

43 KEYBOARD

DISASSEMBLY/REASSEMBLY

CONTENTS	PAGE	
1. GENERAL	1	1.04 The extent of the disassembly procedure is limited to that which is required for correction of troubles or replacement of parts in field locations. When removing a subassembly or part from the keyboard, follow the removal procedure and note the sequence of removal to enable proper reassembly.
2. TOOLS REQUIRED	2	1.05 The 50K122/AAE and AAF unitized keyboards are not field servicable. Therefore, disassembly procedures are not provided. However, keytop identification information in this section does apply. The unitized keyboards are returnable to Western Electric for repair.
3. DISASSEMBLY/REASSEMBLY....	2	1.06 Refer to Maintenance Tools, Section 570-005-800, for a complete listing of the various types of hand tools available for maintenance of Teletype [®] equipment. For a listing of the tools required to perform the disassembly and reassembly of the 43 keyboard, refer to 2. TOOLS REQUIRED.
SPACEBAR MECHANISM (Early Design)	2	1.07 When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055).
SPACEBAR MECHANISM (Late Design)	3	1.08 Precautions should be taken to assure that the keyboard is disassembled and reassembled under clean conditions. No oil, grease, or other liquids should be allowed on loose parts, subassemblies, keyswitches, or the complete keyboard.
KEYTOPS	4	1.09 Reference in the procedures to left or right, up or down and top or bottom, etc, refer to the keyboard in its normal operating position as viewed by the operator.
KEYSWITCH	5	1.10 When removing a subassembly or part from the keyboard, do not force or pry parts to provide the necessary clearance for removal. No forcing is required to accomplish a removal procedure. Follow the removal procedure and note how each part is removed and the sequence of its removal so that proper reassembly can be accomplished. For reassembly, reverse the removal procedure except where different instructions are given.
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CABLE BUFFERED (KSR)	8	
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1. GENERAL		
1.01 This section provides disassembly and reassembly procedures for the 43 keyboard.		
1.02 This section is reissued to include the 50K122/AAE and AAF unitized keyboard and all the 43 Teleprinter Buffered Station keyboards. All references to opcon have been changed to keyboard.		
1.03 The KSR keyboard circuitry can be damaged by static discharge. The 346392 static discharge ground strap is available for use by service personnel. Maintenance spares are provided in antistatic bags which should be saved for reuse when returning keyboards for repair.		

SECTION 574-502-720

1.11 Refer to 43 Teleprinter Disassembly/ Reassembly, Section 574-500-720 for keyboard removal and replacement procedures.

1.12 Some parts that are not listed in the parts sections are shown as necessary to the disassembly procedures such as screws, ring retainers, etc. Most of these parts are common to other Teletype product line and if needed may already be available in available in field repair kits or can be ordered.

2. TOOLS REQUIRED

2.01 The following tools are recommended for uses during the disassembly and reassembly procedures:

75765	Spring Hook — Pull
89954	1/4 Inch Nut Driver
100982	Screwdriver (6 Inch Medium)
108285	Long-Nose Pliers
346257	Keyswitch Extractor
346260	Keytop Extractor
346392	Static Discharge Strap
Telco Provided	Soldering Iron (Low Wattage)
Telco Provided	Desoldering Tool

3. DISASSEMBLY/REASSEMBLY

SPACEBAR MECHANISM (Early Design)

3.01 To remove the spacebar mechanism:

(a) Disengage the leaf spring (bronze colored) from the wire bail using a spring hook and pull toward the front (Fig. 1).

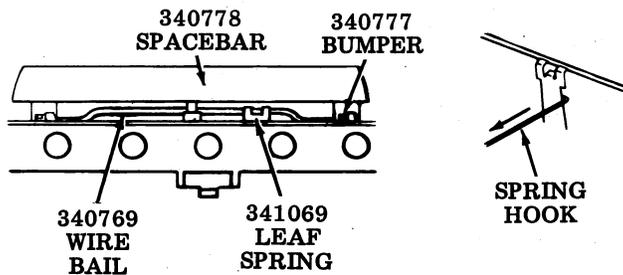


Fig. 1—Leaf Spring Disengagement

(b) Disengage the two rear tines (one at each end of spacebar) with a small screwdriver while pulling the spacebar up and toward the front (Fig. 2).

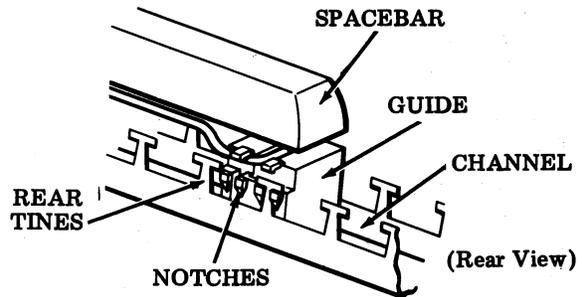


Fig. 2—Spacebar Removal

(c) Continue applying upward pressure to the spacebar and disengage the two front tines.

(d) Remove the wire bail from the left and right spacebar guides (snaps in and out) (Fig. 3).

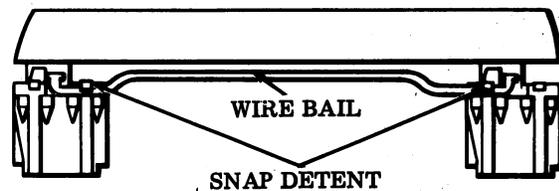


Fig. 3—Wire Bail Removal

3.02 To reassemble the spacebar mechanism:

(a) Make sure the four tines engage the notches in the space bar housing and the leaf spring is engaged to the wire bail.

(b) Check mechanical operation of the spacebar so that it returns to its unoperated position freely when depressed and released slowly.

SPACEBAR MECHANISM (Late Design)

3.03 To remove the spacebar, pry up on the left spacebar, slide projection until the spacebar slide disengages from the housing. Lift and remove spacebar.

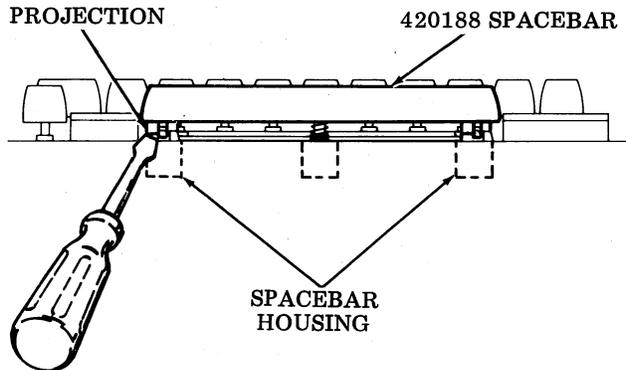


Fig. 4—Spacebar Removal

3.04 To remove the spacebar bail:

- (a) Remove spacebar see 3.03.
- (b) Place 346257 tool over either spacebar housing and press downward. When the tool bottoms and embossed projections snap into notches on housing, squeeze and pull back on the tool to lift housing up (Fig. 5).

