

IBM

FIELD ENGINEERING
INSTALLATION INSTRUCTIONS
PRELIMINARY EDITION

MACHINE TYPE 1130 System

ENGINEERING CHANGE HISTORY			
E/C NO.	DATE	SHEET	NO.
415709F	18-OCT-65 <i>KAB</i>	1 - 11	
415714E	18MAR66	3,6,7,8, 9, 10, 11	
415497A	5JUL66	1,11	

(23 HOLE PUNCH FOR INSTALLATION IN BINDER)

IBM 1130 MANUAL OF
INSTALLATION INSTRUCTIONS

P/N 2191139
SHEET 1 OF 11

This manual is a guide for installing the IBM 1130 Computing System. The manual contains mechanical installation procedures, cabling instructions, and system test procedures for making the system operational for a customer.

The manual, includes installation instructions for the following unit which is basic to the System.

IBM 1131 Processing Unit Models 1A, 1B, 2A, and 2B

For non-basic units, there are unit installation manuals shipped with the unit. The system manual together with the unit manuals, provide the Customer Engineer with a complete installation package for a particular configuration.

Insert the installation instructions for all units attached to the 1131, and the unpack instructions for all units (including the 1131) in this manual for use if the system is re-installed.

The following branch office tools should be available for possible use to complete installation.

1. Oscilloscope
2. Precision meter Weston 901 with 5V scale
3. A multimeter capable of measuring 5 megohms.

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ENG. DATE	18-OCT-65	5JUL66				
CHANGE NO.	415709F	415497A				

SAFETY

All Customer Engineers are thoroughly indoctrinated in IBM safety practices during the early phases of their training. It is expected that this training has become a part of routine practice. However, personal safety cannot be over-emphasized. Follow the safety practices outlined in the CE Safety Practices card, IBM Form 124-0002, issued to all Customer Engineers. This section contains some reminders of general safety practices.

No CE should work alone when performing any maintenance or repair of equipment that has power on. At least two men should be present in the room whenever any work is done on a machine.

Every CE should wear safety glasses during any maintenance or repair operation.

Make sure that there are fire extinguishers available in each room where there are system components. Extinguishers should be of the CO₂ type, which are recommended for electrical fires.

In some instances, dangerous voltages are still present inside the unit, even with power off. If it is necessary to work near live power connectors, convenience outlets, or inside power supplies, use extreme caution.

Always discharge capacitors before working on DC power supplies.

Turn off power before replacing any fuse.

Replace any safety covers that have been removed, before going on to another operation. Hazardous voltages are present in this equipment; forgetfulness could be fatal.

Don't use ungrounded tools or test equipment. They can kill!

ENG. DATE	18-OCT-65				
CHANGE NO.	415709F				

IBM 1130 MANUAL OF
INSTALLATION INSTRUCTIONS

P/N 2191139
SHEET 3 OF 11

FIGURE 1 RELATIVE SEQUENCE OF INSTALLATION PROCESS - IBM 1130

SECTION	OPERATION	REMARKS	OPER COMPLETED
1 PREPARATION OF MACHINE AREA	1. CHECK FACILITIES	1.	
	2. SET UP CE ROOM	2	
	3. INVENTORY AND STORE SPARE PARTS	3	
	4. CHECK AND CALIBRATE TEST EQUIP	4	
	5. INVENTORY AND STORE TEST EQUIP & TOOLS	5	
	6. SET UP RECORD SYSTEM	6	
	7. MARK FLOORS	7	
2 SYSTEM PLACEMENT AND ASSEMBLY	1. RECEIVING AND PLACEMENT	1	
	2. REMOVAL OF PACKING MATERIALS	2	
	3. INSTALL LEVELING PADS	3	
	4. LEVEL UNITS	4	
	5. CONNECT SIGNAL & PWR CABLES	5	
	6. KICK PLATE ASSEMBLY	6	
	7. FINAL GROUND CHECK	7	
3 & 4 ADJUSTMENTS AND TESTING	1. D.C. VOLTAGE CHECK	1	
	2. CORF STORAGE CHECK	2	
	3. DISK STORAGE HEAD ALIGN (MOD 2 ONLY)	3	
	4. TESTING	4	

NOTE: Chart shows relative permissive starting point and possible overlap for various operations, but does not reflect length of time for various operations since time is dependent upon number of men assigned to a particular operation.

ENR. DATE	18-OCT-65	18MAR66			
CHANGE NO.	415709F	415714E			

SECTION 1: 1131 CENTRAL PROCESSING UNIT (MODEL 1 OR 2) SPECIFICATIONS

1. Weight:

660 pounds maximum

2. Dimensions:

<u>Width</u>	<u>Depth</u>	<u>*Height</u>
58-1/2 inches	29 inches	44-1/8 inches

* The base of the processor is 31-1/2 inches high; the console adds another 12-5/8 inches for a total height of 44-1/8 inches.

