

AUTOMATIC OUTGOING INTERTOLL TRUNK TEST AND CONNECTOR FRAMES
AUTOMATIC TRANSMISSION TEST AND CONTROL FRAMES
TELETYPEWRITER FRAME
FLOOR MODEL 28-TYPE TELETYPEWRITER
EQUIPMENT DESIGN REQUIREMENTS

**NO. 4 TYPE TOLL SWITCHING SYSTEMS, CROSSBAR TANDEM SWITCHING
SYSTEM, AND NO. 1 CROSSBAR SWITCHING SYSTEM**

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 engineering, manufacture, and installation of the automatic outgoing intertoll trunk test frame, the automatic outgoing intertoll trunk test connector frame, the automatic transmission test and control frame, and the teletypewriter frame.

1.02 This specification is reissued:

(a) To add No. 4A and No. 4M toll options associated with the false stop-dial signal detector feature per SD-68404-01, Issue 32AC. Added to J67447AM are lists 2 and 3 and to J67447A are lists 51 and 52.

(b) To add the multiple access feature per SD-68404-01, Issue 33B. The following lists are added; J67447A, L48, L49, L50; J67447B, L2; J67447H, L4, L5, L6; J67447J, L4-9; J67447K, L2-6; J67447AR, L1.

(c) To add the repeat test feature per SD-68404-01, Issue 35B. Added to J67447AM is list 4 and to J67447A is list 53.

(d) To add equipment requirements per SD-68446-01, Issue 15B and SD-68404-01, Issue 33B which rates J67447A, B, C, E, G, H, J, K, L, M, N, P, R, AH, AM, and AN A&M

Only for the No. 4A and 4M Toll Switching Systems.

(e) To specify that the 28-type teletypewriters use a pallet per TELETYPE® Part No. TP157671 in the type box for a "plus" indication in the printout per SD-68456-01, Issue 18B.

(f) To add J67447AD, List 3, J67447AE, List 2, and J67447AL, List 2 which provides the teletypewriter feature for the ITT frame in the No. 1 Crossbar System per SD-68456-01, Issue 18B.

(g) To add reference of the No. 1 Crossbar System to this specification.

CAPACITY

1.03 The capacities of the frames and units are as follows:

Automatic outgoing inter-toll trunk test frame	20,000 trunks
Automatic outgoing inter-toll trunk test connector frame	5 connector units
Automatic outgoing inter-toll trunk test connector unit	200 trunks

DESCRIPTION

1.04 The automatic outgoing intertoll trunk test frame is used to make operational circuit tests on outgoing intertoll trunks and the outward path of 2-way intertoll trunks to other toll offices. The tests are made through the regular switching train and are performed manually or automatically depending on whether or not the trunks can be terminated in an intertoll trunk test line at the far end.

1.05 The automatic outgoing intertoll trunk test circuit appears on the incoming link frame in a manner similar to an incoming trunk and, by means of a test connector, will direct a marker to establish a connection through the incoming and outgoing links to the trunk to be tested. A trunk selected for test has its marker sleeve MS lead and select magnet SM lead cut through by the test connector to the test circuit. After it has been determined that the trunk is idle, the test circuit makes it busy and, by means of a code passed to the common control equipment, directs the marker to test on the particular trunk block terminals associated with the test circuit. The SM lead of the outgoing trunk to be tested is presented to the marker which also has available the SMC or SMI lead of the test circuit appearance on the incoming link frame. With both select magnet leads available, the marker proceeds to select a path through the incoming and outgoing link frames and connects the test circuit to the outgoing trunk to be tested. When the connection is established, the marker will release and the test circuit pulses will forward the 103 test line code to reach a test line termination at the distant office. The test circuit will then proceed to test the remaining operating functions of the trunk.

1.06 During automatic testing, the test circuit after testing a trunk is connected to the next trunk and so on until a trunk is encountered which will stop the test circuit and bring in an alarm or until all the trunks have been tested. When a teletypewriter is provided, a printed record may be made of certain minor troubles and the test frame allowed to advance to the next trunk. When desired, a particular trunk may be selected for test and tested repeatedly as many times as necessary to locate the trouble.

1.07 The automatic outgoing intertoll trunk test frame is a single-bay steel structure 11 feet

6 inches high and 2 feet 8-1/8 inches wide arranged to mount 2- by 30-1/2 inch mounting plates. (See Fig. 1.) The relay equipment is mounted under front casings and covered in the rear by flat removable covers. A writing shelf is so located that it will be at the same height as the keyshelf of an adjacent 17C toll testboard bay; the test frame is placed in the lineup so that the jack field will be flush with the 17C toll testboard jack field.

1.08 The automatic transmission test and control frame is a supplementary frame which is supplied with the automatic outgoing intertoll trunk test frame in toll offices and the incoming automatic trunk test frame in crossbar tandem offices, to perform 2-way transmission and noise tests on intertoll trunks. These tests are made by means of a 104 test line code pulsed out via the automatic outgoing intertoll trunk test frame in toll offices or via the incoming automatic trunk test frame in crossbar tandem offices after the latter has completed most of its operational tests.

1.09 Each idle trunk is automatically tested, in turn, until a trunk is encountered whose transmission deviation or noise limit exceeds a specified value. This will stop the test circuit, thereby allowing a printed record to be made by the teletypewriter showing the necessary information. The test circuit will then advance to the next trunk without the trouble alarm being sounded.

1.10 The test frame may be set so that the teletypewriter will print a record of all measurements or only those exceeding a selected deviation limit in one or both directions of transmission, and/or record of intertoll trunks which are noisy at either or both ends.

1.11 When the ATTC frame is required in toll offices, it accommodates a teletypewriter and a group of resettable counters to indicate and record transmission values.

1.12 In crossbar tandem offices, the ATTC frame is similar to the toll office (ATTC) frame except that the teletypewriter is omitted and additional units are mounted in the space made available.

1.13 The automatic transmission test and control frame for toll offices (Fig. 3) and for crossbar tandem offices (Fig. 4) is an 11-foot 6-inch single-bay bulb angle frame 2-feet 0-5/8 inch wide, arranged

to mount standard 2- by 23-inch mounting plates. The relay equipment is mounted under front casings and covered in the rear with flat removable covers. The frame has two amplifier units, a rectifier unit, and a battery shelf mounted near the top of the frame.

1.14 The 115-volt power outlets are brought into the frame to supply power to the teletypewriter, amplifiers, and rectifiers.

1.15 In toll offices, the teletypewriter frame is a supplementary frame used in conjunction with the AOIT test frame in place of the ATTC frame where automatic operational testing is desired without the transmission and noise testing features. A similar arrangement is used in crossbar tandem offices except that an ITT frame is used instead of an AOIT frame and the TTY control units are located on the teletypewriter frame.

1.16 A TTY frame or a 28-type floor model is required for crossbar tandem offices when the ITT frame is used in conjunction with an ATTC frame. The TTY frame accommodates a teletypewriter and a second group of resettable counters when required.

1.17 In No. 1 crossbar offices teletypewriter operation is available for use with the ITT frame. This is provided by the addition of a TTY frame (J67447AF, L1) or a floor model 28-type teletypewriter and three relay rack mounted units that occupy the space of eight 2- by 23-inch mounting plates.

1.18 The teletypewriter frame is an 11-foot 6-inch high and 2-foot 0-5/8 inch wide single bay frame arranged to mount a 28-type table model teletypewriter, which includes its distributor, as shown in Fig. 3. A 115-volt power outlet is brought into the frame to supply power to the teletypewriter.

1.19 The automatic outgoing intertoll trunk test connector frame is a steel structure 11 feet 6 inches high and 1 foot 10-1/8 inches wide arranged to mount 2- by 20-1/2 inch mounting plates as

shown in Fig. 2. Five connector units, each consisting of a mounting plate, a crossbar switch, and two terminal strips, mount on the frame with a miscellaneous jack and test post panel.

1.20 The various relay units on both test frames and the connector unit on the connector frame are surface-wired units interconnected by means of frame local cables terminated on terminal strips near the top of the frames.

1.21 Each connector unit is arranged for a maximum of 80 trunk classes. The frame is equipped for a total of 80 classes, but the wiring and terminal strips provided may be adapted to more if necessary.

FLOOR PLAN ARRANGEMENTS

1.22 The preferred location of the automatic outgoing intertoll trunk test frame is adjacent to the automatic transmission test and control frame or teletypewriter frame and at the nongrowing end of the 17C toll testboard.

1.23 The preferred location of the automatic outgoing intertoll trunk test connector frame is near the assignment distributing frame.

1.24 The preferred location of the automatic transmission test and control frame or teletypewriter frame is adjacent to the automatic outgoing intertoll trunk test frame on the side away from the 17C toll testboard.

1.25 The preferred location of a second set of AOIT and ATTC frames is adjacent to the first set of test frames. (See 5.13.)

1.26 In crossbar tandem offices, the preferred location of the automatic transmission test and control frame is adjacent to the incoming trunk test frame and the teletypewriter frame adjacent to the automatic transmission test and control frame.

1.27 In No. 1 crossbar offices the preferred location of the teletypewriter frame, when required, is near the ITT frame. (See 5.24.)

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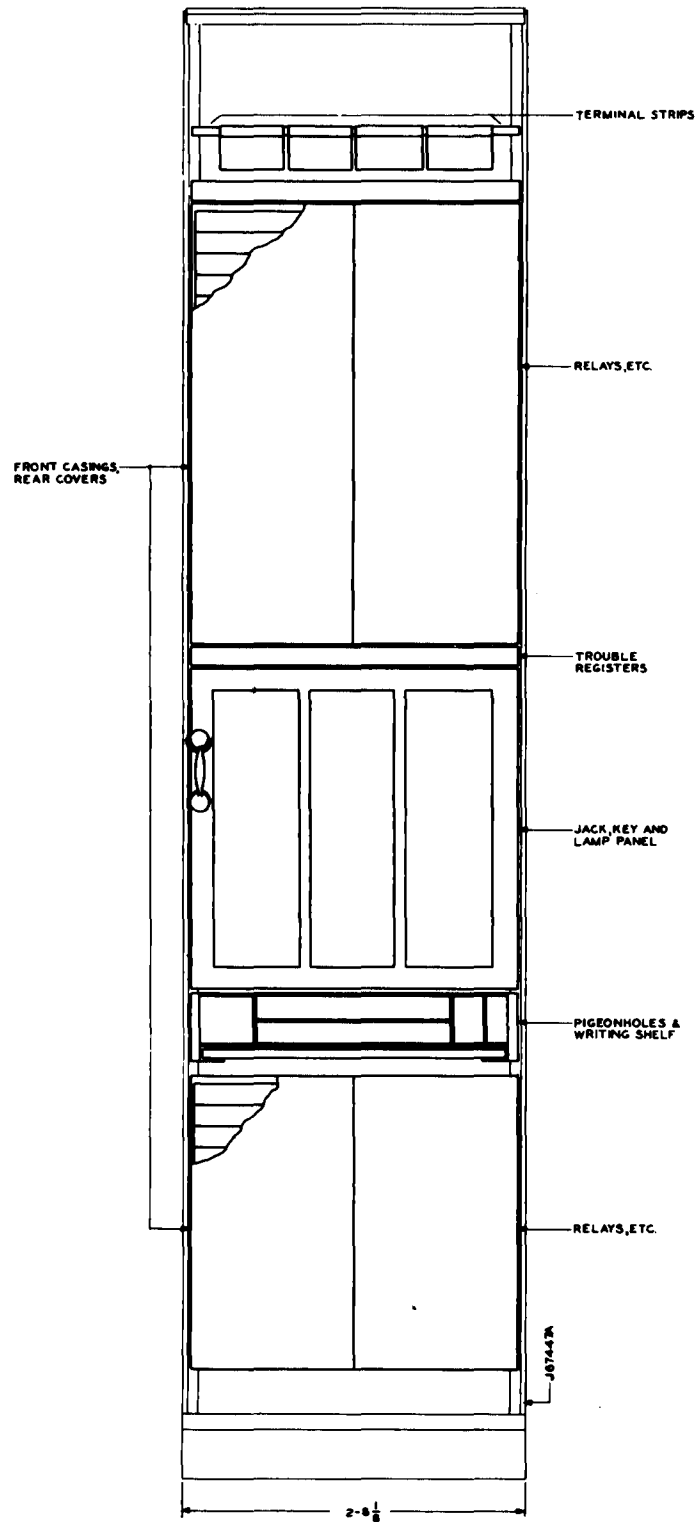


