

INSTALLATION REQUIREMENTS
FOR PERIPHERAL EQUIPMENT
FOR THE
UNIVAC SCIENTIFIC
GENERAL-PURPOSE COMPUTER SYSTEM

P X 44

DECEMBER 1956

Remington Rand Univac

DIVISION OF SPERRY RAND CORPORATION

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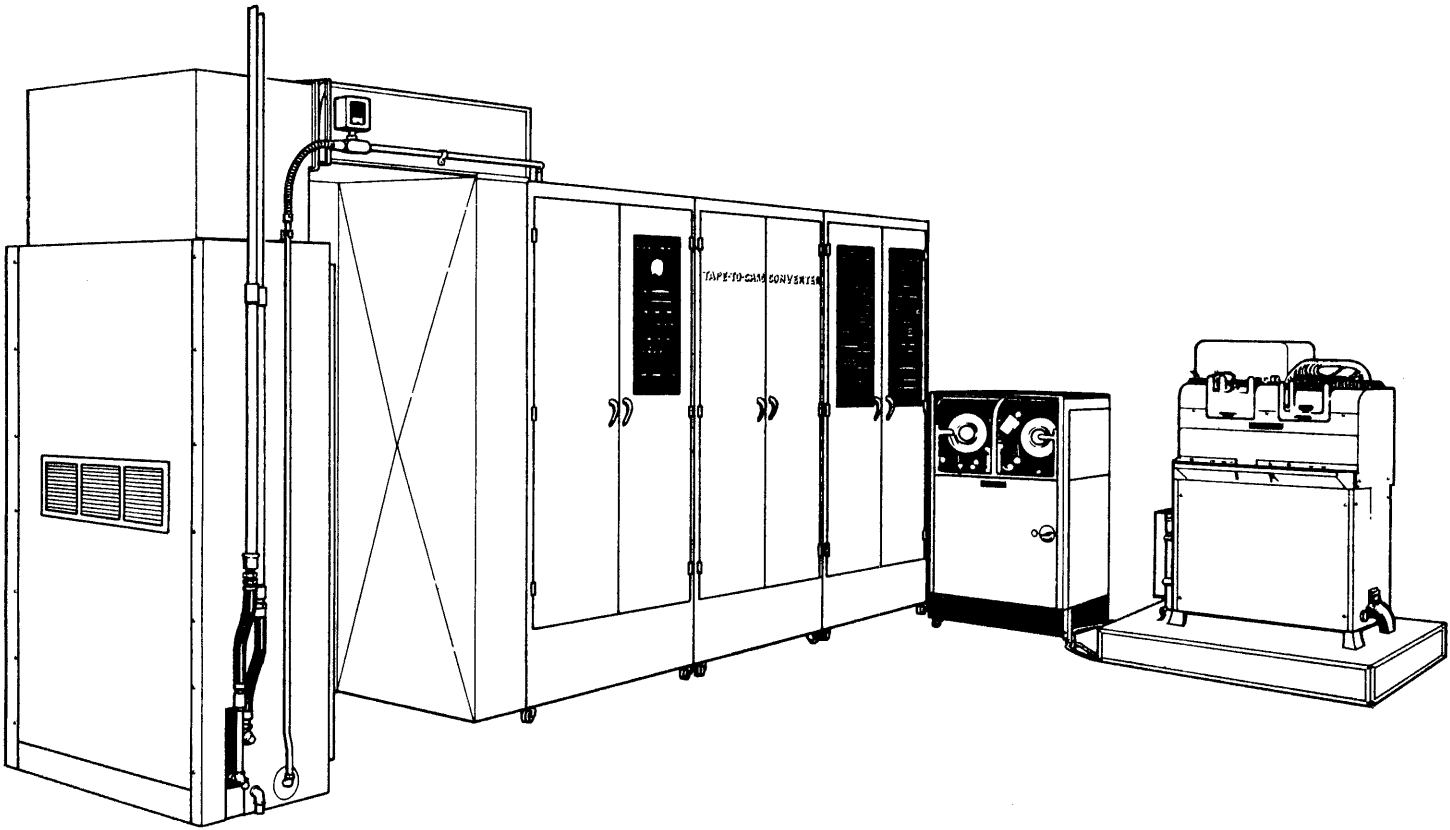


Figure 1. Tape-To-Card Converter
PX 44

TAPE - TO - CARD CONVERTER

The information contained in this section provides data considered to be useful to those concerned with the sale, rental, purchase, and installation of the Univac Magnetic Tape-to-Card Converter System manufactured by the Remington Rand Univac Division of Sperry Rand Corporation.

The installation of input power and cooling equipment for all peripheral units should be carefully scheduled by the customer so that power and refrigeration services are available when needed by the Univac installation personnel. In order to expedite installation the customer should appoint one person to coordinate the activities of his own company with Remington Rand Univac. He should submit complete layout plans to Remington Rand Univac so that the proper equipment may be supplied.

By the time the equipment furnished by Remington Rand Univac arrives at the installation site, all building modifications, including holes in the floor for piping and troughs for cables, should be completed.

If the customer wishes to add acoustically treated ceilings and viewing areas to the installation, he may visit other Univac installations to determine which features can best be incorporated into his system.

The data set forth in the following pages deal primarily with the physical characteristics and installation requirements of three types of systems. This information should be considered prior to shipment of the equipment to insure that room facilities, elevator size, loading facilities, and door openings are adequate. The three systems are very similar, differing only in air conditioning units and the presence or absence of motor-generator equipment. One system, having an externally located motor-generator set, uses a refrigeration-type air conditioning unit manufactured by Frigidaire. The other two systems, one of which utilizes an externally located motor-generator set and the other an internal power supply, use a chilled-water air conditioning system manufactured by Remington Rand Univac. An artist's sketch of the Tape-to-Card Converter is shown in Figure 1. Figures 2 through 8 provide installation dimensions and electrical wiring data on the various models of this equipment.

In the event this manual contains insufficient information to fulfill a particular customer's requirements, Remington Rand Univac will welcome the opportunity to provide further information suited to these individual requirements.

REQUIREMENTS FOR THE MODEL WITH THE MOTOR-GENERATOR
SET AND REFRIGERATION-TYPE AIR CONDITIONING UNIT

The maximum dimensions and approximate weight of the main equipment, including the air conditioning unit, are as follows.

Dimensions: The largest unit is 87" long, 32" wide, and 90" high (the height can be reduced to 80" for shipment by removing duct work). This unit weighs approximately 1,450 lbs.

Floor Space

Requirements: Electronic cabinets with air conditioning unit, 190" x 40"; Card Punch, 36" x 38"; Tape Reader, 23" x 30".

Cable Lengths: Electronic cabinet to punch, 7'; electronic cabinet to Tape Reader, 12'. These lengths are maximum.

Weight: Electronic cabinets with air conditioning unit, 3,025 lbs; Card Punch, 800 lbs; Tape Reader, 400 lbs.

The maximum dimensions and approximate weight of the motor-generator set are as follows.

Height: 20"

Floor Space

Requirements: 18" x 56"

Weight: 600 lbs.

The motor-generator set may be installed in a remote location; its noise makes this desirable.

The power requirements are as follows (all conduit and wiring are to be supplied and installed by customer).

Total Power

Required: Approximately 11.3 kw.

Service

Required: 3-phase, 200 vac \pm 20 vac at 32 amps, or
Single-phase 220 vac \pm 20 vac at 55 amps and
Single-phase 120 vac at 12.5 amps.

If only single-phase 220 vac power is available, the 3-wire, 32-amp line should be replaced with a 2-wire, 55-amp line. Minor internal wiring changes are required to accommodate the single-phase supply.

The approximate phase currents, when using a 3-phase system, depends upon whether or not the compressor in the air conditioning unit is running.

These currents are as follows:

Approximate Current in Amperes

<u>Phase No.</u>	<u>Compressor On</u>	<u>Compressor Off</u>
1	39	23
2	28	12
3	28	28

Power wiring may be brought in from either the ceiling or floor; however, unless the manufacturer is directed otherwise (at least two months prior to equipment delivery) the input power conduit (A66001) will be installed to enter the cabinet from the top so that a ceiling connection will be required.

