IBM

IBM System/360, System/370,
4300, 9370, and ES/9000 Processors

GC22-7064-13

Input/Output Equipment
Installation Manual—Physical Planning

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About This Publication

This manual contains information needed for planning the physical installation of IBM input/output (I/O) devices that attach to mid- to large-scale IBM processors. Some input output devices have separate physical planning manuals. This manual provides references to the titles of those manuals.

What Is Included in This Publication

This publication contains the following chapters and appendices:

Who Should Use This Publication

This publication is for IBM customers and those who assist in planning the installation of IBM input/output equipment, such as architects, building planners, engineering consultants, electricians, and data processing and facilities managers. In planning the installation, the customer may request the assistance of an IBM Installation Planning Representative.

Where to Find More Information

This manual is a companion to and should be used with the following manuals:

- *IBM System/360 Installation Manual—Physical Planning*, GC22-6820
- *IBM System/370 Installation Manual—Physical Planning*, GC22-7004
- *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072
- *IBM System/370 3090 Processor Complex: Installation Manual—Physical Planning*, GC22-7074
- *IBM ES/3090 Processor Complex: Installation Manual—Physical Planning*, GC22-7080
- *IBM Enterprise System/9000 Planning for System Installation*, GA24-4187
- *IBM Enterprise System/9000 Models 180, 190, 210, 260, 320, 440, 480, 490, 570, and 610 Installation Manual—Physical Planning*, GC22-7084
- *IBM Enterprise System/9000 Models 330, 340, 500, 520, 580, 620, 640, 660, 720, 740, 820, 860, and 900 Installation Manual—Physical Planning*, GC22-7083
- *IBM 4321, 4331, 4361 Processors Installation Manual—Physical Planning*, GA33-1577
- *IBM 4341 and 4381 Processors Installation Manual— Physical Planning*, GA24-4017
- *IBM Enterprise System/9370 Installation Manual—Physical Planning*, GA24-4031

For the input/output products, 1xxx and 2xxx series, not listed in this manual, see *IBM Input/Output Equipment Reference Installation Manual—Physical Planning: System/360, System/370, 4300 Processors*, GC22-7069.

The following publications may be used in conjunction with this manual depending on the specific system configuration:

- *IBM System/370 Input/Output Configurator*, GA22-7002 (contains I/O device priority data)
- *IBM 3790 Communication System Installation Manual—Physical Planning*, GA27-2769
- *IBM 3270 Information Display System Installation Manual—Physical Planning*, GA27-2787
- *Assembly of Coaxial Cable and Accessories for Attachment to IBM Products*, GA27-2805

Additional information about specific systems and machines can be found in the following publications:

- *IBM 3750 Switching System Installation Manual—Physical Planning*, GA19-5003
- *IBM 3600 Plant Communication System Installation Manual—Physical Planning*, GA24-3675
- *IBM 8100 Information System Installation Manual—Physical Planning*, GA27-2884
- *IBM Communications Terminals Installation Manual—Physical Planning*, GA27-3006
- *IBM Multiuse Communication Loop Planning and Installation Guide*, GA27-3341

Chapter 1. Machine Specifications and Cabling Schematics

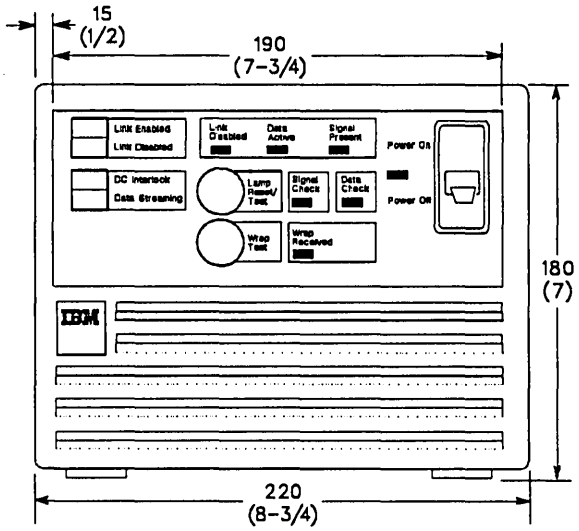
The devices in this section are arranged in numeric order by I/O device, beginning with the 3044 Fiber Optic Channel Extender and ending with the 9345 Direct Access Storage Device. The pages in this section are numbered by I/O device. For example, the pages for the 3044 Fiber Optic Channel Extender are numbered 3044-1 through 3044-8, and the pages for the next I/O device (the 3088 Multi-system Communication Unit) are numbered 3088-1 and 3088-2.

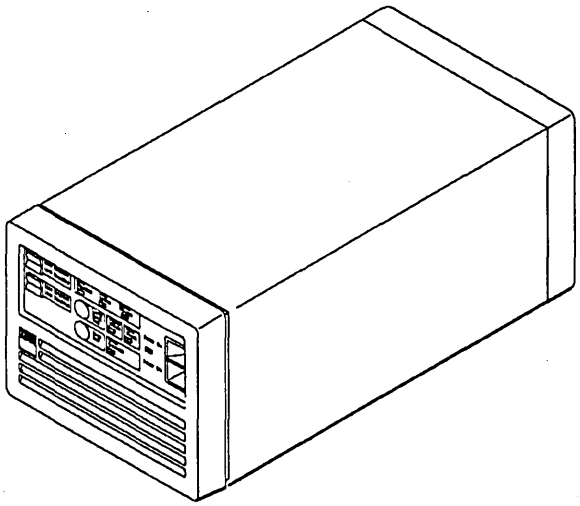
Standard symbols are used in the plan view diagrams.

3044 Fiber Optic Channel Extender Link Models C01 and D01

Front View (Not to Scale)

English measurements are shown in parentheses.





Specifications

Dimensions:

	Front	Side	Height
mm	220	455	180
(inches)	(8-3/4)	(18)	(7)

Service Clearances:

	Front	Rear	Right	Left
mm	255	255	—	—
(inches)	(10)	(10)	(—)	(—)

Weight: 11.5 kg (25 lb)

Heat Output: 120 W (400 BTU/hr) to air (maximum)

Airflow: 1 m^3/min (30 cfm)

Power Requirements:

kVA	0.12 (maximum)
Phases	1
Plug	NEMA 5-15P
Receptacle	NEMA 5-15R
Voltage	120 (50/60 Hz)
Power Cord Style	G1
Length	2.7 m (9 ft)

Note: The power cord to this unit has a separate grounding conductor. Power provided to this unit must also provide a separate grounding conductor.

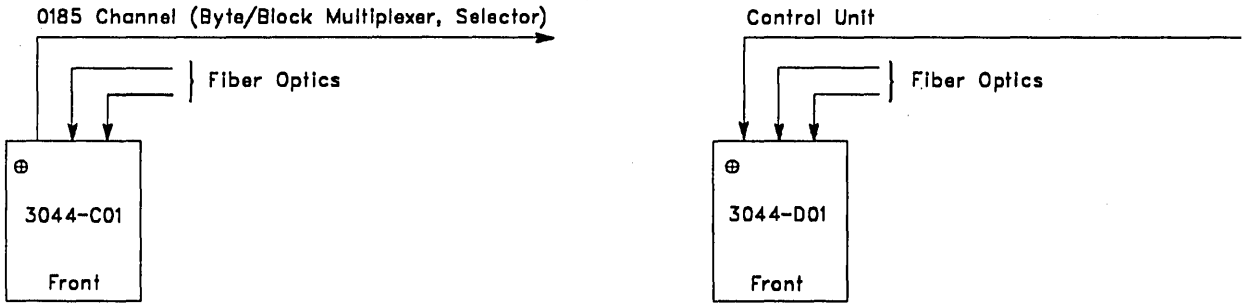
Environment, Operating:

Temperature	10°C-40.6°C (50°F-105°F)
Rel Humidity	8%-80%
Max Wet Bulb	26.7°C (80°F)

Environment, Nonoperating:

Temperature	10°C-51.7°C (50°F-125°F)
Rel Humidity	8%-80%
Max Wet Bulb	26.7°C (80°F)

3044 Fiber Optic Channel Extender Link Models C01 and D01 Cabling Schematic

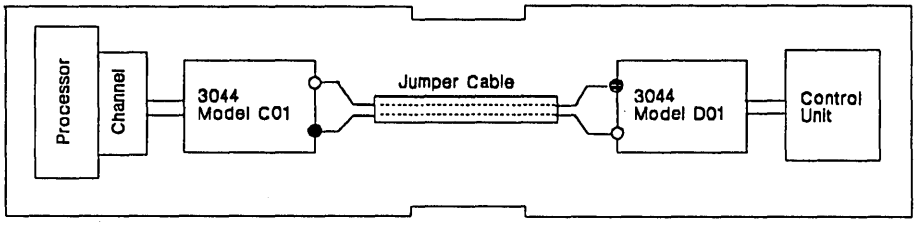


Group No.	*No. of Cables*	*From*	*To*	*Max Length m (ft)*	*Cable Ordering*
0185	2	3044-C01	Channel	61 (200)	Provided by IBM
0185	2	Control Unit	3044-D01	122 (400)	Supplied with control unit

Note: Group 3920 cables may be used if available. For cable distance limitations, see *IBM 3044 Fiber-Optic Channel Extender Link Product Description*, GA22-7097.

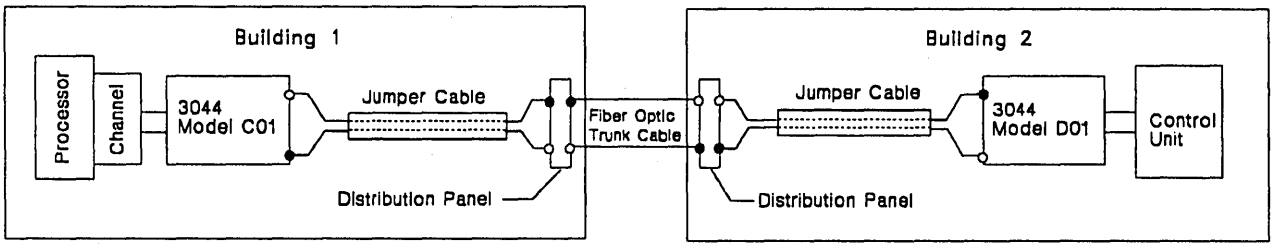
Minimum cable length from a 3800 Model 3 to a 3044 Model D01 is 30 m (100 ft).

Typical Configuration in One Building



Legend:
o Indicates white-capped connector on jumper cable
• Indicates completely black connector on jumper cable

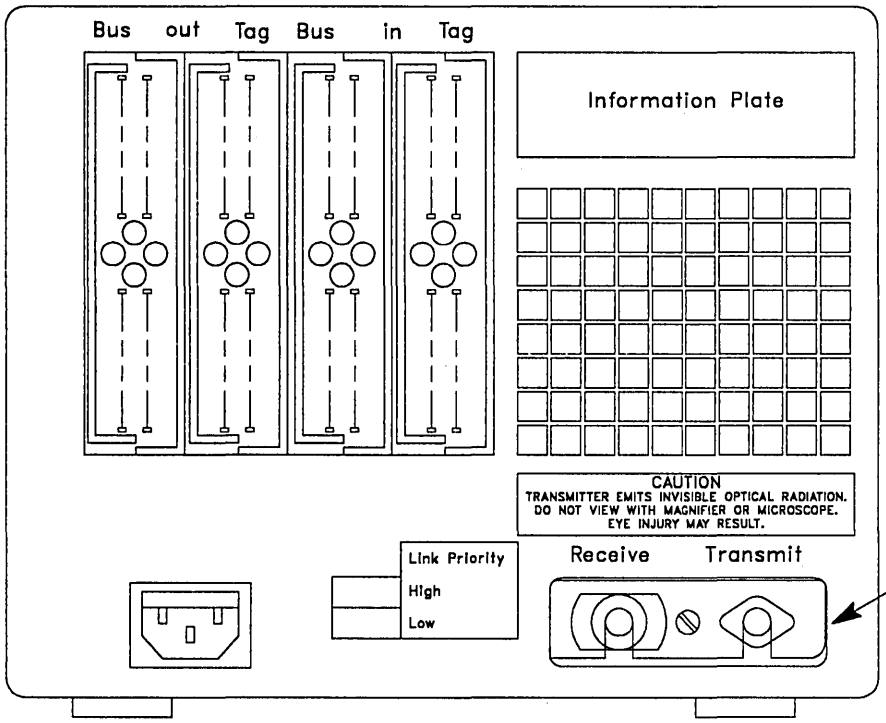
Typical Configuration involving Two Buildings

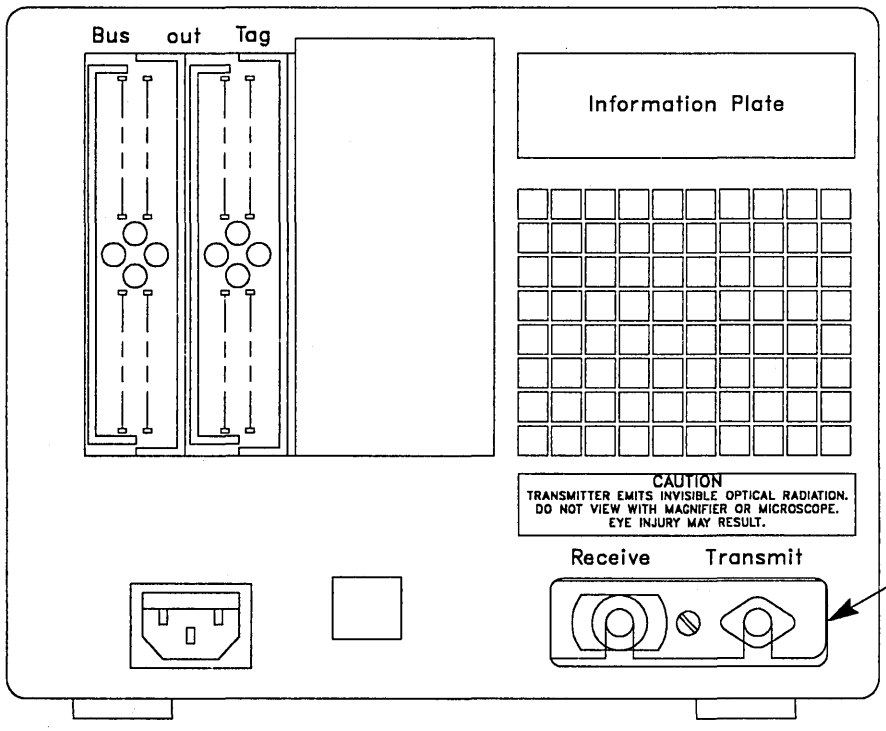


Legend:
o Indicates white-capped/labeled connector
• Indicates completely black connector

Note: See *IBM 3044 Fiber-Optic Channel Extender Link: Fiber-Optic Cable Planning and Installation Guide*, GC22-7073, for additional information.

3044 Fiber Optic Channel Extender Link Models C01 and D01 Rear Panels

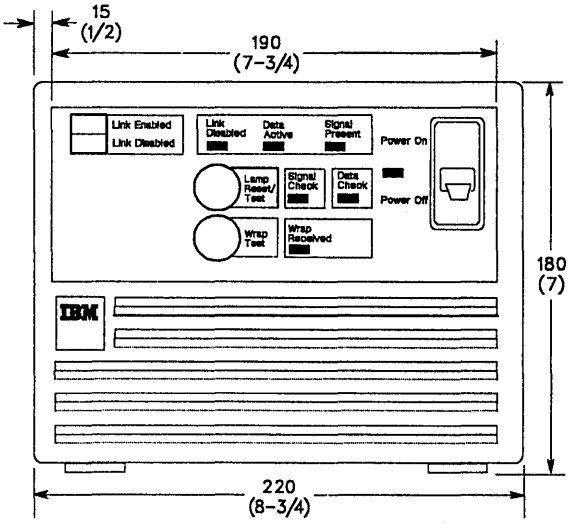


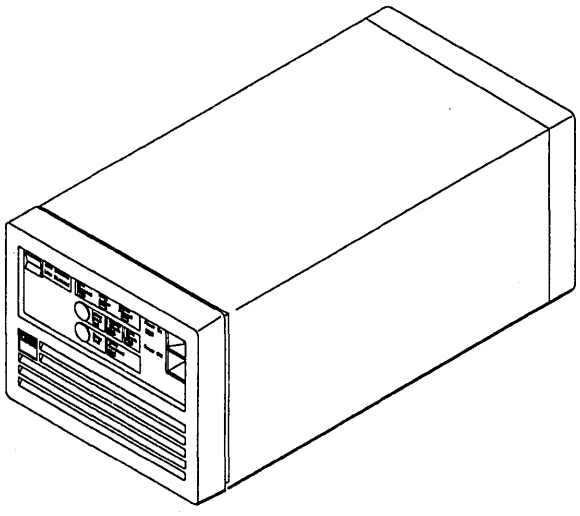


3044 Fiber Optic Channel Extender Link Models C02 and D02

Front View (Not to Scale)

English measurements are shown in parentheses.





Specifications

Dimensions:

	Front	Side	Height
mm	220	455	180
(inches)	(8-3/4)	(18)	(7)

Service Clearances:

	Front	Rear	Right	Left
mm	255	255	—	—
(inches)	(10)	(10)	(—)	(—)

Weight: 13.5 kg (29 lb)

Heat Output: 100 W (350 BTU/hr) to air (maximum)

Power Requirements:

kVA	0.1 (maximum)
Phases	1
Plug	NEMA 5-15P, USA
Receptacle	NEMA 5-15R, USA
Voltage	110/220 (50/60 Hz)
Power Cord Style	G1
Length	2.7 m (9 ft)

Note: IBM supplies a power cord with an attached plug for the power outlet most used in a given country. The power cord to this unit has a separate grounding conductor. Power provided to this unit must also provide a separate grounding conductor.

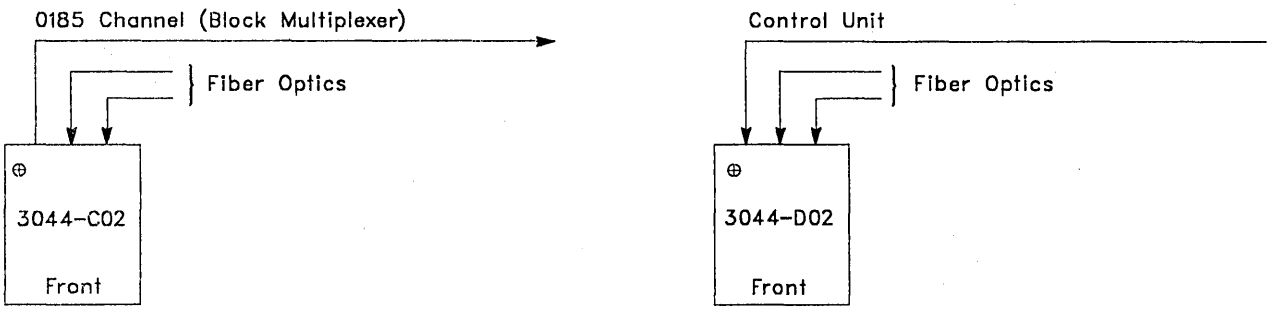
Environment, Operating:

Temperature	10°C-40.6°C (50°F-105°F)
Rel Humidity	8%-80%
Max Wet Bulb	26.7°C (80°F)

Environment, Nonoperating:

Temperature	10°C-51.7°C (50°F-125°F)
Rel Humidity	8%-80%
Max Wet Bulb	26.7°C (80°F)

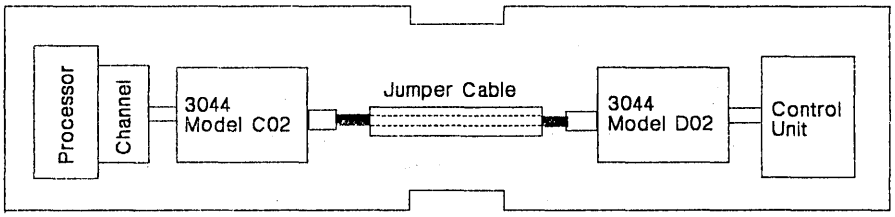
3044 Fiber Optic Channel Extender Link Models C02 and D02 Cabling Schematic



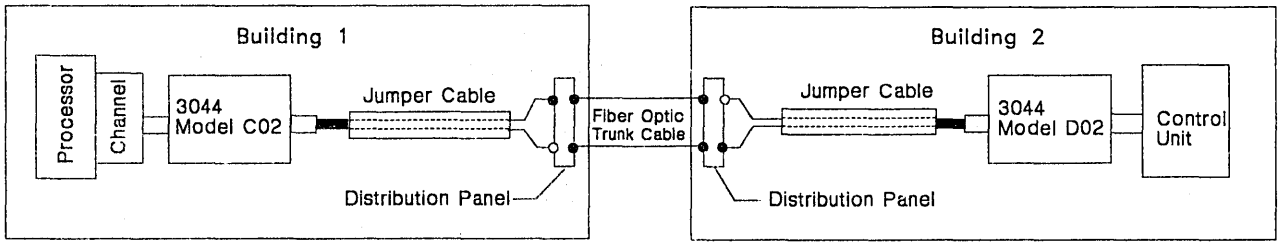
Note: Signal cables for the 3044 Model C02 can be ordered up to a length of 122 meters (400 feet). Signal cables for the 3044 Model D02 are not provided; they must be supplied by the customer. For cable distance limitations, see *IBM 3044 Fiber Optic Channel Extender Link Models C02 and D02 Product Description*, GA22-7129.

Group No.	*No. of Cables*	*From*	*To*	*Max Length m (ft)*	*Cable Ordering*
0185	2	3044-C02	Channel	122 (400)	Provided by IBM
0185	2	Control Unit	3044-D02	122 (400)	Supplied with control unit

Typical Configuration in One Building



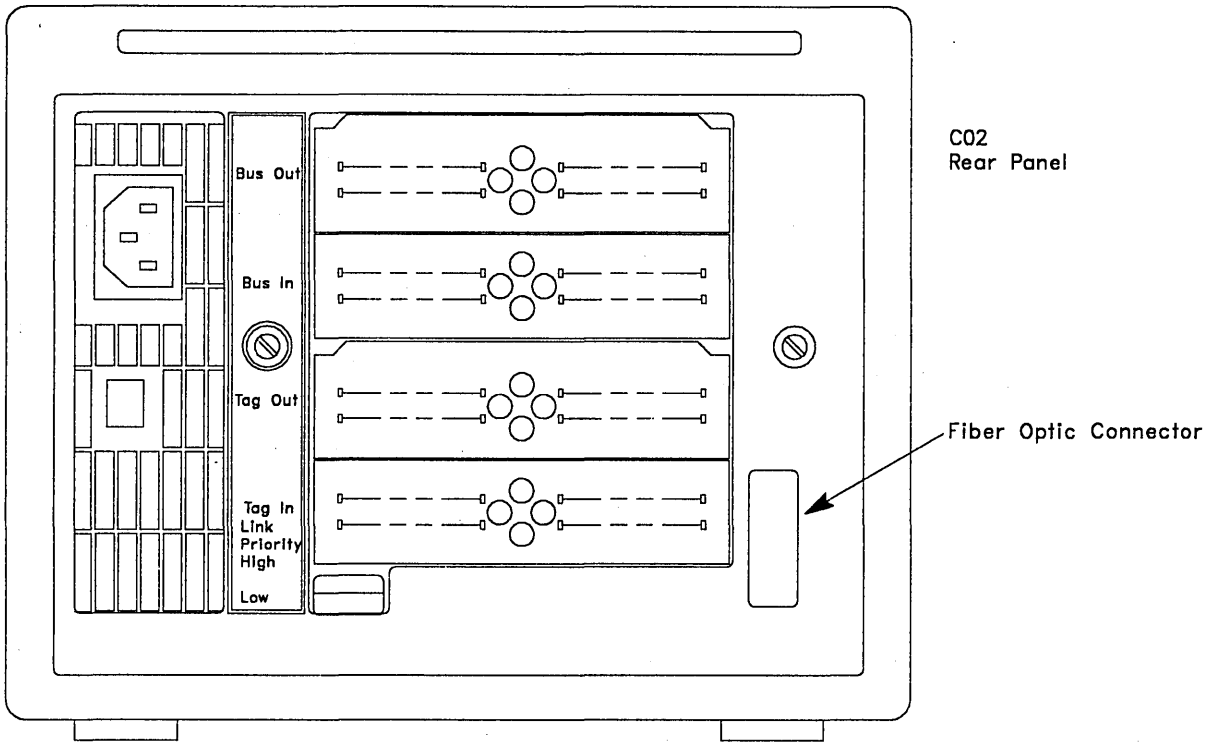
Typical Configuration in Two Buildings

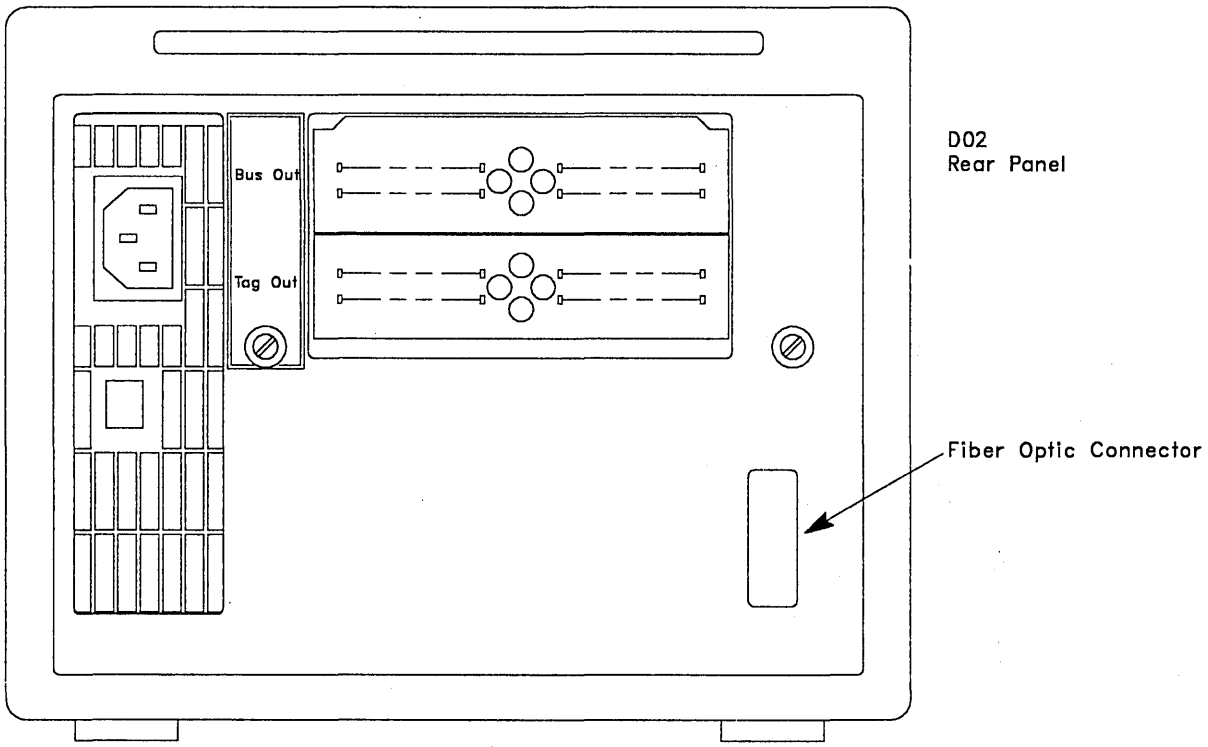


Legend:
o Indicates white-capped/labeled connector
• Indicates completely black connector

Note: See *IBM Fiber Optic Channel Link Planning and Installation Guide*, GA23-0367.

3044 Fiber Optic Channel Extender Link Models C02 and D02 Rear Panels

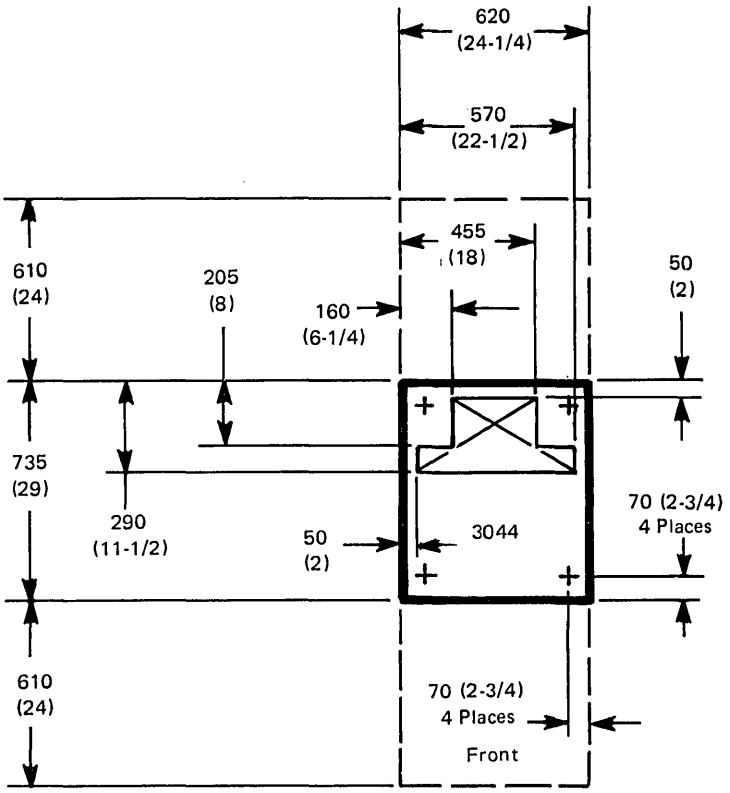




3044 FIBER OPTIC CHANNEL EXTENDER LINK ENCLOSURE

PLAN VIEW (Not to Scale)

English measurements are shown in parentheses.



SPECIFICATIONS

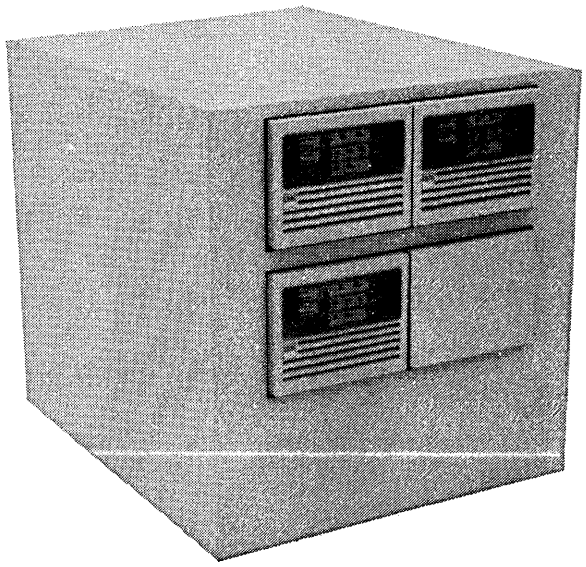
Dimensions:

	Front	Side	Height
mm	620	735	645
(inches)	(24-1/4)	(29)	(25-1/2)

Service Clearances:

	Front	Rear	Right	Left
mm	610	610	–	–
(inches)	(24)	(24)	(–)	(–)

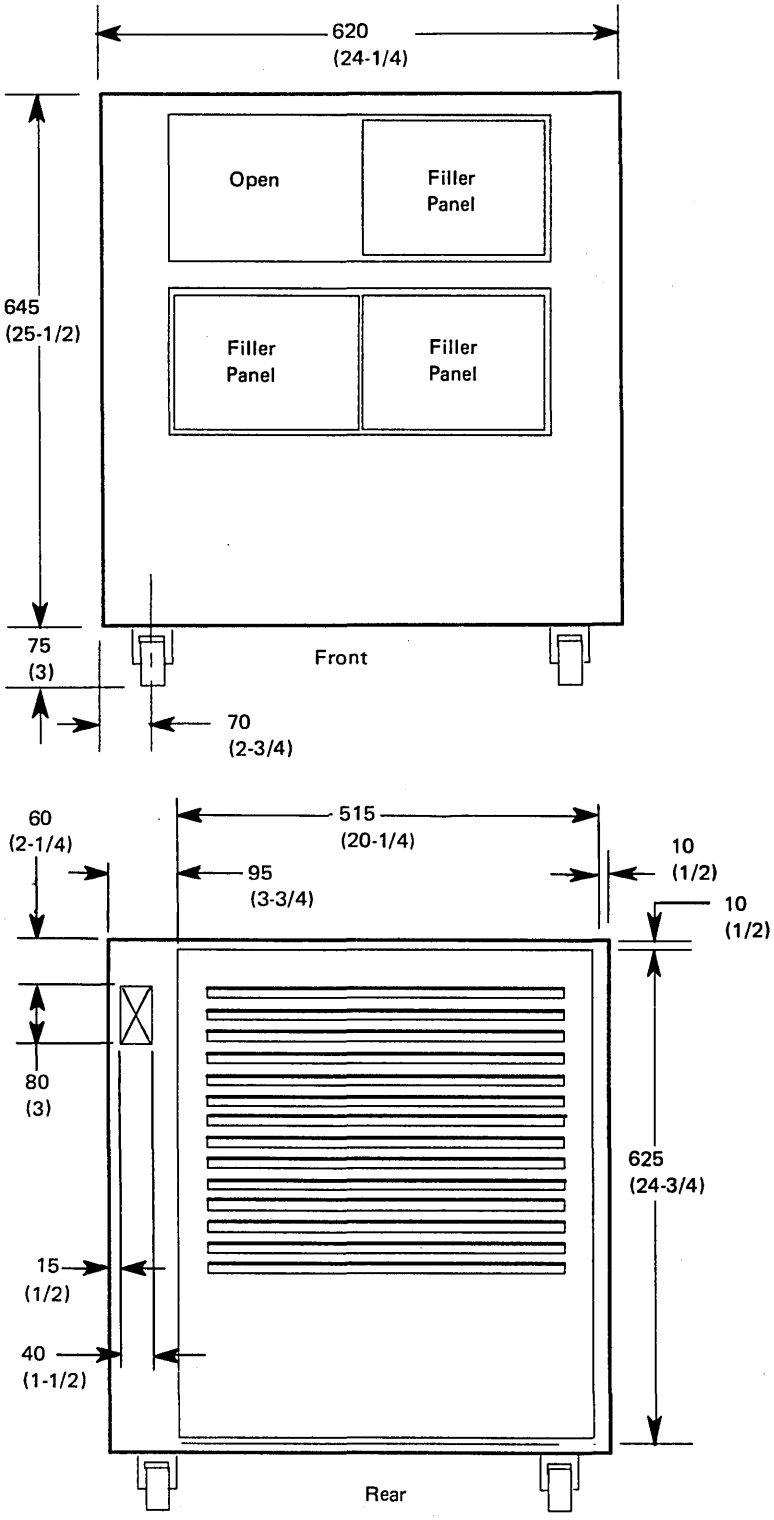
Weight: 60 kg (125 lb)



3044 FIBER OPTIC CHANNEL EXTENDER LINK ENCLOSURE

PLAN VIEW (Not to Scale)

English measurements are shown in parentheses.

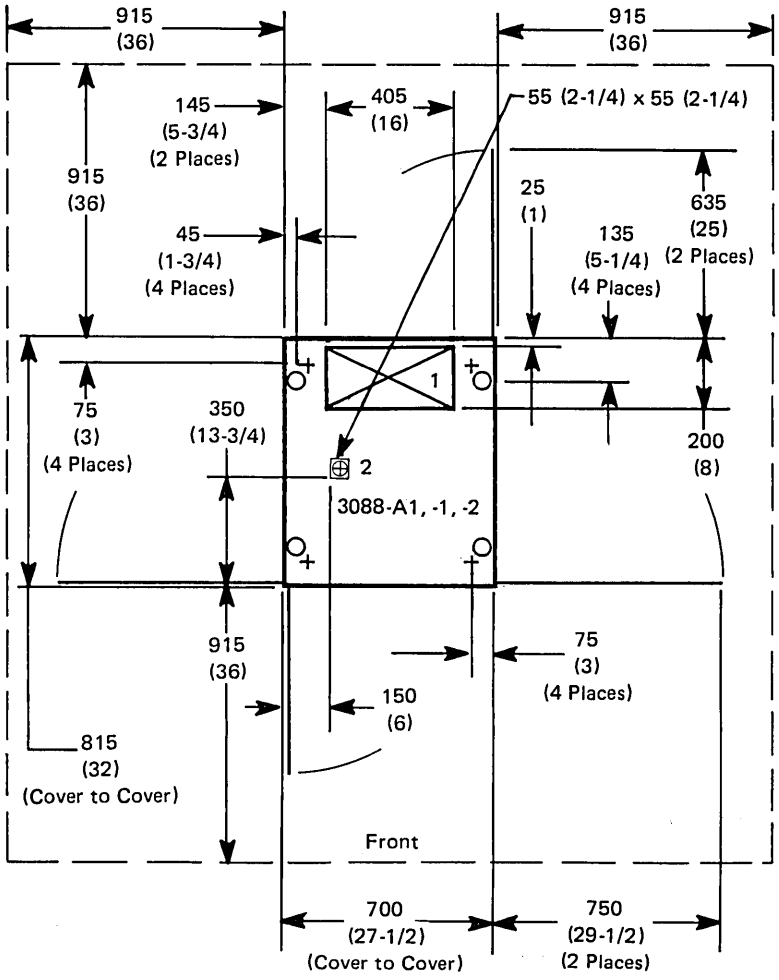


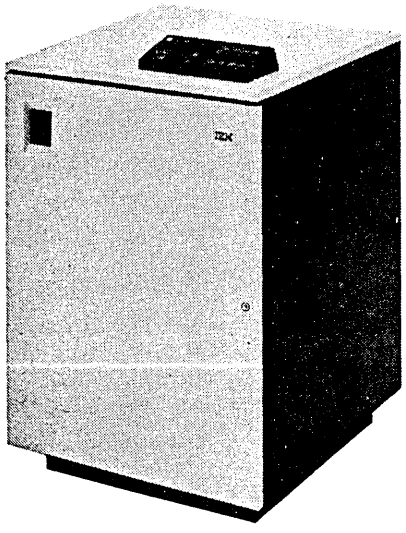
Note: The rear cover is hinged with a 90° swing and is removable. A removable access panel is located at the rear of the channel extender link enclosure for overhead installation of fiber optic cables.

3088 MULTISYSTEM CHANNEL COMMUNICATION UNIT MODELS A1, 1, AND 2

PLAN VIEW (Metric Scale: 10 mm = 0.25 m)

English measurements are shown in parentheses.





3088 (Design Model)

SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	700	815	1 065
(inches)	(27-1/2)	(32)	(42)

Service Clearances:

	Front	Rear	Right	Left
mm	915	915	915	915
(inches)	(36)	(36)	(36)	(36)

Weight:	*Model A1*	*Model 1*	*Model 2*
kg	245	245	265
(lb)	(540)	(540)	(580)

Heat Output: 1 000 W (3,450 BTU/hr)

Airflow: 7 m^3/min (240 cfm)

Acoustical Data:
For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning,* GC22-7072.

L_{WAd}		$<L_{pA}>_m$		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
6.7	6.7	52.0	52.0	No	Yes

Power Requirements:

kVA	1.2 (50/60 Hz)
Phases	1
Plug	R&S, 3720U-2
Connector	R&S, 3913U-2
Receptacle	R&S, 3743U-2

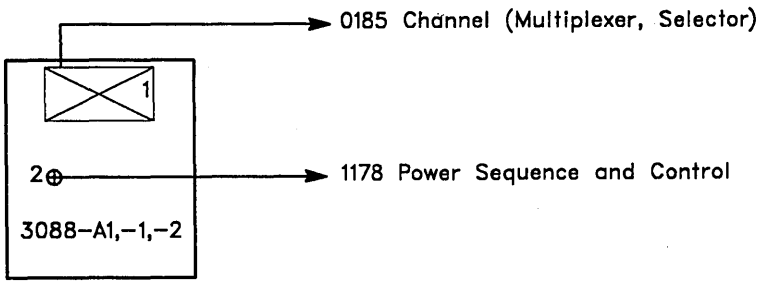
Environment, Operating:

Temperature	15.6°C-32.2°C (60°F-90°F)
Rel Humidity	20%-80%
Max Wet Bulb	22.8°C (73°F)

Environment, Nonoperating:

Temperature	10°C-43°C (50°F-110°F)
Rel Humidity	8%-80%
Max Wet Bulb	26.9°C (80°F)

3088 MULTISYSTEM CHANNEL COMMUNICATION UNIT MODELS A1, 1, AND 2 CABLING SCHEMATIC



Group No.	Frame Exit	Connector ID	Max Length m	Max Length (ft)	Notes	Comments
0185	0101	00001	122	(400)	1,2,3,4,6,7	Bus/tag
0185	0101	00003	122	(400)	1,2,3,4,6,7	Bus/tag
0185	0101	00005	122	(400)	2,3,4,6,7	Bus/tag
0185	0101	00007	122	(400)	2,3,4,6,7	Bus/tag
0185	0101	00009	122	(400)	3,4,6,7	Bus/tag
0185	0101	00011	122	(400)	3,4,6,7	Bus/tag
0185	0101	00013	122	(400)	3,4,6,7	Bus/tag
0185	0101	00015	122	(400)	3,4,6,7	Bus/tag
1178	0102	00017	122	(400)	1,2,3,5,6	Pwr ctrl
1178	0102	00019	122	(400)	1,2,3,5,6	Pwr ctrl
1178	0102	00021	122	(400)	2,3,5,6	Pwr ctrl
1178	0102	00023	122	(400)	2,3,5,6	Pwr ctrl
1178	0102	00025	122	(400)	3,5,6	Pwr ctrl
1178	0102	00027	122	(400)	3,5,6	Pwr ctrl
1178	0102	00029	122	(400)	3,5,6	Pwr ctrl
1178	0102	00031	122	(400)	3,5,6	Pwr ctrl

Notes:

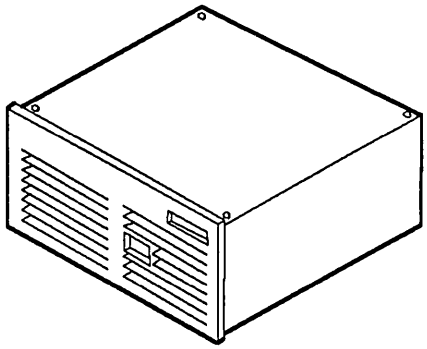
1. For 3088 Model A1 (two-way) configurations. A maximum length of 23 meters (75 feet) for each cable group will be provided without charge at initial installation of each Model A1.
2. For 3088 Model 1 (four-way) configurations. A maximum length of 23 meters (75 feet) for each cable group will be provided without charge at initial installation of each Model 1.
3. For 3088 Model 2 (eight-way) configurations. A maximum length of 31 meters (100 feet) for each cable group will be provided without charge at initial installation of each Model 2.
4. When a 3088 is attached to channel 5, B, or F (lower priority block multiplexer channel) and when short cable lengths (6.1 meters or 20 feet) are installed, the high-speed-transfer-mode data rate limiter must be set to 1.2 megabytes per second to avoid direct-access storage device (DASD) overrun problems on higher priority block multiplexer channels on the same 303X director.
5. Power sequence and control cables are optional.
6. The 121.9-meter (400-foot) maximum length must be reduced by 5 meters (15 feet) for each control unit connected between the system channel and the 3088. For detailed information, see the *3088 Multisystem Channel Communication Unit Product Description*, GA22-7081.
7. Channels that operate at a speed of 4.5 megabytes per second and communicate through the 3088 require cable group 0185.

3172 Interconnect Controller

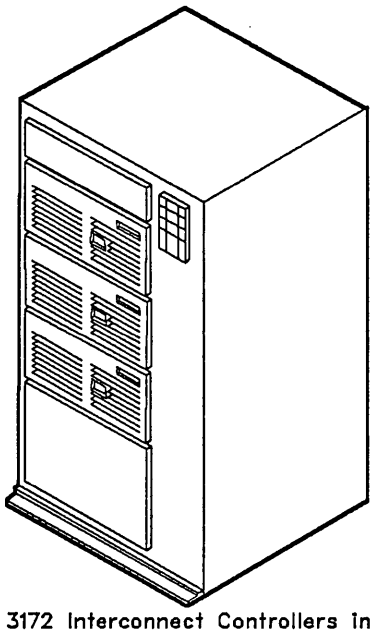
Front View (Not to Scale): English measurements are shown in parentheses.

The 3172 Interconnect Controller may be installed in an IBM 9309 Rack or in an EIA 19-inch rack. The 3172 requires seven EIA units of space. Provide the same service clearances for an EIA rack as for a 9309 Rack.

9309 Rack Installation: A maximum of three 3172s may be installed in a 9309 Rack Model 2. See the *IBM 9309 Rack Enclosure General Information and Site Preparation Guide (Models 1 and 2)*, GA24-4103, for additional information.



3172 Interconnect Controller

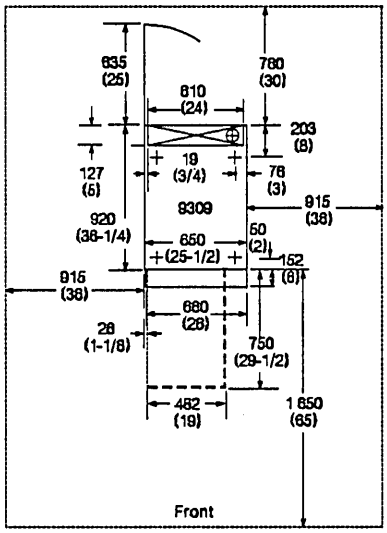


3172 Interconnect Controllers in a 9309 Rack

9309 Rack:

Plan View (Not to Scale): English measurements are shown in parentheses.

Use IBM Physical Planning Template GX24-4046 (English Scale) or GX24-4047 (Metric Scale).



Specifications:

Dimensions:

	Front	Side	Height
3172			
mm	445	485	250
(in.)	(17-½)	(19-¼)	(9-¾)
9309			
mm	660	920	1 580
(in.)	(26)	(36-¼)	(62-¼)

Service Clearances:

9309

	Front	Rear	Right	Left
mm	1 650	760	915	915
(in.)	(65)	(30)	(36)	(36)

Weight:

3172*	14 kg (31 lb)
9309	155 kg (340 lb)

Heat Output:

3172*	250 W (850 BTU/hr)
9309	60 W (200 BTU/hr)

Airflow:*

3172	2.0 m³/min. (70 cfm)
9309	N/A - convection cooling

Airflow is from front to rear. If installed in a rack with a rear door, the door must have louvres or slots for air exit.

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>m$		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
5.7	5.7	44.0	44.0	No	No

Power Requirements:

	3172*	9309
kVA	0.7	1.0
Voltage	200-240	200-240
Phases	1	1 or 3
Hz	50/60	50/60

* Specifications given are for one 3172. For installation in a 9309 Rack, multiply the kVA requirement by the number of 3172s and add to the rack specification.

See the *IBM 9309 Rack Enclosure General Information and Site Preparation Guide (Models 1 and 2)*, GA24-4103, for 3-phase power imbalance information.

Power Cord Style:

See "3172 Interconnect Controller Power Cord Specifications."

Power Plug and Receptacle (USA and Canada):

3172	
Plug	If the 3172 is purchased without a 9309 Rack, a Russellstoll 3720U-2 plug or NEMA L6-15P twistlock plug is provided for the United States and Canada; it is shipped without a plug for other countries. If purchased with a 9309 Rack, the 3172 is provided with a plug for connection to the 9309 power control compartment outlet.
Receptacle	Russellstoll, 3743U-2 or NEMA L6-15R
9309	
Plug	NEMA L6-30P twistlock or Russellstoll 3750 watertight plug for the United States and Canada.
Receptacle	Russellstoll, 3933/3753 or NEMA L6-30R

Power Plug and Receptacle (All Other Locations):

See the *IBM 9309 Rack Enclosure General Information and Site Preparation Guide (Models 1 and 2)*, GA24-4103, for plug provided in other countries.

Power Cord Specifications

60 Hz	Cable Length	Cable Nominal OD	Number of Shields	Number of Wires	Nominal OD	AWG No. (mm^2)
All 60 Hz except Chicago, Illinois, USA; Japan	4.3 m (14 ft)	7.3 mm (0.287 in.)	0	3	1.15 mm (0.043 in.)	17 (1.0)
60 Hz Chicago, Illinois, USA	1.83 m (6 ft)	7.3 mm (0.287 in.)	0	3	1.15 mm (0.043 in.)	17 (1.0)

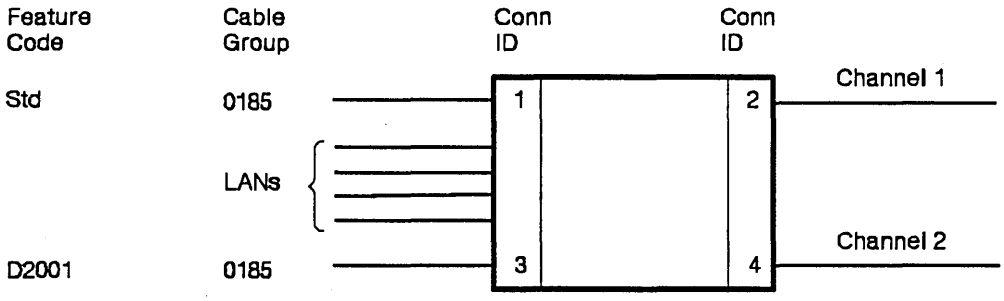
Environment, Operating:

Temperature: 10°C to 40°C (50°F to 105°F)
Relative Humidity: 8% to 80%
Max Wet Bulb: 27°C (80°F)

Environment, Nonoperating:

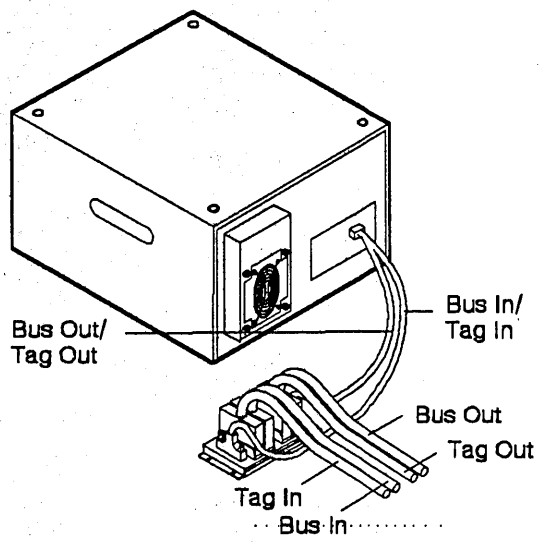
Temperature: 10°C to 51.7°C (50°F to 125°F)
Relative Humidity: 8% to 80%
Max Wet Bulb: 27°C (80°F)

Cabling Schematic



Notes:

1. The 3172 must have no more than 122 meters (400 feet) of channel cable between it and the host computer. If there are other channel-attached devices located between the 3172 and the host, subtract 4.5 meters (15 feet) from the maximum allowable distance for each attached device.
2. Up to four LAN adapters can be installed in each 3172. See the materials provided with the LAN adapters for information about the required cables.



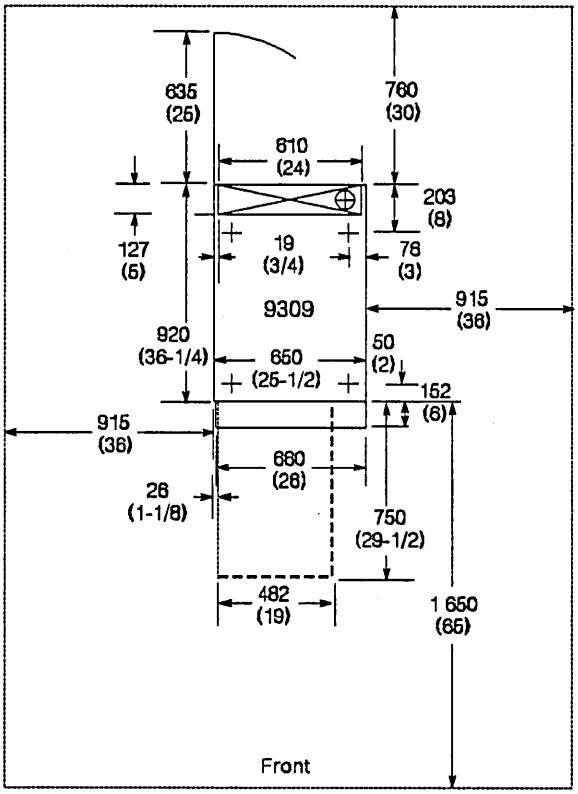
Channel Cable Attachment:

A 3172 purchased without the 9309 Rack is shipped with Y cables that connect to the channel cables. Cables are either 1.8 m (6 ft) or 2.7 m (9 ft) long. When the 3172 is purchased with the 9309 Rack, channel cables attach to a tailgate installed at the rear of the 9309 Rack.

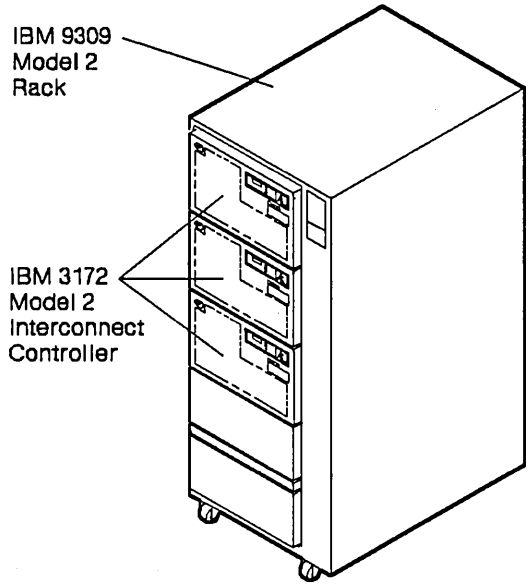
3172 Interconnect Controller Model 2

Plan View (Not to Scale): English measurements are shown in parentheses.

Use IBM Physical Planning Template GX24-4046 (English Scale) or GX24-4047 (Metric Scale).



Front View (Not to Scale)



9309 Rack Installation: The 3172 Interconnect Controller is installed in an IBM 9309 Rack. The 3172 requires 7 EIA units of space.

A maximum of three 3172s may be installed in a 9309 Rack Model 2. For more information about the 9309 rack, see the *IBM 9309 Rack Enclosure General Information and Site Preparation Guide (Models 1 and 2)*, GA24-4103.

Specifications: Dimensions:

	Front	Side	Height
3172			
mm	483	680	306
(in.)	(19.0)	(26.8)	(12.0)
9309			
mm	660	920	1 580
(in.)	(26)	(36-¼)	(62-¼)

Service Clearances:

9309	Front	Rear	Right	Left
mm	1 650	760	915	915
(in.)	(65)	(30)	(36)	(36)

Weight:

3172*	14 kg (31 lb)
9309	155 kg (340 lb)

Heat Output:

3172*	630 W (2100 BTU/hr)
9309	60 W (200 BTU/hr)

Airflow:

3172*	5.3 m³/min. (187 cfm)
9309	N/A - convection cooling

Airflow is from front to rear.

Power Requirements:

	3172*	9309
kVA	0.7	1.0
Voltage	200–240	200–240
Phases	1	1 or 3
Hz	50/60	50/60

See the *IBM 9309 Rack Enclosure General Information and Site Preparation Guide (Models 1 and 2)*, GA24-4103, for 3-phase power imbalance information.

* Specifications given are for one 3172. For installation in a 9309 Rack, multiply the values by the number of 3172s and add to the rack specification.

Acoustical Data:

Noise-emission levels for three 3172 Model 2s installed in a 9309 Rack are shown. Noise-emission levels are the same for 50-Hz and 60-Hz units.

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

L_{WAd}		L_{pAm}		$<L_{pA}>_m$	
Operating (B)	**Idling (B)**	**Operating (dB)**	**Idling (dB)**	**Operating (dB)**	**Idling (dB)**
6.5	6.5	N/A	N/A	49.0	49.0

Power Plug and Receptacle (USA and Canada):

3172	
Plug	The 3172 is provided with a plug for connection to the 9309 power control compartment outlet.
9309	
Plug	NEMA L6-30P twistlock or Russellstoll 3750 watertight plug for the United States and Canada.
Receptacle	Russellstoll, 3933/3753 or NEMA L6-30R

Power Plug and Receptacle (All Other Locations):

See the *IBM 9309 Rack Enclosure General Information and Site Preparation Guide (Models 1 and 2)*, GA24-4103, for plugs provided in other countries.

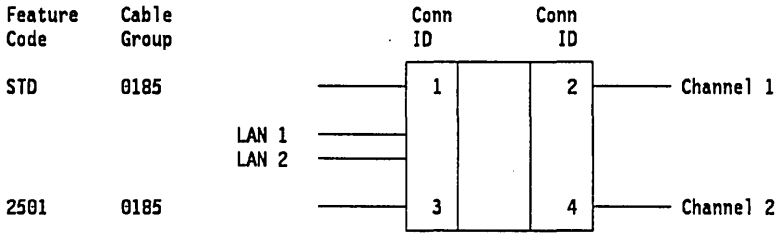
Environment, Operating:

Temperature: 10°C to 40°C (50°F to 105°F)
Relative Humidity: 8% to 80%
Max Wet Bulb: 27°C (80°F)

Environment, Nonoperating:

Temperature: 10°C to 51.7°C (50°F to 125°F)
Relative Humidity: 8% to 80%
Max Wet Bulb: 27°C (80°F)

Cabling Schematic



Notes:

1. The 3172 must have no more than 122 meters (400 feet) of channel cable between it and the host computer. If there are other channel-attached devices located between the 3172 and the host, subtract 4.5 meters (15 feet) from the maximum allowable distance for each attached device.
2. Up to two LAN adapters can be installed in each 3172. For information on the required cables, see the *IBM 3172 Interconnect Controller Planning Guide*, GA27-3867.

Channel Cable Attachment:

A 3172 purchased without the 9309 Rack is shipped with Y cables that connect to a tailgate installed at the rear of the 9309 rack. Cables are either 1.8 m (6 ft) or 2.7 m (9 ft) long. Channel cables attach to the tailgate installed at the rear of the 9309 Rack.

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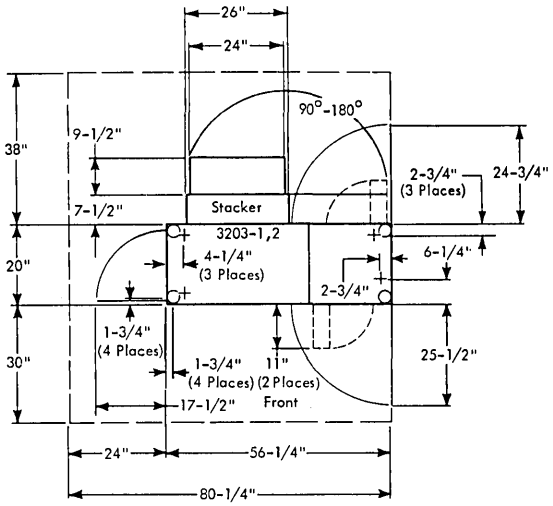
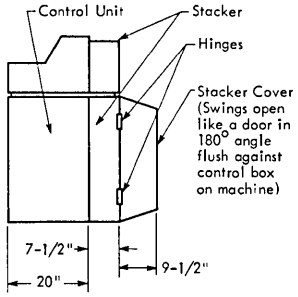
3203 PRINTER MODELS 1 AND 2

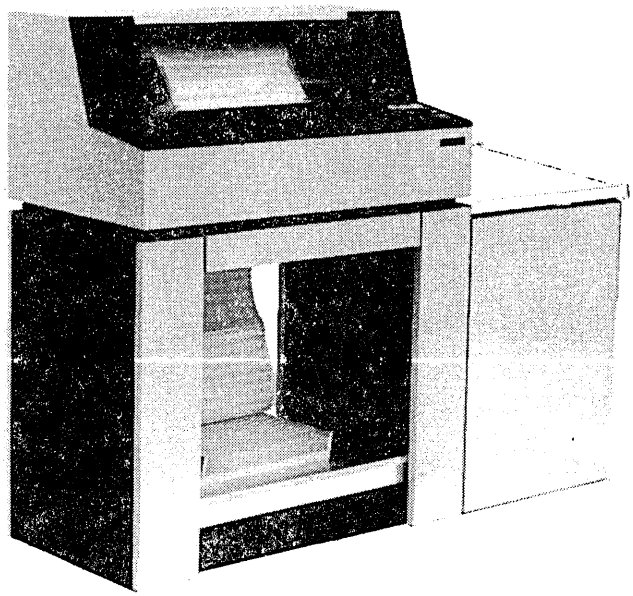
PLAN VIEW (English Scale: 1/4 in. = 1 ft)



Note: No external cables are required for use with 3115-0, 3115-2, 3125-0, or 3125-2.



Side View



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	56-1/4	20	46-1/4
(cm)	(143)	(51)	(117)

Service Clearances:

	F	R	Rt	L
Inches	30	38	0	24
(cm)	(76)	(97)	(0)	(61)

Weight: 800 lb (370 kg)

Heat Output: 6,200 BTU/hr (1 600 kcal/hr)

Airflow: 350 cfm (10 m^3/min)

Power Requirements:*	*50 Hz*	*60 Hz*
kVA	2.3	2.1
Phases	3	3

Environment, Operating:

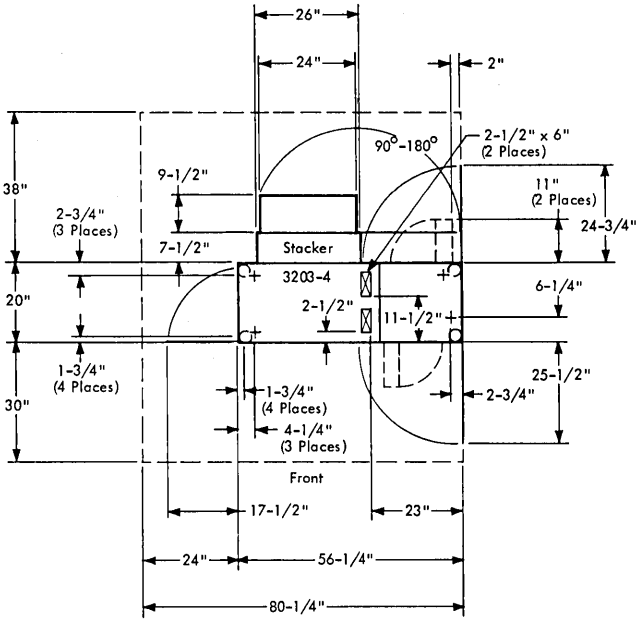
Temperature	60°F-100°F (16°C-38°C)
Rel Humidity	8%-80%
Max Wet Bulb	73°F (23°C)

Notes:

* Powered from and abutted to 3115-0, 3115-2, 3125-0, or 3125-2 when SF 4650 is installed.

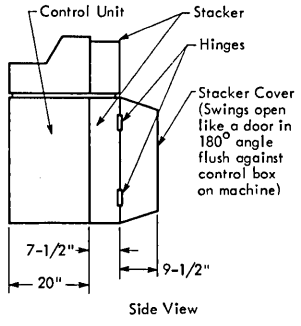
3203 PRINTER MODEL 4

PLAN VIEW (English Scale: 1/4 in. = 1 ft)

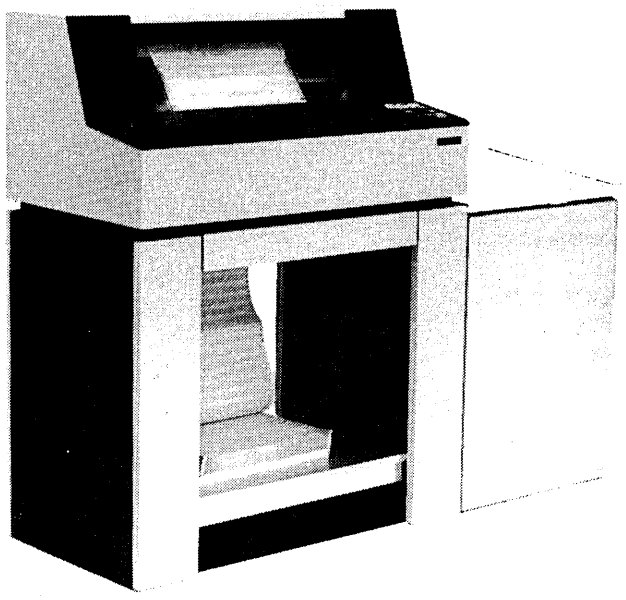


Notes:

1. Route cables through a single 3" x 7" raised-floor cutout located midway between the two 2-1/2" x 6" cable exits shown.
2. For cabling information, see 3138 or 3148.



Side View



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	56-1/4	20	46-1/4
(cm)	(143)	(51)	(117)

Service Clearances:

	F	R	Rt	L
Inches	30	38	0	24
(cm)	(76)	(97)	(0)	(61)

Weight: 800 lb (370 kg)

Heat Output: 6,200 BTU/hr (1 600 kcal/hr)

Airflow: 350 cfm (10 m^3/min)

Power Requirements: *	*50 Hz*	*60 Hz*
kVA	2.3	2.1
Phases	3	3

Environment, Operating:

Temperature	60°F-100°F (16°C-38°C)
Rel Humidity	8%-80%
Max Wet Bulb	73°F (23°C)

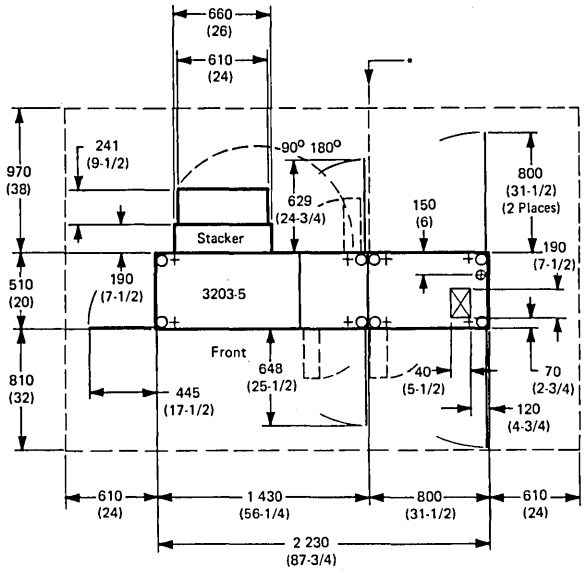
Notes:

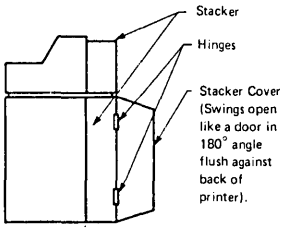
*Powered from 3138 or 3148 when SF 8075 or SF 8076 is installed.

3203 PRINTER MODEL 5

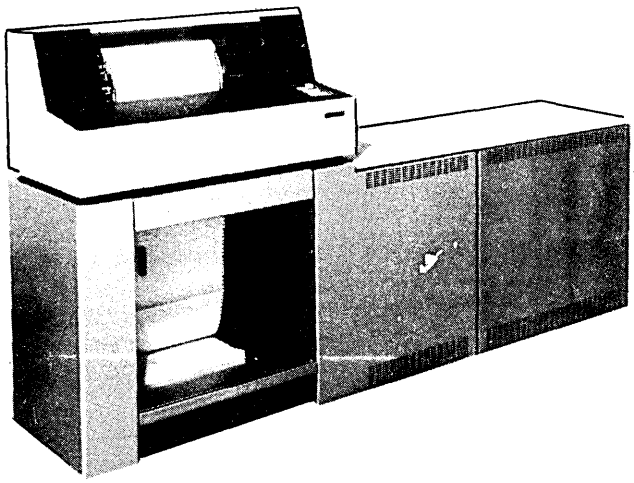
PLAN VIEW (Metric Scale: 10 mm = 0.5 m)

English measurements are shown in parentheses.





Side View



SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	2 230	510	1 170
(inches)	(87-3/4)	(20)	(46-1/4)

Service Clearances:

	Front	Rear	Right	Left
mm	810	970	610	610
(inches)	(32)	(38)	(24)	(24)

Weight: 485 kg (1,070 lb)

Heat Output: 2 400 W (8 150 BTU/hr)

Airflow: 15 m^3/min (530 cfm)

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>_m$		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
8.1	—	64	—	No	No

Power Requirements:	*50 Hz*	*60 Hz*
Voltages	200, 220, 235, 380, 408 V	200, 208, 230 V
kVA	3.0	2.8
Phases **	3	3
Plug		R&S, 3760
Connector		R&S, 3934
Receptacle		R&S, 3754
Power Cord Style (see following page)		

Environment, Operating:

Temperature	16°C-38°C (60°F-100°F)
Rel Humidity	8%-80%
Max Wet Bulb	23°C (73°F)

Notes:

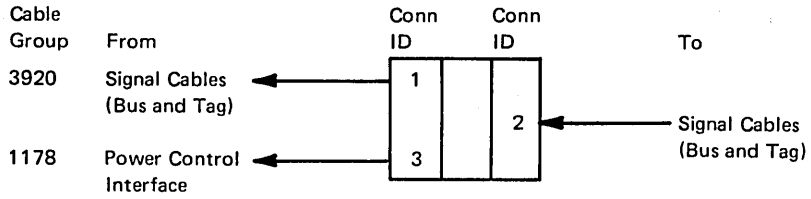
* The machine is separated at this point for shipment.

** Phase load imbalance (approximate) for 380/408 V = R : S : T = 1: 1.9 : 1.

3203 PRINTER MODEL 5 POWER CORD SPECIFICATIONS

	Length	*Cable Nominal OD*	*Number of Shields*	*Conductors*			
				Number	*Nominal OD*	*AWG No.*	*mm²*
All 60 Hz; Japan 50/60 Hz	4.27 m (14 ft) (Chicago – 1.83 m) [6 ft])	15.37 mm (0.605 in.)	0	4	1.6 mm (0.064 in.)	14	
50 Hz (Except Japan)	4.27 m (14 ft)	11.0 mm (0.43 in.)	0	5	1.4 mm (0.055 in.)		1.5

3203 PRINTER MODEL 5 CABLING SCHEMATIC



From 3203

Group No.	*No. of Cables*	*Conn ID*	*Max Length*		*Comments*
			m	*(ft)*	
1178	1	3	46	(150)	Power control interface
3920	2	1	61	(200)	Bus and tag

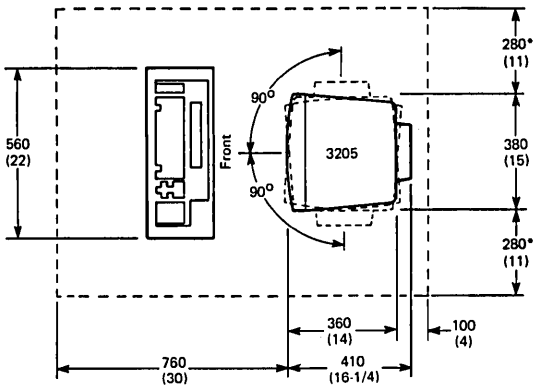
To 3203

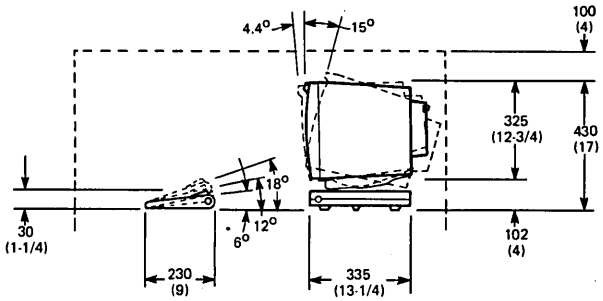
Conn ID	*Comments*
2	Bus and tag

3205 COLOR DISPLAY CONSOLE

PLAN VIEW (Metric Scale: 10 mm = 0.25 m)

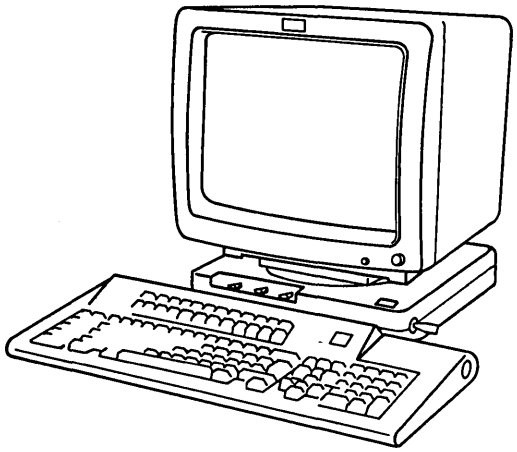
English measurements are shown in parentheses.





Side View

Note: Right and left service clearances can be reduced to the clearances required for 3205 cooling and operating: 100 mm (4 inches) on each side.



SPECIFICATIONS

Dimensions:

	Front	Side*	Height**
mm	380	410	430
(inches)	(15)	(16-1/4)	(17)

Service Clearances:

	Front***	Left	Rear	Right
mm	760	280	100	280
(inches)	(30)	(11)	(4)	(11)

Weight†: 16 kg (35 lb)

Heat Output: 250 W (850 BTU/hr)

Airflow: Natural convection

Power Requirements:

kVA	0.15
Phase	1
Ampacity	15

Environment, Operating:

Temperature	10°C-40°C (50°F-105°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Environment, Nonoperating:

Temperature	5°C-52°C (41°F-125°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Notes:

* Dimension does not include a keyboard. See plan view.

** The 3205 is installed on a customer-supplied desk or table. Recommended keyboard height (measured from the floor to the bottom of the 3205) is 660 mm (26 in.).

*** Each 3205 unit must have a keyboard. Keyboard feature adds 230 mm (9 in.) to front of display and can be moved up to 530 mm (21 in.) away from lower front of display.

† Keyboard feature adds about 4 kg (9 lb) for display console keyboard.

3205 COLOR DISPLAY CONSOLE

Power Cord and Plug Types:

For the United States and Canada, IBM supplies a power cord with an attached plug as follows:

Nonlocking Plug–NEMA 5-15P
125 Vac Rating, Specify Code 9891

The customer must provide the corresponding power outlet receptacle.

For World Trade countries other than Canada, IBM supplies the power cord with attached plug that corresponds to the power outlet receptacle that is most used in that country. Refer to Appendixes B, C, and D in *IBM 3270 Information Display System, Installation Manual–Physical Planning*, GA27-2787.

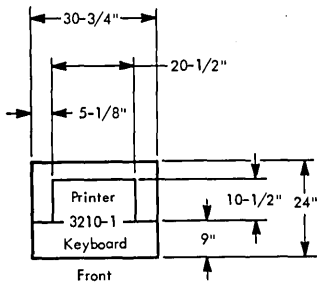
The machine is shipped with a 3-meter (10-foot) power cord unless otherwise specified.

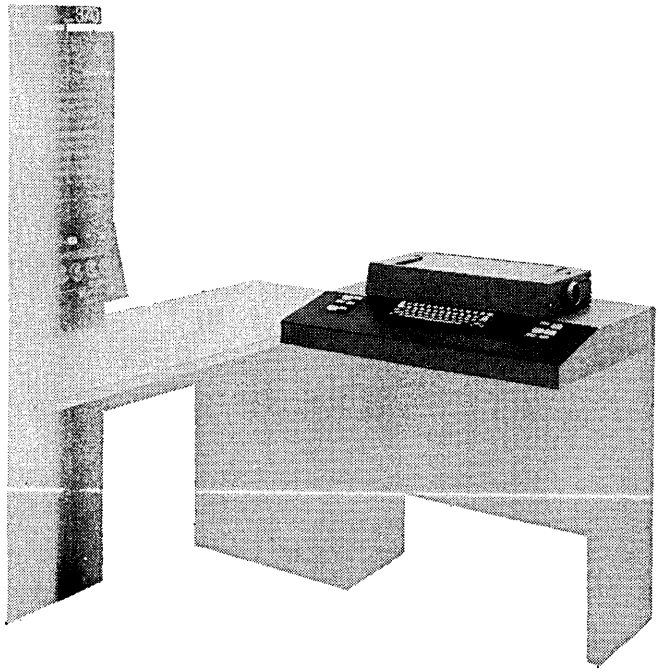
Signal I/O Control Cables:

For communication with the host processor, the 3205 uses a coaxial cable with a connector attached at both ends. This cable, shipped with the host processor, is 7.6 meters (25 feet) long.

3210 CONSOLE PRINTER-KEYBOARD MODEL 1

PLAN VIEW (English Scale: 1/4 in. = 1 ft)





SPECIFICATIONS

Dimensions:

	F	S	H
Inches	30-3/4	24	4*
(cm)	(78)	(61)	(10*)

Service Clearances:

	F	R	Rt	L
Inches	**	**	**	**
(cm)	(**)	(**)	(**)	(**)

Weight: 91 lb*** (42 kg***)

Heat Output: 500 BTU/hr (130 kcal/hr)

Airflow: 0 cfm (0 m^3/min)

Power Requirements:†
kVA 0.16

Environment, Operating:

Temperature	60°F-90°F (16°C-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	78°F (26°C)

Environment, Nonoperating:

Temperature	50°F-110°F (10°C-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	80°F (27°C)

Notes:

* Height from floor is 32 inches (81 cm) when mounted on System/370 console table.

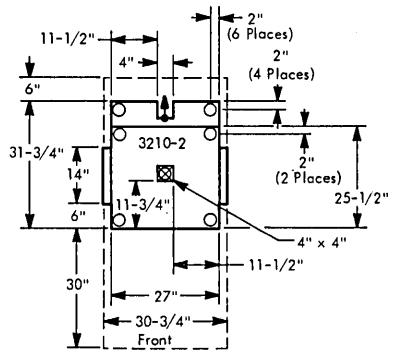
** Provide operator access and sufficient clearance for forms carrier and forms travel.

*** Does not include stand on which machine is placed or forms carrier.

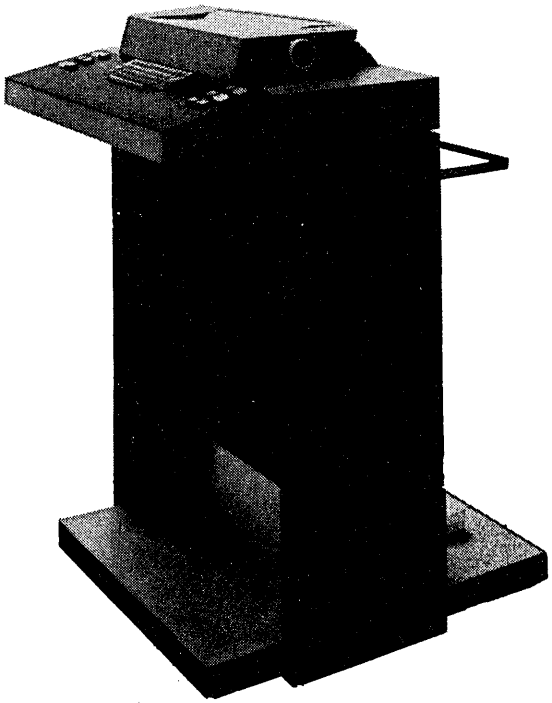
† Powered from System/370 processor.

3210 CONSOLE PRINTER-KEYBOARD MODEL 2

PLAN VIEW (English Scale: 1/4 in. = 1 ft)



Note: For cabling information, see 3145 or 3155.



SPECIFICATIONS

Dimensions: *

	F	S	H
Inches	30-3/4	31-3/4	47
(cm)	(78)	(81)	(119)

Service Clearances:

	F	R	Rt	L
Inches	30	6	**	**
(cm)	(76)	(15)	(**)	(**)

Weight: 275 lb (130 kg)

Heat Output: 500 BTU/hr (130 kcal/hr)

Airflow: 0 cfm (0 m^3/min)

Power Requirements:***

kVA	0.16	
Phases	1	
	115 V	*208/230 V*
Plug	H or P&S, 5266	R&S, FS3720
Connector	H or P&S, 5269	R&S, FS3913
Receptacle	H or P&S, 5261 or 5262	R&S, FS3743

Environment, Operating:

Temperature	60°F-90°F (16°C-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	78°F (26°C)

Environment, Nonoperating:

Temperature	50°F-110°F (10°C-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	80°F (27°C)

Notes:

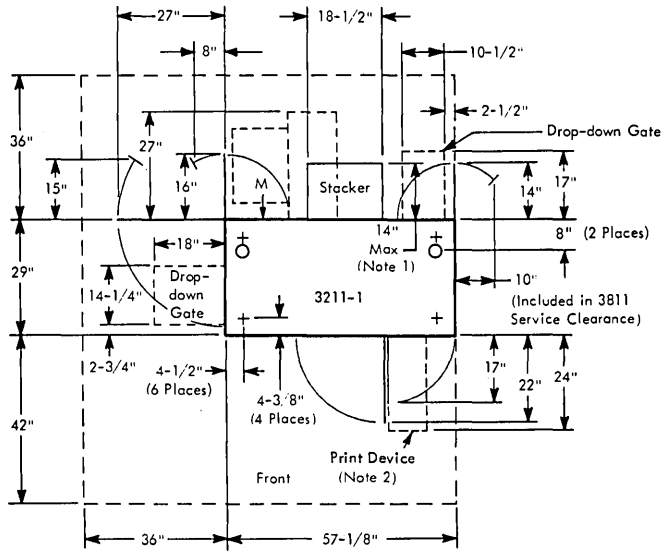
* Machine can be reduced to 30-3/4" x 25-1/2" : 47" (78 cm x 65 cm x 119 cm) for moving through 30-inch (76-cm) doors.

** Provide operator access to forms carrier on eitl right or left side.

*** For all 50-Hz and for 200 V, 60-Hz World Trad systems, power is supplied from System/370 processor. For all 115/208/230 V, 60-Hz syste power is supplied from customer's branch circuit.

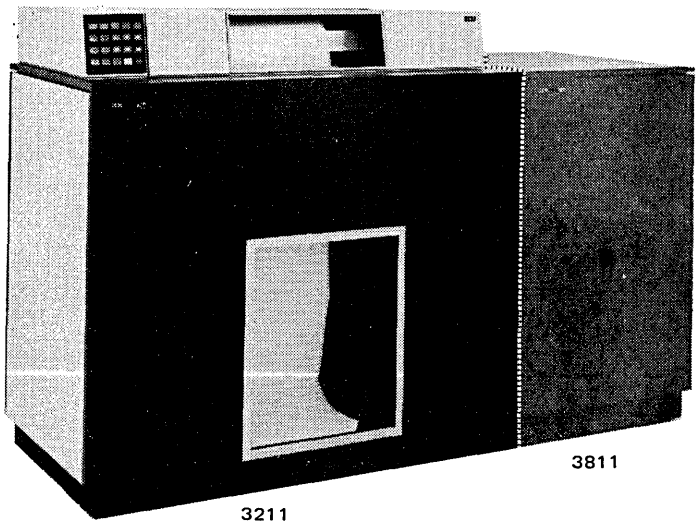
3211 PRINTER MODEL 1

PLAN VIEW (English Scale: 1/4 in. = 1 ft)



Notes:

1. Projection of stacker depends on height of paper forms. Dimension shown is maximum projection.
2. Print device swings open over the lower access doors.



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	57-1/8	29	53-1/2
(cm)	(145)	(74)	(136)

Service Clearances:

	F	R	Rt	L
Inches	42	36	0	36
(cm)	(107)	(91)	(0)	(91)

Weight: 1,400 lb (640 kg)

Heat Output:	*50 Hz*	*60 Hz*
BTU/hr	13,000	13,850
(kcal/hr)	(3 300)	(3 500)

Airflow:

cfm	500	500
(m^3/min)	(15)	(15)

Power Requirements:*

kVA	5.3	5.4

Environment, Operating:

Temperature	60°F-90°F (16°C-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	78°F (26°C)

Environment, Nonoperating:

Temperature	50°F-110°F (10°C-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	80°F (27°C)

Notes:

* Powered from 3811 that is abutted to right end of 3211.

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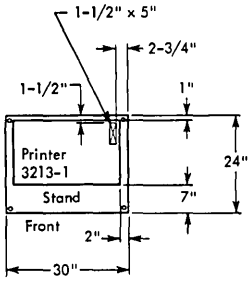
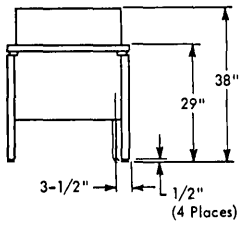
3213 CONSOLE PRINTER MODEL 1

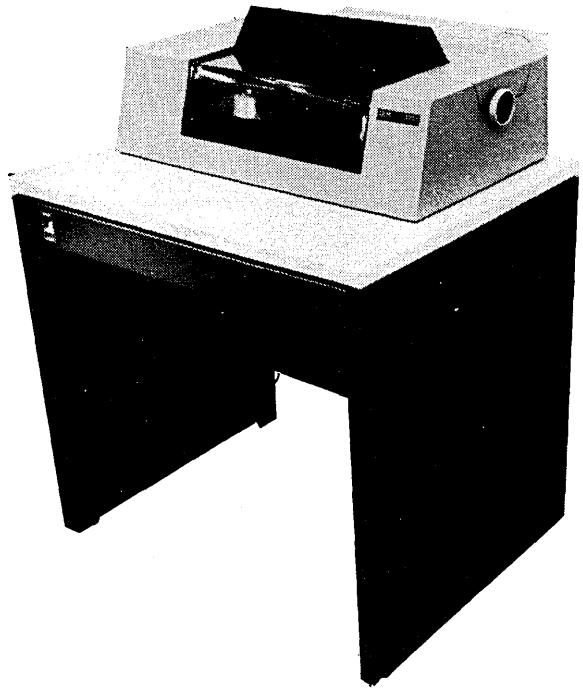
PLAN VIEW (English Scale: 1/4 in. = 1 ft)





Front View

Note: For cabling information, see 3158, 3158-3, or 3168-3.



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	30	24	38
(cm)	(76)	(61)	(97)

Service Clearances:

	F	R	Rt	L
Inches	*	*	*	*
(cm)	(*)	(*)	(*)	(*)

Weight: 190 lb (87 kg)

Heat Output: 600 BTU/hr (160 kcal/hr)

Airflow: 0 cfm (0 m^3/min)

Power Requirements: **

kVA	0.2
Phases	1

Environment, Operating:

Temperature	50°F-110°F (10°C-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	85°F (29°C)

Notes:

* Provide for operator access and sufficient clearance for forms carrier and forms travel.

** Powered from 3158 or 3158-3 when SF 7840 is installed, or from 3168-3 when SF 7850 is installed.

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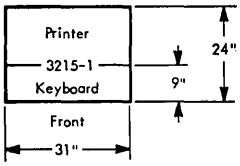
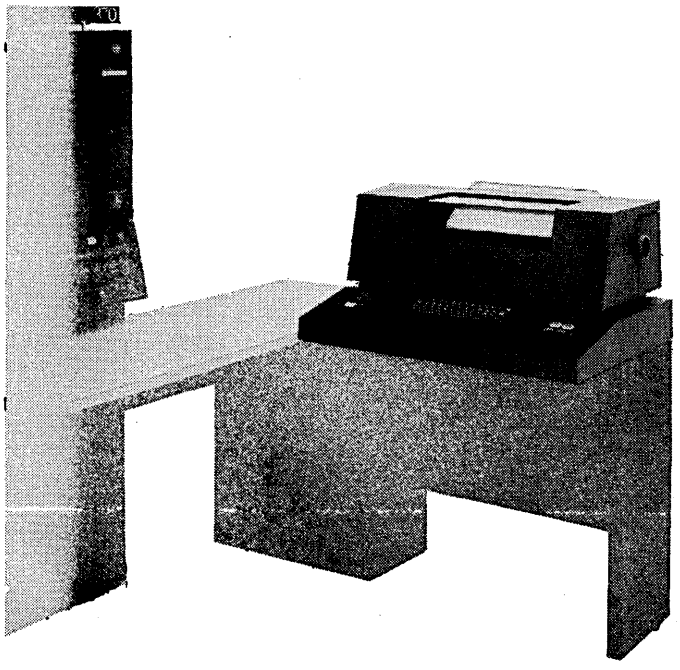
3215 CONSOLE PRINTER-KEYBOARD MODEL 1

PLAN VIEW (English Scale: 1/4 in. = 1 ft)



Note: No external cables are required for use with 3135, 3145, or 3155.



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	31	24	13*
(cm)	(79)	(61)	(33*)

Service Clearances:

	F	R	Rt	L
Inches	**	**	**	**
(cm)	(**)	(**)	(**)	(**)

Weight: 180 lb*** (82 kg***)

Heat Output: 600 BTU/hr (160 kcal/hr)

Airflow: 0 cfm (0 m^3/min)

Power Requirements:†
kVA 0.2

Environment, Operating:
Temperature 50°F-110°F (10°C-43°C)
Rel Humidity 8%-80%
Max Wet Bulb 85°F (29°C)

Environment, Nonoperating:
Temperature 50°F-125°F (10°C-52°C)
Rel Humidity 8%-80%
Max Wet Bulb 85°F (29°C)

Notes:
* Height from floor is 41 inches (104 cm) when mounted on System/370 console table.
** Provide for operator access and sufficient clearance for forms carrier and forms travel.
*** Does not include stand on which machine is placed or forms carrier.
† Powered from System/370 processor.

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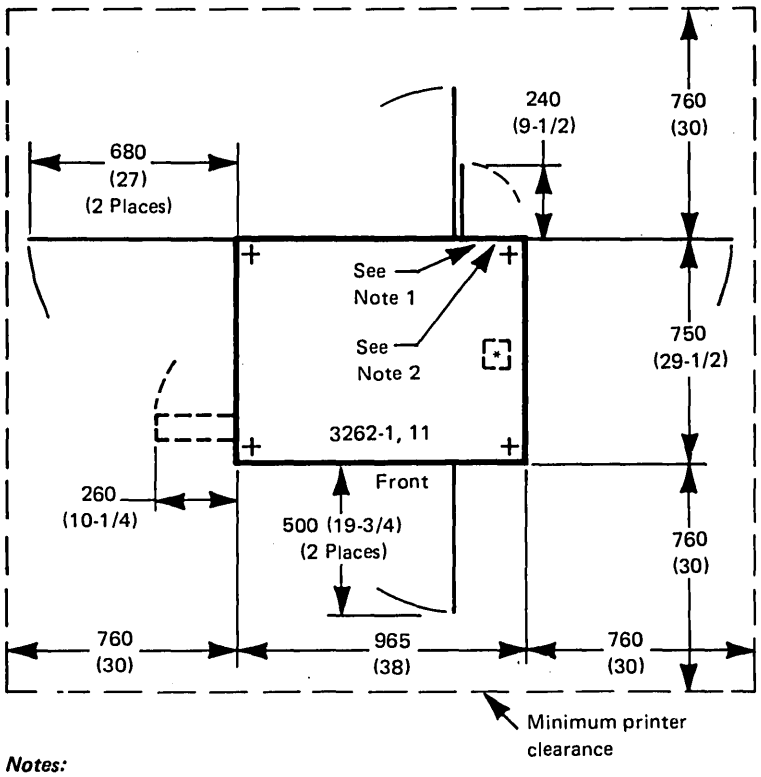
3262 LINE PRINTER MODELS 1 AND 11

(Customer Setup Designated)

PLAN VIEW (Metric Scale: 10 mm = 0.25 m)

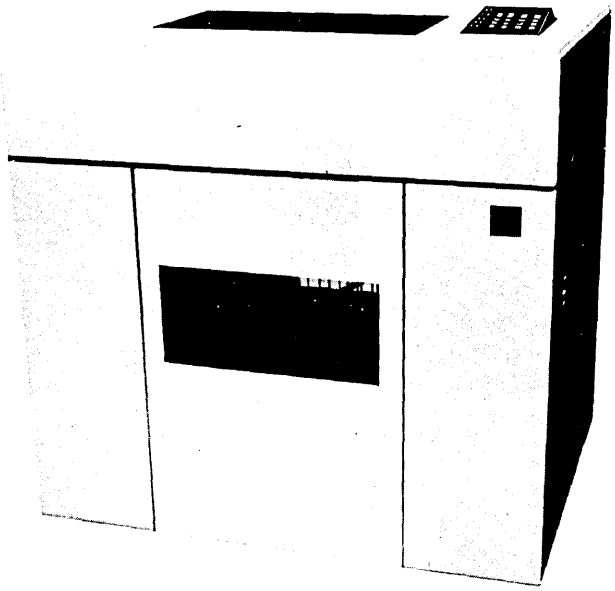
English measurements are shown in parentheses.



Notes:

1. Signal cable connector location.*
2. Power cable location.*
3. Height with cover raised: 1 715 mm (67-1/2 in.)

* Both cables can be routed through a single 64-mm (2-1/2-in.) hole in raised floor. Recommended location for the hole is centered between the front and back of the machine, and 100 mm (4 in.) in from the right side.



3262 LINE PRINTER MODELS 1 AND 11

SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	965	750	1 000
(inches)	(38)	(29-1/2)	(39-1/2)

Service Clearances:

	Front	Rear	Right	Left
mm	760	760	760	760
(inches)	(30)	(30)	(30)	(30)

Weight: 245 kg (540 lb)

Heat Output: 1 100 W (3,750 BTU/hr)

Power Requirements:*

	50 Hz	60 Hz
kVA	1.4	1.2
Phases	1	1

Voltages

50 Hz: 100, 110, 200, 220, 230, 240
60 Hz: 100, 110, 120, 127

Power Cord:

The machine is shipped with a 4.3-m (14-ft) power cord unless otherwise specified. For a 1.8-m (6-ft) cord, specify code 9511.

Plug Types:

For the United States and Canada, IBM supplies power cord with attached nonlocking type (H) plug, unless otherwise specified as:

- Locking type (J) (Feature 9081)
- Watertight type (A1) (Feature 9080)
  (required where connection is beneath raised floor)

For other World Trade countries, IBM supplies the power cord with attached plug corresponding to the power outlet most commonly used in that country. (Refer to "Appendix D. Plugs and Receptacles.")

Environment, Operating:

Temperature	10°C-41°C (50°F-105°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Environment, Operating
Optical Character Recognition (OCR) Applications:

Temperature	16°C-29°C (60°F-85°F)
Rel Humidity	20%-52%
Max Dew Point	18°C (65°F)

Environment, Nonoperating:

Temperature	10°C-52°C (50°F-125°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

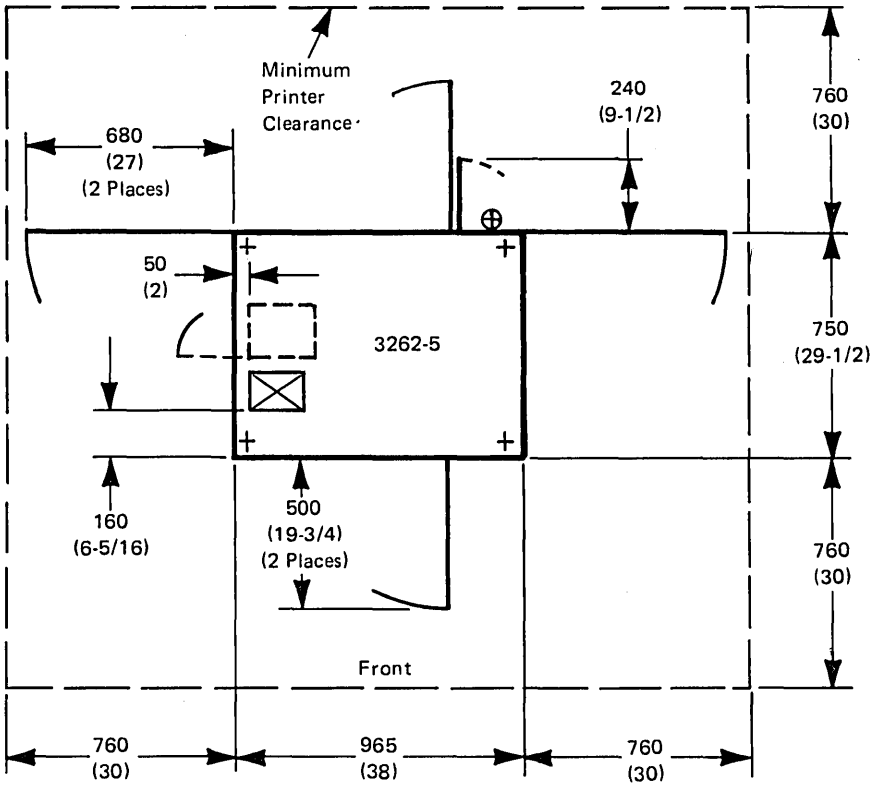
Notes:

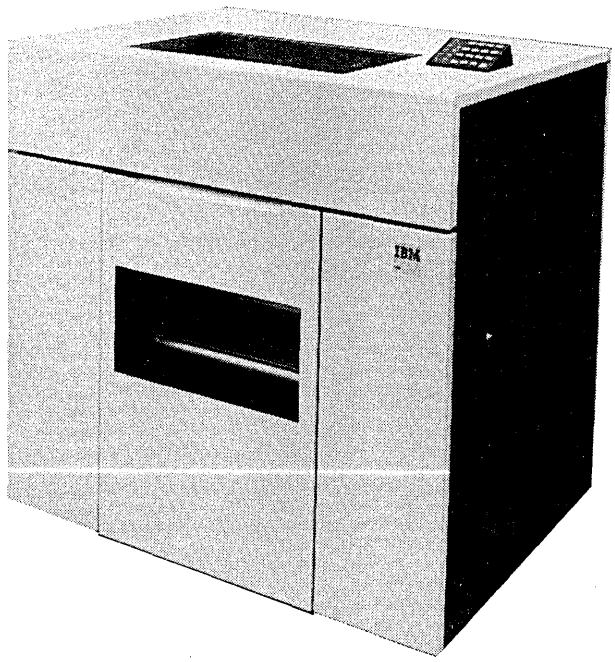
* Branch circuit requires a delayed-action fuse or circuit breaker with a high-surge tolerance for transformer (high-magnetic) applications.

3262 PRINTER MODEL 5

PLAN VIEW (Metric Scale: 10 mm = 0.25 m)

English measurements are shown in parentheses.





SPECIFICATIONS

Dimensions:

	F	S	H
mm	965	750	1 000
(inches)	(38)	(29-1/2)	(39-1/2)

Service Clearances:

	F	R	Rt	L
mm	760	760	760	760
(inches)	(30)	(30)	(30)	(30)

Weight: 250 kg (550 lb)

Heat Output: 1 100 W (3,750 BTU/hr)

Acoustical Data:
For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>$ m		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
8.1	N/A	64.0	N/A	No	No

Power Requirements: *

	50 Hz	60 Hz
kVA	1.4	1.2
Phases	1	1
Voltages		
50 Hz:	100, 110, 200, 220, 230, 240	
60 Hz:	100, 110, 120, 127	

Power Cord: See Appendix A, cord style A9. The machine is shipped with a 4.3-m (14-ft) power cord unless specify code 9986 is ordered for a 1.8-m (6-ft) cord.

Plug Types: See Appendix D.
For the United States, Canada, and Japan, IBM supplies power cord with attached watertight plug (A1), Russell & Stoll 3720U-1.

Receptacle or Connector (Customer Provided):
Watertight receptacle: R&S, 3743U-1
Watertight connector: R&S, 3913U-1
Service rating for the required receptacle/connector is 20 A at 120 V nominal.

Environment, Operating:

Temperature	10°C-32°C (60°F-90°F)
Rel Humidity	8%-80%
Max Wet Bulb	23°C (73°F)

Environment, Operating Optical Character Recognition (OCR) Applications:

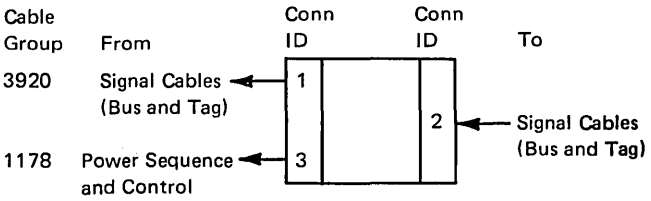
Temperature	16°C-29°C (60°F-85°F)
Rel Humidity	20%-52%
Max Wet Bulb	22°C (72°F)

Environment, Nonoperating:

Temperature	10°C-43°C (50°F-110°F)
Rel Humidity	8%-80%
Max Wet Bulb	23°C (73°F)

Notes:
* Branch circuit requires a delayed-action fuse or circuit breaker with a high-surge tolerance for transformer (high-magnetic) applications.

3262 PRINTER MODEL 5 CABLING SCHEMATIC



From 3262-5

Group No.	*No. of Cables*	*Conn ID*	*Max Length*		*Comments*	*Notes*
			m	*(ft)*		
1178	1	3	46	(150)	Power sequence and control	1
3920	2	1	122	(400)	Bus and tag	2

To 3262-5

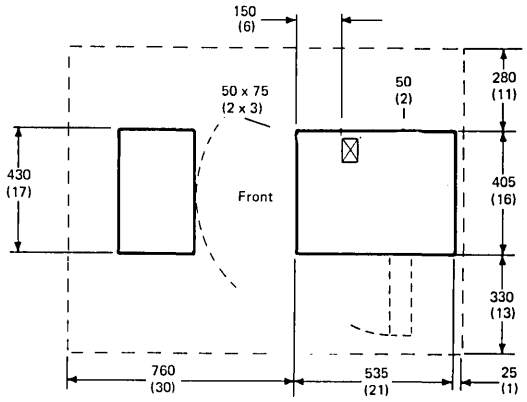
Conn ID	*Comments*
2	Bus and tag

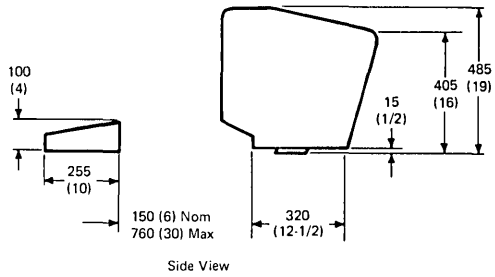
Notes:
1. Cable group 1178, power sequence and control, is optional.
2. Maximum cumulative X-length is 122 m (400 ft) unless modified by system or channel limitation. Maximum cable length must be reduced by 5 m (15 ft) for each control unit between the 3262-5 and the channel.

3278 DISPLAY CONSOLE MODEL 2A

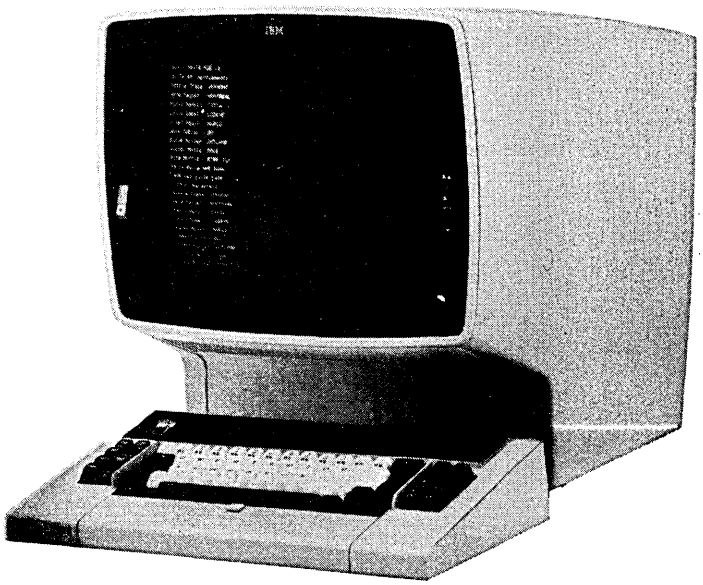
PLAN VIEW (Metric Scale: 10 mm = 0.25 m)

English measurements are shown in parentheses.





Side View



SPECIFICATIONS

Dimensions:

	Front*	Side*	Height**
mm	405	535	485
(inches)	(16)	(21)	(19)

Service Clearances:

	F***	R	Rt	L	T
mm	760	25	330	280	155
(inches)	(30)	(1)	(13)	(11)	(6)

Weight: 40 kg (80 lb) Display
6 kg (13 lb) Keyboard

Heat Output: 130 W (450 BTU/hr)

Airflow: Convection †

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning,* GC22-7072.

L_{WAd}		$<L_{pA}>_m$		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
N/A	N/A	25	N/A	No	No

Power Requirements:

kVA 0.2
Phase 1
Voltage
United States/Canada/Saudi Arabia
60 Hz 120
WT Americas/Far East
50 Hz 100, 110, 200, 220, 230, 240
60 Hz 100, 110, 120, 127
WT Europe/Middle East/Africa
50 Hz 220, 240

(For additional power and cabling information, see following page.)

Environment, Operating:

Temperature	10°C-40°C (50°F-105°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Environment, Nonoperating:

Temperature	10°C-52°C (50°F-125°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Notes:

* Dimension does not include keyboard. See plan view.

** The 3278-2A is mounted on a customer-supplied table (also available from IBM). Recommended keyboard height (measured from the floor to the bottom of the 3278-2A) is 735 mm (29 in.).

*** Keyboard feature adds 255 mm (10 in.) to front of display and can be moved up to 760 mm (30 in.) away from lower front of display.

† The feet provide space between bottom of unit and supporting surface to allow airflow for cooling. Take care that paper, books, etc., do not impede the airflow in this space.

Power Cord and Plug Types:

For the United States and Canada, the machine is shipped with a 2.8-m (9-ft) power cord and a NEMA 5-15P non-locking plug unless otherwise specified.

For 1.8-m (6-ft) cord, specify code 9511.
For 3.7-m (12-ft) cord, specify code 9512.
For 4.5-m (15-ft) cord, specify code 9513.

Locking Plug–NEMA L5-15P
125 Vac Rating, Specify Code 9890
Waterproof Plug–R&S 3720U-1
125 Vac Rating, Specify Code 8802

Note: The waterproof plug is only available with 1.8-m (6-ft) and 4.5-m (15-ft) cords.

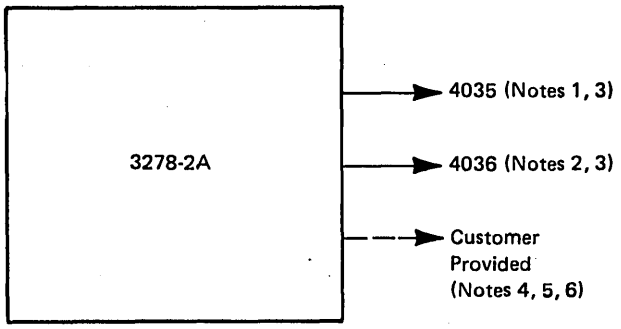
The customer must provide the corresponding power receptacle. For the waterproof power receptacle, use R&S 3743U-1 or for the power outlet connector, use R&S 3913U-1.

For World Trade countries other than Canada, IBM supplies the power cord with attached plug that corresponds to the power outlet receptacle that is most used in that country. Refer to "3278" in Appendixes B, C, and D in *IBM 3270 Information Display System, Installation Manual–Physical Planning,* GA27-2787.

Cabling: The 3278 Model 2A attaches only to a 3081, 3083, 3084, 4331, or 4341 processor. Refer to the appropriate cabling schematic in *IBM 4300 Processor Installation Manual–Physical Planning*, GA24-3667, or *IBM System/370 Installation Manual–Physical Planning*, GC22-7004.

3278 DISPLAY CONSOLE MODEL 2A

CABLING SCHEMATIC



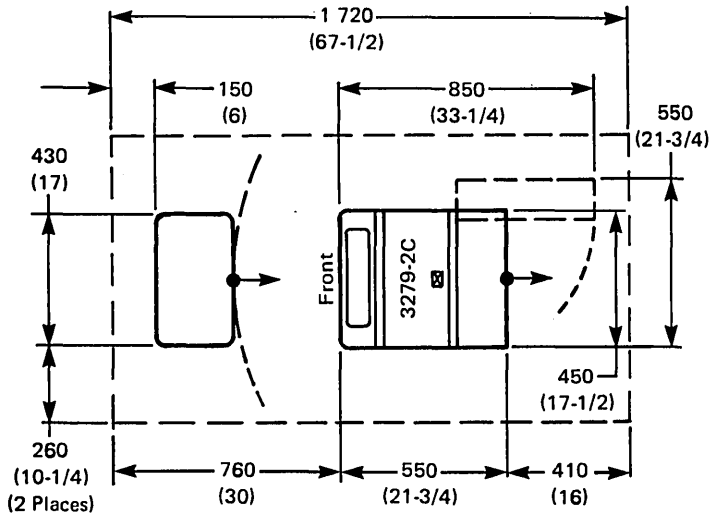
Notes:

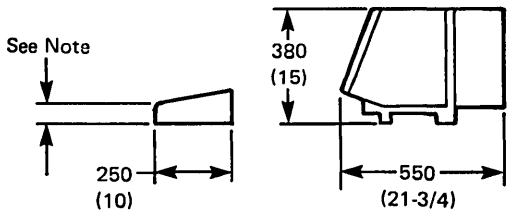
1. Signal cable.
2. Control cable.
3. Fixed length for SF 4631, 4632, and 4634 (for WT, SF 2720, 2727, and 2728) shipped with processor.
4. Used for SF 4633 (for WT, SF 2729).
5. Cable group 4824 when ordered for attachment to a 4341 Processor will provide up to 30.5 meters (100 feet) of coaxial signal cable.
6. Additional coaxial signal cable, if required, up to a maximum total cable length of 1 500 meters (4,925 feet) must be purchased and installed by the customer. Follow the specifications and the instructions of the 3278 Model 2 in the *IBM 3270 Information Display System Installation Manual–Physical Planning,* GA27-2787.

3279 COLOR DISPLAY CONSOLE MODEL 2C

PLAN VIEW (Metric Scale: 10 mm = 0.25 m)

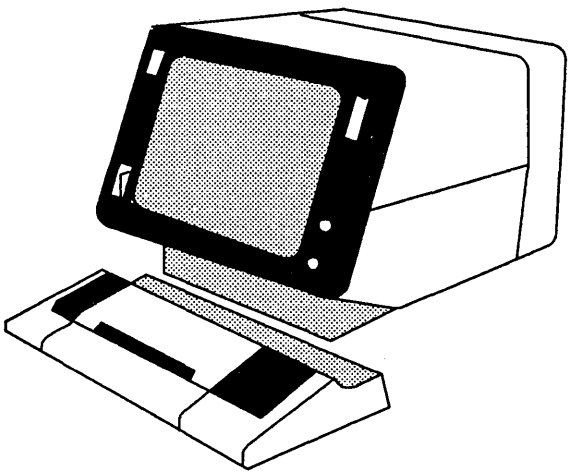
English measurements are shown in parentheses.





Side View

Note: 100 mm (4-1/4 in.) for display console keyboard with operator control panel; 90 mm (3-1/2 in.) for display console keyboard without operator control panel.



SPECIFICATIONS

Dimensions:

	Front	Side*	Height**
mm	450	550	380
(inches)	(17-1/2)	(21-3/4)	(15)

Service Clearances:

	Front***	Left	Rear	Right
mm	760	300	410	30
(inches)	(30)	(12)	(16)	(1)

Weight†: 30 kg (60 lb)

Heat Output: 250 W (850 BTU/hr)

Airflow: Natural convection

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>_m$		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
N/A	N/A	37	N/A	No	No

Power Requirements:

kVA	0.3
Phase	1
Ampacity	15

Environment, Operating

Temperature	10°C-40°C (50°F-105°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Environment, Nonoperating:

Temperature	10°C-52°C (52°F-125°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Notes:

* Dimension does not include a keyboard. See plan view.

** The 3279 is installed on a customer-supplied desk or table. Recommended keyboard height (measured from the floor to the bottom of the 3279) is 660 mm (26 in.).

*** Each 3279 unit must have a keyboard. Keyboard feature adds 250 mm (10 in.) to front of display and can be moved up to 530 mm (21 in.) away from lower front of display.

† Keyboard feature adds about:
4.5 kg (10 lb) for display console keyboard without operator control panel.
8.0 kg (17 lb) for display console keybaord with operator control panel.

3279 COLOR DISPLAY CONSOLE MODEL 2C

Power Cord and Plug Types:

For the United States and Canada, IBM supplies a power cord with an attached plug as follows:

Locking Plug–NEMA L5-15P
125 Vac Rating, Specify Code 9890
Nonlocking Plug–NEMA 5-15P
125 Vac Rating, Specify Code 9891
Waterproof Plug–RS3720U-1,
125 Vac Rating, Specify Code 8802

Note: The waterproof plug is available only with a 1.8-meter (6-foot) or a 4.5-meter (15-foot) cord.

The customer must provide the corresponding power outlet receptacle.

For World Trade countries other than Canada, IBM supplies the power cord with attached plug that corresponds to the power outlet receptacle that is most used in that country. Refer to "3279" in Appendixes B, C, and D in *IBM 3270 Information Display System, Installation Manual–Physical Planning*, GA27-2787.

The machine is shipped with a 2.8-meter (9-foot) power cord unless otherwise specified. For a 1.8-meter (6-foot) cord, specify code 9511; for a 4.5-meter (15-foot) cord, specify code 9513.

Signal I/O Control Cables:

For a display console with operator control panel, no attachment cables are required if the console keyboard includes an operator control panel (keyboards SF 2720, 2727, 2728, 4631, 4632, and 4634). Fixed-length (7.6-meter [25-foot]) cables are furnished by IBM.

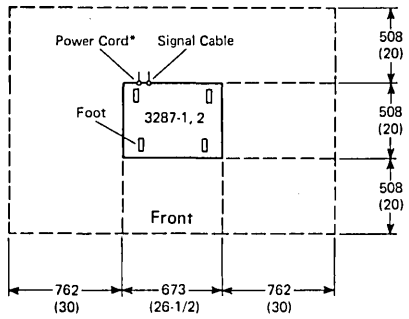
For a display console without operator control panel, cable group 4824 is required if the console keyboard does not include an operator control panel (keyboards SF 2729 and 4634). This cable group supplies a coaxial signal cable of up to 30.5-meter (100-foot) length.

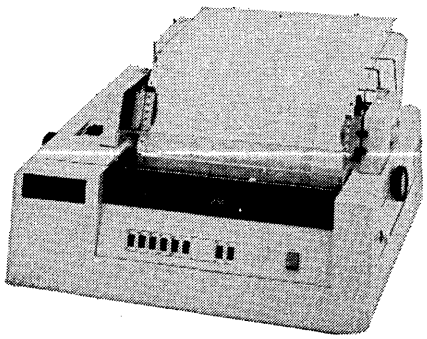
The customer may extend the coaxial signal cable to a maximum length of 1 500-meters (4,925-feet) using coaxial cable as outlined for the 3279 in the *IBM 3270 Information Display System Installation Manual–Physical Planning*, GA27-2787.

3287 PRINTER MODELS 1 AND 2

PLAN VIEW (Metric Scale: 10 mm = 0.5 m)

English measurements are shown in parentheses.





SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	673	508	254**
(inches)	(26-1/2)	(20)	(10)**

Service Clearances:***

	Front	Rear	Right	Left
mm	508	508	762	762
(inches)	(20)	(20)	(30)	(30)

Weight: 31 kg (68 lb)

Heat Output: 250 W (853 BTU/hr)

Airflow: 2 m^3/min (70 cfm)

Power Requirements:†

kVA	0.25
Phases	1
Signal Cables††	

Environment, Operating:

Temperature	10°C-41°C (50°F-105°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Environment, Nonoperating:

Temperature	10°C-52°C (50°F-125°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Notes:

* Power cord length of 2.8 m (9 feet) is supplied as standard. (Optional lengths available are: 1.8 m [6 feet], 3.7 m [12 feet], and 4.5 m [15 feet].)

** 292 mm (11-1/2 inches) with forms tractor.

*** A 1 016-mm (40-inch) service clearance (measured from the table top) is required above the 3287.

† For safety, each branch circuit must be grounded using a dedicated wire conductor or a continuous metal conduit. The dedicated wire conductor is recommended.

†† For attachment to 3081, 3138, or 3148, see 3081, 3083, 3084, 3138, or 3148 (GC22-7004) cabling schematic pages for appropriate IBM cable group number. Maximum cable length is 610 m (2,000 feet).

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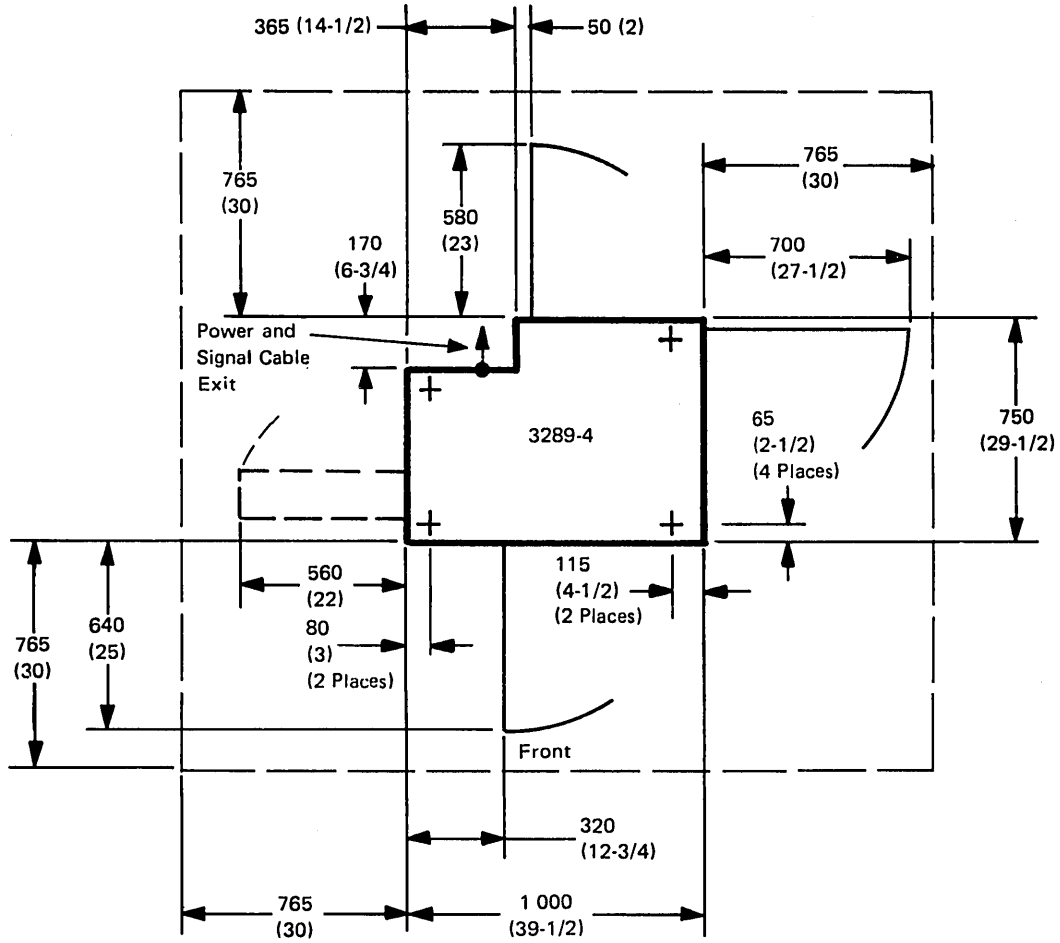
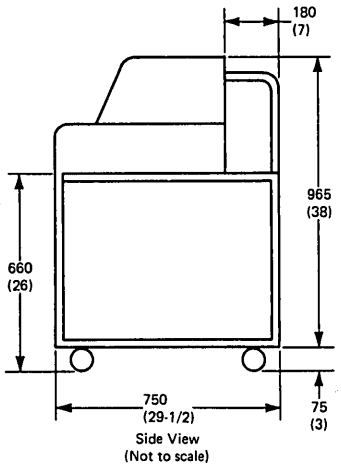
3289 LINE PRINTER MODEL 4
(Customer Setup Designated)

PLAN VIEW (Metric Scale: 10 mm = 0.25 m)





3289 LINE PRINTER MODEL 4

SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	1 000	750	1 040
(inches)	(39½)	(29½)	(41)

Service Clearances:

	Front	Rear	Right	Left
mm	765	765	765	765
(inches)	(30)	(30)	(30)	(30)

Weight: 200 kg (440 lb)

Heat Output: 410 W (1,400 BTU/hr)

Airflow: Convection only

Power Requirements:

kVA 0.6
Phase 1
Voltage United States/Canada/Saudi Arabia
60 Hz 120 V
WT Americas/Far East
50 Hz 100, 110, 200, 220, 230, 240 V
60 Hz 100, 110, 120, 127 V
WT Europe/Middle East/Africa
50 Hz 200, 240 V

Power Cord and Plug Types:

For the United States and Canada, IBM supplies a power cord with an attached plug, as follows:

Locking plug–NEMA L5-15P
125 Vac rating, specify code 9890
Nonlocking plug–NEMA 5-15P
125 Vac rating, specify code 9891

The customer must provide the corresponding power outlet receptacle.

For other World Trade countries, IBM supplies the power cord and attached plug that is most used in that country. Refer to the *IBM 3289 Printer Model 4 Planning and Site Preparation Guide*, GA27-3198.

The machine is shipped with a 2.8-meter (9-foot) power cord unless otherwise specified. The power cord is also available in the following lengths: 1.8 meters (6 feet), 3.7 meters (12 feet), and 4.5 meters (15 feet).

Signal Cable:

Coaxial signal cable (maximum length 1 500 meters [4,920 feet]) must be supplied and installed by the customer. Follow specifications and instructions for the 3278 Model 2 in the *IBM 3270 Information Display System Installation Manual–Physical Planning*, GA27-2787.

Environment, Operating:*

Temperature $10^{o}C$-$41^{o}C$ ($50^{o}F$-$105^{o}F$)
Rel Humidity 8% - 80%

Notes:

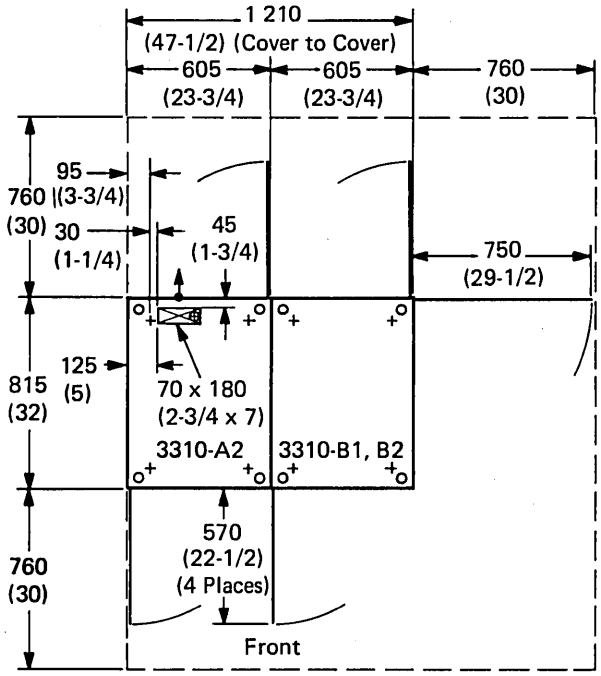
* For optimum paper feeding and stacking, a temperature in the range of $15.6^{o}C$ to $37.8^{o}C$ ($60^{o}F$ to $100^{o}F$) is recommended. The recommended relative humidity range is 26% to 62%.

3310 DIRECT ACCESS STORAGE DEVICE MODELS A2, B1, AND B2

Maximum configuration of 3310 Models A2, B1, and B2

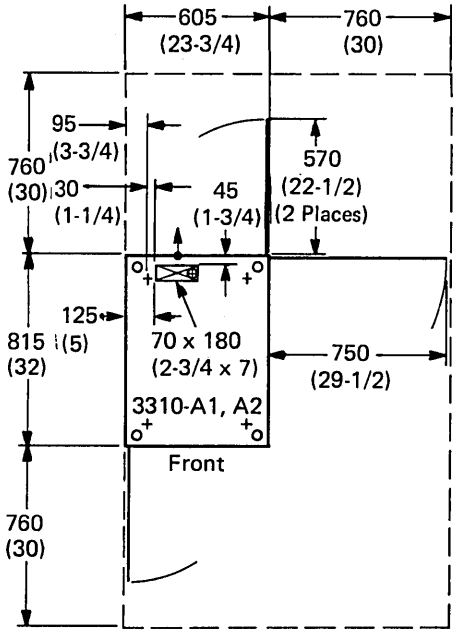
PLAN VIEW (Not to scale)

English measurements are shown in parentheses.

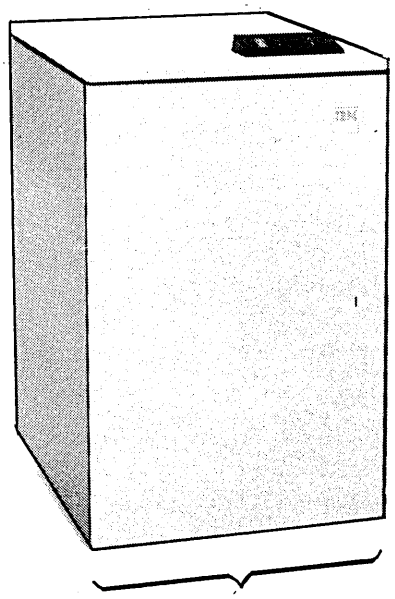


3310 DIRECT ACCESS STORAGE DEVICE MODELS A1 AND A2

PLAN VIEW (Not to scale)



3310 DIRECT ACCESS STORAGE DEVICE MODELS A1 AND A2



3310 Models A1 and A2 (Design Model)

SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	603	813	1 000
(inches)	(23-3/4)	(32)	(39-1/2)

Service Clearances:

	Front	Rear	Right	Left
mm	762	762	762*	0
(inches)	(30)	(30)	(30*)	(0)

Weight:	Model A1	Model A2
kg	136	160
(lb)	(300)	(350)

Heat Output:	Model A1	Model A2
W	170	250
(BTU/hr)	(600)	(900)

Airflow:	Model A1	Model A2
m^3/min	0.5	0.5
(cfm)	(10)	(10)

Power Requirements:

	Model A1	Model A2
kVA	0.3	0.5
Phase	1	1
Plug	R&S, 3720 U2	R&S, 3720 U2
Receptacle	R&S, 3743 U2	R&S, 3743 U2
Connector	R&S, 3913 U2	R&S, 3913 U2
Power Cord		
Style	A1	A1

Environment, Operating:

Temperature	10°C-41°C (50°F-105°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Environment, Nonoperating:

Temperature	10°C-52°C (50°F-125°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

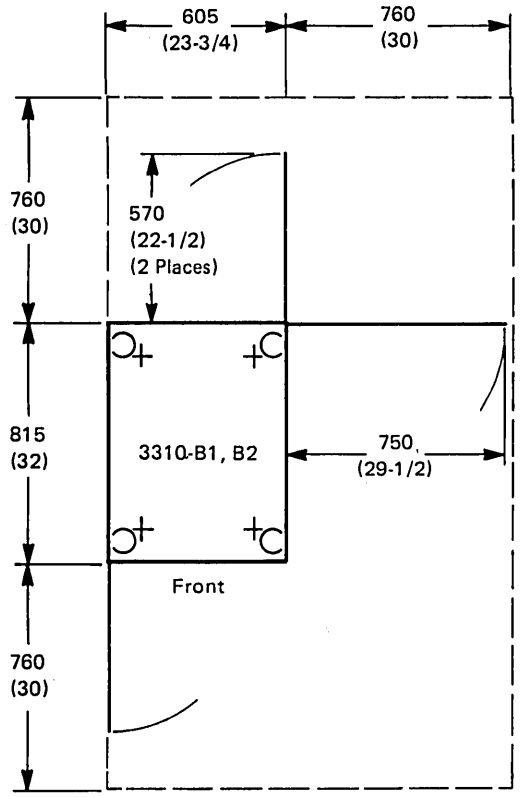
Notes:

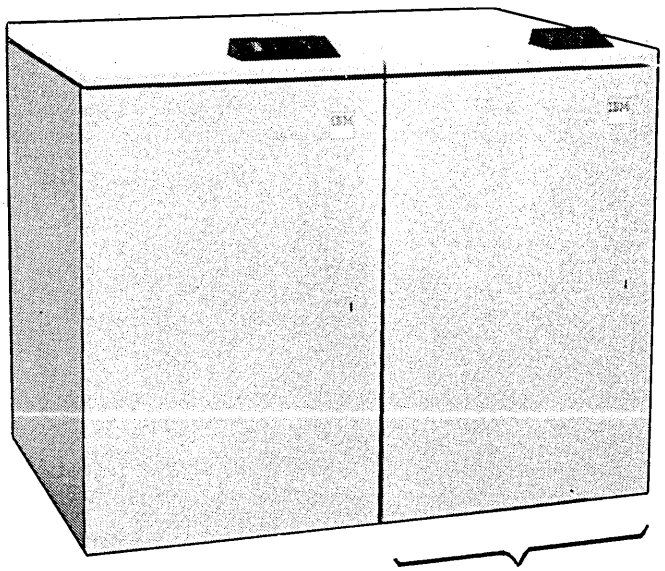
* Service clearance is 760 mm (30 in.) if this is an end device.

3310 DIRECT ACCESS STORAGE DEVICE MODELS B1 AND B2

PLAN VIEW (Metric Scale: 10 mm = 0.25 m)

English measurements are shown in parentheses.





3310 Models B1 and B2 (Design Model)

SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	605	815	1 000
(inches)	(23-3/4)	(32)	(39-1/2)

Service Clearances:

	Front	Rear	Right	Left
mm	760	760	760	0
(inches)	(30)	(30)	(30)	(0)

Weight:	**Model B1**	**Model B2**
kg	110	136
(lb)	(240)	(300)

Heat Output:	**Model B1**	**Model B2**
W	140	230
(BTU/hr)	(500)	(800)

Airflow:	**Model B1**	**Model B2**
m^3/min	0.5	0.5
(cfm)	(10)	(10)

Power Requirements:*

	Model B1	Model B2
kVA	0.2	0.4

Environment, Operating:

Temperature	10 °C to 41 °C (50 °F to 105 °F)
Rel Humidity	8%-80%
Max Wet Bulb	27 °C (80 °F)

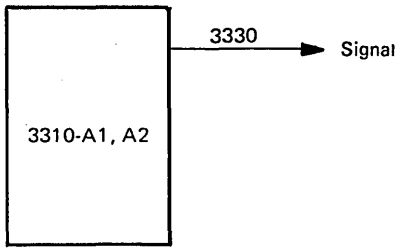
Environment, Nonoperating:

Temperature	10 °C to 52 °C (50 °F to 125 °F)
Rel Humidity	8%-80%
Max Wet Bulb	27 °C (80 °F)

Notes:

* Powered from Model A1 or A2.

3310 DIRECT ACCESS STORAGE DEVICE MODELS A1 AND A2 CABLING SCHEMATIC



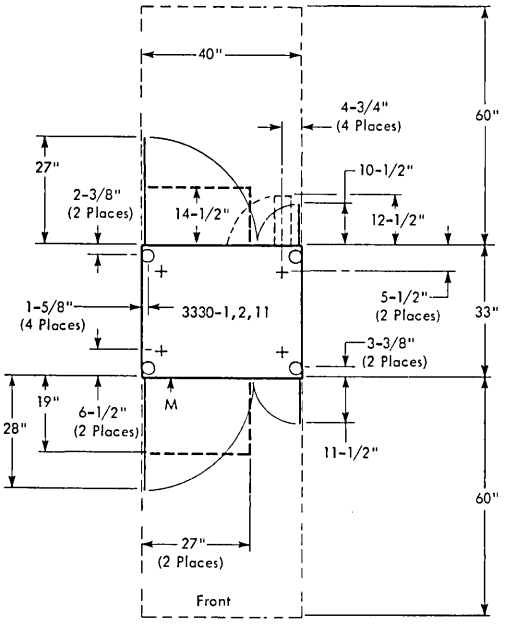
Group No.	*No. of Cables*	*From*	*To*	*Max Length m*	*(ft)*	*Notes*
3330	2	3310-A1/A2	DASD Adapter	–	–	See Note
3330	2	3310-A1/A2	3310-A1/A2, 3340-A2, 3370-A1	–	–	See Note

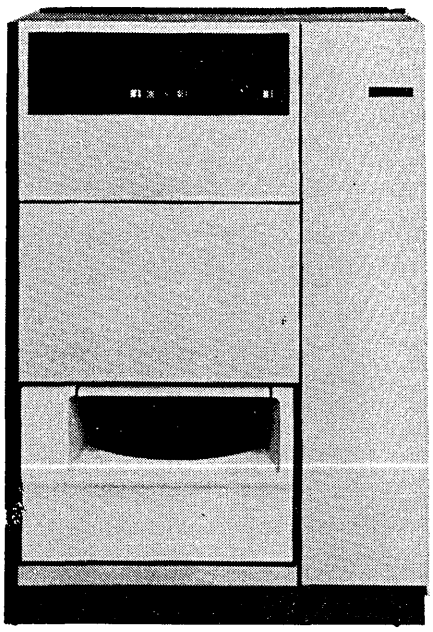
Note: A total of 61 meters (200 feet) of cable is available to attach up to four strings of 3310/3340/3370 Direct Access Storage devices. Up to two strings may be 3340s.

The last 3310-A1/A2 must be within 30 meters (100 feet) of the 4331 Processor. This maximum length must be reduced by 3 meters (10 feet) for each direct access storage device connected between the 3310-A1/A2 and the processor.

3330 DISK STORAGE MODELS 1, 2, AND 11

PLAN VIEW (English Scale: 1/4 in. = 1 ft)





3330-2

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	40*	33	60
(cm)	(102*)	(84)	(152)

Service Clearances:

	F	R	Rt	L
Inches	60	60	0	0**
(cm)	(152)	(152)	(0)	(0**)

Weight:	*Models 1 and 11*	*Model 2*
lb	1,450***	1,100
(kg)	(660***)	(500)

Heat Output:

BTU/hr	9,450	7,200
(kcal/hr)	(2 400)	(1 850)

Airflow:

cfm	600	600
(m^3/min)	(17)	(17)

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning*, GC22-7072.

L_{WAd}		$< L_{pA} >$ m		I	T
Operating (bels)	Idling (bels)	Operating (bels)	Idling (dB)		
8.1	8.1	61	61	No	No

Power Requirements:†

kVA	3.4	2.4

Environment, Operating:

Temperature	60°F-90°F (16°C-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	78°F (26°C)

Environment, Nonoperating:

Temperature	50°F-110°F (10°C-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	80°F (27°C)

Notes:

* The end drive dimension is 41" (104 cm) with a 1-inch (3-cm) cover added. Up to four 3330-1's or 3330-2's can be attached to a 3830-1. Up to three 3330-1's, 3330-2's, or 3330-11's can be attached to a 3333-1 or 3333-11.

** Service clearance is 24" (61 cm) if this is an end device. See 3333 and 3830-1 machine specifications pages.

*** Based on IBM's method of calculating floor loading, a disk storage facility with more than three devices attached exceeds 75 pounds per square foot (370 kg/m^2) distributed floor loading. The installation site, therefore, should be reviewed by a qualified consultant.

† Powered from 3333-1, 3333-11, or 3830-1.

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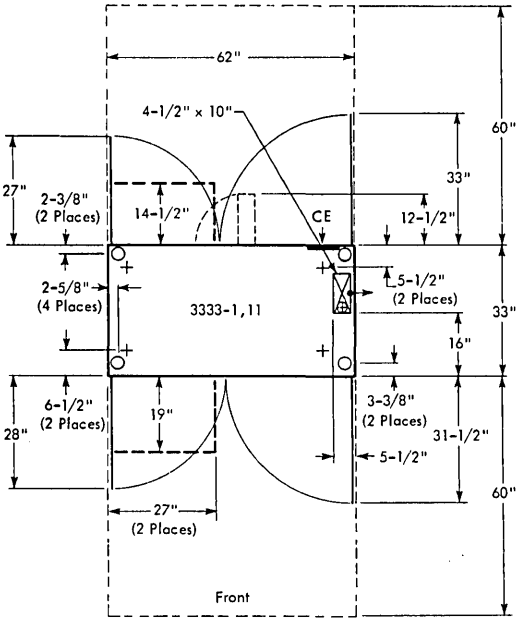
3333 DISK STORAGE AND CONTROL MODELS 1 AND 11

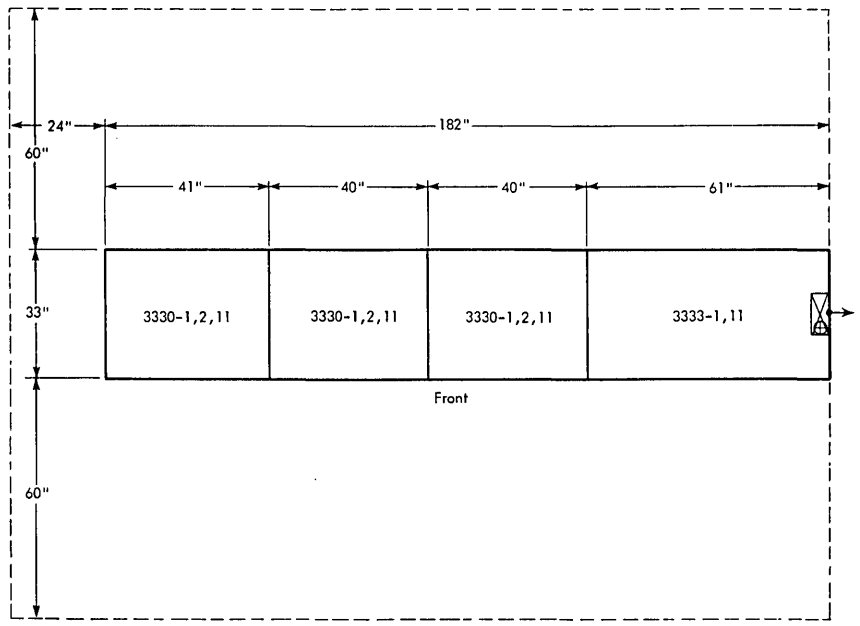
PLAN VIEW (English Scale: 1/4 in. = 1 ft)



Note: For cabling information, see Section 2, "Machines with Integral or Abutted Controls."

3333-1 OR 3333-11 AND 3330-1, 3330-2, OR 3330-11 DISK STORAGE FACILITY (MAXIMUM CONFIGURATION)

PLAN VIEW (English Scale: 1/4 in. = 1 ft)



Note: The 24" (61 cm) end service clearance (right or left) is required for any configuration. The left service clearance is preferred.

3333 DISK STORAGE AND CONTROL MODELS 1 AND 11

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	62*	33	60
(cm)	(157*)	(84)	(152)

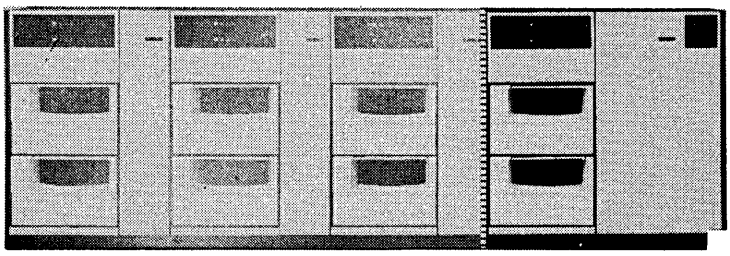
Service Clearances:

	F	R	Rt	L
Inches	60	60	0	0
(cm)	(152)	(152)	(0)	(0)

Weight: 1,850 lb** (840 kg**)

Heat Output: 12,000 BTU/hr (3 050 kcal/hr)

Airflow: 850 cfm (25 m^3/min)



3330-1 3330-1 3330-1 3333-1

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning,* GC22-7072.

L_{WAd}		$<L_{pA}>$ m		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
8.2	8.2	62	62	No	No

Power Requirements:

kVA	4.0
Phases	3
Plug	R&S, SC7328
Connector	R&S, SC7428
Receptacle	R&S, SC7324
Power Cord Style	E7

Environment, Operating:

Temperature	60°F-90°F (16°C-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	78°F (26°C)

Environment, Nonoperating:

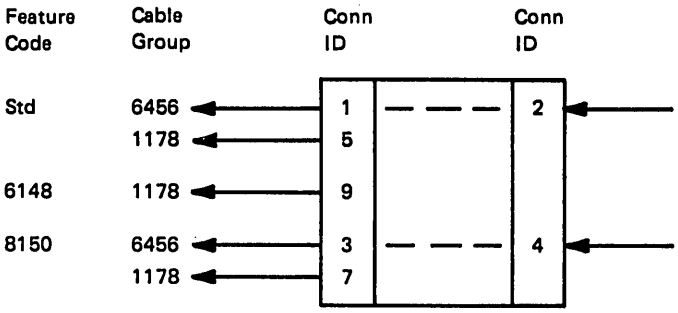
Temperature	50°F-110°F (10°C-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	80°F (27°C)

Notes:

* Dimension is 61" (155 cm) when a 3333 is bolted to the right end of a 3330. Up to three 3330-1's, 3330-2's, or 3330-11's can be attached, in any combination, to a 3333-1 or 3333-11.

** Based on IBM's method of calculating floor loading, a disk storage facility consisting of more than three devices exceeds 75 pounds per square foot (370 kg/m^2) distributed floor loading. The installation site, therefore, should be reviewed by a qualified consultant.

3333 DISK STORAGE AND CONTROL MODELS 1 AND 11 CABLING SCHEMATIC



From 3333

Feature Code	*Group No.*	*No. of Cables*	*Conn ID*	*Max Length*		*Model*	*Notes*
				m	*(ft)*		
Std	6456	2	1	61	(200)	1, 11	1, 2
	1178	1	5	61	(200)	1, 11	4
6148	1178	1	9	61	(200)	1, 11	5
8150	6456	2	3	61	(200)	1, 11	1, 2, 3
	1178	1	7	61	(200)	1, 11	4

To 3333

Feature Code	*Conn ID*	*Model*	*Notes*
Std	2	1, 11	1, 2
8150	4	1, 11	1, 2, 3

Notes:

1. A maximum cable length of 61 meters (200 feet) is available to attach as many as four 3333s to a control device.
2. Maximum available cable length must be reduced by 4.5 meters (15 feet) for each unit in excess of three, connected between a 3333 and a control device.
3. String switch feature is available for the attachment of a 3333 to a second control device.
4. Power sequence and control; cable is optional.
5. Required for SF 6148 (remote switch).

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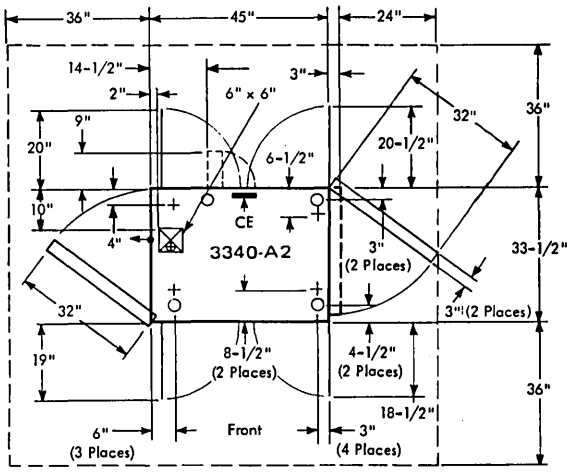
3340 DIRECT ACCESS STORAGE MODEL A2

PLAN VIEW (English Scale: 1/4 in. = 1 ft)



Note: For cabling information, see Section 2, "Machines with Integral or Abutted Controls."

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	45*	33-1/2	46-1/2
(cm)	(114*)	(85)	(118)

Service Clearances:

	F	R	Rt	L
Inches	36	36	0**	36
(cm)	(91)	(91)	(0**)	(91)

Weight: 900 lb (410 kg)

Heat Output: 6,500 BTU/hr (1 650 kcal/hr)

Airflow: 400 cfm ($12m^3$/min)

Acoustical Data:
For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>_m$		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
7.6	7.6	59	59	No	No

Power Requirements:

kVA	2.2
Phases	3
Plug	R&S, FS3760
Connector	R&S, FS3934
Receptacle	R&S, FS3754
Power Cord Style	D2

Environment, Operating:

Temperature	60°F-90°F (16°C-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	78°F (26°C)

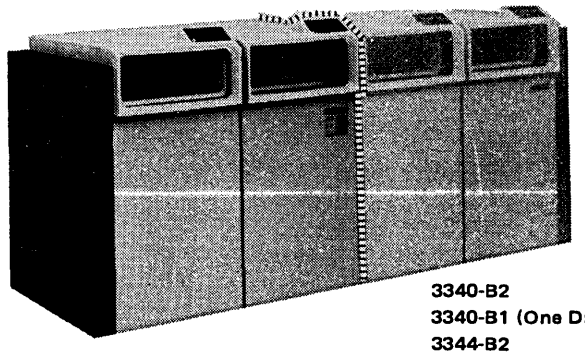
Environment, Nonoperating:

Temperature	50°F-110°F (10°C-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	80°F (27°C)

Notes:

* The standalone dimension is 48" (122 cm) with a 3-inch (8-cm) end cover added. Up to three 3340-B1s, 3340-B2s, 3344-B2s, or 3344-B2Fs, in any combination, can be attached to a 3340-A2.

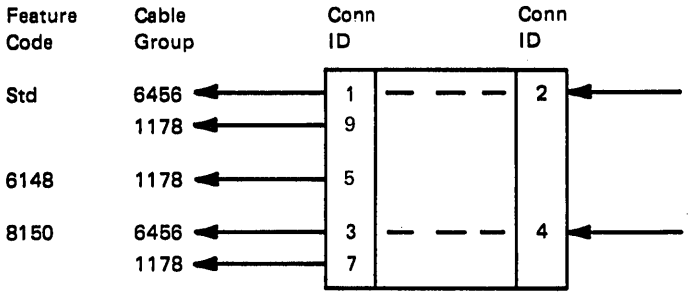
** Service clearance is 24" (61 cm) if 3340-B1s, 3340-B2s, 3344-B2s, or 3344-B2Fs are not attached.



3340-A2

3340-B2
3340-B1 (One Drive)
3344-B2
3344-B2F

3340 DIRECT ACCESS STORAGE MODEL A2 CABLING SCHEMATIC



From 3340

Feature Code	*Group No.*	*No. of Cables*	*Conn ID*	*Max Length*		*Model*	*Notes*
				m	*(ft)*		
Std	6456	2	1	61	(200)	A2	1, 2
	1178	1	9	61	(200)	A2	4
6148	1178	1	5	61	(200)	A2	5
8150	6456	2	3	61	(200)	A2	1, 2, 3
	1178	1	7	61	(200)	A2	4

To 3340

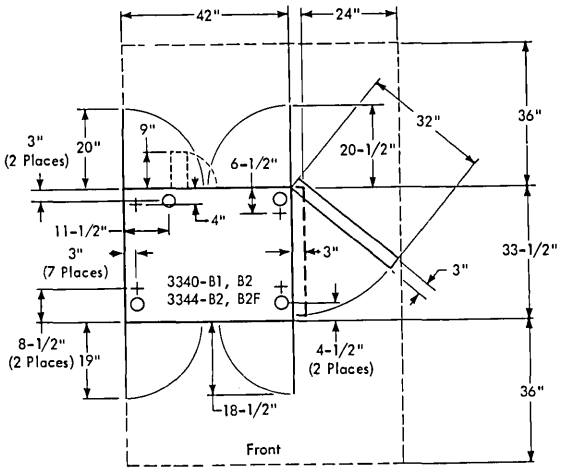
Feature Code	*Conn ID*	*Model*	*Notes*
Std	2	A2	1, 2
8150	4	A2	1, 2, 3

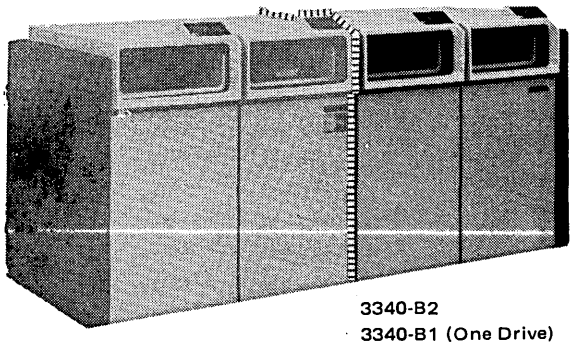
Notes:

1. A maximum cable length of 61 meters (200 feet) is available to attach as many as four 3340s to a control device.
2. Maximum available cable length must be reduced by 4.5 meters (15 feet) for each unit in excess of three connected between a 3340 and a control device.
3. String switch feature is available for the attachment of a 3340 to a second control device.
4. Power sequence and control; cable is optional.
5. Required for SF 6148 (remote switch).

3340 DIRECT ACCESS STORAGE MODELS B1 AND B2
3344 DIRECT ACCESS STORAGE MODELS B2 AND B2F

PLAN VIEW (English Scale: 1/4 in. = 1 ft)





3340-A2

3340-B2
3340-B1 (One Drive)
3344-B2
3344-B2F

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	42*	33-1/2	46-1/2
(cm)	(107*)	(85)	(118)

Service Clearances:

	F	R	Rt	L
Inches	36	36	0**	0
(cm)	(91)	(91)	(0**)	(0)

Weight:	*3340-B1*	*3340-B2, 3344-B2, and 3344-B2F*
lb	600	750
(kg)	(280)	(350)

Heat Output:

BTU/hr	3,500	5,000
(kcal/hr)	(890)	(1 300)

Airflow:

cfm	400	400
(m^3/min)	(12)	(12)

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning*, GC22-7072.

	L_{WAd}		$<L_{pA}>_m$		I	T
	Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
3340-B1, B2	7.6	7.6	59	59	No	No
3344-B2, B2F	7.4	7.4	57	57	No	No

Power Requirements:***

kVA	1.2	1.7
Phases	3	3

Environment, Operating:

Temperature	60°F-90°F (16°C-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	78°F (26°C)

Environment, Nonoperating:

Temperature	50°F-110°F (10°C-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	80°F (27°C)

Notes:

* The end machine dimension is 45" (114 cm) with a 3-inch (8-cm) cover added.

