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IBM System/370 Installation Manual— Physical Planning Systems

IBM System/370 Installation Manual— Physical Planning

Section 4 for other general coding information for the installation of System/370. The right reference appendices, which are listed in the Contents, contain additional information and cross-references. The following publications may be used in conjunction with this manual depending on the specific system configuration.

The manual is divided into four sections with significant appendices. Section 1 includes floor plan, electrical, and mechanical drawings including the various models of System/370. Section 2 gives detailed system specifications and coding information for the various models of System/370. Section 3 contains machine specifications and coding information for input/output equipment that can be directly attached (linked) to a System/370.

Fourth Edition (October 1974)
This is a major revision of GC22-7004-2, making it obsolete. In addition, the following technical revisions have been incorporated in the new edition:
making them obsolete: GC22-7011, GC22-7012, GC22-7013, GC22-7014, GC22-7015, GC22-7017, and GC22-7019. A technical change to the text of an illustration is shown by a vertical line to the left of the change. Changes are continually made to the specifications herein, but we want the publication in conformance with the installation and operation of IBM equipment refer to the IBM System/370 Handbook, GC22-0001, for edition that are applicable and current.

Requests for copies of IBM publications should be made to your IBM representative or to the IBM branch office serving your area.
This manual has been prepared by the IBM System/370 Planning Group, IBM Research Division, Dept. 308, P.O. Box 350, Armonk, New York 10504. A reader's comment is provided at the back of this publication. If the form for reader's comments is provided at the back of this publication, it will be returned to you. Comments may be sent to the following address: Comments become the property of IBM.



Preface

This manual contains information necessary for planning the physical installation of the IBM System/370.

The customer, in planning his installation, may request the assistance of an IBM Installation Planning representative.

This manual is divided into four sections with eight reference appendixes:

- **Section 1** includes floor planning information, as well as electrical, environmental, and structural requirements, including fire and safety precautions. It also includes a list of abbreviations and definitions.
- **Section 2** gives detailed system specifications and cabling information for the various models of System/370.
- **Section 3** contains machine specifications and cabling information for input/output equipment that can be directly attached (cabled) to a System/370.

- **Section 4** has other general cabling information for the installation of System/370.

The eight reference appendixes, which are listed in the Contents, contain additional information and cross-references.

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

Assembly of Coaxial Cable and Accessories for Attachment to IBM Products, GA27-2805

IBM 3270 Information Display System Installation Manual—Physical Planning, GA27-2787

IBM 3790 Communication System Installation Manual—Physical Planning, GA27-2769

Fourth Edition (October 1974)

This is a major revision of GC22-7004-2, making it obsolete. In addition, the following Technical Newsletters have been incorporated in the base manual, making them obsolete: GN22-2011, GN22-2013, GN22-2014, GN22-2015, GN22-2017, and GN22-2019. A technical change to the text or to an illustration is shown by a vertical line to the left of the change. Changes are continually made to the specifications herein; before using this publication in connection with the installation and operation of IBM equipment, refer to the *IBM System/370 Bibliography, GC20-0001*, for editions that are applicable and current.

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This manual has been prepared by the IBM System Products Division, Product Publications, Dept. B98, PO Box 390, Poughkeepsie, N.Y. 12602. A form for readers' comments is provided at the back of this publication. If the form has been removed, comments may be sent to the above address. Comments become the property of IBM.

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Section 1. Preinstallation Planning

The successful installation of a data processing system requires long-range planning and continuous supervision to ensure that the plans are followed. The customer assumes the responsibility of providing suitable space and facilities for the IBM system. IBM Installation Planning representatives are available for consultation in planning physical requirements of the installation.

Depending on the size of the system, the customer may establish a preinstallation consulting and service group that includes IBM representatives, accounting firms, engineering consultants, and other outside consultants. This group will consult with and advise the customer's data processing manager (or executive committee) on the course of action, objectives, and progress of the installation. The manager (or executive committee) will be in charge of the overall operation and will coordinate the physical planning with the procedures and general planning. When the actual order for the system is closed, most of the preliminary methods and procedures planning will have been completed because such planning often forms the basis for the detailed machine order. The customer's planning and programming staff will prepare a list of the actual components to be used in the installation. This list should include the system's components, other equipment or furniture, tape storage cabinets, worktables, chairs, and desks.

The customer must decide on a suitable location for the computer area. Suitable facilities for installation may exist in some customers' offices; while in others, minor or major changes to existing space will provide a suitable location. In other instances, the customer may desire a complete new building. The operation should follow a planned schedule so that the machine room will be ready when the system is delivered.

SCHEDULE

Because each data processing system installation will differ in some respects from every other installation, it is not possible to provide a detailed schedule in this type of manual. However, the following suggested schedule should be adhered to as closely as possible:

Twelve months before system delivery:

1. Determine the machine components desired and review the order.
2. Read this Installation Manual—Physical Planning.
3. Determine the prospective location of the system. Make a preliminary layout of the proposed installation.
4. Request a visit by the IBM Installation Planning representative to discuss with the customer's planning staff and consulting group all phases of the proposed installation. The discussion should include: size of the proposed room, physical layout of the equipment, floor loadings,

use of raised floors, electrical power and air conditioning requirements, and communications facilities (when required).

5. Advise IBM of security or other restrictions, and advise of any unusual housing requirements as a result of these restrictions.
6. The customer should study local delivery quotations on power, air conditioning, customer-supplied cable, and other equipment to determine when each item must be ordered.

Six months before system delivery, the air conditioning and power equipment requirements, and delivery and installation schedule should be reviewed.

Four months before system delivery, the final layout should be made and approved by the customer, Branch Manager, and Field Engineering Manager so that all cables can be ordered. The cable order will be prepared from the final layout by the IBM representative. *This is a critical point in the schedule.* After these cables are ordered, no changes should be made in the layout that will affect cable lengths. See "Cables Supplied."

A System/370 Model 165, 168, or 195 customer should decide when he would prefer to have the 415-Hz motor generator delivered to the site for installation by his electricians. The motor generator may be delivered up to two months prior to delivery of the system so that all the fixed wiring is complete by system installation time.

One month before system delivery, a survey must be made by local IBM representatives to determine specific requirements for moving the machine components from the delivery platform to the machine room. The IBM Branch Office will notify the IBM plants of any special shipping instructions that are required to facilitate delivery within the customer's facilities.

Two weeks before system delivery:

1. Cables will be delivered to the machine room. It is the customer's responsibility to have the cables set in place by personnel of his selection. It is IBM's preference and practice, under normal circumstances, to set the cables in place at the customer's request. If other personnel are selected, IBM will supervise such work. It is IBM's responsibility to connect interconnecting cables to IBM components. Field Engineering furniture and equipment will be delivered.
2. If components are on order and scheduled to be shipped within three months of the original system, their cables may be included on the original cable order. In this case, they will be shipped with the system cables.

Components scheduled to be shipped later than three months after the original system require a separate cable order. These cables will be shipped to coincide with arrival of the individual units.

One week before system delivery, *all air conditioning equipment should be installed, tested, and ready for operation.* Electrical facilities, lighting, floor ramps, painting, plastering, and decorating should also be completed at this time. This includes the customer's electrical wiring of the motor generator to the system power distribution unit (PDU location), and necessary communications lines, data sets, etc.

Balancing of the air conditioning system and the water cooling system should be made as soon as possible after the machines have been completely installed.

Building Requirements

An Installation Planning representative is available to assist in selecting a suitable area. If the installation of the system requires a new building design, or if the existing space is to be altered radically, a suggested machine layout should be made prior to any building planning.

In selecting a location for the computer installation, consideration should be given to the following:

1. Availability and location of proper and adequate power (including standby power where required).
2. Space to house air conditioning equipment (compressor and air handling location and placement of cooling tower or evaporative condenser).
3. Floor-to-finished-ceiling height (minimum 8 feet [2,44m]), outside wall area, and glass area, because these factors will affect the ease of air conditioning the area, and maintaining the required humidity.
4. Work flow to other areas such as accounting department, etc.
5. Floor loading capacity.
6. Proper safety and fire prevention procedures.
7. Electromagnetic compatibility.

SPACE AND LAYOUT REQUIREMENTS

Space and layout requirements will differ for each system and depend on the customer's intended applications as well as the physical area available. A few general rules can be given.

The floor area required for the system will be determined by the specific components to be installed: length-to-width ratio of the room, location of columns, provision for future expansion, etc. To determine the exact area required for a specific group of components, a machine layout should be made using measurements of room under consideration.

Space should be provided for the daily storage of tape, cards, printed forms, etc., within the computer room. As provided by the National Fire Protection Association Standard, all other combustible materials such as permanent master documents, punched card records, magnetic

tape, etc., should be stored in properly designed and protected storage areas. See NFPA* Standard No. 75, Sections 300 and 600, and "Safety and Fire Precautions" in this manual. Consideration should be given in locating storage areas to minimize both the amount of space required and the travel time between areas.

Space must also be planned for printer forms, carriers, storage cabinets, card and record files, worktables, desks, communications facilities, etc.

The integration of the computer work area with that of other associated areas and with storage areas should be considered. The work flow from other areas such as punched card equipment to and from the system should be considered when aisles and intermediate storage locations are planned. The CPU or other control consoles should not be placed directly on main aisles or in traffic centers.

At the option of IBM, test equipment may be assigned to the installation to maintain the equipment in the machine room. Some machines may be moved to the test area, depending on the type of work to be done. These areas should be, whenever possible, on the same floor level. If they are not, ramps should be provided for moving test equipment and machine components. See "CE Room and Test Area" for detailed requirements.

SYSTEM LAYOUT

Before attempting to make a layout, it will be necessary to assign priority to the system channels and to the control units to be attached to the channels. The method for making these assignments is described under "Priority." The IBM Branch Office will provide necessary assistance.

Operational requirements should determine the specific location of the various components in the machine room. However, because the separate components are connected by cables of restricted length, and because of space limitations, priority, and the necessity for maintaining clearances between machines for servicing, work space, and aisles, the customer may need to prepare and analyze several tentative layouts before deciding on the final one.

Because each customer has different requirements such as room size, column spacing, a combination of machine components, and a procedure for using auxiliary input/output units, each installation should be considered individually to determine the best arrangement.

The customer should prepare a layout of the system with the advice of the salesman and Installation Planning representative. This layout must be finalized and approved by the customer prior to the ordering of the system cables. It is the responsibility of each IBM Branch Office to ensure that cables are ordered on schedule. The Installation Planning representatives are available for assistance in this ordering.

To make a layout, it is necessary to have an accurate drawing of the proposed area. Plastic templates, scaled at 1/4 inch to 1 foot, will be available from IBM. See Appendix E

* National Fire Protection Association
60 Batterymarch Street
Boston, Massachusetts 02110

Standard Specifications

SHIPPING DIMENSIONS

Unless otherwise noted on individual specifications page, the following statement applies: All system components can be reduced to 29½" x 60" (75 cm x 152 cm) or smaller sections for shipment. See Maintenance Library Installation Manuals for individual System/370 models for additional information.

ENVIRONMENTAL SPECIFICATIONS

Unless otherwise noted on individual specifications pages, the following environmental specifications apply:

Environment Operating:

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

Environment Nonoperating:

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

Environment Shipping:

Temperature	-40° to 140°F (-40° to 60°C)
Rel Humidity	5%-100% (no condensation)
Wet Bulb Range	33°-80°F (1°-29°C)

METRIC CONVERSIONS

In this manual, English units converted into metric units are rounded to the nearest whole number or to the nearest decimal place given. Exceptions are kilograms (kg), kilocalories per hour (kcal/hr), cubic meters per minute (m³/min), lumens per square meter (lumens/m²), kilograms per square meter (kg/m²) pertaining to floor loading, and meters (m) pertaining to altitude; these are rounded to the 1/10/50 rule.

To round according to the 1/10/50 rule:

1. When the number is less than 100, round up to the next unit, for example, 23,2 or 23,7 becomes 24.
2. When the number is greater than 100 and less than 1,000, round up to the next ten, for example, 163 becomes 170.
3. When the number is greater than 1,000, round up to the next 50, for example, 1,232 becomes 1,250.

Note that numbers expressed in metric units use commas in place of decimal points and decimal points in place of commas (for example, two thousand one hundred kilograms is expressed as 2.100 kg and one-half becomes 0,5).

MANUFACTURERS OF PLUGS, RECEPTACLES, AND CONNECTORS

Hansen-Hansen Manufacturing Co.
Hubbell (H)—Harvey Hubbell, Inc.
Pass and Seymour (P&S)—Pass and Seymour, Inc.
Russell and Stoll (R&S)—Midland Ross Corp.

ABBREVIATIONS AND DEFINITIONS

A	ampere	H	height/Hubbell
ac	alternating current	hp	high pressure/horsepower
ADU	automatic dialing unit	Hz	hertz
ambient	environment		
AWG	American wire gauge	ICA	Integrated Communications Adapter
		ID	identification
blk mpxr	block multiplexer	IDA	Integrated Data Adapter
bpi	bits per inch	IFA	Integrated File Adapter
bps	bits per second	in.	inch
BSM	basic storage module	I/O	input/output
BTU	British thermal unit	IPA	Integrated Printer Adapter
bus	one or more conductors used for transmitting signals or power	IPCEA	International Power Cables Engineering Association
		ISC	Integrated Storage Controls
C	Celsius/coupler		
CCITT	Consultant Committee of International Telephone & Telegraph (WT)	kb	kilobyte
CDU	coolant distribution unit	kbps	kilobytes per second
CE	customer engineer	kcal/hr	kilocalories per hour
CER	customer engineering room	kg	kilogram
cfm	cubic feet per minute	kg/m ²	kilograms per square meter
ch	channel	kVA	kilovolt ampere
chan	channel	kW	kilowatt
cm	centimeter	kybd	keyboard
cnsl	console		
coax	coaxial	L	left
cond	conductor	LA	Line Adapter
conn	connector	lb	pound
cont	continuous	lumens/m ²	lumens per square meter
conv	converter		
CPU	central processing unit	m	meter
CRT	cathode-ray tube	max	maximum
C-T-C	connector-to-connector	MCM	thousand circular mils
ctrl	control	m ³ /min	cubic meter per minute
Cu	copper	MES	Miscellaneous Equipment Specification
CW	copperweld	mfg	manufacturing
		MG	motor generator
		min	minimum/minute
DAA	Data Access Arrangement	mm	millimeter
DASF	direct access storage facility	modem	modulator/demodulator
DAU	data adapter unit	modulator/demodulator	device that modulates and demodulates signals transmitted over communication facilities
dc	direct current		
dist	distribution	MP	multiprocessing
dply	display	mpxr	multiplexer
DRC	data recording control	ms	millisecond
		MSC	mass storage control
EBCD	extended binary-coded decimal	MSF	mass storage facility
EBCDIC	extended binary-coded decimal interchange code	MSS	mass storage system
EIA	Electronic Industry Association	MTU	magnetic tape unit
EPO	sequence and control		
		NEC	National Electrical Code
		NEMA	National Electrical Manufacturers' Association
F	Fahrenheit/front	NFPA	National Fire Protection' Association
fctly	facility	No.	number
FE	field engineering	nom	nominal
FE DAU	Field Engineering Data Adapter Unit	NTT	Nippon Telephone and Telegraph
fr	frame		
ft	feet	OD	outside diameter
		OEM	original equipment manufacturer
gpm	gallons per minute	oersted	centimeter-gram-second electromagnetic unit of magnetic intensity

for order (form) numbers. Note that the plan views printed in this manual may not be scaled at $\frac{1}{4}$ inch to 1 foot. The templates show the clearances required to allow working room for the customer's operator and for the customer engineer to service the unit. Space is included for test or servicing equipment. The swinging radii of the component gates and machine covers and the caster and cable hole locations are shown. If the area layout is to scale, these templates may be used to position the machine equipment on the area drawing; in some cases, clearances shown on the templates may be overlapped as long as the larger clearance is maintained. The gate swing of an auxiliary unit must not interfere with the gate swing of its corresponding control unit.

Systems and machines must be located so that the length of connecting cables will not exceed maximum limits. These limits vary for each type of machine, and charts showing the limits are in Sections 2 and 3 of this manual.

To make a layout and order cables, it is necessary to consider the following information pertaining to the system configuration:

1. Control units to be assigned to each channel.
2. Channel sequence or priority.
3. Features on all units.
4. Physical and logical sequence of control units on each channel.
5. Number of input/output units or features attached to each control unit.

The priority sequence of units on each channel should be established by the customer to fit his application.

The final layout must be reviewed to ensure that cable limitations have not been violated and that proper clearances have been maintained. Copies of this layout must accompany the cable order.

After the cables have been ordered, any changes in the final layout that affect cable lengths must be accompanied by an RPQ (Request for Price Quotation).

When preparing a layout for a system, the following additional points should be considered:

1. There should be visual access between a control unit and at least one of its associated input/output devices.
2. There should be visual access between a channel (CPU on the smaller systems) and one of the attached control units, also, between a channel and the system console.

Significant servicing advantages can be realized by keeping the physical distances as short as practical to permit the CE test panels to be visible and recognizable between the units mentioned in items 1 and 2.

3. High-intensity lighting—over 50 footcandles (540 lumens/m^2)—should be avoided in areas where display devices are to be used.
4. When a unit requires external cables that must be purchased by the customer and installed through walls and/or floors, the purchase of this cable and the arrangements for its installation should be made with

sufficient lead time to permit the cable facilities to be available to the computer system at installation time. This pertains to units such as the IBM 2260 Display Station and the IBM 3705 Communications Controller.

5. Where teleprocessing equipment requiring common-carrier facilities is to be installed, arrangement for these facilities should be made in advance to permit these facilities to be available at the time of installation of the computer equipment. The IBM teleprocessing representative should be consulted regarding systems carrier requirements. See *IBM Planning and Installation of a Data Communications System Using IBM Line Adapters*, GA24-3435, for additional information.
6. The front of the IBM 2816 Switching Unit has a switch and display panel that requires periodic manual operations and should be accessible to and visible from the operator's position.
7. When an IBM machine without built-in convenience outlets is located remote from the computer room, power must be available adjacent to the unit for soldering irons, test equipment, and so forth.

FLOOR CONSTRUCTION

The weight of each unit is listed on its specifications page. A structural engineer should be consulted to determine whether the floor is capable of supporting the system weight load as oriented on your layout.

IBM considers the following factors in determining floor loading:

1. If more than three machines are placed side by side, no allowance can be taken for side clearance at the ends of the machines.
2. Regardless of the actual service clearances required, clearances used in floor loading computations cannot be more than 30 inches (76 cm) in any direction from the machine.
3. Twenty pounds per square foot (98 kg/m^2) of service area used in calculation must be applied as live-load in floor loading computations.
4. If a false or raised floor is used, 10 pounds per square foot (49 kg/m^2) of total area used in calculation must be applied as false floor load in the floor loading computation.
5. The weight of cables has been considered as part of the machine weight.
6. Most office building floors rated at 50 pounds per square foot (250 kg/m^2) have an additional allowance of 20 to 25 pounds per square foot (98 to 130 kg/m^2) for partitions. The local building department should be contacted in reference to using this partition allowance in determining the floor loading capacity.

A raised floor will accomplish the following major objectives:

1. Allow for future layout change with minimum reconstruction cost.
2. Protect the interconnecting cables and power receptacles.
3. Provide personnel safety.
4. Permit the space between the two floors to be used to supply air to the equipment and/or area.

A raised floor can be constructed of steel, aluminum, or fire-resistant wood. The free-access type floor is preferred rather than the raceway type. The two general floor types are shown in Figure 1-1.

IBM recommends:

1. No metal should be exposed to the walking surface where a metallic raised floor structure is used. Such exposure is considered an electrical safety hazard and can also cause static discharge problems.
2. The raised floor height should be 12 inches (31 cm).
3. Minimum clearance must be adequate to accommodate IBM cables, chilled water piping, power distribution, etc., but should not be less than 4½ inches (11 cm) to allow for passage of cables and connectors.
4. When a raised floor panel is cut for cable entry, air register, etc., additional panel support may be required to restore the structural integrity of the panel.
5. Protective covering should be used to prevent damage to floor tiles, carpeting, and panels while equipment is being moved into or relocated within the installation.
6. Eliminate sharp edges on all floor cutouts where cables and hoses pass through these openings.

Floor covering material can contribute to the buildup of high static electrical charges as a result of the motion of people, carts, furniture, etc., in contact with the floor material. Abrupt discharge of these static charges to metallic surfaces or to other people cause discomfort to personnel and may cause malfunction of electronic equipment.

This static buildup and discharge can be minimized by:

1. Providing a conductive path to ground from metallic raised floor structure including the metal panels.
2. Ensuring that maximum resistance for floor surface material is 2×10^{10} ohms, measured between floor surface and building (or applicable ground reference). The procedure outlined in NFPA No. 56A, Chapter 462, Section 4628, should be used. Details of this procedure can be obtained from the IBM Installation Planning representative, if necessary. Floor material with a lower resistance will further decrease static buildup and discharge. The floor covering shall provide a resistance of not less than 150 kilohms when measured, from any point on the floor, by the methods described in NFPA 56A.

Note: Special attention must be given to floor panels constructed of metal facings and nonconductive core to ensure that the resistance requirements are met.

3. Maintaining the room humidity within control limits of design criteria as defined under "Temperature and Humidity Design Criteria" in this manual.

If carpet floor coverings are used, they should be of the variety marketed by carpet manufacturers as "antistatic." Two types are generally available: those with the antistatic properties manufactured into the material and those treated later with antistatic agents. Materials, depending on additives, may have short effective antistatic life without frequent retreatment of the carpet. Maintenance of all antistatic floor coverings (carpet, tile, etc.) should be in agreement with the individual supplier's recommendations.

Vacuuming equipment used in the machine area should have a nonconductive hose and nozzle assembly. This safety precaution minimizes any possibility of static discharge or electrical shock.

FURNITURE

Furniture can provide a potential source of high static charge. Precautions should be taken to ensure that seat covers, etc., are made of materials resistant to static buildup. Many plastics will permit the buildup of high static charges. Cloth-covered chairs are normally less susceptible to generating static charges. Rubber or other insulating type of feet for equipment should be avoided. If casters, ball bearings, etc., are used, they should be lubricated with a graphite or other conductive grease. Rubber tread casters, wheels, etc., should contain conductive material.

The resistance of furniture hardware which touches the floor (such as casters, feet, etc.) should be below 10^9 ohms from metal in the furniture frame to a metal test surface on which the unloaded furniture sample is placed.

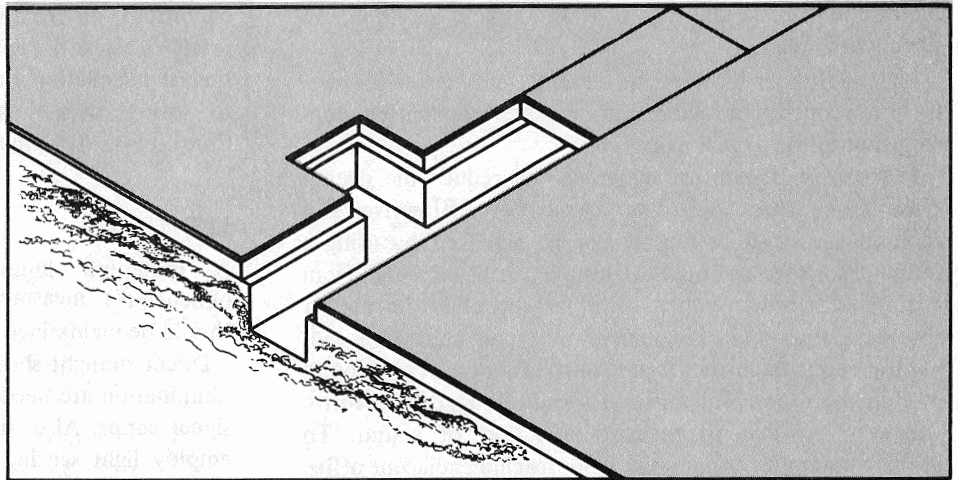
ACOUSTICAL TREATMENT OF COMPUTER ROOM

The entire field of noise reduction is complex. Acoustical treatment of the computer room is recommended to provide for more efficient and comfortable operation. Proper design of acoustic treatment of a computer room may require the services of an acoustical specialist.

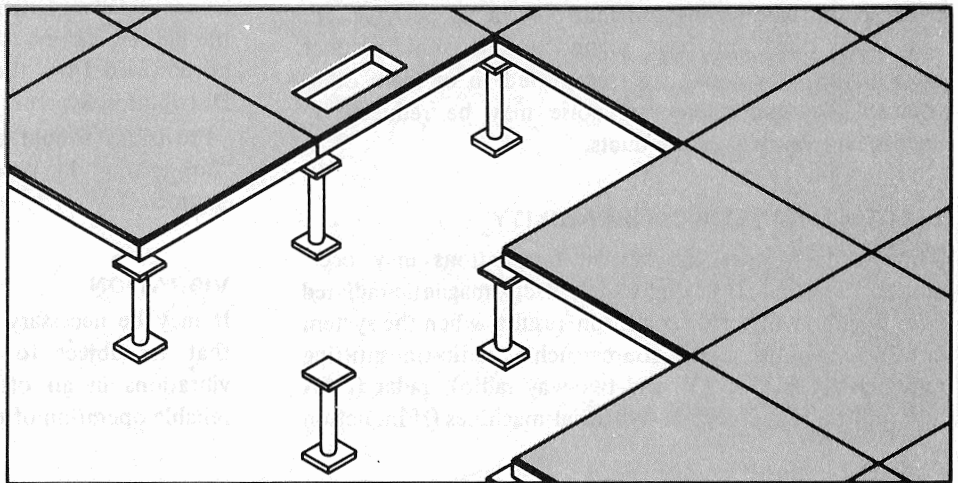
The total environmental noise level of a computer room is affected by all the noise sources in the room, the physical arrangement of the noise sources, and the sound reflective (or absorptive) characteristics of the room surfaces.

The noise level in an installation may be reduced by proper spacing and orientation of the various pieces of noise-emitting equipment. The principal noise sources of the system are the mechanical units such as card punch machines, printers, readers, sorters, and tape drives. Sufficient space should be provided around such units—the farther apart they can be placed the lower the overall room noise will be. When possible, place the noisier machines so that operators are not constantly working between them. Consider placing the quieter electronic units between the

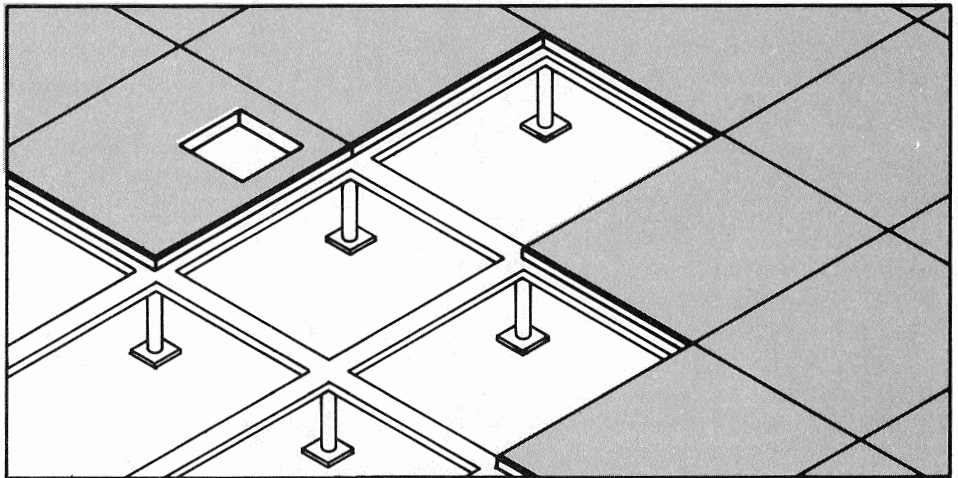
Raceway Floor:
Covers Removable
Cutouts in Covers



Free-Access Floor:
Pedestal Supported Panels
Panels Removable
Cutouts in Panels



Free-Access Floor:
Subframing Supported Panels
Panels Removable
Cutouts in Panels



Note: A raised-floor-panel lifter should be made readily available in the computer room at a convenient location.

Figure 1-1. Types of Raised Flooring

mechanical units referred to previously. An effective method is to place these units at an angle to an aisle or an open work area.

Air conditioner blowers and other external noise sources, if not properly installed, can make a substantial contribution to the overall noise level.

The use of absorptive materials will reduce the overall noise level throughout an installation. Effective and economical sound reduction can be achieved by using a sound-absorptive ceiling. Best results can be expected from a dropped acoustic ceiling. For large rooms, the use of absorptive material (conductive rugs) on the floor will usually result in further significant reduction of the sound level in the room. Wall surfaces should be made absorptive wherever possible to prevent reflection of sound. To prevent computer room noise from reaching adjacent office areas, it is important that the walls be constructed from the floor to the base ceiling and that they be properly sealed. The doors must also have a good seal. If overhead duct work exists, noise may be transmitted to or from other rooms. The transmission of noise may be reduced by acoustical treatment of the ducts.

ELECTROMAGNETIC COMPATIBILITY

Planned data processing system installations may occasionally be in areas having a high electromagnetic-radiated field environment. This condition results when the system is near a radio-frequency source such as radio-transmitting antennas (AM, FM, TV, and two-way radio), radar (FAA and military), and certain industrial machines (rf induction

heaters, rf arc welders, and insulation testers). Under these conditions, an Installation Planning review may be appropriate to assess the environment and determine whether any special installation or product considerations are advisable to assure normal system operation and maintenance. Consult your IBM Installation Planning Representative.

LIGHTING

A minimum illumination of 50 footcandles (540 lumens/m²), measured 30 inches (76 cm) above the floor, should be maintained in the machine room area.

Direct sunlight should be avoided, because lower levels of illumination are needed to observe the various console and signal lamps. Also, direct sunlight may cause devices that employ light sensing (such as certain magnetic tape units) to malfunction. The lights for general illumination should be sectionally controlled by switches so that a portion of the lighting can be turned off as desired. Lights should not be powered from the computer power panel. See "Power Distribution System" for details.

Provisions should be made for emergency lighting. See "Supporting Facilities" under "Safety and Fire Precautions."

VIBRATION

It may be necessary to install the System/370 in an area that is subject to minor vibrations. The intensity of vibrations in an office environment will not affect the reliable operation of the System/370.

Air Conditioning

The components of the machines are internally cooled by air circulated by blowers in most units. The air intake varies slightly from one unit to another, but generally is through the bottom and also through louvers along the bottom edge. One-inch (25,4-mm) dust filters are included at each air input. Warm air usually exhausts from the top of each unit.

To determine the air conditioning capacity necessary for an installation, the following factors must be considered:

- Machine heat dissipation
- Personnel
- Latent load
- Fresh air introduction
- Infiltration of heat through outer walls
- Ceiling
- Floors
- Door openings
- Partitions
- Glass wall area
- Possible reheat

A separate air conditioning system is recommended for a data processing installation. Because of the amount of heat dissipated while this machine is in operation, it is necessary for the air conditioning system to maintain a cooling cycle year-round.

Machine heat dissipation loads are given on the specification page for each machine. For additional cooling requirements for Models 165, 168, and 195, see Appendix A.

The air conditioning units should not be powered from the computer room power panel. The feeder for the air conditioning system and for the computer room power panel should not be in the same conduit.

TEMPERATURE AND HUMIDITY DESIGN CRITERIA

The air conditioning system should be designed to operate at 75°F (24°C) and 50% relative humidity at altitudes up to 7,000 feet (2.150m). This design point provides for the largest buffer in terms of available system time. If the air conditioning system fails or malfunctions, the computer will be able to operate until it reaches its specified limits. This increases the possibility of effecting air conditioning repairs before the computer must be shut down. The design point has also been proven to be a generally acceptable personal comfort level.

In certain geographical areas, a design point of 50% relative humidity is not practical and a value of 45% should be used.

Air conditioning control instruments that respond to $\pm 2^\circ\text{F}$ ($\pm 1^\circ\text{C}$) and $\pm 5\%$ relative humidity should be installed.

Substantial deviations from the recommended design point in either direction, if maintained for long periods, will expose the system to malfunction from external conditions. High relative humidity levels may cause improper feeding of cards and paper, as well as operator discomfort and

condensation on windows and walls when outside temperatures fall below room dew point. Low relative humidity levels alone will not cause static discharge. However, in combination with certain types of floor construction, floor coverings, furniture, etc., static charges which are generated by movement of people, carts, furniture, paper, etc., will be more readily stored on one or more of the objects. These charges may be high enough if discharged by contact with another person or object to be quite objectionable to operating personnel; and if discharged to or near data processing or other electronic equipment, these charges can cause intermittent interference.

Because deviations of only a few hours will permit the floors, desks, furniture, cards, tape, and paper to reach a condition that will readily permit the retention of a charge, it is recommended that the air conditioning system be automatically controlled and provided with a high/low alarm or a continuously recording device with the appropriate limits marked. In most areas, it will be necessary to add moisture to the room air to meet the design criteria.

MACHINE OPERATING LIMITS

Some individual machines may require special consideration and have more or less restrictive requirements. See machine specification page for individual requirements.

	<i>Machine Operating</i>	<i>Machine Nonoperating</i>	<i>Design Criteria</i>
Temperature	60° to 90°F (16° to 32°C)	50° to 110°F (10° to 43°C)	75°F (24°C)
Relative Humidity	20% to 80%	8% to 80%	50%
Max Wet Bulb	78°F (26°C)	80°F (27°C)	—

The air entering the machine must be at the conditions for machine operation before power is turned on.

Under no condition of operation may the machine input air and room air exceed 90°F (32°C). *This is a maximum operating temperature limit and should not be considered a design condition.*

When conditioned air is supplied to the base of any unit by a duct or underfloor air supply, the relative humidity of the air entering a machine unit should not be greater than 80%. This specification is an absolute maximum. Air temperature in this duct or underfloor air supply should be kept above room dew point temperature to prevent condensation within or on the machines. When it is necessary to add moisture to the system for control of low relative humidity, one of the following methods should be used:

1. Steam grid or jets.
2. Steam cup.
3. Water atomizers.

Water treatment may be necessary in areas with high mineral content in the water to avoid contamination of the air.

Note: In localities where the outside temperature drops below freezing, condensation will form on single, glazed window panes. Also, if outside temperatures are considerably below freezing, the outside walls of the building should be waterproofed or vapor sealed on the inside; or, in time, structural damage will occur in the outside walls.

AIR FILTRATION

A high-efficiency filter, rated according to the following specifications, should be installed to filter all air supplied to the computer room.

Mechanical and electrostatic air cleaners operate on two different principles; therefore, it is necessary to specify a different efficiency rating for each type.

Mechanical Air Filter

The mechanical air filter must be rated at a minimum of 20% efficiency by the Bureau of Standards discoloration test using atmospheric dust. This rating applies to a clean filter and must be maintained throughout the life of the filter.

Electrostatic Plate Filter

The electrostatic plate filter must be rated at a minimum of 85 to 90% efficiency by the Bureau of Standards discoloration test using atmospheric dust. Electrostatic air cleaners are designed to operate at 85 to 90% efficiency at a given face velocity. As you increase the face velocity through an electrostatic filter, its efficiency decreases. Therefore, an electrostatic filter operated at increased face velocities or below 85% efficiency would allow a greater number of particles charged by the ionizing wires to pass through the plate section and to enter the room. This would increase what is known as space charge. As the space charge increases, a greater voltage differential occurs between the positive charged particles and the negative surfaces in the room. This causes dust to accumulate rapidly on all surfaces, defeating the purpose of a high-efficiency filter.

Special air filtration is necessary only where installations are exposed to corrosive gases, salt air, or unusual dirt or dust conditions.

TEMPERATURE AND HUMIDITY RECORDING INSTRUMENTS

It is recommended that all customers install temperature and humidity recording instruments. Recording instruments are necessary to provide a continuous record of temperature and humidity conditions in the machine area. Also, if the air conditioning requirements are not met, a record is available to indicate the extent and duration of the undesirable condition and to indicate whether a drying-out period is required. This may, in some cases, save machine downtime.

The record of temperature and humidity can be used:

1. To assure the customer that his air conditioning installation is continuously performing its job. Installation errors and loss of efficiency because of malfunction of some part of the air conditioning system can be quickly detected.
2. To determine whether a mandatory drying-out period is necessary when humidity limitations are exceeded. The drying-out period may be necessary if the excess humidity occurs either during periods of actual machine operation or during periods when the machine is down and unattended. The extent and duration of the excess humidity determines the duration of the drying-out period.
3. To determine whether the environment in the area meets the requirements for the machine.

A visual or an audible signal device should be incorporated into the instrument. It provides a visual or an audible indication that the temperature or humidity conditions to the computer area are nearing the maximum limitations stated in this manual. Action can then be taken by the customer's personnel to correct this situation.

Direct-reading instruments with a seven-day, electric-drive chart should be used for all installations to monitor the ambient room conditions. The recorder should be at a representative location within the room and adjacent to the control devices.

For use in monitoring the underfloor air conditions, a remote indicating instrument is recommended. This should also have a seven-day, electric-drive chart and can be the wet and dry bulb or electronic type if direct reading is not available. The recording instrument can be on the wall in the room or in the mechanical equipment room or in any other location convenient to the building engineer.

Air Distribution and Types of Systems

The heat load of the computer system is concentrated in a relatively small area. For this reason, careful attention should be given to the method of air distribution to eliminate areas of excessive air motion.

Several types of air conditioning systems can be designed to satisfy the temperature and humidity requirements. The following are the most common types of systems in use with a brief description of each. In no case should these descriptions be considered complete, and the use of an experienced air conditioning design engineer is strongly recommended.

The system should use predominantly recirculated air with a set minimum for introduction of fresh air for personnel. This minimum fresh air introduction will enable the machine area to be pressurized so that air leakage is always outward. This will help prevent dust entry from adjacent areas.

SINGLE DUCT (OVERHEAD SYSTEM)

In this system, the entire heat load of the room, including the heat generated by the computer system, is absorbed by the air supplied to the machine room. The air is generally supplied from either an overhead duct and diffuser system or by a ceiling plenum.

The return air to the air conditioning unit is taken from either ceiling return registers above the heat-producing units, or a fixed pattern of returns both in the ceiling or on the walls around the periphery of the room.

The temperature control system would consist of temperature and humidity controls placed in a representative location within the machine room. A temperature and humidity recorder (previously described) would be mounted adjacent to the controls to monitor the room conditions.

UNDERFLOOR SYSTEM

In this system, the space between the regular building floor and the raised floor is used as a supply plenum. All air is discharged into the room through floor registers around the perimeter of the area. The air is returned to the air conditioning unit by means of ceiling registers located directly above the machine units.

A higher return temperature can be used in this system without affecting the design conditions of the overall room. The design of this system takes into consideration a heat transfer factor through the metal floor. This affords a

certain amount of reheat to control relative humidity of air before it enters the room.

The temperature control system would consist of the same controls as described for the single duct system. In addition, the system must have controls of air temperature in the underfloor supply system to prevent an uncomfortably cold floor. Air entering the machine through the cable holes must be within stated machine specifications.

TWO DUCT (TWO AIR CONDITIONING UNIT SYSTEM)

One air handling unit with separate controls supplies conditioned and filtered air to the area under the raised floor. The air is discharged into the room through the floor panels or the registers. This air absorbs the heat generated by the machine and is discharged from the top of the units into the room. Relative humidity of the air supplied to the units should be maintained below 80% and temperatures should be controlled to prevent condensation on or within the units.

To ensure a controlled relative humidity, it will be necessary to provide for a reheat system to operate in conjunction with the cooling unit. This unit is basically a sensible cooling operation.

The second air handling unit supplies air directly to the room through a separate duct system and should be large enough to absorb the remaining heat load in the computer area. It should be capable of maintaining room temperature and relative humidity as specified in this manual and give complete year-round air conditioning, ventilation, and heating.

TWO DUCT (SINGLE AIR CONDITIONING UNIT SYSTEM)

This system is similar to the preceding system except in one respect: This system uses only one air handling unit to supply both air circuits. The air is filtered and the temperature and humidity are regulated before air is supplied to the room and the underfloor area.

A split coil with reheat and/or face and bypass dampers can be used to regulate the air to be supplied to the underfloor area. Relative humidity of this air should be maintained below 80% and temperature should be controlled to prevent condensation on or within the units.

The temperature control system for the air being supplied to the overhead system would be the same as for the single duct system. In addition, a control system would have to be installed in the discharge duct to regulate the air supply to the underfloor system. The controls would operate either the separate cooling and reheat coils or the face and bypass dampers to maintain the required conditions. A remote reading temperature and humidity recorder should be installed with the sensing elements in the discharge air to the underfloor system to monitor the air entering the machine units.

Power Requirements

The computer system can be supplied to operate on either a 208V or a 230V (not both), 3-phase (1-phase for some machines; see individual machine specification pages), 3-wire, 4-conductor, 60-Hz supply. The four conductors consist of three phase wires and one insulated equipment grounding conductor (green or green with yellow trace).

Total system power demand depends on the system configuration, as well as on the type of operation. A quick summary can be obtained by adding the kVA values as shown on the individual machine specification pages.

VOLTAGE LIMITS

The line-to-line, steady-state voltage must be maintained within *plus 10% or minus 8%* of the normal rated voltage, measured at the receptacle, when the system is operating.

A transient-voltage condition must not exceed plus 15% or minus 18% of nominal and must return to within a steady-state tolerance of plus 10% or minus 8% of the normal rated voltage within 30 cycles. See Note 11 in the "Specification Summary," Appendix F or G, for systems or machines that can accept the transient-voltage condition.

Because of the possibility of brownouts, or other marginal voltage conditions, it may be necessary to install a voltage monitor or meter.

FREQUENCY LIMITS

The line frequency must be maintained at *60 Hz plus or minus ½ Hz*.

LINE-TO-LINE VOLTAGE IMBALANCE

The value of any of the three line-to-line equipment voltages in a three-phase system shall not differ by more than 2.5% from the arithmetic average of the three voltages. All three line-to-line voltages shall be within the limits specified under "Voltage Limits."

HARMONIC CONTENT

The maximum total harmonic content of the power system voltage waveforms on the equipment feeder shall not exceed 5% with the equipment not operating.

Power Distribution System

PRIMARY COMPUTER POWER SERVICE

For maximum system reliability, the computer power panel should connect to feeders that serve *no other loads*. Transient-producing devices, such as accounting machines, card punch machines, typewriters, desk calculators, and so forth, should be connected to separate panels from those feeding the computer units to eliminate potential sources of noise interference to the computer system.

BRANCH CIRCUITS

The computer branch circuit panel should be in an unobstructed, well-lighted area in the computer room.

The individual branch circuits on the panel should be protected by suitable circuit breakers properly de-rated according to manufacturer specifications and applicable codes. Each circuit breaker should be labeled to identify the branch circuit it is controlling.

The grounding wire of the branch circuit must be insulated and equal in size to the phase conductors.

Branch circuits should terminate under the raised floor as close as possible (within 10 feet [3,05m]) to the machine they supply. The branch circuits should be run in metallic conduit, either rigid or nonrigid. This conduit system should be continuous and uninterrupted from the receptacle to the building or transformer ground. See Figure 1-2 for further details.

Power cords are supplied in 14-foot (427-cm) lengths, unless otherwise noted on the specification page. The length is measured from the symbol \oplus on the plan views. Power plugs furnished by IBM that can be located under the computer floor will be watertight. The customer-supplied receptacle should be watertight or nonwatertight and can be either an inline or a fixed type, depending on local code requirements.

Note: The service ratings for the branch circuit connections are given in the "Specification Summary," Appendix F or G.

GROUNDING

All IBM units are provided with an equipment ground wire (green or green with yellow trace). At the branch circuit panel, the green wire ground from all units must be tied into one main grounding conductor. This equipment grounding wire is a dedicated ground, not a neutral, and must be carried back to service ground or suitable building ground. Conduit must not be used as the only grounding means.

To minimize the effects of high-frequency noises, the branch circuit power panel servicing the equipment should be mounted in contact with bare building steel or connected to it by a short length of cable. Where this is not possible, a metal area (power panel plus conduit plus plate) of at least 10 square feet (1m^2) in contact with masonry can be used. The plate shall be connected to the green-wire common. See Figure 1-2. The connection shall not be more than 5 feet (1,5m) long and shall consist of #12 AWG (0.0051 square inches [$3,3\text{ mm}^2$]) or larger wire.

PHASE ROTATION

The three-phase power receptacles for use with the system must be wired for correct phase rotation. Looking at the face of the receptacle, and running counterclockwise from the ground pin, the sequencing will be phase 1, phase 2, and phase 3. See Figure 1-3.

EMERGENCY POWER-OFF CONTROLS

As a safety precaution, in addition to emergency power-off switches for individual components or other units of equipment, controls for the disconnecting provided as a part of the main service wiring supplying the electronic computer equipment shall be convenient to the operator. These controls should also be next to each exit door to readily disconnect power to all electronic equipment in the computer area and to the air conditioning system. Provision should be made for emergency lighting. See "Supporting Facilities" under "Safety and Fire Precautions" and notes on motor-generator specification pages.

LIGHTNING PROTECTION

It is recommended that the customer install lightning protection on his secondary power source when:

1. Primary power is supplied by an overhead power service.
2. The utility company installs lightning protectors on the primary power source.
3. The area is subject to electrical storms or equivalent type power surges.

The determination as to whether lightning protection is desirable, the selection of the service protector needed, and its proper installation are to be made by the customer.

CONVENIENCE OUTLETS

A suitable number of convenience outlets should be installed in the computer room and CE room for use by building maintenance personnel, porter service, customer engineers, etc. Convenience outlets should be on the lighting or other building circuits, *not on the computer power panel or feeder*. See "CE Room and Test Area" for details of requirements in that area.

Under no circumstances are the system convenience outlets on IBM units to be used for any purpose other than normal servicing.

PRIMARY POWER PROBLEM AREAS

All reasonable efforts have been made in the machine design to ensure satisfactory operation from the normal power supplied by most power companies. There are, however, many outside variables over which neither your power company nor IBM has any control. To guard against possible computer malfunctions caused by outside (radiated or conducted) transient electrical noise signals being superimposed on the power supplying your computer, power distribution design should comply with the computer system requirements specified in this manual.

Failures caused by your power supply are basically of two types:

1. *Power Outages*: This includes short duration dips in voltage as well as prolonged outages. If the frequency of such power failures is not acceptable for your operation, it may be necessary to install static, rotary, or a combination of both types of standby power systems. The IBM Installation Planning representative will discuss your application requirement with you.
2. *Transient Electrical Noise Superimposed on Power Lines*: This type of problem may be caused by a wide variety of industrial, medical, communications, or other equipment in the vicinity of the power company's distribution lines, or within or adjacent to your facilities. Electromechanical equipment such as adding machines, card punch machines, etc., on the same power source as the computer, may, under certain conditions, cause intermittent electrical disturbances.

If transient-producing devices have been eliminated from the feeder and the computer room power panel and power line disturbances are still present, it may be necessary for the customer to install isolation equipment (for example, transformers, motor generators, and so forth).

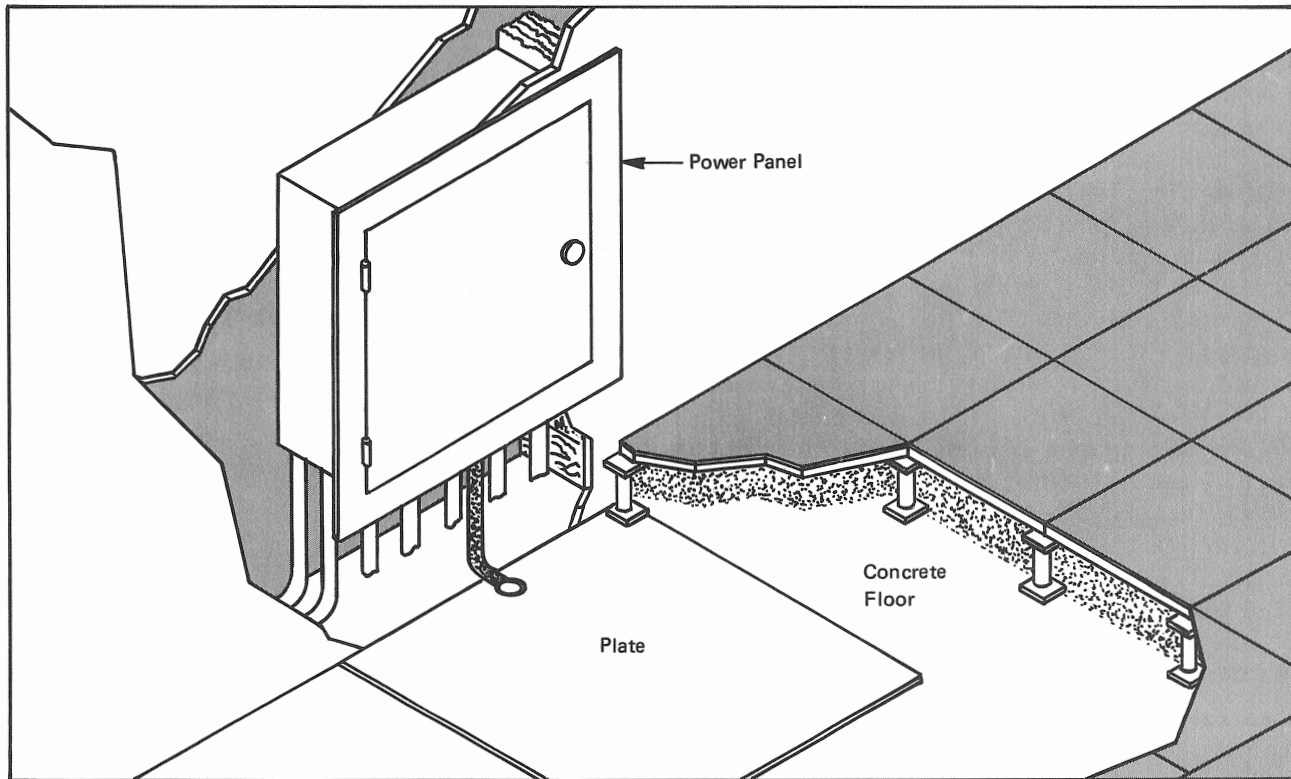
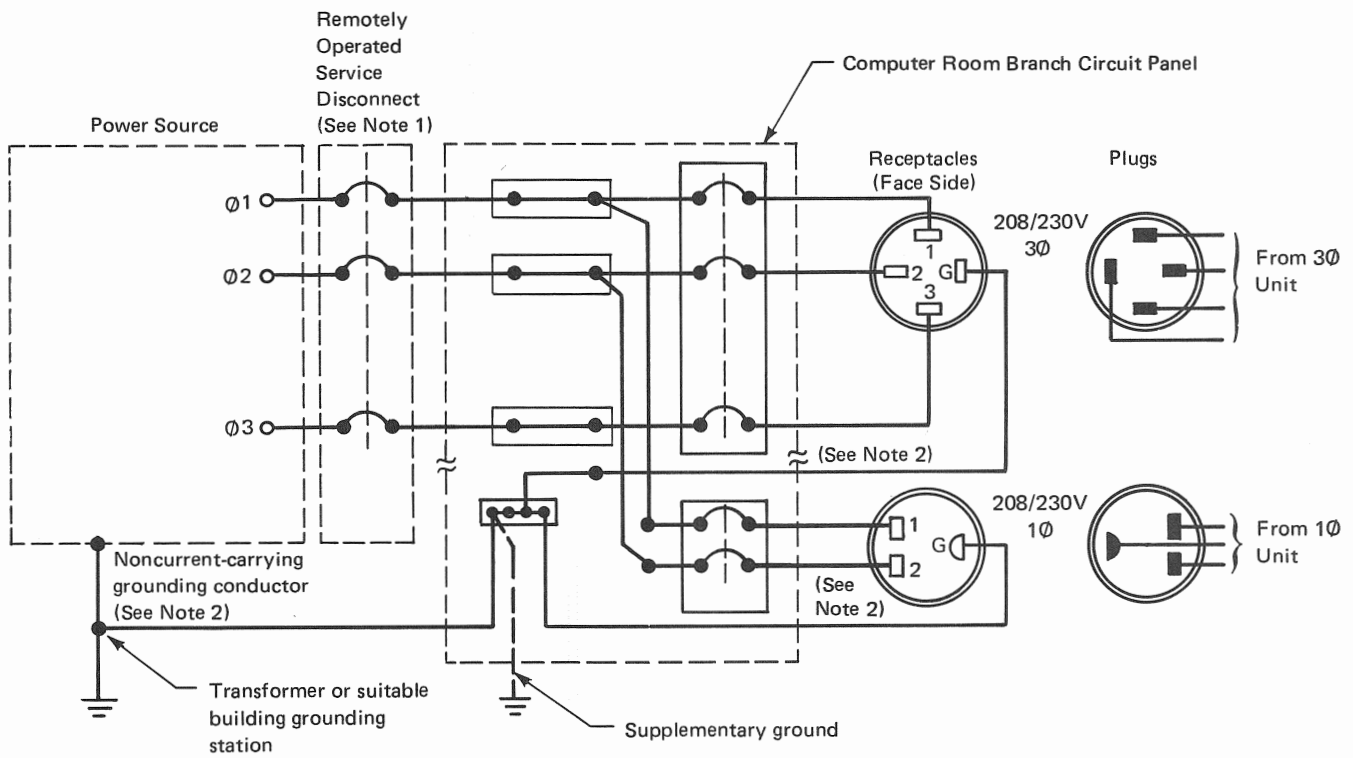


Figure 1-2. Transient Grounding Plate



Notes:

1. Remotely disengaged by an emergency device located near the console operator and next to the main exit door.
2. Ground wire (green or green with yellow trace).

Figure 1-3. Power Distribution System

Safety and Fire Precautions

Safety is a vital factor in planning for a large computer installation. This consideration is reflected in the choice of a computer location, building materials used, fire prevention equipment, air conditioning and electrical systems, and personnel training.

COMPUTER LOCATION

1. The computer area should be in a noncombustible or fire-resistive building or room.
2. The computer room should not be above, below, or adjacent to areas where hazardous materials or gases are stored, manufactured, or processed. If the customer must locate near such an area, he should take extra precautions to safeguard the area.

FIRE PREVENTION CONSIDERATIONS

1. Walls enclosing a computer area should be of noncombustible materials (minimum of one-hour-fire-resistance rating). These walls should extend from structural floor to structural ceiling.
2. If a computer area has one or more outside walls adjacent to a building that is susceptible to fire:
 - a. Installation of shatterproof windows in the computer room would improve the safety of personnel and equipment from flying debris and water damage.
 - b. Outside sprinklers could be installed over the windows to protect them with a blanket of water if a fire occurs in the adjacent area.
 - c. Windows could be sealed with masonry.
3. Where a false (or hung) ceiling is to be added, it should be constructed of noncombustible or fire-resistant material. All ducts and insulating materials should be noncombustible and nondusting. If combustible materials are used in the space between the structural ceiling and the false ceiling, appropriate protection should be provided.
4. A raised floor, installed over the structural floor, should be constructed of noncombustible or fire-retardant materials. If the structural floor is of combustible material, it should be protected from the ceiling below, preferably by water sprinklers. (*Note:* Before the computer is installed, the space between the raised and the structural floors should be cleared of debris. Also, this space should be periodically checked after installation, to keep it free of accumulated dust and possible debris.)
5. The roof or floor above the computer and recorded media storage areas should be watertight.
6. Subfloor space should be provided with positive drainage.
7. When machines are connected to a system but are located in a different room from the CPU (or system

EPO), a switch that is capable of disconnecting power to the machine(s) shall be provided in the remote location. Check with your IBM Installation Planning representative to determine whether the remote IBM units can provide this switch function or whether a wall switch is required.

TYPE OF FIRE PREVENTION EQUIPMENT IN A COMPUTER AREA

1. An early-warning detection system should be installed to protect the computer and recorded media storage areas. This detection system should actuate an audible alarm in the room and at a monitored central station.
2. Portable carbon dioxide fire extinguishers of suitable size and number should be provided in the machine room for use on the electrical equipment.
3. Portable, pressurized-water extinguishers should also be provided for ordinary combustible material such as paper.
4. Extinguishers should be readily accessible to individuals in the area, and extinguisher locations should be visibly marked overhead.
5. Where portable cylinders are used as the primary extinguishing agent, it is advisable to locate a standpipe or hose unit, within effective range of the computer areas, as a secondary extinguishing agent or backup.
6. If the customer requires or prefers to have a room-flooding system installed, Halon 1301 (see NFPA No. 12A) can be considered on the basis of its excellent safety qualities.
7. Where automatic water sprinklers are required because of building conditions, automatic on/off sprinklers should be considered, if they are acceptable to local authorities. This type of system minimizes the quantity of water discharged which could otherwise cause additional damage.
8. Waste material containers should be of metal construction with a flame-suppressant lid.

DATA STORAGE

1. Any data stored in the computer room, whether in the form of magnetic tape, paper tape, cards, paper forms, etc., should be limited to the minimum needed for safe, efficient operation and should be enclosed in metal cabinets or fire-resistant containers, when not in use.
2. For security purposes and protection against fire, a separate storage room is strongly recommended. This room should be constructed of fire-resistant material (minimum two-hour-fire-resistance rating). The preferred type of fire prevention equipment should be a chemical-flooding system such as Halon 1301 or a sprinkler system.

SUPPORTING FACILITIES

Air Conditioning Systems

1. In most installations, the computer area is controlled by a separate air conditioning system. In these cases, an emergency power-off switch should be placed in a convenient location, preferably near the console operator or next to the main exit door. Fusible-link dampers should be located at fire walls and at places as prescribed by local code.
2. Where the regular building air conditioning system is used, with supplemental units in the computer area, the supplemental units would then be handled as stated in item 1. The regular building air conditioning system should have an audible alarm in the regular building maintenance area to alert the maintenance personnel of an emergency. Air ducts serving other areas but passing through the computer room should contain fusible-link dampers at each wall of the computer room.
3. The air filters used as part of the air conditioning system should contain noncombustible or self-extinguishing material.

Electrical Systems

1. The mainline breaker for the computer equipment should be remotely operated. The remote controls should be in a convenient location, preferably near the console operator and next to the main exit door. A light should be installed to indicate when power is on.
2. It is advisable to install a battery-operated lighting unit that will automatically illuminate an area if a power or lighting circuit failure occurs. These units are wired to and controlled by the lighting circuit.
3. Watertight connectors should be used if they must be located where they may be exposed to excessive moisture. Proper drainage will guard against flooding or trapping water under the raised floor in the computer room. This is important in new buildings where the structural floor is recessed and the raised surface is on the level of the adjacent areas.
4. Where continuity of operation is essential, a standby power source should be installed.

PREPLANNING TO CONTINUE OPERATION IN AN EMERGENCY

The continued operation of a customer's computer depends on information stored on cards, tapes, disks, drums, and so forth. Also, equipment must be available to process the information. Arrangements should be made for emergency use of other equipment and transportation of personnel, data, and supplies to a temporary location. Duplicate or master records should be maintained from which the necessary information can be taken to resume operation. These records should be stored in a remote area.

GENERAL PRECAUTIONS AND PERSONNEL TRAINING

1. The computer room, air conditioning equipment room, and data storage room should be monitored during nonoperating hours.
2. Steampipes and waterpipes above the false ceiling should be inspected to guard against possible damage because of accidental breakage, leakage, or condensation.
3. Emergency exit doors should be located in the computer area. The number of doors depends on the size and location of the area.
4. Personnel should be trained in emergency measures such as:
 - a. Method and sequence of shutting off all electrical power.
 - b. Shutting off air conditioning system.
 - c. Handling fire extinguishers in the approved manner.
 - d. Operating a small-diameter fire hose.
 - e. Evacuating records.
 - f. Evacuating personnel.
 - g. Calling fire company.
 - h. Administering first aid.

ADDITIONAL REFERENCE MATERIAL

Consult NFPA Standard No. 75, "Protection of Electronic Computer/Data Processing Equipment."

Storage of IBM Data Recording Media

MAGNETIC TAPE

Storage facilities for frequent or infrequent usage of magnetic tape should be maintained within the following limits:

IBM Heavy-Duty Magnetic Tape

Temperature: 40° to 90°F (4° to 32°C)

Relative Humidity: 20% to 80%

Mylar Tape—Intermediate-Term Storage*

Temperature: 50° to 90°F (10° to 32°C)

Relative Humidity: 20% to 80%

Tape exposed to atmospheric conditions outside the preceding limits requires reconditioning before use. This is accomplished by permitting the tape to remain in the correct operating environment for a length of time equal to the storage time (up to maximum reconditioning period of 24 hours).

The tape should be stored in a dustproof container in a vertical position and should never come in contact with magnetic material at any time. Magnetic fields of greater than 50-oersted intensity can cause loss of information or introduction of noise.

When shipping magnetic tape, each reel should be sealed in a plastic bag and packed individually in stiff cardboard shipping boxes. These may be obtained from IBM.

DISK PACK, DISK CARTRIDGE, DATA CELL, AND DATA MODULE

The disk pack, disk cartridge, data cell, and data module are precision instruments. Storage facilities should be maintained within the following limits:

Disk Pack, Disk Cartridge, and Data Module

Short-Term Storage:

Temperature: 60° to 90°F (16° to 32°C)

Relative Humidity: 10% to 80%

Intermediate-Term Storage:

Temperature: 40° to 150°F (4° to 66°C)

Data Cell

Storage:

Temperature: 50° to 110°F (10° to 43°C)

Relative Humidity: 8% to 80%

Max Wet Bulb: 80°F (27°C)

* Trademark of E.I. du Pont de Nemours & Co. (Inc.)

Disk packs, disk cartridges, data cells, and data modules must be conditioned to the machine operating environment before use. This is accomplished by permitting the device to remain in the correct operating environment for a length of time equal to the time out of the operating environment (up to a maximum conditioning period of 2 hours).

These devices have dustproof covers which should be left in place, except when installed in the file. Storage should be in fire-resistant cabinets away from magnetic fields. Magnetic fields of greater than 50 oersteds (25 oersteds for 3348 Data Module Model 70F) can cause loss of information or introduction of noise.

Additional information concerning handling, operation, device dimensions, flammability characteristics, shipping requirements, and housekeeping is in *IBM Disk Pack Handling and Operating Procedures*, GA26-5756, *IBM Data Cell Handling Guide*, GA26-3633, and *IBM Data Module Handling Procedures*, GA26-1625.

DATA CARTRIDGE

The data cartridge is normally stored within the IBM 3851 Mass Storage Facility. Storage conditions at the 3851 air input or in customer-provided supplemental storage areas should be maintained within the following conditions:

Temperature: 60° to 90°F (16° to 32°C)

Relative Humidity: 20% to 80%

Max Dew Point: 65°F (18°C)

Exposure of the cartridge to elevated temperatures for extensive periods of time can cause physical deformation of the media. The cartridge should not be exposed to temperatures in excess of 90°F (32°C). Exposure of the cartridge to temperatures between 90°F (32°C) and 120°F (49°C), or below 60°F (16°C), or to other atmospheric conditions outside the preceding limits require reconditioning before use. This is accomplished by permitting the cartridge to remain in the correct environment for a length of time equal to the exposure time.

Customer storage facilities should be fire-resistant enclosures located away from magnetic fields. Magnetic fields of greater than 50 oersteds can cause loss of data or introduction of noise.

Priority

INPUT/OUTPUT PRIORITY SEQUENCE

Channel capabilities are affected by the sequence in which I/O devices are attached to the channel. This sequence is called priority. This is most pronounced on the byte multiplexer channel. For assigning priorities, the devices are divided into three groups:

- Class 1: Devices subject to overrun.
- Class 2: Devices that require channel service in synchronization with their mechanical operations.
- Class 3: Devices that do not require their channel service to be in synchronization with their operations.

Device Wait (Critical) Time

After a multiplex-mode device requests channel service, it has a fixed length of time that it can wait for service. If the channel provides service within this length of time, the device operates satisfactorily. If, however, the channel does not service the device within the device's wait time, either of two things happens: If the device is not subject to overrun, it continues waiting; if it is subject to overrun, it loses data and subsequently causes an I/O interruption condition. For example, when an IBM 1403 Printer on an overloaded byte multiplexer channel fails to receive data within its particular wait time, it merely waits until service is provided by the byte multiplexer channel. The delay does not cause an interruption condition, nor is a new start I/O instruction required for selecting the 1403. The only effect is a lessening in performance. If an IBM 1442 Card Read Punch read operation does not receive data service within its wait time, however, overrun occurs.

Wait (critical) time factors for multiplex-mode devices are listed in Appendix B.

In attaching devices to the byte multiplexer channel, the various classes are normally attached in numeric sequence (1, 2, and 3). Within each class, devices are usually attached in order of increasing critical time intervals. Differences in how individual I/O devices are programmed may require two I/O devices with either the same or nearly the same critical times to be swapped in priority for proper operation. No information can be lost with devices of class 2 or 3. A device not required to operate at its rated performance may be attached with a lower priority than normally assigned.

Devices that operate in burst mode may be attached to byte multiplexer channel in any physical location; from a performance standpoint, these units should be assigned lowest priority. On the selector or block multiplexer channel, devices are assigned priority according to data rate within class sequence.

In determining the attachment of I/O devices to selector or block multiplexer channels, the following guidelines generally apply. Class 1 devices with the highest data rates are normally attached to the lowest numbered channels (for example, channel 1). Because service to class 2 and 3 devices may be delayed without the loss of information, they usually are attached to the highest numbered channels (for example, channels 3 and 4).

In determining the priority of control units which operate multiple devices with different priority rules (for example, a 2821 that attaches both class 2 and class 3 devices and the 2702 or tape control units that may attach devices with different data rates), the highest priority for any of the attached devices is normally used.

The class designation, critical time, and data rates for various units and features are in Appendix B. For additional information, see the appropriate system or channel characteristics publication.

Control units are addressed by the channel via a cable that contains "select in" and "select out" lines. A particular control unit can be connected to either line. Control units may be in any physical sequence on these lines that will permit connection in accordance with the prescribed priority sequence. Several physical sequences of units are usually possible that will provide the same priority sequence.

Cables must be ordered by starting at the unit most remote from the CPU. Cables are then specified from unit to unit back to the channel or CPU. It is necessary that the proper sequence be observed to ensure receiving the proper length cables. The machine type numbers used in the "From" and "To" columns of the cable order form determine the amount of cable required to connect to the proper location inside the units at each end of the cable. When ordering a cable to attach from one location to another within the same unit (for example, SF #1850 on one channel to another channel within the same unit), specify an "X" length of "0" feet, unless otherwise directed.

Cables

IBM supplies the necessary cables for the initial installation as specified in this manual. The cables are custom-made to the lengths required for each installation. Cables are measured in accordance with the approved layout. The group number and channel where required, along with the required cable length, must be submitted for each cable in the computer system. The required cable length is defined as the center-to-center distance between machine cable entry holes measured along the intended route of the cable as projected on the floor or other mounting surface. When machines are mounted on a raised floor, twice the height of the raised floor should be included in the required cable length. IBM makes allowance for the portion of each cable that is from the floor or mounting surface into the machine. For best electrical design and computer performance, all cable lengths should be kept as short as possible. External interconnecting cables should be installed under the raised floor. Where a raised floor is not used, these cables should be protected from mechanical damage, scuffing, and in a manner that will not present a safety hazard to operating personnel.

Orders for cables that exceed the maximum lengths specified for the system must be approved by IBM and may result in extra charges. Consult your IBM representative.

When a unit requires external cables which must be purchased by the customer and installed through walls and/or floors, the purchase of this cable and the arrangements for its installation should be made with sufficient lead time to permit the cable facilities to be available to the computer system at installation time. This pertains to units such as the IBM 2260, 3704, and 3705.

CABLES SUPPLIED

Cables Related to Initial Installations

One cable or one "cable group" within standard specifications in accordance with an approved layout, required to install machines being delivered from IBM, will be supplied by IBM at no additional charge unless customer-supplied or a chargeable basis is indicated (such as for IBM 2260 cables). Orders for cables not within the standard specifications must be accompanied by an approved RPQ. For detailed instructions on entering cable orders, consult your IBM representative.

Changes in cable order specifications requested within three months of the scheduled date of shipment (or subsequent to any non-IBM-caused deferment within three months of scheduled date of shipment) may be subject to charge.

If cables (of the type provided at no charge for an initial installation) have to be changed to accommodate the installation of additional IBM machines, these cables will be supplied by IBM at no charge on an exchange basis. An explanation of why the cables are required must accompany the cable order. All replaced cables must be returned to IBM.

Other Cable Requests

Cables requested for other reasons (for example, additional or replacement cables for rearrangement not caused by installation of machines being delivered from IBM, cables to connect IBM and non-IBM equipment, etc.) will be considered only on an RPQ basis.

Field Engineering Support Facilities

CE ROOM AND TEST AREA

The customer engineers' test area for a single installation should contain between 70 and 400 square feet (7 and 38m²) of space depending on the size of the system, and be air conditioned to the same specifications as the machine room.

The IBM Field Engineering Branch Manager will provide, on a scaled layout, the Field Engineering equipment which will be installed in the CE room to assist the customer in locating receptacles, lights, and so forth.

The test area should contain at least one 208V (or 230V), 3-phase, 20A power receptacle (Hubbell or Pass and Seymour type 7250 or equivalent) for operation of the tape unit testing equipment. At least two 115V, single-phase, 15A receptacles (convenience outlets) and other receptacles adequate to repair any unit that can be serviced in the CE room should be provided. The 115V receptacles (convenience outlets) should not be supplied power from the computer power panel.

FURNITURE AND FIXTURES

The furniture and fixtures for the CE room will be determined by local Field Engineering management and will vary according to the size of the system or systems installed and the number of customer engineers required.

The following is a partial list of typical furniture and fixtures:

	Length		Width		Height	
	in.	cm	in.	cm	in.	cm
Desk	45	114	34	86	29	74
Workbench	72	183	30	76	35	89
Shelf Cabinet	36	91	18	46	72	183
Parts Cabinet	42	107	24	61	87	221
File Cabinet	18	46	28	71	60	152
Bookcase	33-1/4	84	15-1/4	39	42	107
Study Table	60	152	30	76	29	74
Book Cart	40	102	13	33	31	79
Card File	17	43	24	61	9	23
Microfiche Viewer	24	61	24	61	54	137
Tool and Test Equipment Cart	22	56	22	56	35	89

Templates for the furniture listed are available from IBM. See Appendix E for order (form) number.

RETAIN/370 SERVICE

The IBM 2955 Field Engineering Data Adapter Unit (FE DAU) for RETAIN/370 is used on certain System/370 configurations. The 2955 has the following specifications:

Dimensions: See plan view on the following page.

Weight: 600 lb (280 kg)

Heat Output: 3,000 BTU/hr (760 kcal/hr)

Airflow: 120 cfm (4 m³/min)

Power Requirements: 1.0 kVA, single phase, 60 Hz

Power Plug: R&S, FS3720. Customer supplies either R&S, FS3743 receptacle or R&S, FS3913 connector.

Cabling Schematic: See Section 4.

Note: The FE DAU takes one control unit position on a byte multiplexer channel. It is a class 1 device with a critical time of 14.1/N.

BASIC STORAGE MODULE (BSM) ANALYZER

Provision must be made for testing the spare BSM for IBM System/370 Model 195.

The spare BSM is within the frame of a mobile service cart. The physical dimensions and other specifications for the spare BSM and cart are:

Dimensions: See plan view on the following page.

Weight: 500 lb (230 kg)

<i>Heat Output:</i>	<i>To Air</i>	<i>To Water</i>
BTU/hr	3,100	2,500
(kcal/hr)	(790)	(630)

Airflow: 325 cfm (10 m³/min)

For servicing, this cart must be near the analyzer.

Both 415-Hz and 60-Hz power is supplied from the IBM 3085 Power Distribution Unit (PDU), frame 09. Coolant is supplied from the IBM 3086 Coolant Distribution Unit (CDU), frame 02, via 125 feet of hose.

The Model 195 test area will contain a BSM analyzer with the following specifications:

Dimensions: See plan view on the following page.

Weight: 1,040 lb (480 kg)

Heat Output: 12,900 BTU/hr (3,300 kcal/hr)

Airflow: 1,240 cfm (36 m³/min)

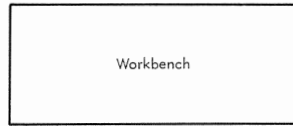
Power Requirements: 4.5 kVA, 60 Hz
3.0 kVA, 415 Hz

System/360 and System/370 Field Engineering Furniture and Test Equipment

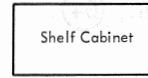
PLAN VIEWS



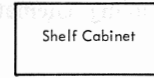
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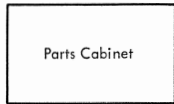
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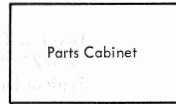
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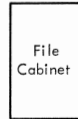
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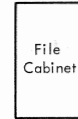
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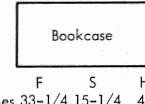
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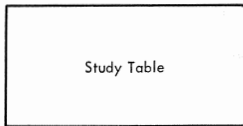
Inches F S H
(cm) (46) (71) (152)



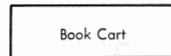
Inches F S H
(cm) (46) (71) (152)



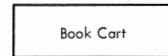
Inches F S H
(cm) (84) (39) (107)



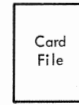
Inches F S H
(cm) (152) (76) (74)



Inches F S H
(cm) (102) (33) (79)



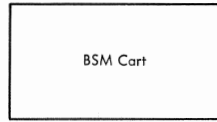
Inches F S H
(cm) (102) (33) (79)



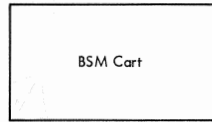
Inches F S H
(cm) (43) (61) (23)



Inches F S H
(cm) (61) (61) (137)



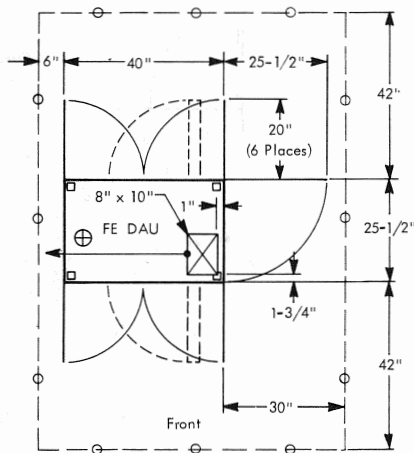
Inches F S H
(cm) (132) (74) (178)



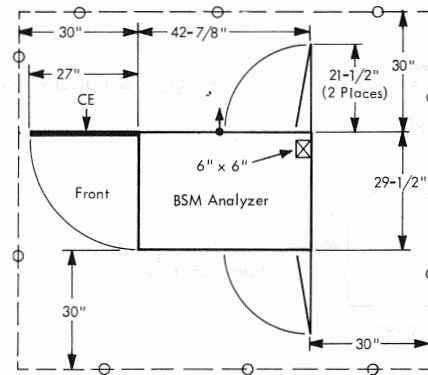
Inches F S H
(cm) (132) (74) (178)



Inches F S H
(cm) (56) (56) (89)



Inches F S H
(cm) (102) (65) (102)

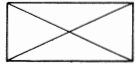


Inches F S H
(cm) (75) (109) (178)

Standard Symbols

Figure 1-4 shows the symbols adopted as standard for the IBM System/370. Frame numbers are shown circled on plan views and cabling schematics, for example, 04.

In Plan Views:



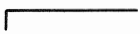
Cable Entry and Exit Area in Base of Unit



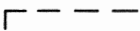
Power Cord Exit



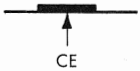
Swinging Gate



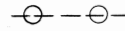
Standard Equipment Outline (Shows unit with covers closed)



Optional Equipment Outline



Customer Engineer Indicator Panel



Service Area Boundary (Service clearances are measured from unit with covers closed)



Casters



Leveling Pads or Glides (3-1/2" [8,9 cm] Typical Diameter)



Legs

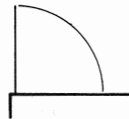


Nonraised Floor Cable Exit

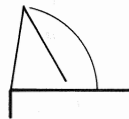


Meter Location

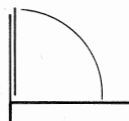
Hinged Covers



Single



Bifold

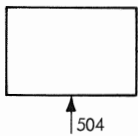


Offset Bifold

In Cabling Schematics:



Indicates Cable Group from a Unit, and



Indicates Cable Group to a Unit

Figure 1-4. Standard Symbols

Standard Specifications

SHIPPING DIMENSIONS

Unless otherwise noted on individual specifications page, the following statement applies: All system components can be reduced to 29½" x 60" (75 cm x 152 cm) or smaller sections for shipment. See Maintenance Library Installation Manuals for individual System/370 models for additional information.

ENVIRONMENTAL SPECIFICATIONS

Unless otherwise noted on individual specifications pages, the following environmental specifications apply:

Environment Operating:

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

Environment Nonoperating:

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

Environment Shipping:

Temperature	-40° to 140°F (-40° to 60°C)
Rel Humidity	5%-100% (no condensation)
Wet Bulb Range	33°-80°F (1°-29°C)

METRIC CONVERSIONS

In this manual, English units converted into metric units are rounded to the nearest whole number or to the nearest decimal place given. Exceptions are kilograms (kg), kilocalories per hour (kcal/hr), cubic meters per minute (m³/min), lumens per square meter (lumens/m²), kilograms per square meter (kg/m²) pertaining to floor loading, and meters (m) pertaining to altitude; these are rounded to the 1/10/50 rule.

To round according to the 1/10/50 rule:

1. When the number is less than 100, round up to the next unit, for example, 23,2 or 23,7 becomes 24.
2. When the number is greater than 100 and less than 1,000, round up to the next ten, for example, 163 becomes 170.
3. When the number is greater than 1,000, round up to the next 50, for example, 1,232 becomes 1,250.

Note that numbers expressed in metric units use commas in place of decimal points and decimal points in place of commas (for example, two thousand one hundred kilograms is expressed as 2.100 kg and one-half becomes 0,5).

MANUFACTURERS OF PLUGS, RECEPTACLES, AND CONNECTORS

Hansen—Hansen Manufacturing Co.

Hubbell (H)—Harvey Hubbell, Inc.

Pass and Seymour (P&S)—Pass and Seymour, Inc.

Russell and Stoll (R&S)—Midland Ross Corp.

ABBREVIATIONS AND DEFINITIONS

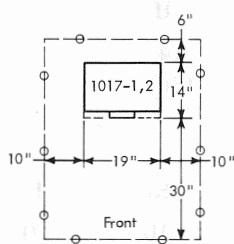
A	ampere	gpm	gallons per minute
ac	alternating current	H	height/Hubbell
ADU	automatic dialing unit	hp	high pressure/horsepower
ambient	environment	Hz	hertz
AWG	American wire gauge	ICA	Integrated Communications Adapter
		ID	identification
		IFA	Integrated File Adapter
		in.	inch
		I/O	input/output
blk mpxr	block multiplexer	IPA	Integrated Printer Adapter
bpi	bits per inch	IPCEA	International Power Cables Engineering Association
bps	bits per second	ISC	Integrated Storage Controls
BSM	basic storage module		
BTU	British thermal unit	kb	kilobyte
bus	one or more conductors used for transmitting signals or power	kbytes	kilobytes per second
		kcal/hr	kilocalories per hour
C	Celsius/coupler	kg	kilogram
CCITT	Consultant Committee of International Telephone & Telegraph (WT)	kg/m ²	kilograms per square meter
CDU	coolant distribution unit	kVA	kilovolt ampere
CE	customer engineer	kW	kilowatt
CER	customer engineering room	kybd	keyboard
cfm	cubic feet per minute		
ch	channel	L	left
chan	channel	LA	Line Adapter
cm	centimeter	lb	pound
cnsl	console	lumens/m ²	lumens per square meter
coax	coaxial		
cond	conductor	m	meter
conn	connector	max	maximum
cont	continuous	MCM	thousand circular mils
conv	converter	m ³ /min	cubic meter per minute
CPU	central processing unit	MES	Miscellaneous Equipment Specification
CRT	cathode-ray tube	mfg	manufacturing
C-T-C	connector-to-connector	MG	motor generator
ctrl	control	min	minimum/minute
Cu	copper	mm	millimeter
CW	copperweld	modem	modulator/demodulator
		modulator/demodulator	device that modulates and demodulates signals transmitted over communication facilities
DAA	Data Access Arrangement	MP	multiprocessing
DASF	direct access storage facility	mpxr	multiplexer
DAU	data adapter unit	ms	millisecond
dc	direct current	MSC	mass storage control
dist	distribution	MSF	mass storage facility
dply	display	MSS	mass storage system
DRC	data recording control	MTU	magnetic tape unit
EBCD	extended binary-coded decimal		
EBCDIC	extended binary-coded decimal interchange code	NEC	National Electrical Code
EIA	Electronic Industry Association	NEMA	National Electrical Manufacturers' Association
EPO	sequence and control	NFPA	National Fire Protection Association
		No.	number
F	Fahrenheit/front	nom	nominal
fectly	facility	NTT	Nippon Telephone and Telegraph
FE	field engineering		
FE DAU	Field Engineering Data Adapter Unit	OD	outside diameter
fr	frame	OEM	original equipment manufacturer
ft	feet	oersted	centimeter-gram-second electromagnetic unit of magnetic intensity

P&S	Pass and Seymour	SDA	Synchronous Data Adapter
PCDU	power and coolant distribution unit	sec	second
PDU	power distribution unit	seq	sequential
pF	picofarad	service clearance	minimum space required to allow working room for the machine operator and/or the customer engineer for servicing the unit
pH	hydrogen-ion concentration		
port	entry/exit in mass storage control of 3851 for attachment of external devices		
ppm	parts per million	SF	special feature/sales feature
proc	processing	slr	selector
psi	pounds per square inch	stg	storage
psig	pounds per square inch gauge		
PTT	postal telephone and telegraph	TNL	Technical Newsletter
PVC	polyvinyl chloride		
pwr	power		
R	rear	UK	United Kingdom
R&S	Russell & Stoll	UL	Underwriters Laboratory
rdr	reader	UPS	uninterrupted power supply
Rel	relative	U.S.	United States
rfi	radio-frequency interference		
RPQ	Request for Price Quotation	V	volt
Rt	right	VFL	variable field length
S	side	WE	Western Electric
SCU	storage control unit	WT	World Trade

Section 3. Machine Specifications and Cabling Schematics

1017 PAPER TAPE READER MODELS 1 AND 2

PLAN VIEW



Note: For cabling information, see 2826.

SPECIFICATIONS

Dimensions: (Installed)

	F	S	H	
			Model 1	Model 2
Inches	19	14	11-1/2	15
(cm)	(48)	(36)	(29)	(38)

Service Clearances:

	F	R	Rt	L
Inches	30	6	10	10
(cm)	(76)	(15)	(25)	(25)

Weight: Model 1 Model 2

lb	42	60
(kg)	(20)	(28)

Heat Output:

BTU/hr	300	750
(kcal/hr)	(76)	(190)

Power Requirements:

kVA	0.1	0.4
Phases	1	1

Computer Room R&S Type No.	Remote Installation H or P&S Type Nos.***
Nonlocking	Locking
115	208/230
5266	115
5269	208/230
5261	115
5262	208/230

U.S. Requirements	Computer Room R&S Type No.	Remote Installation H or P&S Type Nos.***			
		Nonlocking		Locking	
Voltage	208/230	115	208/230	115	208/230
Plug*	**	5266	5666	4720	4770
Connector	**	5269	5669	4730	4780
Receptacle	**	5261	5661	4700	4750
		5262	5662	4710	4760

World Trade Requirements	
Voltage†	112.5, 123.5, 195, 208, 220, 230, 235
Power Cord Style††	A9

Environment Operating:

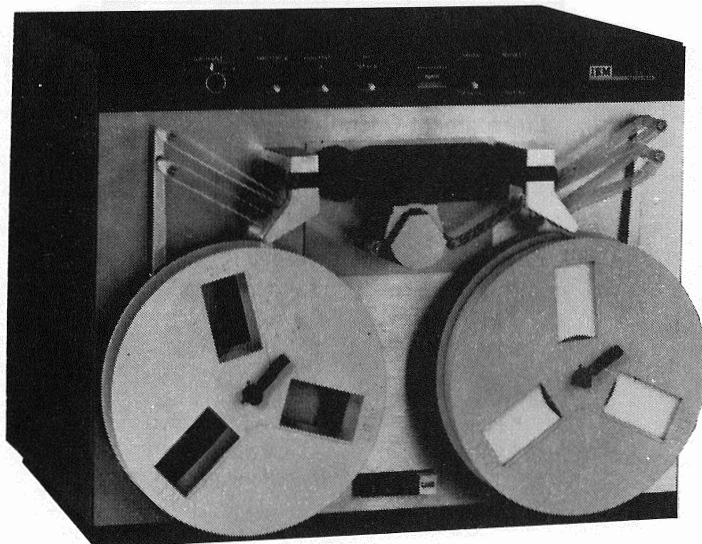
Temperature	50°-110°F (10°-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	85°F (29°C)

Environment Nonoperating:

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

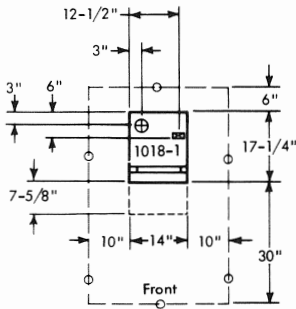
Notes:

- * Plug type to be specified on the order.
- ** Powered from 2826.
- *** Or equivalent.
- † 112.5 and 123.5V for remote installation only.
- †† Remote installation only. When 1017 is installed in computer room, power is provided from 2826.



1018 PAPER TAPE PUNCH MODEL 1

PLAN VIEW



Note: For cabling information, see 2826.

SPECIFICATIONS

Dimensions: (Installed)

	F	S	H
Inches	14	17-1/4	14
(cm)	(36)	(44)	(36)

Service Clearances:

	F	R	Rt	L
Inches	30	6	10	10
(cm)	(76)	(15)	(25)	(25)

Weight: 67 lb (31 kg)

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

Power Requirements:

kVA	0.2
Phases	1

U.S. Requirements	Computer Room R&S Type No.	Remote Installation H or P&S Type Nos.**			
		Nonlocking		Locking	
Voltage	208/230	115	208/230	115	208/230
Plug*	FS3720	5266	5666	4720	4770
Connector	FS3913	5269	5669	4730	4780
Receptacle	FS3743	5261	5661	4700	4750
		5262	5662	4710	4760

World Trade Requirements	
Voltage***	112.5, 123.5, 195, 208, 220, 230, 235
Power Cord Style	A9

Environment Operating:

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

Environment Nonoperating:

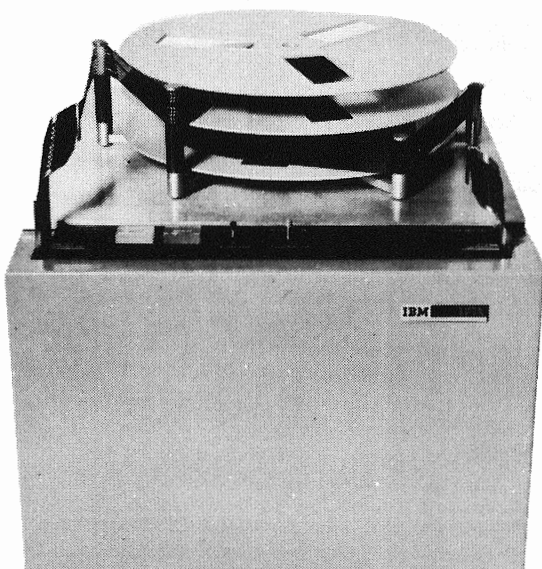
Temperature	50°-125°F (10°-52°C)
Rel Humidity	8%-80%
Max Wet Bulb	85°F (29°C)

Notes:

* Plug type to be specified on the order.

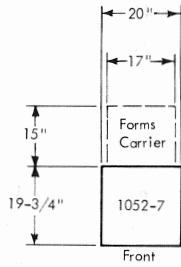
** Or equivalent.

*** 112.5 and 123.5V for remote installation only.



1052 PRINTER-KEYBOARD MODEL 7

PLAN VIEW



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	23*	19-3/4	9
(cm)	(58*)	(50)	(23)

Service Clearances:

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

Weight: 65 lb (30 kg)

Heat Output: 570 BTU/hr (150 kcal/hr)

Airflow: 0 cfm (0 m³/min)

Power Requirements:***

kVA 0.17

Environment Operating:

Temperature	50 ⁰ -110 ⁰ F (10 ⁰ -43 ⁰ C)
Rel Humidity	10%-80%
Max Wet Bulb	80 ⁰ F (27 ⁰ C)

Environment Nonoperating:

Temperature	50 ⁰ -110 ⁰ F (10 ⁰ -43 ⁰ C)
Rel Humidity	10%-80%
Max Wet Bulb	80 ⁰ F (27 ⁰ C)

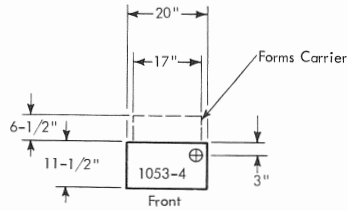
Notes:

- * Dimension includes 1-1/2 inches (4 cm) on each side for platen knobs.
- ** Controlled by system configuration. Provide operator access and sufficient clearance for forms carrier and forms travel.
- *** Powered from system CPU.



1053 PRINTER MODEL 4 (2848 ATTACHMENT)

PLAN VIEW



Note: For cabling information, see 2848.

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	23*	11-1/2	9
(cm)	(58*)	(29)	(23)

Service Clearances:

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

Weight: 35 lb (16 kg)

Heat Output: 570 BTU/hr (150 kcal/hr)

Airflow: 0 cfm (0 m³/min)

Power Requirements:***

kVA	0.2	
Phases	1	
Plug	115V H or P&S, 5266	208/230V H or P&S, 5666
Connector	H or P&S, 5269	H or P&S, 5669
Receptacle	H or P&S, 5261 or 5262	H or P&S, 5661 or 5662
Power Cord Style	G2	

Environment Operating:

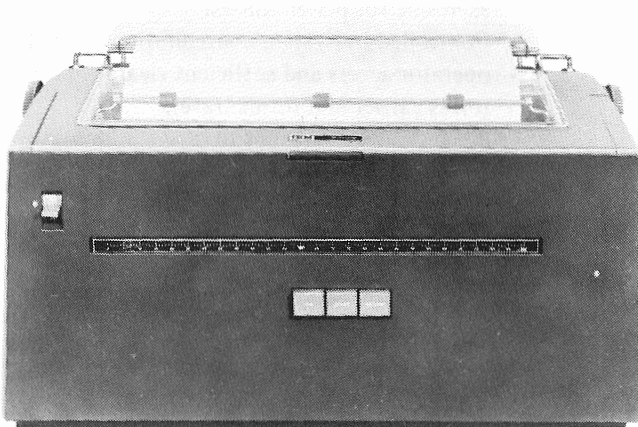
Temperature	50 ⁰ -110 ⁰ F (10 ⁰ -43 ⁰ C)
Rel Humidity	10%-80%
Max Wet Bulb	80 ⁰ F (27 ⁰ C)

Environment Nonoperating:

Temperature	50 ⁰ -110 ⁰ F (10 ⁰ -43 ⁰ C)
Rel Humidity	10%-80%
Max Wet Bulb	80 ⁰ F (27 ⁰ C)

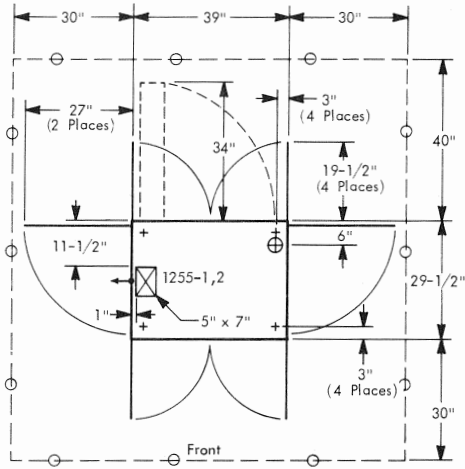
Notes:

- * Dimension includes 1-1/2 inches (4 cm) on each side for platen knobs.
- ** Provide operator access and sufficient clearance for forms carrier and forms travel.
- *** Model 4 is available for *remote* installation only.

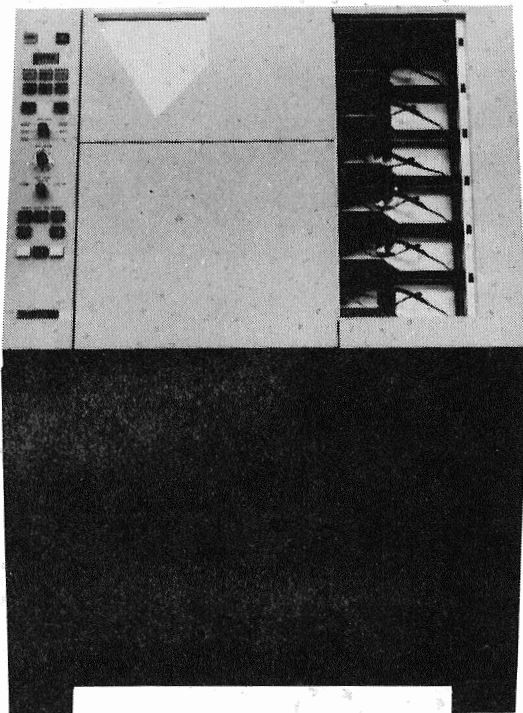


1255 MAGNETIC CHARACTER READER MODELS 1 AND 2

PLAN VIEW



Note: For cabling information, see Section 4, "Units With Integral or Abutted Controls."



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	39	29-1/2	55
(cm)	(99)	(75)	(140)

Service Clearances:

	F	R	Rt	L
Inches	30	40	30	30
(cm)	(76)	(102)	(76)	(76)

Weight: 560 lb (260 kg)

Heat Output: 2,600 BTU/hr (660 kcal/hr)

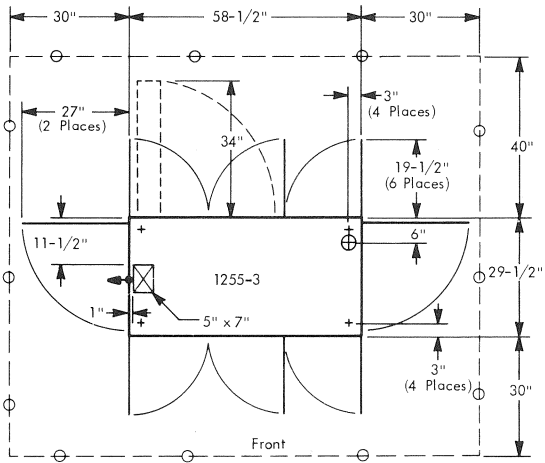
Airflow: 300 cfm (9 m³/min)

Power Requirements:

kVA	0.96
Phases	1
Plug	R&S, FS3720
Connector	R&S, FS3913
Receptacle	R&S, FS3743
Power Cord Style	A1
Power Cord Length	10 feet (305 cm)

1255 MAGNETIC CHARACTER READER MODEL 3

PLAN VIEW



Note: For cabling information, see Section 4, "Units With Integral or Abutted Controls."

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	58-1/2	29-1/2	55
(cm)	(149)	(75)	(140)

Service Clearances:

	F	R	Rt	L
Inches	30	40	30	30
(cm)	(76)	(102)	(76)	(76)

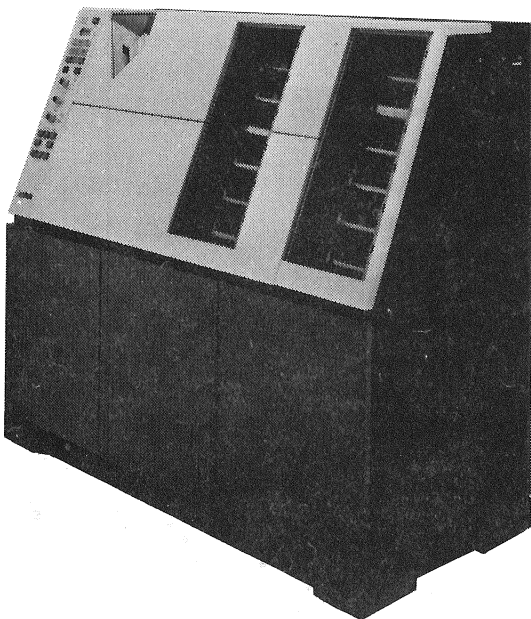
Weight: 700 lb (320 kg)

Heat Output: 2,600 BTU/hr (660 kcal/hr)

Airflow: 300 cfm (9 m³/min)

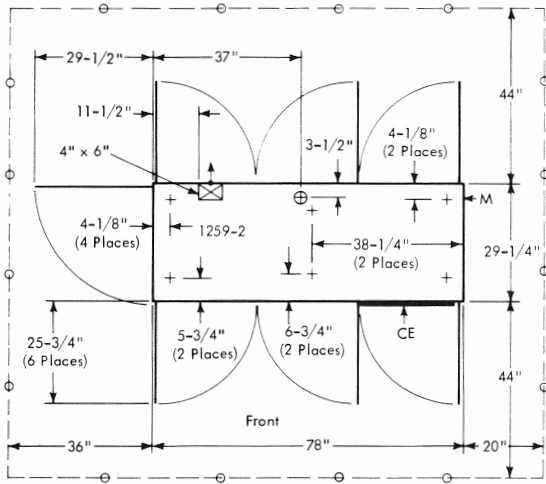
Power Requirements:

kVA	0.96
Phases	1
Plug	R&S, FS3720
Connector	R&S, FS3913
Receptacle	R&S, FS3743
Power Cord Style	A1
Power Cord Length	10 feet (305 cm)

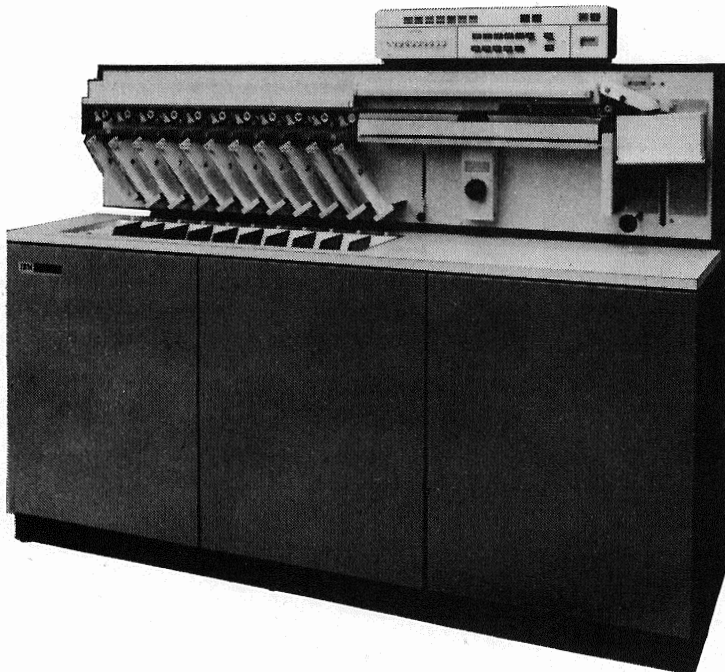


1259 MAGNETIC CHARACTER READER MODEL 2

PLAN VIEW



Note: For cabling information, see Section 4, "Units With Integral or Abutted Controls."



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	78	29-1/4	61-5/8*
(cm)	(198)	(74)	(157*)

Service Clearances:

	F	R	Rt	L
Inches	44	44	20	36
(cm)	(112)	(112)	(51)	(91)

Weight: 1,400 lb (640 kg)

Heat Output: 5,000 BTU/hr (1.300 kcal/hr)

Airflow: 260 cfm (8 m³/min)

Power Requirements:

kVA 2.4 (195/220/235/408V-50 Hz)
2.3 (208/230V-60 Hz; 380V-50 Hz)

Phases 3
Plug R&S, FS3760
Connector R&S, FS3934
Receptacle R&S, FS3754
Power Cord Style D3

Environment Operating:

Temperature 65°-80°F (18°-27°C)
Rel Humidity 20%-65%
Max Wet Bulb 70°F (21°C)

Environment Nonoperating:

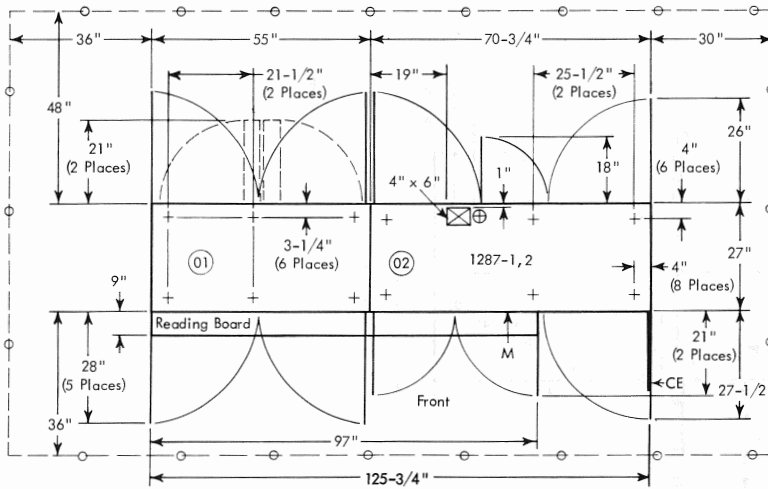
Temperature 50°-110°F (10°-43°C)
Rel Humidity 8%-80%
Max Wet Bulb 104°F (40°C)

Notes:

* Shipping height is 56-1/8" (143 cm).

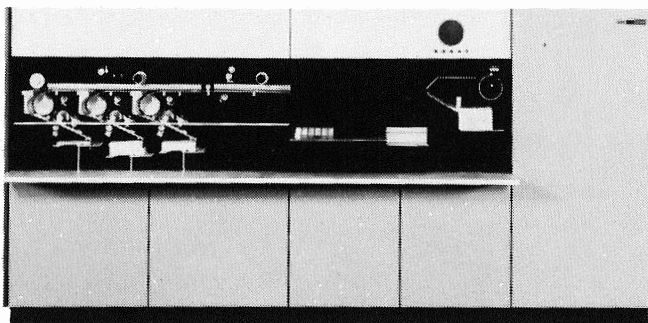
1287 OPTICAL READER MODELS 1 AND 2

PLAN VIEW



Frame	Weight	
	lb	kg
01	1,000	460
02	1,900	870

Note: For cabling information, see Section 4, "Units With Integral or Abutted Controls."



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	125-3/4*	36*	60
(cm)	(319*)	(91*)	(152)

Service Clearances:

	F	R	Rt	L
Inches	36	48	30	36
(cm)	(91)	(122)	(76)	(91)

Weight: 2,900 lb (1.350 kg)

Heat Output: 10,000 BTU/hr (2.550 kcal/hr)

Airflow: 900 cfm (26 m³/min)

Power Requirements:

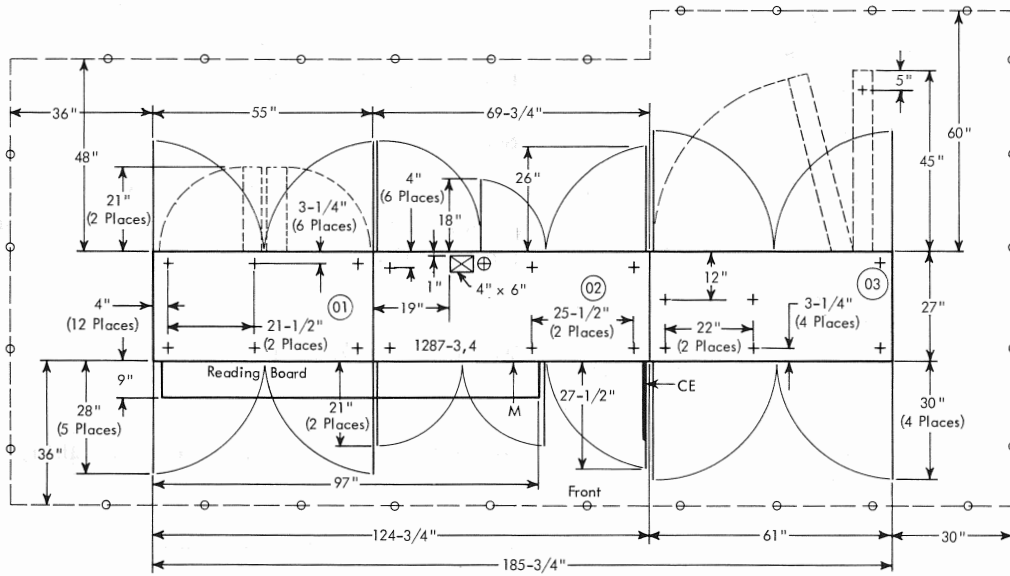
kVA	4.0
Phases	3
Plug	R&S, FS3760
Connector	R&S, FS3934
Receptacle	R&S, FS3754
Power Cord Style	D1

Notes:

* Reading board is removed and frames are separated for shipment. Side dimension includes 9" (23 cm) for reading board projection.

1287 OPTICAL READER MODELS 3 AND 4

PLAN VIEW



Frame	Weight	
	lb	kg
01	900	410
02	2,000	910
03	1,000	460

Note: For cabling information, see Section 4, "Units With Integral or Abutted Controls."

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	185-3/4*	36*	60
(cm)	(472*)	(91*)	(152)

Service Clearances:

	F	R	Rt	L
Inches	36	**	30	36
(cm)	(91)	(**)	(76)	(91)

Weight: 3,900 lb (1.800 kg)

Heat Output: 13,300 BTU/hr (3.400 kcal/hr)

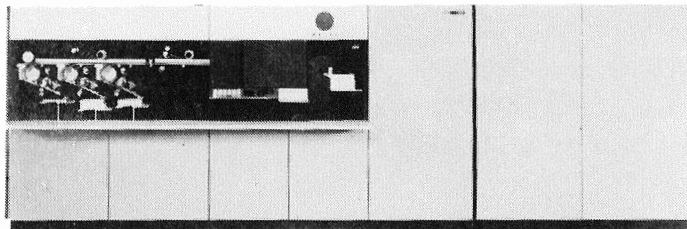
Airflow: 1,400 cfm (40 m³/min)

Power Requirements:

kVA	5.0
Phases	3
Plug	R&S, FS3760
Connector	R&S, FS3934
Receptacle	R&S, FS3754
Power Cord Style	D1

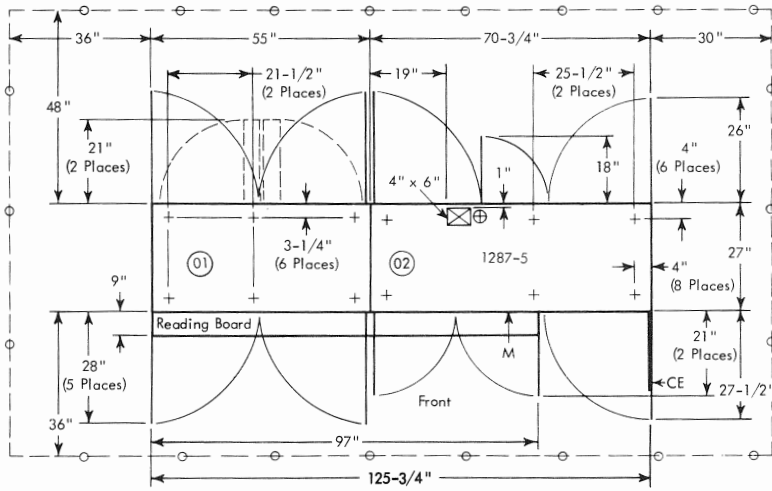
Notes:

- * Reading board is removed and frames are separated for shipment. Side dimension includes 9" (23 cm) for reading board projection.
- ** See plan view.



1287 OPTICAL READER MODEL 5

PLAN VIEW



Frame	Weight	
	lb	kg
01	1,000	460
02	1,800	820

Note: For cabling information, see Section 4, "Units With Integral or Abutted Controls."

1287 OPTICAL READER MODEL 5

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	125-3/4*	36*	60
(cm)	(319*)	(91*)	(152)

Service Clearances:

	F	R	Rt	L
Inches	36	48	30	36
(cm)	(91)	(122)	(76)	(91)

Weight: 2,800 lb (1,300 kg)

Heat Output: 10,000 BTU/hr (2,550 kcal/hr)

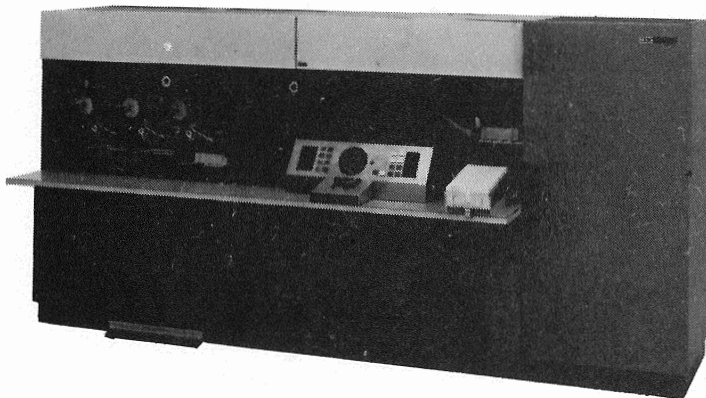
Airflow: 900 cfm (26 m³/min)

Power Requirements:

kVA	4.0
Phases	3
Plug	R&S, FS3760
Connector	R&S, FS3934
Receptacle	R&S, FS3754
Power Cord Style	D1

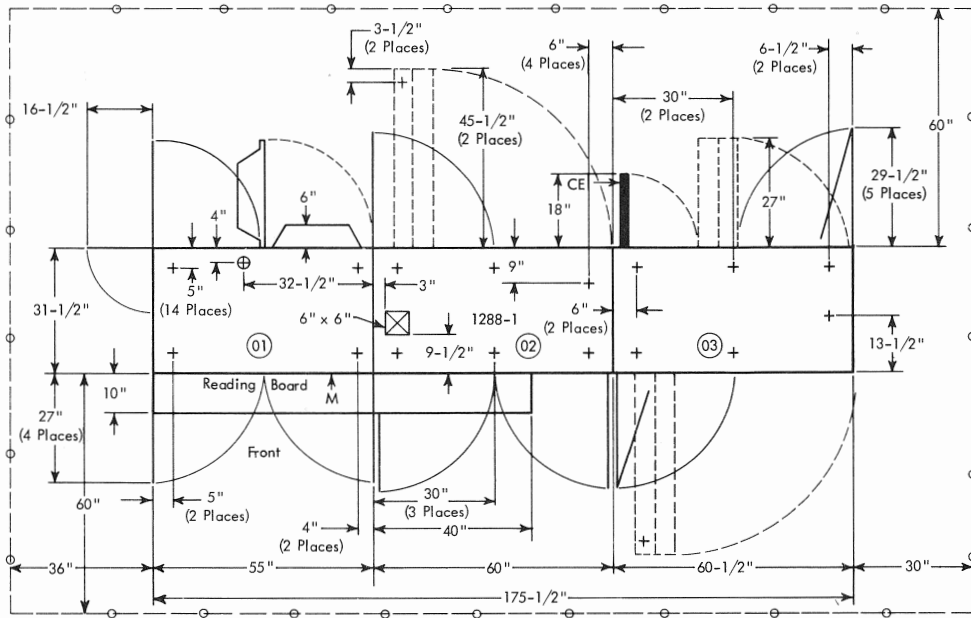
Notes:

* Reading board is removed and frames are separated for shipment. Side dimension includes 9" (23 cm) for reading board projection.



1288 OPTICAL PAGE READER MODEL 1

PLAN VIEW



Frame	Weight	
	lb	kg
01	1,160	530
02	1,280	590
03	1,460	670

Note: For cabling information, see Section 4, "Units With Integral or Abutted Controls."

1288 OPTICAL PAGE READER MODEL 1

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	175-1/2*	41-1/2*	60
(cm)	(446*)	(105*)	(152)

Service Clearances:

	F	R	Rt	L
Inches	60	60	30	36
(cm)	(152)	(152)	(76)	(91)

Weight: 3,900 lb (1,800 kg)

Heat Output: 13,000 BTU/hr (3,300 kcal/hr)

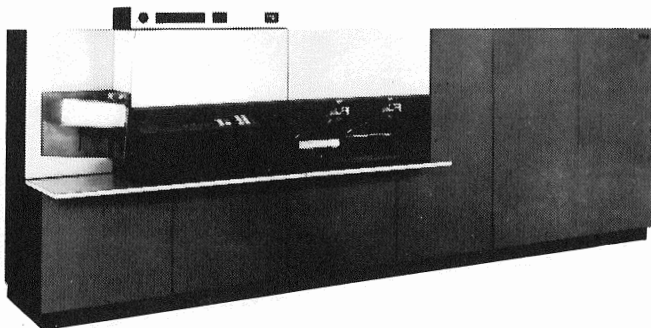
Airflow: 1,330 cfm (38 m³/min)

Power Requirements:

kVA	5.2
Phases	3
Plug	R&S, FS3760
Connector	R&S, FS3934
Receptacle	R&S, FS3754
Power Cord Style	D1

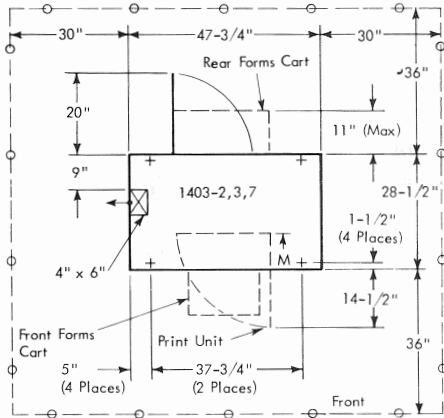
Notes:

* Reading board is removed and frames are separated for shipment. Side dimension includes 10" (25 cm) for reading board projection.



1403 PRINTER MODELS 2, 3, AND 7

PLAN VIEW



Note: For cabling information, see 2821, 3125-0, 3125-2, 3135, or 3138.

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	47-3/4	28-1/2	53-1/4
(cm)	(121)	(72)	(135)

Service Clearances:

	F	R	Rt	L
Inches	36	36	30	30
(cm)	(91)	(91)	(76)	(76)

Weight:	<i>Model 2</i>	<i>Model 3</i>	<i>Model 7</i>
lb	750	750	750
(kg)	(350)	(350)	(350)

Heat Output:

BTU/hr	3,000	3,600	2,400
(kcal/hr)	(760)	(910)	(610)

Airflow:

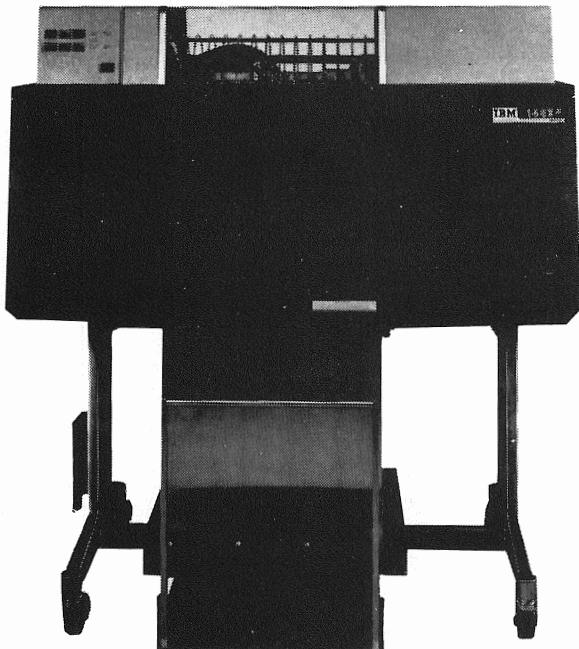
cfm	310	350	310
(m ³ /min)	(9)	(10)	(9)

Power Requirements:*

kVA	1.0	1.2	0.8
-----	-----	-----	-----

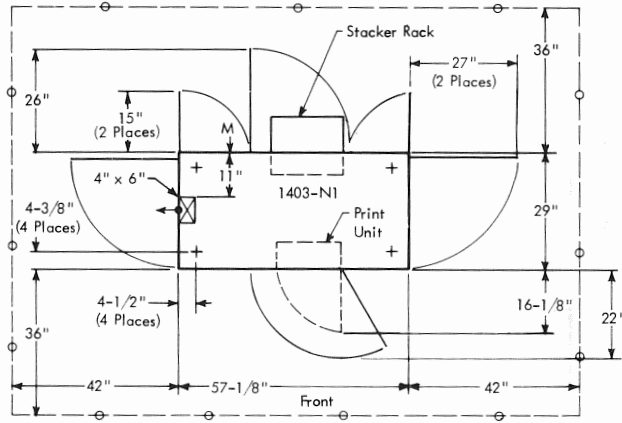
Notes:

* Models 2, 3, and 7 are powered from 2821. Models 2 and 7 are powered from 2025 when SF #4590 is installed, or from 3125-0, 3125-2, 3135, or 3138 when SF #4662 or #4667 is installed.



1403 PRINTER MODEL N1

PLAN VIEW



Note: For cabling information, see 2821, 3125-0, 3125-2, 3135, or 3138.

SPECIFICATIONS

Dimensions:

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

Service Clearances:

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

Weight: 1,250 lb (570 kg)

Heat Output: 4,500 BTU/hr (1.150 kcal/hr)

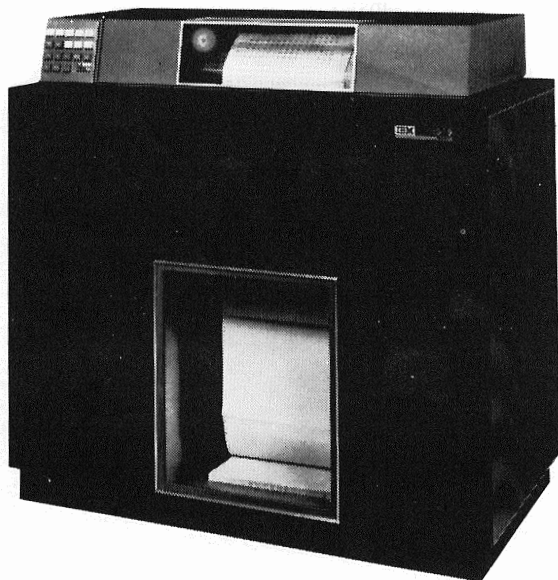
Airflow: 350 cfm (10 m³/min)

Power Requirements: *

kVA 1.5

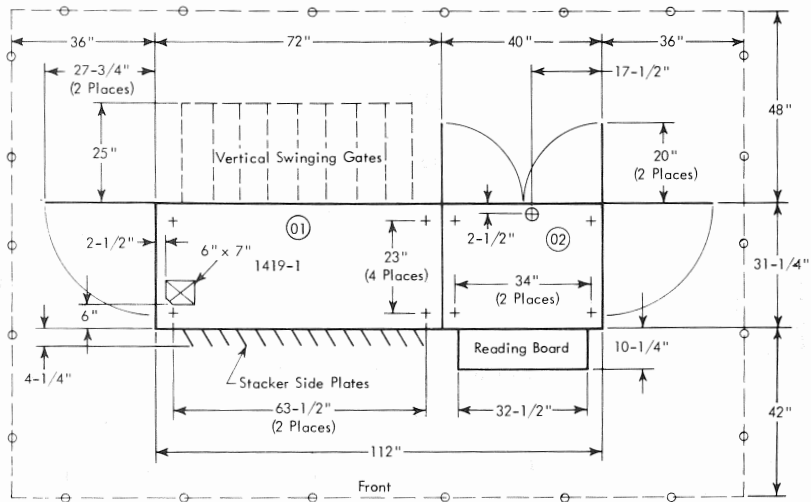
Notes:

* Powered from 2821, or from 2025 when SF #4590 is installed or from 3125-0, 3125-2, 3135, or 3138 when SF #4668 is installed.



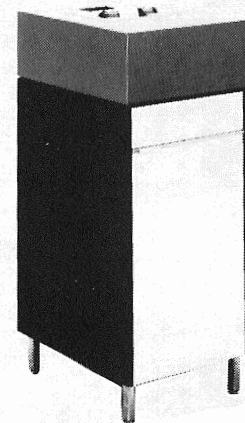
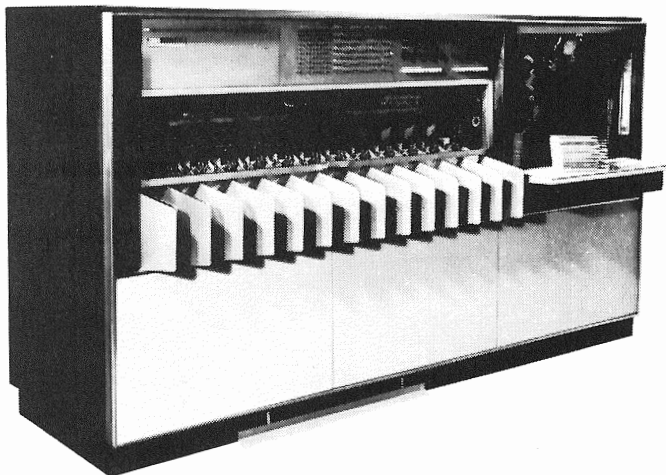
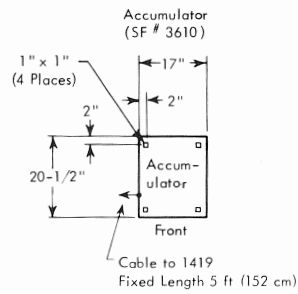
1419 MAGNETIC CHARACTER READER MODEL 1

PLAN VIEW



Frame	Weight	
	lb	kg
01	1,675	760
02***	1,075	490

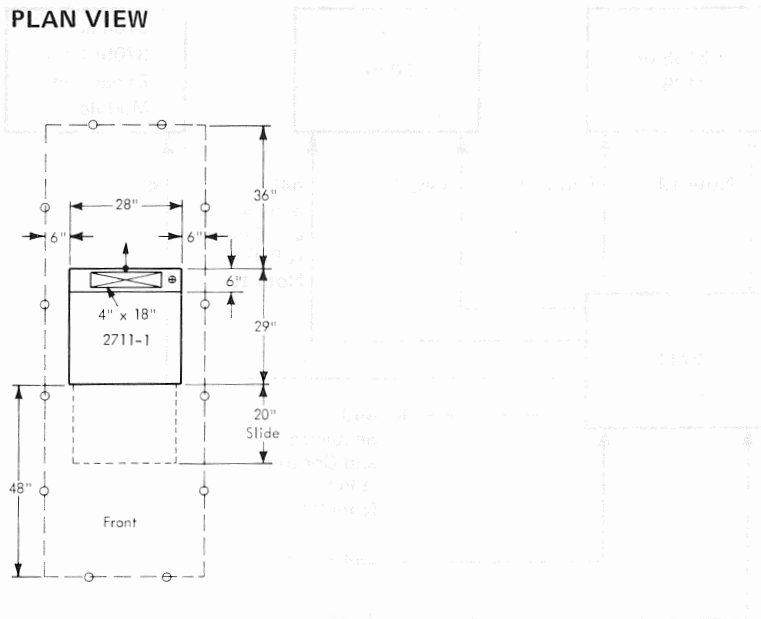
Note: For cabling information, see Section 4, "Units With Integral or Abutted Controls."



Accumulator (SF # 3610)

2711 LINE ADAPTER UNIT MODEL 1

PLAN VIEW



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	28	29	64*
(cm)	(71)	(74)	(163*)

Service Clearances:

	F	R	Rt	L
Inches	48	36	6	6
(cm)	(122)	(91)	(15)	(15)

Weight: 727 lb* (330 kg*)

Heat Output: 1,600 BTU/hr (410 kcal/hr)

Airflow: 100 cfm (3 m³/min)

Power Requirements:

kVA	0.5
Phases	1
Plug	R&S, FS3720
Connector	R&S, FS3913
Receptacle	R&S, FS3743
Power Cord Style	A5

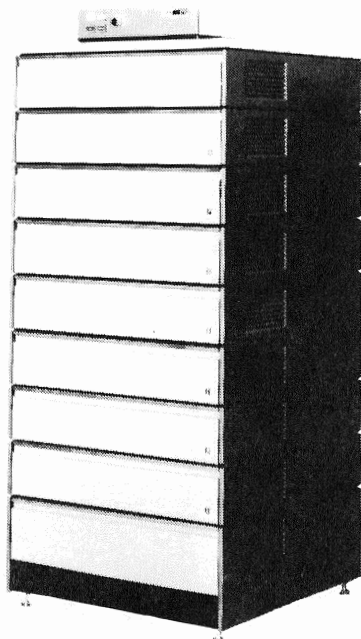
Environment Operating:

Temperature	50 ⁰ -90 ⁰ F (10 ⁰ -32 ⁰ C)
Rel Humidity	8%-80%
Max Wet Bulb	78 ⁰ F (26 ⁰ C)

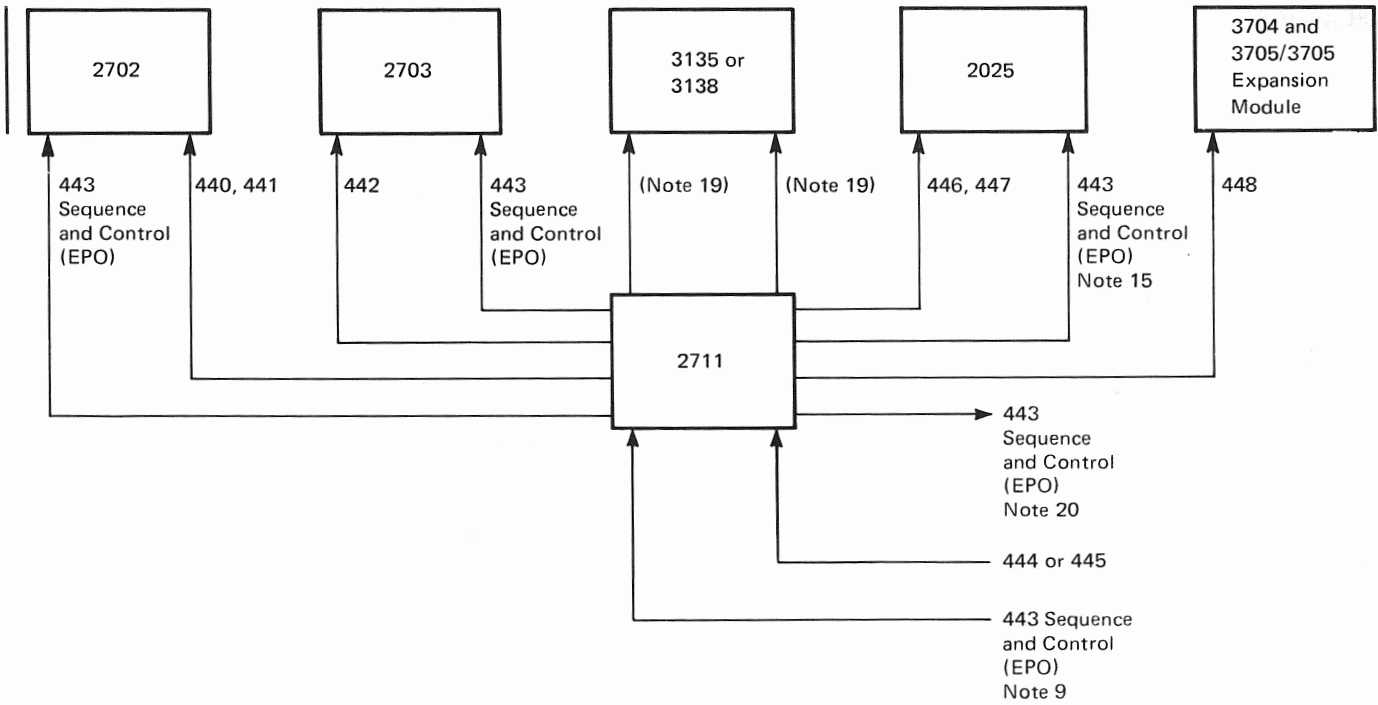
Notes:

* Figure represents 2711 maximum configuration. The basic unit (Power Supply Module, "A" Line Adapter Module, and Control Module) is 22" (56 cm) high and weighs a maximum of 251 lb (120 kg). Add 6" (15 cm) and a maximum of 68 lb (31 kg) for each additional Line Adapter Module (maximum of seven additional Line Adapter Modules). Weight varies depending on type of line adapters installed.

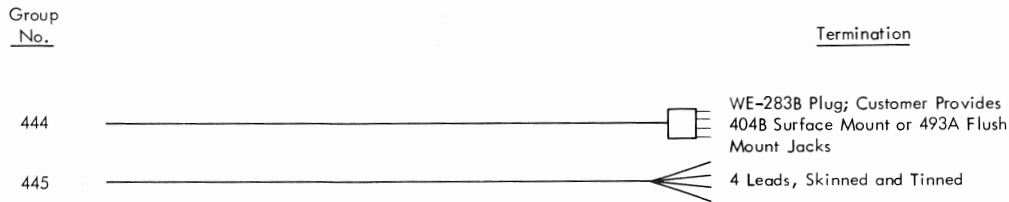
If only one or two Line Adapter Modules are used, consideration should be given to placing the unit on a stand or table. (This will avoid a possible safety hazard of having a low unit in the middle of the floor.)



2711 LINE ADAPTER UNIT CABLING SCHEMATIC (50 HZ)



Cables for IBM and Non-IBM Devices



1419 MAGNETIC CHARACTER READER MODEL 1

Details for Power Requirements and Heat Output

Endorser Unit	Branch Circuit Requirements			Power Requirements*	Heat Output
	Voltage	Max Cont Load (A)	Phases	kVA	BTU/hr (kcal/hr)
With Endorser Unit	208	21.8	1	4.5	13,800 (3.500)
	230	20.8	1	4.7	14,400 (3.650)
Without Endorser Unit	195**	16.0	3	4.6	11,450 (2.900)
	208	18.0	1	3.7	11,350 (2.900)
	220**	14.3	3	4.6	11,450 (2.900)
	230	16.5	1	3.8	11,650 (2.950)
	235**	13.2	3	4.6	11,450 (2.900)
	380**	9.0	3	5.1	12,700 (3.250)
	408**	8.3	3	5.1	12,700 (3.250)
Plug R&S, FS3750 Connector R&S, FS3933 Receptacle R&S, FS3753 Power Cord Style D1					

SPECIFICATIONS

Dimensions:

	F	S	H
<i>Reader-Sorter***</i>			
Inches	112	41-1/2†	60-1/4
(cm)	(284)	(105†)	(153)

Accumulator

Inches	17	20-1/2	38-1/2
(cm)	(43)	(52)	(98)

Service Clearances:

	F	R	Rt	L
<i>Reader-Sorter</i>				
Inches	42	48	36	36
(cm)	(107)	(122)	(91)	(91)

Accumulator

None required, except provide for operator access at front.

Weight:

	Without Endorser Unit	With Endorser Unit
lb	2,675	2,750
(kg)	(1.250)	(1.250)

Accumulator

105 lb (48 kg)

Heat Output: See Details table.

Airflow:

cfm	400	510
(m ³ /min)	(12)	(15)

Power Requirements: See Details table.

Environment Operating:

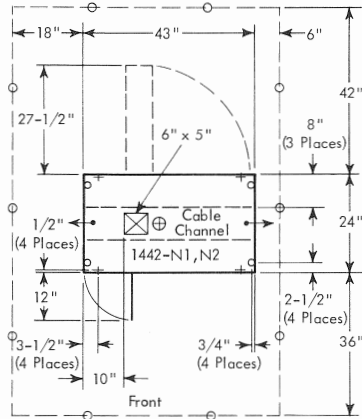
Temperature	65 ^o -80 ^o F (18 ^o -27 ^o C)
Rel Humidity	20%-65%

Notes:

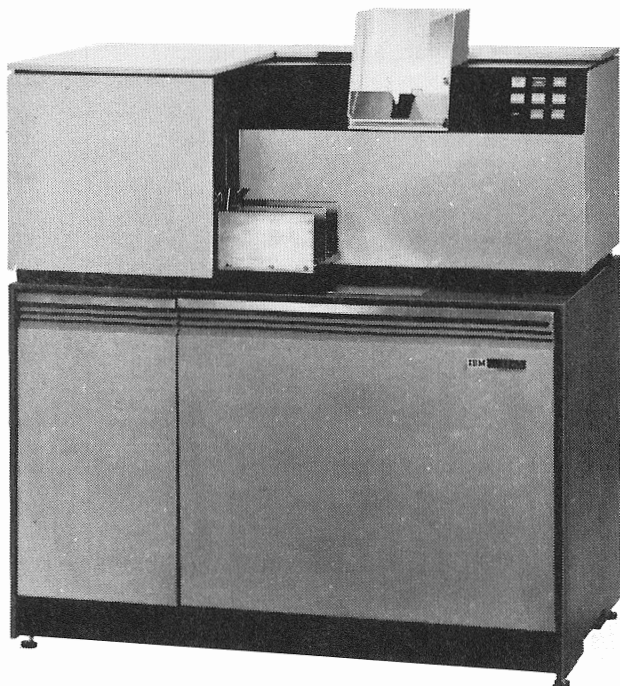
- * Accumulator is powered from 1419.
- ** Apply to 50-Hz machines.
- *** Machine is shipped in two sections.
- † Dimension includes 10-1/4 inches (26 cm) for reading board projection.

**1442 CARD READ PUNCH MODEL N1
1442 CARD PUNCH MODEL N2**

PLAN VIEW



Note: For cabling information, see Section 4, "Units With Integral or Abutted Controls."



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	43	24	49
(cm)	(109)	(61)	(124)

Service Clearances:

	F	R	Rt	L
Inches	36	42	6	18
(cm)	(91)	(107)	(15)	(46)

Weight: 575 lb (270 kg)

Heat Output: 2,200 BTU/hr (560 kcal/hr)

Airflow: 0 cfm (0 m³/min)

Power Requirements:

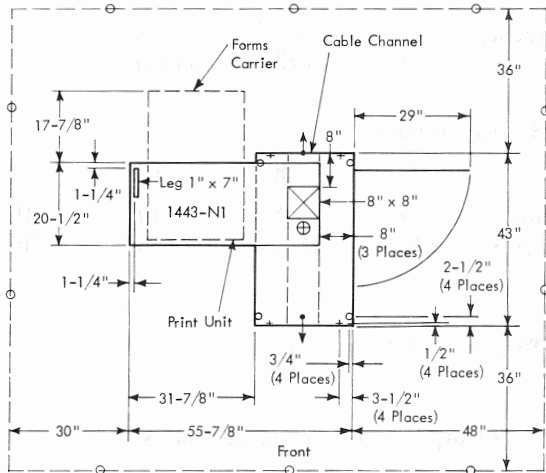
kVA	0.8
Phases	1
Plug	R&S, FS3720
Connector	R&S, FS3913
Receptacle	R&S, FS3743
Power Cord Style	A1

Environment Operating:

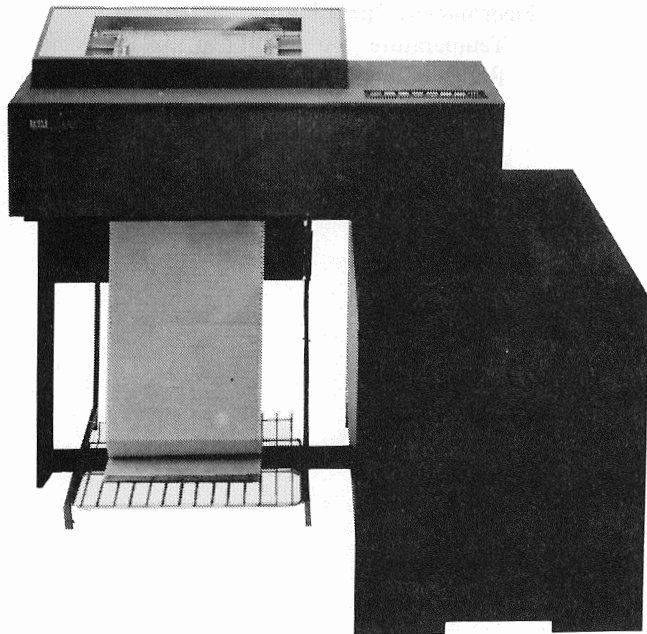
Temperature	60 ^o -90 ^o F (16 ^o -32 ^o C)
Rel Humidity	10%-80%

1443 PRINTER MODEL N1

PLAN VIEW



Note: For cabling information, see Section 4, "Units With Integral or Abutted Controls."



SPECIFICATIONS

Dimensions:*

	F	S	H
Inches	55-7/8	43	46
(cm)	(142)	(109)	(117)

Service Clearances:

	F	R	Rt	L
Inches	36	36	48	30
(cm)	(91)	(91)	(122)	(76)

Weight: 800 lb (370 kg)

Heat Output: 3,200 BTU/hr (810 kcal/hr)

Airflow: 50 cfm (2 m³/min)

Power Requirements:

kVA	1.1
Phases	1
Plug	R&S, FS3720
Connector	R&S, FS3913
Receptacle	R&S, FS3743
Power Cord Style	A1

Environment Operating:

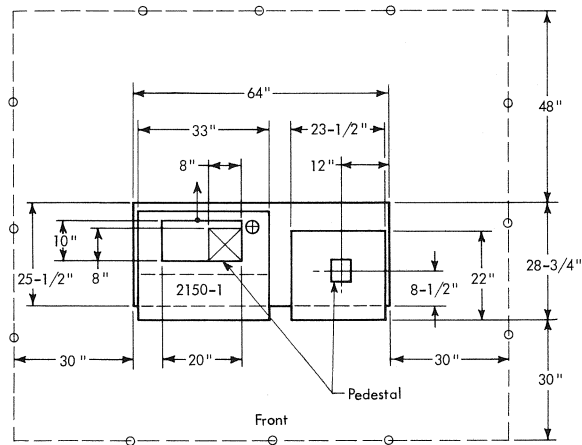
Temperature	60 ^o -90 ^o F (16 ^o -32 ^o C)
Rel Humidity	10%-80%

Notes:

* Shipping dimensions are 49" x 25" x 50" (124 cm x 64 cm x 127 cm).

2150 CONSOLE MODEL 1

PLAN VIEW



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	64	28-3/4	52-1/8
(cm)	(163)	(73)	(132)

Service Clearances:

	F	R	Rt	L
Inches	30	48	30	30
(cm)	(76)	(122)	(76)	(76)

Weight: 800 lb (370 kg)

Heat Output: 1,740 BTU/hr (440 kcal/hr)

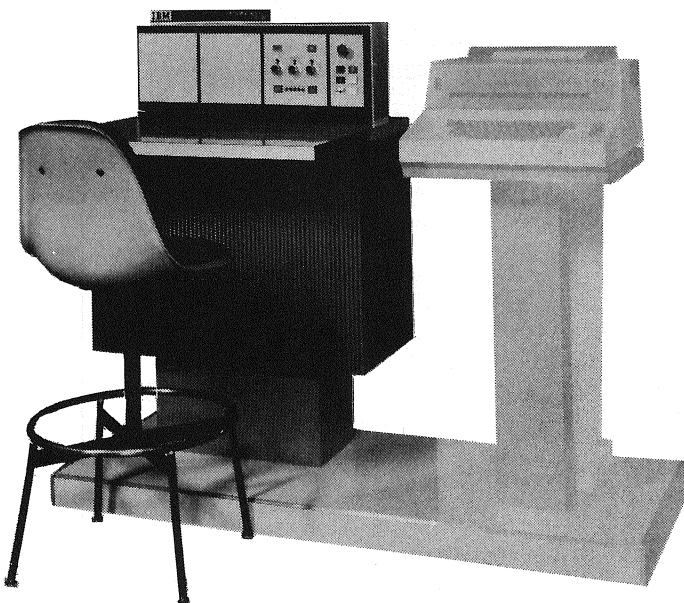
Airflow: 180 cfm (6 m³/min)

Power Requirements:

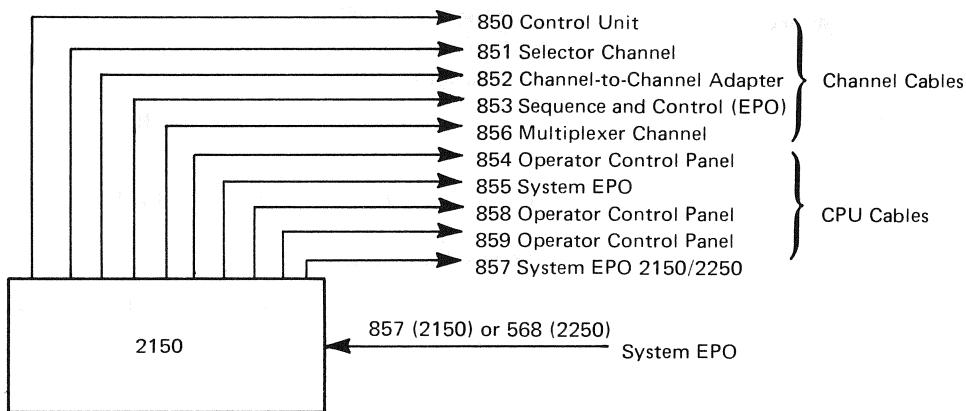
kVA	0.65
Phases	3
Plug	R&S, FS3730
Connector	R&S, FS3914
Receptacle	R&S, FS3744
Power Cord Style	B1

Environment Operating:

Temperature	60°-90°F (16°-32°C)
Rel Humidity	10%-80%



2150 CONSOLE CABLING SCHEMATIC



Group No.	No. of Cables	From	To	Max Length (ft)	Notes
850	2	2150	Control Unit	—	1
851	2	2150	Selector Channel	—	1
852	2	2150	Channel-to-Channel Adapter	—	1, 4
853	1	2150	Channel	150	2
854	3	2150	System/360 CPU	70	3, 6
855	1	2150	System/360 or System/370 CPU	70	5, 6
856	2	2150	Multiplexer Channel	—	1
857	1	2150	Console (2150/2250)	70	5
858	2	2150	System/360 or System/370 CPU	70	3, 6
859	1	2150	System/360 or System/370 CPU	70	3, 6

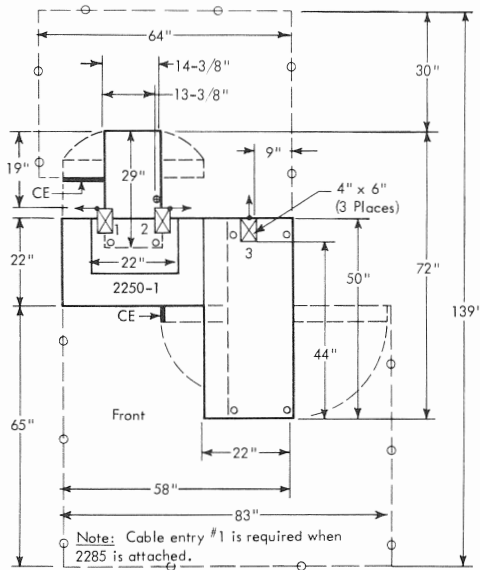
Notes:

- Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units to a channel.
- Sequence and control (EPO).
- For SF #5475 and #5476. One cable group is required for each feature.
- To channel-to-channel adapter (SF #1850).
- Total length of all system EPO cables may not exceed 70 feet (sum of 855 plus 857 or 568 \leq 70 feet).
- Cabled to System/360 and System/370 CPU according to the following table:

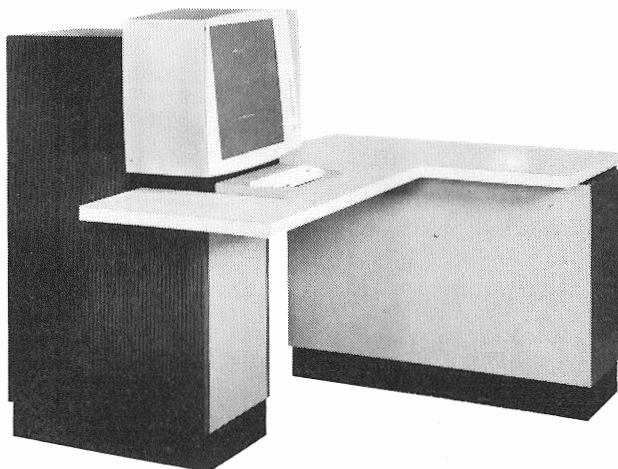
Cable Group No.	CPU	Frame No.	Frame No.—Hole No.
854	2050	—	03
	2065	—	02
	2075	—	03
	2085	—	05
855	2050	—	03
	2065	—	02
	2075	—	02
	2085	—	14
858	3155/3158/3158-3	EPO—I/O Panel	—
	3165/3168/3168-3	15	—
	3195	09	—
859	3165/3168/3168-3	—	05
	3195	—	01 #1
859	3165/3168/3168-3	—	06
	3195	—	01 #2

2250 DISPLAY UNIT MODEL 1

PLAN VIEW



Note: For cabling information, see 2840.



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	*	*	50
(cm)	(*)	(*)	(127)

Service Clearances:

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

Weight:

		<i>Absolute Vectors</i>
lb	890	890
(kg)	(410)	(410)

Heat Output:

BTU/hr	3,300	4,400
(kcal/hr)	(840)	(1,150)

Airflow:

cfm	620	620
(m ³ /min)	(18)	(18)

Power Requirements:

kVA	1.25	1.7
Phases	1	1
Plug	R&S, FS3720	
Connector	R&S, FS3913	
Receptacle	R&S, FS3743	
Power Cord Style	A2	

Environment Operating:

Temperature	50 ⁰ -90 ⁰ F (10 ⁰ -32 ⁰ C)
Rel Humidity	8%-80%
Max Wet Bulb	78 ⁰ F (26 ⁰ C)

Environment Nonoperating:

Temperature	50 ⁰ -150 ⁰ F (10 ⁰ -66 ⁰ C)
Rel Humidity	8%-80%
Max Wet Bulb	85 ⁰ F (29 ⁰ C)

Cable Limitations:

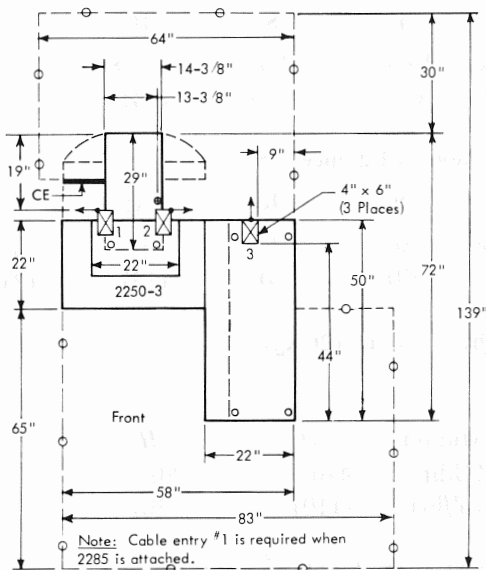
Same as for a control unit on the channel.

Notes:

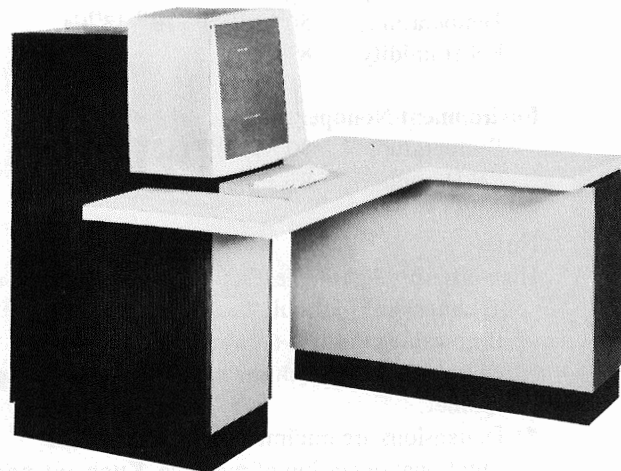
* See plan view. The right-hand frame is shipped separate from the console.

