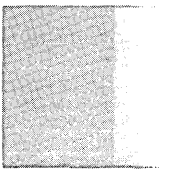
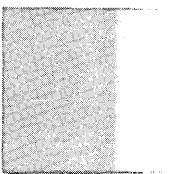
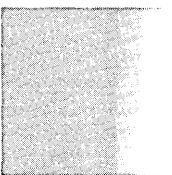
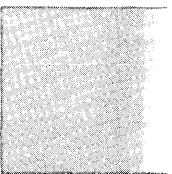
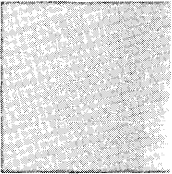
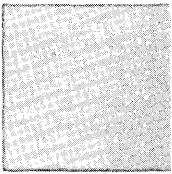
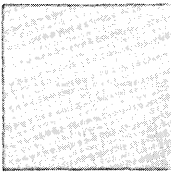
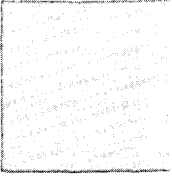
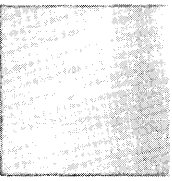


Systems Reference Library

IBM 1130 Computing System Installation Manual—Physical Planning

This publication contains physical planning information for the installation of an 1130 system. Included are dimensions, weights, cable locations and lengths, service clearances, and other necessary physical information for each unit of the system. Environmental and electrical requirements are also included. Photographs and drawings are used throughout the text, and a summary table of physical planning specifications is provided.



Fourth Edition

This publication (Form A26-5914-3) supersedes and makes obsolete the previous edition (Form A26-5914-2).

Specifications contained herein are subject to change from time to time. Any such change will be reported in subsequent revisions or Technical Newsletters.

The illustrations in this manual have a code number in the lower corner. This is a publishing control number and is not related to the subject matter.

Copies of this and other IBM publications can be obtained through IBM Branch Offices

A form is provided at the back of this publication for your comments.

This manual was prepared by the IBM Systems Development Division, Product Publications, Dept. 455, Bldg. 014, San Jose, California 95114. Send comments concerning the contents of this manual to this address.

CONTENTS

INSTALLATION REQUIREMENTS AND			
SCHEDULING	1	Synchronous Communications Adapter	6
System Arrangement and Space		IBM Field Engineering Requirements	6
Requirements	1	UNIT SPECIFICATIONS	7
Scheduling	1	IBM 1131 Central Processing Unit, Models 1A,	
Six Months before Delivery	1	1B, 2A, and 2B	8
Four Months before Delivery	1	IBM 1131 Central Processing Unit, Models 2C,	
One Week before Machine Delivery	3	2D, 3B, 3C, and 3D	9
Environmental Requirements	3	IBM 1132 Printer	10
Ambient Air Conditions	3	IBM 1133 Multiplex Control Enclosure	11
Dust and Dirt Control	3	IBM 1134 Paper Tape Reader	12
Fire Protection Equipment	3	IBM 1231 Optical Mark Page Reader, Model 1 .	13
Power Requirements	3	IBM 1442 Card Punch, Model 5	14
Power Supply	3	IBM 1442 Card Read Punch, Models 6 and 7 . .	14
Power Distribution	3	IBM 2310 Disk Storage, Models B1 and B2 . . .	15
Phase Rotation	4	IBM 2501 Card Reader, Models A1 and A2 . . .	16
Convenience Outlets	4	IBM 1055 Paper Tape Punch	17
Grounding	4	IBM 1403 Printer, Models 6 and 7	18
Lightning Protection	4	IBM 1627 Plotter, Models 1 and 2	19
Cables	4	Auxiliary Table	20
Storage Access Channel	4	APPENDIX A	21
Storage Access Channel Cable	4	APPENDIX B	22
		INDEX	23

INSTALLATION REQUIREMENTS AND SCHEDULING

An efficiently operated computer system depends largely on careful planning and preparation prior to actual installation of equipment. The purpose of this manual is to assist IBM customers in the period preceding delivery of new equipment.

The foremost requirement is to provide suitable space and environmental conditions for the components ordered. Consideration should be given not only to the requirements of the system and associated personnel, but also to other equipment, such as storage cabinets, work tables, chairs, and desks. IBM will provide consultation and assistance when requested to do so.

The following IBM publication is available to facilitate planning and installation:

1130 System Template (Form X26-5997)

SYSTEM ARRANGEMENT AND SPACE REQUIREMENTS

The physical location of the 1130 system components can be arranged to fit the individual needs of the user. Raised floors are not required but, when used, offer the following advantages:

1. Provide increased flexibility in system layout by allowing cables to be run direct.
2. Can be used as an air plenum.
3. Provide protection for inter-unit cabling and customer branch circuit wiring.

A compact arrangement of components provides for efficient and convenient operation by the system operator.

Consideration should be given to the possible future expansion of the system or installation. Additional machines or equipment can then be added to the initial installation without disruptive revisions to the original plans.

In summary, the following items should be considered in determining space requirements and location:

Cable routing.
Cable length.
Service clearance.

Work space.
Heat dissipation.
Desk space.
Aisle space.
Future expansion.
Weight and floor loading.
Electrical requirements.
Doorway sizes, elevator capacities, and loading facilities used to get the machines to their location.

Figure 1 illustrates the system component cabling and includes a list of the cables and cable lengths.

The appendix contains a summary of the physical specifications of the units of the 1130 system, including the required service clearance for proper servicing of the equipment by IBM Customer Engineers.

SCHEDULING

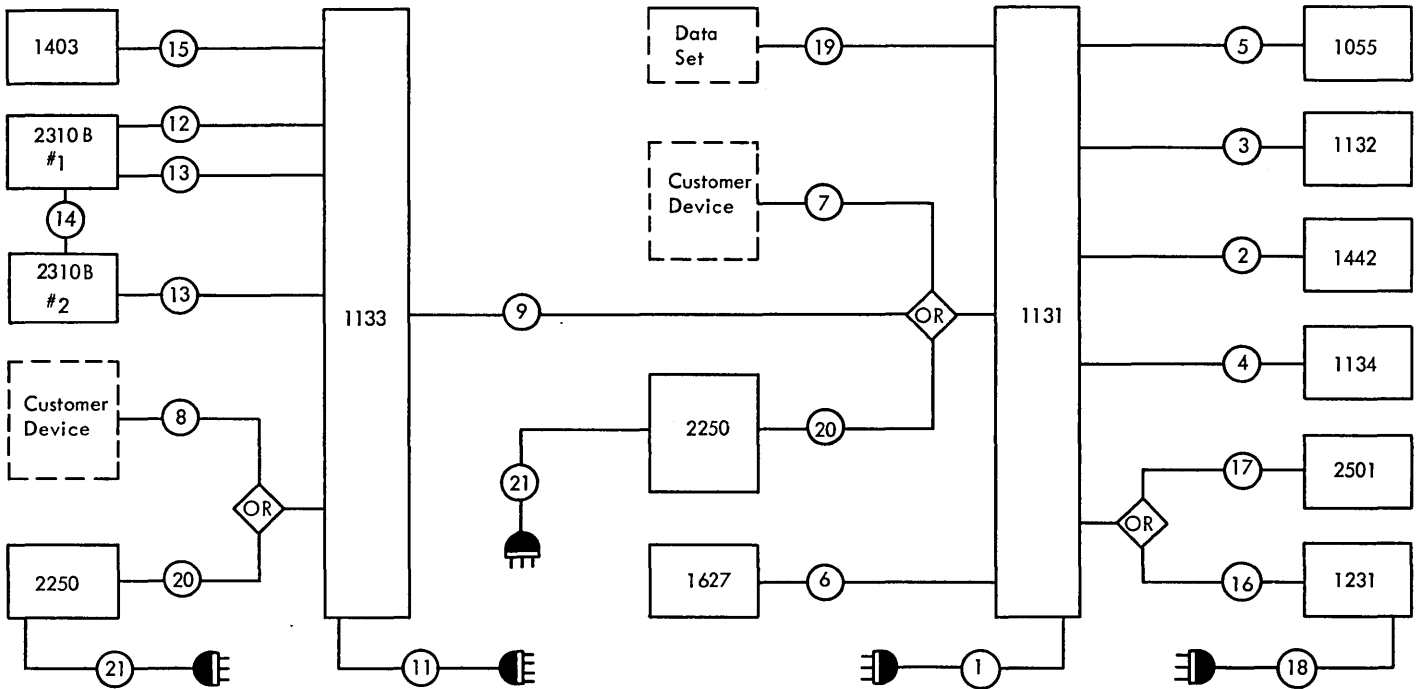
The design and implementation of a physical planning schedule assures machine-room readiness when the system is delivered. Because each 1130 system installation differs in some respect from every other installation, it is not possible to provide a precise schedule. The following schedule may be modified to meet the specific needs of a given installation.

Six Months before Delivery

1. Review the order.
2. Determine the prospective location of the system, initiate design criteria for facilities, and make a preliminary layout of the proposed installation.

Four Months before Delivery

This is a critical point in the schedule. The final layout should be determined and approved by the customer and by the IBM Branch Manager. If building alterations, such as painting, plastering, or expansion of electrical service, are necessary, the drawings and specifications for them should be complete and ready for the work to begin.



