# INTERNAL NUMERIC CLUSTER FEATURE FOR DATASPEED 40/4

## 1. GENERAL

1.01 The internal numeric cluster feature is for use on DATASPEED 40/4 EBCDIC Station arrangements. Keytop layout of the 40K105/CAA operator console for EBCDIC line code, is changed from the standard DATASPEED 40/4 opcon (40K104) to permit more convenient entry of numeric information.

1.02 Keyboard layout, for the 40K105/CAA operator console (opcon) for EBCDIC line code hereafter is referred to as the internal numeric cluster opcon, as shown in Fig. 1.

1.03 The affect of this feature on maxi-cluster station arrangements (Fig. 2) is that all opcons connected to a DCC are of the same type, either standard 40/4 or internal numeric cluster opcons. Installation requires a 40C402/ACQ/057 controller or removing the 410809 and 410911 circuit cards from an existing EBCDIC controller and replacing them with 410810 and 410907 circuit cards. Existing ASCII stations (Mark I) can be converted to EBCDIC line code use, see Part 4 CONVERSION.
Note: The 40/4 station option 406 (numeric field override) has no effect on the internal numeric cluster opcons; however option 406 will affect standard opcons connected to a DCC in this arrangement.

1.04 In mini-cluster station arrangements (Fig. 3) using this feature, only internal numeric cluster opcons may be connected to the MCC. Installation requires a 40C403/ACU/061 controller or removing 410812, 410914 and 410915 circuit card to an existing EBCDIC MCC. Existing ASCII stations can be converted to EBCDIC line code use, see Part 4 CONVERSION.

