TRUNK AND CONVERTER FINDERS AND 10-CAPACITY FINDER SHELVES NO. 1, 350A, 355A, AND INTERTOLL DIALING OFFICES EQUIPMENT DESIGN REQUIREMENTS STEP-BY-STEP SYSTEMS

1. GENERAL

Scope

1.01 This specification, together with the supplementary information listed herein, covers the equipment design requirements for the manufacture and installation of 100- and 200-point 3-wire, and 100-point 8-wire trunk finders in No. 1, 350A, 355A, and CAMA intertoll dialing step-by-step offices, and 100-point 8-wire trunk finders and converter finders required in step-by-step offices arranged for TOUCH-TONE® calling without common control.

1.02 This specification is reissued to provide for a multiple arrangement of TOUCH-TONE trunk finders and to clarify the general description of LAMA and CAMA trunk finders.

1.03 The 3-wire trunk finders are used in tandem trunking arrangements for concentrating groups of incoming trunks from nearby points for routing to distant points.

1.04 The 8-wire trunk finders are used for associating senders with trunks in LAMA and CAMA offices and converter trunks with converters or converter finders in offices equipped for TOUCH-TONE calling.

1.05 The 8-wire converter finders are used with 8-wire trunk finders in TOUCH-TONE calling offices that require more than 20 converters.

Capacity

1.06 The 3-wire trunk finder units have a capacity of ten trunk finders and mount on the universal switch frame. Seven trunk finder units, 100-point or 200-point, may be mounted on an 11-foot 6-inch frame. These trunk finder units are used as follows.

(a) To concentrate traffic from incoming trunks to tandem trunks.

(b) To concentrate vacant code traffic from AMA trunks to special service operator trunks or recorded announcement trunks.

1.07 The 8-wire trunk finder unit has a capacity of ten trunk finders. In LAMA offices sender groups that were converted from automatic ticketing mount up to two units on the trunk finder-sender trunk connector frame. In new LAMA and CAMA offices and new sender groups in LAMA offices converted from LAMA, the units will mount on a universal switch frame per ED-31178-30. For wiring purposes, the four shelves associated with the two finder groups in a sender group will usually be mounted on the same switch frame.

1.08 In step-by-step offices arranged for TOUCH-TONE calling, the trunk finder shelf units mount on a universal switch frame. When more than 20 converters are required, converter finder shelves will be provided one per trunk finder shelf.

Description

1.09 Trunk finders may be provided for concentrating incoming trunks from distant A or tollboards equipped with dials so that the most economical use can be made of trunking facilities between subtandem and tandem offices. The 100- and 200-point trunk finders are made available for this purpose as covered herein. The 200-point trunk finder is similar to the standard line finder except that provision is made for grouping from 10 to 140 finders in one group with 200 trunks. Also, the incoming trunk relays

are arranged for loops considerably longer than those for regular subscriber lines. The 100-point trunk finder is similar to the 200-point unit except that provision is made for grouping from 10 to 40 finders in one group with 100 trunks.

1.10 The trunk finders are arranged in units of ten finders each, wired universally so that the group equipment may be associated with any unit. The greater part of the group equipment is mounted on the first unit of a trunk finder group, but due to limited space it is necessary to mount part of this equipment, consisting of battery feed relays, on the second unit of the group. These two parts of the group equipment are made up in separate applique form with local wiring attached.

1.11 The trunk relays may be provided in multiples of 10 or 20 relays up to 200 relays in one group. These relays are not mounted on the trunk finder units as in the case of line finder units, but are mounted on relay rack bays. These bays will be located as close as possible to the trunk finder frame, preferably adjacent to it.

1.12 ***Trunk Fnders for LAMA, or CAMA:*** The LAMA, CAMA trunk finder is a 100-point 8-wire switch, which is used to associate a sender with a trunk. This trunk finder connects six leads through from the trunks to the sender. In addition, the LAMA trunk finder cuts through two sender control leads. One of these leads TC is cut through from the sender to the particular multicontact relay in the sender trunk connector associated with this trunk, which in turn cuts through additional leads required between a sender and a trunk. The other lead GP is cut through to the sender to identify the particular group of ten trunks which appear in a vertical file on the banks. The CAMA trunk finder connects the CL lead from the trunk class translator to the CC lead from the decoder connector, or it cuts through the RN lead from the trunk transfer circuit to the transverter connector. In addition, it connects the IC lead from the trunk to the TIC lead from the transverter connector.

1.13 The LAMA or CAMA trunk finder shelf uses shelf framework of universal construction, 6 feet 0-1/2 inch long. Each shelf is arranged to mount ten trunk finders between start circuit, alarm, and miscellaneous equipment on the left and two bank terminal strips on the right. All the miscellaneous equipment at the left is arranged on horizontal mounting plates or panels, each 1 inch or 2 inches wide. Fuse panels are provided on each shelf.

1.14 All shelves are normally equipped before shipment with trunk finders, trunk finder jacks, banks, terminal strips, miscellaneous, and alarm equipment. The first unit of a group only is equipped with the group start relays.

1.15 Aside from the usual bank multiple, all local shelf wiring, including wiring from switch jacks and from miscellaneous alarm equipment to the miscellaneous terminal strip, is run as loose wiring. This wiring is contained within fanning rings provided behind each switch position and behind the mounting plate support bars. Two small terminal strips are provided in the rear of the miscellaneous equipment for interconnecting group, start, alarm, and miscellaneous leads to associated switchboard cable or to the miscellaneous terminal strips of an associated unit.

