

INCOMING FRAMES EQUIPMENT DESIGN REQUIREMENTS PANEL SYSTEMS

1. GENERAL

Scope

1.01 This specification, together with the supplementary information listed herein, covers the equipment design requirements for the framework, equipment, and circuits to be used in the manufacture and installation of incoming frames for use in panel offices having either battery or ground on the cut off relay. Equipment included in this specification may be ordered by specifying the code and list numbers covered in part 4.

1.02 This specification is reissued to incorporate previous appendix changes.

Capacity

1.03 The incoming frame has a capacity of 60 selectors and 480 outgoing trunk circuits.

Description

1.04 The incoming frame is one of a chain of frames in the panel system which is used exclusively for terminating traffic. On the frame are mounted incoming selectors associated with incoming trunks, together with the usual panel bank equipment on which appears the multiple leading to the selectors on the final frames. The incoming frame is a steel structure of a type known as a double sided frame, designed for mounting panel type banks, selectors, sequence switches, associated relays, repeating coils, condensers and miscellaneous apparatus.

1.05 The frame consists of five bays, namely, a center bay for mounting the banks, friction roll drives, clutches, brush rods, commutators, etc., two sequence switch bays and two relay bays. The sequence switch bays are adjacent to the center bay, one at the right and one at the left. The relay bays are at the two ends of the frame.

1.06 The incoming frame is arranged to accommodate three lengths of mounting plates depending on the amount of relay equipment in the various incoming selector circuits. The length of frame required is shown in the tables on the mounting plate equipment drawing.

Incoming Selectors

1.07 Each incoming selector circuit is cross connected to an incoming trunk and since these trunks originate in offices having different types of equipment, and serve different classes of service, a number of different types of incoming selector circuits are required in order to take care of the various requirements.

1.08 The incoming selector circuits are divided into two general classes with subdivisions as indicated below.

(a) Incoming Selector from Manual Offices.

(1) "B" Switchboard Type

- (a) From Local Offices
- (b) From Long Distance Offices
- (c) From Tandem Offices

(2) Key Pulsing Type

- (a) From Long Distance Offices

(3) Dialing Type

- (a) From Local Offices

(4) Key Indicator Type

- (a) From Local Offices
- (b) From Long Distance Offices

(b) Incoming Selectors from Panel Dial Offices.

(1) Panel Type

- (a) From Local Offices
- (b) From Tandem Offices
- (c) From "A" Swbd. via "B" Swbd.
- (d) From "A" Swbd. via Central "B" Swbd.

