"DATASPEED*" 40 OPERATOR CONSOLES KD AND RO

TESTING AND TROUBLESHOOTING

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1. GENERAL

1.01 This section contains procedures to test and troubleshoot the two basic types of DATASPEED 40 Operator Consoles (opcon), KD and RO, shown in Fig. 1.

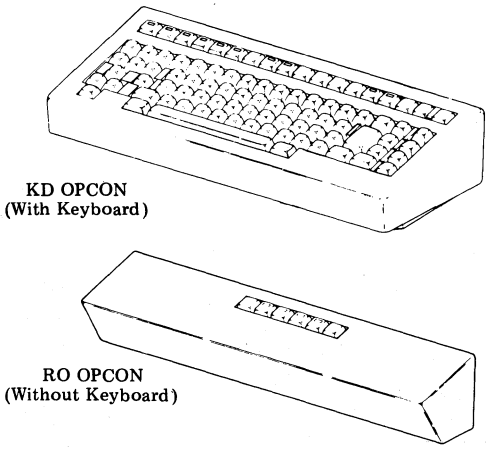

Fig. 1 — Operator Consoles

1.02 This section is reissued to incorporate 40K203, 40K003, 40K004, and the latest engineering changes available at this time. Teletype Change Notice (TCN) information, where applicable, is also included. Because this is a general revision, marginal arrows have been omitted.

Note: The 40K203 External Numeric Cluster opcon is basically the same as a numeric cluster located to the right of the keyboard data array. The 40K104 and 40K203 opcons hereafter are referred to as the 40K104, 203 opcon.

1.03 The testing and troubleshooting procedures in this section apply to Asynchronous DATASPEED 40 Opcons with full edit features and Synchronous DATASPEED 40 Opcons.

1.04 The extent of the testing and troubleshooting procedures are limited to that which is required for correction of troubles or replacement of parts in field locations.

1.05 Repackage the opcon into its original packaging details it was received in or into the replacement opcon packaging details.

1.06 New packaging material and a packaging specification can be ordered from Teletype Corporation or Western Electric Service Center in the event the original packaging materials are not available.

Packaging Specification:

- PS-28001 — For KD opcon
- PS-28002 — For RO opcon

Note: When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410075).

1.07 Refer to Section 582-211-100 for information providing description and operation of DATASPEED 40 opcons, 582-211-400 for wiring, and 582-211-700 for adjustment, disassembly, reassembly, and parts information.

1.08 Reference manuals associated with the DATASPEED 40 opcons are:

- 999-300-121 How to Operate Asynchronous DATASPEED 40 Keyboard-Display
- 999-301-121 How to Operate DATASPEED 40 Printer
- 999-300-123 How to Operate Synchronous DATASPEED 40 Keyboard-Display

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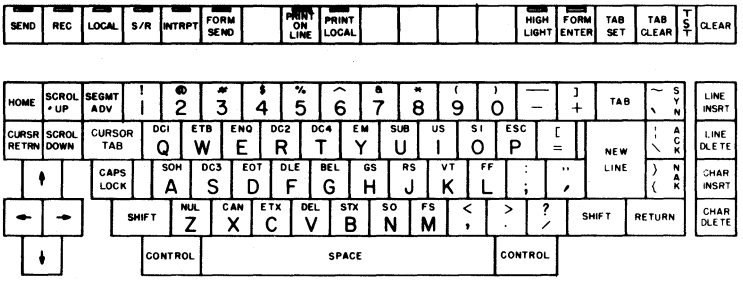
2. TESTING

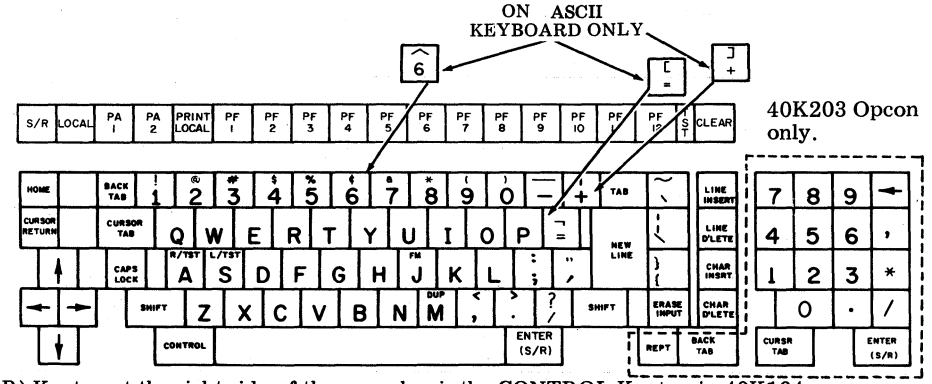
2.01 Operational checkout procedures are presented in Tables A through D. Each table is identified as to the opcon being tested. Use the tables to assure complete operation of the opcon after maintenance or to isolate a poorly defined trouble area.

2.02 Perform the checkout in the order presented as applicable to the KD or RO opcon being tested. The required response for each test step is shown. If the opcon under test fails to respond correctly to a test step, go to 3. TROUBLESHOOTING.

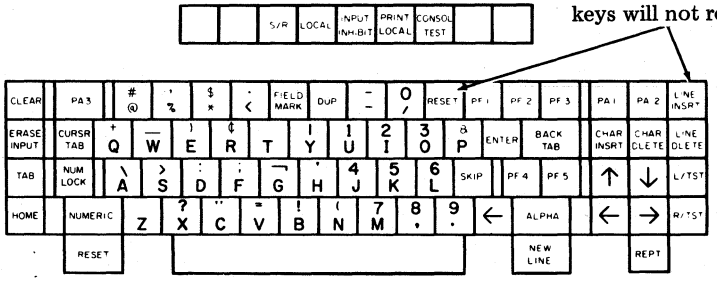
2.03 The keytop identification of opcons provided in this section can be found in Fig. 2.