Fig. 1—Automatic Intertoll Trunk Test Frame

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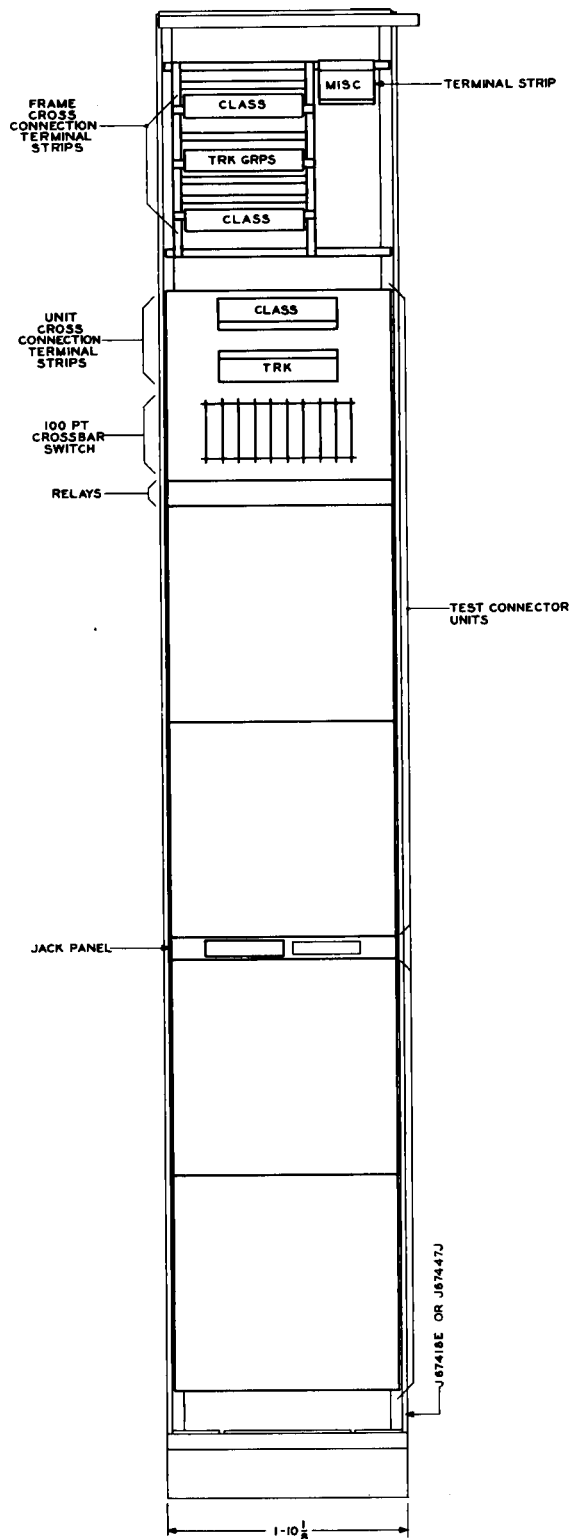


Fig. 2—Outgoing Toll Connecting and Intertoll Trunk Test Connector Frames

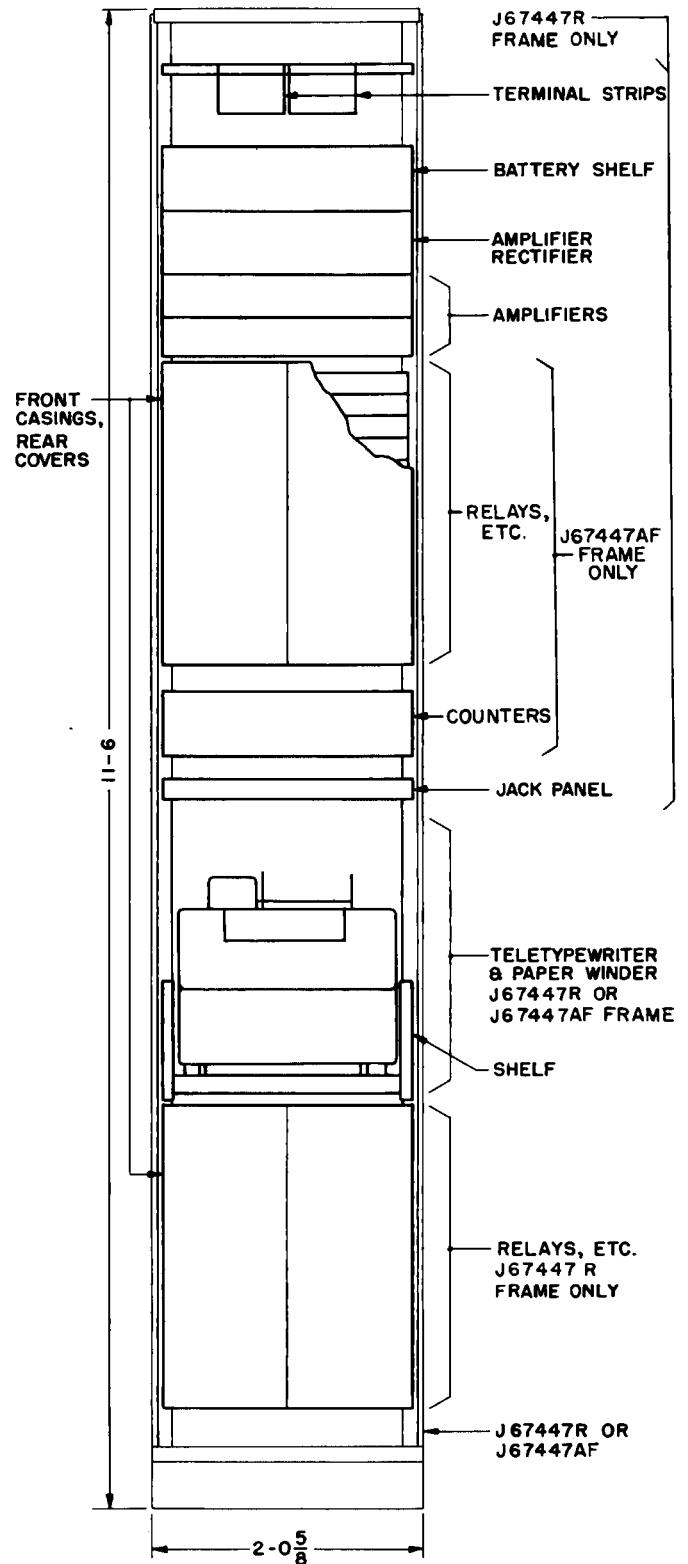


Fig. 3—Automatic Transmission Test & Control Frame or Teletypewriter Frame

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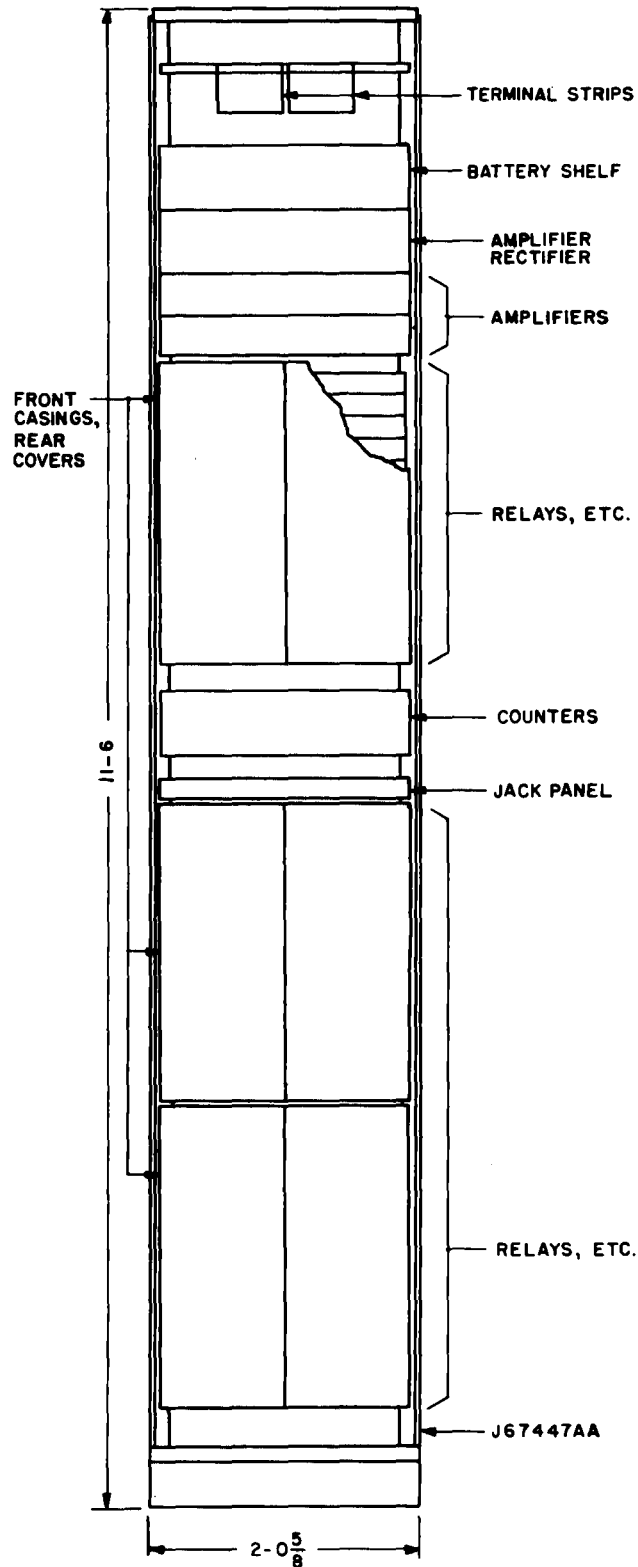