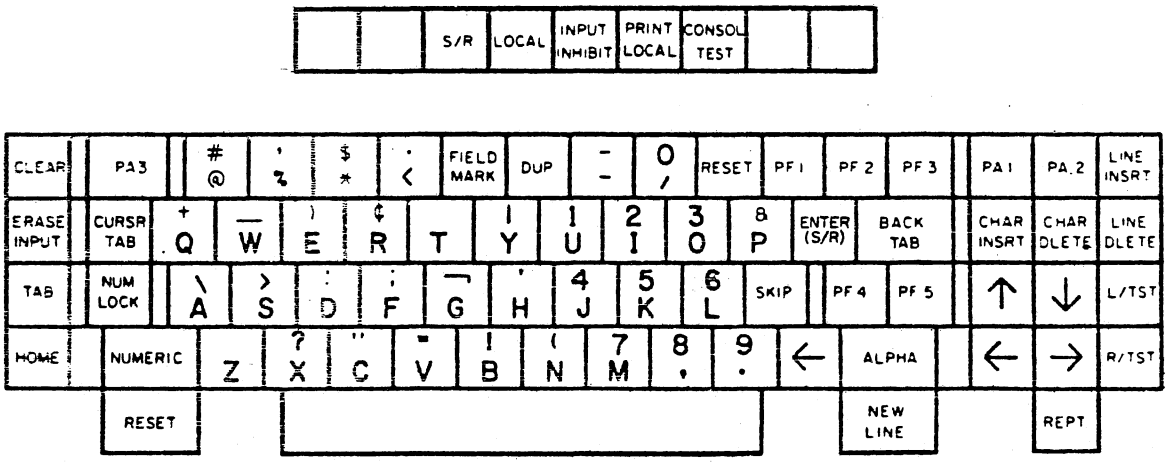
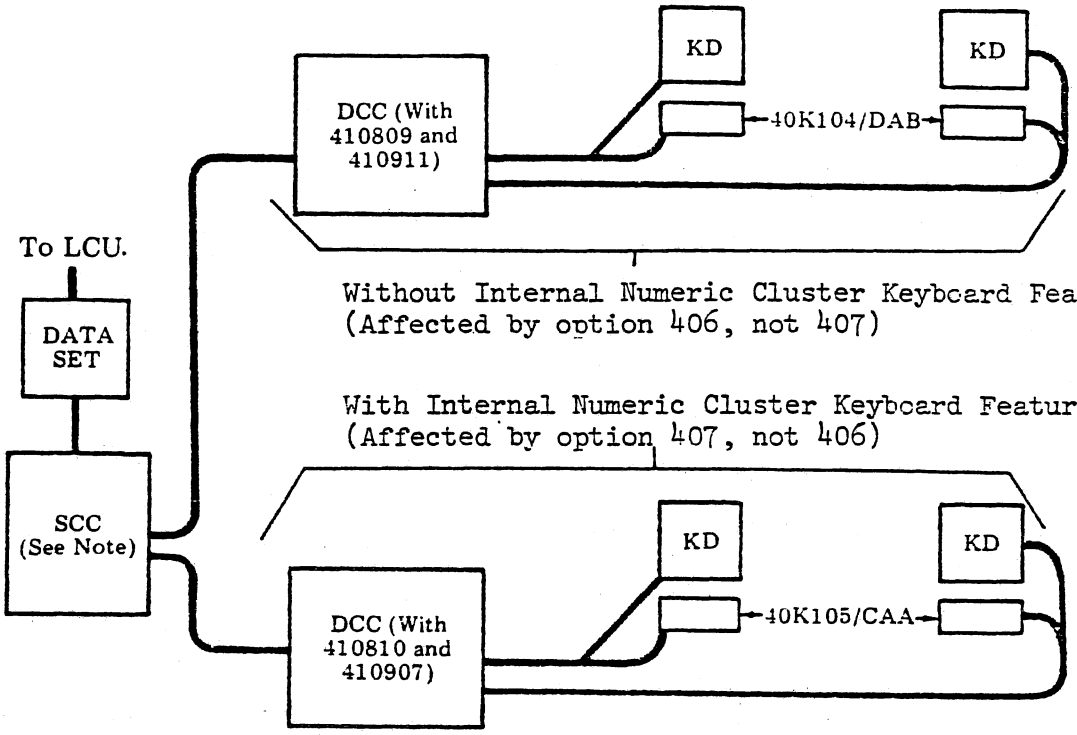
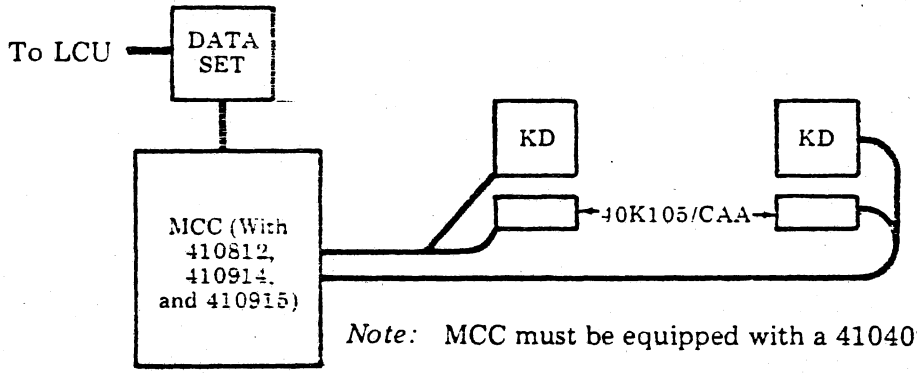



Fig. 1-Internal Numeric Cluster Opcon




*Note:* SCC must be equipped with a 410409, 410804 and 410905.

Fig. 2—Example of Feature Installed in Part of a Maxi-Cluster Station




*Note:* MCC must be equipped with a 410409 circuit card.

Fig. 3—Example of Feature Installed in a Mini-Cluster Station

1.05 The internal numeric cluster opcon when connected to either a DCC or MCC, allows the use of the 40/4 station option 407 "Numeric Lock Special Feature". Option 407 is enabled or disabled on the 410403 circuit card of the SCC (or MCC). Note: Option 407 has no effect on standard opcons in maxi-cluster station arrangements.

1.06 The internal numeric cluster opcon has a standard alpha keytop layout. Fig. 4. All alpha characters are displayed and transmitted as upper case. Lower case alpha characters are not used in the internal numeric cluster opcon.