** Service clearance is 24" (61 cm) if this is an end machine.

*** Powered from 3340-A2.

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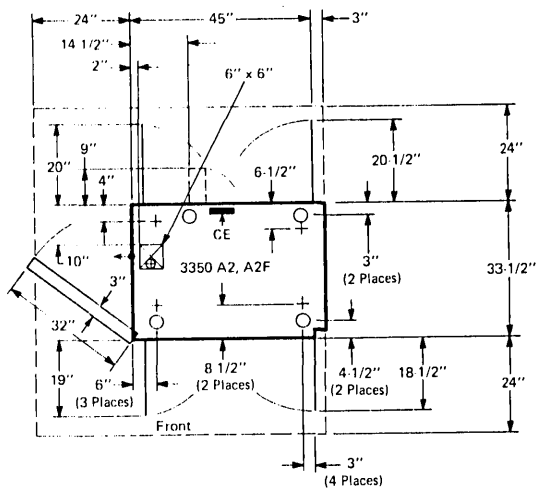
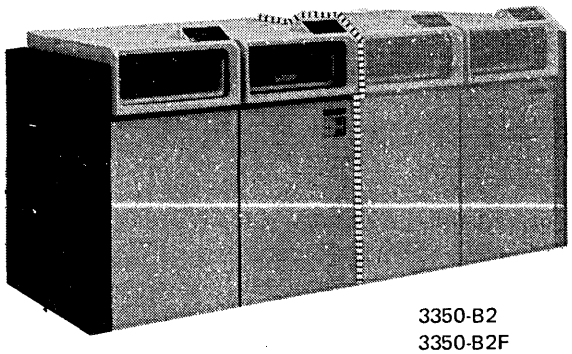
3350 DIRECT ACCESS STORAGE MODELS A2 AND A2F

PLAN VIEW (English Scale: 1/4 in. = 1 ft)



Note: For cabling information, see Section 2, "Machines with Integral or Abutted Controls."



3350-A2
3350-A2F

3350-B2
3350-B2F
3350-C2
3350-C2F

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	45*	33-1/2	46-1/2
(cm)	(114*)	(85)	(118)

Service Clearances:

	F	R	Rt	L
Inches	24	24	0	24
(cm)	(61)	(61)	(0)	(61)

Weight: 1,000 lb (460 kg)

Heat Output: 7,200 BTU/hr (1 850 kcal/hr)

Airflow: 400 cfm (12 m^3/min)

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>_m$		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
7.5	7.5	58.0	58.0	No	No

Power Requirements:

kVA	2.3
Phases	3
Plug	R&S, SC7328
Connector	R&S, SC7428
Receptacle	R&S, SC7324
Power Cord Style	E1

Environment, Operating:

Temperature	60°F-90°F (16°C-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	78°F (26°C)

Environment, Nonoperating:

Temperature	50°F-110°F (10°C-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	80°F (27°C)

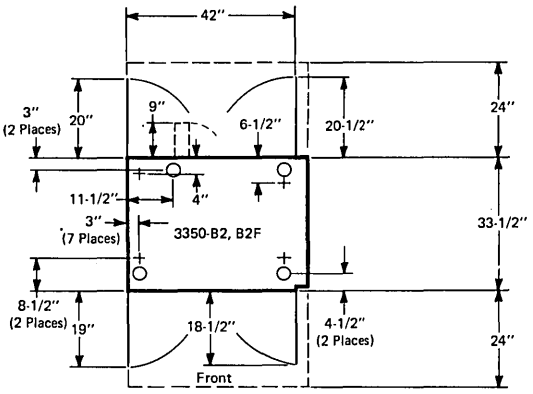
Notes:

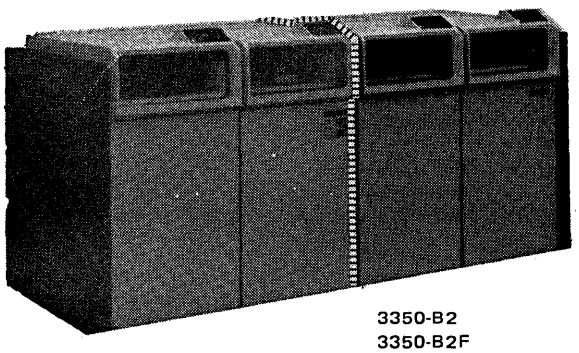
* The standalone dimension is 48" (122 cm) with a 3-inch (8-cm) end cover added. Up to three 3350-B2s or 3350-B2Fs, in any combination, can be attached to a 3350-A2 or 3350-A2F.

A 3350-A2 or 3350-A2F with primary controller adapter feature can attach one 3350-C2 or 3350-C2F and up to two 3350-B2s or 3350-B2Fs in any combination. The 3350-C2 or 3350-C2F must always be attached in the right end position.

3350 DIRECT ACCESS STORAGE MODELS B2 AND B2F

PLAN VIEW (English Scale: 1/4 in. = 1 ft)





3350-B2
3350-B2F

3350-A2
3350-A2F

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	42*	33-1/2	46-1/2
(cm)	(107*)	(85)	(118)

Service Clearances:

	F	R	Rt	L
Inches	24	24	0	0
(cm)	(61)	(61)	(0)	(0)

Weight: 800 lb (370 kg)

Heat Output: 5,800 BTU/hr (1 500 kcal/hr)

Airflow: 400 cfm (12 m^3/min)

Acoustical Data:
For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning,* GC22-7072.

L_{WAd}		$<L_{pA}>_m$		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
7.5	7.5	58.0	58.0	No	No

Power Requirements:**

kVA	1.9
Phases	3

Environment, Operating:

Temperature	60°F-90°F (16°C-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	78°F (26°C)

Environment, Nonoperating:

Temperature	50°F-110°F (10°C-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	80°F (27°C)

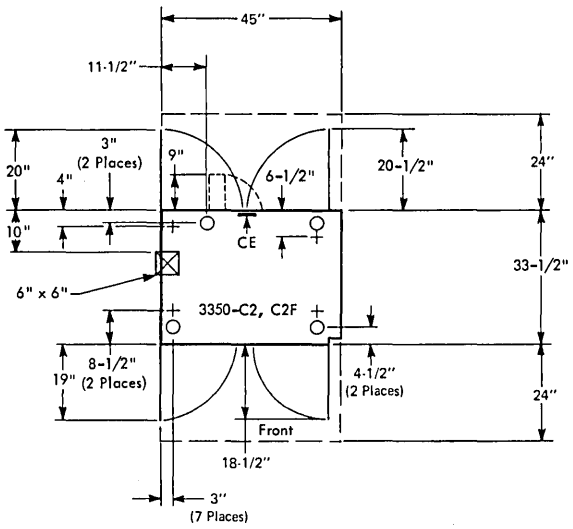
Notes:

* The end device dimension is 45" (114 cm) with a 3-inch (8- cover added.

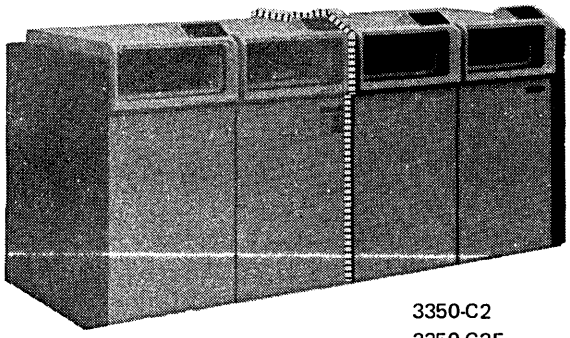
** Powered from 3350-A2 or 3350-A2F.

3350 DIRECT ACCESS STORAGE MODELS C2 AND C2F

PLAN VIEW (English Scale: 1/4 in. = 1 ft)



Note: For cabling information, see Section 2, "Machines with Integral or Abutted Controls."



3350-A2
3350-A2F

3350-C2
3350-C2F

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	45	33-1/2	46-1/2
(cm)	(114)	(85)	(118)

Service Clearances:

	F	R	Rt	L
Inches	24	24	0	0
(cm)	(61)	(61)	(0)	(0)

Weight: 1,050 lb (480 kg)

Heat Output: 6,500 BTU/hr (1 650 kcal/hr)

Airflow: 400 cfm (12 m^3/min)

Acoustical Data:
For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>$ m		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
7.5	7.5	58.0	58.0	No	No

Power Requirements: *

kVA	2.1
Phases	3

Environment, Operating:

Temperature	60°F-90°F (16°C-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	78°F (26°C)

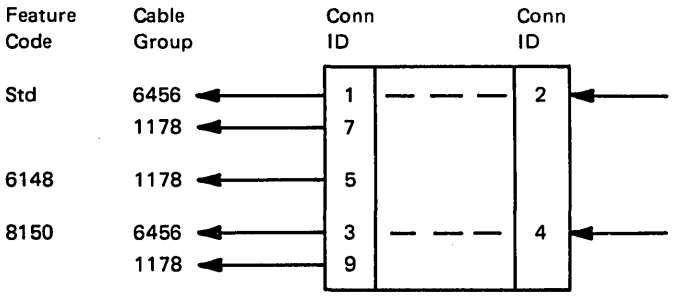
Environment, Nonoperating:

Temperature	50°F-110°F (10°C-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	80°F (27°C)

Notes:

*Powered from 3350-A2 or 3350-A2F.

3350 DIRECT ACCESS STORAGE MODELS A2, A2F, C2, AND C2F CABLING SCHEMATIC



From 3350

Feature Code	*Group No.*	*No. of Cables*	*Conn ID*	*Max Length*		*Model*	*Notes*
				m	*(ft)*		
Std	6456	2	1	61	(200)	A2, A2F, C2, C2F	1, 2
	1178	1	7	61	(200)	A2, A2F	4
6148	1178	1	5	61	(200)	A2, A2F, C2, C2F	5
8150	6456	2	3	61	(200)	A2, A2F, C2, C2F	1, 2, 3
	1178	1	9	61	(200)	A2, A2F	4

To 3350

Feature Code	*Conn ID*	*Model*	*Notes*
Std	2	A2, A2F, C2, C2F	1, 2
8150	4	A2, A2F, C2, C2F	1, 2, 3

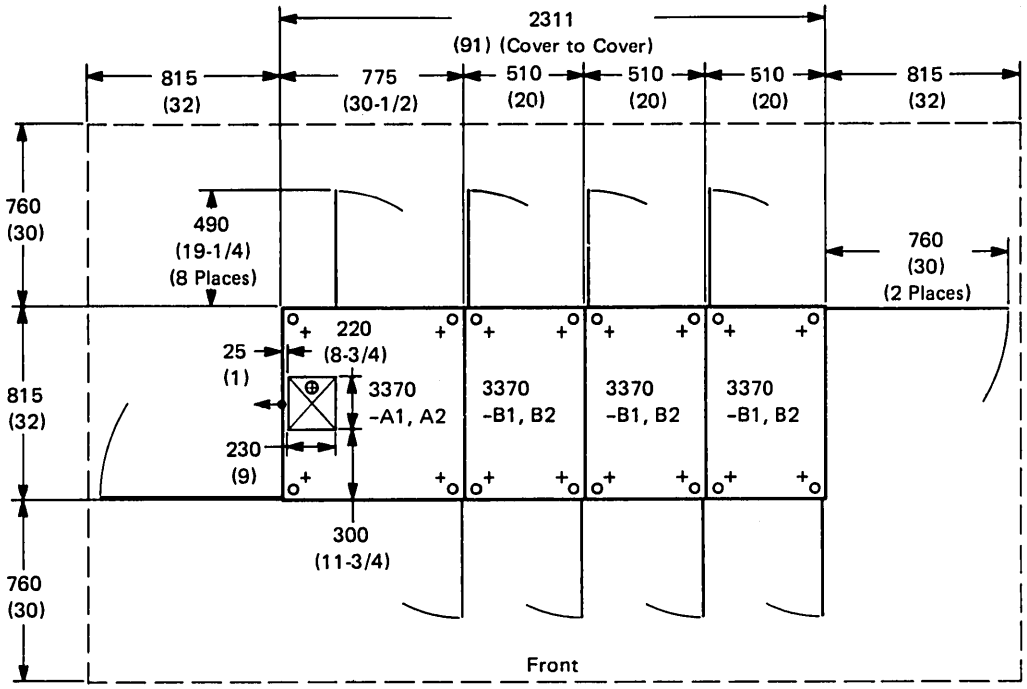
Notes:

1. A maximum cable length of up to 61 meters (200 feet) is available to attach as many as four 3350-A2s or 3350-A2Fs and four 3350-C2s or 3350-C2Fs to a control device.
2. Each 3350-A2 or 3350-A2F can attach one 3350-C2 or 3350-C2F.
3. String switch feature is available for the attachment of a 3350 to a second control device.
4. Power sequence and control; cable is optional.
5. Required for SF 6148 (remote switch).

3370 DIRECT ACCESS STORAGE MODELS A1, A2, B1, AND B2 (MAXIMUM CONFIGURATION)

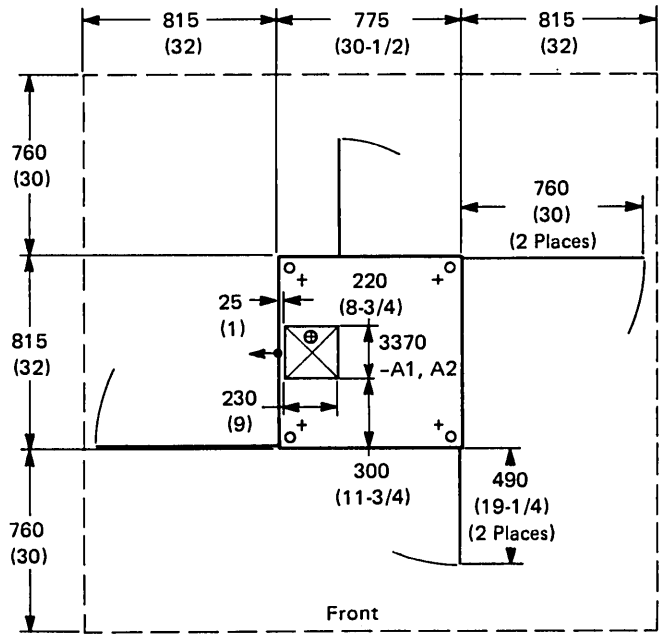
PLAN VIEW (Not to scale)

English measurements are shown in parentheses.

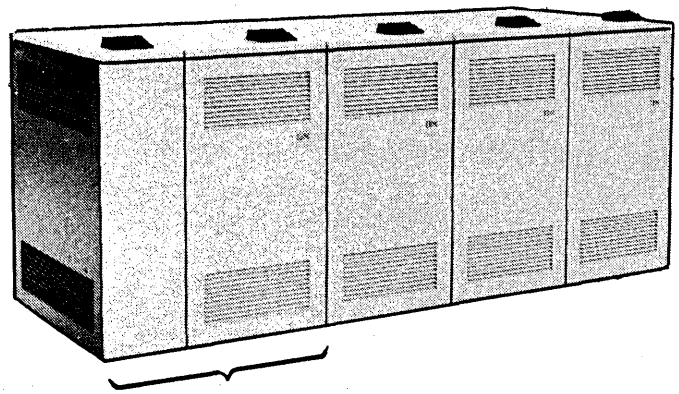


3370 DIRECT ACCESS STORAGE MODELS A1 AND A2

PLAN VIEW (Not to scale)



3370 DIRECT ACCESS STORAGE MODELS A1 AND A2



3370-A1, A2

SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	775	815	1 000
(inches)	(30-1/2)	(32)	(39-1/2)

Service Clearances:

	Front	Rear	Right	Left
mm	760	760	815*	815
(inches)	(30)	(30)	(32*)	(32)

Weight: 260 kg (580 lb)

Heat Output:**

Airflow: 5.5 m^3/min (190 cfm)

Acoustical Data:
For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>_m$		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
7.8	7.8	58.0	58.0	No	No

Power Requirements:

kVA**	
Phases	3
Plug	R&S, 3730
Receptacle	R&S, 3744
Connector	R&S, 3914
Power Cord Style	B2

Environment, Operating:***

Temperature	16°C-32°C (60°F-90°F)
Rel Humidity	8%-80%
Max Wet Bulb	23°C (73°F)

Environment, Nonoperating:

Temperature	10°C-43°C (50°F-110°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Notes:

* Service clearance is 815 mm (32 in.) if this is an end device.

** Varies with supply voltage.

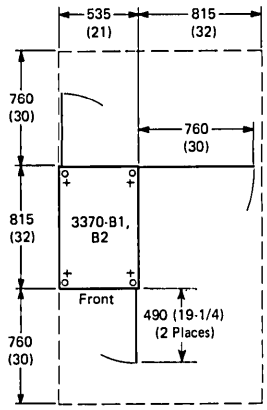
Volts	*kVA*	*Watts*	*BTU/hr*
200/208	1.0	640	2,200
220	1.2	680	2,350
235/240	1.3	720	2,500

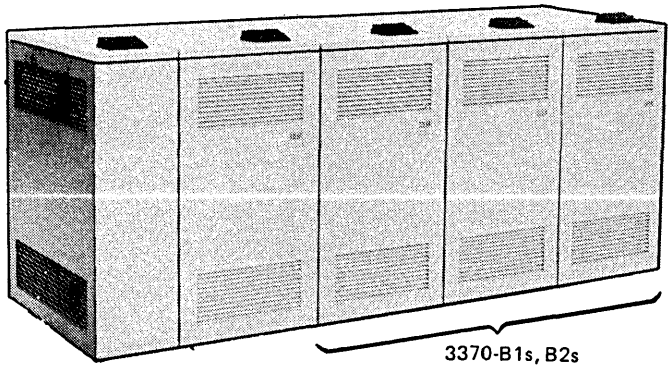
*** Biocides containing organometallic oxide *must not* be used in the air-conditioning systems of buildings containing these machines.

3370 DIRECT ACCESS STORAGE MODELS B1 AND B2

PLAN VIEW (Metric Scale: 10 mm = 0.5 m)

English measurements are shown in parentheses.





SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	535*	815	1 000
(inches)	(21*)	(32)	(39-1/2)

Service Clearances:

	Front	Rear	Right	Left
mm	760	760	815**	0
(inches)	(30)	(30)	(32**)	(0)

Weight: 170 kg (375 lb)

Heat Output:***

Airflow: 3.6 m^3/min (130 cfm)

Acoustical Data:
For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>$ m			
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	I	T
7.8	7.8	58.0	58.0	No	No

Power Requirements:†

kVA***
Phases 3

Environment, Operating:††

Temperature	16°C-32°C (60°F-90°F)
Rel Humidity	8%-80%
Max Wet Bulb	23°C (73°F)

Environment, Nonoperating:

Temperature	10°C-43°C (50°F-110°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Notes:

* The effective width of Model B1 or B2 when attached to a Model A1 or A2 or to another Model B1 or B2 is 510 mm (20 in.).

** Service clearance is 815 mm (32 in.) if this is an end device.

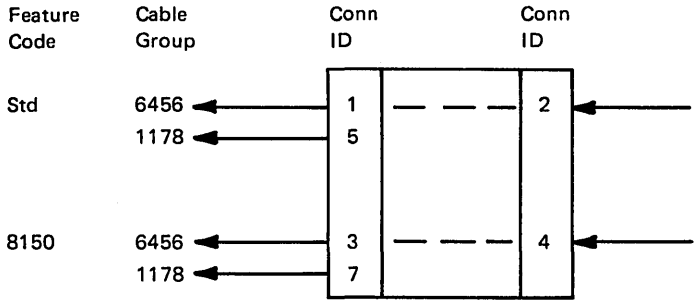
*** Varies with supply voltage.

Volts	*kVA*	*Watts*	*BTU/hr*
200/208	0.7	420	1,450
220	0.9	460	1,650
235/240	1.0	500	1,700

† Powered from a 3370 Model A1 or A2.

†† Biocides containing organometallic oxide *must not* be used in the air-conditioning systems of buildings containing these machines.

3370 DIRECT ACCESS STORAGE MODELS A1 AND A2 CABLING SCHEMATIC



From 3370

Feature Code	*Group No.*	*No. of Cables*	*Conn ID*	*Max Length*		*Model*	*Notes*
				m	*(ft)*		
Std	6456	2	1	61	(200)	A1, A2	1
	1178	1	5	61	(200)	A1, A2	3
8150	6456	2	3	61	(200)	A1, A2	1, 2
	1178	1	7	61	(200)	A1, A2	3

To 3370

Feature Code	*Conn ID*	*Model*	*Notes*
Std	2	A1, A2	1
8150	4	A1, A2	1, 2

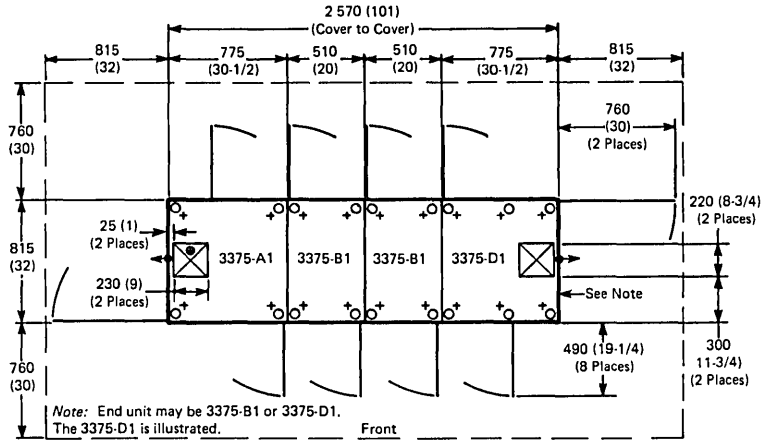
Notes:

1. A maximum cable length of 61 meters (200 feet) is available to attach as many as four 3370-A1s or A2s to a control device or to an intervening disk storage unit.
2. String switch feature (SF 8150) is available for the attachment of a 3370-A1 or A2 to a second control device.
3. Power sequence and control; cable is optional.

3375 DIRECT ACCESS STORAGE MODELS A1, B1, AND D1 (MAXIMUM CONFIGURATION)

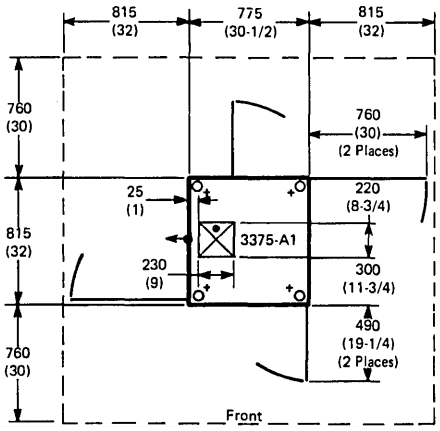
PLAN VIEW (Metric Scale: 10 mm = 0.5 m)

English measurements are shown in parentheses.

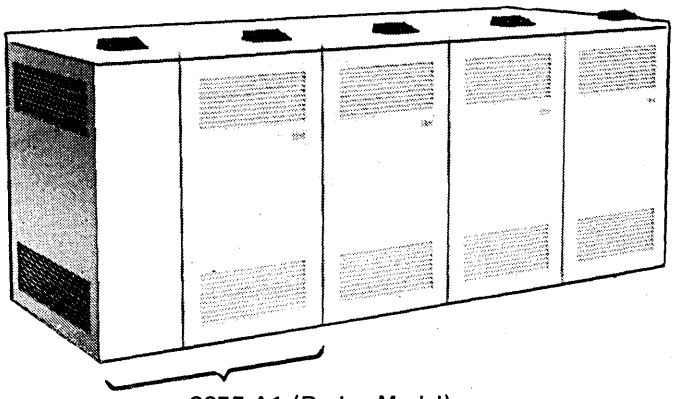


3375 DIRECT ACCESS STORAGE MODEL A1

PLAN VIEW (Not to scale)



3375 DIRECT ACCESS STORAGE MODEL A1



3375-A1 (Design Model)

SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	775	815	1 000
(inches)	(30-1/2)	(32)	(39-1/2)

Service Clearances:

	Front	Rear	Right	Left
mm	760	760	815*	815
(inches)	(30)	(30)	(32*)	(32)

Weight: 260 kg (580 lb)

Heat Output:**

Airflow: 5.5 m^3/min (190 cfm)

Acoustical Data:
For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>_m$		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
7.7	7.7	58.0	53.0	No	No

Power Requirements:

kVA**	
Phases	3
Plug	R&S, 3730
Receptacles	R&S, 3744
Connectors	R&S, 3914
Power Cord Style	B2

Environment, Operating:***

Temperature	16°C-32°C (60°F-90°F)
Rel Humidity	8%-80%
Max Wet Bulb	23°C (73°F)

Environment, Nonoperating:

Temperature	10°C-43°9C (50°F-110°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Notes:

* Service clearance is 815 mm (32 in.) if this is an end device.

** Varies with supply voltage.

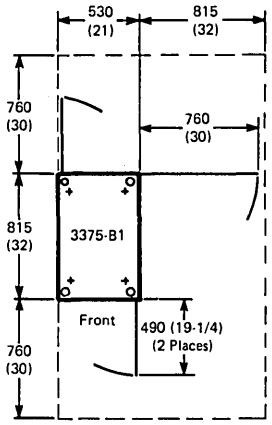
Volts	*kVA*	*Watts*	*BTU/hr*
200/208	1.0	640	2,200
220	1.2	680	2,350
235/240	1.3	720	2,500

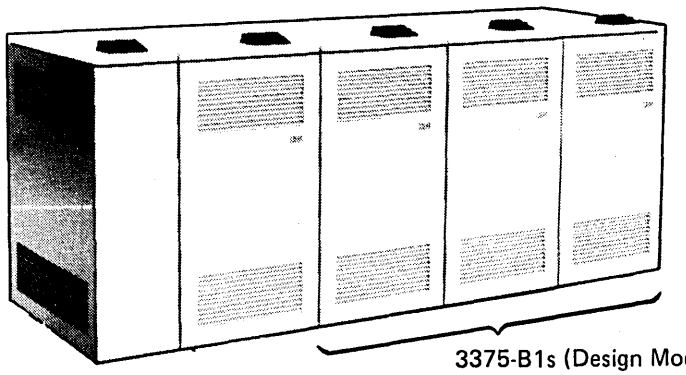
*** Organometallic oxide biocides and/or amines should not be used in the air-conditioning or steam-humidification systems of buildings containing these machines.

3375 DIRECT ACCESS STORAGE MODEL B1

PLAN VIEW (Metric Scale: 10 mm = 0.5 m)

English measurements are shown in parentheses.





3375-B1s (Design Model)

SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	530*	815	1 000
(inches)	(21*)	(32)	(39-1/2)

Service Clearances:

	Front	Rear	Right	Left
mm	760	760	815**	0
(inches)	(30)	(30)	(32**)	(0)

Weight: 170 kg (380 lb)

Heat Output:***

Airflow: 3.6 m^3/min (130 cfm)

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>_m$		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
7.7	7.7	58.0	53.0	No	No

Power Requirements:†

kVA***
Phases 3

Environment, Operating:††

Temperature	16°C-32°C (60°F-90°F)
Rel Humidity	8%-80%
Max Wet Bulb	23°C (73°F)

Environment, Nonoperating:

Temperature	10°C-43°C (50°F-110°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Notes:

* The effective width of Model B1 when attached to a Model A1 or another Model B1 is 510 mm (20 in.).

** Service clearance is 815 mm (32 in.) if this is an end device.

*** Varies with supply voltage.

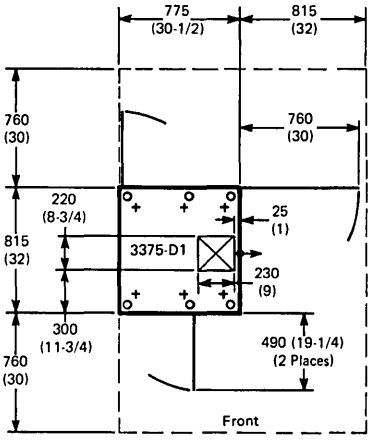
Volts	*kVA*	*Watts*	*BTU/hr*
200/208	0.7	420	1,450
220	0.9	460	1,650
235/240	1.0	500	1,700

† Powered from a 3370 Model A1 or A2.

†† Organometallic oxide biocides and/or amines should not be used in the air-conditioning or steam-humidification systems of buildings containing these machines.

3375 DIRECT ACCESS STORAGE MODEL D1

PLAN VIEW (Metric Scale: 10 mm = 0.5 m)
English measurements are shown in parentheses.



SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	775	815	1 000
(inches)	(30-1/2)	(32)	(39-1/2)

Service Clearances:

	Front	Rear	Right	Left
mm	760	760	815	0
(inches)	(30)	(30)	(32)	(0)

Weight: 250 kg (550 lb)

Heat Output:*

Airflow: 5.5 m^3/min (190 cfm)

Acoustical Data:
For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>_m$		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
7.7	7.7	58.0	53.0	No	No

Power Requirements:**

kVA*
Phases 3

Environment, Operating:***

Temperature	16°C-32°C (60°F-90°F)
Rel Humidity	8%-80%
Max Wet Bulb	23°C (73°F)

Environment, Nonoperating:

Temperature	10°C-43°C (50°F-110°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

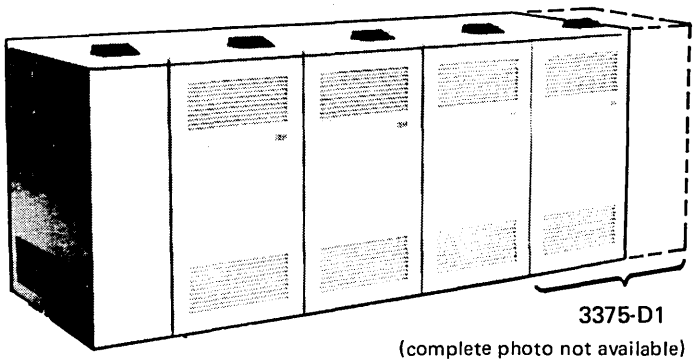
Notes:

* Varies with supply voltage.

Volts	*kVA*	*Watts*	*BTU/hr*
200/208	0.9	590	2,000
220	1.1	630	2,150
235/240	1.2	670	2,300

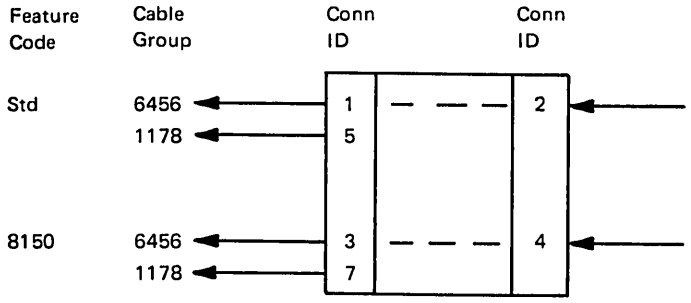
** Powered from a 3375 Model A1.

*** Organometallic oxide biocides and/or amines should not be used in the air-conditioning or steam-humidification systems of buildings containing these machines.



3375-D1
(complete photo not available)

3375 DIRECT ACCESS STORAGE MODELS A1 AND D1 CABLING SCHEMATIC



From 3375

Feature Code	*Group No.*	*No. of Cables*	*Conn ID*	*Max Length*		*Model*	*Notes*
				m	*(ft)*		
Std	6456	2	1	61	(200)	A1, D1	1, 3
	1178	1	5	61	(200)	A1, D1	4
8150	6456	2	3	61	(200)	A1, D1	1, 2, 3
	1178	1	7	61	(200)	A1, D1	4

To 3375

Feature Code	*Conn ID*	*Model*	*Notes*
Std	2	A1, D1	1, 3
8150	4	A1, D1	1, 2, 3

Notes:

1. A maximum cable length of 61 meters (200 feet) is available to attach as many as four 3375-A1s and/or 3375-D1s to a control device.
2. String switch feature (SF 8150) is available for the attachment of a 3375-A1 or 3375-D1 to a second control device.
3. A 3375-A1 and 3375-D1 in the same string cannot attach to the same control device.
4. Power sequence and control; cable is optional.

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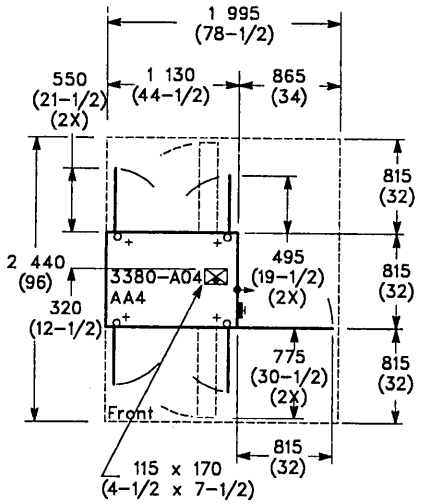
3380 DIRECT ACCESS STORAGE MODELS A04 AND AA4

PLAN VIEW (Not to Scale)

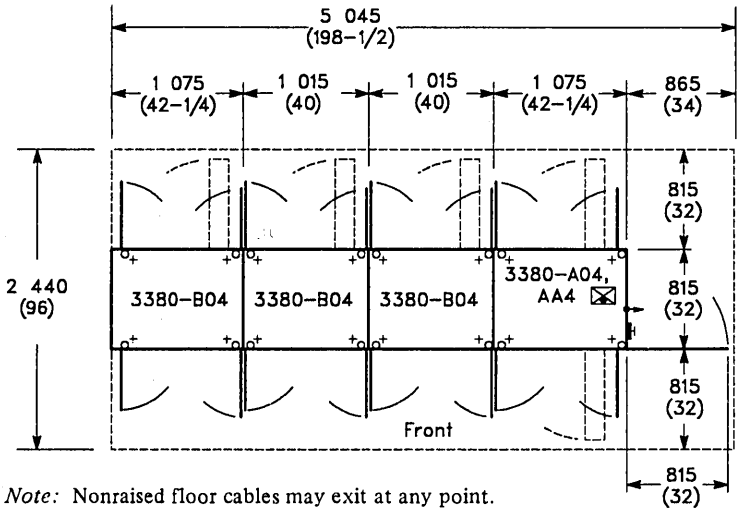
English measurements are shown in parentheses.



Note: Nonraised floor cables may exit at any point.

3380 DIRECT ACCESS STORAGE MODELS A04, AA4, AND B04 (Maximum Configuration)

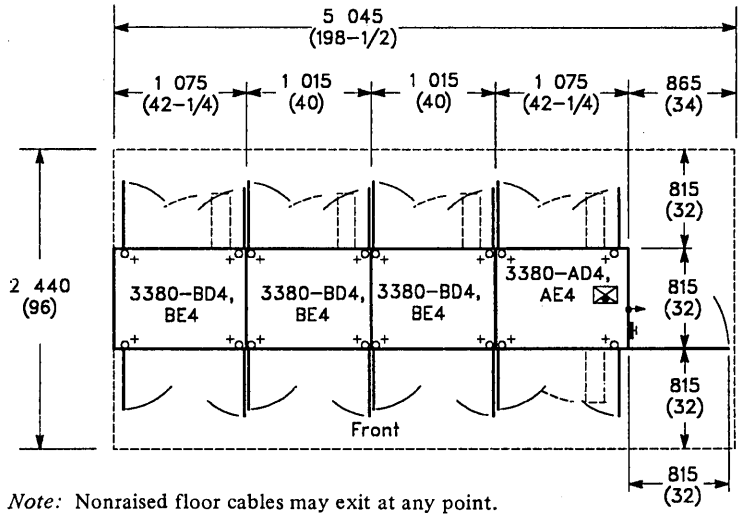
PLAN VIEW (Not to Scale)



Note: Nonraised floor cables may exit at any point.

3380 DIRECT ACCESS STORAGE MODELS AD4, AE4, BD4, AND BE4 (Maximum Configuration)

PLAN VIEW (Not to Scale)

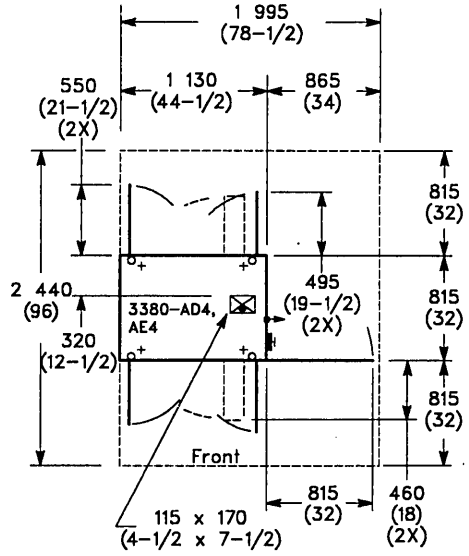


Note: Nonraised floor cables may exit at any point.

3380 DIRECT ACCESS STORAGE MODELS AD4 AND AE4

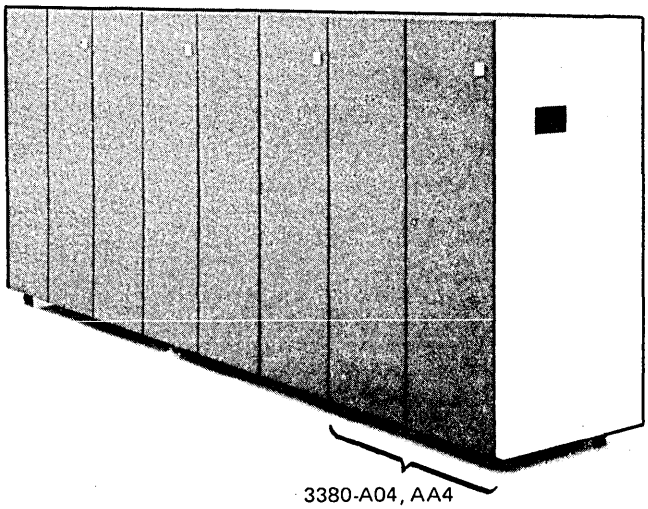
PLAN VIEW (Not to Scale)

English measurements are shown in parentheses.

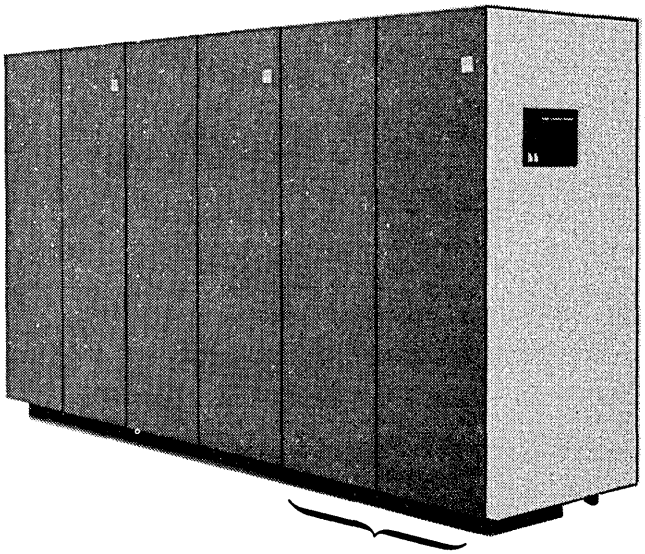


Note: Nonraised floor cables may exit at any point.

3380 DIRECT ACCESS STORAGE MODELS A04, AA4, AD4, AND AE4



3380-A04, AA4



3380-AD4, AE4

Notes:

* Add 57 mm (2-1/4 in.) to the front dimension for each end cover that is attached to this machine.

** Values vary with input voltage, installed features, and manufacturing variations.

*** Organometallic oxide biocides and/or amines should not be used in the air-conditioning or steam-humidification systems of buildings containing these machines.

SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	1 015*	815	1 790
(inches)	(40*)	(32)	(70-1/2)

Service Clearances:

	Front	Rear	Right	Left
mm	815	815	865	0
(inches)	(32)	(32)	(34)	(0)

Weight: 545 kg (1,200 lb)

Heat Output and Power Requirements:**

Voltage	*Max kVA*	*Max kW*	*Max (kBTU/hr)*
200/208	2.50	1.78	(6.10)
220/380	2.90	1.87	(6.40)
230/400	3.10	1.85	(6.35)
240/415	3.30	1.88	(6.45)
Phases	3		
Plug	Russellstoll, 7328		
Receptacle	Russellstoll, 7324		
Connector	Russellstoll, 7428		
Power Cord Style	E1		

Airflow: 8.5 m^3/min (300 cfm)

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>_m$		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
7.9	7.9	58.0	58.0	No	No

Environment, Operating:***

Temperature	16°C-32°C (60°F-90°F)
Rel Humidity	20%-80%
Max Wet Bulb	26°C (78°F)

Environment, Nonoperating:

Temperature	10°C-43°C (50°F-110°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

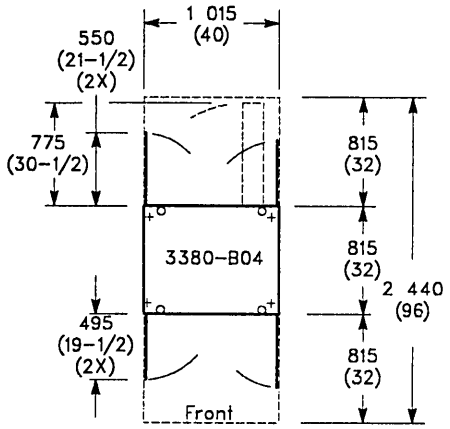
Environment, Storage: (Maximum 1 year)

Temperature	1°C-60°C (34°F-140°F)
Rel Humidity	5%-80%
Wet Bulb Range	1°C-29°C (34°F-85°F)

3380 DIRECT ACCESS STORAGE MODEL B04

PLAN VIEW (Not to Scale)

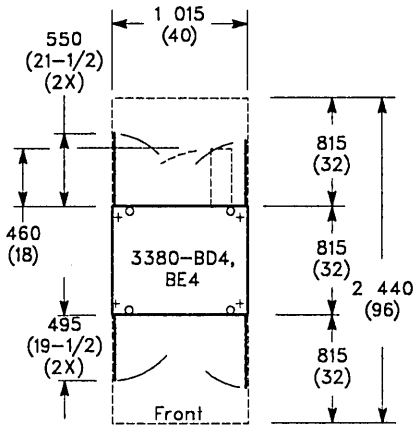
English measurements are shown in parentheses.

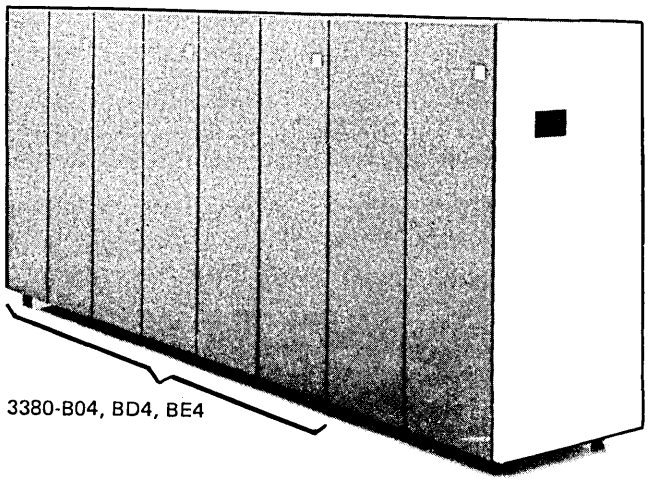


3380 DIRECT ACCESS STORAGE MODELS BD4 AND BE4

PLAN VIEW (Not to Scale)

English measurements are shown in parentheses.





3380 DIRECT ACCESS STORAGE MODELS B04, BD4, AND BE4

SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	1 015*	815	1 790
(inches)	(40*)	(32)	(70-1/2)

Service Clearances:

	Front	Rear	Right	Left
mm	815	815	0	0
(inches)	(32)	(32)	(0)	(0)

Weight: 455 kg (1,000 lb)

Heat Output and Power Requirements:**

Voltage	*Max kVA*	*Max kW*	*Max (kBTU/hr)*
200/208	1.90	1.30	(4.45)
220/380	2.30	1.44	(4.95)
230/400	2.60	1.42	(4.90)
240/415	2.80	1.50	(5.30)

The Model Bxx units are powered from the Model Axx.

Phases 3

Airflow: 6.2 m^3/min (220 cfm)

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>_m$		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
7.9	7.9	58.0	58.0	No	No

Environment, Operating:***

Temperature	16°C-32°C (60°F-90°F)
Rel Humidity	20%-80%
Max Wet Bulb	26°C (78°F)

Environment, Nonoperating:

Temperature	10°C-43°C (50°F-110°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Environment, Storage: (Maximum 1 year)

Temperature	1°C-60°C (34°F-140°F)
Rel Humidity	5%-80%
Wet Bulb Range	1°C-29°C (34°F-85°F)

Notes:

* Add 57 mm (2-1/4 in.) to the front dimension for each end cover that is attached to this machine.

** Values vary with input voltage, installed features, and manufacturing variations.

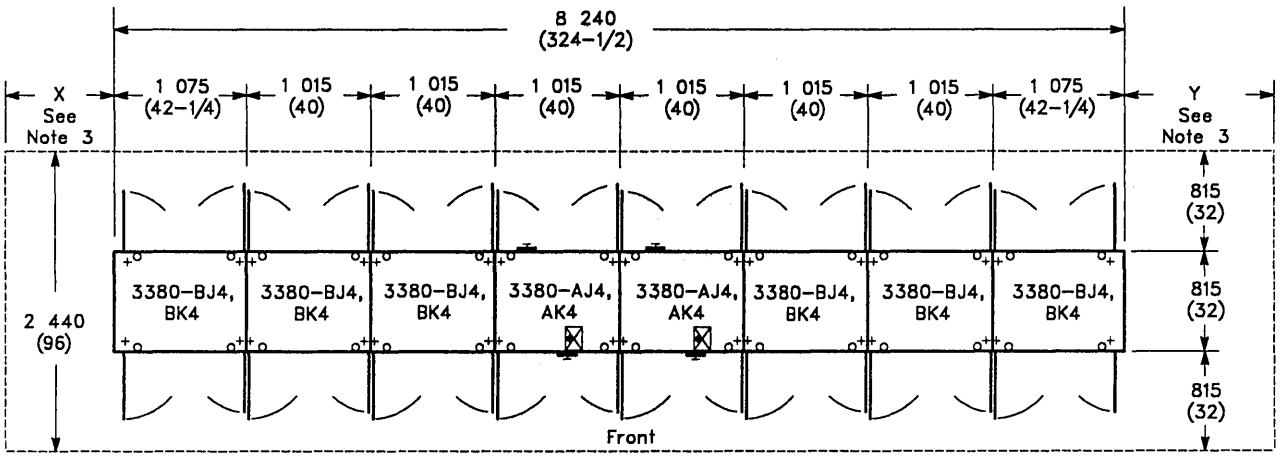
*** Organometallic oxide biocides and/or amines should not be used in the air-conditioning or steam-humidification systems of buildings containing these machines.

3380 DIRECT ACCESS STORAGE MODELS AJ4, AK4, BJ4, AND BK4

(Maximum Configuration)

PLAN VIEW (Not to Scale)

English measurements are shown in parentheses.



Notes:

1. Nonraised floor cables may exit at any point.

2. Leveling pads are not shipped with this machine. If they are required, the installing service representative will supply the leveling pads, part 4519857, four for each frame. Leveling pads are not recommended for earthquake-prone areas.

3. The following are the weights of the 3380 Models AJ4, AK4, BJ4, and BK4:

Models	Weight kg	(lb)
AJ4, AK4 (60 Hz)	585	(1 290)
AJ4, AK4 (50 Hz)	620	(1 370)
AJ4, AK4 (Japan)	545	(1 200)
BJ4, BK4 (60 Hz)	470	(1 040)
BJ4, BK4 (50 Hz)	475	(1 050)
BJ4, BK4 (Japan)	455	(1 000)

The following service clearance requirements are based on the weight of these machines.

A service clearance of 815 mm (32 in.) is required in the front and the rear of the machine.

Machines installed on floors rated at 415 kg/m2 (85 lb/ft^2) or stronger do not require end clearance, based on IBM's method of calculating floor load.

If the floor load rating is less than 415 kg/m^2 (85 lb/ft^2), use Table A to find the total end clearance required to distribute the load.

When one end of a string is against a wall and forms a dead-end aisle, the maximum length of the string is 7.6 m (25 ft) and access of 915 mm (36 in.) for emergency exit must be provided at the open end.

Table A

Floor Load Rating		*Required End Clearance*		
kg/m^2	*(lb/ft^2)*	*Dimension X + Y 60 Hz*	*Dimension X + Y 50 Hz*	*Dimension X + Y Japan*
440	(90)	0 mm (0 in.)	0 mm (0 in.)	0 mm (0 in.)
415	(85)	0 mm (0 in.)	205 mm (10 in.)	0 mm (0 in.)
390	(80)	255 mm (10 in.)	405 mm (16 in.)	100 mm (5 in.)
365	(75)	635 mm (25 in.)	840 mm (33 in.)	305 mm (12 in.)
340	(70)	1 525 mm (60 in.)	1 525 mm (60 in.)*	1 220 mm (48 in.)

*In addition to the end clearance, the service clearance at the front and rear of the machine must be increased to 865 mm (34 in.).

The Models AJ4 and AK4 can be installed at either end of the string. If planning for a four-path DASD string, the two Axx units must be next to each other. A maximum of three B units can be installed on both ends of the two Axx units of a four-path string. For maximum floor utilization and ease of conversion to four-path strings, the Axx units of two-path strings should be installed next to each other. For a four-path string, the end covers are removed and the emergency power-off (EPO) cables are interconnected between the two Axx units.

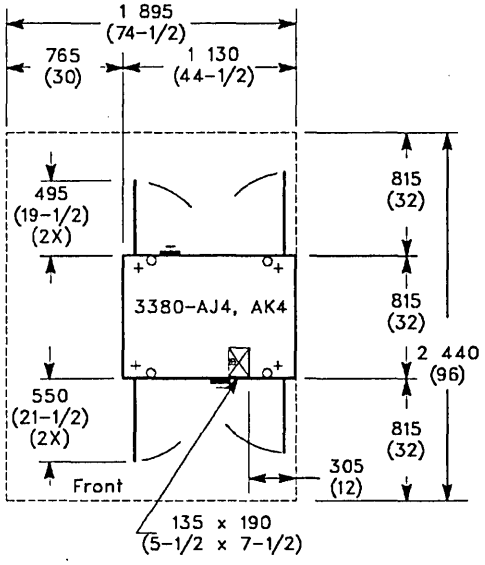
For addressing purposes, the recommended physical placement of the two Axx units in the four-path string is for the Axx unit with path A1/A2 to be positioned to the left of the Axx unit with path A3/A4. This will result in the low addresses physically located on the left of the string, as seen facing the string from the front.

3380 Direct Access Storage Models AJ4 and AK4

PLAN VIEW (Not to Scale)

English measurements are shown in parentheses.

Use IBM Physical Planning Template GX22-7089.



Specifications

Dimensions:

	Front	Side	Height
mm	1 015*	815	1 790
(inches)	(40*)	(32)	(70-1/2)

Service Clearances:

	Front	Rear	Right	Left
mm	815	815	See Note on page	
(inches)	(32)	(32)	3380.5	

Weight: See Note on page 3380.5.

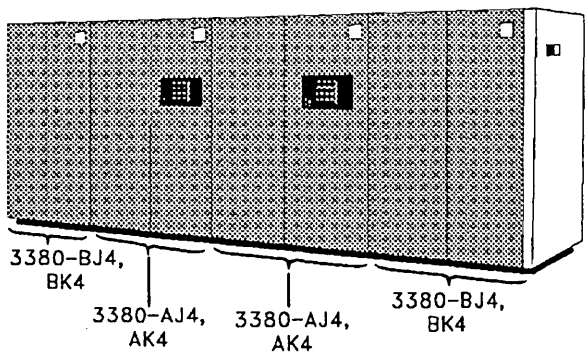
Heat Output and Power Requirements:**

Model AJ4, AK4 60-Hz Voltage	*Max kVA*	*Max kW*	*Max (kBTU/hr)*
200	1.89	1.70	(5.80)
208	1.95	1.77	(6.04)
220	2.02	1.84	(6.28)
240	2.11	1.89	(6.45)

Model AJ4, AK4 50-Hz Voltage	*Max kVA*	*Max kW*	*Max (kBTU/hr)*
200	1.77	1.71	(5.84)
220/380	2.06	1.90	(6.49)
230/400	2.09	1.85	(6.31)
240/415	2.05	1.84	(6.28)

Phases	3
Plug	Russellstoll, 7328
Receptacle	Russellstoll, 7324
Connector	Russellstoll, 7428
Power Cord Style	E1

Airflow: 8.5 m^3/min (300 cfm)



3380 Direct Access Storage Models AJ4 and AK4

Specifications (Continued)

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>m$		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
7.9	7.9	58.0	58.0	No	No

Environment, Operating:***

Temperature	16°C-32°C (60°F-90°F)†
Rel Humidity	20%-80%
Max Wet Bulb	26°C (78°F)

Environment, Nonoperating:

Temperature	10°C-43°C (50°F-110°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Environment, Storage: (Maximum 1 year)

Temperature	1°C-60°C (34°F-140°F)
Rel Humidity	5%-80%
Wet Bulb Range	1°C-29°C (34°F-85°F)

Notes:

* Add 57 mm (2-1/4 in.) to the front dimension for each end cover that is attached to this machine.

** Values vary with input voltage, installed features, and manufacturing variations.

*** Organometallic oxide biocides and/or amines should not be used in the air-conditioning or steam-humidification systems of buildings containing these machines.

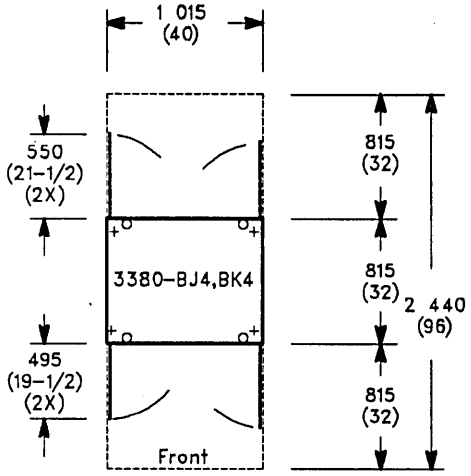
† It is recommended that inlet air to 3380 Models J and K be at a minimum of 65°F, as measured at the inlet louvers.

3380 Direct Access Storage Models BJ4 and BK4

PLAN VIEW (Not to Scale)

English measurements are shown in parentheses.

Use IBM Physical Planning Template GX22-7089.



Specifications

Dimensions:

	Front	Side	Height
mm	1 015*	815	1 790
(inches)	(40*)	(32)	(70-1/2)

Service Clearances:

	Front	Rear	Right	Left
mm	815	815	See Note on page	
(inches)	(32)	(32)	3380.5.	

Weight: See Note on page 3380.5.

Heat Output and Power Requirements:**

Model BJ4, BK4 60-Hz Voltage	*Max kVA*	*Max kW*	*Max (kBTU/hr)*
200	1.48	1.35	(4.61)
208	1.54	1.42	(4.85)
220	1.65	1.50	(5.12)
240	1.73	1.57	(5.36)

Model BJ4, BK4 50-Hz Voltage	*Max kVA*	*Max kW*	*Max (kBTU/hr)*
200	1.32	1.30	(4.44)
220/380	1.77	1.59	(5.43)
230/400	1.77	1.59	(5.43)
240/415	1.87	1.72	(5.87)

The Model Bxx units are powered from the Model Axx.

Phases 3

Airflow: 6.2 m^3/min (220 cfm)

3380 Direct Access Storage Models BJ4 and BK4

Specifications (Continued)

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>m$		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
7.9	7.9	58.0	58.0	No	No

Environment, Operating:***

Temperature	16°C-32°C (60°F-90°F)†
Rel Humidity	20%-80%
Max Wet Bulb	26°C (78°F)

Environment, Nonoperating:

Temperature	10°C-43°C (50°F-110°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Environment, Storage: (Maximum 1 year)

Temperature	1°C-60°C (34°F-140°F)
Rel Humidity	5%-80%
Wet Bulb Range	1°C-29°C (34°F-85°F)

Notes:

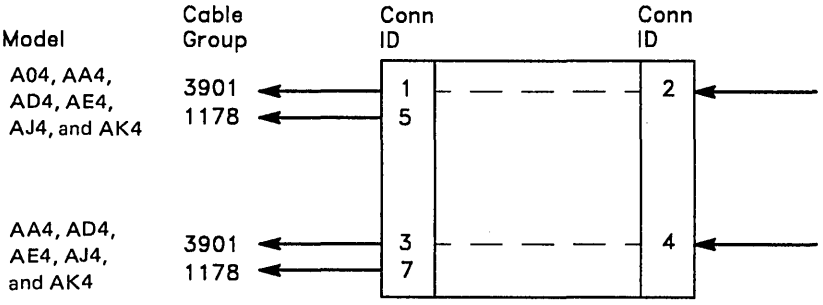
* Add 57 mm (2-1/4 in.) to the front dimension for each end cover that is attached to this machine.

** Values vary with input voltage, installed features, and manufacturing variations.

*** Organometallic oxide biocides and/or amines should not be used in the air-conditioning or steam-humidification systems of buildings containing these machines.

† It is recommended that inlet air to 3380 Models J and K be at a minimum of 65°F, as measured at the inlet louvers.

3380 DIRECT ACCESS STORAGE MODELS A04, AA4, AD4, AE4, AJ4, AND AK4 CABLING SCHEMATIC



From 3380

Feature Code	Group No.	No. of Cables	Conn ID	Max Length m	Max Length (ft)	Model	Notes
Std	3901	1	1	61	(200)	AO4,AA4,AD4,AE4,AJ4,AK4	1,2,4
	1178	1	5	61	(200)	AO4,AA4,AD4,AE4,AJ4,AK4	5
Std	3901	1	3	61	(200)	AA4,AD4,AE4,AJ4,AK4	1,2,3,4,6,7
	1178	1	7	61	(200)	AA4,AD4,AE4,AJ4,AK4	5

To 3380

Feature Code	Conn ID	Model	Notes
Std	2	AO4,AA4,AD4,AE4,AJ4,AK4	1,2,4
Std	4	AA4,AD4,AE4,AJ4,AK4	1,2,3

Notes:

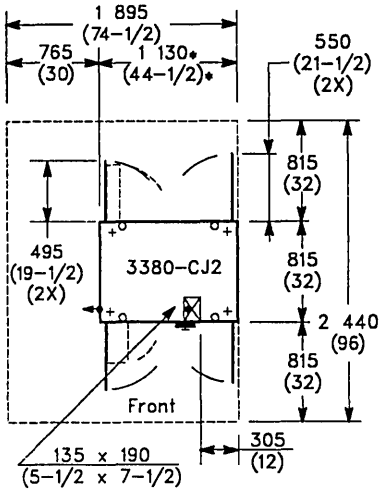
1. A maximum cable length of 61 meters (200 feet) is available to attach as many as two 3380-Axxs to a storage control unit.
2. One or two Model A04s may be attached to one storage control unit. A Model A04 may not share the same storage control unit with a Model AA4, AD4, AE4, AJ4, or AK4.
3. Two Model AA4s, AD4s, AE4s, AJ4s, or AK4s may share storage control units in any combination. If these machines share a storage control unit, both of them must share the same second storage control unit.
4. A maximum of three Model B04s may be attached to a Model A04 or AA4. A maximum of three Model BD4s or BE4s may be attached to a Model AD4 or AE4 in any combination.

   A maximum of three Model BJ4s or BK4s may be attached to a Model AJ4 or AK4 in any combination. No other configurations of a DASD string are allowed.
5. The power sequence control cable is connected to the 3380 for remote power-on functions. The cable is required for Models A04 and AA4. It is optional for Models AD4, AE4, AJ4, and AK4.
6. Cable shield continuity on the 3901 cables must be maintained. Submit an RPQ for applications where 3901 cables must be connected together to extend their length, or where a device other than another 3380 is inserted in the path.
7. The four-path configuration cables for Models AJ4 and AK4 are ordered for each Axx unit as if they were independent units.

3380 DIRECT ACCESS STORAGE MODEL CJ2

PLAN VIEW (Not to Scale)

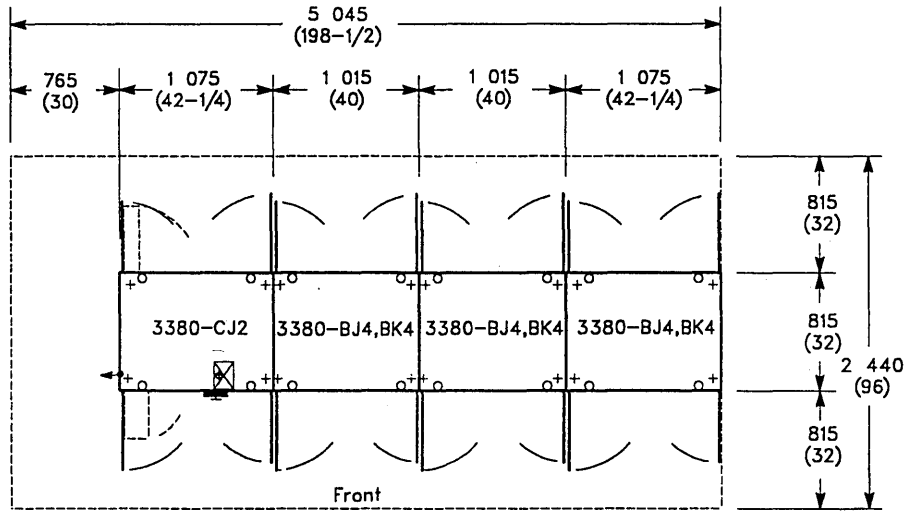
English measurements are shown in parentheses.



3380 DIRECT ACCESS STORAGE MODEL CJ2

(Maximum Configuration)

PLAN VIEW (Not to Scale)

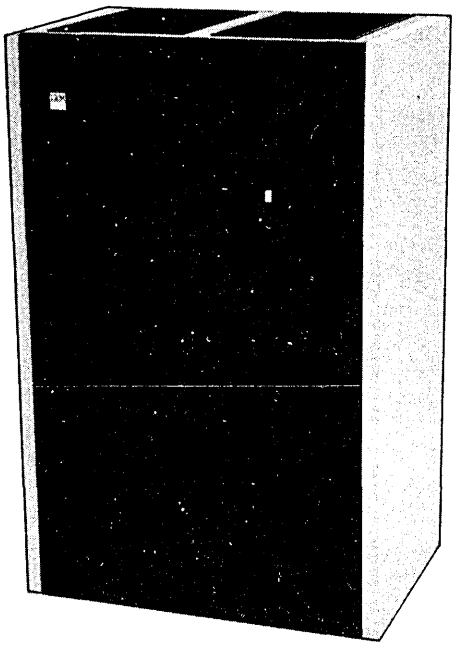


Notes:

1. As many as three 3380 Model BJ4s or BK4s may be attached to the right side of a 3380 Model CJ2.

2. Leveling pads are not shipped with this machine. If they are required, the installing service representative will supply the leveling pads, part 4519857, four for each frame. Leveling pads are not recommended for earthquake prone areas.

3380 DIRECT ACCESS STORAGE MODEL CJ2



SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	1 015*	815	1 790
(inches)	(40*)	(32)	(70-1/2)

Service Clearances:

	Front	Rear	Right	Left
mm	815	815	0	765
(inches)	(32)	(32)	(0)	(30)

Weight: *60 Hz* 514 kg (1 141 lb) *50 Hz* 541 kg (1 204 lb)

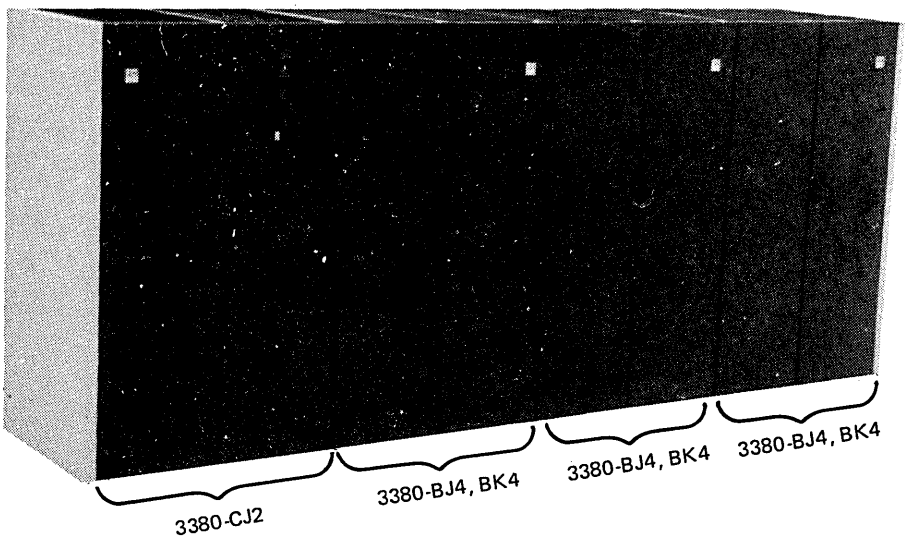
Heat Output and Power Requirements:**

Model CJ2 60-Hz Voltage	*Max kVA*	*Max kW*	*Max (kBTU/hr)*
208	1.78	1.70	(5.80)
220	1.54	1.48	(5.05)
240	1.61	1.57	(5.36)

Model CJ2 50-Hz Voltage	*Max kVA*	*Max kW*	*Max (kBTU/hr)*
200	1.76	1.71	(5.84)
220/380	1.82	1.78	(6.07)
240/415	1.90	1.84	(6.28)

Phases	3
Plug	Russellstoll, 7328
Receptacle	Russellstoll, 7324
Connector	Russellstoll, 7428
Power Cord Style	E1

Airflow: 8.5 m^3/min (300 cfm)



3380 DIRECT ACCESS STORAGE MODEL CJ2

SPECIFICATIONS (Continued)

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>_m$			
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	I	T
7.9	7.9	57.0	57.0	No	No

Environment, Operating:***

Temperature	16°C-32°C (60°F-90°F)
Rel Humidity	20%-80%
Max Wet Bulb	26°C (78°F)

Environment, Nonoperating:

Temperature	10°C-43°C (50°F-110°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Environment, Storage: (Maximum 1 year)

Temperature	1°C-60°C (34°F-140°F)
Rel Humidity	5%-80%
Wet Bulb Range	1°C-29°C (34°F-85°F)

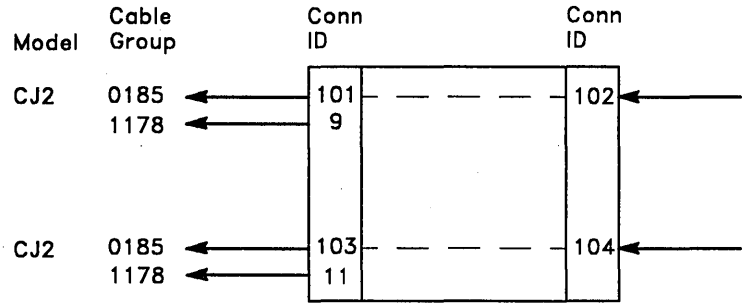
Notes:

* Add 57 mm (2-1/4 in.) to the front dimension for each end cover that is attached to this machine.

** Values vary with input voltage, installed features, and manufacturing variations.

*** Organometallic oxide biocides and/or amines should not be used in the air-conditioning or steam-humidification systems of buildings containing these machines.

3380 Direct Access Storage Model CJ2 Cabling Schematic



From 3380-CJ2

Feature Code	Group No.	No. of Cables	Conn ID	Max Length m	Max Length (ft)	Model	Notes
Std	0185	2	101	122	(400)	CJ2	1,2,3
	1178	1	9	122	(400)	CJ2	4
Std	0185	2	103	122	(400)	CJ2	1,2,3
	1178	1	11	122	(400)	CJ2	4

To 3380-CJ2

Feature Code	Conn ID	Model	Notes
Std	102	CJ2	1
Std	104	CJ2	1

Notes:

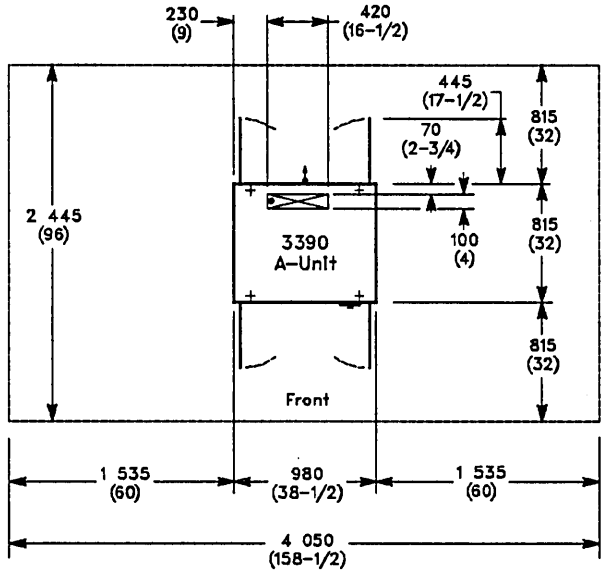
1. Standard channel interface. The total cable length of 122 meters (400 feet) is available to attach as many as eight storage control units.
2. The maximum cable length must be reduced 4.5 meters (15 feet) for each storage control unit attached between the 3380 Model CJ2 and the channel.
3. One set of cables is required for each channel attachment.
4. Power sequence and control cable.
5. If DASD units are attached to a 3044 Model D02, no other type of control unit may be attached to that same D02 unit. The 3380 Model CJ2 cannot be attached to 308x channels by means of a 3044.
6. When a 3380 Model CJ2 is attached to a 3044 Model D02 in data streaming, the total distance to the channel must not exceed 245 meters (800 feet). Distance includes both copper bus and tag cables, and fiber optic cable.

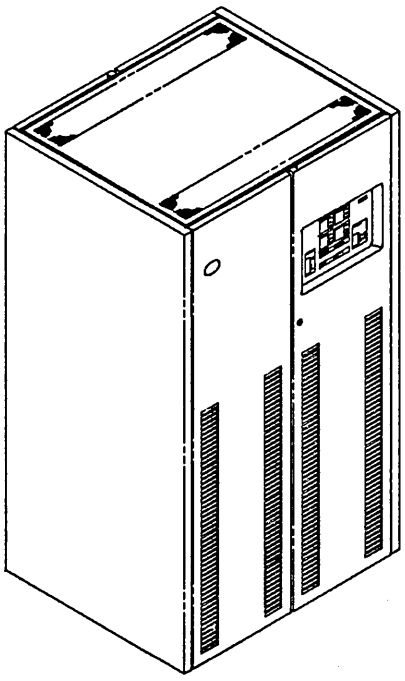
3390 Direct Access Storage

Models A14, A24, A34, A18, A28, A38

Plan View (Not to Scale): English measurements are shown in parentheses.

Use IBM Physical Planning Template, GX22-7129.





Specifications: Dimensions:

Single Frame:	Front	Side	Height
mm	980	815	1 790
(inches)	(38½)	(32)	(70½)

Service Clearances for 70-lb Floors:*

	Front	Rear	Right	Left
mm	815	815	1 535	1 535
(inches)	(32)	(32)	(60)	(60)
	975**	975**		
	(38**)	(38**)		

Heat Output and Power Requirements:*, ****

Models A14, A24, A34 Voltage	Max kVA	Max kW	Max (kBTU/hour)
200/208	1.6	1.3	(4.4)
220/380	1.8	1.4	(4.8)
230/400	1.9	1.5	(5.0)
240/415	2.1	1.6	(5.5)

Models A18, A28, A38 Voltage	Max kVA	Max kW	Max (kBTU/hour)
200/208	2.2	2.0	(6.8)
220/380	2.3	2.0	(6.8)
230/400	2.4	2.1	(7.2)
240/415	2.5	2.1	(7.2)

Phases *****	3
Plug (A-unit only)	Russellstoll, 7328
Receptacle	Russellstoll, 7324
Connector	Russellstoll, 7428-JPA63
	Russellstoll, 7428-JPA64
	Russellstoll, 7428-JPA65
Power Cord Style	E1

Notes:

* Review information for floor loading considerations.

** Models A14, A24, A34, A18, A28, and A38 with optional isolation transformer only.

*** Values vary with input voltage, installed features, and manufacturing variations.

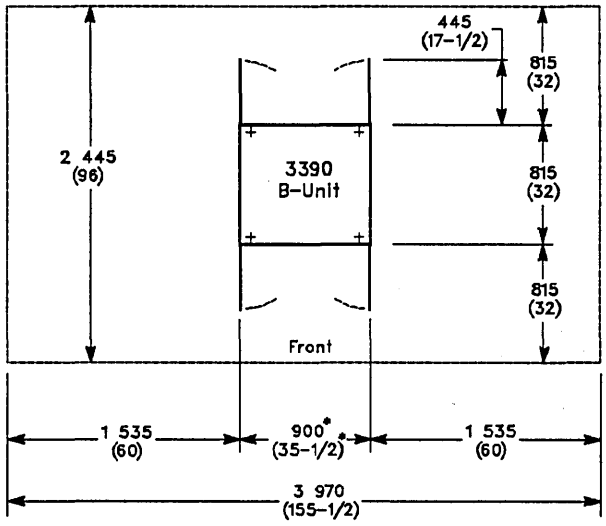
**** For 50-Hz machines only, the distribution transformer should be derated 20% when 3390s and 3990s are the only machines it supplies. An optional feature or RPQ for an isolation transformer is available for countries with phase/neutral current restrictions.

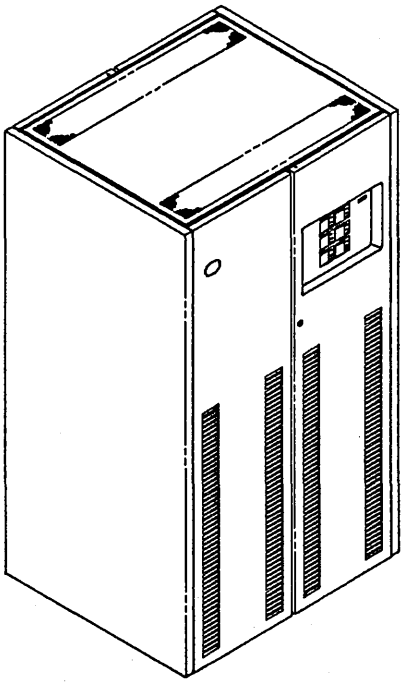
***** This product is not phase sensitive.

Models B14, B24, B34, B18, B28, B38, B1C, B2C, and B3C

Plan View (Not to Scale): English measurements are shown in parentheses.

Use IBM Physical Planning Template, GX22-7129.





Specifications

Heat Output and Power Requirements:**

Models B14, B24, B34 Voltage	Max kVA	Max kW	Max (kBTU/hr)
200/208	1.6	1.3	(4.4)
220/380	1.8	1.4	(4.8)
230/400	1.9	1.5	(5.0)
240/415	2.1	1.6	(5.5)

Models B18, B28, B38 Voltage	Max kVA	Max kW	Max (kBTU/hr)
200/208	2.2	2.0	(6.8)
220/380	2.2	2.0	(6.8)
230/400	2.3	2.1	(7.2)
240/415	2.4	2.1	(7.2)

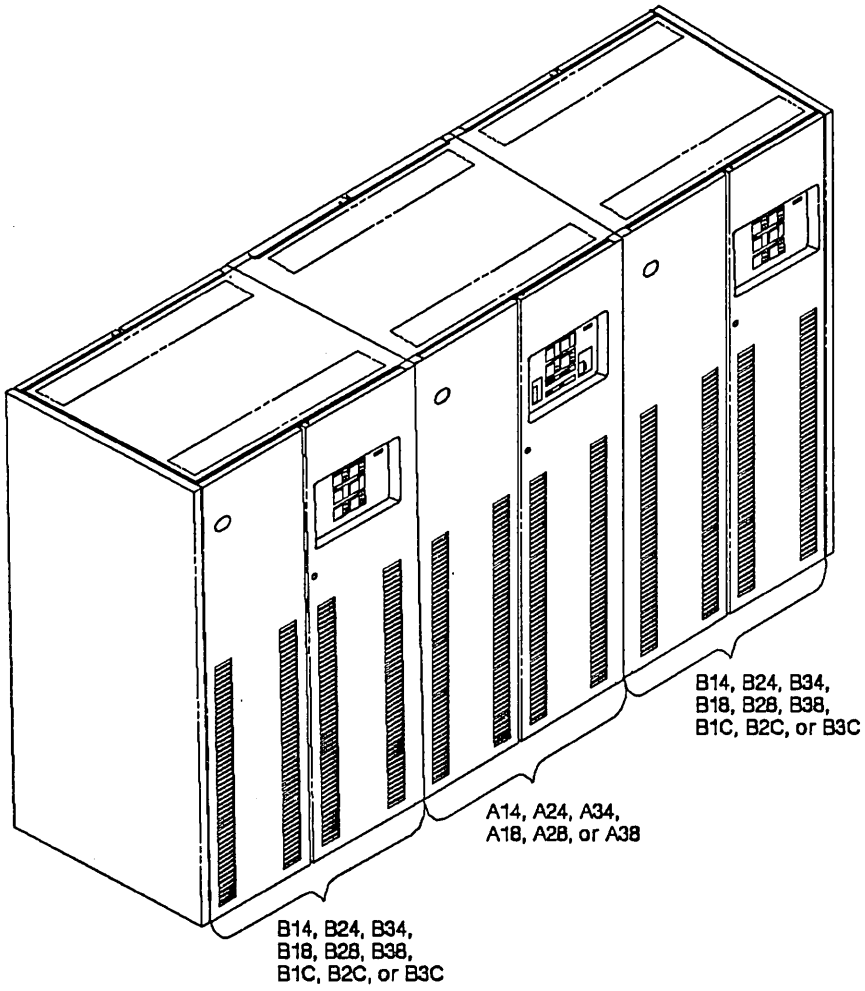
Models B1C, B2C, B3C Voltage	Max kVA	Max kW	Max (kBTU/hr)
200/208	3.2	3.0	(10.1)
220/380	3.4	3.0	(10.3)
230/400	3.5	3.0	(10.4)
240/415	3.6	3.1	(10.6)

Notes:

* When the B-unit is attached to the A-unit (head of string), the A-unit end cover is moved to the exposed end of the B-unit.

** Values vary with input voltage, installed features, and manufacturing variations.

Models A14, A24, A34, A18, A28, A38, B14, B24, B34, B18, B28, B38, B1C, B2C, and B3C



Specifications Acoustical Data:: For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>m$		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
7.9	7.9	57.0	57.0	No	No

Environment, Operating:

Temperature	16°C—32°C (60°F—90°F)
Relative Humidity	20%—80%
Maximum Wet Bulb	23°C (73°F)

Environment, Nonoperating:

Temperature	10°C—43°C (50°F—110°F)
Relative Humidity	8%—80%
Maximum Wet Bulb	27°C (80°F)

Environment, Storage: (Maximum 1 year)

Temperature	1°C—60°C (34°F—140°F)
Relative Humidity	5%—80%
Maximum Wet Bulb	29°C (84°F)

Air Flow:

Model	m³/min	(cfm)
A14, A24, A34	28.3	(1 000)
A18, A28, A38	28.3	(1 000)
B14, B24, B34	28.3	(1 000)
B18, B28, B38	28.3	(1 000)
B1C, B2C, B3C	42.5	(1 500)

Weight:*

Model	kg	(lbs)
A14, A24, A34	425	(940)
A18, A28, A38	515	(1 140)
B14, B24, B34	389	(860)
B18, B28, B38	480	(1 060)
B1C, B2C, B3C	605	(1 340)

Note:

* If an isolation transformer is used, add 125 kg (275 lb) to the weight of the Model A14, A18, A24, A28, A34, or A38.

Floor and Heat Loading Considerations:

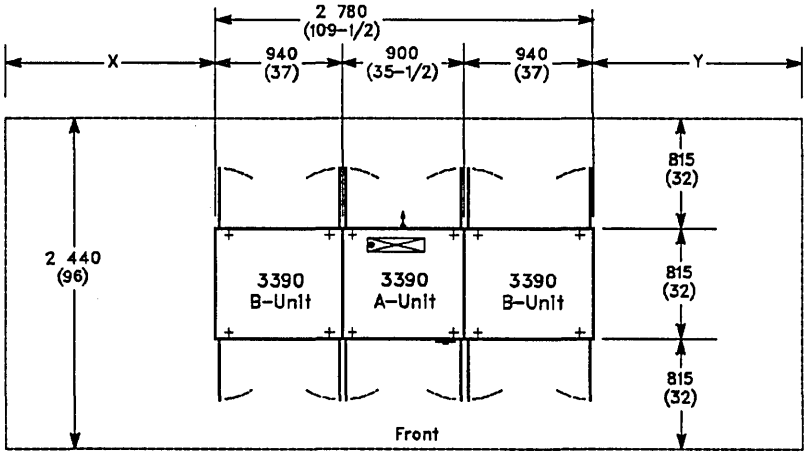
Machines installed in rooms with floor load ratings in excess of 490 kg/m² (100 lb/ft²) require no end clearance.

If the floor load rating is less than 490 kg/m² (100 lb/ft²) the following table must be used to distribute the weight.

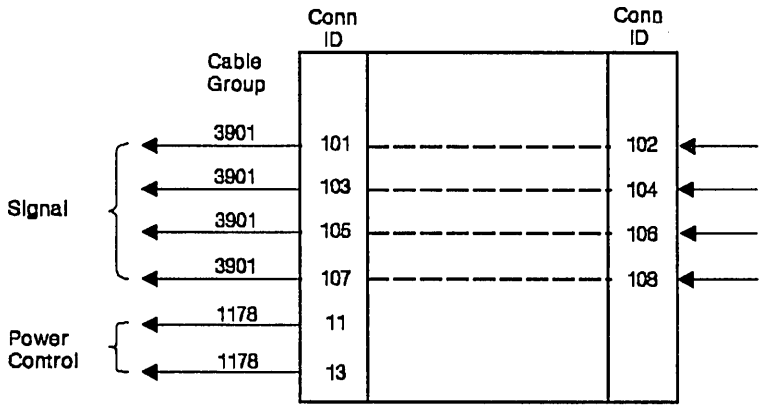
Consult a structural engineer if there is any question about the correct placement of these machines for floor load distribution.

Floor Loading				Heat Loading	
Floor Load Rating		End Clearance (X and Y Dimensions)*			
kg/m²	(lb/ft²)	mm	(In.)	W/m²	(W/ft²)
490	(100)	0	(0)	1725	(160)
440	(90)	310	(12)	1540	(145)
390	(80)	820	(32)	1325	(125)
340	(70)	1530	(60)	1110	(105)

Note: *See the figure below for location of X and Y dimensions.



Models A14, A24, A34, A18, A28, A38 Cabling Schematic



From 3390:

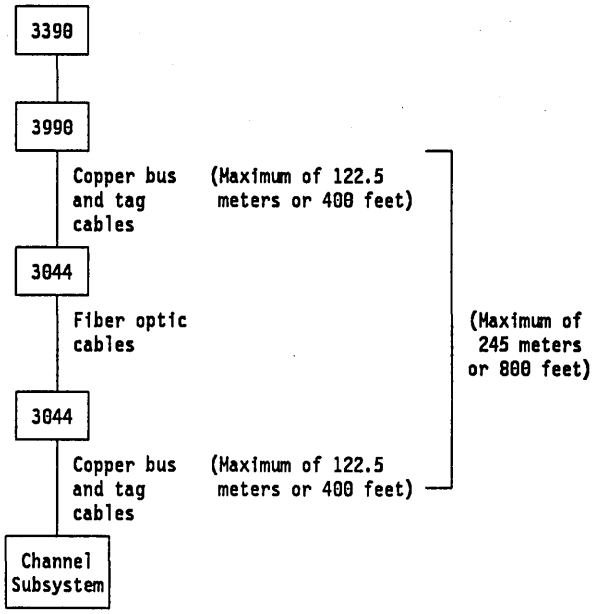
Device Adapter	Group No.	No. of Cables	Conn ID	Max. Length m	Max. Length (ft)	Model	Notes
Device Adapter 0	3901	1	101	61	(200)	A14, A24, A34, A18, A28, A38	1, 2
	1178	1	11	61	(200)	A14, A24, A34, A18, A28, A38	3
Device Adapter 1	3901	1	103	61	(200)	A14, A24, A34, A18, A28, A38	1, 2
	1178	1	13	61	(200)	A14, A24, A34, A18, A28, A38	3
Device Adapter 2	3901	1	105	61	(200)	A14, A24, A34, A18, A28, A38	1, 2
		No cable					
Device Adapter 3	3901	1	107	61	(200)	A14, A24, A34, A18, A28, A38	1, 2
		No cable					

To 3390:

Device Adapter	Conn ID	Model	Notes
Device Adapter 0	102	A14, A24, A34, A18, A28, A38	1, 2
Device Adapter 1	104	A14, A24, A34, A18, A28, A38	1, 2
Device Adapter 2	106	A14, A24, A34, A18, A28, A38	1, 2
Device Adapter 3	108	A14, A24, A34, A18, A28, A38	1, 2

Notes:

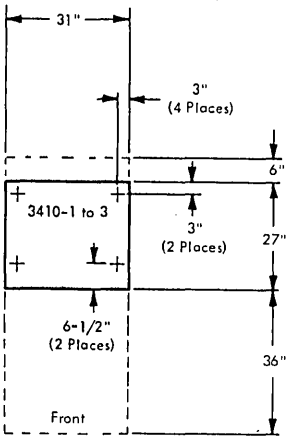
1. A maximum cable length of 61 meters (200 feet) is available to attach as many as two 3390 strings (Model A14, A24, A34, A18, A28, or A38) or one 3380 string (Model AD4, AE4, AJ4, or AK4) and one 3390 string to an IBM 3990 Storage Control.
2. Cable shield continuity on the 3901 cables must be maintained. Submit an RPQ for applications where 3901 cables must be connected together to extend their length, or where a device other than a 3380 or another 3390 is to be inserted in the path.
3. Power sequence and control cable.
4. If a 3390 is attached to a 3044-D02 through a 3990 Storage Control, no other type of control unit may be attached to that same D02 unit. The DASD units cannot be attached to 308X channels through a 3044.
5. When a 3390 is attached to a 3044-D02 unit through a 3990 Storage Control in data streaming mode, the total distance to the channel must not be more than 245 meters (800 feet). Distance includes both copper bus and tag cables and fiber optic cables. See diagram below.



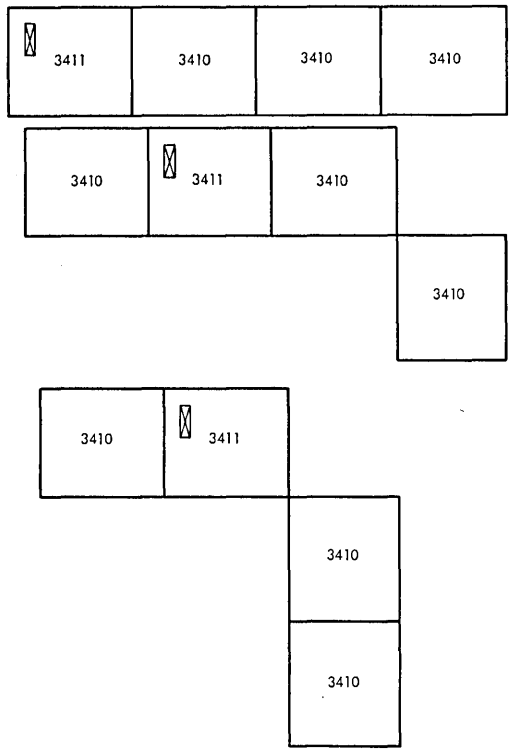
For example, if the copper bus and tag cables between the 3990 and 3044 are 250 feet, and the copper bus and tag cables between the 3044 and channel subsystem are 300 feet, then the fiber optic cables between the two 3044s can be up to 250 feet (for a total distance of 800 feet).

3410 MAGNETIC TAPE UNIT MODELS 1 TO 3

PLAN VIEW (English Scale: 1/4 in. = 1 ft)



Typical Tape Unit Layouts



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	31	27	39
(cm)	(79)	(69)	(99)

Service Clearances:

	F	R	Rt	L
Inches	36	6	0*	0*
(cm)	(91)	(15)	(0*)	(0*)

Weight: 180 lb (82 kg)

Heat Output: 850 BTU/hr (220 kcal/hr)

Airflow: 60 cfm (2 m^3/min)

Acoustical Data:
For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning,* GC22-7072.

L_{WAd}		$<L_{pA}>_m$		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
7.9	7.3	58.0	53.0	No	No

Power Requirements:**

kVA	0.3

Environment, Operating:

Temperature	60°F-90°F (16°C-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	78°F (26°C)

Environment, Nonoperating:

Temperature	50°F-110°F (10°C-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	80°F (27°C)

Notes:

* The 3410 can be attached to either side of the 3411, with a maximum of three devices on a side.

** Powered from 3411.

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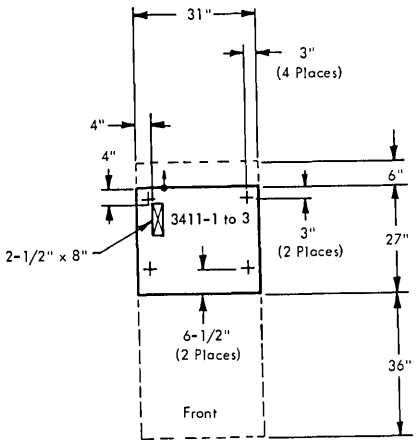
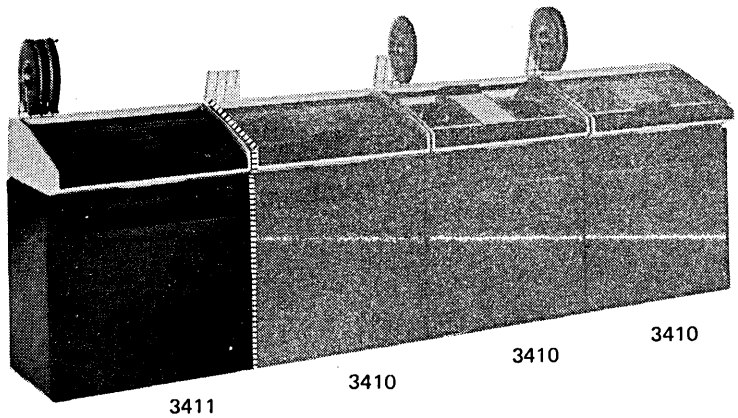
3411 MAGNETIC TAPE UNIT AND CONTROL MODELS 1 TO 3

PLAN VIEW (English Scale: 1/4 in. = 1 ft)





SPECIFICATIONS

Dimensions:

	F	S	H
Inches	31	27	39
(cm)	(79)	(69)	(99)

Service Clearances:

	F	R	Rt	L
Inches	36	6	0*	0*
(cm)	(91)	(15)	(0*)	(0*)

Weight: 325 lb (150 kg)

Heat Output: 3,500 BTU/hr (890 kcal/hr)

Airflow: 200 cfm (6 m^3/min)

Acoustical Data:
For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>_m$		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
7.9	7.3	58.0	53.0	No	No

Power Requirements:	*60 Hz All and 50 Hz Model 1*	*50 Hz Models 2 and 3*
kVA	1.2	1.2
Phases	1	3
Plug	R&S, FS3750	
Connector	R&S, FS3933	
Receptacle	R&S, FS3753	
Power Cord Style	A2	D2

Environment, Operating:

Temperature	60°F-90°F (16°C-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	78°F (26°C)

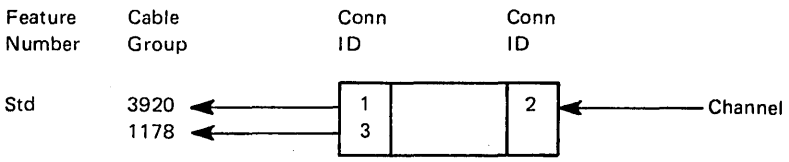
Environment, Nonoperating:

Temperature	50°F-110°F (10°C-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	80°F (27°C)

Notes:

*The 3410 can be attached to either side of the 3411, with a maximum of three devices on a side. The 3411 Model 1 can have up to three 3410s attached (total capability of four tape units). The 3411 Models 2 and 3 can have a maximum of five 3410s attached (total capability of six tape units). All devices are physically attached at the front corner, allowing up to 90° swing between devices.

3411 MAGNETIC TAPE UNIT AND CONTROL MODELS 1 TO 3 CABLING SCHEMATIC



From 3411

Feature Code	*Group No.*	*No. of Cables*	*Conn ID*	*Max Length*		*Model*	*Notes*
				m	*(ft)*		
Std	1178	1	3	45	(150)	All	2, 3
	3920	2	1	61	(200)	All	1, 2

To 3411

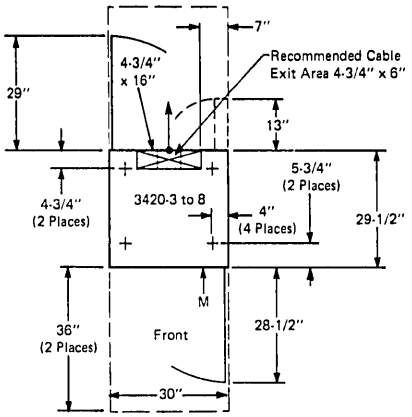
Feature Code	*Conn ID*	*Model*	*Notes*
Std	2	All	1

Notes:

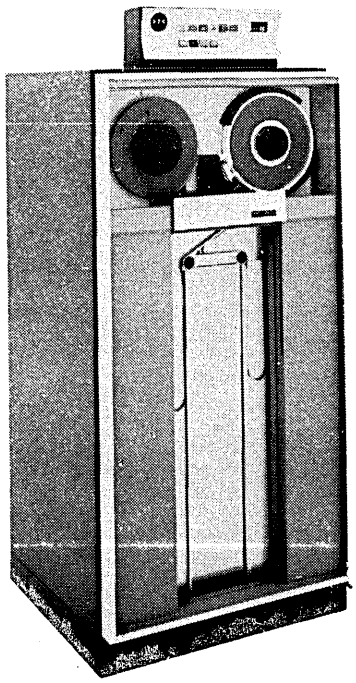
1. As many as 61 meters (200 feet), unless modified by the general control-to-channel cabling schematic, available to attach up to eight control units.
2. As many as eight tape control units (any combination of 3803s and 3411s) may be attached to the 3800 Printing Subsystem with the Tape-to-Printing Subsystem feature installed. However, only one tape control unit can be active at a time. The 3800 provides power sequence and control for one 3411 or 3803 (cable group 1178). Any additional tape control units must receive their power sequence and control from another source.
3. Power sequence and control. This machine must have the power sequence and control installed for proper operation.

3420 MAGNETIC TAPE UNIT MODELS 3 TO 8

PLAN VIEW (English Scale: 1/4 in. = 1 ft)



Note: For cabling information, see 3803.



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	30	29-1/2	67
(cm)	(76)	(75)	(170)

Service Clearances:

	F	R	Rt	L
Inches	36	36	0	0
(cm)	(91)	(91)	(0)	(0)

Weight: 800 lb (370 kg)

Acoustical Data:
For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning*, GC22-7072.

	L_{WAd}		$<L_{pA}>_m$		I	T
	Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
3420-3	7.8	7.5	57.0	54.0	No	No
3420-8	8.0	7.4	58.0	53.0	No	No

Environment, Operating:

Temperature	60°F-90°F (16°C-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	78°F (26°C)

Environment, Nonoperating:

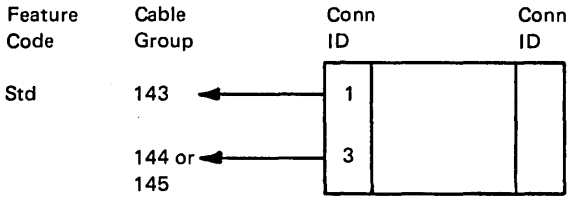
Temperature	50°F-110°F (10°C-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	80°F (27°C)

Details (By Model)

Model	*Heat Output BTU/hr (kcal/hr)*		*Airflow cfm (m^3/min)*	*kVA**	
	Operating	*Ready*		*Operating*	*Ready*
3	4,400 (1 150)	3,900 (990)	360 (11)	1.6	1.4
4	4,500 (1 150)	4,000 (1 050)	360 (11)	1.7	1.5
5	4,400 (1 150)	3,900 (990)	360 (11)	1.6	1.4
6	5,600 (1 450)	4,000 (1 050)	360 (11)	1.9	1.5
7	5,600 (1 450)	4,800 (1 250)	360 (11)	2.0	1.7
8	8,400 (2 150)	5,800 (1 500)	360 (11)	2.9	2.1

Notes:
* Powered from 3803.

3420 MAGNETIC TAPE UNIT MODELS 3 TO 8 CABLING SCHEMATIC



From 3420

Feature Code	*Group No.*	*No. of Cables*	*Conn ID*	*Max Length*		*Model*	*Notes*
				m	*(ft)*		
Std	143	1	1	36.5	(120)	All	–
	144	1	3	36.5	(120)	All	1
	145	1	3	36.5	(120)	All	1

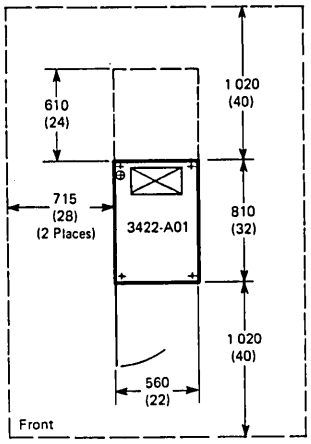
Note:
1. Power cable. Use group 144 for 60 Hz and group 145 for 50 Hz.

3422 MAGNETIC TAPE SUBSYSTEM

MINIMUM CONFIGURATION

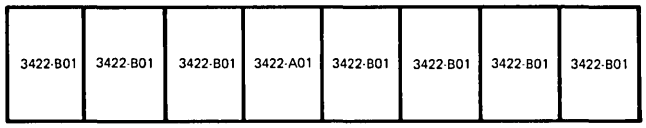
PLAN VIEW (Metric Scale: 10 mm = 0.5 m)

English measurements are shown in parentheses.

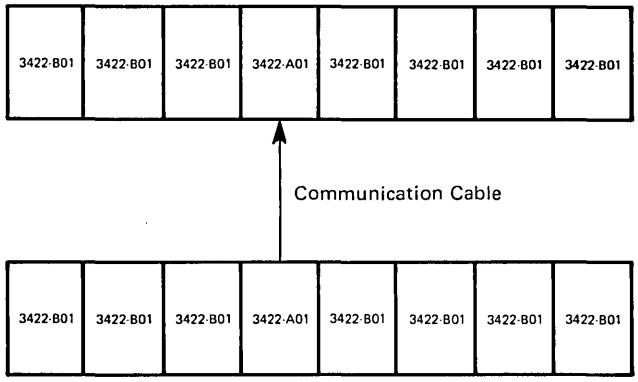


Typical Tape Unit Layouts

1 x 8 Configuration

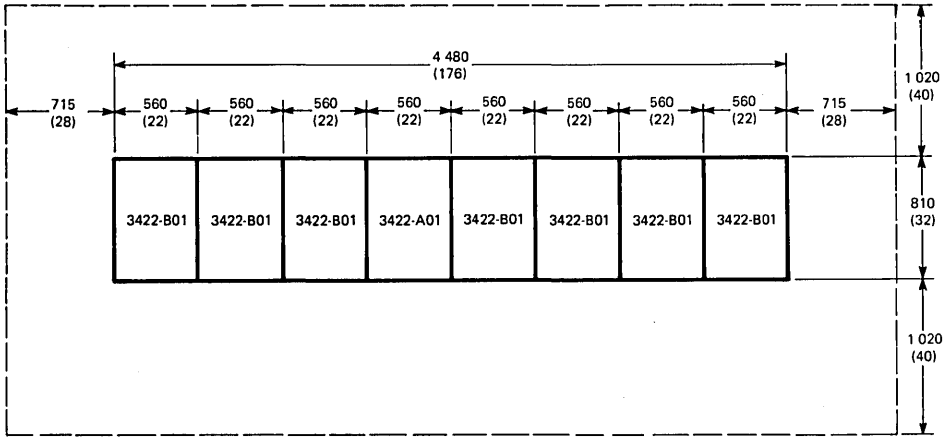


2 x 16 Configuration



MAXIMUM CONFIGURATION

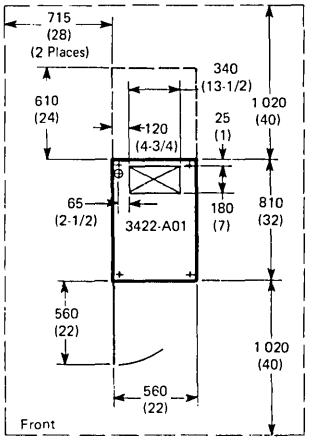
PLAN VIEW (Metric Scale: 10 mm = 0.5 m)



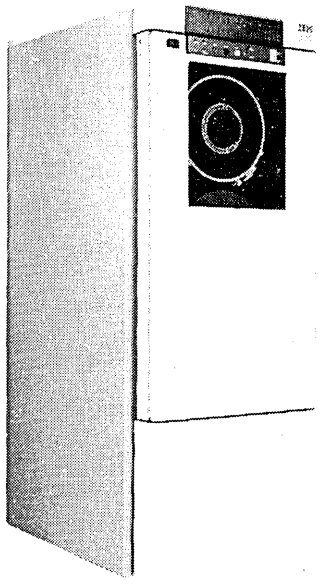
3422 MAGNETIC TAPE UNIT AND CONTROL MODEL A01

PLAN VIEW (Metric Scale: 10 mm = 0.5 m)

English measurements are shown in parentheses.



Note: Rear cover is removable.



SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	560	810	1 500
(inches)	(22)	(32)	(60)

Service Clearances:*

	Front	Rear	Right	Left
mm	1 020	1 020	715	715
(inches)	(40)	(40)	(28)	(28)

Weight: 295 kg (650 lb)

Heat Output: 1 950 W (6 650 BTU/hr)

Airflow: 18.5 m^3/min (650 cfm)

Power Requirements:**

kVA	2.3
Phases	3
Plug	R&S, 7328
Receptable	R&S, 7324
Connector	R&S, 7428
Power Cord Style	E4

Environment, Operating:

Temperature	16°C-32°C (60°F-90°F)
Rel Humidity	20%-80%
Max Wet Bulb	26°C (78°F)

Environment, Nonoperating:

Temperature	10°C-43°C (50°F-110°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

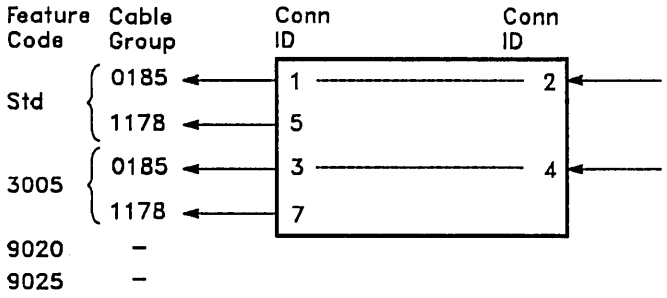
Notes:

* These service clearances are needed to meet the 342-kilogram-per-square-meter (70-pound-per-square-foot) distributed floor loading as calculated by IBM. The installation site should be reviewed by a structural engineer if the installation will reduce the service clearance below 1 020 mm (40 inches). Right and left service clearances apply only at the end of the subsystem string.

** For Canadian installations, branch circuit breakers are 50 A maximum.

Model B can be attached to either side of Model A, with a maximum of four Model Bs on a side. The interconnection between units is by a flat cable. To minimize phase imbalance, Model A must be attached at either end of the string if the total number of Model Bs is less than four.

3422 Magnetic Tape Unit and Control Model A01 Cabling Schematic



From 3422

Feature Code	Group No.	No. of Cables	Conn ID	Max Length m (ft)	Model	Notes
Std	0185	2	1	122 (400)	A01	1, 2
	1178	1	5	122 (400)	A01	2, 3
3005	0185	2	3	122 (400)	A01	1, 2
	1178	1	7	122 (400)	A01	2, 3
9020	-	2	-	10 (30)	A01	4
9025	-	2	-	30 (100)	A01	4

To 3422

Feature Code	Conn ID	Model	Notes
Std	2	A01	1
3005	4	A01	1

Notes:

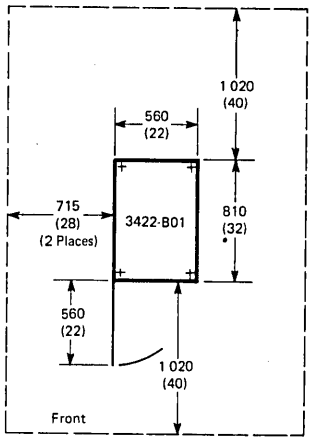
1. The rate of data transfer varies on nondata-streaming channels depending on the cable length. The maximum cable length must be reduced by 4.5 meters (15 feet) for each unit connected between the 3422 Tape Control and the channel. The maximum cable length of 122 meters (400 feet) can be used only if it is supported by the attaching processor channel.

   Signal cable lengths are limited to 122 meters (400 feet) for data-streaming-mode channels and to 60 meters (200 feet) for interlock-mode channels.
2. One channel attachment is standard on the 3422 Tape Control. A second channel, feature code 3005, is available. Order cable groups 0185 and 1178 for each channel attachment. The maximum length applies to each channel attachment.
3. Power sequence and control cable 1178 (one for each using channel) is optional.
4. All fixed-length cables required for the communicator feature must be ordered separately. Only one feature code (9020 or 9025) is needed to connect two tape controls. The cable length for feature code 9020 is 10 meters (30 feet) and for 9025 it is 30 meters (100 feet).
5. All cables required to connect the tape units to the tape control are supplied by IBM and are shipped with the tape unit; no separate cable order is required.

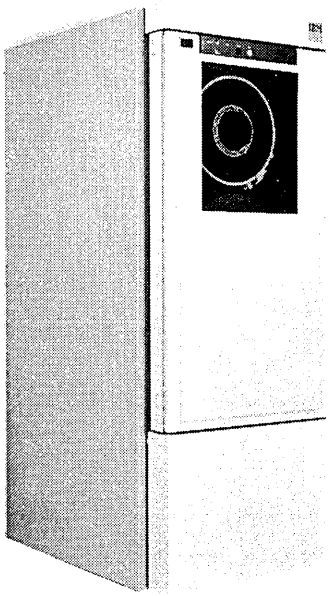
3422 MAGNETIC TAPE UNIT MODEL B01

PLAN VIEW (Metric Scale: 10 mm = 0.5 m)

English measurements are shown in parentheses.



Note: Rear cover is removable.



SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	560	810	1 500
(inches)	(22)	(32)	(60)

Service Clearances:*

	Front	Rear	Right	Left
mm	1 020	1 020	715	715
(inches)	(40)	(40)	(28)	(28)

Weight: 270 kg (600 lb)

Heat Output: 1 275 W (4,350 BTU/hr)

Airflow: 11 m^3/min (390 cfm)

Power Requirements:

kVA	1.5

Environment, Operating:

Temperature	16°C-32°C (60°F-90°F)
Rel Humidity	20%-80%
Max Wet Bulb	26°C (78°F)

Environment, Nonoperating:

Temperature	10°C-43°C (50°F-110°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Notes:

* These service clearances are needed to meet the 342-kilogram-per-square-meter (70-pound-per-square-foot) distributed floor loading as calculated by IBM. The installation site should be reviewed by a structural engineer if the installation will reduce the service clearance below 1 020 mm (40 inches). Right and left service clearances apply only at the end of the subsystem string.

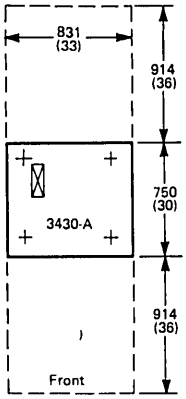
Model B can be attached to either side of Model A, with a maximum of four Model Bs on a side. The interconnection between units is by a flat cable.

3430 MAGNETIC TAPE SUBSYSTEM

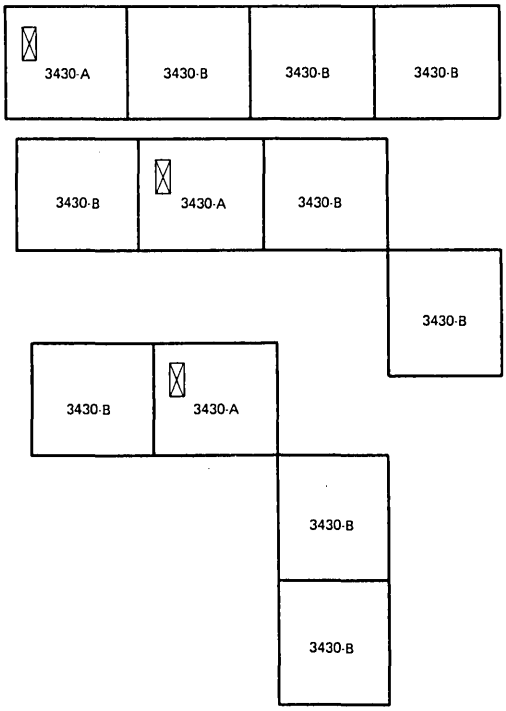
MINIMUM CONFIGURATION

PLAN VIEW (Metric Scale: 10 mm = 0.5 m)

English measurements are shown in parentheses.

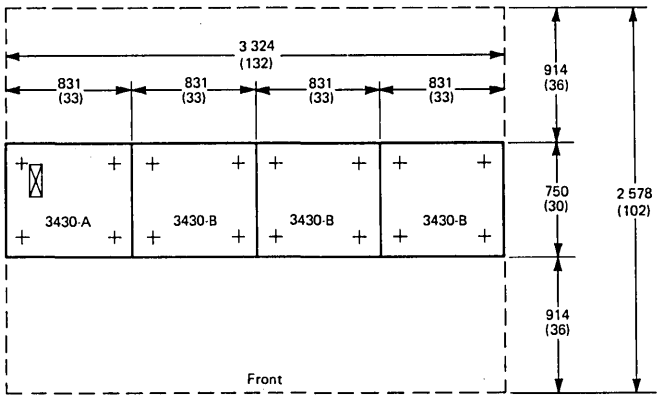


Typical Tape Unit Layouts



MAXIMUM CONFIGURATION

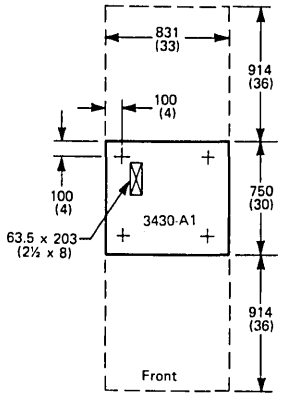
PLAN VIEW (Metric Scale: 10 mm = 0.5 m)

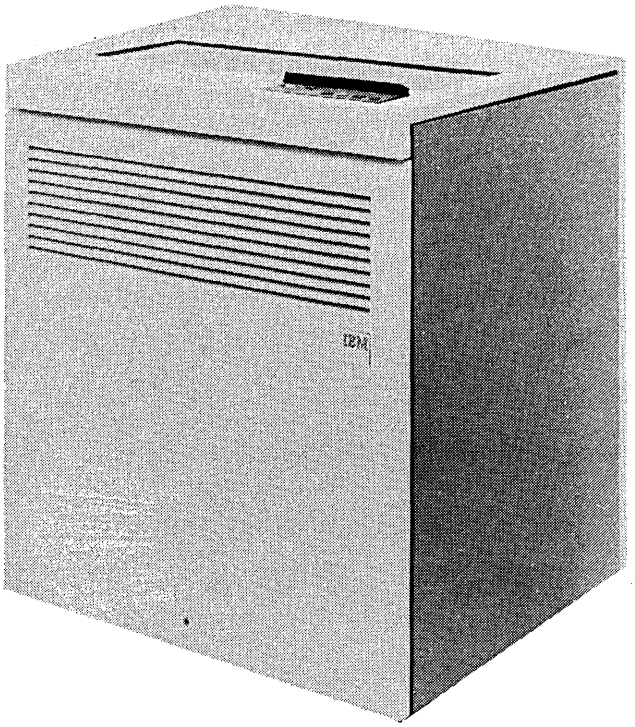


3430 MAGNETIC TAPE UNIT AND CONTROL MODEL A1

PLAN VIEW (Metric Scale: 10 mm = 0.5 m)

English measurements are shown in parentheses.





SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	831	750	1 000
(inches)	(33)	(30)	(39)

Service Clearances:

	Front	Rear	Right	Left
mm	914	914	0*	0*
(inches)	(36)	(36)	(0*)	(0*)

Weight: 215 kg (470 lb)

Heat Output: 1 100 W (3,700 BTU/hr)

Airflow: 6 m^3/min (200 cfm)

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning,* GC22-7072.

L_{WAd}		$<L_{pA}>_m$		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
7.3	6.4	56.0	48.0	No	No

Power Requirements:

kVA	1.2
Phases	1
Plug	Russellstoll, FS3720, L6-20P**
Receptacle	Russellstoll, FS3743, L6-20R**
Connector	Russellstoll, FS3913
Power Cord Style	A2

Environment, Operating:

Temperature	16°C-32°C (60°F-90°F)
Rel Humidity	20%-80%
Max Wet Bulb	26°C (78°F)

Environment, Nonoperating:

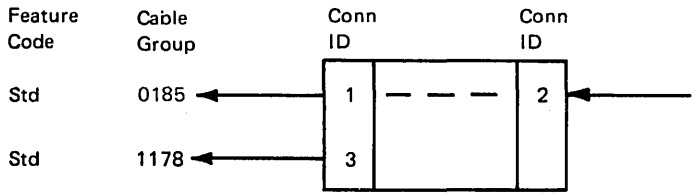
Temperature	10°C-43°C (50°F-110°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Notes:

*The Model B1 can be attached to either side of the Model A1, with a maximum of three devices on a side. All devices are physically attached at the front corner, allowing up to 90° swing between devices.

**For 9370 installations only.

3430 MAGNETIC TAPE UNIT AND CONTROL MODEL A1 CABLING SCHEMATIC



From 3430

Feature Code	*Group No.*	*No. of Cables*	*Conn ID*	*Max Length*		*Model*	*Notes*
				m	*(ft)*		
Std	0185	2	1	122	(400)	A1	1
	1178	1	3	122	(400)	A1	2

To 3430

Feature Code	*Conn ID*	*Model*	*Notes*
Std	2	A1	1

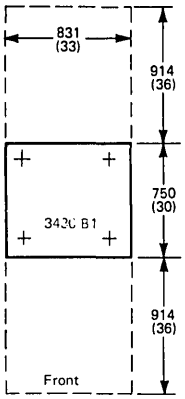
Notes:

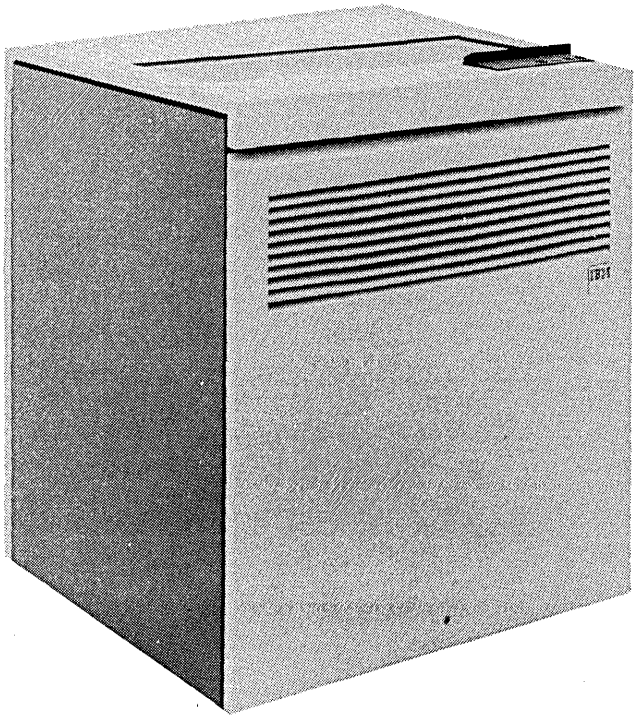
1. Maximum cable length must be reduced by 4.5 meters (15 feet) for each device connected between a 3430 and the attached channel.
2. Power sequence and control; cable is optional.

3430 MAGNETIC TAPE UNIT MODEL B1

PLAN VIEW (Metric Scale: 10 mm = 0.5 m)

English measurements are shown in parentheses.





SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	831	750	1 000
(inches)	(33)	(30)	(39)

Service Clearances:

	Front	Rear	Right	Left
mm	914	914	0*	0*
(inches)	(36)	(36)	(0*)	(0*)

Weight: 155 kg (340 lb)

Heat Output: 360 W (1,250 BTU/hr)

Airflow: 2 m^3/min (60 cfm)

Power Requirements: **

kVA 0.4

Environment, Operating:

Temperature	16°C-32°C (60°F-90°F)
Rel Humidity	20%-80%
Max Wet Bulb	26°C (78°F)

Environment, Nonoperating:

Temperature	10°C-43°C (50°F-110°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

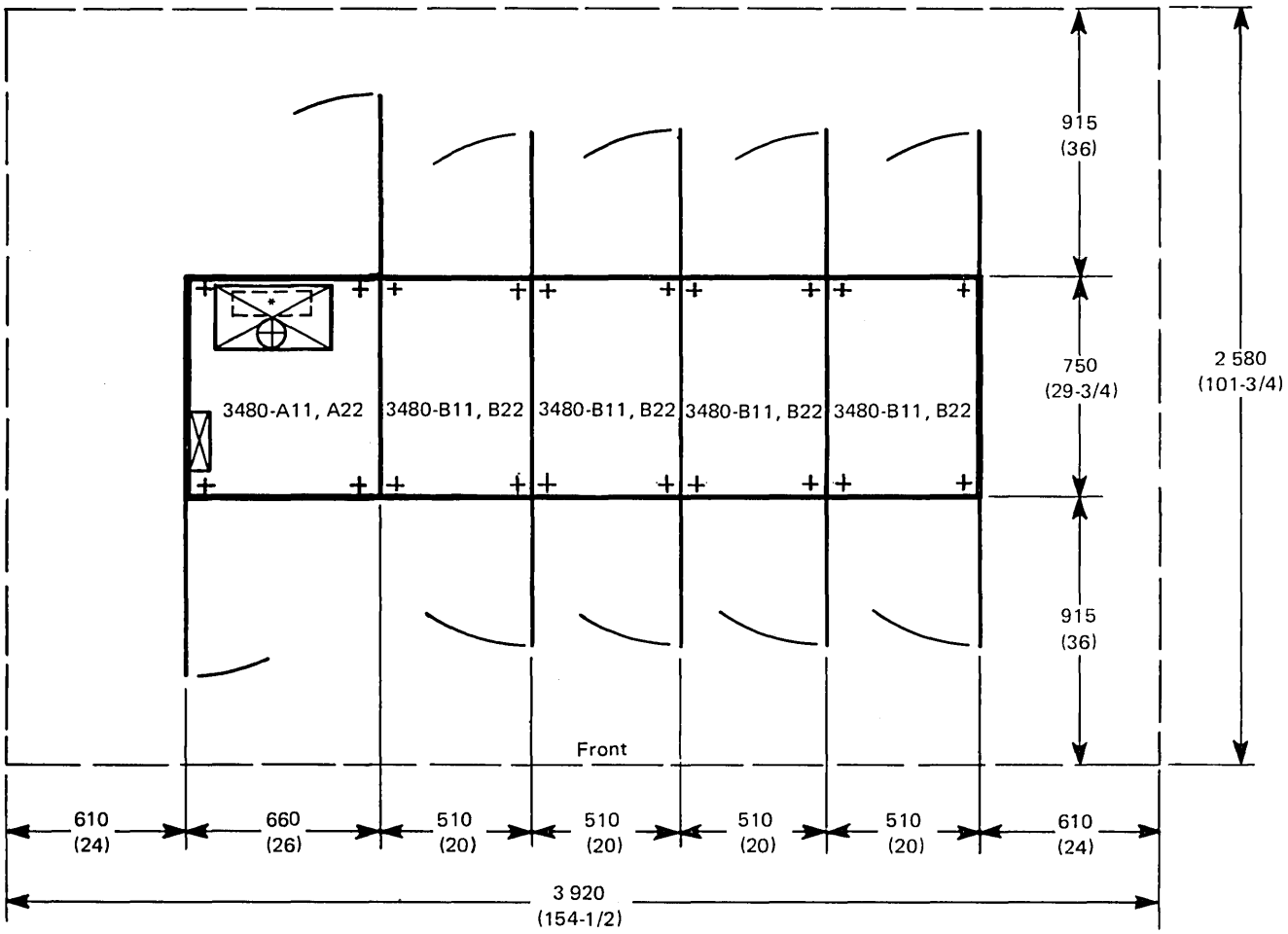
Notes:

*The Model B1 can be attached to either side of the Model A1, with a maximum of three devices on a side.
**Powered from Model A1.

3480 MAGNETIC TAPE SUBSYSTEM

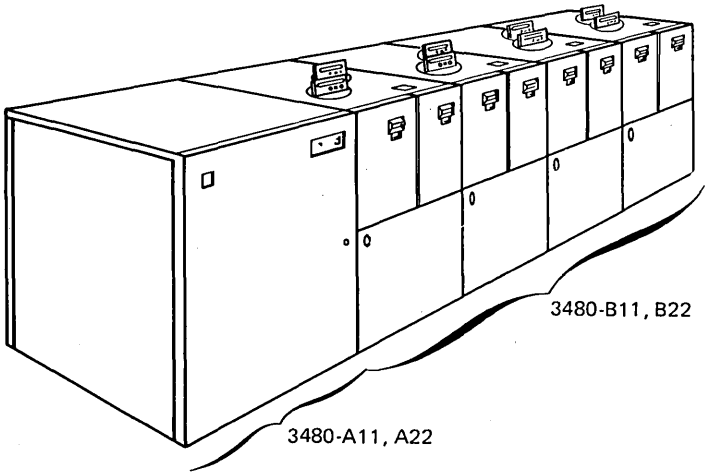
PLAN VIEW (Metric Scale: 10 mm = 0.25 m)

English measurements are shown in parentheses.



Notes:

1. Model B11 and B22 tape units are shipped without side covers and are bolted together during installation.
2. The internal cables that connect the Model B11 and B22 tape units are not long enough to permit corner installations.

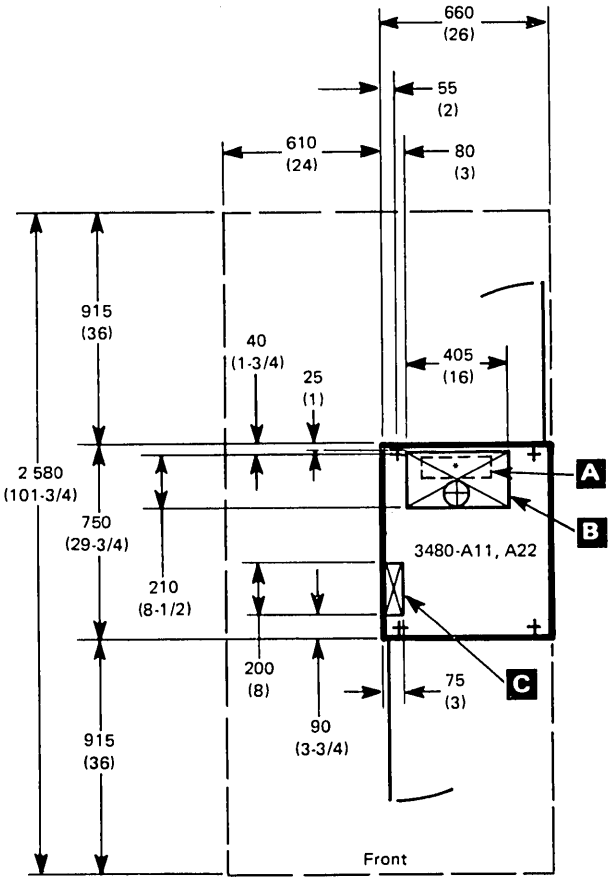


Control Unit Models A11 and A22

PLAN VIEW (Metric Scale: 10 mm = 0.25 m)

English measurements are shown in parentheses.

Use IBM Physical Planning Template GX22-7089.



Note: The 3480 Control Units with the dual-control-unit-communications coupler feature are interconnected with fixed-length cables. These fixed-length cables have an entry/exit point at either **B** (newer-level devices) or **C** (early-level devices). Early-level devices may use either the side cable entry/exit floor cutout **C** or the rear cable entry/exit floor cutout **A** (6" x 12").

Newer-level devices must use the rear cable entry/exit floor cutout **A**. Cable length measurements must be made between these cable entry/exit locations on the two control units.

See the table on page 3480.5 for the serial number range of the newer-level devices.

Specifications

Dimensions:

	Front	Side	Height
mm	660	750	1 000
(inches)	(26)	(29-3/4)	(39-1/2)

Service Clearances:

	Front	Rear	Right	Left
mm	915	915	0	610
(inches)	(36)	(36)	(0)	(24)

Weight: 195 kg (430 lb)

Heat Output: 1 kW (3,400 BTU/hr)

Airflow: 12 M^3/min (400 cfm)

Power Requirements:

kVA	1
Phases	3
Plug type	R&S. 3760
Receptacle Type	R&S. 3754
Connector Housing	R&S. 3934
Power Cord Style	D4

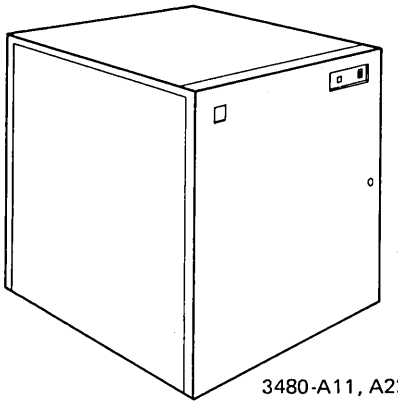
Note: See Note 9 on page 3480.6.

Environment, Operating:

Temperature	15°C-32°C (60°F-90°F)
Relative Humidity	20%-80%
Max Wet Bulb	25.6°C (78°F)

Environment, Nonoperating:

Temperature	10°C-43°C (50°F-110°F)
Relative Humidity	8%-80%
Max Wet Bulb	26.7°C (80°F)



3480-A11, A22

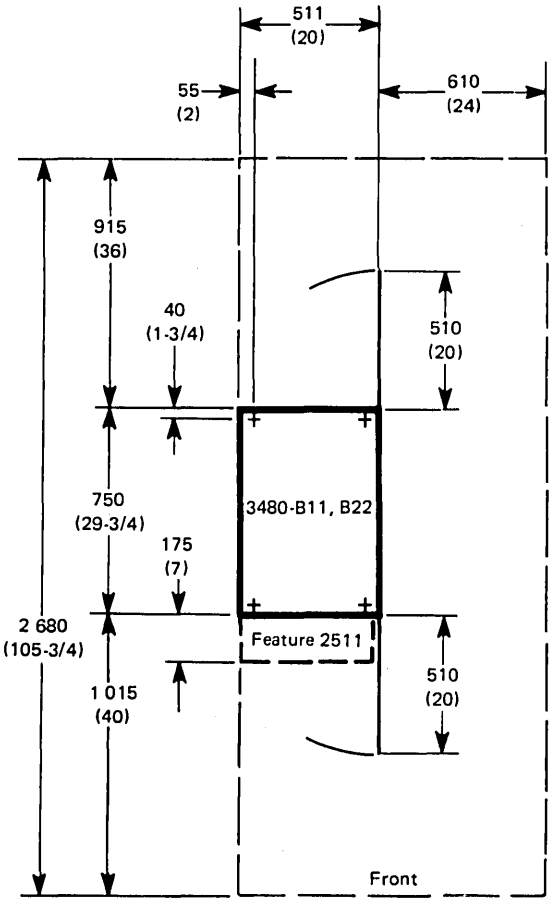
(Front View)

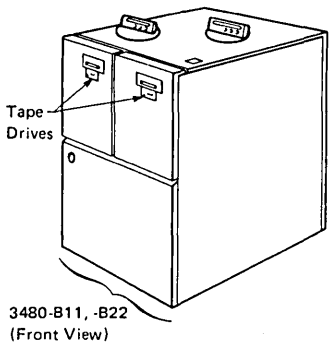
3480 Tape Unit Models B11 and B22

Plan View (Metric Scale: 10mm-0.25 m)

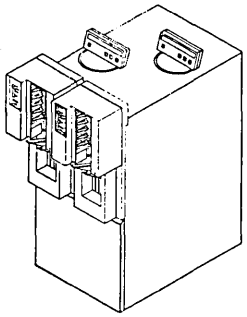
English measurements are shown in parentheses.

Use IBM Physical Planning Template GX22-7089.





3480-B11, -B22
(Front View)



3480-B11, B22 with
Feature 2511 Installed

Specifications

Dimensions:

	Front	Side	Height
mm	510	750	1 000*
(inches)	(20)	(29-3/4)	(39-1/2)*

Service Clearances:

	Front	Rear	Right	Left
mm	915**	915	610***	0
(inches)	(36)**	(36)	(24)***	(0)

Weight: 155 kg (340 lb)

Heat Output: 800 W (2,700 BTU/hr)

Airflow: 12 M^3/min (400 cfm)

Acoustical Data:
For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>_m$		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
7.3	7.4	55.0	56.0	No	No

Power Requirements: †

kVA	0.9
Phases	3

Environment, Operating:

Temperature	15.6°C-32.0°C (60°F-90°F)
Relative Humidity	20%-80%
Max Wet Bulb	25.6°C (78°F)

Environment, Nonoperating:

Temperature	10°C-43°C (50°F-110°F)
Relative Humidity	8%-80%
Max Wet Bulb	26.7°C (80°F)

Notes:

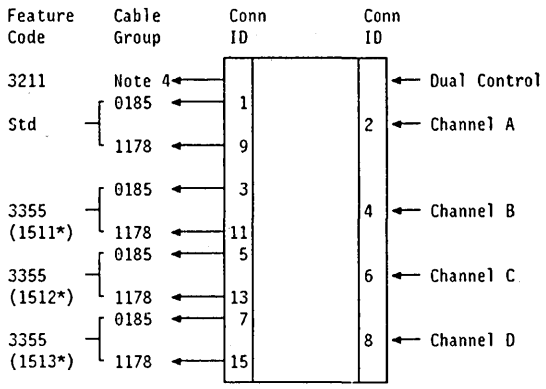
*The operator's control panel extends an additional 80 mm (3-1/4 inches) above the top cover.

**Feature 2511 requires an additional 100 mm (4 inches) of service clearance at the front of the 3480-B11 and -B22.

***The right service clearance applies to only the rightmost tape unit attached to a control unit.

†Power is received from the 3480 Control Unit.

3480 Magnetic Tape Subsystem Cabling Schematic



From 3480

Feature Code	Group No.	No. of Cables	Conn ID	Max Length m (ft)	Model	Notes
3211	None	2	None	6 (20)	A11, A22	4
Std	0185	2	1	122 (400)	A11, A22	1,2
	1178	1	9	122 (400)	A11, A22	2,3
3355 (1511*)	0185	2	3	122 (400)	A11, A22	1,2
	1178	1	11	122 (400)	A11, A22	2,3
3355 (1512*)	0185	2	5	122 (400)	A11, A22	1,2
	1178	1	13	122 (400)	A11, A22	2,3
3355 (1513*)	0185	2	7	122 (400)	A11, A22	1,2
	1178	1	15	122 (400)	A11, A22	2,3

*See Note 3

To 3480

Feature Code	Conn ID	Model	Notes
3211	None	A11, A22	4
Std	2	A11, A22	2
3355	4	A11, A22	2
3355	6	A11, A22	2
3355	8	A11, A22	2

Notes:

1. To determine the applicable blue or grey channel cable for a specific device, use the following criteria:

   For all control units that meet OEMI data-transfer interface specifications of 4.5 MB per second, use either blue or grey in matched color pairs of the same length (within the length restrictions controlled by channel speed).

   Cable group 0185 (IBM-manufactured blue cable) has a maximum length of 122 m (400 ft) for attachment to a System/370 data-streaming channel.

   The following 3480 devices meet OEMI interface applications:

   - IBM 3480 Control Unit Models A22 shipped before 28 November 1988 that are upgraded with 3306 and 3354 or 3355
   - IBM 3480 Control Unit Models A22 shipped after 28 November 1988 that specify 9001

   The following 3480 devices do not meet OEMI interface specifications:

   - IBM 3480 Control Unit Models A11
   - IBM 3480 Control Unit Models A22 shipped before 28 November 1988
   - IBM 3480 Control Unit Models A22 shipped before 28 November 1988 that are not upgraded with 3306 and 3354 or 3355

   Physical placement of all 3480 sybsystems that meet OEMI specifications is arbitrary if:

- The channel operates at a data-transfer rate of less than 4.5 MB per second.
- The channel has PROTOCL = S4 option of the IOCP CNTLUNIT statement at 4.5 MB per second.

Physical placement of all 3480 sybsystems that meet OEMI specifications and other channel-attaching devices must be in the following order:

- All devices that meet the data-transfer rate of 4.5 MB per second with PROTOCL = S4 if the data-transfer rate does not exceed 4.5 MB per second in DC interlock or data-streaming mode
- All remaining units

Customers who use IBM-manufactured grey cable (or a mix of grey and blue within the restrictions noted above) for attaching IBM 3480 subsystems that meet OEMI specifications to a 4.5-MB-per-second channel at channel-to-terminator distances greater than 90 m (300 ft) must submit a no-charge RPQ 8B0115.

A description of the configuration must be included. Such cases will be considered for approval on an individual basis. Standard rules related to cable-length deductions for additional control-unit attachments should be applied to the 90 m (300 ft) base. The maximum lengths must be reduced by 4.5 m (15 ft) for each control unit connected between a channel and the 3480 subsystem.

The rate of data transfer varies for non-data-streaming channels depending on the cable length.

The maximum instantaneous data rate of 1.5 MB per second can be realized on a non-data-streaming channel up to a total cable length of 25 m (80 ft). The subsystem will function with lengths beyond 25 m (80 ft), but the data rate decreases as the cable length is increased. The maximum cable length of 122 m (400 ft) will limit the channel's instantaneous data rate to approximately 650 KB per second.

2. One channel attachment is standard on the 3480 Control Unit. Three additional channel attachments may be added by ordering one feature 3355 for each additional channel. To upgrade presently installed channels to 4.5-MB-per-second capability, order one feature 3355 for each channel. Order one cable group 0185 and 1178 for each channel attachment. The maximum length applies to each channel attachment. Three additional channel attachments (second, third, and fourth, that is, features 1511, 1512, and 1513, respectively) were available until 27 September 1988.
3. Sequence and control cable (one for each using channel) is optional.
4. The dual-control-unit-communications-coupler feature (two fixed-length cables) is available on a purchase-only basis. Only one feature is needed to couple two Model A11s or two Model A22s together. The feature should be ordered as feature 3211 when the subsystem and the the feature are shipped together from the plant. For separate shipment of the feature, also order feature 3211. Model A11 Control Units require dual communication feature 3201 in addition to feature 3211 before dual-control-unit communications can be established.
5. All cables required to connect the 3480 Tape Units to the 3480 Control Unit are supplied by IBM and are shipped with the tape unit.
6. When the 3480 Model A22/B22 subsystem is attached to the IBM 3044 Fiber-Optic Channel Extender Link Model C02 or D02, the 3044 allows the following fiber-optic cable lengths between the host processor and the 3480 device:

Model A22/B22	**Fiber-Optic Cable Length**
3.0 megabytes per second	Up to 400 m (1310 ft)
4.5 megabytes per second	Up to 244 m (800 ft)
4.5 megabytes per second	Up to 3 km (9845 ft) with feature code 6053 (IBM 3044 Enhanced Tape Attachment)

For further information, see *IBM Fiber-Optic Channel Extender Link Models C02 and D02 Product Description.*

For pre-requisite conditions, check RETAIN, device 3480, ECA 052, or record number H021550.

7. The maximum cable length via 2604 IOP attachment to a 9406 processor is 61 m (200 ft).
8. When a raised platform is required for the installation of the 3480 sybsystem, the platform must be constructed to simulate a computer-room floor.
9. Phase balancing is recommended for any installation operating more than three full strings of 3480s. To accomplish phase balancing, start at the second string of 3480s and rotate the ac power cord connections in the ac box. Move the power cord connection from phase 1 to phase 2, phase 2 to phase 3, and phase 3 to phase 1. In the third string, move the power cord connection from phase 1 to phase 3, phase 2 to phase 1, and phase 3 to phase 2.

   For each three full string of 3480s after the first three strings, repeat the above procedure until all strings are included. After the rotations are completed, label the control units to identify the rotation in each control unit, for example,

   Label for system 1: SYS. 1 No rotation Label for system 2: SYS. 2 CW rotation phase 1 to phase 2, etc. Label for system 3: SYS. 3 CW rotation phase 1 to phase 3, etc.

   No phasing reset is necessary if the system is relocated within the same room or to another site. As systems are relocated, even numbers of systems 1, systems 2, and systems 3 ensure the best load balance.

   The following example shows the results of the rotation:

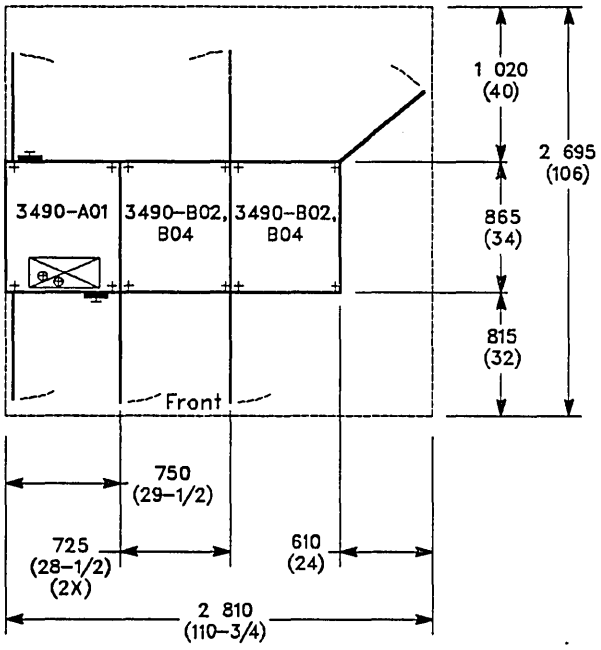
System	Phase 1 (amperes)	Total (amperes)	Phase 2 (amperes)	Total (amperes)	Phase 3 (amperes)	Total (amperes)
1	5.5	5.5	7.6	7.6	6.1	6.1
2	6.1	11.6	5.5	13.1	7.6	13.7
3	7.6	19.2	6.1	19.2	5.5	19.2

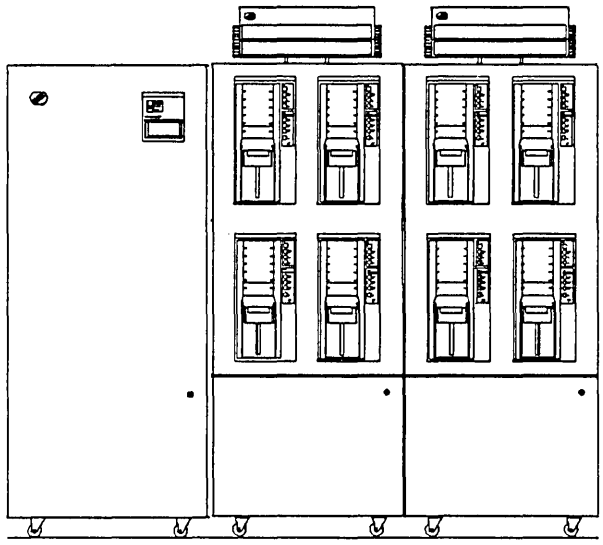
3490 Magnetic Tape Subsystem

Models A01, A10, B02, B04, B20, and B40

Plan View (Not to Scale): English measurements are shown in parentheses.

Use IBM Physical Planning Template GX22-7128.





Models A01 and B04

Maximum Configuration for Model A01

Model A01	Model B02	Model B02	Model B02	Model B02
Model A01	Model B04	Model B04		

Maximum Configuration for Model A02

Model A02	Model B02	Model B02	Model B02	Model B02
Model A02	Model B04	Model B04	Model B04	Model B04

Note: If a 3490 configuration includes Models B02 and B04 in the same string, all Models B02 must be positioned after all Models B04 in the string.

Maximum Configuration for Model A10

Model A10	Model B20	Model B20	Model B20	Model B20
Model A10	Model B40	Model B40		

Maximum Configuration for Model A20

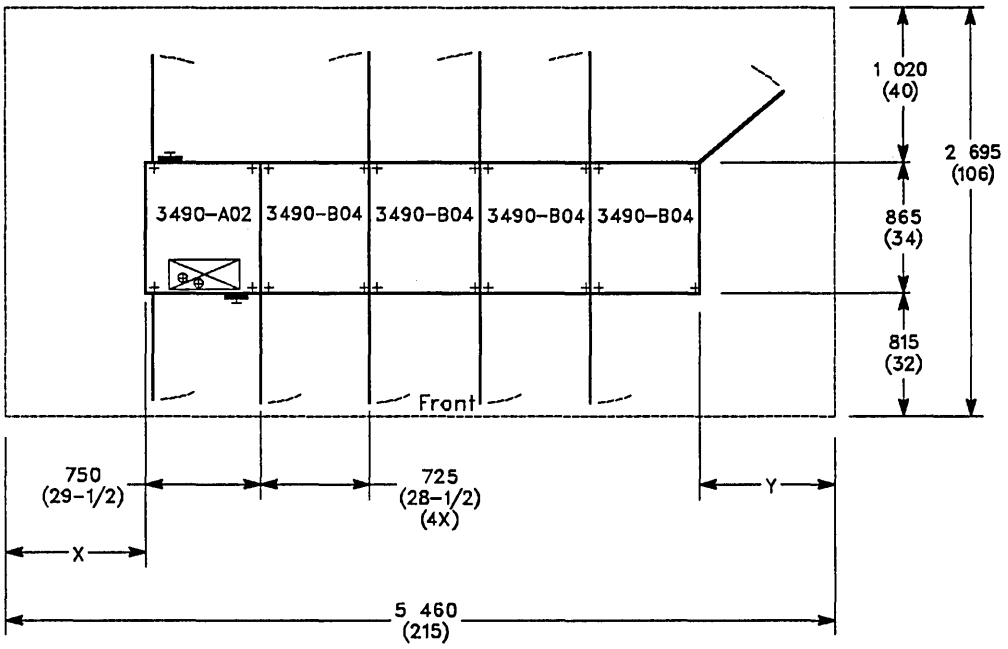
Model A20	Model B20	Model B20	Model B20	Model B20
Model A20	Model B40	Model B40	Model B40	Model B40

Note: If a 3490 configuration includes Models B20 and B40 in the same string, all Models B20 must be positioned after all Models B40 in the string.

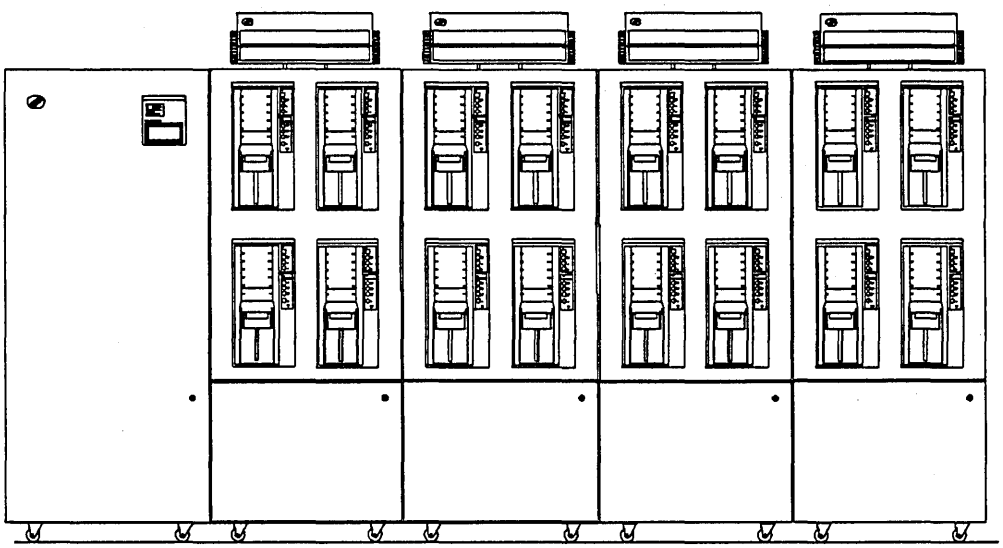
Models A02, A20, B02, B04, B20, and B40

Plan View (Not to Scale): English measurements are shown in parentheses.

Use IBM Physical Planning Template GX22-7128.



Note: For service clearances and weight distribution, see page 3490-3.



Models A02, A20, B04, and B40 Service Clearance and Weight Distribution for 60-Hz Installations

Floor Load Rating		End Clearance Required*							
		1(A02) and 1(B04) 1(A20) and 1(B40) X + Y		1(A02) and 2(B04) 1(A20) and 2(B40) X + Y		1(A02) and 3(B04) 1(A20) and 3(B40) X + Y		1(A02) and 4(B04) 1(A20) and 4(B40) X + Y	
kg/m²	(lb/ft²)	mm	(in.)	mm	(in.)	mm	(in.)	mm	(in.)
415	(85)	0	(0)	0	(0)	0	(0)	0	(0)
390	(80)	0	(0)	51	(2)	203	(8)	356	(14)
365	(75)	203	(8)	508	(20)	813	(32)	1 118	(44)
340	(70)	533	(21)	1 067	(42)	1 575	(62)	2 032	(80)

Models A02, A20, B04, and B40 Service Clearance and Weight Distribution for 50-Hz Installations

Floor Load Rating		End Clearance Required*							
		1(A02) and 1(B04) 1(A20) and 1(B40) X + Y		1(A02) and 2(B04) 1(A20) and 2(B40) X + Y		1(A02) and 3(B04) 1(A20) and 3(B40) X + Y		1(A02) and 4(B04) 1(A20) and 4(B40) X + Y	
kg/m²	(lb/ft²)	mm	(in.)	mm	(in.)	mm	(in.)	mm	(in.)
415	(85)	0	(0)	0	(0)	0	(0)	127	(5)
390	(80)	51	(2)	305	(12)	533	(21)	787	(31)
365	(75)	330	(13)	762	(30)	1 168	(46)	1 600	(63)
340	(70)	686	(27)	1 321	(52)	1 956	(77)	2 591	(102)

*The end clearance may be applied to either the left or the right end, or split between ends, depending on installation requirements, not more than 1525 mm (60 in.) maximum per side.

The end clearances in each of these two tables are required for the indicated floor load ratings only.

The service clearance of 610 mm (24 in.) stated on the specification page for Models B02, B04, B20, and B40 must be considered separately and maintained for servicing of the last Model B02, B04, B20, or B40 in a string.

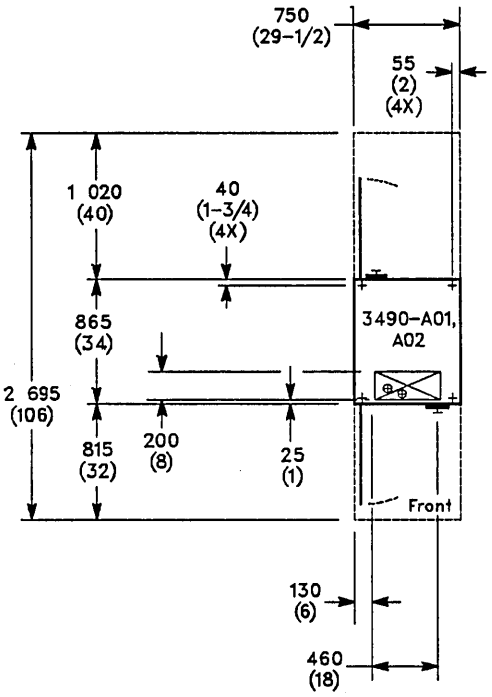
The X+Y service clearance and weight distribution required for Models A01, A10, B02, and B20 for 50 or 60 Hz is 0, except for the following configurations:

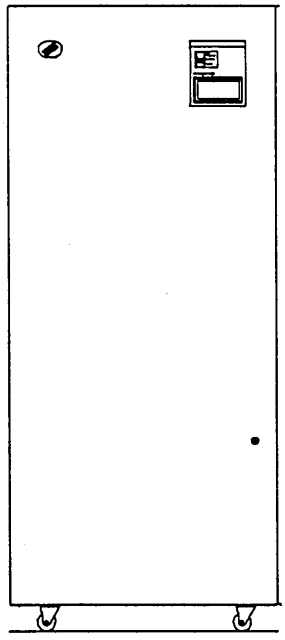
- For 50 Hz, Model A01 and 3 Models B02, or Model A10 and 3 Models B20, which require 51 mm (2 in.) at either end of the string.
- For 50 Hz, Model A01 and 4 Models B02, or Model A10 and 4 Models B20, which require 152.4 mm (6 in.) at either end of the string.

See "Maximum Configuration" on page 3490-1.

Control Unit Models A01, A02, A10, and A20

Plan View (Not to Scale): English measurements are shown in parentheses.





Specifications:

	Dimensions (with covers): Front	Side	Height
mm	770	870	1 970
(in.)	(30-1/4)	(34-1/4)	(77-1/2)

	Service Clearances: Front	Rear	Right	Left
mm	815	1 020	0	0
(in.)	(32)	(40)	(0)	(0)

See page 3490-3 for additional Model A02 or A20 weight distribution and service clearance requirements.

Weight: (50 or 60 Hz)	Model A01 or A10	Model A02 or A20
kg	318	358
(lb)	(700)	(790)
	Heat Output:	
kW	0.6	1.2
(kBTU/hr)	(2.1)	(4.1)
	Airflow:	
m^3/min	5.7	11.3
(cfm)	(200)	(400)

Power Requirements:

kVA for each Power Cord	0.6
Phases	3
Plug Type	Russellstoll, 3760
Receptacle Type	Russellstoll, 3754
Connector Housing	Russellstoll, 3934
Power Cord Style	D4 (Model A01 or A10 has one power cord. Model A02 or A20 has two power cords.)

Note: Each power cord also supplies power for 1 control unit and as many as 4 Models B02 or B20, or 2 Models B04 or B40.

