HONEYWELL EDP

HARDWARE BULLETIN

SERIES 200

PAPER TAPE PROGRAMMING CONSIDERATIONS AND CONVERSION CHARTS

PURPOSE:

This bulletin contains some information that should be considered when programming an application where paper tape is involved. The conversion charts are furnished to assist in those applications requiring the use of codes other than Honeywell's.

SPECIAL INSTRUCTIONS:

Other information concerning paper tape can be found in the following publications:

209 Paper Tape Reader and Control (DSI-221)
210 Paper Tape Punch and Control (DSI-222)
Models 209/210 Paper Tape Equipment (DSI-322)
THOR-P and THOR-AP (DSI-324)
TOPPER Read Routine (DSI-340)
Paper Tape SCOPE/Link (DSI-344)

DATE: September 8, 1965

FILE NO.: 112.0005.1900.00.00

8472
1965
Printed in U.S.A.

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SECTION I

PROGRAMMING CONSIDERATIONS

CHANNEL-8 END-OF-RECORD SENSE READING

The Type 209 Paper Tape Reader is normally delivered with the end-of-record sense channel designated as channel 7. However, the reader may be ordered with the sensing channel changed to channel 8.

With channel 8 as the end-of-record sensing channel, the reader becomes more compatible with many of the more widely accepted 8-channel paper tape codes used today. Nearly all of these "foreign" codes use channel 7 as part of their code configuration. This, therefore, disallows all end-of-record sense reading of these tapes. Most of these codes (Friden, IBM, Dura, Burroughs, etc.), however, use channel 8 only as an end-of-record-or-line character or in one or two cases as a delete character. With channel 8 as the EOR channel, end-of-record sense reading of these codes is possible. This setup provides an easy way to read variable-length records. Terminate each record on tape with an end-of-record (or line) character, and issue all read instructions in the end-of-record sense mode. Then all instructions will automatically be terminated at the end of each record, regardless of size, when the 8th channel EOR punch is sensed.

It should be remembered, however, that if channel 8 is chosen as the end-of-record sense channel, problems will arise when running some Honeywell systems programs from the paper tape reader. All Honeywell systems program tapes have the EOR punch in channel 7 and not in channel 8. If, however, the Honeywell systems programs are loaded from cards or magnetic tape, no difficulties will occur.

CHANGING FROM NORMAL TO END-OF-RECORD SENSE READING WHEN REVERSING TAPE DIRECTION

When operating in the "end-of-record" sense mode, the Type 209 Paper Tape Reader terminates the read and stops the tape upon encountering a channel 7 (or 8) punch on tape. When the tape comes to rest, the sensed punch is beyond the read head. If the tape is next read in the opposite direction in "end-of-record" sense (EOR) mode, it logically stops upon encountering the same EOR punch. The result, of course, is that no data is read into memory. To overcome this, the control unit has been designed to ignore the first EOR punch sensed (and all frames preceding it) when reversing direction.

When reading in the "end-of-record" sense mode, this provision works well. However, when reading in normal or not "end-of-record" sense mode, if the user switches and reads the tape in the opposite direction in the "end-of-record" (EOR) mode, the following facts must be taken into consideration. When reversing direction as stated, all data up to the first EOR punch sensed will be lost. In addition, if only one EOR punch is present on the portion of tape being read, the read will never be terminated, since at the point where the tape is reversed, there is no EOR punch to ignore. The tape's original motion, when read in normal or not-EOR-sense mode, is terminated by a record mark in memory and not by a punch on tape. Therefore, everything encountered up to the first EOR punch, regardless of how far down the tape, is ignored. If only one punch is sensed, the read is not terminated except by pushing the INITIALIZE button.

One method of overcoming this problem is to read the first frame in the opposite direction in normal mode, and then switch to the "end-of-record" sense mode to read the rest of the record. The change from normal to EOR-sense mode does not coincide with the change of tape direction, so this condition will not be present. If the user is not interested in the data being read in the reverse direction, two consecutive EOR punches can be used to terminate the read. The first punch will be ignored, but the second will stop the read. This can be a useful method of finding the beginning of a tape from any location down the tape. The first two frames on the tape in this case would be 7th (or 8th) channel EOR punches.

It should be remembered that this condition only occurs when the device is reading in normal mode and then simultaneously changes to read in EOR-sense mode and reverses tape direction.

Tape direction can be changed while reading in the same mode, read modes can be changed while maintaining the same tape direction, and even changing from EOR-sense mode to normal read mode while changing tape direction will not cause any difficulty.

PAPER TAPE CODE CONVERSION

Nearly all paper tapes being read by the 209 paper tape reader will be punched in a "foreign" code, that is, not the same as the Honeywell internal 6-bit code used by the Series 200 computers. This is also true of codes created by the Type 210 Paper Tape Punch. Therefore, it is necessary to translate the incoming codes to Honeywell 6-bit internal code, and the Honeywell 6-bit code to the outgoing 5, 6, 7 or 8 channel code required.

Translation is most efficiently done with the Honeywell Series 200 Move Item and Translate (MIT) instruction, or the Move and Translate Instruction, (MAT).