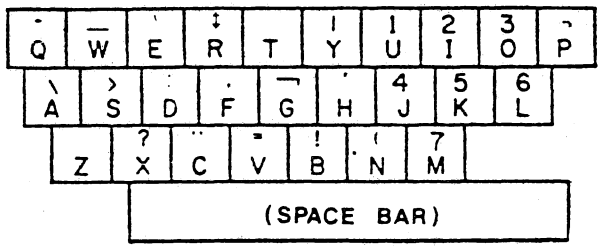



Fig. 4—Alpha Keys

1.07 The keytop layout has a cluster of numeric keys to facilitate rapid numeric data entry. Fig. 5. Numeric cluster characters

include the 0-9, DUP and "minus" keys and "period" on the key with "period" above "less than". Numeric cluster keytops are lettered in yellow to indicate they are part of the cluster.

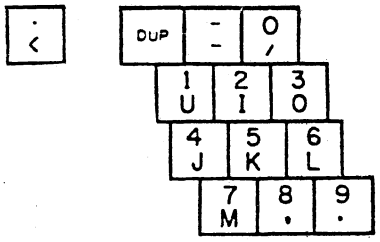



Fig. 5—Numeric Cluster Keys

1.08 For this document, an alpha character is the symbol displayed on the lower half of the keytop. A numeric character is on the upper portion of the keytops (the upper part of the T and Z keys is a space character), Fig. 6.

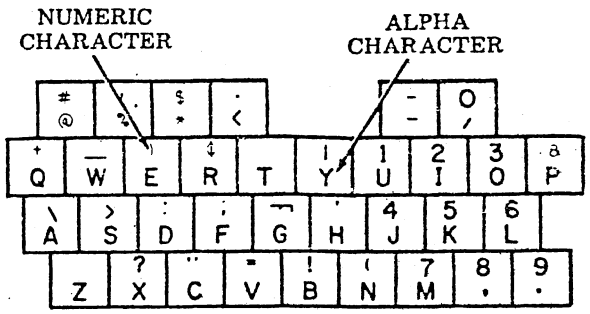



Fig. 6—Alpha/Numeric Characters

1.09 Except for keytop position, most of the function (nonalphanumeric) keys and indicators on the internal numeric cluster opcon, Fig. 7, are the same in nomenclature and operation as the ones on the standard 40/4 opcon (Fig. 8). The exceptions are described in Part 3 DESCRIPTION.