Fig. 4—Crossbar Tandem Automatic Transmission Test and Control Frame

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SUBDIVISIONS OF EQUIPMENT AND DETAILED INDEX

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

EQUIPMENT CODE	RATING OF UNIT	TITLE	EQUIPMENT DRAWING	CIRCUIT DRAWING
J67447A	A&M Only	Automatic Outgoing Intertoll Trunk Test Frame	J67447A-()	SD-68404-01
J67447B	A&M Only	Connector Control Unit	J67447B-()	SD-68404-01
J67447C	A&M Only	Busy Test and Trouble Timing Unit	J67447C-()	SD-68404-01
J67447D	A&M Only	Test and Outpulse Control Unit for No. 4M	J67447D-()	SD-68404-01
J67447E	A&M Only	Test and Outpulse Control Unit for No. 4A	J67447E-()	SD-68404-01
J67447G	A&M Only	Pulse Generator and Timing Control Unit	J67447G-()	SD-68404-01
J67447H	A&M Only	Class and Code Selection Unit	J67447H-()	SD-68404-01
J67447J	A&M Only	Automatic Outgoing Intertoll Trunk Test Connector Frame	J67447J-()	SD-68404-01
J67447K	A&M Only	Automatic Outgoing Intertoll Trunk Test Connector Unit	J67447K-()	SD-68404-01
J67447L	A&M Only	Ringling and Supervision Test Circuit	J67447L-()	SD-68404-01
J67447M	A&M Only	Teletypewriter Control Unit	J67447M-()	SD-68456-01
J67447N	A&M Only	Transmission Class Unit	J67447N-()	SD-68446-01
J67557P	A&M Only	Transmission Computer Unit	J67477P-()	SD-68446-01
J67447R	A&M Only	Automatic Transmission Test and Control Frame for No. 4A or 4M Toll Offices	J67447R-()	SD-68446-01
J67447S	AT&TCo Std	Transmission Path Switching Unit For No. 4A or 4M Toll and Crossbar Tandem Offices	J67447S-()	SD-68446-01
J67447T	AT&TCo Std	Control Unit for No. 4A or 4M Toll and Crossbar Tandem Offices	J67447T-()	SD-68446-01
J67447U	AT&TCo Std	Pulse Generator Unit for No. 4A or 4M Toll and Crossbar Tandem Offices	J67447U-()	SD-68446-01
J67447V	AT&TCo Std	Measuring and Check Pad Unit for No. 4A or 4M Toll and Crossbar Tandem Offices	J67447V-()	SD-68446-01

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EQUIPMENT CODE	RATING OF UNIT	TITLE	EQUIPMENT DRAWING	CIRCUIT DRAWING
J67447X	AT&TCo Std	Deviation Totalizer Unit for No. 4A or 4M Toll and Crossbar Tandem Offices	J67447X-()	SD-68446-01
J67447AA	AT&TCo Std	Automatic Transmission Test and Control Frame for Crossbar Tandem Offices	J67447AA-()	SD-68446-01
J67447AB	AT&TCo Std	Transmission Class Unit for Crossbar Tandem Offices	J67447AB-()	SD-68446-01
J67447AC	AT&TCo Std	Transmission Computer Unit for Crossbar Tandem Offices	J67447AC-()	SD-68446-01
J67447AD	AT&TCo Std	Teletypewriter Selector Unit — Crossbar Tandem Offices and No. 1 Crossbar Office	J67447AD-()	SD-68456-01
J67447AE	AT&TCo Std	Code Relay Unit — Crossbar Tandem Offices and No. 1 Crossbar Offices	J67447AE-()	SD-68456-01
J67447AF	AT&TCo Std	Teletypewriter Frame for No. 4A or 4M Toll and Crossbar Tandem Offices and No. 1 Crossbar Offices	J67447AF-()	SD-68456-01
J67447AG	AT&TCo Std	Deviation Counter Unit for No. 4A or 4M and Crossbar Tandem Offices	J67447AG-()	SD-68446-01
J67447AH	A&M Only	Supplementary Transmission Class Unit for No. 4A or 4M Toll Offices	J67447AH-()	SD-68446-01
J67447AJ	AT&TCo Std	Supplementary Transmission Class Unit — Crossbar Tandem	J67447AJ-()	SD-68446-01
J67447AL	AT&TCo Std	Supplementary Code Relay and Identity Digit Unit for Crossbar Tandem Offices and No. 1 Crossbar Offices	J67447AL-()	SD-68456-01
J67447AM	A&M Only	False-Stop Detector and Go Timing Unit for No. 4A or 4M Toll Offices	J67447AM-()	SD-68404-01
J67447AN	A&M Only	Class Matrix Cross-Connection Unit for No. 4A or 4M Toll Offices	J67447AN-()	SD-68404-01
J67447AP	AT&TCo Std	Deviation Selector Unit for Crossbar Tandem and No. 4A or 4M Toll Offices	J67447AP-()	SD-68446-01
J67447AR	A&M Only	Master Cut-In Relay Unit for No. 4A or 4M Toll Offices	J67447AR-()	SD-68404-01

Circuit Schematic Index

CIRCUIT DRAWING	J67447 EQUIP CODE
SD-68404-01	A,B,C,D,E,G,H,J,K,L,AM,AN,AR
SD-68446-01	N,P,R,S,T,U,V,X,AA,AB, AC,AG,AH,AJ,AP
SD-68456-01	M,AD,AE,AF,AL

2. SUPPLEMENTARY INFORMATION

817-000-000—Crossbar Tandem System Index
818-000-000—No. 4 Type Toll Switching Systems Index
AA612.019—Gen Equip. Req—Wiring and Cabling
AA613.009—Gen Equip. Req—Numbering and Lettering
AA614.020—Gen Equip. Req—Auxiliary Framing
801-225-181—Gen Equip. Req—Performance Req for Amplifiers, Amplifier Rectifiers and Weighting Networks—For Testing and Maintenance
J25551—817-060-150, 818-080-150—End Guards, Aisle Pilot Lamps and DPTS Supports, and Fuse Record Book and Holder
J29253—817-010-100—General Outline—Crossbar Tandem system
J69202—818-005-150—General No. 4A Toll Switching System
J95501—AA388.025—Frame Lighting and Appliance Outlets
Floor Plan Data

Section 9.3—Crossbar Tandem and No. 1 Crossbar

Sheet 31

Sheet 32

Section 10.3—Toll Systems

Sheet 19

Sheet 20

Sheet 24

Sheet 25

3. DRAWINGS

For additional drawings forming a part of this specification, see listings under Subdivision of Equipment and Detailed Index.

ED-68243-01—Designation Cards
ED-68680-10—Automatic Outgoing Intertoll Trunk Test Frame and Automatic Transmission Test & Control Frame—Switchboard Cabling—No. 4A or 4M Toll
ED-68680-12—Automatic Transmission Test and Control Frame and Teletypewriter Frame—Crossbar Tandem
ED-68689-10—Automatic Outgoing Intertoll Trunk Test Connector Frame—Switchboard Cabling—No. 4A or 4M
SD-25435-01—Crossbar Tandem
SD-68400-01—No. 4A Toll Switching System
SD-68470-01—No. 4M Toll Switching System

4. EQUIPMENT

J67447A—A&M Only—Automatic Outgoing Intertoll Trunk Test Frame

Equipment—J67447A-()

List 1—Framework, assembly, wiring, and equipment for one automatic outgoing intertoll trunk test frame.

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	WIRE	EQUIP	NOTES		WIRE	EQUIP	NOTES
Automatic Outgoing Intertoll Trunk Test Ckt, SD-68404-01:				Audible Relay, Fig. 4, With R Wiring	1	1	A
Connector Control, Fig. 2, less X, VE & VF App	1	1	A	Audible Signaling, Fig. 5, With M App	1	1	
Fig. K and V	1	1		Audible and Visual Key, Fig. 10	1	1	
Lead Control Check, Fig. G, H, or U	1	0	A,D	Audible and Visual Relay, Fig. 11, With R Wiring	1	1	A
Busy Test and Timing, Fig. 3 and WN App, Less X and ZY App	1	1	A	Transmission Measuring Ckt, SD-95900-01:			
Test and Pulsing Control, Fig. 4, S, & D or E, Less Y & Z App	1	1	A	Control Ckt, Fig. 15	1	1	
Ringing and Supervision Testing, Fig. 5 and WN App, Less T App	1	1	A	Receiving Jack Ckt, Fig. 4	1	1	
Keyset, Fig. 6	1	1		Misc. Ckt,			
Pulsing Generator, Fig. 7	1	1	A	SD-68426-01:			
Counting and Timing, Fig. 8	1	1	A	4W Test Line, Fig. 1	1	1	
Telephone, Fig. 9 & M	1	1	A	Test Battery, Fig. 2	1	1	
Key and Lamp Ckt, Fig. 10 & 11	1	1	B	Spare Jack, Fig. 3	1	1	
Class Relay, Fig. 12, Less WV App	1	1	A	Connector Control Unit, J67447B,L1		1	
No-Ring Class Relay, Fig. 13	1	0	A	Busy Test and Timing Unit, J67447C,L1		1	
Code Selector, Fig. 14	1	1	A	Pulsing Generator and Timing Control Unit, J67447G,L1		1	
Frame Line Connector, Fig. 15	2	2	C	Class and Code Selector Unit J67447H,L1		1	
Trunk Number Identification, Fig. 16	1	1	A	Ringing and Supervision Test Unit, J67447L,L1		1	
Transmission Test Check, Fig. 17	1	1	A	False Stop Detector and Go Timing Unit, J67447AM,L1		1	
Outgoing Intertoll Trunk (OIH type) in Same Building, Fig. 18	1	0	A				
Outgoing Toll Tandem Trunk (OTB type), 2-Second Timed Ring, Fig. 19	1	0	A				
Dial Detector & Go Timing, Fig. 20	1	1	A				
Connector Control For Joint Access, Fig. 21	1	0	A				
Test Frame Cut-In, Fig. 22	1	0	A				
Test Line Test Check, Fig. 27	1	0					
Short Period Timer For Multiple Access, Fig. 29	1	0	A				
Auxiliary Signaling and Night Alarm Ckt, SD-55039-01:							
Audible Key, Fig. 3	1	1					

List 2—Equipment required in addition to list 1 in offices with both intertoll and toll completing markers.

WIRE EQUIP NOTES

Automatic Outgoing Intertoll Trunk Test Ckt, SD-68404-01:			
Connector Control, Fig. 2, X App Only		1	A
Busy Test and Timing, Fig. 3, X App Only		1	A
Busy Test and Timing Unit, J67447C,L2		1	

List 4—Equipment required in addition to list 1 for No. 4A offices.

