

1A AND 1A1 KEY TELEPHONE SYSTEMS

SEPARATELY MOUNTED KEYS

6021DN, 6027DA, 6027DB, 6028DA

6040A, 6040B, AND 6040C

1.00 GENERAL

1.01 This section covers connections at the station for external keys. It includes key cable connections at such keys and their associated subscriber sets, handsets, and buzzers, and strapping information for interconnecting the various pieces of apparatus.

1.02 The keys listed in this section are the only keys which can be used in the 1A1 key telephone system. However, wiring changes shown in Table 39.10 must be made before the keys are connected.

1.03 The 6040A, B, and C keys may be used in the 1A or 1A1 key telephone systems and are furnished shop-wired for use in the 1A key telephone system. *To use these keys in the 1A1 key telephone system, certain wires within the key must be reterminated.*

1.04 Internal wiring changes and connections for 6040A, B, and C keys are shown in Tables 39.11 through 39.18.

2.00 KEY CABLE CONNECTIONS

2.01 Specific key cable pairs always should be associated with specific features, as specified in the tables of this section. If a certain feature is not furnished, the pair associated with that feature should be left vacant.

2.02 Pair 12 is assigned for ringers which are mounted in the same subscriber sets as the talking circuits. Pair 21 is assigned for separately mounted ringers. Pair 12 or 21 may be used for buzzers.

2.03 These assignments conform with those made for ringers and buzzers installed, either internal or external, at key telephone set locations.

2.04 Tables 39.16 and 39.17 show the connection of key cable and cord to the connecting block. Where cord is not required, key cable is brought directly into the key and terminated on key terminal strip. When removing cord, be certain that internal key leads equipped with spade tips are not disassociated from their respective terminals (see Table 39.18).

SECTION C71.439

3.00 WIRING

3.01 Station wire may be used for local wiring between key and subscriber set, between subscriber set and hand telephone set, and for strapping terminals on keys.

3.02 Telephone set connections to the key are made through the cord to the connecting block

when used, or connected directly to the key when cord and connecting block are not used.

4.00 REFERENCES

Reference information for this section is given in Section C71.355, 1A1 Key Telephone System, Connection Data, Description and Use.

TABLE 39.01

Cutting Off Extension Station or Ringer and Transferring Audible Signal Circuit to Local Ringer Using 6028DA Key

Subset at Local Station	To Other Station or Ringer	Key Cable			6028DA Key Terminal	Subset Terminal	Ringer Lead	Capacitor Lead
		Pair No.	C Type	D Type				
	Color		Color					
634CF	R T	15	G-W W	S BK	CR CT			
					LR——H* LT——T* X	E GRD K	BK R Y S	
531A or Equiv	R T	15	G-W W	S BK	CR CT			
					LR——H* LT——T* X	L1 L2 K	R BK Y S	

*Terminals are designated 1H and 1T for first line, 2H and 2T for second line, etc.

Key Cable to Lamps in Indicators

TABLE 39.02

Lead Desig	Key Cable			Indicator		
	Pair No.	C Type	D Type	Type	Terminal	
		Color				
L LG	16	G-BR W	BL Y	18B-3	1L G	
L LG		G-S W	O Y		2L G	
L LG	18	BR-W W	G Y		3L G	
L LG		BR-S W	BR Y		1L G	
L LG	20	S-W W	S Y		17C-3	2L G
L LG						

Individual Line Ringer Connected on Tip and
Ring of Any Line except Private Line*

TABLE 39.03

Subset	Key	Subset	Ringer Lead	Capacitor Lead
	Terminal		Color	
634CF	H†	E	BK R	Y
	T†	GRD		S
		K		
531A or Equiv	H†	L1	R	Y
	T†	L2	BK	S
		K		

* The term "private line" as used herein is defined as intercom, dial selective intercom, tie, and station lines.

† Terminals are designated 1H and 1T for first line, 2H and 2T for second line, etc.

