

STROMBERG-CARLSON®

F-80A DIAL PBX

installation instructions

GENERAL DYNAMICS | TELECOMMUNICATION

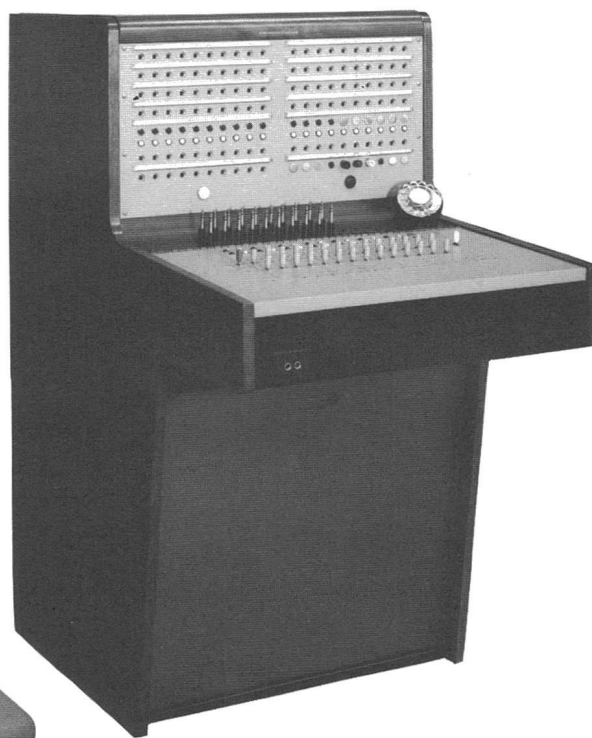
Stromberg-Carlson®

F-80A Dial PBX

INSTALLATION INSTRUCTIONS



CORDLESS TURRET



CORD-TYPE
ATTENDANT'S CABINET



GENERAL DYNAMICS | TELECOMMUNICATION

TABLE OF CONTENTS

	<u>PARAGRAPH</u>	<u>PAGE</u>
SECTION I GENERAL		
DESCRIPTION OF EQUIPMENT	1	1
LOCATION OF SWITCHING EQUIPMENT CABINET	2	1
USE OF DIGITS	3	1
CODE CALL — CODES AVAILABLE	4	2
MARKING CIRCUIT PLATES	5	2
SECTION II PBX WITH CORDLESS TURRET		
GENERAL.	6	3
<u>a.</u> Capacity		3
<u>b.</u> Standard Features		3
<u>c.</u> Optional Features		3
INSTALLATION	7	4
CONNECTION BETWEEN SWITCHING EQUIPMENT AND ATTENDANT'S TURRET	8	4
<u>a.</u> Trunk Connections.		4
(1) Combination trunk S-408019		4
(2) Ringdown trunk S-410024		7
(3) Information trunk S-408020		9
<u>b.</u> Attendant's Turret.		9
(1) Power connections		9
(2) Miscellaneous connections		10
(3) Operator's telephone circuit.		11
CONNECTIONS AT SWITCHING EQUIPMENT	9	11
<u>a.</u> Trunk Connections.		11
(1) Loop trunk S-408018		11
(2) E & M trunk S-406023		13
<u>b.</u> Station Lines		15
(1) Restricted service by line marking		16
(2) Consecutive number hunting		16
<u>c.</u> Optional Features		17
(1) Code call circuit S-33236.		17
(2) Executive right-of-way S-30268		18

TABLE OF CONTENTS (Cont)

	<u>PARAGRAPH</u>	<u>PAGE</u>
(3) Conference call S-411053		19
(4) Universal night answering S-410006		20
INSTALLATION OF CIRCUIT PLATES, XY * UNIVERSAL SWITCHES, METERS, AND FUSES	10	21
<u>a.</u> Circuit Plate Installation		21
(1) Finder-connector circuit plates		22
(2) Consecutive number hunting and restricted service control circuit plate		22
(3) Line circuit plates		22
(4) Allotter circuit plate		22
(5) Trunk circuit plates		22
(6) Code call circuit plate		22
(7) Universal night answering circuit plate		23
(8) Information trunk circuit plate and conference call circuit plates		23
<u>b.</u> Installation of XY Universal Switches		23
<u>c.</u> Installation of PC and ATB Meters		23
<u>d.</u> Installation of Fuses		23
(1) Power and supervisory		24
(2) Position 56		24
(3) Ringing generator		24
POWER CONNECTIONS OF SWITCHING EQUIPMENT	11	24
<u>a.</u> Emergency Battery		24
<u>b.</u> Earth Ground		24
<u>c.</u> Tone Generator		24
<u>d.</u> Power and Supervisory Circuit Plate		25
<u>e.</u> Battery Eliminator		25
<u>f.</u> Power Sources		25
INSTALLATION TESTS	12	25
<u>a.</u> Switching Equipment		25
(1) Fuse alarm		25
(2) Allotter stepping		25
(3) Finder-connector links		26
(4) All finders busy		27

* XY is a registered trademark of General Dynamics Corporation

TABLE OF CONTENTS (Cont)

	<u>PARAGRAPH</u>	<u>PAGE</u>
<u>b.</u> Seizure of Trunks		27
(1) Level 9 (single-digit cut-through level)		27
(2) Level 0 (two-digit cut-through level)		27
<u>c.</u> Operation of Central-Office Trunks (Level 9)		27
<u>d.</u> Station Lines		28
<u>e.</u> Turret Operation		28
<u>f.</u> Optional Features		28
(1) Executive right-of-way		28
(2) Conference call		29
(3) Code call		29
(4) Universal night answering		29
SECURING THE EQUIPMENT	13	30
SECTION III PBX WITH CORD-TYPE ATTENDANT'S CABINET		
GENERAL	14	31
<u>a.</u> Capacity		31
(1) Switching equipment		31
(2) Card-type attendant's cabinet		31
<u>b.</u> Standard Features		31
<u>c.</u> Optional Features		31
INSTALLATION	15	32
CONNECTIONS BETWEEN SWITCHING EQUIPMENT AND ATTENDANT'S CABINET	16	32
<u>a.</u> Trunk Connections		32
(1) Combination trunk S-408016		33
(2) Ringdown trunk S-410022		36
(3) Information trunk S-408020		37
(4) Loop trunk S-408018		39
<u>b.</u> Station Lines		41
<u>c.</u> Attendant's Cabinet		44
(1) Power connections		44
(2) Ground connection		44
CONNECTIONS AT SWITCHING EQUIPMENT	17	44
<u>a.</u> E & M Trunk S-406023		45
<u>b.</u> Station Lines		47
(1) Restricted service by line marking		48
(2) Consecutive number hunting		48

TABLE OF CONTENTS (Cont)

	<u>PARAGRAPH</u>	<u>PAGE</u>
c. Optional Features		49
(1) Code call circuit S-33236		49
(2) Executive right-of-way S-30268		50
INSTALLATION OF CIRCUIT PLATES, XY UNIVERSAL SWITCHES, METERS, AND FUSES	18	51
a. Circuit Plate Installation		51
(1) Finder-connector circuit plates		51
(2) Consecutive number hunting and restricted service control circuit plate		51
(3) Line circuit plates		52
(4) Allotter circuit plate		52
(5) Trunk circuit plates		52
(6) Code call circuit plate		52
(7) Information trunk circuit plates		52
b. Installation of XY Universal Switches		52
c. Installation of PC & ATB Meters		53
d. Installation of Fuses (F-80A Switching Equipment)		53
(1) Power and supervisory		53
(2) Position 56		53
(3) Ringing generator		53
ADDITION OF CORD CIRCUITS	19	53
a. Cord Circuit Assemblies (Cord Circuits 11 through 14)		53
b. Cord Circuit and Key Assembly (Cord Circuit 15)		55
POWER CONNECTIONS OF SWITCHING EQUIPMENT	20	55
a. Emergency Battery		55
b. Earth Ground		55
c. Tone Generator		55
d. Power and Supervisory Circuit Plate		55
e. Battery Eliminator		56
f. Power Source		56
INSTALLATION TESTS	21	56
a. Switching Equipment		56
(1) Fuse alarm		56
(2) Allotter stepping		56

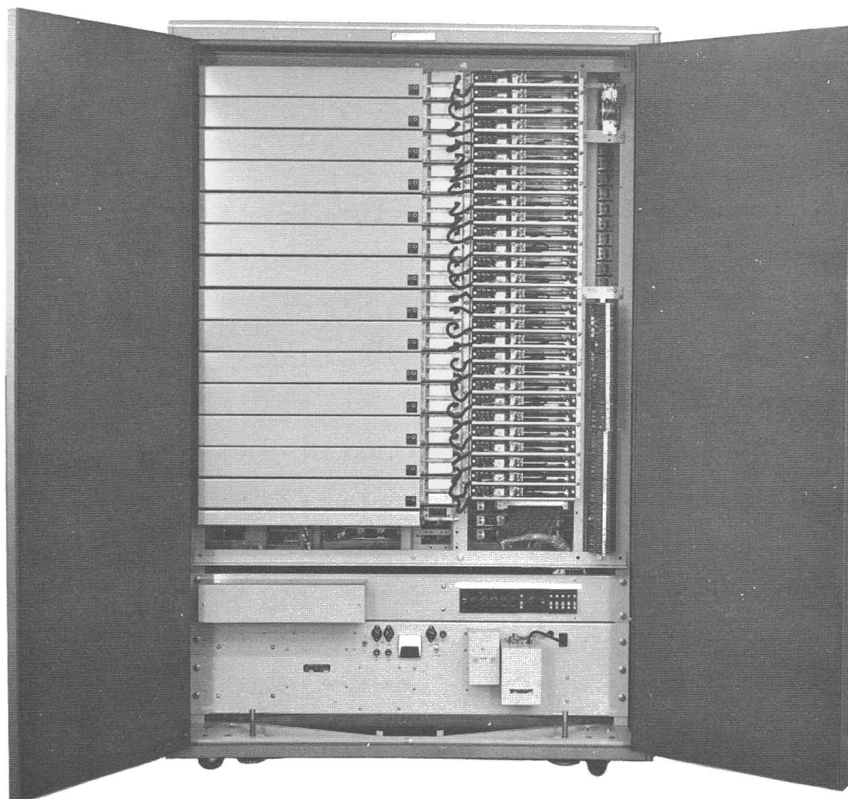
TABLE OF CONTENTS (Cont)

	<u>PARAGRAPH</u>	<u>PAGE</u>
(3) Finder-connector links		57
(4) All finders busy.		58
b. Seizure of Trunks		58
(1) Level 9 (single-digit cut-through level)		58
(2) Level 0 (two-digit cut-through level)		58
c. Operation of Central-Office Trunks (Level 9)		58
d. Station Lines		59
e. Attendant's Cabinet		59
(1) Fuse alarm circuit.		59
(2) Cord circuits		59
(3) Line jack multiple		60
(4) Conference jacks		60
(5) Night jacks		61
f. Optional Features		61
(1) Executive right-of-way		61
(2) Code call		62
SECURING THE EQUIPMENT.	22	62

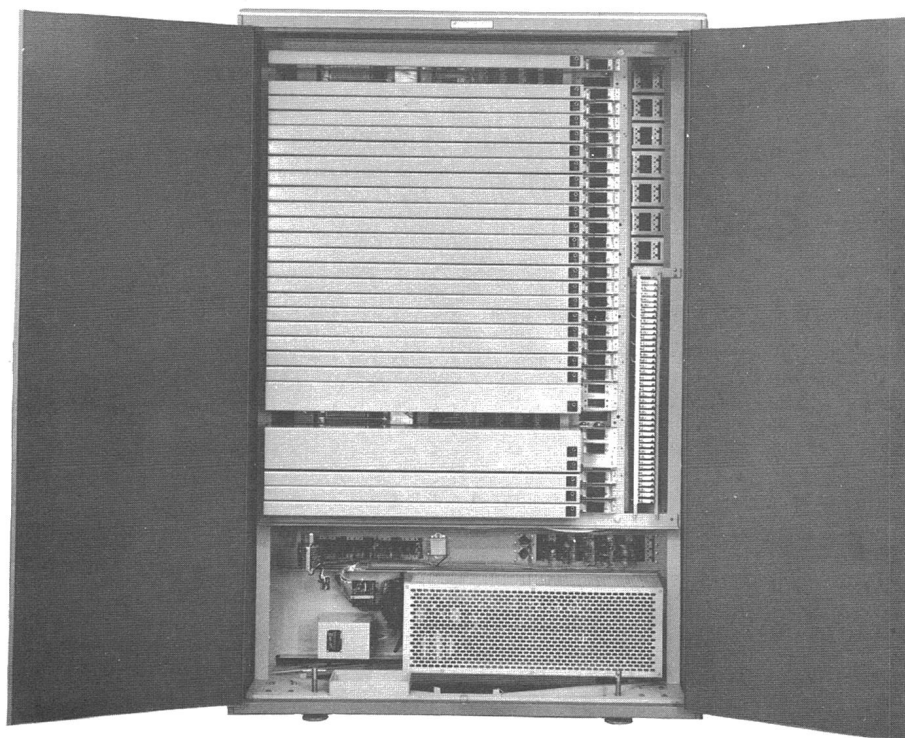
LIST OF ILLUSTRATIONS

<u>TITLE</u>	<u>FIGURE</u>	<u>PAGE</u>
Position F59 Terminal Block Designations	1	63
Position F60 Terminal Block Designations	2	65
Trunk Connections In Level 0	3	67
Terminal Numbering of Bay Jacks.	4	67
Terminal Boards of Turret	5	69
Power Terminal Block of F-80A	6	69
Installation of Fuses	7	71
Trunk and Line Multiple Terminal Board - Cord Type Attendant's Cabinet.	8	71
Power Terminal Strips - Cord Type Attendant's Cabinet.	9	73
Trunk Connections In Level 0	10	75
Numbering of Cord Circuit Plate Terminal Blocks	11	75

F-80A PBX EQUIPMENT CABINET



FRONT VIEW



REAR VIEW

SECTION I

GENERAL

1. DESCRIPTION OF EQUIPMENT

The F-80A Dial PBX is a self-contained automatic telephone exchange. The PBX is provided with either a cord-type attendant's cabinet or a cordless turret.

The capacity, features, and installation instructions of the cordless turret are given in Section II, and of the cord-type attendant's cabinet in Section III.

The switching equipment is contained in a cabinet 6 feet 4 inches high, 4 feet 1 1/2 inches wide, and 2 feet deep. The cabinet is mounted on casters for ease of movement and is provided with floor locks to secure the unit in the desired location.