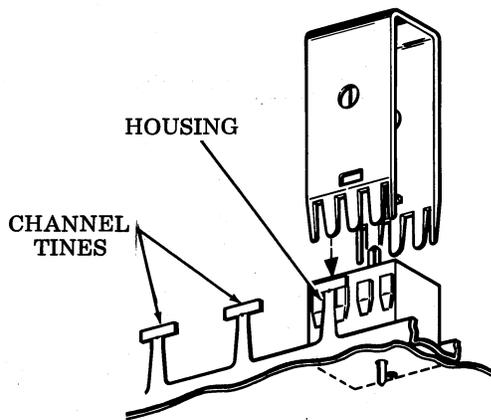


Fig. 5—Spacebar Housing

Note: The tines of the tool must pass between the housing and the inside of the tines of the channel

- (c) Repeat (b) for the other housing and lift out both housings with bail.
- (d) Remove bail from housings by snapping out of housing tab.

3.05 To reassemble the spacebar mechanism:

- (a) Snap the bail into the tabs on the spacebar housings as shown below.

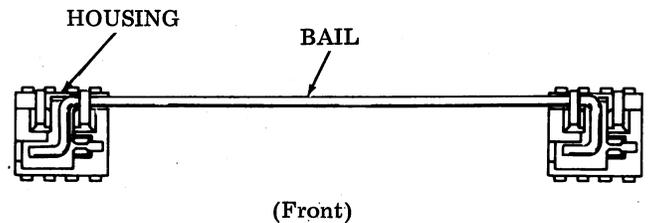


Fig. 6—Wire Bail and Housing Assembly

- (b) Snap the two spacebar housings into the keyboard channel, see Fig. 6. Make sure the four tines of the channel engages the notches in the spacebar housing.
- (c) Place the spacebar into the guide slots in the left and right housing. Position the bail into the notch (one left side and one right side) on the spacebar. Push down on the spacebar snapping it into place in the housing, see Fig. 7.

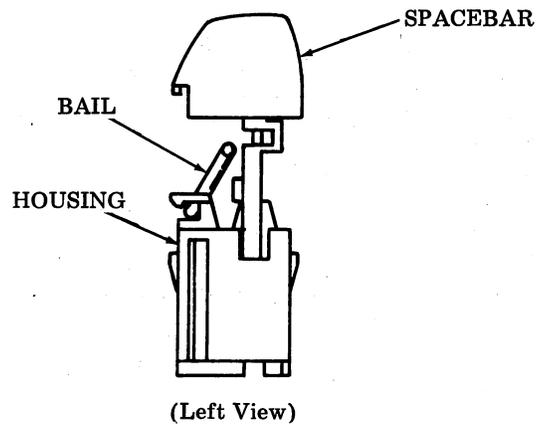


Fig. 7—Spacebar Assembly

- (d) Check mechanical operation of the spacebar so that it returns to its unoperated position freely when depressed and released slowly.

KEYTOPS

3.06 To remove the keytops (Fig. 8):

(a) There are two types of keytops used on the keyboard.

(1) Control Keytop

Indicator
Nonindicator

(2) Data Keytop



Fig. 8—Keytops

(b) To remove data keytops, place 346260 tool over the keytop and pull up to remove (Fig. 9).

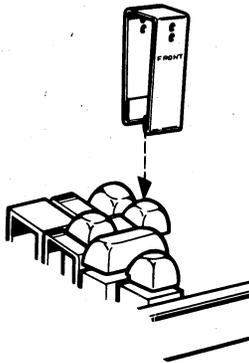


Fig. 9—Data Keytop Removal

Warning: CAPS LOCK, PARITY, DUPLEX, and CPS keytops, if present, must be in the fully extended, unlatched position before attempting to remove the keytop. Failure to observe this precaution will result in a damaged keyswitch.

(c) To remove control keytops (Fig. 10):

(1) Grasp keytop using thumb and index finger.

(2) Exert upward force until keytop releases.

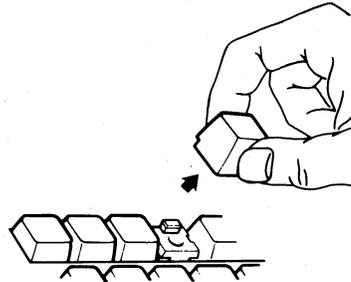
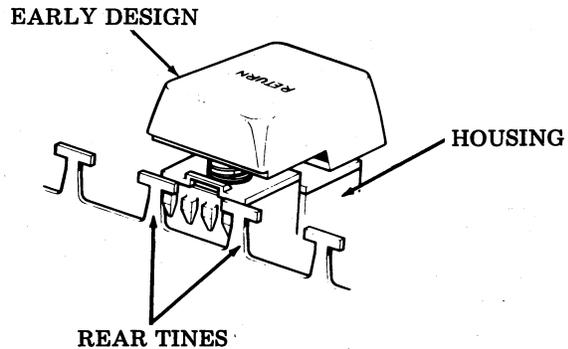


Fig. 10—Control Keytop Removal

(d) To remove the early design RETURN keytop with housing:

(1) Remove the keytops that surround the RETURN keytop using 346260 tool.

(2) Disengage the rear tines from housing with a small screwdriver while pulling the RETURN keytop up and toward the front (Fig. 11).



(Rear View)

Fig. 11—Rear Tine Disengagement

- (3) Continue applying upward pressure to the RETURN key and disengage the front tine from housing using a spring hook. Remove keytop with housing from channel (Fig. 12).

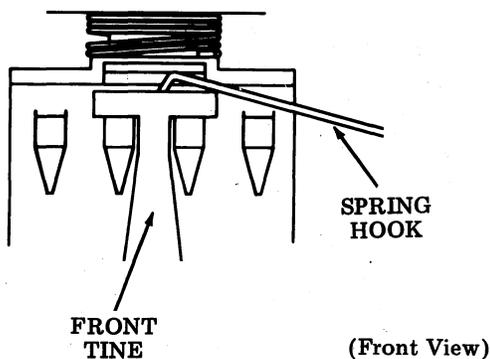


Fig. 12—Front Tine Disengagement

- (e) To remove the late design RETURN keytop:
- (1) Remove the keytops that surround the RETURN keytop using the 346260 tool.
 - (2) Grasp the RETURN keytop using thumb and index finger.
 - (3) Exert upward force until keytop releases.



Fig. 13—Late Design RETURN Keytop

- 3.07 To reassemble the early design RETURN keytop with housing:

Insert housing with key; observe position of locating lug on housing and press into channel. Housing must snap fully into front and rear channel tines.

KEYSWITCH

- 3.08 To remove the keyswitch:

- (a) Remove shield to expose circuit card by removing four screws. Cut cable tie, if present, securing loose end of cable to the keyboard.
- (b) Remove keytop.
- (c) Remove solder from around terminal pins of keyswitch to be removed (Fig. 14).

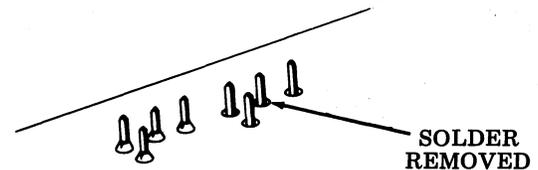


Fig. 14—Solder Removal

Warning: Use a grounded low wattage soldering iron (avoid prolonged contact with pins) along with a desoldering tool to prevent damage to keyswitch, card circuits and components.