Acoustical Data (for one A02 and three B02/B04 units or one A01 and two B02/B04 units):

For definitions, see "Acoustics" in Chapter 3 of the *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>m$		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
7.7	7.6	59.0	58.0	No	No

Environment, Operating:

Temperature	16°C to 32°C (60°F to 90°F)
Relative Humidity	20% to 80%
Max Wet Bulb	25.6°C (78°F)

Environment, Nonoperating:

Temperature	10°C to 43°C (50°F to 110°F)
Relative Humidity	8% to 80%
Max Wet Bulb	27°C (80°F)

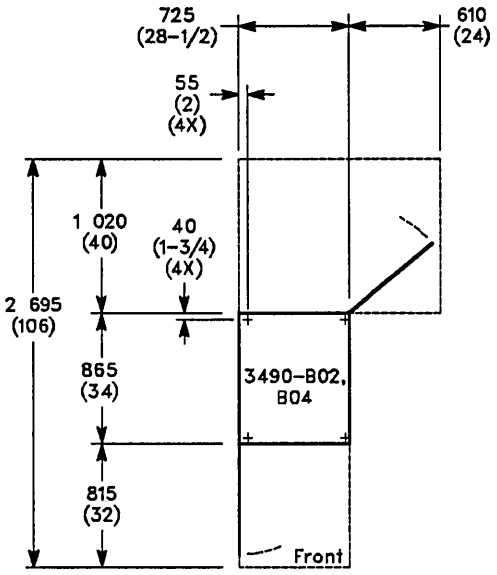
Acoustical Data (for one A20 and four B40 units)

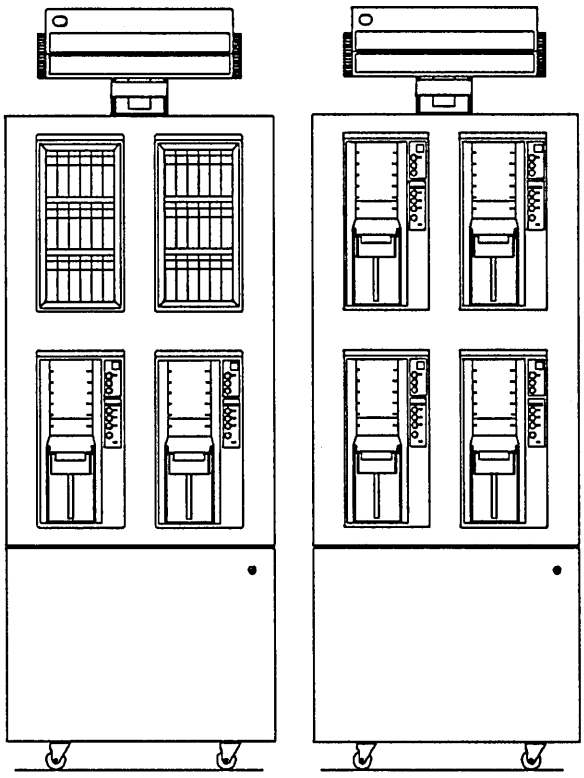
For definitions, see "Acoustics" in Chapter 3 of the *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

	L_{WAd}		$<L_{pA}>m$		I	T
Hz	Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
50	7.3	7.3	55.0	55.0	Yes	No
60	7.4	7.4	56.0	56.0	Yes	No

Tape Unit Models B02, B04, B20, and B40

Plan View (Not to Scale): English measurements are shown in parentheses.





Front view of Model B04 or B40 (right) and Model B02 or B20 (left)

Specifications:

Dimensions (with covers):	Front	Side	Height
mm	725	870	1770
(inches)	(28-1/2)	(34-1/4)	(70)

Note: The display panel extends 190 mm (7-1/2 in.) above the top cover when the panel is fully lowered. The cartridge loader is flush with the front cover of Model B02, B04, B20, or B40.

Service Clearances:	Front	Rear	Right*	Left
mm	815	1020	610	0
(inches)	(32)	(40)	(24)	(0)

*Multiple strings of 3490 units can be butted together. However, a service clearance of 610 mm (24 in.) must be allowed at the right rear of the last Model B02, B04, B20, or B40 in a string.

See page 3490-3 for more weight distribution and service clearance requirements.

Weight:	Model B02 or B20	Model B04 or B40
60 Hz	324 kg (715 lb)	422 kg (930 lb)
50 Hz	338 kg (745 lb)	449 kg (990 lb)
Heat Output:		
kW	0.7	1.4
(kBTU/hr)	(2.2)	(4.5)
Airflow:		
m^3/min	10.2	10.2
(cfm)	(360)	(360)

Power Requirements (power supplied by Model A01, A02, A10, or A20):

kVA	1.4
Phases	3

Acoustical Data: See Acoustical Data for Model A02 or A20.

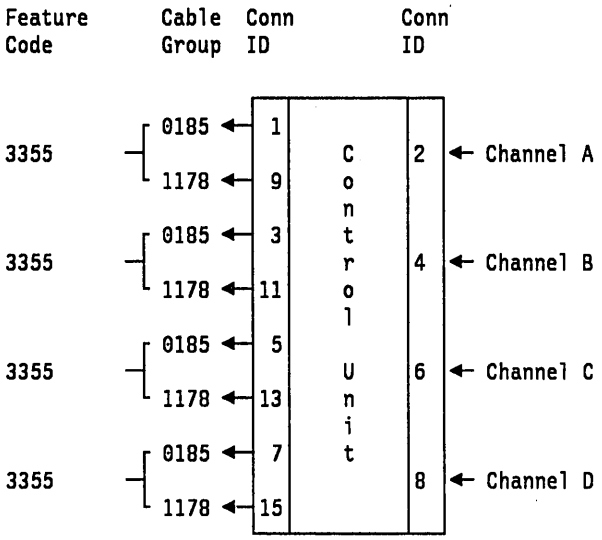
Environment, Operating:

Temperature	16°C to 32°C (60°F to 90°F)
Relative Humidity	20% to 80%
Max Wet Bulb	25.6°C (78°F)

Environment, Nonoperating:

Temperature	10°C to 43°C (50°F to 110°F)
Relative Humidity	8% to 80%
Max Wet Bulb	27°C (80°F)

Cabling Schematic for 3490 Model A01 or A10 Parallel Channel



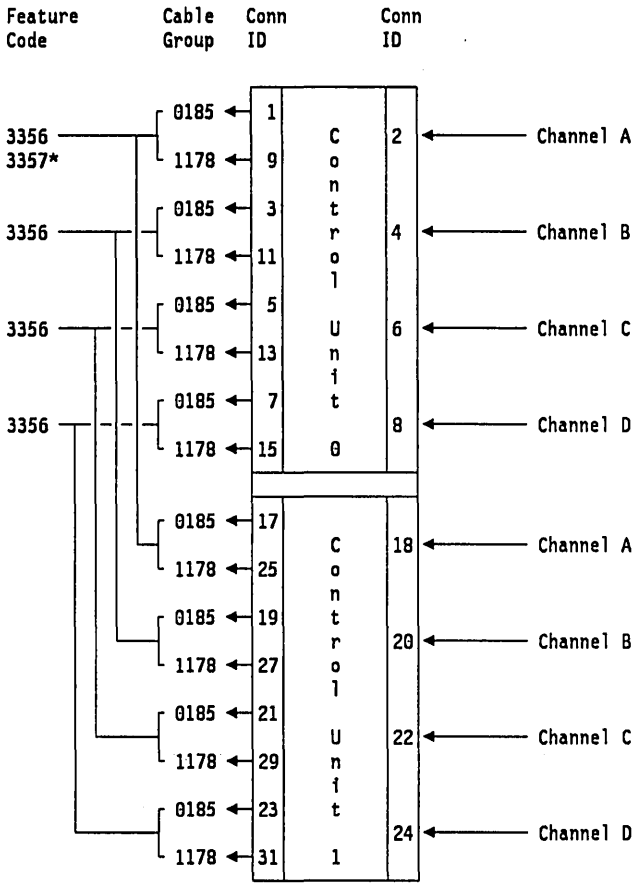
From 3490 Model A01 or A10

Feature Code	Group No.	No. of Cables	Conn ID	Max Length m (ft)	Model	Notes
3355	0185	2	1	122 (400)	A01 or A10	1,3,4,7,9
	1178	1	9	122 (400)	A01 or A10	5
3355	0185	2	3	122 (400)	A01 or A10	1,3,4,7,9
	1178	1	11	122 (400)	A01 or A10	5
3355	0185	2	5	122 (400)	A01 or A10	1,3,4,7,9
	1178	1	13	122 (400)	A01 or A10	5
3355	0185	2	7	122 (400)	A01 or A10	1,3,4,7,9
	1178	1	15	122 (400)	A01 or A10	5

To 3490 Model A01 or A10

Feature Code	Conn ID	Model	Notes
3355	2	A01 or A10	3,4
3355	4	A01 or A10	3,4
3355	6	A01 or A10	3,4
3355	8	A01 or A10	3,4

Cabling Schematic for 3490 Model A02 or A20 Parallel Channel



*Feature code 3357 adds 1 parallel adapter to the second control unit function with the Model A10 to Model A20 upgrade.

From 3490 Model A02 or A20

Feature Code	Group No.	No. of Cables	Conn ID	Max Length m (ft)	Model	Notes
3356	0185	4	1 and 17	122 (400)	A02 or A20	1,2,3,4,7,9
	1178	1	9 or 25	122 (400)	A02 or A20	5
3356	0185	4	3 and 19	122 (400)	A02 or A20	1,2,3,4,7,9
	1178	1	11 or 27	122 (400)	A02 or A20	5
3356	0185	4	5 and 21	122 (400)	A02 or A20	1,2,3,4,7,9
	1178	1	13 or 29	122 (400)	A02 or A20	5
3356	0185	4	7 and 23	122 (400)	A02 or A20	1,2,3,4,7,9
	1178	1	15 or 31	122 (400)	A02 or A20	5

To 3490 Model A02 or A20

Feature Code	Conn ID	Model	Notes
3356	2 and 18	A02 or A20	3,4
3356	4 and 20	A02 or A20	3,4
3356	6 and 22	A02 or A20	3,4
3356	8 and 24	A02 or A20	3,4

Notes:

1. For parallel channel adapters, Model A01, A02, A10, or A20 attaches to the following processors: 308x, 309x, ES/3090, ES/9000, 4341, 4361 (no data chaining), 4381, and 937x.

   The 3490 ESCON adapters may be used only on Models A01, A02, A10, or A20 with ESCON-capable IBM processors.

2. Model A02 or A20 is configured as a dual control unit and needs no additional cabling. Control units 0 and 1 reside in the same A02 or A20 frame.

3. For Model A01 or A10, specify code 3311 to add one ESCON adapter and specify code 3355 for each parallel channel attachment. For Model A02 or A20, specify code 3312 to add two ESCON adapters and specify code 3356 for each pair of parallel channel attachments. Specify code 3356 cannot be used to order cables for Model A01 or A10.

   Up to two ESCON adapters or four parallel channel attachments for each control unit function may be ordered for a total of four ESCON adapters or eight parallel channels for each Model A02 or A20. All Model A02 or A20 parallel channel attachments must be ordered in pairs. If parallel channels and ESCON adapters are mixed, the parallel feature must be inserted in the first slot.

4. The rate of data transfer varies on non-data-streaming channels depending on the cable length. The maximum cable length must be reduced by 4.5 m (15 ft) for each unit connected between Model A01, A02, A10, or A20 and the channel. The maximum instantaneous data rate of 1.5 Mb per second can be realized on a non-data-streaming channel up to a total cable length of 15 m (50 ft). The subsystem functions with cable lengths beyond 15 m (50 ft), but the data rate decreases as the cable length is increased. The maximum cable length of 122 m (400 ft) limits the channel's instantaneous data rate to approximately 710 Kb per second.

5. Power sequence and control cable (order one of cable group 1178 for each using channel) is optional.

6. All cables required to connect Model B02 or B04 to Model A01 or A02, and Model B20 or B40 to Model A10 or A20 are supplied by IBM and shipped with the tape unit.

7. Either gray or IBM-manufactured blue channel cables in matched pairs of the same length may be used for Model A01, A02, A10, or A20.

   If customers use gray cables with a cable length longer than 90 m (300 ft) to attach Model A01, A02, A10, or A20 to a 4.5 Mb-per-second channel, they must submit an RPQ for evaluation of their installation plan. A description of the configuration must be included.

8. Models B02 and B04 may only be attached to Model A01 or A02. Models B20 and B40 may only be attached to Model A10 or A20.

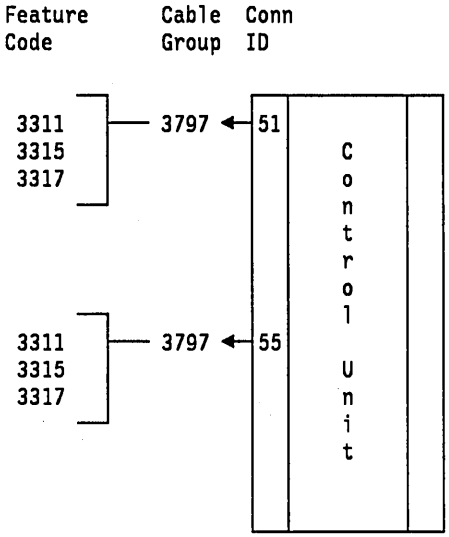
9. When Model A01, A02, A10, or A20 is attached to the IBM 3044 Fiber Optic Channel Extender Link Model C02 or D02, the 3044 allows the following fiber optic cable lengths between the host processor and the 3490 device:

Model A01, A02, A10, or A20	**Fiber Optic Cable Length**	
3.0 Mb per second	Up to 400 m (1310 ft)	
4.5 Mb per second	Up to 244 m (800 ft)	
4.5 Mb per second	Up to 3 km (9845 ft) with feature code 605 Tape Attachment feature)	3 (3044 Enhanced

   For more information, see *IBM Fiber Optic Channel Extender Link Models C02 and D02 Product Description*, GA22-7129.

10. If a raised platform is required for the installation of the 3490 Model A01, A02, B02, or B04 subsystem or the 3490 Model A10, A20, B20, or B40 subsystem, the platform must be constructed to simulate a computer-room floor.

Cabling Schematic for 3490 Model A01 ESCON Adapters

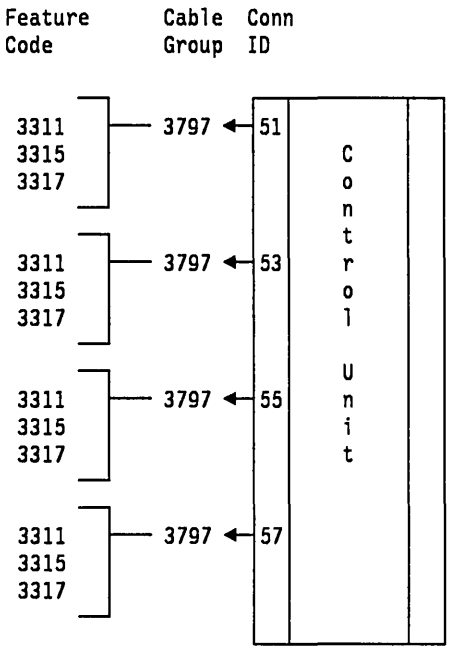


From 3490 Model A01

Feature Code	Group No.	No. of Cables	Conn ID	Max Length m (ft)	Model	Notes
3311 3315 3317	3797	1	51	122 (400)*	A01	1,3
3311 3315 3317	3797	1	55	122 (400)*	A01	1,3

Add 610 mm (24 in.) to each channel length of fiber optic cable to provide the needed length to reach ESCON ports inside all 3490 models.

Cabling Schematic for 3490 Model A10 ESCON Adapters

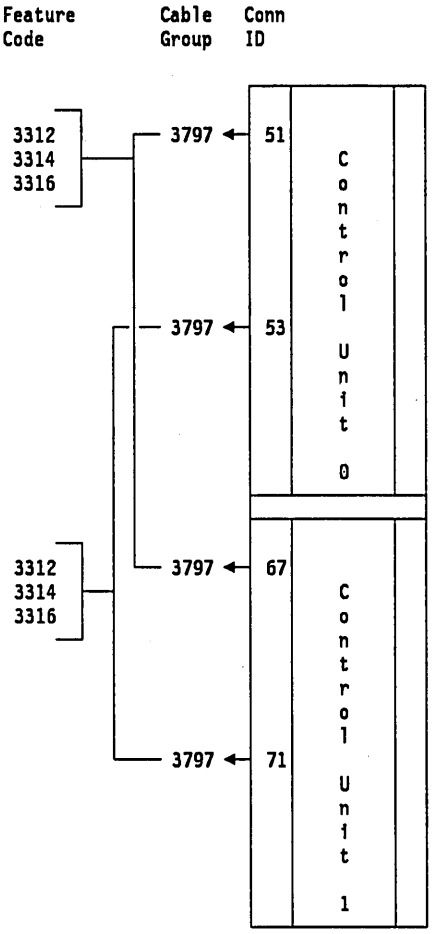


From 3490 Model A10

Feature Code	Group No.	No. of Cables	Conn ID	Max Length m (ft)	Model	Notes
3311 3315 3317	3797	1	51	122 (400)*	A10	1,3
	3797	1	53	122 (400)*	A10	1,3
	3797	1	55	122 (400)*	A10	1,3
	3797	1	57	122 (400)*	A10	1,3

Add 610 mm (24 in.) to each channel length of fiber optic cable to provide the needed length to reach ESCON ports inside all 3490 models.

Cabling Schematic for 3490 Model A02 ESCON Adapters

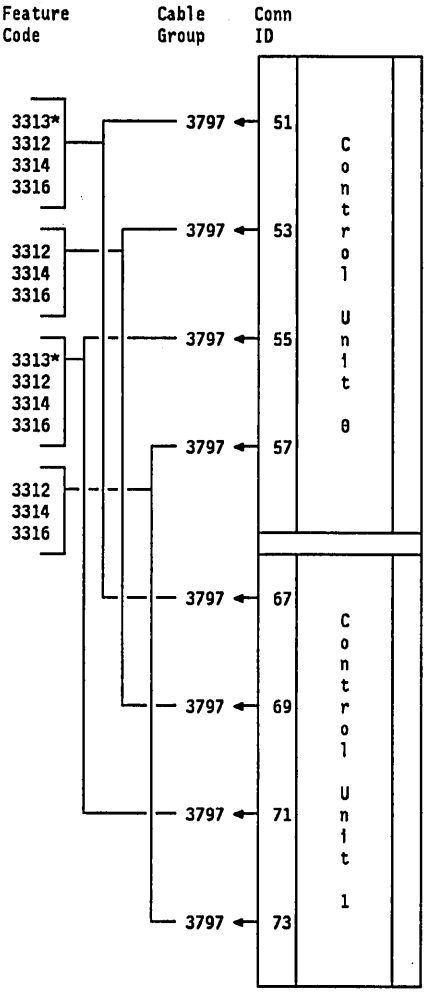


From 3490 Model A02

Feature Code	Group No.	No. of Cables	Conn ID	Max Length m (ft)	Model	Notes
3312 3314 3316	3797	1	51	122 (400)*	A02	1,2,3
	3797	1	67	122 (400)*	A02	1,2,3
3312 3314 3316	3797	1	55	122 (400)*	A02	1,2,3
	3797	1	71	122 (400)*	A02	1,2,3

Add 610 mm (24 in.) to each channel length of fiber optic cable to provide the needed length to reach ESCON ports inside all 3490 models.

Cabling Schematic for 3490 Model A20 ESCON Adapters



*Feature code 3313 adds 1 ESCON adapter to the second control unit function with the Model A10 to Model A20 upgrade.

From 3490 Model A20

Feature Code	Group No.	No. of Cables	Conn ID	Max Length m (ft)	Model	Notes
3312 3314 3316	3797	1	51,67	122 (400)*	A20	1,2,3
	3797	1	53,69	122 (400)*	A20	1,2,3
	3797	1	55,71	122 (400)*	A20	1,2,3
	3797	1	57,73	122 (400)*	A20	1,2,3

Add 610 mm (24 in.) to each channel length of fiber optic cable to provide the needed length to reach ESCON ports inside all 3490 models.

ESCON Adapters for 3490 Model A01, A02, A10, or A20: The 3490 ESCON adapters may be used only on 3490 Tape Unit Models A01, A02, A10, or A20 with ESCON-capable IBM processors.

Model A01	2 ESCON adapters (Feature)
Model A02	4 ESCON adapters (2 per control unit function) (Feature)
Model A10	4 ESCON adapters (Feature)
Model A20	8 ESCON adapters (2 per control unit function) (Feature)

The addition of an ESCON adapter allows the location of any 3490 model up to 9 km, through data routers, from the central processing facility. The distance per link is limited as follows:

50.0/125 micron cable	2 km (6600 ft.)
62.5/125 micron cable	3 km (9845 ft.)

The total distance capability with two data routers is limited as follows:

50.0/125 micron cable	6 km (13 200 ft.)
62.5/125 micron cable	9 km (19 800 ft.)

Each 3490 ESCON adapter feature installed on Model A02 or A20 provides two ESCON adapters, one adapter on each control unit function. One jumper cable per port is included with each installed ESCON feature, but it must be ordered separately. A description of addition and removal options per adapter, 3490 model, and pertinent feature follows:

Description	IBM 3490	Feature
Add 1 ESCON adapter.	Model A01 or A10	3311
Add 2 ESCON adapters.	Model A02 or A20	3312
Add 1 ESCON adapter to the second control unit function in upgrades from A01 to A02 or A10 to A20.	Model A01, A02, A10, or A20	3313
Add 1 ESCON adapter and return 1 parallel channel adapter.	Model A01 or A10	3315
Add 1 ESCON adapter and return 2 parallel channel adapters.	Model A01 or A10	3317
Add 2 ESCON adapters and return 2 parallel channel adapters.	Model A02 or A20	3314
Add 2 ESCON adapters and return 4 parallel channel adapters.	Model A02 or A20	3316

Note: Parallel adapters removed by feature code 3314, 3315, 3316, or 3317 are the property of IBM and must be returned to IBM.

The following combinations of ESCON adapters and parallel channels are allowed for the subsystem:

Model A01		Model A02	
ESCON Adapters	Parallel Channels	ESCON Adapters	Parallel Channels
0 1 2	1, 2, 3, or 4 0, 1, or 2 0	0 2 4	2, 4, 6, or 8 0, 2, or 4 0
Model A10		**Model A20**	
ESCON Adapters	Parallel Channels	ESCON Adapters	Parallel Channels
0 1 2 3 4	1, 2, 3, or 4 1, 2, or 3 2 1 0	0 2 4 6 8	2, 4, 6, or 8 2, 4, or 6 2 or 4 2 0

Up to four parallel channel attachments are permitted on Model A01 or A10, and up to eight parallel channel attachments on Model A02 or A20.

For Model A01 or A10, one ESCON Adapter feature 3311 provides one ESCON adapter for the single control unit function. For Model A02 or A20, one ESCON Adapter feature 3312 provides one ESCON adapter for each control unit function for a total of two ESCON adapters.

One ESCON Adapter feature or one Parallel Channel Attach feature is required for each control unit function, that is, one channel connection per Model A01 or A10 and two channel connections per Model A02 or A20.

IBM 3490	Feature Installed	Feature Removed	Feature Quantity Removed
Model A01 or A10	3311	N/A	0
Model A01 or A10	3315	3355	1
Model A01 or A10	3317	3355	2
Model A02 or A20	3312	N/A	0
Model A02 or A20	3314	3356	1
Model A02 or A20	3316	3356	2
Model A20	3313	N/A	0
Model A20	N/A	3357	0

Notes:

1. Feature code 3313 or 3357 is used only for upgrades from Model A10 to A20.
2. All parts of feature codes 3314, 3315, 3316, and 3317 that are removed are the property of IBM and must be returned to IBM.

Fiber optic jumper cables are required to attach a 3490 with ESCON adapters to dynamic data routers. Duplex to duplex 62.5/125 micron fiber optic jumper cables (part number 14F3797) are available from IBM in standard lengths up to 122 m (400 ft). Custom lengths are available above 122 m (400 ft) to a maximum length of 500 m (1640 ft). The jumper cables are stocked in the following 11 fixed lengths:

4 m (12 ft)	61 m (200 ft)
7 m (20 ft)	77 m (250 ft)
13 m (40 ft)	92 m (300 ft)
22 m (70 ft)	107 m (350 ft)
31 m (100 ft)	122 m (400 ft)
46 m (150 ft)	

One jumper per port is included with each installed ESCON adapter feature, but it must be ordered separately.

Magnetic Tape Subsystem Enhanced Capability Models C10, C11, and C22

The 3490 Magnetic Tape Subsystem Enhanced Capability Models C10, C11, and C22 (also known as the 3490E) can be installed in an IBM 9309-2 Rack. The 3490E Models C10, C11, and C22 require 14 EIA Units of space.

Definitions of the 3490E models are:

C10 Control Unit and one drive.

C11 Control Unit and one drive with an automatic cartridge loader.

C22 Control Unit and two drives with two automatic cartridge loaders.

The control unit is contained in a mounting sleeve; the drive or drives with their associated power supplies are contained in another sleeve. The drive sleeve must be installed directly below the control unit sleeve.

One 3490E Model C10, C11, or C22 can be installed in a 9406 System Unit Expansion, 9406 Bus Extension Unit, or 9309-2 Rack. For more information, see *IBM 9309 Rack Enclosure General Information and Site Preparation Guide*, GA24-4103. For AS/400 physical planning information see *IBM Application System/400 Physical Planning Guide*, GA21-9571.

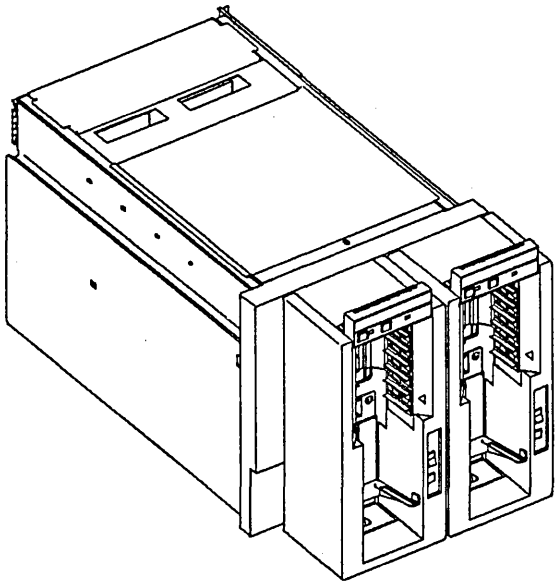
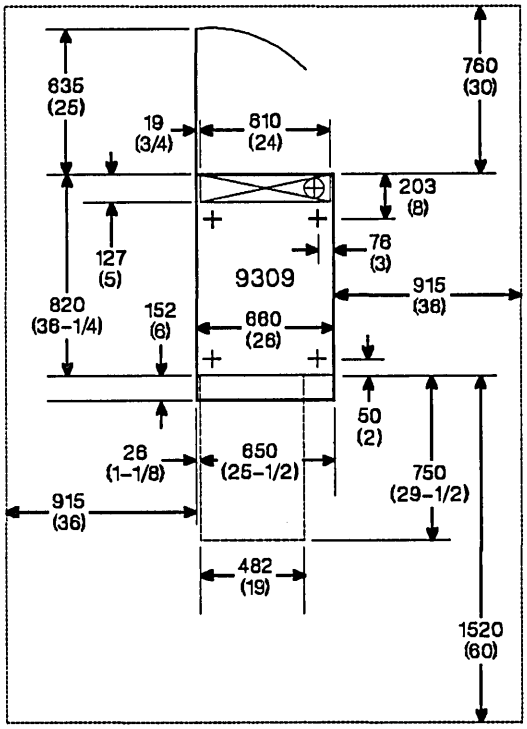


Illustration of Drive Units in Sleeve

Plan View (Not to Scale): English measurements are shown in parentheses.

Use IBM Physical Planning Template GX24-4046 (English Scale) or GX24-4047 (Metric Scale).

Plan View of Control Unit and Drive Units in 9309 Rack.



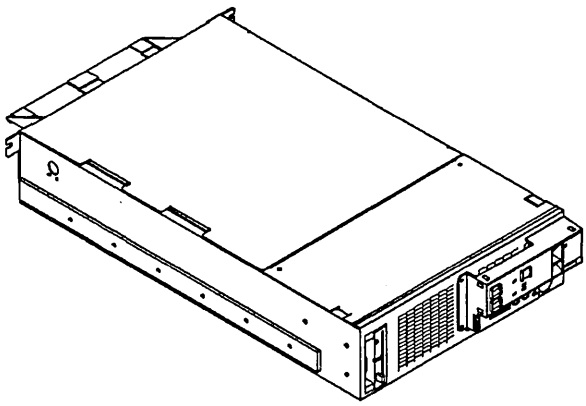


Illustration of Control Unit in Sleeve

Specifications

3490E Control Unit C10, C11, C22 Dimensions:

	Front	Side[1]	Height
mm (in.)	480 (19)	845 (33-1/4)	130 (5-1/4)

3490E Drive Unit C10, C11, C22 Dimensions:

	Front	Side[2]	Height
mm (in.)	479 (19)	800 (31-1/2)	485 (19)

9309-2 Dimensions:

	Front	Side	Height
mm (in.)	650 (25-3/4)	920 (36-1/4)	1580 (62-1/4)

9309 Service Clearances:

	Front[3]	Left Side	Right Side	Rear
mm (in.)	1524 (60)	0 (0)	0 (0)	760 (30)

340 kg/m² (70 lb/ft²) Floor Load Rating, 9309-2 with C10, C11, or C22:[5]

	Front	Left	Right	Rear
All Models	1525 (60)	0	0	765 (30)

240 kg/m²(50 lb/ft²) Floor Load Rating, 9309-2 with C10, C11, or C22:[5]

	Front	Left[6]	Right[6]	Rear
C10	1525 (60)	130 (5-1/4)	130 (5-1/4)	765 (30)
C11	1525 (60)	130 (5-1/4)	130 (5-1/4)	765 (30)
C22	1525 (60)	255 (10)	255 (10)	765 (30)

Weight:	9309-2	C10	C11[4]	C22[4]
kg (lbs)	140 (310)	85 (185)	90 (200)	120 (260)

Heat Output:	Model C10	Model C11	Model C22
kW	0.52	0.52	0.85
kCal/hr (kBTU/hr)	446 (1.77)	446 (1.77)	731 (2.90)
Airflow:			
m³/min	9.6 (340)	9.6 (340)	9.6 (340)

Notes:

1. The side dimension includes the control unit operator panel and rear tailgate.
2. The side dimension includes the message display. The automatic cartridge loader, when installed, adds 180 mm (7-1/4 in.) to the side dimension.
3. The front service clearances given are only for the 3490E. Other equipment installed in the rack is not included.
4. Models C11 and C22 data includes the weight of the automatic cartridge loader or loaders.
5. The data shown includes a C22 installed in a 9309-2 Rack. Other equipment that may be installed in the same rack is not included.
6. The right and left service clearances are required for minimum floor loading per IBM standards. If X and Y must be reduced below that, a structural engineer must be consulted.

Power Requirements:

	Model C10	Model C11	Model C22
kVA	0.57	0.57	0.90

Phases	1
Voltages	200 to 240 V ac-RMS with no adjustment required
Frequency	50/60 Hz with no adjustment required

Note: See *IBM 9309 Rack Enclosure General Information and Site Preparation Guide*, GA24-4103, for plug type, receptacle type, connector and power cord style.

Acoustical Data (Preliminary):

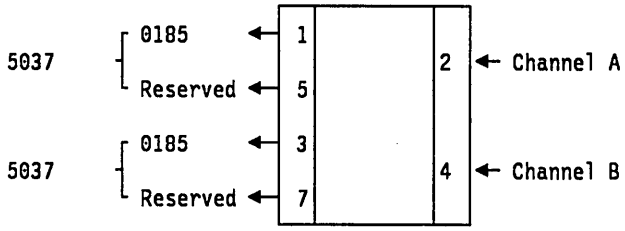
	L_{WAd}		$<L_{pA}>_m$			
	Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	I	T
C10	5.8	5.8	42	42	No	No
C11	6.1	5.8	44	42	Yes	No
C22	6.4	6.3	47	46	Yes	No

Environment:

Operating:		Nonoperating:	
Temperature	16°C to 32°C (60°F to 90°F)	Temperature	10°C to 43°C (50°F to 110°F)
Relative Humidity	20% to 80%	Relative Humidity	8% to 80%
Max Wet Bulb	25.6°C (78°F)	Max Wet Bulb	27°C (80°F)

Note: The environments described above apply to the components of the 3490E subsystem. For specifications on the environmental limits of the Cartridge System Tape media, see the *IBM Magnetic Tape and Cartridge Requirements*, GA32-0048.

AS/400 Cabling Schematic for 3490E Models C10, C11, and C22



To 3490E Models C10, C11, and C22

Feature Code	Conn. ID	Model	Notes
5037	2	All	1, 2, 3, 4
5037	4	All	1, 2, 3, 4

From 3490E Models C10, C11, and C22

Feature Code	Group No.	No. of Cables	Conn. ID	Max Length m (ft)	Model	Notes
9928	—	2	1/3	1.7 (5.6)	All	1, 2, 3, 5, 6
9929	—	2	1/3	6.6 (21.6)	All	1, 2, 3, 4, 5, 6
9930	—	2	1/3	24 (78.7)	All	1, 2, 3, 4, 5,6
5037	0185	2	1/3	122 (400)	All	1, 2, 3, 4, 5

Cabling Notes

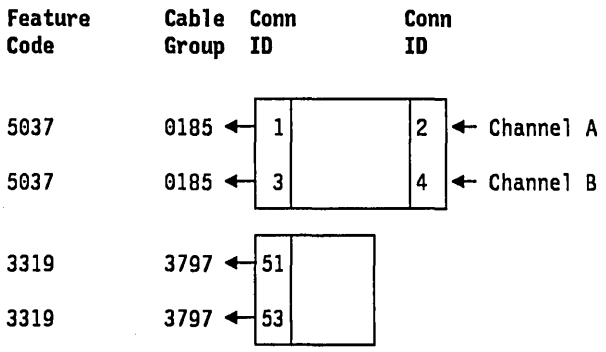
Notes:

1. Models C10, C11, and C22 are configured as single integrated control unit and and tape drives and need no additional cabling.
2. Parallel channel adapters are available on Models C10, C11, and C22 allowing attachment to a 9406.

   The following configurations are allowed for the 3490E C10, C11, and C22:

   - One parallel channel adapter on tailgate channel A
   - Two parallel channel adapters on tailgate channel A and B.
3. 3490E Models C10, C11, and C22 do not support Remote Power Sequence and Control.
4. For optional channel cables up to 61 m (200 ft), do not specify the *To Conn ID*.
5. Models C10, C11, and C22 cannot use ESCON channels when attached only to 9406 processors.
6. Cables 9928, 9929, 9930 are D-shell to D-shell cables to connect the tape control unit to the processor.
7. For more information on AS/400 attachment, see *Physical Planning and Reference*, GA41-9571.

MVS/VM Cabling Schematic for 3490 C10, C11, C22



To 3490E C10, C11, C22

Feature Code	Conn. ID	Model	Notes
5037	2	All	1, 2, 3
5037	4	All	1, 2, 3

From 3490E C10, C11, C22

Feature Code	Group No.	No. of Cables	Conn. ID	Max Length * m (ft)	Model	Notes
3319	3797	2	51	122 (400)*	All	1, 2, 3, 4, 5
3319	3797	2	53	122 (400)*	All	1, 2, 3, 4, 5
5037	0185	2	1	122 (400)	All	1, 2, 3
5037	0185	2	3	122 (400)	All	1, 2, 3
Note: * Add 2286 mm (90 in.) to each channel length of fiber optic cable to reach the ESCON ports on all models.						

Cabling Notes

Notes:

1. Internal channel cable configurations can be specified. See the IBM sales manual.
2. 3490E Models C10, C11, C22 do not support Remote Power Sequence and Control.
3. Parallel channel adapters on the Models C10, C11, and C22 allow attachment to the following processors: 3090, ES/3090, 4381, 937x, and 9406.
4. The following configurations are allowed for 3490E Models C10, C11, and C22:

   Parallel Channels:

   - One parallel channel adapter in position A
   - Two parallel channel adapters in positions A and B

   ESCON Ports:

   - One ESCON adapter in position A
   - Two ESCON adapters in positions A and B
   - One parallel channel adapter and one ESCON adapter in positions A and B

4. Each ESCON adapter feature installed on Models C10, C11, and C22 provides one ESCON adapter. One jumper cable per port is included with each installed ESCON feature, but it must be ordered separately. A description of addition and remove options per adapter and pertinent features follows:

Description	3490E Model	Feature Installed	Feature Removed	Quantity Removed
1 ESCON adapter	C10, C11, or C22	3319	N/A	0
1 parallel channel adapter	C10, C11, or C22	5037	N/A	0

The ESCON and parallel channel adapters can be ordered and installed only in the following combinations:

ESCON Adapter	Parallel Channel	IBM 3490E
1	1	Model C10, C11, or C22
0	1	Model C10, C11, or C22
0	2	Model C10, C11, or C22
2	0	Model C10, C11, or C22
1	0	Model C10, C11, or C22

5. 3490E Models C10, C11, and C22 support ESCON data rates to a maximum of 9.0 Mb per second and cables lengths as listed below. A 3490E model C10, C11, or C22 with ESCON Adapter features can be located up to 23 km from the host processor by interconnecting one or two ESCON Directors.

Fiber Optic jumper cables are required for attaching 3490E Models C10, C11, and C22 with ESCON Adapters to ESCON Directors. Duplex-to-duplex 62.5/125 micron fiber optic jumper cables (PN 14F3797) are available from IBM in standard lengths up to 122 meters (400 feet). Custom lengths are available above 122 meters (400 feet) to a maximum length of 500 meters (1,640 feet). The jumper cables are stocked in the following fixed lengths.

4 m (13 ft)	7 m (23 ft)	13 m (43 ft)	22 m (73 ft)
31 m (102 ft)	46 m (151 ft)	61 m (200 ft)	77 m (253 ft)
92 m (302 ft)	107 m (352 ft)	122 m (400 ft)	

When the subsystem is attached to the IBM 3044 Fiber Optic Channel Extender Link Model C02 or D02, the 3044 allows fiber optic cable lengths between the host processor and 3490E device of:

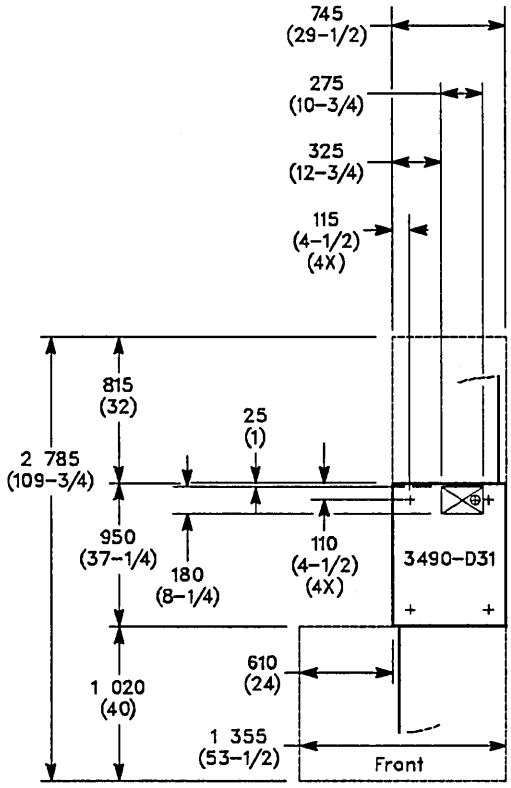
Model C10, C11, or C22	Fiber Optic Cable Length (ESCON)
3.0 Mb per second	Up to 400 m (1312 ft)
4.5 Mb per second	Up to 244 m (801 ft)
4.5 Mb per second	Up to 3 km (9821 ft) with feature code 6053

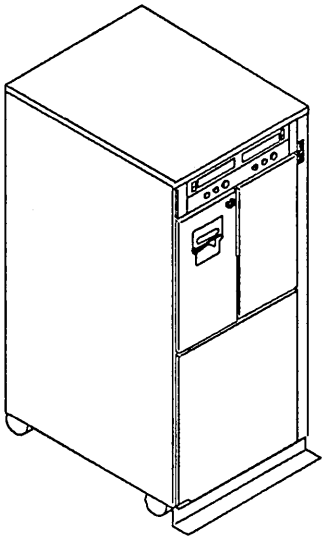
For more fiber optics installation information, see *Fiber Optic Channel Link Planning and Installation*, GA23-0367. For more product information, see *IBM Fiber Optic Channel Extender Link Models C02 and D02 Product Description*.

Magnetic Tape Subsystem Model D31 or D41

Plan View (Not to Scale): English measurements are shown in parentheses.

Use IBM Physical Planning Template GX22-7128.





Specifications:

Dimensions:

	Front	Side	Height
mm	745	950	1580
(in.)	(29-1/2)	(37-1/4)	(62-1/4)

Service Clearances:

	Front	Rear	Right	Left*
mm	1 020	815	0	0
(in.)	(40)	(32)	(0)	(0)

*If Model D31 or D41 is at either end of a string, it requires service clearances of 610 mm (24 in.) at either the left front or the right front and 610 mm (24 in.) between the wall and the end unit.

Weight: 377 kg (830 lb) (with one cartridge loader)

Heat Output: 1.0 kW (3.3 kBTU/hr)

Airflow: 13.0 m³/min (450 cfm)

Power Requirements:

kVA	1.0
Phases	1
Plug Type	L6-30P
Receptacle Type	L6-30R
Power Cord Style	3 wire, no shield Wire size, 1.5 mm² Bulk wire OD, 8.9 mm

For additional power plugs, see page 3490-27.

Acoustical Data:
For definitions, see "Acoustics" in Chapter 3 of the *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

	L_{WAd}		$<L_{pA}>m$		I	T
	Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
D31	7.4	7.3	57.0	56.0	No	No
D41	6.6	6.5	50.0	48.0	Yes	No

Environment, Operating:

Temperature	16°C to 32°C (60°F to 90°F)
Relative Humidity	20% to 80%
Max Wet Bulb	25.6°C (78°F)

Environment, Nonoperating:

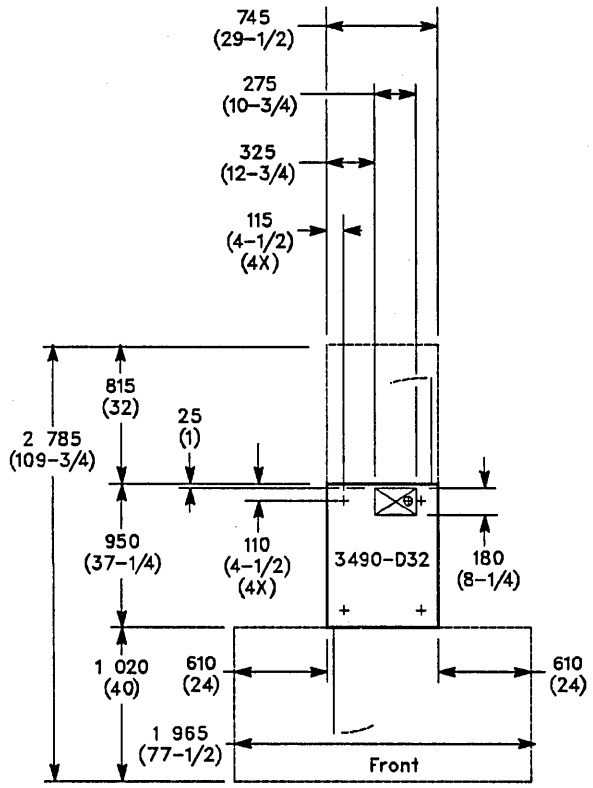
Temperature	10°C to 43°C (50°F to 110°F)
Relative Humidity	8% to 80%
Max Wet Bulb	27°C (80°F)

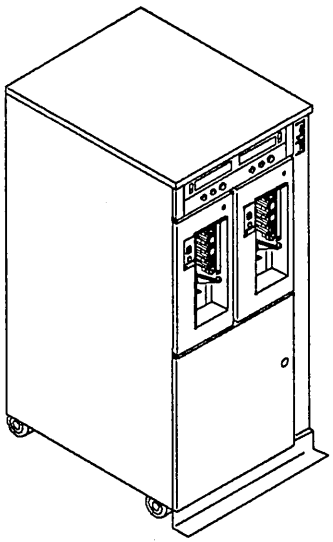
Note: The automatic cartridge loader, when installed, is flush with the front cover.

Magnetic Tape Subsystem Model D32 or D42

Plan View (Not to Scale)

English measurements are shown in parentheses.: Use IBM Physical Planning Template GX22-7128.





Specifications:

Dimensions:

	Front	Side	Height
mm	745	950	1 580
(in.)	(29-1/2)	(37-1/4)	(62-1/4)

Service Clearances:

	Front	Rear	Right*	Left*
mm	1 020	815	0	610
(in.)	(40)	(32)	(0)	(24)

*If Model D32 or D42 is at either end of a string, it requires service clearances of 610 mm (24 in.) at either the left front or the right front and 610 mm (24 in.) between the wall and the end unit.

Weight: 404 kg (890 lb) (with two cartridge loaders)

Heat Output: 1.1 kW (3.8 kBTU/hr)

Airflow: 13.0 m^3/min (450 cfm)

Power Requirements:

kVA	1.1
Phases	1
Plug Type	L6-30P
Receptacle Type	L6-30R
Power Cord Style	3 wire, no shield Wire size, 1.5 mm^2 Bulk wire OD, 8.9 mm

For additional power plugs, see page 3490-27.

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of the *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

	L_{WAd}		$<L_{pA}>m$			
	Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	I	T
D32	7.4	7.3	57.0	56.0	No	No
D42	6.6	6.5	50.0	48.0	Yes	No

Environment, Operating:

Temperature	16°C to 32°C (60°F to 90°F)
Relative Humidity	20% to 80%
Max Wet Bulb	25.6°C (78°F)

Environment, Nonoperating:

Temperature	10°C to 43°C (50°F to 110°F)
Relative Humidity	8% to 80%
Max Wet Bulb	27°C (80°F)

Note: The automatic cartridge loaders, when installed, are flush with the front cover.

Power Cords, Plugs, and Receptacles for IBM USA, IBM Canada, IBM World Trade Latin America, and IBM World Trade Asia/Pacific: IBM supplies each 3490 Model D31, D32, D41, or D42 with a power cord and attached plug. The customer must supply a corresponding receptacle for each unit.

Plug Type	Service Rating				Connector	Receptacle	Notes	Diagram number in Appendix A
	Maximum Voltage	A	Phases	Wires				
3750	250	30	1	3	3933	3753	1,2,5,6	40
L6-30P	250	30	1	3	-	L6-30R	5,6	29
56PA330	250	30	1	3	-	56S0330	3,5	-
WIP130	250	30	1	3	-	WIB130	4,5	-

For IBM Europe/Middle East/Africa

_	Service Rating				Connector	Receptacle	Notes	Diagram number in Appendix A
	Maximum Voltage	A	Phases	Wires				
-	250	16	1	3	-	-	5,7	18
-	250	16	1	3	-	-	5,7	22
-	250	10/16	1	3	-	-	5,7	25
-	220/380	16/32	1	3	-	-	5,8	46
-	220/380	16/32	1	3	-	-	5,9	46

Notes:

1. Raised-floor installations require a Russellstoll watertight plug and connector/receptacle (specify code 9080).
2. A Russellstoll inline connector used with flexible metal conduit or liquid-tight flexible metal conduit requires a Russellstoll FSA adapter.
3. Only for New Zealand.
4. Only for Australia.
5. See power plug illustrations in Appendix A.
6. The 3490 Magnetic Tape Subsystem is shipped with a standard 4.3-m (14-ft) power cord and L6-30P plug (specify code 9081). Optionally, the following specify codes canmay be ordered:
   - Specify code 9986 is a 1.8-m (6-ft) power cord and specify code 9081 is an L6-30P plug.
   - Specify code 9986 is a 1.8-m (6-ft) power cord and specify code 9080 is a Russellstoll 3750 plug.
   - Specify code 9080 is a standard 4.3-m (14-ft) power cord with a Russellstoll 3750 plug.
7. Plug is rated for 3 kVA single phase.
8. Plug is rated for 5 kVA single phase.
9. Plug is rated for 4.4 kVA and 5 kVA three phase. This plug uses only phases 1 and 2 of the incoming three phases. The use of only two phases by the PCC might cause a power imbalance.

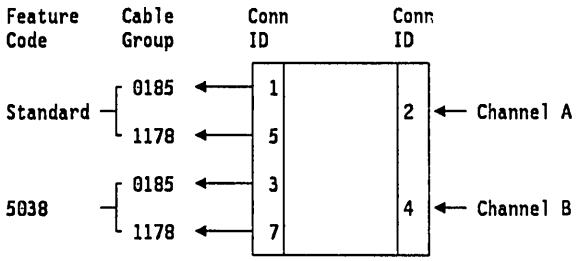
Power Cords, Plugs, and Receptacles for IBM World Trade Europe/Middle East/Africa Countries:

For E/ME/A countries, IBM supplies the power cord for each unit with an attached plug that corresponds to the power-outlet receptacle most used in that country. To find the plugs and receptacles needed for each country, match the country Plug ID letter with the letter of the plug diagram in Appendix A.

Country	Diagram Number	Country	Diagram Number
Algeria	18	Malawi	23
Andorra	18	Mali	18
Angola	18	Malta	23
AREAS/South (Africa)	23	Mauritania	18
Austria	18	Mauritius	18
Bahrain	23	Monaco	18
Belgium	18	Morocco	18
Benin Republic	18	Mozambique	18
Bulgaria	18	Netherlands	18
Burkina Faso (Upper Volta)	18	New Caledonia	18
Burundi	18	Niger	18
Cameroon	18	Nigeria	23
Central Africa Republic	18	Norway	18
Chad	18	Oman	23
Channel Islands	23	Pakistan	22
Congo	18	Poland	18
Cyprus	23	Portugal	18
Czechoslovakia	18	Qatar	23
Denmark	19	ROECE	46
Egypt	18	Romania	18
Ethiopia	25	Saudi Arabia	18
Finland	18	Senegal	18
France	18	Sierra Leone	23
Germany	18	Somalia	23
Ghana	23	South Africa	22
Greece	18	South Asia Region (SAR)	18
Guinea	18	Spain	18
Hungary	18	Sudan	18
Iceland	18	Sweden	18
Iran	18	Switzerland	24
Iraq	23	Tanzania	23
Ireland	23	Togo	18
Israel	32	Tunisia	18
Italy	25	Turkey	18
Ivory Coast	18	Uganda	23
Jordan	18, 23	United Arab Emirates (UAE)	23
Kenya	23	United Kingdom*	Hard-wired
Kuwait	23	USSR	18
Lebanon	18	Yemen	23
Libya	25	Yugoslavia	18
Liechtenstein	24	Zaire	18
Luxembourg	18	Zambia	23
Malagasy Republic	18	Zimbabwe	18

*The power cord for the 3 kVA single phase PCC in the United Kingdom does not have a plug.

Cabling Schematic for 3490 Model D31, D32, D41, or D42:



From 3490

Feature Code	Group No.	No. of Cables	Conn ID	Max Length m (ft)	Model	Notes
Standard	0185	2	1	122 (400)	D31, D32 D41, D42	1,2,3,5
9402	1178	1	5	122 (400)	D31, D32 D41, D42	6
5038	0185	2	3	122 (400)	D31, D32 D41, D42	1,2,3,5
	1178	1	7	122 (400)	D31, D32 D41, D42	6
Standard	0185	2	1	61 (200)	9406	1,2,3,5,7
5038	0185	2	3	61 (200)	9406	1,2,3,5,7

To 3490

Feature Code	Conn ID	Model	Notes
Standard	2	D31, D32 D41, D42	2,3
5038	4	D31, D32 D41, D42	2,3
Standard	2	9406	2,3,7
5038	4	9406	2,3,7

50-Hz Power Cord Style: The following table gives the power cord specifications needed to terminate the power cord in accordance with local practice, if necessary.

Phase	Cable Nominal OD mm	Cable Nominal OD (in.)	Number of Shields	Quantity	Conductors Nominal OD* mm²	Conductors Nominal OD* (in.)
1	8.9	(0.350)	0	3	1.5	(0.060)

* This diameter refers to solid, bare wire.

Auto Restart: The ac box in the rack area of 3490 Model D31, D32, D41, or D42 frame has auto-restart capabilities. This automatically powers on the system racks after an unexpected loss of power.

Note: If the system is powered on and it loses power as a result of one of the following, the system will restart when power is restored if the outage was 10 seconds or more.

- A line voltage drop, such as a utility outage
- Disconnection of the rack power cord before a normal power-off sequence
- Setting of CB1 to the Off position before a normal power-off sequence

To override this auto-restart capability after an unexpected loss of power, set the Enable/Off switch on the Main System Power panel to the Off position or set the key to the Local position if feature 9402 is installed.

Notes:

1. For parallel channel adapters, the 3490 Model D31, D32, D41, or D42 subsystem attaches to the following processors: 308x, 3090, ES/3090, 4341, 4361 (no data chaining), 4381, 937x, and 9406.

   The 3490 ESCON adapters may be used only on 3490 Models D31, D32, D41, or D42 with ESCON-capable IBM processors.

2. Model D31 or D41 is configured as a single integrated control unit and single tape drive and needs no additional cabling. Model D32 or D42 is configured as a single integrated control unit and two tape drives and needs no additional cabling.

3. One parallel channel attachment is standard. Another parallel channel can be added for a total of two channels by adding the Parallel Channel Attach feature 5038.

   To install an ESCON adapter, order feature code 3309 or feature code 3310. Feature code 3309 adds one ESCON adapter. Feature code 3310 removes one parallel channel adapter and adds one ESCON adapter.

   For AS/400 installations only, the standard channel cable length is 6 m (20 ft). Another channel may be specified for another 6 m (20 ft) pair of channel cables. Both channels can be specified by feature code 9985.

4. The rate of data transfer varies on non-data-streaming channels depending on the cable length. The maximum cable length must be reduced by 4.5 m (15 ft) for each unit connected between Model D31, D32, D41, or D42 and the channel.

   The maximum instantaneous data rate of 1.5 Mb per second can be realized on a non-data-streaming channel up to a total cable length of 15 m (50 ft). The subsystem functions with cable lengths beyond 15 m (50 ft), but the data rate decreases as the cable length is increased. The maximum cable length of 122 m (400 ft) limits the channel's instantaneous data rate to approximately 710 Kb per second.

5. When the 3490 Model D31, D32, D41, or D42 subsystem is attached to the IBM 3044 Fiber Optic Channel Extender Link Model C02 or D02, the 3044 allows the following fiber optic cable lengths between the host processor and the 3490 device:

Model D31, D32, D41, or D42	**Fiber Optic Cable Length**
3.0 Mb per second	Up to 400 m (1310 ft)
4.5 Mb per second	Up to 244 m (800 ft)
4.5 Mb per second	Up to 3 km (9845 ft) with feature code 6053 (IBM 3044 Enhanced Tape Attachment)

   For more information, see *IBM Fiber Optic Channel Extender Link Models C02 and D02 Product Description*.

6. Feature 9402, Shared Power Controller, permits attachment to System/370 Channel Power and Control. Only one feature 9402 is required for each shared 3490.

   Power sequence and control is optional.

   When attaching power sequence and control to a System/370 processor, order feature code 9402, Shared Power Controller. Only one feature code 9402 is needed per Model D31, D32, D41, or D42.

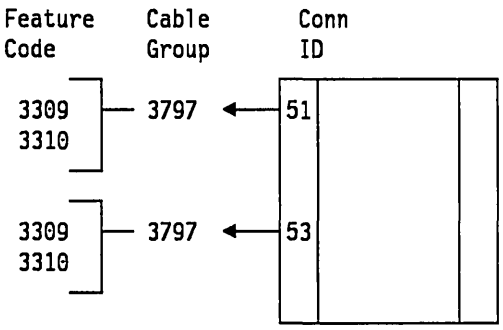
   Order one cable group 1178 for each connecting channel (maximum of two per system).

   Feature code 9402 allows a maximum distance of 60 m (197 ft) between a System/370 processor and Model D31, D32, D41, or D42.

   Power sequence and control is not available when attaching to a 9370 or 9406 processor.

7. The maximum cable length for use with a 9406 processor is 61 m (200 ft). Do not specify *To CONN ID* when ordering X length cables for use with a 9406 processor.

Cabling Schematic for 3490 Model D31, D32, D41, or D42 ESCON Adapters



From 3490

Feature Code	Group No.	No. of Cables	Conn ID	Max Length m (ft)	Model	Notes
3309 3310	3797	1	51	122 (400)*	D31, D32 D41, D42	1,2,3
			53			

Add 610 mm (24 in.) to each channel length of fiber optic cable to provide the needed length to reach ESCON ports inside all 3490 models.

ESCON Adapters for 3490 Model D31, D32, D41, or D42: The 3490 ESCON adapters can be used only on 3490 Model D31, D32, D41, or D42 with ESCON-capable IBM processors.

Model D31 or D32	1 ESCON adapter
Model D41 or D42	1 or 2 ESCON adapters

The addition of an ESCON adapter allows the location of any 3490 model up to 9 km, through ESCON directors or converters, from the central processing facility. The distance per link is limited as follows:

50.0/125 micron cable	2 km
62.5/125 micron cable	3 km

The total distance with two data routers is limited as follows:

50.0/125 micron cable	6 km
62.5/125 micron cable	9 km

Each 3490 ESCON adapter feature installed on Model D31, D32, D41, or D42 provides one ESCON adapter. One jumper cable per port is included with each installed ESCON feature, but it must be ordered separately.

A description of addition and removal options per adapter, 3490 model, and pertinent feature follows:

Description	IBM 3490	Feature
Add 1 ESCON adapter.	Model D31, D32, D41, or D42	3309
Add 1 ESCON adapter and remove 1 parallel channel adapter.	Model D31, D32, D41, or D42	3310

Note: All parts removed are the property of IBM and must be returned to IBM.

The ESCON adapter and the parallel channel adapters must be ordered and installed in the following combinations only:

ESCON Adapter	Parallel Channel	IBM 3490
1	1	Model D31, D32, D41, or D42
0	1	Model D31, D32, D41, or D42
0	2	Model D31, D32, D41, or D42
2	0	Model D41 or D42

Note: One parallel channel adapter is standard on Model D31, D32, D41, or D42.

IBM 3490	Feature Installed	Feature Removed	Quantity Removed
Model D31, D32, D41, or D42	3309	N/A	0
Model D31, D32, D41, or D42	3310	5038	1

Note: All parts that are removed by feature code 3310 are the property of IBM and must be returned to IBM.

Fiber-optic jumper cables are required to attach a 3490 with ESCON adapters to dynamic data routers. Duplex to duplex 62.5/125 micron fiber optic jumper cables (part number 14F3797) are available from IBM in standard lengths up to 122 m (400 ft). Custom lengths are available above 122 m (400 ft) to a maximum length of 500 m (1640 ft). The jumper cables are stocked in the following 11 fixed lengths:

4 m (12 ft)	61 m (200 ft)
7 m (20 ft)	77 m (250 ft)
13 m (40 ft)	92 m (300 ft)
22 m (70 ft)	107 m (350 ft)
31 m (100 ft)	122 m (400 ft)
46 m (150 ft)	

One jumper per port is included with each installed ESCON adapter feature, but it must be ordered separately.

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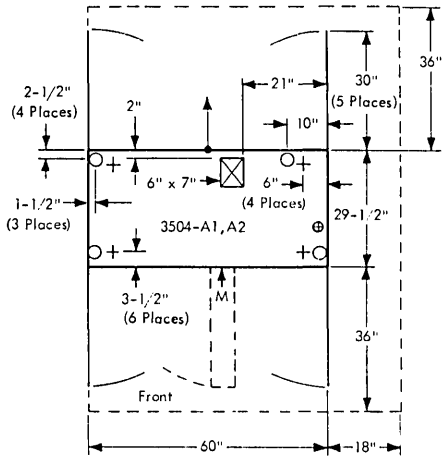
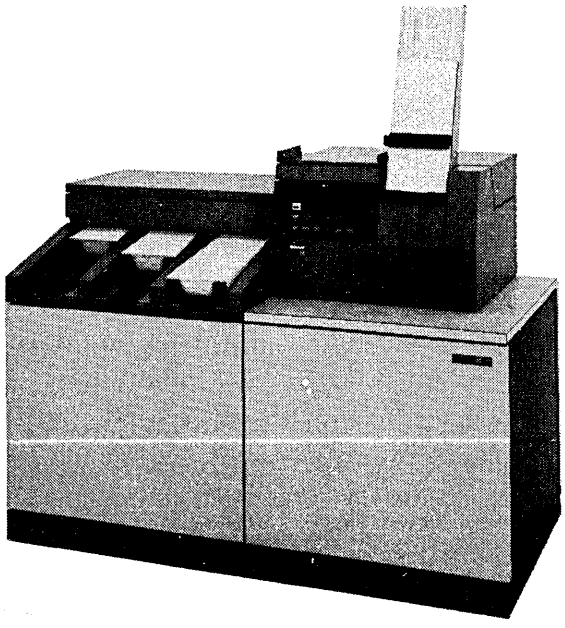
3504 CARD READER MODELS A1 AND A2

PLAN VIEW (English Scale: 1/4 in. = 1 ft)



Note: For cabling information, see 3125-0 or 3125-2.



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	60	29-1/2	44
(cm)	(152)	(75)	(112)

Service Clearances:

	F	R	Rt	L
Inches	36	36	18	0
(cm)	(91)	(91)	(46)	(0)

Weight:	*50 Hz*	*60 Hz*
lb	600	600
(kg)	(280)	(280)

Heat Output:		
BTU/hr	4,600	4,200
(kcal/hr)	(1 200)	(1 100)

Airflow:		
cfm	250	250
(m^3/min)	(8)	(8)

Power Requirements:*		
kVA	1.9	1.6

Notes:

* Powered from 3125-0 or 3125-2 when SF 4680 is installed.

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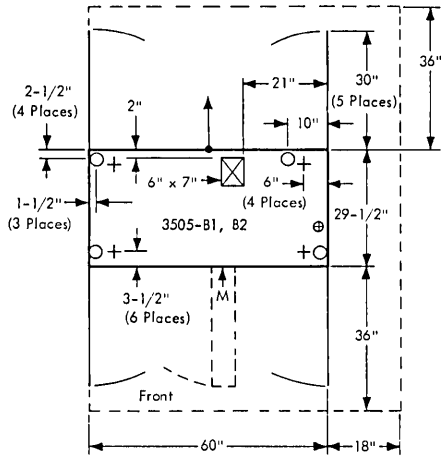
3505 CARD READER MODELS B1 AND B2

PLAN VIEW (English Scale: 1/4 in. = 1 ft)



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	60	29-1/2	44
(cm)	(152)	(75)	(112)

Service Clearances:

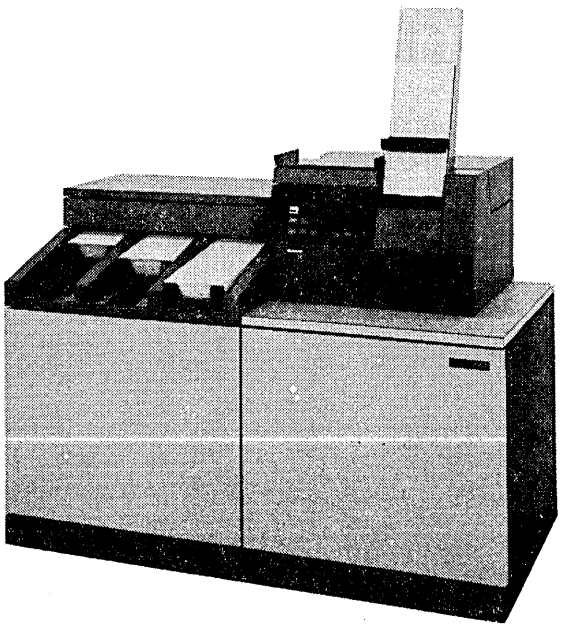
	F	R	Rt	L
Inches	36	36	18	0
(cm)	(91)	(91)	(46)	(0)

Weight:	*50 Hz*	*60 Hz*
lb	900	900
(kg)	(410)	(410)

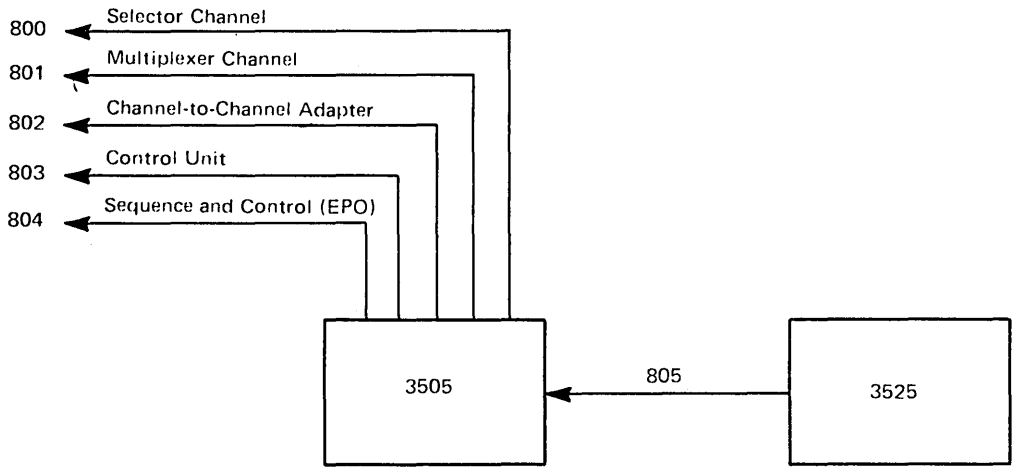
Heat Output:		
BTU/hr	5,200	4,600
(kcal/hr)	(1 350)	(1 200)

Airflow:		
cfm	250	250
(m^3/min)	(8)	(8)

Power Requirements:		
kVA	2.2	1.9
Phases	3	3
Plug	R&S, FS3760	
Connector	R&S, FS3934	
Receptacle	R&S, FS3754	
Power Cord Style	D1	



3505 CARD READER AND 3525 CARD PUNCH CABLING SCHEMATIC

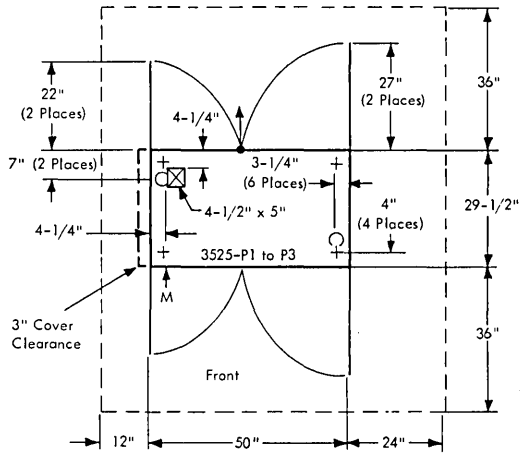


Group No.	*No. of Cables*	*From*	*To*	*Max Length (ft)*	*Notes*
800	2	3505	Selector Channel	–	1
801	2	3505	Multiplexer Channel	–	1
802	2	3505	Channel-to-Channel Adapter	–	1,3
803	2	3505	Control Unit	–	1
804	1	3505	Channel	150	2
805	4	3525	3505	20	–

Notes:
1. Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units.
2. Power sequence and control cable. This machine must have the power sequence and control cable installed for proper operation.
3. To channel-to-channel adapter (SI[1850).

3525 CARD PUNCH MODELS P1 TO P3

PLAN VIEW (English Scale: 1/4 in. = 1 ft)



Note: For cabling information, see 3505 and 3125.

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	50	29-1/2	45
(cm)	(127)	(75)	(114)

Service Clearances:

	F	R	Rt	L
Inches	36	36	24	12
(cm)	(91)	(91)	(61)	(30)

Weight:	*50 Hz*	*60 Hz*
lb	850	850
(kg)	(390)	(390)

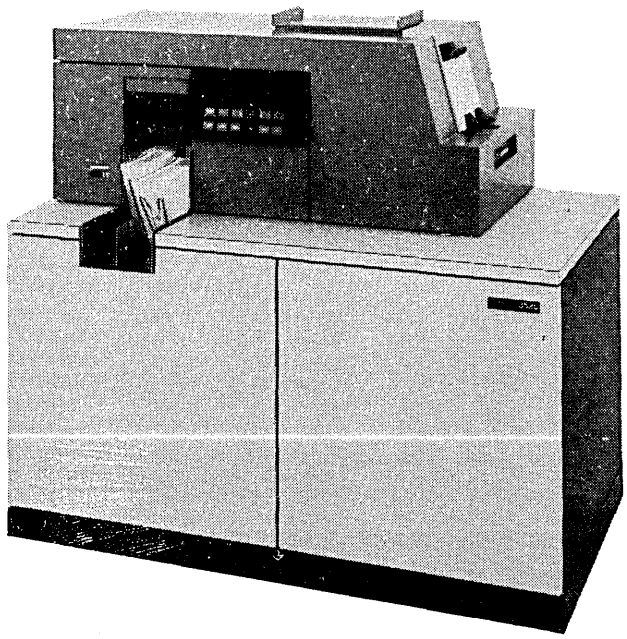
Heat Output:		
BTU/hr	4,800	4,400
(kcal/hr)	(1 250)	(1 150)

Airflow:		
cfm	200	200
(m^3/min)	(6)	(6)

Power Requirements:*		
kVA	1.8	1.6

Notes:

* Powered from 3505, or from 3125-0 or 3125-2 when SF 4685 is installed.



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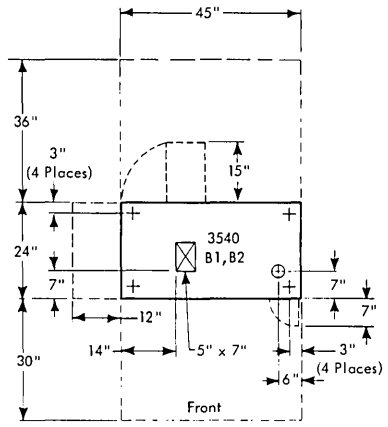
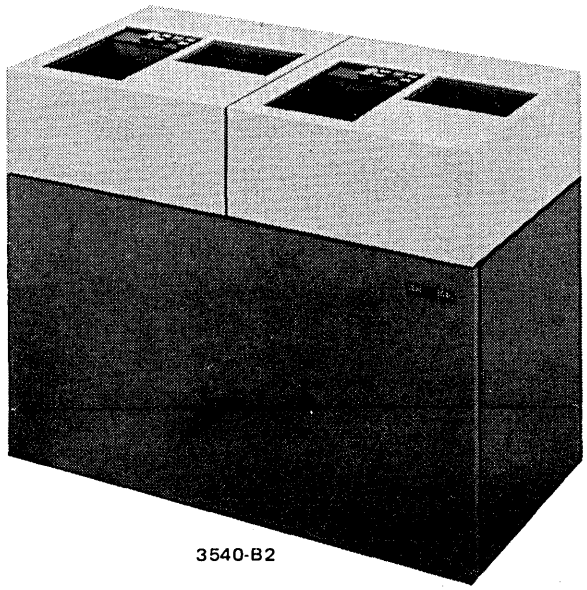
3540 DISKETTE INPUT/OUTPUT UNIT
MODELS B1 AND B2

PLAN VIEW (English Scale: 1/4 in. = 1 ft)



Note: For cabling information, see Section 2, "Machines with Integral or Abutted Controls."



3540-B2

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	45	24	37
(cm)	(114)	(61)	(94)

Service Clearances:

	F	R	Rt	L
Inches	30	36	0	12
(cm)	(76)	(91)	(0)	(30)

Weight:	*Model B1*	*Model B2*
lb	380	440
(kg)	(180)	(200)

Heat Output:		
BTU/hr	1,600	2,150
(kcal/hr)	(410)	(550)

Airflow:		
cfm	150	150
(m^3/min)	(5)	(5)

Power Requirements:		
kVA	0.6	0.8
Phases	1	1
Plug	R&S, FS3720	
Connector	R&S, FS3913	
Receptacle	R&S, FS3743	
Power Cord Style	A1	

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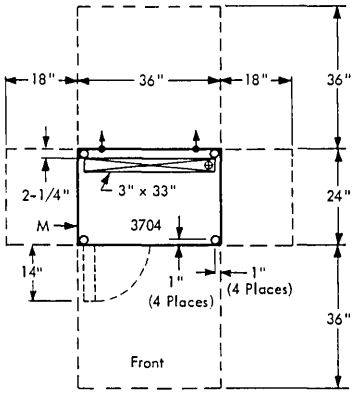
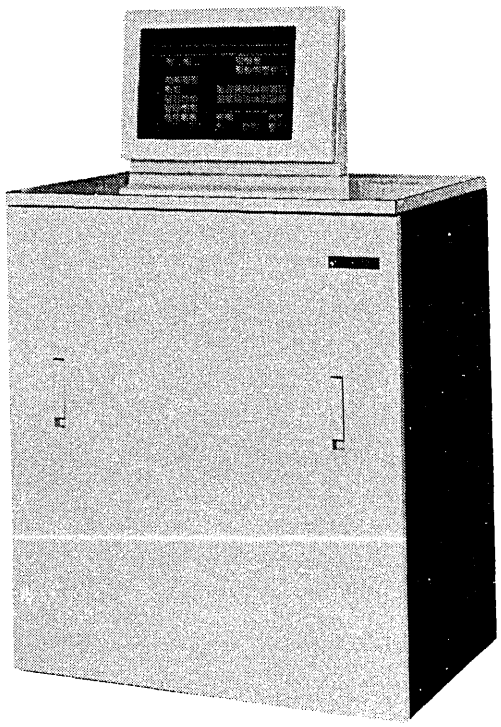
3704 COMMUNICATIONS CONTROLLER

PLAN VIEW (English Scale: 1/4 in. = 1 ft)





SPECIFICATIONS

Dimensions:

	F	S	H
Inches	36	24	57*
(cm)	(91)	(61)	(145*)

Service Clearances:

	F	R	Rt	L
Inches	36	36	18	18
(cm)	(91)	(91)	(46)	(46)

Weight: 390 lb (180 kg)

Heat Output: 5,600 BTU/hr (1 450 kcal/hr)

Airflow: 500 cfm (15 m^3/min)

Power Requirements:

kVA	2.2
Phases	1
Plug	R&S, FS3720
Connector	R&S, FS3913
Receptacle	R&S, FS3743

Power Cord Style A2

Environment, Operating:

Temperature	60°F-100°F (16°C-38°C)
Rel Humidity	8%-80%
Max Wet Bulb	78°F (26°C)

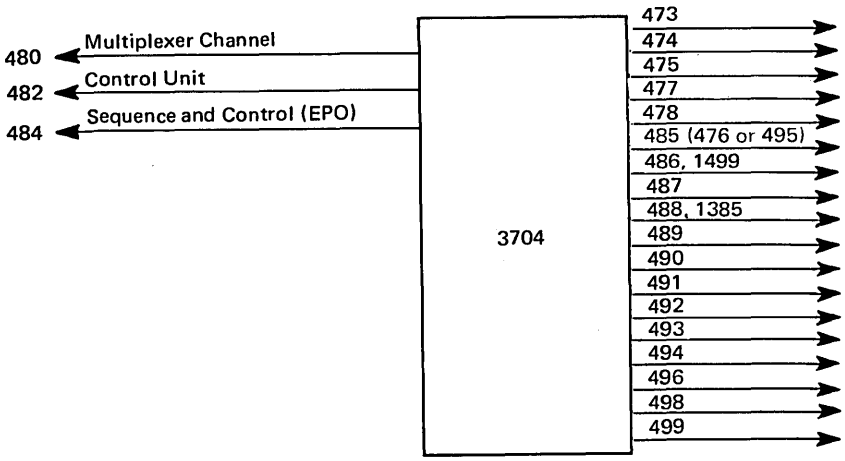
Environment, Nonoperating:

Temperature	50°F-110°F (10°C-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	85°F (29°C)

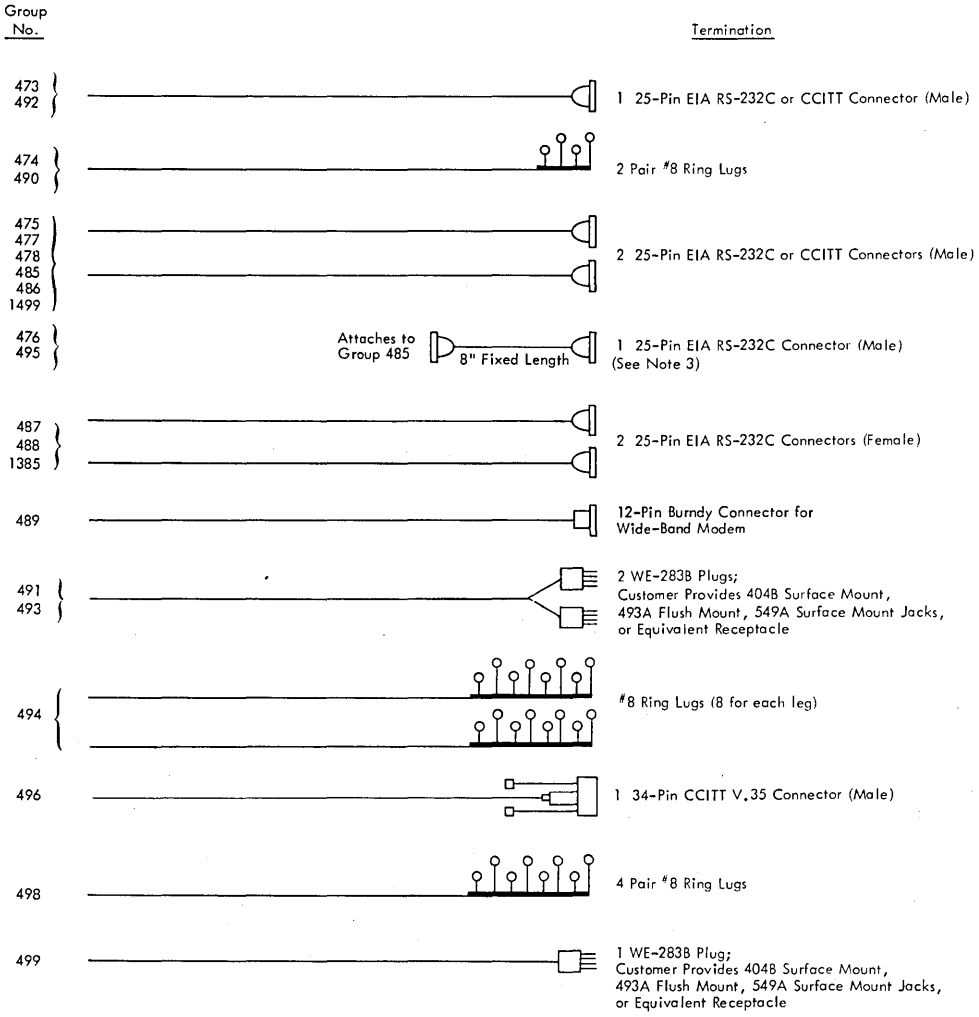
Notes:

*Height from base of machine to countertop is 42" (107 cm).

3704 COMMUNICATIONS CONTROLLER CABLING SCHEMATIC



Cables for IBM and Non-IBM Devices



3704 COMMUNICATIONS CONTROLLER CABLING SCHEMATIC

Feature Code	*Group No.*	*Line Set Type*	*No. of Cables*	*From*	*To*	*Max Length (ft)*	*Notes*
–	480	–	2	3704	Multiplexer Channel	–	1
–	482	–	2	3704	Control Unit	–	1
–	484	–	1	3704	Channel	150	2
2944	496	1K	1	3704	Modem	45	12,14
4709	498	LIB 9	1	3704	Common-Carrier CBS Data Coupler	45	14
4711	475 or	1A	2	3704	Two Modems	45	7,14
–	477 or	1A	2	3704	Two Modems	45	7,11,14
–	478	1A	2	3704	Two Modems	45	7,11
4712	492	1B	1	3704	One Low-Speed Duplex Modem	45	14
4713	487	1C	2	3704	Two Directly Attached Terminals	195	14, 16
4714	476 or	1D	1	3704	Modem End of 485	8"	3,14
–	477 or	1A/1D	2	3704	Two Modems	45	9,11,14
–	478 or	1A/1D	2	3704	Two Modems	45	9,11,14
–	485 or	1D	2	3704	Two Modems	45	3,9,10,14
–	495	1D	1	3704	Modem End of 485	8"	3,14
4715	486	1E	2	3704	Two Autocall Devices	45	14
–	1499	1E	2	3704	Two World Trade Autocall Devices	45	12,14,17
4716	488	1F	2	3704	Two Directly Attached Terminals	95	14, 16
–	1385	1F	2	3704	Two Directly Attached Terminals	95	14, 15, 16
4717	489	1G	1	3704	Wide-Band Modem	45	14
4718	473	1H	1	3704	Modem	45	14
4719	–	1J	–	–	–	–	
4721	474	2A	1	3704	Common-Carrier Terminal Strip	45	13,14
–	490	2A	1	3704	Common-Carrier Terminal Strip	45	4,14
4731	491	3A	1	3704	Common-Carrier Telephone Jack	45	14
4732	491	3B	1	3704	Common-Carrier Telephone Jack	45	14
4741	491	4A	1	3704	Common-Carrier Telephone Jack	45	14
4742	491	4B	1	3704	Common-Carrier Telephone Jack	45	14
4743	491	4C	1	3704	Common-Carrier Telephone Jack	45	14
4751	493	1L	1	3704	Common-Carrier Telephone Jack	45	5,14
4752	493	1M	1	3704	Common-Carrier Telephone Jack	45	5,14
4754	499	1X	1	3704	Common-Carrier Telephone Jack	45	14
4755	499	1Y	1	3704	Common-Carrier Telephone Jack	45	14
4761	494	1P	2	3704	Common-Carrier CBS Data Coupler	45	6,14
4771	498	1Q	1	3704	Common-Carrier CBS Data Coupler	45	14
4781	499	8A	1	3704	Common-Carrier Telephone Jack	45	14
4782	498	8B	1	3704	Common-Carrier CBS Data Coupler	45	14
4784	499	10A	1	3704	Common-Carrier Telephone Jack	45	14
4785	499	8C	1	3704	Common-Carrier Telephone Jack	45	14
4786	498	8D	1	3704	Common-Carrier CBS Data Coupler	45	14

Notes:

1. Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units.
2. Sequence and control (EPO).
3. One required for each SF 4717, *except* in Germany. See Note 11. In U.S. and Canada, SF 4714 may require either cable group 476 or 495 depending on the following:
   a. One or two of group 476 required in addition to group 485 for switched network modems that use either "Ring-Indicate" or "Coupler-Cut-Through" on pin 23. (Pin 18 is not used.)
   b. One or two of group 495 required in addition to group 485 for modems using a contact closure interface between pins 19 and 20. Group 495 provides compatibility between 3704 25-pin EIA RS-232C voltage interface and the modem contact closure interface. Cable includes a jumper between pins 19 and 20 and removes the "Data Terminal Ready" voltage from pin 20.
4. One required for each SF 4721, *except* in Germany. See Note 13.
5. One required when two SF 4751s or 4752s are attached. Use cable group 499 when only one SF 4751 or 4752 is attached.
6. One required when two SF 4761s are attached. Use cable group 498 when one SF 4761 is attached.
7. One required for each SF 4711, *except* in Germany. See Note 11.

3704 COMMUNICATIONS CONTROLLER CABLING SCHEMATIC

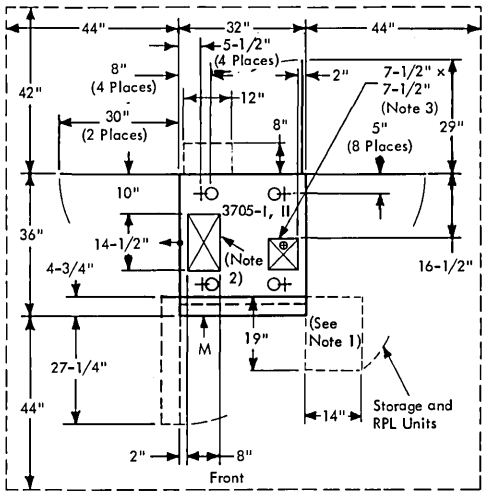
Notes: (Continued)

8. External cable is not supplied for SF 4719 (Line Set Type 1J). The cable-connecting hardware is supplied for this feature. See *IBM 3704 and 3705 Communications Controllers,* OEMI, GA27-3053, for pin designations. Any customer-supplied protective conduit must *not* extend above the lower machine frame (2-1/2").
9. For SF 4714, at transmission rates above 7,200 bps, the cable length is limited to 25 feet maximum in U.S. and Canada. At rates above 4,800 bps, the length is limited to 25 feet maximum in World Trade countries.
10. For SF 4714 (Line Set Type 1D, cable group 485). If a longer cable length is desired at the higher speeds, contact the IBM Marketing Representative.
11. One required for each SF 4711 or 4714 in Germany depending on the following:
    a. For IBM modems, use group 477. (Provides a shielded cable for compliance with radio-frequency-interference regulations.)
    b. For PTT mandatory modems, use group 478. (Pins 14 and 18 are not used.)
12. For World Trade countries only.
13. One required for each SF 4721 in Germany. (Provides a shielded cable for compliance with radio-frequency-interference regulations.)
14. See "Cables for IBM and Non-IBM Devices" for cable specifications.
15. If attaching an IBM SNA terminal, group 1385 must be used (whether used in SNA mode or not); otherwise, order group 488.
16. The total length (including any directly attached terminal cable) must not exceed 100 feet for SF 4716 or 200 feet for SF 4713.
17. SF 4715 requires one group 1499 when attaching French cauducee automatic calling devices.

3705-I OR 3705-II COMMUNICATIONS CONTROLLER

3705-I OR -II BASIC MODULE

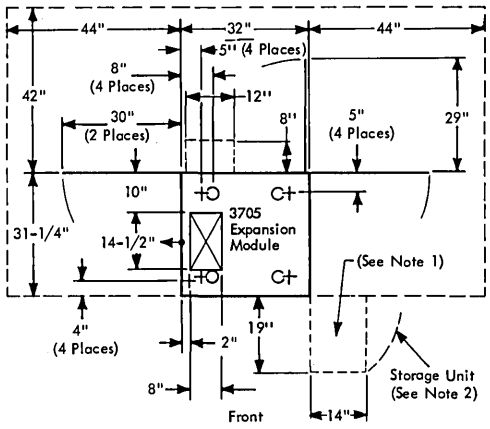
PLAN VIEW (English Scale: 1/4 in. = 1 ft)



Notes:
1. For full 180° swing, remove adjacent machine cover.
2. Signal cable entry.
3. Power cable entry.

3705-I OR -II EXPANSION MODULE

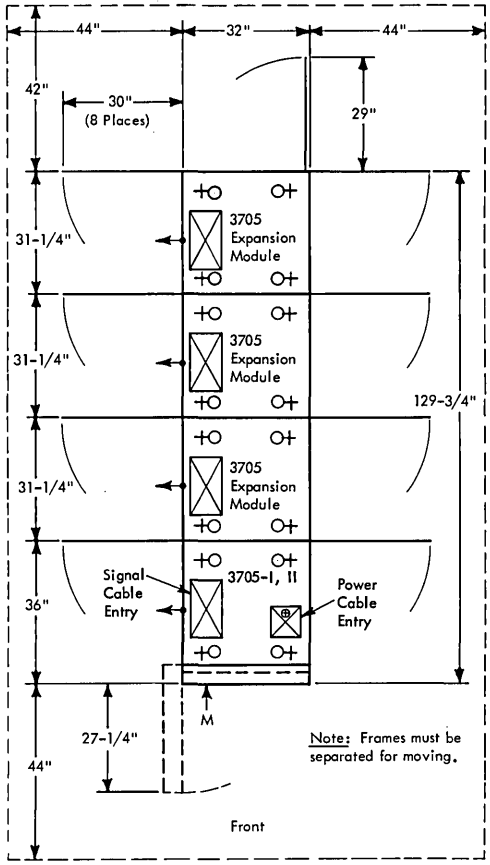
PLAN VIEW (English Scale: 1/4 in. = 1 ft)

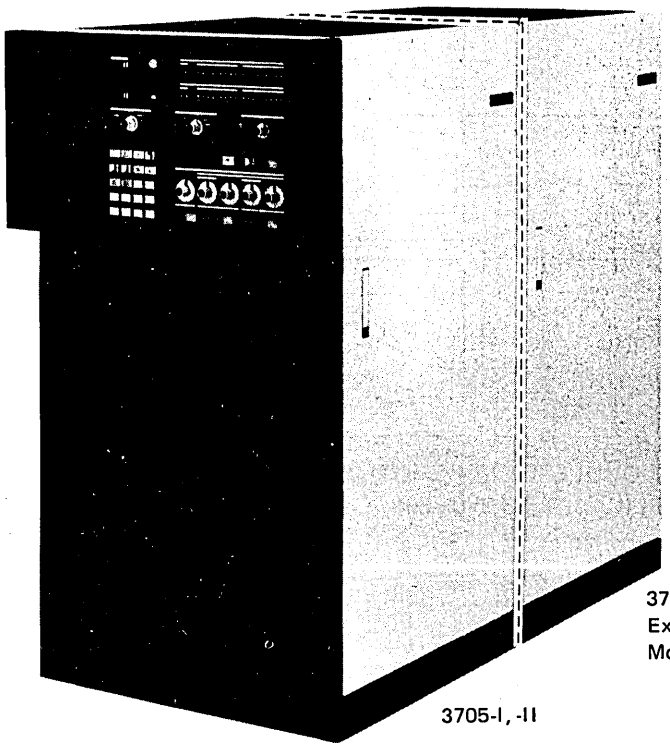


Notes:
1. For full 180° swing remove adjacent machine cover.
2. Storage unit in the first expansion module of 3705-II, Models J, K, and L only.

3705-I OR -II MAXIMUM CONFIGURATION

PLAN VIEW (English Scale: 1/4 in. = 1 ft)





3705-I OR 3705-II COMMUNICATIONS CONTROLLER

SPECIFICATIONS

Model	*Dimensions* in. (mm)*			*Service Clearances in. (mm)*				*Weight lb (kg)*
	Front	*Side*	*Height*	*Front*	*Rear*	*Right*	*Left*	
A or E	32 (810)	36 (910)	60 (1 520)	44 (1 120)	42 (1 070)	44 (1 120)	44 (1 120)	1,010 (460)
B, F, or J	32 (810)	67¼ (1 710)	60 (1 520)	44 (1 120)	42 (1 070)	44 (1 120)	44 (1 120)	1,920 (880)
C, G, or K	32 (810)	98½ (2 500)	60 (1 520)	44 (1 120)	42 (1 070)	44 (1 120)	44 (1 120)	2,830 (1 300)
D, H, or L	32 (810)	129¼ (3 300)	60 (1 520)	44 (1 120)	42 (1 070)	44 (1 120)	44 (1 120)	3,740 (1 700)

*Shipping dimensions are 32" x 36" x 60" (810 mm x 910 mm x 1 520 mm). Removal of the covers reduces the width to 29½" (750 mm). The front panel can be removed to make the unit 29½" x 30" x 60" (750 mm x 760 mm x 1 520 mm).

Model	*Heat Output BTU/hr (kcal/hr)*	
	60 Hz	*50 Hz*
A or E	6,400 (1 650)	7,170 (1 850)
B or F	12,800 (3 250)	14,340 (3 650)
C or G	19,200 (4 850)	21,510 (5 450)
D or H	25,600 (6 500)	28,680 (7 250)
J	11,300 (2 850)	12,900 (3 250)
K	16,900 (4 300)	19,400 (4 900)
L	22,500 (5 700)	25,800 (6 500)

Airflow (3705-I or 3705-II):
cfm 880
(m^3/min) (25)

Environment, Operating (3705-I or 3705-II):
Temperature 50°F-100°F (10°C-38°C)*
Rel Humidity 8%-80%
Max Wet Bulb 78°F (26°C)

*The upper temperature limit must be derated 1°F (0.6°C) for each 250 feet (76 meters) of elevation above 3,000 feet (914 meters).

Environment, Nonoperating (3705-I or 3705-II):
Temperature 50°F-100°F (10°C-40°C)
Rel Humidity 8%-80%
Max Wet Bulb 80°F (26.7°C)

Note:
The 3705 with remote program loader (RPL) is attached to the host processor through another 3705 by a type 3002 private line data channel with type C2 conditioning, a CCITT recommended M102 data channel, or equivalent privately supplied channel.

3705-I OR 3705-II COMMUNICATIONS CONTROLLER

SPECIFICATIONS (Continued)

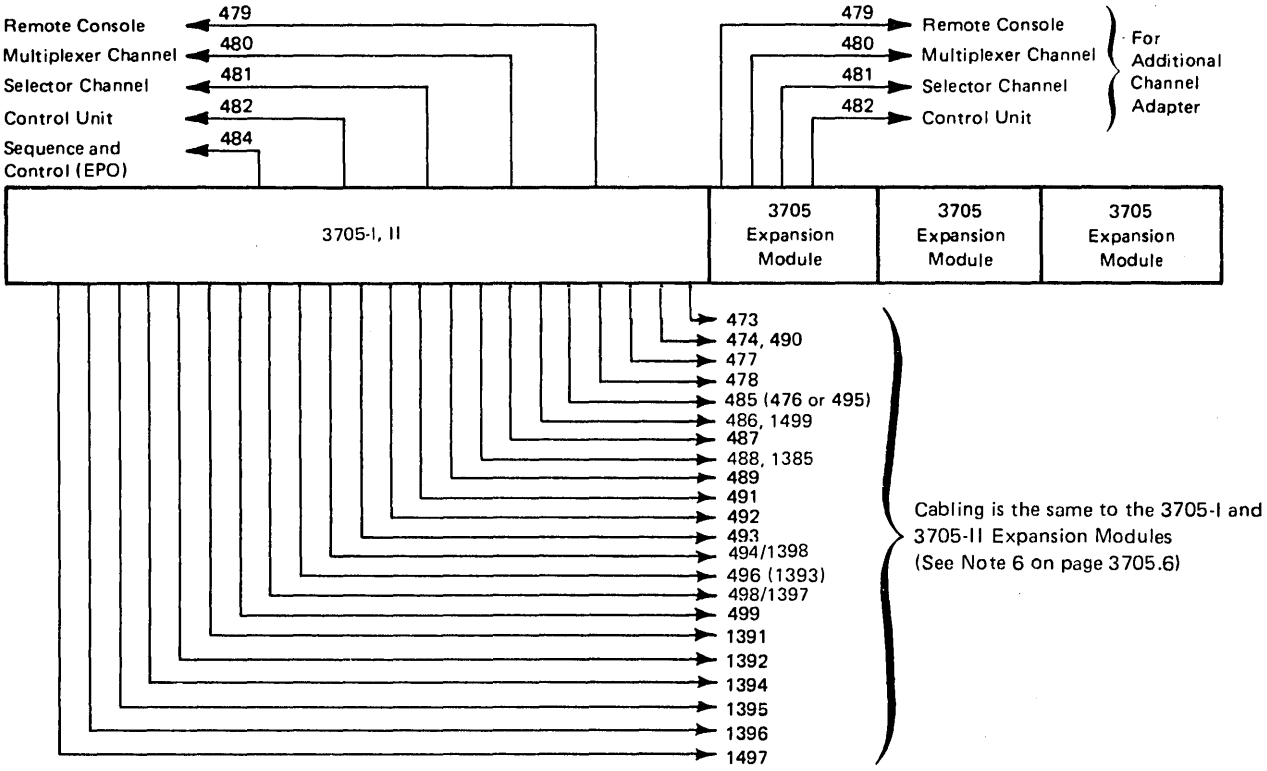
Specification	*Model*	*60 Hz*			*50 Hz* ***				
Volts	All	200*	208	230	200	220	235	380	408
Phase	All	3	3	3	3	3	3	3	3
kVA	A or E	2.5	2.5	2.5	2.8	2.8	2.8	2.8	2.8
	B or F	5.0	5.0	5.0	5.6	5.6	5.6	5.6	5.6
	C or G	7.5	7.5	7.5	8.4	8.4	8.4	8.4	8.4
	D or H	10.0	10.0	10.0	11.2	11.2	11.2	11.2	11.2
	J	5.3	5.3	5.3	5.9	5.9	5.9	5.9	5.9
	K	7.9	7.9	7.9	8.9	8.9	8.9	8.9	8.9
	L	10.6	10.6	10.6	11.9	11.9	11.9	11.9	11.9
Branch Circuit (Amperes)	A or E	–	30	30	–	–	–	–	–
	B, F, or J	–	30	30	–	–	–	–	–
	C, G, or K	–	60	60	–	–	–	–	–
	D, H, or L	–	60	60	–	–	–	–	–
Max Cont Load (Amperes)	A or E	7.2	6.9	6.3	8.1	7.3	6.9	4.3	4.0
	B or F	14.4	13.9	12.6	16.2	14.7	13.8	8.5	7.9
	J	15.3	14.7	13.3	17.0	15.5	14.5	9.0	8.3
	C or G	21.7	20.8	18.8	24.2	22.0	20.6	12.8	11.9
	K	22.8	21.9	19.8	25.7	23.4	21.9	13.5	12.6
	D or H	28.9	27.8	25.1	32.3	29.4	27.5	17.0	15.8
	L	30.6	29.4	26.6	34.4	31.2	29.2	18.1	16.8
Power Cord Style**	A or E	F1	–	–	D2	D2	D2	D2	D2
	B, F, or J	F2	–	–	E1	E1	E1	D2	D2
	C, D, H, K, or L	F2	–	–	E2	E2	E2	E1	E1
Plug Type	A, B, E, F, or J	–	D	D	–	–	–	–	–
	C, D, G, H, K, or L	–	E	E	–	–	–	–	–
Power Cord Length (ft)	All	14	14	14	14	14	14	14	14
Length (m)	All	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.27

*World Trade

**When field converting to Model A, B, E, F, or J from Model C, D, G, H, K, or L, a new power cord will not be shipped. Existing cord assembly should be used.

***For the 3705-II, 50 Hz only, the phase may be unbalanced to a ratio of 1.3 to 1.

3705-I OR 3705-II COMMUNICATIONS CONTROLLER AND 3705 EXPANSION MODULE CABLING SCHEMATIC



Cable Ordering

All 60-Hz machines for WT Europe/Middle East/Africa (E/ME/A) are shipped from Raleigh, North Carolina, U.S.A. Cables for these machines must be ordered by an exception order telex according to the exception order process.

3705-I OR 3705-II COMMUNICATIONS CONTROLLER AND 3705 EXPANSION MODULE CABLING SCHEMATIC

Feature Code	*Group No.*	*Line Set Type*	*No. of Cables*	*From*	*To*	*Max Length (ft)*	*Meters*	*Notes*
1543	479		1	3705-I, II or 3705 Expansion Module	Remote Console	150	45.7	4
–	480		2	3705-I, II or 3705 Expansion Module	Multiplexer Channel	–		1
–	481		2	3705-I, II or 3705 Expansion Module	Selector Channel	–		1
–	482		2	3705-I, II or 3705 Expansion Module	Control Unit	–		1
–	484		1	3705-I, II	Channel	150	45.7	15
2944	496	1K	1	3705-I, II or 3705 Expansion Module	One High-Speed Modem	45	13.7	7,21
4707	498	LIB 7	1	3705-I, II or 3705 Expansion Module	Data Coupler	45	13.7	18
4711	477 or	1A	2	3705-I, II or 3705 Expansion Module	Two IBM Modems	45	13.7	7,10,20
	478 or	1A	2	3705-I, II or 3705 Expansion Module	Two Non-IBM Modems	45	13.7	7,10,20
	485	1A	2	3705-I, II or 3705 Expansion Module	Two Modems	45	13.7	8,10,20
4712	492	1B	1	3705-I, II or 3705 Expansion Module	One Low-Speed Duplex Modem	45	13.7	20
4713	487	1C	2	3705-I, II or 3705 Expansion Module	Two Directly Attached Terminals	195	59.4	12,20
4714	473 or	1D	1	3705-I, II or 3705 Expansion Module	One Medium-Speed Duplex Modem–BSC, SDLC	45	13.7	
	477 or	1D	2	3705-I, II or 3705 Expansion Module	Two IBM Modems	45	13.7	5,7,10
	478 or	1D	2	3705-I, II or 3705 Expansion Module	Two Non-IBM Modems	45	13.7	5,7,10
	485 or	1D	2	3705-I, II or 3705 Expansion Module	Two Modems–S/S, BSC, SDLC	45	13.7	2,5,10,11
	487 or	1D	2	3705-I, II or 3705 Expansion Module	Two Directly Attached Terminals–S/S	195	59.4	19
	488 or	1D	2	3705-I, II or 3705 Expansion Module	Two Directly Attached Terminals–BSC	95	28.9	12,13
	1385 or	1D	2	3705-I, II or 3705 Expansion Module	Two Directly Attached Terminals–SDLC/BSC	95	28.9	12,13
	492	1D	1	3705-I, II or 3705 Expansion Module	One Low-Speed Duplex Modem–S/S	45	13.7	
4715	486 or	1E	2	3705-I, II or 3705 Expansion Module	Two Autocall Units	45	13.7	
	1499	1E	2	3705-I, II or 3705 Expansion Module	Two WT Autocall Units	45	13.7	7,14
4716	488 or	1F	2	3705-I, II or 3705 Expansion Module	Two Directly Attached Terminals	95	28.9	12,20
	1385	1F	2	3705-I, II or 3705 Expansion Module	Two Directly Attached Terminals	95	28.9	12,13,20
4717	489	1G	1	3705-I, II or 3705 Expansion Module	Wide-Band Modem	45	13.7	
4718	473	1H	1	3705-I, II or 3705 Expansion Module	One Medium-Speed Duplex Modem	45	13.7	20
4719	None	1J	0					3
4720	496	1S	1	3705-I, II or 3705 Expansion Module	One High-Speed Modem	45	13.7	8
4721	490 or	2A	1	3705-I, II or 3705 Expansion Module	Common-Carrier Terminal Strip	45	13.7	8,9
	474	2A	1	3705-I, II or 3705 Expansion Module	Common-Carrier Terminal Strip	45	13.7	7,9
4722	489	1GA	1	3705-I, II or 3705 Expansion Module	Wide-Band Modem	45	13.7	16
4723	489	1TA	1	3705-I, II or 3705 Expansion Module	Wide-Band Duplex Modem	45	13.7	16
4725	489	1T	1	3705-I, II or 3705 Expansion Module	One Wide-Band Duplex Modem	45	13.7	
4726	1497	1U	1	3705-I, II or 3705 Expansion Module	One High-Speed Duplex Modem	45	13.7	
4727	1394	1W	1	3705-II or 3705 Expansion Module	One Directly Attached Device	145	44.2	22
4728	1395	1Z	1	3705-II or 3705 Expansion Module	One Directly Attached Device	145	44.2	22
4731	491	3A	1	3705-I, II or 3705 Expansion Module	Common-Carrier Telephone Jack	45	13.7	
4732	491	3B	1	3705-I, II or 3705 Expansion Module	Common-Carrier Telephone Jack	45	13.7	
4741	491	4A	1	3705-I, II or 3705 Expansion Module	Common-Carrier Telephone Jack	45	13.7	
4742	491	4B	1	3705-I, II or 3705 Expansion Module	Common-Carrier Telephone Jack	45	13.7	
4743	491	4C	1	3705-I, II or 3705 Expansion Module	Common-Carrier Telephone Jack	45	13.7	
4751	499	5A	1	3705-I, II	Common-Carrier Telephone Jack	45	13.7	6
4752	499	5B	1	3705-I, II	Common-Carrier Telephone Jack	45	13.7	6
4754	499	11A	1	3705-I, II	Common-Carrier Telephone Jack	45	13.7	6
4755	499	11B	1	3705-I, II	Common-Carrier Telephone Jack	45	13.7	6
4761	498	6A	1	3705-I, II or 3705 Expansion Module	Data Coupler	45	13.7	18
4781	493	8A	1	3705-I, II or 3705 Expansion Module	Common-Carrier Telephone Jack	45	13.7	

3705-I OR 3705-II COMMUNICATIONS CONTROLLER AND 3705 EXPANSION MODULE CABLING SCHEMATIC

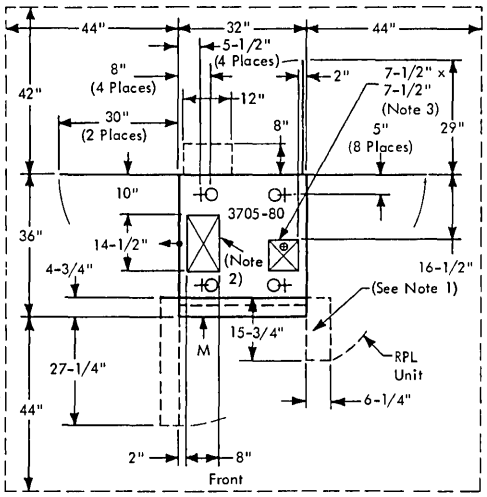
Feature Code	*Group No.*	*Line Set Type*	*No. of Cables*	*From*	*To*	*Max Length (ft)*	*Meters*	*Notes*
4782	494 or	8B	2	3705-I, II or 3705 Expansion Module	Data Coupler, OEM	45	13.7	18
	1398	8B	2	3705-II or 3705 Expansion Module	Data Coupler, IBM	45	13.7	
4784	499	10A	1	3705-I, II or 3705 Expansion Module	Common-Carrier Telephone Jack	45	13.7	
4785	493	12A	1	3705-I, II or 3705 Expansion Module	Common-Carrier Telephone Jack	45	13.7	
4786	494	12B	2	3705-I, II or 3705 Expansion Module	Data Coupler	45	13.7	18
4791	498 or	9A	1	3705-I, II or 3705 Expansion Module	Data Coupler, OEM	45	13.7	18
	1397	9A	1	3705-II or 3705 Expansion Module	Data Coupler, IBM	45	13.7	
5655	1391 or	1N	1	3705-II or 3705 Expansion Module	One Duplex DCE	45	13.7	
	1392	1N	2	3705-II or 3705 Expansion Module	Two Half-Duplex DCEs	45	13.7	17
5656	1391	1R	1	3705-II or 3705 Expansion Module	One Duplex DCE	45	13.7	

Notes:

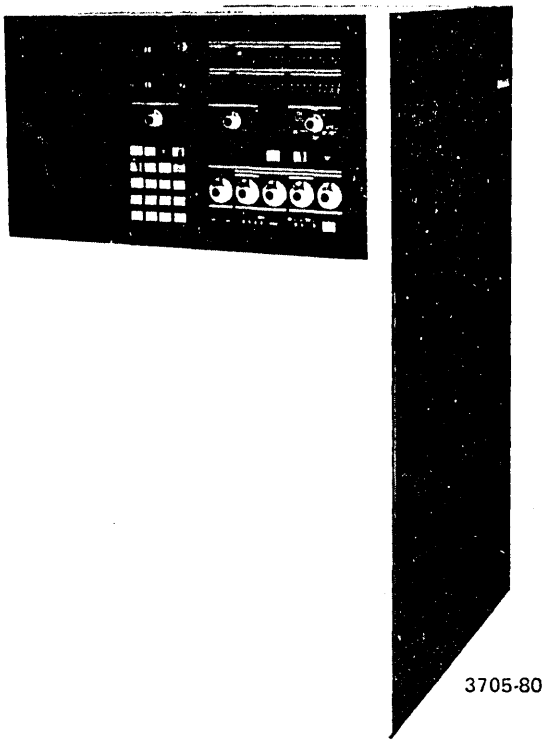
1. Total cable length of 60.96 meters (200 feet) (unless modified by general control-to-channel schematic) is available to attach up to eight control units.
2. SF 4714 requires cable group 485 and may require either group 476 or 495 as specified below:
   a. One or two of group 476 is required for switched network modems that use either "Ring-Indicate" or "Coupler-Cut-Through" on pin 23. (Pins 18 and 23 are not used.)
   b. One or two of group 495 is required for modems using a contact closure interface between pins 19 and 20. Group 495 provides compatibility between the 3705 25-pin EIA RS-232C voltage interface and the modem contact closure interface. Cable includes a jumper between pins 19 and 20 and removes the "Data Terminal Ready" voltage from pin 20.
3. Cable-connecting hardware is supplied for SF 4719; external cable is not supplied. See *IBM 3704 and 3705 Communications Controllers, Original Equipment Manufacturer's Information,* GA27-3053, for pin designations. Any customer-supplied protective conduit must *not* extend above the lower machine frame more than 66 mm (2.6 inches).
4. In addition to the two sets of channel cables chosen, one cable group 479 is required if the type 3 channel adapters interface enable/disable switch is to be placed on the remote console (3058 or 3068).
5. The maximum cable length is 7.62 meters (25 feet) when the rate exceeds 7,200 bps in U.S. and Canada or 4,800 bps in World Trade countri
6. SF 4751, 4752, 4754, and 4755 do not apply to the 3705 Expansion Module.
7. For World Trade countries only.
8. For U.S. and Canada.
9. In World Trade countries *except* Germany, SF 4721 requires one cable group 490. In Germany, SF 4721 requires one cable group 474 (provides a shielded cable).
10. In World Trade countries *except* Germany, SF 4711 and SF 4714 require one cable group 485. In Germany, SF 4711 and SF 4714 require either one group 477 when using IBM modems (provides a shielded cable) or one group 478 when using PTT mandatory modems (pins 14 and 18 are not used). United States and World Trade–for SF 4714 at transmission rates above 7200 bps U.S. or 4800 bps WT the cable maximum length is 7.62 meters (25 feet).
11. For SF 4714 (Line Set Type 1D, cable group 485). If a longer cable length is desired at the higher speeds, contact the IBM Marketing Representative.
12. The total cable length (including any directly-attached terminal cable) must not exceed 30.48 meters (100 feet) for SF 4716 and SF 4714 nor 60.96 meters (200 feet) for SF 4713.
13. Order cable group 1385 for attaching a BSC or SNA terminal. Cable group 488 is shown for reference only.
14. SF 4715 requires one group 1499 when attaching French Caducee automatic calling units; otherwise, order group 486.
15. Power sequence and control; cable is optional.
16. Operates only with a Type 3HS Communication Scanner.
17. SF 5655 using cable group 1392 also requires one cable group 1396. Each 3705 or 3705 expansion module (3706) requires only one 1396 cable group.
18. FCC registered protective coupler (CBS type) or equivalent.
19. For SF 4714 (Line Set Type 1D, cable group 487), the total cable length must not exceed 30.48 meters (100 feet) for S/S operation at 2400 bps or 60.96 meters (200 feet) for S/S operation at line speeds up to and including 1200 bps.
20. This line set will not be available for a 3705 after December 1, 1980. Its functions can now be performed by a 1D line set if appropriate cables are installed. See SF 4714. Consult your IBM Marketing Representative for details on cable requirements.
21. If SF 2944 is for attachment to a French 48K bps modem, one cable group 1393 is also required.
22. Total cable length, including the attached device cable, must not exceed 60.96 meters (200 feet).

3705-80 COMMUNICATIONS CONTROLLER

PLAN VIEW (English Scale: 1/4 in. = 1 ft.)



Notes:
1. For full 180° swing, remove adjacent machine cover.
2. Signal cable entry.
3. Power cable entry.



3705-80 COMMUNICATIONS CONTROLLER

SPECIFICATIONS

Model	*Dimensions* in. (mm)*			*Service Clearances in. (mm)*				Weight lb (kg)
	Front	Side	Height	Front	Rear	Right	Left	
All	32 (810)	36 (910)	60 (1 520)	44 (1 120)	42 (1 020)	44 (1 120)	44 (1 120)	1,010 (460)

Model	*Heat Output BTU/hr (kcal/hr)*	
	60 Hz	*50 Hz*
All	6,400 (1 650)	7,170 (1 850)

*Shipping dimensions are 32" x 36" x 60" (810 mm x 910 mm x 1 520 mm). Removal of the covers reduces the width to 29½" (750 mm). The front panel can be removed to make the unit 29½" x 30" x 60" (750 mm x 760 mm x 1 520 mm).

Model	*Specification*	*60 Hz*			*50 Hz*,***				
All	Volts	200*	208	230	200	220	235	380	408
All	Phase	3	3	3	3	3	3	3	3
All	kVA	2.5	2.5	2.5	2.8	2.8	2.8	2.8	2.8
All	Branch Circuit (Amperes)	–	30	30	–	–	–	–	–
All	Max Cont Load (Amperes)	7.2	6.9	6.3	8.1	7.3	6.9	4.3	4.0
All	Power Cord Style	F1	–	–	D2	D2	D2	D2	D2
All	Plug Type	–	D	D	–	–	–	–	–
All	Power Cord Length (ft)	14	14	14	14	14	14	14	14
All	Length (m)	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.27

*World Trade

**For the 3705-80, 50 Hz only, the phase may be unbalanced to a ratio of 1.3 to 1.

Airflow: 880 cfm (25 m^3/min)

Environment, Operating:

Temperature 50°F-100°F (10°C-38°C)*
Rel Humidity 8%-80%
Max Wet Bulb 78°F (26°C)

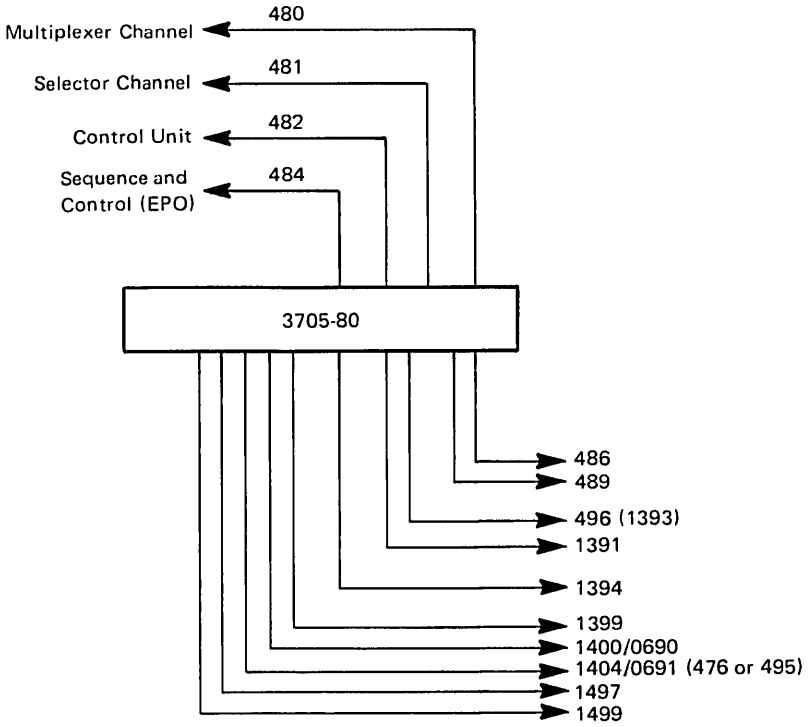
*The upper temperature limit must be derated 1°F (0.6°C) for each 250 feet (76 meters) of elevation above 3,000 feet (914 meters).

Environment, Nonoperating:

Temperature 50°F-110°F (10°C-40°C)
Rel Humidity 8%-80%
Max Wet Bulb 80°F (26.7°C)

Note:
The 3705 with the remote program loader (RPL) is attached to the host processor through another 3705 by a type 3002 private line data channel with type C2 conditioning, a CCITT recommended M102 data channel, or equivalent privately supplied channel.

3705-80 COMMUNICATIONS CONTROLLER CABLING SCHEMATIC



Cable Ordering

All 60-Hz machines for WT Europe/Middle East/Africa (E/ME/A) are shipped from Raleigh, North Carolina, U.S.A. Cables for these machines must be ordered by an exception order telex according to the exception order process.

3705-80 COMMUNICATIONS CONTROLLER CABLING SCHEMATIC

Feature Code	*Group No.*	*Line Set Type*	*No. of Cables*	*From*	*To*	*Max Length (ft)*	*Meters*	*Notes*
–	480		2	3705-80	Multiplexer Channel	–		1
–	481		2	3705-80	Selector Channel			1
–	482		2	3705-80	Control Unit	–		1
–	484		1	3705-80	Channel	150	45.7	3
–	1399		1	3705-80	One Directly Attached S/S Terminal	195	59.4	8, 9
–	1400 or 0690		1	3705-80	One Directly Attached Synchronous Terminal	95	29.0	8, 10, 14
–	1404 or 0691		1	3705-80	One Modem	45	13.7	2, 8, 12, 15
–	1391	LS8	1	3705-80	One DCE	45	13.7	4, 8, 13
5657	1391	LS8	1 1	3705-80	One Duplex or Half-Duplex DCE, Medium Speed	45	13.7	4
5658	1391	LS9	1	3705-80	One Duplex or Half-Duplex DCE, High Speed	45	13.7	
6712	496	LS2	1	3705-80	One High-Speed Modem	45	13.7	5
	1497	LS2	1	3705-80	One High-Speed Duplex Modem	45	13.7	5
6713	489	LS3	1	3705-80	Wide-Band Modem	45	13.7	6
6714	486 or	LS4	2	3705-80	Two WT Autocall Units	45	13.7	7
	1499	LS4	2	3705-80	Two WT Autocall Units	45	13.7	7
6715	1394	LS5	1	3705-80	One Directly Attached Terminal	145	44.2	11

Notes:

1. Total cable length of 60.96 meters (200 feet) (unless modified by general control-to-channel cabling schematic) is available to attach up to eight control units.
2. Cable group 1404 or 0691 may require either group 476 or 495 as specified below:
   a. Group 476 is required for switched network modems that use either "Ring-Indicate" or "Coupler-Cut-Through" on pin 23. (Pins 18 and 23 are not used.)
   b. Group 495 is required for modems using a contact closure interface between pins 19 and 20. Group 495 provides compatibility between the 3705 25-pin EIA RS-232C voltage interface and the modem contact closure interface. Cable includes a jumper between pins 19 and 20 and removes the "Data Terminal Ready" voltage from pin 20.
3. Power sequence and control; cable is optional.
4. The LS8 line set requires two cable groups 1391.
5. SF 6712 requires two cable groups 496 for attaching two half-duplex modems, or one cable group 1497 for attaching one duplex modem. Attachment of two half-duplex French 48K bps modem requires two cable groups 496 and two cable groups 1393. Attachment of one half-duplex French 48K bps modem requires one cable group 496 and one cable group 1393.
6. SF 6713 using a duplex modem requires one cable group 489. SF 6713 using two half-duplex modems requires two cable groups 489.
7. SF 6714 can handle a maximum of four autocall units. SF 6714 using four French Caducee autocall units requires two cable groups 1499. Otherwise, order two cable groups 486.
8. The number of communication lines/devices that can be attached to basic line attachment hardware in individual models of the 3705-80 and the maximum number of cable groups required for each model are:
   3705-80, M81–4 devices/lines–order 4 (maximum) of cable groups 1399, 1400/0690, or 1404/0691*
   3705-80, M82–10 devices/lines–order 10 (maximum) of cable groups 1399, 1400/0690, or 1404/0691*
   3705-80, M83–16 devices/lines–order 16 (maximum) of cable groups 1399, 1400/0690, or 1404/0691*
   3705-80, M84–10 devices/lines–order 4 (maximum) of cable groups 1399, 1400/0690, or 1404/0691*
   (for attaching 4 devices/lines) and order 6 (maximum) of cable group 1391
   (for attaching 6 lines)
   *A combination of cable groups 1399, 1400/0690, and 1404/0691 can be ordered; however, the number of cable groups ordered must not exceed the maximum number of groups shown.
9. The total cable length (including any directly attached terminal cable) must not exceed 30.48 meters (100 feet) for S/S operation at 2400 bps or 60.96 meters (200 feet) for S/S operation at line speeds up to and including 1200 bps.
10. The total cable length (including any directly-attached terminal cable) must not exceed 30.48 meters (100 feet).
11. The LS5 line set can handle two devices. SF 6715 requires one cable group 1394 to attach to each device. Total cable length, including the attached device cable, must not exceed 60.96 meters (200 feet).
12. For operation at 19.2K bps, cable length must not exceed 6.85 meters (22.5 feet).

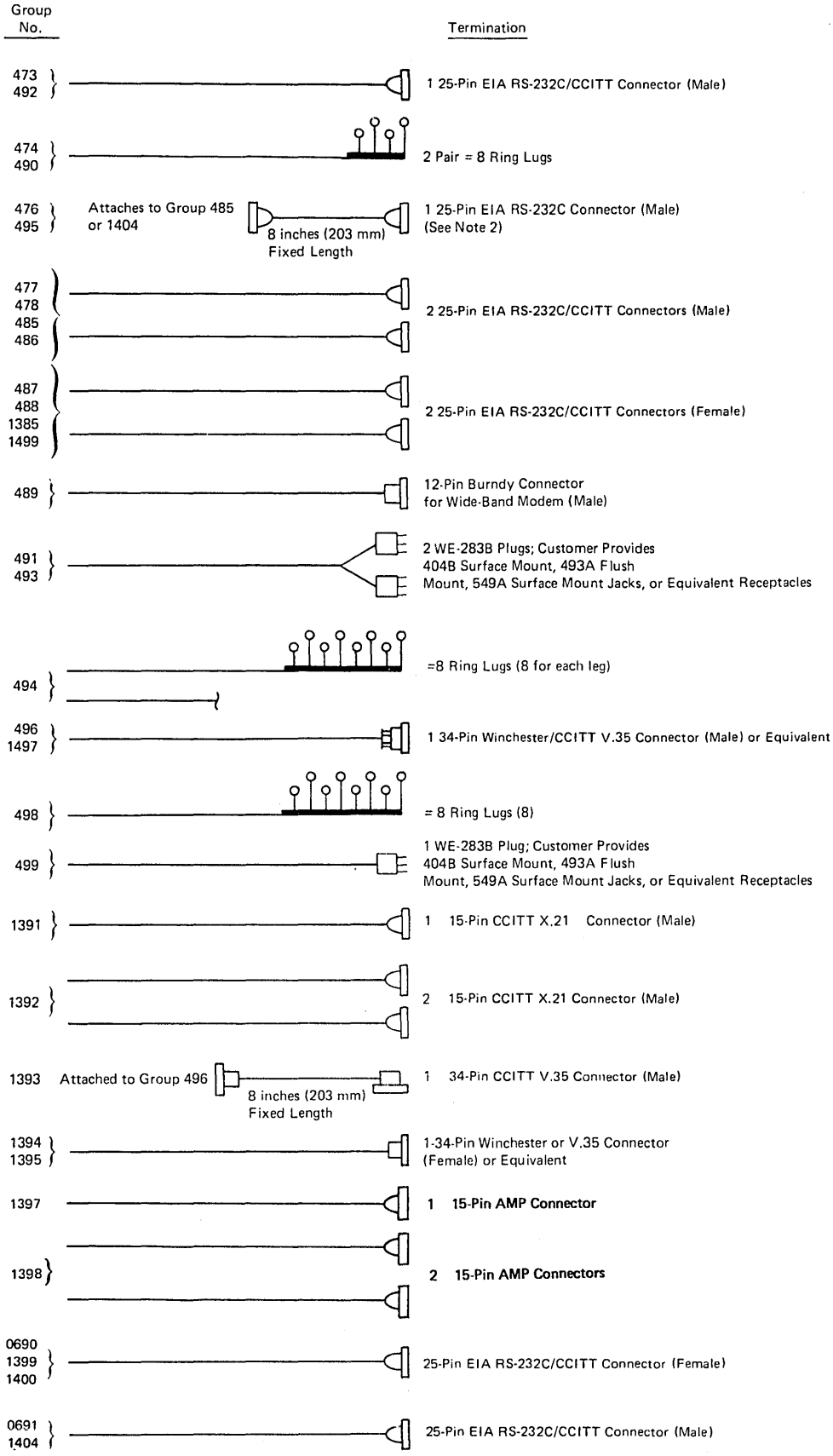
3705-80 COMMUNICATIONS CONTROLLER CABLING SCHEMATIC

Notes (Continued):

13. Three LS8 line sets are provided as basic hardware segments of the 3705-80 Model 84.
14. Order cable group 1400 for a fixed-length cable 13.5 meters (45 feet) long, if possible. Order cable group 0690 for a shorter cable of any length if cable group 1400 is not suitable. For a longer cable (maximum length of 35 meters [115 feet]), order a cable, part 1733746, on an MES order.
15. Order cable group 1404 for a fixed-length cable 13.5 meters (45 feet) long if possible. Order cable group 0691 for a shorter cable of any length if cable group 1404 is not suitable. For a longer cable (maximum of 35 meters [115 feet]), order a cable, part 1736733, on an MES order.

    When the DCE is an IBM 3863, 3864, or 3865 Modem, the maximum length is 100 meters (328 feet) if the suffix level of the modem (two alphabetic characters on the data tag) is FG or later for the U.S. and Americas/Far East, or KF or later for Europe/Middle East/Africa. For modems with an earlier suffix, the modem must have engineering change (EC) 344120 installed if data multiplexer feature 3260 *is not* installed, or EC 323406 if data multiplexer feature 3260 *is* installed to use the longer cable length.

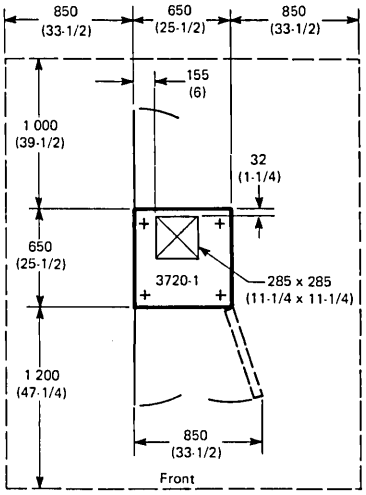
Cables for IBM and Non-IBM Devices

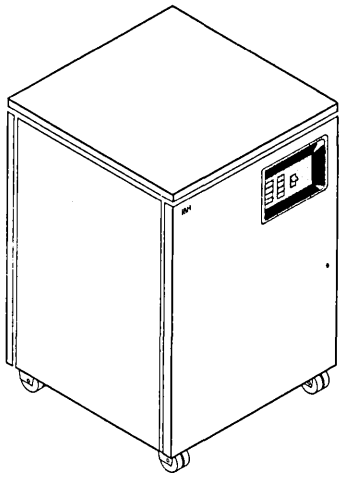


3720 COMMUNICATION CONTROLLER MODEL 1

PLAN VIEW (Metric Scale: 10 mm = 0.5 m)

English measurements are shown in parentheses.

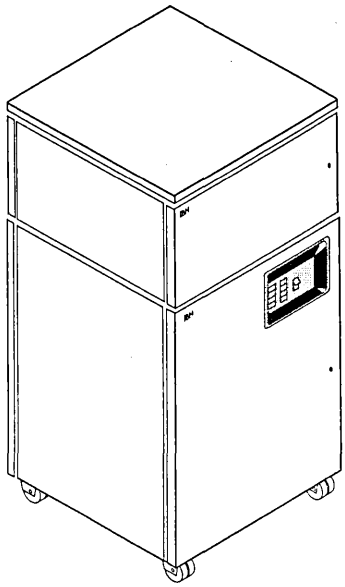




3720 Model 1

Notes:

1. The 3721 expansion unit is placed on top of the 3720 base unit, and therefore should be installed after the base unit is installed. The top cover of a 3720 Model 1 or Model 2 is removed when a 3721 expansion unit is installed and the top cover is placed on top of the 3721.
   When planning multiple base unit/expansion unit configurations, consider that unit weights and heat outputs are additive.
2. A ventilation system is contained within the 3720 Model 1. The 3721 expansion unit does not contain a ventilation system. When an expansion unit is installed on top of a base unit, the ventilation system of the base unit provides ventilation for the expansion unit.
   Direction of airflow is from top to bottom. To maintain airflow, the casters must not be removed from the 3720 Model 1.



3720 Model 1 with 3721 Expansion Unit

3720 COMMUNICATION CONTROLLER MODEL 1

SPECIFICATIONS*

Dimensions:

	Front	Side	Height
mm	650	650	1 000
(inches)	(25-1/2)	(25-1/2)	(39-1/2)

Service Clearances:

	Front	Rear	Right	Left
mm	1 200	1 000	850**	850**
(inches)	(47-1/4)	(39-1/2)	(33-1/2)**	(33-1/2)**

Weight: 155 kg (340 lb)

Heat Output: 515 W (1,755 BTU/hr)

Airflow:

	50 Hz	60 Hz
m^3/min	8.7	9.5
(cfm)	(300)	(330)

Power Requirements:

kVA	0.8***, 1.2†
Phases	1
Voltages (Nominal)	100-127, 200-240
Frequency	47-63 Hz
Plug††	
Connector††	
Receptacle††	
Power Cord Style	A1
Power Cord Length†††	4.3 m (14 ft)

Environment, Operating:

Temperature	16°C-38°C (60°F-100°F)
Rel Humidity	8%-80%
Max Wet Bulb	23°C (73°F)

Environment, Nonoperating:

Temperature	10°C-43°C (50°F-110°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Acoustical Data:

For definitions, refer to "Acoustics" in Chapter 3 of *IBM General Information Manual Installation Manual–Physical Planning*, GC22-7072.

	L_{WAd}		$<L_{pA}>_m$		I	T
	Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
*	7.1	7.1	54	54	No	No
**	6.2	6.2	44	44	No	No

*120 V, 60 Hz
**220 V, 50 Hz

Notes:

*For additional planning information on the 3720 Communication Controller Model 1, cable ordering information, and information on the 3721 expansion unit, refer to the *IBM 3720 and 3721 Communication Controller Planning and Site Preparation Guide*, GA33-0061.

**No service clearance is required at the two sides of the 3720 Model 1, so that units can be positioned side by sid except for the first and last unit in a row. They should be clear of walls and adjacent machines by 850 mm (33-1/2 inches).

***The given kVA values are the maximum possible. Whatever is the machine configuration or the machine voltage, the primary current will never exceed 12 amperes.

†With 3721 expansion unit installed.

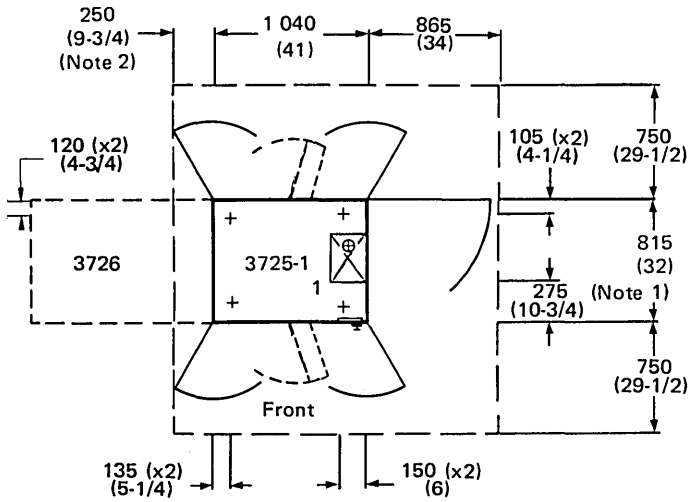
††For plug, connector, and receptacle requirements, refer to the *IBM 3720 and 3721 Communication Controller Planning and Site Preparation Guide*, GA33-0061.

†††In Chicago, Illinois, USA, specify code 9986 for a 1.8-m (6-ft) cord.

3725 COMMUNICATION CONTROLLER MODEL 1

PLAN VIEW (Metric Scale: 10 mm = 0.5 m)

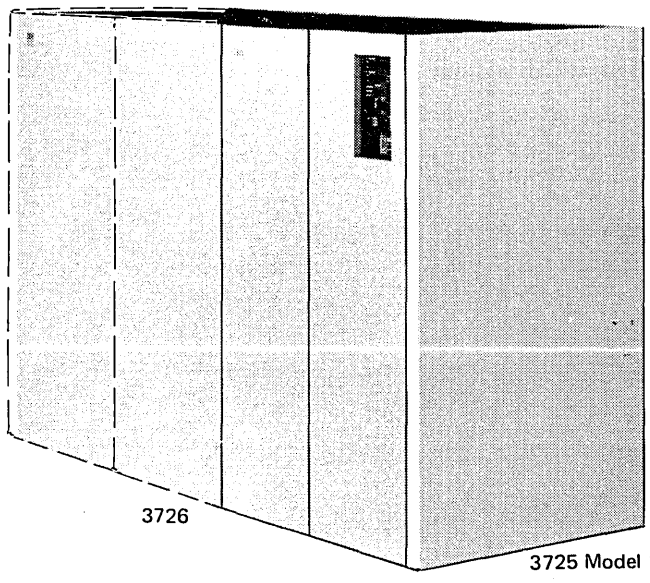
English measurements are shown in parentheses.



Notes:

1. If required, the width can be reduced to 750 mm (29-1/2 inches).
2. The service clearance can be reduced to 0 when a 3726 is installed or when another machine is abutted to the left side of the 3725 Model 1, if the covers can be opened as shown on the plan view.
3. A raised floor is not mandatory if the 3725 Model 1 has no channel connection. However, the cables should be protected with ramps or trenches.
4. Caster and cable hole locating dimensions are measured from edge of frame, not cover.
5. Ground plates are delivered with the 3725 Model 1. These plates are installed by the service representative during machine installation. Cutaways in the plates correspond to the existing cable hole shown in the plan view.

Cable Entry/Exit Number	Dimensions (Millimeters)	Dimensions (Inches)
1	320 x 250	12-1/2 x 9-3/4



3725 COMMUNICATION CONTROLLER MODEL 1

SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	1 040	815	1 525
(inches)	(40)	(32)	(60)

Service Clearances:

	Front	Rear	Right	Left
mm	750	750	865	250
(inches)	(29-1/2)	(29-1/2)	(34)	(9-3/4)

Weight: 400 kg (880 lb)

Heat Output:	*50 Hz*	*60 Hz*
W	1 900	1 900
(BTU/hr)	(6,500)	(6,500)

Airflow:	*50 Hz*	*60Hz*
m^3/min	12.5	12.5
(cfm)	(430)	(430)

Power Requirements:	*50 Hz*	*60 Hz*
kVA	2.1	1.9
Phases	1	1
Voltages*	200, 220, 230, 240	200, 208, 220, 240
Frequency	50 (±0.5)	60 (±0.5)
Plug**		Russellstoll, 3720
Connector**		Russellstoll, 3913
Receptacle**		Russellstoll, 3743
Power Cord Style		A1
Power Cord Length**		4.3 m (14 ft)

Environment, Operating:

Temperature	16°C-38°C (60°F-100°F)
Rel Humidity	8%-80%
Max Wet Bulb	23°C (73°F)

Environment, Nonoperating:

Temperature	10°C-43°C (50°F-110°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Notes:

* United States and Canada:
60 Hz: 208 V or 240 V
World Trade Americas Group and World Trade Asia/Pacific Group:
50 Hz: 200 V, 220 V, 230 V, or 240 V
60 Hz: 200 V, 208 V, 220 V, or 240 V
World Trade Europe/Middle East/Africa Corporation:
50 Hz: 220 V, 230 V, or 240 V
60 Hz: 220 V

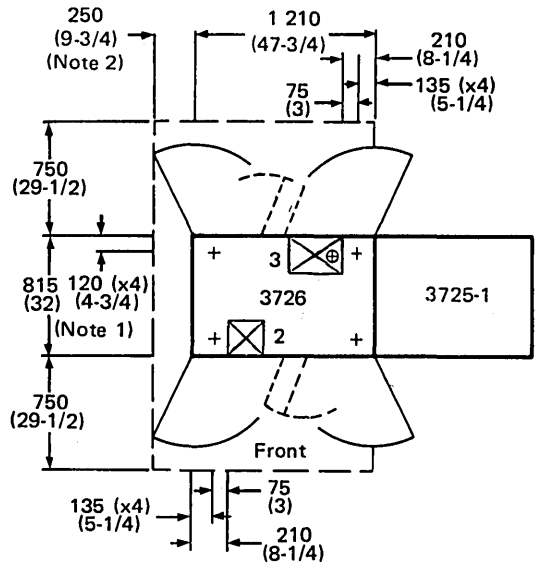
** In Chicago, Illinois, USA, specify code 9986 for a 1.8-m (6-ft) cord.

Note: Although the maximum current consumption does not exceed 15 A, the power receptacle at the customer premises should be able to handle inrush current up to 20 A (to support quick on and off switching of the 3725 Model 1/3726).

3726 COMMUNICATION CONTROLLER EXPANSION

PLAN VIEW (Metric Scale: 10 mm = 0.5 m)

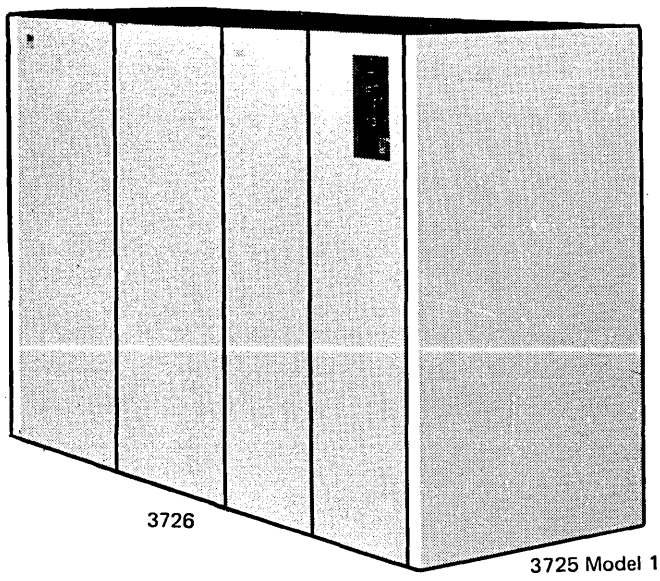
English measurements are shown in parentheses.



Notes:

1. If required, the width can be reduced to 750 mm (29-1/2 inches).
2. The service clearance can be reduced to 0 when another machine is abutted to the left side of the 3726, if the covers can be opened as shown on the plan view.
3. Caster and cable hole locating dimensions are measured from edge of frame, not cover.
4. Ground plates are delivered with the 3726. These plates are installed by the service representative during machine installation. Cutaways in the plates correspond to the existing cable holes shown in the plan view.

Cable Entry/Exit Number	Dimensions (Millimeters)	Dimensions (Inches)
2	250 x 250	9-3/4 x 9-3/4
3	360 x 250	14-1/4 x 9-3/4



3726 COMMUNICATION CONTROLLER EXPANSION

SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	1 210	815	1 525
(inches)	(47-3/4)	(32)	(60)

Service Clearances:

	Front	Rear	Right	Left
mm	750	750	0	250
(inches)	(29-1/2)	(29-1/2)	(0)	(9-3/4)

Weight: 600 kg (1 320 lb)

Heat Output:	*50 Hz*	*60 Hz*
W	2 500	2 400
(BTU/hr)	(8,550)	(8,200)

Airflow:	*50 Hz*	*60 Hz*
m^3/min	12.5	12.5
(cfm)	(430)	(430)

Power Requirements:	*50 Hz*	*60 Hz*
kVA	2.5	2.4
Phases	1	1
Voltages*	200, 220, 230, 240	200, 208, 220, 240
Frequency	50 (±0.5)	60 (±0.5)
Plug**		Russellstoll, 3720
Connector**		Russellstoll, 3913
Receptacle**		Russellstoll, 3743
Power Cord Style		A1
Power Cord Length**		4.3 m (14 ft)

Environment, Operating:

Temperature	16°C-38°C (60°F-100°F)
Rel Humidity	8%-80%
Max Wet Bulb	23°C (73°F)

Environment, Nonoperating:

Temperature	10°C-43°C (50°F-110°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Notes:

* United States and Canada:
60 Hz: 208 V or 240 V
World Trade Americas Group and World Trade Asia/Pacific Group:
50 Hz: 200 V, 220 V, 230 V, or 240 V
60 Hz: 200 V, 208 V, 220 V, or 240 V
World Trade Europe/Middle East/Africa Corporation:
50 Hz: 220 V, 230 V, or 240 V
60 Hz: 220 V

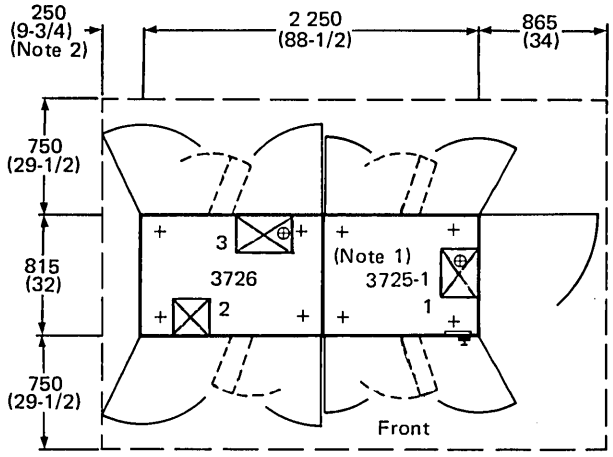
** In Chicago, Illinois, USA, specify code 9986 for a 1.8-m (6-ft) cord.

Note: Although the maximum current consumption does not exceed 15 A, the power receptacle at the customer premises should be able to handle inrush current up to 20 A (to support quick on and off switching of the 3725 Model 1/3726).

3725 MODEL 1/3726 MAXIMUM CONFIGURATION

PLAN VIEW (Metric Scale: 10 mm = 0.5 m)

English measurements are shown in parentheses.



Notes:

1. The right side of the 3726 is bolted to the left side of the 3725 Model 1. The frames must be separated for moving.
2. The service clearance can be reduced to 0 when another machine is abutted to the left side of the 3726, if the covers can be opened as shown on the plan view.

When the 3725 Model 1 and 3726 are bolted together, the front dimension is 2 250 mm (88-1/2 in.)

For weight, heat output, airflow, and power requirements, add the 3725 Model 1 specifications to the 3726 specifications.

OPERATOR CONSOLES FOR 3725 MODEL 1/3726

The operator console for the 3725 Model 1 is the IBM 3727 Operator Console, which consists of three elements: a keyboard, a logic, and a display.

One primary console is required within 5 m (16 ft) of the 3725 Model 1 (cable entry/exit hole) with no intervening walls, doors, or obstructions.

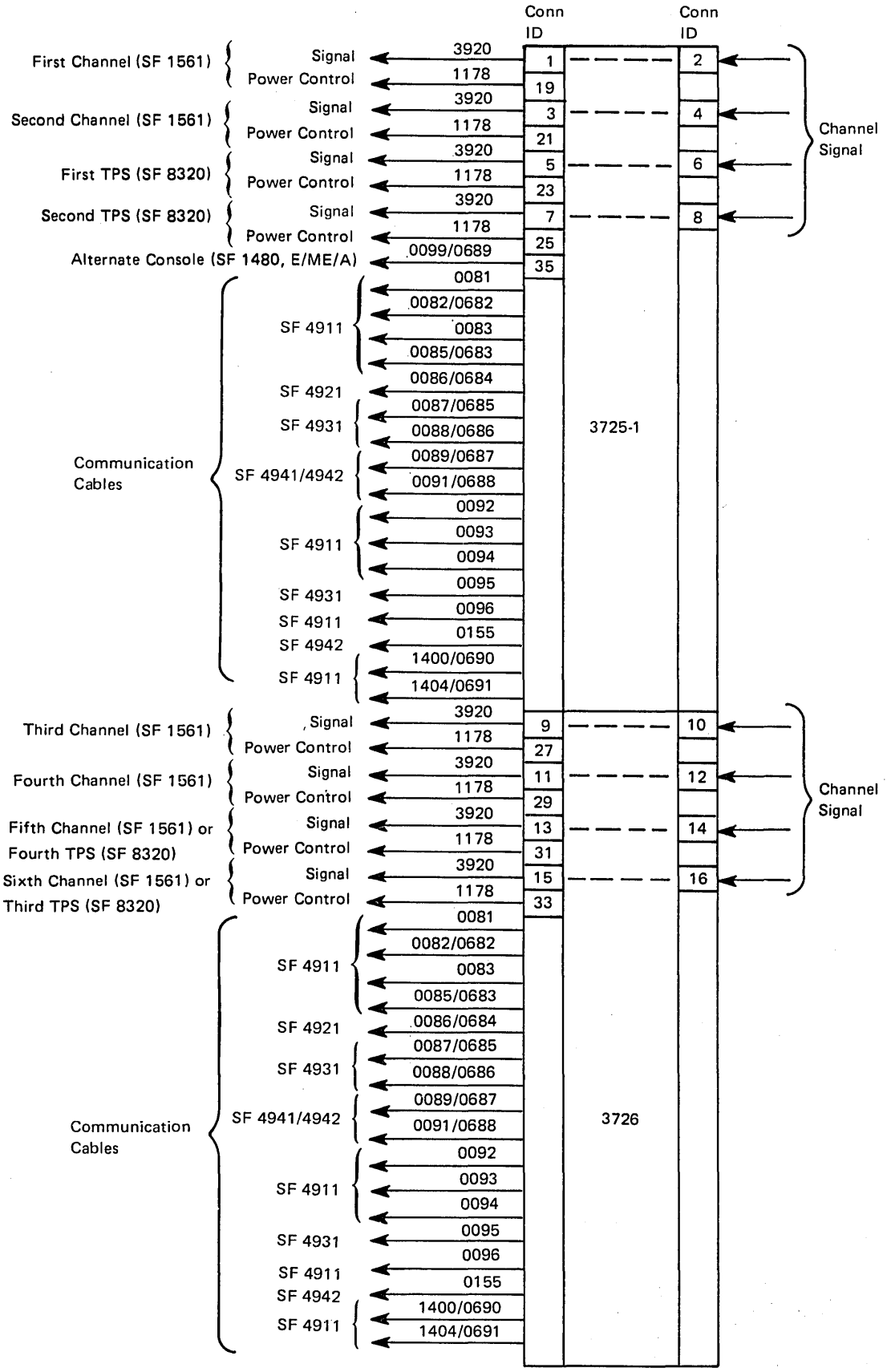
An alternate operator console (optional) may be connected to the 3725 Model 1 by a 150-m (492-ft) cable. This cable must be ordered. (See the cabling schematic on page 3725/3726.6.)

The customer must supply tables for the consoles. The recommended table height is 735 mm (29 in.)

CHANNEL CABLES: SPECIAL CONSIDERATIONS

If the 3725/3726 is to be installed in the same channel string as a device using the command retry and/or bus extension features, System/370 type channel interface cables must be ordered.

3725 MODEL 1/3726 COMMUNICATION CONTROLLER AND EXPANSION CABLING SCHEMATIC



CABLE ROUTING TO 3725 MODEL 1/3726 COMMUNICATION CONTROLLER AND EXPANSION

Channel Cables

Feature Code	*Conn ID*	*Frame (Note 4)*	*Cable Hole*	*Comments*	*Notes*
1561	2	01	1	First channel	
1561	4	01	1	Second channel	
1561	10	02	3	Third channel	3
1561	12	02	3	Fourth channel	3
1561	14	02	3	Fifth channel	1, 3
1561	16	02	3	Sixth channel	2, 3
8320	6	01	1	First two-processor switch	
8320	8	01	1	Second two-processor switch	
8320	16	02	3	Third two-processor switch	2, 3
8320	14	02	3	Fourth two-processor switch	1, 3

Notes:
1. Fifth channel (SF 1561) and fourth two-processor switch (SF 8320) are mutually exclusive.
2. Sixth channel (SF 1561) and third two-processor switch (SF 8320) are mutually exclusive.
3. 3726 only.
4. Frame 01 is the 3725 Model 1 base frame; frame 02 is the 3726 expansion frame.

Communication Cables

Feature Code	*Feature Quantity*	*Frame*	*Cable Hole*	*Comments*
3602 4771/2	0 0	01	1	Line address 0-63
3602 4771/2	0 1	01	1	Line address 64-95
3602 4771/2	0 2	02	2	Line address 96-127
3602 4771/2	0 3	02	2	Line address 128-159
3602 4771/2	0 4	02	2	Line address 160-191
3602 4771/2	1 5	02	3	Line address 192-223
3602 4771/2	1 6	02	3	Line address 224-255

Note: No connector ID is required for communication cables. Contact your IBM representative.

3725 MODEL 1/3726 COMMUNICATION CONTROLLER AND EXPANSION CABLE ORDERING

Cable	*Country*	*Ordering Instructions*
Power cable and primary operator console signal cable	All countries	Do not order these cables. They are supplied with a fixed length: Power cable: Chicago, Illinois, U.S.A. (SC 9986): 1.8 m (6 ft) Other locations: 4.3 m (14 ft) Primary operator console signal cable: All locations: 7.5 m (25 ft)
Channel and communication cables, and alternate operator console signal cable	North America, Latin America, Taiwan	1. Order channel cables by cable group number, up to the maximum length, as shown under "3725 Model 1/3726 Custom-Length Cables." 2. Whenever possible, order communcation cables and alternate operator console signal cable at standard lengths by group number, as shown under "3725 Model 1/3726 Standard Communication Cables for North America, Latin America, and Taiwan." 3. If the standard lengths shown are not suitable, order custom-length cables as shown under "3725 Model 1/3726 Custom-Length Cables."
	Far East, except Taiwan	Order all cables by cable group number as shown under "3725 Model 1/3726 Custom-Length Cables."
	WT Europe/Middle East/Africa (E/ME/A) (SC 2999)	60-Hz Machines: All 60-Hz machines are shipped from Raleigh, North Carolina, U.S.A. Cables for these machines must be ordered by an exception order telex according to the exception order process. 50-Hz Machines, Standard Cables: If the standard cables supplied automatically with the machines meet the customer's requirements, do not order cables (see "Standard Cables" that follows). 50-Hz Machines, Nonstandard Cables: If the types and/or lengths of the standard cables do not meet the customer's requirements: 1. Order the cables through an exception telex order. 2. Use the cable part numbers. 3. Specify the cable length up to the maximum length (see "3725 Model 1/3726 Custom-Length Cables.")

Standard Cables

In WT Europe/Middle East/Africa (E/ME/A), the following cables are automatically supplied, at the standard lengths, according to the ordered features:

Feature Code	*Name*	*Country*	*Cable Group*	*No. of Cable Groups*	*Standard Length m*	*(ft)*
1480	Alternate operator console	E/ME/A	0099	1	13.5	(45)
1561	Channel adapter	E/ME/A	3920 1178	1 1	7.5 18.0	(25) (60)
4911	LIC1	E/ME/A except UK and Belgium UK Belgium	1404 0092 0096	4 4 4	13.5 13.5 13.5	(45) (45) (45)
4921	LIC2	E/ME/A	0086	1	13.5	(45)
4931	LIC3	E/ME/A except France France	0087 0095	1 1	13.5 13.5	(45) (45)
4941	LIC4A	E/ME/A	0089	4	13.5	(45)
4942	LIC4B	E/ME/A except France France Transfix	0089 0155	1 1	13.5 13.5	(45) (45)
4991	TIC1	E/ME/A	–	1	9.0	(30)
8320	TPS	E/ME/A	3920 1178	1 1	12.0 18.0	(40) (60)

3725 MODEL 1/3726 STANDARD COMMUNICATION CABLES FOR NORTH AMERICA, LATIN AMERICA, AND TAIWAN

Order the standard length cable groups shown below if possible. For shorter cables or for an alternate operator console cable up to 20-meters (64-feet) long, order the cable groups shown under "3725 Model 1/3726 Custom-Length Cables." For longer cables, order cables by part number on an MES order as shown under "3725 Model 1/3726 Custom-Length Cables."