The power equipment consists of a 48-volt dc battery eliminator, a ringing generator, and a static (tone) generator. The battery eliminator operates on 105 to 125-volt, single-phase, 60 cycle ac, at a full load volt-ampere input of 1700 volt amperes.

2. LOCATION OF SWITCHING EQUIPMENT CABINET

If building wiring has already been installed, the location of the switching equipment is obvious. If the building wiring has not been installed, several factors must be considered in determining the most desirable location of the F-80A switching equipment.

- a. Location of central-office trunk terminations.
- b. Location of turret or attendant's cabinet.
- c. Central location to majority of local stations.
- d. Availability of 105 to 125-volt, 60 cycle, single-phase ac power.

3. USE OF DIGITS

The following list indicates the use of digits in the F-80A system. Station line circuit plates are installed on the rear of the frame in positions 3 through 8. Refer to drawing 202503-249.

STATION LINES

<u>Circuit Plate</u>	<u>Station Lines</u>															
1	11	12	13	14	15	16	17	18	19	10	21	22	23	24	25	
2	31	32	33	34	35	36	37	38	39	30	26	27	28	29	20	
3	41	42	43	44	45	46	47	48	49	40	51	52	53	54	55	
4	61	62	63	64	65	66	67	68	69	60	56	57	58	59	50	
5	71	72	73	74	75	76	77	78	79	70	81	82	83	84	85	
6	91	92	93	94	95	96	97	98	99	90	86	87	88	89	80	

NORMAL LEVEL

OPERATOR 01

CODE CALL 09 (CALL)
(When used)

80 (ANSWER) - can be used for station line when code call is
not installed.

CENTRAL OFFICE TRUNKS 9

UNIVERSAL NIGHT ANSWERING (When used) 9 (ANSWER)
0 (TRANSFER)

4. CODE CALL - CODES AVAILABLE

11 12 13 14 15 16
21 22 23 24 25 26
31 32 33 34 35 36
41 42 43 44 45 46
51 52 53 54 55 56
61 62 63 64 65 66

5. MARKING CIRCUIT PLATES

It is recommended that the installer mark the circuit plates, by rubber stamping or stenciling, to aid in locating the circuits after installation. Mark per drawing 202503-249.

SECTION II
PBX WITH CORDLESS TURRET

6. GENERAL

a. *Capacity.*

80 local lines (1200-ohm extension loop)

14 linefinder-connector links

14 trunks

2 information trunks

1 operator's trunk (used by attendant to call PBX lines)

b. *Standard Features.*

Night answering - of predetermined trunks by predetermined stations

Consecutive number hunting

One or two-digit, metallic switch-through

Restricted service by line marking

Jack-in circuit plates that provide easy installation, expansion to maximum capacity, replacement, and removal for testing.

c. *Optional Features.*

Executive right-of-way

Meet-me-type conference circuit

Universal night answering - transfer to any station

Code call - 36 two-digit codes

7. INSTALLATION

The installer should complete all wiring before installing circuit plates. Remove the panel on the side of the cabinet of the F-80A to provide access to the terminal blocks at positions 59 and 60.

IMPORTANT: Do not connect power until wiring is complete and circuit plates and fuses are installed.

8. CONNECTIONS BETWEEN SWITCHING EQUIPMENT AND ATTENDANT'S TURRET

The wiring between the switching equipment and the attendant's turret should be completed before the wiring of optional features, trunks that are not accessed at the turret, station lines, etc.

Wiring connections that must be made by the installer are listed below. It is recommended that these connections be made in the sequence shown. Space is provided in the charts or in front of strap terminations for the installer to indicate the color of each wire installed, thus providing a permanent record of PBX wiring.

a. Trunk Connection.

The cordless turret can accommodate a maximum of eight two-way combination central-office trunks, or six two-way combination central-office trunks and two ringdown trunks. As shipped from the factory, the PBX is wired for 10 combination trunks on level 9. Terminals 91 through 98 can be used for two-way combination central-office trunks, 99 and 90 can be used for one-way outgoing trunks, if desired.

Trunk circuits 1 through 10 are strapped in the 9th level switch bank terminals 91 through 90. Circuits 1 through 8 are also strapped to normal level line circuits 91 through 98. The installer can change this arrangement, if required by moving the appropriate jumpers to the desired terminals. The identification of these jumpers is shown in sheets 7 and 8 of J-888.

Ringdown trunks can be connected in trunk circuit positions 7 and 8, instead of combination trunks. The jumpers connecting trunk circuits 7 and 8 to the 9th level must be disconnected and moved to the desired terminals (normally in level 0).

(1) Combination trunk S-408019.

Refer to circuit diagram S-408019, circuit description DS-408019, and figures 1, 2, 4, and 5 of this publication.

The following charts indicate the connections between the switching equipment and turret. Connect the combination trunk terminals of the switching equipment to the C.O. Trunk terminals of the attendant's turret; trunk 1 to terminal group 1, trunk 2 to terminal group 2 etc.

TURRET DESIG- NATION	CIRCUIT PLATE TERMINAL	COMBINATION TRUNKS POSITION F59							
		1		2		3		4	
		TERM.	COLOR	TERM.	COLOR	TERM.	COLOR	TERM.	COLOR
SR. L	A12	1E		3E		5E		7E	
INC. L	A17	1A		3A		5A		7A	
BSY. L	A18	2M		4M		6M		8M	
ANS	A19	2L		4L		6L		8L	
DL	A20	2K		4K		6K		8K	
RLS	A24	2G		4G		6G		8G	

TURRET DESIG- NATION	CIRCUIT PLATE TERMINAL	COMBINATION TRUNKS POSITION F59							
		5		6		7		8	
		TERM.	COLOR	TERM.	COLOR	TERM.	COLOR	TERM.	COLOR
SR. L	A12	9E		11E		13E		15E	
INC. L	A17	9A		11A		13A		15A	
BSY. L	A18	10M		12M		14M		16M	
ANS	A19	10L		12L		14L		16L	
DL	A20	10K		12K		14K		16K	
RLS	A24	10G		12G		14G		16G	

The following chart indicates the connections from central office to the combination trunks. Connect the incoming leads from central office to the terminals shown for each combination trunk installed.

Note. The T & R leads must be a twisted pair.

FROM CENTRAL OFFICE	CIRCUIT PLATE TERMINAL	COMBINATION TRUNKS POSITION F59							
		TRUNK 1		TRUNK 2		TRUNK 3		TRUNK 4	
		TERM.	COLOR	TERM.	COLOR	TERM.	COLOR	TERM.	COLOR
T	A2	1L		3L		5L		7L	
R	A7	1H		3H		5H		7H	

FROM CENTRAL OFFICE	CIRCUIT PLATE TERMINAL	COMBINATION TRUNKS POSITION F59							
		TRUNK 5		TRUNK 6		TRUNK 7		TRUNK 8	
		TERM.	COLOR	TERM.	COLOR	TERM.	COLOR	TERM.	COLOR
T	A2	9L		11L		13L		15L	
R	A7	9H		11H		13H		15H	

Note. Add "M" wiring if central-office battery is 24 volts. Jumper must be connected at bay jack. Refer to figure 4. () A4 to A9.

Night Answering - (Answering of predetermined trunks by predetermined stations.) Refer to figures 1, 2, and 5. The installer must assign the stations that will answer the trunks.

Note. If universal night answering is used, these connections are not made.

TRUNK TO TURRET

Note. T & R leads must be a twisted pair.

COMBINATION TRUNK	POSITION F59			TURRET		
	CIRCUIT PLATE TERMINAL	TERM.	COLOR	NIGHT SWITCH KEY NO.	NIGHT SERVICE TERMINAL	COLOR
1	A1	1M		1	T	
	A6	1J			R	
	A11	1F			S	
2	A1	3M		2	T	
	A6	3J			R	
	A11	3F			S	
3	A1	5M		3	T	
	A6	5J			R	
	A11	5F			S	
4	A1	7M		4	T	
	A6	7J			R	
	A11	7F			S	
5	A1	9M		5	T	
	A6	9J			R	
	A11	9F			S	

LINE CIRCUIT TO TURRET

Note. The T & R leads must be a twisted pair.

COMBINATION TRUNK	POSITION F59 or F60			TURRET		
	ASSIGNED LINE NUMBER	TERM.	COLOR	NIGHT SWITCH KEY NO.	LINE TERMINAL	COLOR
1		T R S		1	T R SN	
2		T R S		2	T R SN	
3		T R S		3	T R SN	
4		T R S		4	T R SN	
5		T R S		5	T R SN	

(2) Ringdown trunk S-410024.

Refer to circuit diagram S-410024, circuit description DS-410024, and figures 1, 2, and 5 of this publication.

The following charts indicate the connection between the switching equipment and turret. Connect the ringdown trunk terminals of the switching equipment to the C.O. Trunk terminals of the attendant's cabinet; trunk 1 to terminal group 7, trunk 2 to terminal group 8.

TURRET DESIG- NATIONS	CIRCUIT PLATE TERMINALS	RINGDOWN TRUNKS (NORMALLY INSTALLED IN TRUNK POSITIONS 7 & 8)			
		1		2	
		POS F59 TERM.	COLOR	POS F59 TERM.	COLOR
SR. L	A12	13E		15E	
INC. L	A17	13A		15A	
BSY. L	A18	14M		16M	
ANS	A19	14L		16L	
DL	A20	14K		16K	
RLS	A24	14G		16G	

Note. When connecting this trunk, the installer must remove the straps connecting the trunk circuit to the switch bank terminals in level 9; and connect them to the desired switch bank terminals (normally in level 0). These straps are on A1 (T), A6 (R), and A11 (S).

Night Answering - (Answering of predetermined trunks by predetermined stations.) Refer to figures 1, 2, and 5. The installer must assign the stations that will answer the trunks.

The following charts indicate the connections between the switching equipment and turret. Since ringdown trunks are connected in trunk position 7 and 8, night switch keys 4 and 5 should be used if the circuit is to be answered at night.

Note. If universal night answering is used, these connections are not made.

TRUNK TO TURRET

Note. The T & R leads must be a twisted pair.

RINGDOWN TRUNK	POSITION F59			TURRET		
	CIRCUIT PLATE TERMINAL	R59 TERM.	COLOR	NIGHT SWITCH KEY NO.	NIGHT SERVICE TERMINAL	COLOR
1	A14	13C		4	T	
	A16	13B			R	
	A21	14J			S	
2	A14	15C		5	T	
	A16	15B			R	
	A21	16J			S	

LINE CIRCUIT TO TURRET

Note. The T & R leads must be a twisted pair.

RINGDOWN TRUNK	POSITION F59 or F60			TURRET		
	ASSIGNED LINE NUMBER	TERM.	COLOR	NIGHT SWITCH KEY NO.	LINE TERMINAL	COLOR
1		T R S		4	T R SN	
2		T R S		5	T R SN	

(3) Information trunk S-408020.

Refer to circuit diagram S-408020, circuit description DS-408020, and figures 1, 2, and 5 of this publication.

The following chart indicates the connections that must be made between the switching equipment and the turret.

TURRET DESIG- NATIONS	CIRCUIT PLATE TERMINALS		INFORMATION TRUNKS			
			1		2	
	CCT 1	CCT 2	POS F59 TERM.	COLOR	POS F59 TERM.	COLOR
T	A2	A4	33L		33J	
R	A7	A9	33G		33E	
S	A12	A14	33B		34M	
INC. L	A10	A20	33D		34J	

Note. Trunk position 1 (first two information trunks) are factory wired to appear on terminals of 01 and 02.

b. Attendant's Turret.

The following connections must be made to complete the connection of the attendant's turret to the F-80A switching equipment. Refer to figure 5.

(1) Power connections.

These connections must be made between the main terminal block of the turret and position F59 of the F-80A switching equipment. Refer to figure 5A.

F-80A POSITION F59		TURRET MAIN TERMINAL BLOCK	
TERM. & DESIG.	COLOR	DESIG.	COLOR
39B(GRD)		+GRD	
39A(-48V)		BAT	
45M(DAY BAT.)		DB	

(2) Miscellaneous connections.

Refer to figure 5A.

F80A POSITION F59		TURRET MAIN TERMINAL BLOCK	
TERM. & DESIG.	COLOR	DESIG.	COLOR
39J(TO)		TO	
39H(RO)		RO	
39D(AL)		AL	
39C(AB)		AB	

F-80A POSITION F59		TURRET OPER. TEL. TERM. BLK.	
TERM. & DESIG.	COLOR	DESIG.	COLOR
31A(CO)		CO	

Note. Remove the rear cover of the battery eliminator and remove the instruction sheet. Restore the cover of the battery eliminator.

Operator's trunk - The installer must connect the T and R terminals of the attendant's turret to a line circuit. The connection must be made using a twisted pair.

It is recommended that the installer use line circuit 90 which is connected in the normal level.

F-80A POSITION F60		TURRET MAIN TERMINAL BLOCK	
TERM.	COLOR	TERM.	COLOR
50D		T	
50C		R	

If normal level line circuit 90 is used for some other purpose, the operator's trunk can be connected to any other line circuit in a similar manner.

Note. The G terminals of the attendant's turret are used only when a single-digit toll restrictor is connected. Refer to the instructions accompanying the toll restrictor (T-1060) for terminations.

(3) Operator's telephone circuit.

Connect the cable of the attendant's telephone to the operator's telephone terminal block of the turret. Refer to figure 5B.

<u>TELEPHONE CABLE</u>		<u>OPERATOR'S TELEPHONE TERMINAL BLOCK</u>
() Yellow	to	Y
() Blue	to	BL
() Red	to	R
() Green	to	G
() Brown	to	BR
() White	to	W

9. CONNECTIONS AT SWITCHING EQUIPMENT

After the cabling has been connected between the attendant's turret and the switching equipment the following connections must be made at the switching equipment.

a. *Trunk Connections.*

Trunk circuits 11 through 14 are not strapped to any switch bank terminals. The installer must jumper the trunk terminals to the desired line circuit and switch bank terminals (normally in level 0). Loop and/or E and M dial-to-dial tie lines can be connected, as shown in figure 3, either as individual trunks or for group hunting. Trunks must not be mixed in a group, however, it is possible to have more than one group in a level if two-digit cut-through level wiring is used. Refer to connector drawing S-401038.

Note. When a single-digit toll restrictor is used with this equipment, refer to the instruction sheet packed with the toll restrictor, and to sheet 2 of general assembly drawing 202503-249 before making any central-office trunk connections.

(1) Loop trunk S-408018.

Refer to circuit diagram S-408018, circuit description DS-408018, and figures 1, 2, 4, and 5 of this publication.