1.16 ***Ten Senders on 99 Trunks:*** When ten or fewer senders are required to serve 99 or fewer trunks, one trunk finder shelf equipped with the start relays G and miscellaneous equipment is required.

1.17 ***Twenty Senders on 99 Trunks:*** When 11 to 20 senders are required to serve 99 or fewer trunks, two trunk finder units will be required, wired as a 20-finder group. Only the first unit will be equipped with G relays, and the banks of the two units will be multipled by means of a local cable wired in the shop to the second (lower) trunk finder unit of the group, and connected by the installer to the initial (upper) trunk finder unit.

1.18 ***Ten Senders on 198 Trunks:*** When ten or fewer senders are required to serve from 100 to 198 trunks, two trunk finder units will be required, wired as two individual 10-finder groups. Corresponding trunk finders on the two units will be common to the same senders so that each sender will be accessible from each of the two segregated groups of 99 trunks. The two finders serving a sender are called multiple finders. The finders on the trunk finder shelf associated with the first 99 trunks will be

cross-connected as the A multiple finders, and all of the leads from the senders will terminate on the jacks of these trunk finders. The finders of the trunk finder shelf associated with the second 99 trunks will be cross-connected as B multiple finders, and the jack wiring will be multipled from the corresponding A multiple finders. The start circuit of the A multiple finder is wired through the contacts of the A relay in the B multiple finder and vice versa, so that if one finder is busy the multiple finder will also be busied and its start circuit will be cut through to the next choice finder in that group.

1.19 *Twenty Senders on 198 Trunks:* When 11 to 20 senders are required to serve 100 to 198 trunks, four trunk finder units are required. The wiring for each group of 20 finders shall be the same as covered in 1.17. In addition, the first unit of each group shall be cross-connected for multiple operation as covered in 1.18, and the second unit of each group shall likewise be cross-connected for similar multiple operation.

1.20 In LAMA offices the GP bank terminals of the trunk finder are strapped together in vertical rows; that is, the GP terminals of the first rotary position of all levels are strapped together, the GP terminals of the second rotary position of all levels are strapped together, etc. The ten trunks having their GP leads strapped together appear in the same sender trunk connectors; this common lead serves to operate the proper sender preference relay in the sender trunk connector.

1.21 In LAMA offices the trunks are assigned to the bank terminals per J38205.

1.22 In CAMA offices the trunks are assigned to the trunk finder bank terminals in regular order as shown in Table A. The last terminal on the first level is reserved as a test terminal.

TABLE A

TYPICAL ASSIGNMENT OF CAMA TRUNKS TO FINDER BANKS — TRUNK FINDER 1 — 11-FOOT 6-INCH TRUNK FRAME

	Bank Terminal Number									
	1	2	3	4	5	6	7	8	9	0
LEVEL 1	0-00	0-01	0-02	0-03	0-04	0-05	0-06	0-07	0-08	TST
LEVEL 2	0-10	0-11	0-12	0-13	0-14	0-15	0-16	0-17	0-18	0-19
LEVEL 3	1-00	1-01	1-02	1-03	1-04	1-05	1-06	1-07	1-08	1-09
LEVEL 4	1-10	1-11	1-12	1-13	1-14	1-15	1-16	1-17	1-18	1-19
LEVEL 5	2-00	2-01	2-02	2-03	2-04	2-05	2-06	2-07	2-08	2-09
LEVEL 6	2-10	2-11	2-12	2-13	2-14	2-15	2-16	2-17	2-18	2-19
LEVEL 7	3-00	3-01	3-02	3-03	3-04	3-05	3-06	3-07	3-08	3-09
LEVEL 8	3-10	3-11	3-12	3-13	3-14	3-15	3-16	3-17	3-18	3-19
LEVEL 9	4-00	4-01	4-02	4-03	4-04	4-05	4-06	4-07	4-08	4-09
LEVEL 0	4-10	4-11	4-12	4-13	4-14	4-15	4-16	4-17	4-18	0-09

Trunk Number

Trunk Frame Number

1.23 *Trunk Finders and Converter Finders for TOUCH-TONE Calling:* The TOUCH-TONE calling trunk finder is a 100-point 8-wire switch, which is used to associate a line finder with a converter. A trunk finder group may be defined as the number of trunk finders associated with a converter group. A converter group consists of a maximum of 100 converters. This trunk finder connects eight leads through from the converter trunk to the converter finder or the converter. Each converter trunk is directly associated with a particular line finder.

1.24 The converter finder is a 100-point 8-wire switch which is used to permit the trunk finders in an office to have access to all converters in a group. A converter group consists of a maximum of 100 converters. A converter finder group may be defined as consisting of the number of converter finders associated with a converter group. The converter finder switches are associated with and equipped on a one-to-one basis with the trunk finder switches. The converter finder connects eight leads through from the trunk finder to the converter. Converter finder bank terminals are assigned by vertical file for connection to converters. Table B of J33024 shows the assignment of a group of 100 converters.

1.25 In step-by-step offices with TOUCH-TONE calling lines, five arrangements are available for interconnecting trunk finders, converter finders, and converters.

