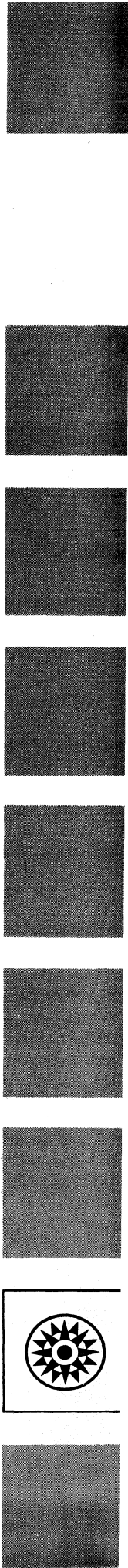




**Systems Reference Library**

## **IBM System/360 Installation Manual – Physical Planning**

This manual contains preliminary physical information for installing IBM System/360, including floor planning and electrical, environmental, and structural requirements. It discusses the physical characteristics of each unit and their effect on installation requirements. Detailed cable and location charts are included, together with illustrations and dimensions, on all cable connectors used in the system.



## PREFACE

This manual contains information necessary for planning the physical installation of the IBM System/360.

In addition to technical information needed for physical installation planning, it contains recommendations and suggestions to be used in planning an efficient and pleasant installation. The customer should make such arrangements as he deems necessary for professional consultants' services in planning his installation. It is important that local and national code requirements be adhered to by the customer.

The requirements of the system are subject to modification by engineering developments.

### Ninth Edition

This is a major revision of, and obsoletes, Form C22-6820-7, all previous editions, and Technical Newsletters N22-0273, N22-0288, N22-9000, N22-9001, N22-9002, and N22-9004. Significant changes to the text are indicated by a vertical line to the left of the change. Where a complete section has been revised, the symbol (●) appears to the left of the heading. Revised plan view drawings are indicated by the symbol (●) to the left of "Plan View."

Significant changes or additions to the specifications contained in this publication are continually being made. When using this publication in connection with the operation of IBM equipment, check the latest SRL Newsletter for revisions or contact the local IBM branch office.

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

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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 which 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, work tables, 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 machine 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 machine delivery:

1. Determine the machine components desired and review the order.
2. Read this Physical Planning Installation Manual.

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 the size of the proposed room, physical layout of the equipment, floor loadings, the use of raised floors, and electrical power and air conditioning requirements.

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 machine delivery, the air conditioning and power equipment requirements, and delivery and installation schedule should be reviewed.

Four months before machine 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. Note: See item 4 under "Cables Supplied."

The customer should decide when he would prefer to have the 415-cps motor-generator set delivered to the site for installation by his electricians. The motor-generator set may be delivered up to two months prior to delivery of the system, in order to have all the fixed wiring complete by system installation time.

One month before machine 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 which are required to facilitate delivery within the customer's facilities.

Two weeks before system delivery:

1. For systems other than System/360 Model 30, cables will be delivered to the machine room. Model 30 cables will be delivered with the system, unless otherwise requested. Cables will be set in place by

customer personnel under supervision of IBM customer engineers. 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 machine 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 set to the power distribution unit (PDU--System/360 Model 85).

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.

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. Ceiling height, outside wall area, and glass area, since 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.

### 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, and so on. To determine the exact area required for a specific group of components, a machine layout should be made using the measurements of the 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 the safety section of 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 stands, storage cabinets, card and record files, work tables, desks, communication facilities, etc.

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

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 traffic centers.

At the option of IBM, a substantial amount of 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.

The customer engineers' test area for a single installation should contain between 70 and 400 square feet of space depending on the size of the system, and be air conditioned to the same specifications as the machine room. See "CE Room and Test Area" for detailed requirements. Local Field Engineering management should be consulted to determine the actual space required.

### LAYOUT OF MACHINE COMPONENTS

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 of making these assignments is described in the priority section. 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 of 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 a different room size, column spacing, a combination of machine components, and a different 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 are supplied by IBM. They 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 caster and cable hole locations are shown. If the area layout scale is 1/4 inch to 1 foot, these templates may be used to position the machine equipment properly 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.

Machine components 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 the cable section of this manual.

To make a layout and order cables properly, 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. Priority or 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 within the limitations established in the priority section of this manual.

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.

Any changes in the final layout, after the cables have been ordered, that affect cable lengths must be accompanied by an RPQ.

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 devices; 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 levels -- over 50 foot-candles (538 lumens/m<sup>2</sup>) should be avoided in areas where display devices are to be used.

4. 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, 2848, and 2250 Model 3.

5. Where Tele-processing 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 area communications representative should be consulted regarding systems carrier requirements. See IBM Planning and Installation of a Data Communications System Using IBM Line Adapters, Form A24-3435-2 (or later) for additional information.

6. If an IBM 2816 Switching Unit is included, the front of this unit has a switch and display panel which requires periodic manual operations and should be accessible and visible from the operator's position.

#### CE ROOM AND TEST AREA

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, etc.

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

In addition to these requirements, provision for testing the 2385 storage spare basic storage module for the System/360 Model 85 are necessary.



The area will contain a basic storage module test unit with the following specifications:

**Dimensions:**

	<u>Front</u>	<u>Side</u>	<u>Height</u>
Inches	31	44	70
cm	79	112	178

Service Clearance: 30 inches (76 cm) on all sides

Weight: 1,000 lbs (454 kg) estimate

Heat Load: 12,900 BTU/hr (3.251 kcal)

Air Flow: 1,240 cfm (35 m<sup>3</sup>/m)

Power Requirements: 4.5 kva, 208 volt, single phase, 60 cps

Power Plug Type: R & S, FS3750.  
Customer supplies either FS3933 connector or FS3753 receptacle.

The spare basic storage module is within the frame of a mobile service cart (29" x 52" x 70" -- 74 cm x 132 cm x 178 cm). For servicing, this cart must be in close proximity to the test unit.

The 415-cps power for spare basic storage module is supplied from the PDU via the test unit. IBM furnishes connector and up to 100 feet of cable.

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 CE's required.

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

	<u>Length</u>		<u>Width</u>		<u>Height</u>	
	<u>in.</u>	<u>cm</u>	<u>in.</u>	<u>cm</u>	<u>in.</u>	<u>cm</u>
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	85	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

Templates for the furniture listed are included under "Field Engineering Furniture Template."

**FLOOR CONSTRUCTION**

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

Factors to be considered in determining floor loading are:

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 one direction from the machine.

3. Twenty pounds for each square foot (98 kg/m<sup>2</sup>) 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 for each square foot (49 kg/m<sup>2</sup>) 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 (244 kg/m<sup>2</sup>) have an additional allowance of 20 to 25 pounds per square foot (98 to 122 kg/m<sup>2</sup>) 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 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 on Figure 1.

IBM recommends:

1. There be no metal exposed to the walking surface where a raised floor using metal is used. Such exposure is considered a safety hazard. It can also cause static discharge problems.

2. The raised floor height should be 12 inches (31 cm).

3. Minimum clearance must not be less than 4-1/2 inches (11 cm).

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 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. The maximum resistance for floor tile or other floor surface material should be  $2 \times 10^{10}$  ohms, measured between floor surface and building (or applicable ground reference). The procedure outlined in NFPA No. 56, Chapter 25, Section 2522, should be used. Floor material with a lower resistance will further decrease static buildup and discharge. The minimum resistance should not be less than  $5 \times 10^5$  ohms.

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

3. Maintain 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 "anti-static." Two types are generally available: those with the anti-static properties manufactured into the material and those treated later with anti-static agents. Materials, depending on additives, may have short effective anti-static life without frequent retreatment of the carpet. Maintenance of all anti-static floor coverings (carpet, tile, etc.) should be in agreement with the individual supplier's recommendations.

## 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

Acoustical treatment is recommended for a more comfortable operation of the system. The following is presented as general information.

The principal noise sources in the system are the mechanical units such as card punch machines, printers, reader-sorters, blowers, etc. The floor construction should be of a nature that will retard vibration to other areas. The walls should be constructed to prevent the transmission of noise to the adjacent area. It is important that these walls be constructed from the floor to the base ceiling and properly sealed. The doors must also have a good seal. The use of absorptive materials will reduce the average sound pressure level throughout an installation. The greatest sound reduction will be obtained by properly treating the ceiling. Best results can be expected from a dropped porous ceiling. If overhead duct work exists, it may be possible that noise generated in the machine room will be transmitted to other rooms unless proper precautions are taken. For large rooms, the floor is the second most effective area on which to apply absorptive materials. Wall surfaces should be made soft to prevent reverberations.

## LIGHTING

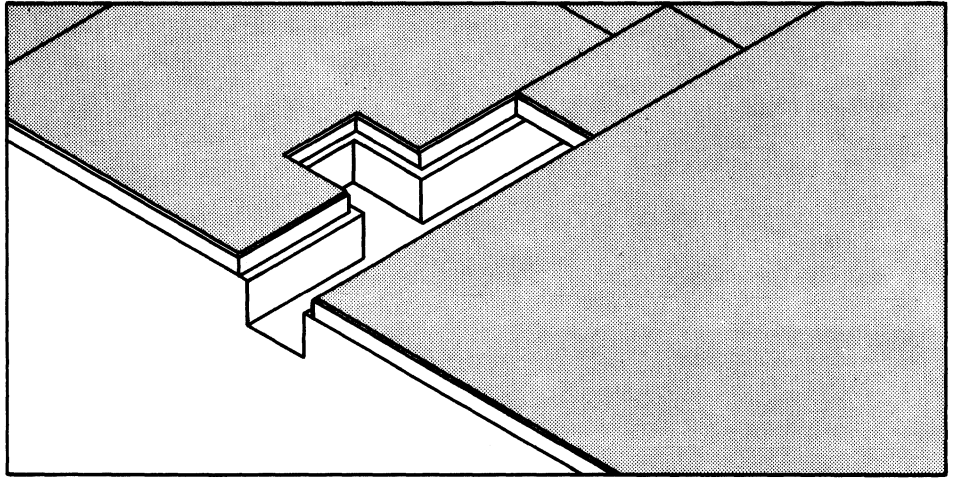
A minimum average illumination of 40 foot-candles ( $430 \text{ lumens/m}^2$ ) measured 30 inches (76 cm) above the floor should be maintained in the machine room area.

Direct sunlight should be avoided, since lower levels of illumination are needed to observe the various console and signal lamps. 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.

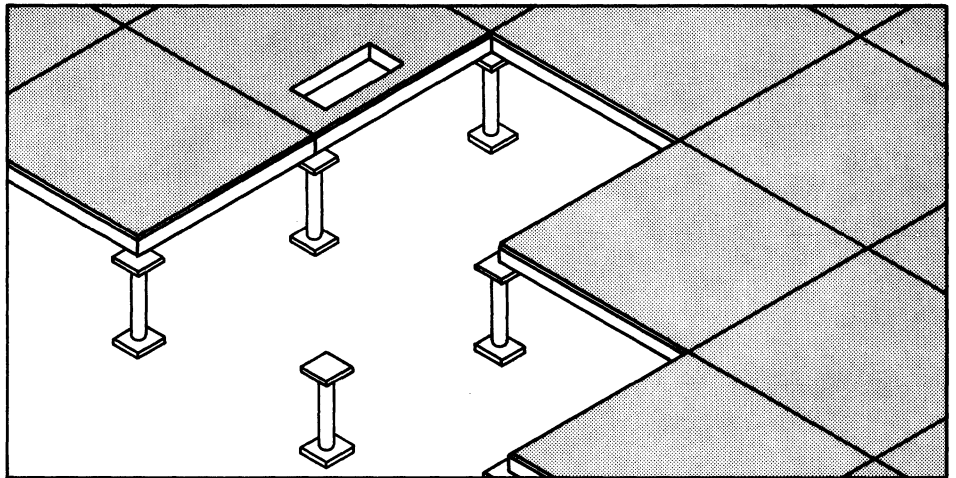
## VIBRATION

It may be necessary to install the System/360 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/360.

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

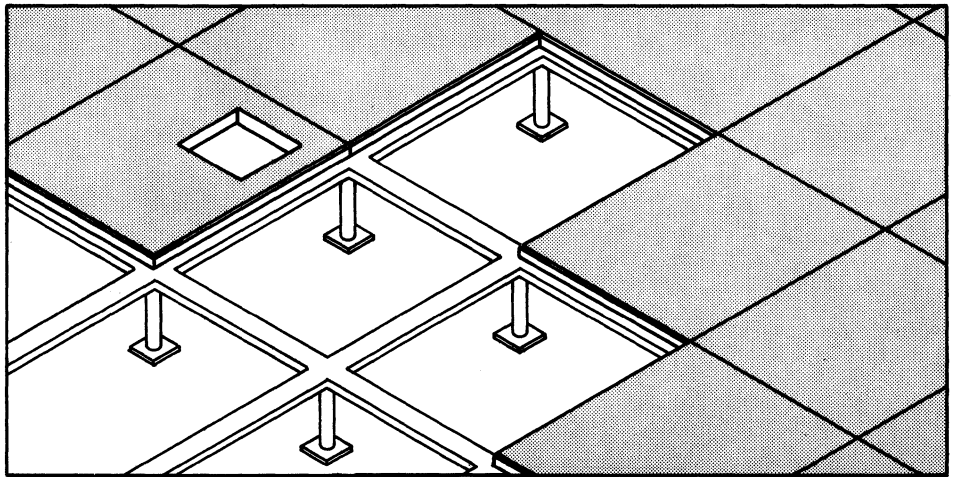


Figure 1. Types of Raised Flooring

## STORAGE OF TAPE DISK PACK, DISK CARTRIDGE, AND DATA CELL

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

### Heavy-Duty Tape

Relative humidity 20 to 80%.

Temperature 40° to 90°F (4° to 32°C).

### Mylar\* Tape -- Long-Term Storage

Relative humidity 20 to 80%.

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

Tape exposed to atmospheric conditions outside the above limits will require reconditioning before it is used. 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 dust-proof 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.

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

### Disk Pack and Disk Cartridge

#### Short-Term Storage:

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

Relative humidity 10 to 80%.

#### Long-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%.

Maximum wet bulb temperature 80°F (27°C).

Disk packs, disk cartridges, and data cells 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 operating environment (up to a maximum conditioning period of 24 hours).

These devices are equipped with dust-proof 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 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, Form A26-5756 and IBM Data Cell Handling Guide, Form A26-3633.

\*Trademark of E. I. duPont deNemours & Co. (Inc.)

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 dust filters are included at each air input. Warm air 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, and 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 unit and on the specification summary.

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

#### TEMPERATURE AND HUMIDITY DESIGN CRITERIA

All components of a System/360 have been designed for optimum operation at 75°F (24°C) and 50% relative humidity at altitudes up to 7,000 feet (2,134m). This design point provides for the largest buffer in terms of system available 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 prior to computer shutdown. The design point has also been proven to be a generally acceptable personnel comfort level.

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

Deviation 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 will not cause static dis-

charge. However, in combination with certain types of floor construction, floor coverings, furniture, etc., static charges which are generated by moving people, carts, furniture, paper, etc., will be more readily stored on one or more of the objects. These charges may be high enough when discharged by contact with another person or object to be quite objectionable to operating personnel and can cause intermittent interference with operation of computers or other electronic equipment. Since deviations of 24 hours or longer will permit the floors, desks, furniture, cards, tape, and paper to reach steady-state condition, 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.

Under normal operation, the design conditions can be controlled within limits of ±2°F (±1°C) and ±5% relative humidity with standard air conditioning controls.

#### MACHINE OPERATING LIMITS

Some individual units may require special consideration and have more or less restrictive requirements. See unit specification pages for individual requirements.

	<u>Machine Operating</u>	<u>Machine Nonoperating</u>	<u>Design Criteria</u>
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 MACHINE 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 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 entirely different principles. Therefore, it is necessary to specify a different efficiency rating for each type.

Mechanical Air Filter: This type 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 Type Filter: This type 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 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.

Even through the heat loads of the computer system are considerably reduced from previous systems, the heat load 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 different 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. All local building codes should be checked including the electrical code, as some localities will not permit the use of the raised floor as an air conditioning plenum as described in the following text.

#### 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 (described in detail later) would be mounted adjacent to the controls to monitor the room conditions.

#### TWO DUCT -- TWO AIR CONDITIONING UNIT SYSTEM

One air handling unit with separate controls supplies conditioned and filtered air to the air inlets on the machines. This air may be supplied to the machines through ducts laid beneath the raised floor or fed to a floor plenum chamber with holes through the floor located under the machines. Each machine is supplied with a quantity of air equal to its internal fan capacity. 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.

This 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.

#### 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 individual units through separate ducts.

A split coil with reheat and/or face and bypass dampers can be used to regulate the air to be supplied directly to the individual unit. 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.

#### 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.

#### 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 indicate whether a drying-out period is required. This may, in some cases, save machine shutdown time.

The record of temperature and humidity can be used:

1. To assure the customer that his air conditioning installation is continuously performing its job

properly. 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 shut down and unattended. The extent and duration of the excess humidity is used to determine 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 audible signal device should be incorporated into the instrument. Its purpose is to provide a visual or 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 7-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 7-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 any other location convenient to the building engineer.



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.

Locating a Computer Area

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 inflammable or explosive materials or gases are stored, manufactured, or processed. If the customer must locate near such an area, he should take precautions to safeguard the area.

Safety Considerations

1. Walls enclosing a computer area should be of noncombustible materials. These walls should extend from floor to ceiling. If walls are made of combustible material, they should be protected as prescribed by code.
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. Sprinklers could be installed externally over the windows to protect them with a blanket of water in case of fire in the adjacent area.
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 regular ceiling and the false ceiling, proper protection should be provided.
4. A raised floor, installed over the regular floor, should be constructed of noncombustible or fire-retardant materials. If the regular floor is of combustible material, it should be properly protected from the ceiling below, preferably by water sprinklers. (Note: Before the computer is installed, the space between the raised and regular 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 tape storage areas should be a watertight slab. If practical, the walls of the room should be sealed to the slab in such a manner as to prevent water entering from above.

6. Subfloor space should be provided with positive drainage.

Type of Fire Prevention Equipment in a Computer Area

1. Portable carbon dioxide fire extinguishers of suitable size -- 15 pounds (7 kg) and number should be provided in the machine room. This is the recommended nonwetting agent for electrical equipment (Class C Hazard). Extinguishers should be overhead, marked, and readily accessible to individuals in the immediate area. Local codes govern the frequency of inspecting the cylinders, which is done by weighing for dissipation of contents.
2. Where portable carbon dioxide cylinders are used as the primary extinguishing agent, it is advisable to locate a standpipe or hose unit within effective range of the computer area as a secondary extinguishing agent for a Class A Hazard.
3. In some cases, local building codes and ordinances, or insurance regulations, require automatic water sprinklers. One of the following should be used, if it conforms to such codes and ordinances:
  - a. Pre-action sprinkler system. High temperatures actuate heat-sensitive devices, which open a control valve. This valve, outside the room, admits water into the sprinkler piping before the sprinkler heads operate. This type of system minimizes the possibility of accidental discharge of water because of failure or mechanical breakage of the automatic sprinkler heads.
  - b. Higher temperature sprinkler heads. Replace the sprinkler heads with high-rated ones -- preferably in the intermediate range of 175°F (79°C) rating.
4. A fire detection system should be installed to protect the computer and tape storage areas. This detection system should actuate an alarm and shut down the air conditioning system.

Data Storage

1. Any data stored in the computer room, whether in the form of magnetic tape, paper tape, cards, or

paper forms, should be limited to the minimum needed for safe efficient operation and enclosed in metal cabinets or fire-resistant containers.

2. For security purposes or for maintaining duplicates of master records, a separate storage room should be used. This room should be of fire-resistant material and contain the same type of fire prevention equipment as described in "Type of Fire Prevention Equipment in a Computer Area."

### Supporting Facilities

#### Air Conditioning Systems

1. In most installations, the computer area is controlled by a completely separate air conditioning system. In these cases, an emergency power-off switch should be placed in a convenient location, preferably near the operating console 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 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 material.

#### Electric 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 operating console and next to the main exit door. A light should be installed to indicate when power is on.

2. Some local codes require a special battery-operated lighting unit that will automatically illuminate an area in case of power or lighting circuit failure. These units are wired to and controlled by the lighting circuit. When not required by code, it is recommended that such lights be installed.

3. Protection against lightning surges can be obtained by installing lightning arresters on the secondary power source, especially when:

- a. The utility company installs lightning protectors on the primary power source.

- b. Primary power is supplied by an overload power system.

4. If power receptacles are under the false floor which could be susceptible to excessive water, water-proof connectors should be used. Proper drainage will guard against flooding or trapping water under the false floor in the computer room. This is important in certain new buildings where the regular floor is depressed and the raised surface is on the level of the adjacent areas.

### Preplanning to Continue Operation in an Emergency

1. The continued operation of a customer's computer depends on information stored on cards, tape, disks, drums, etc. Also, there must be equipment 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.

2. Where continuity of operation is essential, a standby power source should be installed.

### 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 running 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. Proper method and sequence of shutting off all electrical power.
- b. Shutting off air conditioning system.
- c. Handling fire extinguishers in the approved manner.
- d. Properly operating a small-diameter fire hose.
- e. Evacuating records.
- f. Evacuating personnel.
- g. Calling fire company.
- h. First aid.

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 multiplexer channel. For the purpose of 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.

In attaching devices to the multiplexer channel, the various classes are normally attached in numeric sequence (1, 2, and 3). Within each class, devices are attached in order of increasing critical time intervals. 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 are listed as burst mode may be attached to the multiplexer channel in any physical location; from a performance standpoint, these units should be assigned to lowest priority. On the selector channel, they are assigned according to data rate within class sequence.

In determining the attachment of I/O devices to the selector channels, the following guidelines generally apply. Class 1 devices with the highest data rates are normally attached to the lowest numbered channels (selector 1). Since 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, selector 2 and selector 3).

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 the various units and features are listed in Appendix A.

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.

System/360 I/O Priority Assignment

Layout and Cable Ordering Procedures

Priority assignment and physical cabling sequence can be represented by using a form shown on Figure 2. Each form represents two channels and provides for eight attached control units.

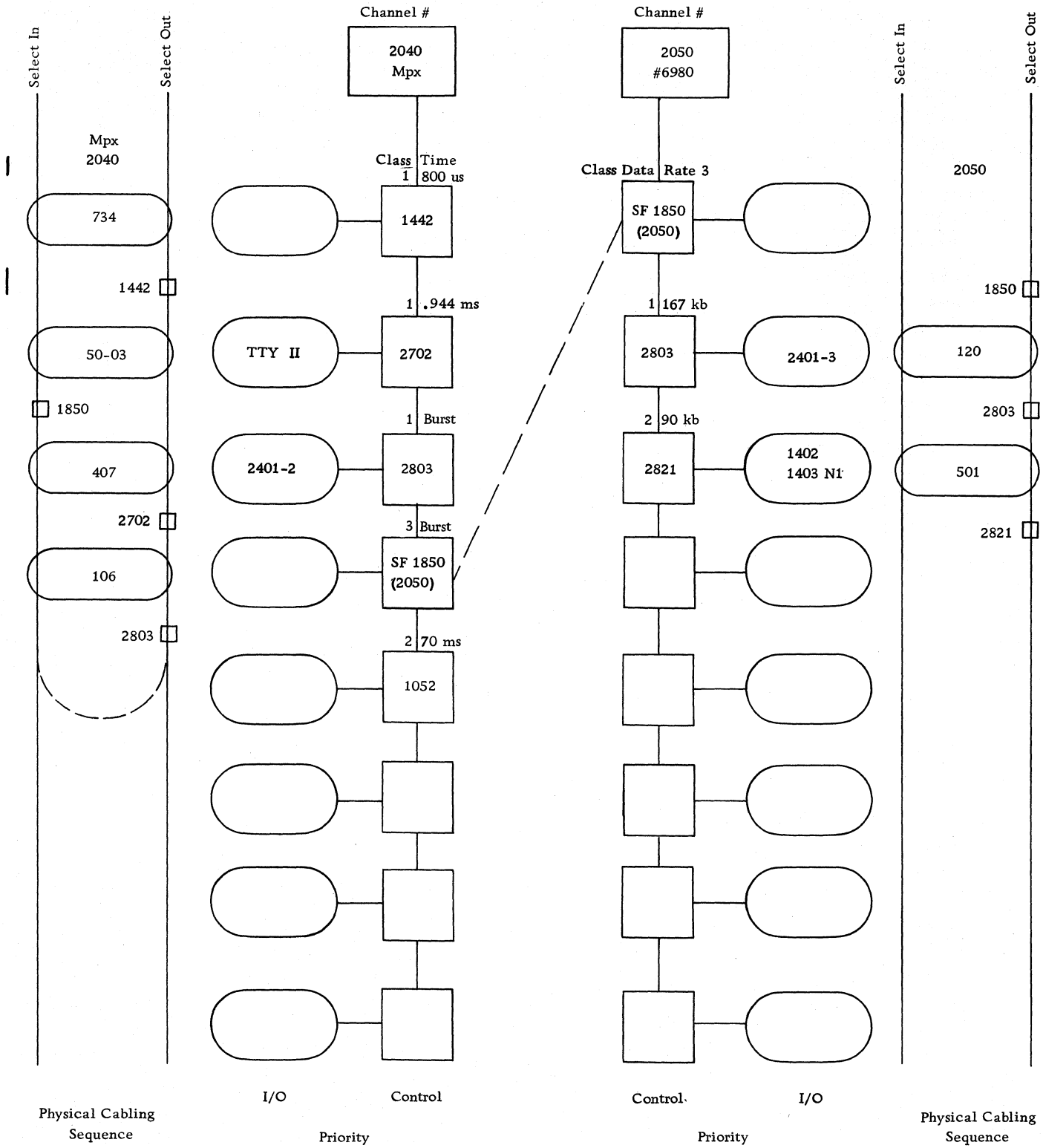
The two lines shown to the right and left of Figure 2 are used in checking the physical cabling for proper priority sequence. The control units, I/O devices, features, and data listed in Appendix A should be listed on each channel, starting with the highest priority device. All control units should be listed including channel-to-channel adapter and 1052 adapter. Note that the channel-to-channel adapter, 2404, 2804, and 2841 with two channel switch, etc., require control positions on each of two channels.

After priority has been assigned, a layout can be prepared and cabling sequence checked against maximum cable lengths. To assist in this and in checking the priority of the system, the two lines shown on the extreme right and left of Figure 2 are used. As indicated, these represent the "select in" and "select out" lines in the channel cable that affect the priority on the channel. The 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 most remote unit from the processor. Cables are then specified from unit to unit back to the channel or processor. 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.

Example: Figure 2 shows two channels: one in a Model 40 processor (2040) and the other in a 2050. The control units assigned to the channels are:

2040 Multiplexer Channel	2050
2702	2821-1
2803	2802
1052 Adapter	
1442	1850 Channel-to- Channel Adapter



●Figure 2. Priority Assignment

The program dictates that the 2050 channel requires access to the 2040 multiplexer channel via the 1850 feature. This feature must then be added to the multiplexer listing. The units and features to which the channels require access must be arranged in priority sequence as shown. The dotted line between the two boxes labeled "1850" on the illustration indicates that these are actually the same feature.

Having established priority, a layout can be made and cabling sequence can be checked. The cabling sequence should be checked by using the two lines at the extreme right and left sides of Figure 2 and assigning the units or features to either of the lines,

so that the sequence in which they appear on these lines conforms to the prescribed priority sequence.

Note that the 1052 adapter does not appear on the multiplexer channel cabling. This adapter is internally cabled on the Model 40 and 50 processors. The 1850 feature is also internally cabled on the unit to which it is assigned.

On Model 30 systems, the 1051 and 1052 are internally cabled and do not attach to either the multiplexer or selector channels. To cable 1053, 1054, 1055, and 1056 units to the 1051, consult the IBM 1050 Data Communications System, Installation Manual -- Physical Planning, Form A24-3022.

## CABLES

IBM will supply 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. In the interest of the 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 injury, 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 salesman.

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 2260, 2848, and 2250.

### CABLES SUPPLIED

1. The cables necessary to connect IBM input/output control units to the main processing system.
2. The cables listed below for connecting IBM components such as card punches, readers, printers,

and storage and tape units to the input/output control units or processor.

- a. One tape signal cable for each tape unit.
  - b. One signal cable (or set of signal cables) for each card punch, printer, reader, or other input/output device.
  - c. One signal cable (or set of signal cables) for each storage unit.
  - d. One signal cable for each inquiry station.
  - e. One signal cable (or set of signal cables) as required by the system installation manual for Tele-processing applications or direct data.
  - f. Power and control cables will be supplied to each unit as required by the system installation manual.
3. The cables required for new and/or additional equipment will be supplied in accordance with the preceding items. If components of the system must be moved to permit installation of the new component and/or systems into the installation, those cables necessary to permit the move will be supplied at no charge. Your IBM Sales representative will place a special order for these cables against the installed machine. The order must specify the group number, the cable length, and the reason the cables are required. All replaced cables must be returned to the factory.
  4. If cables are requested for reasons other than those specified in preceding text, such as a layout revision after cables have been ordered, it will be necessary to submit a special order requesting these cables. The order must specify the cable group number, the cable length, and the reason the cables are required. The IBM Sales representative should be consulted as to the possible extra cost of these cables.

### CABLING CONNECTOR ILLUSTRATIONS

Figures 3 through 8 are representative of cable connectors used in the computer systems. The dimensions given for the plugs are maximum overall measurements and may be used in calculations concerning subfloor clearances.

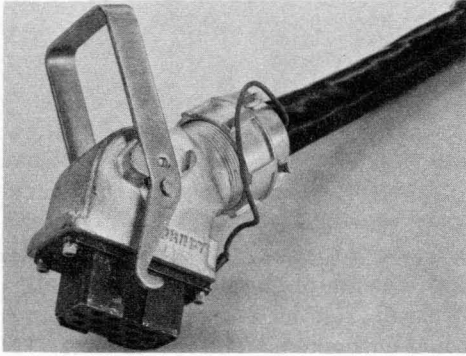


Figure 3. Tape Power Cable Connector -- 3-5/8 inches (9 cm) high, 4-1/2 inches (11 cm) deep, 2-1/16 inches (5 cm) wide



Figure 4. Power Cord Plug -- 3-phase, 30-amp, 4-wire; OD 2-1/4 inches (6 cm), 4-1/2 inches (11 cm) long

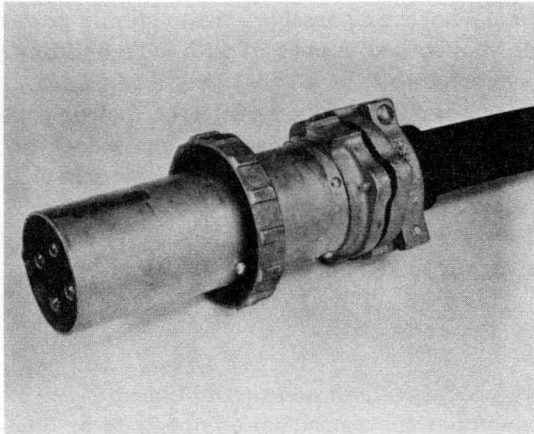


Figure 5. Power Cord Plug -- 3-phase, 60-amp, 4-wire, OD 3-3/4 inches (10 cm), 9 inches (23 cm) long

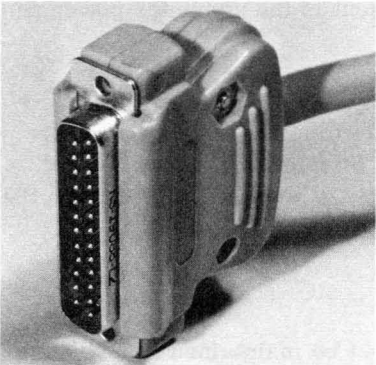


Figure 6. Common Carrier to Data Set -- 2-3/16 inches (6 cm) wide, 3/4 inch (2 cm) high, 1-5/8 inches (4 cm) deep

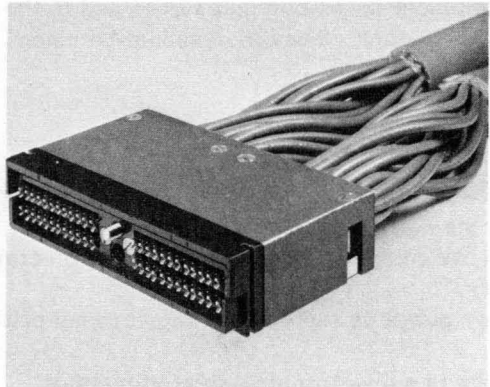


Figure 7. System/360 Interface Connector

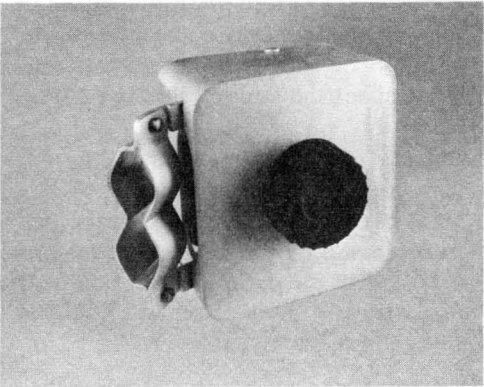


Figure 8. Hypertape Signal Connector -- 7-11/16 inches (20 cm) high, 4-1/8 inches (11 cm) deep, 5-15/16 inches (15 cm) wide

## POWER REQUIREMENTS

The computer system can be supplied to operate on either a 208-volt or a 230-volt (not both), 3-phase, 4-wire, 60-cycle supply. The voltage normally used is 208 volts. The four wires consist of three phase wires and one insulated equipment grounding conductor (green or green with yellow trace). The grounding conductor must be the same size as the phase conductors. The equipment grounding conductors from all the units can be tied into one main grounding conductor at the main distribution panel. This conductor shall be carried directly back to the service ground or suitable building ground. All grounding conductors are to be insulated. (See "Grounding.") All components of a system must connect to this ground. Conduit must not be used as the only grounding means. A neutral wire is not required and should not be present in the computer power panel.

### Voltage Limits

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

### Frequency Limits

The line frequency must be maintained at 60 cycles plus or minus 1/2 cycle per second.

### 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  $\pm 5\%$  with the equipment not operating.

### 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.

### Grounding

All IBM units are provided with an equipment ground wire (green or green with yellow trace). The branch circuit receptacles recommended provide for connection of the equipment ground. This grounding wire must be insulated. At the main distribution panel, the green wire ground from all units can be tied into one main grounding conductor. This equipment grounding wire must be carried back to service ground or suitable building ground. This is a non-current carrying ground not a neutral. Conduit must not be used as the only grounding means. The grounding conductor must be the same size as the phase conductors. Wherever possible, the system's power panel shall 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 (Figure 9) in contact with masonry shall be connected to the green wire common. The connection shall not be more than 5 feet long and shall consist of AWG12 or larger wire.

### Emergency Power Controls

As a safety precaution, in addition to emergency shutdown 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. They 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.

### Lightning Protection

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

1. The utility company installs lightning protectors on the primary.
2. Primary power is supplied by an overhead power service.
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.



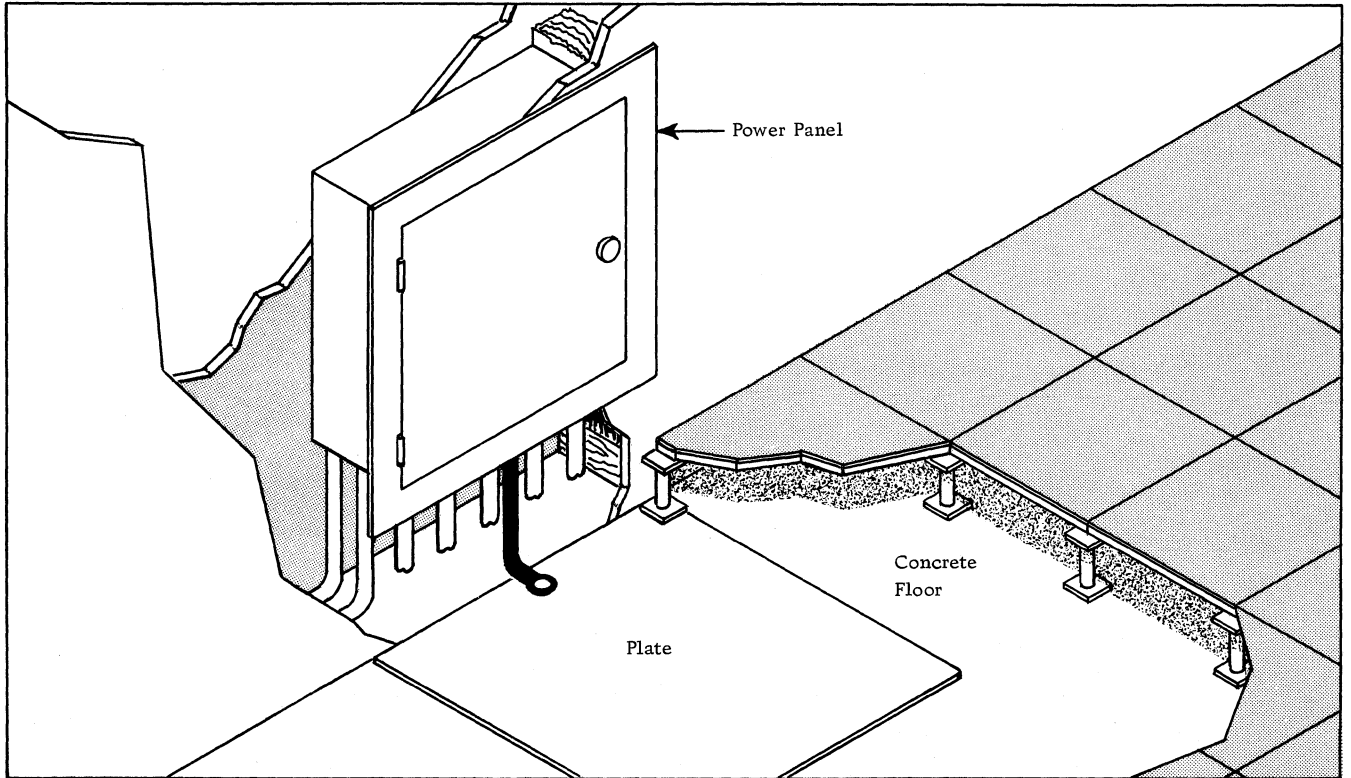
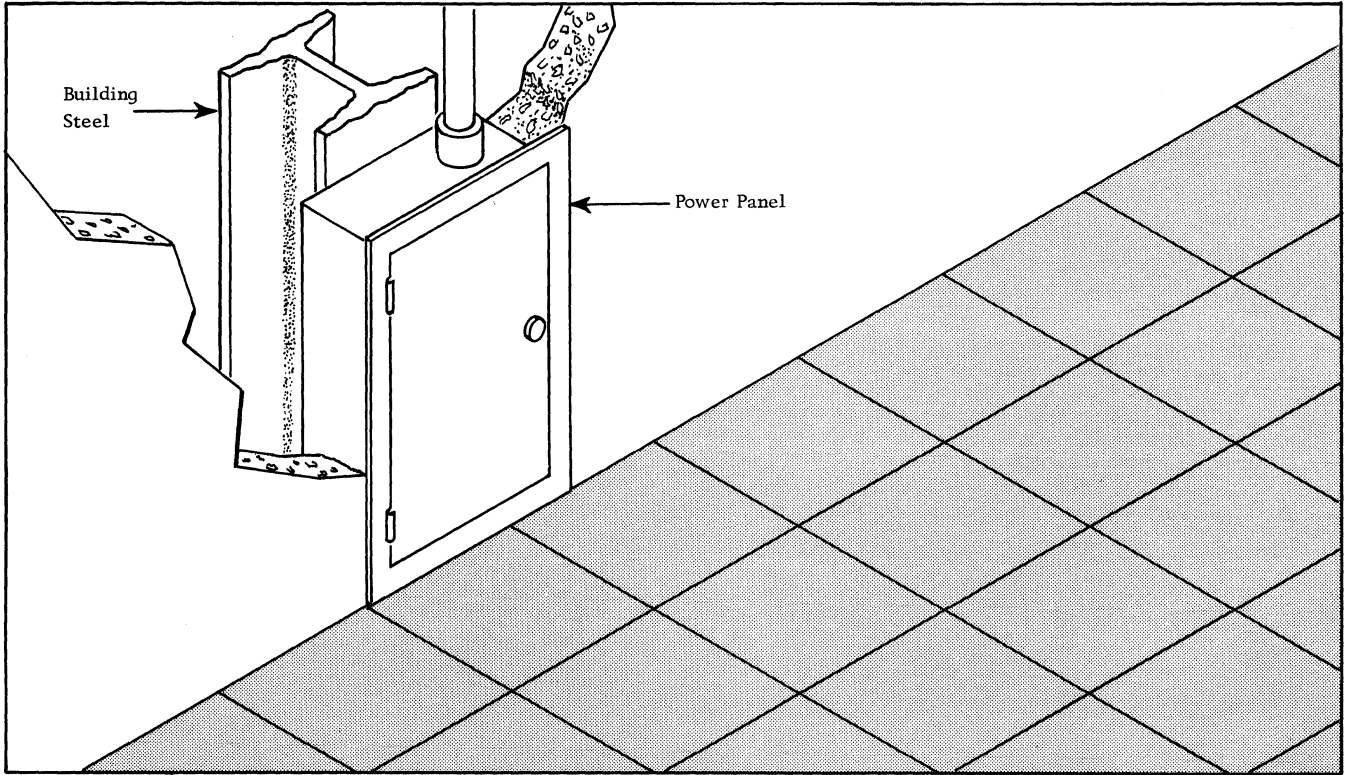


Figure 9. Power Panel Grounding

## 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 riser. See "CE Room and Test Area" for detail of requirements in that area.

### Primary Computer Power Service

For maximum system reliability, the computer power panel should connect to a riser which feeds no other loads. By following the specifications in the power section and eliminating the neutral from this panel transient producing devices such as accounting machines, card punch machines, typewriters, desk calculators, etc., can be eliminated as potential sources of noise interference to the computer system.

### Branch Circuits

The individual branch circuits on the distribution 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 distribution panel should be in an unobstructed, well-lighted area in the computer room.

Branch circuits should terminate under the raised floor as close as possible (within 10 feet) 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.

The specifications summary in this manual gives the type and quantity of receptable service required.

### 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.

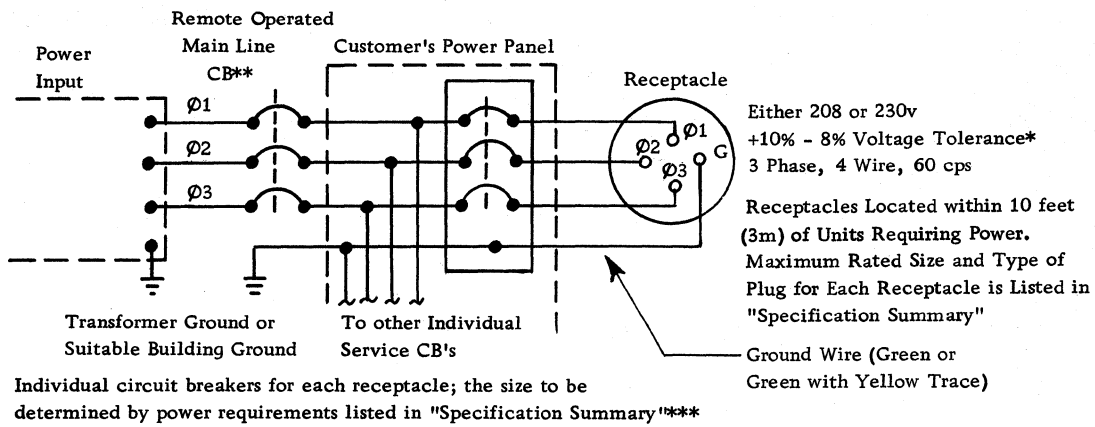
Failures caused by your power supply are basically of two types:

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 be glad to 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 riser and the computer room power panel and power line disturbances are still present, it may be necessary to install an isolation transformer and/or an RF filter. The RF filter should be installed as close as possible to the load end of the riser.

All riser lines should be enclosed in metal and have a building ground. Power service and distribution installed according to IBM requirements will reduce the effects of such disturbances.



Individual circuit breakers for each receptacle; the size to be determined by power requirements listed in "Specification Summary"\*\*\*

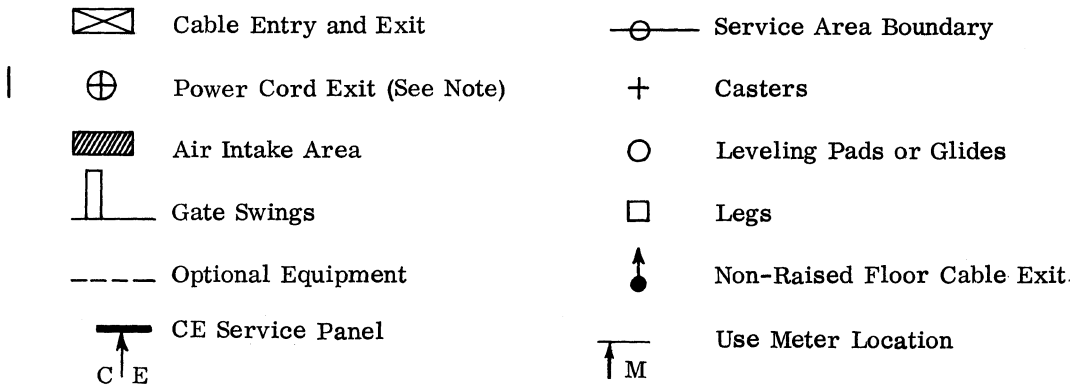
- \* Tolerance includes any variable combination of steady state and/or short duration transients.
- \*\* Remotely disengaged from an emergency device located near the console operator and next to the main exit door.
- \*\*\* The power plugs furnished by IBM which can be located under the computer floor will be waterproof. The customer-furnished receptacle can be either waterproof or non-waterproof and either an in-line or fixed type depending on local code requirements.

Figure 10. Power Distribution System

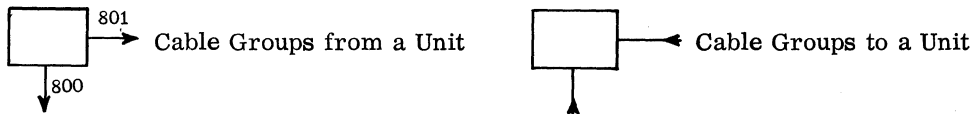
STANDARD SYMBOLS

Figure 11 shows the symbols adopted as standard for the IBM System/360.

In Plan Views



In Cabling Schematics



Unless otherwise noted on individual unit specification pages, the following statement applies: All systems components can be reduced to 29-1/2 inches by 60 inches (75 cm by 152 cm) or smaller sections for shipment.

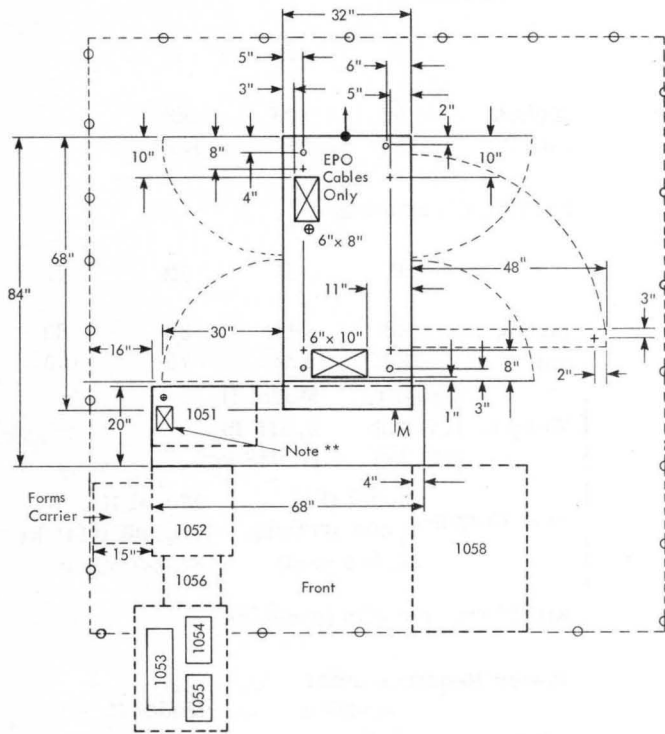
Note: Power cords are supplied in 14-foot lengths, unless otherwise noted on the unit specification page. The length is measured from the symbol ⊕.

● Figure 11. Standard Symbols

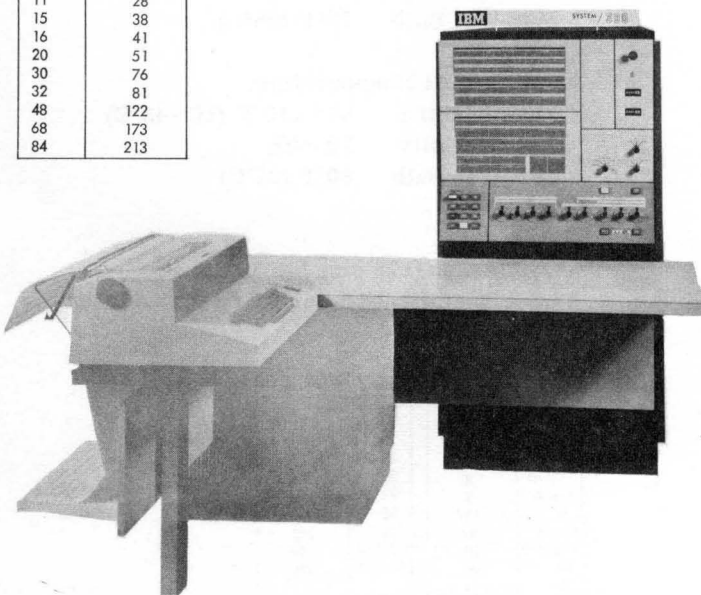


SYSTEM/360 MODEL 30, 2030 PROCESSING UNIT

PLAN VIEW (TEMPLATE X22-6894)



Inches	Centimeters
1	3
2	5
3	8
4	10
5	13
6	15
8	20
10	25
11	28
15	38
16	41
20	51
30	76
32	81
48	122
68	173
84	213



SPECIFICATIONS

Dimensions

	F	S	H
Inches	60	109	60*
cm	152	277	152*

Service Clearances

	F	R	Rt	L
Inches	42	24	60	48
cm	107	61	152	122

Weight: 1,700 lb (771 kg)

Heat Output: 10,000 BTU/hr (2,520 kcal)

Air Flow: 900 cfm (26 m<sup>3</sup>/m)

Power Requirements:

kva	3.8
Phases	3
Plug	R&S, FS3730***
Connector	R&S, FS3914

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)

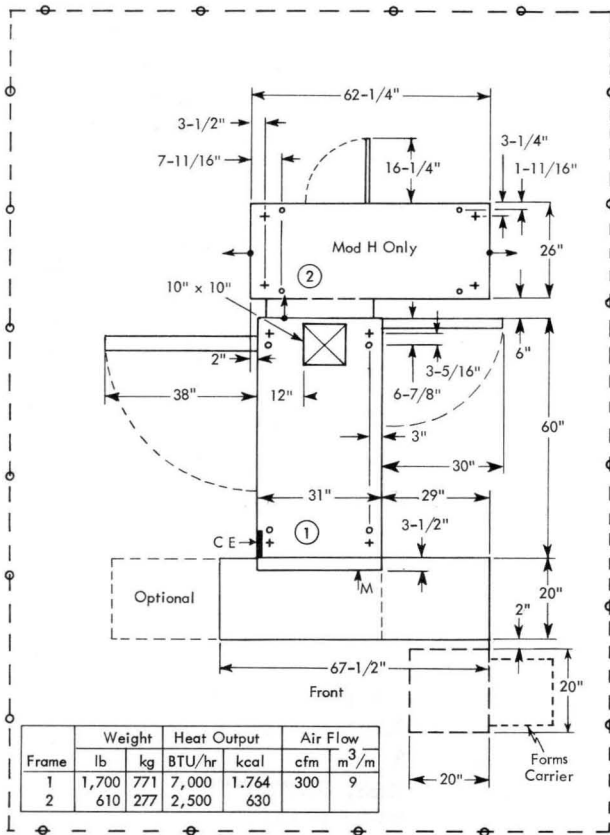
Notes

\*Unless otherwise specified, the shipping dimensions on the 2030 will be 32" x 68" x 64" (81 x 173 x 163 cm). Removal of the side covers will reduce the width to 29" (74 cm). If further reduction in length is required, see sales representative for method of specifying on the order. This will modify the unit to 29" x 60" x 70" (74 x 152 x 178 cm).

\*\*This cutout is required when SF #3622 or 1051 is installed.  
 \*\*\*See specification summary for additional requirements.

SYSTEM/360 MODEL 40, 2040 PROCESSING UNIT

● PLAN VIEW (TEMPLATE X22-6894)



SPECIFICATIONS

Dimensions

	F	S	H
Inches	60	109	60*
cm	152	277	152*

Service Clearances

	F	R	Rt	L
Inches	48	48	30	60
cm	122	122	76	152

	Model G	Model H
Weight:	1,700 lb (771 kg)	2,310 lb (1,048 kg)
Heat Output:	7,000 BTU/hr (1,764 kcal)	10,500 BTU/hr (2,646 kcal)

Air Flow: 300 cfm (9 m<sup>3</sup>/m)

Power Requirements:

	Model G	Model H
kva	2.5	3.7
Phases	3	
Plug	R&S, FS3760 **	
Connector	R&S, FS3934	

Environment Operating:

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

Environment Nonoperating:

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

Notes

- \* 70 inches (178 cm) for Model H.
- \*\* See specification summary for additional requirements.

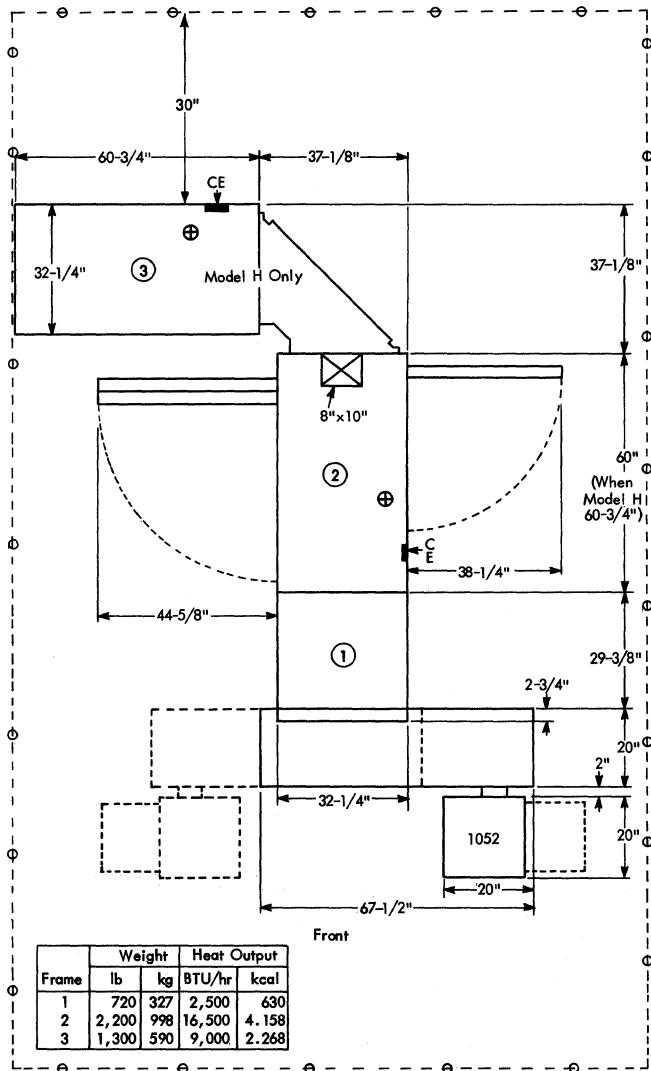
Inches	Centimeters	Inches	Centimeters
1-11/16	4	16-1/4	41
2	5	20	51
3	8	26	66
3-1/4	8	29	74
3-5/16	8	30	76
3-1/2	9	31	79
6	15	38	97
6-7/8	18	60	152
7-11/16	20	62-1/4	158
10	25	67-1/2	172
12	31		





SYSTEM/360 MODEL 44 E, F, G, AND H, 2044 PROCESSING UNIT

PLAN VIEW (TEMPLATE X22-6914)



Inches	Centimeters
2	5
2-3/4	7
8	20
10	25
20	51
29-3/8	74
30	76
32-1/4	82
37-1/8	94
38-1/4	97
44-5/8	113
60	152
60-3/4	154
67-1/2	172

SPECIFICATIONS

Dimensions

	F	S	H
Inches	*	*	72
cm	*	*	183

Service Clearances

	F	R	Rt	L
Inches	*	*	*	*
cm	*	*	*	*

	Models		
	E, F	G	H
Weight lb	2,800	2,900	4,200
kg	1.270	1.315	1.905
Heat BTU/hr	15,000	19,000	28,000
Output kcal	3,780	4,788	7,056
Air cfm	1,600	1,600	2,400
Flow m <sup>3</sup> /m	45	45	68

Power Requirements:

kva	5.3	6.5	9.5
Phases	3		
Plug	R&S, FS3760**		
Connector	R&S, FS3934		

Environment Operating:

Temperature 60°-90°F (16°-32°C)  
 Rel Humidity 20-80%  
 Max Wet Bulb 78°F (27°C)

Environment Nonoperating:

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

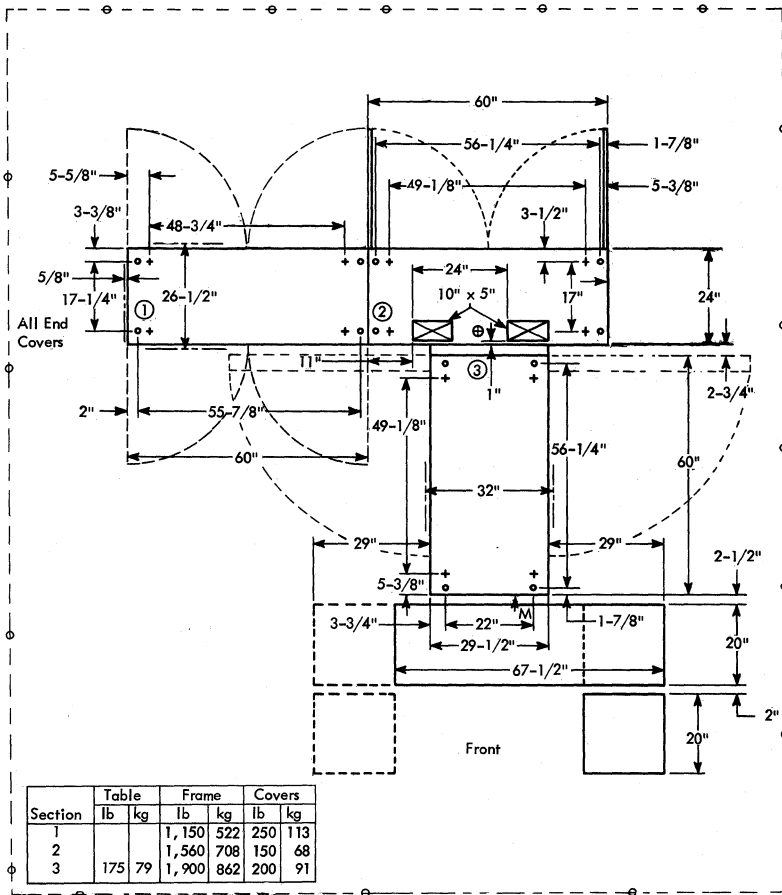
Notes

\* See plan view for dimensions and service clearance.

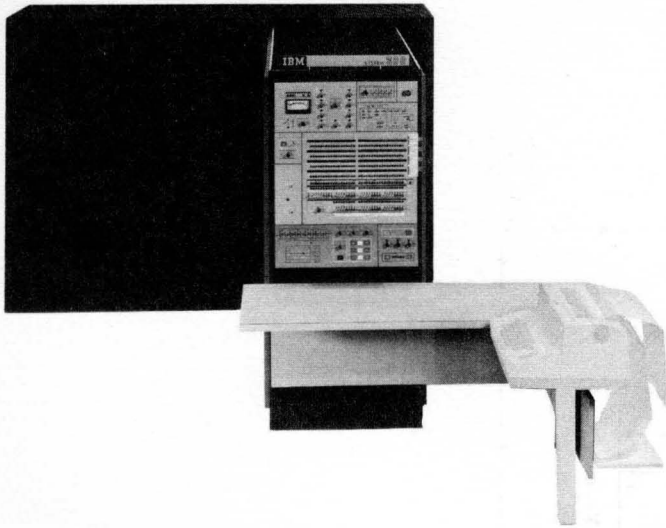
\*\* See specification summary for additional requirements.

SYSTEM/360 MODEL 50 F, G, AND H, 2050 PROCESSING UNIT

● PLAN VIEW (TEMPLATE X22-6914)



Inches	Centimeters	Inches	Centimeters
5/8	2	17-1/4	44
1	3	20	51
1-7/8	5	22	56
2	5	24	61
2-1/2	6	26-1/2	67
2-3/4	7	29	74
3-3/8	9	29-1/2	75
3-1/2	9	32	81
3-3/4	10	48-3/4	124
5	13	49-1/8	125
5-3/8	14	55-7/8	142
5-5/8	14	56-1/4	143
10	25	60	152
11	28	67-1/2	172
17	43		



SPECIFICATIONS

Dimensions

	F	S	H
Inches	*	*	72-1/2
cm	*	*	184

Service Clearances

	F	R	Rt	L
Inches	*	*	*	*
cm	*	*	*	*

Weight:	Models F and G	Model H
	4,700 lb (2,132 kg)	5,210 lb (2,363 kg)

Heat Output:	20,410 BTU/hr (4,543 kcal)	21,350 BTU/hr (5,380 kcal)
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Air Flow:	2,350 cfm (67 m <sup>3</sup> /m)	2,990 cfm (85 m <sup>3</sup> /m)
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Power Requirements:

kva	6.5	6.8
Phases	3	
Plug	R&S, SC7328	
Connector	R&S, SC7428	

Environment Operating:

Temperature	60°-90°F (16°-32°C)
Rel Humidity	20-80%
Max Wet Bulb	78°F (27°C)

Environment Nonoperating:

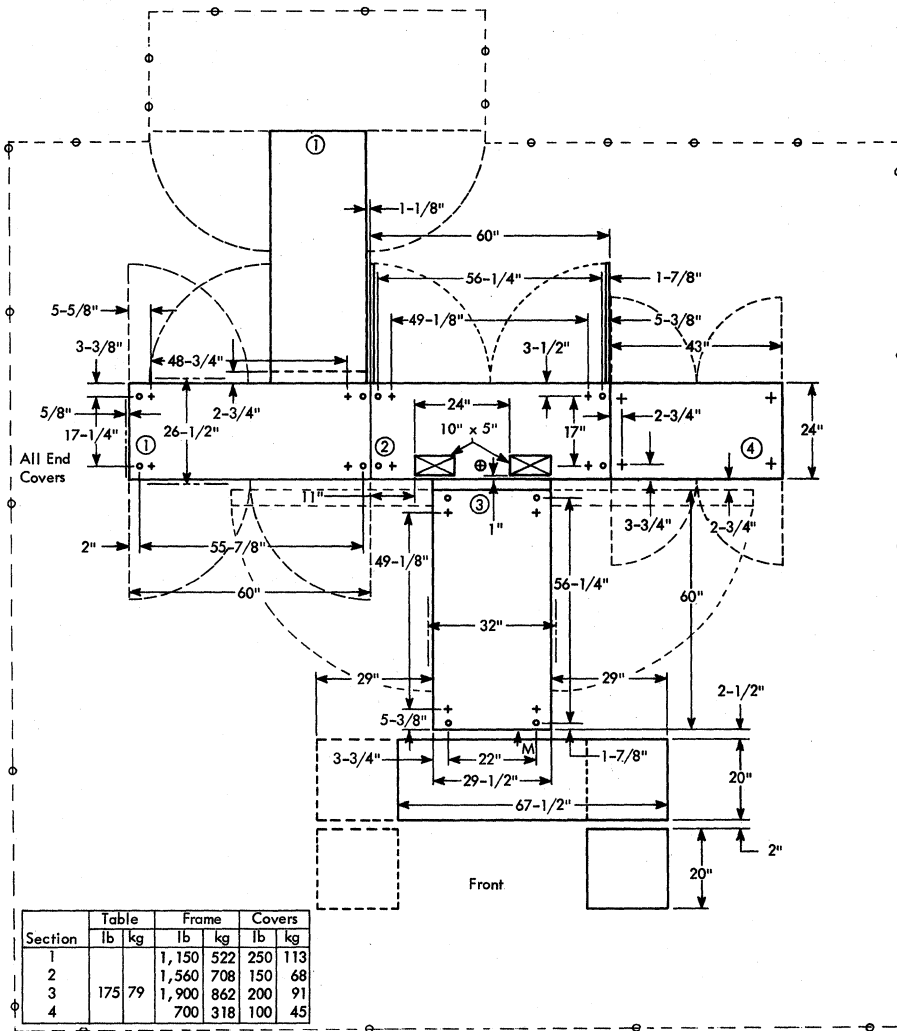
Temperature	50°-110°F (10°-43°C)
Rel Humidity	8-80%
Max Wet Bulb	80°F (27°C)

Notes

\* See plan view for dimensions and service clearances.