TRUNK TO LINE CIRCUIT

Note. The T & R leads must be a twisted pair.

LOOP TRUNK	LINE CIRCUIT ASSIGNMENT				COLOR
	TRUNK CCT TERM.	POSITION F59	POSITION F60	ASSIGNED LINE	
1	A3		T		
	A8		R		
	A13		S		
2	A3		T		
	A8		R		
	A13		S		
3	A3		T		
	A8		R		
	A13		S		
4	A3		T		
	A8		R		
	A13		S		

TRUNK TO SWITCH BANK

Note. The T & R leads must be a twisted pair.

LOOP TRUNK	SWITCH BANK ASSIGNMENT				COLOR
	TRUNK CCT TERM.	POSITION F59	POSITION F60	ASSIGNED SW. BANK TERM.	
1	A1		T		
	A6		R		
	A11		S		
2	A1		T		
	A6		R		
	A11		S		
3	A1		T		
	A6		R		
	A11		S		
4	A1		T		
	A6		R		
	A11		S		

TIE-LINE TO F-80A

Note. The T & R leads must be a twisted pair.

LOOP TRUNK	TIE- LINE LEADS	TRUNK CIRCUIT PLATE TERMINAL	POSITION F59	
			ASSIGNED TERMINAL	COLOR
1	T	A2		
	R	A7		
2	T	A2		
	R	A7		
3	T	A2		
	R	A7		
4	T	A2		
	R	A7		

Optional wiring - If the loop resistance exceeds 1000 ohms, the installer must connect "W" wiring. Jumpers must be connected at the bay jack.

() A5 to A4

() A15 to A18

(2) E & M trunk S-406023.

Refer to circuit diagram S-406023, circuit description DS-406023, and figures 1, 2, and 4 of this publication. When this circuit is used, the SX, CX, and signaling equipment must be mounted externally in a separate cabinet or relay rack.

SX OR CX EQUIPMENT TO TRUNK

Note. The T & R leads must be a twisted pair.

SX OR CX EQUIPMENT TERMINAL	CCT PLATE TERM.	E & M TRUNKS POSITION F59							
		TRUNK 1		TRUNK 2		TRUNK 3		TRUNK 4	
		ASSIGNED TERM.	COLOR	ASSIGNED TERM.	COLOR	ASSIGNED TERM.	COLOR	ASSIGNED TERM.	COLOR
A	A23								
B	A28								
T	A2								
R	A7								

MICROWAVE EQUIPMENT TO TRUNK (When used)

MICROWAVE EQUIPMENT TERMINAL	CCT PLATE TERM.	E & M TRUNKS POSITION F59							
		TRUNK 1		TRUNK 2		TRUNK 3		TRUNK 4	
		ASSIGNED TERM.	COLOR	ASSIGNED TERM.	COLOR	ASSIGNED TERM.	COLOR	ASSIGNED TERM.	COLOR
ICS	A12								

RELAY RACK TO TRUNKS (When Polar Duplex is used)

RELAY RACK TERM.	CCT PLATE TERM.	E & M TRUNKS POSITION F59							
		TRUNK 1		TRUNK 2		TRUNK 3		TRUNK 4	
		ASSIGNED TERM.	COLOR	ASSIGNED TERM.	COLOR	ASSIGNED TERM.	COLOR	ASSIGNED TERM.	COLOR
BT	*A18								
J	*A18								
K	*A17								
E	A24								
M	A19								

* Not always used

TRUNK TO LINE CIRCUIT

Note. The T & R leads must be a twisted pair.

E & M TRUNK	LINE CIRCUIT ASSIGNMENT				COLOR
	TRUNK CCT TERM.	POSITION F59	POSITION F60	ASSIGNED LINE	
1	A3		T		
	A8		R		
	A13		S		
2	A3		T		
	A8		R		
	A13		S		
3	A3		T		
	A8		R		
	A13		S		
4	A3		T		
	A8		R		
	A13		S		

TRUNK TO SWITCH BANK

Note. The T & R leads must be a twisted pair.

E & M TRUNK	SWITCH BANK ASSIGNMENT				COLOR
	TRUNK CCT TERM.	POSITION F59	POSITION F60	ASSIGNED SW. BANK TERM.	
1	A1		T		
	A6		R		
	A11		S		
	A16		HS		
2	A1		T		
	A6		R		
	A11		S		
	A16		HS		
3	A1		T		
	A6		R		
	A11		S		
	A16		HS		
4	A1		T		
	A6		R		
	A11		S		
	A16		HS		

Optional wiring - Use "M" wiring and omit "N" wiring when used with polar duplex equipment. Jumpers must be connected at the bay jack.

() A10 to A15

() A20 to A15

Use "N" wiring and omit "M" wiring when used with carrier or microwave equipment. Jumper must be connected at the bay jack.

() A4 to A10

b. Station Lines.

Refer to figures 1 and 2. Each telephone station requires two wires. Connect the T (tip) and R (ring) wires of the telephone line to the T and R terminals of the terminal blocks on the front of the equipment frame (positions F59 and F60). Lines 11 through 10 are located on the top terminal block (position F59) and lines 21 through 80 are located on the bottom terminal block (position F60).

(1) Restricted service by line marking.

Connect the HS terminals (located at positions F59 and F60) of all station lines assigned for restricted service in multiple. Connect a lead from this multiple to the RS terminal of position F29, terminal C30. Connection is made at the circuit plate bay jack.

(2) Consecutive number hunting.

Refer to circuit diagram S-401038 and figures 1, 2, and 4 of this publication.

The F-80A has provision for connecting 14 lines for consecutive number hunting. A maximum of ten lines can be connected in any one group.

There are three different arrangements for consecutive number hunting:

1) restricted lines, 2) non-restricted lines, and 3) mixed group of restricted and non-restricted lines. The wiring procedures for these arrangements are outlined below.

Note. When more than 14 station lines are assigned for consecutive number hunting, a second RS relay must be installed. Refer to assembly drawing 202503-249 for ordering information.

(a) Restricted lines.

Refer to figure H of S-401038.

Strap the S and HS terminals (located at position F60) of all the station lines in the group, except the last line. Connect a lead from the HS terminal of the last line in the group to the RS terminal at position F29, terminal C30. Connection is made at the circuit plate bay jack.

(b) Non-restricted lines.

Refer to figures 3 and D of S-401038.

Connect the S and HS terminals of each station line in the group, except the last line, to a set of S and HS springs of the RS relay at position F29. Connection is made at the circuit plate bay jacks. The S and HS terminals of the last line in the group are not wired to the springs of the RS relay.

(c) Mixed group.

Refer to figures 3 and E of S-401038.

Strap the S and HS terminals of the restricted lines in the group. If the last line in the group is a restricted line, do not strap the S and HS terminals. However, the HS terminal must be wired to the RS terminal of position F29, terminal C30.

Connect the S and HS terminals to the springs of the RS relay at position F29. Connections are made at the circuit plate bay jacks. If the last line in the group is a non-restricted line, do not make any connections to the S and HS terminals of this line.

c. Optional Features.

The following optional features can be installed in the F-80A switching equipment by installing the appropriate circuit plates and by making the connections listed in the following paragraphs.

(1) Code call circuit S-33236.

Refer to circuit diagram S-33236 and circuit description DS-33236.

(a) Disconnect the line circuit for 80. Refer to figure 2B. Remove the outside lead connected to the tip (T), ring (R), and sleeve (S) terminals of line 80 at position F60.

(b) Connect.

Line 80	()	F60-35D (T) to F59-44M
	()	F60-35C (R) to F59-44L
	()	F60-35B (S) to F59-44K
Line 09	()	F60-45H (T) to F59-44H
	()	F60-45G (R) to F59-44G
	()	F60-45F (S) to F59-44F

(c) Fire alarm.

If a fire alarm circuit is used in conjunction with this circuit, connect the lead from the fire alarm circuit to F59-45A (FIRE ALM).

(d) Code call signaling device.

Connect the control lead from the code call MASTER RELAY to F59-45B (SIG). The MASTER RELAY must be provided by the customer and should have a 48 vdc coil.

(2) Executive right-of-way S-30268.

Refer to circuit diagram S-30268 and circuit description DS-30268.

The executive right-of-way (EROW) service requires the use of a two-line telephone or two telephones since EROW lines provide outgoing service only. The first line is connected in the normal manner as previously described. The T (tip) and R (ring) connections of the EROW line must be connected directly to the executive right-of-way connector as described below.

(a) EROW line.

- () T to F59-43B 2nd station assigned for EROW service
- () R to F59-43A
- () T to F59-44B 1st station assigned for EROW service
- () R to F59-44A

Note. Executive right-of-way service can be extended to other telephone stations on a party line basis, when desired, by connecting the EROW lines in parallel.

(b) Optional wiring.

Remove the wiring from the bay jacks to the terminals of the XX wire banks of the EROW connectors. Remove the jumpers from the XX wire bank terminals.

Connect the following jumpers:

- () F27-A27 to level 9 of XX wire bank. Jumper level 9 to level 0 of the XX wire bank.
- () F25-A27 to level 9 of XX wire bank. Jumper level 9 to level 0 of the XX wire bank.

(c) When EROW connectors are installed in positions F25 and F27, the following connections are required.

- () F27-A13 to ground.
- () F25-A13 to ground.

(d) Automatic re-ring.

If "M" wiring is not connected, the EROW connector is provided with automatic re-ring. Thus, if a busy line is dialed from an EROW telephone, the executive can

request that the conversing parties hang up. When the conversing parties have disconnected, the station dialed from the EROW telephone will be automatically rung.

If this feature is not desired, connect the following optional wiring.

() F27-A21 to F27-A26

() F25-A21 to F25-A26

(3) Conference call S-411053.

Refer to circuit diagram S-411053 and circuit description DS-411053.

The conference call circuit plate is provided with one operator's access circuit and six conference circuits which are accessible from station lines.

Each conference call access installed will require a finder-connector link when seized by a station line. Thus, when a full complement of finder-connector links is not provided, it is recommended that the number of conference call accesses connected should be reduced proportionally.

Each conference call circuit must be connected to a station line. Thus, the number of conference call accesses installed will reduce the number of station lines accordingly. The installer should assign the conference call circuits to consecutive lines in the same level. The last lines in the level are recommended, as they can be wired for consecutive number hunting without sacrificing a station line. Refer to connector drawing S-401038.

The operator's access circuit should be assigned to the station line immediately preceding the conference circuit group. Thus, if the conference circuit group is assigned to lines 64 through 60, line 63 should be assigned to operator's access.

Note. Connect this circuit as an individual line, not as a part of the conference circuit group.

The line circuits of the station lines to which conference call circuits are assigned, must be disconnected from the connector wire banks. This can be accomplished at position F60, refer to figure 2(B). Disconnect the outside lead connected to the T (tip), R (ring), and S (sleeve) terminals of the assigned line circuits on the shop side of the terminal board. Insulate these leads.

Note. If full capacity of station lines is not used, the omission of the appropriate line circuit plate will eliminate the necessity of disconnecting the line circuits.

CONNECTIONS

<u>Position F60 (Lines Assigned to Conference Call)</u>			<u>Position F59</u>
Circuit 1	()	T	38L (A16)
	()	R	38J (A20)
	()	S	38C (A30)
	()	T	37K (A3)
	()	R	37F (A8)
	()	S	27A (A13)
Circuit 2	()	T	37L (A2)
	()	R	37G (A7)
	()	S	37B (A12)
	()	T	38K (A18)
	()	R	38F (A23)
	()	S	38D (A25)
Circuit 3	()	T	38E (A24)
	()	R	38G (A22)
	()	S	37D (A10)
	()	T	37J (A4)
	()	R	37E (A9)
	()	S	38M (A14)
 Operator's Access			
<u>Position F60 (Line Assigned to Operator's Access)</u>			<u>Position F59</u>
	()	T	37M (A1)
	()	R	37H (A6)
	()	S	37C (A11)

(4) Universal night answering S-410006.

Refer to circuit diagram S-410006, circuit description DS-410006, and figures 1 and 2 of this publication.

Disconnect and insulate the green, blue, and blue-white wires connected to the T, R, and S terminals of line 91. These terminals are located at 36H, 36G, and 36F of position F60.

To audible signal device - Ringing current is provided for a standard line ringer. The AD1 lead energizes the ringer to indicate an incoming call; the AD2 lead energizes the ringer to indicate that an incoming call is waiting to be answered when the common equipment is free.

() AD1 lead to F59-29A

() AD2 lead to F59-30A

Note. The switchboard is wired for night answering of the first 6 combination trunks. If the universal night answering feature is desired for trunk positions 7 and 8, the following jumpers must be installed.

TRUNK 7

() F59 - 32M to F59 - 14K DL

() F59 - 32L to F59 - 14L ANS

() F59 - 32K to F59 - 14G RLS

() F59 - 32J to F59 - 13E SR.L

() F59 - 32H to F59 - 13A INC.L

TRUNK 8

() F59 - 32F to F59 - 15K DL

() F59 - 32E to F59 - 15L ANS

() F59 - 32D to F59 - 15G RLS

() F59 - 32C to F59 - 16E SR.L

() F59 - 32B to F59 - 16A INC.L

Optional wiring - Refer to figure 4 and connector drawing S-401038. When universal night answering is installed, remove "W" wiring of connectors. Jumper must be removed at bay jacks of connectors.

() Remove jumpers connecting A7 and A10.

10. INSTALLATION OF CIRCUIT PLATES, XY UNIVERSAL SWITCHES, METERS AND FUSES

Remove the covers from all circuit plates. Remove all packing material from the covers.

a. *Circuit Plate Installation.*

Refer to assembly drawing 202503-249.

All circuit plates used with the F-80A are installed in the following manner. The circuit plate positions are numbered from top (1) to bottom (31).

Carefully insert the circuit plate plug into the bay jack. Check to ensure that the pins of the circuit plate plug are properly aligned with the pins of the bay jack.

IMPORTANT: Do not apply excessive force when inserting the circuit plate plug in the bay jack.

Secure the circuit plate to the frame with the screws provided.

(1) Finder-connector circuit plates.

Install the first 12 finder-connector circuit plates in the circuit plate positions 1 through 24 on the front of the frame. Positions 25 through 28 can be used for either standard finder-connector links or for Executive Right-of-Way Connectors.

(2) Consecutive number hunting and restricted service control circuit plate.

Install the consecutive number hunting and restricted service control circuit plate in position 29 on the front of the equipment frame.

(3) Line circuit plates.

Install the line circuit plates in circuit plate positions 3 through 8 on the rear of the equipment frame.