(a) For a small installation in which the traffic demands will not require more than 100 converter trunks and 10 converters, provide one trunk finder shelf with the trunk finder jacks cabled directly to converters.

(b) For installations in which traffic demands require up to 100 converter trunks served by 11 to 20 converters, two trunk finder units will be required. Only the first unit will be equipped with G relays, and the banks of the two units will be multipled by means of a local cable wired in the shop to the second (lower) trunk finder unit of the group, and connected by the installer to the initial (upper) trunk finder unit.

(c) For installations in which traffic demands require 10 or less converters serving 200 trunks, two trunk finder shelves are provided. The banks of each shelf are associated with a separate 100 converter trunks. Corresponding trunk finders on the two units will be common to the same converters so that each converter will be accessible from each of the two segregated groups of 100 trunks. The two finders serving a converter are called multiple finders. The finders on the trunk finder shelf associated with the first 100 trunks will be cross-connected as the A multiple finders, and all of the leads from the senders will terminate on the jacks of these trunk finders. The finders of the trunk finder shelf associated with the second 100 trunks will be cross-connected as B multiple finders, and the jack wiring will be multipled from the corresponding A multiple finders. The start circuit of the A multiple finder is wired through the contacts of the A relay in the B multiple finder and vice versa, so that if one finder is busy the multiple finder will also be busied and its start circuit will be cut through to the next choice finder in that group.

(d) When 11 to 20 converters are required to serve more than 100 and up to 200 trunks, four trunk finder units are required. These will be divided into two pairs of A and B shelves. Each pair should be wired as covered in 1.25(b). The pairs should then be multiplied as covered in 1.25(c).

(e) Where more than 20 converters are required, provide a trunk finder to converter finder to converter arrangement. Direct cabling is used between the following equipments: line finder and converter trunk; converter trunk and trunk finder bank terminal; trunk finder and converter finder; and, lastly between the converter finder bank and the converter.

1.26 A common control arrangement for TOUCH-TONE calling which is adaptable for controlled outpulsing is also available. The equipment design requirements for the TOUCH-TONE calling portion of common control are covered in general specification J39225.

2. SUPPLEMENTARY INFORMATION

AA128.006 — List of General Equipment Requirements Sections
814-000-000 — Step-by-Step Systems Index
J38201 (814-105-153) — Trunk Finder and Sender Trunk Connector Frame

J38205 (814-105-152) — Sender Trunk Connector Frame
J39215 (814-100-150) — Automatic Message Accounting — General Specification
J39220 (814-100-151) — Step-by-Step Systems Intertoll Dialing Office With CAMA — General
X-61350 — List of Specifications and Keysheets
Floor Plan Data — Section 5.2, Sheet 6 — Trunk Finder Frame

Current Drain Data

SD-31359-02 — Step-by-Step System No. 1
SD-32230-02 — Step-by-Step System No. 1 — Automatic Message Accounting
SD-32320-02 — Step-by-Step Systems Intertoll Dialing Office With CAMA
SD-31369-02 — Step-by-Step System No. 350A
SD-31780-02 — Step-by-Step System No. 355A

3. DRAWINGS

WECo J drawings should be ordered by referring to the prefix and base number and requesting the current dash (–) number.

Keysheets

SD-31359-01 — Step-by-Step System No. 1
SD-32230-01 — Step-by-Step System No. 1 — Automatic Message Accounting
SD-32320-01 — SXS Systems Intertoll Dialing Office With CAMA
SD-31364-01 — Step-by-Step System No. 350A
SD-31780-01 — Step-by-Step System No. 355A

Circuits

SD-31330-01 — Step-by-Step Systems No. 1 or 350A
SD-31514-01 — Step-by-Step Systems No. 1, 350A, 355A or 35E97
SD-31530-01 — Step-by-Step Systems No. 1 or 350A
SD-31781-01 — Step-by-Step Systems No. 1, 350A, 355A, or 360A
SD-31953-01 — Step-by-Step Systems No. 1, 350A or 355A
SD-33028-01 — Step-by-Step Systems No. 1, 350A, or 355A

Framework

ED-31178-30 — Universal Switch Frame Assembly

Equipment

ED-30283-01 — Designation Cards
ED-30446-01 — Incoming Trunk Associated With Trunk Finders
ED-31286-( )— Trunk Finder Frame Equipment
ED-31781-01 — 100-Point Trunk Finder Equipment
ED-31953-01 — 100-Point 8-Wire Trunk Finder Equipment
ED-33013-01 — 200-Point Trunk Finder Equipment
ED-33028-01 — 100-Point 8-Wire Converter Finder Equipment

Shelf Units

J32004AY-( ) — Trunk Finder Unit — For Ten 100- or 200-Point Trunk Finders (Solderless Banks)
J32004BA-( ) — Trunk Finder Unit — For Ten 100-Point 8-Wire Trunk Finders — Local or Centralized Automatic Message Accounting or Offices With TOUCH-TONE Calling Lines (Arranged for Solderless Wrapped Connections)
J32004BB-( ) — Bank and Commutator Equipment — For 100-Point 8-Wire Trunk Finders — Local AMA (Solderless Banks and Terminal Strips)
J32004BC-( ) — Bank and Commutator Equipment — For 100-Point 8-Wire Trunk Finders — CAMA or TOUCH-TONE Calling (Solderless Banks and Terminal Strips)
J32004BD-( ) — Converter Finder Unit — For Ten 100-Point 8-Wire Converter Finders — For Use in Offices Having TOUCH-TONE Calling Lines (Arranged for Solderless-Wrapped Connection)
J32004BE-( ) — Bank and Commutator Equipment — For 100-Point 8-Wire Converter Finders (Solderless Banks and Terminal Strips)