The Series 200 Move Item and Translate instruction will translate 8 bits or channels at one time, and the Move and Translate (MAT) instruction will convert six bits or one character at a time. The Move Item and Translate instruction can be used on all incoming or outgoing codes to directly translate from one language to another. Even with the one-character six-bit Move and Translate instruction (MAT), nearly all present-day paper tape codes can be translated to and from the Honeywell 6-bit code with the aid of one or more translation tables. These include the 8-channel Friden, IBM, DURA, NCR, etc. codes. These two instructions employ translation tables that use the octal value of the code to be translated to locate the equivalent configuration of the Honeywell 6-bit or foreign code required. For more information on these two instructions, please refer to the Programmer's Reference Manual.

11/16" Wide Tapes

READ TRANSLATION

11/16" wide 5-channel tapes are created by a variety of devices, including teletype equipment, cash registers, etc. These narrow tapes, when read by the Type 209 Paper Tape Reader, only cover read sensors 1 through 5 of the photoelectric read head. Sensors 6, 7 and 8 are exposed to the read head light source.

It is important to remember, therefore, that when a read instruction is given and the reading of the tape begins, sensors 6, 7 and 8, detecting light, send a 1-bit signal to the reader control unit. Readings are taken on all eight channels, regardless of whether one- or two-character mode is specified by the PDT instruction. Assuming one character per frame mode, the sixth bit transferred from memory when reading these 11/16" wide tapes will be a one (1) bit. Before translation, this bit should be set to zero by extracting or substituting the character through an octal mask of 37 (011111) or the sixth bit can be left a one (1) bit and this taken into consideration when setting up the translation table(s). However, the substitution or extraction method is preferred, as a much smaller translation table can be used if the sixth bit is a zero. This method also eliminates any possible errors in reading caused by the tape skewing and covering enough of sensor 6 as it passes over the read head to cause that channel to register as a zero, instead of a one-bit.

PARITY

Parity is checked by the Type 209 Paper Tape Reader control unit on all eight channels. This means, when reading 11/16" wide tapes punched in a code using parity, a "parity reversal" takes place. Because the 6th, 7th and 8th sensors will register as one-bits, 3 extra one bits are added to the code configuration. These 3 extra bits in effect will reverse parity. For example, a 11/16" wide tape frame with 1, 3 or 5 one-bits (odd parity) will register in the control unit as 4, 6 or 8 one-bits (even parity). Thus, all codes on 11/16" tape written in odd

parity must be checked in even parity, and all those written in even parity must be checked in odd parity mode. This is also true for 5-channel codes punched in 7/8" wide 7-channel tapes. In this case, the 8th channel sensor is exposed to the read-head light source, causing an extra one-bit to be added to the count received by the control unit. In this case, again, odd parity tapes must be checked in even mode, and even parity tapes in the odd mode. This is not the case, however, for 5-channel tapes punched in 1" wide 8-channel tape. Here sensors 6-8 are covered by the tape, and will register as zeros in the control unit. Normal parity checking is required for these conditions.

PUNCH TRANSLATION

Translation from the Honeywell 6-bit code to any 5-level code is again best accomplished by means of the Move Item and Translate instruction or tne Move and Translate instruction. It is important to remember to always have the sixth bit in the translation table a zero. Otherwise, the sixth punch die will be activated, causing the tape to be "laced": it attempts to punch a hole on the edge of the tape. All punch instructions for 5-channel tapes are given in the one-character-per-frame mode.

7/8" Wide Seven-Channel Tape

READ TRANSLATION, 6 AND 7 CHANNEL TAPES

As is the case with 11/16" wide 5-channel tapes, 7/8" wide 7-channel tapes do not cover all eight sensors in the read head. Here, the eighth sensor is exposed to the light source as the tape passes over the read head. This causes the eighth channel to be recorded as a one-bit. If six-channel tapes are read in the one-character frame mode, no problems in translating occur. However, if reading is in the 2-character-per-frame mode, the second bit of the first character location is read into (Word A) to be registered as a one-bit.

If the seventh bit is required for code translation, the eighth channel-1 bit in Word A should be set to zero by extracting or substituting Word A through an octal mask of 01. A second method is to leave this bit as a one-bit and take this into consideration when designing the translation table(s) to be used. The extraction-or-substitution method is far more satisfactory, as it reduces table sizes and eliminates possible read errors caused by the skewing of the tape as it passes over the read head. This skewing can cause enough of the tape to cover the eighth sensor to have it register as a 0 instead of a 1 bit.

PARITY

Parity is checked by the 209 paper tape reader on all eight channels. With the eighth sensor exposed to the light, an extra 1 bit is added to the code configuration received by the control unit. This will cause a parity reversal on all 7/8" wide tapes punched with a code using parity. A tape punched in odd parity with 1, 3, 5, or 7 one-bits will be sensed by the control

unit as 2, 4, 6 or 8 1-bits respectively (even parity). Thus all 7/8" wide tapes punched in odd parity must be checked in even parity mode, and vice versa.

However, if a six or seven channel tape is punched in a 1" wide 8-channel tape, no parity reversal takes place. In this case, the eighth channel is covered and registers as a zero, not altering the parity count. Thus, all codes punched in 1" wide tape should be checked in the parity mode in which the tape is written.