1.10 The PF6-PF12, SHIFT, CONTROL, CAPS LOCK and CURSR RETRN keys of the 40K104 opcon do not exist on the 40K105/CAA.

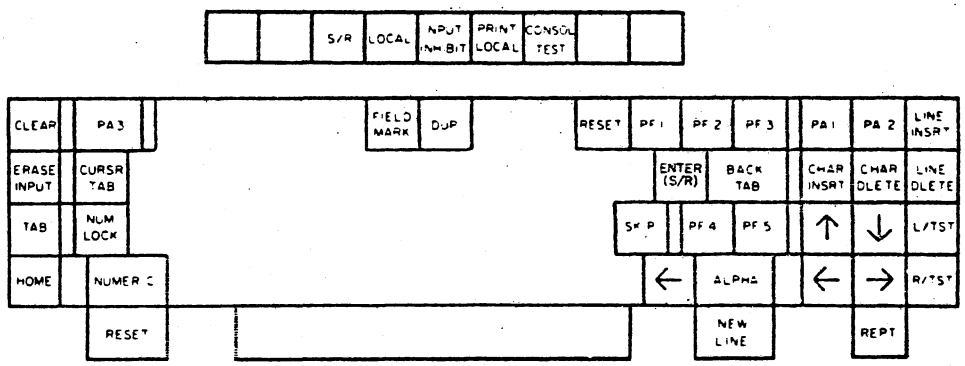



Fig. 7. Internal Numeric Cluster Opcon Function Keys and Indicators

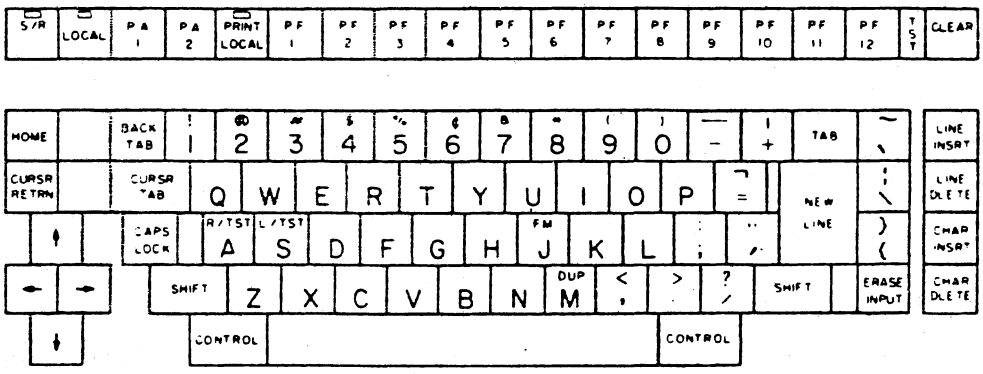



Fig. 8—Standard (40K104/DAB) Opcon
(For EBCDIC Feature Only)

## 2. TECHNICAL DATA

2.01 Installation of this feature as a new station is substantially the same as for an installation of a 40/4 station without this feature. Installation of the feature in an existing station consists of:

(a) Substituting 40K105/CAA opcons for 40K104/DAB opcons.

(b) Substitution of a minimum of two circuit cards in the affected DCC(s) or three circuit cards in the MCC.

(c) Checking option 407 in the SCC (or MCC).

2.02 Maintenance of a station is not affected by this feature other than requiring the new release parts for replacement.

2.03 The electrical and environmental requirements for a station are not affected by this feature.

2.04 The physical dimensions, weight, size, and color of a station are not affected by the feature.

2.05 The station interfaces and cable connections are not affected by this feature.

## 3. DESCRIPTION

3.01 The major components of this feature depend on whether the station arrangement is a mini-cluster or maxi-cluster.

(a) Mini-cluster:
40C403/ACU/061, USOC:
40K105/CAA, USOC:

(b) Maxi-cluster:
40C402/ACQ/057, USOC:
40K105/CAA, USOC:

3.02 Both mini-cluster stations and the maxi-cluster stations can use option 407 "Numeric Lock Special Feature". This option can easily be enabled during installation. When enabled (407a), the option limits the characters that can be entered into a numeric, unprotected field to those in the numeric cluster. The option may be temporarily overridden by depressing the NUMERIC or ALPHA key as described in Paragraph 3.06(b).

3.03 The internal numeric cluster opcon key layout varies from the one used in a standard synchronous 40/4 system (Fig.8), and described in the 999-300-123 BSP How to Operate Manual. For a comparison of keytops and operation, see table on Page 5. Keytops not mentioned in the comparison are common to both (even though the key locations may change they are considered to be the same keys).

3.04 The INPUT INHIBIT indicator acts as a nonlocal indicator. When lighted, operator input (except for RESET when not sending or receiving data) is inhibited and the alarm will sound. The indicator is lighted when ENTER, CLEAR, PA 1-PA 3, PF 1-PF 5, R/TST, L/TST or PRINT LOCAL is depressed. The lamp is extinguished when the print local buffer transfer is complete, under command of the LCU or when the RESET key is depressed.

3.05 Formatted display alphanumeric field: Option 407 has no effect on data keyed into an alphanumeric field.

a) NUM LOCK off (indicator not lighted): To enter alpha data depress the desired keys. To enter numeric data, depress and hold down the NUMERIC key while depressing the desired key(s).

b) NUM LOCK on (indicator lighted): To enter numeric data depress the desired keys. The program will perform an upshift of the data entered to display the proper numeric characters. To enter alpha data, depress the ALPHA key and hold it down while depressing the desired key(s).

3.06 Formatted display numeric field: The setting of the NUM LOCK key and indicator has no effect on data keyed into a numeric field.

a) Option 407b: To enter numeric data simply depress the desired keys. The entered data is upshifted to display the correct numeric characters. To enter alpha character(s), depress and hold down the ALPHA key while depressing the desired key(s).

b) Option 407a: The characters defined as being part of the numeric cluster of keys may be directly entered into the field by simply depressing the desired keys. To enter numeric characters outside of the numeric cluster keys, depress and hold down the NUMERIC key while depressing the desired data key(s). To enter alpha data, depress the ALPHA key and hold it down while depressing the desired key(s).