SYSTEM/360 MODEL 50 I, 2050 PROCESSING UNIT

● PLAN VIEW (TEMPLATE X22-6914)



Inches	Centimeters	Inches	Centimeters
5/8	2	17-1/4	44
1	3	20	51
1-1/8	3	22	56
1-7/8	5	24	61
2	5	26-1/2	68
2-1/2	6	29	74
2-3/4	7	29-1/2	75
3-3/8	9	32	81
3-1/2	9	43	109
3-3/4	10	48-3/4	124
5	13	49-1/8	125
5-3/8	14	55-7/8	142
5-5/8	14	57-1/4	143
10	25	60	152
11	28	67-1/2	172
17	43		

SYSTEM/360 MODEL 50 I, 2050 PROCESSING UNIT

SPECIFICATIONS

Dimensions

	F	S	H
Inches	*	*	72-1/2
cm	*	*	184

Service Clearances

	F	R	Rt	L
Inches	*	*	*	*
cm	*	*	*	*

Weight: 7,310 lb (3.316 kg)

Heat Output: 30,044 BTU/hr (7.560 kcal)

Air Flow: 4,600 cfm (130 m<sup>3</sup>/m)

Power Requirements:

kva	9.6
Phases	3
Plug	R&S, SC7328
Connector	R&S, SC7428

Environment Operating:

Temperature	60 <sup>o</sup> -90 <sup>o</sup> F (16 <sup>o</sup> -32 <sup>o</sup> C)
Rel Humidity	20-80%
Max Wet Bulb	78 <sup>o</sup> F (27 <sup>o</sup> C)

Environment Nonoperating:

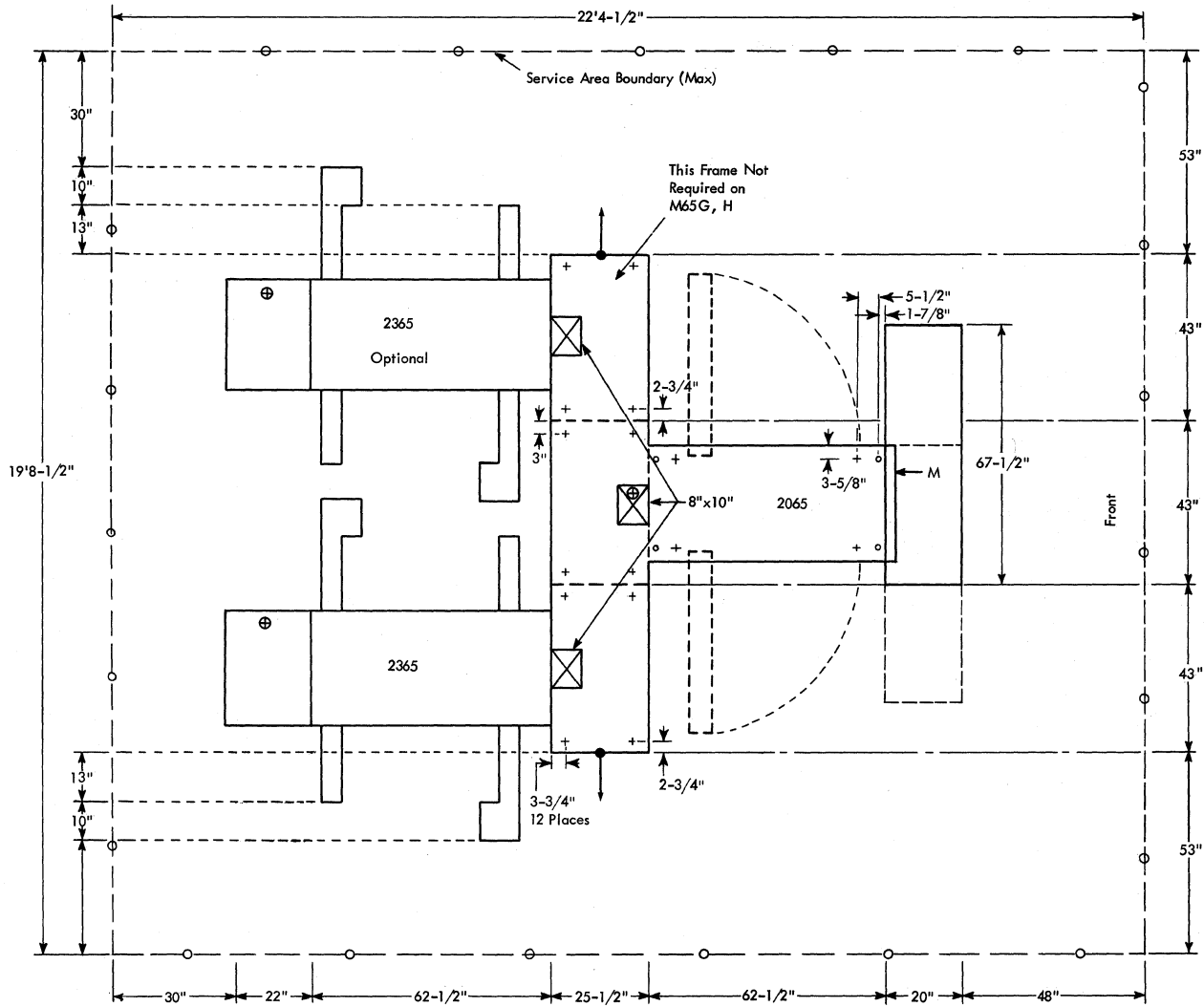
Temperature	50 <sup>o</sup> -110 <sup>o</sup> F (10 <sup>o</sup> -43 <sup>o</sup> C)
Rel Humidity	8-80%
Max Wet Bulb	80 <sup>o</sup> F (27 <sup>o</sup> C)

Notes

\*See plan view for this data.

SYSTEM/360 MODEL 65 G, H, AND I, 2065 PROCESSING UNIT

● PLAN VIEW (TEMPLATE X22-6856)



Inches	Centimeters
1-7/8	5
2-3/4	7
3	8
3-5/8	9
3-3/4	10
5-1/2	14
8	20
10	25
13	33
20	51
22	56
25-1/2	65
30	76
43	109
48	122
53	135
62-1/2	159
67-1/2	172
236-1/2	601
268-1/2	682

SYSTEM/360 MODEL 65 G, H, AND I, 2065 PROCESSING UNIT



SPECIFICATIONS

Dimensions

	F	S	H
Inches	*	*	72-1/2
cm	*	*	184

Service Clearances

	F	R	Rt	L
Inches	*	*	*	*
cm	*	*	*	*

Weight: 2,400 lb (1.089 kg)

Heat Output: 15,800 BTU/hr (3.982 kcal)

Air Flow: 2,100 cfm (60 m<sup>3</sup>/m)

Power Requirements:

kva 5.4  
 Phases 3  
 Plug R&S, SC7328  
 Connector R&S, SC7428

Environment Operating:

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

Environment Nonoperating:

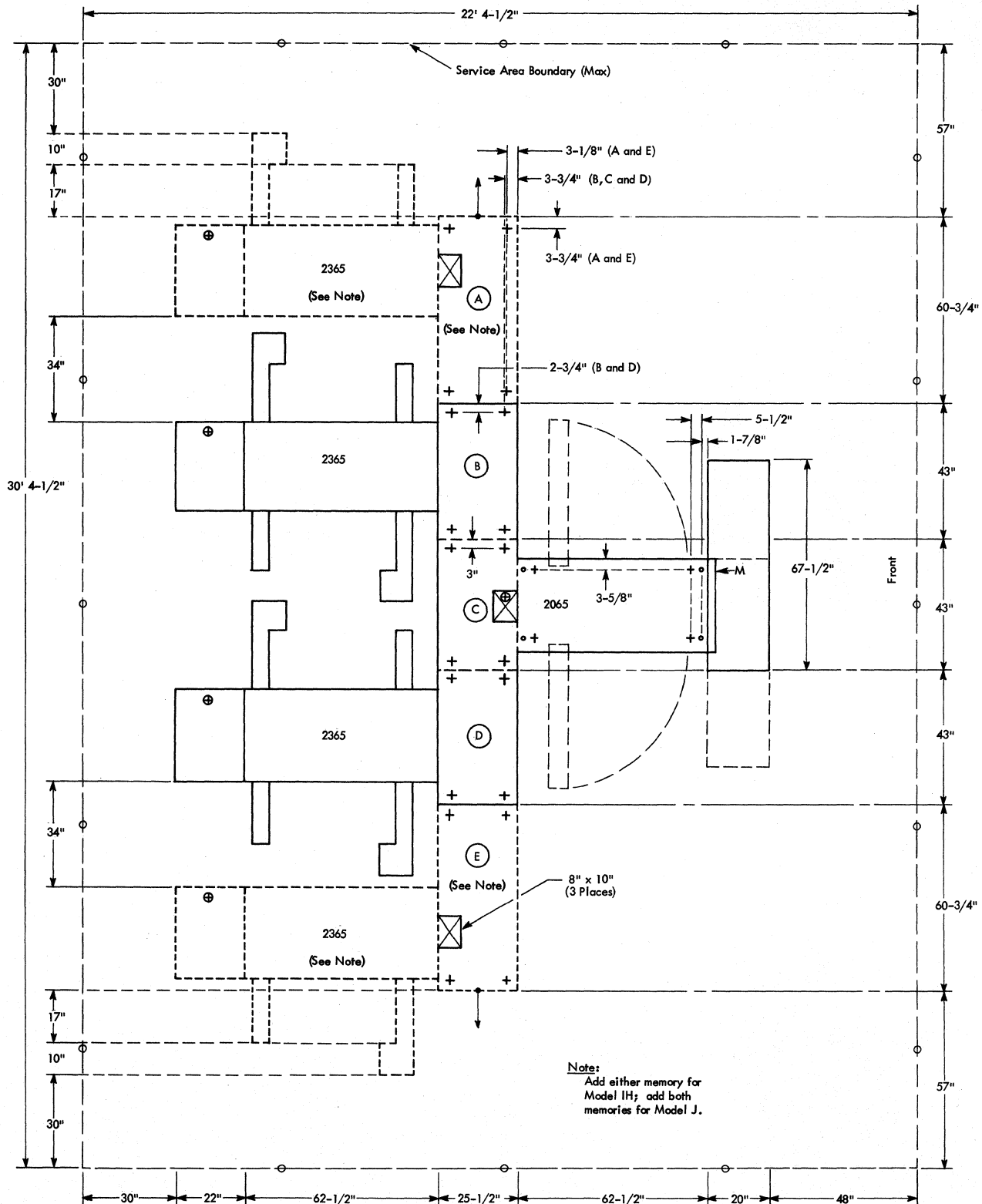
Temperature 50°-110°F (10°-43°C)  
 Rel Humidity 8-80%  
 Max Wet Bulb 80°F (27°C)

Notes

\*See plan view for data.

SYSTEM/360 MODEL 65 IH AND J, 2065 PROCESSING UNIT

●PLAN VIEW (TEMPLATE X22-6856)





**| SYSTEM/360 MODEL 65 IH AND J, 2065 PROCESSING UNIT**

Inches.	Centimeters
1-7/8	5
2-3/4	7
3	8
3-1/8	8
3-5/8	9
3-3/4	10
5-1/2	14
8	20
10	25
17	43
20	51
22	56
25-1/2	65
30	76
34	86
43	109
48	122
57	145
60-3/4	154
62-1/2	159
67-1/2	172
268-1/2	682
364-1/2	926

**SPECIFICATIONS**

**Dimensions**

	F	S	H
Inches	*	*	72-1/2
cm	*	*	184

**Service Clearances**

	F	R	Rt	L
Inches	*	*	*	*
cm	*	*	*	*

**Weight:** 2,800 lb (1.270 kg)

**Heat Output:** 15,800 BTU/hr (3.982 kcal)

**Air Flow:** 2,100 cfm (60 m<sup>3</sup>/m)

**Power Requirements:**

kva 5.4  
 Phases 3  
 Plug R&S, SC7328  
 Connector R&S, SC7428

**Environment Operating:**

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

**Environment Nonoperating:**

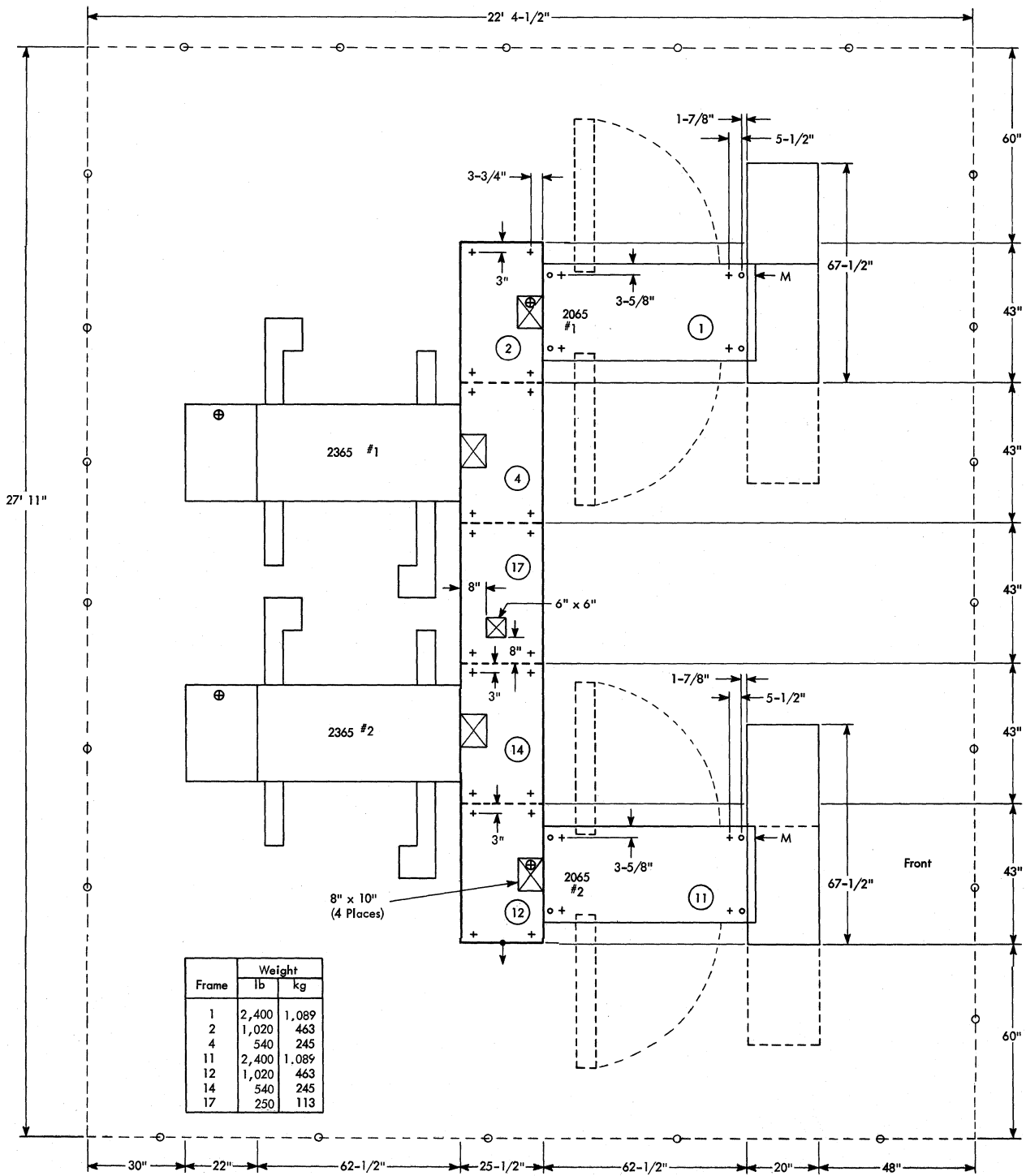
Temperature 50°-110°F (10°-43°C)  
 Rel Humidity 8-80%  
 Max Wet Bulb 80°F (27°C)

**Notes**

\* See plan view for data.

SYSTEM/360 MODEL 65 I, MULTIPROCESSING UNIT

● PLAN VIEW (TEMPLATE X22-6924)



SYSTEM/360 MODEL 65 I, MULTIPROCESSING UNIT

Inches	Centimeters
1-7/8	5
3	8
3-5/8	9
3-3/4	10
5-1/2	14
6	15
8	20
10	25
20	51
22	56
25-1/2	65
30	76
43	109
48	122
60	152
62-1/2	159
67-1/2	172
268-1/2	682
335	851

SPECIFICATIONS

Dimensions

	F	S	H
Inches	*	*	72-1/2
cm	*	*	184

Service Clearances

	F	R	Rt	L
Inches	*	*	*	*
cm	*	*	*	*

Weight: 8,170 lb (3,700 kg)

Heat Output: 12,000 BTU/hr per 2065  
(3.024 kcal)

Air Flow: 2,100 cfm per 2065 (59 m<sup>3</sup>/m)

Power Requirements:

kva 6.9 per 2065  
 Phases 3  
 Plug R&S, SC7328 per 2065  
 Connector R&S, SC7428 per 2065

Environment Operating:

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

Environment Nonoperating:

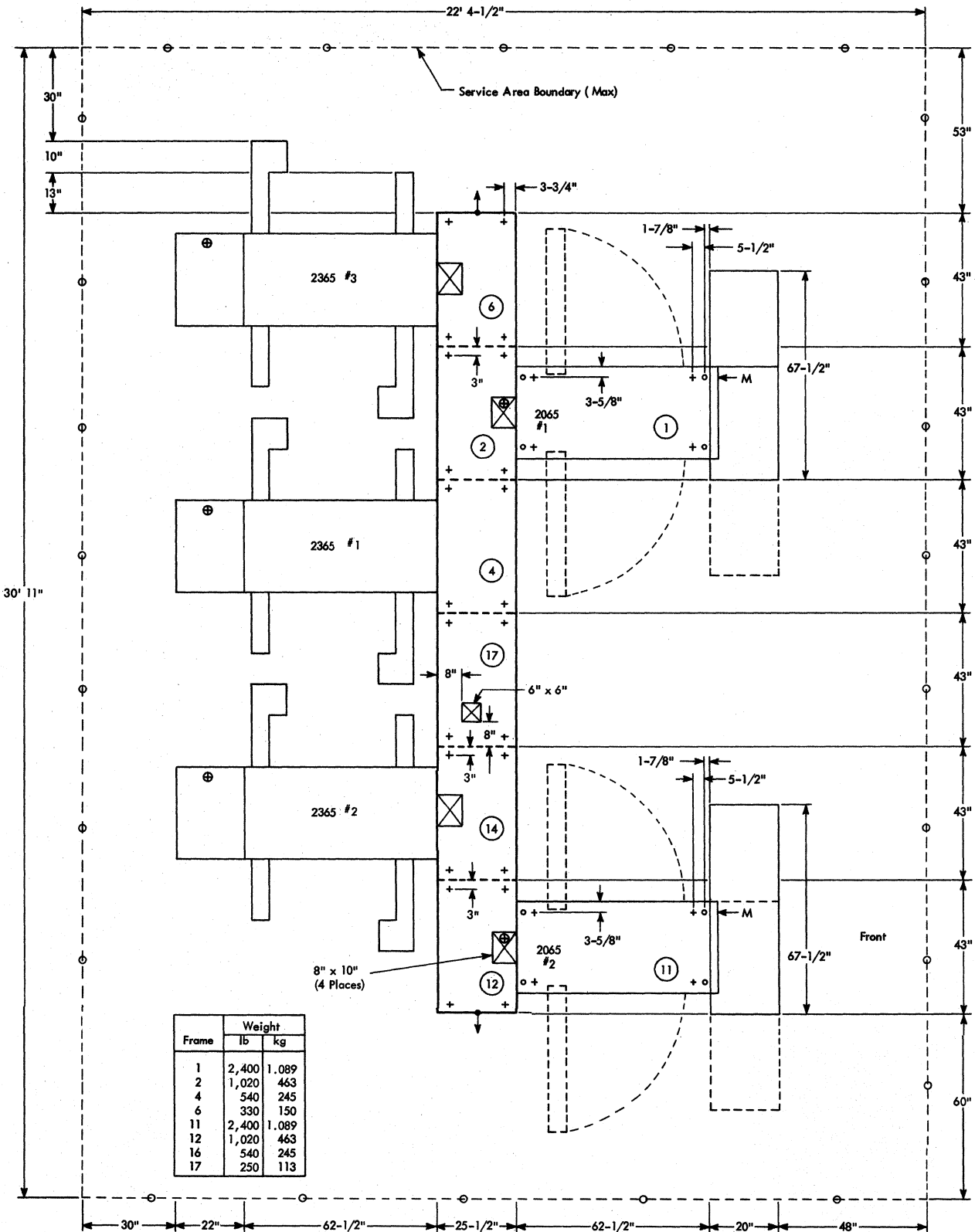
Temperature 50°-110°F (10°-43°C)  
 Rel Humidity 8-80%  
 Max Wet Bulb 80°F (27°C)

Notes

\* See plan view.

SYSTEM/360 MODEL 65 IH, MULTIPROCESSING UNIT

● PLAN VIEW (TEMPLATE X22-6924)



Frame	Weight	
	lb	kg
1	2,400	1.089
2	1,020	463
4	540	245
6	330	150
11	2,400	1.089
12	1,020	463
16	540	245
17	250	113

SYSTEM/360 MODEL 65 IH, MULTIPROCESSING UNIT

Inches	Centimeters
1-7/8	5
3	8
3-5/8	9
3-3/4	10
5-1/2	14
6	15
8	20
10	25
13	33
20	51
22	56
25-1/2	65
30	76
43	109
48	122
53	135
60	152
62-1/2	159
67-1/2	172
268-1/2	682
371	942

SPECIFICATIONS

Dimensions

	F	S	H
Inches	*	*	72-1/2
cm	*	*	184

Service Clearances

	F	R	Rt	L
Inches	*	*	*	*
cm	*	*	*	*

Weight: 8,500 lb (3.856 kg)

Heat Output: 12,000 BTU/hr per 2065  
(3.024 kcal)

Air Flow: 2,100 cfm per 2065 (59 m<sup>3</sup>/m)

Power Requirements:

kva 6.9 per 2065  
 Phases 3  
 Plug R&S, SC7328 per 2065  
 Connector R&S, SC7428 per 2065

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)

Notes:

\* See plan view.



SYSTEM/360 MODEL 65 J, MULTIPROCESSING UNIT

Inches	Centimeters
1-7/8	5
3	8
3-5/8	9
3-3/4	10
5-1/2	14
6	15
8	20
10	25
13	33
20	51
22	56
25-1/2	65
30	76
43	109
48	122
53	135
62-1/2	159
67-1/2	172
268-1/2	682
407	1,034

SPECIFICATIONS

Dimensions

	F	S	H
Inches	*	*	72-1/2
cm	*	*	184

Service Clearances

	F	R	Rt	L
Inches	*	*	*	*
cm	*	*	*	*

Weight: 8,830 lb (4,005 kg)

Heat Output: 12,000 BTU/hr per 2065  
(3,024 kcal)

Air Flow: 2,100 cfm per 2065 (59 m<sup>3</sup>/m)

Power Requirements:

kva 6.9 per 2065  
Phases 3  
Plug R&S, SC7328 per 2065  
Connector R&S, SC7428 per 2065

Environment Operating:

Temperature 60<sup>0</sup>-90<sup>0</sup>F (16<sup>0</sup>-32<sup>0</sup>C)  
Rel Humidity 20-80%  
Max Wet Bulb 78<sup>0</sup>F (26<sup>0</sup>C)

Environment Nonoperating:

Temperature 50<sup>0</sup>-110<sup>0</sup>F (10<sup>0</sup>-43<sup>0</sup>C)  
Rel Humidity 8-80%  
Max Wet Bulb 80<sup>0</sup>F (27<sup>0</sup>C)

Notes:

\* See plan view.

## SYSTEM/360 MODEL 67 CONFIGURATIONS

The IBM System/360 Model 67 configuration varies with the units that are ordered by the customer to make up his system.

The following rules are to be observed in the arrangement of the system and peripheral units:

1. The configurations of the System/360 Model 67-1 are limited by features to those shown on the following page. The 2365 Storage Units are to be numbered as shown in Figures 12 through 15.

2. The configurations of the System/360 Model 67-2 are shown on page 51. The 2365 Storage Units and 2067 Processor Units are to be numbered as shown in Figures 16 through 23. The 2365 Storage Units in Figure 23 would always be numbered 5 through 8 from left to right, regardless of whether the con-

figuration was located to the left or right of the configuration with the processors.

3. 2365 Storage Units are installed to the right and/or left of the 2067 or side by side in a contiguous wall section with expansion feature (SF 3846) between them. There must always be a SF 3846 between two adjacent 2365 units if there is not a 2067 between them.

4. 2365 Storage Units Model 2 require SF 8035 when installed with a 2067.

5. The power sequence feature (SF 5518) is required for a system with two or more 2067 Processing Units. SF 5518 is installed in one of the expansion features (SF 3846) that will be required for the two-processor system.

6. Subfloor cable entry capability is a requirement.



SYSTEM/360 MODEL 67 CONFIGURATION  
FEATURES

The sales manual lists special features that must be ordered to make up various configurations of 2365 Processor Storage and the 2067 Processor Units.

System/360 Model 67-1

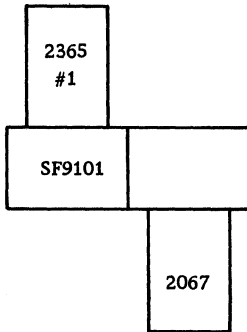


Figure 12

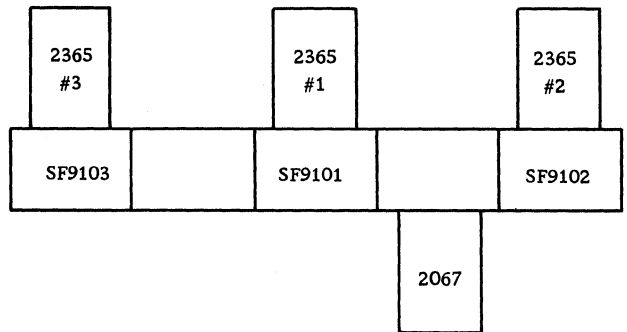


Figure 13

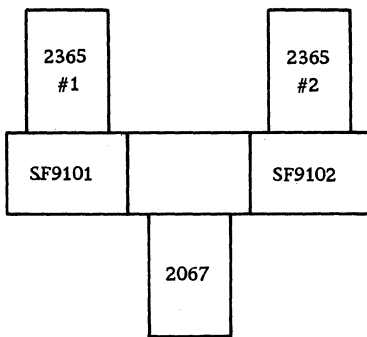


Figure 14

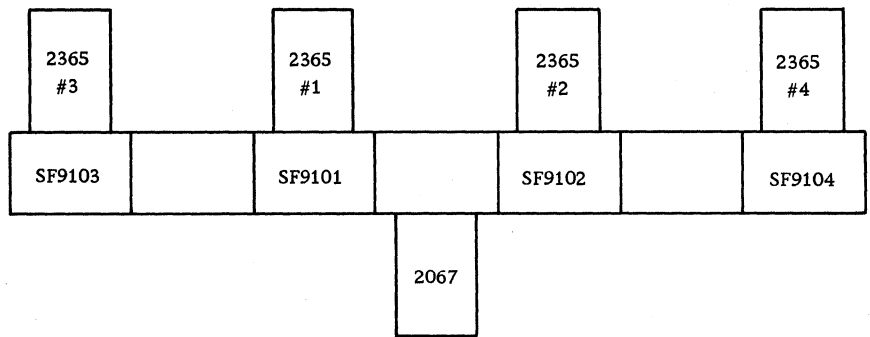


Figure 15

Figure 12--SF9101 attaches #1 2365 Model 2 to 2067 Model 1.

Figure 13--SF9102 attaches #2 2365 Model 2 to 2067 Model 1 (2365 with SF9101 is a prerequisite).

Figure 14--SF9103 attaches #3 2365 Model 2 to 2067 Model 1 (2365 Model 2 with SF9102 is a prerequisite).

Figure 15--SF9104 attaches #4 2365 Model 2 to 2067 Model 1 (2365 Model 2 with SF9103 is a prerequisite).

System/360 Model 67-2

The following feature listing and example represent typical configurations.

Attachment Feature SF9111 (Model 12 only): Required to attach #1 2365 Model 12 to the #1 2067 Model 2. Plant only.

Attachment Feature SF9112 (Model 12 only): Required to attach #2 2365 Model 12 to the #1 2067 Model 2. Plant only.

Attachment Feature SF9114 (Model 12 only): Required to attach #3 2365 Model 12 to the #1 2067 Model 2. Plant only.

Attachment Feature SF9116 (Model 12 only): Required to attach #4 2365 Model 12 to the #1 2067 Model 2. Plant only.

Attachment Feature SF9122 (Model 12 only): Required to attach #4 2365 Model 12 to the #2 2067 Model 2.

Attachment Feature SF9121 (Model 12 only): Required to attach #3 2365 Model 12 to the #2 2067 Model 2.

Attachment Feature SF9123 (Model 12 only): Required to attach #2 2365 Model 12 to the #2 2067 Model 2.

Attachment Feature SF9125 (Model 12 only): Required to attach #1 2365 Model 12 to the #2 2067 Model 2.

Attachment Feature SF9131: Required on the left-end 2365 of each wall when #1 2846 attaches on the left.

Attachment Feature SF9141: Required on the left-end 2365 of each wall when #2 2846 attaches on the left.

Attachment Feature SF9132: Required on the right-end 2365 of each wall when #1 2846 attaches on the right.

Attachment Feature SF9142: Required on the right-end 2365 of each wall when #2 2846 attaches on the right.

Pass Feature SF9133: Required on each 2365 on a wall, except the first, for #1 2846. Prerequisite is either SF9131 or SF9132 on the first 2365 on each wall.

Pass Feature SF9143: Required on each 2365 on a wall, except the first, for #2 2846. Prerequisite is either SF9141 or SF9142 on the first 2365 on each wall.

Attachment Feature SF9118: Required on the left-end 2365 of the second wall to connect the #1 2067 from the left.

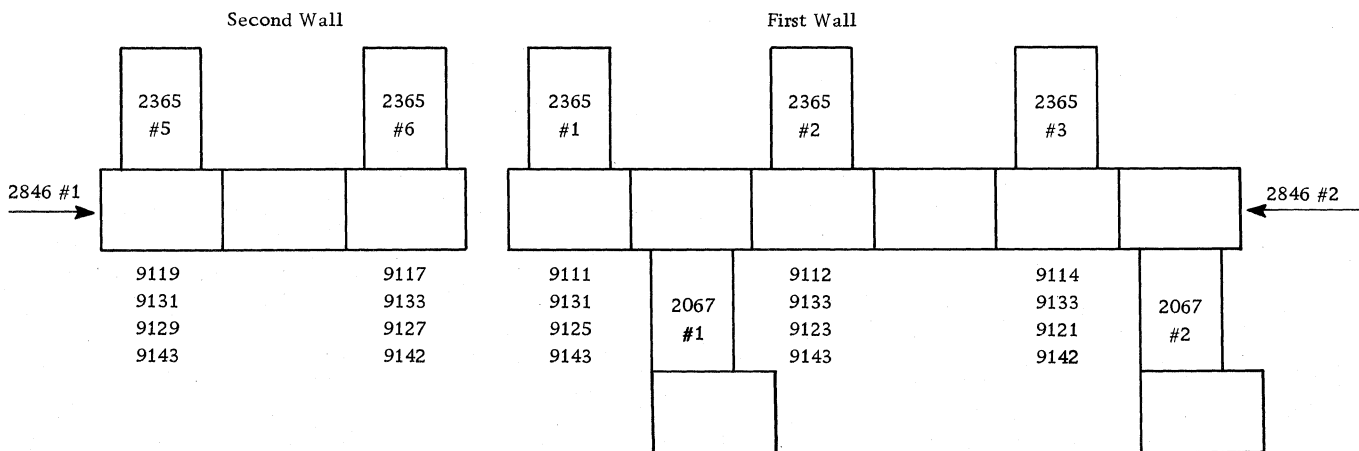
Attachment Feature SF9128: Required on the left-end 2365 of the second wall to connect the #2 2067 from the left.

Attachment Feature SF9117: Required on the right-end 2365 of the second wall to connect the #1 2067 from the right.

Attachment Feature SF9127: Required on the right-end 2365 of the second wall to connect the #2 2067 from the right.

Pass Feature SF9119: Required on each 2365, except the first of the second wall, for #1 2067. Prerequisite is either SF9118 or SF9117 on the first 2365.

Pass Feature SF9129: Required on each 2365, except the first of the second wall, for #2 2067. Prerequisite is either SF9128 or SF9127 on the first 2365.



System/360 Model 67-2 Configurations with One Processor

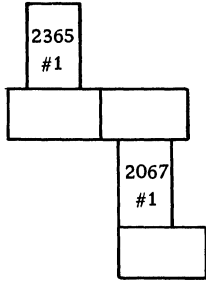


Figure 16

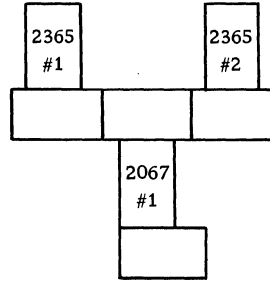


Figure 17

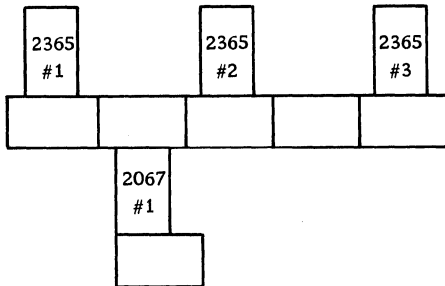


Figure 18

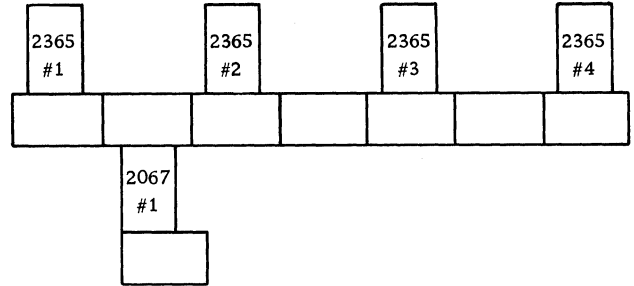


Figure 19

System/360 Model 67-2 Configurations with Two Processors

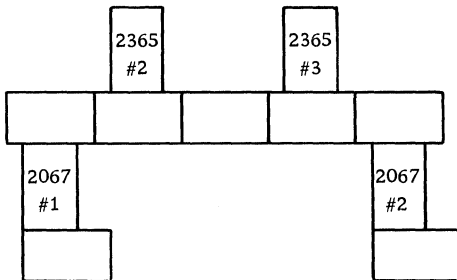


Figure 20

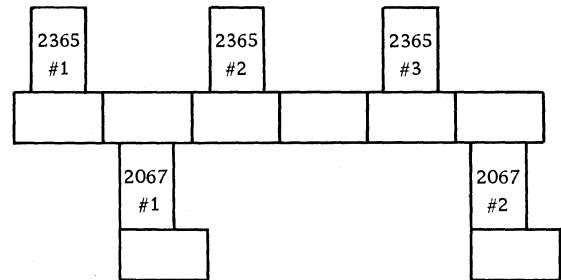


Figure 21

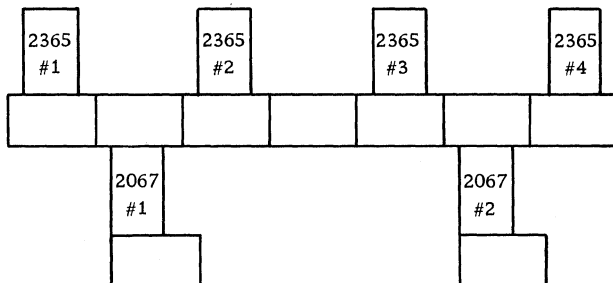


Figure 22

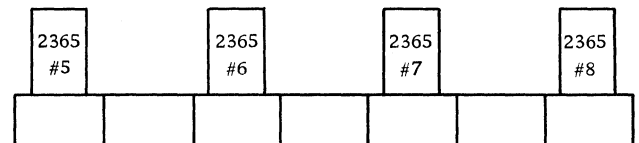
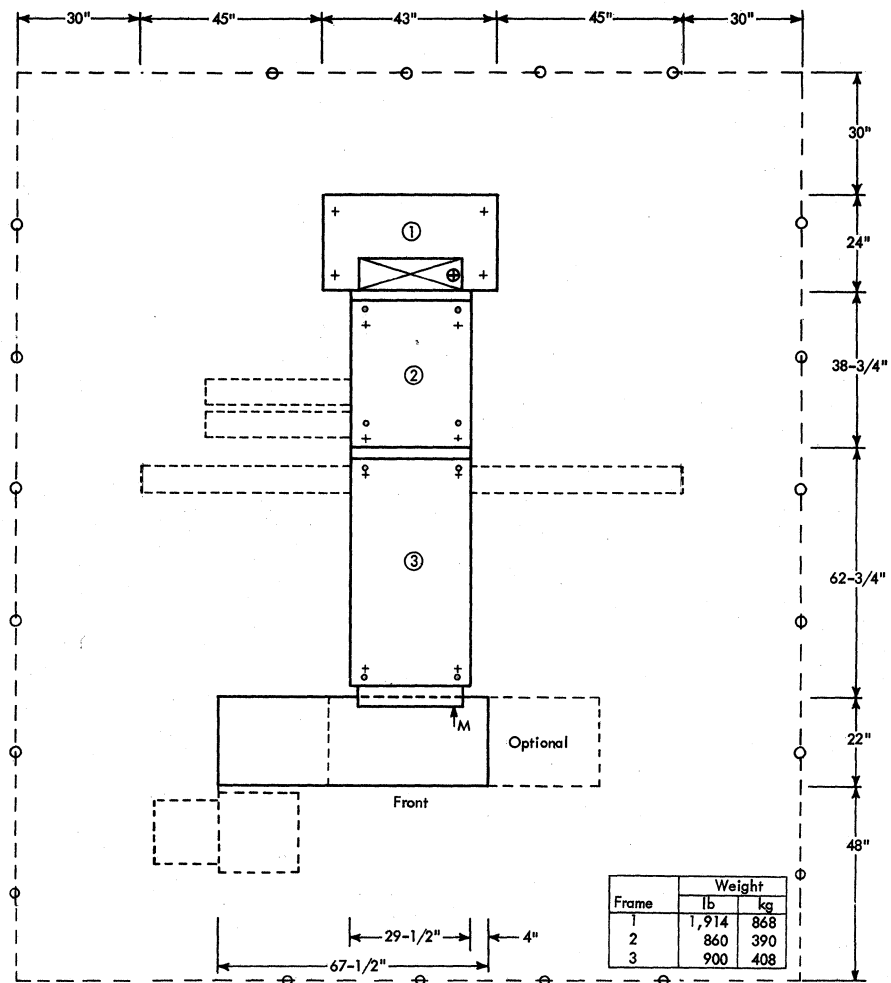


Figure 23

Additional 2365 Storage Units (maximum of four) may be ordered with any of the two processor configurations.

SYSTEM/360 MODEL 67, 2067 PROCESSING UNIT

PLAN VIEW (TEMPLATE X22-6905)



Inches	Centimeters
4	10
22	56
24	61
29-1/2	75
30	76
38-3/4	98
43	109
45	114
48	122
62-3/4	159
67-1/2	172

SYSTEM/360 MODEL 67, 2067 PROCESSING UNIT

SPECIFICATIONS

Dimensions

	F	S	H
Inches	*	*	72-1/2
cm	*	*	184

Service Clearances

	F	R	Rt	L
Inches	*	*	*	*
cm	*	*	*	*

Weight: 3,674 lb (1.667 kg)

Heat Output: 20,000 BTU/hr (5.040 kcal)

Air Flow: 4,620 cfm (131 m<sup>3</sup>/m)

Power Requirements:

kva	6.85
Phases	3
Plug	R&S, SC7328
Connector	R&S, SC7428

Environment Operating:

Temperature	60°-90°F (16°-32°C)
Rel Humidity	8-80%
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)

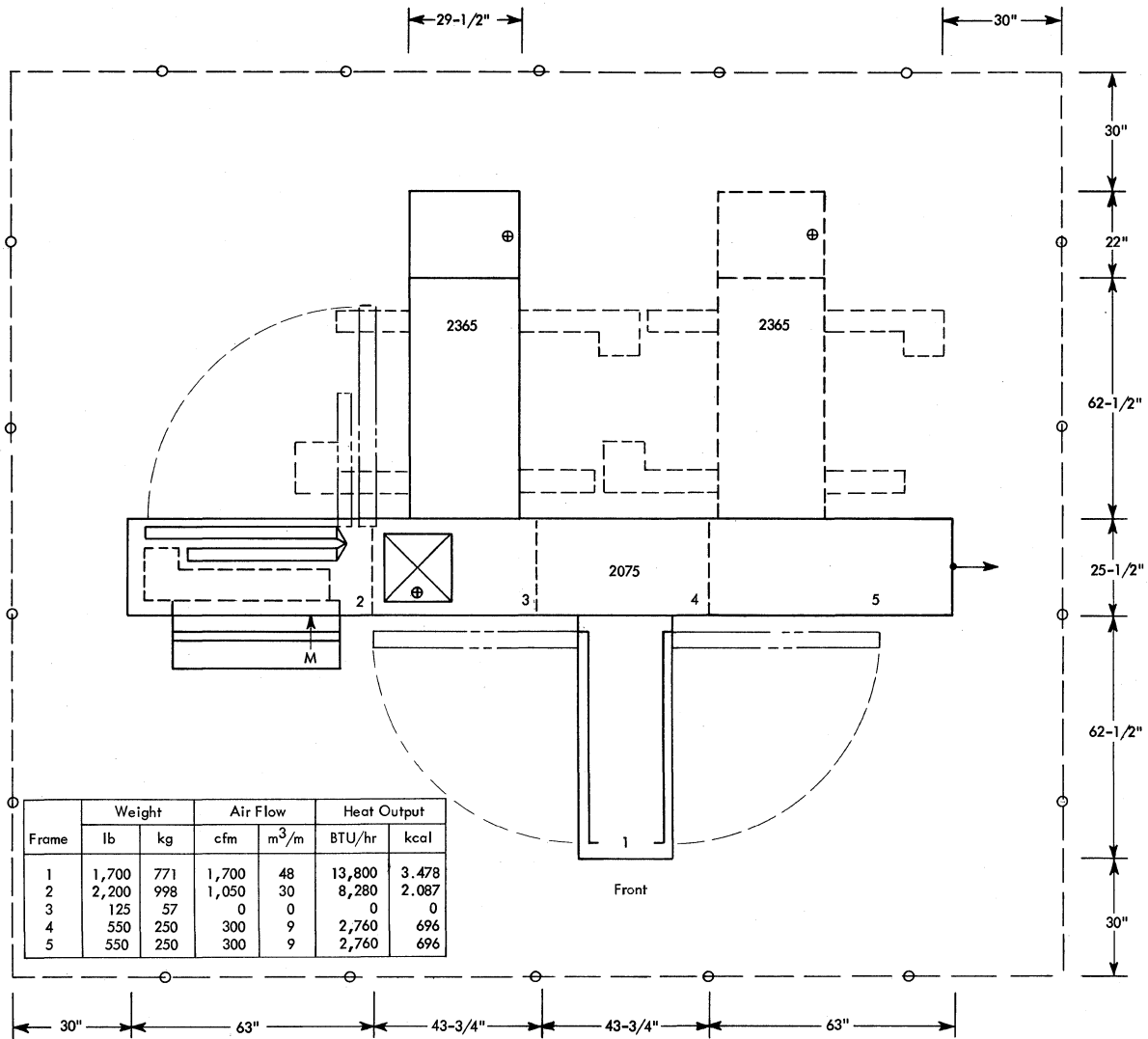
Notes

\* See plan view for data.

Dimensions are frame size; add  
1-3/8 inches (4 cm) per cover.

SYSTEM/360 MODEL 75 H AND I, 2075 PROCESSING UNIT

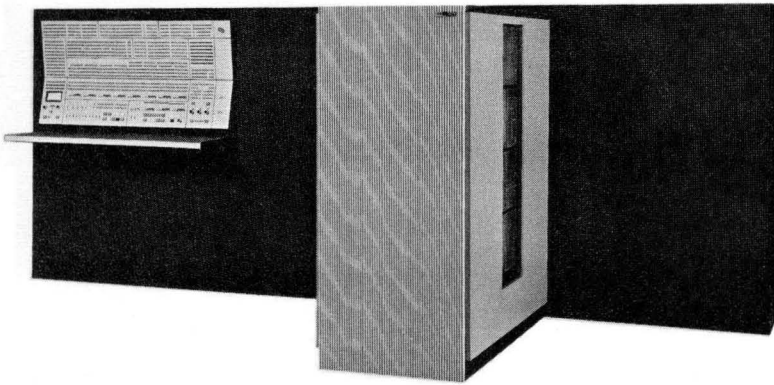
PLAN VIEW (TEMPLATE X22-6856)



Frame	Weight		Air Flow		Heat Output	
	lb	kg	cfm	m <sup>3</sup> /m	BTU/hr	kcal
1	1,700	771	1,700	48	13,800	3.478
2	2,200	998	1,050	30	8,280	2.087
3	125	57	0	0	0	0
4	550	250	300	9	2,760	696
5	550	250	300	9	2,760	696

Inches	Centimeters
22	56
25-1/2	65
29-1/2	75
30	76
43-3/4	111
62-1/2	159
63	160

SYSTEM/360 MODEL 75 H AND I, 2075 PROCESSING UNIT



SPECIFICATIONS

Dimensions

	F	S	H
Inches	*	*	72-1/2
cm	*	*	184

Service Clearances

	F	R	Rt	L
Inches	*	*	*	*
cm	*	*	*	*

Weight: 5,125 lb (2.313 kg)

Heat Output: 27,600 BTU/hr (6.955 kcal)

Air Flow: 3,350 cfm (95 m<sup>3</sup>/m)

Power Requirements:

kva 8.6  
 Phases 3  
 Plug R&S, SC7328  
 Connector R&S, SC7428

Environment Operating:

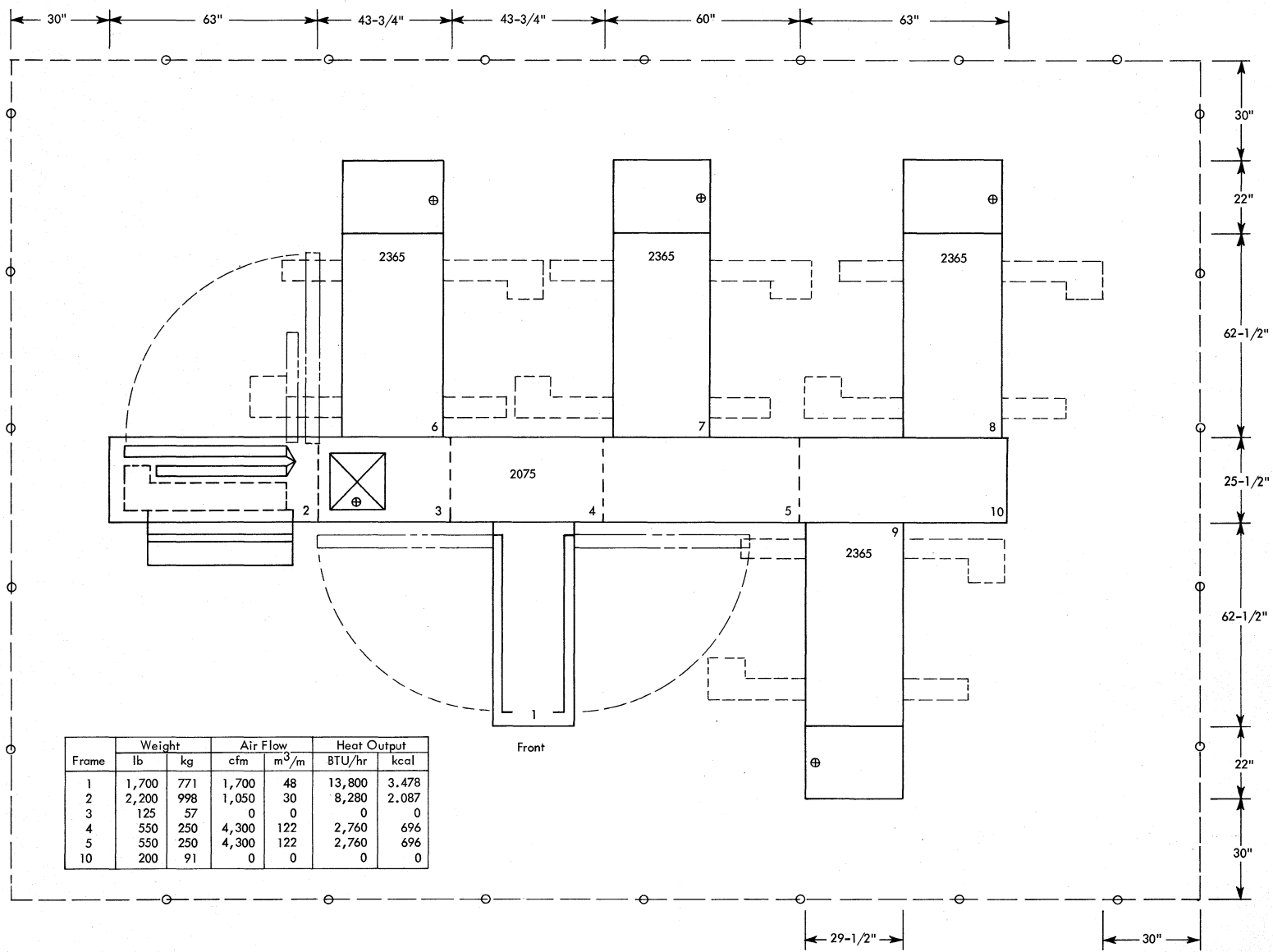
Temperature 60<sup>o</sup>-90<sup>o</sup>F (16<sup>o</sup>-32<sup>o</sup>C)  
 Rel Humidity 8-80%  
 Max Wet Bulb 78<sup>o</sup>F (26<sup>o</sup>C)

Environment Nonoperating:

Temperature 50<sup>o</sup>-110<sup>o</sup>F (10<sup>o</sup>-43<sup>o</sup>C)  
 Rel Humidity 8-80%  
 Max Wet Bulb 80<sup>o</sup>F (27<sup>o</sup>C)

Notes

\* See plan view for data.



Frame	Weight		Air Flow		Heat Output	
	lb	kg	cfm	m <sup>3</sup> /m	BTU/hr	kcal
1	1,700	771	1,700	48	13,800	3.478
2	2,200	998	1,050	30	8,280	2.087
3	125	57	0	0	0	0
4	550	250	4,300	122	2,760	696
5	550	250	4,300	122	2,760	696
10	200	91	0	0	0	0

Inches	Centimeters	Inches	Centimeters
22	56	43-3/4	111
25-1/2	65	60	152
29-1/2	75	62-1/2	159
30	76	63	160



SYSTEM/360 MODEL 75 J, 2075 PROCESSING UNIT

SPECIFICATIONS

Dimensions

	F	S	H
Inches	*	*	72-1/2
cm	*	*	184

Service Clearances

	F	R	Rt	L
Inches	*	*	*	*
cm	*	*	*	*

Weight: 5,325 lb (2.404 kg)

Heat Output: 27,600 BTU/hr (6.955 kcal)

Air Flow: 3,350 cfm (95 m<sup>3</sup>/m)

Power Requirements:

kva	8.6
Phases	3
Plug	R&S, SC7328
Connector	R&S, SC7428

Environment Operating:

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

Environment Nonoperating:

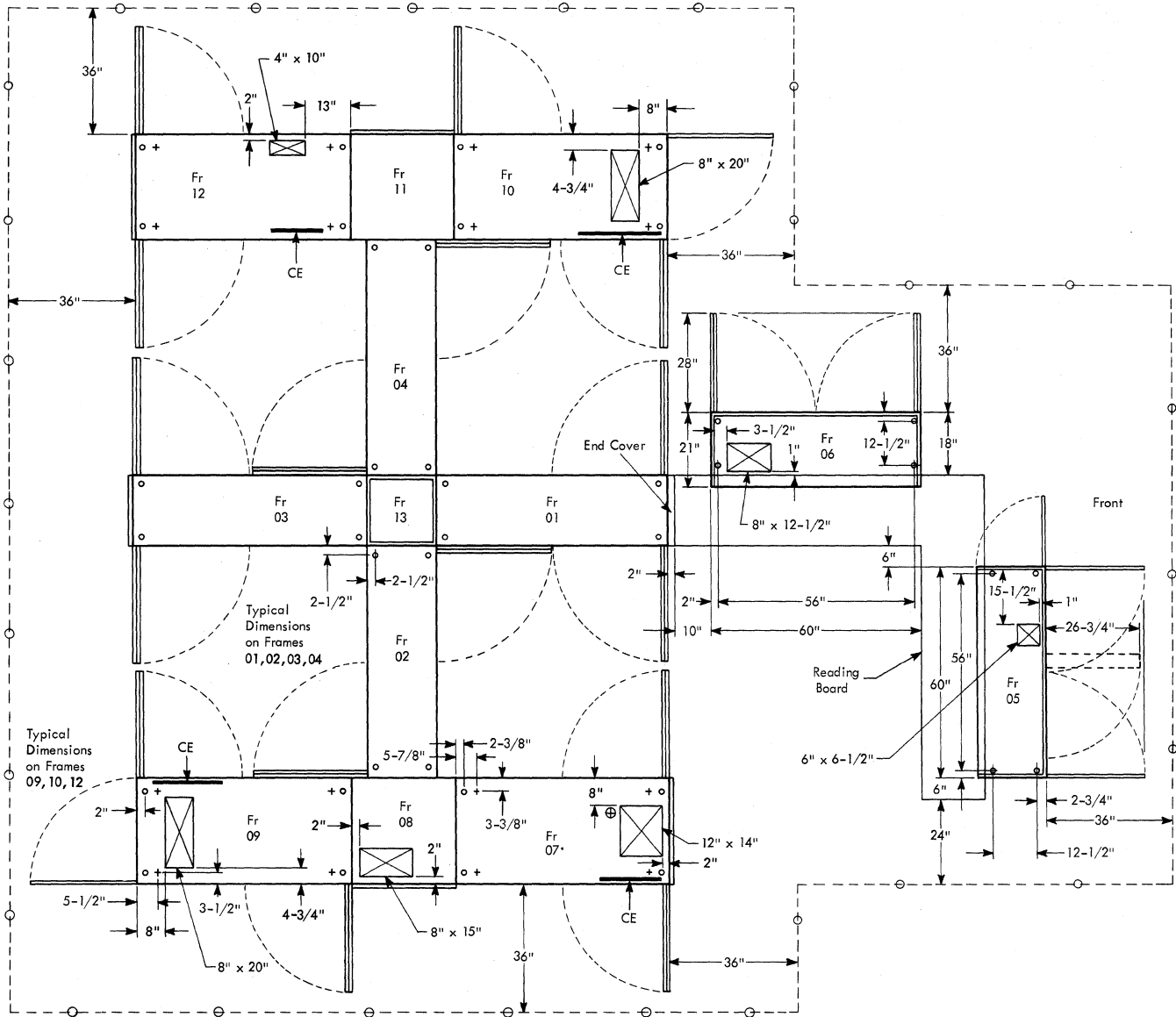
Temperature	50°-110°F (10°-43°C)
Rel Humidity	8-80%
Max Wet Bulb	80°F (27°C)

Notes

\* See plan view for data.

SYSTEM/360 MODEL 85, 2085 PROCESSING UNIT

● PLAN VIEW (TEMPLATE X22-6923)



Frame	Size	
	Inches	Centimeters
07, 09, 10, 12	30 x 61	76 x 155
01, 02, 04	20 x 66	51 x 168
03	20 x 67	51 x 170
08, 11	30 x 30	76 x 76
13	20 x 20	51 x 51

Inches	Centimeters
1	3
2	5
2-3/8	6
2-1/2	6
2-3/4	7
3-3/8	9
3-1/2	9
4	10
4-3/4	12
5-1/2	14
5-7/8	15
6	15
6-1/2	17
8	20
10	25

Inches	Centimeters
12	31
12-1/2	32
13	33
14	36
15	38
15-1/2	39
18	46
20	51
21	53
24	61
26-3/4	68
28	71
36	91
56	142
60	152

Details (By Frame)

Frame	Weight lb (kg)	Air Flow cfm (m <sup>3</sup> /m)	To Air BTU/hr (kcal)	To Water BTU/hr (kcal)
01	900 (408)	400 (11)	3,830 (965)	22,100 (5,569)
02	900 (408)	400 (11)	8,830 (2,225)	29,570 (7,452)
03	900 (408)	400 (11)	6,990 (1,761)	44,650 (11,252)
04	900 (408)	400 (11)	7,000 (1,764)	40,440 (10,191)
05	1,200 (544)	200 (6)	2,000 (504)	0 (0)
06	1,500 (680)	200 (6)	5,100 (1,285)	0 (0)
07	800 (362)	500 (14)	3,140 (791)	0 (0)
08	0 (0)	0 (0)	0 (0)	0 (0)
09	1,900 (862)	300 (8)	2,320 (585)	48,960 (12,338)
10	1,900 (862)	300 (8)	640 (161)	24,460 (6,164)
11	0 (0)	0 (0)	0 (0)	0 (0)
12	1,200 (544)	0 (0)	3,500 (882)	0 (0)

SPECIFICATIONS

Dimensions

	F	S	H
Inches	*	*	78
cm	*	*	198

Service Clearances

	F	R	Rt	L
Inches	*	*	*	*
cm	*	*	*	*

Weight: 12,100 lb (5,488 kg)

Heat Output:

Air 39,850 BTU/hr (10,042 kcal)  
 Water 210,180 BTU/hr (52,965 kcal)  
 Air Flow: 3,100 cfm (88 m<sup>3</sup>/m)

Power Requirements:

Phases 3

Environment Operating:

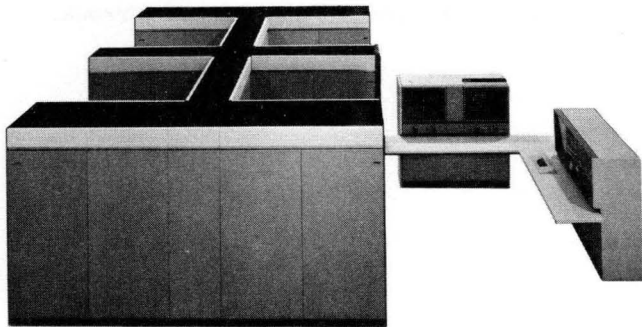
Temperature 65<sup>o</sup>-80<sup>o</sup>F (18<sup>o</sup>-27<sup>o</sup>C)  
 Rel Humidity 20-80%  
 Max Wet Bulb 73<sup>o</sup>F (23<sup>o</sup>C)

Environment Nonoperating:

Temperature 50<sup>o</sup>-110<sup>o</sup>F (10<sup>o</sup>-43<sup>o</sup>C)  
 Rel Humidity 8-80%  
 Max Wet Bulb 80<sup>o</sup>F (27<sup>o</sup>C)

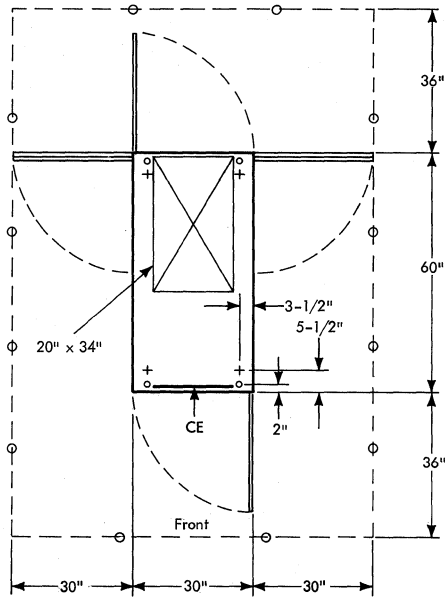
Notes

\*See plan view.



2085 POWER DISTRIBUTION UNIT (PDU) -- FRAME 14

PLAN VIEW (TEMPLATE X22-6923)



Inches	Centimeters
2	5
3-1/2	9
5-1/2	14
20	51
30	76
34	86
36	91
60	152

SPECIFICATIONS

Dimensions

	F	S	H
Inches	60	30	70
cm	152	76	178

Service Clearances

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

Weight: 1,500 lb (650 kg)

Heat Output: Negligible

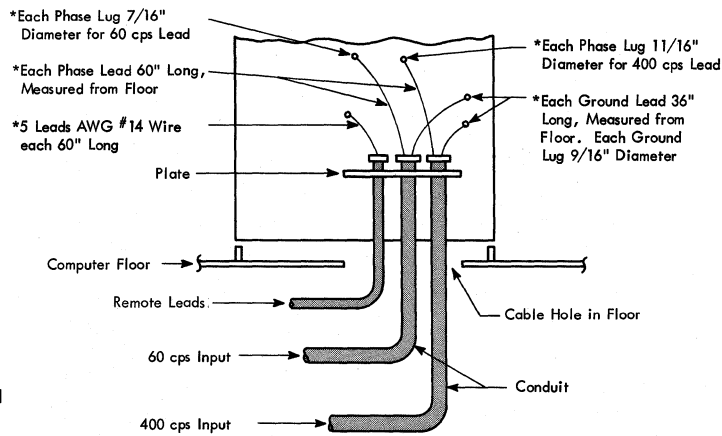
Air Flow: 0 cfm (0 m<sup>3</sup>/m)

Input Power:

kva	Model			
	I	J	K	L
60 cps	36.7	45.4	42.5	51.1
415 cps	113.8	120.0	170.9	224.4

Environment Operating:

Temperature	65°-80° F (18°-28°C)
Rel Humidity	20-80%
Max Wet Bulb	73° F (23°C)



Elevation View

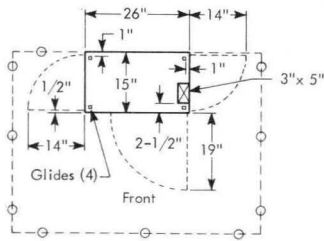
Inches	Centimeters
7/16	1
9/16	1
11/16	2
36	91
60	152

Notes

The 400-cps conduit must be non-ferrous.