TABLE 39.04

Common Audible Signal, Dial Selective Intercom Line
Station Signal, or Signal-key and Buzzer System Signal

Subset or Buzzer	Lead Desig	Key Cable			Subset Terminal	Ringer Lead	Buzzer Terminal
		Pair No.	C Type	D Type		Color	
			Color			Color	
634CF or 684BA Subset	B1 R1	12*	O-G W	O BK	K GRD	R BK	
531A Subset or Equiv	B1 R1	21	BL R	BL V	L1 K	R BK	
7-type Buzzer	B1 R1	12†	O-G W	O BK			A or D C

* See 2.02 on page 1 of this section.

† Pair 12 or 21 may be used.

TABLE 39.05

Cutting Off Individual Line Ringer on Tip and
Ring of Any Line except Private Line*

Subset	Key	Subset	Ringer Lead	Capacitor Lead
	Terminal		Color	
634CF	H† ——— LR T† ——— LT CR CT	E GRD K	BK R	Y S
531A or Equiv	H† ——— LR T† ——— LT CR CT	L1 L2 K	R BK	Y S

* The term "private line" as used herein is defined as intercom, dial selective intercom, tie, and station lines.

† Terminals are designated 1H and 1T for first line, 2H and 2T for second line, etc.

**Cutting Off Common Audible Signal
or Dial Selective Intercom Line
Station Signal Using 6028DA Key**

TABLE 39.06

Subset or Buzzer	Lead Desig	Key Cable			6028DA Key	Subset	Ringer Lead	Buzzer Terminal
		Pair No.	C Type	D Type				
			Color					
634CF or 684BA Subset	B1 R1	12*	O-G W	O BK	LR LT CR CT	K GRD	R BK	
531A Subset or Equiv	B1 R1	21	BL R	BL V	LR LT CR CT	L1 K	R BK	
7-type Buzzer	B1 R1	12†	O-G W	O BK	LR LT CR CT			A or D C

* See 2.02 on page 1 of this section.

† Pair 12 or 21 may be used.

**Cutting Off Extension Station
or Ringer Using 6028DA Key**

TABLE 39.07

To Cut Off Tel Set or Ringer	Key Cable			6028DA Key Terminal
	Pair No.	C Type	D Type	
		Color		
R T	15	G-W W	S BK	CR CT LR———H* LT———T*

* Terminals are designated 1H and 1T for first line, 2H and 2T for second line, etc.

TABLE 39.08

Transferring Common Ringer or
Buzzer from Another Station to
Local Station Using 6028DA Key

Subset or Buzzer at Station	Lead Desig	Key Cable		6028DA Key	Subset	Ringer Lead	Buzzer Terminal
		Pair No.	C Type				
			Color		Terminal		
634CF or 684BA Subset	B1 R1*	12†	O-G W	O BK	LR LT X CR CT	K GRD	R BK
	B1 R1‡	15	G-W W	S BK			
531A Subset or Equiv	B1 R1*	21	BL R	BL V	LR LT X CR CT	L1 K	R BK
	B1 R1‡	15	G-W W	S BK			
7-type Buzzer	B1 R1*	12§	O-G W	O BK	LR LT X CR CT		A or D C
	B1 R1‡	15	G-W W	S BK			

* These are incoming common audible signal leads from equipment cabinet.

† See 2.02 on page 1 of this section.

‡ These are common audible signal leads to the other station.

§ Pair 12 or 21 may be used.