- (d) Place 346257 tool over the keyswitch and press downward. When the tool bottoms and embossed projections snap into notches on keyswitch, squeeze and pull back on the tool to lift keyswitch out (Fig. 15).

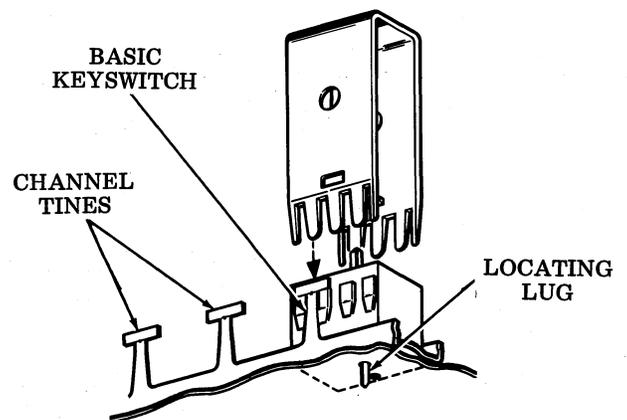


Fig. 15—Keyswitch Removal

Note: The tines of the tool must pass between the keyswitch housing and the inside of the tines of the channel.

3.09 To reassemble the keyswitch:

Insert new keyswitch, observe position of the locating lug, and press keyswitch into channel. Switch must snap fully into front and rear channel tines. Hold keyswitch in place and resolder.

BLOCKING SPACER

3.10 To remove blocking spacer:

- (a) Remove keytop associated with blocking spacer and first keytop, if present, to the left (see 3.06).
- (b) Slide spacer to the left as far as it will go and then pull to the rear (Fig. 16).

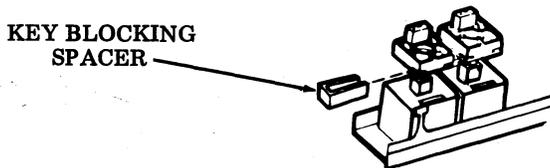


Fig. 16—Blocking Spacer Removal

- (c) In reassembly, insert spacer from the left and observe that the spacer encapsulates the keyswitch push rod and that the front part of the spacer is located between the keyswitch springs (Fig. 17).

- (d) Replace keytops.

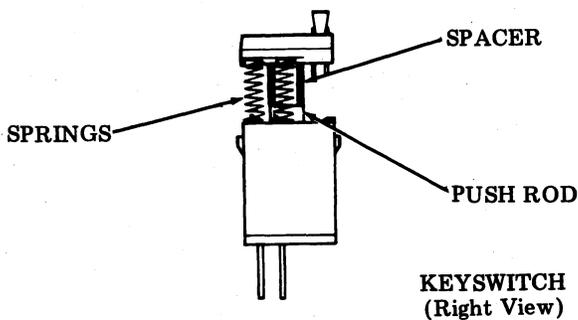


Fig. 17—Blocking Spacer Reassembly

CABLE BASIC (KSR)

3.11 To remove the cable:

- (a) Remove shield to expose circuit card by removing four screws.
- (b) Remove the PRINTER TEST, PARITY, DUPLEX and CPS keytops.
- (c) Remove the INTERLOCK, PRINTER TEST, PARITY, DUPLEX and CPS keyswitches (Fig. 18).

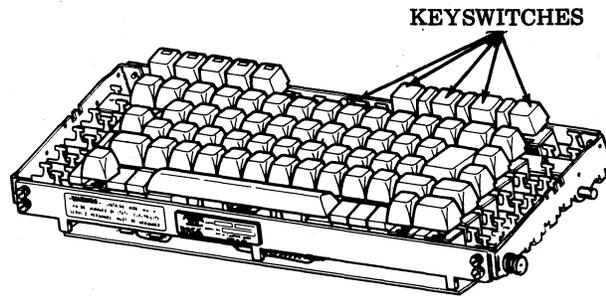


Fig. 18—Keyswitch Identification

- (d) Remove solder from around connector pins of cable to be removed (Fig. 19).

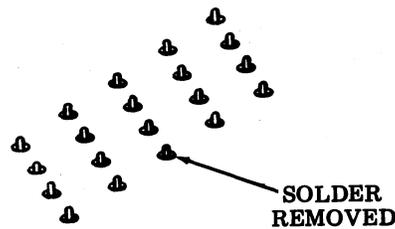


Fig. 19—Connector Pins

Warning: Use a grounded, low wattage soldering iron (avoid prolonged contact with pins) along with a desoldering tool to prevent damage to card circuits and components.

- (d) Remove the circuit card cover located in front of the control keys from the channel. Use a spring hook to remove the cover from the mounting posts (Fig. 20).

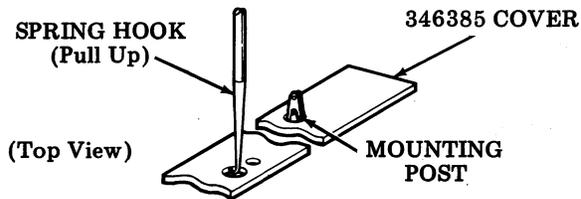


Fig. 20—Cover Removal

- (e) Grasp the cable connector using thumb and index finger.
- (f) Exert upward force until cable connector releases (Fig. 21).

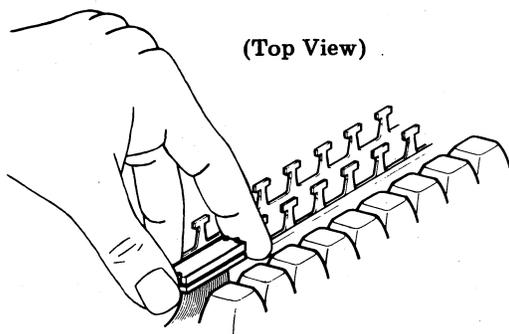


Fig. 21—Cable Connector Removal

- (g) Remove rear plate (Fig. 22).

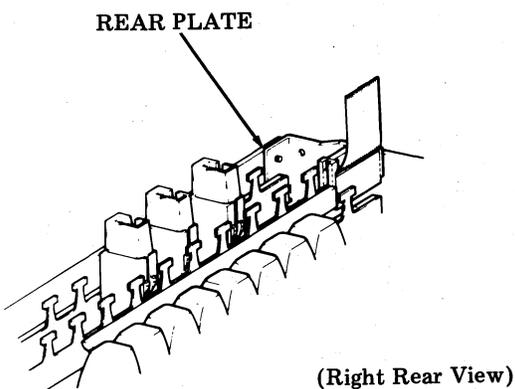


Fig. 22—Cable Removal

- (h) Slide cable to the right until it clears the circuit card. Remove through opening between channels (Fig. 22).

3.12 To reassemble the cable:

- (a) Insert new cable connector into circuit card holes and press into place. Hold cable connector in place and resolder.
- (b) Fasten cable to card using locally furnished cable tie.
- (c) Reassemble keyswitches and keytops removed in 3.11 (b) and (c).
- (d) Replace circuit card cover removed in 3.11 (e).
- (e) Replace rear plate.
- (f) Replace shield removed in 3.11 (a).