Group No.	No. of Cables	From (Unit)	To (Unit)	Maximum Length	Standard* Length (Ft)	Notes
1	1	Recpt	1131	14	14	1,2
2	2	1442	1131	15	15	1,3
3	2	1132	1131	15	15	1,3
4	1	1134	1131	11	11	1,3
5	1	1055	1131	7	7	1,3
6	1	1627	1131	12	12	1,3
7	1	Cust Dev	1131	19	-	4,7,8,9
8	1	Cust Dev	1133	19	-	4,7,8,10
9	3	1133	1131	13	13	4
11	1	Recpt	1133	14	14	1
12	2	2310 B #1	1133	-	13	5
13	1	2310 B	1133	13	13	-
14	2	2310 B #2	2310B#1	-	5	5
15	3	1403	1133	21	21	-
16	1	1231	1131	25	25	6
17	2	2501	1131	25	20	6
18	1	Recpt	1231	8	8	1
19	1	Data Set	1131	40	25	-
20	1	2250	1131 1133	13	13	4,8
21	1	Recpt	2250	14	14	1

- Notes:
1. Available only at length shown.
 2. The ac power cord (cable group 1) to the 1131 is not used when an 1133 is installed. When an 1133 is not installed, the ac power cord (cable group 1) must be ordered.
 3. Cables shipped with from unit.
 4. Only one device can be connected via the storage access channel. Thus, either an 1133 (cable group 9), the 2250 (cable group 20), or a customer device (cable group 7) can be connected to the 1131. Similarly, either the 2250 (cable group 20) or a customer device (cable group 8) can be connected to the 1133. Cable group 7 can be substituted for cable group 8 when adding an 1133 to an installed system.
 5. Maximum length of cable group 12 plus cable group 14 must be equal to or less than 21 feet.
 6. Only one 1231 or one 2501 may be installed.
 7. Customer purchase only.
 8. Cable length is measured from cable floor entry at 1131 or 1133 to the connector at the end of the cable. Maximum length must be reduced by the wire circuit dimension from the mating receptacle to the circuit component in the customer device.
 9. Used with feature code 7490.
 10. Used with feature code 7492.
- * Standard cable lengths shown will be supplied for the system unless a cable order is received at least 120 days prior to scheduled system delivery.

19050

● Figure 1. Cable Diagram and Cable Chart

No further changes that affect cable lengths should be made in the layout. A cable order form must be processed at this time.

One Week before Machine Delivery

All installation elements pertaining to environmental and power requirements should be reviewed and tested. Lighting, floor ramps, painting, plastering, decorating, etc., should also be completed at this time. Installation and testing of all early-delivery items should be completed.

ENVIRONMENTAL REQUIREMENTS

Ambient Air Conditions

All IBM 1130 Computing Systems use air for internal cooling. Cool air is introduced through the bottom or side of each unit, internally circulated by fans or natural convection, and exhausted to the room from the top. The following limits should be maintained for ambient air to ensure normal operation of the system:

Temperature: 60°F to 90°F
Relative humidity: 10% to 80%
Maximum wet bulb temperature: 78°F

A summary of the specifications for the individual units is given in the appendix.

Dust and Dirt Control

The amount of contamination in the office atmosphere will not normally interfere with the operation of the 1130 system. Normal precautions should be taken, however, to keep dust, dirt, and other foreign matter away from the machine area.

Fire Protection Equipment

Portable carbon-dioxide fire extinguishers of suitable size should be provided in the computing system area, subject to local building-code and fire-insurance requirements. A nonwetting fire-extinguishing agent for electrical equipment (Class C hazard) is recommended.

POWER REQUIREMENTS

Power Supply

Electrical requirements for the IBM 1130 Computing System depend on the system configuration and auxiliary equipment used. See Unit Specifications for voltage requirements.

The voltage and frequency specifications for the 1130 system are:

1. 115vac($\pm 10\%$); 60Hz(± 0.5 Hz); single-phase; three-wire (one phase, one neutral, and one grounding conductor).
2. 208 or 230vac($\pm 10\%$); 60Hz(± 0.5 Hz); single-phase; three-wire (two phase and one grounding conductor).
3. 208 or 230vac($\pm 10\%$); 60Hz(± 0.5 Hz); three-phase; four-wire (three phase and one grounding conductor).
- 4.* 195, or 220, or 235 vac($\pm 10\%$); 50 Hz(± 0.5 Hz); single-phase; three-wire (one phase, one neutral, and one grounding conductor).
- 5.* 195, or 220, or 235 vac ($\pm 10\%$); 50 Hz(± 0.5 Hz); three-phase; four-wire (three phase and one grounding conductor).

Power Distribution

All power to the 1130 system should be supplied through a single feeder, protected by a mainline circuit breaker. Individual branch circuits from the distribution panel should be protected by circuit breakers suitable for motor load application and derated according to the manufacturer's specifications.

The distribution panel should be located in an unobstructed and well-lighted area within the computer room. As a safety precaution, a remote circuit breaker, which can remove all power from the computer system, should be provided in the machine room.

Any customer-supplied machine receiving power from the building distribution system should have a branch-circuit protection device. This protection device should be interconnected with the 1130 system mainline circuit breaker, so that all power to machines located in the same room or area can be interrupted from one location under emergency conditions.

*Available for use in countries where 50-hertz power distribution systems are used.

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 one, phase two, and phase three.

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.

Grounding

A green-wire grounding conductor is supplied in each power cord. Each customer-supplied branch circuit should have an insulated wire conductor for the purpose of grounding equipment. All branch-circuit grounding wires can be tied to a common ground point at the distribution panel, and a single grounding wire run from the distribution panel to the nearest grounding station. Conduit must not be used as the only grounding means. Unless otherwise required by local codes, the grounded neutral conductor must be electrically isolated from the system grounding conductor except at the building grounding station.

Lightning Protection

It is recommended that the customer install lightning protection on his secondary power source when any of the following conditions exists:

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 power surges.

CABLES

IBM provides the necessary inter-unit signal and power cables for proper connection to the 1130 system.

Cable length limitations and routing listed in Figure 1 are available to the customer at no extra charge, except for those cables listed as customer purchase only. Cable lengths longer than the maximum specified can be considered on an RPQ* basis.

Cable lengths are determined by measuring the distance along the cable route from the floor or other mounting surface point of entry of a unit to the corresponding surface point of entry of the connecting unit. When a raised floor or raceway floor is used, twice the height of the floor must be added to the measured length.

Exposed interconnecting cables should be protected so that they do not present a safety hazard and are not readily damaged. This protection can consist of ramps, raceways with removable covers, or a raised floor.

Storage Access Channel

The Storage Access Channel (SAC) feature provides a means for external devices or systems to communicate directly with the 1131 CPU core storage. Communication with core storage from an external device is on either a cycle-steal or an interrupt basis, and is initiated by the external device when the device is ready to communicate. For more information on SAC, refer to the SRL Publication "IBM 1131 OEMI" (Form A26-3645).

Storage Access Channel Cable

Cable assembly P/N 2243004 (includes a connector on each end) may be purchased from IBM for attachment of a customer device to the Storage Access Channel (cable group number 7).

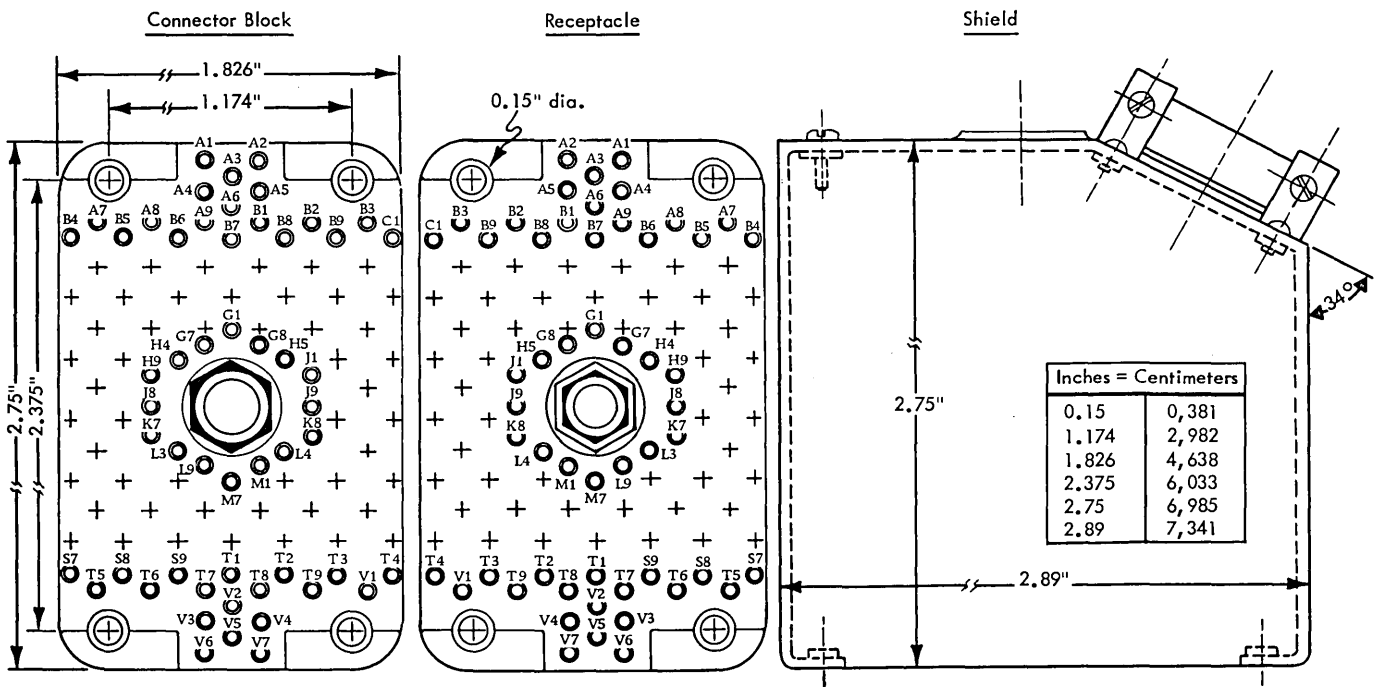
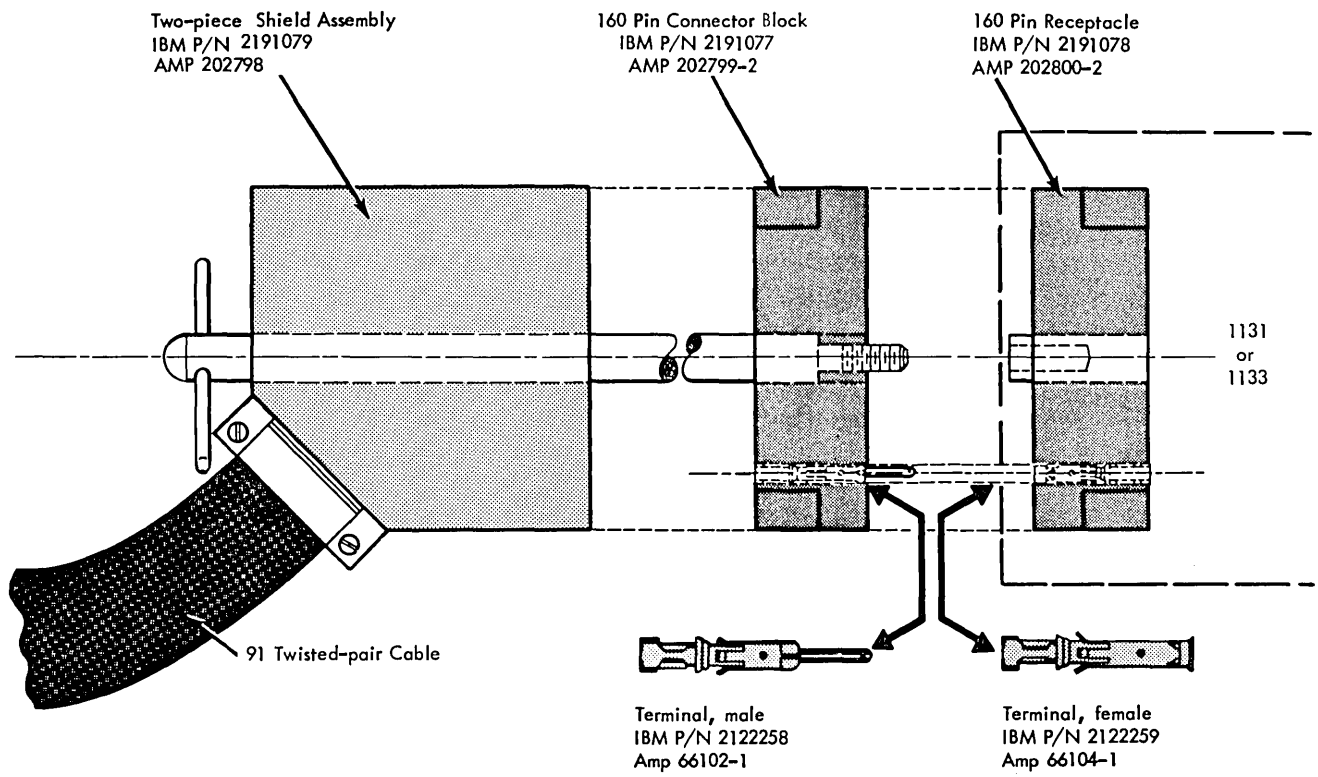
The data, address, and control lines are brought out through a 160-pin receptacle in the 1131.