1032 DIGITAL TIME UNIT

PLAN VIEW



Inches	Centimeters
1/2	1
1	3
2-1/2	6
3	8
5	13
14	36
15	38
19	48
26	66



SPECIFICATIONS

Dimensions

	F	S	H
Inches	26	15	27
cm	66	38	69

Service Clearances

	F	R	Rt	L
Inches	30	0	18	18
cm	76	0	46	46

Weight: 100 lb (45 kg)

Heat Output: 270 BTU/hr (68 kcal)

Air Flow: 0 cfm (0 m<sup>3</sup>/m)

Power Requirements:

kva	0.1
Phases	1
Plug	R&S, FS3720
Connector	R&S, FS3913

Environment Operating:

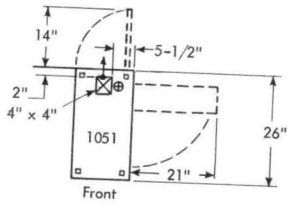
Temperature	50 <sup>o</sup> -110 <sup>o</sup> F (10 <sup>o</sup> -43 <sup>o</sup> C)
Rel Humidity	8-90%
Max Wet Bulb	85 <sup>o</sup> F (29 <sup>o</sup> C)

Environment Nonoperating:

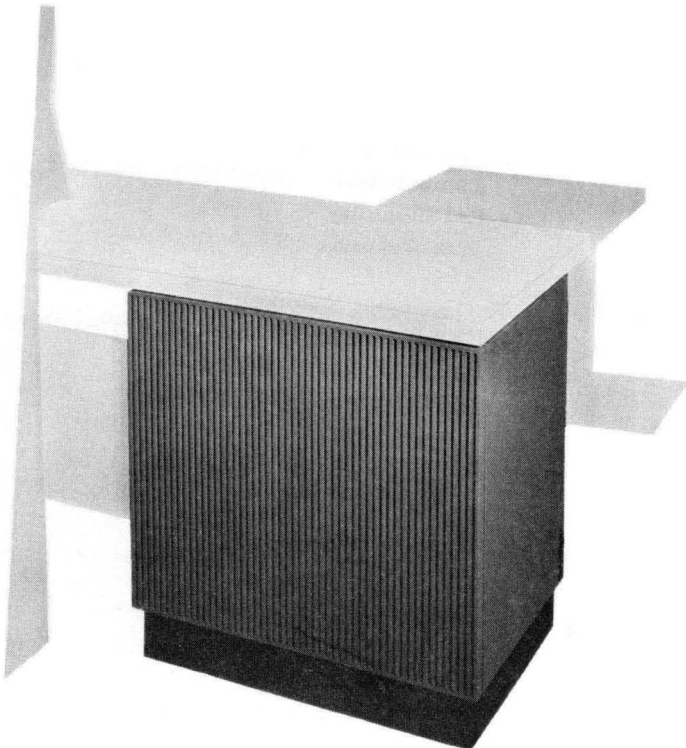
Temperature	50 <sup>o</sup> -125 <sup>o</sup> F (10 <sup>o</sup> -52 <sup>o</sup> C)
Rel Humidity	8-90%
Max Wet Bulb	85 <sup>o</sup> F (29 <sup>o</sup> C)

1051 CONTROL UNIT MODELS 1 AND N1

PLAN VIEW (TEMPLATE X22-6894)



Inches	Centimeters
2	5
4	10
5-1/2	14
14	36
21	53
26	66



SPECIFICATIONS

Dimensions

	F	S	H
Inches	26	15	27
cm	66	38	69

Service Clearances

	F	R	Rt	L
Inches	0	30	36	0
cm	0	76	91	0

Weight: 195 lb (89 kg)

Heat Output: 670 BTU/hr (169 kcal)

Air Flow: 0 cfm (0 m<sup>3</sup>/m)

Power Requirement

kva 0.2  
 Phases 1  
 Plug R&S, FS3720  
 Connector R&S, FS3913

Environment Operating:

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

Environment Nonoperating:

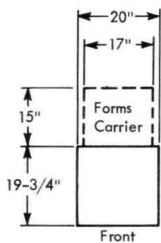
Temperature 50°-110°F (10°-43°C)  
 Rel Humidity 10-80%  
 Max Wet Bulb 80°F (27°C)

Cable Limitations:

Fixed length to 2030.

1052 PRINTER-KEYBOARD

PLAN VIEW (TEMPLATE X22-6894)



Inches	Centimeters
15	38
17	43
19-3/4	50
20	51



SPECIFICATIONS

Dimensions

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

Service Clearances

	F	R	Rt	L
Inches	0	0	0	0
cm	0	0	0	0

Weight: 65 lb (30 kg)

Heat Output: 570 BTU/hr (144 kcal)

Air Flow: 0 cfm (0 m<sup>3</sup>/m)

Power Requirements:

kva 0.17\*\*

Environment Operating:

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

Environment Nonoperating:

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

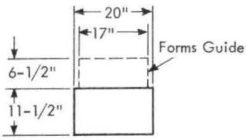
Notes

\*Includes 1-1/2 inches (4 cm) for knobs on ends of platen.

\*\* Powered from System/360.

1053 PRINTER MODEL 4 (2848 ATTACHMENT)

PLAN VIEW (TEMPLATE X22-6894)



Inches	Centimeters
6-1/2	17
11-1/2	29
17	43
20	51

SPECIFICATIONS

Dimensions

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

Service Clearances

	F	R	Rt	L
Inches	0	0	0	0
cm	0	0	0	0

Weight: 35 lb (17 kg)

Heat Output: 570 BTU/hr (144 kcal)

Air Flow: 0 cfm (0 m<sup>3</sup>/m)

Power Requirements:

kva	0.17**
Phases	1
Plug	115v, H or P&S 5266; 208/230v, H 5666
Connector	115v, H or P&S 5269; 208/230v, H or P&S 5669

Environment Operating:

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

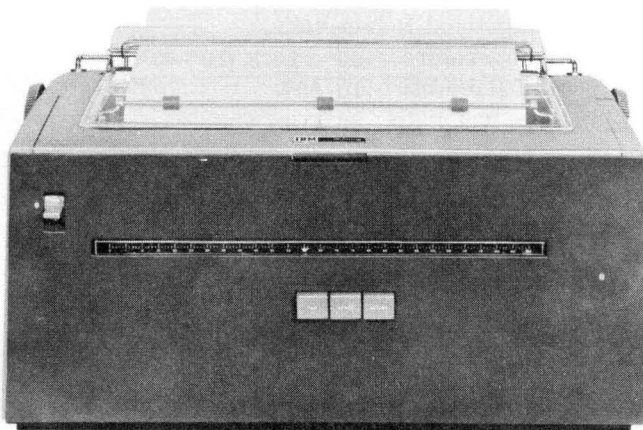
Environment Nonoperating:

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

Notes

\*Includes 1-1/2 inches (4 cm) each side for platen knobs.

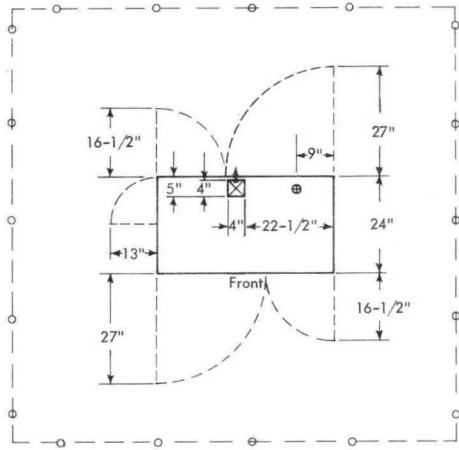
\*\*Model 4 is available for remote installation only. Plug type is specified by feature code. For attachment to 1050 System. See IBM 1050 Data Communications System Installation Manual -- Physical Planning, Form A24-3022.



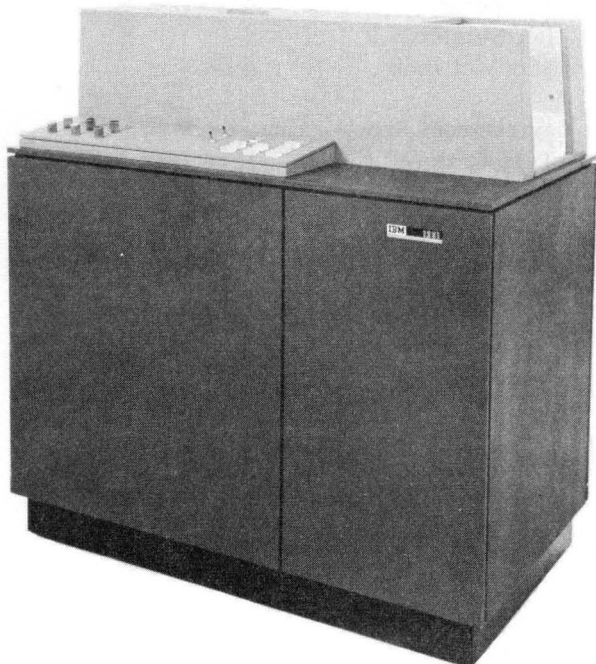


1231 OPTICAL MARK PAGE READER MODEL N1

● PLAN VIEW (TEMPLATE X22-6860)



Inches	Centimeters
4	10
5	13
9	23
13	33
16-1/2	43
22-1/2	57
24	61
27	69



SPECIFICATIONS

Dimensions

	F	S	H
Inches	43-1/2	24	44-3/4
cm	111	61	114

Service Clearances

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

Weight: 620 lb (281 kg)

Heat Output: 3,700 BTU/hr (932 kcal)

Air Flow: 300 cfm (9 m<sup>3</sup>/m)

Power Requirements:

kva 1.2\*  
 Phases 1  
 Plug R&S, FS3720  
 Connector R&S, FS3913

Environment Operating:

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

Environment Nonoperating:

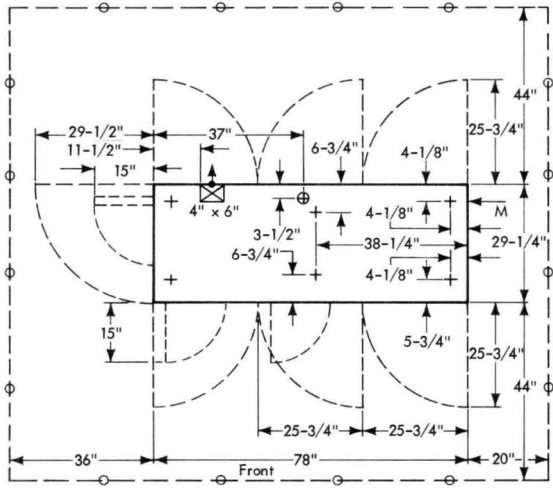
Temperature 50°-110°F (10°-43°C)  
 Rel Humidity 8-80%

Notes

\*See specification summary for special grounding requirements.

● 1259 MAGNETIC CHARACTER READER MODEL 2

PLAN VIEW (TEMPLATE X22-6860)



Inches	Centimeters
3-1/2	9
4	10
4-1/8	10
5-3/4	15
6	15
6-3/4	17
11-1/2	29
15	38
20	51
25-3/4	65
29-1/4	74
29-1/2	75
36	91
37	94
38-1/4	97
44	112
78	198

SPECIFICATIONS

Dimensions

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

Service Clearances

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

Weight: 1,250 lb (567 kg)

Heat Output: 5,000 BTU/hr (1.260 kcal)

Air Flow: 260 cfm (7 m<sup>3</sup>/m)

Power Requirements:

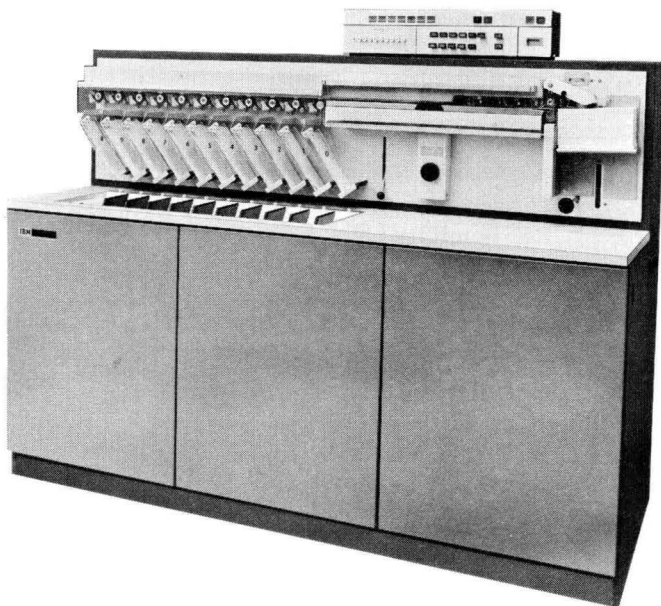
kva	2.2
Phases	3
Plug	R&S, FS3760
Connector	R&S, FS3934

Environment Operating:

Temperature	65 <sup>o</sup> -80 <sup>o</sup> F (18 <sup>o</sup> -27 <sup>o</sup> C)
Rel Humidity	20-65%
Max Wet Bulb	70 <sup>o</sup> F (21 <sup>o</sup> C)

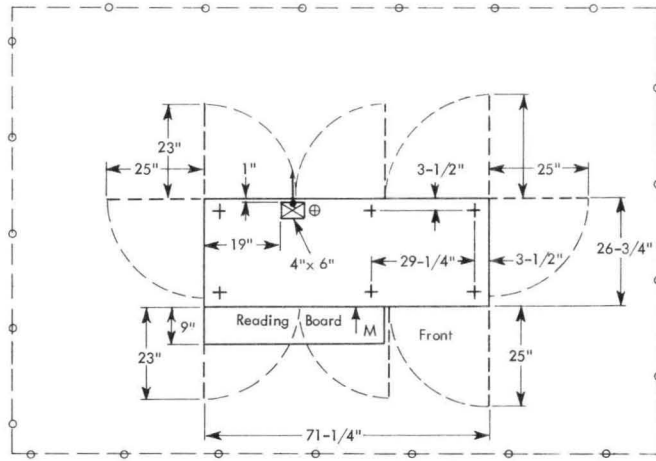
Environment Nonoperating:

Temperature	50 <sup>o</sup> -110 <sup>o</sup> F (10 <sup>o</sup> -43 <sup>o</sup> C)
Rel Humidity	8-80%
Max Wet Bulb	104 <sup>o</sup> F (40 <sup>o</sup> C)



1285 OPTICAL READER

● PLAN VIEW (TEMPLATE X22-6860)



Inches	Centimeters
1	3
3-1/2	9
4	10
6	15
9	23
19	48
23	58
25	64
26-3/4	68
29-1/4	74
71-1/4	181



SPECIFICATIONS

Dimensions

	F	S	H
Inches	71-1/4	35-3/4	60 (Installed)
cm	181	91	152
Inches	70	29	60 (For Shipping)
cm	178	74	152

Service Clearances

	F	R	Rt	L
Inches	36	48	42	48
cm	91	122	107	122

Weight: 1,600 lb (726 kg)

Heat Output: 5,000 BTU/hr (1.260 kcal)

Air Flow: 600 cfm (17 m<sup>3</sup>/m)

Power Requirements:

kva	2.0
Phases	3
Plug	R&S, FS3760
Connector	R&S, FS3934

Environment Operating:

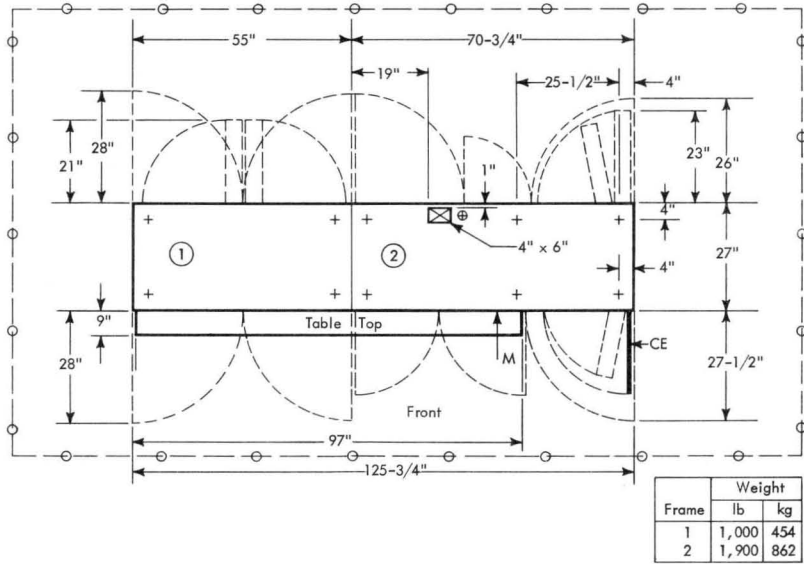
Temperature	60 <sup>0</sup> -90 <sup>0</sup> F (16 <sup>0</sup> -32 <sup>0</sup> C)
Rel Humidity	20-80%
Max Wet Bulb	78 <sup>0</sup> F (26 <sup>0</sup> C)

Environment Nonoperating (Excluding Storage and Shipment):

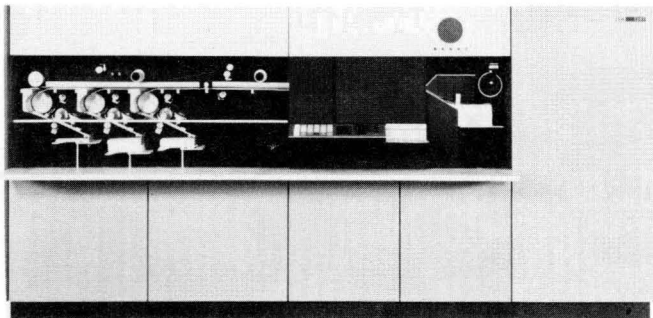
Temperature	50 <sup>0</sup> -90 <sup>0</sup> F (10 <sup>0</sup> -32 <sup>0</sup> C)
Rel Humidity	8-80%
Max Wet Bulb	80 <sup>0</sup> F (27 <sup>0</sup> C)

1287 OPTICAL READER

● PLAN VIEW (TEMPLATE X22-6860)



Inches	Centimeters
1	3
4	10
6	15
9	23
19	48
21	53
23	58
25-1/2	65
26	66
27	69
27-1/2	70
28	71
55	140
70-3/4	180
97	246
125-3/4	319



# 1287 OPTICAL READER

## SPECIFICATIONS

### Dimensions

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

### Service Clearances

	F	R	Rt	L
Inches	36	48	42	30
cm	91	122	107	76

Weight: 2,900 lb (1.315 kg)

Heat Output: 10,000 BTU/hr (2.520 kcal)

Air Flow: 900 cfm (26 m<sup>3</sup>/m)

### Power Requirements:

kva	4
Phases	3
Plug	R&S, FS3760
Connector	R&S, FS3934

### Environment Operating:

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

### Environment Nonoperating:

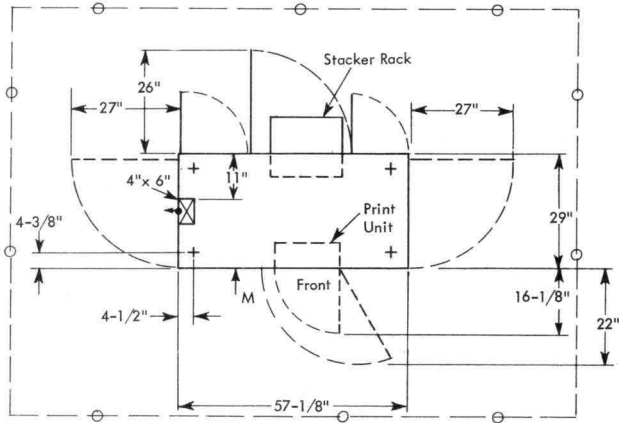
Temperature	50°-90°F (10°-32°C)
Rel Humidity	8-80%
Max Wet Bulb	80°F (27°C)

### Notes

\* Reading board removed and units separated for shipment.

1403 PRINTER MODEL N1

● PLAN VIEW (TEMPLATE X22-6834)



Inches	Centimeters
4	10
4-3/8	11
4-1/2	11
6	15
11	28
16-1/8	41
22	56
26	66
27	69
29	74
57-1/8	145

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: 825 lb (374 kg)

Heat Output: 4,500 BTU/hr (1.134 kcal)

Air Flow: 350 cfm (10 m<sup>3</sup>/m)

Power Requirements:

kva 1.5\*

Environment Operating:

Temperature 60°-90°F (16°-32°C)  
Rel Humidity 20-80%

Environment Nonoperating:

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

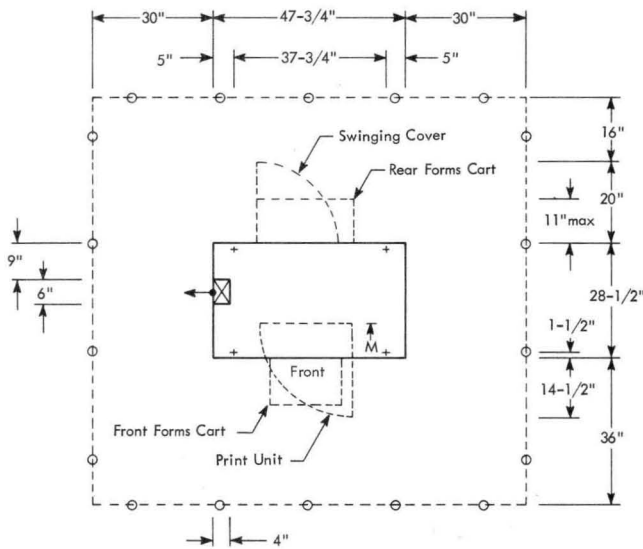
Notes

\* Powered from 2821.



1403 PRINTER MODELS 2, 3, AND 7

PLAN VIEW (TEMPLATE X22-6834)



Inches	Centimeters	Inches	Centimeters
1-1/2	4	16	41
4	10	20	51
5	13	28-1/2	72
6	15	30	76
9	23	36	91
11	28	37-3/4	96
14-1/2	37	47-3/4	121



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

	Mod 2	Mod 3	Mod 7
Weight: lb	750	750	750
kg	340	340	340

Heat BTU/hr	3,000	3,600	2,400
Output: kcal	756	907	605

Air cfm	310	350	310
Flow: m <sup>3</sup> /m	9	10	9

Power Requirements:

kva	1.0*	1.2*	0.8*
-----	------	------	------

Environment Operating:

Temperature	60 <sup>0</sup> -90 <sup>0</sup> F (16 <sup>0</sup> -32 <sup>0</sup> C)
Rel Humidity	20-80%

Environment Nonoperating:

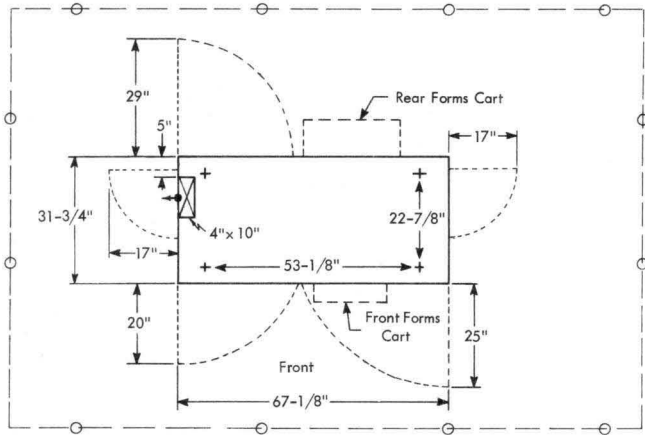
Temperature	50 <sup>0</sup> -110 <sup>0</sup> F (10 <sup>0</sup> -43 <sup>0</sup> C)
Rel Humidity	8-80%

Notes

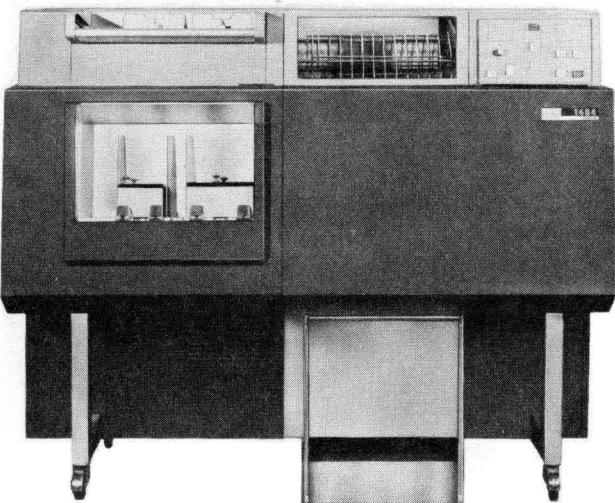
\* Powered from 2821.

1404 PRINTER MODEL 2

PLAN VIEW (TEMPLATE X22-6834)



Inches	Centimeters
4	10
5	13
10	25
17	43
20	51
22-7/8	58
25	64
29	74
31-3/4	81
53-1/8	135
67-1/8	171



SPECIFICATIONS

Dimensions

	F	S	H
Inches	67-1/8*	31-3/4*	53-1/2*
cm	171*	81*	136*

Service Clearances

	F	R	Rt	L
Inches	36	36	48	42
cm	91	91	122	107

Weight: 1,600 lb (726 kg)

Heat Output: 3,800 BTU/hr (958 kcal)

Air Flow: 280 cfm (8 m<sup>3</sup>/m)

Power Requirements:

kva 1.5\*\*

Environment Operating:

Temperature 60<sup>o</sup>-90<sup>o</sup>F (16<sup>o</sup>-32<sup>o</sup>C)  
 Rel Humidity 20-80%

Environment Nonoperating:

Temperature 50<sup>o</sup>-110<sup>o</sup>F (10<sup>o</sup>-43<sup>o</sup>C)  
 Rel Humidity 8-80%

Notes

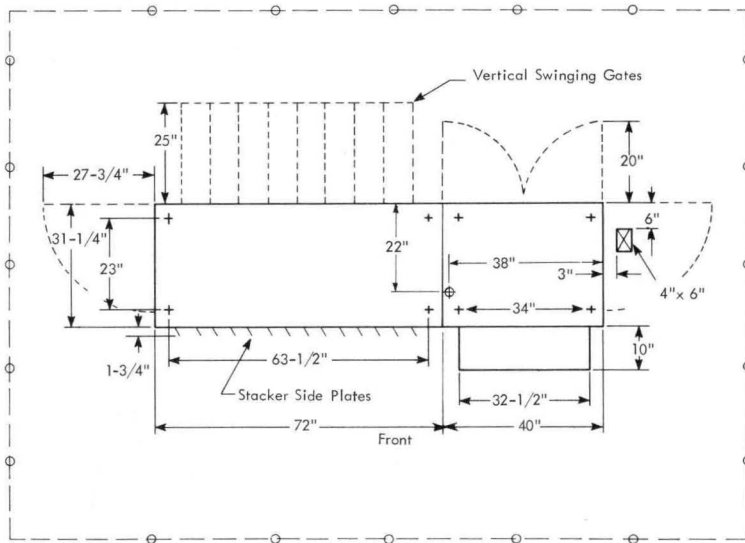
- \* Front forms cart, 18-1/4 by 25 by 21-1/4 inches (46 cm by 64 cm by 54 cm); rear forms cart, 24-1/2 by 23 by 21-1/4 inches (62 cm by 58 cm by 54 cm); and maximum forms card projection, front 5 inches (13 cm), rear 9 inches (23 cm).

\*\* Powered from 2821.

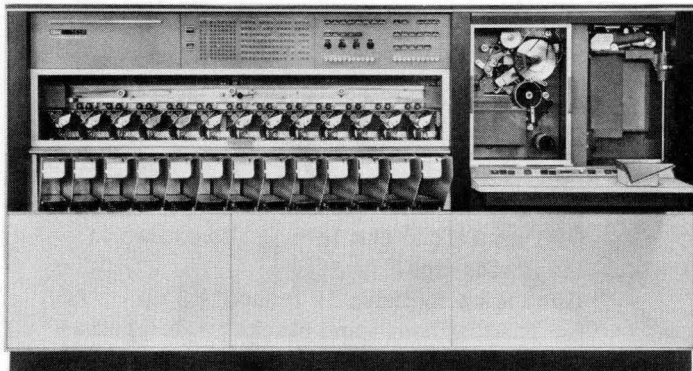


1412 MAGNETIC CHARACTER READER MODEL 1

● PLAN VIEW (TEMPLATE X22-6860)



Inches	Centimeters
1-3/4	4
3	8
4	10
6	15
10	25
20	51
22	56
23	58
25	64
27-3/4	71
31-1/4	79
32-1/2	83
34	86
38	97
40	102
63-1/2	161
72	183



SPECIFICATIONS

Dimensions

	F	S	H
Inches	112	41-1/4*	60-1/4
cm	285	105*	153

Service Clearances

	F	R	Rt	L
Inches	42	48	36	36
cm	107	122	91	91

Weight: 2,475 lb (1.123 kg)

Heat Output: 6,300 BTU/hr (1.588 kcal)

Air Flow: 320 cfm (9 m<sup>3</sup>/m)

Power Requirements:

kva	2.7
Phases	1
Plug	R&S, FS3750
Connector	R&S, FS3933

Environment Operating:

Temperature	65 <sup>0</sup> -80 <sup>0</sup> F (18 <sup>0</sup> -27 <sup>0</sup> C)
Rel Humidity	20-65%

Environment Nonoperating:

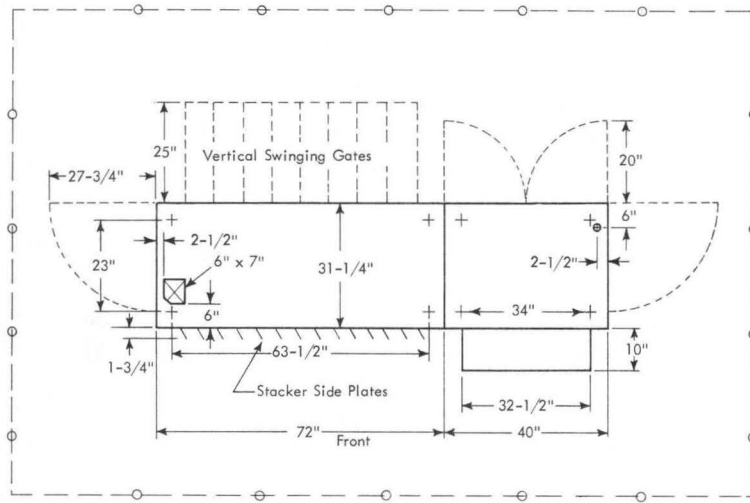
Temperature	50 <sup>0</sup> -110 <sup>0</sup> F (10 <sup>0</sup> -43 <sup>0</sup> C)
Rel Humidity	8-80%

Notes

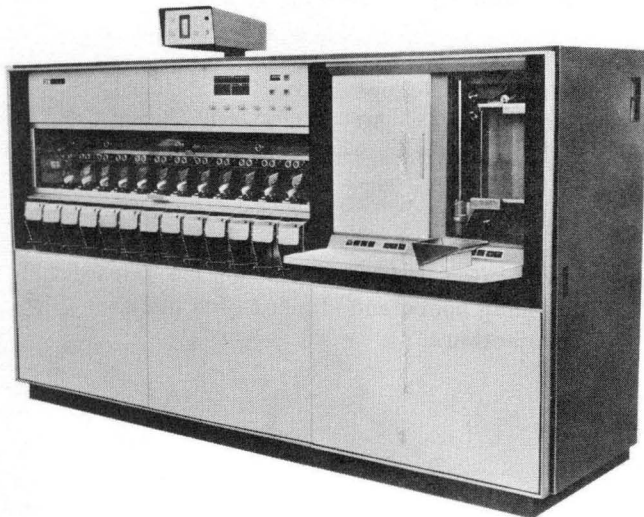
\*Dimension includes 10 inches (25 cm) for reading board and stacker side plate projection.

1418 OPTICAL CHARACTER READER MODELS 1, 2, AND 3  
 1428 ALPHAMERIC OPTICAL READER MODELS 1, 2, AND 3

● PLAN VIEW (TEMPLATE X22-6860)



Inches	Centimeters
1-3/4	4
2-1/2	6
6	15
7	18
10	25
20	51
23	58
25	64
27-3/4	71
31-1/4	79
32-1/2	83
34	86
40	102
63-1/2	161
72	183



SPECIFICATIONS

Dimensions

	F	S	H
Inches	112	41-1/4**	60-1/4*
cm	285	105**	153*

Service Clearances

	F	R	Rt	L
Inches	42	48	36	36
cm	107	122	91	91

	M1 & 3	M1 & 3	M2	M2
	1418	1428	1418	1428
Weight: lb	2,650	2,750	2,700	2,800
kg	(1.202)	(1.247)	(1.225)	(1.270)

Heat BTU/hr	8,300	10,500	8,300	10,500
Output: kcal	(2.092)	(2.646)	(2.092)	(2.646)

Air Flow: 575 cfm (16 m<sup>3</sup>/m)

Power Requirements:

kva	3.8 (1418)	4.6 (1428)
Phases	3	
Plug	R&S, FS3760	
Connector	R&S, FS3934	

Environment Operating:

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

Environment Nonoperating:

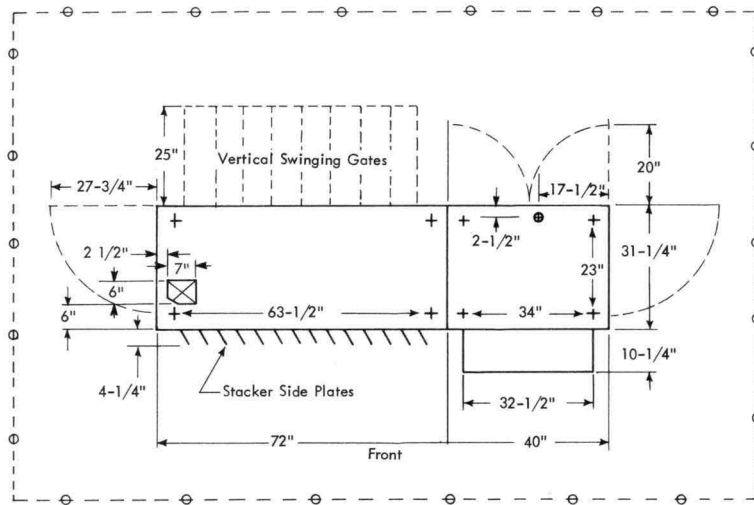
Temperature	50°-110°F (10°-43°C)
Rel Humidity	8-80%

Notes

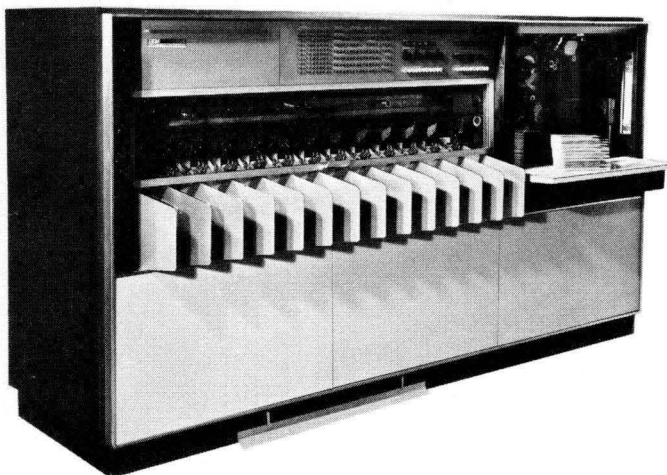
- \* Add 7-3/8 inches (19 cm) to height for CRT on 1418. The 1418 is illustrated in the photograph.
- \*\* Dimension includes 10 inches (25 cm) for reading board and stacker side plate projection.

1419 MAGNETIC CHARACTER READER MODEL 1

PLAN VIEW (TEMPLATE X22-6860)



Inches	Centimeters
2-1/2	6
4-1/4	11
6	15
7	18
10-1/4	26
17-1/2	45
20	51
23	58
25	64
27-3/4	71
31-1/4	79
32-1/2	83
34	86
40	102
63-1/2	161
72	183



SPECIFICATIONS

Dimensions

	F	S	H
Inches	112	41-1/2*	60-1/4
cm	285	105*	153

Service Clearances

	F	R	Rt	L
Inches	42	48	36	36
cm	107	122	91	91

Weight: 2,675 lb (1.213 kg)

Heat Output: 8,500 BTU/hr (2.142 kcal)

Air Flow: 400 cfm (11 m<sup>3</sup>/m)

Power Requirements:

kva	3.3
Phases	1
Plug	R&S, FS3750
Connector	R&S, FS3933

Environment Operating:

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

Environment Nonoperating:

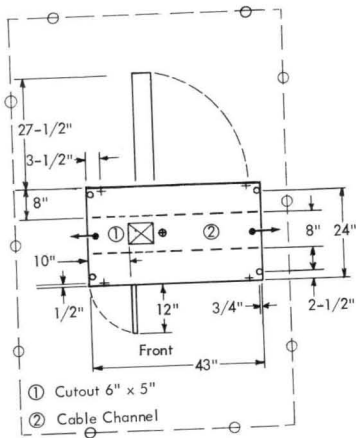
Temperature	50°-110°F (10°-43°C)
Rel Humidity	8-80%

Notes

\* Dimension includes 10-1/4 inches (26 cm) for reading board and stacker side plate projection.

1442 CARD READ PUNCH MODEL N1  
 1442 CARD PUNCH MODEL N2

PLAN VIEW (TEMPLATE X22-6834)



Inches	Centimeters
1/2	1
3/4	2
2-1/2	6
3-1/2	9
5	13
6	15
8	20
10	25
12	31
24	61
27-1/2	70
43	109

SPECIFICATIONS

Dimensions

	F	S	H
Inches	43	24	49
cm	109	61	125

Service Clearances

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

Weight: 575 lb (261 kg)

Heat Output: 2,200 BTU/hr (554 kcal)

Air Flow: 0 cfm (0 m<sup>3</sup>/m)

Power Requirements:

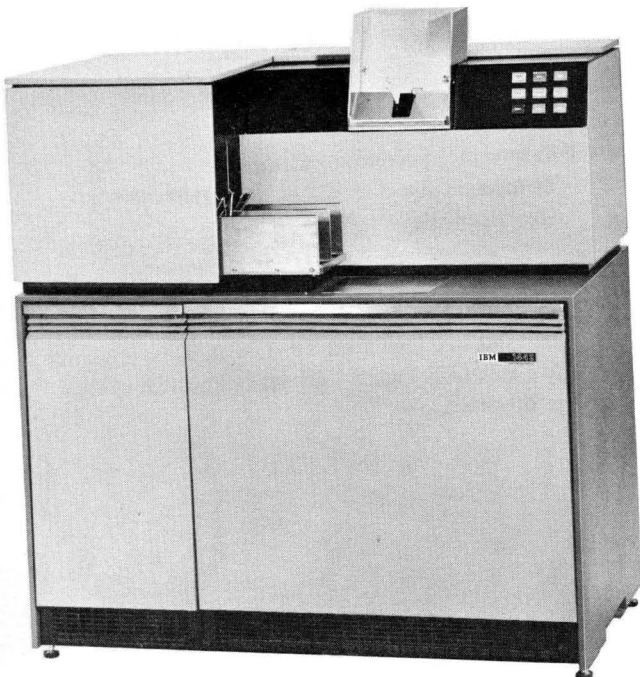
kva 0.8  
 Phases 1  
 Plug R&S, FS3720  
 Connector R&S, FS3913

Environment Operating:

Temperature 60<sup>o</sup>-90<sup>o</sup>F (16<sup>o</sup>-32<sup>o</sup>C)  
 Rel Humidity 10-80%

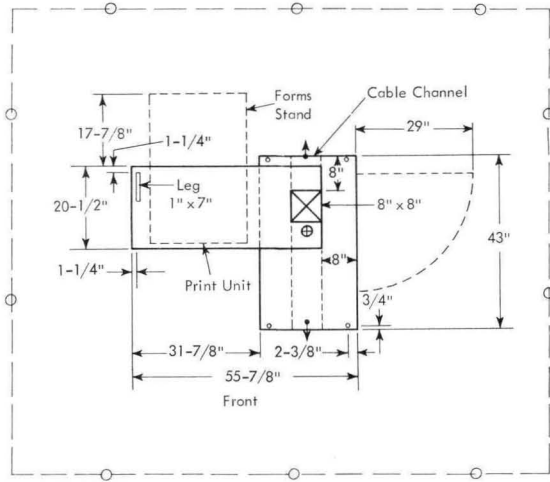
Environment Nonoperating:

Temperature 50<sup>o</sup>-110<sup>o</sup>F (10<sup>o</sup>-43<sup>o</sup>C)  
 Rel Humidity 8-80%

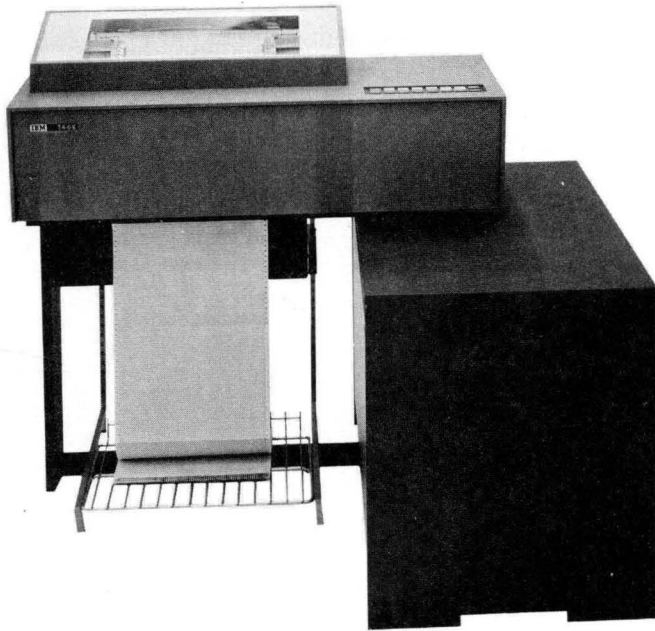


1443 AND 1445 PRINTERS MODEL N1

PLAN VIEW (TEMPLATE X22-6834)



Inches	Centimeters
3/4	2
1	3
1-1/4	3
2-3/8	6
7	18
8	20
17-7/8	45
20-1/2	52
29	74
31-7/8	81
43	109
55-7/8	141



SPECIFICATIONS

Dimensions

	F	S	H
Inches	55-7/8	43	46
cm	141	109	117

Service Clearances

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

Weight:	1443	1445
	800 lb (363 kg)	825 lb (374 kg)

Heat Output: 3,200 BTU/hr (806 kcal)

Air Flow: 50 cfm (1 m<sup>3</sup>/m)

Power Requirements:

kva	1.1
Phases	1
Plug	R&S, FS3720
Connector	R&S, FS3913

Environment Operating:

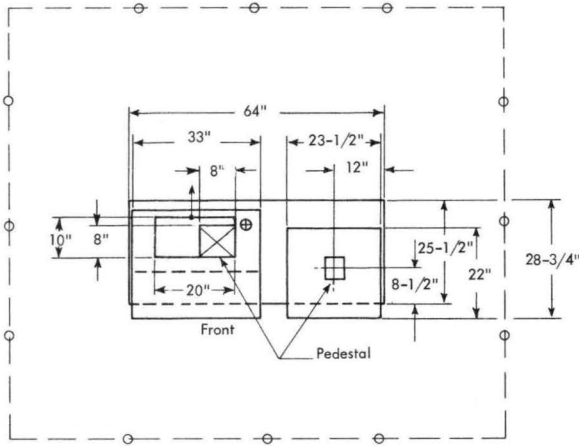
Temperature	60°-90°F (16°-32°C)
Rel Humidity	10-80%

Environment Nonoperating:

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

2150 CONSOLE

● PLAN VIEW (TEMPLATE X22-6859)



Inches	Centimeters
8	20
8-1/2	23
10	25
12	31
20	51
22	56
23-1/2	60
25-1/2	65
28-3/4	73
33	84
64	163

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 (363 kg)

Heat Output: 1,740 BTU/hr (439 kcal)

Air Flow: 180 cfm (5 m<sup>3</sup>/m)

Power Requirements:

kva	0.65
Phases	3
Plug	R&S, FS3730
Connector	R&S, FS3914

Environment Operating:

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

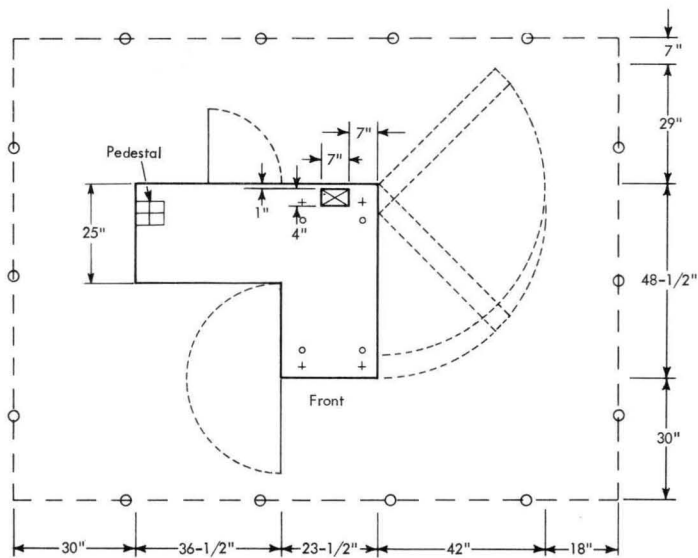
Environment Nonoperating:

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

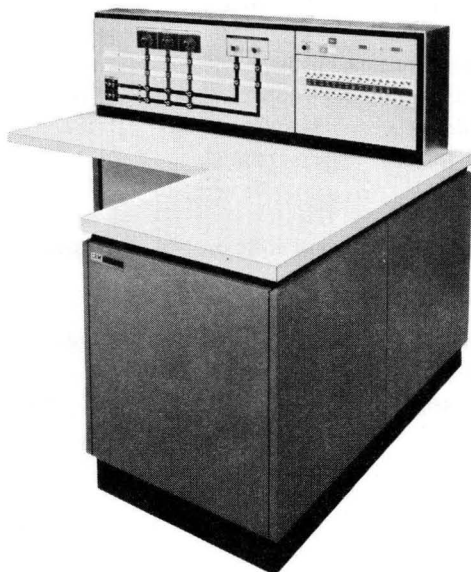


2167 CONFIGURATION UNIT

PLAN VIEW (TEMPLATE X22-6905)



Inches	Centimeters
1	3
4	10
7	18
18	46
23-1/2	60
25	64
29	74
30	76
36-1/2	93
42	107
48-1/2	123



SPECIFICATIONS

Dimensions

	F	S	H
Inches	*	*	46
cm	*	*	117

Service Clearances

	F	R	Rt	L
Inches	*	*	*	*
cm	*	*	*	*

Weight: 583 lb (264 kg)

Heat Output: 2,000 BTU/hr (504 kcal)

Air Flow: 500 cfm (14 m<sup>3</sup>/m)

Power Requirements:

kva	0.65
Phases	1
Plug	R&S, FS3720
Connector	R&S, FS3913

Environment Operating:

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

Environment Nonoperating:

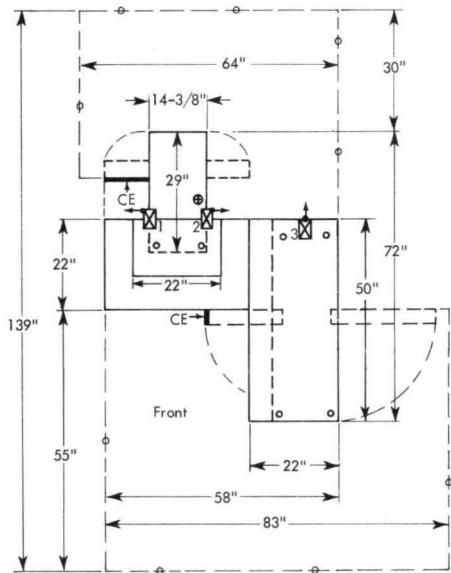
Temperature	50°-110°F (10°-43°C)
Rel Humidity	8-80%
Max Wet Bulb	80°F (27°C)

Notes

\* See plan view for data.

2250 DISPLAY UNIT MODEL 1

PLAN VIEW (TEMPLATE X22-6859)



Inches	Centimeters
14-3/8	37
22	56
29	74
30	76
50	127
55	140
58	147
64	163
72	183
83	211
139	353

SPECIFICATIONS

Dimensions

	F	S	H
Inches	*	*	50
cm	*	*	127

Service Clearances

	F	R	Rt	L
Inches	*	*	*	*
cm	*	*	*	*

		Abs Vectors	
Weight:	lb	890	890
	kg	408	408
Heat	BTU/hr	3,300	4,400
Output:	kcal	832	1,109
Air	cfm	620	620
Flow:	m <sup>3</sup> /m	18	18

Power Requirements:

kva	1.25	1.7
Phases	1	
Plug	R&S, FS3720	
Connector	R&S, FS3913	

Environment Operating:

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

Environment Nonoperating:

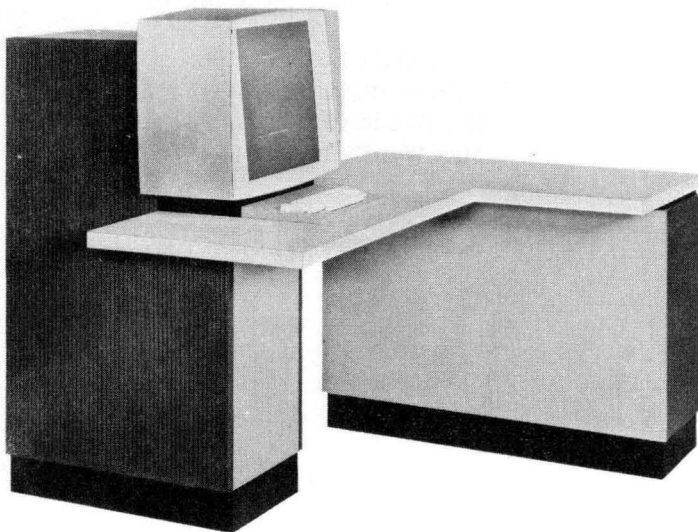
Temperature	50 <sup>0</sup> -150 <sup>0</sup> F (10 <sup>0</sup> -66 <sup>0</sup> C)
Rel Humidity	8-80%
Max Wet Bulb	85 <sup>0</sup> F (29 <sup>0</sup> C)

Cable Limitations:

Same as for a control unit on the channel.

Notes

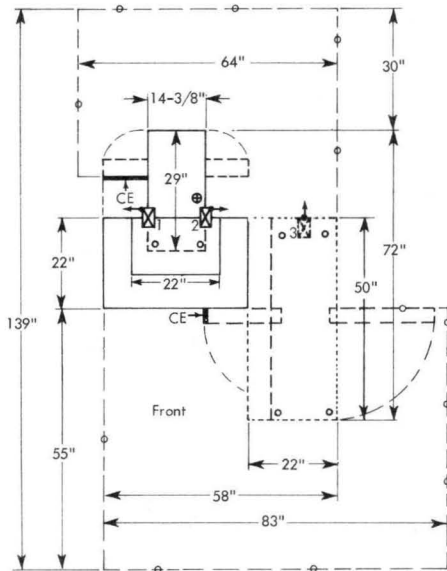
\*See plan view for dimensions and service clearances. The right-hand frame is shipped separate from the console.





2250 DISPLAY UNIT MODEL 2

PLAN VIEW (TEMPLATE X22-6859)



Inches	Centimeters
14-3/8	37
22	56
29	74
30	76
50	127
55	140
58	147
64	163
72	183
83	211
139	353



SPECIFICATIONS

Dimensions

	F	S	H
Inches	*	*	50
cm	*	*	127

Service Clearances

	F	R	Rt	L
Inches	*	*	*	**
cm	*	*	*	**

Weight:	lb	530	Abs Vectors	
	kg	227	770	
Heat Output:	BTU/hr	1,600	2,600	
	kcal	403	655	
Air Flow:	cfm	300	380	
	m <sup>3</sup> /m	8	11	

Power Requirements:

kva	1.0	1.5
Phases	1	
Plug	R&S, FS3720	
Connector	R&S, FS3913	

Environment Operating:

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

Environment Nonoperating:

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

Cable Limitations:

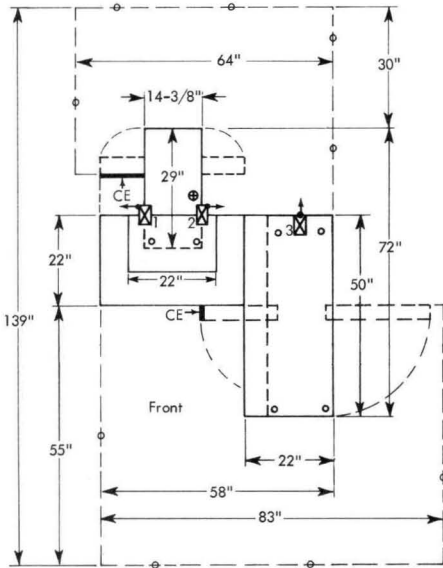
2840 to 2250 Model 2, 2,000 feet (610m) or less. (See schematic for cable supplied.)

Notes

- \* See plan view for data.
- \*\* Units may be abutted. There should be a 30-inch (76 cm) clearance between a 2250 Model 2 and any other unit or structure unless otherwise specified.
- \*\*\* The absolute vector frame is shipped separate from the console.

2250 DISPLAY UNIT MODEL 3

PLAN VIEW (TEMPLATE X22-6859)



SPECIFICATIONS

Dimensions

	F	S	H
Inches	*	*	50
cm	*	*	127

Service Clearances

	F	R	Rt	L
Inches	*	*	*	**
cm	*	*	*	**

Weight: 770 lb (363 kg)

Heat Output: 2,600 BTU/hr (655 kcal)

Air Flow: 380 cfm (11 m<sup>3</sup>/m)

Power Requirements:

- kva 1.5
- Phases 1
- Plug R&S, FS3720
- Connector R&S, FS3913

Environment Operating:

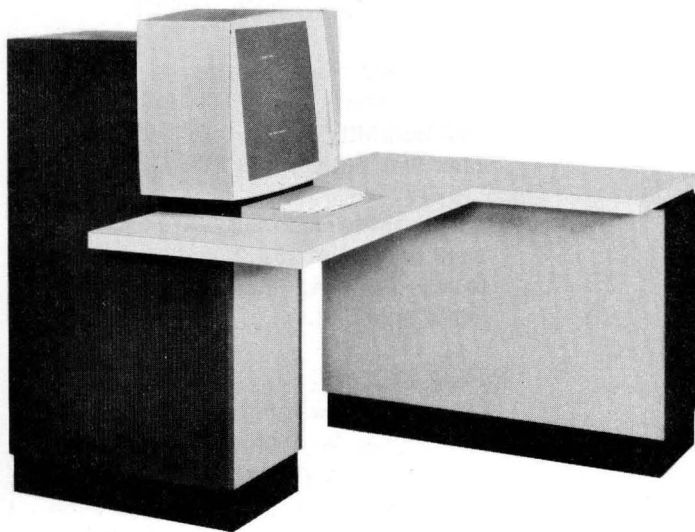
- Temperature 50°-90°F (10°-32°C)
- Rel Humidity 8-80%
- Max Wet Bulb 78°F (26°C)

Environment Nonoperating:

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

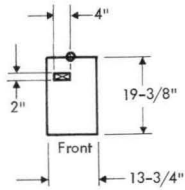
Notes

- \* See plan view for data.
- \*\* 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.

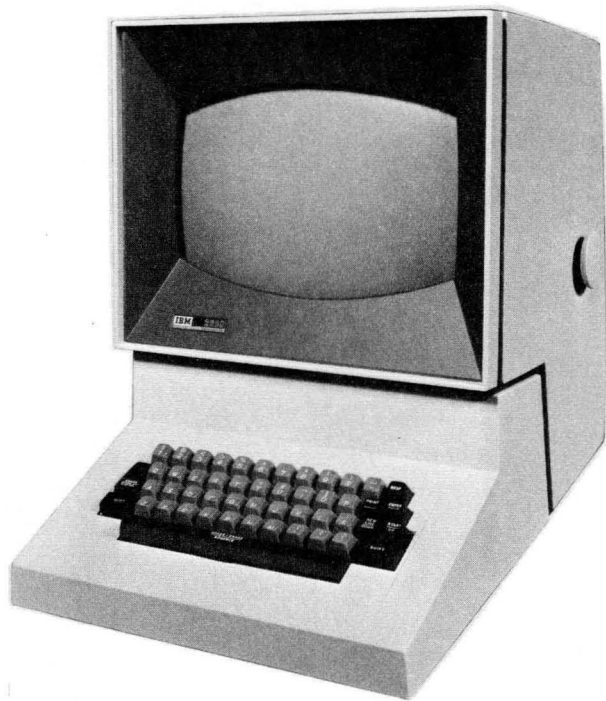


2260 DISPLAY STATION -- WITH KEYBOARD

PLAN VIEW



Inches	Centimeters
2	5
4	10
13-3/4	35
19-3/8	49



SPECIFICATIONS

Dimensions

	F	S	H
Inches	13-3/4	19-3/8*	17-3/8
cm	35	49*	44

Service Clearances

	F	R	Rt	L
Inches	0	0	0	0
cm	0	0	0	0

Weight: 45 lb (20 kg)

Heat Output: 477 BTU/hr (120 kcal)

Air Flow: 0 cfm (0 m<sup>3</sup>/m)

Power Requirements:\*\*\*

kva	**
Phases	1

Environment Operating:

Temperature	50 <sup>0</sup> -110 <sup>0</sup> F (10 <sup>0</sup> -43 <sup>0</sup> C)
Rel Humidity	8-80%

Environment Nonoperating:

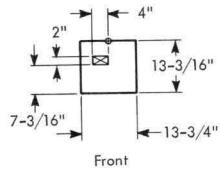
Temperature	50 <sup>0</sup> -150 <sup>0</sup> F (10 <sup>0</sup> -66 <sup>0</sup> C)
Rel Humidity	8-80%

Notes

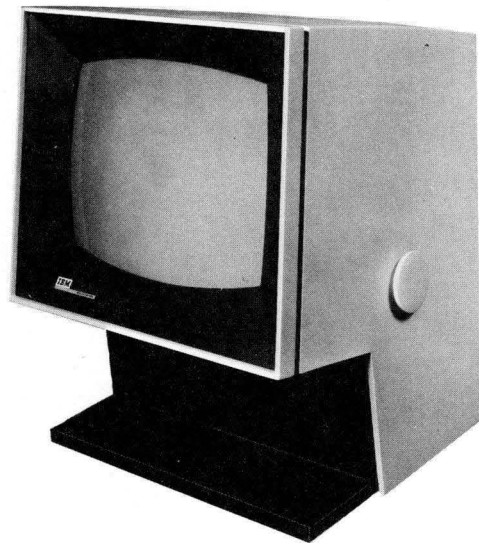
- \*Will fit standard 17 inches by 17 inches (43 cm by 43 cm) office typewriter stand. This dimension includes the overhang of video.
- \*\*Available 115v for remote installation only. RPQ is required for 208/230v and EPO when 2260 is to be local to the system.
- \*\*\*Power cord is 8 feet long.

2260 DISPLAY STATION -- WITHOUT KEYBOARD

PLAN VIEW



Inches	Centimeters
2	5
4	10
13-3/16	34
13-3/4	35



SPECIFICATIONS

Dimensions

	F	S	H
Inches	13-3/4	13-3/16*	17-3/8
cm	35	34*	44

Service Clearances

	F	R	Rt	L
Inches	0	0	0	0
cm	0	0	0	0

Weight: 25 lb (11 kg)

Heat Output: 477 BTU/hr (120 kcal)

Air Flow: 0 cfm (0 m<sup>3</sup>/m)

Power Requirements:\*\*\*

kva \*\*

Phases 1

Environment Operating:

Temperature 50<sup>o</sup>-110<sup>o</sup>F (10<sup>o</sup>-43<sup>o</sup>C)

Rel Humidity 8-80%

Environment Nonoperating:

Temperature 50<sup>o</sup>-150<sup>o</sup>F (10<sup>o</sup>-66<sup>o</sup>C)

Rel Humidity 8-80%

Notes

High intensity lighting levels -- over 50 foot-candles (538 lumens/m<sup>2</sup>) should be avoided.

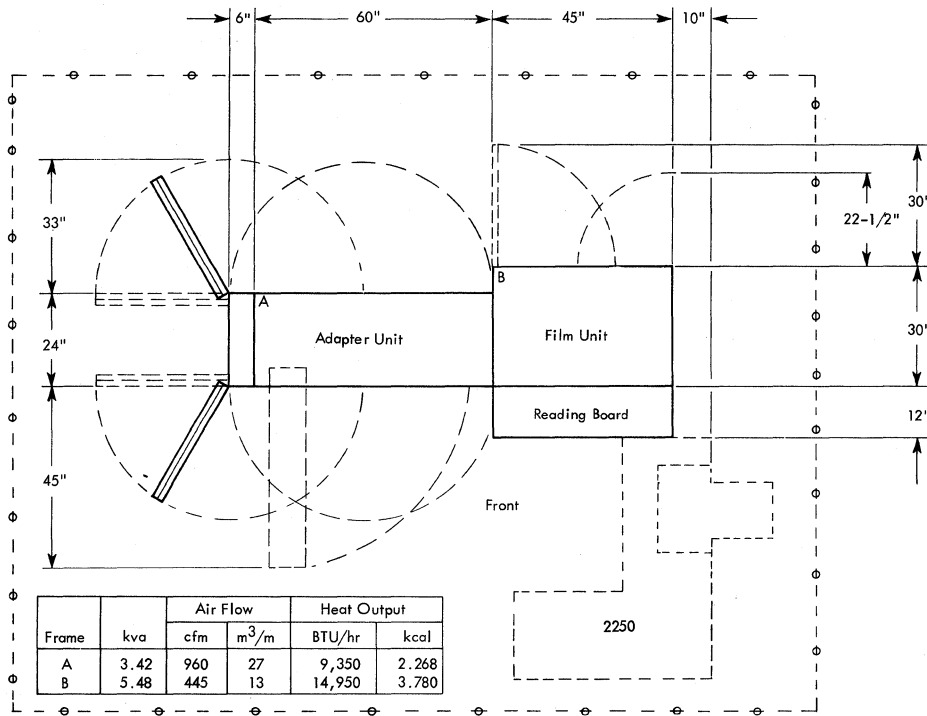
\*Will fit standard 17 inches by 17 inches (43 cm by 43 cm) office typewriter stand. This dimension includes the overhang of video.

\*\*Available 115v for remote installation only. RPQ is required for 208/230v and EPO when 2260 is to be local to the system.

\*\*\* Power cord is 8 feet long.

2280 FILM RECORDER  
 2282 FILM RECORDER SCANNER

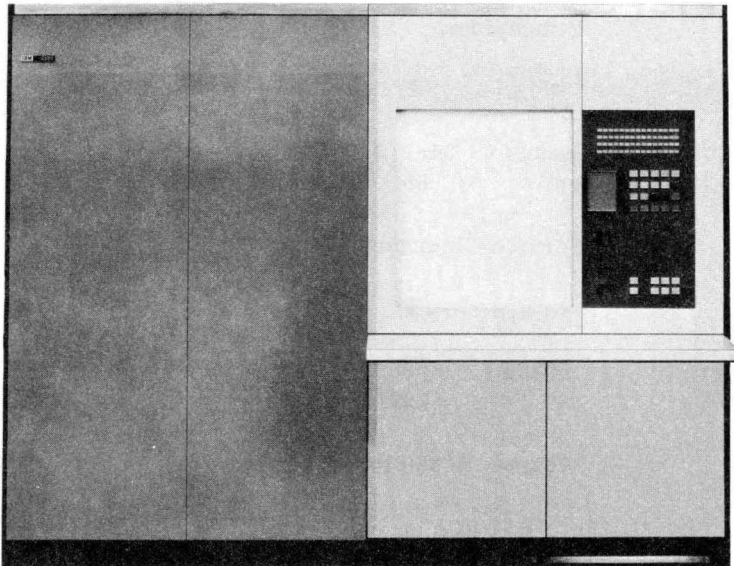
PLAN VIEW (TEMPLATE X22-6859)



Frame	kva	Air Flow		Heat Output	
		cfm	m <sup>3</sup> /m	BTU/hr	kcal
A	3.42	960	27	9,350	2.268
B	5.48	445	13	14,950	3.780

Inches	Centimeters
6	15
10	25
12	31
22-1/2	57
24	61
30	76
33	84
45	114
60	152

2280 FILM RECORDER  
 2282 FILM RECORDER SCANNER



SPECIFICATIONS

Dimensions

	F	S	H
Inches	111	*	70
cm	282	*	178

Service Clearances

	F	R	Rt	L
Inches	69	48	36	54
cm	175	122	91	137

Weight: 1,900 lb (862 kg)

Heat Output: 24,300 BTU/hr (6.124 kcal)

Air Flow: 1,405 cfm (40 m<sup>3</sup>/m)

Power Requirements:

kva	8.9
Phases	3
Plug	R&S, SC7328
Connector	R&S, SC7428

Environment Operating:

Temperature	60 <sup>o</sup> -90 <sup>o</sup> F (16 <sup>o</sup> -32 <sup>o</sup> C)
Rel Humidity	20-70%
Max Wet Bulb	78 <sup>o</sup> F (26 <sup>o</sup> C)

Environment Nonoperating:

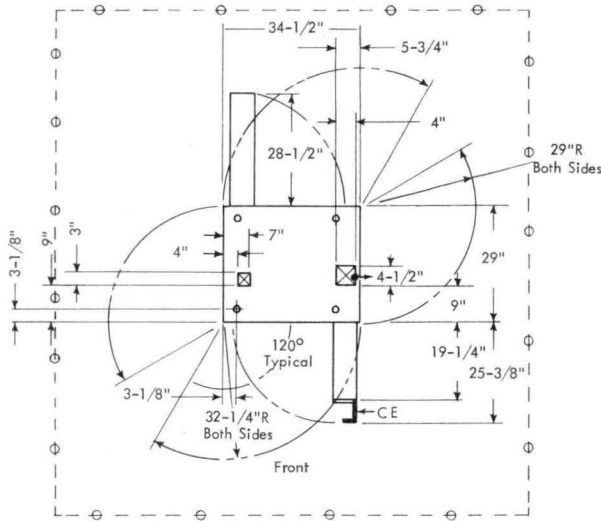
Temperature	50 <sup>o</sup> -110 <sup>o</sup> F (10 <sup>o</sup> -43 <sup>o</sup> C)
Rel Humidity	10-80%
Max Wet Bulb	80 <sup>o</sup> F (27 <sup>o</sup> C)

Notes

\* See plan view for this dimension.  
 The unit separates into two units for shipping as shown. See 2250-2 for specifications when used.