Feature Code	*Group No.*	*No. of Cables*	*Length*		*Comments*	*Notes*
			m	*(ft)*		
4911 (LIC1)	0099	1	13.5	(45)	Alternate operator console	
	0082	1	13.5	(45)	V.25/RS-366 autocall unit	1, 3
	0085	1	13.5	(45)	V.24/RS-232C direct attachment, asynchronous	1, 3
	1400	1	13.5	(45)	V.24/RS-232C direct attachment, synchronous	1, 3
	1404	1	13.5	(45)	V.24/RS-232C DCE	1, 3
4921 (LIC2)	0086	1	13.5	(45)	Wide-band DCE	2, 3
4931 (LIC3)	0087	1	13.5	(45)	V.35 DCE	2, 3
	0088	1	30	(100)	V.35 direct attachment	2, 3
4941 (LIC4A)	0089	1	13.5	(45)	X.21 DCE	1, 3
	0091	1	30	(100)	X.21 direct attachment	1, 3
4942 (LIC4B)	0089	1	13.5	(45)	X.21 DCE	2, 3
	0091	1	30	(100)	X.21 direct attachment	2, 3
4991 (TIC1)	1666	1	21.5	(70)	IBM Token-Ring Network attachment	2, 3, 4

Notes:

1. Four cable groups must be ordered for each LIC.
2. One cable group must be ordered for each LIC or TIC.
3. *Introduction to the IBM 3725 Model 1 Communication Controller*, GA33-0010, lists terminals that may be connected to various LIC types.
4. When the 3725 is to be installed in an IBM Token-Ring Network where IBM Cabling System Type 3 Specified Media (telephone twisted pair) is used, a Data Grade Media to Type 3 Filter is required between the IBM 3725 TIC cable and the telephone twisted pair wiring. Refer to *IBM Token-Ring Network Twisted Pair Media Guide*, GA27-3714. Consult the IBM Token-Ring Network Installation Planning Representative for further information.

				U.S. and A/FE Regular Order		MES Order or E/ME/A Telex Order						
				Max Length		Max Length						
Feature Code	Group No.	No. of Cables	Conn ID	m	(ft)	m	(ft)	Part	Frame	Cable Hole	Comments	Notes
1480	0689	1	35	20	(64)	150	(492)	2667243	01	1	Alternate operator console	10
1561	3920	2	1	62	(200)	62	(200)	5353920	01	1	First channel	
	1178	1	19	45	(150)	45	(150)	5351178	01	1	Power sequence and control, first channel (optional)	
1561	3920	2	3	62	(200)	62	(200)	5353920	01	1	Second channel	
	1178	1	21	45	(150)	45	(150)	5351178	01	1	Power sequence and control, second channel (optional)	
1561	3920	2	9	62	(200)	62	(200)	5353920	02	3	Third channel	
	1178	1	27	45	(150)	45	(150)	5351178	02	3	Power sequence and control, third channel (optional)	
1561	3920	2	11	62	(200)	62	(200)	5353920	02	3	Fourth channel	
	1178	1	29	45	(150)	45	(150)	5351178	02	3	Power sequence and control, fourth channel (optional)	
1561	3920	2	13	62	(200)	62	(200)	5353920	02	3	Fifth channel	8
	1178	1	31	45	(150)	45	(150)	5351178	02	3	Power sequence and control, fifth channel (optional)	8
1561	3920	2	15	62	(200)	62	(200)	5353920	02	3	Sixth channel	9
	1178	1	33	45	(150)	45	(150)	5351178	02	3	Power sequence and control, sixth channel (optional)	9
4911 (LIC1)	0081	1	Not Required	13.5	(45)	35	(115)	2667349, 6089076*	01, 02	1, 2, 3	V.24 DCE, Japan NTT	4, 7
	0083	1				35	(115)	1733914, 6406254*	01, 02	1, 2, 3	V.25 auto-call unit, French Caducee	4
	0092	2				35	(115)	1736733, 1743584, 6089075*	01, 02	1, 2, 3	V.24 DCE, UK	4, 7
	0093	1		13.5	(45)	35	(115)	2667696, 6089078*	01, 02	1, 2, 3	V.25 NTT auto-call unit, Japan	4
	0094	2				35	(115)	1733747, 6089077*, 674570	01, 02	1, 2, 3	V.25 auto-call unit, UK	4
	0096	2				35	(115)	1736733, 1489985, 6089075*	01, 02	1, 2, 3	V.24 DCE, Belgium	4, 7

*LIC1 cables are 13.5 m (45 ft) or less only.

				U.S. and A/FE Regular Order		MES Order or E/ME/A Telex Order						
				Max Length		Max Length						
Feature Code	*Group No.*	*No. of Cables*	*Conn ID*	*m*	*(ft)*	*m*	*(ft)*	*Part*	*Frame*	*Cable Hole*	*Comments*	*Notes*
4911 (LIC1) (continued)	0682	1	Not Required	13.5	(45)	35	(115)	1733747, 6089077*	01, 02	1, 2, 3	V.25/RS-366 auto-call unit (except French Caducee, UK, Japan)	4
	0683	1		13.5	(45)	35	(115)	2667351	01, 02	1, 2, 3	V.24/RS-232C direct attachment, asynchronous	4
	0690	1		13.5	(45)	Note 1		1733746	01, 02	1, 2, 3	V.24/RS-232C direct attachment, synchronous	4
	0691	1		10.6	(35)	35	(115)	1736733, 6089075*	01, 02	1, 2, 3	V.24/RS-232C DCE (except Japan NTT, UK, Belgium)	4, 7
4921 (LIC2)	0684	1		10.6	(35)	13.5	(45)	1733817	01, 02	1, 2, 3	Wide-band modem	5
4931 (LIC3)	0095	2		10.6	(35)	35	(115)	1733820, 1749352	01, 02	1, 2, 3	V.35 DCE, French PTT	5, 11
	0685	1		10.6	(35)	35	(115)	1733820	01, 02	1, 2, 3	V.35 DCE (except French PTT modem)	5, 11
	0686	1		13.5	(45)	150	(492)	1733822	01, 02	1, 2, 3	V.35 direct attachment	5, 12
4941 (LIC4A)	0687	1		13.5	(45)	Note 2		1733825	01, 02	1, 2, 3	X.21 DCE	4
	0688	1		30	(100)	Note 3		2667352	01, 02	1, 2, 3	X.21 direct attachment	4
4942 (LIC4B)	0155	1				Note 2		2667777	01, 02	1, 2, 3	X.21 DCE, French Transfix	5
	0687	1		13.5	(45)	Note 2		1733825	01, 02	1, 2, 3	X.21 DCE (except French Transfix)	5
	0688	1		30	(100)	Note 3		2667352	01, 02	1, 2, 3	X.21 direct attachment	5
4991 (TIC1)	1667	1		21.5	(70)	76	(250)	61X3229**	01, 02	1, 2, 3	IBM Token-Ring Network attachment	5, 13
8320	3920	2	5	62	(200)	62	(200)	5353920	01	1	First two-processor switch	
	1178	1	23	45	(150)	45	(150)	5351178	01	1	Power sequence and control, first TPS (optional)	
8320	3920	2	7	62	(200)	62	(200)	5353920	01	1	Second two-processor switch	
	1178	1	25	45	(150)	45	(150)	5351178	01	1	Power sequence and control, second TPS (optional)	
8320	3920	2	15	62	(200)	62	(200)	5353920	02	2	Third two-processor switch	9
	1178	1	33	45	(150)	45	(150)	5351178	02	2	Power sequence and control, third TPS (optional)	9
8320	3920	2	13	62	(200)	62	(200)	5353920	02	2	Fourth two-processor switch	8
	1178	1	31	45	(150)	45	(150)	5351178	02	2	Power sequence and control, fourth TPS (optional)	8

*LIC1 cables are 13.5 m (45 ft) or less only.

**Not for E/ME/A. For longer or shorter than standard cables for E/ME/A, contact your referenced distributors of the IBM Cabling System. The length of each TIC cable must meet IBM Cabling System specifications.

3725 MODEL 1/3726 CUSTOM-LENGTH CABLES (Continued)

Notes:

1. A maximum distance of 35 m (115 ft) meets the CCITT specifications. However, if the terminal is a 3725, it operates correctly up to 150 m (492 ft).
2. Maximum length:

Up to 56,000 bps	150 m (492 ft)
Up to 128,000 bps	60 m (197 ft)
Above 128,000 bps	30 m (98 ft)

3. The maximum distance to meet the CCITT specifications is:

Up to 56,000 bps	150 m (492 ft)
Above 56,000 bps	60 m (197 ft)

   However, if the terminal is a 3725, it operates correctly:

Up to 19,200 bps	600 m (1,969 ft)
Up to 64,000 bps	300 m (984 ft)
Up to 128,000 bps	150 m (492 ft)
Up to 256,000 bps	60 m (200 ft)

4. Four cable groups can be ordered for each LIC.
5. One cable group can be ordered for each LIC or TIC.
6. *Introduction to the IBM 3725 Model 1 Communication Controller*, GA33-0100, lists the terminals that may be connected to various LIC types.
7. When the DCE is an IBM 3863, 3864, or 3865 Modem, the maximum length is 100 m (328 ft) if one of the following conditions is fulfilled:
   a. The suffix level (two alphabetic characters on the date tag) is FG or later for U.S. and A/FE, or KF or later for E/ME/A.
   b. If the suffix level is earlier with data multiplexer feature 3260 not installed, the modem must have EC 344120 installed.
   c. If the suffix level is earlier with data multiplexer feature 3260 installed, the modem must have EC 323406 installed.
8. Fifth channel (SF 1561) and fourth two-processor switch (SF 8320) are mutually exclusive.
9. Sixth channel (SF 1561) and third two-processor switch (SF 8320) are mutually exclusive.
10. Feature 1480 is required in E/ME/A only.
11. For speeds $\geq$ 64,000 bps, the maximum cable length is 13.5 m (45 ft).
12. For speeds $\geq$ 64,000 bps, the maximum cable length is 35 m (115 ft).
13. When the 3725 is to be installed in an IBM Token-Ring Network where IBM Cabling System Type 3 Specified Media (telephone twisted pair) is used, a Data Grade Media to Type 3 Filter is required between the IBM 3725 TIC cable and the telephone twisted pair wiring. Refer to *IBM Token-Ring Network Twisted Pair Media Guide*, GA27-3714. Consult the IBM Token-Ring Network Installation Planning Representative for further information.

3725 MODEL 1/3726 COMMUNICATION CONTROLLER AND EXPANSION TRANSMISSION CABLE TERMINATION

Cable Group	*Interface*	*Connector*		
		Male/Female	*No. of Pins*	*Type*
0081	V.24 DCE (Japan)	Male	25	NTT with test/operate switch
0082	V.25/RS-366 autocall unit (except French Caducee, Japan, and UK)	Male	25	ISO 2110
0083	V.25 autocall unit (French Caducee)	Female	25	ISO 2110
0085	V.24/RS-232C direct attachment (asynchronous)	Female	25	ISO 2110
0086	Wide-band DCE	Male	12	MD 12 MPX
0087	V.35 DCE (except French PTT modems)	Male	34	ISO/DIS 2593
0088	V.35 direct attachment	Female	34	ISO/DIS 2593
0089	X.21 DCE	Male	15	ISO 4903
0091	X.21 direct attachment	Female	15	ISO 4903
0092	V.24 DCE (UK) (Note 1)	Male	25	ISO 2110
0093	V.25/NTT autocall unit (Japan)	Male	25	NTT with test/operate switch
0094	V.25 autocall unit (UK) (Note 2)	Male	25	ISO 2110
0095	V.35 DCE (French PTT modems) (Note 3)	Male	34	ISO/DIS 2593
0096	V.24 DCE (Belgium) (Note 4)	Male	25	ISO 2110
0155	French Transfix	Male	15	ISO 4903
1400	V.24/RS-232C direct attachment (synchronous)	Female	25	ISO 2110
1404	V.24/RS-232C DCE (except Japan, Belgium, and UK)	Male	25	ISO 2110

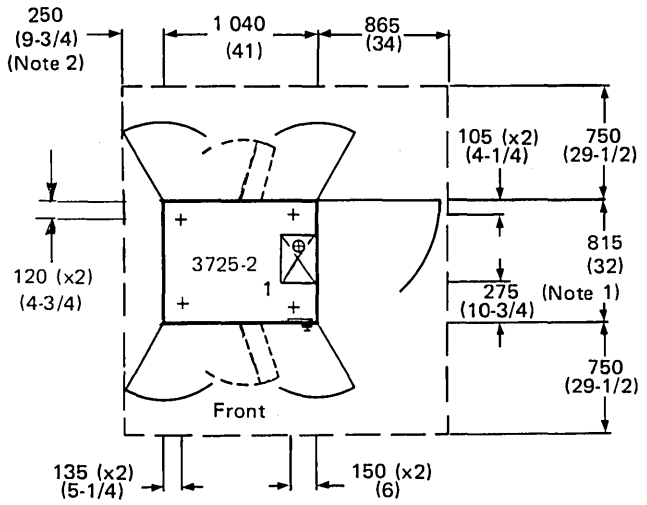
Notes:

1. Cable group 0092 includes cable 0092A and cable adapter 0092B.
2. Cable group 0094 includes cable 0094A and cable adapter 0094B.
3. Cable group 0095 includes cable 0095A and cable adapter 0095B.
4. Cable group 0096 includes cable 0096A and cable adapter 0096B.

3725 COMMUNICATION CONTROLLER MODEL 2

PLAN VIEW (Metric Scale: 10 mm = 0.5 m)

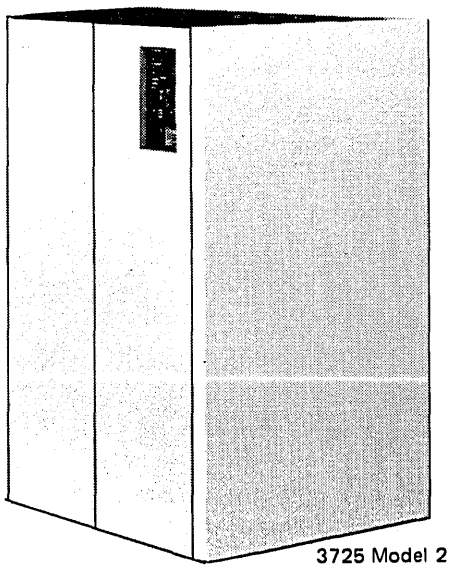
English measurements are shown in parentheses.



Notes:

1. If required, the width can be reduced to 750 mm (29-1/2 inches).
2. The service clearance can be reduced to 0 when another machine is abutted to the left side of the 3725 Model 2, if the covers can be opened as shown on the plan view.
3. A raised floor is not mandatory if the 3725 Model 2 has no channel connection. However, the cables should be protected with ramps or trenches.
4. Caster and cable hole locating dimensions are measured from edge of frame, not cover.
5. Ground plates are delivered with the 3725 Model 2. These plates are installed by the service representative during machine installation. Cutaways in the plates correspond to the existing cable hole shown in the plan view.

Cable Entry/Exit Number	Dimensions (Millimeters)	Dimensions (Inches)
1	320 x 250	12-1/2 x 9-3/4



3725 Model 2

3725 COMMUNICATION CONTROLLER MODEL 2

SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	1 040	815	1 525
(inches)	(41)	(32)	(60)

Service Clearances:

	Front	Rear	Right	Left
mm	750	750	865	250
(inches)	(29-1/2)	(29-1/2)	(34)	(9-3/4)

Weight: 400 kg (880 lb)

Heat Output:	*50 Hz*	*60 Hz*
W	1 900	1 900
(BTU/hr)	(6,500)	(6,500)

Airflow:	*50 Hz*	*60 Hz*
m^3/min	12.5	12.5
(cfm)	(430)	(430)

Power Requirements:	*50 Hz*	*60 Hz*
kVA	2.1	1.9
Phases	1	1
Voltages*	200, 220, 230, 240	200, 208, 220, 240
Frequency	50 (±0.5)	60 (±0.5)
Plug		R&S, 3720
Connector		R&S, 3913
Receptacle		R&S, 3743
Power Cord Style	A1	
Power Cord Length**	4.3 m (14 ft)	

Note: Although the maximum current consumption does not exceed 15 A, the power receptacle at the customer premises should be able to handle inrush current up to 20 A (to support quick on and off switching of the 3725 Model 2).

Environment, Operating:

Temperature	16°C-38°C (60°F-100°F)
Rel Humidity	8%-80%
Max Wet Bulb	23°C (73°F)

Environment, Nonoperating:

Temperature	10°C-43°C (50°F-110°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Notes:

* United States/Canada:
60 Hz: 208 V or 240 V
WT Americas/Far East:
50 Hz: 200 V, 220 V, 230 V, or 240 V
60 Hz: 200 V, 208 V, 220 V, or 240 V
WT Europe/Middle East/Africa:
50 Hz: 220 V, 230 V, or 240 V
60 Hz: 220 V

** In Chicago, Illinois, U.S.A., specify code 9986 for a 1.8-m (6-ft cord.

OPERATOR CONSOLES FOR THE 3725 MODEL 2

The operator console for the 3725 Model 2 is the IBM 3727 Operator Console, which consists of three elements: a keyboard, a logic, and a display.

One primary console is required within 5 m (16 ft) of the 3725 Model 2 (cable entry/exit hole) with no intervening walls, doors, or obstructions.

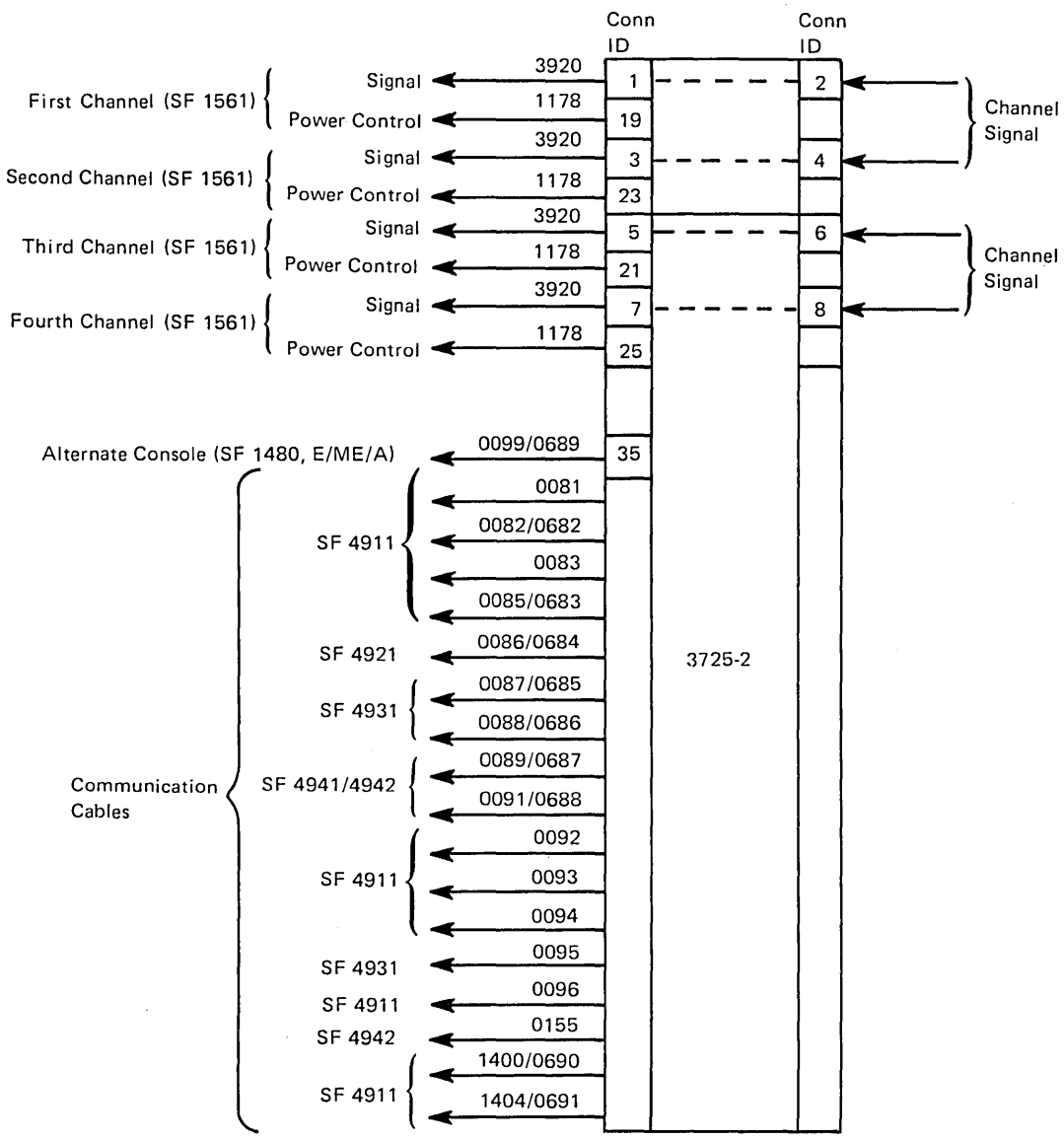
An alternate operator console (optional) may be connected to the 3725 Model 2 by a 150-m (492-ft) cable. This cable must be ordered. (See the cabling shcematic on page 3725/3726.15.)

The customer must supply tables for the consoles. The recommended table height is 735 mm (29 in.).

CHANNEL CABLES: SPECIAL CONSIDERATIONS

If the 3725 Model 2 is to be installed in the same channel string as a device using the command retry and/or bus extension features, System/370 type channel interface cables must be ordered.

3725 COMMUNICATION CONTROLLER MODEL 2 CABLING SCHEMATIC



3725 COMMUNICATION CONTROLLER MODEL 2 CABLE ORDERING

Cable	*Country*	*Ordering Instructions*
Power cable and primary operator console signal cable	All countries	Do not order these cables. They are supplied with a fixed length: Power cable: Chicago, Illinois, U.S.A. (SC 9986): 1.8 m (6 ft) Other locations: 4.3 m (14 ft) Primary operator console signal cable: All locations: 7.5 m (25 ft)
Channel and communication cables, and alternate operator console signal cable	North America, Latin America, Taiwan	1. Order channel cables by cable group number, up to the maximum length, as shown under "3725 Model 2 Custom-Length Cables." 2. Whenever possible, order communcation cables and alternate operator console cable at standard lengths by group number, as shown under "3725 Model 2 Standard Communication Cables for North America, Latin America, and Taiwan." 3. If the standard lengths shown are not suitable, order custom-length cables as shown under "3725 Model 2 Custom-Length Cables."
	Far East, except Taiwan	Order all cables by cable group number as shown under "3725 Model 2 Custom-Length Cables."
	WT Europe/Middle East/ Africa (E/ME/A) (SC 2999)	60-Hz Machines: All 60-Hz machines are shipped from Raleigh, North Carolina, U.S.A. Cables for these machines must be ordered by an exception order telex according to the exception order process. 50-Hz Machines, Standard Cables: If the standard cables supplied automatically with the machines meet the customer's requirements, do not order cables (see "Standard Cables" that follows). 50-Hz Machines, Nonstandard Cables: If the types and/or lengths of the standard cables do not meet the customer's requirements: 1. Order the cables through an exception telex order. 2. Use the cable part numbers. 3. Specify the cable length up to the maximum length (see "3725 Model 2 Custom-Length Cables").

Standard Cables

In WT Europe/Middle East/Africa (E/ME/A), the following cables are automatically supplied, at the standard lengths, according to the ordered features:

Feature Code	*Name*	*Country*	*Cable Group*	*No. of Cable Groups*	*Standard Length m*	*(ft)*
1480	Alternate operator console	E/ME/A	0099	1	13.5	(45)
1561	Channel adapter	E/ME/A	3920	1	7.5	(25)
			1178	1	18.0	(60)
4911	LIC1	E/ME/A except UK and Belgium	1404	4	13.5	(45)
		UK	0092	4	13.5	(45)
		Belgium	0096	4	13.5	(45)
4921	LIC2	E/ME/A	0086	1	13.5	(45)
4931	LIC3	E/ME/A except France	0087	1	13.5	(45)
		France	0095	1	13.5	(45)
4941	LIC4A	E/ME/A	0089	4	13.5	(45)
4942	LIC4B	E/ME/A except France	0089	1	13.5	(45)
		France Transfix	0155	1	13.5	(45)
4991	TIC1	E/ME/A	–	1	9.0	(30)

3725 MODEL 2 STANDARD COMMUNICATION CABLES FOR NORTH AMERICA, LATIN AMERICA, AND TAIWAN

Order the standard length cable groups shown below if possible. For shorter cables or for an alternate operator console signal cable up to 20 meters (64 feet) long, order the cable groups shown under "3725 Model 2 Custom-Length Cables." For longer cables, order cables by part number on an MES order as shown under "3725 Model 2 Custom-Length Cables."

Feature Code	*Group No.*	*No. of Cables*	*Length*		*Comments*	*Notes*
			m	*(ft)*		
4911 (L1C1)	0099	1	13.5	(45)	Alternate operator console	
	0082	1	13.5	(45)	V.25/RS-366 autocall unit	1, 3
	0085	1	13.5	(45)	V.24/RS-232C direct attachment, asynchronous	1, 3
	1400	1	13.5	(45)	V.24/RS-232C direct attachment, synchronous	1, 3
	1404	1	13.5	(45)	V.24/RS-232C DCE	1, 3
4921 (LIC2)	0086	1	13.5	(45)	Wide-band DCE	2, 3
4931 (LIC3)	0087	1	13.5	(45)	V.35 DCE	2, 3
	0088	1	30	(100)	V.35 direct attachment	2, 3
4941 (LIC4A)	0089	1	13.5	(45)	X.21 DCE	1, 3
	0091	1	30	(100)	X.21 direct attachment	1, 3
4942 (LIC4B)	0089	1	13.5	(45)	X.21 DCE	2, 3
	0091	1	30	(100)	X.21 direct attachment	2, 3
4991 (TIC1)	1666	1	23	(75)	IBM Token-Ring Network attachment	2, 3, 4

Notes:

1. Four cable groups must be ordered for each LIC.
2. One cable group must be ordered for each LIC or TIC.
3. *Introduction to the IBM 3725 Model 1 Communication Controller,* GA33-0010, lists terminals that may be connected to various LIC types.
4. When the 3725 is to be installed in an IBM Token-Ring Network where IBM Cabling System Type 3 Specified Media (telephone twisted pair) is used, a Data Grade Media to Type 3 Filter is required between the IBM 3725 TIC cable and the telephone twisted pair wiring. Refer to *IBM Token-Ring Network Twisted Pair Media Guide*, GA27-3714. Consult the IBM Token-Ring Network Installation Planning Representative for further information.

Feature Code	Group No.	No. of Cables	Conn ID	U.S. and A/FE Regular Order Max Length m	U.S. and A/FE Regular Order Max Length (ft)	MES Order or E/ME/A Telex Order Max Length m	MES Order or E/ME/A Telex Order Max Length (ft)	Part	Frame	Cable Hole	Comments	Notes
1480	0689	1	35	20	(64)	150	(492)	2667243	01	1	Alternate operator console	8
1561	3920	2	1	62	(200)	62	(200)	5353920	01	1	First channel	
	1178	1	19	45	(150)	45	(150)	5351178	01	1	Power sequence and control, first channel (optional)	
1561	3920	2	3	62	(200)	62	(200)	5353920	01	1	Second channel	
	1178	1	23	45	(150)	45	(150)	5351178	01	1	Power sequence and control, second channel (optional)	
1561	3920	2	5	62	(200)	62	(200)	5353920	01	1	Third channel	
	1178	1	21	45	(150)	45	(150)	5351178	01	1	Power sequence and control, third channel (optional)	
1561	3920	2	7	62	(200)	62	(200)	5353920	01	1	Fourth channel	
	1178	1	25	45	(150)	45	(150)	5351178	01	1	Power sequence and control, fourth channel (optional)	
4911 (LIC1)	0081	1	Not Required	13.5	(45)	35	(115)	2667349, 6089076*	01, 02	1, 2, 3	V.24 DCE, Japan NTT	4, 7
	0083	1				35	(115)	1733914, 6406254*	01, 02	1, 2, 3	V.25 auto-call unit, French Caducee	4
	0092	2				35	(115)	1736733, 1743584, 6089075*	01, 02	1, 2, 3	V.24 DCE, United Kingdom	4, 7
	0093	1		13.5	(45)	35	(115)	2667696, 6089078*	01, 02	1, 2, 3	V.25 NTT auto-call unit, Japan	4
	0094	2				35	(115)	1733747, 6089077*, 674570	01, 02	1, 2, 3	V.25 auto-call unit, UK	4
	0096	2				35	(115)	1736733, 1489985, 6089075*	01, 02	1, 2, 3	V.24 DCE, Belgium	4, 7
	0682	1		13.5	(45)	35	(115)	1733747, 6089077*	01, 02	1, 2, 3	V.25/RS-366 auto-call unit (except French Caducee, UK, Japan)	4
	0683	1		13.5	(45)	35	(115)	2667351	01, 02	1, 2, 3	V.24/RS-232C direct attachment, asynchronous	4
	0690	1		13.5	(45)	Note 1		1733746	01, 02	1, 2, 3	V.24/RS-232C direct attachment, synchronous	4
	0691	1		10.6	(35)	35	(115)	1736733, 6089075*	01, 02	1, 2, 3	V.24/RS-232C DCE (except Japan NTT, UK, Belgium)	4, 7

*LIC1 cables are 3.5 m (45 ft) or less only.

Feature Code	Group No.	No. of Cables	Conn ID	U.S. and A/FE Regular Order Max Length m	U.S. and A/FE Regular Order Max Length (ft)	MES Order or E/ME/A Telex Order Max Length m	MES Order or E/ME/A Telex Order Max Length (ft)	Part	Frame	Cable Hole	Comments	Notes
4921 (LIC2)	0684	1	Not Required	10.6	(35)	13.5	(45)	1733817	01, 02	1, 2, 3	Wide-band modem	5
4931 (LIC3)	0095	2				35	(115)	1733820, 1749352	01, 02	1, 2, 3	V.35 DCE, French PTT	5, 9
	0685	1		10.6	(35)	35	(115)	1733820	01, 02	1, 2, 3	V.35 DCE (except French PTT modem)	5, 9
	0686	1		13.5	(45)	150	(492)	1733822	01, 02	1, 2, 3	V.35 direct attachment	5, 10
4941 (LIC4A)	0687	1		13.5	(45)	150	(492)	1733825	01, 02	1, 2, 3	X.21 DCE	4
	0688	1		30	(100)	Note 3		2667352	01, 02	1, 2, 3	X.21 direct attachment	4
4942 (LIC4B)	0155	1				Note 2		2667777	01, 02	1, 2, 3	X.21 DCE, French Transfix	5
	0687	1		13.5	(45)	Note 2		1733825	01, 02	1, 2, 3	X.21 DCE (except French Transfix)	5
	0688	1		30	(100)	Note 3		2667352	01, 02	1, 2, 3	X.21 direct attachment	5
4991 (TIC1)	1667	1		23	(75)	76	(250)	61X3229*	01, 02	1, 2, 3	IBM Token-Ring Network attachment	5, 13

*Not for E/ME/A. For longer or shorter than standard cables for E/ME/A, contact your referenced distributors of the IBM Cabling System. The length of each TIC cable must meet IBM Cabling System specifications.

3725 MODEL 2 CUSTOM-LENGTH CABLES

Notes:

1. A maximum distance of 35 m (115 ft) meets the CCITT specifications. However, if the terminal is a 3725, it operates correctly up to 150 m (492 ft).
2. Maximum length:

Up to 56,000 bps	150 m (492 ft)
Up to 128,000 bps	60 m (197 ft)
Above 128,000 bps	30 m (98 ft)

3. The maximum distance to meet the CCITT specifications is:

Up to 56,000 bps	150 m (492 ft)
Above 56,000 bps	60 m (197 ft)

   However, if the terminal is a 3725, it operates correctly:

Up to 19,200 bps	600 m (1,969 ft)
Up to 64,000 bps	300 m (984 ft)
Up to 128,000 bps	150 m (492 ft)
Up to 256,000 bps	60 m (200 ft)

4. Four cable groups can be ordered for each LIC.
5. One cable group can be ordered for each LIC.
6. *Introduction to the IBM 3725 Model 2 Communication Controller,* GA33-0021, lists the terminals that may be connected to various LIC types.
7. When the DCE is an IBM 3863, 3864, or 3865 Modem, the maximum length is 100 m (328 ft) if one of the following conditions is fulfilled:
   a. The suffix level (two alphabetic characters on the date tag) is FG or later for U.S. and A/FE, or KF or later for E/ME/A.
   b. If the suffix level is earlier with data multiplexer feature 3260 not installed, the modem must have EC 344120 installed.
   c. If the suffix level is earlier with data multiplexer feature 3260 installed, the modem must have EC 323406 installed.
8. Feature 1480 is required in E/ME/A only.
9. For speeds ≥ 64,000 bps, the maximum cable length is 13.5 m (45 ft).
10. For speeds ≥ 64,000 bps, the maximum cable length is 35 m (115 ft).
11. When the 3725 is to be installed in an IBM Token-Ring Network where IBM Cabling System Type 3 Specified Media (telephone twisted pair) is used, a Data Grade Media to Type 3 Filter is required between the IBM 3725 TIC cable and the telephone twisted pair wiring. Refer to *IBM Token-Ring Network Twisted Pair Media Guide,* GA27-3714. Consult the IBM Token-Ring Network Installation Planning Representative for further information.

3725 COMMUNICATION CONTROLLER MODEL 2 TRANSMISSION CABLE TERMINATION

Cable Group	*Interface*	*Connector*		
		Male/Female	*No. of Pins*	*Type*
0081	V.24 DCE (Japan)	Male	25	NTT with test/operate switch
0082	V.25/RS-366 autocall unit (except French Caducee, Japan, and UK)	Male	25	ISO 2110
0083	V.25 autocall unit (French Caducee)	Female	25	ISO 2110
0085	V.24/RS-232C direct attachment (asynchronous)	Female	25	ISO 2110
0086	Wide-band DCE	Male	12	MD 12 MPX
0087	V.35 DCE (except French PTT modems)	Male	34	ISO/DIS 2593
0088	V.35 direct attachment	Female	34	ISO/DIS 2593
0089	X.21 DCE	Male	15	ISO 4903
0091	X.21 direct attachment	Female	15	ISO 4903
0092	V.24 DCE (UK) (Note 1)	Male	25	ISO 2110
0093	V.25/NTT autocall unit (Japan)	Male	25	NTT with test/operate switch
0094	V.25 autocall unit (UK) (Note 2)	Male	25	ISO 2110
0095	V.35 DCE (French PTT modems) (Note 3)	Male	34	ISO/DIS 2593
0096	V.24 DCE (Belgium) (Note 4)	Male	25	ISO 2110
0155	French Transfix	Male	15	ISO 4903
1400	V.24/RS-232C direct attachment (synchronous)	Female	25	ISO 2110
1404	V.24/RS-232C DCE (except Japan, Belgium, and UK)	Male	25	ISO 2110

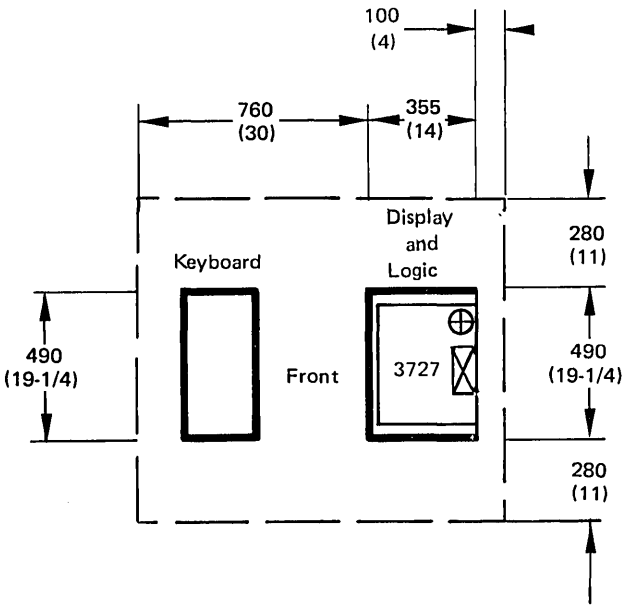
Notes:

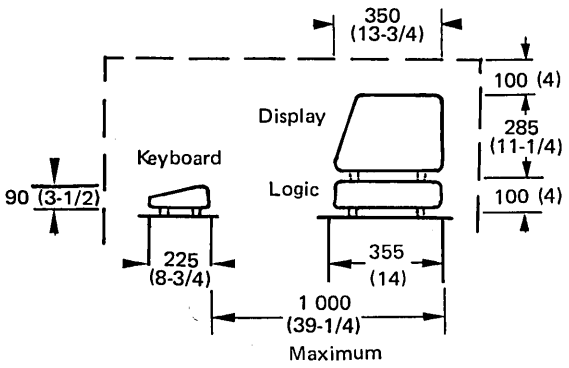
1. Cable group 0092 includes cable 0092A and cable adapter 0092B.
2. Cable group 0094 includes cable 0094A and cable adapter 0094B.
3. Cable group 0095 includes cable 0095A and cable adapter 0095B.
4. Cable group 0096 includes cable 0096A and cable adapter 0096B.

3727 OPERATOR CONSOLE

PLAN VIEW (Metric Scale: 10 mm = 0.25 m)

English measurements are shown in parentheses.





Side View

Cable Entry/Exit: 100 x 60 mm (4 x 2-1/4 in.)

Note: When the 3725 Model 1 or 2 is installed without a raised floor (no channel connection), a cable entry/exit hole is not necessary for the console.

The IBM 3727 Operator Console is used for the IBM 3725 Model 1/3726 Communication Controller and Expansion or 3725 Communication Controller Model 2. The 3727 consists of three elements: a logic, a display, and a keyboard.

One primary console is required within 5 m (16 ft) of the 3725 Model 1 or 3725 Model 2 (cable entry/exit hole) with no intervening walls, doors, or obstructions.

An alternate operator console (optional) may be connected to the 3725 by a 150-m (492-ft) cable. This cable must be ordered. (See the cabling schematic on page 3727.3).

The IBM 7427 Console Switching Unit allows one primary console or one alternate console to be shared among several controllers.

The customer must supply tables for the console. The recommended table height is 735 mm (29 in.).

3727 OPERATOR CONSOLE

SPECIFICATIONS

Dimensions:	Front	Side	Height
Display:			
mm	380	350	285
(inches)	(15)	(13-1/4)	(11-1/4)
Keyboard:			
mm	490	225*	90
(inches)	(19-1/4)	(8-3/4*)	(3-1/2)

*In WT Europe/Middle East/Africa, a palm rest and an antiglare filter are automatically supplied. With the palm rest attached, the keyboard side is 285 mm (11 in.).

Logic:			
mm	490	355	100
(inches)	(19-1/4)	(14)	(4)

Service Clearances:

	Front	Rear	Right	Left	Top
mm	760	100	280	280	100
(inches)	(30)	(4)	(11)	(11)	(4)

Weight:	*kg*	*(lb)*
Display	7	(15)
Keyboard	5.5	(12)
Logic	5	(11)

Heat Output: 50 Hz or 60 Hz: 50 W (171 BTU/hr)

Airflow: Natural convection

Power Requirements:

kVA	0.12 (50 Hz or 60 Hz)
Phases	1
Voltages	50 Hz/60 Hz: 100-127/200-240
Power Cord Style	Three-wire, grounded

Environment, Operating:

Temperature	10°C-41°C (50°F-105°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Environment, Nonoperating:

Temperature	1°C-60°C (33°F-140°F)
Rel Humidity	5%-80%
Max Wet Bulb	29°C (85°F)

Power Cord and Plug Types:

For the United States and Canada, the machine is shipped with a 1.8-m (6-ft) power cord and a NEMA 5-15P nonlocking plug.

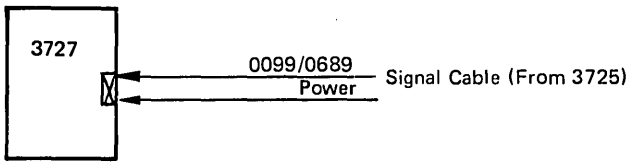
For World Trade countries other than Canada, the machine is shipped with a 3-m (10-ft) power cord with attached plug that corresponds to the power outlet receptacle that is most used in that country.

The customer must provide the corresponding power receptacle.

Notes:

1. The signal ground of the console is permanently connected to its frame ground.
2. To avoid noise, it is recommended that the 3727 and the 3725 use the same equipment ground path.
3. If the 3725 and the 3727 are simultaneously accessible (for example, in the same room), they must use the same equipment ground path.

3727 OPERATOR CONSOLE CABLING SCHEMATIC



Signal Cables

Primary Operator Console: This cable is supplied with the 3725. Its length is fixed: 7.5 m (25 ft).

Alternate Operator Console: This cable must be ordered as indicated in the 3725 Model 1/3726 or 3725 Model 2 machine specifications and cabling schematic, as appropriate.

Standard length (E/ME/A)	14 m (45 ft)
Maximum length	150 m (492 ft)
Cable group number	0099/0689

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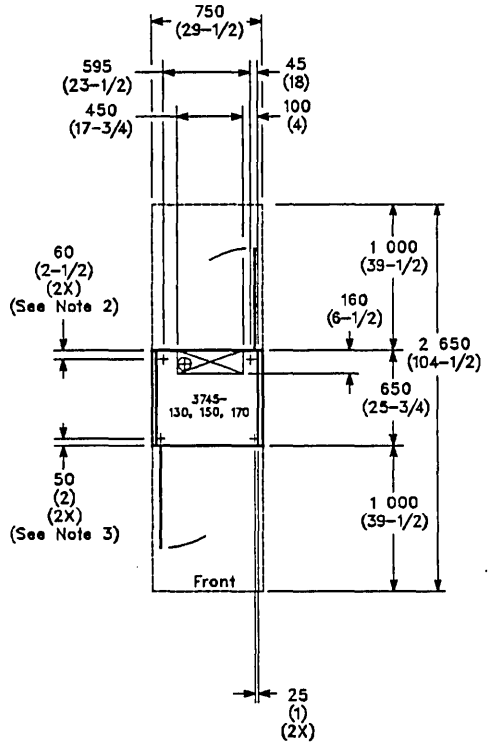
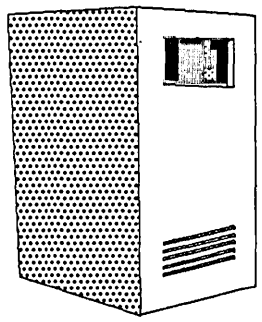
3745 Communication Controller and 3746 Expansion Unit

3745 Communication Controller Models 130, 150, and 170

Plan View (Not to Scale): English measurements are shown in parentheses.

Use IBM Physical Planning Template GX22-7125.





3745-130, 150, 170

Notes:

1. Caster and cable entry and exit area locating dimensions are measured from the edge of the frame, including side covers, but excluding front and rear covers.
2. Two swiveling casters with locks on the rear side.
3. Two fixed (nonswiveling) casters on the front side.
4. Ground plates are delivered with the 3745. These plates are installed by the service representative during machine installation. Cutaways in the ground plates correspond to the cable entry and exit area shown in the plan view.
5. A raised floor is recommended. For 3745 Model 130 and 3745 Model 170 configurations exceeding any of the following limits, a raised floor is required.
   - 3745-130: 2 host attachments.
   - 3745-170: either of the following:
     a. 64 external cables (LIC cables, high-speed line cables, IBM token-ring cables)
     b. Two LIC base features
   - Either 2 host attachments with blue cables (part 5460185), or 1 host attachment with gray cables (part 5353920).

   When no raised floor is installed, the cables should be protected with ramps or trenches.

Specifications: Dimensions:

	Front	Side	Height
mm	750	650	1 000
(in.)	(29-½)	(25-¾)	(39-½)

Service Clearances:				
	Front	Rear	Right	Left
mm	1 000	1 000	0	0
(in.)	(39-½)	(39-½)	(0)	(0)

Weight:

Frame	Weight less than:
3745-130, 150, 170	230 kg (510 lb)

Heat Output:

	Maximum Heat Output
Frame	kW (kBTU/hr)
3745-130, 150, 170	0.8 (2.6)

Airflow:

A ventilation system is installed inside each 3745 frame.

Frame	Cooling System	Airflow
3745-130, 150, 170	Forced Air	7.5 m^3/min (260 cfm)

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual—Physical Planning,* GC22-7072.

L_{WAd}		$<L_{pA}>m$				
Hz	Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	I	T
50/60 nominal	7.0	7.0	N/A	N/A	No	No

Power Requirements:

Phases	1
kVA	1.1 kVA
Voltages (Nominal)	200—240 V
Maximum current	5.5 A
Frequency	50 Hz or 60 Hz (±1 Hz)
Branch circuit ampacity	10 A

Inrush current at first half cycle 100 A

Note: In some countries, 120 Volt power is available by ordering RPQ 7L1184.

Power Connection: **Note for World Trade:** The 3745 can be connected to an impedance grounded (impedance terre or IT) power system. An IT power system is a power distribution having no direct connection to ground, the exposed conductive parts of the electrical installation being grounded.

Ground Current Leakage: The ground current leakage is not more than 3.5 mA rms in any configuration.

Power Cord and Power Plug: A 4.3-m (14-ft) power cord is shipped with each 3745. In Chicago, Illinois, USA, specify code 9986 for a 1.8-meter (6-ft) power cord.

The power cord is supplied with a country-dependent plug.

Notes:

1. For countries listed in the table under "Power Plug Identification by Country," the number alongside the country name in the table indicates the corresponding plug shown in Appendix A.
2. USA and Canada

	Plug Type	Plug	Feature Code	Receptacle	Diagram Number
Raised Floor	Moisture Proof	Russelstoll 3720U-2	9020	Russelstoll 3913U-2 (inline) or 3743U-2 (box type)	34
Nonraised Floor	Locking	NEMA L6-15P	9890	NEMA L6-15R	10
	Nonlocking	NEMA 6-15P	See Note	NEMA 6-15R	5

Note: The standard nonlocking power plug is shipped with the machine if no feature code is specified.

3. Japan

Plug Type	Plug	Feature Code	Receptacle	Diagram Number
Locking	NEMA L6-15P	9890	NEMA L6-15R	10
Non-locking	NEMA 6-15P	See Note	NEMA 6-15R	5

Note: The standard nonlocking power plug is shipped if no feature code is specified.

Power Plug Identification by Country:

See Appendix A for Power Plug Identification.

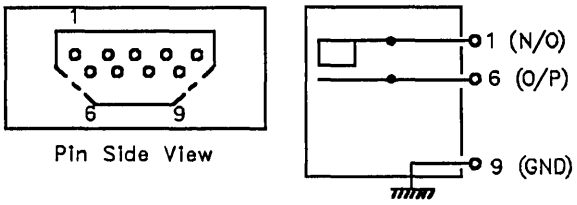
Country	Frequency	Diagram Number
Afghanistan	50	18
Algeria	50	18
Andorra	50	18
Angola	50	18
Argentina	50	6
Australia	50	6
Austria	50	18
Bahamas	60	5
Bahrain	50	23
Bangladesh	50	22
Barbados	50	6
Belgium	50	18
Benin	50	18
Bermuda	60	5
Bolivia	50	6
Brazil	60	5
Brunei	50	23
Bulgaria	50	18
Burma	50	22
Cameroon	50	18
Centre Afrique Republic	50	18
Chad	50	18
Channel Islands	50	23
Chile	50	25
Colombia	60	5
Congo Brazzaville	50	18
Costa Rica	60	5
Cyprus	50	23
Czechoslovakia	50	18
Denmark	50	19
Dominican Republic	60	5
Egypt	50	18
El Salvador	60	5
Ecuador	60	5
Ethiopia	50	25
Finland	50	18
Federal Rep. of Germany	50	18
France	50	18
German Democratic Rep.	50	18
Ghana	50	23
Greece	50	18
Guatemala	60	5
Guinea	50	18
Haiti	60	5
Honduras	60	5
Hong Kong	50	23
Hungary	50	18
Iceland	50	18
India	50	23
Indonesia	50	18
Iran	50	18
Iraq	50	23
Ireland	50	23
Israel	50	32
Italy	50	25
Ivory Coast	50	18
Jamaica	50	6
Jordan	50	23
Kenya	50	23
Korea	60	5
Kuwait	50	23
Lebanon	50	18
Libya	50	25
Liechtenstein	50	24
Luxembourg	50	18
Malagasy	50	18
Malawi	50	23
Malaysia	50	23
Mali	50	18
Malta	50	23
Martinique	50	18
Mauritania	50	18
Mauritius	50	18
Mexico	60	10
Monaco	50	18
Morocco	50	18
Mozambique	50	18
Nepal	50	23
Netherlands	50	18
Netherlands Antilles	60	5
New Caledonia	50	18
New Zealand	50	6
Nicaragua	60	5
Niger	50	18
Nigeria	50	23
Norway	50	18
Oman	50	23
Pakistan	50	22
Panama	60	5
Papua New Guinea	50	6
Paraguay	50	2
Peru	60	5
Philippines	60	5
Poland	50	18
Portugal	50	18
Qatar	50	23
Romania	50	18
Senegal	50	18
Sierra Leone	50	23
Singapore	50	23
Somalia	50	23
South Africa	50	22
Spain	50	18
Sri Lanka	50	22
Sudan	50	18
Sweden	50	18
Switzerland	50	24
Syria	50	18
Taiwan	60	5
Tanzania	50	23
Thailand	50	6
Togo	50	18
Trinidad Tobago	60	5
Tunisia	50	18
Turkey	50	18
Uganda	50	23
Uruguay	50	2
United Arab Emirates	50	23
United Kingdom	50	23
Upper Volta	50	18
USSR	50	18
Venezuela	60	5
Western Samoa	50	6
Yemen	50	23
Yugoslavia	50	18
Zaire	50	18
Zambia	50	23
Zimbabwe	50	18

Power Requirements for Consoles:

Power receptacles must be ordered for all consoles. See *IBM General Information Manual: Installation Manual—Physical Planning,* GC22-7072, which provides information on different country-dependent plug and receptacle types.

Customer Power Control Relay

- A contact that is open when the power is on is provided.



- An outlet available to the customer.
- Voltage and current rating: 30 V ac or 42.4 V dc at 20—500 mA.
- The plug is not provided by IBM. It is a standard 9 pin female D shell connector including:
  - One receptacle (AMP reference 205203-1 or equivalent)
  - Three sockets (AMP reference 66504-9 or equivalent)
  - One housing (AMP reference 205729-1 or equivalent)
  - Two studs (AMP reference 350547-3 or equivalent)
- The cable is not provided by IBM. Its characteristics are:
  - Bulk cable, with a maximum outside diameter of 6 mm (0.23 in.)
  - Three conductors
  - AWG no. 22 (0.3 mm²)

Environmental Specifications

Environment, Operating

Temperature	16°C-38°C (60°F-100°F)
Rel Humidity	8%-80%
Max Wet Bulb	23°C (73°F)

Environment, Nonoperating

Temperature	10°C-43°C (50°F-110°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Lightning Protection

The power input of the 3745 is protected against lightning. Contact an electrical contractor to determine if lightning protection is needed for your power distribution system.

The LIC and operator console cables are not protected against lightning and must be placed in the same building as the 3745.

Electromagnetic Interference

The 3745 is compatible with the following classes of interference:

- CISPR Publication 22, class A
- FCC, Part 15, Subpart J, class A (USA)
- VCCI-1, class 1 (Japan).

Console Tables

The customer must supply tables for all consoles. The recommended console table height is 735 mm (29 in.).

Explanation of Cable Characteristics:

The expression (col [a]) in the following title means: see column [a] in the tables.

Cables to Be Ordered and Installed (col [a]): Cables that might have to be ordered and installed are:

- "Channel Attachment Cables and Emergency Power-Off Cables" on page 3745-8.
- "Operator Console and Remote Support Facility (RSF) Attachment Cables" on page 3745-9. For more information about operator consoles and RSF, see "Console Attachment" on page 3745-9.
- "Token-Ring Attachment and High-Speed Line Attachment Cables" on page 3745-11.
- "Line Interface Attachment (LIC) Cables" on pages 3745-13, 3745-14, and 3745-15.
- Telecommunication cords for LIC types 5 and 6 on pages 3745-13,3745-14, and 3745-15.

Feature Number (col [b]): The code of each feature is given if applicable.

LIC Type or Notes (col [c]): The type of LIC corresponding to the line is given if applicable.

The 3745 offers 2 types of integrated modems packaged in a LIC enclosure.

- The LIC type 5 includes 2 leased line modems.
- The LIC type 6 includes 1 modem operating as a data service unit/channel service unit on the digital data service network, or as a limited distance modem.

See *Power Supply and Telephone Connections for IBM Modems*, GA33-0054.

Cable Lengths (col [d, e] [f, g] [h, I]): Three types of cable length are available:

Fixed-Length Cables (col [d, e]): Cable lengths are given in column [e]. These cables can be delivered with the 3745, depending on the feature type and the country. Order standard cable lengths by their cable group number (col [d]). The part numbers of standard cable lengths are not included in these tables. They are the same as those given in col [f] for shorter than or equal to standard cable lengths.

Custom-Length Short Cables (col [f, g]): Order these cables by their cable group number (in USA, IBM World Trade Americas Group, and IBM World Trade Asia/Pacific Group) or by their part number (in IBM World Trade Europe/Middle East/Africa Corporation), (CG or Part No. in col [f]), and specify the required length up to the maximum length given in col [g].

Custom-Length Long Cables (col [h, I]): Order these cables by their part number (Part No. in col [h]) and indicate the required length up to the maximum length given in col [i].

Cabling Identification

- Use *IBM 3745-130/150/170 Communication Controller: Preparing for Connection*, GA33-0140, to prepare the cabling plan. This manual provides:
  - Instructions for plugging sheets and labels.
  - A set of plugging sheets.
- Use *IBM 3745-130/150/170 Communication Controller: Set of Cable Labels*, GA33-0135, for a set of labels.

Country Areas (col [j, k]): Features are not available in all countries. See the following two country groups:

- USA, Canada, IBM World Trade Americas Group, and IBM World Trade Asia/Pacific Group: (col [j]).
- IBM World Trade Europe/Middle East/Africa Corporation: (col [k]).

In columns [j, k]:

- Y means that the feature is available.
- N means that the feature is not available.

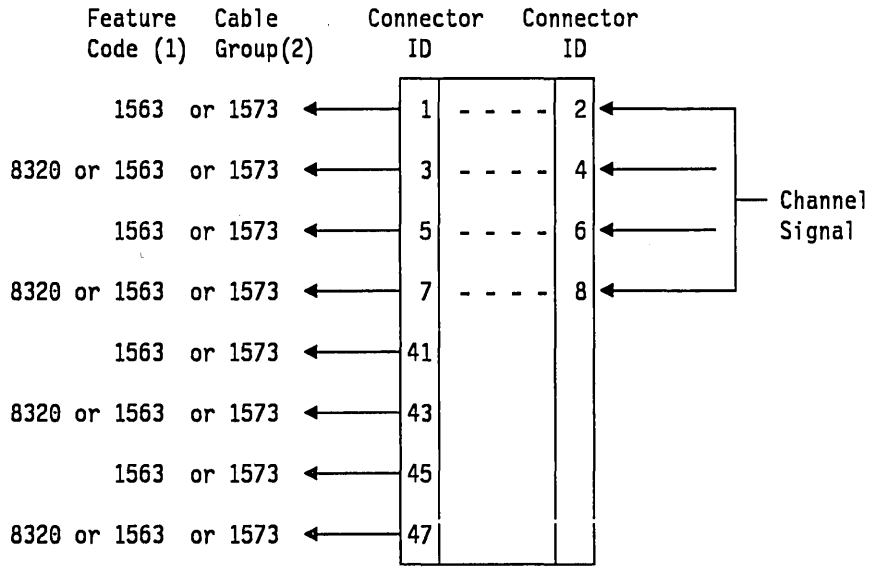
How to Measure Cable Lengths

To calculate a cable length, add the lengths of the cable:

1. From the connector of the 3745 frame to its bottom.
2. From the bottom of the frame to the bottom of the attached device, including:
   - Cable routing and bends
   - Twice the distance between the bottom and the raised floor, if any.
3. From the bottom of the attached device to its connector.

See *Selecting and Ordering IBM Machine External Cables*, GA23-0278.

3745 Models 130 and 170 Channel Cabling Schematic



Notes:

1. Each two-processor switch (feature code 8320) takes the place of one channel adapter (feature code 1563) or one buffer chaining channel adapter (BCCA) (feature code 1573).
2. The cable group for signal cables is 0185. The cable group for power control cables is 1178.

Channel Attachment Cables and Emergency Power-Off Cables

Feature				According to Your Requirements, Order:				Area	
Channel Adapter, TPS, and Emergency Power Off (EPO) (See Note 1)	Feature Code	Conn ID	No. of Cables	Fixed-Length Cable (See Note 2) CG	Length m (ft)	Custom-Length Cable (See Note 3 and Note 4) CG or Part No.	Maximum Length m (ft)	USA AG A/PG	E/ME/A
[a]	[b]	[b]	[a]	[d]	[e]	[h]	[i]	[j]	[k]
First channel	1563 or 1573	1	2	0185	12 (40)	0185 5460185	122(400)	Y	Y
Second channel	1563 or 1573	3	2	0185	12 (40)	0185 5460185	122(400)		
or first TPS	8320	3	2	0185	12 (40)	0185 5460185	122(400)		
Third channel	1563 or 1573	5	2	0185	12 (40)	0185 5460185	122(400)		
Fourth channel	1563 or 1573	7	2	0185	12 (40)	0185 5460185	122(400)		
or second TPS	8320	7	2	0185	12 (40)	0185 5460185	122(400)		
First EPO	1563 or 1573	41	1	1178	18 (60)	1178 5351178	122(400)		
Second EPO	1563 or 1573 or 8320	43	1	1178	18 (60)	1178 5351178	122(400)		
Third EPO	1563 or 1573	45	1	1178	18 (60)	1178 5351178	122(400)		
Fourth EPO	1563 or 1573 or 8320	47	1	1178	18 (60)	1178 5351178	122(400)		

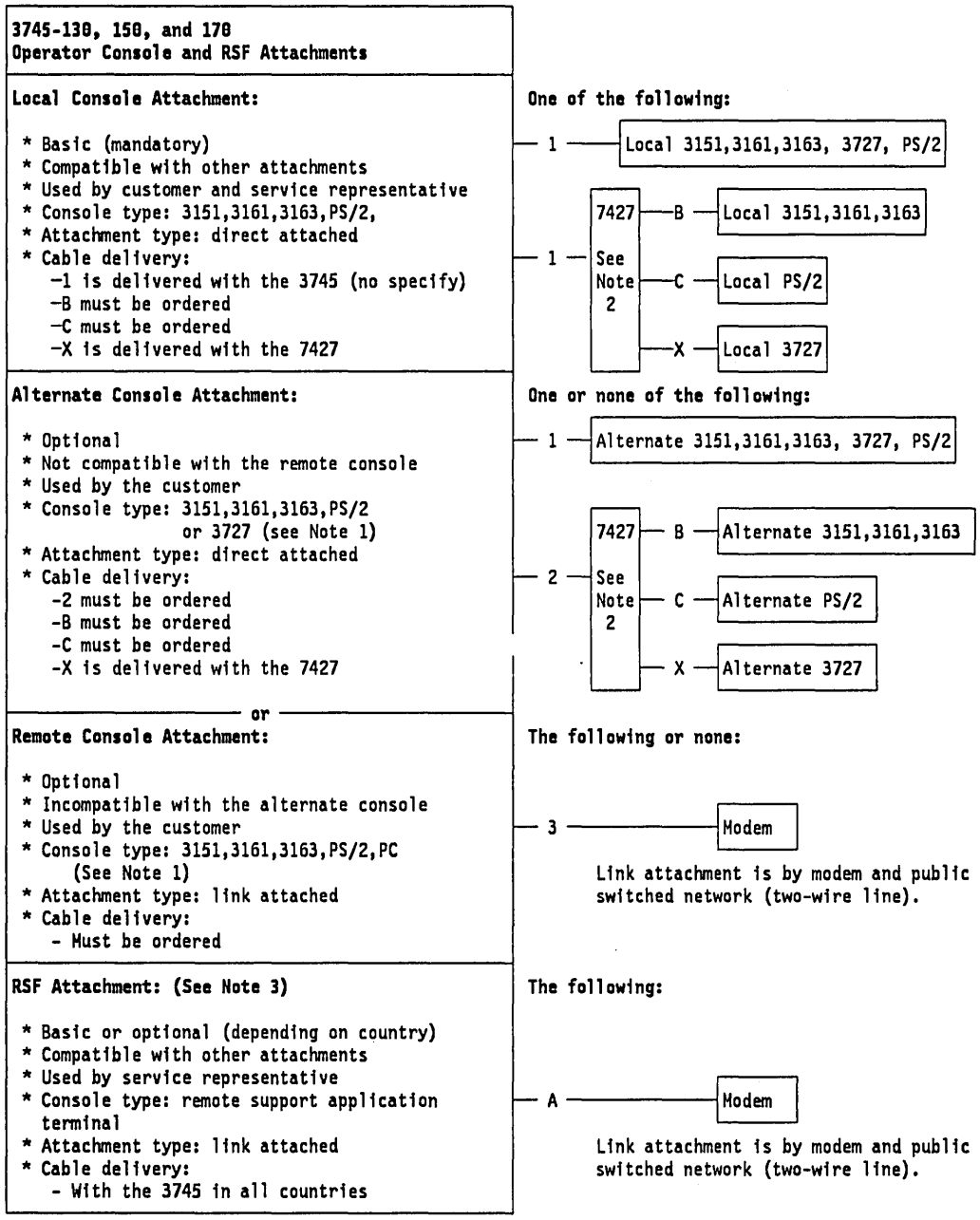
TPS is two-processor switch.

Notes:

1. The *emergency power-off (EPO)* cable is also called the *power control* cable.
2. The fixed-length standard cable length is available in IBM World Trade Europe/Middle East/Africa Corporation countries only. All other countries, including the USA, must specify the length required.
3. For data streaming, the maximum cumulative cable length is 122 m (400 ft) unless modified by system or channel limitation. The maximum cable length must be reduced by 4.5 m (15 ft) for each control unit between the 3745 and the channel.

   For nondata streaming, the maximum length is 61 m (200 ft) unless modified by the general control-to-channel cabling schematic.
4. In the USA, Canada, IBM World Trade Americas Group, and IBM World Trade Asia/Pacific Group countries, order cables by group number up to the maximum length specified.

Console Attachment: The following figure refers to method of feature attachment and cable characteristics. The cable lengths are given with no intervening walls, doors, or obstructions.



Notes:

1. The 3151, 3161, and 3163 consoles are not available in Brazil.
2. A local console, as well as an alternate console, can be common to several IBM communication controllers to which it is connected by an IBM 7427 Switching Unit.
3. A modem (see note 1 on page 3745-11) is required for connection to the IBM Remote Support Facility. The customer must provide access to the public switched network by a analog telephone line suited to the modem.

Operator Console and Remote Support Facility (RSF) Attachment Cables: The numbers on the left of the following table are references to the cable codes shown under "Console Attachment" on the previous page.

	Feature			According to Your Requirements, Order:						Area	
						Custom-Length Cable					
				Fixed-Length Cable		Short Cable		Long Cable			
	Console and RSF Attachments		Number of Cables	CG or Part No.	Length m (ft)	CG or Part No.	Maximum Length m (ft)	Part No.	Maximum Length m (ft)	USA AG A/PG	E/ME/A
	[a]		[a]	[d]	[e]	[f]	[g]	[h]	[i]	[j]	[k]
1	Local console	3151,3161, 3163 3727,PS/2, 3745 to 7427	1	(See Note 4)	7 (23)					Y	Y
2	Alternate console	3151,3161, 3163 3727,PS/2, 3745 to 7427	1	(See Note 3)		6147 26F1792	35 (115)	26F1799	122 (400)		
3	Remote console 3151,3161,3163 or PS/2,PC (See Note 2)		1	(See Note 3)		6148 03F5027	13.5(45)	03F5028	122 (400)		
A	RSF (See Note 1) (See Note 2)		1	(See Note 1)	13.5(45)						
B	Local or alternate	7427 to 3151,3161 3163	1	5828 65X8985	1 (3)						
C	Local or alternate	7427 to PS/2	1	8148 26F0317	2 (6.5)						

Notes:

1. The RSF cable, P/N 03F4945, is included in the shipping group for all installations. Modem for the RSF:
   a. IBM modem for all countries when this modem is PTT-homologated:
      - Shipped with the 3745
      - Installed by IBM

      The customer must provide access to the public switched network (analog) by means of an RJ11 type connector.
   b. In other countries:
      - Provided and installed by the customer
      - Compatible with CCITT V.22 bis
      - Operating in half-duplex mode, with BSC protocol at 1200 bps, without clocking.
2. See *Power Supply and Telecommunication Connections for IBM Modems*, GA33-0054.
3. A fixed-length cable is not available for these attachments.
4. This cable is supplied with the 3745 (P/N 26F1794).

Token-Ring Attachment and High-Speed Line Attachment Cables

Feature			According to Your Requirements, Orders:						Area	
			Fixed-Length Cable		Custom-Length Cable					
					Short Cable		Long Cable			
Token-Ring Attachment and High-Speed Line	Feat Code (See Note 6)	Maximum Number of Cables Per Feature	CG	Length m (ft)	CG or Part No.	Maximum Length m (ft)	Part No.	Maximum Length m (ft)	USA AG A/PG	E/ME/A
[a]	[b]	[a]	[d]	[e]	[f]	[g]	[h]	[i]	[j]	[k]
Token-ring attachment (USA, AG, and A/PG)	4771	2	1666	21.3(70)	1667 61X3229	21.3(70)	61X3229	44.2 (145)	Y	N
Token-ring attachment (E/ME/A)	4771	2	1666	9 (30)	1667 61X3229	21.3(70)	61X3229	44.2 (145)	N	Y
V.35 DCE (See Notes 1 and 2)	4741	1	5831	10 (33)	5830 58X9344	10 (33)	58X9344	35 (115) (See Note 5)	Y	
X.21 DCE (See Notes 1 and 2)	4741	1	5833	10 (33)	5832 58X9345	10 (33)				
V.35 direct attachment (See Note 1)	4741	1	5837 (See Note 3)	10 (33)	5836 58X9347	10 (33)	58X9347	100(328)		
X.21 direct attachment (See Note 1)	4741	1	5839 (See Note 3)	10 (33)	5838 58X9348	10 (33)				
X.21 Transfix (See Notes 2 and 4)	4741	1	5835	10 (33)	5834 58X9346	10 (33)			N	
X.21 EIA-547 DCE	4741	1	5844	10 (33)	5842 11F4837	10 (33)	11F4837	35 (115)	Y	N
X.21 EIA-547 direct attachment	4741	1	5845	10 (33)	5843 11F4838	10 (33)	11F4838	100(328)		

Notes:

1. For 3745 to 3745, 3745 to 3745/3746, 3745 to 3720, 3745 to 3725 connections:
   - For the 3745 to 3745:
     - The main 3745 (NCP generation parameter: direct clocking) has a V.35 (5837) or X.21 (5839) direct-attachment cable.
     - The tributary 3745 (NCP generation parameter: external clocking) has a V.35 (5831) or X.21 (5833) DCE cable.

- For the 3745 to 3745/3746, to 3720, or to 3725:
  - If the 3745 is defined as main (direct clocking), it has a V.35 (5837) or X.21 (5839) direct-attachment cable.
  - If the 3745 is defined as tributary (external clocking), it has a V.35 (5831) or X.21 (5833) DCE cable.

2. In E/ME/A countries, the cable group delivered when using specify code 2999 with this feature is:

   5831 (V.35 DCE) in Belgium, Denmark, Ireland, Norway, Spain, Sweden, and Switzerland
   5835 (X.21 Transfix) in France
   5833 (X.21 DCE) in other E/ME/A countries

3. Group numbers 5837 and 5839 are not available in IBM World Trade Europe/Middle East/Africa countries.
4. X.21 Transfix is available in France only.
5. This length is authorized with the special clocking option only (transmit clocking loop back to DCE). Without this option, the maximum cable length is 15 m (50 ft).
6. Each 4741 feature code provides two ports, a V.35 and a X.21. Only one port can be active at a time.

Line Interface Attachment (LIC) Cables (Part 1 of 2)

Feature				According to Your Requirements, Order:						Area	
				Fixed-Length Cable		Custom-Length Cable					
						Short Cable		Long Cable			
LIC	Feat Code	LIC Code	Maximum Number of Cables Per Feature	CG	Length m (ft)	CG or Part No.	Maximum Length m (ft)	Part No.	Maximum Length m (ft)	USA AG A/PG	E/ME/A
[a]	[b]	[c]	[a]	[d]	[e]	[f]	[g]	[h]	[i]	[j]	[k]
V.24 DCE (Japan NTT) (See Notes 1&2)	4911	1	4			1621 6398662	13.5(45)	6398782	100(328)	Y	N
V.25 DCE (Japan NTT) X.21 bis one. (See Note 2)	4911	1	4			8153 61F4505	13.5(45)	61F4507	100(328)		
V.25 auto call (Japan NTT) (See Note 2)	4911	1	4			1634 6398664	13.5(45)	6398786	35 (115)		
V.25 auto call (Caducee France)	4911	1	4			1622 6398667	13.5(45)	6398783	35 (115)	N	Y
V.25 RS-366 auto call (UK)	4911	1	4			1635 6398670	13.5(45)	6398787	35 (115)		
V.35 DCE (French PTT modem) (See Note 3)	4931	3	1	1619	13.5(45)	1619 6398671	13.5(45)	6398789	100(328)		
V.24 DCE (Belgium) (See Note 1)	4911	1	4	1620	13.5(45)	1620 6398672	13.5(45)	6398780	100(328)		
Transfix (France)	4942	4B	1	1609	13.5(45)	1609 58X9488	13.5(45)	6398661	122(400)		
V.35 direct attachment (France)	4931	3	1			1623F 65X9900	13.5(45)	65X9900	122(400)		

Notes:

1. This cable does not support X.21 bis operation.
2. LIC1 for:
   - Nippon Telegraph and Telephone (NTT) modem
   - Japanese original equipment manufacturer (OEM) modem
3. Include the adapter, part 1749352.

Line Interface Attachment (LIC) Cables (Part 2 of 2)

Feature				According to Your Requirements, Order:						Area	
				Fixed-Length Cable		Custom-Length Cable					
						Short Cable		Long Cable			
LIC	Feat Code	LIC Code	Maximum Number of Cables Per Feature	CG	Length m (ft)	CG or Part No.	Maximum Length m (ft)	Part No.	Maximum Length m (ft)	USA AG A/PG	E/ME/A
[a]	[b]	[c]	[a]	[d]	[e]	[f]	[g]	[h]	[i]	[j]	[k]
V.25 RS-366 auto call	4911	1	4	1616	13.5(45)	1610 6398668	13.5(45)	6398788	35 (115)	Y	Y
V.24 RS-232-C direct attachment (See Note 1)	4911	1	4	1607	13.5(45)	1612 7837397	13.5(45)	7837398	122(400)		
V.35 DCE (See Note 2)	4931	3	1	1613	13.5(45)	1618 58X9485	13.5(45)	6398665	100(328)		
V.35 direct attachment	4931	3	1	1605	13.5(45)	1623 58X9484	13.5(45)	6398657	122(400)		
X.21 DCE (See Note 3)	4941 4942	4A 4B	4 1	1606	13.5(45)	1624 58X9487	13.5(45)	6398658	122(400)		
X.21 direct attachment	4941 4942	4A 4B	4 1	1608	30 (100)	1625 58X9486	30 (100)	6398660	122(400)		
V.24 RS-232-C direct attachment (See Note 4)	4911	1	4	1611	13.5(45)	1627 7837395	13.5(45)	7837396	122(400)		
V.24 RS-232-C DCE (See Notes 5 & 6)	4911	1	4	1604	13.5(45)	1628 6398643	13.5(45)	6398785	100(328)		
V.24 RS-232-C DCE X.21 bis operation (See Note 7)	4911	1	4	8154	13.5(45)	8152 61F4504	13.5(45)	61F4506	100(328)		
Telecommunication cord (See Note 8)	7865 7825	5 6	2 1		15 (50)						

Notes:

1. Direct attachment for the IBM 3101 Display Terminal and the asynchronous data terminal equipment (DTE).
2. LIC3 for all lines, except for the French Post Telephone and Telegraph (PTT) modem.
3. LIC4 for all lines, except for Transfix (France).
4. Direct attachment for synchronous DTE.
5. LIC1 for all lines, except for Nippon Telegraph and Telephone (NTT) modem.
6. For LIC Types 5 and 6, the cables are delivered with the LICs. The cable lengths are always 15 meters (50 feet). The telephone cable part numbers are specific to particular countries as shown in the following table:

Countries	Telephone Cable Part No.
Austria	65X8475
Belgium	65X8476
Germany	65X8476
Denmark	65X8482
France	65X8479
Israel	65X8477
Italy	65X8480
Japan	65X8484
Hong Kong	65X8485
Netherlands	65X8474
New Zealand	65X8472
South Africa	65X8473
Sweden	65X8481
Switzerland	65X8486
UK	65X8472
USA, Canada	65X8471
Other countries	65X8483

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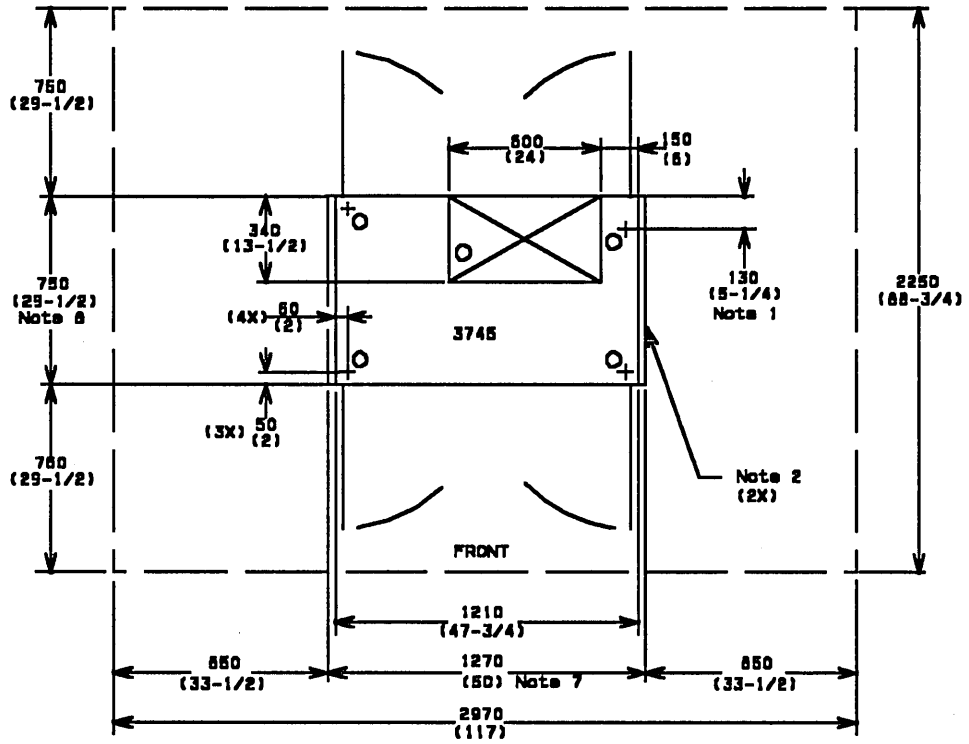
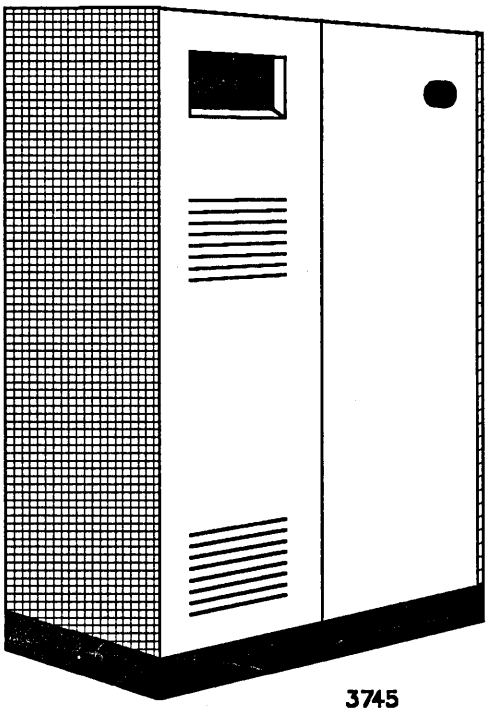
3745 Models 210 through 61A and 3746 Expansion Unit Models A11 through 900

Plan View (Not to Scale): English measurements are shown in parentheses.

Use IBM Physical Planning Template GX22-7125 for 3745 Models 210 to 610 and for all 3745 Models 21A to 61A configurations not including a 3746 Model 900.

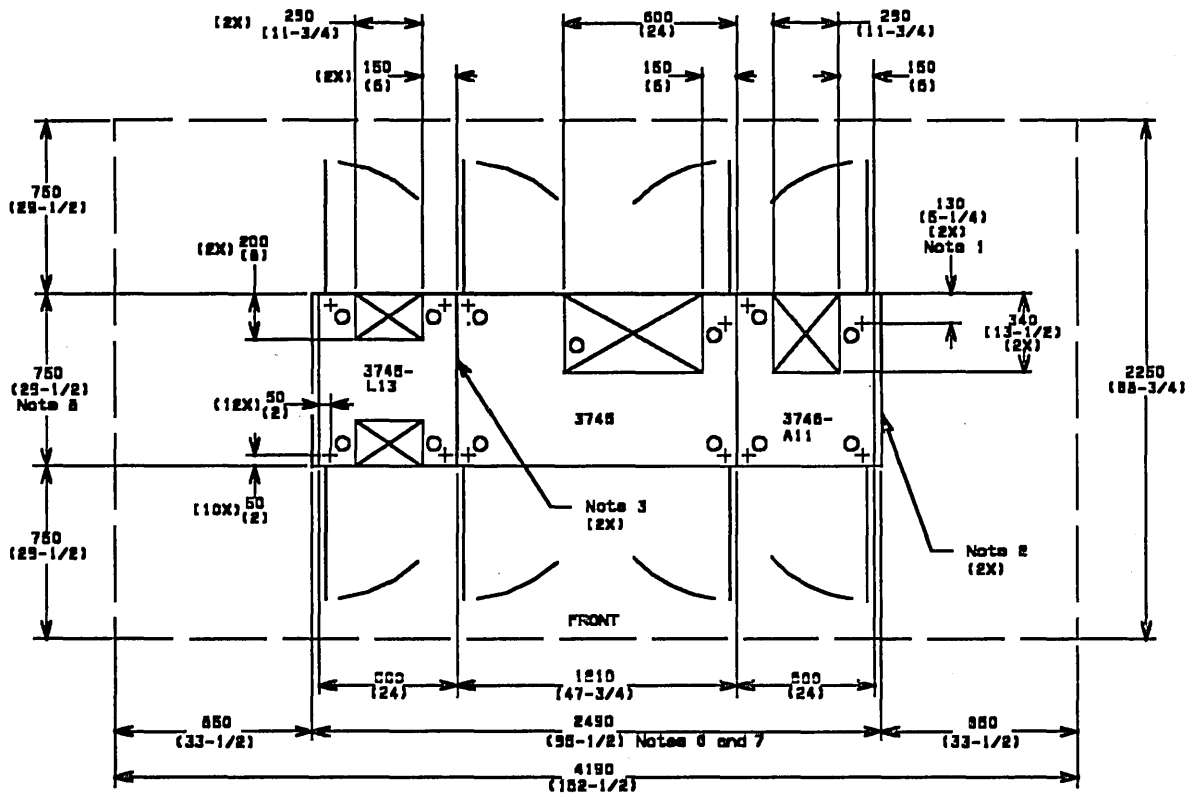
Minimum Configuration (3745 models 210, 310, 410, 610, 21A, 31A, 41A, and 61A)

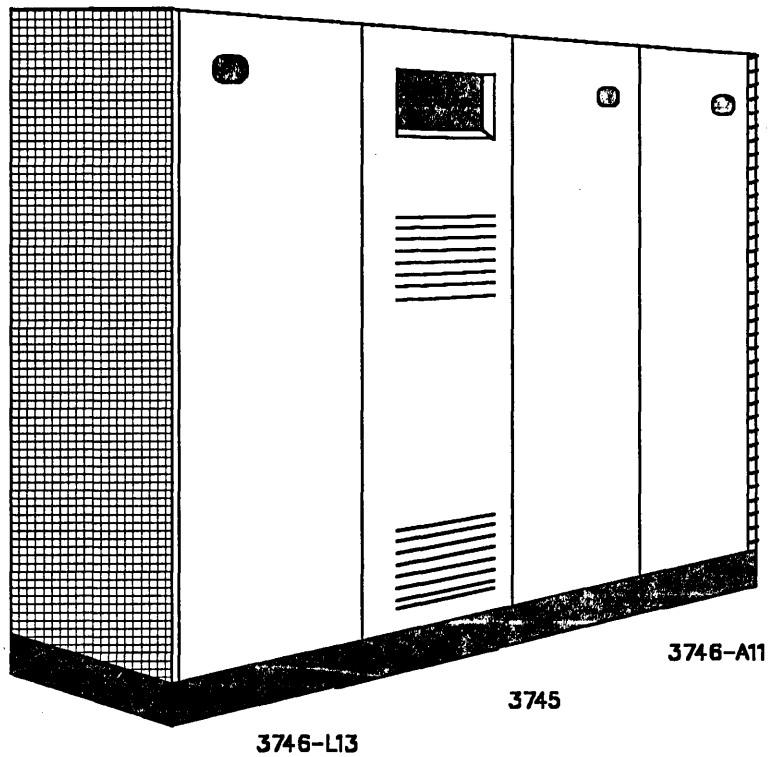




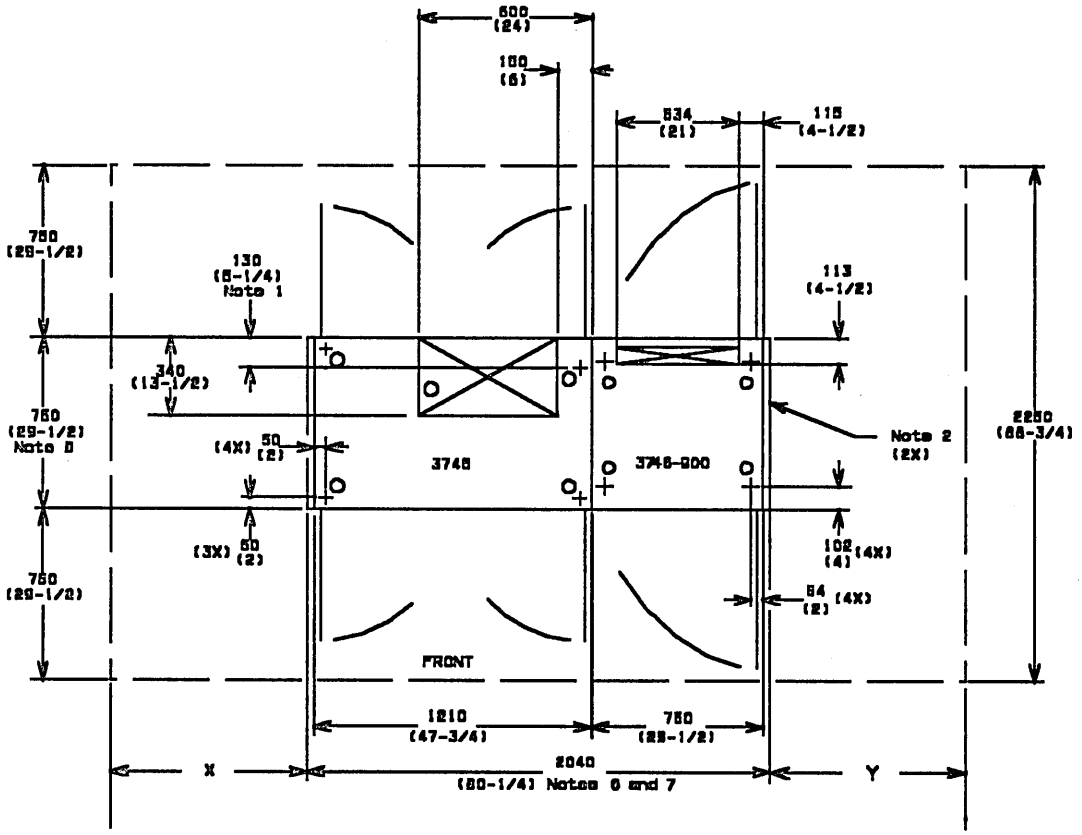
3745

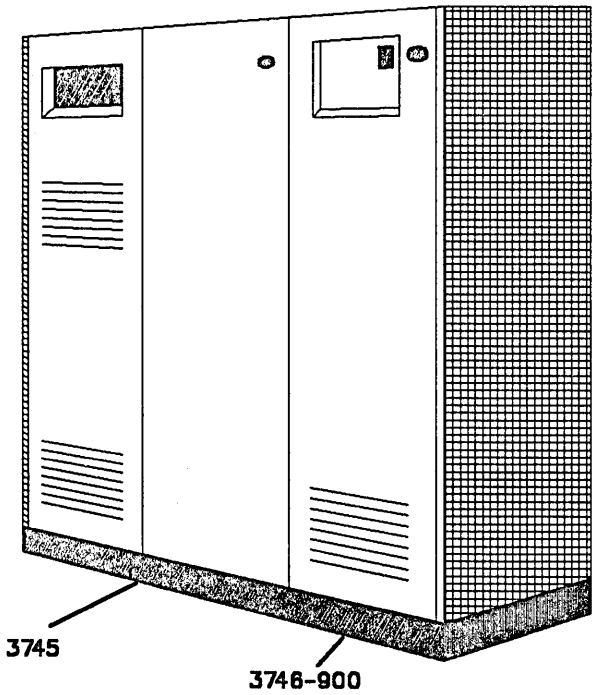
Medium Configuration (3745 models 210, 310, 410, 610, 21A, 31A, 41A, and 61A)





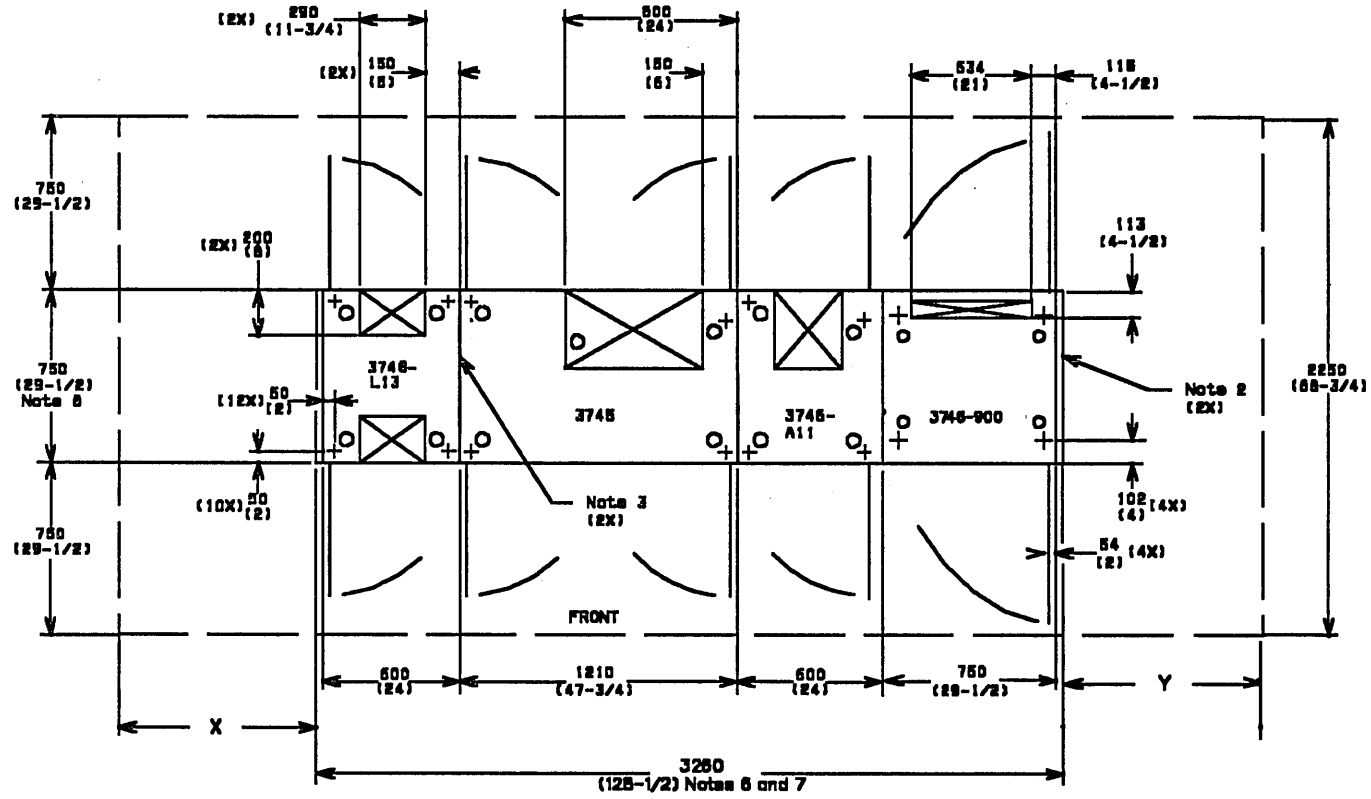
Minimum Configuration with 3746-900 (3745 models 21A, 31A, 41A, and 61A)

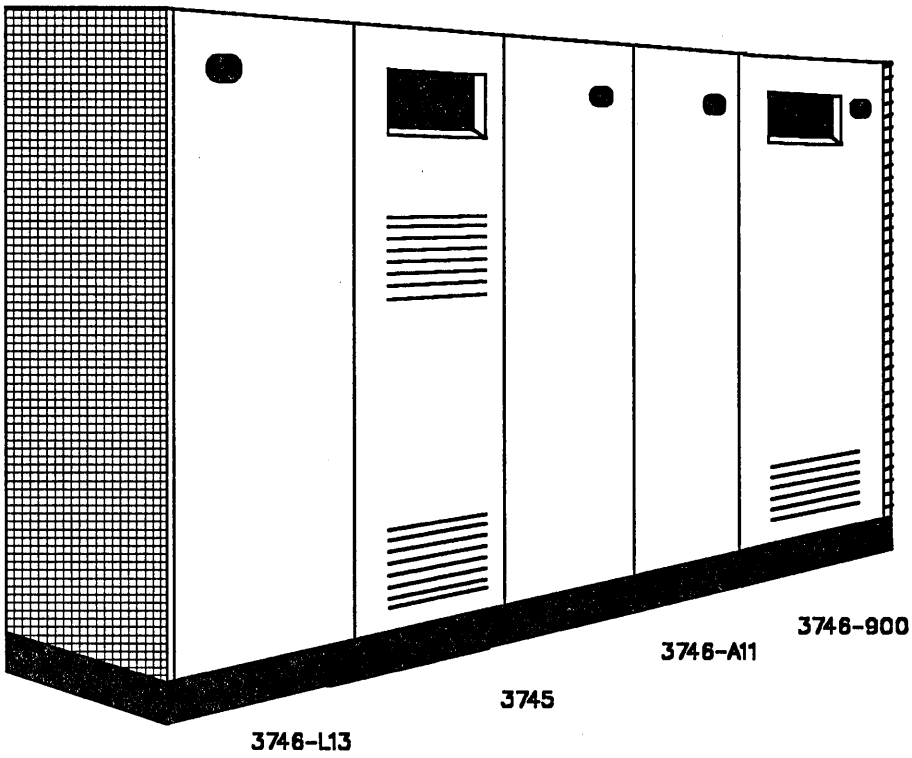




For X and Y dimensions, refer to "Service Clearances and Floor Loading (with 3746-900)" on page 3745-26.

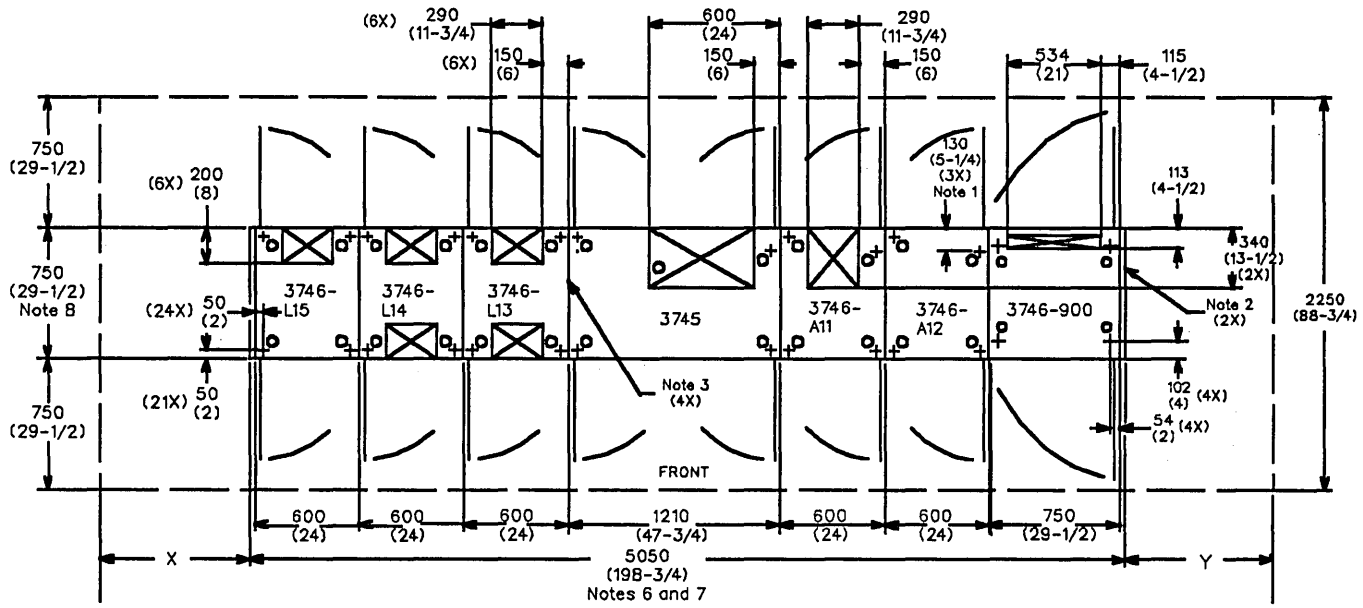
Medium Configuration with 3746-900 (3745 models 21A, 31A, 41A, and 61A)

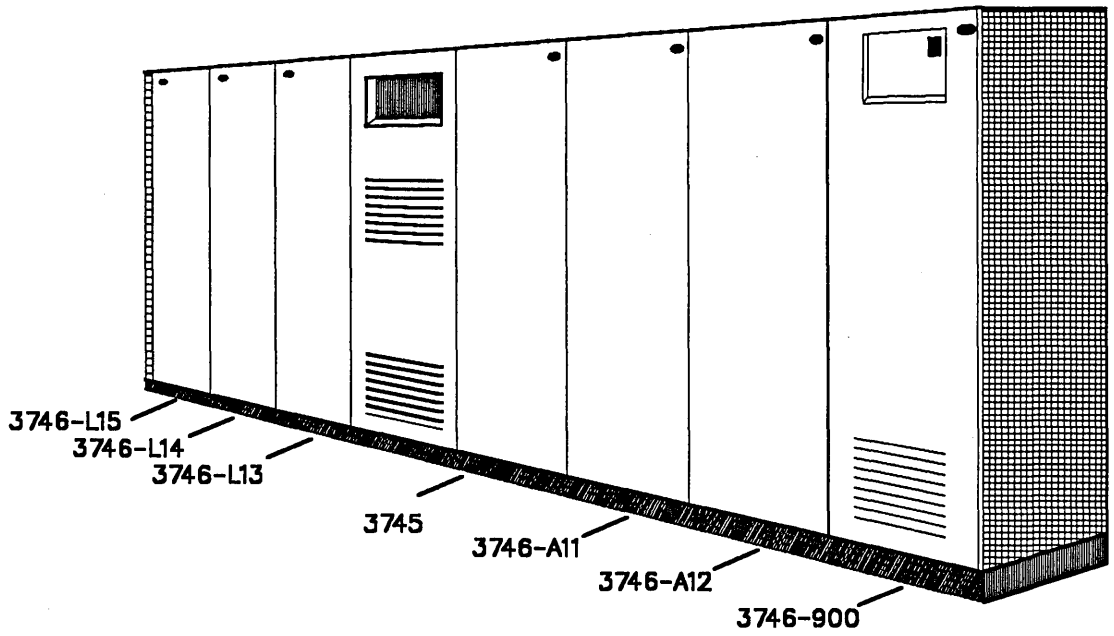




For X and Y dimensions, refer to "Service Clearances and Floor Loading (with 3746-900)" on page 3745-26.

Maximum Configuration with 3746-900 (3745 models 21A, 31A, 41A, and 61A)





For X and Y dimensions, refer to "Service Clearances and Floor Loading (with 3746-900)" on page 3745-26.

Notes:

1. This caster is more than 54mm (2-1/4 in.) from frame edge.
2. Caster and cable entry and exit area locating dimensions are measured from edge of frame, not covers. The casters must not be less than 75mm (3 in.) from a hole under a frame.
   - The base frame and the 3746-900 have four swiveling castors.
   - Each of the expansion frames has:
     - Two swiveling castors on the front side
     - Two fixed castors on the rear side

     Leveling pads are delivered with each unit.
3. Ground plates are delivered with the 3745. These plates are installed by the service representative during machine installation. Cutaways in the ground plates correspond to the existing cable entry and exit areas shown in the plan views.
4. The 3745 is shipped with end covers. When 3746 Expansion Units are installed, the 3745 end covers are relocated to the ends of the expansion units by the IBM representative.
5. A raised floor is required unless **all** the following conditions are met:
   - No expansion unit is connected to the base frame.
   - The base frame is not channel attached; that is, no channel attachments in the configuration,
   - No more than 32 attachments (low-speed lines, high-speed lines, and token rings) are connected to the base frame.

   When no raised floor is installed, the cables should be protected with ramps or trenches.
6. Dimension includes gaps between 3745 units that are 10mm (1/2 in.) each.
7. Dimension includes two side covers that are 35mm (1-1/2 in.) each.
8. Dimension includes front and rear covers that are 30mm (1-1/4 in.) each.

Service Clearances and Floor Loading (without 3746-900)

	Front	Rear	Left	Right
mm	750	750	850	850
(In.)	(29-1/2)	(29-1/2)	(33-1/2)	(33-1/2)

Based on IBM's method of calculating floor loading, a base unit and any configuration **not including a 3746-900** installed with the service clearances shown does not exceed 345 kg/m² (70 lb/ft²). The 850 mm (33-1/2 in.) side clearance is not a service requirement; it ensures that the weight distribution of the 3745 meets IBM standards.

Service Clearances and Floor Loading (with 3746-900)

	Front	Rear	Left (X)	Right (Y)
mm	750 (see note 1)	750 (see note 1)	(see note 2)	(see note 2)
(In.)	(29-1/2) (see note 1)	(29-1/2) (see note 1)	(see note 2)	(see note 2)

Notes:

1. For configurations with a 3746-900, it is recommended to add 5cm (2 in.) to the **Front** and **Rear** dimensions, to facilitate door opening (door width 750mm).
2. The 3746-900 is somewhat heavier than the other frames of a 3745 which means that the side service clearances depend on the strength of raised floor. The customer facilities management personnel should be consulted to determine the floor load rating that is installed. The table below shows the required side service clearances for different types of raised floor:

Configuration	Floor Load Rating		Total End Clearance (X + Y)		
	Kg/M²	Lb/F²	mm.	In.	See Note
Minimum with 3746-900 (1 AC Input)	345	70	1900	74.8	1
	365	74	1400	55.1	1
	390	79	950	37.4	1
Minimum with 3746-900 (2 AC Inputs or 1 AC + 1 DC Input)	345	70	2300	90.5	1
	365	74	1750	68.9	1
	390	79	1250	49.2	1
Medium with 3746-900 (1 AC Input)	345	70	2500	98.4	3
	365	74	1700	66.9	2
	390	79	1700	66.9	2
Medium with 3746-900 (2 AC Inputs or 1 AC + 1 DC Input)	345	70	2750	108.3	3
	365	74	2100	82.7	3
	376	76	1700	66.9	2
	390	79	1700	66.9	2
Maximum with 3746-900 (1 AC Input)	345	70	2700	106.3	3
	365	74	1700	66.9	2
	390	79	1700	66.9	2
Maximum with 3746-900 (2 AC Inputs or 1 AC + 1 DC Input)	345	70	3000	118.1	3
	365	74	1700	66.9	2
	390	79	1700	66.9	2

Notes:

1. Either X or Y clearance must be a minimum of 850 mm (33-1/2 In.).
2. Both X and Y clearances must be a minimum of 850 mm (33-1/2 In.).
3. Not recommended (does not conform to IBM standards).

Specifications

Dimensions in mm (in.):

Model	Front*	Side	Height
3745-210, 310, 410, 610, 21A, 31A, 41A, 61A	1 210 (47-3/4)	750 (29-1/2)	1 775 (70)
3746-900	750 (29-1/2)	750 (29-1/2)	1 775 (70)
3746-A11, A12, L13, L14, L15	600 (24)	750 (29-1/2)	1 775 (70)

Legend: * These dimensions do not include side covers.

Weight:

Frame	Weight less than:
3745-210, 310, 410, 610, 21A, 31A, 41A, 61A	680 kg (1 496 lb)
3746-900 (1 AC)	390 kg (858 lb)
3746-900 (2 AC)	446 kg (982 lb)
3746-A11	320 kg (704 lb)
3746-A12, L13, L14, L15	240 kg (528 lb)

Heat Output:

Frame	Maximum Heat Output	
	kW	(kBTU/hr)
3745-210, 310, 410, 610 21A, 31A, 41A, 61A	2.6 1.45	(8.9) (5)
3746-900	1.34	(4.65)
3746-A11	1.2	(4.1)
3746-A12	0.5	(1.7)
3746-L13	0.6	(2.1)
3746-L14	0.6	(2.1)
3746-L15	0.6	(2.1)

Airflow:: A ventilation system is installed inside each 3745/3746 frame.

Frame	Cooling System	Airflow
3745-210, 310, 410, 610, 21A, 31A, 41A, 61A	Forced Air	18 m³/min (635 cfm)
3746-900		18 m³/min (635 cfm)
3746-A11		24 m³/min (850 cfm)
3746-A12		12 m³/min (425 cfm)
3746-L13		5 m³/min (180 cfm)
3746-L14		5 m³/min (180 cfm)
3746-L15		5 m³/min (180 cfm)

Acoustical Data:: For definitions, see *Acoustics* in *IBM General Information Manual: Installation Manual-Physical Planning,* GC22-7072.

		LwAd		◄Lpa►			
		Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	I	T
3745 operating at 208 V	3745 alone	7.5	7.5	*	*	No	No
60 Hz	3745 and 3746-L13 and 3746-A11	7.8	7.8	*	*	No	No
3745 operating at 380 V	3745 alone	7.5	7.5	*	*	No	No
50 Hz	3745 and 3746-L13 and 3746-A11	7.8	7.8	*	*	No	No
3746-900 operating at 208V 60 Hz		7.5	7.5	*	*	No	No
3746-900 operating at 220V 50 Hz		7.5	7.5	*	*	No	No

* Not Available

Specifications (Continued)

Power Requirements: The base frame power system has an external power cord. It distributes power to the attached 3746 Expansion Units Models A11, A12, L13, L14, and L15. The 3746-900 has its own power supply and external power cord.

3745 and 3746 Models A11, A12, L13, L14, and L15

	Freq	Voltages (Nominal)	Phase Distribution System	Wiring (Note 1)	Power Factor	Maximum Machine Load (Amperes) (Notes 1 and 2)
USA and Canada	60 Hz	208/240	Three phases phase to phase	Four-wire	0.65 leading	31.6
E/ME/A*, AG**, and A/PG*** except Japan	60 Hz	208/220	Three phases phase to phase (delta)	Four-wire	0.65 leading	31.6
	50 Hz	200/415		Four-wire		33
	60 Hz	380/415	Three phases phase to neutral (wye)	Five-wire	0.65 leading	17.3
	50 Hz	380/415		Five-wire		
Japan	60 Hz	200/240	Three phases phase to phase	Four-wire	0.65 leading	33
	50 Hz	200/240		Four-wire		

Legend:
* IBM world Trade Europe/Middle East/Africa Corp. countries.
** IBM world Trade Americas Group countries.
*** IBM world Trade Asia/Pacific Group countries.
Notes:

1. Four-wire configurations include three phase wires and one ground.
   five-wire configurations include three phase wires, one ground, and one neutral that are mandatory in the wye system.
2. Maximum load per phase under minimum nominal voltage.
3. A phase load imbalance of 1.2 is included.

3746 Model 900: The 3746 Model 900 has a basic AC power inlet and optionally, either a second AC power inlet or DC power inlet.

AC Power (each inlet):

	Freq	Voltages (Nominal)	Phases	Wiring (Note 1)	Power Factor	Maximum Current (Amperes)
USA and Canada	60 Hz	200/240	One	Three-wire	0.75	8
E/ME/A* and AG**	50 Hz	200/220/240	One	Three-wire	0.75	8
	60 Hz	200/220/240				
APG***	50 Hz	200/220/240	One	Three-wire	0.75	8
	60 Hz	200/220/240				

Legend:
* IBM world Trade Europe/Middle East/Africa Corp. countries.
** IBM world Trade Americas Group countries.
*** IBM world Trade Asia/Pacific Group countries.
Notes:

1. Includes two phase wires and one ground wire.

DC Power:

Input Voltage Range:	-41.3V to -60.0V
Max Continuous Current:	26A
Max Inrush Current:	400A / 5ms.
Wiring:	2 wires plus one ground wire. Positive and ground lines connected to DC common and machine frame.

Specifications (Continued)

The 50- or 60-Hz power input requirements are:

Frame	Maximum kVA
3745-210, 310, 410, 610, 21A, 31A, 41A, 61A	4.0
3746-900	1.8
3746-A11	1.8
3746-A12	0.8
3746-L13	0.9
3746-L14	0.9
3746-L15	0.9

The minimum branch circuit rating should be calculated by an electrical contractor according to country regulations. For example, in the USA and in Canada, the minimum branch circuit rating is:

- For the 3745 base frame: 15 A per phase
- For a maximum configuration (without a 3746-900): 40 A per phase.
- For the 3746-900: 15 A

Environmental Specifications

Operating Environment

Temperature	10°C-38°C (60°F-110°F)
Relative Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Lightning Protection: The power input of the 3745 is protected against lightning.

Contact an electrical contractor to determine if lightning protection is needed for your power distribution system.

The Line Interface Coupler (LIC) and operator console cables are not protected against lightning and must be placed in the same building as the 3745/3746 units.

Electromagnetic Interference:: The 3745 is compatible with the following classes of interference:

- CISPR Publication 22, class A
- FCC, Part 15, Subpart J, class A (USA)
- VCCI-1, class 1 (Japan)

Ground Leakage Current:

The ground leakage current does not exceed 500 mA rms in any configuration.

The ground leakage current for the 3746-900 does not exceed 3.5 mA rms.

Power Cord Characteristics

3745 and 3746 Models A11, A12, L13, L14, and L15

Voltages	Cable Outside Diameter mm (In.)	Number of Conductors	AWG Number AWG (mm^2)
200-240 delta configuration	25.9 (1.2)	3 and ground	8 (8.4)
380-440 wye configuration	21.7 (0.85)	4 and ground	10 (5.3)

The power wiring configuration can be changed on-site from wye to delta and from delta to wye. Contact your IBM representative.

3746 Model 900

Voltages	Cable Outside Diameter mm (In.)	Number of Conductors	AWG Number AWG (mm^2)
200-240 single phase (AC)	US/JAPAN 9.5 (0.4) Other 8.5 (0.37)	2 and ground	14 (2)
-41.3 - -60.0 (DC)	All Countries 22.5 (0.88)	2 and ground	8 (8)

Power Cord length: A 4.3-m (14-ft) power cord is shipped with each 3745 and 3746-900. In Chicago, Illinois, USA, specify code 9986 for a 1.8-m (6-ft) cord. Two such power cords are shipped with the 3746-900 when an optional power inlet (AC or DC) is present.

Power Cord Plug and Receptacle: The AC power cord is supplied with a country-dependent plug. The DC power cord for the 3746-900 is supplied with a terminal to fit M6 or 0.250 - 20 UNC.

The customer must provide a receptacle, as shown in the following table. The branch circuit rating should match the receptacle rating.

Although the maximum current does not exceed 33 A, to support quick On/Off switching of the 3745, the receptacle at the customer location should be able to handle inrush current up to:

- 230 amperes in the 208 volt to 240 volt range
- 150 amperes in the 380 volt to 415 volt range

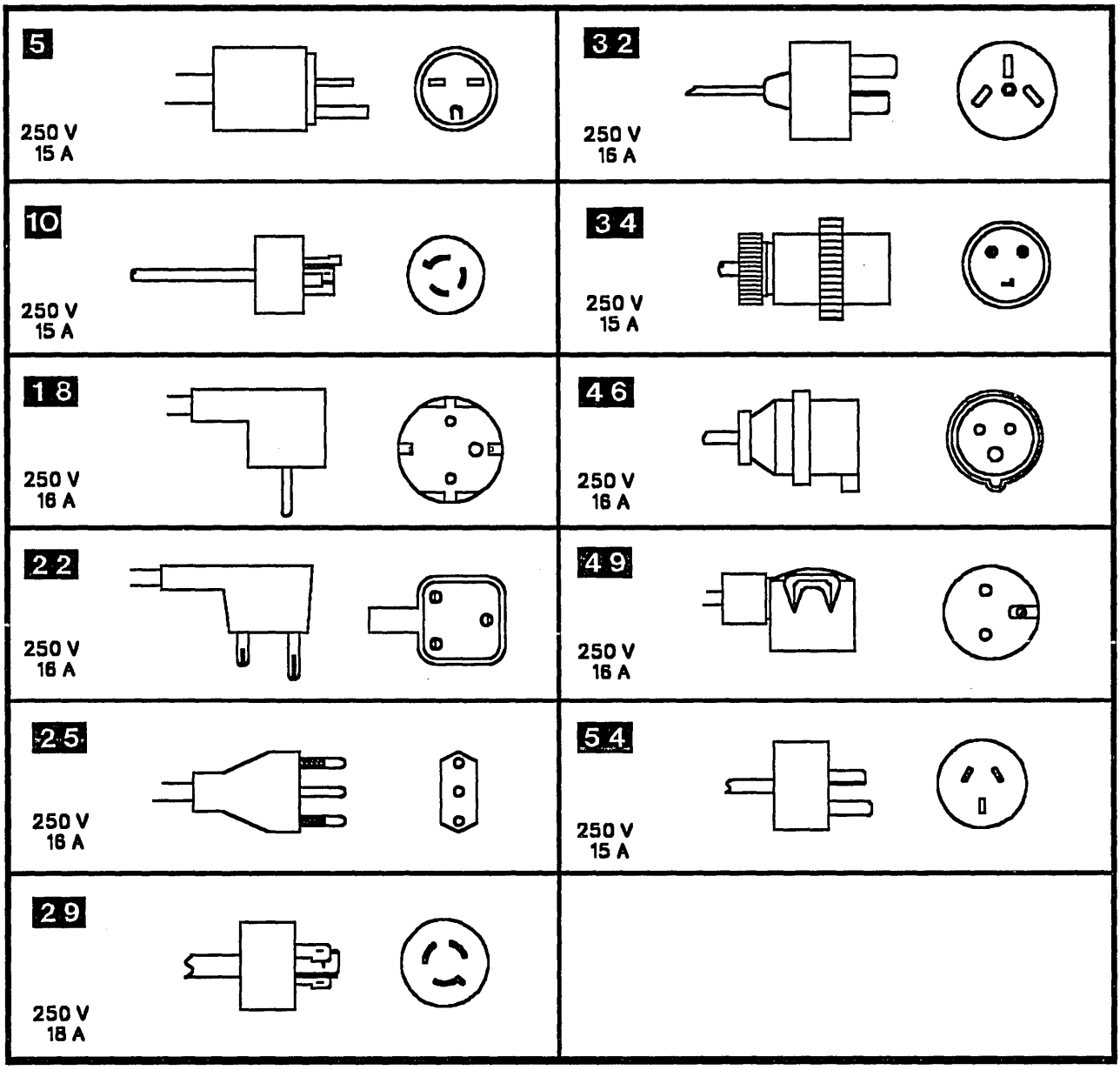
USA, Canada, Mexico	Plug Type	Plug	Ordering Code	Receptacle
3745	Moisture Resistant	Russelstoll 7328-78	none	Russelstoll 7428 (inline) or 7324 (box type)
3746-900 AC input	Moisture Resistant	Russelstoll 3720-DPU2	none	Russelstoll 3913U-2 (inline) or 3743U-2 (box type)

Japan	Plug Type	Plug	Ordering Code	Receptacle
3745	Moisture Resistant	Hirose Electric CL105-0091	none	Hirose Electric CL105-0092
3746-900 AC input	Locking Non-locking	NEMA L6-15P NEMA 6-15P	9892 9893	NEMA L6-15R NEMA 6-15R

Other Countries	Plug Type
3745	no plug shipped
3746-900 AC input	country standard plug. (refer to Country Power Plugs table)

Note: The approved plug for the specific location and installation should be installed by an electrical contractor. The green/yellow grounding wire of the power cable *must* be attached to the ground leg of the power plug.

3746-900 Power Plug Identification



Notes:

1. The figure shows the side and connector end for each plug.
2. The form of the plug moldings depends on the manufacturer.

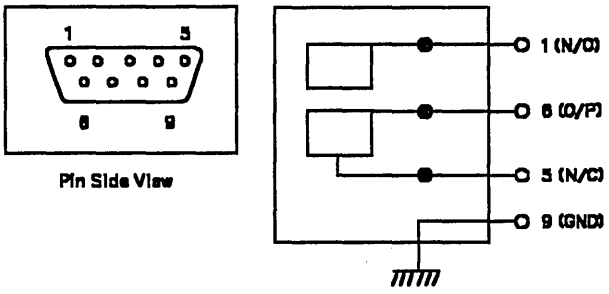
Country Power Plugs for 3746 Model 900:

Country	Frequency	Plug Number
Afghanistan	50	18
Algeria	50	18
Andorra	50	18
Angola	50	18
Argentina	50	54
Australia	50	54
Austria	50	18
Bahamas	60	5
Bahrain	50	46
Bangladesh	50	22
Barbados	50	54
Belgium	50	18
Benin	50	18
Bermuda	60	5
Bolivia	50	54
Brazil	60	5
Brunei	50	46
Bulgaria	50	18
Burma	50	22
Cameroon	50	18
Canada	60	34
Centre Afrique Republic	50	18
Chad	50	18
Channel Islands	50	46
Chile	50	25
Colombia	60	5
Congo Brazzaville	50	18
Costa Rica	60	5
Cyprus	50	46
Czechoslovakia	50	18
Denmark	50	19
Dominican Republic	60	5
Egypt	50	18
El Salvador	60	5
Ecuador	60	5
Ethiopia	50	25
Finland	50	18
France	50	18
Germany	50	18
Ghana	50	46
Greece	50	18
Guatemala	60	5
Guinea	50	18
Haiti	60	5
Honduras	60	5
Hong Kong	50	46
Hungary	50	18
Iceland	50	18
India	50	46
Indonesia	50	18
Iran	50	18
Iraq	50	46
Ireland	50	46
Israel	50	32
Italy	50	25
Ivory Coast	50	18
Jamaica	50	5
Japan	50 / 60	5/10
Jordan	50	46
Kenya	50	46
Korea	60	18
Kuwait	50	46
Lebanon	50	18
Libya	50	25
Lichtenstein	50	18

Country	Frequency	Plug Number
Luxembourg	50	18
Malagasy	50	18
Malawi	50	46
Malaysia	50	46
Mali	50	18
Malta	50	46
Martinique	50	18
Mauritania	50	18
Mauritius	50	18
Mexico	60	34
Monaco	50	18
Morocco	50	18
Mozambique	50	18
Nepal	50	46
Netherlands	50	18
Netherlands Antilles	60	5
New Caledonia	50	18
New Zealand	50	49
Nicaragua	60	5
Niger	50	18
Nigeria	50	46
Norway	50	18
Oman	50	46
Pakistan	50	22
Panama	60	5
Papua New Guinea	50	54
Paraguay	50	2
Peru	60	5
Philippines	60	5
Poland	50	18
Portugal	50	18
Qatar	50	46
Romania	50	18
Saudi Arabia	50	18
Senegal	50	18
Sierra Leone	50	46
Singapore	50	46
Somalia	50	46
South Africa	50	22
Spain	50	18
Sri Lanka	50	22
Sudan	50	18
Sweden	50	18
Switzerland	50	46
Syria	50	18
Taiwan	60	5
Tanzania	50	46
Thailand	50	5
Togo	50	18
Trinidad Tobago	60	5
Tunisia	50	18
Turkey	50	18
Uganda	50	46
United Arab Emirates	50	46
United Kingdom	50	46
Upper Volta	50	18
Uruguay	50	2
USA	60	34
USSR	50	18
Venezuela	60	5
Western Samoa	50	5
Yemen	50	46
Yugoslavia	50	18
Zaire	50	18
Zambia	50	46
Zimbabwe	50	18

Customer Power Control Relay: The customer power control relay includes:

- A normal-closed contact and a normal-open contact when the power is off, and the reverse when the power is on.
- An outlet available to the customer
- Voltage and current rating: 30 V ac or 42.4 V dc at 20-500 mA.
- The plug is not provided by IBM. It is a standard nine-pin female D shell connector including:
  - One receptacle (AMP reference 205203-1 or equivalent)
  - Four sockets (AMP reference 66504-9 or equivalent)
  - One housing (AMP reference 205729-1 or equivalent)
  - Two studs (AMP reference 350547-3 or equivalent)
- The cable is not provided by IBM. Its characteristics are:
  - Bulk cable, with a maximum outside diameter of 6 mm (0.23 in.)
  - Four conductors
  - AWG no. 22 (0.3 mm^2)



Console Tables: The customer must supply tables for all consoles. The recommended console table height is 735 mm (20 in.).

Power Requirements for Consoles:
Power receptacles must be provided for all consoles. See *IBM General Information Manual: Installation Manual-Physical Planning.* GC22-7072, it provides information on different country-dependent plug and receptacle types.

Explanation of Cable Characteristics:
The expression (col[a]) in the following title means: refer to column [a] in the tables.

Cables to be Ordered and Installed (col [a]): Cables that may have to be ordered and installed are:

- Channel Attachment Cables and Emergency Power Off Cables (see pages 3745-35 and 3745-37.)
- Operator Console and RSF Attachment Cables (see page 3745-43). For detailed information about operator consoles and RSF, (see page 3745-41).
- Token-Ring and High Speed Line Attachment Cables (see page 3745-46).
- Line Interface Attachment Cables (see pages 3745-49 and 3745-50).

Feature Number (col[b]): The code of each feature is given if applicable.

LIC Type or Notes (col[c]): The type of LIC corresponding to the line is given if applicable.

The 3745 offers two types of integrated modems packaged in an LIC enclosure.

- The LIC type 5 includes two leased-line modems.
- The LIC type 6 includes one modem operating as a data service unit and a channel service unit on the digital data service network, or as a limited distance modem.

See *Power Supply and Telecommunication Connections for IBM Modems,* GA33-0054.

Cable Lengths (col [d, e] [f, g] [h, i]): Three types of cable lengths are available:

Fixed-Length Cables (col [d, e]) Cable lengths are given in column [e]. These cables may be delivered with the 3745, depending on the feature type and the country: Order standard length cables by their cable group number (col [d]).

The part numbers of standard length cables are not included in these tables. They are the same as those given in col [f] for short cables.

Customer-Length Short Cables (col[f, g]): Order these cables by their cable group number (in USA, IBM World Trade Americas Group countries, and IBM World Trade Asia/Pacific Group countries) or by their part number (in IBM World Trade Europe/Middle East/Africa Corporation countries), (CG or Part No. in col [f]), and specify the required length up to the maximum length given in col [g]).

Custom-Length Long Cables (col [h, i]): Order these cables by their part number (Part No. in col [h]) and indicate the required length up to the maximum length given in col [i].

How to Measure Cable Lengths: To compute a cable length, add the lengths of the cable:

1. From the connector of the 3745/3746 frame to its bottom
2. From the bottom of the frame to the bottom of the attached device, including:
   - Cable routing and bends
   - Twice the distance between the bottom and the raised floor, if any
3. From the bottom of the attached device to its connector.

See *Selecting and Ordering IBM Machine External Cables,* GA23-0278.

Country Areas (col [j, k]): Features may or may not be available in a particular country. See the following two country groups:

- USA, Canada, IBM World Trade Americs Group, and IBM World Trade Asia/Pacific Group /col[j])
- IBM World Trade Europe/Middle East/Africa Corporation (col [k]).

  In columns [j, k]:

  — Y means that the feature is available.

  — No means that the feature is not available.

3745 Frame (col [l]): This column gives the name of the frame or frames to which the cables must be connected. The following abbreviations are used:

BF is 3745 (base frame)

11 is 3746-A11

13 is 3746-L13

14 is 3746-L14

15 is 3746-L15

Feature Rank in Margin: To facilitate reference to feature cables in each table, codes (numbers or letters) have been added in the left margin of these tables.

Cabling Identification: Use *IBM 3745 Communication Controller: Preparing for Connection,* GA33-0127, to prepare the cabling plan. This manual provides:

- How to use the plugging sheets.
- A set of plugging sheets.

Channel Attachment Cables and Emergency Power-Off Cables (3745 and 3746 Model A11)

Feature				According to Your Requirements, Order:				Area		
Channel adapter, CATPS, and Emergency Power Off (EPO) (See Note 1)	Feature Code	Conn ID	No. of Cables	Fixed-Length Cable (See Note 2) CG	Length m (ft)	Custom-Length Cable (See Note 3 and Note 4) CG or Part No.	Maximum Length m (ft)	USA AG A/PG	E/ME/A	Frame
<a>	<b>	<b>		<d>	<e>	<h>	<i>	<j>	<k>	<l>
First CATPS or 1st and 2nd Channel Adapters	1562 or 1561 or 1571	1	2	0185	12 (40)	0185 5460185	122(400)	Y	Y	BF
	1581 or 1561 or 1571	3	2	0185	12 (40)	0185 5460185	122(400)			
Second CATPS or 3rd and 4th Channel Adapters	1562 or 1561 or 1571	5	2	0185	12 (40)	0185 5460185	122(400)			
	1581 or 1561 or 1571	7	2	0185	12 (40)	0185 5460185	122(400)			
Third CATPS or 5th and 6th Channel Adapters	1562 or 1561 or 1571	9	2	0185	12 (40)	0185 5460185	122(400)			
	1581 or 1561 or 1571	11	2	0185	12 (40)	0185 5460185	122(400)			
Fourth CATPS or 7th and 8th Channel Adapters	1562 or 1561 or 1571	13	2	0185	12 (40)	0185 5460185	122(400)			
	1581 or 1561 or 1571	15	2	0185	12 (40)	0185 5460185	122(400)			
Fifth CATPS or 9th and 10th Channel Adapters	1562 or 1561 or 1571	17	2	0185	12 (40)	0185 5460185	122(400)			A11
	1581 or 1561 or 1571	19	2	0185	12 (40)	0185 5460185	122(400)			
Sixth CATPS or 10th and 11th Channel Adapters	1562 or 1561 or 1571	21	2	0185	12 (40)	0185 5460185	122(400)			
	1581 or 1561 or 1571	23	2	0185	12 (40)	0185 5460185	122(400)			
Seventh CATPS or 12th and 13th Channel Adapters	1562 or 1561 or 1571	25	2	0185	12 (40)	0185 5460185	122(400)			
	1581 or 1561 or 1571	27	2	0185	12 (40)	0185 5460185	122(400)			
Eighth CATPS or 14th and 15th Channel Adapters	1562 or 1561 or 1571	29	2	0185	12 (40)	0185 5460185	122(400)			
	1581 or 1561 or 1571	31	2	0185	12 (40)	0185 5460185	122(400)			
1st EPO	1561, 1562, 1571, 1581	41	1	1178	18 (60)	1178 5351178	122(400)			BF
2nd EPO	1561, 1562, 1571, 1581	43	1	1178	18 (60)	1178 5351178	122(400)			
3rd EPO	1561, 1562, 1571, 1581	45	1	1178	18 (60)	1178 5351178	122(400)			
4th EPO	1561, 1562, 1571, 1581	47	1	1178	18 (60)	1178 5351178	122(400)			
5th EPO	1561, 1562, 1571, 1581	49	1	1178	18 (60)	1178 5351178	122(400)			
6th EPO	1561, 1562, 1571, 1581	51	1	1178	18 (60)	1178 5351178	122(400)			
7th EPO	1561, 1562, 1571, 1581	53	1	1178	18 (60)	1178 5351178	122(400)			
8th EPO	1561, 1562, 1571, 1581	55	1	1178	18 (60)	1178 5351178	122(400)			

CATPS is channel adapter with two processor switch.

Notes:

1. The *emergency power-off (EPO)* cable is also called *the power control* cable.
2. The fixed-length cable is available in IBM World Trade Europe/Middle East/Africa Corporation countries only. All other countries, including the USA, must specify length required.
3. For data streaming, the maximum cumulative cable length is 122 m (400 ft) unless modified by system or channel limitation. Maximum cable length must be reduced by 4.5 m (15 ft) for each control unit between the 3745 and the channel.

   For non data streaming, the maximum length is 61 m (200 ft) unless modified by general control-to-channel cabling schematic.
4. In the USA, Canada, IBM World Trade Americas Group, and IBM World Trade Asia/Pacific Group countries, order cables by group number up to the maximum length specified.

ESCON Jumper Cables and Emergency Power-Off Cables (3746 Model 900): For general information about ESCON planning, refer to *Planning for Enterprise Systems Connection Links*, (GA23-0367).

The ESCON channel adapters of the 3745 use multimode fibers (LED), located in the 3746 Expansion Unit Model 900.

Multimode fiber-optic jumper cables with duplex connectors at both ends are required to directly connect the 3745 to ESCON channels, IBM 9032 ESCON Directors Model 2, or IBM 9033 ESCON Directors Model 1.
A fixed-length duplex-to-duplex 62.5/125-micron multimode fiber-optic jumper cable is either automatically shipped (EMEA countries) or must be ordered for each ESCON channel coupler of the 3745, as indicated in the table below.

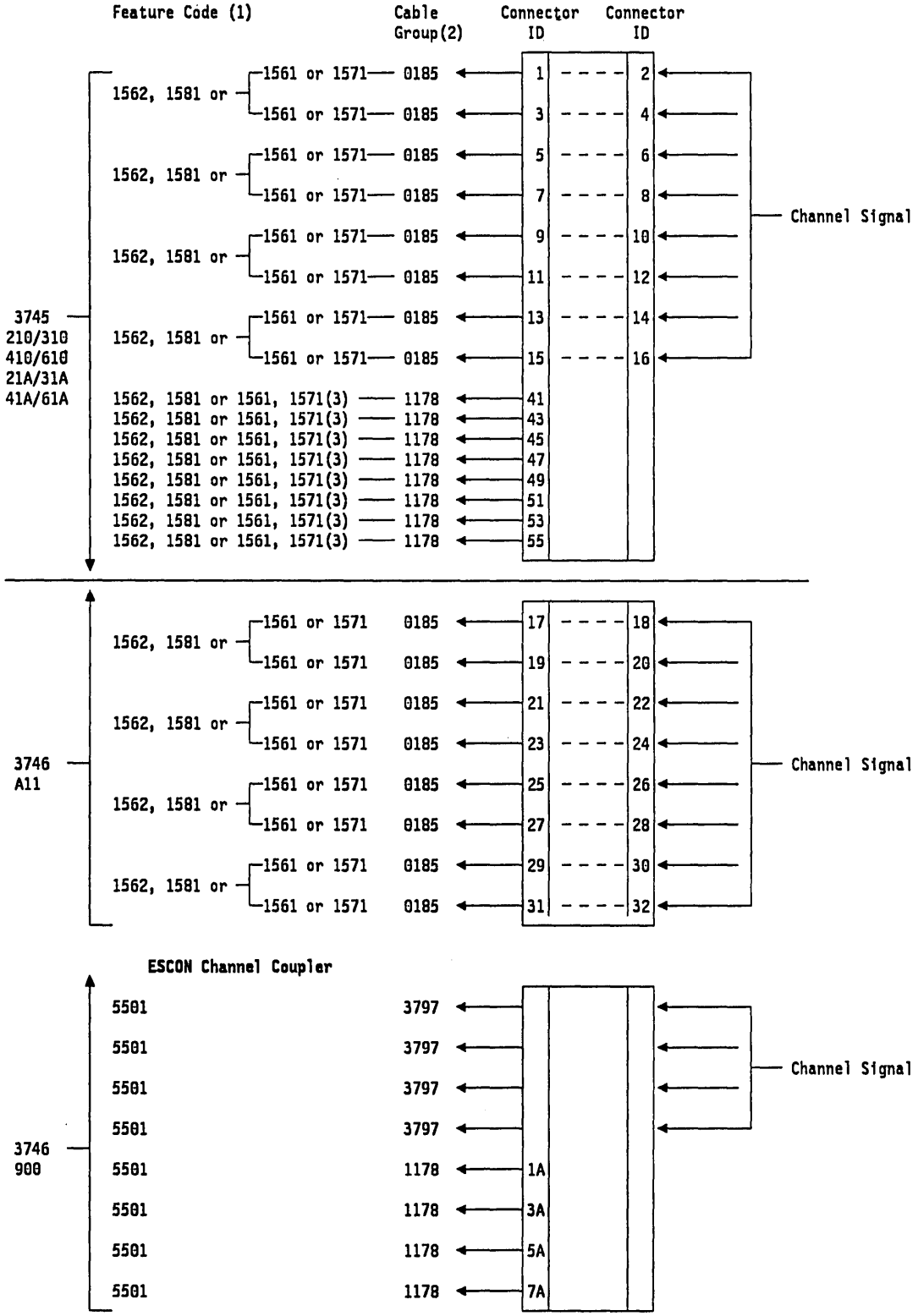
Note: IBM recommends using IBM duplex-to-duplex jumper cables between the ESCON-capable device (3745) and distribution panels.
In some cases, attaching a jumper cable to a distribution panel could require jumper cables with other connector types for the distribution panel end, (for example, Duplex-to-ST jumper cables or Duplex-to-FC/PC jumper cables), depending upon the type of connectors used by the ESCON trunk cable and the type of couplers/adapters available on the distribution panel.

Feature			According to Your Requirements, Order:			
ESCON Coupler & Emergency Power Off (EPO) (See Note 1)	Feature Code	Cables	Fixed-Length Cable		Custom-Length Cable	
			CG or No.	m (ft)	CG or No.	Maximum Length m (ft)
<a>	<b>		<d>	<e>	<f>	<g>
ESCON (except EMEA)	5501	1	3797 (See note 2)	4 (12) 7 (20) 13 (40) 22 (70) 31 (100) 46 (150) 61 (200) 77 (250) 92 (300) 107 (350) 122 (400)	14F3797 (See note 6)	500 (1640)
EPO (except EMEA)	5501	1			1178 5351178 (see note 5)	122 (400)
ESCON (EMEA)	5501	1	74F5416 (See note 3) 74F5412 74F5413 74F5414 74F5415 74F9718 74F5417 74F9419 74F9420 74F9421 74F5418	31 (100) 4 (12) 7 (20) 13 (40) 22 (70) 46 (150) 61 (200) 77 (250) 92 (300) 107 (350) 122 (400)	74F5436 (See note 6)	500 (1640)
EPO (EMEA)	5501	1	1178 (See note 4)	18 (60)	5351178	122 (400)

Notes:

1. The *emergency power-off (EPO)* cable is also called the *power control* cable.
2. To order, specify cable group 3797 and one of these lengths, as determined by the IBM Installation Planning Representative.
3. The 31m (100 ft.) jumper cable is automatically shipped. If it is determined by the IBM Installation Planning Representative that another length is required, order one of the other fixed-length cables by part number and length.
4. Automatically shipped with feature 5501.
5. To order, specify cable group 1178, and a length not exceeding the maximum stated.
6. Custom-length duplex-to-duplex jumper cables up to 500m (1640ft), jumper cables with a duplex connector at one end (3745) and another type of connector at the other end (distribution panel), and fiber optic adapters and couplers used in distribution panels can be purchased as described in the "ESCON Cabling Information" section of this publication (GC22-7064).

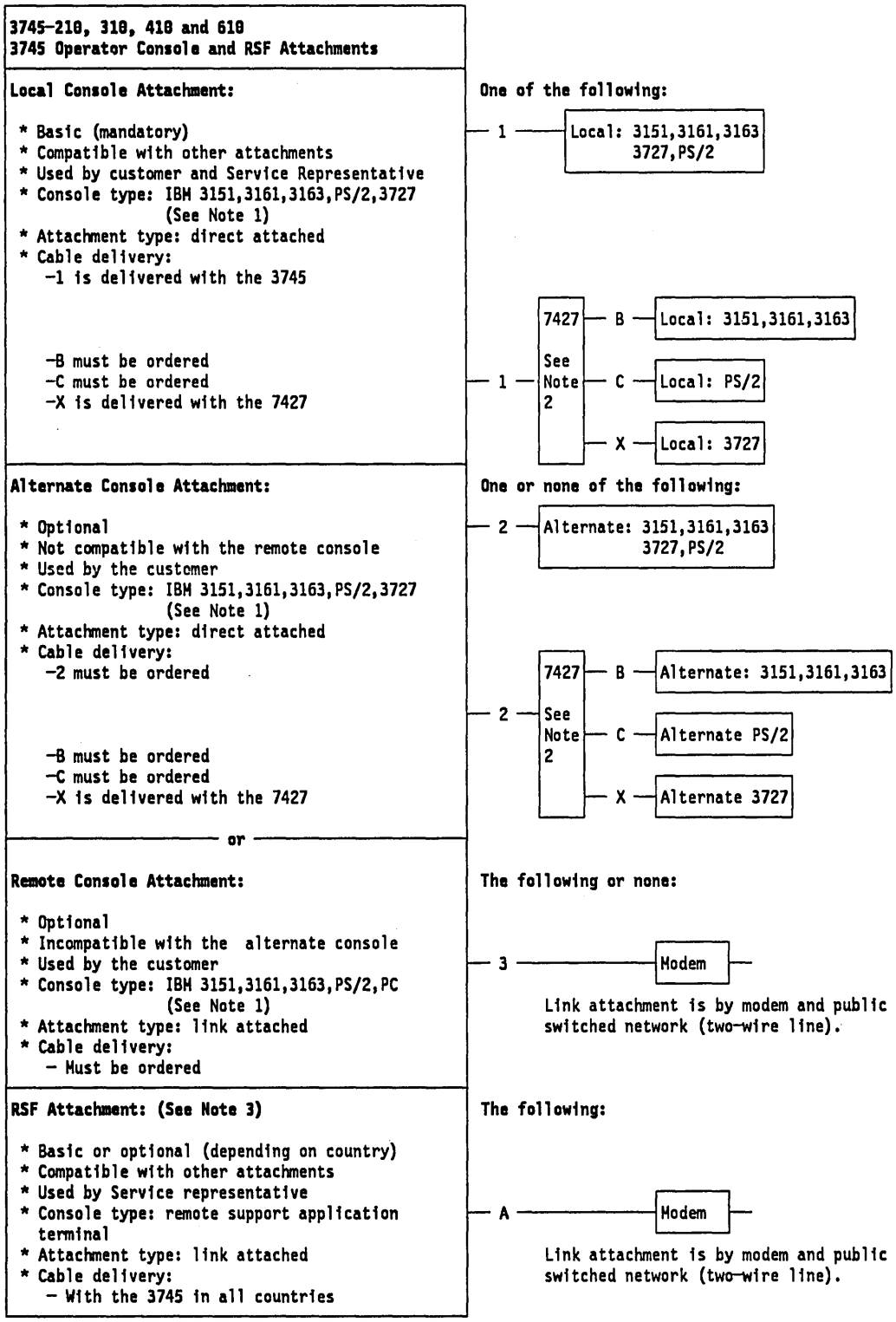
Channel Cabling Schematic 3745 Models 210, 310, 410, 610, 21A, 31A, 41A, 61A, and 3746 Models A11 and 900



Notes:

1. Each channel adapter with two-processor switch (CA feature code 1562 or BCCA feature code 1581) takes the place of two channel adapters (feature code 1561) or of two buffer chaining channel adapters (feature code 1571)
2. Cable group for signal cables is 0185 or 3797. Cable group is 1178 for power control cables.
3. Each of the 12 possible power control cables (1178) can be associated to any of the 20 possible channel attachments. Therefore, a host with a channel attachment to the 3746 Model A11 or 900 can power control the 3745 and 3746 expansion units via one power control cable.
4. For a 3745 with 3746-900, one of the 8 possible power control cable connection IDs of the 3745 must be reserved for internal power control.

Console Attachment (3745 Models 210, 310, 410, 610): Feature attachment methods and cable characteristics are shown. Cable lengths are given with no intervening walls, doors, or obstructions.



Notes:

1. 3151, 3161, and 3163 consoles are not available in Brazil
2. A local console, as well as an alternate console, can be common to several IBM communication controllers to which they are connected by an IBM 7427 Switching Unit.
3. In the USA and certain selected countries, a modem (see note 1 on next page) is provided for connection to the IBM Remote Support Facility (RSF). The customer must provide access to the public switched telephone network via an ANALOG telephone line (preferably dedicated).

Operator Console and RSF Attachment Cables (3745 Models 210, 310, 410, 610): The numbers on the left of the following table are references to the cable codes shown under "Console Attachment" on page 3745-41.

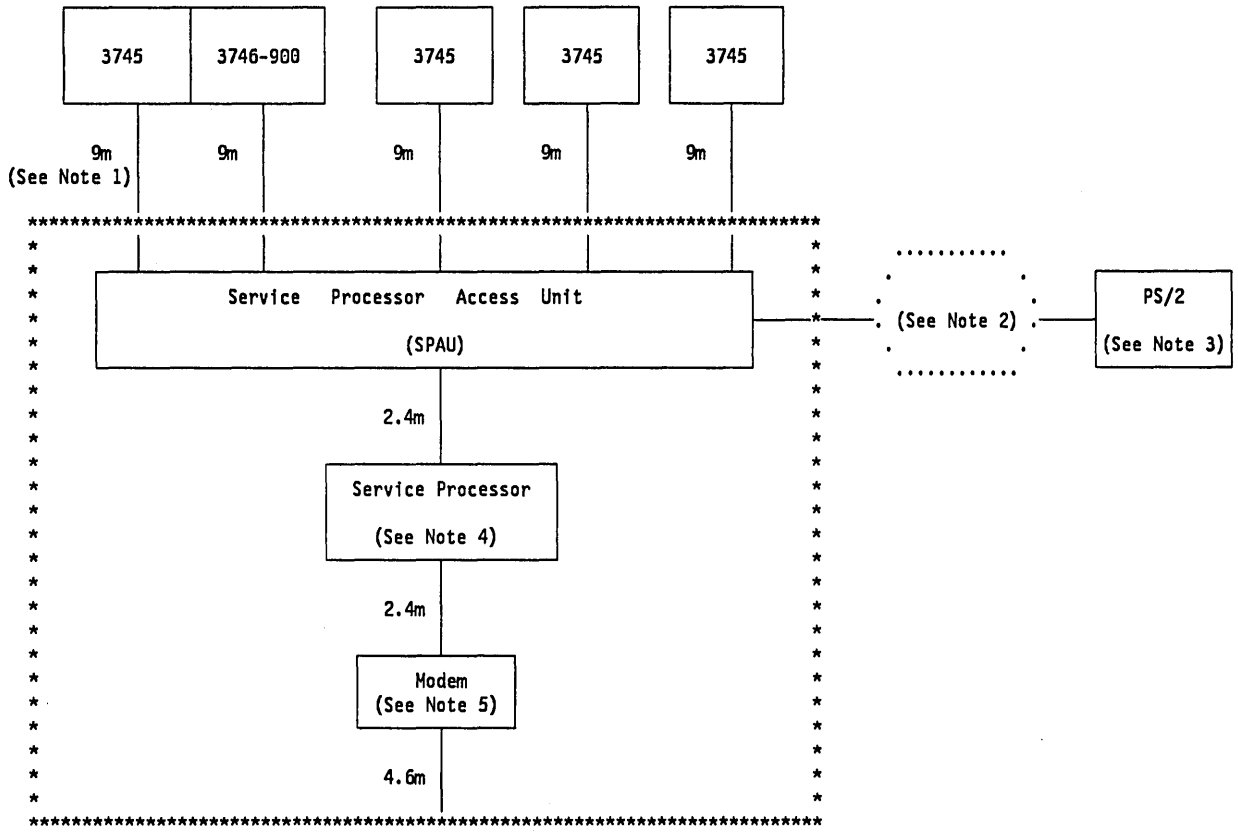
	Feature			According to Your Requirements, Order:						Area	
						Custom-Length Cable					
				Fixed-Length Cable		Short Cable		Long Cable			
	Console and RSF Attachments		Number of Cables	CG or Part No.	Length m (ft)	CG or Part No.	Maximum Length m (ft)	Part No.	Maximum Length m (ft)	USA AG A/PG	E/ME/A
	<a>		<a>	<d>	<e>	<f>	<g>	<h>	<i>	<j>	<k>
1	Local Console	3151,3161 3163 3727 PS/2 3745 to 7427	1	(See note 4)	7 (23)					Y	Y
2	Alternate Console	3151,3161 3163 3727,PS/2 3745 to 7427	1	(See Note 3)		5826 34F1262	35 (115)	34F1262	122 (400)		
3	Remote Console 3151,3161,3163 or PS/2,PC (See Note 2)		1	(See Note 3)		6153 03F4404	13.5 (45)	03F4405	122 (400)		
A	RSF (See Note 1) (See Note 2)		1	(See Note 1)	13.5 (45)						
B	Local or Alternate	7427 to 3151,3161 3163	1	5828 65X8985	1 (3)						
C	Local or Alternate	7427 to PS/2	1	8148 26F0317	2 (6.5)						

Notes:

1. The RSF cable is delivered with the 3745, Part No. 76F8604 (US only) or Part No. 65X8920 (World Trade only).
   Modem for the RSF:
   a. IBM modem for all countries when this modem is PTT-homologated:
      - Shipped with the 3745
      - Installed by IBM.

      The customer must provide access to the public switched network (analog) by means of an RJ11 type connector.
   b. In other countries:
      - Provided and installed by the customer
      - Compatible with CCITT V.22 bis
      - Operating in half-duplex mode, with BSC protocol at 1200 bps.
2. See *Power Supply and Telecommunication Connections for IBM Modems*, GA33-0054.
3. A fixed-length cable is not available for these attachments.
4. This cable is delivered with the 3745, Part No. 76F8607 (US only) or Part No. 26F1792 (World Trade only).

Service Processor Attachment Cables (3745 Models 21A, 31A, 41A, 61A, and 3746-900):



Notes:

The following part numbers are supplied for replacement purposes (notes 1 to 4):

1. Token-Ring cable shipped automatically with each 3745 and 3746-900. Part No. 76F9440 (US), Part No. 76F9441 (other countries).
2. Connection(s) to user Token-Ring (16Mbps) and/or an IBM PS/2 used as an alternate/remote console.
3. LAN Attached Console (via a Token-Ring).
4. All cables within area denoted by '*' shipped automatically with the Service Processor.
   - Part No. 6339098 - SPAU to Service Processor cable
   - Part No. 1502067 - Service Processor to Modem cable
   - Modem telephone cable, see following table.

Country	Cable P/N	Description
US/Canada/Japan/Chile/ Argentina,Philippines	53F6095	Switched network telecommunication cable with country designated plug
Austria	74F4485	
Denmark	74F4488	
Norway	74F4490	
France	74F4493	
Italy	74F4498	
Netherlands	74F4500	
Sweden/Iceland	74F4502	
UK/Hong Kong/China/ Thailand/Sri Lanka	74F4504	
Belgium/Egypt/Greece	74F4507	
Spain	93F1528	
Israel	93F1532	
Portugal/Saudi Arabia	74F8370	Switched network telecommunication cable with spade lugs

5. For US and Canada the modem is integrated in the service processor

Modem for RSF and Remote Console Access in a Switched Network: A modem is required for connection to the IBM Remote Support Facility. The customer must provide access to a dedicated analog line of the public switched telephone network (PSTN), so that the Service Processor can automatically dial into the IBM Remote Support Facility.

Modem for the RSF:

1. IBM modem for all countries when this modem is PTT-homologated:
   - Shipped with the Service Processor
   - Installed by IBM.

   The customer must provide access to the public switched network (analog).
2. In other countries:
   - Either provided with the service processor or provided and installed by the customer (country dependent)
   - Compatible with CCITT V.32
   - The modem must support the V.25 bis protocol
   - Operating in full-duplex mode, with SDLC protocol at 9600 bps.

Token-Ring Attachment and High-Speed Line Attachment Cables (3745)

Feature		Maximum Number of Cables per Feature	According to Your Requirements, Order:						Area		
			Fixed-Length Cable		Custom-Length Cable						
					Short Cable		Long Cable				
Token-Ring Attachment and High-Speed Line	Feat Code (See Note 6)		CG	Length m (ft)	CG or Part No.	Maximum Length m (ft)	Part No.	Maximum Length m (ft)	USA AG A/PG	E/ME/A	Frame
◄a►	◄b►	◄a►	◄d►	◄e►	◄f►	◄g►	◄h►	◄i►	◄j►	◄k►	◄l►
Token-ring attachment (USA, AG, and A/PG)	4760 or 4770	2	1666 (See Note 7)	21.3(70)	1667 61X3229	21.3(70)	61X3229	44.2(145)	Y	N	BF
Token-ring attachment (E/ME/A)	4760 or 4770	2	1666 (See Note 7)	9 (30)	1667 61X3229	21.3(70)	61X3229	44.2(145)	N	Y	
V.35 DCE (See Notes 1 and 2)	4740	1	5831	10 (33)	5830 58X9344	10 (33)	58X9344	35 (115) (See Note 5)	Y		
X.21 DCE (See Notes 1 and 2)	4740	1	5833	10 (33)	5832 58X9345	10 (33)					
V.35 direct attachment (See Note 1)	4740	1	5837 (See Note 3)	10 (33)	5836 58X9347	10 (33)	58X9347	100 (328)			
X.21 direct attachment (See Note 1)	4740	1	5839 (See Note 3)	10 (33)	5838 58X9348	10 (33)					
X.21 Transfix (See Notes 2 and 4)	4740	1	5835	10 (33)	5834 58X9346	10 (33)			N		
X.21 EIA-547 DCE	4740	1	5844	10 (33)	5842 11F4837	10 (33)	11F4837	35 (115)	Y	N	
X.21 EIA-547 direct attachment	4740	1	5845	10 (33)	5843 11F4838	10 (33)	11F4838	100 (328)			

Token-Ring Attachment Cables (3746-900)

Feature		Maximum Number of Cables per Feature	According to Your Requirements, Order:						Area		
			Fixed-Length Cable		Custom-Length Cable						
					Short Cable		Long Cable				
Token-Ring Attachment	Feat Code		CG	Length m (ft)	CG or Part No.	Maximum Length m (ft)	Part No.	Maximum Length m (ft)	USA AG A/PG	E/ME/A	Frame
◄a►	◄b►	◄a►	◄d►	◄e►	◄f►	◄g►	◄h►	◄i►	◄j►	◄k►	◄l►
Token-ring attachment (USA, AG, and A/PG)	5601	1	7003 (See Note 7)	21.3(70)	7004 72F1236	21.3(70)	72F1236	44.2(145)	Y	N	3746 900
Token-ring attachment (USA) plenum Cable	5601	1	7005	21.3(70)	7006 72F1242	21.3(70)	72F1242	44.2(145)	USA	N	
Token-ring attachment (E/ME/A)	5601	1	7003 (See Note 7)	9 (30)	7004 72F1236	9.0(30)	72F1236	44.2(145)	N	Y	

Notes:

1. 3745/3746 to 3745/3746, 3745/3746 to 3745, 3745/3746 to 3720, 3745/3746 to 3725 connections:
   - For the 3745/3746 to 3745/3746:
     - The main 3745/3746 (NCP generation parameter: direct clocking) has a V.35 or X.21 direct-attachment cable.
     - The tributary 3745/3746 (NCP generation parameter: external clocking has a V.35 or X.21 DCE cable.

     The total length of the two cables must not exceed 100m (328 ft) for V.35, or 10m (33 ft) for X.21.
   - For the 3745/3746 to 3745, 3745/3746 to 3720, or 3745/3746 to 3725:
     - If the 3745/3746 is defined as main (direct clocking), it has a V.35 or X.21 direct-attachment cable.
     - If the 3745/3746 is defined as tributary (external clocking), it has a V.35 or X.21 DCE cable.