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	WIRE	EQUIP	NOTES
Automatic Outgoing Intertoll Trunk Test Ckt, SD-68404-01:			
Test and Pulsing Control, Fig. 4, Y App Only		1	A
Test and Outpulse Control Unit, J67447E,L1		1	

List 12—Wiring and equipment required in addition to lists 1 and 18 when automatic transmission test and control is provided.

	WIRE	EQUIP	NOTES
Automatic Outgoing Intertoll Trunk Test Ckt, SD-68404-01:			
Ringing and Supervision Test, Fig. 5, T App Only		1	A
Automatic Transmission Test and Control Ckt, SD-68446-01:			
Class, Fig. 1, With ZD Option, Less E Apparatus	1	1	A
Transmission Computer, Fig. 2, With ZA and ZI			
Wiring	1	1	A
Lamps, Fig. 8	1	1	A
First Deviation Totalizer, Fig. 11, ZI Option (Switch Only)	1	1	A
Transmission Class Unit, J67447N,L1		1	
Transmission Computer Unit, J67447P,L1		1	

List 14—Equipment required in addition to list 1 when there are trunks to be tested which do not have rering feature at the distant end.

	WIRE	EQUIP	NOTES
Automatic Outgoing Intertoll Trunk Test Ckt, SD-68404-01:			
No-Ring Class Relay, Fig. 13		1	A
Class and Code Selector Unit, J67447H,L2		1	

List 15—Equipment per SD-95900-01, Fig. 48, and G apparatus, required in addition to list 1 when the projection-type meter is not accessible.

List 18—Wiring and equipment required in addition to list 1 when a teletypewriter printer is provided.

	WIRE	EQUIP	NOTES
Automatic Outgoing Intertoll Trunk Test Ckt, SD-68404-01:			
Busy Test and Timing, Fig. 3, ZY App Only		1	A
Teletypewriter Control Ckt, SD-68456-01:			
Distributor Control, Fig. 1	1	0	A
Walking Relay, Fig. 2	1	0	A
Code Relay, Fig. 3	1	1	A
Cut-On Relay, Fig. 5	1	0	A
Trouble Indication, Fig. 6	1	0	A
Teletypewriter Control Unit, J67447M, L1		1	

List 19—A&M Only—Equipment per J67447D, List 2 required in addition to list 3 in No. 4M offices with split A pads.

List 20—Equipment per J67447E, List 2 required in addition to list 4 in No. 4A offices with split A pads.

List 21—A&M Only—Equipment per J67447C, List 5 required in addition to list 1 in 2-train No. 4A, in combined operation No. 4M offices, and No. 4A combined train offices.

List 22—A&M Only—Equipment required in addition to list 1 in No. 4M offices.

	WIRE	EQUIP	NOTES
Automatic Outgoing Intertoll Trunk Test Ckt, SD-68404-01:			
Test and Pulsing Control, Fig. 4, Z App Only		1	A
Test and Outpulse Control Unit, J67447D, L1		1	

List 23—A&M Only—Equipment per J67447D, List 3 required in addition to list 22 for use in single. A pad offices where A pad equals 4dB.

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List 24—A&M Only—Equipment per J67447D, List 4 required in addition to list 22 for use in single A pad offices where A pad equals 5 dB.

List 25—A&M Only—Equipment per J67447D, List 5 required in addition to list 22 for use in single A pad offices where A pad equals 6 dB.

List 26—A&M Only—Equipment per J67447D, List 6 required in addition to list 22 for use in single A pad offices where A pad equals 7 dB.

List 27—Equipment per J67447E, List 3 required in addition to list 4 for use in single A pad offices where A pad equals 4 dB.

List 28—Equipment per J67447E, List 4 required in addition to list 4 for use in single A pad offices where A pad equals 5 dB.

List 29—Equipment per J67447E, List 5 required in addition to list 4 for use in single A pad offices where A pad equals 6 dB.

List 30—Equipment per J67447E, List 6 required in addition to list 4 for use in single A pad offices where A pad equals 7 dB.

List 35—A&M Only—Equipment per J67447D, List 9 required in addition to list 22 for use in single A pad offices where A pad equals 8 dB.

List 36—Equipment per J67447E, List 9 required in addition to list 4 for use in single A pad offices where A pad equals 8 dB.

List 37—Wiring and equipment required in addition to list 12 when supplementary class relays and lamps 2.4 to 3.6 dB are provided.

	WIRE	EQUIP	NOTES
Automatic Transmission Test and Control Ckt, SD-68446-01: Suppl Class, Fig. 1, E Apparatus Only	1	1	A
Supplementary Transmission Class Unit, J67447AH List 1		1	

List 38—A&M Only—Equipment per J67447D, List 10, required in addition to list 1 in offices where OIH type trunks are to be tested.

	WIRE	EQUIP	NOTES
Automatic Outgoing Intertoll Test Ckt, SD-68404-01: OIH Trunks in Same Building, Fig. 18		1	A
Test & Outpulse Control Unit, J67447D, L10		1	

List 39—A&M Only—Equipment required in addition to list 1 where OTB type trunks are to be tested.

	WIRE	EQUIP	NOTES
Test & Outpulse Control Unit, J67447D, L11		1	

List 40—Equipment required in addition to list 1 where OIH trunks are to be tested.

	WIRE	EQUIP	NOTES
Automatic Outgoing Intertoll Trunk Test Ckt, SD-68404-01: OIH Trunks in Same Bldg, Fig. 18		A	A
Test & Outpulse Control Unit, J67447E, L10		1	

List 41—Equipment required in addition to list 1 where OTB type trunks are to be tested.

	WIRE	EQUIP	NOTES
Test & Outpulse Control Unit, J67447E, L11		1	

List 44—Equipment required in addition to list 1 for No. 4A offices.

	WIRE	EQUIP	NOTES
False-Stop Detector & Go Timing Unit, J67447AM, L2		1	

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List 45—A&M Only—Equipment required in addition to list 1 for No. 4M offices.

	WIRE	EQUIP	NOTES
False-Stop Detector & Go Timing Unit, J67447AM, L3		1	

List 46—Equipment required in addition to list 18 when additional trouble codes and identity digit are required.

	WIRE	EQUIP	NOTES
Teletypewriter Control Unit, J67447M, L2		1	

List 48—Equipment required in addition to list 1 for joint or multiple access operation.

	WIRE	EQUIP	NOTES
Automatic Outgoing Inter-toll Test Ckt, SD-68404-01:			
Connector Control for Joint or Multiple Access, Fig. 21		1	A
Test Frame Cut-In Fig. 22, Less VE & VF App Class and Code Selector Unit, J67447H, L4		1	A

List 49—Equipment required in addition to list 48 when joint access operation for two AOIT frames is required.

	WIRE	EQUIP	NOTES
Class and Code Selection Unit, J67447H, L5		1	

List 50—Equipment required in addition to list 48 for multiple access operations:

	WIRE	EQUIP	NOTES
AOIT Ckt, SD-68404-01:			
Test Frame Cut-In, Fig. 22, VE or VF App		1	
Short Period Timer, Fig. 29		1	
Connector Control Unit, J67447B, L2		1	
Class and Code Selector Unit, J67447H, L6		1	

List 51—A&M Only—Equipment required in addition to list 1 for the test line test check feature in No. 4M Offices.

	WIRE	EQUIP	NOTES
Test & Outpulse Control Unit, J67447D, L12		1	

List 52—Equipment required in addition to list 1 for the test line test check feature in No. 4A offices.

	WIRE	EQUIP	NOTES
Test & Outpulse Control Unit, J67447E, L12		1	

List 53—Equipment required in addition to list 50 for the repeat test feature per SD-68404-01, Fig. 21, VZ option (lamp only) and J67447AM, List 4.

Notes

A. The frame local cable for these figures shall include all interunit wiring and all intraunit optional wiring. The equipment for these figures shall include only the jacks, keys, lamps, or other apparatus not mounted on the various surface-wired units.

B. Key and lamp circuits on Fig. 11 shall be cross connected to a 2-way trunk circuit (SD-55348-01) to the toll switching maintenance center, and Fig. 11 shall be cross-connected to an outgoing trunk (SD-95617-01) associated with an incoming

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tandem trunk (SD-68315-01) to the Toll Switching System when the test frame is not adjacent to a 17C toll testboard bay.

- C. The frame line keys shall be cabled to the distributing frame terminating the frame line circuits used for the intertoll trunk and test connector circuits.

D. For Card Translator Equipped Offices:

Connect Fig. G (A&M Only) in No. 4M separate train and No. 4A combined train offices.

Connect Fig. H (A&M Only) in No. 4A combined train offices and No. 4A and 4M separate train combined operation offices. (Apparatus in list 21.)

For Electronic Translator Equipped Offices:

Connect Fig. U in No. 4A combined train offices, No. 4A and 4M separate train combined operation offices, and No. 4M intertoll and toll completing train offices.

J67447B—A&M Only—Connector Control Unit

Equipment—J67447B()

List 1—Assembly, surface wiring, and equipment per SD-68404-01, Fig. K, V, and Fig. 2, less VE and VF options for one connector control unit. (See Note A.)

List 2—Equipment per SD-68404-01, Fig. 2, VE or VF apparatus required in addition to list 1 for multiple access operation.

Note

- A. This list does not include apparatus mounted on the AOIT jack, key, and lamp panel.

J67447C—A&M Only—Busy Test and Trouble Timing Unit

Equipment—J67447C()

List 1—Assembly, surface wiring, and equipment per SD-68404-01, Fig. 3 for one busy test and trouble timing unit. (See Note A.)

List 2—Equipment per SD-68404-01, Fig. 3, X apparatus only, required in addition to list 1 in offices with both intertoll and toll completing markers. (See Note A.)

List 5—Equipment per SD-68404-01, Fig. H required in addition to list 1 in 2-train No. 4A combined operation No. 4M and 4A combined train offices.

Note

- A. This list does not include apparatus mounted on the AOIT jack, key, and lamp panel.

J67447D—A&M Only—Test and Outpulse Control Unit for No. 4M

Equipment—J67447D()

List 1—Assembly, surface wiring, and equipment per SD-68404-01, Fig. 3, D, and S, with Z apparatus, and Fig. 16 for one test and outpulse control unit for use in No. 4M offices. (See Notes A, B, and C.)

List 2—Equipment per SD-68404-01, Fig. 4, R apparatus only, required in addition to list 1 in offices with split A pads.

List 3—Wiring and equipment per SD-68404-01, Fig. Q, with YP apparatus and YN wiring, required in addition to list 1 for use in single A pad offices where A pad equals 4 dB and where S pad equals 2 dB.

List 4—Wiring and equipment per SD-68404-01, Fig. Q, with YQ apparatus and YN wiring, required in addition to list 1 for use in single A pad offices where A pad equals 5 dB and where S pad equals 2 dB.

List 5—Wiring and equipment per SD-68404-01, Fig. Q, with YR apparatus and YN wiring, required in addition to list 1 for use in single A pad offices where A pad equals 6 dB and where S pad equals 2 dB.