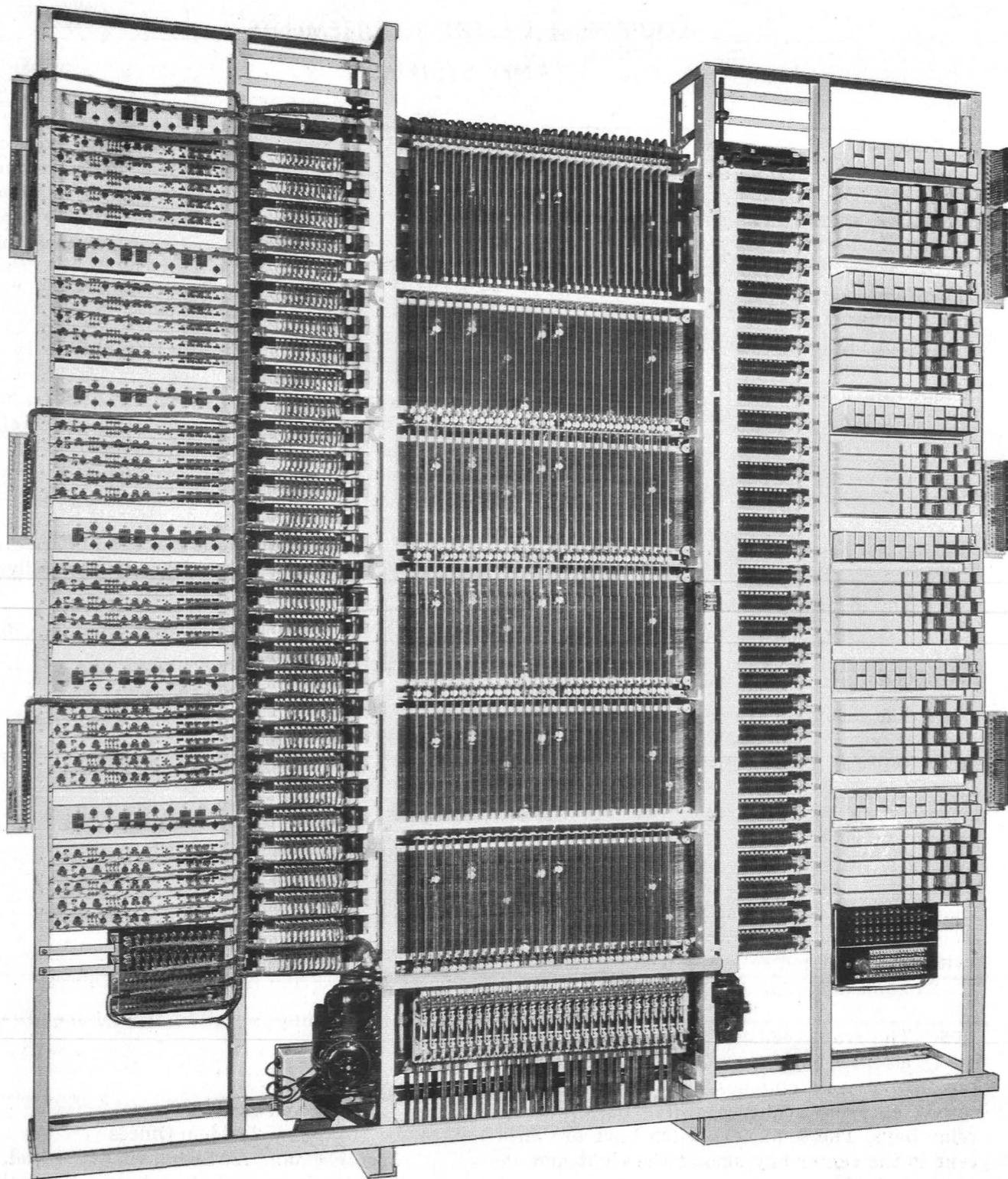


Fig. 1 - Incoming Frame

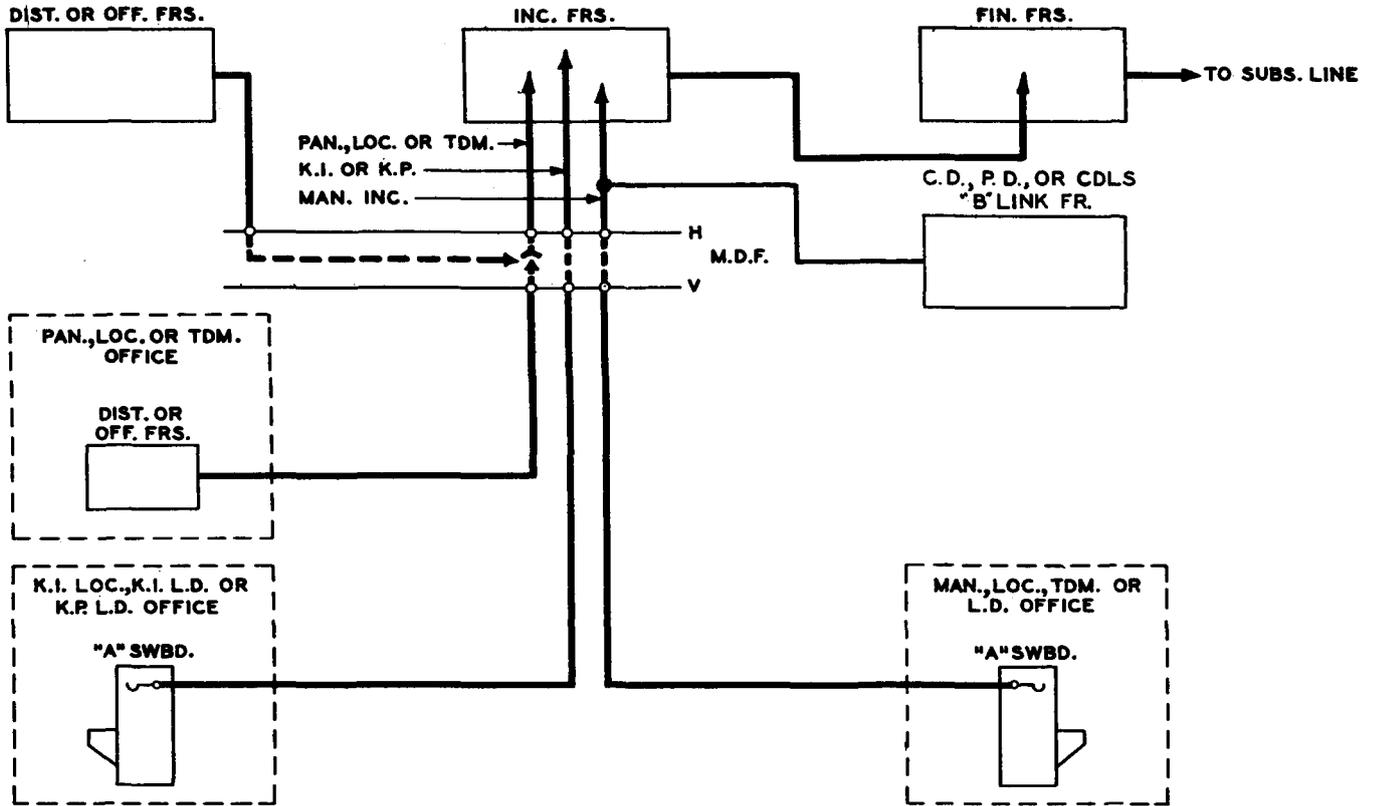


Fig. 2 — Traffic Schematic — Regular Service

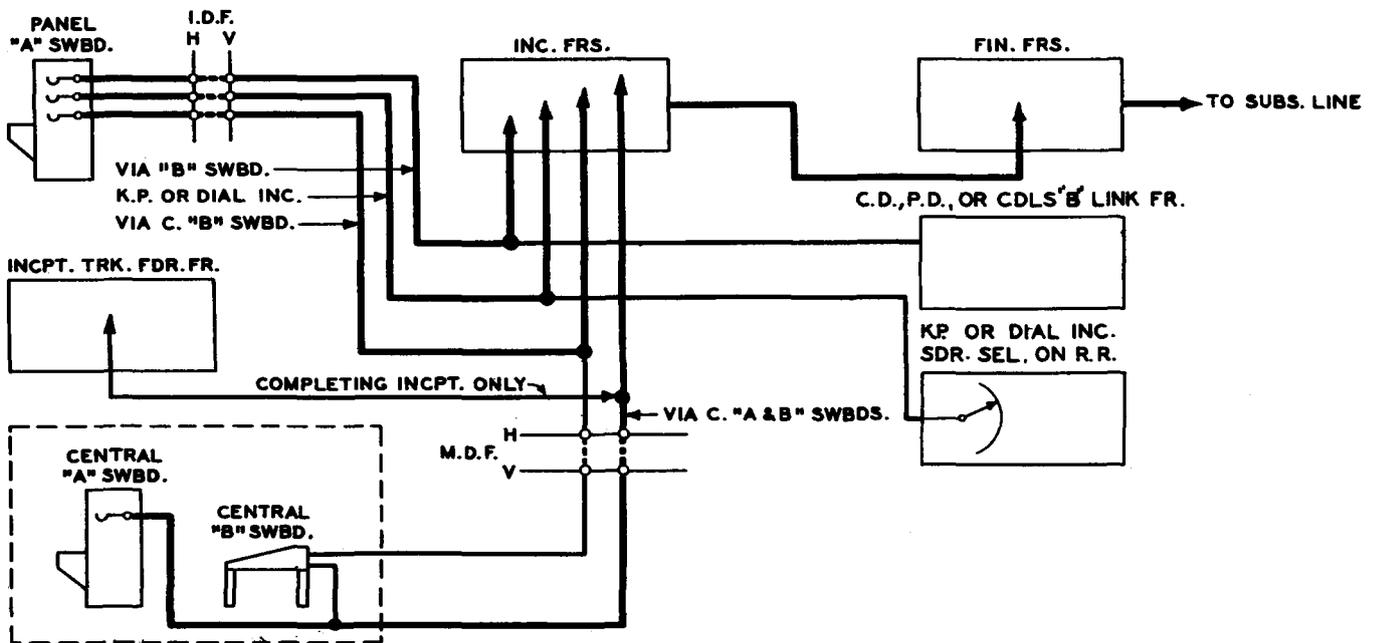


Fig. 3 — Traffic Schematic — Special Service

- (e) From Central "A" Swbd. via Central "B" Swbd.
- (f) From K.P. "A" Swbd.
- (g) From Dial "A" Swbd.

Subdivisions of Equipment

- J27701A (A&M Only) — Incoming Frame 9'-1-5/8" Long (16-1/2" Mtg. Plates)
- J27701B (A&M Only) — Incoming Frame 9'-6-5/8" long (19" Mtg. Plates)
- J27701C (A&M Only) — Incoming frame 10'-2-5/8" long (23" Mtg. Plates)

2. SUPPLEMENTARY INFORMATION

- 815-000-000 — Panel Systems Index
- AA128.006 — List of General Equipment Requirement Sections
- X-61200 — List of Engineering Requirement Specifications — Ground on the CO Relay (A&M Only)
- X-61400 — List of Engineering Requirement Specifications — Battery on the CO Relay (Std.)
- J20102 (815-030-150) — Switchboard Power Cabling
- J99206 — Trunk Coin Control Unit
- Floor Plan Data — Section 4.12, Sheet 4

3. DRAWINGS**Keysheets — Panel Offices**

- SD-21300-01 — Battery on the CO Relay
- SD-21680-01 — Ground on the CO Relay

Framework

- ED-20177-01 — Assembly of Frame
- ED-20177-02 — Assembly Details
- ED-20509-01 — Assembly of Fuse Panel
- ED-20624-01 — Assembly of Jack Panel
