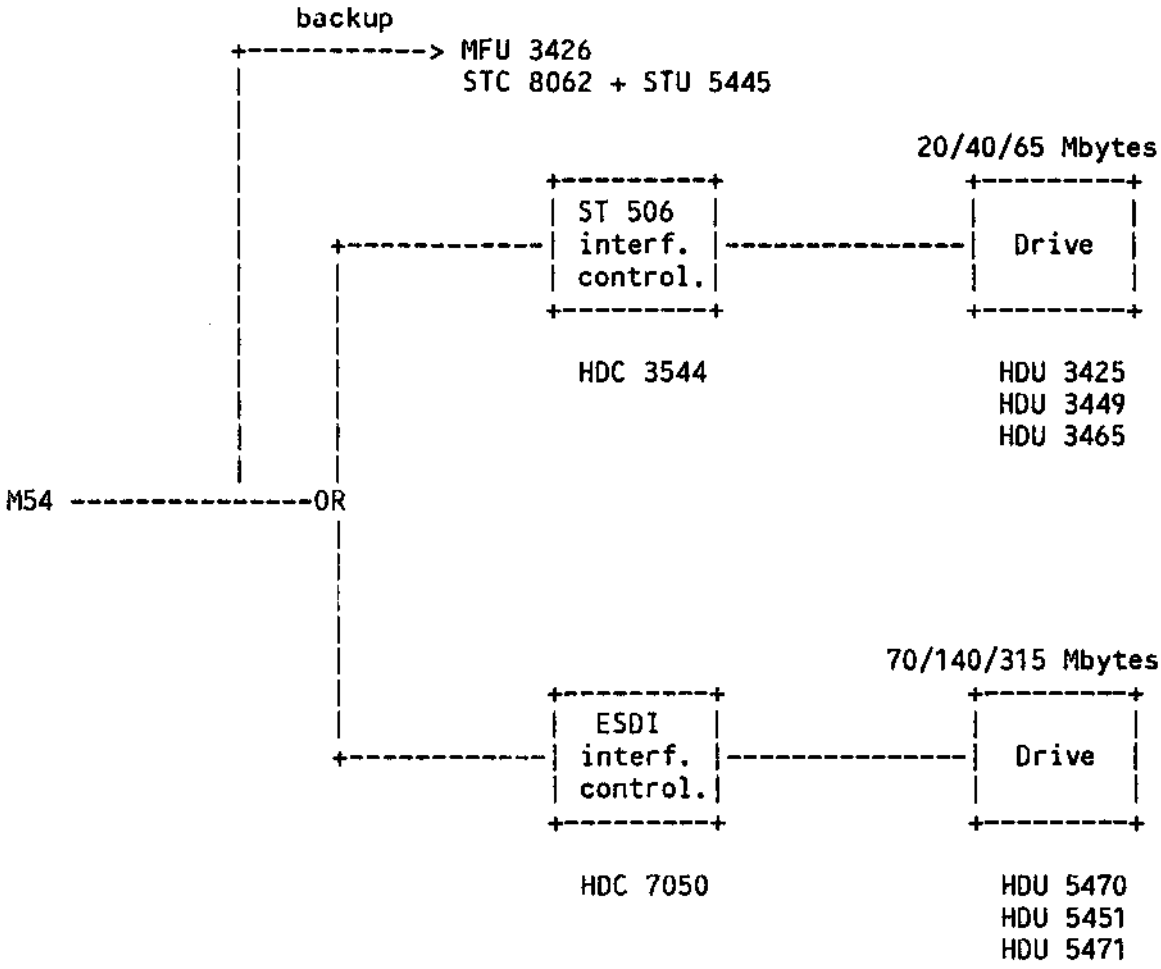




NOTE 1 - The M54 hard disk configuration cannot have two 5.25 inch diskettes; the 5.25 inch streaming tape cartridge should be used as second removable magnetic unit.

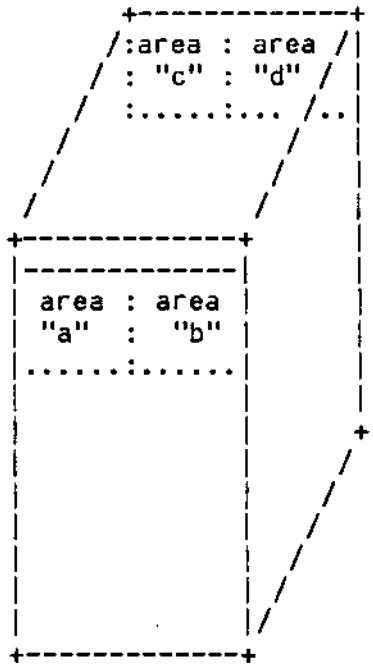
DIAGRAMS ON M54 HARD DISK

*** 20/40/65/70/140/315 Mbyte HARD DISKS ***



CONFIGURATION OF MAGNETIC STORAGE UNITS FOR M64/M70 BASIC CABINET

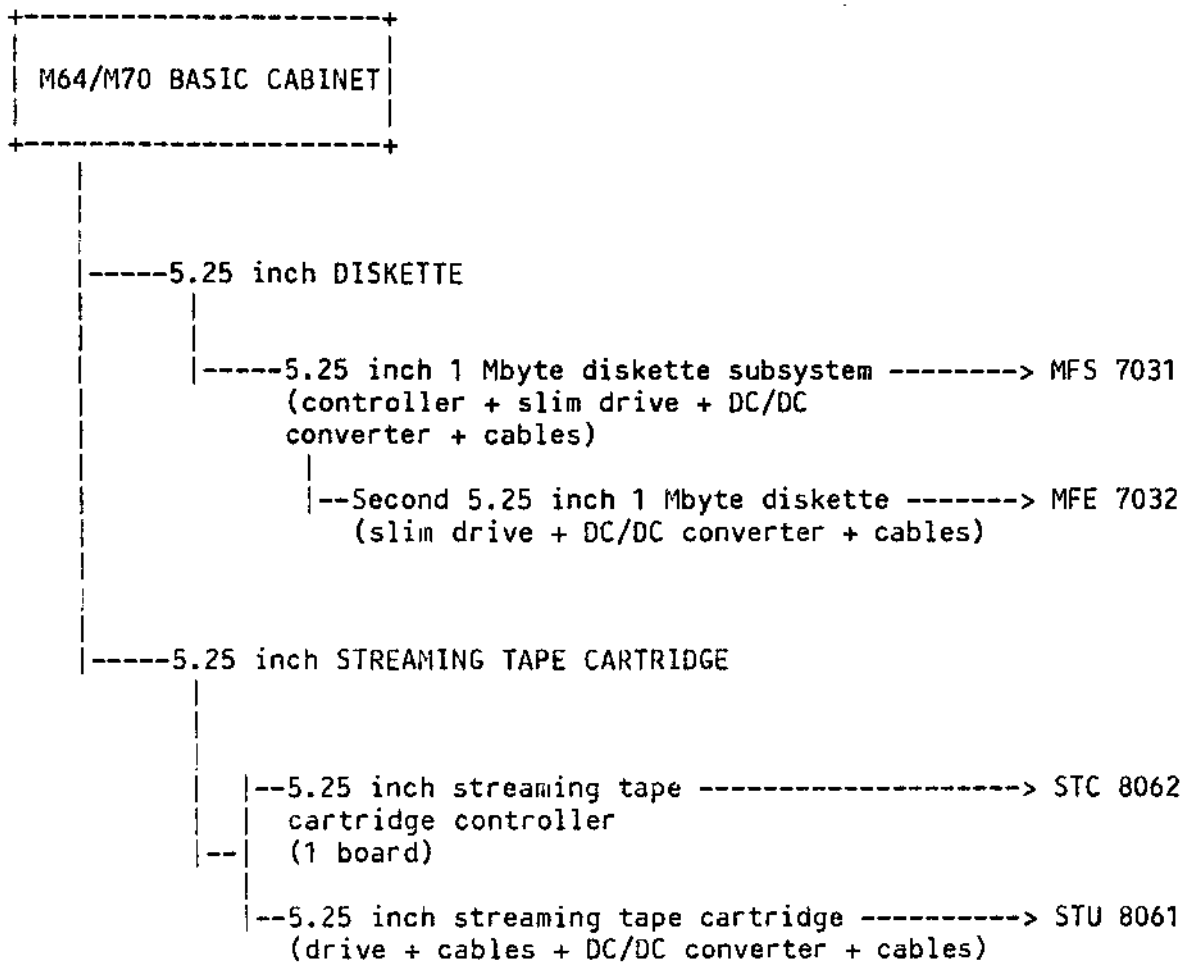
The front side of the M64/M70 basic cabinet is as follows:



On the two front areas "a" and "b" there is space to insert removable magnetic units, and the other two areas "c" and "d" can house hard disk units. The following table shows the different configurations for the M64/M70 basic cabinet and the upgrading possibilities.

CONF.	AREA "a"	AREA "b"	AREA "c"	AREA "d"	UPGRADING
A1	1 diskette	--	1 hard disk	--	A3,A4,A5,A7,A8
A2	--	1 stc	1 hard disk	--	A6,A8
A3	1 diskette	1 diskette	1 hard disk	--	A7
A4	1 diskette	1 stc	1 hard disk	--	A8
A5	1 diskette	--	1 hard disk	1 hard disk	A7,A8
A6	--	1 stc	1 hard disk	1 hard disk	A8
A7	1 diskette	1 diskette	1 hard disk	1 hard disk	
A8	1 diskette	1 stc	1 hard disk	1 hard disk	

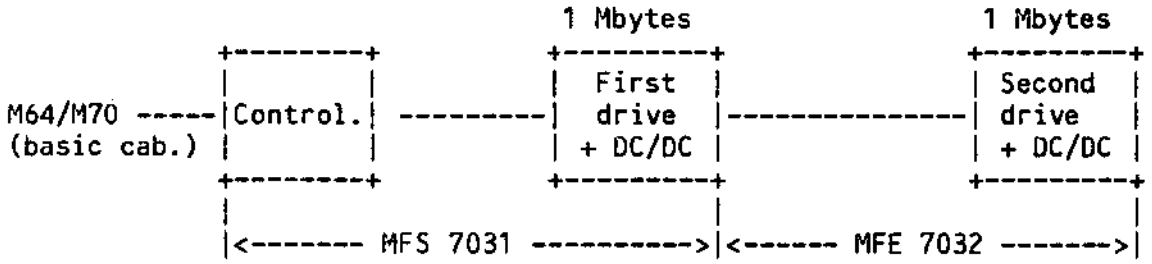
M64/M70: BASIC CABINET WITH DISKETTE/STREAMING TAPE CARTRIDGE



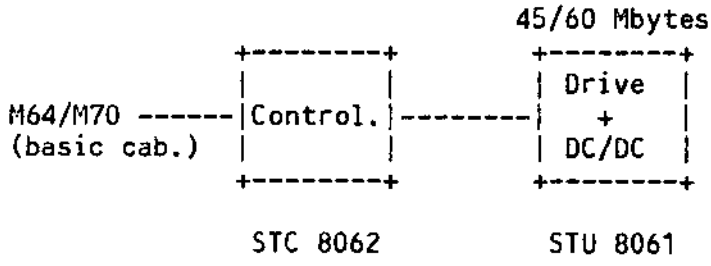
NOTE 1 - The controller of the 1 Mbyte diskettes can handle up to two drives; the non-homogeneous configurations (5.25 inch and 8 inch diskettes) need two different controllers.

M64/M70: DIAGRAMS OF BASIC CABINET WITH DISKETTE/STREAMING TAPE

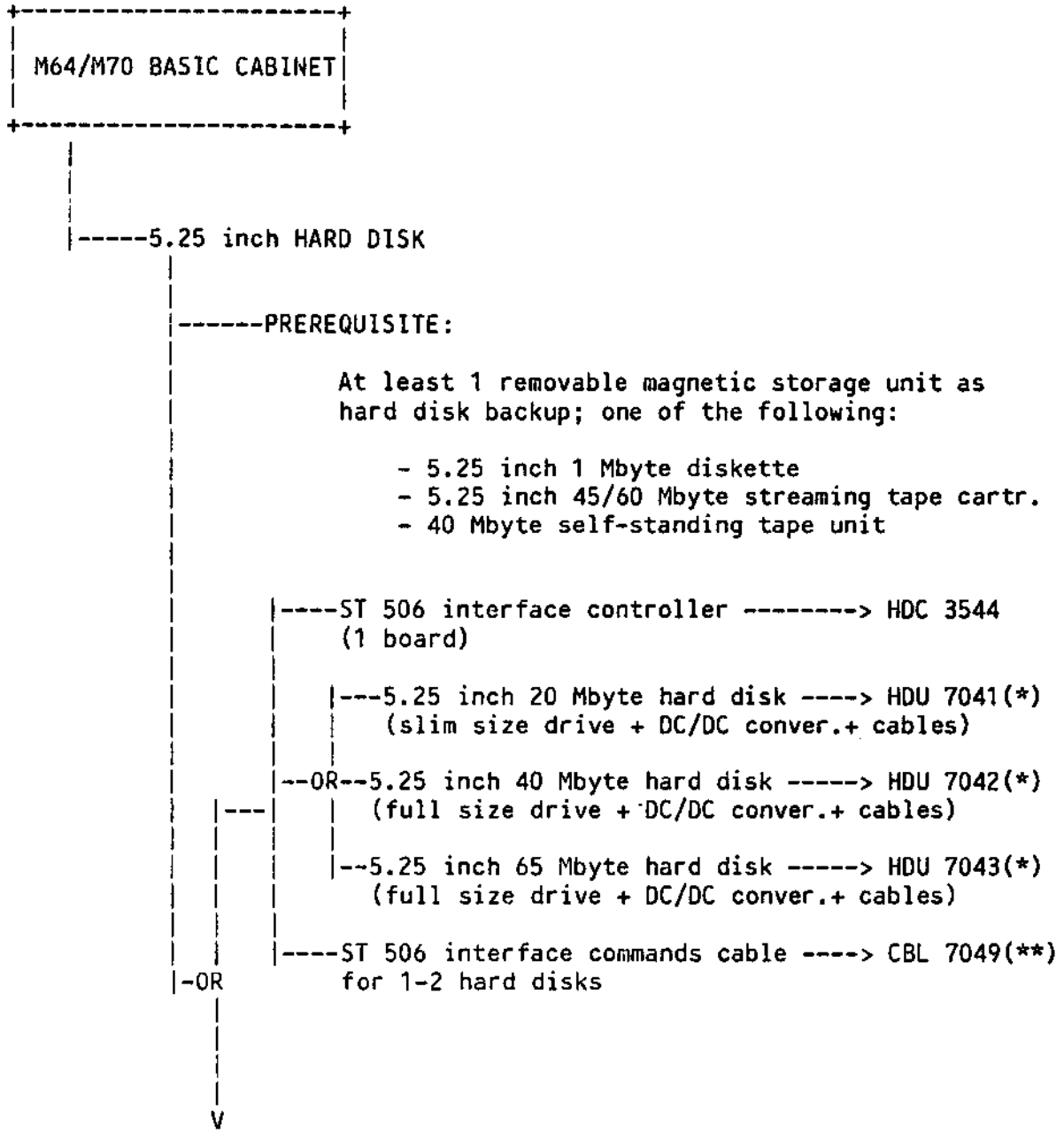
*** FIRST AND SECOND DRIVE FOR 5.25 inch 1 Mbyte DISKETTES ***

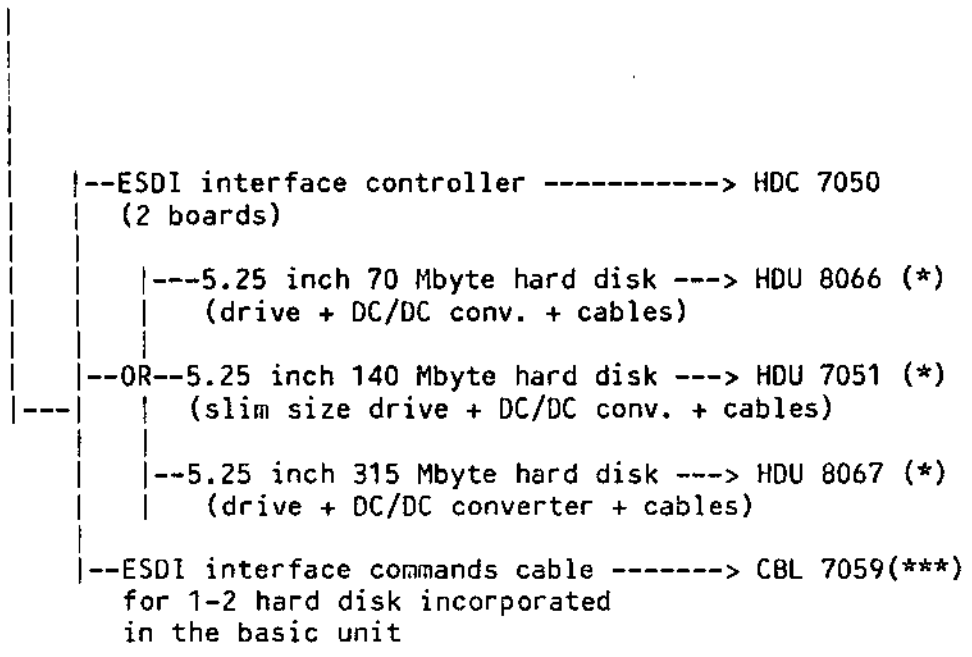


*** 5.25 inch 45/60 Mbyte STREAMING TAPE CARTRIDGE ***



M64/M70: BASIC CABINET WITH HARD DISK





(*) This HDU .... item should also be ordered as second drive; for example, in a configuration with two 40 Mbyte hard disks order:

- **1 HDC 3544**
- **2 HDUs 7042**
- **1 CBL 7049 (CAV 180)**

(**) Commands cable for connecting:

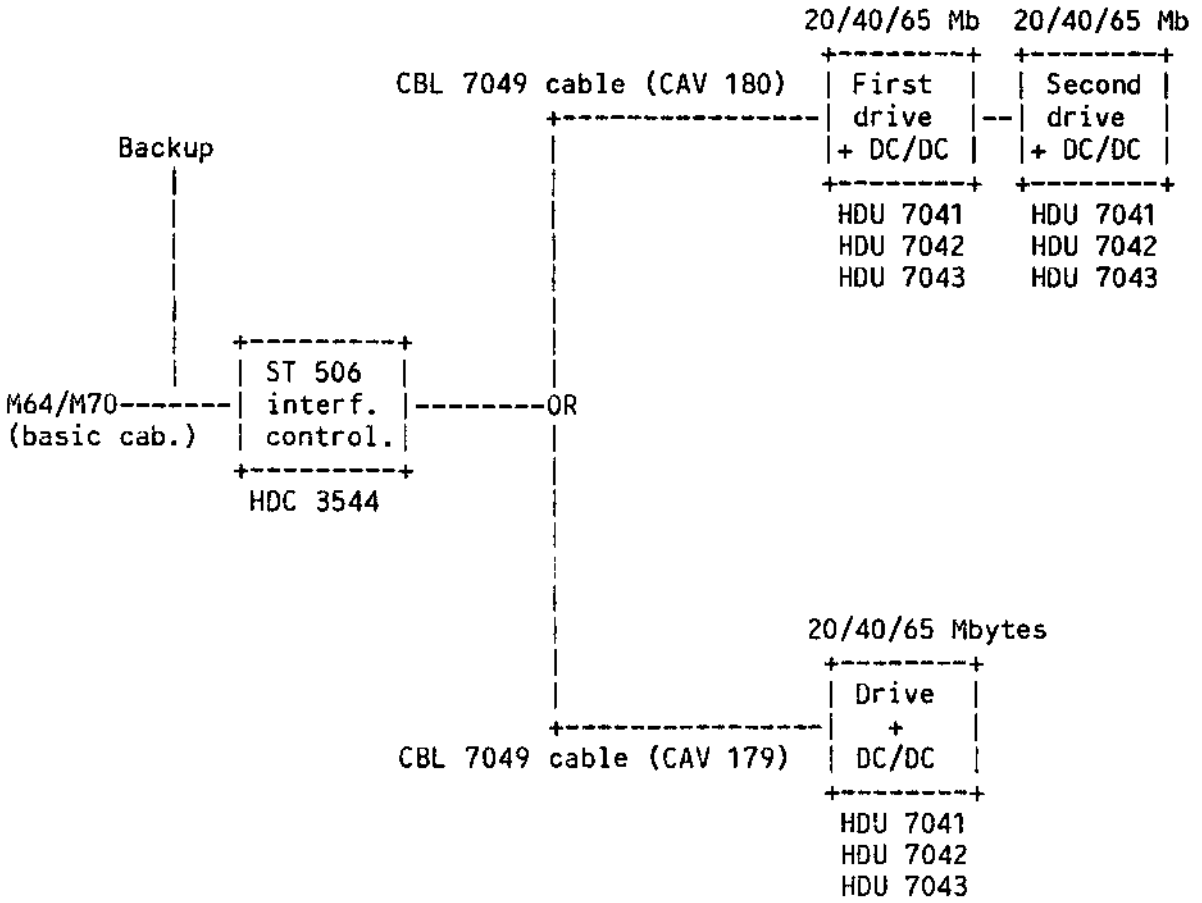
- **1 drive (CAV 179)**
- **2 drives (CAV 180)**
  (cable must be replaced when upgrading from 1 to 2 drives)

(***) Commands cable for connecting:

- **1 drive (CAV 181)**
- **2 drives (CAV 182)**
- **3rd/4th drive (CAV 199)**
  (cable must be replaced when upgrading from 1 to 2, 3, 4 drives)

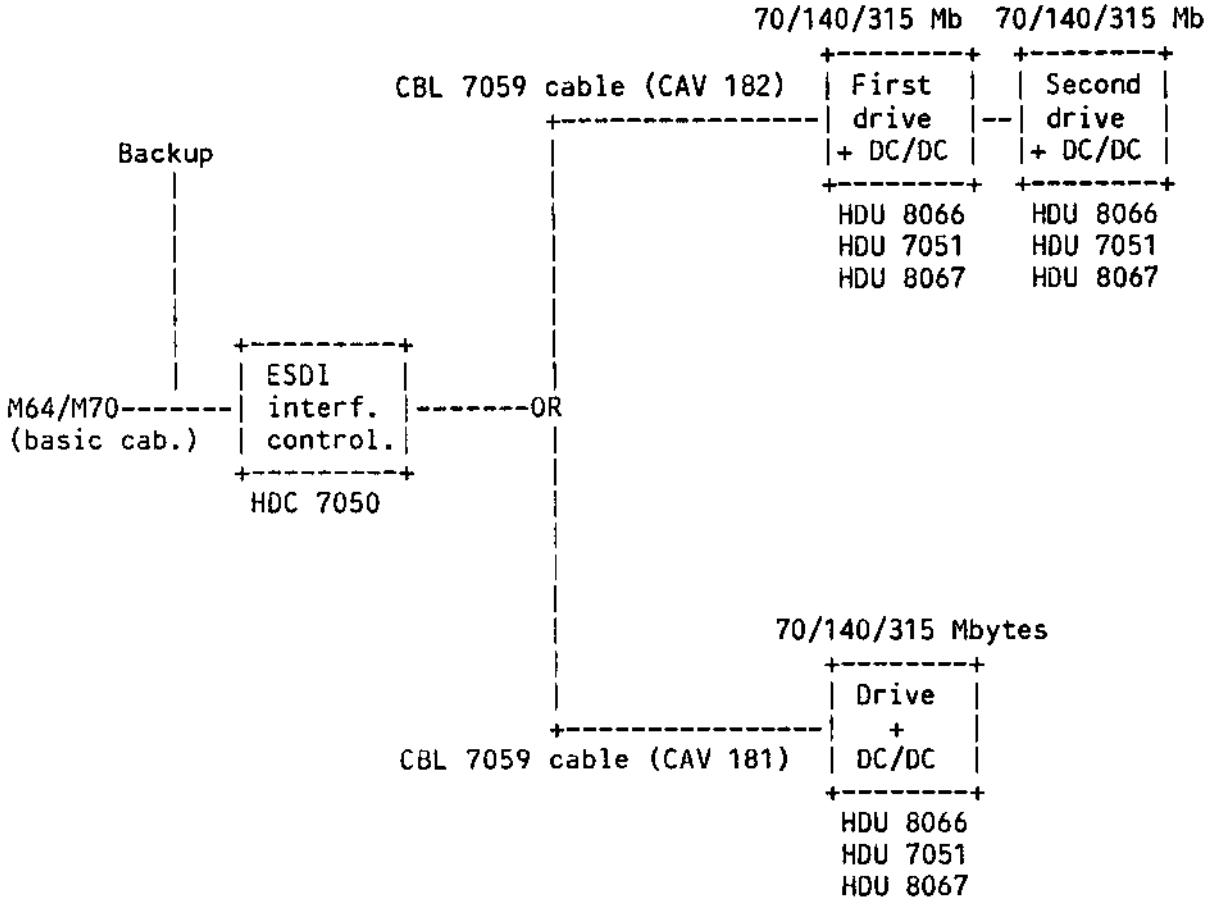
M64/M70: DIAGRAMS OF BASIC CABINET WITH 20/40/65 Mbyte HARD DISKS

*** ONE OR TWO 20/40/65 Mbyte HARD DISKS ***



M64/M70: DIAGRAMS OF BASIC CABINET WITH 70/140/315 Mb HARD DISKS

*** ONE OR TWO 70/140/215 Mbyte HARD DISKS ***

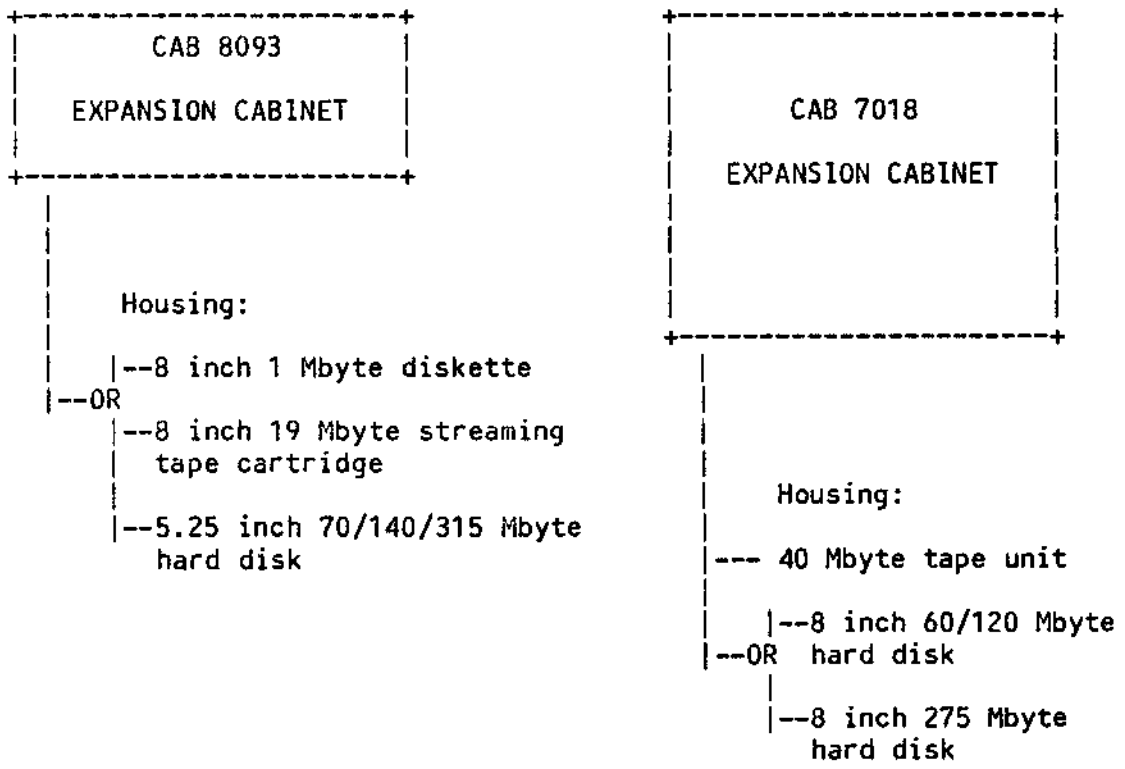


EXPANSION CABINET FOR M64/M70 SYSTEMS

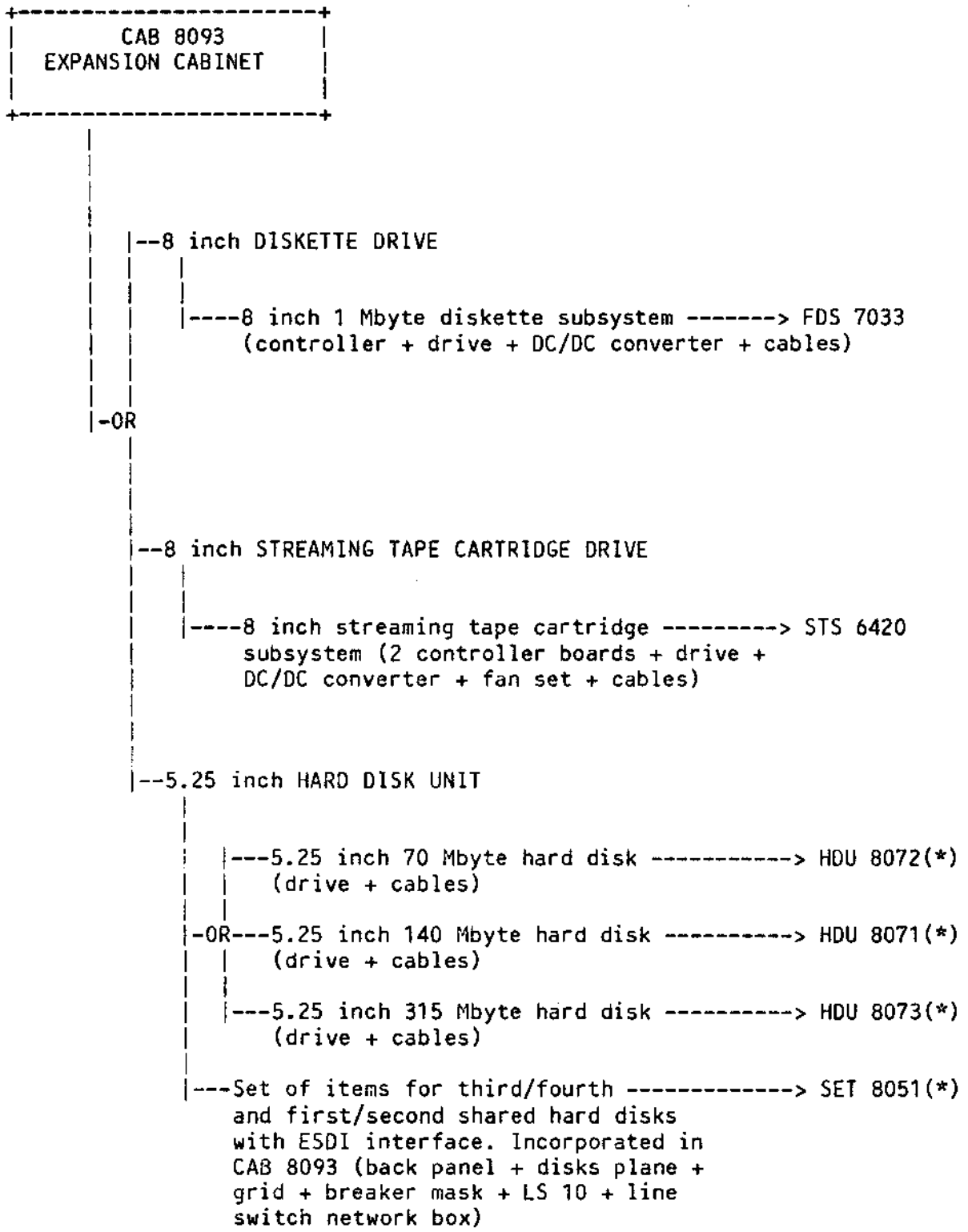
The M64 and M70 models can dispose of two types of expansion cabinets which are placed near and connected to the system's basic cabinet.

a) **CAB 8093 expansion cabinet,** housing: an 8 inch diskette drive, or an 8 inch streaming tape cartridge drive, or one/two 5.25 inch 70/140/315 Mbyte hard disk units.

b) **CAB 7018 expansion cabinet,** housing: a 40 Mbyte tape unit and one/two 8 inch 60/120/275 Mbyte hard disk units.