2250 DISPLAY UNIT MODEL 3

PLAN VIEW



Note: For cabling information, see 2840.



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	*	*	50
(cm)	(*)	(*)	(127)

Service Clearances:

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

Weight: 770 lb (350 kg)

Heat Output: 2,600 BTU/hr (660 kcal/hr)

Airflow: 380 cfm (11 m³/min)

Power Requirements:

kVA	1.5
Phases	1
Plug	R&S, FS3720
Connector	R&S, FS3913
Receptacle	R&S, FS3743
Power Cord Style	A2

Environment Operating:

Temperature	50 ⁰ -90 ⁰ F (10 ⁰ -32 ⁰ C)
Rel Humidity	8%-80%
Max Wet Bulb	78 ⁰ F (26 ⁰ C)

Environment Nonoperating:

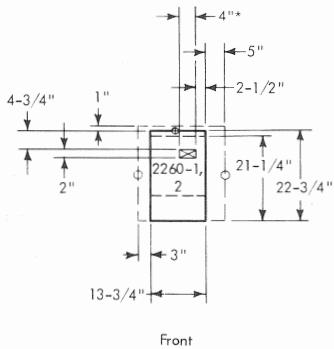
Temperature	50 ⁰ -150 ⁰ F (10 ⁰ -66 ⁰ C)
Rel Humidity	8%-80%
Max Wet Bulb	85 ⁰ F (29 ⁰ C)

Notes:

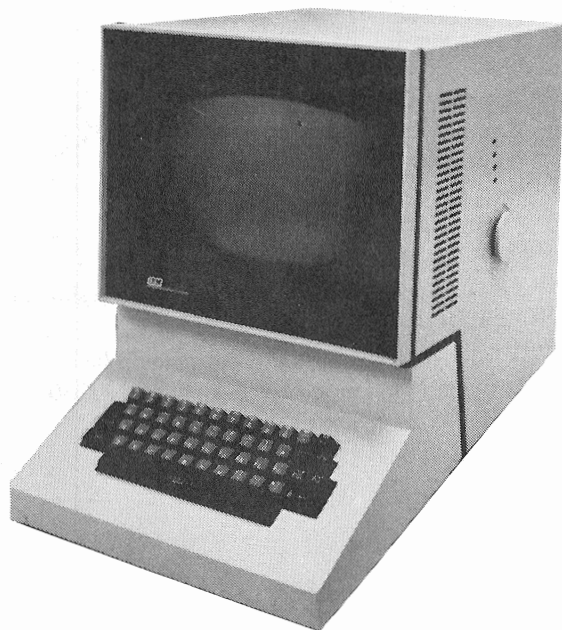
- * See plan view. The right-hand frame is shipped separate from the console.
- ** Units may be abutted. There should be a 30-inch (76-cm) clearance between a 2250 Model 3 and any other unit or structure, unless otherwise specified.

2260 DISPLAY STATION MODELS 1 AND 2—WITH KEYBOARD

PLAN VIEW



Note: For cabling information, see 2848.



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	13-3/4	22-3/4	17-3/8
(cm)	(35)	(58)	(44)

Operational Clearances:**

	F	R	Rt	L
Inches	0	1	5	3
(cm)	(0)	(3)	(13)	(8)

Weight: 56 lb (26 kg)

Heat Output:	50 Hz	60 Hz
BTU/hr	410	480
(kcal/hr)	(110)	(130)

Airflow: 35 cfm (1 m³/min)

Power Requirements:

kVA 0.22

Phases 1

Locking:	115V
Plug	H4723
Connector	H4730
Receptacle	H4700 or 4710

Nonlocking:	115V
Plug	H or P&S, 5266
Connector	H or P&S, 5269
Receptacle	H or P&S, 5261 or 5262
Power Cord Style	G1
Power Cord Length	8 feet (244 cm)

Environment Operating:

Temperature 50⁰-110⁰F (10⁰-43⁰C)

Rel Humidity 8%-80%

Environment Nonoperating:

Temperature 50⁰-150⁰F (10⁰-66⁰C)

Rel Humidity 8%-80%

Notes:

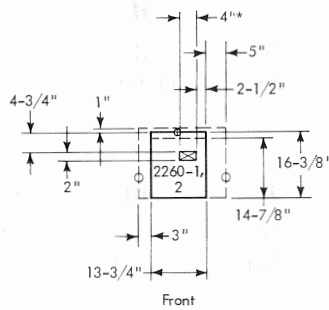
High-intensity lighting levels (over 50 footcandles 540 lumens/m²) should be avoided.

* If no cable cutout is desired, the signal cable will enter underneath the unit at the rear of the cabinet.

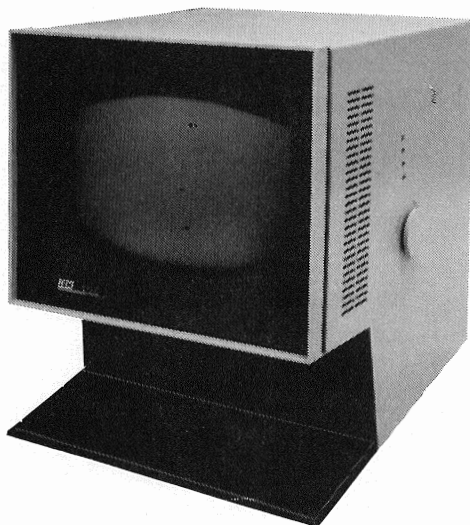
** Dimensions are minimum requirements for functional operation of machine. Knob extends from right side. Provide for sufficient operator clearance.

2260 DISPLAY STATION MODELS 1 AND 2—WITHOUT KEYBOARD

PLAN VIEW



Note: For cabling information, see 2848.



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	13-3/4	16-3/8	17-3/8
(cm)	(35)	(42)	(44)

Operational Clearances:**

	F	R	Rt	L
Inches	0	1	5	3
(cm)	(0)	(3)	(13)	(8)

Weight: 36 lb (17 kg)

Heat Output:	50 Hz	60 Hz
BTU/hr	410	480
(kcal/hr)	(110)	(130)

Airflow: 35 cfm (1 m³/min)

Power Requirements:

kVA 0.22

Phases 1

Locking:	115V
Plug	H4723
Connector	H4730
Receptacle	H4700 or 4710

Nonlocking:	115V
Plug	H or P&S, 5266
Connector	H or P&S, 5269
Receptacle	H or P&S, 5261 or 5262
Power Cord Style	G1
Power Cord Length	8 feet (244 cm)

Environment Operating:

Temperature	50 ^o -110 ^o F (10 ^o -43 ^o C)
Rel Humidity	8%-80%

Environment Nonoperating:

Temperature	50 ^o -150 ^o F (10 ^o -66 ^o C)
Rel Humidity	8%-80%

Notes:

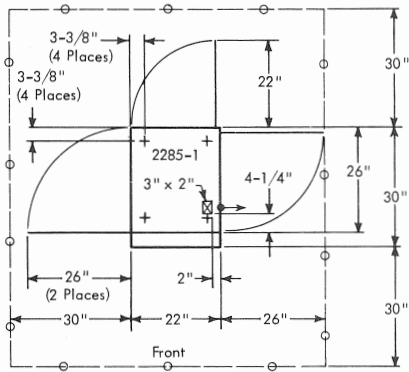
High-intensity lighting levels (over 50 footcandles [540 lumens/m²]) should be avoided.

* If no cable cutout is desired, the signal cable will enter underneath the unit at the rear of the cabinet.

** Dimensions are minimum requirements for functional operation of machine. Knob extends from right side. Provide for sufficient operator clearance.

2285 DISPLAY COPIER MODEL 1

PLAN VIEW



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	22	30	40
(cm)	(56)	(76)	(102)

Service Clearances:

	F	R	Rt	L
Inches	30	30	26	30
(cm)	(76)	(76)	(66)	(76)

Weight: 350 lb (160 kg)

Heat Output: 750 BTU/hr (190 kcal/hr)

Airflow: Negligible

Power Requirements:*

kVA 1.5

Environment Operating:

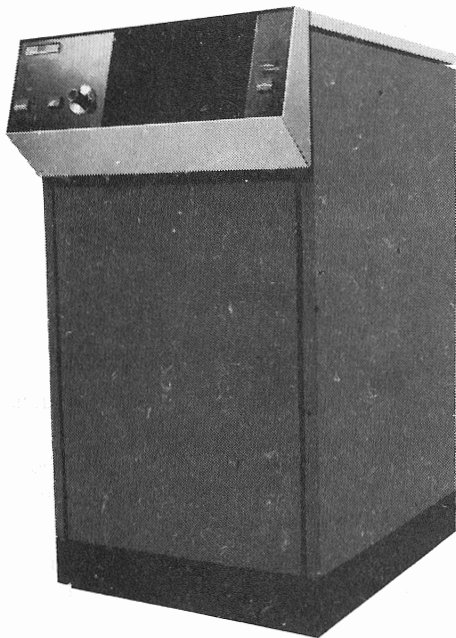
Maximum relative humidity is limited to 70% because of the characteristics of the photographic medium.

Cable Limitations:

Cable length is fixed at 5 feet "X" dimension.

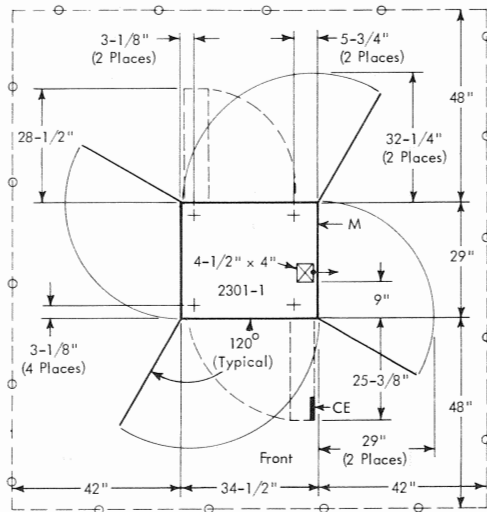
Notes:

* Powered from 2250.

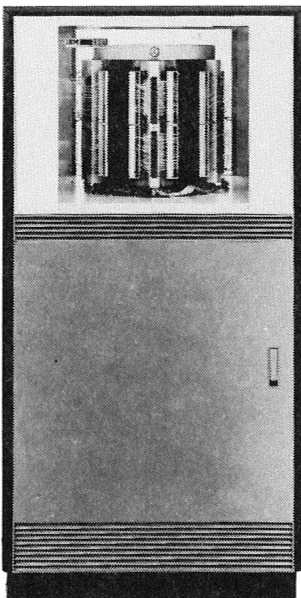


2301 DRUM STORAGE MODEL 1

PLAN VIEW



Note: For cabling information, see 2820.



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	34-1/2	29	64
(cm)	(88)	(74)	(163)

Service Clearances:

	F	R	Rt	L
Inches	48	48	42	42
(cm)	(122)	(122)	(107)	(107)

Weight: 850 lb (390 kg)

Heat Output: 3,800 BTU/hr (960 kcal/hr)

Airflow: 320 cfm (10 m³/min)

Power Requirements:*	50 Hz	60 Hz
kVA	2.1	1.5
Phases	3	3

Environment Operating:

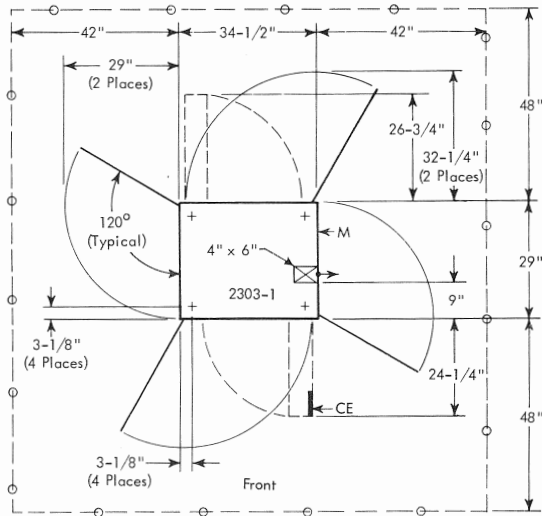
Normal operating conditions must be maintained for two hours prior to start of operation.

Notes:

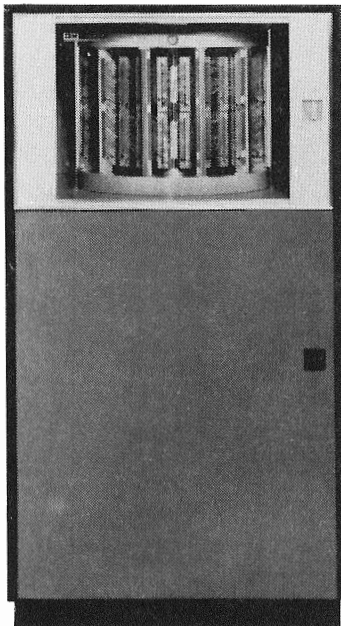
* Powered from control unit.

2303 DRUM STORAGE MODEL 1

PLAN VIEW



Note: For cabling information, see 2841.



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	34-1/2	29	64
(cm)	(88)	(74)	(163)

Service Clearances:

	F	R	Rt	L
Inches	48	48	42	42
(cm)	(122)	(122)	(107)	(107)

Weight: 850 lb (390 kg)

Heat Output: 3,800 BTU/hr (960 kcal/hr)

Airflow: 250 cfm (8 m³/min)

Power Requirements:*	50 Hz	60 Hz
kVA	2.1	1.7
Phases	3	3

Environment Operating:

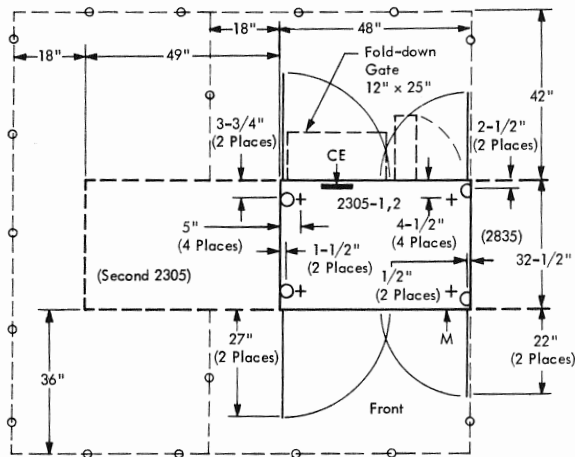
Normal operating conditions must be maintained for two hours prior to start of operation.

Notes:

* Powered from control unit.

2305 FIXED HEAD STORAGE MODELS 1 AND 2

PLAN VIEW



SPECIFICATIONS*

Dimensions:

	F	S	H
Inches	48**	32-1/2	60
(cm)	(122**)	(83)	(152)

Service Clearances:

	F	R	Rt	L
Inches	36	42	***	18†
(cm)	(91)	(107)	(***)	(46†)

Weight: 1,150 lb (530 kg)

Heat Output: 11,000 BTU/hr (2,800 kcal/hr)

Airflow: 470 cfm (14 m³/min)

Power Requirements:††

kVA 3.5

Notes:

* Machines shipped prior to August 5, 1972 have the following specifications:

	50 Hz	60 Hz
Serial Numbers:	50103 80169	10134 30284

Weight:		
lb	1,350	1,350
(kg)	(620)	(620)

Heat Output:		
BTU/hr	15,400	15,000
(kcal/hr)	(3,900)	(3,800)

Airflow:†††		
cfm	550	550
(m ³ /min)	(16)	(16)

Power Requirements:		
kVA	5.0	4.8

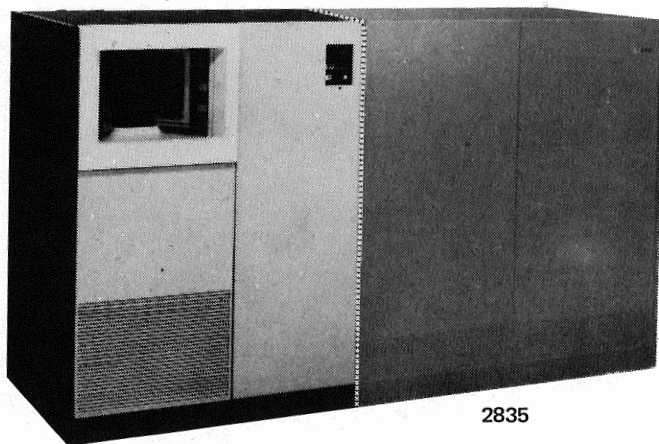
** Dimension is 49" (124 cm) for leftmost (or only) 2305 to allow for end cover.

*** The 2305 is bolted to the left side of the 2835 or first 2305.

† For the end 2305 unit.

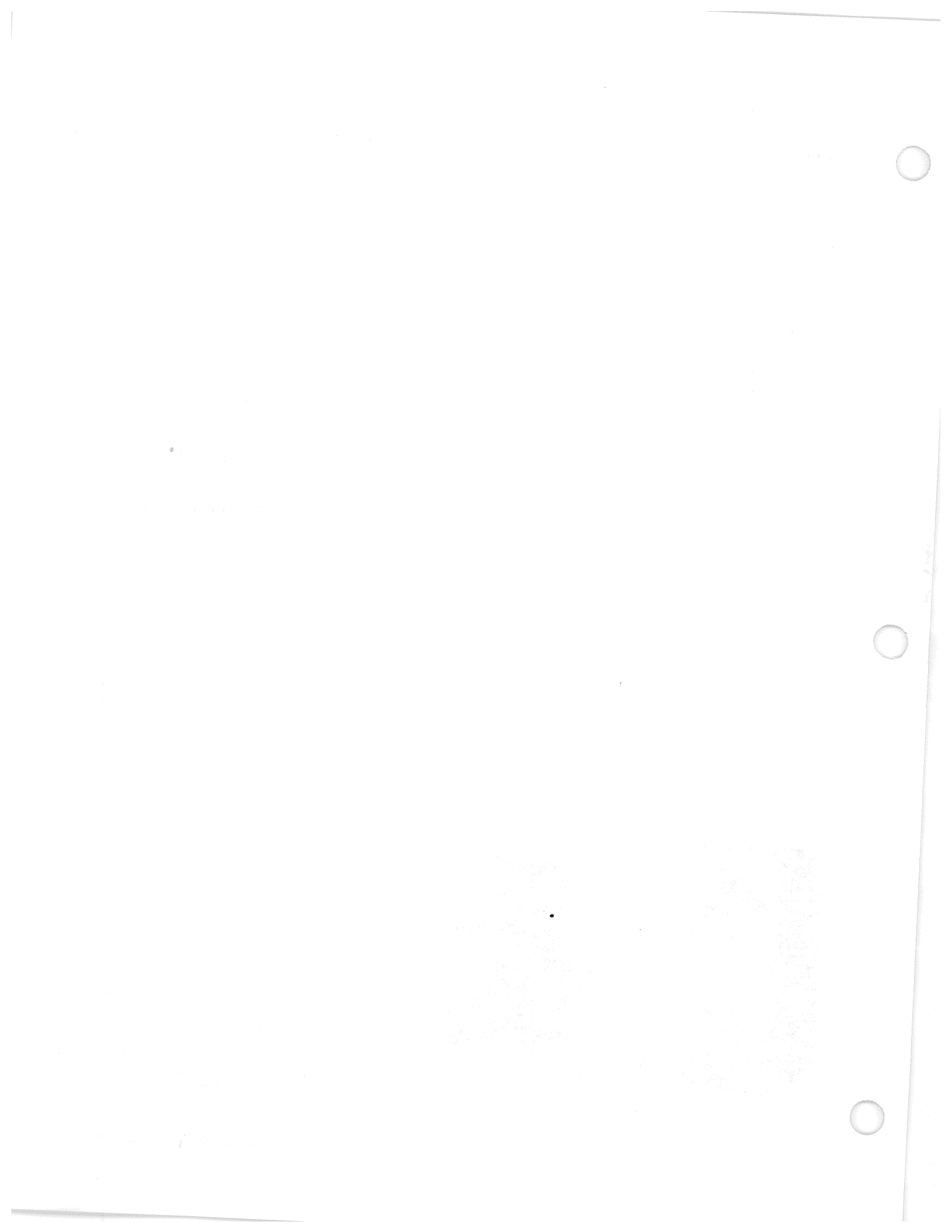
†† Powered from 2835.

††† Of this total, 450 cfm (13 m³/min) is horizontal airflow from the front to the back of the machine. Exhaust is about 25°F (14°C) above the input air temperature.



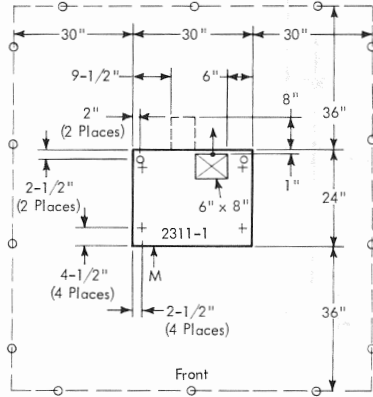
2305

2835



2311 DISK STORAGE DRIVE MODEL 1

PLAN VIEW



Note: For cabling information, see 2841.

SPECIFICATIONS

Dimensions:

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

Service Clearances:

	F	R	Rt	L
Inches	36	36	30*	30*
(cm)	(91)	(91)	(76*)	(76*)

Weight: 280 lb (130 kg)

Heat Output: 2,000 BTU/hr (510 kcal/hr)

Airflow: 100 cfm (3 m³/min)

Power Requirements:**
kVA 0.75

Notes:

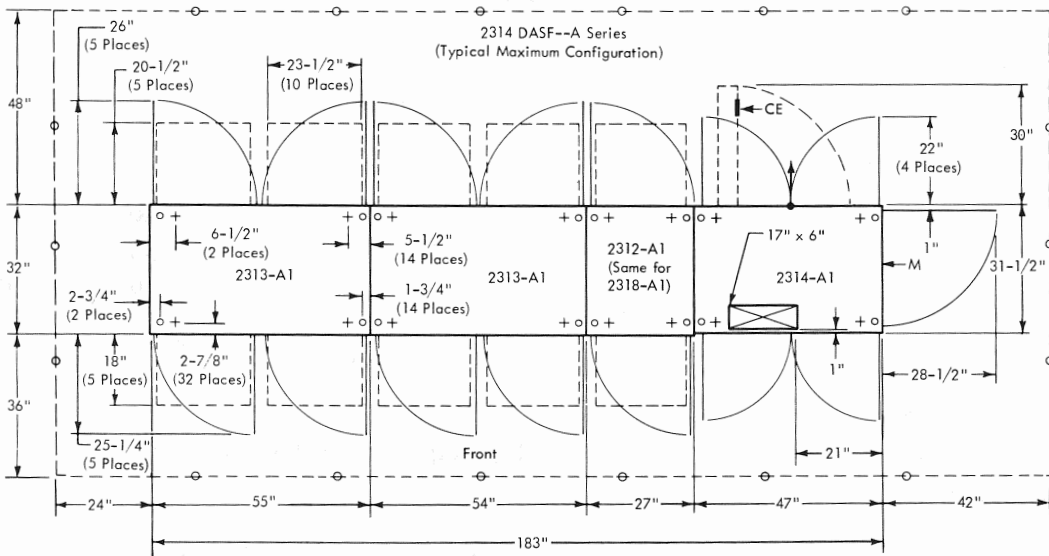
* When not abutted to units of similar construction.

** Powered from control unit.



2314 DIRECT ACCESS STORAGE FACILITY—A SERIES

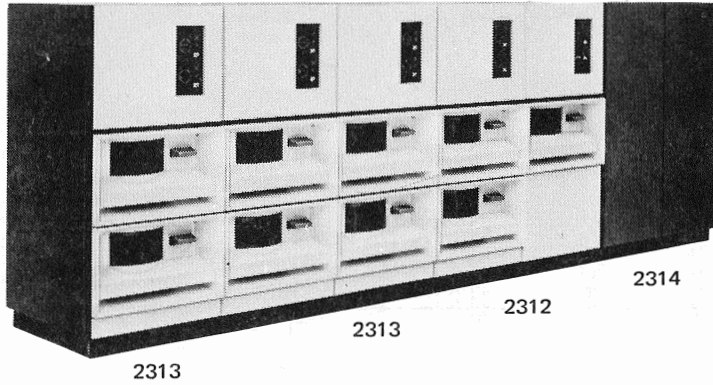
PLAN VIEW



Notes:

1. The 2314 DASF-A Series is composed of a 2314 storage control and various combinations of 2312, 2313, and 2318 Disk Storage units. Plan view shows typical maximum configuration. Left end clearance is required for any configuration.
2. For cabling information, see Section 4, "Units With Integral or Abutted Controls."

2314 DIRECT ACCESS STORAGE FACILITY—A SERIES



SPECIFICATIONS

Dimensions:*

	F	S	H
Inches	183	32	60
(cm)	(465)	(81)	(152)

Service Clearances: (For Any Configuration)

	F	R	Rt	L
Inches	36	48	42	24
(cm)	(91)	(122)	(107)	(61)

Weight: 4,200 lb* (1,950 kg*)

Heat Output: 20,400 BTU/hr* (5.150 kcal/hr*)

Airflow: 2,000 cfm* (57 m³/min*)

Power Requirements:	50 Hz	60 Hz
kVA	9.1*	7.4*
Phases	3	3
Plug	R&S, FS3760**	
Connector	R&S, FS3934**	
Receptacle	R&S, FS3754**	
Power Cord Style	D2**	

Notes:

* For maximum configuration (eight online disk storage modules and one spare).

** For facility with six or fewer disk storage modules (SF #9580 neither required nor installed). For facility with seven or more disk storage modules (SF #9580 required) or with SF #9580 specified in anticipation of expansion, plug is R&S, SC7328; connector is R&S, SC7428; receptacle is R&S, SC7324; and power cord style is E1.

*** Facility is shipped as individual units.

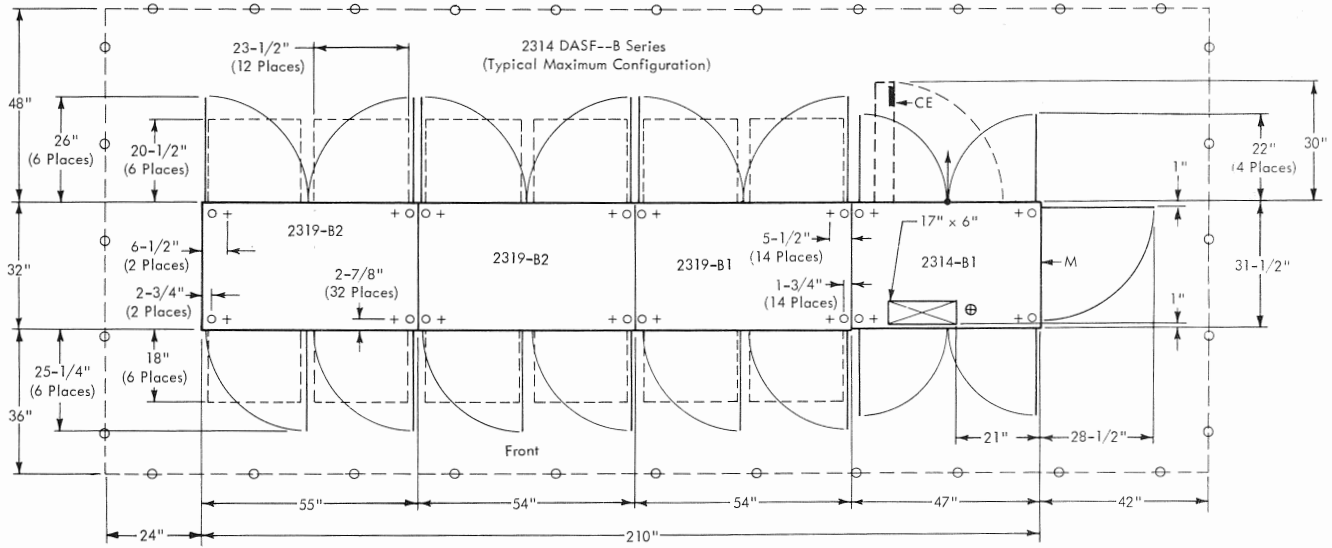
† To allow for end cover, add 1 inch (3 cm) to front dimension for the leftmost unit of the installed facility.

†† Powered from 2314.

Model AI Unit***	Dimensions† F x S x H inches (cm)	Weight lb (kg)	Airflow cfm (m ³ /min)	Heat Output		kVA	
				BTU/hr 50 Hz	(kcal/hr) 60 Hz	50 Hz	60 Hz
2312	27 x 32 x 60 (69 x 81 x 152)	500 (230)	200 (6)	1,700 (430)	1,900 (480)	0.8††	0.7††
2313	54 x 32 x 60 (137 x 81 x 152)	1,375 (630)	400 (12)	7,400 (1,900)	7,700 (1,950)	3.4††	2.8††
2314	47 x 31-1/2 x 60 (119 x 80 x 152)	950 (440)	1,000 (29)	3,300 (840)	3,100 (790)	1.6	1.1
2318	27 x 32 x 60 (69 x 81 x 152)	690 (320)	200 (6)	3,400 (860)	3,800 (960)	1.7††	1.4††

2314 DIRECT ACCESS STORAGE FACILITY—B SERIES

PLAN VIEW



Note: For cabling information, see Section 4, "Units With Integral or Abutted Controls."

2314 DIRECT ACCESS STORAGE FACILITY—B SERIES

SPECIFICATIONS

Dimensions:*

	F	S	H
Inches	210	32	60
(cm)	(533)	(81)	(152)

Service Clearances: (For Any Configuration)

	F	R	Rt	L
Inches	36	48	42	24
(cm)	(91)	(122)	(107)	(61)

Weight: 4,250 lb* (1.950 kg*)

Heat Output: 19,600 BTU/hr* (4.950 kcal/hr*)

Airflow: 2,200 cfm* (63 m³/min*)

Power Requirements:

kVA	6.5*
Phases	3
Plug	R&S, FS3760**
Connector	R&S, FS3934**
Receptacle	R&S, FS3754**
Power Cord Style	D2**

Notes:

* For maximum configuration (eight online disk storage modules and one spare).

** For facility with second 2319-B2 not installed (SF #9580 neither required nor installed).

For facility with second 2319-B2 installed (SF #9580 required) or SF #9580 specified in anticipation of expansion, plug is R&S, SC7328; connector is R&S, SC7428; receptacle is R&S, SC7324; and power cord style is E2.

*** Facility is shipped as individual units.

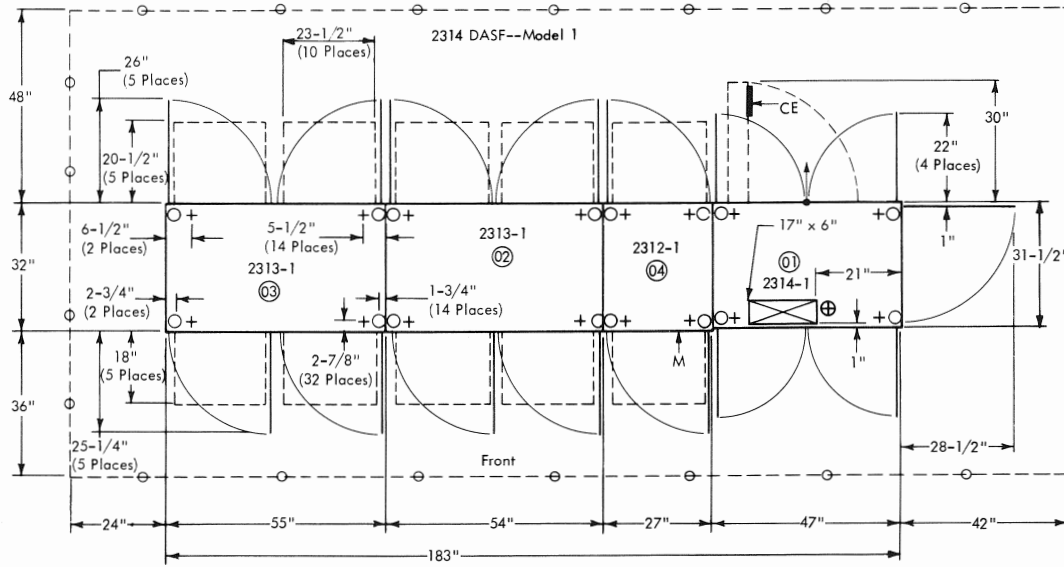
† To allow for end cover, add 1 inch (3 cm) to front dimension for the leftmost unit of the installed facility.

†† Powered from 2314.

Unit***	Dimensions† F x S x H inches (cm)	Weight lb (kg)	Airflow cfm (m ³ /min)	Heat Output		kVA
				BTU/hr 50 Hz	(kcal/hr) 60 Hz	
2314-B1	47 x 31-1/2 x 60 (119 x 80 x 152)	950 (440)	1,000 (29)	3,300 (840)	3,100 (790)	1.1
2319-B1 2319-B2	54 x 32 x 60 (137 x 81 x 152)	1,100 (500)	400 (12)	5,500 (1,400)	5,500 (1,400)	1.8††

2314 DIRECT ACCESS STORAGE FACILITY—MODEL 1

PLAN VIEW



Note: For cabling information, see Section 4, "Units With Integral or Abutted Controls."

2314 DIRECT ACCESS STORAGE FACILITY—MODEL 1

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	183	32	60
(cm)	(465)	(81)	(152)

Service Clearances:

	F	R	Rt	L
Inches	36	48	42	24
(cm)	(91)	(122)	(107)	(61)

Weight: 4,200 lb (1,950 kg)

Heat Output: 20,400 BTU/hr (5.150 kcal/hr)

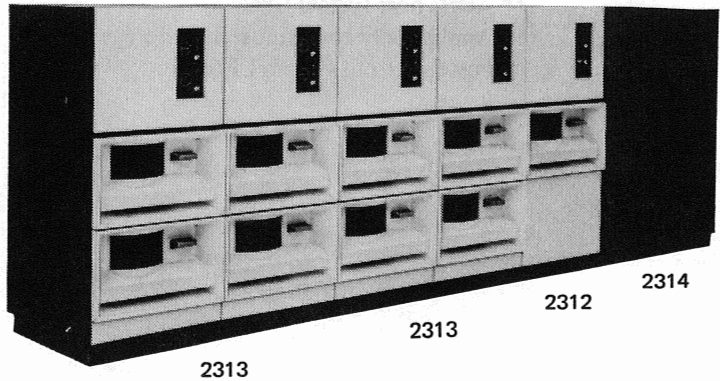
Airflow: 2,000 cfm (57 m³/min)

Power Requirements: 50 Hz 60 Hz

kVA	9.1	7.4
Phases	3	3
Plug	R&S, SC7328	
Connector	R&S, SC7428	
Receptacle	R&S, SC7324	
Power Cord Style	E1	

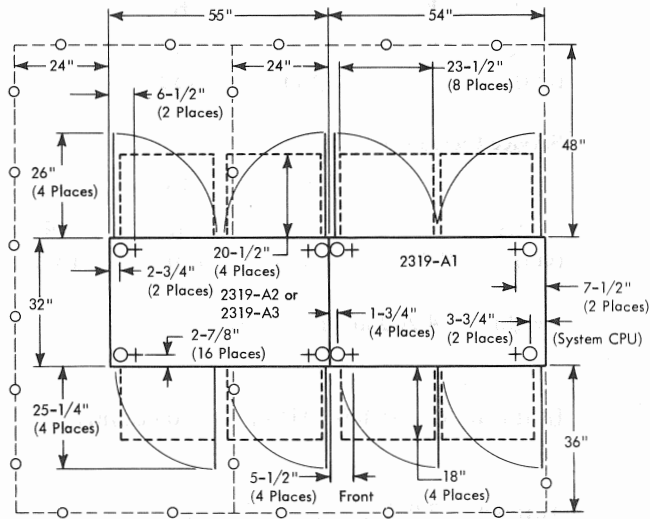
Notes:
Machine is shipped in four sections:

Frame	Front inches (cm)	Side inches (cm)	Weight lb (kg)
01	47 (119)	31-1/2 (80)	950 (440)
02	54 (137)	32 (81)	1,375 (630)
03	55 (140)	32 (81)	1,375 (630)
04	27 (69)	32 (81)	500 (230)



2319 DISK STORAGE MODELS A1, A2, AND A3

PLAN VIEW



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	*	32	60
(cm)	(*)	(81)	(152)

Service Clearances:

	F	R	Rt	L
Inches	36	48	0**	24***
(cm)	(91)	(122)	(0**)	(61***)

Weight:	Model A1	Model A2	Model A3
lb	1,100	1,100	1,160
(kg)	(500)	(500)	(530)

Heat Output:

BTU/hr	5,500	5,500	6,000
(kcal/hr)	(1,400)	(1,400)	(1,550)

Airflow:

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

Power Requirements: †

kVA	1.8	1.8	2.8 (50 Hz)
			2.2 (60 Hz)

Notes:

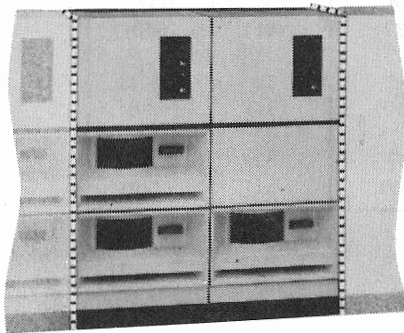
* 2319-A1: 54" (137 cm); add 2" (5 cm) for spacer to system CPU; add 1" (3 cm) for left end cover, where required.

2319-A2 or 2319-A3: 54" (137 cm); plan view shows 55" (140 cm) with 1" (3 cm) left end cover in place.

** Abuts host system CPU.

*** Applies only to leftmost disk storage unit.

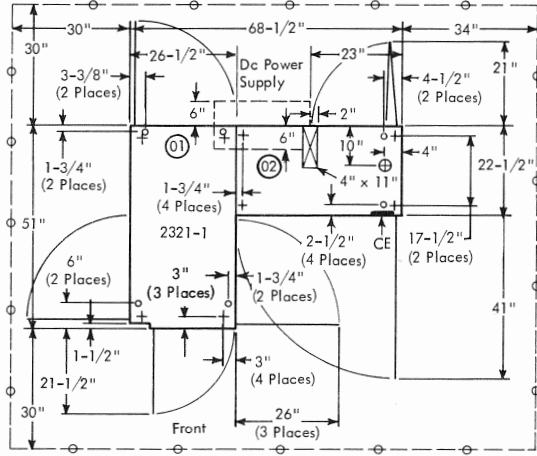
† Powered from system CPU.



2319-A1

2321 DATA CELL DRIVE MODEL 1

PLAN VIEW



Note: For cabling information, see 2841.

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	68-1/2*	51*	60
(cm)	(174*)	(130*)	(152)

Service Clearances:

	F	R	Rt	L
Inches	30	30	34**	30**
(cm)	(76)	(76)	(86**)	(76**)

Weight: 1,825 lb (830 kg)

Heat Output: 10,600 BTU/hr (2,700 kcal/hr)

Airflow: 850 cfm (25 m³/min)

Power Requirements:

kVA	4.4
Phases	3
Plug	R&S, FS3760
Connector	R&S, FS3934
Receptacle	R&S, FS3754
Power Cord Style	D2

Environment Operating:

Temperature	65°-90°F (18°-32°C)
Rel Humidity	20%-80%

Notes:

* Machine is shipped in two sections:

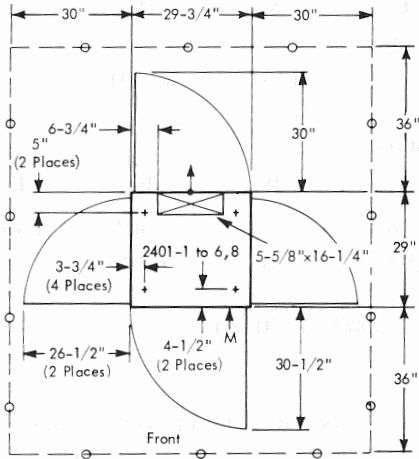
Frame	Front inches (cm)	Side inches (cm)	Weight lb (kg)
01	26-1/2 (67)	51 (130)	1,175 (540)
02	22-1/2 (57)	42 (107)	650 (300)

** When not abutted to another 2321.

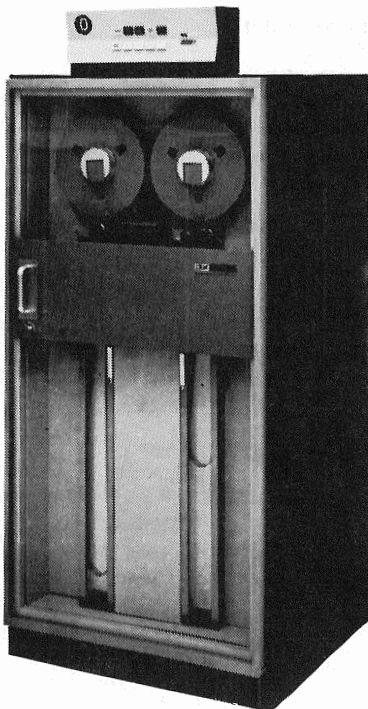


2401 MAGNETIC TAPE UNIT MODELS 1 TO 6 AND 8

PLAN VIEW



Note: For cabling information, see 2403.



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	29-3/4	29	67
(cm)	(76)	(74)	(170)

Service Clearances:

	F	R	Rt	L
Inches	36	36	30*	30*
(cm)	(91)	(91)	(76*)	(76*)

Weight: 800 lb (370 kg)

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

Airflow: 500 cfm (15 m³/min)

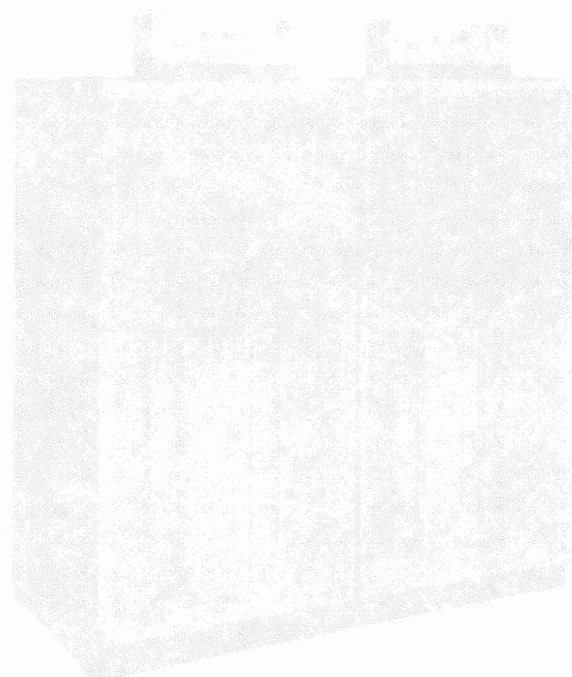
Power Requirements: **

kVA 1.6

Notes:

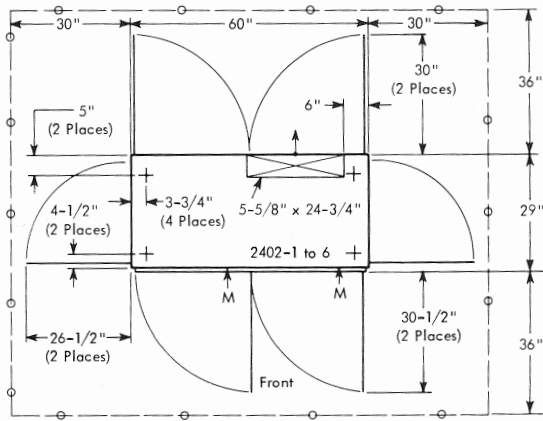
* When not abutted to another tape unit or tape control unit.

** Powered from control unit.



2402 MAGNETIC TAPE UNIT MODELS 1 TO 6

PLAN VIEW



Note: For cabling information, see 2403.

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	60	29	67
(cm)	(152)	(74)	(170)

Service Clearances:

	F	R	Rt	L
Inches	36	36	30*	30*
(cm)	(91)	(91)	(76*)	(76*)

Weight: 1,600 lb (730 kg)

Heat Output: 7,000 BTU/hr (1,800 kcal/hr)

Airflow: 1,000 cfm (29 m³/min)

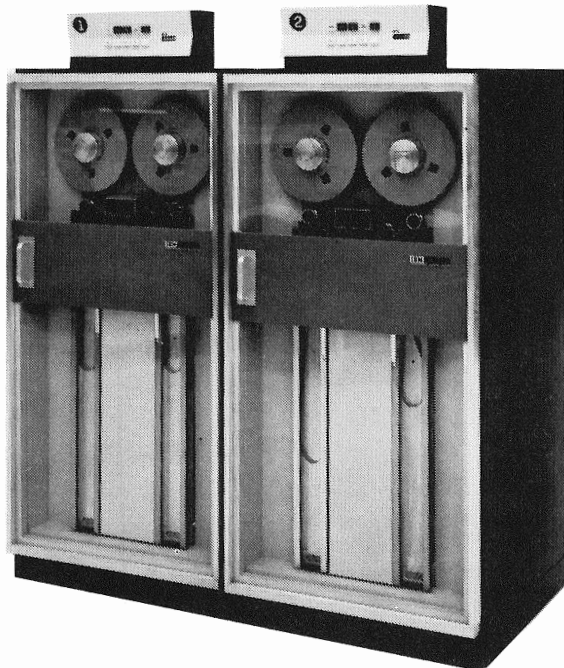
Power Requirements:**

kVA 3.2

Notes:

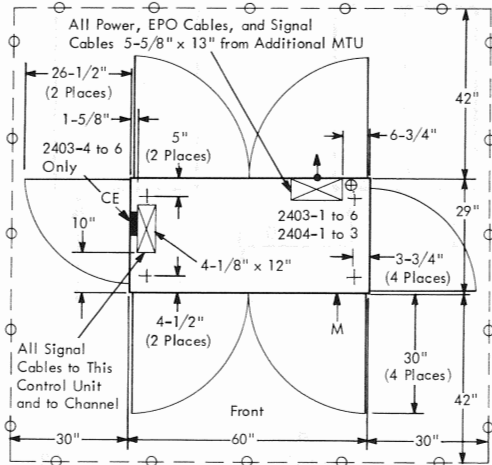
* When not abutted to another tape unit or tape control unit.

** Powered from control unit.



**2403 MAGNETIC TAPE UNIT AND CONTROL MODELS 1 TO 6
2404 MAGNETIC TAPE UNIT AND CONTROL MODELS 1 TO 3**

PLAN VIEW



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	60	29	67
(cm)	(152)	(74)	(170)

Service Clearances:

	F	R	Rt	L
Inches	42	42	30*	30
(cm)	(107)	(107)	(76*)	(76)

Weight:	2403	2404
lb	1,450	1,650
(kg)	(660)	(750)

Heat Output:

BTU/hr	5,500	6,300
(kcal/hr)	(1,400)	(1,600)

Airflow:

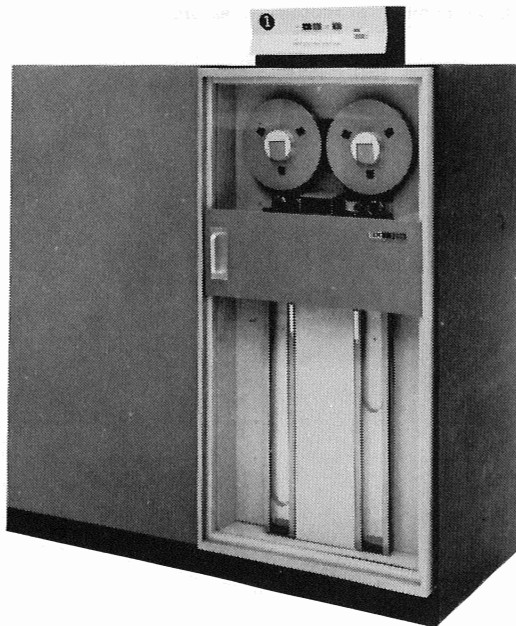
cfm	1,000	1,200
(m ³ /min)	(29)	(35)

Power Requirements:

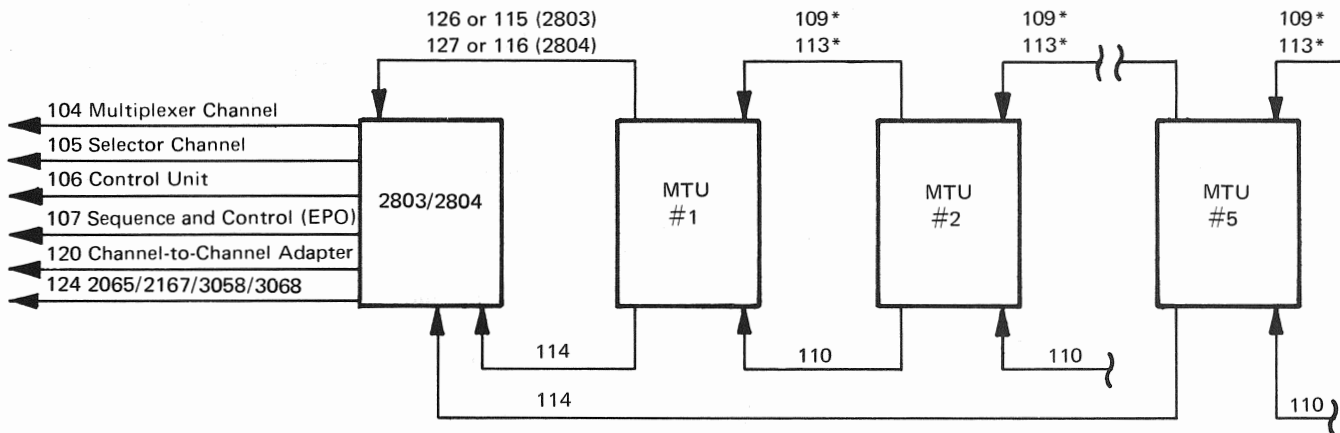
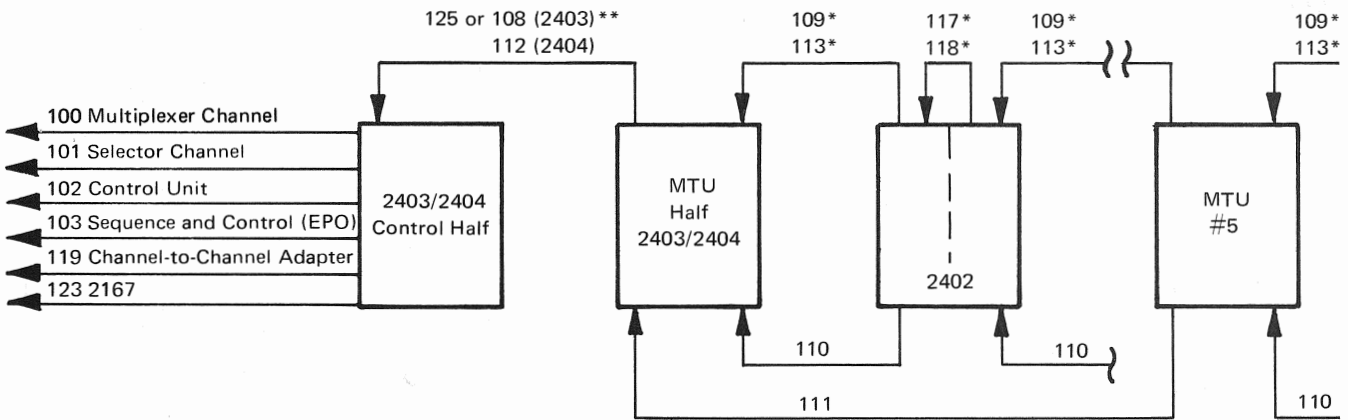
kVA	2.1	2.4
Phases	3	3
Plug	R&S, SC7328	
Connector	R&S, SC7428	
Receptacle	R&S, SC7324	
Power Cord Style	E2	

Notes:

* When not abutted to another tape unit or tape control unit.



2403, 2404, 2420, 2803, AND 2804 CABLING SCHEMATIC



* Use upper number for MTUs (magnetic tape units) without SF #7160 or #7161. Use lower number for those with feature.
 ** These groups should be routed from address "0" unit.

2403, 2404, 2420, 2803, AND 2804 CABLING SCHEMATIC

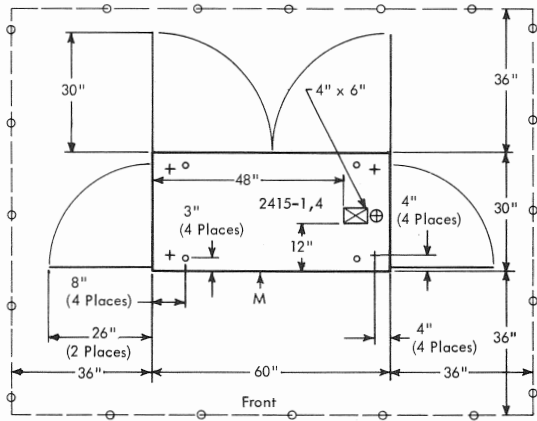
<i>Group No.</i>	<i>No. of Cables</i>	<i>From</i>	<i>To</i>	<i>Max Length (ft)</i>	<i>Notes</i>
100	2	2403/2404	Multiplexer Channel	—	1,12
101	2	2403/2404	Selector Channel	—	1,12
102	2	2403/2404	Control Unit	—	1,12
103	1	2403/2404	Channel	150	2,12
104	2	2803/2804	Multiplexer Channel	—	1,12
105	2	2803/2804	Selector Channel	—	1,12
106	2	2803/2804	Control Unit	—	1,12
107	1	2803/2804	Channel	150	2,12
108	1	MTU #1	2403 Models 1-3	—	3,4,9
109	1	MTU	MTU	—	3,4
110	1	MTU	MTU	—	7,8
111	1	MTU	2403/2404	—	7
112	1	MTU #1	2404	—	3,5
113	1	MTU	MTU	—	3,5
114	1	MTU	2803/2804	—	7,8
115	1	MTU #1	2803 Models 1 and 3	—	3,4,9
116	1	MTU #1	2804 Models 1 and 3	—	3,5,9
117	1	1/2 2402	1/2 2402	(Fixed)	4,6
118	1	1/2 2402	1/2 2402	(Fixed)	5,6
119	2	2403/2404	Channel-to-Channel Adapter	—	1,10,12
120	2	2803/2804	Channel-to-Channel Adapter	—	1,10,12
123	1	2403 Models 1-3	2167	75	11
124	1	2803 Model 1	2065/2167/3058/3068	150	11
125	1	MTU #1	2403 Models 4-6	—	3,4,9
126	1	MTU #1	2803 Model 2	—	3,4,9
127	1	MTU #1	2804 Model 2	—	3,5,9

Notes:

1. Total cable length of 200 feet is available to attach up to eight control units to a channel. For control units with 2401-6, 2402-6, or 2403-6 attached, total cable length of 100 feet is available to attach up to eight control units to a channel.
2. Sequence and control (EPO).
3. For eight drives (not units), the maximum total "X" dimension of the following cable groups should not exceed 100 feet: (125 or 126, 115 or 108) plus 109, (112 or 116 or 127) plus 113.
4. For use with MTUs without SF #7160 or #7161, simultaneous read/write.
5. For use with MTUs with SF #7160 or #7161, simultaneous read/write.
6. Jumper signal cable for 2402 required when 2816 is not used. Indicate quantity required on cable order.
7. For four drives (not units), the maximum total "X" dimension of the following cable groups should not exceed 100 feet: (114 or 111) plus 110.
8. The total number of MTUs powered from any given control unit must not exceed eight (maximum of four drives per power cable string). For operation at 195V, 50 Hz, the total number of 2420s powered from a 2803 Model 2 must not exceed six (maximum of three drives per power cable string).
9. The following pairs of cable groups use the same cable part but different terminators: 125 and 108, 126 and 115, and 127 and 116. To obtain only the replacement terminator required for a model change, order the cable group specified for the model on the cable order form or through the IBM Branch Office on an MES (Miscellaneous Equipment Specification) and state "Terminator Only."
10. To channel-to-channel adapter (SF #1850).
11. For use with SF #6148 (remote switch) only.
12. One group required for each channel. Maximum length applies to each channel. Connection to two channels for 2404/2804 is standard. Special features may be ordered for connection to two channels for 2403-1, 2, 3 or 2803-1.

2415 MAGNETIC TAPE UNIT AND CONTROL MODELS 1 AND 4

PLAN VIEW



Note: For cabling information, see Section 4, "Units With Integral or Abutted Controls."

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	60	30	67
(cm)	(152)	(76)	(170)

Service Clearances:

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

Weight:	50 Hz	60 Hz
lb	1,400	1,400
(kg)	(640)	(640)

Heat Output:

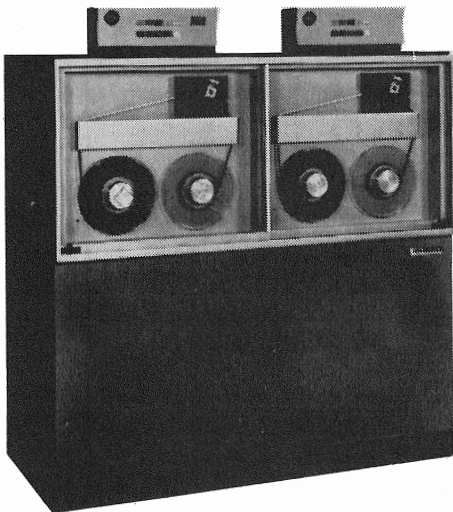
BTU/hr	10,000	4,500
(kcal/hr)	(2,550)	(1,150)

Airflow:

cfm	1,250	1,250
(m ³ /min)	(36)	(36)

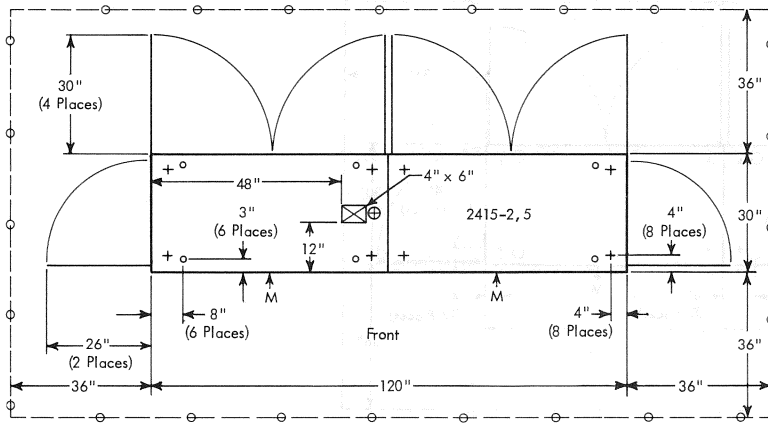
Power Requirements:

kVA	4.2	2.2
Phases	3	3
Plug	R&S, FS3760	
Connector	R&S, FS3934	
Receptacle	R&S, FS3754	
Power Cord Style	D1	



2415 MAGNETIC TAPE UNIT AND CONTROL MODELS 2 AND 5

PLAN VIEW



Note: For cabling information, see Section 4, "Units With Integral or Abutted Controls."

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	120	30	67
(cm)	(305)	(76)	(170)

Service Clearances:

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

Weight:

	50 Hz	60 Hz
lb	2,250	2,250
(kg)	(1,050)	(1,050)

Heat Output:

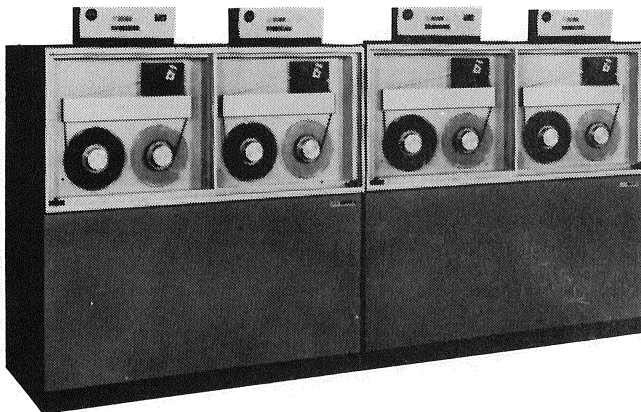
BTU/hr	12,500	6,200
(kcal/hr)	(3,200)	(1,600)

Airflow:

cfm	1,500	1,500
(m ³ /min)	(43)	(43)

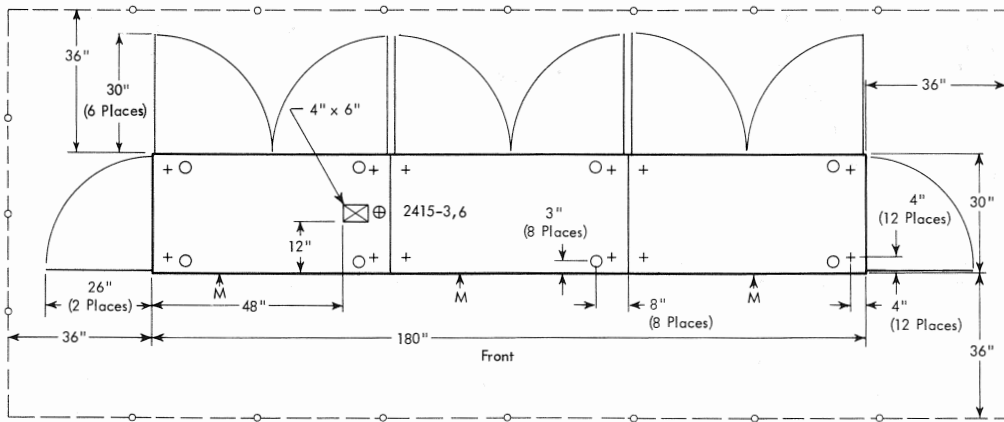
Power Requirements:

kVA	5.3	3.0
Phases	3	3
Plug	R&S, FS3760	
Connector	R&S, FS3934	
Receptacle	R&S, FS3754	
Power Cord Style	D1	



2415 MAGNETIC TAPE UNIT AND CONTROL MODELS 3 AND 6

PLAN VIEW



Note: For cabling information, see Section 4, "Units With Integral or Abutted Controls."

2415 MAGNETIC TAPE UNIT AND CONTROL MODELS 3 AND 6

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	180	30	67
(cm)	(457)	(76)	(170)

Service Clearances:

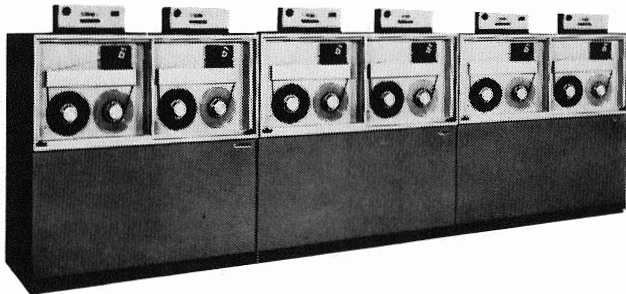
	F	R	Rt	L
Inches	36	36	36	36
(cm)	(91)	(91)	(91)	(91)

Weight:	50 Hz	60 Hz
lb	3,100	3,100
(kg)	(1,450)	(1,450)

Heat Output:	50 Hz	60 Hz
BTU/hr	15,000	7,800
(kcal/hr)	(3,800)	(2,000)

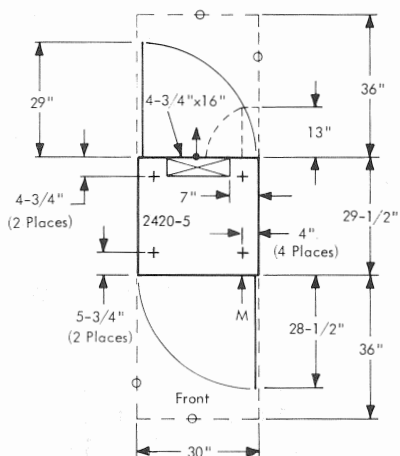
Airflow:	50 Hz	60 Hz
cfm	1,750	1,750
(m ³ /min)	(50)	(50)

Power Requirements:		
kVA	6.5	3.8
Phases	3	3
Plug	R&S, FS3760	
Connector	R&S, FS3934	
Receptacle	R&S, FS3754	
Power Cord Style	D1	



2420 MAGNETIC TAPE UNIT MODEL 5

PLAN VIEW



Note: For cabling information, see 2403.

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)

Heat Output: 4,000 BTU/hr (1.050 kcal/hr)

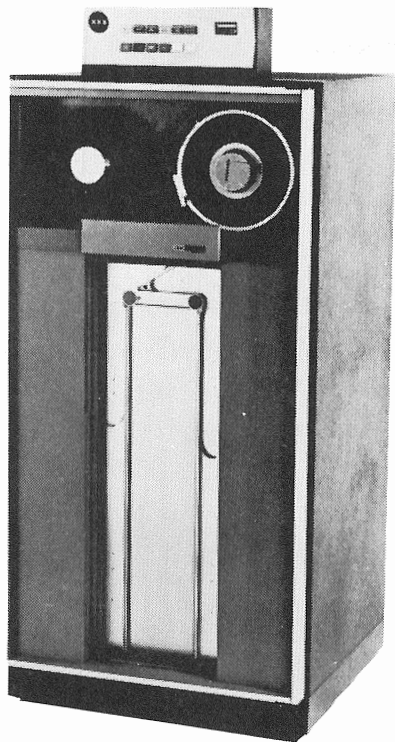
Airflow: 360 cfm (11 m³/min)

Power Requirements:*

kVA	1.8 (Operating)
	1.4 (Ready)

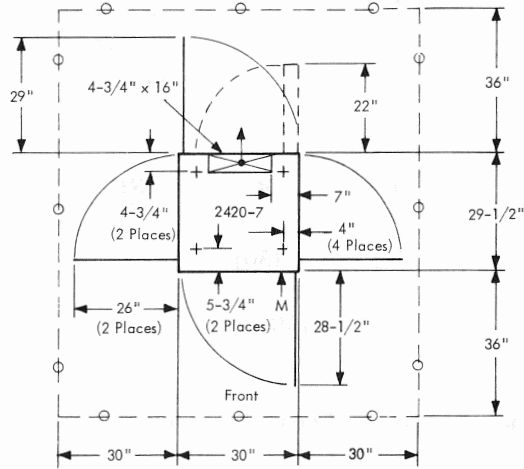
Notes:

* Powered from control unit.

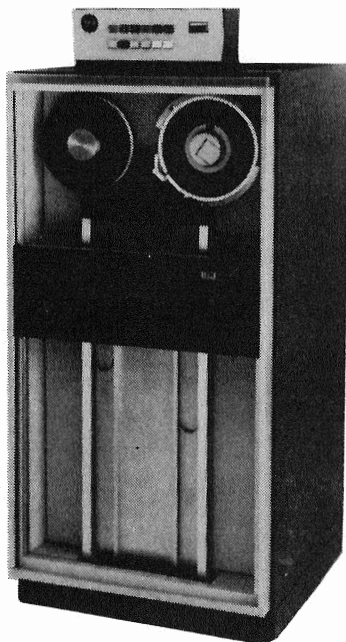


2420 MAGNETIC TAPE UNIT MODEL 7

PLAN VIEW



Note: For cabling information, see 2403.



SPECIFICATIONS

Dimensions:

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

Service Clearances:*

	F	R	Rt	L
Inches	36	36	30	30
(cm)	(91)	(91)	(76)	(76)

Weight: 930 lb (430 kg)

Heat Output: 5,000 BTU/hr (1,300 kcal/hr)

Airflow: 1,000 cfm (29 m³/min)

Power Requirements:**

kVA 2.0 (Operating)
 1.5 (Ready)

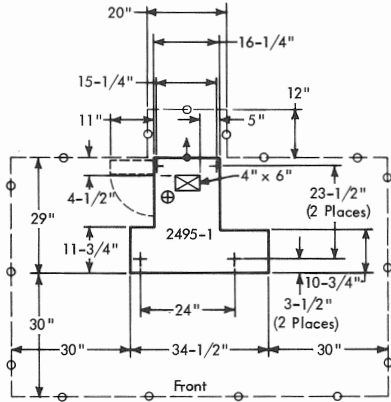
Notes:

* If more than three machines are abutted, additional front or rear clearance may have to be provided to meet floor loading capacity.

** Powered from control unit.

2495 TAPE CARTRIDGE READER MODEL 1

PLAN VIEW



Note: For cabling information, see Section 4, "Units With Integral or Abutted Controls."

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	34-1/2	29	45-9/16
(cm)	(88)	(74)	(116)

Service Clearances:

	F	R	Rt	L
Inches	30	12	30	30
(cm)	(76)	(30)	(76)	(76)

Weight: 330 lb (150 kg)

Heat Output: 890 BTU/hr (230 kcal/hr)

Airflow: 0 cfm (0 m³/min)

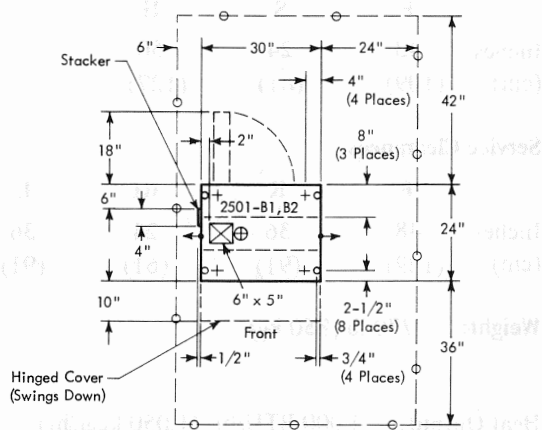
Power Requirements:

kVA	0.287
Phases	1
Plug	R&S, FS3720
Connector	R&S, FS3913
Receptacle	R&S, FS3743
Power Cord Style	A-



2501 CARD READER MODELS B1 AND B2

PLAN VIEW



Note: For cabling information, see Section 4, "Units With Integral or Abutted Controls."



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	30	24	45*
(cm)	(76)	(61)	(114*)

Service Clearances:

	F	R	Rt	L
Inches	36	42	24	6**
(cm)	(91)	(107)	(61)	(15**)

Weight: 440 lb (200 kg)

Heat Output: 1,200 BTU/hr (310 kcal/hr)

Airflow: 0 cfm (0 m³/min)

Power Requirements:

kVA	0.5
Phases	1
Plug	R&S, FS3720
Connector	R&S, FS3913
Receptacle	R&S, FS3743
Power Cord Style	A1

Environment Operating:

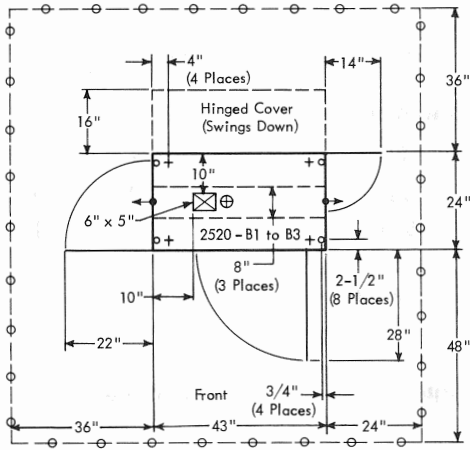
Temperature	50°-90°F (10°-32°C)
Rel Humidity	10%-80%
Max Wet Bulb	78°F (26°C)

Notes:

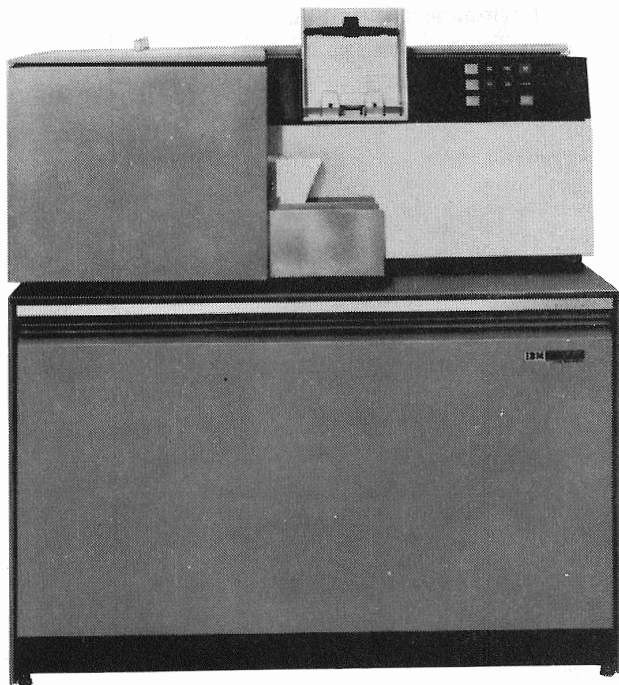
- * To top of stacker.
- ** Can be abutted to top of base only.

**2520 CARD READ PUNCH MODEL B1
2520 CARD PUNCH MODELS B2 AND B3**

PLAN VIEW



Note: For cabling information, see Section 4, "Units With Integral or Abutted Controls."



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	43	24	50
(cm)	(109)	(61)	(127)

Service Clearances:

	F	R	Rt	L
Inches	48	36	24	36
(cm)	(122)	(91)	(61)	(91)

Weight: 770 lb (350 kg)

Heat Output: 4,000 BTU/hr (1.050 kcal/hr)

Airflow: 100 cfm (3 m³/min)

Power Requirements:

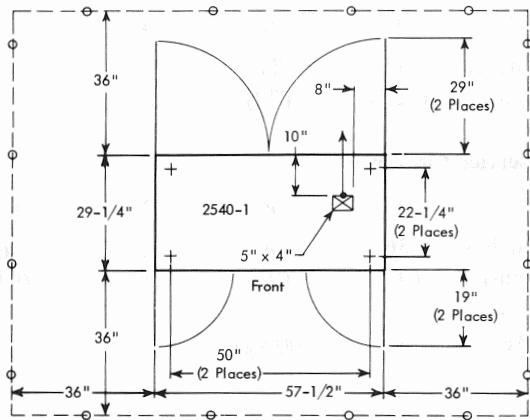
kVA	1.6
Phases	1
Plug	R&S, FS3720
Connector	R&S, FS3913
Receptacle	R&S, FS3743
Power Cord Style	A1

Environment Operating:

Temperature	50 ⁰ -90 ⁰ F (10 ⁰ -32 ⁰ C)
Rel Humidity	10%-80%
Max Wet Bulb	78 ⁰ F (26 ⁰ C)

2540 CARD READ PUNCH MODEL 1

PLAN VIEW



Note: For cabling information, see 2821.

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	57-1/2	29-1/4	45-1/4*
(cm)	(146)	(74)	(115*)

Service Clearances:

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

Weight: 1,050 lb (480 kg)

Heat Output: 3,000 BTU/hr (760 kcal/hr)

Airflow: 50 cfm (2 m³/min)

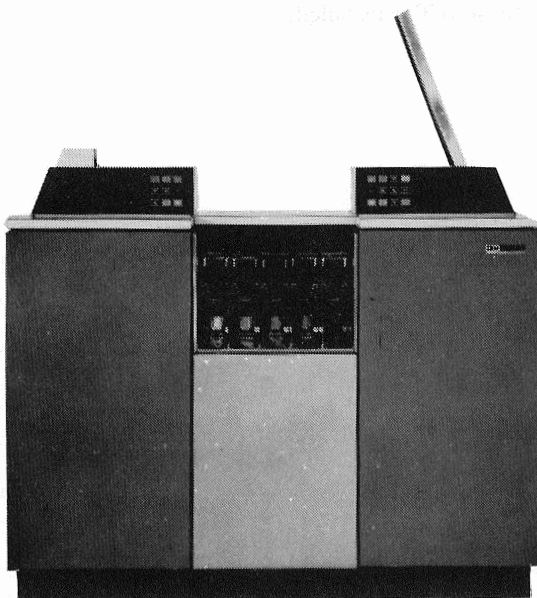
Power Requirements:**

kVA 1.2

Notes:

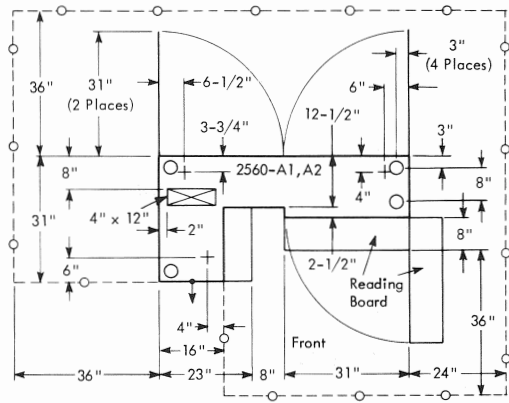
* Add 20-1/4" (51 cm) to the dimension for read file feed.

** Powered from 2821, or from 2025 when SF #4595 is installed.



2560 MULTI-FUNCTION CARD MACHINE MODELS A1 AND A2

PLAN VIEW



Note: For cabling information, see 3115 or 3125.

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	62	31	44
(cm)	(157)	(79)	(112)

Service Clearances:

	F	R	Rt	L
Inches	36	36	24	36
(cm)	(91)	(91)	(61)	(91)

Weight: 875 lb (400 kg)

Heat Output: 3,600 BTU/hr (910 kcal/hr)

Airflow: 100 cfm (3 m³/min)

Power Requirements:*

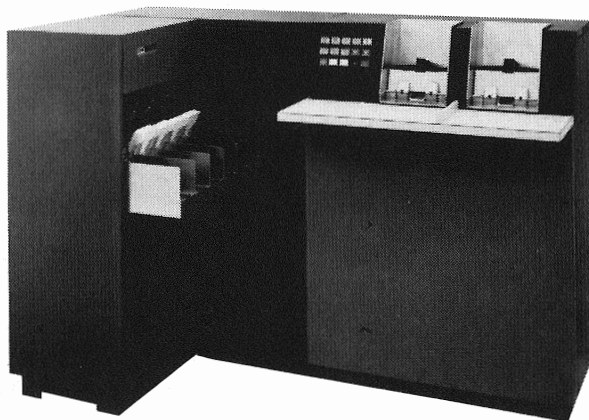
kVA 1.3

Environment Operating:

Temperature	50°-90°F (10°-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	78°F (26°C)

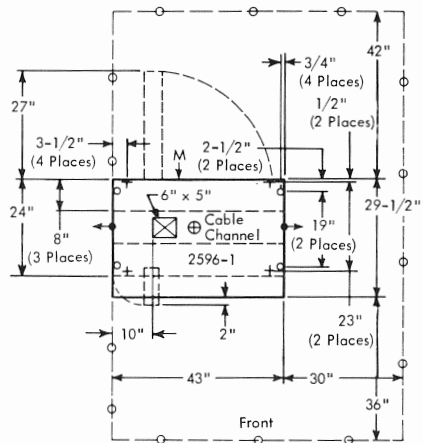
Notes:

* Powered from 2025, or from 3115 or 3125 when SF #4670 is installed.



2596 CARD READ PUNCH MODEL 1

PLAN VIEW



Note: For cabling information, see Section 4, "Units With Integral or Abutted Controls."

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	43	29-1/2	55
(cm)	(109)	(75)	(140)

Service Clearances:

	F	R	Rt	L
Inches	36	42	30	0
(cm)	(91)	(107)	(76)	(0)

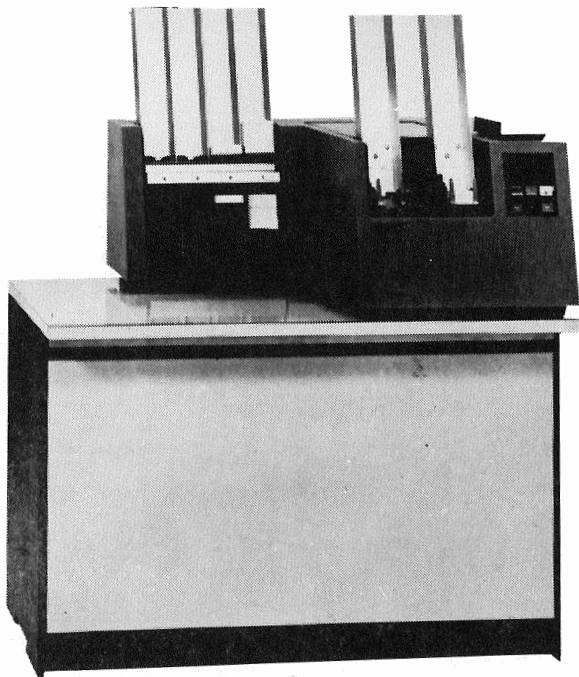
Weight: 575 lb (270 kg)

Heat Output: 3,350 BTU/hr (850 kcal/hr)

Airflow: 200 cfm (6 m³/min)

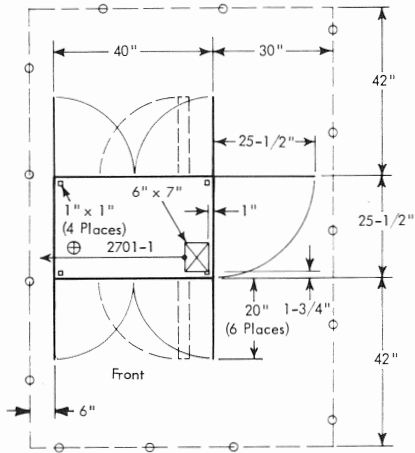
Power Requirements:

kVA	1.4
Phases	1
Plug	R&S, FS3720
Connector	R&S, FS3913
Receptacle	R&S, FS3743
Power Cord Style	A1



2701 DATA ADAPTER UNIT MODEL 1

PLAN VIEW



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	40	25-1/2	40
(cm)	(102)	(65)	(102)

Service Clearances:

	F	R	Rt	L
Inches	42	42	30	6
(cm)	(107)	(107)	(76)	(15)

Weight: 600 lb (280 kg)

Heat Output: 3,000 BTU/hr (760 kcal/hr)

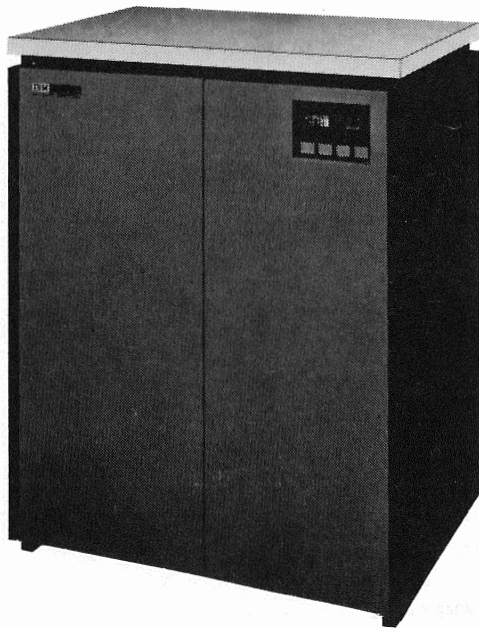
Airflow: 120 cfm (4 m³/min)

Power Requirements:

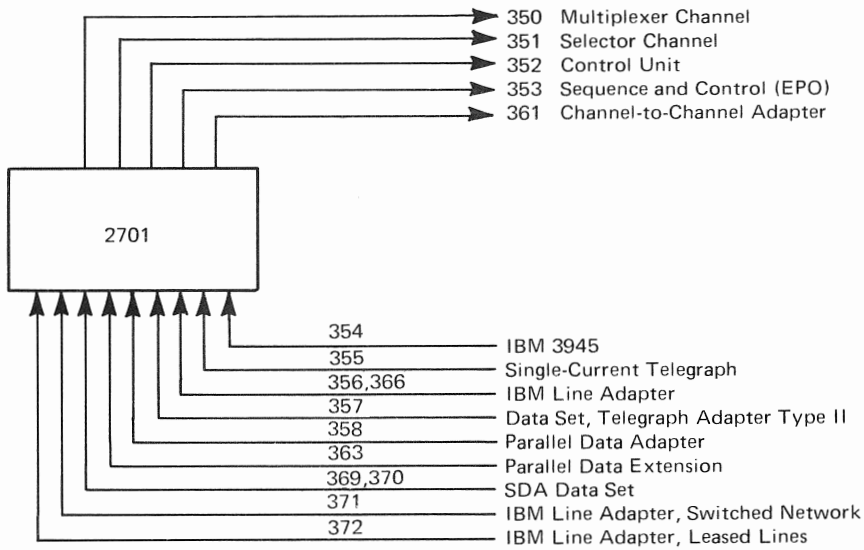
kVA	1.0
Phases	1
Plug	R&S, FS3720
Connector	R&S, FS3913
Receptacle	R&S, FS3743
Power Cord Style	A3

Environment Operating:

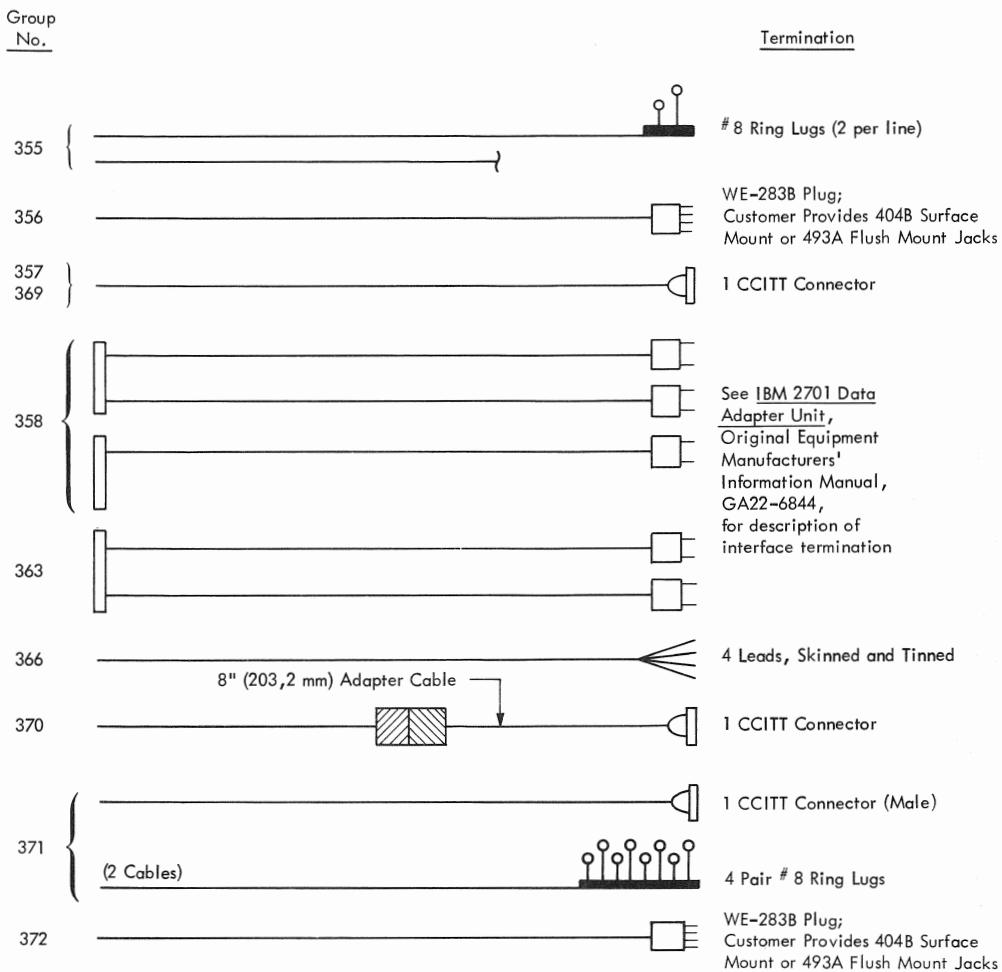
Temperature	50 ⁰ -90 ⁰ F (10 ⁰ -32 ⁰ C)
Rel Humidity	8%-80%
Max Wet Bulb	78 ⁰ F (26 ⁰ C)



2701 DATA ADAPTER UNIT CABLING SCHEMATIC (WORLD TRADE)



Cables from Non-IBM Devices



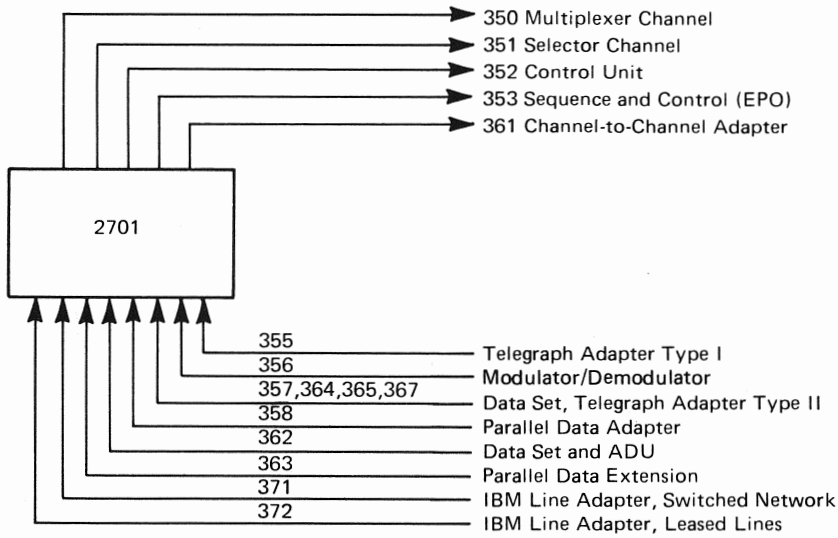
2701 DATA ADAPTER UNIT CABLING SCHEMATIC (WORLD TRADE)

Group No.	No. of Cables	From	To	Max Length (ft)	Notes
350	2	2701	Multiplexer Channel	—	1
351	2	2701	Selector Channel	—	1
352	2	2701	Control Unit	—	1
353	1	2701	Channel	150	2
354	—	IBM 3945	2701	40	5
355	1	Single-Current Telegraph	2701	40	9, 14
356	1	Customer-Owned Communications Line	2701	40	4, 9
357	—	Data Set	2701	40	6, 9
358	3	Parallel Data Adapter (SF #5500)	2701	40	3, 9, 12
361	2	2701	Channel-to-Channel Adapter	—	1, 7
363	2	Parallel Data Extension (SF #5505)	2701	40	8, 9, 13
366	—	Customer-Owned Communications Line	2701	40	4, 9
369	1	SDA Type II (GH-2011) or SDA Type II (Datel I)	2701	40	9, 11
370	1	SDA Type I and SDA Type II	2701	40	9, 10
371	2	IBM LA, Switched Network	2701	40	9, 15
372	1	IBM LA, Leased Lines	2701	40	9, 16

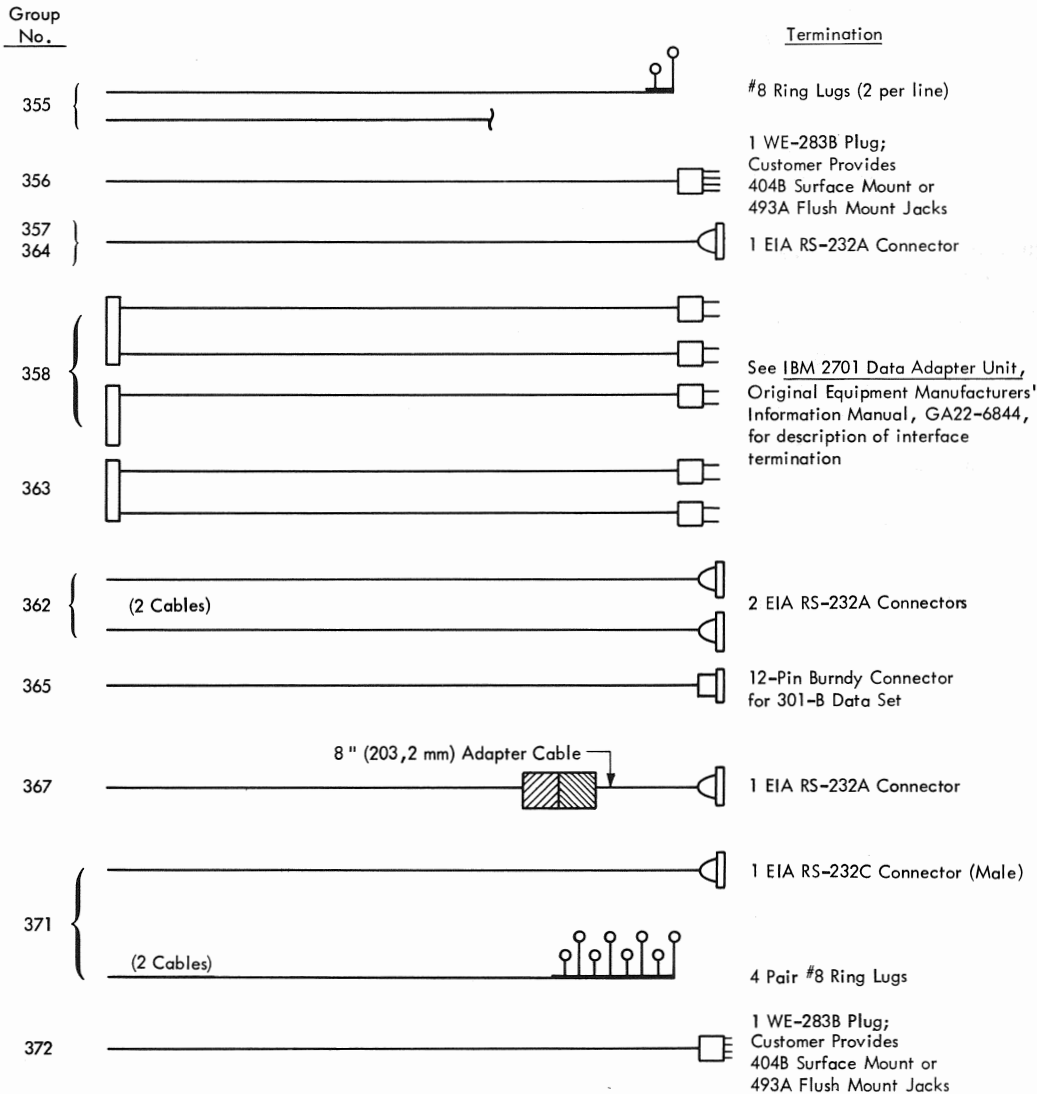
Notes:

- Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units to a channel.
- Sequence and control (EPO).
- Order group 358 for SF #5500 (maximum of four).
- Customer-owned communications lines (SF #4636 and #4637). Group 356 is terminated at the customer end with a telephone type, four-prong plug (type 283B). Group 366 is terminated with wires fanned out and leads skinned and tinned for attachment to locally acceptable plug or terminal strip.
- World Trade Telegraph Adapter (SF #2794).
- Use for SF #4656. Use for SF #4640 and #4648 if neither #4636 nor #4637 is used.
- To channel-to-channel adapter (SF #1850).
- Required for first and third extensions only of SF #5505 (maximum of four).
- See "Cables from Non-IBM Devices" for cable specifications.
- For use with binary synchronous devices such as IBM 3976 Modem, IBM 3977 Modem, Swedish GH-2002B, and other CCITT Version 24 Interface Data Sets and German GH-2011 Model 5, except United Kingdom Datel I Model 5 (see group 369 for these interfaces) SF #2899, #2901, #2970, #2971, #2972, #3462, and #7696 (including attachment from the IBM 4872 Modem).
- For connection with one United Kingdom Datel I Model 5 Interface Data Set or with one German GH-2011 Model 5 Interface Data Set.
- Group 358 is two assemblies with a total of three cables to common-carrier facility.
- Group 363 is one assembly with two cables to common-carrier facility.
- Group 355 is used for SF #2829.
- For use with IBM Line Adapter at 1,200 bps and with Type CBS-DAA to switched network (SF #4782).
- For use with IBM Line Adapter at 1,200 bps to leased lines (SF #4781).

2701 DATA ADAPTER UNIT CABLING SCHEMATIC (U.S.)



Cables from Non-IBM Devices



2701 DATA ADAPTER UNIT CABLING SCHEMATIC (U.S.)

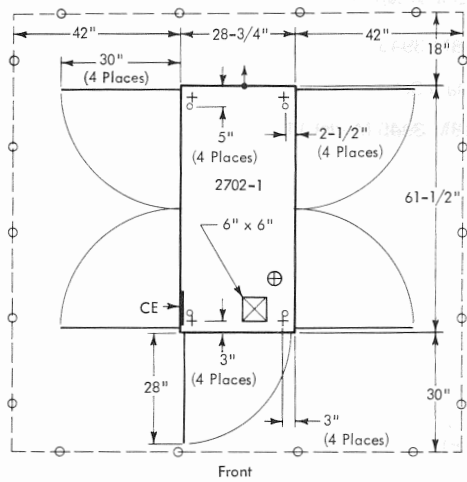
Group No.	No. of Cables	From	To	Max Length (ft)	Notes
350	2	2701	Multiplexer Channel	—	1
351	2	2701	Selector Channel	—	1
352	2	2701	Control Unit	—	1
353	1	2701	Channel	150	2
355	1	Terminal Board	2701	40	5,12
356	1	Customer-Owned Communications Line	2701	40	4,12
357	1	Data Set	2701	40	6,12
358	3	Parallel Data Adapter (SF #5500)	2701	40	3,12,13
361	2	2701	Channel-to-Channel Adapter	—	1,7
362	2	Data Set and ADU	2701	40	8,12
363	2	Parallel Data Extension (SF #5505)	2701	40	9,12,15
364	1	ADU (SDA)	2701	40	10,12
365	1	SDA Type I and SDA Type II	2701	40	11,12
367	1	SDA Type I and SDA Type II	2701	40	12, 14
371	2	IBM LA, Switched Network	2701	40	12, 16
372	1	IBM LA, Leased Lines	2701	40	12, 17

Notes:

- Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units to a channel.
- Sequence and control (EPO).
- Order group 358 for SF #5500 (maximum of four).
- Customer-owned communications lines (SF #4636 and #4637).
- Use for Telegraph Adapter Type I (SF #4633, #7860, #7861, and #7862).
- Use for SF #4656 and #4657. Use for SF #4640, #4645, #4646, #4648, and #7885 if neither SF #1302, #4636, nor #4637 is used.
- To channel-to-channel adapter (SF #1850).
- Use when both data set and ADU are required (SF #4640, #4645, or #7885 with SF #1302), one for each line.
- Required for first and third extensions only of SF #5505 (maximum of four).
- For Synchronous Data Adapter (SF #1303 and #1314).
- For Synchronous Data Adapter (SF #3461, #3463, #7695, and #7697).
- See "Cables from Non-IBM Devices" for cable specifications.
- Group 358 is two assemblies with a total of three cables to common-carrier facility.
- For connection to one RS-232, RS-232A, or RS-232B interface data set with SF #3462, #3464, #7696 (including attachment from the IBM 4872 Modem), #7698, or #7699.
- Group 363 is one assembly with two cables to common-carrier facility.
- For use with IBM Line Adapter at 1,200 bps and with Type CBS-DAA to switched network (SF #4782).
- For use with IBM Line Adapter at 1,200 bps to leased lines (SF #4781).

2702 TRANSMISSION CONTROL MODEL 1

PLAN VIEW



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	28-3/4	61-1/2	60
(cm)	(73)	(156)	(152)

Service Clearances:

	F	R	Rt	L
Inches	30	18	42	42
(cm)	(76)	(46)	(107)	(107)

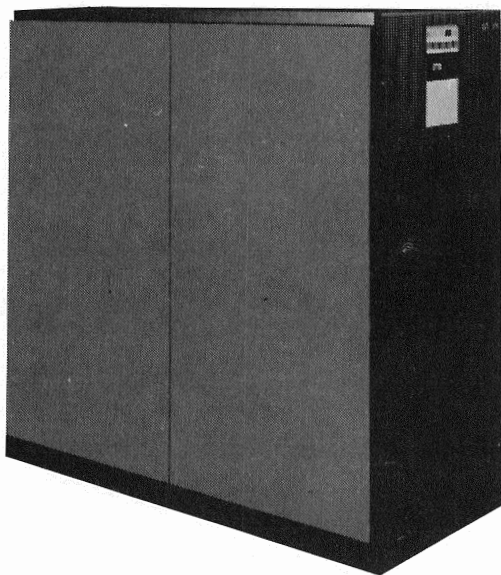
Weight: 900 lb (410 kg)

Heat Output: 5,600 BTU/hr (1.450 kcal/hr)

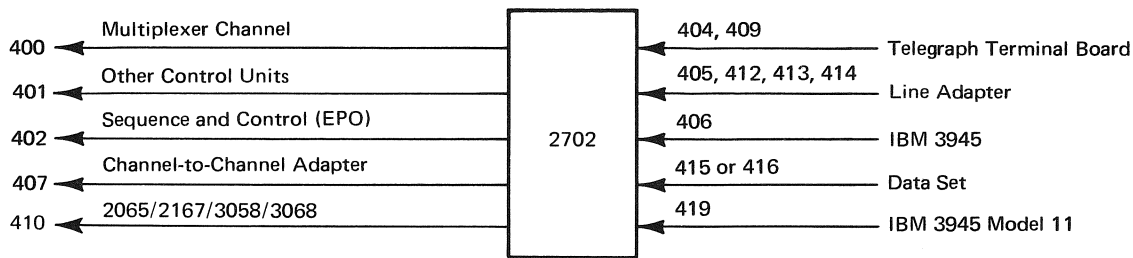
Airflow: 800 cfm (23 m³/min)

Power Requirements:

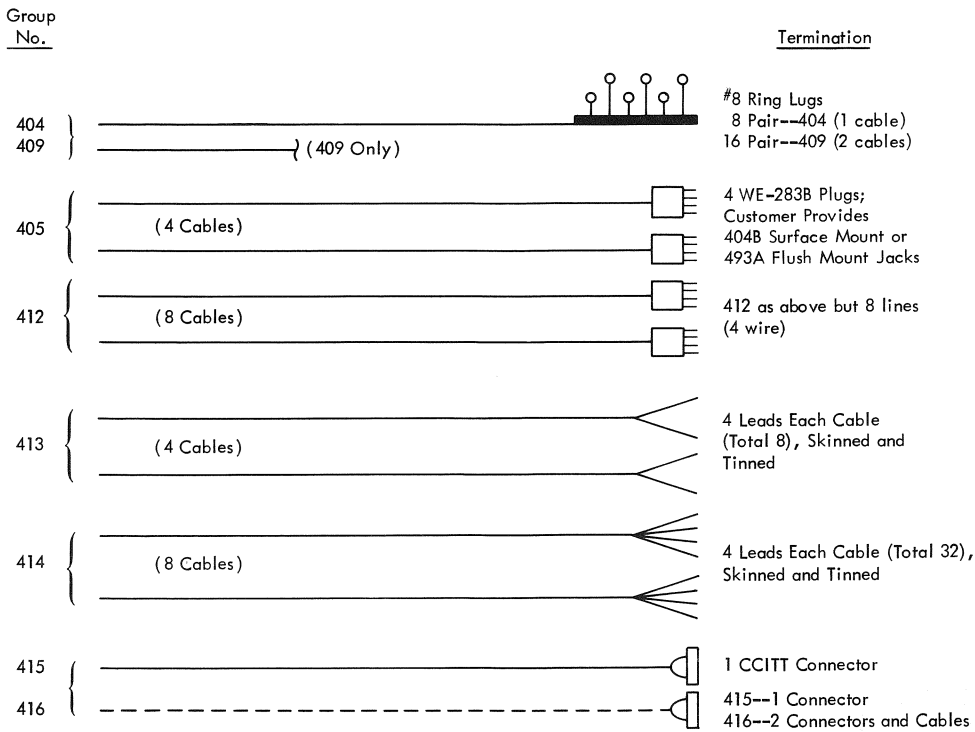
kVA	1.8
Phases	1
Plug	R&S, FS3720
Connector	R&S, FS3913
Receptacle	R&S, FS3743
Power Cord Style	A3



2702 TRANSMISSION CONTROL CABLING SCHEMATIC (WORLD TRADE)



Cables from Non-IBM Devices



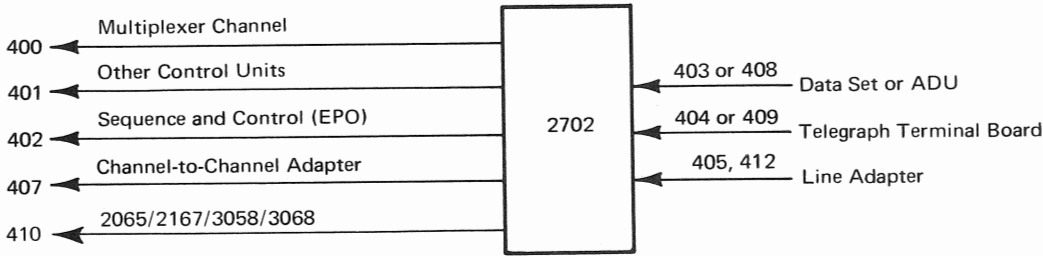
2702 TRANSMISSION CONTROL CABLING SCHEMATIC (WORLD TRADE)

<i>Group No.</i>	<i>No. of Cables</i>	<i>From</i>	<i>To</i>	<i>Max Length (ft)</i>	<i>Notes</i>
400	2	2702	Multiplexer Channel	—	1
401	2	2702	Control Unit	—	1
402	1	2702	Channel	150	2
404	1	Telegraph Terminal Board	2702	40	7, 9, 10
405	4	Customer-Owned Communications Line	2702	40	4, 7, 11
406	1	IBM 3945	2702	40	12, 17
407	2	2702	Channel-to-Channel Adapter		1, 15
409	2	Telegraph Terminal Board	2702	40	7, 12
410	1	2702	2065/2167/3058/3068	150	16
412	8	Customer-Owned Communications Line	2702	40	7, 8, 11
413	4	Customer-Owned Communications Line	2702	40	4, 7, 11
414	8	Customer-Owned Communications Line	2702	40	7, 8, 11
415	1	Data Set	2702	37	3, 5, 7
416	2	Data Set	2702	37	3, 6, 7
419	1	IBM 3945 Model 11	2702	40	14, 17

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. Use for connection to CCITT interface data sets. Used with SF # 3233.
4. Use for connection to customer-owned communications line. Used with SF # 4612 and # 4613. One cable for each four lines.
5. Use for attachment of the last data set if the total number of data sets is odd.
6. One group is used for connection to two data sets. If the total number of data sets is odd, use cable group 415 for connection to the last unit.
7. See "Cables from Non-IBM Devices" for cable specifications.
8. For SF # 4634 and # 4635 (one group per eight lines).
9. Use for connection to common-carrier telegraph terminal board. Used with SF # 2829.
10. One group is used if the total number of single-current telegraph adapters is less than 8, or 16 or more and less than 24.
11. Groups 405 and 412 are terminated at the customer end with a telephone-type, four-prong plug (type 283B). Groups 413 and 414 are terminated with wires fanned out and leads skinned and tinned for attachment to locally acceptable plug or terminal strip.
12. For SF # 2799 (one group for every four telegraph lines, single or double current).
13. One group is used if the total number of single-current telegraph adapters is 8 or more and less than 16. A second group is used if the total number of telegraph lines is more than 23.
14. For SF # 2831 (one group for every two double-current telegraph lines).
15. To channel-to-channel adapter (SF # 1850).
16. For use with SF # 6148 only.
17. Includes a ground jumper assembly that must be attached to the cable and that must be secured to the 2702 frame and to the IBM 3945 ground terminal. The ground jumper is 2 feet (61 cm) longer than its accompanying cable.

2702 TRANSMISSION CONTROL CABLING SCHEMATIC (U.S.)

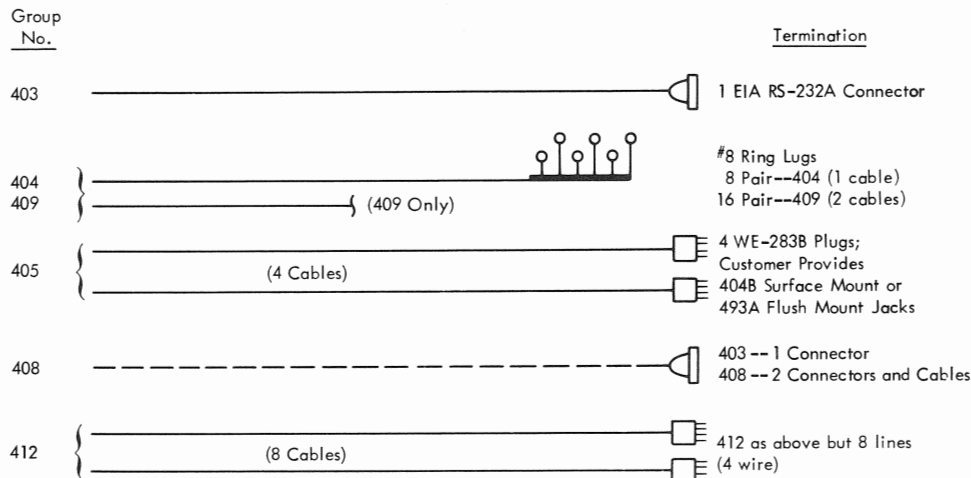


Group No.	No. of Cables	From	To	Max Length (ft)	Notes
400	2	2702	Multiplexer Channel	—	1
401	2	2702	Control Unit	—	1
402	1	2702	Channel	150	2
403	1	Data Set or ADU	2702	37	3, 6, 10
404	1	Telegraph Terminal Board	2702	40	4, 7, 10
405	4	Customer-Owned Communications Line	2702	40	5, 10
407	2	2702	Channel-to-Channel Adapter	—	1, 12
408	2	Data Set or ADU	2702	37	3, 8, 10
409	2	Telegraph Terminal Board	2702	40	4, 9, 10
410	1	2702	2065/2167/3058/3068	150	13
412	8	Customer-Owned Communications Line	2702	40	10, 11

Notes:

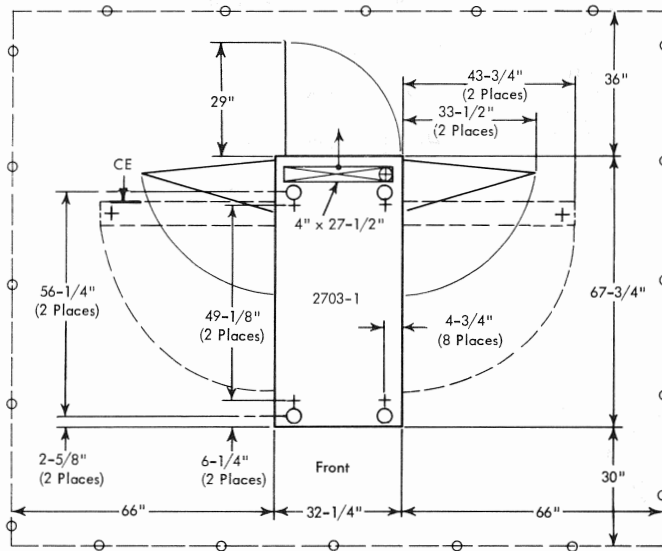
- Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units.
- Sequence and control (EPO).
- Use for connection to EIA RS-232A interface data sets or automatic dialing units. Used with SF # 1290, # 1311, # 3233, # 7912, # 8045, # 8046, # 8050, and # 8051.
- Use for connection to common-carrier telegraph terminal board. Used with SF # 7895 and # 7911.
- Use for connection to customer-owned communications line. Used with SF # 4612 and # 4613. One cable for each four lines.
- Use for attachment of the last data set or automatic dialing unit if the total number of data sets or automatic dialing units is odd.
- One group is used if the total number of domestic telegraph lines is less than 8, or 16 or more and less than 24.
- One group is used for connection to two data sets or two automatic dialing units. If the total number of data sets or automatic dialing units is odd, use cable group 403 for connection to the last unit.
- One group is used if the total number of domestic telegraph lines is 8 or more and less than 16. A second group is used if the total number of telegraphic lines is more than 23.
- See "Cables from Non-IBM Devices" for cable specifications.
- For SF # 4634 and # 4635 (one group per eight lines).
- To channel-to-channel adapter (SF # 1850).
- For use with SF # 6148 only.

Cables from Non-IBM Devices



2703 TRANSMISSION CONTROL MODEL 1

PLAN VIEW



SPECIFICATIONS

Dimensions: *

	F	S	H
Inches	32-1/4	67-3/4	70-3/4
(cm)	(82)	(172)	(180)

Service Clearances:

	F	R	Rt	L
Inches	30	36	66	66
(cm)	(76)	(91)	(168)	(168)

Weight: 2,200 lb (1,000 kg)

Heat Output: 11,750 BTU/hr (3,000 kcal/hr)

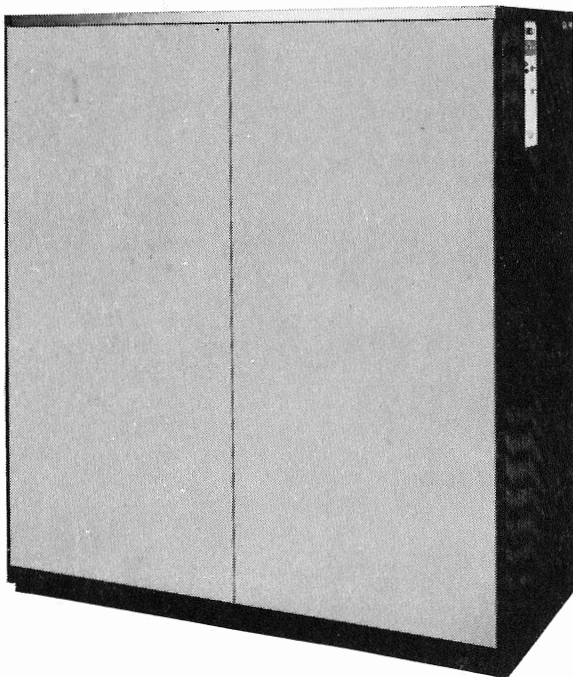
Airflow: 2,000 cfm (57 m³/min)

Power Requirements: 50 Hz 60 Hz

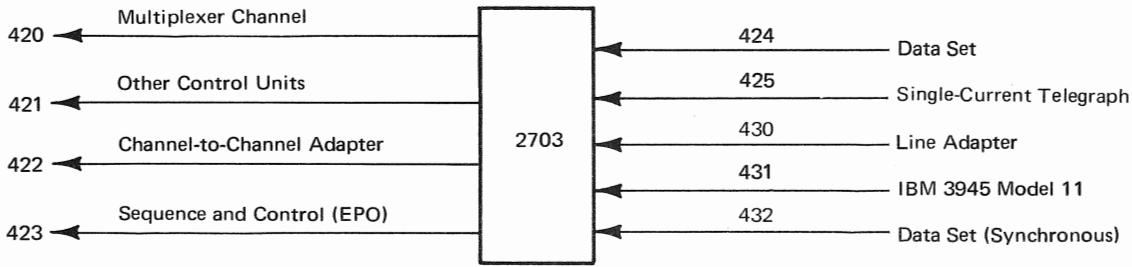
kVA	4.6	4.3
Phases	3	3
Plug	R&S, FS3760	
Connector	R&S, FS3934	
Receptacle	R&S, FS3754	
Power Cord Style	D2	

Notes:

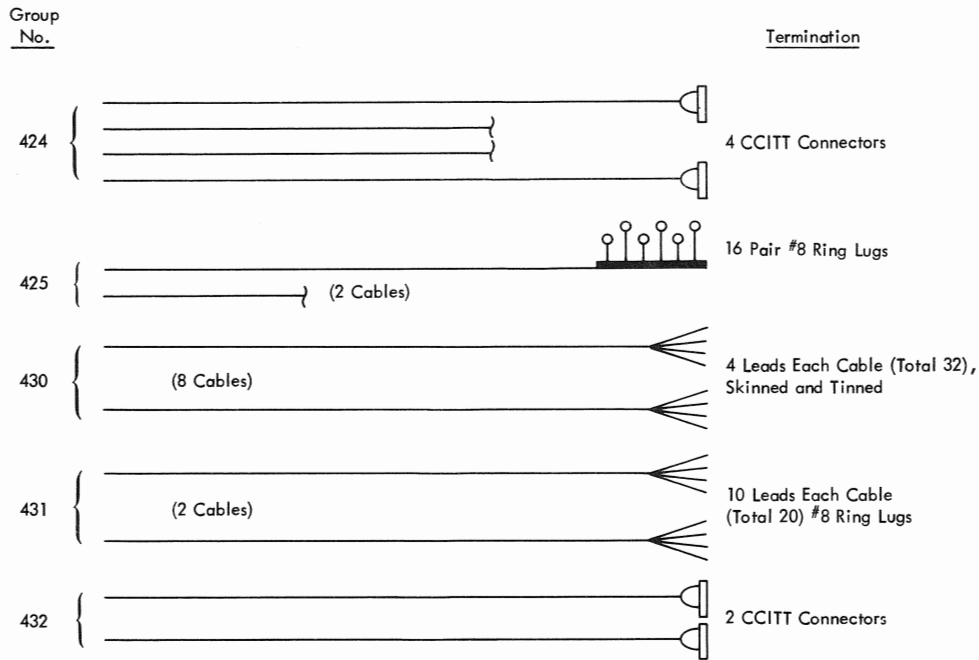
* Dimensions can be reduced to 29-1/2" x 60" x 70" (75 cm x 152 cm x 178 cm) for shipping. See sales representative for specifying dimensions on the order.



2703 TRANSMISSION CONTROL CABLING SCHEMATIC (WORLD TRADE)



Cables from Non-IBM Devices



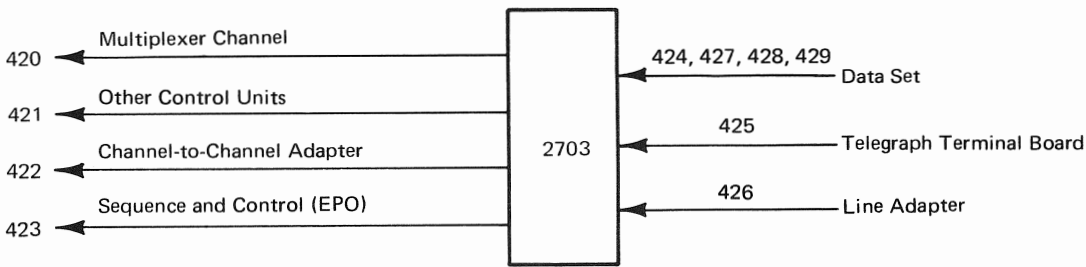
2703 TRANSMISSION CONTROL CABLING SCHEMATIC (WORLD TRADE)

Group No.	No. of Cables	From	To	Max Length (ft)	Notes
420	2	2703	Multiplexer Channel	—	1
421	2	2703	Control Unit	—	1
422	2	2703	Channel-to-Channel Adapter	—	1, 11
423	1	2703	Channel	150	2
424	4	Data Set	2703	40	3, 4
425	2	Single-Current Telegraph Line Set	2703	40	4, 10
430	8	Customer-Owned Communications Line	2703	40	4, 5, 6
431	2	IBM 3945 Model 11 Telegraph, Double-Current Line Set	2703	40	4, 7
432	2	Data Set (Synchronous)	2703	40	4, 8, 9

Notes:

- Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units.
- Sequence and control (EPO).
- Use with data line set (SF #3205 and #3206). Use one for each group of four data sets. Line termination may be via IBM 3976 Model 1, 2, or 3 or IBM 3977 Model 1 or 2.
- See "Cables from Non-IBM Devices" for cable specifications.
- For SF #4686, #4687, and #4688.
- Group 430 is terminated with wires fanned out and leads skinned and tinned for attachment to locally acceptable plug or terminal strip. Each group contains eight lines.
- For SF #2831 and #2832. Each group contains four lines.
- For SF #2902 and #2974. Each group contains two data sets.
- Line termination may be via IBM 3976 Model 3 or IBM 3977 Model 1 or 2.
- For SF #2829 (one group provides for one each of SF #2829 and #2830). Each group contains 16 lines.
- To channel-to-channel adapter (SF #1850).

2703 TRANSMISSION CONTROL CABLING SCHEMATIC (U.S.)

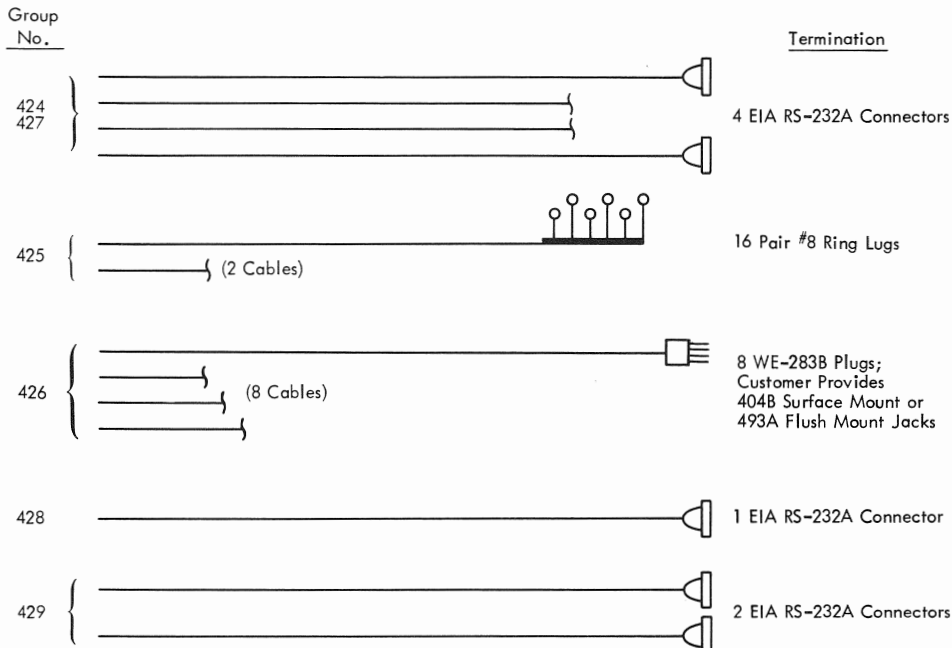


Group No.	No. of Cables	From	To	Max Length (ft)	Notes
420	2	2703	Multiplexer Channel	—	1
421	2	2703	Control Unit	—	1
422	2	2703	Channel-to-Channel Adapter	—	1,9
423	1	2703	Channel	150	2
424	4	Data Set	2703	40	3,4
425	2	Telegraph Terminal Board	2703	40	4,8
426	8	Customer-Owned Communications Line	2703	40	4,10
427	4	Data Set (Autocall)	2703	40	4,6
428	1	Data Set (To 2712)	2703	40	4,5
429	2	Data Set (Synchronous)	2703	40	4,7

Notes:

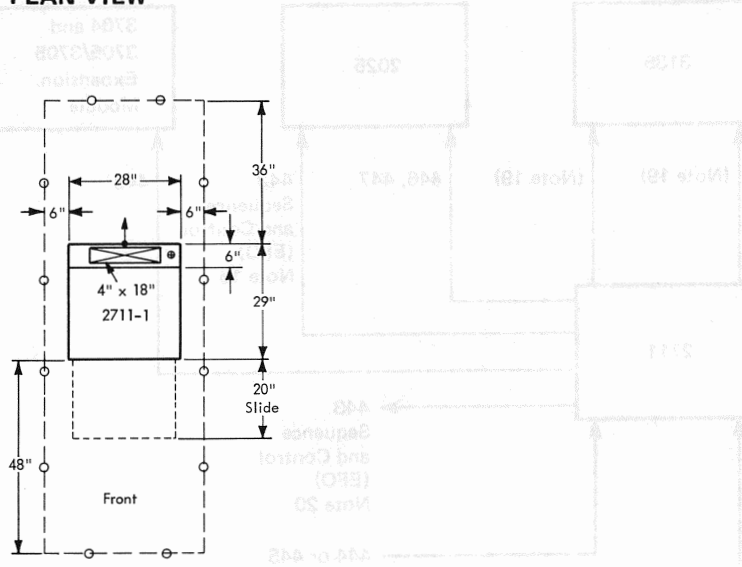
- Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units.
- Sequence and control (EPO).
- Use with data line set (SF #3205 and #3206). Use one for each group of four data sets.
- See "Cables from Non-IBM Devices" for cable specifications.
- For SF #8047 and #8057 (one group provides for each of SF #8047 and #8048, or one each of SF #8057 and #8058).
- For SF #1340 and #1341. Use one for each group of data sets.
- For SF #7710, including attachment from the IBM 4872 Modem. Use one for each group of data sets.
- For SF #7897 (one group provides for one each of SF #7897 and #7898). Each group contains 16 lines.
- To channel-to-channel adapter (SF #1850).
- For SF #4686, #4687, and #4688. Each group contains eight lines.

Cables from Non-IBM Devices



2711 LINE ADAPTER UNIT MODEL 1

PLAN VIEW



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	28	29	64*
(cm)	(71)	(74)	(163*)

Service Clearances:

	F	R	Rt	L
Inches	48	36	6	6
(cm)	(122)	(91)	(15)	(15)

Weight: 727 lb* (330 kg*)

Heat Output: 1,600 BTU/hr (410 kcal/hr)

Airflow: 100 cfm (3 m³/min)

Power Requirements:

- kVA 0.5
- Phases 1
- Plug R&S, FS3720
- Connector R&S, FS3913
- Receptacle R&S, FS3743
- Power Cord Style A5

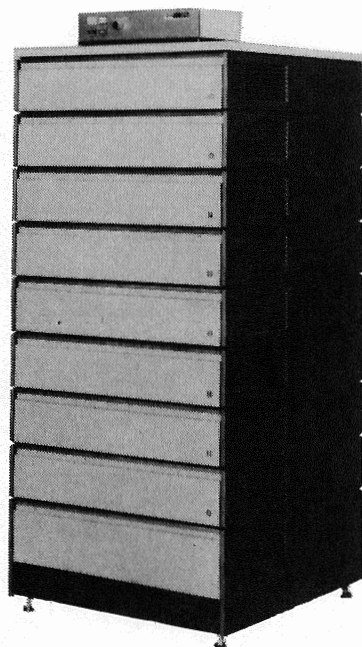
Environment Operating:

- Temperature 50^o-90^oF (10^o-32^oC)
- Rel Humidity 8%-80%
- Max Wet Bulb 78^oF (26^oC)

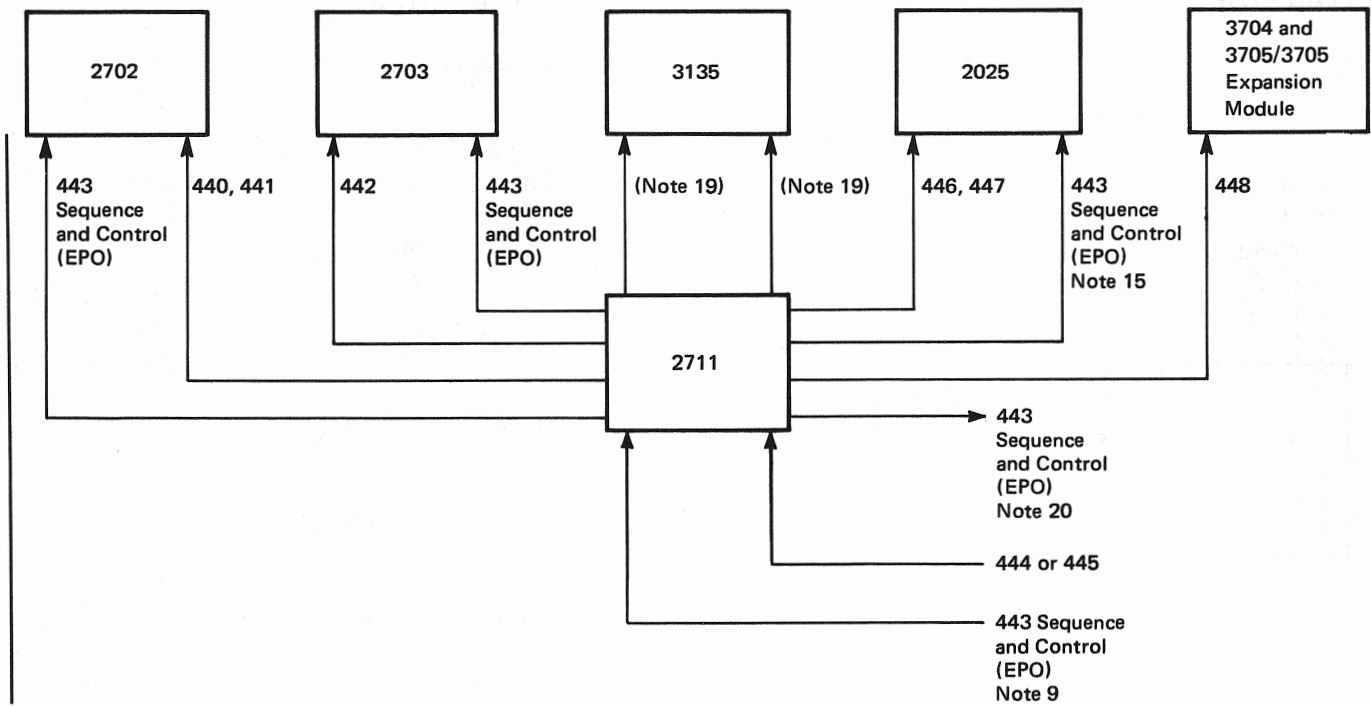
Notes:

* Figure represents 2711 maximum configuration. The basic unit (Power Supply Module, "A" Line Adapter Module, and Control Module) is 22" (56 cm) high and weighs a maximum of 251 lb (120 kg). Add 6" (15 cm) and a maximum of 68 lb (31 kg) for each additional Line Adapter Module (maximum of seven additional Line Adapter Modules). Weight varies depending on type of line adapters installed.

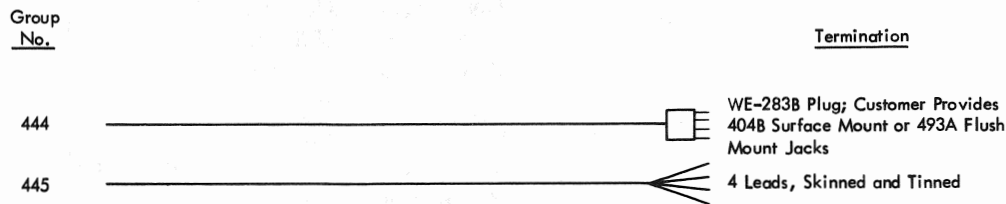
If only one or two Line Adapter Modules are used, consideration should be given to placing the unit on a stand or table. (This will avoid a possible safety hazard of having a low unit in the middle of the floor.)



2711 LINE ADAPTER UNIT CABLING SCHEMATIC (50 HZ)



Cables for IBM and Non-IBM Devices



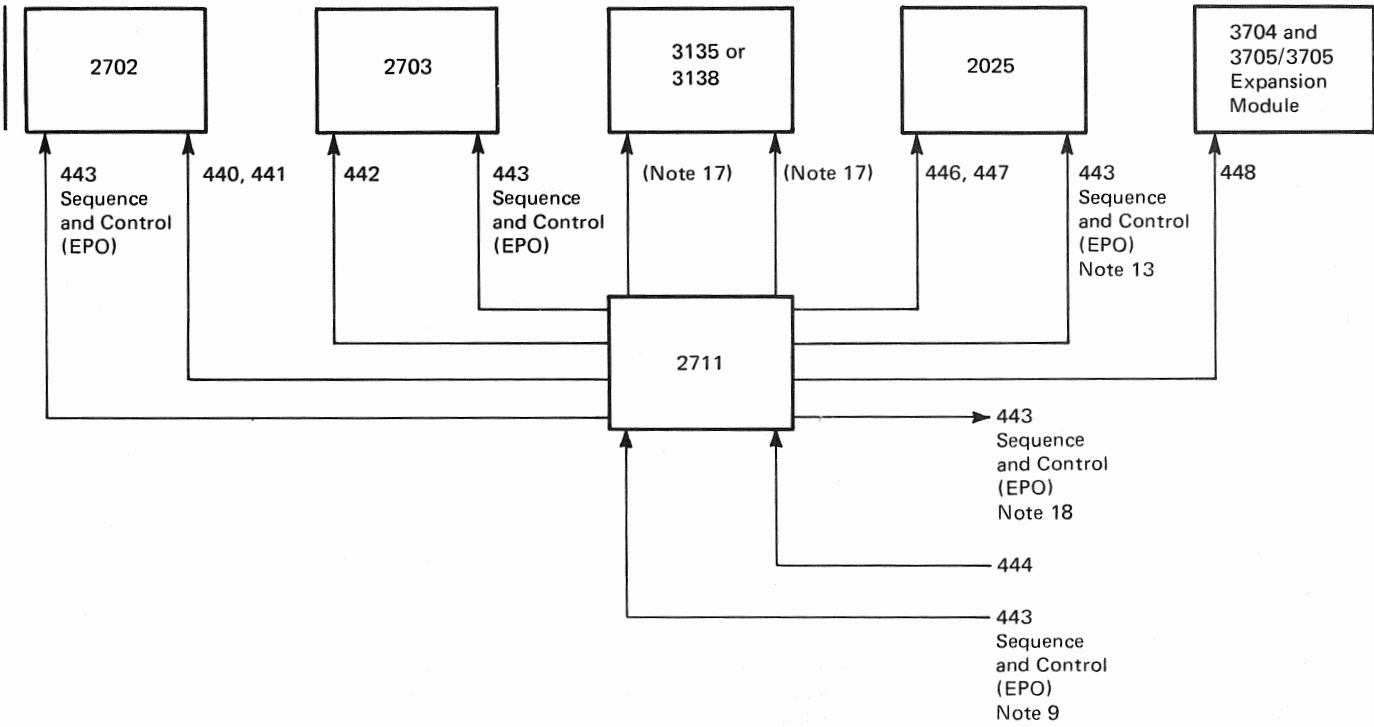
2711 LINE ADAPTER UNIT CABLING SCHEMATIC (50 HZ)

Group No.	No. of Cables	From	To	Max Length (ft) (Note 10)	Notes
440	1	2711	2702	40	1, 5
441	2	2711	2702	37	1, 6
442	4	2711	2703	40	2, 7
443	1	2711	2025 (Power Entry)/2702/2703/ 2711/3705	40	3, 9, 15, 20
444	1	Common-Carrier Facility	2711	40	4, 8, 11, 12, 13
445	1	Common-Carrier Facility	2711	40	4, 8, 11, 12
446	4	2711	2025 (Signal Entry)	40	14, 15, 16
447	2	2711	2025 (Signal Entry)	40	14, 15, 16
448	2	2711	3704,3705/3705 Expansion Module	45	17, 18

Notes:

1. Cable from data set to 2702 may be used, if long enough.
2. Cable from data set to 2703 may be used, if long enough.
3. Sequence and control (EPO); one group only for each 2711.
4. One group for each line adapter feature.
5. One group for each single or odd multiple 2702 data set lines being converted (maximum of one per 2702).
6. One group for each pair of 2702 data set lines being converted.
7. One group for each group of four 2703 data set lines being converted.
8. See "Cables for IBM and Non-IBM Devices" for cable specifications.
9. When more than one 2711 is used in the same system, the sequence and control (EPO) for each additional 2711 is routed to the next 2711; that is, 2711 #3 to 2711 #2, 2711 #2 to 2711 #1, and 2711 #1 to 2025/2702/2703/3705.
10. If 2711 with one or two line adapter modules is placed on a stand or table, the distance from the floor to the bottom of the 2711 must be added to the "X" length.
11. Group 444 is terminated at the customer end with a telephone-type, four-prong plug (type 283B). Group 445 is terminated with wires fanned out and leads skinned and tinned for attachment to locally acceptable plug or terminal strip.
12. See *Planning and Installation of a Data Communications System Using IBM Line Adapters*, GA24-3435, for options to connect IBM Shared Line Adapters to common-carrier facility.
13. For 60-Hz machines, see *Planning and Installation of a Data Communications System Using IBM Line Adapters*, GA24-3435, for options to connect IBM Shared Line Adapters (SF #4641 through #4644 and/or #4691 through #4694) to common-carrier facility. Consideration must be given to the use of IBM 4/1 Terminator (SF #6350) or the installation of multiple type 404B jacks (one for each subchannel plus termination plug).
14. Cable from data sets to 2025 may be used, if long enough. See "System/360 Model 25 Cabling Schematic," GC19-0001, for cable group numbers.
15. See "System/360 Model 25, 2025 Processing Unit" specifications page, GC19-0001, for proper cable entry location.
16. SF #7401 on 2025 group 447; SF #7401 and #7402 on 2025 group 446; SF #7401, #7402, and #7403 on 2025 groups 446 and 447. Maximum of four of each group (446 and 447).
17. Cable from data set to 3704 or 3705/3705 Expansion Module may be used, if long enough.
18. One group is required for each pair or for each single 3704 or 3705/3705 Expansion Module data set line(s) being converted.
19. See "System/370 Model 135 or 138 Cabling Schematic" for cable group numbers.
20. Sequence and control (EPO); group 443 routed to next unit when 2711 is used with 3704.

2711 LINE ADAPTER UNIT CABLING SCHEMATIC (60 HZ)



Cables for IBM and Non-IBM Devices

Group
No.

444



Termination

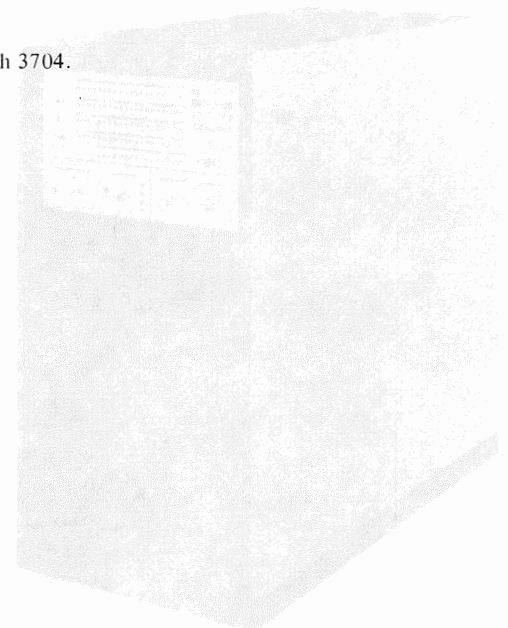
WE-283B Plug; Customer Provides
 404B Surface Mount or 493A
 Flush Mount Jacks

2711 LINE ADAPTER UNIT CABLING SCHEMATIC (60 HZ)

Group No.	No. of Cables	From	To	Max Length (ft) (Note 10)	Notes
440	1	2711	2702	40	1, 5
441	2	2711	2702	37	1, 6
442	4	2711	2703	40	2, 7
443	1	2711	2025(Power Entry)/2702/2703/ 2711/3705	40	3, 9, 13, 18
444	1	Common-Carrier Facility	2711	40	4, 8, 11
446	4	2711	2025 (Signal Entry)	40	12, 13, 14
447	2	2711	2025 (Signal Entry)	40	12, 13, 14
448	2	2711	3704,3705/3705 Expansion Module	45	15, 16

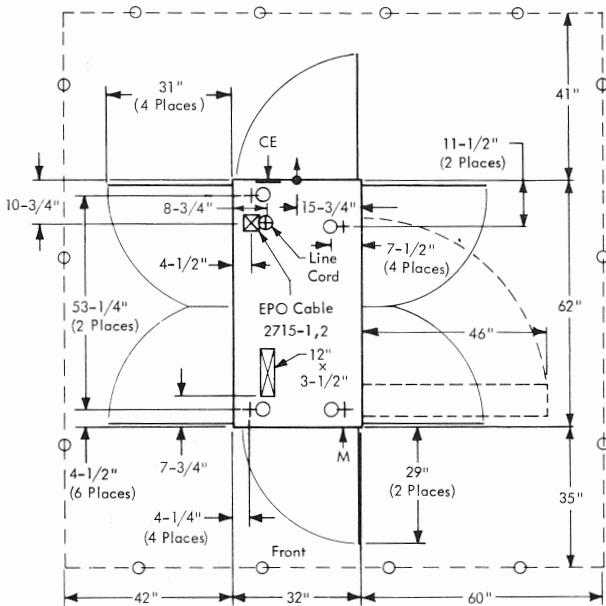
Notes:

1. Cable from data set to 2702 may be used, if long enough.
2. Cable from data set to 2703 may be used, if long enough.
3. Sequence and control (EPO); one group for each 2711.
4. One group for each line adapter feature.
5. One group for each single or odd multiple 2702 data set lines being converted (maximum of one per 2702).
6. One group for each pair of 2702 data set lines being converted.
7. One group for each group of four 2703 data set lines being converted.
8. See "Cables for IBM and Non-IBM Devices" for cable specifications.
9. When more than one 2711 is used in the same system, the sequence and control (EPO) for each additional 2711 is routed to the next 2711; that is, 2711 #3 to 2711 #2, 2711 #2 to 2711 #1, and 2711 #1 to 2025/2702/2703/3705.
10. If 2711 with one or two line adapter modules is placed on a stand or table, the distance from the floor to the bottom of the 2711 must be added to the "X" length.
11. See *Planning and Installation of a Data Communications System Using IBM Line Adapters, GA24-3435*, for options to connect IBM Shared Line Adapters (SF #4641 through #4644 and/or #4691 through #4694) to common-carrier facility. Consideration must be given to the use of the IBM 4/1 Terminator (SF #6350) or the installation of multiple type 404B jacks (one for each subchannel plus termination plug).
12. Cable from data sets to 2025 may be used, if long enough. See "System/360 Model 25 Cabling Schematic," GC22-6820, for cable group numbers.
13. See "System/360 Model 25, 2025 Processing Unit" specifications page, GC22-6820, for proper cable entry location.
14. SF #7401 on 2025 group 447; SF #7401 and #7402 on 2025 group 446; SF #7401, #7402, and #7403 on 2025 groups 446 and 447. Maximum of four of each group (446 and 447).
15. Cable from data set to 3704 or 3705/3705 Expansion Module may be used, if long enough.
16. One group is required for each pair or for each single 3704 or 3705/3705 Expansion Module data set line(s) being converted.
17. See "System/370 Model 135 or 138 Cabling Schematic" for cable group numbers.
18. Sequence and control (EPO); group 443 routed to next unit when 2711 is used with 3704.



2715 TRANSMISSION CONTROL UNIT MODELS 1 AND 2

PLAN VIEW



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	32	62	60*
(cm)	(81)	(157)	(152*)

Service Clearances:

	F	R	Rt	L
Inches	35	41	60	42
(cm)	(89)	(104)	(152)	(107)

Weight: 1,350 lb (620 kg)

Heat Output: 9,600 BTU/hr (2,450 kcal/hr)

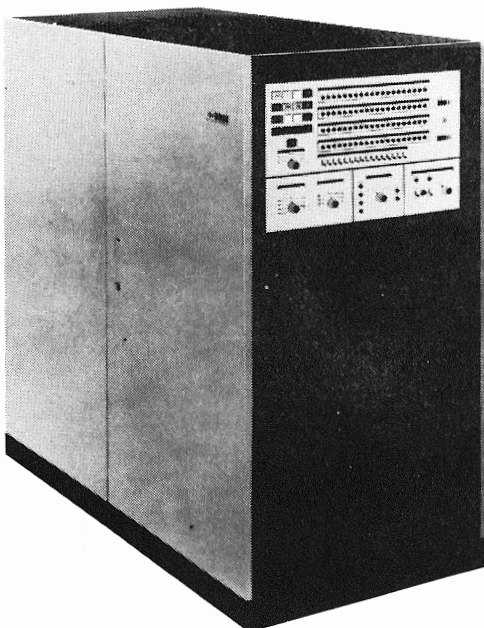
Airflow: 240 cfm (7 m³/min)

Power Requirements:

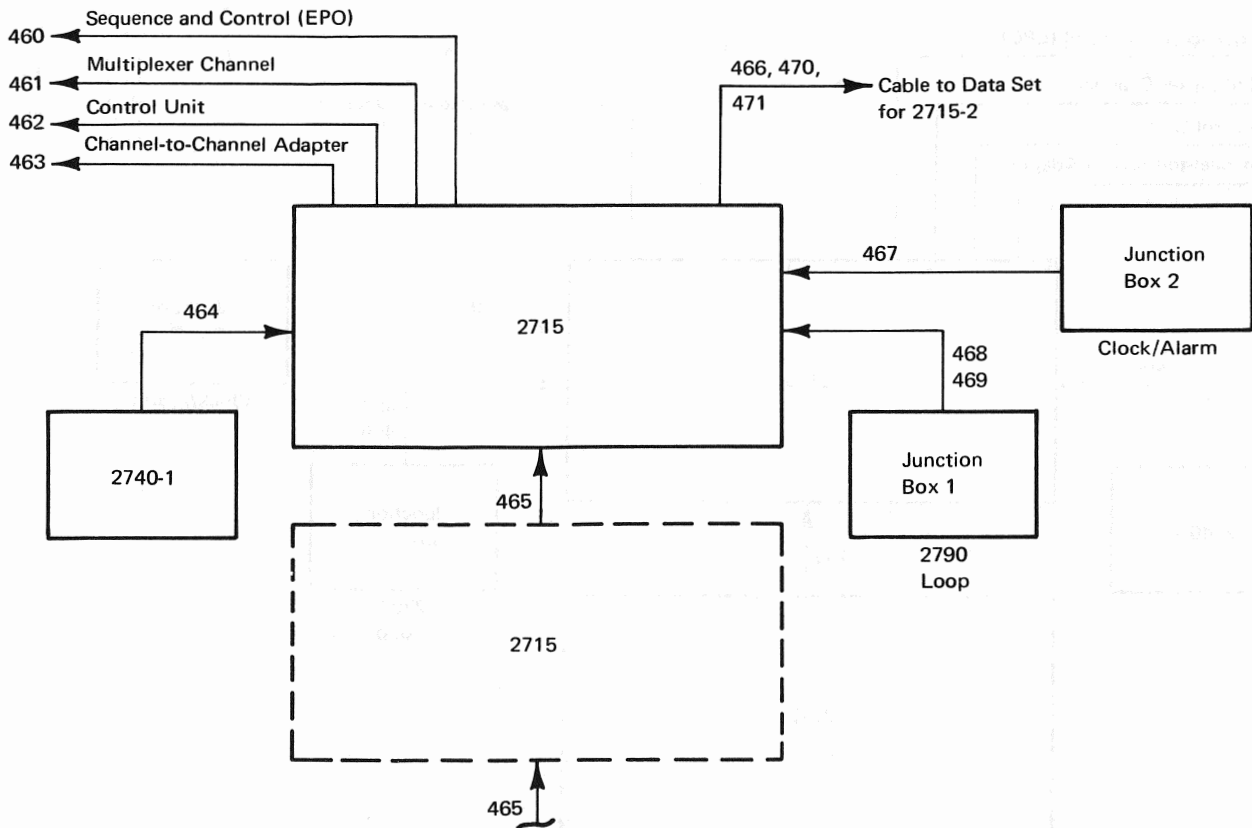
kVA	3.5
Phases	3
Plug	R&S, FS3730
Connector	R&S, FS3914
Receptacle	R&S, FS3744
Power Cord Style	D2

Notes:

* Add 4" (10 cm) to this dimension for shipping height.