PUNCH TRANSLATION

Six-Channel Codes:

Translation from Honeywell 6-bit code to any other 6-channel code, again, is best accomplished by means of the Move Item and Translate or Move and Translate instruction. All punching is done in the one character/frame mode.

Seven-Channel Codes:

Translation of Honeywell 6-bit code to any seven channel code is also best accomplished by means of the Move Item and Translate or the Move and Translate instruction. This translation can be completed with one Move Item and Translate instruction, and in most cases with one Move and Translate instruction. The conversion table for the MAT instruction should contain the configuration for channels 1-6. This configuration should be placed in character location A+1 of the punch buffer "A". An item mark can be included in the translation table for all characters which require a channel 7 punch. This item mark is moved with the translated character from the table by the Move and Translate instruction. The translated character should then be tested for an item mark. If one is found, a one-bit (Octal 01) should be placed in the first bit position of the first character (Word A) in the 2-character punch image. All other bits in the first character, especially the second, should be zero. If bit 2 is a one-bit, the eighth channel punch die will be activated, causing the edge of the 7/8" tape to be laced. If an item mark is not found in the translated character, an octal 00 should be placed in the first character position (Word A) of the 2-character punch image. Seven channel per frame punching should be done in 2-character-per-frame mode.

1" Wide Eight-Channel Tape

READ TRANSLATION

As mentioned, many of the popularly used 8-channel codes can be translated with one Move and Translate instruction. Of course, this can be done with one Move Item and Translate instruction which works on 8 bits at a time. The codes translatable with one Move and Translate instruction include the Friden and IBM BCD codes, the Dura Mach 10 and modified BCD codes,

etc. With a few minor exceptions, the first six channels of these codes can be used to translate the incoming configuration.

The few possible duplications found in some codes can be flagged in the translation table with item marks. When an item mark is encountered (after translation), channels 7 and/or 8 of Word A should be checked to determine the correct incoming character.

If enough duplications occur, a second table (or third table, if upper and lower cases are involved), can be employed to translate these duplications. The Dura Mach 10 code might require such a second or third table. These codes, with duplications, must be read in 2-character-per-frame mode.

If no duplications occur, as when reading IBM or Friden BCD codes in "end of record sense" mode (when the end of record sense punch is in channel 8), the tape can be read in the one-character-per-frame mode to save time and halve the buffer areas normally required.

PARITY

There are no parity reversal problems involved in reading 1" wide tape, as there are in reading 11/16" and 7/8" wide tapes. All eight channel sensors of the read head are covered by the tape as it passes under the light source. All unused channels thus register as zeros in the control unit, maintaining the original parity count. Therefore, all codes punched in 1" wide tape, regardless of the number of channels used, should be checked in the parity mode in which they were punched.

PUNCH TRANSLATION

Punch translation of all eight-channel tapes can be done with one Move Item and Translate (MIT) instruction, and in nearly all cases with one Move and Translate (MAT) instruction. Nearly all eight-channel codes use only seven channels, except for one or possibly two control characters. These exceptions can be tested and provided for. The conversion table for the Move and Translate instruction should contain the configuration for channels 1-6. Characters requiring seven channel punches (as in the Friden and IBM BCD codes, Dura Mach 10 and modified BCD codes, etc.) can be flagged with item marks in the translation table. These item marks can be checked for in the translated character, and when present an octal 01 (channel 7 punch) should be moved into first character position (Word A) of the two-character punch image.

If no item mark is present, an octal 00 should be moved into Word A, specifying a zero bit for channels 7 and 8. All seven and eight channel codes require two characters of memory per frame, and they must be punched in two-character-per-frame mode.

SECTION II

TRANSLATION TABLES

TRANSLATION TABLES FOR THE MOVE AND TRANSLATE INSTRUCTION

Type 209 Paper Tape Reader

As stated, nearly all of the popular 7 and 8 channel codes in use can be translated with one Move and Translate instruction. With a few minor exceptions, the first six channels of these codes can be used to translate any incoming configuration. The few duplications possible when using only a six-bit translation configuration can be flagged with an item mark in the translation table. This item mark is moved with the translated character by a Move and Translate instruction. The translated character should then be tested for the presence of an item mark. If found, channels 7 and 8 of the incoming frame should be checked to identify the character.

The following tables have been designed to translate eight-channel codes using only channels 1 thru 6. These tables are intended only as a guide, and they should be modified by the user to meet his own requirements. There has been no attempt to differentiate between all the special control characters used by the originating equipment. In most cases, Honeywell characters not used elsewhere are available for any special control characters that require identification.

Type 209 Paper Tape Punch

The following tables have been designed only for codes read by the Type 209 Paper Tape Reader. Tables can be made to translate codes for the Type 210 Paper Tape Punch, using the same 6-bit translation method, by reversing the techniques and procedures used for the reader.

Table Notes

The following is an explanation of the asterisks noted in the translation tables.

(*)	This translation is accomplished with the first 6 channels of the incoming code only.
(**)	These are suggested Honeywell characters to be used to represent control and non-equivalent data characters. These characters may be changed or substituted at will to best meet each particular situation.
(***)	These are duplicate six-bit representations of the incoming code. They should contain an item mark which flags them for subsequent clarification.