CABLE BASIC (RO)

3.13 To remove the cable:

- (a) Remove the interlock keyswitch (see 3.08).
- (b) Remove solder from around connector pins of cable to be removed (Fig. 19).

Warning: Use a grounded, low wattage soldering iron (avoid prolonged contact with pins) along with a desoldering tool to prevent damage to card circuits and components.

- (c) Cut the cable tie securing the cable to the circuit card.
- (d) Remove the screw securing the right rear side of the circuit card to the channel (Fig. 23).
- (e) Grasp the cable connector using thumb and index finger (Fig. 21).
- (f) Exert upward force until cable connector releases.
- (g) While biasing the right rear cover of the circuit card in the downward direction; slide the cable to the rear until it clears the circuit card. Remove cable.

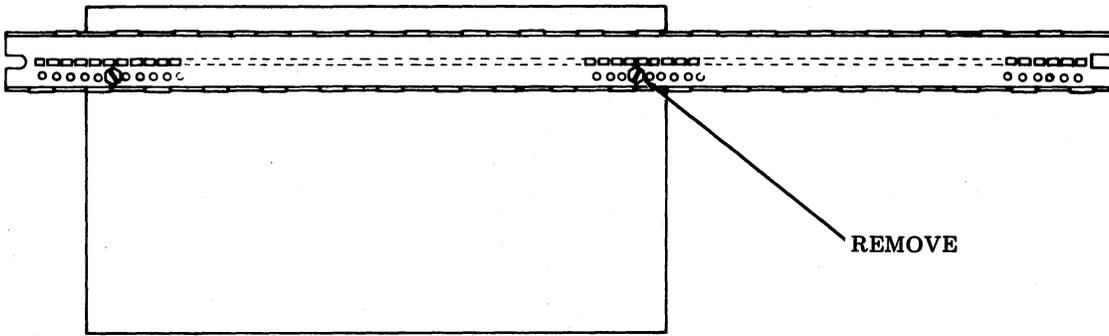


Fig. 23—Channel

3.14 To reassemble the cable:

- (a) Insert new cable connector into circuit card holes and press into place. Hold cable connector in place and resolder.
- (b) Fasten cable to card using cable tie.
- (c) Secure the circuit card to the channel with the screw previously removed.
- (d) Reassemble interlock keyswitch previously removed.
- (e) Replace circuit card shield.

- (b) Remove the keyswitches associated with the keytops in (a). See 3.08 for keyswitch removal.
- (c) Remove solder from around connector pins of cable to be removed (Fig. 25).

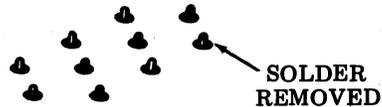


Fig. 25—Connector Pins

Warning: Use a grounded, low wattage soldering iron (avoid prolonged contact with pins) along with a desoldering tool to prevent damage to card circuits and components.

CABLE BUFFERED STATION

3.15 To remove the cable:

- (a) Remove the left most nine keytops. See Fig. 24.

- (d) Remove the circuit card cover located in front of the control keys from the channel. Use a spring hook to remove the cover from the mounting posts (Fig. 26).

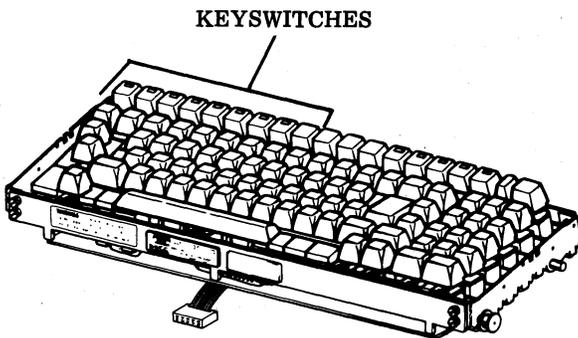
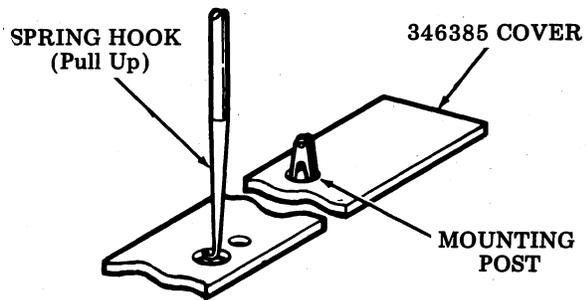


Fig. 24—Keyswitch Identification



(Top View)

Fig. 26—Cover Removal

- (e) Grasp the cable and cable connector and exert upward force until cable connector releases.
- (f) Cut cable ties securing the cable to the circuit card.
- (g) Remove rear plate and left side frame (Fig. 27).

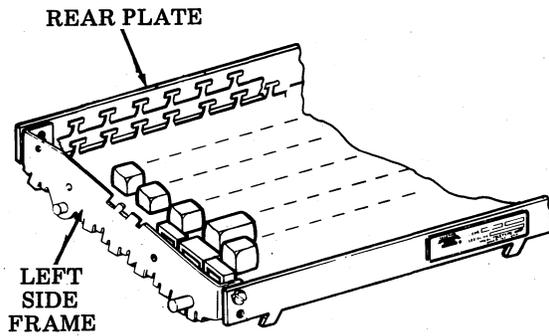


Fig. 27—Cable Removal

- (h) Slide cable to the left until it clears the circuit card and remove.

3.16 To reassemble the cable:

- (a) Insert new cable connector into circuit card holes and press into place. Route cable as shown in Fig. 28. Hold cable connector in place and resolder.

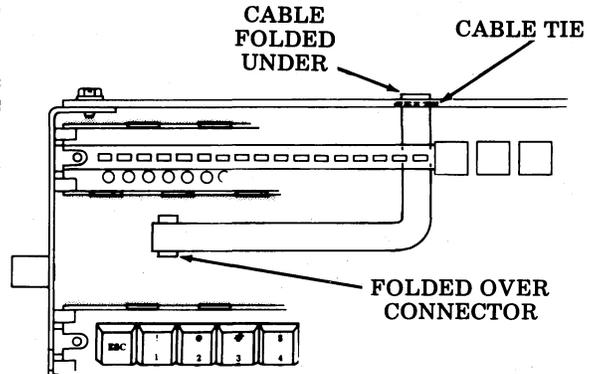


Fig. 28—Cable Routing

- (b) Fold the cable under the circuit card and fasten to the circuit card using a cable tie. See Fig. 28.
- (c) Reassemble keyswitches and keytops removed in 3.15 (a) and (b).
- (d) Replace rear plate and left side frame removed in 3.15 (g).
- (e) Replace circuit card cover removed in 3.15 (d).
- (f) Replace circuit card shield and fasten the loose end of the cable to the circuit card using a cable tie, see Fig. 29.