3. Service clearance:

<u>Front</u>	<u>Rear</u>	<u>Right Side</u>	<u>Left Side</u>
42 inches	42 inches	30 inches	none

4. Environmental Requirements (Power on):

Ambient Air Conditions

The 1131 unit uses air for internal cooling. Cool air is introduced through the bottom of the unit, internally circulated by fans, 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%

Dust and Dirt Control

The amount of contamination in the office atmosphere will not normally interfere with the operation of the 1131. Normal precautions should be taken, however, to keep dust, dirt, and other foreign matter away from the machine area.

ENG. DATE	18-OCT-65					
CHANGE NO.	415709F					

SECTION 1 (Continued)

5. Electrical Requirements:

Power Source

The IBM 1130 Computing System operates on the following electrical power sources:

- i. 115 vac $\pm 10\%$; 60 cps ± 0.5 cps; single-phase; 3-wire (two power and one grounding).
2. 195 vac, 220 vac, or 235 vac $\pm 10\%$; 50 cps ± 0.5 cps; single-phase; 3-wire (two power and one grounding).

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.

Grounding

A green wire grounding conductor is supplied in each power cord. Each customer-supplied branch circuit should have a wire conductor for the purpose of grounding equipment. All branch circuit grounding wires should be tied to a common ground point at the distribution panel, and a single-grounding wire should be run from the distribution panel to the nearest grounding station. Conduit must not be used as the only grounding means.