Asynchronous DATASPEED 40, 40K101 Opcon (Complete Complement)



ENTER (S/R) Keytop at the right side of the space bar is the CONTROL Keytop in 40K104 opcon.
Synchronous DATASPEED 40, 40K104 (ASCII and EBCDIC) and 40K203/GAB opcons.



Note: Reset and Line Insert keys will not repeat with 40/4.

Synchronous DATASPEED 40, 40K105 Opcon (Data Entry)

Fig. 2—KD Opcon Keytop Arrangements

TABLE A

OPERATIONAL CHECKS FOR THE 40K101 OPERATOR CONSOLE

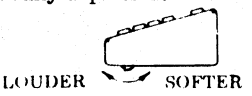
Note: The LOCAL indicator lights immediately when power to the set is turned on.

TEST STEP	PROCEDURE	RESPONSE
1	On early design 40K101 opcon only: Depress the RETURN and ESC P keys simultaneously with additional force and then release.	TST indicator lamp lights (brightly) momentarily indicating power to opcon.
2	Depress the RETURN and " ' keys simultaneously with additional force and then release. a. Place opcon into the caps mode by depressing and latching the CAPS LOCK key. b. Depress the following keys while observing lights for proper indication.	TST indicator lamp lights (brightly) and remains lighted indicating the loop-back test mode is activated. *Note 1:* Occasionally the operational lamps may flash on and then off, or the alarm bell may sound when the loop-back test mode is activated. If this occurs, clear the test by depressing the RETURN and ESC P keys beyond their normal stop, and re-enter the test mode. *Note 2:* Ignore any characters that may appear on your screen during test.

Depress Key (or keys).	Indicator Key	Indicator Condition
A	SEND	ON
CONTROL & A	SEND	OFF
C	REC	ON
CONTROL & C	REC	OFF
D	LOCAL	ON
CONTROL & D	LOCAL	OFF
G	S/R	ON
CONTROL & G	S/R	OFF
F	INTRPT	ON
CONTROL & ACK	INTRPT	OFF
E	FORM SEND	ON
CONTROL & E	FORM SEND	OFF
J	PRINT ON LINE	ON
NEW LINE	PRINT ON LINE	OFF
O	PRINT LOCAL	ON
CONTROL & O	PRINT LOCAL	OFF
I	HIGH LIGHT	ON
TAB	HIGH LIGHT	OFF
H	FORM ENTER	ON
←	FORM ENTER	OFF
→	REC	>FLASH<
CONTROL & C	REC	OFF
CURSR RETRN	S/R	>FLASH<
CONTROL & G	S/R	OFF
CLEAR	PRINT ON LINE	>FLASH<
NEW LINE	PRINT ON LINE	OFF
HOME	FORM ENTER	>FLASH<
←	FORM ENTER	OFF

TABLE A (Cont)

OPERATIONAL CHECKS FOR THE 40K101 OPERATOR CONSOLE

TEST STEP	PROCEDURE	RESPONSE
2 (Cont)	c. On late design 40K101 opcon (interface/bell card not present), the alarm may be sounded for testing purposes by depressing the RETURN key fully.	The alarm sounds (loud-control turned toward front; soft-control turned toward rear) as long as RETURN key is fully depressed. 
	d. Depress the RETURN and ESC P keys simultaneously with additional force and then release.	TST indicator lamp extinguishes and returns opcon to normal operating mode.
3	Depress each key on the keyboard portion of the opcon four or five times.	
4	Disengage the CAPS LOCK key by depressing it again momentarily. Again depress each key on the keyboard portion of the opcon four or five times.	The alpha characters described in Step 3 are displayed in lower case (ie, abcdef, etc).

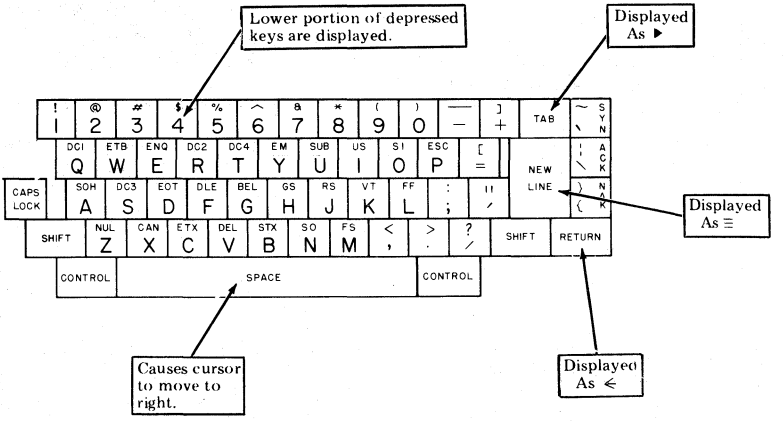


TABLE A (Cont)

OPERATIONAL CHECKS FOR THE 40K101 OPERATOR CONSOLE

TEST STEP	PROCEDURE	RESPONSE
5	Depress the left [SHIFT] key together with each nonalpha key (ie, !@*$, etc) on the keyboard portion of the opcon.	Upper portion of the depressed keys are displayed.
6	Depress the right [SHIFT] key together with one of the keys depressed in Step 5.	The character on the upper portion of the depressed key is displayed.
7	Depress the left [CONTROL] key together with the keys containing control characters four or five times each.	Displayed As D_1 E_B E_Q D_2 D_4 E_M S_B U_S S_I E_C S_H D_3 E_T D_L B_L G_S R_S V_T F_F N_U C_N E_X $/\!/$ S_X S_O F_S S_Y A_K N_K

TABLE A (Cont)