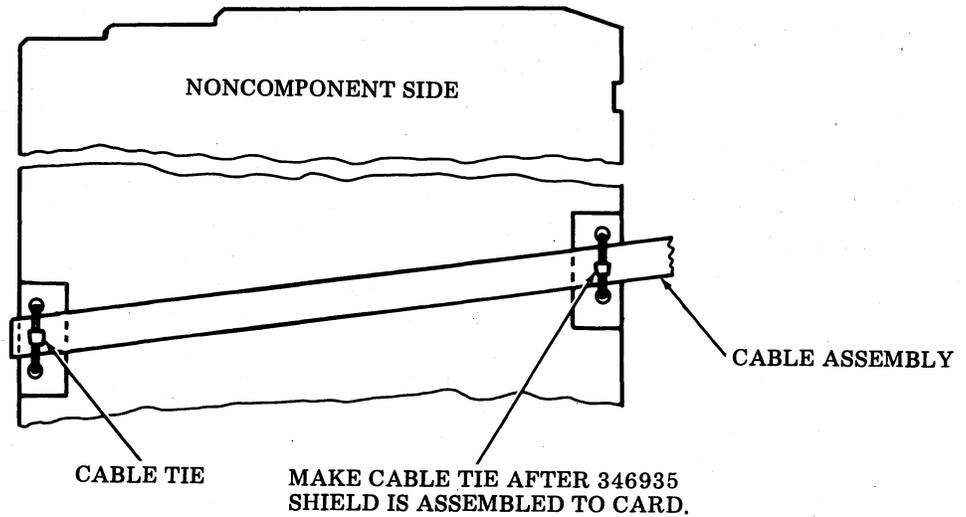
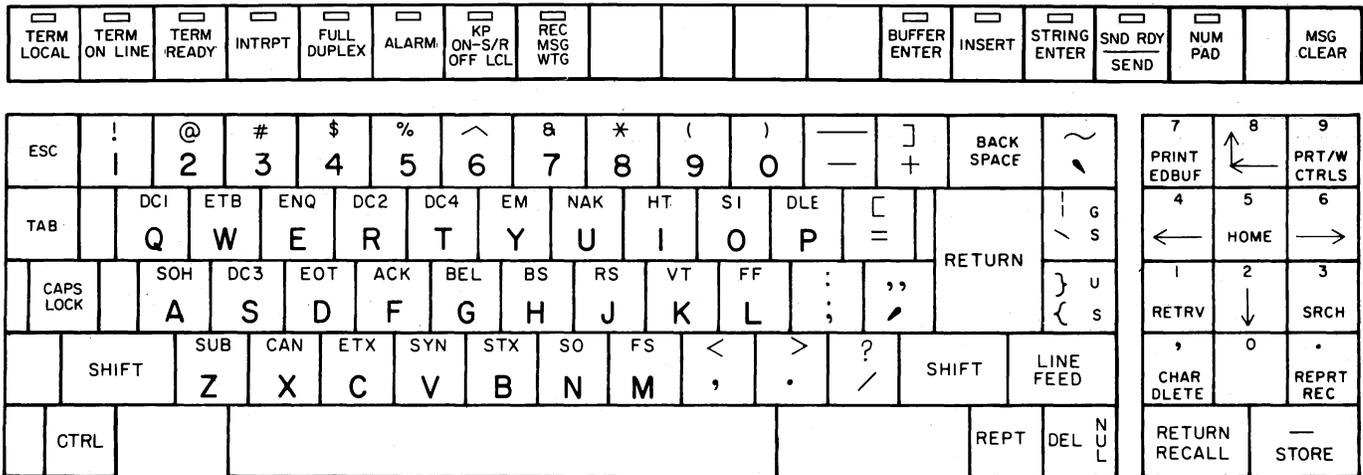
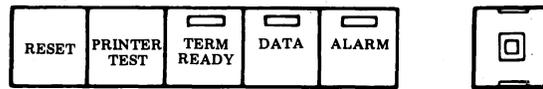
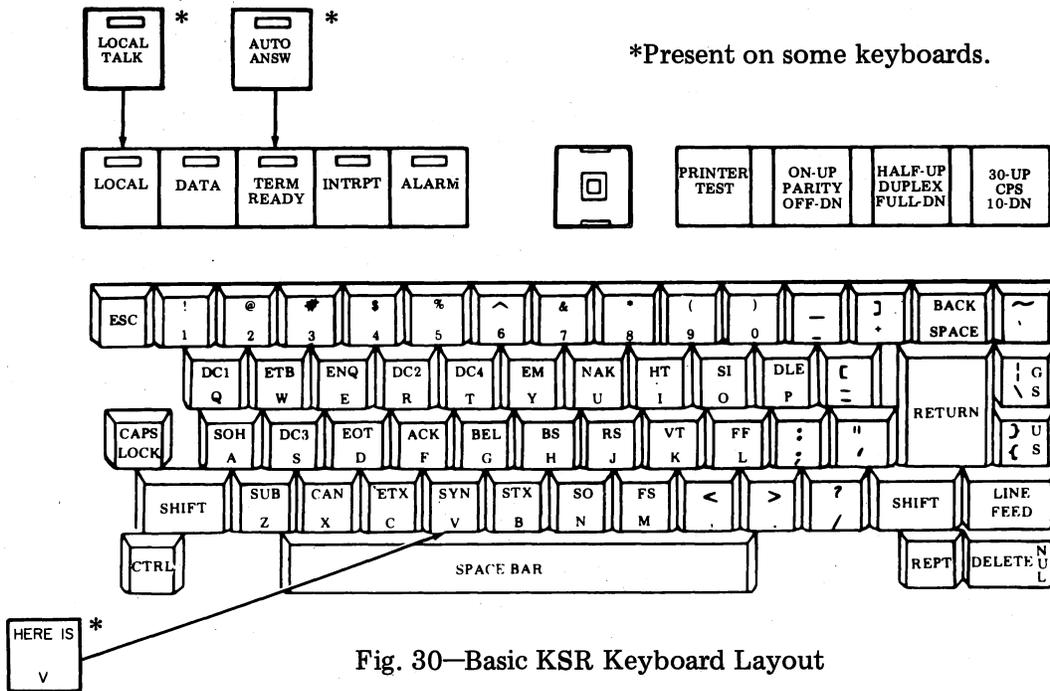