2715 TRANSMISSION CONTROL UNIT CABLING SCHEMATIC (WORLD TRADE)

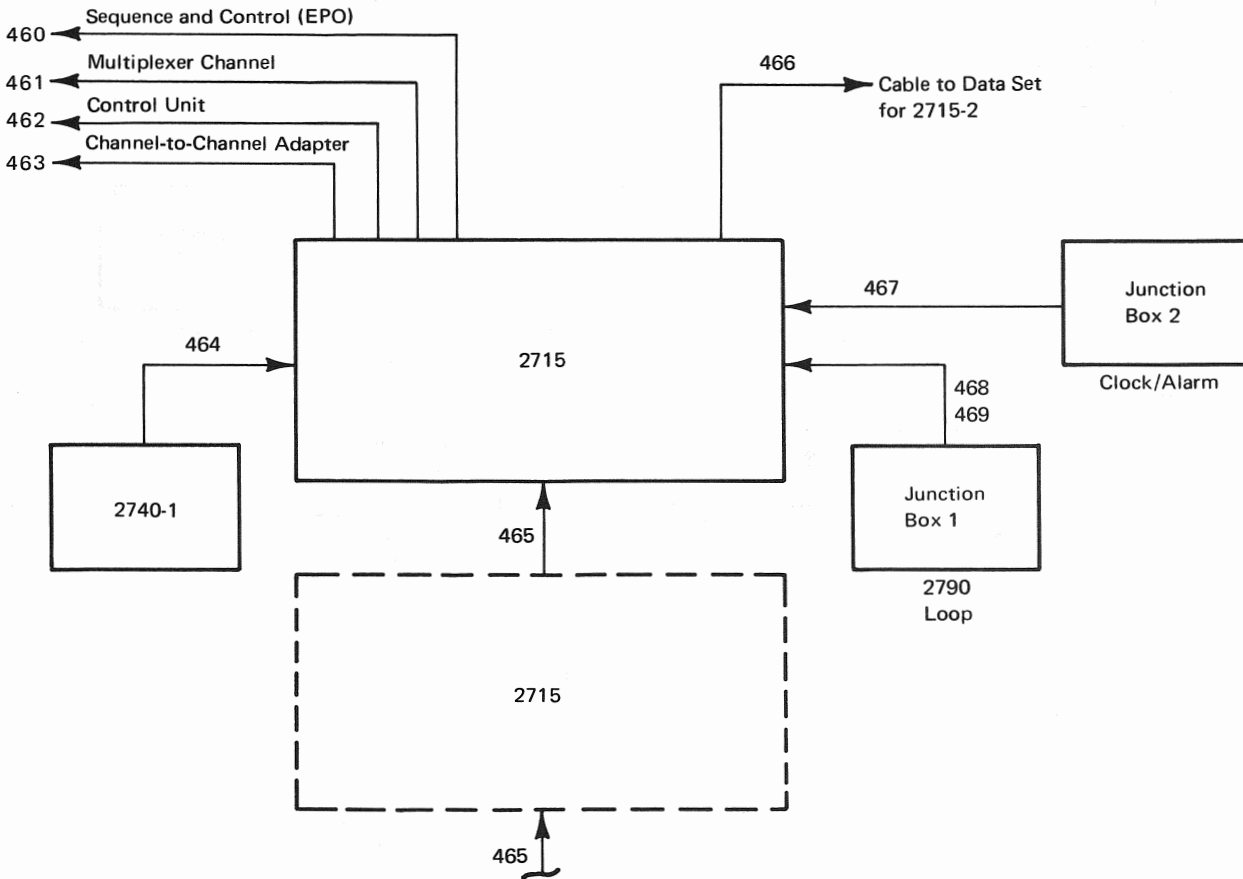


Group No.	No. of Cables	From	To	Max Length (ft)	Notes
460	1	2715	Channel	150	2
461	2	2715	Multiplexer Channel	—	1
462	2	2715	Control Unit	—	1
463	2	2715	Channel-to-Channel Adapter	—	1
464	1	2740-1	2715	40	—
465	1	2715	2715	50	3
466	1	2715	Data Set	40	4
467	1	Junction Box 2	2715	40	5
468	1	Junction Box 1	2715	40	6
469	1	Junction Box 1	2715	40	6
470	1	2715	United Kingdom Data Set	—	7
471	2	2715	All Data Sets, Except United Kingdom	—	—

Notes:

- Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units.
- Sequence and control (EPO).
- When two 2715s are cabled together for backup by group 465 in an IBM 2790 Data Communication System loop circuit, each 2715 requires its own cabling to its associated multiplexer channel, data set, 2740, and clock or alarm device. When three 2715s are cabled together, the center 2715 cannot be attached to the loop circuit. It is backup for the other two 2715s. Each of the three 2715s requires cabling to its associated units.
- For 2715 Model 2 only.
- For clock or alarm circuits.
- For connection to IBM 2790 Data Communication System loop circuits. Group 468 is for installation using telephone type WE-283B plugs (Western Electric plug). Group 469 is for installation using terminal box.
- An isolation box may be required for attachment to GPO modem. Group 470 is then connected between 2715 and isolation box.

2715 TRANSMISSION CONTROL UNIT CABLING SCHEMATIC (U.S.)



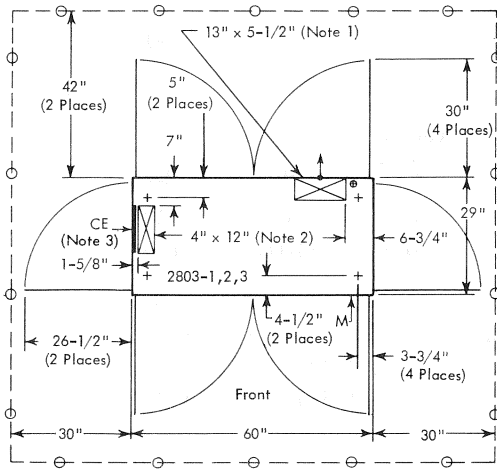
Group No.	No. of Cables	From	To	Max Length (ft)	Notes
460	1	2715	Channel	150	2
461	2	2715	Multiplexer Channel	—	1
462	2	2715	Control Unit	—	1
463	2	2715	Channel-to-Channel Adapter	—	1
464	1	2740-1	2715	40	—
465	1	2715	2715	50	3
466	1	2715	Data Set	40	4
467	1	Junction Box 2	2715	40	5
468	1	Junction Box 1	2715	40	6
469	1	Junction Box 1	2715	40	6

Notes:

- Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units.
- Sequence and control (EPO).
- When two 2715s are cabled together for backup by group 465 in an IBM 2790 Data Communication System loop circuit, each 2715 requires its own cabling to its associated multiplexer channel, data set, 2740, and clock or alarm device. When three 2715s are cabled together, the center 2715 cannot be attached to the loop circuit. It is backup for the other two 2715s. Each of the three 2715s requires cabling to its associated units.
- For 2715 Model 2 only.
- For clock or alarm circuits.
- For connection to IBM 2790 Data Communication System loop circuits. Group 468 for installation using telephone type WE-283B plugs (Western Electric plug). Group 469 is for installation using terminal box.

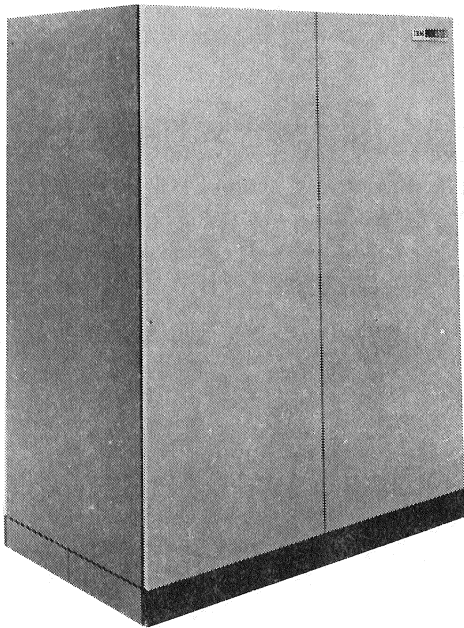
2803 TAPE CONTROL MODELS 1, 2, AND 3

PLAN VIEW



Notes:

1. All power and tape unit signal cables.
2. All signal cables for channel.
3. Model 2 serial numbers 5X,XXX only.
4. For cabling information, see 2403.



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	60	29	60
(cm)	(152)	(74)	(152)

Service Clearances:

	F	R	Rt	L
Inches	42	42	30*	30
(cm)	(107)	(107)	(76*)	(76)

Weight:	Models 1 and 3	Model 2
lb	1,050	1,250
(kg)	(480)	(570)

Heat Output:

BTU/hr	4,500	7,700
(kcal/hr)	(1.150)	(1.950)

Airflow:

cfm	500	700
(m ³ /min)	(15)	(20)

Power Requirements:**

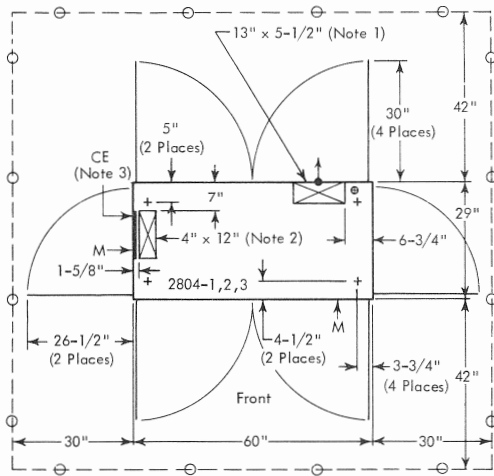
kVA	1.7	2.4
Phases	3	3
Plug	R&S, SC7328	
Connector	R&S, SC7428	
Receptacle	R&S, SC7324	
Power Cord Style	E2	

Notes:

- * When not abutted to another tape unit or tape control unit.
- ** Supplies power to tape units. For planning purposes, maximum continuous operating current with eight tape units attached will not exceed 40A per phase.

2804 TAPE CONTROL MODELS 1, 2, AND 3

PLAN VIEW



Notes:

1. All power and tape unit signal cables.
2. All signal cables for channel.
3. Model 2 only.
4. For cabling information, see 2403.

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	60	29	60
(cm)	(152)	(74)	(152)

Service Clearances:

	F	R	Rt	L
Inches	42	42	30*	30
(cm)	(107)	(107)	(76*)	(76)

Weight:	Models 1 and 3	Model 2
lb	1,200	1,550
(kg)	(550)	(710)

Heat Output:

BTU/hr	6,800	10,500
(kcal/hr)	(1.750)	(2.650)

Airflow:

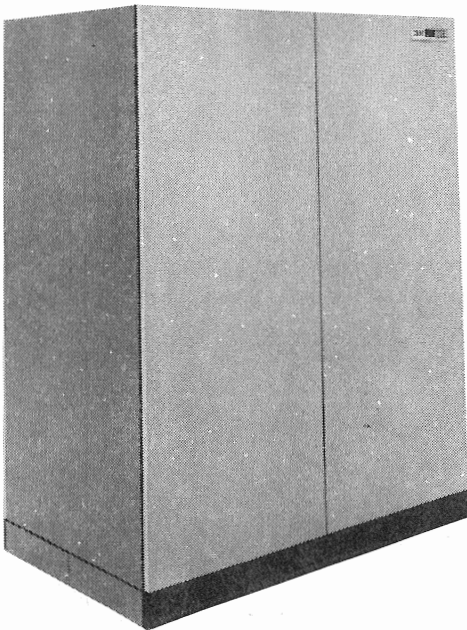
cfm	700	900
(m ³ /min)	(20)	(26)

Power Requirements:**

kVA	2.2	3.4
Phases	3	3
Plug	R&S, SC7328	
Connector	R&S, SC7428	
Receptacle	R&S, SC7324	
Power Cord Style	E2	

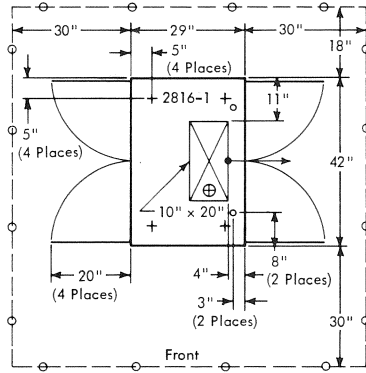
Notes:

- * When not abutted to another tape unit or tape control unit.
- ** Supplies power to tape units. For planning purposes, maximum continuous operating current with eight tape units attached will not exceed 40A per phase.



2816 SWITCHING UNIT MODEL 1

PLAN VIEW



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	29	42	60
(cm)	(74)	(107)	(152)

Service Clearances:

	F	R	Rt	L
Inches	30	18	30	30
(cm)	(76)	(46)	(76)	(76)

Weight: 500 lb (230 kg)

Heat Output: 1,500 BTU/hr (380 kcal/hr)

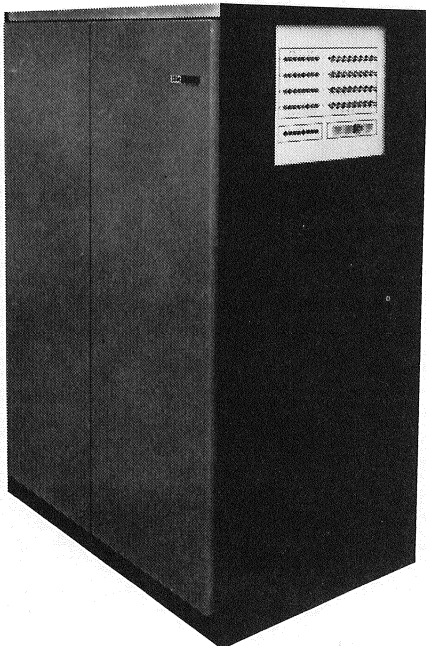
Airflow: 280 cfm (8 m³/min)

Power Requirements:

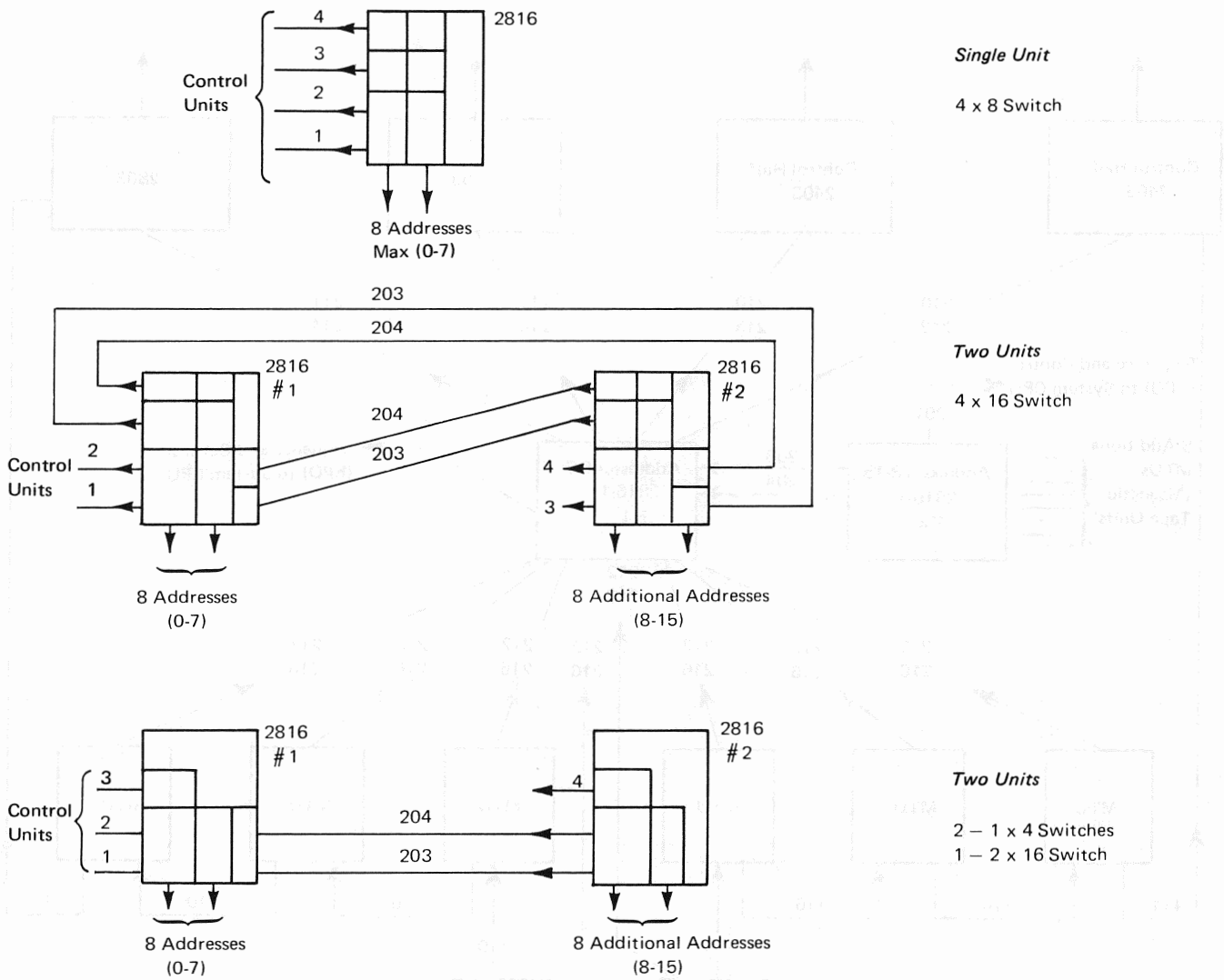
kVA	1.2
Phases	1
Plug	R&S, FS3720
Connector	R&S, FS3913
Receptacle	R&S, FS3743
Power Cord Style	A8

Notes:

Switch and display panel should be visible from and accessible to operator's position.



SWITCHING UNIT CABLING



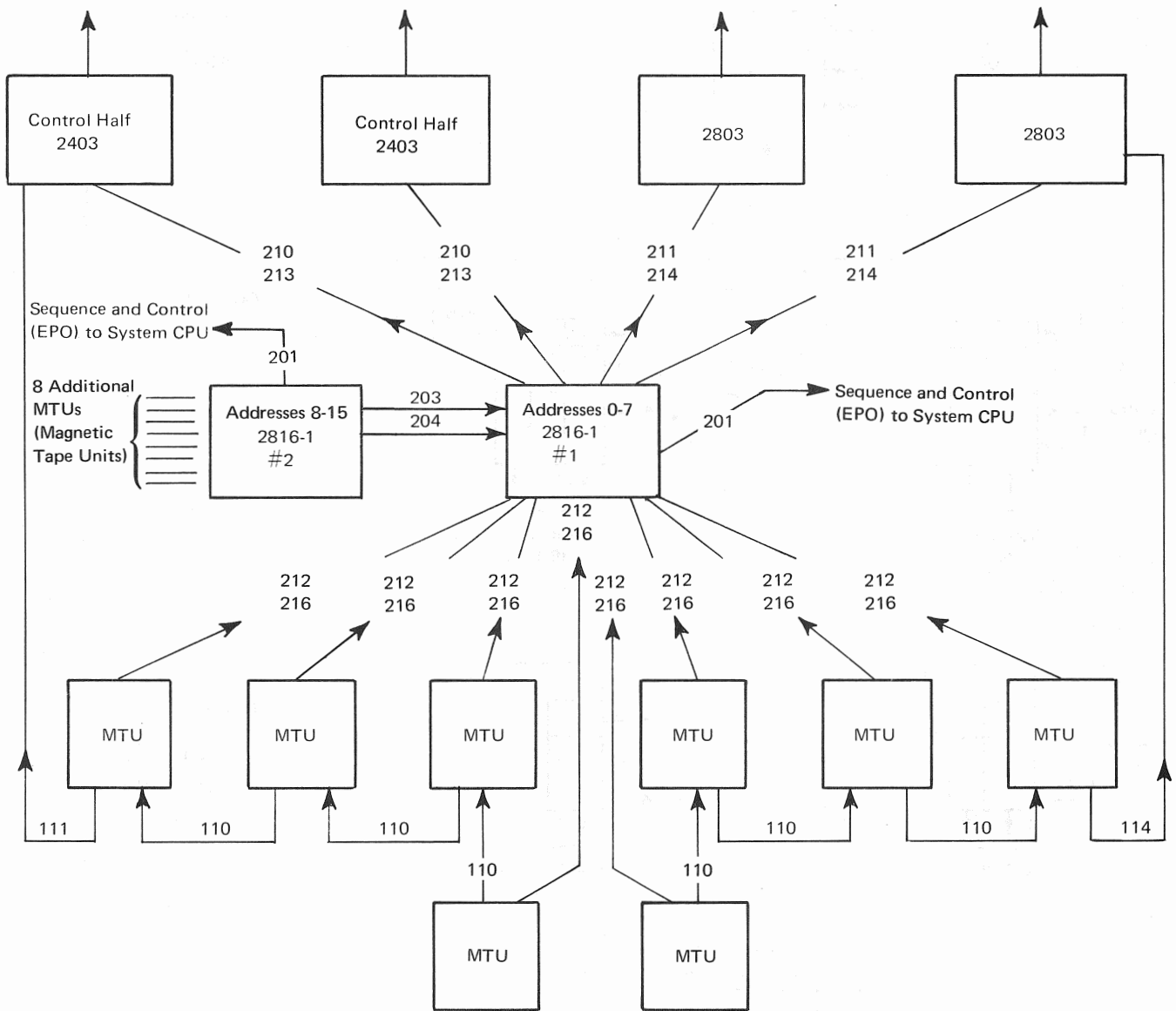
Feature Description for Preceding Block Diagrams

2286	1052		(SF #6393)
2285	1051		
	1050		(SF #6392)

Cables from the 2816s to the control units should be routed from the 2816 containing the lowest address that the control unit is to address.

Exception: For third and fourth control units addressing over eight addresses, the cables should route from the 2816 containing address 8 (as shown above).

2816 SWITCHING UNIT CABLING SCHEMATIC



2816 SWITCHING UNIT CABLING SCHEMATIC

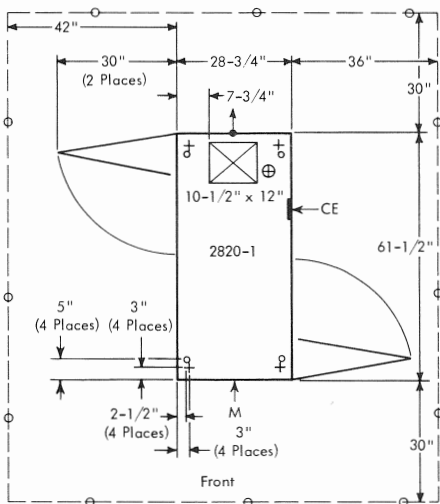
<i>Group No.</i>	<i>No. of Cables</i>	<i>From</i>	<i>To</i>	<i>Max Length (ft)</i>	<i>Notes</i>
110	1	MTU	MTU	—	3,7
111	1	MTU	2403	—	3
114	1	MTU	2803	—	3,7
201	1	2816	System/360 or System/370 CPU	150	4
203	4	2816-1 #2	2816-1 #1	20	2
204	4	2816-1 #2	2816-1 #1	20	2
210	3	2816-1 #1	2403	—	1
211	3	2816-1 #1	2803	—	1
212	1	MTU (Models 1-3)	2816	—	1,6,8
213	1	2816-1 #1	2403	—	5
214	1	2816-1 #1	2803	—	5
216	1	MTU (Models 4-6)	2816	—	1,6,8

Notes:

1. Longest group number 210 or 211 plus longest group number 212 or 216 may not exceed 100 feet. (Group 203 must also be added when used.)
2. Group number 203 for control 1, 2816-1 #2; group number 204 for control 2 (for SF #6392 and #6393).
3. Power cables.
4. Sequence and control (EPO); one per system for *each* 2816.
5. Required for sixteen address feature (SF #7185) in addition to basic cable group.
6. Use group 212 when control units attach 800-bpi drives; use group 216 when control units attach 1,600-bpi drives.
7. Total number of MTUs powered from any given control unit must not exceed eight (maximum of four drives per power cable string). For operation at 195V, 50 Hz, the total number of 2420s powered from a 2803 must not exceed six (maximum of three drives per power cable string).
8. Cable groups 212 and 216 use the same cable number but different terminators. To obtain the replacement terminator required for a model change, order the cable group specified for the model on the cable order form or through the IBM Branch Office on an MES (Miscellaneous Equipment Specification) and state "Terminator Only."

2820 STORAGE CONTROL MODEL 1

PLAN VIEW



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	28-3/4	61-1/2	60
(cm)	(73)	(156)	(152)

Service Clearances:

	F	R	Rt	L
Inches	30	30	36	42
(cm)	(76)	(76)	(91)	(107)

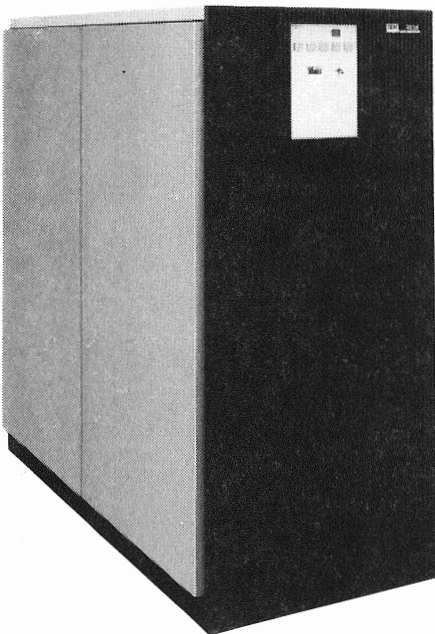
Weight: 750 lb (350 kg)

Heat Output: 3,300 BTU/hr (840 kcal/hr)

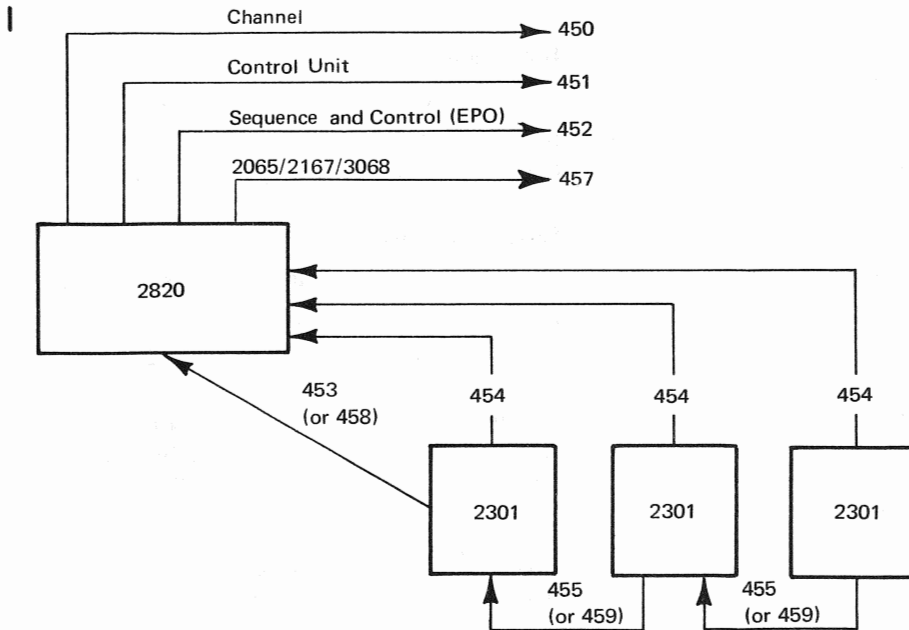
Airflow: 550 cfm (16 m³/min)

Power Requirements:

kVA	1.25
Phases	3
Plug	R&S, FS3760
Connector	R&S, FS3934
Receptacle	R&S, FS3754
Power Cord Style	D2



2820 AND 2301 CABLING SCHEMATIC



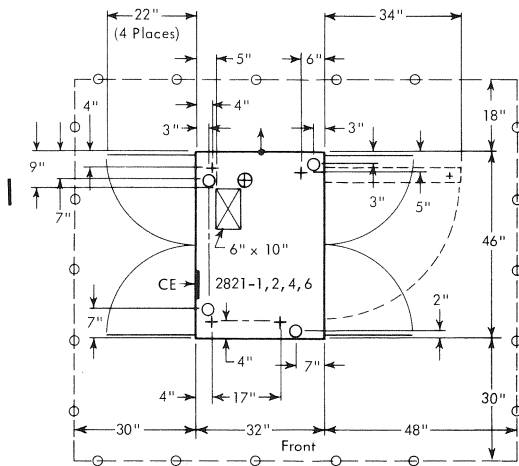
Group No.	No. of Cables	From	To	Max Length (ft)	Notes
450	2	2820	Channel	—	1, 4, 6
451	2	2820	Control Unit	—	1, 4, 6
452	1	2820	Channel	150	2, 6
453 (or 458)	3	2301	2820	—	3
454	1	2301	2820	130	—
455 (or 459)	3	2301	2301	—	3
457	1	2820	2065/2167/3068	150	5

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; maximum of 20 feet to 2820. The 2820 should be first on the channel.
2. Sequence and control (EPO).
3. Length of group 453 (or 458) plus 455 (or 459) may not exceed 130 feet. For 50-Hz machines, use group number in parentheses.
4. Length of group 451 plus 450 may not exceed 20 feet for two 2820s.
5. For SF #6148 only.
6. One group required for each channel when SF #8170 is installed. Maximum length applies to each channel.

2821 CONTROL UNIT MODELS 1, 2, 4, AND 6 (SYSTEM/360)
2821 CONTROL UNIT MODELS 1, 2, AND 6 (SYSTEM/370)

PLAN VIEW



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	32	46	60
(cm)	(81)	(117)	(152)

Service Clearances:

	F	R	Rt	L
Inches	30	18	48	30
(cm)	(76)	(46)	(122)	(76)

Weight:

	Model 1	Model 2	Model 4	Model 6
lb	1,250	1,250	1,250	1,150
(kg)	(570)	(570)	(570)	(530)

Heat Output:

BTU/hr	3,850	3,000	3,850	3,300
(kcal/hr)	(980)	(760)	(980)	(840)

Airflow:

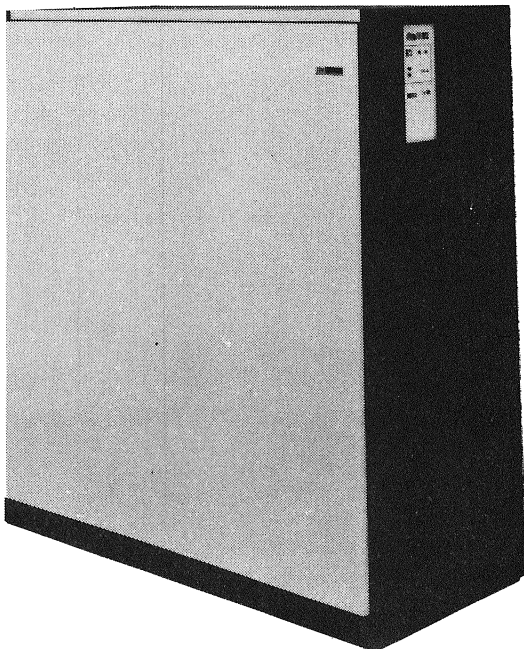
cfm	500	400	500	400
(m ³ /min)	(15)	(12)	(15)	(12)

Power Requirements:

kVA	1.4	1.1	1.4	1.2
Phases	3	3	3	3
Plug	R&S, FS3760			
Connector	R&S, FS3934			
Receptacle	R&S, FS3754			
Power Cord Style	D1			

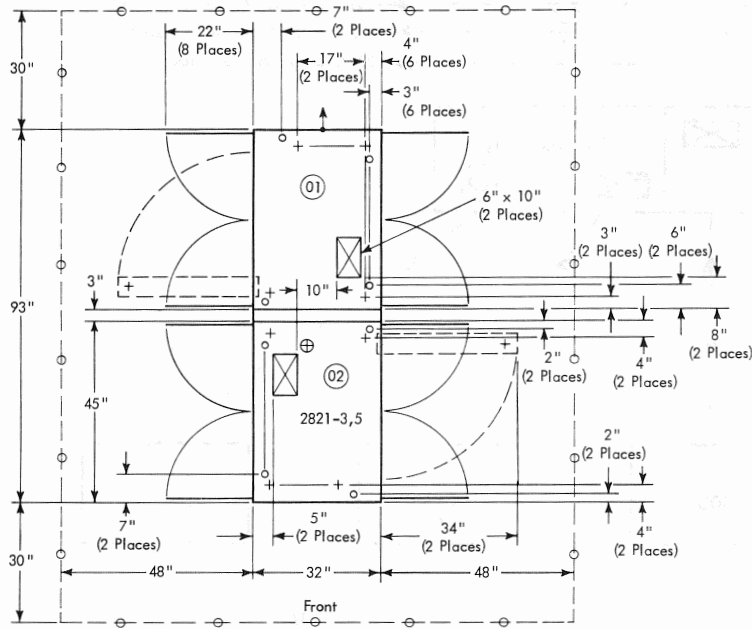
Environment Operating:

Temperature	60°-90°F (16°-32°C)
Rel Humidity	8%-80%
Max Wet Bulb	78°F (26°C)

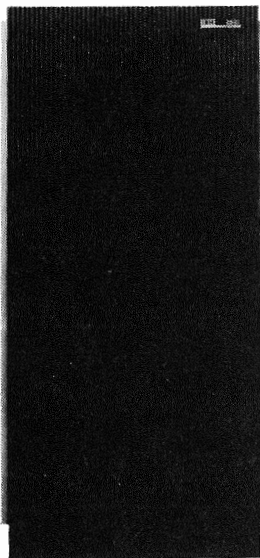


2821 CONTROL UNIT MODELS 3 AND 5

PLAN VIEW



Model	Frame	Weight lb (kg)
3	01	1,250 (570)
	02	925 (420)
5	01	1,000 (460)
	02	1,175 (540)



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	32	93	60
(cm)	(81)	(236)	(152)

Service Clearances:

	F	R	Rt	L
Inches	30	30	48	48
(cm)	(76)	(76)	(122)	(122)

Weight	Model 3	Model 5
lb	2,175	2,175
(kg)	(990)	(990)

Heat Output:

BTU/hr	5,200	6,000
(kcal/hr)	(1,350)	(1,550)

Airflow:

cfm	900	1,000
(m ³ /min)	(26)	(29)

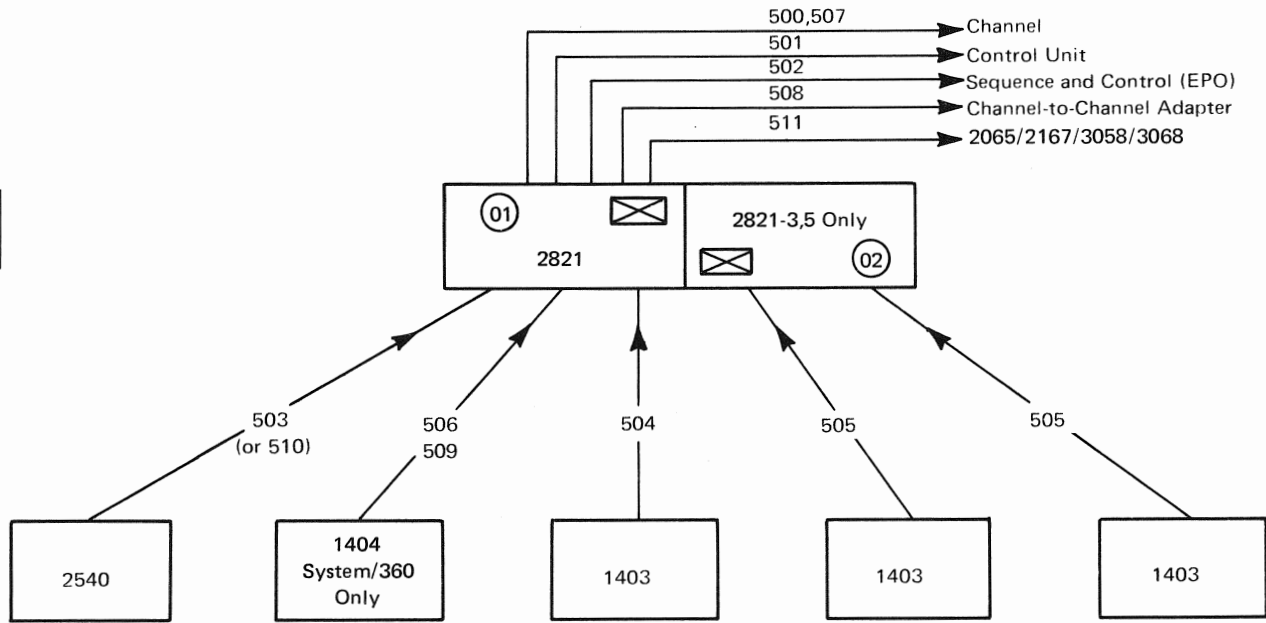
Power Requirements:

kVA	1.9	2.2
Phases	3	3
Plug	R&S, SC7328	
Connector	R&S, SC7428	
Receptacle	R&S, SC7324	
Power Cord Style	E3	

Environment Operating:

Temperature	60°-90°F (16°-32°C)
Rel Humidity	8%-80%
Max Wet Bulb	78°F (26°C)

2821 CONTROL UNIT CABLING SCHEMATIC



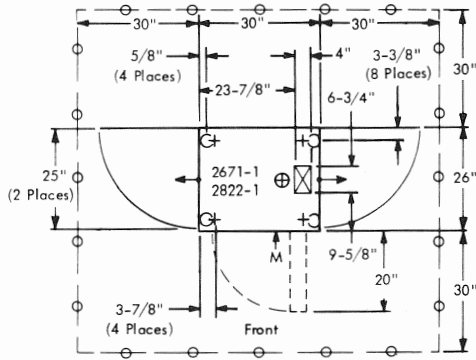
Group No.	No. of Cables	From	To	Max Length (ft)	Notes
500	2	2821 Fr 01	Multiplexer Channel	—	1,10
501	2	2821 Fr 01	Control Unit	—	1,10
502	1	2821 Fr 01	Channel	150	2,10
503 (or 510)	2	2540	2821 Fr 01	25	5,9,11
504	3	1403	2821 Fr 01	25	5,7,8,12
505	3	1403	2821 Fr 02	25	5,7,12
506	1	1404	2821 Fr 01	25	3,13
507	2	2821 Fr 01	Selector Channel	—	1,10
508	2	2821 Fr 01	Channel-to-Channel Adapter	—	1,4,10
509	4	1404	2821 Fr 01	25	13
511	1	2821 Fr 01	2065/2167/3058/3068	150	6,10

Notes:

1. Total cable length of 200 feet available to attach up to eight control units. (See general control-to-channel cabling schematic for additional limitations.)
2. Sequence and control (EPO).
3. For read-compare feature only (SF #5990).
4. To channel-to-channel adapter (SF #1850).
5. Contains one power cable.
6. For use with SF #6148 only.
7. Cables from a 1403 to a 2020 are *not* interchangeable with cables used to connect a 1403 to a 2821.
8. Not attachable to 2821 Model 6.
9. For 50-Hz machines, use group number in parentheses.
10. The 2821 Model 4 is *not* used on System/370 configurations.
11. The 2540 can only be attached to 2821 Models 1, 4, 5, and 6.
12. The 1403 can only be attached to 2821 Models 1, 2, 3, and 5.
13. The 1404 can only be attached to 2821 Model 4.

**2822 PAPER TAPE READER CONTROL MODEL 1
WITH 2671 PAPER TAPE READER MODEL 1**

PLAN VIEW



Note: For cabling information, see Section 4, "Units With Integral or Abutted Controls."



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	30	26	45
(cm)	(76)	(66)	(114)

Service Clearances:

	F	R	Rt	L
Inches	30	30	30	30
(cm)	(76)	(76)	(76)	(76)

Weight: 495 lb (230 kg)

Heat Output: 2,200 BTU/hr (560 kcal/hr)

Airflow: 150 cfm (5 m³/min)

Power Requirements:

kVA	1.05
Phases	1
Plug	R&S, FS3720
Connector	R&S, FS3913
Receptacle	R&S, FS3743
Power Cord Style	A5

Environment Operating:

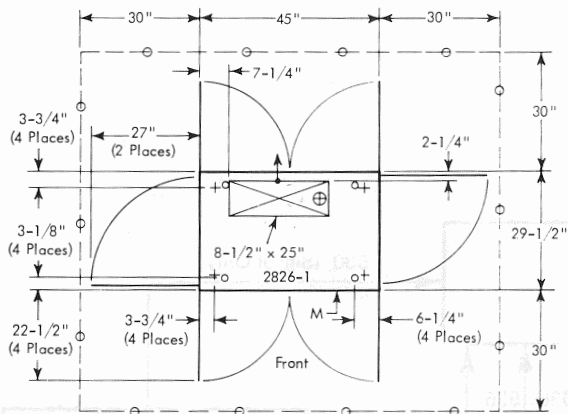
Temperature	60 ^o -90 ^o F (16 ^o -32 ^o C)
Rel Humidity	10%-80%
Max Wet Bulb	78 ^o F (26 ^o C)

Environment Nonoperating:

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

2826 PAPER TAPE CONTROL MODEL 1

PLAN VIEW



SPECIFICATIONS

Dimensions: (Installed)

	F	S	H
Inches	45	29-1/2	60
(cm)	(114)	(75)	(152)

Service Clearances:

	F	R	Rt	L
Inches	30	30	30	30
(cm)	(76)	(76)	(76)	(76)

Weight: 690 lb (320 kg)

Heat Output: 3,760 BTU/hr (950 kcal/hr)

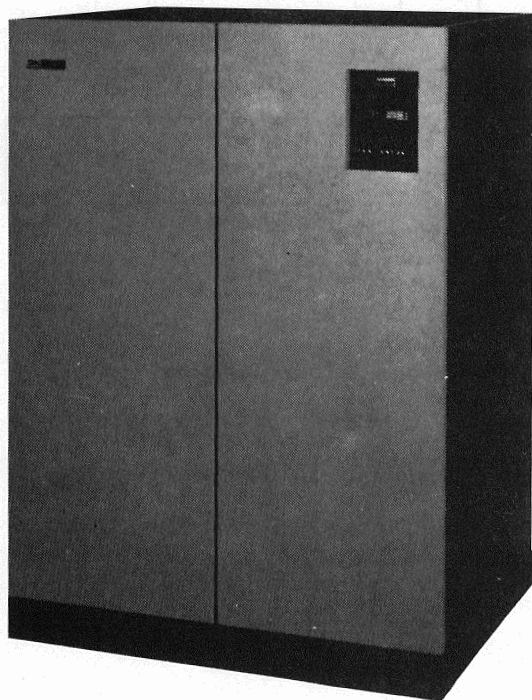
Airflow: 280 cfm (8 m³/min)

Power Requirements:

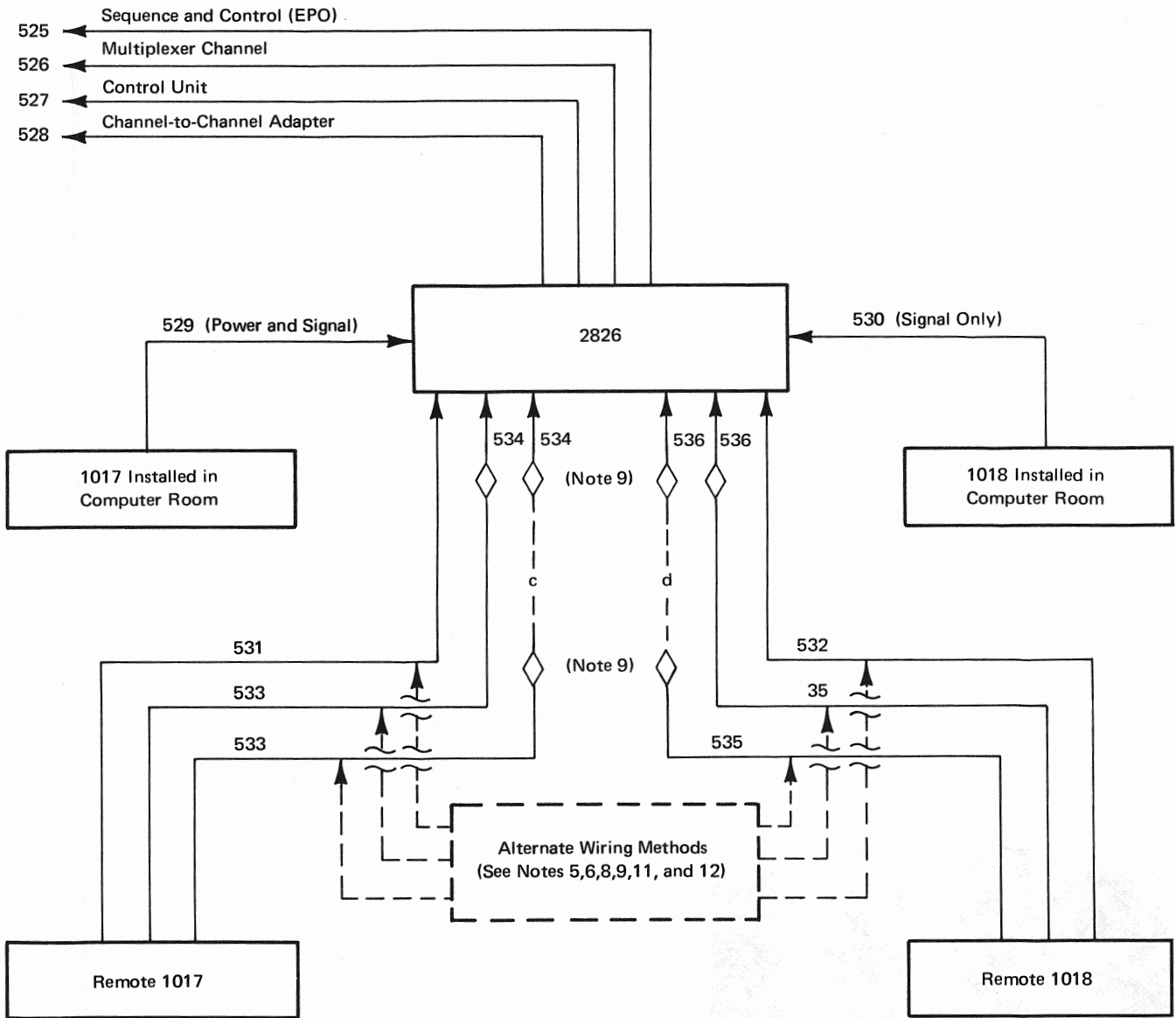
kVA	1.1
Phases	1
Plug	R&S, FS3720
Connector	R&S, FS3913
Receptacle	R&S, FS3743
Power Cord Style	A4

Environment Operating:

Temperature	60°-90°F (16°-32°C)
Rel Humidity	8%-80%
Max Wet Bulb	78°F (26°C)



2826, 1017, AND 1018 CABLING SCHEMATIC



2826, 1017, AND 1018 CABLING SCHEMATIC

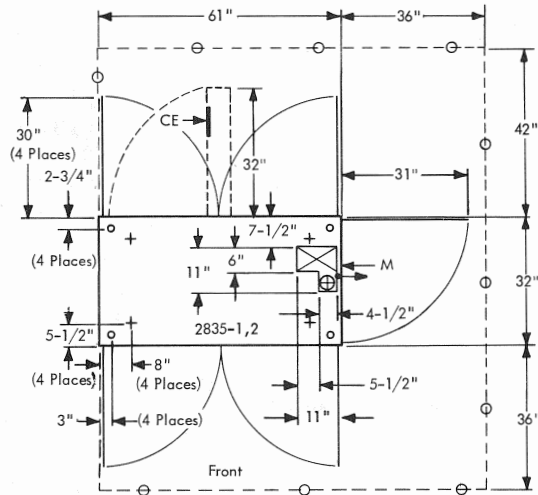
Group No.	No. of Cables	From	To	Max Length (ft)	Notes
c	1	Terminal Box	Terminal Box	—	8
d	1	Terminal Box	Terminal Box	—	8
525	1	2826	Channel	150	2
526	2	2826	Multiplexer Channel	—	1
527	2	2826	Control Unit	—	1
528	2	2826	Channel-to-Channel Adapter	—	1, 3
529	2	1017	2826	25	4,10,13
530	1	1018	2826	25	7,10,13
531	1	1017	2826	350	5,10,11,13
532	1	1018	2826	350	5,10,12,13,14
533	1	1017	Terminal Box	—	5,6,10
534	1	Terminal Box	2826	—	5,6,14
535	1	1018	Terminal Box	—	5,6,10,14
536	1	Terminal Box	2826	—	5,6,14

Notes:

1. Total cable length of 200 feet available to attach up to eight control units. (See general control-to-channel cabling schematic for additional limitations.)
2. Sequence and control (EPO).
3. To channel-to-channel adapter (SF #1850).
4. Signal and power cables for use when the 1017 is installed in the computer room.
5. 1017 (group 533), 1018 (group 535), or 2826 (group 534 or 536) to customer-supplied terminal box. Cable at customer end is fanned out.
6. Total length of (533 plus c plus 534) or (535 plus d plus 536) or (531) or (532) cannot exceed 350 feet. If the error correction feature (SF #3800) is installed on the 1018, maximum cable length between the 1018 and the 2826 is restricted to 25 feet. IBM will provide as much as 25 feet for each 1017 or 1018 at no extra charge. Additional cable may be purchased from IBM. Consult your IBM sales representative for cost. The customer is responsible for the installation and maintenance of these cables. Three methods of installation are available:
 - a. A single cable assembly may be ordered—group 531 for the 1017 or group 532 for the 1018. Because these cables have plug connectors on each end, the customer must determine that enough space is available to install the cables.
 - b. One terminal box is installed either at the remote location or in the computer room.
 - c. Two terminal boxes are required. Group 533 (1017) or group 535 (1018) terminates at the remote location in a customer-provided terminal box. Group 534 (1017) or group 536 (1018) terminates in the computer room in a customer-provided terminal box. Customer-provided cable is used between the two terminal boxes. See Appendix C for cable specifications
7. Signal cable for use when the 1018 is installed in the computer room.
8. See Appendix C for specifications of customer-supplied cable.
9. Terminal boxes supplied by customer. IBM cables are fanned out for a length of 4 inches. Customer may use any commercially available terminal box. Each 1017 cable has 32 twisted pairs of wire (64 wires). Fifty-four wires are used and ten are spares. Each 1018 cable has 40 twisted pairs of wire (80 wires). Seventy-one wires are used and nine are spares.
10. For cables to the 1017 and 1018, the distance from the floor to the top of the table must be included in the "X" length. Provide at least 1 foot of slack in the cable length to the 1017 and/or 1018 to allow the units to be turned or moved during servicing.
11. Signal cable for use when the 1017 is installed at a remote location. This is a complete cable assembly with connectors attached at both ends. See Note 6 for restrictions.
12. Signal cable for use when the 1018 is installed at a remote location. This is a complete cable assembly with connectors attached at both ends. See Note 6 for restrictions.
13. Maximum of two 1017s and two 1018s can be attached to one 2826.
14. If the punch checking feature (SF #5820) is installed on the 2826, the 1018 cannot be remotely located; maximum cable length from the 2826 to the 1018 is reduced to 25 feet.

2835 STORAGE CONTROL MODELS 1 AND 2

PLAN VIEW



Note: For cabling information, see Section 4, "Units With Integral or Abutted Controls."

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	61	32	60
(cm)	(155)	(81)	(152)

Service Clearances:

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

Weight: 1,525 lb (700 kg)

Heat Output: 10,500 BTU/hr (2.650 kcal/hr)

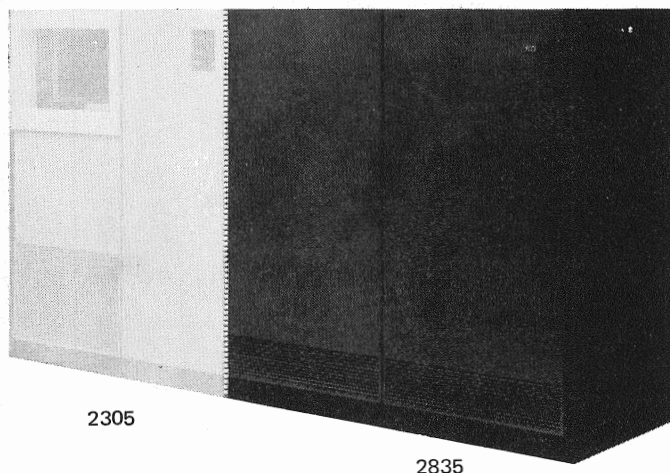
Airflow: 800 cfm (23 m³/min)

Power Requirements:

kVA	3.4
Phases	3
Plug	R&S, SC7328
Connector	R&S, SC7428
Receptacle	R&S, SC7324
Power Cord Style	E7

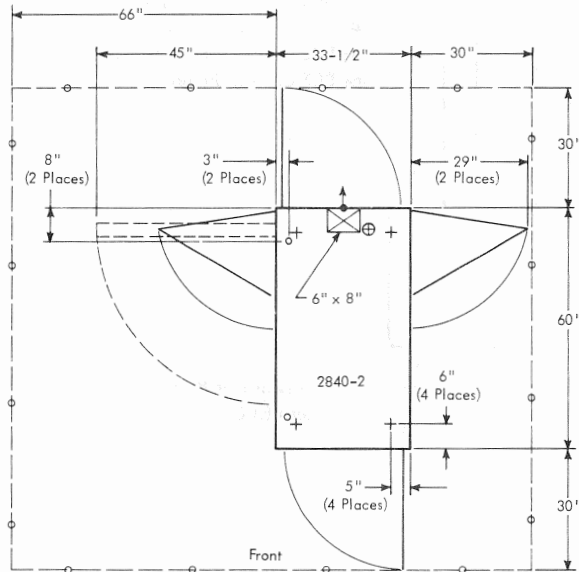
Notes:

* The 2835 is installed abutted to the right side of a 2305.



2840 DISPLAY CONTROL MODEL 2

PLAN VIEW



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	33-1/2	60	72-1/2
(cm)	(85)	(152)	(184)

Service Clearances:

	F	R	Rt	L
Inches	30	30	30	66
(cm)	(76)	(76)	(76)	(168)

Weight: 800 lb (370 kg)

Heat Output: 6,500 BTU/hr (1.650 kcal/hr)

Airflow: 800 cfm (23 m³/min)

Power Requirements:

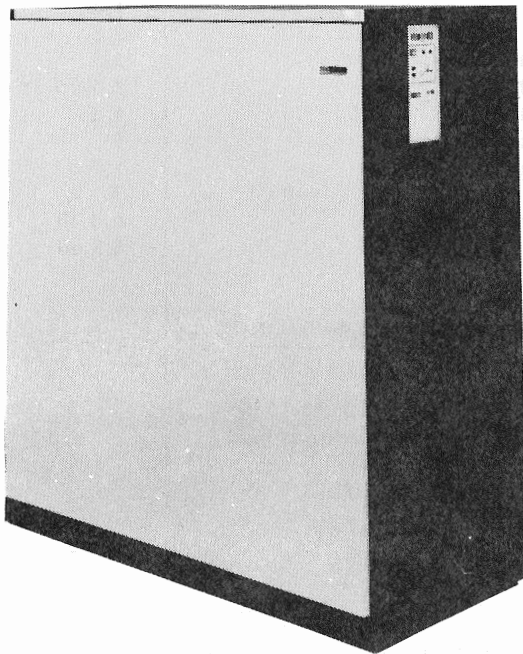
kVA	2.4
Phases	3
Plug	R&S, FS3760
Connector	R&S, FS3934
Receptacle	R&S, FS3754
Power Cord Style	D3

Environment Operating:

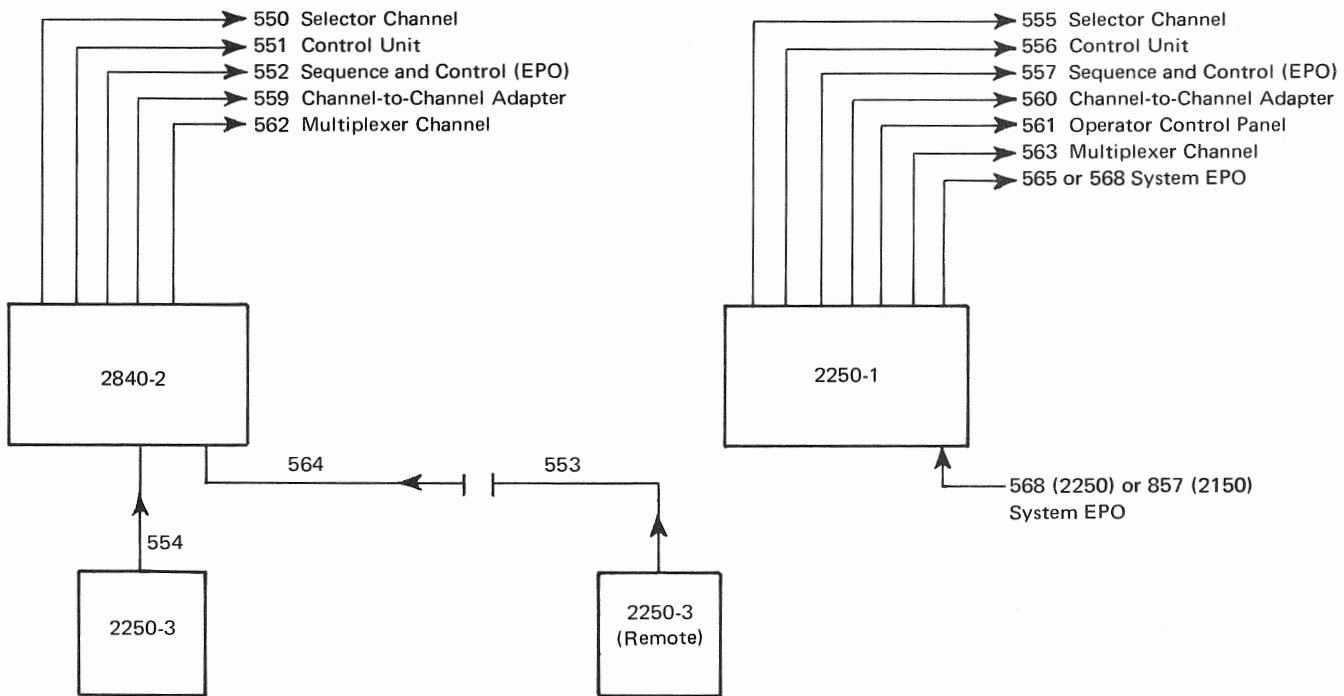
Temperature	50°-90°F (10°-32°C)
Rel Humidity	8%-80%
Max Wet Bulb	78°F (26°C)

Environment Nonoperating:

Temperature	50°-150°F (10°-66°C)
Rel Humidity	8%-80%
Max Wet Bulb	85°F (29°C)



2840 AND 2250 CABLING SCHEMATIC



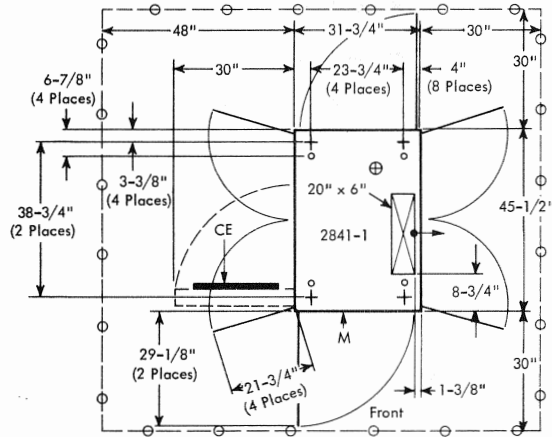
Group No.	No. of Cables	From	To	Max Length (ft)	Notes
550	2	2840-2	Selector Channel	—	1
551	2	2840-2	Control Unit	—	1
552	1	2840-2	Channel	150	2
553	1	2250-3	Connector	20	3, 9
554	2	2250-3	2840-2	40	9
555	2	2250-1	Selector Channel	—	1, 7
556	2	2250-1	Control Unit	—	1, 7
557	1	2250-1	Channel	150	2, 8
559	2	2840-2	Channel-to-Channel Adapter	—	1, 5
560	2	2250-1	Channel-to-Channel Adapter	—	1, 5, 7
561	3	2250-1	System/360 or System/370 CPU	70	4, 8
562	2	2840-2	Multiplexer Channel	—	1
563	2	2250-1	Multiplexer Channel	—	1, 7
564	1	Connector	2840-2	40	3
565	1	2250-1	System/360 or System/370 CPU	—	6, 8, 10
568	1	2250-1	2150/2250-1	—	6, 8, 10

Notes:

- Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units to a channel.
- Sequence and control (EPO).
- A remote 2250-3 may be up to 2,000 feet from the 2840. Cable in excess of that specified for group number 553 plus group number 564 must be supplied by the customer. Connectors mate so that more than one cable may be used to make a run. See Appendix C for cable specifications.
- For operator control panel attachment (one operator control panel per System/360 or System/370 CPU).
- To channel-to-channel adapter (SF #1850).
- Sum of lengths of system EPO cables \leq 70 feet (EPO switches).
- These cable groups route from cable hole #3 on 2250 plan view.
- These cable groups route from either cable hole #1 or #2 on 2250 plan view.
- These cable groups route from cable hole #3 for 2250 Model 3 units.
- Required for first operator control panel feature (SF #5475) and second operator control panel feature (SF #5476).

2841 STORAGE CONTROL MODEL 1

PLAN VIEW



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	31-3/4	45-1/2	60
(cm)	(81)	(116)	(152)

Service Clearances:

	F	R	Rt	L
Inches	30	30	30	48
(cm)	(76)	(76)	(76)	(122)

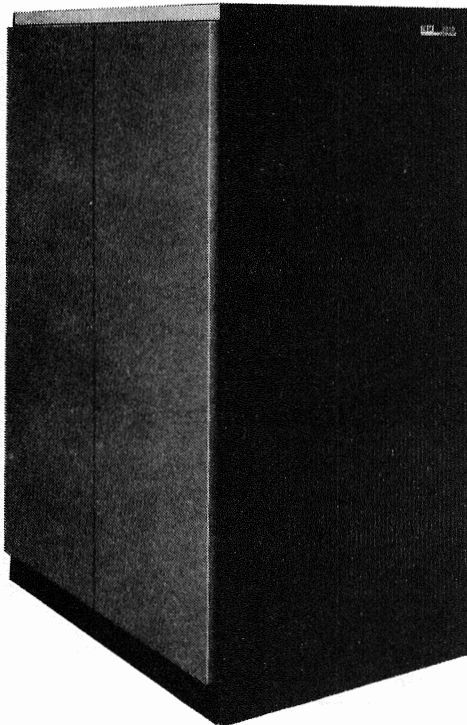
Weight: 750 lb (350 kg)

Heat Output: 3,100 BTU/hr (790 kcal/hr)

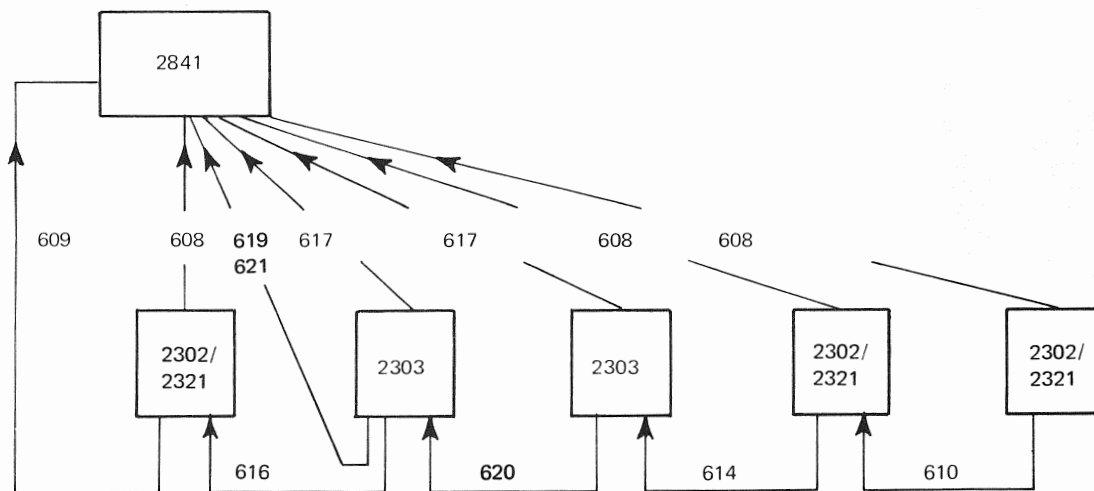
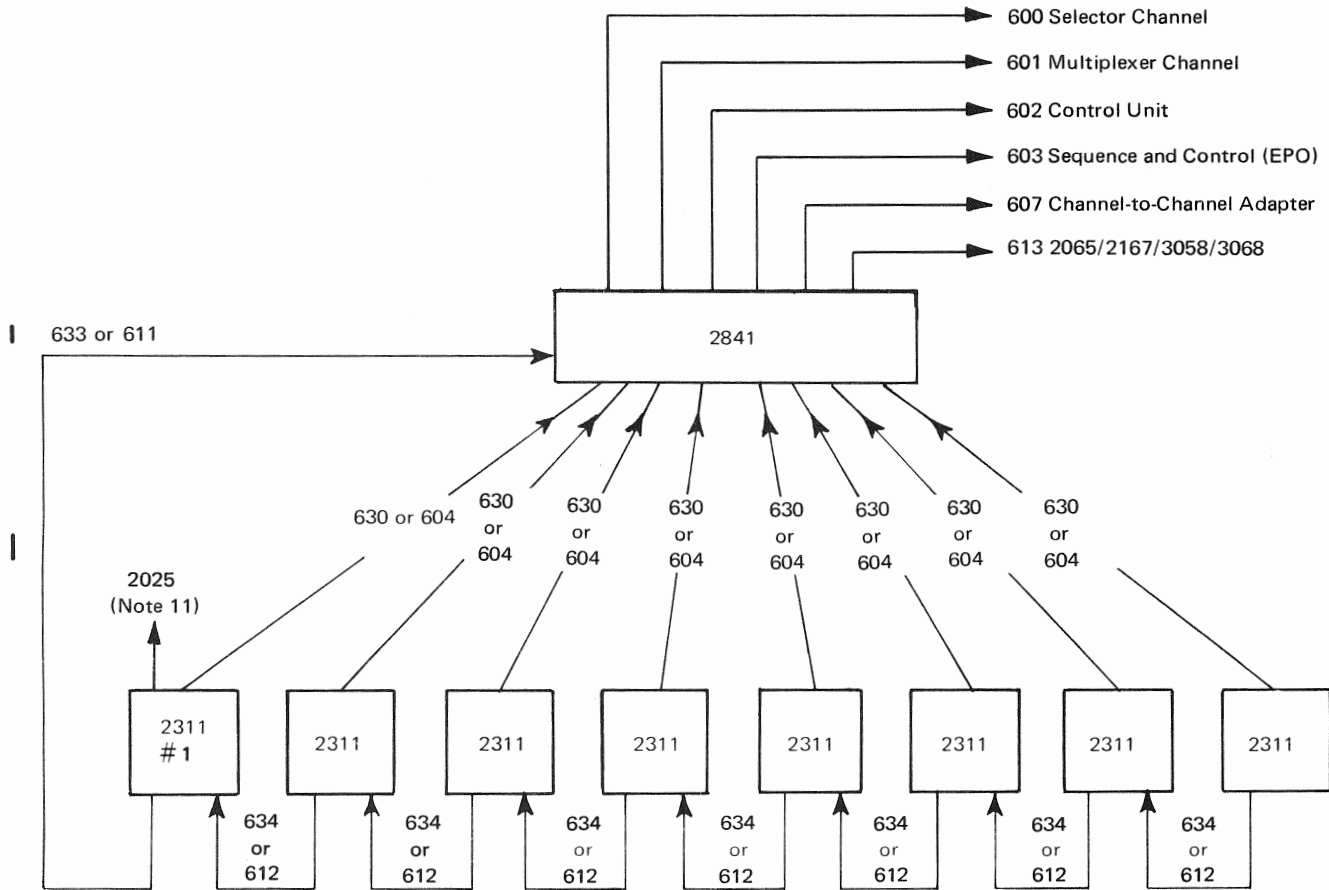
Airflow: 1,000 cfm (29 m³/min)

Power Requirements:

kVA	1.1
Phases	3
Plug	R&S, FS3760
Connector	R&S, FS3934
Receptacle	R&S, FS3754
Power Cord Style	D2



2841 STORAGE CONTROL CABLING SCHEMATIC (WORLD TRADE)



For cable groups (terminators) 624 and 625, see note 9.

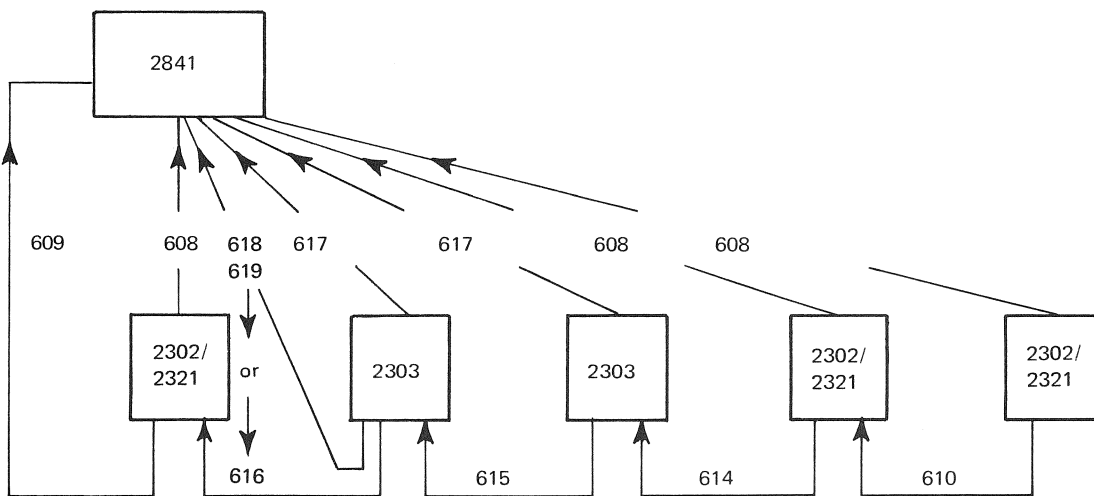
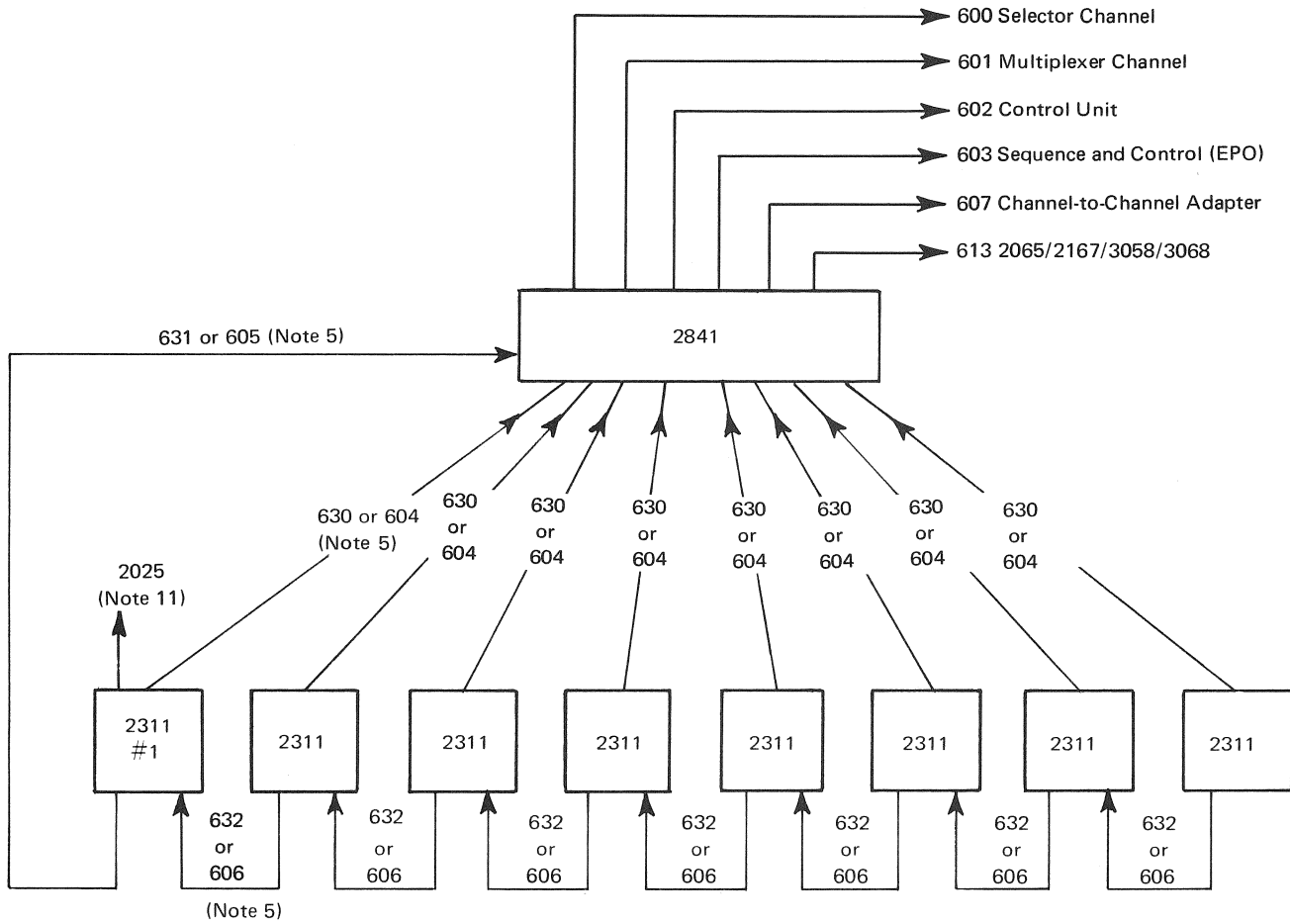
2841 STORAGE CONTROL CABLING SCHEMATIC (WORLD TRADE)

Group No.	No. of Cables	From	To	Max Length (ft)	Notes
600	2	2841	Selector Channel	—	1,12
601	2	2841	Multiplexer Channel	—	1,12
602	2	2841	Control Unit	—	1,12
603	1	2841	Channel	150	2,12
604	1	2311	2841	55	5,11
607	2	2841	Channel-to-Channel Adapter	—	1,4,12
608	1	Storage	2841	100	—
609	4	Storage	2841	—	3
610	4	Storage	Storage	—	3
611 (605)	2	2311 #1	2841	—	3,5,11,13
612 (606)	2	2311	2311	—	3,5,11,13
613	1	2841	2065/2167/3058/3068	150	10
614	4	2321	2303	—	3
616	4	2303	2321	—	3,8
617	1	2303	2841	90	6
619	4	2303 #1	2841	90	8
620 (615)	5	2303	2303	—	3,13
621 (618)	1	2303 #1	2841	90	7,13
624	—	2303 Terminator	—	—	9
625	—	2302 Terminator	—	—	9
630	1	2311	2841	55	5
633 (631)	2	2311 #1	2841	—	5,13
634 (632)	2	2311	2311	—	5,13

Notes:

1. Last 2841 must be within 100 feet (75 feet on System/360 Model 40 when 2303 is attached).
2. Sequence and control (EPO).
3. The total length of each of the following groups should not exceed 100 feet: (611 plus 612s), (621 plus 620 plus 614 plus 610), (619 plus 620 plus 614 plus 610), (609 plus 616 plus 620 plus 614 plus 610), and (633 plus 634).
4. To connect to channel-to-channel adapter (SF #1850).
5. Specify cable groups 630, 633, and/or 634 for all new cable orders. Cable groups 604, 611, and/or 612 need not be replaced in existing installations, unless SF #9160 is installed on 2841.
6. One per 2303.
7. One per 2303 adapter.
8. Use cable group 616 to attach 2303 to 2321 or 2302. Use cable group 619 to attach 2303 to 2841. Order cable group 619 or 616, *not both*.
9. End-of-line terminator required must be specified on cable order form, unless 2321 is last unit on line.
10. For SF #6148 only.
11. The 2311 cable used in conjunction with 2841 cannot be used with direct 2025 attachment. See "System/360 Model 25 Cabling Schematic," GC19-0001, for cables required.
12. One group required for each channel when SF #8100 is installed. Maximum length applies to each channel.
13. For 60-Hz machines, use group number in parentheses. See cable listing under "2841 Storage Control Cabling Schematic (U.S.);" for details.

2841 STORAGE CONTROL CABLING SCHEMATIC (U.S.)



For cable groups (terminators) 624 and 625, see note 9.

2841 STORAGE CONTROL CABLING SCHEMATIC (U.S.)

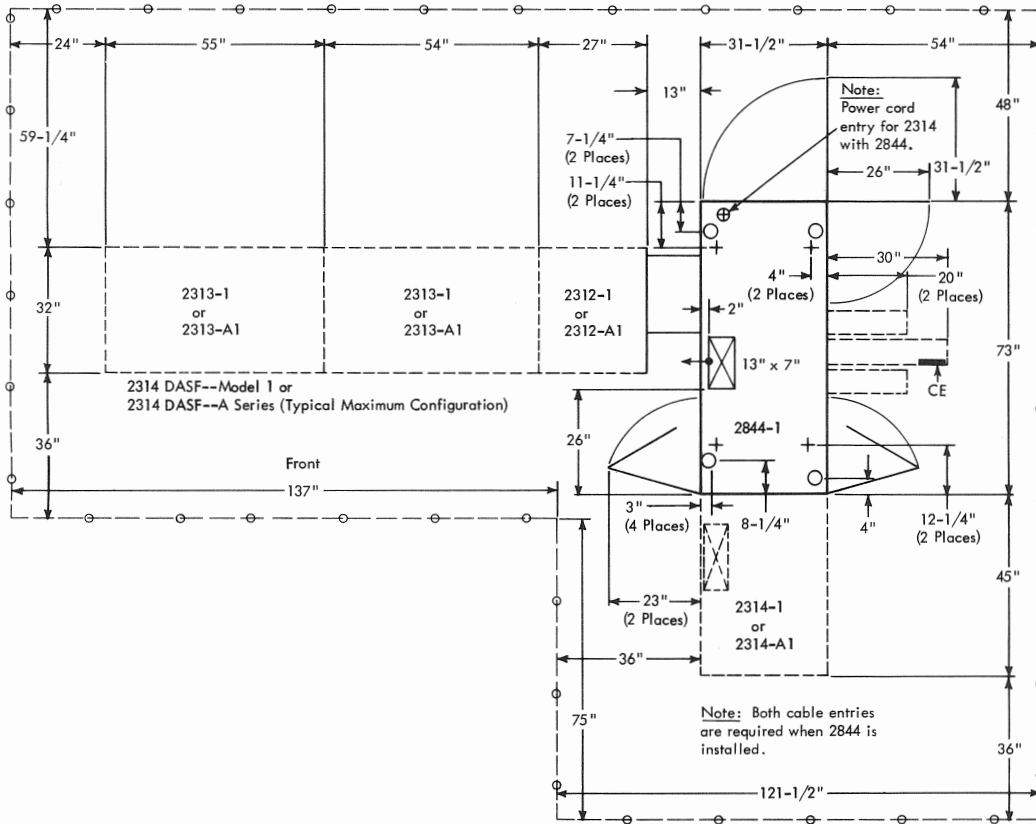
Group No.	No. of Cables	From	To	Max Length (ft)	Notes
600	2	2841	Selector Channel	—	1, 12
601	2	2841	Multiplexer Channel	—	1, 12
602	2	2841	Control Unit	—	1, 12
603	1	2841	Channel	150	2, 12
604	1	2311	2841	55	5, 11
605	2	2311 #1	2841	—	3, 5, 11
606	2	2311	2311	—	3, 5, 11
607	2	2841	Channel-to-Channel Adapter	—	1, 4, 12
608	1	Storage	2841	100	—
609	4	Storage	2841	—	3
610	4	Storage	Storage	—	3
613	1	2841	2065/2167/3058/3068	150	10
614	4	2321	2303	—	3
615	5	2303	2303	—	3
616	4	2303	2321	—	3, 8
617	1	2303	2841	90	6
618	1	2303 #1	2841	—	3, 7
619	4	2303 #1	2841	—	3, 7, 8
624	—	2303 Terminator	—	—	9
625	—	2302 Terminator	—	—	9
630	1	2311	2841	55	5
631	2	2311 #1	2841	—	5
632	2	2311	2311	—	5

Notes:

1. Last 2841 must be within 100 feet (75 feet on System/360 Model 40 when 2303 is attached).
2. Sequence and control (EPO).
3. The total length of each of the following groups should not exceed 100 feet: (605 plus 606s), (631 plus 632s), (618 plus 615 plus 614 plus 610), (619 plus 615 plus 614 plus 610), and (609 plus 616 plus 615 plus 614 plus 610).
4. To connect to channel-to-channel adapter (SF #1850).
5. Specify cable groups 630, 631, and/or 632 for all new cable orders. Cable groups 604, 605, and/or 606 need not be replaced in existing installations, unless SF #9160 is installed in 2841.
6. One per 2303.
7. One per 2303 adapter.
8. Use cable group 616 to attach 2303 to 2321 or 2302. Use cable group 619 to attach 2303 to 2841. Order cable group 619 or 616, *not both*.
9. End-of-line terminator required must be specified on cable order form, unless 2321 is last unit on line.
10. For SF #6148 only.
11. The 2311 cable used in conjunction with 2841 cannot be used with direct 2025 attachment. See "System/360 Model 25 Cabling Schematic," GC22-6820, for cables required.
12. One group required for each channel when SF #8100 is installed. Maximum length applies to each channel.

**2844 AUXILIARY STORAGE CONTROL MODEL 1
FOR 2314 DIRECT ACCESS STORAGE FACILITY**

PLAN VIEW



Note: For cabling information, see Section 4, "Units With Integral or Abutted Controls."

**2844 AUXILIARY STORAGE CONTROL MODEL 1
FOR 2314 DIRECT ACCESS STORAGE FACILITY**

SPECIFICATIONS

Dimensions: (2844)

	F	S	H
Inches	*	*	60
(cm)	(*)	(*)	(152)

Service Clearances:

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

Weight: 1,300 lb** (590 kg**)

Heat Output: 3,200 BTU/hr** (810 kcal/hr**)

Airflow: 1,000 cfm** (29 m³/min**)

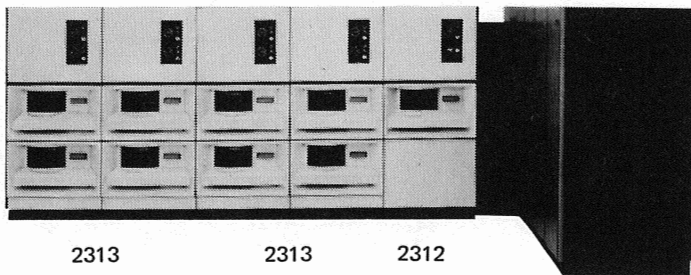
Power Requirements:**

kVA	1.3	
Phases	3	
Plug	R&S, SC7328	} 2314 With 2844
Connector	R&S, SC7428	
Receptacle	R&S, SC7324	
Power Cord Style	E1	

Notes:

* See plan view.

** Refer to 2314 machine specification pages for individual unit specifications. Add 2314 requirements to 2844 to obtain total requirements for heat output, weight, airflow, and power for the facility.



2313

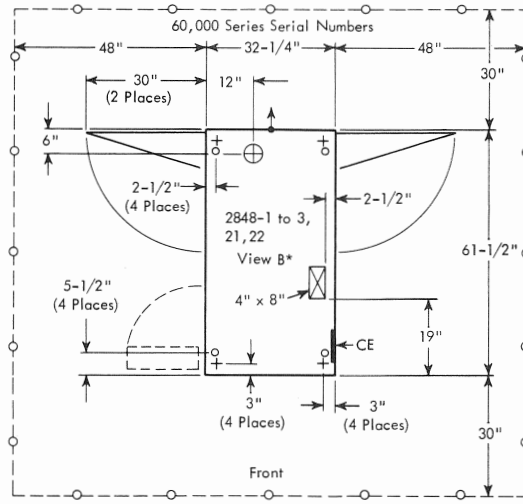
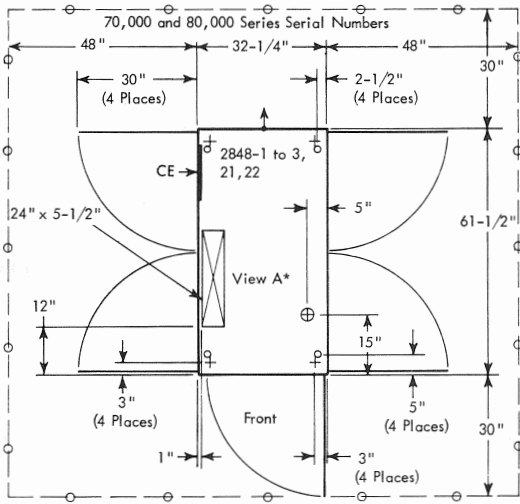
2313

2312

2844

2848 DISPLAY CONTROL MODELS 1 TO 3, 21, AND 22

PLAN VIEW



*Machines may be provided in either configuration (no choice).
Cable opening in raised floor should be placed between the two possible cable exit holes.

2848 DISPLAY CONTROL MODELS 1 TO 3, 21, AND 22

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	32-1/4	61-1/2	70-3/4
(cm)	(82)	(156)	(180)

Service Clearances:

	F	R	Rt	L
Inches	30	30	48	48
(cm)	(76)	(76)	(122)	(122)

Weight: 1,150 lb (530 kg)

Heat Output: 6,100 BTU/hr (1.550 kcal/hr)

Airflow: 400 cfm (12 m³/min)

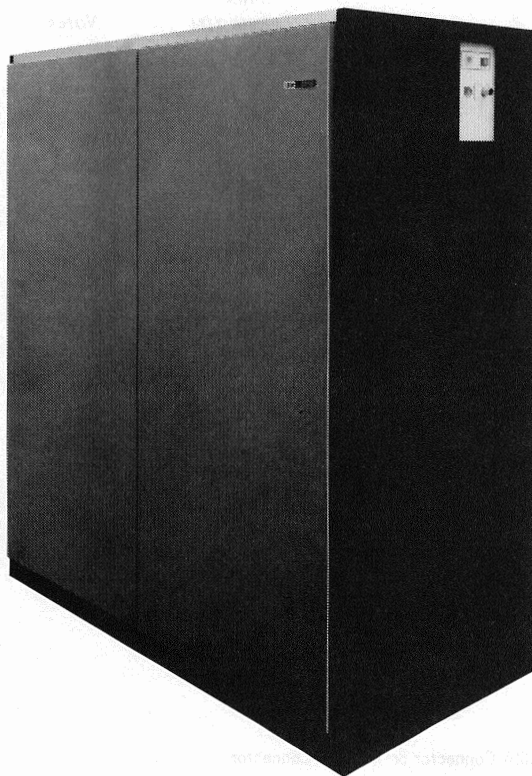
Power Requirements:	50 Hz	60 Hz
kVA	2.0	2.0
Phases	3	1
Plug	R&S, FS3750	
Connector	R&S, FS3933	
Receptacle	R&S, FS3753	
Power Cord Style	D1	A3

Environment Operating:*

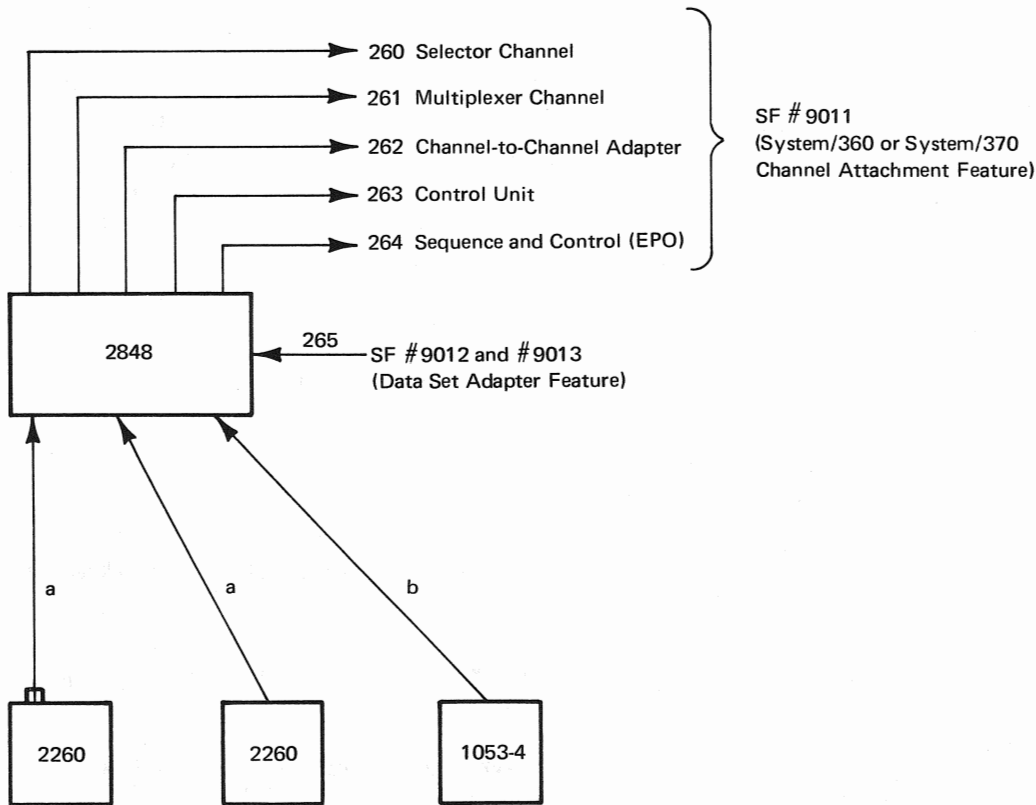
Temperature	60°-90°F (16°-32°C)
Rel Humidity	8%-80%
Max Wet Bulb	78°F (26°C)

Notes:

* These conditions must exist and power must be on for at least two hours prior to start of operation.



2848, 2260, AND 1053 CABLING SCHEMATIC



Group No.	No. of Cables	From	To	Max Length (ft)	Notes
a	1	2260	2848	2,000	4
b	1	1053-4	2848	2,000	4
260	2	2848	Selector Channel	-	1
261	2	2848	Multiplexer Channel	-	1
262	2	2848	Channel-to-Channel Adapter	-	1,3
263	2	2848	Control Unit	-	1
264	1	2848	Channel	150	2
265	1	Data Set	2848	40	

Notes:

- Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units.
- Sequence and control (EPO).
- To channel-to-channel adapter (SF #1850).
- IBM-supplied connectors; customer-supplied cable. See Appendix C for cable specifications.
- IBM 3977 or equivalent.
- For use with SF #9012 and #9013. See "Cables from Non-IBM Devices" for cable specifications.

Cables from Non-IBM Devices

Group No.	Termination
265	1 EIA RS-232A Connector or 1 CCITT Connector

CABLE INSTALLATION PRACTICE FOR 2260/2848 AND 1053/2848

Customer-assembled Cables

The customer may elect to construct his own 2260/2848 or 1053/2848 cables. When ordering bulk cable from IBM or other sources, the customer should indicate the continuous unit-to-unit cable lengths to the cable suppliers so that unplanned splicing may be avoided. If splicing is required, it should be accomplished as shown in the following sections. See Appendix C for part numbers or cable descriptions.

The connector groups for the cables listed previously are to be ordered from IBM without charge. The package will contain a connector group and step-by-step instructions for assembling connectors to each end of one cable. It is recommended that personnel skilled in termination of coaxial cables and in the use of termination crimping tools handle the assembling of connectors. The customer must provide the required tools for assembling the connectors. (See "Special Tools Required" in Appendix C.)

Cable Runs

The cabling between the 2260 and 2848 should be separated from the electrical wiring of the building's lampholders, outlets, and power lines by at least 3 inches (76,2 mm). The cables should not run close to unshielded high-power or high-frequency energy sources. A malfunction of the 2260/2848 may occur if these requirements are not met because of induced electrical noise in the video cable. When using two runs of 323291 (RG62A/U), it is recommended that an identification tag be attached to one run (both ends). This identification will be required for terminating cable-to-connector groups.

Vertical cabling runs of the 2260/2848 and 1053/2848 cables must be supported, either individually or in a tight bundle, every 10 feet (3m).

Cabling to be used outdoors, aerial or buried, must be approved for that use.

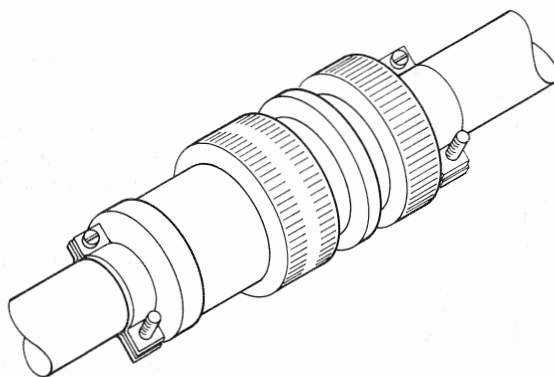
To facilitate pulling preassembled cables through enclosed conduits or raceways, it may be desirable to remove the connector from the 2848 end of 2260/2848 cables and from the 1053 end of 1053/2848 cables. To remove and reinstall the connector:

1. Remove connector hood and insulator strip or strain relief from cable.

2. For 2848/2260 cables, remove wires from connector by gripping terminal (not wire) with needle-nose pliers.
For 2848/1053 cables, remove wires from connector by using extraction tool (AMP 305183/IBM 2108398) by pushing terminal from the face of the connector and out the wiring side.
3. Tape loose wires back to cable jacket. Care should be taken so that a cable puller or other equipment will put the strain on the main cable body and not on the loose wires.
4. Reassemble wires per the applicable chart after cable has been installed into conduit or raceway.
5. Reinstall insulator strip and connector hood or strain relief.

Cable Splice Using Quick-disconnect Connector

The customer may elect to splice or install a quick-disconnect connector (see accompanying illustration) to the 2260/2848 cables or the 1053/2848 cables. The connector has complete environmental sealing and may be potted with resilient silicone rubber for waterproof applications. A maximum of four splices are allowed per cable. The customer can purchase the IBM kit or the commercial parts as indicated in the following chart. The IBM kit will contain parts for one splice and step-by-step installation instructions. When using commercial parts, it is recommended that the IBM installation procedure be used for installing the connector. Copies of the procedure may be ordered through IBM Branch Offices. A 10- to 15-watt soldering iron and heat gun are required for installing the connector.



Note: Connector assembly is used for splicing 2848 external cables and it is also used as a quick disconnect.

<i>Cable Assembly</i>	<i>IBM Kit Number</i>	<i>IBM Procedure</i>	<i>Part Description</i>	<i>Commercial Parts Quantity</i>	<i>Commercial Source</i>
2260/2848	5727379	5727381	Plug 67-5076 Receptacle 67-5077 1/4" (6,4 mm) Shrink Sleeving Clamp Boot	1 1 6" (152,4 mm) *	Amphenol Corporation Amphenol Corporation Electrical Supplier Electrical Supplier
1053/2848	5727380	5727382	Plug 67-01C22-67P (104) Receptacle 67-06 C22-67S (104) Clamp Boot	1 1 **	Amphenol Corporation Amphenol Corporation Electrical Supplier

* One each of MS39056-3, MS39056-4, and MS39056-5.

** One each of MS39056-5, MS39056-6, and MS39056-7.

Cable Splice (Alternate Method) for 2260/2848 and 1053/2848 Cables

The customer may select an alternate method of splicing by procuring the following IBM splicing kits or commercial parts. This splice is not recommended for environmental applications. For applications where exposures to the elements of weather exist, it is recommended that the cable

connector specified in "Cable Splice Using Quick-disconnect Connector" be used. A maximum of three splices are allowed per cable. The IBM kits will contain step-by-step installation instructions. The special tools that the customer must provide to make a splice are a Burndy Corporation Y9M hand crimp tool and Raychem Minigun CV-5300 or equivalent.

<i>Cable Assembly</i>	<i>Bulk Cable</i>	<i>IBM Kit Number</i>	<i>Description and Commercial Part Numbers</i>	<i>Quantity</i>	<i>Commercial Source</i>
Display Only					
5727685 or 5728291*	2 runs of 323921* RG62A/U	5727719	BNC Connector Plug UG-260 B/U	2	Electrical Supplier
			BNC Connector Plug UG-261 3/4" (19,0 mm) Shrink Sleeving	2 10" (254,0 mm)	Electrical Supplier Electrical Supplier
Keyboard Attachment					
5727686 or 5728293	5213866	5727720	Butt Connector YSV-18 1/8" (3,2 mm) Shrink Sleeving 3/4" (19,0 mm) Shrink Sleeving	12 16" (406,4 mm) 16" (406,4 mm)	Burndy Corporation Electrical Supplier Electrical Supplier
Combined Keyboard Display					
5727687** or 5728292	5214887 or 5213814	5727721	BNC Connector Plug UG-260 B/U	2	Electrical Supplier
			BNC Connector Plug UG-261 B/U	2	Electrical Supplier
			Butt Connector YSV-18 1/8" (3,2 mm) Shrink Sleeving 1/4" (6,4 mm) Shrink Sleeving 3/4" (19,0 mm) Shrink Sleeving	16 20" (508,0 mm) 20" (508,0 mm) 20" (508,0 mm)	Burndy Corporation Electrical Supplier Electrical Supplier Electrical Supplier
1053 Attachment					
5728298	5213821	5727722	Butt Connector YSV-18 1/8" (3,2 mm) Shrink Sleeving 3/4" (19,0 mm) Shrink Sleeving	24 24" (609,6 mm) 16" (406,4 mm)	Burndy Corporation Electrical Supplier Electrical Supplier

* When one run of cable is bulk cable (IBM 532029), BNC connectors UG-1033/U and UG-1056/U should be used (included in kit).

** Formerly cable assembly 5729793. If splicing is required for this cable, order kits or parts for cable assemblies 5728291 and 5728293.

When the customer elects to procure the commercial parts, the following recommended procedures should be used:

1. The multiple conductor cable splice should be covered with a 3/4-inch (19,0-mm) shrink sleeving or high-quality electrical tape. Be sure to slide sleeving onto cable body before making the first splice.
2. When splicing the coaxial wire or shielded wire (part 532029), the appropriate BNC connector as specified in the preceding chart must be used so that reflections and attenuations will be minimized. The BNC connector must be insulated with 3/4-inch (19,0-mm) diameter shrink sleeving after the two halves have been mated. Refer to manufacturer's procedures in Amphenol Catalog CC-7, or an equivalent manufacturer's catalog, for installation instructions.
3. Splicing of the shielded wire within the multiple wire jacket cable may be accomplished by using Burndy Corporation YSV-18 butt connector or equivalent butt connector. Be sure the butt connector of the inner wire is insulated with 1/8-inch (3,2-mm) shrink tubing before butt-connecting the shield.
4. Splice all nonshielded conductors (AWG #18, #20, and #22 wires), using Burndy Corporation YSV-18 butt connector or an equivalent butt connector; all splices should be staggered, soldered after crimping, and insulated with 1-inch (25,4-mm) long shrink sleeving. Be sure to slide sleeving onto wire leads before crimping butt connector.

Terminations of 2260/2848 Cables at 2848 End and 1053/2848 Cables at 1053 End

5727686		
Wire Number		Connector Position
1	Blk #18 AWG	C
2	Blk #18 AWG	E
3	Blk #22 AWG	R
4	Wh #22 AWG	Q
5	Red #22 AWG	P
6	Blu #22 AWG	N
7	Gra #22 AWG	M
8	Org #22 AWG	L
9	Aqu #22 AWG	K
10	Vio #22 AWG	J
11	Yel #22 AWG	F
12	Brn #22 AWG	G

5727687		
Wire Number		Connector Position
1	Coax Yel	A
1	Blk (Shield)	B
2	Blk #18 AWG	B
3	Wh #18 AWG	C
4	Blk #22 AWG	R
5	Wh #22 AWG	Q
6	Red #22 AWG	P
7	Blu #22 AWG	N
8	Gra #22 AWG	M
9	Org #22 AWG	L
10	Aqu #22 AWG	K
11	Vio #22 AWG	J
12	Yel #22 AWG	F
13	Brn #22 AWG	G
14	Coax Wh/Blk	D
14	Blk (Shield)	C
15	Wh/Red #22 AWG	E
16	Wh/Blu #22 AWG	H

5728291 and 5727685		
Wire Number		Connector Position
1	Yel	A
1	Blk (Shield)	B
2	Wh	D
2	Blk (Shield)	B

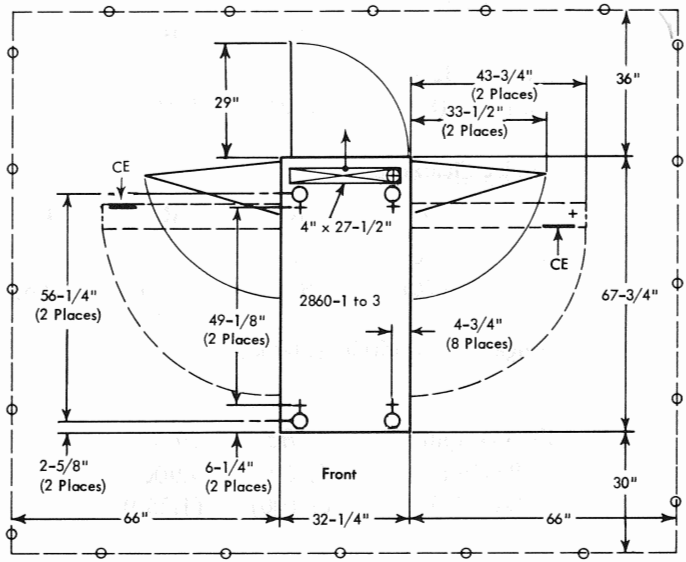
5728292		
Wire Number		Connector Position
1	Bare Coax	A
1	Blk (Shield)	B
2	Blk #18 AWG	F
3	Wh #18 AWG	G
4	Blk #22 AWG	R
5	Wh #22 AWG	Q
6	Red #22 AWG	P
7	Blu #22 AWG	N
8	Gra #22 AWG	M
9	Org #22 AWG	L
10	Aqu #22 AWG	K
11	Vio #22 AWG	J
12	Yel #22 AWG	H
13	Brn #22 AWG	C
14	Wh/Blk #22 AWG	D
14	Blk (Shield)	B

5728293		
Wire Number		Connector Position
1	Blk #18 AWG	F
2	Wh # 18 AWG	G
3	Blk #22 AWG	R
4	Wh #22 AWG	Q
5	Red #22 AWG	P
6	Blu #22 AWG	N
7	Gra #22 AWG	M
8	Org #22 AWG	L
9	Aqu #22 AWG	K
10	Vio #22 AWG	J
11	Yel #22 AWG	H
12	Brn # 22 AWG	C

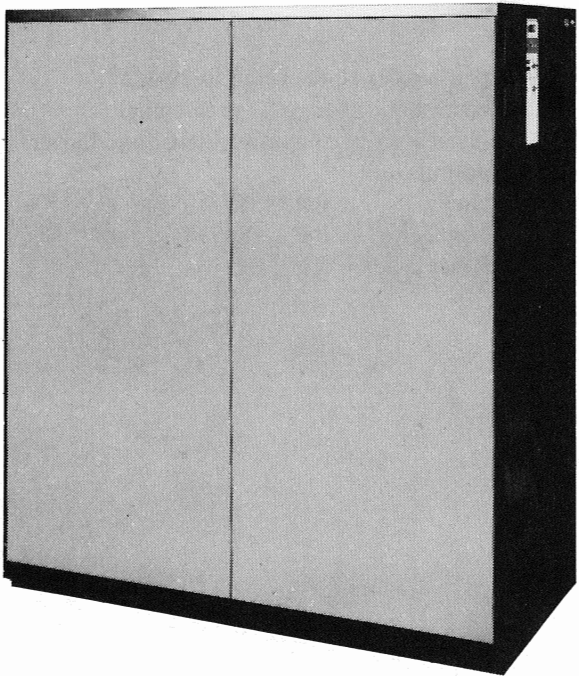
5728298		
Wire Number		Connector Position
1	Blk #18 AWG	K
2	Wh #18 AWG	J
3	Red #18 AWG	P
4	Yel #18 AWG	M
5	Org #18 AWG	L
6	Blu #18 AWG	N
7	Brn #18 AWG	BB
8	Vio #18 AWG	FF
9	Aqu #18 AWG	NN
10	Gra #18 AWG	R
11	Wh/Red #18 AWG	V
12	Wh/Yel #18 AWG	T
13	Grn/Yel #18 AWG	Z
14	Blk #20 AWG	H
15	Wh #20 AWG	D
16	Red #20 AWG	F
17	Yel #20 AWG	MM
18	Org #20 AWG	S
19	Blu #20 AWG	CC
20	Brn #20 AWG	W
21	Vio #20 AWG	AA
22	Aqu #20 AWG	KK
23	Gra #20 AWG	E
24	Wh/Red #20 AWG	C

2860 SELECTOR CHANNEL MODELS 1 TO 3

PLAN VIEW



Note: For cabling information, see host system CPU.



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	32-1/4*	67-3/4*	70-3/4
(cm)	(82*)	(172*)	(180)

Service Clearances:

	F	R	Rt	L
Inches	30	36	66	66
(cm)	(76)	(91)	(168)	(168)

Weight:

	Model 1	Model 2	Model 3
lb	1,150	1,450	1,750
(kg)	(530)	(660)	(800)

Heat Output:

	Model 1	Model 2	Model 3
BTU/hr	4,200	4,400	4,700
(kcal/hr)	(1,100)	(1,150)	(1,200)

Airflow:

	Model 1	Model 2	Model 3
cfm	420	740	1,060
(m ³ /min)	(12)	(21)	(31)

Power Requirements:

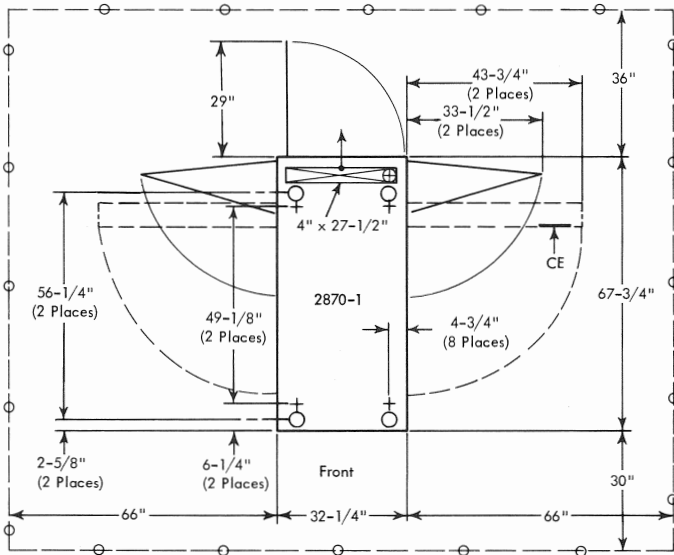
kVA	1.6	1.7	1.8
Phases	3	3	3
Plug	R&S, FS3730		
Connector	R&S, FS3914		
Receptacle	R&S, FS3744		
Power Cord Style	B1		

Notes:

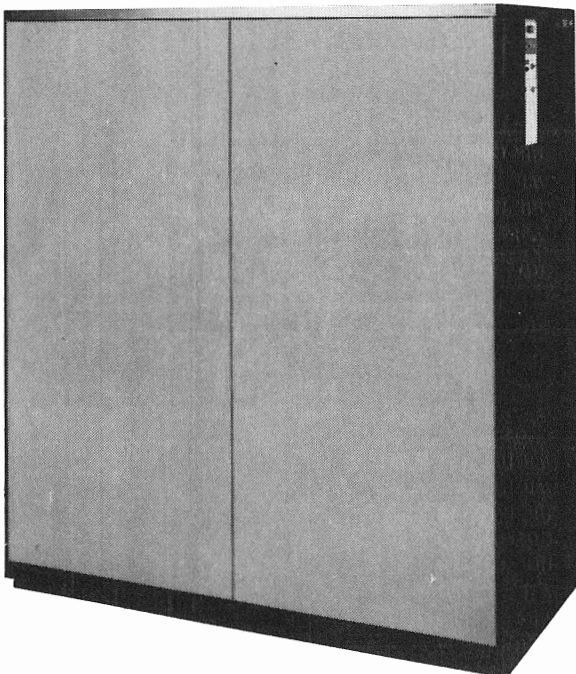
* Dimensions can be reduced to 29-1/2" (75 cm) x 60" (152 cm) for shipping.

2870 MULTIPLEXER CHANNEL MODEL 1

PLAN VIEW



Note: For cabling information, see host system CPU.



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	32-1/4*	67-3/4*	70-3/4
(cm)	(82*)	(172*)	(180)

Service Clearances:

	F	R	Rt	L
Inches	30	36	66	66
(cm)	(76)	(91)	(168)	(168)

Weight: 1,450 lb (660 kg)

Heat Output:	50 Hz	60 Hz
BTU/hr	4,200	4,900
(kcal/hr)	(1.100)	(1.250)

Airflow:

cfm	1,060	1,060
(m ³ /min)	(31)	(31)

Power Requirements:

kVA	1.6	1.9
Phases	3	3
Plug	R&S, FS3730**	
Connector	R&S, FS3914**	
Receptacle	R&S, FS3744**	
Power Cord Style	B1	

Notes:

* Dimensions can be reduced to 29-1/2" (75 cm) x 60" (152 cm) for shipping.

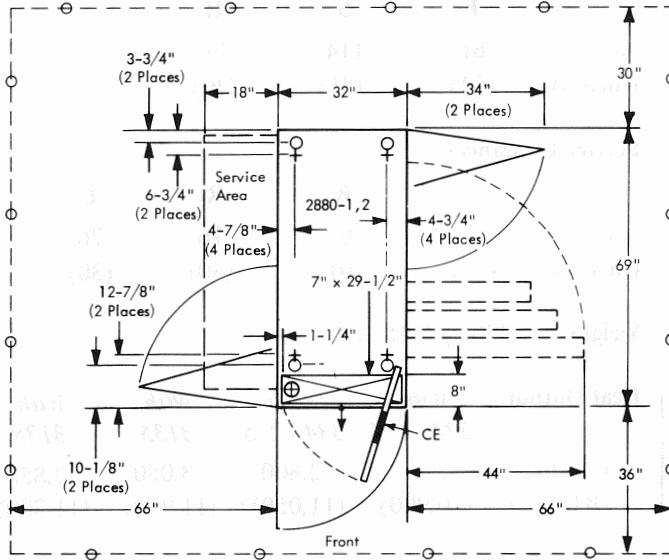
** Applicable to serial number 70502 and higher.

Prior units use:

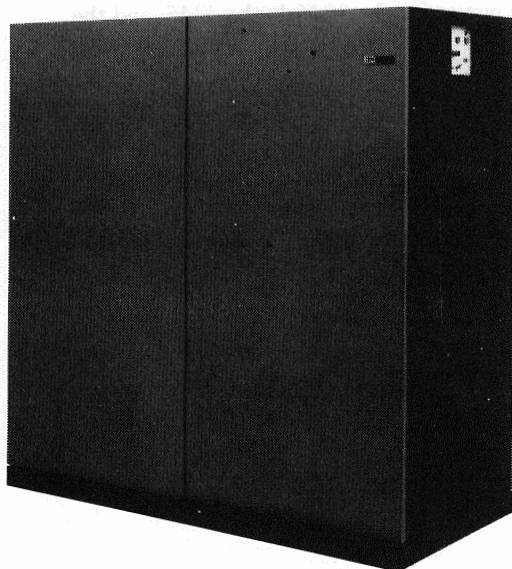
Plug	R&S, FS3760
Connector	R&S, FS3934
Receptacle	R&S, FS3754

2880 BLOCK-MULTIPLEXER CHANNEL MODELS 1 AND 2

PLAN VIEW



Note: For cabling information, see host system CPU.



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	32	69	71
(cm)	(81)	(175)	(180)

Service Clearances:

	F	R	Rt	L
Inches	36	30	66	66
(cm)	(91)	(76)	(168)	(168)

Weight:	Model 1	Model 2
lb	1,970	2,385
(kg)	(900)	(1.100)

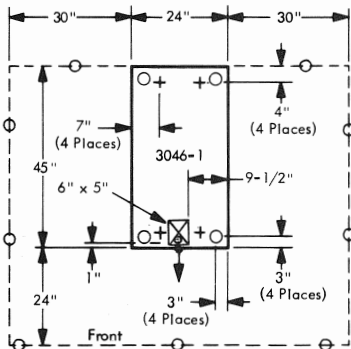
Heat Output:	Model 1	Model 2
BTU/hr	13,700	22,200
(kcal/hr)	(3.450)	(5.600)

Airflow:	Model 1	Model 2
cfm	550	900
(m ³ /min)	(16)	(26)

Power Requirements:	Model 1	Model 2
kVA	4.8	7.3
Phases	3	3
Plug	R&S, FS3760	
Connector	R&S, FS3934	
Receptacle	R&S, FS3754	
Power Cord Style	D1	

3046 POWER UNIT MODEL 1

PLAN VIEW



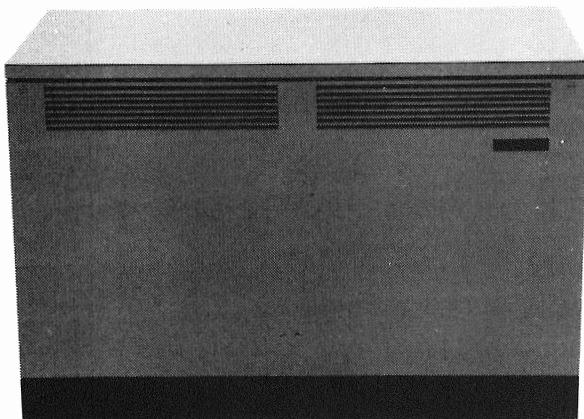
Note: For cabling information, see 3145.

Branch Circuit Requirements

Voltage*	200	208	220	230	235	380	408
Ampacity	50	60	50	60	50	30	30
Max Cont Load (A) **							
With 3345-1, 4	24	23	22	21	21	13	12
With 3345-2, 5	34	32	31	29	29	18	17
With 3135	44	42	39	38	37	23	21
With 3138	37	35	32	31	30	16	14
Plug Connector Receptacle	R&S, SC7328 R&S, SC7428 R&S, SC7324						
Power Cord Style	UK: E8 Europe (except UK): E4 Japan: E9 Other: E-						

Branch Circuit Protection ***

200/208/220 230/235V		380/408V	
Sec	A	Sec	A
2.0	330	2.0	150
Continuous	55/60†	Continuous	30
Adjustable	500	Adjustable	300
Trip		Trip	



SPECIFICATIONS

Dimensions:

	F	S	H
cm	61	114	74
(Inches)	(24)	(45)	(29)

Service Clearances:

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

Weight: 370 kg (815 lb)

Heat Output:	With 3345-1, 4	With 3345-2, 5	With 3135	With 3138
kcal/hr	2.750	2.800	3.050	2.850
(BTU/hr)	(10,900)	(11,050)	(11,950)	(11,300)

Airflow: ††				
m ³ /min	9	9	9	9
(cfm)	(300)	(300)	(300)	(300)

Power Requirements: †††

kVA	3.6	3.8	4.4	4.4
Phases	3	3	3	3

Notes:

* 200V applies to 50-Hz and 60-Hz World Trade systems. 220/235/380/408V apply to 50-Hz World Trade systems.

** Includes power for the 3046-1, the 3345, and the 3135 or 3138.

*** Because of the nature of inrush currents, the branch circuit protection device requires characteristics that are equal to or slower than those specified in the Branch Circuit Protection table.

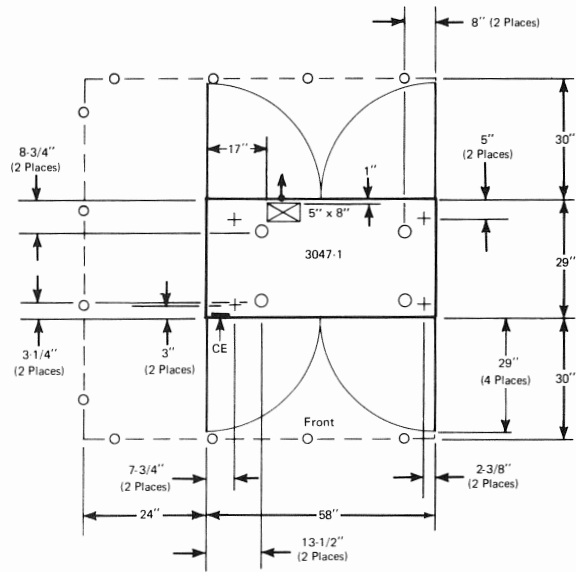
† Systems installed U.S. and Canada require 60A when 60A R&S plug is used.

†† Air may be exhausted either to right or left by interchanging the right and left covers.

††† Includes power used and dissipated as heat within the 3046-1. Does not include power passed on to the 3345, the 3135, or the 3138. For current drawn, see Branch Circuit Requirements.

3047 POWER UNIT MODEL 1

PLAN VIEW



Note: For cabling information, see 3145, 3148.

SPECIFICATIONS

Dimensions:

	F	S	H
cm	147	74	102
(Inches)	(58)	(29)	(40)

Service Clearances:

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

Weight:	<i>50 Hz</i>	<i>60 Hz</i>
kg	420	390
(lb)	(915)	(850)

Heat Output: 4.700 kcal/hr (18,500 BTU/hr)

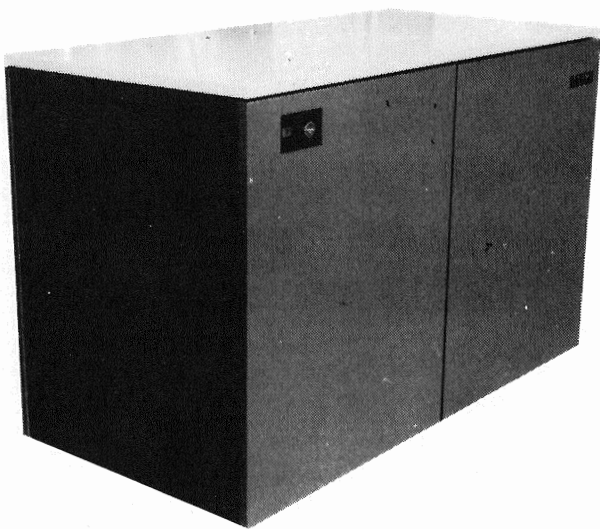
Airflow: 11 m³/min (380 cfm)

Power Requirements: *

kVA	6.7
Phases	3

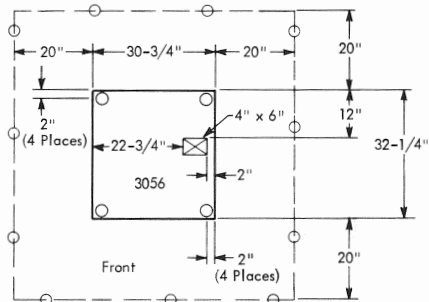
Note:

*Powered from 3145, 3148.

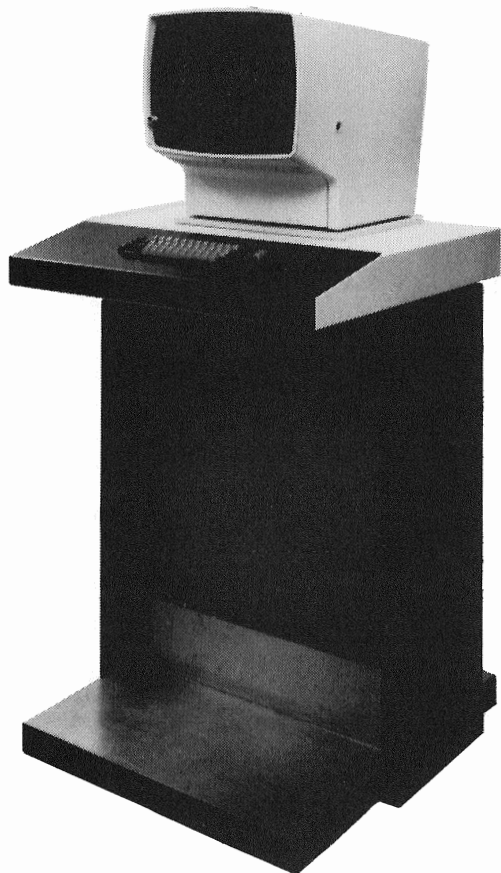


**3056 REMOTE SYSTEM CONSOLE FOR SYSTEM/370
 MODEL 158 AND MODEL 158 MULTIPROCESSING**

PLAN VIEW



Note: For cabling information, see 3158 and 3158-3.



SPECIFICATIONS

Dimensions: *

	F	S	H
Inches	30-3/4	32-1/4	62**
(cm)	(78)	(82)	(157)**

Service Clearances:

	F	R	Rt	L
Inches	20	20	20	20
(cm)	(51)	(51)	(51)	(51)

Weight: 150 lb (69 kg)

Heat Output: 550 BTU/hr (140 kcal/hr)

Airflow: Convection only

Power Requirements: ***
 kVA 0.2

Environment Operating:
 Temperature 50^o-110^oF (10^o-43^oC)
 Rel Humidity 8%-80%
 Max Wet Bulb 85^oF (29^oC)

Environment Nonoperating:
 Temperature 50^o-125^oF (10^o-52^oC)
 Rel Humidity 8%-80%
 Max Wet Bulb 85^oF (29^oC)

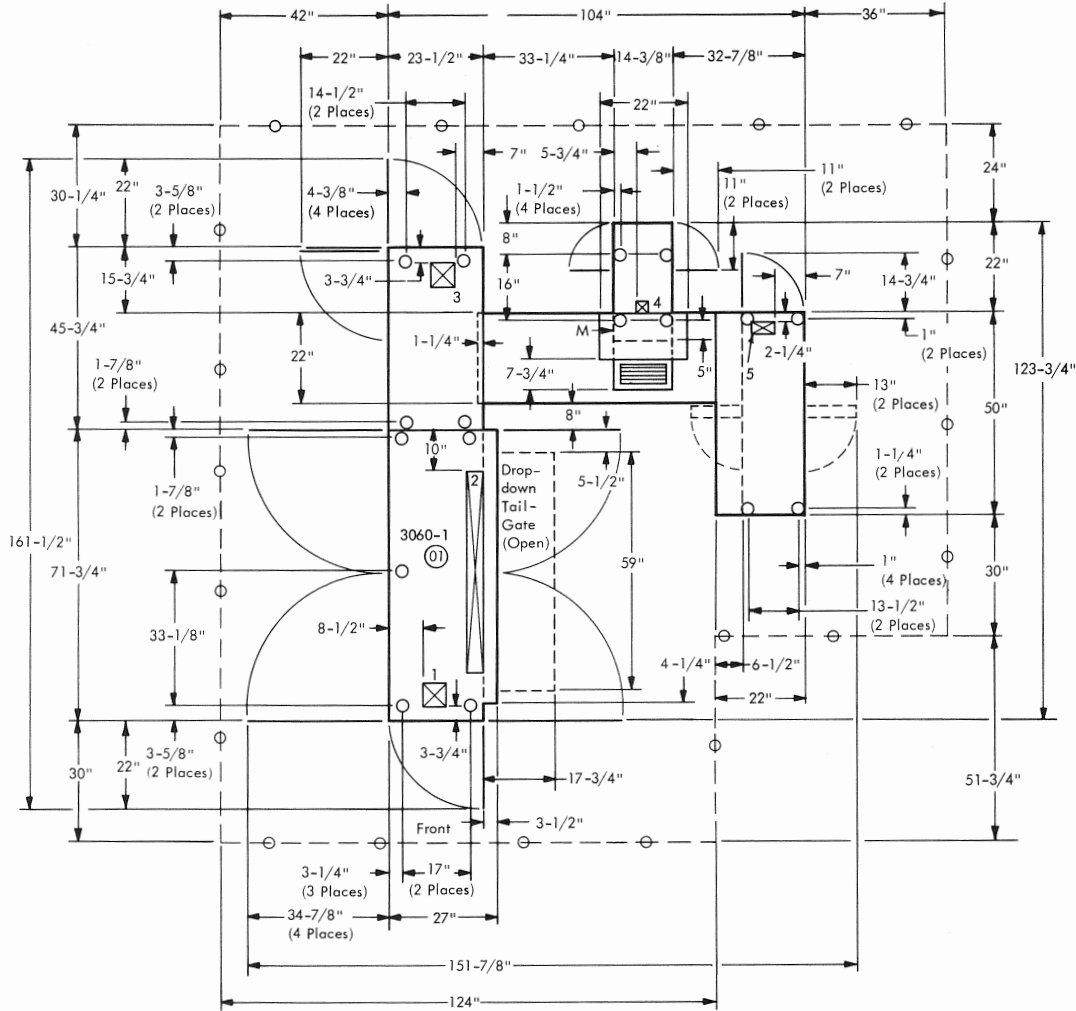
Notes:

- * Machine can be reduced to 30" x 32-1/4" x 44" (76 cm x 82 cm x 112 cm) for shipment.
- ** To top surface of keyboard unit is 44" (112 cm).

***** Powered from 3158 or 3158-3.**

**3060 SYSTEM CONSOLE MODEL 1
FOR SYSTEM/370 MODEL 195**

PLAN VIEW



Cable Entry/Exit Number	Dimensions (Inches)
1	6 x 6
2	4 x 50
3	6 x 6
4	3 x 3
5	3 x 6

Note: For cabling information, see 3195.

**3060 SYSTEM CONSOLE MODEL 1
FOR SYSTEM/370 MODEL 195**

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	*	*	67
(cm)	(*)	(*)	(170)

Service Clearances:

	F	R	Rt	L
Inches	30	24	36	42
(cm)	(76)	(61)	(91)	(107)

Weight: 2,500 lb (1.150 kg)

Heat Output: 14,000 BTU/hr (3.550 kcal/hr)

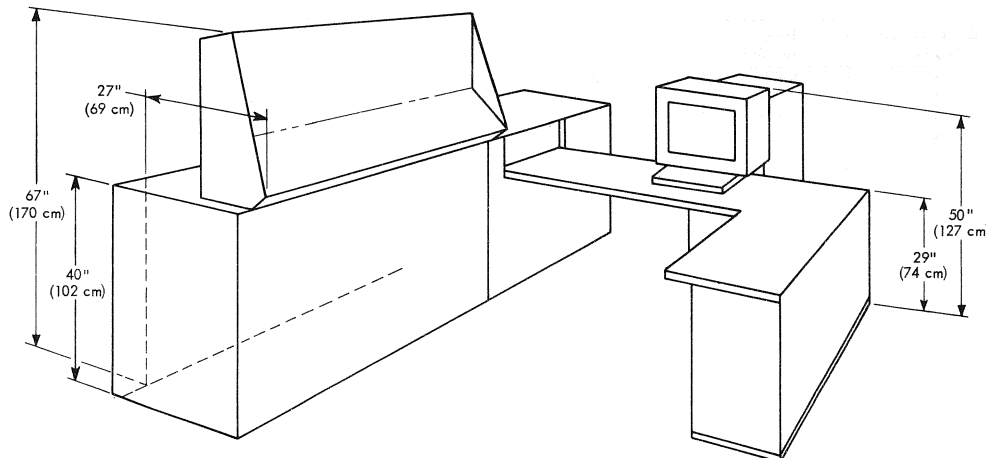
Airflow: 1,100 cfm (32 m³/min)

Power Requirements:

The 3060 (frame 01) receives power from the 3085 PDU (frame 09).

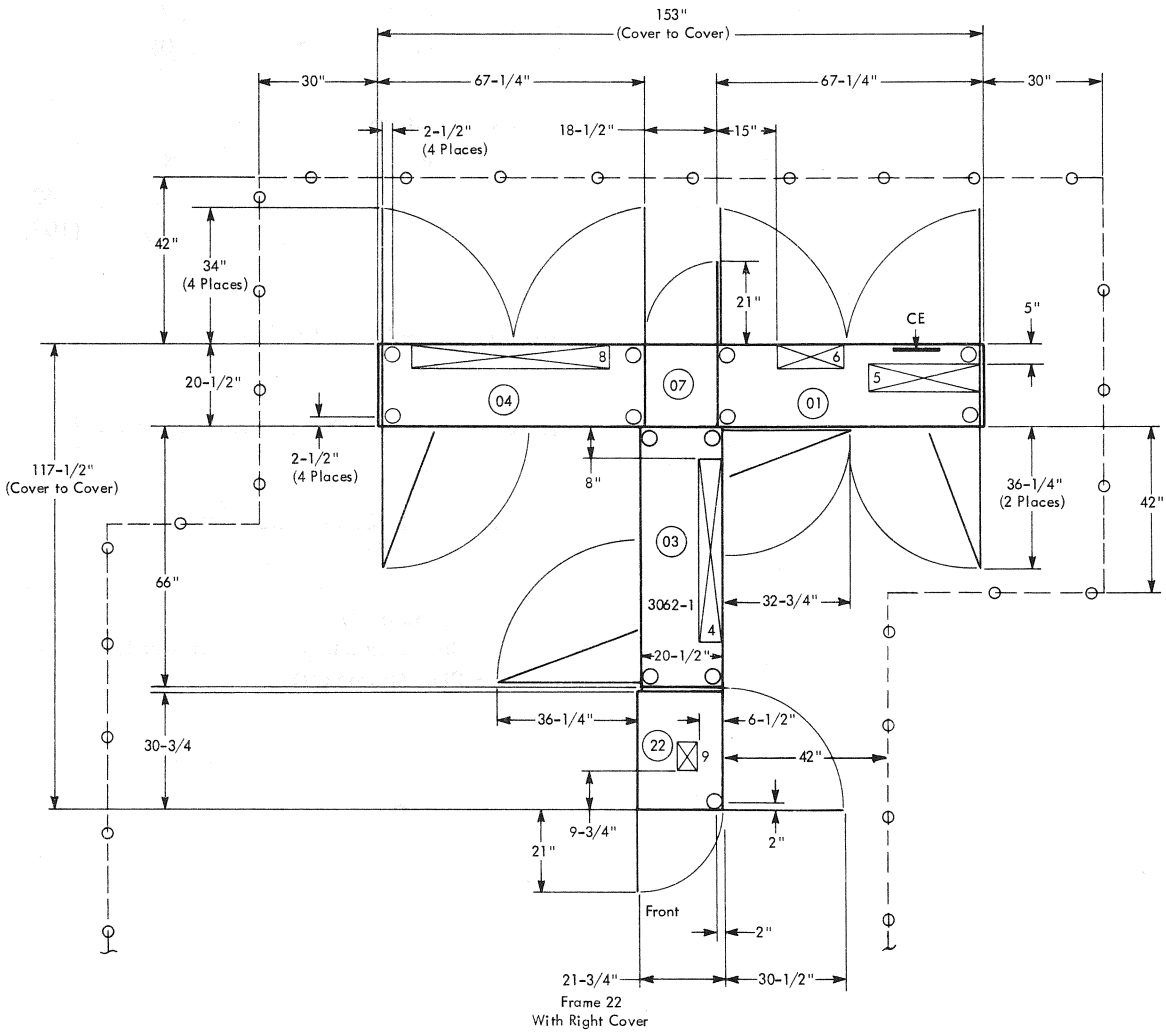
Notes:

* See plan view.



**3062 ATTACHED PROCESSING UNIT MODEL 1
 FOR SYSTEM/370 MODEL 168 ATTACHED
 PROCESSOR (3168-3 PROCESSING UNIT)**

PLAN VIEW



- Notes:**
1. Caster, cable hole, and leveling pad locating dimensions are measured from edge of frame, not cover.
 2. Typical dimensions for leveling pads on frames 01, 03, and 04.
 3. Frame 22 abuts to frame 02 of 3168-3.

Cable Entry/Exit Number	Dimensions (Inches)
4	6 x 46
5	7 x 28
6	6 x 17
8	6 x 50
9	5 x 7

**3062 ATTACHED PROCESSING UNIT MODEL 1
FOR SYSTEM/370 MODEL 168 ATTACHED
PROCESSOR (3168-3 PROCESSING UNIT)**

Details (By Frame)

Frame	Weight lb (kg)	Airflow cfm (m ³ /min)	Heat Output BTU/hr (kcal/hr)		kVA
			To Air	To Water	
01	750 (350)	250 (8)	4,230 (1.100)	22,060 (5.600)	*
03	900 (410)	500 (15)	7,620 (1.950)	29,820 (7.550)	*
04	850 (390)	500 (15)	5,835 (1.500)	22,105 (5.600)	*
07	100 (46)	—	—	—	—
22	125 (57)	—	—	—	—

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	**	**	78
(cm)	(**)	(**)	(198)

Service Clearances:

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

Environment Operating:

Temperature 65°-90°F (18°-32°C)
 Rel Humidity 20%-80%
 Max Wet Bulb 72°F (22°C)***

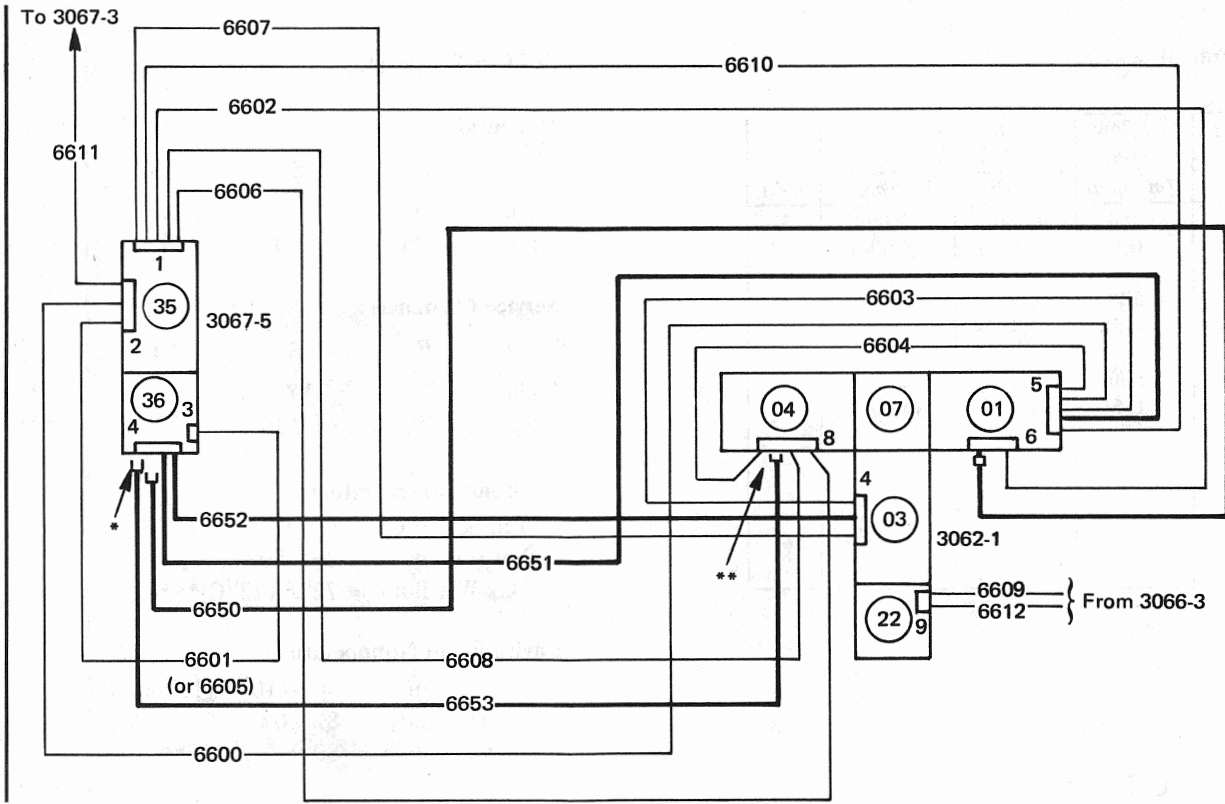
Environment Nonoperating:

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

Notes:

- *Receives power from the 3067 PCDU Model 5 (frame 35).
- **See plan view.
- ***See "Liquid Coolant System" in Appendix A.

3062 ATTACHED PROCESSING UNIT MODEL 1 CABLING SCHEMATIC—CABLES AND COOLANT HOSES



Legend:

- Coolant Hoses. (Only supply hoses are shown; assume one return hose for each supply hose.)
- Cables

*Quick-connect sockets are on supply hoses at 3067-5 CDU end. Quick-connect plugs are on return hoses at 3067-5 CDU end.

**Quick-connect plugs are on supply hoses at end away from 3067-5 CDU. Quick-connect sockets are on return hoses at end away from 3067-5 CDU.

3062 ATTACHED PROCESSING UNIT MODEL 1 CABLING SCHEMATIC—CABLES AND COOLANT HOSES

Cables

<i>Group No.</i>	<i>No. of Cables</i>	<i>From</i>	<i>Frame No.</i>	<i>To</i>	<i>Frame No.</i>	<i>Max Length (ft)</i>	<i>Notes</i>
6600	3	3067-5	35	3062-1	01	40	1
| 6601 (6605)	2	3067-5	35	3067-5	36	13	1, 3
6602	3	3067-5	35	3062-1	01	40	1
6603	1	3062-1	01	3062-1	03	10	1
6604	1	3062-1	01	3062-1	04	10	1
6606	1	3067-5	35	3062-1	04	40	1, 2
6607	8	3067-5	35	3062-1	03	40	1
6608	4	3067-5	35	3062-1	04	40	1
6609 [6576]	15	3066-3	05	3062-1	22	30	4,5
6610	7	3067-5	35	3062-1	01	40	1
| 6611	1	3067-5	35	3067-3	15	150	1
6612	1	3066-3	05	3062-1	22	30	4,6

Coolant Hoses

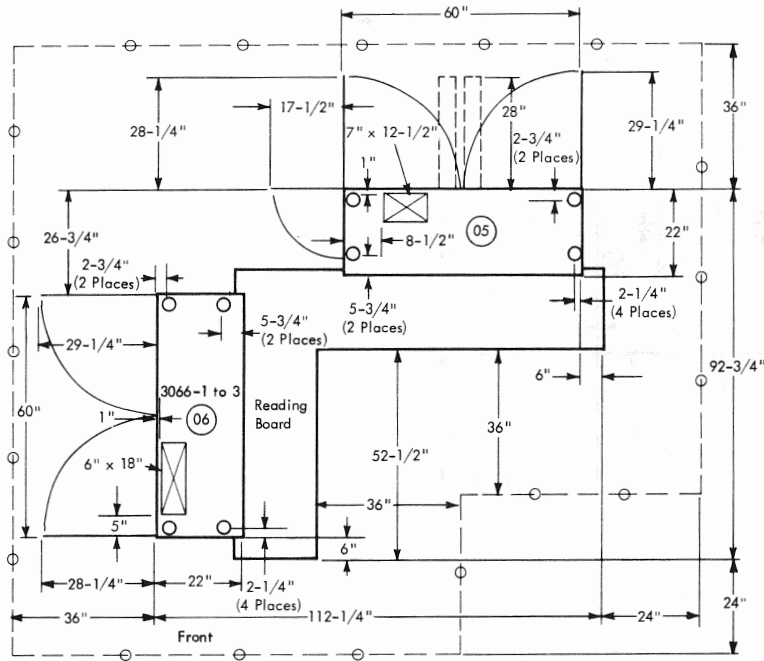
<i>Group No.</i>	<i>No. of Hoses</i>	<i>From</i>	<i>Frame No.</i>	<i>To</i>	<i>Frame No.</i>	<i>Max Length (ft)</i>	<i>Notes</i>
6650	2	3067-5	36	3062-1	01	55	—
| 6651	2	3067-5	36	3062-1	01	55	—
6652	4	3067-5	36	3062-1	03	55	—
| 6653	4	3067-5	36	3062-1	04	55	—

Notes:

1. Power cabling.
2. Required for high-speed multiply feature (SF #4525).
3. For 50-Hz machines, use group number in parentheses.
4. Required for attachment of 3066-3 to 3062-1 on 3168-3.
- | 5. Group 6576 (in brackets) can be used in place of 6609 where "X" length is satisfactory by rerouting the "to" end of 6576 from frame 07 on 3168 to frame 22 on 3062.
6. "X" length of group 6612 must equal "X" length of 6576 if 6576 is used, or must equal "X" length of 6609 if 6609 is used.

**3066 SYSTEM CONSOLE MODEL 1 FOR SYSTEM/370 MODEL 165,
 MODEL 2 FOR SYSTEM/370 MODEL 168 AND MODEL 168
 MULTIPROCESSING, AND MODEL 3 FOR SYSTEM/370 MODEL 168
 ATTACHED PROCESSOR**

PLAN VIEW



Frame	Weight	
	lb	kg
05	600	280
06	700	320

Note: For cabling information, see 3165, 3168, and 3168-3.

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	112-1/4	92-3/4	56*
(cm)	(285)	(236)	(142*)

Service Clearances:

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

Weight: 1,300 lb (590 kg)

Heat Output: 9,530 BTU/hr (2,450 kcal/hr)

Airflow: 440 cfm (13 m³/min)

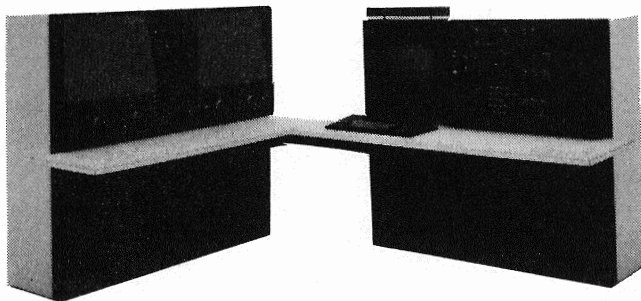
Power Requirements:

The 3066 Models 1 to 3 (frames 05 and 06) receive power from the 3067 PCDU Models 1 to 3 (frame 15).

Notes:

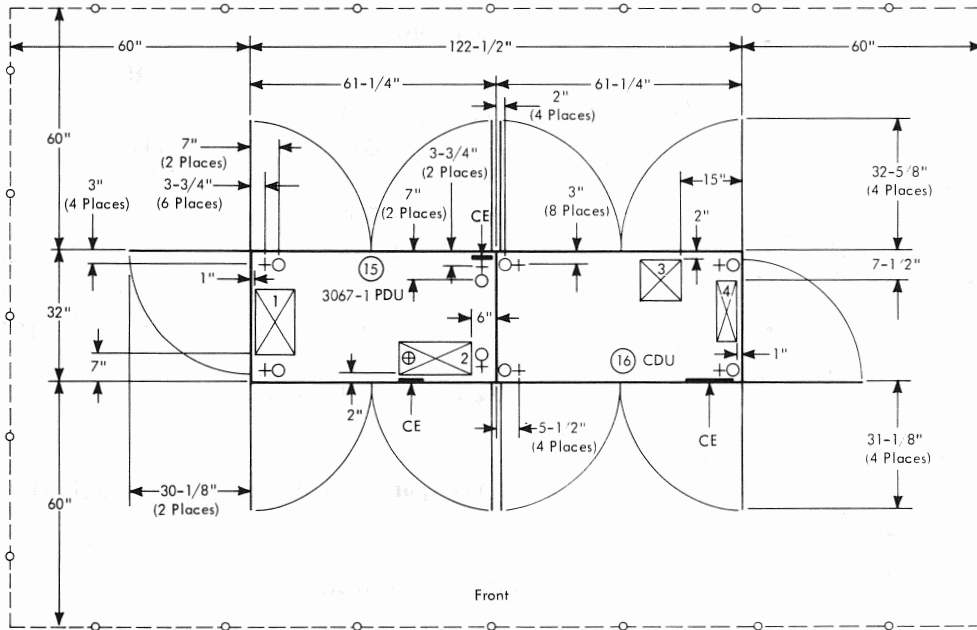
* 52 inches (132 cm) for frame 05.

** See plan view.



**3067 POWER AND COOLANT DISTRIBUTION UNIT MODEL 1
 FOR SYSTEM/370 MODEL 165**

PLAN VIEW



Frame	Weight	
	lb	kg
15	1,600	730
16	1,300	590

Cable Entry/Exit Number	Dimensions (Inches)	Notes
1	10 x 16	
2	8 x 18	1
3	10 x 10	2
4	5 x 14-1/2	3

Notes:

1. See Details A and B.
2. Customer chilled water supply and return.
3. IBM supply and return.
4. For cabling information, see 3165.

**3067 POWER AND COOLANT DISTRIBUTION UNIT MODEL 1
 FOR SYSTEM/370 MODEL 165**

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	122-1/2	32	70
(cm)	(311)	(81)	(178)

Service Clearances:

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

Weight: 2,900 lb (1.350 kg)

Heat Output:

Air	5,550 BTU/hr (1.400 kcal/hr)
Water*	26,300 BTU/hr (6.650 kcal/hr)

Airflow: 0 cfm (0 m³/min)

Power Requirements:

	50/60 Hz	415/441 Hz
kVA	6.0	kVA 54.0
Phases	3	Phases 3
Plug	R&S, FS3760	Voltage 208 ±2%
Connector	R&S, FS3934	Hardwired from remote
Receptacle	R&S, FS3754	motor generator

The PCDU (frame 15):

1. Requires 3-phase, 200/220/235/380/408V + 10%, -8%, 50-Hz ±0.5-Hz, or 200/208/230V + 10%, -8%, 60-Hz ±0.5-Hz customer service.
2. Receives 3-phase, 208V ±2%, 415/441-Hz (nominal) power from the remote motor generator (hardwired).

Environment Operating:

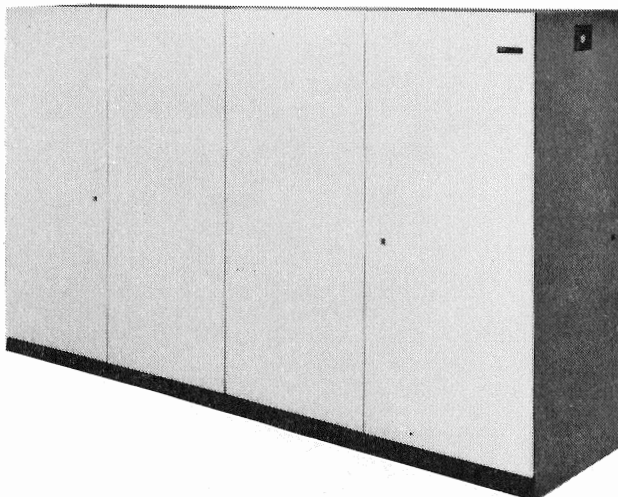
Temperature	65°-90°F (18°-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	72°F (22°C)**

Environment Nonoperating:

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

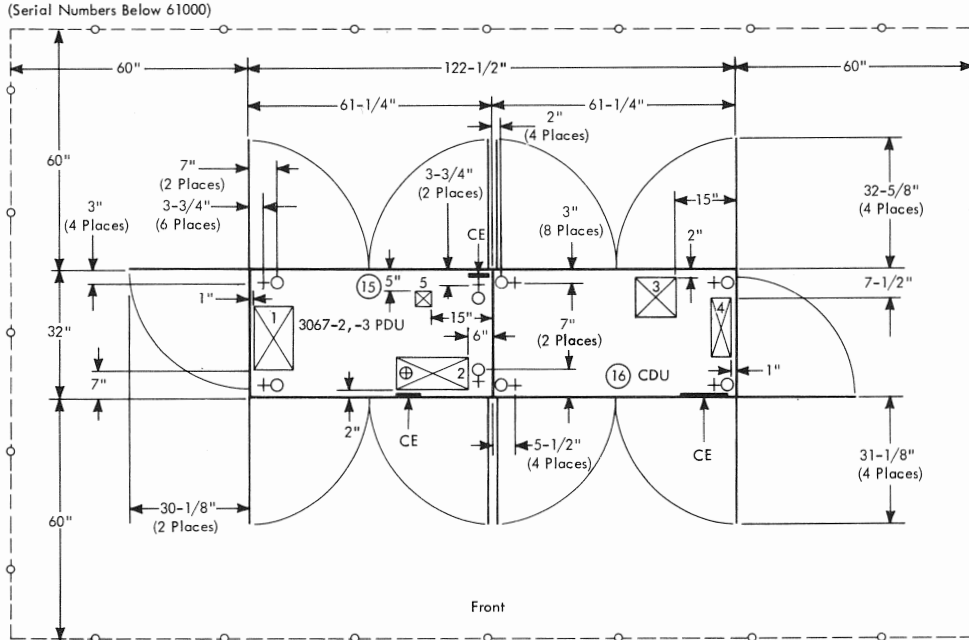
Notes:

- * For maximum-feature Model 165, add 5,780 BTU/hr (1.500 kcal/hr).
- ** See "Liquid Coolant System" in Appendix A.



