

## AMERICAN TELEPHONE AND TELEGRAPH COMPANY

195 BROADWAY, NEW YORK 7, N.Y.

AREA CODE 212 393-3195

C. M. MAPES  
ASSISTANT CHIEF ENGINEER

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P.E.L. 7125

Topical Index Code 1C1.15C

Two new equipment packages have been developed to provide basic step-by-step PBX service for customers with a maximum of 100 or 200 lines. These packages incorporate 701B switches and trunks which are shop mounted and wired on frames which may be enclosed with cabinets. The new packages are coded the 701PK system when associated with a 552D or 608A PBX switchboard and the 711PK PBX system when used as a satellite.

The 701PK offers distinct possibilities in cases where the customer's service requirements are and will be substantially confined to basic PBX services such as station hunting, restriction, intercept, power failure transfer, recorded telephone dictation, tie trunks and manual conferencing. The provision of new service features being developed for PBX and CENTREX application is generally more economically attractive with the 757A Crossbar and 101 Electronic Switching Systems.

The frames are equipped as follows:

	<u>Initial 100 Line</u>	<u>Supplementary 100 Line</u>
Size	5'4-1/4" long X 6'7-1/2" high X 2'6"	5'4-1/4" long X 6'7-1/2" high X 2'6"
Line Circuits	100	100
Line Finders	13	10
Selectors	13	10
Connectors	8	8
Central Office Trunks	- - - -	As Required - - - -
Attendant Trunks	6	3
Test Line Unit	1	0
Manual Conf. Unit	1	0
Vacant Sel. Level Unit	1	0
Vacant Conn. Term. Unit	1	0
9-Ampere Power Supply	1	1

For installations in the 100-200 line range, the supplementary frame can be connected to the initial frame by means of connector ended cables. Each

frame will have a moderate amount of 2-inch mounting plant space for mounting miscellaneous equipment such as tie trunks, code call units, dictation trunks and additional central office and attendant trunks.

A more detailed description, and price and ordering information are attached.

Equipment engineering design requirements will be provided in B.S.P. AA355.031 (J58842). 701B Plant Series maintenance practices are being reissued to include the new 701PK system.

The Western Electric Company advises that this equipment will be available on order in the First Quarter of 1963 on a limited basis with a 17-week manufacturing interval.

At the request of Messrs. Collins and Stecker, copies of this letter are included for your General Traffic and Plant Managers. Mr. Kertz will write the General Commercial Managers covering the rate aspects and Mr. Landry will write the Marketing people covering the Marketing aspects.

Sincerely,

*C. M. Mapes*

Assistant Chief Engineer

Attachments:

- A - Ordering and Price Information
- B - Description of 701PK PBX System
- C - Photos

To all Chief Engineers  
(Copies included for  
General Plant and  
Traffic Managers)

Price and Ordering Information701-PK and 711-PK Systems

<u>Description</u>	<u>Engineering Price Estimate</u>
<u>Basic Switching Modules</u>	
J-58842 A-1, List 1	\$5295.00
Framework, assembly, wiring and equipment for one basic module equipped with 100 lines, 13 linefinders, 13 selectors, 8 hunting connectors, 2 three circuit attendant trunk units, 1 common alarm unit, 1 manual conference unit, 1 test line unit, 1 vacant selector level intercept unit, 1 line intercept unit, 1 nine-ampere batteryless power supply unit and miscellaneous equipment for 3-digit operation E/W (see trunk table on next page)	
J-58842 A-1, List 2	4725.00
Framework, assembly, wiring and equipment for one supplementary module equipped with 100 lines, 10 linefinders, 10 selectors, 8 hunting connectors, 1 three circuit attendant trunk unit, 1 control and transfer panel, 1 nine-ampere batteryless power supply unit and miscellaneous equipment for 3-digit operation E/W (see trunk table on next page)	
J-58842 A-1, List A	238.00
Cabinet for 100 line basic module.	
J-58842 A-1, List B	194.00
Cabinet for 100 line supplementary module.	