List 6—Wiring and equipment per SD-68404-01, Fig. Q, with YS apparatus and YN wiring, required in addition to list 1 for use in single A pad offices where A pad equals 7 dB and where S pad equals 2 dB.

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List 9—Wiring and equipment per SD-68404-01, Fig. Q, with XK apparatus and XN wiring, required in addition to list 1 for use in single A pad offices where A pad equals 8 dB and where S pad equals 2 dB.

List 10—Equipment per SD-68404-01, Fig. 18 required in addition to list 1 when OIH trunks are to be tested. (See Note C.)

List 11—Equipment per SD-68404-01, Fig. 19 required in addition to list 1 when OTB type trunks are to be tested.

List 12—Equipment per SD-68404-01, Fig. 27, required in addition to list 1 for the test line test check feature.

Notes

- A. Provide Fig. P, add YM wiring, per SD-68404-01, Fig. 4 in offices equipped with split A pads and in offices equipped with single A pads where the S pad equals 4 dB.
- B. Provide XA to XH, and XJ option strapping as required in accordance with SD-68404-01, Note 115.
- C. This list does not include apparatus mounted on th AOIT jack, key, and lamp panel.

J67447E—A&M Only—Test and Outpulse Control Unit for No. 4A

Equipment—J67447E-()

List 1—Assembly, surface wiring, and equipment per SD-68404-01, Fig. 4, E, and S, with Y apparatus, and Fig. 16 for one test and outpulse control unit for use in No. 4A offices. (See Notes A, B, and C.)

List 2—Equipment per SD-68404-01, Fig. 4, R apparatus only, required in addition to list 1 in offices with split A pads.

List 3—Wiring and equipment per SD-68404-01, Fig. Q, with YP apparatus and YN wiring, required in addition to list 1 for use in single A pad offices where A pad equals 4 dB and where S pad equals 2 dB.

List 4—Wiring and equipment per SD-68404-01, Fig. Q, with YQ apparatus and YN wiring, required in addition to list 1 for use in single A pad offices where A pad equals 5 dB and where S pad equals 2 dB.

List 5—Wiring and equipment per SD-68404-01, Fig. Q, with YR apparatus and YN wiring, required in addition to list 1 for use in single A pad offices where A pad equals 6 dB and where S pad equals 2 dB.

List 6—Wiring and equipment per SD-68404-01, Fig. Q, with YS apparatus and YN wiring, required in addition to list 1 for use in single A pad offices where A pad equals 7 dB and where S pad equals 2 dB.

List 9—Wiring and equipment per SD-68404-01, Fig. Q, with XK apparatus and YN wiring, required in addition to list 1 for use in single A pad offices where A pad equals 8 dB and where S pad equals 2 dB.

List 10—Equipment per SD-68404-01, Fig. 18 required in addition to list 1 when OIH trunks are to be tested. (See Note C.)

List 11—Equipment per SD-68404-01, Fig. 19 and VA option required in addition to list 1 when OTB type trunks are to be tested.

List 12—Equipment per SD-68404-01, Fig. 27, required in addition to list 1 for the test line test check feature.

Notes

- A. Provide Fig. P and YM wiring per SD-68404-01, Fig. 4, in offices equipped with split A pads and in offices equipped with single A pads where the S pad equals 4 dB.
- B. Provide XA to XH, and XJ option strapping as required in accordance with SD-68404-01, Note 115.
- C. This list does not include apparatus mounted on the AOIT jack, key, and lamp panel.

J67447G—A&M Only—Pulse Generator and Timing Control Unit

Equipment—J67447G-()

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List 1—Assembly, surface wiring, and equipment per SD-68404-01, Fig. 7 and 8 for one pulse generator and timing control unit. (See Note A.)

Note

A. This list does not include apparatus mounted on the AOIT jack, key, and lamp panel.

J67447H—A&M Only—Class and Code Selection unit

Equipment—J67447H

List 1—Assembly, surface wiring, and equipment for one class and code selection unit.

	WIRE	EQUIP	NOTES
Auxiliary Signaling and NA Ckt, SD-55039-01:			
Audible Relay, Fig. 4	1	1	
Audible and Visual Relay, Fig. 11	1	1	
Automatic Outgoing Intertoll Trunk Test Ckt, SD-68404-01:			
Telephone Ckt, Fig. 9 & M	1	1	A
Class Relay, Fig. 12, less WV app	1	1	A
Code Selector, Fig. 14	1	1	A
Transmission Test Check, Fig. 17	1	1	A
Connector Control for Joint Access, Fig. 21	1	0	

List 2—Equipment per SD-68404-01, Fig. 13, required in addition to list 1 for testing trunks without rering feature at the distant end. (See Note A.)

List 4—Equipment per SD-68404-01, Fig. 21, less VD, VE, and VF options required in addition to list 1 for joint or multiple access operation.

List 5—Equipment per SD-68404-01, Fig. 12, WV apparatus and Fig. 21, VD apparatus required in addition to list 4 for joint access operation.

List 6—Equipment per SD-68404-01, Fig. 21, VE

or VF apparatus required in addition to list 1 for multiple access operation.

Note

A. This list does not include apparatus mounted on the AOIT jack, key, and lamp panel.

J67447J—A&M Only—Automatic Outgoing Intertoll Trunk Test Connector Frame

Equipment—J67477J-()

List 1—Framework, assembly, wiring, and equipment for one automatic outgoing intertoll trunk test connector frame.

	WIRE	EQUIP	NOTES
Automatic Outgoing Intertoll Trunk Test Ckt, SD-68404-01:			
Trunk Connector, Fig. 1, and Fig. 28	5	0	A
Group Preference, Fig. A, B, or C, less Fig. 23, 24, or 25	5	0	A
Miscellaneous Ckt, SD-68427-01:			
Frame Line, Fig. 1	1	1	
Test Battery, Fig. 2	1	1	
Spare Jack, Fig. 3	1	1	

List 2—Equipment per J67447K, List 1 required in addition to list 1 for one connector unit for 200 trunks.

List 3—Equipment per J67447AN, List 1 required in addition to list 1 for ten transmission classes of either OIH or OTB trunks or five transmission classes of each.

List 4—Equipment per J67447K, List 2 required in addition to list 1 for joint access operation of two AOIT frames or for multiple access whenever the mate AOIT frame is assigned as the second or third test frame. (See Note 5.14B.)

List 5—Equipment per J67447K, List 3 required in addition to list 1 for single AOIT frame operation, joint access operation, or for

the multiple access feature when the first AOIT frame is provided. (See Note 5.14B.)

List 6—Equipment per J67447K, List 4 required in addition to list 1 for multiple access to be used by an ADOIT frame assigned as the first test frame.

List 7—Equipment per J67447K, List 5 required in addition to list 1 and 6 for multiple access to be used by an ADOIT frame when this connection is to be accessed by the second or third test frame.

List 8—Equipment per J67447K, List 6 required in addition to list 1 and 6 for multiple access to be used by an ADOIT frame assigned as a fourth test frame.

List 9—Equipment per J67447AR, List 1 required in addition to list 1 for use on the first test connector frame when multiple access operation is required. (See Note B.)

Notes

- A. The frame local cable for these figures shall include all interunit wiring and all intraunit optional wiring. The equipment is included in a surface-wired unit.
- B. List 9 shall be provided only when the ATTC frame is serving an AOIT frame.

J67477K—A&M Only—Automatic Outgoing Intertoll Trunk Test Connector Unit

Equipment—J67447K-()

List 1—Assembly, surface wiring, and equipment for one automatic outgoing intertoll trunk test connector unit. (See Note A.)

	WIRE	EQUIP	NOTES
Automatic Outgoing Intertoll Trunk Test Ckt, SD-68404-01:			
Outgoing Trunk Connector Fig. 1, less WV, VF, and VO Apparatus	1	0	A
Group Preference Ckt, Fig. A, B, or C, less WV, VF, and VO Apparatus	1	0	
Fig. 28	1	1	

List 2—Equipment per SD-68404-01, Fig. 1, WV or VF apparatus and Fig. A, B, or C, WV or VF apparatus required in addition to list 1 for joint access operation of two AOIT frames or for multiple access whenever the mate AOIT frame is assigned as the second or third test frame. (See Note 5.14B.)

List 3—Equipment per SD-68404-01, Fig. 1, VO apparatus and Fig. A, B, or C, VO apparatus required in addition to list 1 for single AOIT frame operation, joint access operation, or for the multiple access feature when the first AOIT frame is provided. (See Note 5.14B.)

List 4—Equipment per SD-68404-01, Fig. 23 required in addition to list 1 for one group preference relay for multiple access to be used by an ADOIT frame assigned as the first test frame. (See Notes C and 5.14B.)

List 5—Equipment per SD-68404-01, Fig. 24 required in addition to list 1 and 4 for one group preference relay to be used for multiple access by an ADOIT frame when connector is to be accessed by the second or third test frame. (See Notes B and 5.14B.)

List 6—Equipment per SD-68404-01, Fig. 25 required in addition to list 1 and 4 for one group preference relay for multiple access to be used by an ADOIT frame assigned as a fourth test frame. (See Notes D and 5.14B.)

Notes

- A. This list does not include apparatus mounted on the AOIT jack, key, and lamp panel.
- B. The group preference relay provided by list 5 is mounted on the test connector unit mounting plate either in position 5 or 6 and stamped GPB or GPC depending on the associated ADOIT frame position. (See Note 5.14B.)
- C. The group preference relay provided by list 4 is mounted on the test connector unit mounting plate in position 10 and is stamped GPA.
- D. The group preference relay provided by list 6 is mounted on the test connector unit mounting plate in position 8 and is stamped GPD.

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***J67447L—A&M Only—Ringling and Supervision
Test Unit***

Equipment—J67447L-()

List 1—Assembly, surface wiring, and equipment per SD-68404-01, Fig. 5 and WN option for one ringling and supervision and test unit. (See Note B.)

Note

A. This list does not include apparatus mounted on the AOIT jack, key, and lamp panel.

J67447M—A&M Only—Teletypewriter Control Unit

Equipment—J67447M-()

List 1—Assembly, surface wiring, and equipment for one teletypewriter control unit.

	WIRE	EQUIP	NOTES
Teletypewriter Control Ckt, SD-68456-01:			
Distributor Control, Fig. 1, G & F Apparatus	1	1	
Walking Relay, Fig. 2 and F Apparatus	1	1	
Code Relay, Fig. 3	1	1	
Cut-On Relay, Fig. 5 and F Apparatus	1	1	
Trouble Indicator, Fig. 6	1	1	

List 2—Equipment required in addition to list 1 for additional codes and identity digit.

	WIRE	EQUIP	NOTES
Teletypewriter Control Ckt, SD-68456-01:			
Distributor Control, Fig. 1, N Apparatus	0	1	
Walking Relay, Fig. 2, N Apparatus	0	1	
Code Relay, Fig. 3, S Apparatus	0	1	
Trouble Indicator, Fig. 6, S Apparatus	0	1	

Note

A. Provide M, Q, and T wiring when list 2 is not required.

J67447N—A&M Only—Transmission Class Unit

Equipment—J67447N-()

List 1—Assembly, surface wiring, and equipment per SD-68446-01, Fig. 1 for one class unit. (See Note A.)