2301 DRUM STORAGE

PLAN VIEW (TEMPLATE X22-6858)



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 (386 kg)

Heat Output: 3,800 BTU/hr (958 kcal)

Air Flow: 320 cfm (9 m<sup>3</sup>/m)

Power Requirements: \*\*

kva 1.5  
Phases 3

Environment Operating:\*

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

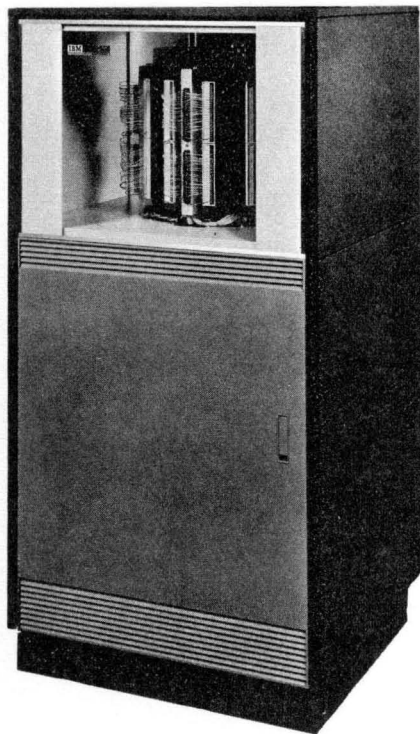
Environment Nonoperating:

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

Notes

\*Normal operating conditions must be maintained for 2 hours prior to start of operation.

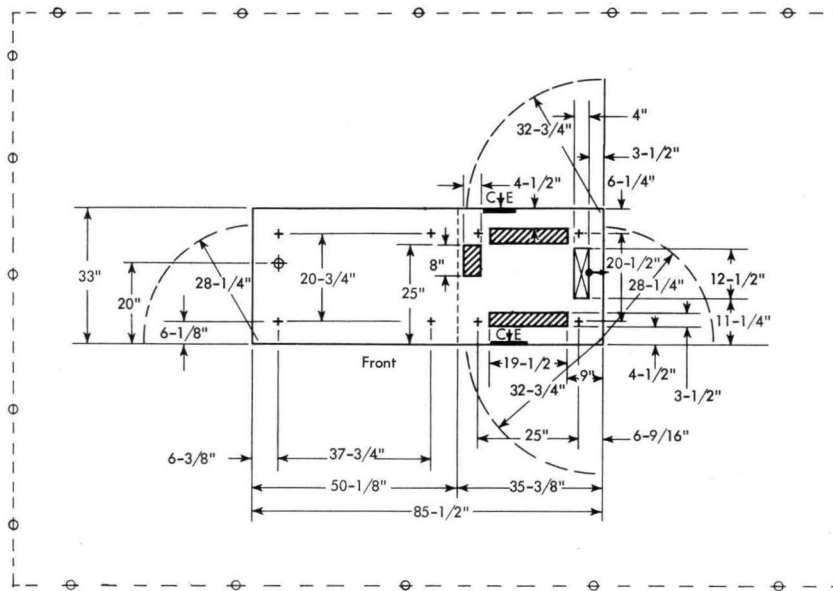
\*\*Powered from control unit.



Inches	Centimeters
3	8
3-1/8	8
4	10
4-1/2	11
5-3/4	15
7	18
9	23
19-1/4	50
25-3/8	65
28-1/2	72
29	74
32-1/4	82
34-1/2	88

2302 DISK STORAGE MODELS 3 AND 4

PLAN VIEW (TEMPLATE X22-6858)



SPECIFICATIONS

Dimensions

	F	S	H
Inches	85-1/2*	33	68-3/4
cm	217	84	175

Service Clearances

	F	R	Rt	L
Inches	60	60	60	60
cm	152	152	152	152

	Mod 3	Mod 4
Weight: lb	4,025	4,425
kg	1,826	2,007

Heat Output:	BTU/hr	20,000	28,000
kcal		5.040	7.056

Air Flow:	cfm	2,210	2,210
m <sup>3</sup> /m		63	63

Power Requirements:

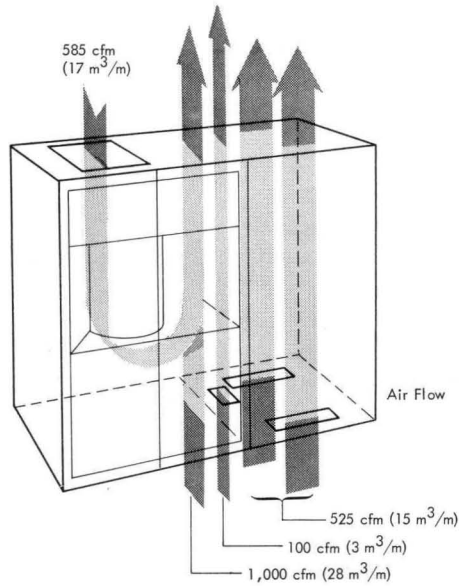
kva	9.0** (M3)	12.6** (M4)
Phases	3	
Plug	R&S, SC7328	
Connector	R&S, SC7428	

Environment Operating:

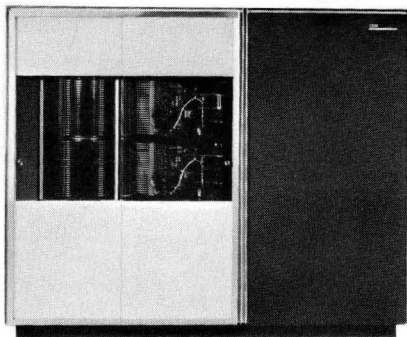
Temperature	65°-90°F (18°-32°C)
Rel Humidity	10-80%
Max Wet Bulb	78°F (26°C)

Environment Nonoperating:

Temperature	50°-110°F (10°-43°C)
-------------	----------------------



Inches	Centimeters
3-1/2	9
4	10
4-1/2	11
6-1/8	16
6-1/4	16
6-3/8	16
6-9/16	18
8	20
9	23
11-1/4	29
12-1/2	32
19-1/2	50
20	51
20-1/2	52
20-3/4	53
25	64
28-1/4	72
32-3/4	83
33	84
35-3/8	90
37-3/4	96
50-1/8	127
85-1/2	217



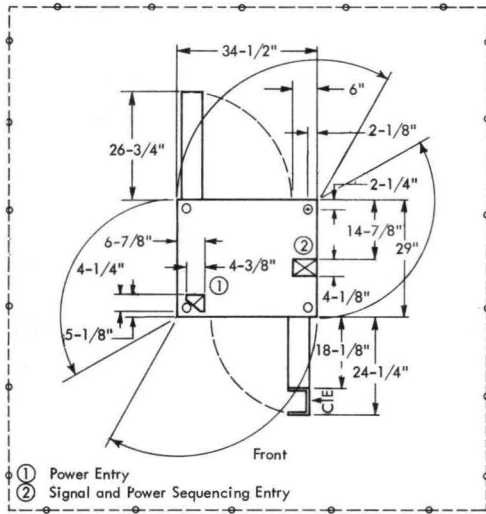
Notes

- \* Shipped in two sections, 50-1/8 inches (127 cm) and 35-5/8 inches (91 cm) long.
- \*\* See specification summary for special grounding requirements.



2303 DRUM STORAGE

PLAN VIEW (TEMPLATE X22-6858)



Inches	Centimeters
2-1/8	5
2-1/4	6
4-1/8	11
4-1/4	11
4-3/8	11
5-1/8	13
6	15
6-7/8	18
14-7/8	38
18-1/8	46
24-1/4	62
26-3/4	68
29	74
34-1/2	88

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 (386 kg)

Heat Output: 3,800 BTU/hr (958 kcal)

Air Flow: 250 cfm (7 m<sup>3</sup>/m)

Power Requirements:\*\*

kva 1.7  
Phases 3

Environment Operating:\*

Temperature 60<sup>o</sup>-90<sup>o</sup>F (16<sup>o</sup>-32<sup>o</sup>C)  
Rel Humidity 8-80%  
Max Wet Bulb 78<sup>o</sup>F (26<sup>o</sup>C)

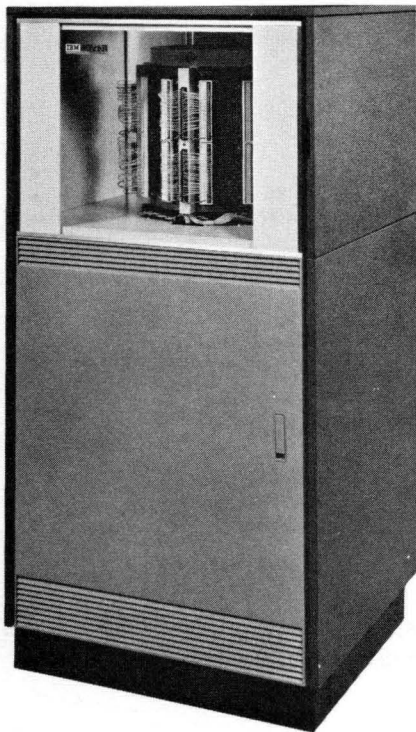
Environment Nonoperating:

Temperature 50<sup>o</sup>-110<sup>o</sup>F (10<sup>o</sup>-43<sup>o</sup>C)  
Rel Humidity 0-80%

Notes

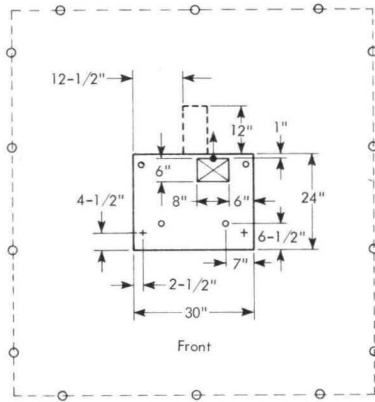
\* Normal operating conditions must be maintained for 2 hours prior to start of operation.

\*\* Powered from control unit.



2311 DISK STORAGE DRIVE

PLAN VIEW (TEMPLATE X22-6858)



Inches	Centimeters
1	3
2-1/2	6
4-1/2	11
6	15
6-1/2	17
7	18
8	20
12	31
12-1/2	32
24	61
30	76



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: 390 lb (177 kg)

Heat Output: 2,000 BTU/hr (504 kcal)

Air Flow: 100 cfm (3 m<sup>3</sup>/m)

Power Requirements:\*

kva 0.75

Environment Operating:

Temperature 60<sup>o</sup>-90<sup>o</sup>F (16<sup>o</sup>-32<sup>o</sup>C)  
 Rel Humidity 8-80%

Environment Nonoperating:

Temperature 50<sup>o</sup>-110<sup>o</sup>F (10<sup>o</sup>-43<sup>o</sup>C)  
 Rel Humidity 0-80%

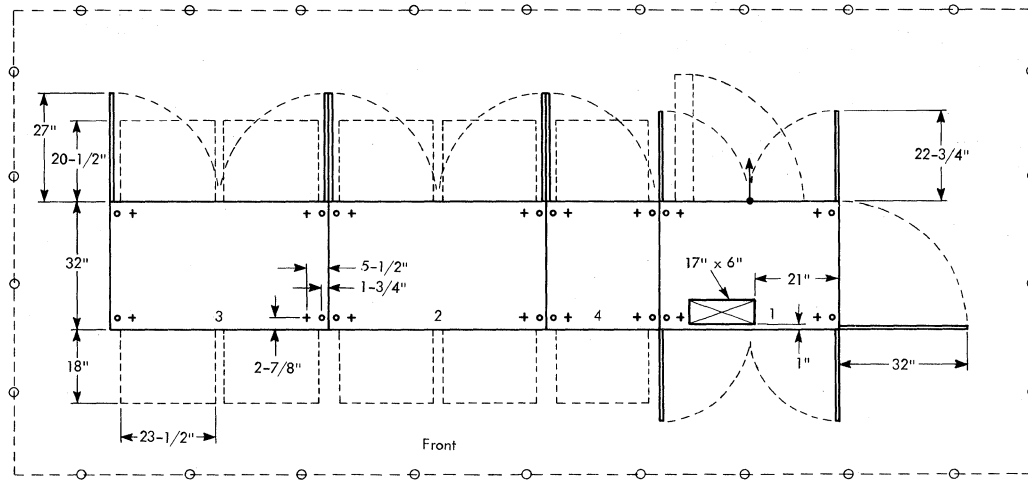
Notes

\*Powered from control unit.

\*\*When not abutted to units of like construction.

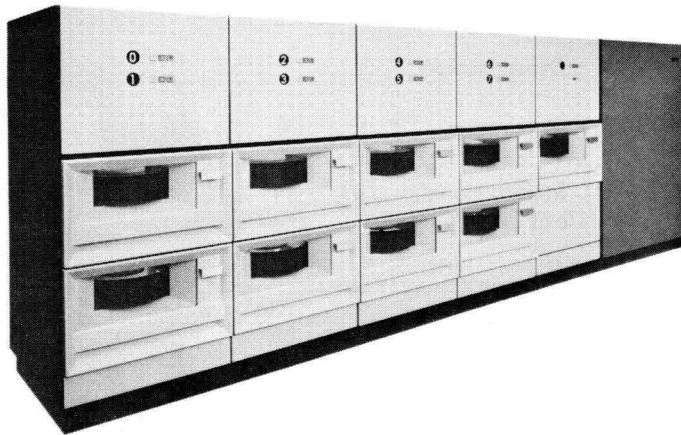
2314 DIRECT ACCESS STORAGE FACILITY

PLAN VIEW (TEMPLATE X22-6858)



Inches	Centimeters
1	3
1-3/4	4
2-7/8	7
5-1/2	14
6	15
17	43
18	46
20-1/2	52
21	53
22-3/4	58
23-1/2	60
27	69
32	81

2314 DIRECT ACCESS STORAGE FACILITY



SPECIFICATIONS

Dimensions

	F	S	H
Inches	186	32	57
cm	472	81	145

Service Clearances

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

Weight: 4,200 lb (1,905 kg)

Heat Output: 17,000 BTU/hr (4,284 kcal)

Air Flow: 2,000 cfm (57 m<sup>3</sup>/m)

Power Requirements:

kva 6.1  
 Phases 3  
 Plug R&S, SC7328  
 Connector R&S, SC7428

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)

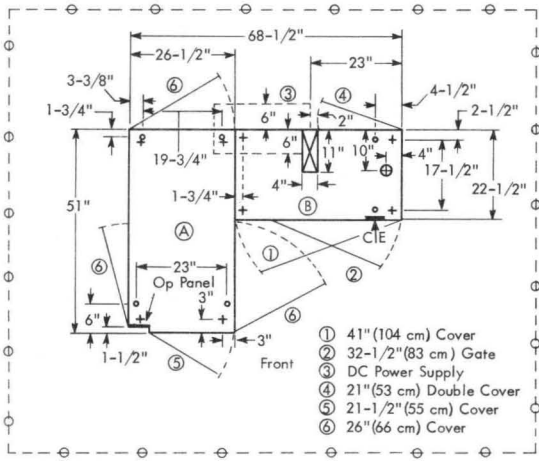
Notes

Unit is shipped in four sections:

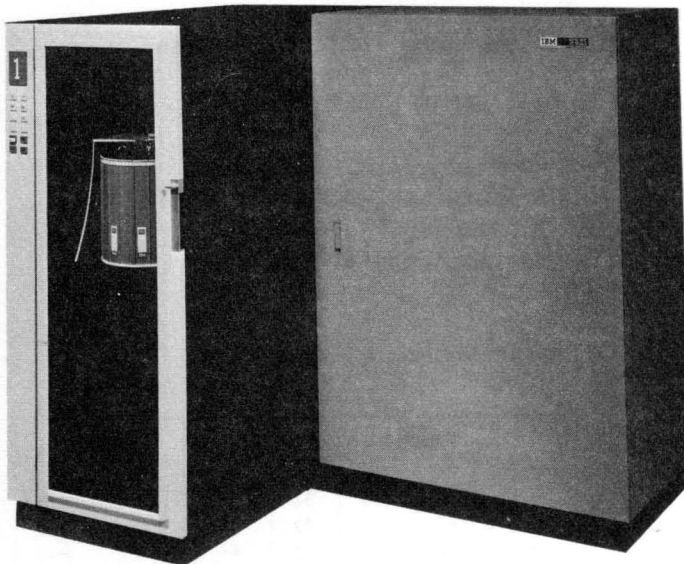
Section	Length		Width		Weight	
	in.	cm	in.	cm	lb	kg
1	47	119	32	81	950	430
2	55	140	32	81	1,375	624
3	56	142	32	81	1,375	624
4	28	71	32	81	500	227

2321 DATA CELL DRIVE MODEL 1

PLAN VIEW (TEMPLATE X22-6858)



Inches	Centimeters	Inches	Centimeters
1-1/2	4	10	25
1-3/4	4	11	28
2	5	17-1/2	45
2-1/2	6	19-3/4	50
3	8	22-1/2	57
3-3/8	9	23	58
4	10	26-1/2	67
4-1/2	11	51	130
6	15	68-1/2	174



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 (817 kg)

Heat Output: 10,600 BTU/hr (2,671 kcal)

Air Flow: 850 cfm (24 m<sup>3</sup>/m)

Power Requirements:

kva 4.4  
 Phases 3  
 Plug R&S, FS3760  
 Connector R&S, FS3934

Environment Operating:

Temperature 65°-90°F (18°-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)

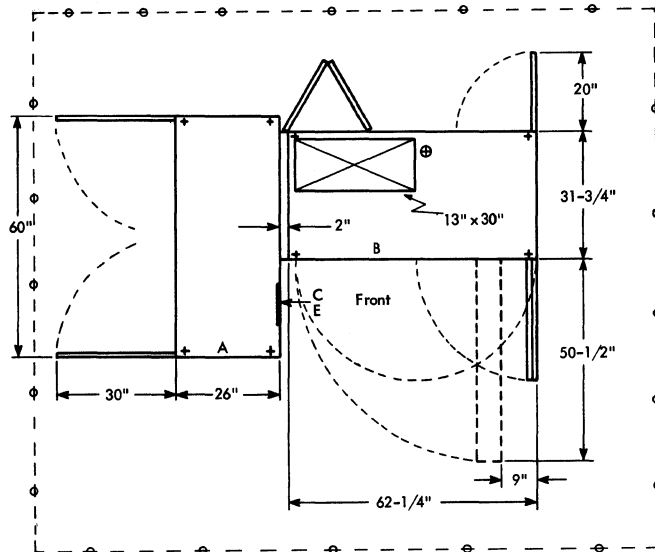
Notes

\*Shipped in two sections:

Frame	Front		Side		Weight	
	in.	cm	in.	cm	lb	kg
A	26-1/2	67	51	130	1,175	544
B	22-1/2	57	42	107	650	318

2361 CORE STORAGE MODELS 1 AND 2

PLAN VIEW (TEMPLATE X22-6856)



Frame	Weight		Air Flow		Heat Output			
	lb	kg	cfm	m <sup>3</sup> /m	BTU/hr		kcal	
					Mod 1	Mod 2	Mod 1	Mod 2
A	625	272	275	8	2,750	4,200	693	1,058
B	1,500	680	930	26	8,250	13,200	2,079	3,326

Inches	Centimeters
2	5
9	23
13	33
20	51
26	66
30	76
31-3/4	81
50-1/2	128
60	152
62-1/4	158

SPECIFICATIONS

Dimensions

	F	S	H
Inches	62-1/4	31-3/4	70-1/2
cm	158	81	179

Service Clearances

	F	R	Rt	L
Inches	72	30	30	36
cm	182	76	76	91

Weight: 2,125 lb (964 kg)

Heat Output:	Model 1	Model 2
BTU/hr	11,000	17,400
kcal	2.772	4.385

Air Flow: 1,205 cfm (34 m<sup>3</sup>/m)

Power Requirements:

kva	4.5* (Model 1)	7.0*(Model 2)
Phases	3	
Plug	R&S, SC7328	
Connector	R&S, SC7428	

Environment Operating:

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

Environment Nonoperating:

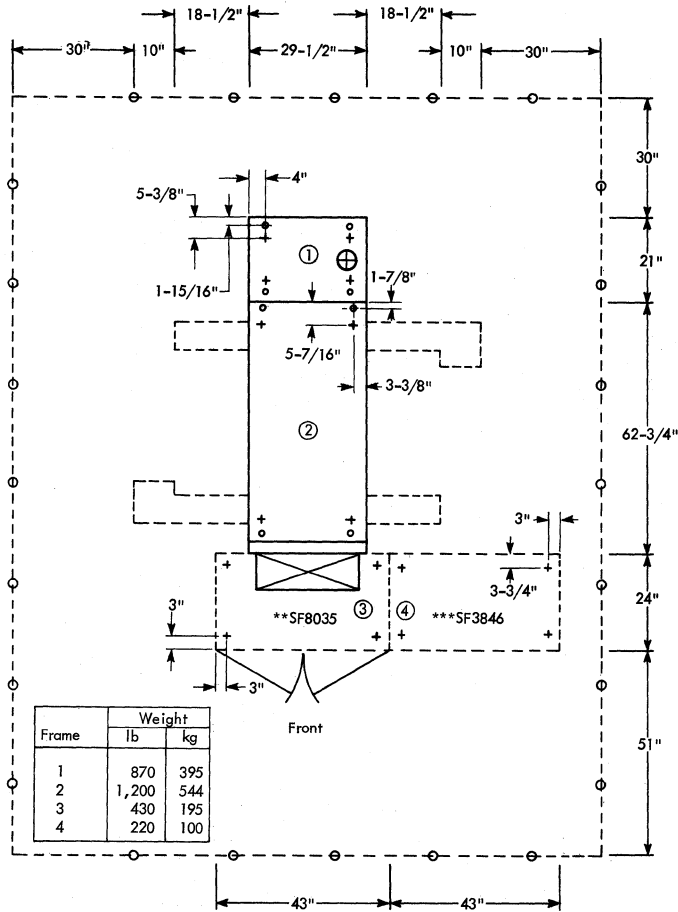
Temperature	50°-110°F (10°-43°C)
Rel Humidity	8-80%
Max Wet Bulb	78°F (26°C)

Notes

\*See specification summary for special grounding requirements.

2365 PROCESSOR STORAGE MODELS 1, 2, AND 3

PLAN VIEW (TEMPLATES X22-6856, X22-6905)



Inches	Centimeters
1-7/8	5
1-15/16	5
3	8
3-3/8	9
3-3/4	10
4	10
5-3/8	14
5-7/16	14
10	25
18-1/2	47
21	53
24	61
29-1/2	75
30	76
43	109
51	130
62-3/4	159

SPECIFICATIONS

Dimensions

	F	S	H
Inches	*	*	72-1/2
cm	*	*	184

Service Clearances

	F	R	Rt	L
Inches	*	*	*	*
cm	*	*	*	*

Weight:	Model 1	Models 2 & 3
	2,200 lb (998 kg)	2,720 lb (1,234 kg)

Heat Output:	25,300 BTU/hr (6.376 kcal)	25,300 BTU/hr (6.376 kcal)
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Air Flow:	1,055 cfm (30 m <sup>3</sup> /m)	1,495 cfm (42 m <sup>3</sup> /m)
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Power Requirements:

kva	7.4 (Mod1)	7.4 (Mods 2 & 3)
Phases	3	
Plug	R&S, SC7328	
Connector	R&S, SC7428	

Environment Operating:

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

Environment Nonoperating:

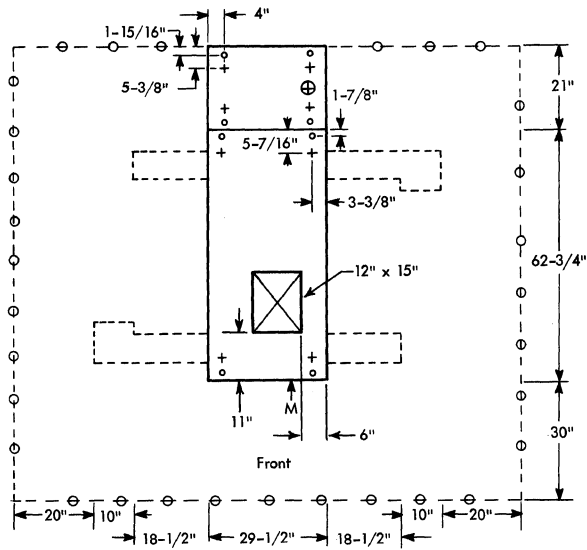
Temperature	50°-110°F (10°-43°C)
Rel Humidity	8-80%
Max Wet Bulb	80°F (27°C)

Notes

- \* See plan view for details. Dimensions are for frame size; add 1-3/8 inches (4 cm) per cover.
- \*\* Special feature 8035 required with each 2365 Model 2 in a Model 67 system.
- \*\*\* Special feature 3846 is an expansion feature required between two 2365 units when not separated by a 2067.

2365 PROCESSOR STORAGE MODEL 5

● PLAN VIEW (TEMPLATE X22-6923)



Inches	Centimeters
1-7/8	5
1-15/16	5
3-5/8	9
4	10
5-3/8	14
5-7/16	14
6	15
10	25
11	28
12	31
15	38
18-1/2	47
20	51
21	53
29-1/2	75
30	76
62-3/4	159

SPECIFICATIONS

Dimensions

	F	S	H
Inches	*	*	72-1/2
cm	*	*	184

Service Clearances

	F	R	Rt	L
Inches	*	*	*	*
cm	*	*	*	*

Weight: 2,500 lb (1.089 kg)

Heat Output: 15,000 BTU/hr (3.780 kcal)

Air Flow: 750 cfm (21 m<sup>3</sup>/m)

Power Requirements:

- kva
- Phases
- Plug
- Connector

Environment Operating:

- Temperature
- Rel Humidity
- Max Wet Bulb

Environment Nonoperating:

- Temperature
- Rel Humidity
- Max Wet Bulb

Notes

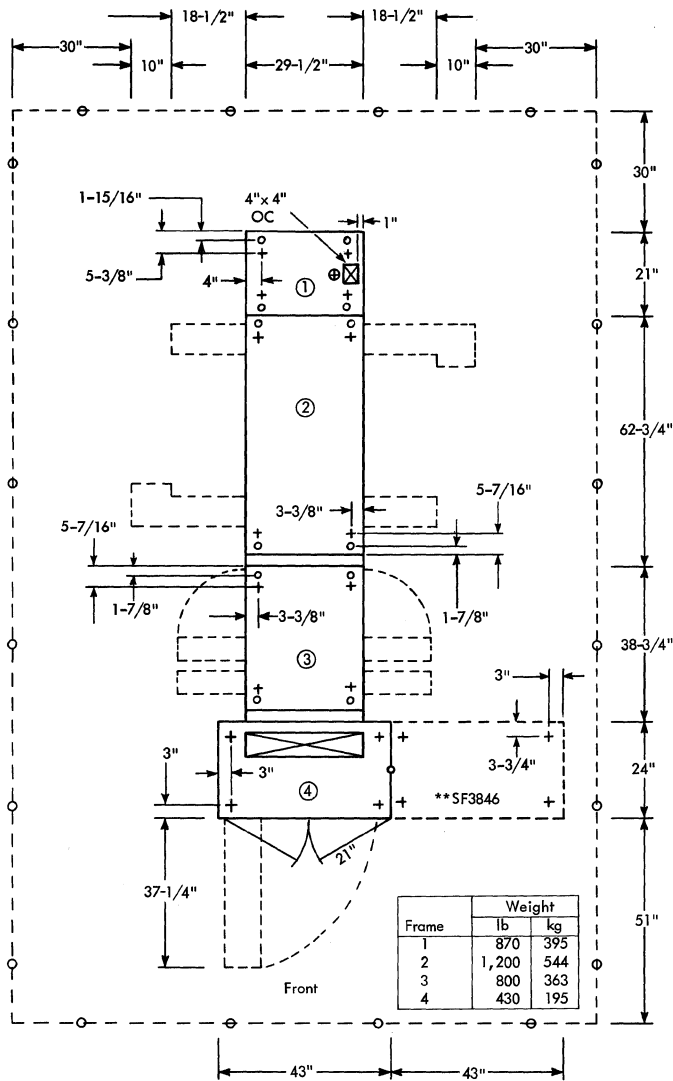
\*See plan view.





2365 PROCESSOR STORAGE MODEL 12

PLAN VIEW (TEMPLATE X22-6905)



Inches	Centimeters
1	3
1-7/8	5
1-15/16	5
3	8
3-3/8	9
3-3/4	10
4	10
5-3/8	14
5-7/16	14
10	25
18-1/2	47
21	53
24	61
29-1/2	75
30	76
37-1/4	95
38-3/4	98
43	109
51	130
62-3/4	159

SPECIFICATIONS

Dimensions

	F	S	H
Inches	*	*	72-1/2
cm	*	*	184

Service Clearances

	F	R	Rt	L
Inches	*	*	*	*
cm	*	*	*	*

Weight: 3,300 lb (1.497 kg)

Heat Output: 29,000 BTU/hr (7.308 kcal)

Air Flow: 2,345 cfm (66 m<sup>3</sup>/m)

Power Requirements:

kva	8.5
Phases	3
Plug	R&S, SC7328
Connector	R&S, SC7428

Environment Operating:

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

Environment Nonoperating:

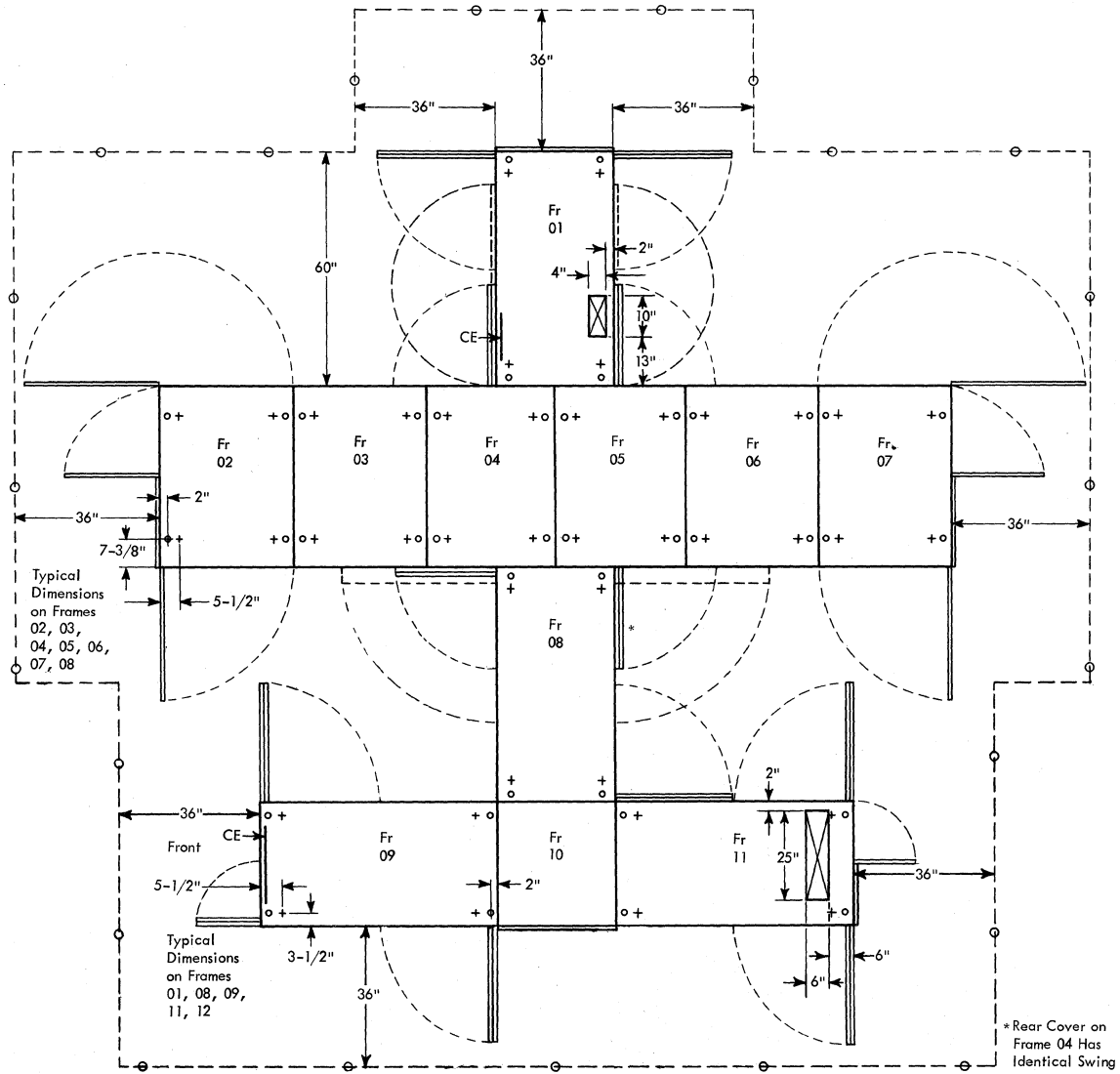
Temperature	50°-110°F (10°-43°C)
Rel Humidity	8-80%
Max Wet Bulb	80°F (27°C)

Notes

- \* See plan view for details. Dimensions are for frame size; add 1-3/8 inches (4 cm) per cover.
- \*\*Special feature 3846 is an expansion feature required between two 2365 units when not separated by a 2067.

| 2385 PROCESSOR STORAGE MODEL 1

● PLAN VIEW (TEMPLATE X22-6923)



Inches	Centimeters
2	5
3-1/2	9
4	10
5-1/2	14
6	15
7-3/8	19
13	33
25	64
36	91
60	152

Frame	Size	
	Inches	Centimeters
02, 03, 04, 05, 06, 07	34 x 46	86 x 117
01, 08, 09, 11	30 x 60	76 x 152

Details (By Frame)

Frame	Weight lb (kg)	Air Flow cfm (m <sup>3</sup> /m)	To Air BTU/hr (kcal)	To Water BTU/hr (kcal)
01	1,200 (544)			
02	1,600 (726)			
03	1,600 (726)			
04	1,600 (726)			
05	1,600 (726)			
06	1,600 (726)			
07	1,600 (726)			
08	1,500 (650)			
09	1,600 (726)			
10	0 (0)			
11	2,000 (907)			

SPECIFICATIONS

Dimensions

	F	S	H
Inches	*	*	*
cm	*	*	*

Service Clearances

	F	R	Rt	L
Inches	*	*	*	*
cm	*	*	*	*

Weight: See "Details"

Heat Output: 75,000 BTU/hr (18.900 kcal)

Air Flow: 5,600 cfm (159 m<sup>3</sup>/m)

Power Requirements:

- kva
- Phases
- Plug
- Connector

Environment Operating:

Temperature	65°-80°F (18°-27°C)
Rel Humidity	20-80%
Max Wet Bulb	73°F (23°C)

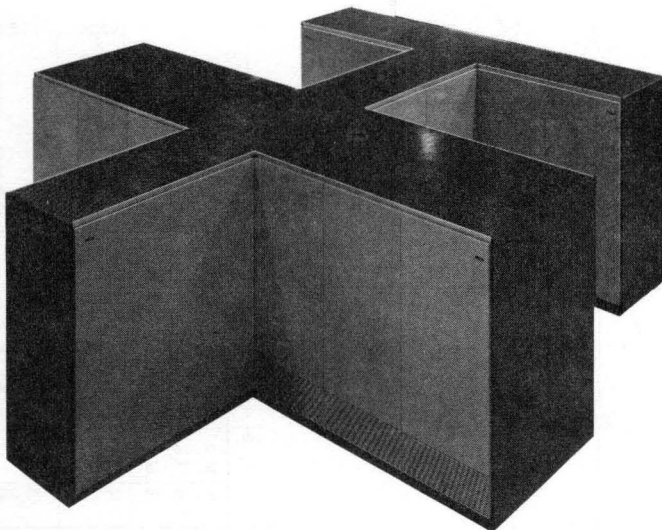
Environment Nonoperating:

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

Notes

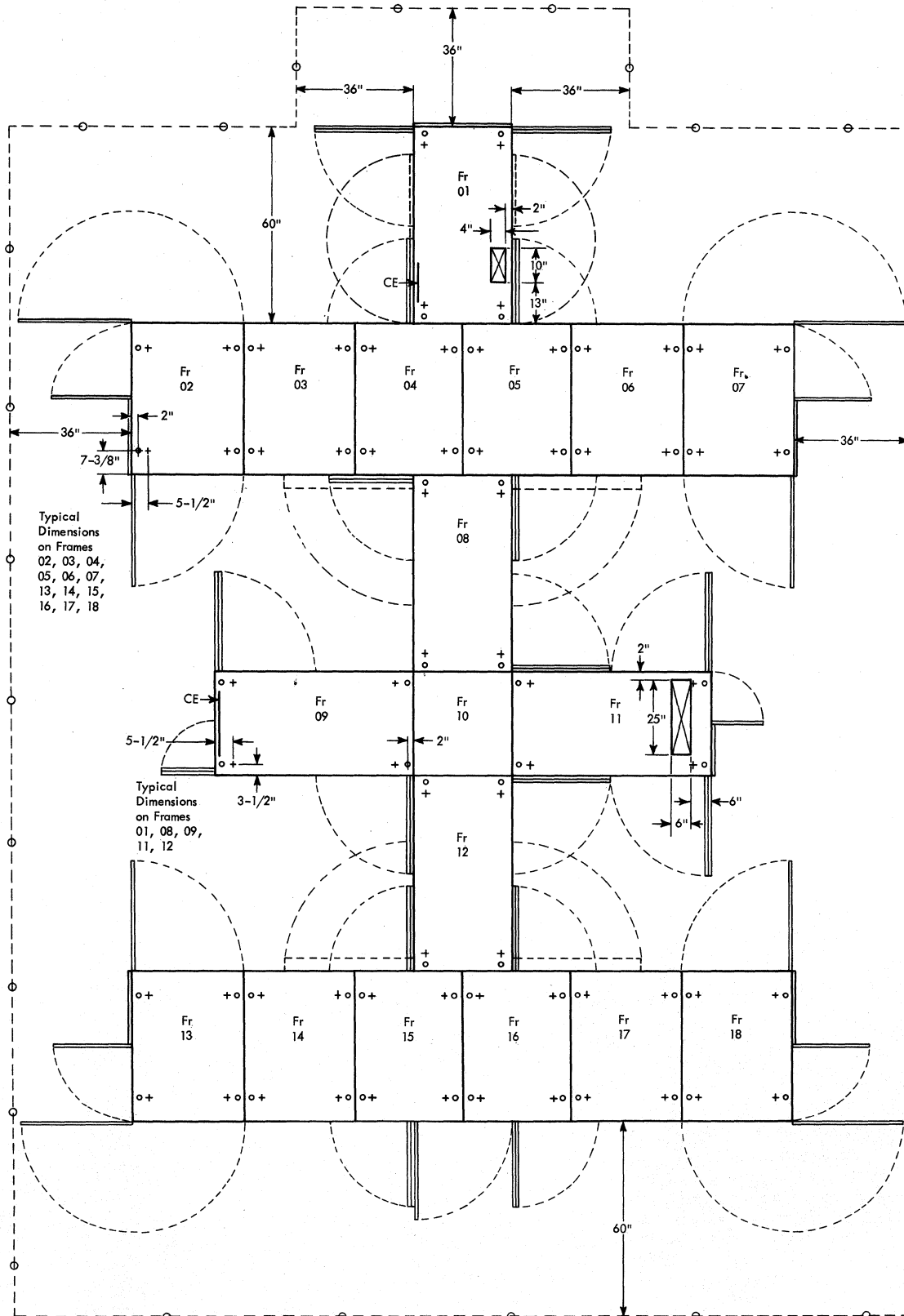
\*See plan view.

| External Liquid: 15 gpm at 60°F (16°C).



1 2385 PROCESSOR STORAGE MODEL 2

● PLAN VIEW (TEMPLATE X22-6923)



Typical Dimensions on Frames 02, 03, 04, 05, 06, 07, 13, 14, 15, 16, 17, 18

Typical Dimensions on Frames 01, 08, 09, 11, 12

Inches	Centimeters
2	5
3-1/2	9
4	10
5-1/2	14
6	15
7-3/8	19
10	25
13	33
25	64
36	91
60	152

Frame	Size	
	Inches	Centimeters
02, 03, 04, 05, 06, 07, 13, 14, 15, 16, 17, 18	34 x 46	86 x 117
01, 08, 09, 11, 12	30 x 60	76 x 152

Details (By Frame)

Frame	Weight lb (kg)	Air Flow cfm (m <sup>3</sup> /m)	To Air BTU/hr (kcal)	To Water BTU/hr (kcal)
01	1,200 (544)			
02	1,600 (726)			
03	1,600 (726)			
04	1,600 (726)			
05	1,600 (726)			
06	1,600 (726)			
07	1,600 (726)			
08	1,500 (650)			
09	1,600 (726)			
10	0 (0)			
11	2,000 (907)			
12	1,500 (650)			
13	1,600 (726)			
14	1,600 (726)			
15	1,600 (726)			
16	1,600 (726)			
17	1,600 (726)			
18	1,600 (726)			

SPECIFICATIONS

Dimensions

	F	S	H
Inches	*	*	*
cm	*	*	*

Service Clearances

	F	R	Rt	L
Inches	*	*	*	*
cm	*	*	*	*

Weight: See "Details"

Heat Output: 150,000 BTU/hr (37.800 kcal)

Air Flow: 11,200 cfm (317 m<sup>3</sup>/m)

Power Requirements:

- kva
- Phases
- Plug
- Connector

Environment Operating:

- Temperature 65°-80°F (18°-27°C)
- Rel Humidity 20-80%
- Max Wet Bulb 73°F (23°C)

Environment Nonoperating:

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

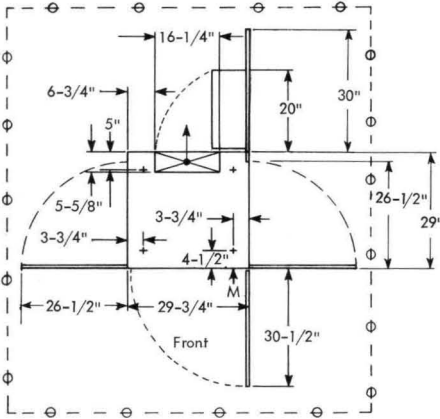
Notes

\*See plan view.

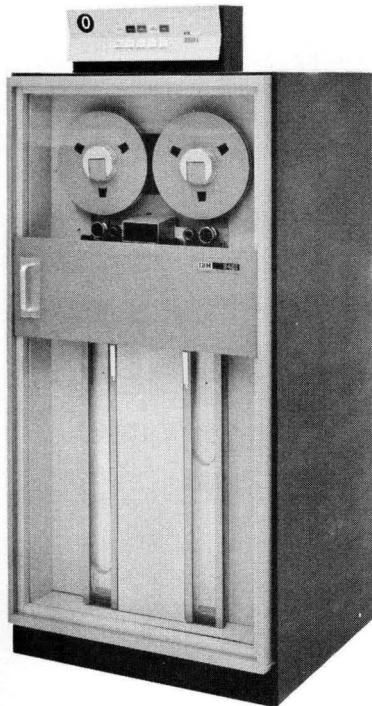
| External Liquid: 30 gpm at 60°F (16°C).

2401 MAGNETIC TAPE UNIT MODELS 1-6

PLAN VIEW (TEMPLATE X22-6855)



Inches	Centimeters	Inches	Centimeters
3-3/4	10	20	51
4-1/2	11	26-1/2	67
5	13	29	74
5-5/8	14	29-3/4	76
6-3/4	17	30	76
16-1/4	41	30-1/2	78



SPECIFICATIONS

Dimensions

	F	S	H
Inches	30	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 (363 kg)

Heat Output: 3,500 BTU/hr (882 kcal)

Air Flow: 500 cfm (14 m<sup>3</sup>/m)

Power Requirements:

kva 1.6\*\*

Environment Operating:

Temperature 60<sup>o</sup>-90<sup>o</sup>F (16<sup>o</sup>-32<sup>o</sup>C)  
 Rel Humidity 20-80%  
 Max Wet Bulb 78<sup>o</sup>F (26<sup>o</sup>C)

Environment Nonoperating:

Temperature 50<sup>o</sup>-110<sup>o</sup>F (10<sup>o</sup>-43 C)  
 Rel Humidity 8-80%  
 Max Wet Bulb 80<sup>o</sup>F (27<sup>o</sup>C)

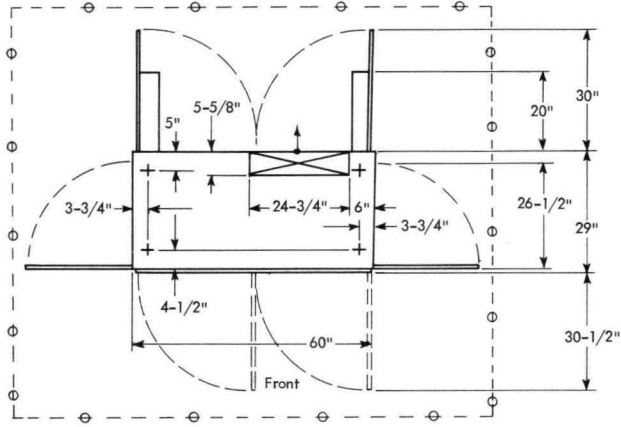
Notes

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

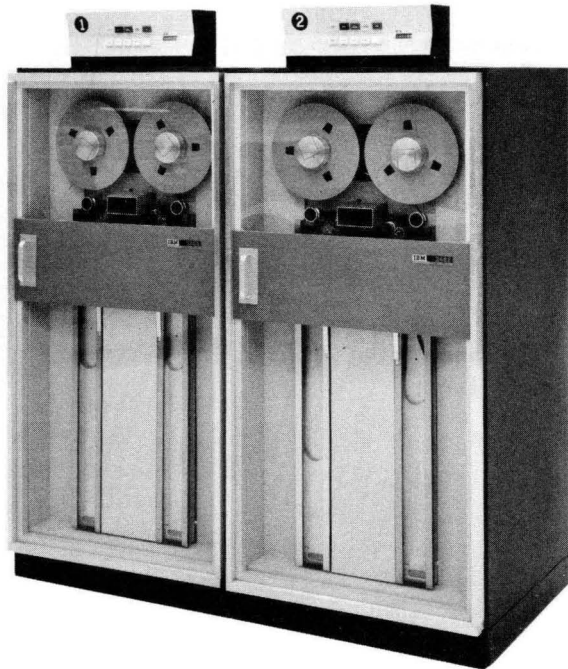
\*\*Powered from control unit.

2402 MAGNETIC TAPE UNIT MODELS 1-6

PLAN VIEW (TEMPLATE X22-6855)



Inches	Centimeters	Inches	Centimeters
3-3/4	10	24-3/4	63
4-1/2	11	26-1/2	67
5	13	29	74
5-5/8	14	30	76
6	15	30-1/2	78
20	51	60	152



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 (726 kg)

Heat Output: 7,000 BTU/hr (1.764 kcal)

Air Flow: 1,000 cfm (28 m<sup>3</sup>/m)

Power Requirements:

kva 3.2\*\*

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)

Notes

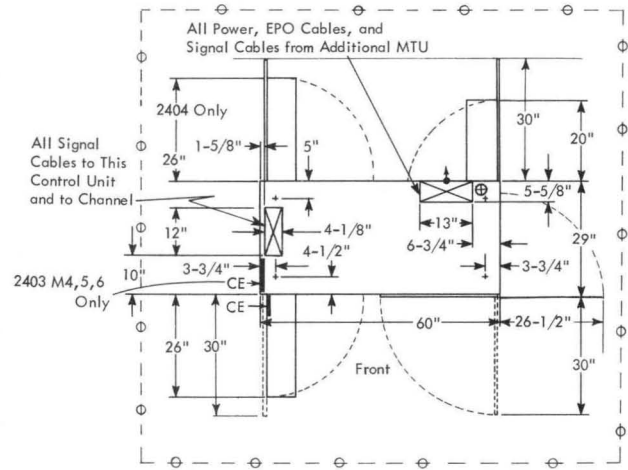
\*When not abutted to another tape unit or tape control unit.

\*\*Powered from control unit.

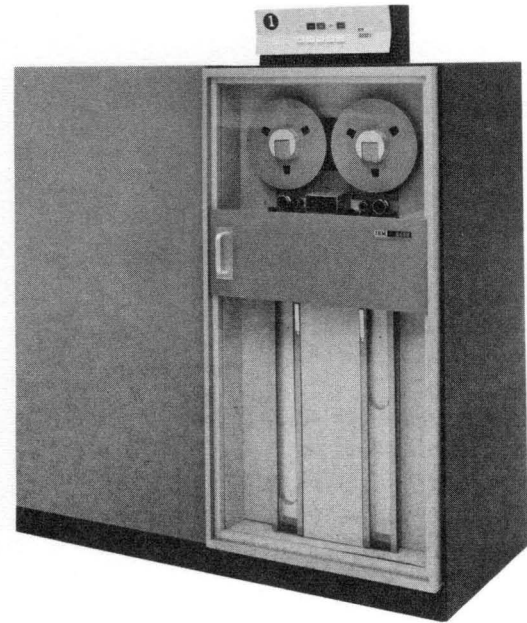


2403 MAGNETIC TAPE UNIT AND CONTROL MODELS 1-6  
 2404 MAGNETIC TAPE UNIT AND CONTROL MODELS 1, 2, AND 3

PLAN VIEW (TEMPLATE X22-6855)



Inches	Centimeters	Inches	Centimeters
1-5/8	4	12	31
3-3/4	10	13	33
4-1/8	11	20	51
4-1/2	11	26	66
5	13	26-1/2	67
5-5/8	14	29	74
6-3/4	17	30	76
10	25	60	152



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

	2403	2404
Weight: lb	2,000	2,000
kg	(907)	(907)
Heat BTU/hr	5,500	6,300
Output: kcal	(1.386)	(1.587)
Air cfm	1,000	1,200
Flow: (m <sup>3</sup> /m)	(28)	(34)

Power Requirements:

kva	2.1 (2403)	2.4 (2404)
Phases	3	
Plug	R&S, SC7328	
Connector	R&S, SC7428	

Environment Operating:

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

Environment Nonoperating:

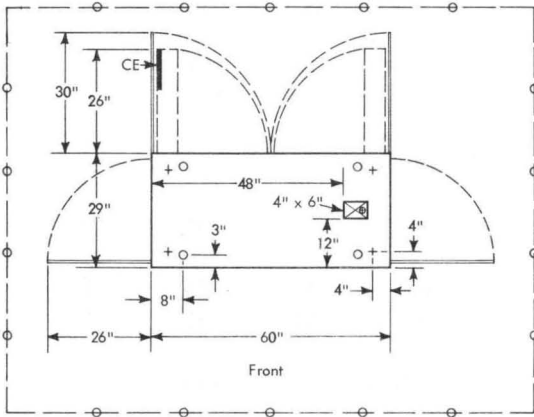
Temperature	50°-110°F (10°-43°C)
Rel Humidity	8-80%
Max Wet Bulb	80°F (27°C)

Notes

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

2415 MAGNETIC TAPE UNIT AND CONTROL MODELS 1 AND 4

PLAN VIEW (TEMPLATE X22-6855)



Inches	Centimeters
3	8
4	10
6	15
8	20
12	31
26	66
29	74
30	76
48	122
60	152



SPECIFICATIONS

Dimensions

	F	S	H
Inches	60	29	67
cm	152	74	170

Service Clearances

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

Weight: 1,400 lb (635 kg)

Heat Output: 10,000 BTU/hr (2,520 kcal)

Air Flow: 1,250 cfm (35 m<sup>3</sup>/m)

Power Requirements:

kva	4.0
Phases	3
Plug	R&S, FS3760
Connector	R&S, FS3934

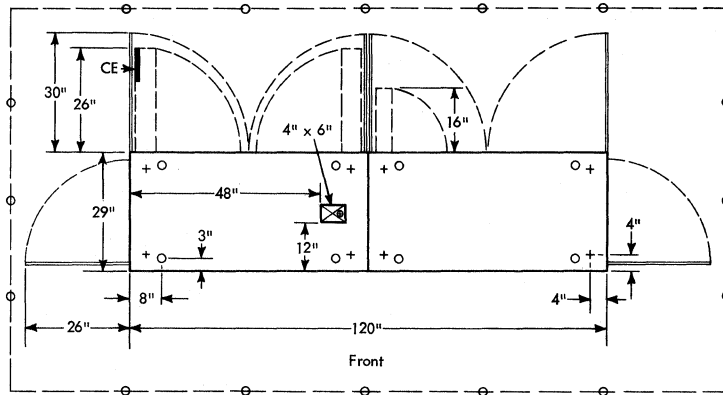
Environment Operating:

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)

PLAN VIEW (TEMPLATE X22-6855)



Inches	Centimeters
3	8
4	10
6	15
8	20
12	31
16	41
26	66
29	74
30	76
120	305

SPECIFICATIONS

Dimensions

	F	S	H
Inches	120	29	67
cm	305	74	170

Service Clearances

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

Weight: 2,150 lb (975 kg)

Heat Output: 12,500 BTU/hr (3.150 kcal)

Air Flow: 1,500 cfm (43 m<sup>3</sup>/m)

Power Requirements:

- kva 4.8
- Phases 3
- Plug R&S, FS3760
- Connector R&S, FS3934

Environment Operating:

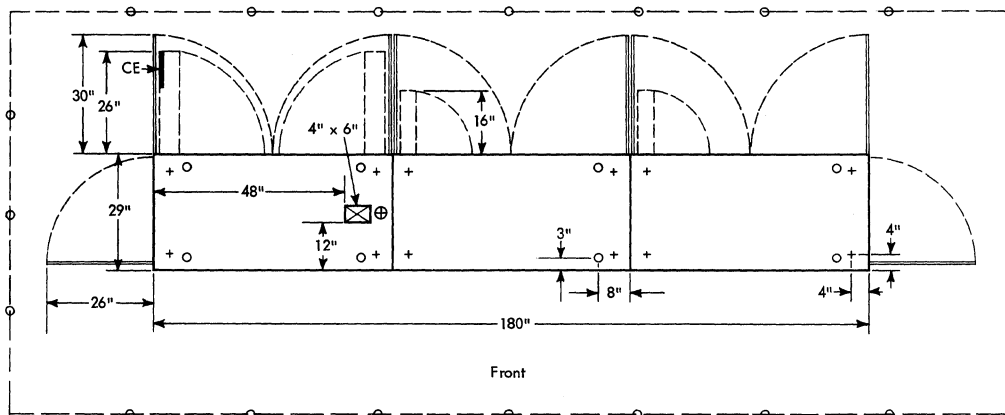
- Temperature 60°-90°F (16°-32°C)
- Rel Humidity 20-80%
- Max Wet Bulb 78°F (26°C)

Environment Nonoperating:

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

2415 MAGNETIC TAPE UNIT AND CONTROL MODELS 3 AND 6

PLAN VIEW (TEMPLATE X22-6855)



Inches	Centimeters
3	8
4	10
6	15
8	20
12	31
16	41
26	66
29	74
30	76
48	122
180	457

SPECIFICATIONS

Dimensions

	F	S	H
Inches	180	29	67
cm	457	74	170

Service Clearances

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

Weight: 2,900 lb (1.315 kg)

Heat Output: 15,000 BTU/hr (3.780 kcal)

Air Flow: 1,750 cfm (50 m<sup>3</sup>/m)

Power Requirements:

kva 5.9  
 Phases 3  
 Plug R&S, FS3760  
 Connector R&S, FS3934

Environment Operating:

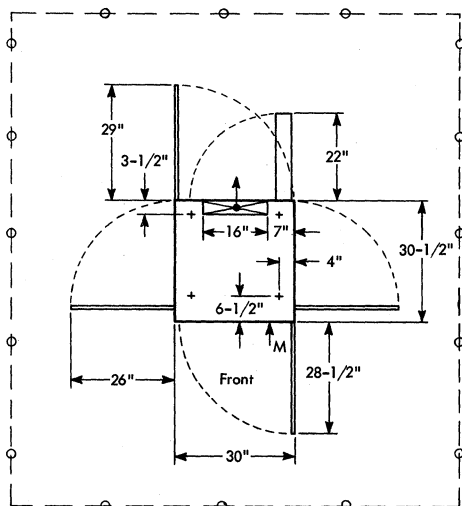
Temperature 60°-90°F (16°-32°C)  
 Rel Humidity 20-80%  
 Max Wet Bulb 78°F (26°C)

Environment Nonoperating:

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

2420 MAGNETIC TAPE UNIT MODEL 7

● PLAN VIEW (TEMPLATE X22-6855)



Inches	Centimeters
3-1/2	9
4	10
6-1/2	17
7	18
16	41
22	56
26	66
28-1/2	72
29	74
30	76
30-1/2	78

SPECIFICATIONS

Dimensions

	F	S	H
Inches	30	30-1/2	67
cm	76	78	170

Service Clearances

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

Weight: 1,000 lb (454 kg)

Power Requirements:

kva 2.9\*\*

Heat Output: 7,900 BTU/hr (1.991 kcal)

Air Flow: 700 cfm (20 m<sup>3</sup>/m)

Environment Operating:

Temperature 60<sup>o</sup>-90<sup>o</sup>F (16<sup>o</sup>-32<sup>o</sup>C)  
 Rel Humidity 20-80%  
 Max Wet Bulb 78<sup>o</sup>F (26<sup>o</sup>C)

Environment Nonoperating:

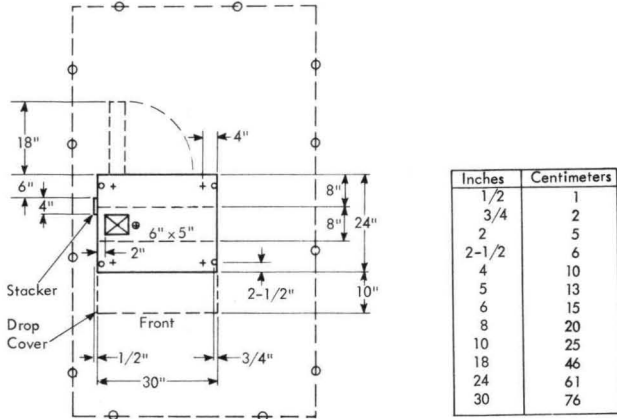
Temperature 50<sup>o</sup>-110<sup>o</sup>F (10<sup>o</sup>-43<sup>o</sup>C)  
 Rel Humidity 8-80%  
 Max Wet Bulb 80<sup>o</sup>F (27<sup>o</sup>C)

Notes

- \* When not abutted to another tape unit or tape control unit.
- \*\* Powered from control unit.

2501 CARD READER MODELS B1 AND B2

PLAN VIEW (TEMPLATE X22-6834)



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 (181 kg)

Heat Output: 1,200 BTU/hr (252 kcal)

Air Flow: 0 cfm (0 m<sup>3</sup>/m)

Power Requirements:

kva	0.5
Phases	1
Plug	R&S, FS3720
Connector	R&S, FS3913

Environment Operating:

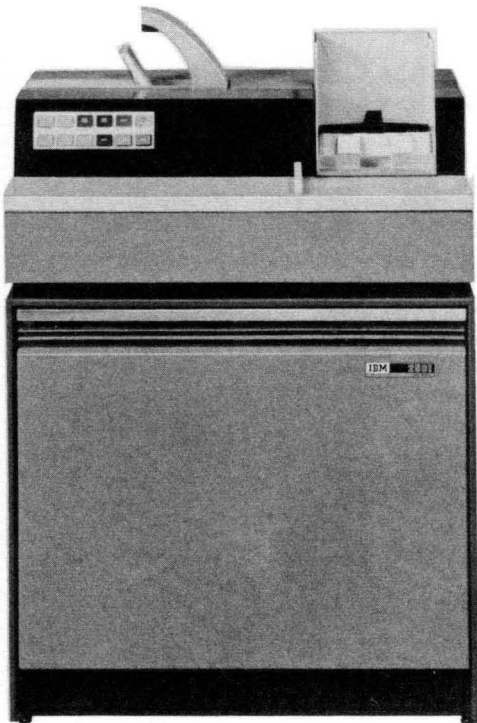
Temperature	50°-90°F (10°-32°C)
Rel Humidity	10-80%
Max Wet Bulb	78°F (26°C)

Environment Nonoperating:

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

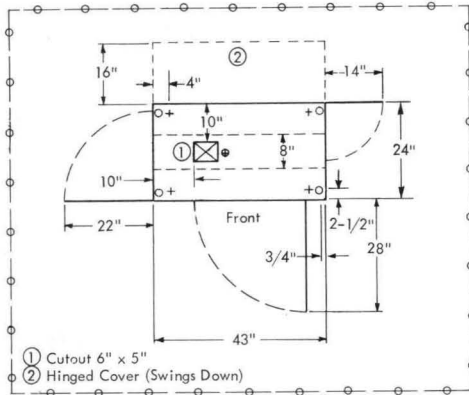
Notes

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

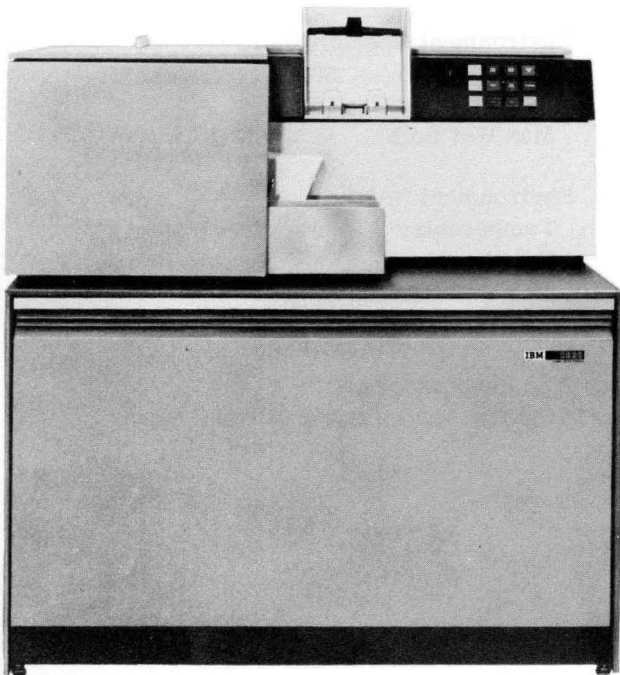


2520 CARD READ PUNCH MODEL B1  
 2520 CARD PUNCH MODELS B2 AND B3

PLAN VIEW (TEMPLATE X22-6834)



Inches	Centimeters
3/4	2
2-1/2	6
4	10
5	13
6	15
8	20
10	25
14	36
16	41
22	56
24	61
28	71
43	109



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 (349 kg)

Heat Output: 6,350 BTU/hr (1.600 kcal)

Air Flow: 100 cfm (3 m<sup>3</sup>/m)

Power Requirements:

kva 2.0  
 Phases 1  
 Plug R&S, FS3720  
 Connector R&S, FS3913

Environment Operating:

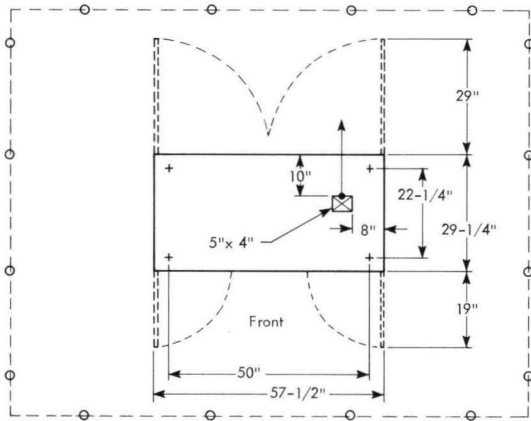
Temperature 50°-90°F (10°-32°C)  
 Rel Humidity 10-80%  
 Max Wet Bulb 78°F (26°C)

Environment Nonoperating:

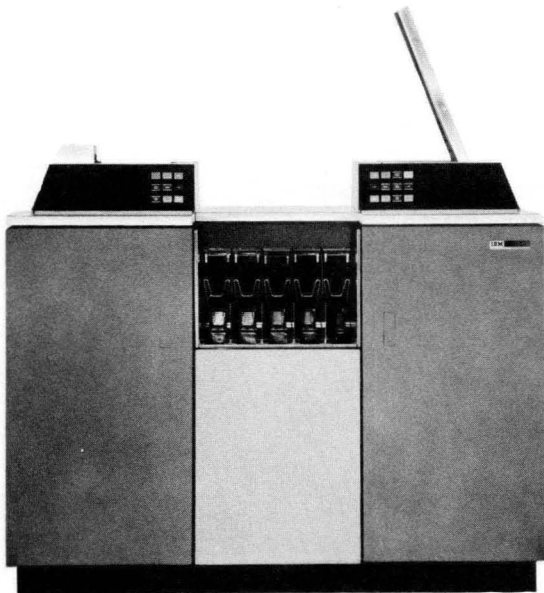
Temperature 50°-110°F (10°-43°C)  
 Rel Humidity 8-80%  
 Max Wet Bulb 80°F (27°C)

2540 CARD READ PUNCH

PLAN VIEW (TEMPLATE X22-6834)



Inches	Centimeters
4	10
5	13
8	20
10	25
19	48
22-1/4	57
29	74
29-1/4	74
50	127
57-1/2	146



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 (476 kg)

Heat Output: 3,000 BTU/hr (756 kcal)

Air Flow: 50 cfm (1 m<sup>3</sup>/m)

Power Requirements:

kva 1.2\*\*

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)

Notes

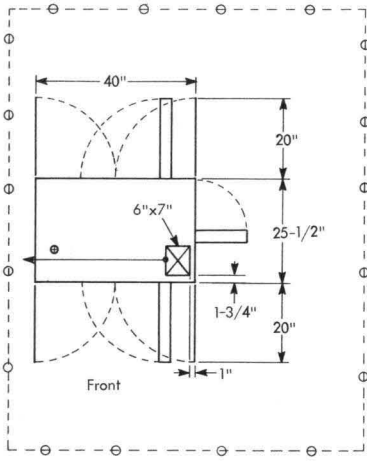
\* Add 20-1/4 inches (51 cm) for read file feed.