A detailed diagram of the plug and receptacle is shown in Figure 2.

Specifications of the Storage Access Channel cable are:

Number of conductors: 182 (91 twisted pairs)
Cable diameter: 1.20" nominal
Cover type: Polyvinyl chloride 5/64" nominal thickness
Twist per foot: 1
Shielding: Tinned copper braid for 90% minimum coverage
Cable lay-up: 1-6-12-18-24-30

*Request price quotation from IBM.



27136A

Figure 2. Storage Access Channel Connector

Individual Conductor Characteristics:

Quantity: 182 (91 twisted pairs)
Maximum outside diameter: 0.054"
AWG size: 22
Conductor material: stranded copper
Insulation material: semi-rigid polyvinyl chloride
Insulation thickness: 0.009" nominal
U. L. voltage rating: 300 volts
Temp. rating (insulation): 80° C (176° F)

The external shielding must be connected only to CPU ground through position L3 of the 160-pin receptacle for the SAC.

Coupled Noise

The maximum level for noise coupled onto any signal line must not exceed 300 millivolts.

Cable Resistance

Cable length is limited by cable resistance and contact resistance. The maximum cable resistance, including contact resistance, must not exceed 26 ohms.

Power Sequence for Storage Access Channel Devices

Customer devices attached to the storage access channel should not be turned on or off except when the CPU is off or in single step mode.

It is recommended that non-IBM devices connected to the 1130 system via the storage access

channel be powered from an ac source having the same voltage as the ac source for the 1130 system.

Synchronous Communications Adapter

The Synchronous Communications Adapter (SCA) special feature enables the IBM 1130 Computing System to function as a point-to-point data transmission terminal, using either private or commercial common-carrier line transmission facilities. The adapter sends data to or receives data from the line transmission facilities under control of the stored program in the 1130. It operates on an interrupt-request basis similar to that used by other input/output devices in the IBM 1130 Computing System.

The Synchronous Communications Adapter cable (cable 19) routing is shown in Figure 1.

For more information on the SCA, refer to the SRL "IBM 1131 Functional Characteristics" (Form A26-5881).

IBM FIELD ENGINEERING REQUIREMENTS

Proper servicing of the 1130 system requires adequate service clearances around each unit of the system. These clearances are listed under the Specifications list for the individual unit.

Space should be provided near the operating area for storage of test equipment and spare parts. At least one duplex 115/120 vac grounding type receptacle should be located in this area.

This section contains plan views for each of the units in the system.

The plan views illustrated for each unit use these symbols:

- + Caster
- Floor Leveler
- ⊠ IBM Cable Entry
- ←● Floor Level Cable Exit
- ↑M Usage Meter
- CE → C.E. Panel

30046

IBM 1131 CENTRAL PROCESSING UNIT, MODELS 1A, 1B, 2A, AND 2B



23101A

Dimensions--	Width	Depth	Height
Inches:	58.25	29	46.5
Centimeters:	148	74	118

Service Clearance--	Front	Rear	Left	Right
Inches:	42	36	—	30
Centimeters:	107	91	—	76

Maximum Weight--760 lb (34,5 kg)

Heat Output/hr.--3100 BTU (781 kcal)

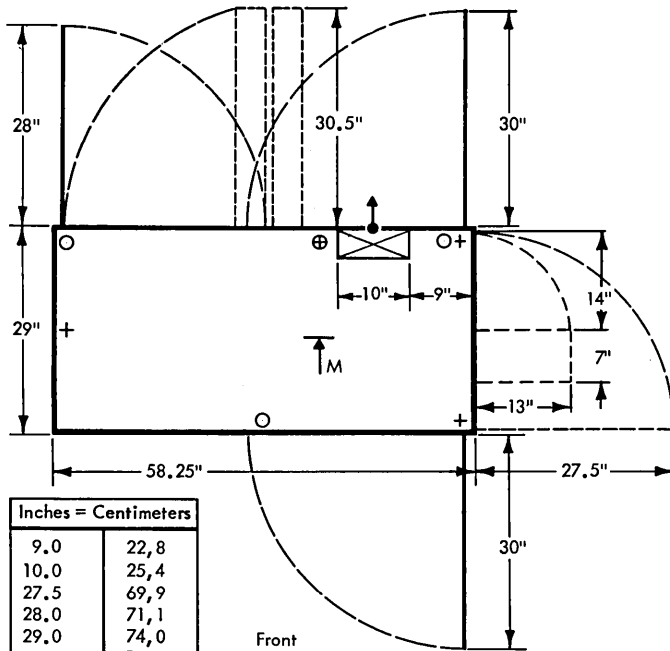
Air Flow--720 cfm (21 m³/m) maximum

(*2) Electrical Requirements--(115v)

Voltage: 115v ± 10%	Service: 30 amp
Frequency: 60 ± 0.5 Hz	Plug: Hubbell #9338
Phases: 1	Receptacle: Hubbell #9344
KVA: 1.1	

(*1) Electrical Requirements--(208/230v)

Voltage: 208/230 ± 10%	Service: 20 amp
Frequency: 60 ± 0.5 Hz	Plug: Russell and Stoll
Phases: 1	#F.S. 3720
KVA: 1.1	Receptacle: Russell and Stoll
	#F.S. 3743
	Connector: Russell and Stoll
	#F.S. 3913



Inches = Centimeters	
9.0	22,8
10.0	25,4
27.5	69,9
28.0	71,1
29.0	74,0
30.0	76,0
30.5	88,9
58.25	148,0

23100C

Operating Environment--

Temperature: 60° to 90° F (15.6° to 32.2° C)
Rel. Humidity: 10% to 80%
Max. Wet Bulb: 78° F (25.6° C)

Nonoperating Environment--

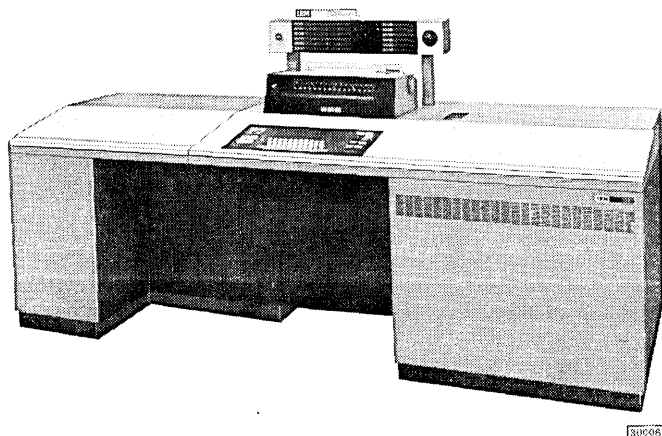
Temperature: 50° to 110° F (10° to 43° C)
Rel. Humidity: 8% to 80%
Max. Wet Bulb: 80° F (26.7° C)

*Notes:

1. Power is supplied by the 1133 if installed.
2. Measure voltage at receptacle before connecting power cord to be sure correct voltage exists.