- ED-20081-01 — Sequence Switch Frame Details
- ED-20293-01 — Framework Limits
- ED-20446-01 — Length of Connecting Shafts
- ED-20865-01 — Assembly and Equipment — Transmission Battery Filter Panel

Equipment

- ED-20178-01 — Equipment of Frame
- ED-20178-04 — Equipment Details (Bat. on C.O.)
- ED-20278-01 — Equipment Details (Grd. on C.O.)
- ED-90411-01 — Designation Cards

Wiring and Cabling

- ED-20781-01 — Local Cable
- ED-20192-01 — Switchboard Cabling Plan
- ED-20192-04 — Switchboard Cabling Details
- ED-20811-01 — Switchboard Power Cabling
- ES-225550 — Schematic Layout — Sender Selectors
- ES-299914 — Schematic Layout — Rotary Links
- ES-420200 — Schematic Layout — Panel Links
- ED-20252-01 — Schematic Layout (Bat. on C.O.)
- ED-20623-01 — Method of Running and Supporting Frame Battery and Ground Leads
- ED-20826-01 — Diagram of Cabling — OGT Multiple
- ED-20287-01 — Wiring and Cabling of Traffic Registers

4. EQUIPMENT**J27701A (A&M Only) — Incoming Frame 9'-1-5/8" Long**

- Equipment of Frame — ED-20178-01, Item 1
- Equipment Details — ED-20178-04 (Bat. on C.O.)
- Equipment Details — ED-20278-01 (Grd. on C.O.)
- Local Cable — ED-20781-01, Item 1

List 1 — Framework, assembly, wiring, and equipment for one incoming frame 9'-1-5/8" long using 16-1/2" mountplates.