OPERATIONAL CHECKS FOR THE 40K101 OPERATOR CONSOLE

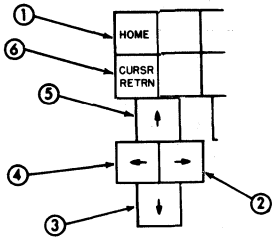
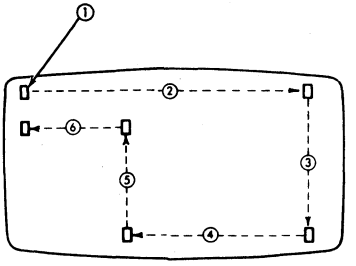
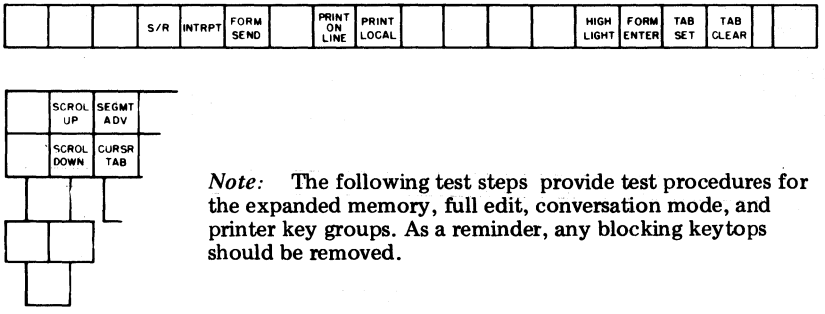
TEST STEP	PROCEDURE	RESPONSE
8	Depress the right [CONTROL] key together with one of the keys depressed in Step 7.	The corresponding control character is displayed.
9	Depress the [—] [_], [>] [.] and [SPACE] keys with additional force than is normally required.	The space key repeatedly moves the cursor to the right.
10	Depress the [HOME] key. Then in sequence depress momentarily with more force than normally required, each cursor movement key shown. 	
11	Home the cursor and type the alpha characters A through J on the display. Place the cursor over character E and depress the [CHAR INSRT] key momentarily; then depress it fully — releasing it after the characters stop moving.	ABCDEFGHIJ ABCD E FGHIJ ABCD FGHIJ ABCD EFGHIJ
12	Depress the [CHAR DLETE] key momentarily; then depress it fully.	ABCD EFGHIJ ABCD EFGHIJ ABCD E FGHIJ ABCD F GHIJ ABCD G HIJ

TABLE A (Cont)

OPERATIONAL CHECKS FOR THE 40K101 OPERATOR CONSOLE

TEST STEP	PROCEDURE	RESPONSE
13	Depress the [LINE INSRT] key once.	The cursor moves to the beginning of the line and the line of data moves down one line.
14	Depress the [LINE DLETE] key once; then depress the [CLEAR] key.	The line of data moves up and then the display is cleared of all characters.
15	Depress the [SEND], [REC] and [LOCAL] keys in sequence as shown.	[SEND] lamp lights when key is depressed (LOCAL lamp extinguishes). [REC] lamp lights when key is depressed (SEND lamp extinguishes). [LOCAL] lamp lights when key is depressed (REC lamp extinguishes).

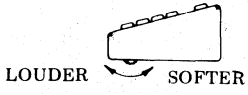


Note: The following test steps provide test procedures for the expanded memory, full edit, conversation mode, and printer key groups. As a reminder, any blocking keytops should be removed.

16	Depress the [SEGMT ADV] key twice — three times if three segments are present.	The segment marker in the top left-hand corner of the display changes from(-) to (=) to (≡) — back to (-) on sets with three segments.
17	Depress the [SCROL UP] key once; then depress it fully.	The display moves up one line. It then continues to move up until the last segment marker appears at the top of the display.

TABLE A (Cont)

OPERATIONAL CHECKS FOR THE 40K101 OPERATOR CONSOLE

TEST STEP	PROCEDURE	RESPONSE
18	Depress the SCROL DOWN key once; then depress it fully.	The display moves down one line. It then continues to move down until the first segment marker appears at the top of the display.
19	Place the cursor away from home position and depress the TAB SET key. Depress the CURSR TAB key twice.	A column of tab marks are written. The cursor moves to the tab mark on the next line.
20	Home the cursor and depress the TAB CLEAR key.	The cursor returns to the home position, and all tab marks are cleared from the display.
21	Depress the INTRPT, FORM SEND, PRINT ON LINE, HIGH LIGHT and FORM ENTER control keys — each twice.	Indicator lamp lights when key is depressed; extinguishes when key is depressed again.
22	Depress the S/R, PRINT LOCAL and LOCAL control keys in sequence as shown.	S/R lamp lights when key is depressed (REC lamp lights). PRINT LOCAL lamp lights when key is depressed (REC lamp extinguishes, SEND lamp lights, and S/R lamp remains on). LOCAL lamp lights when key is depressed (SEND, S/R, and PRINT LOCAL lamps extinguish).
23	Type a character in the 80th (last) position of the display (on full edit sets only).	The alarm sounds (loud-control turned toward front; soft-control turned toward rear). 

(Test Ended)

TABLE B

OPERATIONAL CHECKS FOR THE 40K104, 203 OPERATOR CONSOLE

Note: The [LOCAL] indicator lights immediately when power to the set is turned on.