TRUNK TABLE

J-58842 A-1 Trunking List No.	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	
Basic Module List 1	X	X	X	X	X	X	X	X	X	X	X	X	X												
Suppl. Module List 2														X	X	X	X	X	X	X	X	X	X	X	X
552 Swbd.	X	X	X	X	X	X	X	X	X	-	-	-	-	X	X	X	X	X	X	X	X	-	-	-	-
608 Swbd.	X	X	X	X	-	-	-	-	X	X	X	X	X	X	X	X	X	-	-	-	-	X	X	X	X
1-Way O.G. Dial or 2-Way Man. Trunk Units	8	8	8	8										3	3	3	3								
Comb. 2-Way Dial or Man. Sel. Trunk Units							1	0	1	0	1	0	1	0	1	0	1					6	6	6	6
Manual, Panel or X-Bar Office	X	X			X	X			X	X				X	X			X	X			X	X		
SxS Office			X	X			X	X			X	X			X	X			X	X			X	X	
Without Toll Div	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
With Toll Div.		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
O.G. Man. Inc. R.D. Trunk Units	5	5	5	5	4	4	4	4	4	4	4	4	4	1	1	1	1	-	-	-	-	-	-	-	-
Att. Trk. Unit (Toll Div.)	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-
Price (Engr. Est.)	477.00	606.00	550.00	699.00	723.00	878.00	938.00	1118.00	943.00	1099.00	910.00	1091.00	152.00	192.00	179.00	227.00	359.00	440.00	444.00	509.00	417.00	497.00	472.00	567.00	

NOTE: For detail information refer to J-58842 A-1, Sheet 2, Table A

701PK and 711PK PBX Systems

1. General

The No. 701PK and 711PK systems are intended for installations requiring only basic PBX service and where the ultimate capacity of the PBX will not exceed 200 station lines. The Line Finders, Selectors and Connectors of the 701PK system may be used interchangeably with similar types in the 701B system.

Capacity

The capacities of the 701PK and 711PK PBX's with 3 digit type of operation are 200 station lines. The 701PK PBX is intended to be used with a 552A, 552D or 608A multiple or non-multiple type of switchboard.

Operating Ranges

The operating ranges of the 701PK and 711PK PBX's are:

Station Conductors loop 885 ohms (Station-to-station calls)

Trunk conductor loop \*

\*The loop resistance of the trunk and/or the station depends on the type of attendant PBX switchboard and the type of connection central office. The ranges for these types of combinations of equipment are covered in the drawings listed in Part 3 of this Attachment.

2. Description

General

In general, the circuits for this system are the same as those used in the 701B system. The switching equipment arrangements are improved by:

- (a) Complete shop wired modules including direct association of line-finders and selectors by means of local cables.
- (b) Centralized location of line finder, selector and connector alarms on the basic 100 line module.
- (c) Simplification of growth from 100 to 200 station lines by furnishing a supplementary module which connects to the basic module by means of cables equipped with connectors through the module bases.
- (d) Locating the miscellaneous alarm unit, miscellaneous circuits, trunk units and power equipment on the module.

- (e) Locating distributing frame terminal strips on each module connected to the switching equipment by means of local cables.

There have been no changes made in either the circuit or equipment associated with the manual switchboards connected to the 701PK PBX system. Each unit of equipment associated with the No. 701PK and 711PK PBX's will be shipped complete with all the necessary hardware to meet installation needs in the field.