Note. A line circuit plate must be installed in position 8 on the rear of the equipment frame. Line circuits 91-90 of this plate are used with combination trunks and operator's trunk. Line circuits 86-89 can be used for station lines. Line 80 is used for code call answering when the code call circuit is installed, otherwise, 80 can be used as a station line.

(4) Allotter circuit plate.

Install the allotter circuit plate in circuit plate position 1 on the rear of the equipment frame. Note that position 2 is left vacant.

(5) Trunk circuit plates.

Install the trunk circuit plates in positions 9 through 22 on the rear of the equipment frame.

(6) Code call circuit plate.

Install the code call circuit plate in positions 23 and 24 on the rear of the equipment frame. Note that position 25 is left vacant.

(7) Universal night answering circuit plate.

Install the universal night answering circuit plate in position 26 through 28 on the rear of the equipment frame.

(8) Information trunk circuit plate and conference call circuit plate.

The information trunk circuit plate must be installed in position 29 on the rear of the equipment frame. The conference call circuit plate, when used, must be installed in position 31 on the rear of the equipment frame.

b. *Installation of XY Universal Switches.*

All XY Universal Switches are interchangeable and can be used as either a linefinder or connector.

The XY Universal Switches are installed in the cells adjacent to the finder-connector circuit plates, located on the front of the equipment frame. The top switch of a group is the connector and the bottom switch is the linefinder.

Check to ensure that the wipers of the switch are in the normal position, i.e. not extended.

Install the Switch by depressing the lock springs and inserting the Switch into the cell. Connect the XY plug to the associated circuit plate plug.

c. *Installation of PC and ATB Meters.*

The PC (peg count) meter registers the number of calls that are originated in the F-80A. The ATB (all trunks busy) meter registers the number of times that all of the finder-connector links are busy. The same type meter is used for both applications.

The meters can be installed by inserting them in the designated jacks located on the front of the equipment frame.

d. *Installation of Fuses.*

Refer to figure 7. All fuses for the F-80A, except for battery eliminator, are shipped in a separate carton and must be installed by the installer. As each fuse is installed, check that there is clearance between the contact spring and the center (alarm bar) contact.

(1) Power and supervisory.

Install the 10-ampere cartridge fuse in the EQPT F position, and a 5-ampere fuse in the COMB. TRUNK position. Install the 3-ampere fuses in all other positions at the power and supervisory fuse blocks.

(2) Position 56.

Install 3-ampere fuses for TRUNKS, total of seven fuses. Install 1 1/3-ampere fuses in all other fuseholders at position 56.

(3) Ring generator.

The fuse for the ringing generator is located on the right side of the generator housing. The fuse is installed at the factory, when required, replace with a cartridge fuse of the same rating.

11. POWER CONNECTIONS OF SWITCHING EQUIPMENT

a. *Emergency Battery.*

When an emergency battery is installed, the following connection must be made by the installer.

Unwrap the pair of #14 wires that are folded back next to the cable run to the power terminal block (PW) of the F-80A.

Connect

() White wire to negative (–) terminal of the battery.

() Black wire to positive (+) terminal of the battery.

b. *Earth Ground.*

The F-80A must be connected to an earth ground such as building ground. Refer to figure 6.

() Earth ground to () PW terminal block, terminal 10A(50).

c. *Tone Generator.*

Insert the power plug of the static (tone) generator into the adjacent receptacle.

d. *Power and Supervisory Circuit Plate.*

Remove the cover from the power and supervisory circuit plate. Remove all packing material from the cover. Install the tubes (packed separately).

e. *Battery Eliminator.*

Remove the rear cover of the battery eliminator and remove the instruction sheet. Restore the cover of the battery eliminator.

f. *Power Source.*

Insert the power plug of the F-80A switching equipment into a socket providing 110-volt, single-phase, 60-cycle ac. Operate the power OFF-ON switch to ON.

Adjust the voltage control potentiometer for a voltage reading of 48 volts, as indicated by the meter. If sufficient voltage cannot be obtained, due to low line voltage; (1) disconnect power, (2) move the lead of the power transformer of the battery eliminator from 120V to 110V, (3) reconnect power.

12. INSTALLATION TESTS

The following paragraphs outline the procedure for testing the switching equipment after installation is complete. To accomplish these tests, the installer should equip a standard telephone with clip leads for use as a test telephone; and have a hand test set (Buttinsky) available. Refer to the Operator's Handbook for the F-80A cordless attendant's cabinet, T-1059.

Note. Station line 39 must be equipped with a line circuit in order to accomplish the tests of the finder-connector links.

a. *Switching Equipment.*

(1) Fuse alarm.

Test the fuse alarm by applying a slight pressure to the spring on one of the "grasshopper" fuses. Check to ensure that the FA lamp is illuminated at the switching equipment, and that the fuse alarm buzzers of the switching equipment and attendant's turret operate. Release the spring on the "grasshopper" fuse.

(2) Allotter stepping.

Operate the TEST key of the allotter. The linefinders will operate in sequence from top to bottom. Check to ensure that all finders operate. After the finders have operated in sequence twice, restore the TEST key of the allotter.

(3) Finder-connector links.

Connect the test telephone to the terminals of a station line at Position F60. Plug the hand test set in the TEST jack of the allotter circuit plate. Each link should be checked for the following items:

(a) Seizure and finder action.

When the plug of the hand test set is inserted in the TEST jack of the allotter circuit plate, one of the linefinders will operate.

(b) Dial tone.

Following linefinder action, dial tone will be received.

(c) Ringing and ring trip.

Dial the number of the test telephone. The associated connector should operate. The test telephone will ring. Test ring trip by lifting the handset of the test telephone. This action will immediately trip the ring during any portion of the ringing cycle.

(d) Talk path.

The talk path has now been established and can be checked by the installer.

(e) Release.

Replace the handset of the test telephone. The switch train will still be held by the calling phone (hand test set).

Lift the handset of the test telephone and disconnect the hand test set. The linefinder will release. When the hand test set is taken off hook again, the next linefinder will be seized and dial tone will be received. However, the test telephone will still hold the connector operated. Replace the handset of the test telephone. The connector will now release.

Repeat the above procedure for the remaining finder-connector links.

(f) Busy tone.

Remove the handset of the test telephone. Using the hand test set, dial the number of the test telephone. Busy tone will be received. Repeat this procedure for the remaining finder-connector links.

(4) All finders busy.

Turn the BSY key of each linefinder circuit plate. The FB relay of the allotter will release. Remove the handset of the test telephone. If the FB relay has not released, the rotary switch of the allotter will continue to cycle. When the FB relay has released, no allotter action will take place and dial tone will not be received.

b. Seizure of Trunks.

Plug the hand test set into the TEST jack of the allotter circuit plate.

(1) Level 9 (single-digit cut-through level).

Dial 9. The first trunk circuit in level 9 will be seized. Turn the BSY key of this trunk. Dial 9 again. The next trunk will be seized. Turn the BSY key of this trunk. Continue this procedure until all trunks have been seized.

(2) Level 0 (two-digit cut-through level).

Dial the number of the trunk group in level 0. Check the trunk group using the same procedure outlined in (1) above. When individual trunks are assigned, check each trunk for seizure by dialing the assigned number.

c. Operation of Central-Office Trunks (Level 9).

The operation of central-office trunk circuits can be more readily checked by two people. One person should work at the switching equipment and the other at the attendant's turret.

(1) Plug the hand test set into the TEST jack of the allotter circuit plate. Connect a test telephone to the terminals of a station line.

(2) Dial 9. The first trunk in level 9 should be seized. Dial the central-office number of the PBX.

(3) Answer the call at the attendant's turret by operating the appropriate ANS.-TRUNK RELEASE key to ANS. Check the talk path.

(4) Operate the RELEASE-DIAL LOCAL key to DIAL LOCAL. Dial the number of the test telephone.

(5) At the switching equipment, answer the call and check the talk path.

(6) Operate the MONITOR-CONN TRUNK key to CONN TRUNK. Check the talk path between the hand test set and the test telephone.

(7) Operate the ANS.-TRUNK RELEASE key to TRUNK RELEASE. Disconnect at the hand test set and test telephone. At the switching equipment, toothpick the CB relay of trunk 1 to the operated position.

(8) Follow the same procedure for the remaining trunks. However, when the last trunk is seized, perform the following step. Remove the toothpick from the CB relay of trunk 1. Dial the central-office number of the PBX. Perform steps (3) through (7).

(9) Remove the toothpicks from the CB relays of all trunks. All central-office trunks have now been checked for outgoing and incoming service. Central-office trunks on other levels can be checked in a similar manner.

d. *Station Lines.*

Connect the test telephone to the terminals (located at positions F59 and F60) of the first station line equipped with a line circuit. Remove the handset and check for dial tone. Repeat this procedure for all station lines equipped with line circuits.

e. *Turret Operation.*

Refer to the Operator's Handbook for the F-80A cordless attendant's cabinet, T-1059. Follow the operating procedures outlined in the handbook and check each feature for normal operation.

f. *Optional Features.*

(1) Executive right-of-way.

The operation of the executive right-of-way (EROW) circuit can be more readily checked by two people.

(a) Establish a call between two telephone stations not equipped with EROW.

(b) Using the EROW telephone, dial the number of one of these telephone stations. The EROW connector will switch through and a three-way conversation will now be possible.

(c) Replace the handsets of the two telephones of step (a). If automatic re-ring is wired, proceed to step (d), otherwise ignore step (d).

(d) The telephone station dialed from the EROW telephone will now be rung automatically. Upon answering this telephone, connection will be made with the EROW telephone only.

Note. EROW does not operate in levels 9 and 0.

(2) Conference call.

The operation of the conference call circuit can be more readily checked by two people.

(a) Both parties should dial the conference number and check that conversation is possible.

(b) One of the parties should proceed to a third telephone station and dial into the conference circuit and check that conversation is possible with the first two telephone stations.

(c) This procedure should be repeated until all conference call circuits are in use.

(d) The number assigned for operator's access to the conference circuit should be dialed from the operator's position to check operator's access.

(3) Code Call.

The operation of the code call circuit can be more readily checked by two people.

(a) Dial the code call access number, 09.

(b) Dial a code. Check that the correct code is sounded.

(c) From another station, dial the code call answer number, 80. Check the talking path.

(4) Universal night answering.

The operation of universal night answering circuit can be more readily checked by two people. One person should work at the switching equipment, and the other person should work at a station line.

Plug the hand test set into the TEST jack of the allotter circuit plate.

(a) Operate the BAT. key of the attendant's turret to the off position.

(b) Dial 9. Dial the central-office number of the PBX.

(c) When the audible signal sounds, the party working at the station line should answer the call by dialing 9. Check the talk path.

(d) The answering party should now check the transfer function by dialing 0, and then dialing the number of a nearby telephone station. When this telephone rings, he should answer it and then replace the handset of the first telephone. Check the talk path at the telephone to which the call was transferred and then hang up.

(e) The party at the switching equipment should then toothpick the CB relay operated.

(f) Repeat this procedure for the remaining central-office trunks wired for universal night answering.

(g) After checking all trunks, remove the toothpicks from the CB relays.

13. SECURING THE EQUIPMENT

After completion of installation tests, the equipment should be secured. Restore the circuit plate covers and the access panel of the cabinet.

Secure the floor locks by turning them down. Care should be taken that casters or floor locks do not interfere with cabling.

SECTION III
PBX WITH CORD-TYPE ATTENDANT'S CABINET

14. GENERAL

a. *Capacity.*

(1) Switching equipment.

80 local lines (1200-ohm extension loop)
14 linefinder-connector links
14 trunks
6 information trunks

(2) Cord-type attendant's cabinet.

80 local line jacks
14 trunk jacks
5 conference jacks
5 night connection jacks
6 information jacks
15 cord circuits

b. *Standard Features.*

Conference
Night answering
Consecutive number hunting
One or two-digit, metallic switch-through
Restricted service by line marking
Full line multiple appearance on attendant's cabinet to extend calls without dialing
Jack-in circuit plates (except on relay gate) that provide easy installation, expansion to full capacity, and replacement

c. *Optional Features.*

Executive right-of-way
Code call-36 codes

15. INSTALLATION

The installer should complete all wiring before installing circuit plates.

Remove the panel on the side of the cabinet of the F-80A switching equipment to provide access to the terminal blocks at positions F59 and F60.

IMPORTANT: Do not connect power until wiring is complete and circuit plates and fuses are installed.

16. CONNECTIONS BETWEEN SWITCHING EQUIPMENT AND ATTENDANT'S CABINET

The wiring between the switching equipment and the attendant's cabinet should be completed before the wiring of optional features, trunks that are not accessed, station lines, etc.

Wiring connections that must be made by the installer are listed below. It is recommended that these connections be made in the sequence shown. Space is provided in the charts or in front of strap terminations for the installer to indicate the color of each wire, thus providing a permanent record of PBX wiring.

a. *Trunk Connections.*

The cord-type attendant's cabinet provides access to all 14 trunks. Thus, the 14 trunks can be used for two groups of two-way combination central-office trunks, or a group of combination trunks plus a group of ringdown trunks.

As shipped from the factory, the PBX is wired for 10 two-way combination central-office trunks on level 9. Trunk circuits 1 through 10 are strapped to the 9th level switch bank terminals 91 through 90. Circuits 1 through 8 are also strapped to normal level line circuits 91 through 98 (these normal level line circuits are not normally used with the cord-type attendant's cabinet). The installer can change this arrangement, if desired, by moving the appropriate jumpers to the desired terminals. The identification of these jumpers is shown in sheets 7 and 8 of J-888.

Ringdown trunks and dial-to-dial tie lines can be installed in trunk circuit positions 11 through 14. Trunk circuit positions 11 through 14 are not strapped to any switch bank terminals.

Ringdown trunks do not appear in the connector wire banks. The installer must strap ringdown trunks directly to the trunk terminations of the attendant's cabinet.

Loop and E & M dial-to-dial tie lines must be strapped to switch bank terminals. The installer must jumper the trunk circuit terminals to the desired switch bank terminals (normally in level 0) and to the trunk terminations of the attendant's cabinet. Refer to figures 3 and 8.

Information trunks 1 and 2 are strapped to switch bank terminals of 01 and 02. Information trunks 3 through 6, when provided, should be connected to switch bank terminals of 03 through 06 and wired for group hunting. Refer to connector drawing S-401038. Line 07 must then be left vacant. When the PBX is not equipped with the full complement of information trunks, these switch bank terminals can be used for dial-to-dial tie lines.

Line 09 is used for code call access, however, when code call is not installed, this line can be used for trunk termination. Line 00 is also available for trunk use.