\*\* Powered from 2821.



2701 DATA ADAPTER UNIT

PLAN VIEW (TEMPLATE X22-6857)



Inches	Centimeters
1	3
1-3/4	4
6	15
7	18
20	51
25-1/2	65
40	102



SPECIFICATIONS

Dimensions

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

Service Clearances

	F	R	Rt	L
Inches	42	42	42	6*
cm	107	107	107	15*

Weight: 600 lb (272 kg)

Heat Output: 3,000 BTU/hr (756 kcal)

Air Flow: 120 cfm (3 m<sup>3</sup>/m)

Power Requirements:

kva	1.0
Phases	1
Plug	R&S, FS3720
Connector	R&S, FS3913

Environment Operating:

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

Environment Nonoperating:

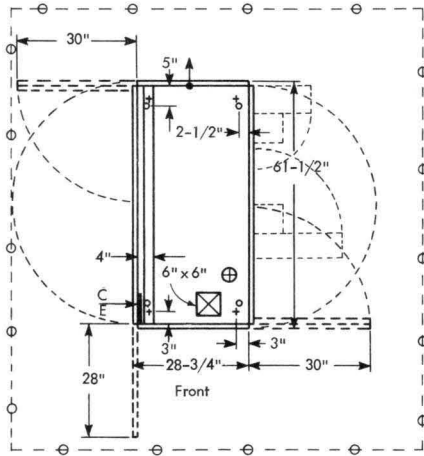
Temperature	50°-110°F (10°-43°C)
Rel Humidity	8-80%
Max Wet Bulb	80°F (27°C)

Notes

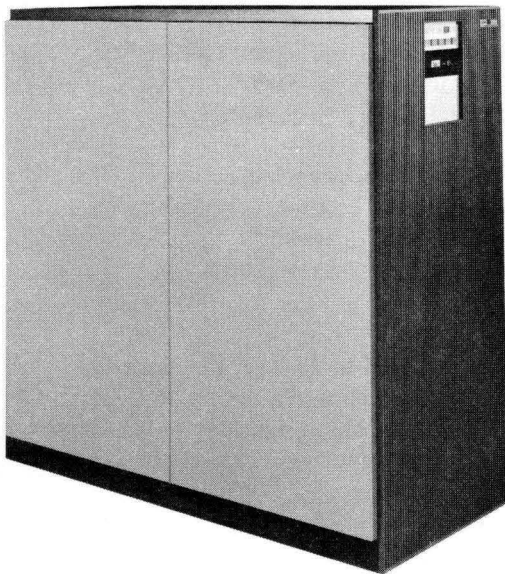
\* For air circulation.

2702 TRANSMISSION CONTROL

PLAN VIEW (TEMPLATE X22-6857)



Inches	Centimeters
2-1/2	6
3	8
4	10
5	13
6	15
28	71
28-3/4	73
30	76
61-1/2	156



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	30
cm	76	46	107	76

Weight: 900 lb (408 kg)

Heat Output: 5,600 BTU/hr (1.411 kcal)

Air Flow: 800 cfm (23 m<sup>3</sup>/m)

Power Requirements:

kva 1.8  
 Phases 1  
 Plug R&S, FS3720  
 Connector R&S, FS3913

Environment Operating:

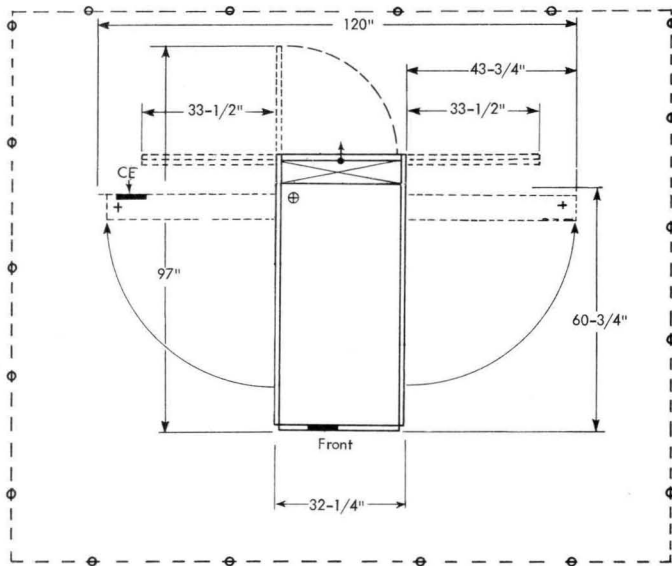
Temperature 60°-90°F (16°-32°C)  
 Rel Humidity 8-80%  
 Max Wet Bulb 78°F (26°C)

Environment Nonoperating:

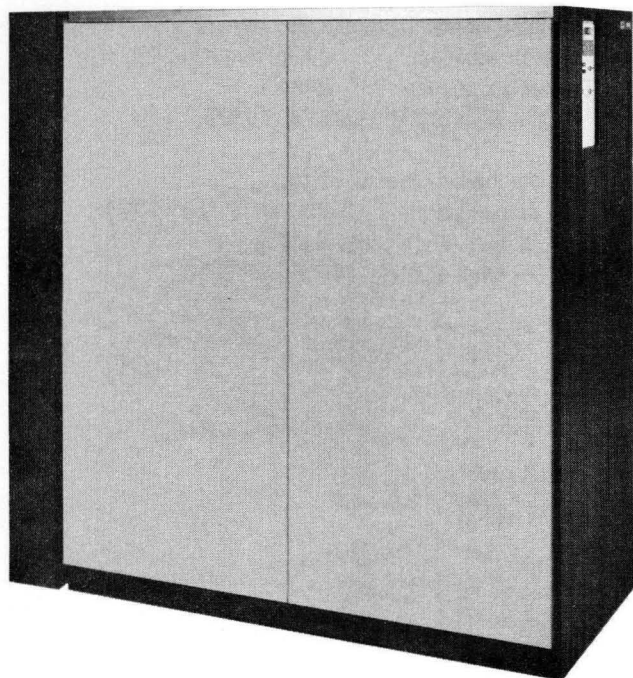
Temperature 50°-110°F (10°-43°C)  
 Rel Humidity 8-80%  
 Max Wet Bulb 80°F (27°C)

2703 TRANSMISSION CONTROL

PLAN VIEW (TEMPLATE X22-6857)



Inches	Centimeters
32-1/4	82
33-1/2	85
43-3/4	111
60-3/4	154
97	246
120	305



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 (998 kg)

Heat Output: 11,750 BTU/hr (2.961 kcal)

Air Flow: 2,000 cfm (57 m<sup>3</sup>/m)

Power Requirements:

kva	4.3
Phases	3
Plug	R&S, FS3760
Connector	R&S, FS3934

Environment Operating:

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

Environment Nonoperating:

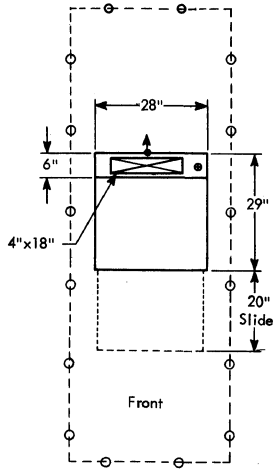
Temperature	50°-110°F (10°-43°C)
Rel Humidity	20-80%
Max Wet Bulb	80°F (27°C)

Notes

\* Can be reduced to 29-1/2 inches by 60 inches by 70 inches (75 cm by 152 cm by 178 cm) for shipping. See sales representative for specifying dimensions on order.

2711 LINE ADAPTER UNIT

PLAN VIEW (TEMPLATE X22-6857)



Inches	Centimeters
4	10
6	15
18	46
20	51
28	71
29	74

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 (403 kcal)

Air Flow: 100 cfm (3 m<sup>3</sup>/m)

Power Requirements:

kva 0.5  
 Phases 1  
 Plug R&S, FS3720  
 Connector R&S, FS3913

Environment Operating:

Temperature 50°-90°F (10°-32°C)  
 Rel Humidity 8-80%  
 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)

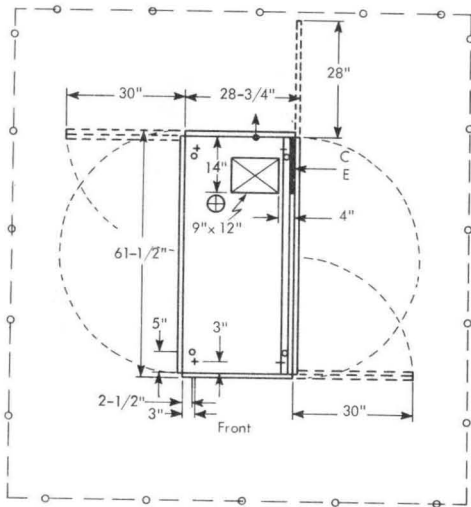
Notes

\*Figures represent 2711 maximum configuration. The basic unit (Power Supply Module, "A" Line Adapter Module, and Control Module) is 22 inches (56 cm) high and weighs a maximum of 251 pounds (114 kg). Add 6 inches (15 cm) and a maximum of 68 pounds (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.)

2802 HYPERTAPE CONTROL

PLAN VIEW (TEMPLATE X22-6835)



Inches	Centimeters
2-1/2	6
3	8
4	10
5	13
9	23
12	31
14	36
28	71
28-3/4	73
30	76
61-1/2	156

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	42	42
cm	76	76	107	107

Weight: 928 lb (422 kg)

Heat Output: 1,360 BTU/hr (343 kcal)

Air Flow: 300 cfm (9 m<sup>3</sup>/m)

Power Requirements:

kva	0.6*
Phases	3
Plug	R&S, JPS1034H
Connector	R&S, JCS1034H

Environment Operating:

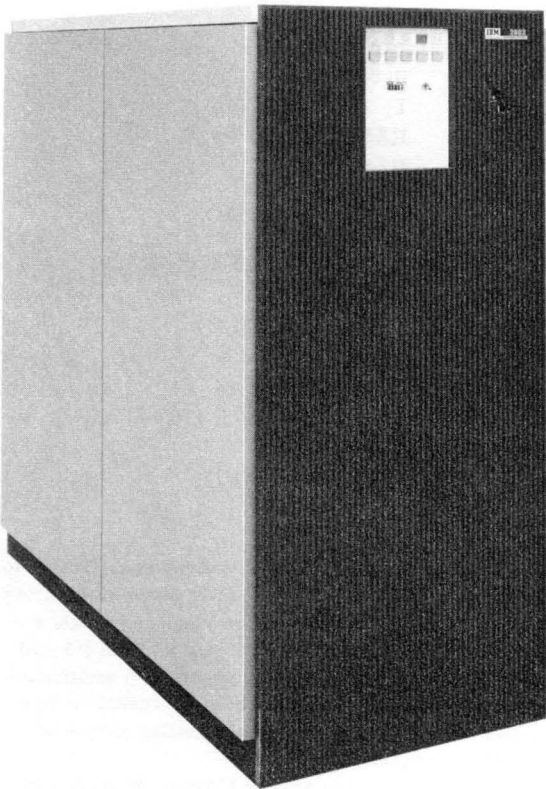
Temperature	60°-90°F (16°-32°C)
Rel Humidity	20-80%
Max Wet Bulb	78°F (26°C)

Environment Nonoperating:

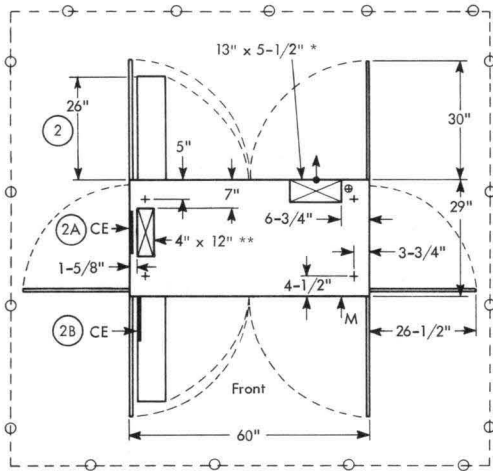
Temperature	50°-110°F (10°-43°C)
Rel Humidity	8-80%
Max Wet Bulb	80°F (27°C)

Notes

\* Power for 2802. Add power for 7340 units attached.

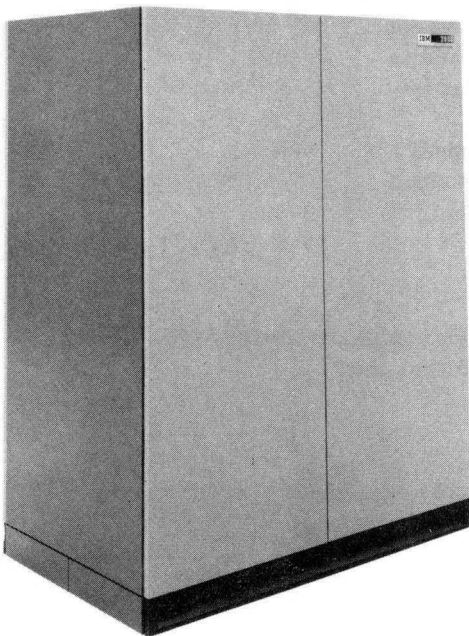


● PLAN VIEW (TEMPLATE X22-6855)



- ② = Model 2 Only
- ②A = Model 2 Serial Numbers 5X,XXX Only
- ②B = All Model 2 Serial Numbers 14,XXX and All Model 1
- \* All Power Cables
- \*\* All Signal Cables for Channel and MTU

Inches	Centimeters	Inches	Centimeters
1-5/8	4	12	31
3-3/4	10	13	33
4	10	20	51
4-1/2	11	26	66
5	13	26-1/2	67
5-1/2	14	29	74
6-3/4	17	30	76
7	18	60	152



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

		Model 1	Model 2
Weight: lb		1,050	1,250
kg		(476)	(567)

Heat Output: BTU/hr		4,500	7,700
kcal		(1.134)	(1.940)

Air Flow: cfm		500	700
(m <sup>3</sup> /m)		(14)	(20)

Power Requirements:

kva	1.7 (Model 1)	2.4 (Model 2)
Phases	3	
Plug	R&S, SC7328	JPS1034H**
Connector	R&S, SC7428	JCS1034H**

Environment Operating:

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

Environment Nonoperating:

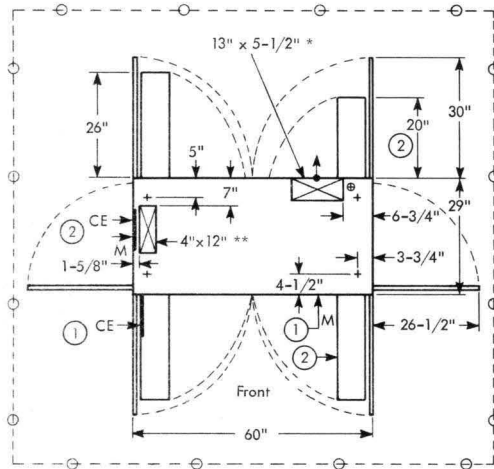
Temperature	50°-110°F (10°-43°C)
Rel Humidity	8-80%
Max Wet Bulb	80°F (27°C)

Notes

- \* When not abutted to another tape unit or tape control unit.
- \*\* 100 amp service required for Model 2 with 2420 Model 7 attachment feature SF #7900.

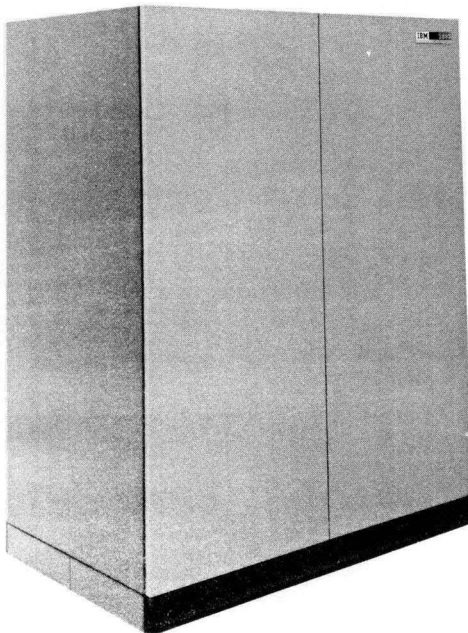
2804 TAPE CONTROL MODELS 1 AND 2

● PLAN VIEW (TEMPLATE X22-6855)



- ① = Model 1 Only
- ② = Model 2 Only
- \* All Power Cables
- \*\* All Signal Cables for Channel and MTU

Inches	Centimeters	Inches	Centimeters
1-5/8	4	12	31
3-3/4	10	13	33
4	10	20	51
4-1/2	11	26	66
5	13	26-1/2	67
5-1/2	14	29	74
6-3/4	17	30	76
7	18	60	152



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

		Model 1	Model 2
Weight:	lb	1,200	1,550
	kg	(544)	(703)

Heat	BTU/hr	6,800	10,500
Output:	kcal	(1.714)	(2.646)

Air	cfm	700	900
Flow:	(m <sup>3</sup> /m)	(20)	(25)

Power Requirements:

kva	2.2 (Model 1)	3.4 (Model 2)
Phases	3	
Plug	R&S, SC7328	
Connector	R&S, SC7428	

Environment Operating:

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

Environment Nonoperating:

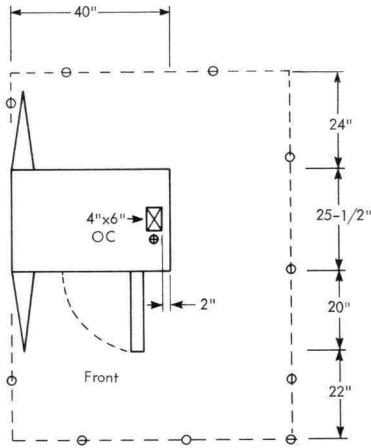
Temperature	50°-110°F (10°-43°C)
Rel Humidity	8-80%
Max Wet Bulb	80°F (27°C)

Notes

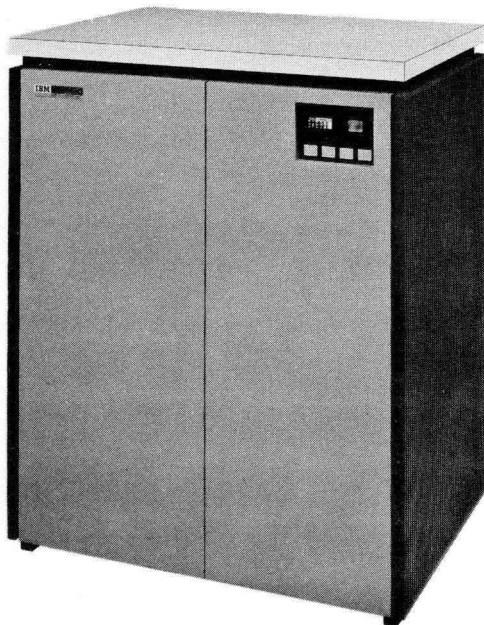
\* When not abutted to another tape unit or tape control unit.

# 2814 SWITCHING UNIT

## PLAN VIEW (TEMPLATE X22-6905)



Inches	Centimeters
2	5
4	10
6	15
20	51
22	56
24	61
25-1/2	65
40	102



## SPECIFICATIONS

### Dimensions

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

### Service Clearances

	F	R	Rt	L
Inches	42	24	30	0
cm	107	61	76	0

Weight: 320 lb (145 kg)

Heat Output: 750 BTU/hr (189 kcal)

Air Flow: 120 cfm (3 m<sup>3</sup>/m)

### Power Requirements:

kva	0.4
Phases	1
Plug	R&S, FS3720
Connector	R&S, FS3913

### Environment Operating:

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

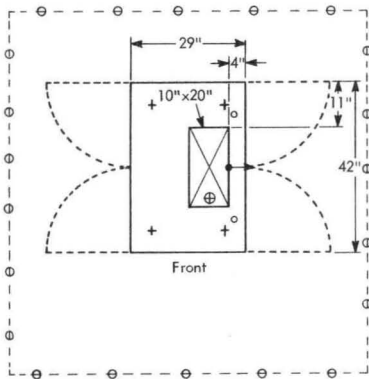
### Environment Nonoperating:

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



2816 SWITCHING UNIT MODELS 1 AND 2

PLAN VIEW (TEMPLATES X22-6835, X22-6855)



Inches	Centimeters
4	10
10	25
11	28
20	51
29	74
42	107

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 (227 kg)

Heat Output: 1,500 BTU/hr (378 kcal)

Air Flow: 280 cfm ( 8 m<sup>3</sup>/m)

Power Requirements:

kva	1.2
Phases	1
Plug	R&S, FS3720
Connector	R&S, FS3913

Environment Operating:

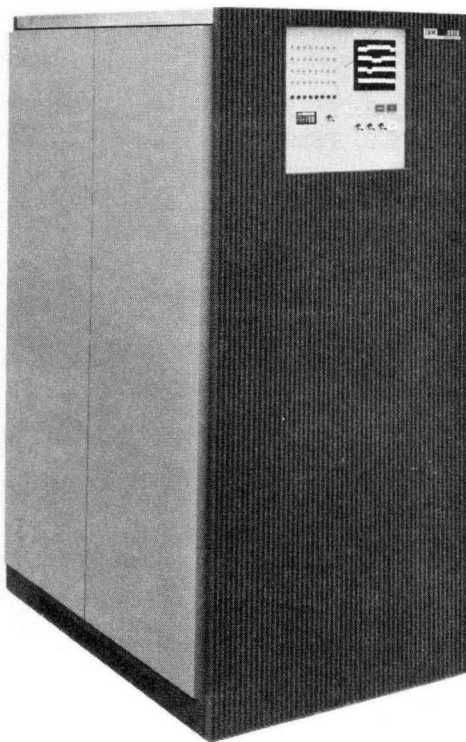
Temperature	60°-90°F (16°-32°C)
Rel Humidity	20-80%
Max Wet Bulb	78°F (26°C)

Environment Nonoperating:

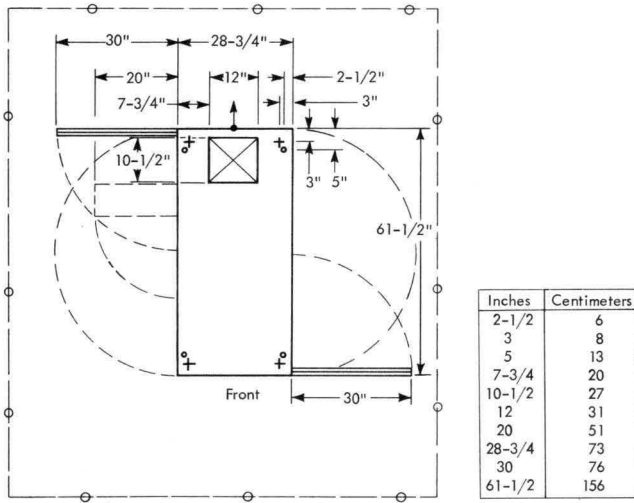
Temperature	50°-110°F (10°-43°C)
Rel Humidity	8-80%
Max Wet Bulb	80°F (27°C)

Notes

Should be visible from and accessible to operator location.



● PLAN VIEW (TEMPLATE X22-6858)



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 (340 kg)

Heat Output: 3,300 BTU/hr (832 kcal)

Air Flow: 550 cfm (16 m<sup>3</sup>/m)

Power Requirements:

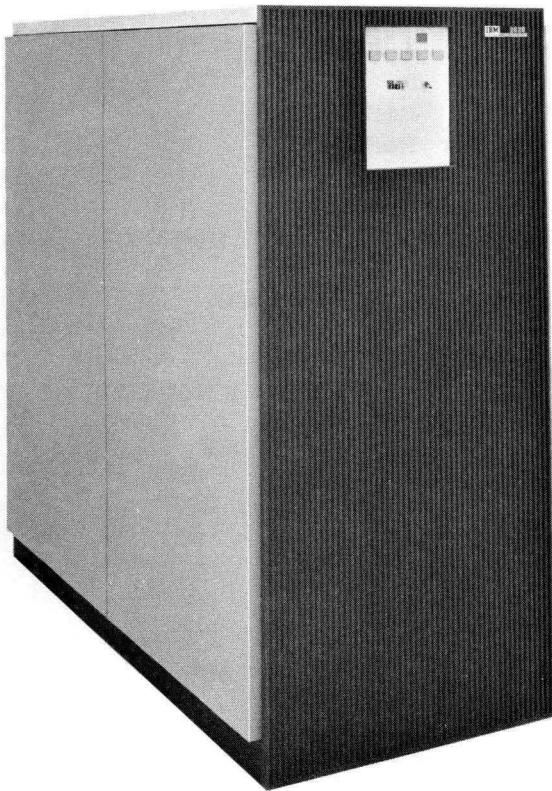
kva	1.25
Phases	3
Plug	R&S, FS3760
Connector	R&S, FS3934

Environment Operating:

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

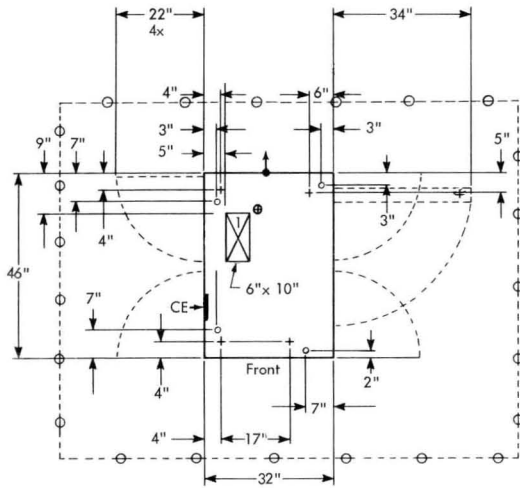
Environment Nonoperating:

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



2821 CONTROL UNIT MODELS 1, 2, AND 4

PLAN VIEW (TEMPLATE X22-6834)



SPECIFICATIONS

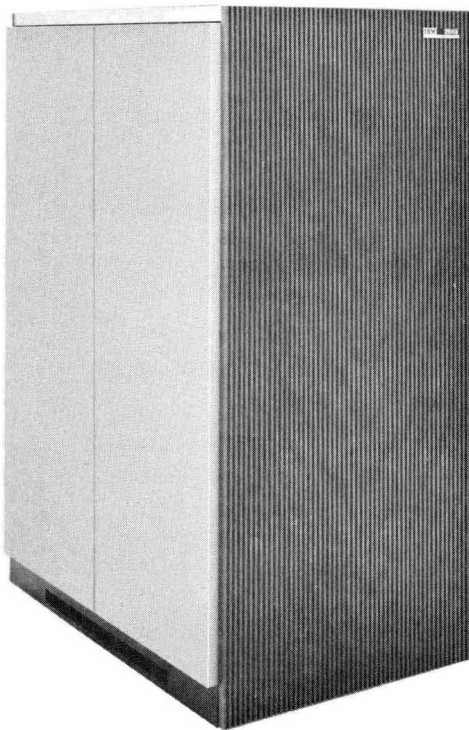
Dimensions

	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

	Mod 1	Mod 2	Mod 4
Weight: lb	1,000	1,000	1,000
kg	(454)	(454)	(454)
Heat Output: BTU/hr	7,500	6,000	8,000
kcal	(1,890)	(1,512)	(2,016)
Air Flow: cfm	500	400	500
(m <sup>3</sup> /m)	(14)	(11)	(14)



Inches	Centimeters
2	5
3	8
4	10
5	13
6	15
7	18
9	23
10	25
17	43
22	56
32	81
34	86
46	117

Power Requirements:

kva	3.2 (M1)	2.4 (M2)	3.3 (M4)
Phases	3		
Plug	R&S, FS3760		
Connector	R&S, FS3934		

Environment Operating:

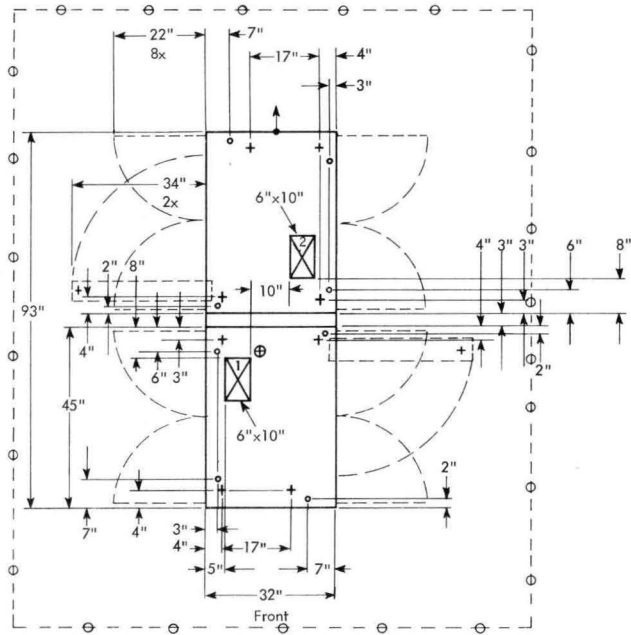
Temperature	60°-90°F (16°-32°C)
Rel Humidity	8-80%
Max Wet Bulb	78°F (26°C)

Environment Nonoperating:

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

2821 CONTROL UNIT MODELS 3 AND 5

PLAN VIEW (TEMPLATE X22-6834)



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

	Mod 3	Mod 5
Weight: lb	2,000	2,000
kg	(907)	(907)
Heat Output: BTU/hr	12,000	14,000
kcal	(3.024)	(3.582)
Air Flow: cfm	900	1,000
(m <sup>3</sup> /m)	(26)	(28)

Power Requirements:

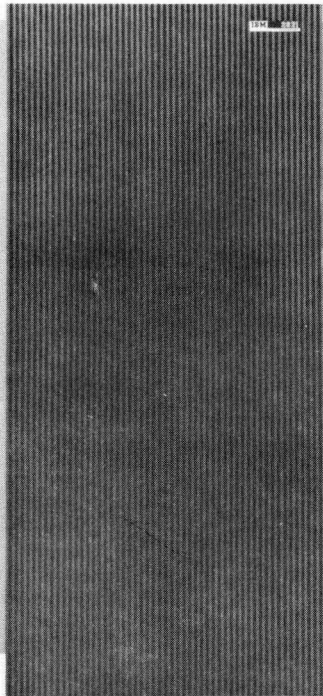
kva	5.1 (M3)	5.9 (M5)
Phases	3	
Plug	R&S, SC7328	
Connector	R&S, SC7428	

Environment Operating:

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

Environment Nonoperating:

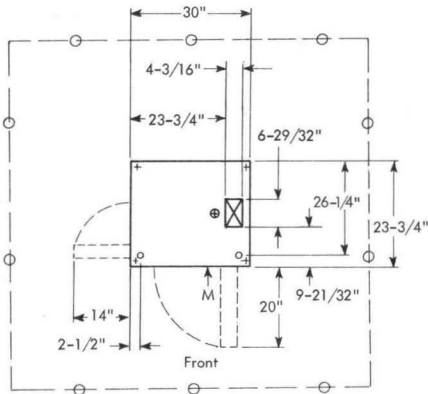
Temperature	50°-110°F (10°-43°C)
Rel Humidity	8-80%
Max Wet Bulb	80°F (27°C)



Inches	Centimeters
2	5
3	8
4	10
5	13
6	15
7	18
8	20
10	25
17	43
22	56
32	81
34	86
45	114
93	236

2822 PAPER TAPE READER CONTROL WITH 2671 PAPER TAPE READER

● PLAN VIEW (TEMPLATE X22-6834)



Inches	Centimeters	Inches	Centimeters
2-1/2	6	20	51
4-3/16	11	23-3/4	60
6-29/32	18	26-1/4	68
9-21/32	25	30	76
14	36		



SPECIFICATIONS

Dimensions

	F	S	H
Inches	30	26-1/4	42
cm	76	67	107

Service Clearances

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

Weight: 495 lb (227 kg)

Heat Output: 2,200 BTU/hr (554 kcal)

Air Flow: 150 cfm (4 m<sup>3</sup>/m)

Power Requirements:

kva	1.05
Phases	1
Plug	R&S, FS3720
Connector	R&S, FS3913

Environment Operating:

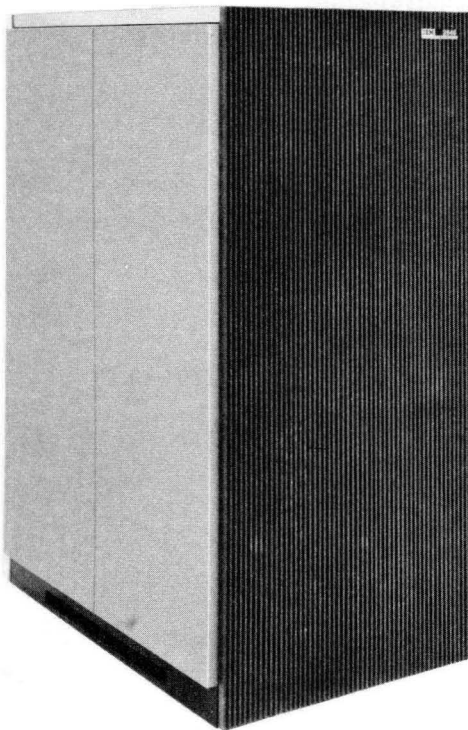
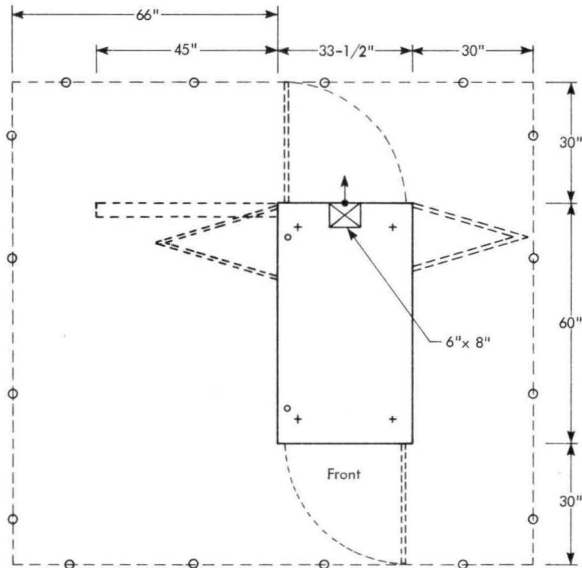
Temperature	60°-90°F (16°-32°C)
Rel Humidity	10-80%
Max Wet Bulb	78°F (26°C)

Environment Nonoperating:

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

2840 DISPLAY CONTROL MODELS 1 AND 2

PLAN VIEW (TEMPLATE X22-6859)



Inches	Centimeters
6	15
8	20
30	76
33-1/2	84
45	114
60	152
66	168

SPECIFICATIONS

Dimensions

	F	S	H
Inches	33-1/2	60	72-1/2
cm	84	152	184

Service Clearances

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

Weight: 800 lb (363 kg)

Heat Output: 6,500 BTU/hr (1.638 kcal)

Air Flow: 800 cfm (23 m<sup>3</sup>/m)

Power Requirements:

kva 2.4  
 Phases 3  
 Plug R&S, FS3760  
 Connector R&S, FS3934

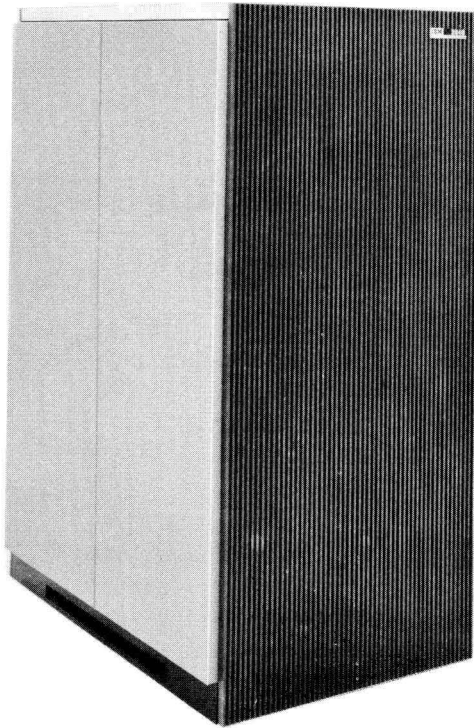
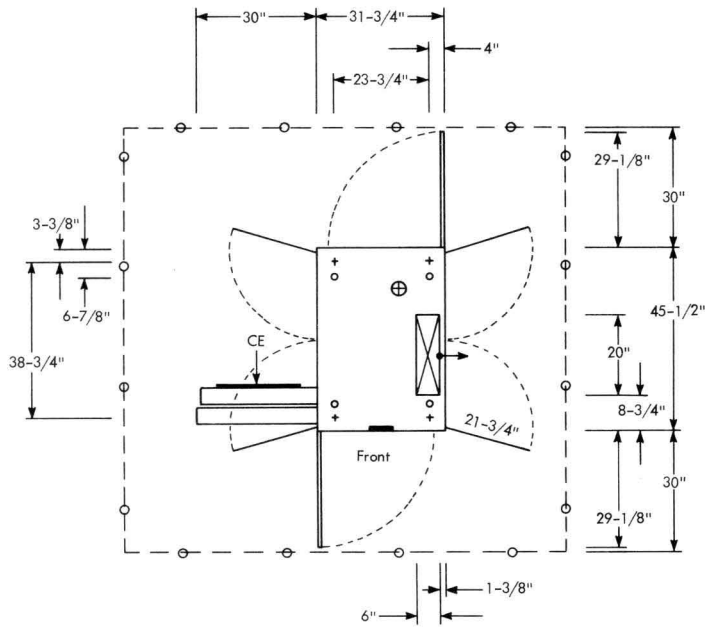
Environment Operating:

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)

PLAN VIEW (TEMPLATE X22-6858)



Inches	Centimeters
1-3/8	4
3-3/8	9
4	10
6	15
6-7/8	18
8-3/4	22
20	51
21-3/4	55
23-3/4	60
29-1/8	74
30	76
31-3/4	81
38-3/4	98
45-1/2	116

SPECIFICATIONS

Dimensions

	F	S	H
Inches	32	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 (340 kg)

Heat Output: 5,500 BTU/hr (1.386 kcal)

Air Flow: 1,000 cfm (28 m<sup>3</sup>/m)

Power Requirements:

- kva 1.9
- Phases 3
- Plug R&S, FS3760
- Connector R&S, FS3934

Environment Operating:

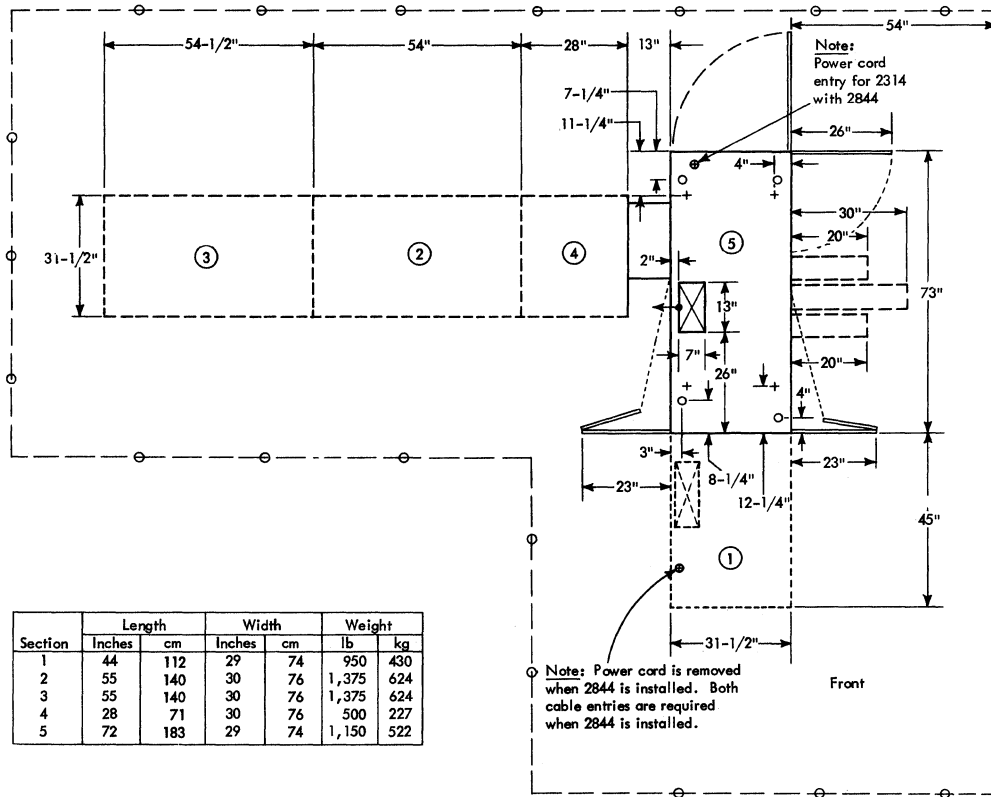
- Temperature 60°-90°F (16°-32°C)
- Rel Humidity 20-80%
- Max Wet Bulb 78°F (26°C)

Environment Nonoperating:

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

2844 AUXILIARY STORAGE CONTROL FOR DIRECT ACCESS STORAGE FACILITY

● PLAN VIEW (TEMPLATE X22-6858)



Section	Length		Width		Weight	
	Inches	cm	Inches	cm	lb	kg
1	44	112	29	74	950	430
2	55	140	30	76	1,375	624
3	55	140	30	76	1,375	624
4	28	71	30	76	500	227
5	72	183	29	74	1,150	522

Inches	Centimeters	Inches	Centimeters
2	5	22	56
3	8	23	58
4	10	26	66
7	18	28	71
7-1/4	18	30	76
8-1/4	21	31-1/2	80
11	28	45	114
11-1/4	29	54	137
12-1/4	31	54-1/2	138
13	33	73	185
20	51		

Air Flow: 3,000 cfm (85 m<sup>3</sup>/m)

SPECIFICATIONS

Dimensions

	F	S	H
Inches	179*	118*	60
cm	455*	300*	152

Service Clearances

	F	R	Rt	L
Inches	36	48	54	24
cm	91	122	137	61

Weight: 1,150 lb (522 kg)

Power Requirements: \*\*

kva	2.14
Phases	3
Plug	R&S, SC7328
Connector	R&S, SC7428

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)

Notes

\*See plan view for data.

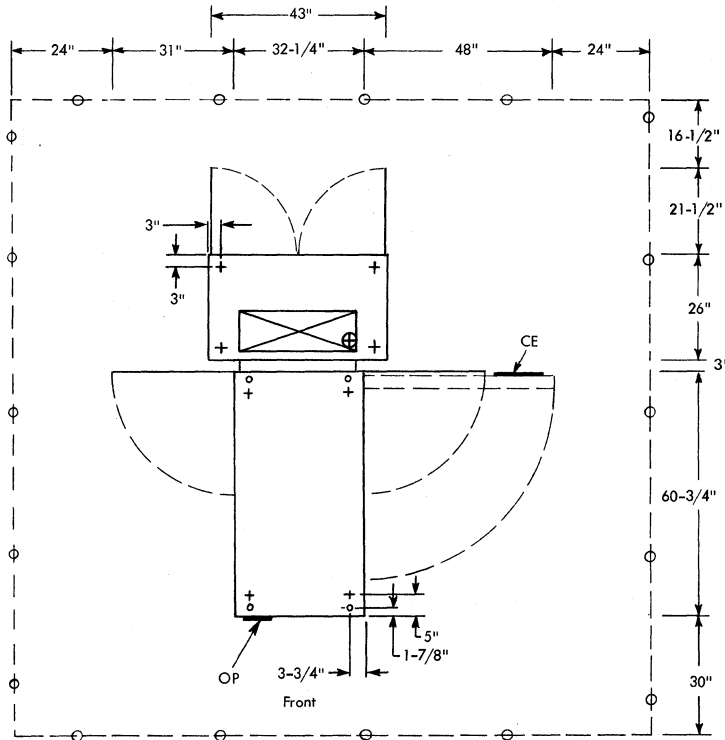
\*\*Add 2314 requirements to obtain total.

| Heat Output: 6,000 BTU/hr (1.512 kcal)\*\*



2846 CHANNEL CONTROLLER

PLAN VIEW (TEMPLATE X22-6905)



Inches	Centimeters
1-7/8	5
3	8
3-3/4	10
5	13
16-1/2	42
21-1/2	55
24	61
26	66
30	76
31	79
32-1/4	82
43	109
48	122
60-3/4	154

SPECIFICATIONS

Dimensions

	F	S	H
Inches	*	*	72-1/2
cm	*	*	184

Service Clearances

	F	R	Rt	L
Inches	30	48	72	55
cm	76	122	183	140

Weight: 2,000 lb (907 kg)

Heat Output: 2,600 BTU/hr (655 kcal)

Air Flow: 900 cfm (26 m<sup>3</sup>/m)

Power Requirements:

kva	0.88
Phases	1
Plug	R&S, FS3720
Connector	R&S, FS3913

Environment Operating:

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

Environment Nonoperating:

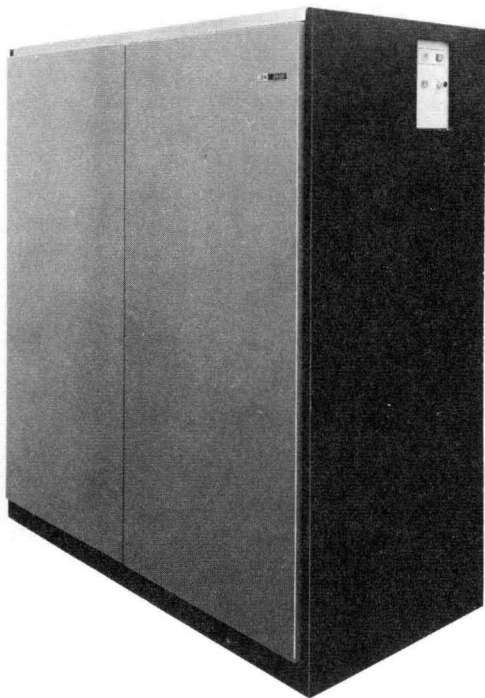
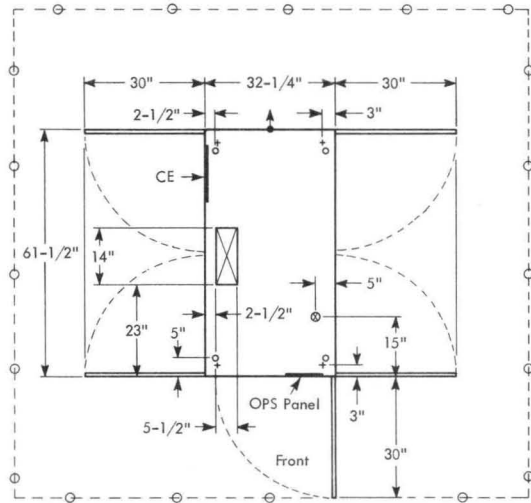
Temperature	50°-110°F (10°-43°C)
Rel Humidity	8-80%
Max Wet Bulb	80°F (27°C)

Notes

\* See plan view for data.

2848 DISPLAY CONTROL

PLAN VIEW (TEMPLATE X22-6859)



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: 1,000 lb (454 kg)

Heat Output: 10,000 BTU/hr (2.520 kcal)

Air Flow: 570 cfm (16 m<sup>3</sup>/m)

Power Requirements:

kva	3.3
Phases	1
Plug	R&S, FS3750
Connector	R&S, FS3933

Environment Operating:\*

Temperature	60°-90°F (16°-32°C)
Rel Humidity	8-80%
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)

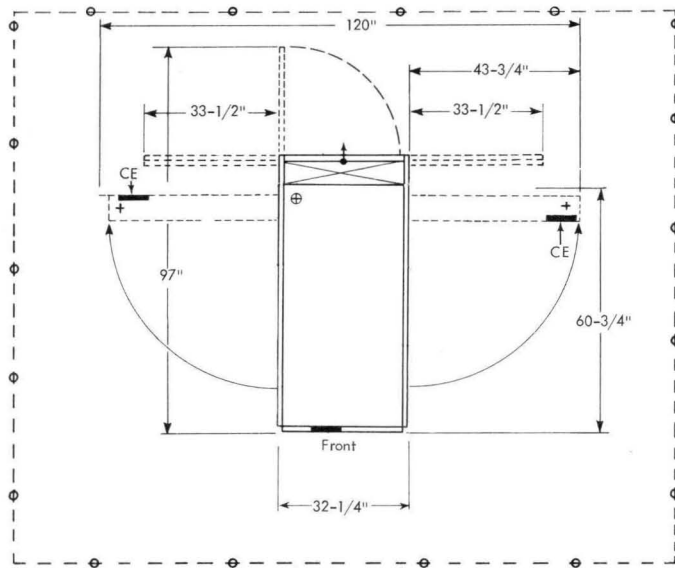
Notes

\* These conditions must exist and power must be on for at least two hours before operation.

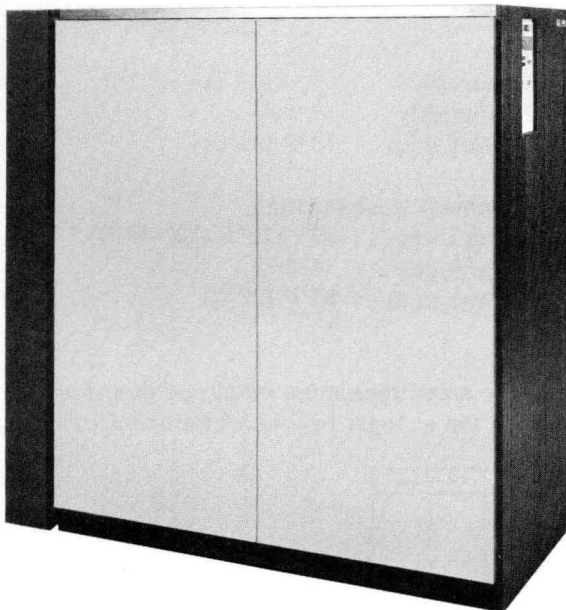
Inches	Centimeters
2-1/2	6
3	8
5	13
5-1/2	14
14	36
15	38
23	58
30	76
32-1/4	82
61-1/2	156

2860 SELECTOR CHANNEL MODELS 1, 2, AND 3

PLAN VIEW (TEMPLATES X22-6856, X22-6905, X22-6923, AND X22-6924)



Inches	Centimeters
32-1/4	82
33-1/2	85
43-3/4	111
60-3/4	154
97	246
120	305



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:	Mod 1	Mod 2	Mod 3
lb	1,150	1,450	1,750
kg	(522)	(658)	(794)

Heat Output:	BTU/hr	kcal
	8,200	(2.066)
	10,000	(2.520)
	11,600	(2.923)

Air Flow:	cfm	(m <sup>3</sup> /m)
	420	(12)
	740	(21)
	1,060	(30)

Power Requirements:

kva	1.6 (M1)	1.7 (M2)	1.8 (M3)
Phases	3		
Plug	R&S, FS3730		
Connector	R&S, FS3914		

Environment Operating:

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

Environment Nonoperating:

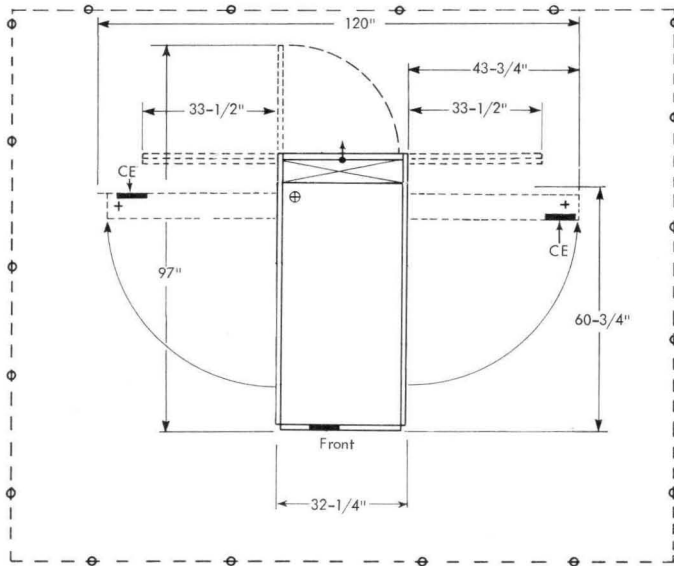
Temperature	50°-110°F (10°-43°C)
Rel Humidity	20-80%
Max Wet Bulb	80°F (27°C)

Notes

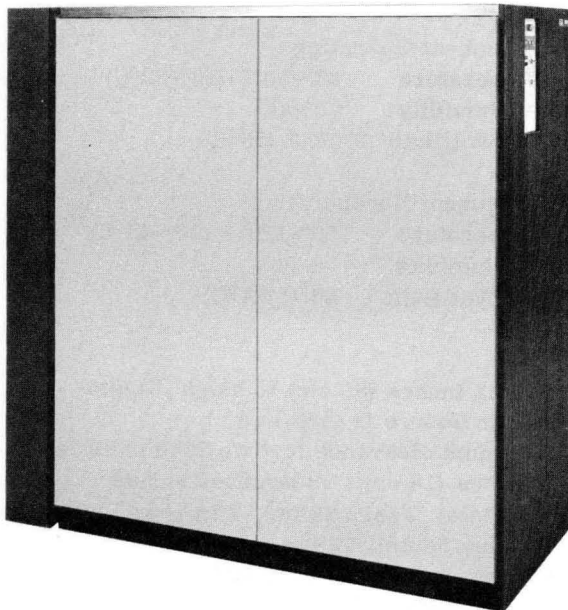
\*Dimensions can be reduced to 29-1/2 inches (75 cm) by 60 inches (152 cm).

2870 MULTIPLEXER CHANNEL

PLAN VIEW (TEMPLATES X22-6856, X22-6905, X22-6923, AND X22-6924)



Inches	Centimeters
32-1/4	82
33-1/2	85
43-3/4	111
60-3/4	154
97	246
120	305



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 (658 kg)

Heat Output: 11,600 BTU/hr (2.923 kcal)

Air Flow: 1,060 cfm (30 m<sup>3</sup>/m)

Power Requirements:

kva	4.25
Phases	3
Plug	R&S, FS3760
Connector	R&S, FS3934

Environment Operating:

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

Environment Nonoperating:

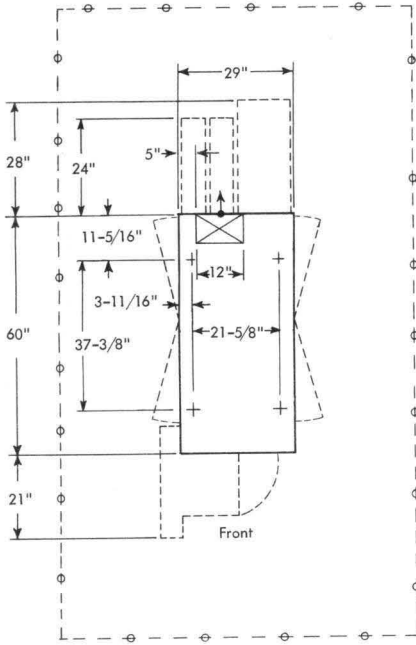
Temperature	50°-110°F (10°-43°C)
Rel Humidity	20-80%
Max Wet Bulb	80°F (27°C)

Notes

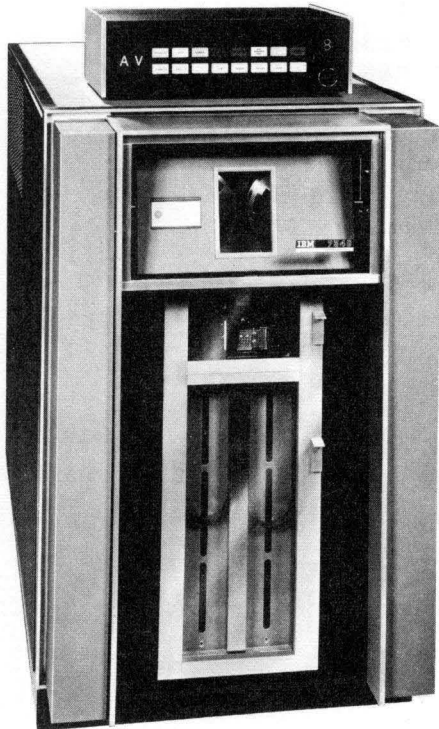
\*Dimensions can be reduced to 29-1/2 inches (75 cm) by 60 inches (152 cm).

7340 HYPERTAPE DRIVE MODEL 3

● PLAN VIEW (TEMPLATE X22-6835)



Inches	Centimeters
3	8
3-11/16	9
5	13
11-5/16	29
12	31
21	53
21-5/8	55
24	61
28	71
29	74
37-3/8	95
60	152



SPECIFICATIONS

Dimensions

	F	S	H
Inches	29	60	48*
cm	74	152	122*

Service Clearances

	F	R	Rt	L
Inches	46	52	**	**
cm	117	132	**	**

Weight: 1,500 lb† (680 kg)‡

Heat Output: 12,000 BTU/hr (3.024 kcal)

Air Flow: 700 cfm (20 m<sup>3</sup>/m)

Power Requirements:

kva 4.0 ‡

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)

Notes

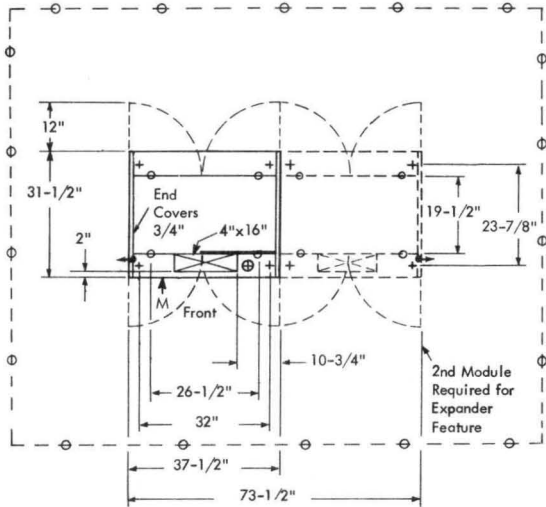
- \* Add 22 inches (56 cm) to height if auto-loader feature is installed.
- \*\* Minimum clearance for two 7340 units is 7 inches (18 cm); clearances should alternate: 7 in., 22 in., 7 in., and 22 in. (18 cm, 56 cm, 18 cm, and 56 cm). Clearance between 7340 and any other unit or structure is 30 inches (76 cm).

† Add 250 pounds (113 kg) to weight if auto-loader feature is installed.

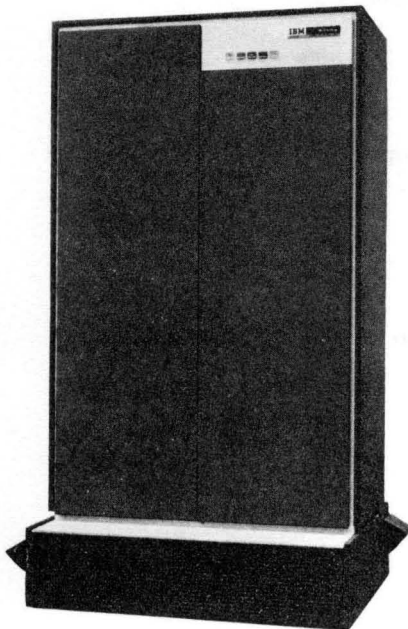
‡ Powered from control unit.

7770 AUDIO RESPONSE UNIT MODEL 3

PLAN VIEW (TEMPLATE X22-6857)



Inches	Centimeters	Inches	Centimeters
3/4	2	23-7/8	61
2	5	26-1/2	67
4	10	31-1/2	80
10-3/4	27	32	81
12	31	37-1/2	95
16	41	73-1/2	187
19-1/2	50		



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: To 16 Lines 600 lb (272 kg) To 48 Lines 1,200 lb (544 kg)

Heat Output: 4,800 BTU/hr (1.210 kcal) 7,200 BTU/hr (1.814 kcal)

Air Flow: 400 cfm (11 m<sup>3</sup>/m) 800 cfm (23 m<sup>3</sup>/m)

Power Requirements:

kva 1.6 (16) 2.4 (48)  
 Phases 1  
 Plug R&S, FS3720  
 Connector R&S, FS3913

Environment Operating:

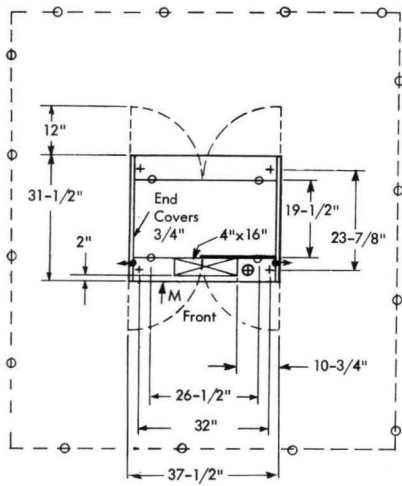
Temperature 60°-90°F (16°-32°C)  
 Rel Humidity 8-80%  
 Max Wet Bulb 78°F (26°C)

Notes

\*73-1/2 inches (187 cm) with expander feature.