Table 2-2. Present ASCII Eight-Channel-Code

Translation Table*

ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER	ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER
	ALPHA	OCTAL			ALPHA	OCTAL	
ØØ	¢	77**	NULL	40	CR	75**	ILLEGAL
01	"	"	SOM	41	"	"	"
02	"	"	EOA	42	"	"	"
03	"	"	EOM	43	"	"	"
04	"	"	EOT	44	"	"	"
05	"	"	WRU	45	"	"	"
06	"	"	RU	46	"	"	"
07	"	"	BELL	47	"	"	"
10	"	"	FEO	5Ø	"	"	"
11	"	"	HT/SK	51	"	"	"
12	"	"	LF	52	"	"	"
13	"	"	V TAB	53	"	"	"
14	"	"	FF	54	"	"	"
15	"	"	CR	55	"	"	"
16	"	"	SO	56	"	"	"
17	"	"	S1	57	"	"	"
20	"	"	DCO	60	"	"	"
21	"	"	DC1	61	"	"	"
22	"	"	DC2	62	"	"	"
23	"	"	DC3	63	"	"	"
24	"	"	DC4 (STOP)	64	"	"	"
25	"	"	ERR	65	"	"	"
26	"	"	SYNC	66	"	"	"
27	"	"	LEM	67	"	"	"
30	"	"	SO	7Ø	"	"	"
31	"	"	S1	71	"	"	"
32	"	"	S2	72	"	"	"
33	"	"	S3	73	"	"	"
34	"	"	S4	74	¢	77*	ACK
35	"	"	S5	75	¢	77*	(2)
36	"	"	S6	76	¢	77*	ESL
37	"	"	S7	77	¢	77*	DEL

NOTE 1: The intent of this table is to show the location in a translation table of the various control characters of the ASCII code. No attempt is made to identify each character as they will conflict with the data characters. If some control characters must be identified, some unused data characters in the above table can be used. Generally an incoming message does not utilize all 64 data characters specified in the data translation table.

Table 2-4. Present ASCII Eight-Channel-Code Data-Character

Translation Table*

ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER	ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER
	ALPHA	OCTAL			ALPHA	OCTAL	
ØØ	@	72	@	40	SPACE	15	SPACE
01	A	21	A	41	!	57	!
02	B	22	B	42	"	55	"
03	C	23	C	43	#	52	#
04	D	24	D	44	$	53	$
05	E	25	E	45	%	35	%
06	F	26	F	46	&	17	&
07	G	27	G	47	'	12	'
10	H	30	H	5Ø	(	74	(
11	I	31	I	51	)	34	)
12	J	41	J	52	*	54	*
13	K	42	K	53	+	20	+
14	L	43	L	54	,	73	,
15	M	44	M	55	-	40	-
16	N	45	N	56	.	33	.
17	O	46	O	57	/	61	/
20	P	47	P	60	0	00	0
21	Q	50	Q	61	1	01	1
22	R	51	R	62	2	02	2
23	S	62	S	63	3	03	3
24	T	63	T	64	4	04	4
25	U	64	U	65	5	05	5
26	V	65	V	66	6	06	6
27	W	66	W	67	7	07	7
30	X	67	X	7Ø	8	10	8
31	Y	70	Y	71	9	11	9
32	Z	71	Z	72	:	14	:
33	(	74**	⊏	73	;	32	;
34	≠	56**	\	74	<	60	<
35	)	34**	⊐	75	=	13	=
36	□	76**	↑	76	>	16	>
37	■	36**	←	77	?	37	?

NOTE 1: This table is for data only. There are duplications when using control characters. Channel 7 of the incoming characters must be tested to determine whether data or control tables should be used.

Table 2-6. NCR 304 Eight-Channel Typewriter Code Upper-Shift

Translation Table*

ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER	ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER
	ALPHA	OCTAL			ALPHA	OCTAL	
ØØ	≠	56**	RUNIN	40	+	20	+
01	1	01	1	41	J	41	J
02	! OR =	57 OR 13	! OR =	42	K	42	K
03	#	52	#	43	L	43	L
04	$	53	$	44	M OR ?	44 OR 37	M OR ?
05	%	35	%	45	N OR :	45 OR 14	N OR :
06	/	61	/	46	O	46	O OR ←
07	&	17	&	47	P	47	P OR ↑
10	*	54	*	5Ø	Q	50	Q
11	(	74	(	51	R	51	R
12	)	34	)	52	C_R	75**	ILLEGAL
13	C_R	75**	ILLEGAL	53	C_R	75**	"
14	SPACE	15	SPACE	54	C_R	75**	"
15	≠	56**	PUT	55	≠	56**	STOP
16	❜	73	❜	56	C_R	75**	ILLEGAL
17	≠	J	CLEAR	57	C_R	75**	ILLEGAL
20	"	55	▲ OR (11)	60	□ OR ;	76 OR 32	□ OR ; **
21	A	21	A	61	C_R	75**	ILLEGAL
22	B	22	B	62	S OR ≻	62 OR 16	S OR ≻
23	C	23	C	63	T	63	T
24	D	24 OR 60	d OR ≺	64	U OR '	64 OR 12	u OR '
25	E	25	E	65	V or (	65 or 74	v OR ⌊ **
26	F	26	F	66	W or)	66 or 34	w OR ⌋ **
27	G	27	G	67	X	67	x OR \
30	H	30	H	7Ø	Y	70	Y
31	I	31	I	71	Z	71	Z
32	■	36**	DWN SHIFT	72	C_R	75**	ILLEGAL
33	□	76**	UP SHIFT	73	"	"	"
34	C_R	75**	ILLEGAL	74	"	"	"
35	C_R	75**	ILLEGAL	75	"	"	"
36	≠	56**	TAB	76	"	"	"
37	≠	56**	CAR. RTN.	77	≠	56**	DELETE