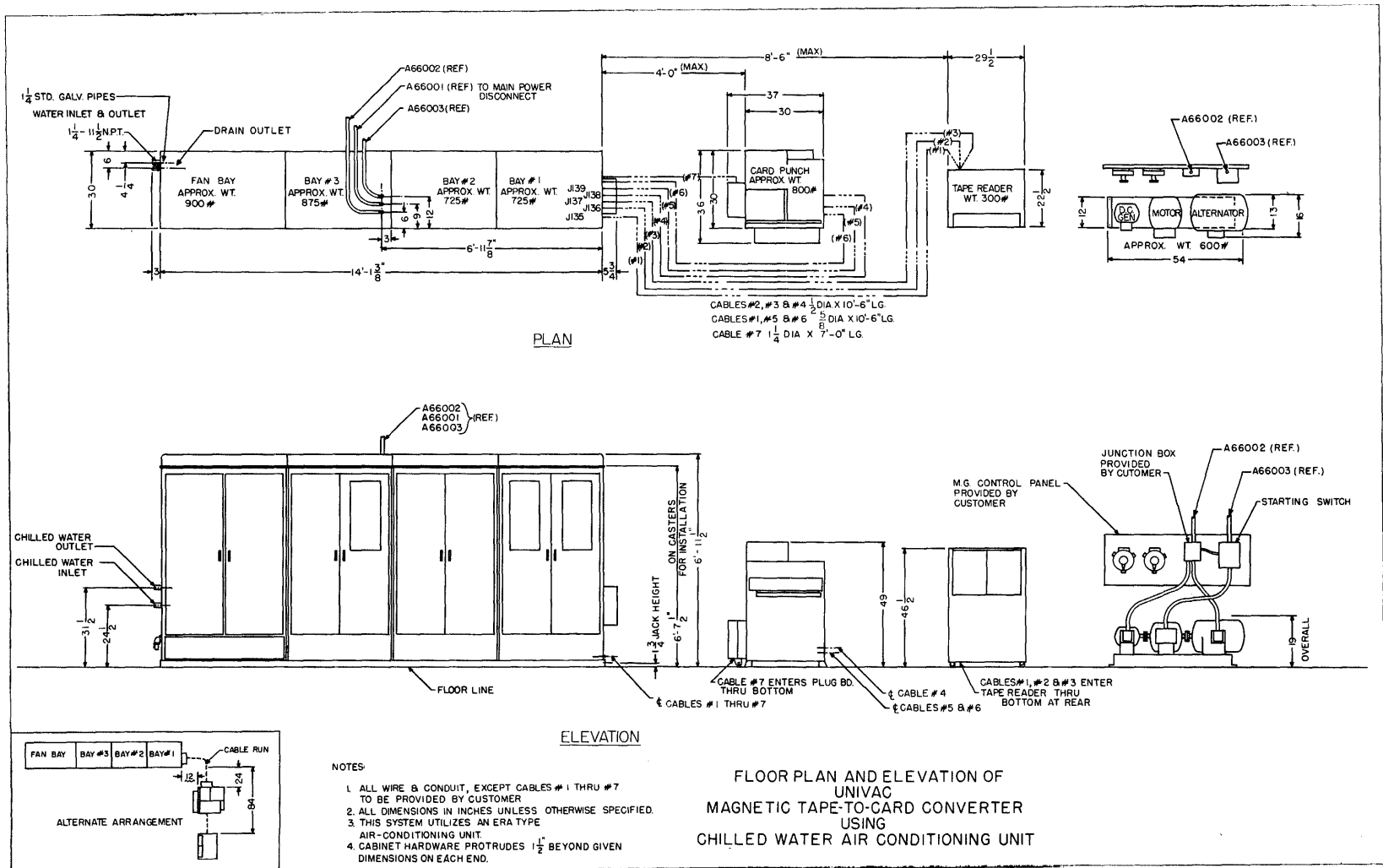
The air conditioning unit cools room air down to 65°F maximum and blows it through the cabinets to cool the components. Air temperature is increased by approximately 15°F as it passes up through the cabinets. It is exhausted back into the room through grilles at the top of the cabinets. The room temperature should not be allowed to exceed 85°F.

The air conditioning unit must be supplied with ordinary tap water at a rate depending on water temperature, approximately as follows:

45°F	125 gals/hour
60°F	165 gals/hour
70°F	225 gals/hour
80°F	335 gals/hour
90°F	855 gals/hour

A floor drain system should be installed to remove condensate from the air conditioning unit. If this is not possible, a sump pump arrangement may be used, because condensate collects very slowly. Water input to the air conditioning unit may be from either the floor or the ceiling. All plumbing facilities are to be supplied and installed by the customer.

It is recommended that, if possible, the equipment be arranged and connected as shown in Figures 2, 5, 6, and 7. Sufficient information is supplied by these figures so that floor loading and maximum point loading may be readily computed by the customer.



<u>Phase No.</u>	<u>Approximate Current in Amperes</u>
1	23
2	12
3	28

Power wiring may be brought in from either the ceiling or floor; however, unless the manufacturer is directed otherwise (at least two months prior to equipment delivery) the input power conduit (A66001) will be installed to enter the cabinet from the top, so that a ceiling connection will be required.

The air conditioning unit is a closed system, wherein air is cooled in the air conditioning unit, blown into the cabinets to cool the components, and then returned to the air conditioning unit to be recycled. Room temperature therefore is not affected.

Recommended Minimum Pressure
Difference Through Cooling Unit: 30 psi at 16 gals/min.

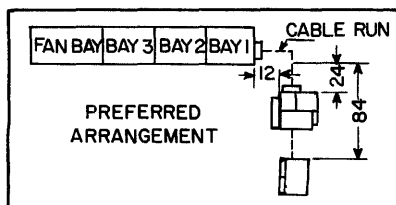
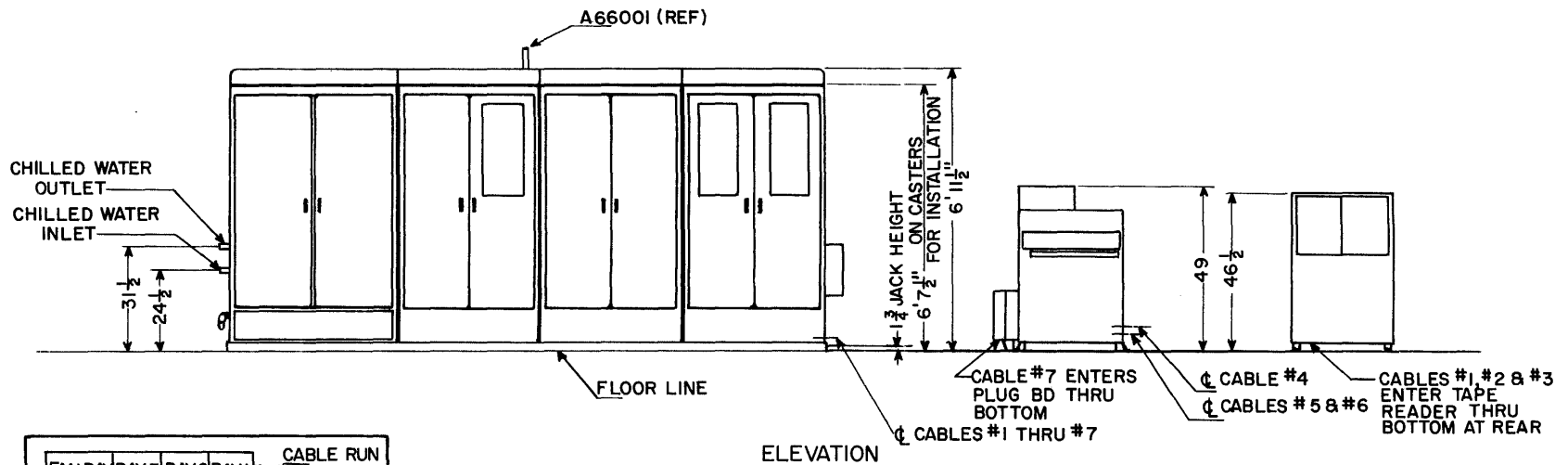
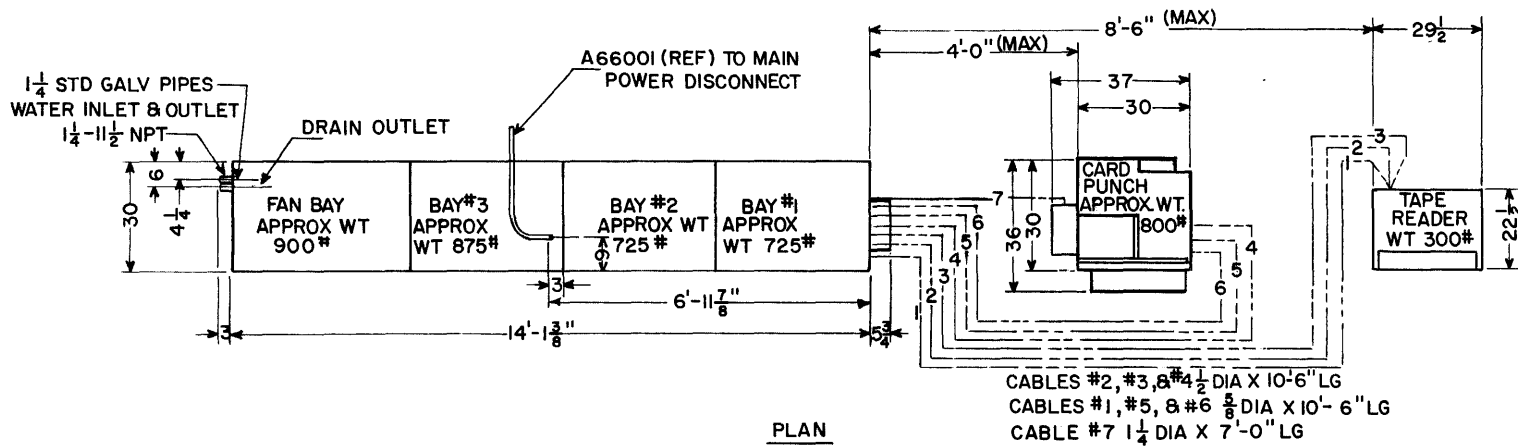
Maximum Allowable Pressure: 100 psi.

Normal Operational Requirements
Using 45°F Water: 4.5 gals/min.

Normal Operational Requirements
Using 50°F Water: 7.75 gals/min.

A floor drain system should be installed to remove condensate from the air conditioning unit. If this is not possible, a sump pump arrangement may be used, because condensate collects very slowly. Water input to the air conditioning unit may be from either the floor or the ceiling. All plumbing facilities are to be supplied and installed by the customer.

It is recommended that, if possible, the equipment be arranged as shown in Figures 3, 5, 6, 7, and 8. Sufficient information is supplied by these figures so that floor loading and maximum point loading may be readily computed by the customer.