(1) Combination trunk S-408016.

Refer to circuit diagram S-408016, circuit description DS-408016 and figures 1, 2, 4, and 8A of this publication.

The following charts indicate the connection between the switching equipment and attendant's cabinet. Connect the combination trunk terminals of the switching equipment to the trunk terminals of the attendant's cabinet; trunk 1 to terminal group 1, trunk 2 to terminal group 2; etc.

Note. The T & R leads must be a twisted pair.

ATTENDANT'S CABINET DESIGNATION	CIRCUIT PLATE TERMINAL	COMBINATION TRUNKS POSITION F59							
		1		2		3		4	
		TERM.	COLOR	TERM.	COLOR	TERM.	COLOR	TERM.	COLOR
T	A23	2H		4H		6H		8H	
R	A28	2D		4D		6D		8D	
S	A14	1C		3C		5C		7C	
LL	A17	1A		3A		5A		7A	
BL	A18	2M		4M		6M		8M	

ATTENDANT'S CABINET DESIGNATION	CIRCUIT PLATE TERMINAL	COMBINATION TRUNKS POSITION F59							
		5		6		7		8	
		TERM.	COLOR	TERM.	COLOR	TERM.	COLOR	TERM.	COLOR
T	A23	10H		12H		14H		16H	
R	A28	10D		12D		14D		16D	
S	A14	9C		11C		13C		15C	
LL	A17	9A		11A		13A		15A	
BL	A18	10M		12M		14M		16M	

ATTENDANT'S CABINET DESIGNATION	CIRCUIT PLATE TERMINAL	COMBINATION TRUNKS POSITION F59							
		9		10		11		12	
		TERM.	COLOR	TERM.	COLOR	TERM.	COLOR	TERM.	COLOR
T	A23	18H		20H		22H		24H	
R	A28	18D		20D		22D		24D	
S	A14	17C		19C		21C		23C	
LL	A17	17A		19A		21A		23A	
BL	A18	18M		20M		22M		24M	

ATTENDANT'S CABINET DESIGNATION	CIRCUIT PLATE TERMINAL	COMBINATION TRUNKS POSITION F59			
		13		14	
		TERM.	COLOR	TERM.	COLOR
T	A23	26H		28H	
R	A28	26D		28D	
S	A14	25C		27C	
LL	A17	25A		27A	
BL	A18	26M		28M	

Night Service Jacks - Answering of predetermined trunks by predetermined stations. Refer to figures 1, 2, and 8A.

TRUNK TO ATTENDANT'S CABINET

Note. The T & R leads must be a twisted pair.

COMBINATION TRUNK	POSITION F59			ATTENDANT'S CABINET		
	CIRCUIT PLATE TERMINAL	TERM.	COLOR	NIGHT SWITCH KEY NO.	NIGHT JACK TERMINAL	COLOR
1	A1	1M		1	T	
	A6	1J			R	
	A11	1F			S	
					* C	
2	A1	3M		2	T	
	A6	3J			R	
	A11	3F			S	
					* C	
3	A1	5M		3	T	
	A6	5J			R	
	A11	5F			S	
					* C	
4	A1	7M		4	T	
	A6	7J			R	
	A11	7F			S	
					* C	
5	A1	9M		5	T	
	A6	9J			R	
	A11	9F			S	
					* C	

* Strap the S and C terminals at the terminal board of the attendant's cabinet.

The following chart indicates the connections from central office to the combination trunks. Connect the incoming leads to the terminals shown for each combination trunk installed. The T & R leads must be a twisted pair.

Note. When a single-digit toll restrictor is used with this equipment, refer to the instruction sheet packed with the toll restrictor, and to sheet 2 of general assembly drawing 202503-249 before making any central-office trunk connections.

CENTRAL OFFICE TO TRUNK

FROM CENTRAL OFFICE	CIRCUIT PLATE TERMINAL	COMBINATION TRUNKS POSITION F59							
		TRUNK 1		TRUNK 2		TRUNK 3		TRUNK 4	
		TERM.	COLOR	TERM.	COLOR	TERM.	COLOR	TERM.	COLOR
T	A2	1L		3L		5L		7L	
R	A7	1H		3H		5H		7H	

FROM CENTRAL OFFICE	CIRCUIT PLATE TERMINAL	COMBINATION TRUNKS POSITION F59							
		TRUNK 5		TRUNK 6		TRUNK 7		TRUNK 8	
		TERM.	COLOR	TERM.	COLOR	TERM.	COLOR	TERM.	COLOR
T	A2	9L		11L		13L		15L	
R	A7	9H		11H		13H		15H	

FROM CENTRAL OFFICE	CIRCUIT PLATE TERMINAL	COMBINATION TRUNKS POSITION F59							
		TRUNK 9		TRUNK 10		TRUNK 11		TRUNK 12	
		TERM.	COLOR	TERM.	COLOR	TERM.	COLOR	TERM.	COLOR
T	A2	17L		19L		21L		23L	
R	A7	17H		19H		21H		23H	

FROM CENTRAL OFFICE	CIRCUIT PLATE TERMINAL	COMBINATION TRUNKS POSITION F59			
		TRUNK 13		TRUNK 14	
		TERM.	COLOR	TERM.	COLOR
T	A2	25L		27L	
R	A7	25H		27H	

Optional wiring - "Y" wiring. Jumpers must be connected at bay jack.

() A16 to A12

() A27 to A30

Note. Delete "Y" wiring and add "X" wiring when ground cannot be removed from the tip side of the line at central-office line circuit. Jumper can be connected at the circuit plate bay jack.

() A4 to A9

Add "L" wiring if central-office battery is 24 volts. Jumper must be connected at bay jack.

() A10 to A19

(2) Ringdown trunk S-410022.

Refer to circuit diagram S-410022, circuit description DS-410022 and figures 1, 2, and 8A of this publication.

The following chart indicates the connections between the switching equipment and the attendant's cabinet. Connect the ringdown trunk terminals to the TRUNK terminals of the attendant's cabinet. Note that this trunk is provided with two circuits per plate.

TRUNK TO ATTENDANT'S CABINET

Note. The T & R leads must be a twisted pair.

ATTENDANT'S CABINET DESIGNATIONS	CIRCUIT PLATE TERMINALS		RINGDOWN TRUNKS (NORMALLY INSTALLED IN TRUNK POSITIONS 11-14)							
			CIRCUIT PLATE 1				CIRCUIT PLATE 2			
			TRUNK 1		TRUNK 2		TRUNK 3		TRUNK 4	
			F59 TERM.	COLOR	F59 TERM.	COLOR	F59 TERM.	COLOR	F59 TERM.	COLOR
T	A1		25M		X		27M		X	
R	A6		25J				27J			
S	A11		25F				27F			
L	A16		25B				27B			
BL	A12		25E				27E			
T		A3	X		25K		X		27K	
R		A8			25G				27G	
S		A13			25D				27D	
L		A18			26M				28M	
BL		A17			25A				27A	

Optional wiring - Install "E" wiring if loop exceeds 3000 ohms. Jumper must be installed at Position F59.

Circuit 1

() A19 to A20

Circuit 2

() A23 to A24

(3) Information trunk S-408020.

Refer to circuit diagram S-408020, circuit description DS-408020, and figures 1, 2, and 8A of this publication.

The following charts indicate the connections that must be made between the switching equipment and the attendant's cabinet.

ATTENDANT'S CABINET TO TRUNKS

Note. The T & R leads must be a twisted pair.

ATTENDANT'S CABINET DESIGNATIONS	CIRCUIT PLATE TERMINALS		INFORMATION TRUNKS			
			1		2	
	TRUNK 1	TRUNK 2	POS. F59 TERM.	COLOR	POS. F59 TERM.	COLOR
T	A2	A4	33L		33J	
R	A7	A9	33G		33E	
S	A12	A14	33B		34M	
INC.L	A10	A20	33D		34J	

ATTENDANT'S CABINET DESIGNATIONS	CIRCUIT PLATE TERMINALS		INFORMATION TRUNKS			
			3		4	
	TRUNK 3	TRUNK 4	POS. F59 TERM.	COLOR	POS. F59 TERM.	COLOR
T	A2	A4	35L		35J	
R	A7	A9	35G		35E	
S	A12	A14	35B		36M	
INC.L	A10	A20	35D		36J	

ATTENDANT'S CABINET DESIGNATIONS	CIRCUIT PLATE TERMINALS		INFORMATION TRUNKS			
			5		6	
	TRUNK 5	TRUNK 6	POS. F59 TERM.	COLOR	POS. F59 TERM.	COLOR
T	A2	A4	37L		37J	
R	A7	A9	37G		37E	
S	A12	A14	37B		38M	
INC.L	A10	A20	37D		38J	

Note. Trunk position 1 (first two information trunks) are factory wired to appear on terminals of 01 and 02. The remaining information trunks must be strapped to adjacent terminals in level 0. The S and HS terminals of 01 and 02 are strapped at the factory. The S and HS terminals of each other information trunk installed must be strapped at position F60 by the installer.

Optional wiring - Remove "P" wiring. Jumper must be disconnected at bay jack.

() Disconnect jumper A15 to A24.

Connect "QQ" wiring. Jumper must be installed at bay jack.

() Connect A29 to A24.

(4) Loop trunk S-408018.

Refer to circuit diagram S-408018, circuit description DS-408018, and figures 1, 2, 4, and 8A of this publication.

TRUNK TO ATTENDANT'S CABINET

Note. The T & R leads must be a twisted pair.

LOOP TRUNK	ATTENDANT'S CABINET DESIGNATIONS	CIRCUIT PLATE TERM.	POSITION F59	
			TERM.	COLOR
1	T	A1	21M	
	R	A6	21J	
	BL	A17	21A	
2	T	A1	23M	
	R	A6	23J	
	BL	A17	23A	
3	T	A1	25M	
	R	A6	25J	
	BL	A17	25A	
4	T	A1	27M	
	R	A6	27J	
	BL	A17	27A	

TRUNK TO LINE CIRCUIT

Note. The T & R leads must be a twisted pair.

LOOP TRUNK	LINE CIRCUIT ASSIGNMENT				COLOR
	TRUNK CCT TERM.	POSITION F59	POSITION F60	ASSIGNED LINE	
1	A3		T		
	A8		R		
	A13		S		
2	A3		T		
	A8		R		
	A13		S		
3	A3		T		
	A8		R		
	A13		S		
4	A3		T		
	A8		R		
	A13		S		

TRUNK TO SWITCH BANK

Note. The T & R leads must be a twisted pair.

LOOP TRUNK	SWITCH BANK ASSIGNMENT				COLOR
	TRUNK CCT TERM.	POSITION F59	POSITION F60	ASSIGNED LINE	
1	A1		T		
	A6		R		
	A11		S		
2	A1		T		
	A6		R		
	A11		S		
3	A1		T		
	A6		R		
	A11		S		
4	A1		T		
	A6		R		
	A11		S		

TIE-LINE TO F-80A

Note. The T & R leads must be a twisted pair.

LOOP TRUNK	TIE-LINE LEADS	TRUNK CIRCUIT PLATE TERMINALS	POSITION F59	
			ASSIGNED TERMINAL	COLOR
1	T	A2		
	R	A7		
2	T	A2		
	R	A7		
3	T	A2		
	R	A7		
4	T	A2		
	R	A7		

Optional wiring - When the loop resistance exceeds 2000 ohms, install "W" wiring. Jumper must be installed at bay jack.

Connect

() A5 to A4

() A15 to A18

b. Station Lines.

Refer to figures 1, 2, and 8B.

All station lines must be connected to the line jack terminal block of the attendant's cabinet. Connect the T, R, and S terminals of the station line terminals at positions F59 and F60 of the F-80A switching equipment to the corresponding terminals of the line jack terminal block of the attendant's cabinet. Indicate the color of each lead in the following chart.

LINES 11-40

Note. The T & R leads must be a twisted pair.

LINE	TERM.	COLOR	LINE	TERM.	COLOR	LINE	TERM.	COLOR	LINE	TERM.	COLOR
11	T R S		21	T R S		31	T R S		41	T R S	
12	T R S		22	T R S		32	T R S		42	T R S	
13	T R S		23	T R S		33	T R S		43	T R S	
14	T R S		24	T R S		34	T R S		44	T R S	
15	T R S		25	T R S		35	T R S		45	T R S	
16	T R S		26	T R S		36	T R S		46	T R S	
17	T R S		27	T R S		37	T R S		47	T R S	
18	T R S		28	T R S		38	T R S		48	T R S	
19	T R S		29	T R S		39	T R S		49	T R S	
10	T R S		20	T R S		30	T R S		40	T R S	

LINES 51-80

Note. The T & R leads must be a twisted pair.

LINE	TERM.	COLOR	LINE	TERM.	COLOR	LINE	TERM.	COLOR	LINE	TERM.	COLOR
51	T R S		61	T R S		71	T R S		81	T R S	
52	T R S		62	T R S		72	T R S		82	T R S	
53	T R S		63	T R S		73	T R S		83	T R S	
54	T R S		64	T R S		74	T R S		84	T R S	
55	T R S		65	T R S		75	T R S		85	T R S	
56	T R S		66	T R S		76	T R S		86	T R S	
57	T R S		67	T R S		77	T R S		87	T R S	
58	T R S		68	T R S		78	T R S		88	T R S	
59	T R S		69	T R S		79	T R S		89	T R S	
50	T R S		60	T R S		70	T R S		80	T R S	

c. Attendant's Cabinet.

The following connections must be made to complete the connections of the attendant's cabinet to the F-80A switching equipment. Refer to figures 1 and 9.

(1) Power connections.

Refer to figure 9B. These connections must be made between the miscellaneous terminal block of the attendant's cabinet and position F59 of the F-80A switching equipment.

F-80A POSITION F59		ATTENDANT'S CABINET MISCELLANEOUS TERM. BLOCK	
TERM. & DESIG.	COLOR	TERM. & DESIG.	COLOR
39A (-48V)		-48V INPUT	
39E (CONT GEN)		CONT GEN	
39F (GEN GRD)		GEN GRD	
39G (ST)		RM ST	
38A (FA)		FA	
45M (DAY BAT.)		DAY BAT.	

(2) Ground connection.

Refer to figure 9A. This connection must be made between the ground terminal strip of the attendant's cabinet and position F59 of the F-80A switching equipment.