TEST STEP	PROCEDURE	RESPONSE
1	On early design 40K104 opcon only: Depress the [ERASE INPUT] and [P] keys simultaneously with additional force and then release.	[TST] indicator lamp lights (brightly) momentarily indicating power supply to opcon.
2	Depress the [ERASE INPUT] and [' /] keys simultaneously with additional force and then release. a. Place opcon into the caps mode by depressing and latching the CAPS LOCK key. b. Depress the following keys while observing lights for proper indication.	[TST] indicator lamp lights (brightly) and remains lighted indicating the loop-back test mode is activated. *Note 1:* Occasionally the operational lamps may flash on and then off, or the alarm bell may sound when the loop-back test mode is activated. If this occurs, clear the test by depressing the [ERASE INPUT] and [P] keys beyond their normal stop, and re-enter the test mode. *Note 2:* Ignore any characters that may appear on your screen during test.

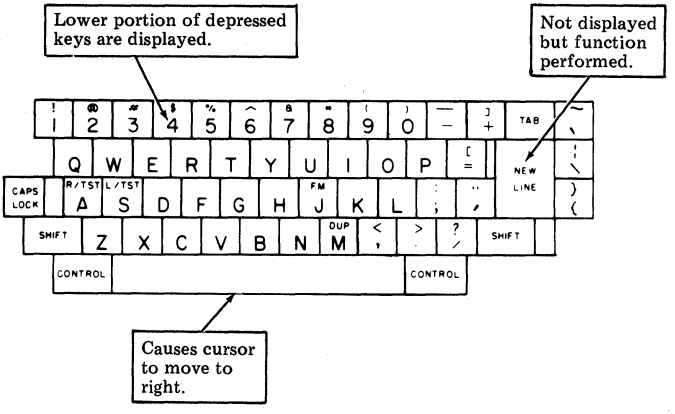
Depress Key (or keys).	Indicator Key	Indicator Condition
A	S/R	ON
CONTROL & A	S/R	OFF
C	LOCAL	ON
CONTROL & C	LOCAL	OFF
F	PRINT LOCAL	ON
CONTROL & [; \ ]	PRINT LOCAL	OFF
→	LOCAL	FLASH
CONTROL & C	LOCAL	OFF

c. On late design 40K104 opcon (interface/bell card not present), the alarm may be sounded for testing purposes by depressing the [ERASE INPUT] key fully.	**The alarm sounds (loud-control turned toward front; soft-control turned toward rear) as long as ERASE INPUT key is fully depressed.** LOUDER ⟷ SOFTER
d. Depress the [ERASE INPUT] and [P] keys simultaneously with additional force and then release.	[TST] indicator lamp extinguishes and returns opcon to normal operating mode.

TABLE B (Cont)

OPERATIONAL CHECKS FOR THE 40K104, 203 OPERATOR CONSOLE

TEST STEP	PROCEDURE	
3	Depress each key on the keyboard portion of the opcon four or five times.	
4	Disengage the CAPS LOCK key by depressing it again momentarily. Again depress each key on the keyboard portion of the opcon four or five times.	The alpha characters described in Step 3 are displayed in lower case (ie, abcdef, etc).
5	Depress the left SHIFT key together with each nonalpha key (ie, !@*$, etc) on the keyboard portion of the opcon.	



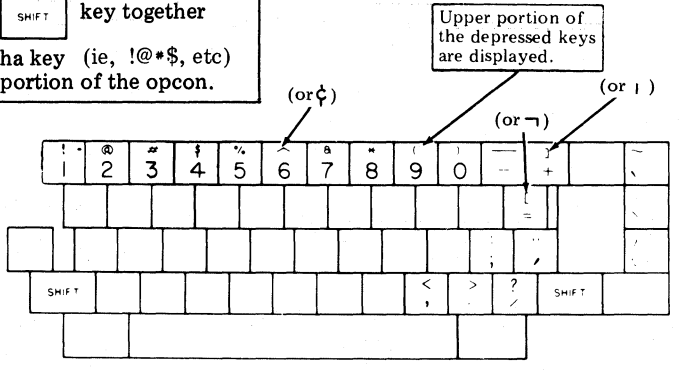


TABLE B (Cont)

OPERATIONAL CHECKS FOR THE 40K104, 203 OPERATOR CONSOLE

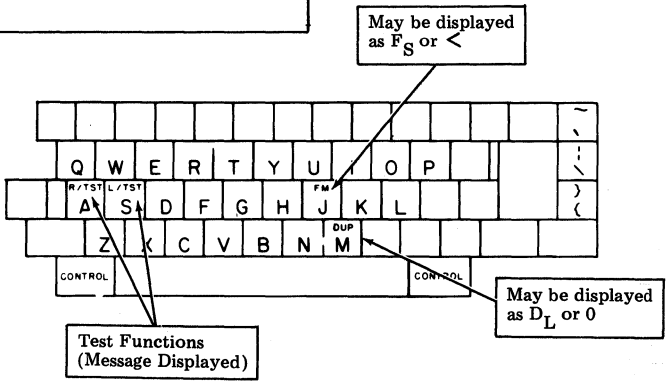
TEST STEP	PROCEDURE	RESPONSE
6	Depress the right [SHIFT] key together with one of the keys depressed in Step 5.	The character on the upper portion of the depressed key is displayed.
7	Depress the left [CONTROL] key together with the keys containing control characters.	
8	Depress the right [CONTROL] key together with one of the keys depressed in Step 7.	The corresponding control character or message is displayed.
9	Depress the [—] , [>] and [SPACE] keys with additional force than is normally required.	---------- . . . . . . The space key repeatedly moves the cursor to the right.