M64/M70: CAB 8093 CABINET WITH DISKETTE/STREAMING TAPE/HARD DISK



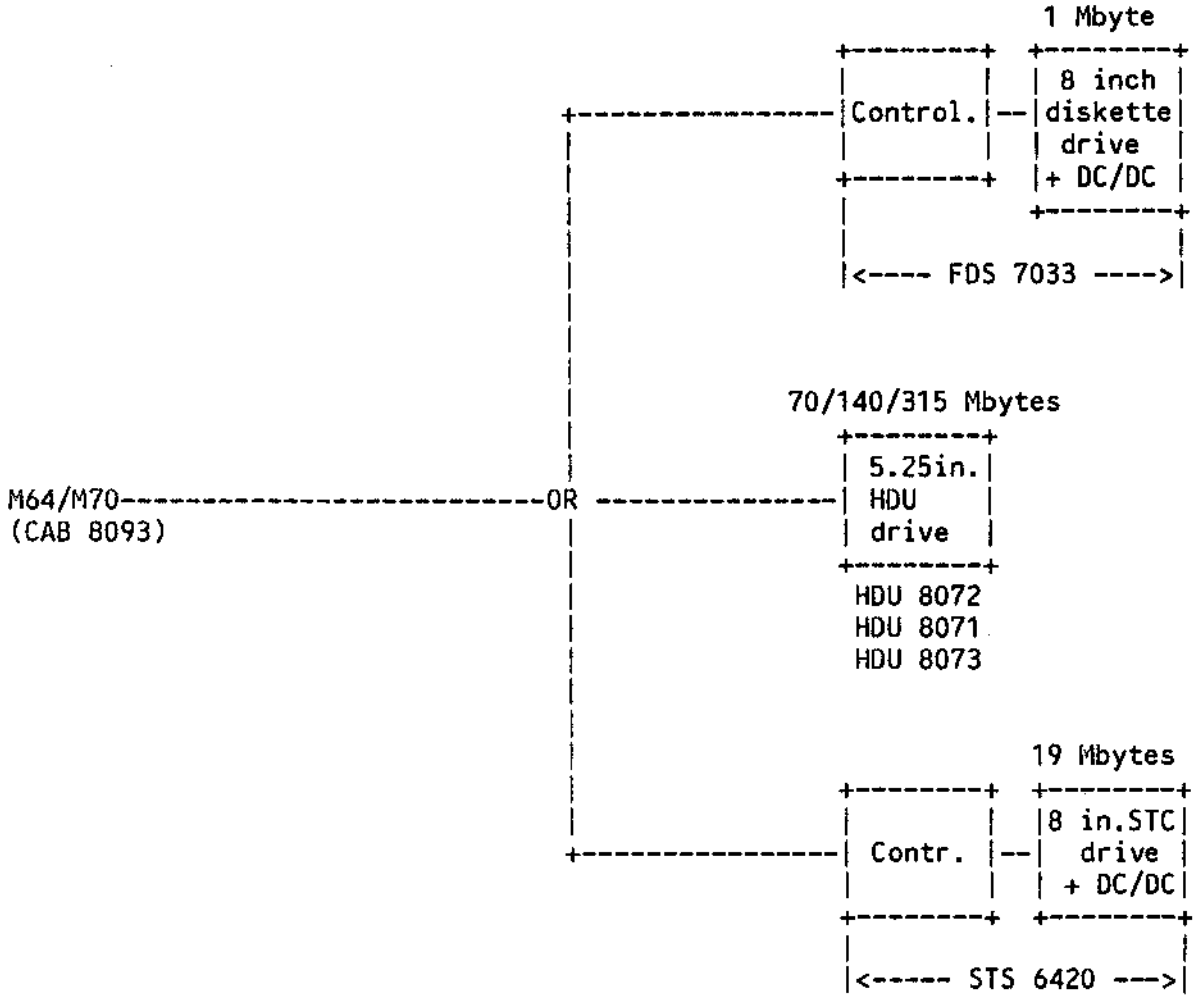
(*) The first drive, housed in the basic unit, comprises:

- SET 8051 + cable CBL 7059 - CAV 199 (characteristics that changes for the third/fourth drive)

NOTE 1 - When ordering the M70 basic unit with 16 board slots (BU 7012) there is no need to request the expansion cabinet CAB 8093 as it is already comprised in the BU.

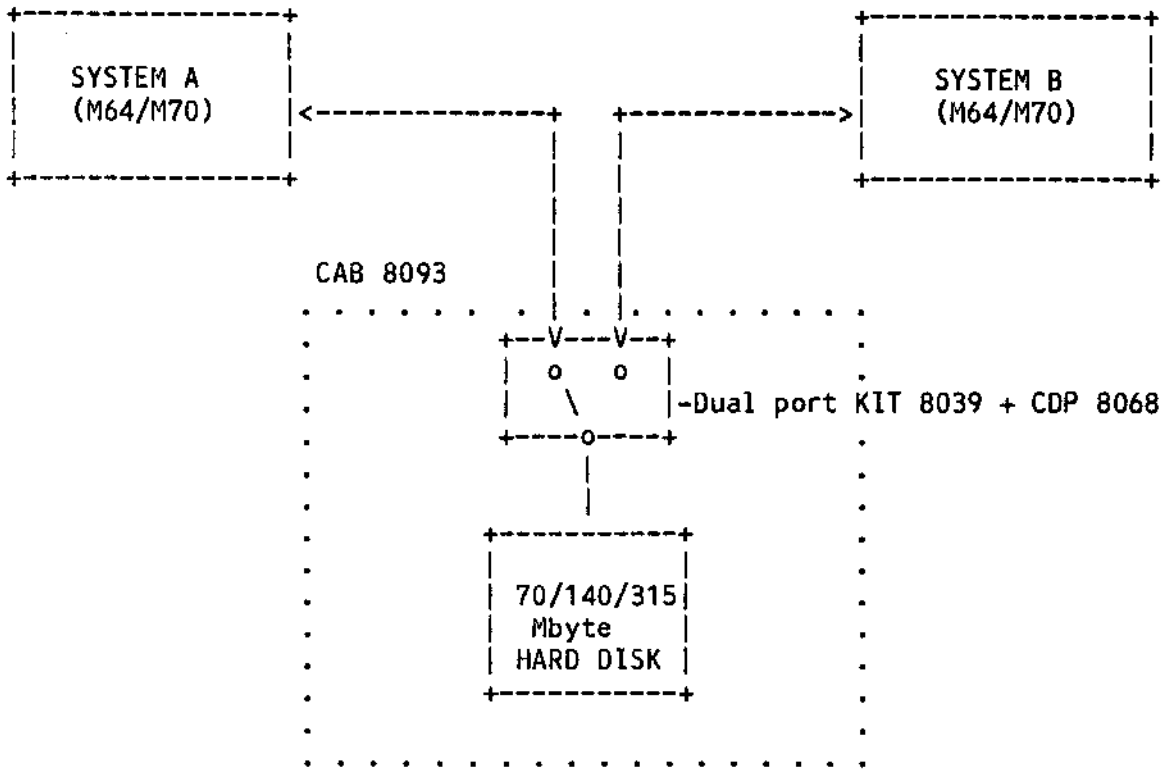
M64/M70: DIAGRAM OF EXPANSION CABINET CAB 8093

*** CAB 8093 WITH 8 inch DISKETTE/8 inch STR. TAPE/5.25 inch HD ***



COMMUTING 70/140/315 Mbyte HARD DISKS BETWEEN TWO M64/M70 SYSTEMS

To commute 5.25 inch 70/140/315 Mbyte hard disks between two M64/M70 systems, it is necessary to use KIT 8039 and CDP 8068 which are optional devices housed in the expansion cabinet CAB 8093.



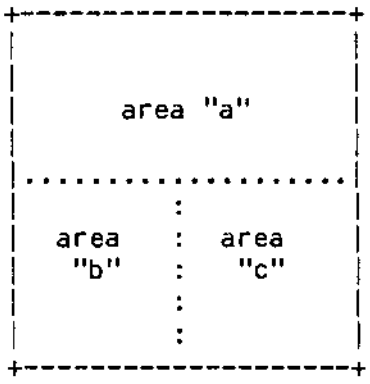
(*) The CDP 8068 module has a CAV variant which distinguishes cables according to the number of hard disks commuted, 1 or 2. The CAV variants are:

- **CAV 194: set of cables for commuting 1 hard disk in CAB 8093**
- **CAV 196: set of cables for commuting 2 hard disks in CAB 8093**

NOTE 1 - 1 KIT 8039 and 1 CDP 8068 must be ordered for each commuted hard disk.

CONFIGURATION OF MAGNETIC UNITS FOR CAB 7018 CABINET

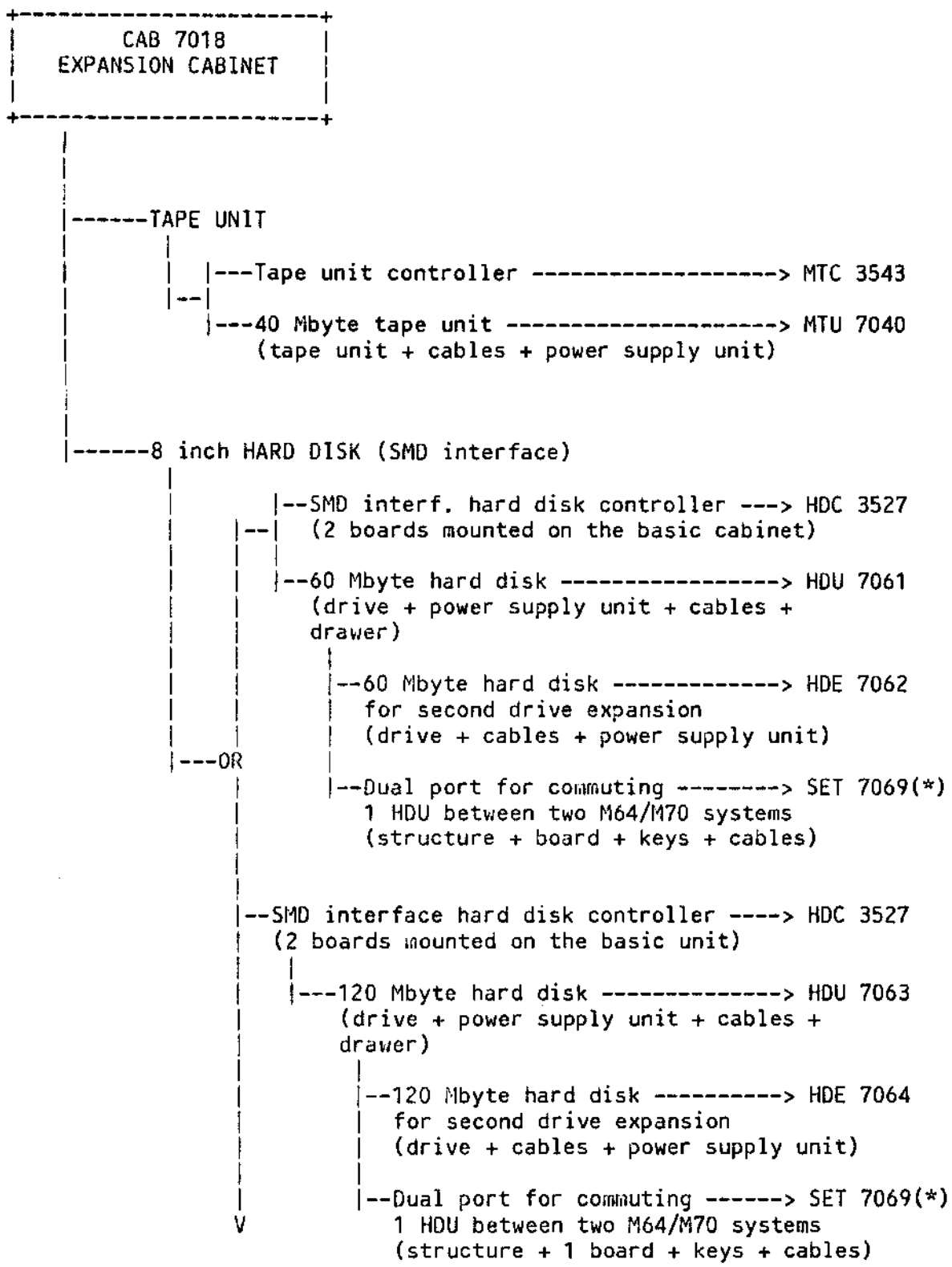
The front part of the expansion cabinet CAB 7018 is structured as follows:

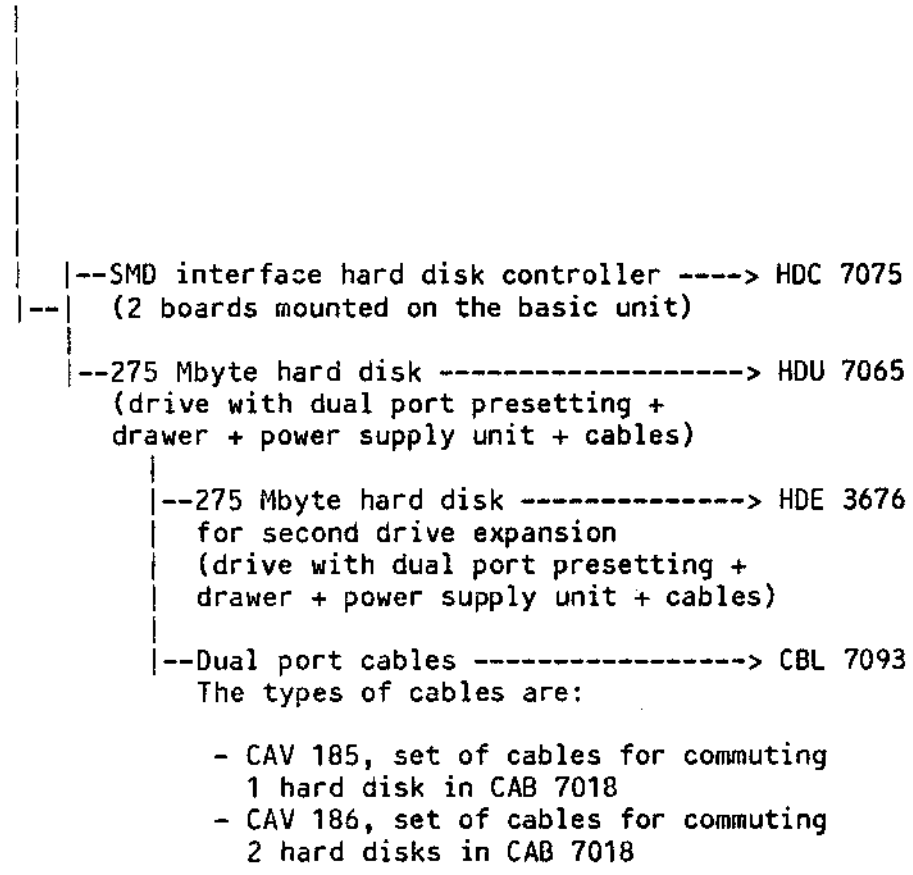


The following table shows the various configurations of the expansion cabinet CAB 7018 and its upgrading possibilities.

CONF.	AREA "a"	AREA "b"	AREA "c"	UPGRADING
A1	tape unit	--	--	A4, A5
A2	--	hard disk	--	A3, A4, A5
A3	--	hard disk	hard disk	A5
A4	tape unit	hard disk	--	A5
A5	tape unit	hard disk	hard disk	

M64/M70: CAB 7018 EXPANSION CABINET WITH TAPE UNIT AND HARD DISK





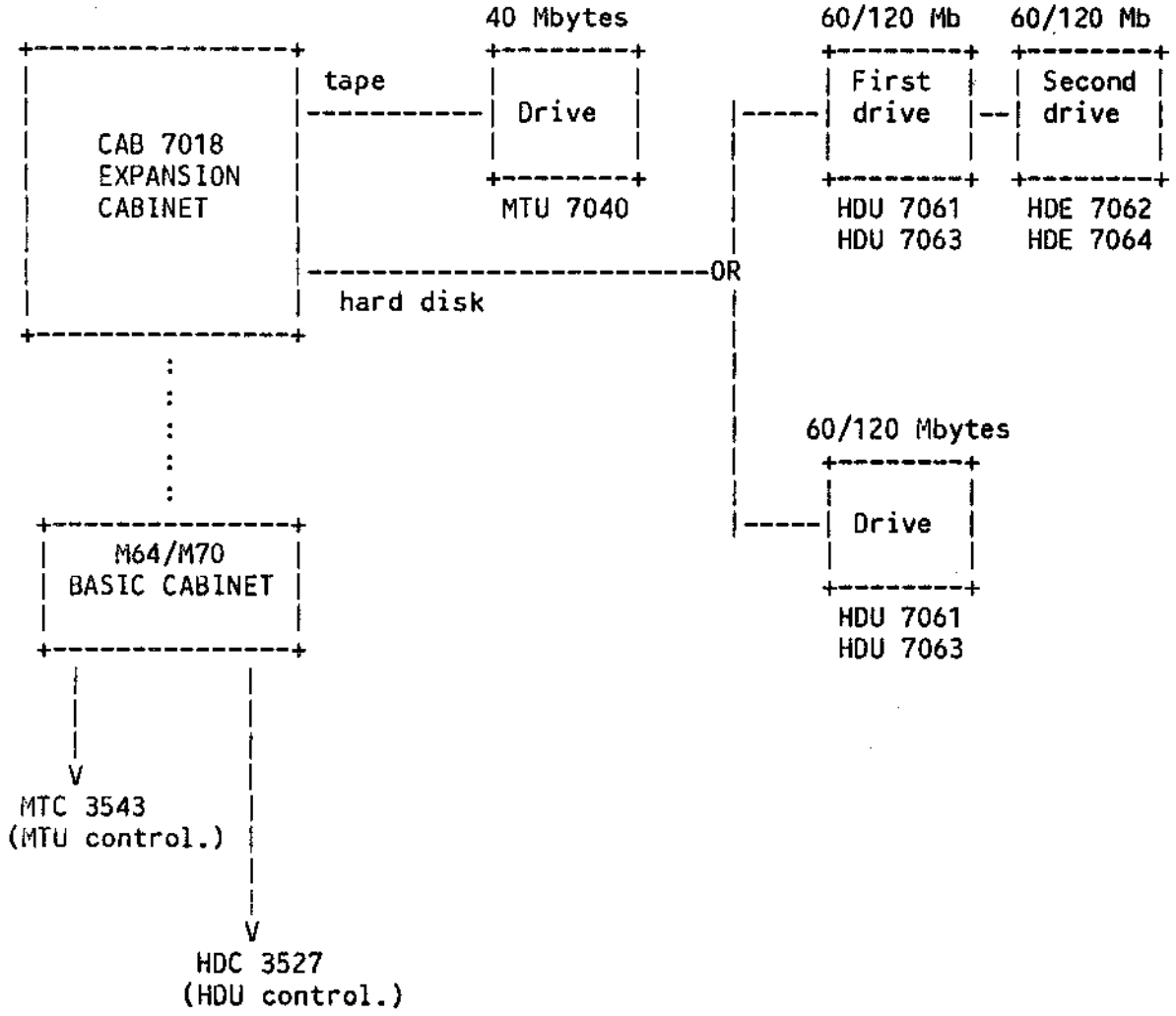
(*) The cables for SET 7069 dual porting are:

- **CAV 183, set of cables for commuting 1 hard disk in CAB 7018**
- **CAV 184, set of cables for commuting 2 hard disks in CAB 7018**

NOTE 1 - The 8 inch 60 Mbyte and 120 Mbyte hard disk units can both be present on the same controller HDC 3527.

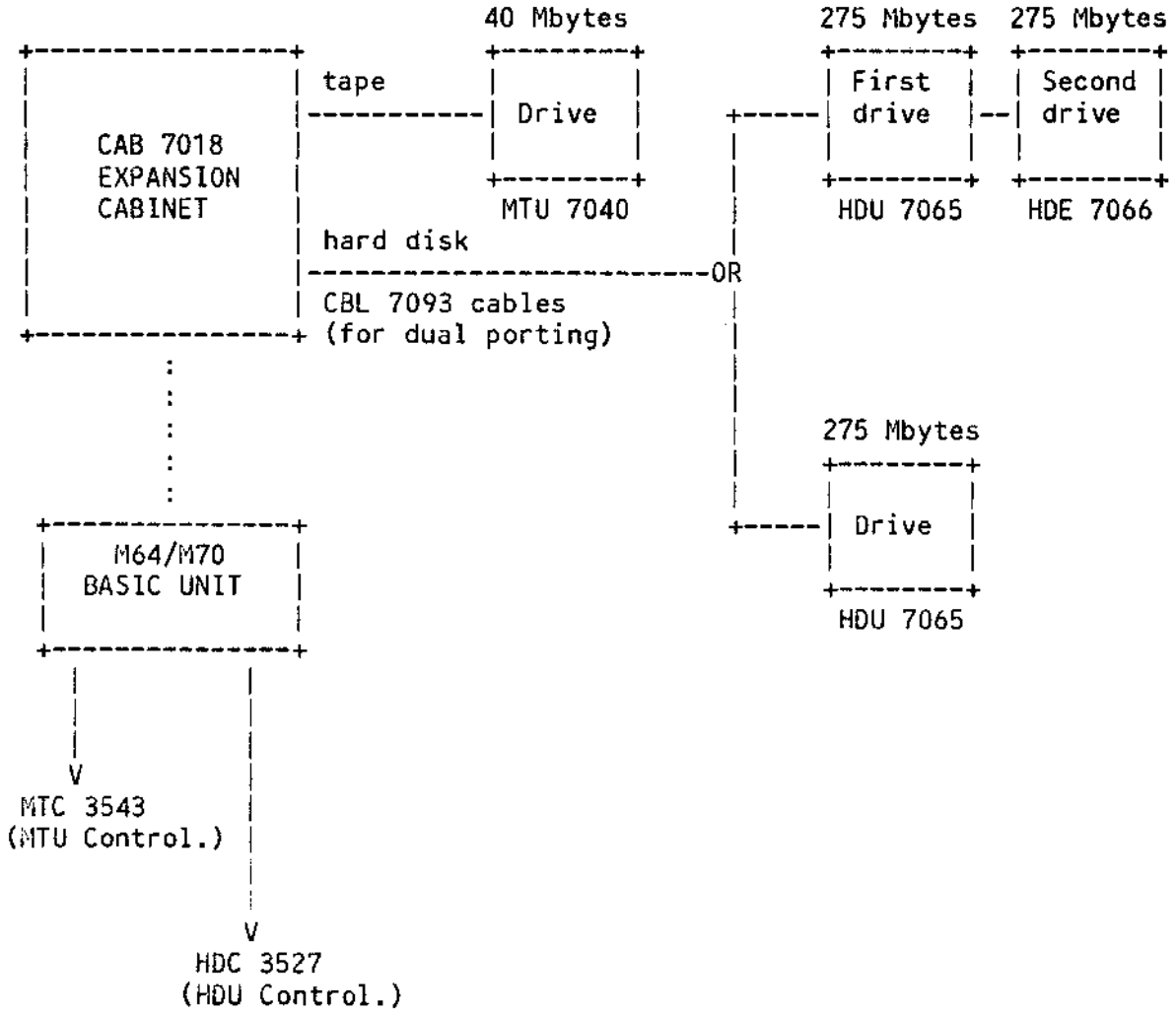
M64/M70: DIAGRAM OF EXPANSION CABINET CAB 7018

*** CAB 7018 EXPANSION CABINET WITH TAPE UNIT AND 60/120 Mbyte HARD DISK ***



NOTE 1 - The controllers of the tape unit and hard disk are mounted on the system's basic cabinet.

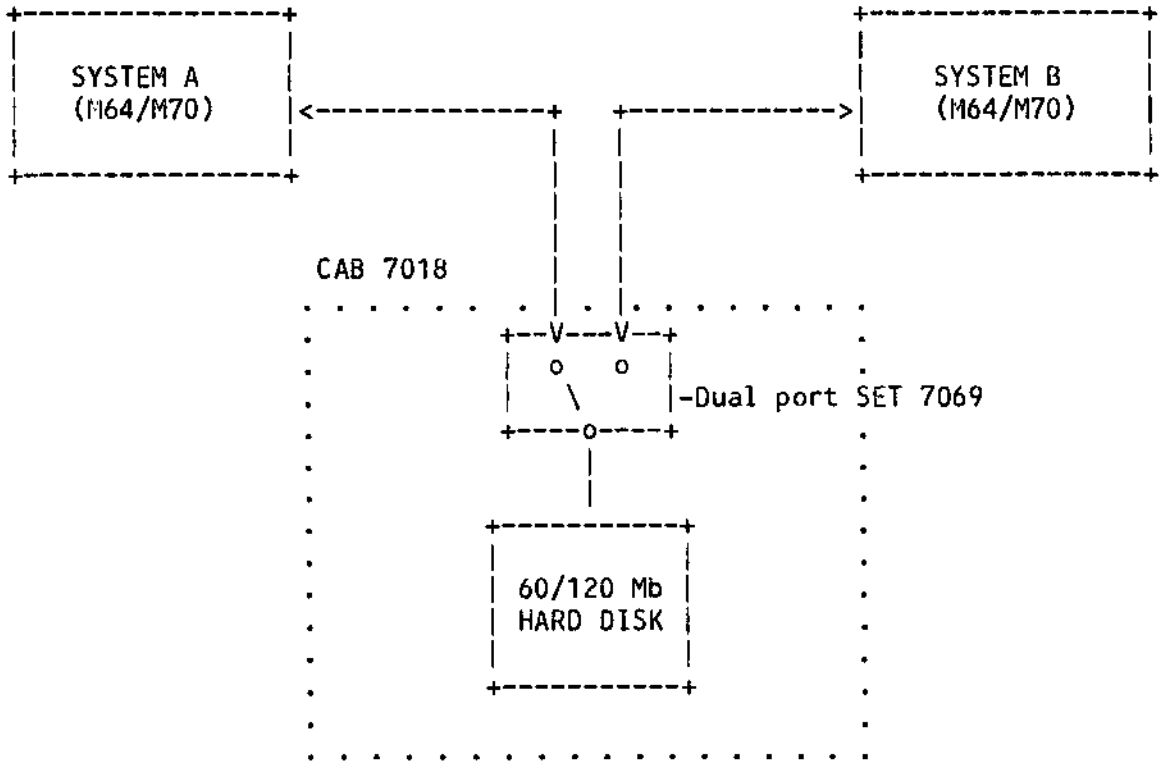
*** CAB 7018 EXPANSION CABINET WITH TAPE UNIT AND 275 Mbyte HARD DISK ***



NOTE 1 - The tape unit and hard disk controllers are mounted on the system's basic cabinet.

COMMUTING 60/120 Mbyte HARD DISK BETWEEN TWO M64/M70 SYSTEMS

By using the optional device SET 7069 housed in the expansion cabinet CAB 7018, there is the possibility for two M64/M70 systems to use the same 60/120 Mbyte hard disk, commuting it from one system to another.

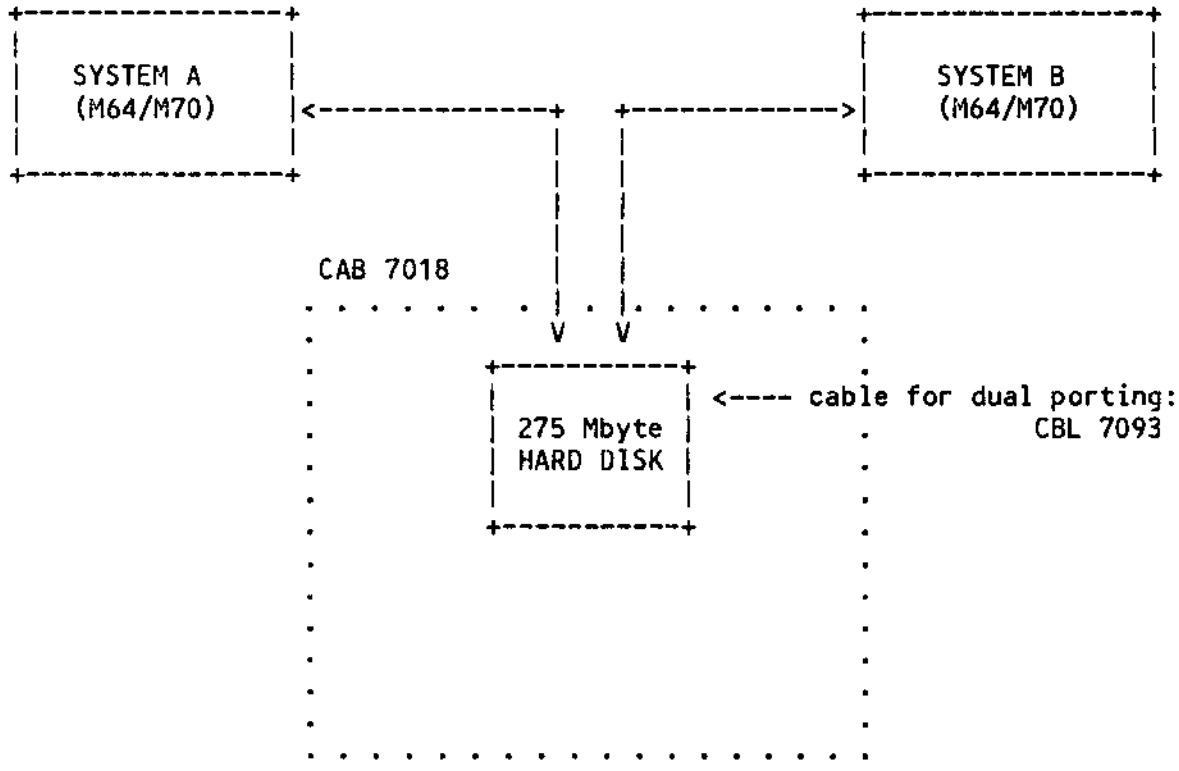


(*) SET 7069 is supplied with the CAV variant, which defines the types of cables used depending on whether commuting 1 or 2 hard disks. The CAV variants are:

- **CAV 183: set of cables for commuting 1 hard disk in CAB 7018**
- **CAV 184: set of cables for commuting 2 hard disks in CAB 7018**

COMMUTING 275 Mbyte HARD DISK BETWEEN TWO M64/M70 SYSTEMS

The 8 inch 275 Mbyte hard disks (housed in CAB 7018) can be commuted between two M64/M70 systems. Hard disk commuting is possible provided the cable for dual porting (CBL 7093) is ordered, indicating as well its variable characteristics.