NOTES

- 1 ALL WIRE & CONDUIT, EXCEPT CABLES 1 THRU 7 TO BE PROVIDED BY CUSTOMER
- 2 ALL DIMENSIONS IN INCHES UNLESS OTHERWISE SPECIFIED
- 3 THIS SYSTEM UTILIZES AN ERA TYPE AIR-CONDITIONING UNIT
- 4 CABINET HARDWARE PROTRUDES 1 1/2" BEYOND GIVEN DIMENSIONS ON EACH END

FLOOR PLAN AND ELEVATION OF
UNIVAC
MAGNETIC TAPE-TO-CARD CONVERTER
USING
CHILLED-WATER AIR CONDITIONING UNIT
AND INTERNAL WATER SUPPLY

REQUIREMENTS FOR THE MODEL WITH THE INTERNAL POWER
SUPPLY AND CHILLED-WATER AIR CONDITIONING UNIT

The maximum dimensions and approximate weight of the main equipment, including the air conditioning unit, are as follows.

- Dimensions: The largest unit is 87" long, 32" wide, and 83-1/2" high (the height can be reduced to 80" for shipping by removing the hood). This unit weighs approximately 1,450 lbs.
- Floor Space Requirements: Electronic cabinets with air conditioning unit, 170" x 33"; Card Punch, 36" x 38"; Tape Reader, 23" x 30".
- Cable Lengths: Electronic cabinet to punch, 7'; electronic cabinet to Tape Reader, 12'. These lengths are maximum.
- Weight: Electronic cabinets with air conditioning unit, 3,225 lbs; Card Punch, 800 lbs; Tape Reader, 400 lbs.

The power requirements are as follows (all conduit and wiring are to be supplied and installed by the customer):

- Total Power Required: Approximately 8 kw.
- Service Required: 3-phase, 220 vac \pm 20 vac at 21 amps,
or
Single-phase, 220 vac \pm 20 vac, at 36 amps and
Single-phase, 120 vac at 12.5 amps.

If only single-phase 220 vac power is available, the 3-wire, 21-amp line should be replaced with a 2-wire, 36-amp line. Minor internal wiring changes are required to accommodate the single-phase supply.

The approximate phase currents, when using a 3-phase system, are as follows:

<u>Phase No.</u>	<u>Approximate Current in Amperes</u>
1	23
2	12
3	28

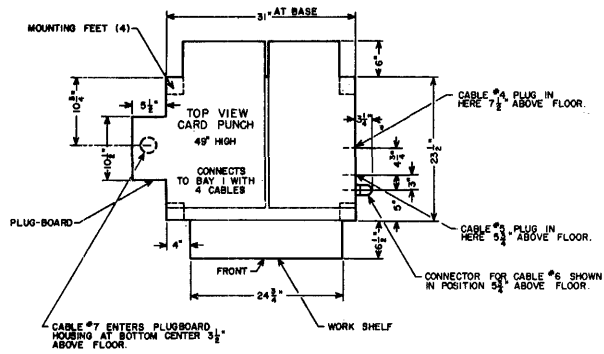
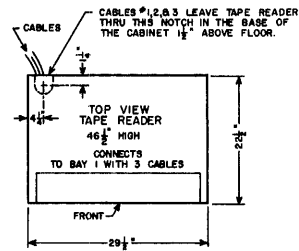
Power wiring may be brought in from either the ceiling or floor; however, unless the manufacturer is directed otherwise (at least two months prior to equipment delivery) the input power conduit (A66001) will be installed to enter the cabinet from the top so that a ceiling connection will be required.

The air conditioning unit is a closed system, wherein air is cooled, blown into the cabinets to cool the components, and then returned to the air conditioning unit to be recycled. Room temperature therefore is not affected. Data on this unit are as follows;

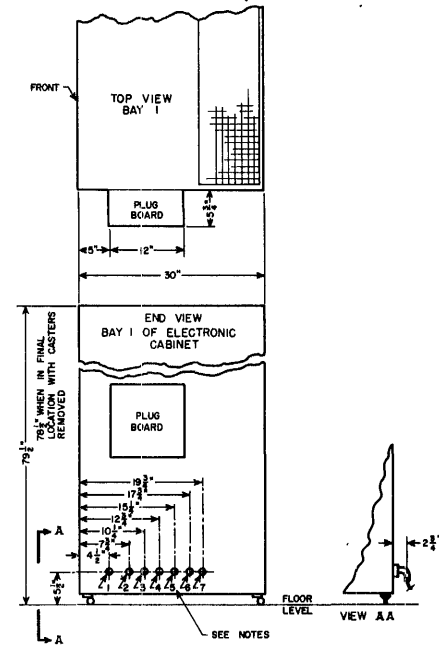
Recommended Minimum Pressure Difference Through Cooling Unit:	30 psi, at 16 gals/min.
Maximum Allowable Pressure:	100 psi.
Normal Operational Requirements Using 45°F Water:	4.5 gals/minute
Normal Operational Requirements Using 50°F Water:	7.75 gals/minute

A floor drain system should be installed to remove condensate from the air conditioning unit. If this is not possible, a sump pump arrangement may be used because condensate collects very slowly. Water input to the air conditioning unit may be from either the floor or the ceiling. All plumbing facilities are to be supplied and installed by the customer.

It is recommended that, if possible, the equipment be arranged as shown in Figures 4, 5, 6, 7, and 8. Sufficient information is supplied by these figures so that floor loading and maximum point loading may be readily computed by the customer.



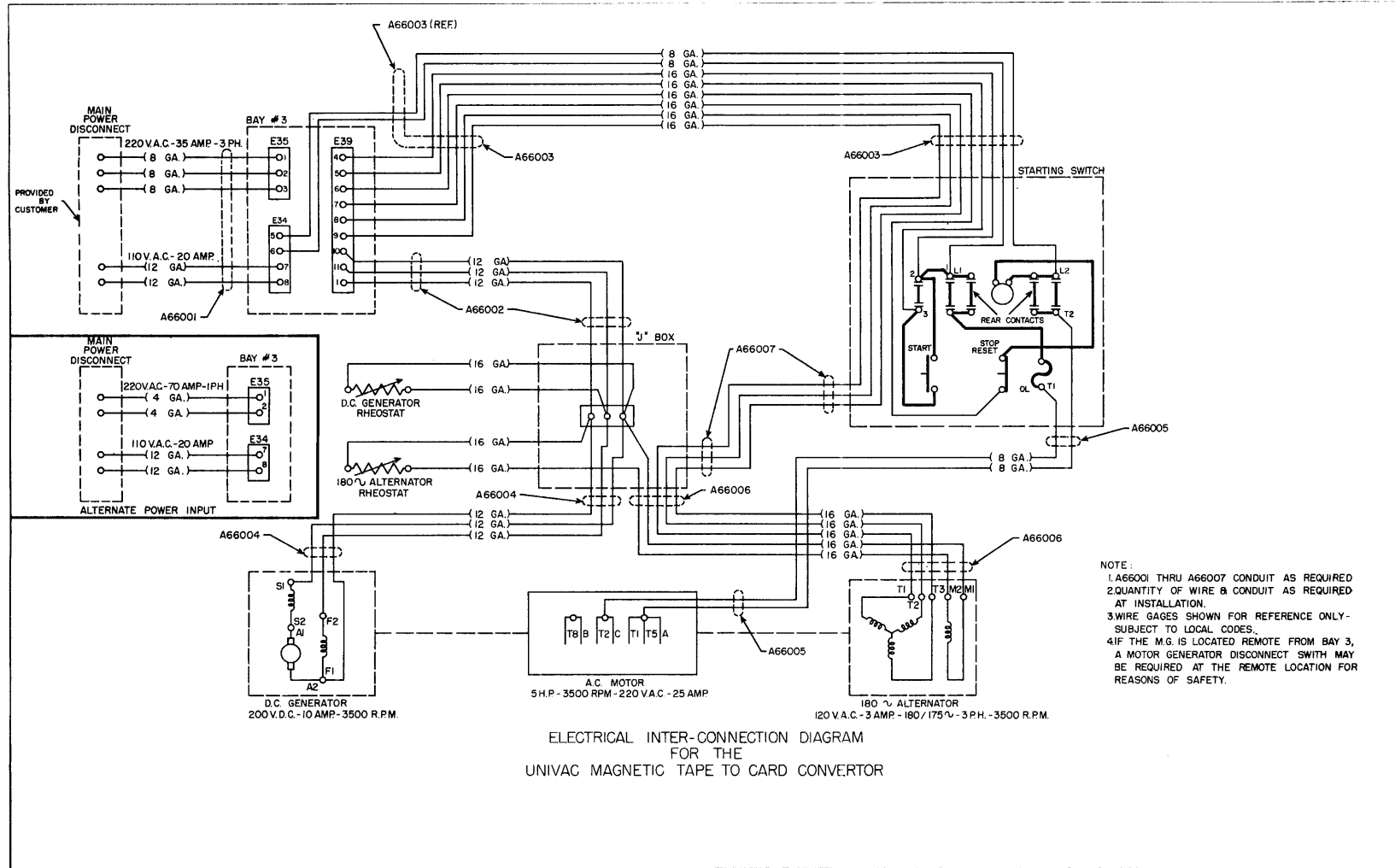
- NOTES:
- CABLE & CONNECTOR INFORMATION
1. $\frac{1}{2}$ " DIA CABLE AMPHENOL CONNECTOR #AN3088-28-1S MAX DIA. 2 $\frac{1}{2}$ " OTHER END PERMANENTLY FASTENED INSIDE TAPE READER.
 2. $\frac{1}{2}$ " DIA CABLE AMPHENOL CONNECTOR #ANS1088-28-1P MAX DIA. 2 $\frac{1}{2}$ " OTHER END PERMANENTLY FASTENED INSIDE TAPE READER.
 3. $\frac{1}{2}$ " DIA. 3 WIRE RUBBER INS. CABLE, BRYANT CONN #912 MAX DIA. 2" OTHER END PERMANENTLY FASTENED INSIDE TAPE READER.
 4. $\frac{1}{2}$ " DIA 3 WIRE RUBBER INS. CABLE, BRYANT CONN #912 MAX DIA. 2" OTHER END AT PUNCH WITH HUBBELL CONN #7555 MAX DIA. 1 $\frac{1}{2}$ "
 5. $\frac{1}{2}$ " DIA 3 WIRE RUBBER INS. CABLE, HUBBELL CONN #7573 MAX DIA. 1 $\frac{1}{2}$ " OTHER END AT PUNCH WITH BRYANT CONN #914 MAX DIA. 2"
 6. $\frac{1}{2}$ " DIA. CABLE PERMANENTLY FASTENED IN BAY 1, OTHER END AT PUNCH WITH AMPHENOL CONN. #AN3088-28-1P MAX DIA. 2 $\frac{1}{2}$ "
 7. 6 CABLES FORMING ONE CABLE 1 $\frac{1}{2}$ " TOTAL DIA. PERMANENTLY FASTENED IN BAY 1 OTHER END ENDING IN PINS AT PLUGBOARD.