#### Frame Arrangements

The switch frame module is a double sided, floor supported frame, 5 feet 2-1/2 inches long, 5 feet 10-1/2 inches high and 1 foot 10 inches wide. The base of this module is 5 feet 4-1/2 inches long, 6 inches high, 2 feet 6 inches wide at floor level and is shipped separately from the switch frame module. The base of this module, is constructed of sheet steel enclosed on both sides, with openings at either end to facilitate inter-module cable connections. The remaining members of the framework are constructed of aluminum welded together at strategic points. Five frame uprights are provided. Three channel type uprights support the switching equipment. The remaining two uprights one angle and one channel type are for mounting distributing frame terminal strips. The subassemblies for mounting the line finders, selectors and connectors are fastened to the uprights by means of screws. When assembled on the job the basic module will mount on its front a maximum of 14 line finders, 100 station line circuits, 10 connectors associated with the first hundred group, miscellaneous trunks and complete alarm circuits for the entire installation. On the rear it mounts a maximum of 14 selectors, a power unit and the trunk units which are located on a set of four swinging gates hinged at the distributing frame side and which are arranged to mount a total of 31 two-inch mounting plates. Duplex AC service outlets are provided immediately above the power unit. The supplementary 100 line module is essentially the same as the basic module with only minor differences in the type and quantities of equipment furnished. It is intended that the supplementary module be located in a lineup with the basic module so that the distributing frame ends are adjacent. The formed switchboard cable furnished with each module can then be pulled through the openings provided in the frame base and connections between modules completed through cable connectors.

#### Equipment Arrangements

Line finder equipment on the basic module consists of 14 sets of line finder banks arranged to mount 14 line finder switches. The bank and switch positions are numbered 1 to 14 when the supplementary module is not equipped. Line finders 1 to 13 are furnished with the shop wired module. The alarm and grouping relays are located to the left of the line finder banks. An identical arrangement of 14 line finder positions and a second group of 100 station line relays is provided on the supplementary module. However, the bank and switch positions are numbered 11 to 20 and 25 to 28. Line finders 11 to 20 are furnished with the shop

wired module. When both modules are furnished the line finder switch positions 11 to 14 on the basic module are renumbered 21 to 24. The line finder banks on the basic and supplementary modules are multiplied together to form one line finder group by means of cable connectors and formed cable through the module bases. Local cables connect the line finder jacks to like numbered selector jacks on the same module and also the station line relays to the station line terminal strip on the distributing frame vertical.

The selector equipment on each of the basic and supplementary modules is patterned after the associated line finder arrangement on the respective modules and is located on the opposite side of the frame from the line finders. The capacity of each is 14 banks and selector switches. On the shop wired basic module 13 selector switches are furnished and numbered 1 to 13 (basic module only equipped) or 1 to 10 and 21 to 23 (both basic and supplementary modules equipped). On the shop wired supplementary module 10 selectors are furnished and numbered 11 to 20. The selector banks on each module terminate on distributing frame terminal strips and are multiplied together with formed switchboard cable.

Connector equipment consisting of 10 sets of banks shop equipped with 8 hunting connectors in position 1 to 7 and 10 is located across the bottom of each module on the same side as the line finders. The bank terminal strip is located at the bottom of the inside distributing frame vertical.

#### Switches

- (a) The line finder switch unit is the same as for the 701B system.
- (b) The selector switch unit is the same for the 701A and 701B system.
- (c) The hunting connector switch unit is the same for the 701A and 701B systems.

#### Miscellaneous Alarm Unit

The 701PK and 711PK PBX's are equipped with a miscellaneous alarm unit mounted on the line finder side of the basic module immediately above the line finder, selector and connector alarms. This alarm unit serves both the basic and supplementary 100 line modules.

It consists of timing and alarm relays, alarm lamps, keys, and cable connecting facilities. This circuit may also be extended to a central office or test bureau for maintenance purposes, if required. Audible and visual alarms are extended to the attendants PBX switchboard in the 701PK PBX system.

Distributing Frame

The inside frame vertical on each module is arranged for mounting distributing frame terminal strips on both the front and rear sides. This vertical is fully equipped and wired by the shop except for the inter-module jumpers required. The house and feeder cables must be terminated on soldered terminals. When required, the end vertical on the supplementary module may be equipped with additional terminal strips. Rubber grommets are equipped within the channel on each of the end distributing frame uprights to permit passing of the inter-module jumper wires. The verticals are arranged to mount 16 inch terminal strips.

Traffic register equipment units are of a universal design, suitable for mounting the registers in any of the following places: All registers are cabled to the distributing frame for cross connection to the switching circuits.

- (a) In the face of a 552A, 552D or 608A PBX switchboard in space not required for jack equipment.
- (b) On a backboard in the room with the attendant switchboard. Where wall mounting is required the backboard should be ordered locally.
- (c) On the relay rack section of the module.