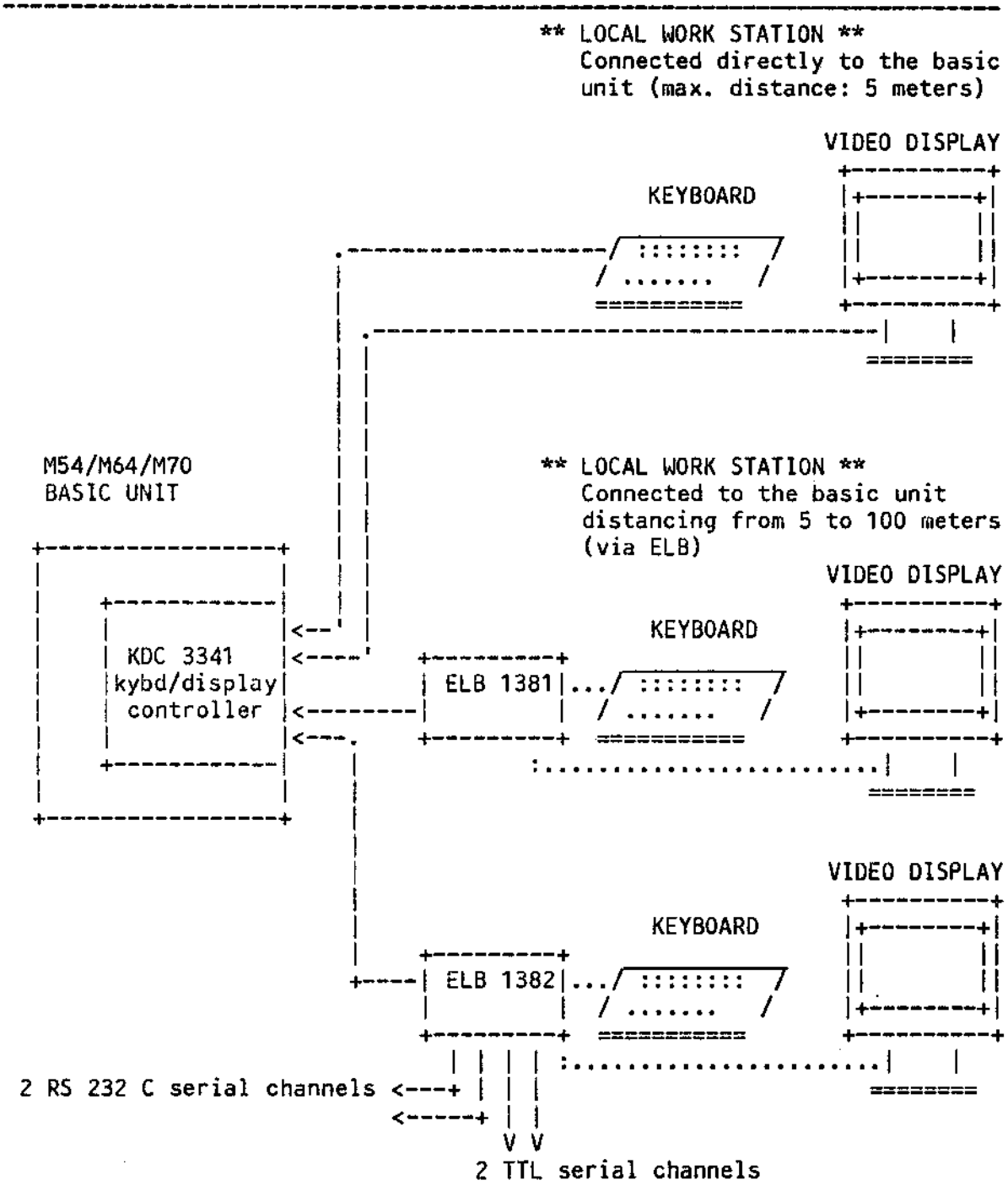


(*) The variable characteristics of CBL 7093 cable for dual porting are:

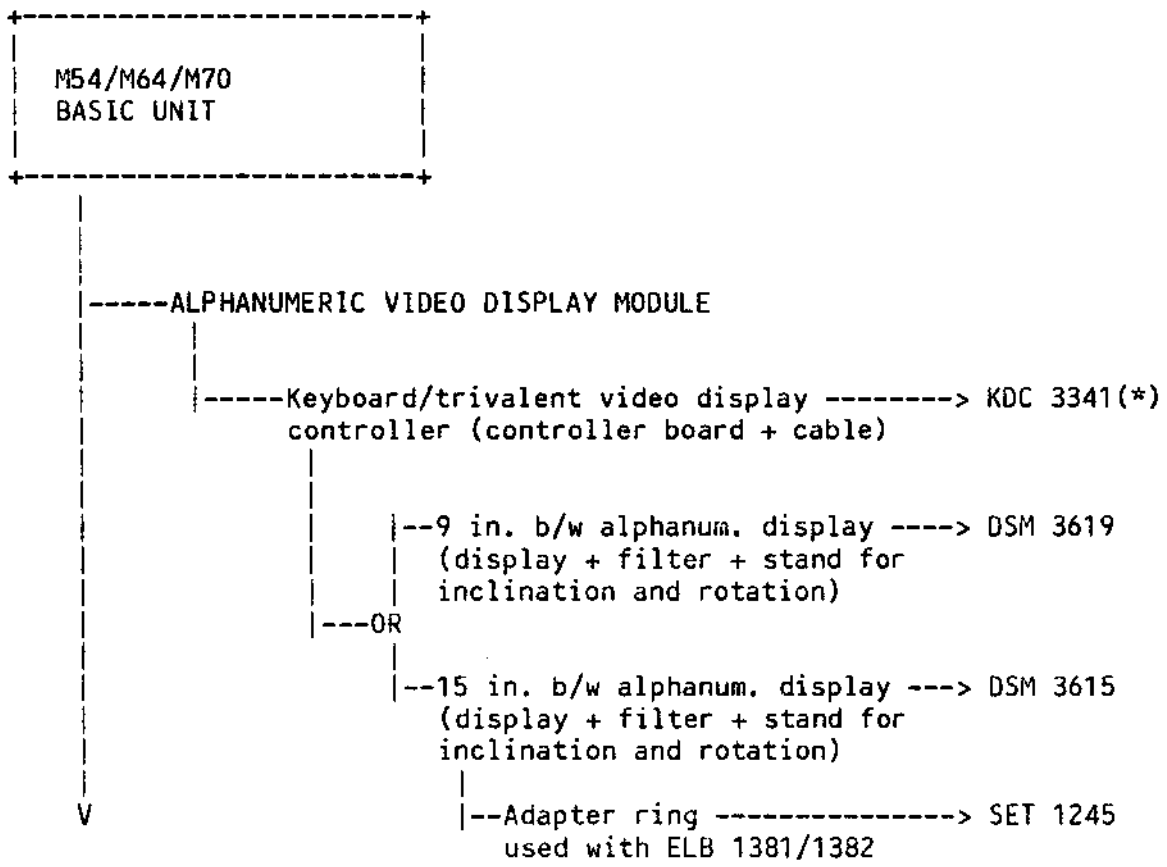
- **CAV 185: set of cables for commuting 1 hard disk in CAB 7018**
- **CAV 186: set of cables for commuting 2 hard disks in CAB 7018**

5. WORK STATIONS

ALPHANUMERIC, GRAPHIC LOCAL WORK STATION (MAX. 100 m DISTANCE)

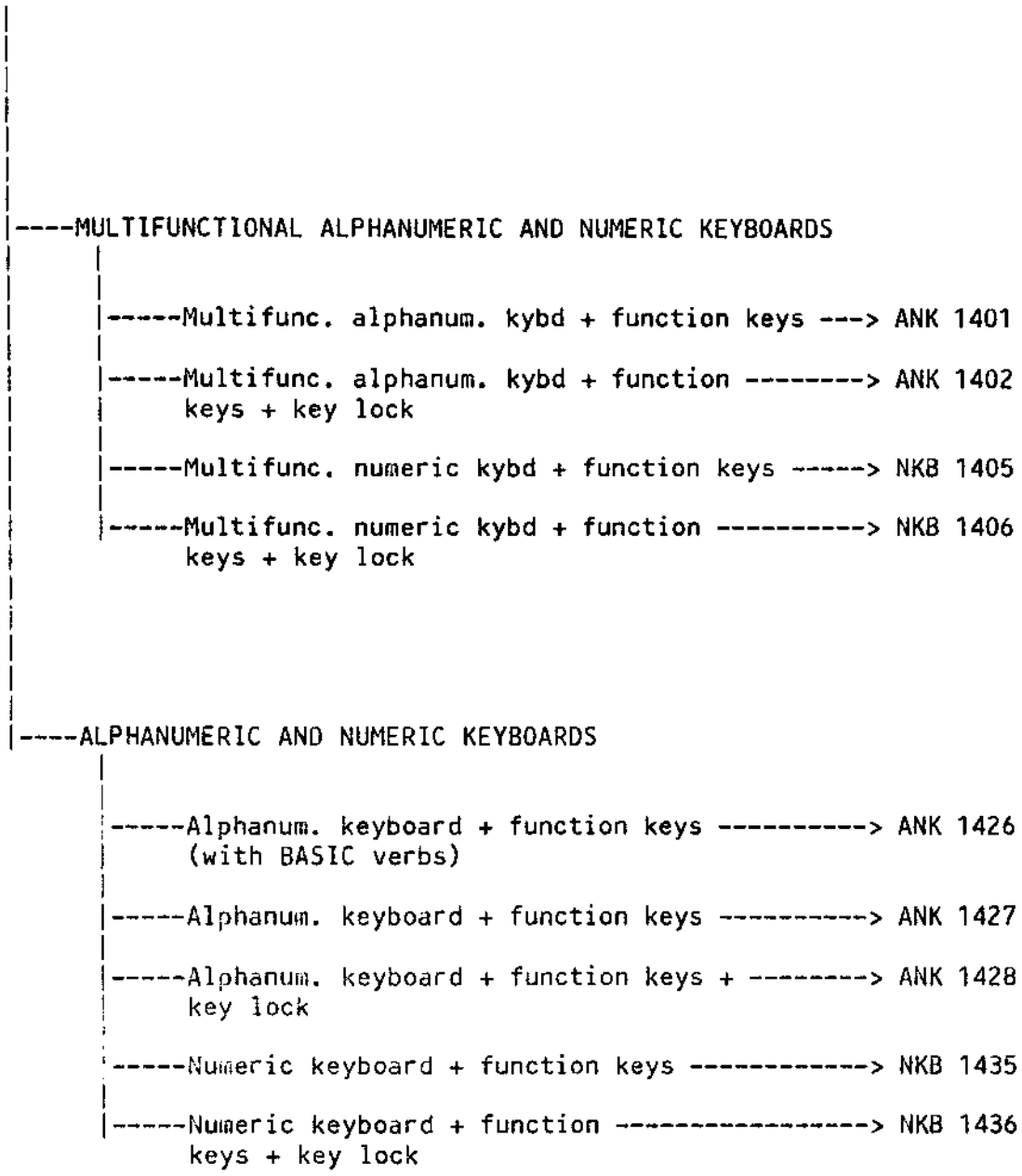


ALPHANUMERIC WORK STATION

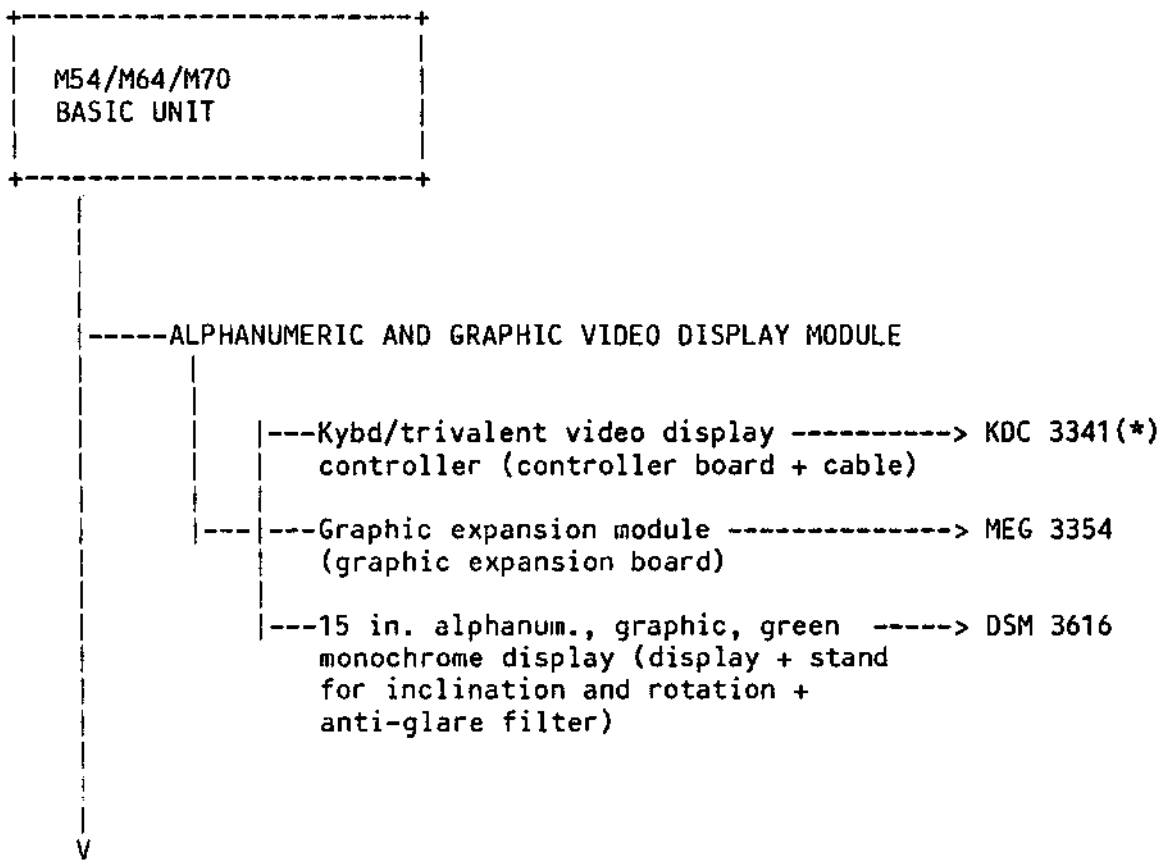


(*) For each controller indicate the type of cable to be used for the video display/keyboard:

- CVT 001: Video display cable 1.10 m - keyboard cable 2 m.
- CVT 002: Video display cable 6 m - keyboard cable 6.5 m.
- CVT 003: Video display cable 3.5 m - keyboard cable 3.5 m.

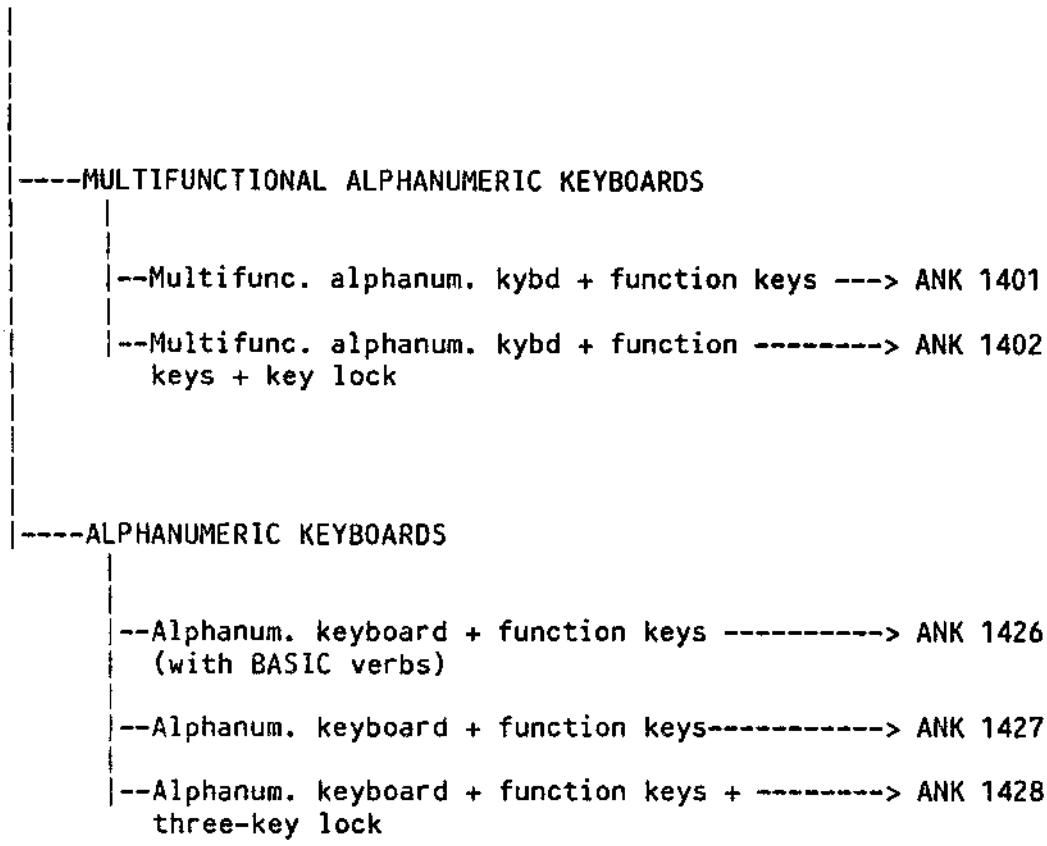

MULTIFUNCTIONAL ALPHANUMERIC AND NUMERIC KEYBOARDS
Multifunc. alphanum. kybd + function keys ---> ANK 1401
Multifunc. alphanum. kybd + function keys + key lock --------> ANK 1402
Multifunc. numeric kybd + function keys -----> NKB 1405
Multifunc. numeric kybd + function keys + key lock ----------> NKB 1406
ALPHANUMERIC AND NUMERIC KEYBOARDS
Alphanum. keyboard + function keys (with BASIC verbs) ----------> ANK 1426
Alphanum. keyboard + function keys ----------> ANK 1427
Alphanum. keyboard + function keys + key lock --------> ANK 1428
Numeric keyboard + function keys ----------> NKB 1435
Numeric keyboard + function keys + key lock ----------> NKB 1436

ALPHANUMERIC AND GRAPHIC WORK STATION

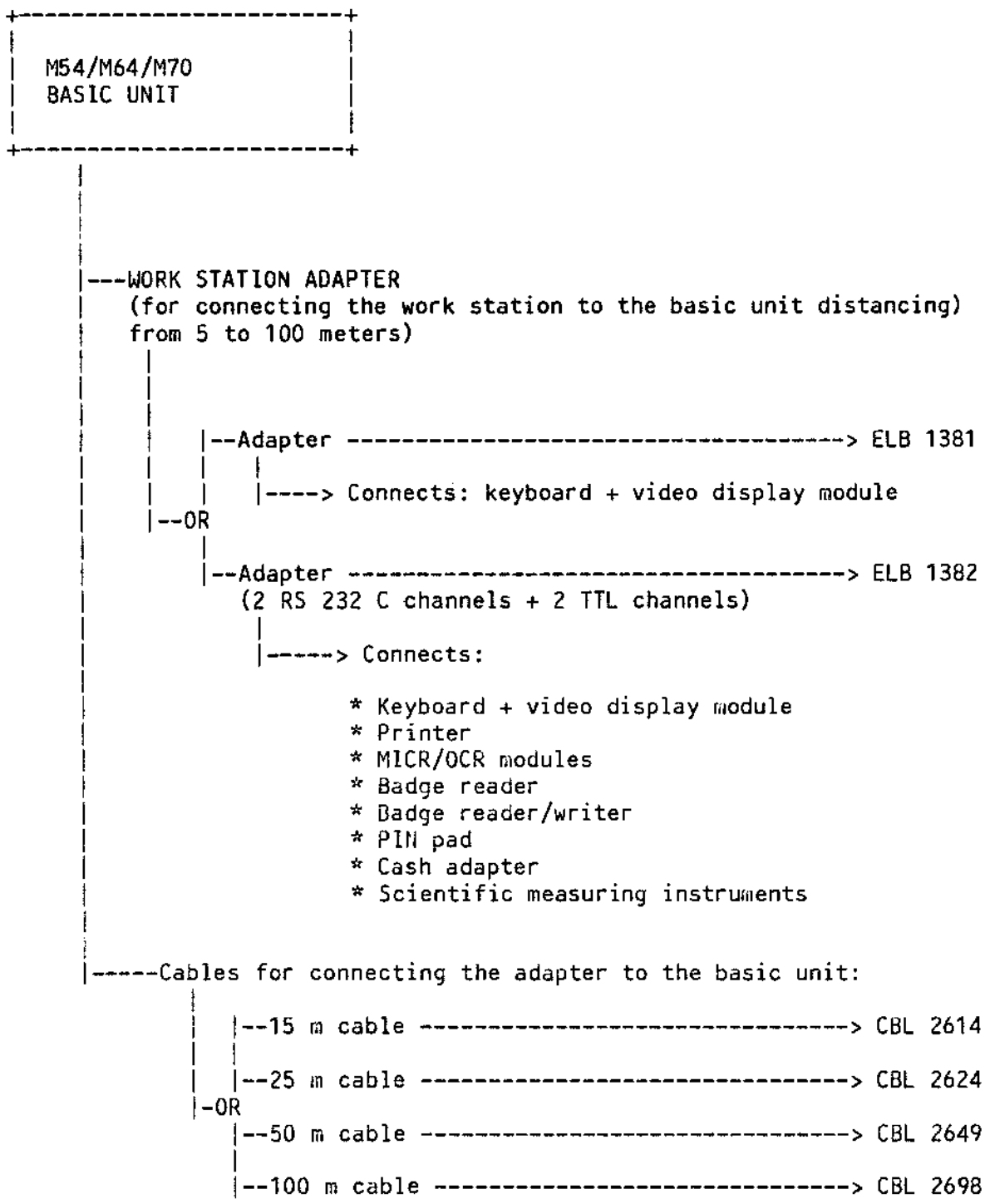


(*) For each controller indicate the type of cable to be used for the video display/keyboard:

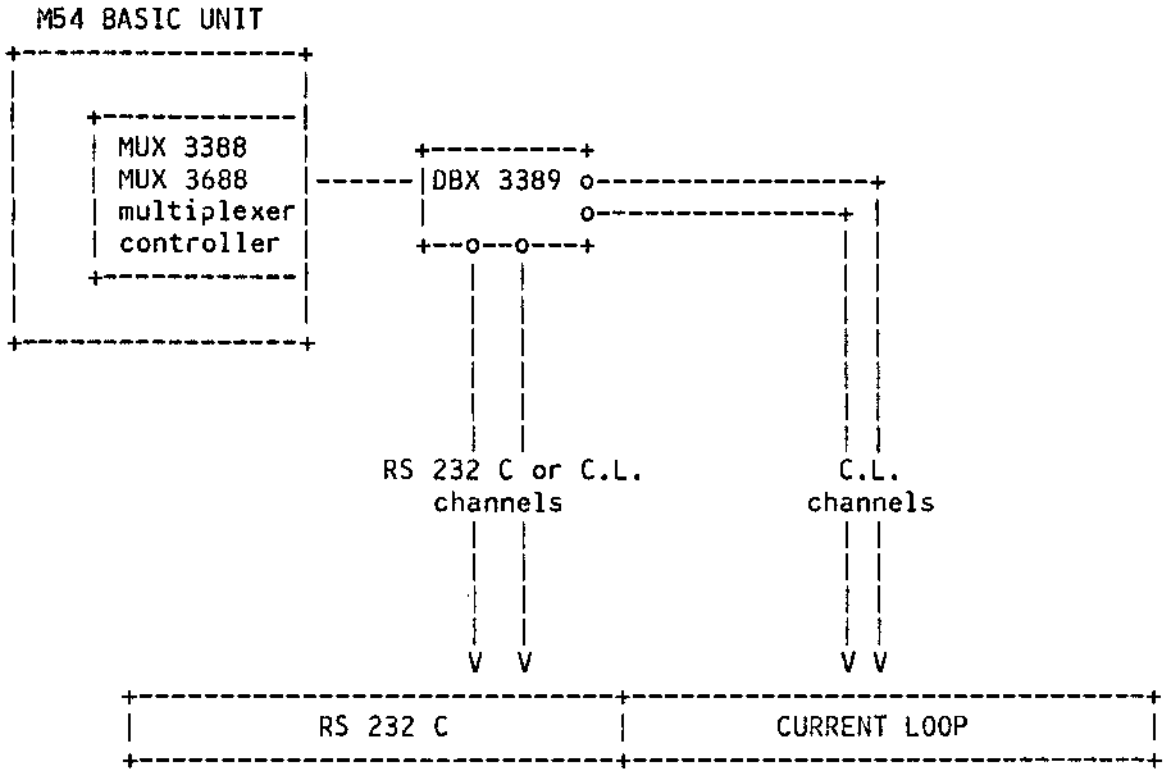
- **CVT 001: Video display cable 1.10 m - keyboard cable 2 m.**
- **CVT 002: Video display cable 6 m - keyboard cable 6.5 m.**
- **CVT 003: Video display cable 3.5 m - keyboard cable 3.5 m.**


----MULTIFUNCTIONAL ALPHANUMERIC KEYBOARDS
--Multifunc. alphanum. kybd + function keys ---> ANK 1401
--Multifunc. alphanum. kybd + function keys + key lock --------> ANK 1402
----ALPHANUMERIC KEYBOARDS
--Alphanum. keyboard + function keys (with BASIC verbs) ----------> ANK 1426
--Alphanum. keyboard + function keys----------> ANK 1427
--Alphanum. keyboard + function keys + three-key lock --------> ANK 1428

ELB 1381/1382 ADAPTER FOR ALPHANUMERIC AND GRAPHIC WORK STATION



M54: ALPHANUMERIC WORK STATION (VIA MUX 3388/3688 CONTROLLER)



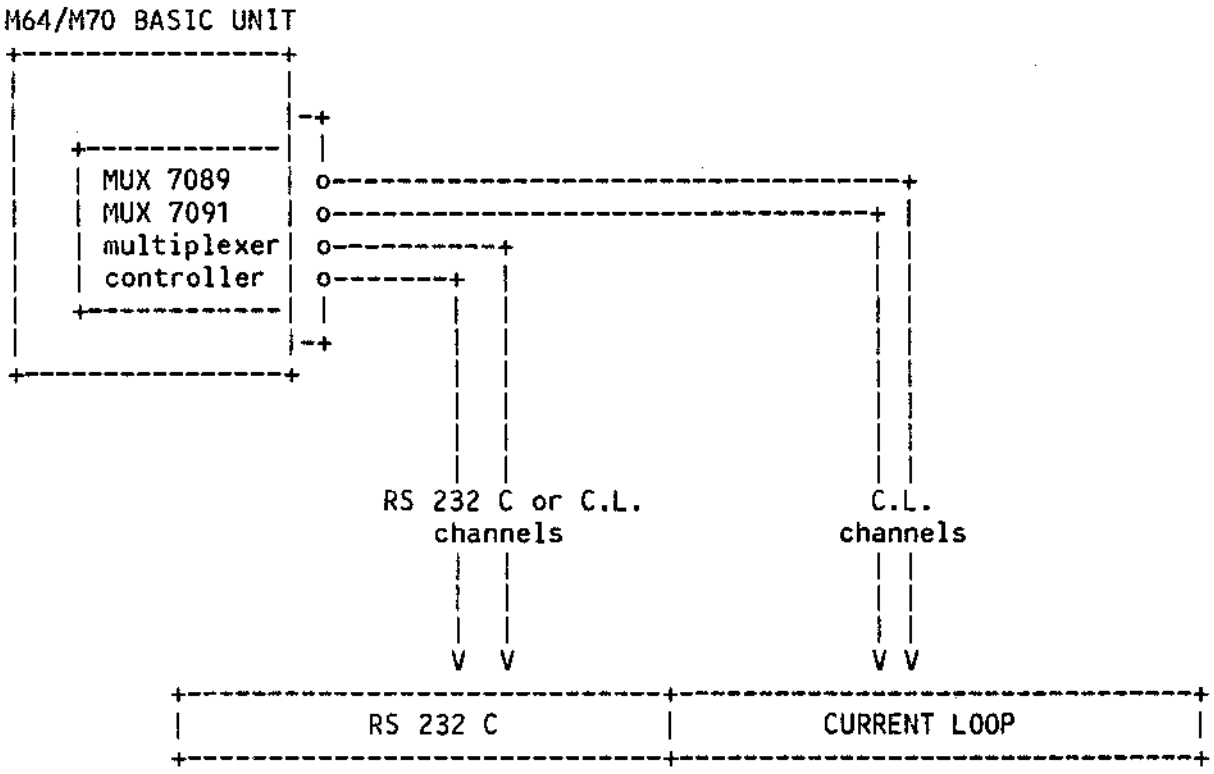
Connections to:

- **ELB 3684 alphanumeric w.s. (with/without modem)**
- **Olivetti Personal computer (with/without modem)**
- **VT100/200 like w.s. (with/without modem)**
- **printers**

Connections to:

- **ELB 3684 alphanumeric w.s.**
- **Olivetti Personal computer**
- **VT100/200 like w.s.**
- **printers**

M64/M70: ALPHANUMERIC WORK STATION (VIA 7089/7091 MUX CONTROLLER)



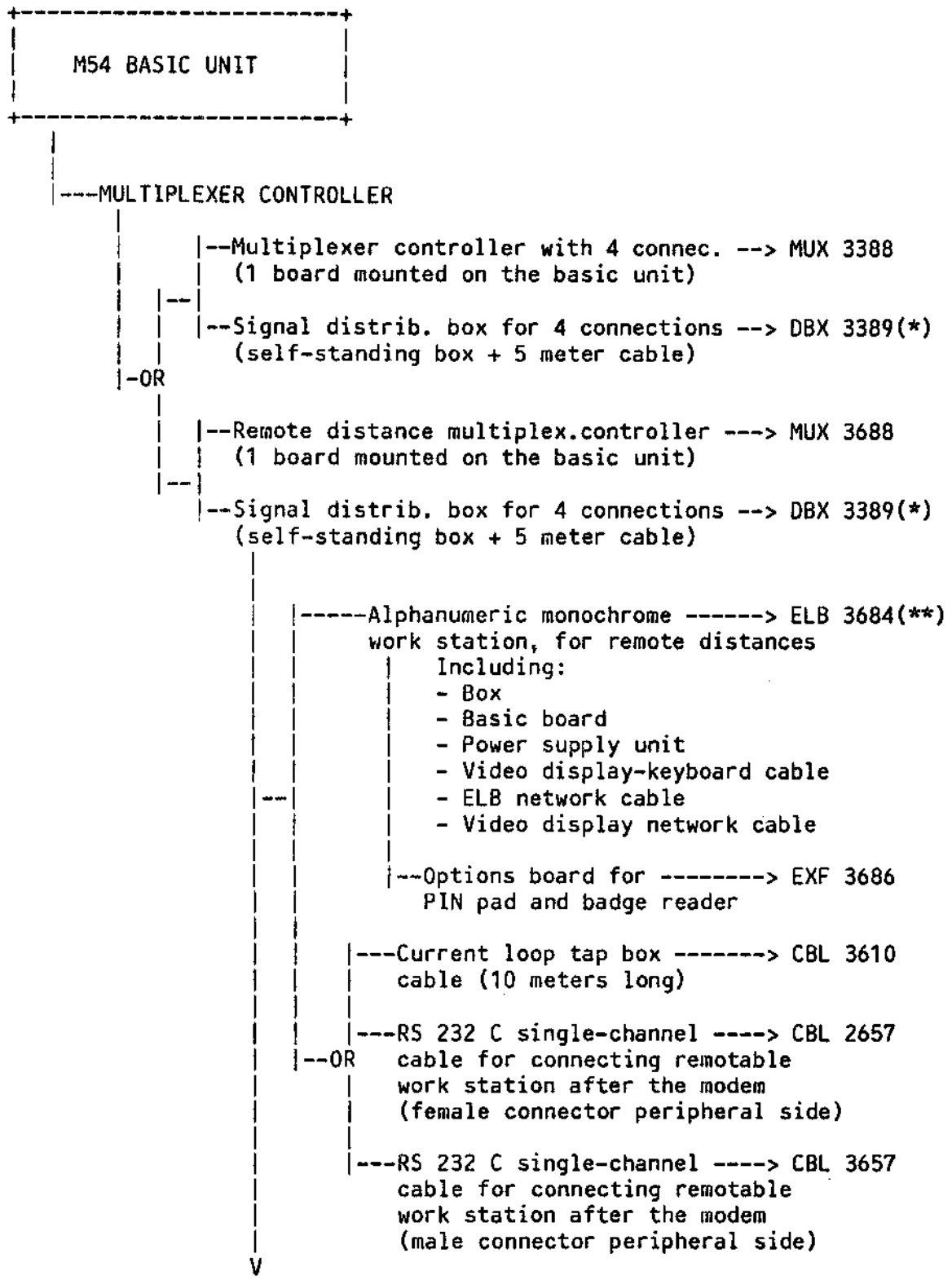
Connections to:

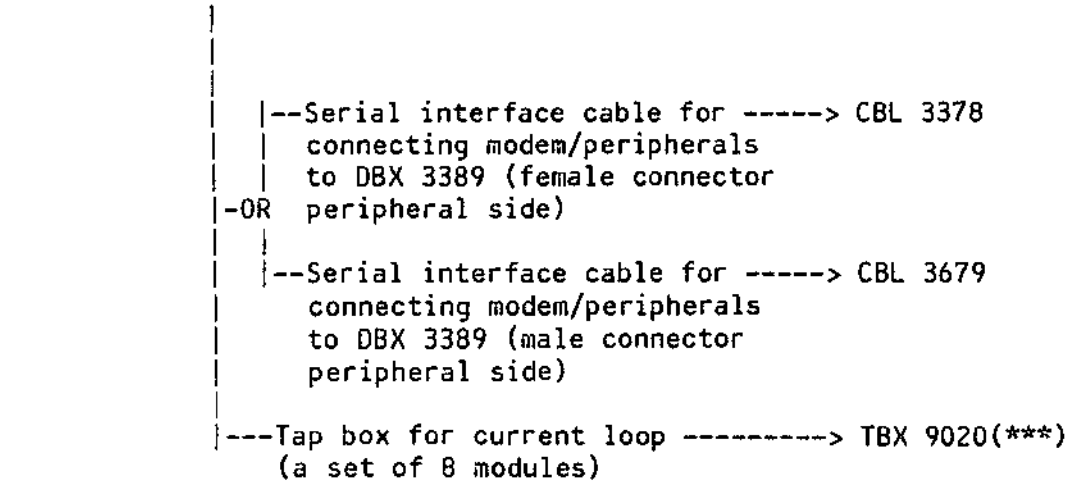
* **ELB 3684 alphanumeric w.s. (with/without modem)**
* **Olivetti Personal computer (with/without modem)**
* **VT 100/200 like w.s. (with/without modem)**
* **printers**

Connections to:

* **ELB 3684 alphanumeric w.s.**
* **Olivetti Personal computer**
* **VT 100/200 like w.s.**
* **printers**

M54: MUX 3388 AND MUX 3688 MULTIPLEXER CONTROLLER





(*) Four work stations/RS 232 C peripherals can be connected to the DBX 3389 signal distribution box of MUX 3388 as follows:

- 4 in current loop, or
- 2 in current loop + 2 in RS 232 C, or
- 3 in current loop + 1 in RS 232 C

Four work stations can be connected to the DBX 3389 signal distribution box of MUX 3688 as follows:

- 2 in current loop + 2 remotable via RS 232 C

or four peripherals can be connected as follows:
- 4 in current loop, or
- 2 in current loop + 2 in RS 232 C, or
- 3 in current loop + 1 in RS 232 C

(**) the ELB 3684 work station can connect:
- alphanumeric video display module
- multifunctional keyboard (ANK 1401, ANK 1402, NKB 1405, NKB 1406)
- 2 RS232 C serial interface peripherals
- optionally: 2 TTL serial interface peripherals, using the EXF 3686 options board

(***) Both the TBX 9020 tap box and the current loop cable must be installed for all current loop connections between 10 - 1000 meter distances (4 wires AWG 24).