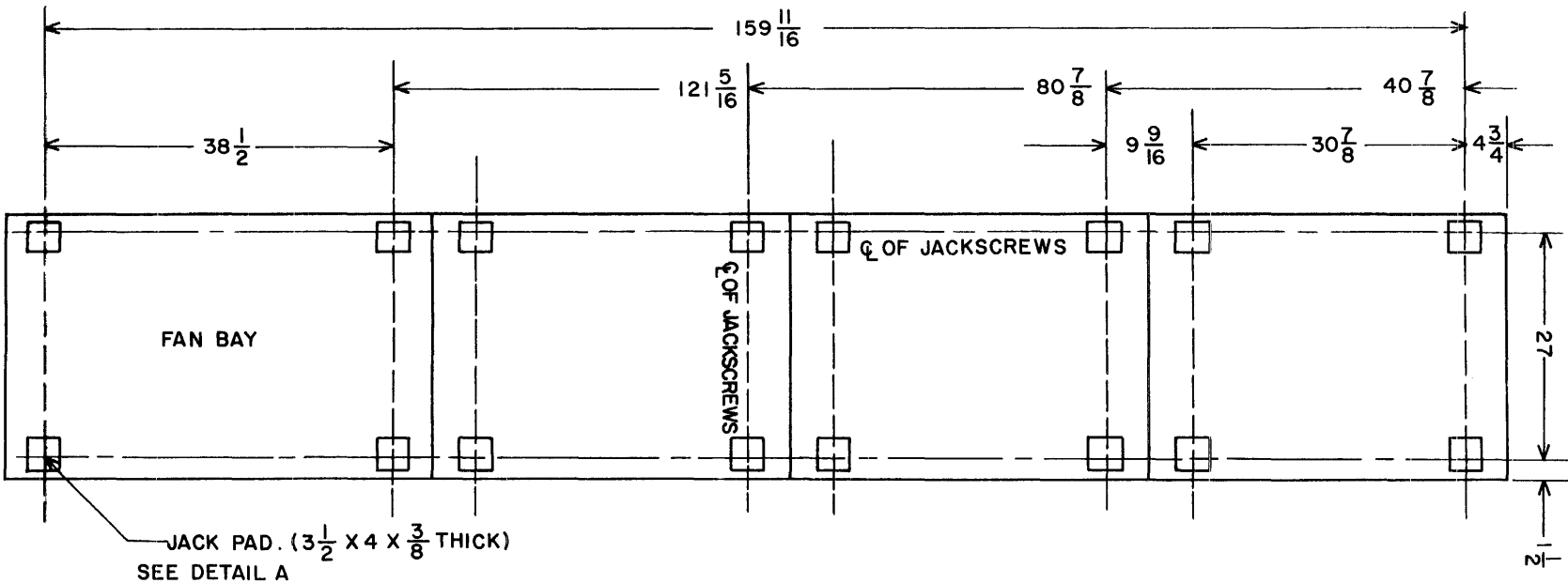
EQUIPMENT LAYOUT AND DETAILED DIMENSIONS FOR THE UNIVAC MAGNETIC TAPE-TO-CARD CONVERTOR

Figure 5
PX 44

Figure 6
PX 44



SECRET



JACK PAD. ($3 \frac{1}{2} \times 4 \times \frac{3}{8}$ THICK)
 SEE DETAIL A

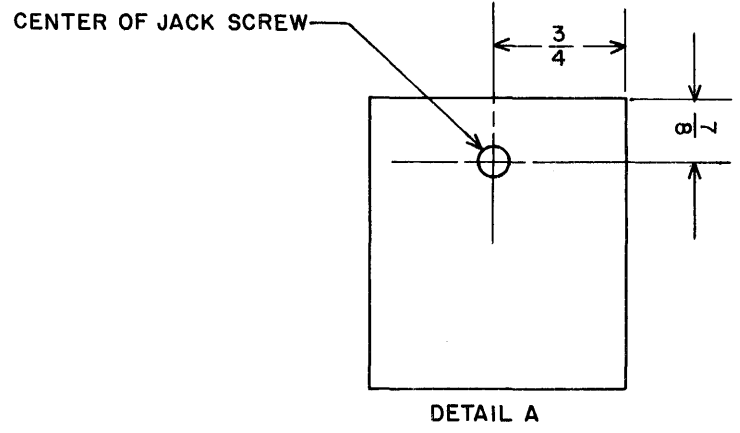
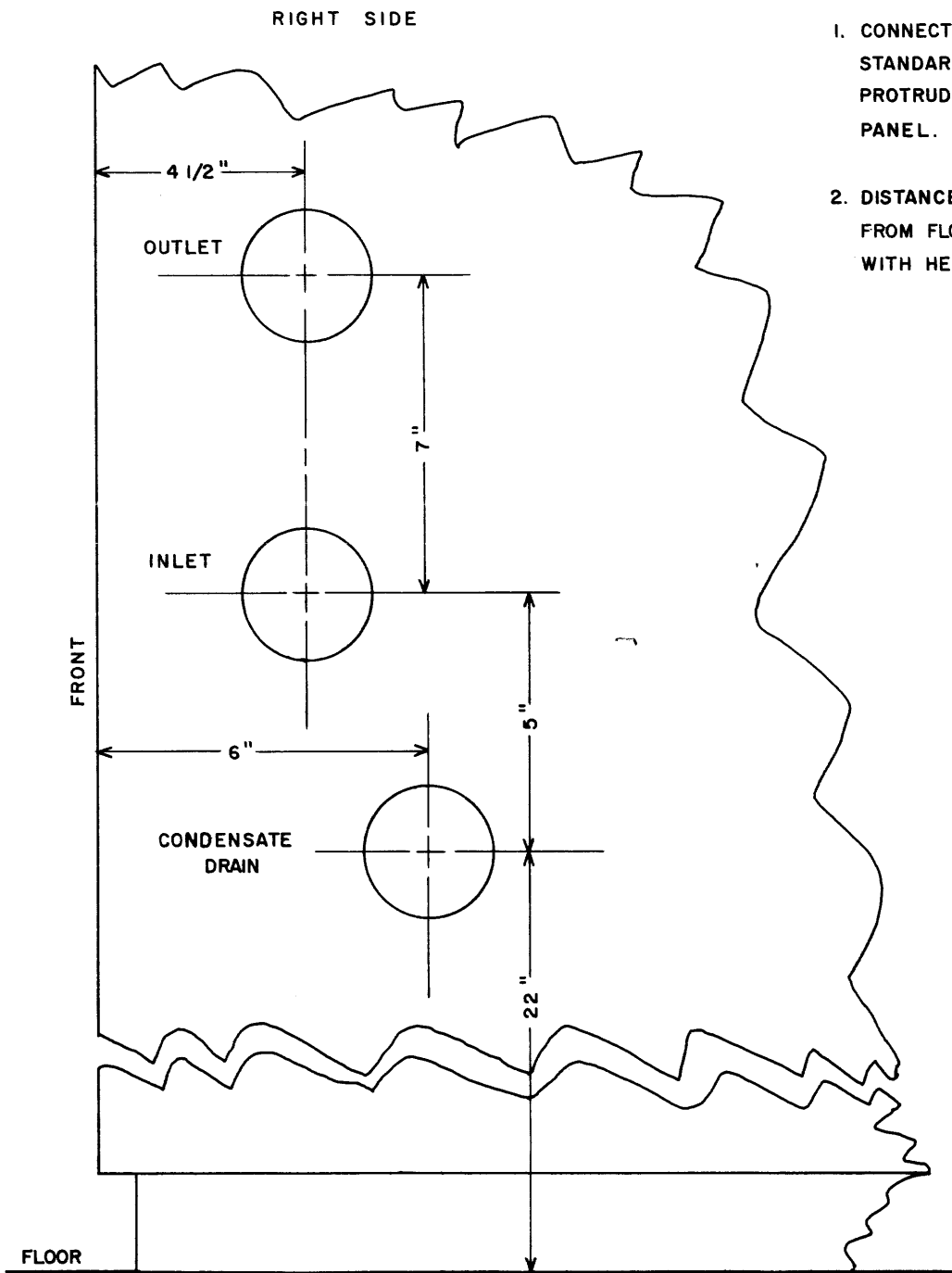


Figure 7. Location of Equipment Supports
 PX 44



1. CONNECTING PIPES ARE STANDARD THREAD-1/4" AND PROTRUDE APPROX. 6" FROM PANEL.
2. DISTANCE OF DRAIN PIPE FROM FLOOR MAY VARY WITH HEIGHT OF FEET.