Fig. 29—Cable Replacement

4. KEYTOP AND KEYSWITCH IDENTIFICATION



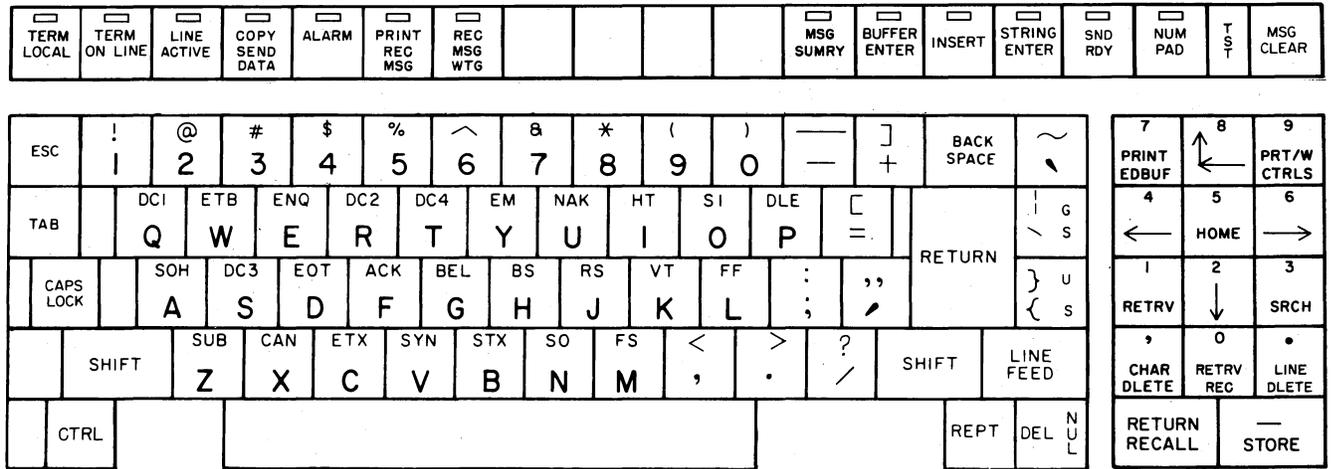
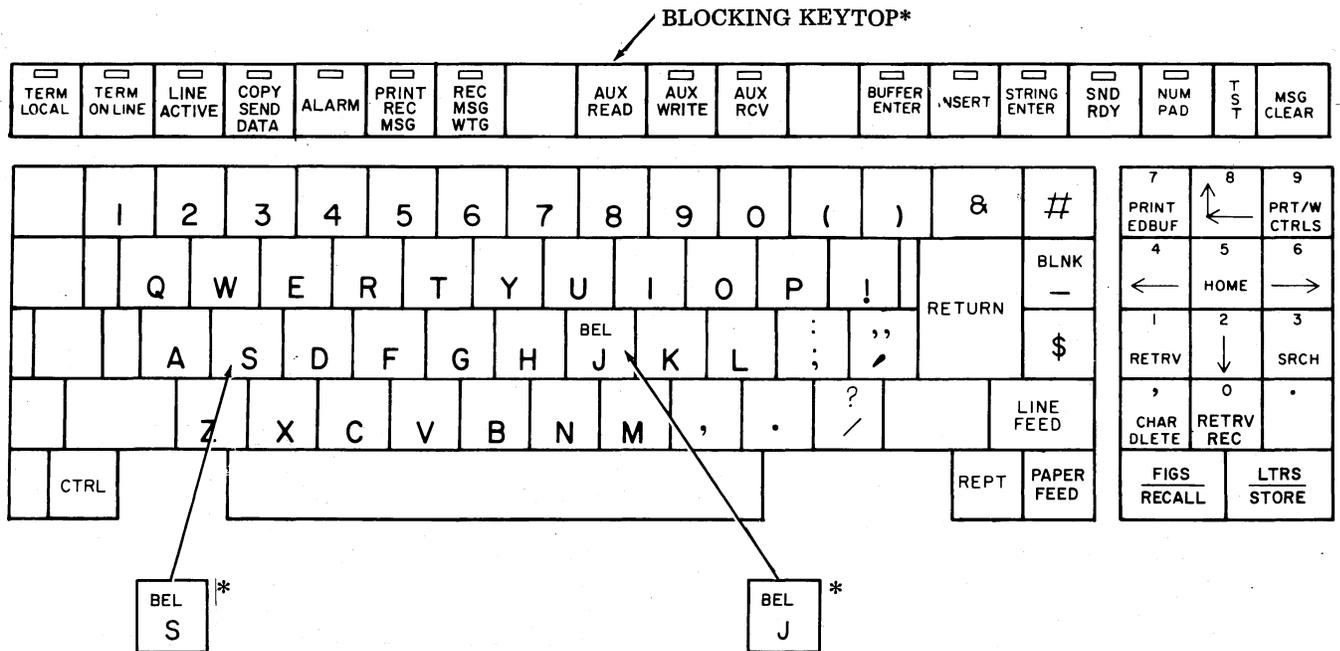


Fig. 33—8-Level Buffered Selective Calling Keyboard Layout



*Present on some keyboards.

Fig. 34—5-Level Buffered Selective Calling Keyboard Layout

SECTION 574-502-720

PART NO.	KEYTOP DESCRIPTION	PART NO.	KEYTOP DESCRIPTION
340701	BLOCKING — CONTROL	340982	BS H
340714	BLOCKING — DATA	340983	} US {
		340984	SUB Z
		340985	SYN V
340778†	SPACEBAR	340986	LINE FEED
340821	! 1	340987	CTRL
340822	@ 2	340988	REPT
340823	# 3	340989#	DELETE NUL
340824	\$ 4	340990	6
340825	% 5	340993	Q
340826	^ 6	340994	W
340827	& 7	340995	E
340828	* 8	340996	R
340829	(9	340997	T
340830) 0	340998	Y
340831	- -	340999	U
340838	DC1 Q	341000	I
340839	ETB W	341001	O(ALPHA)
340840	ENQ E	341002	P
340841	DC2 R	341005	D
340842	DC4 T	341006	F
340843	EM Y	341007	G
340844	NAK U	341008	H
340846	SI O	341009	K
340852	SOH A	341010	L
340853	DC3 S	341012	Z
340854	EOT D	341013	X
340855	ACK F	341014	C
340856	BEL G	341015	V
340858	RS J	341016	B
340859	VT K	341017	N
340860	FF L	341020	(BLANK SHIFT)
340861	: ;	346102	LOCAL
340862	” /	346106	INTRPT
340867	SHIFT	346116	AUTO ANSW
340869	CAN X	346127	TERM READY
340870	ETX C	346161	LOCAL TALK
340872	STX B	346162	DATA
340873	SO N	346163	ALARM
340874	FS M	346164	ON-UP PARITY OFF-DN
340875	< ,	346165	HALF-UP DUPLEX FULL-DN
340876	> .	346166	30-UP CPS 10-DN
340877	? /	346169	PRINTER TEST
340889] +	346403 ^s	RETURN
340890	[=	346536	1
340894	CAPS LOCK	346537	2
340975	ESC	346538	3
340976	BACKSPACE	346539	4
340977	~ \	346540	5
340978	HT I	346541	7
340979	DLE P	346542	8
340981	GS \	346543	9

Fig. 35—Keytop Identification

PART NO.	KEYTOP DESCRIPTION	PART NO.	KEYTOP DESCRIPTION
346544	0(ZERO)	346842	KP ON—SR OFF—LCL
346548	,	346843	REC MSG WTG
346549	.	346844	BUFFER ENTER
346558	M	346845	INSERT
346559	J	346846	STRING ENTER
346589	TAB	346847	SND RDY SEND
346590¶	DEL NUL	346848	NUM PAD
346591	7 PRINT EDBUF	346849	MSG CLR
346592	8 ↑	347095	HERE IS V
346593	9 PRT/W CTRLS	347142	BLNK—
346594	4 ←	347149**	RETURN
346595	5 HOME	347177	PAPER FEED
346596	6 →	347218	0 RETRV REC
346597	1 RETRV	347219	. LINE DLETE
346598	2 ↓	347236	&
346599	3 SRCH	347237	#
346600	CHAR DLETE	347238	!
346601	0	347239	\$
346602	. REPRT REC	347240	BEL S
346603	RETURN RECALL	347241	FIGS — RECALL
346604	— STORE	347242	LTRS — STORE
346675	(347255	. (NUM PAD)
346676)	420188††	SPACEBAR
346682	A	454351	COPY SEND DATA
346683	S	454352	PRINT REC MSG
346694	BEL J	454353	LINE ACTIVE
346834	RESET	454354	MSG SUMRY
346839	TERM LOCAL	454355	SND RDY
346840	TERM ON LINE	454365	AUX REC
346841	FULL DUPLEX	454366	AUX READ
		454367	AUX WRITE

† Early Design Spacebar

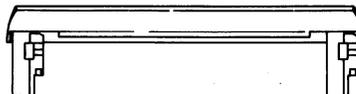
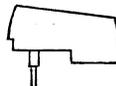
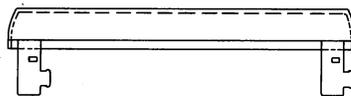
Basic Keyboard Key

s Early Design Return Key

¶ Buffered Keyboard Key

**Late Design Return Key

†† Late Design Spacebar



See Notes on following page.