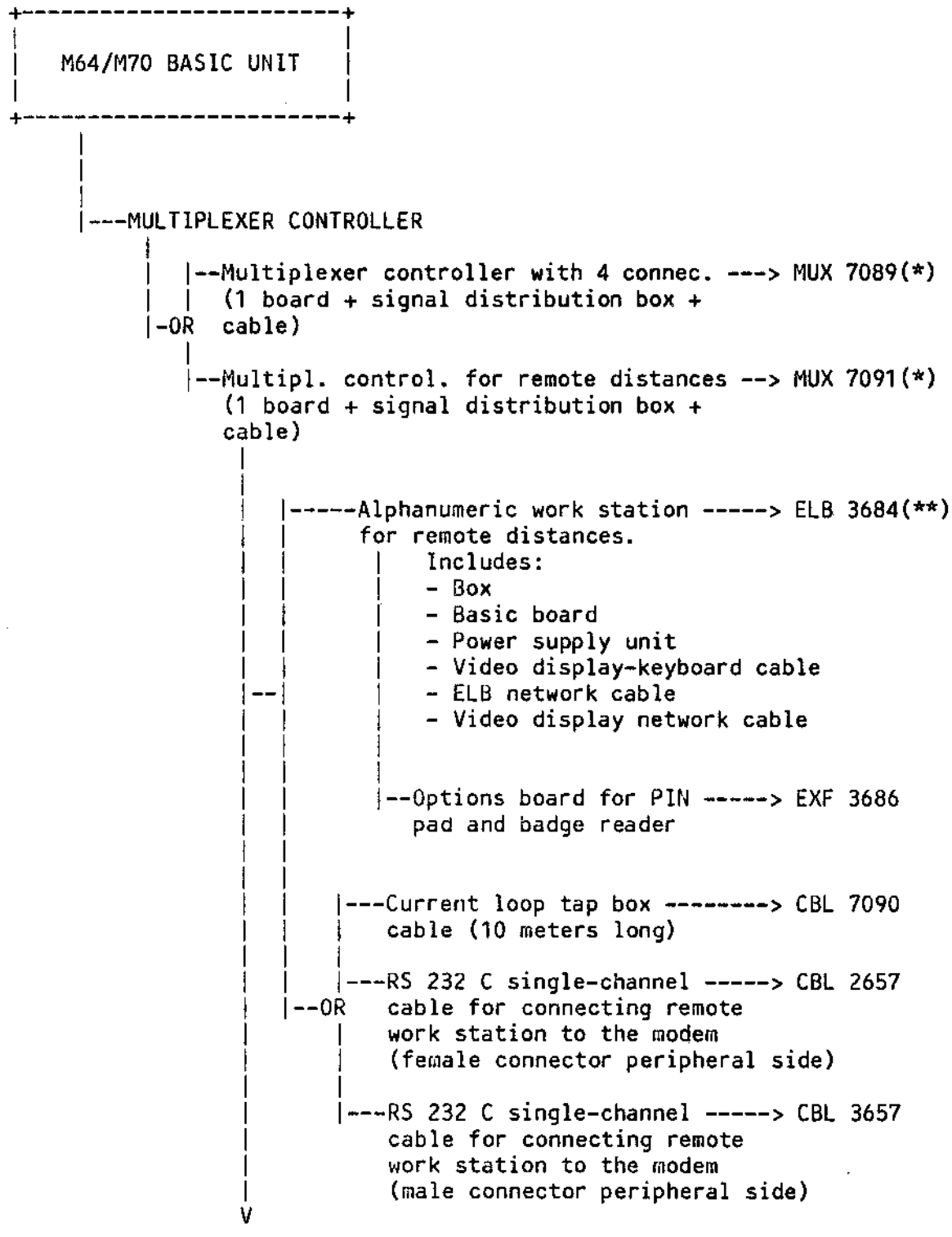
NOTE 1 - The RS 232 C ports in the signal distribution box are used for connecting:

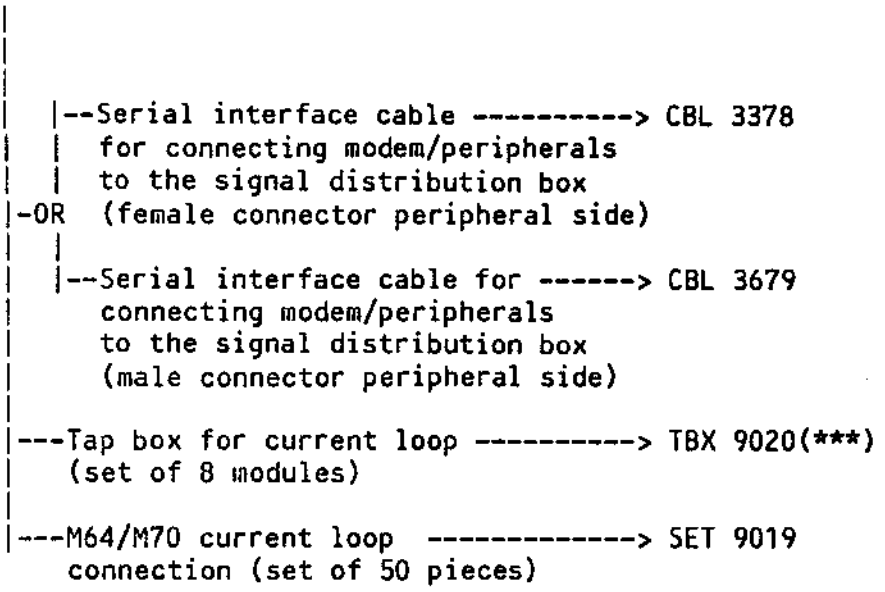
a) remote work stations (via modem)

b) printers in local mode

c) Olivetti Personal computers, VT100/200 like work stations, in local or remote modes.

M64/M70: MUX 7089 AND MUX 7091 MULTIPLEXER CONTROLLER





(*) **Four work stations/RS 232 C peripherals can be connected to the signal distributor of MUX 7089 controller as follows:**
- **4 in current loop, or**
- **2 in current loop + 2 in RS 232 C, or**
- **3 in current loop + 1 in RS 232 C**

Four work stations can be connected to the signal distributor of MUX 7091 as follows:

- **2 in current loop + 2 remotable via RS 232 C**

or four peripherals can be connected as follows:
- **4 in current loop, or**
- **2 in current loop + 2 in RS 232 C, or**
- **3 in current loop + 1 in RS 232 C**

(**) **The ELB 3684 work station can connect:**
- **alphanumeric video display module**
- **multifunctional keyboard (ANK 1401, ANK 1402, NKB 1405, NKB 1406)**
- **2 RS 232 C serial interface peripherals**
- **optionally: 2 TTL serial interface peripherals, using the EXF 3686 options board.**

(***) **The TBX 9020 tap box and the current loop cable (4 wires AWG 24) should be installed for all current loop connections between 10 - 1000 meter distances.**

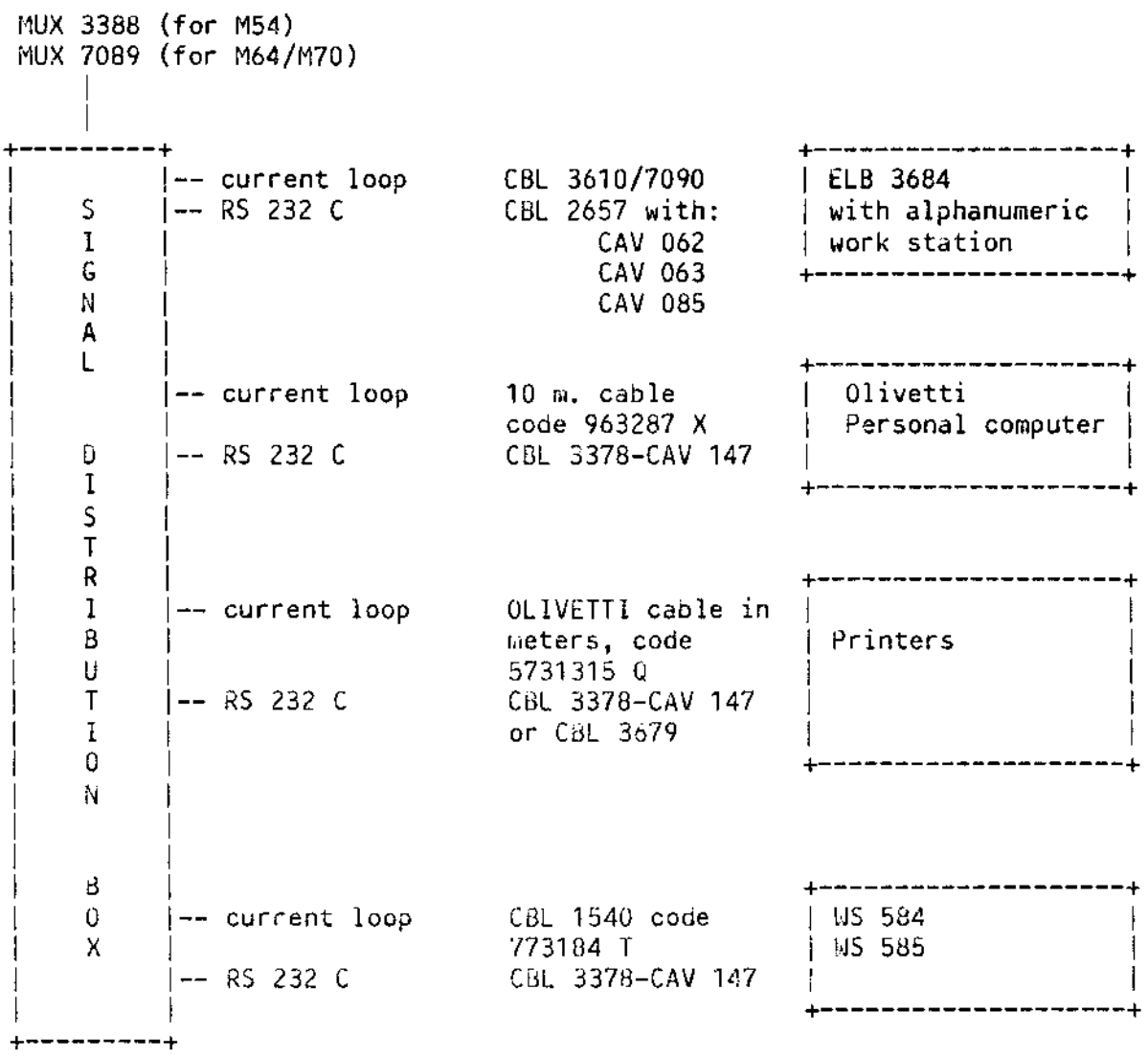
NOTA 1 - The RS 232 C ports in the signal distribution box are used for connecting:

a) remote work stations (via modem)

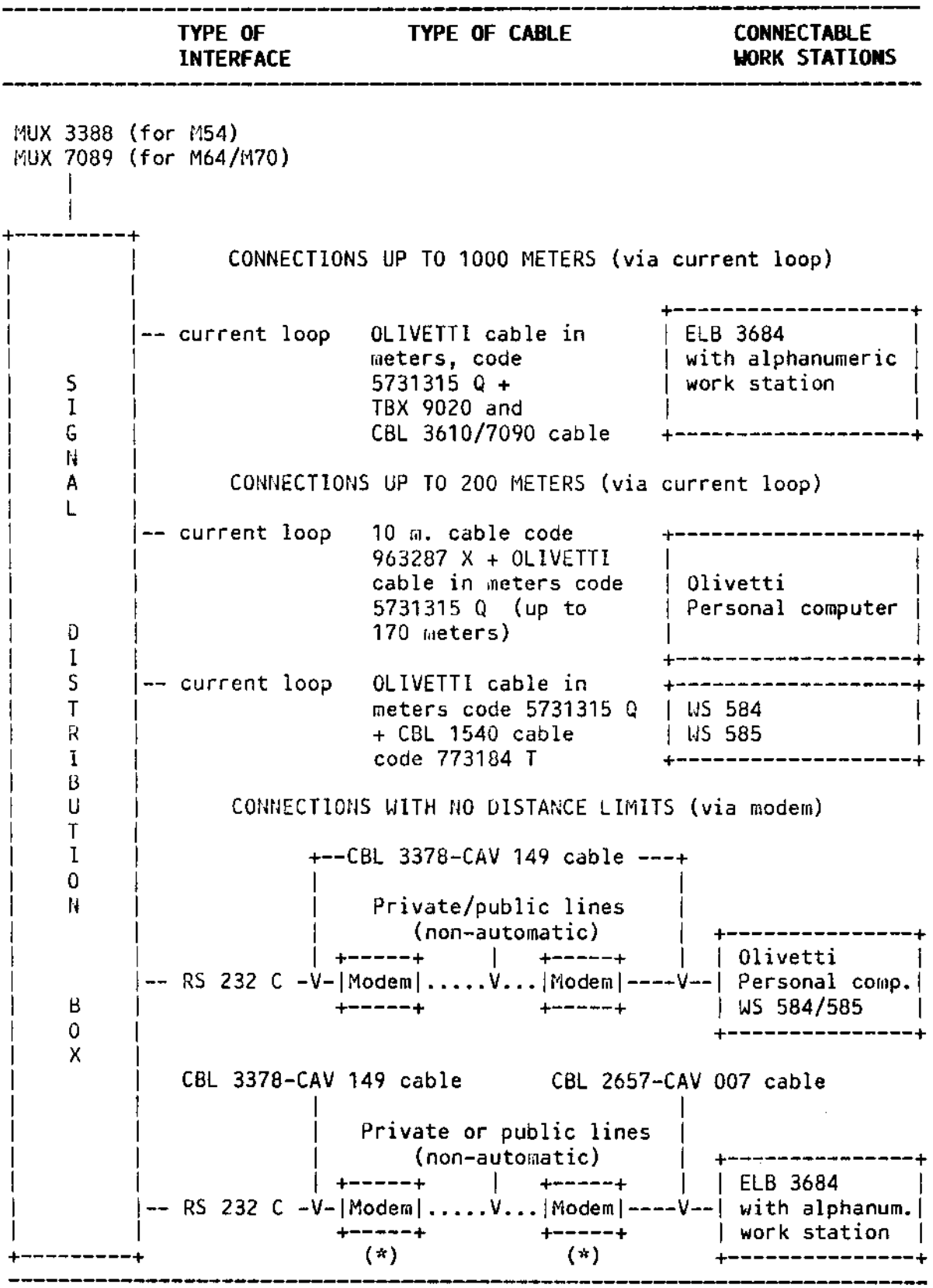
b) printers in local or remote modes

c) Olivetti Personal computer, VT100/200 like work stations, in local or remote modes.

LOCAL CONNECTIONS TO MUX 3388/7089 CONTROLLER (Max.10 m DISTANCE)

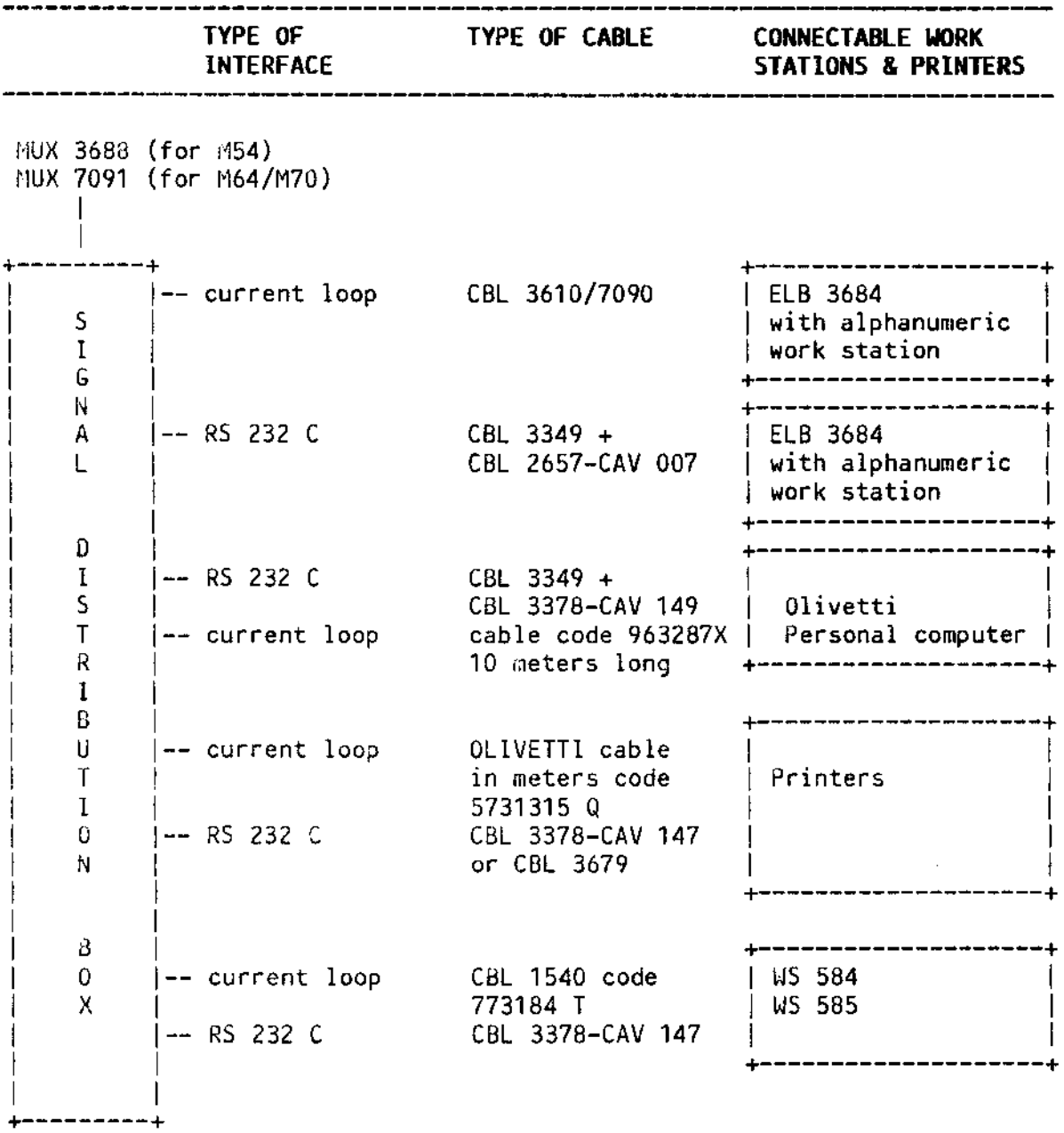


REMOTE CONNECTIONS TO MUX 3388/7089 CONTROLLER (>10 ■ DISTANCE)

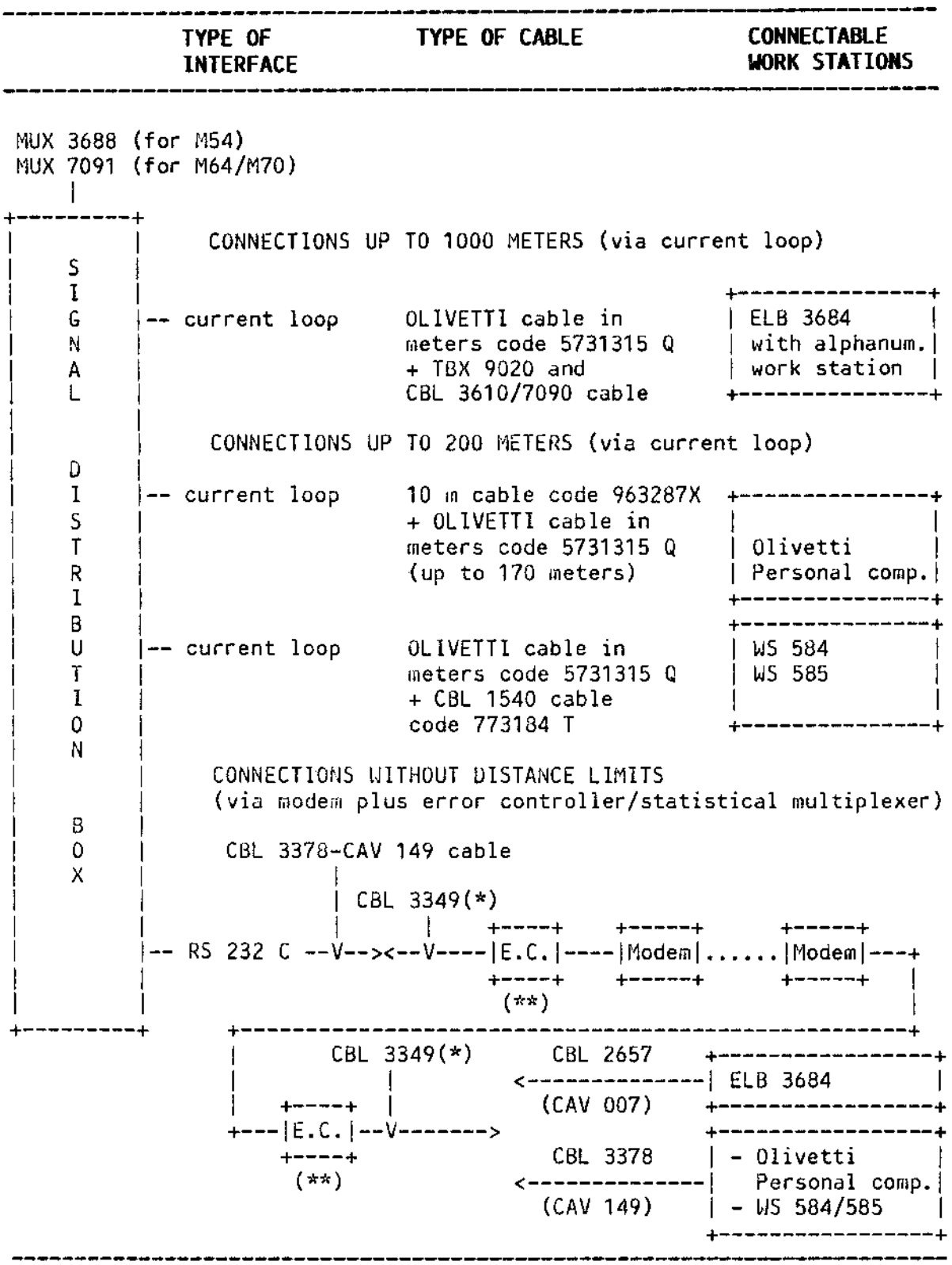


(*) Intelligent Modems may also be used provided printers are not connected to ELB 3684.

LOCAL CONNECTIONS TO MUX 3688/7091 CONTROLLER (max.10 m DISTANCE)



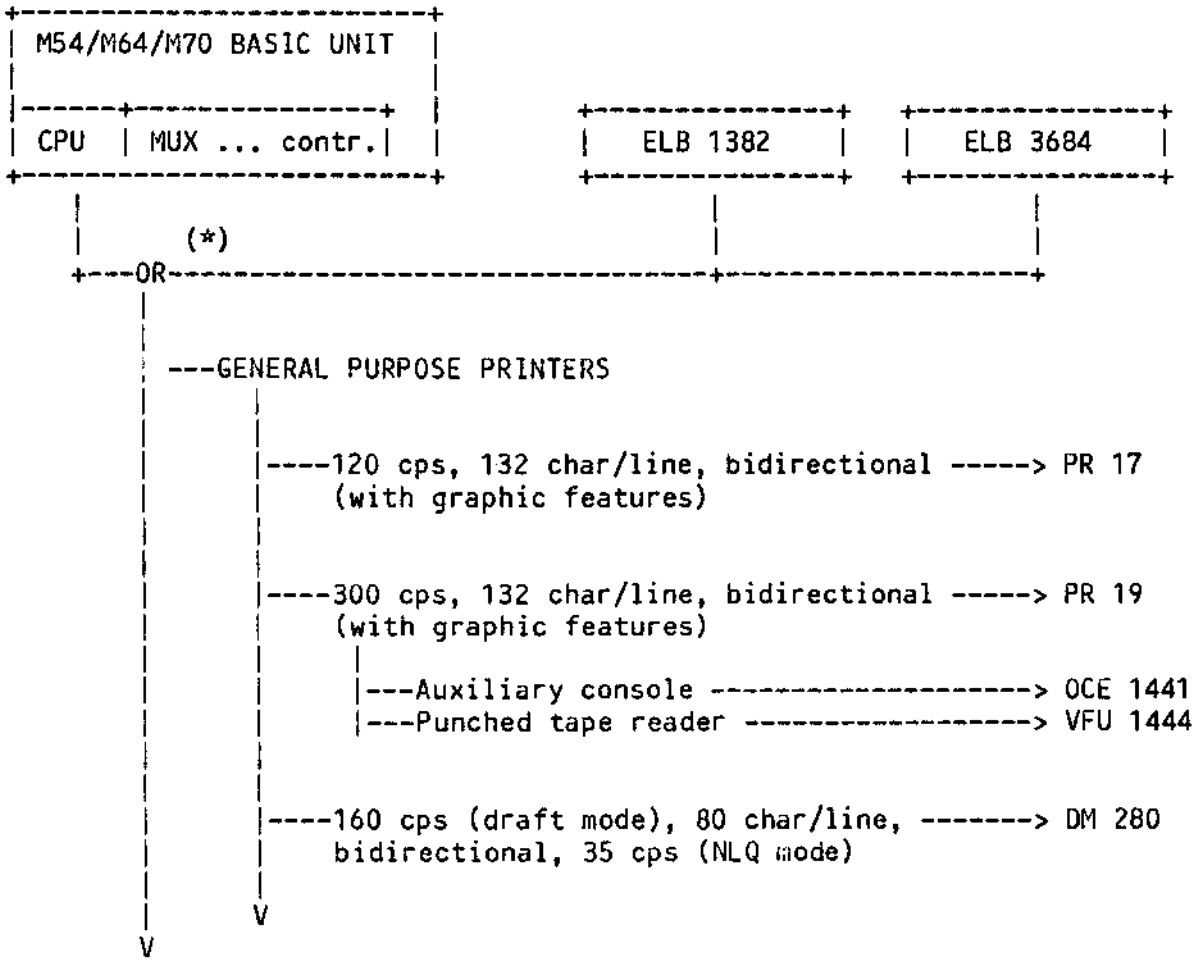
REMOTE CONNECTIONS TO MUX 3688/7091 CONTROLLER (>10 m DISTANCE)



(*) Optional adapter cable used for connecting error controllers (E.C.) or statistical multiplexers.

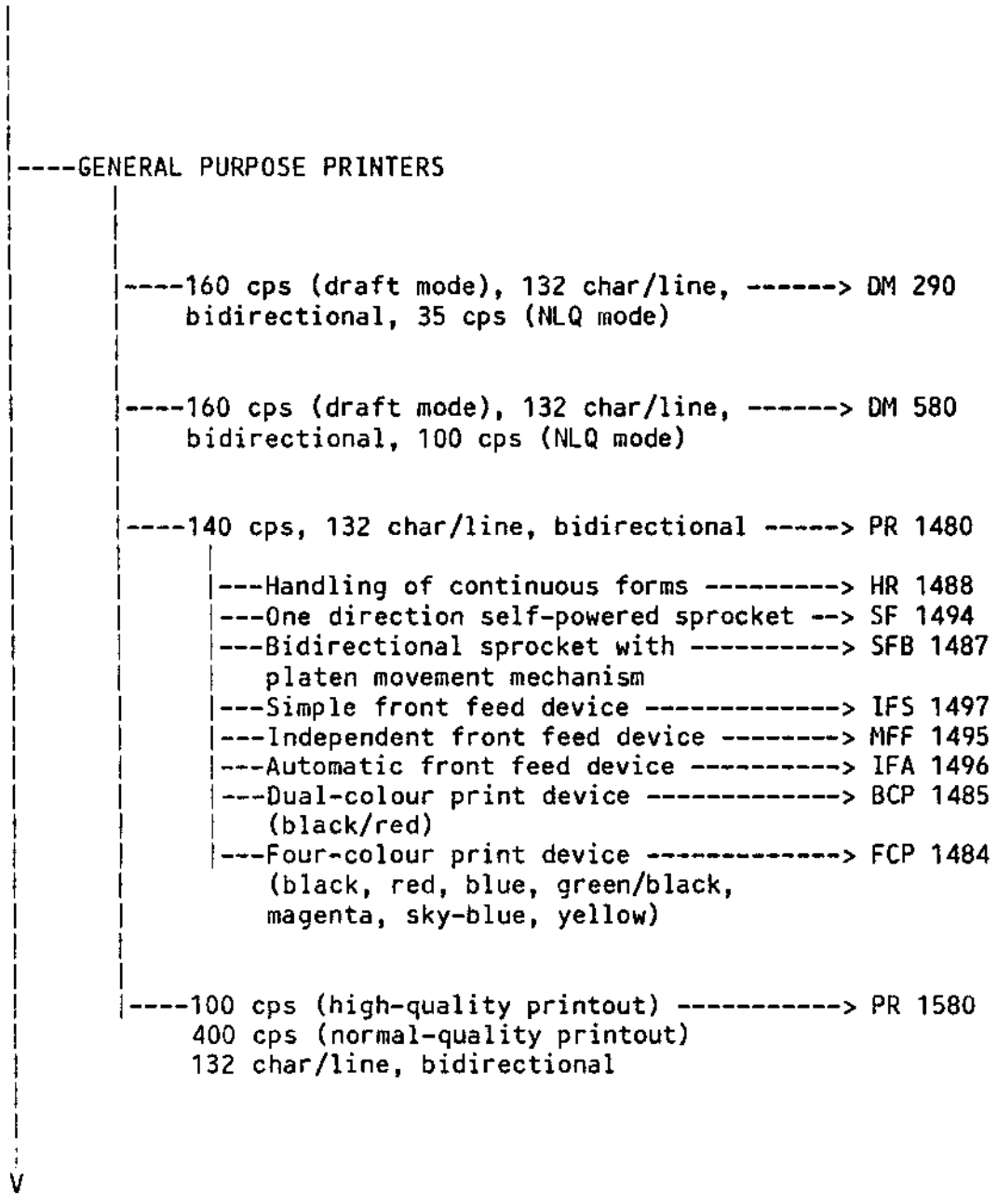
(**) Error controllers (E.C.)/statistical multiplexers can be purchased on the market.

