VOICE CONNECTING ARRANGEMENT DCK
J53050F INTERCONNECTING UNIT

1. GENERAL

1.01 This section provides identification, installation, operation, maintenance, and connecting information for Voice Connecting Arrangement DCK, using J53050F, ▶List 1A◀ interconnecting unit (IU) (Fig. 1). Voice Connecting Arrangement DCK (Fig. 2) provides connection via trunk level access between customer-provided equipment (CPE) (typically, dictation equipment, radio paging system, or information retrieval system) and a Bell System private branch exchange (PBX), Centrex System or Switching System.

1.02 This section is reissued to:

- Include wiring changes made on J53050F, List 1A
- Add connection information for 770A PBX, 812A PBX, and Switching System No. 400
- Revise drawings and illustrations
- Change SD reference in Fig. 5.

1.03 The J53050F, List 1A is the same as the J53050F, List 1 with the IL resistor removed and circuit changes made to improve operation as follows:

- Tip and ring battery feed was changed to improve current limiting on short loops.
- The idle circuit termination and dial pulsing termination has been improved.
- The test and make busy circuit has been changed to prevent interference with a call when the unit is in the busy state.

1.04 If the customer wants a copy of the Technical Reference which covers this interface specification, the customer should contact the local Telephone Company Business Office or the Marketing Representative.

1.05 This issue of the section is based on the following drawings:

CD-1E255-01, Issue 2B

SD-1E255-01, Issue 2B

If this section is to be used with equipment or apparatus reflecting later issue(s) of the drawing(s), reference should be made to the SDs and CDs to