TABLE 39.09

Cutting Off Listening-in
Receiver Using 6028DA Key

To Listening-in Receiver	Key Cable		6028DA Key	Subset	
	Pair No.	C Type			D Type
		Lead Desig	Color		Terminal
R G	15	G-W W	S BK	CR CT LR LT	R G

Connecting Key Cable to Key and Wiring
Key to Subscriber Set and Handset

TABLE 39.10

Lead Desig	Key Cable			Key				634CF or 684BA Subset	213-type Handset
	Pair No.	C Type	D Type	6021DN	6027DA	6027DB	6028DA		
				HPPP	HPPPPP	HPPPPS	HPPPPC		
Color			Terminal*				Terminal		
R T	1	BL W	BL W	1H 1T	1H 1T	1H 1T	1H 1T		
A1 A	2	O W	O W	1A	1A	1A	1A		RR
R T	3	G W	G W	2H 2T	2H 2T	2H 2T	2H 2T		
A1 A	4	BR W	BR W	† 2A	† 2A	† 2A	† 2A		
R T	5	S W	S W	3H 3T	3H 3T	3H 3T	3H 3T		
A1 A	6	BL-W W	BL R	† 3A	† 3A	† 3A	† 3A		
R T	7	BL-O W	O R		4H 4T	4H 4T	4H 4T		
A1 A	8	BL-G W	G R		† 4A	† 4A	† 4A		
R T	9	BL-BR W	BR R		5H 5T				
A1 A or S	10	BL-S W	S R		† 5A	S SG		Strap at connecting block.	
G	11	O-W W	BL BK						
CR CT	15	G-W W	S BK				CR CT		
				H T A	H T A	H T A	H T A	L1 L2 R BK G	Y BL R BK G

* Remove red lead soldered between terminal H and plunger spring of hold key before using key in 1A1 key telephone system.

† This lead is not terminated.

TABLE 39.11

Wiring Changes for Auxiliary Control Leads,
Converting 6040A and C Keys for Use with
1A or 1A1 Key Telephone Systems

Key	Key Tel System	Hold Key Leads		M1W 5-1/2-in. Cord or Equiv C ————— C
		Y	Y-BK	
6040A or 6040C	1A	R	M	ER ————— N
	1A1	M	N	ER ————— R EH ————— N
6040B	1A			
	1A1			EH ————— M

TABLE 39.12

Conversion of Pickup Keys to Signaling Keys
Wiring Changes for 6040A, B, and C Keys

Key	No. of Pickup Keys Converted*	Last Key Converted for Use as Common Signal Key for 2 or 3 Private or Intercom Lines†	Key Lead Color	Key Terminal
6040C	0		S-BR	M
	1		S-BR	SG
6040B	0		S-BR BK-BR W-BR	M M M
	1		S-BR BK-BR W-BR	M M SG
	2		S-BR BK-BR W-BR	M SG SG
	3		S-BR BK-BR W-BR	SG SG SG
6040A	0		Y-BR BR S-BR BK-BR	M M M X
	1		Y-BR BR S-BR BK-BR	M M M SG
	2		Y-BR BR S-BR BK-BR	M M SG X
	3		Y-BR BR S-BR BK-BR	M X SG X
	1	2	Y-BR BR S-BR BK-BR	M X 5H SG
	1	3	Y-BR BR S-BR BK-BR	X X 5H SG

* To convert a key position from pickup (locking) to signaling (nonlocking), remove the screw detail P12AB92 entirely from the plunger at the key position to be converted.

To convert a key position from signaling (nonlocking) to pickup (locking), insert a screw detail P12AB92 into the plunger at the key position to be converted.

† The automatic cutoff feature of the 1A1 key telephone system cannot be used on a line connected to the common signaling key.

Ringer and Buzzer Connections Associated with
6040A, B, and C Keys When Key Cable Is
Connected Directly to Key

TABLE 39.13

To Ringer or Buzzer	Key Terminal Strip	
	Individual Line Ringer or Buzzer	Common Ringer or Buzzer
Lead Desig		
R or R1	R*	RR
B or B1	T*	RT

* Use 1R and 1T for first line, 2R and 2T for second line, etc.