	WIRE	EQUIP	SEE NOTE
Assembly ED-20177-01, Item 1		1	
Assembly Details ED-20177-02, Item 1		2	
Fuse Panel Assembly ED-20509-01, Item 38		2	
Jack Panel Assembly ED-20624-01		2	5.04
Incoming Selector Ckt. Misc Ckt. SD-21229-01:	60	As Spec	A
Fuse Alarm Fig. 1	2	2	
Motor Stop Fig. 3	2	2	
Frame Line Jacks Fig. 4	2	2	
Test Battery Supply Fig. 5	2	2	
Ringling Supply Jack Fig. 7	2	2	
Test Line Jack Fig. 8	2	2	
Bell Set Jack Fig. 10	2	2	
Patching Jack Fig. 13	2	2	
KI or KP Jack Fig. 14	2	2	
"B" Supv. Jack Fig. 16	2	2	

	WIRE	EQUIP	SEE NOTES
Spare Jack Fig. 17	2	2	
Remote Control Jack Fig. 18	4	4	
Relay Test Jacks Fig. 19	2	2	
All Paths Busy Alarm Fig. 21	2	As Spec	

List 2 — Framework, assembly, wiring and equipment for one incoming frame 9'-1-5/8" long using 16-1/2" mounting plates for use in offices with maximum subscriber line loops of 1500 ohms.

	WIRE	EQUIP	SEE NOTE
Assembly ED-20177-01, Item 1		1	
Assembly Details ED-20177-02, Item 1		2	
Fuse Panel Assembly ED-20509-01, Item 38		2	
Jack Panel Assembly ED-20624-01		2	5.04
Battery Panel Assembly ED-20865-01		1	5.20
Incoming Selector Ckt Misc Ckt. SD-21229-01:	60	As Spec	A
Fuse Alarm Fig. 1	2	2	
Motor Stop Fig. 3	2	As Spec	
Frame Line Jacks Fig. 4	2	2	
Test Battery Supply Fig. 5	2	2	
Ringing Supply Jack Fig. 7	2	2	
Test Line Jack Fig. 8	2	2	
Bell Set Jack Fig. 10	2	2	
Patching Jack Fig. 13	2	2	
KI or KP Jack Fig. 14	2	2	
"B" Supv. Jack Fig. 16	2	2	
Spare Jack Fig. 17	2	2	
Remote Control Jack Fig. 18	4	4	
Relay Test Jacks Fig. 19	2	2	
All Paths Busy Alarm Fig. 21	2	As Spec	
Battery Filter Fig. 23	1	1	

Note

A. The incoming selector circuits are listed in the tables on the equipment detail drawings.

J27701B (A&M Only) — Incoming Frame 9'-6-5/8" Long

Equipment of Frame — ED-20178-01, Item 2			
Equipment Details — ED-20178-04 (Bat. on C.O.)			
Local Cable — ED-20781-01, Item 2			

List 1 — Framework, assembly, wiring, and equipment for one incoming frame 9'-6-5/8" long, using 19" mounting plates, for use in Battery cut off offices.

	WIRE	EQUIP	SEE NOTE
Assembly ED-20177-01, Item 2		1	
Assembly Details ED-20177-02, Item 2		2	
Fuse Panel Assembly ED-20509-01, Item 38		2	
Jack Panel Assembly ED-20624-01		2	5.04
Incoming Selector Ckt Misc Ckt. SD-21229-01:	60	As Spec	A
Fuse Alarm Fig. 1	2	2	
Motor Stop Fig. 3	2	2	
Frame Line Jacks Fig. 4	2	2	
Test Battery Supply Fig. 5	2	2	
Ringing Supply Jack Fig. 7	2	2	
Test Line Jack Fig. 8	2	2	
Bell Set Jack Fig. 10	2	2	
Patching Jack Fig. 13	2	2	
KI or KP Jack Fig. 14	2	2	
"B" Supv. Jack Fig. 16	2	2	
Spare Jack Fig. 17	2	2	
Remote Control Jack Fig. 18	4	4	
Relay Test Jacks Fig. 19	2	2	
All Paths Busy Alarm Fig. 21	2	As Spec	

List 2 — Framework, assembly, wiring, and equipment for one incoming frame 9'-6-5/8" long, using 19" mounting plates, for use in battery cut off offices for use in offices with maximum subscriber line loops of 1500 ohms.