TABLE B (Cont)

OPERATIONAL CHECKS FOR THE 40K104, 203 OPERATOR CONSOLE

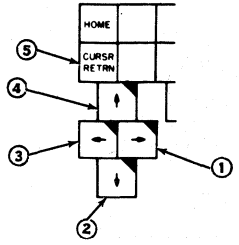
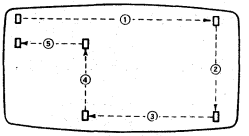
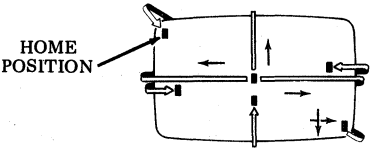
TEST STEP	PROCEDURE	RESPONSE
10	Depress the [HOME] key. Then in sequence depress momentarily, with more force than normally required, each cursor movement key shown. 	 *Note:* Attempts to move the cursor off the display will result as shown below. 
11	Home the cursor and type the alpha characters A through J on the display. Place the cursor over character E and depress the [CHAR INSRT] key momentarily; then depress it fully — releasing it after the characters stop moving.	□ ABCDEFGHIJ□ ABCD[E]FGHIJ ABCD□FGHIJ ABCD□ EFGHIJ
12	Depress the [CHAR DLETE] key momentarily; then depress it fully.	ABCD□EFGHIJ ABCD□EFGHIJ ABCD[E]FGHIJ ABCD[F]GHIJ ABCD[G]HIJ
13	Depress the [LINE INSRT] key once.	The cursor remains in position and the line of data moves down one line.
14	Depress the [LINE DLETE] key once; then depress the [CLEAR] key.	The cursor remains in position and the line of data moves up. The display is then cleared of all characters.

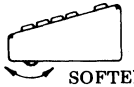
TABLE B (Cont)

OPERATIONAL CHECKS FOR THE 40K104, 203 OPERATOR CONSOLE

TEST STEP	PROCEDURE	RESPONSE
15	Depress the S/R, LOCAL, PRINT LOCAL and LOCAL keys in sequence as shown.	When S/R key is depressed LOCAL lamp extinguishes. LOCAL lamp lights when key is depressed When PRINT LOCAL key is depressed LOCAL lamp extinguishes. LOCAL lamp lights when key is depressed
16	Place the cursor away from home position and depress the CURSR TAB key.	The cursor returns to home position (unformatted display). The cursor advances to the next, current, unprotected field in the display (formatted display).
17	Place the cursor away from home position and depress the position and depress the BACK TAB key.	The cursor returns to home position (unformatted display). The cursor reverses location to preceding start of an unprotected field on the display (formatted display).
18	Place the cursor away from home position and depress the TAB key.	Nulls are written from cursor to end of display and cursor returns to home position (unformatted display). The cursor advances to the next, current, unprotected field on the display and replaces remainder of field from cursor location with nulls (formatted display).
19	Type a line of characters on the display and depress the display and depress the ERASE INPUT key.	The line of characters are cleared from the display and the cursor returns to home position (unformatted display).

TABLE B (Cont)

OPERATIONAL CHECKS FOR THE 40K104, 203 OPERATOR CONSOLE

TEST STEP	PROCEDURE	RESPONSE
20	With the LOCAL lamp lit, depress the PA 1 key, then depress the LOCAL key. Continue to depress the PA 2 , PF 1 , PF 2 , through PF 12 keys in the same manner.	The LOCAL lamp extinguishes each time a PA or PF key is depressed and will remain off until the LOCAL key is depressed.
21	On early design 40K104 opcon only: With the LOCAL lamp lit, depress the CONTROL and L/TST S keys together then release them. Type in some characters after the third character position on the first line of the displayed message.	Message is displayed, and the alarm sounds (loud-control turned toward front; soft-control turned toward rear) when attempting to input data on screen.  LOUDER SOFTER

(Test Ended)

TABLE C

OPERATIONAL CHECKS FOR THE 40K105 OPERATOR CONSOLE

Note: The LOCAL indicator lights immediately when power to the set is turned on.

TEST STEP	PROCEDURE	RESPONSE
1	Depress the CONSOL TEST and LINE INSRT keys simultaneously with additional force and then release.	LOCAL indicator extinguishes, CONSOL TEST indicator lights (brightly) and remains lighted indicating power to the opcon and activate the local loop-back test mode.
	a. Depress the following keys while observing lights for proper indication.	

Depress Key (or keys):	Indicator Key	Indicator Condition
A	S/R	ON
ALPHA & R/TST	S/R	OFF
R/TST	S/R	FLASH ON
ALPHA & A	S/R	FLASH OFF
C	LOCAL	ON
(NOT AVAILABLE)	LOCAL	OFF
→	LOCAL	FLASH ON
ALPHA & C	LOCAL	FLASH OFF
M	INPUT INHIBIT	ON
ERASE INPUT	INPUT INHIBIT	OFF
LINE DLETE	INPUT INHIBIT	FLASH ON
ALPHA & M	INPUT INHIBIT	FLASH OFF
F	PRINT LOCAL	ON
(NOT AVAILABLE)	PRINT LOCAL	OFF
L/TST	PRINT LOCAL	FLASH ON
ALPHA & F	PRINT LOCAL	FLASH OFF
I	NUM LOCK	ON
TAB	NUM LOCK	OFF
NUM LOCK	NUM LOCK	FLASH ON
ALPHA & I	NUM LOCK	FLASH OFF

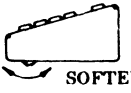
b. Depress the CONSOL TEST key.	The alarm sounds (loud-control turned toward front; soft-control turned toward rear) as long as the CONSOL TEST key is held depressed. 
c. Depress the CONSOL TEST and the small RESET keys simultaneously with additional force and then release.	CONSOL TEST indicator extinguishes; LOCAL indicator lights returning opcon to normal operating mode.