Ringer and Buzzer Connections Associated
with 6040A, B, and C Keys When Key Cable
Is Connected to 44-type Connecting Blocks
and a Cord is Used to Connect the Key

TABLE 39.14

Ringing Circuit	To Ringer or Buzzer		Connecting Block	
	Lead Desig	Line No.	Terminal	No.
Individual Line Ringer	R or R1 B or B1	1	1 2	1
		2	6 7	
		3	3 8	
		4	4 5	2
		5	9 10	
		6	1 2	3
Common Ringer or Buzzer		4 5		

TABLE 39.15

Cutoff Key Connections Using
6040C Key with or without Cord

Feature	Ringer or Buzzer Lead		Cutoff Key Lead		Leads to Cut Off Extension Line, Extension Station or Ringer	
	R or R1	B or B1	R-W	G-W	R	T
Cutoff Ringer Used as Line Ringer	CR (S-R)	CT (S-G)	R*	T*		
Cutoff Ringer Used as Common Ringer	CR (S-R)	CT (S-G)	RR (Y-BL)	RT (Y-W)		
Cut Off Extension Station and Transfer Line Ringer	XR (O-R)	XT (O-G)	R*	T*	CR (S-R)	CT (S-G)
Cut Off Tip and Ring of Any Line			R*	T*	CR (S-R)	CT (S-G)

Note: Parentheses () around cord conductors indicate when key is equipped with cord.

* Use 1R and 1T for first line, 2R and 2T for second line, etc.

Key Cable Connections to Key and Connections
from Key to Telephone Set—6040A and C Keys

TABLE 39.16

Lead Desig		Key Cable			Key Term. Desig	Conn Block		Key		To Telephone Set		
		Pair No.	Inside Wiring					6040A	6040C			
1A	1A1		C Type	D Type	Color	Term.	No.	Cord		1A	1A1*	
		D40A						D37A	Color			Lead Desig
R T	R T	1	BL W	BL W	1R 1T	1 2	1†	R G	R G			
B H	A1 A		2	O W	O W	1B 1H		4 5	Y BK	Y BK		A1
R T	R T		3	G W	G W	2R 2T		6 7	BL W	BL W		
B H	A1 A		4	BR W	BR W	2H		9 10	(BR-R) BR-G	(BR-R) BR-G		
R T	R T		5	S W	S W	3R 3T		3 8	BR-Y BR-BK	BR-Y BR-BK		
B H-S	A1 A-S	6	BL-W W	BL R	3H-S	1 2	2	(BR-BL) BR-W	(BR-BL) BR-W			
R T	R T		7	BL-O W	O R	4R 4T		4 5	R-G R-Y	R-G R-Y		
B H-S	A1 A-S		8	BL-G W	G R	4H-S		6 7	(R-BK) R-BL	(R-BK) R-BL		
R T	R T		9	BL-BR W	BR R	5R 5T		9 10	R-W G-Y			
B H-S	A1 H-S		10	BL-S W	S R	5H-S		3 8	(G-BK) G-BL			
GRD	GRD	11	O-W W	BL BK	SG	1 2	3	G-W (Y-BK)	G-W (Y-BK)			
B R	B R		12	O-G W	O BK	RR RT		4 5	Y-BL Y-W	Y-BL Y-W		
R T	R T		13	O-BR W	G BK	ER ET		6 7	BK-BL BK-W	BK-BL BK-W	R T	R T
B H	B A		14	O-S W	BR BK	EH EB		9 10	BL-W S	BL-W S		A
R T	R T		15	G-W W	S BK	CR‡ CT‡		3 8		S-R S-G		
L LG	L LG	16	G-BR W	BL Y	1L LG	1 2§	4	S-Y S-BK	S-Y S-BK			
L LG	L LG		17	G-S W	O Y	2L		4 5§	S-BL	S-BL		
L LG	L LG		18	BR-W W	G Y	3L		6 7§	S-W	S-W		
L LG	L LG		19	BR-S W	BR Y	4L		9 10§	S-BR	S-BR		
L LG	L LG		20	S-W W	S Y	5L		3 8§	BR			
					XR‡ XT‡	1 2		O-R O-G				
					ON1‡	4 5		(O-Y) O-BK				
					ON‡	6 7		O-BL (O-W)				

Note: Parentheses () around cord conductors indicate when they are taped and stored in key.