F-80A POSITION F59		ATTENDANT'S CABINET GROUND TERMINAL STRIP	
TERM. & DESIG.	COLOR	TERMINAL	COLOR
39B (GRD)		FIRST TER- MINAL OF MULTIPLE	

17. CONNECTIONS AT SWITCHING EQUIPMENT

After the cabling has been connected between the attendant's cabinet and the switching equipment, the following connections must be made at the switching equipment.

a. *E & M Trunk S-406023.*

Refer to circuit diagram S-406023, circuit description DS-406023, and figures 1, 2, and 4 of this publication.

When this circuit is used, the SX, CX, and signaling equipment must be mounted externally in a separate cabinet or relay rack.

SX OR CX EQUIPMENT

Note. The T & R leads must be a twisted pair.

SX OR CX EQUIPMENT TERMINAL	CCT PLATE TERM.	E & M TRUNKS POSITION F59							
		TRUNK 1		TRUNK 2		TRUNK 3		TRUNK 4	
		ASSIGNED TERM.	COLOR	ASSIGNED TERM.	COLOR	ASSIGNED TERM.	COLOR	ASSIGNED TERM.	COLOR
A	A23								
B	A28								
T	A2								
R	A7								

MICROWAVE EQUIPMENT TO TRUNK (When Used)

MICROWAVE EQUIPMENT TERMINAL	CCT PLATE TERM.	E & M TRUNKS POSITION F59							
		TRUNK 1		TRUNK 2		TRUNK 3		TRUNK 4	
		ASSIGNED TERM.	COLOR	ASSIGNED TERM.	COLOR	ASSIGNED TERM.	COLOR	ASSIGNED TERM.	COLOR
ICS	A12								

RELAY RACK TO TRUNKS (When Polar Duplex is Used)

RELAY RACK TERM.	CIRCUIT PLATE TERM.	E & M TRUNKS POSITION F59							
		TRUNK 1		TRUNK 2		TRUNK 3		TRUNK 4	
		ASSIGNED TERM.	COLOR	ASSIGNED TERM.	COLOR	ASSIGNED TERM.	COLOR	ASSIGNED TERM.	COLOR
BT	*A18								
J	*A18								
K	*A17								
E	A24								
M	A19								

* Not always used.

TRUNK TO LINE CIRCUIT

Note. The T & R leads must be a twisted pair.

E & M TRUNK	TRUNK CIRCUIT TERMINAL	LINE CIRCUIT ASSIGNMENT			
		POSITION F59	POSITION F60	ASSIGNED LINE	COLOR
1	A3		T		
	A8		R		
	A13		S		
2	A3		T		
	A8		R		
	A13		S		
3	A3		T		
	A8		R		
	A13		S		
4	A3		T		
	A8		R		
	A13		S		

TRUNK TO SWITCH BANK

Note. The T & R leads must be a twisted pair.

E & M TRUNK	TRUNK CIRCUIT TERMINAL	SWITCH BANK ASSIGNMENT			
		POSITION F59	POSITION F60	ASSIGNED SW. BANK TERM.	COLOR
1	A1		T		
	A6		R		
	A11		S		
	A16		HS		
2	A1		T		
	A6		R		
	A11		S		
	A16		HS		
3	A1		T		
	A6		R		
	A11		S		
	A16		HS		
4	A1		T		
	A6		R		
	A11		S		
	A16		HS		

Optional wiring - Use "M" wiring and omit "N" wiring when used with polar duplex equipment. Jumpers must be connected at the bay jacks.

() A10 to A15

() A20 to A15

Use "N" wiring and omit "M" wiring when used with carrier or microwave equipment. Jumper must be connected at bay jack.

() A4 to A10

b. Station Lines.

Refer to figures 1 and 2. Each telephone station requires two wires. Connect the T (tip) and R (ring) wires of the telephone line to the T and R terminals of the terminal blocks

on the front of the equipment frame (positions F59 and F60). Lines 11 through 10 are located on the top terminal block (position F59) and lines 21 through 80 are located on the bottom terminal block (position F60).

(1) Restricted service by line marking.

Connect the HS terminals (located at positions F59 and F60) of all station lines assigned for restricted service in multiple. Connect a lead from this multiple to the RS terminal of position F29, terminal C30. Connection is made at the circuit plate bay jack.

(2) Consecutive number hunting.

Refer to circuit diagram S-401038 and figures 1, 2, and 4 of this publication.

The F-80A has provision for connecting 14 lines for consecutive number hunting. A maximum of ten lines can be connected in any one group.

There are three different arrangements for consecutive number hunting: 1) restricted lines, 2) non-restricted lines; and 3) mixed group of restricted and non-restricted lines. The wiring procedures for these arrangements are outlined below.

Note. When more than 14 station lines are assigned for consecutive number hunting, a second RS relay must be installed. Refer to assembly drawing 202503-249 for ordering information.

(a) Restricted lines.

Refer to figure H of S-401038.

Strap the S and HS terminals (located at position F60) of all the station lines in the group, except the last line. Connect a lead from the HS terminal of the last line in the group to the RS terminal at position F29, terminal C30. Connection is made at the circuit plate bay jack.

(b) Non-restricted lines.

Refer to figures 3 and D of S-401038.

Connect the S and HS terminals of each station line in the group, except the last line, to a set of S and HS springs of the RS relay at position F29. Connections are made at the circuit plate bay jacks. The S and HS terminals of the last line in the group are not wired to the springs of the RS relay.

(c) Mixed group.

Refer to figures 3 and E of S-401038.

Strap the S and HS terminals of the restricted lines in the group. If the last line in the group is a restricted line, do not strap the S and HS terminals. However, the HS terminal must be wired to the RS terminal of position F29, terminal C30.

Connect the S and HS terminals to the springs of the RS relay at position F29. Connections are made at the circuit plate bay jacks. If the last line in the group is a non-restricted line, do not make any connections to the S and HS terminals of this line.

c. *Optional Features.*

The following optional features can be installed in the F-80A switching equipment by installing the appropriate circuit plates and by making the connections listed in the following paragraphs.

(1) Code call circuit S-33236.

Refer to circuit diagram S-33236 and circuit description DS-33236.

(a) Disconnect the line circuit for 80. Refer to figure 2B. Remove the outside lead connected to the tip (T), ring (R), and sleeve (S) terminals of line 80 at position F60.

(b) Connect.

Line 80 () F60-35D (T) to F59-44M
() F60-35C (R) to F59-44L
() F60-35B (S) to F59-44K
Line 09 () F60-45H (T) to F59-44H
() F60-45G (R) to F59-44G
() F60-45F (S) to F59-44F

(c) Fire alarm.

If a fire alarm circuit is used in conjunction with this circuit, connect the lead from the fire alarm circuit to F59-45A (FIRE ALM).

(d) Code call signaling device.

Connect the control lead from the code call MASTER RELAY to F59-45B (SIG). The MASTER RELAY must be provided by the customer and should have a 48 vdc coil.

(2) Executive right-of-way S-30268.

Refer to circuit diagram S-30268 and circuit description DS-30268.

The executive right-of-way (EROW) service requires the use of a two-line telephone or two telephones since EROW lines provide outgoing service only. The first line is connected in the normal manner as previously described. The T (tip) and R (ring) connections of the EROW line must be connected directly to the executive right-of-way connector as described below.

(a) EROW line.

- () T to F59-43B 2nd station assigned for EROW service
- () R to F59-43A
- () T to F59-44B 1st station assigned for EROW service
- () R to F59-44A

Note. Executive right-of-way service can be extended to other telephone stations on a party line basis, when desired, by connecting the EROW lines in parallel.

(b) Optional wiring.

Remove the wiring from the bay jacks to the terminals of the XX wire banks of the EROW connectors. Remove the jumpers from the XX wire bank terminals. Connect the following jumpers:

- () F27-A27 to level 9 of XX wire banks. Jumper level 9 to level 0 of the XX wire bank.
- () F25-A27 to level 9 of XX wire bank. Jumper level 9 to level 0 of the XX wire bank.

(c) When EROW connectors are installed in positions F25 and F27, the following connections are required.

- () F27-A13 to ground.
- () F25-A13 to ground.

(d) Automatic re-ring.

If 'M' wiring is not connected, the EROW connector is provided with automatic re-ring. Thus, if a busy line is dialed from an EROW telephone, the executive can request that the conversing parties hang up. When the conversing parties have disconnected, the station dialed from the EROW telephone will be automatically rung.

If this feature is *not* desired, connect the following optional wiring.

() F27-A21 to F27-A26

() F25-A21 to F25-A26

18. INSTALLATION OF CIRCUIT PLATES, XY UNIVERSAL SWITCHES, METERS AND FUSES

Remove the covers from all circuit plates. Remove all packing material from the covers.

a. *Circuit Plate Installation.*

Refer to assembly drawing 202503-249.

All circuit plates used with the F-80A are installed in the following manner. The circuit plates are numbered from top (1) to bottom (31).

Carefully insert the circuit plate plug into the bay jack. Check to ensure that the pins of the circuit plate plug are properly aligned with the pins of the bay jack.

IMPORTANT: Do not apply excessive force when inserting the circuit plate plug in the bay jack.

Secure the circuit plate to the frame with the screws provided.

(1) Finder-connector circuit plates.

Install the first 12 finder-connector circuit plates in circuit plate positions 1 through 24 on the front of the frame. Positions 25 through 28 can be used for either standard finder-connector links or for Executive Right-of-Way Connectors.

(2) Consecutive number hunting and restricted service control circuit plate.

Install the consecutive number hunting and restricted service control circuit plate in position 29 on the front of the equipment frame.

(3) Line circuit plates.

Install the line circuit plates in circuit plate positions 3 through 8 on the rear of the equipment frame.

(4) Allotter circuit plate.

Install the allotter circuit plate in circuit plate position 1 on the rear of the equipment frame.

Note. Position 2 is left vacant.

(5) Trunk circuit plates.

Install the trunk circuit plates in positions 9 through 22 on the rear of the equipment frame.

(6) Code call circuit plate.

Install the code call circuit plate in positions 23 and 24 on the rear of the equipment frame.

Note. Position 25 is left vacant.

(7) Information trunk circuit plates.

Information trunk circuit plates are installed in positions 29 through 31 on the rear of the equipment frame.

b. *Installation of XY Universal Switches.*

All XY Universal Switches are interchangeable and can be used as either a line-finder or connector.

The XY Universal Switches are installed in the cells adjacent to the finder-connector circuit plate, located on the front of the equipment frame. The top switch of a group is the connector and the bottom switch is the linefinder.

Check to ensure that the wipers of the switch are in the normal position, i.e. not extended.

Install the Switch by depressing the lock springs and inserting the Switch into the cell. Connect the XY plug to the associated circuit plate plug.

c. *Installation of PC and ATB Meters.*

The PC (peg count) meter registers the number of calls that are originated in the F-80A. The ATB (all trunks busy) meter registers the number of times that all of the finder-connector links are busy. The same type meter is used for both applications.

d. *Installation of Fuses (F-80A Switching Equipment).*

Refer to figure 7. All fuses for the F-80A, except for the battery eliminator, are shipped in a separate carton and must be installed by the installer. As each fuse is installed, check that there is clearance between the contact spring and the center (alarm bar) contact of the fuse block.

(1) Power and supervisory.

Install the 10-ampere cartridge fuse in the EQPT F position, the 1-1/3-ampere fuse in the EQPT position, and the 5-ampere fuse in the COMB TRUNK position. Install the 3-ampere fuses in all other positions at the power and supervisory fuse blocks.

(2) Position 56.

Install 3-ampere fuses for TRUNKS, total of seven fuses. Install 1-1/3-ampere fuses in all other fuseholders at position 56.

(3) Ringling generator.

The fuse for the ringling generator is located on the right side of the generator housing. This fuse is installed at the factory, when required, replace with a cartridge fuse of the same rating.

19. ADDITION OF CORD CIRCUITS

Mount the cord circuit plate to the relay gate. Open the relay gate and make the following connections. Note that there are two cord circuits per plate.

a. *Cord Circuit Assemblies (Cord Circuits 11 through 14).*

Refer to figure 11. Connect the wires from the local cable, that are laced and tubed, to the terminal block of the cord circuit plate.

CORD CIRCUIT 1

LOCAL CABLE LEADS		CORD CIRCUIT PLATE TERMINALS	
DESIGNATION	COLOR		
RT	SL	A1	pair
RR	SL-WH	A6	
FT	WH	A2	pair
FR	RED-WH-BL	A7	
RS	SL-RED	A11	
FS	BL-RED	A12	
KT	BL	A13	pair
KR	BL-WH	A18	
NT	OR	A14	pair
NR	OR-WH	A19	
RL	OR	A16	
FL	OR-WH	A17	
DE	OR-BR	A28	
FT	BR	A4	
FR	BR-WH	A9	pair
RT	BR	A3	
RR	BR-WH	A8	

CORD CIRCUIT 2

LOCAL CABLE LEADS		CORD CIRCUIT PLATE TERMINALS	
DESIGNATION	COLOR		
RT	SL	C1	pair
RR	SL-WH	C6	
FT	WH	C2	pair
FR	RED-WH-BL	C7	
RS	SL-RED	C11	
FS	BL-RED	C12	
KT	BL	C13	pair
KR	BL-WH	C18	
NT	OR	C14	pair
NR	OR-WH	C19	
RL	OR	C16	
FL	OR-WH	C17	
DE	OR-BR	C28	
FT	BR	C4	
FR	BR-WH	C9	pair
RT	BR	C3	
RR	BR-WH	C8	

The second cord assembly can be installed in a similar manner.

b. *Cord Circuit and Key Assembly (Cord Circuit 15).*

Refer to circuit diagram S-10178 and figure 11 of this publication.

The cord circuit plate terminations are the same as shown in a above. The connections at the cord key are shown in circuit diagram S-10178. It is recommended that the installer study the wiring of an adjacent key.

20. POWER CONNECTIONS OF SWITCHING EQUIPMENT

a. *Emergency Battery.*

When an emergency battery is installed, the following connections must be made by the installer.

Unwrap the pair of #14 wires that are folded back next to the cable run to the power terminal block (PW) of the F-80A.

Connect.

() White wire to negative (-) terminal of the battery.

() Black wire to positive (+) terminal of the battery.

b. *Earth Ground.*

The F-80A switching equipment must be connected to an earth ground such as building ground. Refer to figure 6.

() Earth ground to () PW terminal block, terminal 10A(50).

c. *Tone Generator.*

Insert the plug of the static (tone) generator into the adjacent receptacle.

d. *Power and Supervisory Circuit Plate.*

Remove the top cover from the power and supervisory circuit plate. Remove all packing material from the cover. Install the tubes (packed separately).

e. *Battery Eliminator.*

Remove the rear cover of the battery eliminator and remove the instruction sheet. Restore the cover of the battery eliminator.

f. *Power Source.*

Insert the power plug of the F-80A switching equipment into a socket providing 110-volt, single-phase, 60-cycle ac.