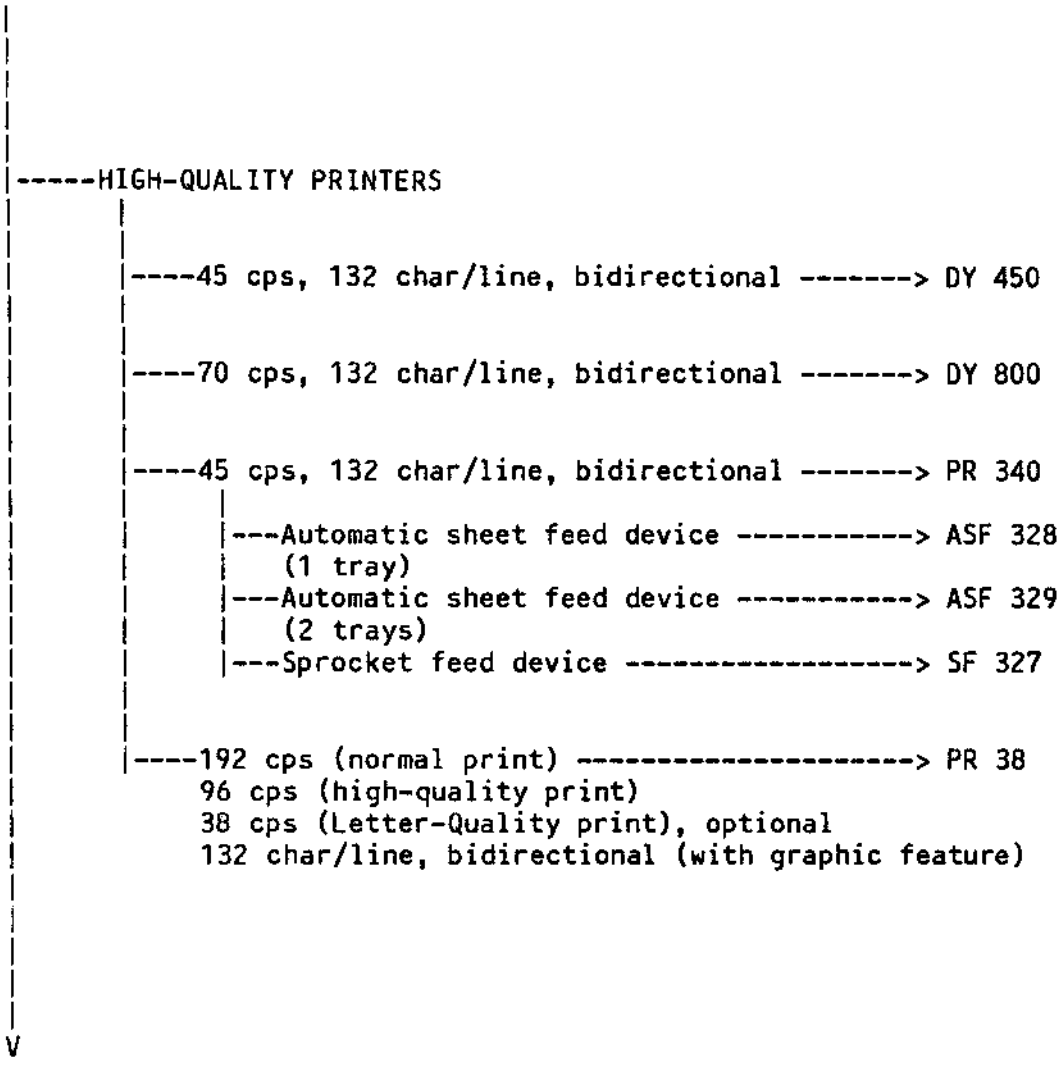
6. PRINTERS

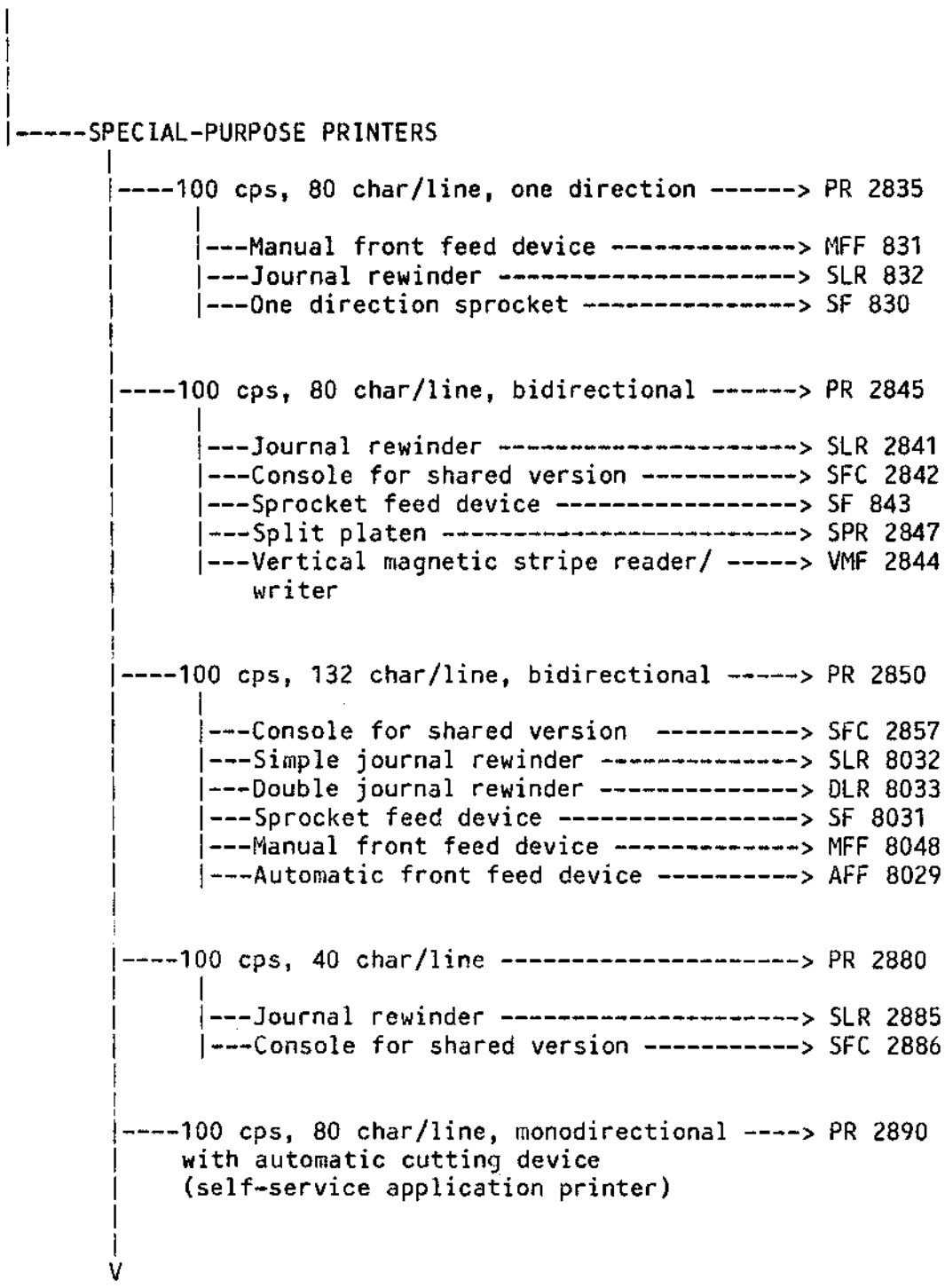


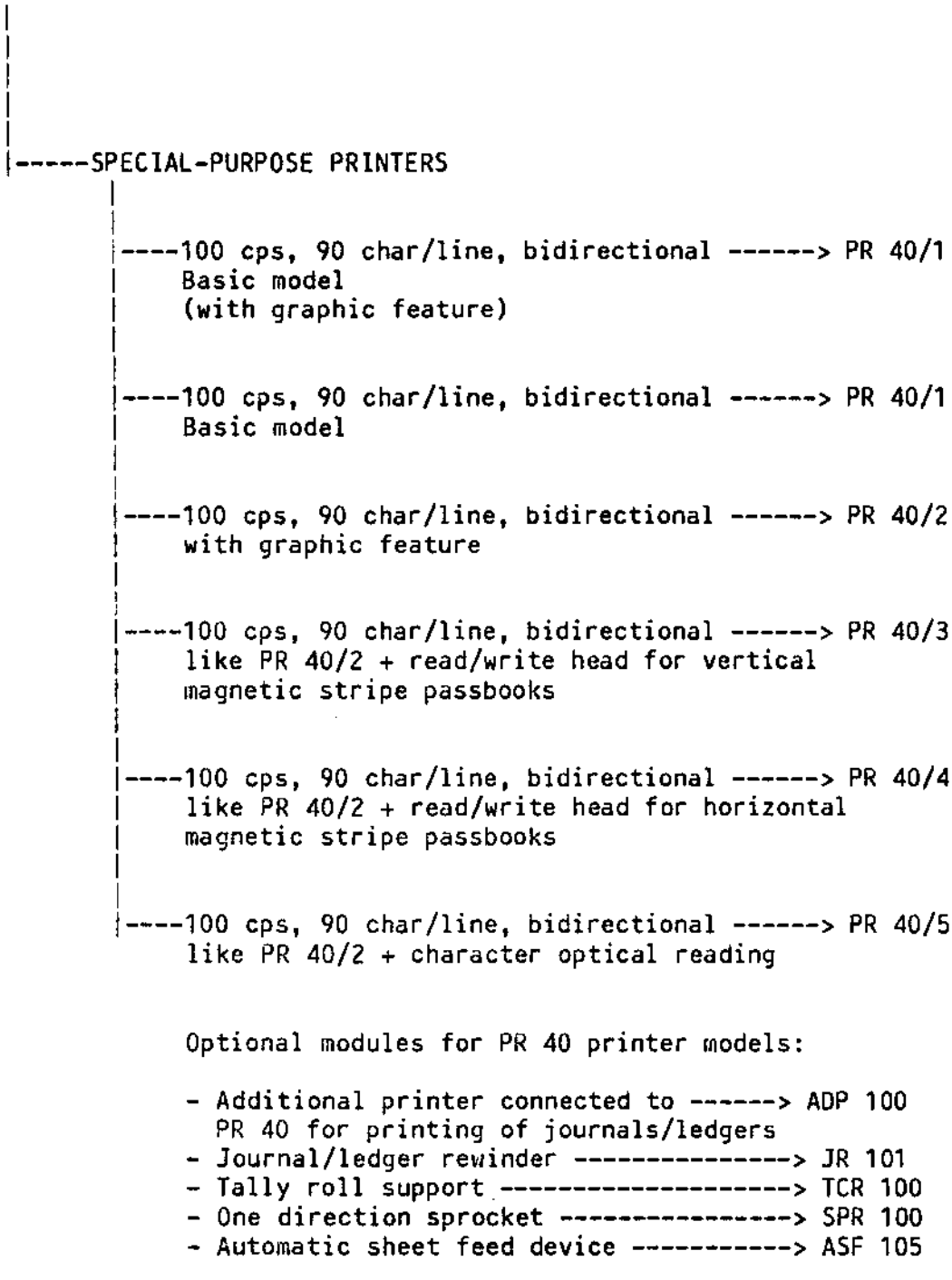
(*) The printer can be connected to:

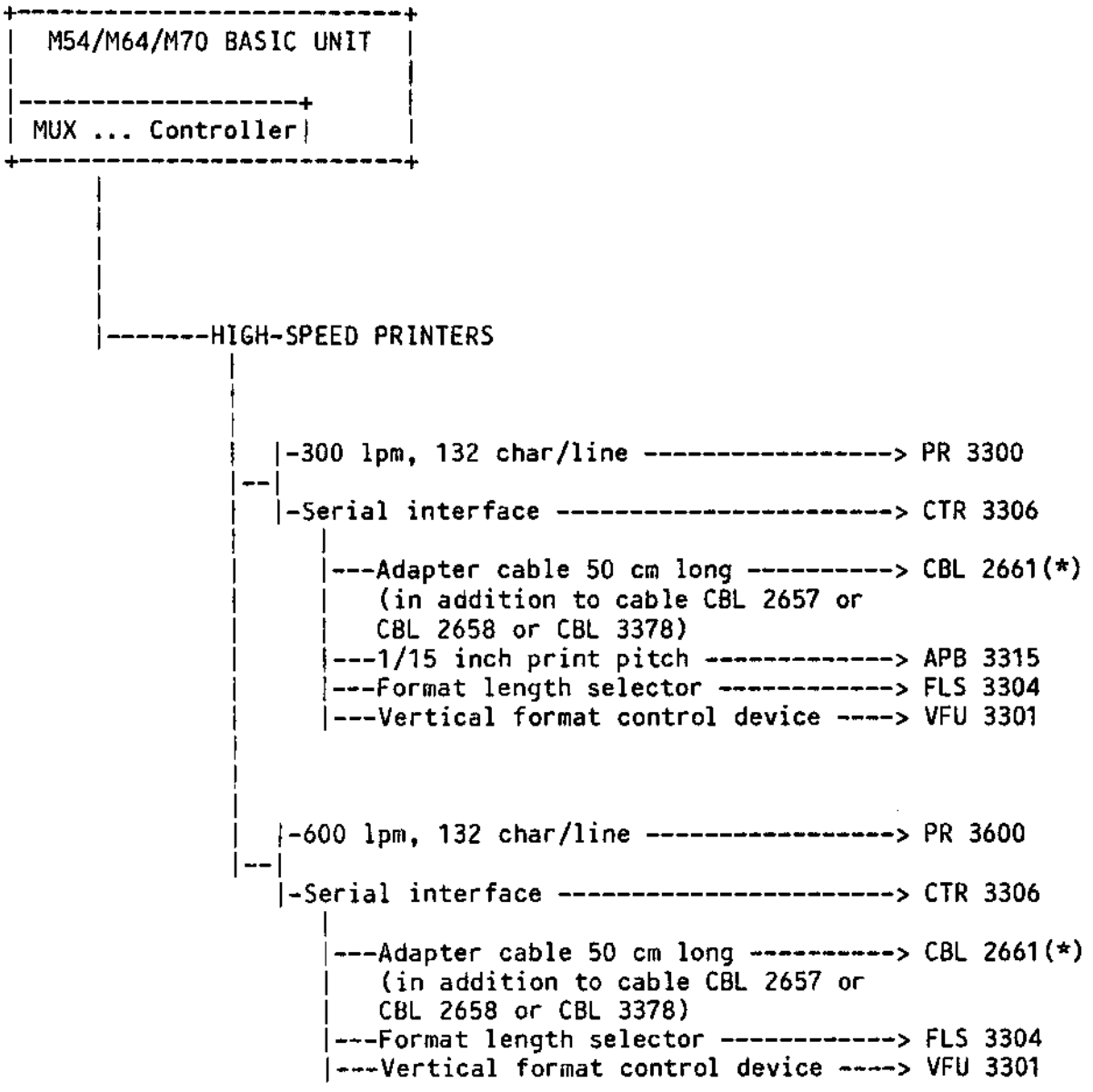
- **an RS 232 C serial controller integrated in the CPU board (except for M70/2 and M70/3 systems), or**
- **the RS 232 C serial dual-channel of the ELB 1382 adapter, or**
- **the ELB 3684 alphanumeric monochrome work station, or**
- **the RS 232 C channel of MUX 3388/7089/3688/7091, or**
- **the current loop channel of MUX 3388/7089/3688/7091**


GENERAL PURPOSE PRINTERS
160 cps (draft mode), 132 char/line, bidirectional, 35 cps (NLQ mode) ------> DM 290
160 cps (draft mode), 132 char/line, bidirectional, 100 cps (NLQ mode) ------> DM 580
140 cps, 132 char/line, bidirectional -----> PR 1480
Handling of continuous forms ---------> HR 1488
One direction self-powered sprocket --> SF 1494
Bidirectional sprocket with platen movement mechanism ----------> SFB 1487
Simple front feed device ----------> IFS 1497
Independent front feed device --------> MFF 1495
Automatic front feed device ----------> IFA 1496
Dual-colour print device (black/red) ----------> BCP 1485
Four-colour print device (black, red, blue, green/black, magenta, sky-blue, yellow) ----------> FCP 1484
100 cps (high-quality printout) ----------> PR 1580
400 cps (normal-quality printout)
132 char/line, bidirectional


HIGH-QUALITY PRINTERS
45 cps, 132 char/line, bidirectional -------> DY 450
70 cps, 132 char/line, bidirectional -------> DY 800
45 cps, 132 char/line, bidirectional -------> PR 340
---Automatic sheet feed device -----------> ASF 328
(1 tray)
---Automatic sheet feed device -----------> ASF 329
(2 trays)
---Sprocket feed device ------------------> SF 327
192 cps (normal print) ---------------------> PR 38
96 cps (high-quality print)
38 cps (Letter-Quality print), optional
132 char/line, bidirectional (with graphic feature)

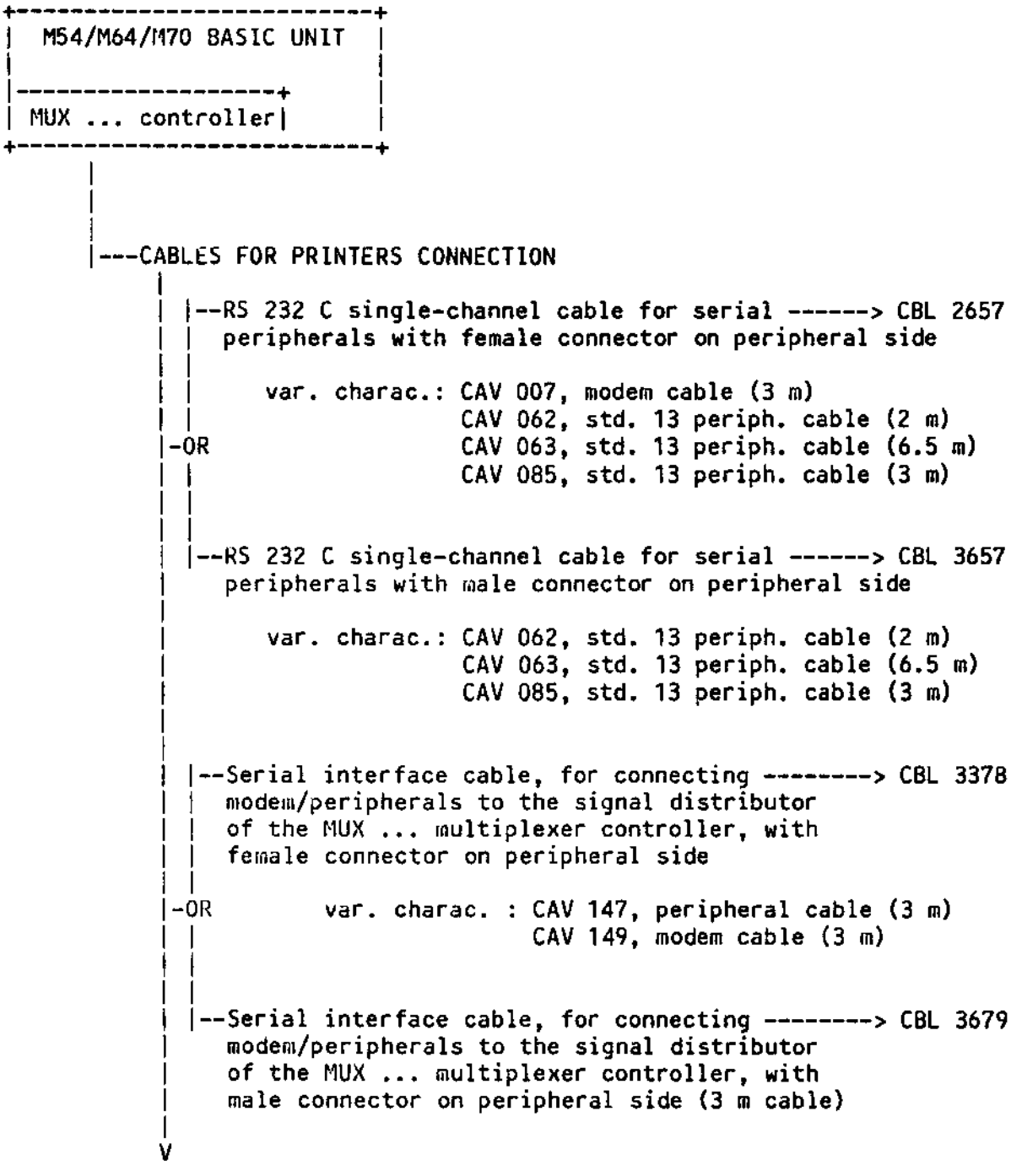

SPECIAL-PURPOSE PRINTERS
100 cps, 80 char/line, one direction ------> PR 2835
Manual front feed device ----------> MFF 831
Journal rewinder ----------> SLR 832
One direction sprocket ----------> SF 830
100 cps, 80 char/line, bidirectional ------> PR 2845
Journal rewinder ----------> SLR 2841
Console for shared version ----------> SFC 2842
Sprocket feed device ----------> SF 843
Split platen ----------> SPR 2847
Vertical magnetic stripe reader/ writer -----> VMF 2844
100 cps, 132 char/line, bidirectional -----> PR 2850
Console for shared version ----------> SFC 2857
Simple journal rewinder ----------> SLR 8032
Double journal rewinder ----------> DLR 8033
Sprocket feed device ----------> SF 8031
Manual front feed device ----------> MFF 8048
Automatic front feed device ----------> AFF 8029
100 cps, 40 char/line ----------> PR 2880
Journal rewinder ----------> SLR 2885
Console for shared version ----------> SFC 2886
100 cps, 80 char/line, monodirectional with automatic cutting device (self-service application printer) ----> PR 2890

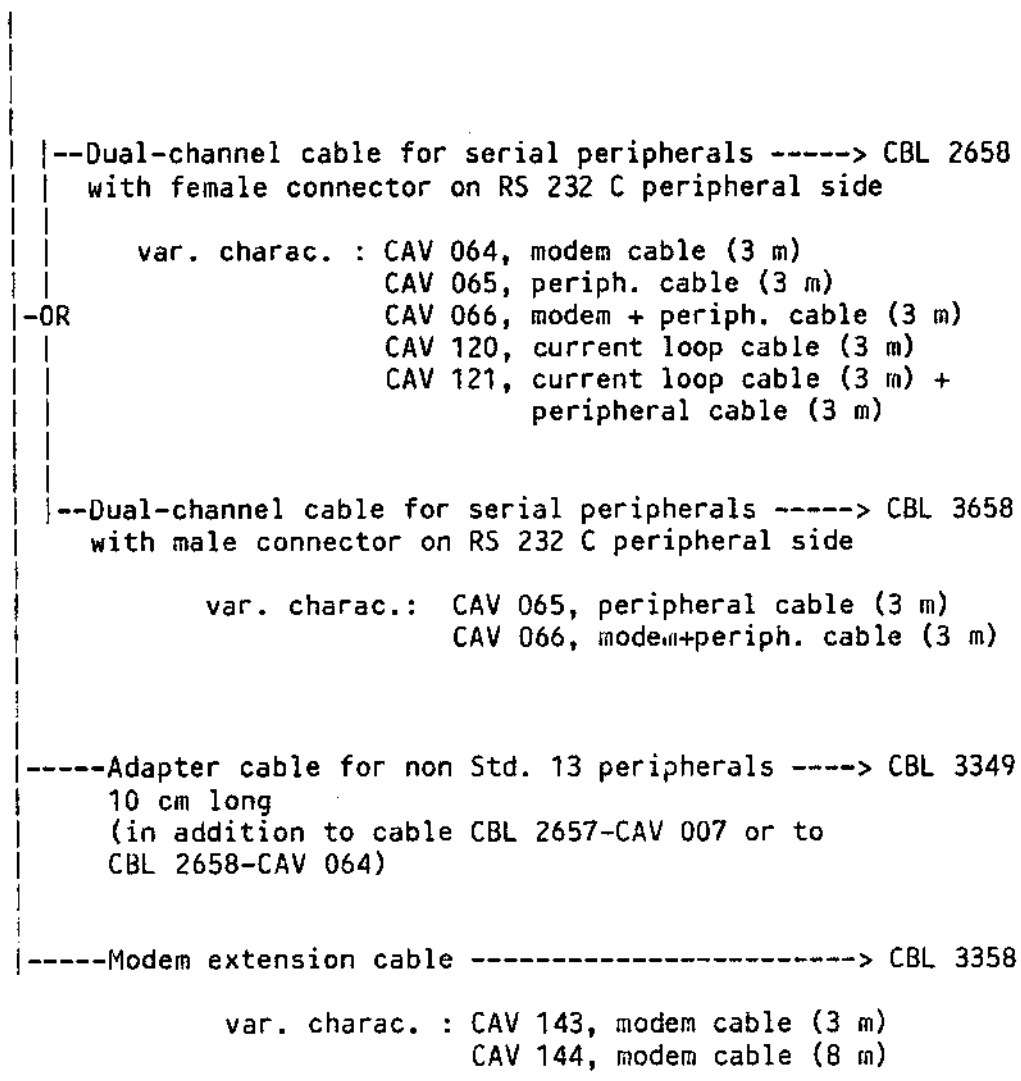

SPECIAL-PURPOSE PRINTERS
100 cps, 90 char/line, bidirectional ------> PR 40/1
Basic model
(with graphic feature)
100 cps, 90 char/line, bidirectional ------> PR 40/1
Basic model
100 cps, 90 char/line, bidirectional ------> PR 40/2
with graphic feature
100 cps, 90 char/line, bidirectional ------> PR 40/3
like PR 40/2 + read/write head for vertical
magnetic stripe passbooks
100 cps, 90 char/line, bidirectional ------> PR 40/4
like PR 40/2 + read/write head for horizontal
magnetic stripe passbooks
100 cps, 90 char/line, bidirectional ------> PR 40/5
like PR 40/2 + character optical reading
Optional modules for PR 40 printer models:
- Additional printer connected to ------> ADP 100
PR 40 for printing of journals/ledgers
- Journal/ledger rewinder ----------> JR 101
- Tally roll support ----------> TCR 100
- One direction sprocket ----------> SPR 100
- Automatic sheet feed device ----------> ASF 105



(*) The CBL 2661 adapter cable is not requested with cables having the male connector on peripheral side: CBL 3657, CBL 3658 and CBL 3679.

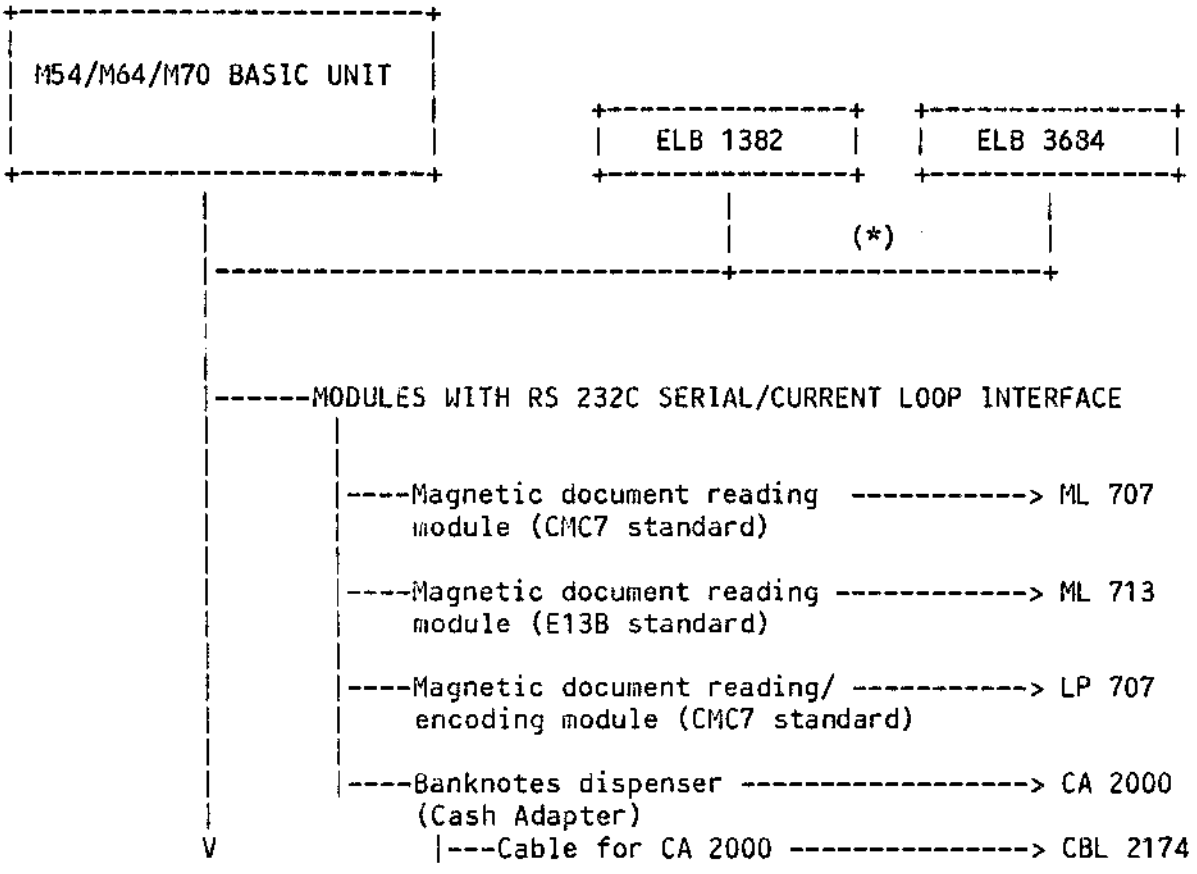
NOTE 1 - The PR 3300/3600 printers are connected only through the MUX ... multiplexer controller.