**3067 POWER AND COOLANT DISTRIBUTION UNIT MODELS 2* AND 3* FOR SYSTEM/370
 MODEL 168, MODEL 168 ATTACHED PROCESSOR, AND MODEL 168 MULTIPROCESSING**

PLAN VIEW

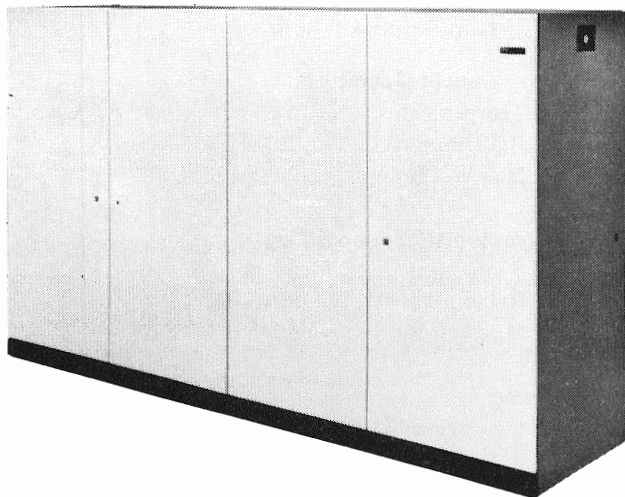


Frame	Weight	
	lb	kg
15	1,600	730
16	1,300	590

Cable Entry/Exit Number	Dimensions (Inches)	Notes
1	10 x 16	
2	8 x 18	1
3	10 x 10	2
4	5 x 14-1/2	3
5	4 x 4	4

Notes:

1. See Details A and B.
2. Customer chilled water supply and return.
3. IBM supply and return.
4. Required for 415/441-Hz power frame 08.
5. For cabling information, see 3168 and 3168-3.



**3067 POWER AND COOLANT DISTRIBUTION UNIT MODELS 2* AND 3* FOR SYSTEM/370
 MODEL 168, MODEL 168 ATTACHED PROCESSOR, AND MODEL 168 MULTIPROCESSING**

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	122-1/2	32	70
(cm)	(311)	(81)	(178)

Service Clearances:

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

Weight: 2,900 lb (1.350 kg)

Heat Output: *3168 and* *3168 MP and*
 3168-3 *3168-3 MP*

Air			
BTU/hr	8,580	8,900	
(kcal/hr)	(2.200)	(2.300)	
Water**			
BTU/hr	36,900	39,400	
(kcal/hr)	(9.300)	(9.950)	

Airflow: 0 cfm (0 m³/min)

Power Requirements:

3168 Model	50/60-Hz kVA	415/441-Hz kVA	
		Model J-M	Model MP1-8
J,MP1	7.3	55.5	60.2
K,MP2	7.3	56.0	60.7
KJ,MP3	7.3	56.5	61.2
L,MP4	7.3	57.0	61.7
LJ,MP5	7.5	57.5	62.2
LK,MP6	7.5	58.0	62.7
LKJ,MP7	7.5	58.5	63.2
M,MP8	7.5	59.0	63.7

3168-3 Model	50/60-Hz kVA	415/441-Hz kVA	
		Model U31-U38 A31-A38	Model M31-M38
U31, A31, M31	7.3	55.5	58.0
U32, A32, M32	7.3	56.0	58.5
U33, A33, M33	7.3	56.5	59.0
U34, A34, M34	7.3	57.0	59.5
U35, A35, M35	7.5	57.5	60.0
U36, A36, M36	7.5	58.0	60.5
U37, A37, M37	7.5	58.5	61.0
U38, A38, M38	7.5	59.0	61.5

	50/60 Hz	415/441 Hz
Phases	3	Phases 3
Plug	R&S, FS3760	Voltage 208 ± 2%
Connector	R&S, FS3934	Hardwired from remote
Receptacle	R&S, FS3754	motor generator

The PCDU (frame 15):

1. Requires 3-phase, 200/220/235/380/408V + 10%, -8%, 50-Hz ± 0.5-Hz, or 200/208/230V + 10%, -8%, 60-Hz ± 0.5-Hz customer service.
2. Receives 3-phase, 208V ± 2%, 415/441-Hz (nominal) power from the remote motor generator (hardwired).

Environment Operating:

Temperature	65°-90°F (18°-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	72°F (20°C)***

Environment Nonoperating:

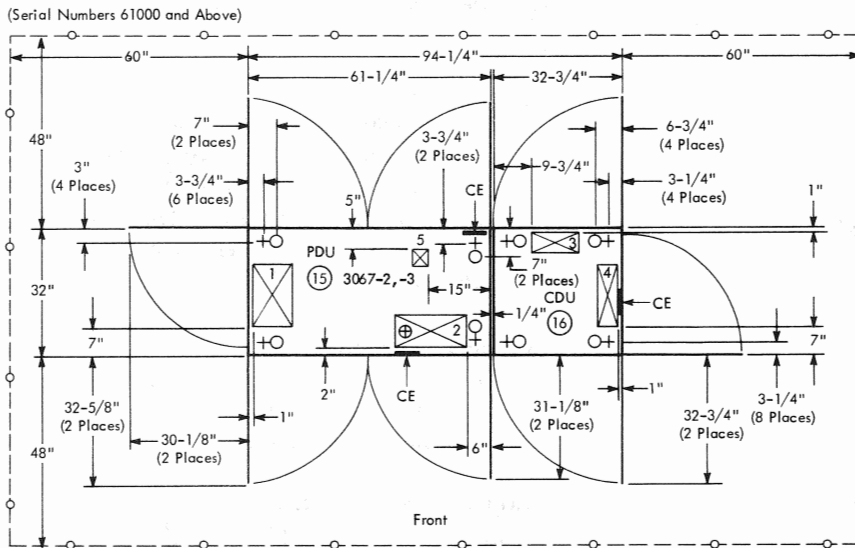
Temperature	50°-110°F (10°-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	80°F (27°C)***

Notes:

- *Use these specifications for machines with serial numbers below 61000.
- **For maximum-feature Model 168, Model 168 Attached Processor, or Model 168 Multiprocessing, add 5,780 BTU/hr (1.500 kcal/hr).
- ***See "Liquid Coolant System" in Appendix A.

**3067 POWER AND COOLANT DISTRIBUTION UNIT MODELS 2* AND 3*
FOR SYSTEM/370 MODEL 168, MODEL 168 ATTACHED PROCESSOR,
AND MODEL 168 MULTIPROCESSING**

PLAN VIEW



Frame	Weight	
	lb	kg
15	1,600	730
16	600	280

Cable Entry/Exit Number	Dimensions (Inches)	Notes
1	10 x 16	
2	8 x 18	1
3	5 x 12	2
4	5 x 15-1/2	3
5	4 x 4	4

Notes:

1. See Details A and B.
2. Customer chilled water supply and return.
3. IBM supply and return.
4. Required for 415/441-Hz power frame 08.
5. For cabling information, see 3168 and 3168-3.

**3067 POWER AND COOLANT DISTRIBUTION UNIT MODELS 2* AND 3* FOR SYSTEM/370
 MODEL 168, MODEL 168 ATTACHED PROCESSOR, AND MODEL 168 MULTIPROCESSING**

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	94-1/4	32	70
(cm)	(239)	(81)	(178)

Service Clearances:

	F	R	Rt	L
Inches	48	48	60	60
(cm)	(122)	(122)	(152)	(152)

Weight: 2,200 lb (1,000 kg)

Heat Output: *3168 and* *3168 MP and*
 3168-3 *3168-3 MP*

Air			
BTU/hr	7,180	7,500	
(kcal/hr)	(1.850)	(1.900)	
Water**			
BTU/hr	35,580	38,080	
(kcal/hr)	(9.000)	(9.600)	

Airflow: 0 cfm (0 m³/min)

Power Requirements:

<i>3168 Model</i>	<i>50/60-Hz kVA</i>	<i>415/441-Hz kVA</i>	
		<i>Model J-M</i>	<i>Model MP1-8</i>
J,MP1	5.6	55.5	60.2
K,MP2	5.6	56.0	60.7
KJ,MP3	5.6	56.5	61.2
L,MP4	5.6	57.0	61.7
LJ,MP5	5.8	57.5	62.2
LK,MP6	5.8	58.0	62.7
LKJ,MP7	5.8	58.5	63.2
M,MP8	5.8	59.0	63.7

<i>3168-3 Model</i>	<i>50/60-Hz kVA</i>	<i>415/441-Hz kVA</i>	
		<i>Model U31-U38 A31-A38</i>	<i>Model M31-M38</i>
U31, A31, M31	5.6	55.5	58.0
U32, A32, M32	5.6	56.0	58.5
U33, A33, M33	5.6	56.5	59.0
U34, A34, M34	5.6	57.0	59.5
U35, A35, M35	5.8	57.5	60.0
U36, A36, M36	5.8	58.0	60.5
U37, A37, M37	5.8	58.5	61.0
U38, A38, M38	5.8	59.0	61.5

	<i>50/60 Hz</i>	<i>415/441 Hz</i>
Phases	3	Phases 3
Plug	R&S, FS3760	Voltage 208 ± 2%
Connector	R&S, FS3934	Hardwired from remote
Receptacle	R&S, FS3754	motor generator

The PCDU (frame 15):

1. Requires 3-phase, 200/220/235/380/408V + 10%, -8%, 50-Hz ± 0.5-Hz, or 200/208/230V + 10%, -8%, 60-Hz ± 0.5-Hz customer service.
2. Receives 3-phase, 208V ± 2%, 415/441-Hz (nominal) power from the remote motor generator (hardwired).

Environment Operating:

Temperature	65°-90°F (18°-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	72°F (22°C)***

Environment Nonoperating:

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

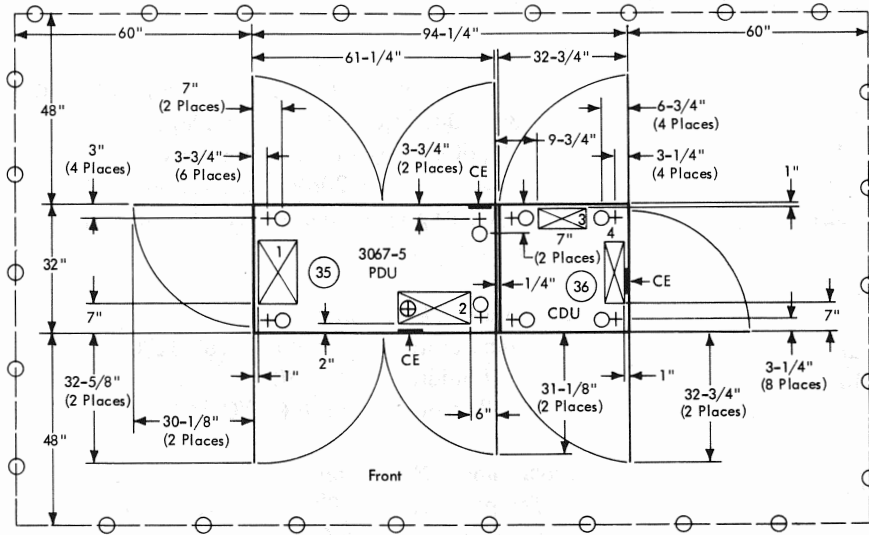
Notes:

- *Use these specifications for machines with serial numbers 61000 and above.
- **For maximum-feature Model 168, Model 168 Attached Processor, or Model 168 Multiprocessing, add 5,780 BTU/hr (1,500 kcal/hr).
- ***See "Liquid Coolant System" in Appendix A.

**3067 POWER AND COOLANT DISTRIBUTION UNIT MODEL 5
FOR 3062 ATTACHED PROCESSING UNIT MODEL 1**

PLAN VIEW

(Serial Numbers 61000 and Above)



Frame	Weight	
	lb	kg
35	1,600	730
36	600	280

Cable Entry/Exit Number	Dimensions (Inches)	Notes
1	10 x 16	
2	8 x 18	1
3	5 x 12	2
4	5 x 15-1/2	3

Notes:

1. See Details A and B.
2. Customer chilled water supply and return.
3. IBM supply and return.
4. For cabling information, see 3062-1.

**3067 POWER AND COOLANT DISTRIBUTION UNIT MODEL 5
 FOR 3062 ATTACHED PROCESSING UNIT MODEL 1**

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	94-1/4	32	70
(cm)	(239)	(81)	(178)

Service Clearances:

	F	R	Rt	L
Inches	48	48	60	60
(cm)	(122)	(122)	(152)	(152)

Weight: 2,200 lb (1,000 kg)

Heat Output:

Air	7,500 BTU/hr (1,900 kcal/hr)
Water	38,080 BTU/hr (9,600 kcal/hr)

Airflow: 0 cfm (0 m³/min)

Power Requirements:

	<i>50/60 Hz</i>	<i>415/441 Hz</i>
kVA	4.0	43.0
Phases	3	Phases 3
Plug	R&S, FS3760	Voltage 208 ±2%
Connector	R&S, FS3934	Hardwired from remote
Receptacle	R&S, FS3754	motor generator

The PCDU (frame 35):

1. Requires 3-phase, 200/220/235/380/408V + 10% -8%, 50-Hz ± 0.5-Hz, or 200/208/230V + 10%, -8%, 60-Hz ± 0.5-Hz customer service.
2. Receives 3-phase, 208V ± 2%, 415/441-Hz (nominal) power from the remote motor generator (hardwired).

Environment Operating:

Temperature	65°-90°F (18°-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	72°F (22°C)*

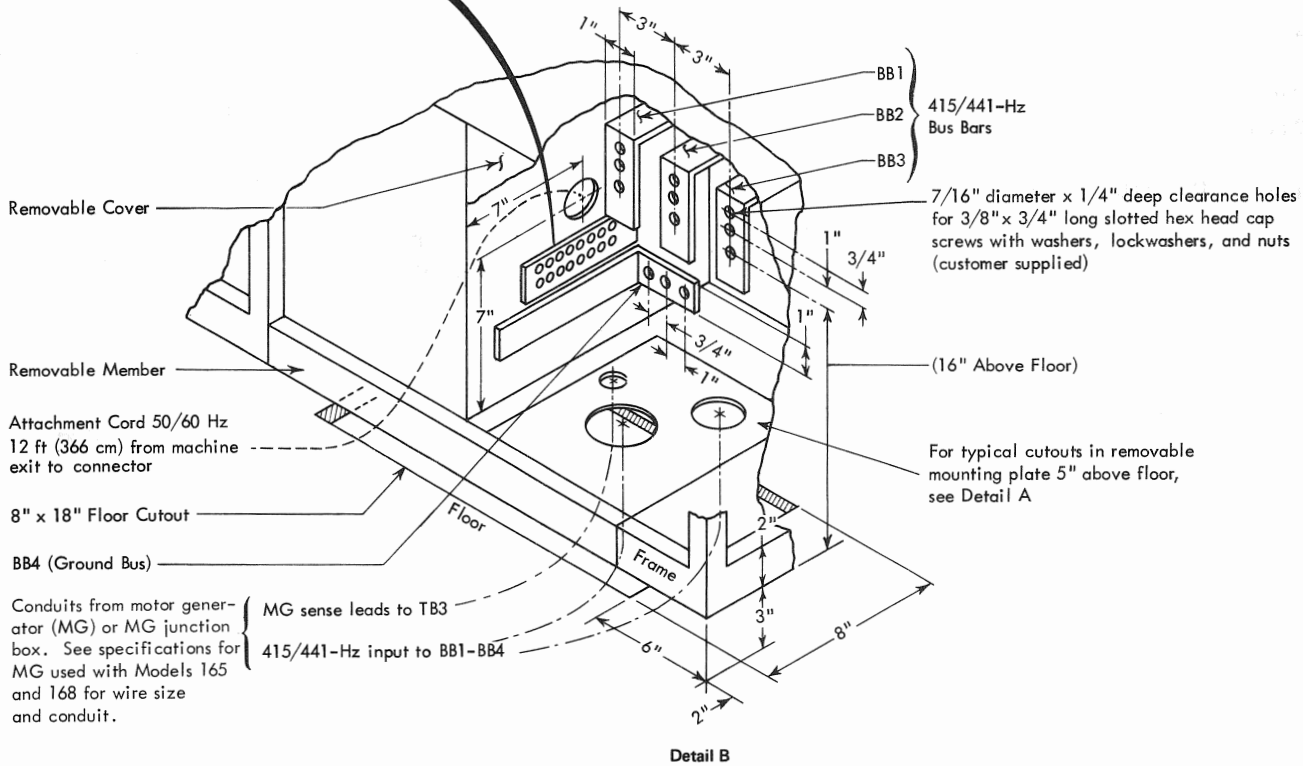
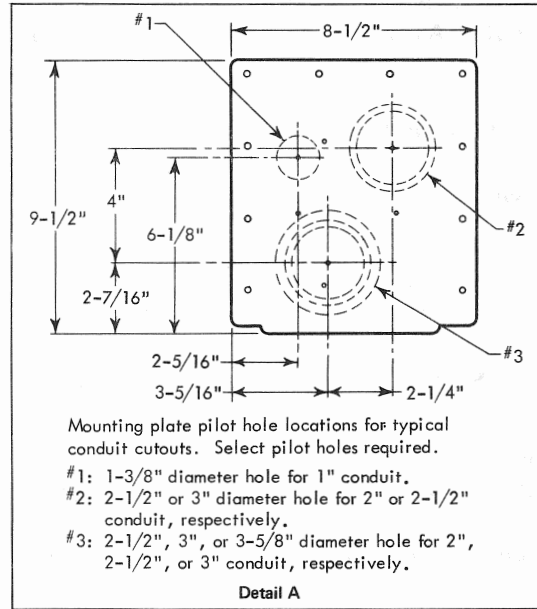
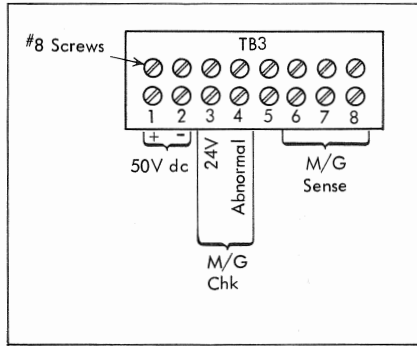
Environment Nonoperating:

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

Notes:

*See "Liquid Coolant System" in Appendix A.

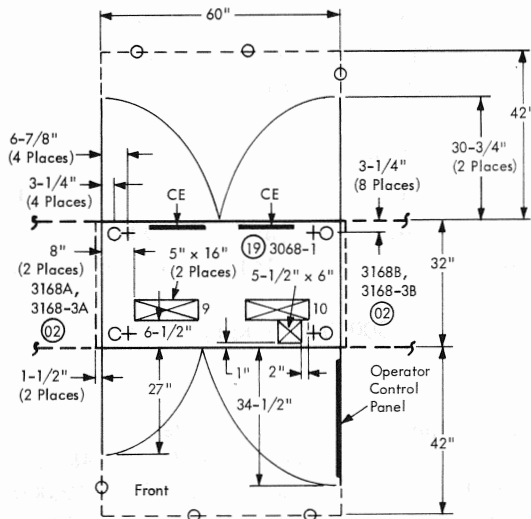
**3067 POWER AND COOLANT DISTRIBUTION UNIT
 MODELS 1 TO 3 AND 5**



Inches	Millimeters	Inches	Millimeters
1/4	6,4	3-5/16	84,1
3/8	9,5	3-5/8	92,1
7/16	11,1	4	101,6
3/4	19,1	5	127,0
1	25,4	6	152,4
1-3/8	34,9	6-1/8	155,6
2	50,8	7	177,8
2-1/4	57,2	8	203,2
2-5/16	58,7	8-1/2	215,9
2-7/16	61,9	9-1/2	241,3
2-1/2	63,5	16	406,4
3	76,2	18	457,2

3068 MULTISYSTEM COMMUNICATION UNIT MODEL 1

PLAN VIEW



Note: For cabling information, see 3168 and 3168-3.

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	60	32	78
(cm)	(152)	(81)	(198)

Service Clearances:

	F	R	Rt	L
Inches	42	42	0*	0*
(cm)	(107)	(107)	(0*)	(0*)

Weight: 900 lb (410 kg)

Heat Output:**

Air	2,960 BTU/hr (750 kcal/hr)
Water	11,500 BTU/hr (2,900 kcal/hr)

Airflow: 240 cfm (7 m³/min)

Power Requirements:

The 3068 (frame 19) receives 50/60-Hz and 415/441-Hz power from the 3067 PCPU Models 2 and 3 (frame 15).

Environment Operating:

Temperature	60 ^o -90 ^o F (18 ^o -32 ^o C)
Rel Humidity	20%-80%
Max Wet Bulb	72 ^o F (22 ^o C)***

Environment Nonoperating:

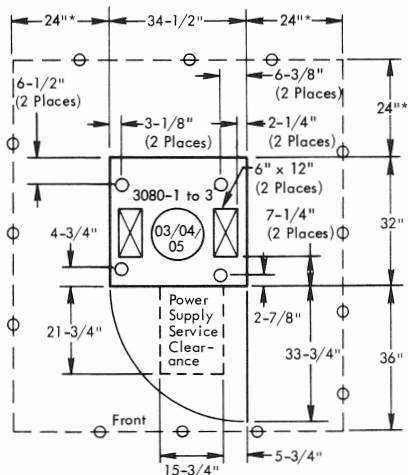
Temperature	50 ^o -110 ^o F (10 ^o -43 ^o C)
Rel Humidity	8%-80%
Max Wet Bulb	80 ^o F (27 ^o C)***

Notes:

- * The 3068 attaches between the Model 168 frame 02s in the Multiprocessing configuration.
- ** One-half of the heat output for the 3068 is associated with each Model 168 system in the Multiprocessing configuration.
- *** See "Liquid Coolant System" in Appendix A.

**3080 POWER UNIT MODELS 1 TO 3
FOR SYSTEM/370 MODEL 195**

PLAN VIEW



Note: For cabling information, see 3195.

SPECIFICATIONS

Dimensions: (All Models)

	F	S	H
Inches	34-1/2	32	60
(cm)	(88)	(81)	(152)

Service Clearances:

	F	R	Rt	L
Inches	36	24*	24*	24*
(cm)	(91)	(61*)	(61*)	(61*)

Weight: 1,300 lb (590 kg) per unit

Heat Output:

	Water		
	Model 1	Model 2	Model 3
BTU/hr	20,000	14,000	19,000
(kcal/hr)	(5.050)	(3.550)	(4.800)

Airflow: 0 cfm (0 m³/min) per unit

Power Requirements:

The 3080 (frames 03, 04, and 05) receives power from 3085 PDU (frame 09).

Notes:

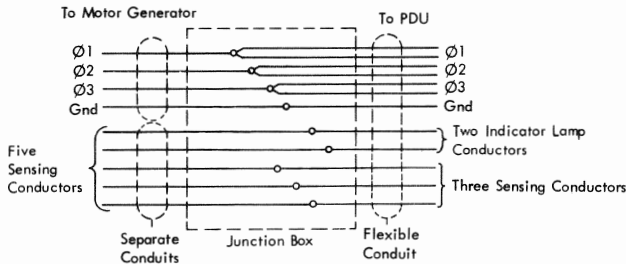
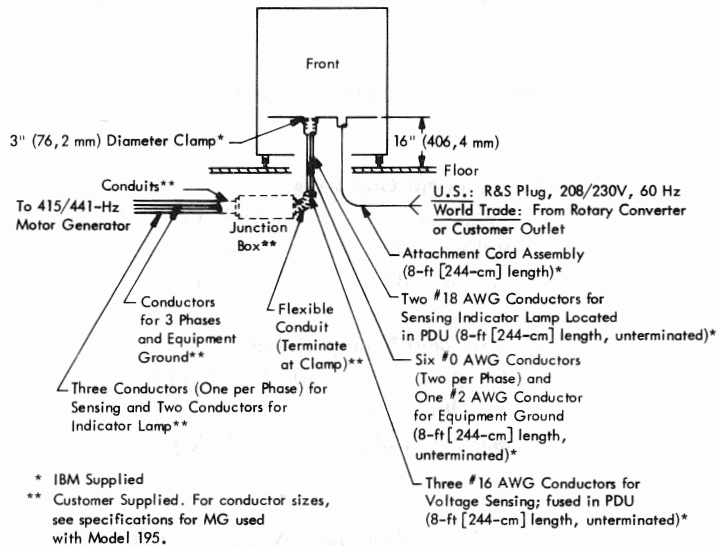
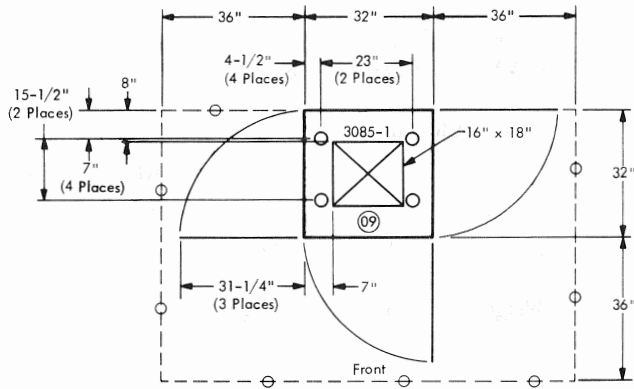
One 3195 Processing Unit requires one each of 3080 Power Unit Models 1, 2, and 3.

3080 Model	Frame	Supplies Power for Frame
1	03	06 (Floating Point)
2	04	08 (Fixed Point and VFL Decimal)
3	05	10 (I-unit and SCU)

* No service access required. The 24-inch (61-cm) clearance is shown to assist in distributing machine weight for 75 pounds per square foot (370 kg/m²) floor loading.

**3085 POWER DISTRIBUTION UNIT (PDU) MODEL 1
FOR SYSTEM/370 MODEL 195**

PLAN VIEW



Junction Box Connection Details

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	32	32	60
(cm)	(81)	(81)	(152)

Service Clearances:

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

Weight: 1,000 lb (460 kg)

Heat Output: Negligible

Airflow: 0 cfm (0 m³/min)

Power Requirements:

The PDU (frame 09):

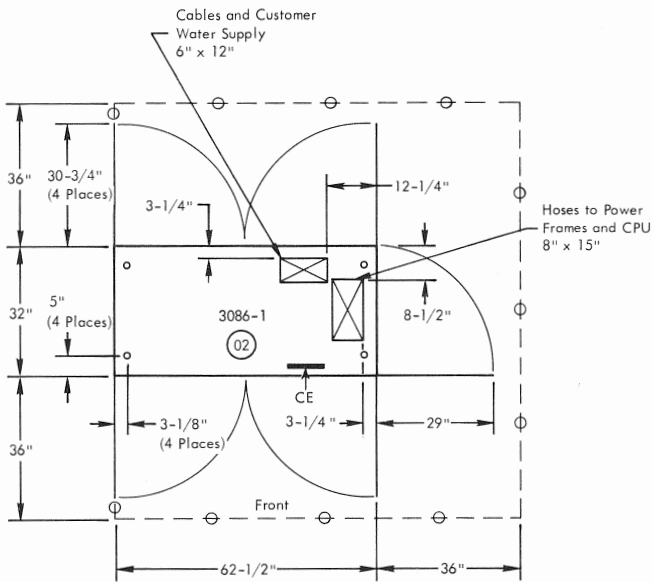
1. Receives 208V, 415/441-Hz power from remote motor generator.
 2. *U. S.*
Requires 208V or 230V, 60-Hz ± 0.5-Hz power from customer power panel:
For Model J1 or K1, use 60A service.
For Model KJ1 or L1, use 100A service.
- World Trade*
Receives 208V, 60-Hz power from remote rotary converter or customer outlet.

Requirements	System Model	
	J1 and K1	KJ1 and L1
Plug	R&S, SC7328	R&S, JPS1034H
Connector	R&S, SC7428	R&S, JCS1034H
Receptacle	R&S, SC7324	R&S, JRSR1034H

System Model	50/60 Hz		415/441 Hz	
	kVA	A/Phase	kVA	A/Phase
J1	10.4	30	47.25	131
K1	16.2	45	54.25	151
KJ1	21.6	60	64.25	179
L1	27.0	75	74.25	206

**3086 COOLANT DISTRIBUTION UNIT (CDU) MODEL 1
FOR SYSTEM/370 MODEL 195**

PLAN VIEW



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	62-1/2	32	70
(cm)	(159)	(81)	(178)

Service Clearances:

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

Weight: 1,450 lb (660 kg)

Heat Output:

Air	2,800 BTU/hr (710 kcal/hr)
Water	9,000 BTU/hr (2,300 kcal/hr)

Airflow: 0 cfm (0 m³/min)

Environment Operating:

Temperature	65 ^o -90 ^o F (18 ^o -32 ^o C)
Rel Humidity	20%-80%
Max Wet Bulb	72 ^o F (22 ^o C)*

Environment Nonoperating:

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

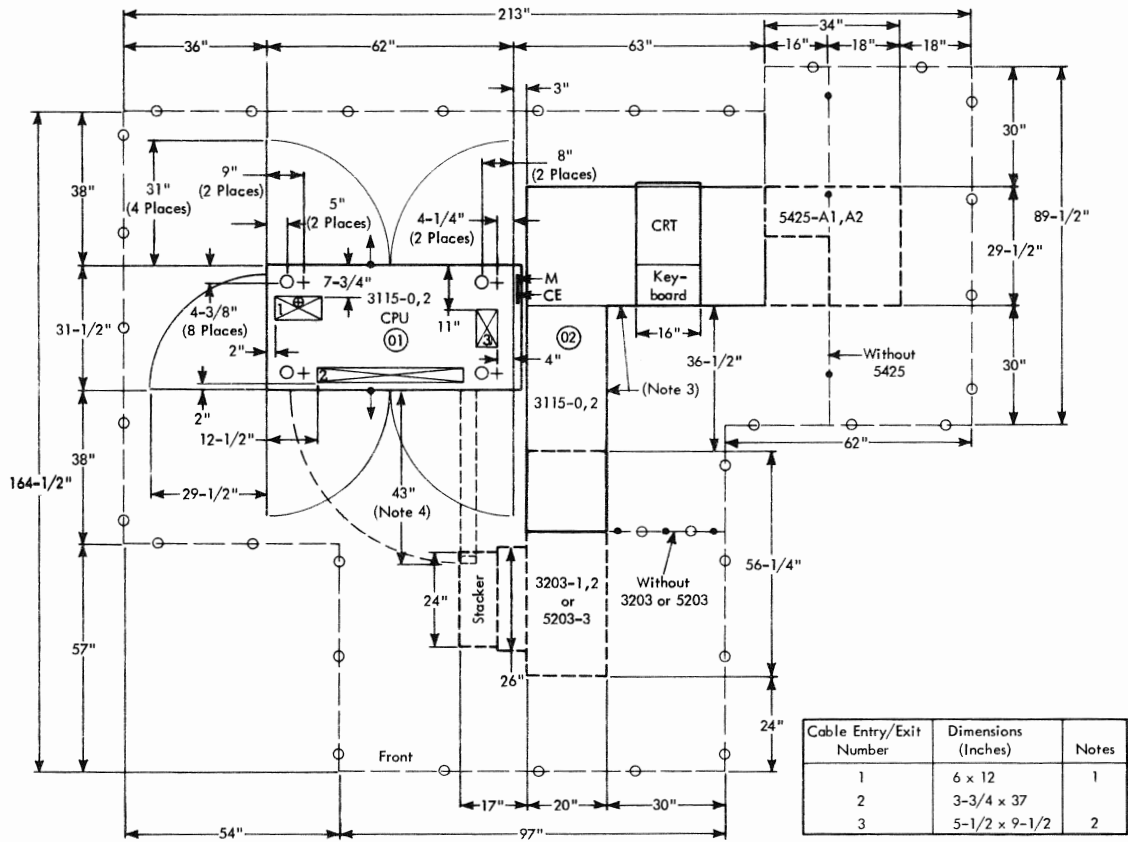
Notes:

* See "Liquid Coolant System" in Appendix A.

Section 2. System Specifications and Cabling Schematics

SYSTEM/370 MODEL 115, 3115-0 AND 3115-2 PROCESSING UNITS

PLAN VIEW (WITH 3203, 5203, AND 5425)



Notes:

1. The main power entry and power exit for natively attached I/O devices and EPO cables.
2. The dc power exit for natively attached I/O devices.
3. The operator console table can be disassembled for shipment.
4. The CPU gate does not interfere with the printer stacker. The total gate length includes the handle at the top of the gate.
5. Caster, cable hole, and leveling pad locating dimensions are measured from edge of frame, not cover.

| SYSTEM/370 MODEL 115, 3115-0 AND 3115-2 PROCESSING UNITS

Details (By Frame)

System Configuration	Frame	Weight lb (kg)	Airflow cfm (m ³ /min)	Heat Output BTU/hr (kcal/hr)	kVA
Basic	01	1,353 (620)	700 (20)	15,100 (3.850)	5.5**
	02	460* (210*)	—	—	—
Maximum††	01	1,765 (800)	1,830 (52)	17,800 (4.500)	6.5**
	02	460* (210*)	—	—	—

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	***	***	60 [†]
(cm)	(***)	(***)	(152 [†])

Service Clearances:

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

| Power Requirements:**

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

Environment Operating:

Temperature	50 ^o -90 ^o F (10 ^o -32 ^o C)
Rel Humidity	8%-80%
Max Wet Bulb	73 ^o F (23 ^o C)

Notes:

* Weight includes reading boards and CRT keyboard assembly.

** The mainline power supply is routed via the 3115-0 or 3115-2 mainline power supply cord and the 3115-0 or 3115-2 to the following natively attached I/O devices:

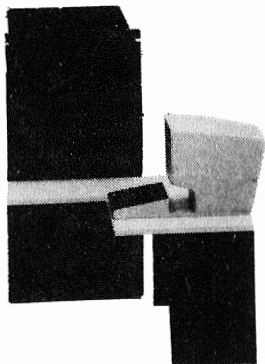
- Printer (3203-1 or 2 or 5203-3)
- Multi-function Card Machine (2560-A1 or A2)
- Multi-function Card Unit (5425-A1 or A2)
- Console Printer (5213-1).

The Details (By Frame) table does not include power for these devices. See the applicable machine specifications pages for this information.

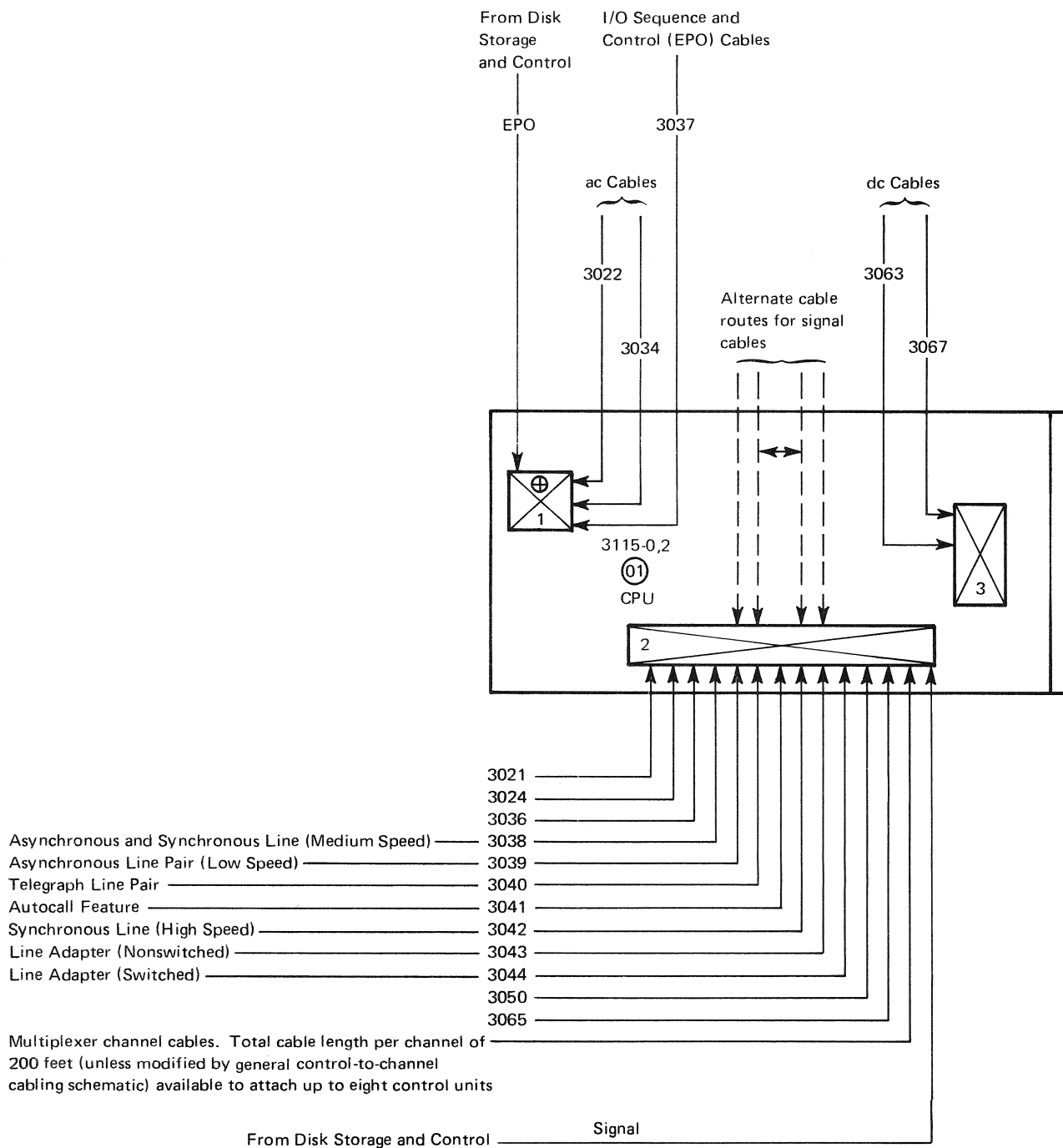
*** See plan view.

† Height for operator console (frame 02) is 48" (122 cm) with CRT; 29" (74 cm) without CRT. Ambient lighting level should not exceed 75 footcandles (810 lumens/m²).

†† The maximum configuration applies to 3115-2 only.



SYSTEM/370 MODEL 115 CABLING SCHEMATIC



SYSTEM/370 MODEL 115 CABLING SCHEMATIC







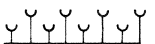

Group No.	No. of Cables	From	To	Cable Entry No.	Max Length (ft)	Notes
3021	3	2560-A1 or A2	3115-0, 2	2	18	1
3022	1	2560-A1 or A2	3115-0, 2	1	23	1
3024	1	2560-A1	3115-0, 2	2	18	2
3034	1	5213-1	3115-0, 2	1	25	3
3036	2	3411-1, 2, 3, or 3803-3	3115-0, 2	2	28	14
3037	1	3411-1, 2, 3, or 3803-3	3115-0, 2	1	35	14,15
3038	1	Data Set	3115-0, 2	2	38	4,12,13,16
3039	2	Data Set	3115-0, 2	2	38	5,12,13,16
3040	1	Telegraph Terminal Board	3115-0, 2	2	38	6,13,16
3041	1	Data Set (Autocall)	3115-0, 2	2	38	7,13,16
3042	1	Data Set	3115-0, 2	2	38	8,13,16
3043	1	Common-Carrier Facility	3115-0, 2	2	38	9,13,16
3044	1	Common-Carrier Facility	3115-0, 2	2	38	10,13,16
3050	1	External Signal	3115-0, 2	2	200	11,16
3063	1	2560-A1 or A2	3115-0, 2	3	23	1
3065	1	5213-1	3115-0, 2	2	19	3
3067	1	5213-1	3115-0, 2	3	20	3

Notes:

1. For SF #4670; order one of each cable group per feature.
2. For SF #4674.
3. For SF #4692; order one of each cable group per feature.
4. For SF #1231, #7141 through #7144, and #7151 through #7154; order one cable group per feature.
5. For SF #1241; order one cable group per feature.
6. For SF #7881; order one cable group per feature.
7. For SF #1291, #1292, #1295, and #1296; order one cable group per feature.
8. For SF #7121.
9. For SF #4743 or #4781; order one cable group per feature.
10. For SF #4782 and #4791; order one cable group per feature.
11. For SF #3898 from non-IBM devices. For IBM machines, see Note 4 under "Units With Integral or Abutted Controls" in Section 4.
12. This cable group is *not* required when the associated SF numbers are a prerequisite for attaching line adapters (SF #4743, #4781, #4782, or #4791).
13. When ordering cable groups for ICA features, the order should indicate the line position to be used: A1-A4 for asynchronous line position and S1-S5 for synchronous line position. Assignment of line positions has definite restrictions that are related to SF numbers and to particular combinations of SF numbers.
14. For SF #4675; order one of each cable group per feature.
15. Sequence and control (EPO).
16. See "Cables for IBM and Non-IBM Devices" for cable specifications.

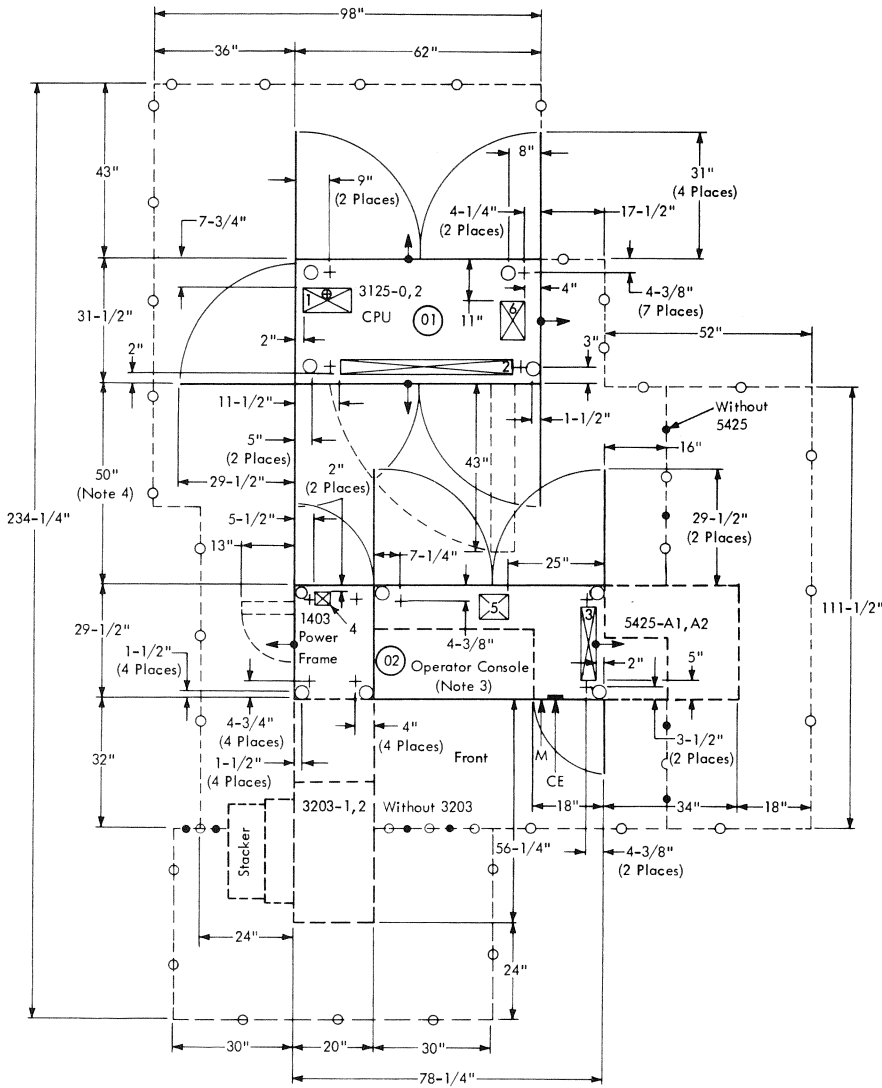
SYSTEM/370 MODEL 115 CABLING SCHEMATIC

Cables for IBM and Non-IBM Devices

Group No.	Termination
3038	 1 EIA RS-232A Connector or 1 CCITT Connector
3039	 2 EIA RS-232A Connectors or 2 CCITT Connectors
3040	 2 Pair #6 Spade Lugs
3041	 1 EIA RS-232A Connector or 1 CCITT Connector
3042	 12-Pin Burndy Connector
3043	 1 WE-283B Plug; Customer Provides 404B Surface Mount or 493A Flush Mount Jacks
3044	 4 Pair #6 Spade Lugs
3050	 23-Pin Burndy Connector

SYSTEM/370 MODEL 125, 3125-0 AND 3125-2 PROCESSING UNITS

PLAN VIEW—CONFIGURATION 1 (WITH 3203 AND 5425)

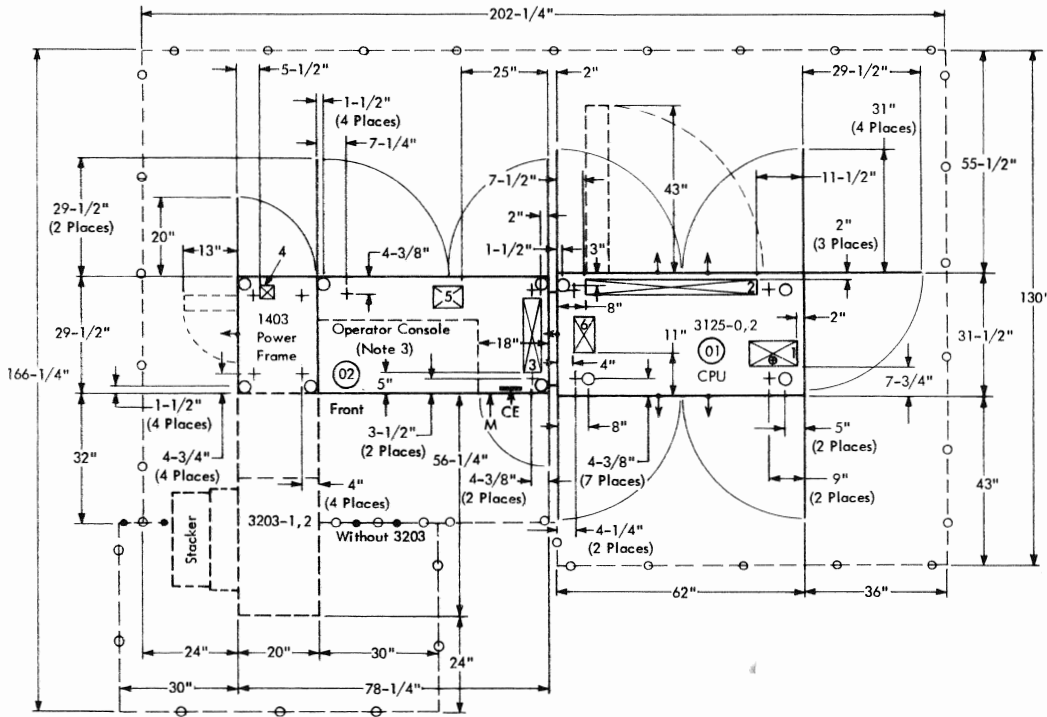


- Notes:
1. Main power entry and power exit for natively attached I/O devices and EPO cables.
 2. Signal cable entry and power cable entry for 1403.
 3. The operator console can be separated for shipment.
 4. Fixed dimension: Both frames must be parallel so that fixed-length cable (IBM supplied) is perpendicular to both cable entry holes (2 and 5). For nonraised floor installations, dimension can be extended 12" (30 cm).
 5. Caster, cable hole, and leveling pad locating dimensions are measured from edge of frame, not cover.

Cable Entry/Exit Number	Dimensions (Inches)	Notes
1	6-1/2 x 12	1
2	43 x 3-3/4	2
3	19 x 4-1/2	
4	3-1/2 x 3-1/2	
5	7-1/2 x 5-7/8	
6	9-1/2 x 5-1/2	

SYSTEM/370 MODEL 125, 3125-0 AND 3125-2 PROCESSING UNITS

PLAN VIEW—CONFIGURATION 2 (WITH 3203)



Notes:

1. Main power entry and power exit for natively attached I/O devices and EPO cables.
2. Signal cable entry and power cable entry for 1403.
3. The operator console can be separated for shipment.
4. Caster, cable hole, and leveling pad locating dimensions are measured from edge of frame, not cover.

Cable Entry/Exit Number	Dimensions (Inches)	Notes
1	6-1/2 x 12	1
2	43 x 3-3/4	
3	19 x 4-1/2	
4	3-1/2 x 3-1/2	2
5	7-1/2 x 5-7/8	
6	9-1/2 x 5-1/2	

**SYSTEM/370 MODEL 125, 3125-0 AND 3125-2 PROCESSING UNITS
 (CONFIGURATIONS 1 AND 2)**

Details (By Frame)

System Configuration	Frame	Weight lb (kg)	Airflow cfm (m ³ /min)	Heat Output BTU/hr (kcal/hr)	kVA***
Basic	01	1,325 (600)	1,080 (31)	12,400 (3.150)	4.5
	02	320 (150)	450 (13)	2,760 (700)	1.0
Maximum	01	1,765 (800)	1,830 (52)	17,800 (4.500)	6.5
	02	355 (160)	450 (13)	6,880 (1.750)	2.5
Power Unit Feature (1403/5425)	02	320 (150)	230 (7)	4,950 (1.250)	1.8

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	*	*	60**
(cm)	(*)	(*)	(152**)

Service Clearances:

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

Power Requirements:***

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

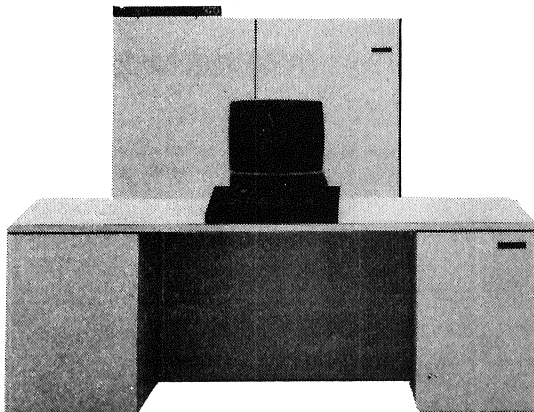
Environment Operating:

Temperature 50⁰-90⁰F (10⁰-32⁰C)
 Rel Humidity 8%-80%
 Max Wet Bulb 73⁰F (23⁰C)

Notes:

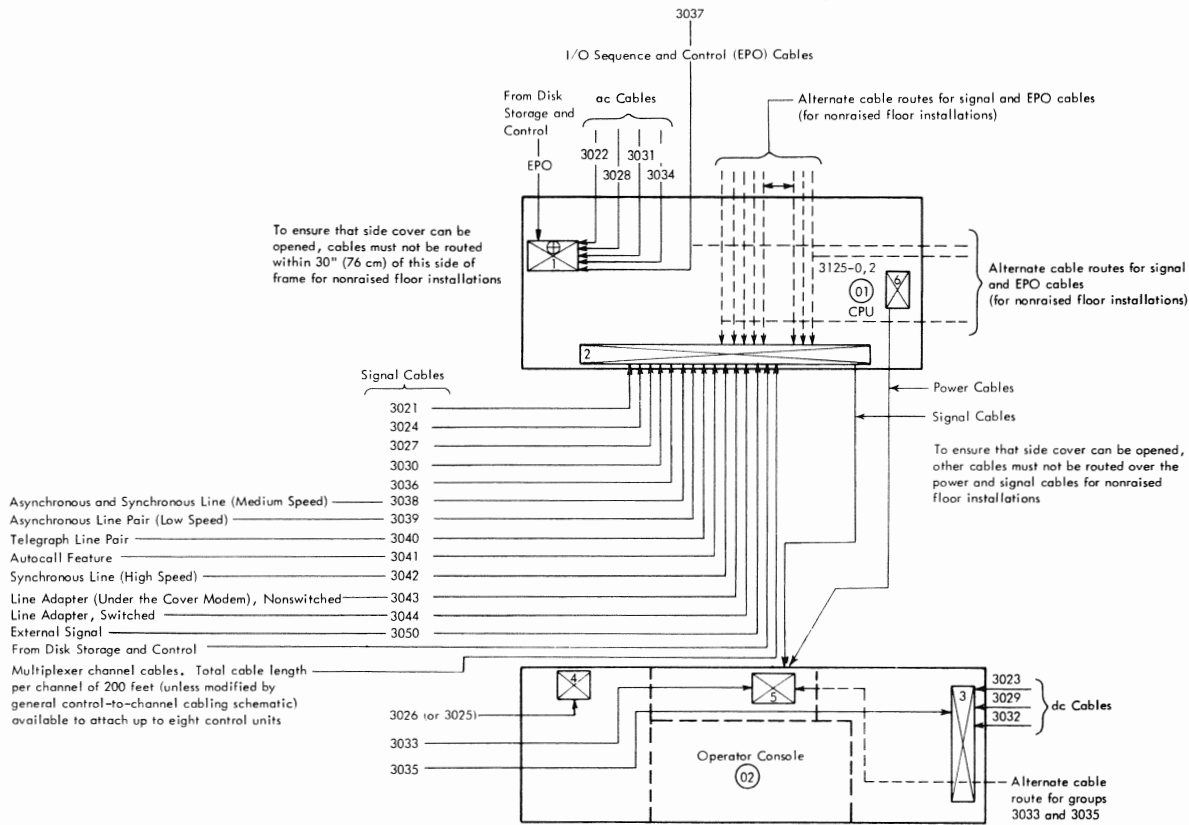
- * See plan view.
- ** Height for operator console (frame 02) is 48" (122 cm) with CRT; 29" (74 cm) without CRT. Ambient lighting level should not exceed 75 footcandles (810 lumens/m²).
- *** The mainline power is routed via the 3125-0 or 3125-2 mainline power cord and the 3125-0 or 3125-2 to the following natively attached I/O devices:
 - Printer (1403-2, 7, or N1 or 3203-1 or 2)
 - Multi-function Card Machine (2560-A1)
 - Card Reader (3504-A1 or A2)
 - Card Punch (3525-P1, P2, or P3)
 - Console Printer (5213-1)
 - Multi-function Card Unit (5425-A1 or A2).

The Details (By Frame) table does not include power for these devices. See the applicable machine specifications pages for this information.

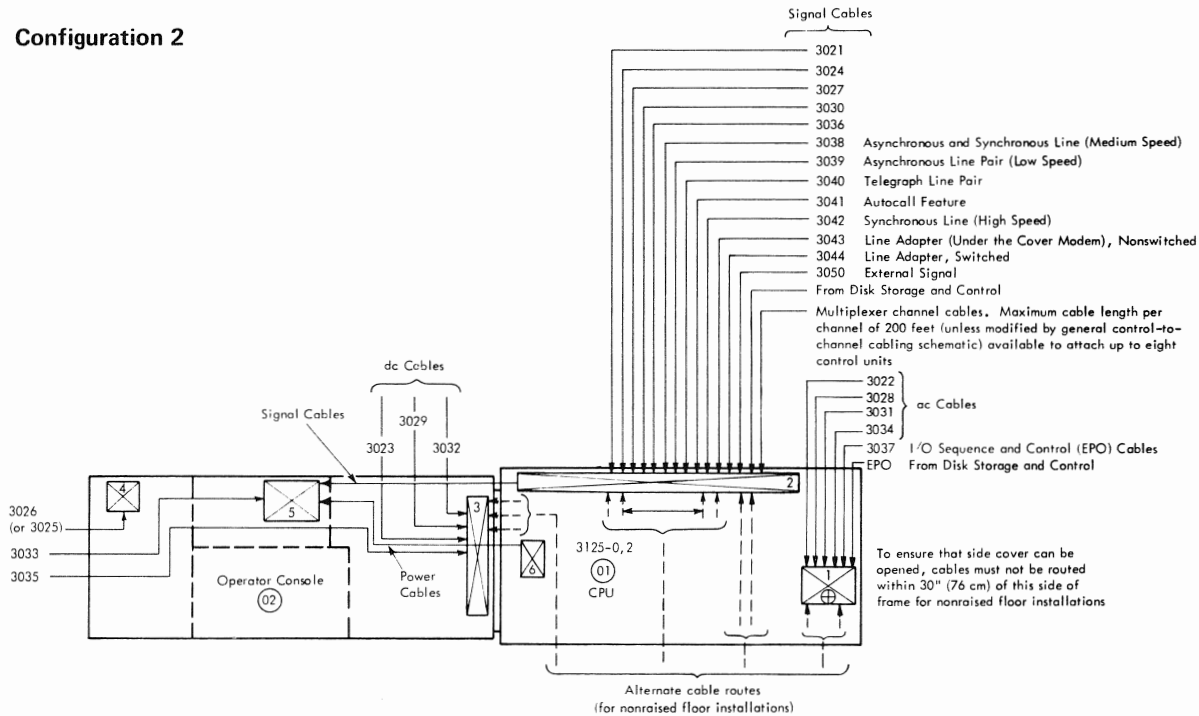


SYSTEM/370 MODEL 125 CABLING SCHEMATIC

Configuration 1



Configuration 2



**SYSTEM/370 MODEL 125 CABLING SCHEMATIC
 (CONFIGURATIONS 1 AND 2)**


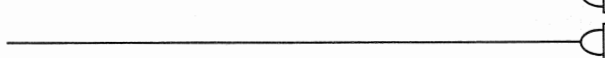



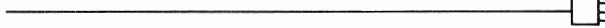


Group No.	No. of Cables	From	To	Cable Entry No.	Max Length (ft)	Notes
3021	3	2560-A1	3125-0, 2	2	18	1
3022	1	2560-A1	3125-0, 2	1	23	1
3023	1	2560-A1	3125-0, 2	3	23	1
3024	1	2560-A1	3125-0, 2	2	18	2
3026 (or 3025)	3	1403-2, 7, or N1	3125-0, 2	4	25	3
3027	2	3504-A1 or A2	3125-0, 2	2	20	4
3028	1	3504-A1 or A2	3125-0, 2	1	25	4
3029	1	3504-A1 or A2	3125-0, 2	3	20	4
3030	2	3525-P1, P2, or P3	3125-0, 2	2	20	5
3031	1	3525-P1, P2, or P3	3125-0, 2	1	25	5
3032	1	3525-P1, P2, or P3	3125-0, 2	3	20	5
3033	1	5213-1	3125-0, 2	5	10	6
3034	1	5213-1	3125-0, 2	1	20	6
3035	1	5213-1	3125-0, 2	3	25	6
3036	2	3411-1, 2, 3, or 3803-3	3125-0, 2	2	28	7
3037	1	3411-1, 2, 3, or 3803-3	3125-0, 2	1	35	7, 8
3038	1	Data Set	3125-0, 2	2	38	9, 17, 18, 19
3039	2	Data Set	3125-0, 2	2	38	10, 17, 18, 19
3040	1	Telegraph Terminal Board	3125-0, 2	2	38	11, 18, 19
3041	1	Data Set (Autocall)	3125-0, 2	2	38	12, 18, 19
3042	1	Data Set	3125-0, 2	2	38	13, 18, 19
3043	1	Common-Carrier Facility	3125-0, 2	2	38	14, 18, 19
3044	1	Common-Carrier Facility	3125-0, 2	2	38	15, 18, 19
3050	1	External Signal	3125-0, 2	2	200	16, 19

Notes:

1. For SF # 4670; order one of each cable group per feature.
2. For SF # 4674.
3. For SF # 4662, # 4667, or # 4668. For 50-Hz machines, use group number in parentheses.
4. For SF # 4680; order one of each cable group per feature.
5. For SF # 4685; order one of each cable group per feature.
6. For SF # 4692; order one of each cable group per feature.
7. For SF # 4675; order one of each cable group per feature.
8. Sequence and control (EPO).
9. For SF # 1231, # 1232, # 7131, # 7132, # 7141 through # 7144, and # 7151 through # 7154; order one of each cable group per feature.
10. For SF # 1241 and # 1242; order one cable group per feature.
11. For SF # 7881 and # 7882; order one cable group per feature.
12. For SF # 1291 through # 1296, order one cable group per feature.
13. For SF # 7121.
14. For SF # 4743 or # 4781; order one cable group per feature.
15. For SF # 4782 or # 4791; order one cable group per feature.
16. For SF # 3898 from non-IBM devices. For IBM machines, see Note 4 under "Units With Integral or Abutted Controls" in Section 4.
17. This cable group is *not* required when the associated SF numbers are a prerequisite for attaching line adapters (SF # 4743, # 4781, # 4782, or # 4791).
18. When ordering cable groups for ICA features, the order should indicate the line position to be used: A1-A8 for asynchronous line position and S1-S6 for synchronous line position. Assignment of line positions has definite restrictions that are related to SF numbers and to particular combinations of SF numbers.
19. See "Cables for IBM and Non-IBM Devices" for cable specifications.

SYSTEM/370 MODEL 125 CABLING SCHEMATIC

Cables for IBM and Non-IBM Devices

Group No.		Termination
3038		1 EIA RS-232A Connector or 1 CCITT Connector
3039		2 EIA RS-232A Connectors or 2 CCITT Connectors
3040		2 Pair #6 Spade Lugs
3041		1 EIA RS-232A Connector or 1 CCITT Connector
3042		12-Pin Burndy Connector
3043		1 WE-283B Plug; Customer Provides 404B Surface Mount or 493A Flush Mount Jacks
3044		4 Pair #6 Spade Lugs
3050		23-Pin Burndy Connector

SYSTEM/370 MODEL 135, 3135 PROCESSING UNIT

2319 Integrated File Adapter

The IBM System/370 Model 135 can provide direct access storage by attachment of the IBM 2319 Disk Storage Facility Model A1 via the 2319 Integrated File Adapter (IFA) feature. The basic IBM 2319-A1 configuration of three disk storage modules can be expanded to a maximum of eight disk storage modules by attachment of either an IBM 2312-A1 (one module), a 2318-A1 (two modules), or a 2319-A3 (three modules) to the basic 2319-A1. The disk storage units associated with the 2319 IFA cannot stand alone and must be attached as shown on the plan view.

As an alternative, the IBM 2314 Direct Access Storage Facility—A Series can be attached via the channel on the I/O interface. See specification pages for 2314—A Series (includes 2312 and 2318) and for 2319.

3330 Series Integrated File Adapter

The disk storage units associated with the IBM 3330 Series Integrated File Adapter are installed on a standalone basis. See specification pages for the individual units.

Note: If both the 2319 and the 3330 IFA are to be attached to one Model 135, the IFA Conversion Feature must be installed.

Console Printer-Keyboard

Either the IBM 3210 Console Printer-Keyboard Model 1 or the IBM 3215 Console Printer-Keyboard Model 1 can be attached as the online I/O device for operator-system communication; one is required. Neither uses a control unit position; that is, they do not count as one of the eight possible control units on a standard I/O interface. The console printer-keyboard occupies the space shown on the 3135 plan view. The weights shown on the specification pages for the 3210-1 and 3215-1 include the printer, printer-keyboard, and associated covers (including the base

plate). The support legs and forms carrier for the printer-keyboard are provided by the 3135 and their weight is included in the weight given for the console table. Power is provided from the 3135.

Power Requirements

The required 415/441-Hz (nominal) power for the 3135 CPU is provided from the IBM 3046 Power Unit Model 1. The customer must provide branch circuit connections for the 3046-1 and the 3135. Due to the nature of the 3046-1 starting and inrush currents, it is necessary to provide branch circuit fuse or circuit breaker protection that meets specified time/current trip characteristics. These may be referred to as "motor branch circuit protection circuit breakers." Refer to 3046-1 specifications (Branch Circuit Requirements) for required circuit protection specifications.

Power requirements for the System/370 Model 135 vary according to main storage capacity and the number of disk storage modules attached via the 2319 IFA feature; these requirements are listed in the 3046-1 and the 3135 specification pages.

Shipping Dimensions

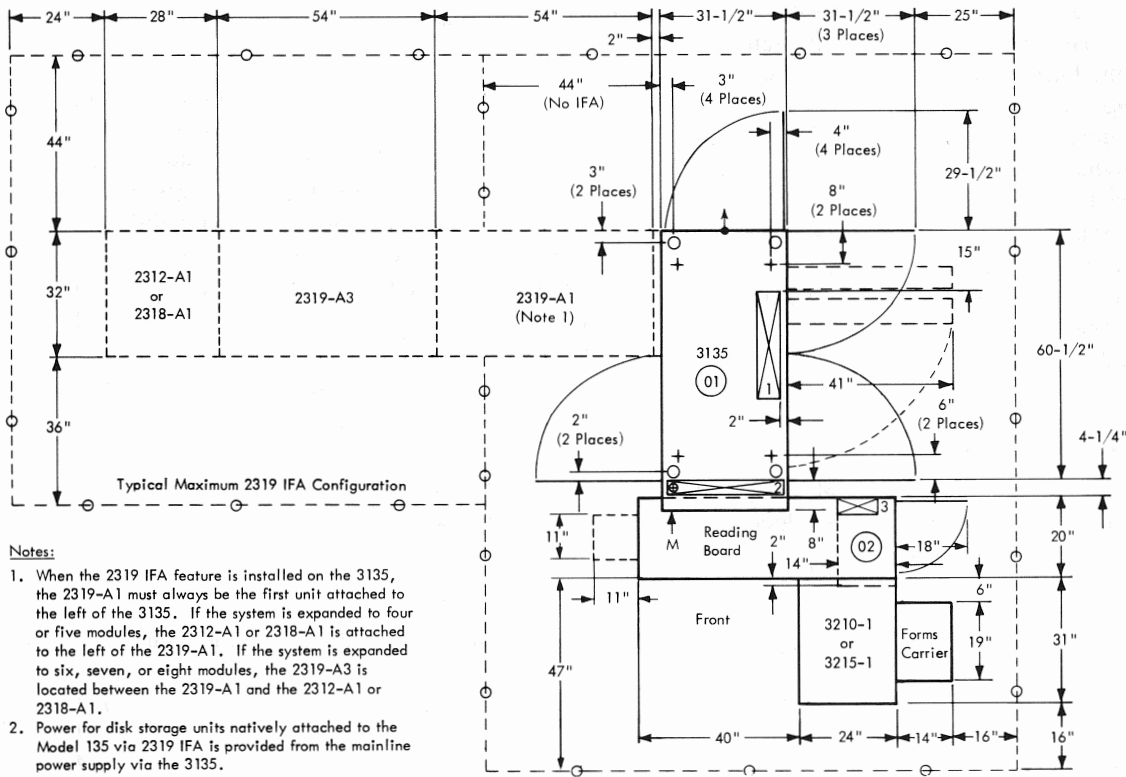
Unless otherwise specified, the shipping dimensions for the 3135 are:

<i>Unit</i>	<i>Length inches (cm)</i>	<i>Width inches (cm)</i>	<i>Height inches (cm)</i>
Frame 01	69 (175)	31-1/2 (80)	60 (152)
Front End	51 (130)	64 (163)	29 (74)

Removing the main frame covers reduces the main frame width to 29½ inches (75 cm). If a further reduction of the main frame dimensions is required, see your sales representative for the method of specifying on the order. The shipping dimensions then become 60 inches (152 cm) long, 29½ inches (75 cm) wide, and 59 inches (150 cm) high.

SYSTEM/370 MODEL 135, 3135 PROCESSING UNIT

PLAN VIEW



Notes:

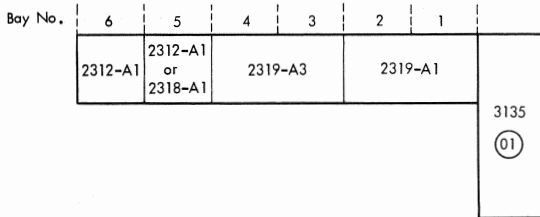
1. When the 2319 IFA feature is installed on the 3135, the 2319-A1 must always be the first unit attached to the left of the 3135. If the system is expanded to four or five modules, the 2312-A1 or 2318-A1 is attached to the left of the 2319-A1. If the system is expanded to six, seven, or eight modules, the 2319-A3 is located between the 2319-A1 and the 2312-A1 or 2318-A1.
2. Power for disk storage units natively attached to the Model 135 via 2319 IFA is provided from the mainline power supply via the 3135.
3. Floor opening is required for Integrated Printer Adapter (IPA) feature. With this feature installed, the door swing is reversed.
4. Front dimension of each bay is 27" (69 cm). Add 1" (3 cm) to leftmost bay to allow for end cover. Allow 24" (61 cm) left service clearance for leftmost bay.

Machine	Bays per Machine	Modules per Machine
2312-A1	1	1
2318-A1	1	2
2319-A1, A3	2	3

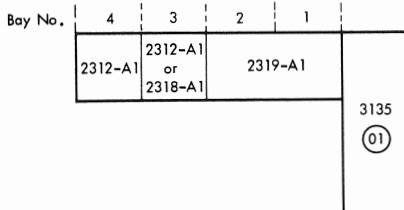
Cable Entry/Exit Number	Dimensions (Inches)	Notes
1	6 x 27	
2	4 x 29-1/2	
3	4 x 10	3

Valid Configurations for 2319 IFA Disk Storage (Note 4)

With 2319-A3: Maximum 6 Bays and 8 Modules



Without 2319-A3: Maximum 4 Bays and 5 Modules



SYSTEM/370 MODEL 135, 3135 PROCESSING UNIT

Details (By Frame)

System Units	Weight* lb (kg)	Heat Output* BTU/hr (kcal/hr)	Airflow* cfm (m ³ /min)	3135 kVA Power Requirements**			
				From Mainline Power Supply	From 3046-1***	Total	
3135 Model— Frame 01 (Main Storage Size)	FE (96k)	1,950 (890)	28,880 (7,300)	1,300 (37)	2.2	7.3	9.5
	GD (144k)	1,975 (900)	29,680 (7,500)	1,280 (37)		7.5	9.7
	GF (192k)	2,075 (950)	34,280 (8,650)	1,460 (42)		8.9	11.1
	DH (240k)	2,125 (970)	35,280 (8,900)	1,440 (41)		9.4	11.6
	H (256k)	2,125 (970)	33,830 (8,550)	1,460 (42)		9.0	11.2
	HF (320k)	2,125 (970)	34,430 (8,700)	1,460 (42)		9.1	11.3
	HG (384k)	2,125 (970)	35,030 (8,850)	1,440 (41)		9.3	11.5
	I (512k)	2,125 (970)	36,100 (9,100)	1,440 (41)		9.5	11.7
For IPA Optional Feature—Frame 02	110 (50)	3,400 (860)	80 (3)	0.0	1.2	1.2	

SPECIFICATIONS

Dimensions:

	F	S	H
Inches †	†	†	60
(cm) (†)	(†)	(†)	(152)

Service Clearances:

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

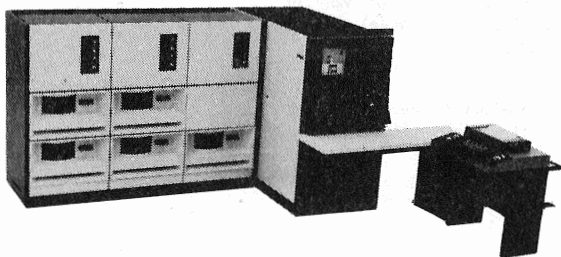
Power Requirements:**

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

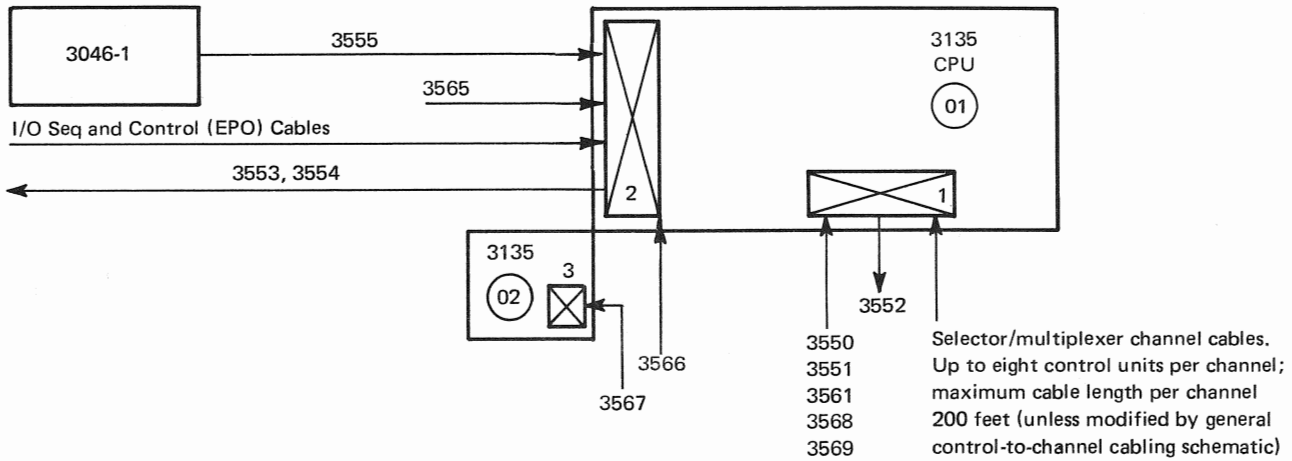
Notes:

- * Weight, airflow, and heat output include figures for the system control panel (incorporates the console file), console table, and printer-keyboard support. (System control panel weight is 65 lb [30 kg], system control panel heat output is 280 BTU/hr [71 kcal/hr], and console table and printer-keyboard support total weight is 150 lb [69 kg].)
- ** The mainline power is routed via the 3135 mainline power supply cord and the 3135 to the following:
 - Console printer-keyboard (3210-1 or 3215-1)
 - Natively attached disk storage (2319-A1, 2319-A3, 2312-A1, or 2318-A1)
 - Natively attached printer (1403-2, 7, or N1).
 The Details (By Frame) table does not include power for these devices. See the applicable machine specifications pages for this information.
- *** The 3046-1 derives its power independently (the 3046 input power is not part of the mainline power supply to the 3135). For all 3046-1 details, see the 3046 specifications page.

† See plan view.



SYSTEM/370 MODEL 135 CABLING SCHEMATIC



Group No.	No. of Cables	From	To	Cable Entry No.	Max Length (ft)	Notes
3550	1	Data Set, Modem, or Autocall	3135	1	40	5,6,9,10,11,13
3551	2	Direct Control	3135	1	50	1
3552	1	3135	System/360 or System/370 CPU	1	100	2
3553	1	3135	System/360 or System/370 CPU	2	150	3
3554	1	3135	System/360 or System/370 CPU	2	150	4
3555	2	3046-1	3135	2	50	-
3561	1	Data Set, Modem, or Autocall	3135	1	40	5,8,9,10,11,13
3562	1	Data Set or Modem	Cable Group 3550 or 3561	1	-	5,9
3563 or 3564	1	Autocall	Cable Group 3550 or 3561	1	-	5,10,11
3565	1	2711	3135	2	40	12
3566	1	1403-2, 7, or N1	3135	2	25	7
3567	2	1403-2, 7, or N1	3135	3	25	7
3568	1	2711	3135	1	40	6,13
3569	1	2711	3135	1	40	8,13

Cables from Non-IBM Devices

Group No.	Termination
3550	1 EIA RS-232A Connector or 1 CCITT Connector
3561	1 EIA RS-232A Connector or 1 CCITT Connector
3562	1 EIA RS-232C Connector (Male) or 1 CCITT Connector (Male) (See Note 9)
3563 } 3564 }	1 EIA RS-232C Connector (Male) or 1 CCITT Connector (Male) (See Note 11)

3561 is plugged into machine end connector for 3550

Attaches to Group 3550 or 3561

8" (203, 2 mm) Fixed Length

Attaches to Group 3550 or 3561

8" (203, 2 mm) Fixed Length

SYSTEM/370 MODEL 135 CABLING SCHEMATIC

Notes:

1. For SF #3274 from non-IBM device.
2. For interconnection of two System/360 or System/370 CPUs (SF #3274); order one per feature.
3. For SF #3621, two-system EPO connection.
4. For SF #3622, multisystem EPO connection. See Note 4 in "System/370 Specification Summary."
5. See "Cables from Non-IBM Devices" for cable specifications.
6. For SF #4640 (Modem 1)—Integrated Communication Adapter (ICA), SF #4723 (Modem 3), SF #4725 (Modem 5), SF #4727 (Modem 7), and SF #9777 (Autocall) through #9783; order one each per feature. Do not order for 2711 (see Note 10). When ordering cables, modem number should be indicated in "From" column.
7. For SF #4672 or #4677. Existing cable groups used for 1403 attachment to other units must be replaced. Cable group numbers 3566 and 3567 are equivalent to group number 3556. Do not order 3556.
8. For SF #4722 (Modem 2), SF #4724 (Modem 4), SF #4726 (Modem 6), SF #4728 (Modem 8), and SF #9777 (Autocall) through #9783; order one each per feature. When ordering cables, modem number should be indicated in "From" column. Do not order for 2711 (see Note 10).
9. The following modems require one fixed-length (8-inch) adapter cable: 3562 to connect cable group 3550 or 3561 to Western Electric W103A Modem (U.S. and Canada) or an IBM 3976 Model 1 mandatory modems GH-2002, GH-2003, and GH-1101-HJ; NTTPC modems DT203, DT205, and DT1205 (World Trade).
10. The modem, data set, autocall, and 2711 cable requirements depend on the combination of modem and autocall special features ordered. The use of the following chart will assist in determining the cable groups required.

ICA Line Position (Max 8)	SF # on ICA Position (Max 8)	Cable Group Number (Max 8)	
		For Use with Modems	For Use with 2711
1	4640	3550	3568
2		3561	3569
3		3550	3568
4		3561	3569
5		3550	3568
6		3561	3569
7		3550	3568
8		3561	3569

The special feature or sales feature numbers *on order* should be entered in the column entitled "SF # on ICA Position" in the following sequence: Modem #1—SF #4640, Modem #2—SF #4722, Modem #3—SF #4723, Modem #4—SF #4724, Modem #5—SF #4725, Modem #6—SF #4726, Modem #7—SF #4727, Modem #8—SF #4728; Autocall #1—SF #9777, Autocall #2—SF #9778, Autocall #3—SF #9779, Autocall #4—SF #9780, Autocall #5—SF #9781, Autocall #6—SF #9782, Autocall #7—SF #9783. Unused ICA positions must be at the bottom of the chart. Feature numbers for modems must be entered before feature numbers for autocall. Modem special feature numbers apply to data sets, modems, or 2711 applications. For each ICA position, order an appropriate cable group number from "Cable Group Number" column. A maximum of eight cables is permitted. When ordering cables, the modem number or line adapter machine number should be indicated in the "From" column.

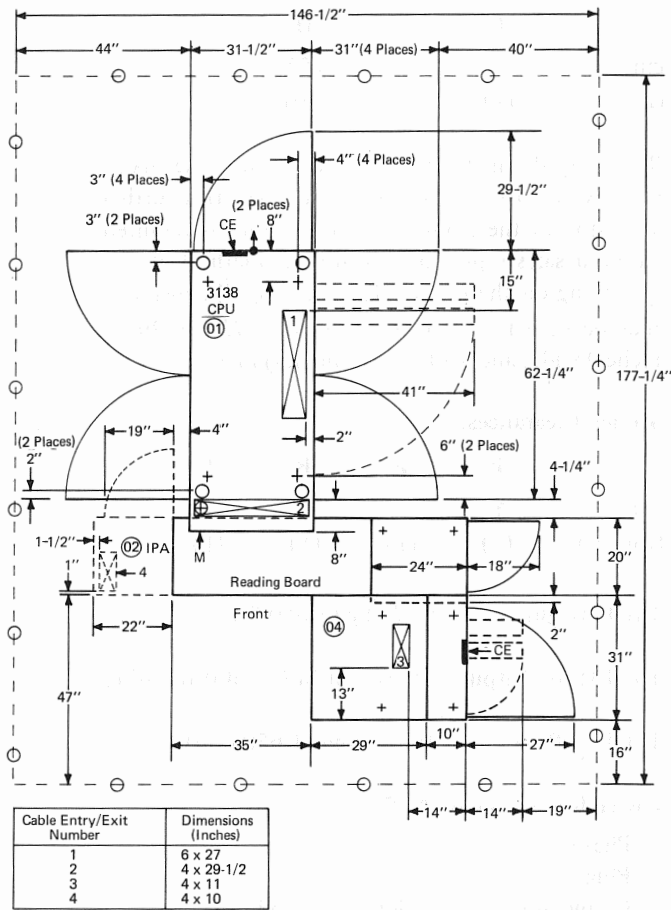
11. Order one fixed-length (8-inch) adapter cable for connection to any of the following communication facilities:

<i>Communication Facility</i>	<i>Cable Group Number</i>
Western Electric Data Auxiliary Set 801	3563
GPO DCE 1A	3564
Datel 600	3564
IBM 3872, 3874, or 3875	3563

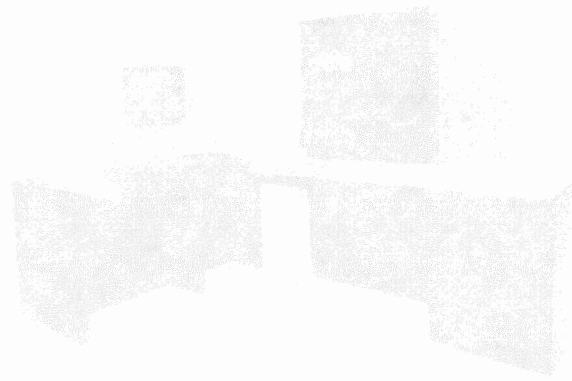
12. Sequence and control (EPO).
13. Maximum of eight cable groups: 3550, 3561, 3568, and 3569.

SYSTEM/370 MODEL 138, 3138 PROCESSING UNIT

PLAN VIEW



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SYSTEM/370 MODEL 138, 3138 PROCESSING UNIT

Details (By Frame)

Model	Frame	Weight kg (lb)	Airflow m ³ /min (cfm)	Heat Output kcal/hr (BTU/hr)	3138 kVA Power Requirements		
					From Mainline Power Supply	From 3046-1	Total
I,J	01	794 (1750)	38 (1350)	7,308 (29,000)	2.2	6.3	8.5
	04	272 (600)	9 (300)	0.62 (2,500)	1.5	1.5	2.0
For IPA Optional Feature—Frame 02		50 (110)	3 (80)	0.860 (3,400)	0.0	1.2	1.2

Notes:

* The customer must provide branch circuit connections for the 3046-1 and the 3138. Because of the nature of the 3046-1 starting and inrush currents, it is necessary to provide branch circuit fuse or circuit breaker protection that meets specified time/current trip characteristics. These may be referred to as "motor branch circuit protection circuit breakers." Refer to 3046-1 specifications (Branch Circuit Requirements) for required circuit protection specifications.

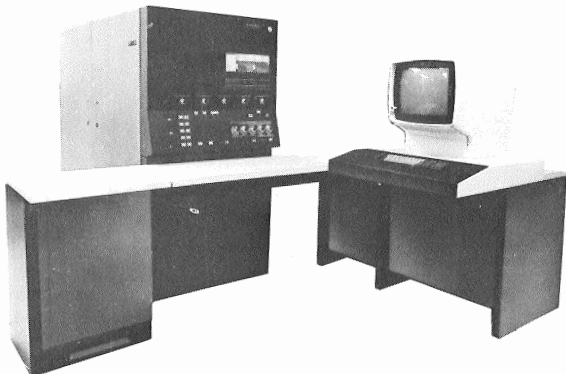
The mainline power is routed via the 3138 mainline power supply cord and the 3138 to the following:

- Natively attached printer (1403-2, 7, or N1)
- Natively attached printer 3203-4.

The Details (By Frame) table does not include power for the natively attached printer. See the applicable machine specifications pages for this information.

** The 3046-1 derives its power independently (the 3046 input power is not part of the mainline power supply to the 3138). For all 3046-1 details, see the 3046 specifications page.

† See plan view.



SPECIFICATIONS

Dimensions:

	F	S	H
cm	†	†	152
(Inches)	(†)	(†)	(60)

Removing the main frame covers reduces the main frame width to 75 cm (29-1/2 inches). If a further reduction of the main frame dimensions is required, see your sales representative for the method of specifying on the order. The shipping dimensions then become 152 cm (60 inches) long, 75 cm (29-1/2 inches) wide, and 150 cm (59 inches) high.

Service Clearances:

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

Total Weight: 1.075 kg (2,350 lb)

Total Heat Output: 7,950 kcal/hr (31,500 BTU/hr)

Total Airflow: 46 m³/min (1,650 cfm)

Power Requirements:* **

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

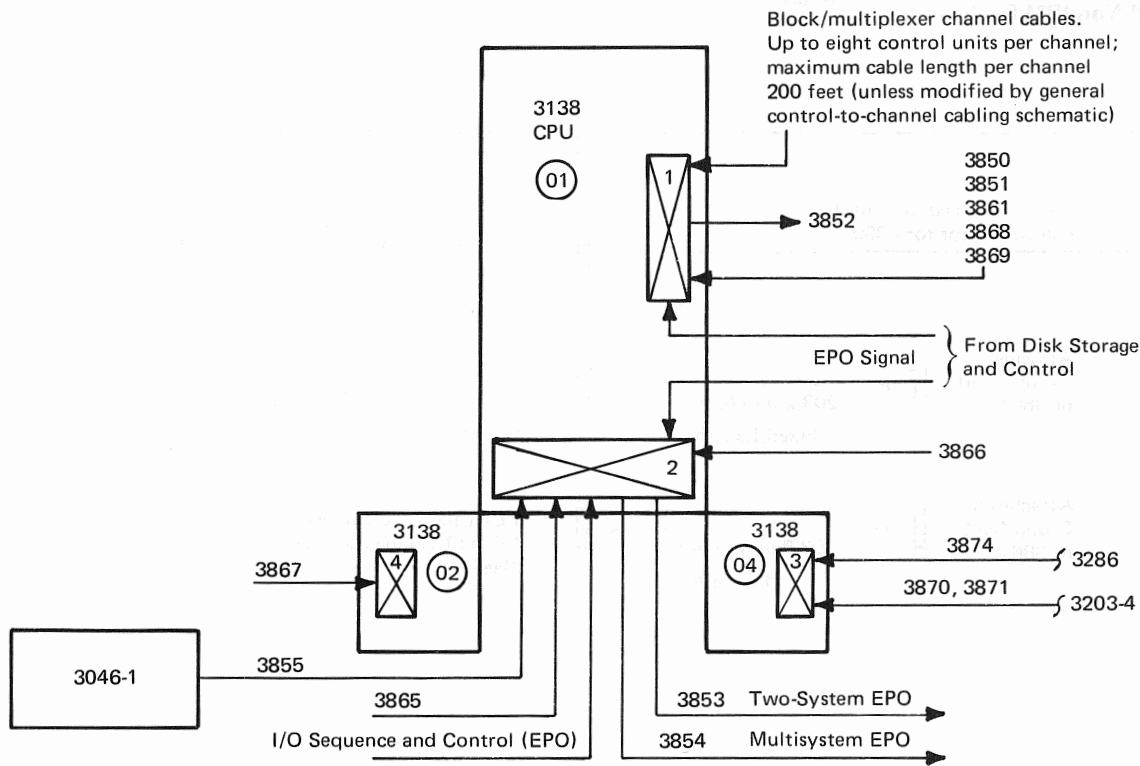
Environment Operating:

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

Environment Nonoperating:

Temperature	10 ^o -43 ^o C (50 ^o -110 ^o F)
Rel Humidity	20%-80%
Max Wet Bulb	27 ^o C (80 ^o F)

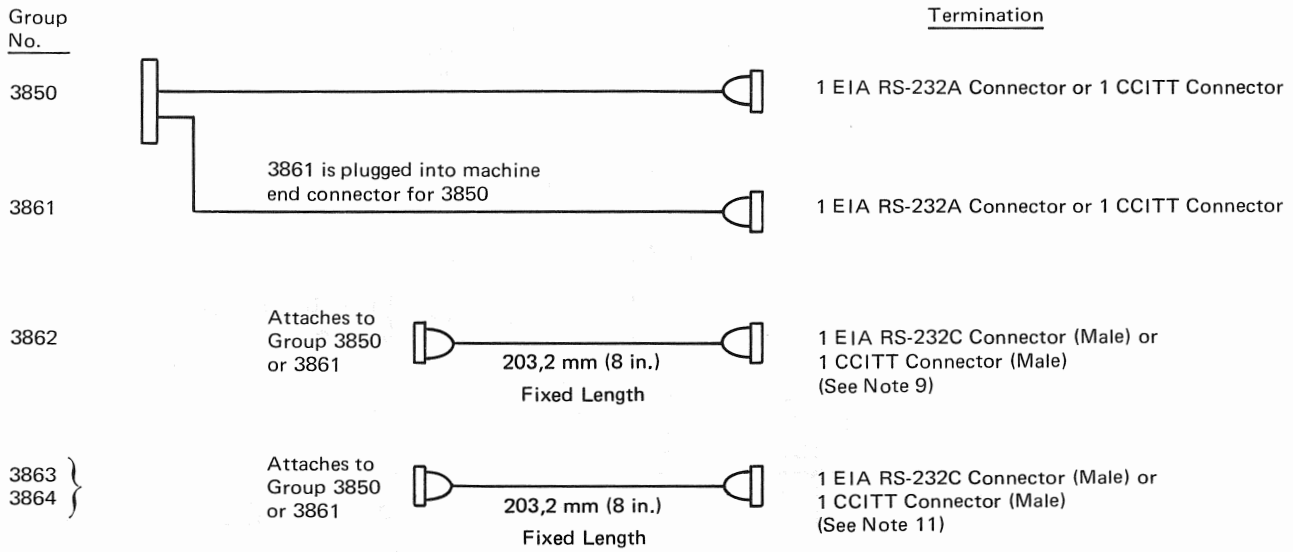
SYSTEM/370 MODEL 138 CABLING SCHEMATIC



Group No.	No. of Cables	From	To	Cable Entry No.	Max Length M (ft)	Notes
3850	1	Data Set, Modem, or Autocall	3138	1	12.2 (40)	5, 6, 9, 10, 11, 13, 14
3851	2	Direct Control	3138	1	15.3 (50)	1, 14
3852	1	3138	System/360 or System/370 CPU	1	30.5 (100)	2, 14
3853	1	3138	System/360 or System/370 CPU	2	45.7 (150)	3, 14
3854	1	3138	System 360 or System/370 CPU	2	45.7 (150)	4, 14
3855	2	3046-1	3138	2	15.3 (50)	14
3861	1	Data Set, Modem, or Autocall	3138	1	12.2 (40)	5, 8, 9, 10, 11, 13, 14
3862	1	Data Set or Modem	Cable Group 3850 or 3861	1	-	5, 9, 14
3863 or 3864	1	Autocall	Cable Group 3850 or 3861	1	-	5, 11, 14
3865	1	2711	3138	2	12.2 (40)	12, 14
3866	1	1403-2, 7, or N1	3138	2	7.6 (25)	7, 14
3867	2	1403-2, 7, or N1	3138	3	7.6 (25)	7, 14
3868	1	2711	3138	1	12.2 (40)	6, 13, 14
3869	1	2711	3138	1	12.2 (40)	8, 13, 14
3870	4	3203-4	3138	3	4.9 (16)	15
3871	4	3203-4	3138	3	4.9 (16)	16
3874	1	3286	3138	3	Max 609.6 (2000)	

SYSTEM/370 MODEL 138 CABLING SCHEMATIC

Cables for IBM and Non-IBM Devices



SYSTEM/370 MODEL 138 CABLING SCHEMATIC

Notes:

1. For SF #3274 from non-IBM device.
2. For interconnection of two System/360 or System/370 CPUs (SF #3274); order one per feature.
3. For SF #3621, two-system EPO connection.
4. For SF #3622, multisystem EPO connection. See Note 4 in "System/370 Specification Summary."
5. See "Cables for IBM and Non-IBM Devices" for cable specifications.
6. For SF #4640 (Modem 1)—Integrated Communications Adapter (ICA), SF #4723 (Modem 3), SF #4725 (Modem 5), SF #4727 (Modem 7), and SF #9777 (Autocall) through #9783; order one each per feature. Do not order for 2711 (see Note 10). When ordering cables, modem number should be indicated in "From" column.
7. For SF #4672 or #4677. Existing cable groups used for 1403 attachment to other units must be replaced. Cable group numbers 3866 and 3867 are equivalent to group number 3856. Do not order 3856.
8. For SF #4722 (Modem 2), SF #4724 (Modem 4), SF #4726 (Modem 6), SF #4728 (Modem 8), and SF #9777 (Autocall) through #9783; order one each per feature. When ordering cables, modem number should be indicated in "From" column. Do not order for 2711 (see Note 10).
9. The following modems require one fixed-length (8-inch) adapter cable: 3862 to connect cable group 3850 or 3861 to Western Electric W103A Modem (U.S. and Canada) or an IBM 3976 Model 1 mandatory modems GH-2002, GH-2003, and GH-1101-HJ; NTPC modems DT203, DT205, and DT1205 (World Trade).
10. The modem, data set, autocall, and 2711 cable requirements depend on the combination of modem and autocall special features ordered. The use of the following chart will assist in determining the cable groups required.

ICA Line Position (Max 8)	SF # on ICA Position (Max 8)	Cable Group Number (Max 8)	
		For Use with Modems	For Use with 2711
1	4640	3850	3868
2		3861	3869
3		3850	3868
4		3861	3869
5		3850	3868
6		3861	3869
7		3850	3868
8		3861	3869

The special feature or sales feature numbers *on order* should be entered in the column entitled "SF # on ICA Position" in the following sequence: Modem #1-SF #4640, Modem #2-SF #4722, Modem #3-SF #4723, Modem #4-SF #4724, Modem #5-SF #4725, Modem #6-SF #4726, Modem #7-SF #4727, Modem #8-SF #4728; Autocall #1-SF #9777, Autocall #2-SF #9778, Autocall #3-SF #9779, Autocall #4-SF #9780, Autocall #5-SF #9781, Autocall #6-SF #9782, Autocall #7-SF #9783. Unused ICA positions must be at the bottom of the chart. Feature numbers for modems must be entered before feature numbers for autocall. Modem special feature numbers apply to data sets, modems, or 2711 applications. For each ICA position, order an appropriate cable group number from "Cable Group Number" column. A maximum of eight cables is permitted. When ordering cables, the modem number or line adapter machine number should be indicated in the "From" column.

11. Order one fixed-length (8-inch) adapter cable for connection to any of the following communication facilities:

<i>Communication Facility</i>	<i>Cable Group Number</i>
Western Electric Data Auxiliary Set 801	3863
GPO DCE 1A	3864
Datel 600	3864
IBM 3872, 3874, or 3875	3863

12. Sequence and control (EPO).
13. Maximum of eight cable groups: 3850, 3861, 3868, and 3869.
14. Whenever a 3138 is a direct replacement for a 3135, cable group numbers 3550 through 3569 can be used in place of cable group numbers 3850 through 3869, respectively.
15. Required for all 60 Hz.
16. Required for all 50 Hz.

SYSTEM/370 MODEL 145, 3145 PROCESSING UNIT

Integrated File Adapter (FED, GE, GFD, H, HG, I)

The IBM System/370 Model 145 can provide direct access storage by attachment of the IBM 2319 Disk Storage Facility Model A1 via the Integrated File Adapter (IFA) feature. The basic IBM 2319-A1 configuration of three disk storage modules can be expanded to a maximum of eight disk storage modules by attachment of combinations of the IBM 2312, 2313, 2318 Model A1, and 2319 Model A2 to the basic 2319 Model A1. Alternately, the IBM 2314 Direct Access Storage Facility—A Series can be attached via the channel on the I/O interface. See the specifications pages for 2314—A Series (includes 2312, 2313, and 2318) and for 2319.

When the IFA feature is installed on the 3145, the 2319-A1 must always be the first unit attached to the left side of 3145 frame 03. Power for these disk storage units is provided from the 3145; all cables are internal cables provided with the units. Note that with the IFA feature installed, only two selector channels (channels 2 and 3) are available on the system to attach I/O devices.

Integrated Storage Controls (H2, HG2, I2, IH2, J2, JI2, K2)

The IBM System/370 Model 145 H2, HG2, I2, IH2, J2, JI2, and K2 can provide direct access storage via the Integrated Storage Controls (ISC) feature.

Console Printer-Keyboard

Either the IBM 3210 Console Printer-Keyboard Model 1 or the IBM 3215 Console Printer-Keyboard Model 1 can be attached as the online I/O device for operator-system communication; one is required. The console printer-keyboards do not use a control unit position; that is, they do not count as one of the eight possible control units on a standard I/O interface. The console printer-keyboard occupies the space shown on the 3145 plan view and may be put on either the right or left console table extension. The weights shown on the specification pages for the 3210-1 and 3215-1 include the printer, printer-keyboard, and associated covers (including the base plate). The support legs and forms carrier for the printer-keyboard are provided by the 3145 and their weight is included in the weight given for console file and table. Power is provided from 3145.

An IBM 3210 Console Printer-Keyboard Model 2 can be remotely attached at up to 75 wire feet from the processing

unit. For 3210-2 World Trade machines operated at 50 Hz or at 60 Hz, 200V, power is provided from the 3145. For machines operated at 60 Hz, 115, 208, or 230V, a power cord is provided.

Power Requirements

The customer is required to provide branch circuit connections for the 3046-1, the 3145 frame 03, and the 3210-2 for Models FED, GE, GFD, H, HG, and I. The customer must provide branch circuit connections for the 3145 frame 03 and the 3210-2 on Models H2, HG2, I2, IH2, J2, JI2, and K2. To avoid tripping the branch circuit breaker when starting the 3145, it is necessary to provide branch circuit fuse or circuit breaker protection that meets specified time/current trip characteristics. These are referred to as "motor branch circuit protection circuit breakers." Refer to Model 145 FED to I, Model 145 H2 to K2, and 3046-1 specifications (Branch Circuit Requirements) for required circuit protection specifications.

Power requirements for the System/370 Model 145 vary according to main storage capacity and the number of disk storage modules attached via the IFA feature; these requirements are listed in the 3046-1 and the 3145 specification pages.

Shipping Dimensions

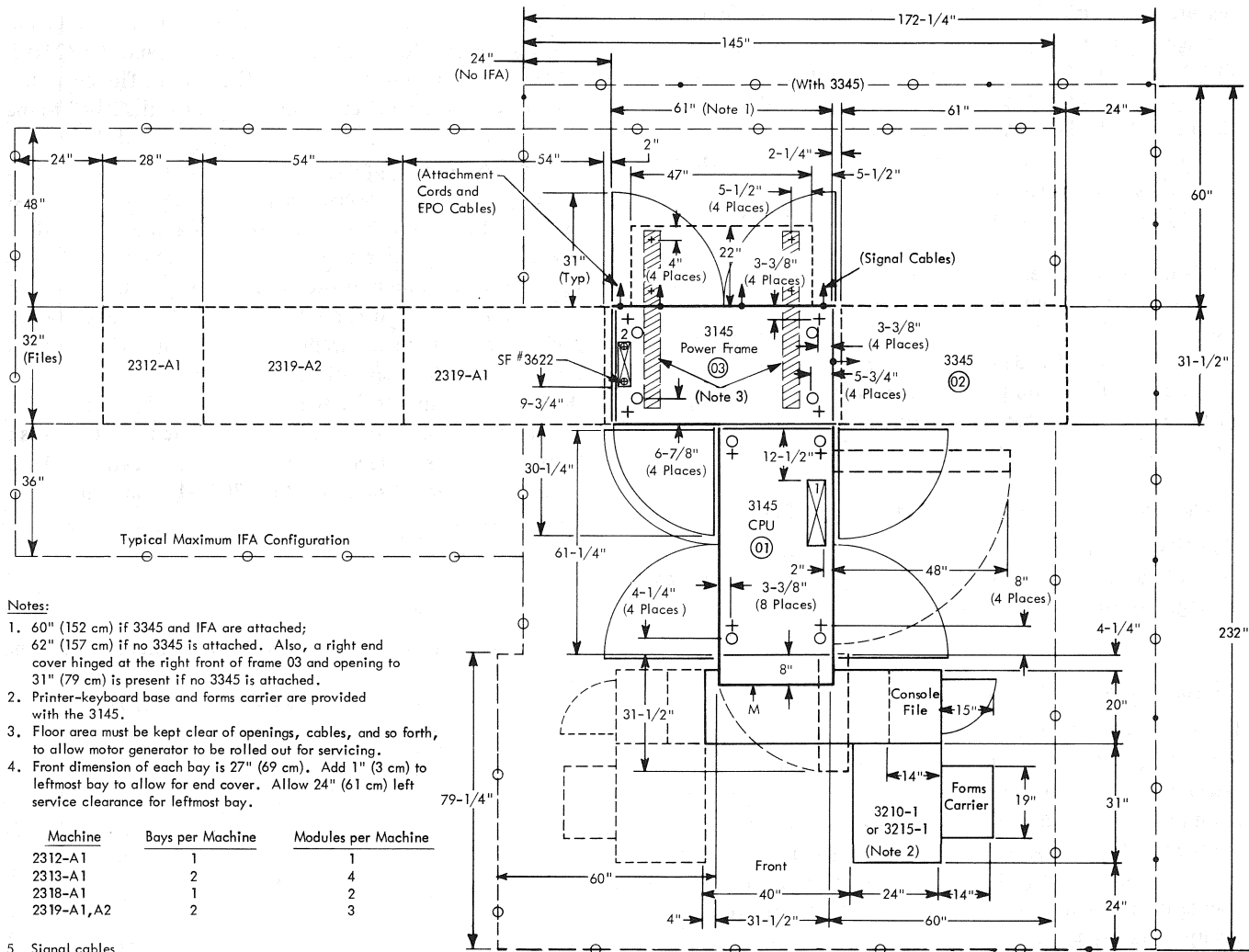
Unless otherwise specified, the shipping dimensions for the 3145 are:

<i>Unit</i>	<i>Length inches (cm)</i>	<i>Width inches (cm)</i>	<i>Height inches (cm)</i>
Frame 01	70 (178)	31-1/2 (80)	60 (152)
Frame 03	62 (157)	31-1/2 (80)	60 (152)
Front End	55 (140)	25 (64)	65 (165)

Removal of the side covers on frames 01 and 03 reduces the width of these units to 29½ inches (75 cm). If a reduction of frame 01 length is needed, see your sales representative for method of specifying on the order. The shipping dimensions for frame 01 then become 60 inches (152 cm) long, 29½ inches (75 cm) wide, and 69 inches (175 cm) high. Frame 03 shipping length can be reduced to 60 inches (152 cm) by removing the end and side covers.

**SYSTEM/370 MODEL 145 FED, GE, GFD, H, HG, AND I
 3145 PROCESSING UNIT**

PLAN VIEW (Also shows integrated files and main storage frames)



Notes:

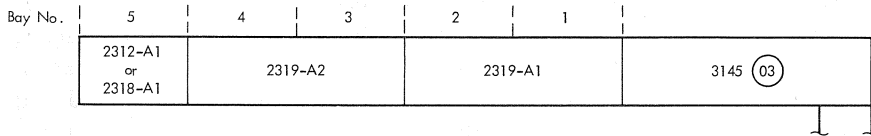
- 60" (152 cm) if 3345 and IFA are attached;
 62" (157 cm) if no 3345 is attached. Also, a right end cover hinged at the right front of frame 03 and opening to 31" (79 cm) is present if no 3345 is attached.
- Printer-keyboard base and forms carrier are provided with the 3145.
- Floor area must be kept clear of openings, cables, and so forth, to allow motor generator to be rolled out for servicing.
- Front dimension of each bay is 27" (69 cm). Add 1" (3 cm) to leftmost bay to allow for end cover. Allow 24" (61 cm) left service clearance for leftmost bay.

Machine	Bays per Machine	Modules per Machine
2312-A1	1	1
2313-A1	2	4
2318-A1	1	2
2319-A1,A2	2	3

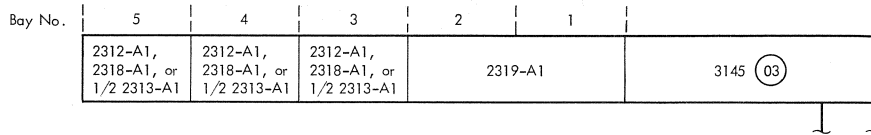
- Signal cables.
- Attachment cords and EPO cables.

Valid Configurations for IFA Disk Storage (Note 4)

With 2319-A2: Maximum 5 Bays and 8 Modules



Without 2319-A2: Maximum 5 Bays and 8 Modules



Cable Entry/Exit Number	Dimensions (Inches)	Notes
1	5 x 18	5
2	3 x 12	6

**SYSTEM/370 MODEL 145 FED, GE, GFD, H, HG, AND I
 3145 PROCESSING UNIT**

Details (By Frame)

System Model	Frame	Weight lb (kg)		Airflow cfm (m ³ /min)	Heat Output BTU/hr (kcal/hr)	kVA
		50 Hz	60 Hz			
FED	01	1,605 (730)	1,605 (730)	1,310 (38)	29,900 (7.550)	10.3
FED	03	1,740 (790)	1,615 (740)	290 (9)	12,000 (3.050)	4.2
GE	01	1,625 (740)	1,625 (740)	1,310 (38)	33,100 (8.350)	11.4
GE	03	1,740 (790)	1,615 (750)	290 (9)	13,000 (3.300)	4.5
GFD	01	1,645 (750)	1,645 (750)	1,310 (38)	36,000 (9.100)	12.5
GFD	03	1,740 (790)	1,615 (740)	290 (9)	14,300 (3.650)	4.9
H	01	1,665 (760)	1,665 (760)	1,310 (38)	38,700 (9.750)	13.4
H	03	1,740 (790)	1,615 (740)	290 (9)	14,800 (3.750)	5.1
HG	01	1,665 (760)	1,665 (760)	1,310 (38)	38,700 (9.750)	13.4
HG	03	1,740 (790)	1,615 (740)	290 (9)	14,800 (3.750)	5.1
I	01	1,665 (760)	1,665 (760)	1,310 (38)	38,700 (9.750)	13.4
I	03	1,740 (790)	1,615 (740)	290 (9)	14,800 (3.750)	5.1
All	Console File and Table	350 (160)	350 (160)	0 (0)	300 (76)	From 3145

Note: See also 2314-A Series, 2319-A1, 3046-1, 3210-1, 3210-2, 3215-1, 3345-1 to 5, and 3145 System Requirements.

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	*	*	60
(cm)	(*)	(*)	(152)

Service Clearances:

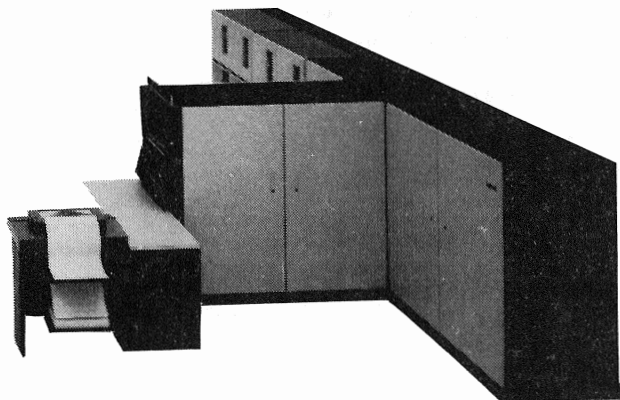
	F	R	Rt	L
Inches	*	*	*	*
(cm)	(*)	(*)	(*)	(*)

Branch Circuit Requirements

	200**	208	220***	230	235***	380***	408***
Voltage	200**	208	220***	230	235***	380***	408***
Phases	3	3	3	3	3	3	3
Ampacity	100	100	100	100	100	60	60
Protection (Cont)	100	100	100	100	100	60	60
Protection (For 1 second) or Adjustable Trip Set for	600	600	600	600	600	400	400
Max Cont Load (A) for:							
3145 FED	57	55	52	49	48	33	30
3145 GE	60	59	55	53	52	35	33
3145 GFD	65	63	60	56	55	38	35
3145 H	69	66	63	60	59	40	36
3145 HG and I	71	68	65	61	60	41	37
Plug Connector	R&S, JPS1034H						
Receptacle	R&S, JCS1034H						
	R&S, JRSR1034H						
Power Cord Style	F4		F2		F2	F2	F2

Notes:

- * See plan view.
- ** Applies to 50-Hz and 60-Hz World Trade machines.
- *** Apply to 50-Hz World Trade machines.



**SYSTEM/370 MODEL 145 FED, GE, GFD, H, HG, AND I
 3145 PROCESSING UNIT**

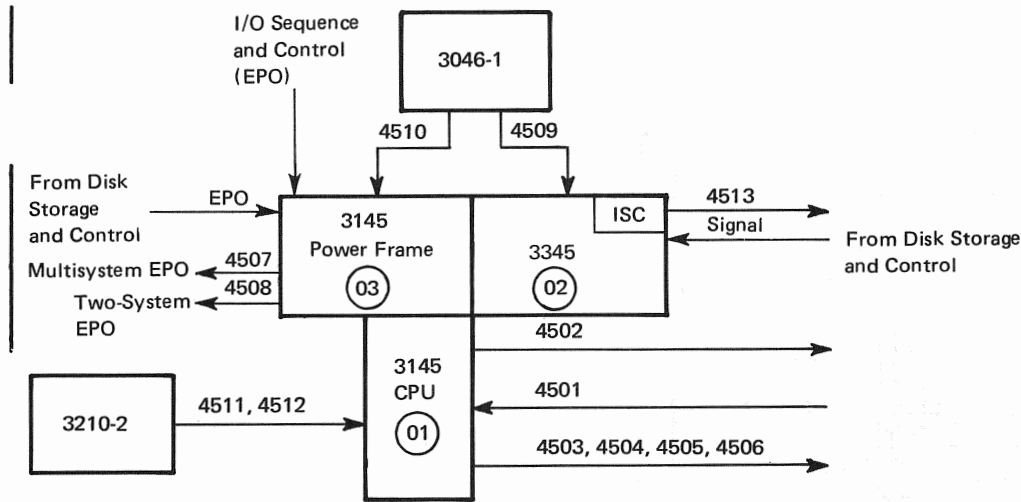
System Requirements

System Units	kVA Power Requirements by System Model							Disk Storage Attached to System					
	Supplied from 3145 Power Cord (Note 3)					Supplied from 3046-1 Power Cord (Note 4)							
	FED	GE	GFD	H	HG and I	HG	I	No. of Modules	2312-A1	2313-A1	2318-A1	2319-A1	2319-A2
3145 (Frame 01)	10.3	11.4	12.5	13.4	13.4	-	-						
3145 (Frame 03)	4.2	4.5	4.9	5.1	5.1	-	-						
3210-1 or 3215-1	Note 2	Note 2	Note 2	Note 2	Note 2	-	-						
Total (Note 1)	14.5	15.9	17.4	18.5	18.5	-	-	0					
	16.3	17.7	19.2	20.3	20.3	-	-	3				X	
	17.0	18.4	19.9	21.0	21.0	-	-	4	X			X	
	17.7	19.1	20.6	21.7	21.7	-	-	5			X	X	
	18.4	19.8	21.3	22.4	22.4	-	-	6	X		X	X	
	18.1	19.5	21.0	22.1	22.1	-	-	6				X	X
	19.1	20.5	22.0	23.1	23.1	-	-	7		X		X	
	18.8	20.2	21.7	22.8	22.8	-	-	7	X			X	X
	19.8	21.2	22.7	23.8	23.8	-	-	8	X	X		X	
	19.5	20.9	22.4	23.5	23.5	-	-	8			X	X	X
3046-1	-	-	-	-	-	3.6	3.8						
3345-1	-	-	-	-	0.5	4.8	-						
3345-2	-	-	-	-	0.5	-	7.8						
3345-3	1.8	1.8	1.8	1.8	-	-	-						
3345-4	-	-	-	-	3.1	4.8	-						
3345-5	-	-	-	-	3.1	-	7.8						

Notes:

- Each "total" kVA entry in this summary is a total of the power requirements for one 3145, one 3210-1 or 3215-1, and combinations (from none to all) of natively attached disk storage. The kVA is shown for each frame and indicates the power cord source of supply. This summary does not replace individual system/machine specifications.
- For 60-Hz (U.S. only) systems, power is included with 3145 frame 01. For all 50-Hz and for 60-Hz (World Trade Only), 200V systems, add 0.1 kVA if 3210-2 is attached.
- Total power is the sum of the appropriate total from Note 1 and from the 3345-1, 2, 3, 4, or 5.
- Total power is the sum of the amounts shown for the 3046-1 and the 3345-1, 2, 4, or 5.

**SYSTEM/370 MODEL 145 FED, GE, GFD, H, HG, AND I
 CABLING SCHEMATIC**



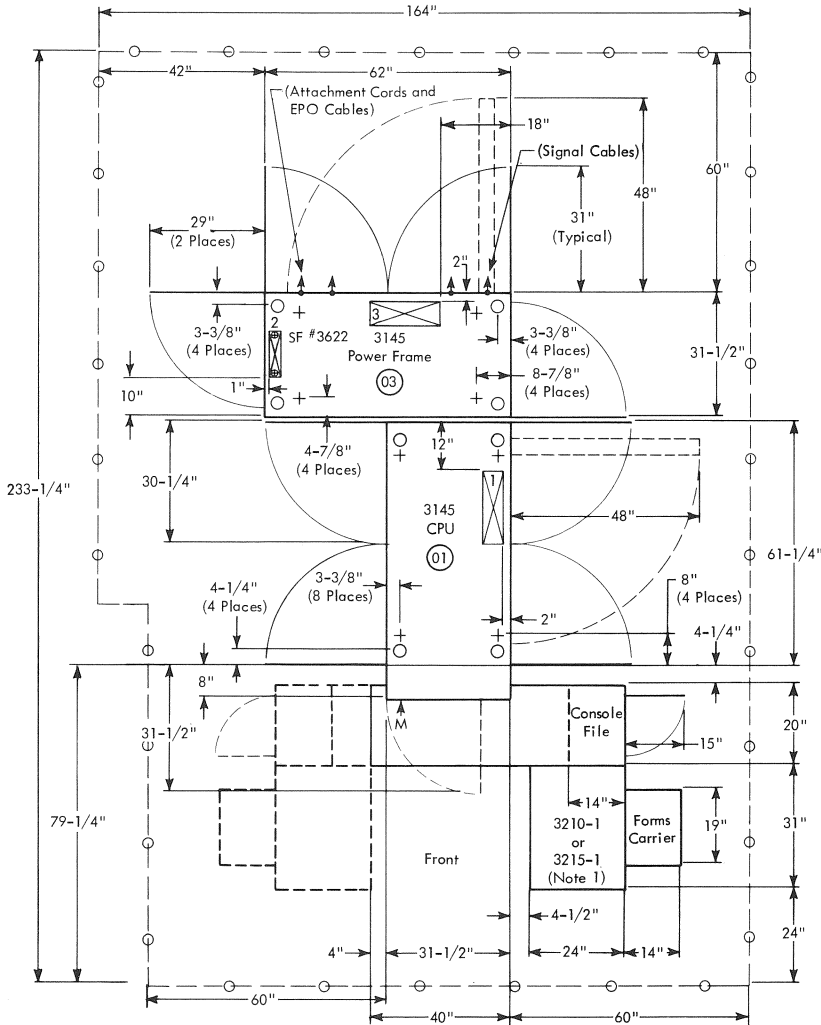
Group No.	No. of Cables	From	To	Max Length (ft)	Notes
4501	2	Direct Control	3145 Fr 01	50	3
4502	1	3145 Fr 01	System/360 or System/370 CPU	100	2
4503	2	3145 Fr 01	Control Unit	-	1
4504	2	3145 Fr 01	Selector or Block Multiplexer Channel	-	1
4505	2	3145 Fr 01	Byte Multiplexer Channel	-	1
4506	2	3145 Fr 01	Channel-to-Channel Adapter	-	1
4507	1	3145 Fr 03	System/360 or System/370 CPU	100	5
4508	1	3145 Fr 03	System/360 or System/370 CPU	100	4
4509	1	3046-1	3345-1, 2, 4, or 5 (Fr 02)	50	10
4510	2	3046-1	3145 Fr 03	50	10
4511	1	3210-2	3145 Fr 01	75	7
4512	1	3210-2	3145 Fr 01	75	6
4513	2	3345-3, 4, or 5	CPU, Channel, or Control Unit	150	8,9

Notes:

- From channel-to-channel adapter (SF # 1850); maximum cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to six control units. This restriction applies to both connected channels (X and Y).
- For the interconnection of two System/360 or System/370 CPUs (SF # 3274); order one per feature.
- For SF # 3274 from non-IBM device.
- To SF # 3621, two-system EPO connection.
- To SF # 3622, multisystem EPO connection. See Note 4 in "System/370 Specification Summary."
- Use for all 50-Hz and 200V, 60-Hz World Trade machines.
- For 3210 Model 2 adapter feature (SF # 7845).
- Used only with 3345-3, 4, or 5. Order two cable groups if 3345 has SF # 8100 (two-channel switch feature).
- ISC is cabled the same as for normal channel interface cabling.
- The 3046-1 is *not* required for 3345-3.

**SYSTEM/370 MODEL 145 H2, HG2, I2, IH2, J2, JI2, AND K2
3145 PROCESSING UNIT**

PLAN VIEW



Notes:

1. Printer-keyboard base and forms carrier are provided with the 3145.
2. Signal cables.
3. Attachment cords and EPO cables.
4. ISC signal cables.

Cable Entry/Exit Number	Dimensions (Inches)	Notes
1	5 x 18	2
2	3 x 12	3
3	6 x 18	4

**SYSTEM/370 MODEL 145 H2, HG2, I2, IH2, J2, JI2, AND K2
3145 PROCESSING UNIT**

Details (By Frame)

System Model	Frame	Weight lb (kg)		Airflow cfm (m ³ /min)	Heat Output BTU/hr (kcal/hr)	kVA
		50 Hz	60 Hz			
H2	01	1,665 (760)	1,665 (760)	1,310 (38)	34,000 (8.600)	11.1
H2	03	930 (430)	870 (400)	1,200 (35)	11,000 (2.800)	3.9
HG2	01	1,665 (760)	1,665 (760)	1,310 (38)	34,000 (8.600)	11.1
HG2	03	1,450 (660)	1,390 (640)	1,200 (35)	13,000 (3.300)	4.7
I2	01	1,665 (760)	1,665 (760)	1,310 (38)	34,000 (8.600)	11.1
I2	03	1,455 (660)	1,395 (640)	1,200 (35)	14,700 (3.750)	5.3
IH2	01	1,665 (760)	1,665 (760)	1,310 (38)	34,000 (8.600)	11.1
IH2	03	1,475 (680)	1,415 (650)	1,200 (35)	17,100 (4.350)	6.1
J2	01	1,665 (760)	1,665 (760)	1,310 (38)	34,000 (8.600)	11.1
J2	03	1,480 (680)	1,420 (650)	1,200 (35)	18,500 (4.700)	6.7
JI2	01	1,665 (760)	1,665 (760)	1,310 (38)	34,000 (8.600)	11.1
JI2	03	1,625 (740)	1,565 (710)	1,325 (38)	24,000 (6.050)	8.0
K2	01	1,665 (760)	1,665 (760)	1,310 (38)	34,000 (8.600)	11.1
K2	03	1,630 (740)	1,570 (710)	1,325 (38)	27,400 (6.900)	9.5
All	Console File and Table	350 (160)	350 (160)	0 (0)	300 (76)	From 3145

Note: See also 3047-1, 3210-1, 3210-2, 3215-1, and 3145 System Requirements.

SPECIFICATIONS

Dimensions:

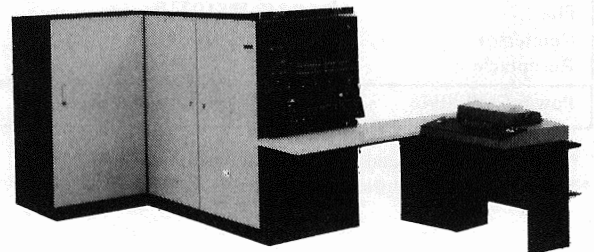
	F	S	H
Inches	*	*	60
(cm)	(*)	(*)	(152)

Service Clearances:

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

Notes:

* See plan view.



**SYSTEM/370 MODEL 145 H2, HG2, I2, IH2, J2, JI2, AND K2
3145 PROCESSING UNIT**

System Requirements

System Units	kVA Power Requirements by System Model (Supplied from 3145 Power Cord)						
	H2	HG2	I2	IH2	J2	JI2	K2
3047-1	6.7	6.7	6.7	6.7	6.7	6.7	6.7
3145 (Frame 01)	11.1	11.1	11.1	11.1	11.1	11.1	11.1
3145 (Frame 03)	3.9	4.7	5.3	6.1	6.7	8.0	9.5
3210-1, 3210-2 (WT), or 3215-1	Note 2	Note 2	Note 2	Note 2	Note 2	Note 2	Note 2
Total (Notes 1, 3)	21.7	22.5	23.1	23.9	24.5	25.8	27.3

Notes:

1. Each total kVA entry in this summary is a total of the power requirements for one 3145-2, one 3210-1 or 3215-1, and one 3047-1.
2. Power is included with 3145 frame 01.
3. If SF #4660 (ISC) is not installed, these values may be reduced by 1.8 kVA.

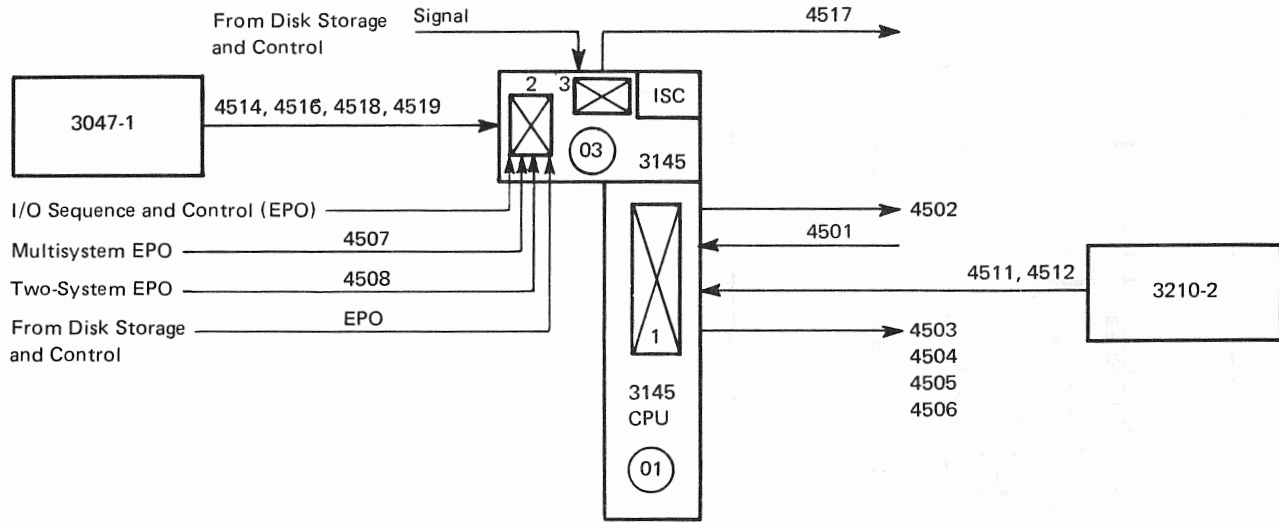
Branch Circuit Requirements

Voltage	200*	208	220**	230	235**	380**	408**
Phases	3	3	3	3	3	3	3
Ampacity	100	100	100	100	100	60	60
Protection (Cont)	100	100	100	100	100	60	60
Protection (For 1 second) or Adjustable Trip Set for	600	600	600	600	600	400	400
Max Cont Load (A) for:	700- 1000	700- 900	700- 900	700- 800	700- 800	400- 500	400- 500
3145 H2	63	62	57	55	54	32	31
3145 HG2	65	64	59	57	56	35	33
3145 I2	67	65	61	58	58	35	33
3145 IH2	69	67	63	60	60	36	34
3145 J2	71	69	64	62	61	37	35
3145 JI2	75	72	68	65	64	39	37
3145 K2	79	76	72	69	67	42	39
Plug Connector Receptacle	R&S, JPS1034H R&S, JCS1034H R&S, JRSR1034H						
Power Cord Style	F4		F2		F2	F2	F2

* Applies to 50-Hz and 60-Hz World Trade machines.

** Apply to 50-Hz World Trade machines.

**SYSTEM/370 MODEL 145 H2, HG2, I2, IH2, J2, JI2, AND K2
CABLING SCHEMATIC**



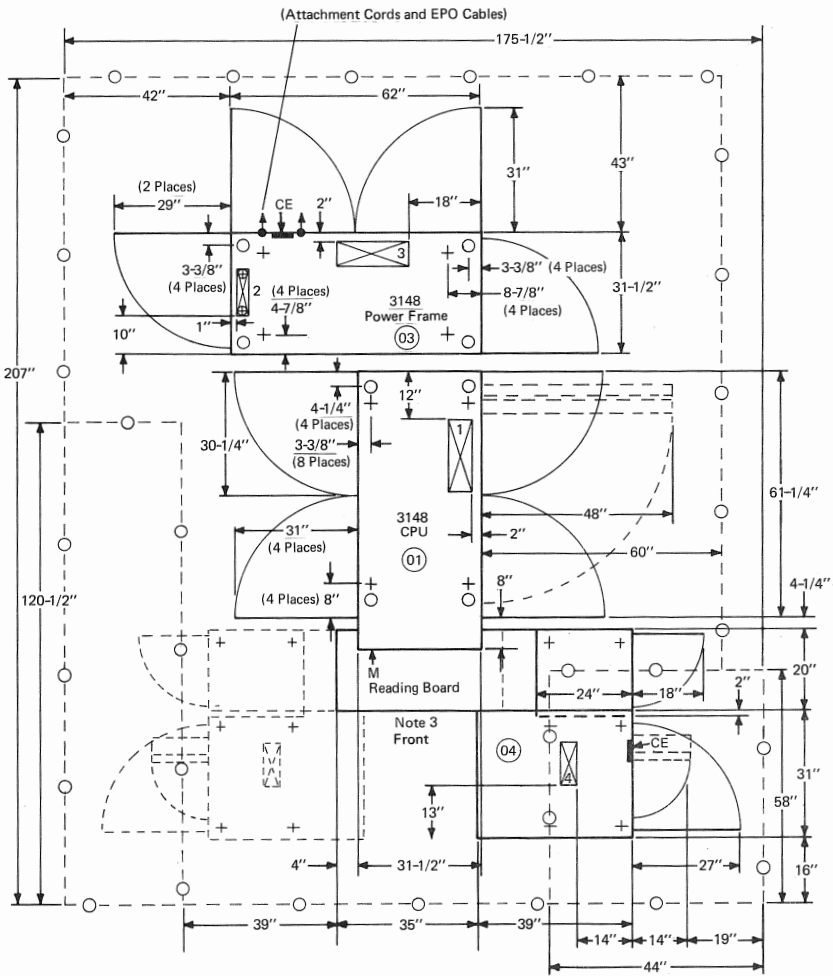
Group No.	No. of Cables	From	To	Cable Entry No.	Max Length (ft)	Notes
4501	2	Direct Control	3145	1	50	3
4502	1	3145	System/360 or System/370 CPU	1	100	2
4503	2	3145	Control Unit	1	-	1
4504	2	3145	Selector or Block Multiplexer Channel	1	-	1
4505	2	3145	Byte Multiplexer Channel	1	-	1
4506	2	3145	Channel-to-Channel Adapter	1	-	1
4507	1	3145	System/360 or System/370 CPU	2	100	5
4508	1	3145	System/360 or System/370 CPU	2	100	4
4511	1	3210-2	3145	1	75	7
4512	1	3210-2	3145	1	75	6
4514	3	3047-1	3145	2	50	10
4516	1	3047-1	3145	2	50	13
4517	2	3145	CPU, Channel, or Control Unit	3	150	8,9
4518	3	3047-1	3145	2	50	12
4519	3	3047-1	3145	2	50	11

Notes:

1. From channel-to-channel adapter (SF # 1850); maximum cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to six control units. This restriction applies to both connected channels (X and Y).
2. For the interconnection of two System/360 or System/370 CPUs (SF # 3274); order one per feature.
3. For SF # 3274 from non-IBM device.
4. To SF # 3621, two-system EPO connection.
5. To SF # 3622, multisystem EPO connection. See Note 4 in "System/370 Specification Summary."
6. Required for all 50-Hz and 200V, 60-Hz World Trade machines.
7. For 3210 Model 2 adapter feature (SF # 7845).
8. Order two cable groups for two-channel switch feature (SF # 8100).
9. ISC is cabled the same as for normal channel interface cabling.
10. Required for 60-Hz machines.
11. Required for 200, 220, and 235V, 50-Hz machines.
12. Required for 380 and 408V, 50-Hz machines.
13. Required for all 50-Hz machines.

SYSTEM/370 MODEL 148, 3148 PROCESSING UNIT

PLAN VIEW



Cable Entry/Exit Number	Dimensions (Inches)	Notes
1	5 x 18	1
2	3 x 12	2
3	6 x 18	5
4	4 x 11	4

- Notes:
1. Signal Cables.
 2. Attachment Cords and EPO Cables.
 3. View Shown is with Right and Left Side IOC.
 4. Required for 3203 Printer Only.
 5. ISC Cables.

SYSTEM/370 MODEL 148, 3148 PROCESSING UNIT

Details (By Frame)

System Model	Frame	Weight kg (lb)		Airflow m ³ /min (cfm)	Heat Output kcal/hr (BTU/hr)	kVA
		50 Hz	60 Hz			
J,K	01	700 (1,550)	680 (1,500)	34 (1,200)	8.600 (34,000)	11.1
J,K	03	430 (930)	400 (870)	8 (280)	2.800 (11,000)	3.9
J,K	04 IOC	280 (600)	280 (600)	9 (320)	1.300 (5,200)	1.5

Note: See also 3047-1 and 3148 System Requirements.

SPECIFICATIONS

Dimensions:

	F	S	H
cm	*	*	152
(Inches)	(*)	(*)	(60)

Removal of the side covers on frames 01 and 03 reduces the width of these units to 75 cm (29-1/2 inches). If a reduction of frame 01 length is needed, see your sales representative for method of specifying on the order. The shipping dimensions for frame 01 then become 152 cm (60 inches) long, 75 cm (29-1/2 inches) wide, and 175 cm (69 inches) high. Frame 03 shipping length can be reduced to 152 cm (60 inches) by removing the end and side covers.

Service Clearances:

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

Environment Operating:

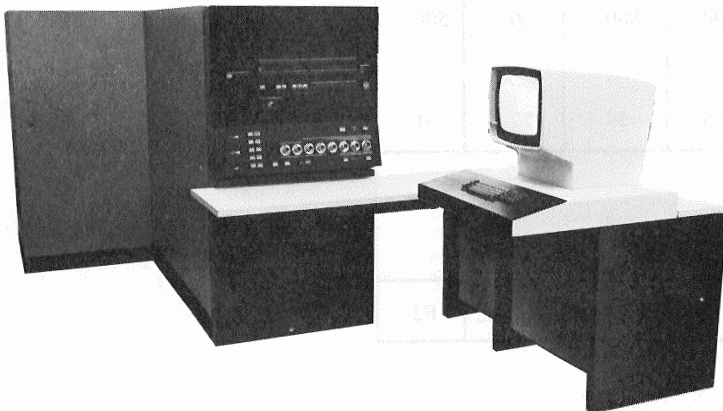
Temperature 16^o-32^oC (60^o-90^oF)
 Rel Humidity 8%-80%
 Max Wet Bulb 23^oC (73^oF)

Environment Nonoperating:

Temperature 10^o-43^oC (50^o-110^oF)
 Rel Humidity 20%-80%
 Max Wet Bulb 27^oC (80^oF)

Note:

* See plan view.



SYSTEM/370 MODEL 148, 3148 PROCESSING UNIT

System Requirements

<i>kVA Power Requirements by System Units</i>	kVA
3047-1	6.7
3148 (Frame 01)	11.1
3148 (Frame 03)	3.9
3148 (Frame 04)	1.5
Total (Notes 1, 2)	23.2

Notes:

1. Each total kVA entry is a total of the power requirements for one 3148, one IOC, and one 3047-1.
2. If SF #4660 (ISC) is not installed, these values may be reduced by 1.8 kVA.

The customer is required to provide a branch circuit connection for the 3148 frame 03. To avoid tripping the branch circuit breaker when starting the 3148, it is necessary to provide branch circuit fuse or circuit breaker protection that meets specified time/current trip characteristics. These are referred to as “motor branch circuit protection circuit breakers.” Refer to Model 148 specifications (Branch Circuit Requirements) for required circuit protection specifications.

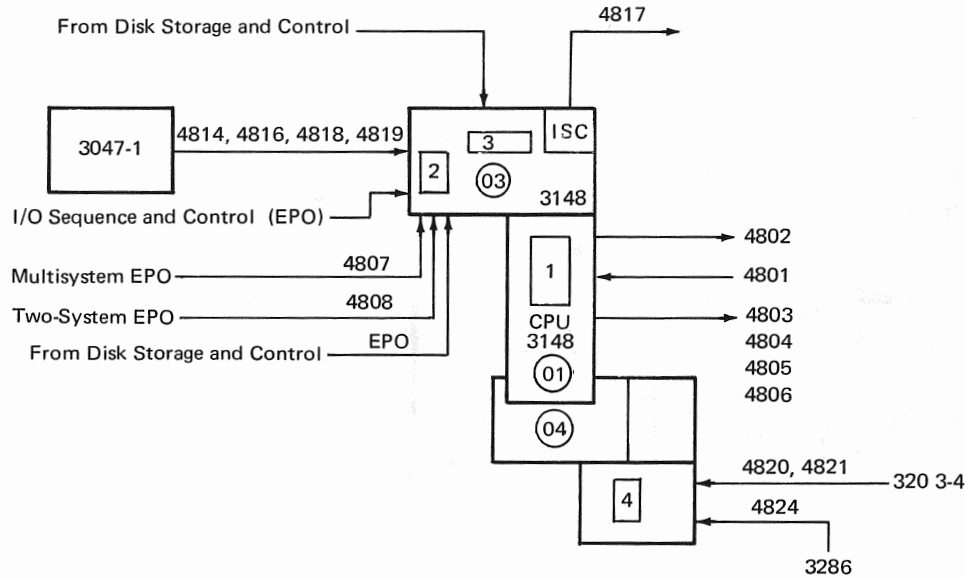
Branch Circuit Requirements

	200*	208	220**	230	235**	380**	408**
Voltage	200*	208	220**	230	235**	380**	408**
Phases	3	3	3	3	3	3	3
Ampacity	100	100	100	100	100	60	60
Protection (Cont)	100	100	100	100	100	60	60
Protection (For 1 second) or Adjustable	600	600	600	600	600	400	400
Trip Set for	700- 1000	700- 900	700- 900	700- 800	700- 800	400- 500	400- 500
Max Cont Load (A) for: 3148	63	62	57	55	54	32	31
Plug Connector Receptacle	R&S, JPS1034H R&S, JCS1034H R&S, JRSR1034H						
Power Cord Style	F4		F2		F2	F2	F2

* Applies to 50-Hz and 60-Hz World Trade machines.

** Apply to 50-Hz World Trade machines.

SYSTEM/370 MODEL 148 CABLING SCHEMATIC



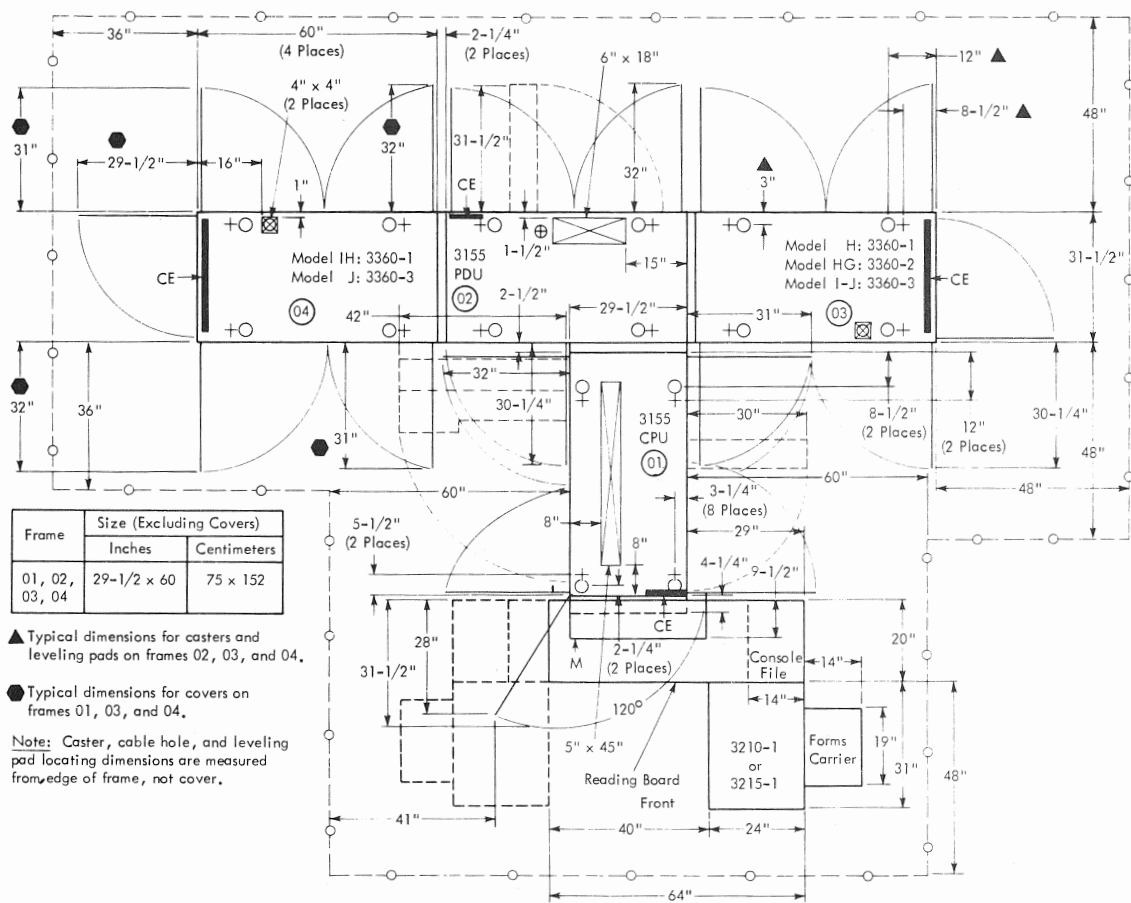
Group No.	No. of Cables	From	To	Cable Entry No.	Max Length M (ft)	Notes
4801	2	Direct Control	3148	1	15.2 (50)	3, 12
4802	1	3148	System/360 or System/370 CPU	1	30.5 (100)	2, 12
4803	2	3148	Control Unit	1	—	1, 12
4804	2	3148	Block Multiplexer Channel	1	—	1, 12
4805	2	3148	Byte Multiplexer Channel	1	—	1, 12
4806	2	3148	Channel-to-Channel Adapter	1	—	1, 12
4807	1	3148	System/360 or System/370 CPU	2	30.5 (100)	5, 12
4808	1	3148	System/360 or System/370 CPU	2	30.5 (100)	4, 12
4814	3	3047-1	3148	2	15.2 (50)	8, 12
4816	1	3047-1	3148	2	15.2 (50)	11, 12
4817	2	3148	CPU, Channel, or Control Unit	3	45.7 (150)	6, 7, 12
4818	3	3047-1	3148	2	15.2 (50)	10, 12
4819	3	3047-1	3148	2	15.2 (50)	9, 12
4820	4	3203-4	3148	4	4.9 (16)	8
4821	5	3203-4	3148	4	4.9 (16)	11
4824	1	3286	3148	4	609.6 (2000) Max	

Notes:

1. From channel-to-channel adapter (SF #1850); maximum cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to six control units. This restriction applies to both connected channels (X and Y).
2. For the interconnection of two System/360 or System/370 CPUs (SF #3274); order one per feature.
3. For SF #3274 from non-IBM device.
4. To SF #3621, two-system EPO connection.
5. To SF #3622, multisystem EPO connection. See Note 4 in "System/370 Specification Summary."
6. Order two cable groups for two-channel switch feature (SF #8100).
7. ISC is cabled the same as for normal channel interface cabling.
8. Required for 60-Hz machines.
9. Required for 200, 220, and 235 V, 50-Hz machines.
10. Required for 380 and 408 V, 50-Hz machines.
11. Required for all 50-Hz machines.
12. Whenever a 3148 is a direct replacement for a 3145, cable groups number 4501 through 4519 can be used in place of cable groups number 4801 through 4819, respectively.

SYSTEM/370 MODEL 155 H-J, 3155 PROCESSING UNIT

PLAN VIEW



SYSTEM/370 MODEL 155 H-J, 3155 PROCESSING UNIT

Details (By Frame)

Frame	Weight lb (kg)	Airflow cfm (m ³ /min)	Heat Output BTU/hr (kcal/hr)	kVA
01	1,800 (820)	1,115 (32)	11,780 (3.000)	**
02	2,810* 2,500* (1.300*) (1.150*)	1,460 (42)	32,420 (8.200)	15.0***
Console File and Table	350 (160)	0 (0)	300 (76)	**
Console Printer- Keyboard	See 3210-1 and 3215-1			**
03	} See 3360-1, 2, and 3			
04				†

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	††	††	60
(cm)	(††)	(††)	(152)

Service Clearances:

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

Weight: 4,960 lb (2.250 kg)
4,650 lb††† (2.150 kg†††)

Heat Output: 44,500 BTU/hr (11.250 kcal/hr)

Airflow: 2,575 cfm (73 m³/min)

Power Requirements:

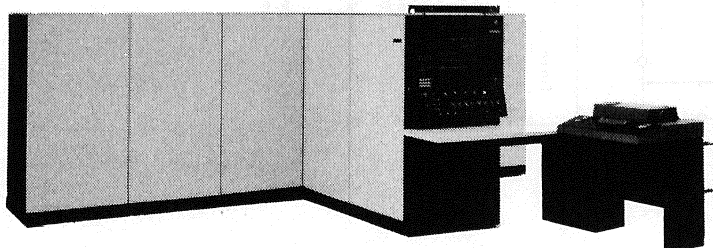
kVA 15.0***
Phases 3

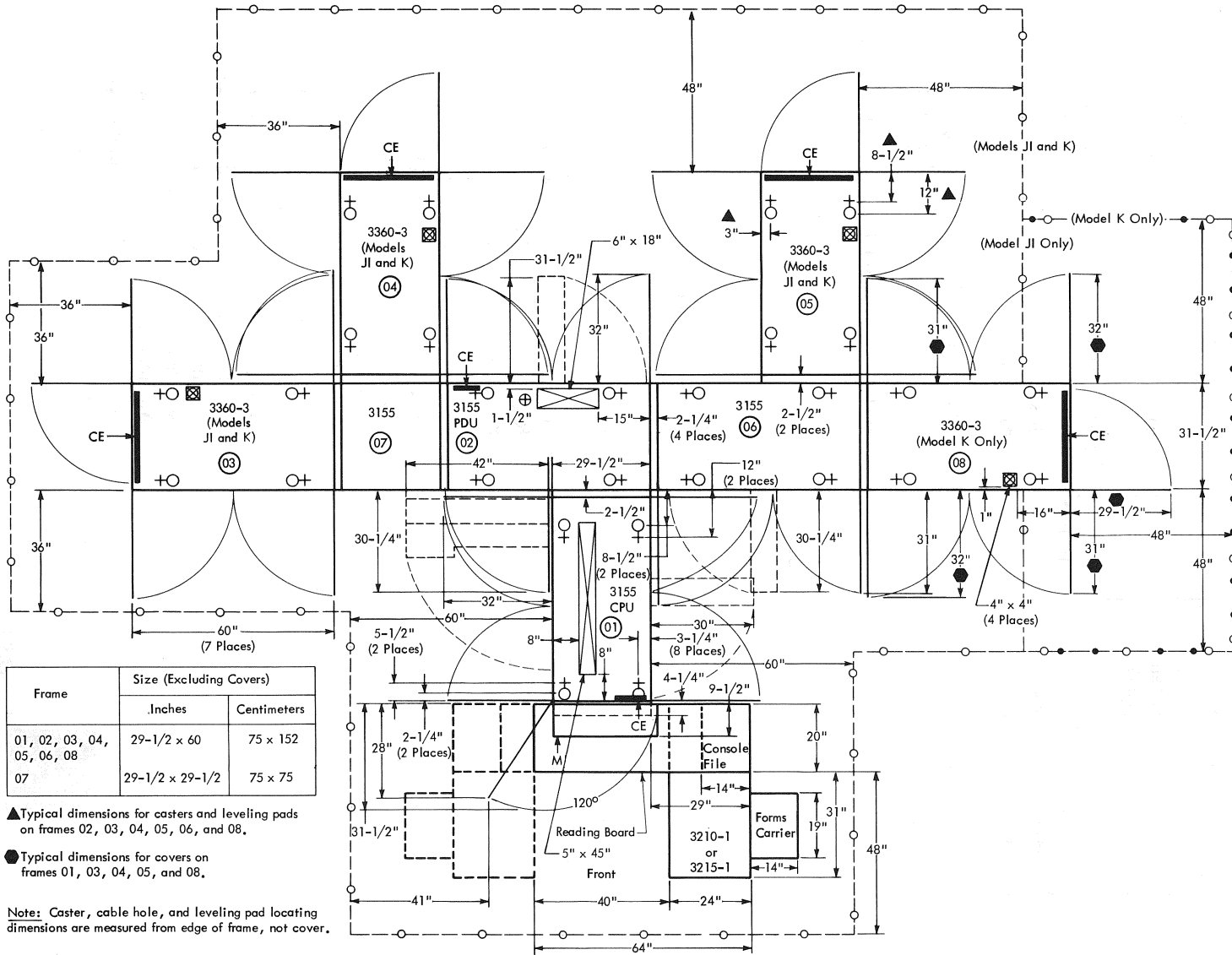
Frame 02 (PDU):

Plug R&S, SC7328
Connector R&S, SC7428
Receptacle R&S, SC7324
Power Cord Style E-

Notes:

- * Frame 02 weight (2,810 lb [1.300 kg]) can be reduced to meet the requirements of a 2,500 lb (1.150 kg) capacity elevator.
- ** Receives power from 3155 frame 02.
- *** For minimum-feature requirements; add 3.0 kVA for maximum-feature system.
- † Only one 3360 Model 1, 2, or 3 can be selected at a time. A selected unit draws 4.5 kVA; an idling (unselected) unit draws 2.5 kVA.
- †† See plan view.
- ††† All Model H-J systems with serial numbers 10654 and above weigh approximately 4,650 lb (2.150 kg).





SYSTEM/370 MODEL 155 JI AND K, 3155 PROCESSING UNIT

Details (By Frame)

Frame	Weight lb (kg)	Airflow cfm (m ³ /min)	Heat Output BTU/hr (kcal/hr)	kVA
01	1,800 (820)	1,115 (32)	11,780 (3,000)	**
02	2,835* 2,520* (1,300*) (1,150*)	1,460 (42)	32,420 (8,200)	16.0***
Console File and Table	350 (160)	0 (0)	300 (76)	**
Console Printer- Keyboard	See 3210-1 and 3215-1			
03	} See 3360-3			†
04				
05				
06	920 (420)	450 (13)	3,000 (760)	**
07	200 (91)	0 (0)	0 (0)	0
08	See 3360-3			

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	††	††	60
(cm)	(††)	(††)	(152)

Service Clearances:

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

Weight: 6,100 lb (2,800 kg)
5,800 lb††† (2,650 kg†††)

Heat Output: 47,500 BTU/hr (12,000 kcal/hr)

Airflow: 3,025 cfm (86 m³/min)

Power Requirements:

kVA 16.0***
Phases 3

Frame 02 (PDU):

Plug R&S, SC7328
Connector R&S, SC7428
Receptacle R&S, SC7324
Power Cord Style E-

Notes:

* Frame 02 weight (2,835 lb [1,300 kg]) can be reduced to meet the requirements of a 2,500 lb (1,150 kg) capacity elevator.