Figure 8. Layout of Plumbing Connections for Fan Bay of Tape-To-Card Converter PX 44

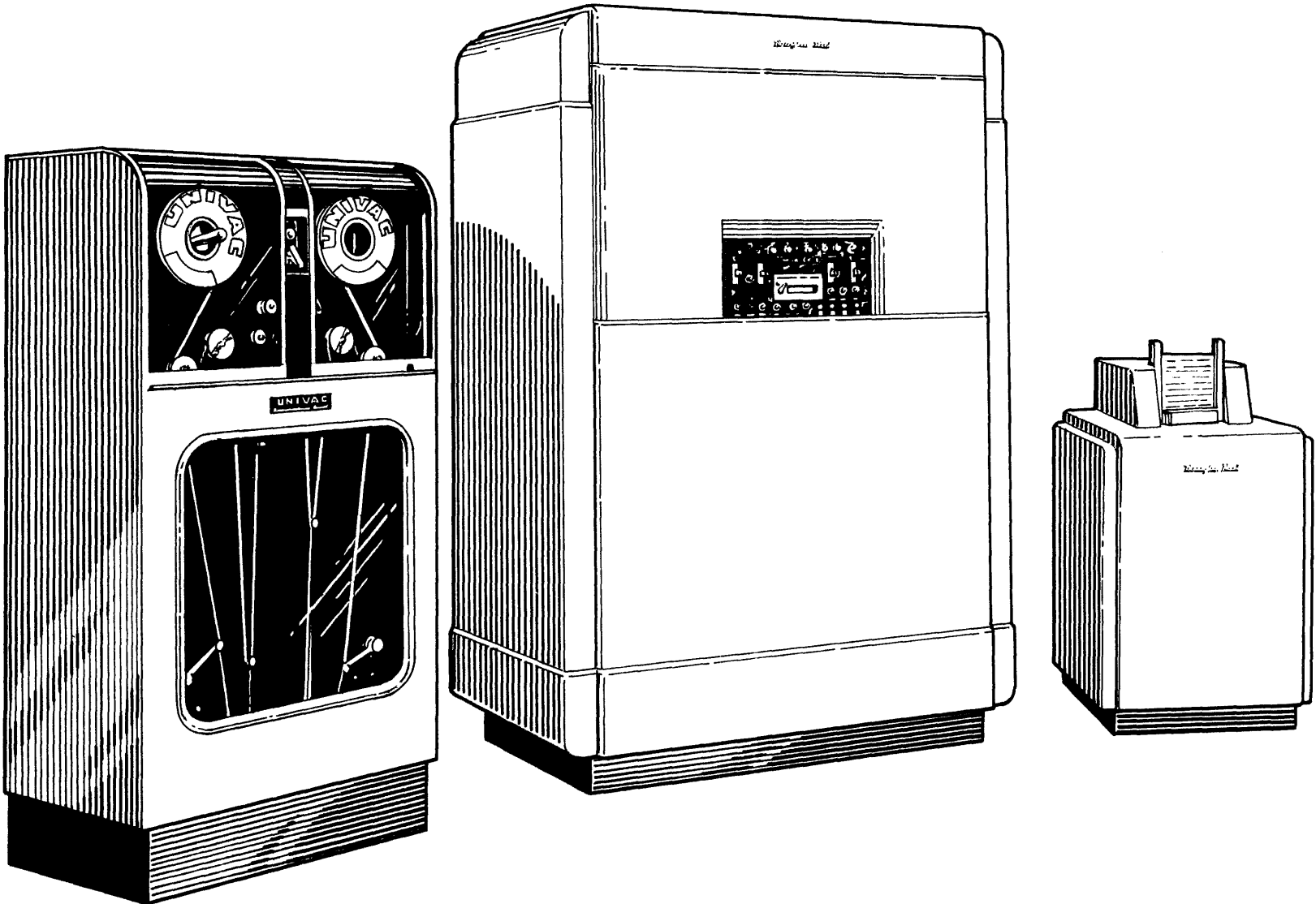


Figure 9, Tape-To-Card Converter

PX 44

CARD - TO - TAPE CONVERTER

The Card-to-Magnetic Tape Converter consists of three units: a card feed, a High-Speed Tape Transport, and an electronic unit. These units should be placed in a floor area of approximately 260 square feet. The space around the units should be such that quick access is allowed to internal, external and extendible sections. A minimum space of four feet should be left between the individual units to accept swinging cabinet doors, cover removal, etc. By allowing sufficient access space, the customer greatly facilitates operation and servicing of the units. A scaled drawing suggesting four layout arrangements is shown in Figure 10.

CABLES - The Converter has four interconnecting cables. Three cables connect the electronic unit to the card feed and can be run in one trough. The other cable connects the electronic unit to the High-Speed Tape Transport. No cable should exceed the 25-foot limit set by the manufacturer. This should be considered in planning the installation. All cables should be placed in a trough or covered by a ramp.

POWER REQUIREMENTS - The Card-to-Tape Converter requires approximately 10 kva of single-phase, 3-wire, 60 cycle a-c. This power may be taken from 2 legs of a 3-phase system, either 208 vac or 230 vac. It is recommended that a Stabline Regulator be installed near the source to minimize line fluctuations.

COOLING REQUIREMENTS - The electronic unit of the Converter requires 14 gallons per minute of chilled water at 50°F. The pump should be capable of working into an 80-foot head. The cool-water input may be connected to the Univac cooling system or to any standard cooling system of about 3-ton minimum capacity. If a "closed-loop" water supply is used, the customer must provide a balance cock between the input and output connections to the Converter to assure adequate water pressure in the radiator coils of the air conditioning system. In addition, each input and output should have a hand-controlled valve. A pan under the cooling coils permits the trapping of condensate water, and a floor drain or sump should be provided to remove such waste. Information on water connections may be obtained by referring to Figure 13, since plumbing connections are identical to those on the High-Speed Printer Control Unit.

The High-Speed Tape Transport is cooled by its own blower and dissipates approximately 2 kw into the room when operating normally. This additional heat load must be accommodated by the room air conditioning equipment.

PHYSICAL CHARACTERISTICS OF THE UNITS

Component	Depth	Width	Hgt.	Approx. Weight	Floor Area
Card Feed	30"	30"	36"	320 lbs.	6.2 sq. ft.
H.S. Tape Transport	21 3/4"	29 1/4"	60"	650 lbs.	5.0 sq. ft.
Electronics Unit	32"	50"	77"	2265 lbs.	11.1 sq. ft.