M54/M64/M70 BASIC UNIT
MUX ... controller
---CABLES FOR PRINTERS CONNECTION
--RS 232 C single-channel cable for serial ------> CBL 2657
peripherals with female connector on peripheral side
var. charac.: CAV 007, modem cable (3 m)
CAV 062, std. 13 periph. cable (2 m)
-OR
CAV 063, std. 13 periph. cable (6.5 m)
CAV 085, std. 13 periph. cable (3 m)
--RS 232 C single-channel cable for serial ------> CBL 3657
peripherals with male connector on peripheral side
var. charac.: CAV 062, std. 13 periph. cable (2 m)
CAV 063, std. 13 periph. cable (6.5 m)
CAV 085, std. 13 periph. cable (3 m)
--Serial interface cable, for connecting --------> CBL 3378
modem/peripherals to the signal distributor
of the MUX ... multiplexer controller, with
female connector on peripheral side
-OR
var. charac. : CAV 147, peripheral cable (3 m)
CAV 149, modem cable (3 m)
--Serial interface cable, for connecting --------> CBL 3679
modem/peripherals to the signal distributor
of the MUX ... multiplexer controller, with
male connector on peripheral side (3 m cable)


--Dual-channel cable for serial peripherals -----> CBL 2658
with female connector on RS 232 C peripheral side
var. charac. : CAV 064, modem cable (3 m)
CAV 065, periph. cable (3 m)
-OR
CAV 066, modem + periph. cable (3 m)
CAV 120, current loop cable (3 m)
CAV 121, current loop cable (3 m) +
peripheral cable (3 m)
--Dual-channel cable for serial peripherals -----> CBL 3658
with male connector on RS 232 C peripheral side
var. charac.: CAV 065, peripheral cable (3 m)
CAV 066, modem+periph. cable (3 m)
-----Adapter cable for non Std. 13 peripherals ----> CBL 3349
10 cm long
(in addition to cable CBL 2657-CAV 007 or to
CBL 2658-CAV 064)
-----Modem extension cable ----------> CBL 3358
var. charac. : CAV 143, modem cable (3 m)
CAV 144, modem cable (8 m)

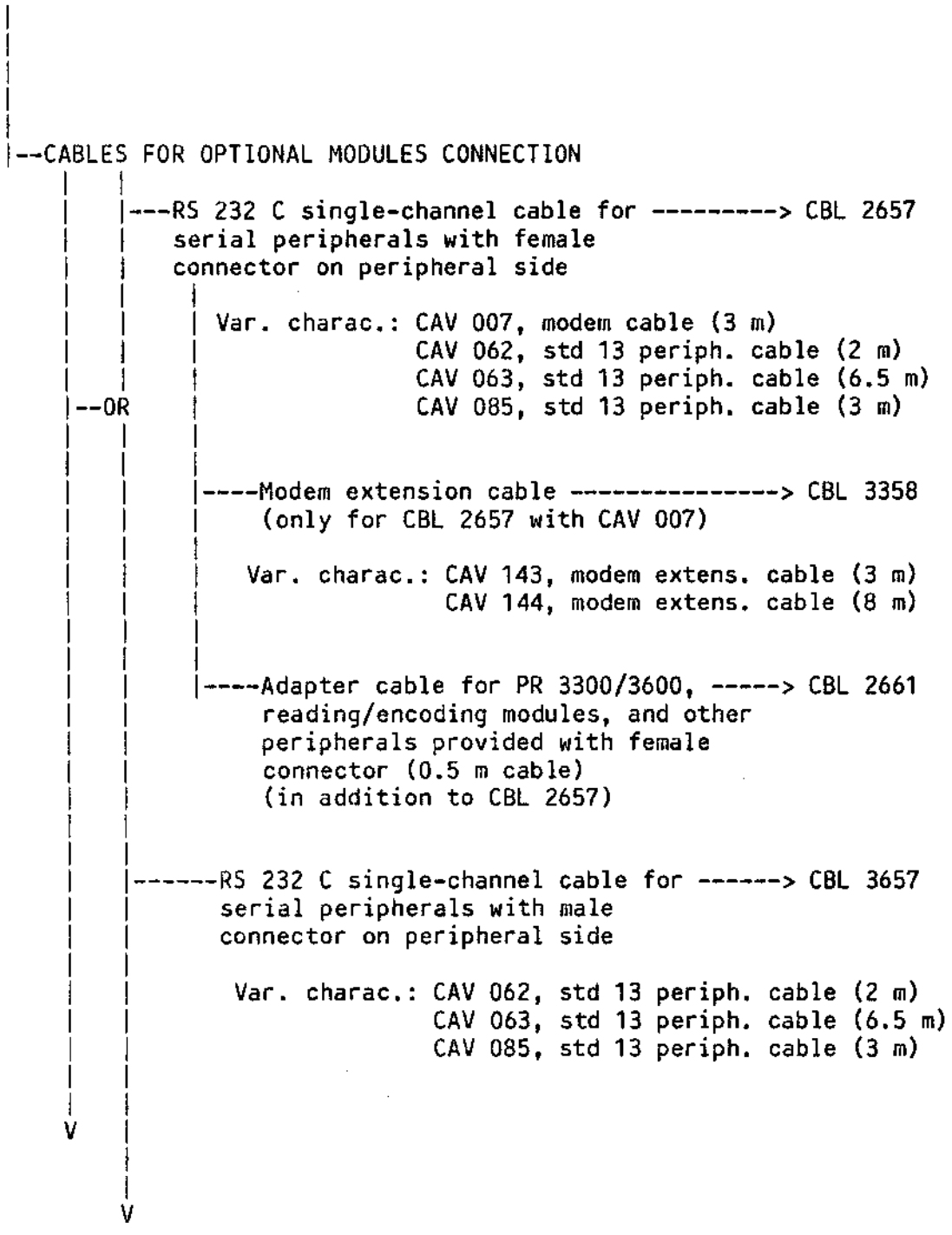
7. OPTIONAL MODULES

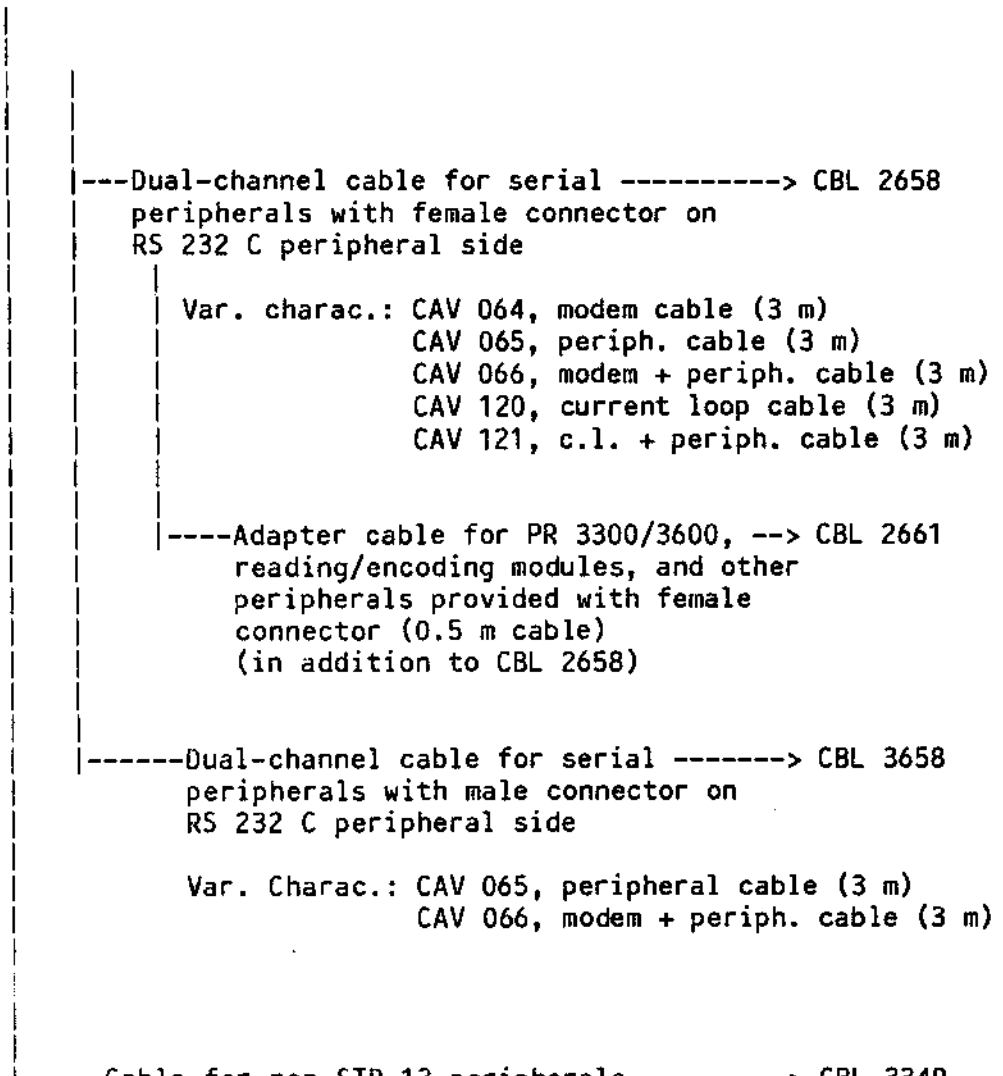
OPTIONAL MODULES WITH RS 232 C INTERFACE



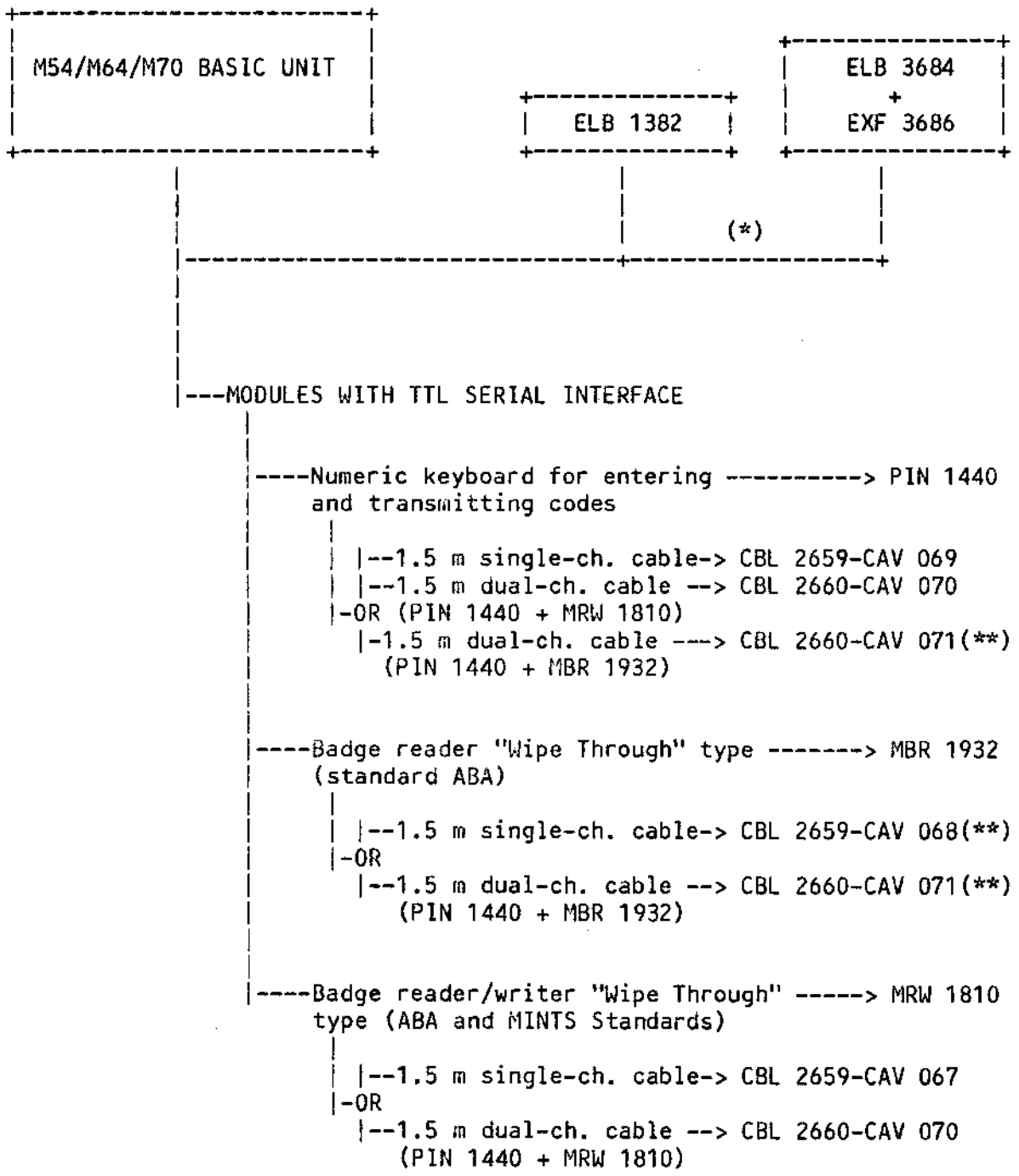
(*) The optional modules of the work station with RS 232 C serial interface can be connected to:

- RS 232 C serial dual-channel of the ELB 1382 adapter, or
- ELB 3684 alphanumeric monochrome work station.


--CABLES FOR OPTIONAL MODULES CONNECTION
---RS 232 C single-channel cable for ---------> CBL 2657
serial peripherals with female
connector on peripheral side
Var. charac.: CAV 007, modem cable (3 m)
CAV 062, std 13 periph. cable (2 m)
CAV 063, std 13 periph. cable (6.5 m)
--OR
CAV 085, std 13 periph. cable (3 m)
----Modem extension cable ---------------> CBL 3358
(only for CBL 2657 with CAV 007)
Var. charac.: CAV 143, modem extens. cable (3 m)
CAV 144, modem extens. cable (8 m)
----Adapter cable for PR 3300/3600, -----> CBL 2661
reading/encoding modules, and other
peripherals provided with female
connector (0.5 m cable)
(in addition to CBL 2657)
------RS 232 C single-channel cable for ------> CBL 3657
serial peripherals with male
connector on peripheral side
Var. charac.: CAV 062, std 13 periph. cable (2 m)
CAV 063, std 13 periph. cable (6.5 m)
CAV 085, std 13 periph. cable (3 m)


---Dual-channel cable for serial ----------> CBL 2658
peripherals with female connector on
RS 232 C peripheral side
Var. charac.: CAV 064, modem cable (3 m)
CAV 065, periph. cable (3 m)
CAV 066, modem + periph. cable (3 m)
CAV 120, current loop cable (3 m)
CAV 121, c.l. + periph. cable (3 m)
----Adapter cable for PR 3300/3600, --> CBL 2661
reading/encoding modules, and other
peripherals provided with female
connector (0.5 m cable)
(in addition to CBL 2658)
------Dual-channel cable for serial -------> CBL 3658
peripherals with male connector on
RS 232 C peripheral side
Var. Charac.: CAV 065, peripheral cable (3 m)
CAV 066, modem + periph. cable (3 m)
-----Cable for non STD 13 peripherals ---------> CBL 3349
(via modem)

OPTIONAL MODULES WITH TTL INTERFACE



(*) The optional modules of the work station with TTL serial interface can be connected to:

- the TTL serial dual channel of the ELB 1382 adapter, or
- the ELB 3684 alphanumeric monochrome work station together with the EXF 3686 optional board.

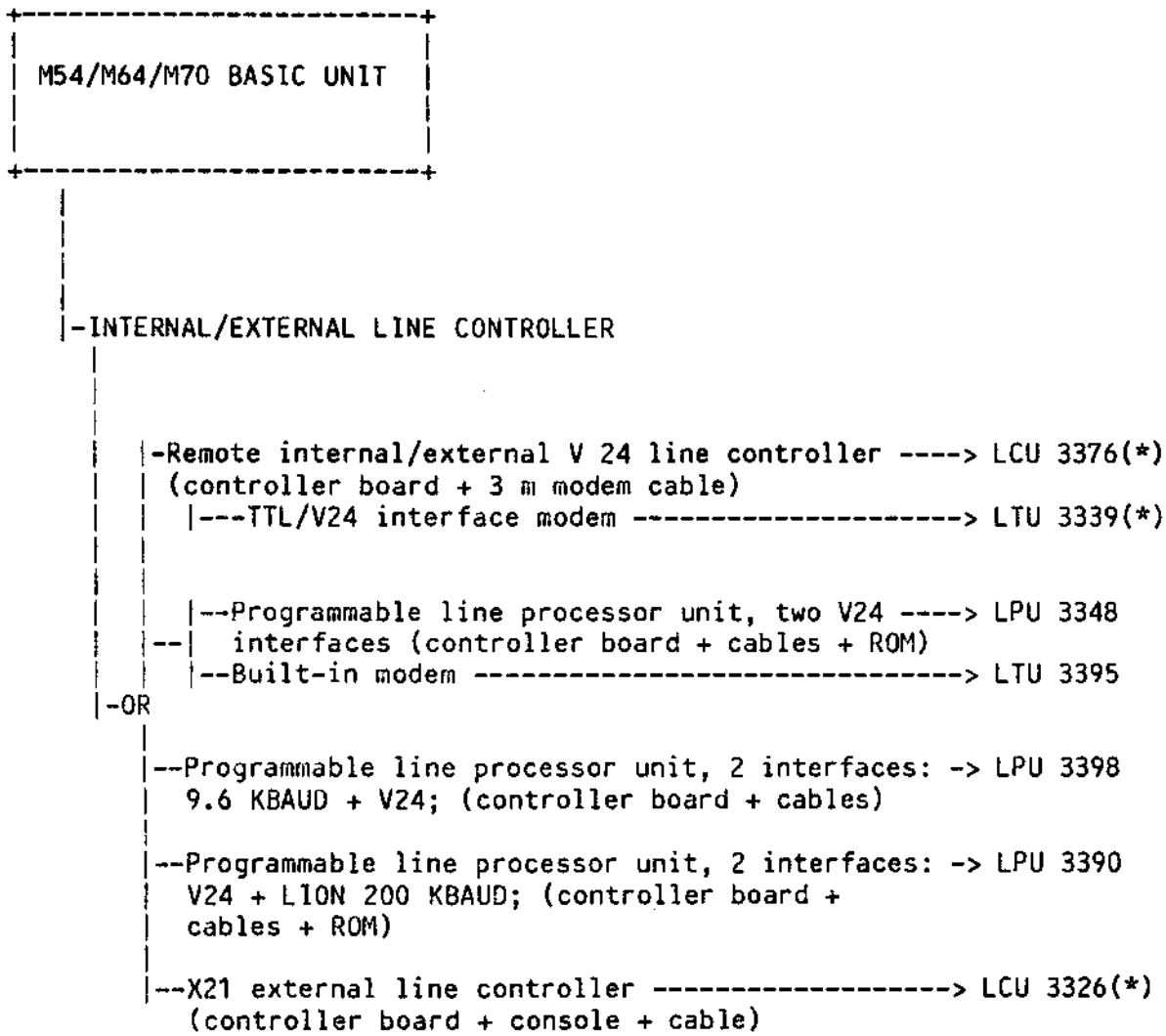
(**) Cables CBL 2659-CAV 068 and CBL 2660-CAV 071 cannot be used with ELB 3684; they are replaced by other cables as follows:

- CBL 2659-CAV 068: replaced by cable CBL 2659-CAV 067 (for MRW 1810 and MBR 1932)

- CBL 2660-CAV 071: replaced by cable CBL 2660-CAV 070 (for PIN 1440, MRW 1810 and MBR 1932).

8. LINE CONTROLLERS

INTERNAL/EXTERNAL LINE CONTROLLERS

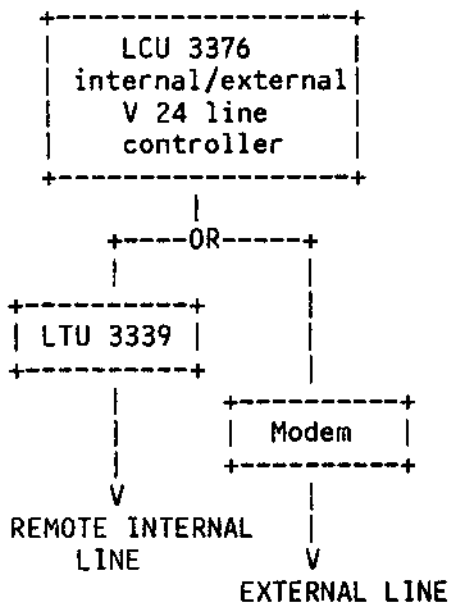


(*) Used for M54/M64.

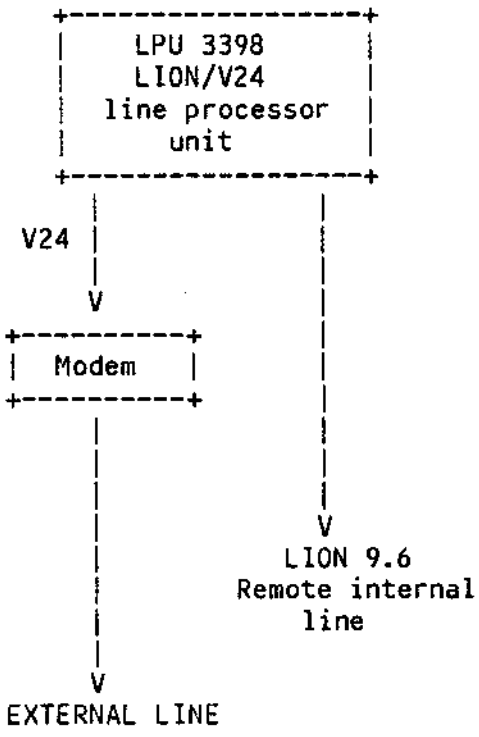
NOTE 1 - M70 uses only programmable controllers (LPU 3348/3390/3398).

SAMPLE DIAGRAMS OF INTERNAL/EXTERNAL LINE CONTROLLERS

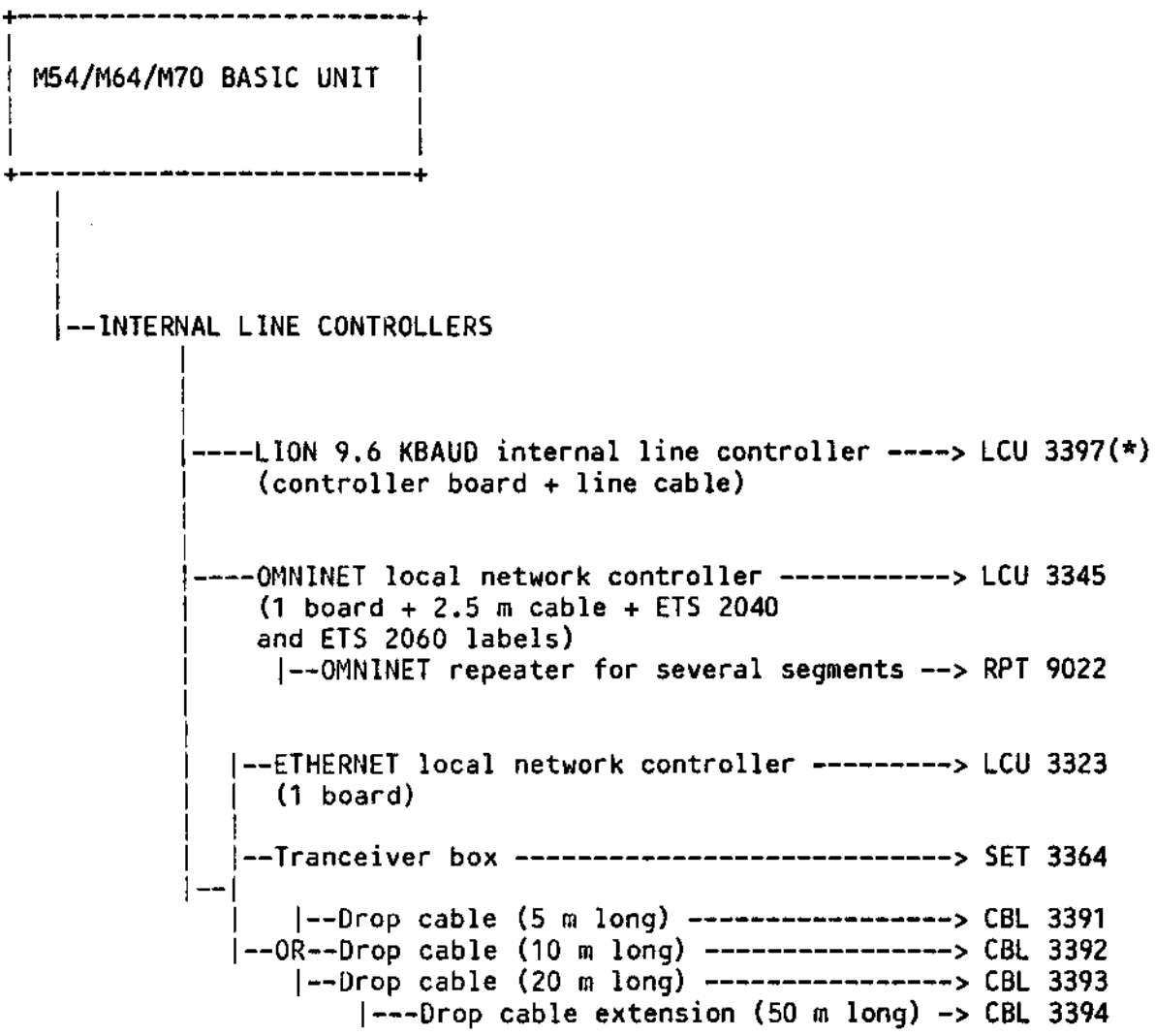
*** INTERNAL/EXTERNAL V24 LINE CONTROLLER ***



*** LION 9.6 KBAUD + V24 LINE PROCESSOR UNIT ***



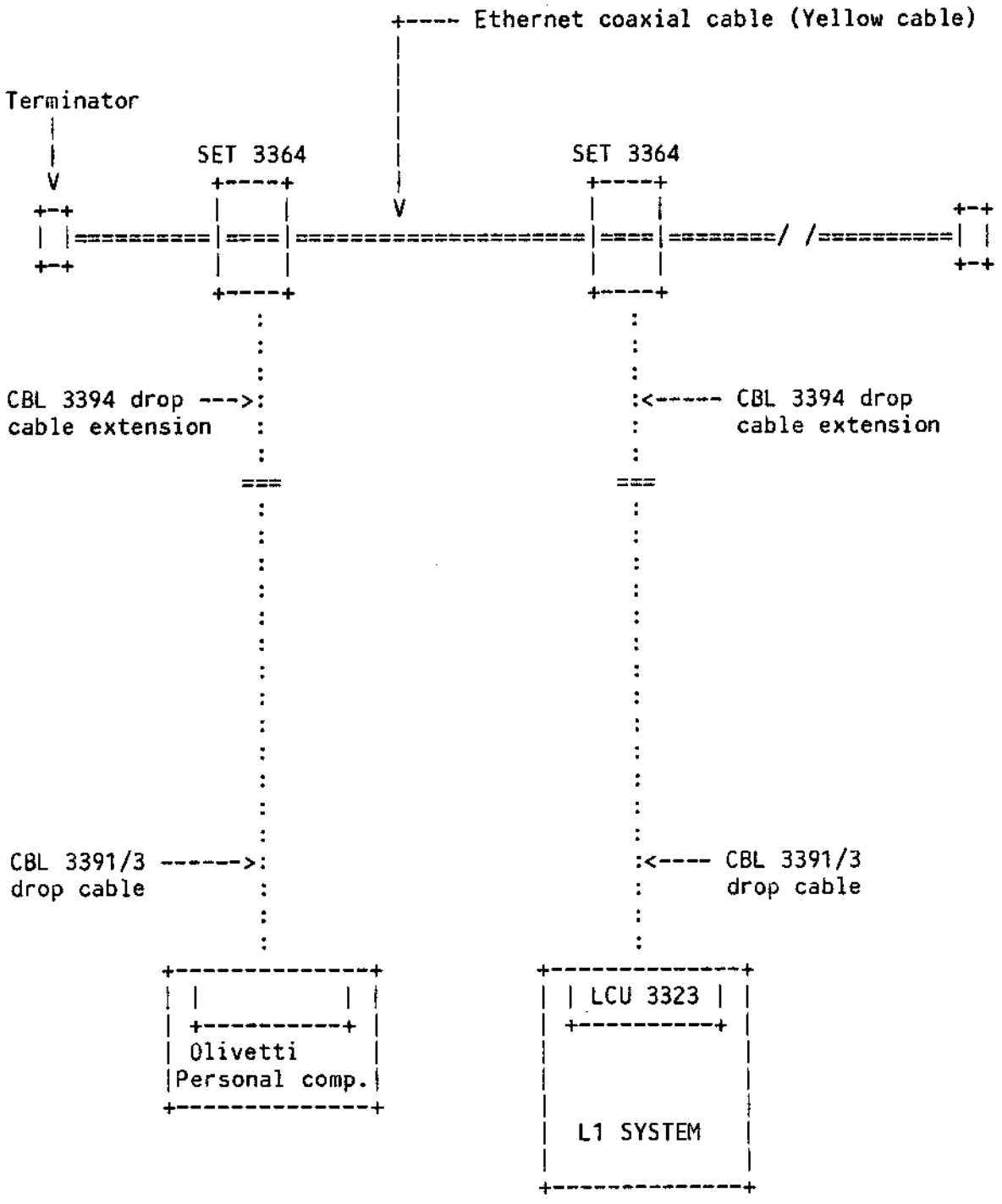
INTERNAL LINE CONTROLLERS



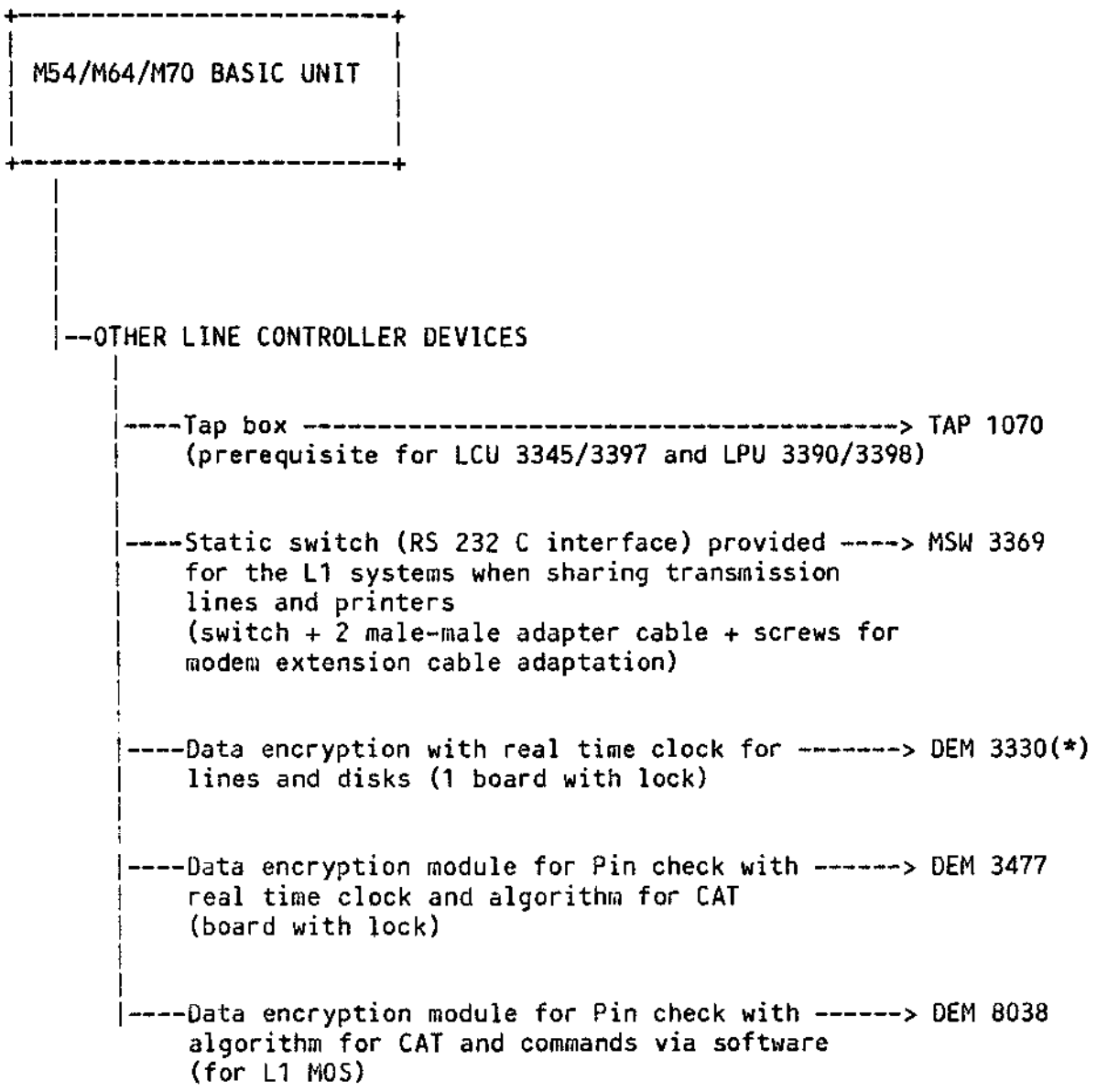
(*) Used only for M54/M64.