Wiring and Cabling

ED-30278-01 — M1R Wiper Cords

ED-30351-01 — Local Cabling Plan — Trunk Finder

ED-30354-01 — Switchboard Cabling and Power Feeder Cabling Plan — Trunk Finder Frame

ED-30356-01 — Wiring of Bank Multiple and Commutators

ED-30446-01 — Cabling of Incoming Trunk Circuits Associated With Trunk Finders

ED-30785-01 — Method of Wiring Banks and Commutators for Trunk Finders and Converter Finders

ED-31251-10 — Line and Trunk Finder Frame—Switchboard Cabling and Power Feeder Wiring

ED-31265-10 — Typical Shelf Wiring

ED-31268-10 — Typical Fuse Panel Wiring and Equipment Arrangements

ED-32264-10 — Wire Gauges and Types of Insulation for Step-by-Step Frames

ED-95131-( ) — Typical Fuse Panel Wiring and Equipment Arrangements

4. EQUIPMENT

J3200AY — (A&M Only) — Trunk Finder Unit — For Ten 100- or 200-Point Trunk Finders (Solderless Banks)

Equipment — J32004AY-( )

List 3 — Assembly, wiring, and equipment including mounting plates for six battery supply circuits per SD-31530-01, Fig. 7, required in addition to list 1 or 6 for the second unit of a trunk finder group. (See Note G.)

List 6 — Framework, assembly, wiring, and common equipment for a unit for ten 200-point trunk finders with banks, but less the trunk finders.

	WIRE	EQUIP	SEE NOTES
42E, 42EA, 52EA Banks and No. 9A Commutators per J32004AY, Fig. A, B, and D, Wired per ED-30356-01, Fig. 1 and 2	10	10	
Trunk Finder Ckt, SD-31530-01:			
Finder Ckt, Fig. 5 and 8 (Jk Wiring Only)	10	10	C
Test Line Jks, Fig. 9	1	1	D
Gr Ckt, Fig. 6 and 6D	1	0	B
Sw Tbl Alarm Ckt, SD-31514-01:			
Rls Alarm Ckt, Fig. 1	1	1	H
Call Blocked Alarm Ckt, Fig. 1 (Less CB Relay and CBLK Lamp)	1	0	H
Fuse Alarm Ckt, Fig. 5	1	1	
All Finders Busy Ckt, Fig. 10	1	0	
Battery Test Jk Ckt, SD-31333-01, Fig. 1		1	

List 7 — Assembly, wiring, and equipment including mounting plates for circuits required in addition to list 1 or 6 for the first unit of a trunk finder group.

	WIRE	EQUIP	SEE NOTES
Start Ckt, SD-31530-01:			
Fig. 2, First	1	1	F
Fig. 3, Intermediate	8	8	
Fig. 4, Last	1	1	
Gr Ckt, Fig. 6 and 6D	1	1	E
Sw Tbl Alarm Ckt, SD-31514-01:			
Call Blocked Alarm Ckt, Fig. 1		1	
All Finders Busy Ckt, Fig. 10		1	

List 8 — Framework, assembly, wiring, and common equipment for a unit for ten 100-point trunk finders with banks, but less the trunk finders.

	WIRE	EQUIP	SEE NOTES
41DA, 42EA Banks and No. 9 Commutators per J32004AY Fig. A and G, Wired per ED-30356-01, Fig. 1 and 2	10	10	I

	WIRE	EQUIP	SEE NOTES
Trunk Finder Ckt, SD-31781-01:			
Finder Ckt, Fig. 5 and 7 (Jk Wiring Only)	10	10	C
Test Line Jks, Fig. 8	1	1	D
Group Ckt, Fig. 6 and 6D	1	0	B
Sw Tbl Alarm Ckt, SD-31514-01:			
Release Alarm Ckt, Fig. 1	1	1	H
Call Blocked Alarm Ckt, Fig. 1 (Less CB Relay and CBLK Lamp)	1	0	H
Fuse Alarm Ckt, Fig. 5	1	1	
All Finders Busy Ckt, Fig. 10	1	0	
Battery Test Jk Ckt, SD-31333-01, Fig. 1	1	1	

List 9 — Assembly, wiring, and equipment including mounting plates for circuits required in addition to list 4 or 8 for the first unit of a trunk finder group.

	WIRE	EQUIP	SEE NOTES
Start Ckt, SD-31781-01:			
Fig. 2, First	1	1	F
Fig. 3, Intermediate	8	8	
Fig. 4, Last	1	1	
Gr Ckt, Fig. 6 and 6D	1	1	E
Sw Tbl Alarm Ckt, SD-31514-01:			
Call Blocked Alarm Ckt, Fig. 1		1	
All Finders Busy Ckt, Fig. 10		1	

Notes

A. In order to permit complete flexibility in the application of the units per lists 1 or 6 and 4 or 8 to all conditions, various leads are brought out to the unit terminal strip for connection to other units or to the group equipment. The terminal assignment of the leads is shown on the cross-connection sheet for the trunk finder circuit. The details of the leads to be furnished are covered in subsequent Notes B to H (except Note G for list 4 or 8).