7772 AUDIO RESPONSE UNIT

● PLAN VIEW (TEMPLATE X22-6857)



Inches	Centimeters
3/4	2
2	5
4	10
10-3/4	27
12	31
16	41
19-1/2	50
23-7/8	61
26-1/2	67
31-1/2	80
32	81
37-1/2	95

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: 600 lb (272 kg)

Heat Output: 5,100 BTU/hr (1.285 kcal)

Air Flow: 1,800 cfm (51 m<sup>3</sup>/m)

Power Requirements:

kva 2.0  
 Phases 1  
 Plug R&S, FS3720  
 Connector R&S, FS3913

Environment Operating:

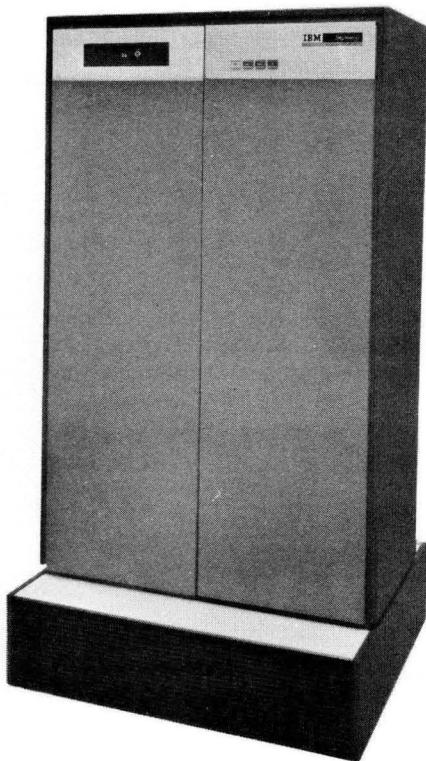
Temperature 60°-90°F (16°-32°C)  
 Rel Humidity 8-80%  
 Max Wet Bulb 78°F (26°C)

Environment Nonoperating:

Temperature 50°-110°F (10°-43°C)  
 Rel Humidity 0-90%  
 Max Wet Bulb 80°F (27°C)

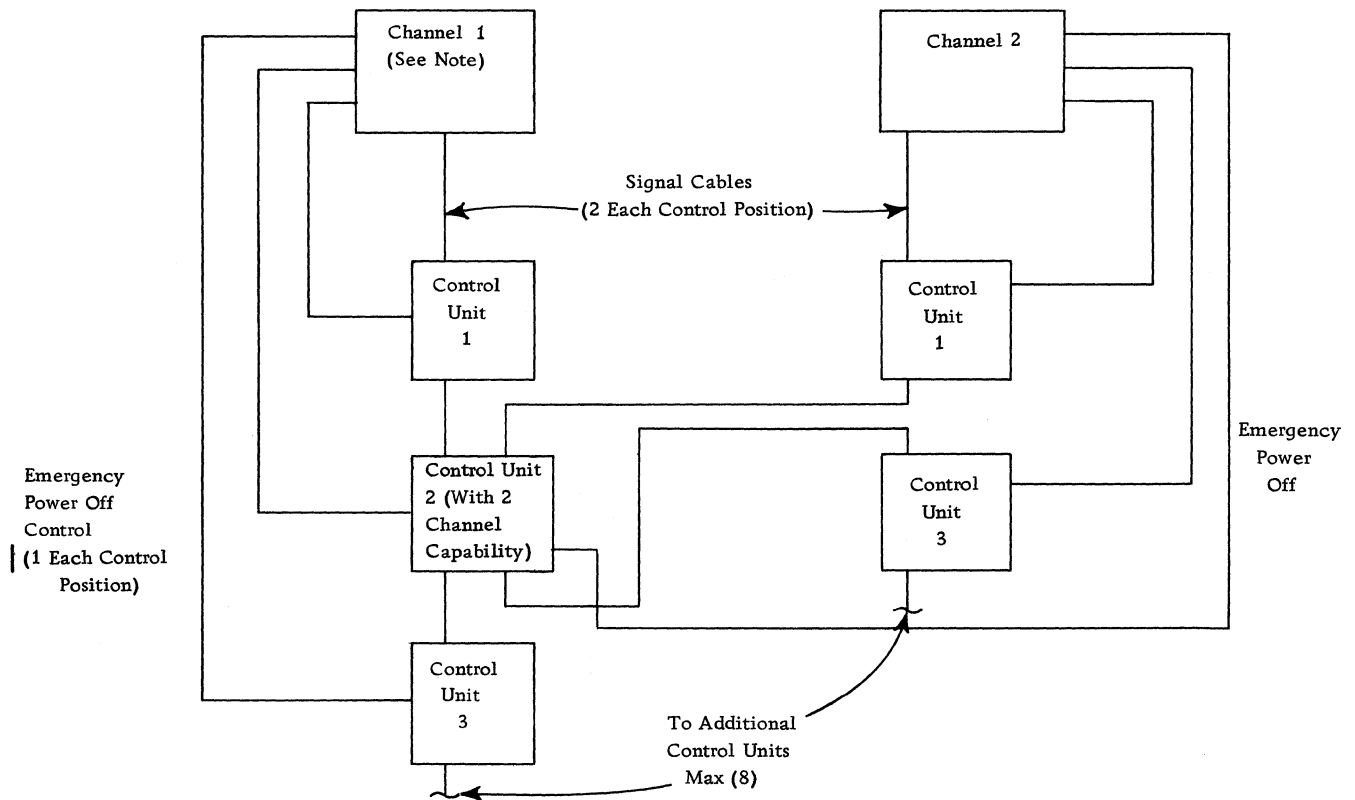
Notes

\* Unless abutted to another similar module.



CONTROL-TO-CHANNEL CABLING

Generally the cable available to connect up to eight control units to a channel is limited to 200 feet (100 feet for System/360 Models 25 and 30). Exceptions to this are noted on the cabling schematics for the individual control units. All control units are connected to the channels serially. All channels exceeding 100 feet must be reviewed and approved by the Installation Planning representative.



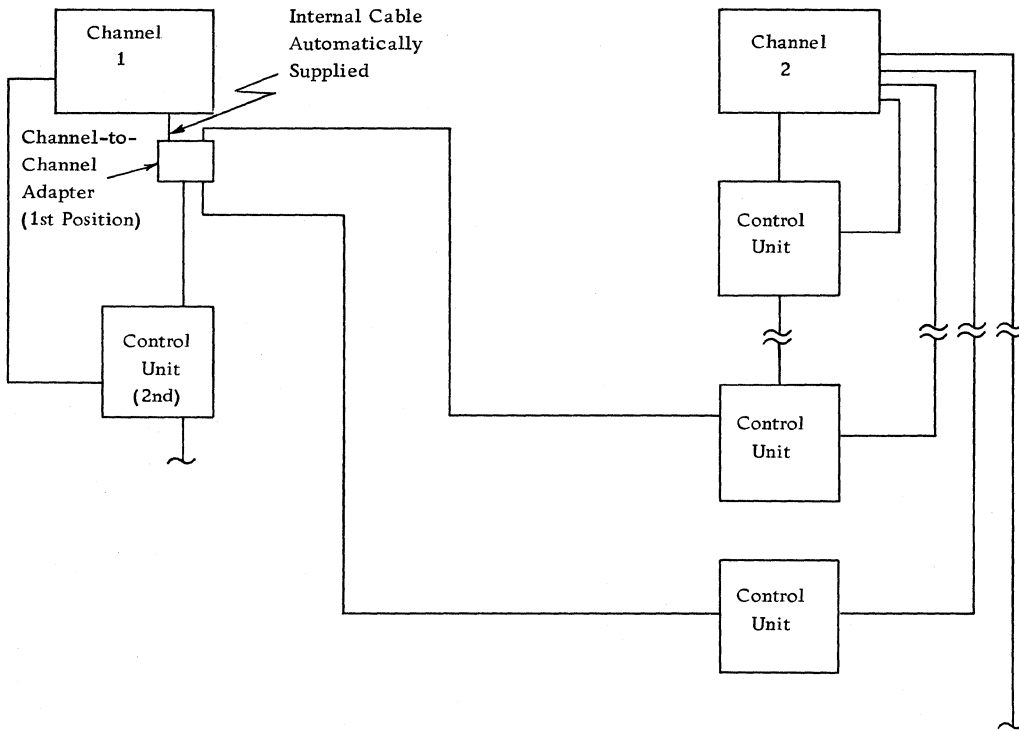
NOTE:

The channel may be a separate unit (2860) or integral to the system processing unit. Cables for multiplexer channels require different identification than does the selector channel.



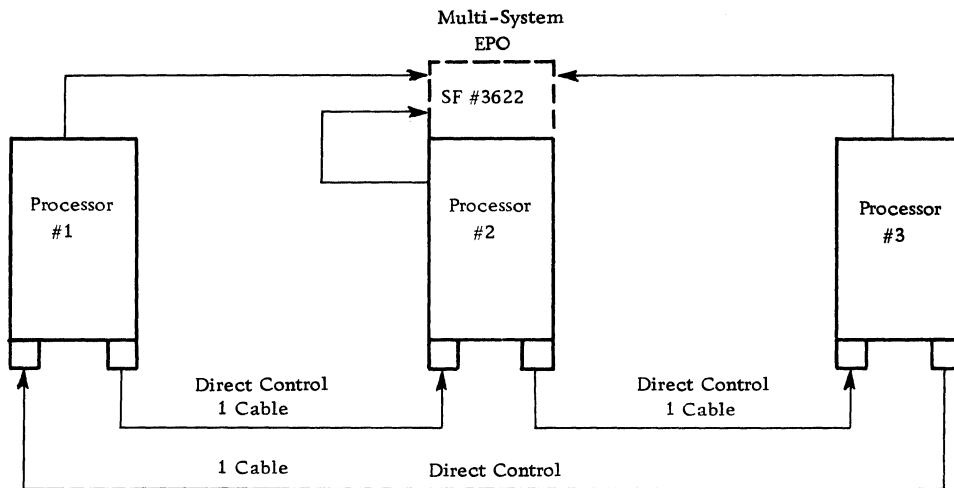
# CHANNEL-TO-CHANNEL ADAPTER CABLING METHOD

The Channel-to-Channel Adapter (SF #1850) is considered as though it were a control unit on each of the channels involved. The adapter requires external cables to a control unit or channel of the second system. The adapter is always the first control device on the channel to which it is assigned.

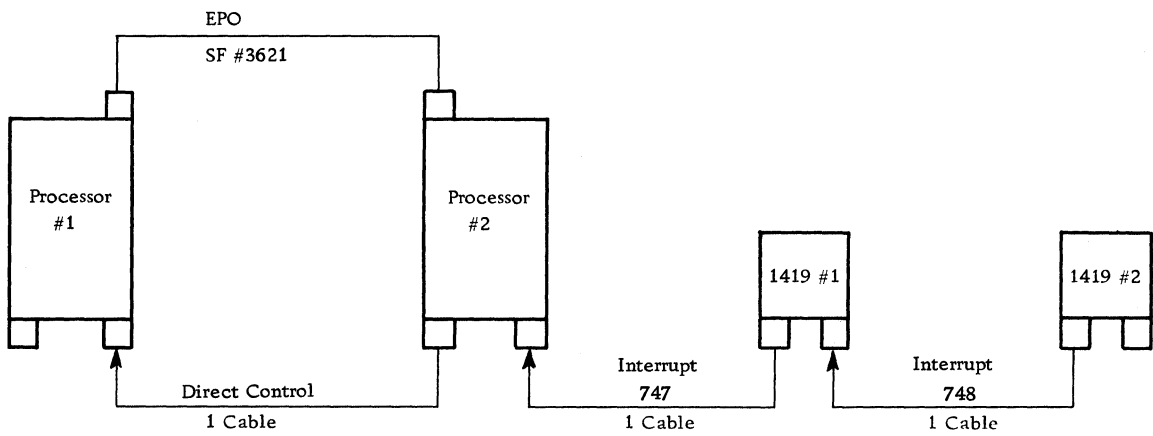


# DIRECT CONTROL CABLING SCHEMATIC

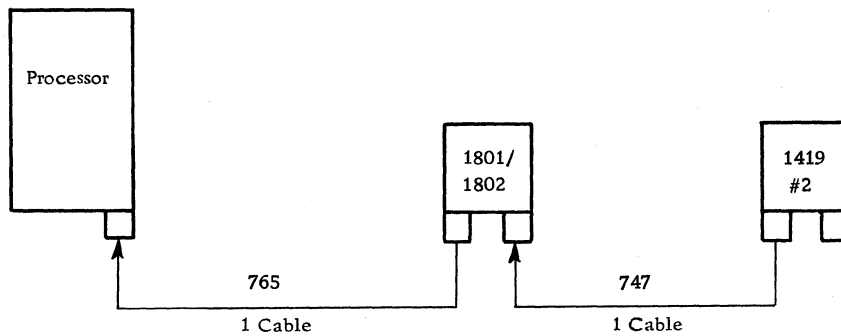
## Multiple Processors



## Two Processors with External Devices

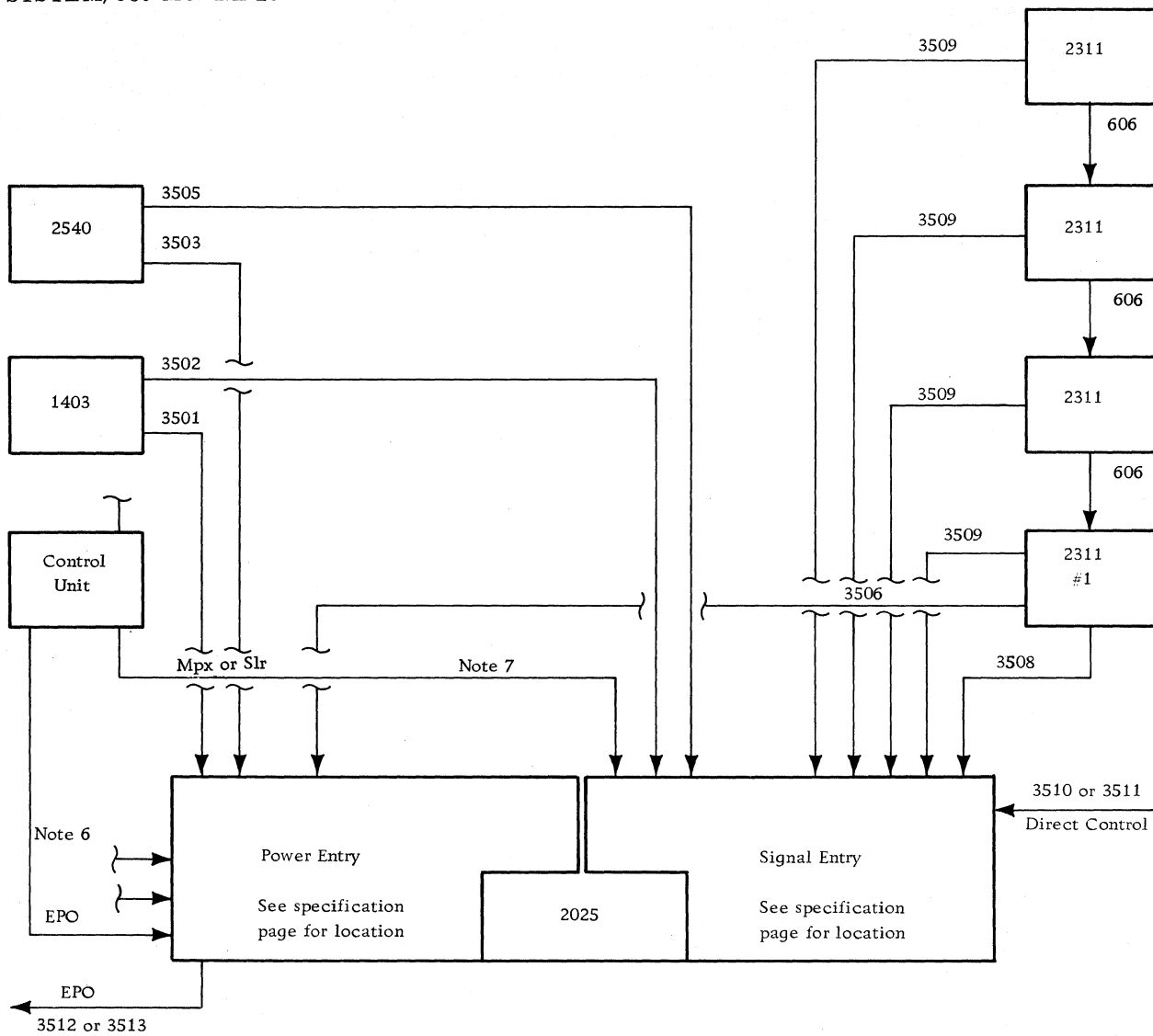


## External Interrupt



- NOTES: 1. Cabling shown above is in addition to basic channel requirements.  
 2. Processor may be System/360 or 1801/1802.

SYSTEM/360 MODEL 25 CABLING SCHEMATIC

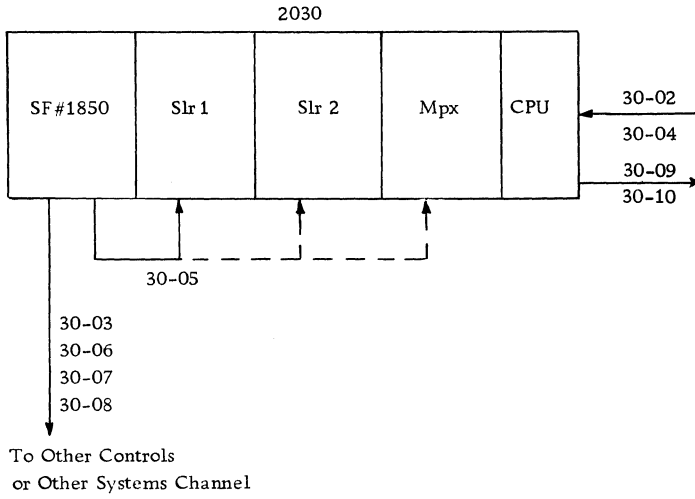


Group No.	No. Cables	From	2025 Cable Entry	To	Max Length (Feet)	Remarks
3501	1	1403	Power	2025	25	Power Cable
3502	2	1403	Signal	2025	25	
3503	1	2540	Power	2025	25	Power Cable
3505	1	2540	Signal	2025	25	
3506	1	2311 #1	Power	2025	Note 1	Power Cable
3508	1	2311 #1	Signal	2025	50	
3509	1	2311	Signal	2025	50	
3510	2	Direct Control	Signal	2025	50	Note 2
3511	1	360 Processor	Signal	2025	100	Note 3
3512	1	2025	Power	360 Processor	100	Note 4
3513	1	2025	Power	360 Processor	100	Note 5

NOTES:

1. Total length of 3506 and 606(s) should not exceed 100 feet.
2. For SF #3274 from non-IBM device.
3. For SF #3274 to S/360 processor. Order one per feature.
4. For SF #3621, two-system EPO.
5. For SF #3622, multi-system EPO.
6. See appropriate control unit for EPO cable group numbers.
7. Channel I/O interface cable to connect as many as eight control units limited to 100 feet. See appropriate control unit for selector or multiplexer cable group numbers.

SYSTEM/360 MODEL 30 CABLING SCHEMATIC

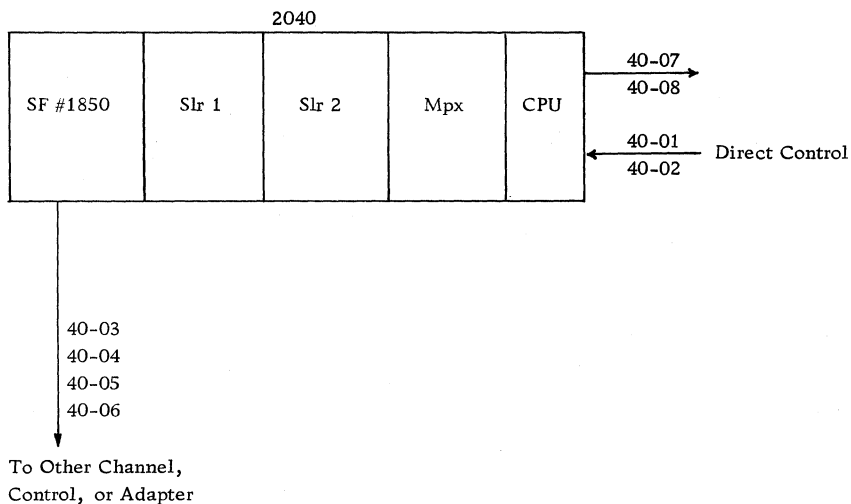


Group No.	No. of Cables	From	To	Max Length (ft)	Notes
30-02	2	Direct Control	2030	50	4
30-03	2	2030	Control		1
30-04	1	Process	2030	100	2
30-05	2	2030	2030	Fixed	3
30-06	2	2030	Slr Ch		1
30-07	2	2030	Mpx Ch		1
30-08	2	2030	Ch-Ch Adapter		1
30-09	1	2030	360 Processor	100	5
30-10	1	2030	360 Processor	100	6

NOTES:

1. From channel-to-channel adapter (SF#1850), maximum 100 feet for up to seven additional controls.
2. For the interconnection of two 360 Processors (SF #3274). Order one per feature.
3. Channel-to-channel adapter (SF #1850)to channel within same unit (maximum of one required).
4. For SF #3274 from non-IBM device.
5. Two system EPO, SF #3621.
6. To multi-system EPO, SF #3622.

# SYSTEM/360 MODEL 40 CABLING SCHEMATIC

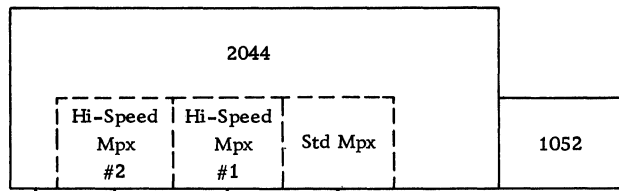


Group No.	No. of Cables	From	To	Max Length (ft)	Notes
40-01	2	Direct Control	2040	50	3
40-02	1	Processor	2040	100	2
40-03	2	2040	Control		1
40-04	2	2040	Slr Ch		1
40-05	2	2040	Mpx Ch		1
40-06	2	2040	Ch-Ch Adapter		1
40-07	1	2040	360 Processor	100	5
40-08	1	2040	360 Processor	100	4

## NOTES:

1. From channel-to-channel adapter (SF #1850), maximum 200 feet (unless modified by general cabling schematic) for up to seven additional control units.
2. For the interconnection of two 360 Processors (SF #3274), Order one per feature.
3. For SF #3274 from non-IBM device.
4. To SF #3621 two-processor EPO connection.
5. To SF #3622 multi-processor EPO connection.

SYSTEM/360 MODEL 44 CABLING SCHEMATIC



Up to eight control units per channel; 200 feet (unless modified by general cabling schematic) maximum cable length per channel

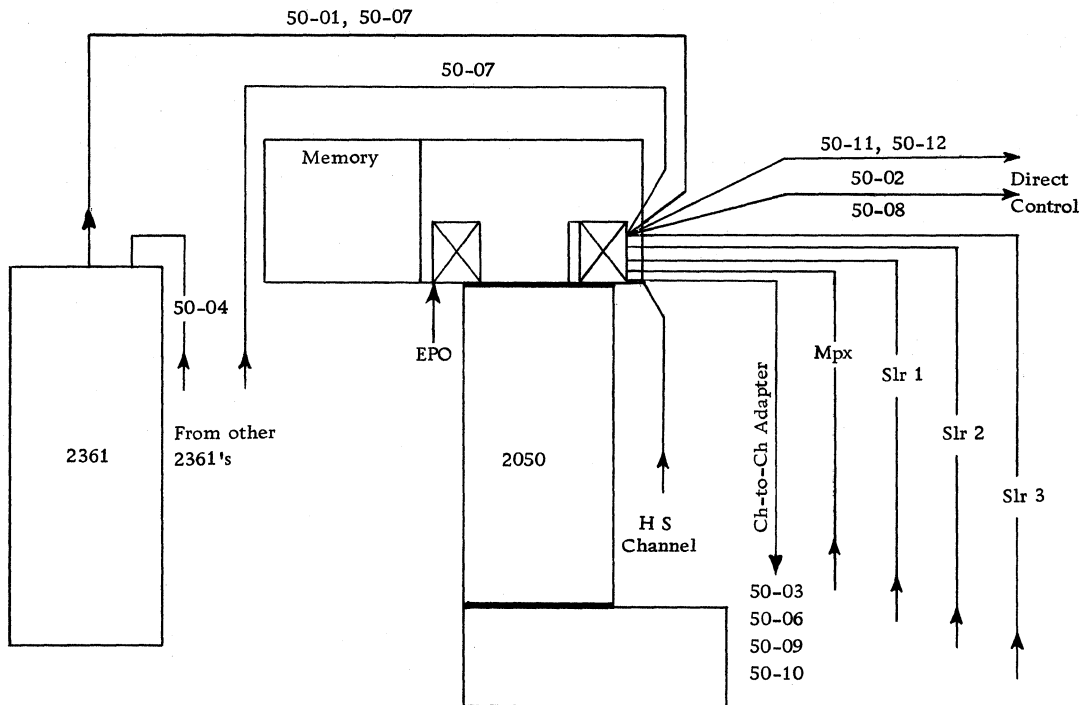
44-01, 44-02, 44-03, 44-04,  
44-05, 44-06, 44-07, 44-08

Group No.	No. of Cables	From	To	Maximum Length (ft)	Notes
44-01	1	Non IBM	2044	50	1
44-02	1	IBM	2044	50	1
44-03	5	2044	2044		4
44-04	3	Non IBM	2044	100	3
44-05	4	Non IBM	2044	100	2
44-06	5	Non IBM	2044		4
44-07	1	2044	360 Processor	100	5
44-08	1	2044	360 Processor	100	6

NOTES:

1. For external interrupt (SF #3895).
2. For direct data (SF #3275).
3. For priority interrupt (SF #5625).
4. For direct word (SF #3288).
5. For two-system EPO (SF #3621).
6. For multi-system EPO (SF #3622).

# SYSTEM/360 MODEL 50 CABLING SCHEMATIC

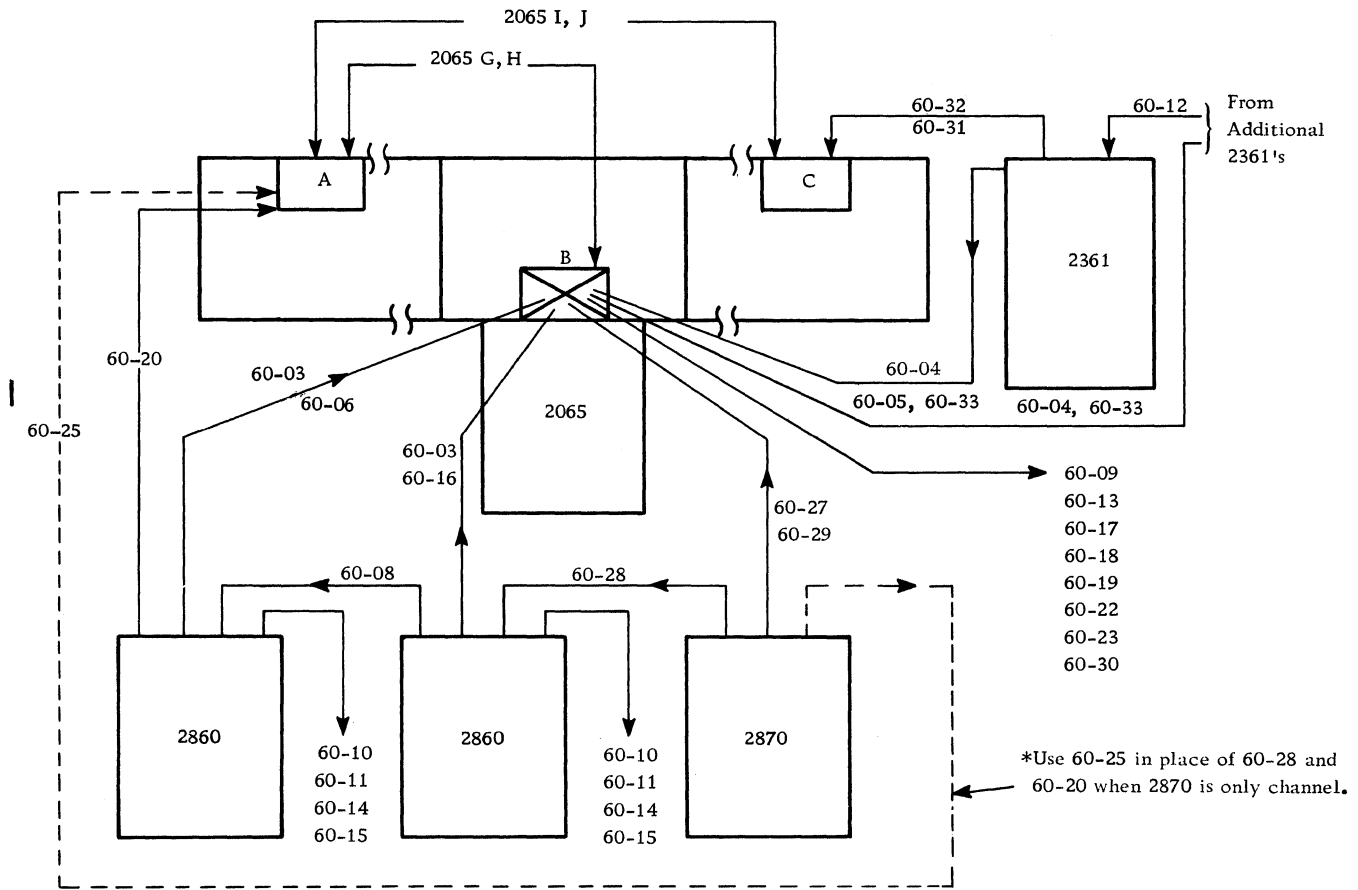


Group No.	No. of Cables	From	To	Max Length(ft)	Notes
50-01	7	2361	2050	20	5
50-02	2	Direct Control	2050	50	4
50-03	2	2050	Control		1
50-04	7	2361	2361		5
50-06	2	2050	Slr Ch		1
50-07	2	2361	2050		2,5
50-08	1	360 Processor	2050	100	3
50-09	2	2050	Mpx Ch		1
50-10	2	2050	Ch-Ch Adapter		1
50-11	1	2050	Processor	100	6
50-12	1	2050	Processor	100	7

## NOTES:

1. For channel-to-channel adapter (SF #1850), 200 feet (unless modified by general cabling schematic) of cable for up to seven additional control units.
2. One per 2361.
3. To other 360 Processor (SF #3274). Order one per feature.
4. For SF #3274 from non-IBM device.
5. The sum of groups 50-07 and (50-01 + 50-04) should not exceed 150 feet for any 2361.
6. To SF #3621 two-processor EPO connection.
7. To SF #3622 multi-processor EPO connection.

SYSTEM/360 MODEL 65 CABLING SCHEMATIC



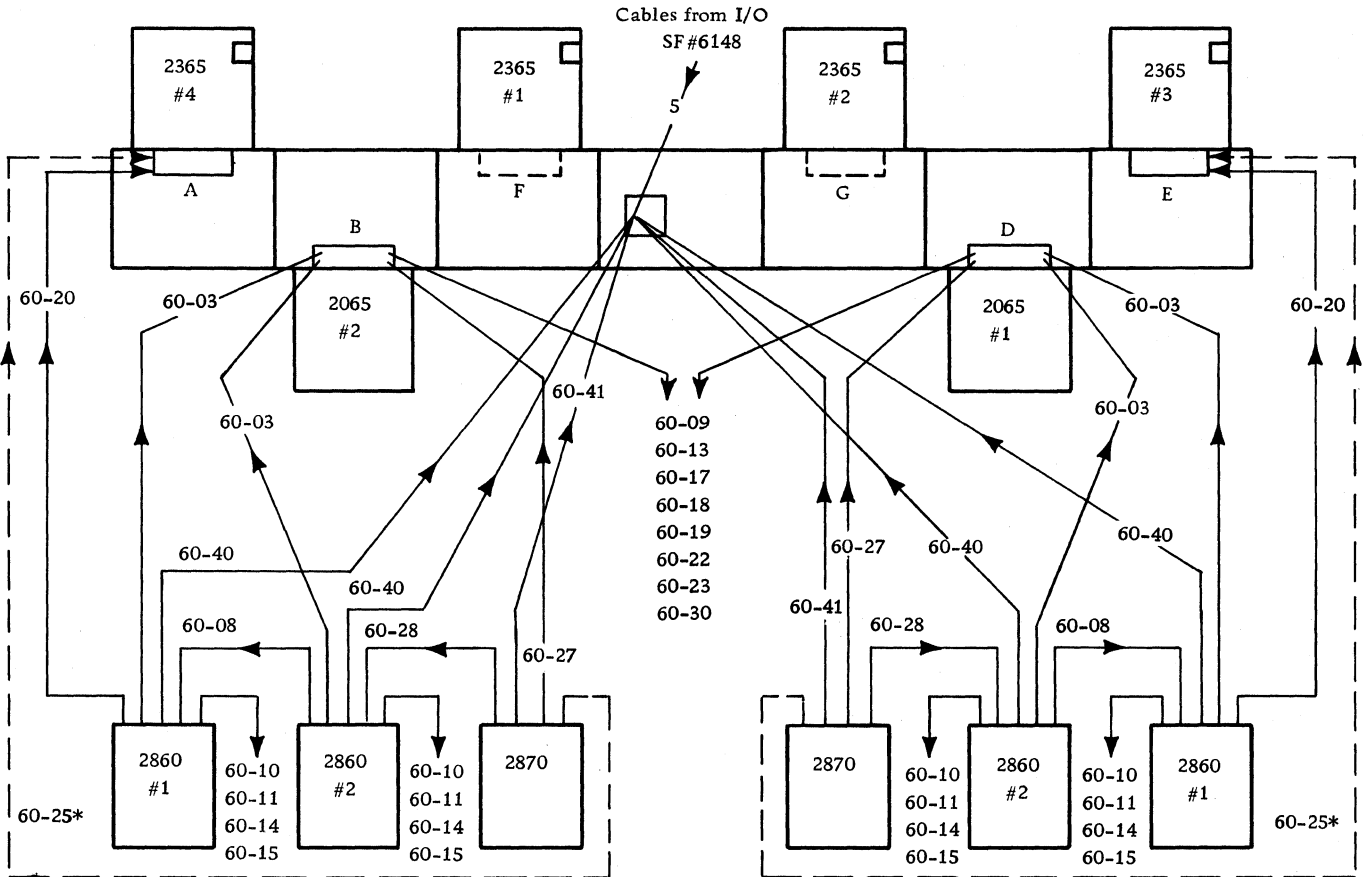
Group No.	No. of Cables	From	To	Max Length (ft)	Notes	Group No.	No. of Cables	From	To	Max Length (ft)	Notes
60-03	1	2860	2065	50	2	60-18	2	SF #7920	Control	10	
60-04	1	2361	2065	50	4	60-19	2	SF #7920	Ch-Ch Adapter	10	
60-05	12	2361 #1	2065 G, H	20	3,7	60-20	13	2860	2065 (A)	25	3,5
60-06	1	2860 #1	2065	40	6	60-22	1	2065	Processor	100	11
60-08	13	2860	2860 #1	20	3,5	60-23	1	2065	Processor	100	13
60-09	2	Direct Control	2065	50	12	60-25	13	2870	2065 (A)	25	
60-10	2	2860 (SF #1850)	Control		1,10	60-27	1	2870	2065		14
60-11	2	2860 (SF #1850)	Ch (SF #1850)		9,10	60-28	13	2870	2860	20	
60-12	11	2361	2361	20	3	60-29	1	2870	2065	65	6
60-13	1	Direct Control	2065	100	8	60-30	2	SF #7920	Mpx Ch		10
60-14	2	2860 (SF #1850)	Mpx Ch		1,10	60-31	1	2361	2065 I, J		4
60-15	2	2860 (SF #1850)	Slr Ch		1,10	60-32	12	2361 #1	2065 I, J	20	
60-16	1	2860 #2	2065		6	60-33	1	2361	2065		4
60-17	2	SF #7920	Slr		10						

NOTES:

1. Channel-to-channel adapter (SF #1850).
2. One per channel.
3. The sum of 60-20 + 60-05 (or 60-32) + 60-08 + 60-12(s) must not exceed 140 feet for Mod G, H, I; 120 feet for Mod J.
4. One per 2361.
5. At no time may the sum of (60-20 + 60-08) and/or 60-28 exceed 65 feet.
6. Control and EPO.
7. When 2nd 2365 is absent, route cable to cable entry "B."
8. For the interconnection of two 360 Processors (SF #3274). Order one per feature.
9. For the interconnection of two channel-to-channel adapter features (SF #1850).
10. Total length of 200 feet (unless modified by general cabling schematic) available for eight control units.
11. To SF #3621 two system EPO.
12. For SF #3274 to non-IBM devices.
13. To SF #3622 multi-system EPO.
14. Max "x" 25 feet for 2870 alone  
45 feet for 2870 + 2860  
65 feet for 2870 + 2-2860.



SYSTEM/360 MODEL 65 MULTIPROCESSING CABLING SCHEMATIC

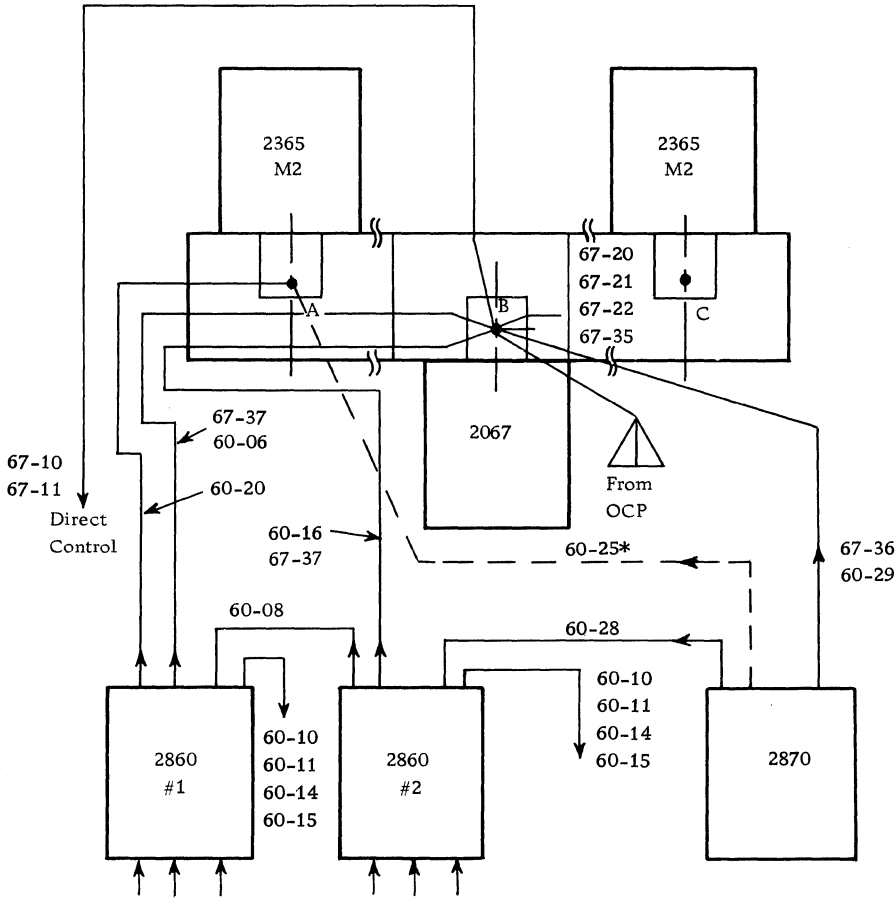


Group No.	No. of Cables	From	To	Max Length (ft)	Notes	Group No.	No. of Cables	From	To	Max Length (ft)	Notes
60-03	1	2860 #1/#2	2065	50	2	60-19	2	SF #7920	Ch-Ch Adapter	9	
60-06	1	2860 #1	2065	40	6	60-20	13	2860	2065 #1/#2	25	3, 4, 5
60-08	13	2860	2860 #1	20	5	60-22	1	2065	Processor	100	10
60-09	2	Direct Control	2065	50	11	60-23	1	2065	Processor	100	12
60-10	2	2860 (SF #1850)	Control		1, 9	60-25	13	2870	2065 #1/#2	25	
60-11	2	2860 (SF #1850)	Ch (SF #1850)		8, 9	60-27	1	2870	2065		13
60-13	1	Direct Control	2065	100	7	60-28	13	2870	2860	20	
60-14	2	2860 (SF #1850)	Mpx Ch		1, 9	60-29	1	2870	2065	65	6
60-15	2	2860 (SF #1850)	Slr Ch		1, 9	60-30	2	SF #7920	Mpx Ch		9
60-16	1	2860 #2			6	60-40	1	2860	2065		6
60-17	2	SF #7920	Slr		9	60-41	1	2870	2065		6
60-18	2	SF #7920	Control		9						

NOTES

1. Channel-to-channel adapter (SF #1850).
2. One per channel.
3. When 2365 #4 is absent, route the cables to entry F instead of A.
4. When 2365 #3 is absent, route the cables to cable entry G instead of E.
5. At no time may the sum of (60-20 + 60-08) and/or 60-28 exceed 65 feet.
6. Control and EPO.
7. For the interconnection of two 360 Processors (SF #3274). Order one per feature.
8. For the interconnection of two channel-to-channel adapter features (SF #1850).
9. Total length of 100 feet available for eight controls.
10. To SF #3621 two-system EPO.
11. For SF #3274 to non-IBM devices.
12. To SF #3622 multi-system EPO.
13. Max "x" 25 feet for 2870 alone  
45 feet for 2870 + 2860  
65 feet for 2870 + 2-2860.

SYSTEM/360 MODEL 67-1 CABLING SCHEMATIC

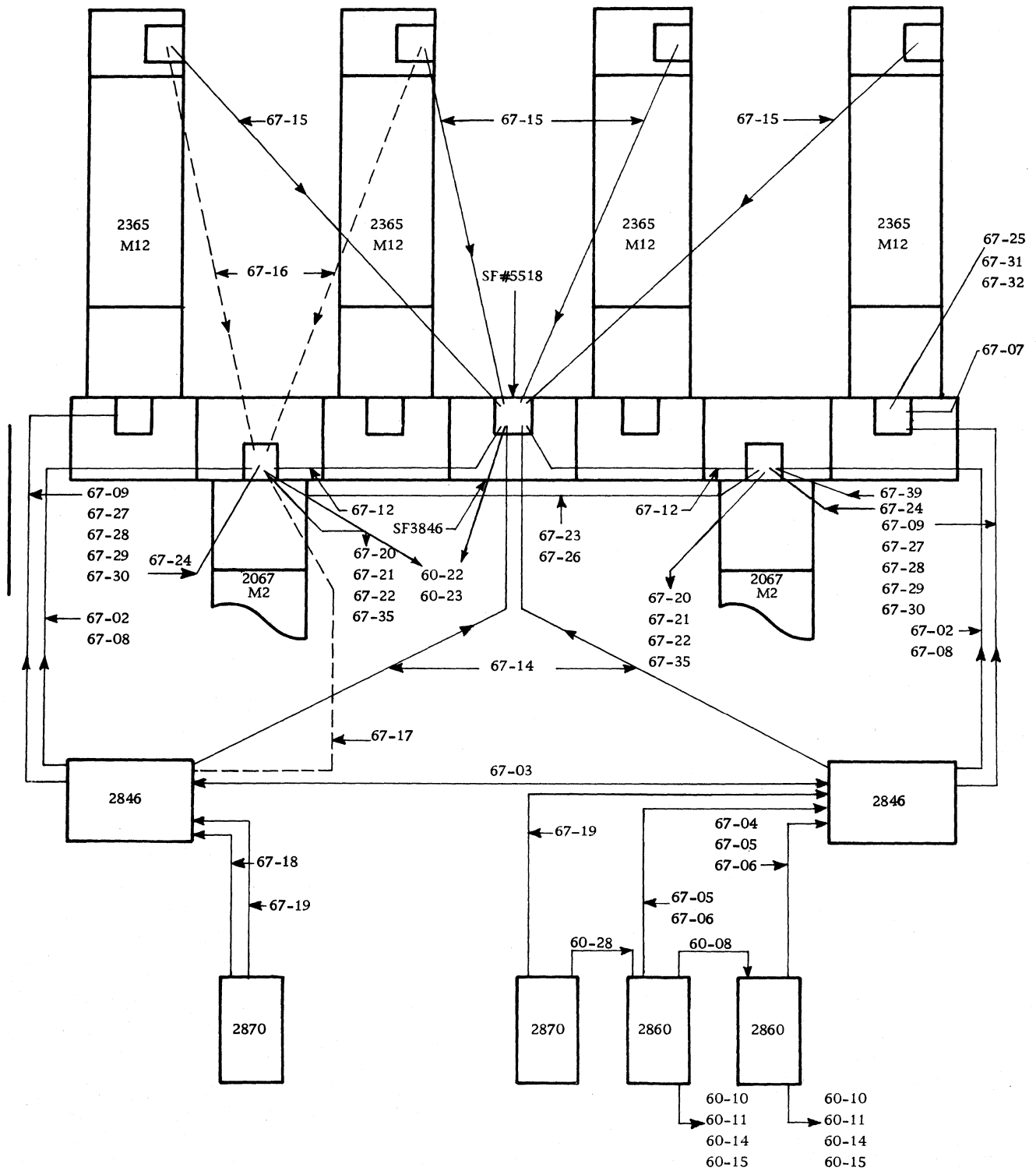


Group No.	No. of Cables	From	To	Max Length (ft)	Notes	Group No.	No. of Cables	From	To	Max Length (ft)	Notes
60-06	1	2860 #1	2067	40	4	60-28	13	2870	2860	20	3
60-08	13	2860 #2	2860 #1	20	3	60-29	1	2870	2067		4
60-10	2	2860(SF #1850)	Control		1,7	67-10	1	Direct Control	2067	100	5
60-11	2	2860(SF #1850)	Ch(SF #1850)		6,7	67-11	2	Direct Control	2067	50	10
60-14	2	2860(SF #1850)	Mpx Ch		1,7	67-20	2	SF #7920	2860		7
60-15	2	2860(SF #1850)	Slr Ch		1,7	67-21	2	SF #7920	Control		7
60-16	1	2860 #2	2067		4	67-22	2	SF #7920	Ch-Ch Adapter		7
60-20	13	2860	2365	25	3	67-35	2	SF #7920	2870		7
60-25	13	2870	2365	25	9	67-36	1	2870	2067		8
						67-37	1	2860	2067		2

NOTES:

1. Channel-to-channel adapter (SF #1850).
2. One per channel.
3. At no time may the sum of 60-20 + 60-08 and/or 60-28 exceed 65 feet.
4. Control and EPO.
5. For the interconnection of two 360 Processors (SF #3274). Order one per feature.
6. For the interconnection of two channel-to-channel adapter features (SF #1850).
7. Total length of 200 feet (unless modified by general cabling schematic) available for eight control units.
8. Max "x" 25 feet for 2870 alone  
45 feet for 2870 + one 2860  
65 feet for 2870 + two 2860's.
9. \* Use 60-25 in place of 60-28 when 2870 is only channel.
10. For SF #3274 to non-IBM device.

SYSTEM/360 MODEL 67-2 CABLING SCHEMATIC



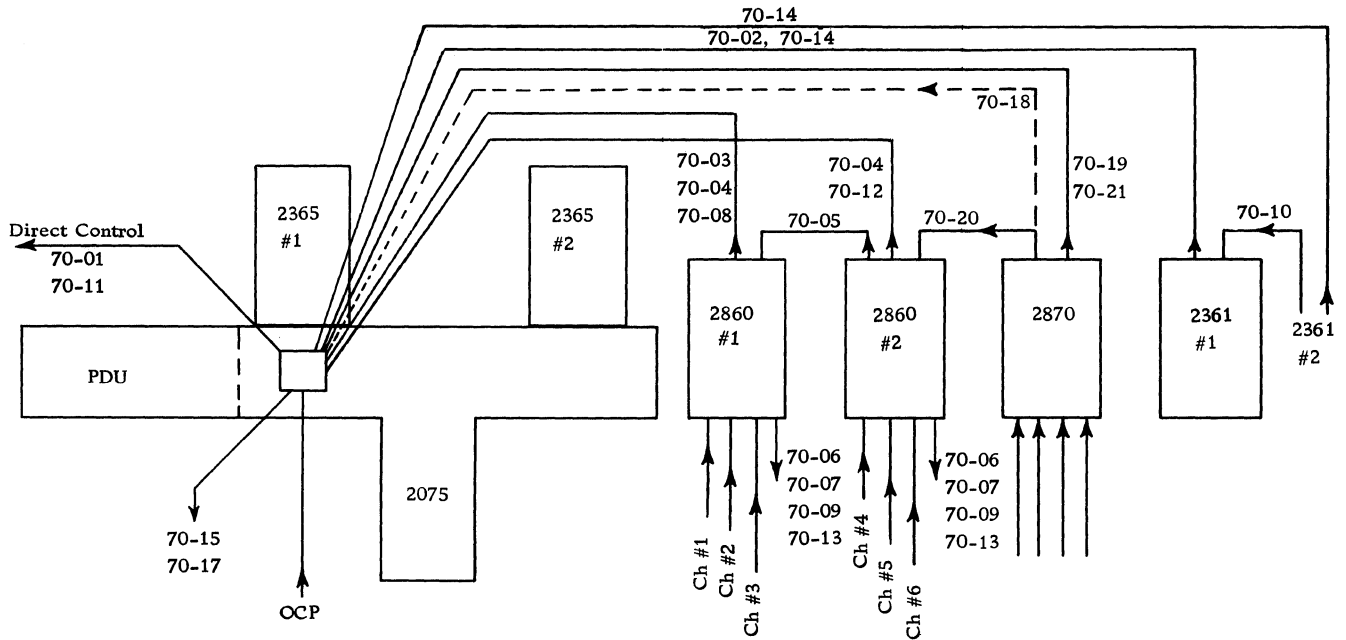
Group No.	No. of Cables	From	To	Max Length (ft)	Notes	Group No.	No. of Cables	From	To	Max Length (ft)	Notes
67-02	3	2846	2067	40	19	67-23	1	2067 #1	2067 #2		20, 23
67-03	3	2846	2846	115	2	67-24	1	2365	2067	75	21
67-04	14	2860	2846	25	8	67-25	1	2365	2365		22
67-05	1	2860	2846	35	3	67-26	1	2067 #1	2067 #2		23, 24
67-06	1	2860	2846		4	67-27	11	2846 #1	2365	25	1
67-07	12	2365	2365	30	5	67-28	11	2846 #2	2365	25	1
67-08	1	2846	2067	100	6	67-29	11	2846 #3	2365	25	1
67-09	1	2846	2365	125	12	67-30	11	2846 #4	2365	25	1
67-12	1	2067	Seq Ctrl (SF5518)	45	13	67-31	11	2365	2365	45	14
67-14	1	2846	Seq Ctrl (SF5518)	60	15	67-32	11	2365	2365	45	14
67-15	1	2365	Seq Ctrl (SF5518)	60	16	67-35	2	2067 (SF#7920)	Mpx		10
67-16	1	2365	2067	60	17	67-39	2	2067	2067		23, 25
67-17	1	2846	2067	60	18	60-08	13	2860	2860	20	7
67-18	13	2870	2846		7, 8	60-10	2	2860 (SF #1850)	Control		10
67-19	2	2870	2846		4, 8	60-11	2	2860 (SF #1850)	Ch (SF #1850)		9, 10, 11
67-20	2	SF #7920	Slr Ch		10	60-14	2	2860 (SF #1850)	Mpx Ch		10
67-21	2	SF #7920	Control		10	60-15	2	2860 (SF #1850)	Slr Ch	20	10
67-22	2	SF #7920	Ch-Ch Adapter		10	60-22	1	2067 (SF #1850)	Processor	100	26
						60-23	1	2067 (SF #1850)	Processor	100	27
						60-28	13	2870	2860	20	7

NOTES:

1. May connect to first 2365 at either end of the system wall.
2. Total cable to connect up to three 2846 units is 115 feet. One group 67-03 required for each 2067 connected to the 2846's.
3. Control and EPO.
4. One per channel. Max 25 feet to first channel frame, 85 feet to any other channel.
5. May be used to connect one contiguous wall section to another. One group 67-07 required for each 2067 in the configuration.
6. One to each 2067.
7. Channel box to channel box interconnecting cable length not to exceed 60 feet for up to seven channel boxes.
8. Cable length from 2846 to first channel not to exceed 25 feet.
9. Channel-to-channel adapter.
10. Total length of 200 feet (unless modified by general cabling schematic) available for eight controls.
11. For interconnection of channel-to-channel adapter features (SF #1850).
12. One to each 2365.
13. Multi-system EPO; one per 2067.
14. May be used to connect one contiguous wall section to another. Use 67-31 for 2846 #1, 67-32 for 2846 #2.
15. One per 2846. Power seq, EPO.
16. One per 2365 in multiple 2067 system. Power seq, EPO.
17. One per 2365 in single 2067 system. Power seq, EPO.
18. Required when system has 2365 M12's and only one 2067.
19. All of the 67-02 cable groups may be routed from any one of the 2846 units to each 2067 in the system or from separate 2846 units as shown.
20. One group required between first 2067 and second 2067 when both have SF #3800, extended direct control.
21. Required for connection of the 2365's of one contiguous wall section to the 2067's of a second contiguous wall section. One required from each 2365 to each 2067.
22. Required to connect second contiguous wall section with the first for convenience outlet power, when second wall section has no 2067.
23. Maximum "x" length of 67-23 or 67-26 plus 67-39 cable groups cannot exceed 100 feet.
24. One group required between first 2067 and second 2067 if system has a third 2067 with SF #3800, extended direct control.
25. One group required between second 2067 and third 2067, and between third 2067 and fourth 2067 with SF #3800, extended direct control.
26. To SF #3621 two-system EPO connects to 2067 for single processor; SF #5518 for dual processor.
27. To SF #3622 multi-system EPO connects to 2067 for single processor; SF #5518 for dual processor.



SYSTEM/360 MODEL 75 CABLING SCHEMATIC

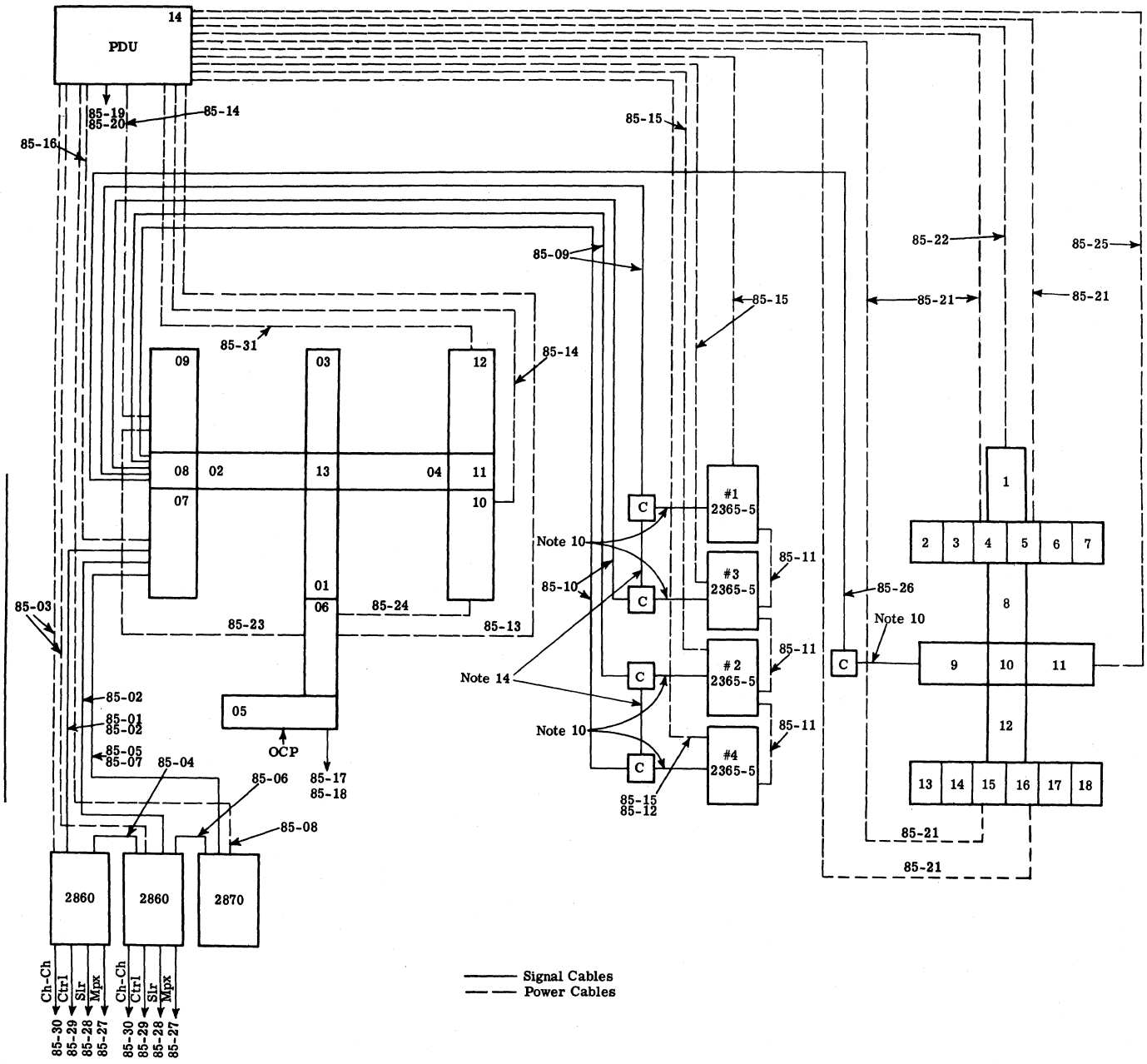


Group No.	No. of Cables	From	To	Max Length (ft)	Notes
70-01	2	Direct Control	2075	50	7
70-02	8	2361	2075	40	11
70-03	7	2860 #1	2075	40	1
70-04	1	2860	2075		4
70-05	13	2860 #2	2860 #1		1
70-06	2	2860 (SF #1850)	Ch-to-Ch Adapter		3,2
70-07	2	2860	Mpx Ch		5,2
70-08	1	2860 #1	2075	40	
70-09	2	2860 (SF #1850)	Control		5,2
70-10	12	2361	2361		11
70-11	1	Direct Control	2075	100	8
70-12	1	2860 #2	2075		
70-13	2	2860	Slr Ch		5,2
70-14	2	2361	2075		6,11
70-15	1	2075	360 Processor		9
70-17	1	2075	360 Processor		10
70-18	7	2870	2075	40	
70-19	1	2870	2075		
70-20	13	2870	2860	20	1
70-21	1	2870	2075		

NOTES:

- The sum of 70-03 plus 70-05 and/or 70-20 may not exceed 50 feet for two-channel units or 70 feet for three-channel units.
- Total cable available for up to eight control units is 200 feet (unless modified by general cabling schematic).
- For interconnection of two channel-to-channel adapters (SF #1850).
- One cable per channel. Length may not be less than 15 feet for 1st chan unit, 30 feet for 2nd or 3rd chan unit.
- Channel-to-channel adapter (SF #1850).
- One per 2361.
- Direct control to non-IBM devices (SF #3274).
- Direct control to other System/360 Processor (SF #3274). Order one per feature.
- To SF #3621.
- To SF #3622.
- The sum of 70-02 + 70-10 may not exceed 100 feet for 1-3 2361's, 80 feet for 4-2361's. 70-14 may not exceed 70-02 + 70-10's for any one 2361.

SYSTEM/360 MODEL 85 CABLING SCHEMATIC



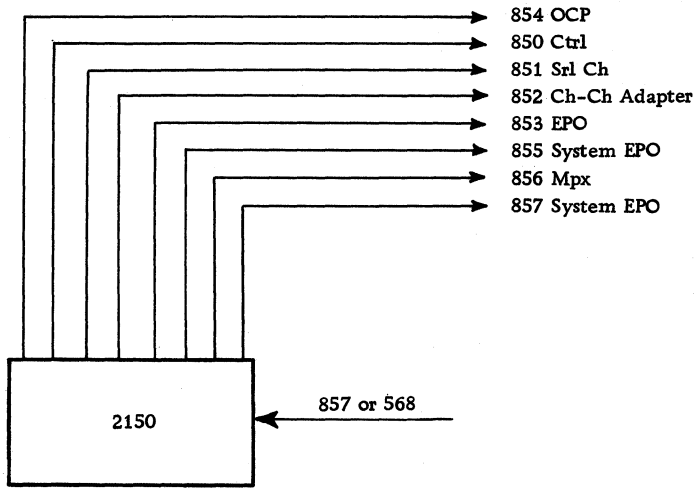
Group No.	No. of Cables	From	Frame No.	To	Frame No.	Maximum "X"	Notes
85-01	13	2860	1	2085	07	25	3
85-02	1	2860		2085	07	45	2, 15
85-03	1	2860		2085	14	100	1
85-04	13	2860	2	2860	1	20	3
85-05	1	2870		2085	07	65	2, 15
85-06	13	2870		2860		20	3
85-07	13	2870		2085	07	25	4
85-08	1	2870		2085	14	65	1, 15
85-09	14	C		2085	08	30	11
85-10	1	C		2085	08		13
85-11	1	2365		2365		20	12
85-12	1	2365		2085	14	80	12
85-13	7	2085	06	2085	14	75	
85-14	4	2085		2085	14	100	
85-15	3	2365		2085	14	80	
85-16	1	2085	07	2085	14	100	
85-17	1	360 Processor		2085	8	100	5
85-18	2	Non-IBM		2085	8	50	5
85-19	1	2085		360 Processor		100	6
85-20	1	2085		360 Processor		100	7
85-21		2385		2085	08	30	
85-22		2385		2085			
85-23	1	2085	06	2085	9	50	
85-24	1	2085		2085	10	50	
85-25		2085	14	2385	11		
85-26		C		2085	8		11
85-27	2	2860		Mpx			8,9
85-28	2	2860		Slr Ch			8,9
85-29	2	2860		Ctrl			8,9
85-30	2	2860		Ch-Ch			8,9
85-31	1	2085	12	2085	14		12

NOTES:

1. One per channel unit (power control).
2. One per channel.
3. The sum of (85-01 + 85-04 + 85-06)  $\leq$  65 feet.
4. Required for 2870 when no 2860's are present.
5. To direct control SF #3274.
6. To SF #3621 two-system EPO.
7. To SF #3622 multi-system EPO.
8. For SF #1850 channel-to-channel adapter.
9. Maximum cable available 200 feet for seven additional controls.
10. Cable from 2365 or 2385 is fixed length. Couplers (3) may be located within 6 feet radius of floor opening. (6 feet includes height of floor, shipped with memory.)
11. "C" indicates couplers.
12. Control and EPO.
13. Required only on 2365-2 and 4 ("J" configuration). Length must equal 85-09 + 9 feet.
14. Fixed length cable (4 feet) shipped with machine.
15. Max "x" 25 feet for 2870 alone  
45 feet for 2870 + 2860  
65 feet for 2870 + 2-2860.



2150 CONSOLE CABLING SCHEMATIC

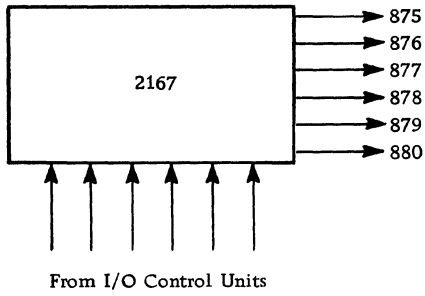


Group No.	No. of Cables	From	To	Max Length (ft)	Notes
850	2	2150	Control		1
851	2	2150	Srl Ch		1
852	2	2150	Ch-Ch Adapter		1, 4
853	1	2150	Ch	100	2
854	3	2150	Processor	70	3
855	1	2150	Processor	70	5, 6
856	2	2150	Mpx Ch		1
857	1	2150	Console (2150/2250)	70	6

NOTES:

1. Total length of 200 feet (unless modified by general cabling schematic) available to attach eight control units to a channel.
2. Emergency power control.
3. One OCP per processor.
4. To channel-to-channel adapter (SF #1850).
5. To host processor only.
6. Total length of all system EPO cables may not exceed 70 feet.