Table 2-8. NCR 304 Eight-Channel Typewriter Code Lower-Shift Translation Table*

ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER	ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER
	ALPHA	OCTAL			ALPHA	OCTAL	
ØØ	≠	56**	RUNIN	40	@	72	@
01	1	01	1	41	J	41	J
02	2	02	2	42	K	42	K
03	3	03	3	43	L	43	L
04	4	04	4	44	M	44	M
05	5	05	5	45	N	45	N
06	6	06	6	46	O	46	O
07	7	07	7	47	P	47	P
10	8	10	8	5Ø	Q	50	Q
11	9	11	9	51	R	51	R
12	0	00	0	52	C_R	75**	ILLEGAL
13	C_R	75**	ILLEGAL	53	"	"	"
14	SPACE	15	SPACE	54	"	"	"
15	≠	56**	PUT	55	≠	56**	STOP
16	•	33	•	56	C_R	75**	ILLEGAL
17	≠	56**	CLEAR	57	C_R	75**	ILLEGAL
20	-	40	-	60	¢ OR !	77 OR 57	¢ OR !
21	A	21	A	61	C_R	75**	ILLEGAL
22	S	22	B	62	S	62	S
23	C	23	C	63	T	63	T
24	D	24	D	64	U	64	U
25	E	25	E	65	V	65	V
26	F	26	F	66	W	66	W
27	G	27	G	67	X	67	X
30	H	30	H	7Ø	Y	70	Y
31	I	31	I	71	Z	71	Z
32	▬	36**	DWN SHIFT	72	C_R	75**	ILLEGAL
33	▭	76**	UP SHIFT	73	"	"	"
34	C_R	75**	ILLEGAL	74	"	"	"
35	C_R	75**	"	75	"	"	"
36	≠	56**	TAB	76	"	"	"
37	≠	56**	CAR. RTN.	77	≠	56**	DELETE

Table 2-10. NCR Eight-Channel General-Purpose-Code Upper-Shift

Translation Table*

ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER	ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER
	ALPHA	OCTAL			ALPHA	OCTAL	
ØØ	CR	75**	ILLEGAL	40	/	61	/
01	≠	56**	TAB	41	%	35	%
02	E	25	E	42	@	72	@
03	!	57	!	43	6	06	6
04	≠	56**	LINE	44	,	73	,
05	≠	56**	PDlSC	45	CR	75**	ILLEGAL
06	A	21	A	46	)	34**	J
07	4	04	4 4	47	#	52	#
10	SPACE	15	SPACE	5Ø	*	54	*
11	CR	75**	ILLEGAL	51	9	11	9
12	>	16	>	52	;	32	;
13	≠	56**	PUT	53	&	17	&
14	•	33	•	54	≠	56**	↗
15	(	74	(	55	Ø	ØØ	Ø
16	'	12	'	56	Q	5Ø	Q
17	"	55	"	57	5	Ø5	5
20	≠	56**	CAR.RETRN	60	<	60	←
21	CR	75**	ILLEGAL	61	)	34	)
22	<	60	<	62	B	22	B
23	2	02	2	63	CR	75**	ILLEGAL
24	R	51	R	64	G	27	G
25	$	53	$	65	CR	75**	ILLEGAL
26	+	20	+	66	(	74**	⊂
27	Ø	ØØ	Ø	67	≠	56**	CLEAR
30	:	14	:	7Ø	?	37	?
31	7	Ø7	7	71	8	1Ø	8
32	F	26	F	72	≠	56**	\
33	=	13	=	73	1	Ø1	1
34	C	23	C	74	≠	56**	STOP
35	3	Ø3	3	75	■	36**	DOWNSHIFT
36	-	40	-	76	□	76**	UPSHIFT
37	≠	56**	COMP	77	¢	77**	*** DE- RUNIN LETE

NOTE 1: This table includes the separate code for numeric keyboards.