B. Leads for the group circuit shall be run as follows in each unit between the equipment and the unit terminal strip: Two leads from the TST key to terminals 49 and 50. One common lead from the positions of the C and S lamps to terminal 53 and one lead each from the C and S lamps to terminals 54 and 63, respectively, and one lead from AR key to terminal 61. One lead each from fuse positions 11 and 12 to terminals 57 and 58, respectively. One lead from the ground terminal for fuse position 12 to terminal 29. One lead from the CB relay to terminal 55.

C. Run one lead from each trunk finder jacks 4 and 15 multipled to terminals 56 and 51, respectively, of the unit terminal strip. One lead from the chain and test leads of all test jacks multipled to terminals 21 and 31. Run one ST1 and ST2 lead from each test jack to terminals 1 to 20. Run one lead from all commutator terminals 0, multipled, and one lead from each of terminals commutator 1, to terminal strip terminals 28 and 33 to 42, respectively.

D. Run two leads from the cut-off springs of the A and B jacks to terminals 25 and 31, respectively. The tip, ring, and sleeve leads of the A and B jacks shall be carried in the shelf local cable to the end of the shelf and from there sewed in a form for connection to the terminals for lines 10 and 110 on the bank terminal strip.

E. The following wiring in addition to that between group relays shall be run to the unit terminal strip for connection to the group circuit wiring included in list 1: One lead each from the OB relay and the first G relay of the start circuit to terminals 49 and 50, respectively. One lead each from the S relay and C resistor to terminals 54 and 64, respectively. Two leads from the AL relay to terminals 61 and 63. One lead from the C1 relays battery A and one lead from the group relays battery B to terminals 57 and 58, respectively. One lead from the group relays ground B to terminal 29. One lead from all G relays strapped to terminal 55. The following wiring will be required for connection to other units: One lead each from the S relay and OB relays to terminals 51 and 52. Three leads from the C1 relay to terminals 62, 67, and 68. One lead from the C1 relay to terminal 21. One lead from each of start relays G to terminals 1, 3, 5, 7, 9, 11, 13, 15, 17, and 19.

F. Run three leads each from the G relays to terminals 81 to 90, 101 to 110, and 111 to 120 of the terminal strip for connection to the trunk relays.

G. The following leads shall be provided between the battery supply relays and the unit terminal strip: One lead each from all relays multipled to terminals 65 and 66 battery B and C, one lead each from the relays to terminals 69 to 80 (DB), one lead each from the relays to terminals 91 to 96 battery C. Not more than ten trunk finders shall be served by one DB lead from C1 and C2 relays.

H. Wiring is provided on each unit for the call blocked, release, and all finders busy alarms. One release alarm shall be provided for each unit, but the call blocked alarm and all finders busy alarms shall be provided only on the first unit of a group.

I. Due to the impracticability from the manufacturing standpoint of wiring 100-point solderless-type bank equipment with a multiple slip, mechanized soldered banks are specified for the upper sleeve banks of 100-point 3-wire trunk finder units.

J32004BA (AT&TCo Std) — Trunk Finder Unit — For Ten 100-Point 8-Wire Trunk Finders — Local or Centralized Automatic Message Accounting or Offices with TOUCH-TONE Calling Lines (Arranged for Solderless Wrapped Connections)

Equipment — J32004BA-( )
Shelf Wiring — ED-31265-10

List 1 — Framework, assembly, wiring, and equipment for one unit of ten 100-point 8-wire trunk finders, less finders and banks for the first unit of a group.

	WIRE	EQUIP
Bat. Tst Jk Ckt, SD-31333-01, Fig. 1	1	1
Sw Tbl Alm Ckt, SD-31514-01:		
Rls Alm Ckt, Fig. 1	1	1
Call-Blocked Alm Ckt, Fig. 1	1	1
Fuse Alm Ckt, Fig. 5, X App	1	1
Trk Fdr Ckt, SD-31953-01:		
Start Ckt:		
Fig. 2, First	1	1
Fig. 3, Intermediate	8	8
Fig. 4, Last	1	1
Trk Fdr Ckt, Fig. 5, Jk Wiring Only	10	10
Gr Ckt, Fig. 6	1	1
Tst Line Jk, Fig. 7	1	0
Tst and Make-Busy Jk:		
Fig. 13 and 15	1	1
Fig. 14	8	8

List 2 — Framework, assembly, wiring, and equipment for one unit of ten 100-point 8-wire trunk finders, less finders and banks for additional units of a group.

	WIRE	EQUIP
Sw Tbl Alm Ckt, SD-31514-01:		
Rls Alm Ckt, Fig. 1	1	1
Fuse Alm Ckt, Fig. 5, X App	1	1
Trk Fdr Ckt, SD-31953-01:		
Trk Fdr Ckt, Fig. 5, Jk Wiring Only	10	10
Tst Line Jk, Fig. 7	1	0
Tst and Make-Busy Jk:		
Fig. 13 and 15	1	1
Fig. 14	8	8

List 3 — Wiring and equipment per SD-31953-01, Fig. 2 and 6, T wiring and apparatus only, required in addition to list 1 when an overflow register is required.