ENG. DATE	18-OCT-65					
CHANGE NO.	415709F					

INSTALLATION INSTRUCTIONS

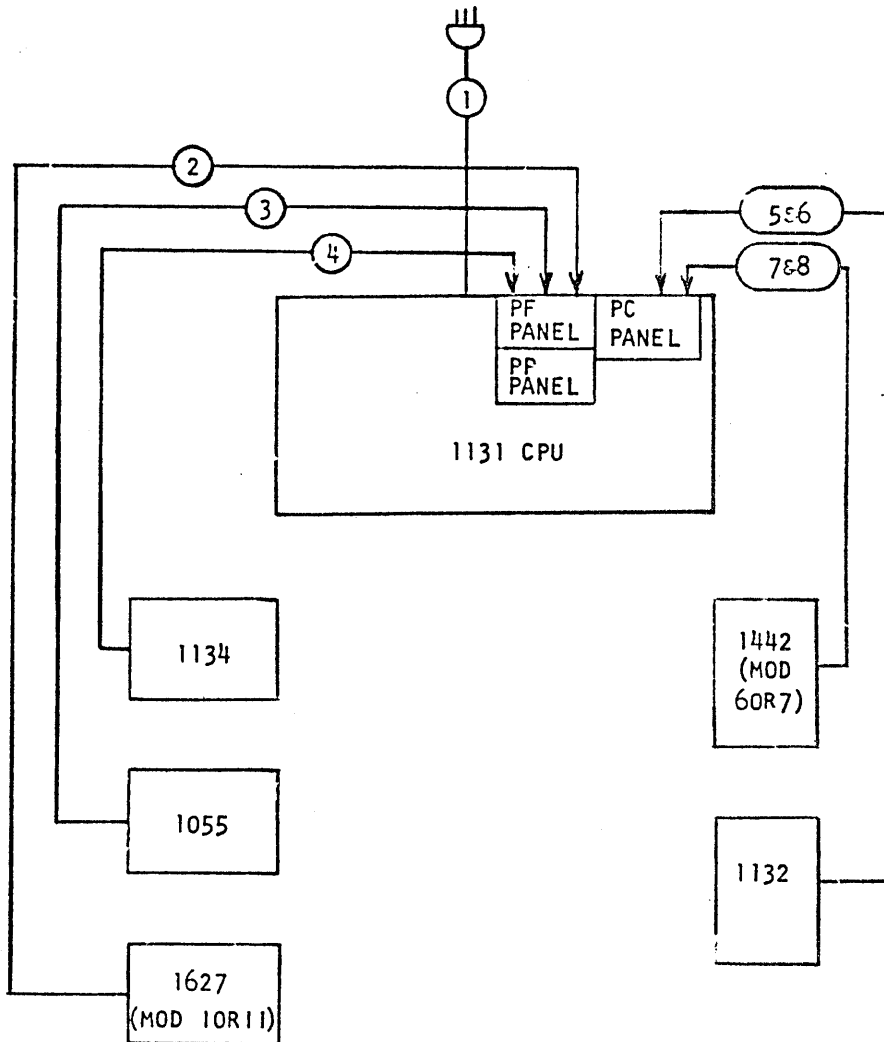
P/N 2191139
SHEET 6 OF 11

SECTION 2 INSTALLATION INSTRUCTIONS

1. Verify that the customer's power outlet has the correct potentials at each terminal of the outlet. Verify that all equipment in the system group are connected to AC Gnd. (Check for continuity from gnd. terminal on main-line plug to frame of piece of equipment.)
2. Remove packaging as indicated in the packaging instructions. Inspect each unit for physical damage. Inventory shipping group parts and supplies against the check list. Locate the units in their proper location in the room. Necessary service clearances are listed in Section 1 of this manual.
3. Level the unit by extending the leveling screws located by the casters on the machine frame.
4. Connect signal and power cables as per Figures 2 and 3.
5. Install kick plate assemblies as per reference drawing (P/N 2190552) in shipping group.
6. Check that paddle cards and SLT cards are securely plugged in the gates.
7. All I/O devices will be installed as per the unit installation manual for the device.

ENG. DATE	18OCT65	18MAR66				
CHANGE NO.	415709F	415714E				

FIGURE 2 1130 EXTERNAL CABLE CONNECTIONS



NOTE: CABLE NUMBERS REFER TO CABLE KEY FIG. 3

ENG. DATE	18-OCT-65	18MAR66			
CHANGE NO.	415709F	415714E			

IBM 1130 MANUAL OF
INSTALLATION INSTRUCTIONS

P/N 2191139
SHEET 8 OF 11

FIGURE 3 CABLE INSTALLATION

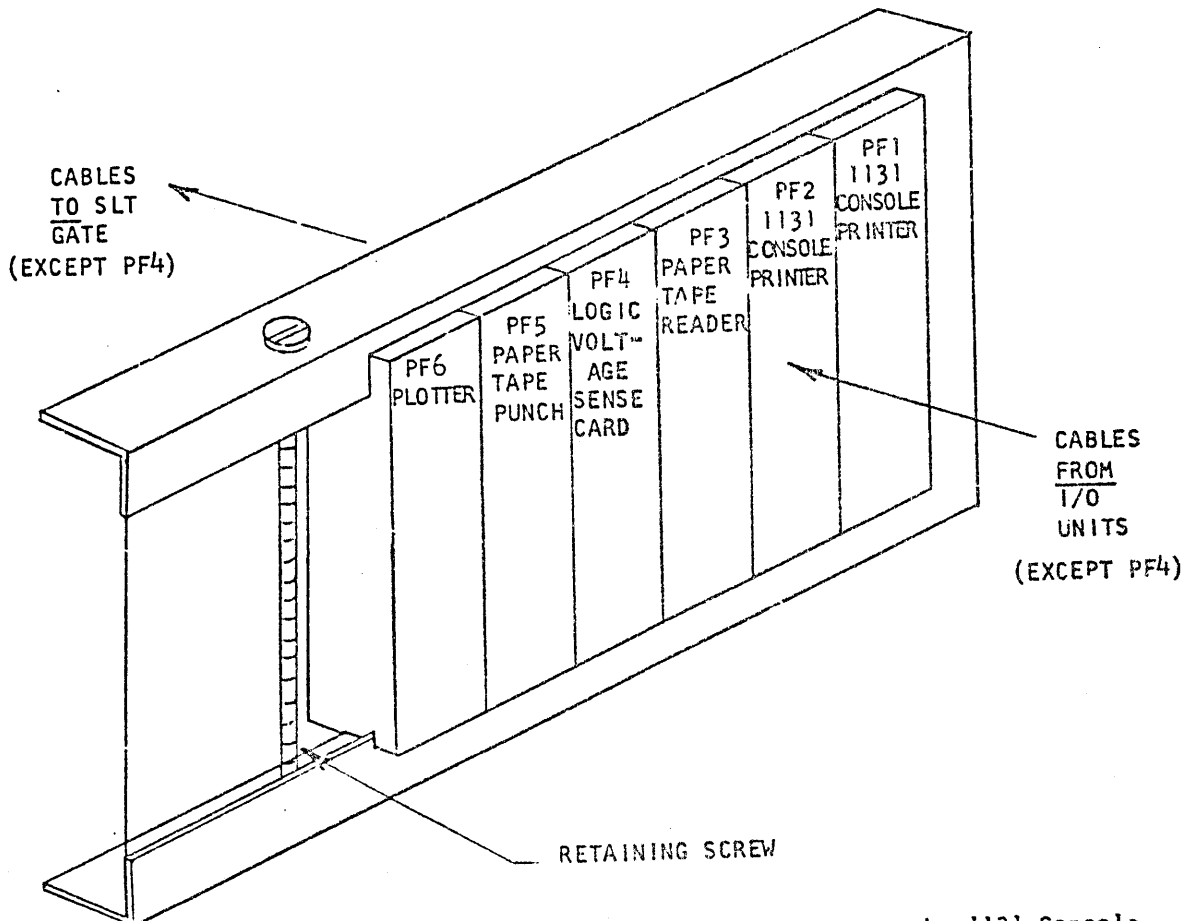
Caution: On the PP panel be sure the paddles are plugged exactly as called out since different voltage bussing exists in each position.