     The total length of the two cables must not exceed 100m (328 ft) for V.35, or 10m (33 ft) for X.21.
2. In E/ME/A, the cable group delivered by default when using specify code 2999, with this feature is:

   5831 (V.35 DCE) in Belgium, Denmark, Ireland, Norway, Spain, Sweden, and Switzerland.
   5835 (X.21 Transfix) in France.
   5833 (X.21 DCE) in other E/ME/A countries.
3. The cable group numbers 5837 and 5839 are not available in IBM World Trade Europe/Middle East/Africa Corporation countries.
4. X.21 Transfix is available in France only.
5. This length is authorized with the special clocking option only (transmit clocking loop back to DCE). Without this option, the maximum cable length is 15m (50 ft).
6. Each 4740 feature code provides with two ports, a V.35 and an X.21. Only one port can be active at a time.
7. Token-Ring cables for the 3745 are not interchangeable with Token-Ring cables for the 3746-900, due to differing connectors on the machine side.

Line Interface Attachment (LIC) Cables (Part 1 of 2)

Feature				According to Your Requirements, Order:						Area		
				Fixed-Length Cable		Custom-Length Cable						
						Short Cable		Long Cable				
LIC	Feat Code	LIC Type	Maximum Number of Cables per Feature	CG	Length m (ft)	CG or Part No.	Maximum Length m (ft)	Part No.	Maximum Length m (ft)	USA AG A/PG	E/ME/A	Frame
<a>	<b>	<c>	<a>	<d>	<e>	<f>	<g>	<h>	<i>	<j>	<k>	<l>
V.24 DCE (Japan NTT) (See Note 1 and Note 2)	4911	1	4			1621 6398662	13.5 (45)	6398782	100 (328)	Y	N	BF 13 14 15
V.24 DCE (Japan NTT) X.21 bis oper. (See Note 2)	4911	1	4			8153 61F4505	13.5 (45)	61F4507	100 (328)			
V.25 auto call (Japan NTT) (See Note 2)	4911	1	4			1634 6398664	13.5 (45)	6398786	35 (115)			
V.25 auto call (Caducee France)	4911	1	4			1622 6398667	13.5 (45)	6398783	35 (115)	N	Y	
V.25 RS-366 auto call (UK)	4911	1	4			1635 6398670	13.5 (45)	6398787	35 (115)			
V.35 DCE (French PTT modem) (See Note 3)	4931	3	1	1619	13.5 (45)	1619 6398671	13.5 (45)	6398789	100 (328)			
V.24 DCE (Belgium) (See Note 1)	4911	1	4	1620	13.5 (45)	1620 6398672	13.5 (45)	6398780	100 (328)			
Transfix (France)	4942	4B	1	1609	13.5 (45)	1609 58X9488	13.5 (45)	6398661	122 (400)			
V.35 direct attachment (France)	4931	3	1			1623F 65X9900	13.5 (45)	65X9900	122 (400)			

Notes:

1. This cable does not support X.21 bis operation.
2. LIC1 for:
   - Nippon Telegraph and Telephone (NTT) modem
   - Japanese original equipment manufacturer (OEM) modem
3. Includes the adapter, part no. 1749352.

Line Interface Attachment (LIC) Cables (Part 2 of 2)

Feature				According to Your Requirements, Order:						Area		
				Fixed-Length Cable		Custom-Length Cable						
						Short Cable		Long Cable				
LIC	Feat Code	LIC Type	Maximum Number of Cables per Feature	CG	Length m (ft)	CG or Part No.	Maximum Length m (ft)	Part No.	Maximum Length m (ft)	USA AG A/PG	E/ME/A	Frame
<a>	<b>	<c>	<a>	<d>	<e>	<f>	<g>	<h>	<i>	<j>	<k>	
V.25 RS-366 auto call	4911	1	4	1616	13.5 (45)	1610 6398668	13.5 (45)	6398788	35 (115)	Y	Y	BF 13 14 15
V.24 RS-232-C direct attachment (See Note 1)	4911	1	4	1607	13.5 (45)	1612 7837397	13.5 (45)	7837398	122 (400)			
V.35 DCE (See Note 2)	4931	3	1	1613	13.5 (45)	1618 58X9485	13.5 (45)	6398665	100 (328)			
V.35 direct attachment	4931	3	1	1605	13.5 (45)	1623 58X9484	13.5 (45)	6398657	122 (400)			
X.21 DCE (See Note 3)	4941 4942	4A 4B	4 1	1606	13.5 (45)	1624 58X9487	13.5 (45)	6398658	122 (400)			
X.21 direct attachment	4941 4942	4A 4B	4 1	1608	30 (100)	1625 58X9486	30 (100)	6398660	122 (400)			
V.24 RS-232-C direct attachment (See Note 4)	4911	1	4	1611	13.5 (45)	1627 7837395	13.5 (45)	7837396	122 (400)			
V.24 RS-232-C DCE (See Note 5 and Note 6)	4911	1	4	1604	13.5 (45)	1628 6398643	13.5 (45)	6398785	100 (328)			
V.24 RS-232-C DCE X.21 bis operation (See Note 7)	4911	1	4	8154	13.5 (45)	8152 61F4504	13.5 (45)	61F4506	100 (328)			
Telecommunic-ation cord (See Note 8)	7865 7825	5 6	2 1		15 (50)							

Line Interface Attachment (LIC) Cables (Part 2 of 2) (Continued)

Notes:

1. Direct attachment for the IBM 3101 Display Terminal and the asynchronous data terminal equipments (DTE).
2. LIC3 for all lines, except for the French Post Telephone and Telegraph (PTT) modem.
3. LIC4 for all lines, except for Transfix (France).
4. Direct attachment for synchronous DTE.
5. LIC1 for all lines, except for Belgium and for Nippon Telegraph and Telephone (NTT) modem.
6. This cable does not support X.21 bis operation.
7. LIC1 for all lines, except for Nippon Telegraph and Telephone (NTT) modem.
8. For LIC types 5 and 6, the cables are delivered with the LICs. The cable lengths are always 15 metres (50 feet). The telephone cable part numbers are specific to certain countries as follows:

Countries	Telephone Cable Part Numbers
Austria	65X8475
Belgium	65X8476
Germany	65X8476
Denmark	65X8482
France	65X8479
Israel	65X8477
Italy	65X8480
Japan	65X8484
Hong-Kong	65X8485
Netherland	65X8474
New Zealand	65X8472
South Africa	65X8473
Sweden	65X8481
Switzerland	65X8486
UK	65X8472
US, Canada	65X8471
Other countries	65X8483

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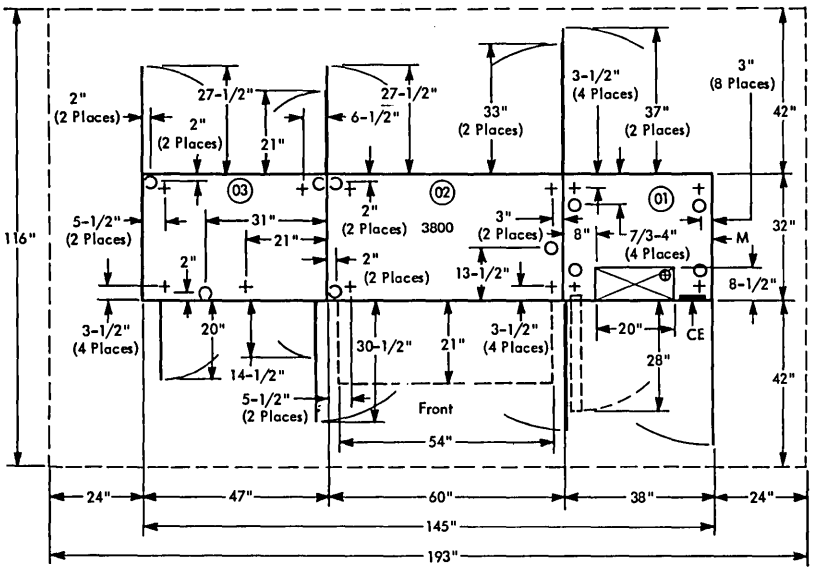
3800 PRINTING SUBSYSTEM MODELS 1-3, 6, AND 8 WITH BURSTER-TRIMMER-STACKER

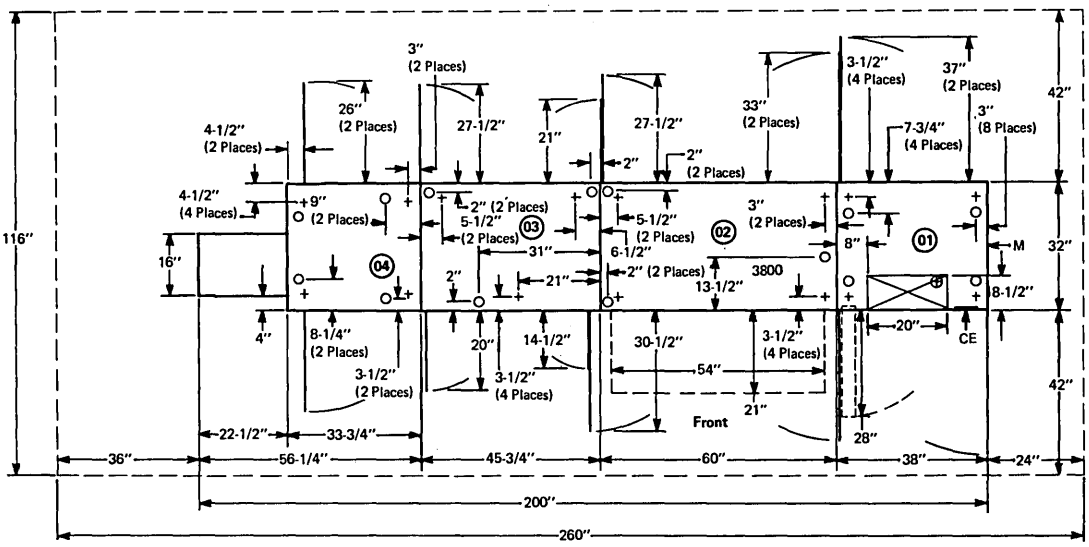
PLAN VIEW (WITHOUT BURSTER-TRIMMER-STACKER), English Scale: 1/4 in. = 1 ft



Notes:

1. Machine has no kickstrips. Nonraised floor cables may exit at any point from frame 01.
2. Single leveling pad on right side of frame 02 supports an installed weight of 900 lb (410 kg).

PLAN VIEW (WITH BURSTER-TRIMMER-STACKER), English Scale: 1/4 in. = 1 ft



Notes:

1. Machine has no kickstrips. Nonraised floor cables may exit at any point from frame 01.
2. Single leveling pad on right side of frame 02 supports an installed weight of 900 lb (410 kg).

3800 PRINTING SUBSYSTEM MODELS 1-3, 6, AND 8 WITH BURSTER-TRIMMER-STACKER

Details (By Frame)

Frame	*Dimensions F x S x H inches (mm)*	*Weight lb (kg)*	*Airflow cfm (m^3/min)*	*Heat Output BTU/hr (W)*	*Power Requirements kVA*
01	38 32 60 (970) (810) (1 520)	750 (340)	225 (7)	*	**
02	60 32 60 (1 520) (810) (1 520)	1,670 (760)	800 (23)	*	**
03	45-3/4 32 60 (1 160) (810) (1 520)	875 (400)	250 (8)	*	**
04	56-1/4 32 60 (1 430) (810) (1 520)	550 (250)	–	700 (200)	0.25

Notes:

* The heat output and power requirements vary with operating status, paper size, and paper weight. Values shown apply with or without burster-trimmer-stacker feature.

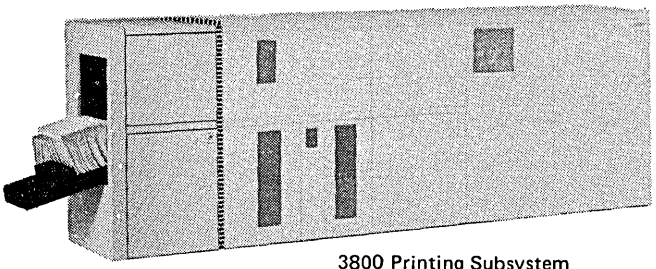
** The machine consumes 14.0 kVA for approximately one minute after initial power on and when changing from idle to run.

*** See Details (By Frame).

† A floor-to ceiling height of 86 inches (2 180 mm) is required to open the top cover.

†† See plan view.

††† This power is consumed by internal control circuitry required to ensure normal machine power-on sequencing. If the branch circuit power is disconnected, an extended warmup period (up to two hours) may be required before processing can start.



Burster-Trimmer-Stacker Feature

3800 Printing Subsystem (Model 1 Shown)

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	***	32	60†
(mm)	(***)	(810)	(1 520 †)

Service Clearances:

	F	R	Rt	L
Inches	42	42	24	††
(mm)	(1 070)	(1 070)	(610)	(††)

Power and Heat Dissipation Requirements:*

Requirements	*Power kVA*	*BTU/hr (W)*
Idle Status**	3.5	11,000 (3 250)
Power Off ††† (Branch Circuit Power On)	0.2	650 (200)
Min Size and Weight Paper	7.0	21,000 (6 150)
Max Size and Weight Paper	10.0	31,500 (9 250)

Phases	3
Plug	R&S, SC7328
Connector	R&S, SC7428
Receptacle	R&S, SC7324
Power Cord Style	E7

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>_m$		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
8.6	7.9	64.0	60.0	No	No

Environment, Operating:

Temperature	60°F-85°F (16°C-29°C)
Rel Humidity	20%-80%
Max Wet Bulb	73°F (23°C)

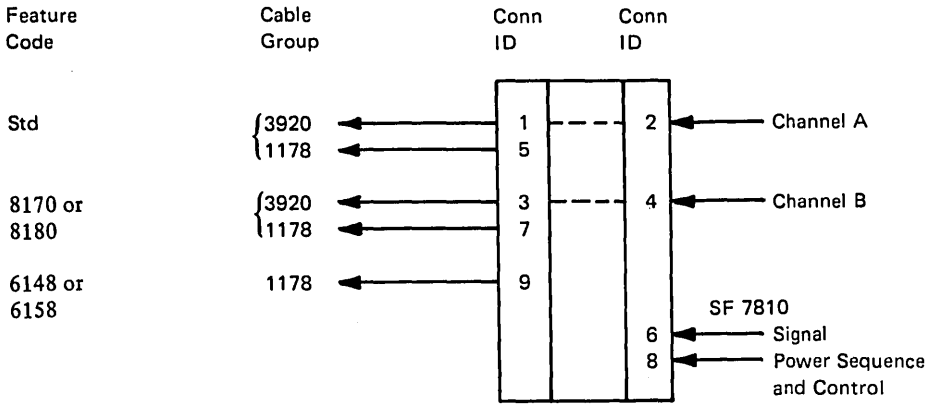
Environment:

"Human health considerations dictate that appropriate ventilation be supplied to the printer area. The American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) recommends a minimum of 0.42-0.57 cmm (15 - 20 cfm) per person of outdoor air make-up during human occupancy (ASHRAE 62-1989). Adherence to IBM pre-printed forms recommendations along with the provision of appropriate ventilation should preclude the development of adverse human health effects due to outgassing/emissions from preprinted forms."

Toner, paper, and ink (present on preprinted forms) is momentarily heated to approximately 350°F (177°C) during the printing process. As a result, chemical compounds may be released. Normally concentrations of these materials do not reach objectionable levels in a typical data processing installation. However, the use of supplemental filtration, exhaust, and/or dilution with building or outside air is recommended to ensure positive control of the installation environment.

Experience has shown that chemical compounds containing amines, such as cyclohexylamine, morpholine, and diethylaminoethanol, may cause degraded printer performance when they are introduced into the printer area. Under extreme conditions, total print loss may occur for short periods of time.

3800 PRINTING SUBSYSTEM MODELS 1-3, 6, AND 8 CABLING SCHEMATIC



From 3800

Feature Code	*Group No.*	*No. of Cables*	*Conn ID*	*Max Length*		*Model*	*Notes*
				m	*(ft)*		
Std	3920	2	1	61	(200)	All	1
	1178	1	5	61	(200)	All	3
6148	1178	1	9	61	(200)	1,2	4
6158	1178	1	9	122	(400)	3,8	4
8170	3920	2	3	61	(200)	1,2	1,2
	1178	1	7	61	(200)	1,2	3
8180	3920	2	3	122	(400)	3,8	1,2
	1178	1	7	122	(400)	3,8	3

To 3800

Feature Code	*Conn ID*	*Model*	*Notes*
Std	2	All	1
7810	6	1	5
	8	1	3,5
8170	4	1,2	1,2
8180	4	3,8	1,2

Notes:

1. Maximum channel cable length will vary by model.
   a. A maximum cable length of 61 meters (200 feet) is available to attach a Model 1 or 2 to a channel. The 61-meter (200-foot) cable length must be reduced by 4.5 meters (15 feet) for each control unit connected between the Model 1 or 2 and the channel.
   b. A maximum cable length of 122 meters (400 feet) is available to attach a Model 3, 6, or 8 to a channel. The 122-meter (400-foot) cable length must be reduced by 4.5 meters (15 feet) for each control unit connected between the Model 3, 6, or 8 and the channel.
2. Special features may be ordered for connecting more than one channel. For channel switching, one set of cable groups is required for each channel. Maximum cable length applies to each channel.
3. Power sequence and control cable, cable group 1178, is optional for each connected channel.
4. Required for SF 6148 and SF 6158 (remote switch).
5. As many as eight tape control units (any combination of 3803s and 3411s) may be attached only to the IBM 3800 Printing Subsystem Model 1, with the Tape-to-Printing Subsystem feature installed. Only one unit can be active at a time. The 3800 provides power sequence and control for one 3411 or 3803. Any additional tape control units must receive power sequence and control from another source.

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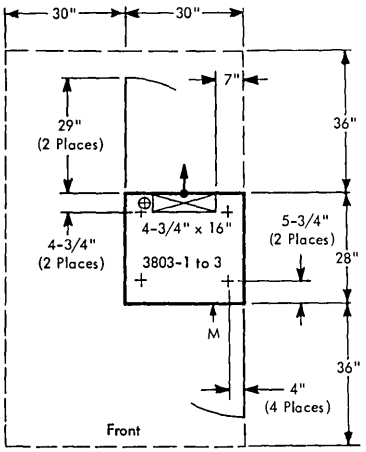
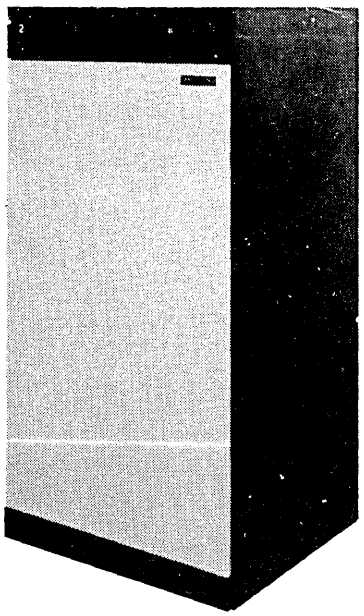
3803 TAPE CONTROL MODELS 1 TO 3

PLAN VIEW (English Scale: 1/4 in. = 1 ft)





SPECIFICATIONS

Dimensions:

	F	S	H
Inches	30	28	60
(cm)	(76)	(71)	(152)

Service Clearances:

	F	R	Rt	L
Inches	36	36	0*	30*
(cm)	(91)	(91)	(0*)	(76*)

Weight: 600 lb (280 kg)

Heat Output:	*Models 1 & 3*	*Model 2*
BTU/hr	3,800	5,700
(kcal/hr)	(960)	(1 450)

Airflow:

cfm	360	360
(m^3/min)	(11)	(11)

Power Requirements:**

kVA	1.2	1.8
Phases	3	3
	*Standard***	*With SF* 9001***
Plug	R&S, SC7328	R&S, JPS1034H
Connector	R&S, SC7428	R&S, JCS1034H
Receptacle	R&S, SC7324	R&S, JRSR1034H
Power Cord Style	E3 – *50 Hz* E10 – *60 Hz*	

Environment, Operating:

Temperature	60°F-90°F (16°C-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	78°F (26°C)

Environment, Nonoperating:

Temperature	50°F-110°F (10°C-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	80°F (27°C)

Notes:

*The 30-inch (76-cm) side clearance is recommended on the left side when compatible with machine layout.

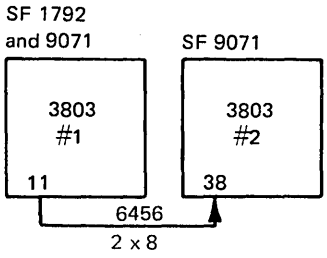
**A 50-Hz 3803 provides power for up to eight 3420s (any model).
A 60-Hz 3803 provides power for up to eight 3420s Models 3 through 7.
When the 60-Hz tape subsystem includes 3420-8's, one 3803 may power a maximum of six 3420-8's. See your IBM representative for valid combinations of drives. Maximum continuous operating current will not exceed 46 A per phase.

***With SF 9001 installed, the 3803-2 may power a maximum of eight 3420s (any model). Maximum continuous operating current will not exceed 56 A per phase.

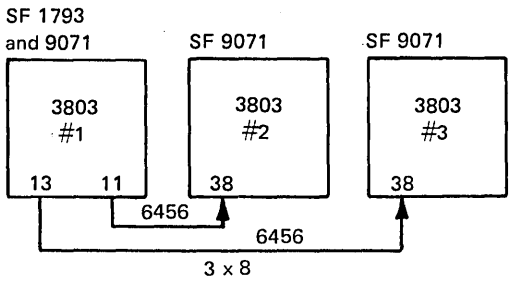
3803 TAPE CONTROL MODELS 1 TO 3 CABLING SCHEMATIC OF TAPE SWITCHING 3803 MODELS 1 AND 2

As many as eight 3420 Magnetic Tape Units can be attached to the 3803s #1.

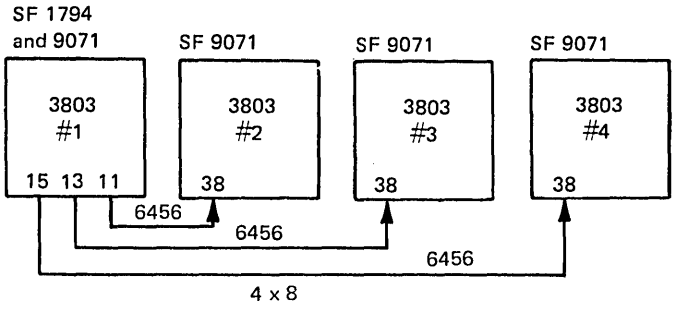
2 Control Units



3 Control Units

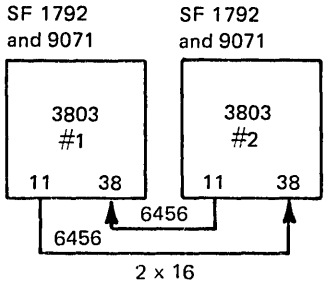


4 Control Units

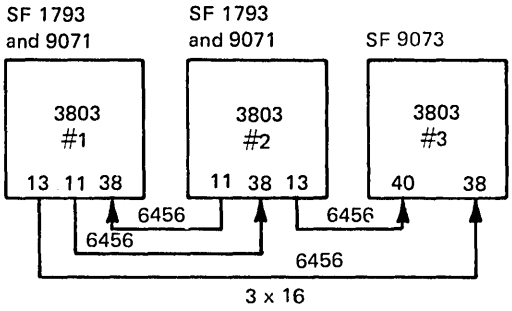


As many as eight 3420 Magnetic Tape Units can be attached to the 3803-1 and as many as eight 3420 Magnetic Tape Units can be attached to the 3803-2.

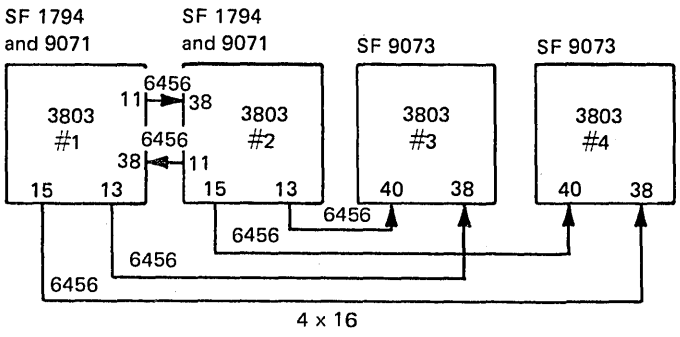
2 Control Units



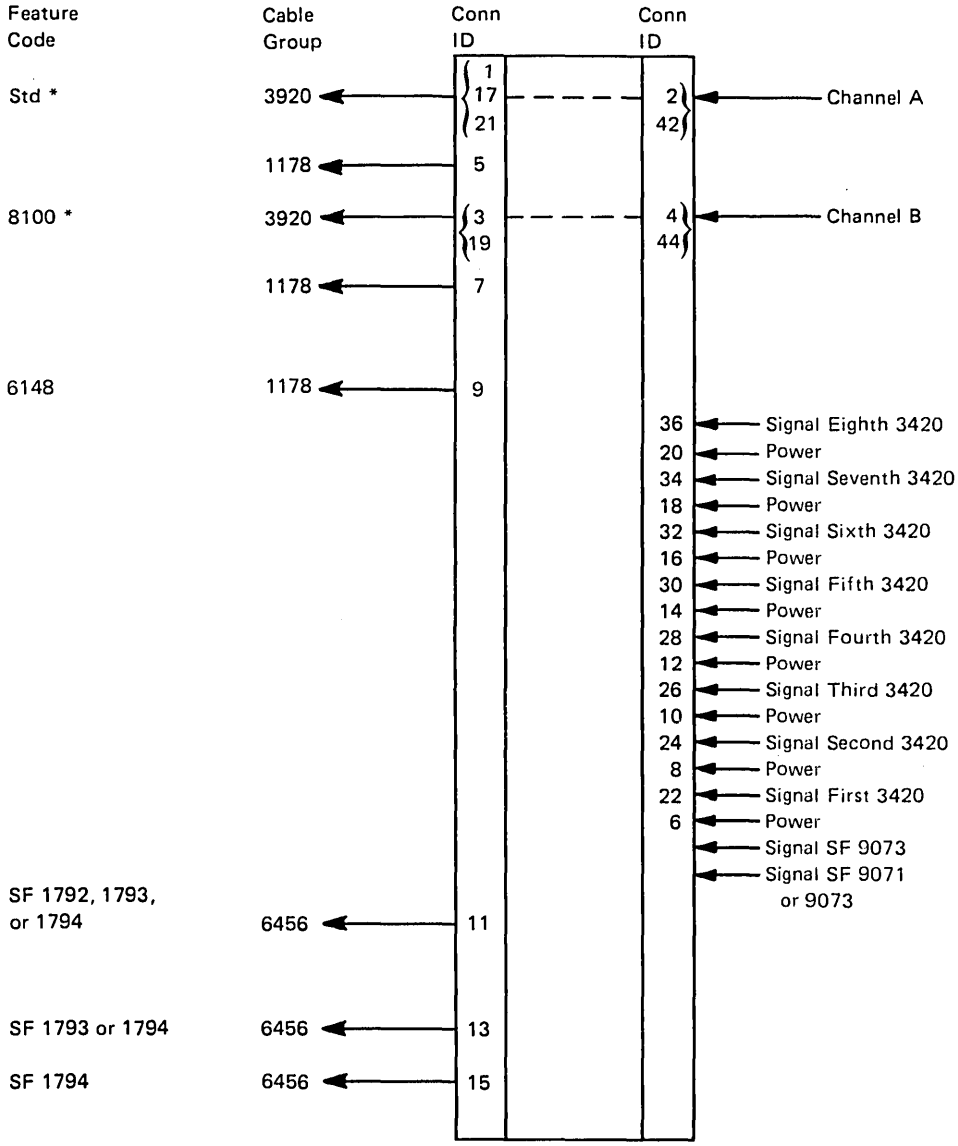
3 Control Units



4 Control Units



3803 TAPE CONTROL MODELS 1 TO 3 CABLING SCHEMATIC



*Model dependent; see *Note 9*.

3803 TAPE CONTROL MODELS 1 TO 3 CABLING SCHEMATIC

From 3803

Feature Code	*Group No.*	*No. of Cables*	*Conn ID*	*Max Length*		*Model*	*Notes*
				m	*(ft)*		
Std	3920	2	1	61	(200)	2	1,2,9
	3920	2	17	61	(200)	1	1,2,9
	3920	2	21	61	(200)	3	1,2,9
	1178	1	5	46	(150)	All	3
1792, 1793, or 1794	6456	2	11	26	(85)	1, 2	4
1793 or 1794	6456	2	13	26	(85)	1, 2	4
1794	6456	2	15	26	(85)	1, 2	4
6148	1178	1	9	46	(150)	1, 2	5
8100	3920	2	3	61	(200)	1, 2	1,9
	3920	2	19	61	(200)	1	1,9
	1178	1	7	46	(150)	1, 2	3

To 3803

Feature Code	*Conn ID*	*Model*	*Notes*
Std	2	2	8,9
Std	42	1	8,9
Std	6	All	6
Std	22	All	7
Std	8	All	6
Std	24	All	7
Std	10	All	6
Std	26	All	7
Std	12	All	6
Std	28	All	7
Std	14	All	6
Std	30	All	7
Std	16	All	6
Std	32	All	7
Std	18	All	6
Std	34	All	7
Std	20	All	6
Std	36	All	7
9071 or 9073	38	1, 2	4
9073	40	1, 2	4
8100	4	1, 2	8,9
8100	44	1	8,9

3803 TAPE CONTROL MODELS 1 TO 3 CABLING SCHEMATIC

Notes:

1. Up to 61 meters (200 feet) is available to attach up to eight control units (unless modified by general control to channel cabling schematic). Cable length between a 3803 with a 3420 Model 6 or Model 8 attached (at 6,250 bpi) and the channel is shown in the following table:

To	*Max Length with 3420 Model 8 Attached* *m*	*(ft)*	*Max Length with 3420 Model 6 Attached* *m*	*(ft)*
2860	22	(72)	61	(200)
2880	36	(119)	61	(200)
Block Multiplexer or 3800	22*, 31	(72*, 103)	61	(200)
Selector Channel	22*, 36	(72*, 119)	61	(200)

*On System/370 Model 135/138, 4331 Processor Model Group 2, 4361 Processors, and 4381 Processors.

For each control unit connected between the 3803 and the channel, the cable length shown must be reduced by 4.5 meters (15 feet) if a 3420 Model 6 is attached, or 20 feet if the 3420 Model 8 is attached.

SF 8100 may be ordered to connect a 3803 Model 1 or 2 to a second channel. Maximum length limitations apply to each channel attachment.

2. Maximum cable length available to connect the 3803 Model 3 to a 3115 or 3125 is 8.5 meters (28 feet).
3. Power sequence and control cable. This machine must have the power sequence and control cable installed for proper operation. External shield of this cable provides an electrical ground reference between the 3803 and the data processing system. This ground reference must be maintained to ensure proper operation of the magnetic tape subsystem. Maximum length is 10.7 meters (35 feet) when attached to a 3115 or a 3125.
4. Signal cabling provides for switching of up to sixteen 3420 Magnetic Tape Units among up to four 3803 Models 1 and 2. (See page 3803.4.) Signal cable length from a 3420 to a 3803 (cable group 143) and signal cable length from the 3803 to the most remote 3803 (one cable group 6456) in the tape switching subsystem must not exceed 36.5 meters (120 feet).

   Up to eight 3420 Magnetic Tape Units may be attached to each of the first and second 3803 units.
5. Required for remote switching feature (SF 6148). This cable must be purchased by the customer. Consult your IBM representative for price and ordering procedure.
6. Power connectors for up to eight tape units. When the number of 3420 Magnetic Tape Units to be attached exceeds the specifications shown on page 3803.1, power for each extra machine may be provided by another 3803 or SF 9001 may be installed.
7. Signal cable connections for up to eight tape units.
8. Channel signal attachment from another control device.
9. Specify 3803 Conn IDs 1, 2, 3, and/or 4 for cable orders for 3803 Models 1 and 2.
   Specifiy Conn ID 21 for cable orders for 3803 Model 3.
   Some 3803 Model 1 units shipped before 1980 may not have EC 733814 installed; substitute Conn ID:
   17 for 1
   42 for 2
   19 for 3
   44 for 4
   for cable orders for these units.

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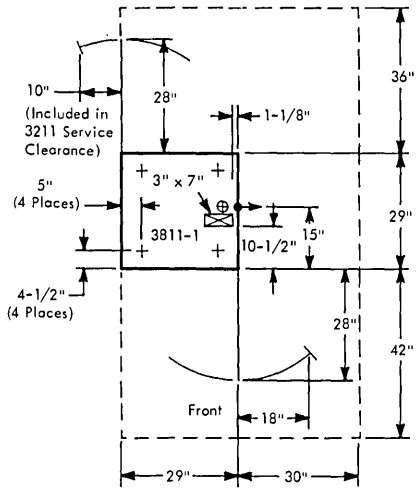
3811 PRINTER CONTROL UNIT MODEL 1

PLAN VIEW (English Scale: 1/4 in. = 1 ft)



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	29	29	46
(cm)	(74)	(74)	(117)

Service Clearances:

	F	R	Rt	L
Inches	42	36	30	0*
(cm)	(107)	(91)	(76)	(0*)

Weight:	*50 Hz*	*60 Hz*
lb	820	750
(kg)	(380)	(350)

Heat Output:		
BTU/hr	7,000	5,600
(kcal/hr)	(1 800)	(1 450)

Airflow:		
cfm	180	180
(m^3/min)	(6)	(6)

Power Requirements:		
kVA	2.7	1.9
Phases	3	3
Plug	R&S, FS3760	
Connector	R&S, FS3934	
Receptacle	R&S, FS3754	
Power Cord Style	D1	

Environment, Operating:

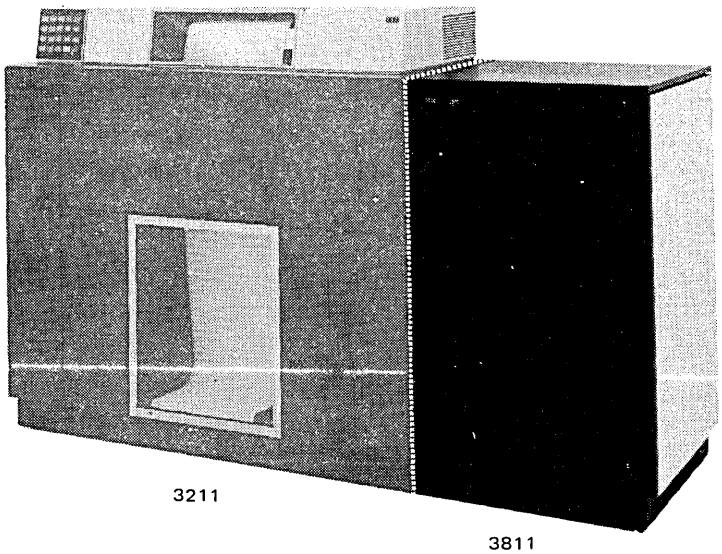
Temperature	60°F-90°F (16°C-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	78°F (26°C)

Environment, Nonoperating:

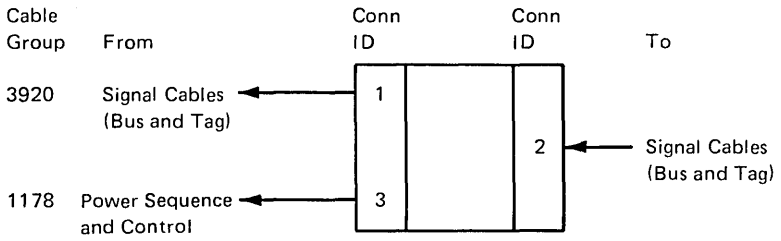
Temperature	50°F-110°F (10°C-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	80°F (27°C)

Notes:

* The 3811 abuts and attaches to the right side of a 3211.



3811 PRINTER CONTROL UNIT MODEL 1 CABLING SCHEMATIC



From 3811

Group No.	*No. of Cables*	*Conn ID*	*Max Length*		*Comments (see Note)*
			m	*(ft)*	
1178	1	3	46	(150)	Power sequence and control
3920	2	1	61	(200)	Bus and tag

To 3811

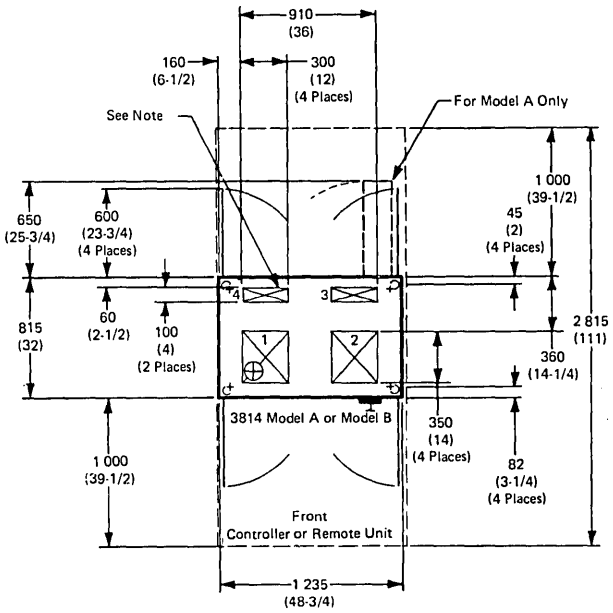
Conn ID	*Comments*
2	Bus and tag

Note: Cable group 1178, power sequence and control, is optional.

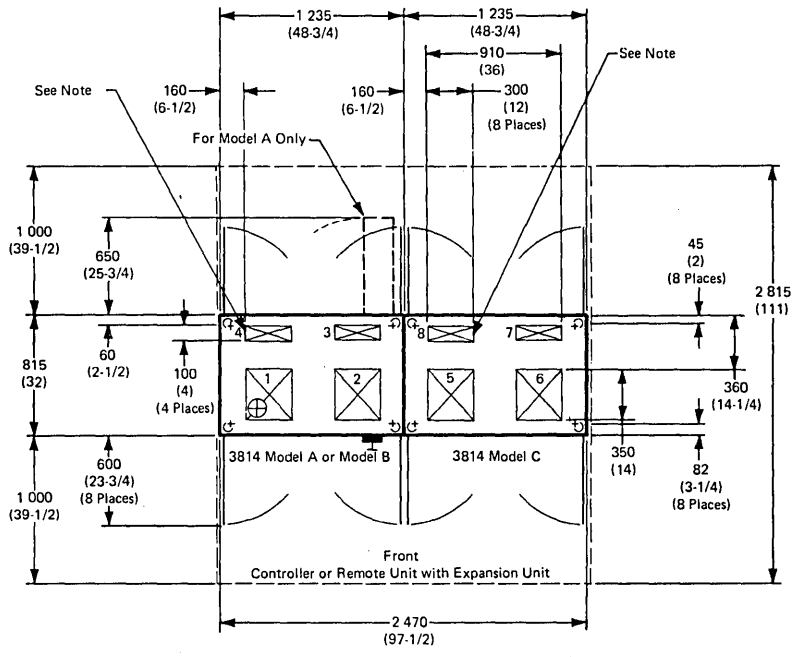
3814 SWITCHING MANAGEMENT SYSTEM MODELS A1-A4, B1-B4, AND C1-C4

PLAN VIEW (Metric Scale: 10 mm = 0.5 m)

English measurements are shown in parentheses.



Model A or Model B



Model A or Model B with Model C

Note: Cable entry/exit holes #4 and #8 are only for remote two-channel switch cables.

3814 SWITCHING MANAGEMENT SYSTEM MODELS A1-A4, B1-B4, AND C1-C4

SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	1 235*	815	1 200**
(inches)	(48-3/4*)	(32)	(47-1/4**)

Service Clearances:

	Front	Rear	Right	Left
mm	1 000	1 000	0	0
(inches)	(39-1/2)	(39-1/2)	(0)	(0)

Weight:

	Model A	Model B	Model C
kg	380	350	340
(lb)	(840)	(780)	(750)

Heat Output:

	Model A or Model B	Model A or Model B with Model C
	1 420 W (4,820 BTU/hr)	2 360 W (8,030 BTU/hr)

Airflow: 18 m^3/min (640 cfm)

Power Requirements:

	Model A or Model B	Model A or Model B with Model C
kVA	1.5	2.6
Voltages (50/60 Hz)	200, 208, 220, 240	
Phases	1	
Plug	R&S, FS3720	
Connector	R&S, FS3913	
Receptacle	R&S, FS3743	
Power Cord Style	A2	

See *** under Notes.

Environment, Operating:

Temperature	10°C-32°C (50°F-90°F)
Rel Humidity	8%-80%
Max Wet Bulb	23°C (73°F)

Environment, Nonoperating:

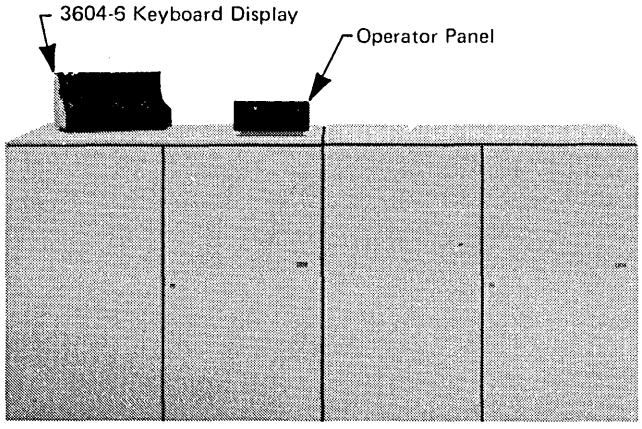
Temperature	10°C-43°C (50°F-110°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Notes:

* Front dimension is 2 470 mm (97-1/4 in.) when expansion unit (Model C) is added to Model A or Model B.

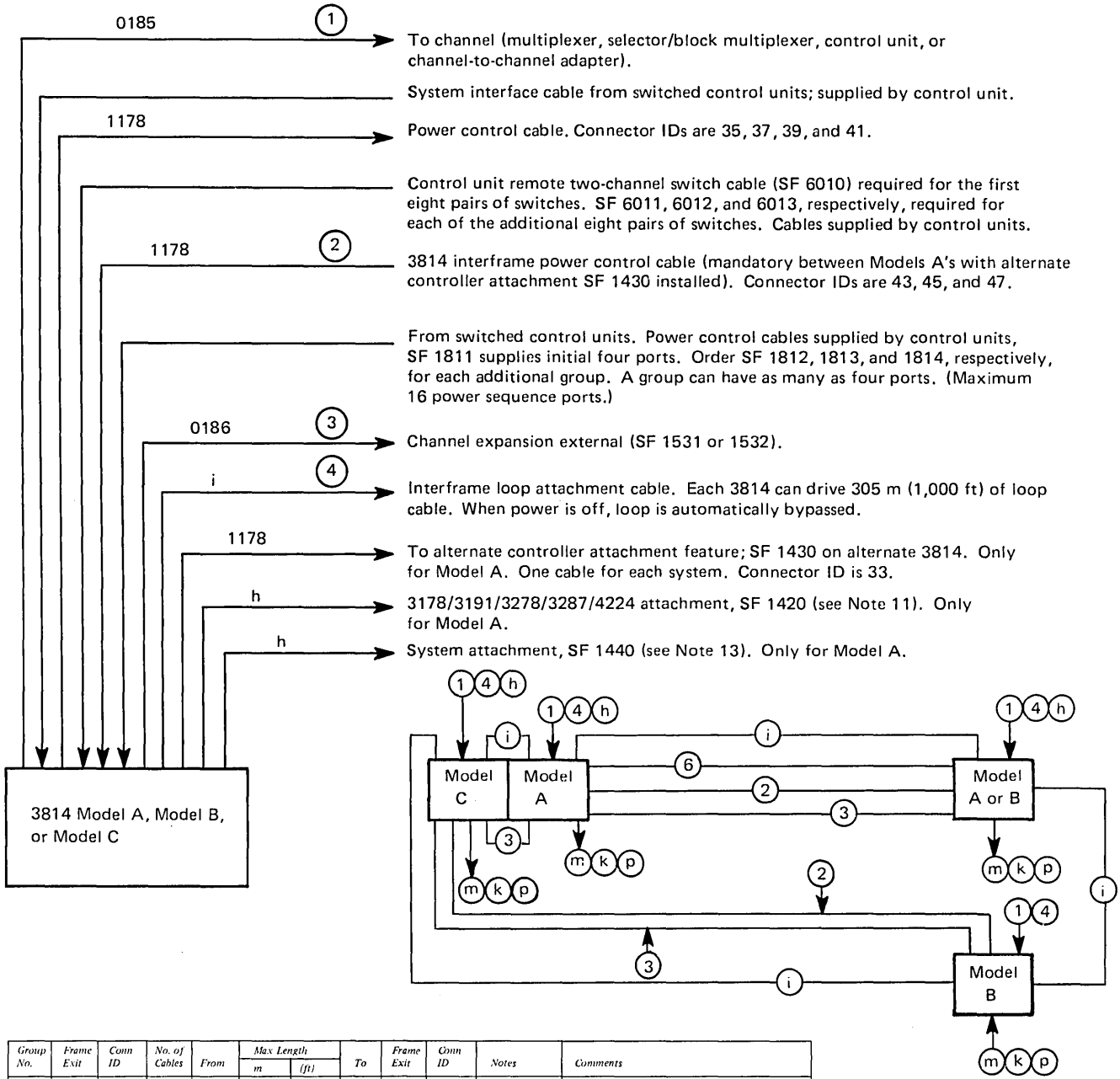
** Operator panel height of 145 mm (6 in.) is not included.

*** When in a service mode, a duplex receptacle is required within 1.0 meter (3-1/2 feet) of the 3814 to provide power for a 3604-6 keyboard display.



3814 Model A (with IBM 3604 Keyboard Display Model 6) and Model C

3814 SWITCHING MANAGEMENT SYSTEM MODELS A1-A4, B1-B4, AND C1-C4 CABLING SCHEMATIC



Group No.	Frame Exit	Conn ID	No. of Cables	From	Max Length m	Max Length (ft)	To	Frame Exit	Conn ID	Notes	Comments
0185	010X	00000	2	3814	122	(400)				1, 8, 9, 14, 15	Bus/tag to host channel
0186	0105	00021	8	3814	122	(400)	3814	0101	00022	7, 8, 9, 14, 15	Bus/tag for SF 1531/SF 1532
m			2	CU			3814	010X	00000		Bus/tag from switched control units
1178	0104	00033	1	3814	46	(150)	3814	0104	00034	12	Alternate controller feature cable (SF 1430)
1178	0104	00035	1	3814	46	(150)				2	Host power sequence and control cables
1178	0104	00037	1	3814	46	(150)				2	
1178	0104	00039	1	3814	46	(150)				2	
1178	0104	00041	1	3814	46	(150)				2	
1178	0104	00043	1	3814	46	(150)	3814	0104	00044	3	3814 interframe power sequence and control cables
1178	0104	00045	1	3814	46	(150)	3814	0104	00046	3	
1178	0104	00047	1	3814	46	(150)	3814	0104	00048	3	
k			1	CU			3814	0104	00000		Control unit power sequence and control cables
h			1	3814	1 500	(4,925)	*			11, 13	Console/printer cable
h			1	3274	2 000	(6,575)	3814			11, 13	System attachment cable (SF 1440)
i			1	3604-6			3814			4, 5, 6, 10	3604-6 cable
i			1	3814			3814			4, 10	Interframe loop attachment cable
p				CU			3814		00000		Remote two-channel switch cable

*3178/3191/3278/3287/4224

3814 SWITCHING MANAGEMENT SYSTEM MODELS A1-A4, B1-B4, AND C1-C4 CABLING SCHEMATIC

Notes:

1. System interface cable. One group number required for each channel attachment. Each Model A1, A2, B1, B2, C1, and C2 requires four cable group numbers for channel attachments. Each Model A3, A4, B3, B4, C3, and C4 requires eight cable group numbers for channel attachments.
2. Power control cable. One cable group required per system attachment; maximum of four cable groups is basic. For additional four cable groups, order SF 6350, system power sequence–additional.
3. Interframe power control cable. Order one cable for each remote unit (mandatory between Model As with SF 1430, alternate controller attachment).
4. Customer-supplied cable. Each 3814 can drive 305 meters (1,000 ft) of loop cable. When power is off, loop is automatically bypassed. For further information on customer-supplied loop cables, see Appendix B of this manual.
5. Physical planning information for 3604-6 and installation of the loop cable is in *IBM 3600 Finance Communication System Installation Manual–Physical Planning,* GA27-2766.
6. Cabling to the first 3604-6 from controller is limited to 10 meters (33 ft) for servicing without SF 1420.
7. Order one group number for SF 1531 and one group number for SF 1532.
8. Maximum channel to control unit cable length is determined by individual control unit requirements. See individual control units.
9. On 3814s without internal channel expansion feature, interface cables in groups of four bus and tag pairs must be ordered to connect each 4 x 4 switch matrix. Each matrix enters and exits the cable hole directly below the matrix. Keep the length of these cables to a minimum as they will reduce the maximum allowable cable length.
10. When selecting the length of the loop cables connected to the 3814 Models A1-A4, an additional 2 meters (6 feet) must be added to the length of either cable. This extra length is rolled up under the 3814 and used only for servicing.
11. Customer-supplied cable. One for each 3178, 3191, 3278, 3287, or 4224, to a maximum of 1 500 m (4,925 ft), must be purchased and installed by the customer, with a maximum of two 3178s, 3191s, or 3278s and three 3287s or 4224s with SF 1420. Follow the specifications and the instructions in *IBM 3270 Information Display Station Installation Manual–Physical Planning,* GA27-2787. See Note 5 on page 3814.8.
12. Alternate controller connection cable. Order one for each 3814 system with the alternate controller attachment feature (SF 1430) installed.
13. Customer-supplied cable. One for each 3274, to a maximum of 2 000 m (6,575 ft), must be purchased and installed by the customer, with a maximum of two 3274s with SF 1440. Follow the specifications and the instructions in *IBM 3270 Information Display System Installation Manual–Physical Planning,* GA27-2787.
14. Devices that operate at a speed of 4.5 megabytes per second and are switched by a 3814 require cable group 0185 and cable group 0186 if SF 1531 or SF 1532 is installed.
15. After 1 September 1987, all 3814s will be shipped with cable groups 0185 and 0186.

3814 Switching Management System Cabling Considerations

When a 3814 logical matrix is configured using physical matrices that are interconnected by external cables, these interconnecting cables must be included in the control unit-to-channel cable length.

Dedicated Path

For each dedicated path, review the following:

1. The number of allowable control units per channel.
   a. Find the equivalent control unit positions for the 3814 (see Table 1).
   b. Add the equivalent control unit positions for th other dedicated control units.
   c. The sum must not exceed eight per dedicated patl
2. The maximum channel cable length restriction is contrc unit dependent and in all situations is the cumulati cable length from the channel to the control unit i cluding all cabling associated with the 3814.
3. Priority considerations as outlined in Chapter 5 c *IBM 3814 Switching Management System Produ Description,* GA22-7075.

Dedicated Control Units	
Switch Sizes	*3814 Equivalent Control Unit Positions*
4 x 4	1
4 x 8	1
4 x 12	2
4 x 16	2
8 x 4	1
8 x 8	1
8 x 12	2
8 x 16	2
12 x 4	1
12 x 8	1
16 x 4	1
16 x 8	1

Table 1

Switchable Interface

For each switchable interface, review the following:

1. Class 1 control units (nondata streaming):
   a. Equivalent control unit positions from the channel through the switch; eight are allowed per switchable interface, including the dedicated control units between the 3814 and the channel.
   b. Maximum cable length:
      Two methods to determine cable length restrictions are:
      1) Use Table 2 to assign the 3814 zero-control-unit positions and to reduce the normal control unit cable length. This method allows eight class 1 control units to be attached.
      2) Use Table 3 to assign the 3814 as representing intervening control units. If this method is used, the number of class 1 control units is restricted.

The maximum channel cable length restriction is control-unit dependent and in all situations is the cumulative cable length from the channel to the control unit including all cabling associated with the 3814. If the Table 3 method is used, the cable length must be reduced for those control units that require reduction for intervening control units.

	For Class 1 Control Units on a Switchable Interface			
3814 Matrix Size	*N = 1 to 4 Subtract:* *Meters (Feet)*	*N = 5 to 8 Subtract:* *Meters (Feet)*	*N = 9 to 12 Subtract:* *Meters (Feet)*	*N = 13 to 16 Subtract:* *Meters (Feet)*
4 x N	12.1 (40)	13.8 (45)	15.3 (50)	16.5 (54)
8 x N Ch: 1-4	12.1 (40)	13.8 (45)	15.3 (50)	16.5 (54)
Ch: 5-8	15.3 (50)	16.5 (54)	18.0 (59)	19.2 (63)
12 x N Ch: 1-4	12.1 (40)	13.8 (45)	N/A	N/A
Ch: 5-8	15.3 (50)	16.5 (54)	N/A	N/A
Ch: 9-12	18.0 (59)	19.2 (63)	N/A	N/A
16 x N Ch: 1-4	12.1 (40)	13.8 (45)	N/A	N/A
Ch: 5-8	15.3 (50)	16.5 (54)	N/A	N/A
Ch: 9-12	18.0 (59)	19.2 (63)	N/A	N/A
Ch: 13-16	20.8 (68)	22.3 (73)	N/A	N/A

N/A = Not Applicable (for Tables 2 and 3)

Note: For use of Table 2, see Example of Table 2 Use.

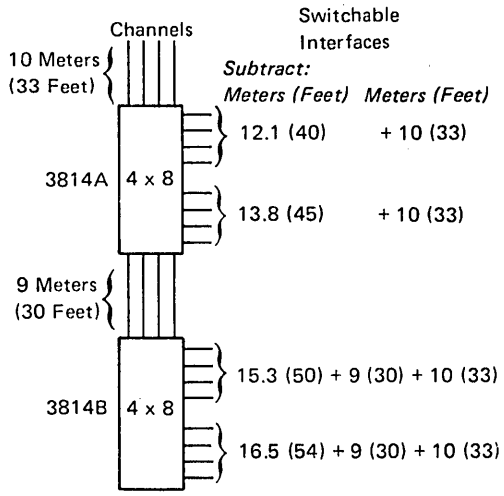
Table 2

	For Class 1 Control Units on a Switchable Interface, the 3814 Can Be Considered Representing This Many Intervening Control Units			
3814 Matrix Size	*N = 1 to 4*	*N = 5 to 8*	*N = 9 to 12*	*N = 13 to 16*
4 x N	3	3	4	4
8 x N Ch: 1-4	3	3	4	4
Ch: 5-8	3	4	4	5
12 x N Ch: 1-4	3	3	N/A	N/A
Ch: 5-8	4	4	N/A	N/A
Ch: 9-12	4	5	N/A	N/A
16 x N Ch: 1-4	3	3	N/A	N/A
Ch: 5-8	4	4	N/A	N/A
Ch: 9-12	4	5	N/A	N/A
Ch: 13-16	5	5	N/A	N/A

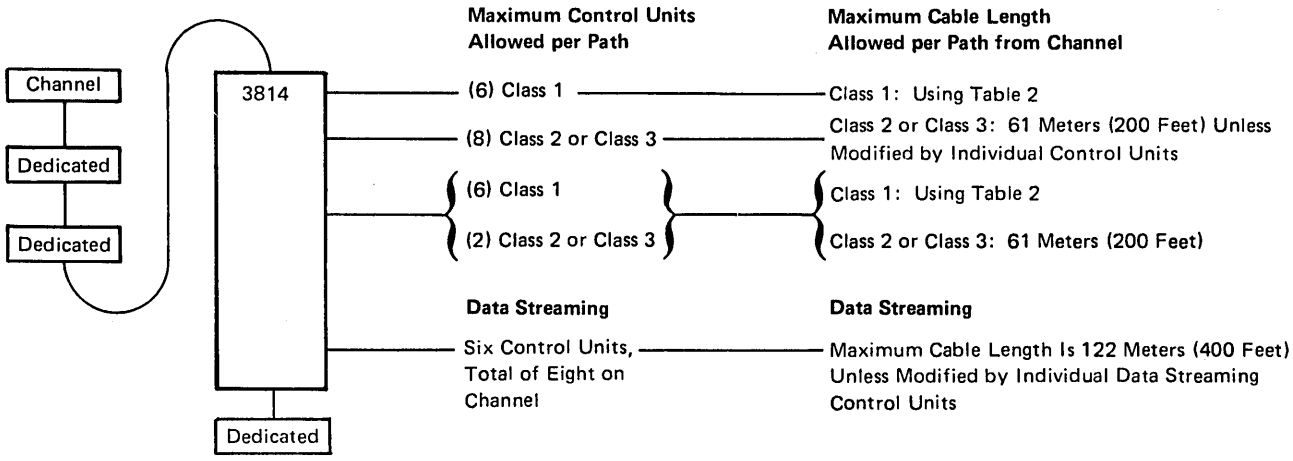
Note: An alternate approach to using Table 2 is to treat the 3814 as representing intervening control units. If this approach is used, Class 1 control units that are affected by intervening control units should use the values as stated in Table 3.

Table 3. Alternate Method for Evaluating 3814 Cabling Restrictions

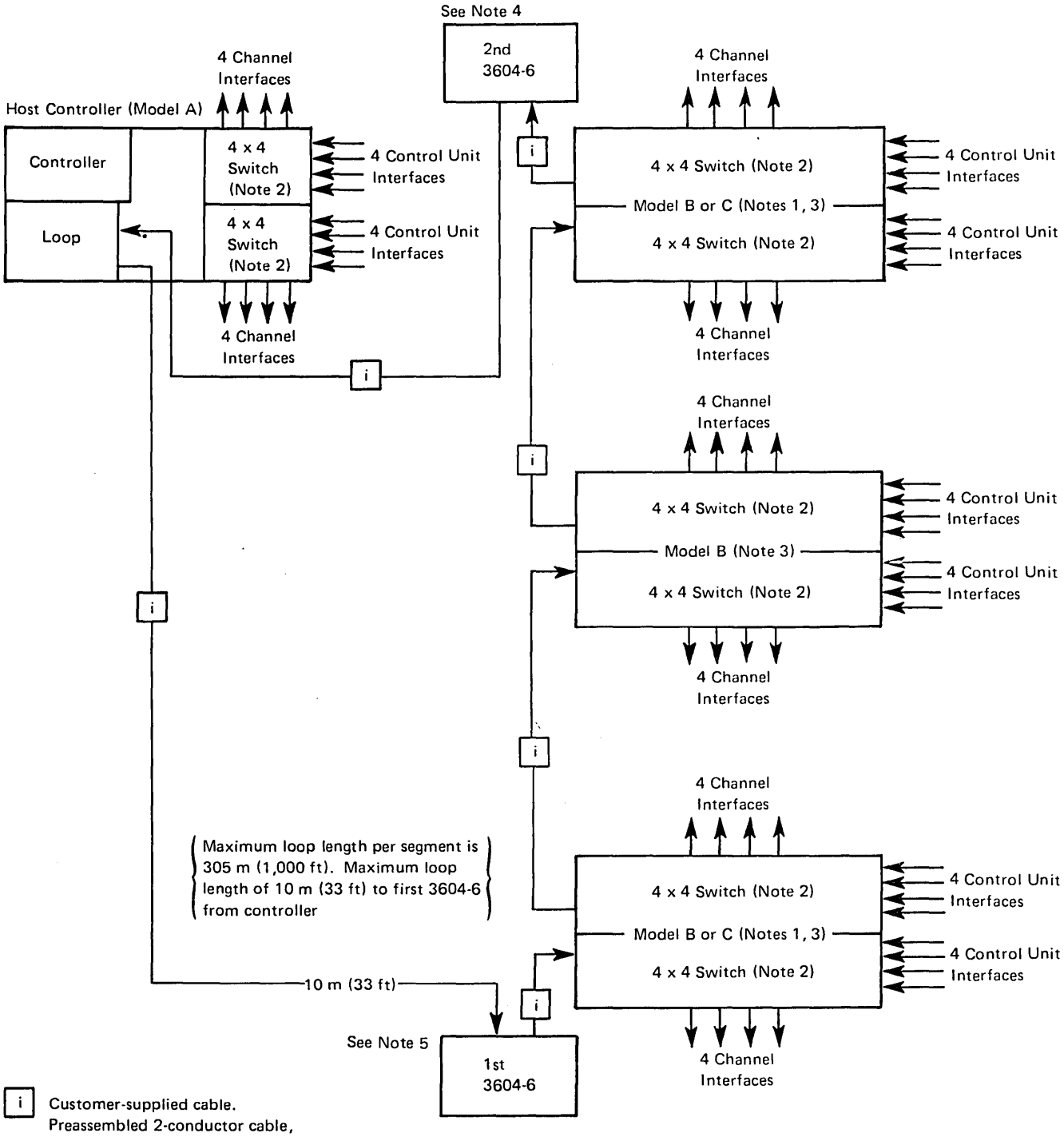
2. Class 2 or Class 3 control units (nondata streaming):
   a. Equivalent control unit positions from the 3814; eight are allowed excluding dedicated control units.
   b. Maximum cable length is determined by individual control unit restrictions as measured from the channel through the 3814.
3. Data streaming control units:
   a. Equivalent control unit positions from the channel through the switch; eight are allowed per switchable interface, including the dedicated control units between the 3814 and the channel. The 3814 is assigned zero control unit positions.
   b. Maximum cable length is determined by individual control unit restrictions as measured from the channel through the 3814.
4. A maximum of eight control units is allowed per switchable interface.
5. Dedicated control units after the 3814 do not count for switchable interface.



Example of Table 2 Use



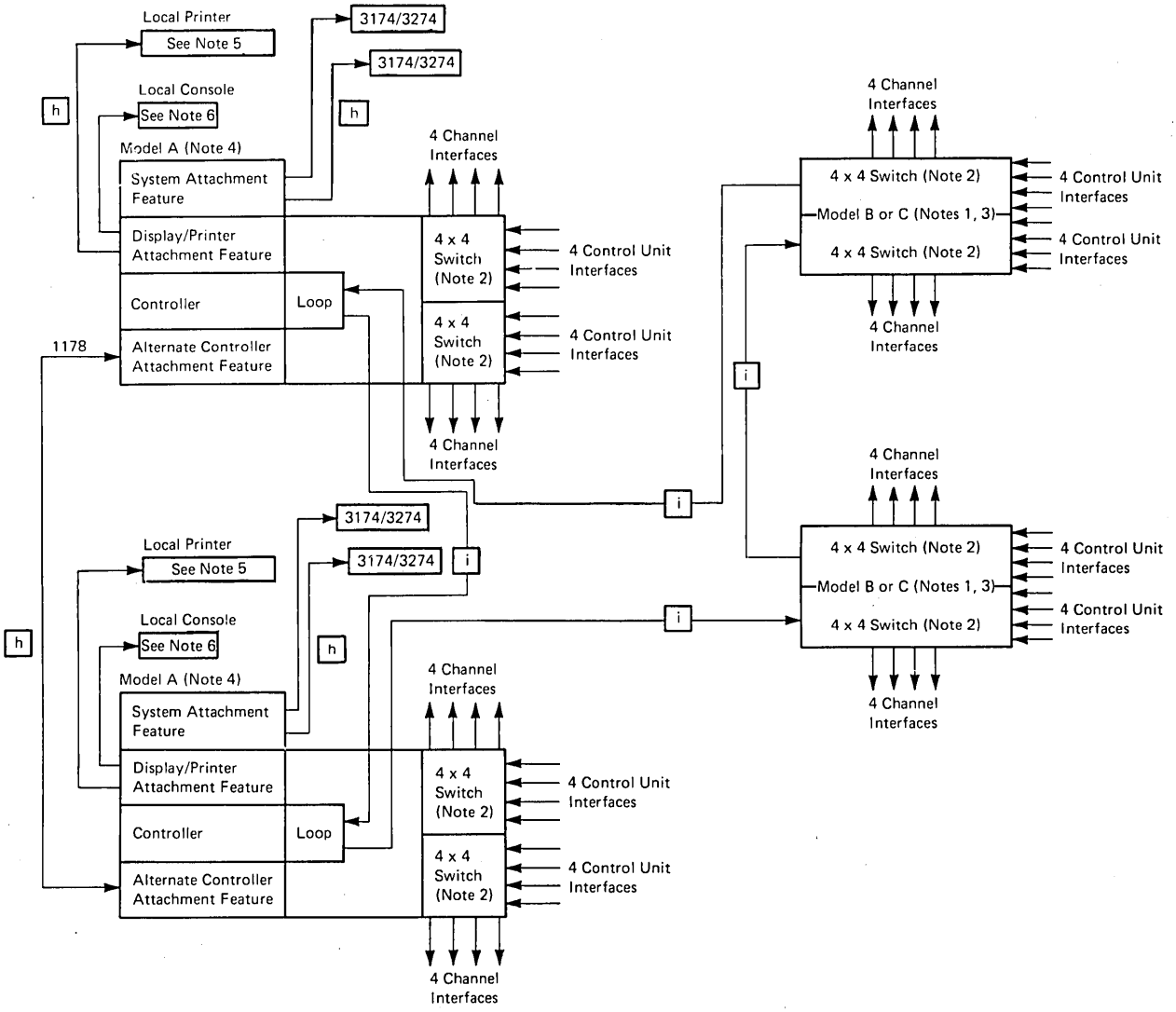
3814 SWITCHING MANAGEMENT SYSTEM COMPONENT DIAGRAM EXAMPLE



Notes:

1. Each 3814 Switching Management System can have a maximum of two Model Cs.
2. The controller can control a maximum of eight 4 x 4 switches in four frames.
3. Valid combinations: Standalone—Model A or Model B
   In combination—Model A and Model C
   Model B and Model C
4. The second 3604-6 may be cabled into any position on the loop after the first 3604-6.
5. For best serviceability, one 3604-6 should be installed within 10 m (33 ft) of the Model A controller and on the same building floor.

3814 SWITCHING MANAGEMENT SYSTEM COMPONENT DIAGRAM EXAMPLE, WITH ALTERNATE CONTROLLER ATTACHMENT FEATURE, DISPLAY/PRINTER ATTACHMENT FEATURE, AND SYSTEM ATTACHMENT FEATURE



h Customer-supplied cable. Preassembled coaxial cable, IBM part 2577672 or equivalent.

i Customer-supplied cable. Preassembled 2-conductor cable, IBM part 1563155 or equivalent.

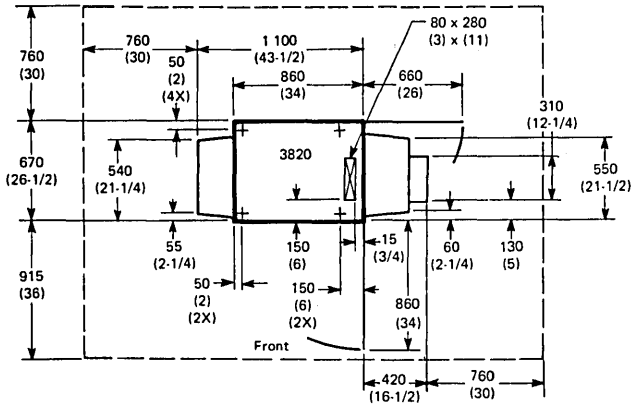
Notes:

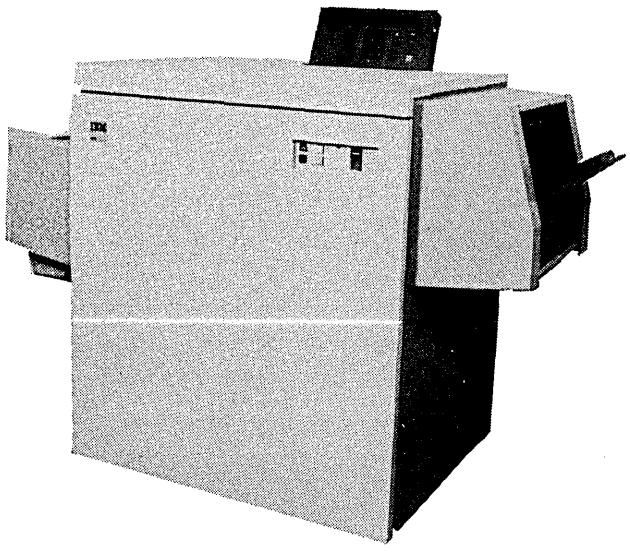
1. Each 3814 Switching Management System can have a maximum of two Model Cs.
2. The controller can control a maximum of eight 4 x 4 switches in four frames.
3. Valid combinations: Standalone—Model A or Model B
   In combination—Model A and Model C
   Model B and Model C
4. For best serviceability, a 3178-C2, 3191-A10, 3191-B10, 3278-2, or 3604-6 should be installed within 30 m (100 ft) of the Model A controller and on the same building floor.
5. Local printers: As many as two 3287-1, -2/4224-201, 202, 2C2, 2EL.
6. Local consoles: One to three 3178-C2/ 3278-2/3191-A10, B10.

3820 PAGE PRINTER

PLAN VIEW (Metric Scale: 10 mm = 0.5 m)

English measurements are shown in parentheses.





SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	1 520	670	1 190
(inches)	(60)	(26-1/2)	(47)

Service Clearances:

	Front	Rear	Right	Left
mm	915	760	760	760
(inches)	(36)	(30)	(30)	(30)

Weight: 259 kg (570 lb)

Heat Output:

Operating: 1 340 W (4,600 BTU/hr)
Nonoperating: 477 W (1,650 BTU/hr)

Power Requirements:

	50 Hz	*60 Hz*
Voltages	100, 200, 220, 230, 240	120, 200
kVA	1.8	1.8
Ampacity	10 A	20 A
Phases	1	1
Plug		NEMA L5-20P (120 V ac only)
Receptacle		NEMA L5-20R (120 V ac only)

Power Cord Style (see following page)

Note: All 50-Hz machines are shipped with transformers set to 220 V ac. All 60-Hz machines are shipped with transformers set to 220 V ac except for machines installed in the US and Canada that are set to 120 V ac only.

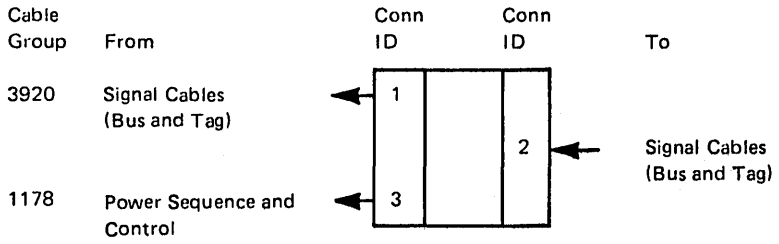
Environment, Operating:

Temperature	16°C-32°C (60°F-90°F)
Rel Humidity	8%-80%
Max Wet Bulb	23°C (73°F)

3820 PAGE PRINTER POWER CORD SPECIFICATIONS

	Length	Cable Nominal OD	Number of Shields	Conductors		
				Number	Nominal OD	AWG No.
All 60 Hz Chicago, Illinois, U.S.A.	3.35 m (11 ft) 1.83 m (6 ft)	15.8 mm (0.62 in.)	0	3	1.63 mm (0.064 in.)	12
50 Hz (Except Japan and Australia)	3.35 m (11 ft)	8.9 mm (0.35 in.)	0	3	1.5 mm (0.059 in.)	14
50/60 Hz Japan	4.13 m (13-1/2 ft)	8.36 mm (0.33 in.)	0	3	–	18
50/60 Hz Australia	4.43 m (14-1/2 ft)	8.36 mm (0.33 in.)	1	3	–	18

3820 PAGE PRINTER CHANNEL FEATURE CABLING SCHEMATIC (Note 1)



From 3820

Group No.	*No. of Cables*	*Conn ID*	*Max Length*		*Comments*	*Notes*
			m	*(ft)*		
3920	2	1	61	(200)	Bus and tag	2
1178	1	3	46	(150)	Power sequence and control	3

To 3820

Conn ID	*Comments*
2	Bus and tag

Notes:

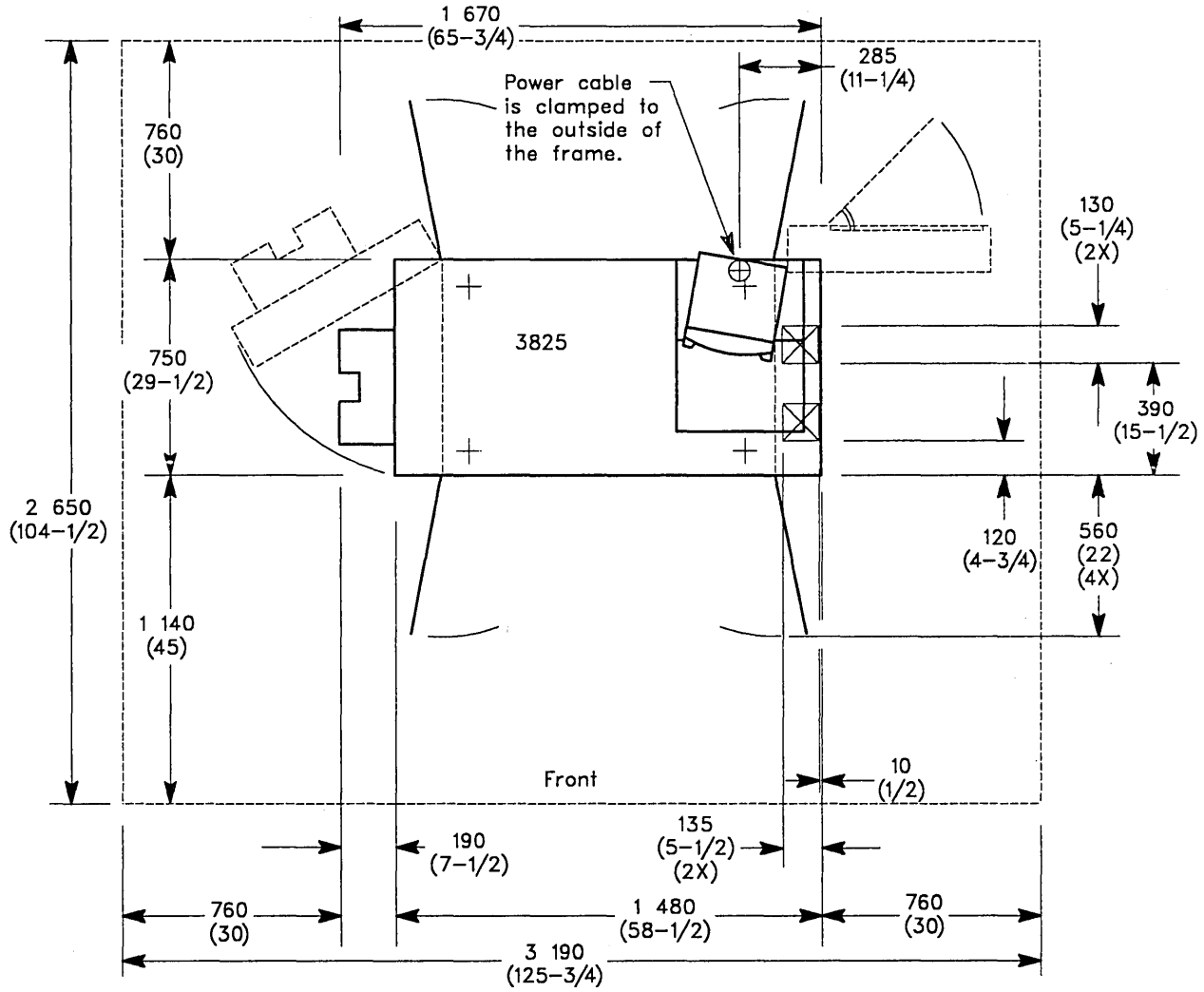
1. Channel interface (feature 3055) cables are not required for EIA communication interface (feature 3050).
2. Maximum cumulative X-length is 61 meters (200 ft), unless modified by system or channel limitation. Maximum cable length must be reduced by 5 meters (15 feet) for each control unit connected between the 3820 and the channel.
3. Cable group 1178, power sequence and control cable, is optional.

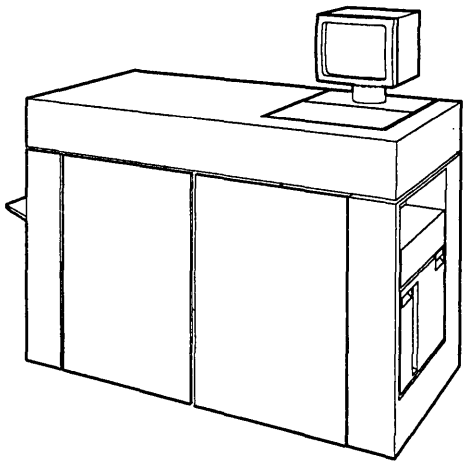
3825 PAGE PRINTER

PLAN VIEW (Not to Scale)

English measurements are shown in parentheses.

Use IBM Physical Planning Template GX22-7120.





SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	1 670	750	1 430
(inches)	(65-3/4)	(29-1/2)	(56)

Height (Cover Raised):

mm	—	—	1 680
(inches)	—	—	(66)

Service Clearances:

	Front	Rear	Right	Left
mm	1 140	760	760	760
(inches)	(45)	(30)	(30)	(30)

Weight: 635 kg (1 400 lb)

Heat Output:

kW	3.2
(kBTU/hr)	(11.0)

Airflow:

m^3/min	0.05
(cfm)	(100)

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>_m$			
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	I	T
7.8	7.0	61	53	No	No

Power Requirements:

	50/60 Hz
kVA	3.3
Phases	3

Voltages at 15 Amperes, 3 Phases:

50-Hz Delta: 200, 220, 230

50-Hz Wye: 346, 380, 400, 415

Warning: The 3825 Page Printer should not be attached to any 380 to 415 volt, 50-Hz IT power-distribution system (impedance grounded [earthed] neutral system). Connection to an IT power-distribution system may:

- Violate applicable national or international codes
- Damage machine components

Additionally, the 3825 should not be attached to a nonearthed neutral system; this connection could also damage machine components.

60-Hz Delta: 200, 208, 220, 240

60-Hz Wye: 380

Power Cord Style and Length: See "3825 Page Printer Power Cord Specifications" on page 3825.3.

Power Plug/Receptacle (USA and Canada):

Plug	Russellstoll, FS3730-MP*
Receptacle	Russellstoll, FS3744-FR**
Connector	Russellstoll, FS3914-FP**

Power Plug/Receptacle (All Other Locations):

Customer supplies both the plug and receptacle or connector.

Environment, Operating:

Temperature	15.6°C-29.4°C (60°F-85°F)
Rel Humidity	15%-65%

Environment, Nonoperating:

Temperature	10°C-43°C (50°F-110°F)
Rel Humidity	20%-80%
Wet Bulb	27°C (80°F)

Notes:

*	Provided by IBM.
**	Provided by customer.

Environment:
"Human health considerations dictate that appropriate ventilation be supplied to the printer area. The American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) recommends a minimum of 0.42-0.57 cmm (15 - 20 cfm) per person of outdoor air make-up during human occupancy (ASHRAE 62-1989). Adherence to IBM pre-printed forms recommendations along with the provision of appropriate ventilation should preclude the development of adverse human health effects due to outgassing/emissions from preprinted forms."

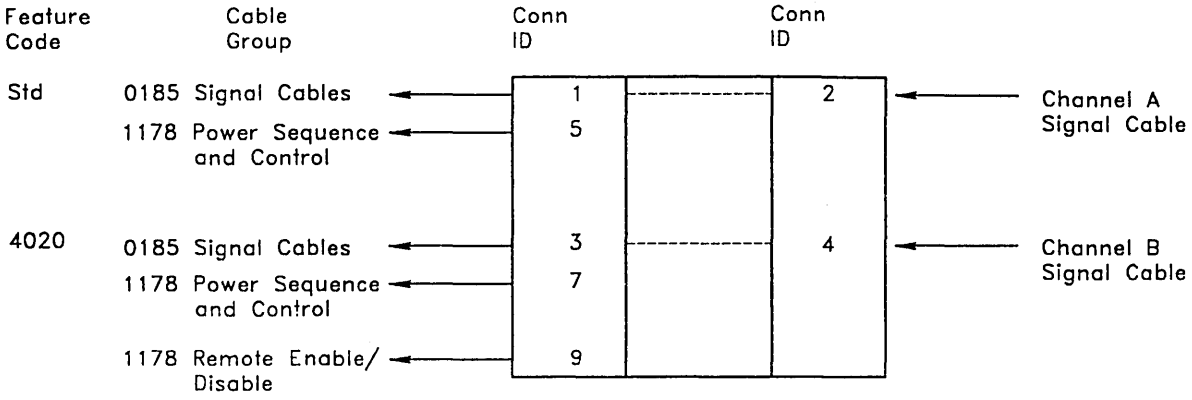
3825 PAGE PRINTER POWER CORD SPECIFICATIONS

Power Source	Cable Length	Cable Nominal OD	Number of Shields	Number of Wires	Nominal OD**	AWG No. (mm^2)
Three-phase wye	4.3 m (14 ft)	19 mm (0.750 in.)	0	5	2.1 mm (0.081 in.)	12 (4.4)
Three-phase delta	4.3 m (14 ft)*	17 mm (0.670 in.)	0	4	2.1 mm (0.081 in.)	12 (4.4)

*In Chicago, Illinois, USA, specify code 9986 for a 1.8-m (6-foot) cord.

**This diameter refers to solid, bare wire.

3825 PAGE PRINTER CABLING SCHEMATIC



From 3825

Feature Code	Group No.	No. of Cables	Conn ID	Max Length m (ft)	Comments	Notes
Std	0185	2	1	122 (400)	Bus and tag	1, 2
	1178	1	5	122 (400)	Power sequence and control	4
4020	0185	2	3	122 (400)	Bus and tag	1, 2, 3
	1178	1	7	122 (400)	Power sequence and control	4
	1178	1	9	122 (400)	Remote enable/disable	4

To 3825

Conn ID	Comments	Notes
2	Bus and tag	1, 2
4	Bus and tag	1, 2, 3

Notes:

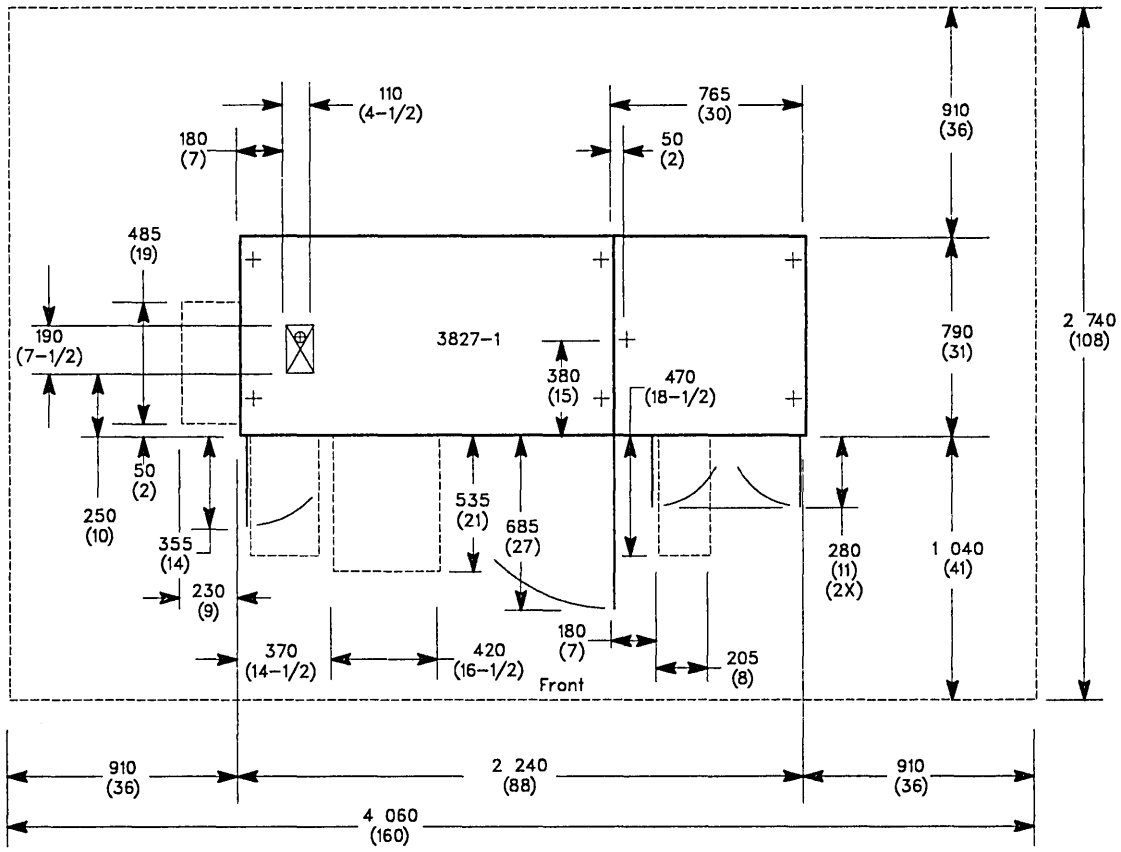
1. Use either group no. 0185 or 3920; 0185 is the newest style of cable and is preferred. If 3920 style cables are already available, they can be used with the 3825.
2. The maximum cumulative length is 122 meters (400 feet), unless modified by system or channel limitation. The maximum cable length must be reduced by 5 meters (15 feet) for each control unit connected between the 3825 and the channel.
3. Second channel feature; channel switching requires one set of cable groups for each channel and the maximum cable length applies to each channel.
4. Optional.

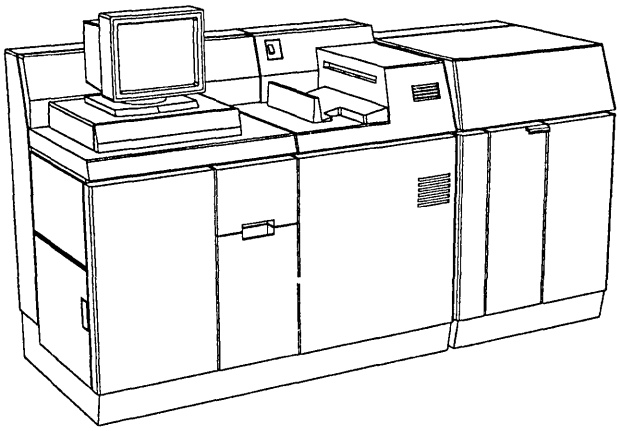
3827 PAGE PRINTER MODEL 1

PLAN VIEW (Not to Scale)

English measurements are shown in parentheses.

Use IBM Physical Planning Template GX22-7118.





3827 PAGE PRINTER MODEL 1

SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	2 240	790	1 270
(inches)	(88)	(31)	(50)

Height (Cover Raised):

mm	—	—	1 850
(inches)	—	—	(73)

Service Clearances:

	Front	Rear	Right	Left
mm	1 040	910	910	910
(inches)	(41)	(36)	(36)	(36)

Weight:

Printer	615 kg (1 360 lb)
Stacker	215 kg (470 lb)
Total	830 kg (1 830 lb)

Heat Output:

Operating: 4.2 kW (14.5 kBTU/hr)
Nonoperating: 1.2 kW (4.1 kBTU/hr)

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

Hz	L_{WAd}		$<L_{pA}>_m$		I	T
	Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
60 Hz	8.6	7.3	68.0	57.0	No	No
50 Hz	8.6	7.3	69.0	57.0	Yes	Yes

Power Requirements:

	50 Hz	60 Hz
kVA	5	5
Phases	3	3

Voltages at 30 Amperes (3 Phases, 5-Wire WYE with Neutral)

	Nominal	Minimum	Maximum
50 Hz	200	190	220
	220	193	238
60 Hz	200	187	220
	208	187	229

Voltages at 15 Amperes (3 Phases and Neutral)

	Nominal	Minimum	Maximum
50 Hz	346	328	380
	380	342	418
	400	360	440
	415	373	439

Power Cord Length:

	Standard	Chicago, Illinois, USA	
meters	4.3	1.8	Specify Code
(feet)	(14)	(6)	9986

Power Cord Style:

See "3827 Page Printer Power Cord Specifications" on page 3827.3.

Power Plug/Receptacle (USA and Canada):

Plug	Russellstoll, DS3516-MP*
Receptacle	Russellstoll, DS3516-FR**
Connector	Russellstoll, DS3516-FP**

Power Plug/Receptacle (All Other Locations): Customer supplies both the plug and receptacle or connector.

Notes:

*	Provided by IBM.
**	Provided by customer.

SPECIFICATIONS (Continued)

Environment, Operating:

Temperature	15.6°C-29.4°C (60°F-85°F)
Rel Humidity	20%-80%
Max Wet Bulb	22.8°C (73°F)
Elevation	0 to 2 134 m (0 to 7 000 ft)

Environment, Nonoperating:

Temperature	4°C-38°C (40°F-100°F)
Rel Humidity	10%-86%

Environment:
"Human health considerations dictate that appropriate ventilation be supplied to the printer area. The American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) recommends a minimum of 0.42-0.57 cmm (15 - 20 cfm) per person of outdoor air make-up during human occupancy (ASHRAE 62-1989). Adherence to IBM pre-printed forms recommendations along with the provision of appropriate ventilation should preclude the development of adverse human health effects due to outgassing/emissions from preprinted forms."

Notes:

*Provided by IBM.
**Provided by customer.

3827 PAGE PRINTER POWER CORD SPECIFICATIONS

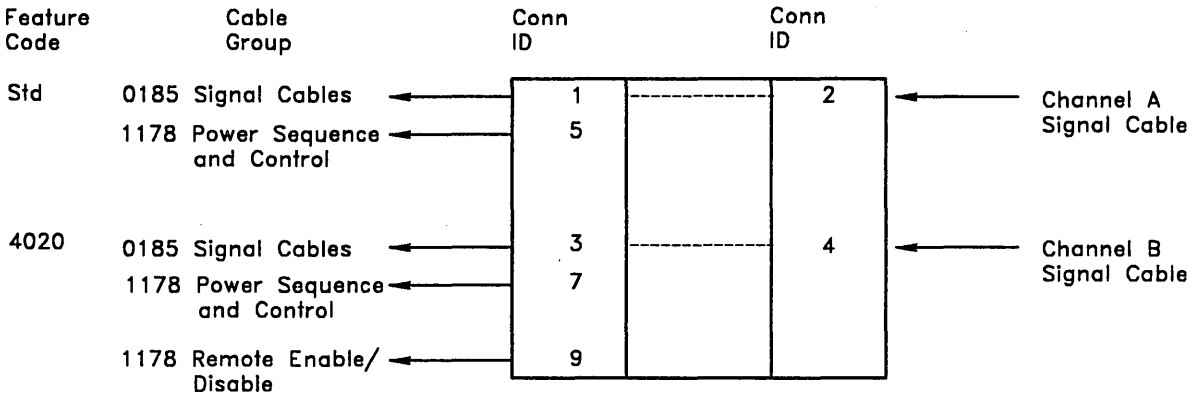
60 Hz	Cable Length*	Cable Nominal OD	Number of Shields	Number of Wires	Nominal OD**	AWG No.
All 60 Hz except Chicago, Illinois, USA; Japan	4.3 m (14 feet)	21.6 mm (0.850 inches)	0	5	2.60 mm (0.102 inches)	10
60 Hz Chicago, Illinois, USA	1.83 m (6 feet)	21.6 mm (0.850 inches)	0	5	2.60 mm (0.102 inches)	10
60 Hz Japan	4.3 m (14 feet)	17.5 mm (0.689 inches)	0	4	2.60 mm (0.102 inches)	10

50 Hz	Cable Length*	Cable Nominal OD	Number of Shields	Number of Wires	Nominal OD**	AWG No.
All 50 Hz except Japan and optional in Belgium	4.3 m (14 feet)	17.0 mm (0.669 inches)	0	5	2.10 mm (0.081 inches)	12
50 Hz Japan and optional in Belgium	4.3 m (14 feet)	15.5 mm (0.610 inches)	0	4	2.10 mm (0.081 inches)	12

*Cable length is from where the cable exits the machine shown on the Plan View as the symbol ⊕ .

**This diameter refers to solid, bare wire.

3827 PAGE PRINTER CABLING SCHEMATIC



From 3827

Feature Code	Group No.	No. of Cables	Conn ID	Max Length m (ft)	Comments	Notes
Std	0185	2	1	122 (400)	Bus and tag	1, 2
	1178	1	5	122 (400)	Power sequence and control	3
4020	0185	2	3	122 (400)	Bus and tag	1, 2
	1178	1	7	122 (400)	Power sequence and control	3
	1178	1	9	122 (400)	Remote enable/disable	3

To 3827

Conn ID	Comments	Notes
2	Bus and tag	1, 2
4	Bus and tag	1, 2

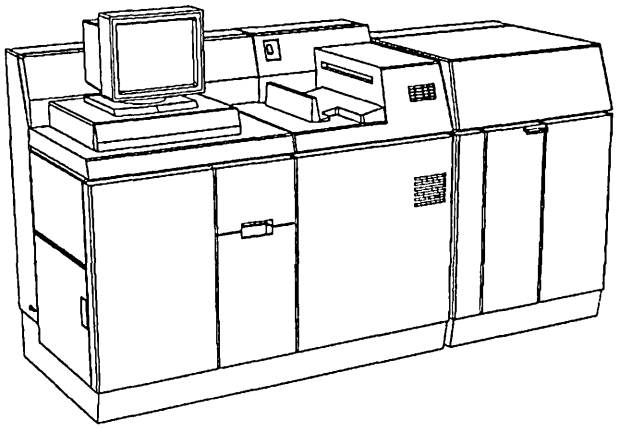
Notes:

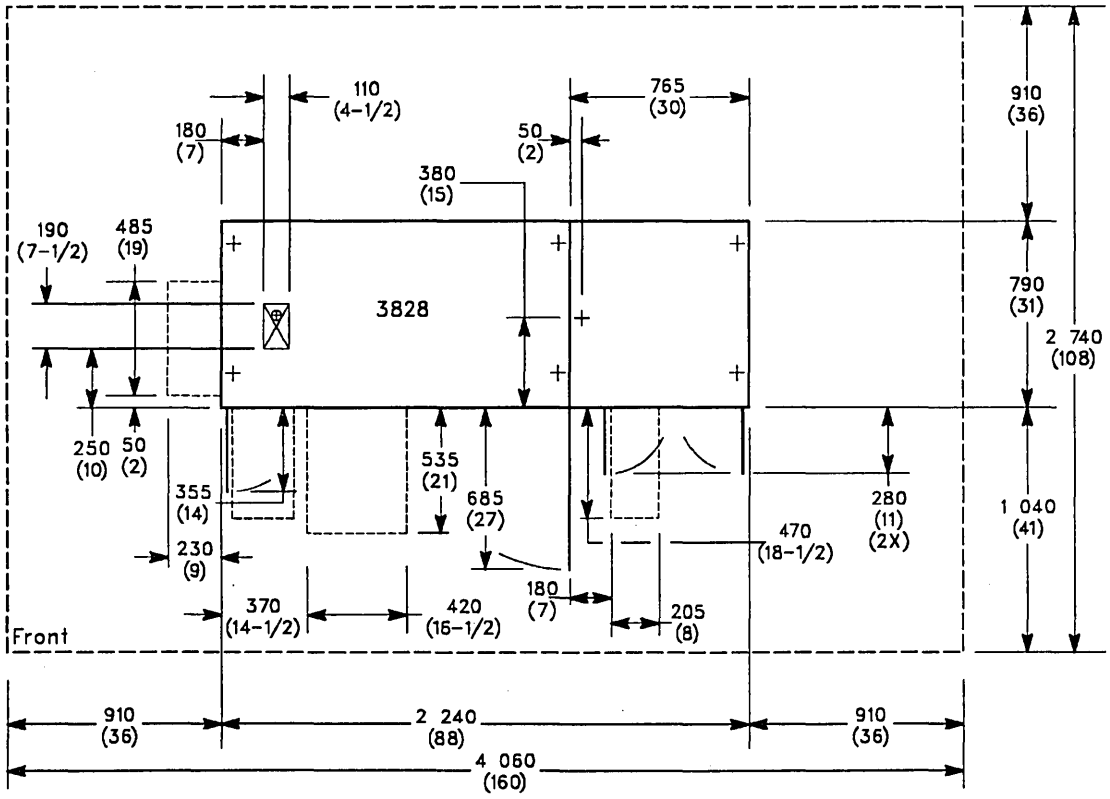
1. Use either group no. 0185 or 3920; 0185 is the newest style of cable and is preferred. If 3920 style cables are already available, they can be used with the 3827.
2. The maximum cumulative length is 122 meters (400 feet), unless modified by system or channel limitation. The maximum cable length must be reduced by 5 meters (15 feet) for each control unit connected between the 3827 and the channel.
3. Optional.

Machine Specifications and Cabling Schematics

3828 Advanced Function MICR Printer

For installation planning, use IBM Physical Planning Template GX22-7118.





Printer Specifications

Dimensions:

Printer	Length	Width	Height
mm	2 240	790	1 270
(inches)	(88)	(31)	(50)

Height (Cover Raised):

mm	1 850
(inches)	(73)

Weight:

Printer	615 kg (1 360 lb)
Stacker	215 kg (470 lb)
Total	830 kg (1 830 lb)

Service Clearances:

	Front	Rear	Right	Left
mm	1 040	910	910	910
(inches)	(41)	(36)	(36)	(36)

Storage Environment:

A 3828 printer that contains developer mix can be stored in the following environments:

Condition	Temperature	%RH	Duration
Hot	38°C (100°F)	5−15%	8 hours
			Note 2
Cold	-29°C (-20°F)		8 hours
Moist	36°C (97°F)	86%	48 hours

Note:

1. All condensation must be evaporated before power is applied.
2. The transition from hot to cold should not be made more than three times for each filling of developer mix.

Environment, Nonoperating:

Temperature	4°C−38°C (40°F−86°F)
Rel Humidity	10%−86%
Max Wet Bulb	27°C (80.6°F)

Environment, Operating:

Temperature	15.6°C−29.4°C (60°F−85°F)
Rel Humidity	20%−65%
Wet Bulb	21.1°C (70°F)
Elevation	0−2 134 m (0−7 000 ft)

Heat Output:

Operating	5 130 W (17 500 BTU/hr)
Idling	1 300 W (4 450 BTU/hr)

Air Flow:

2.83 m^3/min. (100 cfm)

Human health considerations dictate that appropriate ventilation be supplied to the printer area. The American Society of Heating Refrigeration, and Air Conditioning Engineers (ASHRAE) recommends a minimum of 0.42−0.57 cmm (15−20 cfm) per person of outdoor air makeup during human occupancy (ASHRAE 62−1989). Adherence to IBM preprinted forms recommendations along with the provision of appropriate ventilation should preclude the development of adverse human health effects due to outgassing/emissions from preprinted forms.

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual−Physical Planning*, GC22-7072.

LWAd		<LpA>m		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
8.8	7.5	70	57	No	No

Power Requirements:

	60 Hz
kVA (idle)	2.25
kVA (operating)	5.00
Phase	3

60 Hz three-phase voltages:

Nominal	Minimum	Maximum
208	187	229

The 3828 requires a 5 wire WYE with neutral.

Printer Power Cord Specifications

Power Cord Length:

	Standard	Chicago, Illinois U.S.A. Specify code 9986
meters	4.3	1.8
(feet)	(14)	(6)

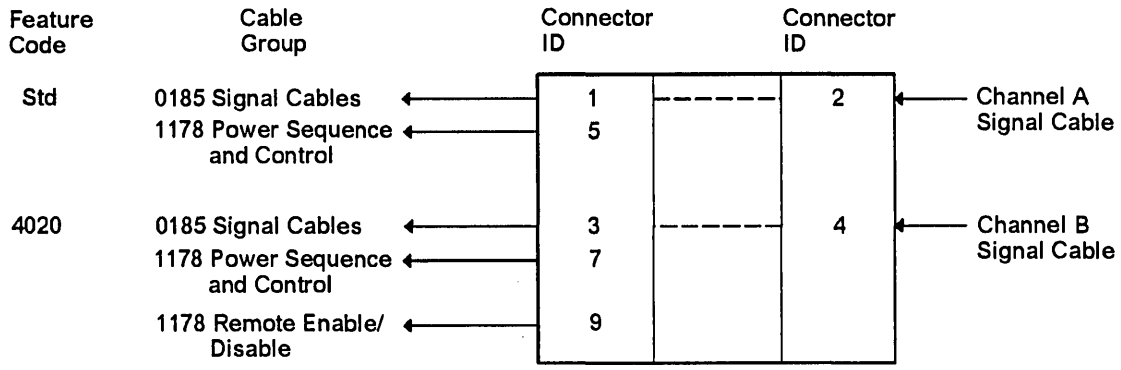
Power Cord Style: Cord OD is 21.6 mm (.85 in.) 5 wire, no shield. Leads are 10 AWG stranded wire.

Power Plug/Receptacle: U.S.A. and Canada

Plug	R&S DS3516-MP (Provided by IBM)
Receptacle *	R&S DS3516-FR (Provided by Customer)
Connector *	R&S DS3516-FP (Provided by Customer)

* Receptacle or connector requires 3 phases, neutral, and ground connection to the facilities power system.

3828 Advanced Function MICR Printer Cabling Schematic



From 3828

Feature Code	Group No.	No. of Cables	Connector ID	Maximum Length meters (feet)	Comments	Notes
Std	0185	2	1	122 (400)	Bus and tag	1, 2, 7
	1178	1	5	122 (400)	Power sequence and control	3
4020	0185	2	3	122 (400)	Bus and tag	1, 2, 6, 7
	1178	1	7	122 (400)	Power sequence and control	3
	1178	1	9	122 (400)	Remote Enable/Disable	4

To 3828

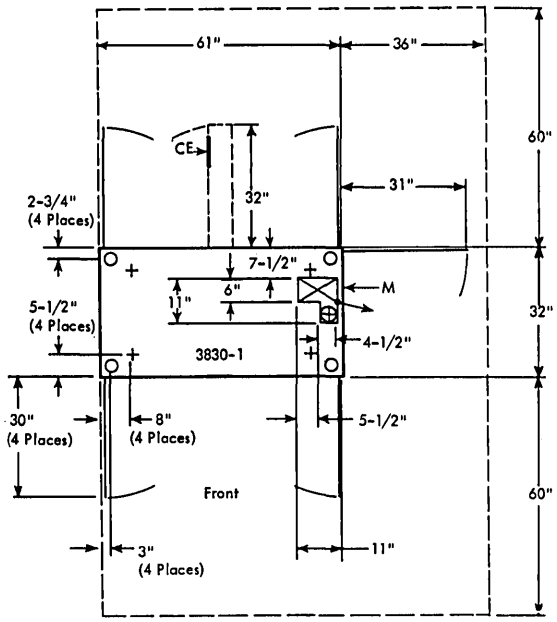
Connector ID.	Notes
2	1, 2, 7
4	1, 2, 6, 7

Notes:

1. 3828 attachment is supported by parallel block multiplexer channels. The 3828 attaches to ES/9370, 4331, 4361, 4381, 308X, 3090 and ES/9000 processors. The 3828 attaches to ES/3090 Models 180J and above (except Model 250,) ES/3090-9000T models, and ES/9000 processors with ESCON channels through the 9034 ESCON Converter Model 1.
2. Attachment can be made through a two-channel switch or directly to the channel. Attachment through a 3044 fiber optic channel extender is supported on the 4361, 4381, 308X, 309X processors. Attachment to the 3044 will be to the remote end (D01 unit). Maximum distance from the 3828 printer to the channel through a 3044 is two kilometers (6 562 feet). The 3828 does not support attachment to the IBM 9370 processors via the IBM 3044 fiber optic channel extender.
3. Remote power sequence and control is optional and can be ordered for each connected channel by cable group 1178.
4. Remote enable/disable is optional and can be attached with cable group 1178.
5. The IBM 3828 printer supports a maximum channel cable length of 122 meters (400 feet) if it is the only control unit on the channel interface. For each additional control unit, up to a maximum of eight control units, this distance is reduced by 4.6 meters (15 feet).
6. The SF 4020 two-channel switch allows connection to a second channel interface.
7. Cable group 0185 is preferred; however, cable group 3920 (old style channel cable) can be used.

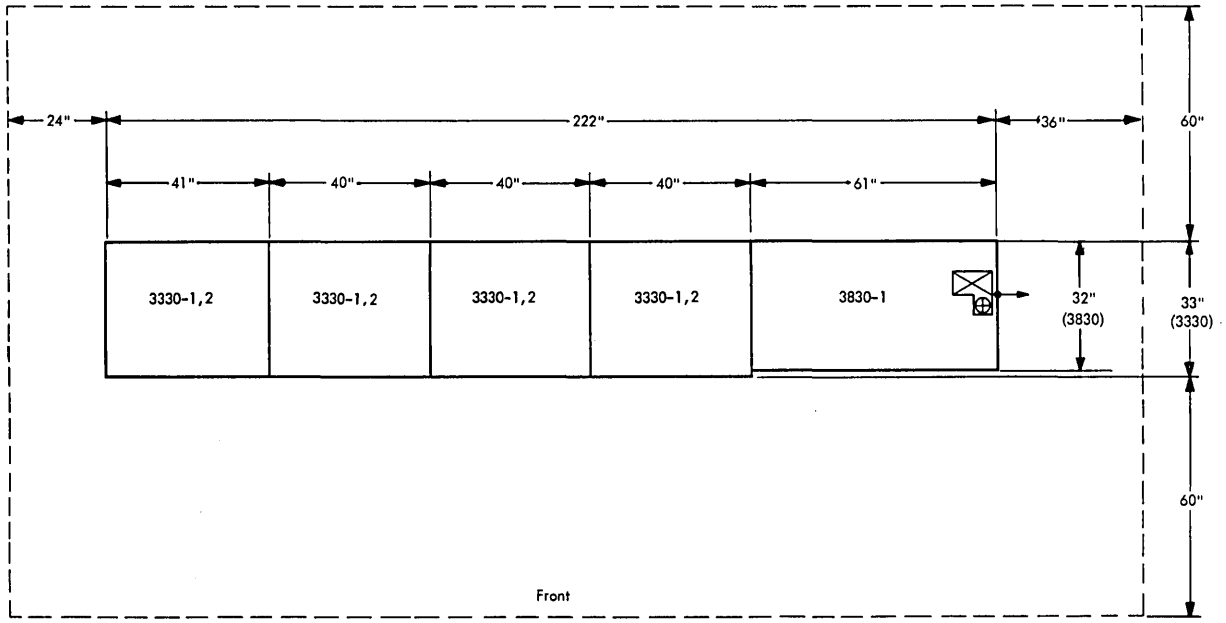
3830 STORAGE CONTROL MODEL 1

PLAN VIEW (English Scale: 1/4 in. = 1 ft)



3830-1 AND 3330-1 OR 3330-2 DISK STORAGE FACILITY (MAXIMUM CONFIGURATION)

PLAN VIEW (English Scale: 1/4 in. = 1 ft)



Note: Left service clearance required for any configuration of storage control and disk storage modules. The facility contains one storage control and from one to four disk storage modules. See 3330 and 3830 specifications.

3830 STORAGE CONTROL MODEL 1

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	61	32	60
(cm)	(155)	(81)	(152)

Service Clearances:

	F	R	Rt	L
Inches	60	60	36	0*
(cm)	(152)	(152)	(91)	(0*)

Weight: 1,600 lb (730 kg)

Heat Output: 10,500 BTU/hr (2 650 kcal/hr)

Airflow: 1,160 cfm (33 m^3/min)

Power Requirements:

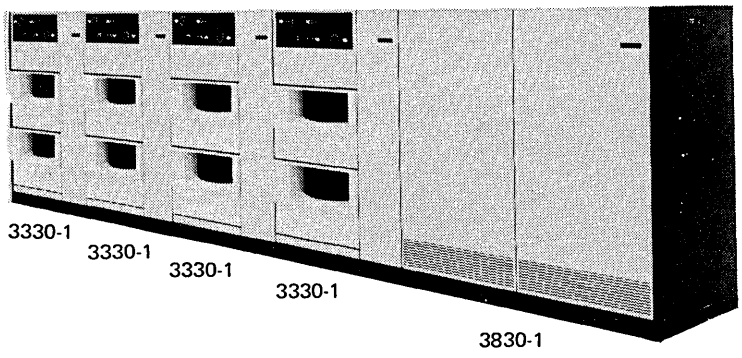
kVA	3.2
Phases	3
Plug	R&S, SC7328
Connector	R&S, SC7428
Receptacle	R&S, SC7324
Power Cord Style	E7

Environment, Operating:

Temperature	60°F-90°F (16°C-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	78°F (26°C)

Environment, Nonoperating:

Temperature	50°F-110°F (10°C-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	80°F (27°C)

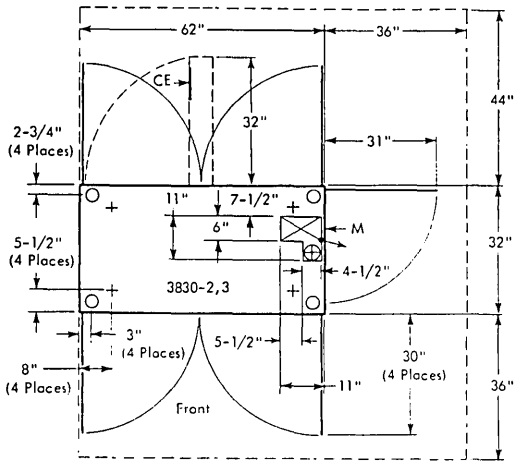


Notes:

* The 3830-1 abuts and attaches to the right end of a 3330-1 or a 3330-2.

3830 STORAGE CONTROL MODELS 2 AND 3

PLAN VIEW (English Scale: 1/4 in. = 1 ft)



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	62	32	60
(cm)	(157)	(81)	(152)

Service Clearances:

	F	R	Rt	L
Inches	36	44	36	0
(cm)	(91)	(112)	(91)	(0)

Weight: 1,600 lb (730 kg)

Heat Output: 10,500 BTU/hr (2 650 kcal/hr)

Airflow: 1,160 cfm (33 m^3/min)

Power Requirements:

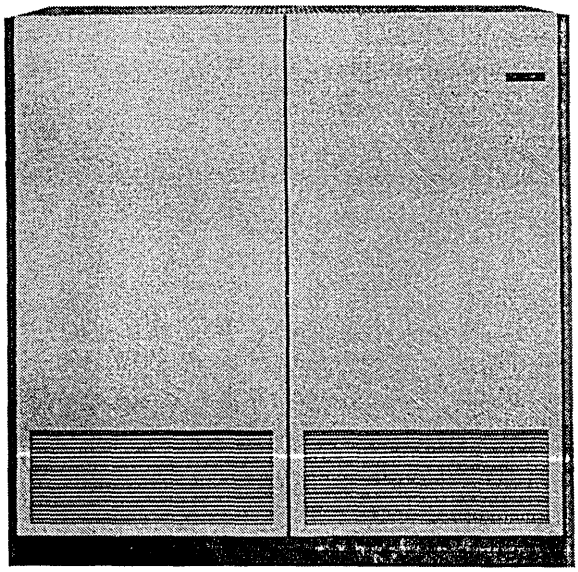
kVA	3.3
Phases	3
Plug	R&S, FS3730
Connector	R&S, FS3914
Receptacle	R&S, FS3744
Power Cord Style	B2

Environment, Operating:

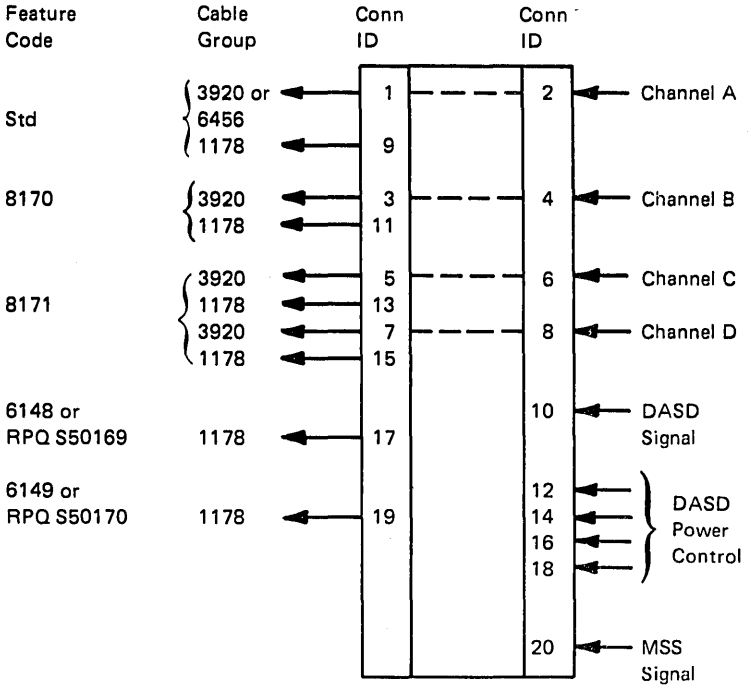
Temperature	60°F-90°F (16°C-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	78°F (26°C)

Environment, Nonoperating:

Temperature	50°F-110°F (10°C-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	80°F (27°C)



3830 STORAGE CONTROL MODELS 1, 2, AND 3 CABLING SCHEMATIC



From 3830

Feature Code	*Group No.*	*No. of Cables*	*Conn ID*	*Max Length*		*Model*	*Notes*
				m	*(ft)*		
Std	3920	2	1	72	(250)	1, 2	1, 2
	6456	2	1	91	(300)	3	5
	1178	1	9	85	(280)	All	3
8170	3920	2	3	75	(250)	All	1, 2
	1178	1	11	85	(280)	All	3
8171	3920	2	5	85	(280)	All	1, 2
	1178	1	13	85	(280)	All	3
	3920	2	7	85	(280)	All	1, 2
	1178	1	15	85	(280)	All	3
6148	1178	1	17	46	(150)	2, 3	4
6149	1178	1	19	46	(150)	2, 3	4
RPQ S50169	1178	1	17	46	(150)	1	4
RPQ S50170	1178	1	19	46	(150)	1	4

To 3830

Feature Code	*Conn ID*	*Model*	*Notes*
Std	2	All	1, 2
8170	4	All	1, 2
8171	6	All	1, 2
	8	All	1, 2
Std	10	2, 3	6, 9, 10
Std	12	2, 3	8
Std	14	2, 3	8
Std	16	2, 3	8
Std	18	2, 3	8
Std	20	3	7, 10

3830 STORAGE CONTROL MODELS 1, 2, AND 3 CABLING SCHEMATIC

Notes:

1. Maximum length is increased to 85 meters (280 feet) when SF 9318 for Model 2 or SF 9320 for Model 3 is installed.
2. Maximum length must be reduced by 4.5 meters (15 feet) for each control device connected between a 3830 and the attaching channel.
3. Power sequence and control; cable is optional.
4. Remote switch is required for SF 6148, SF 6149, RPQ S50169 or RPQ S51070.
5. Maximum cumulative cable length of 91 meters (300 feet) is available to attach as many as seven devices to the standard port of the 3851 or eight devices to an optional port of the 3851. The most remote 3830-3, controlling the 3330, 3333, and/or 3350 containing control information for the mass storage system, must be within 45 meters (150 feet). See "General Cabling Schematics" under "3850 Mass Storage System."
6. Signal from DASD.
7. Signal from MSS.
8. Power control.
9. The attachment options for the 3830 Model 2 are:
   a. As many as four 3333s, 3340-A2s, and/or 3350-A2s, -A2Fs, -C2s, or -C2Fs in any combination.
   b. As many as four 3333s (any model) and/or 3350-A2s, or 3350-A2Fs in any combination. Each 3350-A2 or 3350-A2F can attach one 3350-C2 or 3350-C2F for a maximum of four 3350-A2s or 3350-A2Fs and four 3350-C2s or 3350-C2Fs.
   c. As many as two 3340-A2s can attach 3344. Attachment of one or more 3340-A2s with 3344s is mutually exclusive with attachment of either 3333s or 3350s.
10. The attachment options for the 3830 Model 3 are:
    a. As many as four strings of 3333s and/or 3350s in any combination.
    b. As many as four data recording controllers (DRCs) on the mass storage system.

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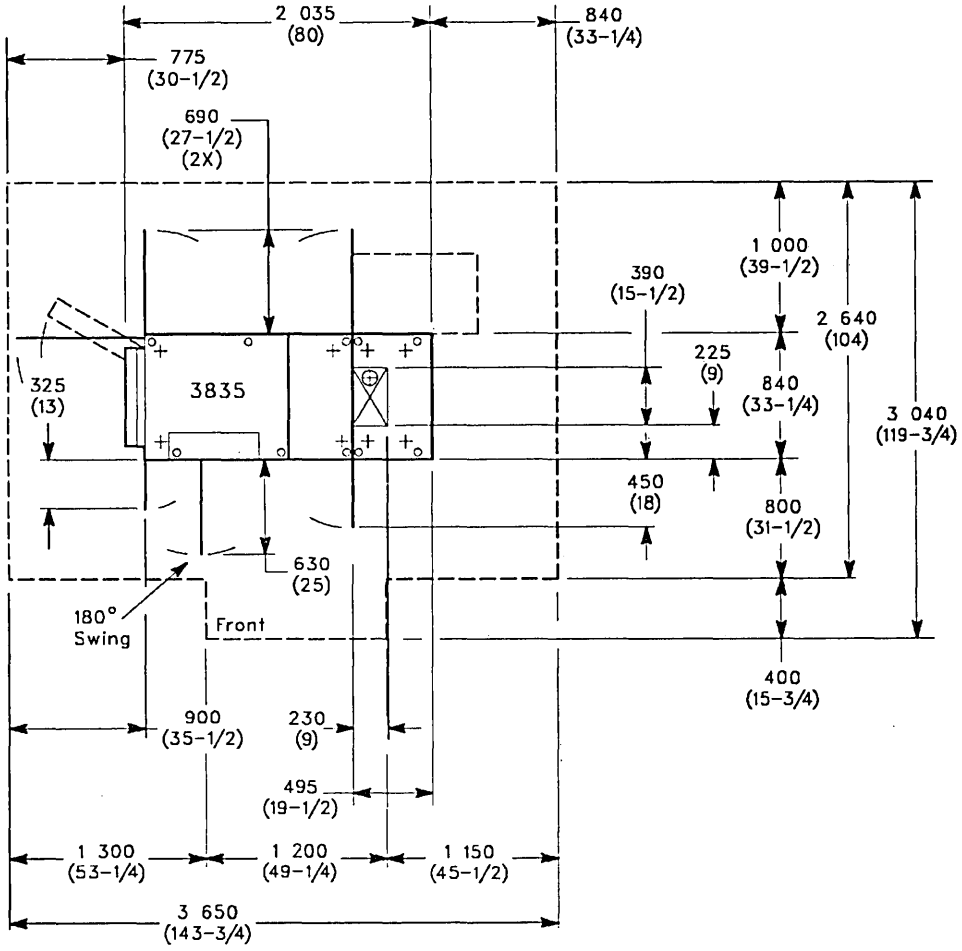
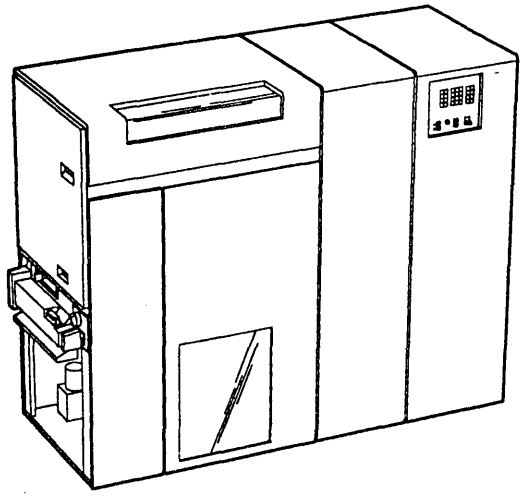
3835 Page Printer Models 1 and 2

Plan View (Not to Scale)

English measurements are shown in parentheses.

Use IBM Physical Planning Template GX22-7119.





3835 Page Printer Models 1 and 2

Specifications

Dimensions:

	Front	Side	Height
mm	2 035	840	1 410
(in.)	(80)	(33-¼)	(55-¾)

Height (Cover Raised):

mm	—	—	2 085
(in.)	—	—	(82)

Service Clearances:

	Front	Rear	Right	Left
mm	800	1 000	840	900
(in.)	(31-½)	(39-½)	(33-¼)	(35-½)

Weight:

Printer	700 kg (1 540 lb)
Controller	150 kg (330 lb)
Total	850 kg (1 870 lb)

The 3835 is shipped on a pallet. A forklift may be required to place the printer on the floor so it can be rolled into position.

Heat Output:

Operating	6.0 kW (20.5 kBTU/hr)
Nonoperating:	5.5 kW (18.0 kBTU/hr)

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual— Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>m$		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
7.6	7.2	59.0	55.0	No	No

Power Requirements:

	50Hz	*60Hz*
kVA	6	6
Phases	3	3

Voltages at 30 Amperes 3 Phases

	Nominal	Minimal	Maximum
50 Hz	200	180	220
	230	207	252

Voltages at 30 Amperes 3 Phases

60 Hz	200	180	220
	208	187	229
	220	198	242
	240	216	264

Voltages at 20 Amperes 3 Phases and Neutral

50 Hz	380	342	418
	400	360	440
	415	374	456

This product is phase sensitive. See the installation instructions for proper phasing.

Power Cord Length:

	Standard	Chicago, Illinois, USA	
meters	4.3	1.8	Specify Code
(feet)	(14)	(6)	9986

Power Cord Style:

See "3835 Page Printer Power Cord Specifications" on page 3835.3.

Power Plug and Receptacle (USA and Canada):

Plug	Russellstoll, 3760
Receptacle	Russellstoll, 3754
Connector	Russellstoll, 3934

Power Plug and Receptacle (All Other Locations):

Customer supplies both the plug and the receptacle or the connector.

SPECIFICATIONS (CONTINUED)

Environment, Operating:

Temperature 15.6°C-29.4°C (60°F-85°F)
Rel Humidity 20%-80%
Max Wet Bulb 22.8°C (73°F)
Elevation 0 to 2 134 m (0 to 7 000 ft)

Environment, Nonoperating:

Temperature 4°C-38°C (40°F-100°F)
Rel Humidity 10%-86%

Environment:
"Human health considerations dictate that appropriate ventilation be supplied to the printer area. The American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) recommends a minimum of 0.42-0.57 cmm (15 - 20 cfm) per person of outdoor air make-up during human occupancy (ASHRAE 62-1989). Adherence to IBM pre-printed forms recommendations along with the provision of appropriate ventilation should preclude the development of adverse human health effects due to outgassing/emissions from preprinted forms."

Notes:

*Provided by IBM.
**Provided by customer.

3835 PAGE PRINTER POWER CORD SPECIFICATIONS

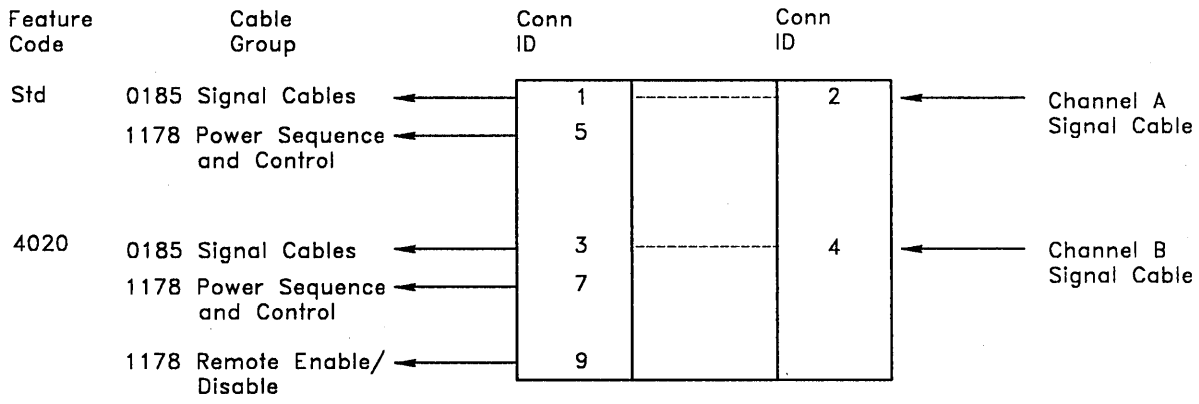
60 Hz	Cable Length*	Cable Nominal OD	Number of Shields	Number of Wires	Nominal OD**	AWG No. / (mm^2)
All 60 Hz except Chicago, Illinois, USA; Japan	4.3 m (14 feet)	21.6 mm (0.850 inches)	0	5	2.60 mm (0.102 inches)	10 (6.8)
60 Hz Chicago, Illinois, USA	1.83 m (6 feet)	21.6 mm (0.850 inches)	0	5	2.60 mm (0.102 inches)	10 (6.8)
60 Hz Japan	4.3 m (14 feet)	17.5 mm (0.689 inches)	0	4	2.60 mm (0.102 inches)	10 (6.8)

50 Hz	Cable Length*	Cable Nominal OD	Number of Shields	Number of Wires	Nominal OD**	AWG No. / (mm^2)
All 50 Hz except Japan and optional in Belgium	4.3 m (14 feet)	17.0 mm (0.669 inches)	0	5	2.10 mm (0.081 inches)	12 (4.4)
50 Hz Japan and optional in Belgium	4.3 m (14 feet)	15.5 mm (0.610 inches)	0	4	2.10 mm (0.081 inches)	12 (4.4)

*Cable length is from where the cable exits the machine shown on the Plan View as the symbol ⊕.

**This diameter refers to solid, bare wire.

3835 PAGE PRINTER CABLING SCHEMATIC



From 3835

Feature Code	Group No.	No. of Cables	Conn ID	Max Length m (ft)	Comments	Notes
Std	0185	2	1	122 (400)	Bus and tag	1, 2
	1178	1	5	122 (400)	Power sequence and control	3
4020	0185	2	3	122 (400)	Bus and tag	1, 2
	1178	1	7	122 (400)	Power sequence and control	3
	1178	1	9	122 (400)	Remote enable/disable	3

To 3835

Conn ID	Comments	Notes
2	Bus and tag	1, 2
4	Bus and tag	1, 2

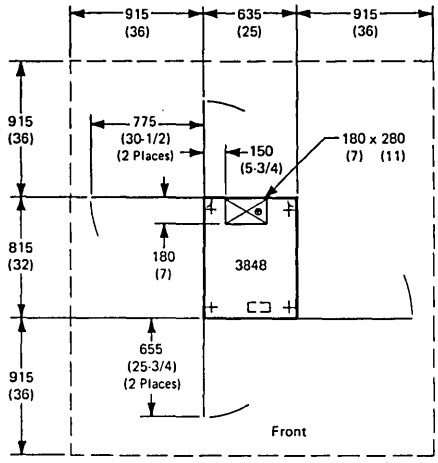
Notes:

1. Use either group no. 0185 or 3920; 0185 is the newest style of cable and is preferred. If 3920 style cables are already available, they can be used with the 3835.
2. The maximum cumulative length is 122 meters (400 feet), unless modified by system or channel limitation. The maximum cable length must be reduced by 5 meters (15 feet) for each control unit connected between the 3835 and the channel.
3. Optional.

3848 CRYPTOGRAPHIC UNIT

PLAN VIEW (Metric Scale: 10 mm = 0.5 m)

English measurements are shown in parentheses.



SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	640	820	1 020
(inches)	(25)	(32)	(40)

Service Clearances:

	Front	Rear	Right	Left
mm	920	920	920	920
(inches)	(36)	(36)	(36)	(36)

Weight: 181 kg (400 lb)

Heat Output: 800 W (2,750 BTU/hr)

Airflow: 6.5 m^3/min (220 cfm)

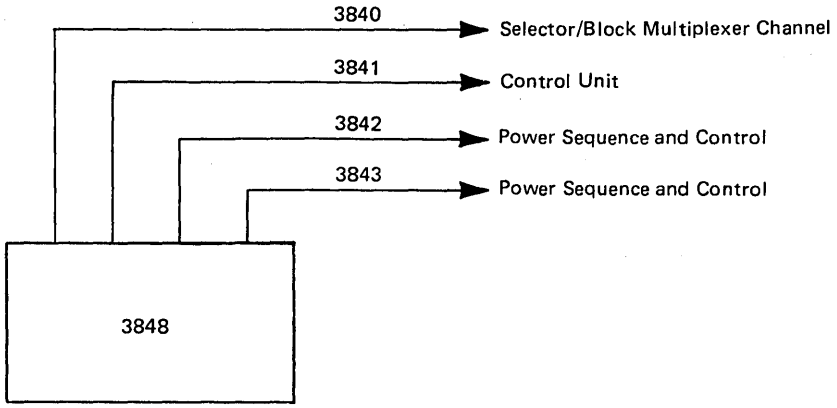
Power Requirements:

kVA	0.8
Phases	1
Plug	R&S, FS3720
Connector	R&S, FS3913
Receptacle	R&S, FS3743
Power Cord Style	A6

Environment, Operating:

Temperature	16°C-32°C (60°F-90°F)
Rel Humidity	20%-80%
Max Wet Bulb	23°C (73°F)

3848 CRYPTOGRAPHIC UNIT CABLING SCHEMATIC



Group No.	*No. of Cables*	*From*	*To*	*Max Length meters*	*(ft)*	*Notes*
3840	2	3848	Sel/Blk Mpx Chan	–	–	2
3841	2	3848	Control Unit	–	–	2
3842	1	3848	Channel	45	(148)	1
3843	1	3848	Channel	122	(400)	1

Notes:

1. Power sequence and control; cable is optional. Select 3842 or 3843.
2. For detailed information, refer to *IBM 3848 Cryptographic Unit Product Description and Operating Procedures*, GA22-7073.

3850 MASS STORAGE SYSTEM

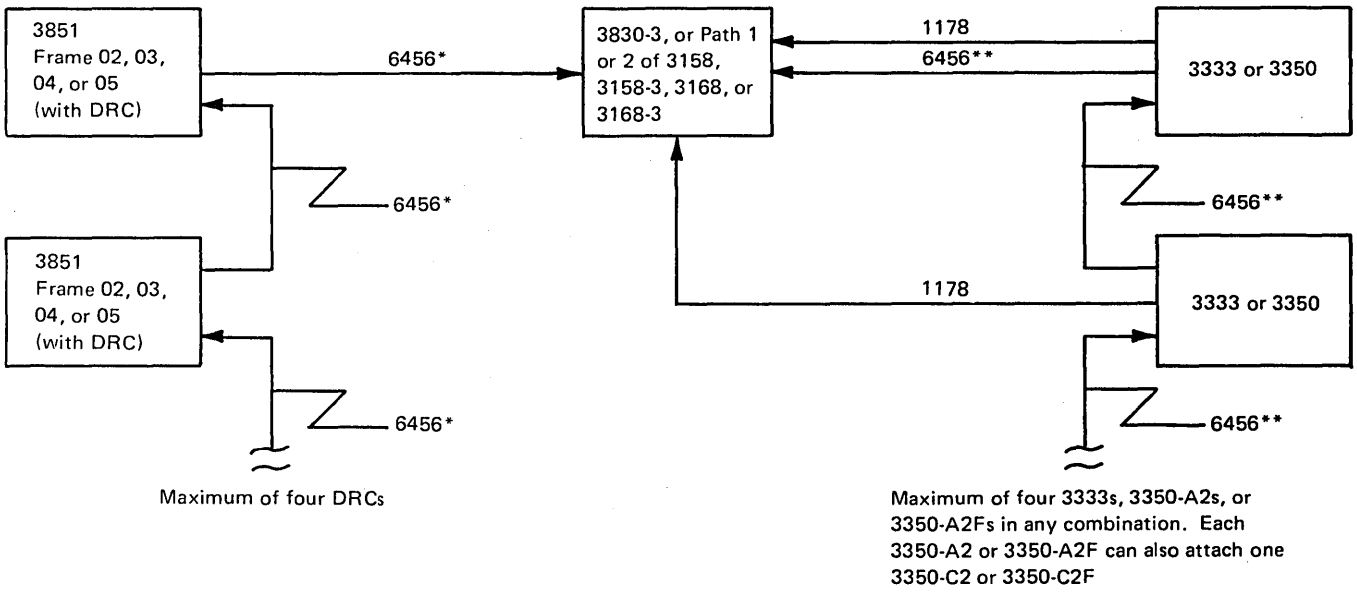
Individual cable paths interconnect various machines and functions of the IBM 3850 Mass Storage System. The following information includes the general cabling schematics and cable length limitations of the system.

1. Connection to system channels. (See Section 2, "General Cabling Information.")
   a. The 3850 Mass Storage Facility frame 01 contains a control unit function. The A-series 3851 (frame 01) requires one position on a channel. The B-series 3851 (frame 01) requires two positions on a channel. (See "3851 Mass Storage Facility Cabling Schematic.") The 3851 can be attached to a maximum of four channels. The maximum cumulative cable length for each channel is 61 meters (200 feet).
   b. The 3830 Storage Control Model 3 requires a position on a block multiplexer channel. The 3830-3 can be attached to a maximum of three channels. Maximum cable length varies. (See "3830 Storage Control Models 1, 2 and 3 Cabling Schematic.")
   c. System/370 Model 158 or 168 may have integrated storage controls (SF 4650) with staging adapter (SF 7220) installed on the 3158, 3158-3, 3168, or 3168-3. Each ISC path can be attached to a maximum of two block multiplexer channels. The maximum cumulative cable length for each channel varies. (See System/370 Models 158 and 168 cabling information for specifications.)
2. Connection of a 3333, 3350-A2/3350-A2F, and 3350-C2/3350-C2F to integrated storage controls or 3830-3. (See individual unit cabling schematics.)

General Cabling Schematics

The following schematics show the cable paths required within the mass storage system.

A. Data Recording Controller* (DRC) and 3333 or 3350 to 3830 Model 3, or Staging Adapter (SF 7220) of a 3158, 3158-3, 3168, or 3168-3

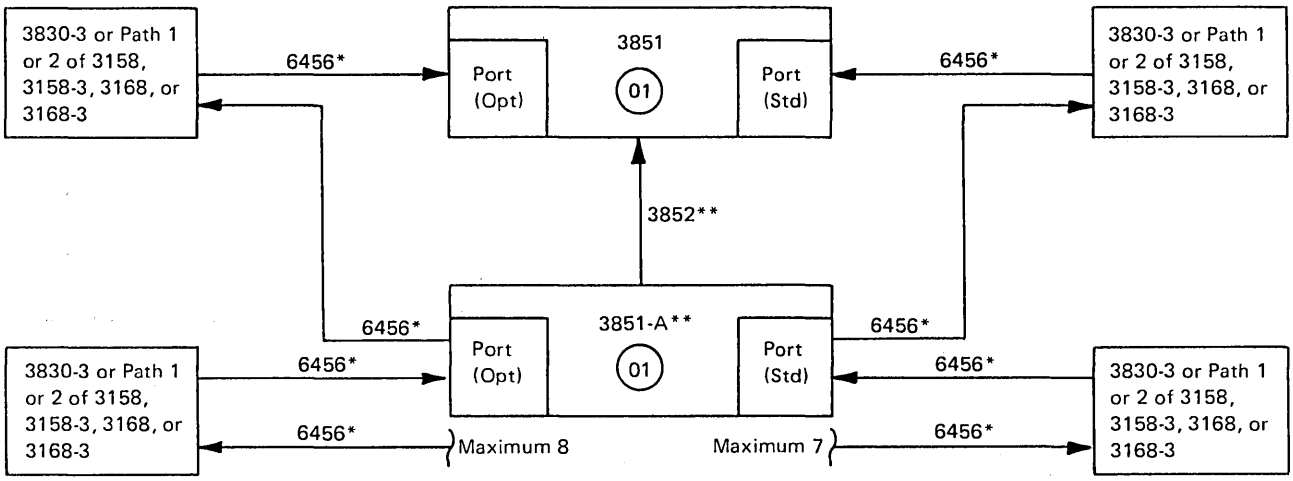


*Each frame (02, 03, 04, and 05) may contain one data recording controller (DRC). The number of frames and DRCs included in the 3851 Mass Storage Facility varies depending on model. Each DRC can be attached to two staging adapters and/or 3830 Model 3. A maximum of four DRCs can be attached to each staging adapter or 3830 Model 3. The DRCs can be part of the same, or different, 3851s in the same 3850 Mass Storage System.

**Special features may be ordered to connect a 3333, 3350-A2, 3350-A2F, 3350-C2, or 3350-C2F to two ISCs and/or 3830-3.

General Cabling Schematics (Continued)

B. 3830 Model 3 or Staging Adapter (SF 7220) of a 3158, 3158-3, 3168, or 3168-3 to the Mass Storage Control Port of a 3851 Mass Storage Facility



*Maximum cumulative cable length for each path is 91 meters (300 feet). The most remote 3158, 3158-3, 3168, or 3830-3 controlling the DASD devices, which contain control information for the mass storage system, must be within 45 meters (150 feet) from the primary and secondary 3851.

**This section of the diagram shows the connection of two A-series 3851s in the same mass storage system. Cable group 3852 connects the secondary (#2) A-series 3851 to the primary (#1) A-series 3851. Maximum cable length is 91 meters (300 feet). If SF 4901 (for the optional port) is installed on the primary A-series 3851 (#1), it should also be installed on the secondary 3851 (#2). The 3851 (#2) should be separately connected to both the standard port and the optional port. Standard port and optional port cable paths should not be cross-connected.

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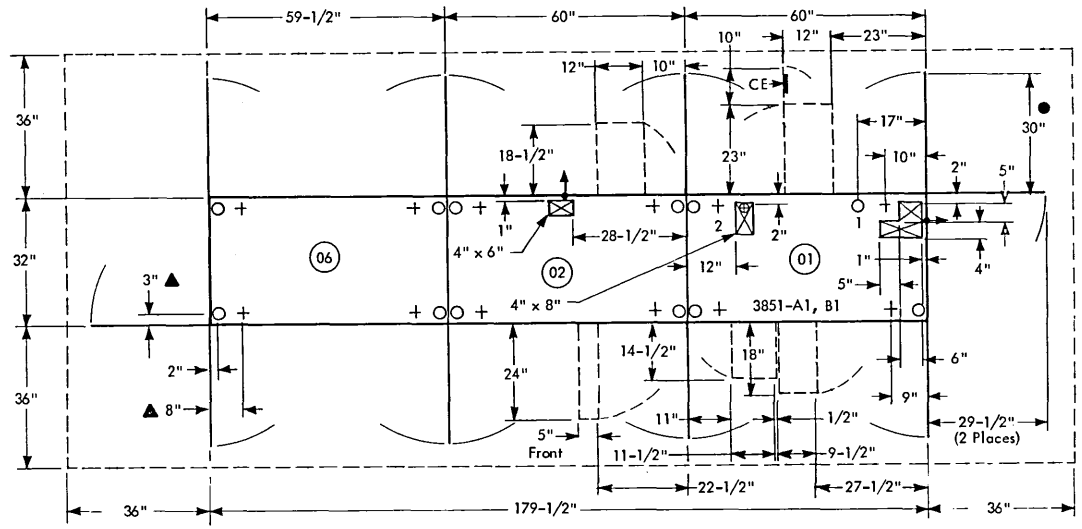
PLAN VIEW (MINIMUM CONFIGURATION)* English Scale: 1/4 in. = 1 ft



*The number of frames included in the 3851 Mass Storage Facility (and cable entry holes required for frames 03, 04, and 05) is model dependent as shown in the following table. Note that frames 01, 02, and 06 (and cable entry holes shown in the plan views for them) are used with all models.

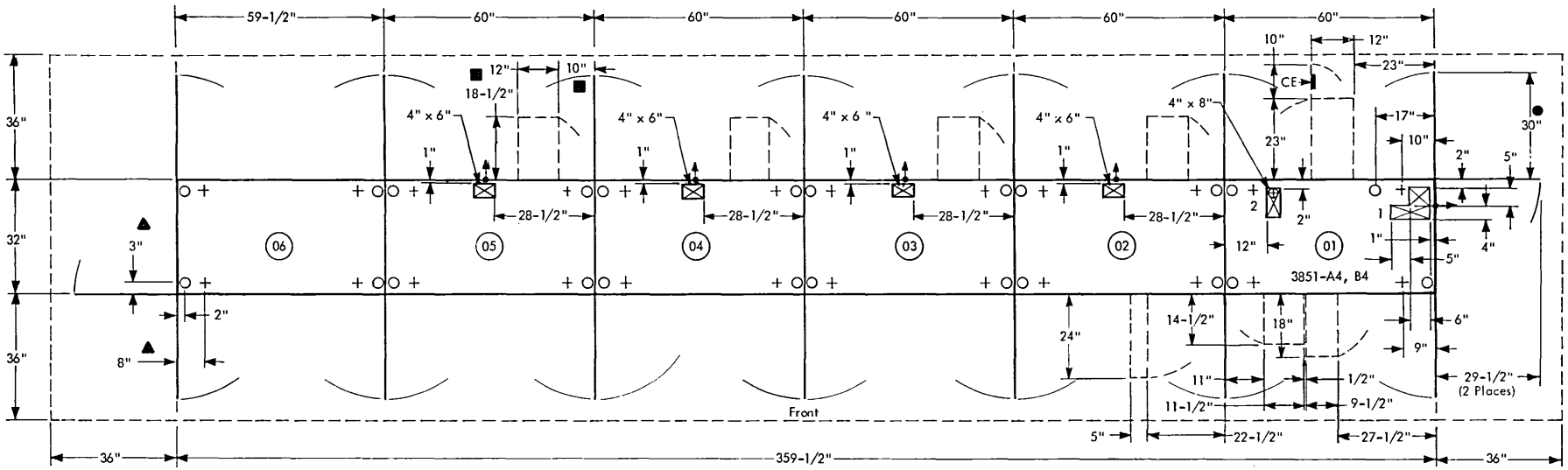
Models	Frames Included	Cable Entry for Frame
A01, B01	01, 02, 06	01, 02
A11, B11	01, 02, 03, 06	01, 02
A21, B21	01, 02, 03, 04, 06	01, 02
A31, B31	01, 02, 03, 04, 05, 06	01, 02
A02, B02	01, 02, 03, 06	01, 02, 03
A12, B12	01, 02, 03, 04, 06	01, 02, 03
A22, B22	01, 02, 03, 04, 05, 06	01, 02, 03
A03, B03	01, 02, 03, 04, 06	01, 02, 03, 04
A13, B13	01, 02, 03, 04, 05, 06	01, 02, 03, 04
A04, B04	01, 02, 03, 04, 05, 06	01, 02, 03, 04, 05

▲ Typical dimensions for casters and leveling pads for frames 01, 02, 03, 04, 05, and 06.

● Typical dimensions for front and rear cover swings on all frames.

■ Typical dimensions for rear gate on frames 02, 03, 04, 05.

PLAN VIEW (MAXIMUM CONFIGURATION)* English Scale: 1/4 in. = 1 ft



3851 MASS STORAGE FACILITY

SPECIFICATIONS

Details (By Frame)

Frame	Weight lb (kg)	Airflow cfm (m^3/min)	Heat Output BTU/hr (kcal/hr)
01 (A-models)	1,720 (780)	630 (18)	11,500 (2 900)
01 (B-models)	1,970 (900)	730 (21)	17,700 (4 500)
02	1,765* (810*)	500 (15)	7,500 (1 900)
03, 04, or 05 (With DRC)	2,020* (920*)	500 (15)	7,500 (1 900)
03, 04, or 05 (Without DRC)	1,330* (605*)	–	–
06	765 (350)	–	–

Note:

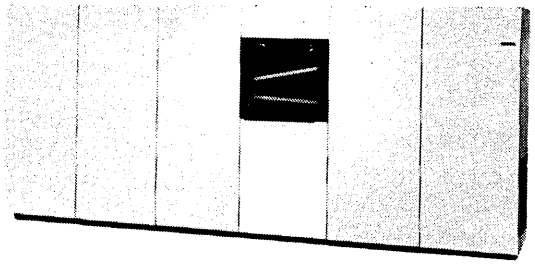
*Weight includes a maximum complement of cartridges:

235 lb (110 kg) for frame 02 and

446 lb (210 kg) each for frames 03, 04, and 05

Totals (By Model)

Model	Weight* lb (kg)	Airflow cfm (m^3/min)	Heat Output BTU/hr (kcal/hr)	kVA
A01	4,250 (1 950)	1,130 (32)	19,000 (4 800)	6.2
A02	6,270 (2 850)	1,630 (47)	26,500 (6 700)	8.6
A03	8,290 (3 800)	2,130 (61)	34,000 (8 600)	11.0
A04	10,310 (4 700)	2,630 (75)	41,500 (10 500)	13.4
A11	5,580 (2 250)	1,130 (32)	19,000 (4 800)	6.2
A12	7,600 (3 450)	1,630 (47)	26,500 (6 700)	8.6
A13	9,620 (4 400)	2,130 (61)	34,000 (8 600)	11.0
A21	6,910 (3 150)	1,130 (32)	19,000 (4 800)	6.2
A22	8,930 (4 000)	1,630 (47)	26,500 (6 700)	8.6
A31	8,240 (3 750)	1,130 (32)	19,000 (4 800)	6.2
B01	4,500 (2 050)	1,230 (35)	25,200 (6 400)	8.2
B02	6,520 (3 000)	1,730 (49)	32,700 (8 250)	10.7
B03	8,540 (3 900)	2,230 (64)	40,200 (10 150)	13.2
B04	10,560 (4 800)	2,730 (78)	47,700 (12 050)	15.6
B11	5,830 (2 650)	1,230 (35)	25,200 (6 400)	8.2
B12	7,850 (3 600)	1,730 (49)	32,700 (8 250)	10.7
B13	9,870 (4 500)	2,230 (64)	40,200 (10 150)	13.2
B21	7,160 (3 250)	1,230 (35)	25,200 (6 400)	8.2
B22	9,180 (4 200)	1,730 (49)	32,700 (8 250)	10.7
B31	8,490 (3 850)	1,230 (35)	25,200 (6 400)	8.2



3851 MASS STORAGE FACILITY

SPECIFICATIONS

Dimensions:

	Front	Side	Height
Inches	**	32	75-1/2
(cm)	(**)	(81)	(192)

Service Clearances:

	Front†	Rear†	Right	Left
Inches	36	36	36	36
(cm)	(91)	(91)	(91)	(91)

Acoustical Data:
For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>_m$		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
8.4	8.4	58.0	57.0	No	No

Power Requirements:*

Phases	3
Plug	R&S, SC7328
Connector	R&S, SC7428
Receptacle	R&S, SC7324
Power Cord Style	E7

Environment, Operating:

Temperature	60°F-85°F (16°C-29°C)
Rel Humidity	20%-80%
Max Wet Bulb	70°F (21°C)

Environment, Nonoperating:

Temperature	50°F-90°F (10°C-32°C)
Rel Humidity	8%-80%
Max Wet Bulb	70°F (21°C)

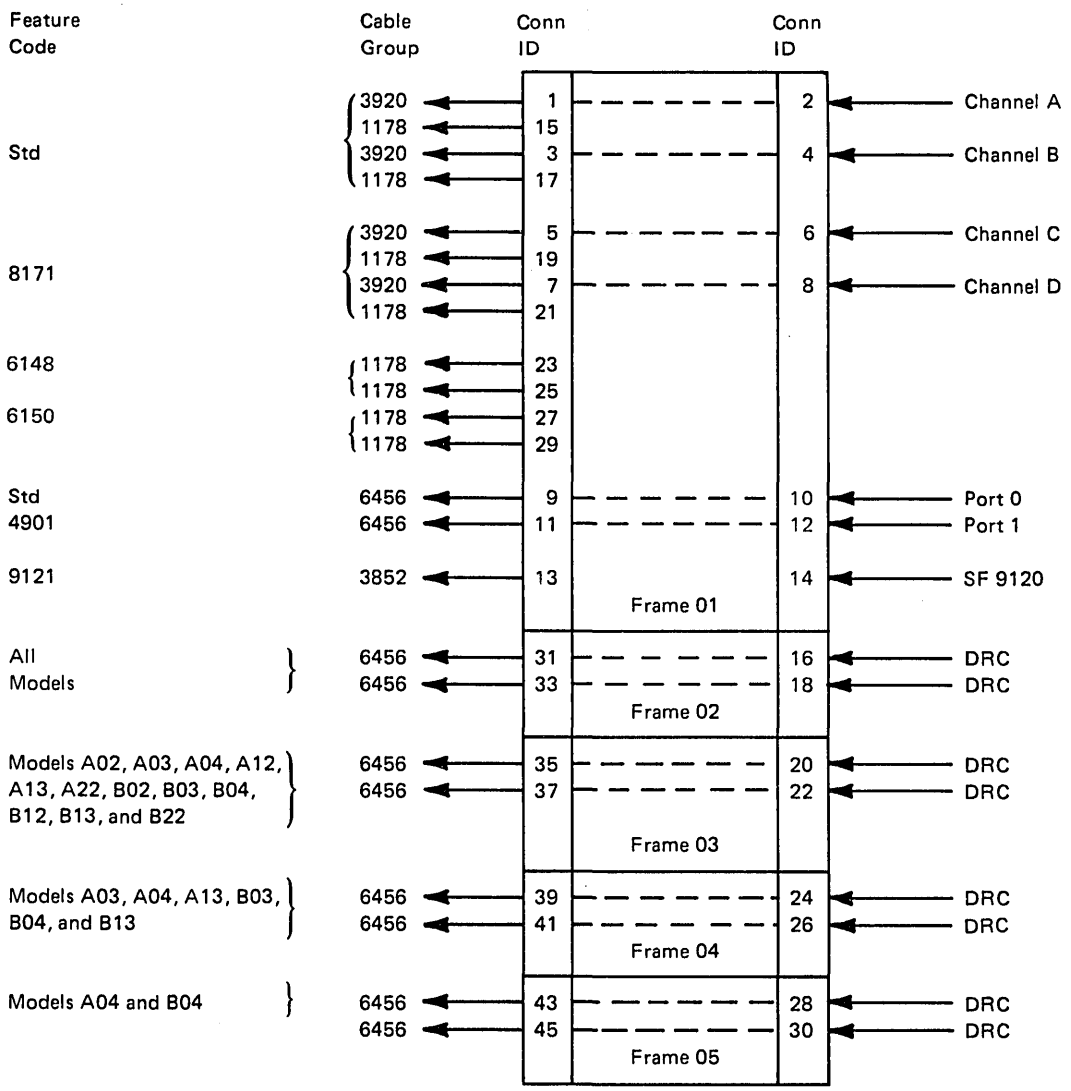
Notes:

* See Totals (By Model) for kVA.