The basic module provides the battery key for the peg count registers for trunk groups. A supplementary unit arranged for six registers is suitable for use with the 200 station lines, providing registers for all finders busy, peg count for the selector group and the two connector groups, and for all connectors busy for each of the two connector groups.

Trunks & Miscellaneous Equipment

The line finder side of the basic module is equipped with unit equipment as follows:

- (a) Test line unit for testing connector
- (b) Manual conference unit
- (c) Vacant selector level intercept unit
- (d) Vacant connector terminal intercept unit
- (e) Fuse units associated with all of the mechanical equipment and the trunks

The line finder side of the supplementary unit is equipped with a control and transfer unit and two additional fuse units. The selector side of both modules provides 31 two-inch mounting plate spaces on four swinging gates hinged at the distributing frame side. Various central office and attendant

trunks are equipped on the gates by the shop with sufficient remaining space for trunks to be added per job requirements.

The trunks and miscellaneous units for use with the 701PK or 711PK PBX are shown in Table A. These units, along with long lines test set and switchboard equipment are covered in separate specifications listed in Part 2.

### Power Equipment

A batteryless power equipment unit is provided as an integral part of each switching module of the PBX. The unit consists of a rectifier having a capacity of 9 amperes together with tone and ringing supplies. The power equipment operates on commercial power supply (115 volts AC). Through the use of large capacitors, the plant is capable of holding the PBX circuits operated during momentary failures of the commercial power. For locations where PBX service must be maintained during commercial power failures of greater duration, a separate cabinet per J58842 with batteries may be provided.

A power failure relay circuit is provided on both the basic and supplementary modules. Each circuit is designed to connect 10 station lines to trunks in the central office on an emergency basis.

### Service Features

- (a) Restricted Service: These PBX's are arranged so that dial lines are restricted from obtaining a connection to a central office. Unrestricted service can be obtained by adding a red plastic sleeve on a contact of the line relay of the associated line circuit.
- (b) Toll Diverting: When these PBX's are connected to a panel, step-by-step, or crossbar dial central office, the trunks may be arranged so that either all or none of the dial extension lines may be diverted to the PBX attendant if a toll call is dialed. The associated central office must be arranged to divert, also the trunks must be arranged for toll diverting, and an operator toll diverting trunk must be provided at the PBX.
- (c) Individual line or 2-party T.P.S. service only may be obtained with the 701PK or 711PK PBX systems.
- (d) Intercept Service
  - (1) Vacant Selector Level Intercept:

A selector level intercept trunk circuit is provided which will function with the attendant switchboard.

(2) Vacant Connector Terminal Intercept:

To facilitate the intercepting of non-working extension lines, a connector intercept circuit is provided. Dial extension lines associated with unassigned line and cutoff relays are intercepted on the subscribers line terminal strip at the distributing frame.

- (e) Touch-Tone Arrangements: The jack wiring of the line finders and selectors is brought out to a terminal strip and strapped for association with Touch-Tone equipment when required.

Ceiling Heights

The height of the frames on the bases but without cabinets for these PBX's is 6 feet 4-1/2 inches. Approximately 3" is added to the height when the optional cabinet is used. There are no over frame cable racks required. The ceiling height under the lowest ceiling obstruction should be sufficient for moving the frames into place and uncrating. A minimum of 7 feet 0 inch clear height is desirable.

Floor Weights

Floor plan data sheets indicate the maximum weight on each frame. Where the weight of the equipment exceeds the allowable floor load, it will be necessary to re-enforce the floor or relocate the frames to be over floor girders, as required.