Note

A. This list does not include apparatus mounted on the AOIT jack, key, and lamp panel.

J67447P—A&M Only—Transmission Computer Unit

Equipment—J67447P-()

List 1—Assembly, surface wiring, and equipment per SD-68446-01, Fig. 2 and ZI option for one computer unit. (See Note A.)

Note

A. This list does not include apparatus mounted on the AOIT jack, key, and lamp panel.

J67447R—A&M Only—Automatic Transmission Test and Control Frame for No. 4A or 4M Toll Offices (See Table A)

Equipment—J67447R-()

List 1—Framework, assembly, wiring, and equipment for one automatic transmission test and control frame. (See Note B.)

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	WIRE	EQUIP	NOTES	
Automatic Transmission Test and Control Ckt, SD-68446-01:				figures shall include only the jacks, keys, lamps, or other apparatus not mounted on the various surface-wired units.
Transmission Patching Switch, Fig. 3, & T Wiring	1	0	A	
Control, Fig. 4	1	1	A	B. Omit list 4 and teletypewriter equipment in General Note 5.16 when the J67447R frame is provided for offices where a J67447AF frame is already installed (see Note 5.04).
Pulsing Generator, Fig. 5	1	0	A	C. The KS-7105 (22-1/2V) and KS-7890 (90V) dry batteries shall be provided as part of list 1.
Milliwatt Supply Jack, Fig. B, R Option	1	1	A	D. List 4 includes teletypewriter shelf, ED-68865-70, Group 4, KS-8586 L37 socket mounted and wired in the shelf, and a KS-8585 L36 plug with a 2-foot long attached cable. (See Note 5.17.)
Far-Near Measuring, Fig. 6, With Z Wiring and Apparatus	1	0	A	
Near-Far Measuring, Fig. 6, With Y Wiring and Apparatus	1	0	A	
Selector, Fig. 7	1	1	A	
19.9-dB Pad, Fig. 9 and T Wiring and Apparatus	1	1		J67447S—AT&TCo Std—Transmission Path Switching Unit for No. 4A or 4M Toll and Crossbar Tandem Offices
Test Pad, Fig. 10, N Apparatus	1	1		Equipment—J67447S-()
First Deviation Totalizer, Fig. 11 (counters only)				List 1 —Assembly, surface wiring, and equipment per SD-68446-01, Fig. 3 for one switching unit.
and T and ZI wiring	1	0	A	List 2 —Equipment per SD-68446-01, Fig. 3, T option only, required in addition to list 1 for use in No. 4A or 4M toll offices.
Amplifier Ckt, SD-96449-01:				List 3 —Equipment per SD-68446-01, Fig. 3, S option only, required in addition to list 1 for use in tandem crossbar and No. 5 crossbar offices.
Fig. 1	2	0		
Amplifier Rectifier Ckt: SD-96450-01:				
Fig. 1	1	0		

List 4—Wiring and equipment provided for teletypewriter shelf.

J67447T—AT&TCo Std—Control Unit for No. 4A or 4M Toll and Crossbar Tandem Offices

	WIRE	EQUIP	NOTES
Teletypewriter Control Circuit, SD-68456-01:			
Fig. 12	1	1	D 5.16 5.17

Equipment—J67447T-()

List 1—Assembly, surface wiring, and equipment per SD-68446-01, Fig. 4 for one control unit.

Notes

A. The frame local cable for these figures shall include all interunit wiring and all intraunit optional wiring. The equipment for these

J67447U—AT&TCo Std—Pulse Generator Unit for No. 4A or 4M Toll Crossbar Tandem Offices

Equipment—J67447U-()

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List 1—Assembly, surface wiring, and equipment per SD-68446-01, Fig. 5 for one pulse generator unit.

J67447V—AT&TCo Std—Measuring and Check Pad Unit for No. 4A or 4M Toll and Crossbar Tandem Offices

Equipment—J67447V-()

List 1—Assembly, surface wiring, and equipment per SD-68446-01, Fig. 6 for one measuring and check pad unit for far-near measuring.

List 2—Equipment per SD-68446-01, Fig. 6, Y option only, for near-far measuring.

J67447X—AT&TCo Std—Deviation Totalizer Unit for No. 4A or 4M Toll and Crossbar Tandem Offices

Equipment—J67447X-()

List 1—Assembly, surface wiring, and equipment per SD-68446-01, Fig. 11 (relays only) for deviation totalizer unit.

J67447AA—AT&TCo Std—Automatic Transmission Test and Control Frame for Crossbar Tandem Offices

Equipment—J67447AA-()

List 1—Framework, assembly, wiring, and equipment for one automatic transmission test and control frame (see Table B).

	WIRE	EQUIP	NOTES
Automatic Transmission Test and Control Ckt, SD-68446-01:			
Class Relay, Fig. 1			
ZD and E Wiring	1	0	
Deviation Computer and Transmission Limits Checking			
Fig. 2, ZA Wiring	1	0	
Transmission Patching			

Switch, Fig. 3, & S Apparatus	1	0	A,
Control, Fig. 4, & S Wiring	1	0	(5.16)
Pulsing Generator, Fig. 5	1	1	A,B
Measuring and Checking Pad, Fig. 6, Far-Near Measuring, Z Wiring & Apparatus	1	0	A,B
Measuring and Checking, Pad, Fig. 6, Near-Far Measuring, Y Wiring & Apparatus	1	0	A
Selector Switch, Fig. 7	1	1	A
Milliwatt, Supply Jack, Fig. B, Q Option	1	1	A,
20.9-dB Pad, Fig. 9, & S Apparatus	1	1	B,D
Test Pad, Fig. 10	1	1	A,B
M Apparatus	1	1	A,B
First Deviation Totalizer, Fig. 11 (counters only)			
and ZI Wiring	1	0	A
20.4-dB Pad, Fig. 12	1	1	A,B
Second Deviation Totalizer, Fig. 13 (relay only)	1	0	
Teletypewriter Control Ckt, SD-68456-01:			
Distributor Control Fig. 1, N & Y Wiring	1	0	A
Walking Relay, Fig. 2, N Wiring and Y Wiring & Apparatus	1	0	A
Code Relay, Fig. 3, N, R, & Y Wiring	1	0	A
Cut-On Relay, Fig. 5, & Y Wiring & Apparatus	1	0	A
Trouble Indication, Fig. 9, & R Wiring	1	0	A

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	WIRE	EQUIP	NOTES
Amplifier Ckt, SD-96449-01: Fig. 1	2	0	
Amplifier-Rectifier Ckt, SD-96450-01: Fig. 1	1	0	

Notes

- A. The frame local cable for these figures shall include all interunit wiring and intra-unit optional wiring.
- B. The equipment for these figures shall include only the jacks, keys, lamps, or other apparatus not mounted on the various surface-wired units.
- C. The KS-7105 (22-1/2V) and KS-7890 (90V) dry batteries shall be provided as part of list 1.
- D. The ATTC milliwatt supply shall have an impedance of 600 ohms and shall be at +0.5 dBm level.

**J67447AB—AT&TCo Std—Transmission Class
Unit for Crossbar Tandem Offices**

Equipment—J6774AB-()

List 1—Assembly, surface wiring, and equipment per SD-68446-01, Fig. 1 for one class unit. (See Note A.)

Note

- A. ZD stamping for crossbar tandem.

**J67447AC—AT&TCo Std—Transmission Computer
Unit for Crossbar Tandem Offices**

Equipment—J67447AC-()

List 1—Assembly, surface wiring, and equipment for one computer unit.

	WIRE	EQUIP	NOTES
Automatic Transmission Test and Control, SD-68446-01: Deviation Computer and Transmission, Fig. 2, and ZI Option	1	1	
First Deviation Totalizer, Fig. 11, S Apparatus (relay only)	1	1	

List 2—Equipment per SD-68446-01, Fig. 13, relays only, required in addition to list 1 for a second deviation totalizer.

**J67447AD—AT&TCo Std—Teletypewriter Selector
Unit—Crossbar Tandem Offices and
No. 1 Crossbar Offices**

Equipment—J67447AD-()

List 1—Assembly, surface wiring, and equipment for one selector unit in crossbar tandem offices.

	WIRE	EQUIP	NOTES
Teletypewriter Control Ckt, SD-68456-01: Distributor Control, Fig. 1	1	1	
Walking Relay, Fig. 2 & Y Apparatus	1	1	
Trouble Indicator Relay, Fig. 9	1	1	

List 2—Reserved

List 3—Assembly, surface wiring and equipment for one selector unit in No. 1 crossbar offices.

	WIRE	EQUIP	NOTES
Teletypewriter Control Ckt, SD-68456-01: Distributor Control, Fig. 13	1	1	
Walking Relay, Fig. 2 and Y Apparatus	1	1	
Trouble Indicator Relay, Fig. 9	1	1	

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J67447AE—AT&TCo Std—Code Relay Unit—Crossbar Tandem Office No. 1 Crossbar Offices

Equipment—J67447AE-()

List 1—Assembly, surface wiring, and equipment for one code relay unit for crossbar tandem offices.

	WIRE	EQUIP	NOTES
Teletypewriter Control Ckt, SD-68456-01:			
Code Relay, Fig. 3, & Y Wiring	1	1	
Cut-On Relay, Fig. 5, & Y Wiring and Apparatus	1	1	

List 2—Assembly, surface wiring, and equipment for one code relay unit in No. 1 crossbar offices.

	WIRE	EQUIP	NOTES
Teletypewriter Control Ckt, SD-68456-01:			
Code Relay, Fig. 3 and Y Wiring	1	1	
Cut-On Relay, Fig. 14 and Y Option	1	1	

J67447AF—AT&TCo Std—Teletypewriter Frame for No. 4A or 4M Toll and Crossbar Tandem Offices and No. 1 Crossbar Offices

Equipment—J67447AF-()

List 1—Framework, assembly, wiring, and equipment for teletypewriter printer frame.

	WIRE	EQUIP	NOTES
Teletypewriter Control Ckt, SD-68456-01:			
Fig. 12	1	1	A,D 5.04 5.05 5.16 5.17

List 4—Wiring required in addition to lists 1 and 2 when teletypewriter operation without transmission test feature is required in a crossbar tandem office. (See Table C.)

	WIRE	EQUIP	NOTES
Teletypewriter Control Ckt, SD-68456-01:			
Distributor Control Fig. 1, N & Y Wiring	1	0	B 5.04.1
Walking Relay, Fig. 2, N Wiring & Y Wiring & Apparatus	1	0	
Code Relay, Fig. 3, N, R, & Y Wiring	1	0	
Cut-On Relay, Fig. 5, & Y Wiring & Apparatus	1	0	
Trouble Indicator, Fig. 9, & R Wiring	1	0	

Notes

- A. In No. 4A or 4M toll offices, the teletypewriter frame is required when the transmission test frame is not ordered.
- B. The frame local cable for SD-68456-01, Fig. 1 to 3, 5, and 6 shall include all interunit wiring and intra-unit optional wiring.
- C. List 1 shall provide one sender casing per ED-90978-57, G2313 when TTY operation without transmission testing is required.
- D. List 1 includes teletypewriter shelf ED-68865-70, Group 4, KS-8586 L37 socket mounted and wired in the shelf, and a KS-8585, L36 plug with a 2-foot long attached cable. (See Note 5.17.)