List 5 — Wiring and equipment per SD-31953-01, Fig. 2, 3, and 4, with B apparatus; Fig. 16 with F wiring and apparatus; Fig. 17 with F wiring and apparatus; and SD-31514-01, Fig. 1, P wiring only, required in addition to list 1 for TOUCH-TONE calling in No. 1 and 350A offices (omit A wiring).

List 6 — Wiring and equipment per SD-31953-01, Fig. 2, 3, and 4, with B apparatus; Fig. 16 with E wiring and apparatus; Fig. 17 with E wiring and apparatus; required in addition to list 1 for TOUCH-TONE calling in No. 355A office (omit A wiring).

Notes

A. When an all finders busy register is required, wiring per SD-31953-01, Fig. 6, V wiring only, shall be provided in addition to list 1.

B. Since the LAMA or CAMA trunks in a subgroup will be located on different frames, cabling is facilitated by providing a G terminal per trunk at the bank terminal strip. These terminals are strapped in groups of ten (one per level), and a G lead per group is extended from the group relay by carrying it through the rings back of the switches and superimposing on the bank multiple cable as shown on J32004BB-( ) or J32004BC-( ).

C. The local cables per J32004BB, List 2 or J32004BC, List 2 shall be employed between the bank terminal strips of supplementary and initial trunk finder units of the same trunk finder frame.

J32004BB (AT&TCo Std) — Bank and Commutator Equipment — For 100-Point 8-Wire Trunk Finders — Local AMA (Solderless Banks and Terminal Strips) (See Note A)

Equipment and Local Cable — J32004BB-( )

List 1 — Assembly, wiring, and equipment for ten 800-point banks and ten commutators wired per ED-30785-01, Fig. 1, 2, and 3 to terminal strips and supports.

List 2 — Interunit bank multiple local cables required in addition to list 1 for each supplementary trunk finder unit per J32004BA, List 2 when mounted on universal switch frame ED-31178-30.

Note

A. Each of the 800-point banks per list 1 consists of three solderless banks and one soldered bank for use with trunk finders per SD-31953-01, when mounted on trunk finder unit J32004BA for LAMA offices.

J32004BC (AT&TCo Std) — Bank and Commutator Equipment — For 100-Point 8-Wire Trunk Finders — CAMA or TOUCH-TONE Calling (Solderless Banks and Terminal Strips) (See Note A)

Equipment and Local Cable — J32004BC-( )

List 1 — Assembly, wiring, and equipment for ten 800-point banks and ten commutators wired per ED-30785-01, Fig. 1 and 3, to terminal strips and supports.

List 2 — Interunit bank multiple local cables required in addition to list 1 for each supplementary trunk finder unit per J32004BA, List 2 when mounted on universal switch frame ED-31178-30.

Note

A. Each of the 800-point banks per list 1 consists of four solderless banks for use with trunk finders per SD-31953-01, when mounted on trunk finder unit J32004BA for CAMA or TOUCH-TONE calling applications.

J32004BD (AT&TCo Std) — Converter Finder Unit — For Ten 100-Point 8-Wire Converter Finders — For Use in Offices Having TOUCH-TONE Calling Lines (Arranged for Solderless-Wrapped Connections)

Equipment — J32004BD-( )
Shelf Wiring — ED-31265-10

List 1 — Framework, assembly, wiring, and equipment for one unit of ten 100-point 8-wire converter finders, less finders and banks for the first unit of a group.

	WIRE	EQUIP
Bat. Tst Jk Ckt, SD-31333-01, Fig. 1	1	1
Sw Tbl Alm Ckt, SD-31514-01, Fuse Alm Ckt, Fig. 5, X App	1	1
Converter Finder Ckt, SD-33028-01, Fig. 2, Jk Wiring Only	10	10

List 2 — Wiring and equipment per SD-33028-01, Fig. 3, converter finder level relays and jacks required in addition to list 1 on each converter finder frame.

List 3 — Timing relays per SD-31514-01, Fig. 14, required in addition to list 1 for all converter finder frames in adjacent cross aisles.

List 4 — Release alarm circuit per SD-31514-01, Fig. 13, required in addition to list 1 on each converter finder shelf in No. 1 and 350A offices.

List 5 — Release alarm circuit per SD-31514-01, Fig. 16, required in addition to list 1 for each converter finder shelf in No. 355A offices.

List 8 — Fuse alarm relay per SD-31514-01, Fig. 6, required in addition to list 1 in No. 1 and 350A offices. (See Note A.)

Note

A. In No. 1 offices one list 8 is provided for all frames in the same aisle between adjacent cross aisles. In No. 350A offices, one list 8 is provided per office.

J32004BE (AT&TCo Std) — Bank and Commutator Equipment — For 100-Point 8-Wire Converter Finders (Solderless Banks and Terminal Strips.) (See Note A.)

Equipment and Local Cable — J32004BE-( )

List 1 — Assembly, wiring, and equipment for ten 800-point banks and ten commutators wired per ED-30785-01, Fig. 1 and 3, to terminal strips and supports.

List 2 — Interunit bank multiple local cables required in addition to list 1 for each additional converter finder unit per J32004BD, List 1 when mounted on universal switch frame ED-31178-30.

Note

A. Each of the 800-point banks per list 1 consists of four solderless banks for use with converter finders per SD-33028-01, when mounted on converter finder unit J32004BD, with TOUCH-TONE calling lines.