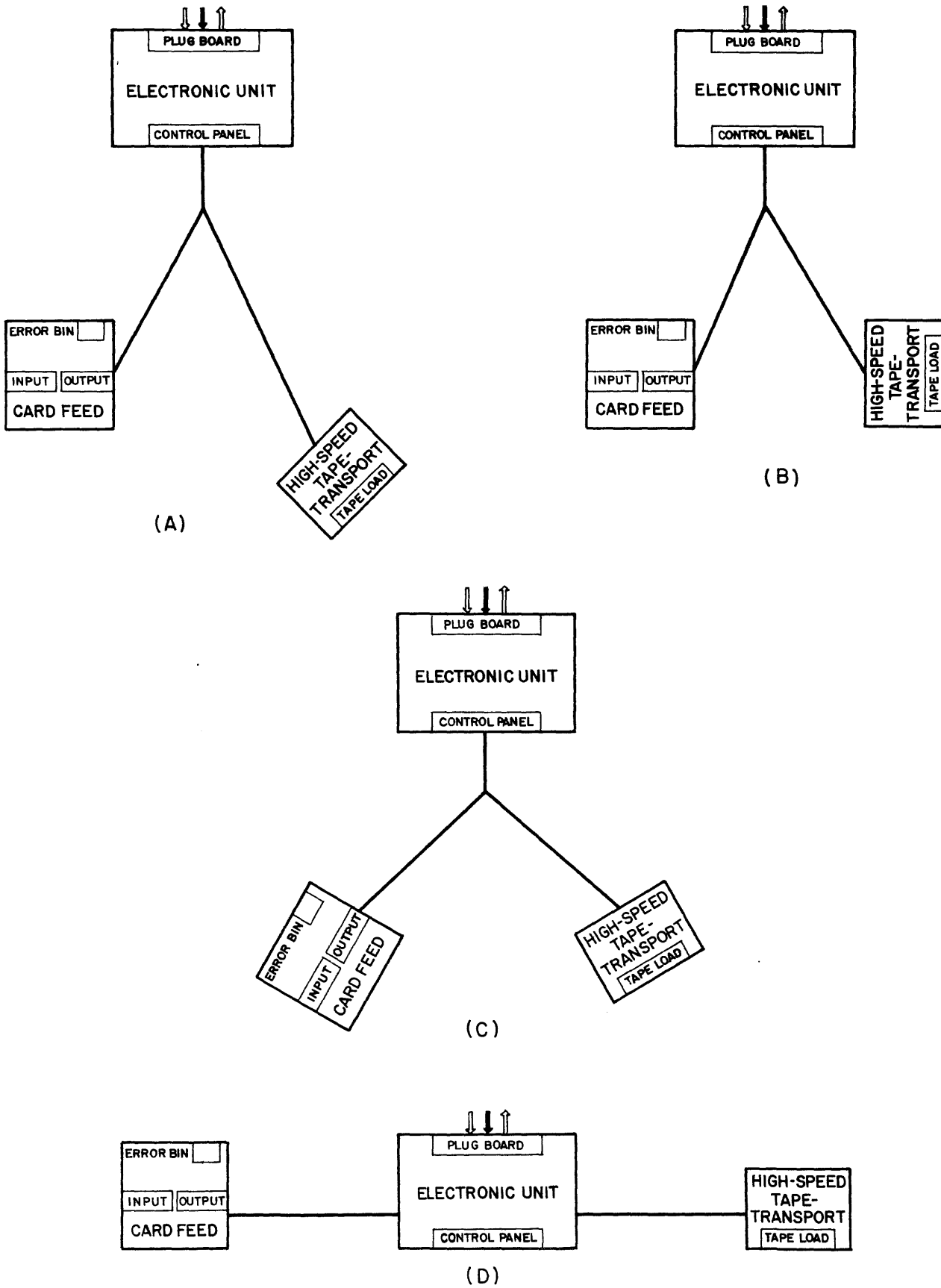


Figure 10. Suggested Arrangements of Units for Card-to-Tape Converter.
PX 44

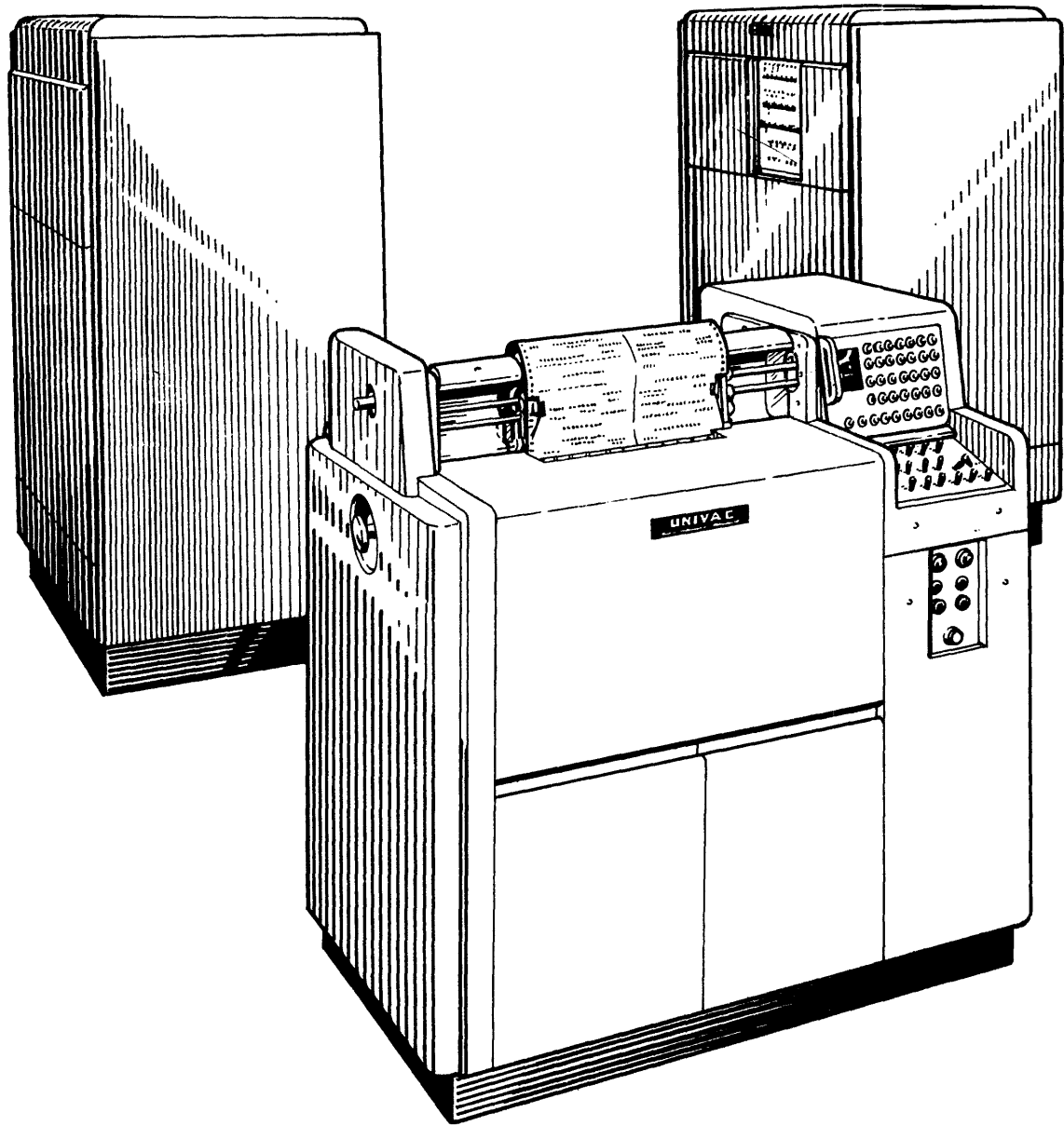
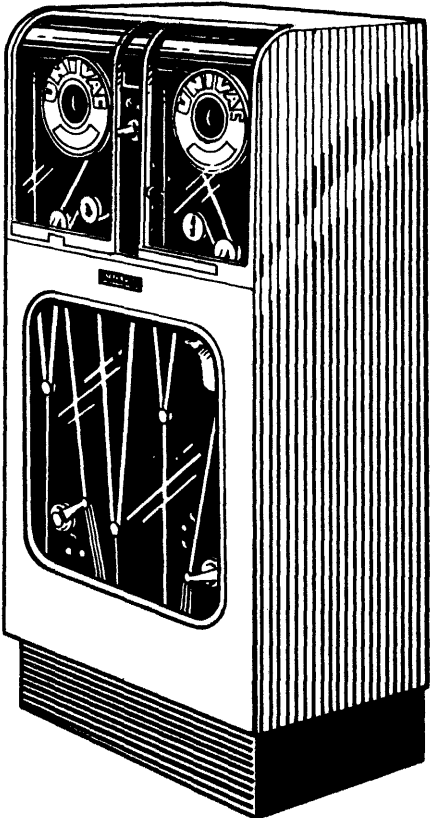


Figure 11. High-Speed Printer
PX 44

HIGH-SPEED PRINTER

The High-Speed Printer is housed in four cabinets. One cabinet contains the Paper-Feed System and the Printer itself. A second cabinet houses the Tape Transport mechanism. The other two cabinets contain the power supply and electronic circuits which control the Printing and Tape Transport mechanisms. The four units are called: 1) Printer Unit, 2) High-Speed Tape Transport, 3) Power and Control Unit, and 4) Memory Unit. A space of about 400 square feet is recommended for efficient operation and maintenance of the four units (see Suggested Floor Plan for High-Speed Printer, Figure 12). Further information, such as interconnecting ductwork, access areas, etc., may be obtained from drawing No. CSK 3344. Four casters support each unit; therefore, floor-loading calculations should consider these concentrated loads. Floor plates may be put under each caster to distribute the load.

POWER REQUIREMENTS - The Printer requires 18 kva of single-phase, 3-wire, 60-cycle power. Power may be taken from a 208 volt source (across two legs of a 3-phase, 4-wire system), or a 230 volt source (across two legs of a 3-phase, 3-wire system). The use of a Stabline Regulator is recommended to minimize line fluctuations. The equipment is furnished with a 25-foot power cable and a Russell and Stoll 100 ampere service with a circuit breaker conveniently located near the power and control unit of the Printer.

COOLING REQUIREMENTS - The Memory Unit and the Power and Control Unit are cooled by a closed-loop chilled-water system. Each of the two units requires 14 gallons of water per minute at 50°F (total: 28 gpm). The pump supplying this water should be capable of working into an 80-foot head. The chilled-water inputs may be supplied from the main cooling system of the computer, or from any standard cooling system of approximately 5-ton minimum capacity.

If an external closed-loop water supply is used, the customer must provide a balance cock between the input and output connections to each unit requiring chilled water to assure adequate water pressure in the radiator coils of the air conditioning system. In addition, each input and output should have a hand-controlled valve. The equipment is furnished with 25-foot flexible hoses having quick disconnects at both ends. The intake and outlet pipes should have 1/2 inch female pipe-thread fittings for connecting to the hoses. A pan under the cooling coils permits the trapping of condensate water, and a floor drain or sump should be provided to remove such waste.

The Printer Unit dissipates approximately 1.4 kw into the room when operating normally. This additional head load must be accommodated by the room air conditioning equipment. Information about cooling requirements for the High-Speed Tape Transport is given in the section on Card-to-Tape Converter.

PHYSICAL CHARACTERISTICS OF UNITS

Component	Depth	Width	Hgt.	Approx. Weight	Floor Area
Printer Unit	31 7/8"	47 1/2"	48"	800 lbs.	10.8 sq. ft.
H.S. Tape Transport	21 3/4"	29 1/4"	60"	650 lbs.	5.0 sq. ft.
Power and Control Unit	50 3/4"	32 3/4"	68 3/16"	2000 lbs.	11.1 sq. ft.
Memory Unit	50 3/4"	32 3/4"	68 3/16"	1200 lbs.	11.1 sq. ft.