30047A

IBM 1131 CENTRAL PROCESSING UNIT, MODELS 2C, 2D, 3B, 3C, AND 3D



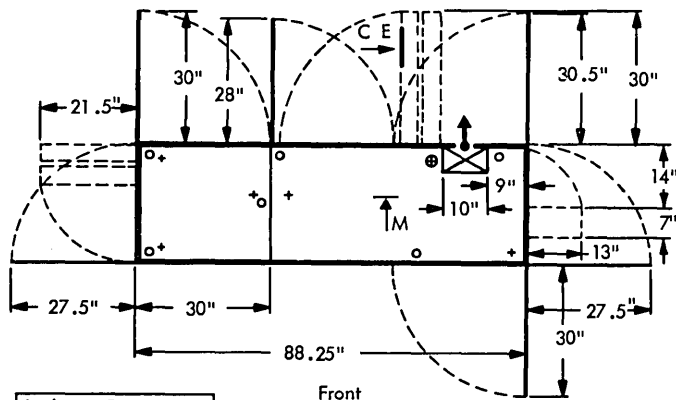
Dimensions--	Width	Depth	Height
Inches:	88.25 (*2)	29	46.50
Centimeters:	224	74	118

Service Clearance--	Front	Rear	Left	Right
Inches:	42	36	30	30
Centimeters:	107	91	76	76

Maximum Weight--1050 lb (477 kg)

Heat Output/hr.--4200 BTU (1058 kcal)

Air Flow--1000 cfm (28,3 m³/m) maximum



Inches = Centimeters	
9.0	22,8
10.0	25,4
21.5	54,6
27.5	69,9
28.0	71,1
30.0	76,2
30.5	88,9
88.25	224,8

(*1) Electrical Requirements--(208/230v)

Voltage: 208/230± 10%	Service: 20 amp
Frequency: 60± .5 Hz	Plug: Russell and Stoll #F.S. 3720
Phases: 1	Receptacle: Russell and Stoll #F.S. 3743
KVA: 1.5	Connector: Russell and Stoll #F.S. 3913

Operating Environment--

Temperature: 60° to 90° F (15.6° to 32.2° C)
 Rel. Humidity: 10% to 80%
 Max. Wet Bulb: 78° F (25.6° C)

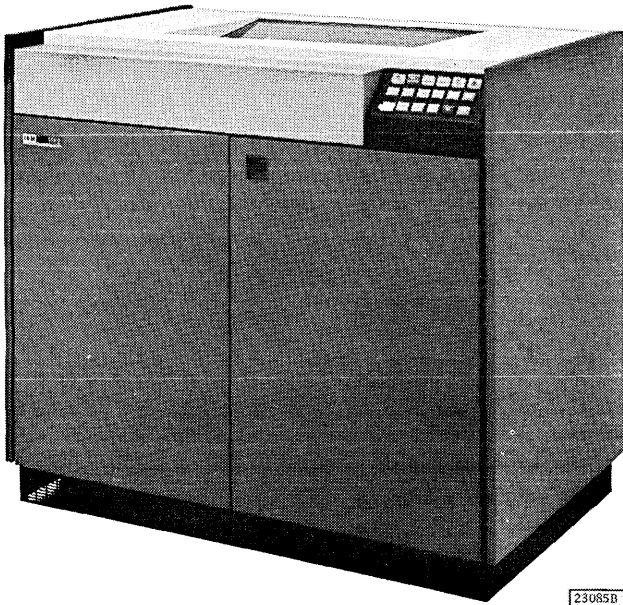
Nonoperating Environment--

Temperature: 50° to 110° F (10° to 43° C)
 Rel. Humidity: 8% to 80%
 Max. Wet Bulb: 80° F (26.7° C)

*Notes:

1. Power is supplied by the 1133 if installed.
2. Shipped in two sections.

IBM 1132 PRINTER



23085B

Dimensions--	Width	Depth	Height
Inches:	47	29.50	42
Centimeters:	119	75	107

Service Clearance--	Front	Rear	Left	Right
Inches:	36	30	30	30
Centimeters:	91	76	76	76

Maximum Weight--700 lb (318 kg)

Heat Output/hr.--1300 BTU (328 kcal)

Air Flow--80 cfm (2 m³/m) maximum

(*1) Electrical Requirements--

KVA: 0.5

Operating Environment--

Temperature: 60° to 90° F (15.6° to 32.2° C)

Rel. Humidity: 10% to 80%

Max. Wet Bulb: 78° F (25.6° C)

Nonoperating Environment--

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

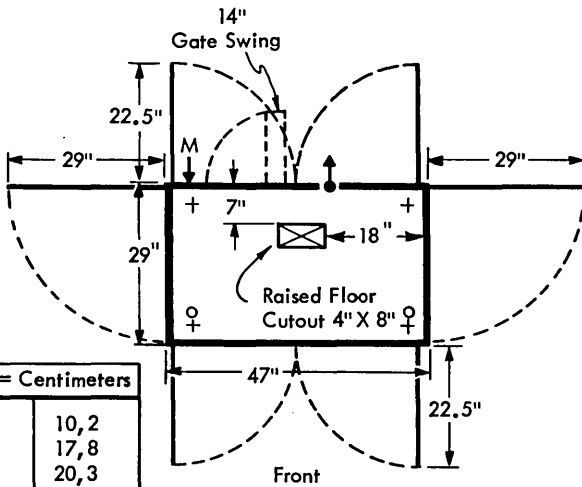
Rel. Humidity: 8% to 80%

Max. Wet Bulb: 80° F (26.7° C)

*Notes:

1. Power is supplied by the 1131.

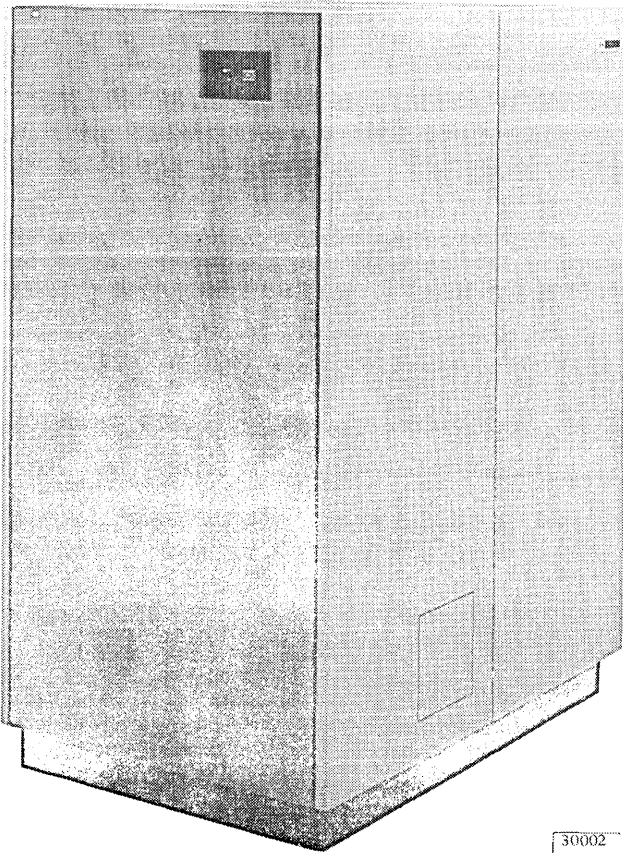
30049



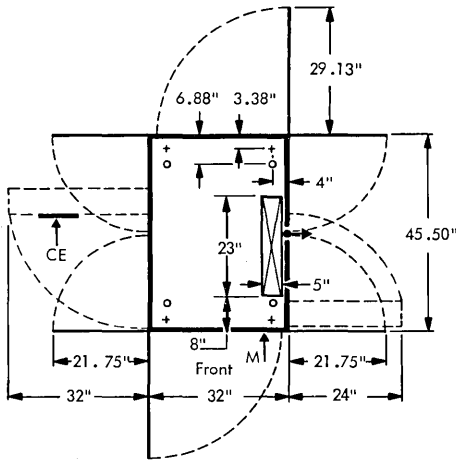
23102C

Inches = Centimeters	
4.0	10,2
7.0	17,8
8.0	20,3
14.0	35,6
22.5	57,2
29.0	73,6
47.0	119,0

IBM 1133 MULTIPLEX CONTROL ENCLOSURE



30002



Inches = Centimeters	
3.38	8,6
4.0	10,2
5.0	12,7
6.88	17,5
8.0	20,3
21.75	55,2
23.0	58,4
24.0	61,0
29.13	74,0
32.0	81,2
45.5	115,6

27071

Dimensions--	Width	Depth	Height
Inches:	32	45.50	60
Centimeters:	81	116	152

Service Clearance--	Front	Rear	Left	Right
Inches:	30	30	42	30
Centimeters:	76	76	107	76

Maximum Weight--1100 lb (499 kg)

Heat Output/hr.--3400 BTU (857 kcal)

Air Flow--500 cfm (14,2 m³/m) maximum

Electrical Requirements--(208/230v)

Voltage: 208/230 ± 10%	Service: 30 amp
Frequency: 60± 0.5 Hz	Plug: Russell and Stoll #F.S. 3760
Phases: 3	Receptacle: Russell and Stoll #F.S. 3754
KVA: 1.1	Connector: Russell and Stoll #F.S. 3934

Operating Environment--

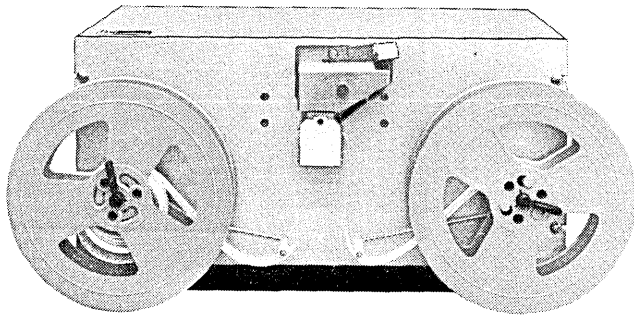
Temperature: 60° to 90° F (15.6° to 32.2°C)
Rel. Humidity: 10% to 80%
Max. Wet Bulb: 78° F (25.6° C)