J67447AG—AT&TCo Std—Deviation Counter Unit for No. 4A or 4M Toll and Crossbar Tandem Offices

Equipment—J67447AG-()

List 1—Assembly, surface wiring, and equipment per SD-68446-01, Fig. 11 or 13, counters only, for one deviation counter unit. (See Notes A and B and 5.07.)

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Notes

- A. This unit shall provide as the first deviation counter unit in toll and tandem crossbar offices per SD-68446-01, Fig. 11, and as the second deviation counter unit in crossbar tandem office only per SD-68446-01, Fig. 13.
- B. Switchboard cable must be used as the wiring to this unit when this unit is provided as the second deviation counter in tandem crossbar offices.

	WIRE	EQUIP	NOTES
Teletypewriter Control Ckt, SD-68456-01:			
Distributor Control, Fig. 1,			
Wiring and Apparatus	1	1	
Walking Relay, Fig. 2, N	1	1	
Wiring & Apparatus	1	1	
Code Relay, Fig. 3, R Wiring	1	1	
& Apparatus, N Wiring	1	1	
Trouble Indication, Fig. 9,			
R Wiring & Apparatus	1	1	

**J67447AH— A&M Only—Supplementary
Transmission Class Unit for No.
4A or 4M Toll Offices**

List 2—Assembly, surface wiring, and equipment for one supplementary code relay and identity digit unit for No. 1 crossbar offices.

Equipment—J67447AH-()

List 1—Assembly, surface wiring, and equipment per SD-68446-01, Fig. 1, E apparatus only for one supplementary class unit. (See Note A.)

Note

- A. This list does not include apparatus mounted on the AOIT jack, key, and lamp panel.

	WIRE	EQUIP	NOTES
Teletypewriter Control Ckt, SD-68456-01:			
Walking Relay, Fig. 2,			
N Option	1	1	
Code Relay, Fig. 3, R			
Option, N Wiring	1	1	
Trouble Indication, Fig. 9,			
R Option	1	1	

**J67447AJ—AT&T Co Std—Supplementary
Transmission Class unit—Crossbar
Tandem**

Note

- A. Provide Q and M wiring in J67447AD and T wiring in J67447AE when this unit is not provided.

Equipment—J67447AJ-()

List 1—Assembly, surface wiring, and equipment per SD-68446-01, Fig. 1, E apparatus only, for one supplementary class unit.

**J67447AM—A&M Only—False-Stop Detector
and Go Timing Unit for No. 4A or
4M Offices**

**J67447AL—AT&T Co Std—Supplementary Code
Relay and Identity Digit Unit for
Crossbar Tandem Offices and No. 1
Crossbar Offices**

Equipment—J67447AM-()

Equipment—J67447AL-()

List 1—Assembly, surface wiring, and equipment for one supplementary code relay and identity digit unit for crossbar tandem offices.

List 1—Assembly, surface wiring, and equipment for one false-stop detector and go timing unit per SD-68404-01, Fig. 20 and Fig. 3, WN option only.

List 2—Equipment per SD-68404-01, Fig. 20, WK and VW apparatus only, required in addition to list 1 in No. 4A offices.

List 3—A&M Only—Equipment per SD-68404-01, Fig. 20, WL and VX apparatus only,

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required in addition to list 1 in No. 4M offices.

List 4—Wiring and equipment per SD-68404-01, Fig. 21, VZ option only required in addition to list 1 for the repeat test feature when multiple access is provided. (See Note A.)

Note

A. This list does not include apparatus mounted on the AOIT jack, key, and lamp panel.

J67447AN—A&M Only—Class Matrix Cross Connection Unit for No. 4A or 4M Offices

Equipment—J67447AN-()

List 1—Assembly, surface wiring, and equipment for two class matrices per SD-68404-01, Fig. T.

J67447AP—AT&T Co Std—Deviation Selector Unit For Crossbar Tandem and No. 4A or 4M Toll Offices

Equipment—J67447AP-()

List 1—Assembly, surface wiring, and equipment for one deviation selector unit per SD-68446-01, Fig. 11, ZI option only. (See Note A.)

List 2—Equipment per SD-68446-01, Fig. 14 and ZG wiring required in addition to list 1 for one-way transmission tests of 2-wire toll completing trunks to 102 test lines for use in crossbar tandem offices only. (See Note B.)

List 3—Equipment per SD-68446-01, Fig. 11, ZK option only required in addition to list 1 when the deviation selector unit is used in a No. 4A or 4M office.

Notes

- A. The switch which is part of Fig. 11, ZI option is provided on the test frame (AOIT or ITT).
- B. The lamps which are part of Fig. 14 are provided on the ITT frame.

J67447AR—A&M Only—Master Cut-In Relay Unit for No. 4A or 4M Toll Offices

Equipment—J67447AR-()

List 1—Assembly, surface wiring, and equipment per SD-68404-01, Fig. 26, VI option for one master cut-in relay unit required for use on the first test connector frame when multiple access is provided. (See Note A.)

Note

A. The unit per J67447AR is required only when the ATTC frame (J67447R) is used for transmission testing with the AOIT frame.

5. GENERAL NOTES

EQUIPMENT

5.01 Unused lamp positions shall not be equipped with lamps or lamp caps.

5.02 Two sets of designation charts per ED-68243-01 shall be provided. One set shall be mounted on a 7-1/2 by 15-inch fiber or masonite board for use at the test frame. The second set shall be provided for the telephone company files.

5.03 The different types of outgoing intertoll trunks shall be assigned to the automatic outgoing intertoll trunk test connector units in order from the bottom up, by groups. The first 100 trunks assigned to a test connector unit shall be associated with crosspoints 0, 1, and 2 of the crossbar switch in verticals 0 to 9, on levels 0 to 9. The second 100 trunks shall be associated with crosspoints 3, 4, and 5 in verticals 0 to 9, on levels 0 to 9 of the same switch. This procedure shall be followed since the test circuit is arranged for this order of testing, passing over each switch twice before proceeding to the next unit. The assignments shall be arranged so that no more than 80 different classes of trunks shall be connected to one crossbar switch.

5.04 In toll offices, the J67477AF teletypewriter frame is provided where teletypewriter operation is required with the automatic intertoll trunk test frame, and the transmission test feature is not desired. For cases where this arrangement is installed initially and transmission testing is required at a later date, teletypewriter equipment

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on the J67447AF frame can be re-used for list 4 and Note 5.16 of the J67447R frame. Under these conditions, the framework of the J67447AF becomes surplus equipment.

5.05 In crossbar tandem offices, the J67447AD and J67447AE units shall be furnished with the TTY frame where teletype operation without transmission test feature is required. For cases where this arrangement is initially installed and transmission testing is required at a later date, the J67447AD and J67447AE units can be re-used with the J67447AA frame.

5.06 KS-1920, 4-1/2 inch wide, canary yellow paper shall be provided with the paper winder.

5.07 The second set of deviation totalizers shall be located on the miscellaneous rack when the teletypewriters are located on other than TTY frames.

5.08 The J67447AD and J67447AE units shall be located on the miscellaneous rack when the teletypewriters are located on other than TTY frames and teletypewriter operation without transmission test features is initially required in crossbar tandem offices only.

5.09 The gauge and type of wire used on this frame shall be in accordance with ED-68870-01 wire gauge and types of insulation. All 115-volt, 60-cycle wiring shall be KS-13385 No. 18 gauge wire unless otherwise specified.

5.10 The multiple access feature in the AOIT circuit (SD-68404-01) provides that a maximum of four test frames can access a group of test connector frames (maximum of twenty). The test frames can be a combination of automatically directed outgoing intertoll trunk test (ADOIT) frames (J67478A) and AOIT frames. The multiple access feature may be installed in toll offices which have single AOIT frame operation or two AOIT frames that have the joint access feature.

5.11 When the multiple access feature is installed and the ATTC frame that is associated with the AOIT frame is desired to be discontinued from service then the teletypewriter on the frame may be retained or relocated to permit teletypewriter operation for the AOIT frame. If the teletypewriter is to be retained on the framework of the ATTC frame then all the J-coded units and sender casings

should be removed. This units become surplus equipment and the space left by their removal becomes spare space. The teletypewriter equipment retained comprises SD-68456-01, Fig. 10, 11, and 12 for 28-type teletypewriters and SD-68456-01, Fig. 7 and 8 for 15-type teletypewriters. If the teletypewriter is to be removed from the framework of the ATTC frame then a floor model cabinet should be ordered from the Western Electric distributing house to mount the teletypewriter equipment.

(a) Offices having a 15-type teletypewriter should order:

TELETYPE code XRT200BH TTY Table

(b) Offices having a 28-type teletypewriter should order:

28D40 TTY Cabinet

Mod. Kit 153901AB Paper Winder Mtg Shelf
(Required only when the
15F40 paper winder is
used)

The 28E40 TTY cabinet should be removed from the frame mounted teletypewriter before it is mounted in the 28D40 cabinet. The floor model 28-type teletypewriter should be wired as specified in SD-68456-01, Fig. 10 and 11. The floor model 15-type teletypewriter should be wired as specified in SD-68456-01, Fig. 7 and 8.

5.12 In cabling the SM and MS leads from the automatic outgoing intertoll trunk test connector crossbar switches to the assignment distributing frame, the SM and MS leads are run in separate cables to avoid interference. The SM and MS leads from the AOIT test connector crossbar switches are each run in 200 circuit cables, wherever possible, to the vertical side of the ADF, and terminated on the same terminal strip punchings as the SM and MS leads from the block relays serving intertoll trunks.

5.13 All the SM and MS leads from the block relays serving intertoll trunks are connected to AOIT test connector units whether or not they are cross-connected to outgoing link frames and outgoing trunks, in order to provide for traffic changes involving assignment of trunks to spare block relay terminals.

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5.14 The stamping and recommended arrangement for two AOIT frames with separate access to its test connectors are:

- (a) When two sets of test frames are furnished with the initial installation.
 1. ATTC (0)—AOIT (0)—ITC (0-0) to ITC (0-9) for intertoll train.
 2. ATTC (1)—AOIT (1)—ITC (1-0) to ITC (1-9) for toll completing train.
- (b) When a second set of test frames is added after the initial installation:
 1. Split the existing test connector multiple between ITC frames, as requested by the telephone company, so that the test load

can be distributed evenly between AOIT (0) and added AOIT (1).