** See plan view.

† Based on IBM's method of computation, the 3851 Model A03 and larger exceed 75 lb/ft^2 (370 kg/m^2) distributed floor loading when specified service clearances are used. Additional front and/or rear service clearances may be required to meet the building floor live-load rating.

3851 MASS STORAGE FACILITY CABLING SCHEMATIC



3851 MASS STORAGE FACILITY CABLING SCHEMATIC

From 3851

Feature Code	*Group No.*	*No. of Cables*	*Conn ID*	*Max Length*		*Model*	*Notes*
				m	*(ft)*		
Std	3920	2	1	61	(200)	All	1, 2, 5, 9
	1178	1	15	–	–	All	6
Std	3920	2	3	61	(200)	All	1, 2, 5, 9
	1178	1	17	–	–	All	6
Std	6456	2	9	91	(300)	All	3, 10
Std	6456	2	31	61	(200)	All	4, 9
Std	6456	2	33	61	(200)	All	4, 9
Std	6456	2	35	61	(200)	*	4, 9
Std	6456	2	37	61	(200)	*	4, 9
Std	6456	2	39	61	(200)	*	4, 9
Std	6456	2	41	61	(200)	*	4, 9
Std	6456	2	43	61	(200)	*	4, 9
Std	6456	2	45	61	(200)	*	4, 9
4901	6456	2	11	91	(300)	*	3, 11
6148	1178	1	23	61	(200)	All	7
6148	1178	1	25	61	(200)	All	7
6150	1178	1	27	61	(200)	B	7
6150	1178	1	29	61	(200)	B	7
8171	3920	2	5	61	(200)	All	1, 2, 5, 9
	1178	1	19	–	–	All	6
	3920	2	7	61	(200)	All	1, 4, 5, 9
	1178	1	21	–	–	All	6
9121	3852	1	13	–	–	A	8, 9

*Model dependent; see cabling schematic on page 3851.4.

3851 MASS STORAGE FACILITY CABLING SCHEMATIC

To 3851

Feature Code	*Conn ID*	*Model*	*Notes*
Std	2	All	1, 2, 5, 9
Std	4	All	1, 2, 5, 9
Std	10	All	3, 10
Std	16	All	4, 9
Std	18	All	4, 9
Std	20	*	4, 9
Std	22	*	4, 9
Std	24	*	4, 9
Std	26	*	4, 9
Std	28	*	4, 9
Std	30	*	4, 9
4901	12	All	3
8171	6	All	1, 2, 5, 9
	8	All	1, 2, 5, 9
9120	14	A	8

*Model dependent; see cabling schematic on page 3851.4.

Notes:

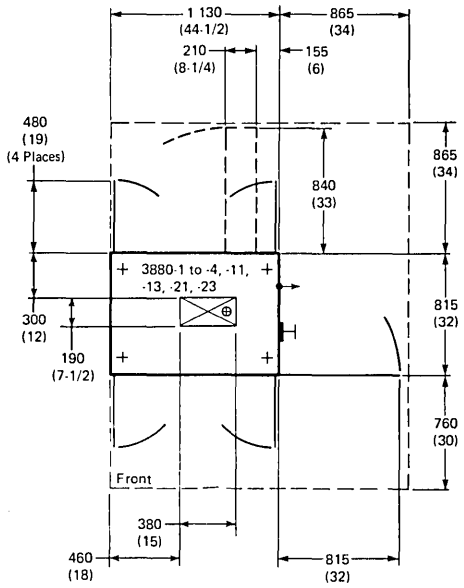
1. Total cable length of 61 meters (200 feet) is available to attach as many as eight control units (unless modified by general control-to-channel cabling schematic).
2. Special features may be ordered for connecting 3851 to more than one channel. One set of cables is required for each channel. Maximum cable length applies to each channel.
3. A maximum cumulative cable length of 91 meters (300 feet) is available to attach seven devices to the standard port. An additional 91-meter (300-foot) cable length is available to attach eight devices to the optional port. The 3830 Model 3 controlling the DASD devices, which contain control information for the mass storage system, must be within 45 meters (150 feet) of the primary and secondary 3851.
4. Each frame 02, 03, 04, or 05 may be attached to two cable paths. Maximum cumulative cable length is 61 meters (200 feet) for each path.
5. An A-series 3851 (frame 01) requires one position on a channel. A B-series 3851 (frame 01) requires two positions on a channel.
6. Power sequence and control cable. This machine must have the power sequence and control cable installed for proper operation.
7. Required for remote-switch attachment features. Specify:
   a. One for A- or B-models with SF 6148 and without SF 8171
   b. Two for A- or B-models with SF 6148 and with SF 8171
   c. Three for B-models with SF 6150 and without SF 8172
   d. Four for B-models with SF 6150 and with SF 8172
8. Required when two A-series are part of a mass storage system.
9. See "General Cabling Schematics" under "3850 Mass Storage System" for additional information.
10. Port 0 standard.
11. Port 1 SF 4901.

3880 STORAGE CONTROL MODELS 1-4, 11, 13, 21, AND 23

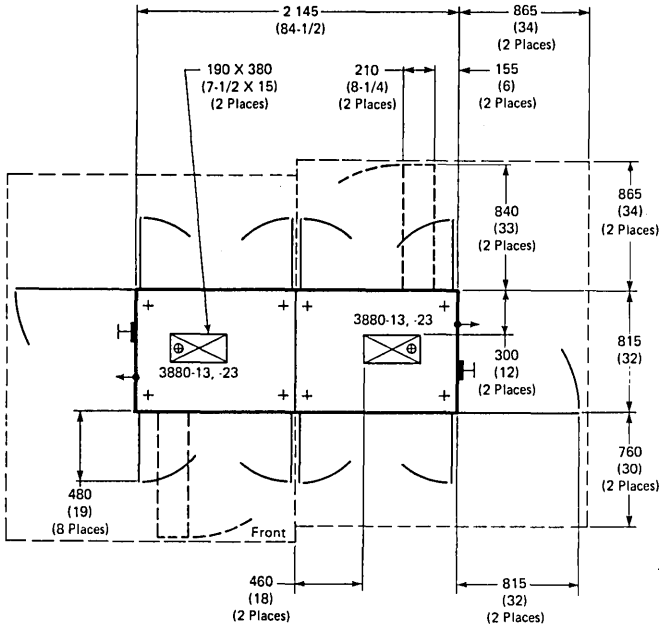
PLAN VIEW (Metric Scale: 10 mm = 0.5 m)

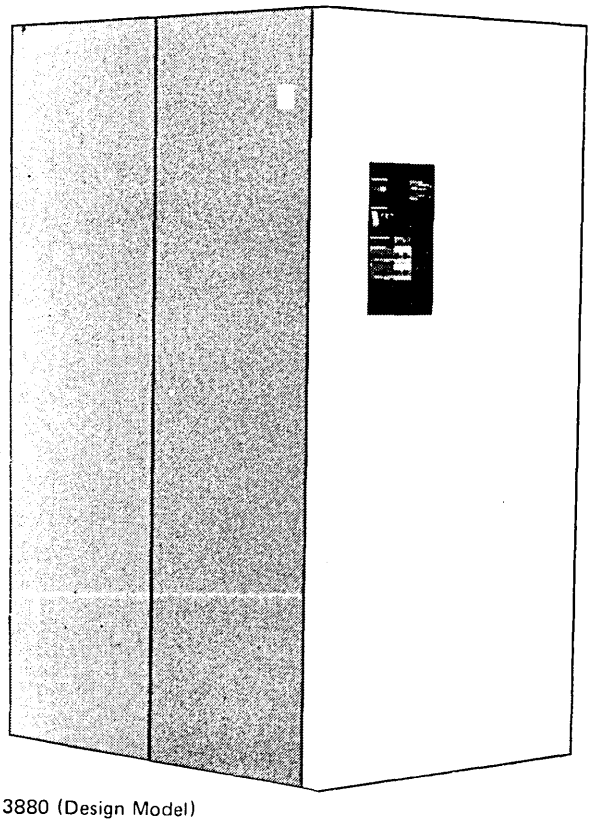
English measurements are shown in parentheses.

Single-Frame Configuration



Dual-Frame Configuration (Model 13 or 23*)





3880 (Design Model)

*Two Model 13s or 23s may be bolted together in a dual-frame configuration. The cover on the zero-clearance end of each frame is removed before the frames are bolted together.

CAUTION

If a dual-frame 3880 Model 23 is to be installed on a non-raised floor or on a raised floor that has no metallic shielding, RETAIN, search argument 3880 TIP 781.

3880 STORAGE CONTROL MODELS 1-4, 11, 13, 21, AND 23

SPECIFICATIONS

Dimensions:

	Front	Side	Height
Single Frame:			
mm	1 130	815	1 790
(inches)	(44-1/2)	(32)	(70-1/2)
Dual Frame:			
mm	2 145	815	1 790
(inches)	(84-1/2)	(32)	(70-1/2)

Service Clearances:

	Front	Rear	Right	Left
mm	760	865	865	0
(inches)	(30)	(34)	(34)	(0)

Dual Frame: See the dual-frame plan view on page 3880.1.

	Models 1-3	*Model 4*	*Models 11 and 13*	*Models 21 and 23*
Weight:				
kg	325	315	545	525
(lb)	(720)	(690)	(1,200)	(1,150)
Heat Output:				
W	1 600	750	2 300*	2 500**
(BTU/hr)	(5,500)	(2,500)	(7,700)	(8,550**)
Airflow:				
m^3/min	9.0	9.0	15.0	30.3
(cfm)	(320)	(320)	(530)	(1,070)

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning*, GC22-7072.

	L_{WAd}		$<L_{pA}>_m$		I	T
	Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
3880-13	7.7	7.7	53.0	53.0	No	No
3880-23	8.0	8.0	56.0	56.0	No	No

Power Requirements:

kVA	1.7	0.9	2.5*	2.8**
Phases	3	3	3	3
Plug	R&S, 3730	R&S, 3730	R&S, 3730	R&S, 3730
Receptacle	R&S, 3744	R&S, 3744	R&S, 3744	R&S, 3744
Connector	R&S, 3914	R&S, 3914	R&S, 3914	R&S, 3914
Power Cord Style	B2	B2	B2	B2

A phase imbalance will exist depending on cache size, channel configuration, and power configuration.

Typical Configurations and Measurements

Power Configuration	*Amperes in Phase*			*Channel Configuration*	*Cache Size (M-bytes)*
	A	*B*	*C*		
60-Hz Delta	8.65	9.67	7.54	8	16
50-Hz Delta	5.92	8.00	7.29	4	32
50-Hz Wye	4.33	2.90	4.71	4	16

Environment, Operating:

Temperature	16°C-32°C (60°F-90°F)
Rel Humidity	20%-80%
Max Wet Bulb	26°C (78°F)

Environment, Nonoperating:

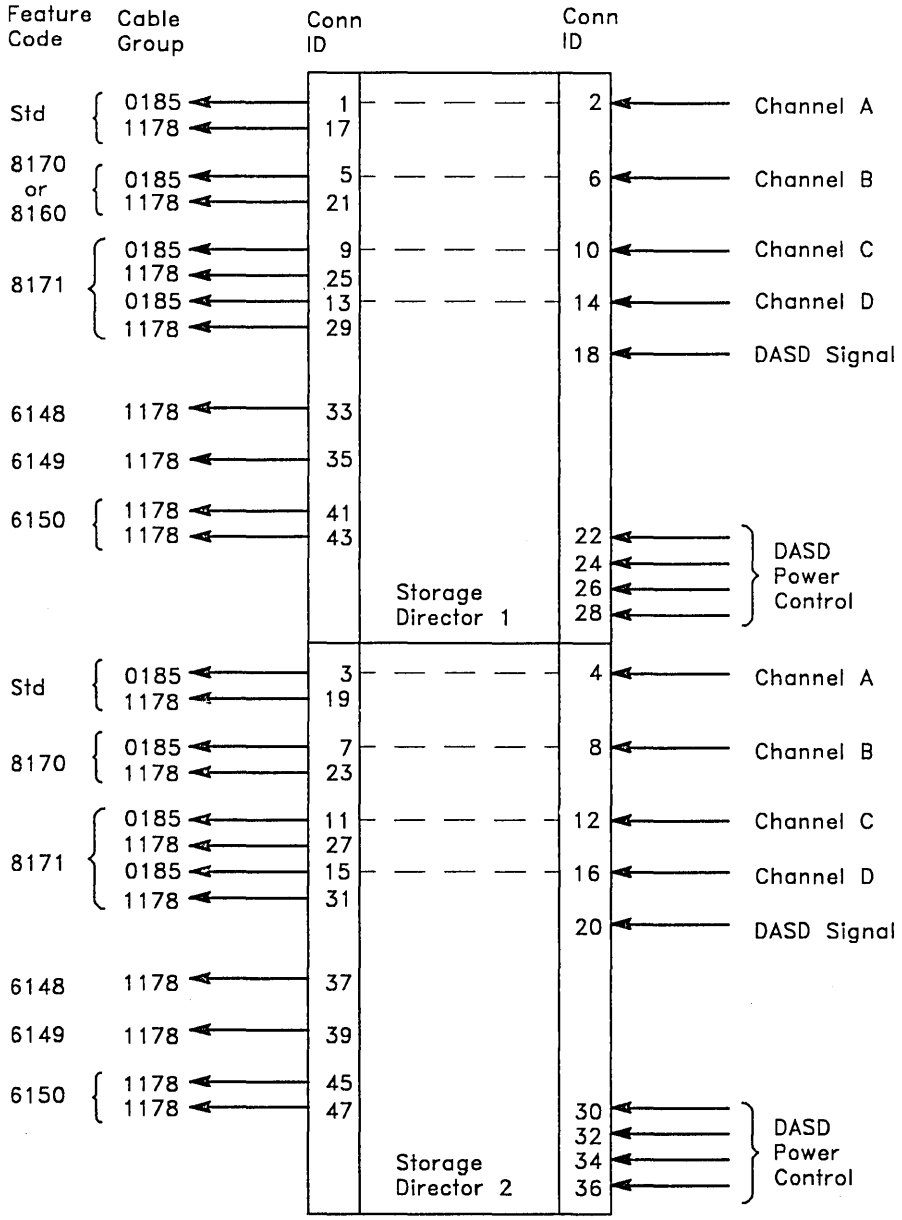
Temperature	10°C-43°C (50°F-110°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Notes:

* On the Model 13 with the eight-channel-switch feature, heat output is 2 560 W (8,800 BTU/hr) and kVA is 3.2.

** On the Model 23 with the eight-channel-switch feature, heat output is 2 830 W (9,700 BTU/hr) and kVA is 3.3.

3880 STORAGE CONTROL MODELS 1-4, 11, 13, 21, AND 23 CABLING SCHEMATIC



3880 STORAGE CONTROL MODELS 1-4, 11, 13, 21, AND 23 CABLING SCHEMATIC

From 3880

Feature Code	Group No.	No. of Cables	Conn ID	Max Length m (ft)	Model	Notes
Std	0185	2	1	122 (400)	4	1,6,7
	1178	1	17	122 (400)	4	3
Std	0185	2	1	122 (400)	1,2,3,11,13,21,23	1,6,7
	1178	1	17	122 (400)	1,2,3,11,13,21,23	3
	0185	2	3	122 (400)	1,2,3,11,13,21,23	1,6,8
	1178	1	19	122 (400)	1,2,3,11,13,21,23	3
8160	0185	2	5	122 (400)	4	1,2,6,7
	1178	1	21	122 (400)	4	3
8170	0185	2	5	122 (400)	1,2,3,11,13,21,23	1,2,6,7
	1178	1	21	122 (400)	1,2,3,11,13,21,23	3
	0185	2	7	122 (400)	1,2,3,11,13,21,23	1,2,6,8
	1178	1	23	122 (400)	1,2,3,11,13,21,23	3
8171	0185	2	9	122 (400)	1,2,3,11,13,21,23	1,2,6,7
	1178	1	25	122 (400)	1,2,3,11,13,21,23	3
	0185	2	11	122 (400)	1,2,3,11,13,21,23	1,2,6,8
	1178	1	27	122 (400)	1,2,3,11,13,21,23	3
	0185	2	13	122 (400)	1,2,3,11,13,21,23	1,2,6,7
	1178	1	29	122 (400)	1,2,3,11,13,21,23	3
	0185	2	15	122 (400)	1,2,3,11,13,21,23	1,2,6,8
	1178	1	31	122 (400)	1,2,3,11,13,21,23	3
6148	1178	1	33	122 (400)	1,2,3,11,13,21,23	5,7
	1178	1	37	122 (400)	1,2,3,11,13,21,23	5,8
6149	1178	1	35	122 (400)	1,2,3,11,13,21,23	5,7
	1178	1	39	122 (400)	1,2,3,11,13,21,23	5,8
6150	1178	1	41	122 (400)	1,2,3,13,23	2,5,7
	1178	1	43	122 (400)	1,2,3,13,23	2,5,7
	1178	1	45	122 (400)	1,2,3,13,23	2,5,8
	1178	1	47	122 (400)	1,2,3,13,23	2,5,8

3880 STORAGE CONTROL MODELS 1-4, 11, 13, 21, AND 23 CABLING SCHEMATIC

To 3880

Feature Code	*Conn ID*	*Model*	*Notes*
Std	2	4	1, 7
Std	2	1, 2, 3, 11, 13, 21, 23	1, 7
	4	1, 2, 3, 11, 13, 21, 23	1, 8
8160	6	4	1, 2, 7
8170	6	1, 2, 3, 11, 13, 21, 23	1, 2, 7
8170	8	1, 2, 3, 11, 13, 21, 23	1, 2, 8
8171	10	1, 2, 3, 11, 13, 21, 23	1, 2, 7
	12	1, 2, 3, 11, 13, 21, 23	1, 2, 8
	14	1, 2, 3, 11, 13, 21, 23	1, 2, 7
	16	1, 2, 3, 11, 13, 21, 23	1, 2, 8
Std	18	1, 2, 3, 11, 13, 21, 23	4, 5, 7
	20	1, 2, 3, 11, 13, 21, 23	4, 8, 9
Std	22	1, 2, 3, 11, 13, 21, 23	3, 7, 9
	24	1, 2, 3, 11, 13, 21, 23	3, 7, 9
	26	1, 2, 3, 11, 13, 21, 23	3, 7, 9
	28	1, 2, 3, 11, 13, 21, 23	3, 7, 9
Std	30	1, 2, 3, 11, 13, 21, 23	3, 8, 9
	32	1, 2, 3, 11, 13, 21, 23	3, 8, 9
	34	1, 2, 3, 11, 13, 21, 23	3, 8, 9
	36	1, 2, 3, 11, 13, 21, 23	3, 8, 9

Notes:

1. A 3880 Model 1, 2, 3, 11, 13, 21, or 23 each contain two storage directors. A 3880 Model 4 contains one storage director. Each storage director can be attached to a system channel directly or by means of intervening control devices. Available cable lengths are computed as follows:
   a. For attachment of one storage director of a 3880 to a 2880, maximum length is 85 meters (280 feet). This maximum length is increased to 107 meters (350 feet) if SF 6550 is installed.
   b. For attachment of one storage director of a 3880 to a 3031, 3032, 3033, 3042-2, 3082 (308x systems), 4331 Model Group 2, or 4341, maximum length is 122 meters (400 feet). With SF 6550 installed, the maximum length is reduced to 107 meters (350 feet).
   c. For attachment of one storage director of a 3880 with 3370-A1s or 3375-A1s to a 4331 Model Group 2 or to a 4341, maximum length is 61 meters (200 feet). Maximum length may be increased to 122 meters (400 feet) when the data-streaming-storage-director-to-channel protocol is used.
   d. Maximum length for attachment to a 3158 is 75 meters (250 feet). If SF 6550 is installed, the maximum length is increased to 110 meters (325 feet).
   e. Maximum length for all other channels is 75 meters (250 feet).
   f. These maximum lengths must be reduced by 4.5 meters (15 feet) for each control unit or storage director connected between a storage director of a 3880 and a channel.
   g. Models 13 and 23 in a dual-frame configuration are cabled in the same manner as two single 3880 Model 13s or 23s.
2. Special features may be ordered to attach each storage director to more than one channel.
   a. SF 8160 provides the second channel attachment for the storage director on 3880 Model 4.
   b. SF 8170 provides the second channel attachment for each storage director on 3880 Models 1, 2, 3, 11, 13, 21, and 23.

   SF 8170 is the minimum configuration for the 3880 Models 21 and 23.

3880 STORAGE CONTROL MODELS 1-4, 11, 13, 21, AND 23 CABLING SCHEMATIC

Notes (Continued):

c. SF 8171 provides two additional channel attachments for each storage director on 3880 Models 1, 2, 3, 11, 13, 21, and 23.
d. SF 8172 (eight-channel switch) internally connects the two storage directors so that each director has access to all eight channels on 3880 Models 1, 2, 3, 13, and 23.

3. Power sequence and control cable. This cable is optional and should be ordered if the installation uses power sequencing controls.
4. Attachment options for each of the 3880 are shown in the following table:

Model	*Attachment Options*
1	Each storage director can attach: • As many as four 3340-A2s or • As many as four 3370-A1s or • As many as four 3375-A1s or 3375-D1s or • As many as four 3333s (any model) and/or 3350-A2s and 3350-A2Fs in any combination. Each 3350-A2 or 3350-A2F can attach one 3350-C2 or 3350-C2F for a maximum of four 3350-A2s or 3350-A2Fs and four 3350-C2s or 3350-C2Fs.
2	Storage director 1 provides for the attachment as described above for one 3880 Model 1 storage director. Storage director 2 provides for the attachment of either as many as two 3380-A4s or as many as two 3380-AA4s.
3	Each storage director can attach as many as two 3380-AA4s, -AD4s, or -AE4s in any combination. Two 3380-A4s can attach; however, 3380 Model A4 cannot be attached to the same director with any other model of 3380.
4	The storage director can attach as many as four 3370s or 3375s. The 3370s and 3375s cannot be attached at the same time.
11	Storage director 1 can attach only one string of 3350s. Storage director 2 can attach as many as four strings of 3333s/3330s and/or 3350s in any combination.
13	The 3880 Model 13 can attach one or two strings of 3380-AA4s. Each 3380-AA4 can attach up to three additional 3380-B4s. Each string of 3380-AA4s must be attached to both storage directors of the same 3880 Model 13. The 3880 Model 13 in a dual-frame configuration (two 3880s bolted together providing four storage directors) can attach as many as two strings of 3380-AA4s to each frame. Each 3380-AA4 unit can attach up to three additional 3380-B4s. The 3380 strings must be cross-connected to the storage directors in alternate 3880s to enhance data availability.
21	The 3880 Model 21 can attach one or two strings of 3350-A2s or 3350-A2Fs (each with one 3350-B2 or 3350-B2F or 3350-C2 or 3350-C2F). Each 3350-A2 or 3350-A2F or 3350-C2 or 3350-C2F must be attached to both storage directors of the same 3880.
21	The 3350-A2s/3350-A2Fs and 3350-C2s/3350-C2Fs attached to the 3880 Model 21 must have a string switch installed and each leg of the string switch must be attached to the same 3880.
23	The 3880 Model 23 can attach as many as two 3380-AA4s, -AD4s, or -AE4s in any combination. Each 3380-AA4 can attach up to three additional 3380-B4s. Each 3380-AD4 or -AE4 can attach up to three additional 3380-BD4s or 3380-BE4s. Each string of 3380-AA4s, -AD4s, and -AE4s must be attached to the same 3880 Model 23. The 3880 Model 23 in the dual-frame configuration (two 3880s bolted together providing four storage directors) can attach as many as two 3380-AA4s, -AD4s or -AE4s to each frame in any combination. Additional 3380-Bs can be attached as previously described. The 3380 strings must be cross-connected to the storage directors in alternate 3880s to enhance data availability.

3880 STORAGE CONTROL MODELS 1-4, 11, 13, 21, AND 23 CABLING SCHEMATIC

Notes (Continued):

5. Required for SF 6148, SF 6149, and SF 6150. Two cable groups (1178) may be ordered for SF 6148 and SF 6149. Four cable groups may be ordered for SF 6150.
6. Specify cable group 790 (instead of cable group 0185) to connect both storage directors of a 3880 to the same channel. Group 790 is a fixed-length, 765-mm (2-1/2 ft) cable. This cable must be ordered at 610-mm (2-ft) length and both connector identifiers (IDs) given; for example, from connector ID3 to connector ID2. *This cable cannot be ordered by metric measure or by inches; it must be ordered at a 2-foot length.* Not available with SF 8172.
7. Storage director 1.
8. Storage director 2.
9. From DASD.

10. The following link length restrictions apply for combinations of parallel and ESCON ports or parallel ports or ESCON ports.

From ↓ To →	CPU channel	9032/9033	9034	3880
CPU channel				
ESCON	--	*	0.9 Km	--
Parallel	--	--	--	122 m
9032/9033				
ESCON	*	--	*	--
Parallel	--	--	--	--
9034				
ESCON	0.9 Km	*	--	--
Parallel	--	--	--	122 m
3880				
ESCON	--	--	--	--
Parallel	122 m	--	122 m	--

* For 3880 attachment, when a 9032 or 9033 ESCON Director is installed between the 9034 and the ESCON channel, subtract 0.2 Km (634 feet) from the allowed distance of 0.9 Km (2 957 feet) between the 9034 and the ESCON channel.

All the channel paths from a particular 3880 to a given processor image must be of the same type. That is, all parallel channels or all ESCON channels configured for the 9034 ESCON Converter.

The maximum length for parallel ports is 122 meters (400 feet) depending on the channel cable type; that is, gray or blue cable.

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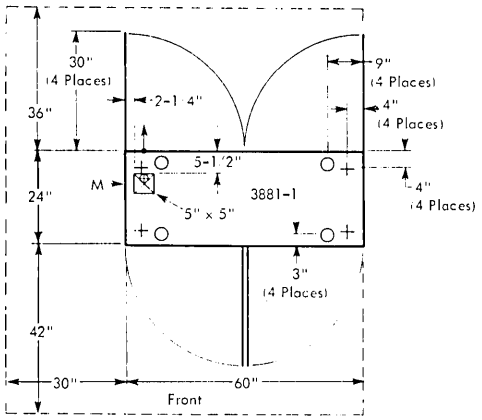
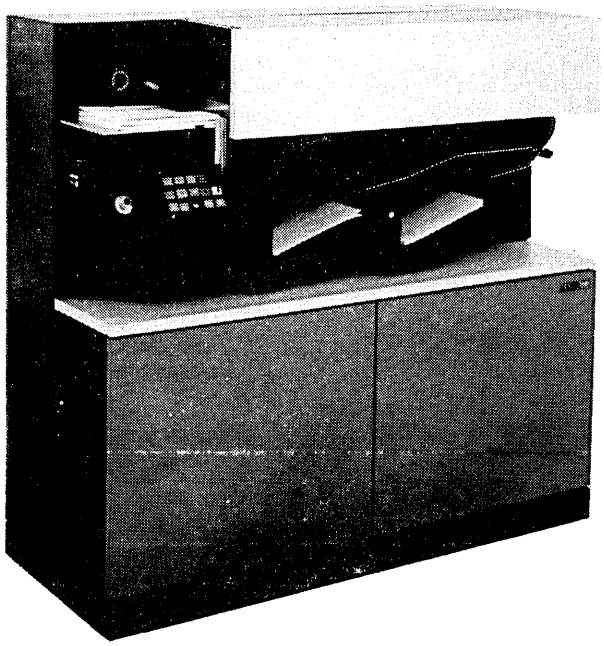
3881 OPTICAL MARK READER MODEL 1

PLAN VIEW (English Scale: 1/4 in. = 1 ft)



Note: For cabling information, see Section 2, "Machines with Integral or Abutted Controls."



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	60	24	55
(cm)	(152)	(61)	(140)

Service Clearances:

	F	R	Rt	L
Inches	42	36	0	30
(cm)	(107)	(91)	(0)	(76)

Weight: 875 lb (400 kg)

Heat Output: 3,500 BTU/hr (890 kcal/hr)

Airflow: 25 cfm (1 m^3/min)

Power Requirements:

kVA	1.2
Phases	1
Plug	R&S, FS3750
Connector	R&S, FS3933
Receptacle	R&S, FS3753
Power Cord Style	A2

Environment, Operating:

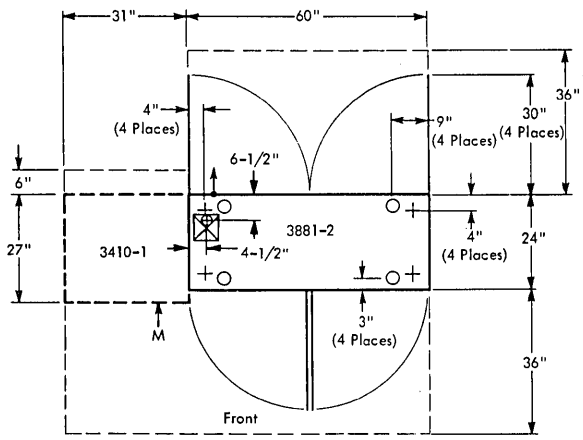
Temperature	60°F-90°F (16°C-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	78°F (26°C)

Environment, Nonoperating:

Temperature	50°F-110°F (10°C-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	80°F (27°C)

3881 OPTICAL MARK READER MODEL 2

PLAN VIEW (English Scale: 1/4 in. = 1 ft)



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	60	24	55
(cm)	(152)	(61)	(140)

Service Clearances:

	F	R	Rt	L
Inches	36	36	*	*
(cm)	(91)	(91)	(*)	(*)

Weight: 875 lb (400 kg)

Heat Output: 3,500 BTU/hr (890 kcal/hr)

Airflow: 25 cfm (1 m^3/min)

Power Requirements:**

kVA	1.2
Phases	1
Plug	R&S, FS3750
Connector	R&S, FS3933
Receptacle	R&S, FS3753
Power Cord Style	A2

Environment, Operating:

Temperature	60°F-90°F (16°C-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	78°F (26°C)

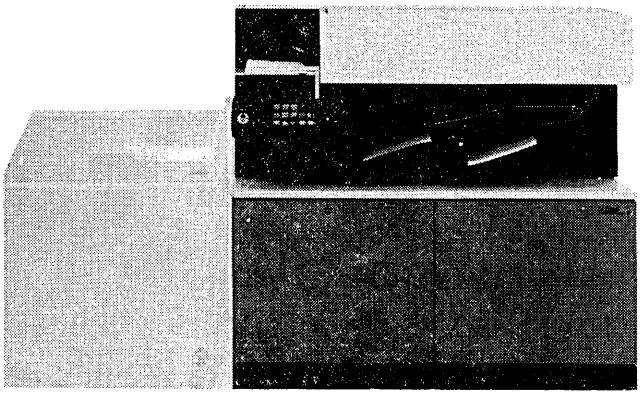
Environment, Nonoperating:

Temperature	50°F-110°F (10°C-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	80°F (27°C)

Notes:

* Clearance should be provided on either side for access to rear of machine. The 3881-2 and the 3410-1 are physically attached at the front corn The attachment is flexible, allowing a swing of u to 90° between devices.

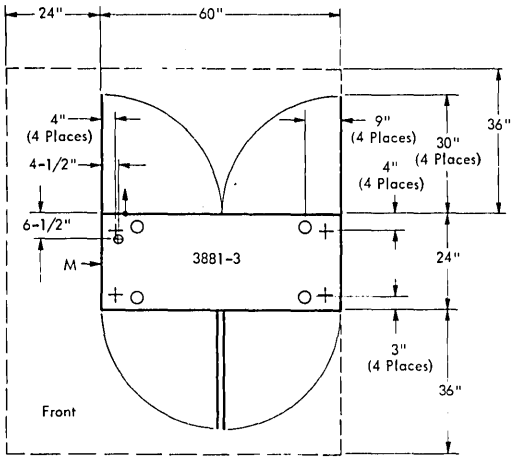
** The 3410-1 is powered from 3881-2.



3410-1 3881-2

3881 OPTICAL MARK READER MODEL 3

PLAN VIEW (English Scale: 1/4 in. = 1 ft)



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	60	24	55
(cm)	(152)	(61)	(140)

Service Clearances:

	F	R	Rt	L
Inches	36	36	0	24
(cm)	(91)	(91)	(0)	(61)

Weight: 925 lb (420 kg)

Heat Output: 3,800 BTU/hr (960 kcal/hr)

Airflow: 25 cfm (1 m^3/min)

Power Requirements:

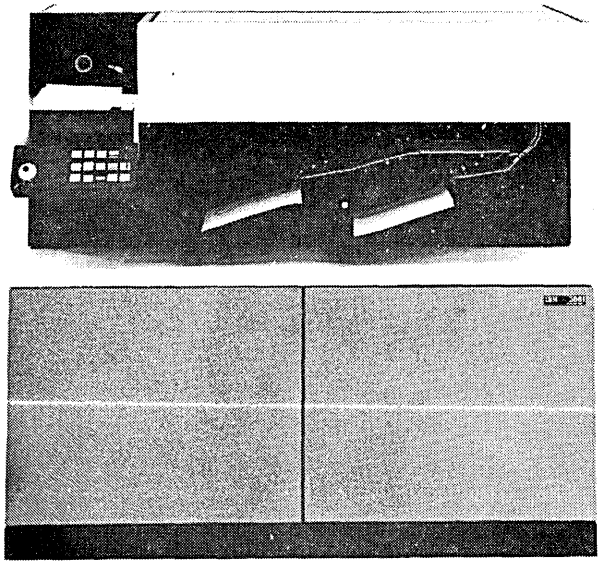
kVA	1.3
Phases	1
Plug	R&S, FS3750
Connector	R&S, FS3933
Receptacle	R&S, FS3753
Power Cord Style	A2

Environment, Operating:

Temperature	60°F-90°F (16°C-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	78°F (26°C)

Environment, Nonoperating:

Temperature	50°F-110°F (10°C-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	80°F (27°C)



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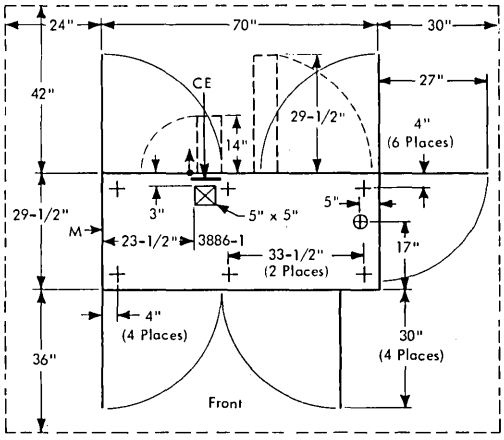
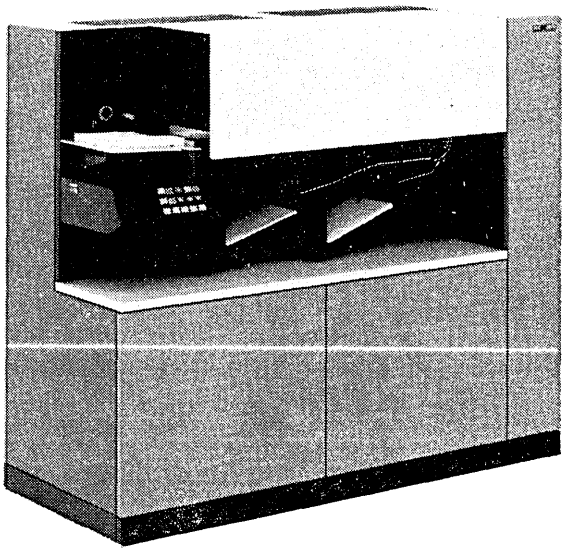
3886 OPTICAL CHARACTER READER MODEL 1

PLAN VIEW (English Scale: 1/4 in. = 1 ft)



Note: For cabling information, see Section 2, "Machines with Integral or Abutted Controls."



SPECIFICATIONS

Dimensions:*

	F	S	H
Inches	70	29-1/2	60
(cm)	(178)	(75)	(152)

Service Clearances:

	F	R	Rt	L
Inches	36	42	30	24
(cm)	(91)	(107)	(76)	(61)

Weight: 1,550 lb (710 kg)

Heat Output: 7,000 BTU/hr (1 800 kcal/hr)

Airflow: 820 cfm (24 m^3/min)

Power Requirements:

kVA	2.3
Phases	3
Plug	R&S, FS3760
Connector	R&S, FS3934
Receptacle	R&S, FS3754
Power Cord Style	D1

Environment, Operating:

Temperature	60°F-90°F (16°C-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	78°F (26°C)

Environment, Nonoperating:

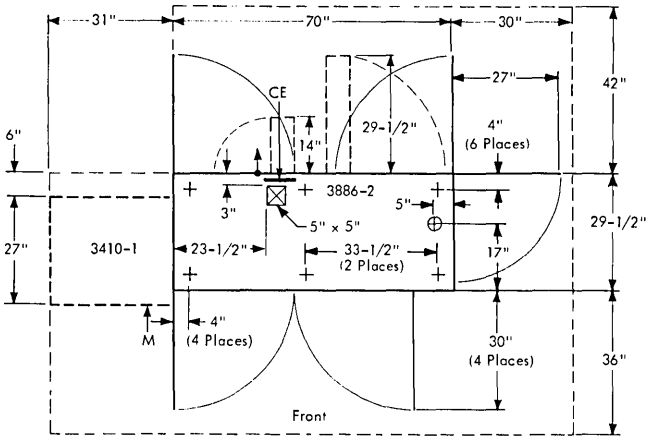
Temperature	50°F-110°F (10°C-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	80°F (27°C)

Notes:

* If required, specify SF 9840 for upending kit.

3886 OPTICAL CHARACTER READER MODEL 2

PLAN VIEW (English Scale: 1/4 in. = 1 ft)



SPECIFICATIONS

Dimensions:*

	F	S	H
Inches	70	29-1/2	60
(cm)	(178)	(75)	(152)

Service Clearances:

	F	R	Rt	L
Inches	36	42	**	**
(cm)	(91)	(107)	(**)	(**)

Weight: 1,550 lb (710 kg)

Heat Output: 7,600 BTU/hr (1 950 kcal/hr)

Airflow: 820 cfm (24 m^3/min)

Power Requirements:***

kVA	2.5
Phases	3
Plug	R&S, FS3760
Connector	R&S, FS3934
Receptacle	R&S, FS3754
Power Cord Style	D1

Environment, Operating:

Temperature	60°F-90°F (16°C-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	78°F (26°C)

Environment, Nonoperating:

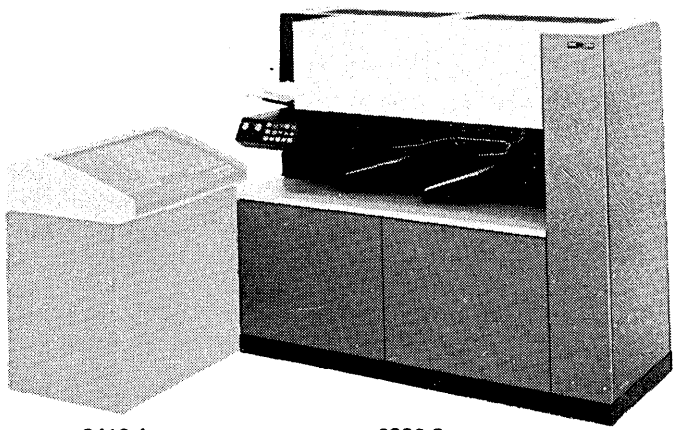
Temperature	50°F-110°F (10°C-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	80°F (27°C)

Notes:

* If required, specify SF 9840 for upending kit.

** Clearance should be provided on either side for access to rear of machine. The 3886-2 and the 3410-1 are physically attached at the front corner. The attachment is flexible, allowing a swing of up to 90° between devices.

*** The 3410-1 is powered from 3886-2.



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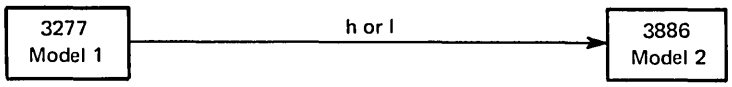
3886 OPTICAL CHARACTER READER MODEL 2 CABLING SCHEMATIC



Group No.	*No. of Cables*	*From*	*To*	*Max Length (ft)*	*Notes*
h or I	1	3277-1	3886-2	2,000	1, 2

Notes:
1. Required for SF 8701.
2. Customer supplied, installed, and maintained; maximum length not to exceed 2,000 feet. Cables may be ordered through IBM Branch Office via MES (Miscellaneous Equipment Specification). See Appendix B for cable specifications and IBM part numbers.

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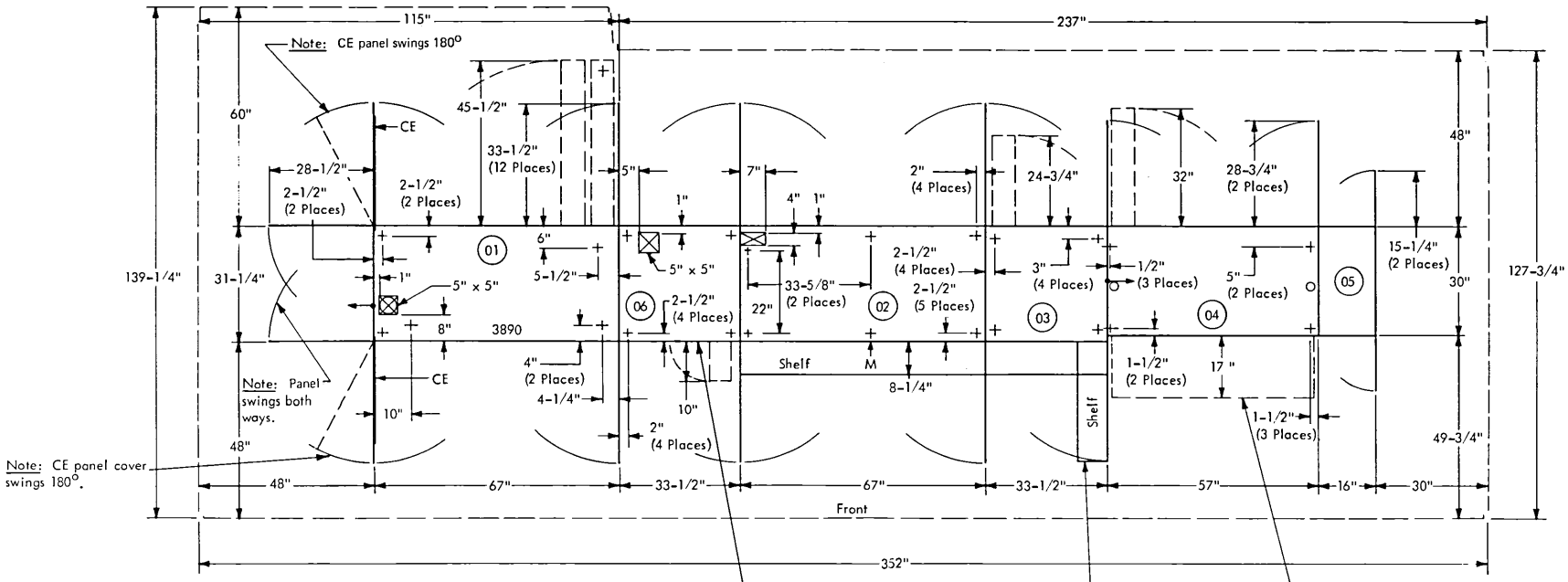
PLAN VIEW (MODEL B1 WITH MICROFILMER), English Scale: 1/4 in. = 1 ft (See Note 11)



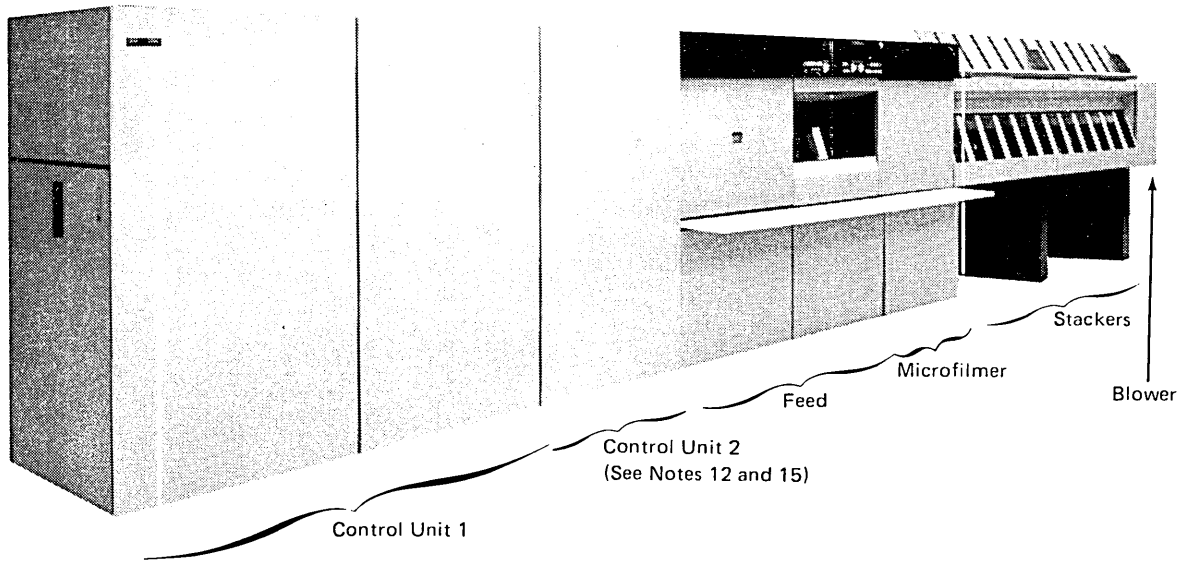
Note: For cabling information, see page 3890.13.

See Notes 12 and 15

Note: Shelf swings out on microfilmer only.

Note: Stacker cover swings forward and down.

MODEL B2 (WITH MICROFILMER)



3890 DOCUMENT PROCESSOR (50 HZ)

Details (By Frame)

Frame	Installed Dimensions F x S x H inches (mm)	Weight lb (kg) 50 Hz 200/235/380/408 V 60 Hz 200 V Note 12	Weight lb (kg) 50 Hz 220 V	Weight lb (kg) 60 Hz 208/240 V Notes 12, 15	Airflow cfm (m^3/min)	Heat Output BTU/hr (W) 50 Hz 200/235/380/408 V 60 Hz 200 V Note 12	Heat Output BTU/hr (W) 50 Hz 220 V	Heat Output BTU/hr (W) 60 Hz 208/240 V Notes 12, 16	kVA 50 Hz 200/235/380/408 V 60 Hz 200 V Note 12	kVA 50 Hz 220 V	kVA 60 Hz 208/240 V Notes 12, 16
Control Unit 1 (Frame 01)	67 x 31-1/4 x 60 (1 705 x 795 x 1 525) Note 1	2,300 (1 045)	2,300 (1 045)	2,300 (1 045)	800 (23)	11,200 (3 290)	11,200 (3 290)	11,200 (3 290)	4.1	4.1	4.1
Control Unit 2 (Frame 06)	33-1/2 x 31-1/4 x 60 (855 x 795 x 1 525) Note 2	385 (175) Note 14	225 (105) Note 14	Note 7	Note 13	11,700 (3 430) Note 8	11,700 (3 430) Note 8	Note 7	3.8 Notes 8, 10	3.8	Note 7
Feed (Frame 02)	67 x 31-1/4 x 60 (1 705 x 795 x 1 525) Note 3	1,850 (840)	1,850 (840)	1,850 (840)	300 (9)	15,800 (4 640)	15,800 (4 640)	15,800 (4 640)	5.8 Note 10	5.8 Note 10	5.8 Note 10
Microfilmer (Frame 03)	33-1/2 x 31-1/4 x 60 (855 x 795 x 1 525) Note 4	720 (330)	720 (330)	720 (330)	357 (11)	9,300 (2 730)	9,300 (2 730)	9,300 (2 730)	3.4 Note 10	3.4 Note 10	3.4 Note 10
Stacker (Frame 04)	57 x 30 x 60 (1 450 x 765 x 1 525) Note 5	850 (390) Note 6	850 (390) Note 6	850 (390) Note 6	115 (4)	4,600 (1 350)	4,600 (1 350)	4,600 (1 350)	1.7 Note 10	1.7 Note 10	1.7 Note 10
Blower (Frame 05) End of Last Stacker	16 x 30 x 52-1/2 (410 x 755 x 1 335)	30 (14)	30 (14)	30 (14)	30 (1)	4,100 (1 210)	4,100 (1 210)	4,100 (1 210)	1.5 Note 10	1.5 Note 10	1.5 Note 10

Plan View Metric Equivalents

Dimensions inches	Dimensions mm	Dimensions inches	Dimensions mm
352	8 940	17	430
237	6 020	16	405
139-1/4	3 535	15-1/4	385
127-3/4	3 245	10-1/5	265
115	2 920	10	255
67	1 700	8-1/4	210
60	1 525	8	200
57	1 450	7	180
49-3/4	1 265	6	150
48	1 220	5-1/2	140
45-1/2	1 155	5	125
33-5/8	855	4-1/4	110
33-1/2	850	4	100
32	815	3	75
31-1/4	795	2-1/2	65
30	760	2	50
28-3/4	730	1-1/2	40
28-1/2	725	1	25
24-3/4	630	1/2	15
22	560		

Branch Circuit Requirements

Hz	50					60		
Voltage	200	220	235	380	408	200	208	240
Phases	3	3	3	3	3	3	3	3
Ampacity	90	90	90	50	50	100	100	100
Maximum Continuous Load (Amperes) for: 3890 Model								
A1	48	43	41	25	23	48	46	42
A2	53	48	45	28	26	53	51	46
A3	58	53	50	31	29	58	56	51
A4	63	58	54	33	31	63	61	55
A5	69	62	58	36	34	69	66	60
A6	73	66	62	38	36	73	70	64
B2	43	48	45	28	26	53	52	47
B2	58	53	50	31	29	58	56	51
B3	63	57	54	33	31	63	61	55
B4	68	62	58	36	34	68	66	60
B5	73	67	62	39	36	73	71	64
B6	78	71	67	41	39	78	75	68
C1	53	48	45	28	26			
C2	58	53	50	31	29			
C3	63	58	54	34	31			
C4	68	62	58	36	34			
C5	74	67	63	39	36			
C6	78	71	66	41	38			
D1	58	53	50	31	29			
D2	64	58	54	34	31			
D3	69	63	59	36	34			
D4	74	67	63	39	36			
D5	79	72	67	42	39			
D6	83	76	71	44	41			
If SF 5111 (microfilmer) is not installed, subtract amperes (A) from Maximum Continuous Load	9.8	8.9	8.4	5.2	4.8	9.8	9.5	8.5
Plug Connector Receptacle Power Cord Style	R&S, JPS1034H R&S, JCS1034H R&S, JRSR1034H F2					208 and 240 V 60 Hz Only Note 12		

3890 DOCUMENT PROCESSOR (50 HZ)

Totals (By Model) Note 9

Model	Power Option: 50 Hz 200/235/380/408 V 60 Hz 200 V	Power Option: 50 Hz 220 V	Power Option: 60 Hz 208/240 V Note 15	Microfilmer (SF 5111)	Weight lb (kg) Note 6	Length inches (mm)	Airflow cfm (m^3/min)	Heat Output BTU/hr (W)	kVA
A1	X				5,415 (2 460)	241-1/2 (6 135)	1,245 (36)	35,800 (10 500)	13.1
	X			X	6,135 (2 790)	275 (6 985)	1,602 (46)	45,100 (13 220)	16.5
		X			5,255 (2 385)	241-1/2 (6 135)	1,245 (36)	35,800 (10 500)	13.1
		X		X	5,975 (2 715)	275 (6 985)	1,602 (46)	45,100 (13 220)	16.5
			X		5,030 (2 285)	208 (5 285)	1,245 (36)	35,800 (10 550)	13.1
			X	X	5,750 (2 610)	241-1/2 (6 135)	1,602 (46)	45,100 (13 220)	16.5
A2	X				6,265 (2 845)	298-1/2 (7 585)	1,360 (39)	40,400 (11 850)	14.8
	X			X	6,985 (3 170)	332 (8 435)	1,717 (49)	49,700 (14 570)	18.2
		X			6,105 (2 770)	298-1/2 (7 585)	1,360 (39)	40,400 (11 850)	14.8
		X		X	6,825 (3 100)	332 (8 435)	1,717 (49)	49,700 (14 570)	18.2
			X		5,880 (2 670)	265 (6 730)	1,360 (39)	40,400 (11 850)	14.8
			X	X	6,600 (2 995)	298-1/2 (7 585)	1,717 (49)	49,700 (14 570)	18.2
A3	X				7,115 (3 230)	355-1/2 (9 030)	1,475 (42)	45,100 (13 220)	16.5
	X			X	7,835 (3 555)	389 (9 885)	1,832 (52)	54,300 (15 920)	19.9
		X			6,955 (3 155)	355-1/2 (9 030)	1,475 (42)	45,100 (13 220)	16.5
		X		X	7,675 (3 485)	389 (9 885)	1,832 (52)	54,300 (15 920)	19.9
			X		6,730 (3 055)	322 (8 180)	1,475 (42)	45,100 (13 220)	16.5
			X	X	7,450 (3 380)	355-1/2 (9 030)	1,832 (52)	54,300 (15 920)	19.9
A4	X				7,965 (3 615)	412-1/2 (10 480)	1,590 (45)	49,700 (14 570)	18.2
	X			X	8,685 (3 940)	446 (11 300)	1,947 (56)	59,000 (17 300)	21.6
		X			7,805 (3 545)	412-1/2 (10 480)	1,590 (45)	49,700 (14 570)	18.2
		X		X	8,525 (3 870)	446 (11 300)	1,947 (56)	59,000 (17 300)	21.6
			X		7,580 (3 440)	379 (9 625)	1,590 (45)	49,700 (14 570)	18.2
			X	X	8,300 (3 765)	412-1/2 (10 480)	1,947 (56)	59,000 (17 300)	21.6
A5	X				8,815 (4 000)	469-1/2 (11 930)	1,705 (49)	54,300 (15 920)	19.9
	X			X	9,535 (4 330)	503 (12 780)	2,062 (59)	63,600 (18 650)	23.3
		X			8,655 (3 930)	469-1/2 (11 930)	1,705 (49)	54,300 (15 920)	19.9
		X		X	9,375 (4 255)	503 (12 780)	2,062 (59)	63,600 (18 650)	23.3
			X		8,430 (3 825)	436 (11 075)	1,705 (49)	54,300 (15 920)	19.9
			X	X	9,150 (4 155)	469-1/2 (11 930)	2,062 (59)	63,600 (18 650)	23.3
A6	X				9,665 (4 385)	526-1/2 (13 375)	1,820 (52)	59,000 (17 300)	21.6
	X			X	10,385 (4 715)	560 (14 225)	2,177 (62)	68,300 (20 020)	25.0
		X			9,505 (4 315)	526-1/2 (13 375)	1,820 (52)	59,000 (17 300)	21.6
		X		X	10,225 (4 640)	560 (14 225)	2,177 (62)	68,300 (20 020)	25.0
			X		9,280 (4 210)	493 (12 520)	1,820 (52)	59,000 (17 320)	21.6
			X	X	10,000 (4 540)	526-1/2 (13 375)	2,177 (62)	68,300 (20 020)	25.0

3890 DOCUMENT PROCESSOR (50 HZ)

Totals (By Model) Note 9

Model	Power Option: 50 Hz 200/235/380/408 V 60 Hz 200 V	Power Option: 50 Hz 220 V	Power Option: 60 Hz 208/240 V Note 15	Microfilmer (SF 5111)	Weight lb (kg) Note 6	Length inches (mm)	Airflow cfm (m^3/min)	Heat Output BTU/hr (W)	kVA
B1	X				5,690 (2 705)	241-1/5 (6 135)	1,505 (43)	41,000 (12 020)	15.0
	X			X	6,410 (2 910)	275 (6 985)	1,862 (53)	50,300 (14 750)	18.4
		X			5,530 (2 510)	241-1/2 (6 135)	1,505 (43)	41,000 (12 020)	15.0
		X		X	6,250 (2 835)	275 (6 985)	1,862 (53)	50,300 (14 750)	18.4
			X		5,245 (2 380)	241-1/2 (6 135)	1,505 (43)	41,000 (12 020)	15.0
			X	X	5,965 (2 705)	275 (6 985)	1,862 (53)	50,300 (14 750)	18.4
B2	X				6,450 (2 925)	298-1/2 (7 585)	1,620 (46)	45,600 (13 370)	16.7
	X			X	7,260 (3 295)	332 (8 435)	1,977 (56)	54,900 (16 100)	20.1
		X			6,380 (2 895)	298-1/2 (7 585)	1,620 (46)	45,600 (13 370)	16.7
		X		X	7,100 (3 220)	332 (8 435)	1,977 (56)	54,900 (16 100)	20.1
			X		6,095 (2 965)	298-1/2 (7 585)	1,620 (46)	45,600 (13 370)	16.7
			X	X	6,815 (3 950)	332 (8 435)	1,977 (56)	54,900 (16 100)	20.1
B3	X				7,390 (3 355)	355-1/2 (9 030)	1,735 (49)	50,300 (14 750)	18.4
	X			X	8,110 (3 680)	389 (9 885)	2,092 (59)	59,500 (17 300)	21.8
		X			7,230 (3 280)	355-1/2 (9 030)	1,735 (49)	50,300 (14 750)	18.4
		X		X	7,725 (3 505)	389 (9 885)	2,090 (59)	59,500 (17 300)	21.8
			X		6,945 (3 150)	355-1/2 (9 030)	1,735 (49)	50,300 (14 750)	18.4
			X	X	7,665 (3 480)	389 (9 885)	2,090 (59)	50 500 (17 300)	21.8
B4	X				8,240 (3 740)	412-1/2 (10 480)	1,850 (53)	54,900 (16 100)	20.1
	X			X	8,960 (4 605)	446 (11 300)	2,207 (62)	64,200 (18 820)	23.5
		X			8,080 (3 665)	412-1/2 (10 480)	1,850 (53)	54,900 (16 100)	20.1
		X		X	8,800 (3 995)	446 (11 300)	2,207 (62)	64,200 (18 820)	23.5
			X		7,795 (3 540)	412-1/2 (10 480)	1,850 (53)	54,900 (16 100)	20.1
			X	X	8,515 (3 860)	446 (11 300)	2,207 (62)	64,200 (18 820)	23.5
B5	X				9,090 (4 125)	469-1/2 (11 930)	1,965 (56)	59,500 (17 300)	21.8
	X			X	9,810 (4 450)	503 (12 780)	2,322 (66)	68,800 (19 940)	25.2
		X			8,930 (4 050)	469-1/2 (11 930)	1,965 (56)	59,500 (17 300)	21.8
		X		X	9,650 (4 380)	503 (12 780)	2,322 (66)	68,800 (19 940)	25.2
			X		8,645 (3 925)	469-1/2 (11 930)	1,965 (56)	59,500 (17 300)	21.8
			X	X	9,365 (4 250)	503 (12 780)	2,322 (66)	68,800 (19 900)	25.2
B6	X				9,940 (4 510)	526-1/2 (13 375)	2,080 (59)	64,200 (18 820)	23.5
	X			X	10,660 (4 835)	560 (14 225)	2,437 (69)	73,500 (21 550)	26.9
		X			9,780 (4 440)	526-1/2 (13 375)	2,080 (59)	64,200 (18 820)	23.5
		X		X	10 500 (4 765)	560 (14 225)	2,437 (69)	73,500 (21 550)	26.9
			X		9,495 (4 310)	526-1/2 (13 375)	2,080 (59)	64,200 (18 820)	23.5
			X	X	10,215 (4 635)	560 (14 225)	2,437 (69)	73,500 (21 550)	26.9

3890 DOCUMENT PROCESSOR (50 HZ)

Totals (By Model) Note 9

Model	Power Option			Microfilmer (SF 5111)	Weight lb (kg) Note 6	Length inches (mm)	Airflow cfm (m^3/min)	Heat Output BTU/hr (W)	kVA
	50 Hz 200/235/ 380/408 V 60 Hz 200 V	50 Hz 220 V	60 Hz 208/240 V Note 12						
C1	X				5,740 (2 605)	241-1/2 (6 135)	1,945 (55)	40,400 (11 850)	14.8
	X			X	6,460 (2 930)	275 (6 985)	2,302 (66)	49,700 (14 570)	18.2
		X			5,580 (2 535)	241-1/2 (6 135)	1,945 (55)	40,400 (11 850)	14.8
		X		X	6,300 (2 860)	275 (6 985)	2,302 (66)	49,700 (14 570)	18.2
C2	X				6,550 (2 975)	298-1/2 (7 580)	2,060 (59)	45,300 (13 280)	16.6
	X			X	7,310 (3 320)	332 (8 435)	2,417 (69)	54,600 (16 010)	20.0
		X			6,430 (2 920)	298-1/2 (7 580)	2,060 (59)	45,300 (13 280)	16.6
		X		X	7,150 (3 245)	332 (8 435)	2,417 (69)	54,600 (16 010)	20.0
C3	X				7,440 (3 375)	355-1/2 (9 030)	2,175 (62)	50,200 (14 720)	18.4
	X			X	8,160 (3 705)	389 (9 880)	2,532 (72)	59,500 (17 440)	21.8
		X			7,280 (3 305)	355-1/2 (9 030)	2,175 (62)	50,200 (14 720)	18.4
		X		X	8,000 (3 630)	389 (9 880)	2,532 (72)	59,500 (17 440)	21.8
C4	X				8,290 (3 765)	412-1/2 (10 480)	2 290 (65)	54,900 (16 100)	20.1
	X			X	9,010 (4 090)	446 (11 330)	2,647 (75)	64,200 (18 820)	23.5
		X			8,130 (3 690)	412-1/2 (10 480)	2 290 (65)	54,900 (16 100)	20.1
		X		X	8,850 (4 015)	446 (11 330)	2,647 (75)	64,200 (18 820)	23.5
C5	X				9,140 (4 150)	469-1/2 (11 925)	2,405 (68)	60,100 (17 620)	22.0
	X			X	9,860 (4 475)	503 (12 775)	2,762 (79)	69,400 (20 350)	25.4
		X			8,980 (4 075)	469-1/2 (11 925)	2,405 (68)	60,100 (17 620)	22.0
		X		X	9,700 (4 400)	503 (12 775)	2,762 (79)	69,400 (20 350)	25.4
C6	X				9,990 (4 535)	526-1/2 (13 375)	2,520 (72)	63,900 (18 720)	23.4
	X			X	10,710 (4 860)	560 (14 225)	2,877 (82)	73,200 (21 460)	26.8
		X			9,830 (4 460)	526-1/2 (13 375)	2,520 (72)	63,900 (18 720)	23.4
		X		X	10,550 (4 790)	560 (14 225)	2,877 (82)	73,200 (21 460)	26.8

3890 DOCUMENT PROCESSOR (50 HZ)

Totals (By Model) Note 9

Model	Power Option			Microfilmer (SF 5111)__	Weight lb (kg) Note 6	Length inches (mm)	Airflow cfm (m^3/min)	Heat Output BTU/hr (W)	kVA
	50 Hz 200/235/ 380/408 V 60 Hz 200 V	50 Hz 220 V	60 Hz 208/240 V Note 12						
D1	X				5,800 (2 635)	241-1/2 (6 135)	1,945 (55)	45,600 (13 630)	16.7
	X			X	6,520 (2 960)	275 (6 985)	2,302 (66)	54,900 (16 100)	20.1
		X			5,640 (2 560)	241-1/2 (6 135)	1,945 (55)	45,600 (13 630)	16.7
		X		X	6,360 (2 885)	275 (6 985)	2,302 (66)	54,900 (16 100)	20.1
D2	X				6,650 (3 020)	298-1/2 (7 580)	2,060 (59)	50,500 (14 810)	18.5
	X			X	7,360 (3 340)	332 (8 435)	2,417 (69)	59,800 (17 530)	21.9
		X			6,490 (2 945)	298-1/2 (7 580)	2,060 (59)	50,500 (14 810)	18.5
		X		X	7,210 (3 275)	332 (8 435)	2,417 (69)	59,800 (17 530)	21.9
D3	X				7,500 (3 405)	355-1/2 (9 030)	2,175 (62)	55,400 (16 240)	20.3
	X			X	8,220 (3 730)	389 (9 880)	2,532 (72)	64,700 (18 970)	23.7
		X			7,340 (3 330)	355-1/2 (9 030)	2,175 (62)	55,400 (16 240)	20.3
		X		X	8,060 (3 660)	389 (9 880)	2,532 (72)	64,700 (18 970)	23.7
D4	X				8,350 (3 790)	412-1/2 (10 480)	2,290 (65)	60,100 (17 620)	22.0
	X			X	9,060 (4 110)	446 (11 330)	2,647 (75)	69,400 (20 350)	25.4
		X			8,190 (3 715)	412-1/2 (10 480)	2,290 (65)	60,100 (17 620)	22.0
		X		X	8,910 (4 045)	446 (11 330)	2,647 (75)	69,400 (20 350)	25.4
D5	X				9,200 (4 175)	469-1/2 (11 925)	2,405 (68)	65,300 (19 140)	23.9
	X			X	9,920 (4 500)	503 (12 775)	2,762 (79)	74,500 (21 840)	27.3
		X			9,040 (4 105)	469-1/2 (11 925)	2,405 (68)	65,300 (19 140)	23.9
		X		X	9,760 (4 430)	503 (12 775)	2,762 (79)	74,500 (21 840)	27.3
D6	X				10,050 (4 560)	526-1/2 (13 375)	2,520 (72)	69,100 (20 260)	25.3
	X			X	10,760 (4 885)	560 (14 225)	2,877 (82)	78,400 (22 980)	28.7
		X			9,890 (4 490)	526-1/2 (13 375)	2,520 (72)	69,100 (20 260)	25.3
		X		X	10,610 (4 815)	560 (14 225)	2,877 (82)	78,400 (22 980)	28.7

3890 DOCUMENT PROCESSOR (50 HZ)

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	Note 11	Note 11	60
(mm)	Note 11	Note 11	(1 525)

Service Clearances: See plan view.

Environment, Operating:

Temperature 65°F-80°F (18°C-27°C)
Rel Humidity 20%-65%

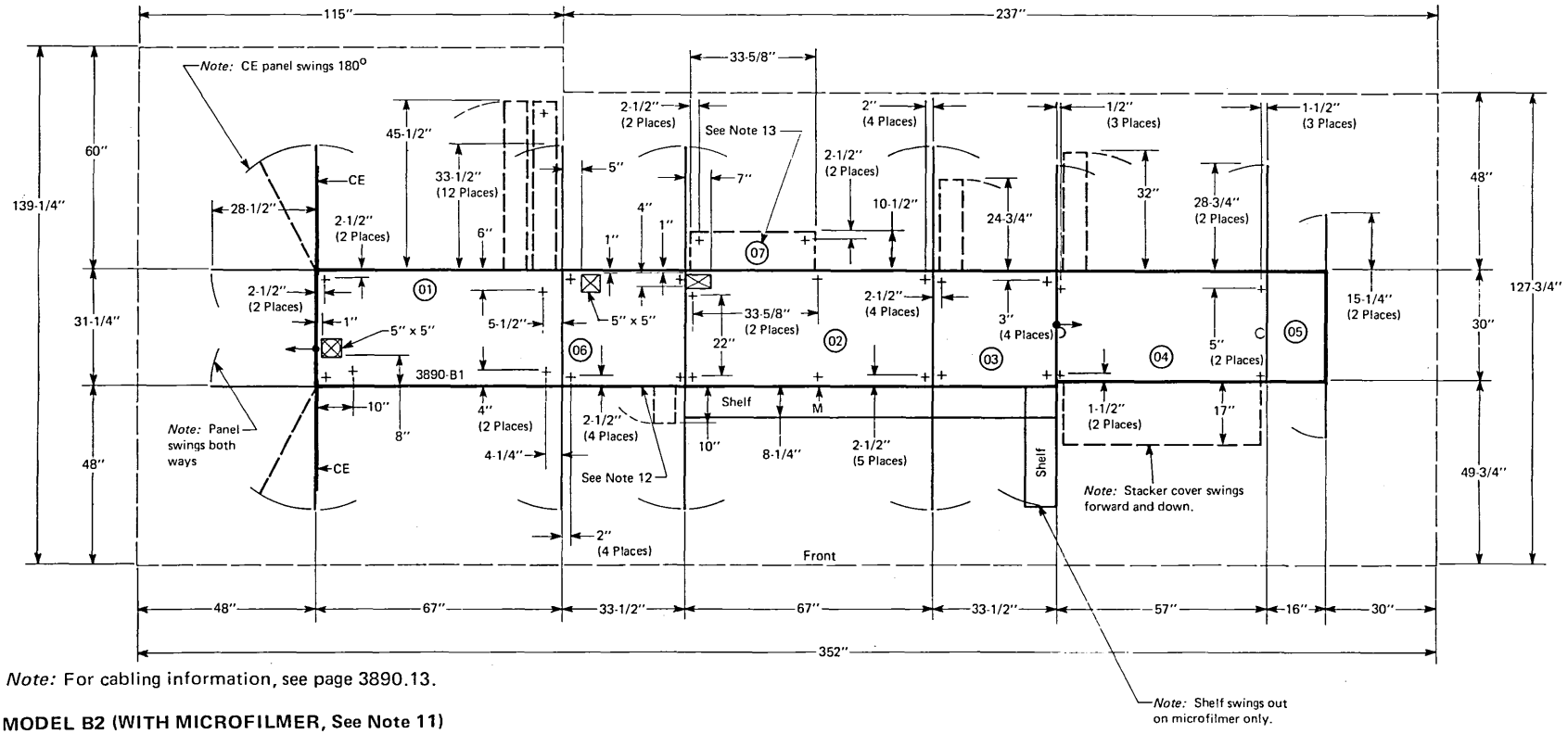
Floor Requirements:

Maximum machine length is 637 in. (16 180 mm). Normal raised floor construction providing ±0.10 in. (±2.54 mm) overall facilitates installation.

Notes:

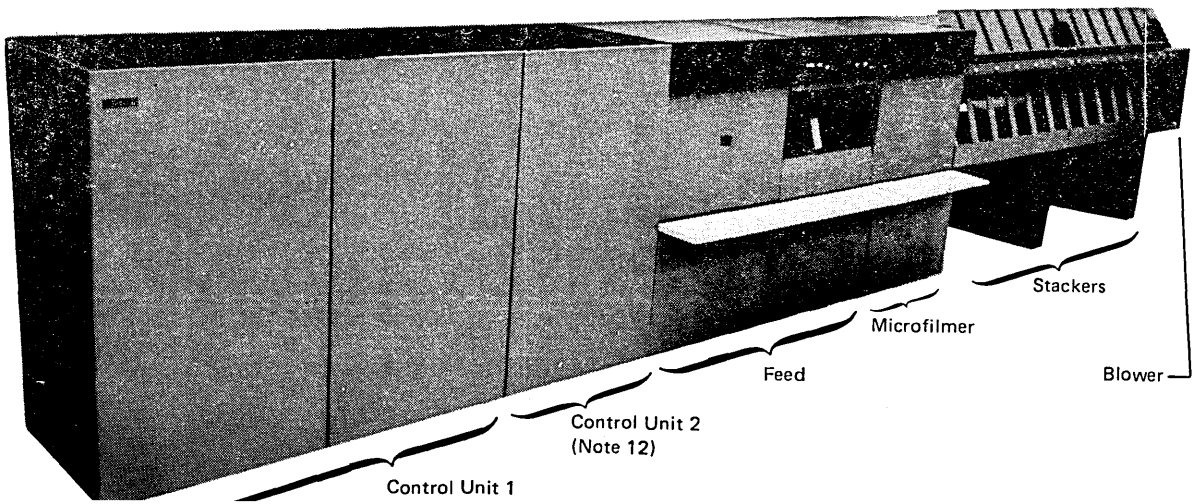
1. Unless otherwise specified, the shipping dimensions for frame 01 are 67 in. x 31-1/4 in. x 60-1/4 in. (1 705 mm x 795 mm x 1 535 mm). Removal of the side covers reduces the width to 29 in. (740 mm). If further reduction in length is required, see the IBM representative to request an upending kit. This modifies the unit to 60 in. x 30-1/4 in. x 71 in. (1 525 mm x 770 mm x 1 805 mm).
2. Unless otherwise specified, the shipping dimensions for frame 06 are 33-1/2 in. x 31-1/4 in. x 60-1/4 in. (855 mm x 795 mm x 1 535 mm). Removal of the front and rear covers reduces the width to 29 in. (740 mm).
3. Unless otherwise specified, the shipping dimensions for frame 02 are 70-3/4 in. x 31-1/2 in. x 60-1/4 in. (1 800 mm x 795 mm x 1 535 mm). Removal of the rear cover reduces the width to 30-1/4 in. (770 mm). Removal of the lower front cover and partially raising the top covers further reduces the width to 29 in. (740 mm). If further reduction in size is required, see the IBM representative for specifying an upending kit. This modifies the unit to 60 in. x 30-1/4 in. x 75-1/2 in. (1 525 mm x 770 mm x 1 920 mm).
   The side dimension is 39-1/2 in. (1 005 mm), including 8-1/4 in. (210 mm) for the shelf.
   The height dimension is 90 in. (2 290 mm) with the cover above the shelf raised to the service position.
4. Unless otherwise specified, the shipping dimensions for frame 03 are 34-1/4 in. x 31-1/4 in. x 60-1/4 in. (870 mm x 795 mm x 1 535 mm). Removal of the rear covers reduces the width to 30-1/4 in. (770 mm). Removal of the front covers and partially raising the top cover further reduces the width to 29 in. (740 mm).
   The side dimension is 39-1/2 in. (1 005 mm), including 8-1/4 in. (210 mm) for the shelf.
   The height dimension is 86-1/4 in. (2 195 mm) with the cover above the shelf raised to the service position.
5. Shipping length for frame 04 is 64 in. (1 630 mm); shipping height is 61-1/2 in. (1 590 mm). Unless otherwise specified, the end stacker unit is shipped with frame 05 assembled. Shipping length is 75 in. (1 910 mm).
   These units are shipped separately by request or are automatically shipped separately if upending kits are specified for frame 01 or frame 02.
   The number of stackers varies by model number. The front dimension for installed stackers is found by multiplying the length of one stacker, 57 in. (1 450 mm), by the model number. (For Model A6 or E6, 57 in. [1 450 mm] x 6 = stacker dimension plus 16 in. [410 mm] for frame 05.)
6. The weight of customer's trays and documents is not included.
7. The 60 Hz, 208/240 V Models A1-A6 do not require frame 06.
8. Maximum value. See Totals (By Model) for actual values by feature and power option.
9. Select the model desired and use the values from the line for the power option and microfilmer (SF 5111) option required.
10. Powered from frame 01.
11. See "Plan View Metric Equivalents" on page 3890.2.
12. 60 Hz is not applicable to Models C1-C6 and D1-D6.
13. Models C1-C6, 700 (20).
    Models D1-D6, 960 (28).
14. Models C1-C6, add 325 (150).
    Models D1-D6, add 385 (180).
15. References to 60-Hz 3890 Models A and B do not apply if the 3890 has the monolithic storage device (instead of the core storage device). The 60-Hz, 208/240 V 3890 Models A and B with monolithic storage do not have frame 06.

PLAN VIEW (MODEL B1 WITH MICROFILMER), English Scale: 1/4 in. = 1 ft (See Notes 10, 11)



Note: For cabling information, see page 3890.13.

MODEL B2 (WITH MICROFILMER, See Note 11)



3890 DOCUMENT PROCESSOR (60 HZ)

Details (By Frame)

Frame	*Installed Dimensions F x S x H inches (mm)*	*Weight lb (kg)*	*Airflow cfm (m^3/min)*	*Heat Output BTU/hr (W)*	*kVA*
Control Unit 1 (Frame 01)	67 x 31-1/4 x 60 (1 700 x 795 x 1 525) See Note 2	2,300 (1 050)	800 (23)	11,200 (3 290)	4.1
Control Unit 2 (Frame 06) See Notes 1,12	33-1/2 x 31-1/4 x 60 (850 x 795 x 1 525) See Note 3	215 (100)	260 (7.5)	5,200 (1 530) See Note 8	1.9 See Notes 8,9
Feed (Frame 02)	67 x 31-1/4 x 60 (1 700 x 795 x 1 525) See Note 4	1,850 (840)	300 (8.5)	15,800 (4 640)	5.8 See Note 9
Document Coding SF 3551 (Frame 07)	33-5/8 x 10-1/2 x 60 (855 x 265 x 1 525)	290 (135)	190 (5.5)	1 708 (510)	0.5
Microfilmer (SF 5111) (Frame 03) See Note 11	33-1/2 x 31-1/4 x 60 (850 x 795 x 1 525) See Note 5	720 (330)	357 (10.5)	9,300 (2 730)	3.4 See Note 9
Stacker (Frame 04)	57 x 30 x 60 (1 450 x 765 x 1 525) See Note 6	850 (390) See Note 7	115 (3.5)	4,600 (1 350)	1.7 See Note 9
Blower (Frame 05) End of Last Stacker	16 x 30 x 52-1/2 (410 x 765 x 1 335)	30 (14)	30 (1)	4,100 (1 210)	1.5 See Note 9

3890 DOCUMENT PROCESSOR (60 HZ)

Totals (By Model)

Model See Notes 11, 12	*Weight lb (kg) See Note 7*	*Length inches (mm)*	*Airflow cfm (m^3/min)*	*Heat Output BTU/hr (W)*	*kVA*
A1	5,030 (2 265)	208 (5 285)	1,245 (35.5)	35,800 (10 500)	13.1
With SF 5111	5,750 (2 610)	241-1/2 (6 135)	1,602 (45.5)	45,100 (13 220)	16.5
A2/E2	5,880 (2 670)	265 (6 735)	1,360 (38.5)	40,400 (11 850)	14.8
With SF 5111	6,600 (2 995)	298-1/2 (7 585)	1,717 (49)	49,700 (14 570)	18.2
A3/E3	6,730 (3 055)	322 (8 180)	1,475 (42)	45,100 (13 220)	16.5
With SF 5111	7,450 (3 380)	355-1/2 (9 030)	1,832 (52)	54,300 (15 920)	19.9
A4/E4	7,580 (3 440)	379 (9 630)	1,590 (45)	49,700 (14 570)	18.2
With SF 5111	8,300 (3 765)	412-1/2 (10 480)	1,947 (55.5)	59,000 (17 300)	21.6
A5/E5	8,430 (3 825)	436 (11 075)	1,705 (48.5)	54,300 (15 920)	19.9
With SF 5111	9,150 (4 155)	469-1/2 (11 930)	2,062 (58.5)	63,600 (18 650)	23.3
A6/E6	9,280 (4 210)	493 (12 525)	1,820 (52)	59,000 (17 300)	21.6
With SF 5111	10,000 (4 540)	526-1/2 (13 375)	2,177 (62)	68,300 (20 020)	25.0
B1	5,245 (2 380)	241-1/2 (6 135)	1,505 (43)	41,000 (12 020)	15.0
With SF 5111	5,965 (2 710)	275 (6 985)	1,862 (53)	50,200 (14 720)	18.4
B2/F2	6,095 (2 765)	298-1/2 (7 585)	1,620 (46)	45,600 (13 370)	16.7
With SF 5111	6,815 (3 095)	332 (8 435)	1,977 (56)	54,900 (16 100)	20.1
B3/F3	6,945 (3 155)	355-1/2 (9 030)	1,735 (50)	50,200 (14 720)	18.4
With SF 5111	7,665 (3 480)	389 (9 885)	2,092 (60)	59,500 (17 440)	21.8
B4/F4	7,795 (3 540)	412-1/2 (10 480)	1,850 (53.5)	54,900 (16 100)	20.1
With SF 5111	8,515 (3 865)	446 (11 330)	2,207 (63)	65,000 (19 060)	23.5
B5/F5	8,645 (3 925)	469-1/2 (11 930)	1,965 (56)	59,500 (17 440)	21.8
With SF 5111	9,365 (4 250)	503 (12 780)	2,322 (66)	68,800 (20 170)	25.2
B6/F6	9,495 (4 310)	526-1/2 (13 375)	2,080 (59)	65,000 (19 060)	23.5
With SF 5111	10,215 (4 635)	560 (14 225)	2,437 (69)	73,400 (21 520)	26.9

3890 DOCUMENT PROCESSOR (60 HZ)

Branch Circuit Requirements

Hz *Voltage* *Phases* *Ampacity*	*60* *208* *3* *100*	 *240* *3* *100*
Maximum Continuous Load (Amperes) for:		
Model A1	46	42
Model A2/E2	51	46
Model A3/E3	56	51
Model A4/E4	61	55
Model A5/E5	66	60
Model A6/E6	70	64
Model B1	52	47
Model B2/F2	56	51
Model B3/F3	61	55
Model B4/F4	66	60
Model B5/F5	71	64
Model B6/F6	75	68
If SF 5111 (microfilmer) is not installed, subtract these values from Maximum Continuous Load. See Note 11.	9.5	8.5
If SF 3551 (document coding) is not installed, subtract these values from Maximum Continuous Load.	3.5	3.0
Plug Connector Receptacle	R&S, JPS1034H R&S, JCS1034H R&S, JRSR1034H	

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	Note 10	Note 10	60
(mm)	(Note 10)	(Note 10)	(1 525)

Service Clearances:

	F	R	Rt	L
Inches	Note 10	Note 10	Note 10	Note 10
(mm)	(Note 10)	(Note 10)	(Note 10)	(Note 10)

Environment, Operating:

Temperature	65°F-80°F (18°C-27°C)
Rel Humidity	20%-65%

Floor Requirements:

Floor beneath machine must be level with maximum variance of 2 in. (55 mm). Maximum machine length is 637 in. (16 180 mm). Normal raised floor construction providing ±0.10 in. (±2.54 mm) overall facilitates installation.

3890 Document Processor (60 Hz)

Notes:

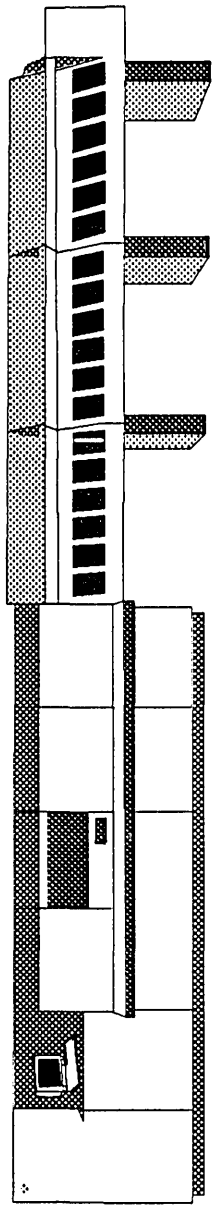
1. Required for Models B1-B2 and F2-F6 that have core storage.
2. Unless otherwise specified, the shipping dimensions for frame 01 are 67 in. x 31-1/4 in x 60-1/4 in. (1 700 mm x 790 mm x 1 530 mm). Removal of the side covers reduces the width to 29 in. (740 mm). If further reduction in length is required, see the IBM representative to request an upending kit. This modifies the machine to 60 in. x 30-1/4 in. x 71 in. (1 520 mm x 770 mm x 1 800 mm).
3. Unless otherwise specified, the shipping dimensions for frame 06 are 33-1/2 in. x 31-1/4 in. x 60-1/4 in. (850 mm x 790 mm x 1 530 mm). Removal of the front and rear covers reduces the width to 29 in. (740 mm).
4. Unless otherwise specified, the shipping dimensions for frame 02 are 70-3/4 in. x 31-1/2 in. x 60-1/4 in. (1 800 mm x 800 mm x 1 530 mm). Removal of the rear cover reduces the width to 30-1/4 in. (770 mm). Removal of the lower front cover and partially raising the top covers further reduces the width to 29 in. (740 mm). If further reduction in size is required, see the IBM representative for specifying an upending kit. This modifies the machine to 60 in. x 30-1/4 in. x 75-1/2 in. (1 520 mm x 770 mm x 1 920 mm). The side dimension is 39-1/2 in. (1 000 mm), including 8-1/4 in. (210 mm) for the shelf. The height dimension is 90 in. (2 290 mm) with the cover above the shelf raised to the service position.
5. Unless otherwise specified, the shipping dimensions for frame 03 are 34-1/4 in. x 31-1/4 in. x 60-1/4 in. (870 mm x 790 mm x 1 530 mm). Removal of the rear covers reduces the width to 30-1/4 in. (770 mm). Removal of the front covers and partially raising the top cover further reduces the width to 29 in. (740 mm). The side dimension is 39-1/2 in. (1 000 mm), including 8-1/4 in. (210 mm) for the shelf. The height dimension is 91-1/2 in. (2 320 mm) with the cover above the shelf raised to the service position.
6. Shipping length for frame 04 is 64 in. (1 630 mm); shipping height is 61-1/2 in. (1 590 mm). Unless otherwise specified, the end stacker unit is shipped with frame 05 assembled. Shipping length is 75 in. (1 910 mm). These units are shipped separately by request or are automatically shipped separately if upending kits are specified for frame 01 or frame 02. The number of stackers varies by model number. The front dimension for installed stackers is found by multiplying the length of one stacker, 57 in. (1 450 mm), by the model number. (For Model A6 or E6, 57 in. [1 450 mm] x 6 = stacker dimension plus 16 in. [410 mm] for frame 05).
7. The weight of customer's trays and documents is not included.
8. Maximum values (Models A6, B6, E6, and F6). See Totals (By Model) for actual values with or without SF 5111 (microfilmer) installed. See Note 11.
9. Powered from control unit 1 (frame 01).
10. See "Plan View Metric Equivalents" on page 3890.2.
11. SF 5111 (microfilmer) is standard on Models E2-E6 and F2-F6.
12. References to 60-Hz 3890 Models B and F do not apply if the 3890 has the monolithic storage device (instead of the core storage device). The 60-Hz 3890 Models B and F with monolithic storage do not have frame 06, but do have the physical characteristics of Models A and E, respectively.
13. Frame 07 is currently available on Models A1-A6 and B1-B6 only.

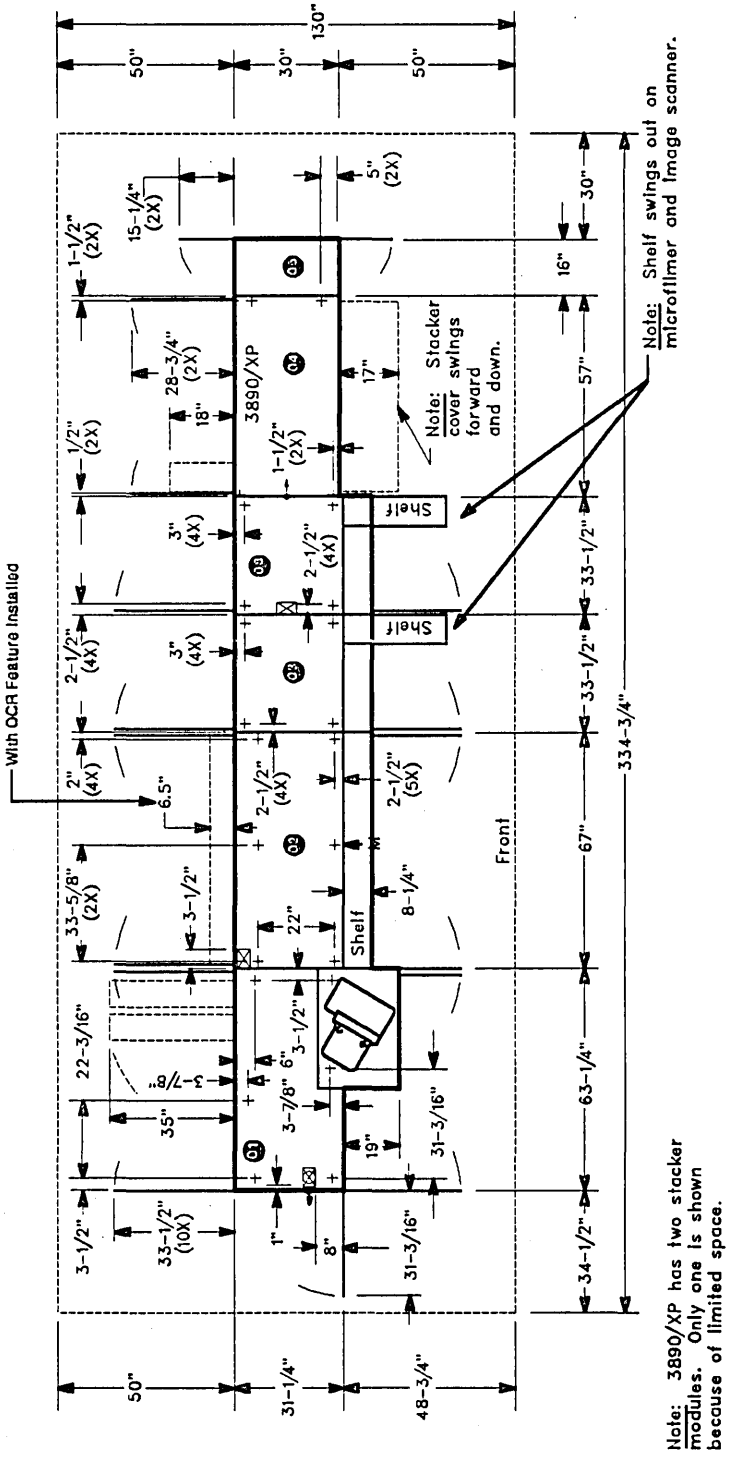
3890/XP Document Processor

Plan View (Not to Scale)

Use IBM Physical Planning Template GX22-7031.

Note: Frame 03 to be repeated for frame 08.
Frame 08 to be located between frames 03 and 04.





3890/XP Declaration of Noise Emission Values

LWAd		(LPA)m		<LpA>m	
Operating (bels)	Idling (bels)	Operating (db)	Idling (db)	Operating (db)	Idling (db)
(9.8)	(8.9)	79	68	75	67

Notes:

1. The above values are for a machine that has the Microfilm feature and four stacker modules installed.
2. () implies a projected value.
3. The data is preliminary, and subject to change.

LWAd is the declared sound power emission level for a production series of machines.

(LPA)m is the mean value of the sound pressure emission levels at the operator position for a production series of machines.

<LpA>m is the mean value of the space-averaged sound pressure emission levels at the one-meter positions for a production series of machines.

All measurements made in accordance with ANSI S12.10, and reported in conformance with ISO 9296.

Table of Metric Equivalent

Plan View Metric Equivalent	
Inch	MM
1/2	12.7
1	25
1-1/2	40
2	50
2-1/2	60
3	80
3-1/2	90
3-7/8	105
5	130
6	150
8	200
8-1/4	205
15-1/4	380
16	410
17	430
18	460
22	560
22-3/16	580
28-3/4	730
30	760
31-3/16	795
31-1/4	795
33-1/2	855
33-5/8	855
34/1/2	880
35	890
48-3/4	1 265
50	1 270
57	1 450
63-1/4	1 610
67	1 700
130	3 300
300	7 655

Details (By Frame)

Frame	Dimensions F x S x H mm (inches)	Weight Kg (lb)	Airflow m /min (cfm)	Heat Output W (BTU/hr	kVA	Notes
Control Unit (01)	1 610 x 795 x 1 525 (63-1/4 x 31-1/4 x 60)	700 (1 550*)	23 (800)	3 150 (10 750	3.9	1
Feed (02)	1 700 x 795 x 1 525 (67 x 31-1/4 x 60)	840 (1 850)	7.5 (260)	4 450 (15 150	5.6	8,9 3,5,
OCR **	0 x 995 x 0 (0 x 37-3/4 x 0)	160 (350)	10.5 (365)	1 035 (3 500)	1.2	
Microfilm (03)	850 x 795 x 1 525 (33 1/2 x 31-1/4 x 60)	330 (720)	10.5 (360)	1 800 (6 050)	2.2	4,8
Scanner (08)	850 x 795 x 1 525 (33-1/2 x 31-1/4 x 60)	230 (500)	8.8 (300)	3 260 (13 000	3.8	4,8,
Stacker (04)	1 450 x 765 x 1 600 (57 x 30 x 63)	390 (850)	3.5 (115)	1 350 (4 600)	1.7	5,6,7
Blower (05)	410 x 765 x 640 (16 x 30 x 25-1/4)	60 (140)	1 (30)	1 250 (4 100)	1.5	6,8

* 1700 lb for 50 Hz machines
** If the feature is installed,
add the appropriate numbers to the feed frame numbers.

Totals (Modules and Feature)

Modules and Feature	Weight kg (lb)	Length mm (inches)	Airflow m3/min (cfm)	Heat Output W (BTU/hr)	kVA
Basic *	2 380 (5 250)	6 605 (260-1/4)	37.5 (1 320)	11 090 (39 200)	14.4
Micro-film **	330 (720)	850 (33-1/2)	10.5 (360)	1 800 (6 050)	2.2
Scanner **	230 (500)	850 (33-1/2)	8.8 (300)	3 260 (13 000)	3.8
OCR **	160 (350)	850 (33-1/2)	10.5 (365)	1 035 (3 500)	1.2
3 Stkrs	2 770 (6 090)	8 050 (317-1/4)	41 (1 435)	12 830 (43 800)	16.1
4 Stkrs	3 155 (6 940)	9 500 (374-1/4)	44 (1 550)	14 180 (48 400)	17.8
5 Stkrs	3 545 (7 790)	10 945 (431-1/4)	48 (1 665)	15 520 (53 000)	19.5
6 Stkrs	3 945 (8 640)	12 395 (488 1/4)	51 (1 780)	16 880 (57 600)	21.2

* Basic weight includes the control unit, feed, two stackers, and blower.
For 50 Hz machines, add 150 lbs to the totals.
** If the feature is installed,
add the appropriate numbers to the total numbers.
N/A = Not available at this time.

Branch Circuit Requirements

Hz	60		50		
Voltage	208	230	220	380	400
Phase	3	3	3	3	3
Ampacity	100	100	90	50	50
Maximum Continuous Load (Amperes)	A	A	A	A	A
Stackers					
2	60	54	57	33	31
3	65	59	61	36	33
4	70	63	66	38	35
5	74	67	70	41	38
6	79	72	75	43	40
If microfilmer (SF 5111) is not installed, subtract "A" from Maximum Continuous Load	9.5	8.5	8.9	5.2	4.8
If scanner is not installed, subtract "A" from Maximum Continuous Load	11.0	10.0	10.4	6.0	5.6
If OCR is not installed, subtract "A" from Maximum Continuous Load	3.0	2.7	2.8	1.6	1.5

* Plug Russell & Stoll, JPS1034H
* Connector Russell & Stoll, JCS1034H
* Receptacle Russell & Stoll, JRSR1034H
Power Cord Style F2

* 60 Hz only.

Specifications

Dimensions:
See "Details (By Frame)" and Note 11.

Service Clearances:
See "Totals (Modules and Feature)" and Note 11.

Environment, Operating:
Temperature 15°C - 27°C (60°F-80°F)
Rel Humidity 20%-65%

Floor Requirements:
The floor beneath the machine must be level with a maximum variance of 55 mm (2 in.). The maximum machine length is 13 255 mm (521-3/4 in.). Normal raised floor construction providing ±2.54 mm (±0.10 in.) overall facilitates installation.

Notes:

1. Unless otherwise specified, the shipping dimensions for frame 01 are 1 610 mm x 795 mm x 1 525 mm (63-1/4 in. x 31-1/4 x 60 in.). Removal of the side covers and related hardware, such as hinge assemblies and mounting brackets, reduces the width to 740 mm (29 in.). If further reduction in length is required, contact an IBM representative to request an upending kit. This kit modifies the machine to 1 525 mm x 770 mm x 1 805 mm (60 in. x 30-1/4 in. x 71 in.).
2. Add 485 mm (19 in.) to the width (S) when the shelf is installed.
3. Unless otherwise specified, the shipping dimensions for frame 02 are 1 800 mm x 800 mm x 1 530 mm (70-3/4 in. x 31-1/2 in. x 60-1/4 in.). Removal of the rear cover and related hardware reduces the width to 770 mm (30-1/4 in.). Removal of the lower front cover and partially raising the top covers further reduces the width to 735 mm (29 in.). If further reduction in length is required, contact an IBM representative to request an upending kit. This kit modifies the machine to 1 525 mm x 770 mm x 1 815 mm (60 in. x 30-1/4 in.x 71-1/2 in.).
4. Unless otherwise specified, the shipping dimensions for frames 03 and 08 are 870 mm x 790 mm x 1 530 mm (34-1/4 in. x 31-1/4 in. x 60-1/4 in.). Removal of the lower front cover and related hardware and partially raising the top cover further reduces the width to 735 mm (29 in.).

   The side dimension is 1 000 mm (39-1/2 in.), including 220mm (8-3/4 in.) for the shelf.
5. The height dimension is 2 340 mm (92 in.) with the cover above the shelf raised to the service position.
6. Shipping length for frame 04 is 1 625 mm (64 in.); shipping height is 1 560 mm (61-1/2 in.). Unless otherwise specified, the end stacker unit is shipped with frame 05 assembled. The shipping length is 1 905 mm (75 in.).

   These units are shipped separately by request or are automatically shipped separately if upending kits are specified for frame 01 or frame 02.

   The number of stacker modules to be used is identified when feature code SF 3022 is selected. The front dimension for installed stackers is found by multiplying the length of one stacker, 1 450 mm (57 in.), by the number of stackers selected and adding it to the basic dimension. That is:

   Four additional stackers are selected,

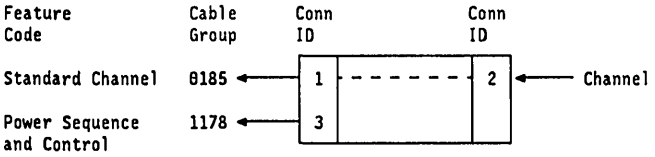
   4 x 1450 mm (57 in.) = 5 795 mm (228 in.)
   Basic dimension = 2 895 mm (114 in.).

   Total = 8 690 mm (342 in.).
7. The weight of the trays and documents belonging to the customer is not included.
8. Powered from control unit 1 (frame 01).
9. Add 210 mm (8-1/4 in.) to the width (S) when the shelf is installed.
10. Height is 1 355 mm (52-1/2 in.) from the floor.
11. See "Inch-to-Millimeter Conversion Table" in Appendix E.

3890 Document Processor (All Models) Cabling Schematic

References to 3890 Models B and F (60 Hz) do not apply if the 3890 has monolithic storage (instead of core storage). The 3890 Models B and F (60 Hz) with monolithic storage do not have frame 06, but do have the physical characteristics of Models A and E, respectively.

Note: Cable group 1178 should be ordered only when the customer wants to enable power sequence and control.



From 3890

Feature Code	Group No.	No. of Cables	Conn ID	Max Length m	Max Length (ft)	Model
Std	0185	2	1	61.0	(200)	All
Opt	1178	1	3	45.7	(150)	All

To 3890

Conn ID	Model
2	All

60 Hz

When a 3890 is installed on a raised floor, cables enter the machine through the cable entry in the first module to the right of frame 01. That is:

- Frame 02 for Models A and E
- Frame 06 for Models B, C, D, and F
- Frame 02 for Models B and F with monolithic storage
- Frame 02 for 3890/XP

When a 3890 is installed on a nonraised floor, cables must be routed under frame 01 and exit at the left end of the machine, or routed under frames 06, 02, and 03 (if installed) and must exit under the first stacker. The sequence and control (EPO) cable enters the machine through frame 02 or through frame 06 when frame 06 is installed.

50 Hz

When a 3890 Model A through F is installed on a raised floor, all cables enter the machine through the cable entry in frame 06.

Note: The 3890/XP cables enter through the cable entry in frame 02.

When a 3890 is installed on a nonraised floor, cables must be routed under frame 01 and exit at the left end of the machine, or routed under frames 06, 02, and 03 (if installed) and must exit under the first stacker. The sequence and control (EPO) cable enters the machine through frame 02 or through frame 06 when frame 06 is installed.

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389X Optical Character Processor Unit (OCP)

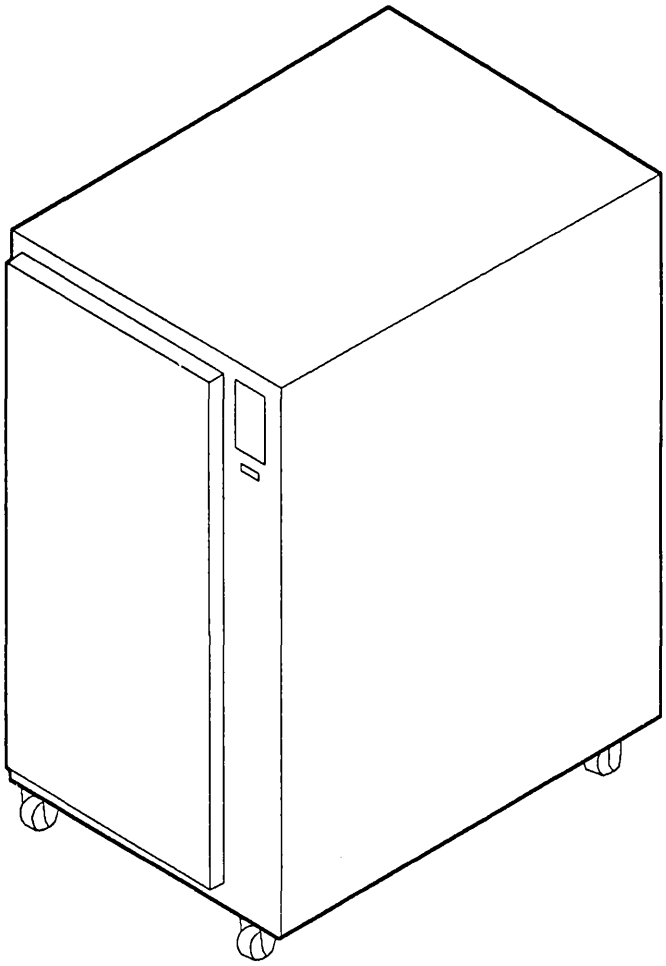

Figure 1. IBM 389X Optical Character Processor Unit (OCP)

Plan View (Not to Scale)-English measurements are shown in parentheses.

Plan View

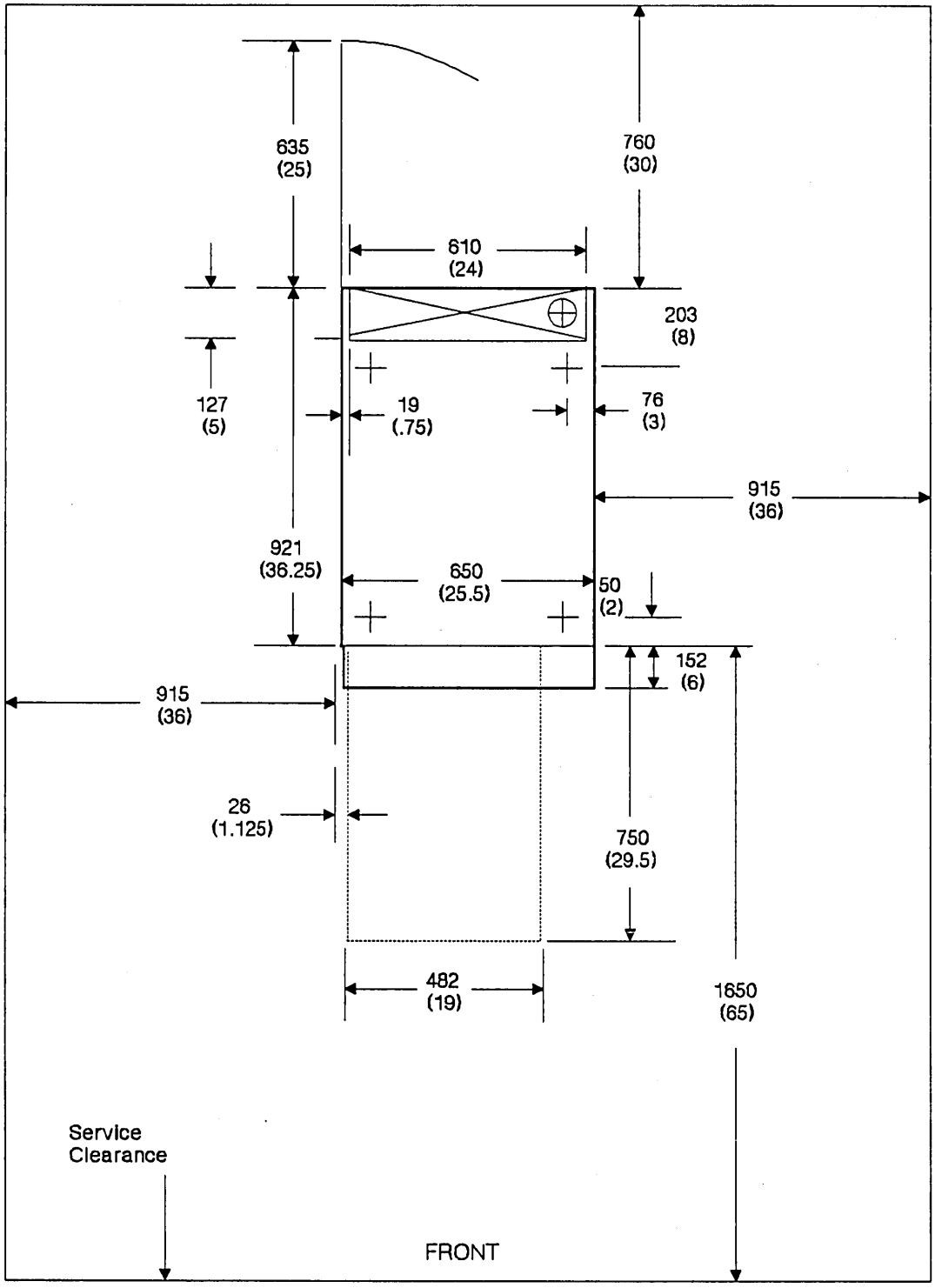

Figure 2. Plan View of the 389X Optical Character Processor Unit

Note: If two or more racks are install as a group (side by side), the side service clearance is required for the end racks only.

389X Declaration of Noise Emission Values

LWAd		(LPA)m		<LpA>m	
Operating (bels)	Idling (bels)	Operating (db)	Idling (db)	Operating (db)	Idling (db)
6.4*	6.4*	N/A	N/A	45*	45*
5.7**	5.7**	N/A	N/A	42**	42**

Notes:

LWAd is the declared sound power emission level for a production series of machines.

(LPA)m is the mean value of the sound pressure emission levels at the operator position for a production series of machines.

◄LpA►m is the mean value of the space-averaged sound pressure emission levels at the one-meter positions for a production series of machines.

* = 60 Hz machine.

** = 50 Hz machine.

N/A = Not applicable.

All measurements made in accordance with ISO 7779, and reported in conformance with ISO 7574/4.

Physical Characteristics

Weight	250 kg (550 lb)			
Dimensions mm (in)	Width 650 (25-1/2)	Depth 921 (36-1/4)	Height 1580 (62)	
Service Clearance mm (in)	Front 1650 (65)	Rear 760 (30)	Right* 915 (36)	Left* 915 (36)

* If two or more racks are installed as a group (side by side), the side service clearance is required for the end racks only.

Heat Output

820 W (2800 BTU/hr) maximum

Airflow

The rack does not have a fan; the system unit has its own fan. Air flows from the front of the system unit to the back at 200 CFM, with the air exiting out of the top and bottom of the rear of the rack frame.

Power Requirements

Low Voltage Input ac

Nominal: 208-240 V (one phase, 50 or 60 HZ)
Minimum: 180 V
Maximum: 254 V
AC Loads: 1.0 kVA
4.6 A Maximum

High Voltage Input ac

Nominal: 380-415 V (three phase, 50 HZ)
Minimum: 333 V
Maximum: 448 V
2.3 A Maximum
AC Loads (50 HZ): 1.0 kVA

Plug Types

Plug Type 60 HZ (See note 1):
Russell & Stoll 3750
Service Rating:

Volts	220/250
Amps	30
Phase	1
Wires	3

Plug Type 50 HZ (See note 2)

Connector Type (See Note 1)

Russell & Stoll 3933

Receptacle Type (See Note 1)

Russell & Stoll 3753

Notes:

1. 60 HZ machines only. 50 HZ machines use a three round pin connector that is rated at 5 kVA.
2. With this plug installed, the 4.4/5 kVA three phase plug power is not balanced. The plug uses phases one and two of the three incoming phases.

Power Cord

Standard 4.27 mm (14 ft)

Note: For 60 HZ machines, an optional 1.83 mm (6 ft) power cord is available.

Patch Cable

Patch cable of the appropriate length to connect the 389X to the token-ring LAN. See the *IBM Cabling System Catalog* GS70-2040-2.

Environment (Operating)

Temperature	16°C - 32°C (60°F - 90°F)
Rel Humidity	8% - 80%

Shipping Dimensions

Front	Side	Height
743 mm (29.25 in)	1048 mm (41.25 in)	1600 mm (63 in)

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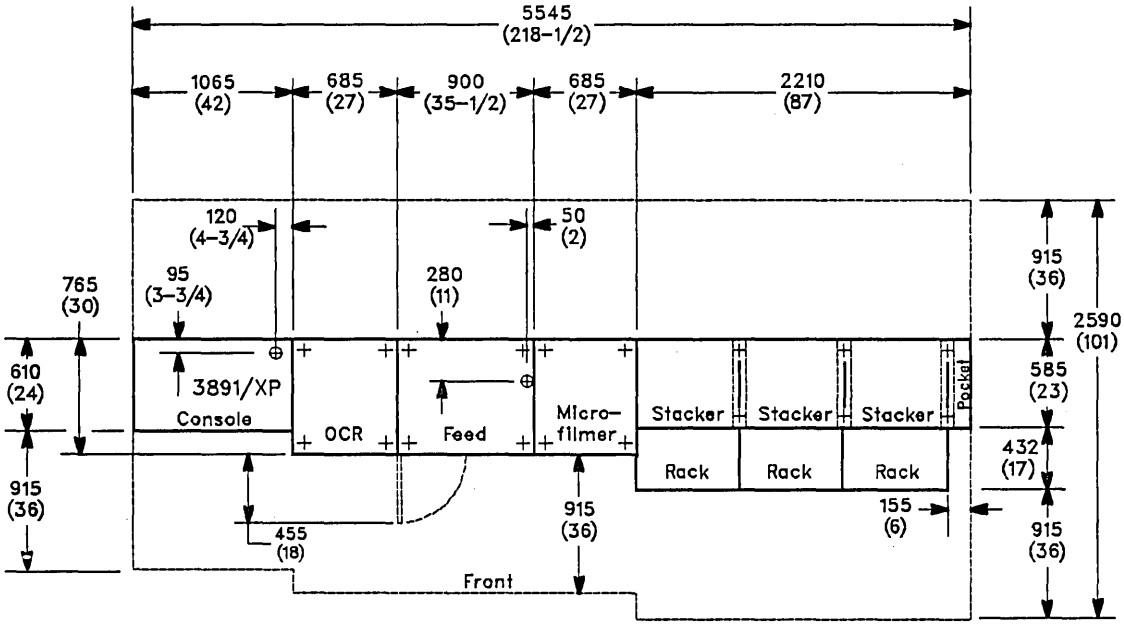
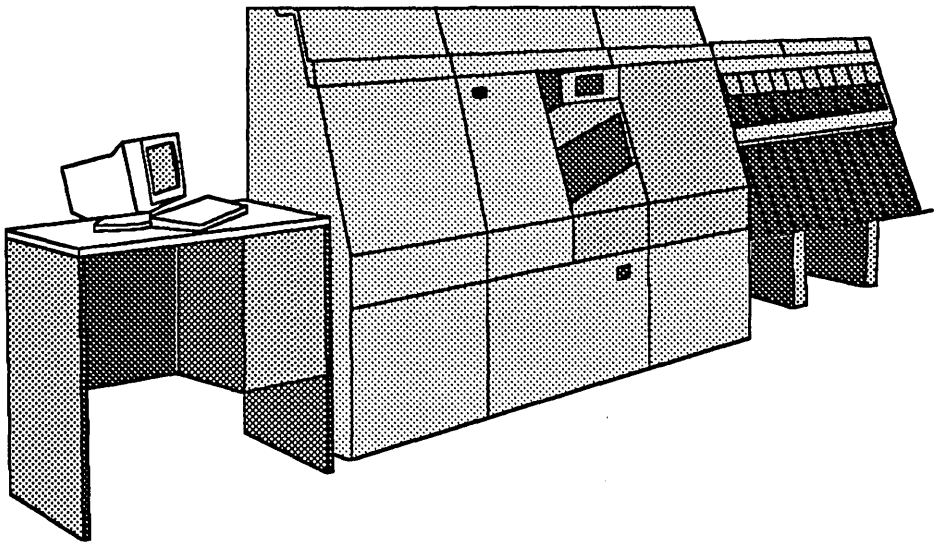
3891/XP Document Processor

Plan View with OCR (Not to Scale): English measurements are shown in parentheses.

Use IBM Physical Planning Template GX22-7131.





Details (By Frame)

Frame	Dimensions F x S x H mm (inches)	Weight Kg (lb)	Airflow m /min (cfm)	Heat Output W (BTU/hr	kVA	Notes
Console	1 065 x 610 x 1 040 (42 x 24 x 41)	90 (200)	1.0 (40)	300 (1 020)	.2	
Feed	900 x 760 x 1 715 (35-1/2 x 30 x 67-1/2)	280 (615)	19.5 (680)	3 160 (10 800	7.3	1
OCR	685 x 760 x 1 715 (27 x 30 x 67-1/2)	268 (590)	10.5 (365)	1 035 (3 500)	1.2	4
Microfilm	685 x 760 x 1 715 (27 x 30 x 67-1/2)	250 (550)	2 (60)	1 640 (5 600)	1.1	2, 5
Stacker (1,3,5)	685 x 585 x 1 525 (27 x 23 x 60)	105 (230)	3.0 (100)	420 (1 450)	1.0	3
Stacker (2,4,6)	685 x 585 x 1 525 (27 x 23 x 60)	95 (210)	3.0 (100)	420 (1 450)	1.0	3
Auxiliary Pocket	155 x 585 x 1 525 (6 x 23 x 60)	7 (16)	0	0	0	
One Tray Rack	685 x 432 x 585 (27 x 17 x 23)	24 (54)	0	0	0	

Notes:

1. When the feed module upper front cover is opened, add 75 mm (3 in.) to H.
2. When the microfilmer front cover is opened, add 70 mm (2-3/4 in.) to H.
3. When the stacker front cover is opened, add 45 mm (1-3/4 in.) to H.
4. If the feature is installed, add the appropriate numbers to the total numbers.
5. The maximum microfilm values are shown for weight, airflow, heat output, and kVA.

Totals (Modules and Feature)

Modules and Feature	Weight kg (lb)	Length mm (in.)	Airflow m^3/min (cfm)	Heat Output W (BTU/hr)	kVA
Basic	625 (1 375)	3 490 (137-1/2)	26.5 (920)	4 300 (14 700)	5.4
Micro-filmer*	250 (550)	685 (27)	2 (60)	1 640 (5 600)	n.n
OCR *	268 (590)	685 (27)	10.5 (365)	1 035 (3 500)	1.2
3 Stkrs	754 (1 659)	4 180 (164-1/2)	29.5 (1 020)	4 720 (16 150)	5.9
4 Stkrs	873 (1 921)	4 860 (191-1/2)	32.5 (1 120)	5 140 (17 600)	6.4
5 Stkrs	1 002 (2 204)	5 550 (218-1/2)	35.5 (1 220)	5 560 (19 050)	7.0
6 Stkrs	1 121 (2 466)	6 235 (245-1/2)	38.5 (1 320)	5 980 (20 500)	7.6

Note: The basic processor includes the console, feed module, 2 stackers, 2 tray racks and auxiliary pocket. The console includes the keyboard, display, and system unit. The basic length includes the feed module, 2 stackers, and auxiliary pocket. Add console length if the console is located against the end of the machine. Stackers weight includes the tray racks.

* If the feature is installed, add the appropriate numbers to the total numbers.

Power Requirements (kVA) See "Totals (Modules and Feature)."

Specifications: Dimensions: See "Details (By Frame)."

Service Clearances: 915 mm (36 in.) at the front and rear.

Plug

Plug Type: Russellstoll, JP7328-78
Service Rating:

Volts	208
Amperes	60
Phases	3
Wires	4

Receptacle Receptacle Type: Russellstoll, JR7428-78

Environment, Operating:

Temperature	15°C – 27°C (60°F – 80°F)
Rel Humidity	20% – 80%

Acoustics and Noise-Emission Levels

For definitions, see "Acoustics" in Chapter 3 of the *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

L_{WAd}		$(L_{pA})m$		$<L_{pA}>m$	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	Operating (dB)	Idling (dB)
9.1	7.6	79	55	73	57

Note: The above values are for a machine that has the microfilmer feature and 3 stacker modules installed.

Floor Requirements: The floor below the machine must be level with a maximum variance of 55 mm (2 in.). Maximum machine length is 13 255 mm (521-3/4 in.). Normal raised floor construction providing ±2.54 mm (±0.10 in.) overall facilitates installation.

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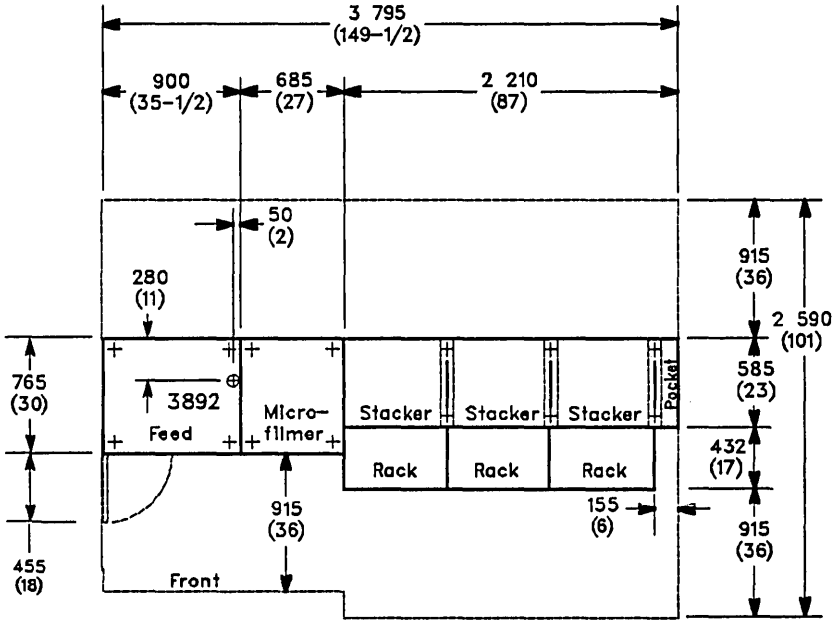
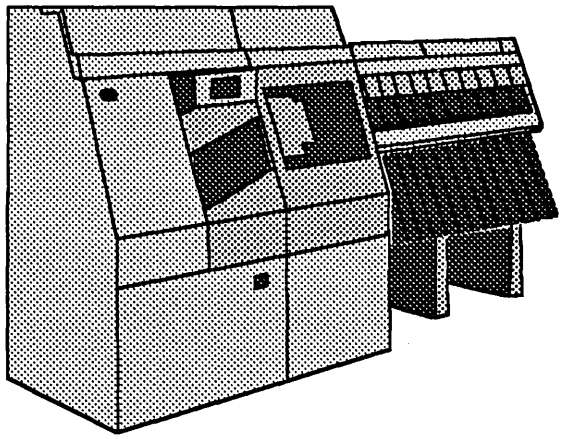
3892 Document Processor

Plan View (Not to Scale)

English measurements are shown in parentheses.

Use IBM Physical Planning Template GX22-7132.





3892 Document Processor

Details (By Frame)

Frame	Dimensions F x S x H mm (in.)	Weight kg (lb)	Airflow m³/min (cfm)	Heat Output W (BTU/hr)	kVA	Notes
Feed	900 x 765 x 1 715 (35-1/2 x 30 x 67-1/2)	300 (660)	8.5 (300)	1 730 (5 900)	2.8	1
Micro-filmer	685 x 765 x 1 525 (27 x 30 x 60)	200 (440)	0 (0)	300 (1 020)	0.5	2
Stacker (1,3,5)	685 x 585 x 1 525 (27 x 23 x 60)	105 (230)	3.5 (110)	160 (550)	0.3	3
Stacker (2,4,6)	685 x 585 x 1 525 (27 x 23 x 60)	95 (210)	3.5 (110)	130 (450)	0.2	3
Auxiliary Pocket	155 x 585 x 1 525 (6 x 23 x 60)	7 (16)	0 (0)	0 (0)	0	
One Tray Rack	685 432 x 585 (27 x 17 x 23)	24 (54)	0 (0)	0 (0)	0	0

Notes:

1. When the feed module upper front cover is opened, add 70 mm (2-3/4 in.) to H.
2. When the microfilmer front cover is opened, add 75 mm (3 in.) to H.
3. When the stacker front cover is opened, add 44 mm (1-3/4 in.) to H.

Totals (Modules and Feature)

Modules and Feature	Weight kg (lb)	Length mm (in.)	Airflow m³/min (cfm)	Heat Output W (BTU/hr)	kVA
Basic	415 (910)	1 740 (68-1/2)	37.5 (1 320)	2 650 (7 000)	3.1
Micro-filmer*	200 (440)	685 (27)	0 (0)	300 (1 020)	0.5
2 Stkrs	510 (1 120)	2 425 (95-1/2)	41 (1 435)	2 830 (6 900)	3.3
3 Stkrs	615 (1 350)	3 110 (122-1/2)	41 (1 435)	2 190 (7 450)	3.6
4 Stkrs	710 (1 560)	3 795 (149-1/2)	44 (1 550)	2 320 (7 900)	3.8
5 Stkrs	815 (1 790)	4 480 (176-1/2)	48 (1 665)	2 480 (8 450)	4.1
6 Stkrs	910 (2 000)	5 170 (203-1/2)	51 (1 780)	2 610 (8 900)	4.3
1 Tray Rack **	24 (54)	N/A	0	0	0

Notes:

1. The basic processor includes the feed module, one stacker, and auxiliary pocket.
2. Feed includes front and rear ink jet and endorser.
3. * Add these numbers to totals if installed.
4. ** Add this weight for each tray rack installed.

Acoustics and Noise-Emission Levels

L_{WAd}		$(L_{pA})m$		$<L_{pA}>m$	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	Operating (dB)	Idling (dB)
8.7	7.2	77	57	70	55

For definitions, see "Acoustics" in Chapter 3 of the *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

Note: The above values are for a machine that has the microfilmer feature and one stacker module installed. Data is preliminary and subject to change.

Power Requirements (kVA)

See "Totals (Modules and Feature)"

Plug

Plug Type: Russellstoll, JPS334H
Service Rating:
- Volts 208
- Amperes 30
- Phases 3
- Wires 4

Receptacle

Receptacle Type: Russellstoll, JRS334H

Power Cord

Standard 4.3 m (14 ft)
Style B1 30 Amps

Specifications

Dimensions:: See "Details (By Frame)"

Service Clearances:: 915 mm (36 in.) at the front and rear.

Environment, Operating::

Temperature 15°C-27°C (60°F-80°F)
Rel Humidity 20%-80%

Floor Requirements:: The floor beneath the machine must be level with a maximum variance of 55 mm (2 in.). Maximum machine length is 13 255 mm (521-3/4 in.). Normal raised floor construction providing
±2.54 mm (±0.10 in.) overall facilitates installation.

3892/XP Document Processor

Plan View with OCR (Not to Scale) and Microfilmer

English measurements are shown in parentheses.

Use IBM Physical Planning Template GX22-7132.

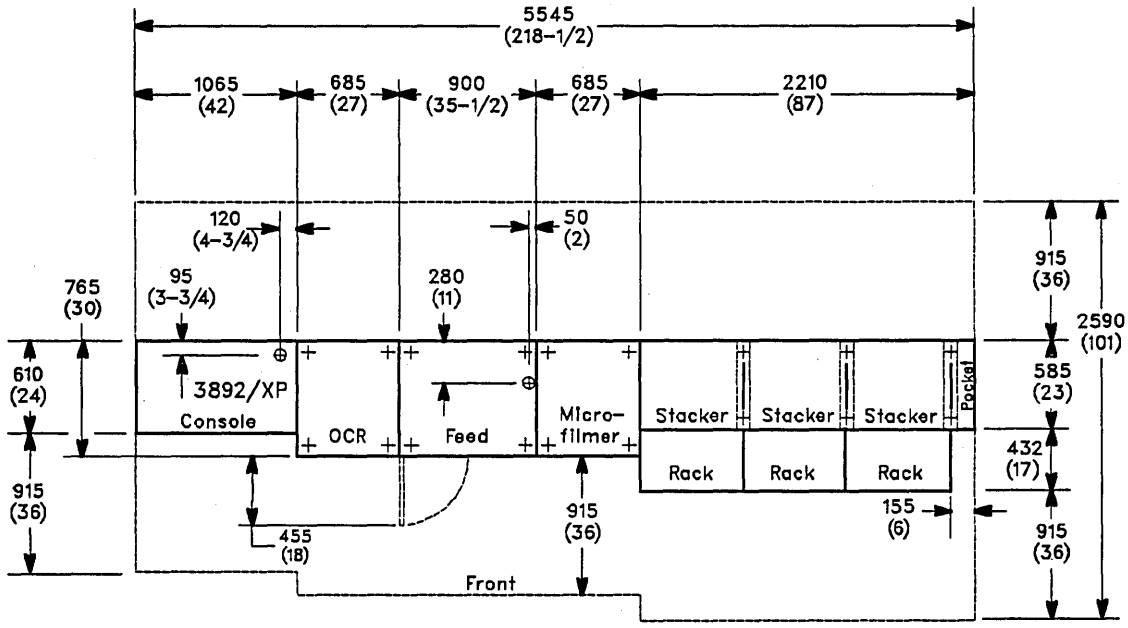
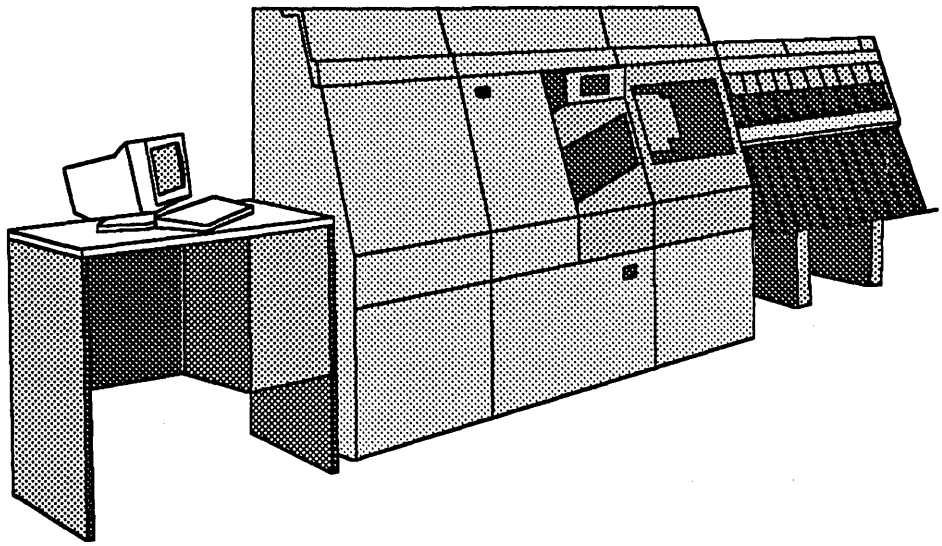


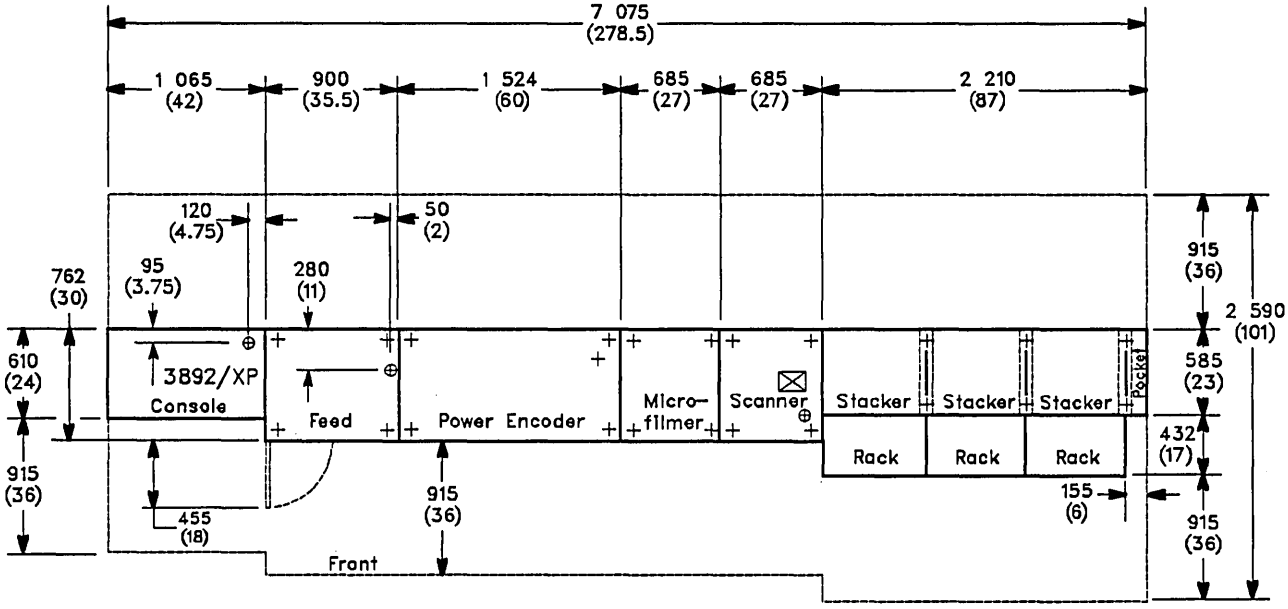
Figure 1. 3892/XP Document Processor Plan View



Plan View with Encoder, Microfilmer (Not to Scale), and Scanner

English measurements are shown in parentheses.

Use IBM Physical Planning Template GX22-7132.



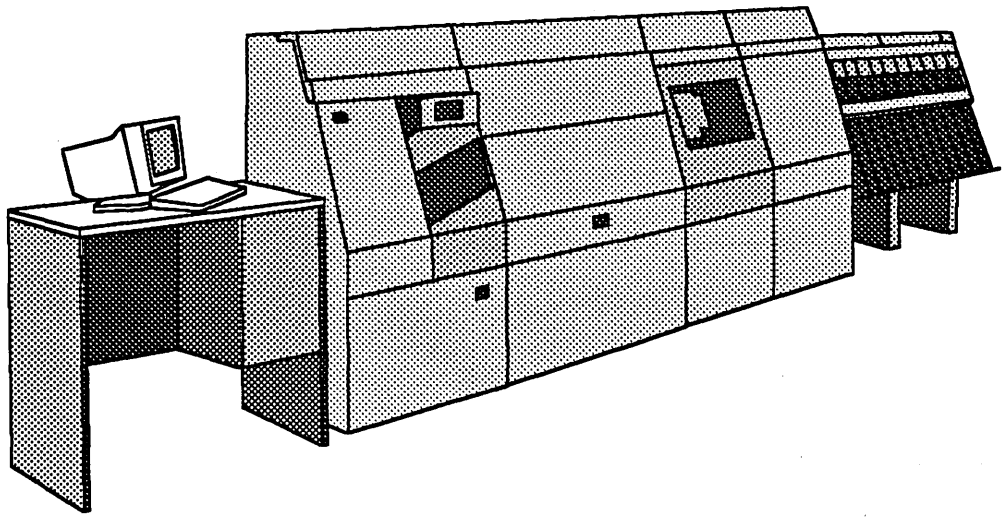


Figure 2. 3892/XP Document Processor and Encoder, Microfilmer, and Scanner Plan View

3892/XP Document Processor Details (By Frame)

Frame	Dimensions F x S x H mm (in.)	Weight kg (lb)	Airflow m^3/min (cfm)	Heat Output W (BTU/hr)	kVA	Notes
Console	1 065 x 610 x 1 040 (42 x 24 x 41)	90 (200)	1.0 (40)	300 (1 020)	0.2	
Feed	900 x 765 x 1 715 (35-1/2 x 30 x 67-1/2)	340 (750)	19.5 (680)	1 890 (6 450)	3.0	1
OCR	685 x 765 x 1 715 (27 x 30 x 67-1/2)	268 (590)	10.5 (365)	1 035 (3 500)	1.2	5
Encoder	1 525 x 760 x 1 715 (60 x 30 x 67-1/2)	390 (860)	17 (600)	2 300 (7 850)	2.9	2
Micro-filmer	685 x 765 x 1 715 (27 x 30 x 67-1/2)	250 (550)	2 (60)	1 640 (5 600)	1.1	3, 6
Scanner	685 x 765 x 1 715 (27 x 30 x 67-1/2)	340 (750)	8.8 (300)	2 400 (8 200)	2.8	7, 8
Stacker (1,3,5)	685 x 585 x 1 525 (27 x 23 x 60)	105 (230)	3.5 (110)	160 (550)	0.7	4
Stacker (2,4,6)	685 x 585 x 1 525 (27 x 23 x 60)	95 (210)	3.5 (110)	130 (450)	0.7	4
Auxiliary Pocket	155 x 585 x 1 525 (6 x 23 x 60)	7 (16)	0 (0)	0 (0)	0	
One Tray Rack	685 432 x 585 (27 x 17 x 23)	24 (54)	0 (0)	0 (0)	0	0

Notes:

1. When the feed module upper front cover is opened, add 75 mm (3 in.) to H.
2. When the encoder front cover is opened, add 590 mm (23 1/4 in.) to H.
3. When the microfilmer front cover is opened, add 70 mm (2-3/4 in.) to H.
4. When the stacker front cover is opened, add 44 mm (1-3/4 in.) to H.
5. If the feature is installed, add the appropriate numbers to the total numbers.
6. The maximum microfilm values are shown for weight, airflow, heat output, and kVA.
7. When the scanner front cover is open, add 70 mm (2 3/4 in.) to H.
8. The maximum scanner values are shown for weight, airflow, heat output, and kVA.

Totals (Modules and Feature)

Modules and Feature	Weight kg (lb)	Length mm (in.)	Airflow m^3/min (cfm)	Heat Output W (BTU/hr)	kVA
Basic	545 (1 200)	2 810 (110-1/2)	24.0 (830)	2 350 (8 020)	3.9
Encoder *	390 (860)	1 525 (60)	17 (600)	2 300 (7 850)	2.9
Micro-filmer*	250 (550)	685 (27)	2 (60)	810 (2 750)	1.3
OCR *	268 (590)	685 (27)	10.5 (365)	1 035 (3 500)	1.2
Scanner * **	340 (750)	685 (27)	8.8 (300)	2 400 (8 200)	2.8
2 Stkrs	640 (1 410)	3 490 (137-1/2)	27.5 (940)	2 480 (8 470)	4.6
3 Stkrs	745 (1 640)	4 180 (164-1/2)	31.0 (1 050)	2 640 (9 020)	5.3
4 Stkrs	840 (1 850)	4 860 (191-1/2)	34.5 (1 160)	2 770 (9 470)	6.0
5 Stkrs	945 (2 080)	5 550 (218-1/2)	38.0 (1 270)	2 930 (10 020)	6.7
6 Stkrs	1 040 (2 290)	6 235 (245-1/2)	41.5 (1 380)	3 060 (10 470)	7.4
1 Tray Rack *	24 (54)	N/A	0	0	0

Note: The basic processor includes the feed module, console, one stacker, and auxiliary pocket. The console includes the keyboard, display, and system unit. The basic length includes the feed module, one stacker, and auxiliary pocket. Add console length if the console is located against the end of the machine.

* If the feature is installed, add the appropriate numbers to the total numbers.
** Scanner has its own linecord.

Acoustics and Noise-Emission Levels

L_{WAd}		$(L_{pA})m$		$<L_{pA}>m$	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	Operating (dB)	Idling (dB)
8.7	7.2	77	57	70	55

For definitions, see "Acoustics" in Chapter 3 of the *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

Note: The above values are for a machine that has the microfilmer feature and one stacker module installed. Data is preliminary and subject to change.

Power Requirements without Power Encoder (kVA)

See "Totals (Modules and Feature)" on page 3892-6

Plug

Plug Type: Russellstoll, JPS334H
Service Rating:
- Volts 208
- Amperes 30
- Phases 3
- Wires 4

Receptacle

Receptacle Type: Russellstoll, JRS334H

Power Cord

Standard 4.3 m (14 ft)
Style B1 30 Amp
E4 - 60 Amp with power encoder

Power Requirements with Power Encoder (kVA)

See "Totals (Modules and Feature)" on page 3892-6

Plug

Plug Type: Russellstoll 7328-78
Service Rating
- Volts 208
- Amps 60
- Phase 3
- Wires 4

Receptacle

Receptacle Type: Russellstoll 7428-78

Additional Power Requirements with Scanner

Note: Scanner requires a separate receptacle, see page 3892-8.

Input ac:

Nominal: 208 V

10 A maximum

AC Loads (60 Hz):

2.8 kVA

Plugs

Plug Type: Russellstoll 3730
Service Rating
- Volts 208
- Amps 14
- Phase 3
- Wires 4

Dual 115 V / single phase receptacle

Receptacle (for Scanner ICP)

Russellstoll 3744

Receptacle (for Scanner ISM)

Russellstoll 3744

Power Cord Style

Standard 4.27 m (14 ft); Optional 1.83 m (6 ft)

Specifications

Dimensions:: See "Details (By Frame)" on page 3892-6

Service Clearances:: 915 mm (36 in.) at the front and rear.

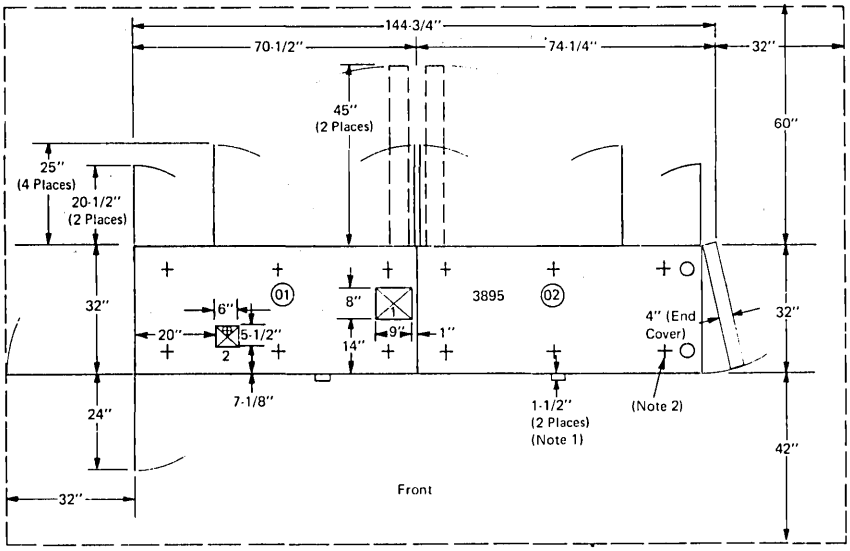
Environment, Operating::

Temperature	15°C-27°C (60°F-80°F)
Rel Humidity	20%-80%

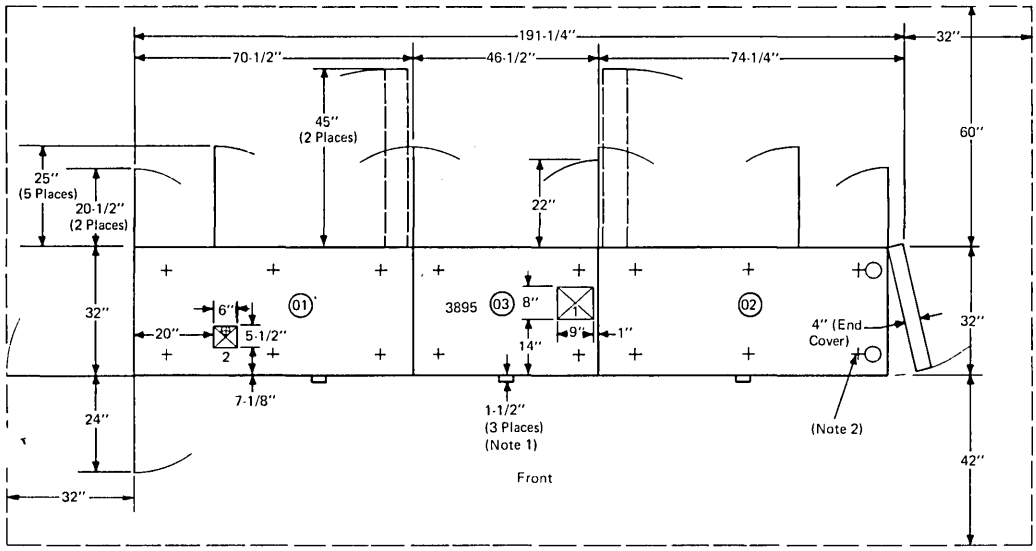
Floor Requirements:: The floor beneath the machine must be level with a maximum variance of 55 mm (2 in.). Maximum machine length is 13 255 mm (521-3/4 in.). Normal raised floor construction providing
±2.54 mm (±0.10 in.) overall facilitates installation.

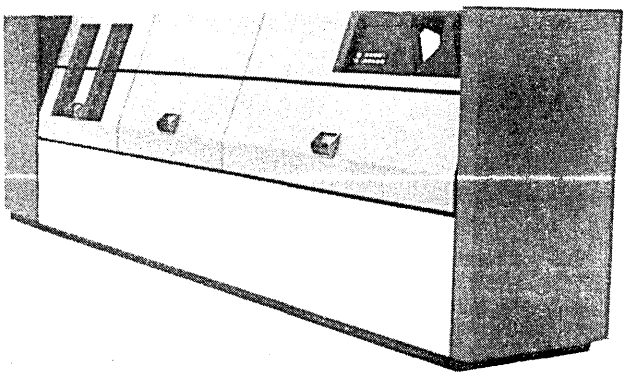
3895 DOCUMENT READER/INSCRIBER (60 HZ)

PLAN VIEW (WITHOUT MICROFILMING FEATURE, SF 5110), English Scale: 1/4 in. = 1 ft



PLAN VIEW (WITH MICROFILMING FEATURE, SF 5110), English Scale: 1/4 in. = 1 ft





Notes:

1. Handles on covers are not removable. Covers can be raised for clearance.
2. Except for the two fixed casters on the right end of frame 02, all casters have a 5/8" vertical adjustment.

3895 DOCUMENT READER/INSCRIBER (60 HZ)

SPECIFICATIONS

Dimensions:*

	Front	Side	Height
Inches	**	**	60***
(cm)	(**)	(**)	(153***)

Service Clearances:

	Front	Rear	Right	Left
Inches	42	60	32	32
(cm)	(107)	(152)	(81)	(81)

Weight: 3,900 lb (1 780 kg)
4,700 lb (2 150 kg)†

Heat Output: 33,500 BTU/hr (8 450 kcal/hr)
37,500 BTU/hr (9 500 kcal/hr)†

Airflow: 1,850 cfm (53 m^3/min)
2,250 cfm (63 m^3/min)†

Power Requirements:

kVA	12.5 (14.3 with microfilming feature)
Branch Circuit Amperes	60
Phases	3
Plug	R&S, SC7328
Connector	R&S, SC7428
Receptacle	R&S, SC7324
Power Cord Length	14 feet (4.3 m)

Environment, Operating:

Temperature	60^oF-85^oF (16^oC-30^oC)
Rel Humidity	20%-80%
Max Wet Bulb	73^oF (23^oC)

Environment, Nonoperating:

Temperature	50^oF-110^oF (10^oC-43^oC)
Rel Humidity	8%-80%
Max Wet Bulb	80^oF (27^oC)

Notes:

* Dimensions shown on plan view are with covers. If further reduction in shipping size is required, request the IBM representative to specify an upending kit. This reduces the *upended* dimensions (without covers) to:

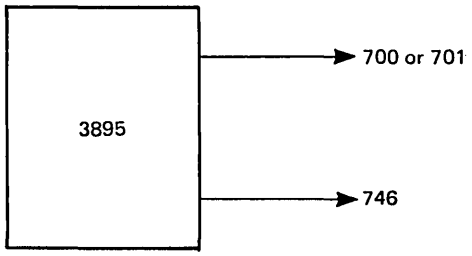
	Front	Side	Height
Frame 01	29-1/2" (75 cm)	59" (150 cm)	74" (188 cm)
Frame 02	29-1/2" (75 cm)	59" (150 cm)	75" (191 cm)

** See plan view.

*** Top cover when raised is 81 inches (206 cm) above floor level.

† With microfilming feature.

3895 DOCUMENT READER/INSCRIBER CABLING SCHEMATIC (60 HZ)



Group No.	*No. of Cables*	*From*	*To*	*Max Length (ft)*	*Notes*
700	2	3895	Multiplexer Channel	200	1
701	2	3895	Control Unit	200	1
746	2	3895	Selector or Block-Multiplexer Channel	200	1

Notes:

1. Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units. (See *IBM System/370 Installation Manual–Physical Planning*, GC22-7004.) Cables are attached through cable entry/exit 1.

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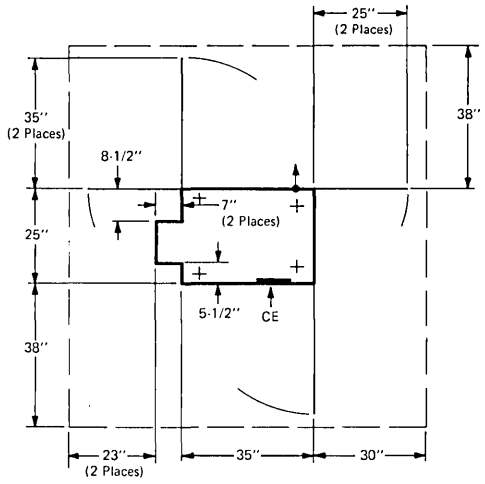
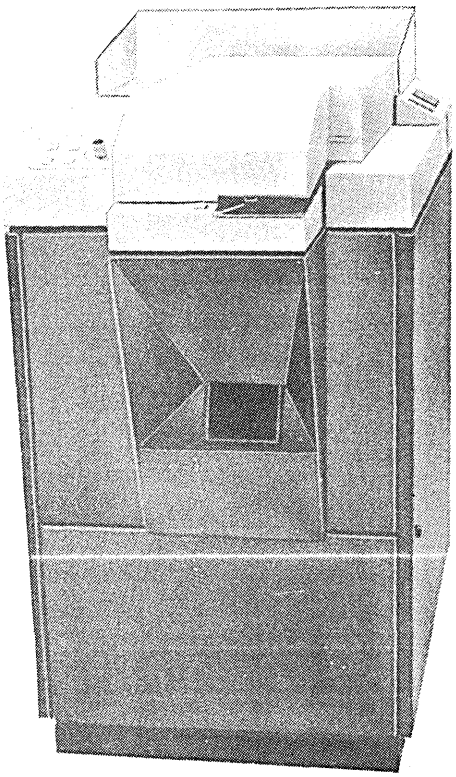
3896 TAPE-DOCUMENT CONVERTER (60 HZ)

PLAN VIEW (English Scale: 1/4 in. = 1 ft)





SPECIFICATIONS

Dimensions:

	Front	Side	Height
Inches	42	25	47
(cm)	(107)	(64)	(119)

Service Clearances:

	Front	Rear	Right	Left
Inches	30*	30*	30	23
(cm)	(76*)	(76*)	(76)	(58)

Weight: 900 lb (410 kg)

Heat Output:** 7,000 BTU/hr (1 800 kcal/hr)

Airflow: 200 cfm (6 m^3/min)

Power Requirements:

kVA	4.3
Phase	1
Branch Circuit Amperes***	30
Plug †	NEMA Type 14-30 P
Receptacle††	NEMA Type 14-30 R
Power Cord Length	10 feet (3 m)

Environment, Operating:

Temperature	60°F-85°F (16°C-30°C)
Rel Humidity	20%-80%
Max Wet Bulb	73°F (23°C)

Notes:

* Covers can be removed for servicing.

** Based on 60% duty cycle. For continuous operation, heat output is 13,000 BTU/hr (3 300 kcal/hr).

*** The 3896 should be the only load connected to the branch circuit.

† With both neutral and equipment ground.