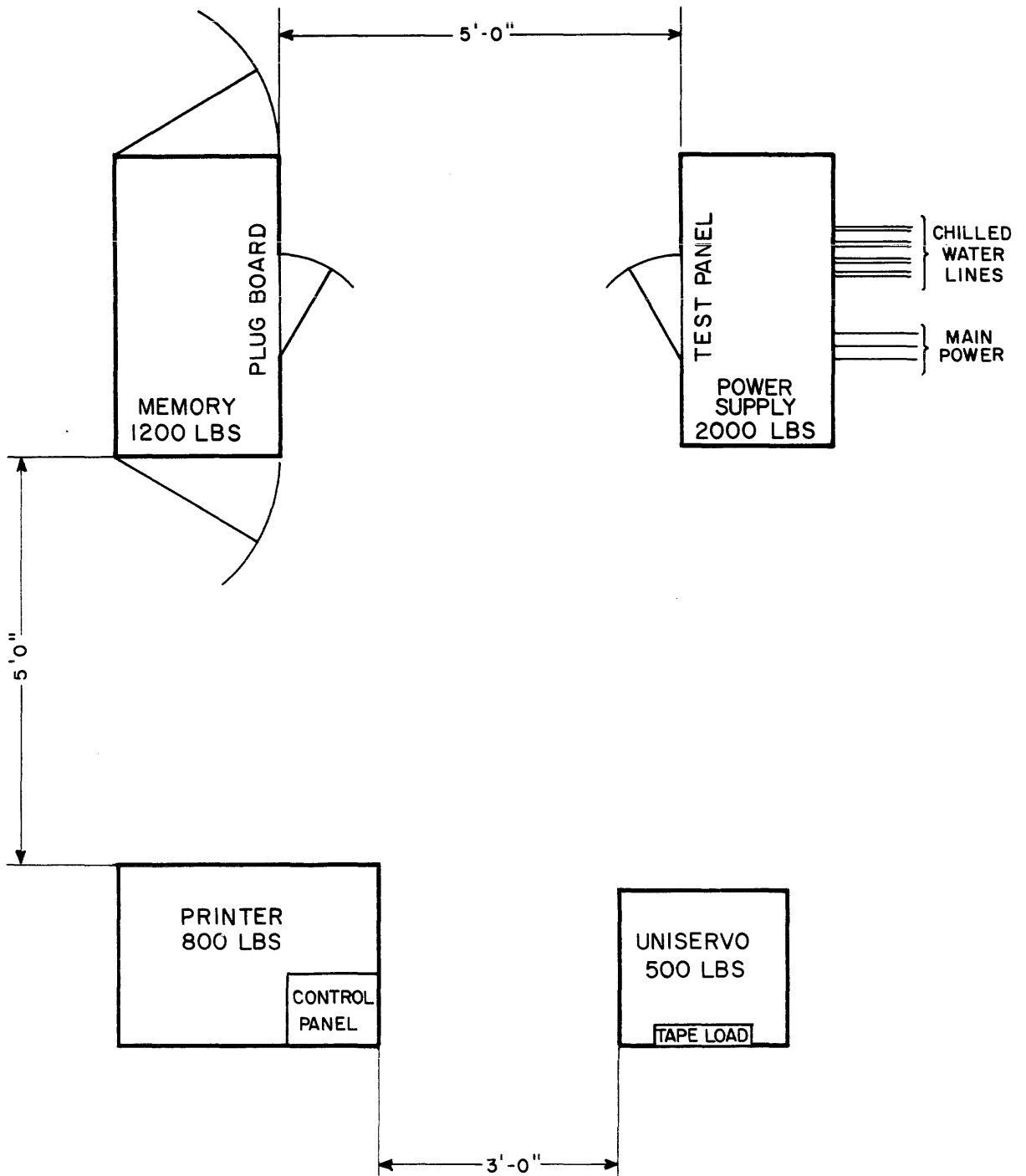


Figure 12. Suggested Floor Plan for High-Speed Printer Installation
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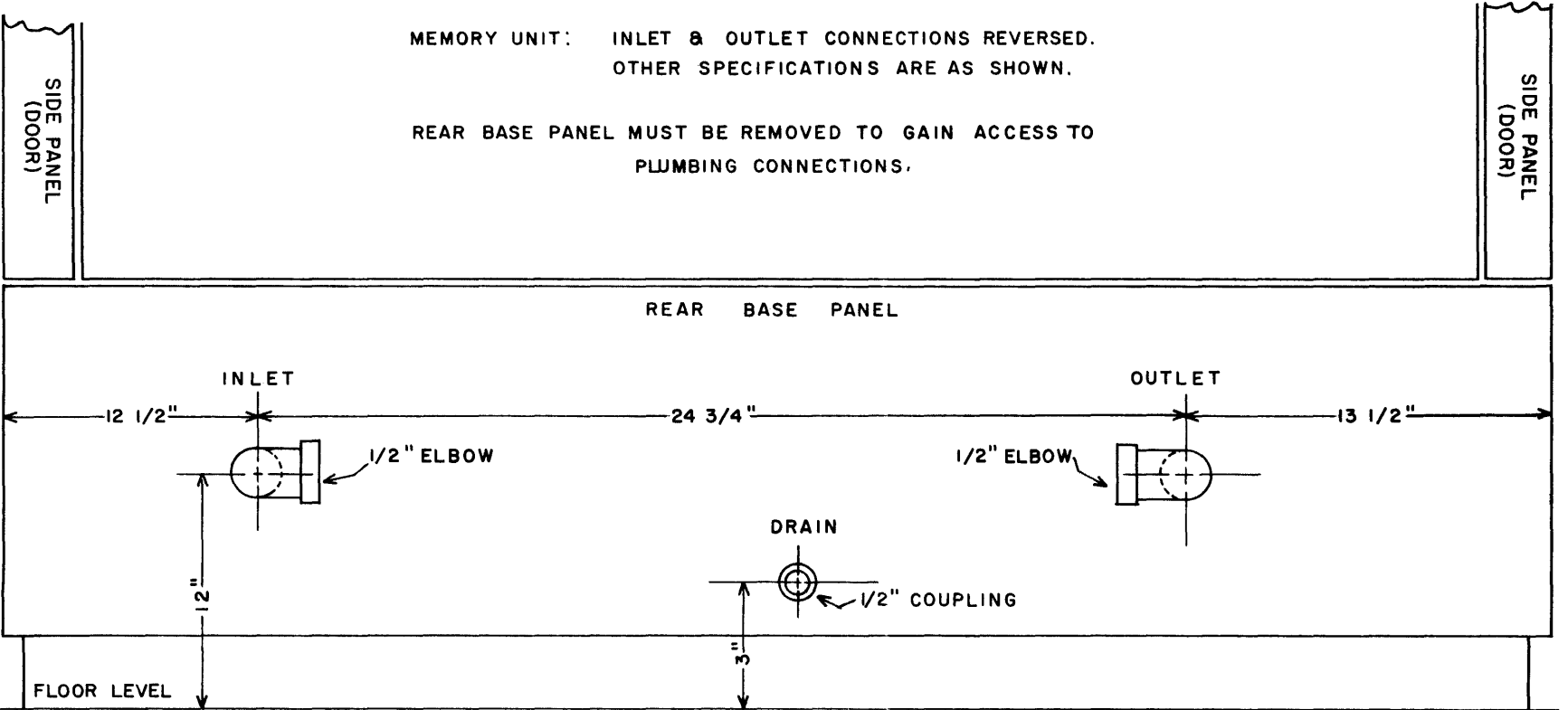


Figure 13. Layout of Plumbing Connections for Power and Control Unit of High-Speed Printer.