Table 2-12. NCR Eight-Channel General-Purpose-Code Lower-Shift Translation Table*

ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER	ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER
	ALPHA	OCTAL			ALPHA	OCTAL	
ØØ	C_R	75**	ILLEGAL	40	T	63	T
01	≠	56**	TAB	41	5	05	5
02	E	25	E	42	Z	71	Z
03	3	03	3	43	6	06	6
04	≠	56**	LINE	44	L	43	L
05	≠	56**	PDISC	45	C_R	75**	ILLEGAL
06	A	21	A	46	W	66	W
07	4	04	4	47	2	02	2
10	SPACE	15	SPACE	5Ø	H	30	H
11	C_R	75**	ILLEGAL	51	9	11	9
12	S	62	S	52	Y	70	Y
13	≠	56**	PUT	53	6	06	6
14	I	31	I	54	P	47	P
15	8	10	8	55	0	00	0
16	U	64	U	56	Q	50	Q
17	7	07	7	57	5	05	5
20	≠	56**	CAR. RTRN.	60	0	46	0
21	C_R	75**	ILLEGAL	61	9	11	9
22	D	24	D	62	B	22	B
23	2	02	2	63	C_R	75**	ILLEGAL
24	R	51	R	64	G	27	G
25	4	04	4	65	C_R	75**	ILLEGAL
26	J	41	J	66	V	65	V
27	0	00	0	67	≠	56**	CLEAR
30	N	45	N	7Ø	M	44	M
31	7	07	7	71	8	10	8
32	F	26	F	72	X	67	X
33	1	01	1	73	1	01	1
34	C	23	C	74	≠	56**	STOP
35	3	03	3	75	■	36**	DOWN SHIFT
36	K	42	K	76	□	76**	UP SHIFT
37	≠	56**	COMP	77	¢	77**	RUN IN, DELETE***

NOTE 1: This table includes the separate code for numeric keyboards.

Table 2-14. IBM Eight-Channel BCD-Code

Translation Table*

ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER	ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER
	ALPHA	OCTAL			ALPHA	OCTAL	
ØØ	-	40	-,EOR***	40	Ø	ØØ	Ø
01	1	01	1	41	A	21	A
02	2	02	2	42	B	22	B
03	L	43	L	43	T	63	T
04	4	04	4	44	D	24	D
05	N	45	N	45	V	65	V
06	0	46	0	46	W	66	W
07	7	07	7	47	G	27	G
10	8	10	8	5Ø	H	30	H
11	R	51	R	51	Z	71	Z
12	!	57**	P.I #2	52	;	32**	P.I #3
13	#	52	#	53	.	33	.
14	*	54**	*	54	%	35	%
15	(	74**	P.I#7	55	11"	55**	P.I #5
16	=	13**	END CARD#1	56	≠	56**	SPECIAL#2
17	>	16**	ERROR	57	'	12**	END CARD#2
20	SPACE	15	SPACE	60	&	17	&
21	J	41	J	61	/	61	/
22	K	42	K	62	S	62	S
23	3	Ø3	3	63	C	23	C
24	M	44	M	64	u	64	u
25	5	Ø5	5	65	E	25	E
26	6	Ø6	6	66	F	26	F
27	P	47	P	67	X	67	X
30	Q	50	Q	7Ø	Y	7Ø	Y
31	9	11	9	71	I	31	I
32	+	20**	P.I.#1	72	^{C}R	75**	SPECIAL#1
33	$	53	$	73	'	73	'
34	@	72	@	74	□	76**	⌑
35	)	34**	P.I.#6	75	:	14**	P.I #4
36	■	36**	CARR RETURN	76	<	60**	SKIP
37	?	37*	CORR. TAB	77	¢	77**	TAPE FEED

Table 2-16. Friden Flexowriter (Model SPS) Eight-Channel BCD Code

Translation Table*

ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER	ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER
	ALPHA	OCTAL			ALPHA	OCTAL	
ØØ	-	4Ø	-, EOR ***	40	Ø	ØØ	Ø
01	1	01	1	41	A	21	A
02	2	02	2	42	B	22	B
03	L	43	L	43	T	63	T
04	4	04	4	44	D	24	D
05	N	45	N	45	V	65	V
06	0	46	0	46	W	66	W
07	7	07	7	47	G	27	G
10	8	10	8	5Ø	H	3Ø	H
11	R	51	R	51	Z	71	Z
12	!	57**	P.I.#2	52	@	72**	PI#3 (BACK SPACE)
13	<	60**	STOP	53	•	33	•
14	≠	13**	ON-1	54	*	54**	PRINT-REST
15	:	14**	SKIP-RESTR.	55	11	55**	PI#5
16	;	32**	CONTROL	56	#	52**	ON-2
17	$	53**	FORM FEED	57	!	57**	PUNCH OFF
20	SPACE	15	SPACE (▲)	60	&	17	&
21	J	41	J	61	/	61	/
22	K	42	K	62	S	62	S
23	3	Ø3	3	63	C	23	C
24	M	44	M	64	U	64	U
25	5	Ø5	5	65	E	25	E
26	6	Ø6	6	66	F	26	F
27	P	47	P	67	X	67	X
30	Q	50	Q	7Ø	Y	70	Y
31	9	11	9	71	I	31	I
32	+	20**	P.I.#1	72	CR	75**	ILLEGAL
33	%	35	%	73	,	73	,
34	)	34**	NON PRINT	74	CR	75**	ILLEGAL
35	■	76**	ADDR.IDEN.	75	(	74**	PI#4
36	▭	36**	FC ON	76	≠	56**	TAB
37	?	37**	DATA SEL	77	¢	77**	TAPE FEED

Table 2-18. Friden Flexowriter (Model SPD) Eight-Channel BCD-Code Upper-Case Translation Table*

ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER	ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER
	ALPHA	OCTAL			ALPHA	OCTAL	
ØØ	"	55	", EOR***	40	)	34	)
01	'	12	'	41	A	21	A
02	@	72	@	42	B	22	B
03	L	43	L	43	T	63	T
04	$	53	$	44	D	24	D
05	N	45	N	45	V	65	V
06	O	46	O	46	W	66	W
07	?	37	?	47	G	27	G
10	*	54	*	5Ø	H	30	H
11	R	51	R	51	Z	71	Z
12	!	57**	P.I.#2	52	≠	56**	P.I.#3
13	<	60**	STOP	53	.	33	.
14	≠	56**	ON 2	54	≠	56**	PRINT-RESTR
15	≠	56**	SKIP RESTORE	55	≠	56**	P.I.#5
16	≠	56**	CONTROL	56	C_R	75**	ILLEGAL
17	≠	56**	FORM FEED	57	≠	56**	PUNCH OFF
20	SPACE (Δ)	15	SPACE (Δ)	60	;	32	;
21	J	41	J	61	:	14	:
22	K	42	K	62	S	62	S
23	#	52	#	63	C	23	C
24	M	44	M	64	U	64	U
25	=	13	=	65	E	25	E
26	¢	77	¢	66	F	26	F
27	P	47	P	67	X	67	X
30	Q	5Ø	Q	7Ø	Y	7Ø	Y
31	(	74	(	71	I	31	I
32	+	20**	P.I.#1	72	■	76**	LOWER CASE
33	-	4Ø	-	73	,	73	,
34	≠	56**	NON-PRINT	74	□	36**	UPPER CASE
35	≠	56**	ADDR.IDEN.	75	C_R	75**	ILLEGAL
36	≠	56**	FC ON	76	≠	56**	TAB
37	≠	56**	DATA SELECTOR	77	>	16**	TAPE FEED

Table 2-20. Friden Flexowriter (Model SPD) Eight-Channel BCD-Code Lower-Case Translation Table*

ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER	ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER
	ALPHA	OCTAL			ALPHA	OCTAL	
ØØ	-	40	-, EOR***	40	Ø	ØØ	Ø
01	1	Ø1	1	41	A	21	a
02	2	Ø2	2	42	B	22	b
03	L	43	l	43	T	63	t
04	4	Ø4	4	44	D	24	d
05	N	45	n	45	V	65	v
06	0	46	0	46	W	66	w
07	7	Ø7	7	47	G	27	g
10	8	1Ø	8	5Ø	H	3Ø	h
11	R	51	r	51	Z	71	z
12	!	57**	P.I.#2	52	≠	56**	P.I.#3
13	<	60**	STOP	53	.	33	.
14	≠	56**	ON 1	54	≠	56**	PRINT RESTR
15	≠	56**	SKIP RESTORE	55	≠	56**	P.I.#5
16	≠	56**	CONTROL	56	C_R	75**	ILLEGAL
17	≠	56**	FORM FEED	57	≠	56**	PUNCH OFF
20	SPACE	15	SPACE	60	&	17	&
21	J	41	j	61	/	61	/
22	K	42	k	62	S	62	s
23	3	Ø3	3	63	C	23	c
24	M	44	m	64	U	64	u
25	5	Ø5	5	65	E	25	e
26	6	Ø6	6	66	F	26	f
27	P	47	p	67	X	67	x
30	Q	5Ø	q	7Ø	Y	70	y
31	9	11	9	71	I	31	i
32	+	20**	P.I.#1	72	■	76**	LOWER CASE
33	%	35	%	73	,	73	,
34	≠	56**	NON-PRINT	74	□	36**	UPPER CASE
35	≠	56**	ADDR.IDEN.	75	C_R	75**	ILLEGAL
36	≠	56**	FC ON	76	≠	56**	TAB
37	≠	56**	DATA SELECTOR	77	>	16**	TAPE FEED

Table 2-22. Friden Flexowriter (Model SFD) Eight-Channel BCD-Code Upper-Case Translation Table*

ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER	ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER
	ALPHA	OCTAL			ALPHA	OCTAL	
ØØ	"	55	,EOR***	40	)	34	)
01	1	Ø1****	-	41	A	21	A
02	@	72	@	42	B	22	B
03	L	43	L	43	T	63	T
04	$	53	$	44	D	24	D
05	N	45	N	45	V	65	V
06	O	46	O	46	W	66	W
07	&	17	&	47	G	27	G
10	*	54	*	5Ø	H	3Ø	H
11	R	51	R	51	Z	71	Z
12	C_R	75**	ILLEGAL	52	+	20**	BACKSPACE
13	<	6Ø**	STOP	53	.	33	.
14	!	57**	PUNCH ON	54	C_R	75**	ILLEGAL
15	C_R	75**	ILLEGAL	55	C_R	75**	ILLEGAL
16	=	13**	CONTROL	56	C_R	75**	ILLEGAL
17	≠	56**	FORM FEED	57	≠	56	PUNCH OFF
20	SPACE	15	SPACE (Δ)	60	:	14	:
21	J	41	J	61	?	37	?
22	K	42	K	62	S	62	S
23	#	52	#	63	C	23	C
24	M	44	M	64	U	64	U
25	%	35	%	65	E	25	E
26	'	12	'	66	F	26	F
27	P	47	P	67	X	67	X
30	Q	50	Q	7Ø	Y	70	Y
31	(	74	(	71	I	31	I
32	C_R	75**	ILLEGAL	72	▀	76	LOWER CASE
33	C_R	75**	ILLEGAL	73	,	73	,
34	C_R	75**	ILLEGAL	74	␣	36	UPPER CASE
35	>	16**	ADDR. IDEN	75	C_R	75**	ILLEGAL
36	C_R	75**	ILLEGAL	76	≠	56**	TAB
37	≠	56**	DATA SEL.	77	¢	77*	TAPE FEED