Fig. 35—Keytop Identification (Contd)

SECTION 574-502-720

Note 1: The 346409 spacer must be installed under the 346163 key to block the action of the ALARM keyswitch on 43K101/CAA keyboard.

Note 2: The 346409 spacer must be installed under the 346162, 346163 and 346127 key to block the action of the ALARM keyswitch on the 43K101/CAB and 43K001/AAA and the TERM READY and DATA keyswitches on the 43K001/AAA keyboard.

Note 3: The 340764 compression spring between the 346403 key and the housing must be ordered separately.

Note 4: The 346116 and 346161 keys are used on 43K101/CAA keyboard.

Note 5: The 346102 and 346127 keys are used on 43K101/CAB keyboard.

Note 6: The 340701 and 340714 keys may be used for local engineering requirements to block the action of keyswitches.

Note 7: All 43K101/CAB operator consoles should have the DATA key unblocked. Remove the 346409 spacer, if present under the 346162 DATA key.

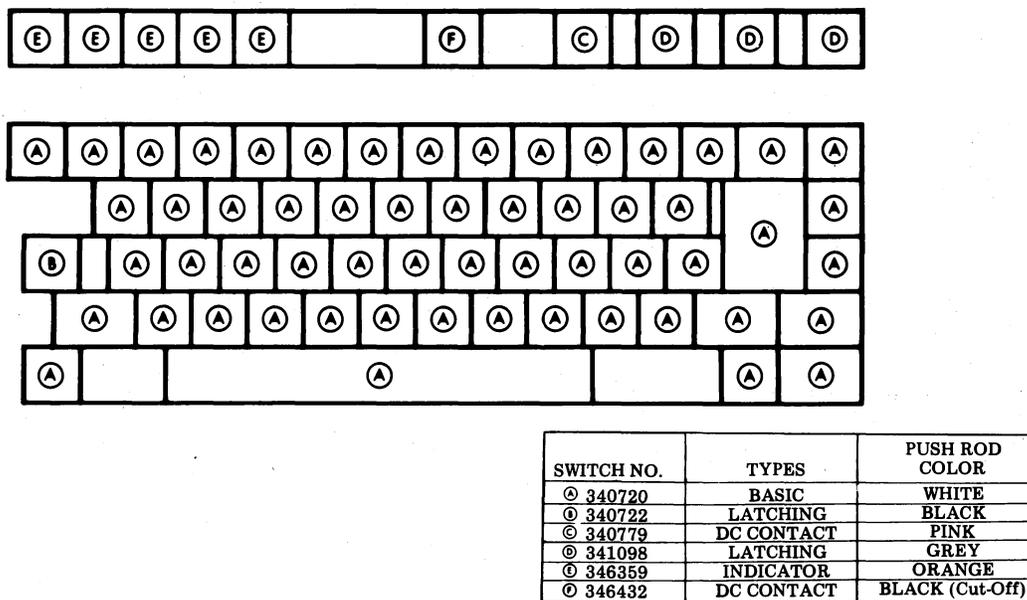
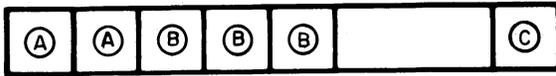
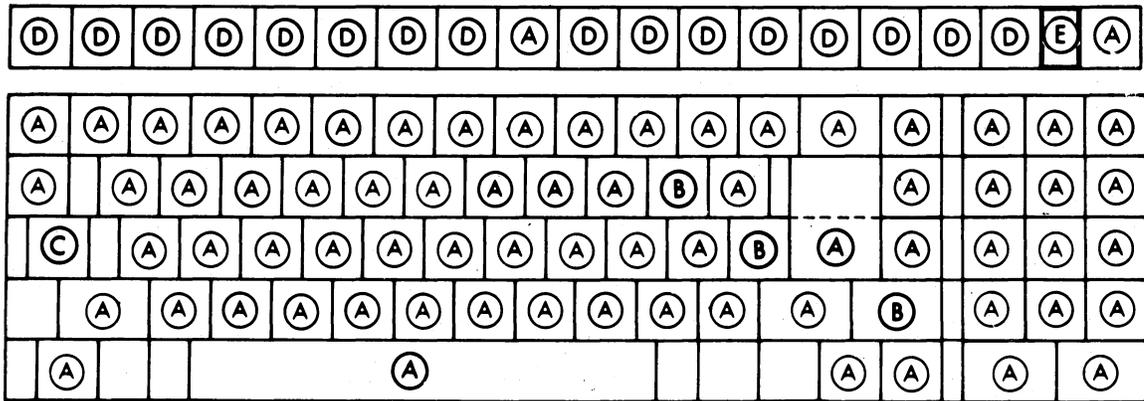


Fig. 36—Basic KSR Keyswitch Identification



SWITCH NO.	TYPES	PUSH ROD COLOR
Ⓐ 340779	DC CONTACT	PINK
Ⓑ 346359	INDICATOR	ORANGE
Ⓒ 346432	DC CONTACT	BLACK (CUT-OFF)