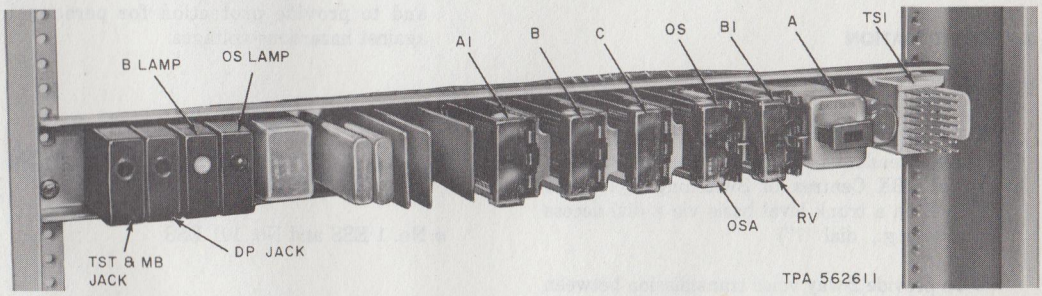


Fig. 1—▶J53050F, List 1A Interconnecting Unit◀

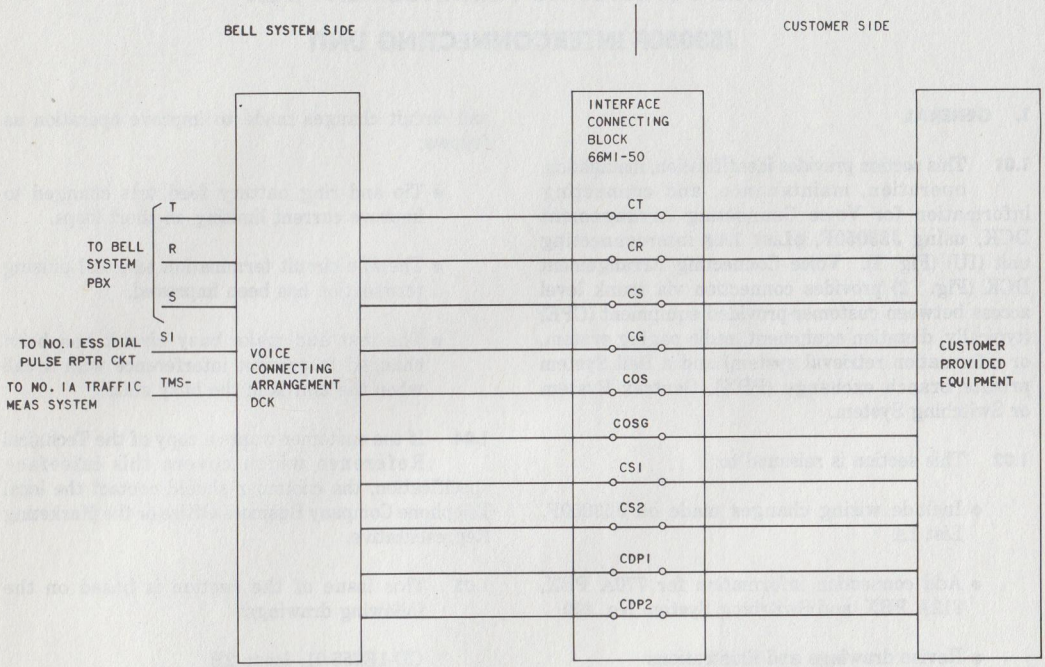


Fig. 2—Block Diagram—Voice Connecting Arrangement DCK

determine the extent of the changes and the manner in which the section may be affected.

2. IDENTIFICATION

PURPOSE

- To provide one-way outgoing access from the attendant or stations of a Bell System dial PBX Centrex or Switching System to CPE on a trunk level basis via a dial access code (e.g., dial "7")
- To provide 2-way voice transmission between the Bell System PBX and the CPE
- To pass control digits (rotary or TOUCH-TONE® dial), when required, to the CPE
- To provide for accepting supervisory control signals from CPE
- To limit excessive signal levels from CPE and to provide protection for personnel against hazardous voltages.

APPLICATION

- 701A, 701B, 711A, 711B, 740E, 756A, 757A, 770A, 800A, 801A, and 812A PBXs
- No. 1 ESS and No. 101 ESS
- No. 5 Crossbar Centrex
- 400-type Switching System

ORDERING GUIDE

- J53050F, ▶List 1A◀ Interconnecting Unit (one per voice connecting arrangement).

Associated Apparatus (Order Separately)

- KS-15620, List 22 Rectifier (required when PBX power supply is insufficient).

Note: This rectifier meets acceptable noise requirements as explained under Power Supplies in Section 332-104-102. Other rectifiers may be used when specified by local engineering.

- KS-14532 Power Cord (for use with KS-15620, List 22 Rectifier)

  List 1—10 ft.

  List 2—2 ft.

  List 3—15 ft.

  List 4—20 ft.

  List 5—25 ft.

- Cable, Wiring, "D" inside, or equivalent (for cabling from connecting arrangement to interface connecting block)

- Block, Connecting, 66M1-50 (Fig. 3)

Note: Other types of blocks may be used when specified by local engineering.

- Clip, Bridging, B (25 per pkg.)

Replaceable Components

- Relay, 316J

- Lamp, Resistance, 14B

DESIGN FEATURES

J53050F, ▶List 1A◀ Interconnecting Unit

- Mounts on standard 23-inch relay rack

- Size—2 by 23 inches

- Provides transformer isolation and hazardous voltage protection between CPE and Bell System facilities.

- Accepts in service/out of service signal from CPE over leads COS and COSG

- Provides seizure signal to CPE over leads CS1 and CS2

- Repeats dial pulses to CPE over leads CDP1 and CDP2

- Passes TOUCH-TONE signals to CPE over leads CT and CR

- Provides a 2-wire voiceband transmission path (voice coupler) to and from CPE over leads CT and CR

- Accepts answer supervision from CPE over leads CS and CG (momentary contact closure)

- Provides option to permit voice transmission during dial pulsing.

3. INSTALLATION

3.01 ▶The interconnecting unit is typically mounted on a 23-inch rack using existing space in the PBX. Follow installation and connection information given in the section for the PBX in use.

3.02 Mount the 66M1-50 interface connecting block at a location mutually agreeable to the customer and where accessible for testing and ease of connection.◀

3.03 Use "D" inside wiring cable or equivalent to terminate the leads associated with the CPE on the interface connecting block. Stencil trunk number and lead designations on interface connecting block designation strip (see Fig. 3).