Table A - Central Office, Attendant and Tie Trunks and Miscellaneous Units  
for use with the 701PK or 711PK PBX

Type	Equipment Code	Function	Schematic
Central Office Trunks	J58824A	Outgoing or 2-way Central Office Trunk, arranged for toll diverting Outgoing: Dial selected or Manual and Dial Selected: Incoming: Ringdown	SD-65657-01
	J58824AY	2-way Central Office Trunk Outgoing: Manual; Incoming: Ringdown.	SD-65781-01
Attendant Trunks	J58824BF	To PBX attendant from selector levels or from Central Office Trunks arranged for Toll Diverting for use on calls to attendant from Dial Stations	SD-66717-01
	J58824F	Toll Diverting Trunk	SD-66450-01
Intercepting Trunks	J58824AU	Intercepting trunk from vacant selector levels	SD-66716-01
	J58824AY	Intercepting trunk from connector terminals	SD-65781-01
Conference Units	J5312OR	Manual Conference Unit arranged for a maximum of four or five simultaneous connections	SD-66462-01
Test Line Unit	J58831M	Test Line Unit for Testing Connectors	SD-66037-01
Misc. Alarm Unit	J58842AA	Miscellaneous Alarm Unit and Battery Cutoff Unit	SD-65761-01 SD-65773-01

Subdivisions of Equipment

ED-65901-01 Line finder  
 ED-66144-03 Hunting Connector  
 ED-66359-03 First Selector

ED-66285-70 Framework Assembly  
 ED-66286-10 110V AC and Power Panel  
 ED-66287-10 Fuse unit

J58842A (A.T.& T. Co. Standard) Basic and Supplementary  
 100 Line Frame Module

J58842AA (A.T.& T. Co. Standard) Miscellaneous Alarm and  
 Battery cutoff unit.

J58842AB (A.T.& T. Co. Standard) Hinging Control and Alarm,  
 Power failure transfer, Load  
 Capacitor and 110V AC Supply  
 Equipment.

Floor Plan Data

Section  
 Sheet

3. Drawings

W. E. Co. J-drawings listed should be ordered by referring to the prefix and base number and requesting the highest suffix dash (-) number.

Key Sheets

SD-65775-01 No. 701B PBX  
 SD-65780-01 No. 711B PBX  
 SD-65591-01 No. 552A and 552D PBX  
 SD-66729-01 No. 608A PBX

Range Charts

ES-536316 PBX's connected to Panel Central Offices  
 ES-536317 PBX's connected to Manual Central Offices  
 ES-536318 PBX's connected to Crossbar Central Offices  
 ES-536319 PBX's connected to Step-by-Step Central Offices  
 SD-65763-01 PBX's connected to No. 5 Crossbar Central Offices  
 having 1350 ohm Subscriber Conductor loop  
 SD-65764-01 PBX's connected to Panel Central Offices having  
 1300 ohm Subscriber conductor loop  
 SD-65765-01 PBX's connected to Step-by-Step Central Offices  
 having 1300 ohm Subscriber conductor loop

Framework

ED-66285-70 Switch Frame Modular type - 5 feet 4-1/4 inches long  
 ED-66073-50 Section assembly No. 552A or 55D PBX  
 ED-66159-01 Section assembly No. 608A PBX  
 ED-66195-50 Cable turning section assembly 608A PBX  
 ED-66195-51 Cable turning section assembly 608A PBX  
 ED-66577-70 Test Terminal Circuit for battery and ground, equipment details  
 ED-90006-30 Cable hole sheathing

Equipment

ED-65735-01 Designation Cards  
 ED-65901-01 Line finder  
 ED-66144-03 Hunting Connector  
 ED-66359-03 First Selector  
 ED-66286-10 110V AC and Power Panel  
 ED-66287-10 Fuse Unit

J58842A ( ) Basic and supplementary 100 Line Frame Modules  
 J58842AA ( ) Miscellaneous alarm and battery cutoff unit  
 J58842AB ( ) Ringing control and alarm, power failure and 110V AC  
 supply equipment.