## 2167 CONFIGURATION UNIT CABLING SCHEMATIC

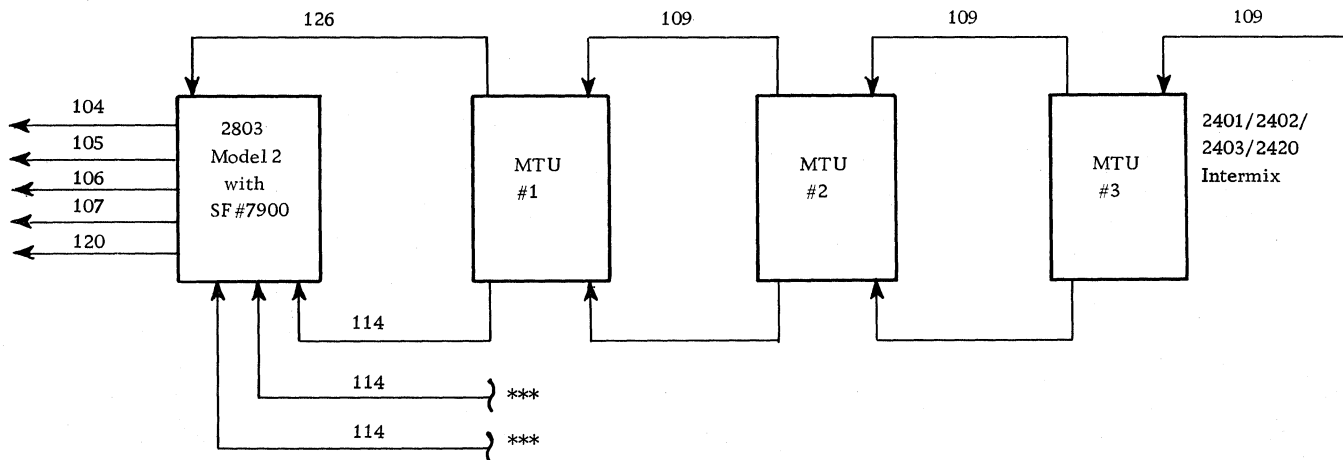
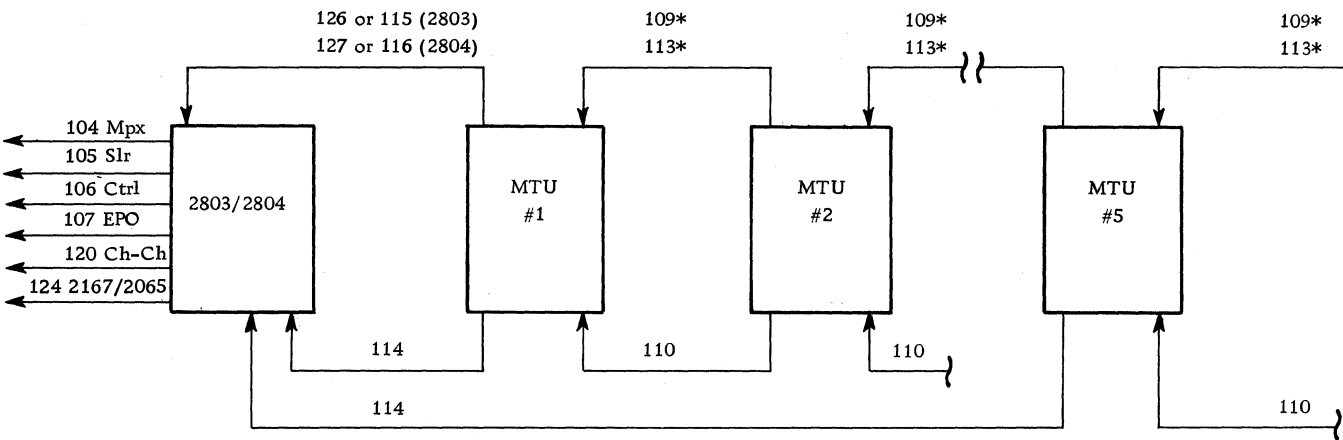
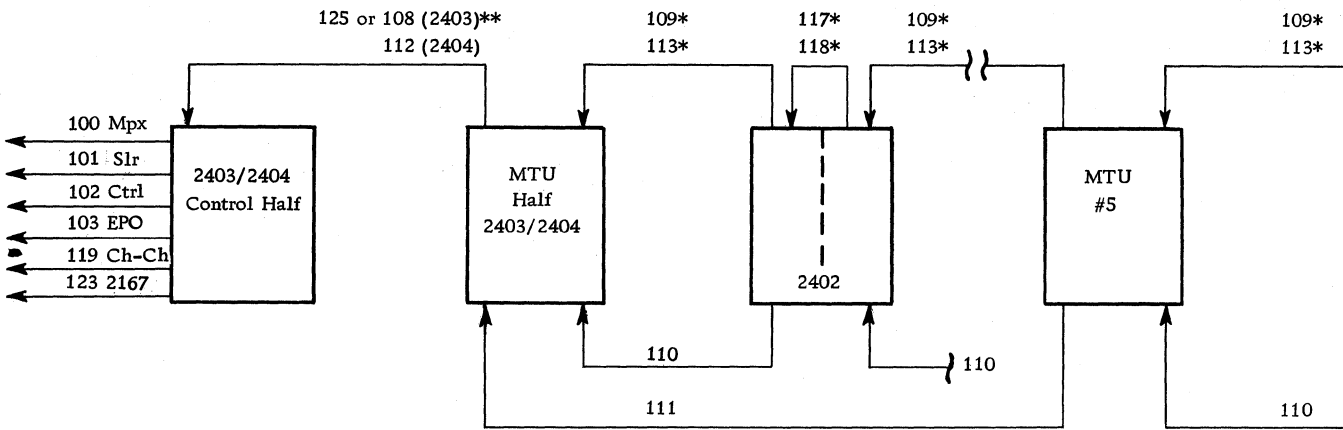


Group No.	No. of Cables	From	To	Max Length (ft)	Notes
875	4	2167	2067	75	1,6
876	1	2167	2365 M12	75	2
877	1	2167	SF #5518 in SF #3846	75	3
878	1	2167	2846	75	4
879	1	2167	2067	75	5
880	3	2167	2067	75	6

### NOTES:

1. One required to each 2067 when 2167 is used.
2. One required to each 2365 M12 when 2167 is used.
3. One required per 2167, EPO.
4. One required to each 2846 for up to four 2365 M12's. Two required to each 2846 for five or more 2365 M12's.
5. One required to 2067 (without SF #5518) EPO.
6. For systems with more than four 2365's, add one 880 to each 2067.

2403, 2404, 2803, AND 2804 CABLING SCHEMATIC



\* Use upper number for MTUs without SF #7160 or 7161. Use lower number for those with feature.

\*\* These groups should be routed from address "O" unit.

\*\*\* Power cable for additional drives. See Notes 9 and 10 for limitations.

Group No.	No. of Cables	From	To	Max Length (ft)	Notes
100	2	2403/04	Mpx Ch		1,9
101	2	2403/04	Slr Ch		1
102	2	2403/04	Control Unit		1
103	1	2403/04	Ch	100	2
104	2	2803/04	Mpx Ch		1
105	2	2803/04	Slr Ch		1
106	2	2803/04	Control Unit		1
107	1	2803/04	Ch	100	2
108	1	MTU #1	2403 M1-3		3,4
109	1	MTU	MTU		3,4
110	1	MTU	MTU		7,10
111	1	MTU	2403/2404		7
112	1	MTU #1	2404		3,5
113	1	MTU	MTU		3,5
114	1	MTU	2803/2804		7,10
115	1	MTU #1	2803 M1		3,4
116	1	MTU #1	2804 M1		3,5
117	1	1/2 2402	1/2 2402	(Fixed)	4,6
118	1	1/2 2402	1/2 2402	(Fixed)	5,6
119	2	2403/04	Ch-Ch Adapter		1
120	2	2803/04	Ch-Ch Adapter		1
123	1	2403 Mod 1-3	2167	75	8
124	1	2803 Mod 1	2167/2065	75	8
125	1	MTU #1	2403 M4-6		3,4
126	1	MTU #1	2803 M2		3,4
127	1	MTU #1	2804 M2		3,5

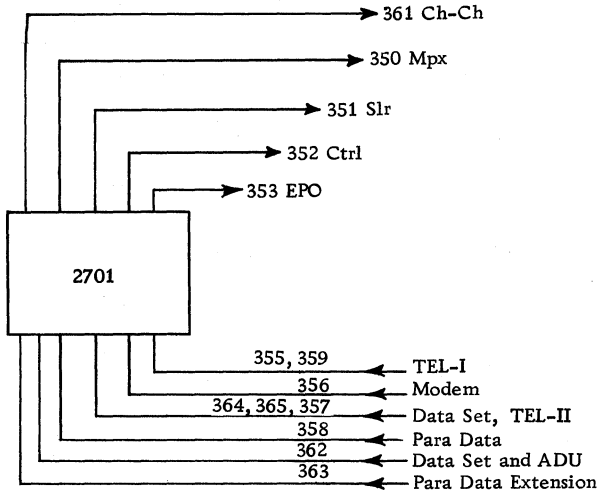
NOTES:

- Total cable available to attach eight control units to a channel is 200 feet for TCUs using 2401, 2, 3 Models 1-5 (see Note 9). Cable from TCU with Mod 6 MTUs attached must be within 50 feet of System/360 Models 30 and 40, 100 feet on other systems. (See general channel cabling schematic for additional limitations.)
- Emergency power controls.
- For eight drives (not units) the maximum total "x" dimensions of the following cable groups should not exceed 100 feet. (125 or 126, 115 or 108) + 109, (112 or 116 or 127) + 113.
- For use with MTUs without SF #7160 or 7161.
- For use with MTUs with SF #7160 or 7161.
- Jumper signal cable for 2402 required when 2816 is not used. Indicate quantity required on cable order.
- For four drives (not units) the maximum total "x" dimension of the following cable groups should not exceed 100 feet. (114 or 111) + 110.
- For use with SF #6148 only.
- TCUs with M5 MTUs attached must be within 50 feet on mpx channel on Model 40.
- Total number of MTUs powered from any given control unit must not exceed eight. Models may be intermixed on a given power cable string within the following limits:

<u>2420</u>	<u>2401/2402*/2403</u>
0	4
1	2
2	1
3	0

\* Each 2402 counts as two units in this table.

## 2701 CABLING

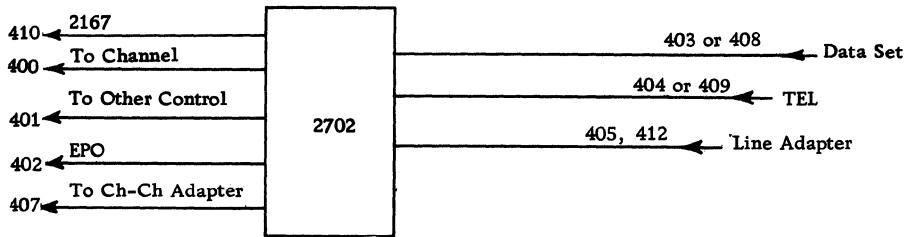


Group No.	No. of Cables	From	To	Maximum Length (ft)	Notes
350	2	2701	Mpx Ch		1
351	2	2701	Slr Ch		1
352	2	2701	Control Unit		1
353	1	2701	Ch	100	2
355		Term Bd	2701	40	5, 12
356		Customer-Owned Communication Line	2701	40	4, 12
357		Data Set	2701	40	6, 12
358	3	Parallel Data (SF #5500)	2701	40	3, 12
359	2	Term Bd and Bias Adj Cable	2701	40	12, 13
361	2	2701	Ch-Ch Adapter		1, 7
362	1	Data Set and ADU	2701	40	8, 12
363	2	Para Data Extension	2701	40	9, 12
364	1	Data Set	2701	40	10, 12
365	1	Data Set	2701	40	11, 12

### NOTES:

1. Total length of 200 feet (unless modified by general cabling schematic) available to attach eight control units to a channel.
2. Emergency power control.
3. Order group 358 for FC #5500.
4. Customer-owned lines (SF #4636, 4637).
5. Use for TEL Group I (SF #7860, 61, 62, 4633). One required for each group except first group.
6. Use for TEL Group II and EIARS 232 interface connections (SF #4645, 4646, 4648, 4656, 4657, 7885 without 4636, 4637, or 1302).
7. To channel-to-channel adapter (SF #1850).
8. Use when both data set and ADU are required (SF #4645 or 7885 with SF #1302).
9. Required for 1st and 3rd extension only (SF #5505).
10. For Synchronous Data Adapter (SF #1303, 1314, 3462, 3464, 3465, 7696, 7698, 7699).
11. For Synchronous Data Adapter (SF #3461, 3463, 7695, 7697).
12. See Appendix B for cable specifications.
13. One required for first group of SF #4633, 7860, 7861, 7862 (see Note 5).

## 2702 TRANSMISSION CONTROL CABLING SCHEMATIC

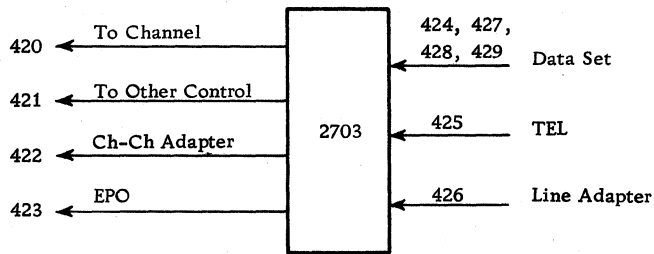


Group No.	No. of Cables	From	To	Max Length (ft)	Notes
400	2	2702	Mpx Ch		1
401	2	2702	Control		1
402	1	2702	Ch	100	2
403	1	Data Set or ADU	2702	40	3,6,10
404	1	TEL Term Bd	2702	40	4,7,10
405	4	Customer-owned communication line	2702	40	5,10
407	2	2702	Ch-Ch Adapter		1
408	2	Data Set or ADU	2702	40	3,8,10
409	2	TEL Term Bd	2702	40	4,9,10
410	1	2702	2167/2065	75	11
412	8	Customer-owned communication line	2702	40	12

### NOTES:

1. Total of 200 feet for eight controls. (See general channel cabling schematic for additional limitations.)
2. Emergency power control.
3. Use for connection to EIA RS232A interface data sets or automatic dialing units. Used with SF #3233, #1290, 8040, 8045, 8046, 8050 and 8051.
4. Use for connection to common carrier telegraph terminal board. Used with SF #7895.
5. Use for connection to customer-owned communication line. Used with SF #4612 and #4613. One cable for each four lines.
6. 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.
7. One group is used if the total number of domestic telegraph lines is less than 8, or 16 or more and less than 24.
8. One group is used for connection to two data sets or two automatic dialing units. If the total number of data sets or auto-dial units is odd, use cable group 403 for connection to the last unit.
9. 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.
10. See Appendix B for detail cable specifications.
11. For use with SF #6148 only.
12. For SF #4634, 4635 (one group per eight lines).

## 2703 TRANSMISSION CONTROL CABLING SCHEMATIC

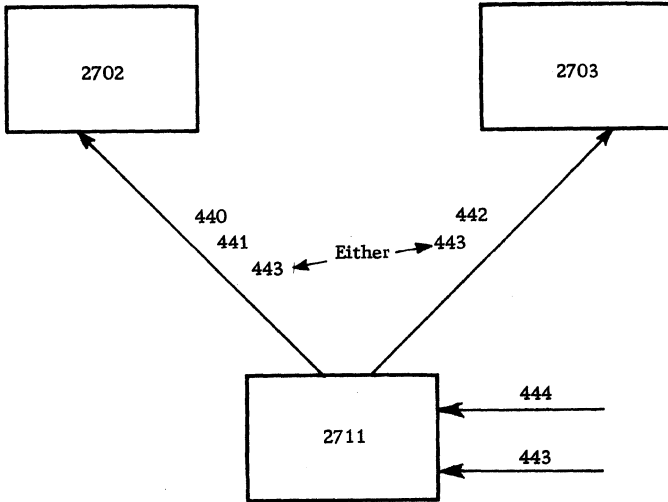


Group No.	No. of Cables	From	To	Maximum Length (ft)	Notes
420	2	2703	Mpx Ch		1
421	2	2703	Control		1
422	2	2703	Ch-Ch (SF #1850)	100	1
423	1	2703	Ch	100	2
424	4	Data Set	2703	40	3, 4
425	2	TEL	2703	40	4, 8
426	8	Customer-owned communication line	2703	40	4, 9
427	4	Data Set	2703	40	4, 6
428	1	Data Set	2703	40	4, 5
429	2	Data Set	2703	40	4, 7

### NOTES:

1. Total of 200 feet (unless modified by general cabling schematic) for eight controls.
2. Emergency power control.
3. Use with Data Line Set (SF #3205, 3206).
4. See Appendix B for cable specifications.
5. For SF #8047, 8057.
6. For SF #1340, 1341.
7. For SF #7710.
8. For SF #7897.
9. For SF #4686, 4687, 4688.

2711 LINE ADAPTER UNIT CABLING SCHEMATIC



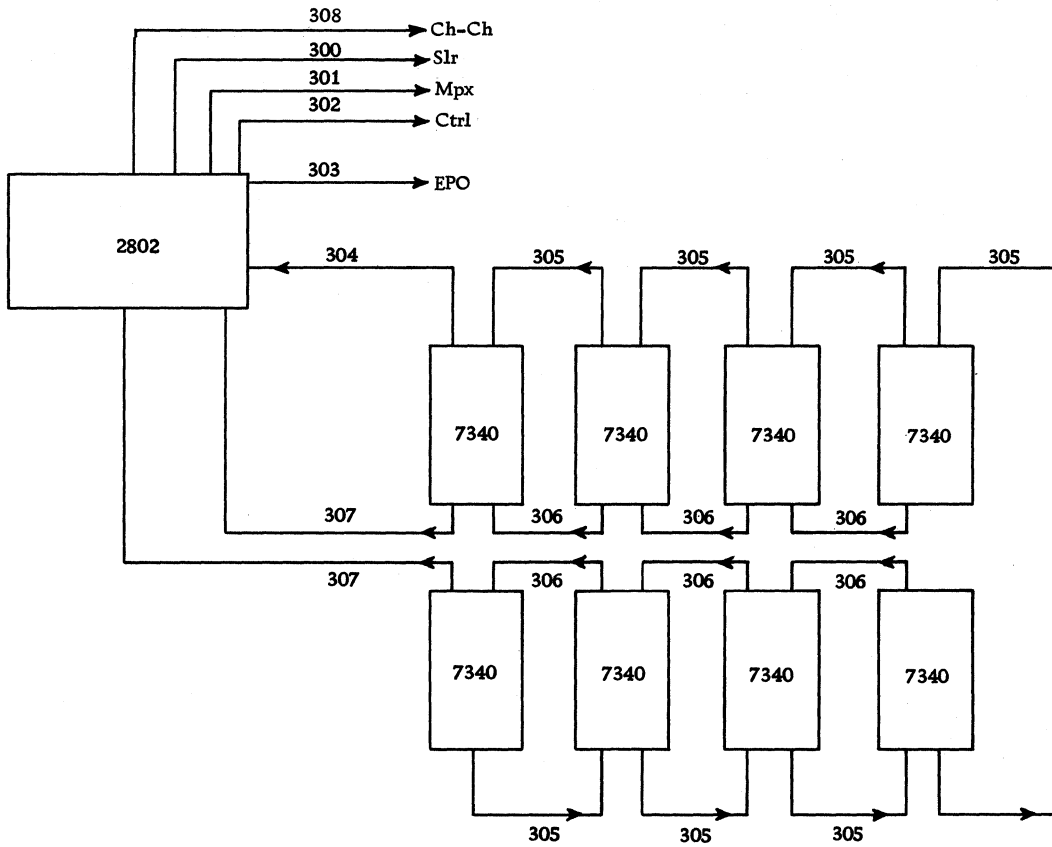
Group No.	No. of Cables	From	To	Max Length (ft) (Note 10)	Notes
440	1	2711	2702	40	1, 5
441	2	2711	2702	40	1, 6
442	4	2711	2703	40	2, 7
443	1	2711	2702/03/2711	40	3, 9
444	1	Common Carrier	2711	40	4, 8

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. One group for each 2711 (EPO).
4. One group for each line adapter feature.
5. One group for each single or odd multiple 2702 Data Set lines being converted (max 1 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 Appendix B for connector specifications.
9. When more than one 2711 is used in the same system, the EPO for each additional 2711 is routed to the next 2711; i.e., 2711 #3 to 2711 #2; 2711 #2 to 2711 #1; 2711 #1 to 2702/2703.
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.



2802 HYPERTAPE CONTROL CABLING SCHEMATIC

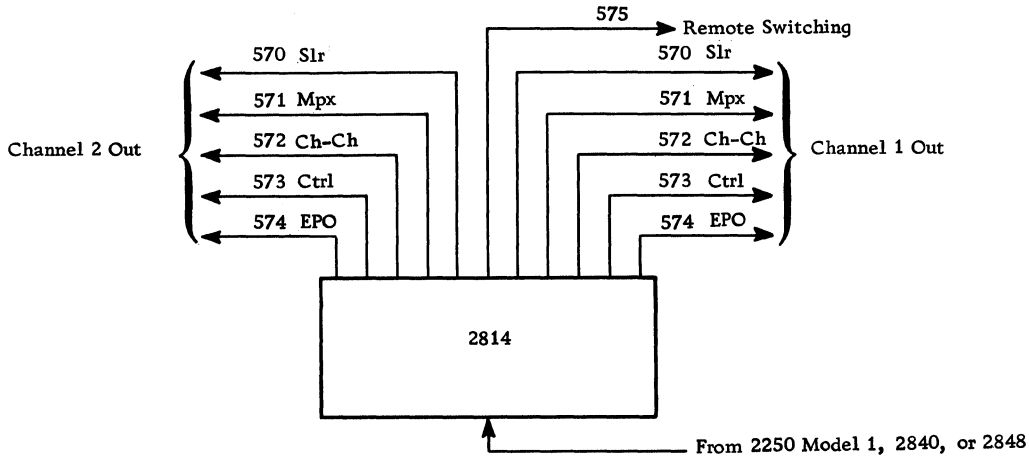


Group No.	No. of Cables	From	To	Max Length (ft)	Notes
300	2	2802	Slr Ch		1
301	2	2802	Mpx Ch		1
302	2	2802	Control		1
303	1	2802	Ch	100	4
304	1	7340	2802		2
305	1	7340	7340		2
306	1	7340	7340		3
307	1	7340	2802		3
308	2	2802	Ch-Ch Adapter		1,5

NOTES:

1. Total length of 100 feet available for eight controls.
2. Total of group number 304 and group number 305's shall not exceed 100 feet for eight drives.
3. Total of group number 307 and group number 306's shall not exceed 86 feet for four drives.
4. Emergency power control.
5. To channel-to-channel adapter (SF #1850).

# 2814 SWITCHING UNIT CABLING SCHEMATIC

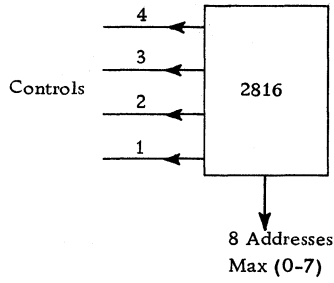


Group No.	No. of Cables	From	To	Max Length (ft)	Notes
570	2	2814	Slr Ch		1
571	2	2814	Mpx Ch		1
572	2	2814	Ch-Ch Adapter		1, 3
573	2	2814	Control		1
574	1	2814	Ch	100	2
575	1	2814	2167	75	

**NOTES:**

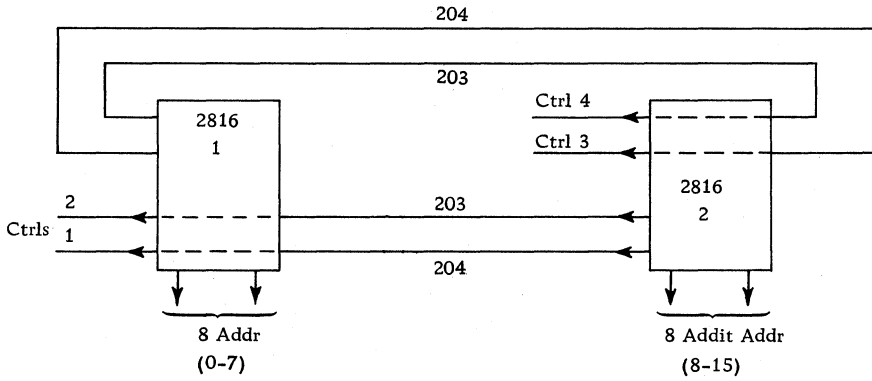
1. Total cable available to connect eight controls to a channel is 200 feet. (See general channel cabling schematic for additional limitations.) The 2814 takes the place of one control unit on each channel in place of the 2250 Model 1, 2840, or 2848.
2. Emergency power control.
3. To channel-to-channel adapter (SF #1850).

# SWITCHING UNIT CABLING



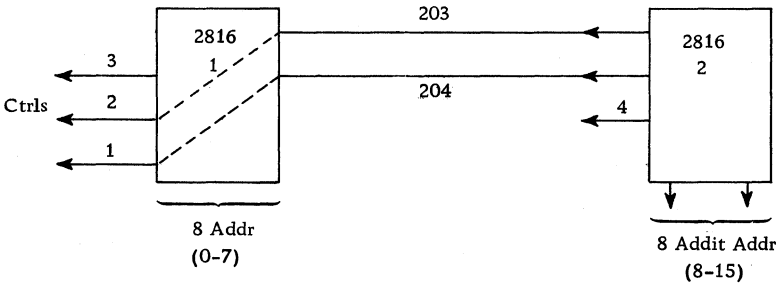
Single Unit

4 x 8 Switch



2 Units

4 x 16 Switch



2 Units

2 -- 1 x 4 Switches  
1 -- 2 x 16 Switch

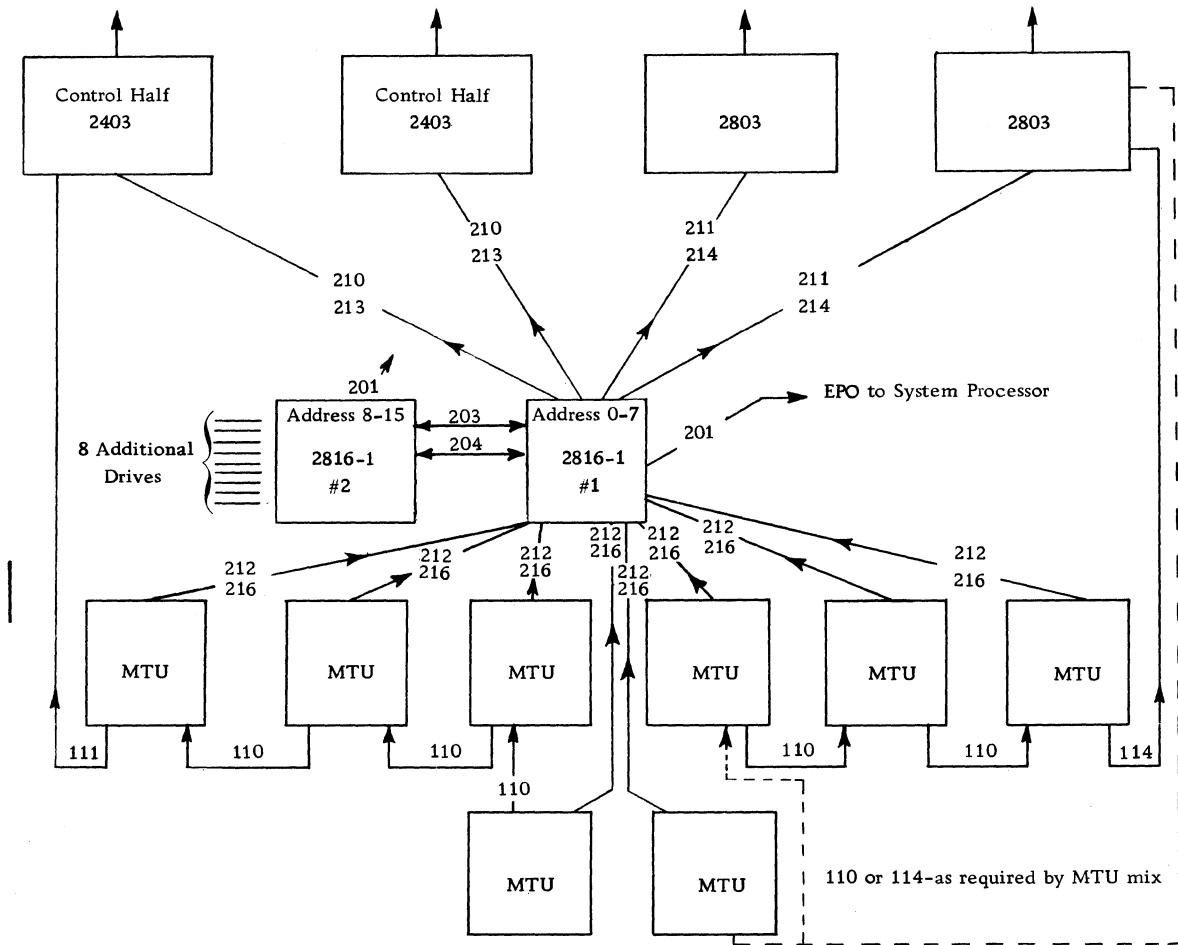
### Feature Configuration

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

Cables from the 2816's 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 controls addressing over eight addresses, the cables should route from the 2816 containing address 8 (as shown above).

2816 SWITCHING UNIT MODEL 1 CABLING SCHEMATIC



Group No.	No. of Cables	From	To	Maximum Length (ft)	Notes
210	3	2816-1 #1	2403		1
211	3	2816-1 #1	2803		1
212	1	MTU (M1-3)	2816-1		1,6
203	4	2816-1 #2	2816-1 #1	20	2
204	4	2816-1 #2	2816-1 #1	20	2
111	1	MTU	2403		3
110	1	MTU	MTU		3,7
114	1	MTU	2803		3,7
201	1	2816	Processor	100	4
213	1	2816	2403		5
214	1	2816	2803		5
216	1	MTU (M4-6)	2816-1		1,6

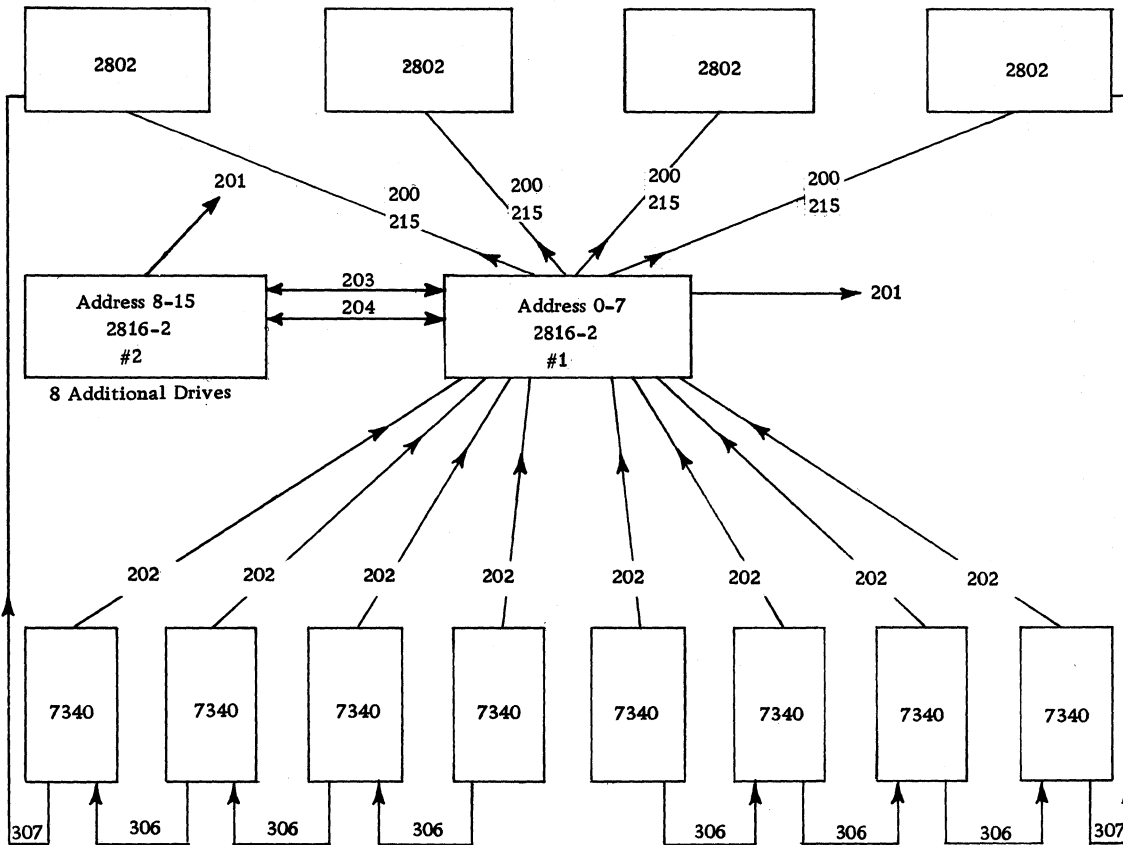
NOTES:

- Longest group number 210 or 211 plus longest group number 212 or 216 may not exceed 100 feet. (203 must also be added when used.)
- Group number 203 control 1, #2816-1 #2; group number 204 for control 2. For SF #6392, 6393.
- Power cables.
- EPO. One per system for each 2816.
- Required for sixteen address feature (#7135).
- Use 212 for 800 bpi drives; 216 for 1,600 drives and for 2420.
- Total number of MTUs powered for any given control unit must not exceed eight. Models may be intermixed on a given power cable string within the following limits:

	2420	2401/2402*/2403
	0	4
	1	2
	2	1
	3	0

\*Each 2402 counts as two units in this table.

2816 SWITCHING UNIT MODEL 2 CABLING SCHEMATIC

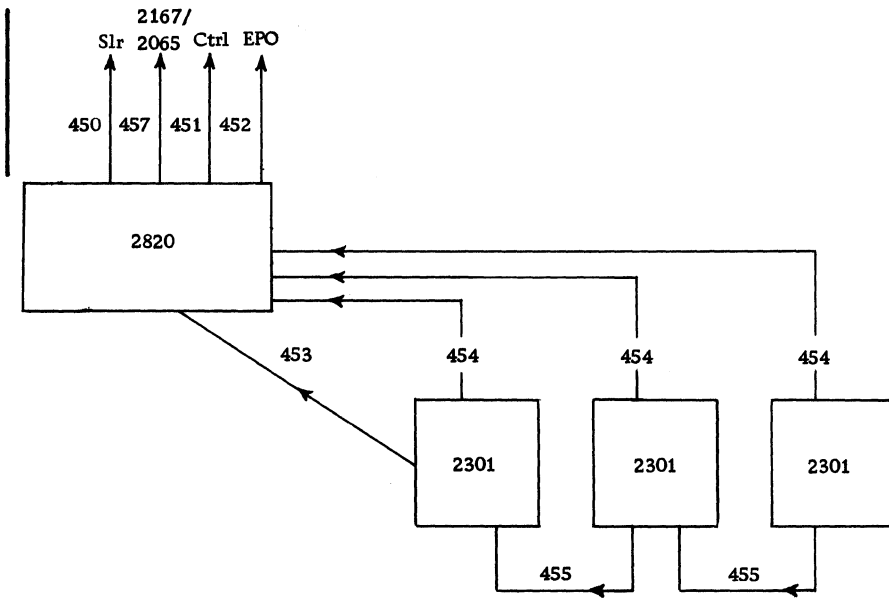


Group No.	No. of Cables	From	To	Max Length (ft)	Notes
200	3	2816-2	2802		1
201	1	2816-2	Processor	100	5
202	1	7340	2816		1
203	4	2816-2	2816-2	20	2
204	4	2816-2	2816-2	20	2
215	1	2816	2802		6
306	1	7340	7340		3, 4
307	1	7340	2802		3, 4

NOTES:

1. The longest group number 200 and the longest group number 202 may not exceed 100 feet.
2. Group number 203 for control 1, 2816-2 #2; group number 204 for control 2. For SF #6392, 6393.
3. Group numbers 306 plus 307 shall not exceed 86 feet.
4. Power cables.
5. EPO. One per system for each 2816.
6. Required for sixteen address feature (#7185).

# 2820 DRUM STORAGE CONTROL CABLING SCHEMATIC



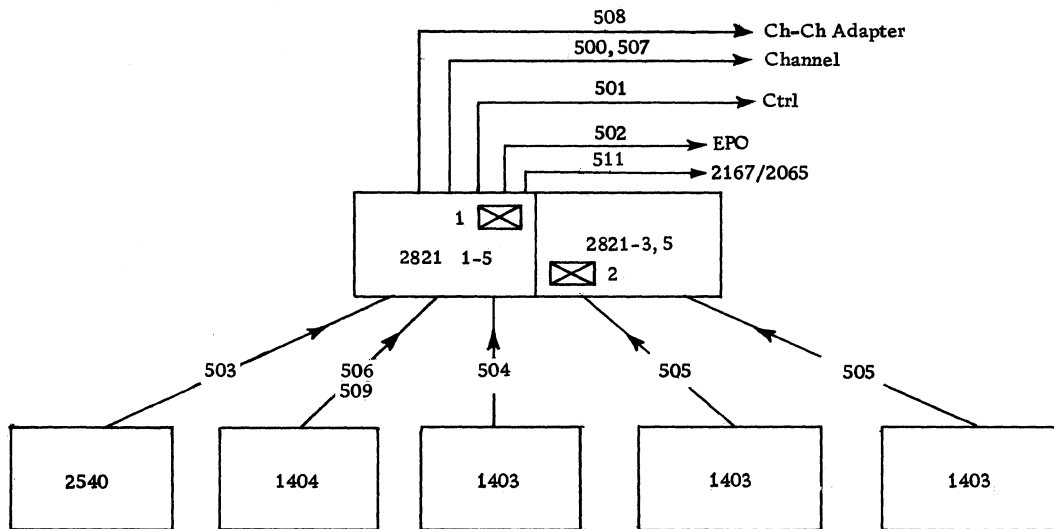
Group No.	No. of Cables	From	To	Max Length (ft)	Notes
450	2	2820	Slr Ch		1, 5
451	2	2820	Control		1, 5
452	1	2820	Ch	100	2
453	3	2301	2820		3
454	1	2301	2820	130	
455	3	2301	2301		3
457	1	2820	2167/2065	75	4

## NOTES:

1. Total of 200 feet (unless modified by general cabling schematic) of cable for up to eight control units; maximum 20 feet to 2820. 2820 should be first on channel.
2. Emergency power control.
3. Length of group 453 plus 455 may not exceed 130 feet.
4. For SF #6148 only.
5. Length of group 451 plus 450 may not exceed 20 feet.



## 2821 CONTROL UNIT CABLING SCHEMATIC



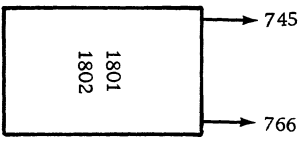
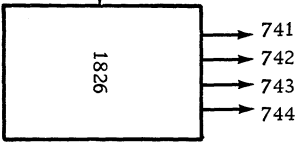
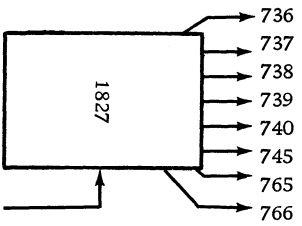
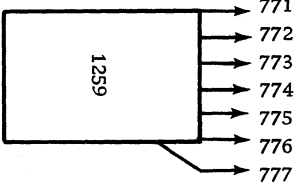
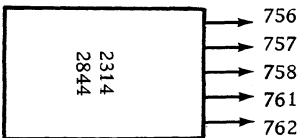
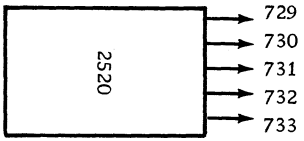
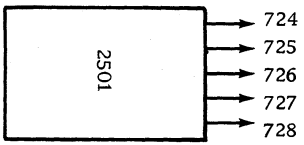
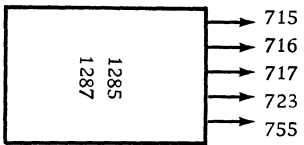
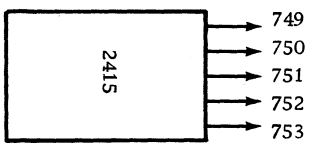
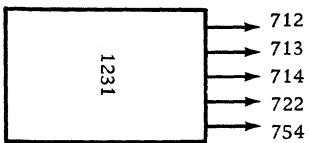
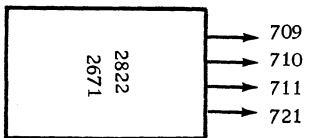
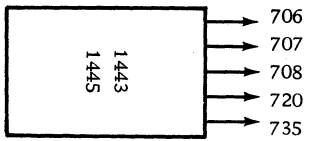
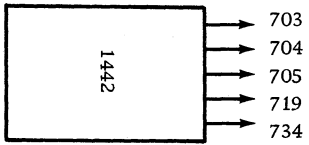
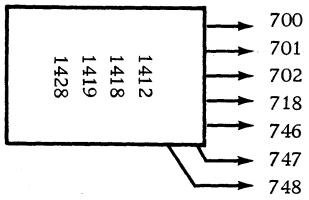
Group No.	No. of Cables	From	To	Max Length (ft)	Notes
500	2	2821	Mpx Ch		1
501	2	2821	Control		1
502	1	2821	Ch	100	2
503	2	2540	2821	25	5
504	3	1403	2821	25	5
505	3	1403	2821	25	5
506	1	1404	2821	25	3
507	2	2821	Slr Ch		1
508	2	2821	Ch-Ch Adapter		1, 4
509	4	1404	2821	25	
511	1	2821	2167/2065	75	6

### NOTES:

1. Total of 200 feet of cable for up to eight control units. (See general channel cabling schematic for additional limitations.)
2. Emergency power control.
3. For read compare feature only (#5990).
4. To channel-to-channel adapter (SF #1850).
5. Contains one power cable.
6. For use with SF #6148 only.



UNITS WITH INTEGRAL CONTROLS



See IBM Data Acquisition and Control System/and Control System/1800  
Installation Manual-Physical Planning, Form A26-5922.

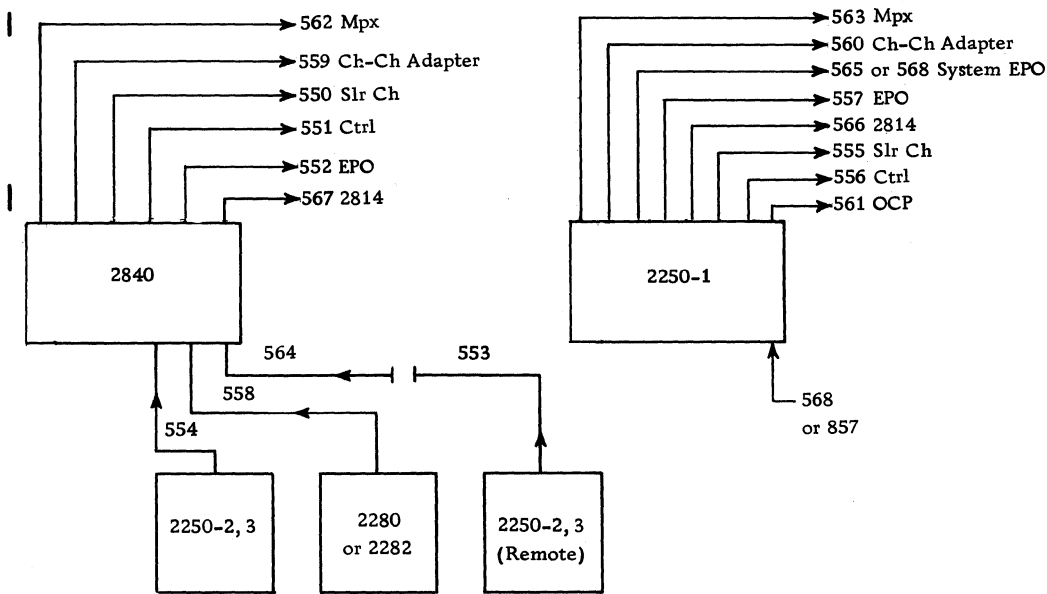
Group No.	No. of Cables	From	To	Max Length (ft)	Notes	Group No.	No. of Cables	From	To	Max Length (ft)	Notes
700	2	Reader Unit	Mpx Ch		1	735	2	1443/1445	Mpx Ch		1
701	2	Reader Unit	Control		1	736	2	1827	Slr Ch		1
702	1	Reader Unit	Ch	100	2	737	2	1827	Mpx Ch		1
703	2	1442	Slr Ch		1	738	2	1827	Ch-Ch Adapter		1, 3
704	2	1442	Control		1	739	2	1827	Control		1
705	1	1442	Ch	100	2	740	1	1827	Ch	100	2
706	2	1443/1445	Slr Ch		1	741	2	1826	Slr Ch		1
707	2	1443/1445	Control		1	742	2	1826	Mpx Ch		1
708	1	1443/1445	Ch	100	2	743	2	1826	Ch-Ch Adapter		1, 3
709	2	2822	Mpx Ch		1	744	2	1826	Control		1
710	2	2822	Control		1	745	1	1801/02/27	360 Processor	100	8
711	1	2822	Ch	100	2	746	2	Reader Unit	Slr Ch		1
712	2	1231	Mpx Ch		1	747	1	Reader Unit	Processor	100	4
713	2	1231	Control		1	748	1	Reader Unit	Reader		4
714	1	1231	Ch	100	2	749	2	2415	Slr Ch		1
715	2	1285/87	Mpx Ch		1	750	2	2415	Mpx Ch		1
716	2	1285/87	Control		1	751	2	2415	Ch-Ch Adapter		1
717	1	1285/87	Ch	100	2	752	2	2415	Control		1
718	2	Reader Unit	Ch		1, 3	753	1	2415	Ch		2
719	2	1442	Ch		1, 3	754	2	1231	Slr Ch		1
720	2	1443/1445	Ch		1, 3	755	2	1285/87	Slr Ch		1
721	2	2822	Ch		1, 3	756	2	2314/2844	Slr		1, 5, 7
722	2	1231	Ch		1, 3	757	2	2314/2844	Ch-Ch Adapter		1, 3, 5, 7
723	2	1285/87	Ch		1, 3	758	2	2314/2844	Control		1, 5, 7
724	2	2501	Slr Ch		1	761	1	2314/2844	Ch	100	2
725	2	2501	Mpx Ch		1	762	1	2314/2844	2167	75	6
726	2	2501	Ch-Ch Adapter		1, 3	765	1	1827	360 Processor	100	4
727	2	2501	Control		1	766	1	1801/02/27	360 Processor	100	9
728	1	2501	Ch	100	2	771	2	1259	Mpx Ch		1
729	2	2520	Slr Ch		1	772	2	1259	Control		1
730	2	2520	Mpx Ch		1	773	1	1259	Ch	100	2
731	2	2520	Ch-Ch Adapter		1, 3	774	2	1259	Ch-Ch Adapter		1, 3
732	2	2520	Control		1	775	2	1259	Slr Ch		1
733	1	2520	Ch	100	2	776	1	1259	Processor	200	4
734	2	1442	Mpx Ch		1	777	1	1259	Reader	200	4

NOTES:

1. 200 feet (unless modified by general cabling schematic) of cable available for eight control units.
2. Emergency power control.
3. To channel-to-channel adapter (SF #1850).
4. For SF #3895 or SF #3274 on Processor.
5. Must be attached to Slr #1 on 2030 and 2040.
6. Required for SF #6148.
7. Last 2314/2844 must be within 75 feet of 2030 and 2040; must be within 100 feet on other systems.
8. To SF #3621 on 360 Processor.
9. To SF #3622 on 360 Processor.



# 2840 DISPLAY CONTROL CABLING SCHEMATIC

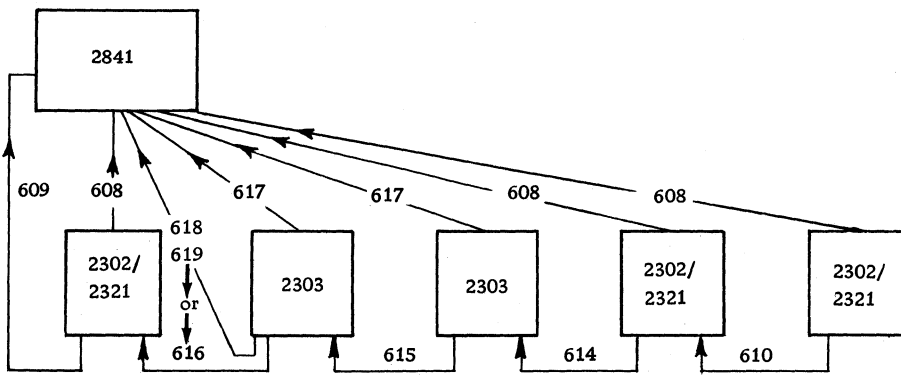
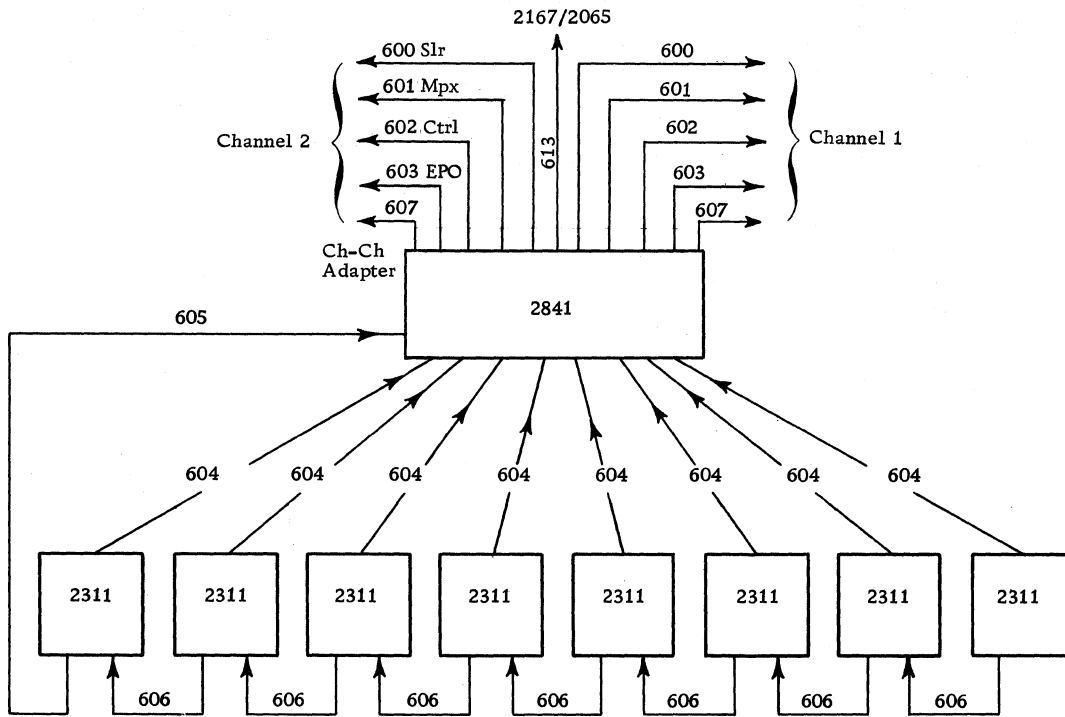


Group No.	No. of Cables	From	To	Max Length (ft)	Notes
550	2	2840	Slr Ch		1
551	2	2840	Control		1
552	1	2840	Ch	100	2
553	1	2250-2, 3	Wall	20	3, 9
554	2	2250-2, 3	2840	40	3, 9
555	2	2250-1	Slr Ch		1, 7
556	2	2250-1	Control		1, 7
557	1	2250-1	Ch	100	2, 8
558	4	2280 or 2282	2840	50	
559	2	2840	Ch-Ch Adapter		1, 5
560	2	2250-1	Ch-Ch Adapter		1, 5, 7
561	3	2250-1	Processor	70	4, 8
562	2	2840	Mpx		1
563	2	2250-1	Mpx		1, 7
564	1	Wall	2840	40	
565	1	2250	Processor		6, 8
566	3	2250-1	2814	50	7
567	3	2840	2814	50	
568	1	2250-1	2150/2250		6, 8

## NOTES:

1. Total cable available to connect eight controls to a channel is 200 feet (unless modified by general cabling schematic).
2. Emergency power control. Not required when unit is used with 2814.
3. A remote 2250-2 may be up to 2,000 feet from the 2840. Cable in excess of that specified for group No. 553 plus group No. 564 must be supplied by the customer. See Appendix B for specifications.
4. For OCP attachment (one OCP per processor).
5. To channel-to-channel adapter (SF #1850).
6. Sum of lengths of system EPO cables  $\leq$  70 feet (EPO switches).
7. These cable groups route to cable hole #3 on 2250 plan view.
8. These cable groups route to either cable hole #1 or #2 on 2250 plan view.
9. These cable groups route to either cable hole #1 or #2 on 2250 plan view for Model 2 units without absolute vectors feature. They route to cable hole #3 for Model 3 units and Model 2 units with absolute vectors feature.

2841 STORAGE CONTROL CABLING SCHEMATIC

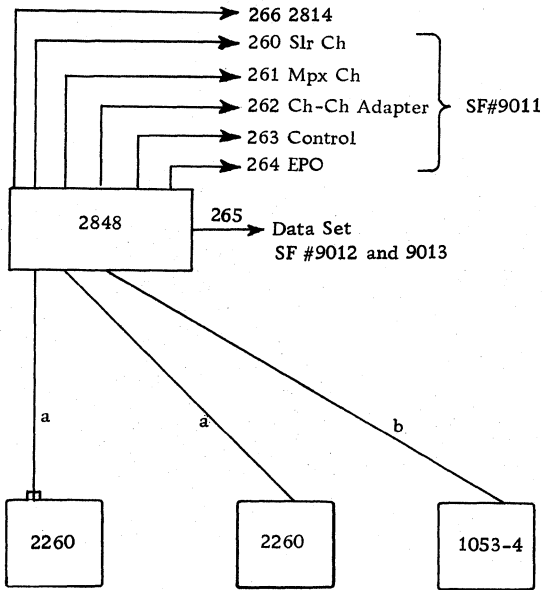


Group No.	No. of Cables	From	To	Max Length (ft)	Notes
600	2	2841	Slr Ch		1
601	2	2841	Mpx Ch		1
602	2	2841	Control		1
603	1	2841	Ch	100	2
604	1	2311	2841	55	
605	2	2311 #1	2841		3
606	2	2311	2311		3
607	2	2841	Ch-Ch Adapter		1, 4
608	1	Storage	2841	100	
609	4	Storage	2841		3
610	4	Storage	Storage		3,9
613	1	2841	2167/2065	100	5
614	4	2302/2321	2303		3,9
615	5	2303	2303		3
616	4	2303	2302/2321		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			10
625		2302 Terminator			10

NOTES:

1. Total cable available for attaching up to eight controls is 100 feet (75 feet on System/360 Model 40 when 2303 is attached).
2. Emergency power control.
3. The total length of each of the following groups should not exceed 100 feet (1) 605 and 606's (618+615+614+610), (619+615+614+610), and (609+616+615+614+610).
4. To connect to channel-to-channel adapter (SF #1850).
5. For SF #6148 only.
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. When 2302 and 2321 are connected to 2841, 2321 cannot be last unit on line.
10. End-of-line terminator required must be specified on cable order form, unless 2321 is last unit on line.

2848 DISPLAY CONTROL CABLING SCHEMATIC

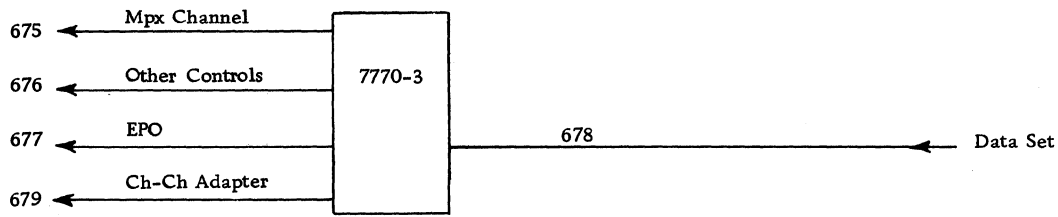


Group No.	No. of Cables	From	To	Max Length (ft)	Notes
260	2	2848	Slr Ch		1
261	2	2848	Mpx Ch		1
262	2	2848	SF #1850		1, 3
263	2	2848	Control		1
264	1	2848	Ch	100	2
a	1	2260	2848	2,000	4
b	1	1053	2848	2,000	4
265	1	Data Set	2848	40	
266	3	2848	2814	50	

NOTES:

1. Total of 200 feet (unless modified by general cabling schematic) of cable for eight control units.
2. Emergency power control.
3. To channel-to-channel adapter (SF #1850).
4. IBM-supplied connectors, customer-supplied cable. (See Appendix B for cable specifications.)

# 7770 AUDIO RESPONSE UNIT CABLING SCHEMATIC



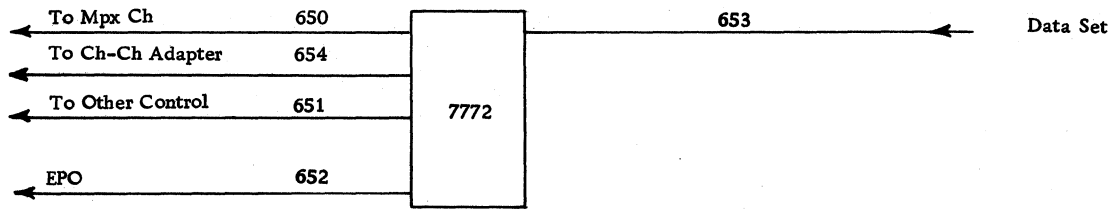
Group No.	No. of Cables	From	To	Max Length (ft)	Notes
675	2	7770-3	Mpx Ch		1
676	2	7770-3	Control		1
677	1	7770-3	Ch	100	2
678	4	Common Carr	7770-3	40	4
679	2	7770-3	Ch-Ch Adapter		1, 3

**NOTES:**

1. Total of 200 feet (unless modified by general cabling schematic) of cable for up to eight control units.
2. Emergency power control.
3. To channel-to-channel adapter (SF #1850).
4. One group for each four data sets.



# 7772 AUDIO RESPONSE UNIT CABLING SCHEMATICS



Group No.	No. of Cables	From	To	Max Length (ft)	Notes
650	2	7772	Mpx Ch		1
651	2	7772	Control		1
652	1	7772	Ch	100	2
653	2	Data Set	7772	40	4
654	2	7772	Ch-Ch Adapter		1,3

### NOTES:

1. Total of 200 feet (unless modified by general cabling schematic) of cable for up to eight control units.
2. Emergency power control.
3. To channel-to-channel adapter (SF #1850).
4. One group for each pair of data sets.