5. GENERAL NOTES

EQUIPMENT

Trunk Finder and Converter Finder Frames

5.01 The standard universal switch frames are used for mounting the trunk finder concentrating units, and TOUCH-TONE trunk finder, and converter finder units. The trunk finder frame may be located in any available space, but should be located preferably near the associated line of relay rack and telephone repeaters or TOUCH-TONE converters. Since the TOUCH-TONE trunk finder and converter finder frames are cabled directly, these frames should be located near each other where possible.

5.02 The new angle-type universal switch frame shall be used for mounting the LAMA or CAMA trunk finder units. Normally, four LAMA or CAMA trunk finder units will be mounted eight 2-1/2 inch spaces apart with the top unit mounting approximately 7-1/2 inches from the top of the frame. Six such units may be mounted on a frame in this manner if warranted by local conditions. When the angle-type universal switch frame is erected in a lineup of 10-inch guardrail frames, two guardrail junction details per ED-25529-01, Group 36 should be ordered.

5.03 For finder frames which are installed under high-type auxiliary framing, it is necessary to provide top-angle assemblies per ED-30375-01 and make provision for supporting the frames from the high-type framing as shown on that drawing.

5.04 The finder units need not be insulated from the frame uprights.

5.05 The finder units on each frame shall be equipped and numbered from the top of the frame down. The trunk finders and converter finders shall be numbered from left to right in each unit starting with one in the first unit and proceeding consecutively throughout the following units. The trunk finder frames shall be designated TF and shall be numbered consecutively from one up TF1, TF2, etc. The converter finder frames shall be designated CF and shall be numbered consecutively from one up CF1, CF2, etc.

5.06 A terminal strip of the required capacity shall be mounted on the end guard of a row of frames in which the finder frames are located, which shall be known as a DPTS. It shall be located at the end of the row of frames at the cross-aisle in which the aisle pilot lamps are located, and always at the end adjacent to the main cross-aisle in offices having no aisle pilots. With regard to the assignment of CAMA senders to trunk finders, it is recommended that CAMA senders 0, 1, 2 located on each of sender frames 00, 01, etc. to 13, inclusive, be assigned consecutively to trunk finders 1, 6, 4, 9, 2, 7, 3,

8, 5, and 10, respectively, for the basic and supplementary trunk finder units serving the first sender group of 20 senders. The same order of assignment of senders in the basic and supplementary trunk finder units serving the second sender group of 20 senders shall be followed.

5.07 Where less than ten 3-wire trunk finders are provided on a unit, equip positions in the order 1, 6, 4, 9, 2, 7, 3, 8, 5, and 10. The 8-wire trunk finders associated with CAMA or TOUCH-TONE shall be equipped in the same order. This permits a more even distribution of traffic over all equipped finders by keeping vacant spaces in the start circuit as widely separated as possible.

5.08 Where less than ten 8-wire converter finders are provided on a unit, equip positions in the order 1, 6, 4, 9, 2, 7, 3, 8, 5, and 10.

5.09 The 8-wire trunk finders associated with LAMA shall be equipped in odd positions (1 to 9) first and then in even positions (2 to 10). Where 100 to 198 trunks are served, the trunk finder shelves shall be designated TG1A, TG1B, TG2A, TG2B, etc. Where less than 100 trunks are served, the trunk finder shelves shall be designated TG1, TG2, etc.

5.10 Due to limited space on the fuse panel of the unit on which the six C2 relays are mounted, it will be necessary to fuse two relays on each of three adjacent units beginning with the unit on which the relays are located.

5.11 A bank support shall be furnished for each unequipped trunk finder position.

5.12 Finder test jacks associated with the trunk finders shall be provided for the full capacity of each shelf regardless of the number of trunk finders equipped.

5.13 The 3-wire trunk finder bank terminals for trunks 10 and 110 are reserved for test purposes and these lines shall not be equipped with trunk relays.

5.14 A full complement of ten subgroup relays shall be provided regardless of the number of trunks equipped.

Trunk Finders and Converter Finders

5.15 The equipment drawing and group number shall be stamped on the mounting plate of each finder in addition to the wiring diagram number. A card holder is provided as part of each switch, into which the installer shall insert a card containing the information shown on the frame equipment drawing listed herein.

Incoming Trunk Circuits Associated With Trunk Finders

5.16 One group of 200 trunks may be served by a group of from 10 to 140 trunk finders. The 200 trunks served by one unit are referred to as a trunk group, and the trunk finders associated with the trunk group are referred to as a trunk finder group. A subgroup of trunks comprises the 20 trunks served by the same start relay. The first subgroup of trunks appears on the first level of trunk finders, 1, 11, 21, etc, and the second subgroup of trunks appears on the first level of trunk finders, 2, 12, 22, etc. The trunk finders on whose first levels the same subgroup of trunks appears are referred to as a subgroup of trunk finders.

5.17 One group of 100 trunks may be served by a group of from 10 to 40 trunk finders. The 100 trunks served by one unit are referred to as a trunk group, and the trunk finders associated with the trunk group are referred to as a trunk finder group. A subgroup of trunks comprises the ten trunks served by the same start relay. The first subgroup of trunks appears on the first level of trunk finders 1, 11, 21, and 31, and the second subgroup of trunks appears on the first level of trunk finders 2, 12, 22, 32, etc. The trunk finders on whose first levels the same subgroup of trunks appears are referred to as a subgroup of trunk finders.