TABLE C (Cont)

OPERATIONAL CHECKS FOR THE 40K105 OPERATOR CONSOLE

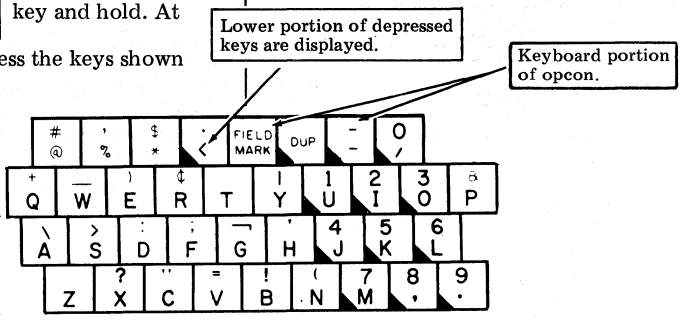
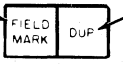
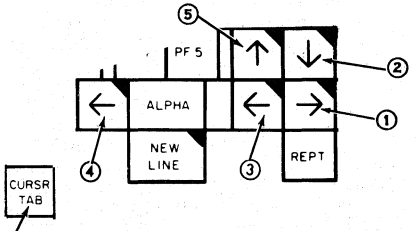
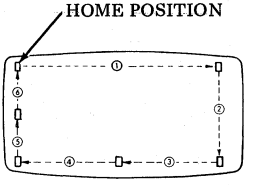
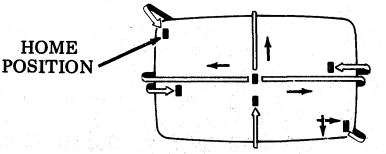
TEST STEP	PROCEDURE	RESPONSE
2	Depress the ALPHA key and hold. At the same time depress the keys shown four or five times.  *Note:* If Option 407.a. is installed in SCC, MCC, or SDS; NUMERIC key must be depressed (or NUM LOCK indicator lit) to enter characters outside the numeric cluster (keys in cluster are marked: ■).	
3	Depress the NUMERIC key and hold. At the same time depress the keys shown in Step 2 four or five times.	Upper portion of depressed keys are displayed.
4	Depress the FIELD MARK and DUP keys four or five times.	Displayed as < (less than)  Displayed as 0 (Zero)
5	Depress the HOME key. Then in sequence depress momentarily, with more force than normally required, each cursor movement key shown.  ⑥ On formatted display the cursor will advance to the next, current, unprotected field in the display.	HOME POSITION  *Note:* Attempts to move the cursor off the display will result as shown below. 

TABLE C (Cont)

OPERATIONAL CHECKS FOR THE 40K105 OPERATOR CONSOLE

TEST STEP	PROCEDURE	RESPONSE
6	Place the cursor away from home position and depress the SKIP key.	The response is the same as the CURSOR TAB key in Step 5.
7	Place the cursor away from home position and depress the NEW LINE key once. Now depress the key and hold for a few moments.	The cursor moves to the beginning of next line. The cursor then repeatedly moves to the beginning of next line until the key is released.
8	Home the cursor and type the alpha characters A through J on the display. Place the cursor over character E and depress the CHAR INSRT key four or five times.	□ ABCDEFGHIJ ABCD[E]FGHIJ ABCD□FGHIJ ABCD□EFGHIJ
9	Depress the CHAR DLETE key four to five times.	ABCD□EFGHIJ ABCD□EFGHIJ ABCD[E]FGHIJ ABCD[F]GHIJ ABCD[G]HIJ
10	Depress the LINE INSRT key once.	The cursor remains in position and the line of data moves down one line.
11	Depress the LINE DLETE key once, then depress the CLEAR key.	The cursor remains in position and the line of data moves up. The display is then cleared of all characters.
12	Place the cursor away from home position and depress the TAB key.	Nulls are written from cursor to end of display and cursor returns to home position (unformatted display). The cursor advances to the next, current, unprotected field on the display and replaces remainder of field from cursor location with nulls (formatted display).
13	Type a line of characters on the display and depress ERASE INPUT key.	The line of characters are cleared from the display and the cursor returns to home position (unformatted display).

TABLE C (Cont)

OPERATIONAL CHECKS FOR THE 40K105 OPERATOR CONSOLE

TEST STEP	PROCEDURE	RESPONSE
14	Place the cursor away from home position and depress the [BACK TAB] key.	The cursor returns to home position (unformatted display). The cursor reverses location to preceding start of an unprotected field on the display (formatted display).
15	Home the cursor and depress the [SPACE] key four or five times. Now depress the key fully and hold for a few moments.	The cursor moves one character position to the right each time the key is depressed. The cursor then continually moves to the right until the key is released.
16	Depress the [REPT] key and hold. At the same time depress an alpha or numeric key and hold for a few moments.	The alpha or numeric key character will repeat as long as the key is depressed along with the [REPT] key.
17	Depress the [NUM LOCK] key twice.	First depression, [NUM LOCK] indicator lights. Second depression extinguishes [NUM LOCK] indicator.
18	With the LOCAL indicator lit, depress the [PA 1] key, then depress the small [RESET] key. Continue to depress the [PA 2], [PA 3] and [PF 1] through [PF 5] keys in the same manner.	The [LOCAL] indicator extinguishes each time a [PA] or [PF] key is depressed and will remain off until the small [RESET] key is depressed.

TABLE C (Cont)

OPERATIONAL CHECKS FOR THE 40K105 OPERATOR CONSOLE

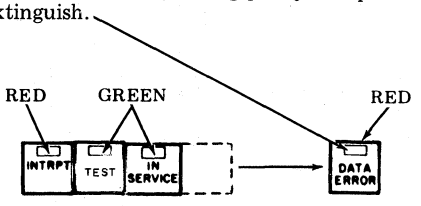
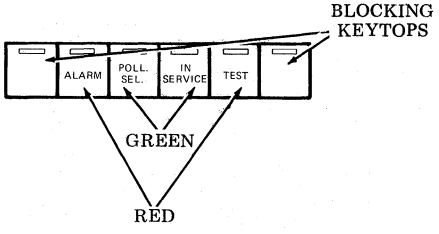
TEST STEP	PROCEDURE	RESPONSE
19	Repeat Step 18, using the larger [RESET] key.	Same as Step 18 response when the larger [RESET] key is used.
20	With the LOCAL indicator lit, depress the [ENTER] key, then depress either RESET key.	The [INPUT INHIBIT] indicator lights, (LOCAL indicator extinguishes) and remains lit until either RESET key is depressed.
21	Depress the ALPHA key and hold. At the same time depress the [L/TST] key. Then depress either RESET key.	Same as Step 20.
22	Depress the ALPHA key and hold. At the same time depress the [R/TST] key. Then depress either RESET key.	Same as Step 20.