3.04 ▶Power will usually be supplied by the PBX.◀ When the KS-15620, List 22 rectifier is used, customer must provide a 117V 60-Hz power outlet within power cord length of the mounting location of the connecting arrangement (see Ordering Guide for cord lengths). Requires 0.6 ampere maximum current.

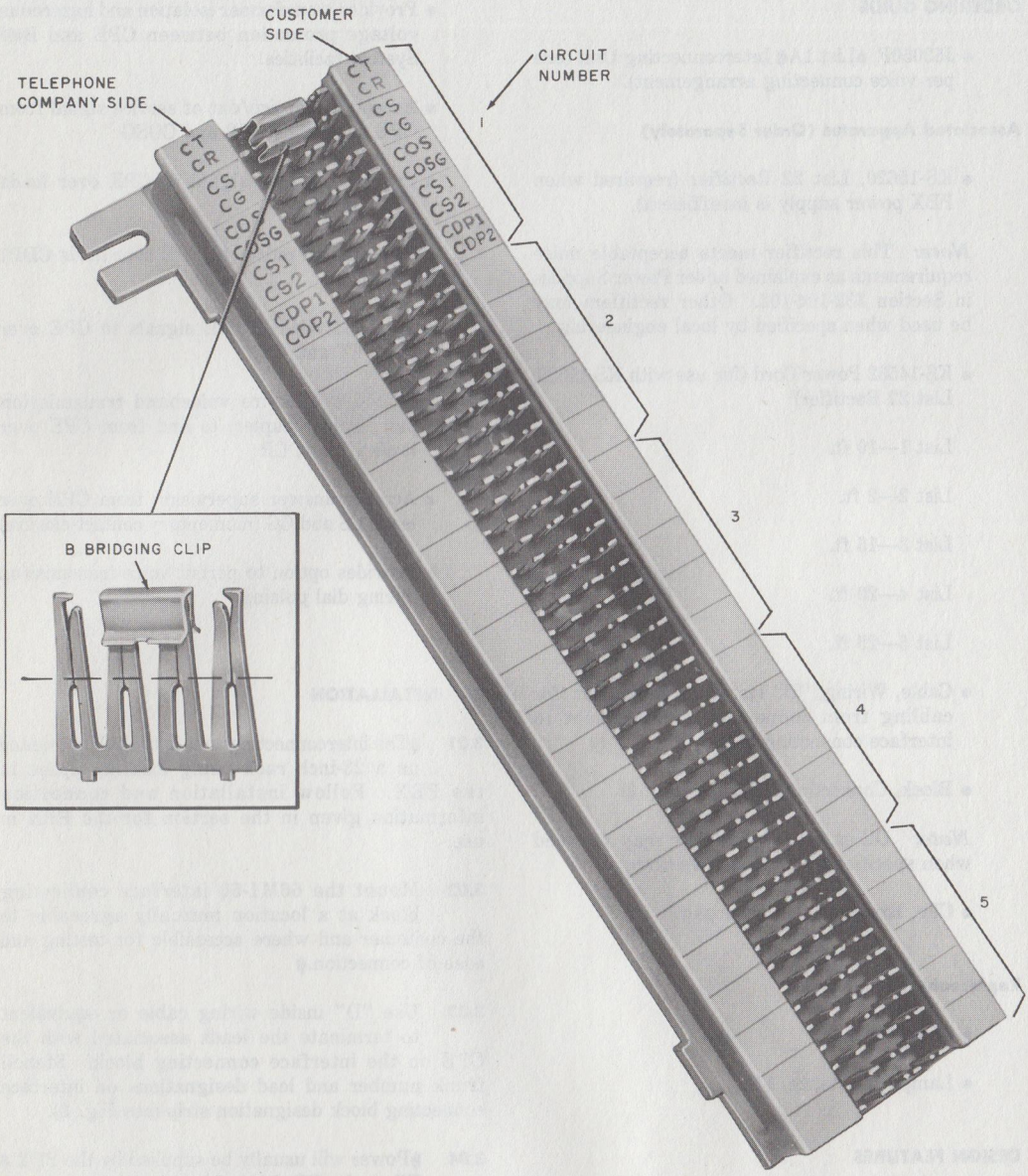


Fig. 3—66M1-50 Interface Connecting Block

3.05 The power outlet supplying connecting arrangement(s) must not be under control of a switch and should be on a separately fused power circuit to prevent accidental loss of ac line voltage. Where local instructions permit, secure the power cord to the outlet with a power cord plug retainer assembly.