Wiring and Cabling

ED-66288-10 Local Cable Plan  
 ED-66289-10 Switchboard Cable Plan  
 H-912-184 Switchboard Cable Forms and Connecting Tables  
 H-912-185 " " " " " "  
 H-912-186 " " " " " "  
 H-912-187 " " " " " "  
 H-912-188 " " " " " "

Equipment

ED-65852-70 Framework for mounting Traffic Registers in Jack Field

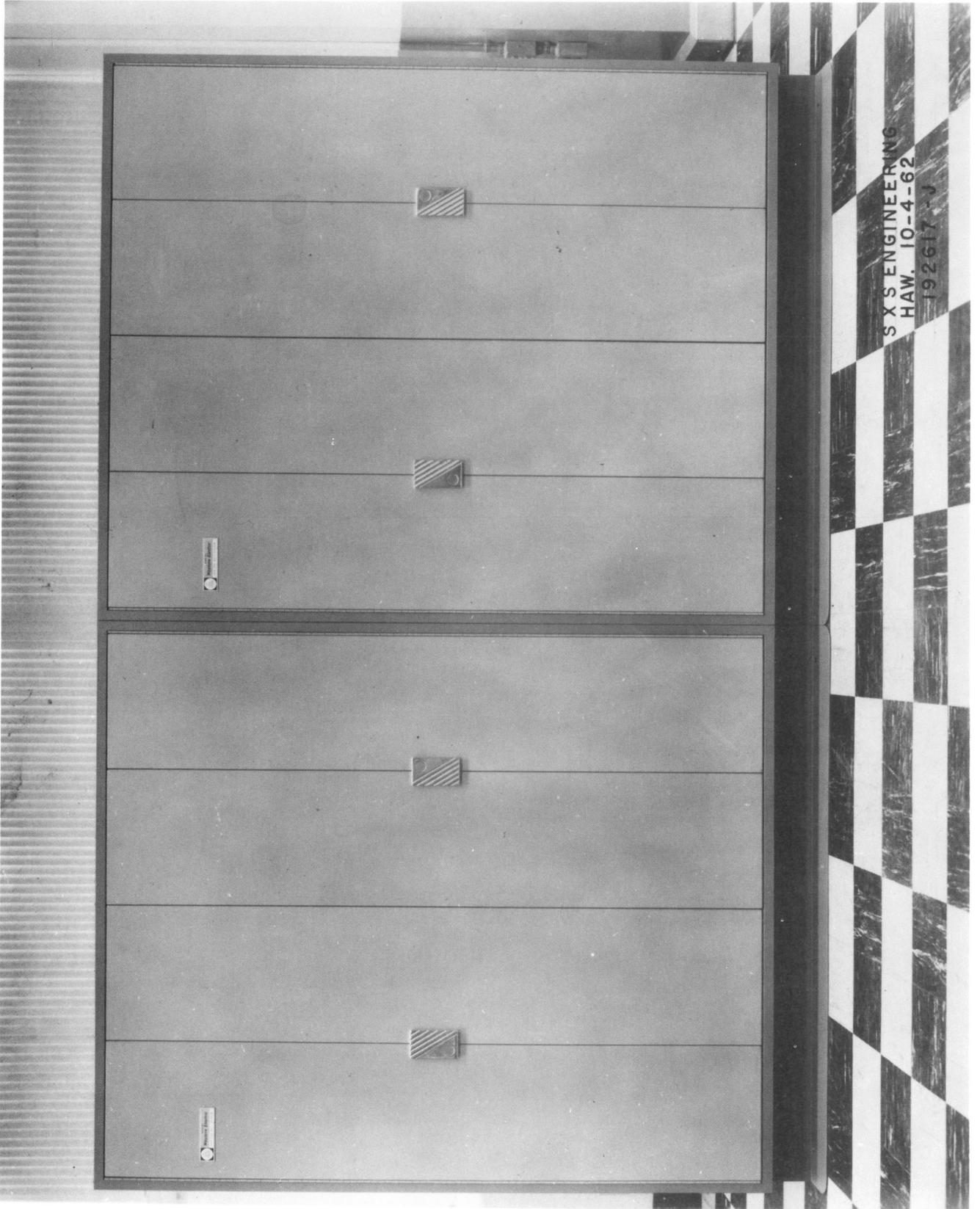