2. ITC frames added after (b)(1) should be assigned on a train basis as covered in [a(1) or (2)].

5.15 The stamping and recommended arrangement for two test frames that have the joint access feature are as follows.

First test frame	AOIT (0)
Second test frame	AOIT (1)
Test connector frames	ITC (0) — ITC (19)

5.16 The stamping and recommended arrangement for AOIT frames (2 max) that have the multiple access feature are as follows.

First test frame	ADOIT (0)		ADOIT (0)
Second test frame	AOIT (0)		ADOIT (1)
Third test frame	AOIT (1)	or	ADOIT (1)
Fourth test frame	ADOIT (1)		ADOIT (2)

Test connector frames ITC (0) — ITC (19)

5.17 Where a small number of intertoll trunks is assigned to a trunk block relay on the toll completing train, the MS leads are terminated on the trunk terminal strips on the horizontal side of the ADF. The SM leads are terminated on the outgoing link terminal strips on the horizontal side of the ADF if these trunks are cabled directly to

the outgoing link frames, or on the SM bunching terminal strip on the vertical side of the ADF if the trunks are arranged for cross-connection at the TDF.

5.18 The following fuses are required on the miscellaneous fuse boards.

AOIT Frame

48V Signal

Sixteen—1-1/3 ampere (A through S), SD-68404-01

One—1-1/3 ampere (TBS), SD-68426-01

One—1-1/3 ampere (NA), SD-55039-01

24V Signal

One—1-1/3 ampere, SD-68404-01

One—1-1/3 ampere, SD-68426-01

130V Plate

One—1/2 ampere, SD-68404-01

±105V Ring

One—1/2 ampere, SD-68404-01

One—1/2 ampere, SD-55039-01

Connector Frame

48V Signal

One—1-1/3 ampere, SD-68427-01

ATTC Frame

48V Signal

Eleven—1-1/3 ampere (A through L), SD-68446-01

One—1-1/3 ampere, SD-68456-01

130V Signal

One—1/2 ampere, SD-68446-01

One—1/2 ampere, SD-68456-01 (No. 4A or 4M toll office only)

TTY Frame

48V Signal

One—1-1/3 ampere, SD-68456-01

130V Signal

One—1/2 ampere, SD-68456-01 (No. 4A or 4M toll office only)

5.19 In toll, crossbar tandem and No. 1 offices the telephone company engineer shall order the following teletypewriter station assembly, modified per SD-68456-01 from the Western Electric distributing house.

28L Distributor

28B Electric Service Unit E/W

TP-152623 Line Relay Mounting

TP-152332 Remote Motor Control

TP-93073 Resistor

314A Relay Unit

28A Motor Unit

1A** Paper Winder (4-1/4 x 8-1/2 Inch Paper)

28B Teletypewriter Base (Receiving Only)

KS-14532,L1 Cap and Cord

28D Typing Unit (4-1/2 Inch Paper)

TP-157671 Pallet (This provides "L.+" in Type Box)

28B Set of 75 WPM Gears

28C1 Set of 100 WPM Gears (See Note 5.25.)

28A Type Box (Arrangement A)

For frame mounted TTY:

28E** TTY Cabinet, grey-green table model, for mounting on TTY shelf ED-68865-70, Group 4. (See Notes 5.06, 5.20, and 5.21.)

For floor model TTY:

28D** TTY Cabinet, Floor Model

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Note: The double asterisk (**) shown above with paper winder and cabinet codes are used to indicate color; substitute them with 40 if gray-green finish is desired or 68 if light gray is desired.

5.20 The installer shall wire between Fig. 10 and 11 of SD-68456-01 per Table B. He shall also connect the cable stub provided with Fig. 12 to the terminal strip of Fig. 10 and cut the KS-14532,L1 power cord to 3 feet when the teletypewriter is frame mounted.

5.21 In crossbar tandem offices when a second teletypewriter is required, the 28L distributor, SD-68456-01, Fig. 10 should not be ordered for the second teletypewriter. (See Notes 5.19 and 5.20.)

5.22 In crossbar tandem offices floor models are made available for either the first or second teletypewriters. To avoid conflict between maintenance center ladders and the protruding teletypewriter shelf of the TTY frame J67447AF, consideration should be given to their use. In this case, the telephone company engineer shall order the same teletypewriter station assembly as in note 5.19 from the distributing house, except substituting the 28D40 TTY cabinet, grey-green floor-mounted model for the 28E40 TTY table cabinet specified in note 5.19.

5.23 Due to the low all allowable loss of 0.3 dB or less between the office link frame and the ATTC frame (through the ITT and ITTC frames) in crossbar tandem, the length of the mean run of the tip and ring leads should not exceed

300 feet of 24-gauge or 400 feet of 22-gauge CL cable.

5.24 When the floor model 28-type teletypewriter per Notes 5.19 and 5.22 is preferred in No. 1 crossbar offices rather than the TTY frame (J67447AF) then it should be located adjacent to or near the ITT frame. In addition, the units per J67445AL, J67447AD, and J674447AE shall be mounted on a miscellaneous relay rack from top to bottom, respectively. These units must be enclosed in a sender casing. If the relay rack is not equipped with sender casings the following may be ordered.

ED-90978-57,G49 Front Casing (21.5 inches high)

ED-90978-58,G48 Rear Casing, Cable cutout per ED-90978-50, Group 2, Point 3

5.25 Installation employing combinations of 15-type and 28-type teletypewriter sets cannot be operated at 100 WPM speed.

5.26 Test connector frames per J67478B can be added to a connector group composed of frames per J67447-() only when the ADOIT frame is used as the first test frame and the ATTC frame per J67447R-() is removed.

5.27 When two AOIT frames are in the ADOIT test frame group accessing one set of test connectors composed of J67447J-() and J67478B-(), both ATTC frames must be removed.

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List of A&M Only and Mfr Disc. Equipment

		DETAILS LAST SHOWN IN ISSUE	REPLACING EQUIPMENT	EQUIPMENT	RATING	DETAILS LAST SHOWN IN ISSUE	REPLACING EQUIPMENT
				L7 & L8	Mfr Disc.	4	—
J67447A	A & M Only	13	J67447A	J67447F	Mfr Disc.	1	J67447L
L3	A & M Only	5	—	J67447G	A & M Only	13	—
L3	Mfr Disc.	9	—	J67447H	A & M Only	13	—
L5				J67447J	A & M Only	13	—
to L11	Mfr Disc.	2	J67447A,L1	J67447K	A & M Only	13	—
L13	Mfr Disc.	2	—	J67447L	A & M Only	13	—
L16			J67447A,L1	L2	Mfr Disc.	9	—
& L17	Mfr Disc.	—	& L15	J67447M	A & M Only	13	—
L19	A & M Only	5	—	J67447N	A & M Only	13	—
L21	A & M Only	10	—	J67447P	A & M Only	13	—
L22				J67447R	A & M Only	13	—
to L26	A & M Only	5	—	L2	Mfr Disc.	5	J67447R,L3
L31				L3	Mfr Disc.	7	J67447R,L4
to L34	Mfr Disc.	4	—				& Note 5.16
L35	A & M Only	6	—	J67447W	Mfr Disc.	4	J67447R,L1
L38,				J67447Y	Mfr Disc.	5	J67447AF
L39 & L45	A & M Only	7	—	J67447AF,L2	Mfr Disc.	7	Notes 5.16
L42	Mfr Disc.	9	—				& 5.17
L43	Mfr Disc.	9	—	L3	Mfr Disc.	6	J67447AG
L47	Mfr Disc.	12	J67447A,L48	J67447AH	A & M Only	13	—
L51	A & M Only	13	—	J67447AK	Mfr Disc.	11	—
J67447B	A & M Only	13	—	J67447AM	A & M Only	13	—
J67447C	A & M Only	13	—	L3	A & M Only	7	—
L3	A & M Only	5	—	J67447AN	A & M Only	13	—
L3	Mfr Disc.	9	—	J67447AR	A & M Only	13	—
L4	Mfr Disc.	2	J67447A,L1				
L6	Mfr Disc.	4	—				
J67447D	A & M Only	5	—				
L7				The above 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.			
& L8	Mfr Disc.	4	—				
J67447E	A & M Only	13	—				

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TABLE A — J67447R

COMPONENT EQUIPMENT UNITS SHALL BE EQUIPPED AS FOLLOWS:					
UNIT			QUANTITY TO BE PROVIDED		DESCRIPTION OF OPTION
QUANTITY	J CODE	LIST NO.	ALWAYS	FOR OPTION INDICATED	
1	J67447S	1	1		
		2	1		
1	J67447T	1	1		
1	J67447U	1	1		
2	J67447V	1	2		For near-far measuring unit
1		2	1		
1	J67447X	1	1		
1	J67447AG	1	1		
1	J67447AP	1	1		
1	J67447AP	3	1		
2	J93020A	1	2		For far-near measuring unit
1		2	1		
1	J93020B	1	1	35-dBa noise rejection (Z & X wiring)	
			1	40-dBa noise rejection (Z & W wiring)	
			1	45-dBa noise rejection (Z & W wiring)	

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TABLE B — J67447AA

COMPONENT EQUIPMENT UNITS SHALL BE EQUIPPED AS FOLLOWS:					
UNIT			QUANTITY TO BE PROVIDED		DESCRIPTION OF OPTION
QUANTITY	J CODE	LIST NO.	ALWAYS	FOR OPTION INDICATED	
1	J67447S	1	1		
		3	1		
1	J67447T	1	1		
1	J67447U	1	1		
2	J67447V	1	2		For near-far measuring unit
1		2	1		
1	J67447X	1	1		
1	J67447AB	1	1		
1	J67447AC	1	1		For second deviation totalizer
1		2		1	
1	J67447AD	1		1	Where teletypewriter operation and transmission test features are required in crossbar tandem offices
1	J67447AE	1		1	
1	J67447AG	1	1		
1	J67447AJ	1		1	For Supply Class Relays 2.4 to 3.6 dB
1	J67447AL	1		1	For identity digit printing and additional trouble codes
1	J67447AP	1	1		
		2		1	One-way transmission testing
2	J93020A	1	2		For far-near measuring unit
1		2	1		
1	J93020B	1		1	35-dBa noise rejection (Z & X wiring)
				1	40-dBa noise rejection (Z & W wiring)
				1	45-dBa noise rejection (Z & V wiring)

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TABLE C — J67447AF

COMPONENT EQUIPMENT UNITS SHALL BE EQUIPPED AS FOLLOWS:					
UNIT			QUANTITY TO BE PROVIDED		DESCRIPTION OF OPTION
QUANTITY	J CODE	LIST NO.	ALWAYS	FOR OPTION INDICATED	
1	J67447AG	1		1	For second deviation counter unit in crossbar tandem offices only
1	J67447AD	1		1	Where teletypewriter operation without transmission test features is required in crossbar tandem offices
1	J67447AE	1		1	
1	J67447AD	3		1	Where teletypewriter operation is required in No. 1 crossbar offices
1	J67447AE	2		1	
1	J67447AL	2		1	
1	J67447AL	1		1	For identity digit printing and additional trouble codes

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