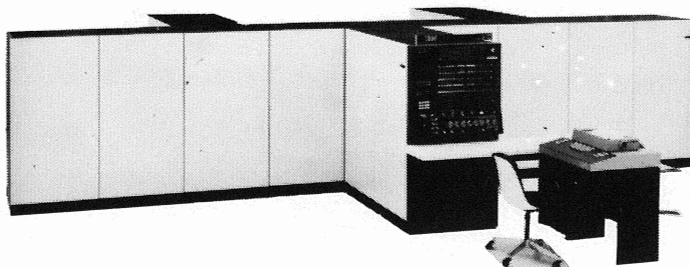
** Receives power from 3155 frame 02.

*** For minimum-feature requirements, add 3.0 kVA for maximum-feature system.

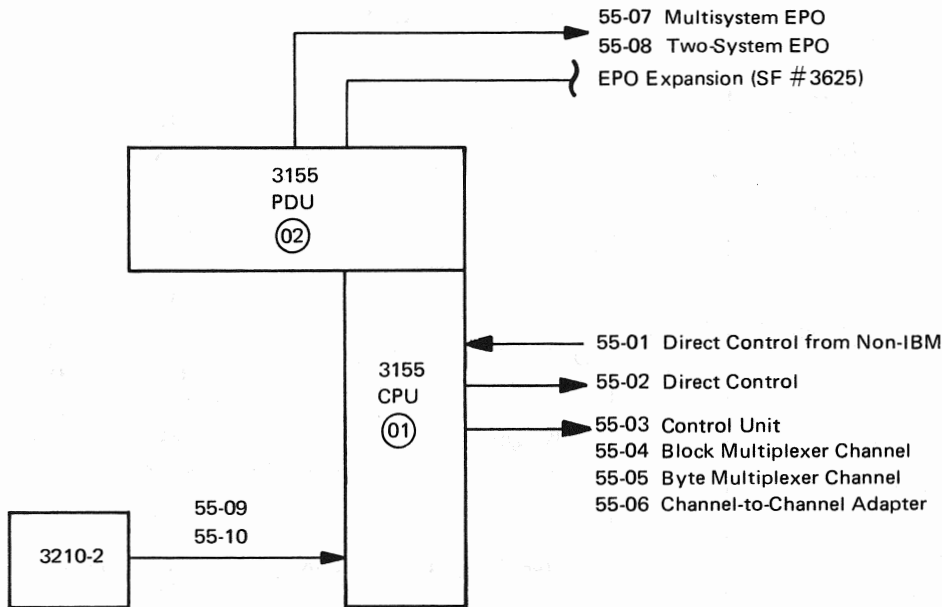
† Only one 3360 Model 1, 2, or 3 can be selected at a time. A selected unit draws 4.5 kVA; an idling (unselected) unit draws 2.5 kVA.

†† See plan view.

††† All Model JI and Model K systems with serial numbers 10654 and above weigh approximately 5,800 lb (2,650 kg).



SYSTEM/370 MODEL 155 CABLING SCHEMATIC



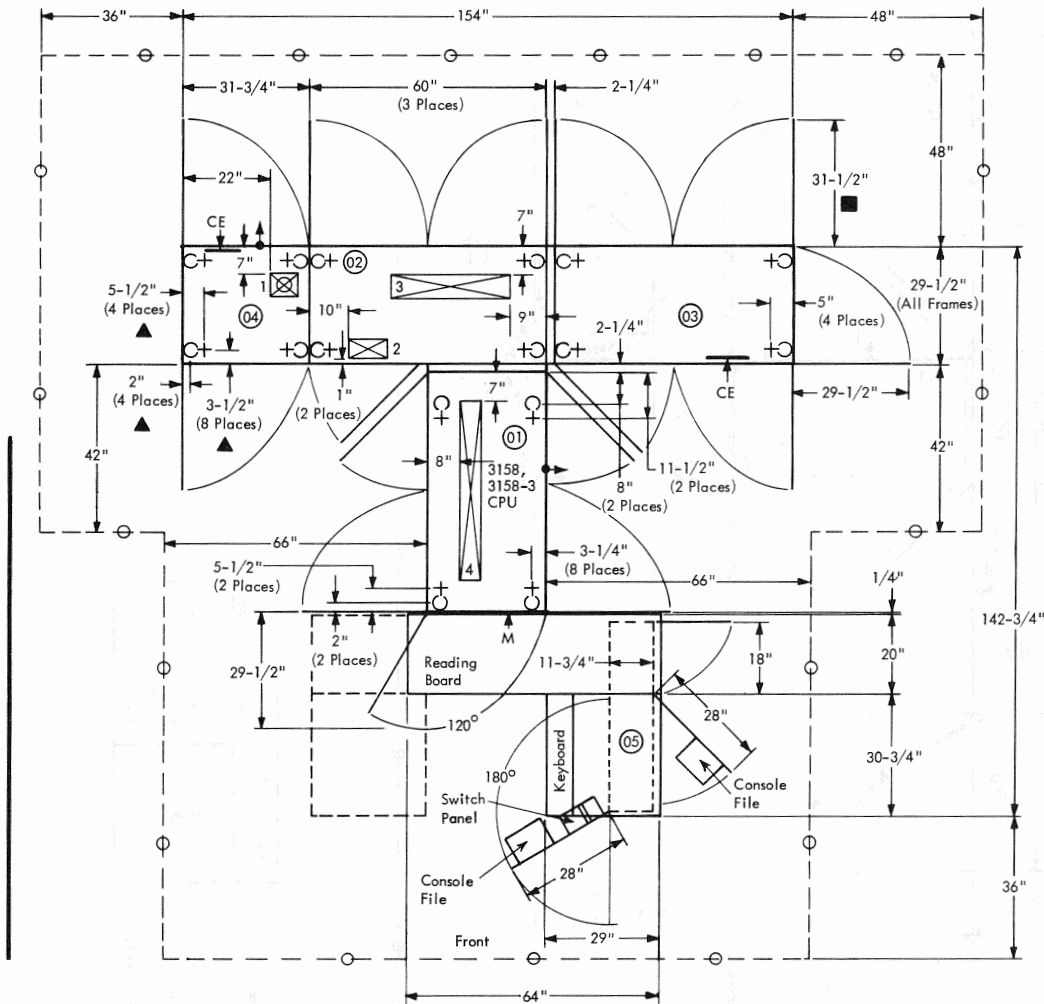
Group No.	No. of Cables	From	To	Max Length (ft)	Notes
55-01	2	Direct Control	3155 Fr 01	50	3
55-02	1	3155 Fr 01	System/360 or System/370 CPU	100	2
55-03	2	3155 Fr 01	Control Unit	—	1
55-04	2	3155 Fr 01	Block Multiplexer Channel	—	1
55-05	2	3155 Fr 01	Byte Multiplexer Channel	—	1
55-06	2	3155 Fr 01	Channel-to-Channel Adapter	—	1
55-07	1	3155 Fr 02	System/360 or System/370 CPU	100	5
55-08	1	3155 Fr 02	System/360 or System/370 CPU	100	4
55-09	1	3210-2	3155 Fr 01	75	7
55-10	1	3210-2	3155 Fr 01	75	6

Notes:

1. From channel-to-channel adapter (SF # 1850); maximum cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to seven control units.
2. For the interconnection of two System/360 or System/370 CPUs (SF #3274); order one per feature.
3. For SF #3274 from non-IBM device.
4. To SF #3621, two-system EPO connection.
5. To SF #3622, multisystem EPO connection. See Note 4 in "System/370 Specification Summary."
6. Use for all 50-Hz machines. Also required for 200V, 60-Hz World Trade machines.
7. For 3210 Model 2 adapter feature (SF #7845).

| SYSTEM/370 MODEL 158, 3158 AND 3158-3 PROCESSING UNITS

PLAN VIEW



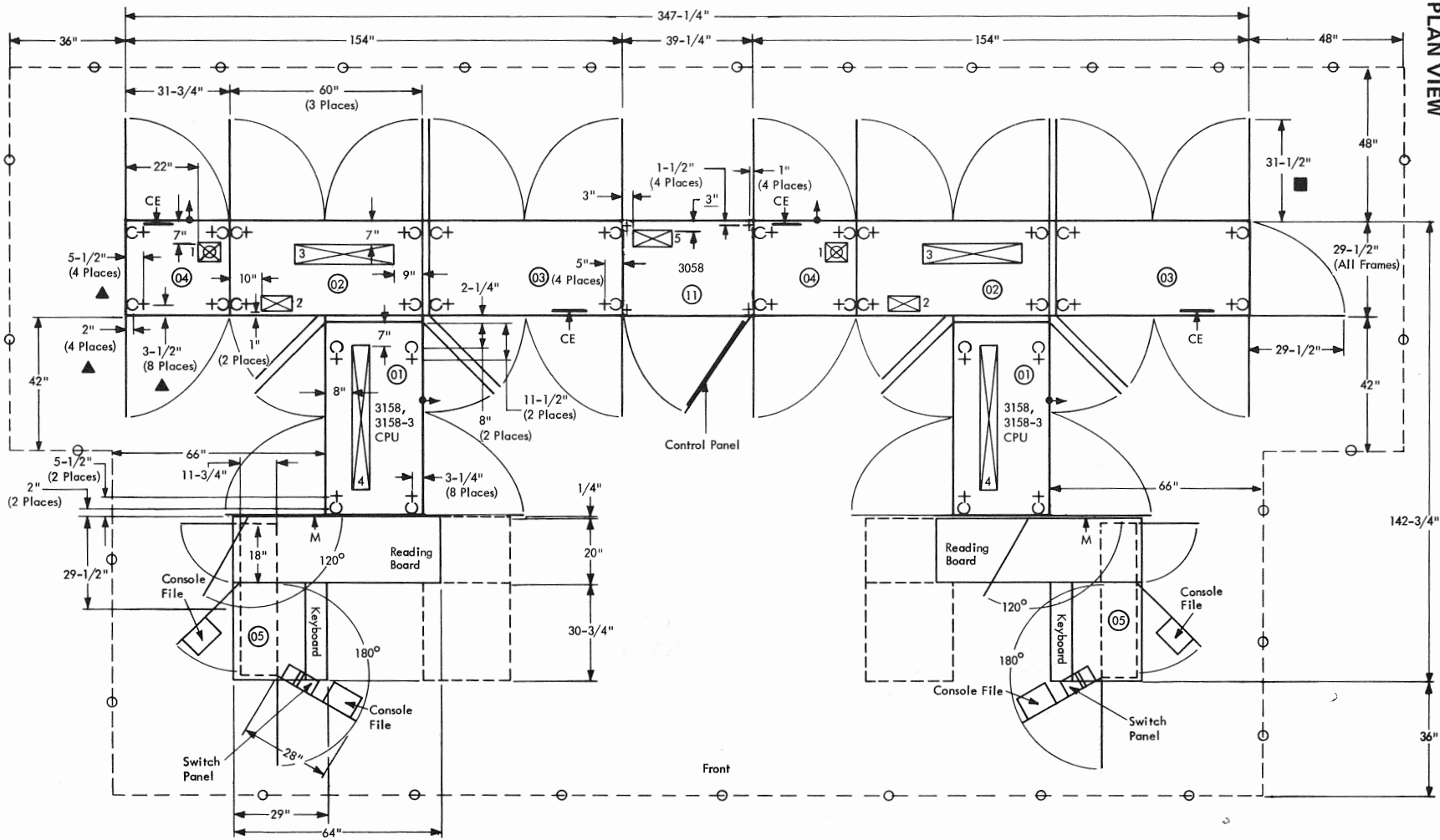
Notes:

1. Caster, cable hole, and leveling pad locating dimensions are measured from edge of frame, not cover.
2. EPO cables.
3. The console for the 3158 or 3158-3 CPU can be placed on either the left or right side. See Model 158 Multiprocessing plan view for console configuration on left side.
- ▲ Typical dimensions for casters and leveling pads on frames 02, 03, and 04.
- Typical dimensions for covers on frames 01, 02, 03, and 04.

Cable Entry/Exit Number	Dimensions (Inches)	Notes
1	6 x 7	
2	5 x 10	2
3	6 x 30	
4	5 x 45	

SYSTEM/370 MODEL 158 MULTIPROCESSING, 3158 AND 3158-3 PROCESSING UNITS

PLAN VIEW



Notes:

1. Caster, cable hole, and leveling pad locating dimensions are measured from edge of frame, not cover.
 2. Typical dimensions for left and right 3158 or 3158-3 units.
 3. EPO cables.
 4. The console for the 3158 or 3158-3 CPU can be placed on either the left or right side.
- ▲ Typical dimensions for casters and leveling pads on frames 02, 03, and 04.
 ■ Typical dimensions for covers on frames 01, 02, 03, and 04.

Cable Entry/Exit Number	Dimensions (Inches)	Notes
1	6 x 7	
2	5 x 10	3
3	6 x 30	
4	5 x 45	
5	5 x 12	

**SYSTEM/370 MODEL 158 AND MODEL 158 MULTIPROCESSING
 3158 AND 3158-3 PROCESSING UNITS**

Details (By Frame)

Frame	Model	Weight lb (kg)	Airflow cfm (m ³ /min)	Heat Output BTU/hr (kcal/hr)	kVA
01	All	1,200 (550)	900 (29)	9,500 (2.400)	*
02	All	1,150 (530)	1,300 (37)	23,600 (5.950)	*
03	I,MP1 U31,M31	1,350 (620)	1,250 (36)	14,600 (3.700)	5.0*
	J,MP2 U32,M32	1,350 (620)	1,250 (36)	15,800 (4.000)	5.4*
	JI,MP3 U33,M33	1,350 (620)	1,250 (36)	16,600 (4.200)	5.7*
	K,MP4 U34,M34	1,350 (620)	1,250 (36)	17,800 (4.500)	6.1*
	KJ,MP5 U35,M35	1,550 (710)	1,550 (44)	19,500 (4.900)	7.1*
	L,MP6 U36,M36	1,550 (710)	1,550 (44)	20,800 (5.250)	7.6*
04	All	1,200 (550)	880 (25)	13,000 (3.300)	17.4
05	All	600 (280)	125 (4)	3,000 (760)	
11 3058	MP Only	400 (190)	0 (0)	Negligible	Negligible

Printer: See 3213 specifications page

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	**	**	60
(cm)	(**)	(**)	(152)

Service Clearances:

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

Power Requirements (50/60 Hz):*

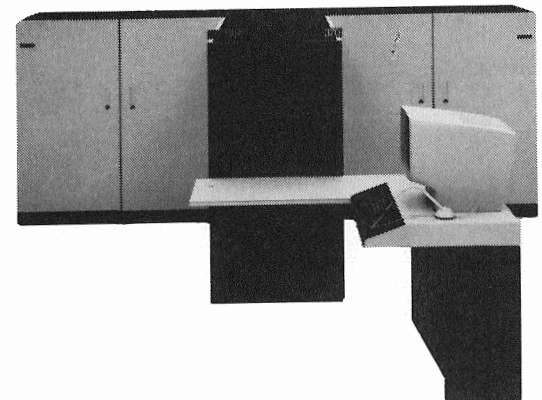
Phases	3
Plug	R&S, JPS1034H
Connector	R&S, JCS1034H
Receptacle	R&S, JRSR1034H
Power Cord Style	F2

Notes:

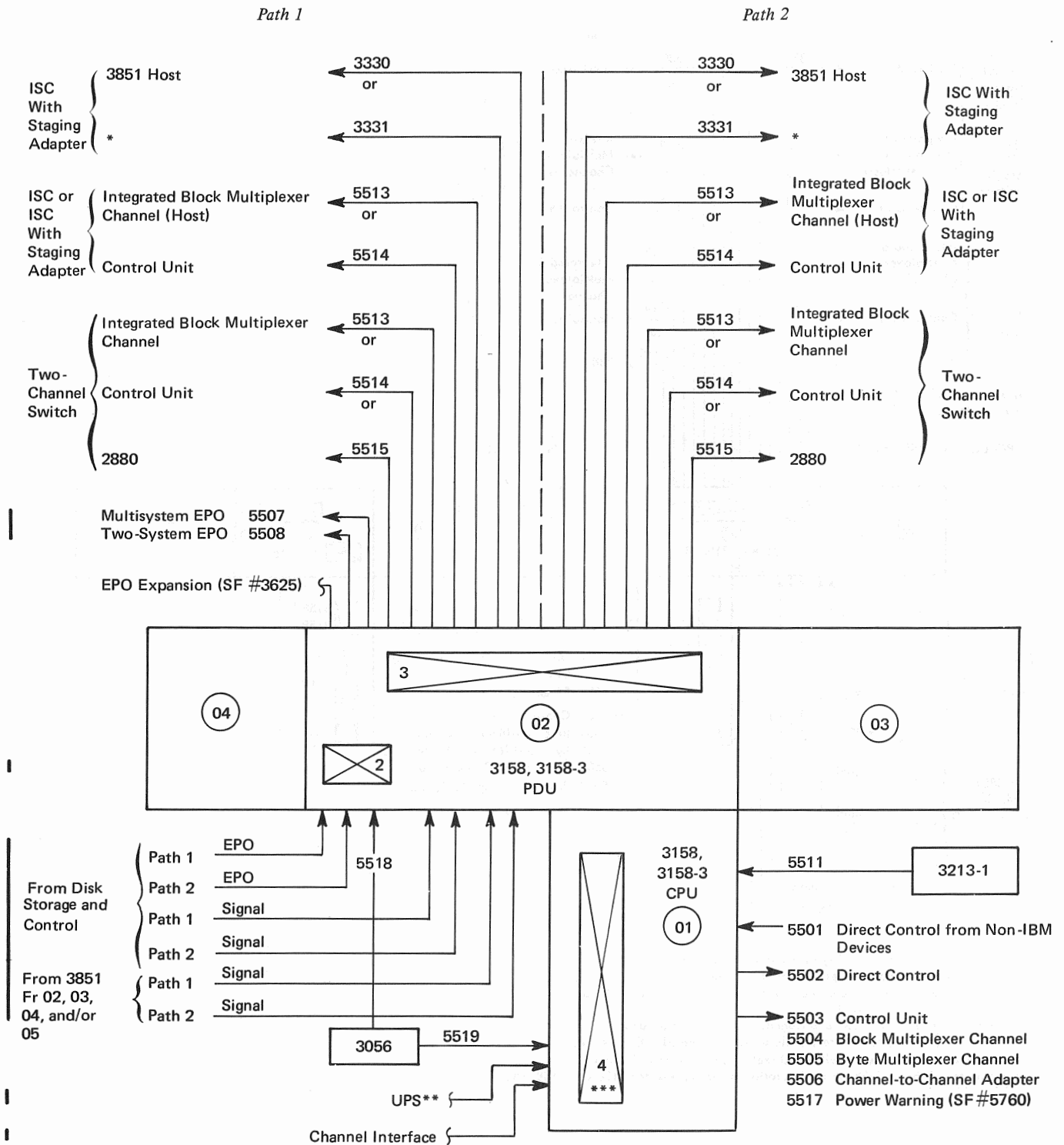
- * Frames 01, 02, 03, and 05 receive power from 3158 or 3158-3 frame 04.
- ** See plan view.

CPU Totals (By Model)

Model	Weight lb (kg)	Airflow cfm (m ³ /min)	Heat Output BTU/hr (kcal/hr)	kVA
I,MP1 U31,M31	5,500 (2.500)	4,455 (130)	63,700 (16.100)	22.4
J,MP2 U32,M32	5,500 (2.500)	4,455 (130)	64,900 (16.400)	22.8
JI,MP3 U33,M33	5,500 (2.500)	4,455 (130)	65,700 (16.600)	23.1
K,MP4 U34,M34	5,500 (2.500)	4,455 (130)	66,900 (16.900)	23.5
KJ,MP5 U35,M35	5,700 (2.600)	4,755 (140)	68,600 (17.300)	24.5
L,MP6 U36,M36	5,700 (2.600)	4,755 (140)	69,900 (17.700)	25.0



SYSTEM/370 MODEL 158 CABLING SCHEMATIC

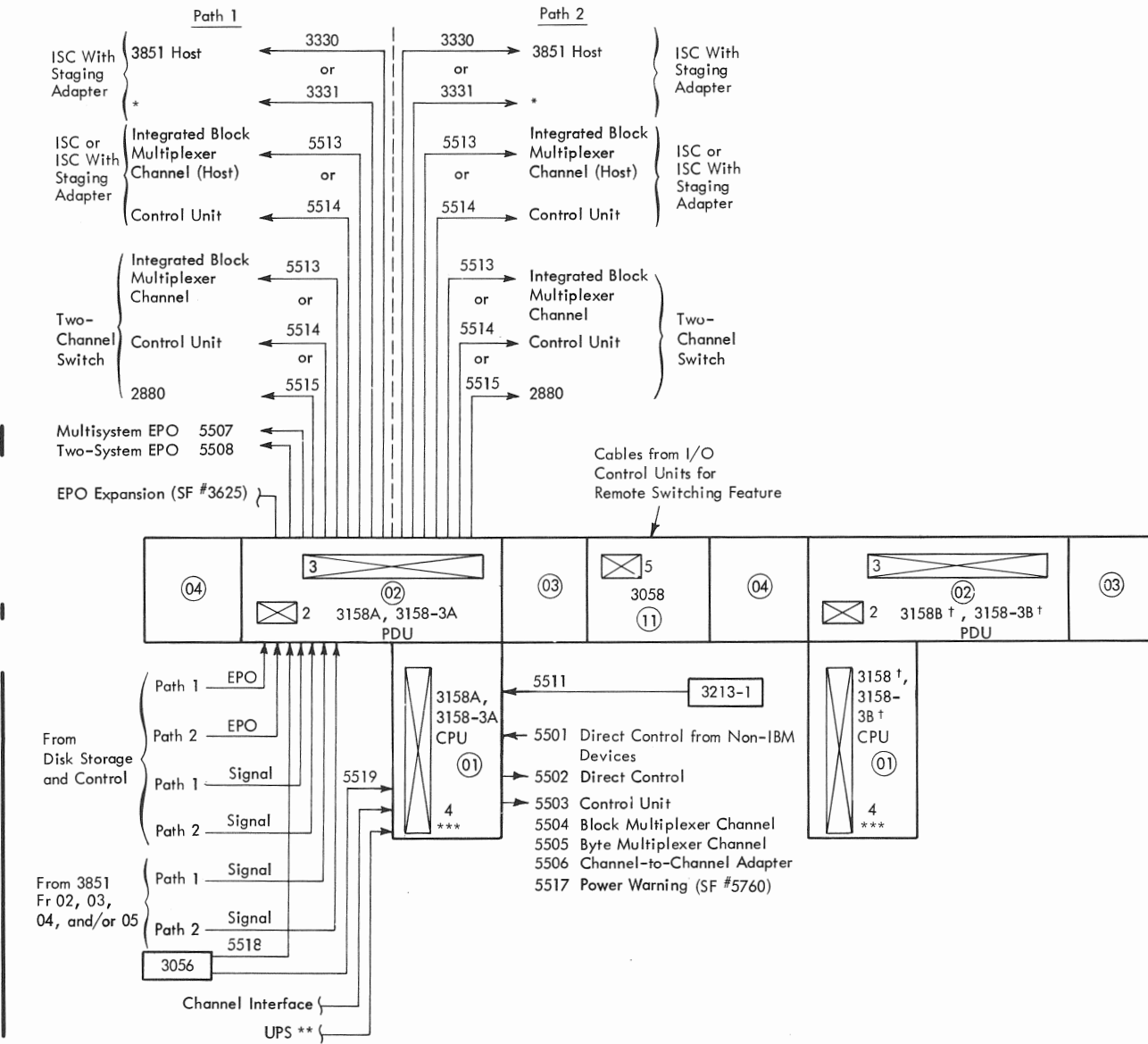


*See 3331 in cable group listing for possible attachments.

**UPS (Uninterrupted Power Supply) detector cable is customer supplied. (See Note 10.)

***For systems installed in U.S. and Canada, integrated data adapter cable (provided with the system) enters cable entry in frame 01. Data Access Arrangement (DAA) must be within 50 feet of cable entry in frame 01.

**SYSTEM/370 MODEL 158 MULTIPROCESSING
 CABLING SCHEMATIC**



* See 3331 in cable group listing for possible attachments.

** UPS (Uninterrupted Power Supply) detector cable is customer supplied. Only one UPS connection required to either 3158A, 3158-3A, 3158B, or 3158-3B. (See Note 10.)

*** For systems installed in U.S. and Canada, integrated data adapter cable (provided with the system) enters cable entry in frame 01. Data Access Arrangement (DAA) must be within 50 feet of cable entry in frame 01.

† Cabling for 3158B or 3158-3B configuration is the same as for 3158A or 3158-3A.

**SYSTEM/370 MODEL 158 AND MODEL 158
 MULTIPROCESSING CABLING SCHEMATIC**

Group No.	No. of Cables	From	To	Cable Hole No. Entry/Exit	Max Length (ft)	Notes
3330	2	3158 or 3158-3 Fr 02	3851 Host Fr 01	-/3	-	8,13
3331	2	3158 or 3158-3 Fr 02	3158 or 3158-3 Fr 02, 3168 or 3168-3 Fr 02, 3830-3, or 3851 #2 Fr 01	-/3	-	8,13
5501	2	Direct Control	3158 or 3158-3 Fr 01	4/-	50	3
5502	1	3158 or 3158-3 Fr 01	System/360 or System/370 CPU	-/4	100	2
5503	2	3158 or 3158-3 Fr 01	Control Unit	-/4	-	1
5504	2	3158 or 3158-3 Fr 01	Block Multiplexer Channel	-/4	-	1
5505	2	3158 or 3158-3 Fr 01	Byte Multiplexer Channel	-/4	-	1
5506	2	3158 or 3158-3 Fr 01	Channel-to-Channel Adapter	-/4	-	1
5507	1	3158 or 3158-3 Fr 02	System/360 or System/370 CPU	-/2	100	5
5508	1	3158 or 3158-3 Fr 02	System/360 or System/370 CPU	-/2	100	4,7
5511	2	3213-1	3158 or 3158-3 Fr 01	4/-	50	6
5513	2	3158 or 3158-3 Fr 02	Integrated Block Multiplexer Channel	4/3	150	8
5514	2	3158 or 3158-3 Fr 02	Control Unit	-/3	-	8,9
5515	2	3158 or 3158-3 Fr 02	2880	-/3	150	8
5517	1	3158 or 3158-3 Fr 01	3158 or 3158-3 Fr 01 or 3066-2	-/4	100	10
5518	2	3056	3158 or 3158-3 Fr 02	2/-	200	11
5519	1	3056	3158 or 3158-3 Fr 01	4/-	200	12

Notes:

1. From channel-to-channel adapter (SF #1850); maximum cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to seven control units.
2. For the interconnection of two System/360 or System/370 CPUs (SF #3274); order one per feature.
3. For SF #3274 from non-IBM device.
4. To SF #3621, two-system EPO connection.
5. To SF #3622, multisystem EPO connection. See Note 4 in "System/370 Specification Summary."
6. SF #7840 is required on 3158 or 3158-3.
7. On replacement systems, check cable group numbers to frame 02 to ensure that "X" dimension is still adequate to allow for cutout relocation.
8. The following cable groups are required for SF #4650, SF #7220, and SF #7905:

<i>Integrated Storage Controls (ISC), SF #4650</i>		<i>ISC, SF #4650, With Staging Adapter, SF #7220</i>	
<i>Path 1</i>	<i>Path 2</i>	<i>Path 1</i>	<i>Path 2</i>
5513 or 5514	Additional 5513 or 5514	3330 or 3331 and 5513 or 5514	Additional 3330 or 3331 and additional 5513 or 5514
<i>With Two-Channel Switch, SF #7905</i>		<i>With Two-Channel Switch, SF #7905</i>	
5513, 5514, or 5515	Additional 5513, 5514, or 5515	5513, 5514, or 5515	Additional 5513, 5514, or 5515

9. The 3158 or 3158-3 frame 02 must be within 150 feet of the block multiplexer channel entry.
10. Required for multiple system connections when SF #5760 is installed. (See *A Guide to 60 Hertz UPS Selection, GA27-2770*, or *A Guide to 50 Hertz UPS Selection, GA27-2771*.) See the following chart for possible connections:

<i>Configuration</i>	<i>Cables Required</i>	<i>Maximum Total Cumulative Length (ft)</i>
One System	UPS cable (customer supplied)	500
Two Systems	UPS cable plus one group 5517 or 6590 (Model 168)	416
Three Systems	UPS cable plus two group 5517s or two group 6590s (Model 168) or one of each	388



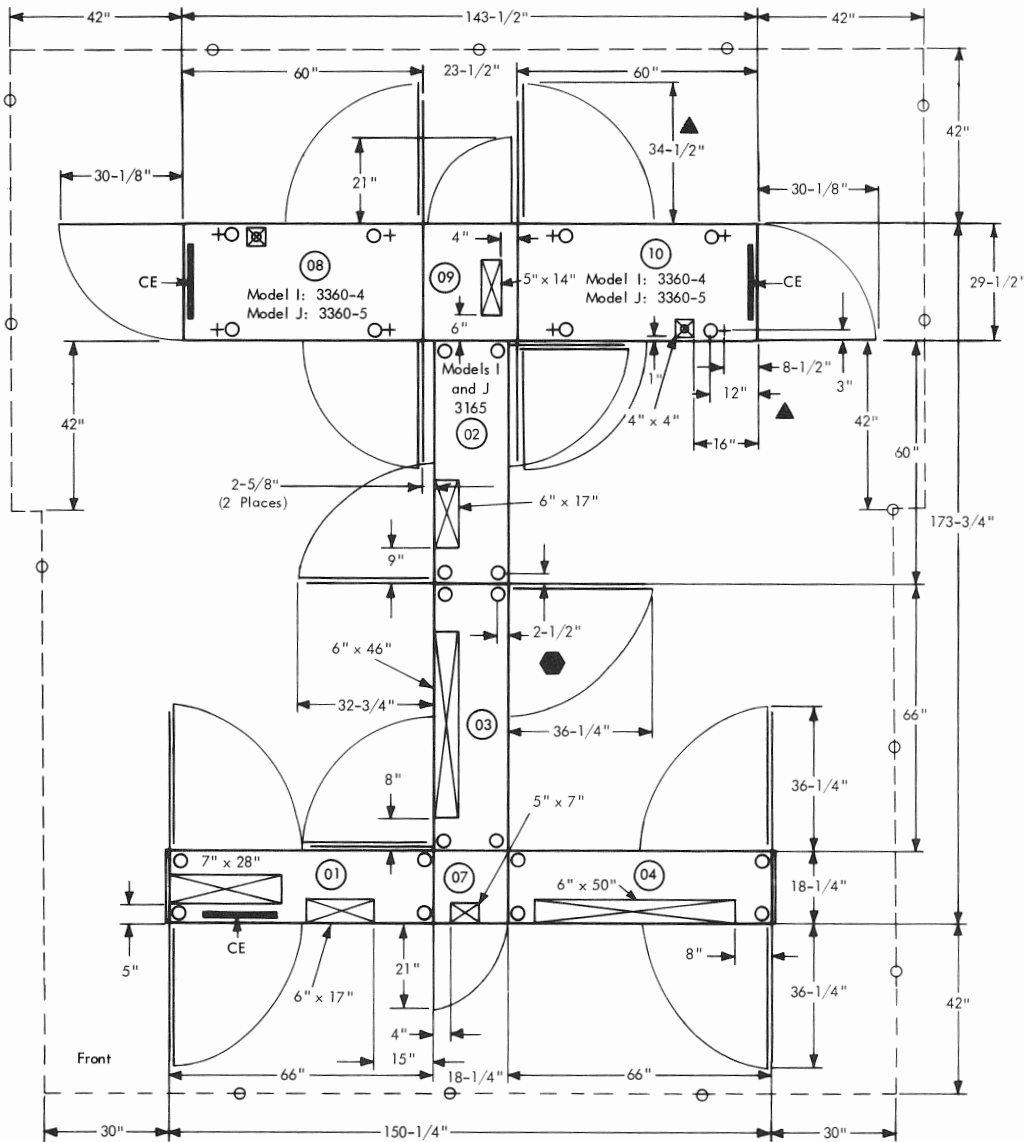
**SYSTEM/370 MODEL 158 AND MODEL 158
MULTIPROCESSING CABLING SCHEMATIC**

Notes: (Continued)

11. Power and sequence and control (EPO) for 3056.
12. For SF #7820 (3056 attachment).
13. Maximum cumulative cable length of 300 feet is available to attach seven devices to the standard port of the 3851 or eight devices to an optional port of the 3851. The most remote 3158 or 3158-3 controlling the 3333 and/or 3330 containing control information for the Mass Storage System must be within 150 feet. See "General Cabling Schematics" under "3850 Mass Storage System" for additional information.

SYSTEM/370 MODEL 165 I AND J, 3165 PROCESSING UNIT

PLAN VIEW



▲ Typical dimensions on frames 08 and 10.
Width of frames is 29-1/2", with covers 32".

● Typical dimensions on frames 01, 02, 03, and 04.

Note: Caster, cable hole, and leveling pad locating dimensions are measured from edge of frame, not cover.

SYSTEM/370 MODEL 165 I AND J, 3165 PROCESSING UNIT

Details (By Frame)

Frame	Weight lb (kg)	Airflow cfm (m ³ /min)	Heat Output BTU/hr (kcal/hr)	
			To Air	To Water
01	1,260 (580)	250 (8)	5,300 (1.350)	74,090 (18.700)
02	990 (450)	395 (12)	6,910 (1.750)	8,950 (2.300)
03	1,300 (590)	500 (15)	11,240 (2.850)	20,560 (5.200)
04	1,310 (600)	500 (15)	10,720 (2.750)	18,770 (4.750)
07	—	—	—	—
08	See 3360-4, 5	—	—	—
09	—	—	—	—
10	See 3360-4, 5	—	—	—

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	*	*	78**
(cm)	(*)	(*)	(198**)

Service Clearances:

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

Weight: 4,860 lb (2.250 kg)
(CPU only)

Heat Output:***

Air 34,170 BTU/hr (8.650 kcal/hr)
Water 122,370 BTU/hr (30.850 kcal/hr)

Airflow: 1,645 cfm (47 m³/min)

Power Requirements:

Frames 01, 02, 03, and 04 receive power from the 3067 PCDU Model 1 (frame 15).†

Environment Operating:

Temperature 65°-90°F (18°-32°C)
Rel Humidity 20%-80%
Max Wet Bulb 72°F (22°C)††

Environment Nonoperating:

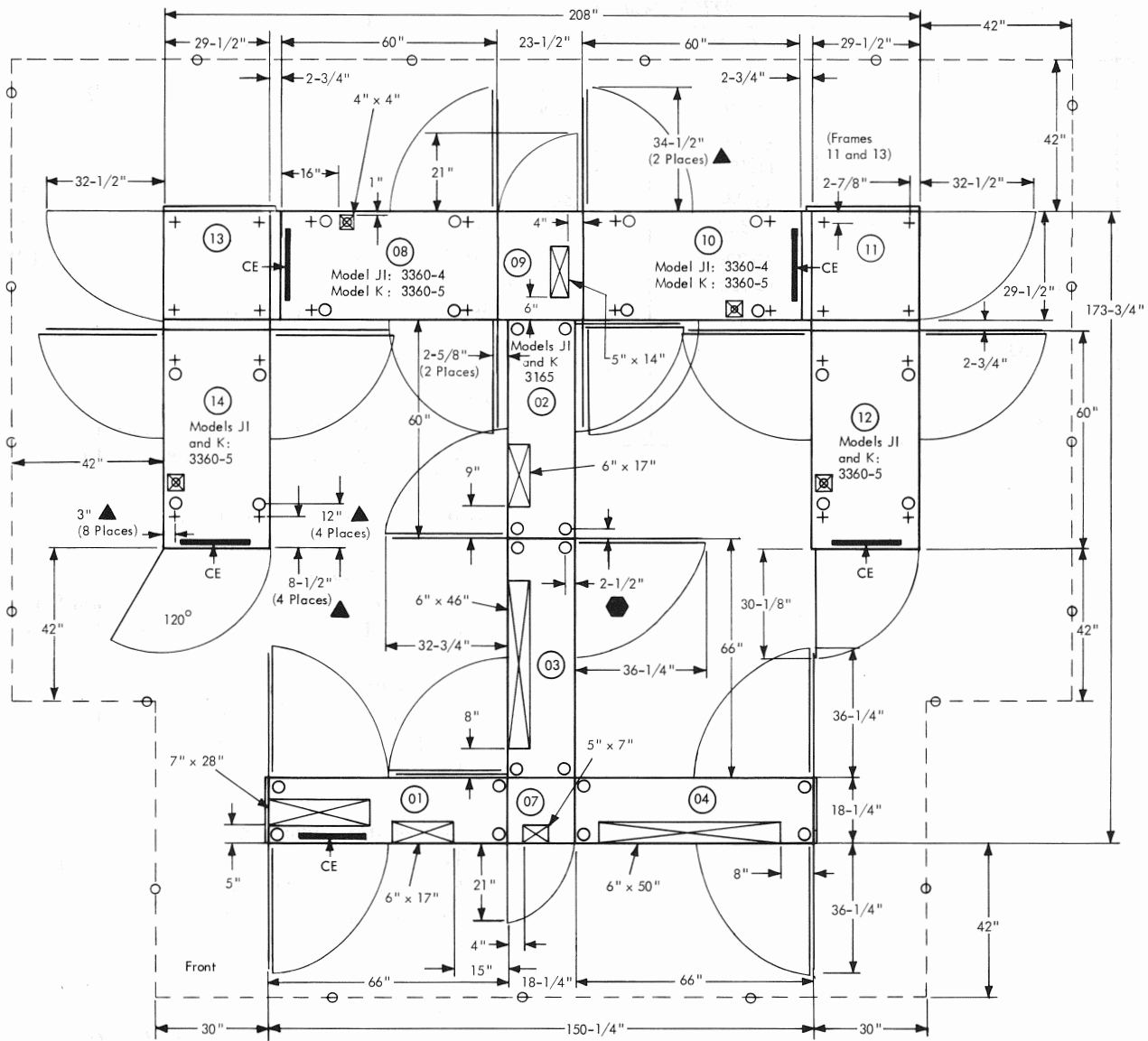
Temperature 50°-110°F (10°-43°C)
Rel Humidity 8%-80%
Max Wet Bulb 80°F (27°C)††

Notes:

- * See plan view.
- ** 70 inches (178 cm) for frames 08, 09, and 10.
- *** For maximum-feature system, add 5,060 BTU/hr (1.300 kcal/hr) to air and 12,530 BTU/hr (3.200 kcal/hr) to water.
- † The 3360 Model 4 or 5 units are selected two at a time (max). A selected unit draws 4.6 kVA; an idling (unselected) unit draws 2.8 kVA.
- †† See "Liquid Coolant System" in Appendix A.

SYSTEM/370 MODEL 165 JI AND K, 3165 PROCESSING UNIT

PLAN VIEW



▲ Typical dimensions on frames 08, 10, 12, and 14. Width of frames is 29-1/2", with covers 32".

● Typical dimensions on frames 01, 02, 03, and 04.

Note: Caster, cable hole, and leveling pad locating dimensions are measured from edge of frame, not cover.

SYSTEM/370 MODEL 165 JI AND K, 3165 PROCESSING UNIT

Details (By Frame)

Frame	Weight lb (kg)	Airflow cfm (m ³ /min)	Heat Output BTU/hr (kcal/hr)	
			To Air	To Water
01	1,260 (580)	250 (8)	5,300 (1.350)	74,090 (18.700)
02	990 (450)	395 (12)	6,910 (1.750)	8,950 (2.300)
03	1,300 (590)	500 (15)	11,240 (2.850)	20,560 (5.200)
04	1,310 (600)	500 (15)	10,720 (2.750)	18,770 (4.750)
07	-	-	-	-
08	See 3360-4, 5	-	-	-
09	-	-	-	-
10	See 3360-4, 5	-	-	-
11	300 (140)	-	-	-
12	See 3360-5	-	-	-
13	300 (140)	-	-	-
14	See 3360-5	-	-	-

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	*	*	78**
(cm)	(*)	(*)	(198**)

Service Clearances:

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

Weight: 5,460 lb (2.500 kg)
(CPU only)

Heat Output:***

Air	34,170 BTU/hr (8.650 kcal/hr)
Water	122,370 BTU/hr (30.850 kcal/hr)

Airflow: 1,645 cfm (47 m³/min)

Power Requirements:

Frames 01, 02, 03, and 04 receive power from the 3067 PCDU Model 1 (frame 15).†

Environment Operating:

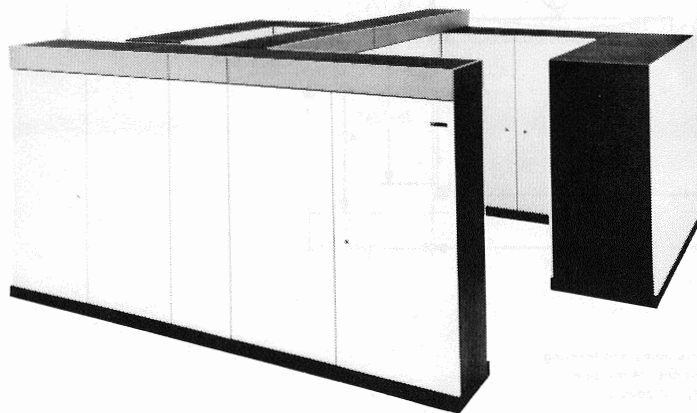
Temperature	65°-90°F (18°-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	72°F (22°C)††

Environment Nonoperating:

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

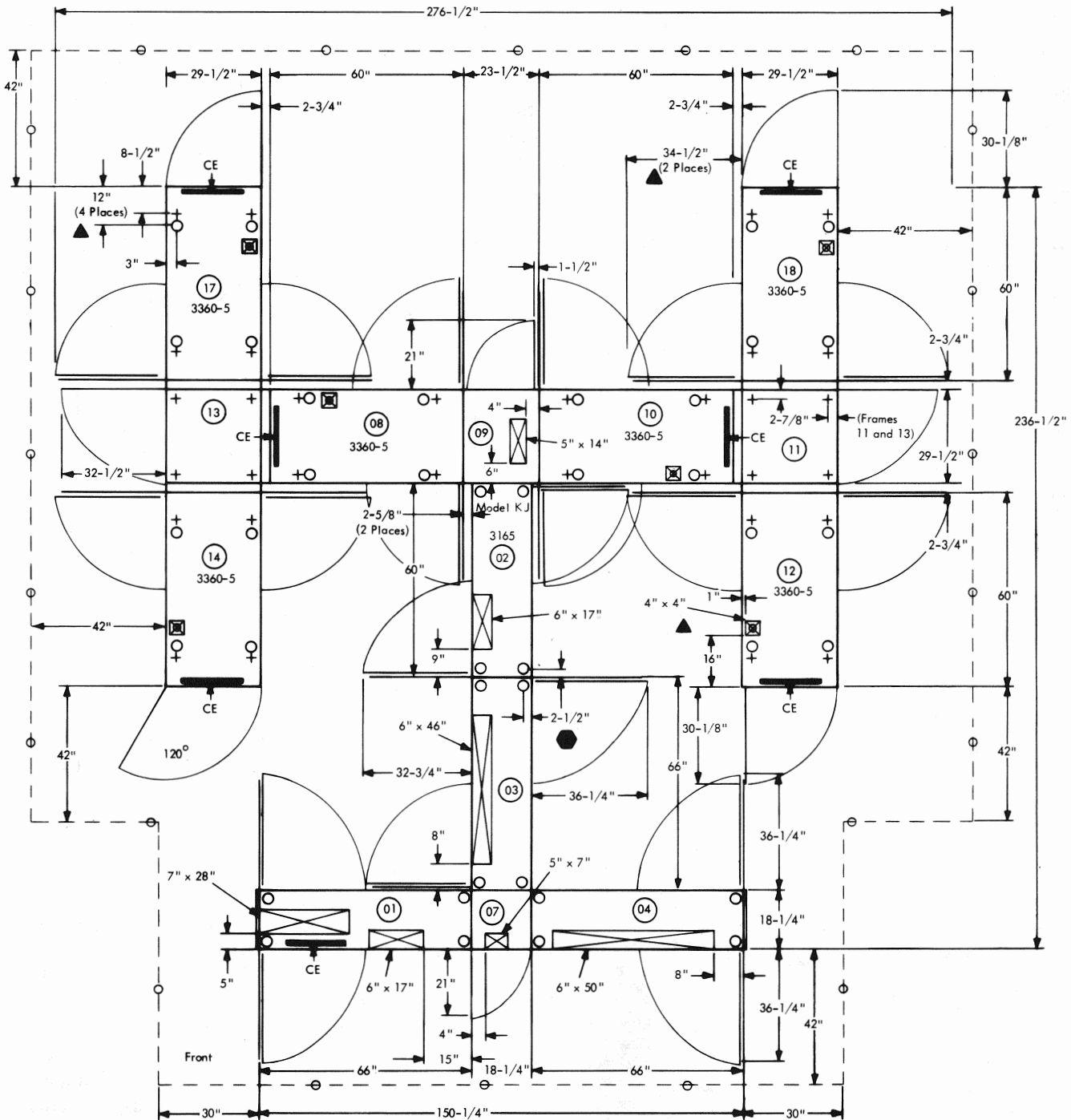
Notes:

- * See plan view.
- ** 70 inches (178 cm) for frames 08 through 14.
- *** For maximum-feature system, add 5,060 BTU/hr (1.300 kcal/hr) to air and 12,530 BTU/hr (3.200 kcal/hr) to water.
- † The 3360 Model 4 or 5 units are selected two at a time (max). A selected unit draws 4.6 kVA; an idling (unselected) unit draws 2.8 kVA.
- †† See "Liquid Coolant System" in Appendix A.



SYSTEM/370 MODEL 165 KJ, 3165 PROCESSING UNIT

PLAN VIEW



Note: Caster, cable hole, and leveling pad locating dimensions are measured from edge of frame, not cover.

SYSTEM/370 MODEL 165 KJ, 3165 PROCESSING UNIT

Details (By Frame)

Frame	Weight lb (kg)	Airflow cfm (m ³ /min)	Heat Output BTU/hr (kcal/hr)	
			To Air	To Water
01	1,260 (580)	250 (8)	5,300 (1.350)	74,090 (18.700)
02	990 (450)	395 (12)	6,910 (1.750)	8,950 (2.300)
03	1,300 (590)	500 (15)	11,240 (2.850)	20,560 (5.200)
04	1,310 (600)	500 (15)	10,720 (2.750)	18,770 (4.750)
07	—	—	—	—
08	See 3360-5	—	—	—
09	—	—	—	—
10	See 3360-5	—	—	—
11	300 (140)	—	—	—
12	See 3360-5	—	—	—
13	300 (140)	—	—	—
14	} See 3360-5	—	—	—
17		—	—	—
18		—	—	—

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	*	*	78**
(cm)	(*)	(*)	(198**)

Service Clearances:

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

Weight: 5,460 lb (2.500 kg)
(CPU only)

Heat Output:***

Air	34,170 BTU/hr (8.650 kcal/hr)
Water	122,370 BTU/hr (30.850 kcal/hr)

Airflow: 1,645 cfm (47 m³/min)

Power Requirements:

Frames 01, 02, 03, and 04 receive power from the 3067 PCDU Model 1 (frame 15).†

Environment Operating:

Temperature	65°-90°F (18°-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	72°F (22°C)††

Environment Nonoperating:

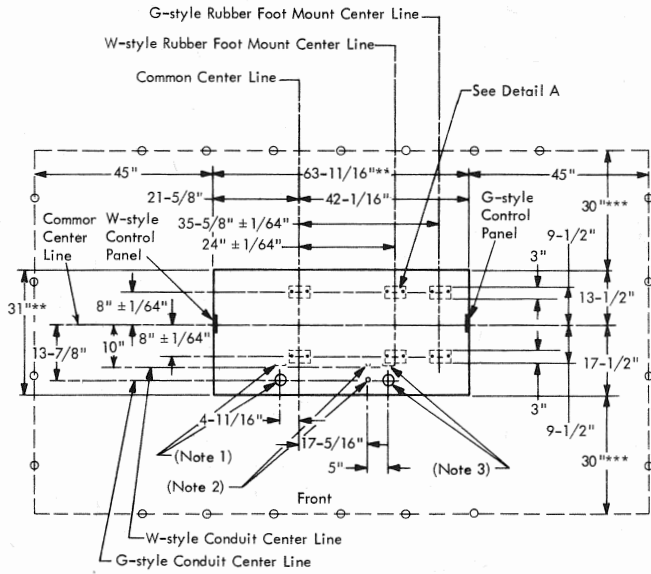
Temperature	50°-110°F (10°-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	80°F (27°C)††

Notes:

- * See plan view.
- ** 70 inches (178 cm) for frames 08 through 14, 17, and 18.
- *** For maximum-feature system, add 5,060 BTU/hr (1.300 kcal/hr) to air and 12,530 BTU/hr (3.200 kcal/hr) to water.
- † The 3360 Model 5 units are selected two at a time (max). A selected unit draws 4.6 kVA; an idling (unselected) unit draws 2.8 kVA.
- †† See "Liquid Coolant System" in Appendix A.

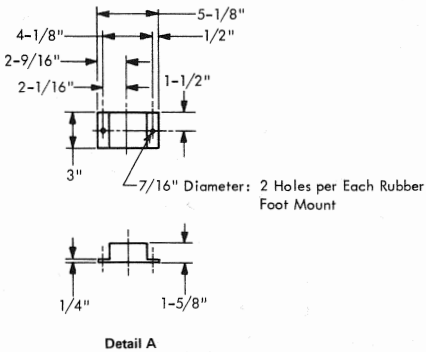
**MOTOR GENERATOR (REMOTE) FOR SYSTEM/370
MODELS 165 AND 168 (50-HZ INPUT)**

PLAN VIEW



Notes:

1. Generator Output: 3-1/8" diameter
 W-style: Hole in vertical plane with center line 24-3/8" above generator mounting surface.*
 G-style: Hole in horizontal plane with center line 20-3/8" above generator mounting surface.*
2. Control Leads: 1-3/8" diameter
 W-style: Hole in vertical plane with center line 24-3/8" above generator mounting surface.*
 G-style: Hole in horizontal plane with center line 20-3/8" above generator mounting surface.*
3. Motor Input: 3-1/8" diameter
 W-style: Hole in vertical plane with center line 24-3/8" above generator mounting surface.*
 G-style: Hole in horizontal plane with center line 20-3/8" above generator mounting surface.*



Inches	Millimeters
1/4	6,4
7/16	11,1
1/2	12,7
1-3/8	34,9
1-1/2	38,1
1-5/8	41,3
2-1/16	52,4
2-9/16	65,1
3	76,2
3-1/8	79,4
4-1/8	104,8
4-11/16	119,0
5	127,0
5-1/8	130,2
8 ± 1/64	203,2 ± 0,4
9-1/2	241,3

Inches	Millimeters
10	254,0
13-1/2	342,9
13-7/8	352,4
17-5/16	439,7
17-1/2	444,5
20-3/8	517,5
21-5/8	549,3
24 ± 1/64	609,6 ± 0,4
24-3/8	619,1
30	762,0
31	787,4
35-5/8 ± 1/64	904,9 ± 0,4
42-1/16	1.068,4
45	1.143,0
63-11/16	1.617,6

**MOTOR GENERATOR (REMOTE) FOR SYSTEM/370
MODELS 165 AND 168 (50-HZ INPUT)**

Notes:

The installation of the motor-generator (including starter) unit will be the responsibility of the customer. Consult motor-generator manufacturer's instruction manual for further installation procedures and maintenance.

The G-style and W-style motor generators have the same functional characteristics but differ slightly in physical dimensions. The dimensions on the plan view allow for the installation of either style. If the installation must be planned and the style is unknown, use the plan view to make provisions for six rubber foot mounts instead of four.

- * Add 1-5/8 inches (41,3 mm) for rubber foot mounts.
- ** Planning dimension allows either style (G or W) to be installed about common center line.
- *** Add 12 inches (304,8 mm) for voltages to ground (earth) over 150V.
- † Height clearance required for top cover swing.
- †† See plan view.

Customer to supply the following wiring and appropriate connecting hardware:

1. Input feeders to the motor and ground wire to the MG frame.
 2. Output feeders, ground wire, and conduit from generator to 3067 PCDU. Wiring may be selected from chart under "Distribution Guide for MG Output."
 3. Seven remote leads from generator to 3067 PCDU:
 - a. Three AWG #14 leads where the run does not exceed 275 feet (84m). For a run longer than 275 feet (84m), use three AWG #10 leads in a continuous run. These are the sense leads.
 - b. Two AWG #16 leads for the abnormal indicator light.
 - c. One AWG #16 twisted pair, shielded, jacketed cable for the 50V monitoring jacks. Shield to be grounded *only* at the motor generator.
 4. Two AWG #14 leads for the emergency power-off pushbutton in the computer room. These leads should remotely cut off the power output from the generator. Shunt trips for emergency turn-off are provided in both input and output circuit breakers.
- Maintain 12-inch (30-cm) spacing between the control conduit and the generator output feeder conduit or, alternatively, run the control wiring in ferrous conduit.

Distribution Guide for Motor-Generator Output to 3067 PCDU

Information in this guide accommodates a 200A full-load rating. Note that the conduit quantity column refers to the number of conduits recommended, each conduit containing all three phases in the wire size shown (three conductors per conduit) plus one AWG #2 insulated copper conductor in one of the conduits (the larger if used) for ground. It is important that local and national wiring codes be followed.

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	††	††	48*
(cm)	(††)	(††)	(122*)

Service Clearances:

	F	R	Rt	L	H
Inches	30***	30***	45	45	30†
(cm)	(76***)	(76***)	(114)	(114)	(76†)

Weight: 2,600 lb (1.200 kg)

Heat Output (Max): 57,000 BTU/hr
(14.400 kcal/hr)

Power Requirements:

Input:

Induction Motor—100 hp, 200/220/235/380/408V, 50 Hz, 3 phase, 100 kVA full load, 40°C maximum ambient, dripproof enclosure

Input (V)	Approximate Full Load (A)
200	272
220	245
235	235
380	142
408	134

Output:

Synchronous Generator—75 kVA, 67 kW, 3 phase, 208V, 441 Hz, 208A full load, 70°C temperature rise, dripproof enclosure

Copper Wire Size	Conduit		Maximum Run Lengths by Conduit Type--ft (meters †)		
	Quantity	Size (inches)	Ferrous	Nonferrous	Nonmetallic ††
250 MCM*	1	3	175** (53**)	225** (69**)	260*** (79***)
2/0 AWG	2	2	325 (99)	400 (122)	465 (142)
250 MCM	{ 1 1 }	{ 2-1/2 3 }	355 (108)	450 (137)	520 (158)

* Single runs with conductors smaller than 250 MCM should not be used. MCM = thousand circular mils, where a circular mil is the cross-sectional area of a 0.001" (0,0254 mm) diameter wire (7.854(10)⁻⁷in² or 5,067(10)⁻⁴ mm²).

** 90°C insulation required.

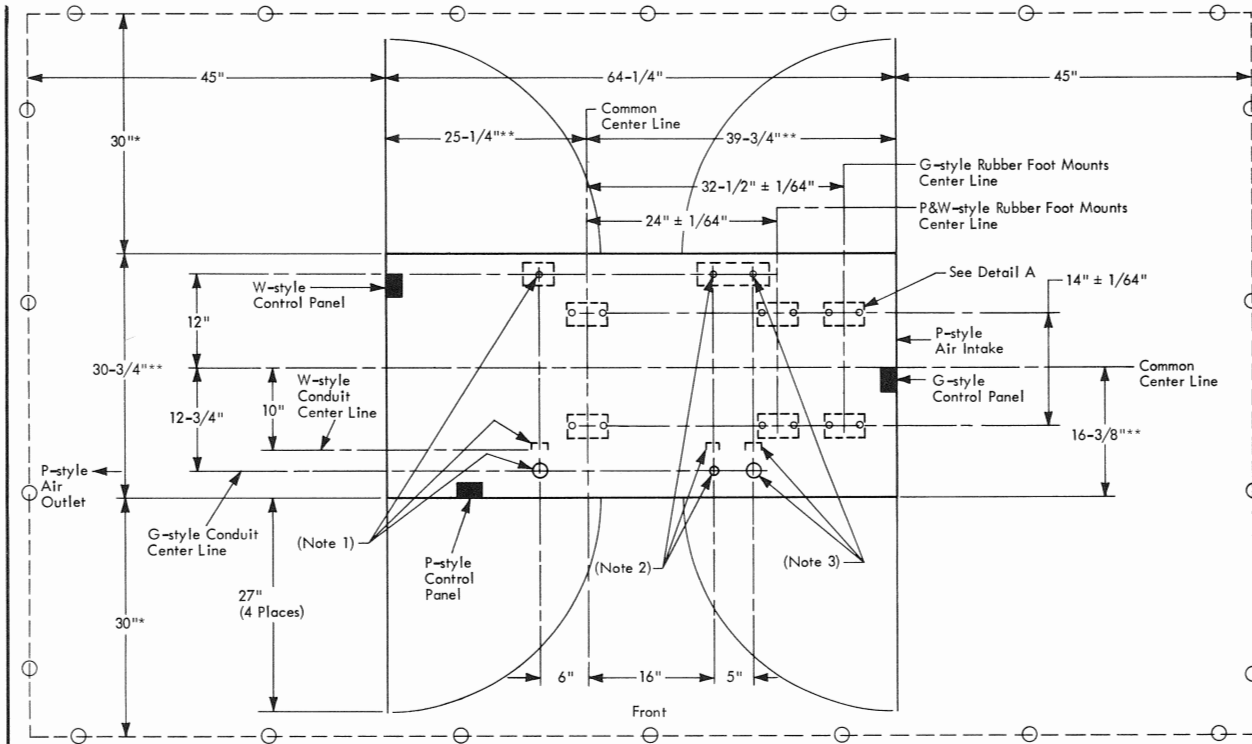
*** 75°C insulation required.

† Lengths are rounded to the nearest unit meter.

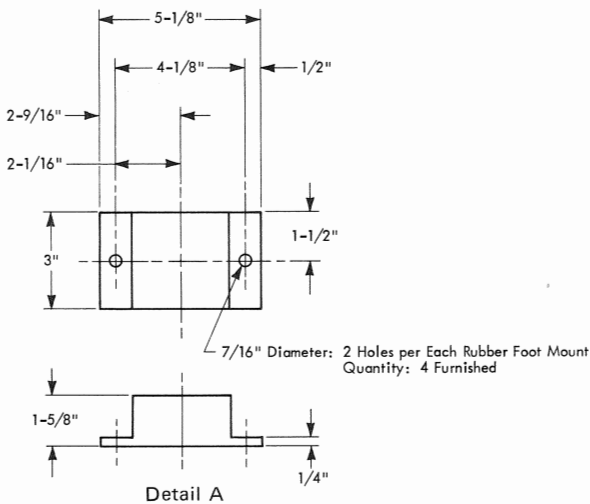
†† Or cabled in air, where codes allow.

**MOTOR GENERATOR (REMOTE) FOR SYSTEM/370
 MODELS 165 AND 168 (60-HZ INPUT)**

PLAN VIEW (Scale is 1/2 inch = 1 foot)



- Notes:**
- Generator Output: 3-1/8" diameter
 W-style: Hole in vertical plane with center line 22-3/8" above generator mounting surface.***
 G-style: Hole in horizontal plane with center line 18-3/8" above generator mounting surface.***
 P-style: 3-5/32" x 4-1/8" opening
 Hole in horizontal plane with center line 22-3/8" above generator mounting surface.***
 - Control Leads: 1-3/8" diameter
 W-style: Hole in vertical plane with center line 20-3/8" above generator mounting surface.***
 G-style: Hole in horizontal plane with center line 18-3/8" above generator mounting surface.***
 P-style: 3-5/32" x 9-3/16" opening
 Hole in horizontal plane with center line 22-3/8" above generator mounting surface.***
 - Motor Input: 3-1/8" diameter
 W-style: Hole in vertical plane with center line 22-3/8" above generator mounting surface.***
 G-style: Hole in horizontal plane with center line 18-3/8" above generator mounting surface.***
 P-style: 3-5/32" x 9-3/16" opening
 Hole in horizontal plane with center line 22-3/8" above generator mounting surface.***



Inches	Millimeters
1/4	6,4
7/16	11,1
1/2	12,7
1-3/8	34,9
1-1/2	38,1
1-5/8	41,3
2-1/16	52,4
2-9/16	65,1
3	76,2
3-1/8	79,4
3-5/32	80,2
4-1/8	104,8
5	127,0
5-1/8	130,2
6	152,4
9-3/16	233,4
10	254,0

Inches	Millimeters
12	304,8
12-3/4	323,9
14 ± 1/64	355,6 ± 0,4
16	406,4
16-3/8	415,9
18-3/8	466,7
20-3/8	517,5
22-3/8	568,3
24 ± 1/64	609,6 ± 0,4
25-1/4	641,4
27	685,8
30	762,0
30-3/4	781,1
32-1/2 ± 1/64	825,5 ± 0,4
39-3/4	1.009,7
45	1.143,0
64-1/4	1.632,0

**MOTOR GENERATOR (REMOTE) FOR SYSTEM/370
 MODELS 165 AND 168 (60-HZ INPUT)**

Notes:

The installation of the motor-generator (including starter) unit will be the responsibility of the customer. Consult motor-generator manufacturer's instruction manual for further installation procedures and maintenance.

The G-style, P-style, and W-style motor generators have the same functional characteristics but differ slightly in physical dimensions. The dimensions on the plan view allow for the installation of either style. If the installation must be planned and the style is unknown, use the plan view to make provisions for six rubber foot mounts instead of four.

* Add 12 inches (304,8 mm) for voltages to ground (earth) over 150V.

** Planning dimension allows G-, P-, or W-style to be installed about common center line.

*** Add 1-5/8 inches (41,3 mm) for rubber foot mounts.

† Height clearance required for top cover swing on G-style and W-style. See plan view for P-style.

†† See plan view.

Customer to supply the following wiring and appropriate connecting hardware:

1. Input feeders to the motor and ground wire to the MG frame.
2. Output feeders, ground wire, and conduit from generator to 3067 PCDU. Wiring may be selected from chart under "Distribution Guide for MG Output."
3. Seven remote leads from generator to 3067 PCDU:
 - a. Three AWG # 14 leads where the run does not exceed 275 feet (84m). For a run longer than 275 feet (84m), use three AWG # 10 leads in a continuous run. These are the sense leads.
 - b. Two AWG # 16 leads for the abnormal indicator light.
 - c. One AWG # 16 twisted pair, shielded, jacketed cable for the 50V monitoring jacks. Shield to be grounded *only* at the motor generator.
4. Two AWG # 14 leads for the emergency power-off push-button in the computer room. These leads should remotely cut off the power output from the generator. Shunt trips for emergency turn-off are provided in both input and output circuit breakers.

Maintain 12-inch (30-cm) spacing between the control conduit and the generator output feeder conduit or, alternatively, run the control wiring in ferrous conduit.

Distribution Guide for Motor-Generator Output to 3067 PCDU

Information in this guide accommodates a 208A full-load rating. Note that the conduit quantity column refers to the number of conduits recommended, each conduit containing all three phases in the wire size shown (three conductors per conduit) plus one AWG #2 insulated copper conductor in one of the conduits (the larger, if used) for ground. It is important that local and national wiring codes be followed.

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	††	††	44-1/2***
(cm)	(††)	(††)	(113***)

Service Clearances:

	F	R	Rt	L	H
Inches	30*	30*	45	45	30†
(cm)	(76*)	(76*)	(114)	(114)	(76†)

Weight:	G- or W-style	P-style
208/230V:	2,100 lb (960 kg)	2,160 lb (980 kg)
460V:	1,910 lb (870 kg)	2,160 lb (980 kg)

Heat Output

(Max):	57,000 BTU/hr (14.400 kcal/hr)	32,500 BTU/hr (8.200 kcal/hr)
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Power Requirements:

Input:

Induction Motor—100 hp, 208/230V or 460V, 3 phase, 60 Hz, 100 kVA full load, NEMA design B, 40°C maximum ambient, dripproof enclosure, maximum starting current 250A at 208V, 220A at 230V, or 125A at 460V

Output:

Synchronous Generator—75 kVA, 67 kW, 3 phase, 208V, 415 Hz, 208A full load, 70°C temperature rise, dripproof enclosure

Copper Wire Size	Conduit		Maximum Run Lengths by Conduit Type--ft (meters †)		
	Quantity	Size (inches)	Ferrous	Nonferrous	Nonmetallic ††
250 MCM*	1	3	175** (53**)	225** (69**)	260*** (79***)
2/0 AWG	2	2	325 (99)	400 (122)	465 (142)
250 MCM	{ 1 1 }	{ 2-1/2 3 }	355 (108)	450 (137)	520 (158)

* Single runs with conductors smaller than 250 MCM should not be used. MCM = thousand circular mils, where a circular mil is the cross-sectional area of a 0.001" (0,0254 mm) diameter wire (7.854(10)⁻⁷in² or 5,067(10)⁻⁴ mm²).

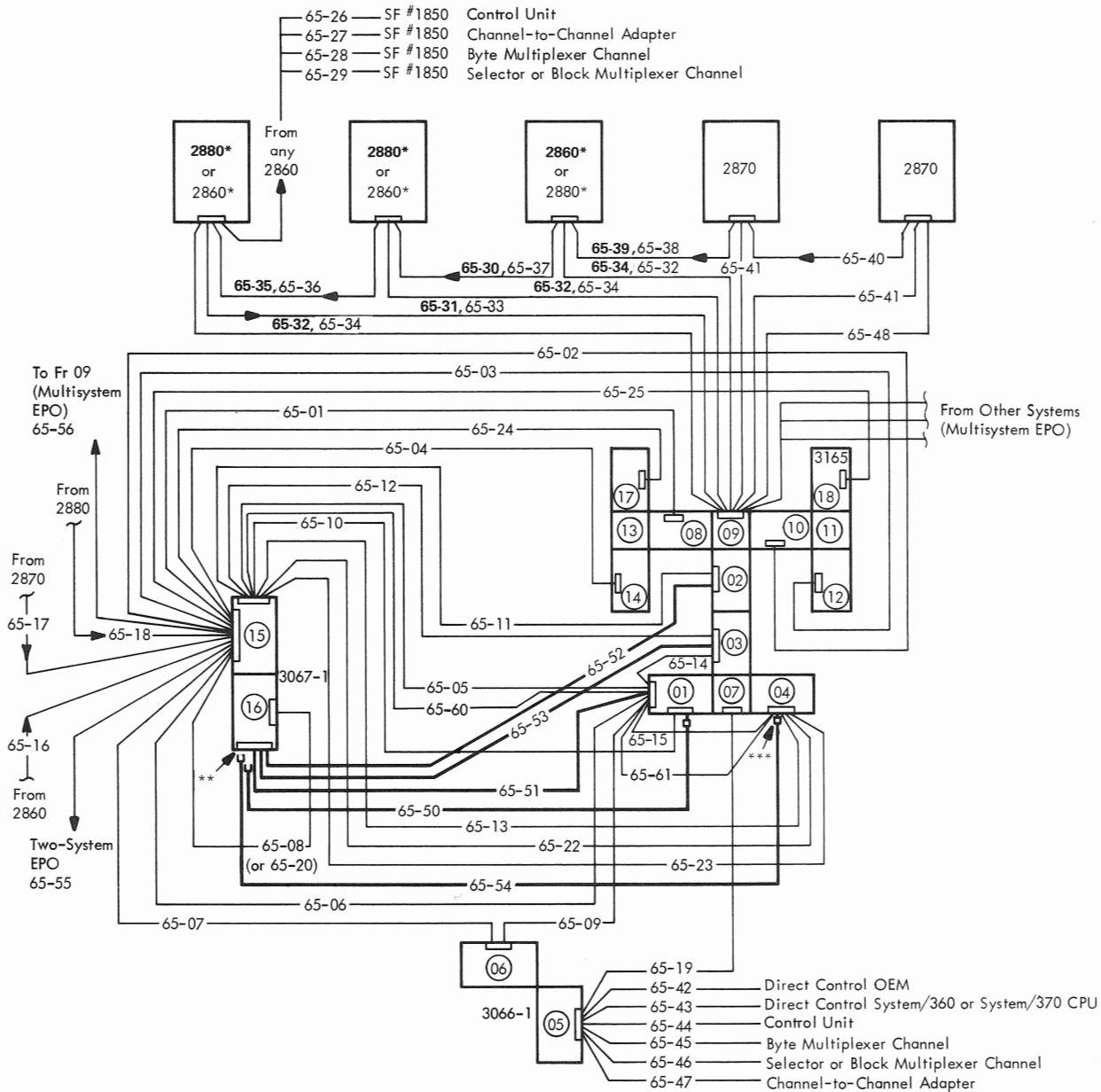
** 90°C insulation required.

*** 75°C insulation required.

† Lengths are rounded to the nearest unit meter.

†† Or cabled in air, where codes allow.

SYSTEM/370 MODEL 165 CABLING AND COOLANT HOSE SCHEMATIC



Legend:

- Coolant Hoses. (Only supply hoses are shown; assume one return hose for each supply hose.)
- Cables

*Where two machine units are represented by the same schematic block, the BOLDFACE machine designations in the top portion of the block is keyed to the BOLDFACE cable group number on the line representing the cable. The machine designation in the lower portion of the block is keyed to the second group number on the line. For example, **2880** to **2880** is associated with **65-35**; 2860 to 2860 is associated with 65-36. Note that the cabling schematic only shows the appropriate cable groups required between channel frames; the number and type of cable groups to be ordered depend on the system configuration.

**Quick-connect sockets are on supply hoses at 3067-1 CDU end. Quick-connect plugs are on return hoses at 3067-1 CDU end.

***Quick-connect plugs are on supply hoses at end away from 3067-1 CDU. Quick-connect sockets are on return hoses at end away from 3067-1 CDU.

SYSTEM/370 MODEL 165 CABLING AND COOLANT HOSE SCHEMATIC

Cables

Group No.	No. of Cables	From	Frame No.	To	Frame No.	Max Length (ft)	Notes
65-01	1	3067-1	15	3165	08	100	—
65-02	1	3067-1	15	3165	10	100	—
65-03	1	3067-1	15	3165	12	100	—
65-04	1	3067-1	15	3165	14	100	—
65-05	12	3067-1	15	3165	01	40	2
65-06	3	3067-1	15	3165	01	40	2
65-07	5	3067-1	15	3066-1	06	100	2
65-08 (or 65-20)	2	3067-1	15	3067-1	16	15	2, 19
65-09	1	3066-1	06	3165	01	100	—
65-10	3	3067-1	15	3165	01	40	2
65-11	2	3067-1	15	3165	02	40	2
65-12	5	3067-1	15	3165	03	40	2
65-13	4	3067-1	15	3165	04	40	2
65-14	3	3165	01	3165	03	10	2
65-15	3	3165	01	3165	04	14	2
65-16	1	2860	—	3067-1	15	150	1
65-17	1	2870	—	3067-1	15	150	1
65-18	1	2880	—	3067-1	15	150	1
65-19	14	3066-1	05	3165	07	30	—
65-22	1	3067-1	15	3165	04	40	2, 4
65-23	1	3067-1	15	3165	04	40	2, 17
65-24	1	3067-1	15	3165	17	100	—
65-25	1	3067-1	15	3165	18	100	—
65-26	2	2860	—	Control Unit	—	—	7, 10
65-27	2	2860	—	Channel-to-Channel Adapter	—	—	7, 9, 10
65-28	2	2860	—	Byte Multiplexer Channel	—	—	7, 10
65-29	2	2860	—	Selector or Block Multiplexer Channel	—	—	7, 10
65-30	13	2860	—	2880	—	20	12, 14
65-31	13	2880	—	3165	09	25	12, 14
65-32	1	2880	—	3165	09	—	6, 13, 14, 18
65-33	13	2860	—	3165	09	25	12, 14
65-34	1	2860	—	3165	09	—	6, 13, 14
65-35	13	2880	—	2880	—	20	12, 14
65-36	13	2860	—	2860	—	20	12, 14
65-37	13	2880	—	2860	—	20	12, 14
65-38	13	2870	—	2880	—	20	12, 14
65-39	13	2870	—	2860	—	20	12, 14
65-40	13	2870	—	2870	—	20	12, 14
65-41	1	2870	—	3165	09	—	13, 14
65-42	2	Direct Control	—	3066-1	05	50	11
65-43	1	3066-1	05	Direct Control	—	100	8
65-44	2	3066-1	05	Control Unit	—	—	10
65-45	2	3066-1	05	Byte Multiplexer Channel	—	—	10
65-46	2	3066-1	05	Selector or Block Multiplexer Channel	—	—	10
65-47	2	3066-1	05	Channel-to-Channel Adapter	—	—	10
65-48	13	2870	—	3165	09	25	5, 12
65-55	1	3067-1	15	System/360 or System/370 CPU	—	100	15
65-56	1	3067-1	15	3165	09	100	16
65-60	2	3067-1	15	3165	01	40	2, 3
65-61	2	3165	01	3165	04	14	2, 3

SYSTEM/370 MODEL 165 CABLING AND COOLANT HOSE SCHEMATIC

Coolant Hoses

Group No.	No. of Hoses	From Frame No.	To Frame No.	Max Length (ft)	Notes
65-50	2	3067-1 16	3165 01	55	—
65-51	4	3067-1 16	3165 01	55	—
65-52	2	3067-1 16	3165 02	55	—
65-53	4	3067-1 16	3165 03	55	—
65-54	4	3067-1 16	3165 04	55	—

Notes:

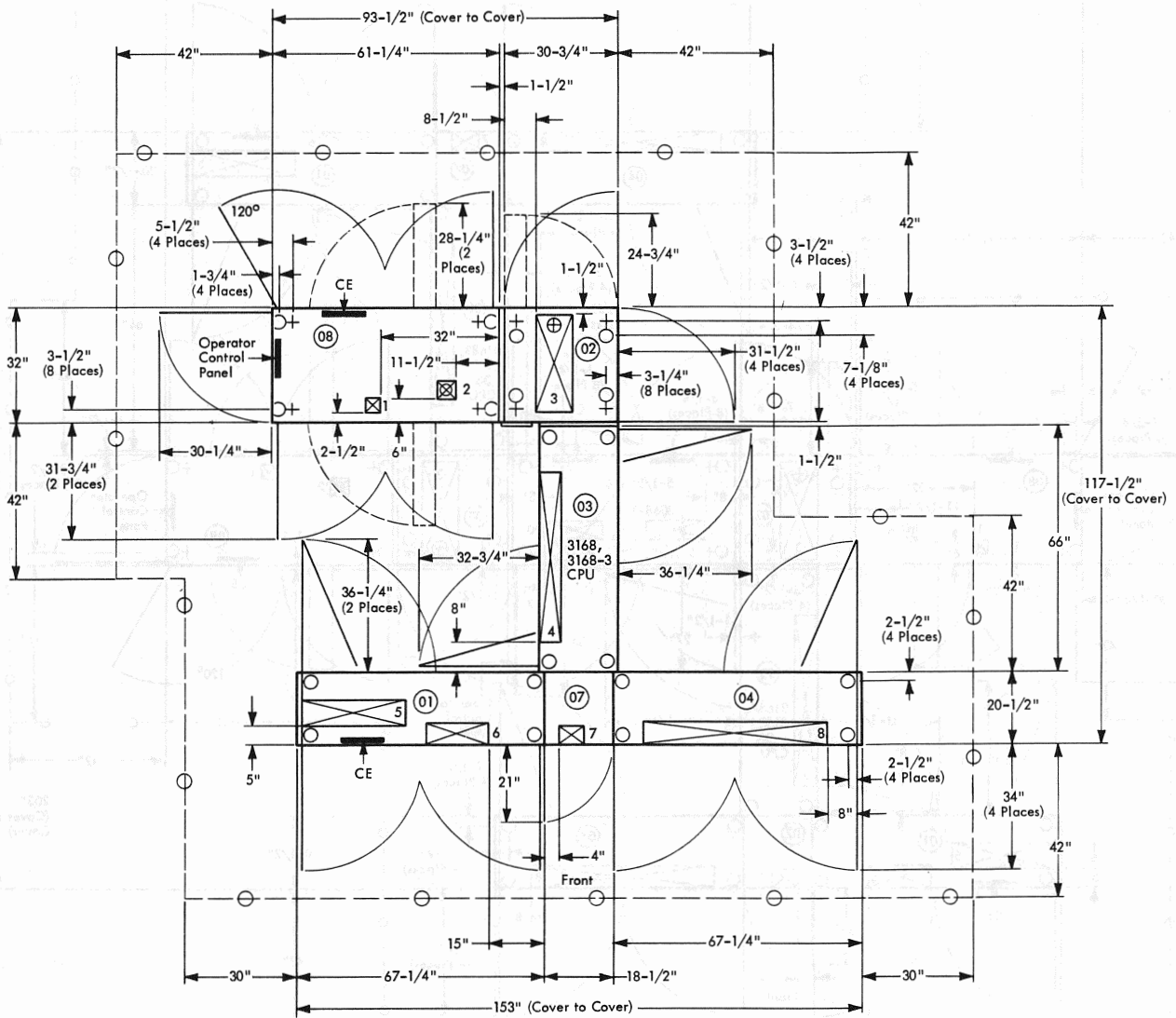
1. Sequence and control (EPO).
2. Power cabling.
3. Required for emulator feature (SF # 7117, # 7118, or # 7119).
4. Required for high-speed multiply feature (SF # 4520).
5. Use when 2870 is the only channel frame on the system (first and last).
6. One per channel.
7. Channel-to-channel adapter feature (SF # 1850); installed only on 2860 and uses one control unit position on each of the two connected channels.
8. For interconnection of two System/360 or System/370 CPUs.
9. For the interconnection of two channel-to-channel adapter features (SF # 1850).
10. Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units.
11. For direct control to non-IBM devices.
12. One per frame.
13. The "X" length of this group (single cable simplex) from any channel frame must equal the cumulative "X" length of the multiplexer bus cables from the same channel frame to the CPU. The multiplexer bus cable groups (such as 65-30 and 65-31) have 13 cables per group.
14. For cabling purposes, the 2880 or 2860 units with high-speed devices faster than 1 megabyte/second are first in line (closest to the CPU) and the 2870 units are physically last.
15. To SF # 3621, two-system EPO connection.
16. To SF # 3622, multisystem EPO connection, mounted in frame 09. See Note 4 in "System/370 Specification Summary."
17. Required for emulator feature (SF # 7119).
18. If 2880 frames are placed in position 5, 6, or 7 on the multiplex string, the simplex "X" cable length to those positions is:

Position	To the Cumulative Multiplex "X" Cable Length to That Position, Add:
5	10 feet
6	30 feet
7	50 feet

19. For 50-Hz machines, use group number in parentheses.

SYSTEM/370 MODEL 168, 3168 AND 3168-3 PROCESSING UNITS

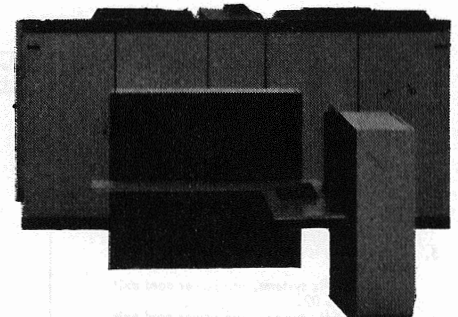
PLAN VIEW



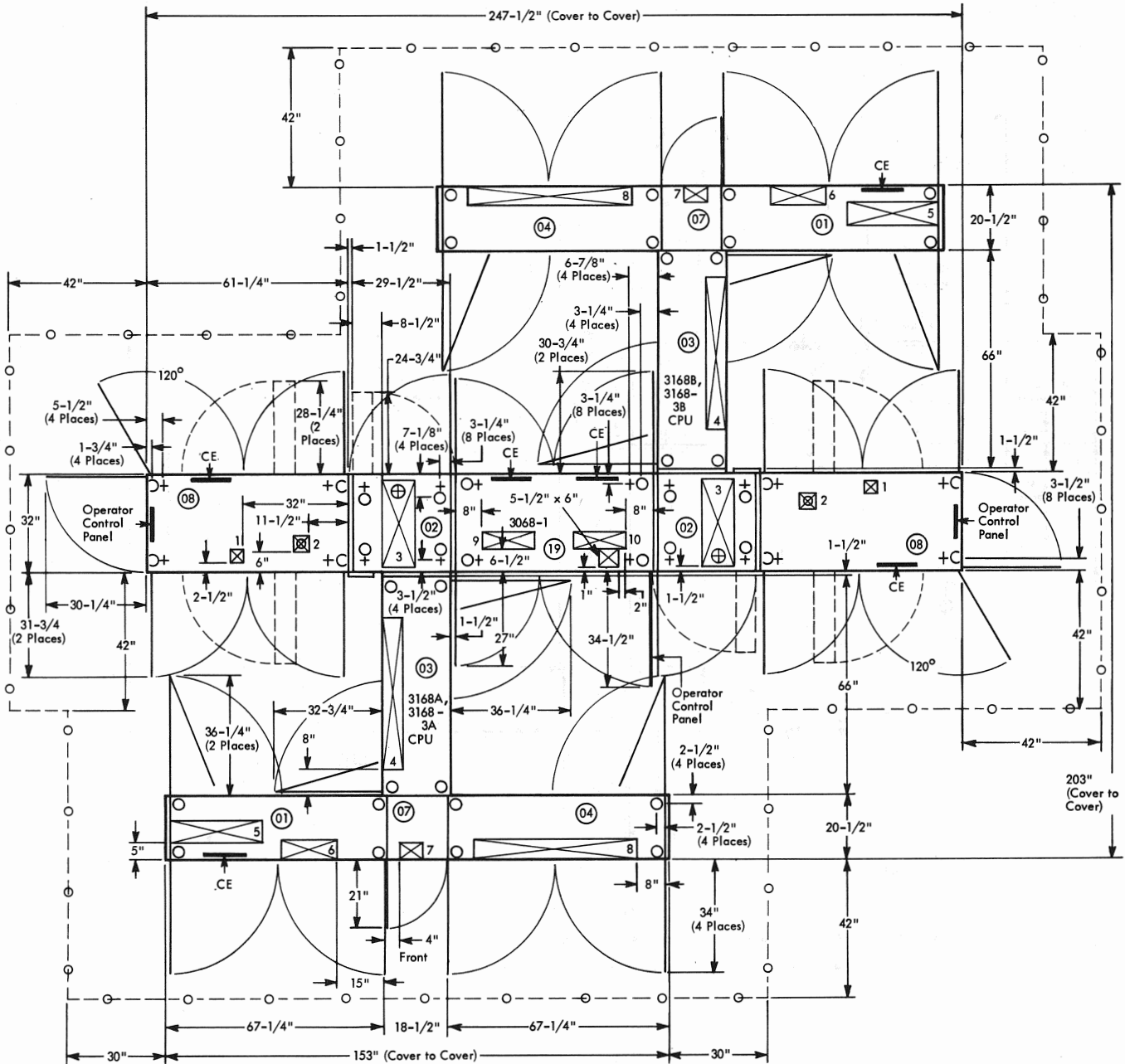
Notes:

1. Caster, cable hole, and leveling pad locating dimensions are measured from edge of frame, not cover.
2. Typical dimensions for leveling pads on frames 01, 03, and 04.
3. The operator control panel (frame 08) and the gates (frames 02 and 08) are installed with the Integrated Storage Controls (ISC) feature.
4. When power is supplied from customer service:
 - a. For 50-Hz systems, use power cord exit in frame 02.
 - b. For 60-Hz systems, use power cord exit in frame 08.

Cable Entry/Exit Number	Dimensions (Inches)
1	4 x 4
2	5 x 5
3	10 x 26-1/2
4	6 x 46
5	7 x 28
6	6 x 17
7	5 x 7
8	6 x 50



SYSTEM/370 MODEL 168 MULTIPROCESSING, 3168 AND 3168-3 PROCESSING UNITS
PLAN VIEW



Notes:

1. Caster, cable hole, and leveling pad locating dimensions are measured from edge of frame, not cover.
2. Typical dimensions for leveling pads on frames 01, 03, and 04.
3. Typical dimensions for 3168A and 3168B or 3168-3A and 3168-3B.
4. The operator control panel (frame 08) and the gates (frames 02 and 08) are installed with the Integrated Storage Controls (ISC) feature.
5. When power is supplied from customer service:
 - a. For 50-Hz systems, use power cord exit in frame 02.
 - b. For 60-Hz systems, use power cord exit in frame 08.

Cable Entry/Exit Number	Dimensions (Inches)
1	4 x 4
2	5 x 5
3	10 x 26-1/2
4	6 x 46
5	7 x 28
6	6 x 17
7	5 x 7
8	6 x 50
9	5 x 16
10	5 x 16

**SYSTEM/370 MODEL 168 AND MODEL 168 MULTIPROCESSING
 3168 PROCESSING UNITS**

Details (By Frame)

Frame	Model	Weight lb (kg)	Airflow cfm (m ³ /min)	Heat Output BTU/hr (kcal/hr)		kVA
				To Air	To Water	
01	All	750 (350)	250 (8)	4,230 (1.100)	22,060 (5.600)	*
02	All	300 (140)	—	50 (13)	—	—
03	All	900 (410)	500 (15)	7,620 (1.950)	29,820 (7.550)	*
04	All	850 (390)	500 (15)	5,835 (1.500)	22,105 (5.600)	*
07	All	100 (46)	—	—	—	—
08	J,MP1	2,200 (1.000)	2,000 (57)	16,100 (4.100)		6.3 or *
08	K,MP2			18,500 (4.700)		7.2 or *
08	KJ,MP3			20,850 (5.300)		9.0 or *
08	L,MP4			23,350 (5.900)		11.0 or *
08	LJ,MP5			26,950 (6.800)		*
08	LK,MP6			29,300 (7.400)		*
08	LKJ,MP7			31,650 (8.000)		*
08	M,MP8	2,200 (1.000)	2,000 (57)	33,900 (8.550)		*
19	MP Only	See 3068 specifications page for details				

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	***	***	78 [†]
(cm)	(***)	(***)	(198 [†])

Service Clearances:

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

Environment Operating:

Temperature	65°-90°F (18°-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	72°F (22°C) ^{††}

Environment Nonoperating:

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

Notes:

*Receives power from the 3067 PCDU Model 2 (frame 15).

**For maximum-feature system, add 4,610 BTU/hr (1.200 kcal/hr) to air and 17,270 BTU/hr (4.400 kcal/hr) to water.

***See plan view.

[†]74-1/2 inches (189 cm) for frames 02 and 08.

^{††}See "Liquid Coolant System" in Appendix A.

Details (By Model)

Model	Weight lb (kg)	Airflow cfm (m ³ /min)	Heat Output BTU/hr (kcal/hr)**	
			To Air	To Water
J,MP1	5,100 (2.350)	3,250 (92)	33,850 (8.550)	73,985 (18.650)
K,MP2			36,200 (9.150)	
KJ,MP3			38,550 (9.750)	
L,MP4			41,100 (10.400)	
LJ,MP5			44,700 (11.300)	
LK,MP6			47,050 (11.900)	
LKJ,MP7			49,400 (12.450)	
M,MP8	5,100 (2.350)	3,250 (92)	51,650 (13.050)	73,985 (18.650)

**SYSTEM/370 MODEL 168 AND MODEL 168 MULTIPROCESSING
 3168-3 PROCESSING UNITS**

Details (By Frame)

Frame	Model	Weight lb (kg)	Airflow cfm (m ³ /min)	Heat Output BTU/hr (kcal/hr)		kVA
				To Air	To Water	
01	All	750 (350)	250 (8)	4,230 (1.100)	22,060 (5.600)	*
02	All	300 (140)	-	50 (13)	-	-
03	All	900 (410)	500 (15)	7,620 (1.950)	29,820 (7.550)	*
04	All	850 (390)	500 (15)	5,835 (1.500)	22,105 (5.600)	*
07	All	100 (46)	-	-	-	-
08	U31, M31	2,200 (1,000)	2,000 (57)	16,100 (4.100)		*
08	U32, M32			18,500 (4.700)		*
08	U33, M33			20,850 (5.300)		*
08	U34, M34			23,350 (5.900)		*
08	U35, M35			26,950 (6.800)		*
08	U36, M36			29,300 (7.400)		*
08	U37, M37			31,650 (8.000)		*
08	U38, M38			2,200 (1,000)	2,000 (57)	33,900 (8.550)
19	MP Only	See 3068 specifications page for details				

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	***	***	78†
(cm)	(***)	(***)	(198†)

Service Clearances:

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

Environment Operating:

Temperature	65°-90°F (18°-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	72°F (22°C)††

Environment Nonoperating:

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

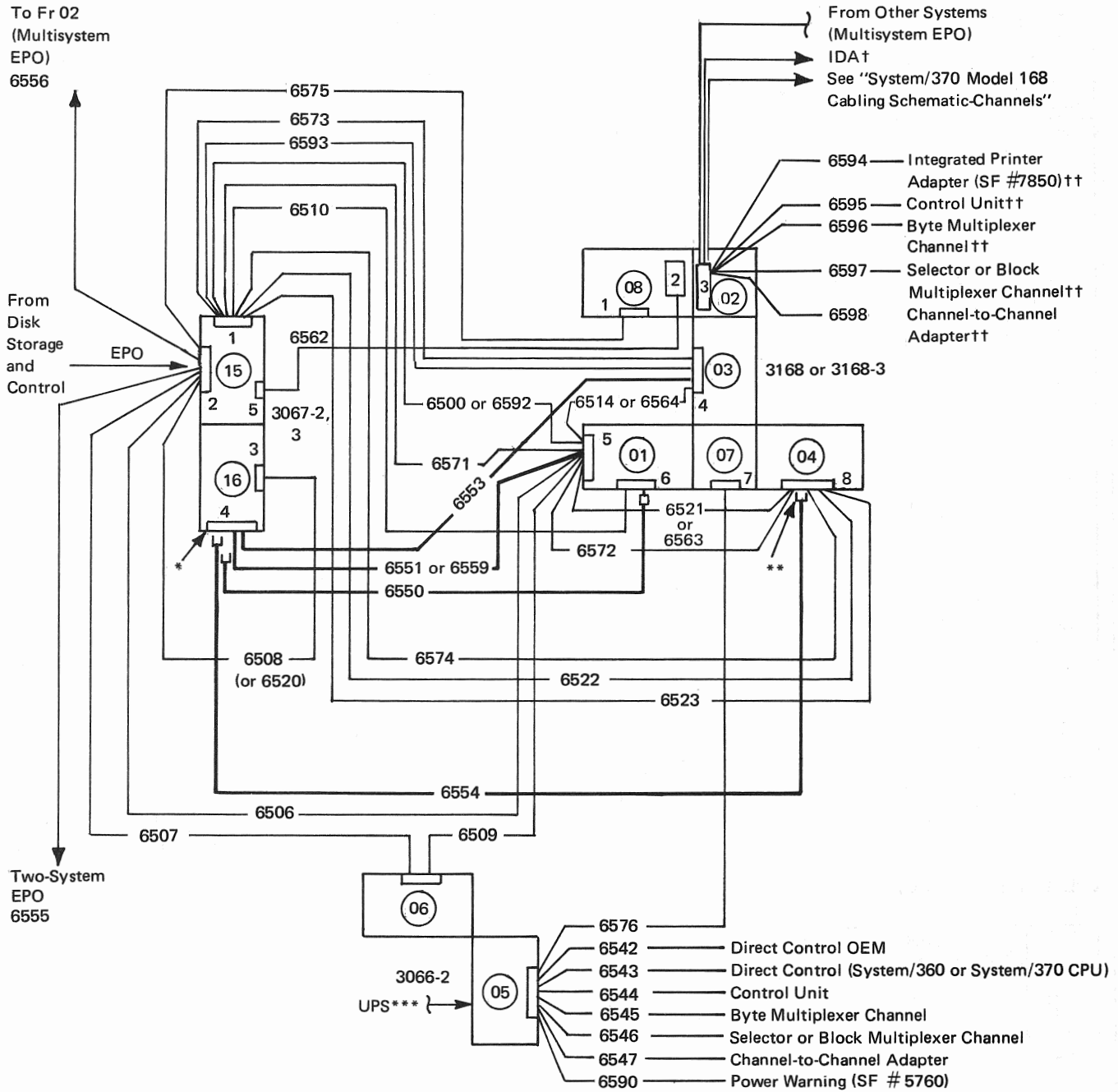
Notes:

- *Receives power from the 3067 PCDU Model 3 (frame 15).
- **For maximum-feature system, add 4,610 BTU/hr (1.200 kcal/hr) to air and 17,270 BTU/hr (4.400 kcal/hr) to water.
- ***See plan view.
- †74-1/2 inches (189 cm) for frames 02 and 08.
- ††See "Liquid Coolant System" in Appendix A.

CPU Totals (By Model)

Model	Weight lb (kg)	Airflow cfm (m ³ /min)	Heat Output BTU/hr (kcal/hr)**	
			To Air	To Water
U31, M31	5,100 (2.350)	3,250 (92)	33,850 (8.550)	73,985 (18.650)
U32, M32			36,200 (9.150)	
U33, M33			38,550 (9.750)	
U34, M34			41,100 (10.400)	
U35, M35			44,700 (11.300)	
U36, M36			47,050 (11.900)	
U37, M37			49,400 (12.450)	
U38, M38	5,100 (2.350)	3,250 (92)	51,650 (13.050)	73,985 (18.650)

SYSTEM/370 MODEL 168 CABLING SCHEMATIC—CABLES AND COOLANT HOSES



Legend:

- Coolant Hoses. (Only supply hoses are shown; assume one return hose for each supply hose.)
- Cables

* Quick-connect sockets are on supply hoses at 3067-2,-3 CDU end. Quick-connect plugs are on return hoses at 3067-2,-3 CDU end.
 ** Quick-connect plugs are on supply hoses at end away from 3067-2,-3 CDU. Quick-connect sockets are on return hoses at end away from 3067-2,-3 CDU.
 *** Uninterrupted Power Supply (UPS) detector cable is customer supplied. See Note 13.
 † For systems installed in U.S. and Canada, integrated data adapter (IDA) cable (provided with the system) enters cable entry in frame 02. Data Access Arrangement (DAA) must be within 50 feet of cable entry in frame 02.
 †† For 3168-3 only. See cable group listing.

SYSTEM/370 MODEL 168 CABLING SCHEMATIC—CABLES AND COOLANT HOSES

Cables

<i>Group No.</i>	<i>No. of Cables</i>	<i>From</i>	<i>Frame No.</i>	<i>To</i>	<i>Frame No.</i>	<i>Max Length (ft)</i>	<i>Notes</i>
6500 [6505]	10 [12]	3067-2	15	3168	01	40	1, 10
6506	3	3067-2, 3	15	3168 or 3168-3	01	40	1
6507	5	3067-2, 3	15	3066-2	06	100	1
6508 (or 6520)	2	3067-2, 3	15	3067-2, 3	16	13	1, 11
6509	1	3066-2	06	3168 or 3168-3	01	100	—
6510	3	3067-2, 3	15	3168 or 3168-3	01	40	1
6514	3	3168	01	3168	03	10	1
6521	2	3168	01	3168	04	10	1
6522	1	3067-2, 3	15	3168 or 3168-3	04	40	1, 3
6523	1	3067-2, 3	15	3168 or 3168-3	04	40	1, 9
6542	2	Direct Control	—	3066-2	05	50	6
6543	1	3066-2	05	Direct Control		100	4
6544	2	3066-2	05	Control Unit		—	5
6545	2	3066-2	05	Byte Multiplexer Channel		—	5
6546	2	3066-2	05	Selector or Block		—	5
				Multiplexer Channel		—	5
6547	2	3066-2	05	Channel-to-Channel		—	5
				Adapter		—	5
6555	1	3067-2,3	15	System/360 or		150	7
				System/370 CPU		150	8
6556	1	3067-2, 3	15	3168 or 3168-3	02	60	12
6562	2	3067-2, 3	15	3168 or 3168-3	08	10	1
6563	1	3168-3	01	3168-3	04	10	1
6564	1	3168-3	01	3168-3	03	10	1
6571 [6560]	1 [2]	3067-2, 3	15	3168 or 3168-3	01	40	1, 2, 10, 14
6572 [6561]	1 [2]	3168 or 3168-3	01	3168 or 3168-3	04	10	1, 2, 10, 14
6573	6	3067-2, 3	15	3168 or 3168-3	03	40	1
6574	5	3067-2, 3	15	3168 or 3168-3	04	40	1
6575	1	3067-2, 3	15	3168 or 3168-3	08	100	1
6576	15	3066-2	05	3168 or 3168-3	07	30	—
6590	1	3066-2	05	3066-2, 3158, or 3158-3	05 or 01	100	13
6592	8 [10/12]	3067-3	15	3168-3	01	40	1, 15
[6500/6505]							
6593	1	3067-3	15	3168-3	03	40	1
6594	2	3213		3168-3	02	50	16
6595	2	3168-3	02	Control Unit		—	17
6596	2	3168-3	02	Byte Multiplexer Channel		—	17
6597	2	3168-3	02	Selector or Block		—	17
				Multiplexer Channel		—	17
6598	2	3168-3	02	Channel-to-Channel		—	17
				Adapter		—	17

Coolant Hoses

<i>Group No.</i>	<i>No. of Hoses</i>	<i>From</i>	<i>Frame No.</i>	<i>To</i>	<i>Frame No.</i>	<i>Max Length (ft)</i>	<i>Notes</i>
6550	2	3067-2, 3	16	3168 or 3168-3	01	55	—
6551	4	3067-2	16	3168	01	55	—
6553	4	3067-2, 3	16	3168 or 3168-3	03	55	—
6554	4	3067-2, 3	16	3168 or 3168-3	04	55	—
6559 [6551]	2 [4]	3067-3	16	3168-3	01	55	15

Notes:

1. Power cabling.
2. Required for emulator feature (SF #7127, #7128, or #7129).
3. Required for high-speed multiply feature (SF #4525).
4. Direct control (standard feature) to other system CPUs (excluding 3195); order one per feature.
5. Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units.

SYSTEM/370 MODEL 168 CABLING SCHEMATIC—CABLES AND COOLANT HOSES

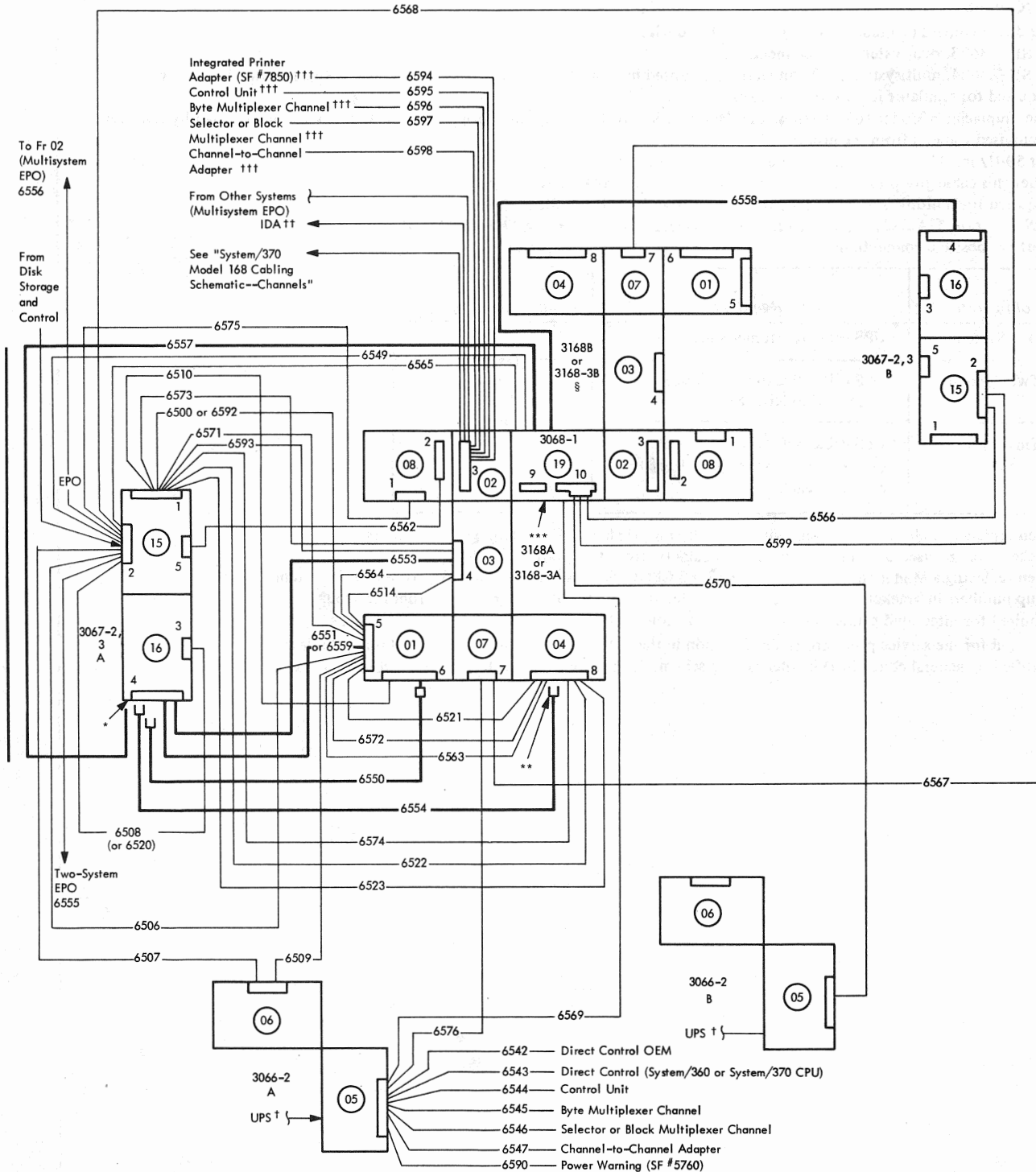
Notes: (Continued)

6. For direct control (standard feature) to non-IBM devices.
7. To SF #3623, two-system EPO connection.
8. To SF #3624, multisystem EPO connection, mounted in frame 02. See Note 4 in "System/370 Specification Summary."
9. Required for emulator feature (SF #7129).
10. When replacing a Model 165 system with a Model 168 (3168 CPU) system, group numbers in brackets may be used by removing the unused cable(s) from the group.
11. For 50-Hz machines, use group number in parentheses.
12. Order this cable group for 3168 or 3168-3 CPUs using 415/441-Hz frame 08.
13. Required for multiple system connections when SF #5760 is installed. (See *A Guide to 60 Hertz UPS Selection*, GA27-2770, or *A Guide to 50 Hertz UPS Selection*, GA27-2771.) See the following chart for possible connections:

Configuration	Cables Required	Maximum Total Cumulative Length (ft)
One System	UPS cable (customer supplied)	500
Two Systems	UPS cable plus one group 6590 or 5517 (Model 158)	416
Three Systems	UPS cable plus two group 6590s or two group 5517s (Model 158) or one of each	388

14. When replacing a Model 165 system with a Model 168 (3168-3 CPU) system, group numbers in brackets may be used by removing the unused cable(s) from the group.
15. When replacing a Model 165 or a Model 168 (3168 CPU) system with a Model 168 (3168-3 CPU) system, group numbers in brackets may be used by removing the unused cable(s) or hose(s) from the group.
16. Required for integrated printer adapter (SF #7850) on 3168-3.
17. Required for the service processor (SVP) function in the 3168-3. Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units.

**SYSTEM/370 MODEL 168 MULTIPROCESSING
 CABLING SCHEMATIC—CABLES AND COOLANT HOSES**



Legend:

— Coolant Hoses. (Only supply hoses are shown; assume one return hose for each supply hose.)
 — Cables

* Quick-connect sockets are on supply hoses at 3067-2, 3 CDU end. Quick-connect plugs are on return hoses at 3067-2,3 CDU end.
 ** Quick-connect plugs are on supply hoses at end away from 3067-2,3 CDU end. Quick-connect sockets are on return hoses at end away from 3067-2,3 CDU end.
 *** Cables from I/O control unit for remote switching feature.
 † Uninterrupted Power Supply (UPS) detector cable is customer supplied. Only one UPS connection is required to either 3066-2A or 3066-2B. See Note 14.
 †† For systems installed in U.S. and Canada, integrated data adapter (IDA) cable (provided with the system) enters cable entry in frame 02. Data Access Arrangement (DAA) must be within 50 feet of cable entry in frame 02.
 ††† For 3168-3 only. See cable group listing.
 § Cabling for 3168B or 3168-3B is the same as that for 3168A or 3168-3A. Interconnecting cables and hoses are shown.

**SYSTEM/370 MODEL 168 MULTIPROCESSING
 CABLING SCHEMATIC—CABLES AND COOLANT HOSES**

Cables

Group No.	No. of Cables	From	Frame No.	To	Frame No.	Max Length (ft)	Notes
6500 [6505]	10 [12]	3067-2	15	3168	01	40	1, 11
6506	3	3067-2, 3	15	3168 or 3168-3	01	40	1
6507	5	3067-2, 3	15	3066-2	06	100	1
6508 (or 6520)	2	3067-2, 3	15	3067-2, 3	16	15	1, 12
6509	1	3066-2	06	3168 or 3168-3	01	100	—
6510	3	3067-2, 3	15	3168 or 3168-3	01	40	1
6514	3	3168	01	3168	03	10	1
6521	2	3168	01	3168	04	14	1
6522	1	3067-2, 3	15	3168 or 3168-3	04	40	1, 3
6523	1	3067-2, 3	15	3168 or 3168-3	04	40	1, 9
6542	2	Direct Control	—	3066-2	05	50	6
6543	1	3066-2	05	Direct Control	—	100	4
6544	2	3066-2	05	Control Unit	—	—	5
6545	2	3066-2	05	Byte Multiplexer Channel	—	—	5
6546	2	3066-2	05	Selector or Block Multiplexer Channel	—	—	5
6547	2	3066-2	05	Channel-to-Channel Adapter	—	—	5
6549	1	3067-2A, 3A	15	3068	19	40	10
6555	1	3067-2, 3	15	System/360 or System/370 CPU	—	150	7
6556	1	3067-2, 3	15	3168 or 3168-3	02	150	8
6562	2	3067-2, 3	15	3168 or 3168-3	08	60	13
6563	1	3168-3	01	3168-3	04	10	1
6564	1	3168-3	01	3168-3	03	10	1
6565	2	3067-2A, 3A	15	3068	19	40	10
6566	2	3067-2B, 3B	15	3068	19	40	10
6567	2	3168A or 3168-3A	07	3168B or 3168-3B	07	28	10, 15
6568	1	3067-2A, 3A	15	3067-2B, 3B	15	75	10
6569	1	3066-2A	05	3068	19	50	10
6570	1	3066-2B	05	3068	19	50	10
6571 [6560]	1 [2]	3067-2, 3	15	3168 or 3168-3	01	40	1, 2, 11, 16
6572 [6561]	1 [2]	3168 or 3168-3	01	3168 or 3168-3	04	10	1, 2, 11, 16
6573	6	3067-2, 3	15	3168 or 3168-3	03	40	1
6574	5	3067-2, 3	15	3168 or 3168-3	04	40	1
6575	1	3067-2, 3	15	3168 or 3168-3	08	100	1
6576	15	3066-2	05	3168 or 3168-3	07	30	—
6590	1	3066-2	05	3066-2, 3158, or 3158-3	05 or 01	100	14
6592 [6500/6505]	8 [10/12]	3067-3	15	3168-3	01	40	1, 17
6593	1	3067-3	15	3168-3	03	40	1
6594	2	3213	—	3168-3	02	50	18
6595	2	3168-3	02	Control Unit	—	—	19
6596	2	3168-3	02	Byte Multiplexer Channel	—	—	19
6597	2	3168-3	02	Selector or Block Multiplexer Channel	—	—	19
6598	2	3168-3	02	Channel-to-Channel Adapter	—	—	19
6599	1	3067-2B, 3B	15	3068	19	40	10

Coolant Hoses

Group No.	No. of Hoses	From	Frame No.	To	Frame No.	Max Length (ft)	Notes
6550	2	3067-2, 3	16	3168 or 3168-3	01	55	—
6551	4	3067-2	16	3168	01	55	—
6553	4	3067-2, 3	16	3168 or 3168-3	03	55	—
6554	4	3067-2, 3	16	3168 or 3168-3	04	55	—
6557	2	3067-2A, 3A	16	3068	19	55	10
6558	2	3067-2B, 3B	16	3068	19	55	10
6559 [6551]	2 [4]	3067 3	16	3168-3	01	55	17

Year	Month	Day	Time	Location	Event	Remarks
2000	Jan	1	08:00	...	...	...
2000	Jan	2	...	...	...	...
2000	Jan	3	...	...	...	...
2000	Jan	4	...	...	...	...
2000	Jan	5	...	...	...	...
2000	Jan	6	...	...	...	...
2000	Jan	7	...	...	...	...
2000	Jan	8	...	...	...	...
2000	Jan	9	...	...	...	...
2000	Jan	10	...	...	...	...
2000	Jan	11	...	...	...	...
2000	Jan	12	...	...	...	...
2000	Jan	13	...	...	...	...
2000	Jan	14	...	...	...	...
2000	Jan	15	...	...	...	...
2000	Jan	16	...	...	...	...
2000	Jan	17	...	...	...	...
2000	Jan	18	...	...	...	...
2000	Jan	19	...	...	...	...
2000	Jan	20	...	...	...	...
2000	Jan	21	...	...	...	...
2000	Jan	22	...	...	...	...
2000	Jan	23	...	...	...	...
2000	Jan	24	...	...	...	...
2000	Jan	25	...	...	...	...
2000	Jan	26	...	...	...	...
2000	Jan	27	...	...	...	...
2000	Jan	28	...	...	...	...
2000	Jan	29	...	...	...	...
2000	Jan	30	...	...	...	...
2000	Jan	31	...	...	...	...
2000	Feb	1	...	...	...	...
2000	Feb	2	...	...	...	...
2000	Feb	3	...	...	...	...
2000	Feb	4	...	...	...	...
2000	Feb	5	...	...	...	...
2000	Feb	6	...	...	...	...
2000	Feb	7	...	...	...	...
2000	Feb	8	...	...	...	...
2000	Feb	9	...	...	...	...
2000	Feb	10	...	...	...	...
2000	Feb	11	...	...	...	...
2000	Feb	12	...	...	...	...
2000	Feb	13	...	...	...	...
2000	Feb	14	...	...	...	...
2000	Feb	15	...	...	...	...
2000	Feb	16	...	...	...	...
2000	Feb	17	...	...	...	...
2000	Feb	18	...	...	...	...
2000	Feb	19	...	...	...	...
2000	Feb	20	...	...	...	...
2000	Feb	21	...	...	...	...
2000	Feb	22	...	...	...	...
2000	Feb	23	...	...	...	...
2000	Feb	24	...	...	...	...
2000	Feb	25	...	...	...	...
2000	Feb	26	...	...	...	...
2000	Feb	27	...	...	...	...
2000	Feb	28	...	...	...	...
2000	Feb	29	...	...	...	...
2000	Mar	1	...	...	...	...
2000	Mar	2	...	...	...	...
2000	Mar	3	...	...	...	...
2000	Mar	4	...	...	...	...
2000	Mar	5	...	...	...	...
2000	Mar	6	...	...	...	...
2000	Mar	7	...	...	...	...
2000	Mar	8	...	...	...	...
2000	Mar	9	...	...	...	...
2000	Mar	10	...	...	...	...
2000	Mar	11	...	...	...	...
2000	Mar	12	...	...	...	...
2000	Mar	13	...	...	...	...
2000	Mar	14	...	...	...	...
2000	Mar	15	...	...	...	...
2000	Mar	16	...	...	...	...
2000	Mar	17	...	...	...	...
2000	Mar	18	...	...	...	...
2000	Mar	19	...	...	...	...
2000	Mar	20	...	...	...	...
2000	Mar	21	...	...	...	...
2000	Mar	22	...	...	...	...
2000	Mar	23	...	...	...	...
2000	Mar	24	...	...	...	...
2000	Mar	25	...	...	...	...
2000	Mar	26	...	...	...	...
2000	Mar	27	...	...	...	...
2000	Mar	28	...	...	...	...
2000	Mar	29	...	...	...	...
2000	Mar	30	...	...	...	...
2000	Mar	31	...	...	...	...

**SYSTEM/370 MODEL 168 MULTIPROCESSING
 CABLING SCHEMATIC—CABLES AND COOLANT HOSES**

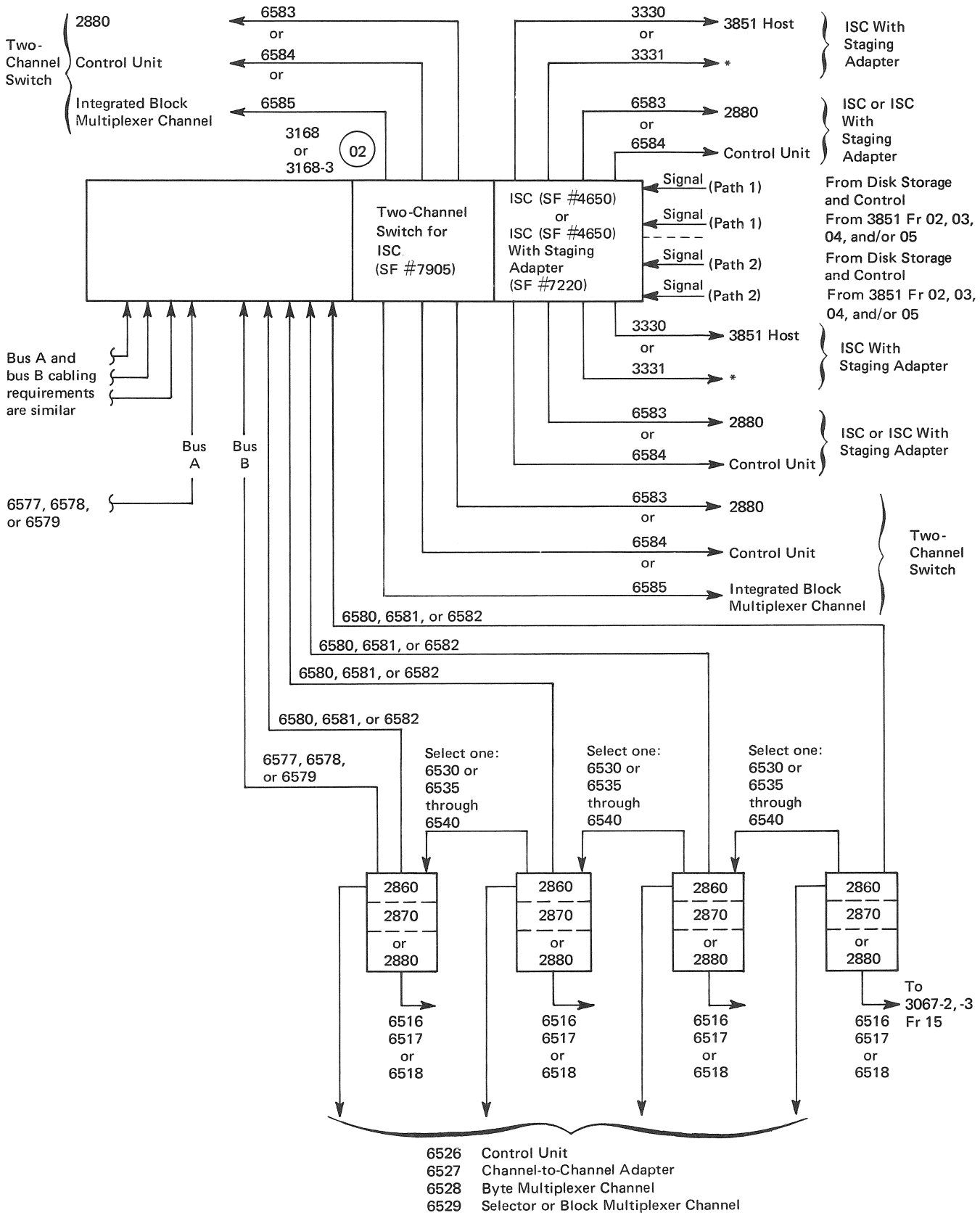
Notes: (Continued)

5. Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units.
6. For direct control (standard feature) to non-IBM devices.
7. To SF # 3623, two-system EPO connection.
8. To SF # 3624, multisystem EPO connection, mounted in frame 02. See Note 4 in "System/370 Specification Summary."
9. Required for emulator feature (SF # 7129).
10. Required for Model 168 Multiprocessing system.
11. When replacing a Model 165 system with a Model 168 (3168 CPU) system, group numbers in brackets may be used by removing the unused cable(s) from the group.
12. For 50-Hz machines, use group number in parentheses.
13. Order this cable group for 3168 or 3168-3 CPUs using 415/441-Hz frame 08.
14. Required for multiple system connections when SF #5760 is installed. (See *A Guide to 60 Hertz UPS Selection, GA27-2770*, or *A Guide to 50 Hertz UPS Selection, GA27-2771*.) See the following chart for possible connections:

<i>Configuration</i>	<i>Cables Required</i>	<i>Maximum Total Cumulative Length (ft)</i>
One System	UPS cable (customer supplied)	500
Two Systems	UPS cable plus one group 6590 or 5517 (Model 158)	416
Three Systems	UPS cable plus two group 6590s or two group 5517s (Model 158) or one of each	388

15. Fixed-length cable.
16. When replacing a Model 165 system with a Model 168 (3168-3 CPU) system, group numbers in brackets may be used by removing the unused cable(s) from the group.
17. When replacing a Model 165 or a Model 168 (3168 CPU) system with a Model 168 (3168-3 CPU) system, group numbers in brackets may be used by removing the unused cable(s) or hose(s) from the group.
18. Required for integrated printer adapter (SF #7850) on 3168-3.
19. Required for the service processor (SVP) function in the 3168-3. Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units.

SYSTEM/370 MODEL 168 CABLING SCHEMATIC—CHANNELS



*See 3331 in cable group listing for possible attachments.

SYSTEM/370 MODEL 168 CABLING SCHEMATIC—CHANNELS

<i>Cable Function</i>	<i>Group No.</i>	<i>No. of Cables</i>	<i>From</i>	<i>To</i>	<i>Max Length (ft)</i>	<i>Notes</i>
Mass Storage Control	3330	2	3168 or 3168-3 Fr 02	3851 Host Fr 01	—	11,12
	3331	2	3168 or 3168-3 Fr 02	3158 or 3158-3 Fr 02, 3168 or 3168-3 Fr 02, 3830-3, or 3851 #2 Fr 01	—	11,12
Control	6516	1	2860	3067-2, 3 Fr 15	150	7
	6517	1	2870	3067-2, 3 Fr 15	150	7
	6518	1	2880	3067-2, 3 Fr 15	150	7
Channel-to-Channel Adapter	6526	2	2860	Control Unit	—	4,5
	6527	2	2860	Channel-to-Channel Adapter	—	4,5,6
	6528	2	2860	Byte Multiplexer Channel	—	4,5
	6529	2	2860	Selector or Block Multiplexer Channel	—	4,5
Multiplex	6530	13	2860	2880	—	3,8
	6535	13	2880	2880	—	3,8
	6536	13	2860	2860	—	3,8
	6537	13	2880	2860	—	3,8
	6538	13	2870	2880	—	3,8
	6539	13	2870	2860	—	3,8
	6540	13	2870	2870	—	3,8
	6577	13	2860	3168 or 3168-3 Fr 02	—	3,8,9
	6578	13	2870	3168 or 3168-3 Fr 02	—	3,8,9
	6579	13	2880	3168 or 3168-3 Fr 02	—	3,8,9
Simplex	6580	1	2860	3168 or 3168-3 Fr 02	—	1,2,8
	6581	1	2870	3168 or 3168-3 Fr 02	—	1,2,8
	6582	1	2880	3168 or 3168-3 Fr 02	—	1,2,8
ISC and Two-Channel Switch	6583	2	3168 or 3168-3 Fr 02	2880	150	11
	6584	2	3168 or 3168-3 Fr 02	Control Unit	—	10,11
	6585	2	3168 or 3168-3 Fr 02	Integrated Block Multiplexer Channel	150	11

Notes:

1. The "X" length of this cable group (single cable simplex) from any channel frame must equal the cumulative "X" length of the multiplexer bus cables from the same channel frame to the CPU. Length must not exceed 125 feet.
2. One group per logical channel.

Basic System: Maximum of three channel frames or three logical channels on bus A; maximum of four channel frames or four logical channels on bus B.

With Extended Channels Feature (SF #3855): Maximum of four channel frames or six logical channels per bus. Maximum of seven channel frames per system.

3. Total cumulative "X" length of the multiplexer bus cables must not exceed 125 feet.
4. Channel-to-channel adapter feature (SF #1850); installed only on 2860 and uses one control unit position on each of the two connected channels.
5. Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units.
6. For the interconnection of two channel-to-channel adapter features (SF #1850).
7. Sequence and control (EPO).
8. For cabling purposes, the 2860 or 2880 units with high-speed devices faster than 1 megabyte/second are first in line (closest to the CPU) and the 2870 units are physically last.
9. Required when channel frame is physically first on the channel bus.
10. The 3168 or 3168-3 frame 02 must be within 150 feet of the block multiplexer channel entry.

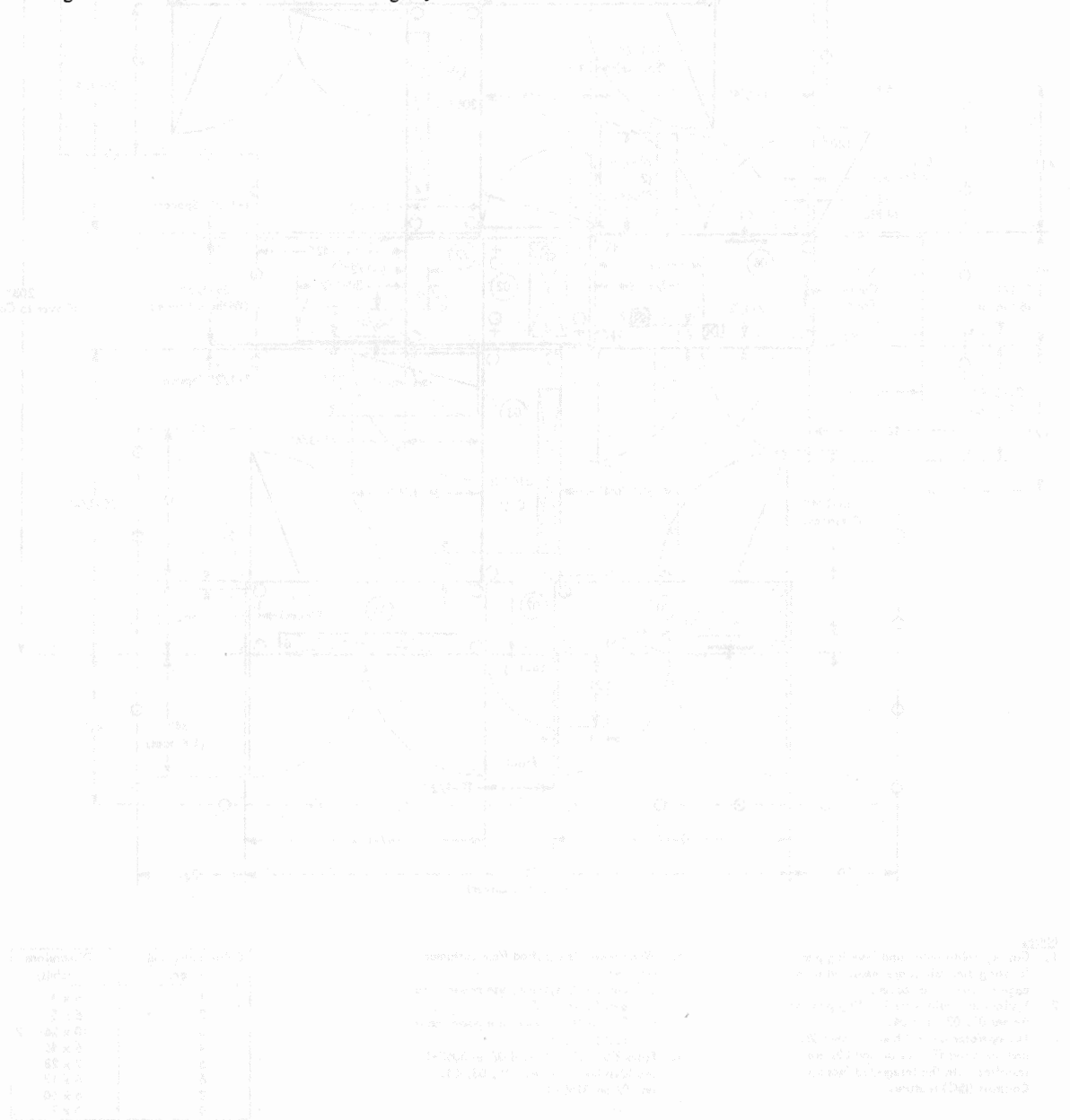
SYSTEM/370 MODEL 168 CABLING SCHEMATIC—CHANNELS

Notes: (Continued)

11. The following cable groups are required for SF #4650, SF #7220, and SF #7905:

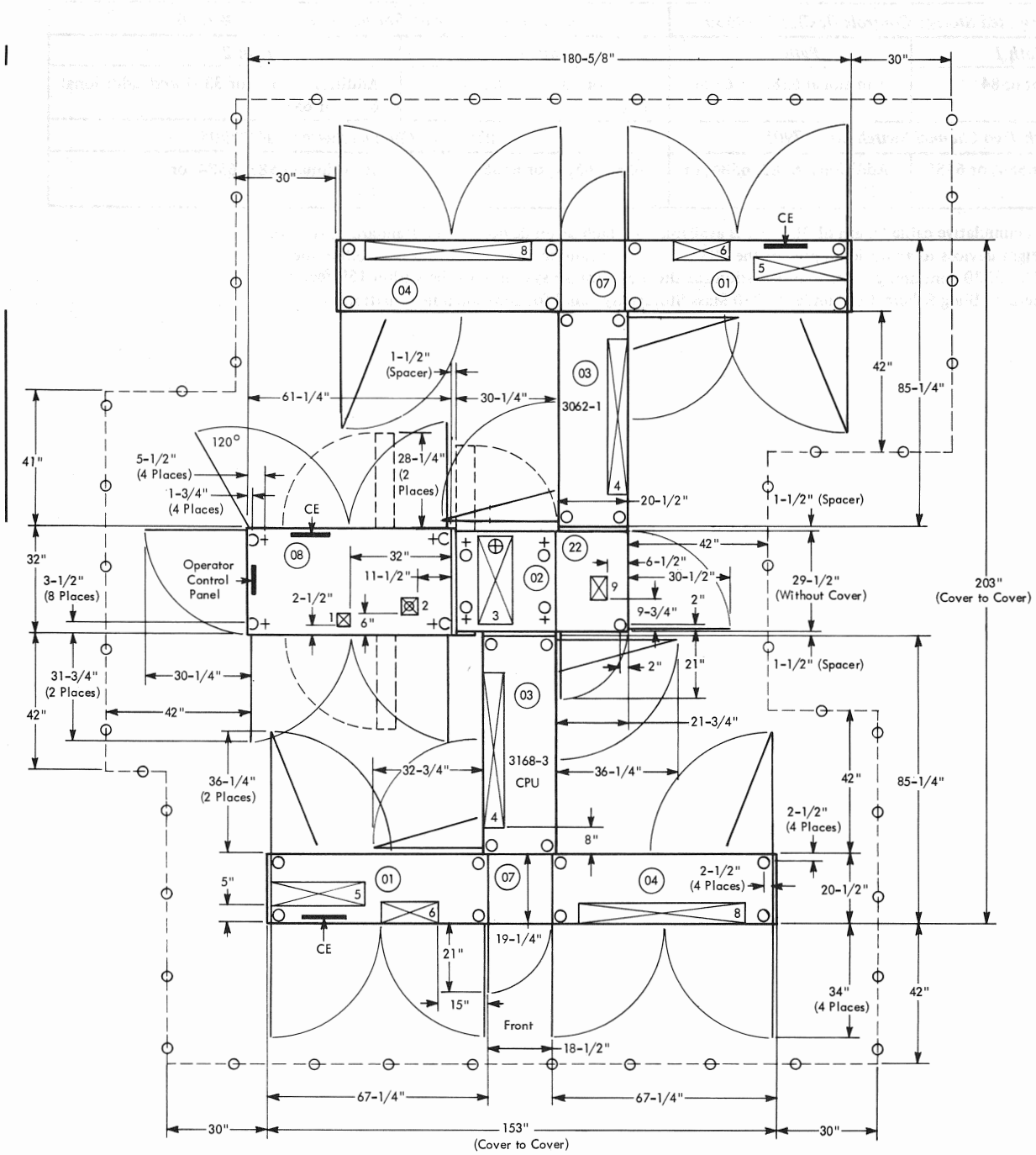
<i>Integrated Storage Controls (ISC), SF #4650</i>		<i>ISC, SF #4650, With Staging Adapter, SF #7220</i>	
<i>Path 1</i>	<i>Path 2</i>	<i>Path 1</i>	<i>Path 2</i>
6583 or 6584	Additional 6583 or 6584	3330 or 3331 and 6583 or 6584	Additional 3330 or 3331 and additional 6583 or 6584
<i>With Two-Channel Switch, SF #7905</i>		<i>With Two-Channel Switch, SF #7905</i>	
6583, 6584, or 6585	Additional 6583, 6584, or 6585	6583, 6584, or 6585	Additional 6583, 6584, or 6585

12. Maximum cumulative cable length of 300 feet is available to attach seven devices to the standard port of the 3851 or eight devices to an optional port of the 3851. The most remote 3168 or 3168-3 controlling the 3333 and/or 3330 containing control information for the mass storage system must be within 150 feet. See "General Cabling Schematics" under "3850 Mass Storage System" for additional information.



SYSTEM/370 MODEL 168 ATTACHED PROCESSOR, 3168-3 PROCESSING UNIT

PLAN VIEW (WITH 3062 ATTACHED PROCESSING UNIT MODEL 1)



Notes:

1. Caster, cable hole, and leveling pad locating dimensions are measured from edge of frame, not cover.
2. Typical dimensions for leveling pads on frames 01, 03, and 04.
3. The operator control panel (frame 08) and the gates (frames 02 and 08) are installed with the Integrated Storage Controls (ISC) feature.
4. When power is supplied from customer service:
 - a. For 50-Hz systems, use power cord exit in frame 02.
 - b. For 60-Hz systems, use power cord exit in frame 08.
5. Frames 01, 03, 04, and 07 on 3062-1 are identical to frames 01, 03, 04, and 07 on 3168-3.

Cable Entry/Exit Number	Dimensions (Inches)
1	4 x 4
2	5 x 5
3	10 x 26-1/2
4	6 x 46
5	7 x 28
6	6 x 17
8	6 x 50
9	5 x 7

SYSTEM/370 MODEL 168 ATTACHED PROCESSOR, 3168-3 PROCESSING UNIT

Details (By Frame)

Frame	Model	Weight lb (kg)	Airflow cfm (m ³ /min)	Heat Output BTU/hr (kcal/hr)		kVA
				To Air	To Water	
01	All	750 (350)	250 (8)	4,230 (1.100)	22,060 (5.600)	*
02	All	300 (140)	—	50 (13)	—	—
03	All	900 (410)	500 (15)	7,620 (1.950)	29,820 (7.550)	*
04	All	850 (390)	500 (15)	5,835 (1.500)	22,105 (5.600)	*
07	All	100 (46)	—	—	—	—
08	A31	2,200 (1.000)	2,000 (57)	16,100 (4.100)	—	*
08	A32	↓	↓	18,500 (4.700)	—	*
08	A33	↓	↓	20,850 (5.300)	—	*
08	A34	↓	↓	23,350 (5.900)	—	*
08	A35	↓	↓	26,950 (6.800)	—	*
08	A36	↓	↓	29,300 (7.400)	—	*
08	A37	↓	↓	31,650 (8.000)	—	*
08	A38	2,200 (1.000)	2,000 (57)	33,900 (8.550)	—	*
22 See 3062 specifications page for details						

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	***	***	78†
(cm)	(***)	(***)	(198†)

Service Clearances:

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

Environment Operating:

Temperature	65°-90°F (18°-32°C)
Rel Humidity	20%-80%
Max Wet Bulb	72°F (22°C)††

Environment Nonoperating:

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

Notes:

*Receives power from the 3067 PCDU Model 3 (frame 15).

**For maximum-feature system, add 4,610 BTU/hr (1.200 kcal/hr) to air and 17,270 BTU/hr (4.400 kcal/hr) to water.

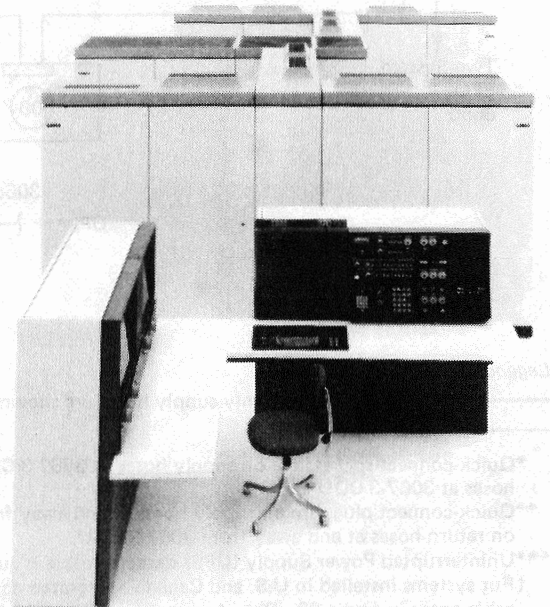
***See plan view.

†74-1/2 inches (189 cm) for frames 02 and 08.

††See "Liquid Coolant System" in Appendix A.

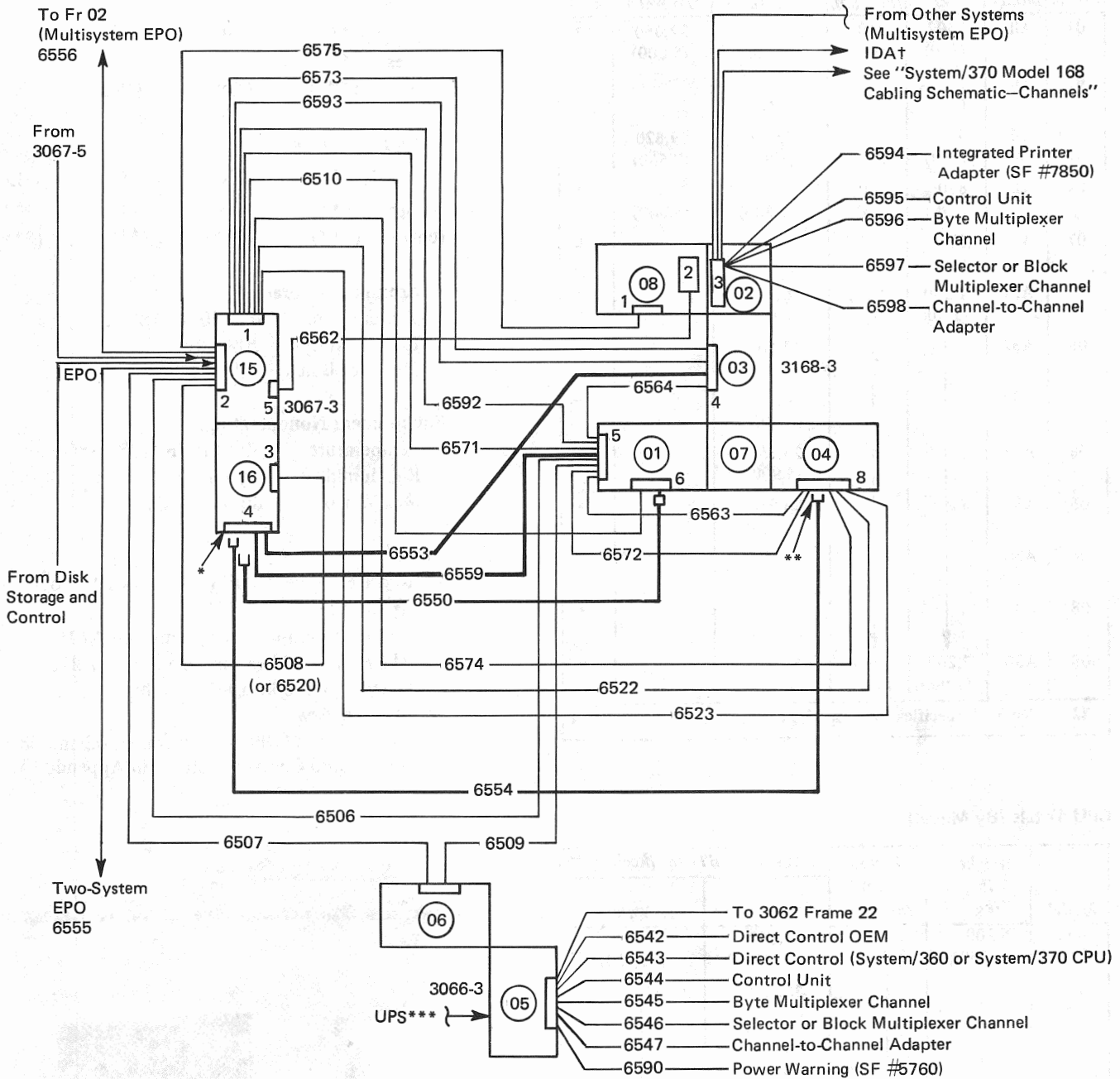
CPU Totals (By Model)

Model	Weight lb (kg)	Airflow cfm (m ³ /min)	Heat Output BTU/hr (kcal/hr)**	
			To Air	To Water
A31	5,100 (2.350)	3,250 (92)	33,850 (8.550)	73,985 (18.650)
A32	↓	↓	36,200 (9.150)	↓
A33	↓	↓	38,550 (9.750)	↓
A34	↓	↓	41,100 (10.400)	↓
A35	↓	↓	44,700 (11.300)	↓
A36	↓	↓	47,050 (11.900)	↓
A37	↓	↓	49,400 (12.450)	↓
A38	5,100 (2.350)	3,250 (92)	51,650 (13.050)	73,985 (18.650)



SYSTEM/370 MODEL 168 ATTACHED PROCESSOR CABLING SCHEMATIC—CABLES AND COOLANT HOSES

Note: See "3062 Attached Processing Unit Model 1 Cabling Schematic—Cables and Coolant Hoses" for information on 3062 cabling.



Legend:

- Coolant Hoses. (Only supply hoses are shown; assume one return hose for each supply hose.)
- Cables

*Quick-connect sockets are on supply hoses at 3067-3 CDU end. Quick-connect plugs are on return hoses at 3067-3 CDU end.
 **Quick-connect plugs are on supply hoses at end away from 3067-3 CDU. Quick-connect sockets are on return hoses at end away from 3067-3 CDU.
 ***Uninterrupted Power Supply (UPS) detector cable is customer supplied. See Note 2.
 †For systems installed in U.S. and Canada, integrated data adapter (IDA) cable (provided with the system) enters cable entry in frame 02. Data Access Arrangement (DAA) must be within 50 feet of cable entry in frame 02.

SYSTEM/370 MODEL 168 ATTACHED PROCESSOR CABLING SCHEMATIC—CABLES AND COOLANT HOSES

Cables

Group No.	No. of Cables	From	Frame No.	To	Frame No.	Max Length (ft)	Notes
6506	3	3067-3	15	3168-3	01	40	1
6507	5	3067-3	15	3066-3	06	100	1
6508 (or 6520)	2	3067-3	15	3067-3	16	15	1, 10
6509	1	3066-3	06	3168-3	01	100	—
6510	3	3067-3	15	3168-3	01	40	1
6522	1	3067-3	15	3168-3	04	40	1, 3
6523	1	3067-3	15	3168-3	04	40	1, 9
6542	2	Direct Control	—	3066-3	05	50	6
6543	1	3066-3	05	Direct Control		100	4
6544	2	3066-3	05	Control Unit		—	5
6545	2	3066-3	05	Byte Multiplexer Channel		—	5
6546	2	3066-3	05	Selector or Block Multiplexer Channel		—	5
6547	2	3066-3	05	Channel-to-Channel Adapter		—	5
6555	1	3067-3	15	System/360 or System/370 CPU		100	7
6556	1	3067-3	15	3168-3	02	100	8
6562	2	3067-3	15	3168-3	08	60	1
6563	2	3168-3	01	3168-3	04	14	1
6564	3	3168-3	01	3168-3	03	10	1
6571	1	3067-3	15	3168-3	01	40	1, 2
6572	1	3168-3	01	3168-3	04	10	1, 2
6573	6	3067-3	15	3168-3	03	40	1
6574	5	3067-3	15	3168-3	04	40	1
6575	1	3067-3	15	3168-3	08	100	1
6590	1	3066-3	05	3066-3, 3158, or 3158-3	05 or 01	100	11
6592	8	3067-3	15	3168-3	01	40	1
6593	1	3067-3	15	3168-3	03	40	1
6594	2	3213		3168-3	02	50	12
6595	2	3168-3	02	Control Unit		—	13
6596	2	3168-3	02	Byte Multiplexer Channel		—	13
6597	2	3168-3	02	Selector or Block Multiplexer Channel		—	13
6598	2	3168-3	02	Channel-to-Channel Adapter		—	13

Coolant Hoses

Group No.	No. of Hoses	From	Frame No.	To	Frame No.	Max Length (ft)	Notes
6550	2	3067-3	16	3168-3	01	55	—
6553	4	3067-3	16	3168-3	03	55	—
6554	4	3067-3	16	3168-3	04	55	—
6559	2	3067-3	16	3168-3	01	55	—

Notes:

1. Power cabling.
2. Required for emulator feature (SF #7127, #7128, or #7129).
3. Required for high-speed multiply feature (SF #4525).
4. Direct control (standard feature) to other system CPUs (excluding 3195); order one per feature.
5. Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units.



SYSTEM/370 MODEL 168 ATTACHED PROCESSOR CABLING SCHEMATIC—CABLES AND COOLANT HOSES

Notes: (Continued)

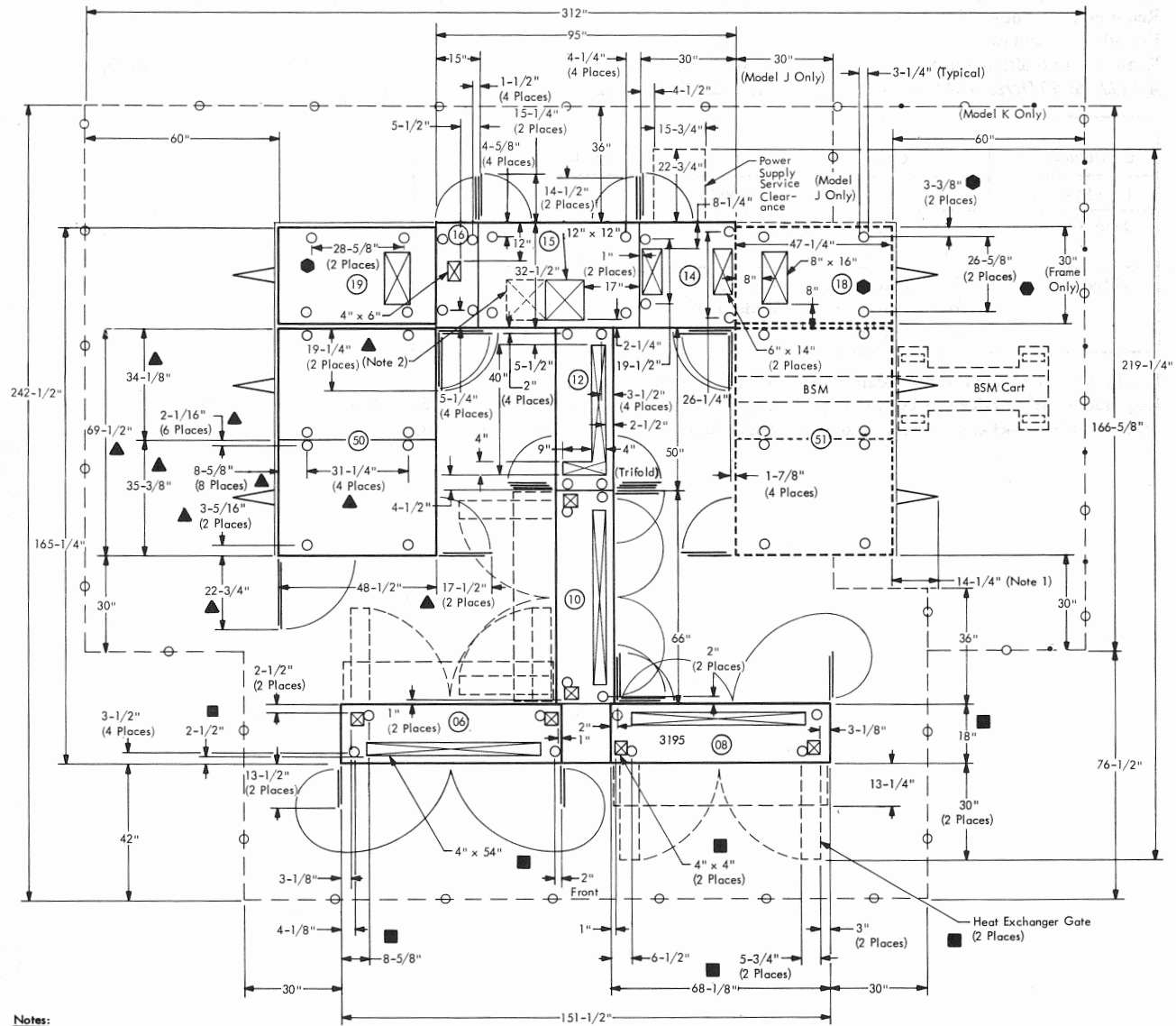
6. For direct control (standard feature) to non-IBM devices.
7. To SF #3623, two-system EPO connection.
8. To SF #3624, multisystem EPO connection, mounted in frame 02. See Note 4 in "System/370 Specification Summary."
9. Required for emulator feature (SF #7129).
10. For 50-Hz machines, use group number in parentheses.
11. Required for multiple system connections when SF #5760 is installed. (See *A Guide to 60 Hertz UPS Selection, GA27-2770*, or *A Guide to 50 Hertz UPS Selection, GA27-2771*.) See the following chart for possible connections:

Configuration	Cables Required	Maximum Total Cumulative Length (ft)
One System	UPS cable (customer supplied)	500
Two Systems	UPS cable plus one group 6590 or 5517 (Model 158)	416
Three Systems	UPS cable plus two group 6590s or two group 5517s (Model 158) or one of each	388

12. Required for integrated printer adapter (SF #7850) on 3168-3.
13. Required for the service processor (SVP) function in the 3168-3. Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units.

SYSTEM/370 MODEL 195 J1 AND K1-3195 PROCESSING UNIT AND STORAGE

PLAN VIEW (Not 1/4" = 1' Scale)



Notes:

1. The two-section covers at the left of frame 19 and the associated main storage frames fold away from the machine to a fixed angle when unlatched. The folded sections can slide on a continuous track the length of the left edge of the referenced frames. The covers at the right of frame 18 and the associated main storage frames work the same way on the right edge.
2. Enlarged opening 12" x 24" (30 cm x 61 cm) is required for additional cables for the extended channels feature (SF #3851).