3.06 Refer to appropriate sections in Division 518 for proper grounding of power plants.

3.07 Provide straps on the J53050F IU as shown in Table A and Fig. 4.

TABLE A
FOR FIG. 4

SERVICE REQUIRED		OPTION	PROVIDE STRAP FROM	PROVIDE STRAP TO
Selector Connector Access		Z, W	17	56
			51	57
Transmission Required During Dialing	YES	Y	37	27
	NO	X	47	27
CSBR No. 5, 400SS, 770A Selector Access-801A, 756A, 757A, 800A, or No. 101 ESS 812A		W	51	57
No. 1 ESS Dial Pulse Repeater Circuit Provided		V	Make Connection Directly to Term. 57 (See Fig. 4.)	

4. OPERATION

4.01 ***Seizure (Fig. 4):***

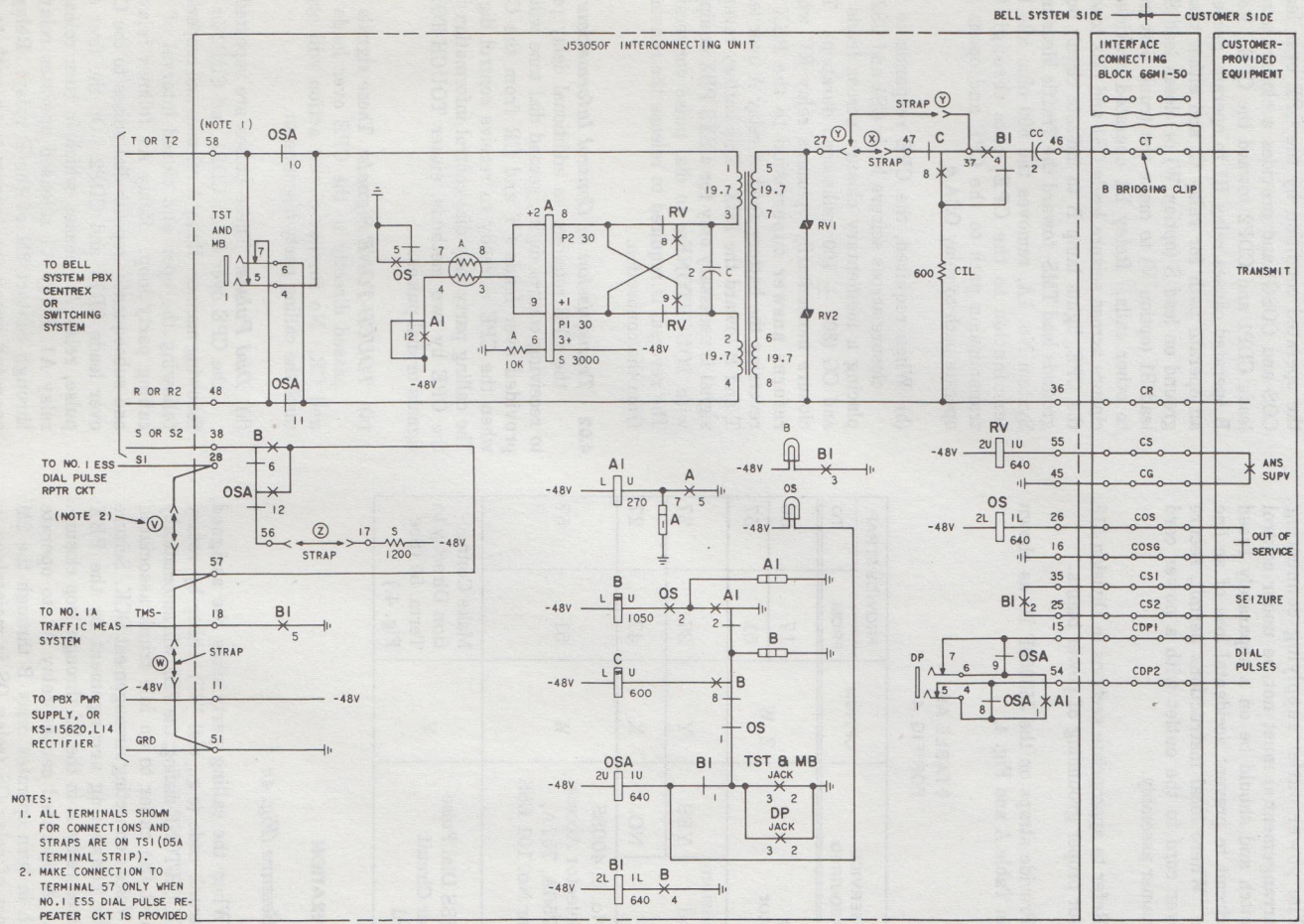
(a) When the calling party dials the assigned trunk code (e.g., dial "7"), either by rotary or TOUCH-TONE dialing, the PBX will automatically connect the caller to an idle trunk associated with Voice Connecting Arrangement DCK. Seizure of the connecting arrangement by the PBX operates relay A in the IU through loop closure. Relay A operated causes relay A1 to operate which in turn operates relay B through the 2M contact of relay OS (relay OS is maintained in the operated condition by the CPE over leads COS and COSG) and provides a closure across leads CDP1 and CDP2 toward the CPE. Relay B operated causes relay B1 to operate, prepares an operate path for relay C, and either places ground on lead S (option W) or closes lead S to lead S1 (option V) to make the trunk port busy to other calls. Relay B1 operated provides a closure across seizure leads CS1 and CS2 toward the CPE, lights lamp B to indicate circuit busy, grounds lead TMS- toward the Traffic Measuring System No. 1A, removes the 600 ohm idle line termination to the CPE, cuts through the transmission path to the CPE and opens the operate path to relay OSA.