Nonoperating Environment--

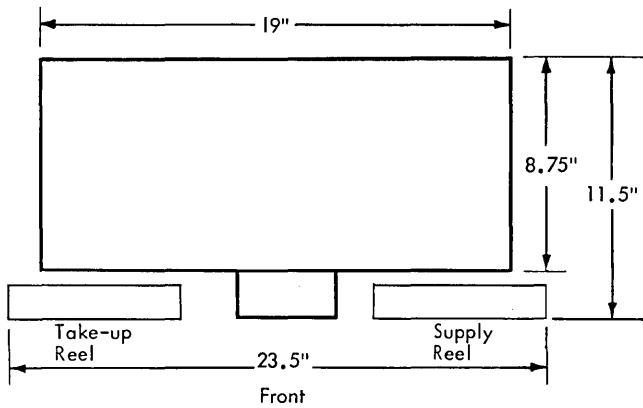
Temperature: 50° to 110° F (10° to 43° C)
Rel. Humidity: 8% to 80%
Max. Wet Bulb: 80° F (26.7° C)

30050

IBM 1134 PAPER TAPE READER



11435 A



Inches = Centimeters	
8.75	22,0
11.50	29,2
19.00	48,0
23.50	59,7

11435 B

Dimensions--	Width	Depth	Height
Inches:	23,5	11,50	10
Centimeters:	59,7	29,20	25,4

Service Clearance--	Front	Rear	Left	Right
Inches:	30	12	6	6
Centimeters:	76	30	15	15

Maximum Weight--15 lb (7 kg)

Heat Output/hr.--150 BTU (38 kcal)

Air Flow--0 cfm (0 m³/m) maximum

(* 1) Electrical Requirements--

KVA: 0.06

Operating Environment--

Temperature: 60° to 90° F (15.6° to 32.2° C)

Rel. Humidity: 10% to 80%

Max. Wet Bulb: 80° F (26.7° C)

Nonoperating Environment--

Temperature: 60° to 90° F (15.6° to 32.2° C)

Rel. Humidity: 10% to 80%

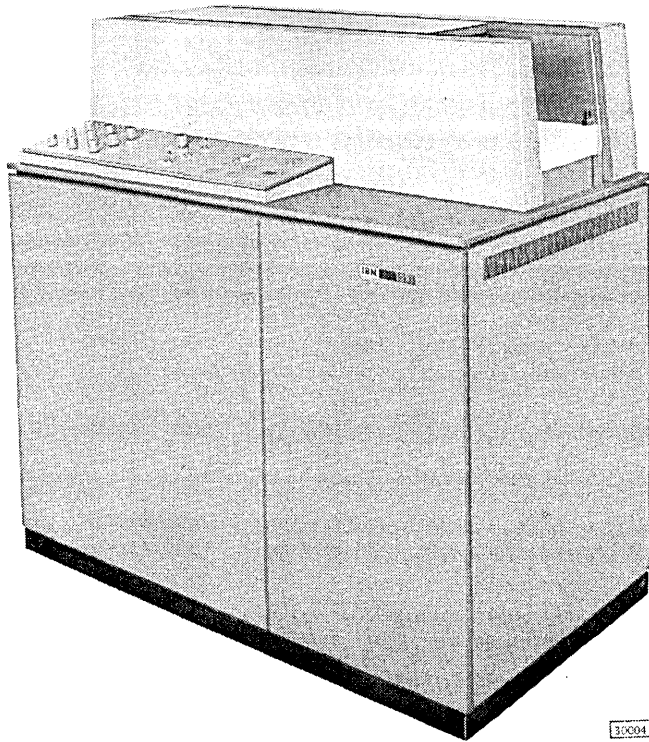
Max. Wet Bulb: 80° F (26.7° C)

*Notes:

1. Power supplied by the 1131.

30051 B

IBM 1231 OPTICAL MARK PAGE READER, MODEL 1



30004

Dimensions--	Width	Depth	Height
Inches:	43.5	24	44.75
Centimeters:	113	61	114

Service Clearance--	Front	Rear	Left	Right
Inches:	42	42	36	30
Centimeters:	107	107	91	76

Maximum Weight--620 lb (281 kg)

Heat Output/hr.--3700 BTU (932 kcal)

Air Flow--300 cfm (8 m³/m) maximum

Electrical Requirements --(208/230v)

Voltage: 208/230± 10%	Service: 15 amp
Frequency: 60± 0.5 Hz	Plug: Russell and Stoll #F.S. 3720
Phases: 1	Receptacle: Russell and Stoll #F.S. 3743
KVA: 1.2	Connector: Russell and Stoll #F.S. 3913

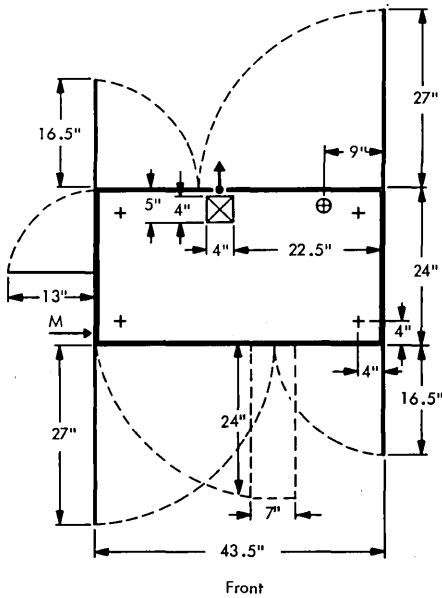
Operating Environment--

- Temperature: 50° to 110° F (10° to 43° C)
- Rel. Humidity: 8% to 80%
- Max. Wet Bulb: 85° F (29.4° C)

Nonoperating Environment--

- Temperature: 50° to 110° F (10° to 43° C)
- Rel. Humidity: 8% to 80%
- Max. Wet Bulb: 85° F (29.4° C)

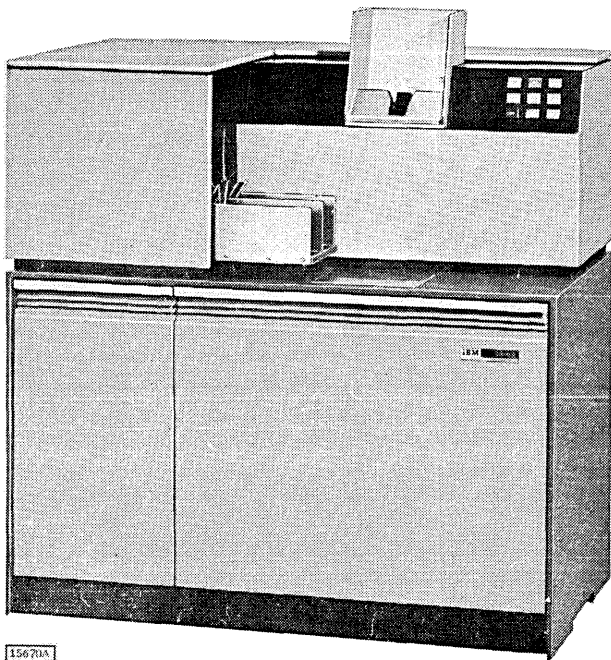
30053



Inches = Centimeters	
4.0	10,2
5.0	12,7
7.0	17,8
9.0	22,8
13.0	33,0
16.5	41,9
22.5	57,2
24.0	61,0
27.0	68,6
43.5	110,5

27072A

IBM 1442 CARD PUNCH, MODEL 5
IBM 1442 CARD READ PUNCH, MODELS 6 AND 7



15670A

Dimensions--	Width	Depth	Height
Inches:	43	24	49
Centimeters:	109	61	124

Service Clearance--	Front	Rear	Left (*1)	Right
Inches:	36	30	18	6
Centimeters:	91	76	46	15

Maximum Weight--525 lb (238 kg)

Heat Output/hr.--1800 BTU (454 kcal)

Air Flow--50 cfm (1 m³/m) maximum

(*2) Electrical Requirements--

KVA: 0.7

Operating Environment--

Temperature: 60° to 90° F (15.6° to 32.2° C)

Rel. Humidity: 10% to 80%

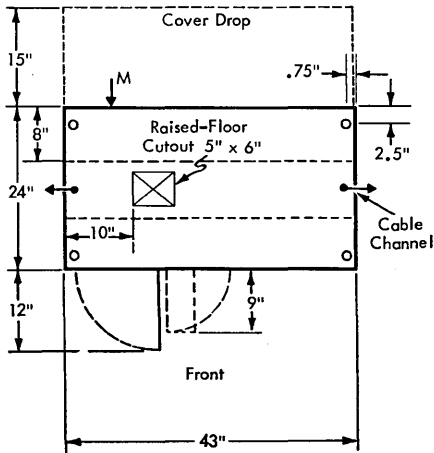
Max. Wet Bulb: 80° F (26.7° C)

Nonoperating Environment--

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

Rel. Humidity: 0% to 80%

Max. Wet Bulb: 80° F (26.7° C)



Inches = Centimeters	
0.5	1,2
0.75	1,9
2.5	6,3
5.0	12,7
6.0	15,2
8.0	20,3
9.0	22,8
10.0	25,4
12.0	30,4
15.0	38,1
24.0	60,9
43.0	109,2

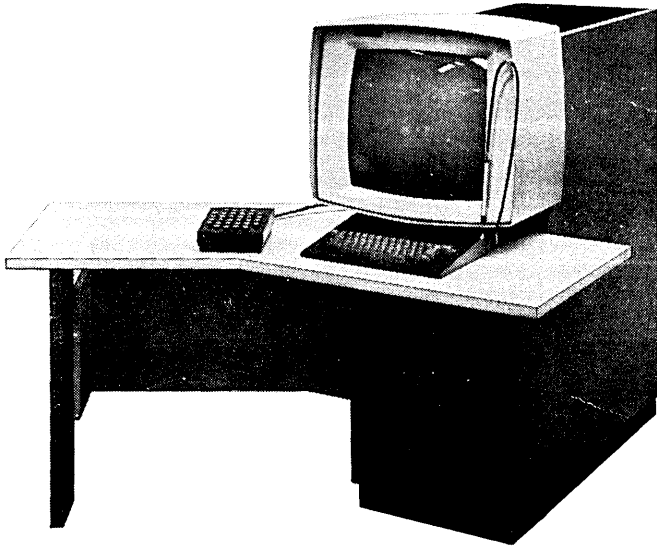
15708B

*Notes:

1. No service clearance is required from floor level to 30" (76 cm) above floor level. Service clearance is required for the upper portion of the machine only. The 1442 can be abutted to units which do not extend more than 30" (76 cm) from the floor.
2. Power is supplied by the 1131.