- ▲ Typical dimensions on frames 50 and 51.
- Typical dimensions on frames 18 and 19.
- Typical dimensions on frames 06, 08, and 10.

SYSTEM/370 MODEL 195 J1 AND K1-3195 PROCESSING UNIT AND STORAGE

Details (By Frame, Without Covers)

Frame	Dimensions F x S x H inches (cm)	Weight lb (kg)	Airflow cfm (m ³ /min)	Heat Output BTU/hr (kcal/hr)	
				To Air	To Water
06	66 x 15 x 70 (168 x 38 x 178)	1,400 (640)	400 (12)	7,000 (1,800)	7,000 (1,800)
08	66 x 15 x 70 (168 x 38 x 178)	1,400 (640)	400 (12)	5,100 (1,300)	5,100 (1,300)
10	15 x 66 x 70 (38 x 168 x 178)	1,400 (640)	400 (12)	6,600 (1,700)	6,600 (1,700)
12	15 x 50 x 70 (38 x 127 x 178)	1,000 (460)	250 (8)	8,050 (2,050)	2,750 (700)
14	30 x 30 x 70 (76 x 76 x 178)	1,300 (590)	-	-	21,000 (5,300)
15	50 x 30 x 70 (127 x 76 x 178)	1,000 (460)	300 (9)	3,000 (760)	-
16	15 x 30 x 70 (38 x 76 x 178)	650 (300)	150 (5)	2,000 (510)	-
18	46 x 30 x 70 (117 x 76 x 178)	1,800 (820)	-	-	-
19	46 x 30 x 70 (117 x 76 x 178)	1,800 (820)	-	-	-
50	46 x 68* x 70 (117 x 173* x 178)	3,500* (1,600*)	2,800 (80)	25,000 (6,350)	20,000 (5,050)
51	46 x 68* x 70 (117 x 173* x 178)	3,500* (1,600*)	2,800 (80)	25,000 (6,350)	20,000 (5,050)

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	**	**	70
(cm)	(**)	(**)	(178)

Service Clearances:

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

Power Requirements:

The Model 195 J1 and K1 receive 50/60-Hz and 415/441-Hz power from 3080 Models 1, 2, and 3 and 3085 PDU.

Environment Operating:

Temperature 65^o-80^oF (18^o-27^oC)
 Rel Humidity 20%-80%
 Max Wet Bulb 75^oF (24^oC)***

Notes:

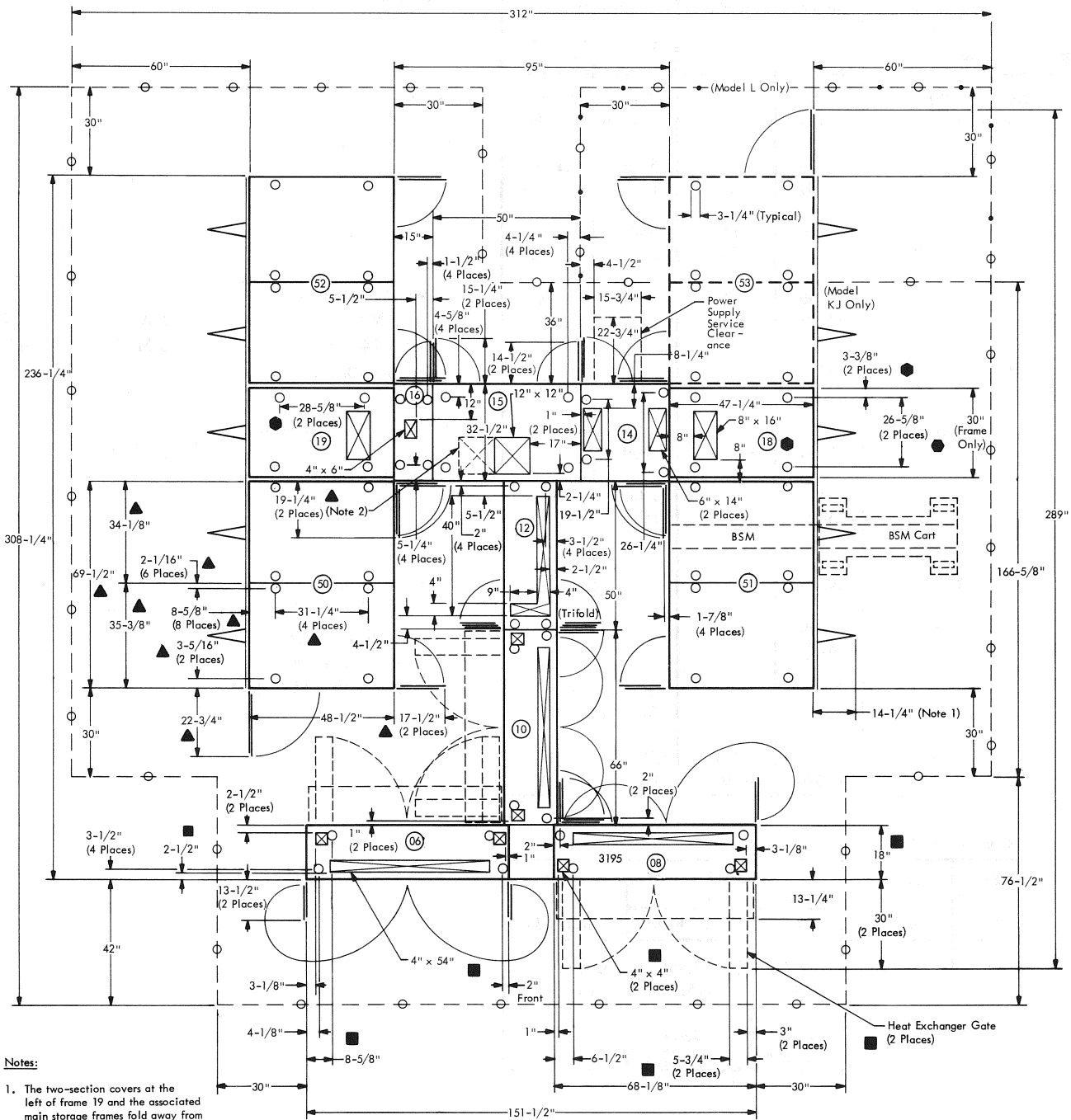
- * The 68 inches (173 cm) represents width of two 34-inch (86-cm) wide subframes, each weighing 1,750 lb (800 kg).
- ** See plan view.
- *** See "Liquid Coolant System" in Appendix A.

CPU Totals (By Model)

Model	Weight lb (kg)	Airflow cfm (m ³ /min)	Heat Output BTU/hr (kcal/hr)		Remarks
			To Air	To Water	
J1	13,450 (6,150)	4,700 (140)	56,750 (14,350)	62,450 (15,750)	Omit frames 18 and 51
K1	18,750 (8,550)	7,500 (220)	81,750 (20,650)	82,450 (20,800)	

SYSTEM/370 MODEL 195 KJ1 AND L1-3195 PROCESSING UNIT AND STORAGE

PLAN VIEW (Not 1/4" = 1' Scale)



Notes:

1. The two-section covers at the left of frame 19 and the associated main storage frames fold away from the machine to a fixed angle when unlatched. The folded sections can slide on a continuous track the length of the left edge of the referenced frames. The covers at the right of frame 18 and the associated main storage frames work the same way on the right edge.
2. Enlarged opening 12" x 24" (30 cm x 61 cm) is required for additional cables for the extended channels feature (SF #3851).

- ▲ Typical dimensions on frames 50, 51, 52, and 53.
- Typical dimensions on frames 18 and 19.
- Typical dimensions on frames 06, 08, and 10.

SYSTEM/370 MODEL 195 KJ1 AND L1-3195 PROCESSING UNIT AND STORAGE

Details (By Frame, Without Covers)

Frame	Dimensions F x S x H inches (cm)	Weight lb (kg)	Airflow cfm (m ³ /min)	Heat Output BTU/hr (kcal/hr)	
				To Air	To Water
06	66 x 15 x 70 (168 x 38 x 178)	1,400 (640)	400 (12)	7,000 (1,800)	7,000 (1,800)
08	66 x 15 x 70 (168 x 38 x 178)	1,400 (640)	400 (12)	5,100 (1,300)	5,100 (1,300)
10	15 x 66 x 70 (38 x 168 x 178)	1,400 (640)	400 (12)	6,600 (1,700)	6,600 (1,700)
12	15 x 50 x 70 (38 x 127 x 178)	1,000 (460)	250 (8)	8,050 (2,050)	2,750 (700)
14	30 x 30 x 70 (76 x 76 x 178)	1,300 (590)	-	-	21,000 (5,300)
15	50 x 30 x 70 (127 x 76 x 178)	1,000 (460)	300 (9)	3,000 (760)	-
16	15 x 30 x 70 (38 x 76 x 178)	650 (300)	150 (5)	2,000 (510)	-
18	46 x 30 x 70 (117 x 76 x 178)	1,800* (820*)	-	-	-
19	46 x 30 x 70 (117 x 76 x 178)	3,100 (1,450)	-	-	-
50	46 x 68** x 70 (117 x 173** x 178)	3,500** (1,600**)	2,800 (80)	25,000 (6,350)	20,000 (5,050)
51	46 x 68** x 70 (117 x 173** x 178)	3,500** (1,600**)	2,800 (80)	25,000 (6,350)	20,000 (5,050)
52	46 x 68** x 70 (117 x 173** x 178)	3,500** (1,600**)	2,800 (80)	25,000 (6,350)	20,000 (5,050)
53	46 x 68** x 70 (117 x 173** x 178)	3,500** (1,600**)	2,800 (80)	25,000 (6,350)	20,000 (5,050)

CPU Totals (By Model)

Model	Weight†† lb (kg)	Airflow cfm (m ³ /min)	Heat Output BTU/hr (kcal/hr)		Remarks
			To Air	To Water	
KJ1	24,850 (11,300)	10,300 (300)	106,750 (26,950)	102,450 (25,850)	Omit frame 53
L1	28,350 (12,900)	13,100 (380)	131,750 (33,250)	122,450 (30,900)	

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	***	***	70
(cm)	(***)	(***)	(178)

Service Clearances:

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

Power Requirements:

The Model 195 KJ1 and L1 receive 50/60-Hz and 415/441-Hz power from 3080 Models 1, 2, and 3 and 3085 PDU.

Environment Operating:

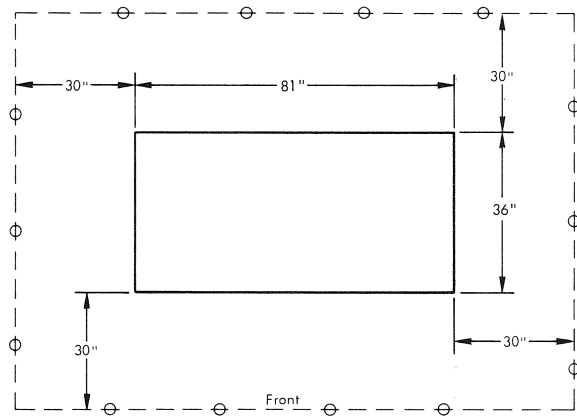
Temperature 65°-80°F (18°-27°C)
 Rel Humidity 20%-80%
 Max Wet Bulb 75°F (24°C)†

Notes:

- * The 1,800 lb (820 kg) is increased to 3,100 lb (1,450 kg) for Model L1.
- ** The 68 inches (173 cm) represents width of two 34-inch (86-cm) wide subframes, each weighing 1,750 lb (800 kg).
- *** See plan view.
- † See "Liquid Coolant System" in Appendix A.
- †† Based on IBM's method of calculating floor loading, the Model 195 exceeds 75 pounds per square foot (370 kg/m²) distributed floor loading. The installation site, therefore, should be reviewed by a qualified consultant.

**MOTOR GENERATOR (REMOTE) FOR SYSTEM/370
MODEL 195 (50-HZ INPUT)**

PLAN VIEW



**Distribution Guide for Motor-Generator Output to
3085 PDU**

Information in this guide accommodates a 208A full-load rating. Note that the conduit quantity column refers to the number of conduits recommended, each conduit containing all three phases in the wire size shown (three conductors per conduit) plus one AWG #2 insulated copper conductor in one of the conduits (the larger, if used) for ground. It is important that local and national wiring codes be followed.

Copper Wire Size	Conduit		3195 Model	Maximum Run Lengths by Conduit Type--ft (meters †)		
	Quantity	Size (inches)		Ferrous	Nonferrous	Nonmetallic††
250 MCM*	1	3	L1	105** (32**)	130** (40**)	155*** (47***)
			KJ1	130** (40**)	155** (47**)	180*** (55***)
			K1	145** (44**)	170** (52**)	195*** (59***)
			J1	160** (49**)	185** (59**)	210*** (64***)
2/0 AWG	2	2	L1	190 (58)	230 (70)	265 (81)
			KJ1	230 (70)	270 (82)	305 (93)
			K1	255 (78)	295 (90)	330 (101)
			J1	280 (85)	320 (98)	355 (108)
250 MCM	$\left. \begin{matrix} 1 \\ 1 \end{matrix} \right\}$	$\left. \begin{matrix} 2-1/2 \\ 3 \end{matrix} \right\}$	L1	210 (64)	260 (79)	310 (94)
			KJ1	250 (76)	300 (91)	350 (107)
			K1	275 (84)	325 (99)	375 (114)
			J1	300 (91)	350 (107)	400 (122)

* Single runs with conductors smaller than 250 MCM should not be used.
MCM = thousand circular mils, where a circular mil is the cross-sectional area of a 0,001" (0,0254 mm) diameter wire (7.854(10)⁻⁷ in² or 5,067(10)⁻⁴ mm²).
** 90°C insulation required.
*** 75°C insulation required.
† Lengths are rounded to the nearest unit meter.
†† Or cabled in air, where codes allow.

**MOTOR GENERATOR (REMOTE) FOR SYSTEM/370
MODEL 195 (50-HZ INPUT)**

MOTOR GENERATOR (REMOTE) FOR SYSTEM/370
MODEL 195 (50-HZ INPUT)

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	81	36	51
(cm)	(206)	(91)	(130)

Service Clearances:

	F	R	Rt	L
Inches	30	30	30	30
(cm)	(76)	(76)	(76)	(76)

Weight: 3,600 lb* (1.650 kg*)

Heat Output (Approximate):

55,250 BTU/hr (14,000 kcal/hr)

Power Requirements:

Phases 3

Input:

Induction Motor—100 hp, type K, class B,
220/240V or 380/408V, 50 ± 0.5 Hz

Input (V)	Locked Rotor Current (A)	Full Load Current (A)
220	Special start winding.	245
240	Less than 200% of full load.	230
380		142
408		134

Output:

Synchronous Generator—75 kVA, 208V ± 2%,
441 Hz ± 6%

Notes:

* Starter circuitry is included in the generator.

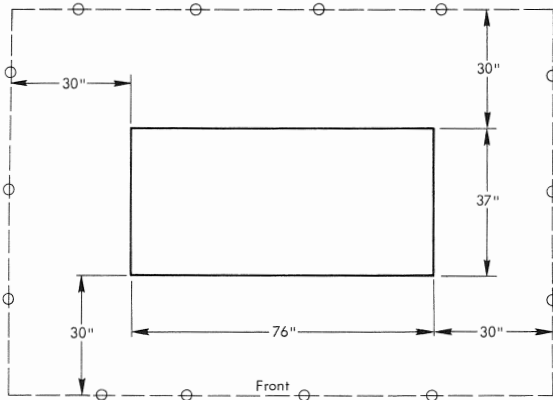
The installation and maintenance of the motor-generator (including starter) unit will be the responsibility of the customer. Consult motor-generator manufacturer's instruction manual for further installation procedures and maintenance.

Customer to supply the following wiring:

1. Input feeders to the motor.
2. Output feeders from generator to PDU junction box. Maximum voltage drop at the PDU should not exceed 5%.
3. Five remote leads required from generator to PDU junction box: three AWG # 14 leads for sensing and two AWG # 16 leads for indicator lights.
4. The EPO pushbutton in the computer room must remotely cut off power to motor and output of the generator. Shunt trips are provided for this purpose in both circuit breakers.

**MOTOR GENERATOR (REMOTE) FOR SYSTEM/370
MODEL 195 (60-HZ INPUT)**

PLAN VIEW



**Distribution Guide for Motor-Generator Output to
3085 PDU**

Information in this guide accommodates a 208A full-load rating. Note that the conduit quantity column refers to the number of conduits recommended, each conduit containing all three phases in the wire size shown (three conductors per conduit) plus one AWG #2 insulated copper conductor in one of the conduits (the larger, if used) for ground. It is important that local and national wiring codes be followed.

Copper Wire Size	Conduit		3195 Model	Maximum Run Lengths by Conduit Type--ft (meters †)		
	Quantity	Size (inches)		Ferrous	Nonferrous	Nonmetallic††
250 MCM*	1	3	L1	105** (32**)	130** (40**)	155*** (47***)
			KJ1	130** (40**)	155** (47**)	180*** (55***)
			K1	145** (44**)	170** (52**)	195*** (59***)
			J1	160** (49**)	185** (59**)	210*** (64***)
2/0 AWG	2	2	L1	190 (58)	230 (70)	265 (81)
			KJ1	230 (70)	270 (82)	305 (93)
			K1	255 (78)	295 (90)	330 (101)
			J1	280 (85)	320 (98)	355 (108)
250 MCM	{ 1 { 1	2-1/2 } 3 }	L1	210 (64)	260 (79)	310 (94)
			KJ1	250 (76)	300 (91)	350 (107)
			K1	275 (84)	325 (99)	375 (114)
			J1	300 (91)	350 (107)	400 (122)

* Single runs with conductors smaller than 250 MCM should not be used.
MCM = thousand circular mils, where a circular mil is the cross-sectional area of a 0,001" (0,0254 mm) diameter wire (7,854(10)⁻⁷ in² or 5,067(10)⁻⁴ mm²).
** 90°C insulation required.
*** 75°C insulation required.
† Lengths are rounded to the nearest unit meter.
†† Or cabled in air, where codes allow.

**MOTOR GENERATOR (REMOTE) FOR SYSTEM/370
MODEL 195 (60-HZ INPUT)**

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	76	37	54
(cm)	(193)	(94)	(137)

Service Clearances:

	F	R	Rt	L
Inches	30	30	30	30
(cm)	(76)	(76)	(76)	(76)

Weight: 3,000 lb (1,400 kg)

Heat Output (Approximate):

40,000 BTU/hr (10.100 kcal/hr)

Power Requirements:*

Phases 3

Input:

Induction Motor—90 hp, type K, NEMA design A, 208/230V or 440V \pm 10%, 60 Hz \pm 5%, 40°C maximum ambient

Starting Inrush Current:

208V—460A
230V—424A
440V—200A

Running Current at Full Load:

208V—235A
230V—212A
440V—106A

Output:

Synchronous Generator—75 kVA, 208V \pm 2%, 415 Hz \pm 6%

Notes:

* Starter circuitry is included in the generator.

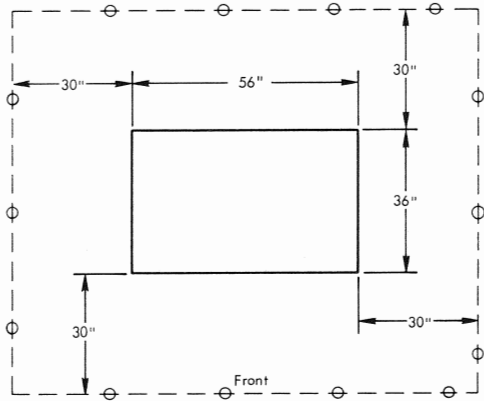
The installation and maintenance of the motor-generator (including starter) unit will be the responsibility of the customer. Consult motor-generator manufacturer's instruction manual for further installation procedures and maintenance.

Customer to supply the following wiring:

1. Input feeders to the motor.
2. Output feeders from generator to PDU junction box. Maximum voltage drop at the PDU should not exceed 5%.
3. Five remote leads required from generator to PDU junction box: three AWG #14 leads for sensing and two AWG #16 leads for indicator lights.
4. The EPO pushbutton in the computer room must remotely cut off power to motor and output of the generator. Shunt trips are provided for this purpose in both circuit breakers.

**ROTARY CONVERTER (REMOTE) FOR SYSTEM/370
MODEL 195 (WORLD TRADE ONLY)**

PLAN VIEW



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	56	36	37
(cm)	(142)	(91)	(94)

Service Clearances:

	F	R	Rt	L
Inches	30	30	30	30
(cm)	(76)	(76)	(76)	(76)

Weight: 1,550 lb (710 kg)

Heat Output: 22,915 BTU/hr (5.800 kcal/hr)

Power Requirements:

Phases 3

Input:

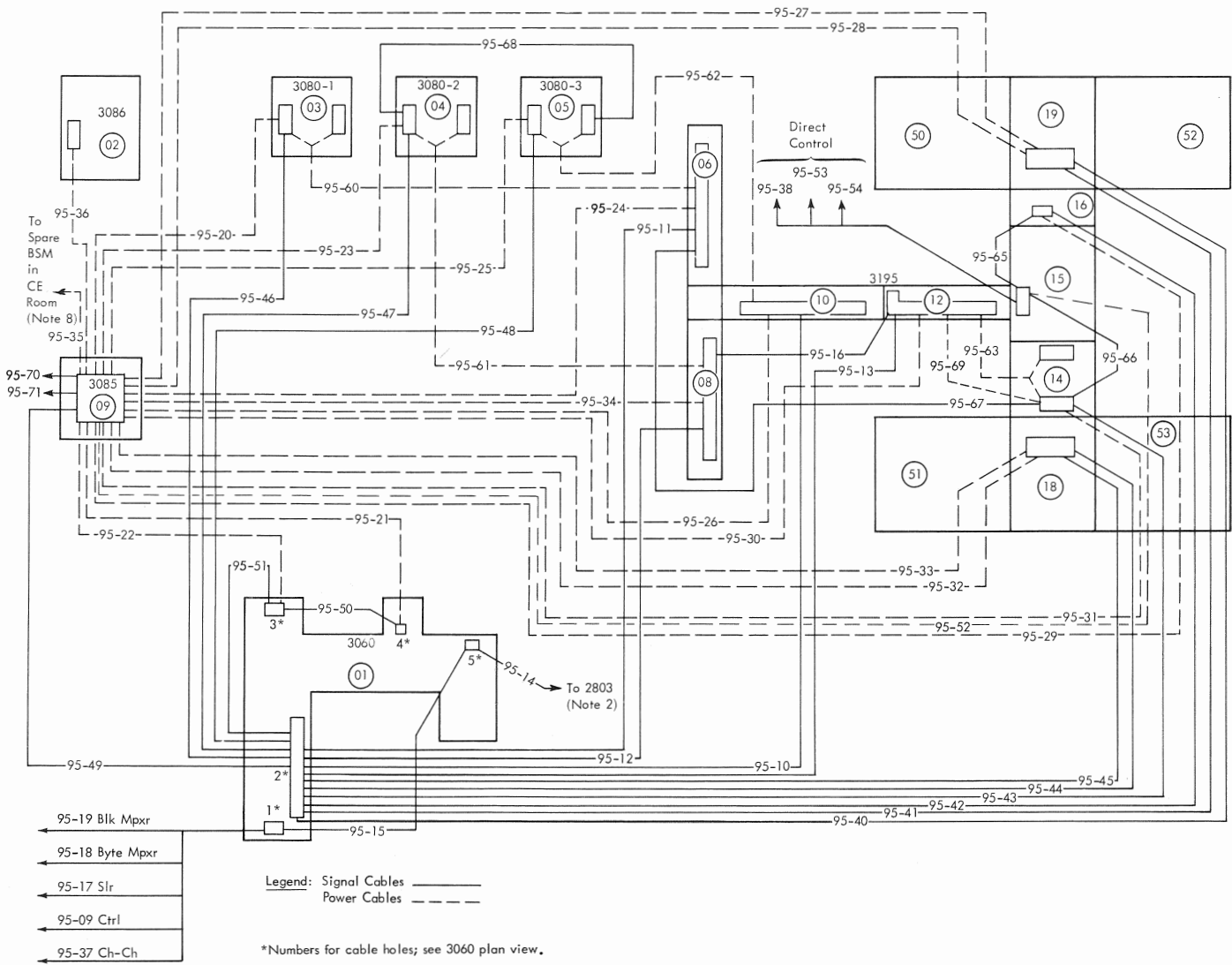
Induction Motor—50 hp, 220/240V or 380/408V, 50 Hz \pm 0.5 Hz

<i>Input (V)</i>	<i>Locked Rotor Current (A)</i>	<i>Full Load Current (A)</i>
220	760	123
240	830	113
380	460	71
408	500	68

Output:

Synchronous generator coupled to motor with timing belts, 208V, 60 Hz, 37.5 kVA

SYSTEM/370 MODEL 195 CABLING SCHEMATIC—CPU



Cable No.	No. of Cables	From Unit-Frame	To Unit-Frame	Max Length (ft)	Notes
95-09	2	3060 Fr 01	Control Unit	—	9
95-10	49	3060 Fr 01	3195 Fr 10	26	3
95-11	35	3060 Fr 01	3195 Fr 06	26	3
95-12	26	3060 Fr 01	3195 Fr 08	26	3
95-13	12	3060 Fr 01	3195 Fr 12	25	3
95-14	2	3060 Fr 01	2803	96	2
95-15	2	3060 Fr 01	3060 Fr 01	14	3
95-16	3	3195 Fr 08	3195 Fr 12	17	3
95-17	2	3060 Fr 01	Selector Channel	—	9
95-18	2	3060 Fr 01	Byte Multiplexer Channel	—	9
95-19	2	3060 Fr 01	Block Multiplexer Channel	—	9
95-20	4	3085 Fr 09	3080 Fr 03	68	—
95-21	2	3085 Fr 09	3060 Fr 01	68	—
95-22	4	3085 Fr 09	3060 Fr 01	68	—
95-23	3	3085 Fr 09	3080 Fr 04	68	—
95-24	2	3085 Fr 09	3195 Fr 06	68	—
95-25	4	3085 Fr 09	3080 Fr 05	68	—
95-26	1	3085 Fr 09	3195 Fr 10	68	—

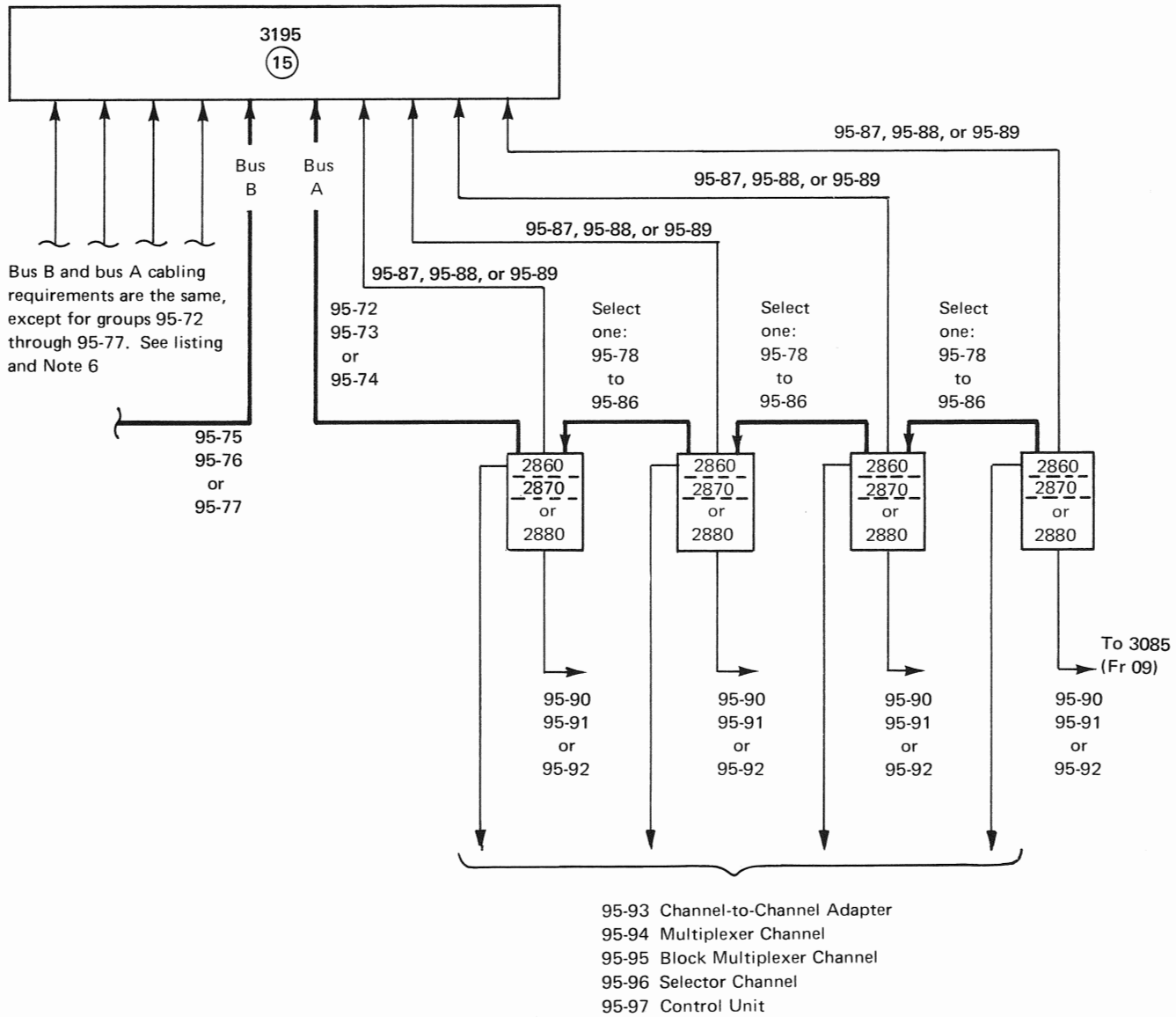
SYSTEM/370 MODEL 195 CABLING SCHEMATIC—CPU

<i>Cable No.</i>	<i>No. of Cables</i>	<i>From Unit-Frame</i>	<i>To Unit-Frame</i>	<i>Max Length (ft)</i>	<i>Notes</i>
95-27	3	3085 Fr 09	3195 Fr 19	68	—
95-28	3	3085 Fr 09	3195 Fr 19	68	5
95-29	4	3085 Fr 09	3195 Fr 16	68	—
95-30	1	3085 Fr 09	3195 Fr 12	68	—
95-31	3	3085 Fr 09	3195 Fr 14	68	—
95-32	3	3085 Fr 09	3195 Fr 18	68	4
95-33	3	3085 Fr 09	3195 Fr 18	68	6
95-34	2	3085 Fr 09	3195 Fr 08	68	—
95-35	2	3085 Fr 09	CER (CE Room)	100	8
95-36	2	3085 Fr 09	3086 Fr 02	55	—
95-37	2	3060 Fr 01	Channel-to-Channel Adapter	—	9
95-38	2	Direct Control	3195 Fr 15	100	10
95-40	1	3060 Fr 01	3195 Fr 19	96	—
95-41	1	3060 Fr 01	3195 Fr 19	96	5
95-42	2	3060 Fr 01	3195 Fr 16	96	—
95-43	1	3060 Fr 01	3195 Fr 14	96	—
95-44	1	3060 Fr 01	3195 Fr 18	96	6
95-45	1	3060 Fr 01	3195 Fr 18	96	4
95-46	1	3060 Fr 01	3080 Fr 03	96	—
95-47	1	3060 Fr 01	3080 Fr 04	96	—
95-48	1	3060 Fr 01	3080 Fr 05	96	—
95-49	2	3085 Fr 09	3060 Fr 01	96	—
95-50	3	3060 Fr 01	3060 Fr 01	8	3
95-51	1	3060 Fr 01	3060 Fr 01	12	3
95-52	1	3085 Fr 09	3195 Fr 15	68	—
95-53	2	Direct Control	3195 Fr 15	100	11
95-54	2	Direct Control	3195 Fr 15	100	1
95-60	21	3080 Fr 03	3195 Fr 06	24	7
95-61	22	3080 Fr 04	3195 Fr 08	24	7
95-62	21	3080 Fr 05	3195 Fr 10	24	7
95-63	19	3195 Fr 14	3195 Fr 12	10	3
95-65	1	3195 Fr 16	3195 Fr 15	8	3
95-66	1	3195 Fr 15	3195 Fr 14	8	3
95-67	1	3195 Fr 14	3195 Fr 06	24	—
95-68	1	3080 Fr 05	3080 Fr 04	68	—
95-69	1	3195 Fr 14	3195 Fr 12	10	3
95-70	1	3085 Fr 09	System/360 or System/370 CPU	100	12
95-71	1	3085 Fr 09	System/360 or System/370 CPU	100	13

Notes:

1. Direct control to other System/360 or System/370 CPUs (excluding 3195).
2. With more than one 2803 on a system, route to "last" 2803 (containing terminators).
3. Fixed-length cables.
4. For 3195 Model L1 configuration only.
5. For 3195 Model KJ1 and L1 configurations only.
6. For 3195 Model K1, KJ1, and L1 configurations only.
7. Cables in this group are divided between the two cutouts in the 3080. Measure from the 3195 cutout to the farther 3080 cutout.
8. From BSM analyzer located in CE room (CER).
9. Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units.
10. Direct control to non-IBM devices.
11. Direct control to another 3195.
12. To SF #3621, two-system EPO connection.
13. To SF #3622, multisystem EPO connection. See Note 4 in "System/370 Specification Summary."

SYSTEM/370 MODEL 195 CABLING SCHEMATIC—CHANNELS



SYSTEM/370 MODEL 195 CABLING SCHEMATIC—CHANNELS

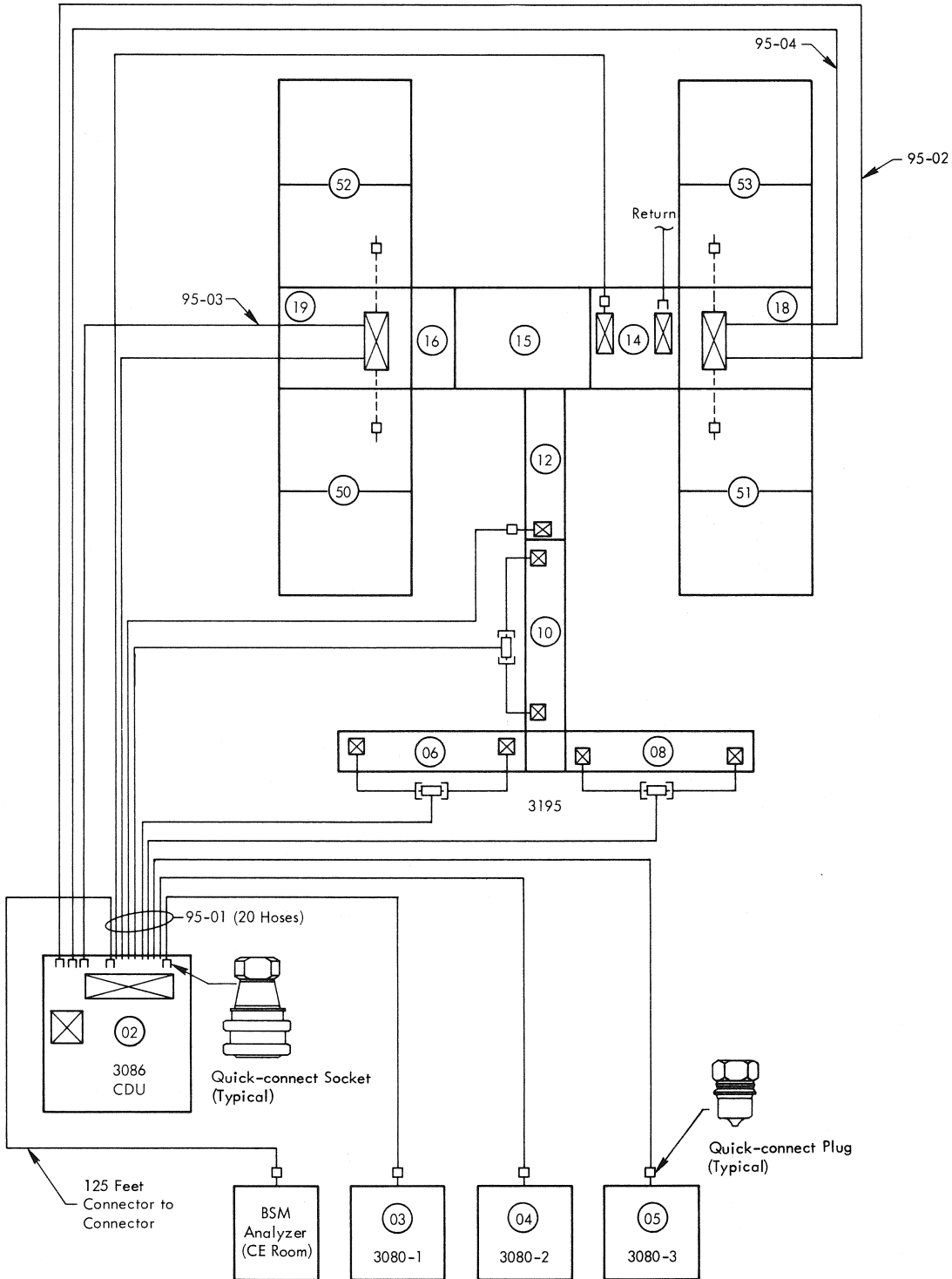
<i>Cable Function</i>	<i>Group No.</i>	<i>No. of Cables</i>	<i>From</i>	<i>To</i>	<i>Max Length (ft)</i>	<i>Notes</i>
Multiplex	95-72	13	2860	3195 Fr 15	—	1,4,6
	95-73	13	2870	3195 Fr 15	—	1,4,6
	95-74	13	2880	3195 Fr 15	—	1,4,6
	95-75	13	2860	3195 Fr 15	—	1,5,6
	95-76	13	2870	3195 Fr 15	—	1,5,6
	95-77	13	2880	3195 Fr 15	—	1,5,6
	95-78	13	2860	2860	—	1
	95-80	13	2860	2880	—	1
	95-81	13	2870	2860	—	1
	95-82	13	2870	2870	—	1
	95-83	13	2870	2880	—	1
	95-84	13	2880	2860	—	1
	95-86	13	2880	2880	—	1
	Simplex	95-87	1	2860	3195 Fr 15	—	2,3
95-88		1	2870	3195 Fr 15	—	2,3
95-89		1	2880	3195 Fr 15	—	2,3
Control	95-90	1	2860	3085 Fr 09	90	—
	95-91	1	2870	3085 Fr 09	90	—
	95-92	1	2880	3085 Fr 09	90	—
Channel-to-Channel Adapter	95-93	2	2860	Channel-to-Channel Adapter	—	7,8
	95-94	2	2860	Multiplexer Channel	—	7,8
	95-95	2	2860	Block Multiplexer Channel	—	7,8
	95-96	2	2860	Selector Channel	—	7,8
	95-97	2	2860	Control Unit	—	7,8

Notes:

<i>Bus Arrangement</i>	<i>Max "X" cable lengths (feet) per bus to connect:</i>			
	<i>1 Unit</i>	<i>2 Units</i>	<i>3 Units</i>	<i>4 Units</i>
With 2880s only	129	115	102	88
Combinations of 2860s, 2870s, and 2880s with a 2880 last unit on bus		111	91	74
Combinations of 2860s, 2870s, and 2880s with either a 2860 or 2870 last unit on bus		77	60	47
With 2860s and/or 2870s only on a bus	95	76	57	39

- One group per channel.
- The total (T) length of simplex group must be within +0% and -3% of the accumulated total length of multiplex group(s) between that particular channel and 3195.
- For bus A only.
- For bus B only.
- General Information:* Maximum of two buses (A and B) per system; divide channel frames between buses A and B when both buses are used. Intermix of 2860, 2870, and 2880 frames on either bus is allowed. *Limitation:* Maximum of four channel frames on one bus.
Basic System: Maximum of seven frames or seven logical channels, whichever occurs first.
If two 2870s are attached, additional intermixed 2860s and 2880s may be attached up to a maximum of five frames or five logical channels of 2860 and/or 2880.
If one 2870 is attached, additional intermixed 2860s and 2880s may be attached up to a maximum of six frames or six logical channels of 2860 and/or 2880.
If no 2870s are attached, the restrictions are the same as for one attached 2870.
- With Extended Channels (SF #3851):* Maximum of 8 frames or 14 logical channels, whichever occurs first.
If two 2870s are attached, additional intermixed 2860s and 2880s may be attached up to a maximum of 5 frames or 5 logical channels of 2860 or a maximum of 6 frames or 12 logical channels of 2880.
If one 2870 is attached, additional intermixed 2860s and 2880s may be attached up to a maximum of 6 frames or 6 logical channels of 2860 or a maximum of 7 frames or 13 logical channels of 2880.
If no 2870s are attached, the restrictions are the same as for one attached 2870.
- For channel-to-channel adapter (SF # 1850).
- Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units.

SYSTEM/370 MODEL 195 CABLING SCHEMATIC—COOLANT HOSES



SYSTEM/370 MODEL 195 CABLING SCHEMATIC—COOLANT HOSES

<i>Group No.</i>	<i>No. of Hoses</i>	<i>From</i>	<i>To 3195 Frame</i>	<i>Fixed Length (ft)</i>	<i>Notes</i>
95-01	20	3086	See Schematic	—	1,2,3
95-02	2	3086	51	50	1,3
95-03	2	3086	52	50	1,3
95-04	2	3086	53	50	1,3

Notes:

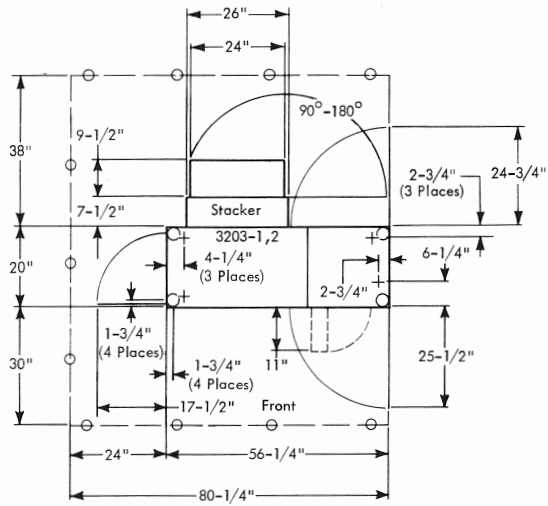
1. Supply hoses have quick-connect plug fittings on end away from CDU and socket fittings on end going into CDU. (Supply hoses only are shown on this schematic; assume one return hose for each supply hose.) Return hoses have quick-connect socket fittings on end away from CDU and plug fittings going into CDU. (Exceptions are BSM analyzer hoses, which have socket connectors on both ends of the supply and return hoses.)
2. Hoses are 50 feet (fixed length), except where otherwise noted.
3. Coolant hoses are ordered by group number only.

Specify:

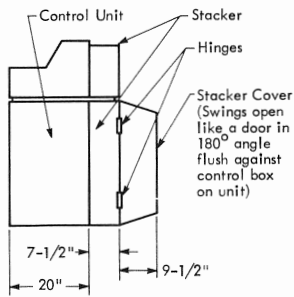
- Group number 95-01 for Model J1
- Group numbers 95-01 and 95-02 for Model K1
- Group numbers 95-01, 95-02, and 95-03 for Model KJ1
- Group numbers 95-01, 95-02, 95-03, and 95-04 for Model L1.

3203 PRINTER MODELS 1 AND 2

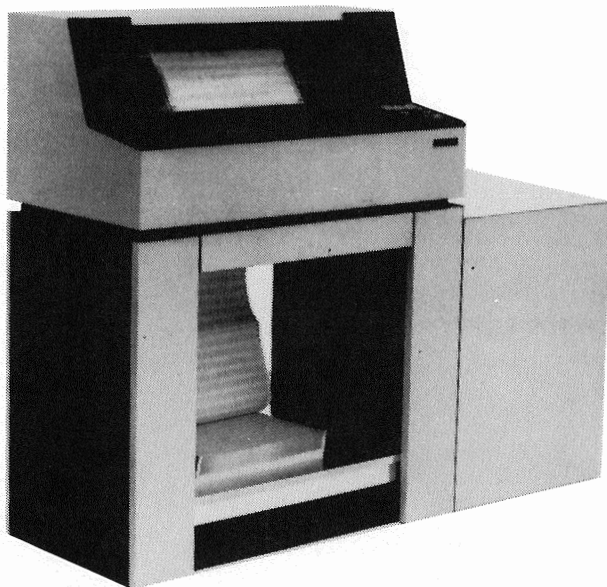
PLAN VIEW



Note: No external cables are required for use with 3115 or 3125.



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: 710 lb (330 kg)

Heat Output: 6,200 BTU/hr (1.600 kcal/hr)

Airflow: 350 cfm (10 m³/min)

Power Requirements:

kVA	2.1
Phases	3

Environment Operating:

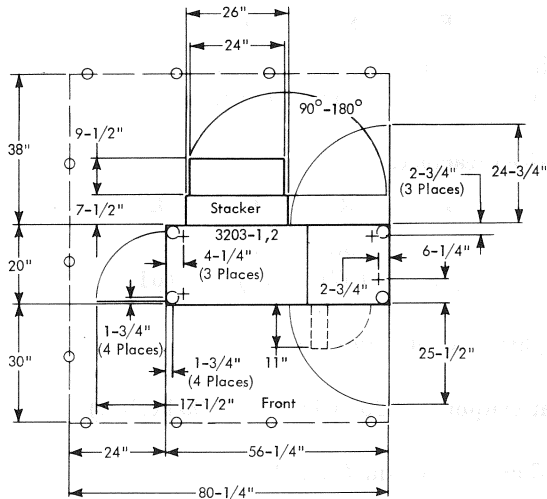
Temperature	60°-100°F (16°-38°C)
Rel Humidity	8%-80%
Max Wet Bulb	73°F (23°C)

Notes:

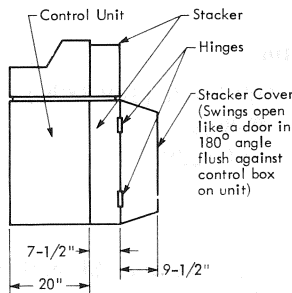
* Powered from and abutted to 3115 or 3125 when SF #4650 is installed.

3203 PRINTER MODELS 1 AND 2

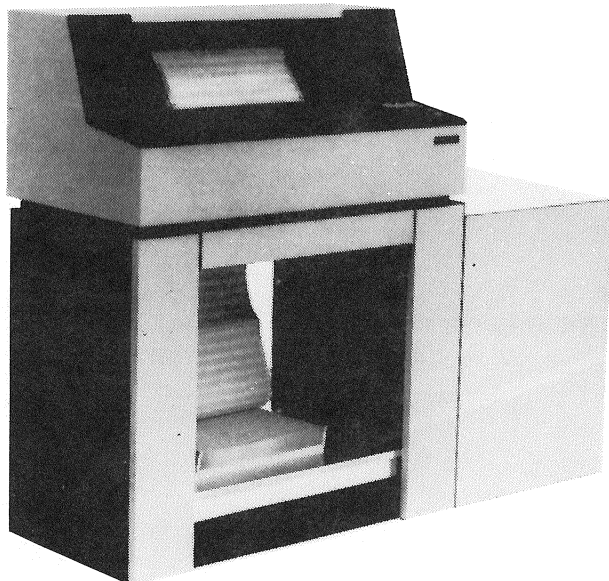
PLAN VIEW



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: 710 lb (330 kg)

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

Airflow: 350 cfm (10 m³/min)

Power Requirements:

kVA	2.1
Phases	3

Environment Operating:

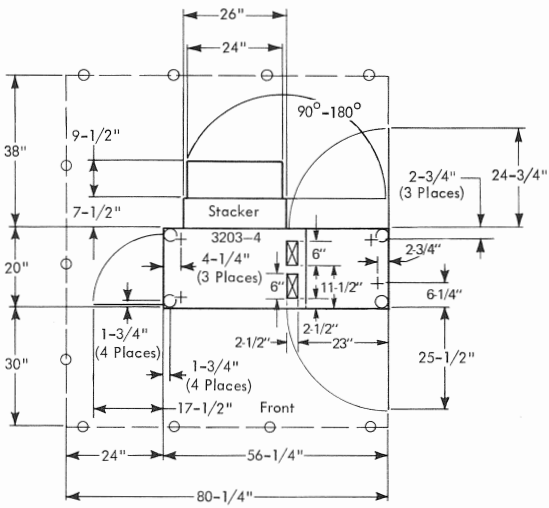
Temperature	60°-100°F (16°-38°C)
Rel Humidity	8%-80%
Max Wet Bulb	73°F (23°C)

Notes:

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

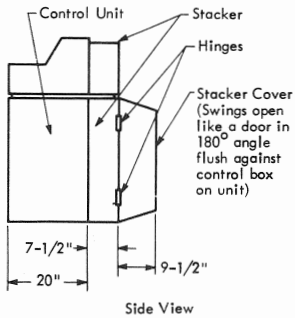
3203 PRINTER MODEL 4

PLAN VIEW



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.



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: 860 lb (390 kg)

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

Airflow: 350 cfm (10 m³/min)

Power Requirements: *

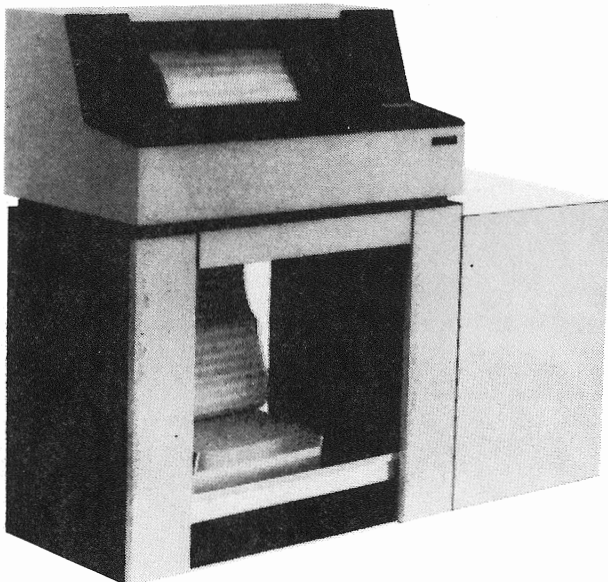
kVA	2.1
Phases	3

Environment Operating:

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

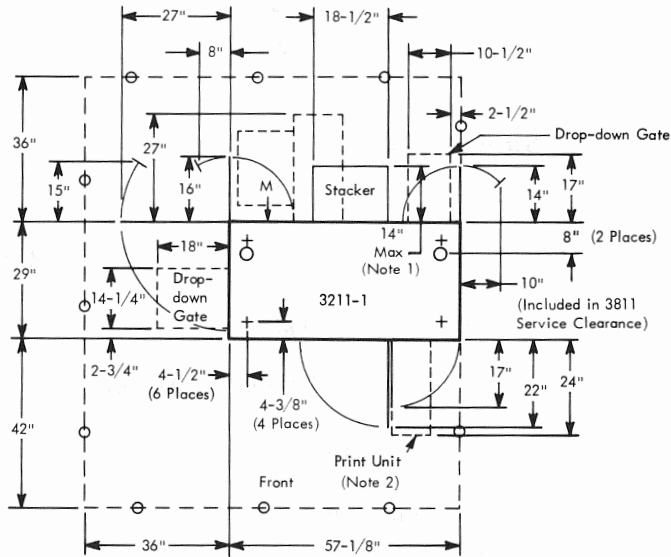
Notes:

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



3211 PRINTER MODEL 1

PLAN VIEW



Notes:

1. Projection of stacker depends on height of paper forms. Dimension shown is maximum projection.
2. Print unit 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:

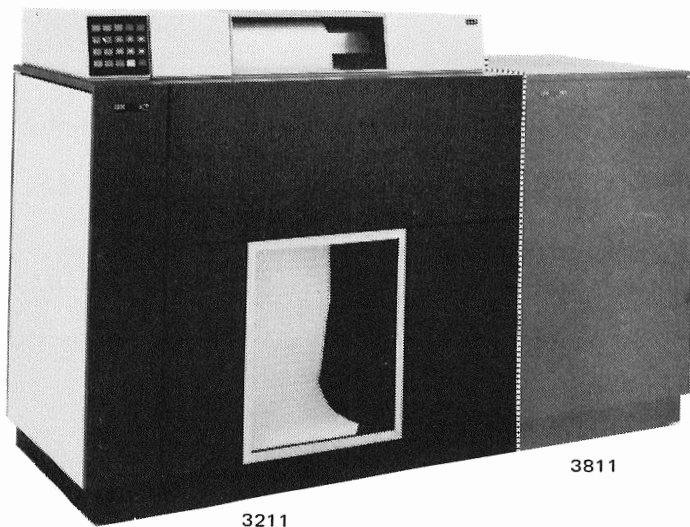
cfm	500	500
(m ³ /min)	(15)	(15)

Power Requirements:*

kVA	5.3	5.4
-----	-----	-----

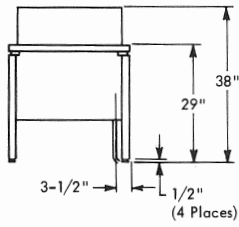
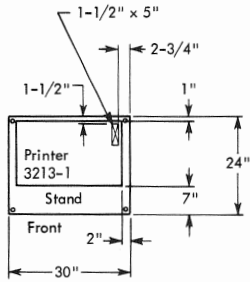
Notes:

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



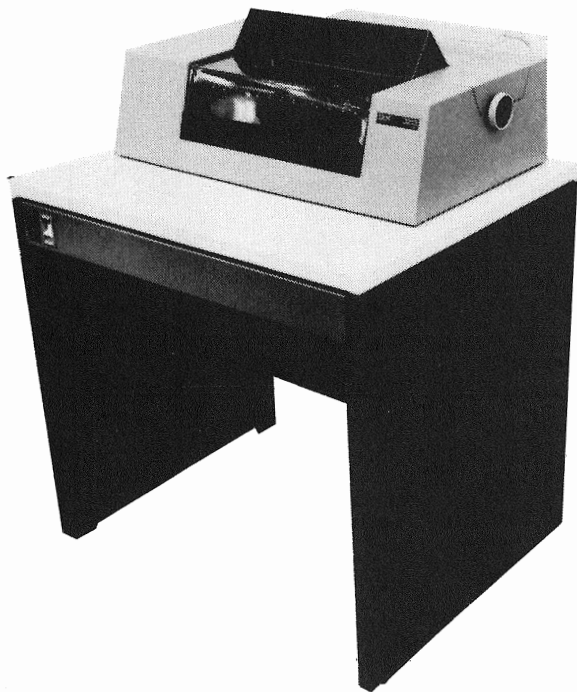
3213 CONSOLE PRINTER MODEL 1

PLAN VIEW



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 m³/min)

Power Requirements: **

kVA	0.2
Phases	1

Environment Operating:

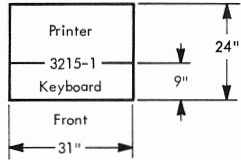
Temperature	50 ^o -110 ^o F (10 ^o -43 ^o C)
Rel Humidity	8%-80%
Max Wet Bulb	85 ^o F (29 ^o C)

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.

3215 CONSOLE PRINTER-KEYBOARD MODEL 1

PLAN VIEW



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 m³/min)

Power Requirements:†

kVA 0.2

Environment Operating:

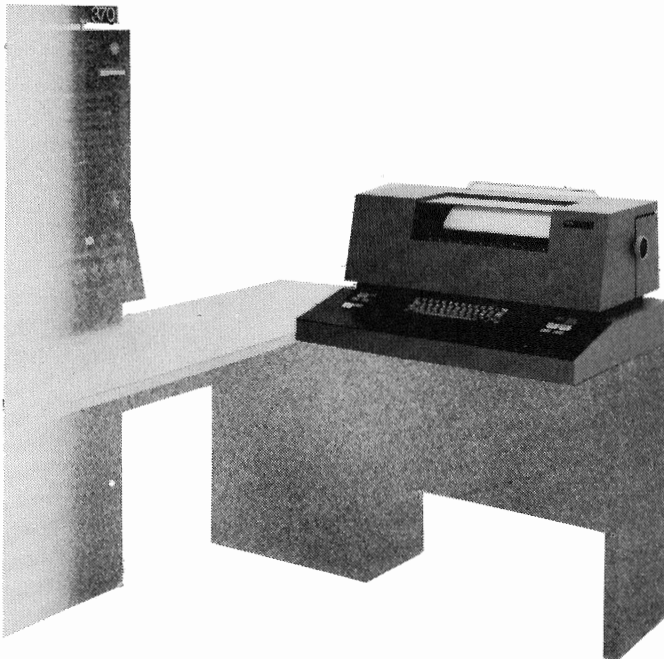
Temperature 50^o-110^oF (10^o-43^oC)
 Rel Humidity 8%-80%
 Max Wet Bulb 85^oF (29^oC)

Environment Nonoperating:

Temperature 50^o-125^oF (10^o-52^oC)
 Rel Humidity 8%-80%
 Max Wet Bulb 85^oF (29^oC)

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 CPU.



Pages 3270.1 to 3270.9, 3271, 3272, 3275, 3277.1, 3277.2, 3284/3286, and 3288 are deleted.

The information contained on these pages is included in the *IBM 3270 Information Display System Installation Manual—Physical Planning, GA27-2787*.

3270 INFORMATION DISPLAY SYSTEM CABLING SCHEMATIC (WORLD TRADE)

<i>Group No.</i>	<i>No. of Cables</i>	<i>From</i>	<i>To</i>	<i>Max Length (ft)</i>	<i>Notes</i>
h or l	1	3277, 3284, 3286	3271, 3272	2,000	5
h or l	1	3288	3271-2, 12, 3272-2	2,000	5
3201	2	3272	Selector Channel	-	1
3202	2	3272	Byte Multiplexer Channel	-	1
3203	2	3272	Block Multiplexer Channel	-	1
3204	2	3272	Control Unit	-	1
3205	2	3272	Channel-to-Channel Adapter	-	1, 8
3206	1	3272	Channel	150	2
3207	1	Modem	3271	40	9, 10
3208	1	Modem	3275	40	9, 10
3209	1	Nonswitched Networks	3275	40	9, 11, 16
3210	1	DAA Type CBS	3275	40	9, 12, 13
3211	1	Nonswitched Networks	3275	40	9, 11
3212	1	Modem	3271, 3275	40	14
3213	1	Modem	3275	40	15

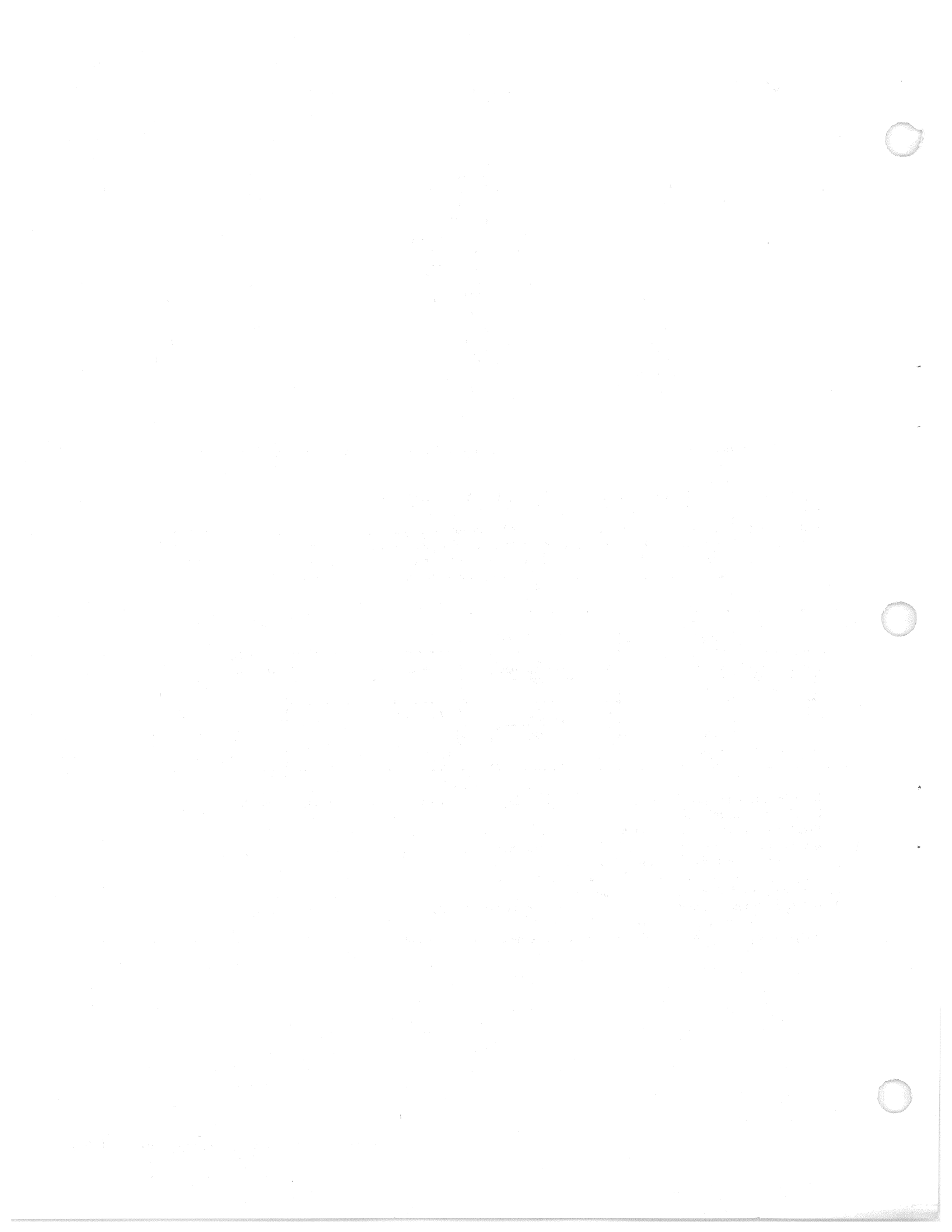
Notes:

- Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units.
- Sequence and control (EPO).
- Fixed cable length of 2-1/2 feet supplied with keyboard (SF #4630 through #4635).
- Fixed cable length of 2 feet supplied with selector pen (SF #6350).
- 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 C for cable specifications and IBM part numbers. If the customer elects to construct his own cable and/or procure commercial parts, see section entitled "Cable Installation Practice for 3270." For completion of MES order form, see the following example:

<i>Machine/Program Type/Serial/Suffix</i>	<i>Feature Code RPQ Reference No. ECA or CEM Number</i>	<i>Description of MES Parts</i>				<i>Qty</i>	<i>Part or B/M Number</i>
		<i>RPQ Region Number</i>		<i>(Indicate Model Changes From/To)</i>			
<i>Cable Group</i>	<i>Length</i>	<i>From</i>		<i>To</i>			
		<i>Unit</i>	<i>No.</i>	<i>Unit</i>	<i>No.</i>		
h	2,000	3277	8	3271	1	1	2577672
l	2,000	3277	9	3271	1	1	1833108

If the installation includes a multiple number of one machine type, include an identifying number in the "No." column in addition to the machine type.

- Fixed cable length of 10 feet supplied with 3284-3.
- Fixed cable length of 2-1/2 feet supplied with ID card reader (#4600).
- To channel-to-channel adapter (SF #1850).
- See "Cables from Non-IBM Devices" for cable specifications.
- For nonswitched or switched external modem.
- For switched lines without autoanswer or nonswitched lines (SF #5500).
- For machines with switched networks, order SF #3440.
- It is the customer's responsibility to have this cable connected to the communications facility.



3270 INFORMATION DISPLAY SYSTEM CABLING SCHEMATIC (WORLD TRADE)

Notes: (Continued)

14. One group 3212 required for each IBM modem attached. See the following chart for modem types:




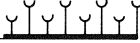

To Unit	Modem
3271	3872-1
	3874-1
	3875-1
	3976-3
	3977-2
3275	3976-3
	3977-2

15. One group 3213 required to attach one IBM 3872-1, 3874-1, or 3875-1 Modem.

16. Fixed cable length of 8 inches supplied with NTT-D1 service (SF #2943) in Japan only.

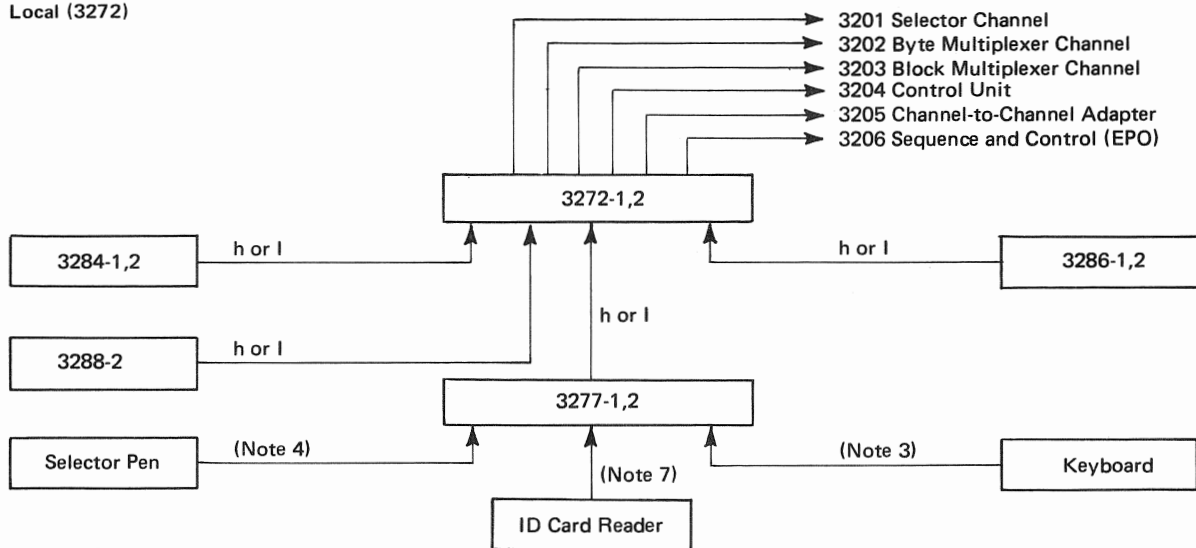


Cables from Non-IBM Devices

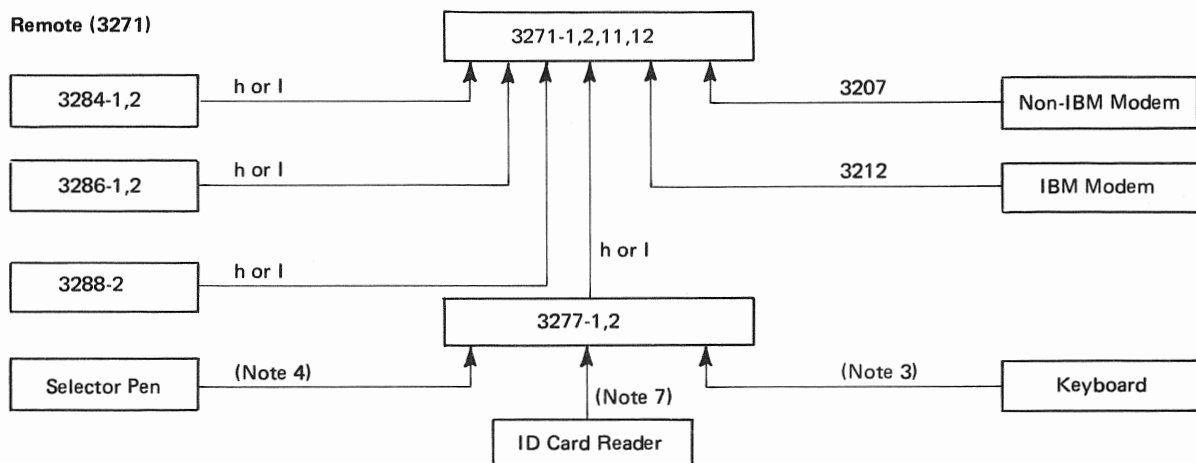
Group No.	Termination
3207	 1 CCITT Connector (Male)
3208	 1 CCITT Connector (Male)
3209	 1 WE-283B Plug; Customer Provides Matching Receptacles
3210	 4 Pair #6 Spade Lugs
3211	 2 Pair #8 Spade Lugs

3270 INFORMATION DISPLAY SYSTEM CABLING SCHEMATIC (U.S.)

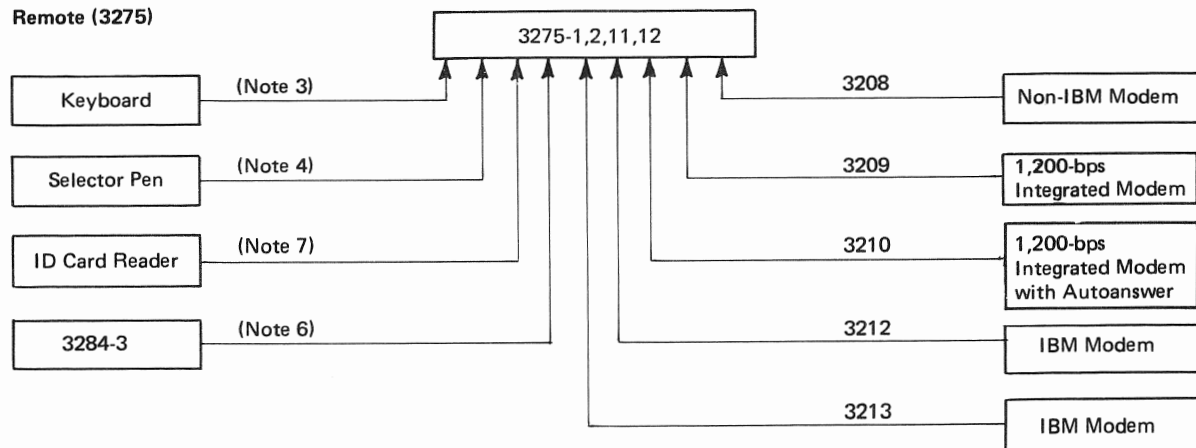
Local (3272)



Remote (3271)



Remote (3275)



3270 INFORMATION DISPLAY SYSTEM CABLING SCHEMATIC (U.S.)

Group No.	No. of Cables	From	To	Max Length (ft)	Notes
h or l	1	3277, 3284, 3286	3271, 3272	2,000	5
h or l	1	3288	3271-2, 12, 3272-2	2,000	5
3201	2	3272	Selector Channel	—	1
3202	2	3272	Byte Multiplexer Channel	—	1
3203	2	3272	Block Multiplexer Channel	—	1
3204	2	3272	Control Unit	—	1
3205	2	3272	Channel-to-Channel Adapter	—	1, 8
3206	1	3272	Channel	150	2
3207	1	Modem	3271	40	9, 10
3208	1	Modem	3275	40	9, 10
3209	1	Nonswitched or Switched Lines/DDA Type CDT	3275	40	9, 11
3210	1	DAA Type CBS	3275	40	9, 12, 13
3212	1	Modem	3271, 3275	40	14
3213	1	Modem	3275	40	15

Notes:

- Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units.
- Sequence and control (EPO).
- Fixed cable length of 2-1/2 feet supplied with keyboard (SF #4630 through #4635).
- Fixed cable length of 2 feet supplied with selector pen (SF #6350).
- 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 C for cable specifications and IBM part numbers. If the customer elects to construct his own cable and/or procure commercial parts, see section entitled "Cable Installation Practice for 3270." For completion of MES order form, see the following example:

Machine/Program Type/Serial/Suffix	Feature Code RPQ Reference No. ECA or CEM Number	Description of MES Parts				Qty	Part or B/M Number
		RPQ Region Number		(Indicate Model Changes From/To)			
Cable Group	Length	From		To			
		Unit	No.	Unit	No.		
h	2,000	3277	8	3271	1	1	2577672
l	2,000	3277	9	3271	1	1	1833108

If the installation includes a multiple number of one machine type, include an identifying number in the "No." column in addition to the machine type.

- Fixed cable length of 10 feet supplied with 3284-3.
- Fixed cable length of 2-1/2 feet supplied with ID card reader (#4600).
- To channel-to-channel adapter (SF #1850).
- See "Cables from Non-IBM Devices" for cable specifications.
- For nonswitched or switched external modem.
- For switched lines without autoanswer or nonswitched lines (SF #5500).
- For machines with switched networks and autoanswer, order SF #5501.
- It is the customer's responsibility to have this cable connected to the communications facility.

3270 INFORMATION DISPLAY SYSTEM CABLING SCHEMATIC (U.S.)

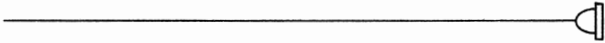


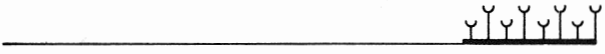
Notes: (Continued)

14. One group 3212 required for each IBM modem attached. See the following chart for modem types:

To Unit	Modem
3271	3872-1
	3874-1
	3875-1
	4872-1,3
3275	4872-1,3

15. One group 3213 required to attach one IBM 3872-1, 3874-1, or 3875-1 Modem.

Cables from Non-IBM Devices

Group No.	Termination
3207	 1 EIA RS-232A Connector (Male)
3208	 1 EIA RS-232A Connector (Male)
3209	 1 WE-283B Plug; Customer Provides 404B Surface Mount or 493A Flush Mount Jacks
3210	 4 Pair #6 Spade Lugs

CABLE INSTALLATION PRACTICE FOR 3270

Customer-Assembled Cables

The customer may elect to construct his own 3270 control unit to display station or printer cables. When ordering bulk cable from IBM or other sources, the customer should indicate the continuous unit-to-unit cable lengths to the cable suppliers so that unplanned splicing may be avoided. If splicing is required, it should be accomplished as shown under "Cable Adapter." Refer to "Cable Descriptions" in Appendix C for additional information.

Note:

IBM 3270 External Coaxial Cable Installation, S229-7020, must be ordered if installing the following:

1. Field assembly of BNC connectors on bulk cable (IBM 323921 or 5252750).
2. Conversion of 2260 display cables to single coaxial to allow 3277, 3284, 3286, or 3288 terminals to be attached to a 3271 or 3272 Control Unit.
3. Assembly of 3270 or converted 2260 cables to a station protector (IBM 5252763).
4. Installation of a station protector (IBM 5252763) for use with outdoor, above-ground cables.

This manual (S229-7020) includes installation instructions for all of the preceding conditions, and only one copy of the manual should be ordered. (This manual should be ordered if the customer elects to construct his own 3270 cables or if IBM constructs the cables.)

Cable Runs (General)

Communication cabling, attached to the outside or inside of a building, should be separated from normal electrical wiring (110/208/230V-50/60 Hz) by at least 2 inches (50 mm). Unshielded high-power or high-energy sources may require a longer separation. If these sources are present, the IBM Installation Planning Representative should be contacted for additional clearance information. However, cabling may be run in telephone conduits without adverse effects. In addition, the cable splice (or terminating connector) should not be grounded while the system is operating. A malfunction may occur if these requirements are not met.

When using two or more runs, an identification tag should be attached to both ends of the cable to assist in proper termination.

Cabling runs must be supported every 10 feet (3m).

Cable Runs (Outdoor, Underground)

A standard RG62A/U coaxial cable (323921) is *not* to be used for outdoor installation. Existing 2260 cables buried at least 3 feet (1m) may be used with no additional protection, provided that cable entrances and exits to buildings are not above ground.

A modified RG62A/U coaxial cable (IBM bulk cable 5252750) is available for *outdoor* or *indoor* installation. This coaxial cable is suitable either for direct burial (a minimum of 3 feet [1m] below ground surface) or for enclosure in metallic or nonmetallic conduit (again buried at least 3 feet [1m] below the surface), provided that cable entrances and exits to buildings are not above ground. See "Cables by Unit" in Appendix C for correct connector group associated with this coaxial cable (5252750).

Cable Runs (Outdoor, Above Ground)

A standard RG62A/U coaxial cable (323921) is *not* to be used for outdoor installation. Coaxial cable (IBM bulk 5252750) is available for outdoor installations. This coaxial cable is RG62A/U with a modified jacket material over the shield. It is not self-supporting, and it must have some type of messenger for overhead installation. A messenger can be a conduit, raceway, or cable.

Existing 2260 cables (bulk 5214887) may be used for 3270 installations between buildings by procuring an IBM splicing kit (2621414) and a coaxial-to-station-protector attaching kit (1833106).

A station protector kit (IBM 1833104 or approved equivalent) must be attached to the shield of each coaxial cable that is run partly or entirely above ground.

The words "above ground" as used in these instructions shall be construed to mean aerial, on the ground, or underground within 3 feet (1m) of the surface.

All cabling should be run so that it is not subject to accidental contact with light or power conductors operating at a potential exceeding 300V.

Station Protector Kit (IBM 1833104) (Use on Outdoor, Above-Ground Installations)

Station protectors (IBM 5252763, two included in kit) must be located inside either on, or immediately adjacent to the structure or building where the coaxial cable enters. The protector must *not* be located near any combustible material nor in a hazardous location. (U.S. users refer to the 1971 National Electrical Code [NEC], Article 500.) A protector must be installed on both ends of the cable. Overall dimensions of this protector are approximately 2.56 inches x 1.80 inches x 1.62 inches (65,02 mm x 45,7 mm x 41,1 mm).

For U.S. users, the protector must be grounded in accordance with the 1971 NEC, Article 800-31 (b) (1-7), except that #12 AWG copper wire is recommended as the grounding conductor.

The protector must be installed in an appropriate mounting to isolate the exposed components from personal and building ground. Kit 1833106 is available for attaching the shield of the coaxial cable to the station protector (IBM 5252763).

Note: The station protector will accommodate two coaxial cables.

Mounting hardware for the station protector must be procured locally because of variations in the mounting surfaces. Replacement carbon protector units for the station protector (IBM 5252763) are available under IBM 5252772.

Because of the complexity of some installations, it may be advisable for the customer to contact the station protector manufacturer directly for customized installations.

Coaxial Cable-to-Station Protector Attachment Kit (1833106)

This kit is available for attaching one 3270 coaxial cable to the station protector. Station protectors are required only on above-ground installations. See "Cable Runs (Outdoor, Above Ground)".

The kit contains all the necessary hardware for attaching a cable to the station protector, except two BNC connectors, if needed. (IBM preassembled cable assemblies include these connectors.)

If the customer has previously installed 2260/2848 cables, he will also need one IBM splicing kit (2621414) for each cable.

If the customer elects to procure the commercial parts, he should refer to the following chart. *IBM 3270 External Coaxial Cable Installation, S229-7020*, should also be ordered. It provides a step-by-step rework instruction for attachment of the coaxial cable to the station protector.

IBM Kit Number	IBM Part Number	Part Description	Required Quantity	Commercial Source
1833104	5252763	Station Protector	2	Reliable Electric Co.* R-123
1833106	5252764	Adapter BNC Bulkhead UG-492A/U	2	Amphenol Corporation* 31-220
	1833107	Jumper Assembly	2	
		The following parts make up 1833107:		
		Ring Terminal 0.500" (12,7 mm) Stud-Wire Range 14-16	2	Electrical Supplier
	Ring Terminal #10 Stud Wire Range 14-16	2	Electrical Supplier	
	Wire-Green/Yellow #14 AWG (2" [50,8 mm])	2	Electrical Supplier	
2621414	5214874	BNC Connector UG-260B/U	2	Amphenol Corporation*
	5922896	Thermofit Cap 1/4 PD, Type 2	2	Raychem Corporation*
	5418051	Shrink Tubing**	1	Electrical Supplier
	535335	Shrink Tubing***	1	Electrical Supplier
	347098	Wire Jumper†	1	Electrical Supplier
	483770	Label	1	
5252772	5252772	Carbon Protector Unit 0.003" (0,08 mm) Airgap	1	Reliable Electric Co.* 1304††

* Or customer-selected source.

** 12 inches (304,8 mm) long, 0.500 inch (12,7 mm) diameter expanded, and 0.250 inch (6,35 mm) diameter recovered.

*** 32 inches (812,8 mm) long, 0.250 inch (6,35 mm) diameter expanded, and 0.125 inch (3,18 mm) diameter recovered.

† #22 AWG black, 42 inches (1.066,8 mm) long.

†† Replacement carbon protector units for station protector (IBM 5252763).

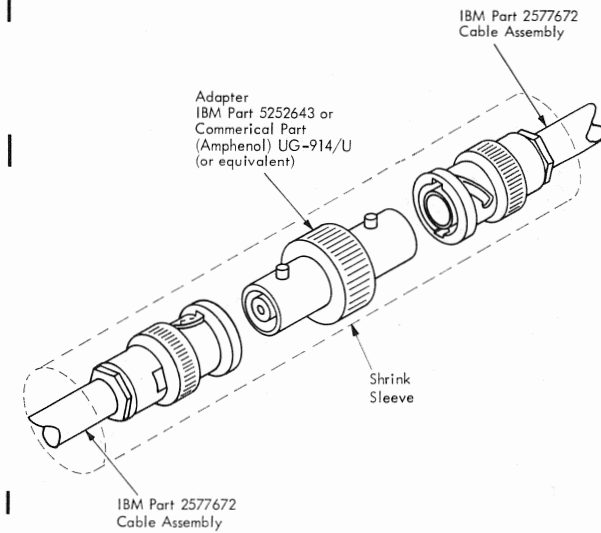
Cable Adapter

Do not cut and splice cables; instead, use a quick-disconnect adapter, IBM 5252643 or commercial connector UG-914/U. This connector has complete environmental sealing and may be potted with resilient silicone rubber for waterproof applications. A maximum of 13 connectors will be allowed in any given cable run. Splice must be covered with 5 inches (127 mm) of shrink tubing, 0.75 inch (19,05 mm) expanded to prevent accidental grounding of the splice. See accompanying illustration.

Rework Instructions

If the customer has previously installed 2260/2848 cables, they may be used for the 3270 by procuring IBM splicing kit 2621414 and IBM Order No. S229-7020. These cables may exist in several forms or part numbers: 5727685, 5727687, 5728291, 5728292, or 5729793.

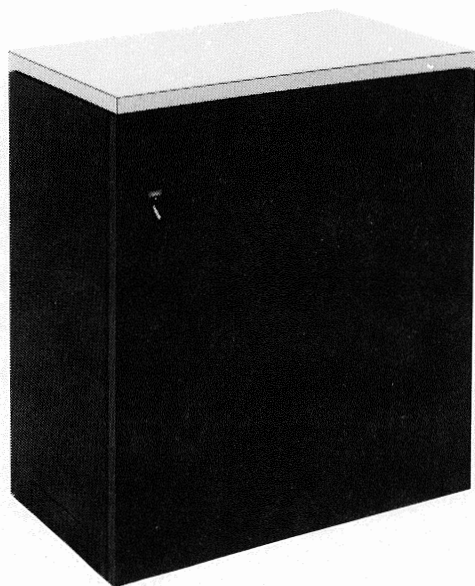
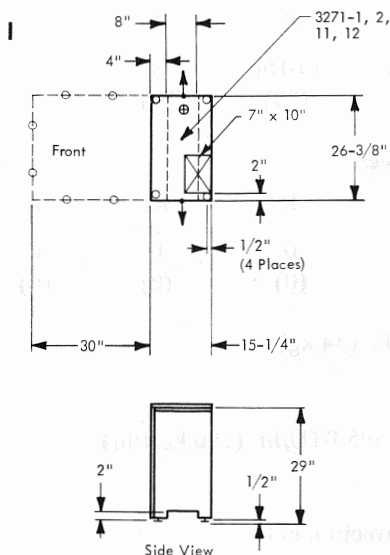
If the customer elects to procure the commercial parts, he should order IBM Order No. S229-7020 that provides a step-by-step rework instruction of the 2260 cable.





3271 CONTROL UNIT MODELS 1, 2, 11, AND 12

PLAN VIEW



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	26-3/8	15-1/4	29
(cm)	(67)	(39)	(74)

Service Clearances:

	F	R	Rt	L
Inches	30	0	0	0
(cm)	(76)	(0)	(0)	(0)

Weight: 98 lb (45 kg)

Models 1 and 2 Models 11 and 12

Heat Output:

BTU/hr	595	630
(kcal/hr)	(150)	(160)

Airflow: Convection only Convection only

Power Requirements:

kVA	0.18	0.20
Phases	1	1
Locking:	115V	208/230V
Plug	H or P&S, 4723	H or P&S, 4570
Connector	H or P&S, 4730	H or P&S, 4580
Receptacle	H or P&S, 4700 or 4710	H or P&S, 4550 or 4560
Nonlocking:		
Plug	H or P&S, 5266	H, 5666
Connector	H or P&S, 5269	H or P&S, 5669
Receptacle	H or P&S, 5261 or 5262	H or P&S, 5661 or 5662

Power Cord Style A4
 Power Cord Length 9 feet (274 cm)

Environment Operating:

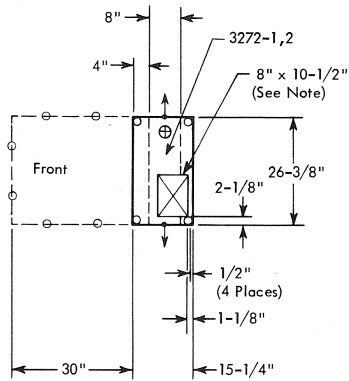
Temperature	50°-110°F (10°-43°C)
Rel Humidity	8%-80%
Max Wet Bulb	85°F (29°C)

Environment Nonoperating:

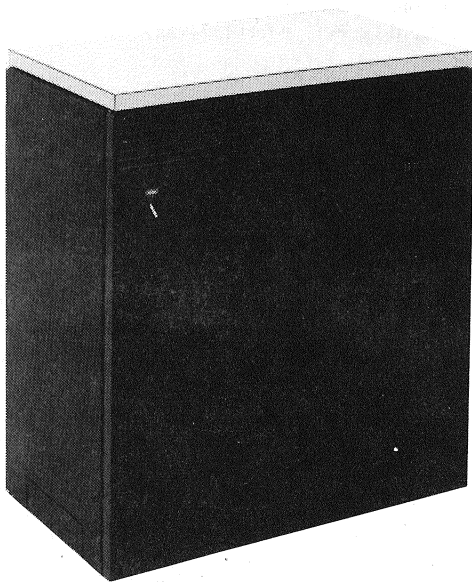
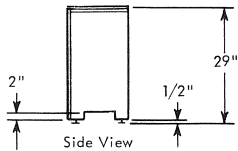
Temperature	50°-125°F (10°-52°C)
Rel Humidity	8%-80%
Max Wet Bulb	85°F (29°C)

3272 CONTROL UNIT MODELS 1 AND 2

PLAN VIEW



Note: Hole opening in the floor should not exceed 5-3/4" x 8-1/2" (15 cm x 22 cm). Maximum width for moulding is 3/4" (2 cm).



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	26-3/8	15-1/4	29
(cm)	(67)	(39)	(74)

Service Clearances:

	F	R	Rt	L
Inches	30	0	0	0
(cm)	(76)	(0)	(0)	(0)

Weight: 95 lb (44 kg)

Heat Output: 595 BTU/hr (150 kcal/hr)

Airflow: Convection only

Power Requirements:

kVA 0.18

Phases 1

Locking: *

Plug H or P&S, 4570

Connector H or P&S, 4580

Receptacle H or P&S, 4550 or 4560

Nonlocking: *

Plug H, 5666

Connector H or P&S, 5669

Receptacle H or P&S, 5661 or 5662

Power Cord Style A4

Power Cord Length 9 feet (274 cm)

Environment Operating:

Temperature 50°-110°F (10°-43°C)

Rel Humidity 8%-80%

Max Wet Bulb 85°F (29°C)

Environment Nonoperating:

Temperature 50°-125°F (10°-52°C)

Rel Humidity 8%-80%

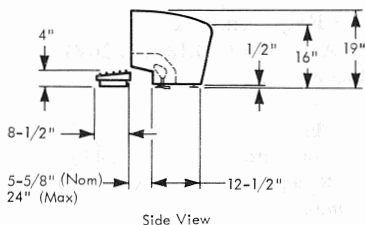
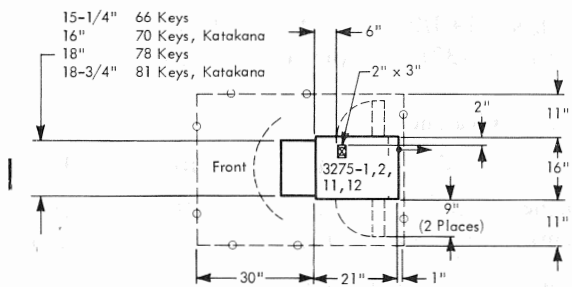
Max Wet Bulb 85°F (29°C)

Notes:

* If watertight connections are required, contact your IBM representative.

3275 DISPLAY STATION MODELS 1, 2, 11, AND 12

PLAN VIEW

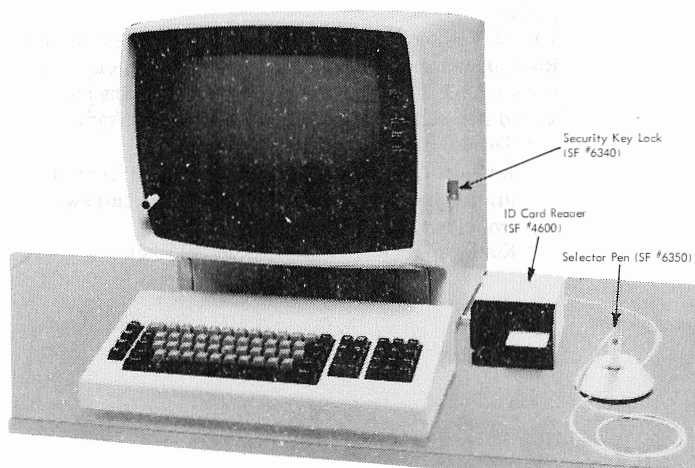


Display Unit Operating Clearances:

	Inches	(cm)	} Dimensions are minimum requirements for functional operation of the machine. These dimensions allow sufficient airflow to provide convection cooling.
Front	0	(0)	
Rear	1	(3)	
Right	3	(8)	
Left	3	(8)	
Top	6	(15)	

Bottom: Unit should be installed in a manner which would guarantee adequate airflow into the underside of the unit to provide convection cooling.

Note: If unit is installed with minimum clearance, service access must be provided.



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	16	21*	19
(cm)	(41)	(53*)	(48)

Service Clearances:

	F	R	Rt	L
Inches	30**	1	11	11
(cm)	(76**) .	(3)	(28)	(28)

Weight: 95 lb*** (44 kg***)

Models 1 and 2 Models 11 and 12

Heat Output:

BTU/hr	700	800
(kcal/hr)	(180)	(210)

Airflow: Convection only Convection only

Power Requirements:

kVA	0.24	0.28
Phases	1	1

Locking:

Plug	H or P&S, 4723
Connector	H or P&S, 4730
Receptacle	H or P&S, 4700 or 4710

Nonlocking:

Plug	H or P&S, 5266
Connector	H or P&S, 5269
Receptacle	H or P&S, 5261 or 5262

Power Cord Style A4
 Power Cord Length 7-1/2 feet (229 cm)

Environment Operating:

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

Environment Nonoperating:

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

Notes:

The 3275 is installed on a customer-supplied desk or table. Recommended keyboard height (measured at home-row keys) is 28-1/2" (72 cm) from the floor. Lighting level should not exceed 75 footcandles (810 lumens/m²).

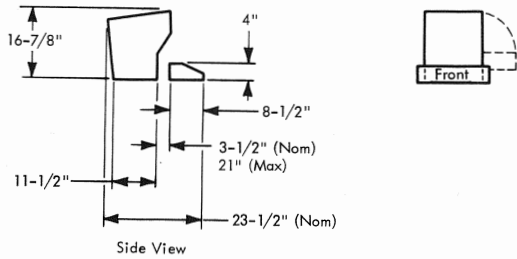
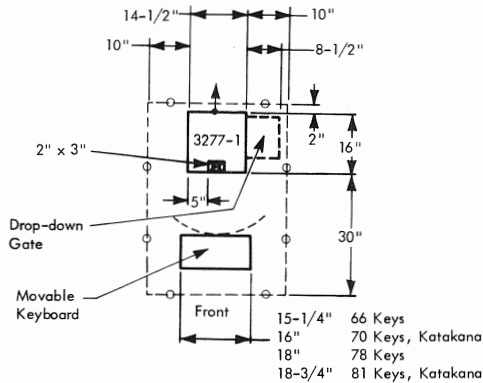
* See also plan view.

** Keyboard feature adds 8-1/2" (22 cm) to front of display and can be moved up to 24" (61 cm) away from lower front of display.

*** Keyboard feature adds approximately 10 lb (5 kg).

3277 DISPLAY STATION MODEL 1

PLAN VIEW

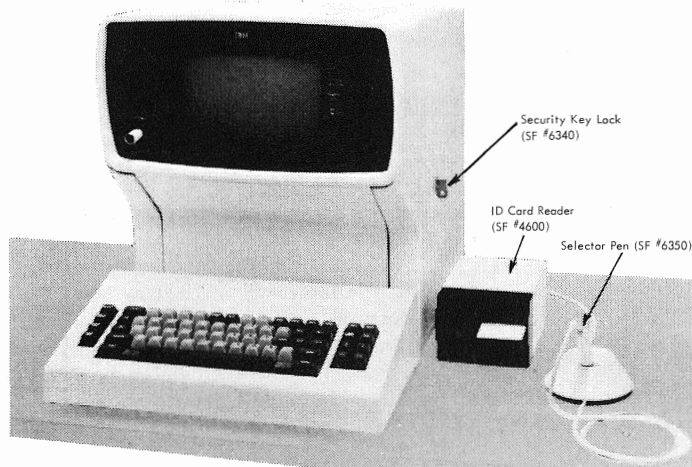


Display Unit Operating Clearances:

	Inches	(cm)	
Front	0	(0)	Dimensions are minimum requirements for functional operation of the machine. These dimensions allow sufficient airflow to provide convection cooling.
Rear	1	(3)	
Right	3	(8)	
Left	3	(8)	
Top	6	(15)	

Bottom: Unit should be installed in a manner which would guarantee adequate airflow into the underside of the unit to provide convection cooling.

Note: If unit is installed with minimum clearance, service access must be provided.



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	14-1/2	16*	16-7/8
(cm)	(37)	(41*)	(43)

Service Clearances:

	F	R	Rt	L
Inches	30**	2	10	10
(cm)	(76**)	(5)	(25)	(25)

Weight: 60 lb*** (28 kg***)

Heat Output: 525 BTU/hr (140 kcal/hr)

Airflow: Convection only

Power Requirements:

kVA 0.17 (0.18 for 220V)

Phases 1

Locking:

Plug	H or P&S, 4723
Connector	H or P&S, 4730
Receptacle	H or P&S, 4700 or 4710

Nonlocking:

Plug	H or P&S, 5266
Connector	H or P&S, 5269
Receptacle	H or P&S, 5261 or 5262

Power Cord Style A4

Power Cord Length 7-1/2 feet (229 cm)

Environment Operating:

Temperature 50°-110°F (10°-43°C)

Rel Humidity 8%-80%

Max Wet Bulb 85°F (29°C)

Environment Nonoperating:

Temperature 50°-125°F (10°-52°C)

Rel Humidity 8%-80%

Max Wet Bulb 85°F (29°C)

Notes:

The 3277 is installed on a customer-supplied desk or table. Recommended keyboard height (measured at home-row keys) is 28-1/2" (72 cm) from the floor. Lighting level should not exceed 75 footcandles (810 lumens/m²).

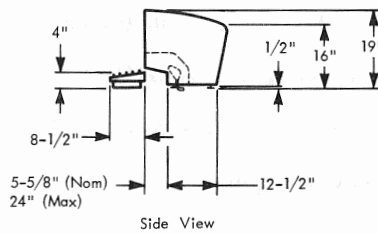
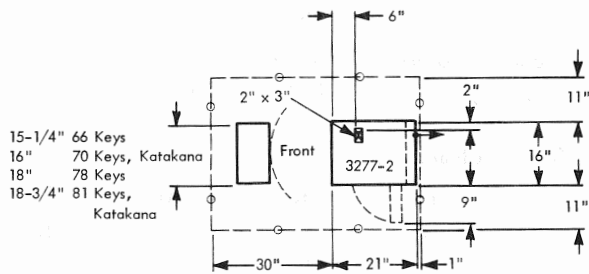
* See also plan view.

** Keyboard feature adds 8-1/2" (22 cm) to front of display and can be moved up to 21" (53 cm) away from lower front of display.

*** Keyboard feature adds about 10 lb (5 kg).

3277 DISPLAY STATION MODEL 2

PLAN VIEW

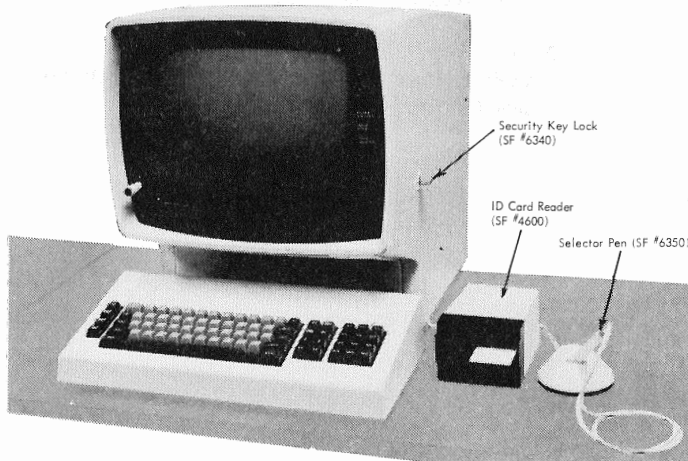


Display Unit Operating Clearances:

	Inches	(cm)	
Front	0	(0)	Dimensions are minimum requirements for functional operation of the machine. These dimensions allow sufficient airflow to provide convection cooling.
Rear	1	(3)	
Right	3	(8)	
Left	3	(8)	
Top	6	(15)	

Bottom: Unit should be installed in a manner which would guarantee adequate airflow into the underside of the unit to provide convection cooling.

Note: If unit is installed with minimum clearance, service access must be provided.



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	16	21*	19
(cm)	(41)	(53*)	(48)

Service Clearances:

	F	R	Rt	L
Inches	30**	1	11	11
(cm)	(76**)	(3)	(28)	(28)

Weight: 85 lb*** (39 kg***)

Heat Output: 525 BTU/hr (140 kcal/hr)

Airflow: Convection only

Power Requirements:

kVA 0.17

Phases 1

Locking:

Plug H or P&S, 4723

Connector H or P&S, 4730

Receptacle H or P&S, 4700 or 4710

Nonlocking:

Plug H or P&S, 5266

Connector H or P&S, 5269

Receptacle H or P&S, 5261 or 5262

Power Cord Style A4

Power Cord Length 7-1/2 feet (229 cm)

Environment Operating:

Temperature 50°-110°F (10°-43°C)

Rel Humidity 8%-80%

Max Wet Bulb 85°F (29°C)

Environment Nonoperating:

Temperature 50°-125°F (10°-52°C)

Rel Humidity 8%-80%

Max Wet Bulb 85°F (29°C)

Notes:

The 3277 is installed on a customer-supplied desk or table. Recommended keyboard height (measured at home-row keys) is 28-1/2" (72 cm) from the floor. Lighting level should not exceed 75 footcandles (810 lumens/m²).

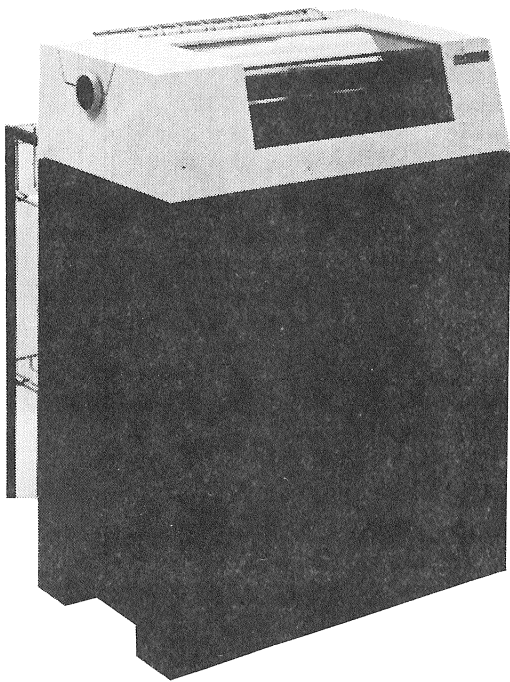
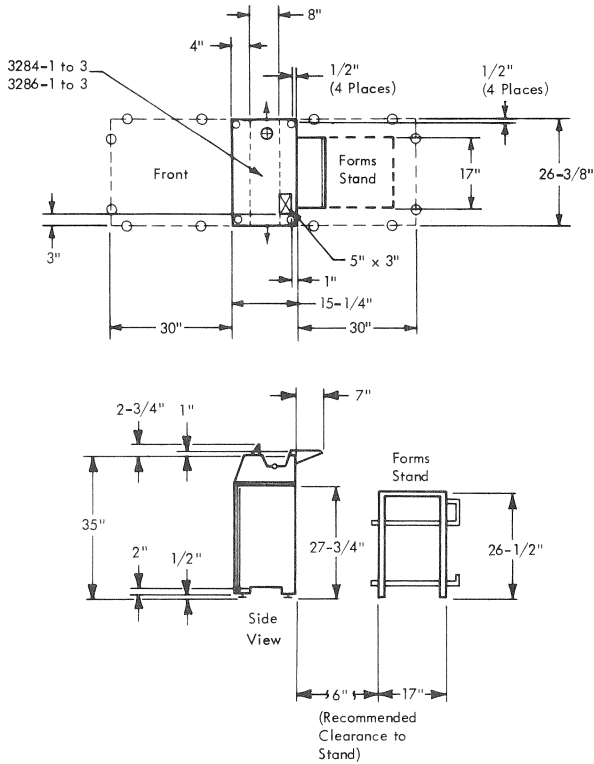
* See also plan view.

** Keyboard feature adds 8-1/2" (22 cm) to front of display and can be moved up to 24" (61 cm) away from lower front of display.

*** Keyboard feature adds about 10 lb (5 kg).

3284 PRINTER MODELS 1, 2, AND 3
 3286 PRINTER MODELS 1, 2, AND 3

PLAN VIEW



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	26-3/8	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: 770 BTU/hr (200 kcal/hr)

Airflow: Convection only

Power Requirements:

kVA 0.26
 Phases 1

Locking:

Plug H or P&S, 4723
 Connector H or P&S, 4730
 Receptacle H or P&S, 4700 or 4710

Nonlocking:

Plug H or P&S, 5266
 Connector H or P&S, 5269
 Receptacle H or P&S, 5261 or 5262

Power Cord Style A9

Power Cord Length 9 feet (274 cm)

Environment Operating:

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

Environment Nonoperating:

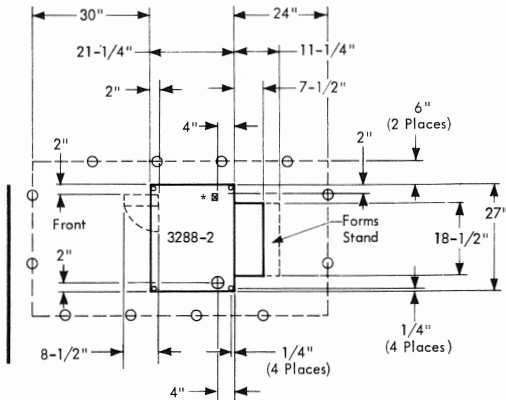
Temperature 50°-125°F (10°-52°C)
 Rel Humidity 8%-80%
 Max Wet Bulb 85°F (29°C)

Notes:

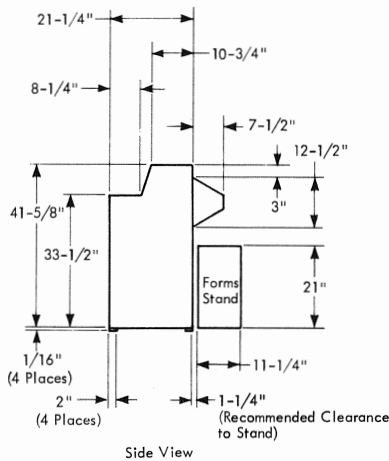
* A 6-inch (15-cm) clearance is recommended to forms stand (SF #4450), if used.

3288 LINE PRINTER MODEL 2

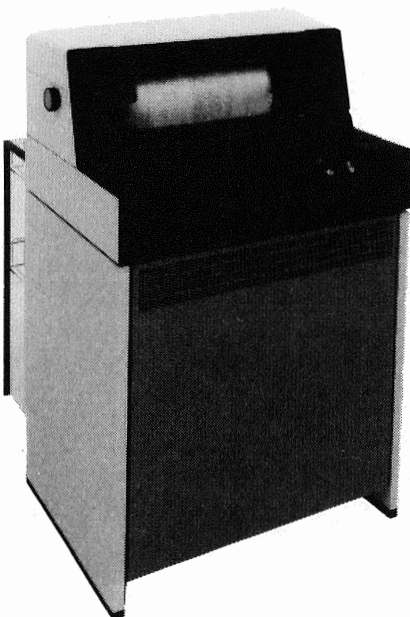
PLAN VIEW



* Cable entry/exit for coaxial cable.
 Approximate dimensions 1/2" x 1/2".



Side View



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	27	21-1/4	41-5/8
(cm)	(69)	(54)	(106)

Service Clearances:

	F	R	Rt	L
Inches	30	24	6	6
(cm)	(76)	(61)	(15)	(15)

Weight: 280 lb (130 kg)

Heat Output: 1,926 BTU/hr (490 kcal/hr)

Airflow: 39 cfm (2 m³/min)

Power Requirements:

kVA 0.60

Phases 1

Locking:

Plug H or P&S, 4723

Connector H or P&S, 4730

Receptacle H or P&S, 4700 or 4710

Nonlocking:

Plug H or P&S, 5266

Connector H or P&S, 5269

Receptacle H or P&S, 5261 or 5262

Power Cord Style A9

Power Cord Length 9 feet (274 cm)

Environment Operating:

Temperature 50°-105°F (10°-40°C)

Rel Humidity 8%-80%

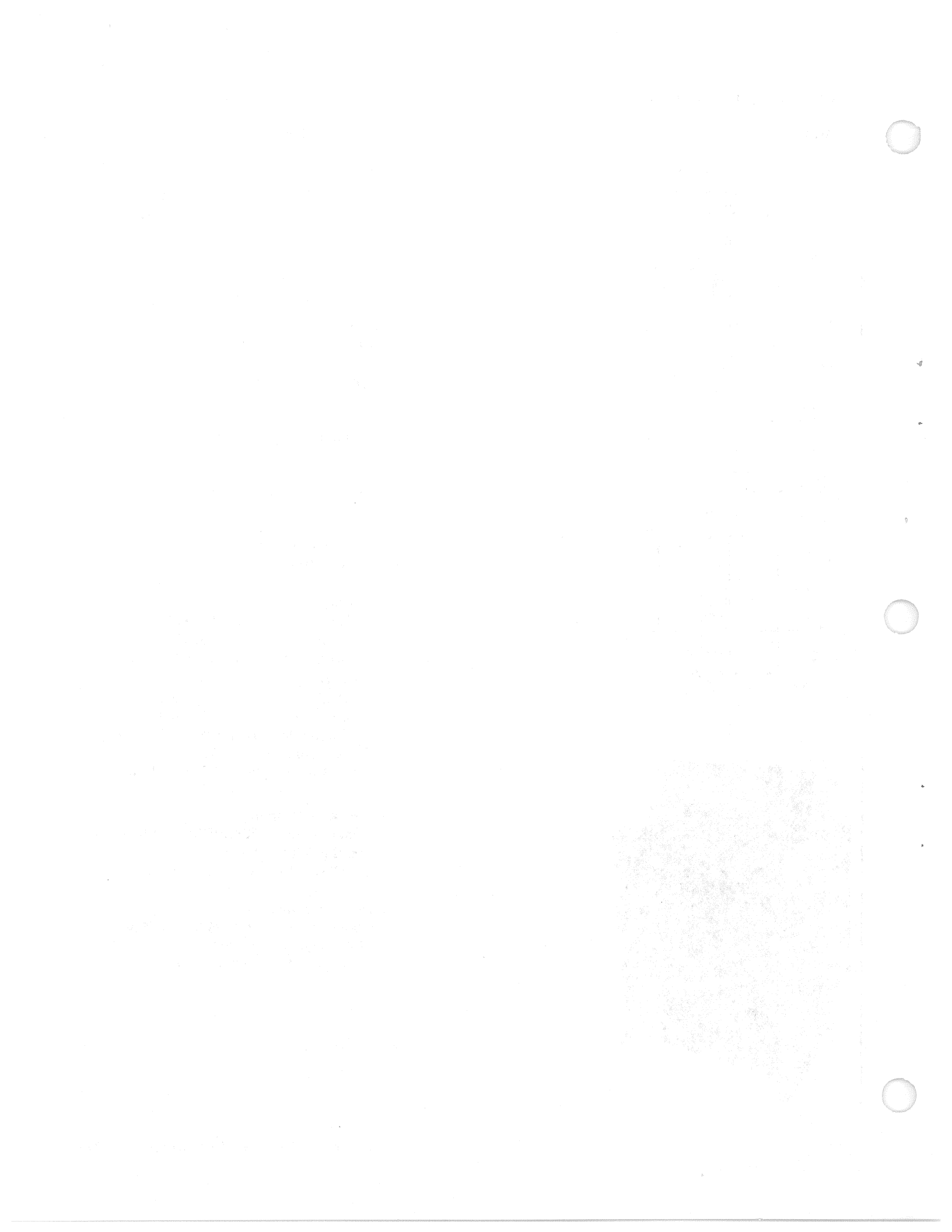
Max Wet Bulb 80°F (27°C)

Environment Nonoperating:

Temperature 50°-125°F (10°-52°C)

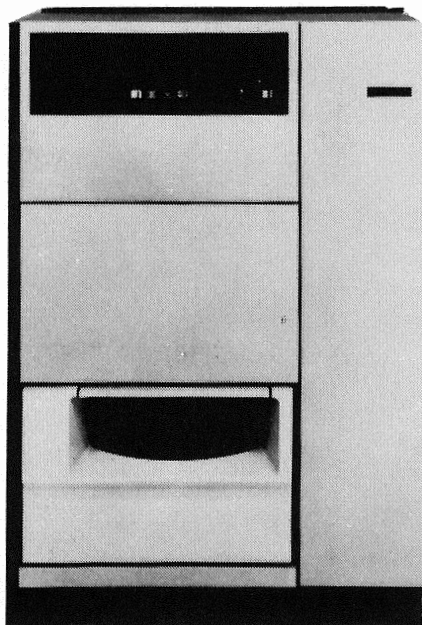
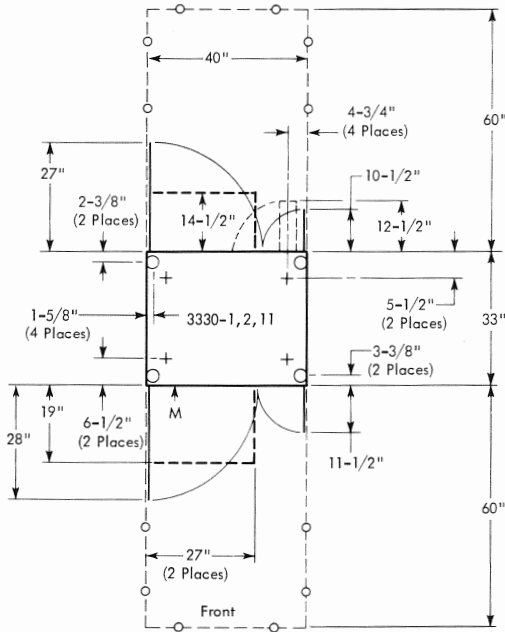
Rel Humidity 8%-80%

Max Wet Bulb 80°F (27°C)



3330 DISK STORAGE MODELS 1, 2, AND 11

PLAN VIEW



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)

Power Requirements:†

kVA	3.4	2.4
-----	-----	-----

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.

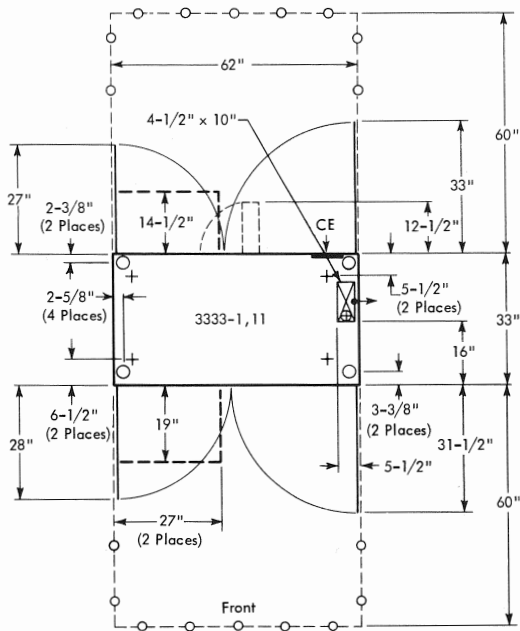
** Service clearance is 24" (61 cm) if this is an end unit. See 3333 and 3830-1 machine specifications pages.

*** Based on IBM's method of calculating floor loading, a disk storage facility with more than three units attached exceeds 75 pounds per square foot (370 kg/m²) distributed floor loading. The installation site, therefore, should be reviewed by a qualified consultant.

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

3333 DISK STORAGE AND CONTROL MODELS 1 AND 11

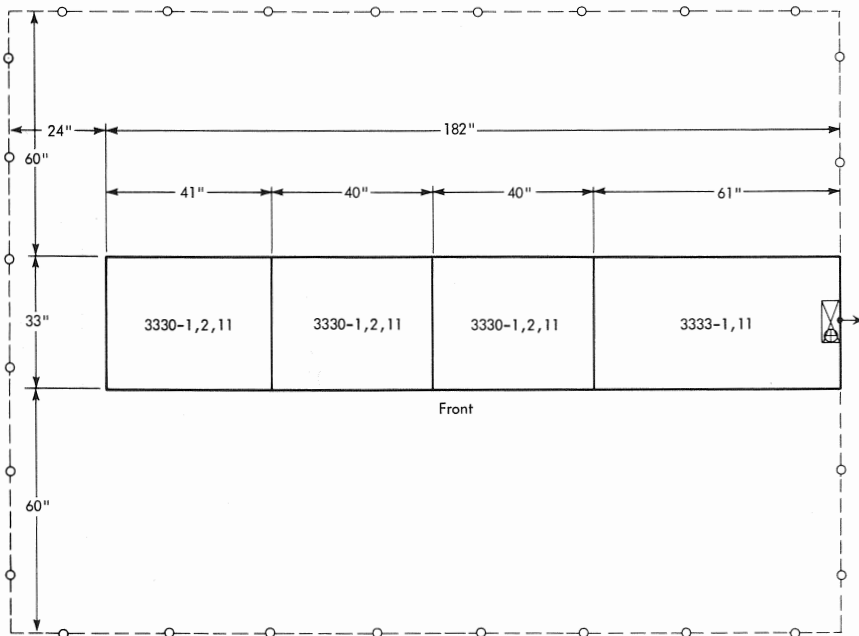
PLAN VIEW



Note: For cabling information, see Section 4, "Units 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



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 m³/min)

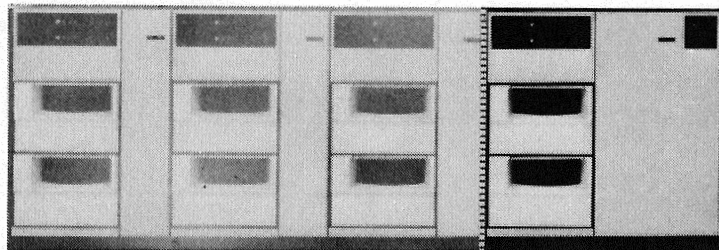
Power Requirements:

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

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 units exceeds 75 pounds per square foot (370 kg/m²) distributed floor loading. The installation site, therefore, should be reviewed by a qualified consultant.



3330-1

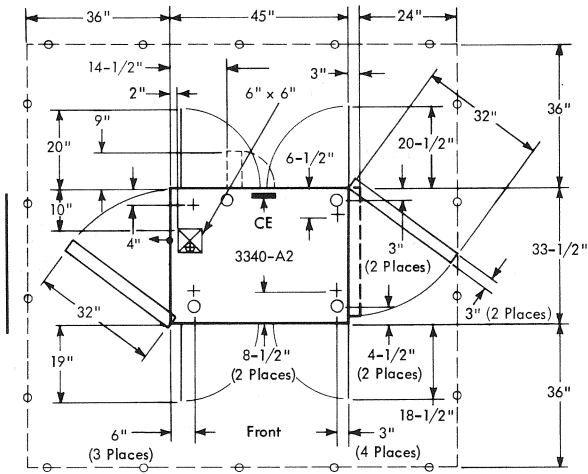
3330-1

3330-1

3333-1

3340 DISK STORAGE MODEL A2

PLAN VIEW



Note: For cabling information, see Section 4, "Units 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)

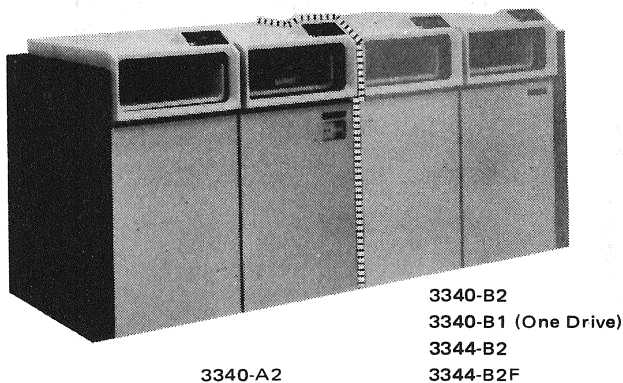
Airflow: 400 cfm (12 m³/min)

Power Requirements:

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

Notes:

- * The standalone dimension is 48" (122 cm) with a 3-inch (8-cm) end cover added. Up to three 3340-B1's, 3340-B2's, 3344-B2's, or 3344-B2F's, in any combination, can be attached to a 3340-A2.
- ** Service clearance is 24" (61 cm) if 3340-B1's, 3340-B2's, 3344-B2's, or 3344-B2F's are not attached.

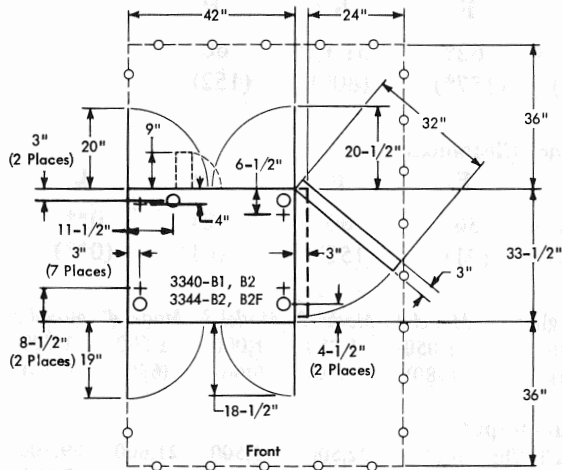


3340-A2

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

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

PLAN VIEW



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:

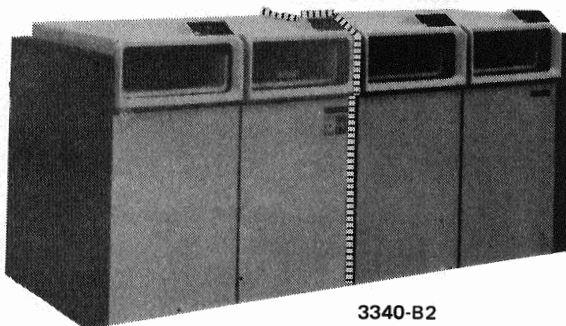
cfm	400	400
(m ³ /min)	(12)	(12)

Power Requirements:***

kVA	1.2	1.7
Phases	3	3

Notes:

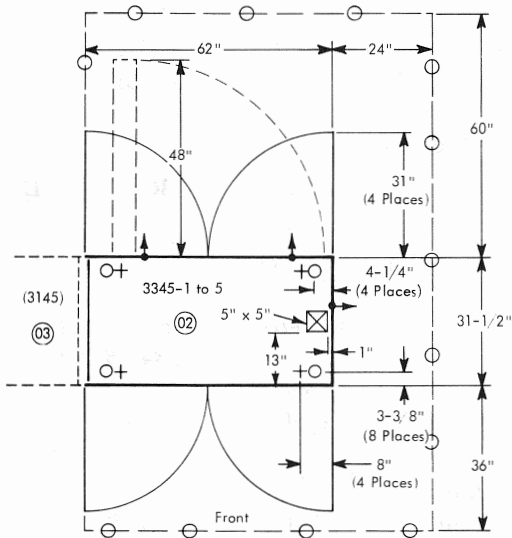
- * The end unit dimension is 45" (114 cm) with a 3-inch (8-cm) cover added.
- ** Service clearance is 24" (61 cm) if this is an end unit.
- *** Powered from 3340-A2.



3340-A2
 3340-B2
 3340-B1 (One Drive)
 3344-B2
 3344-B2F

3345 STORAGE AND CONTROL FRAME MODELS 1 TO 5

PLAN VIEW



Notes:

1. The 48" gate is *not* on the 3345 Model 3.
2. For cabling information, see 3145.

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	62*	31-1/2*	60
(cm)	(157*)	(80*)	(152)

Service Clearances:

	F	R	Rt	L
Inches	36	60	24	0**
(cm)	(91)	(152)	(61)	(0**)

Weight:	Model 1	Model 2	Model 3	Model 4	Model 5
lb	1,050	1,250	1,000	1,500	1,700
(kg)	(480)	(570)	(460)	(690)	(780)

Heat Output:

	Model 1	Model 2	Model 3	Model 4	Model 5
BTU/hr	14,700	22,500	5,500	21,600	29,700
(kcal/hr)	(3.750)	(5.700)	(1.400)	(5.450)	(7.500)

Airflow:

	Model 1	Model 2	Model 3	Model 4	Model 5
cfm	620	760	280	900	1,040
(m ³ /min)	(18)	(22)	(8)	(26)	(31)

Power Requirements:***

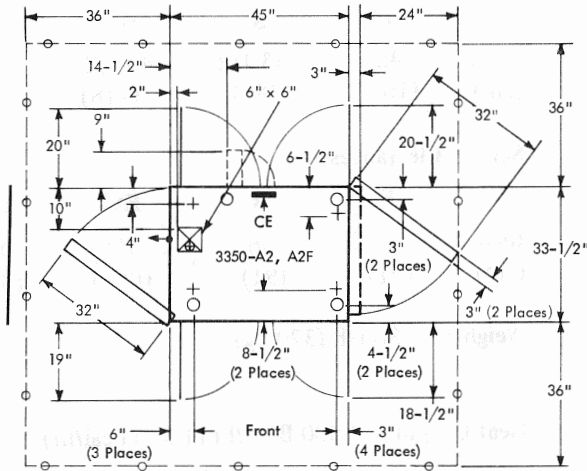
	Model 1	Model 2	Model 3	Model 4	Model 5
kVA	5.3	8.3	1.8	7.9	10.9

Notes:

- *Removal of side and end covers reduces the unit to 29-1/2" x 60" (75 cm x 152 cm).
- **The 3345 is bolted to the right end of the 3145 power frame.
- ***Powered from 3046-1 and/or 3145:
 - Model 1: 4.8 kVA from 3046-1 and 0.5 kVA from 3145.
 - Model 2: 7.8 kVA from 3046-1 and 0.5 kVA from 3145.
 - Model 3: 1.8 kVA from 3145 only.
 - Model 4: 4.8 kVA from 3046-1 and 3.1 kVA from 3145.
 - Model 5: 7.8 kVA from 3046-1 and 3.1 kVA from 3145.

3350 DIRECT ACCESS STORAGE MODELS A2 AND A2F

PLAN VIEW



Note: For cabling information, see Section 4, "Units 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: 1,000 lb (460 kg)

Heat Output: 7,200 BTU/hr (1.850 kcal/hr)

Airflow: 400 cfm (12 m³/min)

Power Requirements:

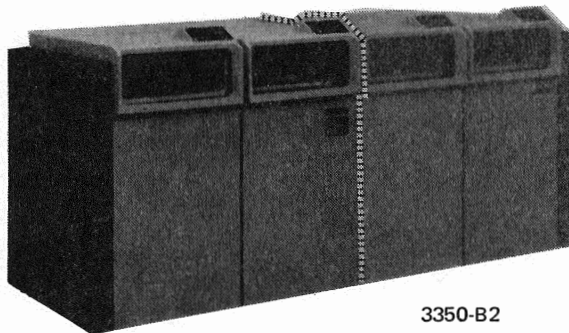
kVA	2.3
Phases	3
Plug	R&S, SC7328
Connector	R&S, SC7428
Receptacle	R&S, SC7324
Power Cord Style	E1

Notes:

* The standalone dimension is 48" (122 cm) with a 3-inch (8-cm) end cover added. Up to three 3350-B2's or 3350-B2F's, 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-B2's or 3350-B2F's in any combination. The 3350-C2 or 3350-C2F must always be attached in the right end position.

** Service clearance is 24" (61 cm) when in a standalone configuration.

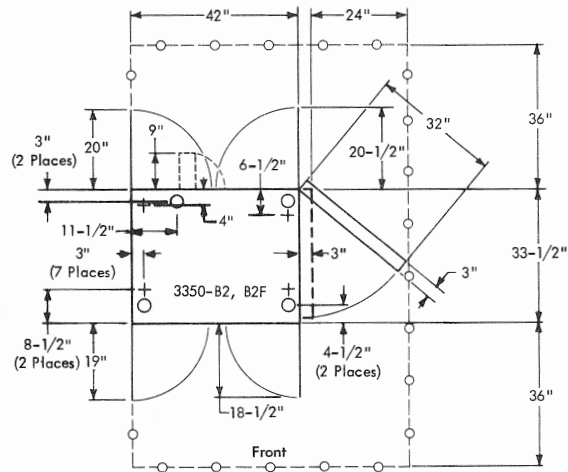


3350-A2
3350-A2F

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

3350 DIRECT ACCESS STORAGE MODELS B2 AND B2F

PLAN VIEW



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: 800 lb (370 kg)

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

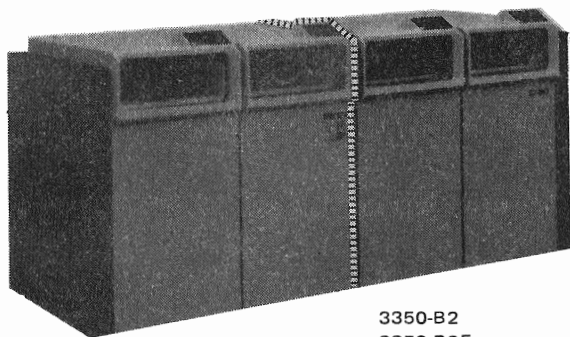
Airflow: 400 cfm (12 m³/min)

Power Requirements:***

kVA	1.9
Phases	3

Notes:

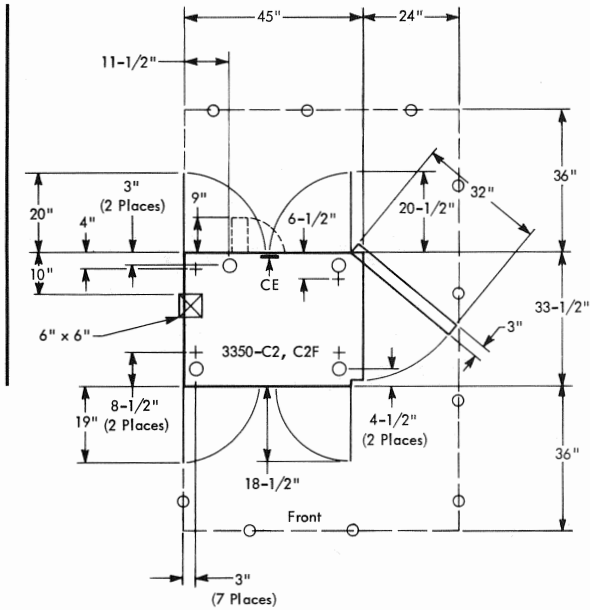
- * The end unit dimension is 45" (114 cm) with a 3-inch (8-cm) cover added.
- ** Service clearance is 24" (61 cm) if this is an end unit.
- *** Powered from 3350-A2 or 3350-A2F.



3350-A2
 3350-A2F
 3350-B2
 3350-B2F

3350 DIRECT ACCESS STORAGE MODELS C2 AND C2F

PLAN VIEW



Note: For cabling information, see Section 4, "Units 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	24	0
(cm)	(91)	(91)	(61)	(0)

Weight: 1,050 lb (480 kg)

Heat Output: 6,500 BTU/hr (1.650 kcal/hr)

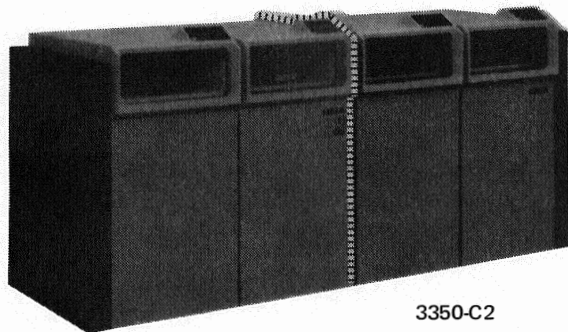
Airflow: 400 cfm (12 m³/min)

Power Requirements: *

kVA	2.1
Phases	3

Notes:

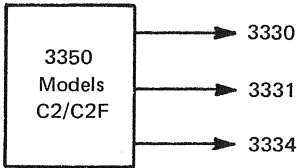
*Powered from 3350-A2 or 3350-A2F.



3350-A2
 3350-A2F
 3350-C2
 3350-C2F



3350 DIRECT ACCESS STORAGE MODELS C2 and C2F CABLING SCHEMATICS



<i>Group No.</i>	<i>No. of Cables</i>	<i>From</i>	<i>To</i>	<i>Max Length (ft)</i>	<i>Notes</i>
3330	2	3350-C2/C2F	ISC, 3830-2	—	1, 2, 3, 4
3331	2	3350-C2/C2F	3333, 3340-A2, 3350-A2/A2F, 3350-C2/C2F	—	1, 3, 4
3334	1	3350-C2/C2F	3058, 3068	200	5

Notes:

- Total cable length of 200 feet is available to attach storage devices to a storage control (3145-2 ISC, the 3345-2, 3, or 5 ISC, the 3830-2 or each path of the 3158 or 3168 ISC).
- The To unit can be one of the following:

<i>Type</i>	<i>Model</i>	<i>Frame</i>	<i>Cable Entry</i>
3145	2	03	03
3158	any	02	03
3168	any	02	03
3345	3, 4, 5	—	—
3830	2	—	—

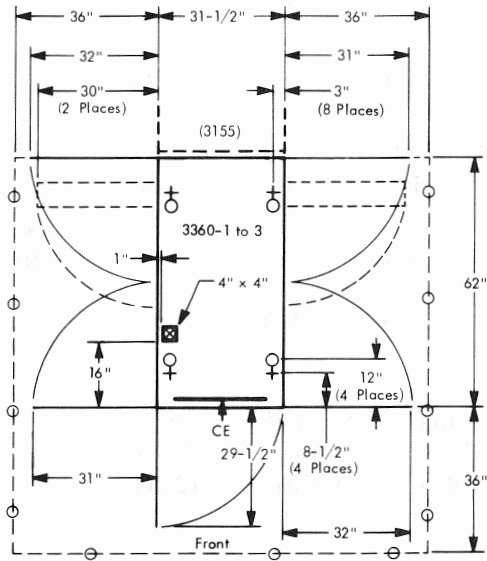
- Attachment options are as follows:

Any combination of up to four strings of 3333/3330, 3340, and 3350 series storage devices can be attached to one storage control. Each 3350 string can contain one 3350 A and one 3350 C series device. Up to four 3350 A and four C series devices can be attached to one storage control. Strings of 3340-A2s with attached 3344s cannot be attached to a storage control with attached 3350s.

- String Switch (SF#8150) may be ordered to connect the 3350-C2/C2F to a second storage control. Cable length limitations and attachment options apply to both controls.
- Required for Remote Switch Attachment (SF#6148).

3360 PROCESSOR STORAGE MODELS 1, 2, AND 3

PLAN VIEW



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	31-1/2	62	60
(cm)	(80)	(157)	(152)

Service Clearances:

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

Weight: 1,800 lb (820 kg)

Heat Output:	Selected	Idling
BTU/hr	13,500	7,500
(kcal/hr)	(3,450)	(1,900)

Airflow:

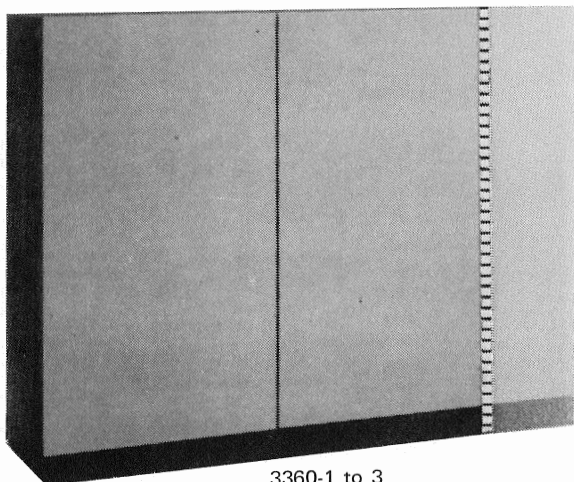
cfm	835	835
(m ³ /min)	(24)	(24)

Power Requirements: *

kVA	4.5	2.5
Phases	3	3
Plug	R&S, FS3760	
Connector	R&S, FS3934	
Receptacle	R&S, FS3754	
Power Cord Style	D1	

Notes:

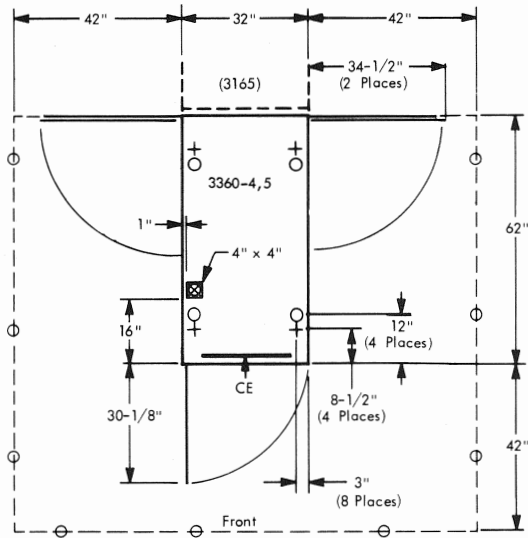
* See also host system specifications.



3360-1 to 3

3360 PROCESSOR STORAGE MODELS 4 AND 5

PLAN VIEW



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	32	62	70
(cm)	(81)	(157)	(178)

Service Clearances:

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

Weight: 2,000 lb (910 kg)

Heat Output:	Selected	Idling
BTU/hr	13,652	8,533
(kcal/hr)	(3,450)	(2,200)

Airflow:

cfm	835	835
(m ³ /min)	(24)	(24)

Power Requirements: *

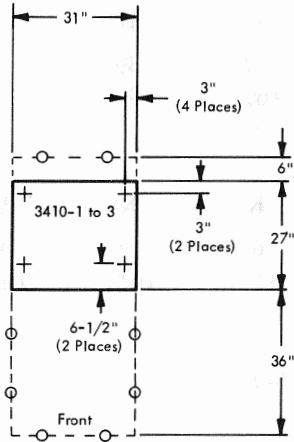
kVA	4.6	2.8
Phases	3	3
Plug	R&S, FS3760	
Connector	R&S, FS3934	
Receptacle	R&S, FS3754	
Power Cord Style	D1	

Notes:

* See also host system specifications.

3410 MAGNETIC TAPE UNIT MODELS 1 TO 3

PLAN VIEW



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 m³/min)

Power Requirements:**

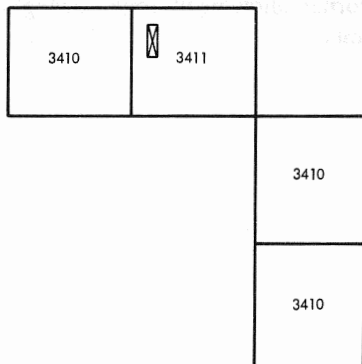
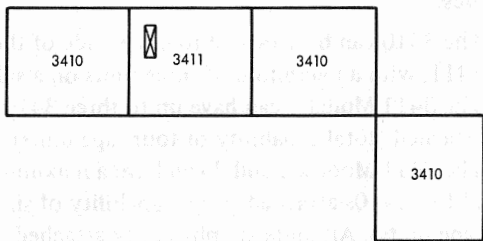
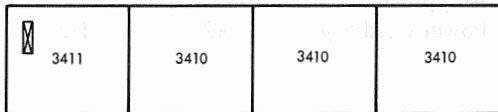
kVA 0.3

Notes:

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

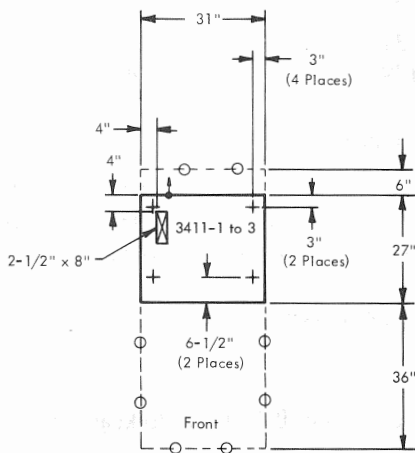
** Powered from 3411.

Typical Tape Unit Layouts



3411 MAGNETIC TAPE UNIT AND CONTROL MODELS 1 TO 3

PLAN VIEW



Note: For cabling information, see Section 4, "Units With Integral or Abutted Controls," 3115-0, 3115-2, 3125-0, or 3125-2.

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)

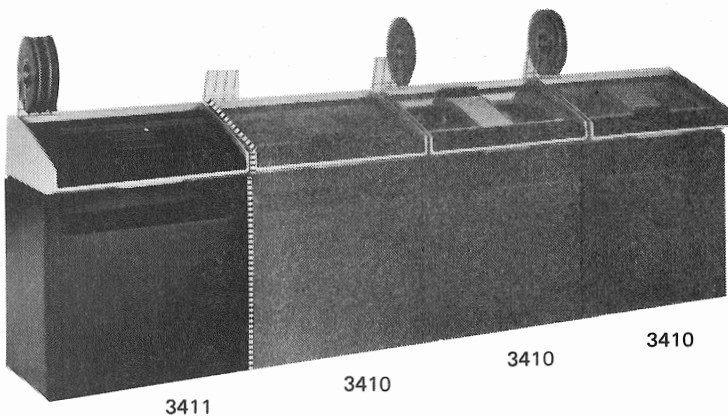
Heat Output: 3,500 BTU/hr (890 kcal/hr)

Airflow: 200 cfm (6 m³/min)

	60 Hz All and 50 Hz Model 1	50 Hz Models 2 and 3
Power Requirements:		
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

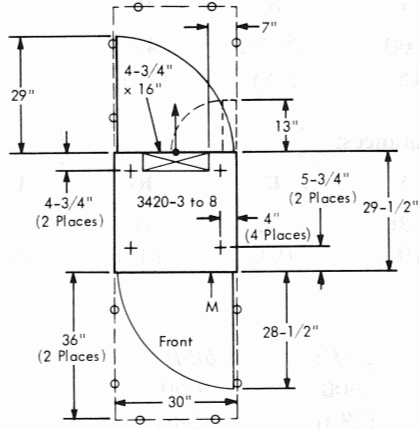
Notes:

* The 3410 can be attached to either side of the 3411, with a maximum of three units 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 units are physically attached at the front corner, allowing up to 90° swing between units.



3420 MAGNETIC TAPE UNIT MODELS 3 TO 8

PLAN VIEW



Note: For cabling information, see 3803.

SPECIFICATIONS

Dimensions:

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

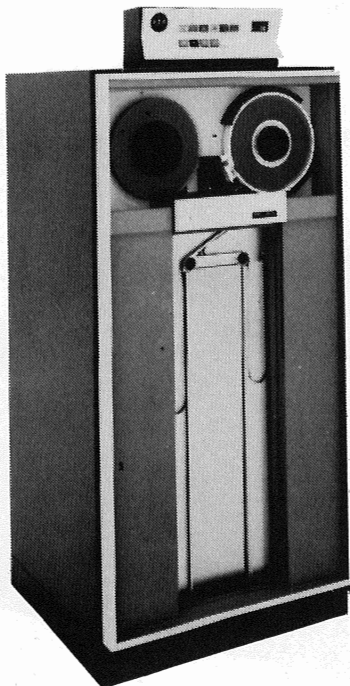
Service Clearances:

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

Weight: 800 lb (370 kg)

Notes:

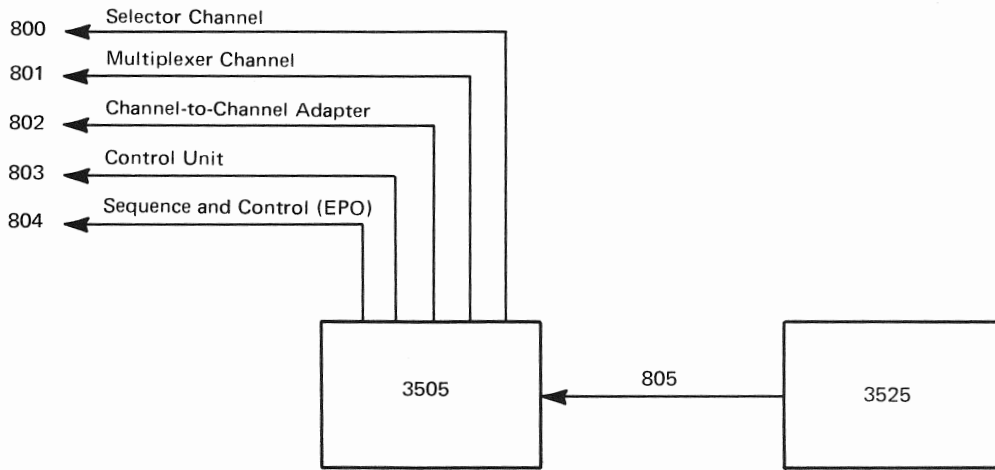
* Powered from 3803.



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

3505 CARD READER AND 3525 CARD PUNCH CABLING SCHEMATIC



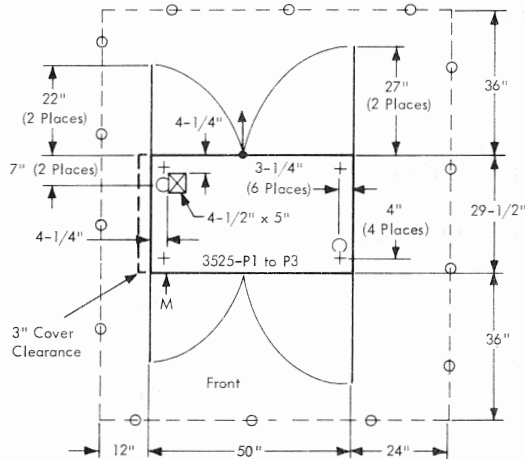
Group No.	No. of Cables	From	To	Max Length (ft)	Notes
800	2	3505	Selector Channel	—	1
801	2	3505	Multiplexer Channel	—	1
802	2	3505	Channel-to-Channel Adapter	—	1,3
803	2	3505	Control Unit	—	1
804	1	3505	Channel	150	2
805	4	3525	3505	20	—

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. Sequence and control (EPO).
3. To channel-to-channel adapter (SF #1850).

3525 CARD PUNCH MODELS P1 TO P3

PLAN VIEW



Note: For cabling information, see 3505, 3125-0, or 3125-2.

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
-----	-----	-----

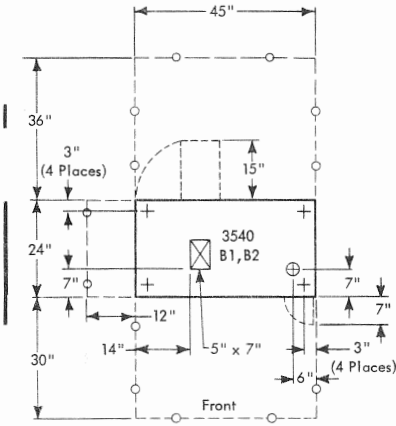
Notes:

* Powered from 3505, or from 3125-0 or 3125-2 when SF #4685 is installed.



**3540 DISKETTE INPUT/OUTPUT UNIT
 MODELS B1 AND B2**

PLAN VIEW



Note: For cabling information, see Section 4, "Units With Integral or Abutted Controls."