(Test Ended)

TABLE D

OPERATIONAL CHECKS FOR THE 40K001, 40K004 and 40K003 OPERATOR CONSOLES

Note: The IN SERVICE indicator lights immediately when power to the set is turned on.

TEST STEP	PROCEDURE	RESPONSE
1	Depress the TEST key, then after a few seconds depress again. *Note:* TEST key was TRANS START key in early design 40K001 opcon.	The TEST indicator lights and character set is printed repeatedly. The TEST indicator then extinguishes and printing stops.
2	Depress the INTRPT key twice, then IN SERVICE key twice.	The INTRPT indicator lights when key is depressed and extinguishes when key is depressed again. The IN SERVICE indicator extinguishes when key is depressed and lights when key is depressed again. *Note:* Indicator lights only during operation of RO printer detecting wrong parity. Depress key to extinguish.  40K001/004 Opcon  40K003 Opcon
(Test Ended)		

3. TROUBLESHOOTING

3.01 Troubleshooting is based on the use of a series of questions to determine possible causes for the trouble. Depending on the response to the questions, instructions are then given to correct the trouble.

3.02 To isolate a trouble to a specific area, start with the operational checkout procedures given in 2. TESTING or start with the following series of questions given in Tables E and F.

3.03 Before attempting to troubleshoot the opcon, make sure the trouble is not caused from interconnected equipment.

3.04 If a trouble is isolated to the interface/bell card on early design 40K101 and 40K104 opcons, the troubleshooting instructions will recommend that the card be replaced. When the keyswitch logic card (excluding the replaceable keyswitches) is found defective, the entire opcon should be replaced.

TABLE E

TROUBLESHOOTING PROCEDURES FOR 40K101, 40K104, 203 AND 40K105 OPERATOR CONSOLES

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
1. Is the opcon's LOCAL lamp on? (Depress LOCAL key on 40K101 or 40K104, 203 opcon and the RESET key on 40K105 opcon.)	Go to 2.	On 40K101 or 40K104, 203 opcon -- go to 11. On 40K105 opcon -- go to 13.
2. Can characters be entered from the opcon and displayed correctly on the screen?	Go to 3.	On early design 40K101 and 40K104, 203 opcons, replace the interface/bell card. On 40K105 opcon, check interface connector. Replace opcon.
3. Do any keys repeat when depressed normally? (Not fully depressed on repeat keys.)	On 40K105 opcon only, check operation of REPT keyswitch and replace if necessary. On 40K101, 40K104, 203 and 40K105 opcons, check operations of all repeat keys. Replace repeat keyswitch(s). Replace opcon.	Go to 4.

TABLE E (Cont)

TROUBLESHOOTING PROCEDURES FOR 40K101, 40K104, 203 AND 40K105 OPERATOR CONSOLES

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
4. Do all repeat keys repeat when fully depressed?	Go to 6.	Check for proper orientation of control (top) row of early design blocking keytops. Rear ⟶  ⟵ Front Note: New style blocking keytops have finger-like extensions to the interior of the keytop to prevent reversal. Go to 5.
5. Does a character appear on the screen when power is first turned on? (Turn power off then on again several times.)	Check operation of that keyswitch associated with character being displayed (go to 7).	Go to 6.
6. Are any characters displayed when key is not depressed? (ie, key touched, opcon vibrated, or other keys operated.)	Replace opcon.	Go to 7.
7. Do any keys fail to operate mechanically? • All keys click when depressed and click again when released. • Repeat or test keys click a second time when fully depressed and click again when released slightly. • CAPS LOCK key locks down when depressed again (if present). • Spacebar must return to its unoperated position fully when depressed and released slowly.	Check clearance between keyboard cover and keytops (adjust if necessary). Replace defective keyswitch. Check spacebar mechanism and replace any parts if necessary.	Go to 8.

TABLE E (Cont)

TROUBLESHOOTING PROCEDURES FOR 40K101, 40K104, 203 AND 40K105 OPERATOR CONSOLES

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
8. Do any keys fail to generate characters to the screen?	Check for short between keyswitch terminals. Replace keyswitch. Replace opcon if any groups of keys fail to operate or more than one character generated when one key is depressed.	Go to 9.
9. Do any indicators fail to light?	Go to 11.	Go to 10.
10. Does bell sound with loudness controlled by thumbwheel? • On40K101 opcon only, controller used must be for full edit KD set. • Generating a bell code at the opcon will not cause the alarm to sound locally.	On 40K101 or 40K104, 203 opcon, go to 11. On40K105 opcon, go to 13.	On early design 40K101 and 40K104 opcons, replace the 410055 or 410075 circuit card. If trouble is not corrected, reinstall original card and replace opcon. On late design 40K101, 40K104, 203 and 40K105 opcons enter loop-back test mode and test alarm circuit. Replace opcon.
11. Does the TST lamp light when RETURN and QUOTES keys (40K101) or ERASE INPUT and QUOTES keys (40K104, 203) are fully depressed simultaneously? (Replace opcon if TST lamp does not stay lit when keys are released.)	Go to 14 if indicator failed to light (Question 9). Simultaneously depress the RETURN and P keys (40K101) or ERASE INPUT and P keys (40K104, 203) fully, to extinguish lamp if no test is required.	Go to 12.