NOTE 2 - The dorsal cables for the Ethernet line and the corresponding terminators are supplied by Olivetti ATC department.

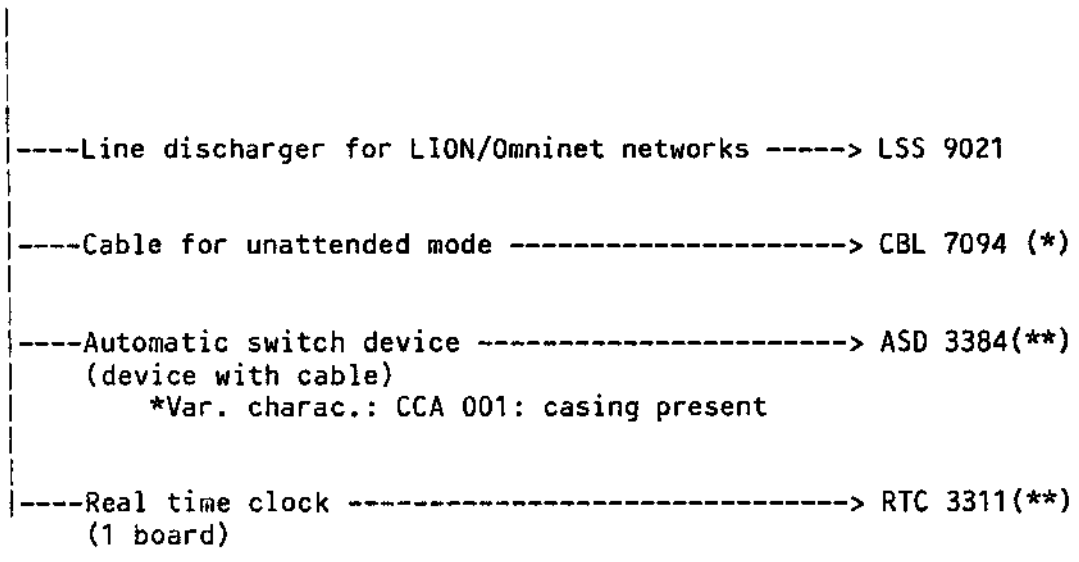
ETHERNET LOCAL NETWORK



OTHER LINE CONTROLLER DEVICES



(*) Non available for M70.



(*) Available for M64/M70.

(**) Used for M54.

9. POWER CONSUMPTIONS

CHARACTERISTICS OF POWER SUPPLY UNITS

The table below indicates the characteristics of power supply units incorporated in M54 basic unit, in M64/M70 basic unit and in CAB 8093 expansion cabinet.

The table shows:

- the amount of power supplied by the power supply unit
- the ampere values for +5 V, +12 V, -12 V, and +35 V.

TYPE OF POWER SUPPLY UNIT	POWER SUPPLIED	AMPERE SUPPLIED			
		+5 V	+12 V	-12 V	+35 V
Power supply unit incorporated in M54 basic unit	170 W	25.5	4.3	0.7	
Power supply unit incorporated in M64 and M70 basic unit	350 W	40	1.4	1.4	6
Power supply unit (for M70) incorporated in expansion cabinet CAB 8093	125 W	25			

POWER CONSUMPTIONS OF HARDWARE MODULES

The table below shows the power consumption of M54, M64, M70 hardware modules.

MODULE	DENOMINATION	NO. OF BOARDS	POWER CONSUMPTION (AMPERE)			
			+5 V	+12 V	-12 V	+35 V
Multifunctional alphanum. kybd	ANK 1401		0.40	0.05		
Multif.alphanum. kybd + key lock	ANK 1402		0.40	0.05		
Alphanum. kybd with BASIC verbs	ANK 1426		0.40	0.05		
Alphanum. kybd	ANK 1427		0.40	0.05		
Alphanum. kybd. + key lock	ANK 1428		0.40	0.05		
Auxiliary processing unit (for M70 multi-processor sys.)	APU 7070	1	6.5	0.023	0.018	
M54 basic unit	BU 5425	1	3.7	0.023	0.018	
M64 basic unit	BU 6401	1	3.7	0.023	0.018	
M70 basic unit monoprocessor, 11 board slots, without console (with TCB)	BU 7011	2	10.43	0.023	0.018	

MODULE	DENOMI-NATION	NO. OF BOARDS	POWER CONSUMPTION (AMPERE)			
			+5 V	+12 V	-12 V	+35 V
M70 basic unit monoprocessor, 16 board slots, without console (with TCB)	BU 7012	2	10.43	0.023	0.018	
M70 basic unit monoprocessor, 11 board slots, without console (without TCB)	BU 7115	1	7.13	0.023	0.018	
M70 basic unit monoprocessor, 16 board slots, without console (without TCB)	BU 7116	1	7.13	0.023	0.018	
Basic console for M64	CDS 6411		0.6			
Console without line diagnostics for M64/M70	CDS 7099		0.7			
Console with line diagnostics for M64/M70	CDS 8077		0.7			
Data encryption module with RTC for lines/disks	DEM 3330	1	1.85	0.1		
Data encryption module for pin-Check + RTC with algorithm for CAT	DEM 3377	1	1.85	0.1		
8 in. 1 Mbyte diskette for CAB 8093	FDS 7033	1	2.5	0.15		0.93

MODULE	DENOMI-NATION	NO. OF BOARDS	POWER CONSUMPTION (AMPERE)			
			+5 V	+12 V	-12 V	+35 V
SMD interface controller	HDC 3527	2	6.1		0.55	
ST 506 interface controller	HDC 3544	1	3.3			
ESDI interface controller	HDC 7050	2	5.2			
SMD interface controller (275 Mbyte HDU)	HDC 7075	2	6.1		0.55	
20 Mbyte h. disk (ST 506 interf.) for M54	HDU 3425		0.6	0.86		
40 Mbyte h.disk (ST 506 interf.) for M54	HDU 3449		0.9	1.19		
65 Mbyte h.disk (ST 506 interf.) for M54	HDU 3465		0.9	1.19		
140 Mbyte h.disk (ESDI interface) for M54	HDU 5451		1.9 (peak = 2)	3.3 (peak = 4.5)		1
70 Mbyte h.disk (ESDI interface) for M54	HDU 5470		1.5	2.42		
315 Mbyte h.disk (ESDI interface) for M54	HDU 5471		1.5	2.42		
20 Mbyte h.disk (ST 506 interf.) for M64/M70	HDU 7041					0.86
40 Mbyte h.disk (ST 506 interf.) for M64/M70	HDU 7042					1.19

MODULE	DENOMI-NATION	NO. OF BOARDS	POWER CONSUMPTION (AMPERE)			
			+5 V	+12 V	-12 V	+35 V
65 Mbyte h.disk (ST 506 interf.) for M64/M70	HDU 7043					1.19
140 Mbyte h.disk (ESDI interf.) for M64/M70	HDU 7051					1
70 Mbyte h.disk (ESDI interf.) for M64/M70	HDU 8066					1.02
315 Mbyte h.disk (ESDI interf.) for M64/M70	HDU 8067					1.02
Kybd/alphan.mon. display control.	KDC 3341	1	2.3			
Ethernet intern. line controller	LCU 3323	1	2.1	0.5		
X21 line contr.	LCU 3326	1	1.86			
Omninet local network control.	LCU 3345	1	2.3			
Intern./external line controller	LCU 3376	1	1.8	0.06	0.06	
LION 9.6 line controller	LCU 3397	1	2.2			
2 V24 line processor unit	LPU 3348	1	2.74	0.12	0.1	
V24 + LION 200 line processor unit	LPU 3390	1	2.79	0.17	0.05	
V24 + LION 9.6 line processor unit	LPU 3398	1	2.79	0.17	0.05	
Built-in modem for LCU 3376	LTU 3339	1	0.55	0.20	0.20	

MODULE	DENOMI-NATION	NO. OF BOARDS	POWER CONSUMPTION (AMPERE)			
			+5 V	+12 V	-12 V	+35 V
Built-in modem for LPU 3348	LTU 3395	1	0.55	0.20	0.20	
Graphic expans.	MEG 3354	1	3.7			
1 Mbyte memory (256 Kbit/chip)	MEM 3361	1	1.72 1.18*			
1.5 Mbyte memory (256 Kbit/chip)	MEM 3362	1	1.86 1.33*			
2 Mbyte memory (256 Kbit/chip)	MEM 3363	1	1.99 1.46*			
512 Kbyte memory (64 Kbit/chip)	MEM 3374	1	1.85 1.38*			
1 Mbyte memory (256 Kbit/chip)	MEM 7022	1	2 0.7*			
2 Mbyte memory (256 Kbit/chip)	MEM 7024	1	3 1.2*			
2 Mbyte memory (256 Kbit/chip)	MEM 6032	1	2.5* 1.4*			
4 Mbyte memory (256 Kbit/chip)	MEM 6034	1	3.3 2*			

(*) "Stand-by" value referring to the power consumption of all the RAM memory boards following the first one when not selected. With more than one memory board, the power consumption is to be calculated as follows: take the value of the board with the maximum power consumption and add to this value all the "stand-by" values of the other boards.

MODULE	DENOMI-NATION	NO. OF BOARDS	POWER CONSUMPTION (AMPERE)			
			+5 V	+12 V	-12 V	+35 V
5.25 in. 1 Mbyte slim diskette, second drive for M54	MFE 3427		0.45	0.6		
5.25 in. 320 Kb slim diskette, second drive for M54	MFE 3433		0.55	0.85		
5.25 in. 1 Mbyte slim diskette, second drive for M64/M70	MFE 7032					0.36
5.25 in. 1 Mbyte subsystem for M64/M70	MFS 7031	1	2.5	0.15		0.36
5.25 in. 1 Mbyte slim diskette, first drive for M54	MFU 3426	1	2.95	0.75		
5.25 in. 320 Kb slim diskette, first drive for M54	MFU 3432	1	3.05	1		
Tape unit contr. for MTU 7040	MTC 3543	1	2.85			
Multipl. contr. for M54	MUX 3388	1	2.32	0.15	0.05	
Remote multi-plexer control. for M54	MUX 3688	1	2.32	0.15	0.05	
Multipl. contr. for M64/M70	MUX 7089	1	2.32	0.15	0.05	

MODULE	DENOMI-NATION	NO. OF BOARDS	POWER CONSUMPTION (AMPERE)			
			+5 V	+12 V	-12 V	+35 V
Remote multi-plexer control. for M64/M70	MUX 7091	1	2.32	0.15	0.05	
Multifunctional numeric kybd	NKB 1405		0.40	0.05		
Multifunc. num. kybd + key lock	NKB 1406		0.40	0.05		
Numeric kybd	NKB 1411		0.37			
Numeric kybd + key lock	NKB 1412		0.37			
Numeric kybd	NKB 1435		0.40	0.05		
Numeric kybd + key lock	NKB 1436		0.40	0.05		
Real time clock	RTC 3311	1	1.51	0.1		
M70 upgrading set from 11 board slots to 16 board slots	SET 7072					
45/60 Mbyte streaming tape car. controller for M54/M64/M70	STC 8062	1	3.3			
19 Mbyte stream-ing tape cartr. subsystem for CAB 8093	STS 6420	2	4.3			1

MODULE	DENOMI-NATION	NO. OF BOARDS	POWER CONSUMPTION (AMPERE)			
			+5 V	+12 V	-12 V	+35 V
45/60 Mbyte streaming tape cartridge for M54	STU 5445		1.7	0.8		
45/60 Mbyte streaming tape cartridge for M64 and M70	STU 8061		1.7			1.14
2 Mbyte memory for M70	TCM 8046	1	4.8 2.4*			
4 Mbyte memory for M70	TCM 8047	1	5.6 3.2*			

(*) "Stand-by" value referring to the power consumption of all the RAM memory boards following the first one when not selected. With more than one memory board, the power consumption is to be calculated as follows: take the value of the board with the maximum power consumption and add to this value all the "stand-by" values of the other boards.

NOTE 1 - Check that the sum of the power consumptions for the various hardware configuration modules (boards inside casing + incorporated drive) respond to the target data of the power supply unit installed in the system's basic unit (see table on page 9-1).

NOTE 2 - The magnetic storage units incorporated in M64/M70 are powered by a DC converter connected to the +35 V output voltage of the power supply unit.

EXAMPLES ON HOW TO CALCULATE POWER CONSUMPTIONS

The following tables contain configuration examples and power consumptions of the non-self-powered hardware modules for every output voltage.

The total power consumption, for each output voltage, must not exceed the maximum power supply value permitted (see table on page 9-1). In addition, the total Watt value must not exceed the maximum power consumption delivered by PSU. The Watt amount is obtained by multiplying the total amount of voltage with the corresponding output ampere consumption.

CONFIGURATION	MODULES	NO. OF BOARDS	POWER CONSUMPTION (AMP)			
			+5 V	+12 V	-12 V	+35 V
M54	BU 5425	1	3.7	0.023	0.018	
2 5.25" diskettes	MEM 3374	1	1.85			
1 graphic WS	MFU 3426 *	1	2.95	0.75		
	MFE 3427		0.45	0.6		
graphic	ANK 1401		0.40	0.05		
WS1	KDC 3341	1	2.3			
	MEG 3354	1	3.7	0.4	0.05	
	DSM 3616					
	PR 15					
	CBL 2657					
	TOTAL	5	15.35	1.823	0.068	
Power consumption in Watts:			76.75	21.876	0.816	
(Total Watts: 99.442)						

(*) Includes power consumption for magnetic storage unit plus controller.

The power values of each output voltage of the power supply unit installed in the system are the following:

170 W power supply unit: 25.5 A - 4.3 A - 0.7 A

The total power consumption for the hardware modules in the configuration are kept within the limits imposed by the 170 W power supply unit. The total number of board slots required is maintained within the limits imposed by the M54 slot board rack **(9 board slots).**

CONFIGURATION	MODULES	NO. OF BOARDS	POWER CONSUMPTION (AMP)			
			+5V	+12V	-12V	+35 V
M64	BU 6401	1	3.7	0.023	0.018	
with hdu & stc	CDS 6411		0.6			
4 WS	MEM 3363	1	1.99			
	MEM 3361	1	1.18			
	HDC 3544	1	3.3			
	HDU 7043					1.19
	STC 8062	1	3.3			1.14
	STU 8061		1.7			
	PR 3300					
	CBL 2657					
	CBL 2661					
	MUX 7089	1	2.32	0.15	0.05	
3 WS	3 ANK 1401 *					
	3 DSM 3615					
	3 ELB 3684					
	3 CBL 7090					
	2 DM 280					
	2 CBL 3657					
1 WS	ANK 1426 *					
	KDC 3341	1	2.3			
	MEG 3354	1	3.7	0.4	0.05	
	DSM 3616					
	ELB 1382					
	CBL 2615					
	PR 1480					
	CBL 2657					
	TOTAL	8	24.09	0.573	0.118	2.33
Power consumption in Watts:			120.45	6.876	0.216	81.55
(Total Watts: 209.092)						

(*) The keyboard is powered by ELB 3684/ELB 1382.

350 W power supply unit: 40 A - 1.4 A - 1.4 A - 5 A

M64 board rack: 11 board slots

CONFIGURATION	MODULES	NO. OF BOARDS	POWER CONSUMPTION (AMP)			
			+5 V	+12 V	-12 V	+35 V
M70/3 triprocessor with hdu & stc 16 WS	BU 7012 SWB 6061 2 APU 7070 CDS 7099 MEM 6034 LPU 3390 HDC 3527 HDU 7061 HDE 7062 STC 8062 STU 8061 4 MUX 7089 PR 3300 CBL 2657 CBL 2661 16 ELB 3684 * 16 CBL 7090 16 ANK 1401 16 DSM 3615	2 2 1 1 2 1 4 	10.43 13 0.7 3.3 2.79 6.1 3.3 1.7 9.28 	0.023 0.046 0.17 0.6 	0.018 0.036 0.05 0.55 0.2 	 1.14
		13	50.60	0.839	0.854	1.14
Power consumption in Watts: (Total Watts: 314.593)			253	10.068	10.248	39.90

(*) The keyboard is powered by ELB 3684

The total power consumption of the hardware modules of this configuration correspond to the limits imposed by the power supply unit installed in the basic cabinet and by the additional PSU contained in the expansion cabinet CAB 8093:

350 W power supply unit: 40 A - 1.4 A - 1.4 A - 5 A

125 W additional power supply unit: 25 A

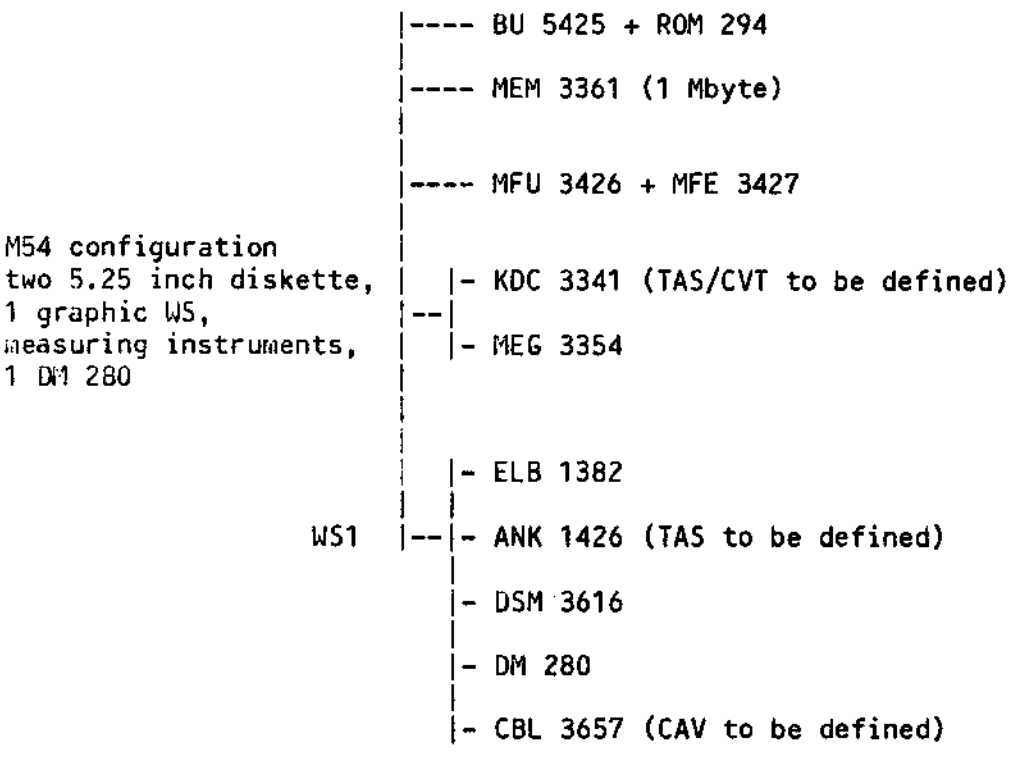
The total number of board slots used remains in the limits permitted by the M70 basic unit + expansion cabinet: 16 board slots, distributed as follows: 11 in the basic cabinet and 5 in the expansion cabinet.

10. CONFIGURATION EXAMPLES

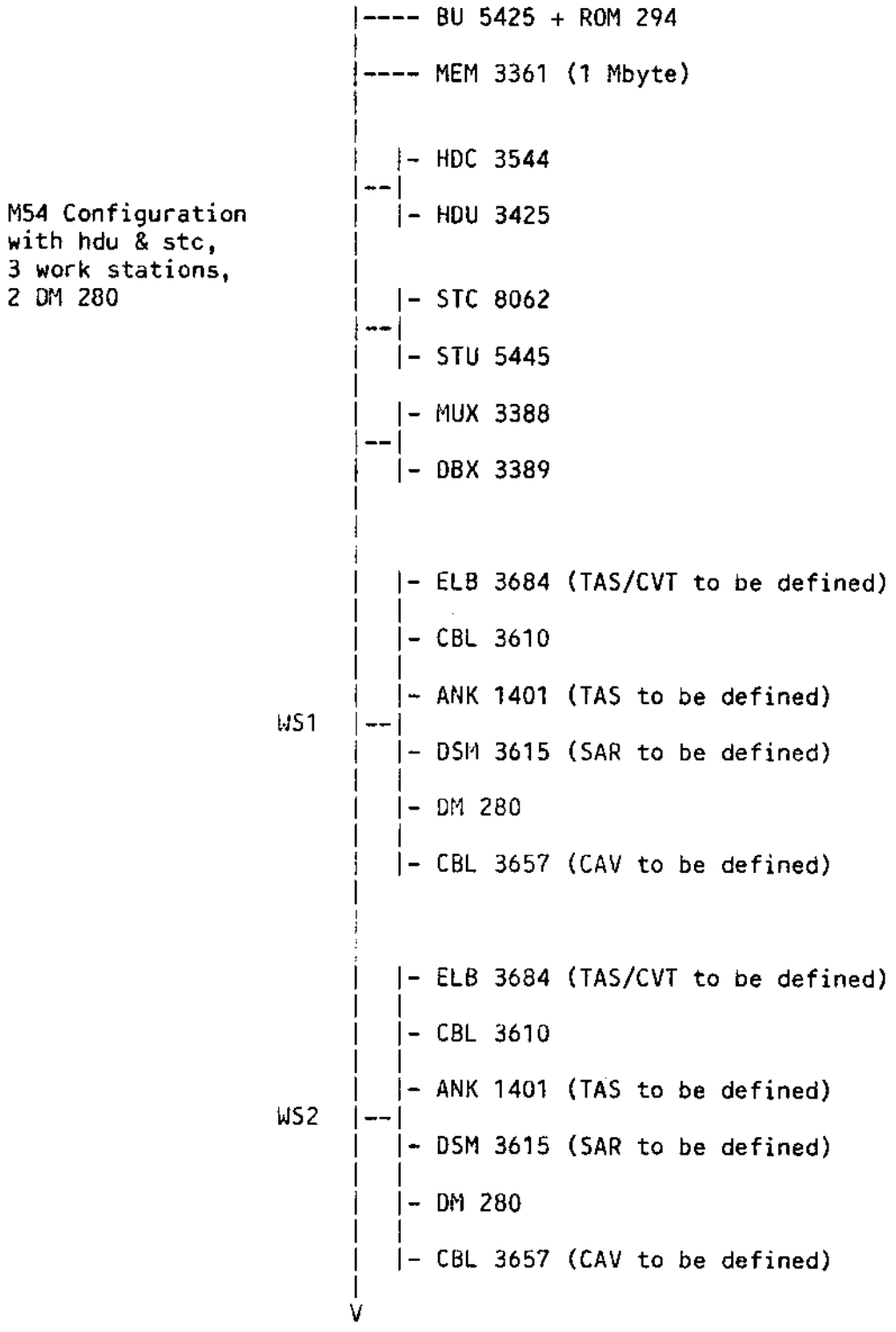
The following pages show examples of systems hardware configurations operating in different software environments:

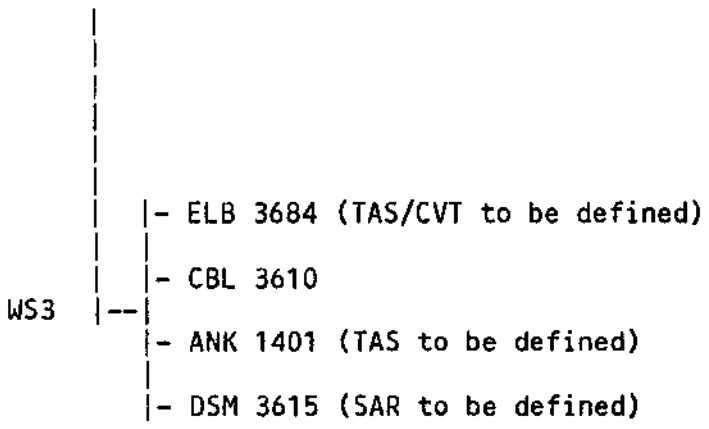
- COSMOS
- BCOS 11
- MOS.

M54 Configuration with 5.25 inch diskette

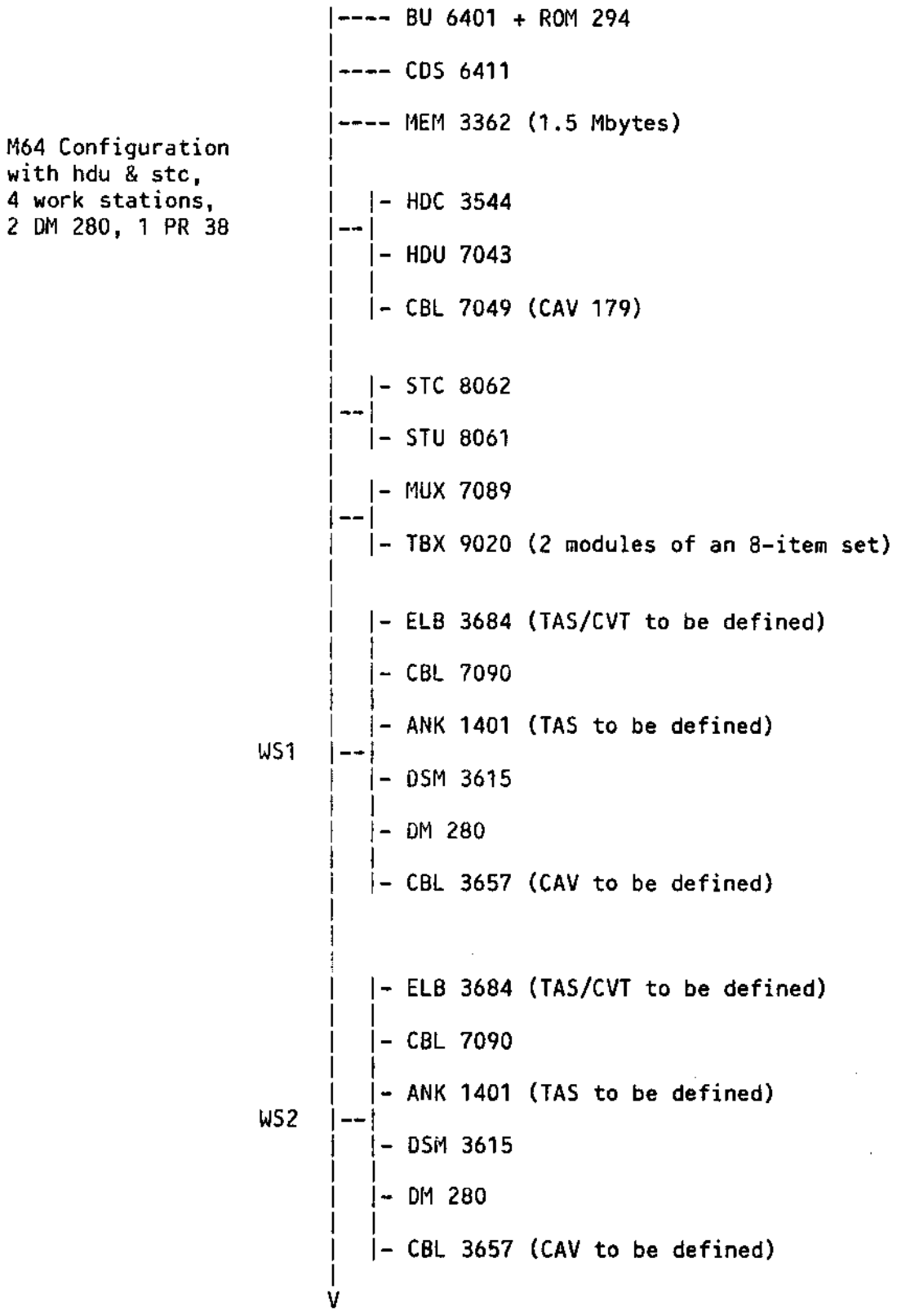


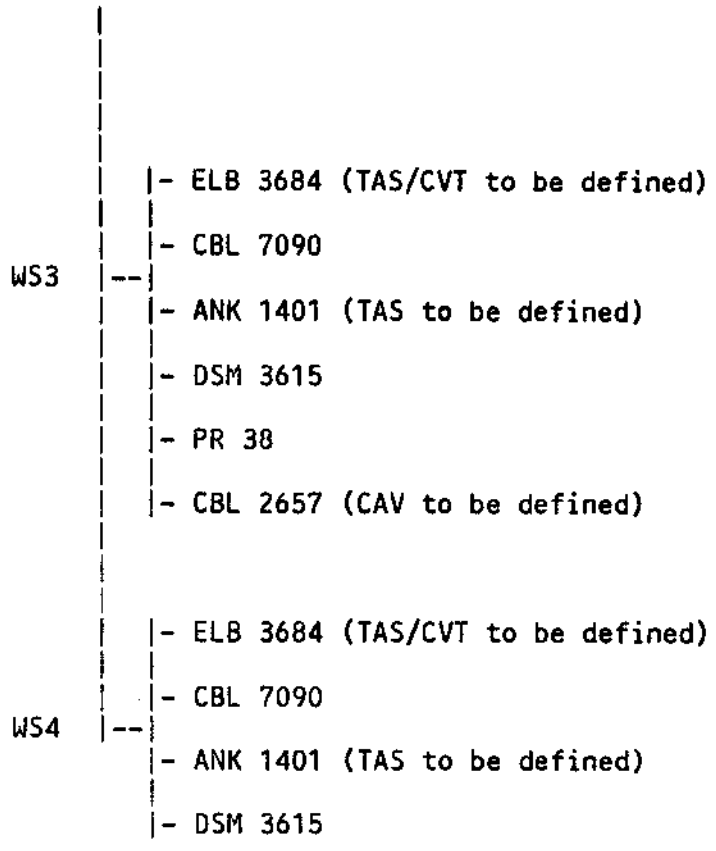
M54 Configuration with hard disk & streaming tape cartridge