	WIRE	EQUIP	SEE NOTE
Assembly ED-20177-01, Item 2		1	
Assembly Details ED-20177-02, Item 2		2	
Fuse Panel Assembly ED-20509-01, Item 38		2	
Jack Panel Assembly ED-20624-01		2	5.04
Battery Panel Assembly ED-20865-01		1	5.20
Incoming Selector Ckt Misc Ckt. SD-21229-01:	60	As Spec	A
Fuse Alarm Fig. 1	2	2	
Motor Stop Fig. 3	2	As Spec	

	WIRE	EQUIP	SEE NOTES
Frame Line Jacks Fig. 4	2	2	
Test Battery Supply Fig. 5	2	2	
Ringling Supply Jack Fig. 7	2	2	
Test Line Jack Fig. 8	2	2	
Bell Set Jack Fig. 10	2	2	
Patching Jack Fig. 13	2	2	
KI or KP Jack Fig. 14	2	2	
"B" Supv. Jack Fig. 16	2	2	
Spare Jack Fig. 17	2	2	
Remote Control Jack Fig. 18	4	4	
Relay Test Jacks Fig. 19	2	2	
All Paths Busy Alarm Fig. 21	2	As Spec	
Battery Filter Fig. 23	1	1	

Note

A. The incoming selector circuits are listed in the tables on the equipment detail drawing.

J27701C (A&M Only) — Incoming Frame 10'-2-5/8" Long

Equipment of Frame — ED-20178-01, Item 3
 Equipment Details — ED-20178-04 (Bat. on C.O.)
 Equipment Details — ED-20278-01 (Grd. on C.O.)
 Local Cable — ED-20781-01, Item 3

List 1 — Framework, assembly, wiring, and equipment for one incoming frame 10'-2-5/8" long using 23" mounting plates.

	WIRE	EQUIP	SEE NOTE
Assembly ED-20177-01, Item 3		1	
Assembly Details ED-20177-02, Item 3		2	
Fuse Panel Assembly ED-20509-01, Item 38		2	
Jack Panel Assembly ED-20624-01		2	5.04
Incoming Selector Circuits	60	As Spec	A & 5.14
Misc Ckt. SD-21229-01:			
Fuse Alarm Fig. 1	2	2	
Motor Stop Fig. 3	2	2	
Frame Line Jacks Fig. 4	2	2	
Test Battery Supply Fig. 5	2	2	
Ringling Supply Jack Fig. 7	2	2	
Test Line Jack Fig. 8	2	2	

	WIRE	EQUIP	SEE NOTES
Bell Set Jack Fig. 10	2	2	
Patching Jack Fig. 13	2	2	
KI or KP Jack Fig. 14	2	2	
"B" Supv. Jack Fig. 16	2	2	
Spare Jack Fig. 17	2	2	
Remote Control Jack Fig. 18	4	4	
Relay Test Jacks Fig. 19	2	2	
All Paths Busy Alarm Fig. 21	2	As Spec	

List 2 — Framework, assembly, wiring, and equipment for one incoming frame 10'-2-5/8" long using 23" mounting plates for use in offices with maximum subscriber line loop of 1500 ohms.

	WIRE	EQUIP	SEE NOTE
Assembly ED-20177-01, Item 3		1	
Assembly Details ED-20177-02, Item 3		2	
Fuse Panel Assembly ED-20509-01, Item 38		2	
Jack Panel Assembly ED-20624-01		2	5.04
Battery Panel Assembly ED-20865-01		1	5.20
Incoming Selector Circuits	60	As Spec	A & 5.14
Misc Ckt. SD-21229-01:			
Fuse Alarm Fig. 1	2	2	
Motor Stop Fig. 3	2	As Spec	
Frame Line Jacks Fig. 4	2	2	
Test Battery Supply Fig. 5	2	2	
Ringling Supply Jack Fig. 7	2	2	
Test Line Jack Fig. 8	2	2	
Bell Set Jack Fig. 10	2	2	
Patching Jack Fig. 13	2	2	
KI or KP Jack Fig. 14	2	2	
"B" Supv. Jack Fig. 16	2	2	
Spare Jack Fig. 17	2	2	
Remote Control Jack Fig. 18	4	4	
Relay Test Jacks Fig. 19	2	2	
All Paths Busy Alarm Fig. 21	2	As Spec	
Battery Filter Fig. 23	1	1	

Note

A. The incoming selector circuits are listed in the tables on the equipment detail drawings.

5. GENERAL NOTES

- 5.01** The incoming frames shall be fully equipped with multiple banks.
- 5.02** Drive and motor equipment shall not be furnished as a part of this specification but shall be furnished separately as required.
- 5.03** The frames shall be equipped with incoming selector circuits as required.
- 5.04** The jack panel shall be fully equipped with T jacks for the incoming selector circuits even though wiring only, is provided for the circuits.
- 5.05** Excess selectors on partially equipped frames using 19 and 23" mounting plates may be wired and equipped for selector circuits normally using shorter mounting plates.
- 5.06** Cordless "B" switchboards in existing ground on the C.O. relay offices may be converted to either position or call distributing operation depending on whether the majority of the terminating equipment in the building is of the cordless or call distributing type. Modification of existing offices for call distributing operation consists of removing the cordless "B" switchboard, the "B" sender and link frames and the "B" sender test frame. It is also necessary to rewire the cordless incoming frames and cable them to call distributing "B" link equipment.