(b) When required, the CPE responds to the closure across seizure leads CS1 and CS2 by placing a momentary closure across leads CS and CG (300 $\pm$ 100 millisecond duration). This closure momentarily operates relay RV which returns answer supervision to the PBX by reversing the battery feed of relay A over leads T and R toward the PBX. This battery reversal signal is necessary only for a SXS PBX equipped with TOUCHTONE® to dial pulse conversion. The reversal is required to release the converter from the connection.

4.02 ***Transmission of Control Information:*** If the CPE requires an additional delay prior to receiving control digits, second dial tone will be provided over leads CT and CR from the CPE when the CPE is ready to receive control digits. The calling party may dial control information into the CPE by two methods, either TOUCH-TONE signals or dial pulses.

(a) ***TOUCH-TONE Signals:*** These signals are passed directly to the CPE over leads CT and CR. No further circuit action will occur until the calling party disconnects.

(b) ***Dial Pulses:*** These pulses are repeated to the CPE over leads CDP1 and CDP2 in the following manner: Relay A releases and reoperates following the open and closed interval of the calling party loop. Relay A1 follows relay A and subsequently repeats dial pulses to the CPE over leads CDP1 and CDP2. On the first dial pulse, relay A releases which in turn releases relay A1. Relay A1 released operates relay C through contact 8M of the B relay. Relay C operated opens the transmission path to the



NOTES:
1. ALL TERMINALS SHOWN FOR CONNECTIONS AND STRAPS ARE ON TSI (D5A TERMINAL STRIP).
2. MAKE CONNECTION TO TERMINAL 57 ONLY WHEN NO.1 ESS DIAL PULSE REPEATER CKT IS PROVIDED (V OPTION).

Fig. 4—Schematic and Connections—Voice Connecting Arrangement DCK

CPE when option X is provided (option Y must be provided when transmission during dialing is required—see Fig. 4 and Table A) and places a 600-ohm idle line termination across leads CT and CR through capacitor CC. At the end of the first pulse, relay A re-operates which subsequently operates relay A1. On successive pulses, relays A and A1 release and re-operate; after the last pulse with relay A1 operated, relay C releases. Relay C released removes the idle line termination across leads CT and CR and recloses the transmission path.