†† Receptacles:

Hubbel 9430
General Electric 4193-1 (surface)
General Electric 4193-3 (flush)
or equivalent

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3897 Image Capture Processor

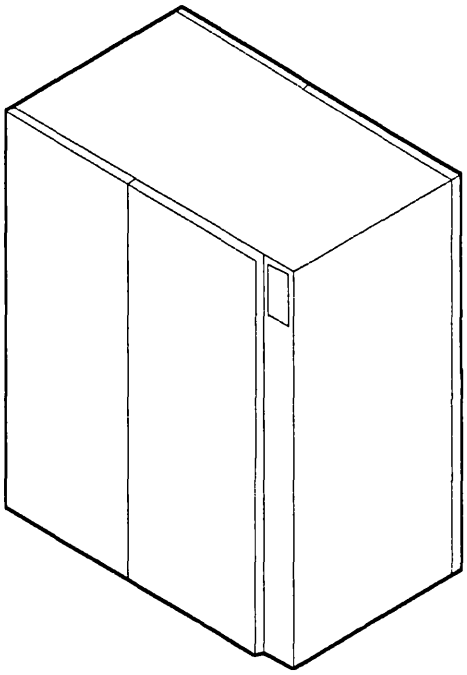
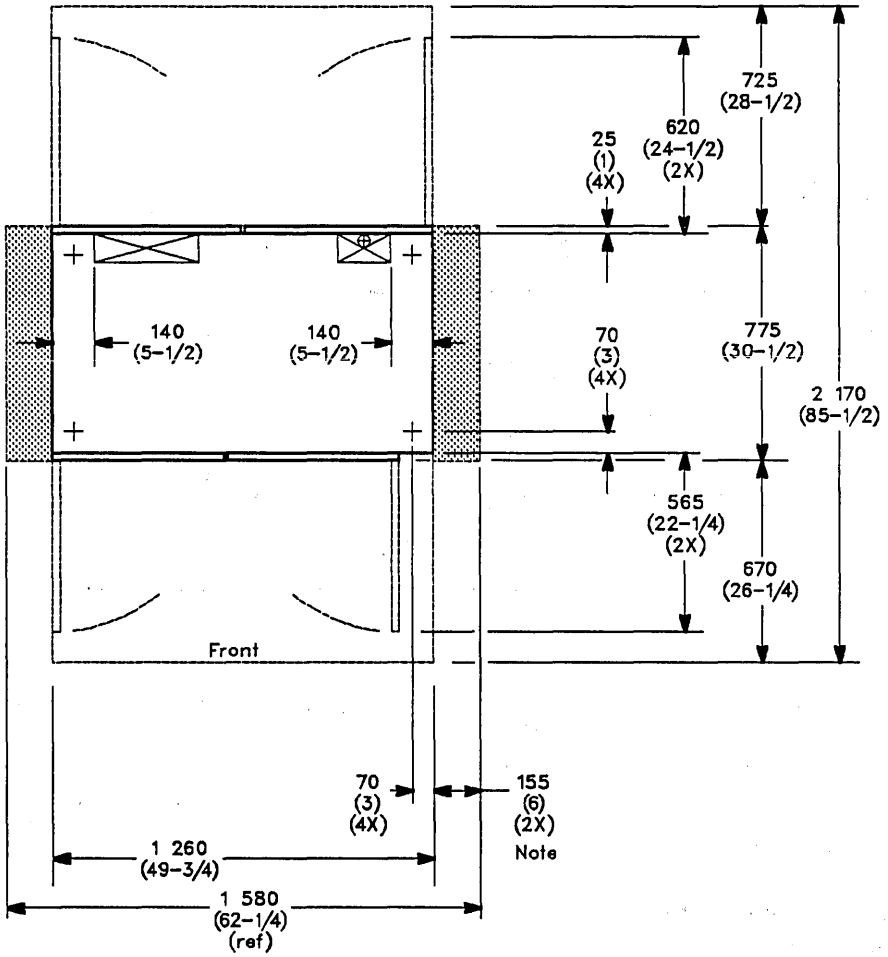


Figure 3. IBM 3897 Image Capture Processor

Plan View

Plan View (Not to Scale)

English measurements are shown in parentheses.



Note: Shaded clearance denotes air space required

Figure 4. Plan View of Image Capture Processor

Notes:

1. The customer is to provide the stand and the power receptacle for the 8514 Display.
2. If the ICP and the document processor cannot be installed in the same room, an installation review for serviceability is required.

3897 Cable Overview

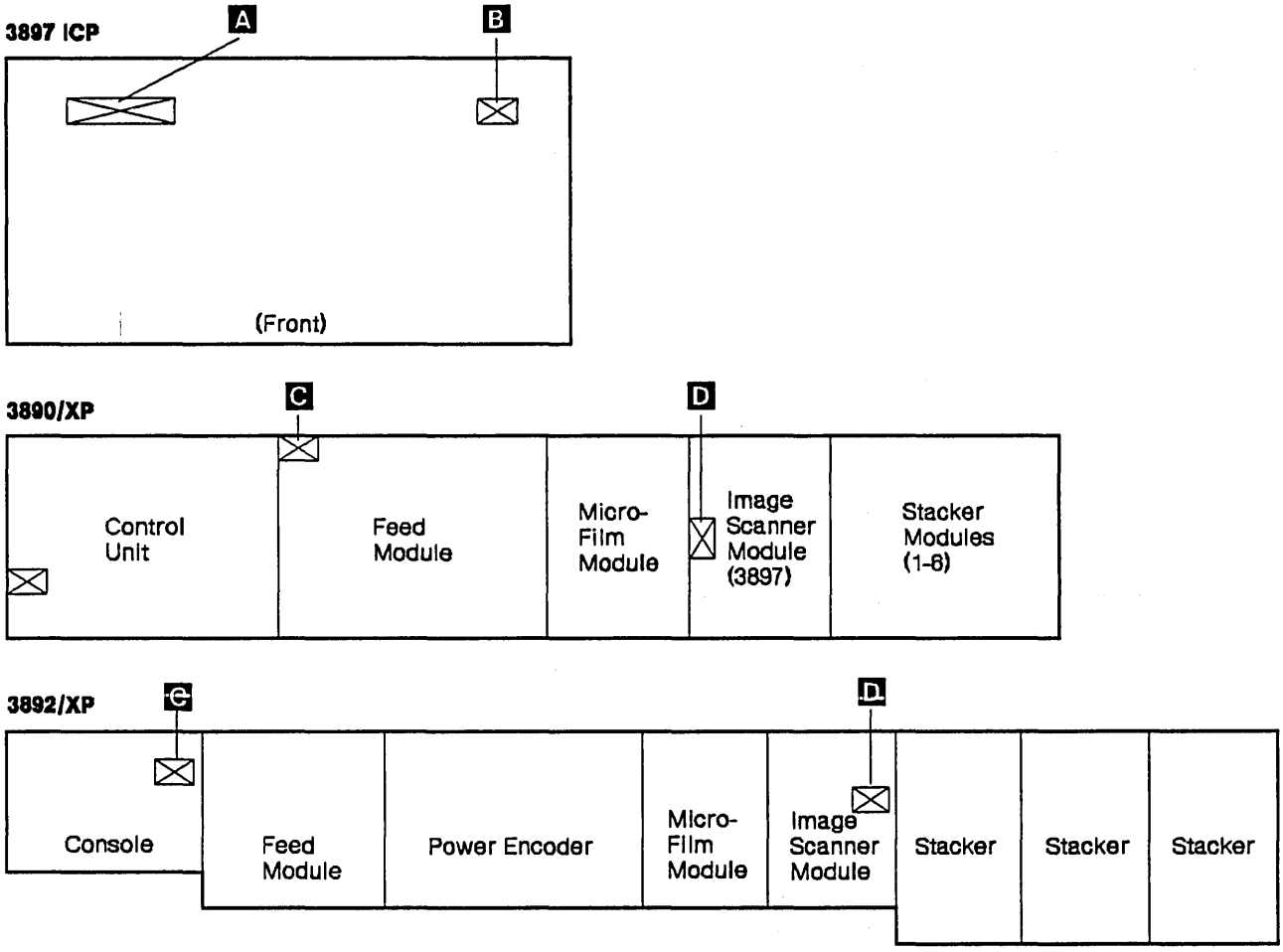


Figure 5. Cable Connections 3897 to 389X/XP

- There are two lengths of cables shipped with the 3897, a 12.2 m (40 ft) specify code number 9040 or a 30.5 m (100 ft) specify code number 9100.

Cable name	To	From	Basic Quantity	Full Feature Quantity
Image Scanner	A	D	5	10
Image Tracking	A	D	1	1
Image Communication (HSA)	A	C	1	1

- Channel cables

  Connect from the host channel to A for the 3897 and to C for the 3890/XP.

3897 Image Capture Processor Channel Cabling Schematic

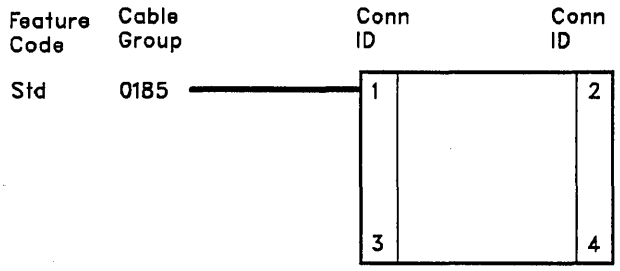


Figure 6. 3897 Channel Cable Schematic

Note: The maximum length of channel cable between the 3897 and the host computer is 122 m (400 ft).

Physical Characteristics

Specifications

Dimensions:	Front	Side	Height
mm	1 250	780	1 580
(in.)	(49-½)	(30-¾)	(62)

Service Clearances:	Front	Rear	Right	Left
mm	660	740	—	—
(in.)	(26)	(29)	—	—

Weight

322 kg (700 lb.)

Heat Output

4000 W (13,652 BTU/hr) maximum

Airflow

11.5 m^3/min (400 cfm)

Power Requirements

Input ac: (60 Hz)

Nominal: 208/240 V (Model 3 is 208 V only)

10 A maximum

AC Loads: (60 Hz)

4.2 kVA

Input ac: (50 Hz)

Nominal: 380 V

Nominal: 415 V

6 A maximum

AC Loads: (50 Hz)

4 kVA

Acoustics and Noise-Emission Levels

L_{WAd}		$(L_{pA})m$		$<L_{pA}>m$	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	Operating (dB)	Idling (dB)
7.5	7.5	N/A	N/A	57	57

For definitions, see "Acoustics" in Chapter 3 of the *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

Note: The above values are for a machine that has the microfilmer feature and one stacker module installed. Data is preliminary and subject to change.

Plugs

Plug Type: Russellstoll 3730
Service Rating
- Volts 208/240 (Model 3 is 208V only)
- Amps 15
- Phase 3
- Wires 4
- Dual 115 V / single phase receptacle

Receptacle

Russellstoll 3744

Power Cord Style

Standard 4.27 m (14 ft); Optional 1.83 m (6 ft)

Environment (Operating)

Temperature	15°C - 27°C (60°F - 80°F)
Rel Humidity	20% - 65%

Shipping Dimensions

Front	Side	Height
1450 mm	1600 mm	1675 mm
(57 in)	(40 in)	(66 in)

Notes:

1. Maximum distance between 3897 and reader/sorter is 100 feet (305 mm).

3898 Image Processor Unit

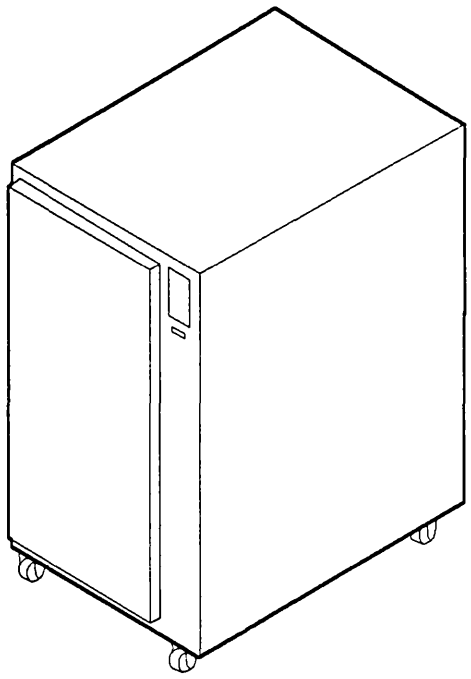


Figure 7. IBM 3898 Image Processor

Plan View (Not to Scale): English measurements are shown in parentheses.

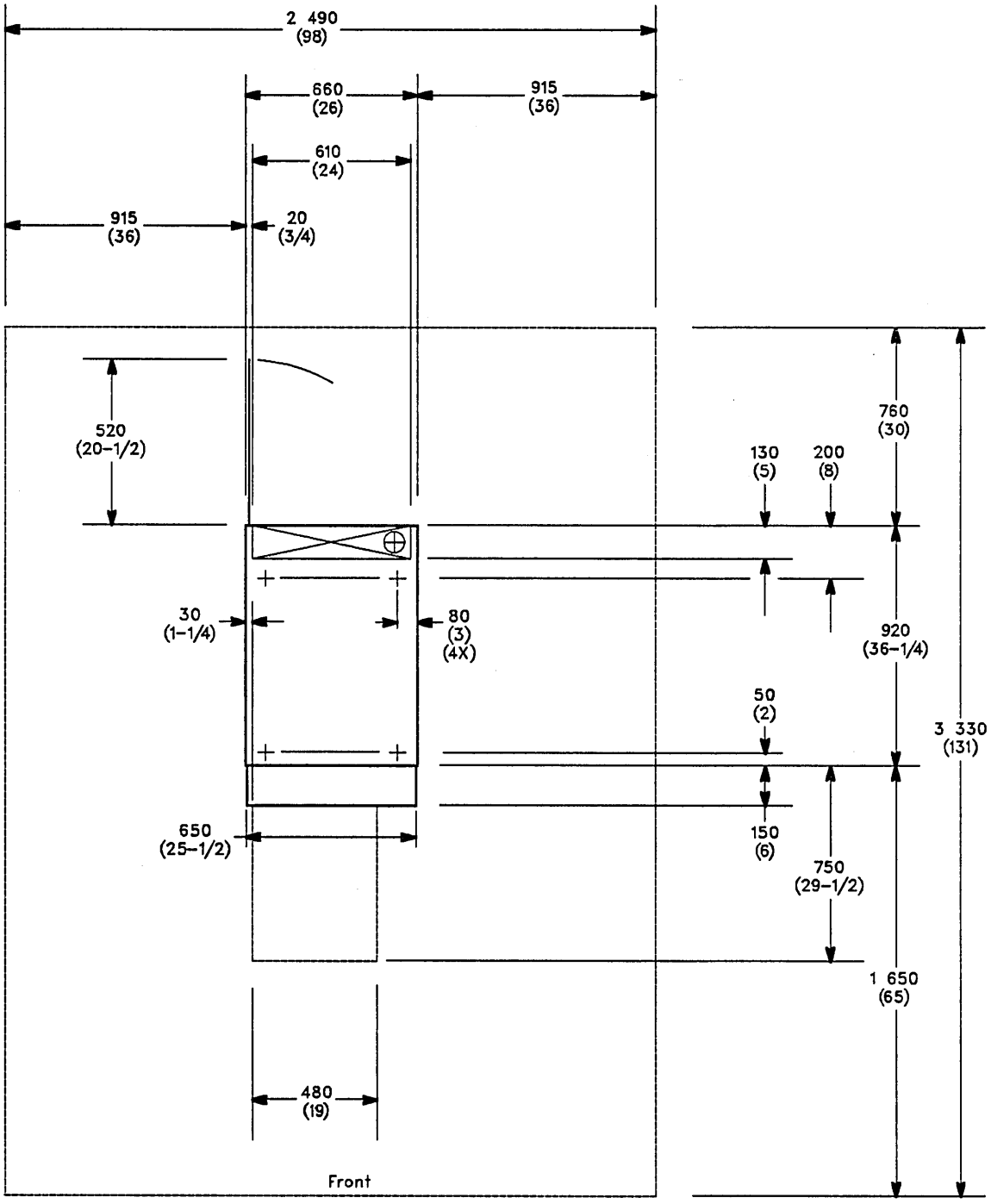


Figure 8. Plan View of the 3898 Image Processor Unit

Note: If 2 or more racks are installed as a group (side by side), the side service clearance is required for the end racks only.

3898 Declaration of Noise Emission Values:

For definitions, see "Acoustics" in Chapter 3 of the *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

L_{WAd}		$(L_{pA})m$		$<L_{pA}>m$	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	Operating (dB)	Idling (dB)
5.6	5.6	N/A	N/A	42.5	43.6

Specifications

Dimensions:	Front	Side	Height
mm	650	920	1 580
(in.)	(25-½)	(36-¼)	(62)

Service Clearances:	Front	Rear	Right	Left
mm	1 650	760	915	915
(in.)	(65)	(30)	(36)	(36)

* If 2 or more racks are installed as a group (side by side), the side service clearance is required for the end racks only.

Weight 250 kg (550 lb.)

Heat Output: 400 W (1367 BTU/hr) maximum

Airflow

The rack does not have a fan; each system unit has its own fan. Air flows from the front to the back of the system units, with the air exiting out of the top and bottom of the rear of the rack frame.

Power Requirements

Input ac Nominal: 200—240 V
Minimum: 180 V
Maximum: 254 V
0.66 kVA maximum
400 Watts maximum

Plug

Plug Type: Russellstoll 3750
Service Rating
Volts 220/250
Amps 30
Phase 1
Wires 3

Connector

Connector Type: Russellstoll 3933

Receptacle

Receptacle Type: Russellstoll 3753

Power Cord

Standard 4.27 m (14 ft);

Optional 1.83 m (6 ft)

Patch Cable
Patch cable of the appropriate length to connect the 3898 to the token-ring LAN. See the *IBM Cabling System Catalog* GS70-2040-2.

Environment (Operating)

Temperature 16°C—32°C (60°F—90°F)
Rel Humidity 8%*endash.80%

Shipping Dimensions

Front	Side	Height
743 mm (29.25 in)	1048 mm (41.25 in)	1600 mm (63 in)

Cabling Schematic

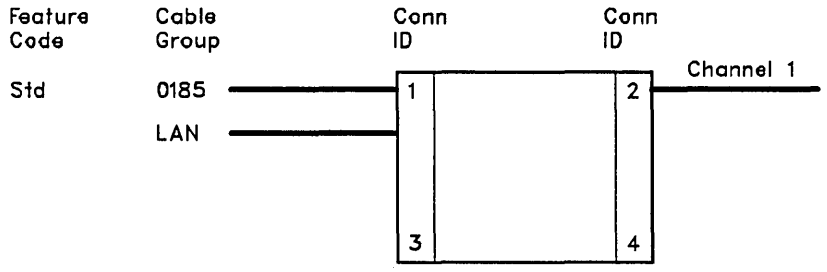


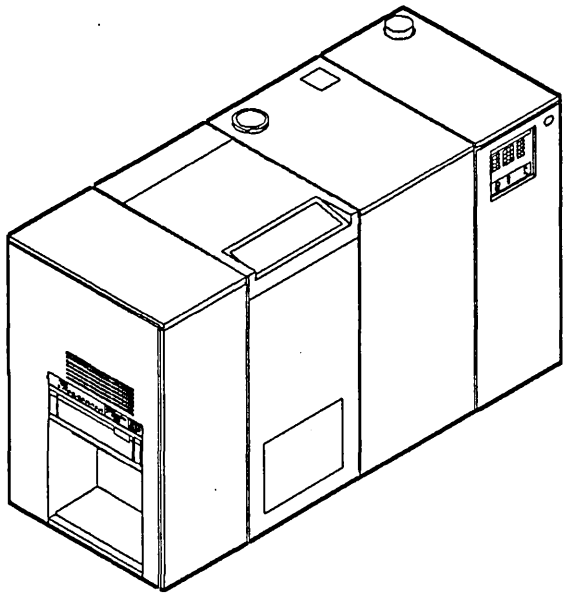
Figure 9. 3898 Cable Schematic

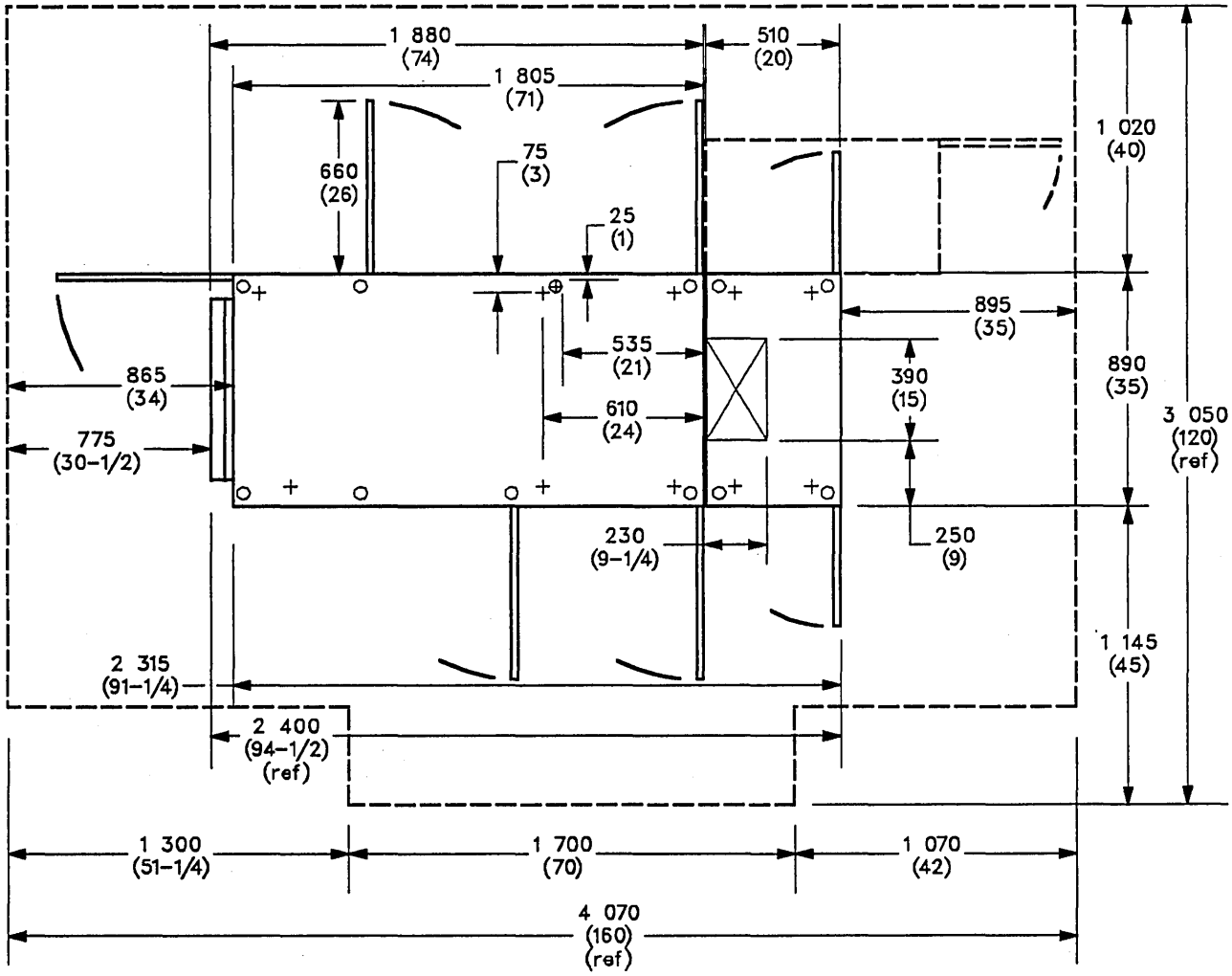
Note: The 3898 contains a 3172. The channel restrictions explained in the 3172 section of this manual apply to the 3898 connection to the host. The maximum length of channel cable between the 3898 and the host computer is 122 m (400 ft). If there are other channel-attached devices located between the 3898 and the host, subtract 4.5 m (15 ft) from the maximum allowable distance for each attached device.

3900 Advanced Function Printer

For installation planning, use IBM Physical Planning Template GX22-7140.

Plan View (Not to Scale)





Specifications:

Dimensions:

	Front	Side	Height
Printer			
mm	1803 – 1880	890	1420
(inches)	(91 – 94)	(35)	(56)
Control Unit			
mm	510	890	1420
(inches)	(20)	(35)	(56)
Total			
mm	2313 – 2402	890	1420
(inches)	(91 – 94)	(35)	(56)

Notes:

1. Printer front length depends on the stacker forms length setting.
2. Check the path of delivery to the final location for both front and side access dimensions before arrival of the printer.
3. The 3900 is shipped on a pallet and should not be removed from the pallet until it arrives at the customer's location. A forklift may be required to place the printer on the floor so it can be rolled into position on its casters. See your IBM representative.
4. If a preprocessor (such as a roll feed) is used and the forms path from it passes under the printer through the channel-cable access, special measures may be necessary to prevent interference between the channel cables and the forms. If 4 or fewer channel cables are used to attach the printer, the cables may simply be moved to the rear of the channel-cable access, and no interference will occur. If more than 4 cables are used, a protective tray, through which the forms will move, must be installed under the control unit. This protective tray is provided by the preprocessor vendor.
5. A 160-mm (6-1/2 in.) square floor cutout is required for the power cord. This cutout must be located under the power cord exit point and as far to the front of the machine as practical.

Service Clearances:

	Front	Rear	Right	Left
mm	1143	1020	895	864
(inches)	(45)	(40)	(35)	(34)

Notes:

1. Clearance can be reduced to 381 (15) × 1300 (51-1/4) at the left front and 940 (37) × 381 (15) at the right front. Front service clearance can be reduced to 765 mm (30 inches) if adequate room is left to service the photoconductor drum.
2. When installing a 3900 printer at the recommended minimum distance from the rear of the 3900 to a wall or other object, you must be aware that the rear covers may latch in an open position and be difficult to unlatch from the top of the cover.

Weight:

Printer	848 kg (1870 lb)
Control Unit	148 kg (326 lb)
Total	996 kg (2196 lb)

Air Flow:

	Printer	Control Unit
cmm	15.0	6.6
(cfm)	530	233

Note: Ventilation must be supplied to the printer area. The American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) recommends a minimum of 0.42 – 0.57 cmm (15 – 20 cfm) of outdoor makeup air per person in the printer area (ASHRAE 62 – 1989). Adherence to IBM preprinted forms recommendations and the provision of appropriate ventilation should prevent adverse human health effects due to outgassing/emissions from preprinted forms. See the *IBM 3900 Advanced Function Printer Forms Design Reference* for more information about selecting preprinted forms and using them safely.

Environment, Operating:

Temperature	16°C – 29°C (60°F – 84.2°F)
Rel Humidity	20% – 80%
Max Wet Bulb	18°C (64.4°F)
Elevation	0 to 2134 m (0 to 7000 ft)

Environment, Nonoperating:

Temperature	10°C – 43°C (50°F – 109.4°F)
Rel Humidity	8% – 80%
Max Wet Bulb	27°C (80.6°F)

Environment Storage, Extremes:
(Printer with developer mix installed)

Extreme	Temperature	%RH	Duration
Heat	40°C (104°F)	5–15%	8 hours
Cold	−25°C (−13°F)		8 hours
Moisture	36°C (97°F)	90%	48 hours

Notes:

1. The transition from hot to cold should not be made more than 3 times for each filling of developer mix.
2. All condensation must be evaporated before power is applied.

Power and Heat Dissipation:

Power and Heat Dissipation					
	Idle		Printing		
	50 Hz	60 Hz	50 Hz	60 Hz	
			42 lb	20 lb	42 lb
kVA	3.48	3.43	10.78	8.18	11.87
kW	2.99	2.81	10.53	8.10	10.94
kBTU/Hr	10.20	9.59	35.94	27.65	37.34

Notes:

1. 50-Hz values may be expected to be within 10% of 60-Hz values.
2. The printer consumes 16.2 kVA for approximately 5 seconds of every 20-second interval of operation.

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of the *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

	L_{WAd}		$<L_{pA}>_m$		I	T
	Printing (bels)	Idle (bels)	Printing (dB)	Idle (dB)		
60 Hz	8.7	8.3	65	58	Y	Y
50 Hz	8.4	7.7	65	57	Y	N

Power Requirements

Country	ac Voltages NOMINAL	ac Voltages MINIMUM	ac Voltages MAXIMUM	Wiring Information	Phase
U.S. Canada	60 Hz/208 60 Hz/230 60 Hz/240	60 Hz/187 60 Hz/207 60 Hz/216	60 Hz/229 60 Hz/253 60 Hz/264	4-wire power cable with 3 phases and ground. Neutral is not required.	3
Japan	50 Hz/200 60 Hz/200	60 Hz/180 60 Hz/180	60 Hz/220 60 Hz/220	4-wire power cable with 3 phases and ground.	3
Europe	50 Hz/220 50 Hz/230	50 Hz/198 50 Hz/207	50 Hz/242 50 Hz/253	4-wire power cable with 3 phases and ground.	3
Europe (See note)	50 Hz/380 50 Hz/400 50 Hz/415	50 Hz/342 50 Hz/360 50 Hz/374	50 Hz/418 50 Hz/440 50 Hz/456	5-wire power cable with 3 phases, ground, and neutral. Direct connection of neutral to ground required.	3
Note: Nonearthed neutral and impedance grounded neutral power distribution systems are not supported by the 50-Hz 380/400/415 volt version. Installation on an impedance grounded neutral power system (IT Power System) could result in failures of motors and transformers in the printer.					

Power Plug and Receptacle – U.S.A. and Canada:

Description	Color Plug	Receptacle	Back Box
250V 60A 3P 4W	Blue 460P9V0	460R9V0 or 460R9W or 460R9	BB601W (1-1/4 in.) BB602W (1-1/2 in.)

Notes:

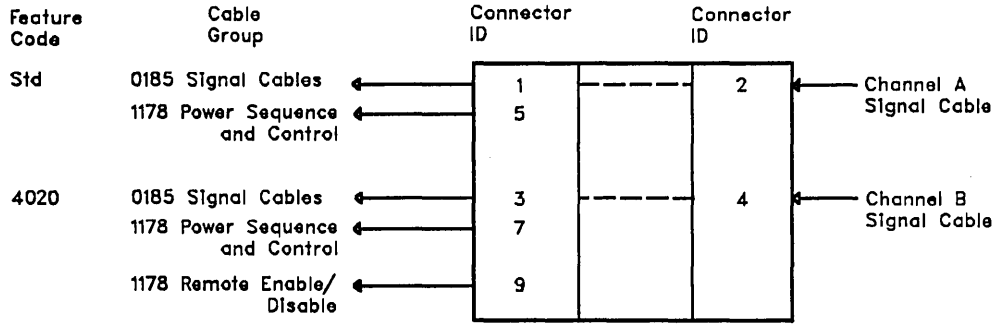
1. A receptacle with an internal jumper between the box and the grounding wire, mounted on a metal back box, is required for power attachment if the branch circuit wiring uses a metallic conduit. This jumper is in addition to the required grounding wire. Receptacles are the only form of connection approved by IBM for attachment of the 3900 to customer-supplied power.
2. IBM recommends the use of V0-designated receptacles. V0-designated receptacles are available from Hubbell. The V0 designation in the part number indicates that the receptacle meets Underwriters Laboratory standard UL94-5V for flammability.
3. Printers shipped outside the U.S. and Canada will not have a power plug attached. The country of final destination must provide a power plug suitable for the printer power requirements that meets the electrical requirements of that country.

Power Cord:

Cord OD is 23 mm (.91 in) 3-phase leads and green/yellow, no shield. Leads are 6 AWG stranded wire.

	Standard	Chicago, Illinois U.S.A. (Specify code 9986)
meters	4.3	1.8
(feet)	(14)	(6)

3900 Advanced Function Printer Cabling Schematic:



From 3900

Feature Code	Group No.	No. of Cables	Con-nector ID	Maximum Length	Comments	Notes
Std	0185	2	1	122 m (400 ft)	Bus and tag	1,2,3,6,8
	1178	1	5	122 m (400 ft)	Power sequence and control	4
4020	0185	2	3	122 m (400 ft)	Bus and tag	1,2,3,6,7,8
	1178	1	7	122 m (400 ft)	Power sequence and control	4
	1178	1	9	122 m (400 ft)	Remote Enable/Disable	5

To 3900

Connector No.	Comments	Notes
2	Bus and tag	1,2,3,6,8
4	Bus and tag	1,2,3,6,7,8

Notes:

1. The 3900 supports parallel channel attachment to 4361, 4381, 308X, 309X, and ES/9000 processors through the S/370 block multiplex channel in single tag interlock, high-speed data-transfer (double tag interlock), or in data streaming mode.
2. Attachment can be through a 2-channel switch or directly to a channel. Attachment through a 3044 fiber optic channel extender is supported on the 4361, 4381, 308X, and 309X processors (attachment to the 4361 High-Speed Channel through the 3044 is limited to single tag-interlock mode).
3. Attachment to the 3044 is to the remote end (D01 or D02 unit). The maximum distance from the printer to the channel through a 3044 is 2 km (6562 ft).
4. Remote Power Sequence and Control is optional and can be ordered for each connected channel by cable group 1178.
5. Remote enable/disable is optional and can be attached with cable group 1178.
6. The IBM 3900 Printer supports a maximum channel cable length of 122 m (400 ft) if it is the only control unit on the interface. For each additional control unit (up to a maximum of 8 control units) this measurement is reduced by 4.6 m (15 ft).
7. SF 4020 two channel switch allows connection to a 2nd channel interface.
8. Cable group 0185 is preferred; however, cable group 3920 (old style channel cable) can be used.
9. No chemical solvents should be used for cleaning the 3900 covers.
10. For proper operating conditions, there should be a minimum of 0.57 cubic meters/min. (20 cfm) of outdoor makeup air per person in the printer area.

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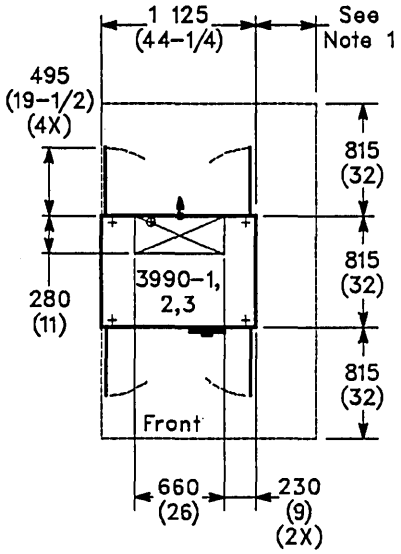
3990 Storage Control

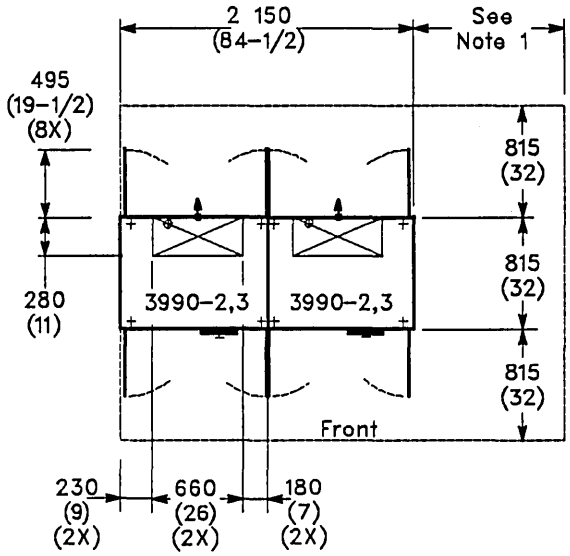
Models 1, 2, and 3

Plan View (Not to Scale): English measurements are shown in parentheses.

Single-Frame Configuration



Dual-Frame Configuration (Model 2 or 3)



Notes:

1. See the service clearances on page 3990-3 for the correct left or right side clearances.
2. Two Model 2s or Model 3s can be bolted together in a dual-frame configuration with the operator panels facing the same direction.

   3990 Models 2 or 3 with modular power subsystems cannot be installed in a dual-frame configuration.

Specifications

Dimensions:

	Front	Side	Height
Single Frame			
mm	1130	815	1790
(inches)	(44-1/2)	(32)	(70-1/2)
Dual Frame			
mm	2145	815	1790
(inches)	(84-1/2)	(32)	(70-1/2)

Weight:	**Model 1**	**Model 2**	**Model 3**
kg	320	385	545
(lb)	(700)	(840)	(1200)

Airflow:	**Model 1**	**Model 2**	**Model 3**
m^3/min	12	24	48.0
(cfm)	(420)	(840)	(1700)

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>_m$		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
7.4	–	55.5	–	No	No

Power Requirements without Modular Power:

Voltages (Nominal)	Max kVA			Max kW			Max (kBTU/hr)		
Models	1	2	3	1	2	3	1	2	3
200/208	0.9	1.6	3.0	0.7	1.3	2.6	2.3	4.6	8.9
220/380	1.1	1.7	3.2	0.7	1.4	2.7	2.5	4.7	9.3
230/400	1.3	1.9	3.3	0.7	1.4	2.7	2.6	4.8	9.4
240/415	1.6	2.1	3.5	0.8	1.4	2.8	2.7	5.0	9.7

Phase Imbalance

Model	Power Configuration	Amperes per Phase A	B	C
1	60-Hz	2.19	2.23	1.68
1	50-Hz	1.41	1.68	1.71
2	50-Hz	5.61	4.37	5.86

Power Requirements with Modular Power:

Modular power provides a power cord for each cluster in a 3990 frame.

Modular Power - Single Line Cord						
Voltages (Nominal)	Max kVA		Max kW		Max (kBTU/hr)	
Models	2	3	2	3	2	3
200/208	1.6	2.9	1.3	2.4	4.5	8.2
220/380	1.8	3.0	1.4	2.6	4.7	8.9
230/400	1.7	3.0	1.4	2.6	4.7	8.9
240/415	1.8	3.1	1.4	2.6	4.8	8.9
Modular Power - Dual Line Cord 0						
Voltages (Nominal)	Max kVA		Max kW		Max (kBTU/hr)	
Models	2	3	2	3	2	3
200/208	0.9	2.0	0.7	1.7	2.4	5.8
220/380	1.2	2.3	0.7	1.8	2.5	6.1
230/400	1.1	2.2	0.7	1.8	2.4	6.1
240/415	1.3	2.4	0.7	1.8	2.5	6.1
Modular Power - Dual Line Cord 1						
Voltages (Nominal)	Max kVA		Max kW		Max (kBTU/hr)	
Models	2	3	2	3	2	3
200/208	0.8	1.0	0.7	0.7	2.3	2.5
220/380	0.9	1.0	0.7	0.9	2.4	2.9
230/400	0.9	1.0	0.7	0.8	2.4	2.9
240/415	0.9	1.1	0.7	0.9	2.4	2.9

Phases	3
Plug	Russellstoll, 3730
Receptacle	Russellstoll, 3744
Connector	Russellstoll, 3914
Power Cord Style for Standard Power	B2 (Shield not used)
Power Cord Specification for Modular Power (Neutral Not Used)	Cable Nominal OD 15.4 mm (0.61 in) no shield 4 conductors Conductor Nominal OD 2.0 mm (0.078 in) 14 AWG (bare wire) or Cable Nominal OD 12.2 mm (0.48 in) no shield 4 conductors Conductor Nominal OD 2.0 mm (0.078 in) 14 AWG (bare wire)

Environment, Operating:

Temperature	16°C–32°C (60°F–90°F)
Relative Humidity	20%–80%
Max Wet Bulb	23°C (73°F)

Environment, Nonoperating:

Temperature	10°C–43°C (50°F–110°F)
Relative Humidity	8%–80%
Max Wet Bulb	27°C (80°F)

Service Clearances:

1. A service clearance of 815 mm (32 in.) is required in the front and rear of the machine.
2. Single-frame configurations of a Model 1 or Model 2 with no future upgrades planned do not require a side clearance, based on IBM's method of calculating floor load.
3. Dual-frame configurations installed on a floor rated at 440 kg/m² (90 lb/ft²) or stronger do not require a side clearance, based on IBM's method of calculating floor load.
4. Dual-frame configurations must be installed on floors of less than 365 kg/m² (75 lb/ft²) in any World Trade county, based on IBM's method of calculating floor load.
5. All 3990s shipped to countries other than the United States and Canada contain a 70 kg (150 lb) isolation transformer.
6. Single-frame floor loading applies to 3990s with modular power.

Single-Frame

Floor Load Rating		Required End Clearance	
		United States and Canada	World Trade Countries
kg/m²	(lb/ft²)	Left or Right Side*	Left or Right Side*
415	(85)	0 mm (0 in.)	55 mm (2 in.)
390	(80)	0 mm (0 in.)	255 mm (10 in.)
370	(75)	150 mm (6 in.)	510 mm (20 in.)
345	(70)	435 mm (17 in.)	815 mm (32 in.)

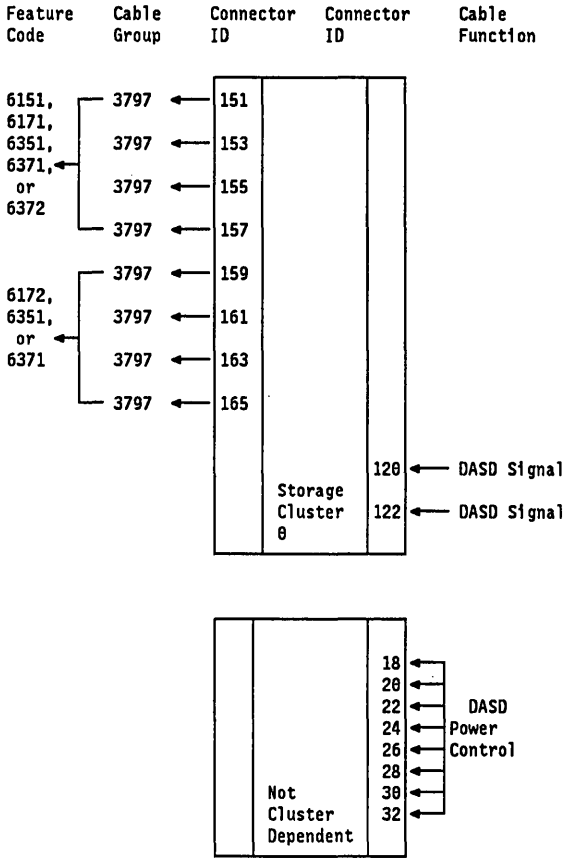
Dual-Frame

Floor Load Rating		Required End Clearance	
		United States and Canada	World Trade Countries
kg/m²	(lb/ft²)	Left or Right Side*	Left or Right Side*
415	(85)	0 mm (0 in.)	340 mm (13 in.)
390	(80)	130 mm (5 in.)	740 mm (29 in.)
370	(75)	560 mm (22 in.)	1250 mm (49 in.)
345	(70)	1100 mm (43 in.)	(See item 4 above)

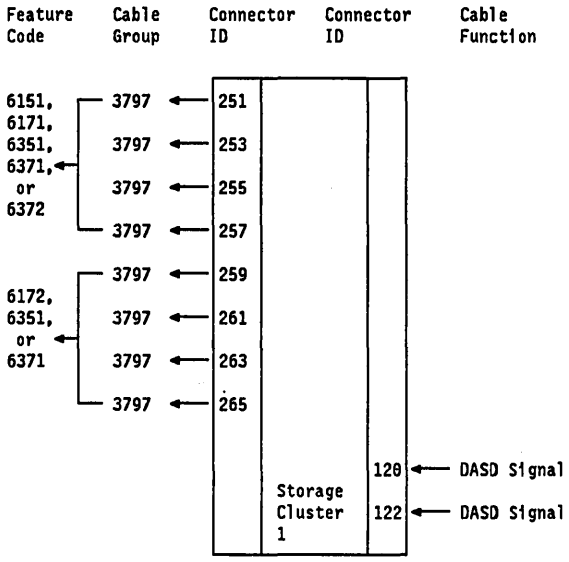
*The left or right side service clearance can be applied to either the left or right side, depending on the installation.

3990 Port Cabling Specifications: The 3990 port cabling specifications include the following cabling schematics, cable tables, and attachment notes:

3990 Models 2 and 3 ESCON Port Cabling Schematics Cluster 0)



3990 Models 2 and 3 ESCON Port Cabling Schematics (Cluster 1)



From Cluster 0 ESCON Ports, Models 2 and 3 Cabling Table

Feature Code	Group No.	No. of Cables	Conn ID	Max. Link Length * m (ft)	Model	Notes
6151, 6171, 6351, 6371, or 6372	3797	1	151	3 km (9 821)	2, 3	1, 2, 7, 8, 9, 10, 11, 12
	3797	1	153	3 km (9 821)	2, 3	1, 2, 7, 8, 9, 10, 11, 12
	3797	1	155	3 km (9 821)	2, 3	1, 2, 7, 8, 9, 10, 11, 12
	3797	1	157	3 km (9 821)	2, 3	1, 2, 7, 8, 9, 10, 11, 12
6172, 6351, or 6371	3797	1	159	3 km (9 821)	2, 3	1, 2, 7, 8, 9, 10, 11, 12
	3797	1	161	3 km (9 821)	2, 3	1, 2, 7, 8, 9, 10, 11, 12
	3797	1	163	3 km (9 821)	2, 3	1, 2, 7, 8, 9, 10, 11, 12
	3797	1	165	3 km (9 821)	2, 3	1, 2, 7, 8, 9, 10, 11, 12

* Add 2135 mm (84 in.) to each channel fiber optic cable. This is the length of cable required to reach from floor level to the ESCON ports in the 3990.

* The maximum IBM standard jumper cable length is 122 m (400 feet).

Custom jumper cables are available up to 500 m (1640 feet).

Fiber trunks can be used to a maximum link length of 3 km (9820 feet).

From Cluster 1 ESCON Ports, Models 2 and 3 Cabling Table

Feature Code	Group No.	No. of Cables	Conn ID	Max. Link Length * m (ft)	Model	Notes
6151, 6171, or 6372	3797	1	251	3 km (9 821)	2, 3	1, 2, 7, 8, 9, 10, 11, 12
	3797	1	253	3 km (9 821)	2, 3	1, 2, 7, 8, 9, 10, 11, 12
	3797	1	255	3 km (9 821)	2, 3	1, 2, 7, 8, 9, 10, 11, 12
	3797	1	257	3 km (9 821)	2, 3	1, 2, 7, 8, 9, 10, 11, 12
6172	3797	1	259	3 km (9 821)	2, 3	1, 2, 7, 8, 9, 10, 11, 12
	3797	1	261	3 km (9 821)	2, 3	1, 2, 7, 8, 9, 10, 11, 12
	3797	1	263	3 km (9 821)	2, 3	1, 2, 7, 8, 9, 10, 11, 12
	3797	1	265	3 km (9 821)	2, 3	1, 2, 7, 8, 9, 10, 11, 12

ESCON Ports—Maximum Number of Cable Groups by Model and Feature Code per Machine

3990 Model	Feature Code	Channel Group 0185*	Power Control Group 1178	Local/ Remote Group 1178	ESCON Group 3797 ***
2 or 3	8171	8	8**	0	0
	7149	8	8**	8	0
	8172	16	8**	0	0
	7149 and 8172	16	8**	16	0
	6151, 6351	0	0	0	4
	6171, 6371	0	0	0	8
	6172	0	0	0	8
	6372	0	0	0	8

* Channel cable group 3920 can be used to attach a 3990 to a parallel channel, according to the length restrictions in note 1 under "Notes for Parallel Port Attachment" on page 3990-13.

Note:

For parallel port attachment, both bus and tag cables in a pair must be the same color and length.

** A maximum of 8 cable groups for each storage control.

*** Each ESCON Adapter feature includes one jumper cable (group number 3797) per port. However, to get these cables, you must specify the number of jumper cables (one per port) and the length of each cable in a cable order.

Notes for ESCON Port Attachment

1. For all 3990 Models 2 or 3, channel attachment features must be symmetrical for both clusters.

   For dual-frame configurations, the channel attachment features for all 4 clusters must be symmetrical.

2. For parallel port attachment, the 3990 attaches to 3090, ES/3090, 3084, 3083, 3081, 9370, and 4381 processors by 3.0 or 4.5 M-bytes (3090 and ES/3090 only) block multiplexer data streaming channel.

   For ESCON port attachment, the 3990 attaches to processors with the ESCON channel capability.

3. From DASD. Odd-numbered controllers use connectors 18, 20, 22, and 24; even-numbered controllers use connectors 26, 28, 30, and 32. Connectors 18 through 32 are not cluster dependent.

4. An analog telephone line must be installed within 15 meters (50 feet) of the 3990 for those installations allowing remote support attachment. The 3990 interfaces with a V.23 (Bell 202 compatible), half-duplex, 1200-bps modem, supplied with an internal clock that attaches to data link 1 or data link 3. Cable, part 8547667, length 15 meters (50 feet), can be ordered for attachment.

5. The maximum device cable length is 61 meters (200 feet).

6. When installing the modular power dual-line cord feature, a second (Russellstoll 3744) power receptacle must be installed within 3 meters (10 feet) of the original power receptacle.

For maximum utilization of the modular power dual-line cord feature, the 3990 should be attached to 6 separate facility power sources to reduce the impact of power outages.

This feature gives each cluster a separate and independent ac line cord, line circuit breaker, line filter, and ac transformer.

7. 3990 ESCON Adapter features allow 3990 Models 2 or 3 to attach to ESCON channels, ESCON Director devices (9032 and 9033), and ESCON Converters (9035).

   When the 3990 is attached to ESCON channels, 3390 and 3380 Models (excluding CJ2, AA4, and A04) can be attached to the 3990.

   3390s operating in 3380 track compatibility mode must not be accessed by channels configured with the 3044 Fiber Optic Channel Extender Link Model 2, the 9034 ESCON Converter, the 9035 ESCON Converter, or with any of the installed ESCON Adapter features.

8. When operating in an ESCON channel environment, 3990 Storage Controls and attached DASD can be installed or removed concurrent with system operation (with appropriate system planning).

9. The Feature Codes for ESCON port attachment include:

   6151 -- ESCON Adapter with two ports
   6171 -- ESCON Adapter with four ports
   6172 -- ESCON Adapter with four ports, additional
   6351 -- Adds 2 ESCON ports, deletes 4 parallel channels
   6371 -- Adds 4 ESCON ports, deletes 4 parallel channels
   6372 -- ESCON Adapter deletes 6151 and adds 6171

   Each ESCON Adapter feature includes 1 jumper cable (group number 3797) per port. However, to get these cables, you must specify the number of jumper cables (1 per port) and the length of each cable in a cable order.

   Parts removed or replaced become the property of IBM and must be returned to IBM.

10. The ESCON Adapter feature is available in the following configurations for 3990 Models 2 or 3:

Feature Number Combinations	Number of Ports Per Cluster		Number of Ports Per 3990	
	Parallel	ESCON	Parallel	ESCON
8171	4	--	8	--
8171 and 8172	8	--	16	--
6151, 6351, and 8171	4 4	2 2	8 8	4 4
6171, 6371, and 8171	4 4	4 4	8 8	8 8
6171 and 6371	0	4	0	8
6171, 6172, and 6371	0 0	8 8	0 0	16 16
6372	0	4	0	8

11. A 3990 Model 2 or 3 with ESCON Adapter features can be located up to 9 km from the host processor by interconnecting 1 or 2 ESCON Director devices.

    Distance per link is limited as follows:

    50/125 micron cable = 2 km (6547 feet)
    62.5/125 micron cable = 3 km (9821 feet).

    Total distance capability using 2 ESCON Director devices is limited as follows:

    50/125 micron cable = 6 km (19 694 feet)
    62.5/125 micron cable = 9 km (29 515 feet).

    Fiber optic jumper cables are required for attaching a 3990 Model 2 or 3 with ESCON Adapters to ESCON Director devices. Duplex-to-duplex 62.5/125 micron fiber optic jumper cables (part number 14F3797) are available from IBM in standard lengths up to 122 meters (400 feet). Custom lengths are available above 122 meters (400 feet), to a maximum length of 500 meters (1640 feet). The jumper cables are stocked in the following fixed lengths.

    4 meters (12 feet)
    7 meters (20 feet)
    13 meters (40 feet)
    22 meters (70 feet)

    31 meters (100 feet)
    46 meters (150 feet)
    61 meters (200 feet)
    77 meters (250 feet)

    92 meters (300 feet)
    107 meters (350 feet)
    122 meters (400 feet)

    For more fiber installation information, see the *Fiber Optic Channel Link Planning and Installation* manual, GA23-0367.

12. The following link length restrictions apply for combinations of parallel and ESCON ports or parallel ports or ESCON ports.

From ↓ To →	CPU channel	9032/9033	9034	9035	3990
CPU channel					
ESCON	--	3.0 km ***	1.2 km	--	3.0 km
Parallel	--	--	--	122 m	122 m
9032/9033					
ESCON	3.0 km ***	3.0 km	*	**	3.0 km ***
Parallel	--	--	--	--	--
9034					
ESCON	1.2 km	*	--	--	--
Parallel	--	--	--	--	122 m
9035					
ESCON	--	**	--	--	3.0 km
Parallel	122 m	--	--	--	--
3990					
ESCON	3.0 km	3.0 km ***	--	3.0 km	--
Parallel	122 m	--	122 m	--	--

All the channel paths from a particular 3990 to a given processor image must be of the same type. That is, all parallel channels, all ESCON channels, all parallel channels configured with the 9035 ESCON Converter, or all ESCON channels configured for the 9034 ESCON Converter.

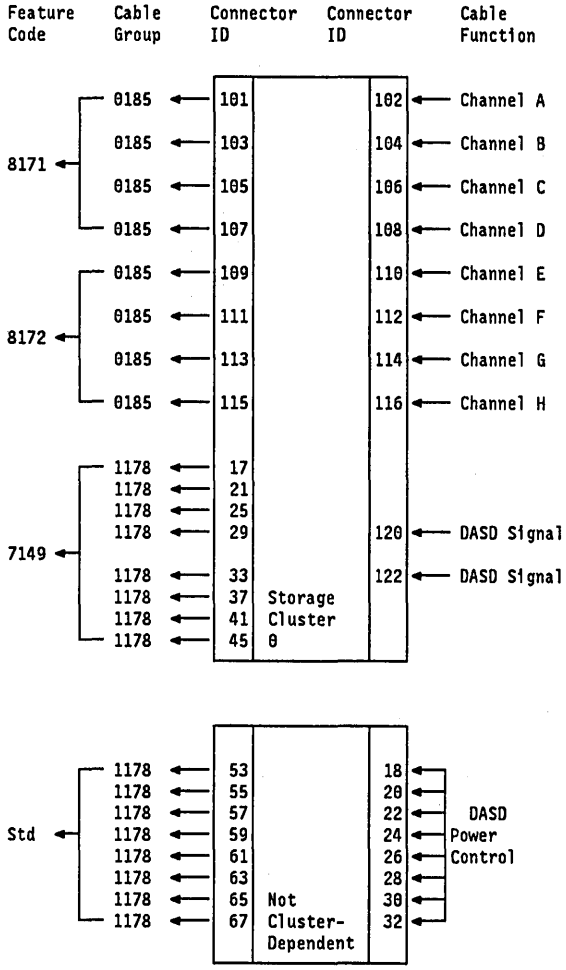
The maximum length for parallel ports is 122 meters (400 feet) depending on the channel cable type; that is, gray or blue cable.

* For 3990 attachment, when a 9032 or 9033 ESCON Director device is installed between the 9034 and the ESCON channel, subtract 0.2 km (634 feet) from the allowed distance of 1.2 km (3960 feet) between the 9034 and the ESCON channel.

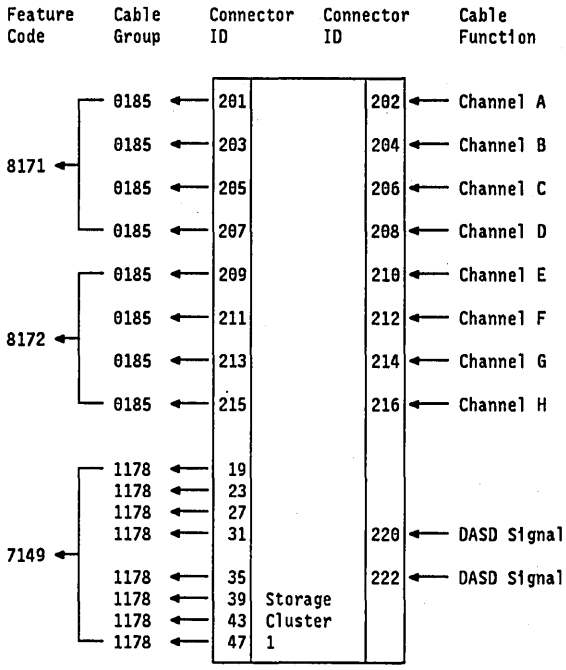
** Presence of a 9032 or 9033 between the 9035 and the 3990 ESCON port has no effect on the maximum allowed distance of 3.0 km (9821 feet).

*** For ESCON operation only.
See 9034 and 9035 entries for distance limitations.

3990 Models 1, 2, and 3 Parallel Port Cabling Schematics (Cluster 0)



3990 Models 2 and 3 Parallel Port Cabling Schematics (Cluster 1)



From Cluster 0 Parallel Ports, Models 1, 2, and 3 Cabling Table

Feature Code	Group No.	No. of Cables	Conn ID	Max Length m (ft)	Model	Notes
8171	0185	2	101	122 (400)	1, 2, 3	1, 2, 3, 4, and 11
	0185	2	103	122 (400)	1, 2, 3	1, 2, 3, 4, and 11
	0185	2	105	122 (400)	1, 2, 3	1, 2, 3, 4, and 11
	0185	2	107	122 (400)	1, 2, 3	1, 2, 3, 4, and 11
8172	0185	2	109	122 (400)	1, 2, 3	1, 2, 3, 4, 9, 11
	0185	2	111	122 (400)	1, 2, 3	1, 2, 3, 4, 9, 11
	0185	2	113	122 (400)	1, 2, 3	1, 2, 3, 4, 9, 11
	0185	2	115	122 (400)	1, 2, 3	1, 2, 3, 4, 9, 11
7149	1178	1	17	122 (400)	1, 2, 3	10
	1178	1	21	122 (400)	1, 2, 3	10
	1178	1	25	122 (400)	1, 2, 3	10
	1178	1	29	122 (400)	1, 2, 3	10
7149	1178	1	33	122 (400)	1, 2, 3	10
	1178	1	37	122 (400)	1, 2, 3	10
	1178	1	41	122 (400)	1, 2, 3	10
	1178	1	45	122 (400)	1, 2, 3	10
	1178	1	53	122 (400)	1, 2, 3	5
	1178	1	55	122 (400)	1, 2, 3	5
	1178	1	57	122 (400)	1, 2, 3	5
	1178	1	59	122 (400)	1, 2, 3	5
	1178	1	61	122 (400)	1, 2, 3	5
	1178	1	63	122 (400)	1, 2, 3	5
	1178	1	65	122 (400)	1, 2, 3	5
	1178	1	67	122 (400)	1, 2, 3	5

From Cluster 1 Parallel Ports (Models 2 and 3) Cabling Table

Feature Code	Group No.	No. of Cables	Conn ID	Max Length m (ft)	Model	Notes
8171	0185	2	201	122 (400)	2, 3	1, 2, 3, 4, and 11
	0185	2	203	122 (400)	2, 3	1, 2, 3, 4, and 11
	0185	2	205	122 (400)	2, 3	1, 2, 3, 4, and 11
	0185	2	207	122 (400)	2, 3	1, 2, 3, 4, and 11
8172	0185	2	209	122 (400)	2, 3	1, 2, 3, 4, 9, 11
	0185	2	211	122 (400)	2, 3	1, 2, 3, 4, 9, 11
	0185	2	213	122 (400)	2, 3	1, 2, 3, 4, 9, 11
	0185	2	215	122 (400)	2, 3	1, 2, 3, 4, 9, 11
7149	1178	1	19	122 (400)	2, 3	10
	1178	1	23	122 (400)	2, 3	10
	1178	1	27	122 (400)	2, 3	10
	1178	1	31	122 (400)	2, 3	10
7149	1178	1	35	122 (400)	2, 3	10
	1178	1	39	122 (400)	2, 3	10
	1178	1	43	122 (400)	2, 3	10
	1178	1	47	122 (400)	2, 3	10

To Cluster 0 Parallel Ports (Models 1, 2, and 3) Cabling Table

Feature Code	Conn ID	No. of Cables	Model	Notes
8171	102	2	1, 2, 3	1, 2, 3, 4, and 11
	104	2	1, 2, 3	1, 2, 3, 4, and 11
	106	2	1, 2, 3	1, 2, 3, 4, and 11
	108	2	1, 2, 3	1, 2, 3, 4, and 11
8172	110	2	1, 2, 3	1, 2, 3, 4, 9, 11
	112	2	1, 2, 3	1, 2, 3, 4, 9, 11
	114	2	1, 2, 3	1, 2, 3, 4, 9, 11
	116	2	1, 2, 3	1, 2, 3, 4, 9, 11
Std	120	1	1, 2, 3	8
	122	1	1, 2, 3	8
	18	1	1, 2, 3	6
	20	1	1, 2, 3	6
	22	1	1, 2, 3	6
	24	1	1, 2, 3	6
	26	1	1, 2, 3	6
	28	1	1, 2, 3	6
	30	1	1, 2, 3	6
	32	1	1, 2, 3	6

To Cluster 1 Parallel Ports (Models 2 and 3) Cabling Table

Feature Code	Conn ID	No. of Cables	Model	Notes
8171	202	2	2, 3	1, 2, 3 4, and 11
	204	2	2, 3	1, 2, 3 4, and 11
	206	2	2, 3	1, 2, 3 4, and 11
	208	2	2, 3	1, 2, 3 4, and 11
8172	210	2	2, 3	1, 2, 3 4, 9, 11
	212	2	2, 3	1, 2, 3 4, 9, 11
	214	2	2, 3	1, 2, 3 4, 9, 11
	216	2	2, 3	1, 2, 3 4, 9, 11
Std	220	1	2, 3	8
	222	1	2, 3	8

Parallel Ports—Maximum Number of Cable Groups by Model and Feature Code Per Machine

3990 Model	3990 Feature Code	Channel Group 0185*	Power Control Group 1178	Local/ Remote Group 1178
1	8171	4	4	0
	7149	4	4	4
	8172	8	8**	0
	7149 and 8172	8	8**	8
2 or 3	8171	8	8**	0
	7149	8	8**	8
	8172	16	8**	0
	7149 and 8172	16	8**	16

*Channel cable group 3920 can be used to attach a 3990 to a channel, according to the length restrictions in note 1 under "Notes for Parallel Port Attachment" on page 3990-13.

Note: Both bus and tag cables in a pair must be the same color and length.

**A maximum of 8 cable groups for each storage control.

Notes for Parallel Port Attachment

1. A 3990 Model 1 contains one storage cluster (usually shortened to "cluster"). A 3990 Model 2 or 3 contains 2 clusters. Each cluster can be attached to a system channel directly or through an intervening switching device.

   Determination of applicable channel cable usage (blue or gray cables) for a specific device follows:

   All 3990 Storage Controls meet the OEMI 4.5 M-bytes data transfer interface specifications and can use either blue or gray cable in matched color pairs of the same length, within the length restrictions controlled by channel speed.

   Cable Group 0185 (IBM-manufactured blue cable) has a maximum length of 122 m (400 ft) for attachment to a S/370 data-streaming channel.

   Customers attaching a 3990 using IBM-manufactured gray cable (or a mix of gray and blue cables, within the restrictions noted above) to a 4.5 M-bytes channel at channel-to-terminator distances greater than 90 m (300 ft), must submit a no-charge RPQ 8B0115. A description of the configuration must be included. Standard rules related to cable length deductions for additional control unit attachments should be applied to the 90 m (300 ft) base. The maximum lengths must be reduced by 4.5 m (15 ft) for each control unit or cluster connected between a cluster of a 3990 and a channel.

Physical placement of all 3990 Models 1, 2, and 3 and other channel attaching devices should be in the following order:

a. All devices that meet the 4.5 M-bytes data transfer interface specifications with PROTOCL=S4 and that have data rates between 4.2 and 4.5 M-bytes in DC-interlock or data-streaming mode must be first.

b. All remaining units. Physical placement of all 3990 Models 1, 2, and 3 is arbitrary if the channel operates at 3 M-bytes data transfer rate.

2. For all 3990 Models 2 or 3, channel attachment features must be symmetrical for both clusters.

   For dual-frame configurations, the channel attachment features for all 4 clusters must be symmetrical.

3. The 3990 subsystem attaches to 3090, ES/3090, 3084, 3083, 3081, 9370, and 4381 processors by 3 or 4.5 M-bytes (3090 and ES/3090 processors only) block multiplexer data streaming channel.

4. The 3990 supports attachment to the 3380 AA4 stage 2 only, with serial numbers greater than 15 000 for 60 Hz and serial numbers greater than X0 300 for 50 Hz. All models of 3990 attach to 3380 Models AJ4, BJ4, AK4, and BK4, as well as most of the 3380 Models AA4, B04, AD4, BD4, AE4, and BE4. However, if feature code 6120 is installed, AA4 and B04 are not supported.

5. Power sequence and control cables (part 5351178) are optional and should be ordered if the installation uses power sequencing controls. These cables are not cluster-dependent. The maximum is 8 per storage control.

6. From DASD. Odd-numbered controllers use connectors 18, 20, 22, and 24; even-numbered controllers use connectors 26, 28, 30, and 32. Connectors 18 through 32 are not cluster-dependent.

7. An analog telephone line must be installed within 15 m (50 ft) of the 3990 for those installations allowing remote support attachment. The 3990 interfaces with a V.23 (Bell 202 compatible), half-duplex, 1200-bps modem, supplied with an internal clock that attaches to data link 1 or data link 3. Cable (part 8547667) length 15 m (50 ft), can be ordered for attachment.

8. Maximum device cable length is 61 m (200 ft).

9. Feature code 8172 (4-channel switch, additional) provides for attachment of 4 additional parallel ports for each cluster on all 3990 models. The maximum is 1 for Model 1 and 2 for Models 2 and 3.

10. Four cable groups (1178) can be ordered for feature code 7149 (remote and local switch attachment for 4-channel switch). The maximum is 8 for Model 1 and 16 for Models 2 and 3.

11. Specify cable group 799 for Model 2 and Model 3 (instead of cable group 0185) to connect both storage clusters of a 3990 to the same channel. Cable group 799 is a fixed-length, 1370 mm (54 in.) cable. This cable must be ordered at 1220 mm (4 ft) length and both connector identifiers (IDs) given; for example, from connector ID 103 to connector ID 202. ***This cable cannot be ordered by metric measure or by inches; it must be ordered at a 4-foot length.***

    In dual-frame configurations, there must be no cross-coupling of clusters in the same frame.

    Cable group 799 is to be used to cross-couple clusters in different frames only.

12. When installing the modular power dual-line cord feature, a second (Russellstoll 3744) power receptacle must be installed within 3 m (10 ft) of the original power receptacle.

    For maximum utilization of the modular power dual-line cord feature, the 3990 should be attached to 2 separate facility power sources to reduce the impact of power outages.

    This feature gives each cluster a separate and independent ac line cord, line circuit breaker, line filter, and ac transformer.

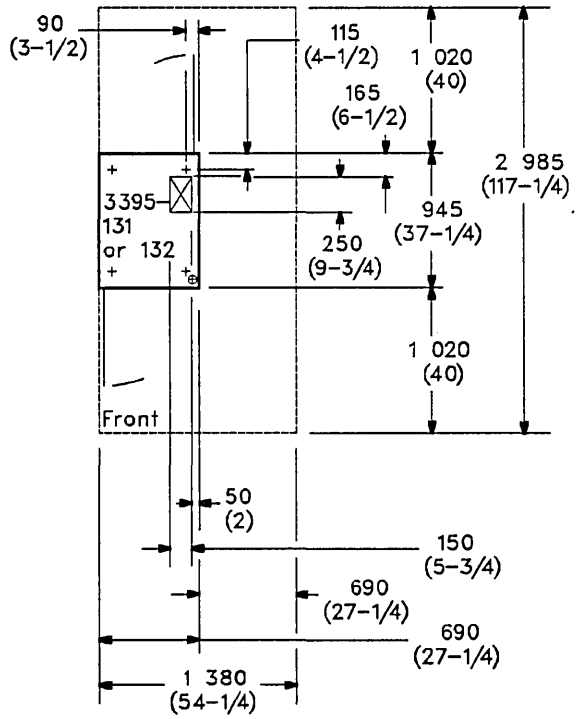
13. For upgrade to modular power in a 3990 Model 2, specify feature code 4353. For upgrade to modular power in a 3990 Model 3, specify feature code 5353.

3995 Optical Library Dataserver

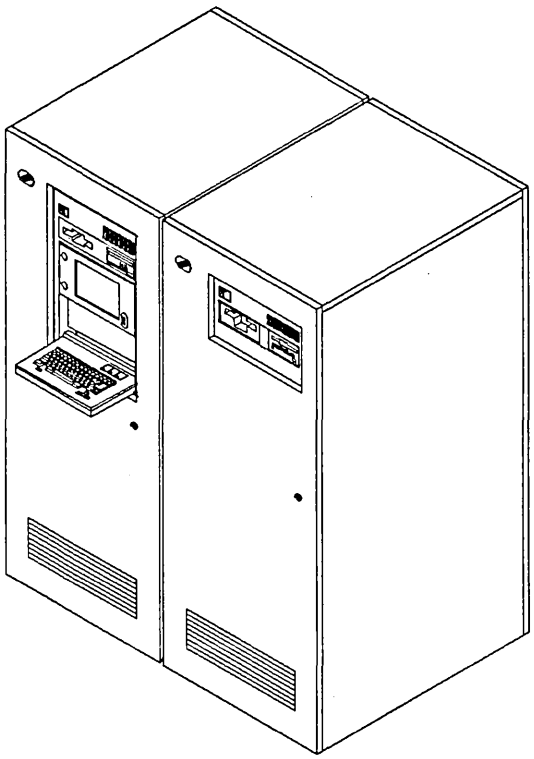
Models 111, 112, 131, 132, and 151

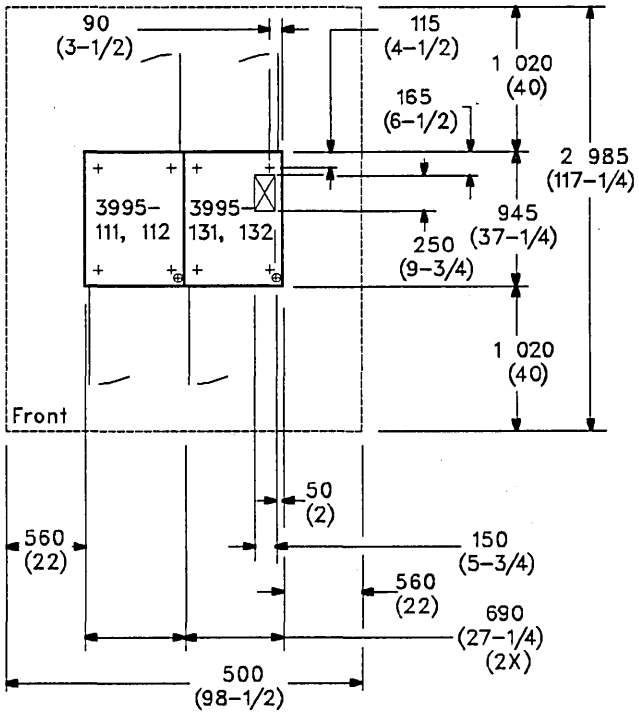
Plan View (Not to Scale): English measurements are shown in parentheses.

Use IBM Physical Planning Template GX22-7139.



Note: The Model 111 can be placed on either side of the Model 131 or 151. The Model 112 can be placed on either side of the Model 132.





Specifications:

Dimensions:

	Front	Side	Height
mm	692	943	1800
(in.)	(27.24)	(37.13)	(71)

Service Clearances:

	Front	Rear	Right	Left
mm	1016	1016	559*	559*
(in.)	(40)	(40)	(22*)	(22*)

*Required for a 2-frame installation. A 3995 Model 131, 132, or 151 requires only 686 mm (27 in.) clearance on the right side when installed without a Model 111 or 112.

Note: Leave enough clearance above the machine for airflow.

Weight: (includes 144 cartridges per model)	**Models 111 or 112**	**Models 131, 132, or 151**
kg	420	472
(lb)	(926)	(1041)

Heat Output:	**Model 111 or 112**	**Model 131, 132, or 151**
kW	.22	.425
(kBTU/hr)	(.75)	(1.5)
Calorific Value	53	96
kCal/hr	.19	.38

Airflow:

m^3/min	3.8	6.2
(cfm)	(135)	(220)

Power Requirements:

kVA	0.3	0.5
Phases	1	
Frequency	50/60	
Plug Type	Russellstoll, 3720U-2-P	
Receptacle Type	Russellstoll, 3743U-2	
Connector Housing	Russellstoll, 3913U-2	
Power Cord Style	A8	

See "Power Cords, Plugs, and Receptacles for USA and Canada" on page 3995-3 for power plug information.

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of the *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>m$		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
6.5	6.4	47.0	46.0	Yes	No

Environment, Operating:

Temperature	16°C to 32°C (60.8°F to 89.6°F)
Relative Humidity	8% to 80%
Max Wet Bulb	23°C (73.4°F)

Environment, Nonoperating:

Temperature	10°C to 43°C (50°F to 110°F)
Relative Humidity	8% to 80%
Max Wet Bulb	27°C (80.6°F)

Power Cords, Plugs, and Receptacles for USA and Canada

Plug Type	Service Rating: Maximum Voltage	Service Rating: A	Service Rating: Phases	Service Rating: Wires	Con-nector	Recep-tacle	Notes	Diagram number in Appendix A
3720U-2-P	208/240	15	1	3	3913U-2	3743U-2	1, 2, 3	34

Power Cords, Plugs, and Receptacles for Latin America, Asia Pacific, and Europe/Middle East/Africa

Plug Type	Service Rating: Maximum Voltage	Service Rating: A	Service Rating: Phases	Service Rating: Wires	Con-nector	Recep-tacle	Notes	Diagram number in Appendix A
—	250	13	1	3	—	—	3, 4	23
—	250	16	1	3	—	—	3, 4	18
—	250	16	1	3	—	—	3, 4	22
—	250	10/16	1	3	—	—	3, 4	25
—	220/380	16/32	1	3	—	—	3, 5	46

Notes:

1. Raised-floor installations require a Russellstoll watertight plug and connector/receptacle.
2. A Russellstoll inline connector used with flexible metal conduit or liquid-tight flexible metal conduit requires a Russellstoll FSA adapter.
3. See the power plug diagrams in Appendix C, "Template Index" on page C-1.
4. Plug is rated for 3 kVA single phase.
5. Plug is rated for 5 kVA single phase.

Power Cords, Plugs, and Receptacles for IBM World Trade Europe/Middle East/Africa (E/ME/A) Corporation Countries: For E/ME/A countries, IBM supplies the power cord for each unit with an attached plug that corresponds to the power-outlet receptacle most used in that country. To find the plugs and receptacles needed for each country, match the country diagram number with the number of the plug diagram in Appendix A, "Power Plug and Power Cord Style Specifications" on page A-1.

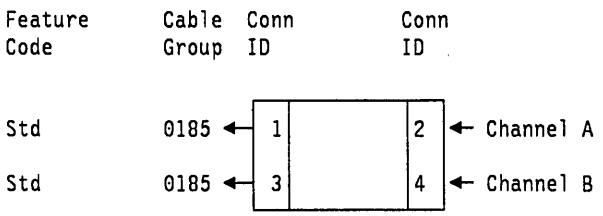
Country	Diagram Number
Afghanistan	18
Algeria	18
Andorra	18
Angola	18
Antigua	46
AREAS/South (Africa)	46
Argentina	11
Aruba	18
Australia	53
Austria	18
Bahamas	5
Bahrain	46
Bangladesh	22
Barbados	5
Belgium	18
Benin Republic	18
Bermuda	46
Bolivia	5
Brazil	18
Brunei	46
Bulgaria	18
Burkina Faso (Upper Volta)	18
Burma	22
Burundi	18
Cameroon	18
Central Africa Republic	18
Chad	18
Channel Islands	46
Chile	25
China (PR)	18
Colombia	2
Congo	18
Costa Rica	5
Curacao	5
Cyprus	46
Czechoslovakia	18
Denmark	46
Dominican Republic	5

Country	Diagram Number
Egypt	18
El Salvador	5
Equador	5
Ethiopia	25
Fiji	46
Finland	18
France	18
French Guiana	18
Germany	18
Ghana	46
Greece	18
Guatemala	5
Guinea	18
Guyana	46
Haiti	5
Honduras	5
Hong Kong	46
Hungary	18
Iceland	18
India	46
Indonesia	18
Iran	18
Iraq	46
Ireland	46
Israel	46
Italy	25
Ivory Coast	18
Jamaica	5
Japan	33
Jordan	18, 23
Kenya	46
Korea (S)	18
Kuwait	46
Lebanon	18
Libya	25
Liechtenstein	24
Luxembourg	18
Macau	18

Country	Diagram Number
Malagasy Republic	18
Malawi	46
Malaysia	46
Mali	18
Malta	46
Martinique	18
Mauritania	18
Mauritius	18
Mexico	11
Monaco	18
Morocco	18
Mozambique	18
Nepal	46
Netherlands	18
Netherlands Antiles	18
New Caledonia	18
New Zealand	49
Nicaragua	3
Niger	18
Nigeria	46
Norway	18
Oman	46
Pakistan	22
Panama (Republic of)	5
Papua New Guinea	6
Paraguay	2
Peru	5
Philippines	5
Poland	18
Polynesia	46
Portugal	18
Qatar	46
ROECE	46
Romania	18
Saudi Arabia	18
Senegal	18
Sierra Leone	46
Singapore	46
Somalia	46
South Africa	22
South Asia Region (SAR)	18
Spain	18
Sri Lanka	22
Sudan	18
Sweden	18

Country	Diagram Number
Switzerland	46
Syria	18
Taiwan	5
Tanzania	46
Thialand	5
Togo	18
Trinidad Tobago	5
Tunisia	18
Turkey	18
Uganda	23
United Arab Emirates (UAE)	23
United Kingdom	23
Upper Volta	18
Uruguay	2
USSR	18
Venezuela	5
Western Samoa	6
Yemen	46
Yugoslavia	18
Zaire	18
Zambia	46
Zimbabwe	18

Cabling Schematic for 3995 Model 131, 132, or 151



From 3995

Feature Code	Group No.	No. of Cables	Conn. ID	Max Length * m (ft)	Model	Notes
Std	0185	2	1	122 (400)	131, 132, or 151	1, 2, 4
Std	0185	2	3	122 (400)	131,132, or 151	1, 2, 4
Note: * The maximum length must be reduced by 9 m (30 ft) for each 3995 connected to the channel. See planning documentation for the channel for any additional restrictions.						

To 3995

Feature Code	Conn. ID	Model	Notes
Std	2	131, 132, or 151	1, 4
Std	4	131, 132, or 151	1, 4

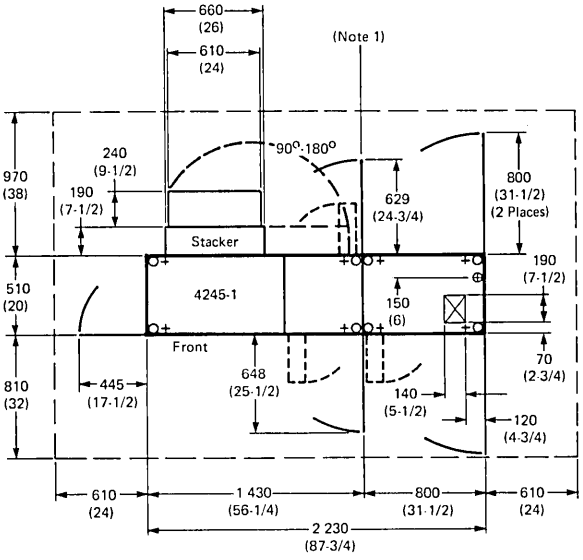
Notes:

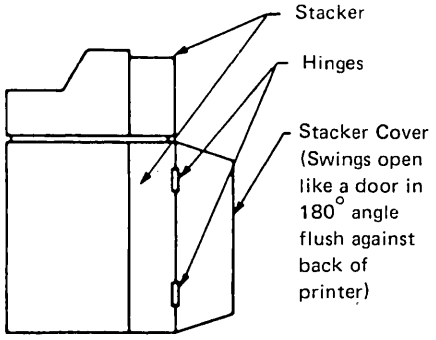
1. The 3995 Optical Library Dataserver attaches to:
   - All ES/9000 processor models
   - ES/3090 processor Models E, S, J, JH, and T
   - ES/4381 processor Model Groups 90E, 91E, and 92E.
2. The maximum configuration is 1 controller Model 131 or 151 and 1 optical library expansion unit Model 111 or 1 controller Model 132 and 1 optical library expansion unit Model 112. All cables needed to attach a Model 111 to a Model 131 or 151 are shipped with the Model 111. All cables needed to attach a Model 112 to a Model 132 are shipped with the Model 112.
3. Storage size of the Model 131, 132, or 151 controller and the expansion unit Model 111 or 112 is 144 cartridges each.
4. Two channels are standard on the Model 131, 132, or 151.

4245 PRINTER MODEL 1

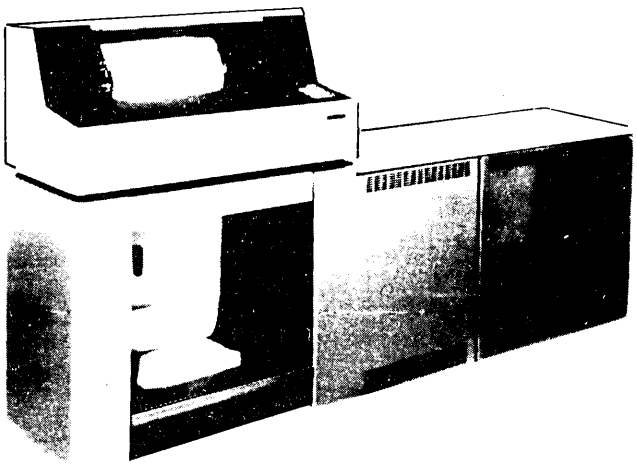
PLAN VIEW (Metric Scale: 10 mm = 0.5 m)

English measurements are shown in parentheses.





Side View



SPECIFICATIONS

Dimensions:

	Front	Side w/o stacker	Side with stacker	Height
mm	2 230	510	940	1 170
(inches)	(87-3/4)	(20)	(37)	(46-1/4)

Service Clearances:

	Front	Rear	Right	Left
mm	810	970	610	610
(inches)	(32)	(38)	(24)	(24)

Weight: 500 kg (1,100 lb)

Heat Output (approx): 3 250 W (11,100 BTU/hr)

Airflow: 18 m^3/min (640 cfm)

Acoustical Data:
For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>$ m		I	T
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
N/A	N/A	63.5	51.5	No	No

Power Requirements:

	50 Hz	*60 Hz*
Voltages	200, 220, 380, 400, 415 V	200, 208, 220, 240, 380 V
kVA	4.0	3.8
Phases (Note 2)	3	3
Plug		R&S, 3760
Connector		R&S, 3934
Receptacle		R&S, 3754

Power Cord Style (see following page)

Environment, Operating:

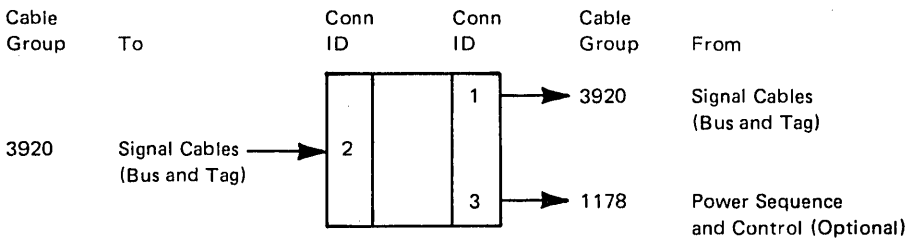
Temperature	16°C-32°C (60°F-90°F)
Rel Humidity	8%-80%
Max Wet Bulb	23°C (73°F)

Notes:
1. The machine is separated at this point for shipment.
2. Phase load imbalance (approximate) for 380/400 V = R : S : T = 1 : 1.7 : 1.

4245 PRINTER MODEL 1 POWER CORD SPECIFICATIONS

	Length	Cable Nominal OD	Number of Shields	Conductors		
				Number	Nominal OD	AWG No.
All 60 Hz: Japan 50/60 Hz	4.27 m (14 ft) Chicago, Illinois, U.S.A. – 1.83 m (6 ft)	15.4 mm (0.604 in.)	0	4	1.63 mm (0.064 in.)	14
50 Hz (Except Japan)	4.27 mm (14 ft)	11 mm (0.43 in.)	0	5	1.38 mm (0.054 in.)	–

4245 PRINTER MODEL 1 CABLING SCHEMATIC



From 4245-1

Group No.	No. of Cables	Conn ID	Max Length m	Max Length (ft)	Comments	Notes
3920	2	1	122	(400)	Bus and tag	1
1178	1	3	46	(150)	Power sequence and control	2

To 4245-1

Conn ID	Comments
2	Bus and tag

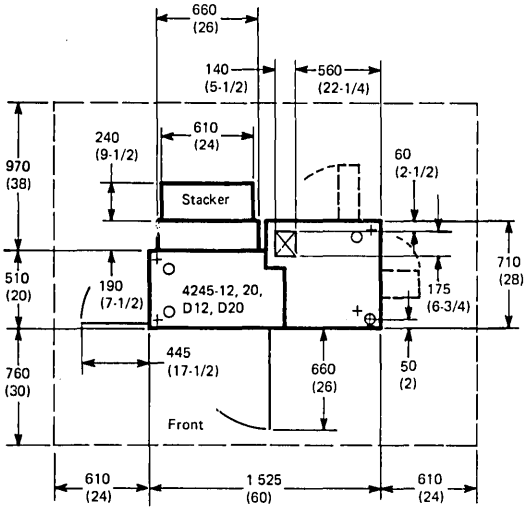
Notes:

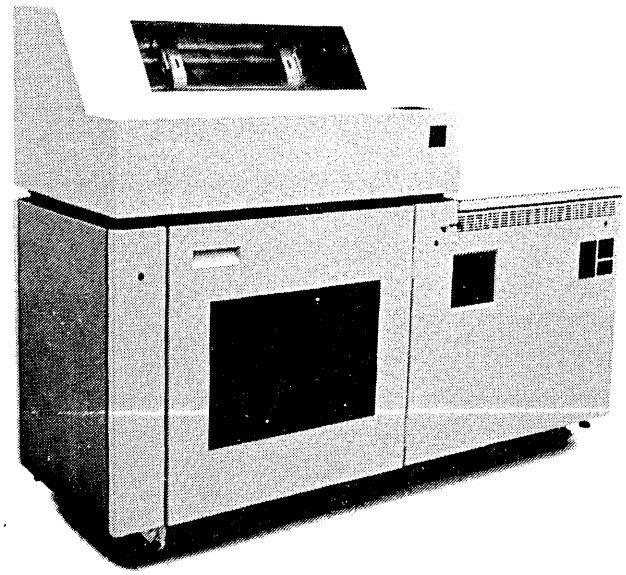
1. Maximum cumulative X-length is 122 meters (400 feet), unless modified by system or channel limitation. Maximum cable length must be reduced by 5 meters (15 feet) for each control unit connected between the 4245 and the channel.
2. Cable group 1178, power sequence and control cable, is optional.

4245 PRINTER MODELS 12 AND 20 (CHANNEL ATTACHED) AND MODELS D12 AND D20 (COAXIAL CABLE ATTACHED, CHANNEL PROTOCOL)

PLAN VIEW (Metric Scale: 10 mm = 0.5 m)

English measurements are shown in parentheses.





SPECIFICATIONS

Dimensions:

	Front	Side w/o stacker	Side with stacker	Height
mm	1 525	710	950	1 170
(inches)	(60)	(28)	(37-1/2)	(46-1/4

Service Clearances:

	Front	Rear	Right	Left
mm	760	970	610	610
(inches)	(30)	(38)	(24)	(24)

Weight: 410 kg (910 lb)

Heat Output (approx):

	Model 12	*Model 20*
W	2 000	2 500
(BTU/hr)	(6,850)	(8,550)

Airflow: 17 m^3/min (600 cfm)

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning*, GC22-7072.

	L_{WAd}		$<L_{pA}>_m$		I	T
	Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
4245-12 50 Hz	7.9	6.6	62.0	50.0	No	No
4245-12 60 Hz	7.8	6.9	63.0	52.5	No	No
4245-20 50 Hz	7.5	6.5	63.5	50.0	No	No
4245-20 60 Hz	7.9	6.8	62.0	52.5	No	No

Power Requirements:

		50 Hz	*60 Hz*
Voltages		200, 220, 380, 400, 415 V	200, 208, 220, 240, 380 V
kVA	Model 12	2.6	2.6
	Model 20	3.1	3.1
Phases		3	3
Inrush Current		160 A maximum	
Power Factor		Better than 0.9	
Plug		R&S, 3760	
Connector		R&S, 3934	
Receptacle		R&S, 3754	
Power Cord Style (see following page)			

Environment, Operating:

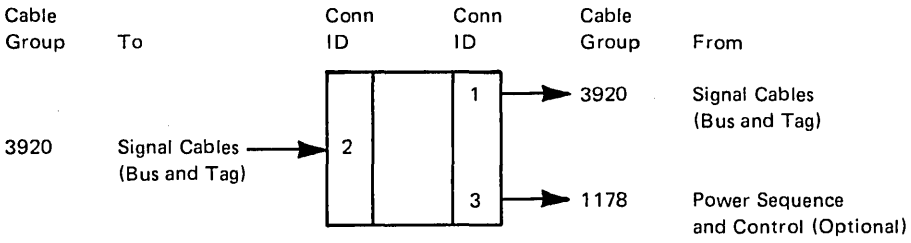
Temperature	16°C-32°C (60°F-90°F)
Rel Humidity	8%-80%
Max Wet Bulb	23°C (73°F)

4245 PRINTER MODELS 12, 20, D12, AND D20 POWER CORD SPECIFICATIONS

	Length	Cable Nominal OD	Number of Shields	Conductors		
				Number	Nominal OD	AWG No.
All 60 Hz: Japan 50/60 Hz	4.27 m (14 ft) Chicago, Illinois, U.S.A. – 1.83 m (6 ft)	15.4 mm (0.604 in.)	0	4	1.63 mm (0.064 in.)	14
50 Hz (Except Japan)	4.27 m (14 ft)	11 mm (0.43 in.)	0	5*	1.38 mm (0.054 in.)	–

*For Brazil and Taiwan, 60 Hz

4245 PRINTER MODELS 12, 20, D12, AND D20 CABLING SCHEMATIC



From 4245

Group No.	*No. of Cables*	*Max Length*			*Comments*	*Notes*
		Conn ID	*m*	*(ft)*		
3920	2	1	127	(416)	Bus and tag	1, 3
1178	1	3	46	(150)	Power sequence and control	2

To 4245

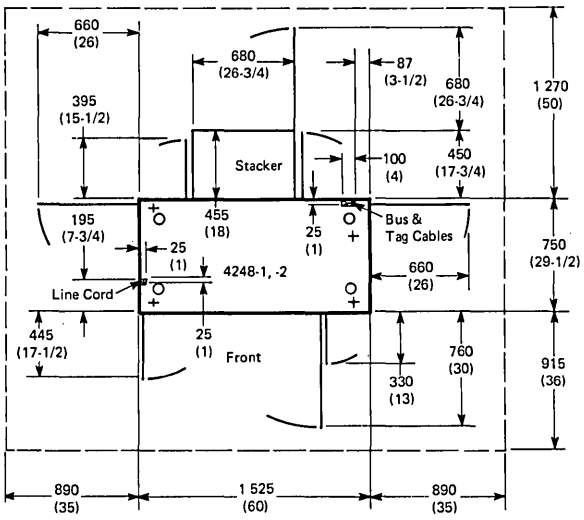
Conn ID	*Comments*
2	Bus and tag

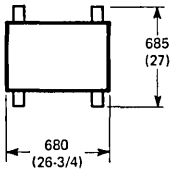
Notes:
1. Used on Models 12 and 20 only.
2. Used on Models 12, 20, D12, and D20 if remote power control is needed.
3. Maximum cable length must be reduced by 5 meters (15 feet) for each additional control unit between the 4245 and the channel.
4. Coaxial signal cables (a maximum length of 1 500 meters (4,920 feet)) for Models D12 and D20 are supplied by the customer. See *Assembly of Coaxial Cable and Accessories for Attachment to IBM Products*, GA27-2805.

4248 PRINTER MODELS 1 AND 2

PLAN VIEW (Metric Scale: 10 mm = 0.25 m)

English measurements are shown in parentheses.

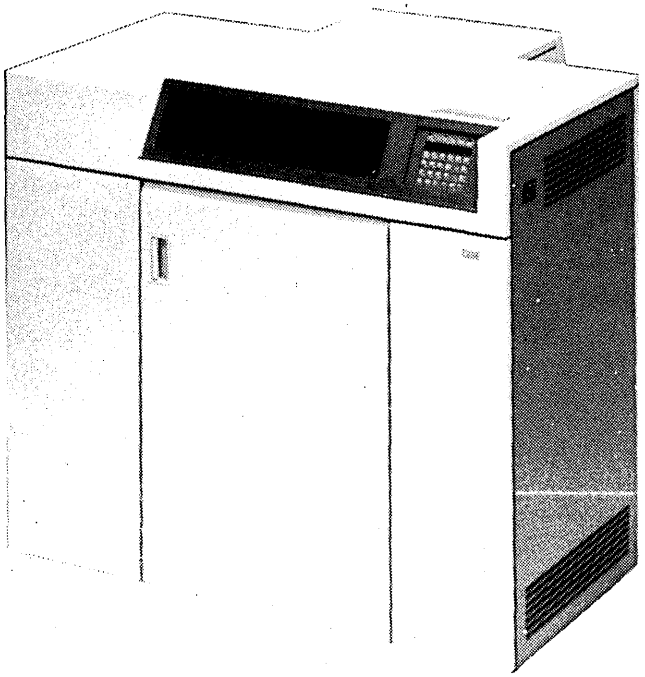




Shipping dimensions of stacker with outriggers.

Notes:

1. The stacker contains light-sensitive sensors: Do not expose the stacker door to direct sunlight.
2. A 150 mm x 150 mm (6 in. x 6 in.) floor cutout is recommended to accommodate the external cables. Locate the cutout at the right rear corner of the printer (where the bus and tag cables are indicated on the plan view).



4248 PRINTER MODELS 1 AND 2

SPECIFICATIONS

Dimensions: (With Covers and Stacker)

	Front	Side	Height	Height
mm	1 525	1 220	1 350	1 420*
(inches)	(60)	(48)	(53)	(56*)

Side Dimension: (Without Stacker)

mm	–	750	–	–
(inches)	–	(29-1/2)	–	–

Height (Cover Raised):

mm	–	–	2 032	–
(inches)	–	–	(80)	–

Service Clearances:

	Front	Rear	Right	Left
mm	915	1 270	890	890
(inches)	(36)	(50)	(35)	(35)

Weight:
With Stacker 865 kg (1,910 lb)
Without Stacker 725 kg (1,600 lb)

Heat Output: 50 Hz 4 500 W (15,400 BTU/hr)
60 Hz 4 400 W (15,000 BTU/hr)

Airflow: 21 m^3/min (725 cfm)

Acoustical Data:
For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual–Physical Planning*, GC22-7072.

Hz	L_{WAd}		$<L_{pA}>_m$		I	T
	Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)		
50	7.9	7.3	61.0	55.0	No	No
60	8.0	7.3	62.0	55.0	No	No

Power Requirements:

	50 Hz	*60 Hz*
kVA	5	5
Phases	3	3

Voltages

	Nominal	*Minimum*	*Maximum*
50 Hz	200	180	220
	220	193	238
	230	202	249
	240	210	259
	380	333	410
	400	350	432
	415	363	448
60 Hz	200	180	220
	208	180	220
	220	193	238
	240	208	254

Power Cord:

	Standard	*Optional*
meters	4.3	1.8
(feet)	(14)	(6)

Power Cord Style: D2 (See Appendix A.)

USA and Canada: (See Appendix D.)
Plug R&S, 3760 (Provided by IBM)
Receptacle R&S, 3754 (Provided by Customer)
Connector R&S, 3934 (Provided by Customer)

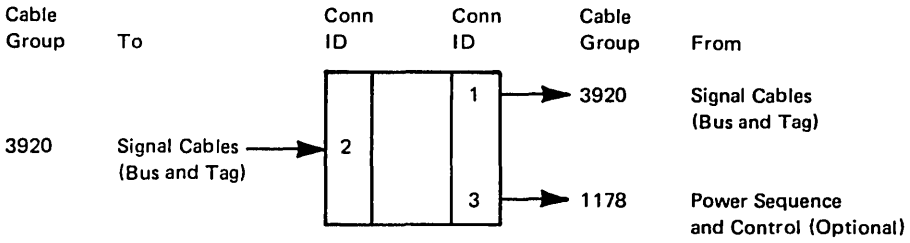
Environment, Operating:
Temperature 16°C-32°C (60°F-90°F)
Rel Humidity 8%-80%
Max Wet Bulb 23°C (73°F)

OCR Applications
Temperature 16°C-29°C (60°F-85°F)
Rel Humidity 20%-70%
Max Wet Bulb 21°C (70°F)

Environment, Nonoperating:
Temperature 10°C-43°C (50°F-110°F)
Rel Humidity 8%-80%
Max Wet Bulb 27°C (80°F)

Note:
*Height includes Attention light.

4248 PRINTER MODELS 1 AND 2 CABLING SCHEMATIC



From 4248

Group No.	*No. of Cables*	*Conn ID*	*Max Length*		*Comments*	*Notes*
			m	*(ft)*		
3920	2	1	122	(400)	Bus and tag	1
1178	1	3	46	(150)	Power sequence and control	2

To 4248

Conn ID	*Comments*
2	Bus and tag

Notes:

1. Maximum cumulative X-length is 122 m (400 ft) unless modified by system or channel limitation. Maximum cable length must be reduced by 5 m (15 ft) for each control unit connected between the 4248 and the channel.
2. Cable group 1178, power sequence and control, is optional.

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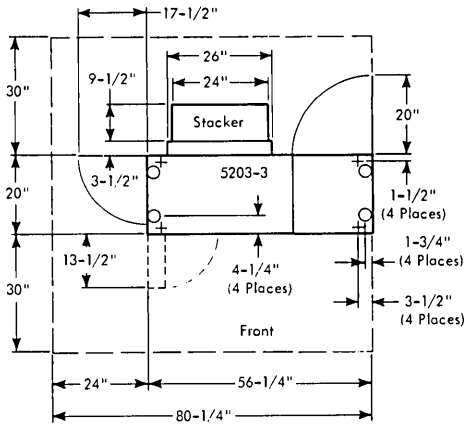
5203 PRINTER MODEL 3

PLAN VIEW (English Scale: 1/4 in. = 1 ft)



Note: No external cables are required for use with 3115-0 or 3115-2.

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	56-1/4	20	41-1/2
(cm)	(143)	(51)	(105)

Service Clearances:

	F	R	Rt	L
Inches	30	30	0	24
(cm)	(76)	(76)	(0)	(61)

Weight: 475 lb (220 kg)

Heat Output: 3,300 BTU/hr (840 kcal/hr)

Airflow: 300 cfm (9 m^3/min)

Power Requirements:*

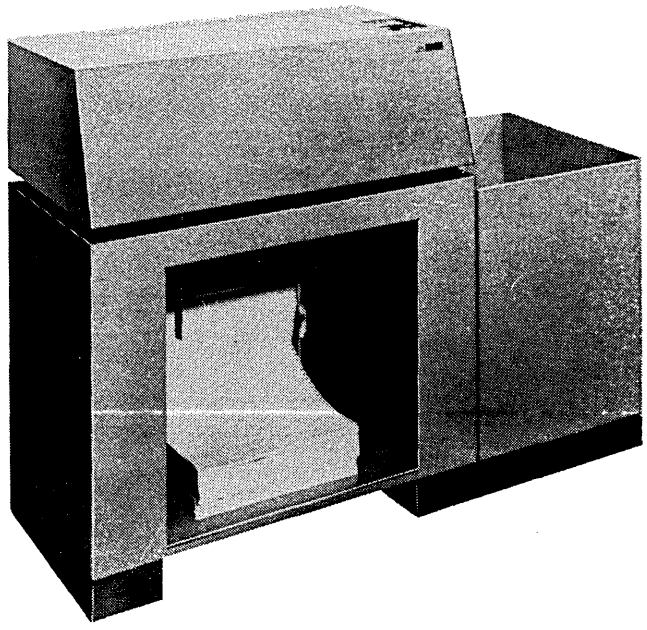
kVA	1.1
Phases	3

Environment, Operating:

Temperature	60°F-100°F (16°C-38°C)
Rel Humidity	8%-80%
Max Wet Bulb	73°F (23°C)

Notes:

* Powered from and abutted to 3115-0 or 3115-2 when SF 4690 is installed.



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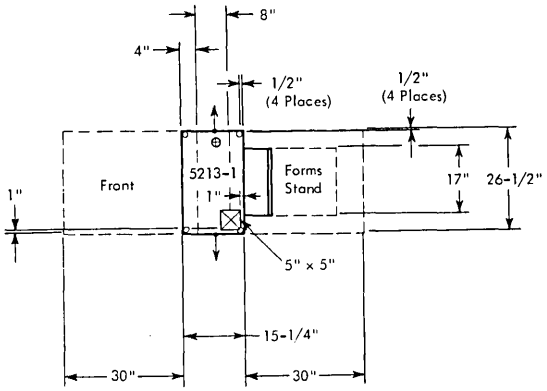
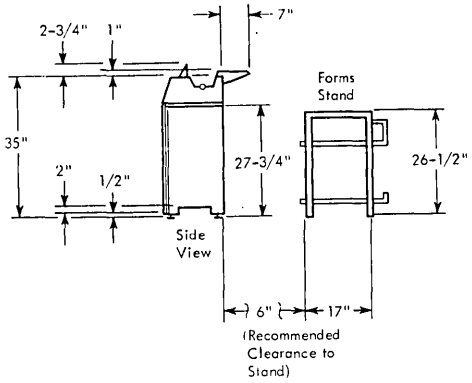
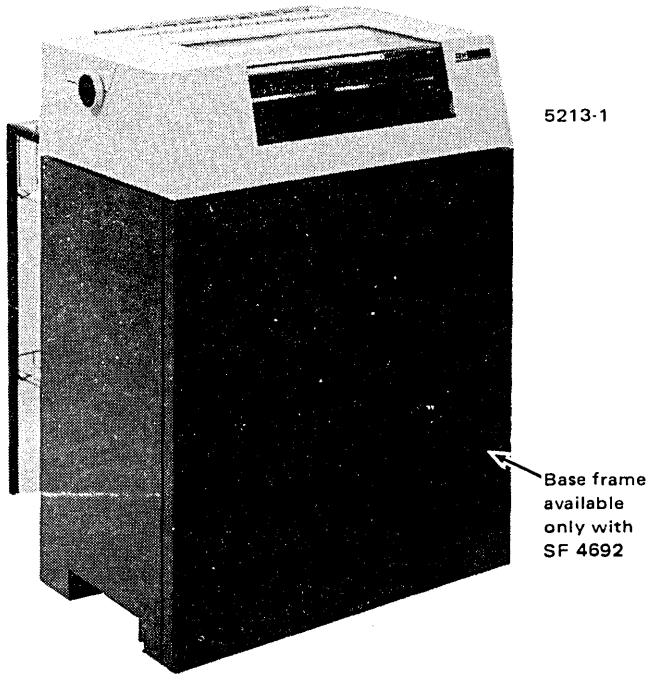
5213 CONSOLE PRINTER MODEL 1 (WITH 3115-0, 3115-2, 3125-0, OR 3125-2)

PLAN VIEW (English Scale: 1/4 in. = 1 ft)





Note: For cabling information, see 3115-0, 3115-2, 3125-0, or 3125-2.



SPECIFICATIONS

Dimensions:*

	F	S	H
Inches	26-1/2	15-1/4	37-3/4
(cm)	(67)	(39)	(96)

Service Clearances:

	F	R	Rt	L
Inches	30	30**	0	0
(cm)	(76)	(76**)	(0)	(0)

Weight: 135 lb (62 kg)

Heat Output: 250 BTU/hr (64 kcal/hr)

Airflow: Convection only

Power Requirements:*	*50 Hz*	*60 Hz*
kVA	0.1	0.2

Environment, Operating:

Temperature	60°F-90°F (16°C-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	78°F (26°C)

Environment, Nonoperating:

Temperature	50°F-110°F (10°C-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	80°F (27°C)

Notes:

* Dimensions are with base frame installed.

** A 6-inch (15-cm) clearance is recommended to forms stand (SF 4450), if used.

*** Powered from 3115-0, 3115-2, 3125-0, or 3125-2 when SF 4692 is installed.

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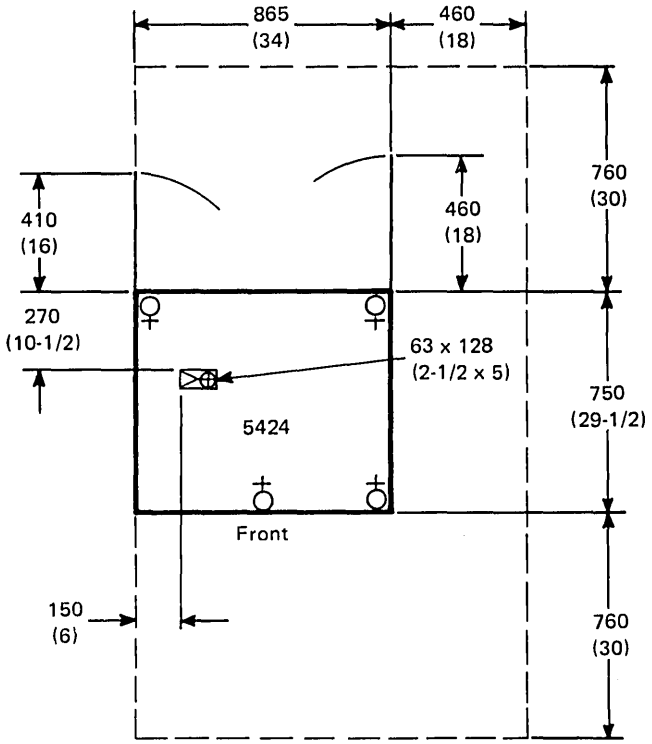
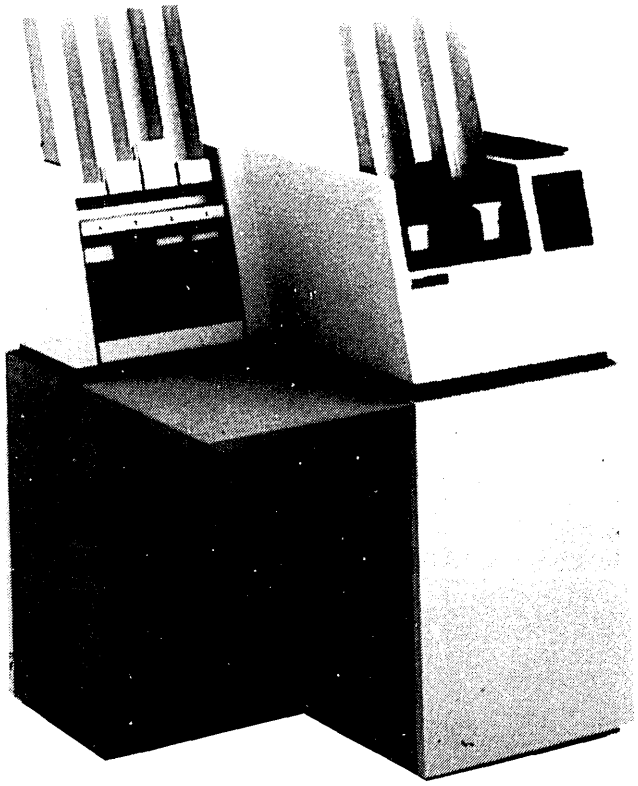
5424 MULTI-FUNCTION CARD UNIT MODELS A1, A2, K1, K2, AND K3 (WITH SF 6510)

PLAN VIEW (Metric Scale: 10 mm = 0.25 m)

English measurements are shown in parentheses.



Note: Two 10-foot (3-meter) signal cables and a 15.6-foot 5-meter) dc common (ground) cable are supplied.



SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	865	750	1 400
(inches)	(34)	(29½)	(55)

Service Clearances:

	Front	Rear	Right	Left
mm	760	760	460	0
(inches)	(30)	(30)	(18)	(0)

Weight: 260 kg (570 lb)

Heat Output: 880 W (3,000 BTU/hr)

Airflow: Convection

Power Requirements:

kVA	1.3		
Phases	1		
Voltages			
50 Hz	200	220	235
60 Hz	200*	208	230
Plug	R&S, FS3720 (Provided by IBM)		
Receptacle	R&S, FS3743 (Provided by Customer)		
Connector	R&S, FS3913 (Provided by Customer)		
Power Cord Style	A6		

Environment, Operating:

Temperature	16°C-38°C (50°F-110°F)
Rel Humidity	8%-80%
Max Wet Bulb	23°C (73°F)

Environment, Nonoperating:

Temperature	10°C-43°C (50°F-110°F)
Rel Humidity	8%-80%
Max Wet Bulb	27°C (80°F)

Notes:

* Not available in U. S.

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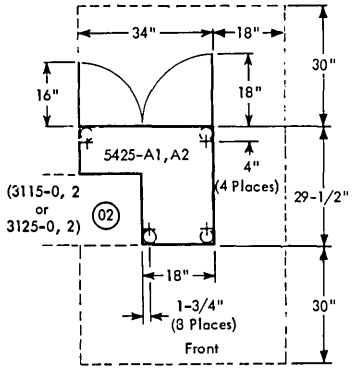
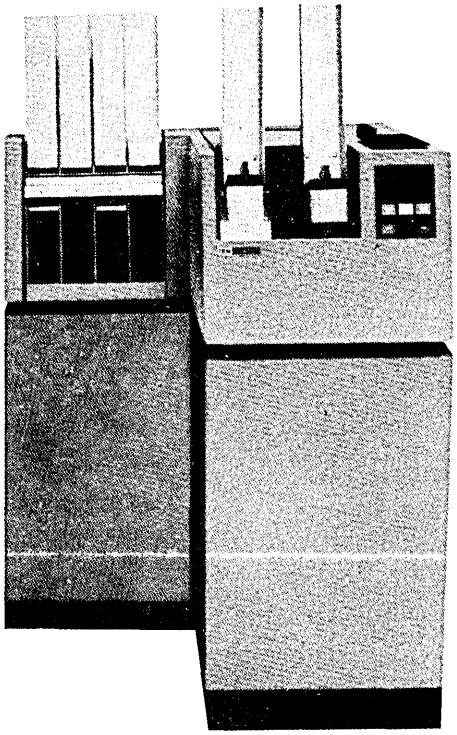
5425 MULTI-FUNCTION CARD UNIT MODELS A1 AND A2

PLAN VIEW (English Scale: 1/4 in. = 1 ft)



Note: No external cables are required for use with 3115-0, 3115-2, 3125-0, or 3125-2.



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	34	29-1/2	55
(cm)	(86)	(75)	(140)

Service Clearances:

	F	R	Rt	L
Inches	30	30	18	0*
(cm)	(76)	(76)	(46)	(0*)

Weight: 450 lb (210 kg)

Heat Output: 2,000 BTU/hr (510 kcal/hr)

Airflow: Convection only

Power Requirements:**
kVA 0.8

Environment, Operating:

Temperature	60°F-100°F (16°C-38°C)
Rel Humidity	8%-80%
Max Wet Bulb	78°F (26°C)

Notes:

*The 5425 Model A1 or A2 attaches to the right end of the 3115-0 or 3115-2 (frame 02) or the 3125-0 or 3125-2 (frame 02) configuration 1 only.

** Powered from 3115-0, 3115-2, 3125-0, or 3125-2 when SF 4695 is installed.

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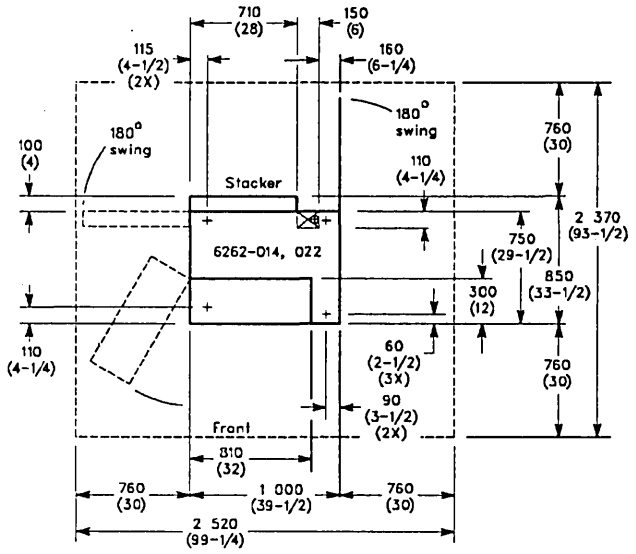
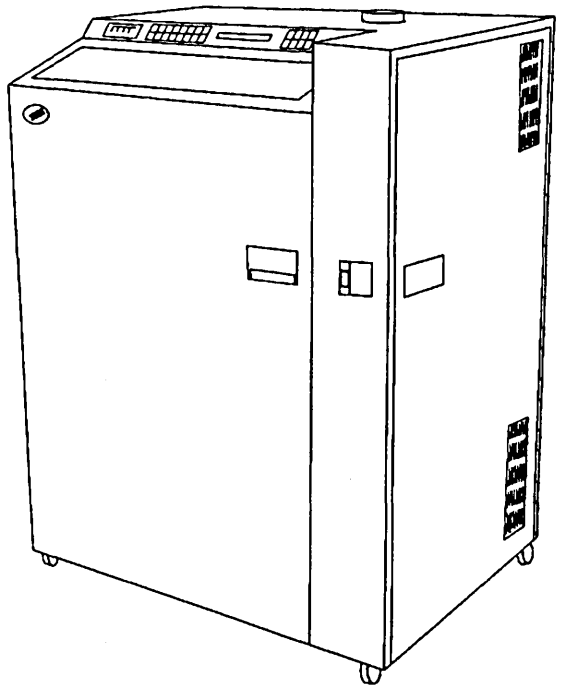
6262 Printer Models 014 and 022

PLAN VIEW (Not to Scale)

English measurements are shown in parentheses. Use IBM Physical Planning Template GX24-3995 (English Scale) or GX24-3996 (Metric Scale).



Note: The stacker contains light-sensitive sensors; do not expose the stacker door to direct sunlight.



6262 Printer Models 014 and 022

Specifications

Dimensions:

	Front	Side	Height
mm	1 000	850	1 360
(inches)	(39-1/2)	(33-1/2)	(53-1/2)

Note: The side dimension is 750 mm (29-1/2 in.) with the rear cover fully open.

Service Clearances:

	Front	Rear	Right	Left
mm	760	760	760	760
(inches)	(30)	(30)	(30)	(30)

Weight:

	Model 014	Model 022
kg	300	360
(lb)	(665)	(795)

Heat Output:

	Model 014	Model 022
kW	1.3	1.4
(kBTU/hr)	(4.3)	(4.8)

Airflow:

m^3/min	5.7	5.7
(cfm)	(200)	(200)

Acoustical Data:*

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

	L_{WAd}		$<L_{pA}>_m$	
Hz	Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)
50/60	7.4	6.9	57	53

Power Requirements:

	50 Hz	*60 Hz*
Model 014	1.5 kVA	1.5 kVA
Model 022	1.7 kVA	1.7 kVA

Model 014 Voltages (Single Phase)

	Nominal	*Minimum*	*Maximum*
50 Hz	100	90	110
	110	99	121
	127	114	140
	200	180	220
	220	198	242
	230	207	253
	240	216	264
60 Hz	100**	90	110
	110**	99	121
	120	104	121
	127**	114	140
	200**	180	220
	208	180	220
	220**	198	242
	240	208	254
	240**	216	264

Model 022 Voltages (Single Phase)

	Nominal	*Minimum*	*Maximum*
50 Hz			
	200	180	220
	220	193	242
	230	202	253
	240	210	264
60 Hz			
	200**	180	220
	208	180	220
	220**	193	242
	240	208	264
	240**	208	264

Specifications (Continued)

Power Cord and Plug Types (USA and Canada):***

Input Voltage	Standard Plug	Specify Code 9080	Specify Code 9081
120	NEMA 5-15P	Russellstoll 3720U-1	NEMA L5-15P
208/240	NEMA 6-15P	Russellstoll 3720U-2	NEMA L6-15P

Power Cord Length:

	Standard	*Optional*
meters	4.3	1.8
(feet)	(14)	(6)

Environment, Operating (Model 014):

Temperature	10°C to 40°C (50°F to 104°F)
Rel Humidity	8% to 80%
Max Wet Bulb	27°C (80°F)

Environment, Operating (Model 022):

Temperature	13°C to 40°C (55°F to 104°F)
Rel Humidity	8% to 80%
Max Wet Bulb	27°C (80°F)

OCR and Bar Code Applications (Model 014):

Temperature	16°C to 29°C (60°F to 85°F)
Rel Humidity	20% to 52%
Max Wet Bulb	22°C (72°F)

OCR and Bar Code Applications (Model 022):

Temperature	16°C to 29°C (60°F to 85°F)
Rel Humidity	20% to 70%
Max Wet Bulb	22°C (72°F)

Environment, Nonoperating (Models 014 and 022):

Temperature	10°C to 52°C (50°F to 125°F)
Rel Humidity	8% to 80%
Max Wet Bulb	27°C (80°F)

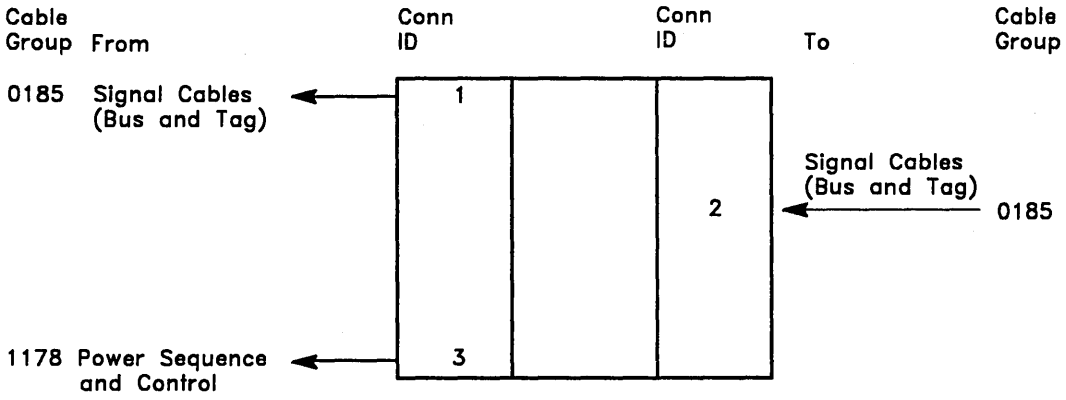
Notes:

* This is preliminary data based on a low sample size; it is subject to change as additional samples are tested.

** World Trade 60-Hz tolerances.

*** For power plugs installed in Japan, use JIS C8303 (100 V), NEMA 5-20P (125 V), or NEMA 6-15P (200 V). For power plugs installed in World Trade countries other than Canada and Japan, see *IBM 6262 Printer Site Planning and Preparation Guide*, GA24-3987.

6262 Printer Models 014 and 022 Cabling Schematic



From 6262

Group No.	No. of Cables	Conn ID	Max Length		Comments	Notes
			m	(ft)		
0185	2	1	122	(400)	Bus and tag	1
1178	1	3	122	(400)	Power sequence and control	2

To 6262

Conn ID	Comments
2	Bus and tag

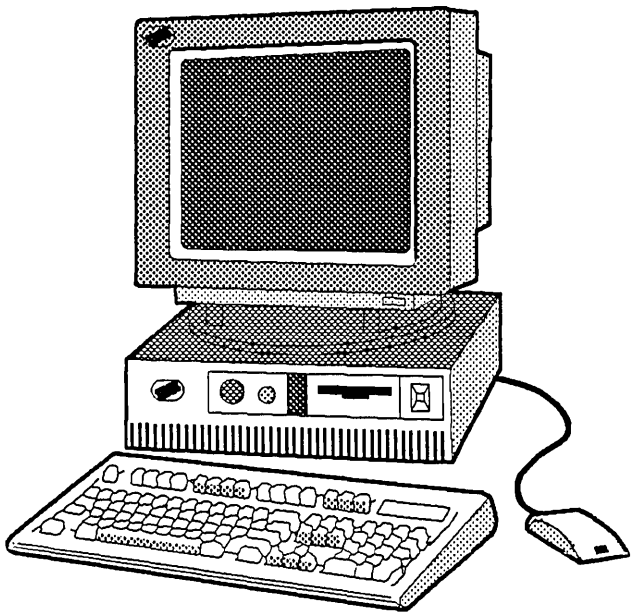
Notes:

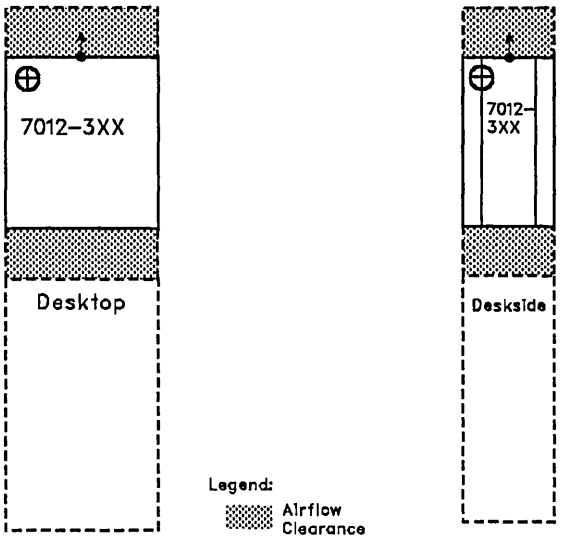
1. Maximum cumulative cable length is 122 meters (400 feet), unless modified by system or channel limitation. Maximum cable length must be reduced by 5 meters (15 feet) for each control unit between the 6262 and the channel.
2. Cable group 1178, power sequence and control, is optional.

7012 POWERstation and POWERserver

Models 3xx

Plan View (Not to Scale): English measurements are shown in parentheses.





Specifications:

Dimensions for Desktop Installations:

	Front	Side	Height
mm	460	525	165
(in.)	(18)	(20-3/4)	(6-1/2)

Dimensions for Deskside Installations:

	Front	Side	Height
mm	280	525	470
(in.)	(11)	(20-3/4)	(18-1/2)

Service Clearances:

	Front	Rear	Right	Left
mm	765	0	0	0
(in.)	(30)	(0)	(0)	(0)

Airflow Clearances:

	Front	Rear	Right	Left
mm	155	155	0	0
(in.)	(6)	(6)	(0)	(0)

Weight (Maximum):

kg	15.5
(lb)	(34)

Heat Output:

kW	0.2
(kBTU/hr)	(0.6)

Airflow:

m^3/min	5.7
(cfm)	(200)

Power Requirements:

Voltage	110/208 nominal, 50/60 Hz
Phases	1
kVA	0.6 Typical, with options
Plug type	NEMA 5-15P
Receptacle type	NEMA 5-15R
Power cord style	3 wire, no shield Wire size, 1.5 mm² Bulk wire OD, 8.9 mm

For countries other than the United States and Canada, IBM supplies power cords with an attached plug that corresponds to the most commonly used power outlet receptacle in that country.

Acoustical Data:
For definitions, see "Acoustics" in Chapter 3 of the *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

	L_{WAd}		$<L_{pA}>m$			
	Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	I	T
Desk-top	5.7	5.5	41.0	41.0	No	No
Desk-side	5.7	5.5	38.0	38.0	No	No

Environment, Operating:

Temperature	16°C – 32°C (60°F – 90°F)
Relative Humidity	8% – 80%
Max Wet Bulb	23°C (73°F)

Environment, Nonoperating:

Temperature	10°C – 43°C (50°F – 110°F)
Relative Humidity	8% – 80%
Max Wet Bulb	27°C (80°F)

For additional details, see *IBM RISC System/6000-Planning for Your Processor* GA23-2407.

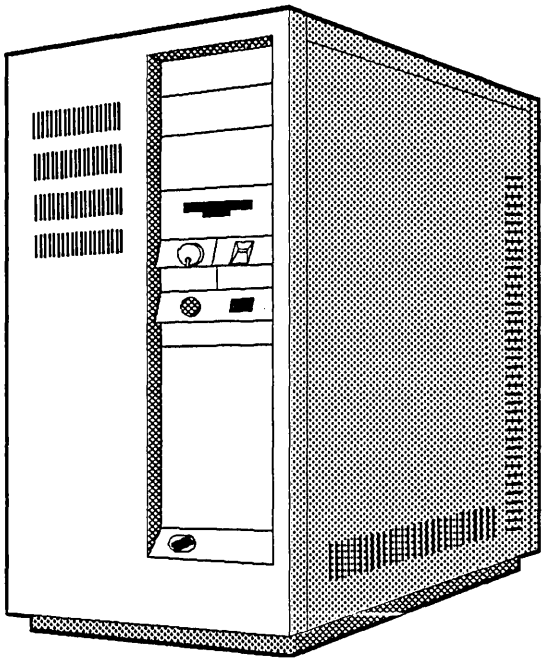
Cabling for Parallel Channel Attachment

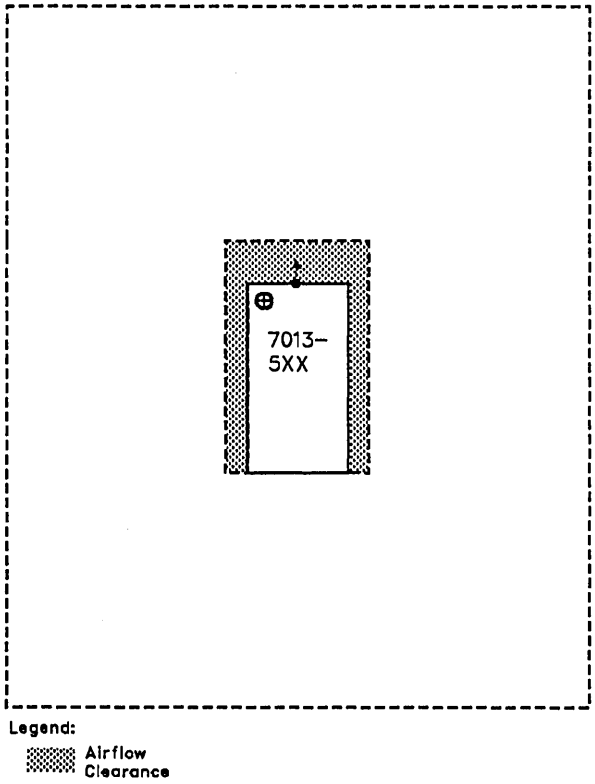
Group No.	No. of Cables	From	To	Max. Length m (ft.)
0185	2	7012	Channel	122 (400)

Note: The 7012 must have no more than 122 meters (400 feet) of channel cable between it and the host computer. If there are other channel-attached devices located between the 7012 and the host, subtract 4.5 meters (15 feet) from the maximum allowable distance for each attached device.

7013 RISC System/6000 Models 5xx

Plan View (Not to Scale): English measurements are shown in parentheses.





Legend:
Airflow
Clearance

Specifications:

Dimensions

	Front	Side	Height
mm	360	675	610
(in.)	(14-1/4)	(26-3/4)	(24)

Service Clearances:

	Front	Rear	Right	Left
mm	765	765	765	765
(in.)	(30)	(30)	(30)	(30)

If service clearance is not provided, the unit must be installed so that it can be moved into a position that provides the required side clearance for service.

Airflow Clearances:

	Front	Rear	Right	Left
mm	0	155	80	80
(in.)	(0)	(6)	(3)	(3)

Weight (Maximum):

kg	55
(lb)	(120)

Heat Output:

kW	0.33
(kBTU/hr)	(1.13)

Airflow:

m^3/min	7.1
(cfm)	(250)

Power Requirements:

Voltage	110/208 nominal, 50/60 Hz
Phases	1
kVA	0.33
Plug type	NEMA 5-15P (110 V) NEMA 6-15P (208 V)
Receptacle type	NEMA 5-15R (110 V) NEMA 6-15R (208 V)
Connector type	RussellStoll 3750
Power cord style	3 wire, no shield Wire size, 1.5 mm^2 Bulk wire OD, 8.9 mm

For countries other than the United States and Canada, IBM supplies power cords with an attached plug that corresponds to the most commonly used power outlet receptacle in that country.

Acoustical Data:
For definitions, see "Acoustics" in Chapter 3 of the *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>m$			
Operating (bels)	**Idling (bels)**	**Operating (dB)**	**Idling (dB)**	**I**	**T**
5.7	5.5	39.0	38.0	No	No

Environment, Operating:

Temperature	16°C–32°C (60°F–90°F)
Relative Humidity	8%–80%
Max Wet Bulb	23°C (73°F)

Environment, Nonoperating:

Temperature	10°C–43°C (50°F–110°F)
Relative Humidity	8%–80%
Max Wet Bulb	27°C (80°F)

For additional details, see *IBM RISC System/6000-Planning for Your Processor* GA23-2407.

Cabling for Parallel Channel Attachment

Group No.	No. of Cables	From	To	Max. Length m (ft.)
0185	2	7013	Channel	122 (400)

Note: The 7013 must have no more than 122 meters (400 feet) of channel cable between it and the host computer. If there are other channel-attached devices located between the 7013 and the host, subtract 4.5 meters (15 feet) from the maximum allowable distance for each attached device.

Cabling for ESCON Channel Attachment

Notes:

1. The 7013 will directly attach to the ES/ESCON LED channel but will not attach directly to an ESCON Extended Distance Feature channel. For attachment to an ESCON Extended Distance Feature (XDF) channel, an ESCON director must be positioned between the XDF channel and the 7013.
2. Fiber optic jumper cables are required to attach the 7013 with ESCON adapters to dynamic data routers. Duplex to duplex 62.5/125 micron fiber optic jumper cables (part number 14F3797) are available from IBM in standard lengths up to 122 meters (400 feet). The jumper cables are stocked in the following fixed lengths:

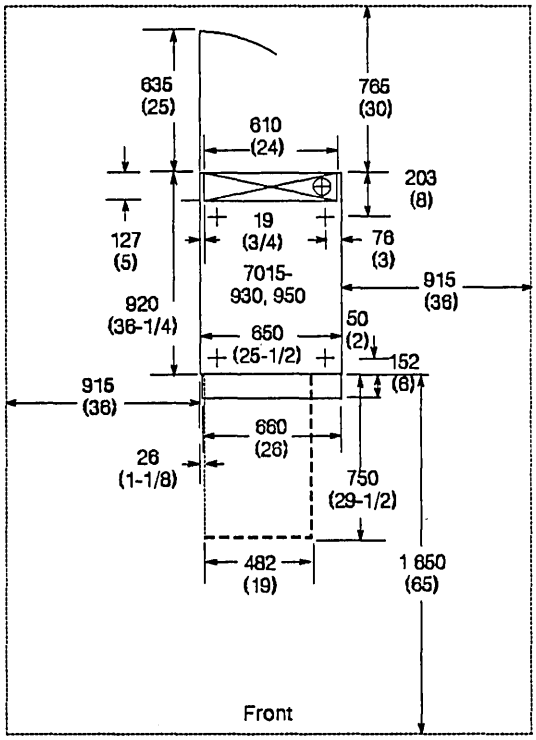
4 meters	(12 feet)
7 meters	(20 feet)
13 meters	(40 feet)
22 meters	(70 feet)
31 meters	(100 feet)
46 meters	(150 feet)
61 meters	(200 feet)
77 meters	(250 feet)
92 meters	(300 feet)
107 meters	(350 feet)
122 meters	(400 feet)

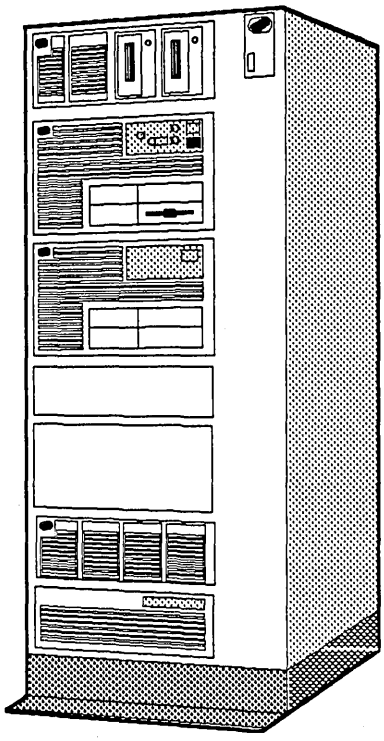
7015 POWERserver

Models 9xx

Plan View (Not to Scale): English measurements are shown in parentheses.

Use IBM Physical Planning Template GX24-4046 (English Scale) or GX24-4047 (Metric Scale)





Specifications:

Dimensions

	Front	Side	Height
mm	650	920	1580
(in.)	(25-1/2)	(36-1/4)	(62)

Service Clearances:

	Front	Rear	Right	Left
mm	1650	765	915	915
(in.)	(65)	(30)	(36)	(36)

Note: For racks placed side by side, the left and right service clearances apply only to the leftmost and rightmost rack. For 5 or 6 racks placed side by side, the left and right service clearances must be increased to 1525 mm (60 in.). Placing more than 6 racks side by side is not recommended.

Airflow Clearances:
The recommended service clearance allows for adequate airflow.

Weight:

	Minimum Configuration	Maximum Configuration
kg	205	440
(lb)	(450)	(970)

Heat Output:

	Minimum Configuration	Maximum Configuration
kW	0.3	1.0
(kBTU/hr)	(1.03)	(3.92)

Airflow:

m^3/min	11.3
(cfm)	(400)

Power Requirements:

Voltage	200 to 240, 50/60 Hz
Phases	1
Minimum kVA	0.54
Maximum kVA	2.0
Plug type	NEMA L6-30P
Receptacle type	NEMA L6-30R
Connector housing	NEMA 3750
Power cord style	3 wire, no shield Wire size, 1.5 mm^2 Bulk wire OD, 8.9 mm

For countries other than the United States and Canada, IBM supplies power cords with an attached plug that corresponds to the most commonly used power outlet receptacle in that country.

Acoustical Data:
For definitions, see "Acoustics" in Chapter 3 of the *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>m$			
Operating (bels)	**Idling (bels)**	**Operating (dB)**	**Idling (dB)**	**I**	**T**
6.4	6.2	49.0	47.0	No	No

Environment, Operating

(With Tape Unit Installed):	
Temperature	10°C – 40°C (50° – 104°F)
Relative Humidity	20% – 80%
Max Wet Bulb	23°C (73°F)
(Without Tape Unit Installed):	
Temperature	10°C – 40°C (50° – 104°F)
Relative Humidity	8% – 80%
Max Wet Bulb	27°C (80°F)

Environment, Nonoperating

(With Tape Unit Installed):	
Temperature	10°C – 52°C (50° – 125°F)
Relative Humidity	20% – 80%
Max Wet Bulb	27°C (80°F)
(Without Tape Unit Installed):	
Temperature	10°C – 52°C (50° – 125°F)
Relative Humidity	8% – 80%
Max Wet Bulb	27°C (80°F)

For additional details, see *IBM RISC System/6000-Planning for Your Processor* GA23-2407.

Cabling for Parallel Channel Attachment

Group No.	No. of Cables	From	To	Max. Length m (ft.)
0185	2	7015	Channel	122 (400)

Note: The 7015 must have no more than 122 meters (400 feet) of channel cable between it and the host computer. If there are other channel-attached devices located between the 7015 and the host, subtract 4.5 meters (15 feet) from the maximum allowable distance for each attached device.

Cabling for ESCON Channel Attachment

Notes:

1. The 7015 will directly attach to the ES/ESCON LED channel but will not attach directly to an ESCON Extended Distance Feature channel. For attachment to an ESCON Extended Distance Feature (XDF) channel, an ESCON director must be positioned between the XDF channel and the 7015.
2. Fiber optic jumper cables are required to attach the 7015 with ESCON adapters to dynamic data routers. Duplex to duplex 62.5/125 micron fiber optic jumper cables (part number 14F3797) are available from IBM in standard lengths up to 122 meters (400 feet). The jumper cables are stocked in the following fixed lengths:

```
  4 meters    (12 feet)
  7 meters    (20 feet)
 13 meters    (40 feet)
 22 meters    (70 feet)

 31 meters   (100 feet)
 46 meters   (150 feet)
 61 meters   (200 feet)
 77 meters   (250 feet)

 92 meters   (300 feet)
107 meters   (350 feet)
122 meters   (400 feet)
```

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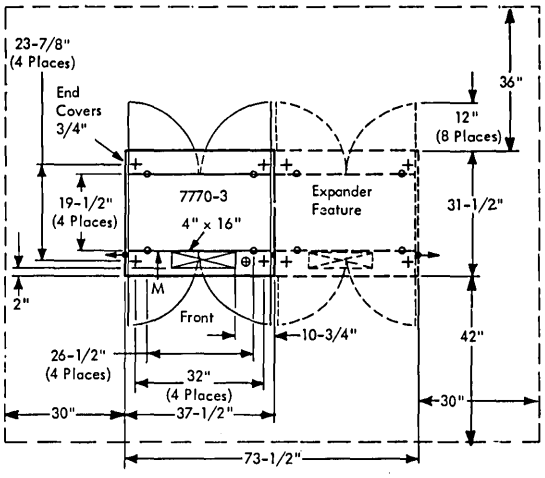
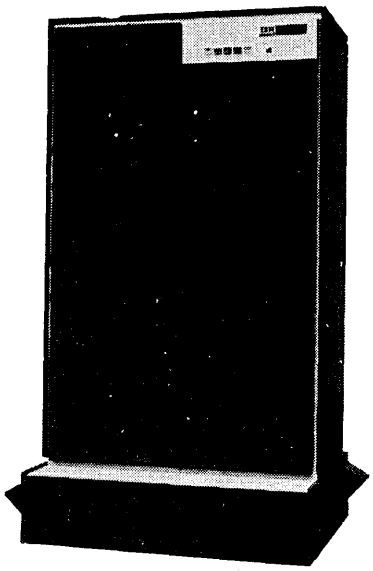
7770 AUDIO RESPONSE UNIT MODEL 3

PLAN VIEW (English Scale: 1/4 in. = 1 ft)





SPECIFICATIONS

Dimensions:

	F	S	H
Inches	37-1/2*	31-1/2	70
(cm)	(95*)	(80)	(178)

Service Clearances:

	F	R	Rt	L
Inches	42	36	30	30
(cm)	(107)	(91)	(76)	(76)

Weight:	*16 Lines*	*48 Lines*
lb	600	1,200
(kg)	(280)	(550)

Heat Output:		
BTU/hr	4,800	7,200
(kcal/hr)	(1 250)	(1 850)

Airflow:		
cfm	400	800
(m^3/min)	(12)	(23)

Power Requirements:			
kVA	*50 Hz*	1.4	2.0
	60 Hz	1.6	2.4
Phases		1	1
Plug		R&S, FS3720	
Connector		R&S, FS3913	
Receptacle		R&S, FS3743	
Power Cord Style		A3	A3

Environment, Operating:

Temperature	60°F-90°F (16°C-32°C)
Rel Humidity	8%-80%
Max Wet Bulb	78°F (26°C)

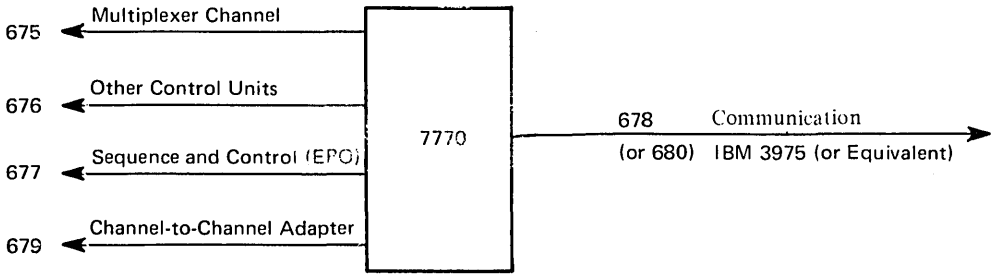
Environment, Nonoperating:

Temperature	50°F-110°F (10°C-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	80°F (27°C)

Notes:

* Dimension is 73-1/2" (187 cm) with expander feature.

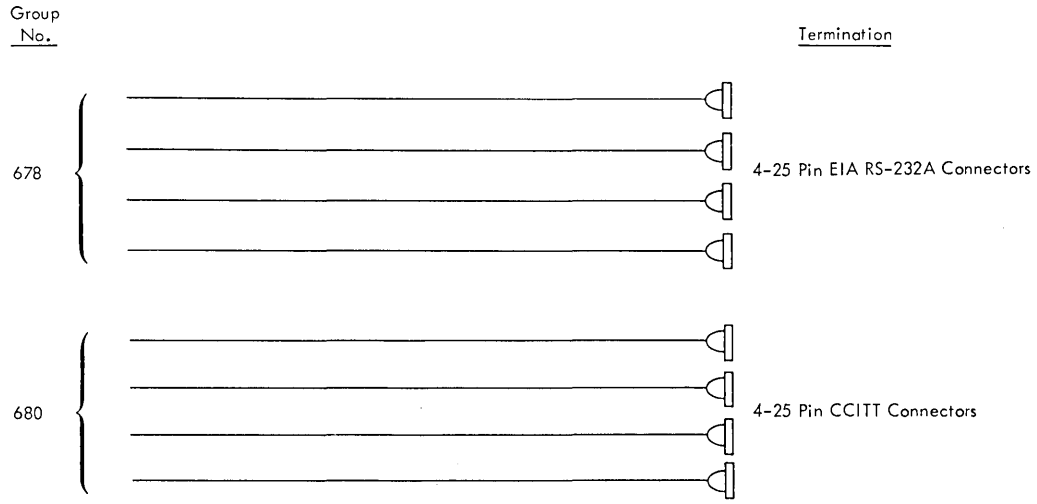
7770 AUDIO RESPONSE UNIT CABLING SCHEMATIC



Group No.	*No. of Cables*	*From*	*To*	*Max Length (ft)*	*Notes*
675	2	7770	Multiplexer Channel	–	1
676	2	7770	Control Unit	–	1
677	1	7770	Channel	150	2
678	4	7770	Communication	40	4,5
(or 680)	4	7770	IBM 3975	40	4,5,6
679	2	7770	Channel-to-Channel Adapter	–	1,3

Notes:
1. Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units.
2. Sequence and control (EPO).
3. To channel-to-channel adapter (SF 1850).
4. One group for each four data sets.
5. See "Cables for IBM and Non-IBM Devices" for cable specifications.
6. For 50-Hz machines, use group number in parentheses.

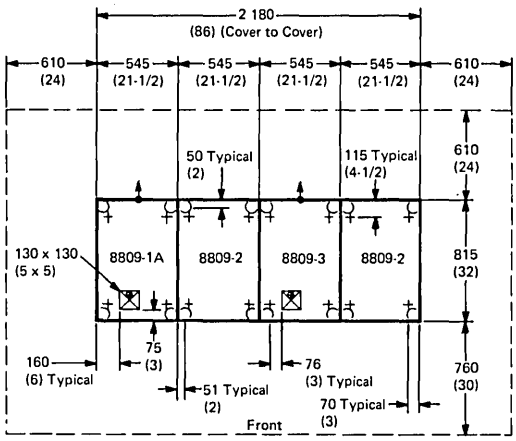
Cables for IBM and Non-IBM Devices



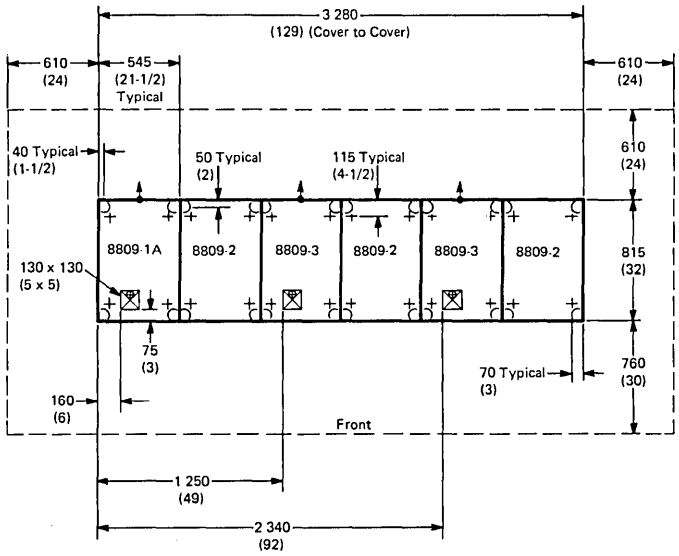
8809 MAGNETIC TAPE UNIT MODELS 1A, 2, AND 3

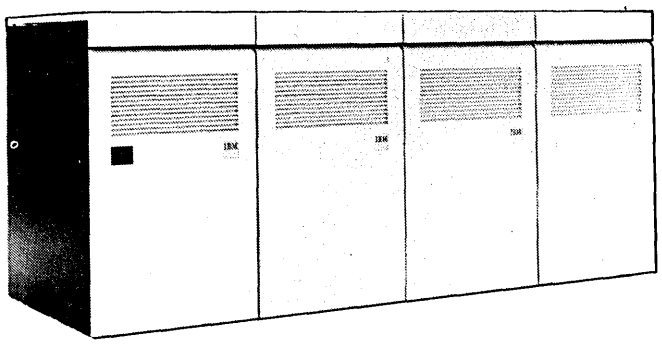
PLAN VIEW (Metric Scale: 10 mm = 0.5 m)

English measurements are shown in parentheses.



Maximum Configuration





8809 MAGNETIC TAPE UNIT MODELS 1A, 2, AND 3

SPECIFICATIONS

Dimensions:

	Front	Side	Height
mm	545	815	1 000
(inches)	(21-1/2)	(32)	(39-1/2)

Service Clearances:

	Front	Rear	Right*	Left*
mm	760	610	610	610
(inches)	(30)	(24)	(24)	(24)

	Model		
Weight:	**1A**	**2**	**3**
kg	137	98	129
(lb)	(302)	(215)	(285)

	Model		
Heat Output:	**1A**	**2**	**3**
W	425	380	425
(BTU/hr)	(1 450)	(1 300)	(1 450)

	Model		
Airflow:	**1A**	**2**	**3**
m^3/min	2.8	2.8	2.8
(cfm)	(100)	(100)	(100)

	Model		
Power Requirements:	**1A**	**2****	**3**
kVA	0.66	0.5	0.66
Phases	1	1	1
Plug	NEMA 5-15P or NEMA 6-15P		
Receptacle/Connector	NEMA 5-15R or NEMA 6-15R		
Power Cord Style	A1		

For machines with waterproof plug, specify feature SF 9950:

	125 V	*250 V*
Plug:	R&S, 3720U-1	R&S, 3720U-2
Connector:	R&S, 3743U-1	R&S, 3743U-2
Receptacle:	R&S, 3913U-1	R&S, 3913U-2

Environment, Operating:

Temperature	16°C-38°C (60°F-100°F)
Rel Humidity	8% to 80%
Max Wet Bulb	26°C (78°F)

Environment, Nonoperating:

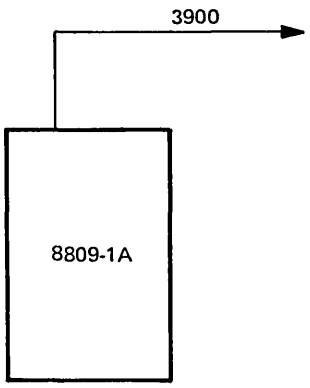
Temperature	10°C-43°C (50°F-110°F)
Rel Humidity	8% to 80%
Max Wet Bulb	27°C (80°F)

Notes:

*Required clearance when the tape unit is at the end of the 8809 series.

**Model 2 receives power from a Model 1A or 3.

8809 MAGNETIC TAPE UNIT MODELS 1A, 2, AND 3 CABLING SCHEMATIC



Group No.	*No. of Cables*	*From*	*To*	*Max Length m*	*(ft)*	*Notes*
3900	2	8809-1A	4331	30	(98)	1, 2, 3

Notes:
1. The 8809 must be the only unit attached to the cable signal path.
2. If more than three 8809 Models 2 or 3 are attached to a Model 1A, the maximum cable length is 15 meters (49 feet).
3. Cable length used must be equal to or greater than 4 meters (13 feet).

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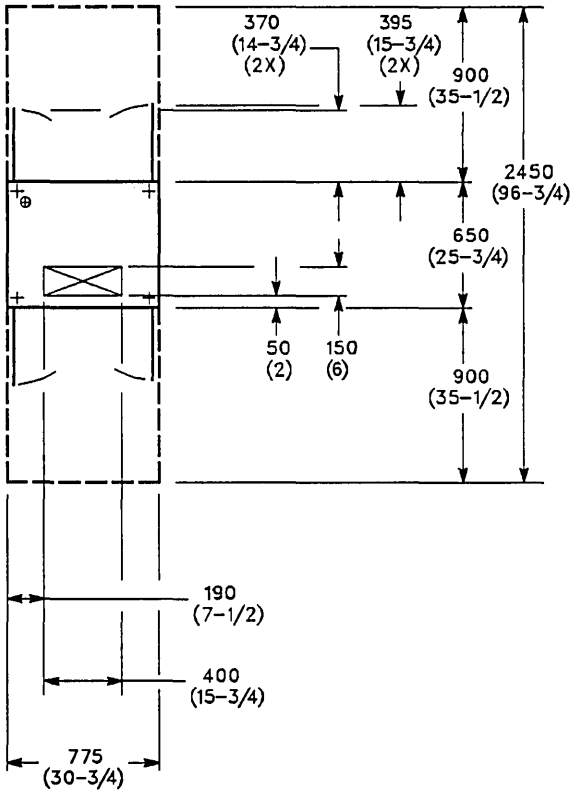
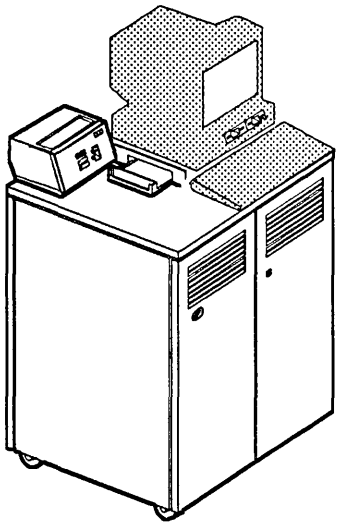
9032 ESCON Director Model 2

Plan View (Not to Scale): English measurements are shown in parentheses.





Specifications:

Dimensions:

	Front	Side	Height (with operator panel)
mm	775	650	1 170
(in.)	(30-3/4)	(25-3/4)	(46-1/4)

Service Clearances:

	Front	Rear	Right	Left
mm	900	900	-	-
(in.)	(35-1/2)	(35-1/2)	n/a	n/a

Weight: (without ESCD console)

28 port machine	200 kg	(440 lb)
Each 4 port addition	0.8 kg	(1.8 lb)
60 port machine	205 kg	(450 lb)

Heat Output: (without ESCD console)

28 port machine	1.2 kBTU/hr
Each 4 port addition	0.1 kBTU/hr
60 port machine	1 980 kBTU/hr

Airflow: 10.3 m³/min (360 cfm)

Air enters the door louvers and discharges at the base of the machine.