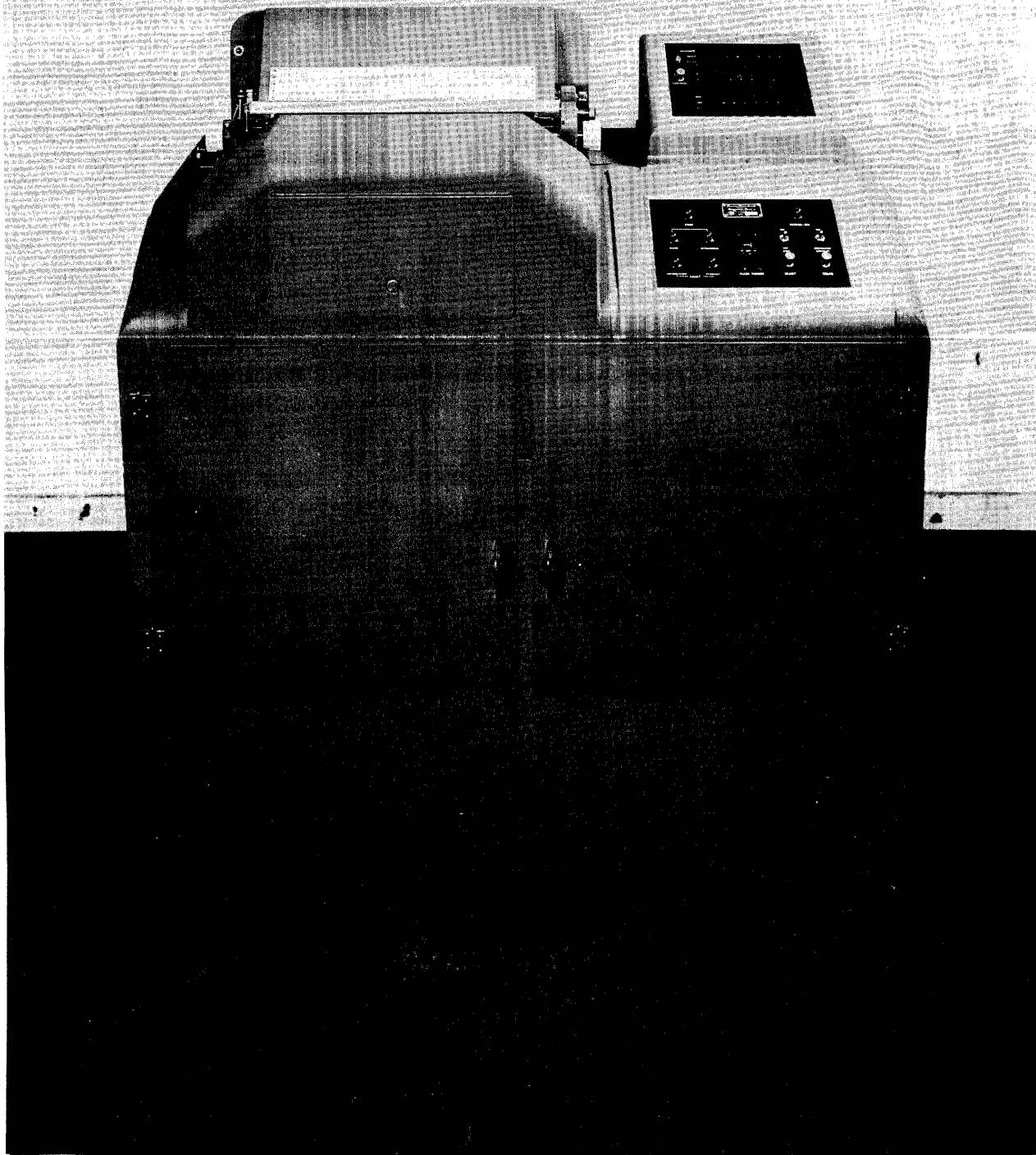


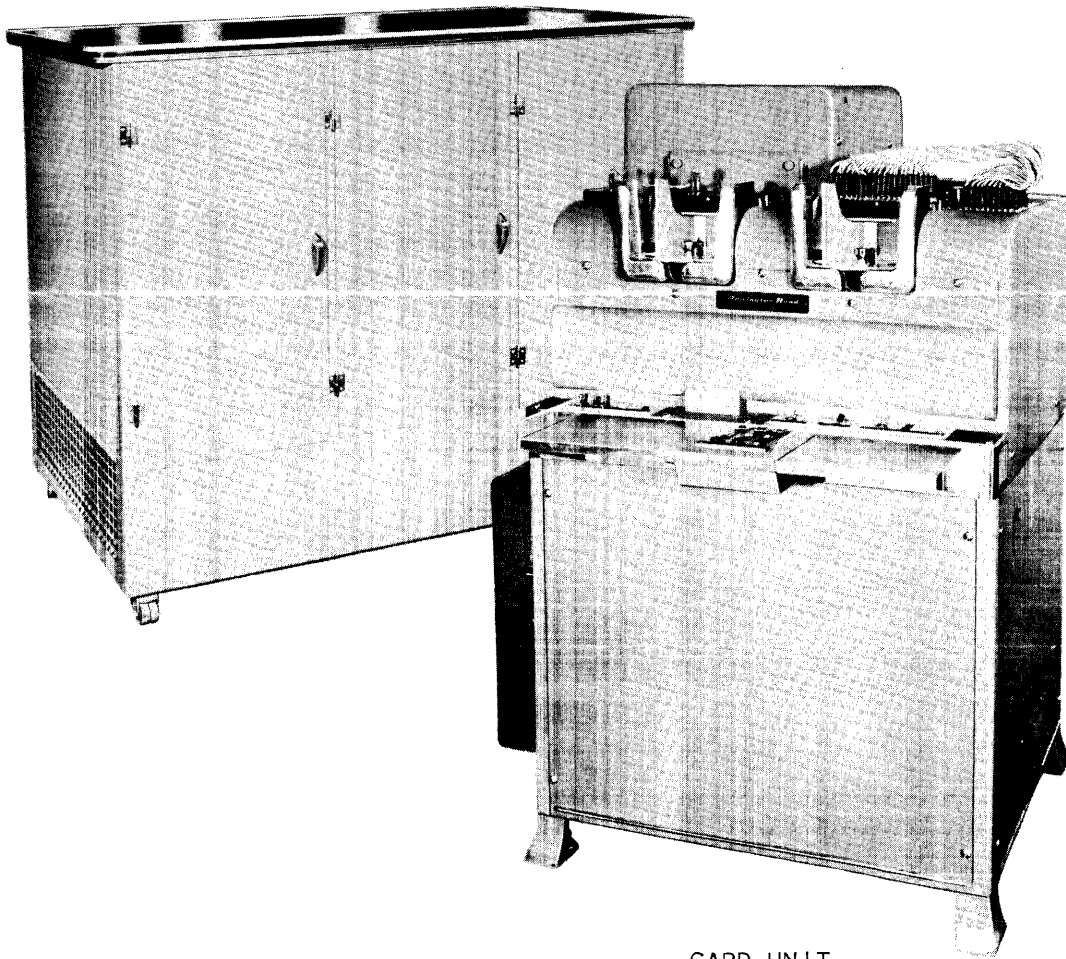
Figure 14. Univac Line Printer
PX 44

UNIVAC LINE PRINTER

The Univac Line Printer is contained in a single cabinet weighing approximately 1200 pounds (see Figure 14). The cabinet dimensions are 49 inches long, 30 inches wide, and 50 inches high. The input power to the Univac Line Printer is 220 volt, 3-phase, 60 cps. The maximum power consumption is 2.4 kw at a power factor of 0.93 inductive. Internal supply units within the Printer are used to derive all the necessary d-c voltages.

For equipment cooling, five blowers pull in room air through the base of the cabinet and exhaust it through the top of the cabinet.

CARD UNIT CONTROL



CARD UNIT

Figure 15. Punched Card Input/Output System
PX 44

0 10534

PUNCHED CARD INPUT / OUTPUT SYSTEM

The Punched Card Input/Output system consists of two pieces of equipment: The Card Unit (a card punch and reader), and the Card Unit Control.

The units are connected to the computer and to each other by cables.

Provisions are made on the platform of the Univac Scientific so that the Card Unit rests on the platform, and the Card Unit Control is mounted either on the platform or on the floor adjacent to the computer.

Dimensions and approximate weights of the two equipments are as follows:

	Width	Depth	Height	Weight
Card Unit	35"	38"	50"	800 lbs.
Card Unit Control	30"	60"	54"	1000 lbs.

The power requirements are 4-wire, 208 vac, at 2.5 kw.

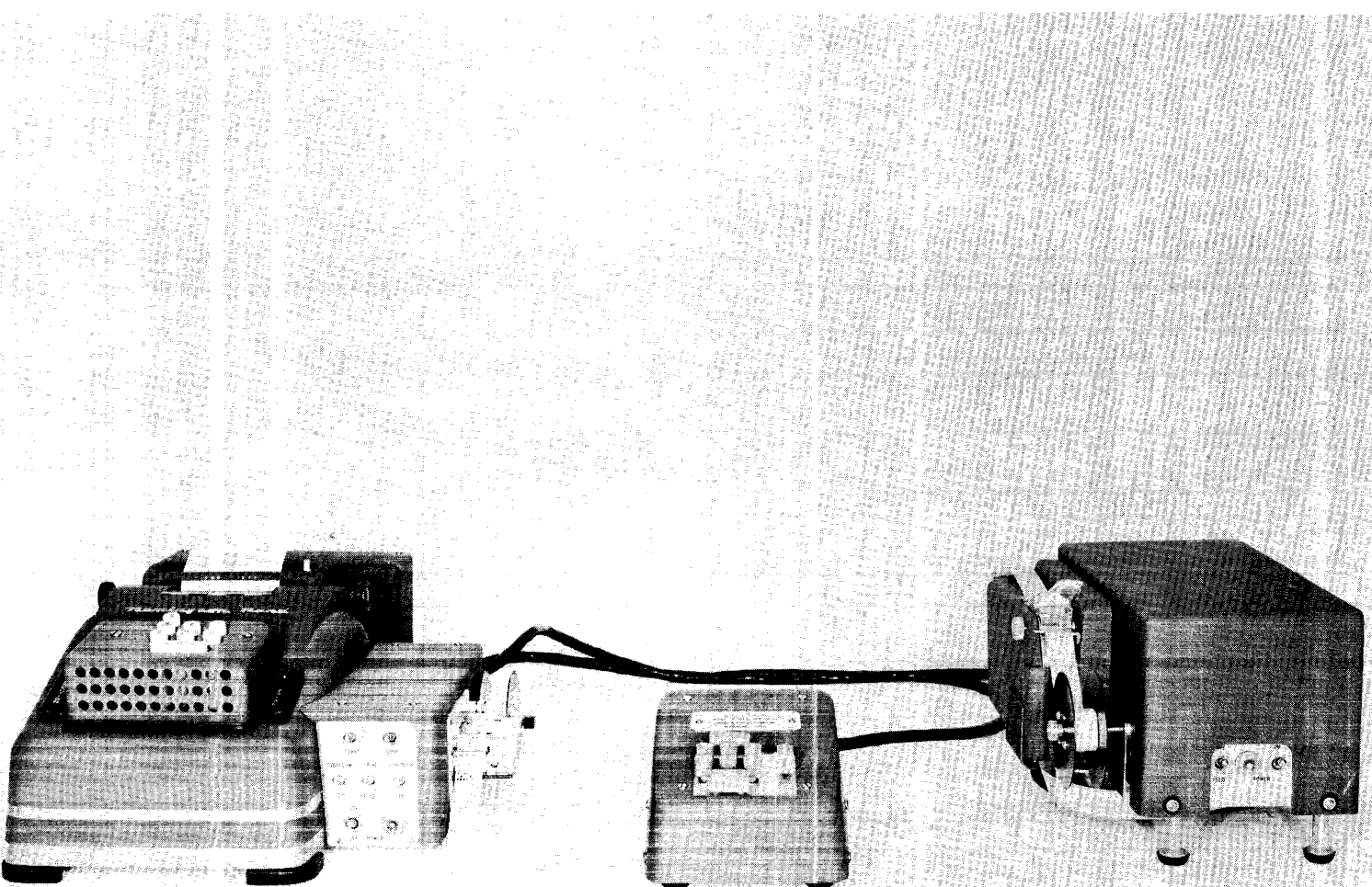


Figure 16. Bi-Octal Tape Preparation Equipment
PX 44

BI-OCTAL TAPE PREPARATION EQUIPMENT

The Bi-Octal Tape Preparation System consists of three major assemblies shown in Figure 16. From left to right, these are the Bi-Octal Printer, the Main Keyboard and the Motorized Punch. These three assemblies are interconnected by cables and occupy a tabletop of approximately six square feet. The three pieces of equipment weigh approximately 75 pounds. This equipment operates from a 115 vac single-phase convenience outlet.

UNITYPER II

The Unityper II is a machine incorporating a modified electric typewriter and a magnetic tape recording device all combined to form a single assembly occupying a space of about two square feet.

OSCILLOSCOPE PRINTER-PLOTTER

The current design for this unit allows for plug-in connection to the Central Computer, thereby restricting its usage to the vicinity of the Supervisory Control Panel. The unit is equipped with wheels so that it may be removed from the Operator's Platform when not in use. Its physical dimensions are: height - 47 inches, width - 30 inches, depth - 27 inches.