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:

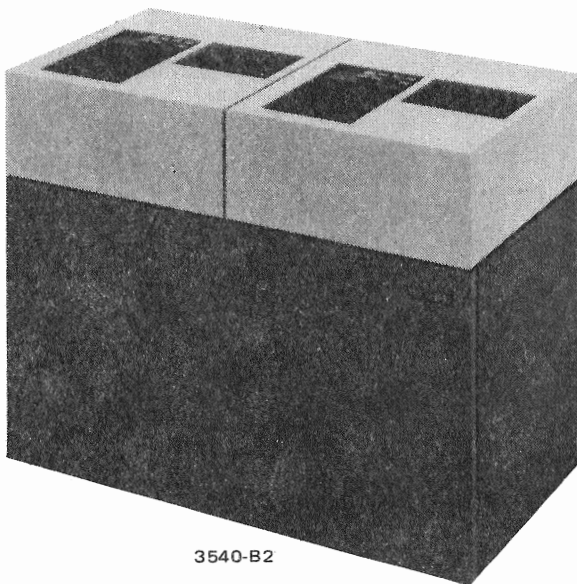
BTU/hr	1,600	2,150
(kcal/hr)	(410)	(550)

Airflow:

cfm	150	150
(m ³ /min)	(5)	(5)

Power Requirements:

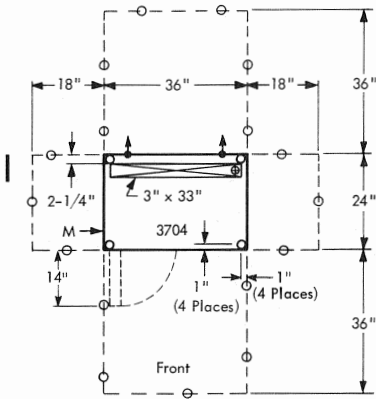
kVA	0.6	0.8
Phases	1	1
Plug	R&S, FS3720	
Connector	R&S, FS3913	
Receptacle	R&S, FS3743	
Power Cord Style	A1	



3540-B2

3704 COMMUNICATIONS CONTROLLER

PLAN VIEW



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 m³/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:

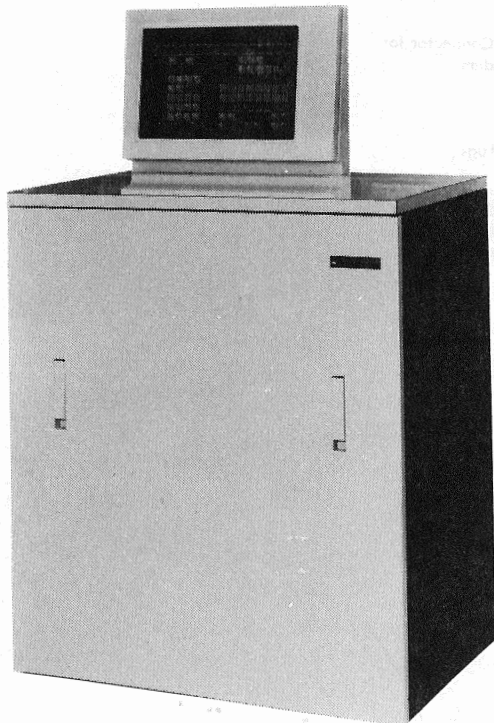
Temperature	60 ^o -100 ^o F (16 ^o -38 ^o C)
Rel Humidity	8%-80%
Max Wet Bulb	78 ^o F (26 ^o C)

Environment Nonoperating:

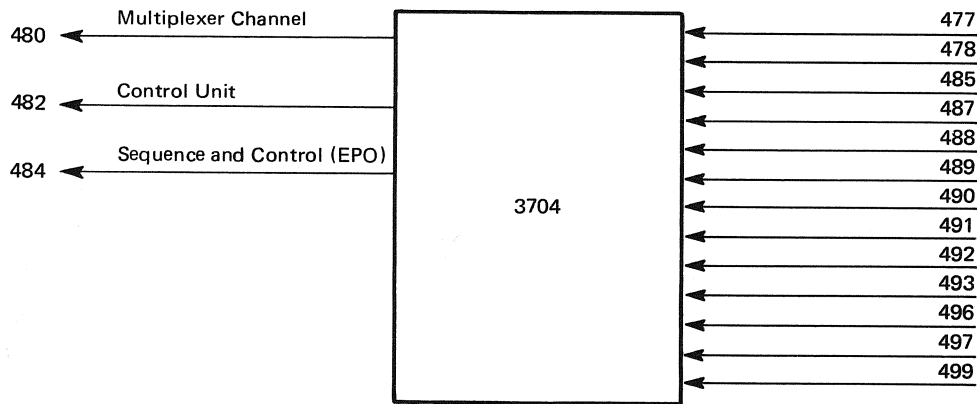
Temperature	50 ^o -110 ^o F (10 ^o -43 ^o C)
Rel Humidity	8%-80%
Max Wet Bulb	85 ^o F (29 ^o C)

Notes:

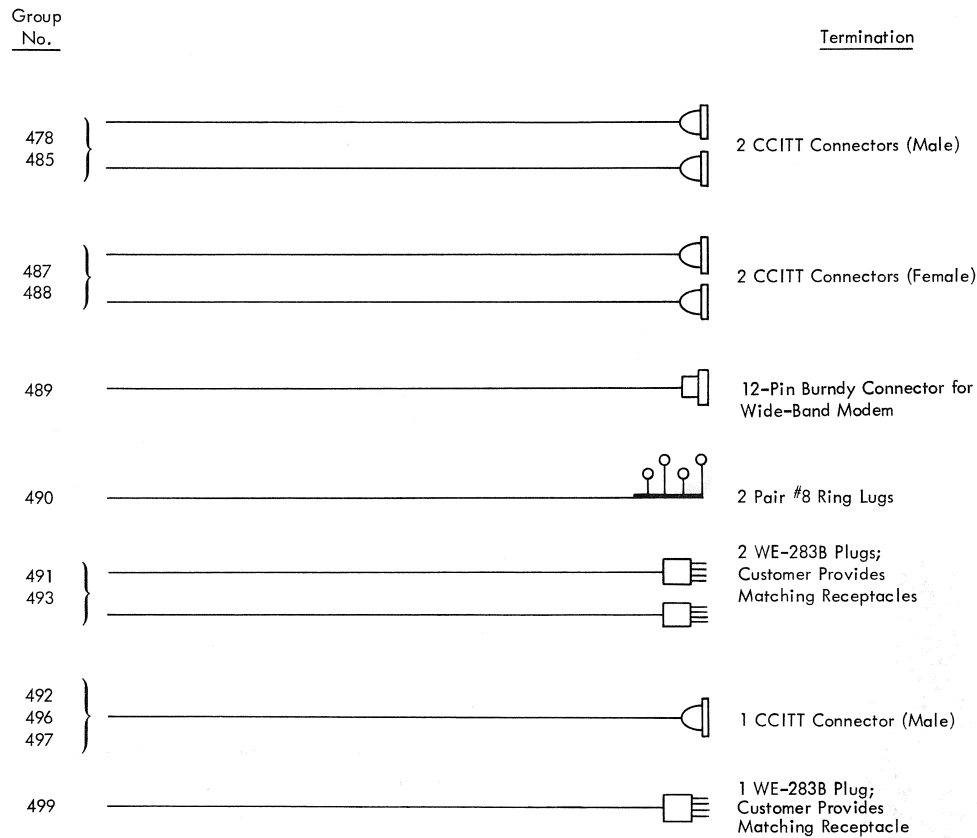
* Height from base of machine to countertop is 42" (107 cm).



**3704 COMMUNICATIONS CONTROLLER
CABLING SCHEMATIC (WORLD TRADE)**



Cables from Non-IBM Devices



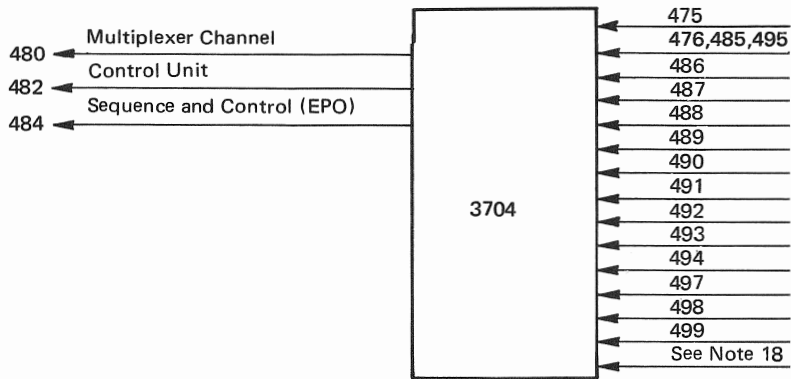
**3704 COMMUNICATIONS CONTROLLER
 CABLING SCHEMATIC (50 HZ)**

Group No.	No. of Cables	From	To	Max Length (ft)	Notes
474	1	Common-Carrier Terminal Strip	3704	45	3,7
475	2	Two Modems	3704	45	3,16
477	2	Two Modems	3704	45	3,14,17
478	2	Two Modems	3704	45	3,14,17
480	2	3704	Multiplexer Channel	—	1
482	2	3704	Control Unit	—	1
484	1	3704	Channel	150	2
485	2	Two Modems	3704	45	3,15,17
487	2	Two Directly Attached Terminals	3704	195	3,4
488	2	Two Directly Attached Terminals	3704	95	3,5
489	2	Wide-Band Modem	3704	45	3,6
490	1	Common-Carrier Terminal Strip	3704	45	3,7
491	1	Common-Carrier Telephone Jack	3704	45	3,8
492	1	One Low-Speed Duplex Modem	3704	45	3,9
493	1	Common-Carrier Telephone Jack	3704	45	3,10
496	1	Modem	3704	45	3,11
497	1	Modem	3704	20	3,12
499	1	Common-Carrier Telephone Jack	3704	45	3,13

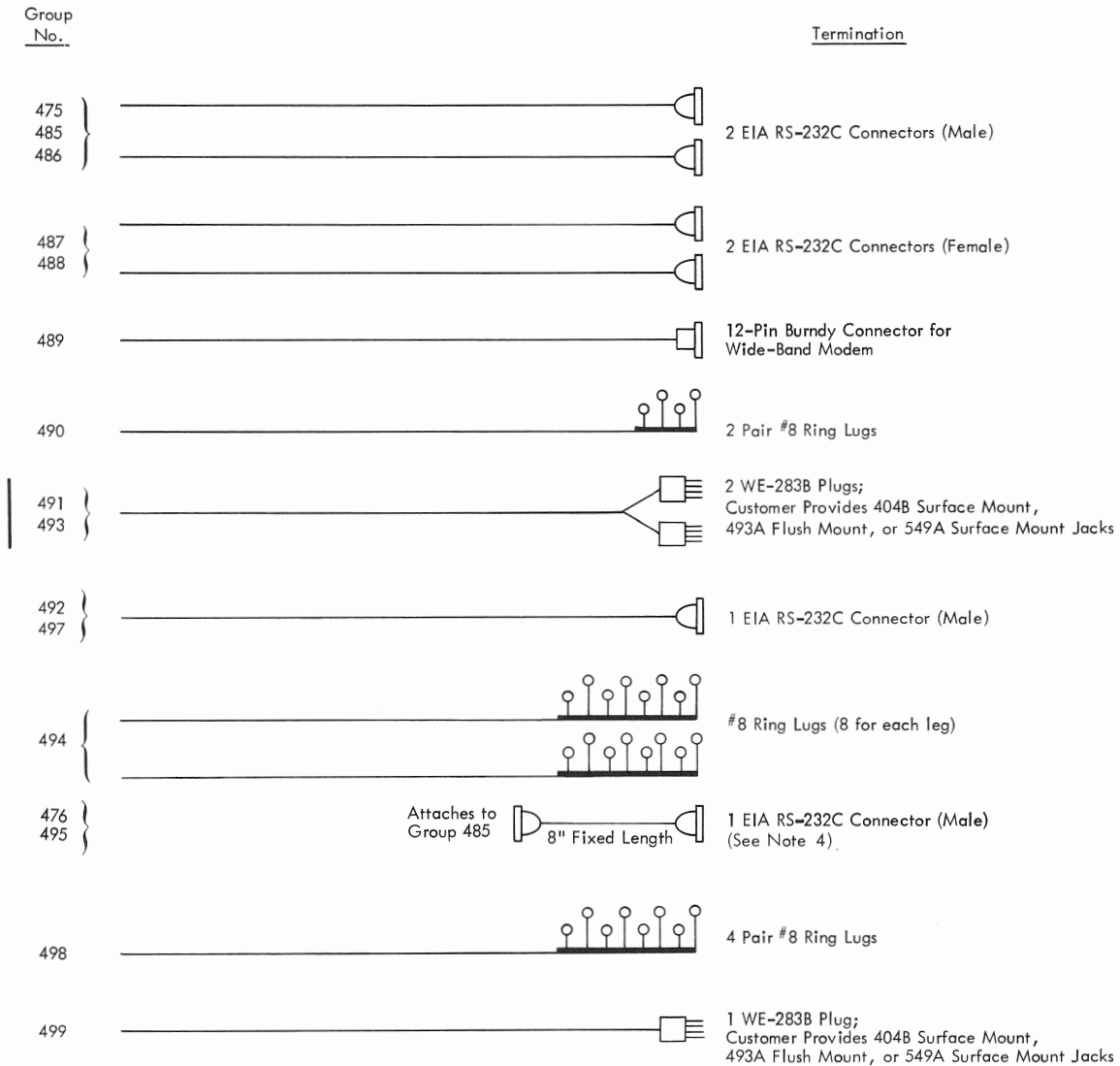
Notes:

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. See "Cables for IBM and Non-IBM Devices" for cable specifications.
4. One required for each SF #4713.
5. One required for each SF #4716.
6. One required for each SF #4717.
7. One required for each SF #4721, *except* in Germany. In Germany, use group 474. (Provides a shielded cable assembly.)
8. One required for each SF #4731, #4732, #4741, #4742, or #4743.
9. One required for each SF #4712.
10. One required when two SF #4751s or #4752s are attached.
11. One required for each SF #2944.
12. One required for each SF #4718.
13. One required for each SF #4751, #4752, #4754, #4755, #4781, #4784, or #4785. Use cable group 493 when two SF #4751s or #4752s are attached.
14. One required for each SF #4711 or #4714 in Germany.
 - 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.)
15. One required for each SF #4711 or #4714, *except* in Germany. For use in Germany, see Note 14.
16. One required for each SF #4711, *except* in Germany. For use in Germany, see Note 14.
17. For SF #4714, at transmission rates above 4,800 bps, cable length is limited to 25 feet maximum.

**3704 COMMUNICATIONS CONTROLLER
 CABLING SCHEMATIC (60 HZ)**



Cables for IBM and Non-IBM Devices



**3704 COMMUNICATIONS CONTROLLER
 CABLING SCHEMATIC (60 HZ)**

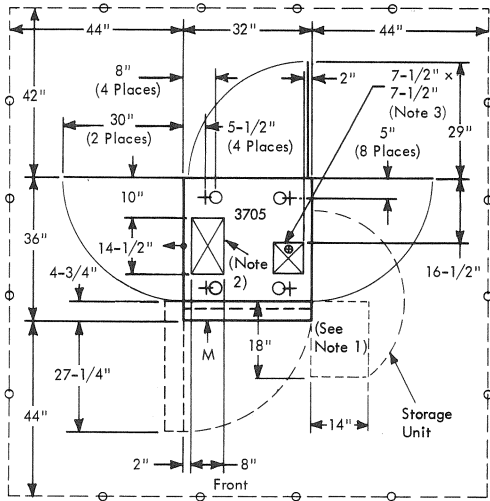
Group No.	No. of Cables	From	To	Max Length (ft)	Notes
475	2	Two Modems	3704	45	3,17
476	1	Modem	Modem End of Group 485	8"	3,4
480	2	3704	Multiplexer Channel	—	1
482	2	3704	Control Unit	—	1
484	1	3704	Channel	150	2
485	2	Two Modems	3704	45	3,4,19
486	2	Two Autocall Units	3704	45	3,5
487	2	Two Directly Attached Terminals	3704	195	3,6
488	2	Two Directly Attached Terminals	3704	95	3,7
489	1	Wide-Band Modem	3704	45	3,8
490	1	Common-Carrier Terminal Strip	3704	45	3,9
491	1	Common-Carrier Telephone Jack (Type 404B)	3704	45	3,10
492	1	One Low-Speed Duplex Modem	3704	45	3,11
493	1	Common-Carrier Telephone Jack (Type 404B)	3704	45	3,12
494	2	Common-Carrier CBS Data Coupler	3704	45	3,13
495	1	Modem	Modem End of Group 485	8"	3,4
497	1	Modem	3704	20	3,14
498	1	Common-Carrier CBS Data Coupler	3704	45	3,15
499	1	Common-Carrier Telephone Jack (Type 404B)	3704	45	3,16

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. See "Cables for IBM and Non-IBM Devices" for cable specifications.
4. One required for each SF #4714. 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 utilize 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 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.
5. One required for each SF #4715.
6. One required for each SF #4713.
7. One required for each SF #4716.
8. One required for each SF #4717.
9. One required for each SF #4721.
10. One required for each SF #4731, #4732, #4741, #4742, or #4743.
11. One required for each SF #4712.
12. One required when two SF #4751s or #4752s are attached.
13. One required when two SF #4761s are attached. Use cable group 498 when one SF #4761 is attached.
14. One required for each SF #4718.
15. One required for each SF #4709, #4771, #4782, or #4786, or when only one SF #4761 is attached. Use cable group 494 when two SF #4761s are attached.
16. One required for each SF #4754, #4755, #4781, #4784, or #4785, or when only one SF #4751 or #4752 is attached. Use cable group 493 when two SF #4751s or #4752s are attached.
17. One required for each SF #4711.
18. 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").
19. For SF #4714, at transmission rates above 7,200 bps, the cable length is limited to 25 feet maximum.

3705 COMMUNICATIONS CONTROLLER

PLAN VIEW

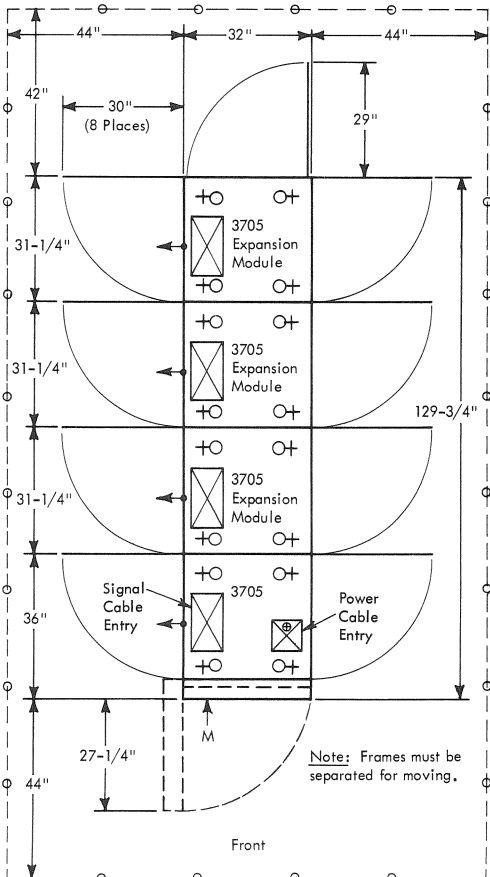


Notes:

1. For full 180° swing, remove adjacent machine cover.
2. Signal cable entry.
3. Power cable entry.

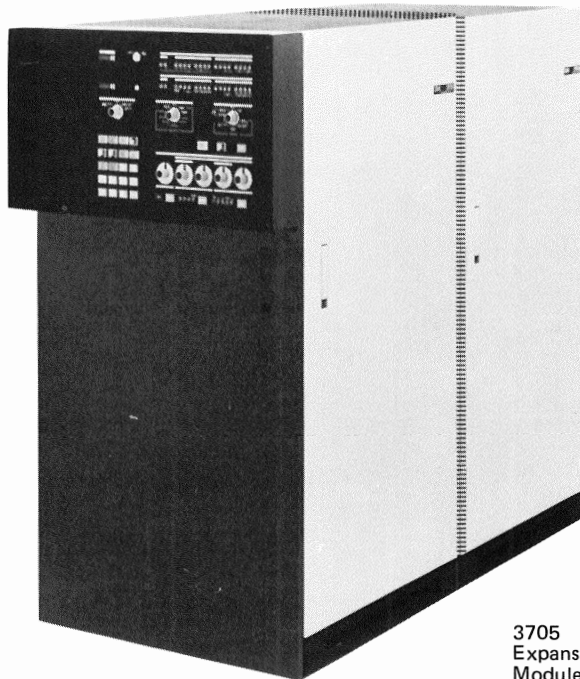
3705 MAXIMUM CONFIGURATION

PLAN VIEW



3705 COMMUNICATIONS CONTROLLER

Machine	Weight lb (kg)	Heat Output		kVA	
		BTU/hr	(kcal/hr)	50 Hz	60 Hz
		50 Hz	60 Hz	50 Hz	60 Hz
3705 (Model A or E)	1,010 (460)	7,170 (1.850)	6,400 (1.650)	2.8	2.5
3705 With One Expansion Module (Model B or F)	1,920 (880)	14,340 (3.650)	12,800 (3.250)	5.6	5.0
3705 With Two Expansion Modules (Model C or G)*	2,830 (1.300)	21,510 (5.450)	19,200 (4.850)	8.4	7.5
3705 With Three Expansion Modules (Model D or H)*	3,740 (1.700)	28,680 (7.250)	25,600 (6.500)	11.2	10.0



3705
3705
Expansion
Module

SPECIFICATIONS

Dimensions: **

	F	S	H
Inches	32	36	60
(cm)	(81)	(91)	(152)

Service Clearances:

	F	R	Rt	L
Inches	44	42	44	44
(cm)	(112)	(107)	(112)	(112)

Weight: 1,010 lb (460 kg)

Heat Output:	50 Hz	60 Hz
BTU/hr	7,170	6,400
(kcal/hr)	(1.850)	(1.650)

Airflow:		
cfm	880	880
(m ³ /min)	(25)	(25)

Power Requirements:

kVA	2.8	2.5
Phases	3	3
Plug	R&S, FS3760***	
Connector	R&S, FS3934***	
Receptacle	R&S, FS3754***	
Power Cord Style	D2***	

Environment Operating:

Temperature 60^o-90^oF (16^o-32^oC)
 Rel Humidity 8% - 80%
 Max Wet Bulb 78^oF (26^oC)

Environment Nonoperating:

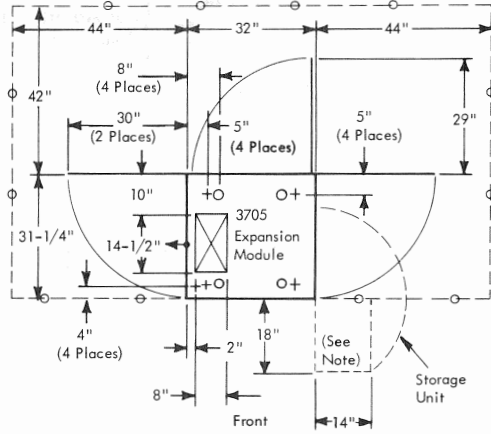
Temperature 50^o-110^oF (10^o-43^oC)
 Rel Humidity 8% - 80%
 Max Wet Bulb 85^oF (29^oC)

Notes:

- * Consult Installation Planning representative for increased branch circuit requirements.
- ** Shipping dimensions are 32" x 36" x 60" (81 cm x 91 cm x 152 cm). Removal of covers reduces width to 29-1/2" (75 cm). Front panel can be removed to make unit 29-1/2" x 30" x 60" (75 cm x 76 cm x 152 cm).
- *** For 3705 Models A, B, E, or F. For Models C, D, G, or H, plug is R&S, SC7328; connector is R&S SC7428; receptacle is R&S, SC7324; and power cord style is E2.

3705 EXPANSION MODULE

PLAN VIEW



Note: For full 180° swing, remove adjacent machine cover.

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	32	31-1/4	60
(cm)	(81)	(79)	(152)

Service Clearances:

	F	R	Rt	L
Inches	0*	42	44	44
(cm)	(0*)	(107)	(112)	(112)

Weight: 910 lb (420 kg)

Heat Output:	50 Hz	60 Hz
BTU/hr	7,170	6,400
(kcal/hr)	(1.850)	(1.650)

Airflow:

cfm	880	880
(m ³ /min)	(25)	(25)

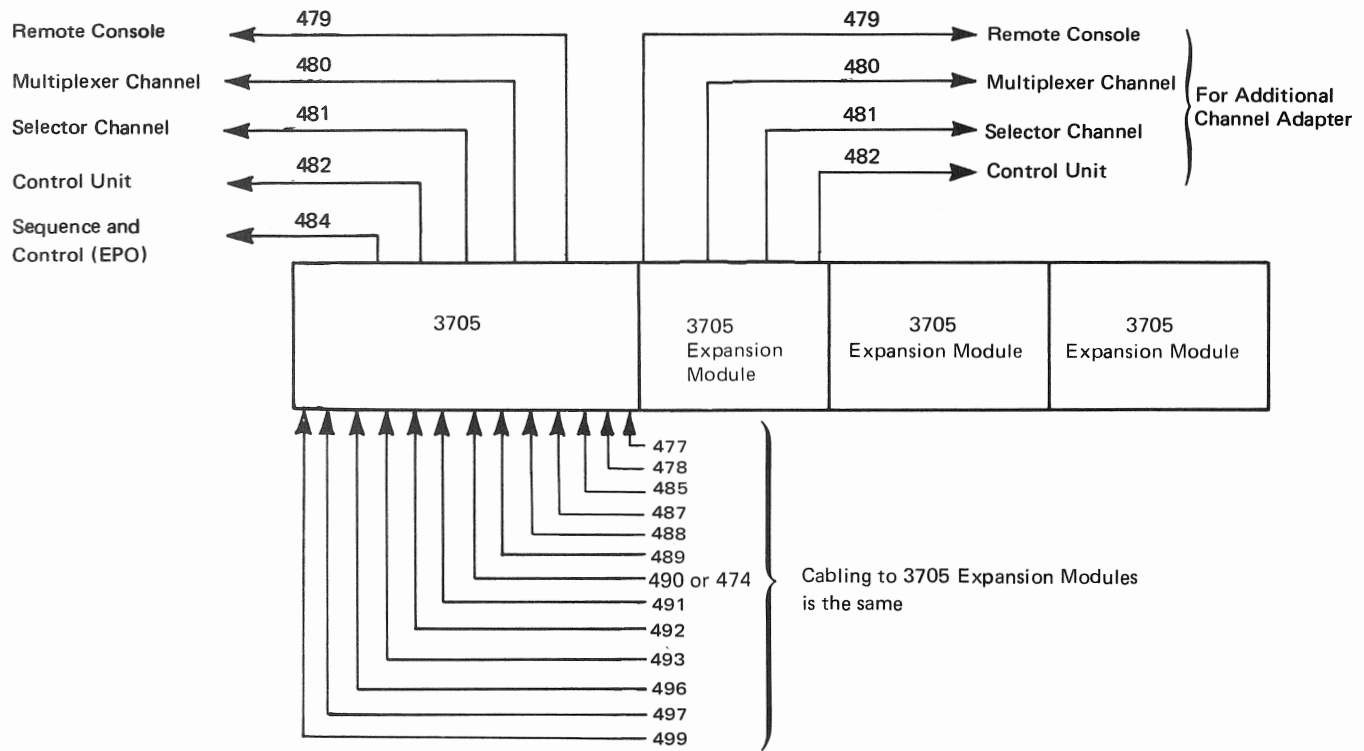
Power Requirements:**

kVA	2.8	2.5
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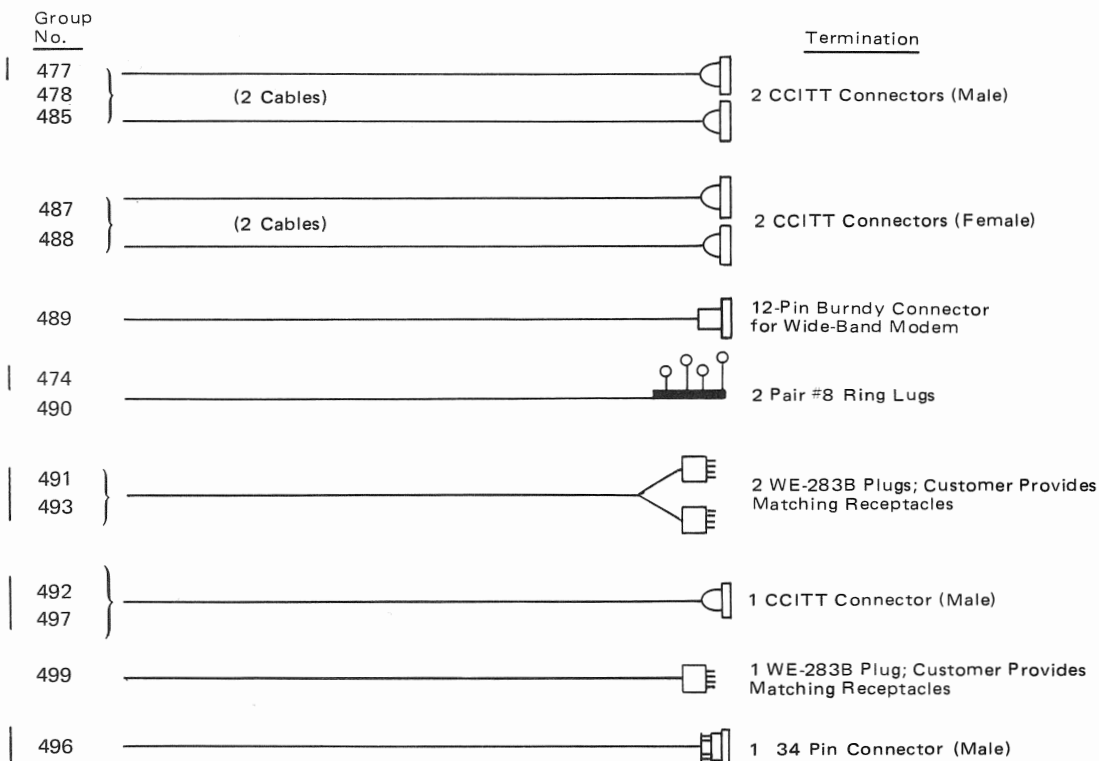
Notes:

- * The 3705 Expansion Module is installed abutted to the rear of the 3705 or another 3705 Expansion Module.
- ** Powered from 3705.

3705 COMMUNICATIONS CONTROLLER AND 3705 EXPANSION MODULE CABLING SCHEMATIC (WORLD TRADE)



Cables from Terminals and Non-IBM Devices



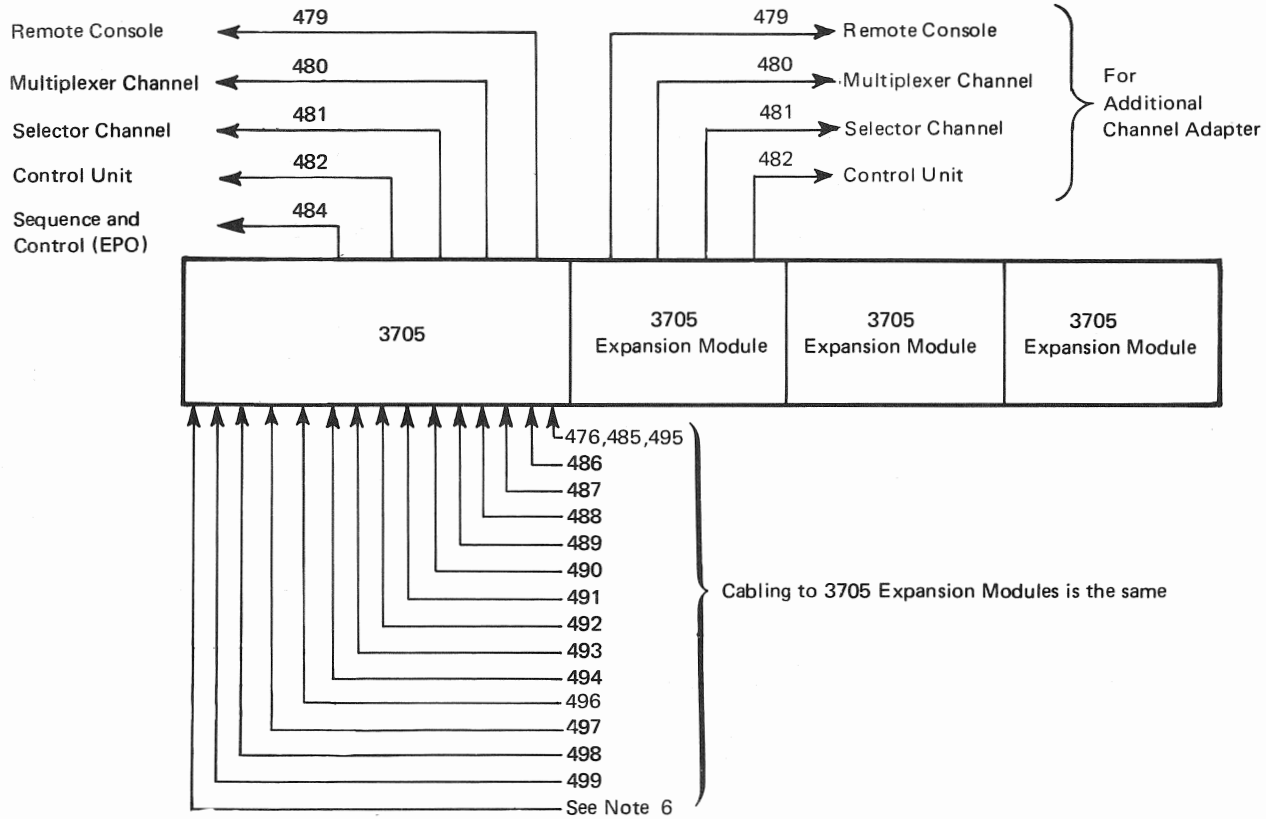
**3705 COMMUNICATIONS CONTROLLER AND
 3705 EXPANSION MODULE CABLING SCHEMATIC (WORLD TRADE)**

Feature Code	Line Set Type	Group No.	Notes	No. of Cables	From	To	Max Length	
							(Feet)	(Metres)
1543	—	479	4	1	3705, 3705 Expansion Module	Remote Console	150	46.7
—	—	480	1	2	3705, 3705 Expansion Module	Multiplexer Channel	—	—
—	—	481	1	2	3705, 3705 Expansion Module	Selector Channel	—	—
—	—	482	1	2	3705, 3705 Expansion Module	Control Unit	—	—
—	—	484		1	3705	Channel (Seq and Ctrl—EPO)	150	46.7
2944	1K	496		1	One Modem	3705, 3705 Expansion Module	45	13.7
4711	1A	477 or	2	2	Two IBM Modems	3705, 3705 Expansion Module	45	13.7
		478 or	2	2	Two Non-IBM Modems	3705, 3705 Expansion Module	45	13.7
		485	2	2	Two Modems	3705, 3705 Expansion Module	45	13.7
4712	1B	492		1	One Low-Speed Duplex Modem	3705, 3705 Expansion Module	45	13.7
4713	1C	487		2	Two Directly Attached Terminals	3705, 3705 Expansion Module	195	59.4
4714	1D	477 or	2	2	Two IBM Modems	3705, 3705 Expansion Module	45	13.7
		478 or	2,3	2	Two Non-IBM Modems	3705, 3705 Expansion Module	45	13.7
		485	2,3	2	Two Modems	3705, 3705 Expansion Module	45	13.7
4716	1F	488		2	Two Directly Attached Terminals	3705, 3705 Expansion Module	95	29
4717	1G	489		1	Wide-Band Modem	3705, 3705 Expansion Module	45	13.7
4718	1H	497		1	One Medium Speed Duplex Modem	3705, 3705 Expansion Module	20	6.1
4721	2A	490 or	7	1	Common-Carrier Terminal Strip	3705, 3705 Expansion Module	45	13.7
		474	7	1	Common-Carrier Terminal Strip	3705, 3705 Expansion Module	45	13.7
4731	3A	491		1	Common-Carrier Telephone Jack	3705, 3705 Expansion Module	45	13.7
4732	3B	491		1	Common-Carrier Telephone Jack	3705, 3705 Expansion Module	45	13.7
4741	4A	491		1	Common-Carrier Telephone Jack	3705, 3705 Expansion Module	45	13.7
4742	4B	491		1	Common-Carrier Telephone Jack	3705, 3705 Expansion Module	45	13.7
4743	4C	491		1	Common-Carrier Telephone Jack	3705, 3705 Expansion Module	45	13.7
4751	5A	499		1	Common-Carrier Telephone Jack	3705	45	13.7
4752	5B	499		1	Common-Carrier Telephone Jack	3705	45	13.7
4754	11A	499		1	Common-Carrier Telephone Jack	3705	45	13.7
4755	11B	499		1	Common-Carrier Telephone Jack	3705	45	13.7
4781	8A	493		1	Common-Carrier Telephone Jack	3705, 3705 Expansion Module	45	13.7
4784	10A	499		1	Common-Carrier Telephone Jack	3705, 3705 Expansion Module	45	13.7
4785	12A	493		1	Common-Carrier Telephone Jack	3705, 3705 Expansion Module	45	13.7

Notes:

1. Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) is available to attach up to eight control units.
2. 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 cable group 477 when using IBM modems (provides a shielded cable) or one cable group 478 when using PTT mandatory modems (cable pins 14 and 18 are not used).
3. The maximum cable length is 7.5 metre (25 feet) at rates above 4800 bps.
4. One cable group 479 is required for each SF # 1543 (Type III Channel Adapter) if that adapter's interface enable/disable switch is placed on the remote unit (3058 or 3068).
5. In World Trade countries except Germany, SF # 4721 requires one cable group 490. In Germany, SF # 4721 requires one cable group 474. (Provides shielded cable.)

**3705 COMMUNICATIONS CONTROLLER AND
 3705 EXPANSION MODULE CABLING SCHEMATIC (U.S.)**



Cables from Terminals and Non-IBM Devices

Group No.	Termination
485 } 486 }	(2 Cables) 2 EIA RS-232C Connectors (Male)
487 } 488 }	(2 Cables) 2 EIA RS-232C Connectors (Female)
489	12-Pin Burndy Connector for Wide-Band Modem
490	2 Pair #8 Ring Lugs
491 } 493 }	2 WE-283B Plugs; Customer Provides 404B Surface Mount, 493A Flush Mount, or 549A Surface Mount Jacks
496	1 34 Pin Connector (Male)
492 } 497 }	1 EIA RS-232C Connector (Male)
494 } (2 Cables)	#8 Ring Lugs (8 for each leg)
476 } 495 }	1 EIA RS-232C Connector (Male) (See Note 2) 8" Fixed Length
498	#8 Ring Lugs (8 for each leg)
499	1 WE-283B Plug; Customer Provides 404B Surface Mount, 493A Flush Mount, or 549A Surface Mount Jack

**3705 COMMUNICATIONS CONTROLLER AND
3705 EXPANSION MODULE CABLING SCHEMATIC (60 HZ)**

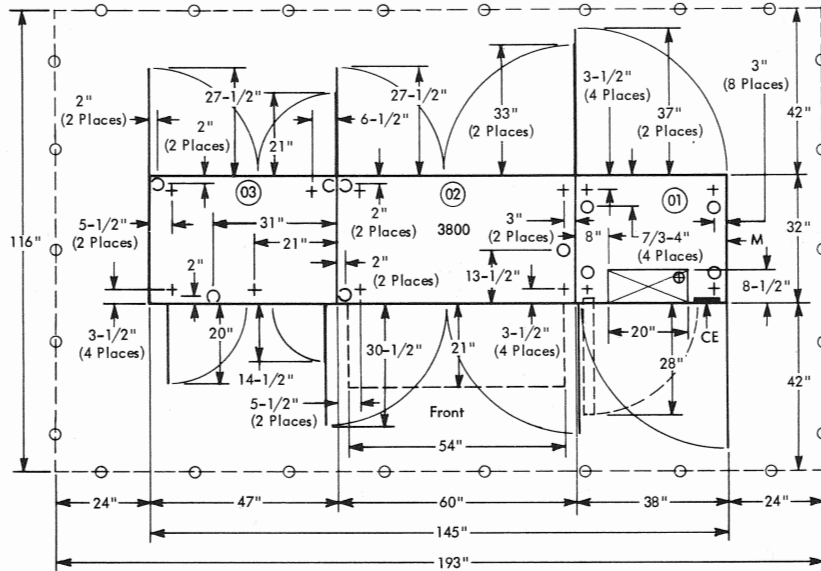
Feature Code	Group No.	No. of Cables	From	To	Max Length (ft)	Notes
1543	479	1	3705, 3705 Expansion Module	Remote Console	150	4
-	480	2	3705, 3705 Expansion Module	Multiplexer Channel	-	1
-	481	2	3705, 3705 Expansion Module	Selector Channel	-	1
-	482	2	3705, 3705 Expansion Module	Control Unit	-	1
-	484	1	3705	Channel (Seq and Ctrl-EPO)	150	
4707	498	1	Common-Carrier CBS Data Coupler	3705, 3705 Expansion Module	45	7
4711	485	2	Two Modems	3705, 3705 Expansion Module	45	7
4712	492	1	One Low-Speed Duplex Modem	3705, 3705 Expansion Module	45	7
4713	487	2	Two Directly Attached Terminals	3705, 3705 Expansion Module	195	7
4714	485	2	Two Modems	3705, 3705 Expansion Module	45	2,5,7
4715	486	2	Two Autocall Units	3705, 3705 Expansion Module	45	7
4716	488	2	Two Directly Attached Terminals	3705, 3705 Expansion Module	95	7
4717	489	1	Wide-Band Modem	3705, 3705 Expansion Module	45	7
4718	497	1	One-Medium Speed Duplex Modem	3705, 3705 Expansion Module	20	7
4719	None	0				3
4720	496	1	One Modem	3705, 3705 Expansion Module	45	7
4721	490	1	Common-Carrier Terminal Strip	3705, 3705 Expansion Module	45	7
4731	491	1	Common-Carrier Telephone Jack	3705, 3705 Expansion Module	45	7
4732	491	1	Common-Carrier Telephone Jack	3705, 3705 Expansion Module	45	7
4741	491	1	Common-Carrier Telephone Jack	3705, 3705 Expansion Module	45	7
4742	491	1	Common-Carrier Telephone Jack	3705, 3705 Expansion Module	45	7
4743	491	1	Common-Carrier Telephone Jack	3705, 3705 Expansion Module	45	7
4751	499	1	Common-Carrier Telephone Jack	3705	45	6,7
4752	499	1	Common-Carrier Telephone Jack	3705	45	6,7
4754	499	1	Common-Carrier Telephone Jack	3705	45	6,7
4755	499	1	Common-Carrier Telephone Jack	3705	45	6,7
4761	498	1	Common-Carrier CBS Data Coupler	3705, 3705 Expansion Module	45	7
4781	493	1	Common-Carrier Telephone Jack	3705, 3705 Expansion Module	45	7
4782	494	2	Common-Carrier CBS Data Coupler	3705, 3705 Expansion Module	45	7
4784	499	1	Common-Carrier Telephone Jack	3705, 3705 Expansion Module	45	7
4785	493	1	Common-Carrier Telephone Jack	3705, 3705 Expansion Module	45	7
4786	494	2	Common-Carrier CBS Data Coupler	3705, 3705 Expansion Module	45	7
4791	498	1	Common-Carrier CBS Data Coupler	3705, 3705 Expansion Module	45	7

Notes:

- Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) is available to attach up to eight control units.
- SF #4714 requires cable group 485 and may require either group 476 or 495 as specified below:
 - One or two of group 476 is required for switched network modems that utilize either "Ring-Indicate" or "Coupler-Cut-Through" on pin 23. (Pins 18 and 23 are not used.)
 - 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 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.
- 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 (2-1/2").
- One cable group 479 is required for each SF #1543 (Type III Channel Adapter) if that adapter's interface enable/disable switch is placed on the remote unit (3058 or 3068).
- The maximum cable length is 25 feet when the rate exceeds 7,200 bps.
- SF #4751, #4752, #4754, and #4755 do not apply to the 3705 Expansion Module.
- See "Cables for IBM and Non-IBM Devices" for cable specifications.

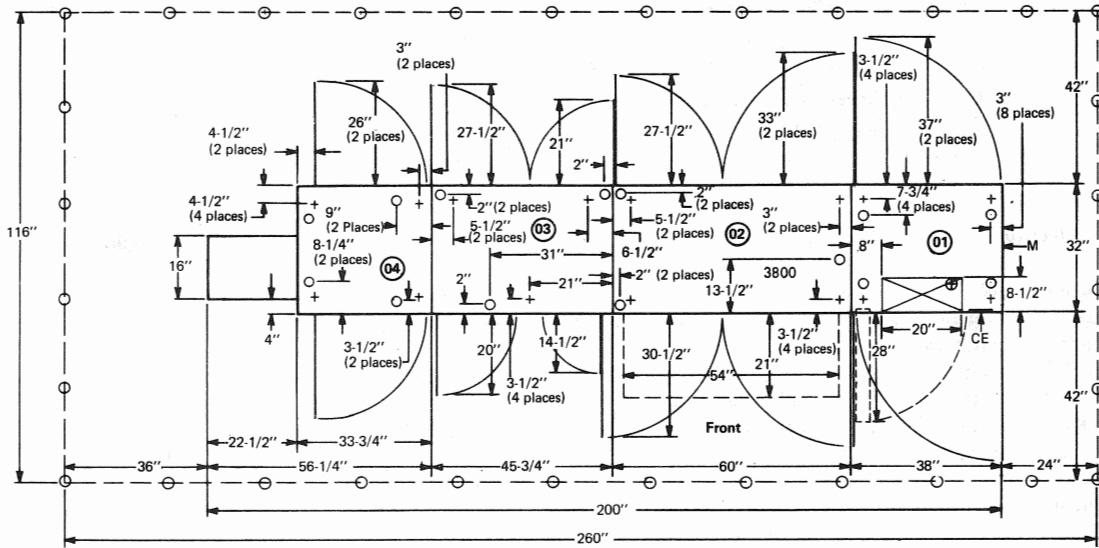
3800 PRINTING SUBSYSTEM WITH BURSTER-TRIMMER-STACKER

PLAN VIEW (WITHOUT BURSTER-TRIMMER-STACKER)



Note: Unit has no kickstrips. Nonraised floor cables may exit at any point from frame 01.

PLAN VIEW (WITH BURSTER-TRIMMER-STACKER)



Note: Unit has no kickstrips. Nonraised floor cables may exit at any point from frame 01.

3800 PRINTING SUBSYSTEM WITH BURSTER-TRIMMER-STACKER

Details (By Frame)

Frame	Dimensions F x S x H inches (cm)			Weight lb (kg)	Airflow cfm (m ³ /min)	Heat Output BTU/hr (kcal/hr)	kVA
01	38 (97)	32 (81)	60 (152)	700 (320)	225 (7)	**	***
02	60 (152)	32 (81)	60 (152)	1,650 (750)	800 (23)	**	***
03	47 (119)	32 (81)	60 (152)	650 (300)	250 (8)	**	***
04	33-3/4 (86)	32 (81)	60 (152)	550 (250)	-	700 (180)	0.25†††

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	*	32	60
(cm)	(*)	(81)	(152)

Service Clearances:

	F	R	Rt	L
Inches	42	42	24	††
(cm)	(107)	(107)	(61)	(††)

Power and Heat Dissipation Requirements:**

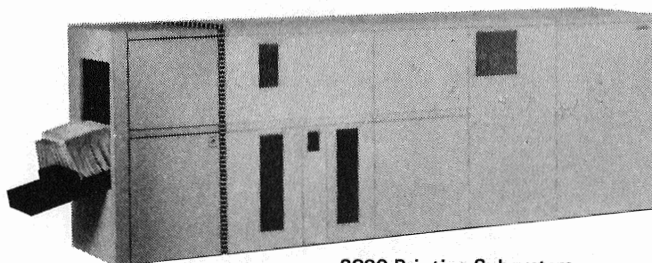
	kVA	BTU/hr (kcal/hr)
Idle Status***	3.5	11,000 (2,800)
Power Off† (Branch Circuit Power On)	0.2	650 (170)
Min Size and Weight Paper	7.0	21,000 (5,300)
Max Size and Weight Paper	10.0	31,500 (8,000)
Phases	3	
Plug	R&S, SC7328	
Connector	R&S, SC7428	
Receptacle	R&S, SC7324	
Power Cord Style	E7	

Environment Operating:

Temperature	60° to 85°F (16° to 29°C)
Rel Humidity	20%-80%
Max Wet Bulb	73°F (23°C)

Notes:

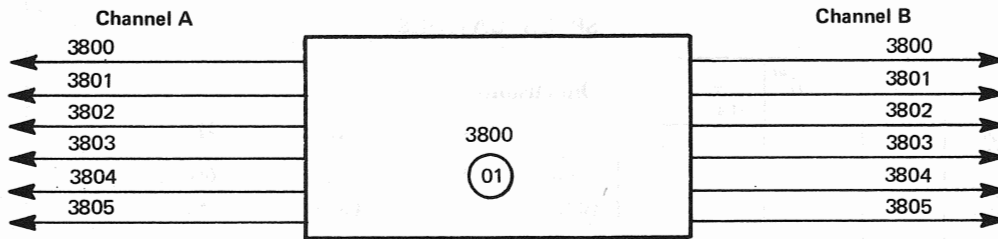
- *See Details (By Frame).
- **The heat output and power requirements vary with operating status, paper size, and paper weight. Values shown apply with or without burster-trimmer-stacker feature.
- ***The unit consumes 14.0 kVA for approximately one minute after initial power on and when changing from idle to run.
- †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) can be required before processing can start.
- ††See plan view.
- †††Powered from the 3800.



3800 Printing Subsystem

Burster-Trim-Stacker

3800 PRINTING SUBSYSTEM CABLING SCHEMATIC



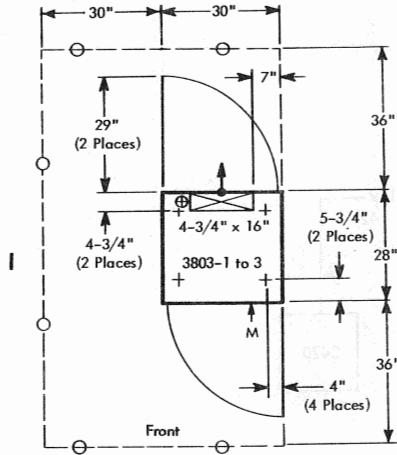
Group No.	No. of Cables	From	To	Max Length (ft)	Notes
3800	2	3800	Byte Multiplexer Channel	-	1, 4
3801	2	3800	Block Multiplexer or Selector Channel	-	1, 4
3802	2	3800	Control Unit	-	1, 4
3803	2	3800	Channel-to-Channel Adapter	-	1, 4
3804	1	3800	Channel	200	2, 4
3805	1	3800	3058/3068	200	3

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. Required for SF #6148.
4. 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.

I 3803 TAPE CONTROL MODELS 1 TO 3

PLAN VIEW



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

Notes:

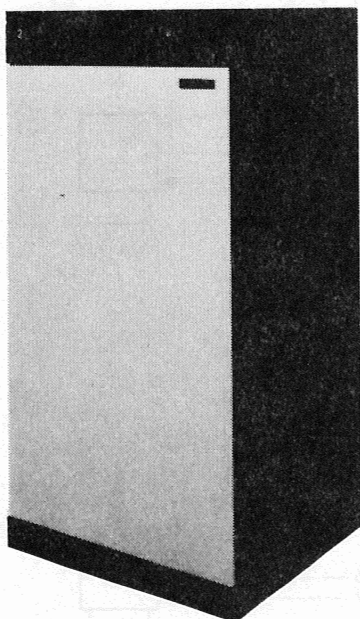
*The 30-inch (76-cm) side clearance is recommended on the left side when compatible with machine layout.

**A 50-Hz 3803 provides power for up to eight 3420s (any model).

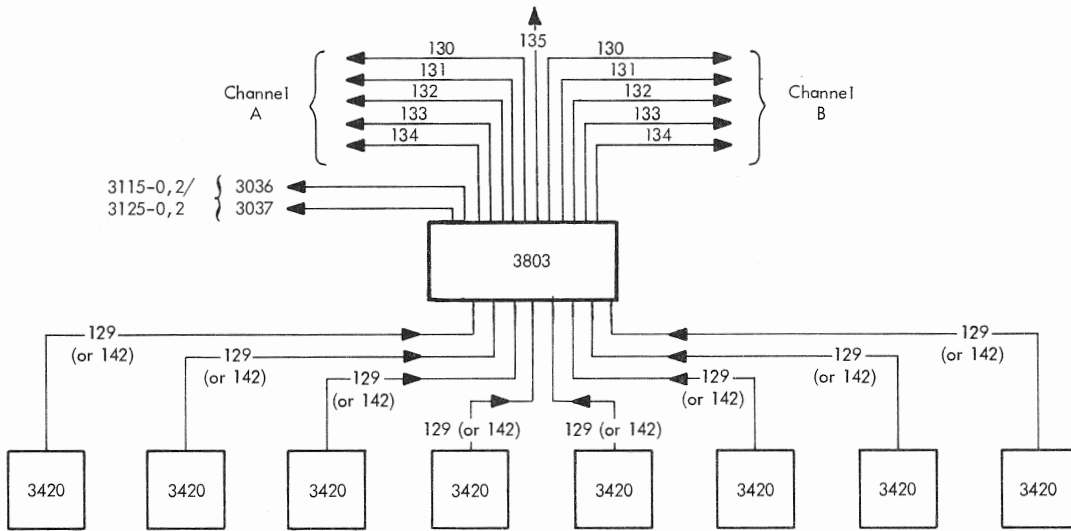
A 60-Hz 3803 provides power for up to eight 3420s Models 3 through 7.

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 46A per phase.

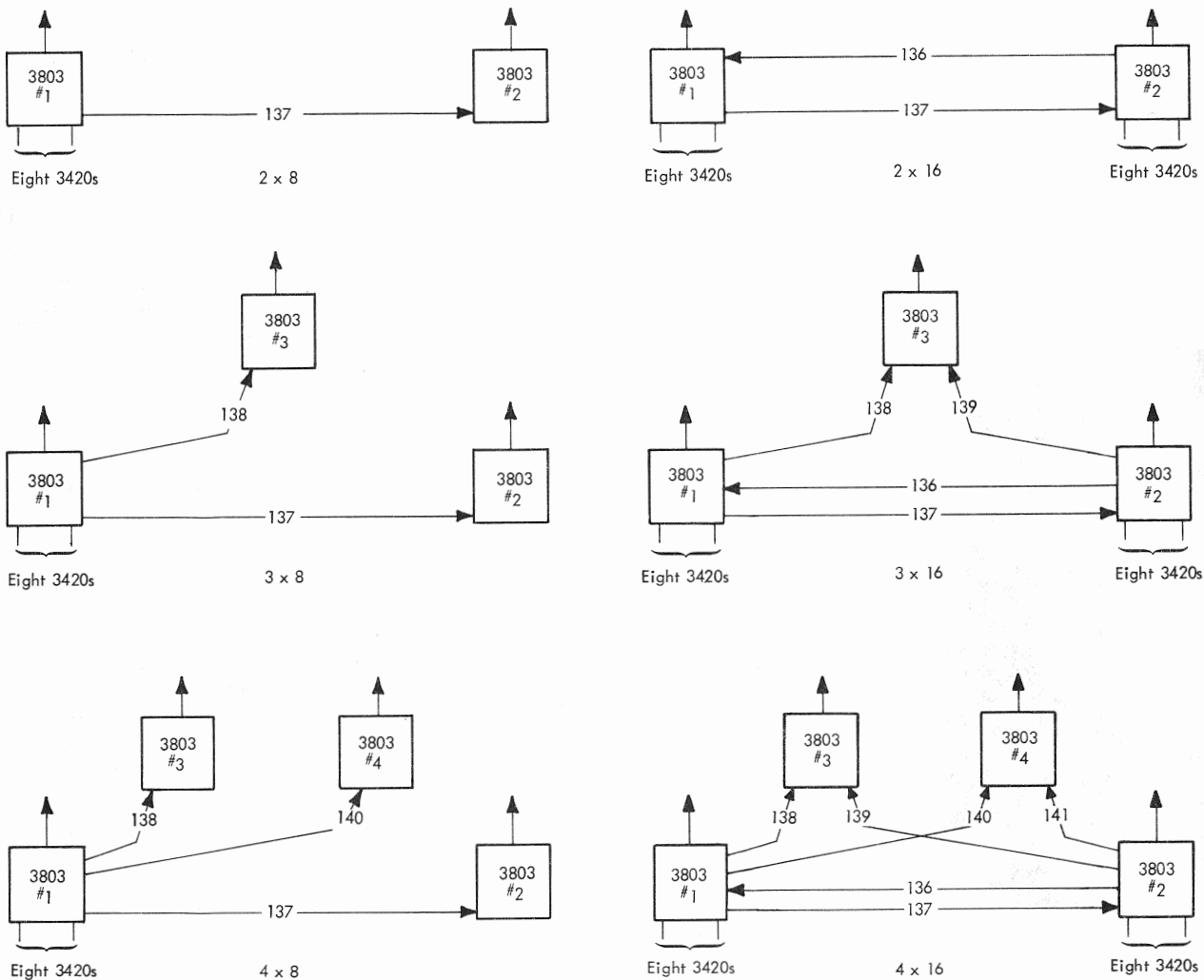
***With SF #9001 installed, the 3803-2 may power a maximum of eight 3420s (any model). Maximum continuous operating current will not exceed 56A per phase.



3803 AND 3420 CABLING SCHEMATIC

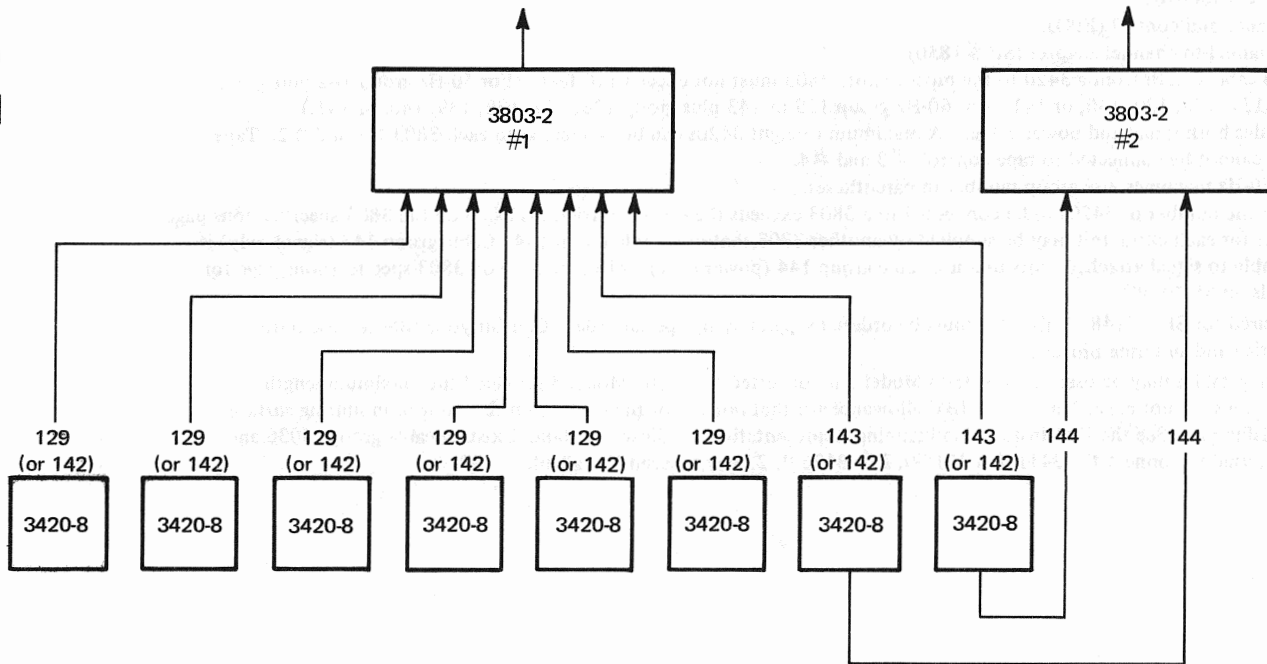


Tape Switching Feature



3803 AND 3420 CABLING SCHEMATIC

Typical example of divided power configuration (see note 7):



Group No.	No. of Cables	From	To	Max Length (ft)	Notes
129 (or 142)	2	3420	3803	120	4,5,6
130	2	3803-1, 2	Byte Multiplexer Channel	-	1,9
131	2	3803-1, 2	Selector or Block Multiplexer Channel	-	1,9
132	2	3803-1, 2	Control Unit	-	1,9
133	2	3803-1, 2	Channel-to-Channel Adapter	-	1,3,9
134	1	3803-1, 2	Channel	150	2,9
135	1	3803-1, 2	2065/2167/3058/3068	150	8
136	2	3803-1, 2 (#2)	3803-1, 2 (#1)	85	4
137	2	3803-1, 2 (#1)	3803-1, 2 (#2)	85	4
138	2	3803-1, 2 (#1)	3803-1, 2 (#3)	85	4
139	2	3803-1, 2 (#2)	3803-1, 2 (#3)	85	4
140	2	3803-1, 2 (#1)	3803-1, 2 (#4)	85	4
141	2	3803-1, 2 (#2)	3803-1, 2 (#4)	85	4
143	1	3420	3803 (Signal Only)	120	4,7
144	1	3420	3803 (Power Only)	120	7
3036	2	3803-3	3115-0, 2/3125-0, 2	28	9
3037	1	3803-3	3115-0, 2/3125-0, 2	35	2,9

Notes:

- Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units. 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 (ft) With 3420 Model 8 Attached	Max Length (ft) With 3420 Model 6 Attached
2860	72	200
2880	119	200
Block Multiplexer Channel	103	200
Selector Channel	72*, 119	200

*On System/370 Model 135.

For each control unit connected between the 3803 and the channel, the cable length shown must be reduced by 15 feet if 3420 Model 6 is attached, or 20 feet if 3420 Model 8 is attached.

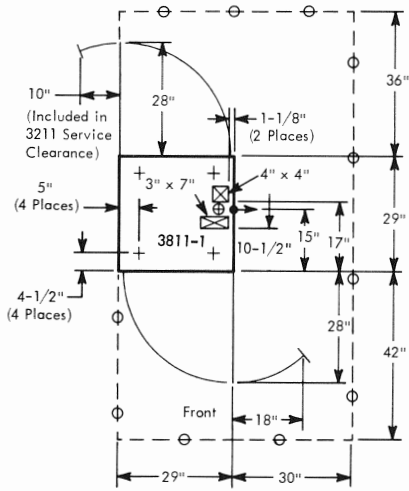
3803 AND 3420 CABLING SCHEMATIC

Notes: (Continued)

2. Sequence and control (EPO).
3. To channel-to-channel adapter (SF #1850).
4. Total cable length from a 3420 to the most remote 3803 must not exceed 120 feet. (For 50-Hz group 142 plus group 136, 137, 138, 139, 140, or 141. For 60-Hz group 129 or 143 plus group 136, 137, 138, 139, 140, or 141.)
5. Includes both signal and power cables. A maximum of eight 3420s can be connected to each 3803 #1 and #2. Tape units cannot be connected to tape controls #3 and #4.
6. For 50-Hz machines, use group number in parentheses.
7. When the number of 3420s to be connected to a 3803 exceeds the power restrictions listed on the 3803 specifications page, power for each extra unit may be supplied by another 3803 that uses cable group 144. Cable group 143 (signal only) is available to signal attached units that use cable group 144 (power only). Also, see note on 3803 specifications page for details on SF #9001.
8. Required for SF #6148. This cable must be ordered separately by special order. Consult your IBM representative for price and ordering procedure.
9. Existing cables may be used when a 3803 Model 1 is converted to a 3803 Model 3 provided the maximum length limitations are not exceeded and the IBM allowance for that portion of the cable from the floor or mounting surface is satisfactory. See the IBM Installation Planning Representative for allowance data. Existing cable groups 3036 and 3037, used to connect the 3411 to a 3115-0, 2 or 3125-0, 2, may be used if available.

3811 PRINTER CONTROL UNIT MODEL 1

PLAN VIEW



Note: For cabling information, see Section 4, "Units With Integral or Abutted Controls."

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:

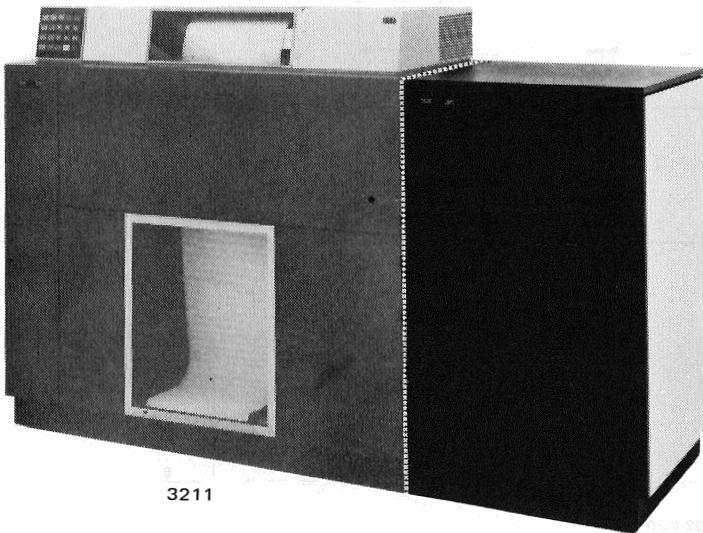
cfm	180	180
(m ³ /min)	(6)	(6)

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	

Notes:

* The 3811 abuts and attaches to the right side of a 3211.

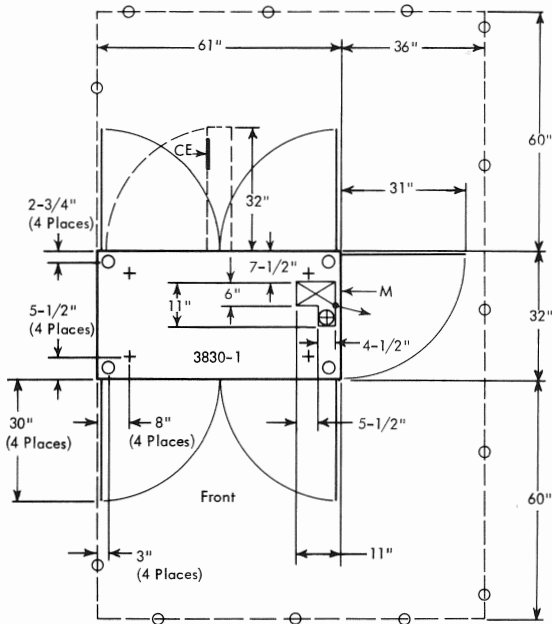


3211

3811

3830 STORAGE CONTROL MODEL 1

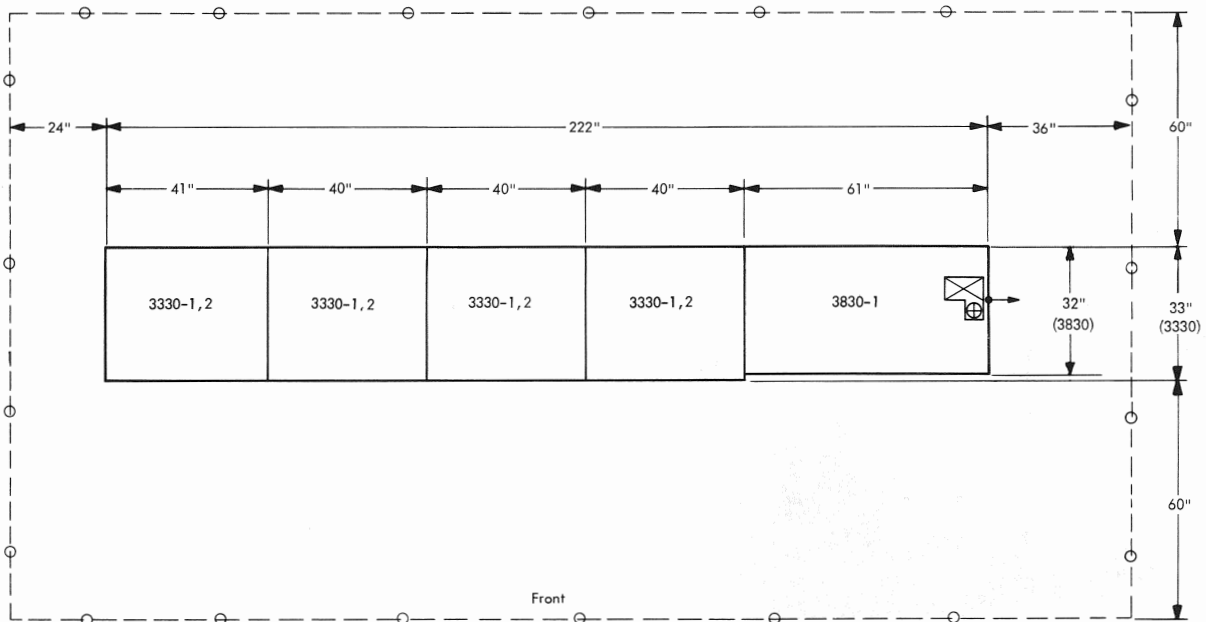
PLAN VIEW



Note: For cabling information, see Section 4, "Units With Integral or Abutted Controls."

3830-1 AND 3330-1 OR 3330-2 DISK STORAGE FACILITY (MAXIMUM CONFIGURATION)

PLAN VIEW



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)

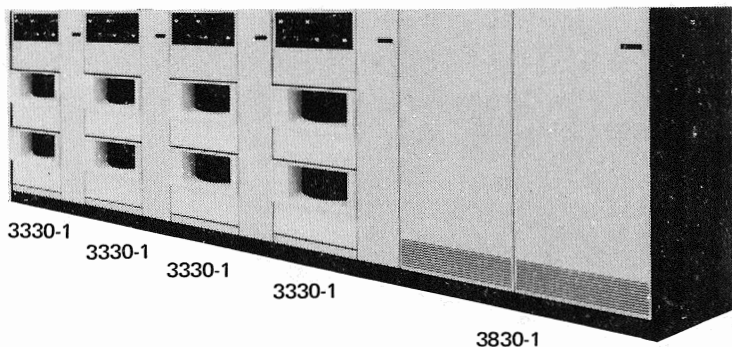
Airflow: 1,160 cfm (33 m³/min)

Power Requirements:

- kVA 3.2
- Phases 3
- Plug R&S, SC7328
- Connector R&S, SC7428
- Receptacle R&S, SC7324
- Power Cord Style E7

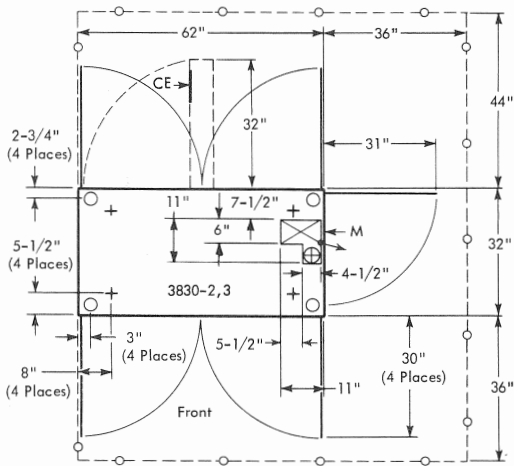
Notes:

* 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



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)

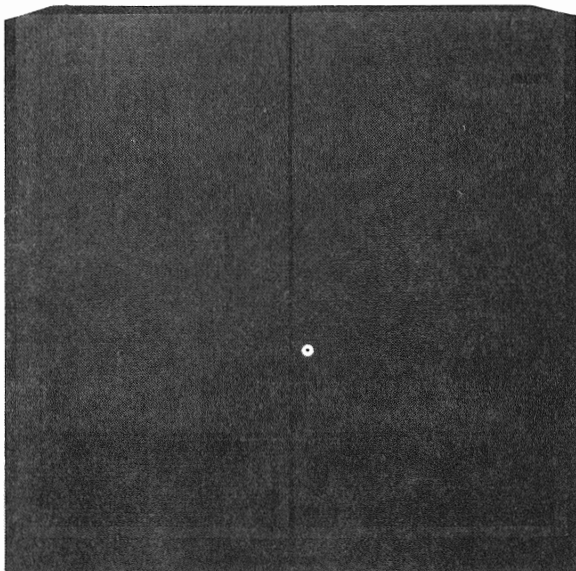
Weight: 1,600 lb (730 kg)

Heat Output: 10,500 BTU/hr (2.650 kcal/hr)

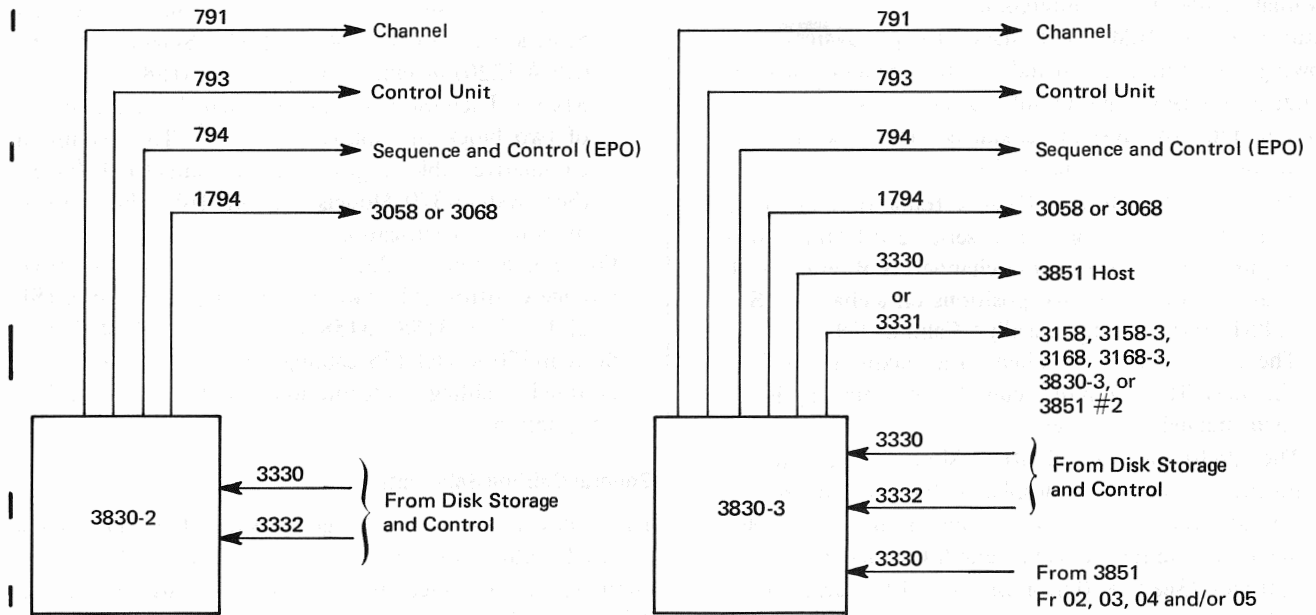
Airflow: 1,160 cfm (33 m³/min)

Power Requirements:

kVA	3.3
Phases	3
Plug	R&S, FS3730
Connector	R&S, FS3914
Receptacle	R&S, FS3744
Power Cord Style	B2



3830 STORAGE CONTROL MODELS 2 AND 3 CABLING SCHEMATIC



Group No.	No. of Cables	From	To	Max Length (ft)	Notes
791	2	3830-2, 3	Channel	-	1,2
793	2	3830-2, 3	Control Unit	-	1,2
794	1	3830-2, 3	Channel	150	2,3
1794	1	3830-2, 3	3058 or 3068	150	4
3330	2	3830-3	3851 Host Fr 01, Cable Entry No. 1	-	5
3331	2	3830-3	3158, 3158-3 Fr 02, 3168, 3168-3 Fr 02, 3830-3, or 3851 #2 Fr 01	-	5

Notes:

1. Maximum cumulative cable length available to attach up to eight control units to a channel is 200 feet. The most remote 3830 must be within 150 feet.
2. Special features may be ordered to attach 3830 to more than one channel. The 3830-2 may be attached to up to four channels. The 3830-3 may be attached to up to three channels. Maximum cable length limit applies to each channel.
3. Sequence and control (EPO).
4. Required for SF #6148 and #6149.
5. Maximum cumulative cable length of 300 feet available to attach up to 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 3333 and/or 3330 containing control information for the Mass Storage System must be within 150 feet. See "General Cabling Schematics" under "3850 Mass Storage System" for additional information.

3850 MASS STORAGE SYSTEM

Individual cable paths interconnect various units and functions of the IBM 3850 Mass Storage System. The following information includes the general cabling schematics and cable length limitations of the system.

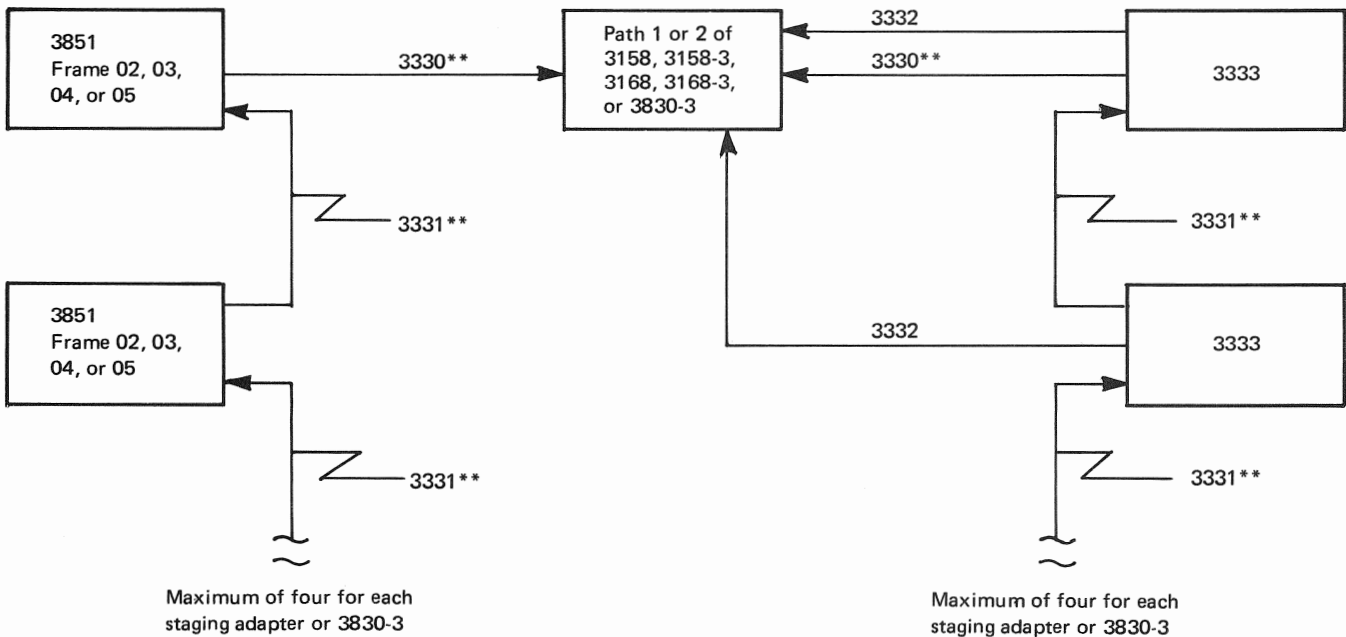
1. Connection to system channels. (See Section 4, "General Cabling Information.")
 - a. The 3851 Mass Storage Facility frame 01 contains a control unit function. An A-series 3851 (frame 01) requires one position on a channel. A B-series 3851 (frame 01) requires two positions on a channel. (See "3851 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 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 cumulative cable length for each channel is 150 feet. (See "3830 Storage Control Models 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 is 150 feet. (See System/370 Models 158 and 168 cabling information for specifications.)
2. For connection of 3333 to a 3830-3 or Integrated Storage Controls (SF #4650) with Staging Adapter (SF #7220) of a 3158, 3158-3, 3168, or 3168-3, see System/370 Model 158 cabling information, Model 168 channel cabling information, and 3830 cabling information.

General Cabling Schematics

The following schematic diagrams show the cable paths required within the mass storage system. Cable group numbers are included because of their use in several different applications.

- A. Data Recording Controller* to 3830 Model 3, or Staging Adapter (SF #7220) of a 3158, 3158-3, 3168, or 3168-3

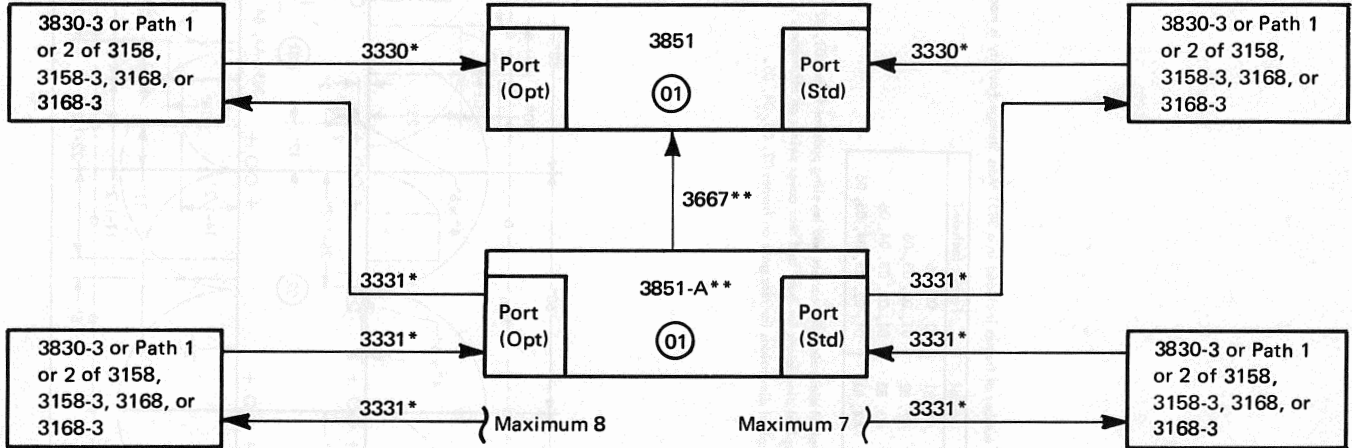


* Each frame (02, 03, 04, and 05) contains one Data Recording Controller. The number of frames included in the 3851 Mass Storage Facility varies depending on the model. Each Data Recording Controller (DRC) can be attached to two staging adapters and/or 3830-3. A maximum of four DRCs can be attached to each staging adapter or 3830-3. 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 to two staging adapters and/or 3830-3. Maximum cumulative cable length (group 3330 and group 3331) available for each staging adapter or 3830-3 is 200 feet.

General Cabling Schematics (Continued)

B. 3830-3 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



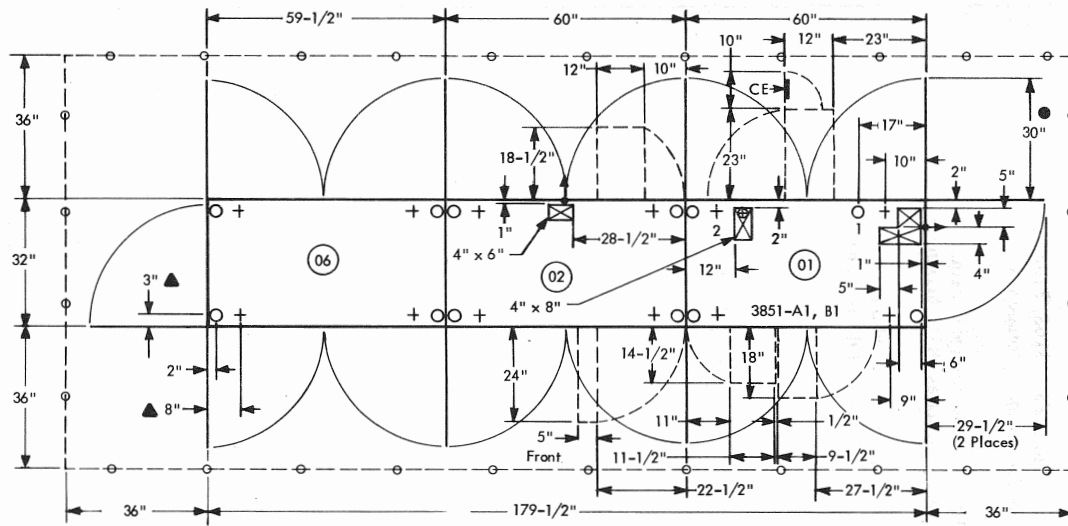
* Maximum cumulative cable length for each path is 300 feet. The most remote 3158, 3158-3, 3168, 3168-3, or 3830-3 controlling the 3333s and/or 3330s, which contain control information for the mass storage system, must be within 150 feet (from primary and secondary 3851).

** This section of the diagram shows the connection of two A-series 3851s in the same mass storage system. Cable group 3667 connects the secondary (#2) A-series 3851 to the first (primary) A-series 3851. Maximum cable length is 300 feet.

If SF #4901 (for the optional port) is installed on the primary 3851, it should also be installed on the secondary 3851 (#2). 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.

3851 MASS STORAGE FACILITY

PLAN VIEW (MODELS A1 AND B1, MINIMUM CONFIGURATION)*

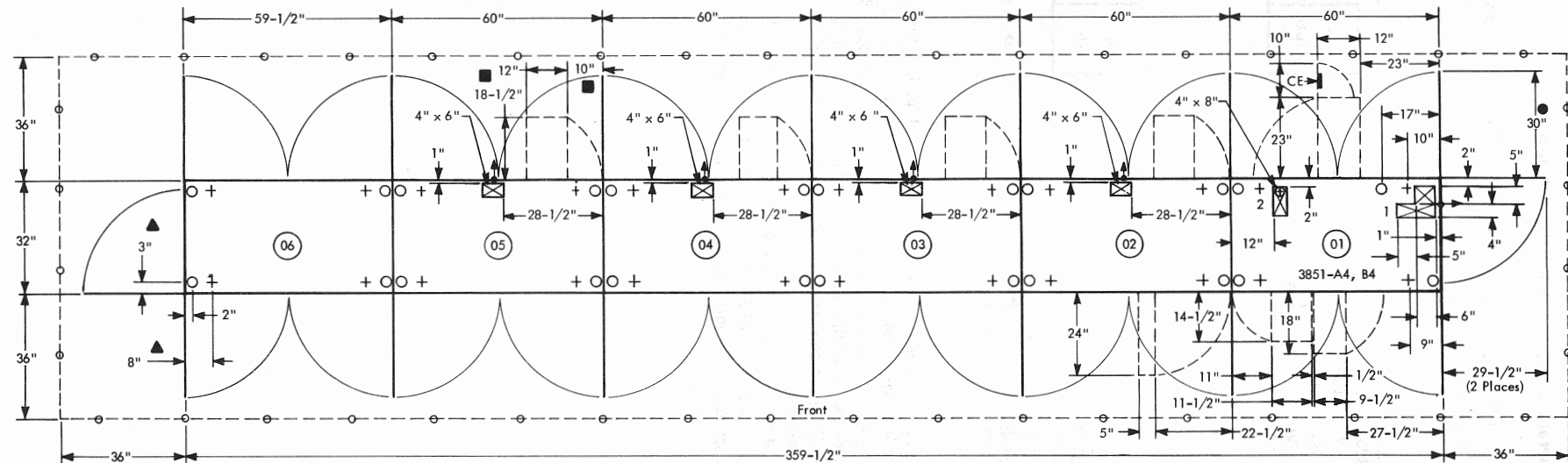


*The number of frames included in a 3851 Mass Storage Facility is model dependent.

Model	Frames Included
A1, B1	01, 02, 06
A2, B2	01, 02, 03, 06
A3, B3	01, 02, 03, 04, 06
A4, B4	01, 02, 03, 04, 05, 06

- ▲ 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 (MODELS A4 AND B4, MAXIMUM CONFIGURATION)*



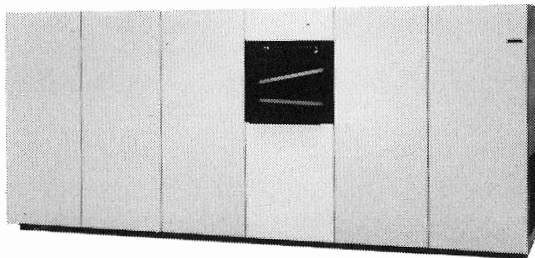
3851 MASS STORAGE FACILITY

Details (By Frame)

Frame	Model	Weight lb (kg)	Airflow cfm (m ³ /min)	Heat Output BTU/hr (kcal/hr)	kVA
01	A1-A4	1,720 (780)	630 (18)	11,500 (2,900)	*
	B1-B4	1,970 (900)	730 (21)	17,700 (4,500)	*
02	All	1,765** (810**)	500 (15)	7,500 (1,900)	*
03, 04, or 05	All	2,020** (920**)	500 (15)	7,500 (1,900)	*
06	All	765 (350)	-	-	*

Totals (By Model)

Model	Weight** lb (kg)	Airflow cfm (m ³ /min)	Heat Output BTU/hr (kcal/hr)	kVA
A1	4,250 (1,950)	1,130 (32)	19,000 (4,800)	6.2
A2	6,270 (2,850)	1,630 (47)	26,500 (6,700)	8.6
A3	8,290 (3,800)	2,130 (61)	34,000 (8,600)	11.0
A4	10,310 (4,700)	2,630 (75)	41,500 (10,500)	13.4
B1	4,500 (2,050)	1,230 (35)	25,200 (6,400)	8.2
B2	6,520 (3,000)	1,730 (49)	32,700 (8,250)	10.7
B3	8,540 (3,900)	2,230 (64)	40,200 (10,150)	13.2
B4	10,560 (4,800)	2,730 (78)	47,700 (12,050)	15.6



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	***	32	75-1/2
(cm)	(***)	(81)	(192)

Service Clearances:

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

Power Requirements:*

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

Environment Operating:

Temperature	60°-85°F (16°-29°C)
Rel Humidity	20%-80%

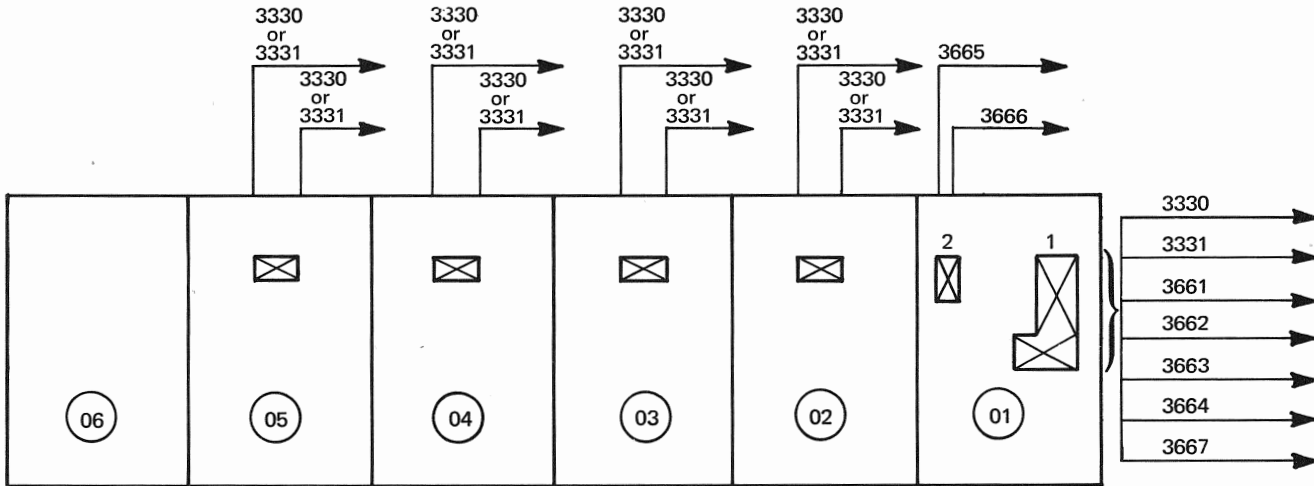
Environment Nonoperating:

Temperature	50°-90°F (10°-32°C)
Rel Humidity	8%-80%

Notes:

- * See Totals (By Model) for kVA.
- ** 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.
- *** See plan view.
- † Based on IBM's method of computation, the 3851 Model A3 and larger exceed 75 lb/ft² (370 kg/m²) 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

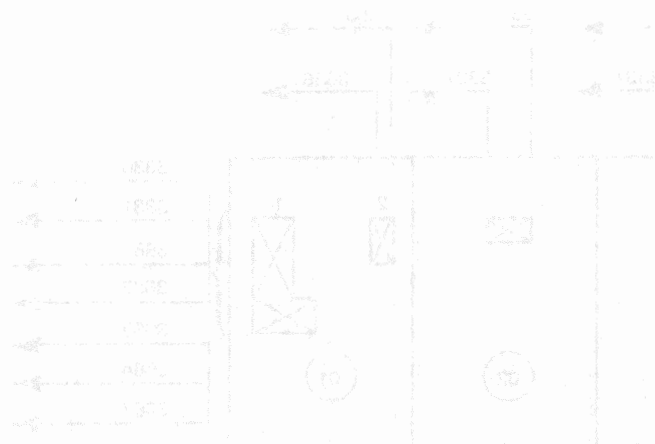


Group No.	No. of Cables	From	Cable Entry No.	To	Max Length (ft)	Notes
3330	2	3851 Fr 02, 03, 04, or 05		3158, 3158-3, 3168, 3168-3, 3830-3	-	1, 8
3330	2	3851 #2	1	3851 Host Fr 01, Cable Entry No. 1	-	2, 8
3331	2	3851 Fr 02, 03, 04, or 05		3851 Fr 02, 03, 04, or 05	-	1, 8
3331	2	3851 #2 Fr 01	1	3158, 3158-3, 3168, 3168-3, 3830-3	-	2, 8
3661	2	3851 Fr 01	1	Byte Multiplexer Channel	-	3, 5, 8
3662	2	3851 Fr 01	1	Block Multiplexer Channel	-	3, 5, 8
3663	2	3851 Fr 01	1	Control Unit	-	3, 5, 8
3664	2	3851 Fr 01	1	Channel-to-Channel Adapter	-	3, 5, 8
3665	1	3851 Fr 01	2	Channel	200	4, 5, 8
3666	1	3851 Fr 01	2	3058, 3068	200	6, 8
3667	1	3851 #2 Fr 01	1	3851 Host Fr 01, Cable Entry No. 1	300	7, 8

Notes:

1. Use group 3330 for first frame attached and 3331 for each additional frame. Each frame 02, 03, 04, or 05 may be attached to two cable paths. Maximum cumulative cable length is 200 feet for each path.
2. A maximum cumulative cable length of 300 feet is available to attach seven units to the standard port. An additional 300-foot cable length is available to attach eight units to the optional port.
3. Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units. An A-series 3851 (frame 01) requires one position on a channel. A B-series 3851 (frame 01) requires two positions on a channel.
4. Sequence and control (EPO).
5. Special features may be ordered for connecting 3851 to more than one channel. One set of cable groups is required for each channel. Maximum cable length applies to each channel.
6. Required for SF #6148, #6149, #6150, and #6151.
7. Required when two A-series 3851s are part of a 3850 Mass Storage System.
8. See "General Cabling Schematics" under "3850 Mass Storage System" for additional information.

3851 MASS STORAGE FACILITY



SPECIFICATIONS

Dimensions:

	F	S	H
Inches	***	32	75-1/2
(cm)	(***)	(81)	(192)

Service Clearances:

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

Power Requirements:*

Phases	3
Plug	R&S, 7328
Connector	R&S, 7428
Receptacle	R&S, 7324
Power Cord Style	E7

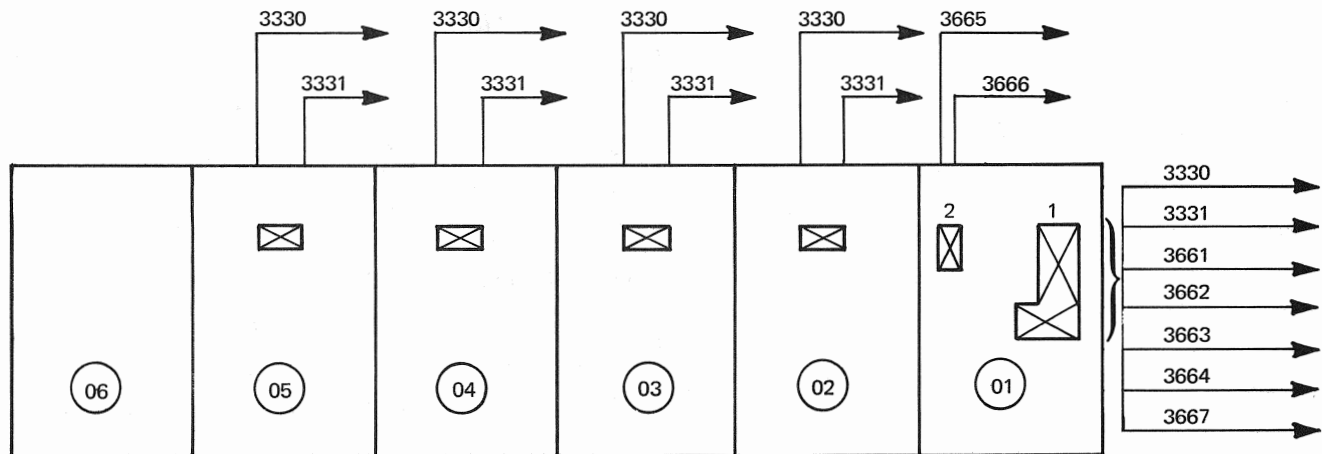
Notes:

- * See Totals (By Model) for kVA.
- ** Weight of frames 02, 03, 04, and 05 includes a maximum complement of cartridges. Weight of cartridges included is:

Frame	Weight lb (kg)
02	235 (110)
03, 04, and 05 (Each)	446 (210)

- *** See plan view.
- † Based on IBM's method of computation, the 3851 Model A3 and larger exceed 75 lb/ft² (370 kg/m²) distributed floor loading when specified service clearances are used. Front and/or rear service clearances should be increased appropriately when the building floor live-load rating (including partitioning allowance) is 75 lb/ft² (370 kg/m²).

3851 MASS STORAGE FACILITY CABLING SCHEMATIC



Group No.	No. of Cables	From	Cable Entry No.	To	Max Length (ft)	Notes
3330	2	3851 Fr 02, 03, 04, or 05		3158, 3168, 3830-3	-	1, 8
3330	2	3851 #2	1	3851 Host Fr 01, Cable Entry No. 1	-	2, 8
3331	2	3851 Fr 02, 03, 04, or 05		3851 Fr 02, 03, 04, or 05	-	1, 8
3331	2	3851 #2 Fr 01	1	3158, 3168, 3830-3	-	2, 8
3661	2	3851 Fr 01	1	Byte Multiplexer Channel	-	3, 5, 8
3662	2	3851 Fr 01	1	Block Multiplexer Channel	-	3, 5, 8
3663	2	3851 Fr 01	1	Control Unit	-	3, 5, 8
3664	2	3851 Fr 01	1	Channel-to-Channel Adapter	-	3, 5, 8
3665	1	3851 Fr 01	2	Channel	200	4, 5, 8
3666	1	3851 Fr 01	2	3058, 3068	200	6, 8
3667	1	3851 #2 Fr 01	1	3851 Host Fr 01, Cable Entry No. 1	300	7, 8

Notes:

1. Use group 3330 for first frame attached and 3331 for each additional frame. Each frame 02, 03, 04, or 05 may be attached to two cable paths. Maximum cumulative cable length is 200 feet for each path.
2. A maximum cumulative cable length of 300 feet is available to attach seven units to the standard port. An additional 300-foot cable length is available to attach eight units to the optional port.
3. Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units.
4. Sequence and control (EPO).
5. Special features may be ordered for connecting 3851 to more than one channel. One set of cable groups is required for each channel. Maximum cable length applies to each channel.
6. Required for SF #6148, #6149, #6150, and #6151.
7. Required when two A-series 3851s are part of a 3850 Mass Storage System.
8. See "General Cabling Schematics" under "3850 Mass Storage System" for additional information.

3851 Models A3 and B3 Mass Storage Facility

SPECIFICATIONS

Dimensions

	F	S	H
Inches	299	32	75-1/2
(cm)	(759)	(81)	(192)

Service Clearances

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

Weight:*

Model A3:	8,325 lb (3.778 kg)
Model B3:	8,585 lb (3.896 kg)

Heat Output:*

Model A3	62,000 BTU/hr (15.600 kcal/hr)
Model B3	72,400 BTU/hr (18.200 kcal/hr)

Air Flow:*

Model A3	2,130 cfm (61 m ³ /min)
Model B3	2,230 cfm (63 m ³ /min)

Power Requirements:

kVA	
Model A3	20
Model B3	23.3
Phases	3
Plug	R & S, JPS 1034H
Connector	R & S, JCS 1034H
Receptacle	R & S, JRSR 1034H
Power Cord Style	E7

Note:

* See details by frame table.

** Based on IBM's method of computation, the 3851 Model A3 and larger exceed 75 lb/ft² (370 kg/m²) distributed floor loading when specified service clearances are used. Front and/or rear service clearances should be increased appropriately when the building floor live-load rating (including partitioning allowance) is 75 lb/ft² (370 kg/m²).

3851 Models A4 and B4 Mass Storage Facility

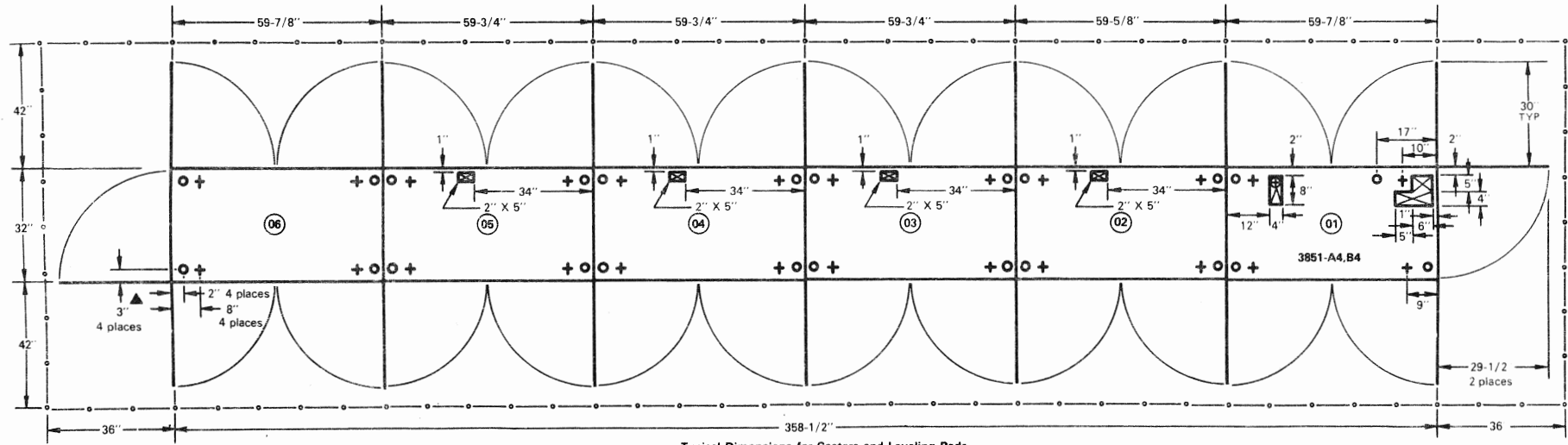
PLAN VIEW

Details (by Frame)

3851 Models A4 and B4			3851 Model A4			3851 Model B4		
Frame No.	Dimensions		Weight lb (kg)	Heat BTU/hr (kcal/hr)	Air Flow cfm (m ³ /min)	Weight lb (kg)	Heat BTU/hr (kcal/hr)	Air Flow cfm (m ³ /min)
	Front inches (cm)	Side inches (cm)						
01	59-7/8 (152)	32 (81)	1,720 (780)	20,000 (5,040)	630 (19)	1,980 (899)	30,400 (7,660)	730 (21)
02	59-5/8 (151)	32 (81)	1,765 (803)	14,000 (3,530)	500 (14)	1,765 (803)	14,000 (3,530)	500 (14)
03, 04, or 05	59-3/4 (152)	32 (81)	2,020 (916)	14,000 (3,530)	500 (14)	2,020 (916)	14,000 (3,530)	500 (14)
06	59-7/8 (152)	32 (81)	800 (363)	—	—	800 (363)	—	—

Notes:

Weights of frames 02, 03, 04 and 05 include a maximum complement of cartridges. Weight of cartridges included is: frame 02, 235 lb (107 kg); frames 03, 04, and 05, 446 lb (202 kg) each. Cartridges are shipped separately.



▲ Typical Dimensions for Casters and Leveling Pads, Frames 02, 03, 04, 05, and 06

3851 Models A4 and B4 Mass Storage Facility

SPECIFICATIONS

Dimensions*

	F	S	H
Inches	358-1/2	32	75-1/2
(cm)	(911)	(81)	(192)

Service Clearances

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

Weight:*

Model A4	10,345 lbs (4.693 kg)
Model B4	10,605 lbs (4.810 kg)

Heat Output:*

Model A4	76,000 BTU/hr (19.200 kcal/hr)
Model B4	86,400 BTU/hr (21.800 kcal/hr)

Air Flow:*

Model A4	2,630 cfm (75 m ³ /min)
Model B4	2,730 cfm (77 m ³ /min)

Power Requirements:

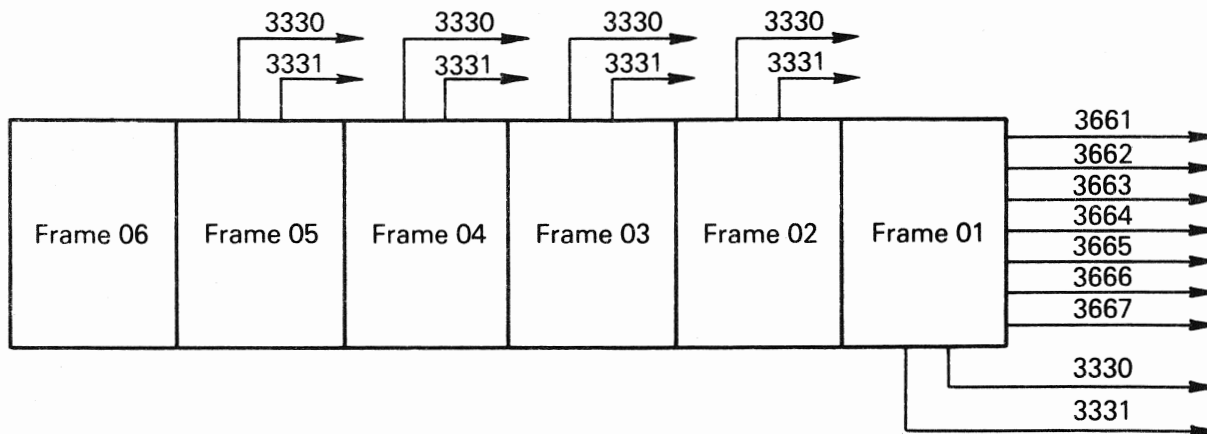
kVA	
Model A4	24
Model B4	27
Phases	3
Plug	R & S, JPS 1034H
Connector	R & S, JCS 1034H
Receptacle	R & S, JRSR 1034H
Power Cord Style	E7

Note:

* See details by frame table.

** Based on IBM's method of computation, the 3851 Model A3 and larger exceed 75 lb/ft² (370 kg/m²) distributed floor loading when specified service clearances are used. Front and/or rear service clearances should be increased appropriately when the building floor live-load rating (including partitioning allowance) is 75 lb/ft² (370 kg/m²).

3851 MASS STORAGE FACILITY CABLING SCHEMATIC



Group No.	No. of Cables	From	Cable Entry		Maximum Length (ft)	Notes
			No.	To		
3330	2	3851, frame 02, 03, 04, or 05		3158, 3168, 3830-3	-	1
3330	2	3851 #2	1	3851 Host, frame 01, Cable Entry No. 1	-	2
3331	2	3851, frame 02, 03, 04, or 05		3851, frame 02, 03, 04, or 05	-	1
3331	2	3851 #2, frame 01	1	3158, 3168, 3830-3	-	2
3661	2	3851, frame 01	1	Byte Multiplexer Channel	-	3, 5
3662	2	3851, frame 01	1	Block Multiplexer Channel	-	3, 5
3663	2	3851, frame 01	1	Control	-	3, 5
3664	2	3851, frame 01	1	Channel-Channel Adapter	-	3, 5
3665	1	3851, frame 01	2	Channel	200	4, 5
3666	1	3851, frame 01		3058, 3068	200	6
3667	1	3851 #2, frame 01	1	3851 Host, frame 02, Cable Entry No. 1	300	7

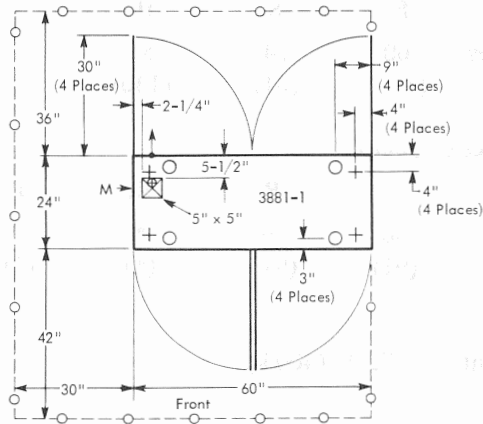
Notes:

See 3850 Mass Storage System General Cabling Schematics for additional information.

1. Use group 3330 for first frame attached and 3331 for each additional frame. Each frame 02, 03, 04, or 05 may be attached to two cable paths. Maximum cumulative cable length is 200 feet for each path.
2. A maximum cumulative length of 300 feet is available to connect seven units to the standard port. An additional 300-foot length is available to connect eight units to the optional port.
3. Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to connect up to eight control units.
4. Sequence and control.
5. Special features may be ordered for connecting to more than one channel. One set of cable groups is required for each channel. Maximum cable length applies to each channel.
6. Required for SF #6148 or #6149.
7. Required when two "A" series 3851s are part of a 3850 Mass Storage System.

3881 OPTICAL MARK READER MODEL 1

PLAN VIEW



Note: For cabling information, see Section 4, "Units 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)

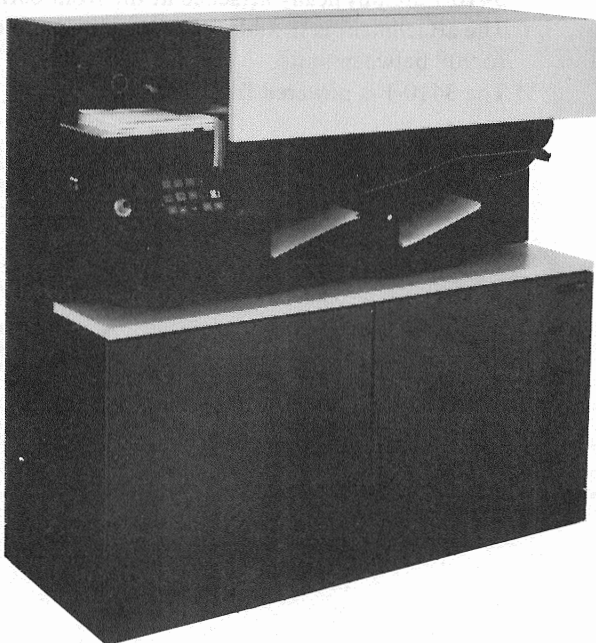
Weight: 875 lb (400 kg)

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

Airflow: 25 cfm (1 m³/min)

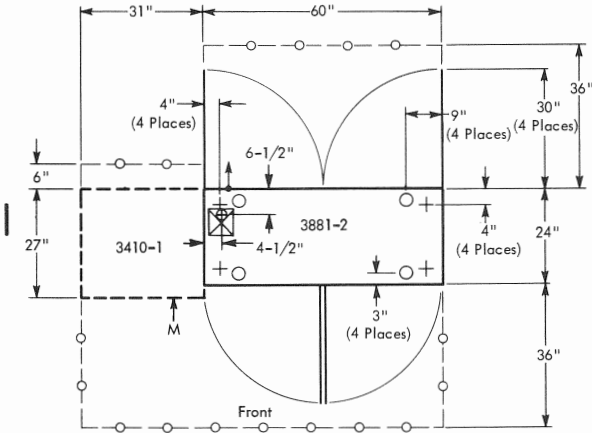
Power Requirements:

kVA	1.2
Phases	1
Plug	R&S, FS3750
Connector	R&S, FS3933
Receptacle	R&S, FS3753
Power Cord Style	A2



3881 OPTICAL MARK READER MODEL 2

PLAN VIEW



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 m³/min)

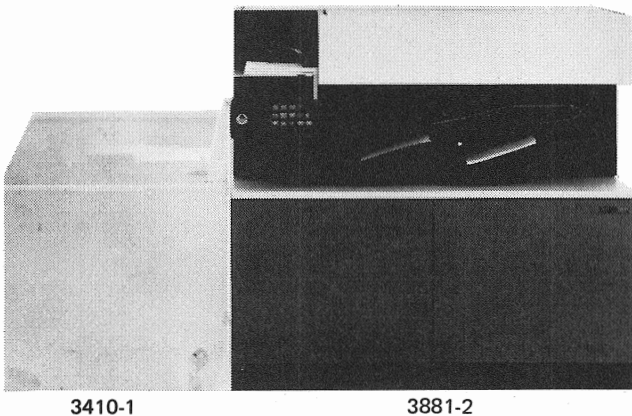
Power Requirements:**

kVA	1.2
Phases	1
Plug	R&S, FS3750
Connector	R&S, FS3933
Receptacle	R&S, FS3753
Power Cord Style	A2

Notes:

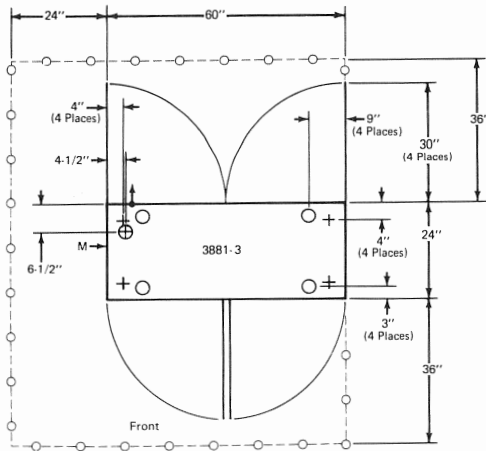
* Clearance should be provided on either side for access to rear of machine. The 3881-2 and the 3410-1 are physically attached at the front corner. The attachment is flexible, allowing a swing of up to 90° between units.

** The 3410-1 is powered from 3881-2.



3881 OPTICAL MARK READER MODEL 3

PLAN VIEW



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)

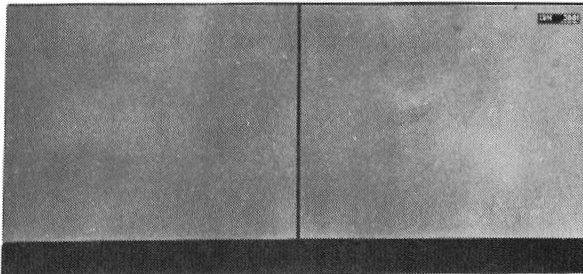
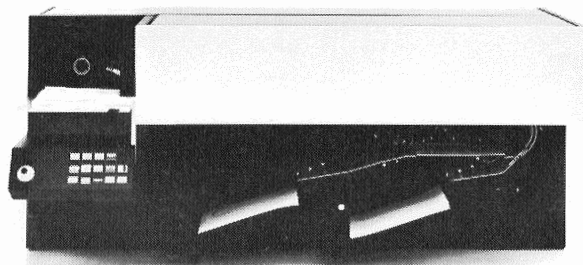
Weight: 925 lb (420 kg)

Heat Output: 3,800 BTU/hr (960 kcal/hr)

Airflow: 25 cfm (1 m³/min)

Power Requirements:

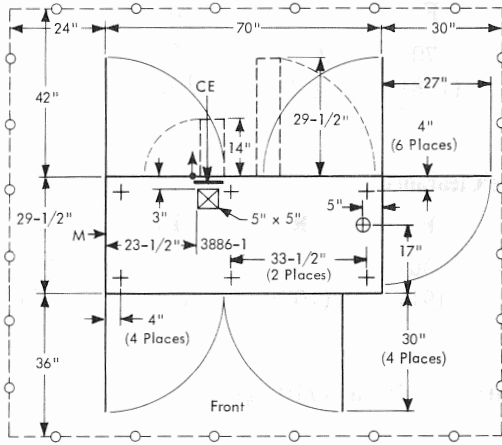
kVA	1.3
Phases	1
Plug	R&S, FS3750
Connector	R&S, FS3933
Receptacle	R&S, FS3753
Power Cord Style	A2



3881-3

3886 OPTICAL CHARACTER READER MODEL 1

PLAN VIEW



Note: For cabling information, see Section 4, "Units 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)

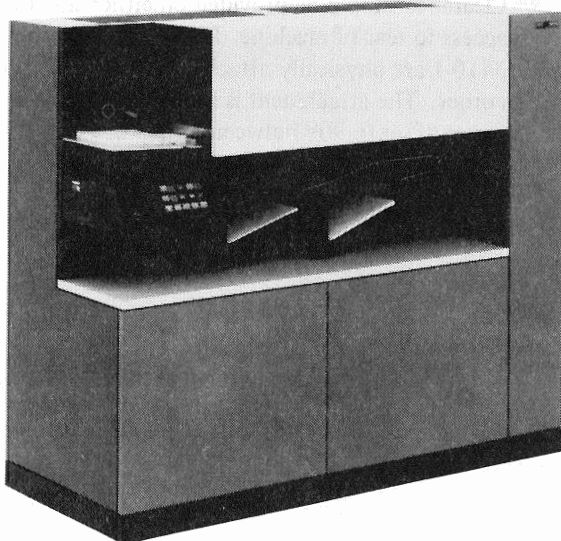
Airflow: 820 cfm (24 m³/min)

Power Requirements:

kVA	2.3
Phases	3
Plug	R&S, FS3760
Connector	R&S, FS3934
Receptacle	R&S, FS3754
Power Cord Style	D1

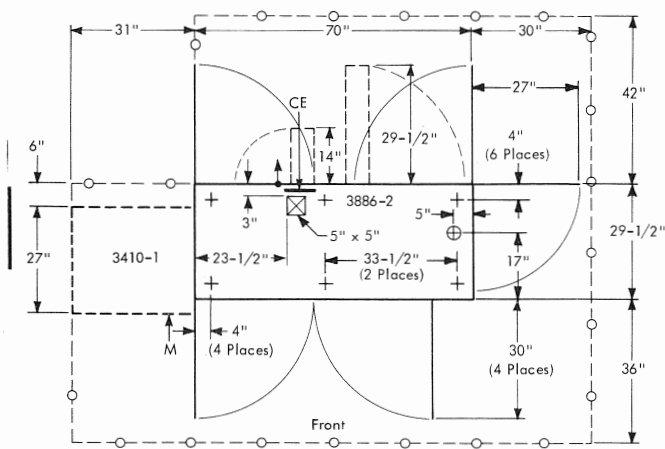
Notes:

* If required, specify SF #9840 for upending kit.



3886 OPTICAL CHARACTER READER MODEL 2

PLAN VIEW



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)

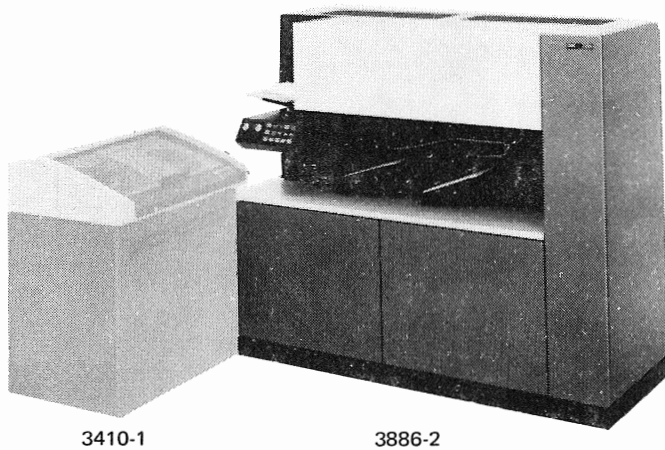
Airflow: 820 cfm (24 m³/min)

Power Requirements:***

kVA	2.5
Phases	3
Plug	R&S, FS3760
Connector	R&S, FS3934
Receptacle	R&S, FS3754
Power Cord Style	D1

Notes:

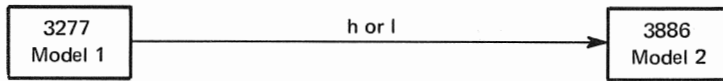
- * If required, specify SF #9840 for upending kit.
- ** Clearance should be provided on either side for access to rear of machine. The 3886-2 and the 3410-1 are physically attached at the front corner. The attachment is flexible, allowing a swing of up to 90° between units.
- *** The 3410-1 is powered from 3886-2.



3410-1

3886-2

3886 OPTICAL CHARACTER READER MODEL 2 CABLING SCHEMATIC

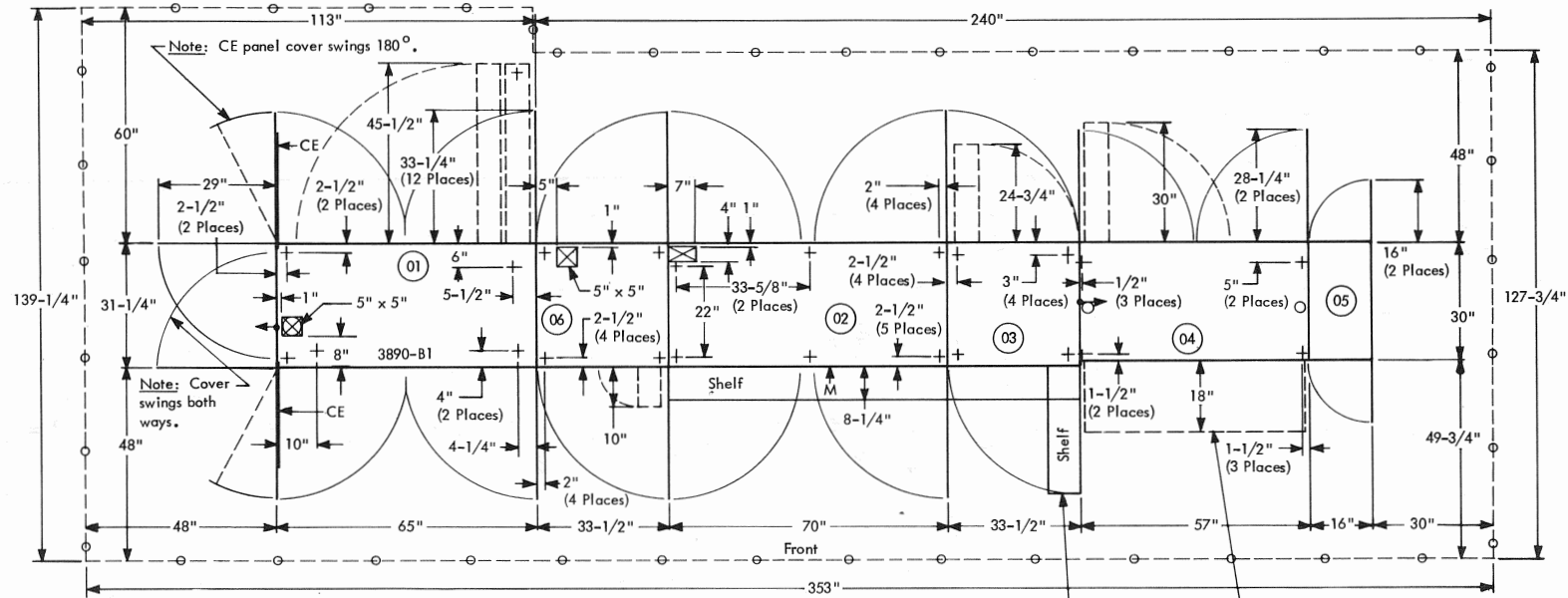


<i>Group No.</i>	<i>No. of Cables</i>	<i>From</i>	<i>To</i>	<i>Max Length (ft)</i>	<i>Notes</i>
h or l	1	3277-1	3886-2	2,000	1, 2

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 C for cable specifications and IBM part numbers. If the customer elects to construct his own cable and/or procure commercial parts, see "Cable Installation Practice for 3270."

PLAN VIEW (MODEL B1 WITH MICROFILM FEATURE, SF #5111)

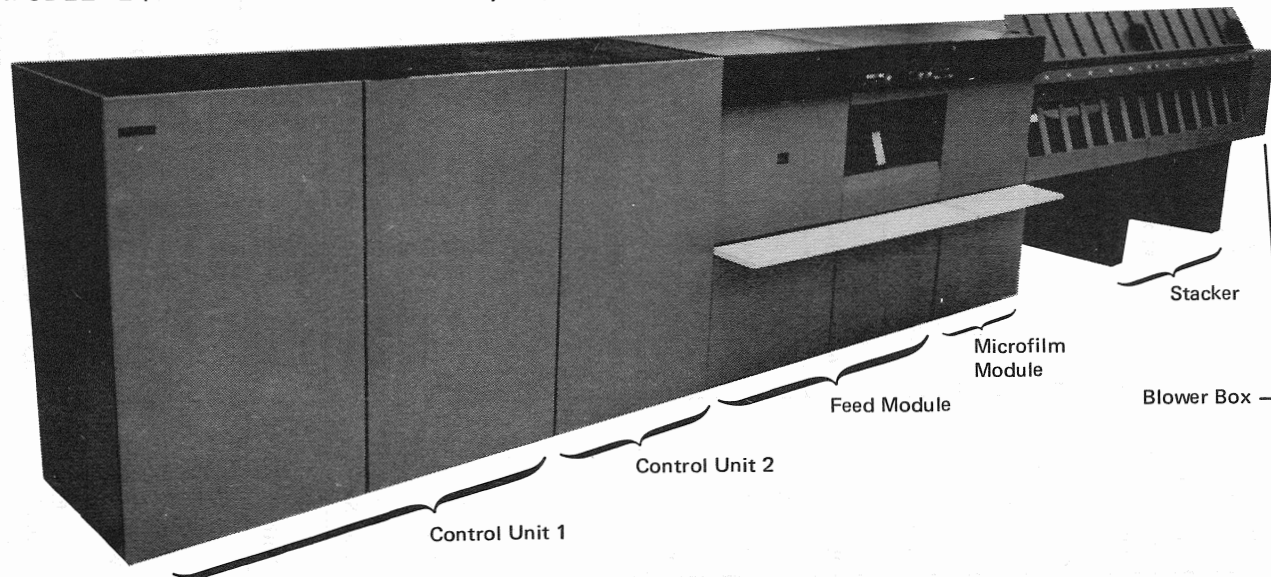


Note: For cabling information, see Section 4, "Units With Integral or Abutted Controls."

Note: Shelf swings out on microfilm section only.

Note: Stacker cover swings forward and down.

MODEL B2 (WITH MICROFILM FEATURE, SF #5111)



3890 DOCUMENT PROCESSOR

Details (By Module)

<i>Module</i>	<i>Dimensions F x S x H inches (cm)</i>	<i>Weight lb (kg)</i>	<i>Airflow cfm (m³/min)</i>	<i>Heat Output BTU/hr (kcal/hr)</i>	<i>kVA</i>
Control Unit No. 1 (Frame 01)	65 x 31-1/4 x 60 (165 x 79 x 152)	2,300 (1.050)	800 (23)	11,200 (2.850)	4.1
Control Unit No. 2 (Frame 06) See Note 1	33-1/2 x 31-1/4 x 60 (85 x 79 x 152)	215 (98)	260 (8)	5,200 (1.310)	1.9 See Notes 8,9
Feed (Frame 02)	70 x 31-1/4 x 60 (178 x 79 x 152)	1,850 (840)	300 (9)	15,800 (4.000)	5.8 See Note 9
Microfilm (SF #5111) (Frame 03)	33-1/2 x 31-1/4 x 60 (85 x 79 x 152)	720 (330)	357 (11)	9,300 (2.350)	3.4 See Note 9
Stacker (Frame 04)	57 x 30 x 60 (145 x 76 x 152)	850 (390)	115 (4)	4,600 (1.200)	1.7 See Note 9
Blower Box (Frame 05) End of Last Stacker	16 x 30 x 52-1/2 (41 x 76 x 133)	30 (14)	30 (1)	4,100 (1.050)	1.5 See Note 9

Totals (By Model)

<i>Model</i>	<i>Weight lb (kg) See Note 7</i>	<i>Length inches (cm)</i>	<i>Airflow cfm (m³/min)</i>	<i>Heat Output BTU/hr (kcal/hr)</i>	<i>kVA</i>
A1 With SF #5111	5,030 (2.300) 5,750 (2.650)	208 (528) 241-1/2 (613)	1,245 (36) 1,602 (46)	35,800 (9.050) 45,100 (11.400)	13.1 16.5
A2 With SF #5111	5,880 (2.700) 6,600 (3.000)	265 (673) 298-1/2 (758)	1,360 (39) 1,717 (49)	40,400 (10.200) 49,700 (12.550)	14.8 18.2
A3 With SF #5111	6,730 (3.100) 7,450 (3.400)	322 (818) 355-1/2 (903)	1,475 (42) 1,832 (52)	45,100 (11.400) 54,300 (13.700)	16.5 19.9
A4 With SF #5111	7,580 (3.450) 8,300 (3.800)	379 (963) 412-1/2 (1.048)	1,590 (45) 1,947 (56)	49,700 (12.550) 59,000 (14.900)	18.2 21.6
A5 With SF #5111	8,430 (3.850) 9,150 (4.150)	436 (1.108) 469-1/2 (1.193)	1,705 (49) 2,062 (59)	54,300 (13.700) 63,600 (16.050)	19.9 23.3
A6 With SF #5111	9,280 (4.250) 10,000 (4.550)	493 (1.253) 526-1/2 (1.338)	1,820 (52) 2,177 (62)	59,000 (14.900) 68,300 (17.250)	21.6 25.0
B1 With SF #5111	5,245 (2.400) 5,965 (2.750)	241-1/2 (614) 275 (699)	1,505 (43) 1,862 (53)	41,000 (10.350) 50,200 (12.700)	15.0 18.4
B2 With SF #5111	6,095 (2.800) 6,815 (3.100)	298-1/2 (758) 332 (843)	1,620 (46) 1,977 (56)	45,600 (11.500) 54,900 (13.850)	16.7 20.1
B3 With SF #5111	6,945 (3.150) 7,665 (3.500)	355-1/2 (903) 389 (988)	1,735 (50) 2,092 (60)	50,200 (12.650) 59,500 (15.000)	18.4 21.8
B4 With SF #5111	7,795 (3.550) 8,515 (3.900)	412-1/2 (1.048) 446 (1.133)	1,850 (53) 2,207 (63)	54,900 (13.850) 65,000 (16.400)	20.1 23.5
B5 With SF #5111	8,645 (3.950) 9,365 (4.250)	469-1/2 (1.193) 503 (1.278)	1,965 (56) 2,322 (66)	59,500 (15.000) 68,800 (17.350)	21.8 25.2
B6 With SF #5111	9,495 (4.350) 10,215 (4.650)	526-1/2 (1.338) 560 (1.423)	2,080 (59) 2,437 (69)	65,000 (16.400) 73,400 (18.550)	23.5 26.9

3890 DOCUMENT PROCESSOR

Branch Circuit Requirements

Hz Voltage Phases Ampacity	60	
	208 3 100	230 3 100
<i>Maximum Continuous Load (Amperes) for:</i>		
Model A1	46	42
Model A2	51	46
Model A3	56	51
Model A4	61	55
Model A5	66	60
Model A6	70	64
Model B1	52	47
Model B2	56	51
Model B3	61	55
Model B4	66	60
Model B5	71	64
Model B6	75	68
If SF #5111 (microfilm module) is not installed, subtract these values from Maximum Continuous Load.	9.5	8.5
Plug Connector Receptacle	R&S, JPS1034H R&S, JCS1034H R&S, JRSR1034H	

SPECIFICATIONS

Dimensions:

	F	S	H
Inches	Note 10	Note 10	60
(cm)	(Note 10)	(Note 10)	(152)

Service Clearances:

	F	R	Rt	L
Inches	Note 10	Note 10	Note 10	Note 10
(cm)	(Note 10)	(Note 10)	(Note 10)	(Note 10)

Environment Operating:

Temperature	65°-80°F (18°-27°C)
Rel Humidity	20%-65%

Floor Requirements:

Floor beneath machine must be level with maximum variance of 2" (5 cm). Maximum machine length is 560" (1,422 cm). Normal raised floor construction providing ±0.10" (±0.254 cm) overall facilitates installation.

Notes:

1. Required for Models B1-B6.
2. Unless otherwise specified, the shipping dimensions

for the control unit 1 module (frame 01) are 65" x 31-1/4" x 60-1/4" (165 cm x 79 cm x 153 cm). Removal of the side covers reduces the width to 29" (74 cm). If further reduction in length is required, see the IBM representative to request an upending kit. This modifies the unit to 60" x 30-1/4" x 71" (152 cm x 77 cm x 180 cm).

3. Unless otherwise specified, the shipping dimensions for the control unit 2 module (frame 06) are 33-1/2" x 31-1/4" x 60-1/4" (85 cm x 79 cm x 153 cm). Removal of the front and rear covers reduces the width to 29" (74 cm).
4. Unless otherwise specified, the shipping dimensions for the feed module (frame 02) are 70-3/4" x 31-1/2" x 60-1/4" (180 cm x 80 cm x 153 cm). Removal of the rear cover reduces the width to 30-1/4" (77 cm). Removal of the lower front cover and partially raising the top covers further reduces the width to 29" (74 cm). If further reduction in size is required, see the IBM representative for specifying an upending kit. This modifies the unit to 60" x 30-1/4" x 75-1/2" (152 cm x 77 cm x 192 cm).

The side dimension is 39-1/2" (100 cm), including 8-1/4" (21 cm) for the shelf.

The height dimension is 90" (229 cm) with the cover above the shelf raised to the service position.

5. Unless otherwise specified, the shipping dimensions for the microfilm module (frame 03) are 34-1/4" x 31-1/4" x 60-1/4" (87 cm x 79 cm x 153 cm). Removal of the rear covers reduces the width to 30-1/4" (77 cm). Removal of the front covers and partially raising the top cover further reduces the width to 29" (74 cm).

The side dimension is 39-1/2" (100 cm), including 8-1/4" (21 cm) for the shelf.

The height dimension is 86-1/4" (219 cm) with the cover above the shelf raised to the service position.

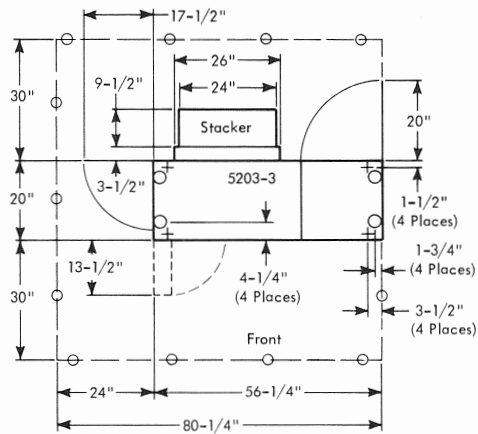
6. Shipping length for a stacker module (frame 04) is 61" (155 cm); shipping height is 52-1/2" (133 cm).

The number of stackers varies by model number. The front dimension for the stacker modules is found by multiplying the length of one stacker, 57" (145 cm), by the model number. (For Model A6, 57" (145 cm) x 6 = stacker dimension.)

7. Weight of customer's trays and documents is not included.
8. Maximum values (Models A6 and B6). See Totals (By Model) for actual values with or without SF #5111 (microfilm) installed.
9. Powered from control unit 1 (frame 01).
10. See plan view.

5203 PRINTER MODEL 3

PLAN VIEW



Note: No external cables are required for use with 3115.

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 m³/min)

Power Requirements:*

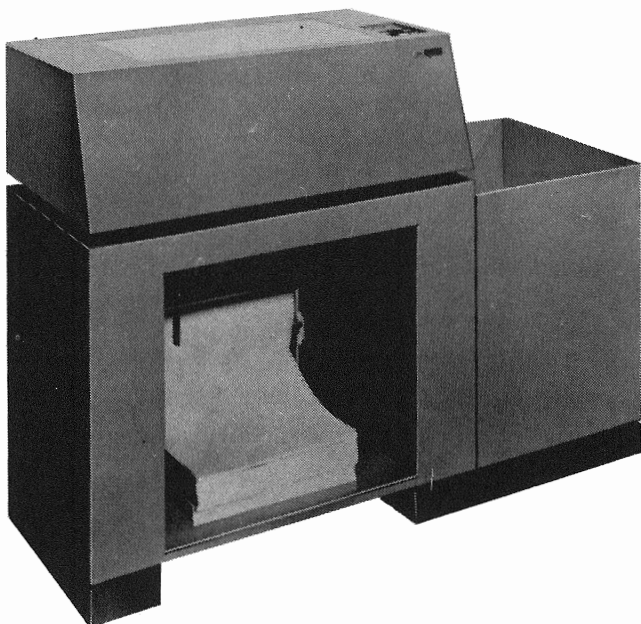
kVA	1.1
Phases	3

Environment Operating:

Temperature	60 ⁰ -100 ⁰ F (16 ⁰ -38 ⁰ C)
Rel Humidity	8%-80%
Max Wet Bulb	73 ⁰ F (23 ⁰ C)

Notes:

* Powered from and abutted to 3115 when SF #4690 is installed.



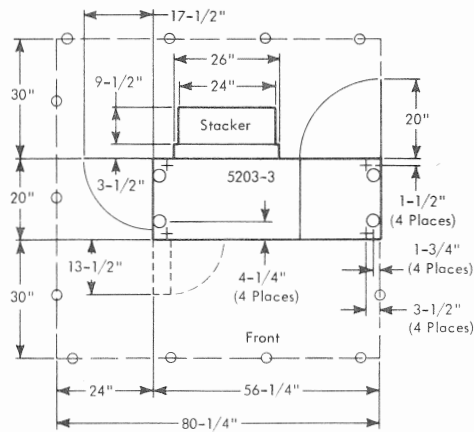
3890 DOCUMENT PROCESSOR

Notes:

- ① Unless otherwise specified, the shipping dimensions for control unit No. 1 (frame 01) are 65" x 31-1/4" x 60-1/4" (165 cm x 80 cm x 153 cm). Removal of the side covers reduces the width to 29" (74 cm). If further reduction in length is required, see the IBM representative for the method of specifying on the order. (This is *not* an upending kit.) This modifies the unit to 60" x 29" x 66" (153 cm x 74 cm x 168 cm).
- ② Shipping width of Control Unit No. 2 (frame 06) may be reduced to 29" (74 cm) by removal of front and rear covers.
- ③ Maximum values (A6 and B6 Models) "Totals (by Model)" table uses actual values by feature configuration.
- ④ Powered from Control Unit 1 (frame 01).
- ⑤ Unless otherwise specified, the shipping dimensions for the feed module (frame 02) are 70-3/4" x 31-1/2" x 60-1/4" (180 cm x 80 cm x 153 cm). Removal of the rear cover reduces the width to 30-1/4" (77 cm). Removal of the lower front cover and partially raising the top covers further reduces the width to 29" (74 cm). If further reduction in size is required, see the IBM representative for specifying an upending kit. This modifies the unit to 60" x 30-1/4" x 75-1/2" (153 cm x 77 cm x 192 cm).
- The side dimension is 39-1/2" (101 cm), including 8-1/4" (21 cm) for the shelf.
- The height dimension is 90" (229 cm) with the cover above the shelf raised to the service position.
- ⑥ Unless otherwise specified, the shipping dimensions for the microfilm module (frame 03) are 34-1/4" x 31-1/4" x 60-1/4" (87 cm x 79 cm x 153 cm). Removal of the rear covers reduces the width to 30-1/4" (77 cm). Removal of the front covers and partially raising the top cover further reduces the width to 29" (74 cm).
- The side dimension is 39-1/2" (101 cm), including 8-1/4" (21 cm) for the shelf.
- The height dimension is 86-1/4" (219 cm) with the cover above the shelf raised to the service position.
- ⑦ Shipping length for a stacker module (frame 04) is 61" (155 cm), shipping height is 52-1/2" (134 cm).
- The number of stackers vary by model number. The front dimension for the stacker modules is found by multiplying the length of one stacker, 57" (145 cm), by the model number. (For Model A6, 57" (145 cm) x 6 = stacker dimension.)
- ⑧ Weight of customer's trays and documents is not included.
- ⑨ Select the model desired. If the microfilm feature is required, use the value from the line where the microfilm feature is checked.
- ⑩ Required for B models.

5203 PRINTER MODEL 3

PLAN VIEW



Note: No external cables are required for use with 3115.

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 m³/min)

Power Requirements:*

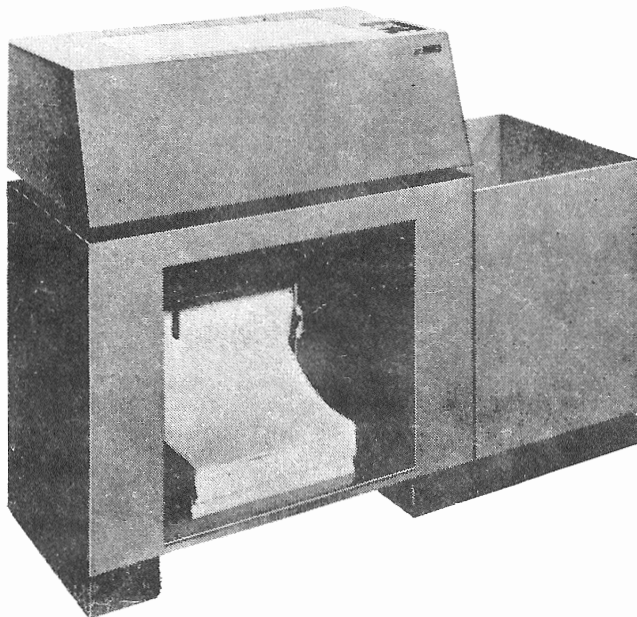
kVA	1.1
Phases	3

Environment Operating:

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

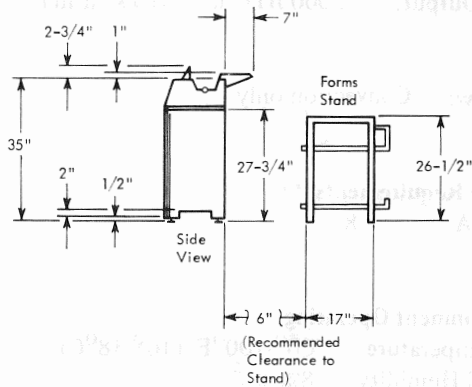
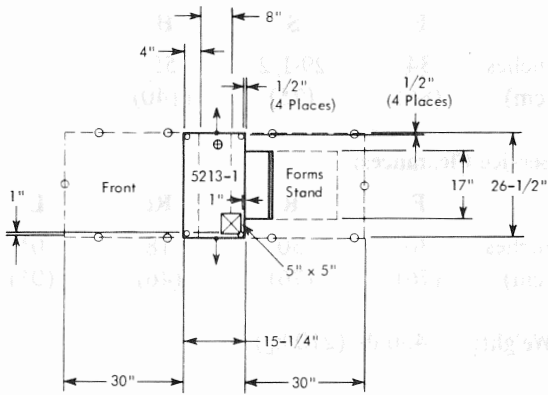
Notes:

* Powered from and abutted to 3115 when SF #4690 is installed.

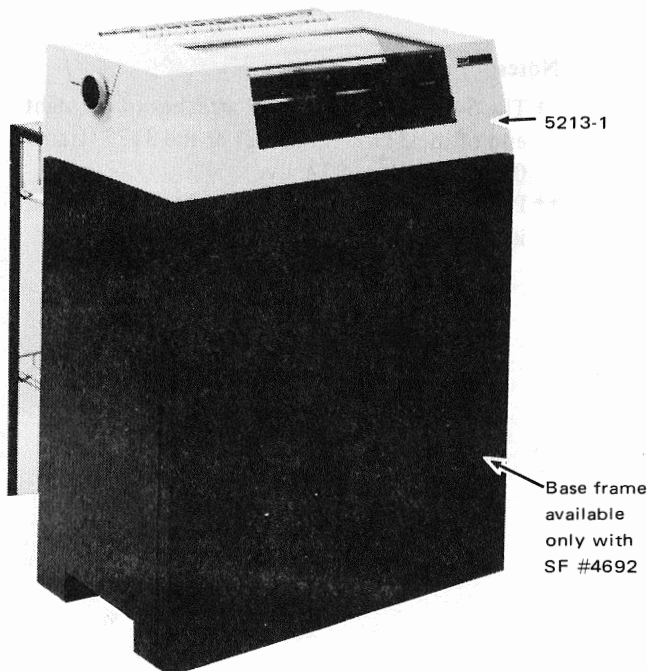


5213 CONSOLE PRINTER MODEL 1 (WITH 3115 OR 3125)

PLAN VIEW



Note: For cabling information, see 3115 or 3125.



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

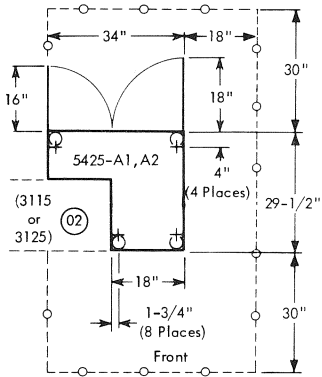
Power Requirements:***	50 Hz	60 Hz
kVA	0.1	0.2

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 or 3125 when SF #4692 is installed.

5425 MULTI-FUNCTION CARD UNIT MODELS A1 AND A2

PLAN VIEW



Note: No external cables are required for use with 3115 or 3125.

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

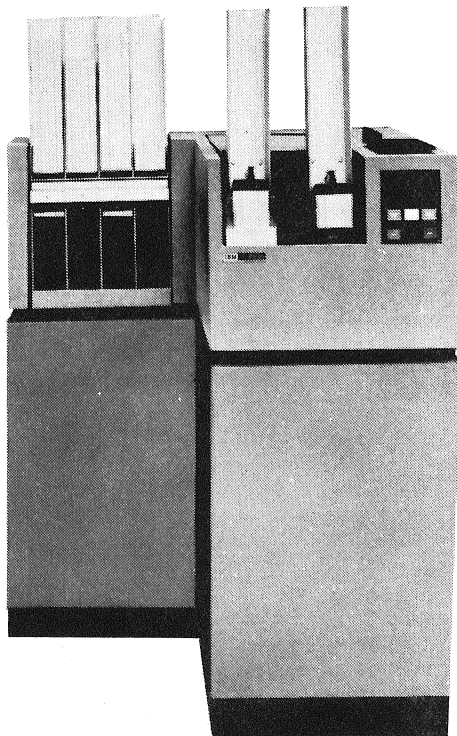
Environment Operating:

Temperature 60^o-100^oF (16^o-38^oC)
 Rel Humidity 8%-80%
 Max Wet Bulb 78^oF (26^oC)

Notes:

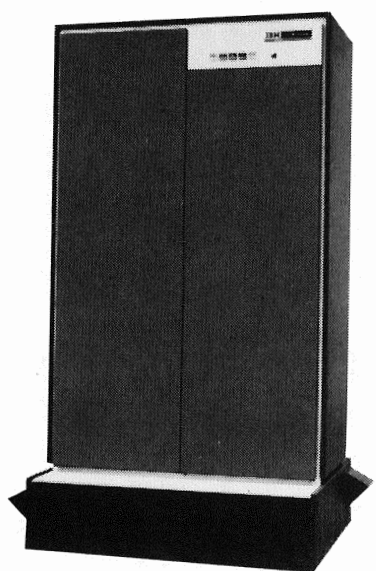
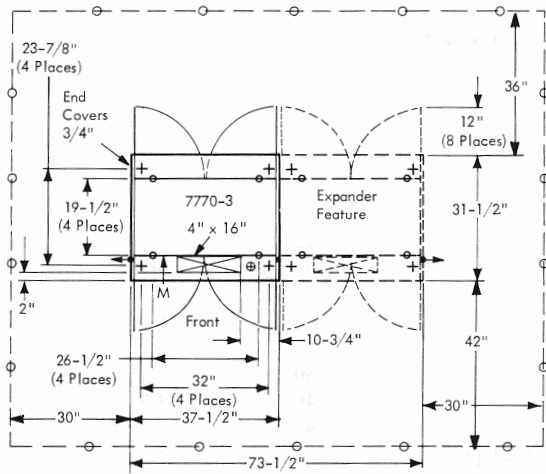
* The 5425 Model A1 or A2 attaches to the right end of the 3115 (frame 02) or the 3125 (frame 02) configuration 1 only.

** Powered from 3115 or 3125 when SF #4695 is installed.



7770 AUDIO RESPONSE UNIT MODEL 3

PLAN VIEW



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:

	16 Lines	48 Lines
BTU/hr	4,800	7,200
(kcal/hr)	(1.250)	(1.850)

Airflow:

	16 Lines	48 Lines
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

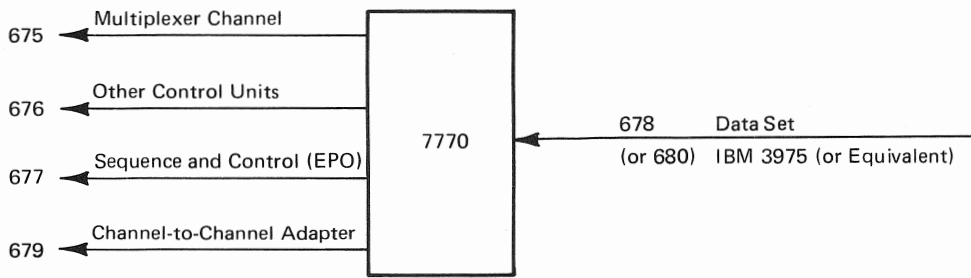
Environment Operating:

Temperature	60°-90°F (16°-32°C)
Rel Humidity	8%-80%
Max Wet Bulb	78°F (26°C)

Notes:

* Dimension is 73-1/2" (187 cm) with expander feature.