4.03 ***Disconnect:*** When the calling party disconnects or abandons the call, relay A releases, subsequently releasing relay A1. Relay A1 released opens leads CDP1 and CDP2 toward the CPE and releases relay B. Relay B released causes Relay B1 to release which removes ground from lead S (option W) or opens lead S from lead S1 (option V), opens leads CS1 and CS2 toward the CPE, and extinguishes lamp B. This returns the circuit to the idle condition.

4.04 ***Out-of-Service:*** The out-of-service feature is provided to allow the customer to make his equipment and the connecting arrangement busy to incoming calls. To initiate the action of this feature, the customer must remove the closure across leads COS and COSG toward the connecting arrangement. Leads COS and COSG opened releases relay OS; relay OS released causes relay B and relay C to release in sequence, if they are operated. Relay OSA operates and lamp OS lights through the normally closed contacts of relays A1, B, B1, and OS. Relay OSA operated grounds lead S (option W) or closes lead S to lead S1 to make the circuit busy to incoming calls.

5. MAINTENANCE

5.01 Where there is an indication of trouble in the connecting arrangement(s), the circuit at fault must be opened at the interface connecting block to verify in which direction the trouble exists. The circuit can be opened at the connecting block by removing the B bridging clip associated with each lead.

5.02 Precautions should be taken when performing tests to avoid adversely affecting service to the customer. Local instructions should be followed with reference to notifying the customer before performing the tests.

5.03 ***Apparatus Required to Perform Tests:***

(a) J34717A Pulsing Test Set or equivalent

(b) J34720A Pulse Repeating Test Set or equivalent

(c) 1013A Hand Test Set or equivalent

(d) 81A Test Set or KS-16990, List 1 Test Set, or equivalent.

5.04 ***Test—Dial Pulses:***

(a) Observe that lamp B on J53050F, ▶List 1A◀ IU under test is extinguished; insert plug from J34717A pulsing test set into Test & MB jack of IU under test—the OS lamp on IU should light. (If lamp B is lighted initially, a call is in progress; the plug from the J34717A pulsing test set may be inserted in the Test & MB jack while the call is in progress without interfering with the call. After completion of the call, relay OSA will operate, lamp B is extinguished and OS will light and the circuit will be made busy to incoming calls).

(b) Open all ten leads of the circuit under test at the interface connecting block. Provide a strap across leads COS and COSG at the interface connecting block; observe that relays A, A1, B, B1, and OS, are operated. Using the 81A or KS-16990, List 1 test set (set the test set to continuity position), check for closure across leads CS1 and CS2 at the interface connecting block; then check for presence of ground on lead TMS toward the PBX.

(c) Provide a strap across leads CS and CG at the interface connecting block—observe that relay RV operates and check for battery reversal on leads T, R of the IU under test. Remove strap from leads CS and CG.

(d) Insert the plug from J34720A pulse repeating test set into the DP jack on the IU under test. Initiate dial pulses with the J34717A pulsing test set and check for proper dial pulses as indicated by the J34720A pulse repeating test set.

(e) Remove the J34717A pulsing test set and the J34720A pulse repeating test set from the IU under test.

5.05 ***Tests—TOUCH-TONE Signals:***

(a) Open all ten leads of the circuit under test at the interface connecting block. Provide a strap across leads COS and COSG at the interface connecting block. Verify that relay OS operates (OS lamp is extinguished).

(b) Have the PBX attendant initiate a call to the trunk level code of the equipment under test. Observe that relays A, A1, B, and B1 are operated—check for closure across leads CS1 and CS2—check for presence of ground on lead TMS, toward the PBX.

(c) Provide a strap across leads CS and CG at the interface connecting block; observe that relay RV operates; check for battery reversal on leads T and R of the IU under test.

(d) Remove strap from leads CS and CG at the interface connecting block, then have the PBX attendant supply TOUCH-TONE dial signals. Using the 1013A dial hand test set, listen for presence of TOUCH-TONE signals across leads CT and CR at interface connecting block.