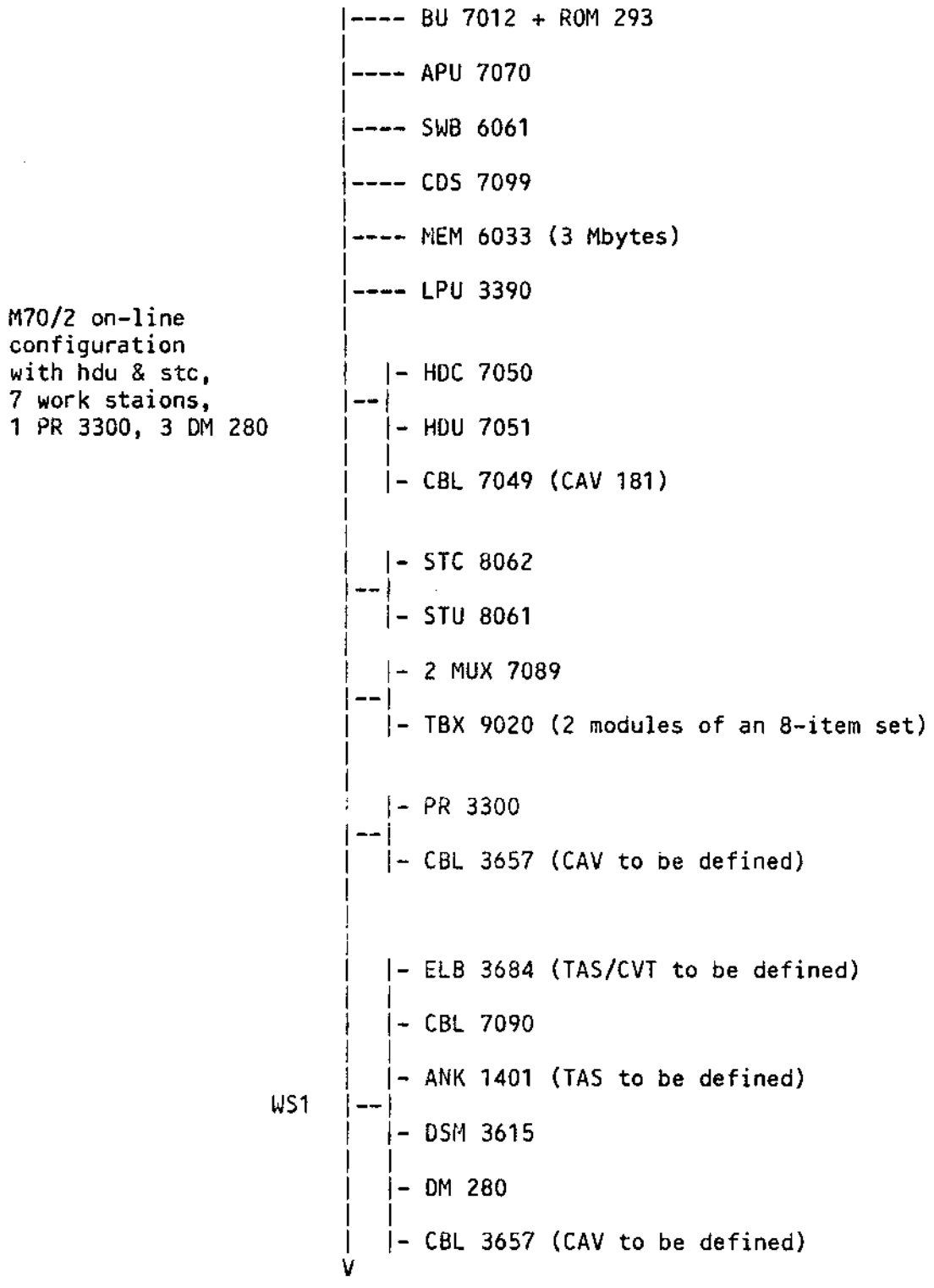

WS3
- ELB 3684 (TAS/CVT to be defined)
- CBL 3610
- ANK 1401 (TAS to be defined)
- DSM 3615 (SAR to be defined)

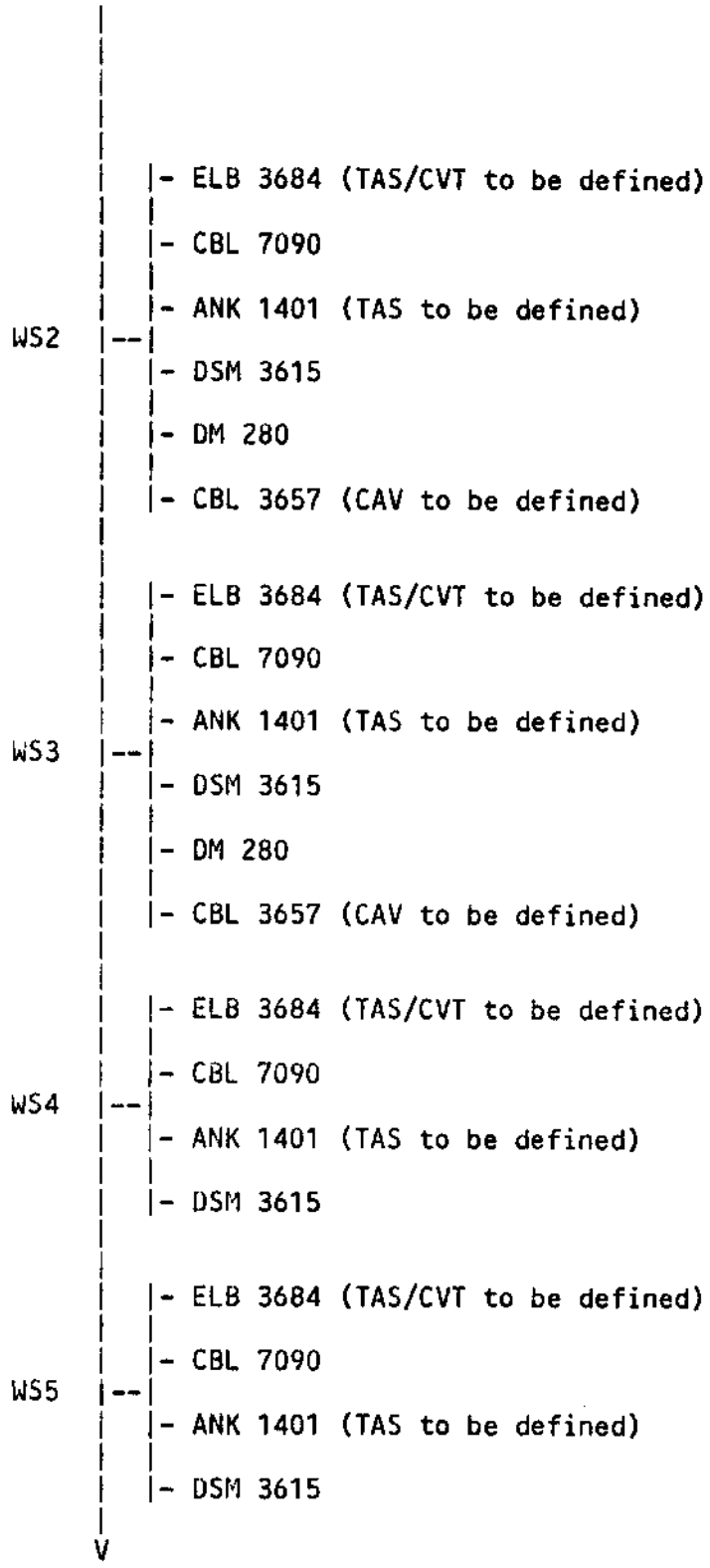
M64 Configuration with hard disk & streaming tape cartridge

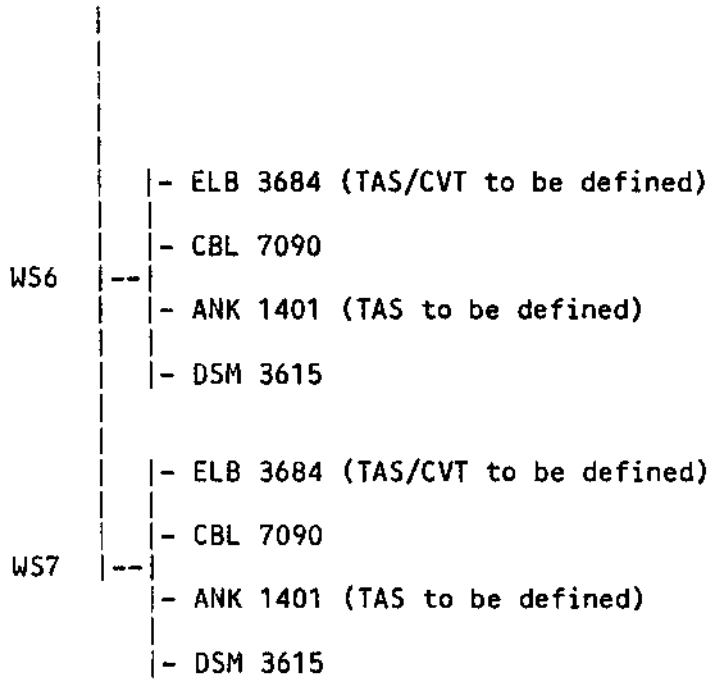



- ELB 3684 (TAS/CVT to be defined)
- CBL 7090
WS3
- ANK 1401 (TAS to be defined)
- DSM 3615
- PR 38
- CBL 2657 (CAV to be defined)
- ELB 3684 (TAS/CVT to be defined)
- CBL 7090
WS4
- ANK 1401 (TAS to be defined)
- DSM 3615

M70/2 configuration with hard disk & streaming tape cartridge




- ELB 3684 (TAS/CVT to be defined)
- CBL 7090
- ANK 1401 (TAS to be defined)
WS2
- DSM 3615
- DM 280
- CBL 3657 (CAV to be defined)
- ELB 3684 (TAS/CVT to be defined)
- CBL 7090
- ANK 1401 (TAS to be defined)
WS3
- DSM 3615
- DM 280
- CBL 3657 (CAV to be defined)
- ELB 3684 (TAS/CVT to be defined)
- CBL 7090
WS4
- ANK 1401 (TAS to be defined)
- DSM 3615
- ELB 3684 (TAS/CVT to be defined)
- CBL 7090
WS5
- ANK 1401 (TAS to be defined)
- DSM 3615


- ELB 3684 (TAS/CVT to be defined)
- CBL 7090
WS6
- ANK 1401 (TAS to be defined)
- DSM 3615
- ELB 3684 (TAS/CVT to be defined)
- CBL 7090
WS7
- ANK 1401 (TAS to be defined)
- DSM 3615

11. HARDWARE MODULES GENERAL LIST

This chapter gives a list of the various modules which make up the hardware components of M54, M64, M70, M70/2 and M70/3 systems.

The list is divided into hardware groups, such as Basic unit, Magnetic storage unit, Work station, etc. Each group contains a description of its corresponding modules as well as the **DENOMINATION AND RANDOM CODE** of each module.

HARDWARE MODULES GENERAL LIST			
HW GROUP	DENOMI-NATION	RANDOM CODE	DESCRIPTION
BASIC UNIT	APU 7070	57070 P	Auxiliary processing unit for M70 multiprocessor
	BU 5425	54025 M	M54 basic unit
	BU 6401	64001 C	M64 basic unit without console
	BU 7011	57011 X	M70 monoprocessor basic unit, 11 board slots, without console (with TCB)
	BU 7012	57012 Z	M70 monoprocessor basic unit 16 board slots, without console (with TCB)
	BU 7115	53131 L	M70 monoprocessor basic unit 11 board slots, without console (without TCB)
	BU 7116	53132 N	M70 monoprocessor basic unit, 16 board slots, without console (without TCB)
	CBL 7094	57094 F	Cable for unattended feature
	CDS 6411	64011 D	Basic console for M64
	CDS 7099	67099 E	Console without line diagnostics for M64/M70
	CDS 8077	53108 A	Console with line diagnostics for M64/M70
	SET 7072	51007 A	M70 upgrading set from 11 to 16 board slots
	SWB 6061	46949 U	Basic software user license for M70 (MOS run-time operating system)

HARDWARE MODULES GENERAL LIST			
HW GROUP	DENOMI-NATION	RANDOM CODE	DESCRIPTION
MEMORY	MEM 3361	46597 Y	1 Mbyte memory (256K bit/chip)
	MEM 3362	46598 K	1.5 Mbyte memory (256K bit/chip)
	MEM 3363	46599 M	2 Mbyte memory (256K bit/chip)
	MEM 3374	47011 T	512K byte memory (256K bit/chip)
	MEM 6032	46930 N	2 Mbyte memory (256K bit/chip)
	MEM 6034	46932 G	4 Mbyte memory (256K bit/chip)
	MEM 7022	50379 T	1 Mbyte memory (256K bit/chip) with ECC
	MEM 7024	50380 W	2 Mbyte memory (256K bit/chip) with ECC
	TCM 8046	53110 K	2 Mbyte memory for M70
	TCM 8047	53111 C	4 Mbyte memory for M70
MAGNETIC STORAGE UNITS	CAB 7018	50397 X	Expansion cabinet for tape unit and hard disk of 60/120 Mbytes and 275 Mbytes
	CAB 8093	53153 H	Expansion cabinet
	CBL 7049	50389 Q	ST 506 interface commands cable for 1-2 hard disks (M64/M70)
	CBL 7059	50393 P	ESDI interface commands cable for 1-2 magnetic storage units housed in M64/M70 basic unit
	CBL 7093	50407 V	Dual port cables for 275 Mbyte hard disk
	CDP 8068	53130 T	Dual port console

HARDWARE MODULES GENERAL LIST			
HW GROUP	DENOMI-NATION	RANDOM CODE	DESCRIPTION
MAGNETIC STORAGE UNITS	FDS 7033	50396 V	8 inch 1 Mbyte diskette subsystem for CAB 8093
	HDC 3527	46879 F	SMD interface controller for 60/120 Mbyte hard disk
	HDC 3544	47026 R	ST 506 interface controller
	HDC 7050	50384 V	ESDI interface controller
	HDC 7075	50410 Z	SMD interface controller for 275 Mbyte hard disk
	HDE 7062	50399 L	60 Mbyte hard disk (SMD interface) second drive for CAB 7018
	HDE 7064	50402 K	120 Mbyte hard disk (SMD interf.) second drive for CAB 7018
	HDE 7066	50406 T	275 Mbyte hard disk (SMD interf.) second drive for CAB 7018
	HDU 3425	50382 R	20 Mbyte hard disk (ST506 interf.) for M54
	HDU 3449	50383 K	40 Mbyte hard disk (ST506 interf.) for M54
	HDU 3465	48986 T	65 Mbyte hard disk (ST506 interf.) for M54
	HDU 5451	50385 X	140 Mbyte hard disk (ESDI interf.) for M54
	HDU 5470	53146 K	70 Mbyte hard disk (ESDI interf.) for M54
	HDU 5471	53147 M	315 Mbyte hard disk (ESDI interf.) for M54
	HDU 7041	50390 S	20 Mbyte slim hard disk (ST 506 interface) for M64/M70 basic unit

HARDWARE MODULES GENERAL LIST			
HW GROUP	DENOMI-NATION	RANDOM CODE	DESCRIPTION
MAGNETIC STORAGE UNITS	HDU 7042	50391 K	40 Mbyte full size hard disk (ST 506 interface) for M64/M70 basic unit
	HDU 7043	50392 M	65 Mbyte full size hard disk (ST 506 interface) for M64/M70 basic unit
	HDU 7051	53119 D	140 Mbyte hard disk (ESDI interface) for M64/M70 basic unit
	HDU 7061	50398 J	60 Mbyte hard disk (SMD interface) first drive for CAB 7018
	HDU 7063	50400 Y	120 Mbyte hard disk (SMD interface) first drive for CAB 7018
	HDU 7065	50405 Z	275 Mbyte hard disk (SMD interface) first drive for CAB 7018
	HDU 8066	53118 B	70 Mbyte hard disk (ESDI interf.) for M64/M70
	HDU 8067	53120 X	315 Mbyte hard disk (ESDI interf.) for M64/M70
	HDU 8071	53122 J	140 Mbyte hard disk (ESDI interf.) for CAB 8093
	HDU 8072	53123 L	70 Mbyte hard disk (ESDI interf.) for CAB 8093
	HDU 8073	53124 W	315 Mbyte hard disk (ESDI interf.) for CAB 8093
	KIT 8039	53125 Y	Dual port kit for 1 commuted hard disk in CAB 8093

HARDWARE MODULES GENERAL LIST			
HW GROUP	DENOMI-NATION	RANDOM CODE	DESCRIPTION
MAGNETIC STORAGE UNITS	MFE 3427	49901 L	5.25 inch 1 Mbyte slim diskette, second drive for M54 basic unit
	MFE 3433	49965 A	5.25 inch 320K byte slim diskette, second drive for M54 basic unit
	MFE 7032	50387 T	5.25 inch 1 Mbyte slim diskette, second drive for M64/M70 basic unit
	MFS 7031	50386 Z	5.25 inch 1 Mbyte slim diskette subsystem, first drive for M64/M70 basic unit
	MFU 3426	49900 T	5.25 inch 1 Mbyte slim diskette subsystem, first drive for M54 basic unit
	MFU 3432	49964 G	5.25 inch 320K byte slim diskette subsystem, first drive for M54
	MTC 3543	46874 L	Controller for MTU 7040 tape unit
	MTU 7040	50404 X	40 Mbyte tape unit for CAB 7018
	SET 7069	50403 M	Dual port for 60/120 Mbyte hard disk
	SET 8051	53121 Q	Set of elements for third/fourth hard disk and first/second hard disk housed in CAB 8093 (ESDI interface)
	STC 8062	53115 L	5.25 in. 45/60 Mbyte streaming tape controller for M54/M64/M70

HARDWARE MODULES GENERAL LIST			
HW GROUP	DENOMI-NATION	RANDOM CODE	DESCRIPTION
MAGNNETIC STORAGE UNITS	STS 6420	50694 U	8 in. 19 Mbyte streaming tape cartridge subsystem for M64/M70
	STU 5445	53144 P	5.25 in. 45/60 Mbyte streaming tape cartridge unit for M54
	STU 8061	53114 J	5.25 in. 45/60 Mbyte streaming tape cartridge unit for M64/M70
WORK STATION	ANK 1401	47295 T	Multif. alphan. kybd + funct.keys
	ANK 1402	47296 V	Multif. alphan. kybd + funct.keys + key lock
	ANK 1426	46645 Y	Alphanum. kybd + function keys + BASIC verbs
	ANK 1427	46646 S	Alphanum. kybd + function keys
	ANK 1428	46647 U	Alphanum. kybd + function keys + key lock
	CBL 2614	46712 N	Cable for connecting adapter to basic unit (15 m long)
	CBL 2624	46713 Q	Cable connecting adapter to basic unit (25 m long)
	CBL 2649	46714 S	Cable connecting adapter to basic unit (50 m long)
	CBL 2698	46756 X	Cable connecting adapter to basic unit (100 m long)
	CBL 3349	46763 V	Adapter cable for non STD 13 peripherals (via modem)

HARDWARE MODULES GENERAL LIST			
HW GROUP	DENOMI-NATION	RANDOM CODE	DESCRIPTION
WORK STATION	CBL 3378	47025 P	Serial interface cable (for connecting peripherals/modem to MUX signal distributor) with female connector on peripheral side
	CBL 3679	50668 Y	Serial interface cable connected to MUX signal distributor with male connector on peripheral side
	CBL 3610	47320 D	10 m current loop cable for ELB 3684 via DBX 3389
	CBL 7090	50409 J	10 m current loop cable for ELB 3684 via MUX 7089/7091
	DBX 3389	47303 M	Signal distribution box for MUX 3388/3688 controller
	DSM 3615	47293 P	15 inch b/w alphanumeric display (self-standing, rotatable with filter)
	DSM 3616	47294 Z	15 inch green monochrome alphanum. and graphic display (self-standing rotatable, with anti-glare filter)
	DSM 3619	47292 M	9 inch trivalent b/w alphanumeric display with rotatable support and filter
	ELB 1381	46650 T	Adapter unit for keyboard/display
	ELB 1382	46651 L	Adapter unit for keyboard/display, printer and optional modules of the work station

HARDWARE MODULES GENERAL LIST			
HW GROUP	DENOMI-NATION	RANDOM CODE	DESCRIPTION
WORK STATION	ELB 3684	50690 V	Remote, monochrome, alphanumeric work station
	EXF 3686	47319 K	Options board for Pin pad and badge reader
	KDC 3341	46731 U	Kybd/single-triv. display controller for DSM 3615/3616/3619
	MEG 3354	46736 E	Graphic expansion module for DSM 3616
	MUX 3388	47302 K	4 connection multiplexer controller for M54
	MUX 3688	50691 N	Remote, multiplexer controller for M54
	MUX 7089	50408 Q	4 connection multiplexer controller for M64/M70
	MUX 7091	50693 J	Remote, multiplexer controller for M64/M70
	NKB 1405	47297 X	Multif. numeric kybd + funct.keys
	NKB 1406	47298 J	Multif. numeric kybd + funct.keys + key lock
	NKB 1435	46648 P	Numeric keyboard + funct. keys
	NKB 1436	46649 R	Numeric keyboard + funct. keys + key lock
	PIN 1440	45706 T	PIN pad (with 1.5 m cable)
	SET 1245	45714 Y	Adapter ring for 15 inch display

HARDWARE MODULES GENERAL LIST			
HW GROUP	DENOMI-NATION	RANDOM CODE	DESCRIPTION
WORK STATION	SET 9019	50695 W	Connectors for current loop connection to M64/M70
	TBX 9020	47367 B	Connector block for current loop
LINE CONTROLLERS	ASD 3384	46657 Y	Automatic power-on device
	CBL 3391	47306 T	Drop cable for Ethernet line (5 m long)
	CBL 3392	47307 V	Drop cable for Ethernet line (10 m long)
	CBL 3393	47308 Q	Drop cable for Ethernet line (20 m long)
	CBL 3394	47317 W	Drop cable extension (30 m long)
	DEM 3330	46760 G	Data encryption module with real time clock for lines/disks
	DEM 3377	50378 Z	Data encryption module for Pin check with real time clock and algorithm for CAT
	DEM 8038	53109 C	Data encryption module for Pin check with real time clock and algorithm for CAT
	LCU 3323	47304 X	Ethernet/internal line controller
	LCU 3326	47769 S	X21 external line controller
	LCU 3345	46882 V	Omninet local network controller
	LCU 3397	47005 A	LION 9.6 internal line controller

HARDWARE MODULES GENERAL LIST			
HW GROUP	DENOMI-NATION	RANDOM CODE	DESCRIPTION
LINE CONTROLLERS	LCU 3376	47004 G	V24 external/internal line contr.
	LPU 3348	46757 Z	Line processor unit, 2 V24 interfaces
	LPU 3390	46758 L	Line processor unit, 2 interfaces: V24 + LION 200
	LPU 3398	47316 U	Line processor unit, 2 interfaces: V24 + LION 9.6
	LSS 9021	47370 A	Lightning Surge Suppressor for LION/Omninet networks
	LTU 3339	46881 T	Built-in modem for LCU 3376
	LTU 3395	47315 S	Built-in modem for LPU 3348
	MSW 3369	46990 F	Static switch for RS 232 C interface
	RPT 9022	47373 X	Omninet repeater
	RTC 3311	46761 Z	Real time clock for M54
	SET 3364	47305 Z	Transceiver box for Ethernet line
	TAP 1070	48146 J	Tap box for LION/Omninet networks
CABLES FOR AUXILIARY PERIPHERALS	CBL 2657	46697 Z	RS 232 C single-channel cable for serial peripherals with female connector on peripheral side
	CBL 2658	46697 Z	Dual-channel cable for serial peripherals with female connector on RS 232 C peripheral side
	CBL 2659	46699 N	Single-channel cable for TTL peripherals

HARDWARE MODULES GENERAL LIST			
HW GROUP	DENOMI-NATION	RANDOM CODE	DESCRIPTION
CABLES FOR AUXILIARY PERIPHERALS	CBL 2660	46501 R	Dual-channel cable for TTL peripherals
	CBL 2661	46524 C	Adapter cable for PR 3300/3600, reading/encoding modules and other peripherals having a female connector
	CBL 3349	46763 V	Adapter cable for non STD 13 peripherals
	CBL 3358	46762 T	Modem extension cable (can be connected to modem cables only)
	CBL 3657	50666 B	RS 232 C single-channel cable for serial peripherals with male connector on peripheral side
	CBL 3658	50667 D	Dual-channel cable for serial peripherals with male connector on RS 232 C peripheral side
	CBL 3679	50668 Y	Serial interface cable with male connector on peripheral side, connected to DBX

12. VARIABLE CHARACTERISTICS

Module	Variable characteristics	Description
		ROM FOR BASIC UNIT
BU 5425 BU 6401 BU 7011 BU 7012 BU 7115 BU 7116 APU 7070	ROM 293	ROM for: Single/multiproc. total memory dump Unattended TCM management ROM debugger management Autodiagnostics loop Reduced/extended diagnostics Test of first and second MMU Mono/multiprocessor management Line diagnostics 5.25 in. & 8 in. diskette management SMD management HDC5 management (ST506) STC4 management STC5 management Tape unit management ESDI management
	ROM 294	ROM for: Single/multiproc. total memory dump Unattended TCM management ROM debugger management Autodiagnostics loop Reduced/extended diagnostics Test of first and second MMU Mono/multiprocessor management Line diagnostics 5.25 in. & 8 in. diskette management SMD management HDC5 management (ST506) STC4 management STC5 management Tape unit management

Module	Variable characteristics	Description
		ROM FOR LINE PROCESSOR
LPU 3348	ROM 201	ROM for internal + external line
		VOLTAGE AND FREQUENCY FOR BASIC UNITS, ETC.
BU 5425	TEN 001	100 V - 50 Hz
BU 6401	TEN 002	120 V - 50 Hz
BU 7011	TEN 004	220 V - 50 Hz
BU 7012	TEN 005	240 V - 50 Hz
BU 7115	TEN 010	100 V - 60 Hz
BU 7116	TEN 011	115 V - 60 Hz
CAB 7018	TEN 013	220 V - 60 Hz
CAB 8093		
ASD 3384		
FDS 7033		
HDU 7061		
HDE 7062		
HDU 7063		
HDE 7064		
HDU 7065		
HDE 7066		
MTU 7040		
ELB 1381		
ELB 1382		
ELB 3684		
RPT 9022		

Module	Variable characteristics	Description
		VOLTAGE AND FREQUENCY FOR DSM 3615 AND DSM 3619
DSM 3615 DSM 3619	TEN 002 TEN 004 TEN 005 TEN 011 TEN 013 TEN 240	120 V - 50 Hz 220 V - 50 Hz 240 V - 50 Hz 115 V - 60 Hz 220 V - 60 Hz 220 V - 50 Hz (for Spain)
		VOLTAGE AND FREQUENCY FOR DSM 3616
DSM 3616	TEN 001 TEN 002 TEN 004 TEN 005 TEN 010 TEN 011 TEN 013 TEN 240	100 V - 50 Hz 120 V - 50 Hz 220 V - 50 Hz 240 V - 50 Hz 100 V - 60 Hz 115 V - 60 Hz 220 V - 60 Hz 220 V - 50 Hz (for Spain)

Module	Variable characteristics	Description
		TAS VARIABLE CHARACTERISTICS
ANK 1401	TAS 098 (1)	ARABIAN (2)
ANK 1402	TAS 128	GERMANY
ANK 1426	TAS 166	PORTUGAL
ANK 1427	TAS 187	SPAIN
ANK 1428	TAS 188	SPAIN 2 (5)
KDC 3341	TAS 411	DENMARK
ELB 3684	TAS 435	FRANCE
	TAS 462	GREECE
	TAS 501	ISRAEL
	TAS 504	ITALY
	TAS 515 (3)	JAPAN (2)
	TAS 609	NORWAY
	TAS 684	SWEDEN/FINLAND
	TAS 688	GERMAN SWITZERLAND
	TAS 689	FRENCH SWITZERLAND
	TAS 729	U.K.
	TAS 732	USA ASCII
	TAS 755	JUGOSLAVIA (4)

(1) Characteristic not available for keyboards ANK 1401/1402/1426, ELB 3684.

(2) Without simple semigraphics.

(3) Available for KDC 3341 only.

(4) With simple semigraphics for ELB 3684 only (without simple semigraphics for the other modules)

(5) Not available for keyboards ANK 1426/1427/1428.

Module	Variable characteristics	Description
		COMMANDS CABLE FOR ST 506
		INTERFACE HARD DISK
CBL 7049	CAV 179	Cable for 1 hard disk
	CAV 180	Cable for 2 hard disks
		COMMANDS CABLE FOR ESDI
		INTERFACE HARD DISK
CBL 7059	CAV 181	Cable for 1 hard disk
	CAV 182	Cable for 2 hard disks
	CAV 199	Cable for third/fourth hard disk
		DUAL PORT CABLE FOR 60/120 Mbyte
		HARD DISK
SET 7069	CAV 183	Set of cables for commuting 1 hard disk in CAB 7018
	CAV 184	Set of cables for commuting 2 hard disks in CAB 7018
		DUAL PORT CABLE FOR 275 Mbyte
		HARD DISK
CBL 7093	CAV 185	Set of cables for commuting 1 hard disk in CAB 7018
	CAV 186	Set of cables for commuting 2 hard disks in CAB 7018

Module	Variable characteristics	Description
		DUAL PORT CABLE FOR HARD DISK
CDP 8068	CAV 194	Set of cables for commuting 1 hard disk only in CAB 8093
	CAV 196	Set of cables for commuting 2 hard disks in CAB 8093
		HARD DISK WITH ESDI INTERFACE
		INCORPORATED IN CAB 8093
HDU 8071	CAV 192	First/second commuted hard disk
HDU 8072	CAV 193	Third/fourth commuted hard disk
		DISPLAY - KEYBOARD CABLES
KDC 3341 ELB 3684	CVT 001	1.10 m display cable - 2 m keyboard cable
	CVT 002	6 m display cable - 6.5 m keyboard cable
	CVT 003	3.5 m display cable - 3.5 m keyboard cable

Module	Variable characteristics	Description
		3395 LTU CABLE
LTU 3395	CAV 150	Internal line cable
	CAV 151	Internal + external line cable
		ASD 3384 DEVICE
ASD 3384	CCA 001	With casing
		CABLES FOR SERIAL INTERFACES
CBL 2657	CAV 007	Single-ch. modem cable, 3 m long
	CAV 062	Single-channel std. 13 peripheral cable, 2 m long
	CAV 063	Single-channel std. 13 peripheral cable, 6.5 m long
	CAV 085	Single-channel std. 13 peripheral cable, 3 m long
CBL 3657	CAV 062	Single-channel std. 13 peripheral cable, 2 m long
	CAV 063	Single-channel std. 13 peripheral cable, 6.5 m long
	CAV 085	Single-channel peripheral cable

Module	Variable characteristics	Description
		CABLES FOR SERIAL INTERFACES
CBL 2658	CAV 064	Dual-channel modem cable (3 m)
	CAV 065	Dual-chan. peripheral cable (3 m)
	CAV 066	Dual-channel cable for modem + peripherals, 3 m long
CBL 3658	CAV 065	Dual-chan. peripheral cable (3 m)
	CAV 066	Dual-channel cable for modem + peripherals, 3 m long
CBL 3378	CAV 147	Peripheral cable, 3 m long
	CAV 149	Modem cable, 3 m long
		LENGTH VARIANT FOR MODEM EXTENSION CABLE
CBL 3358	CAV 143	Modem extension cable 3 m long
	CAV 144	Modem extension cable 8 m long

Module	Variable characteristics	Description
		CABLES FOR TTL SERIAL INTERFACE
CBL 2659	CAV 067	1.5 m single-channel cable for: - MRW 1810 connected to ELB 1382 - MRW 1810 or MBR 1932 connected to ELB 3684
	CAV 068	1.5 m single-channel cable for: - MBR 1932 connected to ELB 1382 (not used on ELB 3684)
	CAV 069	1.5 m single-channel cable for PIN pad connected to ELB 1382 or ELB 3684
CBL 2660	CAV 070	1.5 m dual-channel cable for: - MRW 1810 and PIN pad connected to ELB 1382 - MRW 1810 or MBR 1932 and PIN pad connected to ELB 3684
	CAV 071	1.5 m dual-channel cable for PIN pad and MBR 1932 connected to ELB 1382 (not used on ELB 3684)
		ANTI-GLARE FILTERS FOR MONOCHROME DISPLAYS
DSM 3615 DSM 3619 FIL 3659 FIL 3665	SAR 001	Colourless screen
	SAR 002	Amber screen
	SAR 003	Green screen
	SAR 004	Gray screen

NOTE - In the above list we have not indicated the characteristics of the general-purpose printers and optional modules (PIN pad, badge reader, etc.). This information can be obtained by consulting the specific documentation written for each one.

NOTICE

Ing. C. Olivetti & C. S.p.A. reserves the right to make improvements in the products described in this manual at any time and without notice.

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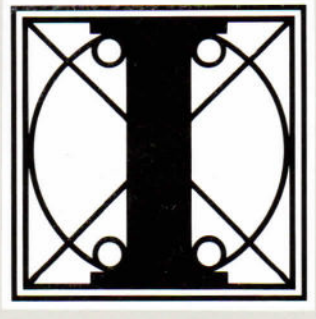

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