TABLE OF COMPARISON

| STANDARD OPCON | INTERNAL NUMERIC CLUSTER OPCON |
|---|---|
| SHIFT<br><br>(NUMERIC not present.)<br><br>(ALPHA not present.)<br><br>*Note:* Alpha characters may be entered into numeric fields (on some terminals), however, the alarm will sound for each entry. | (SHIFT not present.)<br><br>When NUMERIC is held depressed, numeric data can be entered into an unformatted display or an alpha numeric field, (see the NUM LOCK entry). The NUMERIC key is also used to enter numeric characters outside the numeric cluster into a numeric field on a DCC or MCC that has option 407a selected. The NUMERIC key is not used to enter numeric cluster characters or numeric data into a numeric field or an unformatted display, if option 407b is selected or if the NUM LOCK indicator is lighted.<br><br>When ALPHA is depressed, it allows an alpha character(s) to be entered in a numeric field. It also will temporarily override the NUM LOCK key. It is not required to depress ALPHA to enter an alpha character onto an unformatted display or into an alpha numeric field if the NUM LOCK indicator is off.<br><br>*Note:* This opcon does not generate lower case alpha characters. |
| CONTROL two keys used. | (CONTROL not present.) |
| Spacebar.<br><br>(No other space key present.) | Spacebar is present; but if option 407a is selected the ALPHA or NUMERIC key must also be depressed to enter a space in a numeric field.<br><br>T and Z upper portion of both keys is a space. The keys function the same as the spacebar; except that they are not repeat keys. |

| STANDARD OPCON | INTERNAL NUMERIC CLUSTER OPCON |
|---|---|
| [LOCAL]<br><br>(RESET not present.)<br><br>(INPUT INHIBIT not present.) | [LOCAL] is only an indicator.<br><br>Two [RESET] keys are present. Either key will light the LOCAL indicator. Alarm will sound if either [RESET] is depressed while sending or receiving data (no other effect on station).<br><br>[INPUT INHIBIT] is an indicator. It is on when LOCAL is off. It is off when LOCAL is on (detailed description Paragraph 3.04). |
| [CURSR RETRN] | (CURSR RETRN not present.) |
| [CURSR TAB] | [CURSR TAB] is same as standard.<br><br>[SKIP] performs the same function as CURSR TAB. |
| [←] one cursor left positioning key is provided. | [←] two cursor left positioning keys are provided. |
| [CAPS LOCK]<br><br>(NUM LOCK not present.) | (CAPS LOCK not present.)<br><br>[NUM LOCK] is an indicator key. It can be used instead of holding NUMERIC depressed. Indicator will light when NUM LOCK is depressed. Depress again to release. To temporarily override NUM LOCK, depress ALPHA and any desired alpha key simultaneously. With NUM LOCK indicator on, numeric characters may be entered into an unformatted display or an alpha numeric field. (Option 407 affects are described in Paragraphs 3.05 and 3.06.) |
| [–] and [.] (and other keys) are repeatable.<br><br>(REPEAT not present.) | CURSR TAB, SKIP, NEW LINE, the spacebar and the five cursor positioning keys are repeatable (without the use of REPT).<br><br>When [REPT] is depressed, all keys are repeating. |

| STANDARD OPCON | INTERNAL NUMERIC CLUSTER OPCON |
|---|---|
| FM J (Field Mark) | FIELD MARK displays a < (less than), but if option 407a is selected, the ALPHA or Numeric key must also be depressed to enter the < in a numeric field. |
| DUP M | DUP displays a 0 (zero). |
| S/R key and indicator.<br><br>(ENTER is not present, function is part of S/R). | S/R is only an indicator.<br><br>When ENTER (S/R) is depressed, the S/R indicator will light. S/R mode is for sending or receiving messages. |
| (PA 3 not present, PA 1 PA 2 are present.) | PA3 is an additional Program Access key, PA 1 and PA 2 are present. |
| PF 1 through PF 12 are present. | PF 1 through PF 5 are present. PF 6 through PF 12 are not present (PF = Program Function). |
| L/TST S and R/TST A | L/TST (Local Test) and R/TST (Remote Test) keys must be depressed simultaneously with either the ALPHA or NUMERIC key. The functions of local test and remote test are not changed.<br><br>*Note:* The station ignores the depression of either key by itself. |