30052

IBM 2250 DISPLAY UNIT, MODEL 4



19076

Dimensions--	Width	Depth	Height
Inches:	58.5	64.5	50
Centimeters:	149	164	127

Service Clearance--	Front	Rear	Left	Right
Inches:	30	0	40	30
Centimeters:	76	0	102	76

Maximum Weight-- 380 lb (172 kg)

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

Air Flow-- 420 cfm (11,9 m³/m) maximum

Electrical Requirements--

Voltage:	208/230 ± 10%	Service:	15 amp
Frequency:	60 ± 0.5 Hz	Plug:	R&S #FS 3720
Phases:	1	Receptacle:	R&S #FS 3743
KVA:	1.0	Connector:	R&S #FS 3913

Operating Environment--

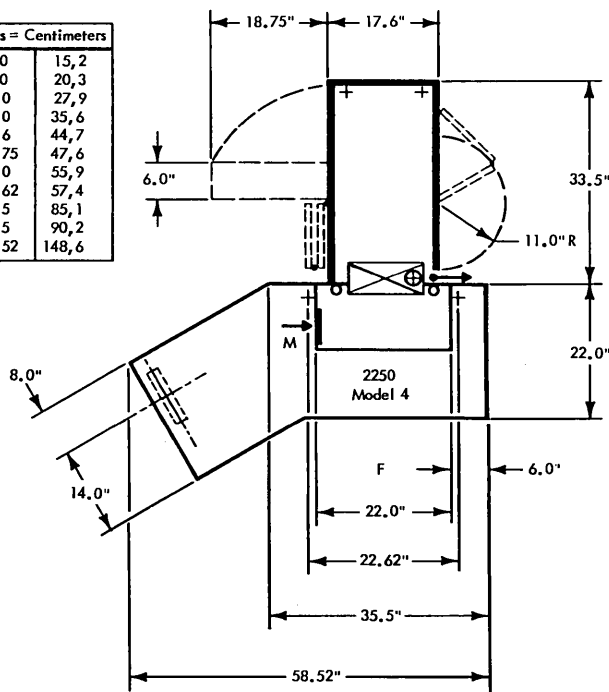
Temperature:	60° to 90°F (15.6° to 32.2°C)
Rel Humidity:	8% to 80%
Max Wet Bulb:	78°F (25.6°C)

Nonoperating Environment--

Temperature:	50° to 110°F (10° to 43°C)
Rel Humidity:	8% to 80%
Max Wet Bulb:	80°F (26.7°C)

19051

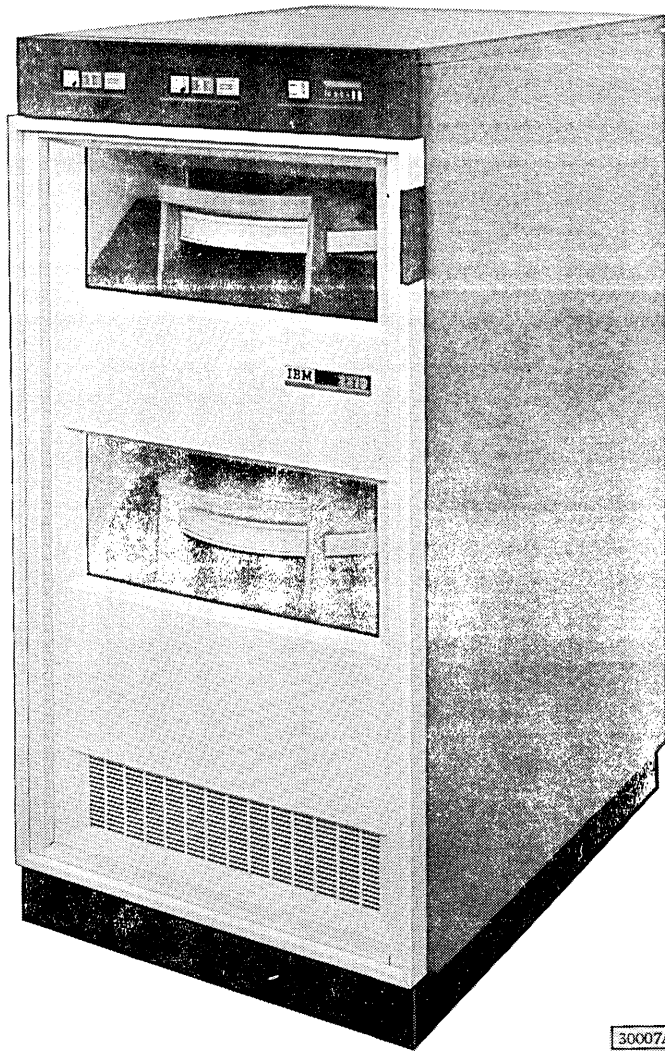
Inches = Centimeters	
6.0	15,2
8.0	20,3
11.0	27,9
14.0	35,6
17.6	44,7
18.75	47,6
22.0	55,9
22.62	57,4
33.5	85,1
35.5	90,2
58.52	148,6



19061

(This page intentionally left blank.)

IBM 2310 DISK STORAGE, MODELS B1 AND B2



Dimensions--	Width	Depth	Height
Inches:	22	30	44
Centimeters:	56	76	112

Service Clearance--	Front	Rear	Left (*1)	Right (*1)
Inches:	30	30	24	24
Centimeters:	76	76	61	61

Maximum Weight--365 lb (165 kg)

Heat Output/hr.--1800 BTU (454 kcal)

Air Flow--75 cfm (2 m³/m) maximum

(*2) Electrical Requirements--

Operating Environment--

- Temperature: 60° to 90° F (15.6° to 32.2° C)
- Rel. Humidity: 10% to 80%
- Max. Wet Bulb: 78° F (25.6° C)

Nonoperating Environment--

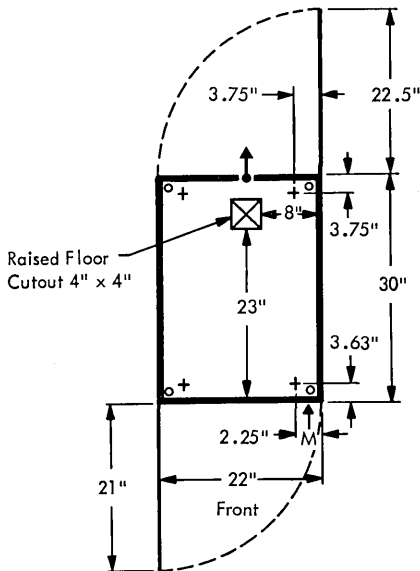
- Temperature: 50° to 110° F (10° to 43° C)
- Rel. Humidity: 8% to 80%
- Max. Wet Bulb: 85° F (29.4° C)

*Notes:

1. Side clearance not required when abutted to units of like construction.
2. Power is supplied by the 1133.

30054

30007A



Inches = Centimeters	
2.25	5,7
3.63	9,2
3.75	9,5
4.0	10,2
8.0	20,3
21.0	53,3
22.0	55,9
22.5	57,2
23.0	58,4
30.0	76,2

27074

IBM 2501 CARD READER, MODELS A1 AND A2



30055

Dimensions--	Width	Depth	Height
Inches:	30	24	45
Centimeters:	76	61	114

Service Clearance--	Front	Rear	Left	Right
Inches:	36	36	6	24
Centimeters:	91	91	15	61

Maximum Weight--340 lb (154 kg)

Heat Output/hr.--700 BTU (176 kcal)

Air Flow--0 cfm (0 m³/m) maximum

(*1) Electrical Requirements--

KVA: 0.3

Operating Environment--

Temperature: 50° to 90° F (10° to 32.2° C)

Rel. Humidity: 20% to 80%

Max. Wet Bulb: 78° F (25.6° C)

Nonoperating Environment--

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

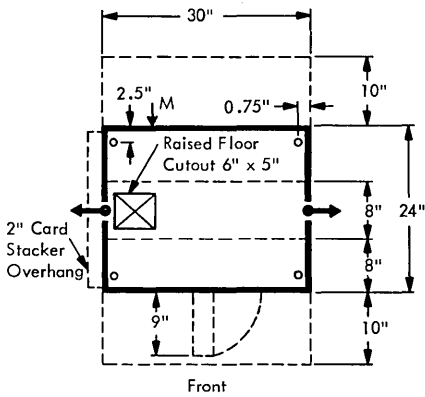
Rel. Humidity: 8% to 80%

Max. Wet Bulb: 80° F (26.7° C)

*Notes:

1. Power is supplied by the 1131.

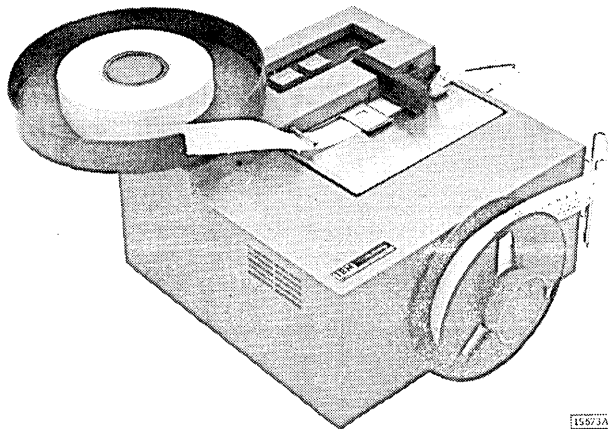
30055



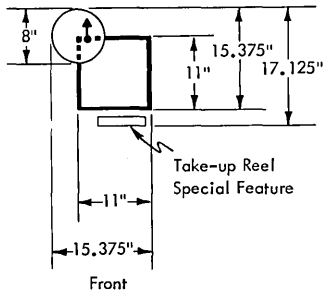
Inches = Centimeters	
0.75	1,9
2.0	5,1
2.5	6,3
5.0	12,7
6.0	15,2
8.0	20,3
9.0	22,8
10.0	25,4
24.0	60,9
30.0	76,2