7770 AUDIO RESPONSE UNIT CABLING SCHEMATIC

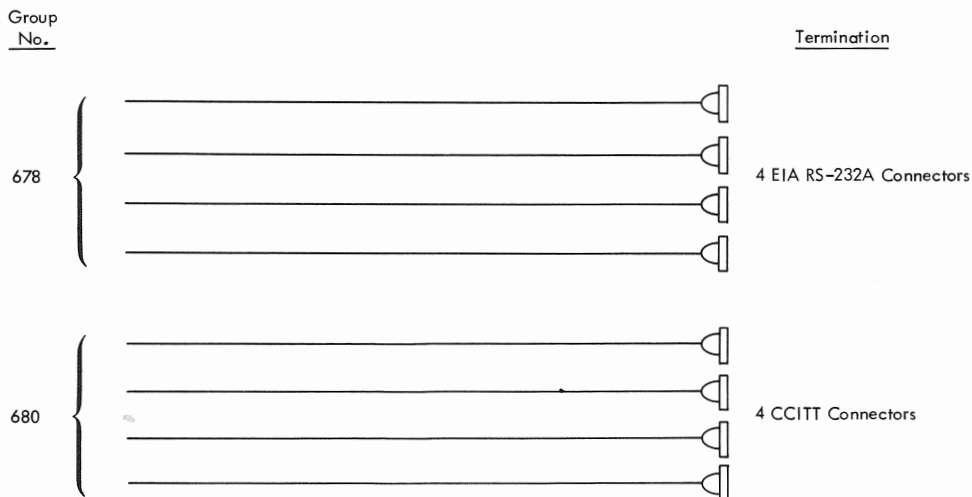


Group No.	No. of Cables	From	To	Max Length (ft)	Notes
675	2	7770	Multiplexer Channel	—	1
676	2	7770	Control Unit	—	1
677	1	7770	Channel	150	2
678	4	Data Set	7770	40	4,5
(or 680)	4	IBM 3975	7770	40	4,5,6
679	2	7770	Channel-to-Channel Adapter	—	1,3

Notes:

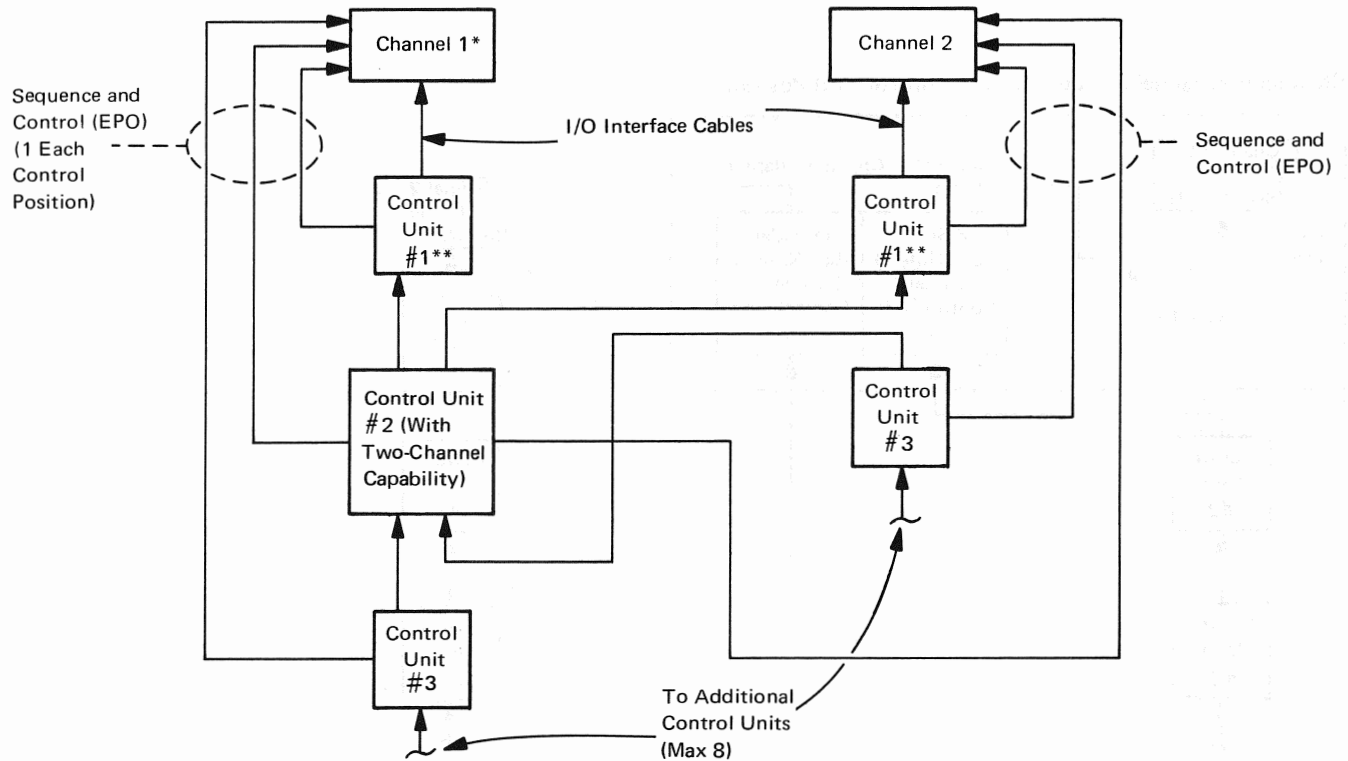
1. Total cable length of 200 feet (unless modified by general control-to-channel cabling schematic) available to attach up to eight control units.
2. Sequence and control (EPO).
3. To channel-to-channel adapter (SF #1850).
4. One group for each four data sets.
5. See "Cables from Non-IBM Devices" for cable specifications.
6. For 50-Hz machines, use group number in parentheses.

Cables from Non-IBM Devices



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.



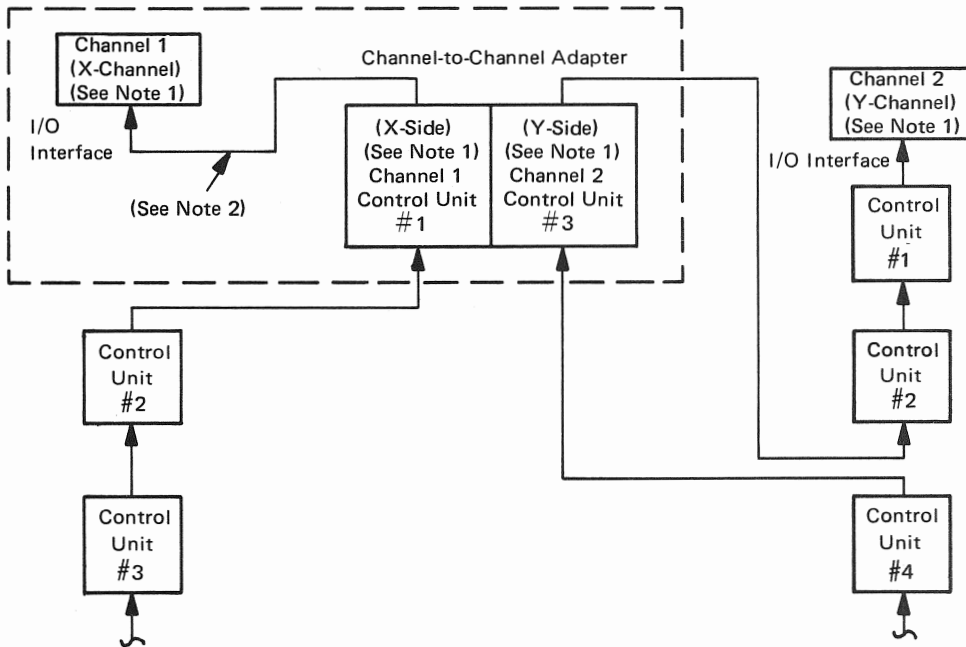
*The channel may be a separate unit (such as the IBM 2860) or integral to the system processing unit.
 **Units with two-byte interface feature must be installed first on the channel.

CHANNEL-TO-CHANNEL ADAPTER CABLING

The channel-to-channel adapter (SF #1850) is considered as though it were a control unit on each of the channels involved, except when the Model 145 is the host system, then the adapter requires two control unit positions on both X- and Y-interfaces. The adapter requires external cables to a control unit or channel of the second system. The adapter is installed with the channel, either in a separate unit (such as the 2860) or physically in the central processing unit. On the Models 145, 155, and 158, it may

be assigned to any control unit position on either the host channel, to which it is attached, or the guest channel. If the adapter is assigned to the first control unit position on the host channel, the cable attaching it to the channel is specified as "X" length of "0" feet. On the 2860, the X-side of the C-T-C adapter is internally wired first on the channel to the select-out line (highest priority). The Y-side may be cabled in any physical position (control unit position) and any priority (any position on the select-out or select-in line).

Channel-to-Channel Adapter in First Control Unit Position

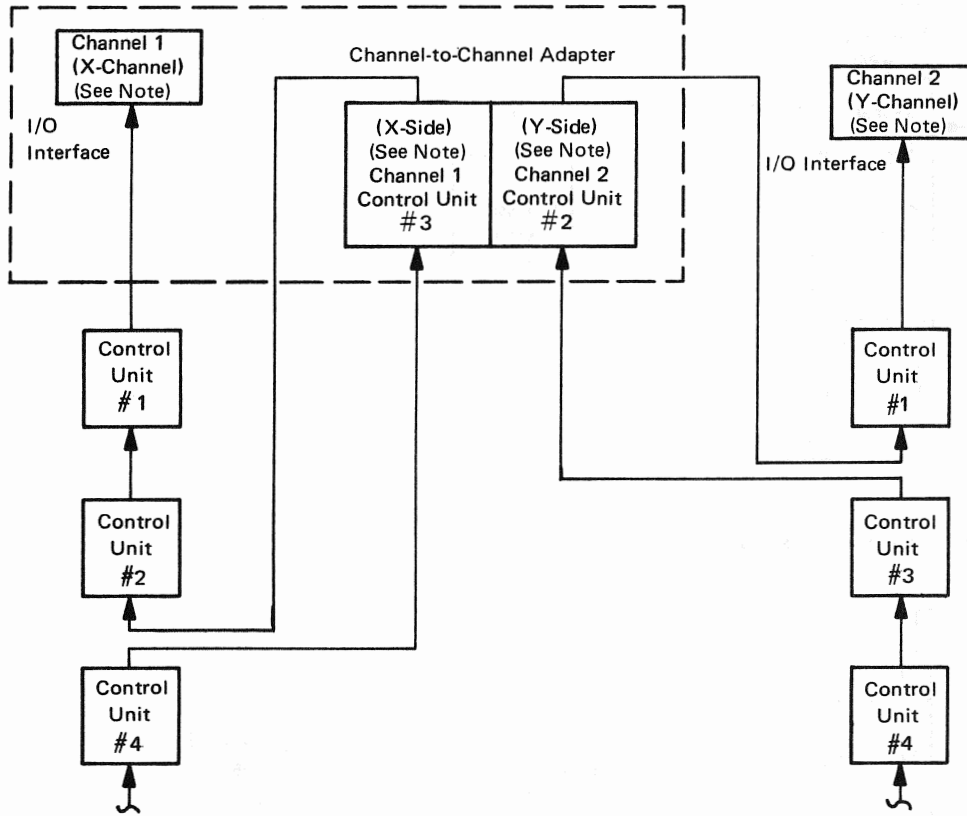


Notes:

1. X refers to the host channel; Y refers to the guest channel.
2. X-side; internal machine wiring.

CHANNEL-TO-CHANNEL ADAPTER CABLING

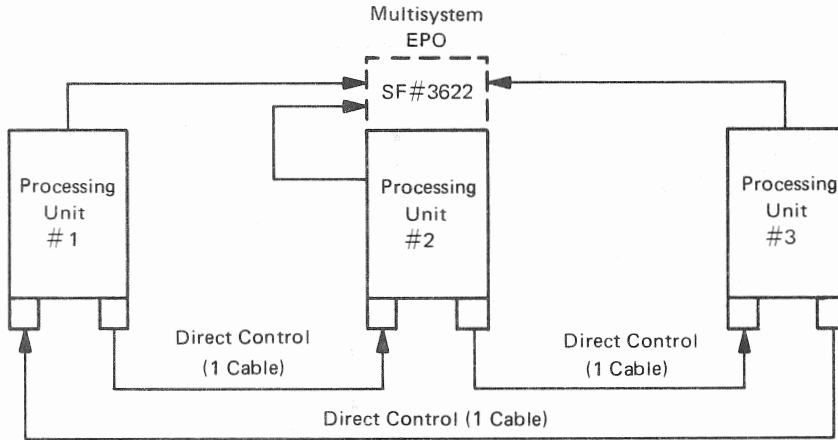
Channel-to-Channel Adapter in Any Control Unit Position



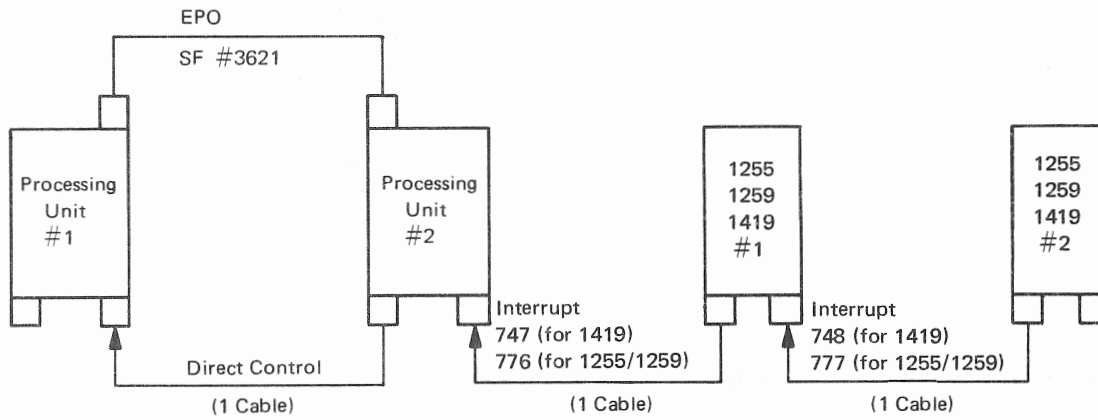
Note: X refers to the host channel; Y refers to the guest channel.

DIRECT CONTROL CABLING

Multiple Processing Units (Notes 1 and 2)



Two Processing Units With External Devices (Notes 1, 2, and 3)



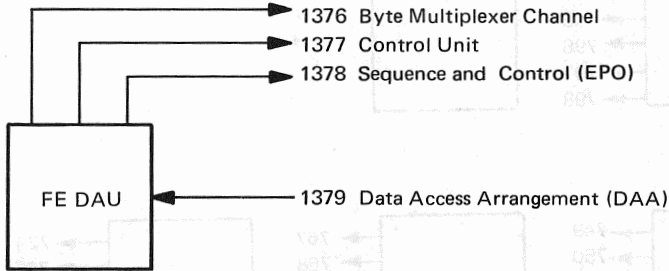
Notes:

1. Cabling shown above is in addition to basic channel requirements.
2. Processing unit may be System/360 or System/370.
3. The total length of 747 or 776 plus 748 or 777 must not exceed 200 feet.

FIELD ENGINEERING TEST EQUIPMENT CABLING

2955 Field Engineering Data Adapter Unit (FE DAU)

Cables must be ordered as part of the channel to which the FE DAU is attached.

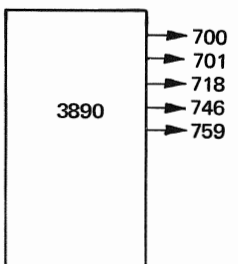
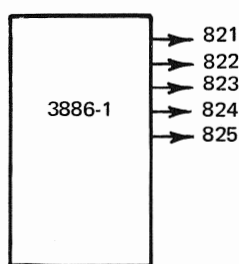
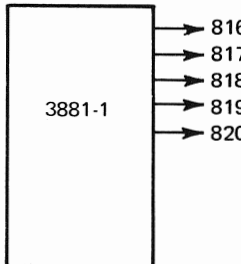
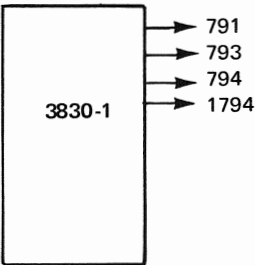
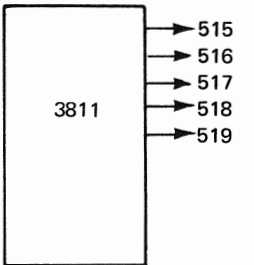
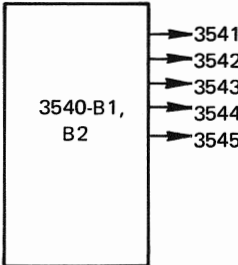
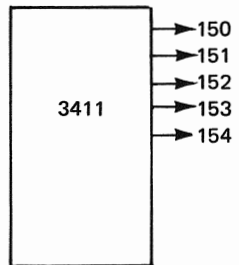
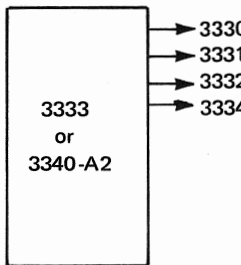
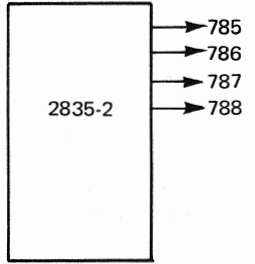
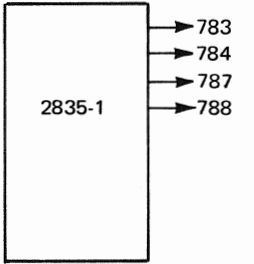
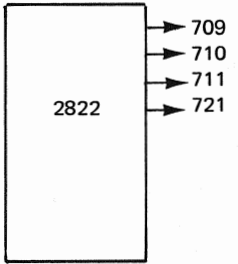
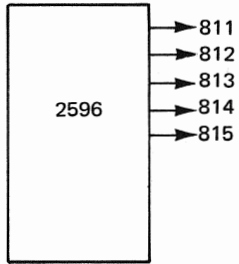
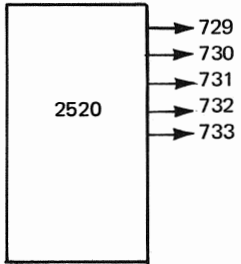
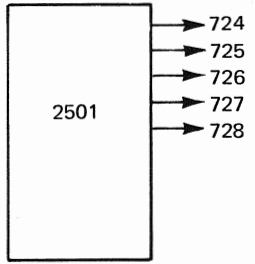
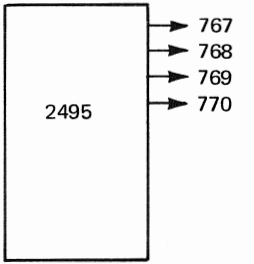
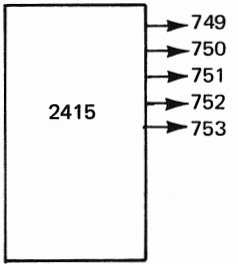
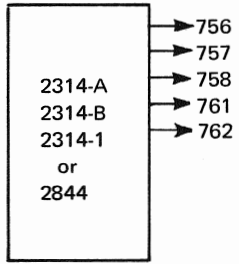
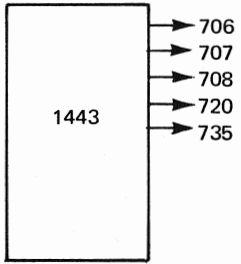
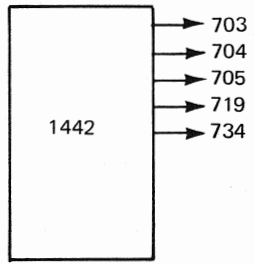
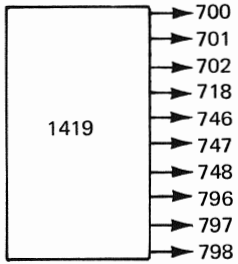
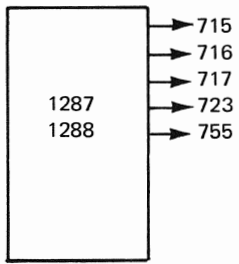
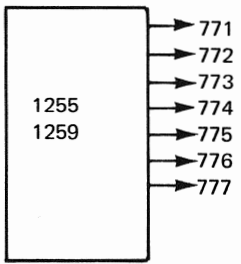


Group No.	No. of Cables	From	To	Max Length (ft)	Notes
1376	2	FE DAU	Byte Multiplexer Channel	—	1,3
1377	2	FE DAU	Control Unit	—	1,3
1378	1	FE DAU	Channel	150	2
1379	1	Data Access Arrangement	FE DAU	50	4

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 cable group plus EPO required for each CPU attached.
4. Customer must provide the interface to customer-provided telephone line. The interface consists of a Data Access Arrangement with a telephone, as designated by USOC Code CDT. Cable terminates in two ring lugs at customer-provided telephone end.

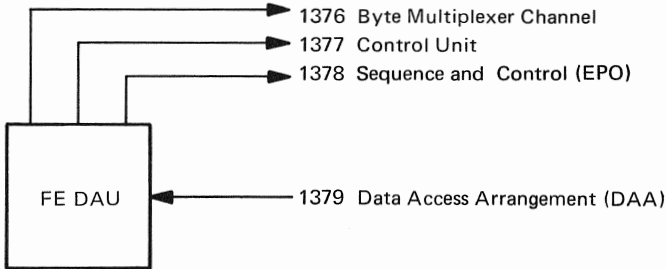
UNITS WITH INTEGRAL OR ABUTTED CONTROLS



FIELD ENGINEERING TEST EQUIPMENT CABLING

2955 Field Engineering Data Adapter Unit (FE DAU)

Cables must be ordered as part of the channel to which the FE DAU is attached.

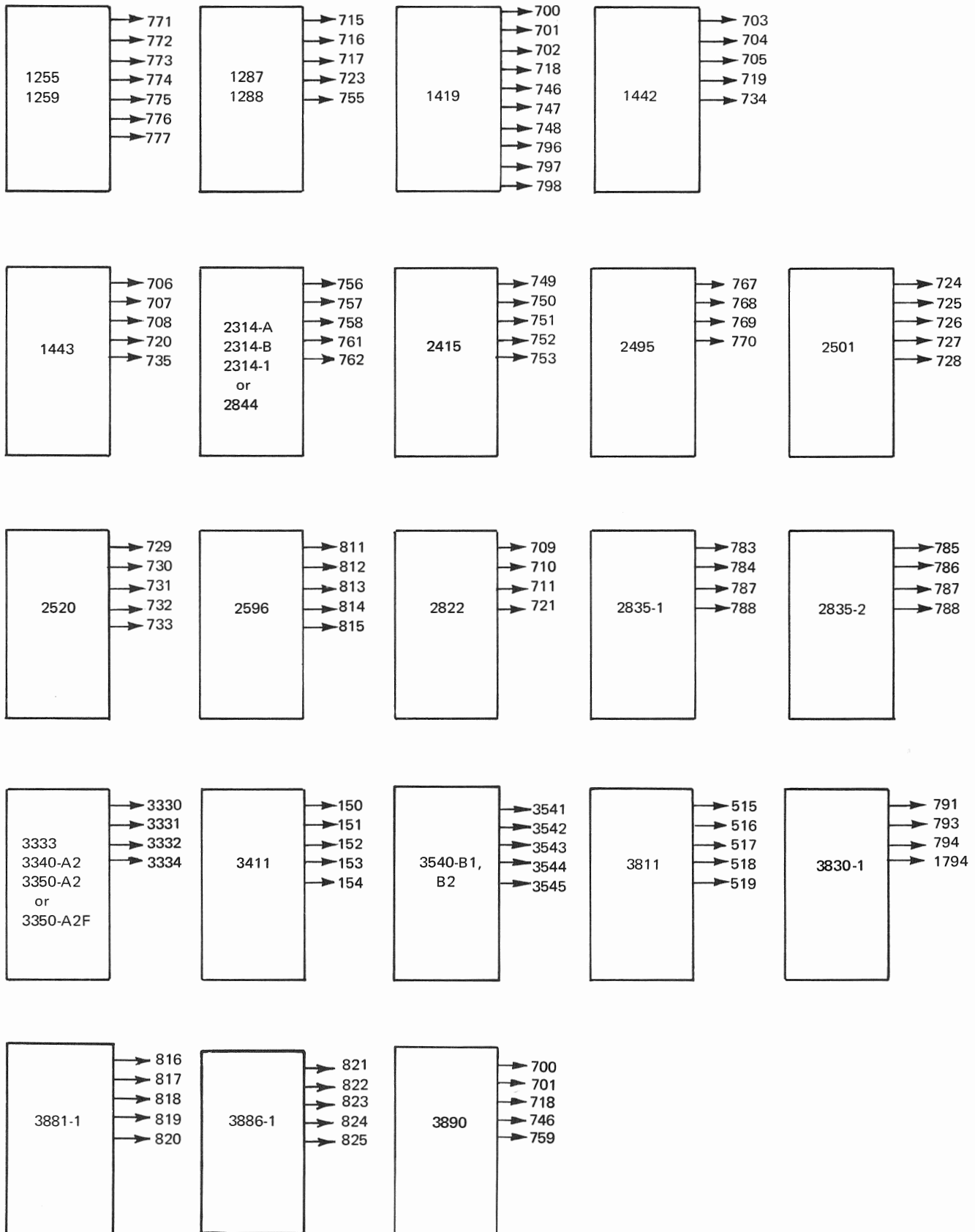


<i>Group No.</i>	<i>No. of Cables</i>	<i>From</i>	<i>To</i>	<i>Max Length (ft)</i>	<i>Notes</i>
1376	2	FE DAU	Byte Multiplexer Channel	—	1,3
1377	2	FE DAU	Control Unit	—	1,3
1378	1	FE DAU	Channel	150	2
1379	1	Data Access Arrangement	FE DAU	50	4

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 cable group plus EPO required for each CPU attached.
4. Customer must provide the interface to customer-provided telephone line. The interface consists of a Data Access Arrangement with a telephone, as designated by USOC Code CDT. Cable terminates in two ring lugs at customer-provided telephone end.

UNITS WITH INTEGRAL OR ABUTTED CONTROLS



UNITS WITH INTEGRAL OR ABUTTED CONTROLS

<i>Group No.</i>	<i>No. of Cables</i>	<i>From</i>	<i>To</i>	<i>Max Length (ft)</i>	<i>Notes</i>
150	2	3411	Multiplexer Channel	—	1
151	2	3411	Selector Channel	—	1
152	2	3411	Control Unit	—	1
153	1	3411	Channel	150	2
154	2	3411	Channel-to-Channel Adapter	—	1,3
515	2	3811	Selector or Block Multiplexer Channel	—	1
516	1	3811	Channel	150	2
517	2	3811	Control Unit	—	1
518	2	3811	Byte Multiplexer Channel	—	1
519	2	3811	Channel-to-Channel Adapter	—	1
700	2	Reader-Sorter	Multiplexer Channel	—	1,11,21
701	2	Reader-Sorter	Control Unit	—	1,11,21
702	1	Reader-Sorter	Channel	150	2
703	2	1442	Selector Channel	—	1
704	2	1442	Control Unit	—	1
705	1	1442	Channel	150	2
706	2	1443	Selector Channel	—	1
707	2	1443	Control Unit	—	1
708	1	1443	Channel	150	2
709	2	2822	Multiplexer Channel	—	1
710	2	2822	Control Unit	—	1
711	1	2822	Channel	150	2
715	2	1287, 1288	Multiplexer Channel	—	1
716	2	1287, 1288	Control Unit	—	1
717	1	1287, 1288	Channel	150	2
718	2	Reader-Sorter	Channel-to-Channel Adapter	—	1,3,11,21
719	2	1442	Channel-to-Channel Adapter	—	1,3
720	2	1443	Channel-to-Channel Adapter	—	1,3
721	2	2822	Channel-to-Channel Adapter	—	1,3
723	2	1287, 1288	Channel-to-Channel Adapter	—	1,3
724	2	2501	Selector Channel	—	1
725	2	2501	Multiplexer Channel	—	1
726	2	2501	Channel-to-Channel Adapter	—	1,3
727	2	2501	Control Unit	—	1
728	1	2501	Channel	150	2
729	2	2520	Selector Channel	—	1
730	2	2520	Multiplexer Channel	—	1
731	2	2520	Channel-to-Channel Adapter	—	1,3
732	2	2520	Control Unit	—	1
733	1	2520	Channel	150	2
734	2	1442	Multiplexer Channel	—	1
735	2	1443	Multiplexer Channel	—	1
746	2	Reader-Sorter	Selector or Block Multiplexer Channel	—	1,12,21
747	1	Reader-Sorter	System/360 or System/370 CPU	—	4,10
748	1	Reader-Sorter	Reader Unit	—	4,10
749	2	2415	Selector Channel	—	1
750	2	2415	Multiplexer Channel	—	1
751	2	2415	Channel-to-Channel Adapter	—	1,3
752	2	2415	Control Unit	—	1
753	1	2415	Channel	150	2
755	2	1287, 1288	Selector or Block Multiplexer Channel	—	1
756	2	2314, 2844	Channel	—	1,5,14,16
757	2	2314, 2844	Channel-to-Channel Adapter	—	1,3,5,14,16
758	2	2314, 2844	Control Unit	—	1,5,14,16
759	1	3890	Channel	150	2,21
761	1	2314, 2844	Channel	150	2,14,16

UNITS WITH INTEGRAL OR ABUTTED CONTROLS

<i>Group No.</i>	<i>No. of Cables</i>	<i>From</i>	<i>To</i>	<i>Max Length (ft)</i>	<i>Notes</i>
762	1	2314, 2844	2065, 2167, 3058, 3068	150	16,19,20
767	2	2495	Multiplexer Channel	—	1
768	2	2495	Control Unit	—	1
769	2	2495	Channel-to-Channel Adapter	—	1,3
770	1	2495	Channel	150	2
771	2	1255, 1259	Multiplexer Channel	—	1
772	2	1255, 1259	Control Unit	—	1
773	1	1255, 1259	Channel	150	2
774	2	1255, 1259	Channel-to-Channel Adapter	—	1,3
775	2	1255, 1259	Selector Channel	—	1,15
776	1	1255, 1259	System/360 or System/370 CPU	—	4,10
777	1	1255, 1259	Reader Unit	—	4,10
783	3	2835-1	Channel	—	6,7,9
784	3	2835-1	2835-1	—	6,7,9,14
785	2	2835-2	Channel	—	6,7,14
786	2	2835-2	Control Unit	—	6,7,14
787	1	2835-1,2	Channel	150	2,14
788	1	2835-1	3058	150	19
		2835-2	3058, 3068	150	19
791	2	3830-1	Channel	—	13,14
793	2	3830-1	Control Unit	—	13,14
794	1	3830-1	Channel	150	2,14
796	2	Reader-Sorter	Multiplexer Channel	—	1,12
797	2	Reader-Sorter	Control Unit	—	1,12
798	2	Reader-Sorter	Channel-to-Channel Adapter	—	1,3,12
811	2	2596	Selector Channel	—	1
812	2	2596	Control Unit	—	1
813	1	2596	Channel	150	2
814	2	2596	Channel-to-Channel Adapter	—	1,3
815	2	2596	Multiplexer Channel	—	1
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
1794	1	3830-1	3058, 3068	150	19
3330	2	3333, 3340-A2, 3350-A2, 3350-A2F	DDA, IFA, ISC, ISC With Staging Adapter, 3830-2, 3830-3	—	17,18,22
3331	2	3333, 3340-A2, 3350-A2, 3350-A2F	3333, 3340-A2, 3350-A2, 3350-A2F	—	18,22
3332	1	3333, 3340-A2, 3350-A2, 3350-A2F	CPU, 3830-2, 3830-3	200	2,17,22
3334	1	3333, 3340-A2, 3350-A2, 3350-A2F	3058, 3068	200	19
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

UNITS WITH INTEGRAL OR ABUTTED CONTROLS

Notes:

21. When installing a 3890 on a raised floor, cables enter the machine through the cable entry in the first module to the right of the control unit module No. 1 (frame 01), i.e., control unit module No. 2 (frame 06) for B models, or feed module (frame 02) for A models. When installing a 3890 on a non-raised floor, cables must be routed under control unit module No. 1 (frame 01), and must exit at the left end of the machine; or they must be routed under control unit module No. 2 (frame 06) for B models, the feed module (frame 02), and the microfilm module (frame 03) if installed, and must exit under the first stacker module. The sequence and control (EPO) cable enters the machine through frame 02 for A models or frame 06 for B models.

UNITS WITH INTEGRAL OR ABUTTED CONTROLS

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. For SF #3898 on System/370 Models 115 and 125, or for SF #3895 or SF #3274 on System/360 or other System/370 CPUs.
5. Last 2314 or 2844 must be within 75 feet of 2030 and 2040; must be within 100 feet on other systems.
6. Available cable length depends on (a) the number of control units connected between the last 2835 and the channel and (b) the type of channel to which the 2835 is attached. Available cable length can be computed as follows:
 - a. For connection of one 2835 Model 1 or 2 to a 2880, maximum length is 84 feet.
 - b. For connection of one 2835 Model 2 to a 3145, maximum length is 76 feet.
 - c. For connection of one 2835 Model 2 to a 3155 or 3158, maximum length is 50 feet.These maximum lengths must be reduced as follows for each control unit connected between the last 2835 Model 1 or 2 and the channel:
 - (1) For each 2835 Model 1, subtract 9-1/2 feet.
 - (2) For each 2835 Model 2, subtract 13-1/2 feet.
 - (3) For each other control unit, subtract 14 feet.
7. If 2835-1 and other units are attached to the same channel, the 2835-1 must be first.
8. Note 8 deleted intentionally.
9. The 2835-1 units should attach to the first 2880.
10. 200 feet (unless modified by direct control cabling schematic) total length of the 747 (or 776) plus 748 (or 777).
11. Use for 1419 machines with SF #7730 (dual address).
12. Use for 1419 machines with SF #7720 (single address).
13. Last 3830 must be within 150 feet.
14. For channel switching, one set of cable groups is required for each channel. Special features may be ordered for connecting more than one channel. Maximum cable length limit applies to each channel.
15. For 1255 and 1259 only.
16. The 2314 DASF-B Series does not attach the 2844. Note also that when a 2050 is installed with SF #4478 and a 2314 or 2844, the IBM representative must be consulted for any special limitations.

UNITS WITH INTEGRAL OR ABUTTED CONTROLS

Notes: (continued)

17. The "to" unit and attachment options for 3333/3330, 3340-A2/3340-B1 or B2, 3340-A2/3344-B2 or B2F, and 3350-A2 or A2F/3350-B2 or B2F are as follows:

To Unit	Frame	Attachment Options
3115 (DDA)	01	One 3340-A2 with one 3340-B1 or B2
3125 (DDA)	01	One 3333-1 with one 3340-1 or 2 or One 3340-A2 with up to three 3340-B1's or B2's
3135 (IFA, SF # 4655)	01	Up to two 3333s and/or 3340-A2's. One 3340-A2 can attach 3344(s). The 3340-A2 with 3344(s) and the 3333 are mutually exclusive.
3145-2 (ISC, SF # 4660)	03	Up to four 3333s, 3340-A2's and/or 3350-A2's in any combination. Up to two 3340-A2's can attach 3344(s). Attachment of one or more 3340-A2's with 3344(s) is mutually exclusive with attachment of either 3333s or 3350-A2's.
3158, 3158-3/3168, 3168-3 (ISC per path, SF # 4650). Sequence and control (cable group 3332) enters frame 15 (3067-2, 3) on 3168 or 3168-3.	02	Up to four 3333s, 3340-A2's and/or 3350-A2's in any combination. Up to two 3340-A2's can attach 3344(s). Attachment of one or more 3340-A2's with 3344(s) is mutually exclusive with attachment of either 3333s or 3350-A2's.
3158, 3158-3/3168, 3168-3 (ISC per path, SF # 4650, with staging adapter, SF # 7220). Sequence and control (cable group 3332) enters frame 15 (3067-2, 3) on 3168 or 3168-3.	02	Up to four 3333s in a 3850 Mass Storage System. 3340s or 3350 cannot be attached to the ISC when SF # 7220 is installed.
3345 Model 3, 4, or 5 for System/370 Model 145 (signal, cable group 3330 only). Sequence and control (cable group 3332) enters frame 03.	02	Up to four 3333s, 3340-A2's and/or 3350-A2's in any combination. Up to two 3340-A2's can attach 3344(s). Attachment of one or more 3340-A2's with 3344(s) is mutually exclusive with attachment of either 3333s or 3350-A2's.
3830-2	-	Up to four 3333s, 3340-A2's and/or 3350-A2's in any combination. Up to two 3340-A2's can attach 3344(s). Attachment of one or more 3340-A2's with 3344(s) is mutually exclusive with attachment of either 3333s or 3350-A2's.
3830-3	-	Up to four 3333s in a 3850 Mass Storage System. 3340s or 3350s cannot be installed on a 3830-3.

18. Last 3333, 3340-A2, 3350-A2, or 3350-A2F must be within 200 feet of the host unit (group 3330 plus 3331).

19. Required for SF #6148 or #6149.

20. Required for SF #6150 on the 2844.

21. When installing a 3890 on a raised floor, cables enter the machine through the cable entry in the first module to the right of the control unit 1 module (frame 01), i.e., control unit 2 module (frame 06) for B models, or feed module (frame 02) for A models. When installing a 3890 on a nonraised floor, cables must be routed under control unit 1 module (frame 01), and must exit at the left end of the machine; or they must be routed under control unit 2 module (frame 06) for B models, the feed module (frame 02), and the microfilm module (frame 03), if installed, and must exit under the first stacker module. The sequence and control (EPO) cable enters the machine through frame 02 for A models or frame 06 for B models.

22. For the 3333, 3340-A2, 3350-A2, and 3350-A2F, one set of cable groups (3330 and 3332 or 3331 and 3332) is required for the basic machine, and one set of cable groups is required for the string switch feature (SF #8150).

Appendix A. Additional Cooling Requirements for Models 165, 168, and 195

COMPUTER ROOM ENVIRONMENT LIMITS

Temperature and Humidity Criteria

Under no condition shall condensation be allowed to occur within the IBM equipment.

Temperature and relative humidity requirements are as stated on the specification pages.

LIQUID COOLANT SYSTEM

General Requirements

The liquid coolant system is a closed-recirculation system. The loop should have a capacity to accept the heat rejected by the computer at the temperature level specified and to provide proper coolant distribution to individual computer frames.

To prevent condensation on the internal portions of water-cooled units, it is recommended that room recorders with audible alarms be installed to alert operating personnel of impending out-of-specification conditions. Relative humidity recorders should be set at 75%; wet bulb recorders should be set at 72°F (22°C).

Customer-supplied Chilled Water Specifications

Note: When the computer system is inoperative (power off), there shall be no customer coolant circulating.

The customer-supplied chilled water may vary 15% in flow rate and $\pm 7.5^\circ\text{F}$ ($\pm 4.2^\circ\text{C}$) in temperature. However, the 60°F (16°C) maximum temperature may *not* be exceeded.

Customer-supplied chilled water should be as free of particulate matter as feasible. A filtering system of dual-basket type water strainers (size 50 mesh) is recommended. This allows switching from one strainer to another for cleaning, maintenance, and replacement. A means of reverse flushing the heat exchanger in the CDU should be considered. The frequency of reverse flushing depends on the quality of the customer's chilled water.

Hardness of water shall not exceed 200 ppm calcium and magnesium. Water pH shall be between 7 and 9.

Supply lines should be terminated with Hansen (Hansen Mfg. Co., Cleveland, Ohio 44735) HK series B6-K31 plugs; return lines should be terminated with Hansen HK series B6-H31 sockets. Fittings should be horizontal. Nine-inch (228,6-mm) long insulators are provided by IBM to cover these fittings.

When the customer's chilled water pressure is above 75 psig (5,3 kg/cm²), a manually operated drain valve (pressure release) could be installed between the customer's shut-off valve and the Hansen plugs. This will allow the pressure to be reduced on the Hansen plugs, so that they may be easily connected or disconnected.

Customer water connections must be accessible.

The maximum coolant hose length supplied by IBM from floor cutout (CDU) to customer fitting is 5 feet (152 cm).

Maximum pressure on customer-supplied, chilled-water lines should not exceed 75 psig (5,3 kg/cm²) for 3067 CDUs (Model 165) with serial numbers below 60151 and for all 3086 CDUs (Model 195). On 3067 CDUs (Model 165 or 168 or 3062-1) starting with serial number 60151, the maximum pressure on customer-supplied, chilled-water lines should not exceed 150 psig (10,5 kg/cm²). Consult your Installation Planning representative.

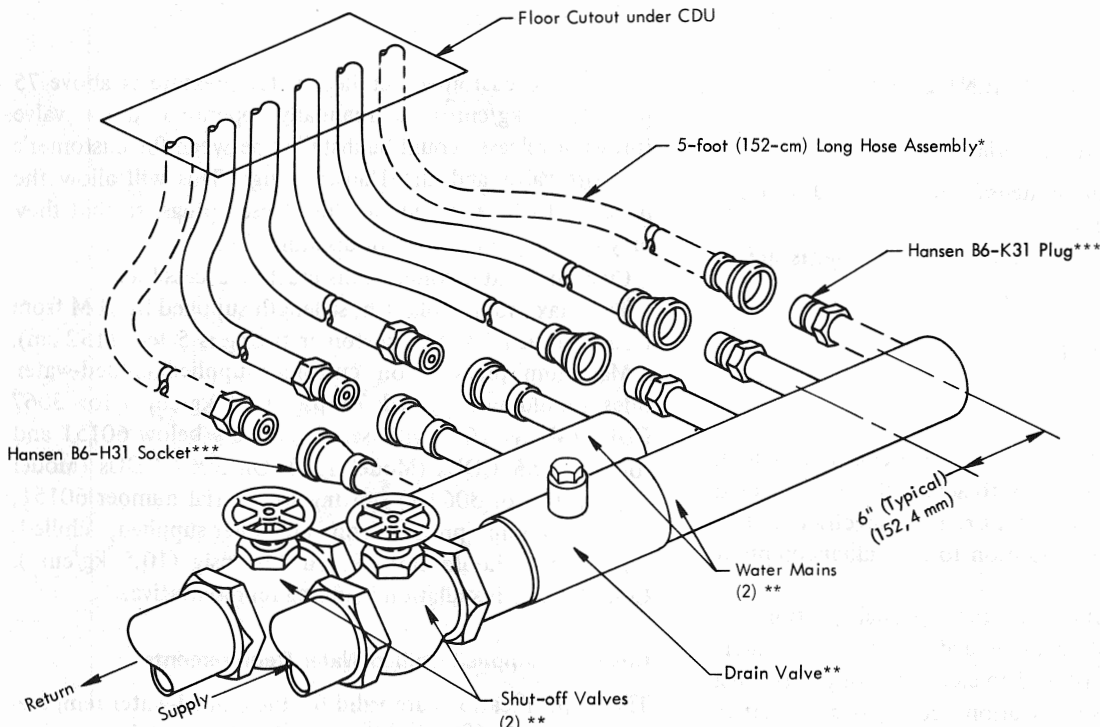
Customer-supplied Chilled Water Requirements

These specifications are valid for the chilled-water temperature range of 60°F (16°C) to 45°F (7°C) and for altitudes up to 3,000 feet (920m). For installations using other temperature ranges and at altitudes above 3,000 feet (920m), consult your Installation Planning representative.

Parameter	Model 165--3067-1 Model 168--3067-2,3*		Model 168--3067-2,3** 3062-1--3067-5		Model 195--3086	
	Min Unit ***	Max Unit ***	Min Unit ***	Max Unit ***	Min Unit ***	Max Unit ***
Max Temp °F (°C)	60 (16)	60 (16)	60 (16)	60 (16)	60 (16)	60 (16)
Min Temp °F (°C)	45 (7)	45 (7)	45 (7)	45 (7)	45 (7)	45 (7)
Pressure Drop psig (kg/cm ²)						
6-hose CDU	10 (0,7)	20 (1,4)	--	--	10 (0,7)	25 (1,8)
4-hose CDU	14 (1,0)	24 (1,7)	16 (1,1)	21 (1,5)	13 (0,9)	35 (2,5)
Flow Rate gpm (liters/min)						
6-hose CDU	25 (95)	35 (133)	--	--	25 (95)	40 (151)
4-hose CDU	28 (106)	38 (144)	28 (106)	32 (121)	25 (95)	40 (151)

* 3067-2, -3 (serial numbers below 61000).
 ** 3067-2, -3, and -5 (serial numbers 61000 and above).
 *** Minimum and maximum refer to the smallest and the largest configuration of system model and installed features.

Typical Connections for Customer-supplied Chilled Water†



* IBM supplied:

Six on 3067s with serial number below 60140.
 Four on 3067s with serial number 60140 and higher.

** Customer supplied.

*** Customer supplied:

Three of each when six hoses are used.
 Two of each when four hoses are used.

† Customer should install two supply and two return connections to his water mains, and he should supply applicable flow rate. CDUs delivered with three supply and three return hoses can use two of each, provided that the applicable flow rate is supplied.

Appendix B. Input/Output Device Priority Considerations

I/O Device	Class	Byte Multiplexer Channel Critical Time (ms)	Block Multiplexer and Selector Channel Burst Mode Data Rate (per second)	Notes (Listed at End of Table)
1052-7	3	70.00	14.8 characters	4
1255	1	0.65	Mpxr only	
1259	1	0.80	Mpxr only	
1287	1	0.40	400 characters	
1288	1	0.40	1,000 characters	
1419	1	0.655	Mpxr only	6,7
1442-N1				
Punching Card Image	2	11.00	0.24 kb	
Punching EBCD	2	11.00	0.12 kb	
Reading Card Image	1	0.800	1.07 kb	
Reading EBCD	1	0.800	0.53 kb	
1442-N2				
Punching Card Image	2	11.00	0.24 kb	
Punching EBCD	2	11.00	0.12 kb	
1443-N1				
13-Character Set	3	18.50	1.44 kb	
39-Character Set	3	18.50	0.72 kb	
52-Character Set	3	18.50	0.58 kb	
63-Character Set	3	18.50	0.48 kb	
2150	2	70.00	14.8 characters	
2250-1	3	Burst mode	238.1 kb	
2314 DASF--A Series, B Series, and Model 1	1	Burst mode	312 kb	
2415-1,2,3	1	Burst mode	15 kb	
2415-4,5,6	1	Burst mode	30 kb	
2495	3	1.10	900 characters	
2501-B1				
Card Image	1	0.462	1.60 kb	
EBCD	1	0.462	0.80 kb	
2501-B2				
Card Image	1	0.462	2.67 kb	
EBCD	1	0.462	1.33 kb	
2520-B1				
Both Reading and Punching (Card Image)	1	*	2.67 kb	
Both Reading and Punching (EBCD)	1	*	1.33 kb	
Punching Card Image	2	9.00	1.33 kb	
Punching EBCD	2	9.00	0.67 kb	
Reading Card Image	1	1.02	1.33 kb	
Reading EBCD	1	1.02	0.67 kb	
2520-B2				
Card Image	2	9.00	1.33 kb	
EBCD	2	9.00	0.67 kb	
2520-B3				
Card Image	2	15.00	0.80 kb	
EBCD	2	15.00	0.40 kb	
2596	3	25.00	25.00 kb	

I/O Device	Class	Byte Multiplexer Channel Critical Time (ms)		Block Multiplexer and Selector Channel Burst Mode Data Rate (per second)	Notes (Listed at End of Table)
2701					
IBM Telegraph Adapter SF #4633--75 bps	1	113.30/N**		8.16 characters	1
IBM Terminal Adapter Type I SF #4645--134.5 bps	1	63.20/N		14.40 characters	1
SF #4646--600.0 bps	1	14.10/N		64.00 characters	1
IBM Terminal Adapter Type II SF #4648--600 bps	1	14.10/N		58.00 characters	1
IBM Terminal Adapter Type III SF #4656 and #4657:					
1,200 bps	1	8.30/N		120.00 characters	1
2,400 bps	1	4.15/N		240.00 characters	1
Telegraph Adapter Type I SF #7860--45.50 bps	1	141.30/N		5.44 characters	1
SF #7861--56.89 bps	1	113.20/N		7.40 characters	1
SF #7862--74.20 bps	1	86.90/N		8.88 characters	1
Telegraph Adapter Type II SF #7885--110 bps	1	85.80/N		9.78 characters	1
IBM World Trade Telegraph Adapter SF #2794:					
50 bps	1	128.80/N		5.97 characters	1
75 bps	1	85.80/N		8.96 characters	1
Synchronous Data Adapter Type I SF #7695 and #7696:					
1,200 bps	1	5.83/N		150 characters	1
2,000 bps	1	3.50/N		250 characters	1
2,400 bps	1	2.90/N		300 characters	1
19.2 kbps	1	0.36/N		2,400 characters	1
40.8 kbps	1	0.17/N		5,110 characters	1
Synchronous Data Adapter Type II SF #7697 and #7698 For 6-Bit Transcode (SF #9062 and #9072):					
600 bps	1	19.10/N		100 characters	1,5
1,200 bps	1	9.50/N		200 characters	1,5
2,000 bps	1	5.70/N		333 characters	1,5
2,400 bps	1	4.70/N		400 characters	1,5
4,800 bps	1	2.3/N		800 characters	1,5
7,200 bps	1	1.5/N		1,200 characters	1,5
19.2 kbps	1	0.59/N		3,200 characters	1
40.8 kbps	1	0.28/N		6,800 characters	1
230.4 kbps	1	0.049/N		38,400 characters	1
For EBCDIC (SF #9060 and #9070); ASCII (SF #9061 and #9071):					
600 bps	1	25.80/N		75 characters	1,5
1,200 bps	1	12.90/N		150 characters	1,5
2,000 bps	1	7.70/N		250 characters	1,5
2,400 bps	1	6.40/N		300 characters	1,5
4,800 bps	1	3.2/N		600 characters	1,5
7,200 bps	1	2.1/N		900 characters	1,5
19.2 kbps	1	0.81/N		2,400 characters	1
40.8 kbps	1	0.37/N		5,110 characters	1
230.4 kbps	1	0.067/N		28,750 characters	1
2702					
IBM Terminal Control Type I		<u>Basic</u>	<u>With SF #7955</u>	Mpxr only	
75 bps	1	7.66	3.66		
134.5 bps	1	4.30	1.97		
600 bps	1	0.944			
IBM Terminal Control Type II	1	0.944			
Telegraph Terminal Control Type I					
45 bps	1	10.54	4.94		
50 bps	1	9.34	4.50		
57 bps	1	8.14	3.95		
75 bps	1	6.22	2.96		
100 bps	1	4.67	2.26		
Telegraph Terminal Control Type II	1	5.45	2.64		

I/O Device	Class	Byte Multiplexer Channel Critical Time (ms)				Block Multiplexer and Selector Channel Burst Mode Data Rate (per second)	Notes (Listed at End of Table)
2703		<u>75 bps</u>	<u>134.5 bps</u>	<u>600 bps</u>			
IBM Terminal Control Type I	1	106/nxb	59.5/nxb	13.3/nxb	Mpxr only	8,9	
IBM Terminal Control Type II	1			13.3/nxb	Mpxr only	8,9	
Telegraph Terminal Control Type I	1	<u>45.5 bps</u> 131/nxb	<u>56.89 bps</u> 105/nxb	<u>74.2 bps</u> 80.9/nxb	Mpxr only	8,9	
Telegraph Terminal Control Type II	1	<u>110 bps</u> 81.8/nxb			Mpxr only	8,9	
EBCDIC or ASCII 6-Bit Transcode	1	<u>1,200 bps</u> 12.00/nxb 8.16/nxb	<u>2,000 bps</u> 6.00/nxb 4.08/nxb	<u>2,400 bps</u> 6.00/nxb 4.08/nxb	<u>4,800 bps</u> 3.12/nxb	Mpxr only Mpxr only	8,9 8,9
2715-1	3	Byte mode				Mpxr only	
2803/2804 With 240X							
Model 1	1	Burst mode				30 kb	
Model 2	1	Burst mode				60 kb	
Model 3	1	Burst mode				90 kb	
Model 4	1	Burst mode				60 kb	
Model 5	1	Burst mode				120 kb	
Model 6	1	Burst mode				180 kb	
Model 8	1	Burst mode				60 kb	
2803-2 With 2420-5	1	Burst mode				160 kb	
2803-2 With 2420-7	1	Burst mode				320 kb	
2820 With 2301	1	Burst mode				1.22 mb	2
2821							
1403-2							
600 Lines per Minute	3	15.70				1.32 kb	
750 Lines per Minute (Universal Character Set)	3	15.70				1.65 kb	
1403-3,N1							
1,100 Lines per Minute	3	15.70				2.42 kb	
1,400 Lines per Minute (Universal Character Set)	3	15.70				3.08 kb	
2540-1							
Punching							
Column Binary	2	14.00				0.80 kb	
EBCD	2	14.00				0.40 kb	
Reading							
Column Binary	2	6.50				2.67 kb	
EBCD	2	6.50				1.33 kb	
51-Column, Column Binary	2	8.00				2.13 kb	
51-Column, EBCD	2	8.00				1.07 kb	
2822	2	800 us				1 kb	
2826							
1017 Reading	2	8.33				Mpxr only	
1018 Punching	2	7.00				Mpxr only	
2835 With							
2305-1	1	Block mpxr only				3.0 mb	
2305-2	1	Block mpxr only				1.5 mb	
2840-2	3	Burst mode				238.1 kb	
2841 With							
2303	1	Burst mode				303.8 kb	
2311	1	Burst mode				156.2 kb	
2321	1	Burst mode				54.7 kb	
2844	1	Burst mode				312 kb	
2848	2	0.327				2.56 kb	
2955 (FE DAU)	1	14.1/N				Mpxr only	
3066	3	Burst mode				240 kb	
3210	3	64.5				Byte mpxr only	
3215	3	11.8				Byte mpxr only	

I/O Device	Class	Byte Multiplexer Channel Critical Time (ms)	Block Multiplexer and Selector Channel Burst Mode Data Rate (per second)	Notes (Listed at End of Table)
			<u>800 bpi</u> <u>1,600 bpi</u>	
3411-1	1	Burst mode	-- 20 kb	
3411-2	1	Burst mode	20 kb 40 kb	
3411-3	1	Burst mode	40 kb 80 kb	
3505-B1	3	9.00)	{ Data mode 1: 167 kb	
3505-B2	3	6.00)		{ Data mode 2: 350 kb
3525-P1	2	67.50)	{ Data mode 1: 167 kb	
3525-P2	2	33.75)		{ Data mode 2: 350 kb
3525-P3	2	22.50)		
3540-B1, B2	3	4.11	69-286 kb	
3704	1	Byte mode in emulation	--	11
3704	3	Burst mode	--	10,11
3705	1	Byte mode in emulation	--	11
3705	3	Burst mode in network control program mode	47, 94, 188, 376 kb	10,11
3800				
6 lines per inch	3	5.70	200 kb	13
8 lines per inch	3	4.27	200 kb	13
			<u>1,600 bpi</u> <u>6,250 bpi</u>	
3803 With				
3420-3	1	Burst mode	120 kb --	
3420-4	1	Burst mode	120 kb 470 kb	
3420-5	1	Burst mode	200 kb --	
3420-6	1	Burst mode	200 kb 780 kb	
3420-7	1	Burst mode	320 kb --	
3420-8	1	Burst mode	320 kb 1,250 kb	
3811 With 3211	3	7.08	288 kb	
3830 With 3330	1	Block mpxr only	806 kb	
3830-2 With 3340	1	Burst mode	885 kb	
3830-3 With 3333/3330	1	Block mpxr only	806 kb	
3851-A1-A4, B1-B4	3	--	Runs at channel speed	
3881-1	3	--	115 kb	
3886-1	3	--	124 kb	12
3890	3	360	200 kb	
7770		<u>Input</u>	Mpxr only	
		Manual***		
		<u>NO.</u>	<u>1001</u>	
Basic	1	49.80	9.02	
With 1 SF #4679	1	24.10	4.50	
2 SF #4679	1	16.60	2.99	
3 SF #4679	1	12.00	1.48	
4 SF #4679	1	9.02	1.48	
5 SF #4679	1	7.51	1.48	
Channel-to-Channel Adapter (SF #1850)	3	Burst mode	Variable, runs at rate of slower channel	3

- * Punching and reading should be evaluated separately by using the critical times, device loads, and previous loads listed for the independent operations.
- ** Milliseconds divided by number of attachable lines.
- *** Manual = pushbutton; manual dialing telephone.

Notes:

1. Each of the critical times and each data rate is given for a single adapter. An estimate of the requirements of a particular 2701 may be obtained as follows:
 - a. Find the multiplexer channel critical times for each adapter present in the 2701 and use only the shortest time.
 - b. Divide this shortest time by the number of lines (adapters) on the 2701.
 Example: Consider the 2701 to have a Telegraph Adapter Type II, an IBM Terminal Adapter Type I at 134.5 bps, and a Synchronous Data Adapter Type I at 2,000 bps. The critical times are 85.8, 63.2, and 3.5 ms, respectively. Dividing the shortest time (3.5 ms) by the number of adapters (3) provides the estimated time of 1.1667 ms for this 2701 configuration.
2. Should be attached as shown to the System/370 Model 165 or 168:
 - a. Up to two 2820s to a 2860-1, up to four 2820s to a 2860-2, and up to four 2820s to a 2860-3. No more than two 2820s to any one channel.
 - b. Up to two 2820s to a 2880-1, and up to four 2820s to a 2880-2. No more than two 2820s to any one channel of a 2880-2.
3. Is generally attached to the lowest priority (highest numbered) selector channel. For the Model 165 or 168, the adapter is the first control device on the channel to which it is assigned and has first priority.
4. Must be cabled as any other control unit.
5. The Synchronous Data Adapter Type II "poll" command requires the following turnaround times between the channel request to end the "poll" and the end of the first data cycle of the command chained "read:"

bps	6-Bit Code (ms)	8-Bit Code (ms)
600	10.8	14.0
1,200	5.4	7.0
2,000	3.2	4.2
2,400	2.7	3.5
4,800	1.3	1.7
7,200	0.67	0.85

6. In general, this device should be placed in highest channel priority. However, because of the load imposed on the channel by one or more of these devices as a function of how the device is programmed, it may be necessary for another device to be placed in higher priority.
7. When 1419s are the only class 1 devices (devices subject to overrun--highest priority required) on the channel, they should be cabled physically last but logically first (highest priority). However, if there are other class 1 devices on the channel, the primary control units of the 1419s should be arranged as members of that class so that device priority is established in order of increasing wait times. (Refer to appropriate system channel characteristics publication.)
8. n = total number of lines operating on this particular line base, regardless of speed.
 b = total number of line bases (1,2, or 3) on the 2703.
 nxb = n times b.

After performing these calculations, select the smallest time for the 2703 critical time. This figure will not be exact due to machine configuration, but it should be adequate for determining multiplexer channel priority.

Example: Consider the 2703 to have 4 lines at 4,800 bps and 8 lines at 2,400 bps operating on a Synchronous Line Base Type 2A; 24 lines at 600 bps operating on a Start/Stop Line Base Type II; 16 lines at 45.5 bps and 56 lines at 134.5 bps operating on a Start/Stop Line Base Type I.

$$\left(\frac{3.12}{(8 + 4)3} = 0.087 \right) \left(\frac{6.00}{(8 + 4)3} = 0.167 \right) \left(\frac{13.3}{(24)3} = 0.185 \right) \left(\frac{131}{(56 + 16)3} = 0.607 \right) \left(\frac{59.5}{(56 + 16)3} = 0.276 \right)$$

Select 0.087 ms as the critical time for this 2703 configuration.

9. Generally, the 2703 (a class 1 device) requires highest priority (smallest wait time). However, when there are other class 1 devices and more than one 2703, the 2703's should follow the other class 1 devices.
10. In network control program mode:

$$\text{Allowable Burst Time} = \left(\frac{3(B + C)}{M \frac{2C}{B} + 1} \right)$$

Where: B = Data characters per block
 C = Block overhead bytes per block
 M = Peak 3704 or 3705 throughput data characters

Devices operating in burst mode longer than the preceding allowable time must not be attached to the multiplexer channel when the 3704 or 3705 is operating on the channel. In network control program mode, the 3704 or 3705 is nonoverrunnable.

11. In emulator mode:
 The 3704 and 3705 have the same restrictions as the 2701, 2702, and 2703--generally highest priority. (Refer to the appropriate channel characteristics publication.)
12. Maximum rate is given. Average rate is 113 kb.
13. The formula for finding the average data rate is:
 Average Data Rate (characters per second) = $\frac{\text{Characters per page} \times 30.7}{\text{Length of page (inches)}}$

Appendix C. Customer-supplied Cables

CABLES BY UNIT

Unit	Model	Cable Group Number	IBM Preassembled Cable Assembly	Customer-assembled Cables		Connector Installation Tools (Note 3)	Cable Description
				Bulk IBM Part No.	Connector Group		
1017/2826	2826	c					Used between customer-provided terminal boxes when 1017 is remote from 2826 (350-foot max). See Specification A for cable description. (Note 5)
1018/2826	2826	d					
1053/2848	All	b	5728298	5213821	5729797	7,8	1053 attachment (2,000-foot maximum cable length). (Note 4) Used to connect group 553 to 564. Connectors mate so that more than one cable may be used to make a run.
2250/2840	2250 Model 3	Group 564 to 553	5724309	5213924		9,9A	
2260/2848	All	a	5728291	323921	5729794	2,3,5	Used for display only (less than 1,000-foot cable length). (Notes 4, 7)
2260/2848	All	a	5727685	323921	5729794	2,3,5	
2260/2848	All	a	5728293	5213866	5729796	4,5	Used for display only (1,000-foot to 2,000-foot cable length). (Notes 4, 7) Used to add keyboard (less than 1,000-foot cable length). (Note 4)
2260/2848	All	a	5727686	5213866	5729796	4,5	
2260/2848	All	a	5728292	5213814	5729795	1,2,3,4,5	Used to add keyboard (1,000-foot to 2,000-foot cable length). (Note 4) Combined keyboard display (less than 1,000-foot cable length). (Notes 4, 7)
2260/2848	All	a	5727687 (Note 2)	5214887	5727385	1,2,3,4,5,6	
3277/3271	All	h	2577672	323921	1836418	None	Combined keyboard display (1,000-foot to 2,000-foot cable length). (Notes 4, 7)
3277/3272	All	h	2577672	323921	1836418	None	
3277/3886	1,2	h	2577672	323921	1836418	None	
3284/3271	1,2/1,2,11,12	h	2577672	323921	1836418	None	Used to attach a display or a printer to a control unit. (Note 6) For indoor use.
3284/3272	1,2	h	2577672	323921	1836418	None	
3286/3271	1,2/1,2,11,12	h	2577672	323921	1836418	None	
3286/3272	1,2	h	2577672	323921	1836418	None	Used to attach a display or a printer to a control unit. Intended for indoor/outdoor use. (Notes 8,9)
3288/3271	2	h	2577672	323921	1836418	None	
3288/3272	2/2, 12	h	2577672	323921	1836418	None	
3277/3271	All	l	1833108	5252750	1836419	None	
3277/3272	All	l	1833108	5252750	1836419	None	
3277/3886	1,2	l	1833108	5252750	1836419	None	
3284/3271	1,2/1,2,11,12	l	1833108	5252750	1836419	None	
3284/3272	1,2	l	1833108	5252750	1836419	None	
3286/3271	1,2/1,2,11,12	l	1833108	5252750	1836419	None	
3286/3272	1,2	l	1833108	5252750	1836419	None	
3288/3271	2/2, 12	l	1833108	5252750	1836419	None	
3288/3272	2	l	1833108	5252750	1836419	None	

Notes:

- One run was formerly bulk IBM 532029. Requires tools 1 and 5 on tool listing for attaching connectors.
- Formerly 5729793, consisted of IBM bulk parts 323921, 532029, and 5213866 (one run each), and connector group 5729798.
- Installation tools for customer-assembled cables must be supplied by the customer. See "Special Tools Required."
- Before ordering parts or cables, see "Cable Installation Practice for 2260/2848 and 1053/2848" in Section 3.
- Installation tools are determined by the type of terminal box provided by the customer and these tools must be supplied by the customer.
- IBM connector kit 1836418 contains two BNC connectors (IBM 1836444; commercial source is Bendix 30220-3). Maximum cable length is 2,000 feet.
- Can be reworked for 3270 Information Display System application. See rework instructions under "Cable Installation Practice for 3270" in Section 3.
- IBM connector kit 1836419 contains two BNC connectors (IBM 1836447; commercial source is Bendix 39100-16). Maximum cable length is 2,000 feet.
- 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.

SPECIAL TOOLS REQUIRED

Tool Code Number	Commercial Tool Number	Component Name	Component IBM Part Number	Component Commercial Part Number*
1	Burndy MR8EC-2	Uniring	523171	Burndy YEC130
		Uniring	2109464	Burndy YEC90
2	Burndy MR8EC-3	Uniring	2152868	Burndy YEC160
3	AMP69454	Connector	321051	AMP320559
4	Berg HT13-1618	Terminal	591047	Berg 3960
5	Berg HT15-20	Terminal	596255	Berg B-T4036-1
6	Raychem Minigun CV-5300	Shrink Tubing	631810	Raychem 0.75" (19,05 mm)
7	AMP90067 and Extraction Tool AMP305183	Contact	2122259	AMP66104-1
	AMP90067 and Extraction Tool AMP305183	Contact	2122261	AMP66100-1
8	AMP90165-1	Terminal	1127037	AMP41274
9	Burndy M8ND	Female	595980	---
	Burndy N22RVT-1	Pin	595985	---
	Burndy RX4-1	Inner Socket	595987	---
9A**	Buchanan	Female	595980	---
	Hand Tool 11220-3	Pin	595985	---
		Inner Socket	595987	---

* Or approved equivalent part.

** Replaces Burndy equipment.

CABLE DESCRIPTIONS

Part 323921—Commercial Designation RG62A/U

Conductor	AWG Size	OD Inches (mm)	UL Rating	Insulation Type	Cover
Copperweld Solid	#22	0.242 (6,1)	600V*	Flame-Retardant Polyethylene	PVC (noncontaminating) Color Black Shield Copper Braid

Source: IBM or customer-selected source.

* Jacket only.

Part 5252750—Commercial Designation RG62A/U (Modified for Outdoor Use per UL Subject 493)

Conductor	AWG Size	OD Inches (mm)	UL Rating	Insulation Type	Cover
Copperweld Solid	#22	0.260 (6,6)	600V**	Flame-Retardant Polyethylene	PVC (UL Subject 493) Color Black Shield Copper Braid Polyester Tape*

Source: IBM or customer-selected source.

* Must be 0.001 inch (0,03 mm) thick between shield and cover.

** Shield to ground.

Part 532029—If larger size is not objectionable, use part 323921

Conductor	AWG Size	OD Inches (mm)	UL Rating	Insulation Type	Cover
Copperweld Solid	#26	0.143 (3,6)	300V*	Flame-Retardant Polyethylene	PVC Color Gray Shield Copper Braid

Source: IBM or customer-selected source.

* Shield to ground.

Specification A—IBM 1017 to 2826 (Customer Supplied)

Conductor	AWG Size*	OD* Inches (mm)	UL Rating	NFPA Application Type	Insulation Type	Cover
Copper 7 x 30 Stranding, Tinned	#22	0.640 to 0.690 (16,3 to 17,5)	300V 80°C	Class 2 Low-Energy Circuit Under 30V	Flame-Retardant PVC (or equivalent)	PVC (or equivalent)

Thirty-two twisted pairs. Pairs twisted one turn per 1.50 ± 0.25 inches (38,1 \pm 6,3 mm).

One conductor of each pair is black; the other conductor is color-coded to agree with American EIA standard GEN 101.

* May be larger if resulting cable size is not objectionable.

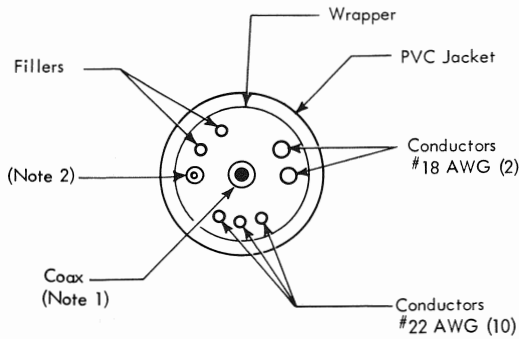
Specification B—IBM 1018 to 2826 (Customer Supplied)

Conductor	AWG Size*	OD* Inches (mm)	UL Rating	NFPA Application Type	Insulation Type	Cover
Copper 7 x 28 Stranding, Tinned	#20	1.048 to 1.148 (26,7 to 29,2)	300V 80°C	Class 2 Low-Energy Circuit Under 30V	Flame-Retardant PVC (or equivalent)	PVC (or equivalent)

Forty twisted pairs. Pairs twisted one turn per 1.00 ± 0.12 inch (25,4 \pm 3,0 mm).

* May be larger if resulting cable size is not objectionable.

Part 5213814

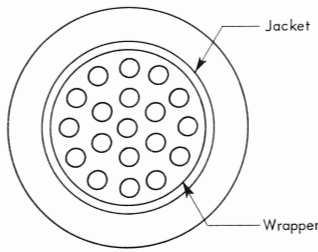


Cable Specifications									
No. of Cond	Shield	Cable OD Inches (mm)	Filler	Wrapper or Separator Inches (mm)	Jacket				Remarks
					Material	Nominal Thickness Inches (mm)	Color	Finish	
14	—	0.462 ± 0.025 (11,7 ± 0,6)	PVC (Note 3)	0.001 Mylar (0,03)	PVC	0.063 (1,6)	IBM 823 Gray	Smooth	See Note 4

Specifications for Individual Conductors												
Wire No.	Conductor				Insulation				UL Rating			
	AWG Size	Nominal OD Inches (mm)		Material	Stranding	Material	Wall Thickness Average Inches (mm)		Body Color	Tracer	Volts	Temp °C
1	22	0.025	(0,6)	CW	Solid	(Note 1)				—	300	80
2	18	0.040	(1,0)	Tinned Cu	16/30	PVC	0.009	(0,2)	Blk	—	↓	↓
3	18	0.040	(1,0)	↓	7/30	↓	↓	↓	Wh	—	↓	↓
4	22	0.025	(0,6)	↓	↓	↓	↓	↓	Blk	—	↓	↓
5	↓	↓	↓	↓	↓	↓	↓	↓	Wh	—	↓	↓
6	↓	↓	↓	↓	↓	↓	↓	↓	Red	—	↓	↓
7	↓	↓	↓	↓	↓	↓	↓	↓	Blu	—	↓	↓
8	↓	↓	↓	↓	↓	↓	↓	↓	Gra	—	↓	↓
9	↓	↓	↓	↓	↓	↓	↓	↓	Org	—	↓	↓
10	↓	↓	↓	↓	↓	↓	↓	↓	Aqu	—	↓	↓
11	↓	↓	↓	↓	↓	↓	↓	↓	Vio	—	↓	↓
12	↓	↓	↓	↓	↓	↓	↓	↓	Yel	—	↓	↓
13	↓	↓	↓	Tinned Cu	↓	↓	↓	↓	Brn	—	↓	↓
14	22	0.025	(0,6)	(Note 2)	7/30	PVC	0.009	(0,2)	Wh	Blk	300	80

- Notes:
- Conductor to be coax—93 ohms, 13.5 pf/ft (44 pf/m), without outer PVC jacket.
 - A #22 AWG (nominal OD 0.025 inch [0,6 mm]) conductor shielded; a #36 AWG (nominal OD 0.005 inch [0,13 mm]) conductor tinned copper, 90% minimum coverage with black PVC jacket.
 - Fillers required to effect circular cross section.
 - Completed cable shall be capable of withstanding one complete turn around a 3-inch (76,2-mm) radius mandrel at room temperature without damage to wires or cover.

Part 5213821



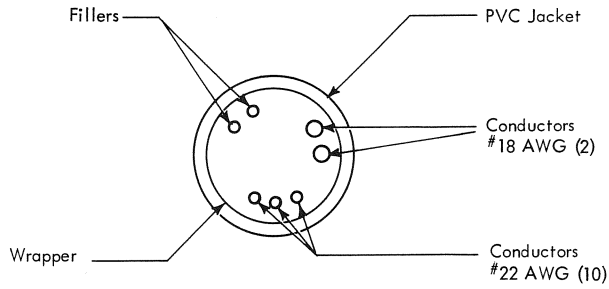
Cable Specifications									
No. of Cond	Shield	Cable OD Inches (mm)	Filler	Wrapper or Separator Inches (mm)	Jacket				Remarks
					Material	Nominal Thickness Inches (mm)	Color	Finish	
24		0.470 ± 0.025 (11,9 ± 0,6)	PVC (Note 2)	0.001 Mylar (0,03)	PVC (Note 1)	0.063 (1,6)	IBM 823 Gray	Smooth	See Notes 4 and 5

Specifications for Individual Conductors											
Wire No.	Conductor				Insulation				UL Rating		
	AWG Size	Nominal OD Inches (mm)		Material	Stranding	Material	Wall Thickness Average Inches (mm)	Body Color	Tracer	Volts	Temp °C
1	18	0.040	(1,0)	Tinned Cu	16/30	PVC	0.016 (0,4)	Blk	-	300	80
2	↓	↓	↓	↓	↓	↓	↓	Wh	-	↓	↓
3	↓	↓	↓	↓	↓	↓	↓	Red	-	↓	↓
4	↓	↓	↓	↓	↓	↓	↓	Yel	-	↓	↓
5	↓	↓	↓	↓	↓	↓	↓	Org	-	↓	↓
6	↓	↓	↓	↓	↓	↓	↓	Blu	-	↓	↓
7	↓	↓	↓	↓	↓	↓	↓	Brn	-	↓	↓
8	↓	↓	↓	↓	↓	↓	↓	Vio	-	↓	↓
9	↓	↓	↓	↓	↓	↓	↓	Aqu	-	↓	↓
10	↓	↓	↓	↓	↓	↓	↓	Gra	-	↓	↓
11	↓	↓	↓	↓	↓	↓	↓	Wh	-	↓	↓
12	↓	↓	↓	↓	↓	↓	↓	Wh	Red	↓	↓
13	18	0.040	(1,0)	↓	16/30	↓	↓	Grn (Note 3)	Yel	↓	↓
14	20	0.032	(0,8)	↓	10/30	↓	↓	Blk	-	↓	↓
15	↓	↓	↓	↓	↓	↓	↓	Wh	-	↓	↓
16	↓	↓	↓	↓	↓	↓	↓	Red	-	↓	↓
17	↓	↓	↓	↓	↓	↓	↓	Yel	-	↓	↓
18	↓	↓	↓	↓	↓	↓	↓	Org	-	↓	↓
19	↓	↓	↓	↓	↓	↓	↓	Blu	-	↓	↓
20	↓	↓	↓	↓	↓	↓	↓	Brn	-	↓	↓
21	↓	↓	↓	↓	↓	↓	↓	Vio	-	↓	↓
22	↓	↓	↓	↓	↓	↓	↓	Aqu	-	↓	↓
23	↓	↓	↓	↓	↓	↓	↓	Gra	-	↓	↓
24	20	0.032	(0,8)	Tinned Cu	10/30	PVC	0.016 (0,4)	Wh	Red	300	80

Notes:

1. Jacket material: elongation—200% minimum; tensile—1,800 psi minimum; hardness—shore A 80 + 5.
2. Fillers optional to effect a circular cross section.
3. Grounding wire is to be colored green (60 to 70%) with yellow (40 to 30%) helix.
4. Completed cable shall be capable of withstanding one complete turn around a 3-inch (76,2-mm) radius mandrel at room temperature without damage to wires or cover.
5. For 1053-to-1801/1802 cables, see IBM Data Acquisition and Control System/1800 Installation Manual—Physical Planning, GA26-5922.

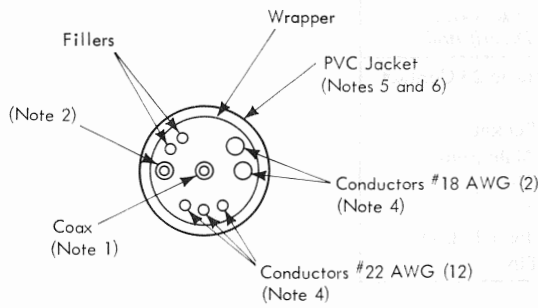
Part 5213866



Cable Specifications									
No. of Cond	Shield	Cable OD Inches (mm)	Filler	Wrapper or Separator Inches (mm)	Jacket				Remarks
					Material	Nominal Thickness Inches (mm)	Color	Finish	
12		0.376 ± 0.015 (9,6 ± 0,4)	PVC	0.001 Mylar (0,03)	PVC	0.063 (1,6)	IBM 823 Gray	Smooth	See Note

Specifications for Individual Conductors											
Wire No.	Conductor				Insulation				UL Rating		
	AWG Size	Nominal OD Inches (mm)	Material	Stranding	Material	Wall Thickness Average Inches (mm)	Body Color	Tracer	Volts	Temp °C	
1	18	0.040 (1,0)	Tinned Cu	16/30	PVC	0.009 (0,2)	Blk	—	300	80	
2	18	0.040 (1,0)	↓	16/30	↓	↓	Wh	—	↓	↓	
3	22	0.025 (0,6)	↓	7/30	↓	↓	Blk	—	↓	↓	
4	↓	↓	↓	↓	↓	↓	Wh	—	↓	↓	
5	↓	↓	↓	↓	↓	↓	Red	—	↓	↓	
6	↓	↓	↓	↓	↓	↓	Blu	—	↓	↓	
7	↓	↓	↓	↓	↓	↓	Gra	—	↓	↓	
8	↓	↓	↓	↓	↓	↓	Org	—	↓	↓	
9	↓	↓	↓	↓	↓	↓	Aqu	—	↓	↓	
10	↓	↓	↓	↓	↓	↓	Vio	—	↓	↓	
11	↓	↓	↓	↓	↓	↓	Yel	—	↓	↓	
12	22	0.025 (0,6)	Tinned Cu	7/30	PVC	0.009 (0,2)	Brn	—	300	80	

Note:
Completed cable shall be capable of withstanding one complete turn around a 3-inch (76,2-mm) radius mandrel at room temperature without damage to wires or cover.



Cable Specifications								
No. of Cond	Shield	Cable OD Inches (mm)	Filler	Wrapper or Separator Inches (mm)	Jacket			
					Material	Nominal Thickness Inches (mm)	Color	Finish
16	-	0.497 ± 0.025 (12,6 ± 0,6)	PVC (Note 3)	0.001 Mylar (0,03)	PVC (Notes 5 and 6)	0.063 (1,6)	Black	Smooth

Specifications for Individual Conductors											
Wire No.	Conductor				Insulation				UL Rating		
	AWG Size	Nominal OD Inches (mm)	Material	Stranding	Material	Wall Thickness Average Inches (mm)	Body Color	Tracer	Volts	Temp °C	
1	22	0.025 (0,6)	CW	Solid	(Note 1)	0.009 (0,2)	Blk	-	300	80	
2	18	0.040 (1,0)	Tinned Cu (Note 4)	16/30	SR PVC		Wh	-			
3	18	0.040 (1,0)	Tinned Cu (Note 2)	16/30	SR PVC	0.009 (0,2)	Blk	-	300	80	
4	22	0.025 (0,6)		7/30			Wh	-			
5	↓	↓		↓			↓	Wh			-
6	↓	↓		↓			↓	Red			-
7	↓	↓		↓			↓	Blu			-
8	↓	↓		↓			↓	Gra			-
9	↓	↓		↓			↓	Org			-
10	↓	↓		↓			↓	Aqu			-
11	↓	↓		↓			↓	Vio			-
12	↓	↓		↓			↓	Yel			-
13	↓	↓		↓			↓	Brn			-
14	↓	↓		↓			↓	Wh			Blk
15	22	0.025 (0,6)	Tinned Cu	7/30	SR PVC	Wh	Red	300	80		
16	22	0.025 (0,6)	Tinned Cu	7/30	SR PVC	Wh	Blu	300	80		

Notes:

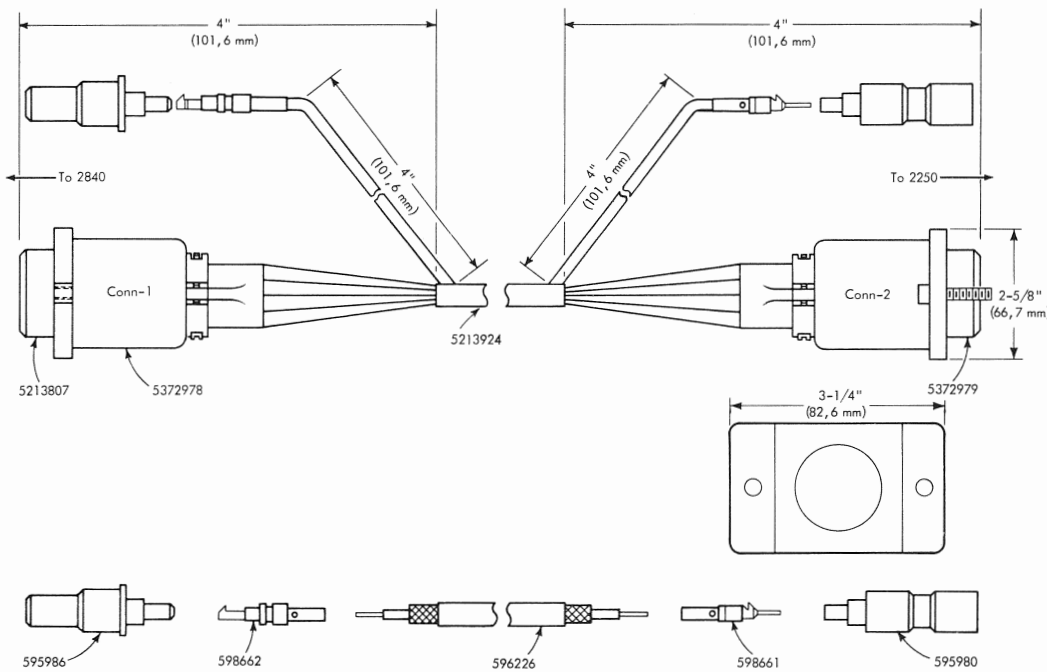
1. Conductor to be coax-93 ohm, 13.5 pf/ft (44 pf/m), without outer PVC jacket.
2. A #22 AWG (nominal OD 0.025 inch [0,6 mm]) conductor shielded; #36 AWG (nominal OD 0.005 inch [0,13 mm]) conductor tinned copper, 90% minimum coverage with black PVC jacket; 0.015 inch (0,4 mm) nominal wall.
3. Fillers required to effect circular cross section.
4. Conductors to be UL style 1061.
5. Jacket material must meet the requirements of IPCEA S-61-402 outdoor use; color is black.
6. Jacket material hardness-shore A 85 ± 5.

Part 5724309

Quantity	IBM Part Number	Burdyn Corporation Part Number *	Description
1	5213807	ME23XR-1	Receptacle 23 Contact
2	5372978	MEH23X-1	Hood
21	598662	RC26W-1F45	Inner Socket
21	595986	RMX109-1F45	Outer Male Body
40	596226	YOE112-L	Outer Hyring
1	5372979	ME23XP-1T	Plug
21	595980	RCX109-1F45	Outer Female Body
21	598661	RM26W-1F45	Inner Pin

Note: Assemble to Specification No. 890130 and 895441; specifications available from IBM upon request.

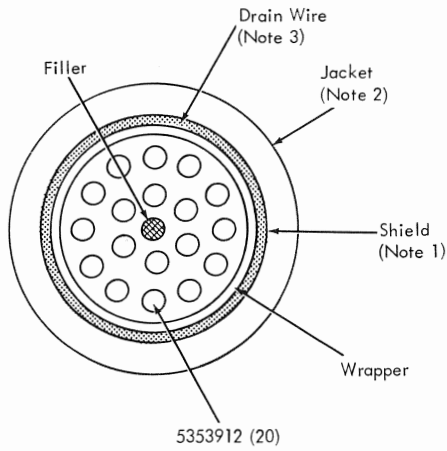
* Or approved equivalent part.



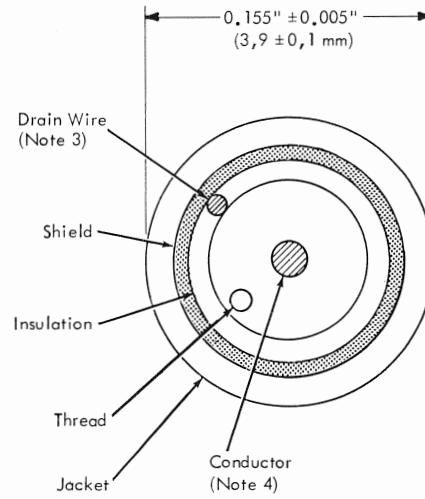
From	To
Conn-1 Pin	Conn-2 Pin
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11

From	To
Conn-1 Pin	Conn-2 Pin
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
23	23

Part 5213924



Part 5353912



Cable Specifications (Part 5213924)								
No. of Cond	Shield	Cable OD Inches (mm)	Filler	Wrapper or Separator Inches (mm)	Jacket			
					Material	Nominal Thickness Inches (mm)	Color	Finish
20	(Note 1)	1.005 ± 0.040 (25,5 ± 1,0)	PVC	0.001 Mylar (0,03)	PVC (Note 2)	0.063 (1,6)	IBM 823 Gray	Smooth

Specifications for Individual Conductors (Part 5353912)										
Wire No.	Conductor		Insulation	Jacket			Shield	UL Rating		Drain Wire
	AWG Size	Material	Material (Insulation and Thread)	Material	Nominal Thickness Inches (mm)	Color	Material and Coverage	Volts	Temp °C	
1-20	#26 Solid	Silver-Plated Copper Alloy (Note 4)	Flame-Retardant Polyethylene	PVC	0.015 (0,4)	Gray	#38 (nominal OD 0.004 inch [0,10 mm]) AWG Tinned Copper 90% Min Coverage	90	80	Silver-Plated Copper Alloy (Note 5)

Notes:

- Shield to be #34 AWG (nominal OD 0.006 inch [0,15 mm]) tinned copper, 90% minimum coverage.
- Tensile strength—1,800 psi (1,3 kg f/mm²) minimum; elongation—200% minimum; hardness—shore A 85 ± 5.
- Drain wire is under shield. A #26 AWG (nominal OD 0.016 inch [0,4 mm]) solid copper alloy spiral lay.
- Dc resistance—52 ohms maximum per 1,000 feet; break force—12.5 lb (5,7 kg) minimum (conductor).
- A #29 AWG (nominal OD 0.110 inch [0,3 mm]) solid copper alloy spiral lay; dc resistance—100 ohms maximum per 1,000 feet; break force—5.6 lb (2,6 kg) minimum; elongation—6% minimum (drain wire).

Appendix D. Power Cord Style Specifications and Plug Installation (World Trade Reference)

CABLE SPECIFICATIONS

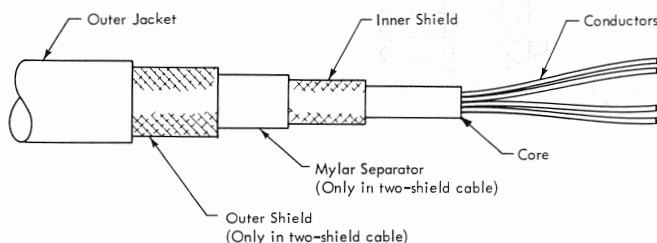
Power Cord Style	Cable Nominal OD inches (mm)	Number of Shields	Conductors		
			Quantity	Nominal OD* inches (mm)	AWG No.
A1	0.520 (13,2)	1	3	0.064 (1,6)	14
A2	0.510 (13,0)	1	3	0.081 (2,1)	12
A3	0.570 (14,5)	1	3	0.102 (2,6)	10
A4	0.375 (9,5)	1	3	0.051 (1,3)	16
A5	0.390 (9,9)	0	3	0.051 (1,3)	16
A6	0.560 (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
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
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
E10	1.340 (34,0)	1	4	0.232 (5,9)	4
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

* This diameter refers to solid, bare wire.

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

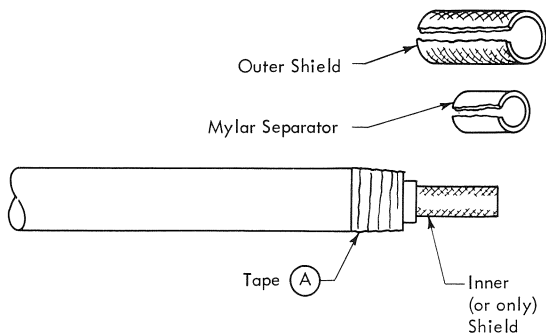


Preparing Bulk Cable End for the Plug

Dimensions given are for reference only. The installer is to use his own discretion to assure proper assembly of the cable and plug.

Step 1: Remove outer jacket for 1-1/2 inches (38 mm) from end for 15A-30A cables or 2-3/4 inches (70 mm) from end for 45A-60A cables. If this is a one-shield cable, go to step 4.

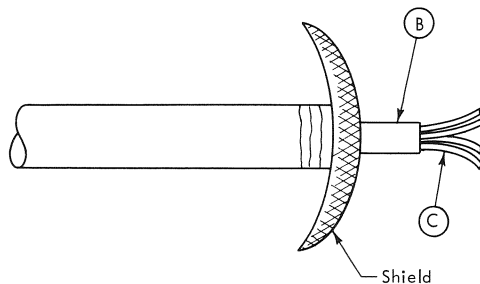
Step 2: (For two-shield cables only.) Remove the outer shield as far back as the outer jacket. The Mylar separator is exposed. Wrap one full turn of electrical tape over the separator and another full turn of tape over the cut end of the outer shield; overlap onto the outer jacket. This tape is used to assure complete electrical isolation between the inner and the outer shields. (See (A).)



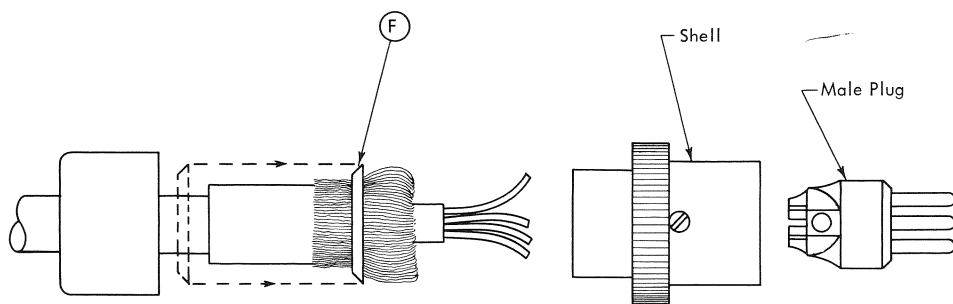
Step 3: (For two-shield cables only.) Remove Mylar separator for 1 inch (25 mm) from end for 15A-30A cables or 2-1/4 inches (57 mm) from end for 45A-60A cables. Do not cut the inner shield.

Step 4: Do not cut the inner (or only) shield. Unbraid and carefully comb out the shield for 1 inch (25 mm) from end for 15A-30A cables or 2-1/4 inches (57 mm) from end for 45A-60A cables. The core is exposed. (See (B).)

Step 5: Remove 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 protec-

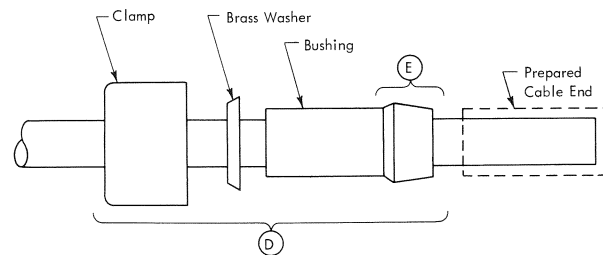


tion. Note that on two-shield cables, the outer shield must be insulated from the plug cap, equipment ground (earth) wire, conduit, and so on; the outer shield is grounded at the machine end only. The inner (or only) shield should be grounded through the shell of the plug to the branch circuit conduit. Three-hundred-sixty-degree grounding of the shield to the plug shell is desirable; that is, making contact 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.

Appendix E. Template Index

Type	Model	Order (Form) Number	Type	Model	Order (Form) Number
360 and 370	Field Engineering Furniture and Test Equipment	GX22-6925	2319	A1-A3	GX22-6858
			2321	1	GX22-6858
370	115	<u>See</u> 3115-0, 3115-2	2401	1-6, 8	GX22-7037
370	125	<u>See</u> 3125-0, 3125-2	2402	1-6	GX22-6855
370	135	<u>See</u> 3135	2403	1-6	GX22-6855
370	145 FED, GE, GFD, H, HG, I	<u>See</u> 3145	2404	1-3	GX22-6855
370	145 H2, HG2, I2, IH2, J2, JI2, K2	<u>See</u> 3145	2415	1-6	GX22-7038
			2420	5, 7	GX22-7039
370	155 H-J	<u>See</u> 3155 H-J	2495	1	GX22-7041
370	155 JI, K	<u>See</u> 3155 JI, K	2501	B1, B2	GX22-6834
370	158	<u>See</u> 3158, 3158-3	2520	B1-B3	GX22-6834
370	158 MP	<u>See</u> 3158, 3158-3 MP	2540	1	GX22-6834
370	165 I, J	<u>See</u> 3165 I, J	2560	A1, A2	GX22-6834
370	165 JI, K	<u>See</u> 3165 JI, K	2596	1	GX22-6834
370	165 KJ	<u>See</u> 3165 KJ	2701	1	GX22-6857
370	168	<u>See</u> 3168, 3168-3	2702	1	GX22-6857
370	168 MP	<u>See</u> 3168, 3168-3 MP	2703	1	GX22-6857
370	195 J1, K1	<u>See</u> 3195 J1, K1	2711	1	GX22-6857
370	195 KJ1, L1	<u>See</u> 3195 KJ1, L1	2715	1, 2	GX22-6857
1017	1, 2	GX22-6834	2803	1-3	GX22-7042
1018	1	GX22-6834	2804	1-3	GX22-7043
1052	7	GX22-6856 GX22-6859 GX22-6894 GX22-6905 GX22-6914 GX22-6924	2816	1	GX22-7044
			2820	1	GX22-6858
			2821	1-6	GX22-6834
			2822	1	GX22-6834
1053	4	GX22-6859	2826	1	GX22-6834
1255	1-3	GX22-6860	2835	1, 2	GX22-6858
1259	2	GX22-6860	2840	2	GX22-6859
1287	1-5	GX22-6860	2841	1	GX22-6858
1288	1	GX22-6860	2844	1	GX22-6858
1403	2, 3, 7, N1	GX22-6834	2848	1-3, 21, 22	GX22-6859
1419	1	GX22-6860	2860	1-3	GX22-6985
1442	N1, N2	GX22-6834	2870	1	GX22-6985
1443	N1	GX22-6834	2880	1, 2	GX22-6985
2150	1	GX22-6859	3046	1 (With Model 135)	GX22-7008
2250	1, 3	GX22-6859	3046	1 (With Model 145)	GX22-7005
2260	1, 2	GX22-6859	3047	1 (With Model 145)	GX22-7005
2285	1	GX22-6859	3056	(With Model 158)	GX22-7023
2301	1	GX22-6858	3060	1 (With Model 195)	GX22-6981
2303	1	GX22-6858	3066	1 (With Model 165)	GX22-7007
2305	1, 2	GX22-6858	3066	2 (With Model 168)	GX22-7022
2311	1	GX22-6858	3067	1 (With Model 165)	GX22-7007
2314	A Series, B Series, 1	GX22-6858			

Type	Model	Order (Form) Number	Type	Model	Order (Form) Number
3067	2, 3 (Serial Numbers 61000 and above With Model 168)	GX22-7022	3215	1	GX22-6859
			3215	1 (With Model 145)	GX22-7005
3067	2, 3 (Serial Numbers below 61000 With Model 168)	GX22-7022	3215	1 (With Model 155)	GX22-7006
			3215	1 (With Model 135)	GX22-7008
3068	1 (With Model 168 MP)	GX22-7022	3330	1, 2, 11	GX22-7047
3080	1-3 (With Model 195)	GX22-6981	3333	1, 11	GX22-7047
3085	1 (With Model 195)	GX22-6981	3340	A2, B1, B2	GX22-7029
3086	1 (With Model 195)	GX22-6981	3345	1-5 (With Model 145)	GX22-7005
3115-0, 3115-2		GX22-7028	3350	A2, A2F, B2, B2F, C2, C2F	GX22-7057
3125-0, 3125-2		GX22-7021	3360	1-3 (With Model 155)	GX22-7006
3135		GX22-7008	3360	4, 5 (With Model 165)	GX22-7007
3145	FED, GE, GFD, H, HG, I	GX22-7005	3410	1-3	GX22-7035
3145	H2, HG2, I2, IH2, J2, JI2, K2	GX22-7005	3411	1-3	GX22-7035
3155	H-J	GX22-7006	3420	3-8	GX22-7030
3155	JI, K	GX22-7006	3504	A1, A2	GX22-6834
3158, 3158-3		GX22-7023	3505	B1, B2	GX22-6834
3158, 3158-3	MP	GX22-7023	3525	P1-P3	GX22-6834
3165	I, J	GX22-7007	3540	B1, B2	GX22-7045
3165	JI, K	GX22-7007	3704		GX22-7032
3165	KJ	GX22-7007	3705		GX22-7051
3168, 3168-3		GX22-7022	3705	Expansion Module	GX22-7051
3168, 3168-3	MP	GX22-7022	3800		GX22-7054
3195	J1, K1	GX22-6981	3803	1, 2	GX22-7030
3195	KJ1, .L1	GX22-6981	3811	1	GX22-6834
3203	1, 2 (With Model 125)	GX22-7021	3830	1, 2, 3	GX22-7046
3203	1, 2 (With Model 115)	GX22-7028	3851	A1-A4, B1-B4	GX22-7053
3210	1	GX22-6859	3881	1-3	GX22-7052
3210	1 (With Model 145)	GX22-7005	3886	1, 2	GX22-7052
3210	1 (With Model 155)	GX22-7006	3890	A1-A6, B1-B6	GX22-7031
3210	1 (With Model 135)	GX22-7008	5203	3 (With Model 115)	GX22-7028
3210	2	GX22-6859	5213	1	GX22-6859
3210	2 (With Model 145)	GX22-7005	5425	A1, A2 (With Model 125)	GX22-7021
3210	2 (With Model 155)	GX22-7006	5425	A1, A2 (With Model 115)	GX22-7028
3211	1	GX22-6834	7770	3	GX22-6857
3213	1	GX22-6859			
3213	1 (With Model 158)	GX22-7023			
3213	1 (With Model 168)	GX22-7022			

Appendix F. System/370 Specification Summary (English Units)

Type	Model	Description	Electrical			Environmental		Weight (lb)	Dimensions (inches)			Service Clearances (inches)				Notes (Listed at End of Table)	
			kVA	Pwr Cord Style	Plug Note	BTU/hr	cfm		Front	Side	Height	F	R	Rt	L		
370	115	3115-0 and 3115-2 Processing Units		E7	E											1,2,5,11	
370	125	3125-0 and 3125-2 Processing Units		E7	E											1,2,5,11	
370	135	3135 Processing Unit		D2	D						60					1,2,4,5,11	
370	145	3145 Processing Unit			F						60					1,2,4,11	
370	155	3155 Processing Unit		E-	E						60					1-4,11	
370	158,158MP	3158 and 3158-3 Processing Units		F2	F						60					1-4,11	
370	165	3165 Processing Unit														1-4,11	
370	165,168	MG (Remote)											45	45		1,11	
370	168,168MP	3168 and 3168-3 Processing Units														1-4,11	
370	168AP	3168-3 Processing Unit														1-4,11	
370	195	3195 Proc Unit & Stg MG (Remote)									70					1,4,5,11	
370	195	Rotary Conv (Remote)					22,915		1,550							1,7,11	
1017	1	Paper Tape Reader	0.1	A9			300		42	56	19	14	11-1/2	30	30	30	10
1017	2	Paper Tape Reader	0.4	A9			750		60	19	14	15		30	6	10	10
1018	1	Paper Tape Punch	0.2	A9			600		67	14	17-1/4	14		30	6	10	10
		(Note 11 applies to SN 00250 and above)															
1052	7	Printer-Keyboard	0.17				570		65	23	19-3/4	9					1,6
1053	4	Printer	0.2	G2	H/K		570		35	23	11-1/2	9					1,6
1255	1,2	Magnetic Char Rdr	0.96	A1	A		2,600	300	560	39	29-1/2	55	30	40	30	30	11
1255	3	Magnetic Char Rdr	0.96	A1	A		2,600	300	700	58-1/2	29-1/2	55	30	40	30	30	11
1259	2	Magnetic Char Rdr	2.3	D3	D		5,000	260	1,400	78	29-1/4		44	44	20	36	1
1287	1,2	Optical Reader	4.0	D1	D		10,000	900	2,900			60	36	48	30	36	1,8
1287	3,4	Optical Reader	5.0	D1	D		13,300	1,400	3,900			60	36		30	36	1,8
1287	5	Optical Reader	4.0	D1	D		10,000	900	2,800			60	36	48	30	36	1,8
1288	1	Optical Page Reader	5.2	D1	D		13,000	1,330	3,900			60	60	60	30	36	1,8
1403	2	Printer	1.0				3,000	310	750	47-3/4	28-1/2	53-1/4	36	36	30	30	6
1403	3	Printer	1.2				3,600	350	750	47-3/4	28-1/2	53-1/4	36	36	30	30	6
1403	7	Printer	0.8				2,400	310	750	47-3/4	28-1/2	53-1/4	36	36	30	30	6
1403	N1	Printer	1.5				4,500	350	1,250	57-1/8	29	53-1/2	36	36	42	42	6,11
1419	1	Magnetic Char Rdr		D1	C												1,8
1442	N1	Card Read Punch	0.8	A1	A		2,200	0	575	43	24	49	36	42	6	18	5
1442	N2	Card Punch	0.8	A1	A		2,200	0	575	43	24	49	36	42	6	18	5
1443	N1	Printer	1.1	A1	A		3,200	50	800	55-7/8	43	46	36	36	48	30	
2150	1	Console	0.65	B1	B		1,740	180	800	64	28-3/4	52-1/8	30	48	30	30	
2250	1	Display Unit		A2	A			620	890			50					1,8
2250	3	Display Unit	1.5	A2	A		2,600	380	770			50					1,8
2260	1,2	Dply Statn, W Kybd	0.22	G1	H/J			35	56	13-3/4	22-3/4	17-3/8	0	1	5	3	1
2260	1,2	Dply Statn, WO Kybd	0.22	G1	H/J			35	36	13-3/4	16-3/4	17-3/8	0	1	5	3	1
2285	1	Display Copier	1.5				750		350	22	30	40	30	30	26	30	1,6
2301	1	Drum Storage					3,800	320	850	34-1/2	29	64	48	48	42	42	1,6
2303	1	Drum Storage					3,800	250	850	34-1/2	29	64	48	48	42	42	1,6
2305	1,2	Fixed Head Storage									32-1/2	60	36	42			1,6,11
2311	1	Disk Storage Drive	0.75				2,000	100	280	30	24	38	36	36			1,6,11
2312	A1	Disk Storage						200	500	27	32	60	36	48	0	0	1,6,11
2313	A1	Disk Storage						400	1,375	54	32	60	36	48	0	0	1,6,11
2314	A Series	(See also 2312-A1, 2313-A1, 2314-A1, 2318-A1)															
							20,400	2,000	4,200	183	32	60	36	48	42	24	1,8,11
2314	B Series	(See also 2314-B1, 2319-B1, 2319-B2)	6.5				19,600	2,200	4,250	210	32	60	36	48	42	24	1,8,11
2314	A1	Storage Control						1,000	950	47	31-1/2	60	36	48	42	0	1,8,11
2314	B1	Storage Control	1.1					1,000	950	47	31-1/2	60	36	48	42	0	1,8,11
2314	1	Direct Acc Stg Fctly		E1	E		20,400	2,000	4,200	183	32	60	36	48	42	24	1,8,11
2318	A1	Disk Storage						200	690	27	32	60	36	48	0	0	1,6,11
2319	A1,A2	Disk Storage	1.8				5,500	400	1,100		32	60	36	48	0	24	1,6,11
2319	A3	Disk Storage						400	1,160		32	60	36	48	0	24	1,6,11
2319	B1,B2	Disk Storage	1.8				5,500	400	1,100	54	32	60	36	48	0	0	11
2321	1	Data Cell Drive	4.4	D2	D		10,600	850	1,825	68-1/2	51	60	30	30			1,8
2401	1-6,8	Magnetic Tape Unit	1.6				3,500	500	800	29-3/4	29	67	36	36			1,6,11

Type	Model	Description	Electrical			Environmental		Weight (lb)	Dimensions (inches)			Service Clearances (inches)				Notes (Listed at End of Table)
			kVA	Pwr Cord Style	Plug Note	BTU/hr	cfm		Front	Side	Height	F	R	Rt	L	
2402	1-6	Magnetic Tape Unit	3.2			7,000	1,000	1,600	60	29	67	36	36			1,6,11
2403	1-6	Mag Tape Unit & Ctrl	2.1	E2	E	5,500	1,000	1,450	60	29	67	42	42	30		1,6,11
2404	1-3	Mag Tape Unit & Ctrl	2.4	E2	E	6,300	1,200	1,650	60	29	67	42	42	30		1,6,11
2415	1,4	Mag Tape Unit & Ctrl		D1	D		1,250	1,400	60	30	67	36	36	36		1,5
2415	2,5	Mag Tape Unit & Ctrl		D1	D		1,500	2,250	120	30	67	36	36	36		1,5,11
2415	3,6	Mag Tape Unit & Ctrl		D1	D		1,750	3,100	180	30	67	36	36	36		1,5
2420	5	Magnetic Tape Unit				4,000	360	800	30	29-1/2	67	36	36	0		1,6,11
2420	7	Magnetic Tape Unit				5,000	1,000	930	30	29-1/2	67	36	36	30		1,6,11
2495	1	Tape Cartridge Rdr	0.287	A-	A	890	0	330	34-1/2	29	45-9/16	30	12	30		
2501	B1,B2	Card Reader	0.5	A1	A	1,200	0	440	30	24		36	42	24		1,5
2520	B1	Card Read Punch	1.6	A1	A	4,000	100	770	43	24	50	48	36	24		36 5
2520	B2,B3	Card Punch	1.6	A1	A	4,000	100	770	43	24	50	48	36	24		36 5
2540	1	Card Read Punch	1.2			3,000	50	1,050	57-1/2	29-1/4		36	36	36		1,6
2560	A1,A2	Multi-function Card Machine	1.3			3,600	100	875	62	31	44	36	36	24		36 6,11
2596	1	Card Read Punch	1.4	A1	A	3,350	200	575	43	29-1/2	55	36	42	30		0 11
2671	1	Paper Tape Reader	(See 2822)													
2701	1	Data Adapter Unit	1.0	A3	A	3,000	120	600	40	25-1/2	40	42	42	30		6
2702	1	Transmission Control	1.8	A3	A	5,600	800	900	28-3/4	61-1/2	60	30	18	42		42
2703	1	Transmission Control		D2	D	11,750	2,000	2,200	32-1/4	67-3/4	70-3/4	30	36	66		66 1
2711	1	Line Adapter Unit	0.5	A5	A	1,600	100		28	29		48	36	6		6 1,11
2715	1,2	Transmission Control Unit	3.5	D2	B	9,600	240	1,350	32	62		35	41	60		42 1,11
2803	1,3	Tape Control	1.7	E2	E	4,500	500	1,050	60	29	60	42	42	30		1,5,11
2803	2	Tape Control	2.4	E2	E	7,700	700	1,250	60	29	60	42	42	30		1,5,11
2804	1,3	Tape Control	2.2	E2	E	6,800	700	1,200	60	29	60	42	42	30		1,5
2804	2	Tape Control	3.4	E2	E	10,500	900	1,550	60	29	60	42	42	30		1,5
2816	1	Switching Unit	1.2	A8	A	1,500	280	500	29	42	60	30	18	30		30
2820	1	Storage Control	1.25	D2	D	3,300	550	750	28-3/4	61-1/2	60	30	30	36		42 5
2821	1	Control Unit	1.4	D1	D	3,850	500	1,250	32	46	60	30	18	48		30
2821	2	Control Unit	1.1	D1	D	3,000	400	1,250	32	46	60	30	18	48		30
2821	3	Control Unit	1.9	E3	E	5,200	900	2,175	32	93	60	30	30	48		48
2821	4	Control Unit	1.4	D1	D	3,850	500	1,250	32	46	60	30	18	48		30
2821	5	Control Unit	2.2	E3	E	6,000	1,000	2,175	32	93	60	30	30	48		48
2821	6	Control Unit	1.2	D1	D	3,300	400	1,150	32	46	60	30	18	48		30
2822	1	Paper Tape Rdr Ctrl	1.05	A5	A	2,200	150	495	30	26	45	30	30	30		30
2826	1	Paper Tape Control	1.1	A4	A	3,760	280	690	45	29-1/2	60	30	30	30		30 11
2835	1,2	Storage Control	3.4	E7	E	10,500	800	1,525	61	32	60	36	42	36		0 2,5,11
2840	2	Display Control	2.4	D3	D	6,500	800	800	33-1/2	60	72-1/2	30	30	30		66
2841	1	Storage Control	1.1	D2	D	3,100	1,000	750	31-3/4	45-1/2	60	30	30	30		48 5,11
2844	1	Auxiliary Stg Ctrl	1.3	E1	E	3,200	1,000	1,300		60	60	30	30	48		1,5,11
2848	1-3,21,22	Display Control	2.0		C	6,100	400	1,150	32-1/4	61-1/2	70-3/4	30	30	48		48 1
2860	1	Selector Channel	1.6	B1	B	4,200	420	1,150	32-1/4	67-3/4	70-3/4	30	36	66		66 11
2860	2	Selector Channel	1.7	B1	B	4,400	740	1,450	32-1/4	67-3/4	70-3/4	30	36	66		66 11
2860	3	Selector Channel	1.8	B1	B	4,700	1,060	1,750	32-1/4	67-3/4	70-3/4	30	36	66		66 11
2870	1	Multiplexer Channel		B1			1,060	1,450	32-1/4	67-3/4	70-3/4	30	36	66		66 1,5,11
2880	1	Block Mpxr Channel	4.8	D1	D	13,660	550	1,970	32	69	71	36	30	66		66 11
2880	2	Block Mpxr Channel	7.3	D1	D	22,200	900	2,385	32	69	71	36	30	66		66 11
3046	1	Power Unit			E		300	815	24	45	29	24	0	30		30 1,11
3047	1	Power Unit	6.7			18,500	380		58	29	40	30	30	0		24 1,6
3056	1	Remote System Cnsl (Model 158 & 158 MP)				550		150	30-3/4	32-1/2		20	20	20		20 1,11
3060	1	System Console				14,000	1,100	2,500			67	30	24	36		42 1,5,6,11
3062	1	Attached Proc Unit														1,6,11
3066	1	System Cnsl (Mod 165)				9,530	400	1,300	112-1/4	92-3/4						1,6,11
3066	2	System Cnsl (Mod 168 and Mod 168 MP)				9,530	440	1,300	112-1/4	92-3/4						1,6,11
3066	3	System Cnsl (Mod 168 Attached Proc)				9,530	440	1,300	112-1/4	92-3/4						1,6,11
3067	1	Power & Coolant Dist Unit (Mod 165)			D		0	2,900	122-1/2	32	70	60	60	60		60 1,11
3067	2,3	Power & Coolant Dist Unit (Mod 168, Mod 168 Attached Proc, and Mod 168 MP)--SN 61000 & above			D		0	2,200	94-1/4	32	70	48	48	60		60 1,11
3067	2,3	Power & Coolant Dist Unit (Mod 168, Mod 168 Attached Proc, and Mod 168 MP)--SN below 61000			D		0	2,900	122-1/2	32	70	60	60	60		60 1,11

Type	Model	Description	Electrical			Environmental		Weight (lb)	Dimensions (inches)			Service Clearances (inches)				Notes (Listed at End of Table)
			kVA	Pwr Cord Style	Plug Note	BTU/hr	cfm		Front	Side	Height	F	R	Rt	L	
3067	5	Power & Coolant Dist Unit			D		0	2,200	94-1/4	32	70	48	48	60	60	1,11
3068	1	Multisystem Comm Unit					240	900	60	32	78	42	42	0	0	1,6,11
3080	1-3	Power Unit					0	1,300	34-1/2	32	60	36	0	36	36	1,5,6,11
3085	1	Power Dist Unit					0	1,000	32	32	60	36	0	36	36	1,5,11
3086	1	Coolant Dist Unit					0	1,450	62-1/2	32	70	36	36	36	0	1,5,11
3203	1,2	Printer	2.1			6,200	350	710	56-1/4	20	46-1/4	30	38	0	24	6,11
3210	1	Console Printer-Kybd	0.16			500	0		30-3/4	24						1,6,11
3210	2	Console Printer-Kybd	0.16		A/H	500	0	275	30-3/4	31-3/4	47	30	6			1,11
3211	1	Printer					500	1,400	57-1/8	29	53-1/2	42	36	0	36	1,6,11
3213	1	Console Printer	0.2			600	0	190	30	24	38					1,6,11
3215	1	Console Printer-Kybd	0.2			600	0		31	24						1,6,11
3330	1,11	Disk Storage	3.4			9,450	60	1,450		33	60	60	60	0	0	1,6,11
3330	2	Disk Storage	2.4			7,200	600	1,100		33	60	60	60	0	0	1,6,11
3333	1,11	Disk Storage & Ctrl	4.0	E7	E	12,000	850	1,850		33	60	60	60	0	0	1,11
3340	A2	Disk Storage	2.2	D2	D	6,500	400	900		33-1/2	46-1/2	36	36	36	0	1,11
3340	B1	Disk Storage	1.2			3,500	400	600		33-1/2	46-1/2	36	36	0	0	1,6,11
3340	B2	Disk Storage	1.7			5,000	400	750		33-1/2	46-1/2	36	36	0	0	1,6,11
3344	B2,B2F	Direct Access Stg	1.7			5,000	400	750		33-1/2	46-1/2	36	36	0	0	1,6,11
3345	1	Stg & Ctrl Frame	5.3			14,700	620	1,050			60	36	60	24	0	1,6,11
3345	2	Stg & Ctrl Frame	8.3			22,500	760	1,250			60	36	60	24	0	1,6,11
3345	3	Stg & Ctrl Frame	1.8			5,500	280	1,000			60	36	60	24	0	1,6,11
3345	4	Stg & Ctrl Frame	7.9			21,600	900	1,500			60	36	60	24	0	1,6,11
3345	5	Stg & Ctrl Frame	10.9			29,700	1,040	1,700			60	36	60	24	0	1,6,11
3350	A2,A2F	Direct Access Stg	2.3	E1	E	7,200	400	1,000		33-1/2	46-1/2	36	36	36	0	1,11
3350	B2,B2F	Direct Access Stg	1.9			5,800	400	800		33-1/2	46-1/2	36	36	0	0	1,6,11
3350	C2,C2F	Direct Access Stg	2.1			6,500	400	1,050	45	33-1/2	46-1/2	36	36	24	0	1,6,11
3360	1-3	Processor Storage		D1	D		835	1,800	31-1/2	62	60	36	0	36	36	1,11
3360	4,5	Processor Storage		D1	D		835	2,000	32	62	70	42	0	42	42	1,11
3410	1-3	Magnetic Tape Unit	0.3			850	60	180	31	27	39	36	6			1,6,11
3411	1	Mag Tape Unit & Ctrl	1.2	A2	C	3,500	200	325	31	27	39	36	6			1,5,11
3411	2,3	Mag Tape Unit & Ctrl	1.2	D2	C	3,500	200	325	31	27	39	36	6			1
3420	3-8	Magnetic Tape Unit						800	30	29-1/2	67	36	36	0	0	1,6,11
3504	A1,A2	Card Reader					250	600	60	29-1/2	44	36	36	18	0	1,6,11
3505	B1,B2	Card Reader		D1	D		250	900	60	29-1/2	44	36	36	18	0	1,11
3525	F1-P3	Card Punch					200	850	50	29-1/2	45	36	36	24	12	1,6,11
3540	B1	Diskette I/O Unit	0.6	A1	A	1,600	150	380	45	24	37	30	36	0	12	
3540	B2	Diskette I/O Unit	0.8	A1	A	2,150	150	440	45	24	37	30	36	0	12	
3704		Communications Ctrlr	2.2	A2	A	5,600	500	390	36	24	57	36	36	18	18	9,11
3705		Communications Ctrlr					880	1,010	32	36	60	44	42	44	44	1,5,9-11
3800		Expansion Module					880	910	32	31-1/4	60	0	42	44	44	1,6,9-11
3800		Printing Subsystem with and without Burster-Trimmed-Stacker								32	60	42	42	24		1,5,11
3803	1,3	Tape Control	1.2			3,800	360	600	30	28	60	36	36			1,5,11
3803	2	Tape Control	1.8			5,700	360	600	30	28	60	36	36			1,5,11
3811	1	Printer Control Unit		D1	D		180		29	29	46	42	36	30	0	1,5,11
3830	1	Storage Control	3.2	E7	E	10,500	1,160	1,600	61	32	60	60	60	36	0	5,11
3830	2,3	Storage Control	3.3	B2	B	10,500	1,160	1,600	62	32	60	36	44	36	0	5,11
3851	A1-A4, B1-B4	Mass Storage Facility		E7	E					32	75-1/2			36	36	1,5,8,11
3881	1	Optical Mark Reader	1.2	A2	C	3,500	25	875	60	24	55	42	36	0	30	5,11
3881	2	Optical Mark Reader	1.2	A2	C	3,500	25	875	60	24	55	36	36			1,5,11
3881	3	Optical Mark Reader	1.3	A2	C	3,800	25	925	60	24	55	36	36	0	24	5,11
3886	1	Optical Char Reader	2.3	D1	D	7,000	820	1,550	70	29-1/2	60	36	42	30	24	5,11
3886	2	Optical Char Reader	2.5	D1	D	7,600	820	1,550	70	29-1/2	60	36	42			1,5,11
3890		Document Processor		F2	F						60					1,5,8,11
5203	3	Printer	1.1			3,300	300	475	56-1/4	20	41-1/2	30	30	0	24	6,11
5213	1	Console Printer				250		135	26-1/2	15-1/4	37-3/4	30	30	0	0	1,6
5425	A1,A2	Multi-function Card Unit	0.8			2,000		450	34	29-1/2	55	30	30	18	0	1,6
7770	3	Audio Response Unit		A3	A					31-1/2	70	42	36	30	30	1

Notes:

1. Parameters not shown may be found in the system/machine specifications.
2. Parameters include the system console.
3. Does not include main storage units.
4. When SF #3622 or #3624 is installed, an additional receptacle (power cord style A or plug note A) is required.
5. This unit has radio interference control circuits and requires a good insulated wired earth or building ground. Total resistance of the ground conductor, measured between the receptacle and the building grounding point, must not exceed 3 ohms. For proper operation, all components of the system or systems to which this unit is attached must have the same ground reference. Conduit is not a satisfactory means of grounding.
6. Powered from another unit.
7. For use in countries other than U.S.
8. Shipped in sections. See specifications page.
9. The 3704 and 3705 machines to be installed in Germany have rfi circuits and have high ground current. The ground wire (and shield) must be fastened by screws. The ground leads (conductor and shield) must be capable of making contact first and breaking last. No pluggable connections are permitted for main machine power when installed in Germany.
10. Each Expansion Module adds to the kVA and heat output of the 3705.
11. These units can withstand a transient-voltage condition of plus 15% or minus 18% of nominal, if the input voltage returns to within a steady-state tolerance of plus 10% or minus 8% of the normal rated voltage within 30 cycles.

Plug Notes:**

Plug Note	Provided With Machine**			Provided By Customer					
	Ref***	Power Cord Plug Cap	Description	Volts	Service Rating A	Phase	Wires†	Inline Connector or Receptacle	
A	R&S	3720	Waterproof	208/230	20	1	3	3913	3743
B	R&S	3730	Waterproof	208/230	15	3	4	3914	3744
C	R&S	3750	Waterproof	208/230	30	1	3	3933	3753
D	R&S	3760	Waterproof	208/230	30	3	4	3934	3754
E	R&S	7328	Waterproof	208/230	60	3	4	7428	7324
F	R&S	JPS1034H	Waterproof	208/230	100	3	4	JCS1034H	JRSA1034H
H	NEMA	5-15P	Nonlocking	115	15	1	3	5-15R	5-15R
J	NEMA	L5-15P	Locking	115	15	1	3	L5-15R	L5-15R
K	NEMA	6-15P	Nonlocking	208/230	15	1	3	6-15R	6-15R

* The plug caps, connectors, receptacles, and service ratings for 208/230V can also be applied to 200/220/235V, 50-Hz units. For 380/408V, 50-Hz units, the rating should be decided by using the power cord specifications in Appendix D.

** In countries other than the U.S. and Canada, machines are shipped without plugs to permit installation of plugs and receptacles in accordance with local standards. See Appendix D for power cord specifications.

*** For U.S. and Canada, reference:

R&S = Russell and Stoll
 NEMA = National Electrical Manufacturer's Association
 configuration number

† The number of wires includes one insulated equipment grounding conductor (green or green with yellow trace).

Appendix G. System/370 Specification Summary (Metric Units)

Type	Model	Description	Electrical			Environmental		Weight (kg)	Dimensions (cm)			Service Clearances (cm)				Notes (Listed at End of Table)
			kVA	Pwr Cord Style	Plug Note	kcal/hr	m ³ /min		Front	Side	Height	F	R	Rt	L	
370	115	3115-0 and 3115-2 Processing Units		E7	E											1,2,5,11
370	125	3125-0 and 3125-2 Processing Units		E7	E											1,2,5,11
370	135	3135 Processing Unit		D2	D						152					1,2,4,5,11
370	145	3145 Processing Unit			F						152					1,2,4,11
370	155	3155 Processing Unit		E-	E						152					1-4,11
370	158,158MP	3158 and 3158-3 Processing Units		F2	F						152					1-4,11
370	165	3165 Processing Unit												114	114	1-4,11
370	165,168	MG (Remote)														1,11
370	168,168MP	3168 and 3168-3 Processing Units														1-4,11
370	168AP	3168-3 Proc Unit														1-4,11
370	195	3195 Proc Unit & Stg									178					1,4,5,11
370	195	MG (Remote)										76	76	76	76	1,11
370	195	Rotary Conv (Remote)				5.800		710	142	91	94	76	76	76	76	1,7,11
1017	1	Paper Tape Reader	0,1	A9		76		20	48	36	29	76	15	25	25	1,6
1017	2	Paper Tape Reader	0,4	A9		190		28	48	36	38	76	15	25	25	1,6
1018	1	Paper Tape Punch	0,2	A9		160		31	36	44	36	76	15	25	25	1,11
			(Note 11 applies to SN 00250 and above)													
1052	7	Printer-Keyboard	0,17			150	0	30	58	50	23					1,6
1053	4	Printer	0,2	G2	H/K	150	0	16	58	29	23					1,6
1255	1,2	Magnetic Char Rdr	0,96	A1	A	660	9	260	99	75	140	76	102	76	76	11
1255	3	Magnetic Char Rdr	0,96	A1	A	660	9	320	149	75	140	76	102	76	76	11
1259	2	Magnetic Char Rdr	2,3	D3	D	1.300	8	640	198	74		112	112	51 10	91	1
1287	1,2	Optical Reader	4,0	D1	D	2.550	26	1.350			152	91	122	76	91	1,8
1287	3,4	Optical Reader	5,0	D1	D	3.400	40	1.800			152	91	122	76	91	1,8
1287	5	Optical Reader	4,0	D1	D	2.550	26	1.300			152	91	122	76	91	1,8
1288	1	Optical Page Reader	5,2	D1	D	3.300	38	1.800			152	152	152	76	91	1,8
1403	2	Printer	1,0			760	9	350	121	72	135	91	91	76	76	6
1403	3	Printer	1,2			910	10	350	121	72	135	91	91	76	76	6
1403	7	Printer	0,8			610	9	350	121	72	135	91	91	76	76	6
1403	N1	Printer	1,5			1.150	10	570	145	74	136	91	91	107	107	6,11
1419	1	Magnetic Char Rdr		D1	C											1,8
1442	N1	Card Read Punch	0,8	A1	A	560	0	270	109	61	124	91	107	15	46	5
1442	N2	Card Punch	0,8	A1	A	560	0	270	109	61	124	91	107	15	46	5
1443	N1	Printer	1,1	A1	A	810	2	370	142	109	117	91	91	122	76	
2150	1	Console	0,65	B1	B	440	6	370	163	73	132	76	122	76	76	
2250	1	Display Unit		A2	A		18	410			127					1,8
2250	3	Display Unit	1,5	A2	A	660	11	350			127					1,8
2260	1,2	Dply Statn, W Kybd	0,22	G1	H/J		1	26	35	58	44	0	3	13	8	1
2260	1,2	Dply Statn, WO Kybd	0,22	G1	H/J		1	17	35	42	44	0	3	13	8	1
2285	1	Display Copier	1,5			190		160	56	76	102	76	76	66	76	1,6
2301	1	Drum Storage				960	10	390	88	74	163	122	122	107	107	1,6
2303	1	Drum Storage				960	8	390	88	74	163	122	122	107	107	1,6
2305	1,2	Fixed Head Storage								83	152	91	107			1,6,11
2311	1	Disk Storage Drive	0,75			510	3	130	76	61	97	91	91			6,11
2312	A1	Disk Storage					6	230	69	81	152	91	122	0	0	1,6,11
2313	A1	Disk Storage					12	630	137	81	152	91	122	0	0	1,6,11
2314	A Series	(See also 2312-A1, 2313-A1, 2314-A1, 2318-A1)				5.150	57	1.950	465	81	152	91	122	107	61	1,8,11
2314	B Series	(See also 2314-B1, 2319-B1, 2319-B2)				4.950	63	1.950	533	81	152	91	122	107	61	1,8,11
2314	A1	Storage Control					29	440	119	80	152	91	122	107	0	1,8,11
2314	B1	Storage Control	1,1				29	440	119	80	152	91	122	107	0	1,8,11
2314	1	Direct Acc Stg Fctly		E1	E	5.150	57	1.950	465	81	152	91	122	107	61	1,8,11
2318	A1	Disk Storage					6	320	69	81	152	91	122	0	0	1,6,11
2319	A1,A2	Disk Storage	1,8			1.400	12	500		81	152	91	122	0	61	1,6,11
2319	A3	Disk Storage				1.550	12	530		81	152	91	122	0	61	1,6,11
2319	B1,B2	Disk Storage	1,8			1.400	12	500	137	81	152	91	122	0	0	11
2321	1	Data Cell Drive	4,4	D2	D	2.700	25	830	174	130	152	76	76			1,8
2401	1-6,8	Magnetic Tape Unit	1,6			890	15	370	76	74	170	91	91			1,6,11

Type	Model	Description	Electrical			Environmental		Weight (kg)	Dimensions (cm)			Service Clearances (cm)				Notes (Listed at End of Table)	
			kVA	Pwr Cord Style	Plug Note	kcal/hr	m ³ /min		Front	Side	Height	F	R	Rt	L		
2402	1-6	Magnetic Tape Unit	3,2			1.800	29	730	152	74	170	91	91				1,6,11
2403	1-6	Mag Tape Unit & Ctrl	2,1	E2	E	1.400	29	660	152	74	170	107	107			76	1,6,11
2404	1-3	Mag Tape Unit & Ctrl	2,4	E2	E	1.600	35	750	152	74	170	107	107			76	1,6,11
2415	1,4	Mag Tape Unit & Ctrl		D1	D		36	640	152	76	170	91	91	91		91	1,5
2415	2,5	Mag Tape Unit & Ctrl		D1	D		43	1.050	305	76	170	91	91	91	91	91	1,5,11
2415	3,6	Mag Tape Unit & Ctrl		D1	D		50	1.450	457	76	170	91	91	91	91	91	1,5
2420	5	Magnetic Tape Unit				1.050	11	370	76	75	170	91	91	0	0	0	1,6,11
2420	7	Magnetic Tape Unit				1.300	29	430	76	75	170	91	91	76	76	76	1,6,11
2495	1	Tape Cartridge Rdr	0,287	A-	A	230	0	150	88	74	116	76	30	76	76	76	
2501	B1,B2	Card Reader	0,5	A1	A	310	0	200	76	61		91	107	61			1,5
2520	B1	Card Read Punch	1,6	A1	A	1.050	3	350	109	61	127	122	91	61	91	91	5
2520	B2,B3	Card Punch	1,6	A1	A	1.050	3	350	109	61	127	122	91	61	91	91	5
2540	1	Card Read Punch	1,2			760	2	480	146	74		91	91	91	91	91	1,6
2560	A1,A2	Multi-function Card Machine	1,3			910	3	400	157	79	112	91	91	61	91	91	6,11
2596	1	Card Read Punch	1,4	A1	A	850	6	270	109	75	140	91	107	76	0	0	11
2671	1	Paper Tape Reader		(See 2822)													
2701	1	Data Adapter Unit	1,0	A3	A	760	4	280	102	65	102	107	107	76	15		
2702	1	Transmission Control	1,8	A3	A	1.450	23	410	73	156	152	76	46	107	107		
2703	1	Transmission Control		D2	D	3.000	57	1.000	82	172	180	76	91	168	168		1
2711	1	Line Adapter Unit	0,5	A5	A	410	3		71	74		122	91	15	15		1,11
2715	1,2	Transmission Control Unit	3,5	D2	B	2.450	7	620	81	157		89	104	152	107	76	1,11
2803	1,3	Tape Control	1,7	E2	E	1.150	15	480	152	74	152	107	107			76	1,5,11
2803	2	Tape Control	2,4	E2	E	1.950	20	570	152	74	152	107	107			76	1,5,11
2804	1,3	Tape Control	2,2	E2	E	1.750	20	550	152	74	152	107	107			76	1,5
2804	2	Tape Control	3,4	E2	E	2.650	26	710	152	74	152	107	107			76	1,5
2816	1	Switching Unit	1,2	A8	A	380	8	230	74	107	152	76	46	76	76	76	
2820	1	Storage Control	1,25	D2	D	840	16	350	73	156	152	76	76	91	107	107	5
2821	1	Control Unit	1,4	D1	D	980	15	570	81	117	152	76	46	122	76		
2821	2	Control Unit	1,1	D1	D	760	12	570	81	117	152	76	46	122	76		
2821	3	Control Unit	1,9	E3	E	1.350	26	990	81	236	152	76	76	122	122		
2821	4	Control Unit	1,4	D1	D	980	15	570	81	117	152	76	46	122	76		
2821	5	Control Unit	2,2	E3	E	1.550	29	990	81	236	152	76	76	122	122		
2821	6	Control Unit	1,2	D1	D	840	12	530	81	117	152	76	46	122	76		
2822	1	Paper Tape Rdr Ctrl	1,05	A5	A	560	5	230	76	66	114	76	76	76	76		
2826	1	Paper Tape Control	1,1	A4	A	950	8	320	114	75	152	76	76	76	76		11
(Note 11 applies to SN 00100 and above)																	
2835	1,2	Storage Control	3,4	E7	E	2.650	23	700	155	81	152	91	107	91	0		2,5,11
2840	2	Display Control	2,4	D3	D	1.650	23	370	85	152	184	76	76	76	168		
2841	1	Storage Control	1,1	D2	D	790	29	350	81	116	152	76	76	76	122		5,11
2844	1	Auxiliary Stg Ctrl	1,3	E1	E	810	29	590			152						1,5,11
2848	1-3,21,22	Display Control	2,0	C		1.550	12	530	82	156	180	76	76	122	122		1
2860	1	Selector Channel	1,6	B1	B	1.100	12	530	82	172	180	76	91	168	168		11
2860	2	Selector Channel	1,7	B1	B	1.150	21	660	82	172	180	76	91	168	168		11
2860	3	Selector Channel	1,8	B1	B	1.200	31	800	82	172	180	76	91	168	168		11
2870	1	Multiplexer Channel		B1			31	660	82	172	180	76	91	168	168		1,5,11
2880	1	Block Mpxr Channel	4,8	D1	D	3.450	16	900	81	175	180	91	76	168	168		11
2880	2	Block Mpxr Channel	7,3	D1	D	5.600	26	1.100	81	175	180	91	76	168	168		11
3046	1	Power Unit			E		9	370	61	114	74	61	0	76	76		1,11
3047	1	Power Unit	6,7			4.700	11		147	74	102	76	76	0	61		1,6
3056		Remote System Cnsl (Model 158 & 158 MP)	0,2			140		69	78	82		51	51	51	51		1,11
3060	1	System Console				3.550	32	1.150			170	76	61	91	107		1,5,6,11
3062	1	Attached Proc Unit															1,6,11
3066	1	System Cnsl (Mod 165)				2.450	13	590	285	236							1,6,11
3066	2	System Cnsl (Mod 168 & Mod 168 MP)				2.450	13	590	285	236							1,6,11
3066	3	System Cnsl (Mod 168 Attached Proc)				2.450	13	590	285	236							1,6,11
3067	1	Power & Coolant Dist Unit (Mod 165)			D		0	1.350	311	81	178	152	152	152	152		1,11
3067	2,3	Power & Coolant Dist Unit (Mod 168, Mod 168 Attached Proc, and Mod 168 MP)--SN 61000 & above			D		0	1.000	239	81	178	122	122	152	152		1,11
3067	2,3	Power & Coolant Dist Unit (Mod 168, Mod 168 Attached Proc and Mod 168 MP)--SN below 61000			D		0	1.350	311	81	178	152	152	152	152		1,11

Type	Model	Description	Electrical			Environmental		Weight (kg)	Dimensions (cm)			Service Clearances (cm)				Notes (Listed at End of Table)	
			kVA	Pwr Cord Style	Plug Note	kcal/hr	m ³ /min		Front	Side	Height	F	R	Rt	L		
3067	5	Power & Coolant Dist. Unit			D		0	1.350	311	81	178	152	152	152	152	1,11	
3068	1	Multisystem Comm Unit					7	410	152	81	198	107	107	0	0	1,6,11	
3080	1-3	Power Unit					0	590	88	81	152	91	0	91	91	1,5,6,11	
3085	1	Power Dist Unit					0	460	81	81	152	91	0	91	91	1,5,11	
3086	1	Coolant Dist Unit					0	660	159	81	178	91	91	91	0	1,5,11	
3203	1,2	Printer	2,1				10	1.600	143	51	117	76	97	0	61	6,11	
3210	1	Console Printer-Kybd	0,16				0	130	78	61						1,6,11	
3210	2	Console Printer-Kybd	0,16		A/H		0	130	78	81	119	76	15			1,11	
3211	1	Printer					15	640	145	74	136	107	91	0	91	1,6,11	
3213	1	Console Printer	0,2				0	160	87	76	61	97				1,6,11	
3215	1	Console Printer-Kybd	0,2				0	160	79	61						1,6,11	
3330	1,11	Disk Storage	3,4				17	2.400	660	84	152	152	152	0	0	1,6,11	
3330	2	Disk Storage	2,4				17	1.850	500	84	152	152	152	0	0	1,6,11	
3333	1,11	Disk Storage & Ctrl	4,0	E7	E		25	3.050	840	84	152	152	152	0	0	1,11	
3340	A2	Disk Storage	2,2	D2	D		12	1.650	410	85	118	91	91		91	1,11	
3340	B1	Disk Storage	1,2				12	890	280	85	118	91	91		0	1,6,11	
3340	B2	Disk Storage	1,7				12	1.300	350	85	118	91	91		0	1,6,11	
3344	B2,B2F	Direct Access Stg	1,7				12	1.300	350	85	118	91	91		0	1,6,11	
3345	1	Stg & Ctrl Frame	5,3				18	3.750	480		152	91	152	61	0	1,6,11	
3345	2	Stg & Ctrl Frame	8,3				22	5.700	570		152	91	152	61	0	1,6,11	
3345	3	Stg & Ctrl Frame	1,8				8	1.400	460		152	91	152	61	0	1,6,11	
3345	4	Stg & Ctrl Frame	7,9				26	5.450	690		152	91	152	61	0	1,6,11	
3345	5	Stg & Ctrl Frame	10,9				31	7.500	780		152	91	152	61	0	1,6,11	
3350	A2,A2F	Direct Access Stg	2,3	E1	E		12	1.850	460	85	118	91	91		91	1,11	
3350	B2,B2F	Direct Access Stg	1,9				12	1.500	370	85	118	91	91		0	1,6,11	
3350	C2,C2F	Direct Access Stg	2,1				12	1.650	480	114	85	118	91	91	61	0	1,6,11
3360	1-3	Processor Storage		D1	D		24	820	80	157	152	91	0	91	91	1,11	
3360	4,5	Processor Storage		D1	D		24	910	81	157	178	107	0	107	107	1,11	
3410	1-3	Magnetic Tape Unit	0,3				2	82	79	69	99	91	15			1,6,11	
3411	1	Mag Tape Unit & Ctrl	1,2	A2	C		6	890	150	79	69	99	91	15		1,5,11	
3411	2,3	Mag Tape Unit & Ctrl	1,2	D2	C		6	890	150	79	69	99	91	15		1	
3420	3-8	Magnetic Tape Unit						370	76	75	170	91	91	0	0	1,6,11	
3504	A1,A2	Card Reader					8	280	152	75	112	91	91	46	0	1,6,11	
3505	B1,B2	Card Reader					8	410	152	75	112	91	91	46	0	1,11	
3525	F1-F3	Card Punch		D1	D		6	390	127	75	114	91	91	61	30	1,6,11	
3540	B1	Diskette I/O Unit	0,6	A1	A		5	410	180	114	61	94	76	91	0	30	
3540	B2	Diskette I/O Unit	0,8	A1	A		5	550	200	114	61	94	76	91	0	30	
3704		Communications Ctrlr	2,2	A2	A		15	1.450	180	91	61	145	91	91	46	46	9,11
3705		Communications Ctrlr					25	460	81	91	152	112	107	112	112	1,5,9-11	
3705		Expansion Module					25	420	81	79	152	0	107	112	112	1,6,9-11	
3800		Printing Subsystem with and without Burster-Trimmer-Stacker								81	152	107	107	61		1,5,11	
3803	1,3	Tape Control	1,2					280	76	71	152	91	91			1,5,11	
3803	2	Tape Control	1,8					280	76	71	152	91	91			1,5,11	
3811	1	Printer Control Unit		D1	D		6		74	74	117	107	91	76	0	1,5,11	
3830	1	Storage Control	3,2	E7	E		33	2.650	730	155	81	152	152	152	91	0	5,11
3830	2,3	Storage Control	3,3	B2	B		33	2.650	730	157	81	152	91	112	91	0	5,11
3851	A1-A4, B1-B4	Mass Storage Facility		E7	E					81	192			91	91	1,5,8,11	
3881	1	Optical Mark Reader	1,2	A2	C		1	400	152	61	140	107	91	0	76	5,11	
3881	2	Optical Mark Reader	1,2	A2	C		1	400	152	61	140	91	91			1,5,11	
3881	3	Optical Mark Reader	1,3	A2	C		1	420	152	61	140	91	91	0	61	5,11	
3886	1	Optical Char Reader	2,3	D1	D		24	1.800	710	178	75	152	91	107	76	61	5,11
3886	2	Optical Char Reader	2,5	D1	D		24	1.950	710	178	75	152	91	107		1,5,11	
3890		Document Processor										152				1,5,8,11	
5203	3	Printer	1,1				9	840	220	143	51	105	76	76	0	61	6,11
5213	1	Console Printer						64	62	67	39	96	76	76	0	0	1,6
5425	A1,A2	Multi-function Card Unit	0,8					510	210	86	75	140	76	76	46	0	1,6
7770	3	Audio Response Unit		A3	A						80	178	107	91	76	76	1

Notes:

1. Parameters not shown may be found in the system/machine specifications.
2. Parameters include the system console.
3. Does not include main storage units.
4. When SF #3622 or #3624 is installed, an additional receptacle (power cord style A or plug note A) is required.
5. This unit has radio interference control circuits and requires a good insulated wired earth or building ground. Total resistance of the ground conductor, measured between the receptacle and the building grounding point, must not exceed 3 ohms. For proper operation, all components of the system or systems to which this unit is attached must have the same ground reference. Conduit is not a satisfactory means of grounding.
6. Powered from another unit.
7. For use in countries other than the U.S.
8. Shipped in sections. See specifications page.
9. The 3704 and 3705 machines to be installed in Germany have rfi circuits and have high ground current. The ground wire (and shield) must be fastened by screws. The ground leads (conductor and shield) must be capable of making contact first and breaking last. No pluggable connections are permitted for main machine power when installed in Germany.
10. Each Expansion Module adds to the kVA and heat output of the 3705.
11. These units can withstand a transient-voltage condition of plus 15% or minus 18% of nominal, if the input voltage returns to within a steady-state tolerance of plus 10% or minus 8% of the normal rated voltage within 30 cycles.

Plug Notes:*

Plug Note	Provided With Machine**			Provided By Customer				
	Ref***	Plug Cap	Description	Service Rating			Inline Connector or Receptacle	
				Volts	A	Phase	Wires†	
A	R&S	3720	Waterproof	208/230	20	1	3	3913 3743
B	R&S	3730	Waterproof	208/230	15	3	4	3914 3744
C	R&S	3750	Waterproof	208/230	30	1	3	3933 3753
D	R&S	3760	Waterproof	208/230	30	3	4	3934 3754
E	R&S	7328	Waterproof	208/230	60	3	4	7428 7324
F	R&S	JPS1034H	Waterproof	208/230	100	3	4	JCS1034H JRSA1034H
H	NEMA	5-15P	Nonlocking	115	15	1	3	5-15R 5-15R
J	NEMA	L5-15P	Locking	115	15	1	3	L5-15R L5-15R
K	NEMA	6-15P	Nonlocking	208/230	15	1	3	6-15R 6-15R

- * The plug caps, connectors, receptacles, and service ratings for 208/230V can also be applied to 200/220/235V, 50-Hz units. For 380/408V, 50-Hz units, the rating should be decided by using the power cord specifications in Appendix D.
- ** In countries other than the U.S. and Canada, machines are shipped without plugs to permit installation of plugs and receptacles in accordance with local standards. See Appendix D for power cord specifications.
- *** For U.S. and Canada, reference:
 R&S = Russell and Stoll
 NEMA = National Electrical Manufacturer's Association configuration number
- † The number of wires includes one insulated equipment grounding conductor (green or green with yellow trace).

Notes:

1. Parameters not shown may be found in the system/machine specifications.
2. Parameters include the system console.
3. Does not include main storage units.
4. When SF #3622 or #3624 is installed, an additional receptacle (power cord style A or connector note A) is required.
5. This unit is equipped with radio interference control circuits and requires a good insulated wired earth or building ground. Total resistance of the ground conductor, measured between the receptacle and the building grounding point, must not exceed 3 ohms. For proper operation, all components of the system or systems to which this unit is attached must have the same ground reference. Conduit is not a satisfactory means of grounding.
6. Powered from another unit.
7. Power cord style D2 for 2314--A and B Series without SF #9580; E1 for 2314-A1 with SF #9580; and E2 for 2314-B1 with SF #9580. Use connector in connector note E for: facility with second 2319-B2 not installed (SF #9580 not required nor installed); facility with second 2319-B2 installed (SF #9580 required) or SF #9580 specified in anticipation of expansion use.
8. Shipped in sections. See specifications page.
9. The 3705 machines to be installed in Germany are equipped with rfi circuits and high ground current. The ground wire (and shield) must be screwed down. The ground leads (conductor and shield) must be capable of making contact first.
10. Each Expansion Module adds to the kVA and heat output of the 3705.
11. Power cord style D2 for 3705 or 3705 with one Expansion Module; power cord style E2 for 3705 or 3705 with two or three Expansion Modules. Connector note D (R&S, FS3760) for 3705 or 3705 with one Expansion Module; connector note E (R&S, SC7328) for 3705 or 3705 with two or three Expansion Modules. Line cord only on 3705.
12. These units can withstand a transient-voltage condition of plus 15% or minus 18% of nominal, provided that the input voltage returns to within a steady-state tolerance of plus 10% or minus 8% of the normal rated voltage within 30 cycles.

Power Cord Notes:

See Appendix D for power cord specifications. For service size ratings, see the following connector notes which can also be applied to 200/220/235V, 50-Hz units. For 380/408V, 50-Hz units, the rating should be decided by using power cord specifications in Appendix D.

Connector Notes:

	<u>Plug</u>	<u>Connector</u>	<u>Receptacle</u>	<u>Service Rating*</u>
A	Russell and Stoll, FS3720	FS3913	FS3743	20A, 1 phase, 3 wire
B	Russell and Stoll, FS3730	FS3914	FS3744	15A, 3 phase, 4 wire
C	Russell and Stoll, FS3750	FS3933	FS3753	30A, 1 phase, 3 wire
D	Russell and Stoll, FS3760	FS3934	FS3754	30A, 3 phase, 4 wire
E	Russell and Stoll, SC7328	SC7428	SC7324	60A, 3 phase, 4 wire
F	Russell and Stoll, JPS1034H	JCS1034H	JRSR1034H	100A, 3 phase, 4 wire
G	115V Hubbell or Pass and Seymour, 5266 (nonlocking)	5269	5261 or 5262	15A, 1 phase, 3 wire
H	208/230V Hubbell or Pass and Seymour, 5666 (nonlocking)	5669	5661 or 5662	15A, 1 phase, 3 wire
J	115V Hubbell or Pass and Seymour, 4720/4723 (locking)	4730	4700 or 4710	15A, 1 phase, 3 wire
K	208/230V Hubbell or Pass and Seymour, 4770 (locking)	4780	4750 or 4760	15A, 1 phase, 3 wire (277V)
M	208/230V Hubbell or Pass and Seymour, 4570 (locking)	4580	4550 or 4560	15A, 1 phase, 3 wire (250V)

*The plugs, connectors, and receptacles listed are for use on 208V or 230V services. The 115V options are not available unless noted. The number of wires includes one insulated grounding conductor (green or green with yellow trace).



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1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the integrity of the financial system and for the ability to detect and prevent fraud.

2. The second part of the document outlines the specific requirements for record-keeping, including the need to maintain original documents and to keep copies of all transactions. It also discusses the importance of ensuring that records are accessible and up-to-date.

3. The third part of the document discusses the role of the auditor in verifying the accuracy of the records. It emphasizes that the auditor must exercise due diligence and must be able to trace all transactions back to their source.

4. The fourth part of the document discusses the consequences of failing to maintain accurate records. It notes that this can lead to the loss of valuable information and can result in the imposition of penalties.

5. The fifth part of the document discusses the importance of training and education in ensuring that all personnel involved in the financial system are aware of their responsibilities and are equipped with the necessary skills to perform their duties effectively.

6. The sixth part of the document discusses the importance of internal controls in preventing fraud and ensuring the accuracy of the financial statements. It notes that a strong internal control system is essential for the integrity of the financial system.

7. The seventh part of the document discusses the importance of transparency and accountability in the financial system. It notes that these principles are essential for the confidence of investors and the public.

8. The eighth part of the document discusses the importance of regular audits and reviews in ensuring the accuracy of the financial statements. It notes that these activities are essential for the detection and prevention of fraud.

9. The ninth part of the document discusses the importance of the role of the regulatory bodies in ensuring the integrity of the financial system. It notes that these bodies are essential for the enforcement of the rules and regulations that govern the financial system.

10. The tenth part of the document discusses the importance of the role of the courts in resolving disputes and enforcing the law. It notes that the courts are essential for the protection of the rights of investors and the public.