5.06 ***Tests—Circuit Busy:***

(a) Remove the strap from leads COS and COSG at the interface connecting block—observe that relay OS releases, relay OSA operates, and OS lamp lights. Have the PBX attendant dial the trunk level code of the equipment under test and check for return of equipment busy signal (120 IPM).

5.07 On completion of tests, remove all straps and replace the B bridging clips at the interface connecting block.

5.08 When in the repairman's judgment the trouble is located in the CPE, the Repair Service Bureau should be notified so that proper Maintenance of Service Charge billing can be initiated as outlined in Section 660-101-312 (Maintenance of Service Charge on services with CPE).

Do not attempt any tests or repairs to the CPE.

6. CONNECTIONS

6.01 For connecting information refer to Fig. 4, 5, and Table A. Connections between Voice Connecting Arrangement DCK and the associated system (PBX or Centrex) switching equipment are shown in Fig. 5.

6.02 Refer to the section covering the particular PBX in use for connection information as follows:

PBX	SECTION NO.
SS 400	518-710-200
756A	551-144-210
757A	551-234-210
770A	551-770-203
800A	553-105-201
801A	553-201-202
812A	553-212-203
101 ESS	240-248-201

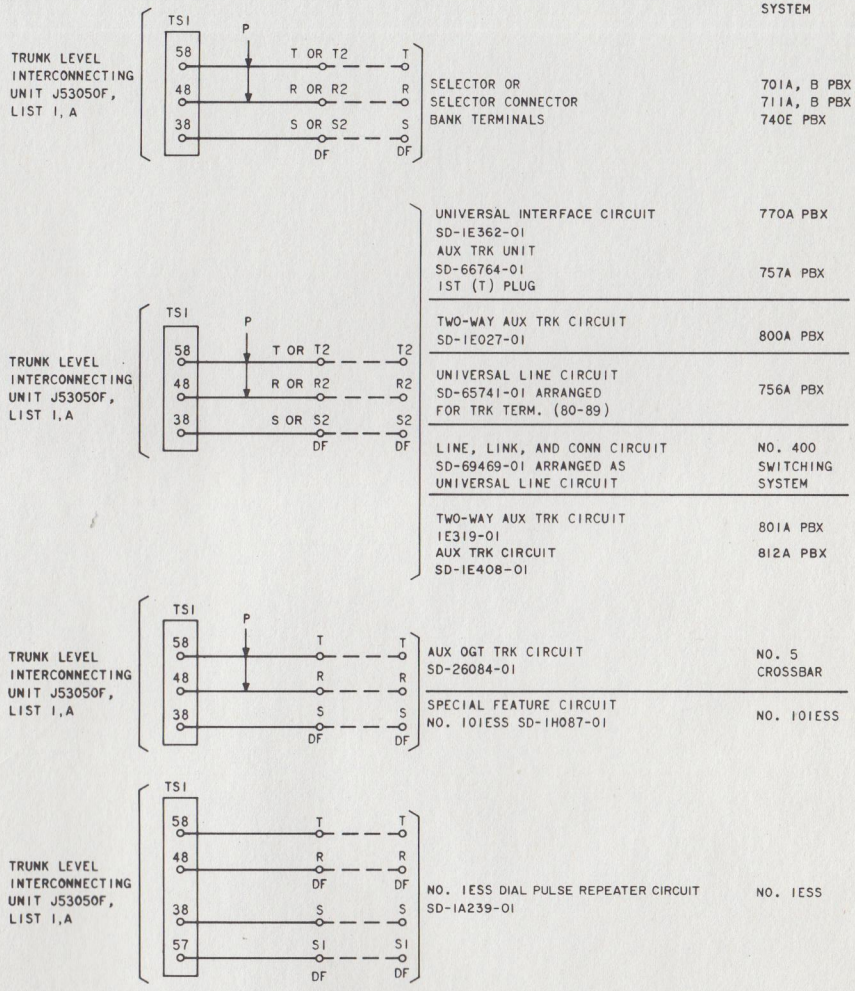


Fig. 5—Typical Connections for System Terminating Circuits with Trunk Level Interconnecting Unit J53050F, List 1