TABLE E (Cont)

TROUBLESHOOTING PROCEDURES FOR 40K101, 40K104, 203 AND 40K105 OPERATOR CONSOLES

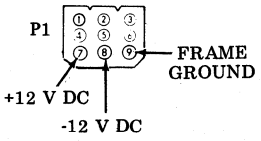
ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
12. Is +12 V dc (pin 7) and -12 V dc (pin 8) present with respect to frame ground (pin 9) on interface connector (P1) of logic cabinet?  	On early design 40K101 and 40K104 opcons only: Check interface/bell card cable and connector. Check for +12 V dc (pin A12) and -12 V dc (pin A7) of interface/bell card to console logic card connector. Replace the 410555 or 410075 interface/bell card. Go to 15. On late design 40K101, 40K104, 203 and 40K105 opcons: Check wiring to interface connector. Go to 15.	Proper voltage not being supplied to the opcon. Check cable to opcon. Check power supply.
13. Does the CONSOL TEST lamp light when CONSOL TEST and LINE INSRT keys are fully depressed simultaneously? (Replace opcon if CONSOL TEST lamp does not stay lit when keys are released.)	Go to 14 if indicator failed to light (Question 9). Simultaneously depress the CONSOL TEST and RESET keys fully to extinguish lamp if no test is required.	Go to 12.
14. Does failing key fail to light in loop-back test mode? (Refer to Tables A, B, or C.)	Go to 15.	Check controller.

TABLE E (Cont)

TROUBLESHOOTING PROCEDURES FOR 40K101, 40K104, 203 AND 40K105 OPERATOR CONSOLES

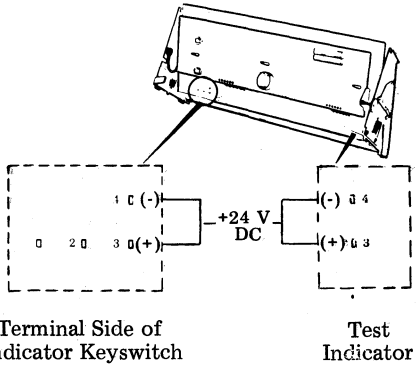
ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
15. Is +24 V dc present at pins 3 and 4 of indicator keyswitch or [TST] indicator terminals when lamp should be lit?  Terminal Side of Indicator Keyswitch — Test Indicator	Replace indicator keyswitch or [TST] indicator that has defective indicator lamp.	Replace opcon.

TABLE F

TROUBLESHOOTING PROCEDURES FOR 40K001, 004 OPERATOR CONSOLE

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
1. Do any indicators light?	Go to 2.	Check for open in ground lead.
2. Does the IN SERVICE indicator light when power is turned ON? (Cabinet lid closed and no paper alarm.) Depress IN SERVICE key on earlier sets.	Go to 5.	Go to 3.

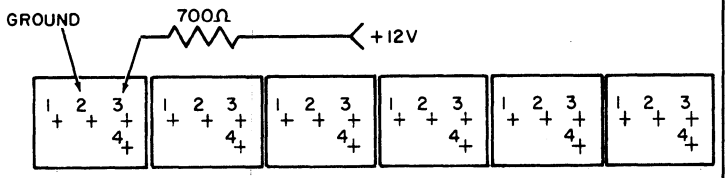
TABLE F (Cont)

TROUBLESHOOTING PROCEDURES FOR 40K001, 004 OPERATOR CONSOLE

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
3. Is approximately +12 V dc present at pins 1, 3, 5, or 7 with respect to frame ground (pin 9) when INTRPT, TEST (or TRANS START), IN SERVICE, or DATA ERROR lamps should be lit?	Check wiring to failing keyswitch indicator. Replace keyswitch.	Go to 4.
4. Is +12 V dc present when associated key-switch is removed? (See ROP Opcon Schematic.)	Replace shorted keyswitch.	Check for short in wiring across keyswitch.
5. Does Test message print when TEST (or TRANS START) key is depressed?	Go to 6.	Check wiring to keyswitch terminals. Replace open keyswitch. Check controller.
6. Does TEST (or TRANS START) lamp light when key is depressed?	Go to 7.	Go to 3.
7. When receiving carrier in data mode (with INTRPT off), does depressing INTRPT key turn on lamp?	Go to 8.	Check wiring to keyswitch. Replace open keyswitch. Check controller.
8. Does DATA ERROR lamp light on receipt of parity error? (Option 25. c. enabled.)	Go to 9.	Go to 3.
9. Does depressing DATA ERROR key extinguish lamp?	Place in service.	Check wiring to keyswitch terminals. Replace open diode on keyswitch. Check controller.

TABLE G

TROUBLESHOOTING PROCEDURES FOR 40K003 OPERATOR CONSOLE

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
Note: Remove 40K003 opcon from the associated terminal cabinet and controller.		
1. Do all indicators light when +12V power supply with a 700 ohm∼800 ohm resistor in series is applied to pin 3 of each keyswitch with respect to pin 2 of each key-switch? 	Go to 2.	Replace any open keyswitch indicator.
2. Does an ohmmeter indicate a short between pin 1 and pin 2 of each keyswitch?	Replace the short keyswitch.	Go to 3.
3. Does an ohmmeter indicate a short from an open between pin 1 and pin 2 of each switch when depressed?	Check controller or interface cable.	Replace the open keyswitch.
4. Does the audible alarm sound when +12V is applied to pin 16 with respect to pin 2 of any keyswitch (ground)?	Go to 5.	Replace the audible alarm (405245).
5. Does the alarm intensity vary when the volume control is turned from one end to the other in Question 4?	Check the controller or interface cable.	Replace the volume control (346384).