CABLE KEY	DESCRIPTION	FROM	TO
1	Main Power Cord	1131 - Physically Attached to 1131	Wall Outlet
2	Power & Signal In one cable	1627 - Cannon Connector - P5	1131 (Signal) PF6* 1131 (Power) PP2
3	Power & Signal In one cable	1055 - Physically Attached to 1055	1131 (Signal) PF5* 1131 (Power) PP5
4	Power & Signal In one cable	1134 - Physically Attached to 1134	1131 (Signal) PF3* 1131 (Power) PP4
5	Signal Cable	1132 - Physically Attached to 1132	1131 PC7
6	Power Cable	1132 - Physically Attached to 1132	1131 PC2
7	Signal Cable	1442 - Physically Attached to 1442	1131 PC6
8	Power Cable	1442 - Physically Attached to 1442	1131 PC1

* NOTE: See Figure 4 for procedure on installing cables to the PF panel.

ENG. DATE	18-OCT-65	18MAR66				
CHANGE NO.	415709F	415714E				

FIGURE 4 SMS I/O PANEL (PF) CABLE INSTALLATION INSTRUCTIONS



NOTE: Positions PF1 and 2 are basic and provide connections to the 1131 Console Printer. PF4 is basic and holds the logic voltage sense card. Positions PF3, 5 and 6 are feature connectors.

If a particular feature is not on the system, the position assigned to it will contain a spacer block. For position PF5 the connector on the cable from the 1055 P. T. Punch must be slipped into the PF panel bracket assembly. To do this, remove the retaining screw, slide out the necessary blocks, and slide in the connector from the 1055 to its correct position. Replace the removed blocks and retaining screw. The cable from the SLT gate to PF5 will be tied back in the machine for shipment. Remove tie back and plug paddle into the position marked on the cable.

ENG. DATE	18-OCT-65	18MAR66			
RANGE NO.	415709F	415714E			

SECTION 3 ADJUSTMENTS

1. Turn off disc storage drive switch.
2. Turn on main line switch.
3. Check gate and power supply blowers.
4. Verify that proper DC voltages are present:

<u>VOLTAGE</u>	<u>MEASURE AT</u>	<u>RANGE OF VOLTAGE</u>
-3V	B Gate TB1-1	-2.94 to -3.06
+3V	B Gate TB2-12	+2.94 to +3.06
+6V	B Gate TB1-12	+5.88 to +6.12
+12V	B Gate TB2-17	+11.04 to +12.96
+48V	A Gate TB2-18	+44.16 to +51.84

5. If the unit contains a Disk Storage Drive, turn off 1131 power ON-OFF switch, and refer to the Disk Storage Installation Manual.

ENG. DATE	18OCT65	18FEB66				
CHANGE NO.	415709F	415714E				

SECTION 4 TESTING

1. A. Check CE switches - Do following in sequence:

Lamp Test

Interrupt Delay

With switch on, depress reset then prog stop, the interrupt level 5 light will not come on until int. delay is turned off. Depress reset to turn int. lvl 5 off.

Storage Load

Turn switch on - set alt. odd bit sw on - depress prog start & then imm. stop. Turn off stor. load sw

Storage Display

Turn on - depress start - alt odd bit pattern will be displayed - turn off switch.

Non-Storage Load

Turn on - set alt. even bit sw on - turn stor load on - depress prog. start - imm. stop - turn off non stor. load and stor. load - turn on stor. disp. and depress start. - alt odd bit pattern will be displayed.

- B. Check operation of mode switch functions.

1. For systems requiring a field merge of a 1442, refer to Logic Page AD000 and check the adjustment of the punch gate single shot.
2. Run the IBM 1130 system diagnostic tests.
3. File installation instructions and pack/unpack instructions in installation instructions binder.

ENG. CHA	DATE	18OCT65	18MAR66	5JUL66			
	E NO.	415709F	415714E	41549QA			