Incoming Multiple

- 5.07** The incoming multiple consists of five panel type banks of 100 sets of terminals each which constitutes the outgoing trunk multiple to the final frames. The banks are each divided from top to bottom into four equal horizontal groups, having 25 sets of terminals each, thus providing 20 groups for the fully equipped frame corresponding to the 20 groups or "choices" of 500 final terminals each. Since one set of terminals of each group of its incoming multiple is used for the "Overflow" or "All Paths Busy" circuit, each group has a capacity of 24 trunks. When more than 24 trunks per choice are required, the increased number is obtained by applying a system of grading.
- 5.08** A graded group is made up of individual and common trunks. The individual trunks are located on the lower numbered terminals of a trunk group assignment and are multiplied through a portion or sub-group of the incoming frames. The common trunks are located on the higher number terminals of a trunk group assignment and are common to several sub-groups of individual trunks.
- 5.09** Except during periods of heavy traffic, a selector will not reach the common group of trunks which is located immediately above each individual group. Should all the individual trunks appearing in a group of trunks become busy, however, a selector hunting for an idle trunk, will search into the common group.
- 5.10** To obtain flexibility in assigning individual and common trunks, each group of trunks is divided into three classes with regard to the manner of wiring the group. These three classes are termed: individual, convertible, and common trunks. The convertible trunks are located midway between the individuals and commons and are arranged so they may be used with either of these classes. All three classes of trunks are multiplied through a given sub-group of incoming frames and then cabled to the proper final frame or frames at which point they are cross connected to final selectors to form individual trunks or are strapped to similar trunks of other sub-groups to form common trunks. The individual trunks are slipped in layers of four with a single turn over as the layer is brought to the bottom of the group. The convertible and common trunks are carried straight through each sub-group of incoming frames but are reversed between sub-groups at the incoming multiple terminal strips on the final frames. Exceptions to this are the top trunks of each choice which serve the overflow and test trunks. These trunks are not included in the reversals and instead are carried through all the incoming frames of the central office unit straight. To make the convertible trunks common, connections are run between the sub-groups of the final frame. The individual trunks may therefore be increased or decreased by changing the connections at the final frame "incoming multiple" terminal strips.
- 5.11** When 24 trunks or less are provided for a final choice the multiple is nongraded and is slipped in layers of two with a single turn-over as the layer is brought to the bottom of the group. The exception is the three top trunks

which are wired straight. All 24 trunks are cabled to "incoming multiple" terminal strips the same as graded trunks. The unequipped trunks per choice being strapped to the equipped trunks.

5.12 The index wheel of the sequence switch used in the call distributing "B" switchboard incoming selector circuits arranged for conversion to panel selectors, shall be stripped in the normal position 1 for panel and key indicator circuits and in position 17 for the "B" switchboard circuits.

5.13 The repeating coils of the incoming selector circuits vary for different line conditions of the interoffice trunk conductors as covered in notes on the circuit drawings. Information on the particular types of repeating coils and condensers shall be obtained from the customers' specifications. When this information is lacking the question shall be discussed with the Telephone Company.

5.14 The (CN) relay of the coin control circuits for the use of the panel "A" or central "A" operator or the auxiliary coin trunk circuits for the use of the toll operator when specified by the Telephone Company shall be mounted on the regular incoming selector mounting plate. When the toll operator controls the coin collection a trunk coin control unit per J99206C shall be furnished for each long distance incoming selector circuit.

5.15 Incoming selectors No. 1 and 2 of each incoming frame shall in all cases be wired for use in connection with the routine testing equipment in addition to the class of service specified. These selectors may be used for both testing and regular service provided they are employed for handling calls from the district or office multiple in the same building. This is accomplished by wiring the corresponding sleeve terminals in the district or office multiple to the routine test frame so that these incoming selectors may be made busy to exclude regular traffic when they are being used for testing purposes. Otherwise, they shall be assigned for testing purposes exclusively and not cross connected to an incoming trunk or to the "A" switchboard. When routine testing is not specified the question shall be discussed with the Telephone Company.

5.16 When a cordless incoming frame is equipped with a combination of "B" switchboard incoming selector and panel incoming selector circuits, and where the former circuits are arranged for overlap multiple, the panel incoming selector circuits shall be located in selector circuit positions corresponding to the trunks left unequipped in the panel cordless "B" board, namely the trunks located in the rear row at the middle of the position. Overlap is not required for Call or Position Distributing.

5.17 In offices whose maximum subscribers loop is 750 ohms, incoming selector circuits shall be arranged for conversion from 24 volts to 48 volt transmission only when specified by the Telephone Company in which case all wiring necessary for the conversion shall be run initially. The 48 volt supervisory relay shall be equipped with a terminal punching for the two leads which initially are connected to the 24 volt supervisory relay winding. In this type of office both the 24 and 48 volt talking battery shall be fused at the incoming fuse board with an individual fuse per circuit.

Ringling

5.18 When 25 percent or less of the subscribers lines are arranged for four party semi-selective ringing, choices 3, 7, 11 and 19 shall be assigned to call with the two ring code.

5.19 When 50 percent or less of the subscribers lines are arranged for four party semi-selective ringing, the odd numbered choices shall be assigned to call with the two ring code. The commutators on the circuit drawings are arranged to give two ring code only on these choices.

Transmission Battery Filter Panel

5.20 In new offices or when modifying existing offices, a transmission battery filter panel and a resistance lamp per circuit shall be mounted on the incoming frames in offices having subscribers line loop of 1500 ohms, with the following exception.