Acoustical Data: For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>_m$	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)
7.2	7.2	56	56

Power Requirements: (without ESCD console)

28 port machine	0.8 kVA (350 W)
Each 4 port addition	0.04 kVA (30 W)
60 port machine	1.1 kVA (580 W)

Phases: 1

Hz: 50/60
Voltage: 200-240 V ac

The 9032 provides a duplex 220 V outlet for the ESCD console. This outlet is located at the rear of the 9032 operator panel, under the panel top cover.

If the customer chooses not to use the 220 V outlet provided by the 9032, or if a 110 V console will be used, an appropriate outlet must be provided within reach of the 1.8 meter (6 ft) console power cord, at the rear of each 9032 on which an ESCD console will be located. This outlet should be located so neither the ESCD console power cord nor receptacle interferes with the 9032 doors. The bottom of the doors are 80 mm (3.15 in) above the floor.

If the Console Sharing Availability feature is used, another power outlet is required for the spare ESCD console. An outlet from a 9032 or one provided by the customer may be used.

9032s sharing the same ESCD console must be installed side-by-side.

Power Cords

Specify code	Length meters (feet)	Plug type [1]	Country [2]
STD	4.1 (13.5)	A2	US, Canada
9800	4.1 (13.5)	L	US, Canada
9801	4.1 (13.5)	K	US, Canada
9896	1.7 (5.5)	A2	US
9987	1.7 (5.5)	L	US
9986	1.7 (5.5)	K	US

Note:

[1] See Appendix A

[2] For all other countries, the 3-digit country code is used to provide a cord with the plug most commonly used in that country.

Environment, Operating:

Temperature: 16°C to 32°C (60.8°F to 89.6°F)
Relative Humidity: 8% to 80%
Max Wet Bulb: 23°C (73.4°F).

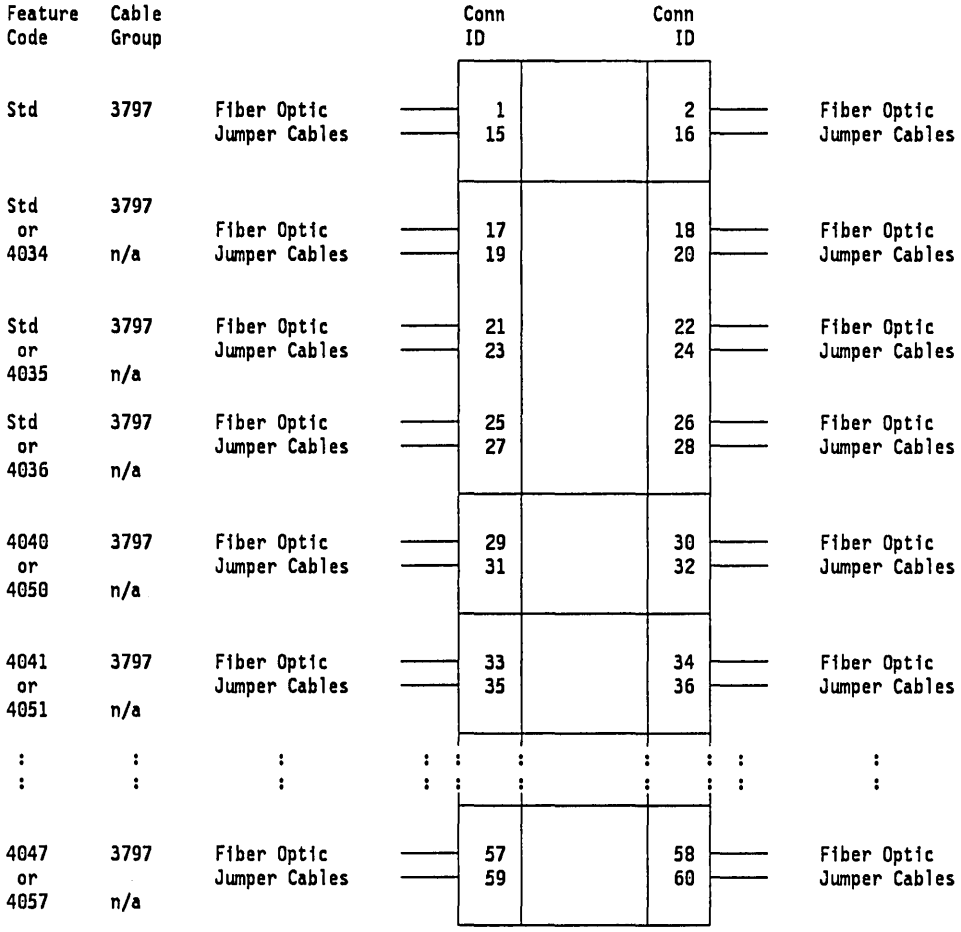
Environment, Nonoperating:

Temperature: 10°C to 43°C (50°F to 109.4°F)
Relative Humidity: 8% to 80%
Max Wet Bulb: 27°C (80.6°F)

9032 Ports:

The 9032 must be ordered with a minimum of 28 ports, at least 16 of which must be LED. Additional LED or Extended Distance Feature (XDF) ports can be ordered, in 4-port increments, to satisfy the minimum of 28 ports and up to the maximum of 60 ports. For more information, see *Planning for Enterprise System Connection Directors.*

9032 Cabling Schematic



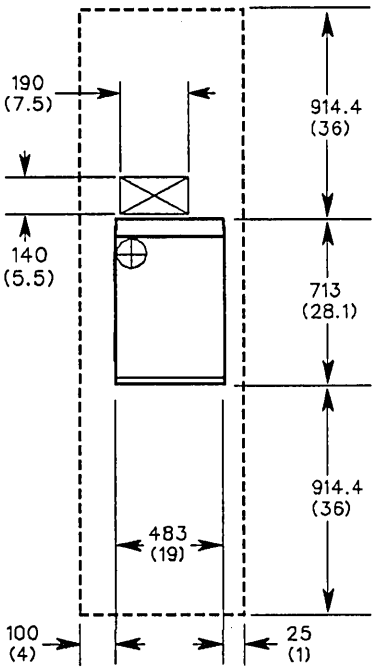
Feature Code	Cable Group	Number of Cables	Conn ID	Comments	Notes
Std	3797	8	1, 3, 5, ... 27	Multimode fiber optic jumper cable	1, 2, 3, 4
4040	3797	2	29, 31	Multimode fiber optic jumper cable	1, 2, 3, 4
4041	3797	2	33, 35	Multimode fiber optic jumper cable	1, 2, 3, 4
4042	3797	2	37, 39	Multimode fiber optic jumper cable	1, 2, 3, 4
4043	3797	2	41, 43	Multimode fiber optic jumper cable	1, 2, 3, 4
4044	3797	2	45, 47	Multimode fiber optic jumper cable	1, 2, 3, 4
4045	3797	2	49, 51	Multimode fiber optic jumper cable	1, 2, 3, 4
4046	3797	2	53, 55	Multimode fiber optic jumper cable	1, 2, 3, 4
4047	3797	2	57, 59	Multimode fiber optic jumper cable	1, 2, 3, 4
4034	n/a	0	17, 19	Single mode fiber optic jumper cable	5
4035	n/a	0	21, 23	Single mode fiber optic jumper cable	5
4036	n/a	0	25, 27	Single mode fiber optic jumper cable	5
4050	n/a	0	29, 31	Single mode fiber optic jumper cable	5
4051	n/a	0	33, 35	Single mode fiber optic jumper cable	5
4052	n/a	0	37, 39	Single mode fiber optic jumper cable	5
4053	n/a	0	41, 43	Single mode fiber optic jumper cable	5
4054	n/a	0	45, 47	Single mode fiber optic jumper cable	5
4055	n/a	0	49, 51	Single mode fiber optic jumper cable	5
4056	n/a	0	53, 55	Single mode fiber optic jumper cable	5
4057	n/a	0	57, 59	Single mode fiber optic jumper cable	5

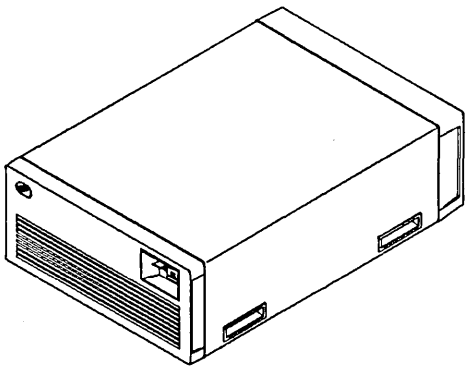
Notes:

1. Multimode 62.5/125 micrometer fiber optic jumper cables, cable group 3797, in lengths up to 122 m (400 ft) are supplied with this product for as many as 50% of the ordered multimode ports. Additional cables required that are not supplied with the I/O devices must be ordered separately. With lengths greater than 122 m, see *Planning for Enterprise System Connection Links*, GA23-0367, for other considerations.
2. Using a 62.5/125 micrometer trunk cable, a maximum length of 3 km is allowed, based on link budget considerations. Using a 50/125 micrometer trunk cable, the maximum length is 2 km The maximum cable length of a channel to control-unit path may also be control-unit dependent. For more information, see the link budget calculations in *Planning for Enterprise System Connection Links.*
3. IBM multimode 62.5/125 micrometer fiber optic jumper cables are available in these lengths: 4 m (12 ft), 7 m (20 ft), 13 m (40 ft), 22 m (70 ft), 31 m (100 ft), 46 m (150 ft), 61 m (200 ft), 77 m (250 ft), 92 m (300 ft), 107 m (350 ft), 122 m (400 ft), manufactured to +0, –2% tolerances. Custom lengths from 4 m (12 ft) to 500 m (1640 ft) may be purchased. English dimensions are approximate. For information on multimode 62.5/125 micrometer fiber optic jumper cables, see Chapter 3, "ESCON Cabling Information" on page 3-1.
4. Odd-numbered cable connector IDs (for example, 1, 3) are for cable-ordering purposes only. When making the actual physical connection decisions, the cable connector ID implications of TO or FROM do not apply, because any port can be either a logical TO or FROM.
5. When ordering the Extended Distance feature, single-mode 9/125 micrometer fiber optic jumper cables are not supplied and must be purchased. For information on single-mode fiber optic jumper cables, see Chapter 3, "ESCON Cabling Information" on page 3-1.

9033 ESCON Director Model 1

Plan View (Not to Scale): English measurements are shown in parentheses.





Specifications:

Dimensions:

	Front	Side	Height
mm	485	715	225
(in.)	(19)	(28-1/4)	(9)

Service Clearances:

	Front	Rear	Left	Right
mm	915	915	100	25
(in.)	(36)	(36)	(4)	(1)

Weight: 40 kg (88 lb.)

Heat Output:

8 port machine	0.5 kBTU/hr
12 port machine	0.5 kBTU/hr
16 port machine	0.5 kBTU/hr

Airflow: 6.0 m^3/min. (210 cfm)

Air flows from the rear of the machine to the front.

Acoustical Data: For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>_m$	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)
7.0	7.0	53	53

Power Requirements:

8 port machine	0.25 kVA (132 W)
12 port machine	0.27 kVA (142 W)
16 port machine	0.29 kVA (152 W)

Phases: 1

Hz: 50/60
Voltage: 200 – 240 V ac

Power Cords

Specify code	Length meters (feet)	Plug type [1]	Country [2]
STD	3.2 (10.5)	K	US, Canada
9800	3.2 (10.5)	L	US, Canada
9801	3.2 (10.5)	A2	US, Canada
9896	1.7 (5.5)	A2	US
9986	1.7 (5.5)	K	US
9987	1.7 (5.5)	L	US

Note:

[1] See Appendix A, "Power Plug and Power Cord Style Specifications" on page A-1.

[2] For all other countries, the 3-digit country code is used to provide a cord with the plug most commonly used in that country.

The 9033 is connected to its ESCD console or another director by a 1.7 m (5.6 ft) signal cable (supplied with 9033). If necessary, a 3.0 m (9.8 ft) cable may be ordered to connect the 9033 to an ESCD console (but not to connect to another director).

A power receptacle must be provided within reach of the 1.8 m (6 ft) console power cord. The receptacle must provide the correct voltage for the console ordered, either 110 or 220 V.

When 9033s share an ESCD console, the 9033s and the console must be next to each other.

If the Console Sharing Availability feature is used, another power receptacle must be provided for the spare ESCD console.

Environment, Operating:

Temperature: 10°C to 40°C (50°F to 104°F)
Relative Humidity: 8% to 80%
Max Wet Bulb: 27°C (80.6°F).

Environment, Nonoperating:

Temperature: 10°C to 52°C (50°F to 125.6°F)
Relative Humidity: 8% to 80%
Max Wet Bulb: 27°C (80.6°F)

Note:

The upper limit of dry bulb temperature must be lowered by 1.0°C for every 137 m (450 ft) of elevation above 915 m (3000 ft).

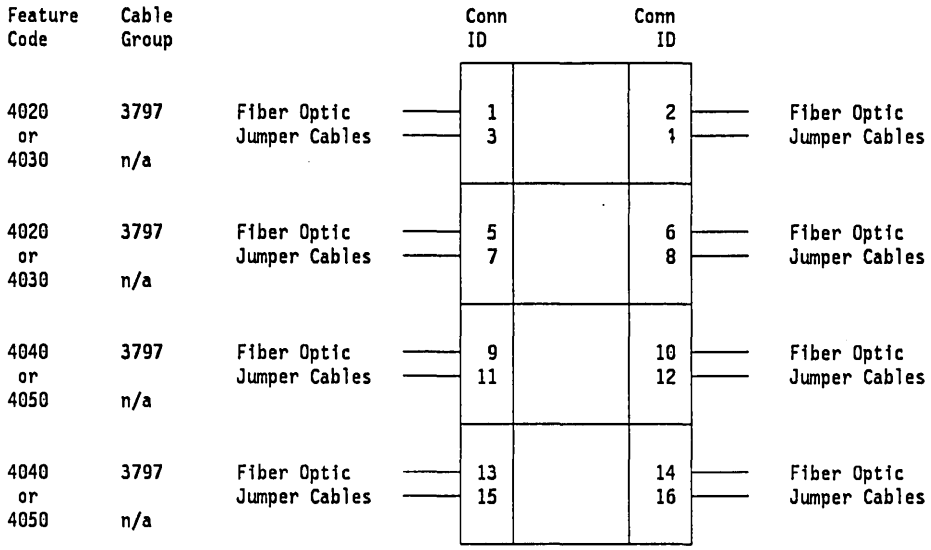
The upper limit of wet bulb temperature must be lowered by 1.0°C for every 274 m (899 ft) of elevation above 305 m (1000 ft).

The temperature/humidity limits shown above may not apply to the console. For console limits, refer to appropriate console specifications.

9033 Ports:

The 9033 can be ordered with a minimum of 8 ports, which can be all LED ports, 4 LED ports and 4 Extended Distance Feature (XDF) ports, or 8 XDF ports. Two additional 9033 port upgrades can be ordered, which can be XDF ports, LED ports, or a combination of both. For more information, see *Planning for Enterprise System Connection Directors.*

9033 Cabling Schematic



Feature Code	Cable Group	Number of Cables	Conn ID	Comments	Notes
4020	3797	2	1, 3	Multimode fiber optic jumper cable	1, 2, 3, 4
4020	3797	2	5, 7	Multimode fiber optic jumper cable	1, 2, 3, 4
4030	n/a	0	1, 3	Single mode fiber optic jumper cable	5
4030	n/a	0	5, 7	Single mode fiber optic jumper cable	5
4040	3797	2	9, 11	Multimode fiber optic jumper cable	1, 2, 3, 4
4040	3797	2	13, 15	Multimode fiber optic jumper cable	1, 2, 3, 4
4050	n/a	0	9, 11	Single mode fiber optic jumper cable	5
4050	n/a	0	13, 15	Single mode fiber optic jumper cable	5

Notes:

1. Multimode 62.5/125 micrometer fiber optic jumper cables, cable group 3797, in lengths up to 122 m (400 ft) are supplied with this product for as many as 50% of the ordered multimode ports. Additional cables required that are not supplied with the I/O devices must be ordered separately. With lengths greater than 122 m, see *Planning for Enterprise System Connection Links*, GA23-0367, for other considerations.
2. Using a 62.5/125 micrometer trunk cable, a maximum length of 3 km is allowed, based on link budget considerations. Using a 50/125 micrometer trunk cable, the maximum length is 2 km. The maximum cable length of a channel to control-unit path may also be control-unit dependent. For more information, see the link budget calculations in *Planning for Enterprise System Connection Links.*
3. IBM multimode 62.5/125 micrometer fiber optic jumper cables are available in these lengths: 4 m (12 ft), 7 m (20 ft), 13 m (40 ft), 22 m. (70 ft), 31 m (100 ft), 46 m (150 ft), 61 m (200 ft), 77 m (250 ft), 92 m (300 ft), 107 m (350 ft), 122 m (400 ft), manufactured to +0, −2% tolerances. Custom lengths from 4 m (12 ft) to 500 m (1640 ft) may be purchased. English dimensions are approximate. For information on multimode 62.5/125 micrometer fiber optic jumper cables, see Chapter 3, "ESCON Cabling Information" on page 3-1.
4. Odd-numbered cable connector IDs (for example, 1, 3) are for cable-ordering purposes only. When making the actual physical connection decisions, the cable connector ID implications of TO or FROM do not apply, because any port can be either a logical TO or FROM.
5. When ordering the Extended Distance Feature, single-mode 9/125 micrometer fiber optic jumper cables are not supplied and must be purchased. For information on single-mode fiber optic jumper cables, see Chapter 3, "ESCON Cabling Information" on page 3-1.

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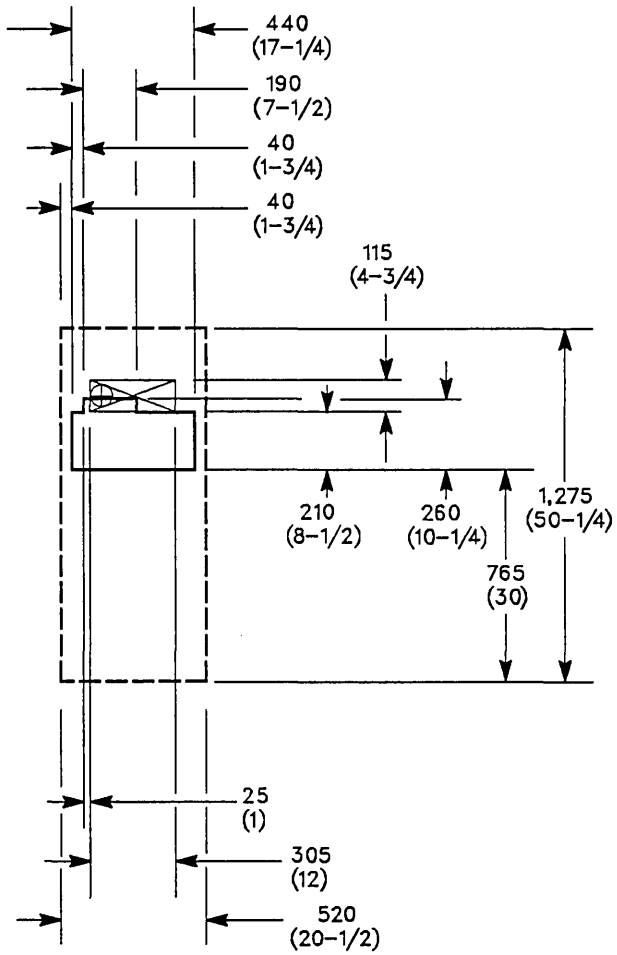
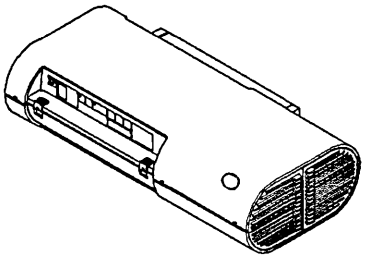
9034 ESCON Converter Model 1

Plan View (Not to Scale): English measurements are shown in parentheses.





If you plan to install one or more 9034s with 110 V ac power on a raised floor, you must locate the power receptacles above the floor.

If a 9034 is being installed on a wall shelf or in an equipment closet, the cable opening at the rear of the shelf should be approximately 305 mm (12 in.) by 115 mm (4-1/2 in.) from the rear of the 9034.

Specifications:

Dimensions:

	Front	Side	Height
mm	440	260	110
(in.)	(17-1/4)	(10-1/4)	(4-1/2)

Service Clearances:

	Front	Rear	Right	Left
mm	765	250	40	40
(inches)	(30)	(10)	(1-1/2)	(1-1/2)

Weight: 5.5 kg (12 lb)

Heat Output:

32.3 W	(97.6 BTU/hr)	at 120 V
31.9 W	(96.6 BTU/hr)	at 220 V

Airflow: .83 m^3/min (30 cfm)

Power Requirements:

0.051 kVA	at 120 V
0.057 kVA	at 220 V

Phases: 1

Voltage: 100 – 125 V ac at 50/60 Hz
and
200 – 240 V ac at 50/60 Hz

Environment, Operating:

Temperature	10°C – 40°C (50°F – 104°F)
Rel Humidity	8% – 80%
Max Wet Bulb	27°C (80.6°F)

Environment, Nonoperating:

Temperature	10°C – 52°C (50°F – 125.6°F)
Rel Humidity	8% – 80%
Max Wet Bulb	27°C (80.6°F)

Power Cords:

The power cord has a separate grounding conductor. Power provided to this unit must also provide a separate grounding conductor.

A 2.7 m (9 ft) power cord with country standard plug, is supplied based on the 3-digit country code.

When an alternative to the 2.7 m (9 ft) power cord is required, use one of these specify feature codes:

Specify code	Voltage	Length meters (feet)	Plug type [1]	Country[2]
STD	120	2.7 (9)	H	US
9513	120	4.3 (14)	H	
9986	120	1.8 (6)	H	US
9890	120	1.8 (6)	J	US
9891	120	4.3 (14)	J	US, Canada
9931	220	4.3 (14)	K	
9895	220	1.8 (6)	K	US
9511	220	1.8 (6)	L	US
9896	220	1.8 (6)	A2	US
9894	220	4.3 (14)	L	US, Canada
9801	220	4.3 (14)	A2	US, Canada

Note:

[1] See Appendix A, "Power Plug and Power Cord Style Specifications" on page A-1 for the plug type.

[2] For all other countries, the 3-digit country code is used to provide a cord with the plug most commonly used in that country.

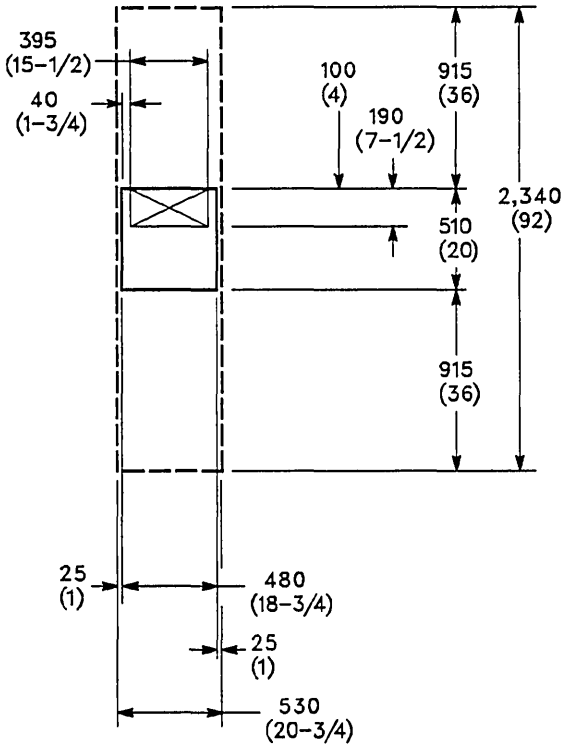
Acoustical Data:

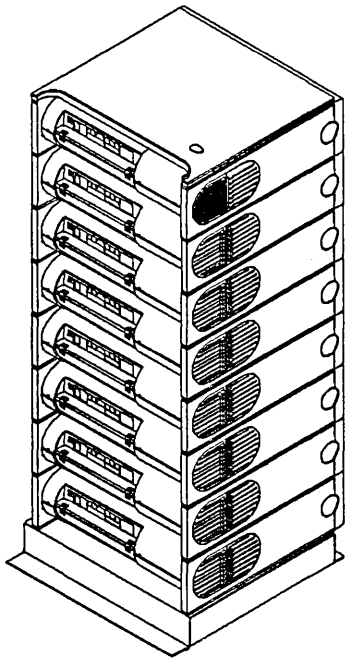
For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>m$	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)
5.7	5.7	42.0	42.0

9034 Enclosure

Plan View (Not to Scale) English measurements are shown in parentheses.:





The 9034 enclosure is shown fully-populated with 8 9034s. The enclosure does not provide any power.

If an enclosure is being installed on a raised floor, the floor opening required for the fiber and copper cables must not be more than 395 mm (15-1/2 in.) by 190 mm (7-1/2 in.).

Note: When planning for an enclosure, it is recommended that all the 9034s installed in the same enclosure have a single common power switch, for example a power box with 8 receptacles controlled by one power switch.

Specifications: Dimensions:

	Height	Width	Depth
Base	80 mm (3.0 in.)	480 mm (18-3/4 in.)	510 mm (20 in.)
Base Opening		395 mm (15-1/2 in.)	190 mm (7-1/2 in.)
Shelf	140 mm (5-1/2 in.)	480 mm (19 in.)	425 mm (16-3/4 in.)

Service Clearances:

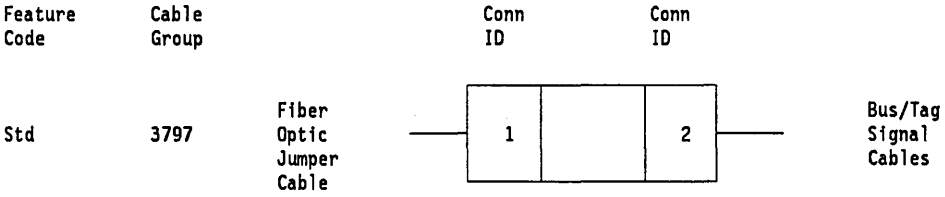
	Front	Rear	Right	Left
mm	915	915	25	25
(inches)	(36)	(36)	(1)	(1)

Note: In a non-air-conditioned environment, a maximum of 2 enclosures may be placed alongside each other with the required clearance.

Weight:

Enclosure base, shelf, and 9034	12 kg (28 lbs)
Each additional shelf and 9034	8 kg (18 lbs)
Fully populated (includes 8 9034s)	70 kg (155 lbs)

9034 Cabling Schematic:



Feature Code	Cable Group	Number of Cables	Conn ID	Comments	Notes
Std	3797	1	1	Fiber optic jumper cable	1, 2, 3
Std	0185	2	2	Bus and tag cables	4

Notes:

1. Using 62.5/125 micrometer cable, a maximum length of 3 km is allowed, based on link budget considerations. Using 50/125 micrometer trunk cable, the maximum length is 2 km. The maximum cable length of a channel to control-unit path may also be control-unit dependent. For more information, see the link budget calculations in *Planning for Enterprise Systems Connection Links*.
2. This product is supplied with one IBM fiber optic jumper cable, available in these lengths: 4 m (12 ft), 7 m (20 ft), 13 m (40 ft), 22 m (70 ft), 31 m (100 ft), 46 m (150 ft), 61 m (200 ft), 77 m (250 ft), 92 m (300 ft), 107 m (350 ft), 122 m (400 ft) and manufactured to +0, −2% tolerances. Custom lengths up to 500 m (1640 ft) may be purchased. English dimensions are approximate.
3. For connections beyond 122 m, see *Planning for Enterprise Systems Connection Links* for other considerations.
4. Supplied with downstream I/O device, maximum length is 122 m (400 ft).

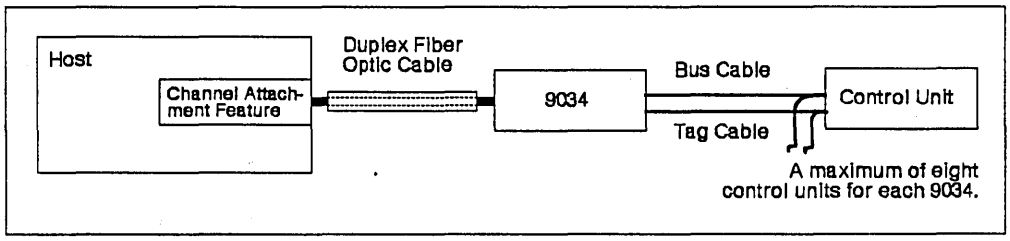


Figure 10. Typical Configuration in One Building

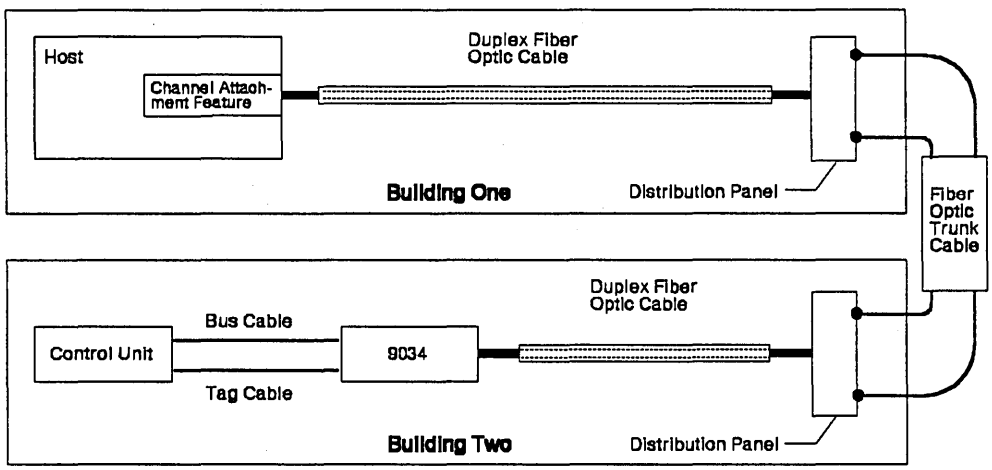
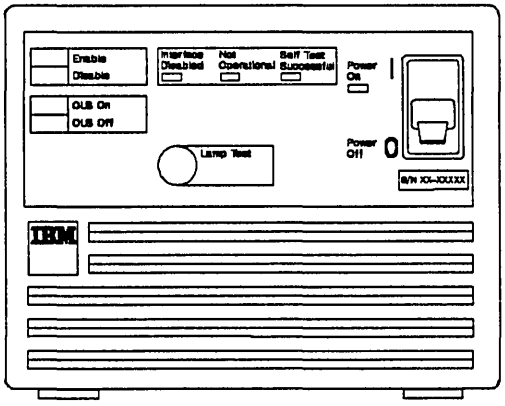


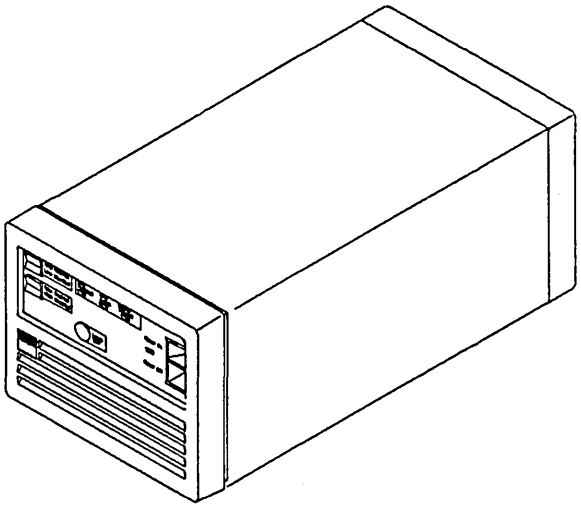
Figure 11. Typical Configuration in Two Buildings

9035 ESCON Converter

Model 2

Plan View (Not to Scale) English measurements are shown in parentheses.:





Specifications:

Dimensions:

	Front	Side	Height
mm	220	460	190
(in.)	(8-3/4)	(18-1/4)	(7-3/4)

Service Clearances:

	Front	Rear	Right	Left
mm	255	255	3	3
(inches)	(10)	(10)	(1/4)	(1/4)

Weight: 11.5 kg (25 lb)

Heat Output:

33 W — 112 BTU/hr to air (maximum) at 120 – 127 VAC

32 W — 108 BTU/hr to air (maximum) at 220 – 240 VAC

Airflow: 1 m^3/min (30 cfm)

Power Requirements:

kVA: 0.084 (maximum)

Phases: 1

Voltage: 100 – 127 V ac at 50/60 Hz and 200 – 240 V ac at 50/60 Hz

Environment, Operating:

Temperature	10°C – 40°C (50°F – 104°F)
Rel Humidity	8% – 80%
Max Wet Bulb	27°C (80.6°F)

Environment, Nonoperating:

Temperature	10°C – 52°C (50°F – 125.6°F)
Rel Humidity	8% – 80%
Max Wet Bulb	27°C (80.6°F)

Power Cords:

The power cord has a separate grounding conductor. Power provided to this unit must also provide a separate grounding conductor.

A 2.7 m (9 ft) power cord with country standard plug, is supplied based on the 3-digit country code.

When an alternative to the 2.7 m (9 ft) power cord is required, use one of these specify feature codes:

Specify code	Voltage	Length meters (feet)	Plug type [1]	Country[2]
STD	120	2.8 (9)	H	US
9513	120	4.3 (14)	H	
9986	120	1.8 (6)	H	US
9890	120	1.8 (6)	J	US
9891	120	4.3 (14)	J	US, Canada
9931	220	4.3 (14)	K	
9895	220	1.8 (6)	K	US
9511	220	1.8 (6)	L	US
9896	220	1.8 (6)	A2	US
9894	220	4.3 (14)	L	US, Canada
9801	220	4.3 (14)	A2	US, Canada

Note:

[1] See Appendix A, "Power Plug and Power Cord Style Specifications" on page A-1 for the plug type.

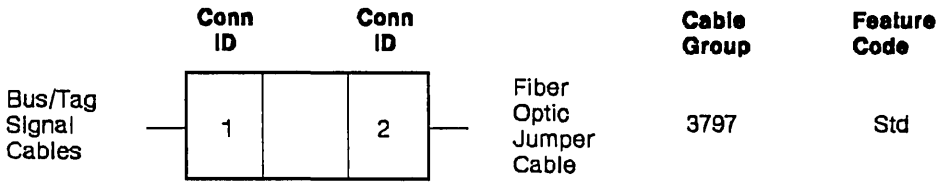
[2] For all other countries, the 3-digit country code is used to provide a cord with the plug most commonly used in that country.

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>m$	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)
6.2	6.2	46.0	46.0

9035 Cabling Schematic



Feature Code	Cable Group	Number of Cables	Conn ID	Comments	Notes
Std	0185	2	1	Bus and tag cables	1
Std	3797	1	2	Fiber optic jumper cable	2, 3, 4

Notes:

1. Supplied with the 9035, the maximum length is 122 m (400 ft).
2. Using 62.5/125 micrometer cable, a maximum length of 3 km is allowed, based on link budget considerations. Using 50/125 micrometer trunk cable, the maximum length is 2 km. The maximum cable length of a channel to control-unit path may also be control-unit dependent. For more information, see the link budget calculations in *Planning for Enterprise Systems Connection Links*, GA23-0367. Contact your marketing representative for more information about supported devices, distances, data rates, and modes.
3. The downstream device provides one IBM fiber optic jumper cable, available in these lengths: 4 m (12 ft), 7 m (20 ft), 13 m (40 ft), 22 m (70 ft), 31 m (100 ft), 46 m (150 ft), 61 m (200 ft), 77 m (250 ft), 92 m (300 ft), 107 m (350 ft), 122 m (400 ft). Custom lengths may be purchased from 4 m (12 ft) to 500 m (1640 ft), in 1 ft increments. English dimensions are approximate.
4. For connections beyond 122 m, see *Planning for Enterprise Systems Connection Links*, GA23-0367 for other considerations.

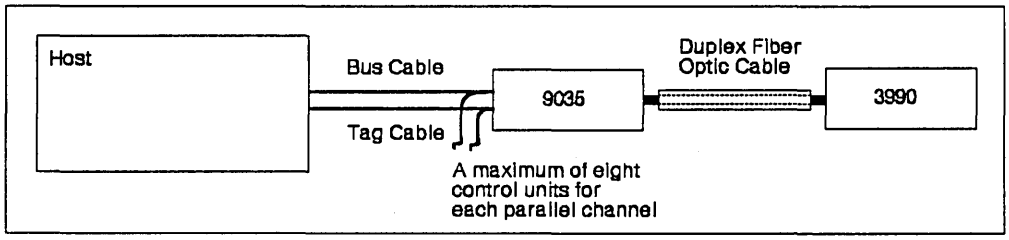


Figure 12. Typical Configuration in One Building

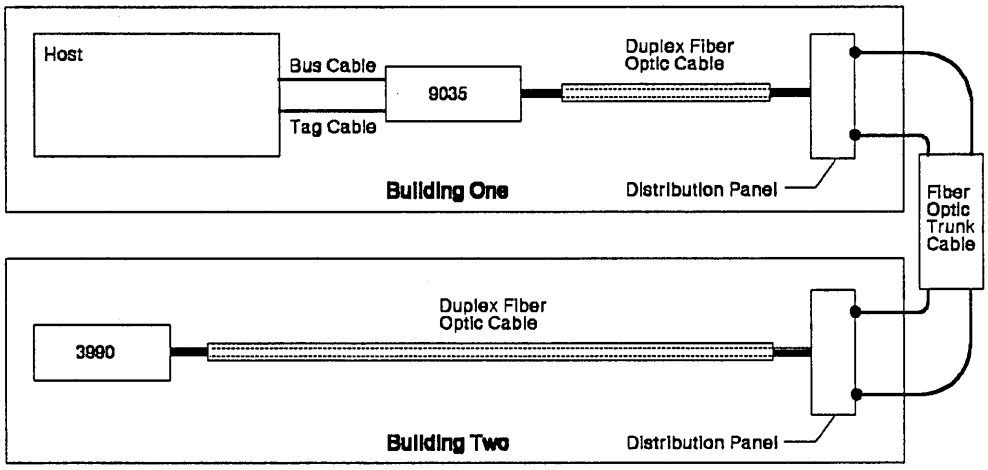
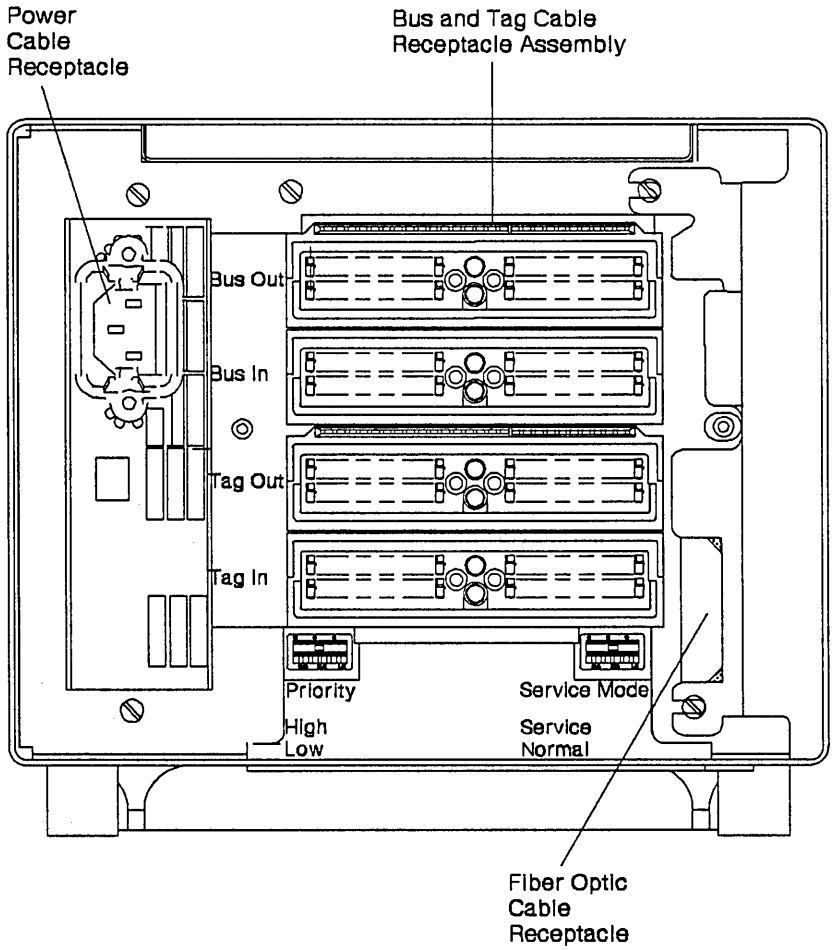


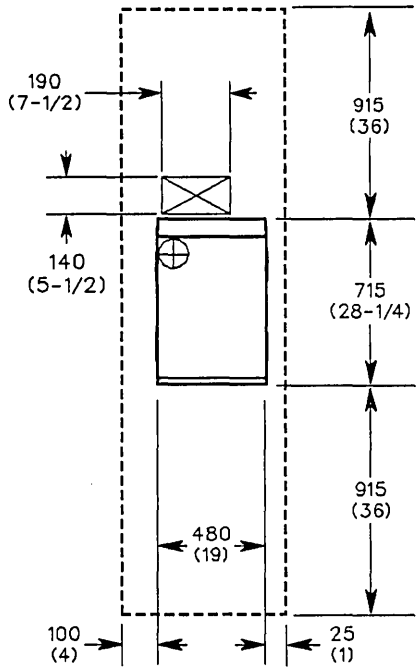
Figure 13. Typical Configuration in Two Buildings

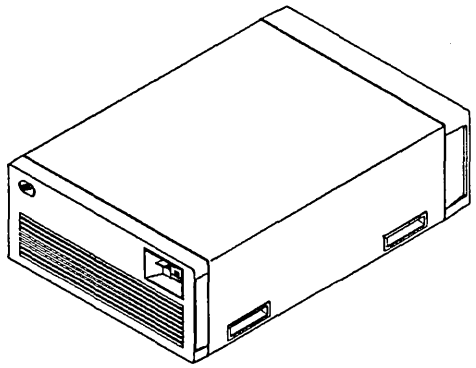
9035 ESCON Converter Model 2 Rear Panel



9037 Sysplex Timer

Plan View (Not to Scale): English measurements are shown in parentheses.





Specifications:

Dimensions:

	Front	Side	Height
mm	480	715	225
(in.)	(19)	(28-1/4)	(9)

Service Clearances:

	Front	Rear	Left	Right
mm	915	915	100	25
(in.)	(36)	(36)	(4)	(1)

Weight: 30 kg (65 lb.)

Heat Output: 121 W (415 BTU/hr)

Airflow: 4.3 m³/min. (150 cfm)

Air flows from the rear of the machine to the front.

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>m$	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)
6.9	6.9	53	53

Power Requirements:

0.21 kVA at 220 V

Phases: 1

Hz: 50/60

Voltage: 200–240 V ac

Power Cord:

No specify code is required to order the default option. The correct power cord will be supplied, based on the 3-digit country code.

Specify code	Length meters (feet)	Plug type[1]	Country[2]
STD	3.2 (10.5)	K	US, Canada
9801	3.2 (10.5)	A2	US, Canada
9894	3.2 (10.5)	L	US, Canada
9986	1.7 (5.5)	K	US
9896	1.7 (5.5)	A2	US
9511	1.7 (5.5)	L	US

Note:

1. See Appendix A, "Power Plug and Power Cord Style Specifications" on page A-1 for the plug type.
2. For all other countries, the 3-digit country code is used to provide a cord with the plug most commonly used in that country.

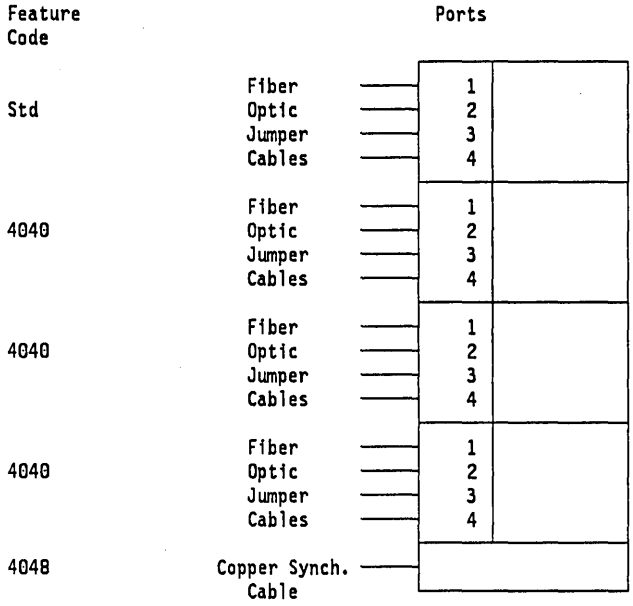
Environment, Operating:

Temperature: 10° to 40°C (50° to 104°F)
Relative Humidity: 8% to 80%
Max Wet Bulb: 27°C (80°F).

Environment, Nonoperating:

Temperature: 10°C to 52°C (50°F to 125.6°F)
Relative Humidity: 8% to 80%
Max Wet Bulb: 27°C (80.6°F)

9037 Cabling Schematic:



Feature Code	Number of Cables	Comments	Notes
Std	4	Fiber optic jumper cable p/n 14F3797	1, 2, 3
4040	4	Fiber optic jumper cable p/n 14F3797	1, 2, 3
4040	4	Fiber optic jumper cable p/n 14F3797	1, 2, 3
4040	4	Fiber optic jumper cable p/n 14F3797	1, 2, 3
4048	1	Copper synchronization cable	4

Notes:

1. Cables are not included. They must be ordered separately, using the part number listed and the required length (see note 3).
2. Using 62.5/125 micrometer cable, a maximum length of 3 km is allowed, based on link budget considerations. Using 50/125 micrometer trunk cable, the maximum length is 2 km. For more information, see the link budget calculations in *Planning for Enterprise Systems Connection Links.*
3. IBM fiber optic jumper cables are available in these lengths: 4 m (12 ft), 7 m (20 ft), 13 m (40 ft), 22 m (70 ft), 31 m (100 ft), 46 m (150 ft), 61 m (200 ft), 77 m (250 ft), 92 m (300 ft), 107 m (350 ft), 122 m (400 ft), manufactured to +0, −2% tolerances. Custom lengths up to 500 m (1640 ft) may be purchased. English dimensions are approximate.
4. Three meter cable (9.8 ft) is included with feature and cannot be ordered separately.

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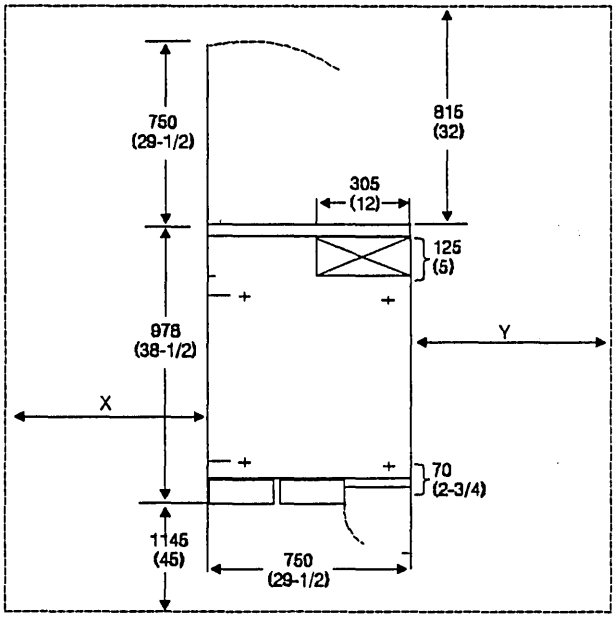
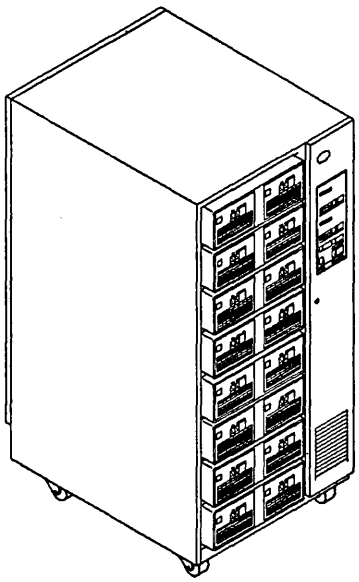
IBM 9343 Storage Controller Models C02, CC2, C04, CC4, D04, and DC4

Plan View (Not to Scale)

English measurements are shown in parentheses.

Use IBM Physical Planning Template, GX22-7143.





Specifications

Dimensions :

	Front	Side	Height
mm	750	980	1580
(inches)	(29-1/2)	(38-1/2)	(62-1/4)

Service Clearances:

Floor Load Rating	Front	Rear	X	Y
340 kg/m²				
mm	1143	813	889	889
(70 lb/ft²)				
(inches)	(45)	(32)	(35)	(35)
240 kg/m²				
mm	1150	815	1347	1347
(50 lb/ft²)				
(inches)	(45)	(32)	(53)	(53)

Floor Load: The right and left service clearances are required for floor loading. If the floor has strength other than those noted above, see your structural engineer for more information.

Weight: 351 kg (774 lbs) estimate with two Model 1s (B12s) or 2s (B22s) installed.

Weight Maximum: 753 kg (1660 lbs) estimate with 16 Model 1s (B12s) or 2s (B22s) installed.

Airflow: 5.4 m³/min (190 ft³/min) with two Model 1s (B12s) or 2s (B22s) installed.

Airflow Maximum: 19.3 m³/min (680 ft³/min) with 16 Model 1s (B12s) or 2s (B22s) installed.

Acoustical Data:

For definitions, see "Acoustics" in Chapter 3 of *IBM General Information Manual: Installation Manual—Physical Planning*, GC22-7072.

L_{WAd}		$<L_{pA}>m$	
Operating (bels)	**Idling (bels)**	**Operating (dB)**	**Idling (dB)**
7.0	7.0	52	52

Note:

Acoustic data with ten Model 1s (B12s) or 2s (B22s) installed.

Input Voltages:*, **

Supply	Single Phase	Three Phase Delta	Three Phase Wye
Frequency Range (Hz)	49 - 61	49 - 61	49 - 51
Voltage Range (V)	200 - 240	200 - 240	380 - 415
Voltage Tolerances (V)	180 - 259	180 - 259	333 - 448

Notes:

* Proper Feature Option must be selected when ordering box (see Sales Manual for details), to identify installation voltage.

** Verify proper voltage selection on primary power box during installation.

Heat Output and Power Requirements:*, **

Configuration	Track Following			Maximum Seek Rate***		
	Max kVA	Max kW	kBTU/hr	Max kVA	Max kW	kBTU/hr
C02, CC2 (8 modules)	1.2	1.1	3.75	1.7	1.6	5.45
C02, CC2 (12 modules)	1.6	1.5	5.11	2.4	2.3	7.84
C04, CC4, D04, and DC4 (16 modules)	2.2	2.0	6.82	3.5	3.3****	11.25****

Notes:

* Power requirements and heat output is the same for all input voltages. This product is not phase sensitive. Values may vary with installed features and manufacturing variations.

** Phase imbalance: In a three (3) phase application, a phase imbalance may exist. In a Wye configuration, under worst case conditions, one phase may have 9.0 amperes maximum current. In a Delta configuration, under worst case conditions, one phase may have 13.0 amperes maximum current.

*** Maximum seek rate = 50 SIO/sec of average length seeks.

**** Steady state seek rate power consumption with 16 modules is 2.5 kW (8.53 kBTU/hr).

Power Connection:*

Phases	Single Phase***	Three Phase Delta***	Three Phase Wye****
Plug (watertight)	Hubbell 330P6W	Hubbell 420P9W	No Conn.
Plug (non-watertight)	Nema L6-30P	Nema L15-20P	No Conn.
Receptacle (watertight)**	Hubbell 330R6W	Hubbell 420R9W	No Conn.
Receptacle (non-watertight)	Nema L6-30R	Nema L15-20R	No Conn.
Power Cord Style (AWG)	12/3	14/4	14/5
No. of Shields for Power Cord	1	1	1
Bulk OD for power cord mm (inches)	12.5 (.5)	12.5 (.5)	15.24 (.6)

Notes:

* The power cord is shipped with the box. Select receptacle, which the customer provides, for the specific type of installation: watertight for raised floor (under floor) connection or non-watertight for office environment.

** For a watertight receptacle, a back box is required with an internal jumper connection from the back box to the ground wire. Hubbell Back Boxes BB20-1W with 3/4 inch hub or BB30-1W with a one inch hub. An inline connector **cannot** be used.

*** Single phase and three (3) phase delta power cords are also available without a plug for hard wired installations.

**** For three phase Wye applications, the customer receptacle should have over current protection device of 16 amperes maximum.

Environment, Operating:

Temperature	10°C-40°C (50°F-104°F)*
Relative Humidity	8%-80%
Maximum Wet Bulb	27°C (80.6°F)**

Notes:

* The upper limit of temperature must be derated (lowered) 1.0°C for every 137 meters of elevation above 915 meters.

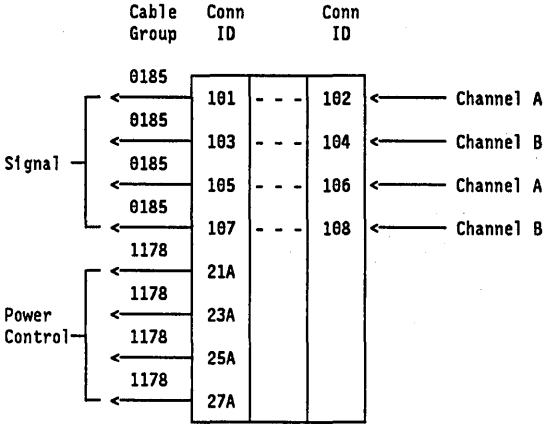
** The upper limit of wet bulb temperature must be derated (lowered) 1.0°C for every 274 meters of elevation above 305 meters.

Environment, Nonoperating:

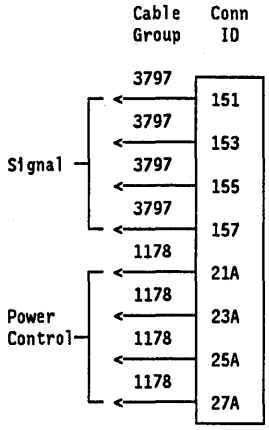
Temperature	10°C-52°C (50°F-125.6°F)
Relative Humidity	8%-80%
Maximum Wet Bulb	27°C (80.6°F)

IBM 9343 Storage Controller Models C02, CC2, C04, CC4, D04, and DC4 Cabling Schematic

For parallel environment (Models C02, CC2, C04 and CC4):



For ESCON environment (Models D04 and DC4):



From IBM 9343 for parallel environment:

Model	Channel	Group No.	No. of Cables	Conn. ID	Max Length meters	Max Length (ft)	Notes
C02, CC2, C04, and CC4	A	0185	2	101	122	(400)	1,3
		1178	1	21A	122	(400)	2
	B	0185	2	103	122	(400)	1,3
		1178	1	23A	122	(400)	2
C04 and CC4	A	0185	2	105	122	(400)	1,3
		1178	1	25A	122	(400)	2
	B	0185	2	107	122	(400)	1,3
		1178	1	27A	122	(400)	2

To IBM 9343 for parallel environment:

Model	Conn ID	Notes
C02, CC2, C04, and CC4	102	1, 3
C02, CC2, C04, and CC4	104	1, 3
C04, CC4	106	1, 3
C04, CC4	108	1, 3

From IBM 9343 for ESCON environment:

Model	Channel	Group No.	No. of Cables	Conn. ID	Max Length meters	Max Length (ft)	Notes
D04, DC4	A	3797	1	151	122	(400)	3, 4, 5
	B	3797	1	153	122	(400)	3, 4, 5
	A	3797	1	155	122	(400)	3, 4, 5
	B	3797	1	157	122	(400)	3, 4, 5

Notes:

1. An IBM 9343 Model C02 or CC2 contains one storage cluster. A model C04 or CC4 contains two storage clusters. Each storage cluster may be attached to 2 processor channels directly or by an intervening switching device.

   a. For blue buss and tag cables (group 0185), the maximum cable length is 122 meters (400 feet). For existing gray buss and tag cables (group 3920), the maximum cable length is 91 meters (300 feet). For either cable, the maximum length must be reduced by 4.5 meters (15 feet) for each intervening control unit or switch between this unit and the channel.

   b. Whichever type of channel cable is used (it can be a mixture or blue and gray as long as they are used in matched pairs), all EMC shields, tailgate shields, and cable clamps must be in place and properly fastened. If shields and cable clamps cannot be properly positioned and fastened with existing gray channel cables (because of their size), new cables must be ordered.

   c. If the IBM 9343 is attached to the channel via a 3044 channel extender, the maximum distance (copper plus fiber optic cable) is 245 meters (800 feet). No other type of control unit may be attached to a 3044 that has DASD attached.

2. Power Sequence and control cables are optional and should be ordered if the installation uses power sequencing controls. This cable is not cluster dependant.

3. The IBM 9343 Models C02, CC2, C04, and CC4 subsystems attach to the following processor channels:

308X	3.0 MB/sec
ES/9000-9221	3.0 and 4.5 MB/sec
ES/9000-9121	4.5 MB/sec
ES/9370	3.0 MB/sec
ES/4381	3.0 and 4.5 MB/sec
4381, 4361, 4341	3.0 MB/sec
ES/3090	4.5 MB/sec
3090	3.0 and 4.5 MB/sec
ES/9000-9021	4.5 MB/sec

   The IBM 9343 Model D04 and DC4 subsystems attach to the following ESCON processor channels:

ES/9000 (all)	10.0 MB/sec
ES/9000-9021	17.0 MB/sec
ES/3090-J	10.0 MB/sec

4. The IBM 9343 Model D04 or DC4 will directly attach to the ES/ESCON LED channel but will not attach directly to an ESCON Extended Distance Feature channel. For attachment to an ESCON Extended Distance Feature (XDF) channel, an ESCON director must be positioned between the XDF channel and the IBM 9343 Storage Controller.

5. Fiber optic jumper cables are required to attach an IBM 9343 with ESCON adapters to dynamic data routers. Duplex to duplex 62.5/125 micron fiber optic jumper cables (part number 14F3797) are available from IBM in standard lengths up to 122 meters (400 feet). Custom lengths are available above 122 meters (400 feet) to a maximum length of 500 meters (1640 feet). The jumper cables are stocked in the following 11 fixed lengths:

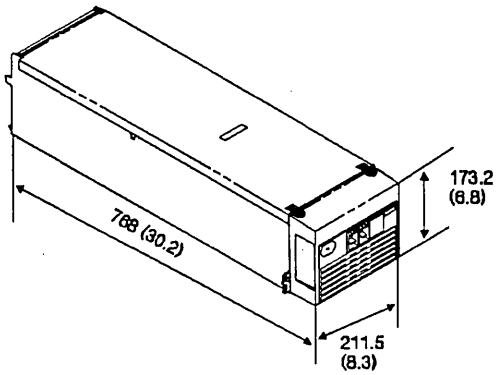
4 meters	(12 feet)
7 meters	(20 feet)
13 meters	(40 feet)
22 meters	(70 feet)
31 meters	(100 feet)
46 meters	(150 feet)
61 meters	(200 feet)
77 meters	(250 feet)
92 meters	(300 feet)
107 meters	(350 feet)
122 meters	(400 feet)

   One jumper per port is included with each installed ESCON adapter feature, but it must be ordered separately.

6. For either ESCON channel type (for example, XDF or LED), the maximum distance the IBM 9343 Model D04 or DC4 can be located from the host processor is 29,529 feet or 9 000 meters.

9345 Direct Access Storage Device Models 1 and 2

Plan View (Not to Scale): English measurements are shown in parentheses.



Specifications: **Dimensions:**

	Front	Side	Height
mm	211.5	768	173.2
(inches)	(8.3)	(30.2)	(6.8)

Weight: 27 kg (60 lbs)

Airflow: 0.99 m^3/min (35 ft^3/min)

Heat Output and Power Requirements:*

Voltage	Track Following	Maximum Seek Rate
+36 V dc	86 W (0.29 BTU/hr)	114 W (0.39 BTU/hr)
−36 V dc	25 W (0.08 BTU/hr)	61 W (0.21 BTU/hr)
Total	111 W (0.37 BTU/hr)	175 W (0.60 BTU/hr)

Note:

* Power is supplied from the 9343 Model C02, C04, or D04.

Environment, Operating:

Temperature	10°C – 40°C (50°F – 104°F)
Relative Humidity	8% – 80%
Maximum Wet Bulb	27°C (80.6°F)

Environment, Nonoperating:

Temperature	10°C – 52°C (50°F – 125.6°F)
Relative Humidity	8% – 80%
Maximum Wet Bulb	27°C (80.6°F)

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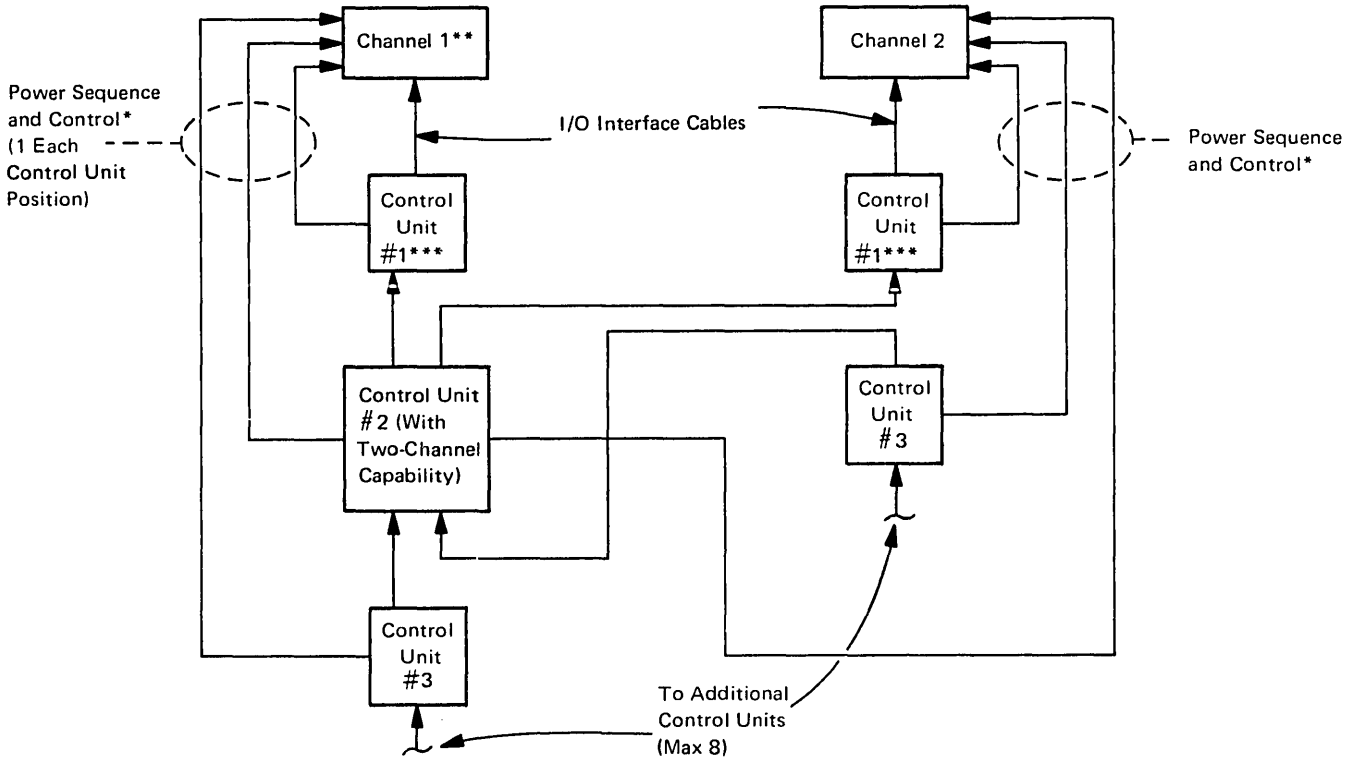
Chapter 2. General Cabling Information

GENERAL CONTROL-TO-CHANNEL CABLING

Generally, the cable available to connect up to eight control units to a channel is limited to 200 feet. Exceptions to this are noted on the cabling schematics for the individual control units. (See also "System/370 Model 145 Cabling Schematic.") All control units are connected to the channels serially. All channels exceeding 100 feet must be reviewed and approved by the Installation Planning representative.



* On IBM 3032 and 3033 Processor Complexes, the power sequence and control cables (no EPO) go to the PDU. On the IBM 3031 Processor Complex, the power sequence and control cables (no EPO) go to the 3031 Processor (frame 02).

** The channel may be a separate machine (such as the IBM 2860) or integral to the system processor.

*** Machines with two-byte interface must be installed first on the channel.

CHANNEL-TO-CHANNEL ADAPTER CABLING

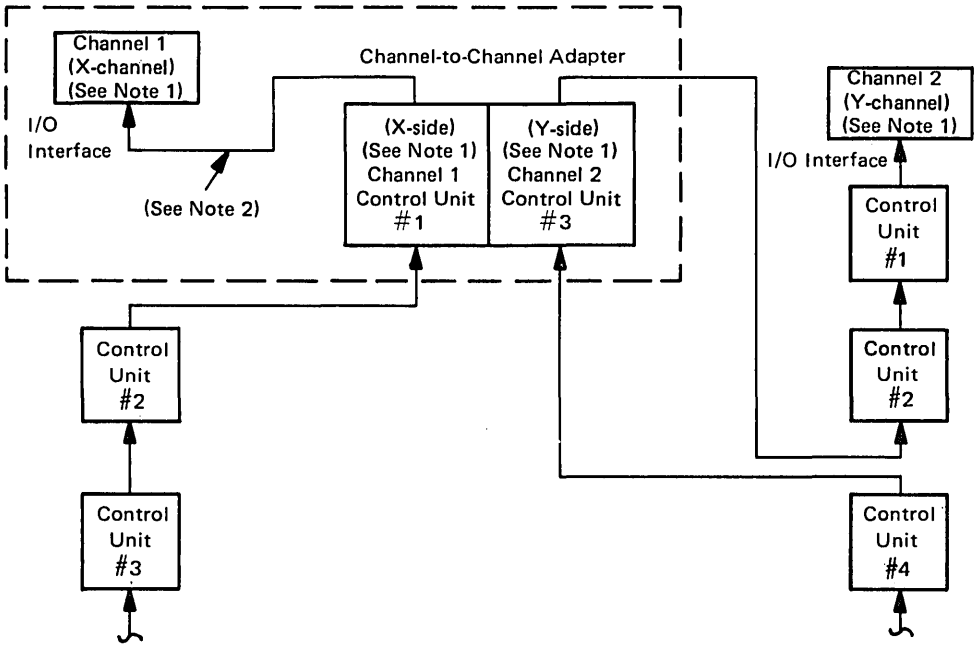
The channel-to-channel adapter (CTCA), SF 1850 and SF 1851, is considered as if it were a control unit on each of the channels affected, except when the Model 145 is the host system. The adapter then requires two control unit positions on both X- (host) and Y- (guest) interfaces. For the IBM 3081 Processor Complex, the adapter reduces the maximum external I/O interface cable length for the Y- (guest) channel with the CTCA by 9.1 meters (30 feet). The adapter requires external cables to both the host and guest channels, except the IBM 2860 Selector Channel.

The channel-to-channel adapter can be installed as follows:

1. *IBM 2860 Selector Channel:* The host side is physically wired internally, first on the channel and then to the select out line (highest priority). The guest side may be cabled in any control unit physical position and any priority position on the select out or select in line.
2. *IBM System/370 Models 145, 155, 158, IBM 3031 and 3032 Processors (with Director 1), and 3081, 3083, and 3084 Processors:* The CTCA is in the same frame as the channel connectors and may be assigned to any control unit position(s) or any priority on the host or guest channel. When the CTCA is physically the first control unit on the host channel, specify 1.2 meters (4 feet) of cable to connect the CTCA to channel connectors.
3. *IBM 3032 Processor (with Director 2) and IBM 3033 Processors:* The CTCA is in a different frame than the channels and can be assigned any control unit position or priority on the host or guest channel. When the CTCA is physically the first control unit on the host channel, specify 3 meters (10 feet) of cable for the 3032 and 1.8 meters (6 feet) of cable for the 3033.

In each of the preceding steps, the guest-side (Y) cabling should be specified as required.

Channel-to-Channel Adapter in First Control Unit Position

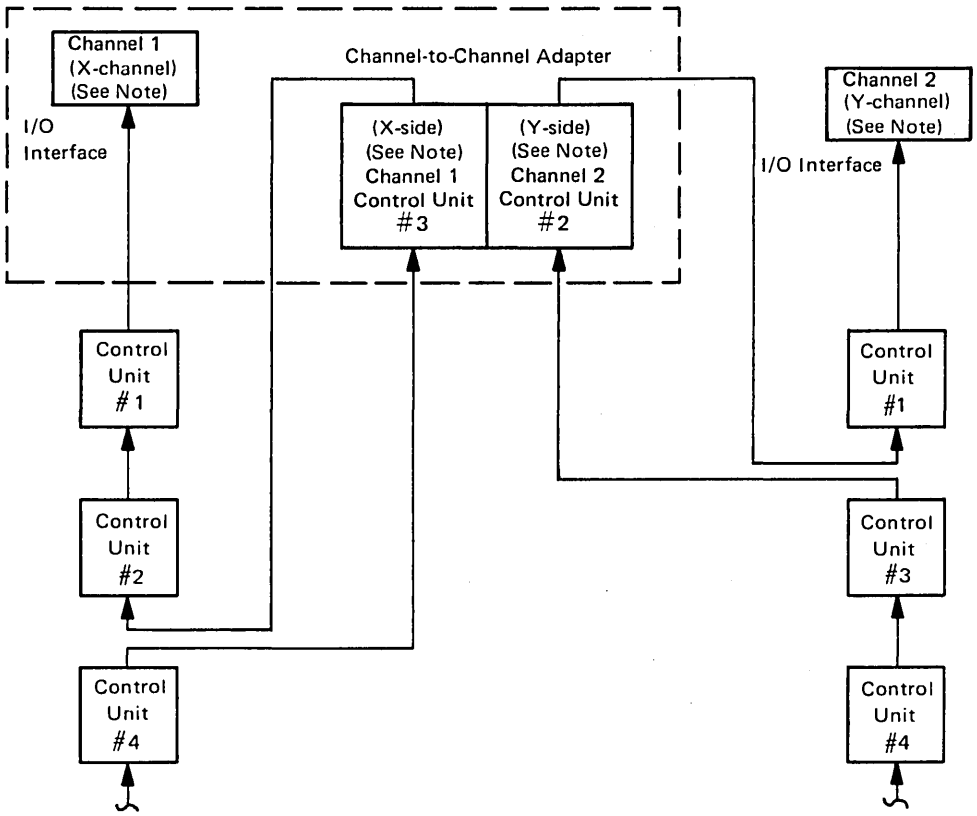


Notes:

1. X refers to the host channel; Y refers to the guest channel.
2. X-side; internal machine wiring (IBM 2860 Selector Channel).

CHANNEL-TO-CHANNEL ADAPTER CABLING

Channel-to-Channel Adapter in Any Control Unit Position



Note: X refers to the host channel; Y refers to the guest channel.

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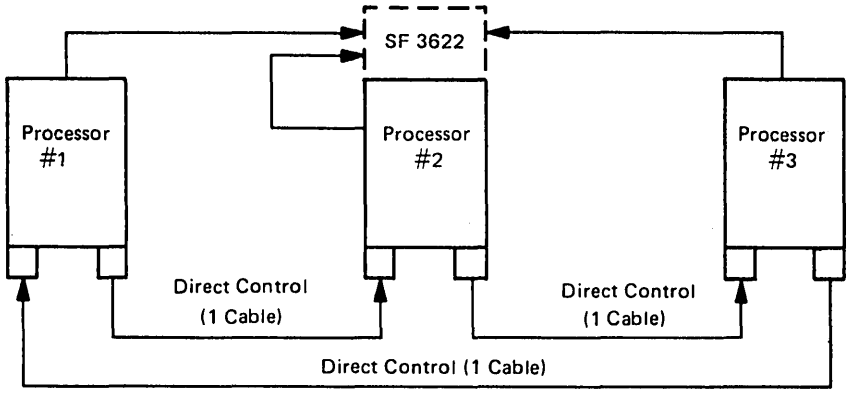
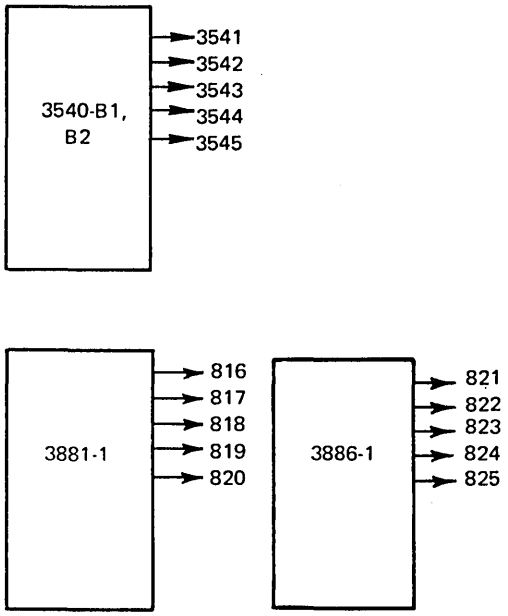
DIRECT CONTROL CABLING

Multiple Processors (Notes 1 and 2)



Notes:
1. Cabling shown above is in addition to basic channel requirements.
2. Processor may be System/360 or System/370.

MACHINES WITH INTEGRAL OR ABUTTED CONTROLS



MACHINES WITH INTEGRAL OR ABUTTED CONTROLS

Group No.	*No. of Cables*	*From*	*To*	*Max Length (ft)*	*Notes*
816	2	3881-1	Multiplexer Channel	–	1
817	1	3881-1	Channel	150	2
818	2	3881-1	Selector Channel	–	1
819	2	3881-1	Channel-to-Channel Adapter	–	1, 3
820	2	3881-1	Control Unit	–	1
821	2	3886-1	Multiplexer Channel	–	1
822	1	3886-1	Channel	150	2
823	2	3886-1	Selector Channel	–	1
824	2	3886-1	Channel-to-Channel Adapter	–	1, 3
825	2	3886-1	Control Unit	–	1
3541	2	3540	Multiplexer Channel	–	1
3542	1	3540	Channel	150	2
3543	2	3540	Selector Channel	–	1
3544	2	3540	Channel-to-Channel Adapter	–	1, 3
3545	2	3540	Control Unit	–	1

Notes:

1. Total cable length of 200 feet (unless modified by general control-to-channel schematic) available to attach as many as eight control units.
2. Power sequence and control. This machine must have the power sequence and control installed for proper operation.
3. To channel-to-channel adapter (SF 1850).
4. See the following page.

MACHINES WITH INTEGRAL OR ABUTTED CONTROLS

Notes: (Continued)

4. The "to" machine and attachment options for 3310-A1, A2/B1, B2; 3333/3330, 3340-A2/3340-B1 or B2; 3340-A2/3344-B2 or B2F, and 3350-A2 or A2F/3350-B2 or B2F/3350-C2 or C2F or 3370 A1, B1 are shown in the following table. Unless otherwise specified, each DASD string may contain up to four attached machines.

To Machine	*Frame*	*Attachment Options*
3115-0 (DDA)	01	One 3340-A2 with one 3340-B1 or B2.
3115-2 (DDA)	01	One 3340-A2 with up to three 3340-B1s, 3340-B2s, or 3344s.
3125-0 (DDA)	01	One 3333-1 with one 3330-1 or 2 *or* One 3340-A2 with up to three 3340-B1s or B2s.
3125-2 (DDA)	01	Two 3340-A2 each controlling up to three 3340-B1s or 3340-B2s or one 3333-1 with one 3330-1 or 2. One 3340-A2 can attach 3344(s).
3135, 3138 (IFA, SF 4655)	01	Up to three 3333s and/or 3340-A2s. One 3340-A2 can attach 3344(s). The 3340-A2 with 3344(s) and the 3333 are mutually exclusive.
3145, 3148 (ISC, SF 4660)	03	Up to four 3333s, 3340-A2s and/or 3350-A2s or A2Fs in any combination. Up to two 3340-A2 can attach 3344(s). Attachment of one or more 3340-A2s with 3344(s) is mutually exclusive with attachment of either 3333s or 3350-A2s or A2Fs. Each 3350-A2 or A2F can attach one 3350-C2 or C2F for a maximum of four 3350-A2s or A2Fs and four 3350-C2s or C2Fs.
3158, 3158-3/3168, 3168-3 (ISC per path, SF 4650). Power sequence and control (cable group 3332 not required for 3350-C2) enters frame 15 (3067-2, 3) on 3168 or 3168-3	02	Up to four 3333s, 3340-A2s and/or 3350-A2s or A2Fs in any combination. Up to two 3340-A2s can attach 3344(s). Attachment of one or more 3340-A2s with 3344(s) is mutually exclusive with attachment of either 3333s or 3350-A2s or A2Fs. Each 3350-A2 or A2F can attach one 3350-C2 or C2F for a maximum of four 3350-A2s or A2Fs and four 3350-C2s or C2Fs.
3158, 3158-3/3168, 3168-3 (ISC per path, SF 4650, with staging adapter, SF 7220). Power sequence and control (cable group 3332) enters frame 15 (3067-2, 3) on 3168 or 3168-3	02	Up to four 3333s and/or 3350-A2s or A2Fs in any combination. At least one 3333 is required for staging or destaging operations.
3345 Model 3, 4, or 5 for System/370 Model 145 (signal, cable group 3330 only). Power sequence and control (cable group 3332 not required for 3350-C2) enters frame 03	02	Up to four 3333s, 3340-A2s and/or 3350-A2s or A2Fs in any combination. Up to two 3340-A2s can attach 3344(s). Attachment of one or more 3340-A2s with 3344(s) is mutually exclusive with attachment of either 3333s or 3350-A2s or A2Fs. Each 3350-A2 or A2F can attach one 3350-C2 or C2F for a maximum of four 3350-A2s or A2Fs and four 3350-C2s or C2Fs.
3830-2	–	Up to four 3333s, 3340-A2s and/or 3350-A2s or A2Fs in any combination. Up to two 3340-A2s can attach 3344(s). Attachment of one or more 3340-A2s with 3344(s) is mutually exclusive with attachment of either 3333s or 3350-A2s or A2Fs. Each 3350-A2 or A2F can attach one 3350-C2 or C2F for a maximum of four 3350-A2s or A2F2s and four 3350-C2s or C2Fs.
3830-3	–	Up to four 3333s and/or 3350-A2s or A2Fs in any combination.
3880	–	See "3880 Storage Control Models 1-4, 11, 13, 21, and 23 Cabling Schematic."
4331 DASD Adapter (SF 3201)	–	Up to four strings of 3310/3340/3370 direct access storage devices may be attached. Up to two strings may be 3340s.

Chapter 3. ESCON Cabling Information

Ordering Fiber Optic Jumper Cables

Some fiber optic jumper cables are provided with ESCON Directors and ESCON-capable devices. Additional fiber optic jumper cables must be purchased. For more information, see the cabling schematic for the ESCON product.

Multimode Fiber Optic Jumper Cables: Multimode duplex to duplex 62.5/125 micrometer fiber optic jumper cables can be ordered with ESCON products from IBM U.S.A., Latin America, and Canada using cable group 3797 and specifying one of these standard lengths: 4 m (12 ft), 7 m (20 ft), 13 m (40 ft), 22 m (70 ft), 31 m (100 ft), 46 m (150 ft), 61 m (200 ft), 77 m (250 ft), 92 m (300 ft), 107 m (350 ft), or 122 m (400 ft).

Multimode duplex-to-duplex fiber optic jumper cables can be purchased from IBM U.S.A., Latin America, and Canada in the above lengths and in custom lengths from 4 m (12 ft) to 500 m (1640 ft) using cable assembly part number 14F3797 and specifying the length. Custom lengths require longer delivery times.

To order or purchase multimode fiber optic jumper cables from an IBM Authorized Distributor or in EMEA or AP, use the part numbers shown below.

Length	Duplex to Duplex	Duplex to Biconic	Duplex to ST	Duplex to FC/PC	Duplex to None
4 m (12 ft)	74F5412	74F5427	74F5419	74F5404	74F5395
7 m (20 ft)	74F5413	74F5428	74F5420	74F5405	74F5396
13 m (40 ft)	74F5414	74F5429	74F5421	74F5406	74F5397
22 m (70 ft)	74F5415	74F5430	74F5422	74F5407	74F5398
31 m (100 ft)	74F5416	74F5431	74F5423	74F5408	74F5399
46 m (150 ft)	74F9718[1]	74F9726[3]	74F9722[3]	74F9786[3]	74F8682[3]
61 m (200 ft)	74F5417	74F5432	74F5424	74F5409	74F5401
77 m (250 ft)	74F9719[1]	74F9727[3]	74F9723[3]	74F9715[3]	74F8683[3]
92 m (300 ft)	74F9720[1]	74F9728[3]	74F9724[3]	74F9716[3]	74F8684[3]
107 m (350 ft)	74F9721[1]	74F9729[3]	74F9725[3]	74F9717[3]	74F8685[3]
122 m (400 ft)	74F5418	74F5433	74F5425	74F5410	74F5402
Custom[2]	74F5436	74F5437	74F5426	74F5411	74F5403

Notes:

1. This cable is not available from IBM Authorized Distributers in the U.S.A., Latin America, or Canada.
2. Custom lengths from 4 m (12 ft) to 500 m (1640 ft) may be ordered using the custom part number from the appropriate column and specifying the length. Custom lengths require longer delivery times.
3. Available in EMEA only, on request.

Multimode Fiber Optic Adapters and Couplers: Adapters and couplers used to join connectors on multimode fiber optic jumper cables include:

Duplex-to-ST adapter	part number 74F5442
Duplex-to-FC/PC adapter	part number 74F8679
Duplex-to-Duplex coupler	part number 74F8681
FC/PC-to-FC/PC coupler	part number 74F5443
ST-to-ST coupler	part number 74F5444

Single-Mode Fiber Optic Jumper Cables: Single-mode 9/125 micrometer fiber optic jumper cables can be purchased from IBM U.S.A., Latin America, and Canada using cable assembly part number 42F8253 and specifying one of these standard lengths: 4 m (12 ft), 13 m (40 ft), 22 m (70 ft), 31 m (100 ft), 61 m (200 ft), 92 m (300 ft), or 122 m (400 ft).

Custom lengths from 4 m (12 ft) to 500 m (1640 ft) can be ordered from IBM U.S.A., Latin America and Canada using part number 42F8253 and specifying the length. Custom lengths require longer delivery time.

To order single-mode fiber optic jumper cables from an IBM Authorized Distributor or in EMEA or AP, use the part numbers shown below.

Length	Duplex-to-Duplex
4 m (12 ft)	02G4982
13 m (40 ft)	02G4983
22 m (70 ft)	02G4984
31 m (100 ft)	02G4985
61 m (200 ft)	02G4986
92 m (300 ft)	02G4987
122 m (400 ft)	02G4988

Note:

Single-Mode fiber optic jumper cables in custom lengths from 4 m (12 ft) to 500 m (1640 ft) can be ordered using part number 02G4989 and specifying the length. Custom lengths require longer delivery times.

Single-Mode Fiber Optic Adapters and Couplers: Adapters and couplers used to join connectors on single-mode fiber optic jumper cables include:

Duplex-to-ST adapter	part number 73F5419
Duplex-to-FC/PC adapter	part number 74F9753
Duplex-to-duplex coupler	part number 73F5418

Trunk Cable: For trunk cable specifications, see *Planning for Enterprise System Connection Links*, GA23-0367.

Appendix A. Power Plug and Power Cord Style Specifications

USA and Canada 60 Hz Power Receptacles and Plugs

60 Hz Power Receptacles and Plugs							
Power Plug Reference (IBM)	—	A	A1	A2	A6	B	B1
Manufacturer or Specification[1]	NEMA	RS	RS	RS	RS	RS	HH or IEC-309
Plug[2]	1-15P	3720	3720U-1	3720U-2	3720U-6	3730	420P9V
Inline Connector[3]	1-15R	3913	3913U-1	3913U-2	3913U-6	3914	—
Receptacle[4]	1-15R	3743	3743U-1	3743U-2	3743U-6	3744	420R9V or 420R9W or 420R9
Schematic: Face of Receptacle[5]	Diagram 1	Diagram 35	Diagram 51	Diagram 34	Diagram 35	Diagram 42[6]	Diagram 46
Service Rating (Amperes)	15	20	20	15	20	15	20
Nominal Voltage	120	208/240	120	208/240	208/240	208/240	208/240
Phases	1	1	1	1	1	3	3
Conductors[7]	2	3	3	3	3	4	4
Features/ Adapter Type	No grounding conductor	Waterproof FSA	Waterproof FSA	Waterproof FSA	Waterproof FSA	Waterproof FSA	Waterproof FSA

60 Hz Power Receptacles and Plugs						
Power Plug Reference (IBM)	B2	C	C1	D	D1	D2
Manufacturer or Specification[1]	NEMA	RS	HH or IEC-309	RS	RS	HH
Plug[2]	L15-20P	3750	330P6W	3760	DS3516MP	JPS334H
Inline Connector[3]	—	3933	—	3934	DS3516FP	JCS334H
Receptacle[4]	L15-20R	3753	330R6W	3754	DS-3516FR	JRS-334H
Schematic: Face of Receptacle[5]	Diagram 60	Diagram 40	Diagram 46	Diagram 38	Diagram 48	Diagram 44
Service Rating (Amperes)	20	30	30	30	30	30
Nominal Voltage	208/240	208/240	208/240	208/240	208/240	208/240
Phases	3	1	1	3	3	3
Conductors[7]	4	3	3	4	5	4
Features/ Adapter Type	Waterproof Locking	Waterproof FSA	Waterproof FSA	Waterproof FSA	Waterproof FSA	Waterproof FSA

Power Plug and Power Cord Style Specifications

60 Hz Power Receptacles and Plugs						
Power Plug Reference (IBM)	E	E1	F	F3	G	H
Manufacturer or Specification[1]	NEMA	RS	RS	RS	RS	RS
Plug[2]	7328	460P9V	JPS-1034H	JPS-1534D	JPS-1534LK	5-15P
Inline Connector[3]	7428		JCS-1034H	JCS-1534D	JCS-1534LK	5-15R
Receptacle[4]	7324	460R9V or 460R9W or 460R9	JRSA-1034H or JRSR-1034H	JRSA-1534D or JRSR-1534D	JRSA-1534LK[7] or JRSR-1534LK	5-15R
Schematic: Face of Receptacle[5]	See Diagram 47	See Diagram 46	See Diagram 45	See Diagram 44	See Diagram 44	See Diagram 4
Service Rating (Amperes)	60	60	100	150	150 (400 Hz)	15
Nominal Voltage	208/240	208/240	208/240	208/240	208/240 400 Hz	120
Phases	3	3	3	3	3	1
Conductors[6]	4	4	4	4	4	3
Features/ Adapter Type	Waterproof FSA	Waterproof FSA	Waterproof FSA	Waterproof FSA	Waterproof FSA	Nonlocking

60 Hz Power Receptacles and Plugs						
Power Plug Reference (IBM)	J	K	L	M	N	Q
Manufacturer or Specification[1]	NEMA	RS	RS	RS	RS	RS
Plug[2]	L5-15P[8]	6-15P	L6-15P	5-20P	L5-20P	L6-20P
Inline Connector[3]	L5-15R	6-15R	L6-15R	5-20R	L5-20R	L6-20R
Receptacle[4]	L5-15R	6-15R	L6-15R	5-20R	L5-20R	L6-20R
Schematic: Face of Receptacle[5]	Diagram 7	Diagram 5	Diagram 10	Diagram 30	Diagram 8	Diagram 11
Service Rating (Amperes)	15	15	15	20	20	20
Nominal Voltage	120	208/240	208/240	120	120	208/240
Phases	1	1	1	1	1	1
Conductors[6]	3	3	3	3	3	3
Features/ Adapter Type	Locking	Nonlocking	Locking	Nonlocking	Locking	Locking

60 Hz Power Receptacles and Plugs							
Power Plug Reference (IBM)	R	S	T	55	—	—	—
Manufacturer or Specification[1]	NEMA	RS	RS	RS	RS	RS	HH or IEC-309
Plug[2]	5-30P	L5-30P	L6-30P	14-30P	6-20P	L6-30P	L14-30R
Inline Connector[3]	5-30R	L5-30R	L6-30R	14-30R	6-20R	L6-30R	L14-30R
Receptacle[4]	5-30R	L5-30R	L6-30R	14-30R	6-20R	L6-30R	L14-30R
Schematic: Face of Receptacle[5]	Diagram 31	Diagram 9	Diagram 12	Diagram 55	Diagram 29	Diagram 12	Diagram 60
Service Rating (Amperes)	30	30	30	30	20	30	30
Nominal Voltage	120	120	208/240	208/240	208/240	208/240	208/240
Phases	1	1	1	1	1	1	1
Conductors[6]	3	3	3	4	3	3	4
Features/ Adapter Type	Nonlocking	Locking	Locking	Nonlocking	—	—	—

Notes:

1. For U.S. and Canada, NEMA is the National Electrical Manufacturer's Association, RS is the Russelstoll division of Amerace Corporation, HH is Hubbell Wiring Device division of Hubbell Incorporated, and IEC is the International Electrotechnical Commission.
2. These plug types (or equivalent) are supplied with the machines. Customer provides matching receptacles.
3. When a RussellStoll inline connector is used with flexible metal conduit or liquid-tight flexible metal conduit, a RussellStoll FSA or JPA adapter is required. See the RussellStoll catalog for the correct adapter and bushing size. size.
4. The 3-phase receptacle must be wired for correct phase rotation, looking at the face of the receptacle and a clockwise direction from the ground pin, the sequence will be phase 1, phase 2, and phase 3.
5. Diagrams are not to scale and are for visual identification only. Size and interlock of actual receptacle may differ from diagrams.
6. Number of conductors includes one insulated equipment grounding conductor green or green and yellow.
7. Includes angular adapter.
8. Hospital service plug version of L5-15 is available.

IBM World Trade Power Receptacle and Plugs

Power Receptacles and Plugs										
Schematic: Face of Receptacle	See Diagram 38	See Diagram 20	See Diagram 2	See Diagram 50	See Diagram 16	See Diagram 26	See Diagram 15	See Diagram 32	See Diagram 52	See Diagram 19
Service Rating: Amperes	20	15	15@ 125	2.5	2.5	6/10	6/10	6/16	10	10
Nominal Voltage	100	125	10@ 250	250	250	250	250	250	250	250
Phases	1	1	1	1	1	1	1	1	1	1
Conductors	3	3	2	2	2	3	3	3	3	3

Figure 14 (Part 1 of 3). Plugs and Receptacles used in IBM World Trade

Power Plugs and Receptacles									
Schematic: Face of Receptacle	See Diagram 17	See Diagram 6	See Diagram 24	See Diagram 25	See Diagram 23	See Diagram 33	See Diagram 53	See Diagram 54	See Diagram 56
Service Rating: Amperes	10	10	10	10/16	13	15	15	15	16
Nominal Voltage	250	250	250	250	250	250	250	250	250
Phases	1	1	1	1	1	1	1	1	1
Conductors	2	3	3	3	3	3	3	3	3

Figure 14 (Part 2 of 3). Plugs and Receptacles used in IBM World Trade

Power Receptacles and Plugs									
Schematic: Face of Receptacle	See Diagram 14	See Diagram 18	See Diagram 22	See Diagram 43	See Diagram 41	See Diagram 27	See Diagram 46	See Diagram 28	See Diagram 48
Service Rating: Amperes	16	16	16	5	10	16	16/32	25	30
Nominal Voltage	250	250	250	220/380	220/380	220/380	220/380	220/380	600
Phases	1	1	1	3	3	3	2 or 3	3	3
Conductors	3	3	3	5	5	5	3, 4, or 5	5	5

Figure 14 (Part 3 of 3). Plugs and Receptacles used in IBM World Trade

Power Receptacles by Country

Country	Single-Phase (By Diagram Number)				Multi-Phase (By Diagram Number)
	Grounded		Double Insulated		
	100-125 V	200-250 V	100-125 V	200-250 V	
Afghanistan		18		14,16	
Algeria*		18,46		14,16	46
Andorra*		18,46		14,16	46
Angola		18,46		14,16	27,28,46
Antigua		23		23	
Argentina		2,6,11,29		14,16	
Aruba	4	5,18	1	14,16	
Austria		18,46		14,16	27,28,46
Australia		6,53,54		6	
Bahamas	4	5	1		
Bahrain		23,46		23	46
Bangladesh		22		22	
Barbados	4	5	1		
Belgium		18,46		14,16	46
Belize					
Benin*		18,46		14,16	46
Bermuda	4	5,23	1	23	
Bolivia	4	5	1		
Brazil	2,4,30,37	2,5,15,18,29	1	14,16	
Brunei		23,46		23	46
Bulgaria		18,46		14,16	46
Burma		22	none	none	
Burundi		18,46		14,16	46
Cameroon*		18,46		14,16	46
Canada	4,7,8,30	3,5,11,34,35,40	1		36,42,44,45,47
Cayman Islands (British W.Ind.)	4	5			
Central African Rep.*		18,46		14,16	46
Chad*		18,46		14,16	46
Channel Islands		23		23	Hard-Wired
Chile		25		16,17	
China (PR)		6		1,17	Hard-Wired
Colombia	4	2, 6, 29	1		
Costa Rica	4	5,11	1		
Congo Brazzaville*		18,46		14,16	46
Curacao	4	5,18	1	14,16	
Cyprus		23,46		23	46
Czechoslovakia		18		14,16	
Denmark		18**,19,46		14,16	46
Dominican Rep.	4	5	1		
Egypt		18		14,16	
El Salvador	4	5	1		
Ecuador	4	5	1		

Power Plug and Power Cord Style Specifications

Country	Single-Phase (By Diagram Number)				Multi-Phase (By Diagram Number)
	Grounded		Double Insulated		
	100-125 V	200-250 V	100-125 V	200-250 V	
Ethiopia		25		14,16	
Fiji		23,46		23	46
Finland		18,46		14,16	46
France*		18,46		14,16	46
French Guiana		18		14,16	
Germany		18,46		14,16	27,28,46
Ghana		23,46		23	46
Greece		18,46		14,16	46
Guatemala	4	5	1		
Guinea*		18,46		14,16	46
Guyana	4	5,23	1	23	
Haiti	4	5			
Honduras	4	5	1		
Hong Kong		23,46		14,23	46
Hungary		18		14,16	
Iceland		18		14,16	
India		23,46		23	46
Indonesia		18		16,17	
Iran		18		14,16	
Iraq		23,46		23	46
Ireland		23,46		23	Hard-Wired
Israel		32,46		32	46
Italy		25,46		16,25	46
Ivory Coast*		18,46		14,16	46
Jamaica	4	5	1		
Japan	4,20,30,38	5,29,40,33	1		36,42,44,45,47
Jordan		18,23		16,23	
Kenya		18,23,46		23	46
Korea (S)	4	18		14,16	
Kuwait		23,46		23	46
Lebanon		18		14,16	
Liberia	4	5	1		
Libya		25		25	
Liechtenstein		24		16,17	
Luxembourg		18		14,16	
Macau		18		14,16	
Malagasy*		18		14,16	
Malawi		23,46		23	46
Malaysia		23,46		14,23	46
Mali*		18,46		14,16	46
Malta		23,46		23	46
Martinique		18		14,16	
Mauritania*		18,46		14,16	46
Mauritius*		18,46		14,16	46

Country	Single-Phase (By Diagram Number)				Multi-Phase (By Diagram Number)
	Grounded		Double Insulated		
	100-125 V	200-250 V	100-125 V	200-250 V	
Mexico	4	10,11	1		
Monaco*		18,46		14,16	46
Morocco*		18,46		14,16	46
Mozambique		18		14,16	
Nepal		23		23	
Netherlands		18,46		14,16	46
Netherlands Antilles	4	5,18	1	14,16	
New Caledonia*		18,46		14,16	46
New Zealand		6,58			
Nicaragua	4,7	3,5	1		
Niger*		18,46		14,16	46
Nigeria		23,46		23	46
Norway		18,46		14,16	46
Oman		23,46		23	46
Pakistan		22		22	
Panama (Rep.of)	4	5	1		
Papua New Guinea		6			
Paraguay		2,6,29		14,16	
Peru	4	5	1		
Philippines	4	4,5	1		
Poland		18,46		14,16	46
Polynesia		23		23	
Portugal		18,46		14,16	
Qatar		23,46		23	
Romania		18		14,16	
Saudi Arabia	4	18	1	14,16	
Senegal*		18,46		14,16	46
Sierra Leone		23,46		23	46
Singapore		23,46		23	46
Somalia		25		25	
South Africa		22		22	
Spain		18		14,16	Hard-Wired
Sri Lanka		22		22	
Sudan		18		14,16	
Suriname	4	5	1		27,28
Sweden		18,46		14,16	27,28,46
Switzerland		24,46		16,17	41,43,46
Syria		18		14,16	
Taiwan	4	5	1		
Tanzania		23,46		23	46
Thailand		5,11		1	
Trinidad Tobago	4	2,5			
Togo*		18,46		14,16	46
Tunisia*		18		14,16	46

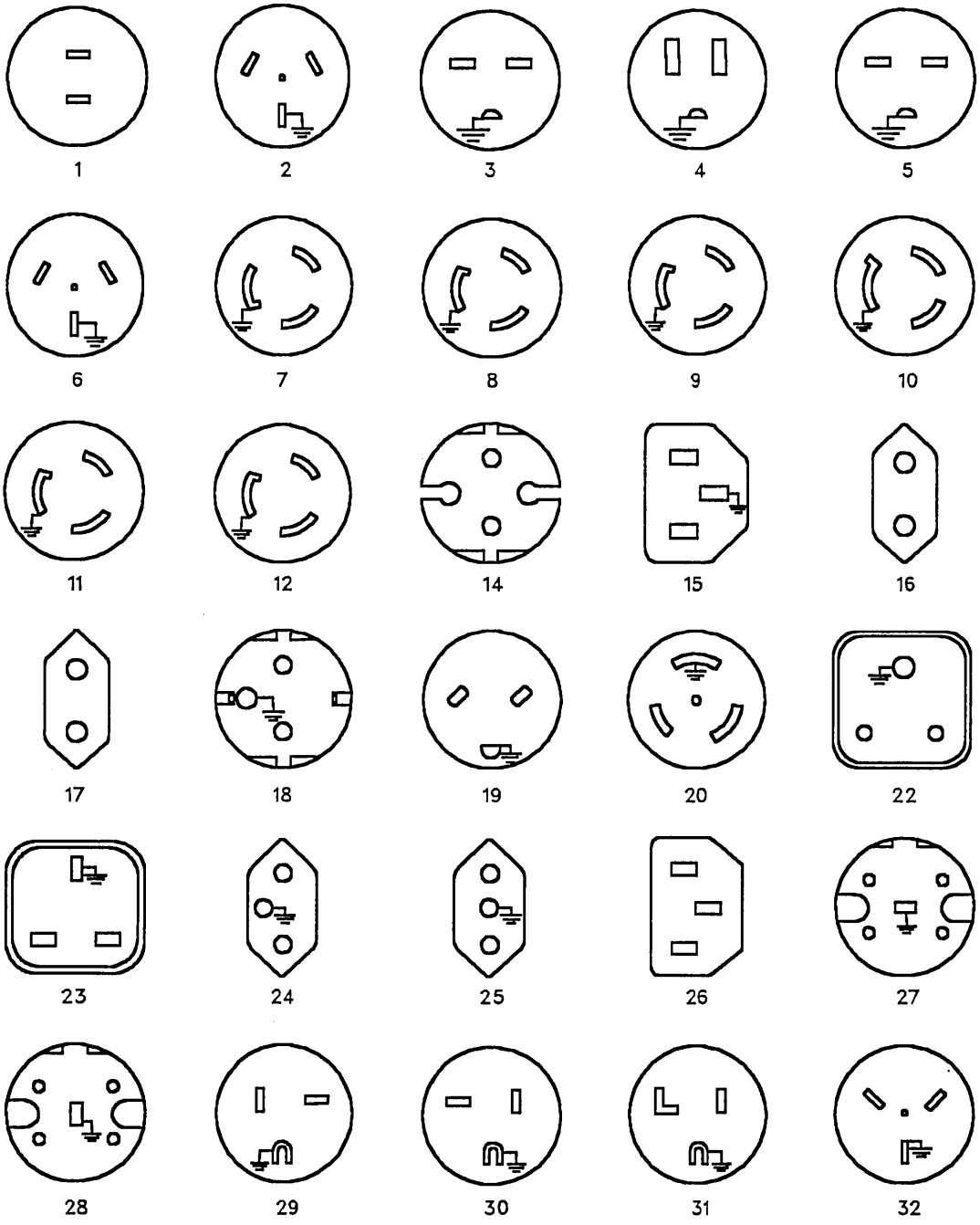
Power Plug and Power Cord Style Specifications

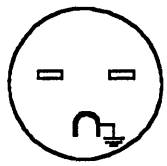
Country	Single-Phase (By Diagram Number)				Multi-Phase (By Diagram Number)
	Grounded		Double Insulated		
	100-125 V	200-250 V	100-125 V	200-250 V	
Turkey		18		14,16	
Uganda		23,46		23	46
United Arab Emirates (Dubai)		23,46		23	46
United Kingdom		23,46		23	Hard-Wired
Upper Volta*		18,46		14,16	46
Uruguay		2,6,29		14	
USA	4,7,8,9 30,31,37	3,5,10,11 34,35,40	1		36,42,44 45,47,55
USSR		18		14,16	46
Venezuela	4,7,8	5	1		
Viet Nam		18,46		14,16	46
Western Samoa		6			
Yemen (Aden)		23		23	
Yugoslavia		18,46		14,16	46
Zaire		18		14,16	
Zambia		23,46		23	46
Zimbabwe		18			

Note: *IBM activities in these countries are supported by IBM France and have requirements identical to those of France.

**Used only for typewriters.

Power Receptacle Diagrams

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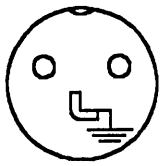
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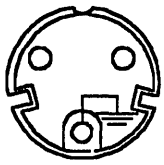
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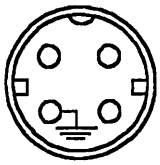
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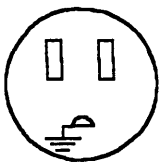
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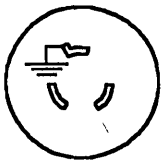
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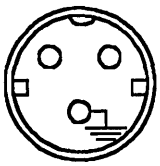
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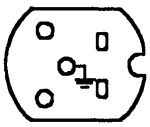
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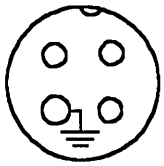
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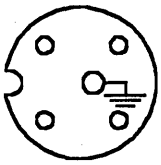
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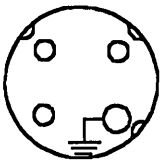
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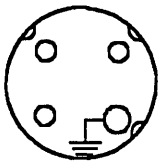
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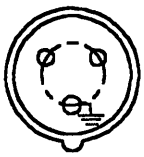

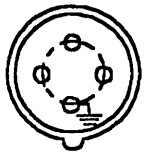

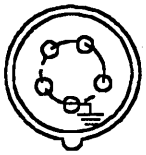
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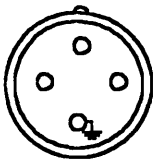
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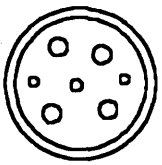
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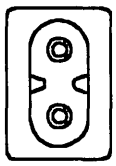
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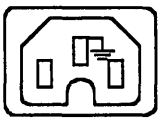
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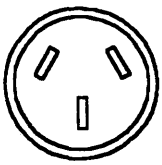
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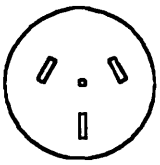
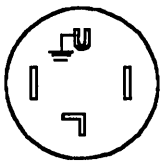
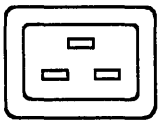
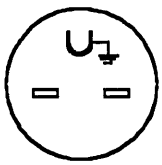
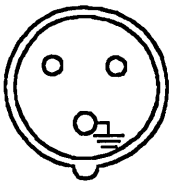
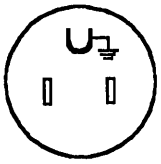

54

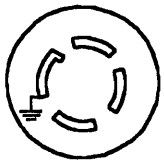

55


56


57


58


59


60

Power Cord Style

Power Cord Style	Cable Nominal OD inches (mm)	Number of Shields	Conductors		
			Quantity	Nominal OD* inches (mm)	AWG No.
A1	0.520 (13.2)	1	3	0.064 (1.6)	14
A2	0.510 (13.0)	1	3	0.081 (2.1)	12
A3	0.570 (14.5)	1	3	0.102 (2.6)	10
A4	0.375 (9.5)	1	3	0.051 (1.3)	16
A5	0.390 (9.9)	0	3	0.051 (1.3)	16
A6	0.560 (14.2)	0	3	0.064 (1.6)	14
A8	0.390 (9.9)	0	3	0.064 (1.6)	14
A9	0.374 (9.5)	0	3	0.040 (1.0)	18
B1	0.713 (18.1)	0	5	0.102 (2.6)	10
B2	0.693 (17.6)	1	5	0.064 (1.6)	14
B3	0.669 (17.0)	0	5	0.083 (2.1)	12
D1	0.792 (20.1)	2	5	0.102 (2.6)	10
D2	0.750 (19.0)	1	5	0.102 (2.6)	10
D3	0.642 (16.3)	2	5	0.064 (1.6)	14
D4	0.855 (19.1)	1	5	0.102 (2.6)	10
E1	1.024 (26.0)	1	5	0.129 (3.3)	8
E2	1.400 (35.6)	0	5	0.232 (5.9)	4
E3	1.200 (30.5)	2	5	0.184 (4.7)	6
E4	1.200 (30.5)	0	5	0.184 (4.7)	6
E5	1.200 (30.5)	1	5	0.184 (4.7)	6
E6	1.240 (31.5)	2	4	0.184 (4.7)	6
E7	1.440 (36.6)	1	5	0.232 (5.9)	4
E8	0.974 (24.7)	0	5	0.129 (3.3)	8
E9	0.949 (24.1)	1	4	0.184 (4.7)	6
F1	1.400 (35.6)	0	5	0.292 (7.4)	2
F2	1.646 (41.8)	1	5	0.292 (7.4)	2
F3	1.646 (41.8)	0	5	0.292 (7.4)	2
F4	1.293 (32.8)	1	4	0.292 (7.4)	2
G1			3	0.040 (1.0)	18
G2					
G3	0.360 (9.1)	0	–	0.051 (1.3)	16
G4	0.365 (9.3)	1	–	0.040 (1.0)	18
H1	1.525 (38.7)	1	3	0.292 (7.4)	2
			1	0.232 (5.9)	4
H2	1.494 (37.9)	1	4	0.292 (7.4)	2
H3	1.240 (31.5)	1	5	0.184 (4.7)	6

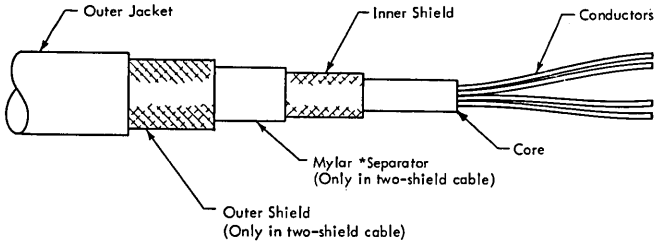
*This diameter refers to solid, bare wire.

Figure 15. Power Cord Style for World Trade

HOW TO INSTALL A POWER PLUG ON SHIELDED CABLE

To make power cable shielding effective, the shield or shields must be properly terminated at the plug end of the cable. Because different plugs are used in different countries, slight changes to the following instructions may be needed.

Names of Bulk Cable Components



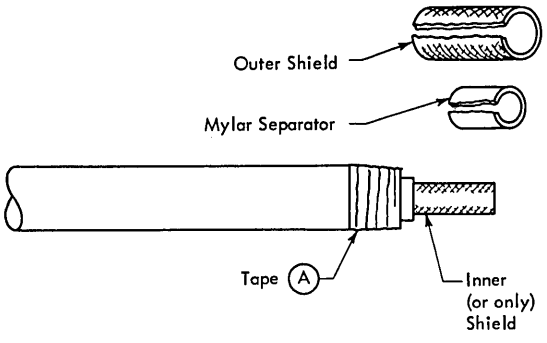
* Trademark of E.I. du Pont de Nemours & Co. (Inc.)

Preparing Bulk Cable End for the Plug

Dimensions given are for reference only. Use your own discretion to assure proper assembly of the cable and plug.

Step 1: Remove the outer jacket for 1-1/2 inches (38 mm) from the end for 15 A-30 A cables or 2-3/4 inches (70 mm) from the end for 45 A-60 A cables. If this is a one-shield cable, go to step 4.

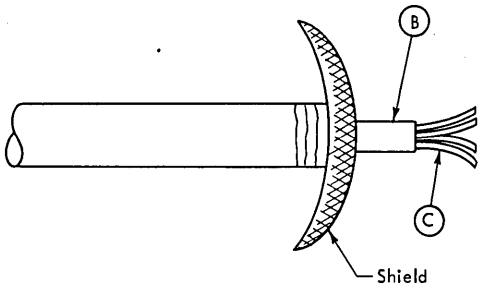
Step 2: (For two-shield cables only.) Remove the outer shield as far back as the outer jacket. The Mylar separator is exposed. Wrap one full turn of electrical tape over the separator and another full turn of tape over the cut end of the outer shield; overlap onto the outer jacket. This tape is used to assure complete electrical isolation between the inner and the outer shields. (See (A).)



Step 3: (For two-shield cables only). Remove the Mylar separator for 1 inch (25 mm) from the end for 15 A-30 A cables or 2-1/4 inches (57 mm) from the end for 45 A-60 A cables. Do not cut the inner shield.

Step 4: Do not cut the inner (or only) shield. Unbraid and carefully comb out the shield for 1 inch (25 mm) from the end for 15 A-30 A cables or 2-1/4 inches (57 mm) from the end for 45 A-60 A cables. The core is exposed. (See (B).)

Step 5: Remove the cable core for a minimum of 3/4 inch (19 mm) from the end; the conductors are exposed. (See (C).)

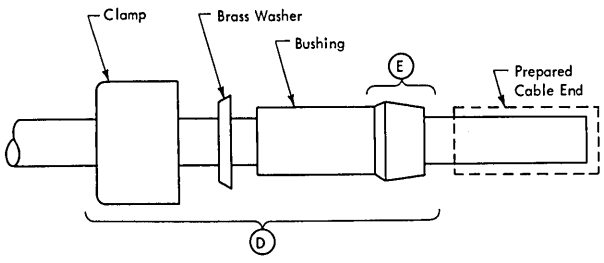


Step 6: Carefully lay the shield back over the cable outer jacket; wrap tape around the shield for temporary protection. Note that on two-shield cables, the outer shield must be insulated from the plug cap, equipment ground (earth) wire, and conduit; the outer shield is grounded at the machine end only. The inner (or only) shield should be grounded through the shell of the plug to the branch circuit conduit. Three-hundred-sixty-degree grounding of the shield to the plug shell is desirable; that is, contact should be between the shield and the shell at all points around the edge, not just at one point.

Installing the Plug

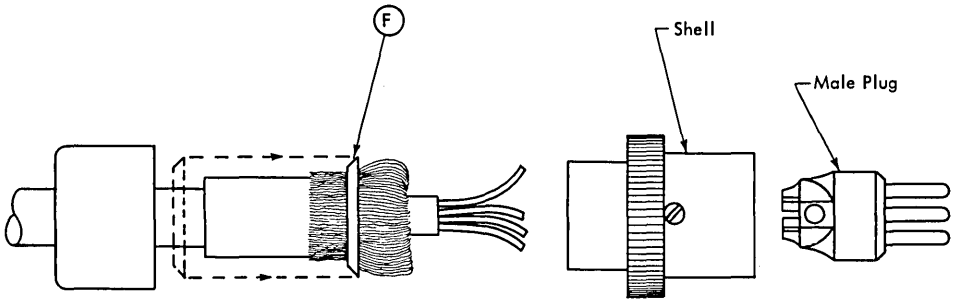
These steps show the attachment of one type of plug; modifications will be needed to allow for the different physical designs of plugs used in various countries.

Install the clamp, brass washer, and bushing over the prepared cable end as shown at (D). Take the protective tape off the shield and slide the bushing over against the shield. Carefully lay the shield back over (E) of the bushing; be sure to spread the strands of the shield evenly over the bushing surface.



Slide the brass washer over the shield and up against the mating surface of the bushing at (F) . Wrap tape around the shield for one full turn and trim off the remaining shield strands. Install the clamp and be sure that the mating surface is tightly against the brass washer.

Install the proper terminals and put the rest of the plug assembly together.



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Appendix B. Customer-Supplied Cables

CABLES BY MACHINE

Machine	Model	Cable Group Number	IBM Preassembled Cable Assembly	Customer-Assembled Cables		Connector Installation Tools	Cable Description
				Bulk IBM Part No.	Connector Group		
3262	1 and 11	None	2577672	323921	1836418	None	For indoor use. (Note 1)
3262	1 and 11	None	1833108	5252750	1836419	None	Intended for indoor/outdoor use. (Notes 2 and 3)
3277/3886	1/2	h	2577672	323921	1836418	None	Used to attach a display to a control unit. For indoor use. (Note 1)
3277/3886	1/2	I	1833108	5252750	1836419	None	Used to attach a display to a control unit. Intended for indoor/outdoor use. (Notes 2 and 3)

Notes:
1. IBM connector kit 1836418 contains two BNC connectors (IBM 1836444; commercial source is Bendix 30220-3). Maximum cable length is 2,000 feet.
2. IBM connector kit 1836419 contains two BNC connectors (IBM 1836477; commercial source is Bendix 39100-16). Maximum cable length is 2,000 feet.
3. Bulk cable (IBM 5252750) is a special RG62A/U outdoor coaxial cable. Jacket must meet the minimum requirements for underground feeder and branch circuit cable (UL subject 493). It must also be weatherproof and sunlight-resistant.

Part to Be Ordered	Specify via MES*
Bulk Cable (outdoor)	IBM part 5252750, including cable length
Bulk Cable (indoor)	IBM part 323921, including cable length
Preassembled Cables (outdoor)	IBM part 1833108, including cable length
Preassembled Cables (indoor)	IBM part 2577672, including cable length
BNC-Type Connectors (outdoors) (two in kit; one kit per cable length)	Connector group IBM part 1836419
BNC-Type Connectors (indoors) (two in kit; one kit per cable length)	Connector group IBM part 1836418

*MES = Miscellaneous Equipment Specification submitted by IBM Marketing Representative

Coaxial Signal Cable and Components

CABLE DESCRIPTIONS

Part 323921—Commercial Designation RG62A/U*

Conductor	*AWG Size*	*OD Inches (mm)*	*Insulation Type*	*Cover*	*Shield*
Copperweld** Solid-40% Conductivity	#22	0.242 (6.1)	Flame-Retardant Polyethylene	PVC Color Black Average Thickness 0.031 inch (0.79 mm)	Copper Braid 90% Minimum Coverage

Source: IBM or customer-selected source.
* Must meet specifications listed here.
** Maximum resistance of 44 ohms/1000 feet.

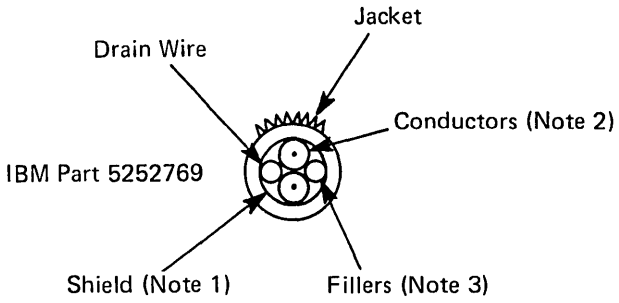
Part 5252750—Commercial Designation RG62A/U* (Modified for Outdoor Use per UL Subject 493)

Conductor	*AWG Size*	*OD Inches (mm)*	*Insulation Type*	*Cover*	*Shield*
Copperweld Solid-40% Conductivity	#22	0.260 (6.6)	Flame-Retardant Polyethylene	PVC (UL Subject 493) Color Black Polyester Tape** Average Thickness 0.040 inch (1.02 mm)	Copper Braid 90% Minimum Coverage

Source: IBM or customer-selected source.
* Must meet specifications listed here. Jacket must have vapor barrier. Must meet minimum requirements and have a thicker jacket for underground feeder and branch circuit cable. Also must be weather proofed and sunlight resistant.
** Must be 0.001 inch (0.03 mm) thick between shield and cover.

Part 5252769—Bulk Cable Specification for Loop Cable on 3814

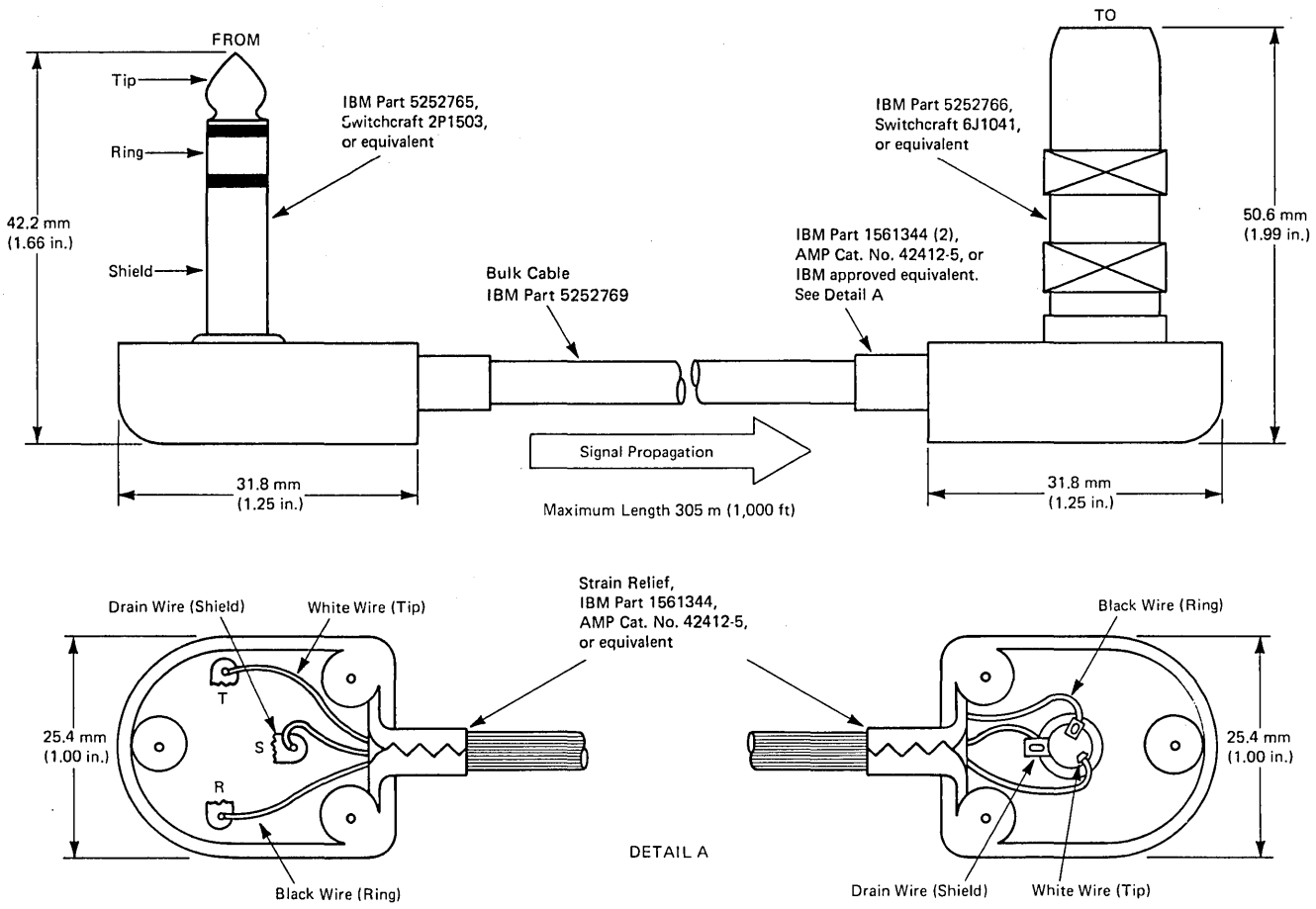
Cable Details	
Number of Conductors	2
Shield(s)	1 (Note 1)
Outside Diameter	5 mm (0.180 in.)
Mandrel Radius	25 mm (1.0 in.)
Cover	
Material	PVC
Nominal Thickness	1 mm (0.035 in.)
Color	White
Individual Conductors	
Wires	#22 AWG, 0.3255 mm^2 (0.0392 sq. in.) (Note 2)
Insulation	
Material	SR-PVC
Nominal Thickness	0.229 mm (0.009 in.)
Color: Wire 1	Black
Wire 2	White
UL Style, Primary Conductors	1061
UL Style, Cable	2464



Notes:

1. Shield: Aluminum polyester tape with 10% minimum overlap and a #22 AWG, 0.3255 mm^2 (0.0392 sq. in.) [7/30 stranding], tinned copper drain wire.
2. Conductors: Tinned copper #22 AWG, 0.3255 mm^2 (0.0392 sq. in.) [7/30 stranding]. Wire numbers 1 and 2 to be twisted together with a 32-mm (1.25-in.) left-hand lay.
3. Fillers as required to effect circular cross-section.

Part 1563155—Loop Cable Assembly (Cable Group I) on 3814



Assembly Details:

1. Terminate both ends of cable per Detail A.
   a. Remove 38.1 mm (1-1/2 in.) of outer jacket and foil shield.
   b. Skin and tin white and black leads 9.5 mm (3/8 in.). Cut shield lead to 19.0 mm (3/4 in.).
   c. Crimp strain relief over cable jacket, flush with jacket end as shown. Use AMP crimp tool, AMP Cat. No. 69474-3.
   d. Solder shield drain wire to shield contact.
   e. Solder white lead to tip contact (T) and black lead to ring contact (R).
   f. Reassemble housing with ears of strain relief located per Detail A.
2. Solder to good commercial practice.
3. Shown in cabling figures as "i."

Appendix C. Template Index

Legend:

T = World Trade Template
K = World Trade Adhesive Template

Metric Scale: 10 mm = 0.5 m (1:50)

Type	Model Number	Order (Form) Number (English Scale 1:48)	Order (Form) Number* (Metric Scale 1:50)
3044		GX22-7110	GX22-7110
3088	A1, 1, 2	GX22-7096	GX22-7096
3172		GX24-4048	GX24-4047
3203	1, 2 (With Model 125)	GX22-7021	T 57 486, K 57 487
3203	1, 2 (With Model 115)	GX22-7028	T 57 486, K 57 487
3203	4 (With Model 138)	GX22-7058	T 57 566, K 57 567
3203	4 (With Model 138)	GX22-7059	T 57 566, K 57 567
3203	5	GX22-7070	
3205		GX22-7111	GX22-7711
3210	1	GX22-6859	--
3210	1 (With Model 145)	GX22-7005	--
3210	1 (With Model 135)	GX22-7008	--
3210	2	GX22-6859	T 57 286, K 57 388
3210	2 (With Model 145)	GX22-7005	--
3210	2 (with Model 155)	GX22-7006	--
3211	1	GX22-6834	T 57 336, K 57 370
3213	1	GX22-6859	T 57 458, K 57 459
3213	1 (With Model 168)	GX22-7022	--
3213	1 (With Model 158)	GX22-7023	--
3215	1	GX22-6859	--
3215	1 (With Model 145)	GX22-7005	--
3215	1 (With Model 155)	GX22-7006	--
3215	1 (With Model 135)	GX22-7008	--
3262	1, 5, 11	GX22-7082	GX22-7082
3287	1, 2	GX22-7066	GX22-7066
3289	4	--	GX22-7091
3310	A1, A2, B1, B2	GX22-7080	GX33-7080
3330	1, 2	GX22-7047	T 57 337, K 57 371
3330	11	GX22-7047	--
3333	1	GX22-7047	T 57 454, K 57 455
3333	11	GX22-7047	--
3340	A1, B1, B2	GX22-7029	T 57 524, K 57 525
3344	B2, B2F	GX22-7029	T 57 524, K 57 525
3350	A2, A2F, B2, B2F, C2, C2F	GX22-7057	--
3370	A1, A2, B1, B2	GX22-7079	GX22-7079
3375	A1, B1, D1	GX22-7088	GX22-7088
3380	All	GX22-7089	GX22-7089
3390	All	GX22-7129	GX22-7129
3410	1-3	GX22-7035	T 57 452, K 57 453
3411	1-3	GX22-7035	T 57 452, K 57 453
3420	3-8	GX22-7030	T 57 501, K 57 505
3422	A01, B01	GX22-7115	GX22-7115
3430	A, B	GX22-7101	GX22-7101
3480	All	GX22-7089	GX22-7089

Template Index

Type	Model Number	Order (Form) Number (English Scale 1:48)	Order (Form) Number* (Metric Scale 1:50)
3490	All	GX22-7128	GX22-7128
3504	A1, A2	GX22-6834	T 57 514, K 57 515
3505	B1, B2	GX22-6834	T 57 514, K 57 515
3525	P1-P3	GX22-6834	T 57 514, K 57 515
3540	B1, B2	GX22-7045	T 57 482, K 57 483
3704		GX22-7032	T 57 470, K 57 471
3705		GX22-7051	T 57 520, K 57 521
3720		GX22-7116	GX22-7116
3725, 3726, 3727	1, 2	GX22-7100	GX22-7100
3745, 3746	All	GX22-7125	GX22-7125
3800	1-3, 6, 8	GX22-7054	GX22-7054
3803	1-3	GX22-7030	T 57 501, K 57 505
3811	1	GX33-6834	T 57 338, K 57 370
3814	A1-A4, B1-B4, C1-C4	GX22-7090	GX22-7090
3820		GX22-7121	GX22-7121
3825		GX22-7120	GX22-7120
3827, 3828	1	GX22-7118	GX22-7118
3830	1	GX22-7047	T 57 538, K 57 539
3830	2, 3	GX22-7047	T 57 454, K 57 455
3835		GX22-7119	GX22-7119
3848		GX22-7085	--
3851	A1-A4, A11-A13, A21, A22, A31, B1-B4, B11-B13, B21, B22, B31	GX22-7053	T 57 530, K 57 531
3880	1-4, 11, 13, 21, 23	GX22-7076	GX22-7076
3881	1-3	GX22-7052	T 57 460, K 57 461
3886	1, 2	GX22-7052	T 57 480, K 57 482
3890, 3890/XP	B1	GX22-7031	--
3891, 3891/XP	--	GX22-7131	GX22-7131
3892, 3892, 3892/XP	--	GX22-7132	GX22-7132

Type	Model Number	Order (Form) Number (English Scale 1:48)	Order (Form) Number* (Metric Scale 1:50)
3890	A1-A6, B1-B6	--	T 57 496, K 57 497
3895		GX22-7063	
3896		GX22-7064	
3900		GX22-7140	GX22-7140
3990	1-3	GX22-7117	GX22-7117
3995		GX22-7139	GX22-7139
4245	1, 12, 20	GX22-7105	GX22-7105
4248	1, 2	GX24-3953	GX24-3954
5203	3 (With Model 115)	GX22-7028	--
5203	3	--	T 57 488, K 57 489
5213	1	GX22-6859	T 57 468, K 57 469
5213	1 (With Model 125)	--	T 57 468, K 57 469
5424	A1, A21, B1, K2, K3	GX22-7084	--
5425	A1, A2	--	T 57 276, K 57 198
5425	A1, A2 (With Model 115)	GX22-7028	--
5425	A1, A2 (With Model 125)	GX22-7021	T 57 468, K 57 469
6262	014, 022	GX24-4171	GX24-4172
7770	3	GX22-6857	T 57 276, K 57 198
8809	1A, 2, 3	GX22-7074	GX22-7074
9032	All	GX22-7136	GX22-7136
9343	All	GX22-7138	GX22-7138

* WT templates are available from:

IBM Deutchland
CE Information Dept. 7902
Pascalstrasse 100
7000 Stuttgart 80
West Germany

Appendix D. Inch-to-Millimeter Conversion

in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
1/8	3.2	48	1 220	98	2 490	148	3 760	198	5 030	248	6 300	298	7 570	348	8 840
1/4	6.4	48-1/2	1 230	98-1/2	2 500	148-1/2	3 770	198-1/2	5 040	248-1/2	6 310	298-1/2	7 580	348-1/2	8 850
3/8	9.5	49	1 230	99	2 510	149	3 780	199	5 050	249	6 320	299	7 590	349	8 860
1/2	12.7	49-1/2	1 260	99-1/2	2 530	149-1/2	3 800	199-1/2	5 070	249-1/2	6 340	299-1/2	7 610	349-1/2	8 880
5/8	15.8	50	1 270	100	2 540	150	3 810	200	5 080	250	6 350	300	7 620	350	8 890
3/4	19	50-1/2	1 280	100-1/2	2 550	150-1/2	3 820	200-1/2	5 090	250-1/2	6 360	300-1/2	7 630	350-1/2	8 900
7/8	22	51	1 300	101	2 570	151	3 840	201	5 110	251	6 380	301	7 650	351	8 920
1	25	51-1/2	1 310	101-1/2	2 580	151-1/2	3 850	201-1/2	5 120	251-1/2	6 390	301-1/2	7 660	351-1/2	8 930
1-1/2	40	52	1 320	102	2 590	152	3 860	202	5 130	252	6 400	302	7 670	352	8 940
2	50	52-1/2	1 330	102-1/2	2 600	152-1/2	3 870	202-1/2	5 140	252-1/2	6 410	302-1/2	7 680	352-1/2	8 950
2-1/2	60	53	1 350	103	2 620	153	3 890	203	5 160	253	6 430	303	7 700	353	8 970
3	80	53-1/2	1 360	103-1/2	2 630	153-1/2	3 900	203-1/2	5 170	253-1/2	6 440	303-1/2	7 710	353-1/2	8 980
3-1/2	90	54	1 370	104	2 640	154	3 910	204	5 180	254	6 450	304	7 720	354	8 990
4	100	54-1/2	1 380	104-1/2	2 650	154-1/2	3 920	204-1/2	5 190	254-1/2	6 460	304-1/2	7 730	354-1/2	9 000
4-1/2	110	55	1 400	105	2 670	155	3 940	205	5 210	255	6 480	305	7 750	355	9 020
5	130	55-1/2	1 410	105-1/2	2 680	155-1/2	3 950	205-1/2	5 220	255-1/2	6 490	305-1/2	7 760	355-1/2	9 030
5-1/2	140	56	1 420	106	2 690	156	3 960	206	5 230	256	6 500	306	7 770	356	9 040
6	150	56-1/2	1 440	106-1/2	2 710	156-1/2	3 980	206-1/2	5 250	256-1/2	6 520	306-1/2	7 790	356-1/2	9 060
6-1/2	170	57	1 450	107	2 720	157	3 990	207	5 260	257	6 530	307	7 800	357	9 070
7	180	57-1/2	1 460	107-1/2	2 730	157-1/2	4 000	207-1/2	5 270	257-1/2	6 540	307-1/2	7 810	357-1/2	9 080
7-1/2	190	58	1 470	108	2 740	158	4 010	208	5 280	258	6 550	308	7 820	358	9 090
8	200	58-1/2	1 490	108-1/2	2 760	158-1/2	4 030	208-1/2	5 300	258-1/2	6 570	308-1/2	7 840	358-1/2	9 110
8-1/2	220	59	1 500	109	2 770	159	4 040	209	5 310	259	6 580	309	7 850	359	9 120
9	230	59-1/2	1 510	109-1/2	2 780	159-1/2	4 050	209-1/2	5 320	259-1/2	6 590	309-1/2	7 860	359-1/2	9 130
9-1/2	240	60	1 520	110	2 790	160	4 060	210	5 330	260	6 600	310	7 870	360	9 140
10	250	60-1/2	1 540	110-1/2	2 810	160-1/2	4 080	210-1/2	5 350	260-1/2	6 620	310-1/2	7 890	360-1/2	9 160
10-1/2	270	61	1 550	111	2 820	161	4 090	211	5 360	261	6 630	311	7 900	361	9 170
11	280	61-1/2	1 560	111-1/2	2 830	161-1/2	4 100	211-1/2	5 370	261-1/2	6 640	311-1/2	7 910	361-1/2	9 180
11-1/2	290	62	1 570	112	2 840	162	4 110	212	5 380	262	6 650	312	7 920	362	9 190
12	300	62-1/2	1 590	112-1/2	2 860	162-1/2	4 130	212-1/2	5 400	262-1/2	6 670	312-1/2	7 940	362-1/2	9 210
12-1/2	320	63	1 600	113	2 870	163	4 140	213	5 410	263	6 680	313	7 950	363	9 220
13	330	63-1/2	1 610	113-1/2	2 880	163-1/2	4 150	213-1/2	5 420	263-1/2	6 690	313-1/2	7 960	363-1/2	9 230
13-1/2	340	64	1 630	114	2 900	164	4 170	214	5 440	264	6 710	314	7 980	364	9 250
14	360	64-1/2	1 640	114-1/2	2 910	164-1/2	4 180	214-1/2	5 450	264-1/2	6 720	314-1/2	7 990	364-1/2	9 260
14-1/2	370	65	1 650	115	2 920	165	4 190	215	5 460	265	6 730	315	8 000	365	9 270
15	380	65-1/2	1 660	115-1/2	2 930	165-1/2	4 200	215-1/2	5 470	265-1/2	6 740	315-1/2	8 010	365-1/2	9 280
15-1/2	390	66	1 680	116	2 950	166	4 220	216	5 490	266	6 760	316	8 030	366	9 300
16	410	66-1/2	1 690	116-1/2	2 960	166-1/2	4 230	216-1/2	5 500	266-1/2	6 770	316-1/2	8 040	366-1/2	9 310
16-1/2	420	67	1 700	117	2 970	167	4 240	217	5 510	267	6 780	317	8 050	367	9 320
17	430	67-1/2	1 710	117-1/2	2 980	167-1/2	4 250	217-1/2	5 520	267-1/2	6 790	317-1/2	8 060	367-1/2	9 330
17-1/2	440	68	1 730	118	3 000	168	4 270	218	5 540	268	6 810	318	8 080	368	9 350
18	460	68-1/2	1 740	118-1/2	3 010	168-1/2	4 280	218-1/2	5 550	268-1/2	6 820	318-1/2	8 090	368-1/2	9 360
18-1/2	470	69	1 750	119	3 020	169	4 290	219	5 560	269	6 830	319	8 100	369	9 370
19	480	69-1/2	1 770	119-1/2	3 040	169-1/2	4 310	219-1/2	5 580	269-1/2	6 850	319-1/2	8 120	369-1/2	9 390
19-1/2	500	70	1 780	120	3 050	170	4 320	220	5 590	270	6 860	320	8 130	370	9 400
20	510	70-1/2	1 790	120-1/2	3 060	170-1/2	4 330	220-1/2	5 600	270-1/2	6 870	320-1/2	8 140	370-1/2	9 410
20-1/2	520	71	1 800	121	3 070	171	4 340	221	5 610	271	6 880	321	8 150	371	9 420
21	530	71-1/2	1 820	121-1/2	3 090	171-1/2	4 360	221-1/2	5 630	271-1/2	6 900	321-1/2	8 170	371-1/2	9 440
21-1/2	550	72	1 830	122	3 100	172	4 370	222	5 640	272	6 910	322	8 180	372	9 450
22	560	72-1/2	1 840	122-1/2	3 110	172-1/2	4 380	222-1/2	5 650	272-1/2	6 920	322-1/2	8 190	372-1/2	9 460
22-1/2	570	73	1 850	123	3 120	173	4 390	223	5 660	273	6 930	323	8 200	373	9 470
23	580	73-1/2	1 870	123-1/2	3 140	173-1/2	4 410	223-1/2	5 680	273-1/2	6 950	323-1/2	8 220	373-1/2	9 490
23-1/2	600	74	1 880	124	3 150	174	4 420	224	5 690	274	6 960	324	8 230	374	9 500
24	610	74-1/2	1 890	124-1/2	3 160	174-1/2	4 430	224-1/2	5 700	274-1/2	6 970	324-1/2	8 240	374-1/2	9 510
24-1/2	620	75	1 910	125	3 180	175	4 440	225	5 720	275	6 990	325	8 260	375	9 530
25	640	75-1/2	1 920	125-1/2	3 190	175-1/2	4 460	225-1/2	5 730	275-1/2	7 000	325-1/2	8 270	375-1/2	9 540
25-1/2	650	76	1 930	126	3 200	176	4 470	226	5 740	276	7 010	326	8 280	376	9 550
26	660	76-1/2	1 940	126-1/2	3 210	176-1/2	4 480	226-1/2	5 750	276-1/2	7 020	326-1/2	8 290	376-1/2	9 560
26-1/2	670	77	1 960	127	3 230	177	4 500	227	5 770	277	7 040	327	8 310	377	9 580
27	690	77-1/2	1 970	127-1/2	3 240	177-1/2	4 510	227-1/2	5 780	277-1/2	7 050	327-1/2	8 320	377-1/2	9 590
27-1/2	700	78	1 980	128	3 250	178	4 520	228	5 790	278	7 060	328	8 330	378	9 600
28	710	78-1/2	1 990	128-1/2	3 260	178-1/2	4 530	228-1/2	5 800	278-1/2	7 070	328-1/2	8 340	378-1/2	9 610
28-1/2	720	79	2 010	129	3 280	179	4 550	229	5 820	279	7 090	329	8 360	379	9 630
29	740	79-1/2	2 020	129-1/2	3 290	179-1/2	4 560	229-1/2	5 830	279-1/2	7 100	329-1/2	8 370	379-1/2	9 640
29-1/2	750	80	2 030	130	3 300	180	4 570	230	5 840	280	7 110	330	8 380	380	9 650
30	760	80-1/2	2 040	130-1/2	3 310	180-1/2	4 580	230-1/2	5 850	280-1/2	7 120	330-1/2	8 390	380-1/2	9 660
30-1/2	770	81	2 060	131	3 330	181	4 600	231	5 870	281	7 140	331	8 410	381	9 680
31	790	81-1/2	2 070	131-1/2	3 340	181-1/2	4 610	231-1/2	5 880	281-1/2	7 150	331-1/2	8 420	381-1/2	9 690
31-1/2	800	82	2 080	132	3 350	182	4 620	232	5 890	282	7 160	332	8 430	382	9 700
32	810	82-1/2	2 100	132-1/2	3 370	182-1/2	4 640	232-1/2	5 910	282-1/2	7 180	332-1/2	8 450	382-1/2	9 720
32-1/2	830	83	2 110	133	3 380	183	4 650	233	5 920	283	7 190	333	8 460	383	9 730
33	840	83-1/2	2 120	133-1/2	3 390	183-1/2	4 660	233-1/2	5 930	283-1/2	7 200	333-1/2	8 470	383-1/2	9 740
33-1/2	850	84	2 130	134	3 400	184	4 670	234	5 940	284	7 210	334	8 480	384	9 750
34	860	84-1/2	2 150	134-1/2	3 420	184-1/2	4 690	234-1/2	5 960	284-1/2	7 230	334-1/2	8 500	384-1/2	9 770
34-1/2	880	85	2 160	135	3 430	185	4 700	235	5 970	285	7 240	335	8 510	385	9 780
35	890	85-1/2	2 170	135-1/2	3 440	185-1/2	4 710	235-1/2	5 980	285-1/2	7 250	335-1/2	8 520	385-1/2	9 790
35-1/2	900	86	2 180	136	3 450	186	4 720	236	5 990	286	7 260	336	8 530	386	9 800
36	910	86-1/2	2 200	136-1/2	3 470	186-1/2	4 740	236-1/2	6 010	286-1/2	7 280	336-1/2	8 550	386-1/2	9 820
36-1/2	930	87	2 210	137	3 480	187	4 750	237	6 020	287	7 290	337	8 560	387	9 830
37	940	87-1/2	2 220	137-1/2	3 490	187-1/2	4 760	237-1/2	6 030	287-1/2	7 300	337-1/2	8 570	387-1/2	9 840
37-1/2	950	88	2 240	138	3 510	188	4 780	238	6 050	288	7 320	338	8 590	388	9 860
38	970	88-1/2	2 250	138-1/2	3 520	188-1/2	4 790	238-1/2	6 060	288-1/2	7 330	338-1/2	8 600	388-1/2	9 870
38-1/2	980	89	2 260	139	3 530	189	4 800	239	6 070	289	7 340	339	8 610	389	9 880
39	990	89-1/2	2 270	139-1/2	3 540	189-1/2	4 810	239-1/2	6 080	289-1/2	7 350	339-1/2	8 620	389-1/2	9 890
39-1/2	1 000	90	2 290	140	3 560	190	4 830	240	6 100	290	7 370	340	8 640	390	9 910
40	1 020	90-1/2	2 300	140-1/2	3 570	190-1/2	4 840	240-1/2	6 110	290-1/2	7 380	340-1/2	8 650	390-1/2	9 920
40-1/2	1 030	91	2 310	141	3 580	191	4 850	241	6 120	291	7 390	341	8 660	391	9 930
41	1 040	91-1/2	2 320	141-1/2	3 590	191-1/2	4 860	241-1/2	6 130	291-1/2	7 400	341-1/2	8 670	391-1/2	9 940
41-1/2	1 050	92	2 340	142	3 610	192	4 880	242	6 150	292	7 420	342	8 690	392	9 960
42	1 070	92-1/2	2 350	142-1/2	3 620	192-1/2	4 890	242-1/2	6 160	292-1/2	7 430	342-1/2	8 700	392-1/2	9 970
42-1/2	1 080	93	2 360	143	3 630	193	4 900	243	6 170	293	7 440	343	8 710	393	9 980
43	1 090	93-1/2	2 370	143-1/2	3 640	193-1/2	4 910	243-1/2	6 180	293-1/2	7 450	343-1/2	8 720	393-1/2	9 990
43-1/2	1 100	94	2 390	144	3 660	194	4 930	244	6 200	294	7 470	344	8 740	394	10 010
44	1 120	94-1/2	2 400	144-1/2	3 670	194-1/2	4 940	244-1/2	6 210	294-1/2	7 480	344-1/2	8 750	394-1/2	10 020
44-1/2	1 130	95	2 410	145	3 680	195	4 950	245	6 220	295	7 490	345	8 760	395	10 030
45	1 140	95-1/2	2 430	145-1/2	3 700	195-1/2	4 970	245-1/2	6 240	295-1/2	7 510	345-1/2	8 780	395-1/2	10 050
45-1/2	1 160	96	2 440	146	3 710	196	4 980	246	6 250	296	7 520	346	8 790	396	10 060
46	1 170	96-1/2	2 450	146-1/2	3 720	196-1/2	4 990	246-1/2	6 260	296-1/2	7 530	346-1/2	8 800	396-1/2	10 070
46-1/2	1 180	97	2 460	147	3 730	197	5 000	247	6 270	297	7 540	347	8 810	397	10 080
47	1 190	97-1/2	2 480	147-1/2	3 750	197-1/2	5 020	247-1/2	6 290	297-1/2	7 560	347-1/2	8 830	397-1/2	10 100
47-1/2	1 210														

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Appendix E. Standard Symbols

This illustration shows standard symbols that are used in this Installation Manual—Physical Planning (IM—PP). Frame numbers are shown circled on plan views and cabling schematics.

In Plan Views:


Cable Entry and Exit Area in Base of Machine. Locating dimensions are measured from edge of frame, not cover. This does not indicate floor cutout.

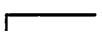

Cable Exit Area, Recommended

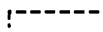

Power Cord Exit, 50/60 Hz

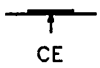

Power Cord Exit, 400 Hz

Power cords are supplied in 4.2-m (14-foot) lengths unless otherwise noted on the specification page. The length is measured from the symbol ⊕ or ◍.


Swinging Gate

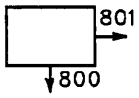

Standard Equipment Outline (Shows machine with covers closed)


Optional Equipment Outline

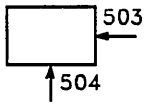


Customer Engineer Indicator Panel

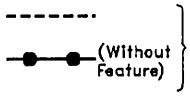
In Cabling Schematics:



Indicates Cable Group <u>from</u> a machine



Indicates Cable Group <u>to</u> a machine



Service Area Boundary (Service clearances are measured from machine with covers closed)


Casters
Locating dimensions are measured from edge of frame, not cover.


Leveling Pads or Glides (90 mm [3-1/2"] Typical Diameter)
Locating dimensions are measured from edge of frame, not cover.


Legs


Nonraised Floor Cable Exit

Meter Location


Unit Emergency Switch

Hinged Covers


Single


Bifold


Offset Bifold


Tambour Canister

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Glossary of Terms and Abbreviations

A

A. Ampere.

ac. Alternating current.

ADU. Automatic dialing unit.

ambient. Environment.

AWG. American wire gauge.

B

blk mpxr. Block multiplexer.

B/M. Bill of Material.

bpi. Bits per inch.

bps. Bits per second.

BSC. Basic storage controller.

BSM. Basic storage module.

BTU. British thermal unit.

bus. One or more conductors used for transmitting signals or power.

C

C. (1) Celsius. (2) Coupler.

CCITT. Consulting Committee of International Telephone & Telegraph (WT).

CDU. Coolant distribution unit.

CE. Customer engineer.

CER. Customer engineering room.

cfm. Cubic feet per minute.

ch. Channel.

chan. Channel.

cm. Centimeter.

cnsl. Console.

coax. Coaxial.

cond. Conductor.

cont. Continuous.

conv. Converter.

CRT. Cathode-ray tube.

C-T-C. Connector-to-connector.

CTCA. Channel-to-channel adapter control.

ctrl. Control.

Cu. Copper.

CW. Copperweld.

D

DAA. Data access arrangement.

DASD. Direct access storage device.

DASF. Direct access storage facility.

DAU. Data adapter unit.

dB. Decibel.

dc. Direct current.

DCE. Data circuit-terminating equipment.

dist. Distribution.

dply. Display.

DRC. Data recording control.

E

EBCD. Extended binary-coded decimal.

EBCDIC. Extended binary-coded decimal interchange code.

EC. Engineering change.

EDR. Effective data rate.

EIA. Electronic Industry Association.

EPO. Emergency power off.

F

F. (1) Fahrenheit. (2) Front.

FBM. Field bill of materials.

FCC. Federal Communications Commission.

FE. Field engineering.

FE DAU. Field engineering data adapter unit.

fr. Frame.

ft. (1) Foot. (2) Feet.

G

gpm. Gallons per minute.

H

H. (1) Height. (2) Hubbell.

Hertz (Hz). A unit of frequency equal to one cycle per second.

hp. (1) High pressure. (2) Horsepower.

Hz. Hertz.

I

I. Impulsive noise.

ICA. Integrated communications adapter.

ID. Identification.

IDA. Integrated data adapter.

IFA. Integrated file adapter.

IM—PP. Installation manual—physical planning.

In.. Inch.

I/O. Input/output.

IPA. Integrated printer adapter.

IPCEA. International Power Cables Engineering Association.

ISC. Integrated storage controls.

K

kb. Kilobyte.

kbps. Kilobytes per second.

kcal/hr. Kilocalories per hour.

kg. Kilogram.

kg/m². Kilograms per square meter.

kVA. Kilovolt ampere.

kW. Kilowatt.

kybd. Keyboard.

L

L. Left.

LA. Line adapter.

lb. Pound.

LIB. Line interface base.

LIC. Line interface coupler.

lumens/m². Lumens per square meter.

M

m. Meter.

max. Maximum.

MCM. Thousand circular mils.

m³/min. Cubic meter per minute.

MES. Miscellaneous equipment specification.

mfg. Manufacturing.

MG. Motor generator.

min. (1) Minimum. (2) Minute.

mm. Millimeter.

modem. Modulator/demodulator.

modulator/demodulator. Device that modulates and demodulates signals transmitted over communication facilities.

MP. Multiprocessing.

mpxr. Multiplexer.

ms. Millisecond.

MSC. Mass storage control.

MSF. Mass storage facility.

MSS. Mass storage system.

MTU. Magnetic tape unit.

N

N/A. (1) Not applicable. (2) Not available.

NEC. National Electric Code.

NEMA. National Electrical Manufactures' Association.

NFPA. National Fire Protection Association.

no.. Number.

nom. Nominal.

NTT. Nippon Telephone and Telegraph.

O

OCR. Optical Character recognition.

OD. Outside diameter.

OEM. Original equipment manufacturer.

oersted. Centimeter-gram-second electromagnetic unit of magnetic intensity.

opt. Optional.

P

P&S. Pass and Seymour.

PCDU. Power and coolant distribution unit.

PDU. Power distribution unit.

pH. Hydrogen-ion concentration.

port. Entry/exit in mass storage control of 3851 for attachment of external devices.

ppm. Parts per million.

proc. Processing.

psi. Pounds per square inch.

psig. Pounds per square inch gauge.

PTT. Postal telephone and telegraph.

PVC. Polyvinyl chloride.

pwr. Power.

R

R. Rear.

R&S. Russell & Stoll.

rdr. Reader.

rel. Relative.

rfi. radio-frequency interference.

RPL. Remote program loader.

RPQ. Request for price quotation.

rt. Right.

S

S. Side.

SC. Specify code.

SCU. Storage control unit.

SDA. Synchronous data adapter.

SDLC. Synchronous data link control.

sec. Second.

seq. Sequential.

service clearance. Minimum space required to allow working room for the machine operator and/or the customer engineer for servicing the unit.

SF. (1) Special feature. (2) Sales feature.

slr. Selector.

SNA. System network architecture.

std. Standard.

stg. Storage.

SVP. Service processor.

T

T. Prominent discrete tones.

TNL. Technical newsletter.

TPS. Two-processor switch.

U

UK. United Kingdom.

UL. Underwriters Laboratory.

UPS. Uninterrupted power supply.

U.S.. United States.

V

V. Volt.

VFL. Variable field length.

W

W. Watt.

WE. Western Electric.

WT. World Trade.

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