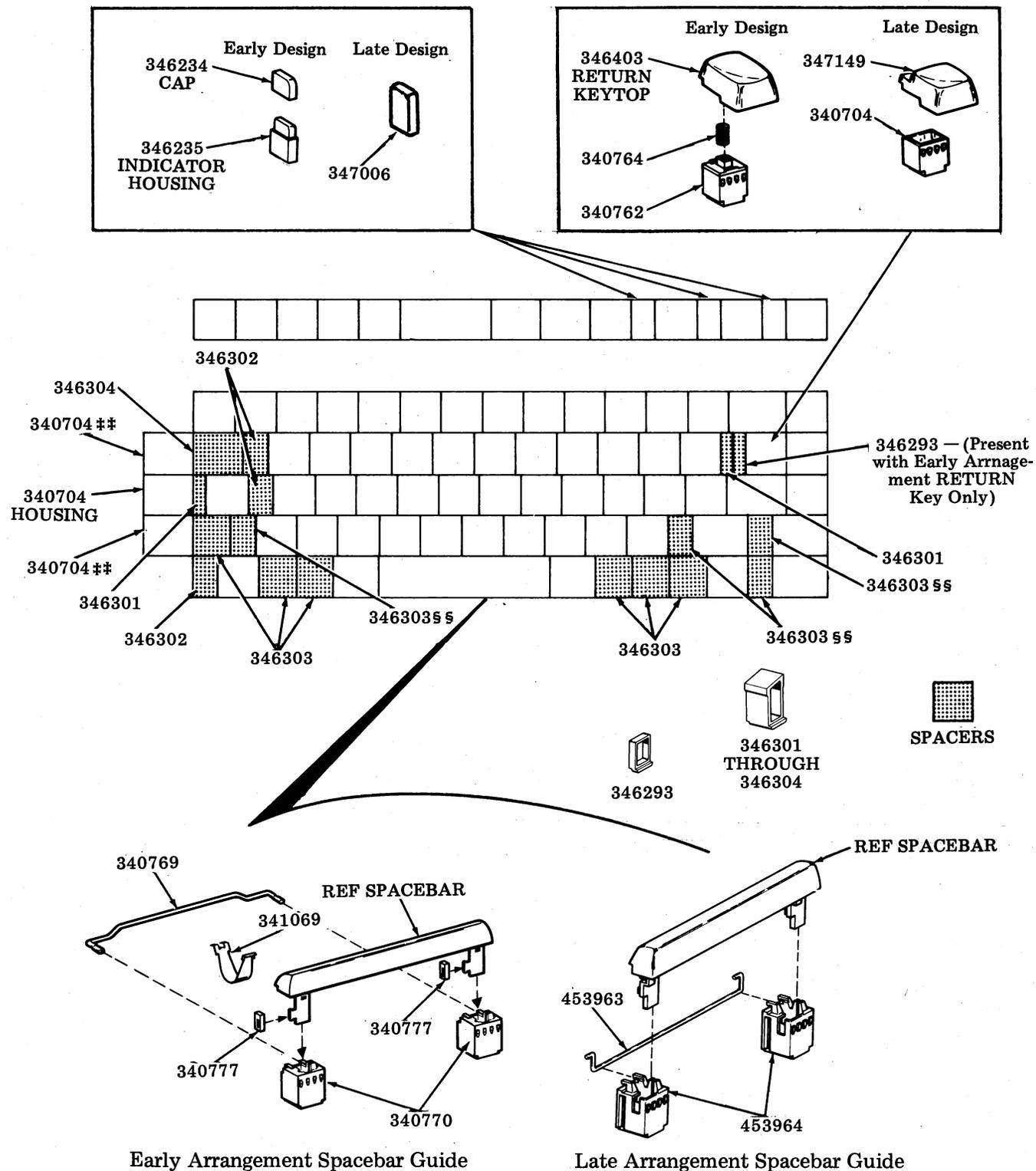
Fig. 37—Basic RO Keyswitch Identification



SWITCH NO.	TYPES	COLOR PUSH ROD
Ⓐ 340720	BASIC	WHITE
Ⓑ 340721	OVERTRAVEL	GREEN
Ⓒ 340722	LATCHING	BLACK
Ⓓ 346359	INDICATOR	ORANGE
Ⓔ 341088	INDICATOR ONLY	—————

Fig. 38—Buffered KSR Keyswitch Identification

5. SPACER, HOUSING AND REFERENCE IDENTIFICATION



**Present on Early Arrangement Keyboards
 sssReplaces Two 346293 Spacers Used on Early Arrangement Keyboards

Fig. 39—Basic KSR Keyboard

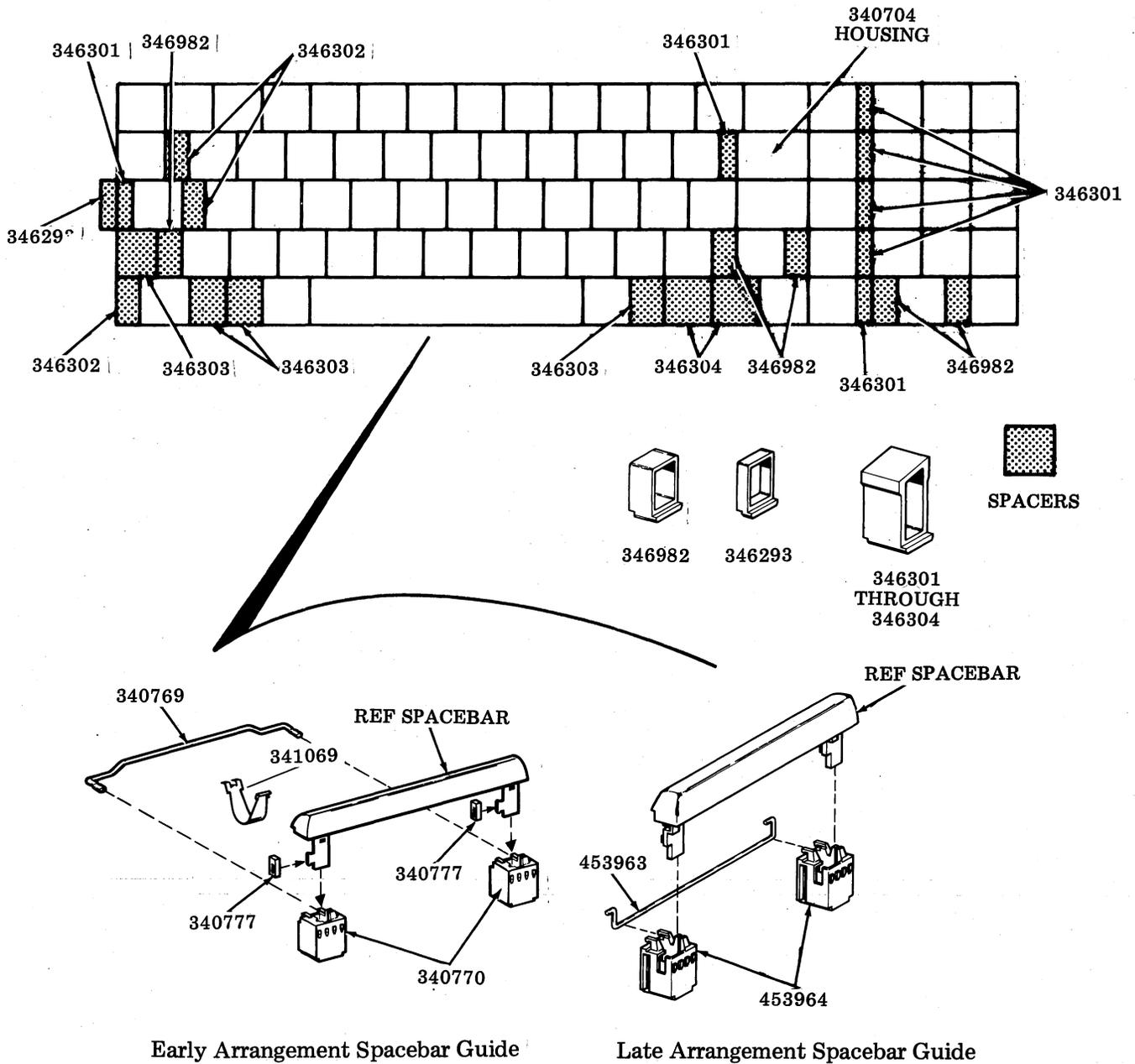


Fig. 40—Buffered Keyboard