5.18 The trunk relays will be provided on an installer-wired basis and located on a relay rack bay apart from the trunk finder frame. Two groups of trunk relays are available, one for trunk loops not exceeding 1935 ohms and the other for loops not exceeding 7000 ohms. The arrangement of the trunk relays is shown on ED-30446-01.

5.19 The trunk relays shall be equipped in multiples of ten circuits. Where the number of trunks in a unit is not a multiple of ten, sufficient additional trunk relays for the unassigned trunks shall be specified to fully equip the mounting plate.

5.20 Where a full group of trunk relays is not required, the trunks shall be assigned in the following order: 00-09, 10-19, 20-29, etc; then 100-109, 110-119, etc.

5.21 Battery serving the trunk relays will also serve the start relays and the battery, ground, and G leads from the trunks to the start relays will be run in switchboard cable.

B. Wiring

Trunk Finder and Converter Finder Frames

5.22 It will not be necessary to provide a wire-connected ground to the trunk or converter finder frame as the cable rack mounted on the frame will provide a satisfactory ground connection.

5.23 Battery and ground feeders are required on the trunk finder frame and converter finder frame, and drop leads shall be attached to the main feeders by means of connectors in the manner shown on the power-feeder cabling plan. The drop leads shall be provided for the full complement of shelves, but on frames partially equipped with shelves the drop leads shall be bent over and sewed along the frame channel uprights using the shelf mounting holes for this purpose.

5.24 Certain of the leads between units, such as the start lead and other leads common to all units, shall be run in switchboard cable. Other miscellaneous leads between adjacent units shall be run in a local frame cable by the installer.

5.25 The cross-connecting information on the trunk finder circuit shows in detail the connection between the various circuits on each shelf and the group circuit.

5.26 A local power cable, as required, shall be run from the DPTS to the alarm pilot lamps and to the incoming shelf terminal strips on each frame. The cable shall be run along the upper angle of the top shelf of the frames and an arm dropped down at the incoming end of each frame. These arms shall contain the alarm, traffic register, and switchman talking line leads. The talking line jack leads are run directly to the jack terminals, but all other leads are terminated on the incoming terminal strip of each trunk finder shelf.

List of A&M Only and Mfr Disc. Equipment

The following equipment has been replaced as indicated. Where A&M Only items appear, the issue numbers shown are those of the issue in which the rating was first applied.

EQUIPMENT	RATING	DETAILS LAST SHOWN IN ISSUE	REPLACING EQUIPMENT
J32004A,	Mfr Disc.	4	J32004AY
J32004A, L1, L2, and L3	Mfr Disc.	2	J32004A, L4, L5, and L6
J32004B	Mfr Disc.	3	—
J32004C	Mfr Disc.	3	—
J32004D	Mfr Disc.	2	J32004V
J32004E	Mfr Disc.	2	J32004X
J32004F	Mfr Disc.	3	—
J32004G	Mfr Disc.	3	—
J32004H	Mfr Disc.	2	J32004W
J32004J	Mfr Disc.	2	J32004Y
J32004K	Mfr Disc.	4	J33019M
J32004L	Mfr Disc.	4	J33019N
J32004M	Mfr Disc.	4	J33013AF
J32004N	Mfr Disc.	2	J32004R
J32004P	Mfr Disc.	2	J32004S
J32004R	Mfr Disc.	3	—
J32004S	Mfr Disc.	3	—
J32004T	Mfr Disc.	3	—
J32004V	Mfr Disc.	3	—
J32004W	Mfr Disc.	3	—
J32004X	Mfr Disc.	3	—
J32004Y	Mfr Disc.	3	—
J32004Z	Mfr Disc.	4	J32004AT
J32004AA	Mfr Disc.	4	J32004AU and J32004AW
J32004AB	Mfr Disc.	4	—
J32004AC	Mfr Disc.	4	—
J32004AD	Mfr Disc.	4	J32004AM
J32004AE	Mfr Disc.	4	J32004AN
J32004AF	Mfr Disc.	4	J33019G
J32004AG	Mfr Disc.	4	J33019H
J32004AH	Mfr Disc.	4	J33019F
J32004AJ	Mfr Disc.	3	J32004AK
J32004AK	Mfr Disc.	4	J33019A
J32004AL	Mfr Disc.	4	J33013AG
J32004AM	Mfr Disc.	4	J33019E
J32004AN	Mfr Disc.	4	—
J32004AP	Mfr Disc.	4	J33019B

EQUIPMENT	RATING	DETAILS LAST SHOWN IN ISSUE	REPLACING EQUIPMENT
J32004AR	Mfr Disc.	6	—
J32004AR, L1	Mfr Disc.	5	J32004AZ, L1
J32004AR, L3	Mfr Disc.	5	J32004AZ, L2
J32004AS	Mfr Disc.	6	J32004BA
J32004AT	Mfr Disc.	4	J33019C
J32004AU	Mfr Disc.	4	J33019D
J32004AW	Mfr Disc.	4	—
J32004AY	A&M Only	6	—
J32004AY L1, L2, L4, and L5	Mfr Disc.	6	J32004AY, L6, L7, L8, and L9
J32004AZ	Mfr Disc.	6	J32004BB
J32004BA, L4	Mfr Disc.	7	—
J32004BD, L6	Mfr Disc.	9	—
L7	Mfr Disc.	9	—

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