Adjust the voltage control potentiometer for a voltage reading of 48 volts, as indicated by the meter. If sufficient voltage cannot be obtained, due to low line voltage; (1) disconnect power, (2) move the lead of the power transformer of the battery eliminator from 120V to 110V, and (3) reconnect power.

21. INSTALLATION TESTS

The following paragraphs outline the procedure for testing the switching equipment after installation is complete. To accomplish these tests, the installer should equip a standard telephone with clip leads for use as a test telephone, and have a hand test set (Buttinsky) available.

Note. Station line 39 must be equipped with a line circuit in order to accomplish the tests of the finder-connector links.

a. *Switching Equipment.*

(1) Fuse alarm.

Test the fuse alarm by applying a slight pressure to the spring on one of the "grasshopper" fuses. Check to ensure that the FA lamp is illuminated at the switching equipment; and that the FA buzzer of the attendant's cabinet and the buzzer of the switching equipment cabinet operate. Release the spring on the "grasshopper" fuse.

(2) Allotter stepping.

Operate the TEST key of the allotter. The linefinders will operate in sequence from top to bottom. Check to ensure that all finders operate. After the finders have operated in sequence twice, restore the TEST key of the allotter.

(3) Finder-connector links.

Connect the test telephone to the terminals of a station line at Position F60. Plug the hand test set in the TEST jack of the allotter shelf. Each link should be checked for the following items:

(a) Seizure and finder action.

When the plug of the hand test set is inserted in the TEST jack of the allotter shelf, one of the linefinders will operate.

(b) Dial tone.

Following linefinder action, dial tone will be received.

(c) Ringing and ring trip.

Dial the number of the test telephone. The associated connector will operate. The test telephone will ring. Test ring trip by lifting the handset of the test telephone. This action will immediately trip the ring during any portion of the ringing cycle.

(d) Talk path.

The talk path has now been established and can be checked by the installer.

(e) Release.

Replace the handset of the test telephone. The switch train will still be held by the calling phone (hand test set).

Lift the handset of the test telephone and disconnect the hand test set. The linefinder will release. When the hand test set is taken off hook again, the next linefinder will be seized and dial tone will be received. However, the test telephone will still hold the connector operated. Replace the handset of the test telephone. The connector will now release.

Repeat the above procedure for the remaining finder-connector links.

(f) Busy tone.

Remove the handset of the test telephone. Using the hand test set, dial the number of the test telephone. Busy tone will be received. Repeat this procedure for the remaining finder-connector links.

(4) All finders busy.

Turn the BSY key of each linefinder circuit plate. The FB relay of the allotter will release. Remove the handset of the test telephone. If the FB relay has not released, the rotary switch of the allotter will continue to cycle. When the FB relay has released, no allotter action will take place and dial tone will not be received.

b. Seizure of Trunks.

Plug the hand test set into the TEST jack of the allotter circuit plate.

(1) Level 9 (single-digit cut-through level).

Dial 9. The first trunk circuit in level 9 will be seized. Turn the BSY key of this trunk. Dial 9 again. The next trunk will be seized. Turn the BSY key of this trunk. Continue this procedure until all trunks have been seized and busy tone is received at the hand test set.

(2) Level 0 (two-digit cut-through level).

Dial the number of the trunk group in level 0. Check the trunk group using the same procedure outlined in (1) above. When individual trunks are assigned, check each trunk for seizure by dialing the assigned number.

c. Operation of Central-Office Trunks (Level 9).

The operation of central-office trunk circuits can be more readily checked by two people. One person should work at the switching equipment and the other at the attendant's cabinet.

(1) Plug the hand test set into the TEST jack of the allotter circuit plate.

(2) Dial 9. The first trunk in level 9 will be seized. Dial the central-office number of the PBX.

(3) At the attendant's cabinet, answer the trunk by inserting one of the answer cords (rear cord) in the appropriate trunk jack. Check the talk path and release the trunk by disconnecting the answer cord. The party at the switching equipment should now toothpick the CB relay of trunk 1 normal.

(4) Follow the same procedure for the remaining trunks. However, when the last trunk is seized, perform the following step.

(5) Remove the toothpick from the CB relay of the first trunk. Dial the central-office number of the PBX. At the attendant's cabinet, answer the trunk, check the talk path, and then release.

(6) Remove the toothpicks from the CB relays. All central-office trunks have now been checked for outgoing and incoming service. Central-office trunks on other levels can be checked in a similar manner.

d. *Station Lines.*

Connect the test telephone to the terminals (located at positions F59 and F60) of the first station line equipped with a line circuit. Remove the handset and check for dial tone. Repeat this procedure for all stations equipped with line circuits.

e. *Attendant's Cabinet.*

The following operational checks should be made at the attendant's cabinet.

(1) Fuse alarm circuit.

(a) FA (fuse alarm).

Depress the spring on one of the "grasshopper" fuses in the attendant's cabinet and check that the FA lamp at the switching equipment is illuminated, and the FA buzzer operates.

(b) MFA (master fuse alarm).

Depress the spring on one of the "grasshopper" fuses in the switching equipment. Check that the MFA lamp in the attendant's cabinet is illuminated, and that the fuse alarm buzzer of the switching equipment and the attendant's cabinet operate.

(2) Cord circuits.

The cord circuits can be more readily checked by two people. One person should work at the switching equipment, and the other person should work at the attendant's cabinet.

(a) At the switching equipment, plug the hand test set in the TEST jack of the allotter circuit plate and connect the test telephone to a station line.

(b) Dial 01.

(c) At the attendant's cabinet, answer the trunk with the answer cord (rear cord) and check that conversation is possible. Extend the call by inserting the call cord (front cord) into the line jack to which the test telephone is connected. Operate the TALK RING FRONT key to RING FRONT.

The person at the switching equipment should answer the call and check that conversation is possible.

(d) At the attendant's cabinet check for splitting by operating the keys to TALK FRONT and TALK REAR. Operate all keys to normal and then operate the MON key. Check that conversation on the line can be monitored. Remove the answer cord.

(e) Plug the answer cord into an open line and check to ensure that both supervisory lamps are illuminated.

(f) Both parties should release, and then check all other cord circuits by following the same procedure.

(3) Line jack multiple.

The line jack multiple can be more readily checked by two people. One person should work at the switching equipment and the other at the attendant's cabinet.

(a) At the switching equipment, connect the test telephone to the terminals of line 11 (located at position F59).

(b) At the attendant's cabinet, plug a call cord into the line jack for station 11 and ring the line. The person at the switching equipment should answer the test telephone and acknowledge that the correct telephone line has been rung.

(c) Connect the test telephone to each of the remaining station lines equipped with a line circuit and repeat the above procedure.

(4) Conference jacks.

The conference feature can be more readily checked by two people. One person should work at the attendant's cabinet, and the other person at a group of telephones.

(a) At the attendant's cabinet patch up several stations in the group to the conference circuit by plugging the rear cords into the conference jacks, the front cords in the line jacks, and operating the THRU NIGHT RING REAR key to the THRU NIGHT position. The person at this group of stations should lift the handsets and check that conversation is possible between these stations.

(b) The person at the attendant's cabinet should access the circuit and check that conversation is possible with all of the stations that are patched to the conference circuit.

(5) Night jacks.

The night jacks can be more readily checked by two people. One person should work at the attendant's cabinet, and the other person at the switching equipment.

(a) At the attendant's cabinet, patch the second trunk to the first night jack. Plug the rear cord into the night jack, plug the front cord into the line jack, and operate the THRU NIGHT RING REAR key to THRU NIGHT.

(b) At the switching equipment, connect the test telephone to the station line associated with the first night jack. Plug the hand test set into the TEST jack of the allotter circuit plate.

(c) Using the hand test set, dial 9. Dial the central-office number of the PBX. Answer the trunk with the test telephone and check that conversation is possible.

(d) Patch up the remaining night jacks using the same procedure. Each time, move the test telephone to the terminals of the station line associated with the night jack that is tested.

f. Optional Features.

(1) Executive right-of-way.

The operation of the executive right-of-way (EROW) circuit can be more readily checked by two people.

(a) Establish a call between two telephone stations not equipped with EROW.

(b) Using the EROW telephone, dial the number of one of these telephone stations. The EROW connector will switch through and a three-way conversation should now be possible.

(c) Replace the handsets of the two telephones of step (a). If automatic re-ring is wired, proceed to step (d), otherwise ignore step (d).

(d) The telephone station dialed from the EROW telephone will now be rung automatically. Upon answering this telephone, connection will be made with the EROW telephone only.

Note. EROW does not operate in levels 9 and 0.

(2) Code call.

The operation of the code call circuit can be more readily checked by two people.

(a) Dial the code call access number, 09.

(b) Dial a code. Check that the correct code is sounded.

(c) From another station, dial the code call answer number, 80. Check the talking path.

22. SECURING THE EQUIPMENT

After completion of installation tests, the equipment should be secured. Restore the circuit plate covers and the access panel of the cabinet. Secure the floor locks by turning them down. Care should be taken to ensure that casters or floor locks do not interfere with cabling.