5.21 When modifying existing offices for use with maximum subscriber line loops of 1500 ohms where space is not available for the resistance lamps such as J27701A having 90 type

condensers mounted on 969A mounting plates, the individual talking battery fuses on the incoming fuse board shall be replaced with resistance lamps and the 24 volt talking battery changed to 48 volts.

5.22 When mounting 11 type resistance lamps below repeating coils which are mounted on the horizontal center line of the mounting plate, a shield shall be mounted between to prevent overheating the repeating coils and condensers. When orders are received for such a modification, or for frames having mounting plates of different lengths than those covered in this specification, they shall be referred to the Laboratories and manufacturing information for shields and additional lamp mounting plates will be originated.

5.23 Incoming fuse boards are not required when the resistance lamps and filter panel are mounted on the incoming frames.

6. WIRING AND CABLING

Local Wiring

Local Cable

6.01 The frame local cable shall be wired to care for the ultimate equipment when the ultimate arrangement is given or can be determined. In order to prevent crosstalk, the size and method of wiring between the transmission battery filter panel and the resistance lamps shall not be deviated from that shown on the drawings listed herein.

Universal Wiring

6.02 Where the initial and ultimate circuit requirements for an incoming frame are different, the frames shall, as far as possible, be provided with universal wiring, so that the selector circuits may be converted from the initial to the ultimate circuit.

6.03 *Battery on the C.O. Relay Offices:* Universal wiring shall be provided for the following combination of incoming selector circuits:

- (a) Panel local and panel tandem.
- (b) Manual local and panel local or tandem.

(c) Key indicator local and panel local or tandem.

(d) Manual tandem and panel local or tandem.

(e) Manual long distance and key pulsing long distance.

6.04 *Ground on the C.O. Relay Offices:* Universal wiring may be provided for the following combination of incoming selector circuits:

(a) Panel local and panel tandem.

(b) Manual local and manual tandem.

(c) Manual local and manual long distance.

(d) Key indicator local to panel local or tandem.

6.05 In ground on the cut off relay offices conversion of manual incoming selectors to panel local or tandem operation involves the replacement of the local cable. Where manual incoming selectors are provided on a frame partially equipped with key indicator or panel incoming selectors, a separate local cable should be provided for the manual type so that this portion of the frame may be rewired when converting to panel operation without disturbing the remaining circuits.

Registers

6.06 The "Group Peg Count" (GR) and "All Paths Busy" (PBR) registers associated with the incoming selectors shall be wired in accordance with drawing ED-20287-01. The overflow registers are connected to the multiple-bank terminal above each final choice to record when ever all final selectors of a choice are busy.

Regrouping Final Choices

6.07 When regrouping final choices, all O.G.T. multiple and final selector circuit cables not required, shall be removed from the forms and cut dead at the cable rack. The new cables shall then be installed as required.

Cabling

Ringling Mains

6.08 The ringling mains for machine ringling supply to frames 1, 4, 7, etc. shall be run to the set of ringling bus bars on the miscellane-