27075

IBM 1055 PAPER TAPE PUNCH



15573A



Inches = Centimeters	
8.0	20,3
11.0	27,9
15.37	39,0
17.12	43,4

15718A

Dimensions--	(* 1)	Width	Depth	Height
Inches:		15.375	17.125	8.25
Centimeters:		39	44	21

Service Clearance--	Front	Rear	Left	Right
Inches:	12	12	12	12
Centimeters:	30	30	30	30

Maximum Weight--26 lb (12 kg)

Heat Output/hr.--150 BTU (38 kcal)

Air Flow--0 cfm (0 m³/m) maximum

(*2) Electrical Requirements--

KVA: 0.06

Operating Environment--

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

Rel. Humidity: 10% to 80%

Max. Wet Bulb: 80° F (27° C)

Nonoperating Environment--

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

Rel. Humidity: 10% to 80%

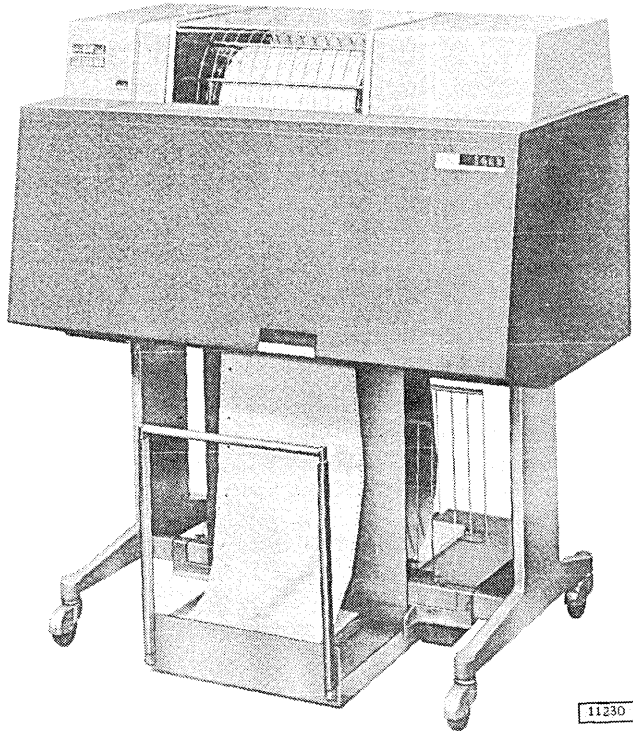
Max. Wet Bulb: 80° F (27° C)

*Notes:

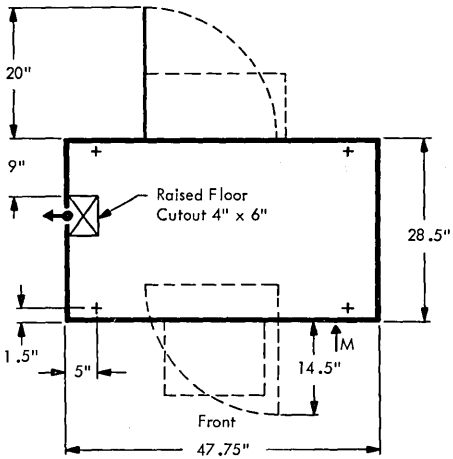
1. With tape reels.
2. Power is supplied by the 1131.

30056

IBM 1403 PRINTER, MODELS 6 AND 7



11230



Inches = Centimeters	
4.0	10,2
5.0	12,7
6.0	15,2
9.0	22,8
11.5	29,2
14.5	36,8
20.0	50,8
28.5	72,4
47.75	121,3

27073

Dimensions--	Width	Depth	Height
Inches:	47.75	28.50	53.25
Centimeters:	121	72	135

Service Clearance--	Front	Rear	Left	Right
Inches:	36	36	30	30
Centimeters:	91	91	76	76

Maximum Weight--750 lb (340 kg)

Heat Output/hr.--2500 BTU (630 kcal)

Air Flow--310 cfm (9 m³/m) maximum

(*1) Electrical Requirements--

KVA: 1.0

Operating Environment--

Temperature: 60° to 90° F (15.6° to 32.2° C)

Rel. Humidity: 20% to 80%

Max. Wet Bulb: 78° F (25.6° C)

Nonoperating Environment--

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

Rel. Humidity: 0% to 80%

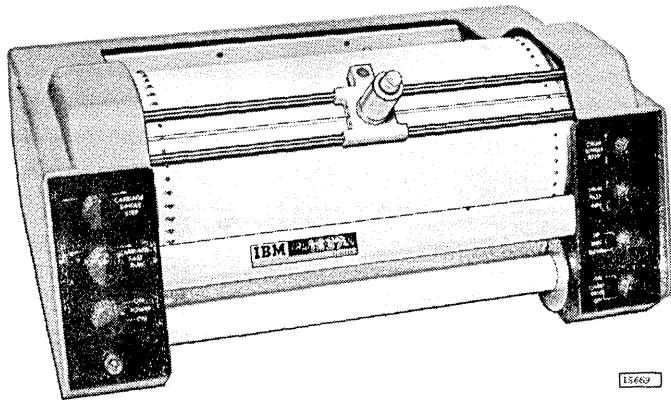
Max. Wet Bulb: 80° F (26.7° C)

*Notes:

1. Power is supplied by the 1133.

30057

IBM 1627 PLOTTER, MODELS 1 AND 2



Dimensions--	Width	Depth	Height	
Inches:	18	15	10	Model 1
Centimeters:	46	38	25	
Inches:	40	15	10	Model 2
Centimeters:	102	38	25	

Service Clearance--	Front	Rear	Left	Right
Inches:	12	12	12	12
Centimeters:	30	30	30	30

Maximum Weight--33 lb (15 kg) Model 1
 Maximum Weight--55 lb (25 kg) Model 2

Heat Output/hr. --250 BTU (63 kcal)

Air Flow--0 cfm (0 m³/m) maximum

(*1) Electrical Requirements--
 KVA: 0.1

Operating Environment--

Temperature: 60° to 90° F (15.6° to 32.2° C)

Rel. Humidity: 20% to 80%

Max. Wet Bulb: 78° F (25.6° C)

Nonoperating Environment--

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

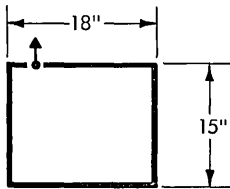
Rel. Humidity: 0% to 80%

Max. Wet Bulb: 85° F (29.4° C)

*Notes:

1. Power is supplied by the 1131.

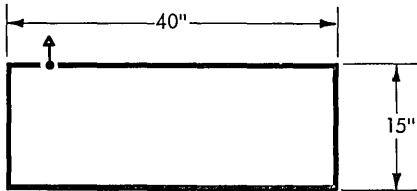
Model 1



Front

Inches = Centimeters	
15.0	38,1
18.0	45,7
40.0	101,6

Model 2

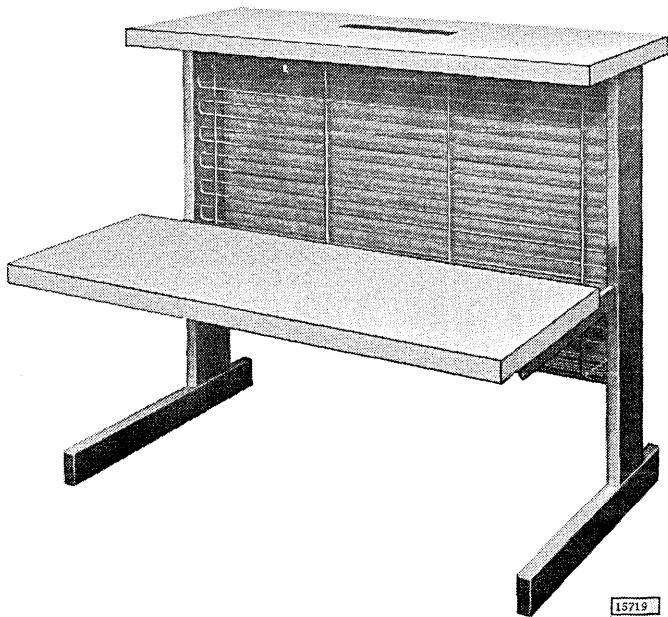


Front

15706A

30058

AUXILIARY TABLE



15719

Dimensions--	Width	Depth (*1)	Height
Inches:	32	23	27
Centimeters:	81	58	69

Service Clearance--	Front	Rear	Left	Right
Inches:	12	12	12	12
Centimeters:	30	30	30	30

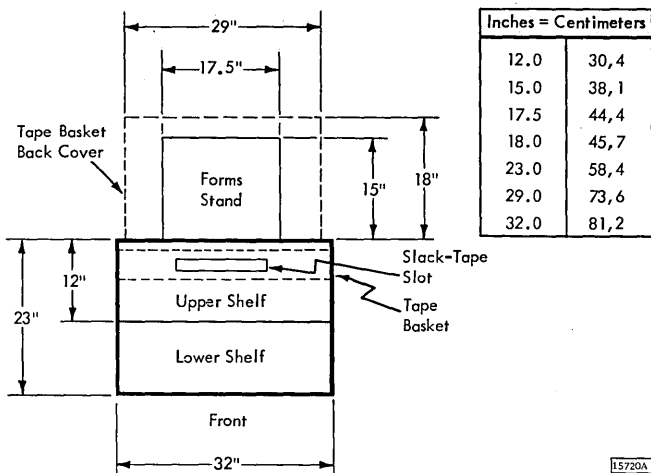
Maximum Weight--30 lb (13.6 kg)

This table is available from IBM, but is not standard with the IBM 1130 System. It is for use with the 1134, 1055, and 1627 Model 1 units.