* See Table 39.11 for wiring changes to use in 1A1 key telephone system.

† Connecting block nearest cord butt.

‡ For cutoff connections, see Table 39.15.

§ Strap LG leads.

TABLE 39.17

Key Cable Connections to Key and Connections
from Key to Telephone Set—6040B Key

Lead Desig		Key Cable			Key Term. Desig	Conn Block		6040B Key			To Telephone Set	
		Pair No.	Inside Wiring					PPP p/s p/s p/s-L	1A 1A1*			
1A	1A1		C Type	D Type		Term.	No.	D40A Cord	Lead Desig			
			Color					Color				
R T	R T	1	BL W	BL W	1R 1T	1 2	1†	R G				
B H	A1 A	2	O W	O W	1B 1H	4 5		Y BK		A1		
R T	R T	3	G W	G W	2R 2T	6 7		BL W				
L	L A	24R 4T	BR(R) W(BR)	BR(V) W(BR)	L6 2H	9 10		BR-R BR-G				
R T	R T	5	S W	S W	3R 3T	3 8		BR-Y BR-BK				
BL	BL A	11T 6T	W(O-W) W(BL-W)	BK(BL) R(BL)	L2‡ 3H	1 2	BR-BL BR-W					
R T	R T	7	BL-O W	O R	4R 4T	4 5	R-G R-Y					
S S	A-S A-S	23T 8T	R(G) W(BL-G)	R(G)	6H-S 4H-S	6 7	R-BK R-BL					
R T	R T	9	BL-BR W	BR R	5R 5T	9 10	R-W G-Y					
GRD S	GRD A-S	11R 10T	O-W(W) W(BL-S)	BL(BK) R(S)	SG 5H-S	3 8	G-BK G-BL					
R T	R T	22	O R	O V	6R 6T	1 2	G-W Y-BK					
R1 B1	R1 B1	12	O-G W	O BK	RR RT	4 5	Y-BL Y-W					
R T	R T	13	O-BR W	G BK	ER ET	6 7	BK-BL BK-W	R T	R T			
B H	B A	14	O-S W	BR BK	EB EH	9 10	BL-W S		A			
		15	G-W W	S BK		3 8						
L LG	L LG	16	G-BR W	BL Y	L1 LG	1 2§	S-Y S-BK					
L LG	L LG	17	G-S W	O Y	L2	4 5§	S-BL					
L LG	L LG	18	BR-W W	G Y	L3	6 7§	S-W					
L LG	L LG	19	BR-S W	BR Y	L4	9 10§	S-BR					
L LG	L LG	20	S-W W	S Y	L5	3 8§	BR					
LG	LG	24T	R(BR)	V(BR)		8§						
							(O-R) (O-G)					
							(O) (O-BK)					
							(O-BL) (O-W)					

Note: Parentheses () around cord conductors indicate when they are taped and stored in back of connecting block.

* See Table 39.11 for wiring changes to use in 1A1 key telephone system.

† Connecting block nearest cord butt.

‡ For cutoff connections, see Table 39.15.

§ Strap LG leads.

Connection of Internal Leads
Equipped with Spade Tips

TABLE 39.18

Key Leads	Key		
	6040A	6040B	6040C
Color	Terminal		
R-W			ON1
G-W			ON
G	ET	ET	ET
Y	R	ER	R
Y-BK	M		M
Y-BR	M		
BK-BR	X	M	
W-BR		M	
S-BR	M	M	M
BR	M		
M1W 5-1/2" Cord	ER-N	EH-M	ER-N