**SYSTEM/360 SPECIFICATION SUMMARY (ENGLISH UNITS)**

Type	Model	Description	Electrical		Environmental		Weight (lbs)	Dimensions (inches)			Service Clearances (inches)				Notes
			kva	Conn Type	BTU/hr	cfm		Width	Depth	Height	F	R	Rt	L	
360	25	2025 Processing Unit	7.4	E	20,500	800	1,850								14
360	30	2030 Processing Unit	3.8	B	10,000	900	1,700								2,4,14
360	40G	2040 Processing Unit	2.5	D	7,000	300	1,700								2,4,14
360	40H	2040 Processing Unit	3.7	D	10,500	300	2,310								2,4,14
360	44E,F	2044 Processing Unit	5.3	D	15,000	1,600	2,800								2,4,14
360	44G	2044 Processing Unit	6.5	D	19,000	1,600	2,900								2,4,14
360	44H	2044 Processing Unit	9.5	D	28,000	2,400	4,200								2,4,5,14
360	50F,G	2050 Processing Unit	6.5	E	20,410	2,350	4,700								4,14
360	50H	2050 Processing Unit	6.8	E	21,350	2,990	5,210								4,14
360	50I	2050 Processing Unit	9.6	E	30,044	4,600	7,310								4,14
360	65G,H,I	2065 Processing Unit	5.4	E	15,800	2,100	2,400			72-1/2					4,14
360	65H, J	2065 Processing Unit	5.4	E	15,800	2,100	2,800			72-1/2					4,14
360	65I	Multiprocessing Unit	6.9	E	12,000	2,100	8,170			72-1/2					4,14
360	65IH	Multiprocessing Unit	6.9	E	12,000	2,100	8,500			72-1/2					4,14
360	65J	Multiprocessing Unit	6.9	E	12,000	2,100	8,830			72-1/2					4,14
360	67	2067 Processing Unit	6.85	E	20,000	4,620	3,674			72-1/2					4
360	75H,I	2075 Processing Unit	8.6	E	27,600	3,350	5,125			72-1/2					2,4,14
360	75J	2075 Processing Unit	8.6	E	27,600	3,350	5,325			72-1/2					2,4,14
360	85	2085 Processing Unit				3,100	12,100			78					2,4,14
360	85	Power Distribution Unit				0	1,500	60	30	70	36	36	30	30	2,4,14
1032		Digital Time Unit	0.1	A	270	0	100	26	15	27	30	0	18	18	
1051	1, N1	Control Unit	0.2	A	670	0	195	26	15	27	0	30	36	0	
1052		Printer-Keyboard	0.17		570	0	65	23	19-3/4	9	0	0	0	0	12
1053	4	Printer	0.17	G,H	570	0	55	23	11-1/2	9	0	0	0	0	11
1231	N1	Optical Mark Page Reader	1.2	A	3,700	300	620	43-1/2	24	44-3/4	42	42	30	36	2
1259	2	Magnetic Char Reader	2.2	D	5,000	260	1,250	78	29-1/4	61-5/8	44	44	20	36	
1285		Optical Reader	2.0	D	5,000	600	1,600	71-1/4	35-3/4	60	36	48	42	48	
1287		Optical Reader	4.0	D	10,000	900	2,900	125-3/4	36	60	36	48	42	30	
1403	2	Printer	1.0		3,000	310	750	47-3/4	28-1/2	53-1/4	36	36	30	30	3
1403	3	Printer	1.2		3,600	350	750	47-3/4	28-1/2	53-1/4	36	36	30	30	3
1403	7	Printer	0.8		2,400	310	750	47-3/4	28-1/2	53-1/4	36	36	30	30	3
1403	N1	Printer	1.5		4,500	350	825	57-1/8	29	53-1/2	36	36	42	42	3
1404	2	Printer	1.5		3,800	280	1,600	67-1/8	31-3/4	53-1/2	36	36	48	42	3
1412	1	Magnetic Char Reader	2.7	C	6,300	320	2,475	112	41-1/4	60-1/4	42	48	36	36	13
1418	1,3	Optical Char Reader	3.8	D	8,300	575	2,650	112	41-1/4	60-1/4	42	48	36	36	13
1418	2	Optical Char Reader	3.8	D	8,300	575	2,700	112	41-1/4	60-1/4	42	48	36	36	13
1419	1	Magnetic Char Reader	3.3	C	8,500	400	2,675	112	41-1/2	60-1/4	42	48	36	36	13
1442	N1	Card Read Punch	0.8	A	2,200	0	575	43	24	49	36	42	6	18	2
1442	N2	Card Punch	0.8	A	2,200	0	575	43	24	49	36	42	6	18	2
1443	N1	Printer	1.1	A	3,200	50	800	55-7/8	43	46	36	36	48	30	
1445	N1	Printer	1.1	A	3,200	50	825	55-7/8	43	46	36	36	48	30	
1826		See IBM Data Acquisition and Control System/1800 Installation Manual - Physical Planning, Form A26-5922													
1827															
2150		Console	0.65	B	1,740	180	800	64	28-3/4	52-1/8	30	48	30	30	
2167	1-6	Configuration Unit	0.65	A	2,000	500	583			46					4
2250	1	Display Unit		A		620	890			50					4,6
2250	2	Display Unit		A						50					4,6
2250	3	Display Unit	1.5	A	2,600	380	770			50					4,6
2260		Display Station, with Keybd		G	477	0	45	13-3/4	19-3/8	17-3/8	0	0	0	0	11
2260		Display Station, without Keybd		G	477	0	25	13-3/4	13-3/16	17-3/8	0	0	0	0	11
2280		Film Recorder	8.9	E	24,300	1,405	1,900	111		70	69	48	36	54	4
2282		Film Recorder Scanner	8.9	E	24,300	1,405	1,900	111		70	69	48	36	54	4
2301		Drum Storage	1.5		3,800	320	850	34-1/2	29	64	48	48	42	42	7
2302	3	Disk Storage	9.0	E	20,000	2,210	4,025	85-1/2	33	68-3/4	60	60	60	60	2
2302	4	Disk Storage	12.6	E	28,000	2,210	4,425	85-1/2	33	68-3/4	60	60	60	60	2
2303		Drum Storage	1.7		3,800	250	850	34-1/2	29	64	48	48	42	42	7
2311		Disk Storage Drive	0.75		2,000	100	390	30	24	38	36	36	30	30	7
2314		Direct Access Storage Facility	6.1	E	17,000	2,000	4,200	186	32	57	36	48	42	24	

(Part 1 of 3)

Type	Model	Description	Electrical		Environmental		Weight (lbs)	Dimensions (inches)			Service Clearances (inches)				Notes
			kva	Conn Type	BTU/hr	cfm		Width	Depth	Height	F	R	Rt	L	
2321	1	Data Cell Drive	4.4	D	10,600	850	1,825	68-1/2	51	60	30	30	34	30	
2361	1	Core Storage	4.5	E	11,000	1,205	2,125	62-1/4	31-3/4	70-1/2	72	30	30	36	2,4
2361	2	Core Storage	7.0	E	17,400	1,205	2,125	62-1/4	31-3/4	70-1/2	72	30	30	36	2,4
2365	1	Processor Storage	7.4	E	25,300	1,055	2,200			72-1/2					4
2365	2,3	Processor Storage	7.4	E	25,300	1,495	2,720			72-1/2					4
2365	5	Processor Storage			15,000	750	2,500			72-1/2					4,12
2365	12	Processor Storage	8.5	E	29,000	2,345	3,300			72-1/2					4
2385	1	Processor Storage			75,000	5,600									4,12
2385	2	Processor Storage			75,000	11,200									4,12
2401	1-6	Magnetic Tape Unit	1.6		3,500	500	800	30	29	67	36	36	30	30	7
2402	1-6	Magnetic Tape Unit	3.2		7,000	1,000	1,600	60	29	67	36	36	30	30	7
2403	1-6	Magnetic Tape Unit and Ctrl	2.1	E	5,500	1,000	2,000	60	29	67	42	42	30	30	
2404	1-3	Magnetic Tape Unit and Ctrl	2.4	E	6,300	1,200	2,000	60	29	67	42	42	30	30	
2415	1,4	Magnetic Tape Unit and Ctrl	4.0	D	10,000	1,250	1,400	60	29	67	36	36	36	36	2
2415	2,5	Magnetic Tape Unit and Ctrl	4.8	D	12,500	1,500	2,150	120	29	67	36	36	36	36	2
2415	3,6	Magnetic Tape Unit and Ctrl	5.9	D	15,000	1,750	2,900	180	29	67	36	36	36	36	2
2420	7	Magnetic Tape Unit	2.9		7,900	700	1,000	30	30-1/2	67	36	36	30	30	7
2501	B1, B2	Card Reader	0.5	A	1,200	0	440	30	24	45	36	42	24	6	2
2520	B1	Card Read Punch	2.0	A	6,350	100	770	43	24	50	48	36	24	36	
2520	B2, B3	Card Punch	2.0	A	6,350	100	770	43	24	50	48	36	24	36	2
2540		Card Read Punch	1.2		3,000	50	1,050	57-1/2	29-1/4	45-1/4	36	36	36	36	3
2671		Paper Tape Reader													10
2701		Data Adapter Unit	1.0	A	3,000	120	600	40	25-1/2	40	42	42	42	6	
2702		Transmission Control	1.8	A	5,600	800	900	28-3/4	61-1/2	60	30	18	42	30	
2703		Transmission Control	4.3	D	11,750	2,000	2,200	32-1/4	67-3/4	70-3/4	30	36	66	66	4
2711		Line Adapter Unit	0.5	A	1,600	100	727	28	29	64	48	36	6	6	4
2802		Hypertape Control	0.6	F	1,360	300	928	28-3/4	61-1/2	60	30	30	42	42	2
2803	1	Tape Control	1.7	E	4,500	500	1,050	60	29	60	42	42	30	30	2
2803	2	Tape Control	2.4	F	7,700	700	1,250	60	29	60	42	42	30	30	2
2804	1	Tape Control	2.2	E	6,800	700	1,200	60	29	60	42	42	30	30	2
2804	2	Tape Control	3.4	E	10,500	900	1,550	60	29	60	42	42	30	30	2
2814		Switching Unit	0.4	A	750	120	320	40	25-1/2	40	42	24	30	0	
2816	1,2	Switching Unit	1.2	A	1,500	280	500	29	42	60	30	18	30	30	
2820		Storage Control	1.25	D	3,300	550	750	28-3/4	61-1/2	60	30	30	36	42	2
2821	1	Control Unit	3.2	D	7,500	500	1,000	32	46	60	30	18	48	30	
2821	2	Control Unit	2.4	D	6,000	400	1,000	32	46	60	30	18	48	30	
2821	3	Control Unit	5.1	E	12,000	900	2,000	32	93	60	30	30	48	48	
2821	4	Control Unit	3.3	D	8,000	500	1,000	32	46	60	30	18	48	30	
2821	5	Control Unit	5.9	E	14,000	1,000	2,000	32	93	60	30	30	48	48	
2822		Paper Tape Reader Control Unit	1.05	A	2,200	150	495	30	26-1/4	42	30	30	30	30	
2840	1,2	Display Control	2.4	D	6,500	800	800	33-1/2	60	72-1/2	30	30	30	66	
2841		Storage Control	1.9	D	5,500	1,000	750	32	45-1/2	60	30	30	30	48	
2844		Auxiliary Storage Control	2.14	E	6,000	3,000	1,150	179	118	60	36	48	54	24	2,4
2846		Channel Controller	0.88	A	2,600	900	2,000			72-1/2	30	48	72	55	4
2848		Display Control	3.3	C	10,000	570	1,000	32-1/4	61-1/2	70-3/4	30	30	48	48	
2860	1	Selector Channel	1.6	B	8,200	420	1,150	32-1/4	67-3/4	70-3/4	30	36	66	66	
2860	2	Selector Channel	1.7	B	10,000	740	1,450	32-1/4	67-3/4	70-3/4	30	36	66	66	
2860	3	Selector Channel	1.8	B	11,600	1,060	1,750	32-1/4	67-3/4	70-3/4	30	36	66	66	
2870		Multiplexer Channel	4.25	D	11,600	1,060	1,450	32-1/4	67-3/4	70-3/4	30	36	66	66	
7340	3	Hypertape Drive	4.0		12,000	700	1,500	29	60	48	46	52			7,8
7770	3	Audio Response Unit		A				37-1/2	31-1/2	70	42	36	30	30	4
7772		Audio Response Unit	2.0	A	5,100	1,800	600	37-1/2	31-1/2	70	42	36	30	30	

(Part 2 of 3)

- NOTES:
1. For airflow, see specifications page for 2302 Disk Storage.
  2. This unit is equipped with radio interference control circuitry 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, may 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.
  3. Powered from 2821.
  4. For data, see specifications page for that item.
  5. Two identical electrical services required.
  6. It is recommended that in the area immediately surrounding this unit provision be made for lowering the lighting level to provide good image resolution.
  7. Powered from control unit.
  8. Minimum clearance for two 7340 units is 7 inches; clearances should alternate: 7, 22, 7 and 22 inches. Clearance between 7340 and any other unit or structure is 30 inches.
  9. Shipped in two sections, 50-1/8 inches and 35-3/8 inches long.
  10. Included in specifications for 2822.
  11. Model 4 for remote installation only.
  12. Powered from System/360.
  13. Shipped in two sections 40 and 72 inches long.
  14. When SF #3622 is installed, a second receptacle (connector type A) is required.

Type	Plug	Connector	Receptacle	Rating*
A	Russel and Stoll, FS3720	FS3913	FS3743	15 amp, 1 phase, 3 wire
B	Russel and Stoll, FS3730	FS3914	FS3744	15 amp, 3 phase, 4 wire
C	Russel and Stoll, FS3750	FS3933	FS3753	30 amp, 1 phase, 3 wire
D	Russel and Stoll, FS3760	FS3934	FS3754	30 amp, 3 phase, 4 wire
E	Russel and Stoll, SC7328	SC7428	SC7324	60 amp, 3 phase, 4 wire
F	Russel and Stoll, JPS1034H	JCS1034H	JRS1034H	100 amp, 3 phase, 4 wire
G	115v Hubbell or Pass and Seymour, 5266	5269	5261 or 5262	15 amp, 1 phase, 3 wire
H	208v/230v Hubbell or Pass and Seymour, 5666	5669	5661 or 5662	15 amp, 1 phase, 3 wire

\*The plugs, connectors, and receptacles listed are for use on 208 or 230 services. 115v options are not available unless noted. The number of wires includes one insulated grounding conductor (green or green with yellow trace).

(Part 3 of 3)

SYSTEM/360 SPECIFICATION SUMMARY (METRIC UNITS)

Type	Model	Description	kcal	kva	m <sup>3</sup> /m	Conn Type	Weight (kg)	Dimensions (cm)			Service Clearances (cm)				Notes
								Width	Depth	Height	F	R	Rt	L	
360	25	2025 Processing Unit	5.166	7,4	23	E	839								14
360	30	2030 Processing Unit	2.520	3,8	26	B	771								2,4,14
360	40G	2040 Processing Unit	1.764	2,5	9	D	771								2,4,14
360	40H	2040 Processing Unit	2.646	3,7	9	D	1.048								2,4,14
360	44E,F	2044 Processing Unit	3.780	5,3	45	D	1.270								2,4,14
360	44G	2044 Processing Unit	4.788	6,5	45	D	1.315								2,4,14
360	44H	2044 Processing Unit	7.056	9,5	68	D	1.905								2,4,5,14
360	50F,G	2050 Processing Unit	4.543	6,5	67	E	2.132								14
360	50H	2050 Processing Unit	5.380	6,8	85	E	2.363								4,14
360	50I	2050 Processing Unit	7.560	9,6	130	E	3.316								4,14
360	65G,H,I	2065 Processing Unit	3.982	5,4	60	E	1.089			184					4,14
360	65H,J	2065 Processing Unit	3.982	5,4	60	E	1.270			184					4,14
360	65I	Multiprocessing Unit	3.024	6,9	59	E	3.700			184					4,14
360	65IH	Multiprocessing Unit	3.024	6,9	59	E	3.856			184					4,14
360	65J	Multiprocessing Unit	3.024	6,9	59	E	4.005			184					4,14
360	67	2067 Processing Unit	5.040	6,85	131	E	1.667			184					4
360	75H,I	2075 Processing Unit	6.955	8,6	95	E	2.313			184					2,4,14
360	75J	2075 Processing Unit	6.955	8,6	95	E	2.404			184					2,4,14
360	85	2085 Processing Unit			88		5.488			198					2,4,14
360	85	Power Distribution Unit			0		650	152	76	178	91	91	76	76	2,4,14
1032		Digital Time Unit	68	0,1	0	A	45	66	38	69	76	0	46	46	
1051	1, N1	Control Unit	169	0,2	0	A	89	66	38	69	0	76	91	0	
1052		Printer-Keyboard	144	0,17	0		30	58	50	23	0	0	0	0	12
1053	4	Printer	144	0,17	0	G,H	17	58	29	23	0	0	0	0	11
1231	N1	Optical Mark Page Reader	932	1,2	9	A	281	111	61	114	107	107	76	91	2
1259	2	Magnetic Character Reader	1.260	2,2	7	D	567	198	74	157	112	112	51	91	
1285		Optical Reader	1.260	2,0	17	D	726	181	91	152	91	122	107	122	
1287		Optical Reader	2.520	4,0	26	D	1.315	319	91	152	91	122	107	76	
1403	2	Printer	756	1,0	9		340	121	72	135	91	91	76	76	3
1403	3	Printer	907	1,2	10		340	121	72	135	91	91	76	76	3
1403	7	Printer	605	0,8	9		340	121	72	135	91	91	76	76	3
1403	N1	Printer	1.134	1,5	10		374	145	74	136	91	91	107	107	3
1404	2	Printer	958	1,5	8		726	171	81	136	91	91	122	107	3
1412	1	Magnetic Character Reader	1.588	2,7	9	C	1.123	285	105	153	107	122	91	91	13
1418	1,3	Optical Character Reader	2.092	3,8	16	D	1.202	285	105	153	107	122	91	91	13
1418	2	Optical Character Reader	2.092	3,8	16	D	1.225	285	105	153	107	122	91	91	13
1419	1	Magnetic Character Reader	2.142	3,3	11	C	1.213	285	105	153	107	122	91	91	13
1442	N1	Card Read Punch	554	0,8	0	A	262	109	61	125	91	107	15	46	2
1442	N2	Card Punch	554	0,8	0	A	261	109	61	125	91	107	15	46	2
1443	N1	Printer	806	1,1	1	A	363	141	109	117	91	91	122	76	
1445	N1	Printer	806	1,1	1	A	374	141	109	117	91	91	122	76	
1826		See IBM Data Acquisition and Control System/1800 Installation Manual - Physical Planning, Form A26-5922													
1827															
2150		Console	439	0,65	5	B	363	163	73	132	76	122	76	76	
2167	1 or 6	Configuration Unit	504	0,65	14	A	264			117					4
2250	1	Display Unit			18	A	408			127					4,6
2250	2	Display Unit				A				127					4,6
2250	3	Display Unit	655	1,5	11	A	363			127					4,6
2260		Display Station, with Keyboard	120		0	G	20	35	49	44	0	0	0	0	11
2260		Display Station, without Keybd	120		0	G	11	35	34	44	0	0	0	0	11
2280		Film Recorder	6.124	8,9	40	E	862	282		178	175	122	91	137	4
2282		Film Recorder Scanner	6.124	8,9	40	E	862	282		178	175	122	91	137	4
2301		Drum Storage	958	1,5	9		386	88	74	163	122	122	107	107	7
2302	3	Disk Storage	5.040	9,0	63	E	1.826	217	84	175	152	152	152	152	2
2302	4	Disk Storage	7.056	12,6	63	E	2.007	217	84	175	152	152	152	152	2
2303		Drum Storage	958	1,7	7		386	88	74	163	122	122	107	107	7

(Part 1 of 3)

Type	Model	Description	kcal	kva	m <sup>3</sup> /m	Conn Type	Weight (kg)	Dimensions (cm)			Service Clearances (cm)				Notes
								Width	Depth	Height	F	R	Rt	L	
2311		Disk Storage Drive	504	0,75	3		177	76	61	97	91	91	76	76	7
2314		Direct Access Storage Facility	4.284	6,1	57	E	1.905	472	81	145	91	122	107	61	
2321	1	Data Cell Drive	2.671	4,4	24	D	817	174	130	152	76	76	86	76	
2361	1	Core Storage	2.772	4,5	34	E	964	158	81	179	182	76	76	91	2,4
2361	2	Core Storage	4.285	7,0	34	E	964	158	81	179	182	76	76	91	2,4
2365	1	Processor Storage	6.376	7,4	30	E	998			184					4
2365	2,3	Processor Storage	6.376	7,4	42	E	1.234			184					4
2365	5	Processor Storage	3.780		21		1.089			184					4,12
2365	12	Processor Storage	7.308	8,5	66	E	1.497			184					4
2385	1	Processor Storage	18.900		159										4,12
2385	2	Processor Storage	37.800		317										4,12
2401	1-6	Magnetic Tape Unit	882	1,6	14		363	76	74	170	91	91	76	76	7
2402	1-6	Magnetic Tape Unit	1.764	3,2	28		726	152	74	170	91	91	76	76	7
2403	1-6	Magnetic Tape Unit and Control	1.386	2,1	28	E	907	152	74	170	107	107	76	76	
2404	1-3	Magnetic Tape Unit and Control	1.587	2,4	34	E	907	152	74	170	107	107	76	76	
2415	1,4	Magnetic Tape Unit and Control	2.520	4,0	35	D	635	152	74	170	91	91	91	91	2
2415	2,5	Magnetic Tape Unit and Control	3.150	4,8	43	D	975	305	74	170	91	91	91	91	2
2415	3,6	Magnetic Tape Unit and Control	3.780	5,9	50	D	1.315	457	74	170	91	91	91	91	2
2420	7	Magnetic Tape Unit	1.991	2,9	20		454	76	78	170	91	91	76	76	7
2501	B1,B2	Card Reader	252	0,5	0	A	181	76	61	114	91	107	61	15	2
2520	B1	Card Read Punch	1.600	2,0	3	A	349	109	61	127	122	91	61	91	
2520	B2, B3	Card Punch	1.600	2,0	3	A	349	109	61	127	122	91	61	91	2
2540		Card Read Punch	756	1,2	1		476	146	74	115	91	91	91	91	3
2671		Paper Tape Reader													10
2701		Data Adapter Unit	756	1,0	3	A	272	102	65	102	107	107	107	15	
2702		Transmission Control	1.411	1,8	23	A	408	73	156	152	76	46	107	76	
2703		Transmission Control	2.961	4,3	57	D	998	82	172	180	76	91	168	168	4
2711		Line Adapter Unit	403	0,5	3	A	330	71	74	163	122	91	15	15	4
2802		Hypertape Control	343	0,6	9	F	422	73	156	152	76	76	107	107	2
2803	1	Tape Control	1.134	1,7	14	E	476	152	74	152	107	107	76	76	
2803	2	Tape Control	1.940	2,4	20	E	567	152	74	152	107	107	76	76	2
2804	1	Tape Control	1.714	2,2	20	E	544	152	74	152	107	107	76	76	
2804	2	Tape Control	2.646	3,4	25	E	703	152	74	152	107	107	76	76	2
2814		Switching Unit	189	0,4	3	A	145	102	65	102	107	61	76	0	
2816	1,2	Switching Unit	378	1,2	8	A	227	74	107	152	76	46	76	76	
2820		Storage Control	832	1,25	16	D	340	73	156	152	76	76	91	107	2
2821	1	Control Unit	1.890	3,2	14	D	454	81	117	152	76	46	122	76	
2821	2	Control Unit	1.512	2,4	11	D	454	81	117	152	76	46	122	76	
2821	3	Control Unit	3.024	5,1	26	E	907	81	236	152	76	76	122	122	
2821	4	Control Unit	2.016	3,3	14	D	454	81	117	152	76	46	122	76	
2821	5	Control Unit	3.582	5,9	28	E	907	81	236	152	76	76	122	122	
2822		Paper Tape Reader Control Unit	554	1,05	4	A	227	76	67	107	76	76	76	76	
2840	1,2	Display Control	1.638	2,4	23	D	363	84	152	184	76	76	76	168	
2841		Storage Control	1.386	1,9	28	D	340	81	116	152	76	76	76	122	
2844		Auxiliary Storage Control	1.512	2,14	85	E	522	455	300	152	91	122	137	61	2,4
2846		Channel Controller	655	0,88	26	A	907			184	76	122	183	140	4
2848		Display Control	2.520	3,3	16	C	454	82	156	180	76	76	122	122	
2860	1	Selector Channel	2.066	1,6	12	B	522	82	172	180	76	91	168	168	
2860	2	Selector Channel	2.520	1,7	21	B	658	82	172	180	76	91	168	168	
2860	3	Selector Channel	2.923	1,8	30	B	794	82	172	180	76	91	168	168	
2870		Multiplexer Channel	2.923	4,25	30	D	658	82	172	180	76	91	168	168	
7340	3	Hypertape Drive	3.024	4,0	20		680	74	152	122	117	132			7,8
7770	3	Audio Response Unit				A		95	80	178	107	91	76	76	4
7772		Audio Response Unit	1.285	2,0	51	A	272	95	80	178	107	91	76	76	

(Part 2 of 3)

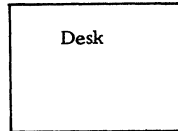
- NOTES:
1. For airflow, see specifications page for 2302 Disk Storage.
  2. This unit is equipped with radio interference control circuitry and requires a good insulated wired earth or building ground. Total resistance of the ground conductor, measured between the receptacle and the building grounding point, may 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.
  3. Powered from 2821.
  4. For data, see specifications page for that item.
  5. Two identical electrical services required.
  6. It is recommended that in the area immediately surrounding this unit provision be made for lowering the lighting level to provide good image resolution.
  7. Powered from control unit.
  8. Minimum clearance for two 7340 units is 18 cm; clearances should alternate: 18 cm, 56 cm, 18 cm, and 56 cm. Clearance between 7340 and any other unit or structure is 76 cm.
  9. Shipped in two sections, 127 cm and 90 cm long.
  10. Included in specifications for 2822.
  11. Model 4 for remote installation only.
  12. Powered from System/360.
  13. Shipped in two sections 102 cm and 183 cm long.
  14. When SF #3622 is installed, a second receptacle (connector A) is required.

Type	Plug	Connector	Receptacle	Rating*
A	Russel and Stoll, FS3720	FS3913	FS3743	15 amp, 1 phase, 3 wire
B	Russel and Stoll, FS3730	FS3914	FS3744	15 amp, 3 phase, 4 wire
C	Russel and Stoll, FS3750	FS3933	FS3753	30 amp, 1 phase, 3 wire
D	Russel and Stoll, FS3760	FS3934	FS3754	30 amp, 3 phase, 4 wire
E	Russel and Stoll, SC7328	SC7428	SC7324	60 amp, 3 phase, 4 wire
F	Russel and Stoll, JPS1034H	JCS1034H	JRS1034H	100 amp, 3 phase, 4 wire
G	115v Hubbell or Pass and Seymour, 5266	5269	5261 or 5262	15 amp, 1 phase, 3 wire
H	208v/230v Hubbell or Pass and Seymour, 5666	5669	5661 or 5662	15 amp, 1 phase, 3 wire

\*The plugs, connectors, and receptacles listed are for use on 208 or 230 services. 115v options are not available unless noted. The number of wires includes one insulated grounding conductor (green or green with yellow trace).

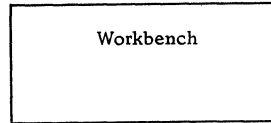
(Part 3 of 3)

FIELD ENGINEERING FURNITURE TEMPLATE



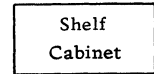
Desk

	L	W	H
Inches	45	34	29
cm	114	86	74



Workbench

	L	W	H
Inches	72	30	35
cm	183	76	89



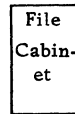
Shelf Cabinet

	L	W	H
Inches	36	18	72
cm	91	46	183



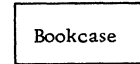
Parts Cabinet

	L	W	H
Inches	42	24	87
cm	107	61	221



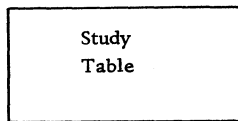
File Cabinet

	L	W	H
Inches	18	28	60
cm	46	71	152



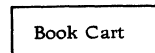
Bookcase

	L	W	H
Inches	33-1/4	15-1/4	42
cm	85	39	107



Study Table

	L	W	H
Inches	60	30	29
cm	152	76	74



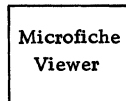
Book Cart

	L	W	H
Inches	40	13	31
cm	102	33	79



Card File

	L	W	H
Inches	17	24	9
cm	43	61	23



Microfiche Viewer

	L	W	H
Inches	24	24	54
cm	61	61	137



APPENDIX A

INPUT/OUTPUT DEVICE PRIORITY SEQUENCE

I/O DEVICE	CLASS	MPX CH		SLR CH	NOTES (Listed at end of table)
		Crit	Time (ms)	Data Rate	
1052 as Console Typewriter Models 40, 50, 65, and 67	2	70.0		14.8 cps	1, 7
1231	1	11		150 cps	3
1285	1	0.4		769 cps	
1287		0.4		400 cps	
1412	1	Highest priority		Mpx only	3
1418	1	Highest priority		Mpx only	3
1419	1	Highest priority		Mpx only	4
1428	1	Highest priority		Mpx only	4
1442 N1	1	800 usec		1 kc	
1442 N2	2	11.0		160 cps	
1443 Model N1	3	18.5		90 kc	
1445	3	18.5		90 kc	
1826	3	Burst		500 kb max	
1827	3	Burst		Mpx only	
2150	2	70		14.8 cps	
2250 Model 1	3	Burst mode		238.1 kc	
2303	1	Slr only		322 kb	
2314	1	Slr only		312 kb	
2403/2404	1	Burst mode		Model 1 -- 30 kb	
2803/2804 Model 1				Model 2 -- 60 kb	
2803/2804 Model 2				Model 3 -- 90 kb	
				Model 4 -- 60 kb	
				Model 5 -- 120 kb	
				Model 6 -- 180 kb	
2803 M2 with 2420				320 kb (2803 Mod 2/2420)	
2415 Models 1, 2, and 3	1	Burst mode		15 kb	
2415 Models 4, 5, and 6	1	Burst mode		30 kb	
2501	1	915 usec		2 kb	
2520					
Model B1 -- Reading 500 cpm	1	1.02		1.08 kb	
Model B2 -- Punching 500 cpm	2	9.0		167 kb	
Model B3 -- Punching 300 cpm	2	15.0		167 kb	
2701					2
IBM Telegraph Adapter	1	30.3		8.3 cps	
IBM Terminal-Type I					
14.8 cps	1	16.7		14.8 cps	
66.6 cps	1	3.75		66.6 cps	
IBM Terminal-Type II	1	3.75		60 cps	
Telegraph Adapter-Type I					
45.5 baud	1	50.5		6 cps	
56.9 baud	1	39.6		7.5 cps	
74.2 baud	1	30.3		10 cps	
Telegraph Adapter-Type II	1	29.5		10 cps	
WTC Telegraph					
50 baud	1	45		6.6 cps	
75 baud	1	30		10 cps	

I/O DEVICE	CLASS	MPX CH Crit Time (ms)	SLR CH Data Rate	NOTES (Listed at end of table)
2702		Basic with #7955	Mpx only	
IBM Terminal-Type I				
75 bps	1	7.66	2.96	
135.5 bps	1	4.30	1.97	
600 bps	1	0.944		
IBM Terminal-Type II	1	0.944		
Telegraph-Type I				
45 bps	1	10.54	4.94	
57 bps	1	8.14	3.95	
75 bps	1	6.22	2.96	
Telegraph-Type II	1	6.22	2.96	
2703				
IBM Terminal-Type I		<u>75 bps</u> <u>134.5 bps</u> <u>600 bps</u>		
With 1 #7505	1	1.25	0.67	
2 #7505	1	0.62	0.33	
1 #7506	1	4.58	2.46	0.54
2 #7506	1	2.29	1.23	0.27
3 #7506	1	1.53	0.82	0.18
IBM Terminal-Type II				
With 1 #7505	1			
2 #7505	1			
1 #7506	1		0.54	
2 #7506	1		0.27	
3 #7506	1		0.18	
Telegraph-Type I		<u>45.5 bps</u> <u>56.89 bps</u> <u>74.2 bps</u>		
With 1 #7505	1	1.72	1.36	1.02
2 #7505	1	0.86	0.68	0.51
1 #7506	1	6.29	5.00	3.75
2 #7506	1	3.15	2.50	1.87
3 #7506	1	2.10	1.67	1.25
Telegraph-Type II		<u>110 bps</u>		
With 1 #7505	1	1.03		
2 #7505	1	0.51		
1 #7506	1	3.79		
2 #7506	1	1.89		
3 #7506	1	1.26		
2802	1	Burst Mode	Low Density 170 kb High Density 340 kb	
2820	1	Slr only	1.22 mb	5
2821				
2540 Reading -- 1000 cpm	2	6.5		
2540 with 51 column feed -- 800 cpm	2	10.0		
2540 Punching	2	14.0		
1403 Model 2	3	15.7	200 kb	
1403 Models 3, N1	3	15.1	200 kb	
2822	2	800 usec	1 kc	
2840	3	Burst Mode	238.1 kc	
2841	1	Burst Mode	2302 156.2 kb 2311 156.2 kb 2321 54.7 kb 7320 135.5 kb 2303 303.8 kb	
		Slr only		

I/O DEVICE	CLASS	MPX CH Crit Time (ms)	SLR CH Data Rate	NOTES (Listed at end of table)
2848	3	0.4	2.56 kc	
7770		INPUT	Mpx only	
		Manual* IBM		
		No. 1001		
Basic	1	49.8	9.02	
With 1 #4679	1	24.1	4.50	
2 #4679	1	16.6	2.99	
3 #4679	1	12.0	1.48	
4 #4679	1	9.02	1.48	
5 #4679	1	7.51	1.48	
7772	1	3.3	Mpx only	
Channel-to-Channel Adapter (SF #1850)	3	Burst Mode	Variable-runs at rate of slower channel	6

\* Manual=Pushbutton  
manual dialing telephone

NOTES:

1. Must be highest or lowest priority device on Models 40 and 50. Should be ignored for cabling purposes.
2. The class and timing for other adapters on the 2701 is variable, depending on the attached facility.
3. Only one per system.
4. Only two per system.
5. Should be attached as shown:

<u>Model</u>	<u>Channel</u>
50	High speed only
65	1
67 or 75	1, 2, or 3

6. Is generally attached to the lowest priority (highest numbered) selector channel. The adapter must be the first control device on the channel to which it is assigned and must also be first priority.
7. Must be cabled as any other control unit. Is located in 2065, 2067.

● CUSTOMER-SUPPLIED CABLES

Unit	Model	Cable Number	IBM Preassembled Cable Assembly	Customer-Assembled Cables			Connector Installation Tools (Note 3)	Cable Description
				Bulk Part	IBM Number	Connector Group		
2260/2848	All	a	5728291	323921	5729794	2, 3, 5	Used for display only (less than 1,000-foot cable length).	
2260/2848	All	a	5727685	323921	5729794	2, 3, 5	Used for display only (1,000-foot to 2,000-foot cable length).	
2260/2848	All	a	5728293	5213866	5729796	4, 5	Used to add keyboard (less than 1,000-foot cable length).	
2260/2848	All	a	5727686	5213866	5729796	4, 5	Used to add keyboard (1,000-foot to 2,000-foot cable length).	
2260/2848	All	a	5728292	5213814	5729795	1, 2, 3, 4, 5	Combined keyboard display (less than 1,000-foot cable length).	
2260/2848	All	a	5727687	5214887	5727385	1, 2, 3, 4, 5, 6	Combined keyboard display (1,000-foot to 2,000-foot cable length).	
1053/2848	All	b	5728298	5213821	5729797	7, 8	1053 attachment (2,000-foot maximum cable length).	
2250/2840	2250 Model 2	Group 564 to 553	5724309	5213924	---	---	Used to connect group 553 to 564. Connectors mate so that more than one cable may be used to make a run.	

NOTES:

1. One run was formerly IBM bulk part 532029. Requires tools 1 and 5 on tool listing for attaching connectors.
2. Formerly 5729793, consisted of IBM bulk parts 323921, 532029, and 5213866 (one run each), and connector group 5729798. Requires same tools as 5727687 cable assembly.
3. Installation tools for customer-assembled cables must be supplied by the customer. See "Special Tools Required."
4. Before ordering parts or cables, see "Cable Installation Practice 2260/2848 and 1053/2848."

● 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	Rayclad Termogun 500A	Shrink Tubing	631810	Rayclad 0.75 inch (2 cm)
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

**CABLE DESCRIPTIONS**

**Part 323921 -- Commercial Designation RG62/U**

Conductor	Wire Size	OD Inches	UL Rating	Insulation Type	Cover
Copperweld Solid	22AWG	0.242 (0,6 cm)	750v	Semi-Solid Polyethylene	Vinyl Color Black Shield Copper Braid

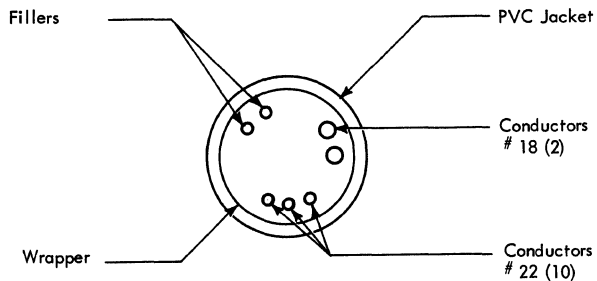
Source: Amphenol 21-026,  
Belden 8254, or approved equivalent.

**Part 532029 (RG62/U may be used if larger size is not objectionable)**

Conductor	Wire Size	OD Inches	UL Rating	Insulation Type	Cover
Copperweld Solid	26AWG	0.143 (0,4 cm)	750v	Flame-Retardant Polyethylene	PVC Color Grey Shield Copper Braid

Source: IBM or approved equivalent.

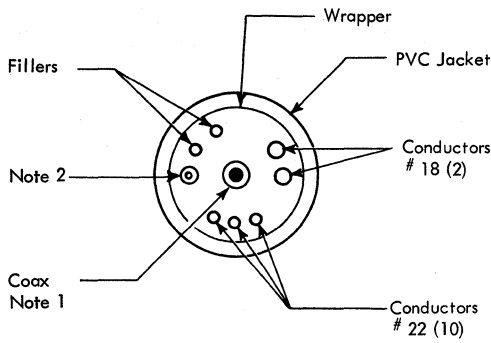
Part 5213866



Cable Specifications									
No. Of Cond	Shield	Cable OD (1 ± 0,04 cm)	Filler	Wrapper or Separator (0,003 cm)	Jacket				Miscellaneous
					Material	Nominal Thickness (0,2 cm)	Color	Finish	
12		.376" ± .015" (1 ± 0,04 cm)	PVC	.001" Mylar* (0,003 cm)	PVC	.063" (0,2 cm)	IBM 823 Grey	Smooth	Note 1

Specifications of Individual Conductors									
Wire No.	Conductor			Insulation				UL Rating	
	AWG Size	Material	Stranding	Material	Wall Thickness Average (in.) (cm)	Body Color	Tracer	Volts	Temp °C
1	18	Tinned·CU	16/30	PVC	.009 0,02	Blk	-	300	80
2	18	↑	16/30	↑	↑	Wh	-	↑	↑
3	22	↑	7/30	↑	↑	Blk	-	↑	↑
4	↑	↑	↓	↑	↑	Wh	-	↑	↑
5	↑	↑	↓	↑	↑	Red	-	↑	↑
6	↑	↑	↓	↑	↑	Blu	-	↑	↑
7	↑	↑	↓	↑	↑	Gry	-	↑	↑
8	↑	↑	↓	↑	↑	Org	-	↑	↑
9	↑	↑	↓	↑	↑	Aqu	-	↑	↑
10	↑	↑	↓	↑	↑	Vio	-	↑	↑
11	↓	↓	↓	↓	↓	Yel	-	↓	↓
12	22	Tinned·CU	7/30	PVC	.009 0,02	Brn	-	300	80

- NOTES:
- \* DuPont Trademark
  - 1. Completed cable shall be capable of withstanding one complete turn around a 3 inch (8 cm) radius mandrel at room temperature without damage.



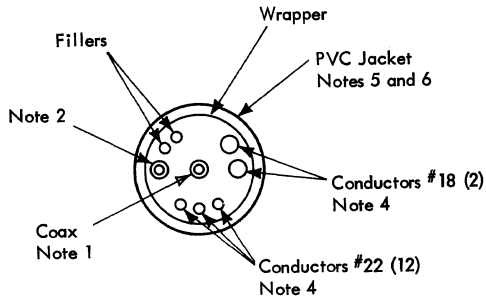
Cable Specifications									
No. Of Cond	Shield	Cable O D (1 ± 0,1 cm)	Filler (Note 3)	Wrapper or Separator (0,003 cm)	Jacket				Miscellaneous Note 4
					Material PVC	Nominal Thickness (0,2 cm)	Color IBM 823 Grey	Finish Smooth	
14	-	.462" ± .025" (1 ± 0,1 cm)	PVC (Note 3)	.001" Mylar (0,003 cm)	PVC	.063" (0,2 cm)	IBM 823 Grey	Smooth	Note 4

Specifications of Individual Conductors									
Wire No.	Conductor			Insulation				UL Rating	
	AWG Size	Material	Stranding	Material	Wall Thickness Average (in.) (cm)	Body Color	Tracer	Volts	Temp °C
1	22	CW	Solid	Note 1			-	300	80
2	18	Tinned-CU	16/30	PVC	.009 0,02	Blk	-	↑	↑
3	18	↑	7/30	↑	↑	Wh	-		
4	22		Blk			-			
5	↑		Wh			-			
6	↑		Red			-			
7	↑		Blu			-			
8	↑		Gry			-			
9	↑		Org			-			
10	↑		Aqu			-			
11	↑		Vio			-			
12	↓		Tinned-CU			7/30	↓	↓	Yel
13	↓	Note 2	↓	PVC	.009 0,02	Brn	-	300	80
14	22	Note 2	7/30	PVC	.009 0,02	Wh	Blk	300	80

NOTES:

1. Conductor to be coax - 93 ohm, 13.5 MMFD/ft (44 MMFD/m), without outer PVC jacket.
2. No. 22 AWG shielded; No. 36 AWG tinned copper 90 percent minimum coverage with black PVC jacket.
3. Fillers required to effect circular cross section.
4. Completed cable shall be capable of withstanding one complete turn around a 3 inch (8 cm) radius mandrel at room temperature without damage.

● Part 5214887



Cable Specifications								
No. Of Cond	Shield	Cable OD	Filler	Wrapper or Separator	Jacket			
					Material	Nominal Thickness	Color	Finish
16	-	.497" ± .025" (1 ± 0,1 cm)	PVC (Note 3)	.001" Mylar (0,003 cm)	PVC (Notes 5 and 6)	.063" (0,2 cm)	Black	Smooth

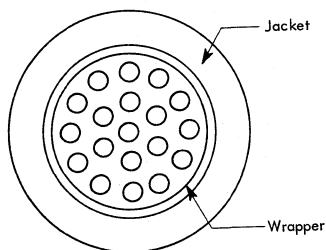
Specifications of Individual Conductors									
Wire No.	Conductor			Insulation				UL Rating	
	AWG Size	Material	Stranding	Material	Wall Thickness Average (in.) (cm)	Body Color	Tracer	Volts	Temp °C
1	22	CW	Solid	Note 1	.009 0,02	Blk	-	300	80
2	18	Tinned · CU	16/30	SR PVC		Wh	-		
3	18	↑	16/30	↑		Blk	-		
4	22		7/30			Wh	-		
5	↑		↑			Red	-		
6	↑		↑			Blu	-		
7	↑		↑			Gry	-		
8	↑		↑			Org	-		
9	↑		↑			Aqu	-		
10	↑		↑			Vio	-		
11	↑		↑			Yel	-		
12	↑		↑			Brn	-		
13	↓	Tinned · CU	↓	↓		Wh	Blk		
14	↓	Note 2	↓	↓		Wh	Red		
15	↓	Tinned · CU	↓	↓		Wh	Blu		
16	22	Tinned · CU	7/30	SR PVC		Wh	Blu		

NOTES:

1. Conductor to be coax - 93 ohm, 13.5 MMFD/ft (44 MMFD/m), without outer PVC jacket (RG62/U).
2. No. 22 AWG shielded; No. 36 AWG tinned copper 90 percent minimum coverage with black PVC jacket; 0.015 inch (0,04 cm) 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 black.
6. Jacket material hardness -- shore A 85 ± 5.



Part 5213821



Cable Specifications									
No. of Cond	Shield	Cable OD	Filler	Wrapper or Separator	Jacket				Miscellaneous
					Material	Nominal Thickness	Color	Finish	
24	-	.470" ± .025" (1 ± 0,1 cm)	PVC	.001" Mylar (0,003 cm)	PVC	.063" (0,2 cm)	Grey IBM 823	Smooth	Note 4

Specifications of Individual Conductors										
Wire No.	Conductor			Insulation					UL Rating	
	AWG Size	Material	Stranding	Material	Wall Thickness Average		Body Color	Tracer	Volts	Temp °C
					(in.)	(cm)				
1	18	Tinned .CU	16/30	PVC	.016	0,04	Blk	-	300	80
2	↑	↑	↑	↑	↑	↑	Wh	-	↑	↑
3	↑	↑	↑	↑	↑	↑	Red	-	↑	↑
4	↑	↑	↑	↑	↑	↑	Yel	-	↑	↑
5	↑	↑	↑	↑	↑	↑	Org	-	↑	↑
6	↑	↑	↑	↑	↑	↑	Blu	-	↑	↑
7	↑	↑	↑	↑	↑	↑	Brn	-	↑	↑
8	↑	↑	↑	↑	↑	↑	Vio	-	↑	↑
9	↑	↑	↑	↑	↑	↑	Aqu	-	↑	↑
10	↑	↑	↑	↑	↑	↑	Gry	-	↑	↑
11	↑	↑	↑	↑	↑	↑	Wh	Red	↑	↑
12	↓	↓	↓	↓	↓	↓	Wh	Yel	↓	↓
13	18	↑	16/30	↑	↑	↑	Grn	Yel	Note 3	Note 3
14	20	↑	10/30	↑	↑	↑	Blk	-	↑	↑
15	↑	↑	↑	↑	↑	↑	Wh	-	↑	↑
16	↑	↑	↑	↑	↑	↑	Red	-	↑	↑
17	↑	↑	↑	↑	↑	↑	Yel	-	↑	↑
18	↑	↑	↑	↑	↑	↑	Org	-	↑	↑
19	↑	↑	↑	↑	↑	↑	Blu	-	↑	↑
20	↑	↑	↑	↑	↑	↑	Brn	-	↑	↑
21	↑	↑	↑	↑	↑	↑	Vio	-	↑	↑
22	↓	↓	↓	↓	↓	↓	Aqu	-	↓	↓
23	↓	↓	↓	↓	↓	↓	Gry	-	↓	↓
24	20	Tinned .CU	10/30	PVC	.016	0,04	Wh	Red	300	80

NOTES:

1. Jacket material: elongation -- 200 percent 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 (60-70 percent) with yellow (40-30 percent) helix.
4. Completed cable shall be capable of withstanding one complete turn around a 3 inch (8 cm) radius mandrel at room temperature without damage to wires or cover.

● CABLE INSTALLATION PRACTICE 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 following sections. See preceding sections 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 type 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.")

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 (8 cm). 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 323921 (RG62/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).

The 2260/2848 and 1053/2848 cabling may be run between buildings overhead or underground and it is recommended that a conduit or raceway be used to transport the cables.

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.

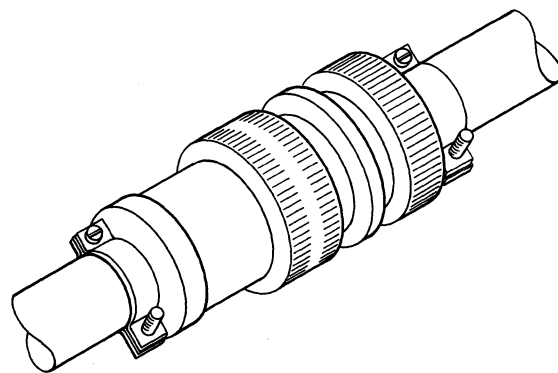
3. Tape loose wires back to cable jacket. Care should be taken so that a cable puller or other equipment will put the strain on the main cable body and not on the loose wires.

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 (Figure 24)

The customer may elect to splice or install a quick-disconnect connector to the 2260/2848 cables or the 1053/2848 cables. The connector has complete environmental sealing and may be potted with resilient 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 are available at 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.

● Figure 24. Connector Assembly

Cable Assembly	IBM Kit Number	IBM Procedure	Description	Commercial Parts Quantity	Commercial Source
2260/2848	5727379	5727381	Plug 67-5076	1	Amphenol Corporation
			Receptacle 67-5077	1	Amphenol Corporation
			1/4" (0,6 cm) Shrink Sleeving	6"	Electrical Supplier
			Clamp Boot	(15 cm) *	Electrical Supplier
1053/2848	5727380	5727382	Plug 67-01C22-67P (104)	1	Amphenol Corporation
			Receptacle 67-06	1	Amphenol Corporation
			C22-67S (104) Clamp Boot	**	Electrical Supplier

\*One each of MS-39056-3, MS39056-4, and MS39056-5.

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

Cable Splice (Alternate Method) 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 YAM hand crimp tool and Master HG501 heat gun or equivalent tool.

Cable Assembly	Bulk Cable	IBM Kit Number	Description and Commercial Part Numbers	Quantity	Commercial Source
<b>Display Only</b>					
5727685 or 5728291*	2 runs of 323921* RG62/U	5727719	BNC Connector Plug UG260 B/U	2	Electrical Supplier
			BNC Connector Jack UG261 3/4" (2 cm) Shrink Sleeving	2 10" (25 cm)	Electrical Supplier Electrical Supplier
<b>Keyboard Attachment</b>					
5727686 or 5728293	5213866	5727720	Butt Connector YSV-18 1/8" (0,3 cm) Shrink Sleeving	12 16" (41 cm)	Burndy Corporation Electrical Supplier
			3/4" (2 cm) Shrink Sleeving	16" (41 cm)	Electrical Supplier
<b>Combined Keyboard Display</b>					
5727687** or 5728292	5214887 or 5213814	5727721	BNC Connector Plug UG260 B/U	1	Electrical Supplier
			BNC Connector Jack UG261 B/U	1	Electrical Supplier
			Butt Connector YSV-18 1/8" (0,3 cm) Shrink Sleeving 1/4" (0,6 cm) Shrink Sleeving 3/4" (2 cm) Shrink Sleeving	16 20" (51 cm) 20" (51 cm) 20" (51 cm)	Burndy Corporation Electrical Supplier Electrical Supplier Electrical Supplier
<b>1053 Attachment</b>					
5728298	5213821	5727722	Butt Connector YSV-18 1/8" (0,3 cm) Shrink Sleeving 3/4" (2 cm) Shrink Sleeving	24 24" (61 cm) 16" (41 cm)	Burndy Corporation Electrical Supplier Electrical Supplier

\*When one run of cable is bulk cable (IBM 532029), BNC connectors UG1033/U and UG1056/U should be used.

\*\*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 3/4-inch (2 cm) 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 (2 cm) diameter shrink sleeving after the two halves have been mated. Refer to manufacturer's procedures in Amphenol Berg Catalog D3, 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 (0,3 cm) 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 (3 cm) 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 Blk #18 AWG	B
2 Wh #18 AWG	C
3 Blk #22 AWG	R
4 Wh #22 AWG	Q
5 Red #22 AWG	P
6 Blue #22 AWG	N
7 Gray #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
13 Coax Yel	A
13 Blk (Shield)	B
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 Yellow	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 Blue #22 AWG	N
8 Gray #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

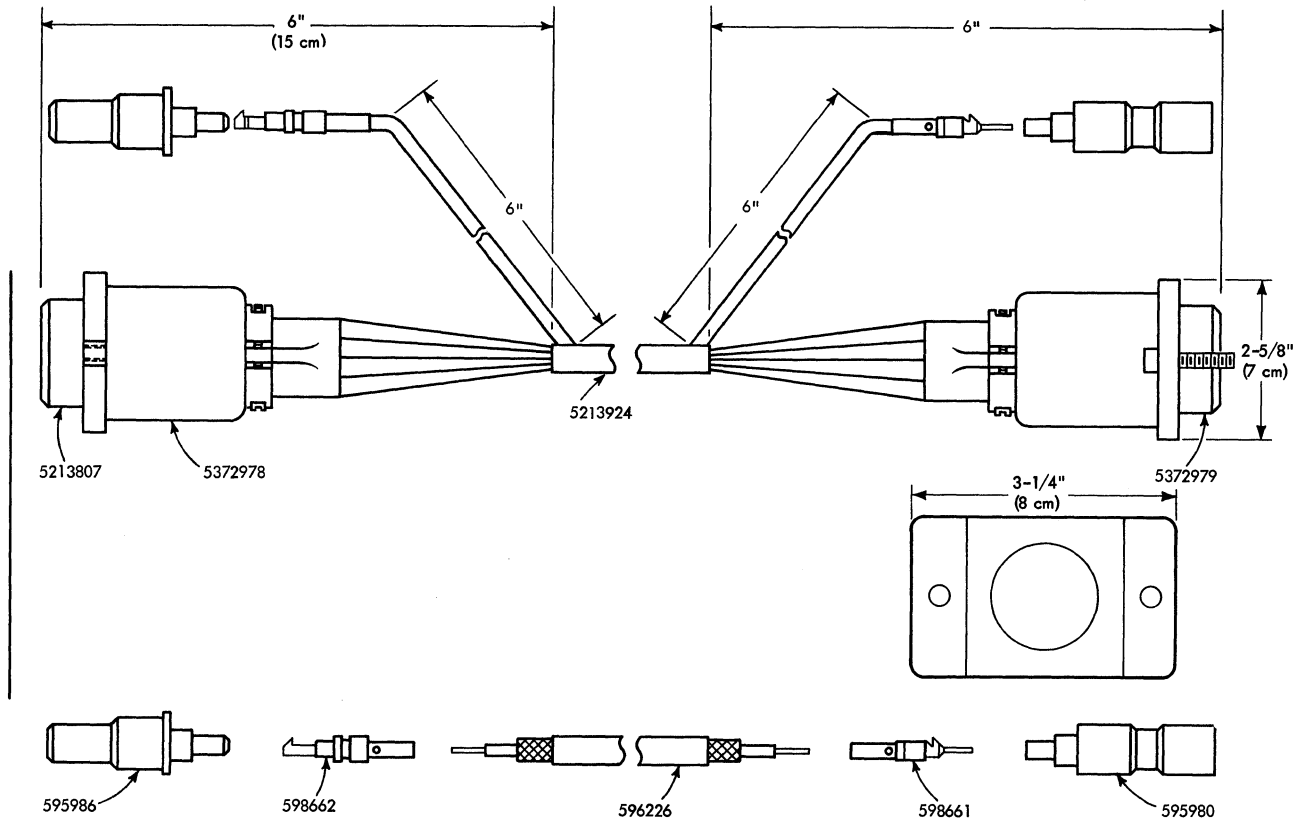
5728293	
Wire Number	Connector Position
1 Blk #18 AWG	F
2 Wh #18 AWG	G
3 Blk #22 AWG	R
4 Wh #22 AWG	Q
5 Red #22 AWG	P
6 Blu #22 AWG	N
7 Gra #22 AWG	M
8 Org #22 AWG	L
9 Aqu #22 AWG	K
10 Vio #22 AWG	J
11 Yel #22 AWG	H
12 Brn #22 AWG	C

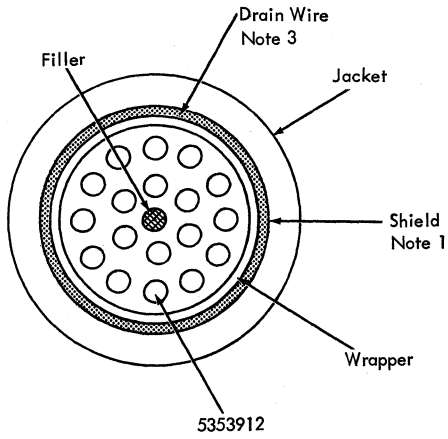
5728298	
Wire Number	Connector Position
1 Blk #18 AWG	K
2 Wh #18 AWG	J
3 Red #18 AWG	P
4 Yel #18 AWG	M
5 Org #18 AWG	L
6 Blu #18 AWG	N
7 Brn #18 AWG	BB
8 Vio #18 AWG	FF
9 Aqu #18 AWG	NN
10 Gra #18 AWG	R
11 Wh/Red #18 AWG	V
12 Wh/Yel #18 AWG	T
13 Grn/Yel #18 AWG	Z
14 Blk #20 AWG	H
15 Wh #20 AWG	D
16 Red #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

Part 5724309

Quantity	IBM Number	Burdny Corporation Part Number	Description
1	5213807	ME28XR-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
1 each	461036	M8ND + N22RVT-1 + N20RT-26	Die set outer Hyring Die set inner Contacts

Assemble to Spec No. 890130 and 895441; specifications available from IBM upon request.





Cable Specifications									
No. of Cond	Shield	Cable OD	Filler	Wrapper or Separator	Jacket				Miscellaneous
					Material	Nominal Thickness	Color	Finish	
20	Note 1	1.005" ± .040" (3 ± 0, 1 cm)	PVC	.001" Mylar (0,003 cm)	PVC Note 2	.063" (0, 2 cm)	Grey IBM 823	Smooth	

Specifications of Individual Conductors										
Wire No.	Conductor			Insulation					UL Rating	
	AWG Size	Material	Stranding	Material	Wall Thickness Average (in.) (cm)	Body Color	Tracer	Volts	Temp °C	
1-20	--	5353912	--	--	--	--	--	--	--	

NOTES:

1. Shield to be No. 34 tinned copper 90 percent minimum coverage.
2. Tensile strength-- 1, 800 psi minimum; elongation-- 200 percent minimum; hardness-- shore A 85 ± 5.
3. Drain wire is under shield. No. 26 AWG solid copper alloy spiral lay.

# CABLES FROM NON-IBM DEVICES

Unit	Group No.	Termination	
2701	355 } 359 }	#8 Ring Lugs (2 per line) 1 pair - 355 2 pair - 359	
	356	WE-283B Plug Customer Provides 404B Surface Mount or 493A Flush Mount Jacks	
	357 } 364 }	EIA RS-232A Connector	
	365	12 Pin Burndy Connector for 301-B Data Set	
	358 } 363 }	See 2701 Data Adapter Unit, Original Equipment Manufacturers' Information Manual, Form A22-6844	
	362	2 EIA RS-232A Connectors	
	2702	403	EIA RS-232A Connector
408		403-1 Connector 408-2 Connector and Cables	
404 409		#8 Ring Lugs 8 pair - 404 16 pair - 409	
405		4 WE-283B Plugs Customer Provides 404B Surface Mount or 493 Flush Mount Jacks	
412		412 as above but 8 lines (4 Wire)	
2703		424 } 427 }	4 EIA RS-232A Connectors
		428	1 EIA RS-232A Connector
	425	#8 Ring Lugs (16 pair)	
	426	8 WE-283B Plugs Customer Provides 404B Surface Mount or 493A Flush Mount Jacks	
	429	2 EIA RS-232A Connectors	
	2711	444	WE-283B Plug Customer Provides 404B Surface Mount or 493A Flush Mount Jacks
	2848	265	EIA RS-232
7770	678	4 EIA RS-232 Cables	
		2 EIA RS-232 Cables	
		2 EIA RS-232 Cables	
		2 EIA RS-232 Cables	
7772	653	2 EIA RS-232 Cables	



## APPENDIX C

### MODEL 85 -- ADDITIONAL INSTALLATION REQUIREMENTS

#### 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 page.

##### Design Criteria

The design criteria for the Model 85 is the same as the System/360 components.

### LIQUID COOLANT SYSTEM

#### General Requirements

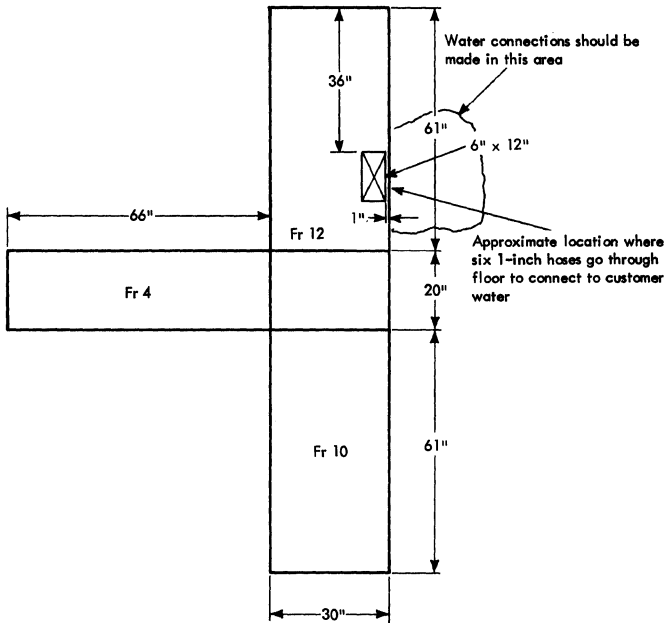
The liquid coolant system is a closed-recirculation system. The loop should have a capacity to accept the heat rejected by the computer at the temperature level specified and provide proper coolant distribution to individual computer frames.

Note: In the nonoperating condition, there should be no coolant circulation.

Coolant specifications are valid for altitudes to 3,000 feet (914m). For altitudes above 3,000 feet (914m), see your Installation Planning representative for recommendations.

**I COOLANT DISTRIBUTION UNIT**

**PLAN VIEW**



**Water Required:**  
 30 gpm at 60°F (16°C).  
 15 psi pressure drop.  
 Volume adequate to 3,000 feet (914m) altitude.

Change in specifications available for altitudes above 3,000 feet (914m). See your Installation Planning representative.

Supply lines should terminate with three Hansen\* HK series B6-K31 fittings; return line with three Hansen HK series B6-H31 fittings.

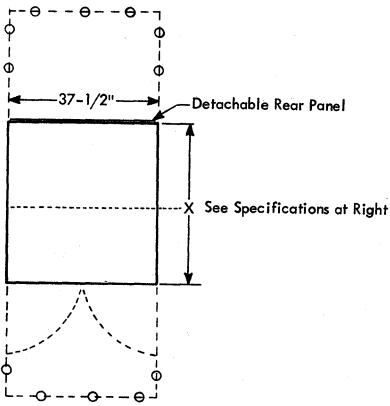
**Note:**  
 Customer water connections must be accessible.  
 Maximum hose length from floor hole to customer fitting = 5 feet (2m).

\* Hansen Mfg Co., Cleveland, Ohio

Inches	Centimeters
1	3
6	15
12	31
20	51
30	76
36	91
61	155
66	168

2085 MOTOR-GENERATOR STARTER (REMOTE)

PLAN VIEW



Inches	Centimeters
37-1/2	95

SPECIFICATIONS

Dimensions

	F	S	H
440 volts			
Inches	37-1/2	20	80
cm	95	51	203
220 volts			
Inches	37-1/2	30	90
cm	95	76	229

Service Clearances

	F	R	Rt	L
Inches	30	30	0	0
cm	76	76	0	0

Weight:

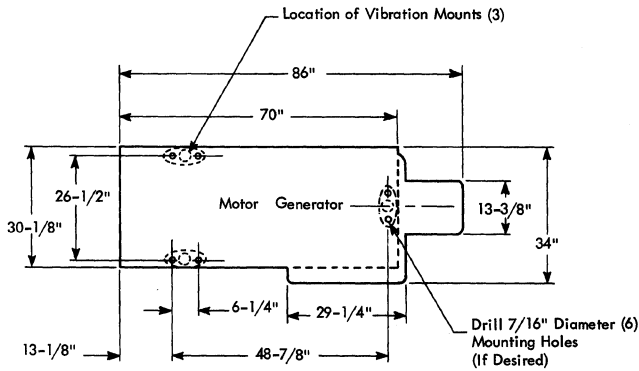
- | NEMA Size #5 -- 208 volts  
2,000 lb (907 kg)
- NEMA Size #6 -- 440 volts  
800 lb (363 kg)

Motor starter--can be set at one of the following:

Starting Current		Starting Time	Tap
440v	208v	(Approx)	Setting
(amps)	(amps)	(sec)	(percent)
988	1,760	9.5	80
670	1,160	14.5	65 (factory setting)
422	690	24.5	50

2085 MOTOR GENERATOR (REMOTE)

PLAN VIEW



Inches	Centimeters
7/16	1
6-1/4	16
13-1/8	33
13-3/8	34
26-1/2	67
29-1/4	74
30-1/8	77
34	86
48-7/8	124
70	178
86	218

SPECIFICATIONS

Dimensions

	F	S	H
Inches	86	34	53
cm	218	86	135

Service Clearances

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

Weight: 4,200 lb (1,905 kg)

Heat Output: Max 102,000 BTU/hr @ 440v  
 (25,704 kcal)  
 86,000 BTU/hr @ 208v  
 (21,672 kcal)

Power Requirements:

Phases 3

Input: Motor--Induction, 2 pole, 200 hp, 3,560 rpm,  
 208v or 440v, 60 cycle/240 amps full load,  
 NEMA design B, code F  
 40°C maximum ambient, dripproof enclosure

Output: Generator--Synchronous, 14 pole, 175 kva, 3 phase,  
 3,560 rpm, 208 volts, 3 phase, 400 cycle, 485 amps  
 full load, 70°C rise, dripproof enclosure

Notes

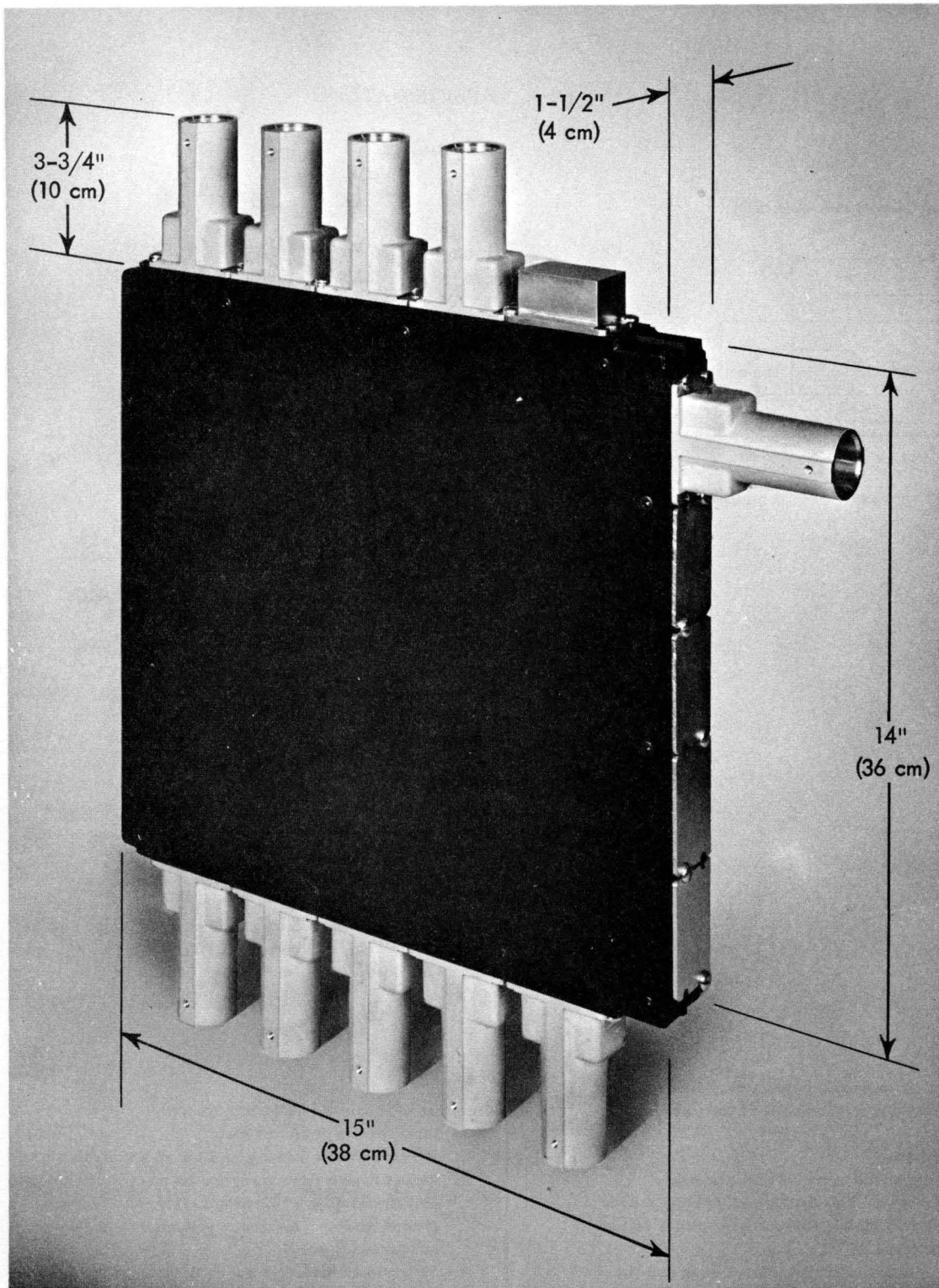
The installation and maintenance of the motor-generator set and starter unit will be the responsibility of the customer.

At Time of Installation:

1. An overvoltage circuit is provided in the motor-generator regulator. This must be adjusted to remove generator output when the 400-cps line voltage reaches  $220 \pm 2$  volts (RMS).
2. The generator output voltage must be set so that the voltage measured by the meter located on the power distribution unit (frame 14) reads between the center and upper scribe marks.
3. 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. Wiring between motor-generator set and motor starter.
3. Output feeders from generator to power distribution unit (frame 14); if in conduit, this must be a non-ferrous conduit. Maximum voltage drop at PDU should not exceed 5 percent.
4. Five remote leads required from generator to PDU; three leads for sensing (2 ohms maximum resistance) and two indicator light leads.
5. EPO pushbutton in computer room must remotely cut off power to motor and output of generator. Shunt trips are provided for this purpose in both circuit breakers.



Memory Bus Coupler

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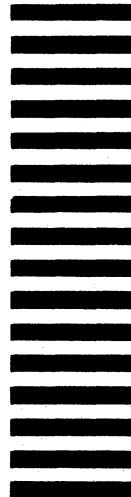
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