4. CONVERSION

4.01 Existing EBCDIC stations can be provided with this feature by:

a) Affected DCC(s):

| REMOVE | REPLACE WITH |
|---|---|
| 410809 | 410810 |
| 410911 | 410907 |

b) If affected DCC is equipped with any 410435 circuit cards; replace with 410436 circuit cards. Unaffected DCC(s): (No change)

c) SCC: (No change)

d) MCC:

| REMOVE | REPLACE WITH |
|---|---|
| 410808 | 410812 |
| 410909 | 410914 |
| 410910 | 410915 |

e) If affected MCC is equipped with any 410435 circuit cards; replace with 410436 circuit cards.

f) Affected KDs: Remove 40K104/DAB (See Paragraph 4.04), replace with 40K105/CAA opcon.

g) Unaffected KDs: (No Change)

h) Printer(s): (No Change)

4.02 Existing Mark I ASCII stations can be provided with this feature (but they become EBCDIC Mark II stations) by:

a) Affected DCC(s):

| REMOVE | REPLACE WITH |
|---|---|
| 410802 | 410810 |
| 410902 | 410907 |
| All 410431, 410432 or 410434 cards | 410436 (one for each removed) |

b) Unaffected DCC(s):

| REMOVE | REPLACE EACH WITH |
|---|---|
| All 410431, 410432 or 410434 cards | 410435 (Up-Low) or 410436 (Mono) |
| 410802 | 410809 |
| 410902 | 410911 |

c) SCC:

| REMOVE | REPLACE WITH |
|---|---|
| 410408 | 410409 |
| 410801 | 410804 |
| 410901 | 410905 |

d) MCC:

| REMOVE | REPLACE WITH |
|---|---|
| 410408 | 410409 |
| 410803 | 410812 |
| 410903 | 410914 |
| 410904 | 410915 |
| All 410431, 410432 or 410434 cards | 410436 (one for each removed |

e) Affected KDs: Remove 40K104/DAA, replace with 40K105/CAA opcon.

f) Unaffected KDs: Remove 40K104/DAA, replace with 40K104/DAB (see Paragraph 4.04).

g) 80-Column Printers: Remove 410645 or 410629, replace with 400785 (mono) or 400784 (up-low) type carrier.

h) 132-Column Printers: Remove 400780 or 400777, replace with 400887 (mono) or 400783 (up-low) type carrier.

4.03 Existing Mark II ASCII stations can be provided with this feature (but they become EBCDIC stations) by:

a) Affected DCC(s):

| REMOVE | REPLACE WITH |
|---|---|
| 410809 | 410810 |
| 410911 | 410907 |
| All 410431, 410432 or 410434 cards | 410436 (one for each removed) |

b) Unaffected DCC(s):

| REMOVE | REPLACE EACH WITH |
|---|---|
| All 410431, 410432 or 410434 cards | 410435 (Up-Low) or 410436 (Mono) |

c) SCC:

| REMOVE | REPLACE WITH |
|---|---|
| 410408 | 410409 |

d) MCC:

| REMOVE | REPLACE WITH |
|---|---|
| 410408 | 410409 |
| 410808 | 410812 |
| 410909 | 410914 |
| 410910 | 410915 |
| All 410431, 410432 or 410434 cards | 410436 (one for each removed) |

e) Affected KDs: Remove 40K104/DAA opcon, replace with 40K105/CAA opcon.

f) Unaffected KDs: Remove 40K104/DAA opcon, replace with 40K104/DAB opcon (see Paragraph 4.04).

g) 80-Column Printers: Remove 400645 or 400629, replace with 400785 (mono) or 400784 (up-low) type carrier.

h) 132-Column Printers: Remove 400780 or 400777, replace with 400887 (mono) or 400783 (up-low) type carrier.

4.04 A 40K104/DAB is equivalent to a 40K104/DAA opcon plus the following keytops: 341027, 341028, and 341029.

4.05 All opcons attached to a DCC or MCC must be of the same type. Maxi-cluster stations however can include different types of DCCs.