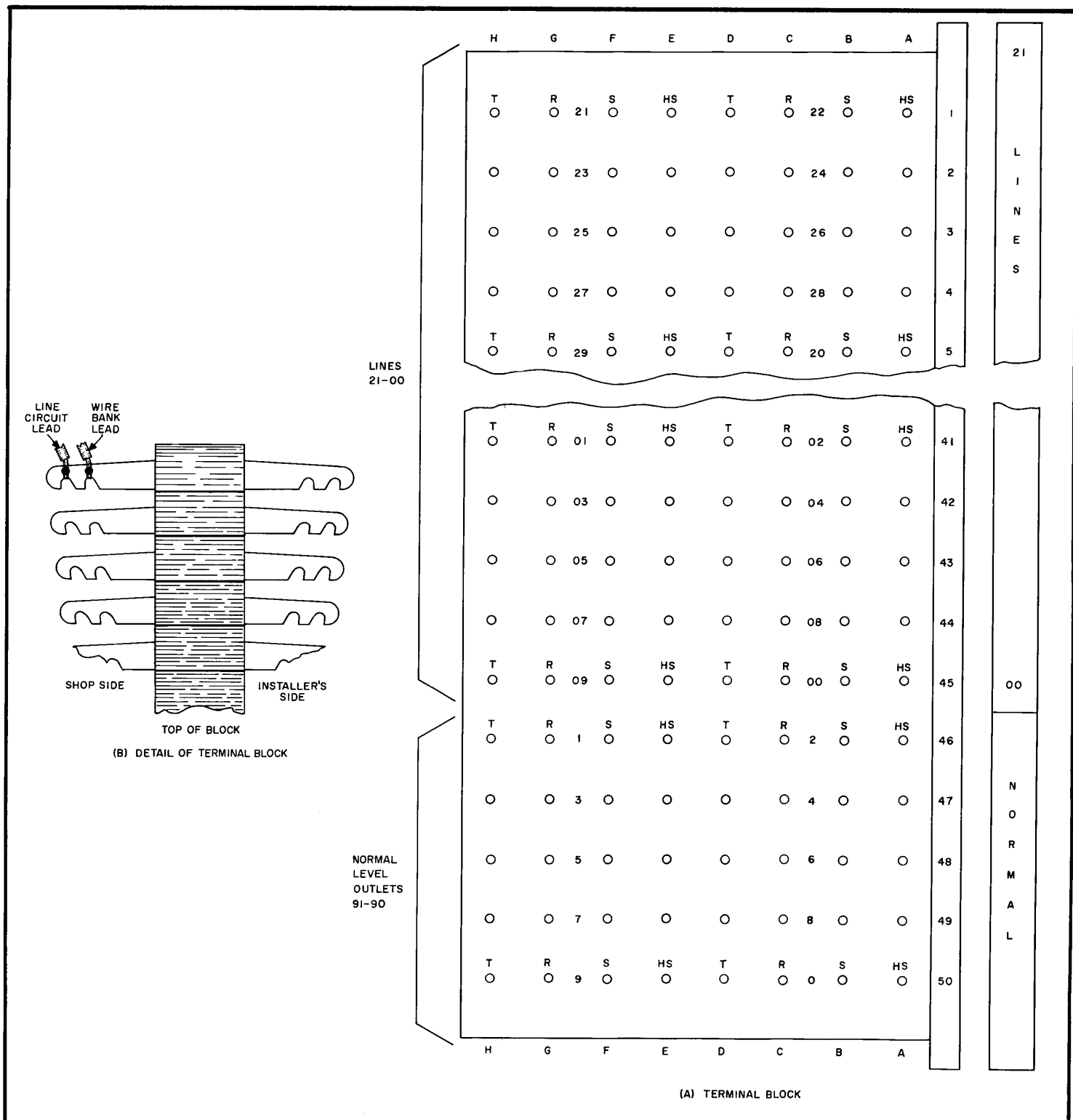


Figure 2. Position F60 Terminal Block Designations

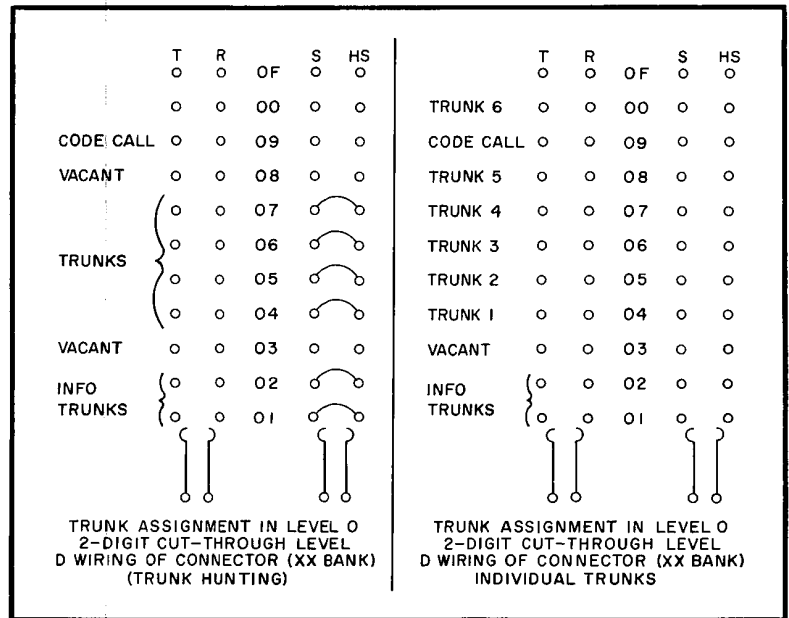


Figure 3. Trunk Connections in Level 0

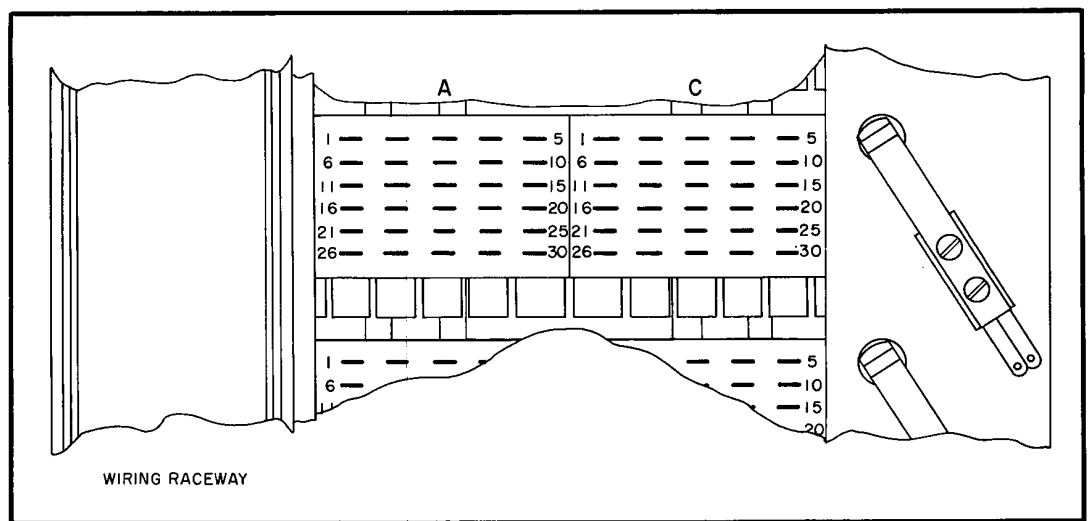


Figure 4. Terminal Numbering of Bay Jacks

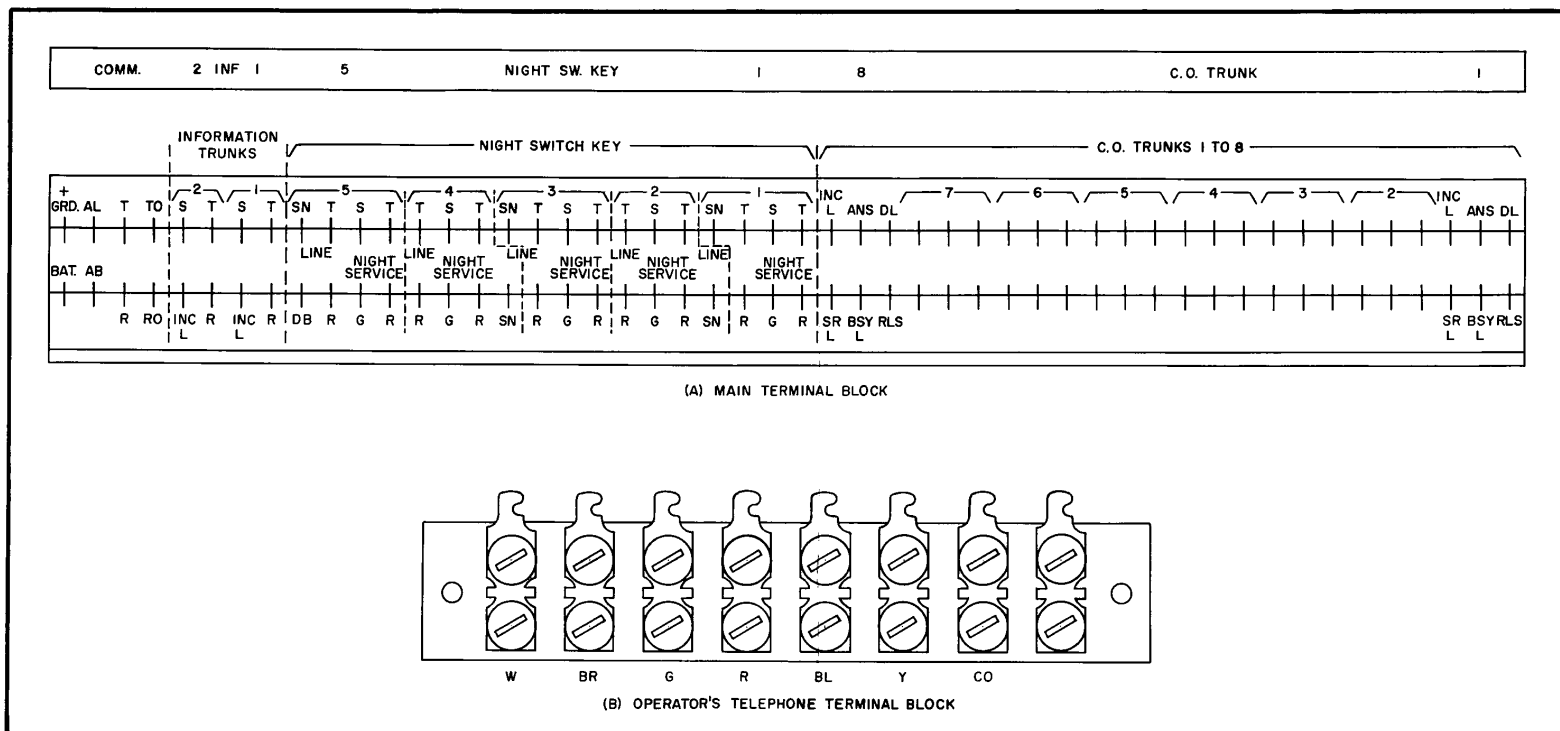


Figure 5. Terminal Boards of Turret

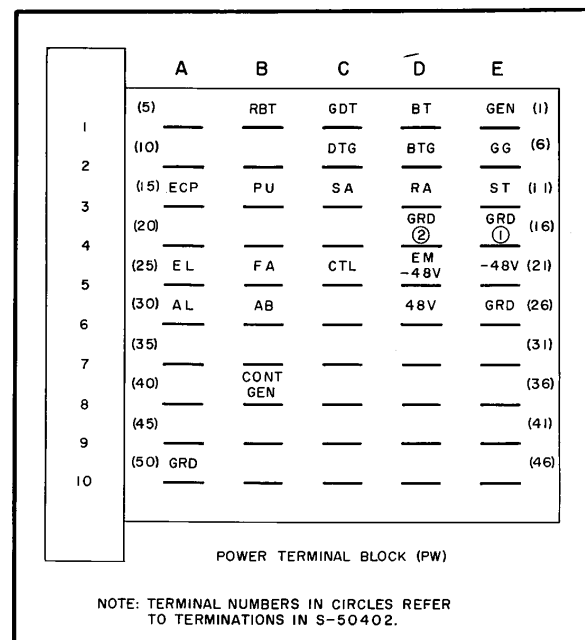


Figure 6. Power Terminal Block of F-80A

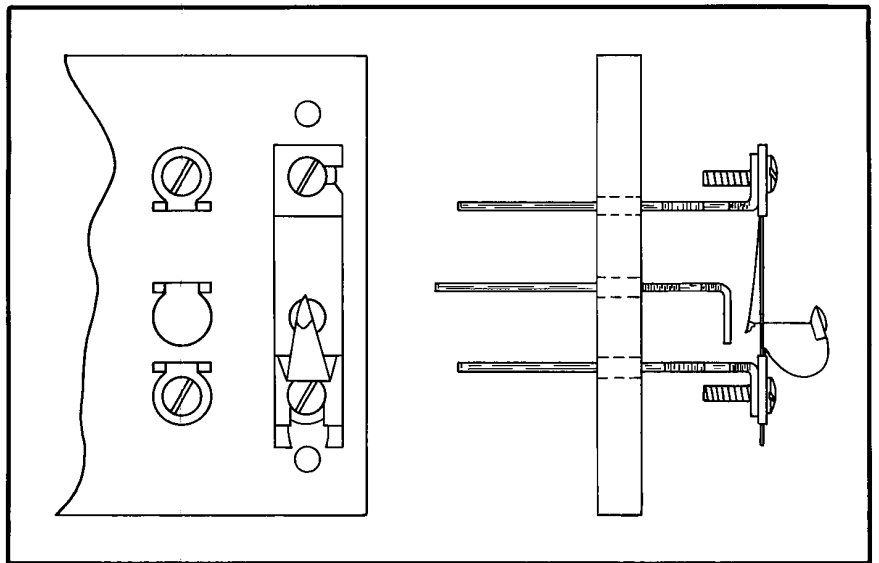


Figure 7. Installation of Fuses

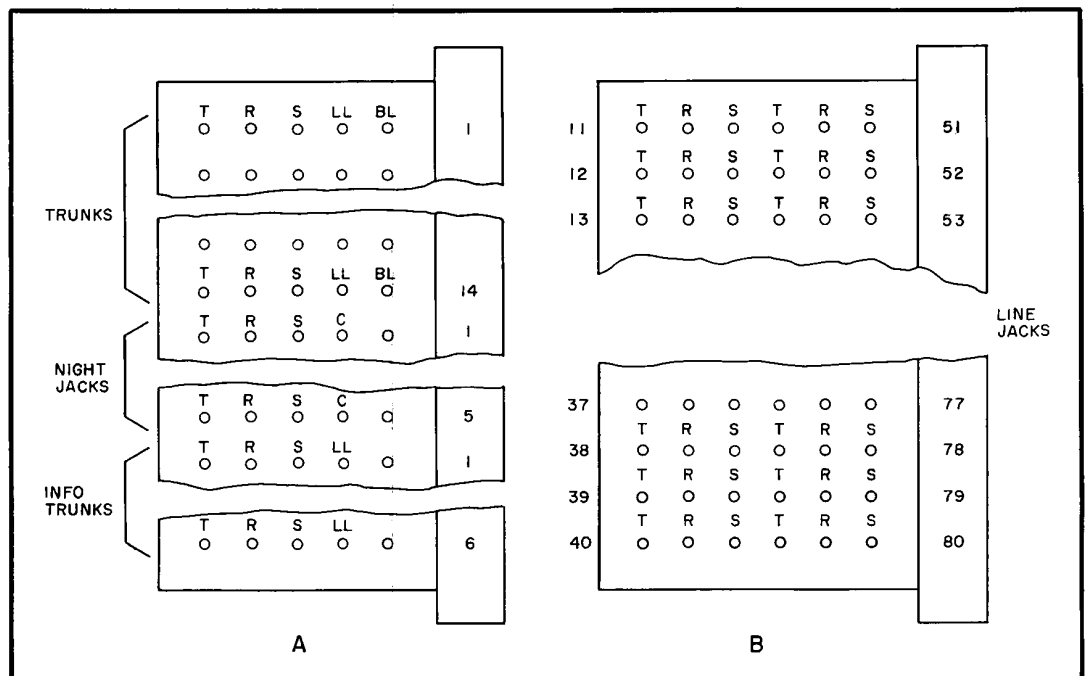


Figure 8. Trunk and Line Multiple Terminal Board - Cord Type Attendant's Cabinet

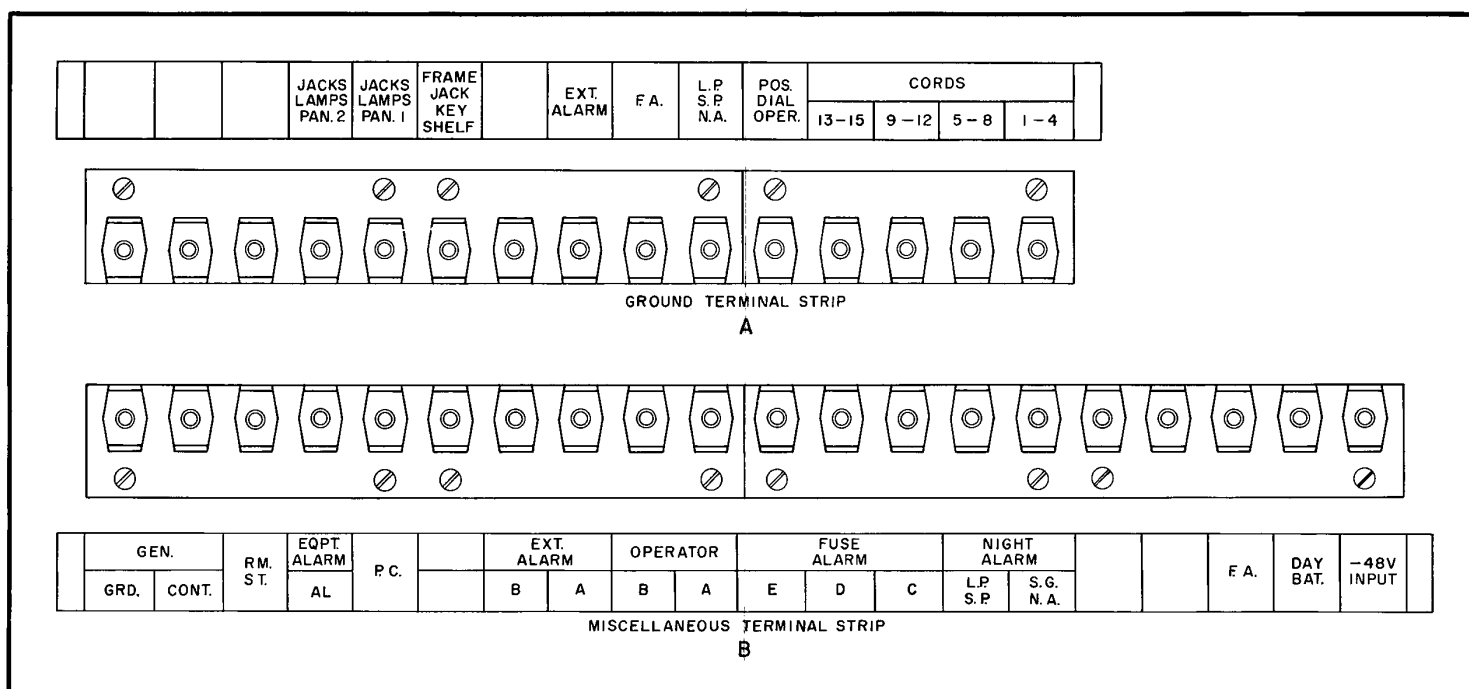


Figure 9. Power Terminal Strips - Cord Type Attendant's Cabinet

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