***Notes:**

1. This dimension is decreased 3" (7,6 cm) when the lower shelf is repositioned to the rear.

30059



15720A

● APPENDIX A. PHYSICAL PLANNING, SUMMARY OF SPECIFICATIONS

Type	Model	Name	Electrical		Environmental		Weight (lbs.)	Dimensions (inches)			Service Clearances (inches)				Notes
			KVA	Conn. Type*	BTU/Hr	CFM		Width	Depth	Height	F	R	L	Rt	
1131	1A,1B 2A,2B	Central Processing Unit	1.1	A or D	3100	720	660	58.25	29	46.5	42	36	-	30	1,2
1131	2C,2D 3B,3C 3D	Central Processing Unit	1.5	A	4200	1000	1050	88.25	29	46.5	42	36	30	30	1,2
1055	-	Paper Tape Punch	0.06	-	150	-	26	15.375	17.125	8.25	12	12	12	12	3
1132	-	Printer	0.5	-	1300	80	700	47	29.50	42	36	30	30	30	3
1133	-	Multiplex Control Enclosure	1.1	C	3400	500	1100	32	45.50	60	30	30	42	30	
1134	1,2	Paper Tape Punch	0.06	-	150	-	15	19	8.75	8.75	30	12	6	6	3
1231	1	Optical Mark Page Reader	1.2	A	3700	300	620	43.50	24	44.75	42	42	36	30	2
1403	6,7	Printer	1.0	-	2500	310	750	47.75	28.50	53.25	36	36	30	30	4
1442	5	Card Punch	0.7	-	1800	50	525	43	24	49	36	30	18	6	3
1442	6,7	Card Read Punch	0.6	-	1500	50	525	43	24	49	36	30	18	6	3
1627	1	Plotter	0.1	-	250	-	33	18	15	10	12	12	12	12	3
1627	2	Plotter	0.1	-	250	-	55	40	15	10	12	12	12	12	3
2310	B1,B2	Disk Storage	0.7	-	1800	75	365	22	30	44	30	30	24	24	4
2501	A1,A2	Card Reader	0.3	-	700	-	340	30	24	45	36	36	6	24	3
2250	4	Display Unit	1.0	A	3000	420	380	58.5	64.5	50	30	0	40	30	

Notes:

1. The base of the Processor is 31.50 inches high, the console adds another 13.50 inches for a total height of 45 inches.
2. This unit is equipped with radio interference control circuitry and requires a good wired earth or building ground. Total resistance of the ground conductor, measured between the receptacle and the building grounding point, must not exceed 3 ohms. For proper operation, all components of the system or systems to which this unit is attached must have the same ground reference. Conduit is not a satisfactory means of grounding. When an 1133 is installed, an 1131 branch circuit is not required.
3. Powered from 1131.
4. Powered from 1133.

* Type	Plug	Connector	Receptacle	Rating	Voltage
A	Russell & Stoll, FS3720	FS3913	FS3743	20 amp, 1 phase, 3 wire	208/230
C	Russell & Stoll, FS3760	FS3934	FS3754	30 amp, 3 phase, 4 wire	208/230
D	Hubbell #9338		#9344	30 amp, 1 phase, 3 wire	115

23103H

● APPENDIX B. SUMMARY OF SPECIFICATIONS (METRIC)

Type	Model	Name	Environmental				Weight (Kg)	Dimensions (Centimeters)			Service Clearances (Centimeters)				Notes
			KVA	Conn Type	Kcal	M ³ /M		Width	Depth	Height	F	R	L	RT	
1131	1A,1B 2A,2B	Central Processing Unit	1.1	A or D	781	20,7	299	148	74	118	107	91	-	76	1,2
1131	2C,2D 3B,3C 3D	Central Processing Unit	1.5	A	1058	28,3	477	224	74	118	107	91	76	76	1,2
1055	-	Paper Tape Punch	0.06	-	37,8	-	16,3	40	44	21	30	30	30	30	3
1132	-	Printer	0.5	-	328	2,26	317,5	119	75	107	91	76	76	76	3
1133	-	Multiplex Control Enclosure	1.1	C	857	14,2	499	81	116	152	76	76	107	76	
1134	1,2	Paper Tape Punch	0.06	-	37,8	-	6,8	48	22	22	76	30	15	15	3
1231	1	Optical Mark Page Reader	1.2	A	932	8,49	281	110	61	114	107	107	91	76	2
1403	6,7	Printer	1.0	-	630	8,77	340	121	72	135	91	91	76	76	4
1442	5	Card Punch	0.7	-	454	1,42	238	109	61	124	91	76	46	15	3
1442	6,7	Card Read Punch	0.6	-	378	1,42	238	109	61	124	91	76	46	15	3
1627	1	Plotter	0.1	-	63	-	15	46	38	2,5	30	30	30	30	3
1627	2	Plotter	0.1	-	63	-	24,9	102	38	2,5	30	30	30	30	3
2310	B1,B2	Disk Storage	0.7	-	454	2,12	165	56	76	112	76	76	61	61	4
2501	A1,A2	Card Reader	0.3	-	17,6	-	154	76	61	114	91	91	15	61	3
2250	4	Display Unit	1.0	A	756	11,9	172	149	164	127	76	0	102	76	

Notes:

1. The base of the Processor is 80 centimeters high, the console adds another 34, 29 centimeters for a total height of 114,3 cm.
2. This unit is equipped with radio interference control circuitry and requires a good wired earth or building ground. Total resistance of the ground conductor, measured between the receptacle and the building grounding point, must not exceed 3 ohms. For proper operation, all components of the system or systems to which this unit is attached must have the same ground reference. Conduit is not a satisfactory means of grounding. When an 1133 is installed, an 1131 branch circuit is not required.
3. Powered from 1131.
4. Powered from 1133.

27077 C

Ambient Air Conditions	3	IBM 1403 Printer, Models 6 and 7	18
Auxiliary Table	20	IBM 1442 Card Punch, Model 5	14
Cable Resistance	6	IBM 1442 Card Read Punch, Models 6 and 7	14
Cables	4	IBM 1627 Plotter, Models 1 and 2	19
Convenience Outlets	4	IBM 2310 Disk Storage, Models B1 and B2	15
Coupled Noise	6	IBM 2501 Card Reader, Models A1 and A2	16
Dust and Dirt Control	3	Installation Requirements and Scheduling	1
Environmental Requirements	3	Lightning Protection	4
Fire Protection Equipment	3	One Week before Machine Delivery	3
Four Months before Delivery	1	Phase Rotation	4
Grounding	4	Power Distribution	3
IBM Field Engineering Requirements	6	Power Requirements	3
IBM 1055 Paper Tape Punch	17	Power Sequence for Storage Access Channel Devices	6
IBM 1131 Central Processing Unit, Models 1A, 1B, 2A and 2B	8	Power Supply	3
IBM 1131 Central Processing Unit, Models 2C, 2D, 3B, 3C, and 3D	9	Scheduling	1
IBM 1132 Printer	10	Six Months before Delivery	1
IBM 1133 Multiplex Control Enclosure	11	Storage Access Channel	4
IBM 1134 Paper Tape Reader	12	Storage Access Channel Cable	4
IBM 1231 Optical Mark Page Reader, Model 1	13	Synchronous Communications Adapter	6
		System Arrangement and Space Requirements	1
		Unit Specifications	7



Technical Newsletter

File Number 1130-15

Re: Form No. A26-5914-3

This Newsletter No. N26-0204

Date 9/13/67

Previous Newsletter Nos. N26-0195 Obsolete
N26-0197 Obsolete
N26-0198

This newsletter updates the SRL publication IBM 1130 Computing System Installation Manual - Physical Planning (Form A26-5914-3). Changes and additions to the text are indicated by a vertical bar in the margin to the left of the change. Figures that have been changed are indicated by a bullet (●) to the left of the figure title.

Replace these pages:

7 and 8 ✓
9 and 10 ✓
21 and 22 ✓

This newsletter covers changes made in electrical requirements in all models of the 1131 Central Processing Unit. All machines will be shipped with Russell & Stoll plug, FS 3720, unless RPQ #S50005 is ordered.

File this letter at the back of the publication. It will then serve as a record of changes received and incorporated.

READER'S COMMENT FORM

1130 Installation Manual --
Physical Planning

A26-5914-3

- Your comments, accompanied by answers to the following questions, help us produce better publications for your use. If your answer to a question is "No" or requires qualification, please explain in the space provided below. Comments and suggestions become the property of IBM.

- | | Yes | No |
|--|--------------------------|---|
| • Does this publication meet your needs? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Did you find the material: | | |
| Easy to read and understand? | <input type="checkbox"/> | <input type="checkbox"/> |
| Organized for convenient use? | <input type="checkbox"/> | <input type="checkbox"/> |
| Complete? | <input type="checkbox"/> | <input type="checkbox"/> |
| Well illustrated? | <input type="checkbox"/> | <input type="checkbox"/> |
| Written for your technical level? | <input type="checkbox"/> | <input type="checkbox"/> |
| • What is your occupation? _____ | | |
| • How do you use this publication? | | |
| As an introduction to the subject? | <input type="checkbox"/> | As an instructor in a class? <input type="checkbox"/> |
| For advanced knowledge of the subject? | <input type="checkbox"/> | As a student in a class? <input type="checkbox"/> |
| For information about operating procedures? | <input type="checkbox"/> | As a reference manual? <input type="checkbox"/> |
| Other _____ | | |
| • Please give specific page and line references with your comments when appropriate. | | |

COMMENTS

- Thank you for your cooperation. No postage necessary if mailed in the U.S.A.

fold

fold

FIRST CLASS
PERMIT NO. 2078
SAN JOSE, CALIF.

BUSINESS REPLY MAIL
NO POSTAGE STAMP NECESSARY IF MAILED IN U. S. A.

POSTAGE WILL BE PAID BY . . .

IBM Corporation
Monterey & Cottle Rds.
San Jose, California
95114

Attention: Product Publications, Dept. 455



fold

fold



International Business Machines Corporation
Data Processing Division
112 East Post Road, White Plains, N.Y. 10601
[USA Only]

IBM World Trade Corporation
821 United Nations Plaza, New York, New York 10017
[International]

IBM[®]

International Business Machines Corporation
Data Processing Division
112 East Post Road, White Plains, N.Y. 10601
[USA Only]

IBM World Trade Corporation
821 United Nations Plaza, New York, New York 10017
[International]