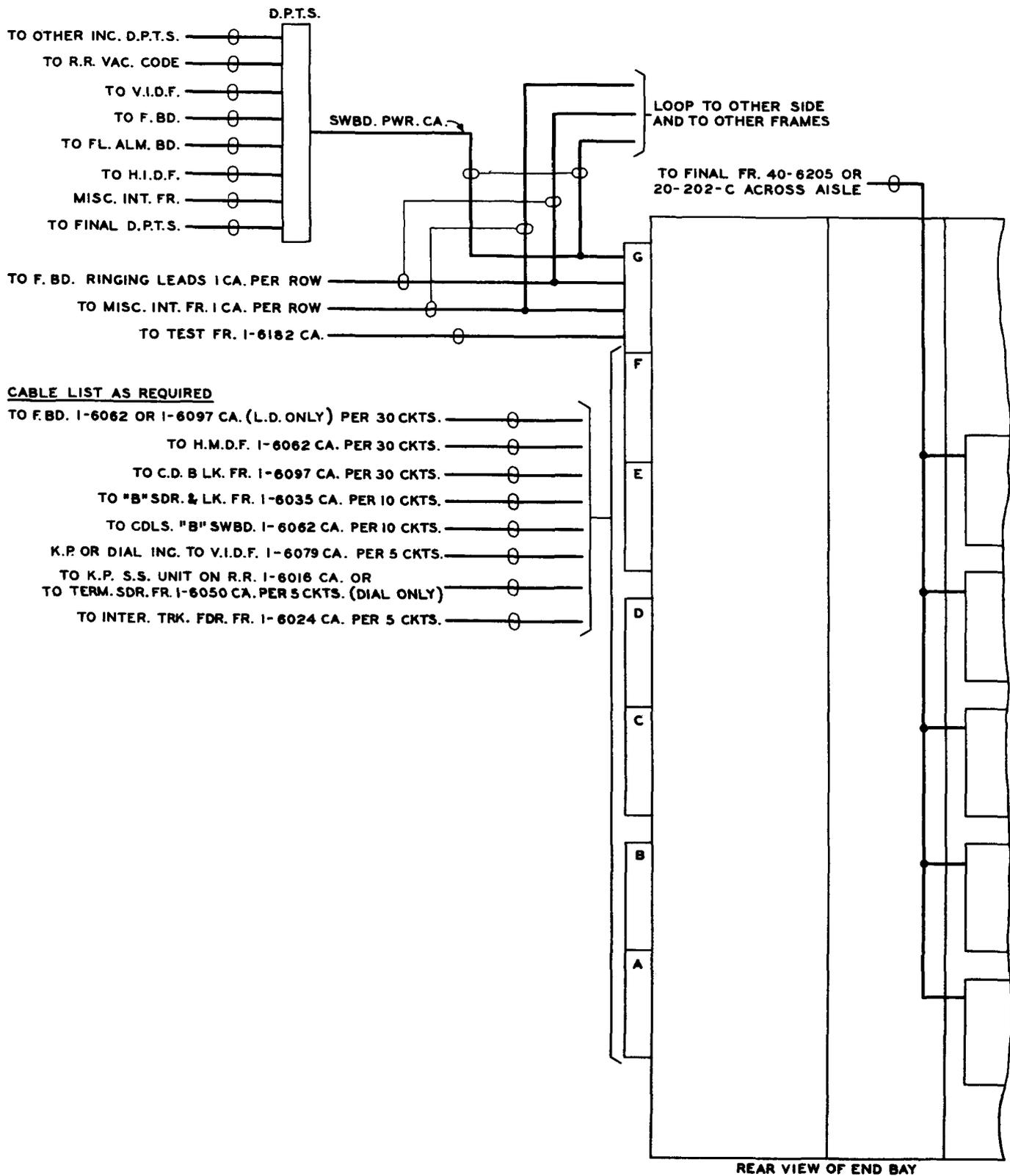


Fig. 4 - Cabling Diagram

ous fuse board which are designated "Brush No. 1". Similarly, the ringing mains for selector frames, 2, 5, 8, etc. and 3, 6, 9, etc. shall be run to bus bars designated "Brush No. 2" and "Brush No. 3" respectively.

6.09 The ringing leads shall be cabled direct from the fuse board, omitting the DPTS, to each line or side of line of frames depending on the type of ringing. The cables shall be looped at the miscellaneous frame terminal strips, the proper leads connected and the remainder looped to the next frame.

Incoming Multiple

6.10 Each choice of the incoming multiple shall be cabled from the incoming frame multiple banks to the incoming multiple terminal strips on the front and rear of the associated final frames. From there they are cross connected to the proper final selectors on the selector terminal strips below.

6.11 The overaisle incoming multiple cables should in general be carried directly across aisle without running to the main aisle rack, a 5" cross aisle rack being provided for this purpose.

6.12 The tip leads only of the overflow trunks of each group or sub-group shall be cabled to the distributing frame for cross connection to the overflow registers.

Vacant Incoming Multiple Trunks

6.13 These trunks provide a means of intercepting calls dialed in error to subscriber lines that do not exist. They also provide a means of intercepting calls to final frames temporarily removed from service to permit bank replacements or other similar installation and maintenance work.

6.14 Unless otherwise specified by the Telephone Company five trunks shall be provided for each office having vacant final choices. For multi-office installations the trunks for offices having vacant choices may be extended to serve the offices not having vacant choices, each

group of trunks serving a nearly equal number of offices.

6.15 Each group of five vacant incoming multiple trunks should be extended from the relay rack with code 6050 cable to an incoming frame D.P.T.S. and multiplied from there to other offices in the same building as required.

6.16 The trunks should be cabled with code 6050 cable from the D.P.T.S. to the top unequipped choice of the nearest incoming frame and connected to terminals 19 to 23 of the choice. These terminals shall be multiplied through all frames of all sub-groups without slip and shall be wired by the installer to corresponding terminals of each vacant choice with local wiring on the first incoming frame of each office.

6.17 In the case of non-graded multiples slack shall be left in the multiple conductors to allow for connection to new terminals when the choice is equipped and the multiple slipped.

6.18 Sleeve terminals 0 to 18 inclusive of all vacant choices on each frame shall be strapped together and connected to ground on the frame fuse panel. The leads in the multiple cable for trunks 0 to 18 shall not be soldered.

6.19 For offices having all final choices equipped the vacant incoming trunk cabling will be dead ended at the incoming frame distributing power terminal strip.

6.20 When all the final choices are equipped in all the offices of an installation one set of five vacant incoming trunks shall be provided to serve all the offices. However, when all the final choices are served by more than one final frame these trunks are not required since one final frame can be arranged to serve the choice while the other is being repaired.

Theoretical or Official Numbers

6.21 When theoretical or official numbers are assigned in a certain choice while the lines are actually connected in a different choice the incoming bank terminals for the theoretical and actual final choices shall be multiplied together by means of a local cable form on the end frames of each group of incoming frames.

Miscellaneous

6.22 The cabling between the distributing power terminal strip and points of termination for the various circuits shall be run in the largest switchboard cables possible consistent with the grouping of leads and points of termination.

6.23 When modifying existing offices for use with maximum subscribers loop range of 1500 ohms, where the battery feeders are under the guardrails, new feeders shall be provided on the cable rack to supply the transmission battery filter panels on the incoming frames.

Bell Telephone Laboratories, Incorporated

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