ED-65901-01 Line finder

ED-66144-03 Hunting Connector

ED-66359-03 First Selector

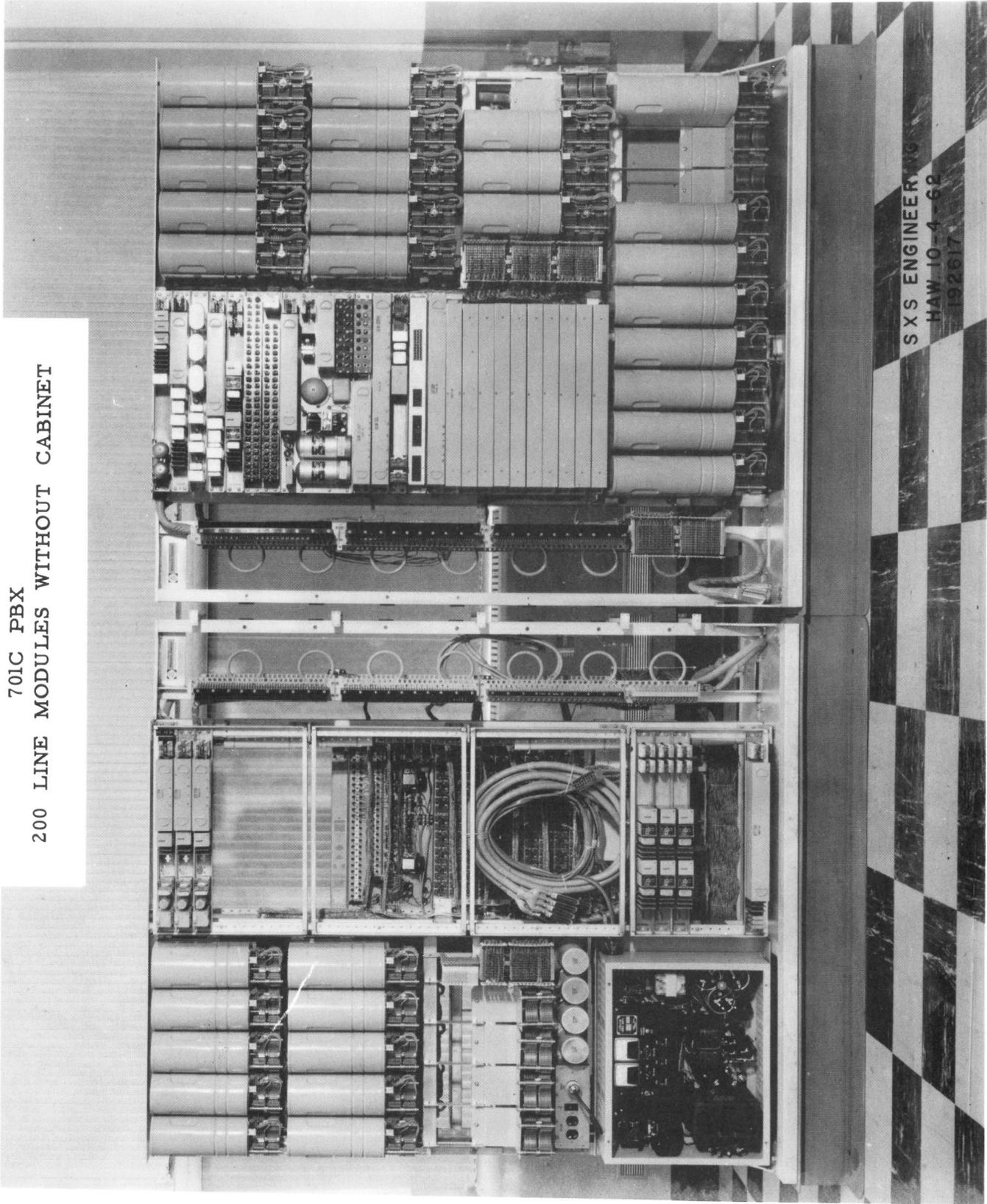
Frames

ED-66285-70 Modular type switch frame 5 feet 4-1/4 inches long



S X S ENGINEERING  
HAW. 10-4-62  
192617 J

701C PBX  
200 LINE MODULES WITHOUT CABINET



SXS ENGINEERING  
HAW 10-4-62  
192617