Table 2-24. Friden Flexowriter (Model SFD) Eight-Channel BCD-Code Lower-Case Translation Table*

ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER	ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER
	ALPHA	OCTAL			ALPHA	OCTAL	
ØØ	-	4Ø	-, EOR ***	40	Ø	ØØ	Ø
01	1	Ø1	1	41	A	21	a
02	2	Ø2	2	42	B	22	b
03	L	43	l	43	T	63	t
04	4	ØØ	4	44	D	24	d
05	N	45	n	45	V	65	v
06	O	46	o	46	W	66	w
07	7	Ø7	7	47	G	27	g
10	8	1Ø	8	5Ø	H	3Ø	h
11	R	51	r	51	Z	71	z
12	C_R	75**	ILLEGAL	52	+	20**	BACK SPACE
13	<	60**	STOP	53	.	33	.
14	!	57**	PUNCH ON	54	C_R	75**	ILLEGAL
15	C_R	75**	ILLEGAL	55	C_R	75**	ILLEGAL
16	=	13**	CONTROL	56	C_R	75**	ILLEGAL
17	≠	56**	FORM FEED	57	≠	56**	PUNCH OFF
20	SPACE	15	SPACE (Δ)	60	;	32	;
21	J	41	j	61	/	61	/
22	K	42	k	62	S	62	s
23	3	Ø3	3	63	C	23	c
24	M	44	m	64	U	64	u
25	5	Ø5	5	65	E	25	e
26	6	Ø6	6	66	F	26	f
27	P	47	p	67	X	67	x
30	Q	5Ø	q	7Ø	Y	70	y
31	9	11	9	71	I	31	i
32	C_R	75**	ILLEGAL	72	■	76**	LOWER CASE
33	C_R	75**	ILLEGAL	73	,	73	,
34	C_R	75**	ILLEGAL	74	□	36**	UPPER CASE
35	>	16**	ADDR. IDEN	75	C_R	75**	ILLEGAL
36	C_R	75**	ILLEGAL	76	≠	56**	TAB
37	≠	56**	DATA SEL.	77	¢	77**	TAPE FEED

Table 2-26. Dura Mach 10 Modified-BCD Eight-Channel Binary-Code Upper-Case Translation Table*

ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER	ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER
	ALPHA	OCTAL			ALPHA	OCTAL	
ØØ	-	40	-,EOR***	40	+	20**	b
01	C_R	75**	ILLEGAL	41	C_R	75**	ILLEGAL
02	C_R	75**	"	42	"	"	"
03	"	"	"	43	"	"	"
04	:	14	"	44	(	74	(
05	*	54	*	45	%	35	%
06	+	20**	Δ	46	"	55	"
07	>	16	>	47	<	60	<
10	C_R	75**	ILLEGAL	5Ø	C_R	75**	ILLEGAL
11	"	"	"	51	"	"	"
12	"	"	"	52	+	20**	BACK SPACE
13	+	20**	STOP	53	"	20**	V
14	"	"	PUNCH ON	54	"	20**	PRT. RGSTR.
15	"	"	SKIP	55	C_R	75**	ILLEGAL
16	+	20**	TRANS SPEED	56	+	20**	PNCH #2 ON
17	+	20**	FIRST LINE	57	+	20**	PNCH OFF
20	SPACE	15	SPACE	60	&	17	&
21	C_R	75**	ILLEGAL	61	C_R	75**	ILLEGAL
22	"	"	"	62	"	"	"
23	"	"	"	63	"	"	"
24	)	34	)	64	=	13	=
25	@	72	@	65	□	76	□
26	+	20**	¬V	66	≠	56**	≠
27	;	32	;	67	/	12	/
30	C_R	75**	ILLEGAL	7Ø	C_R	75**	ILLEGAL
31	"	"	"	71	"	"	"
32	"	"	"	72	■	36**	LOWER CASE
33	"	"	"	73	C_R	75**	ILLEGAL
34	+	20**	NON PRINT	74	!	57**	UPPER CASE
35	C_R	75**	ILLEGAL	75	¢	77	¢
36	"	"	"	76	+	20**	TAB
37	+	20**	-	77	+	20**	DELETE

Table 2-28. Dura Mach 10 Modified-BCD Eight-Channel Binary-Code Lower-Case Translation Table*

ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER	ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER
	ALPHA	OCTAL			ALPHA	OCTAL	
ØØ	-	40	-,EOR***	40	0	00	0
01	/	01	/	41	A	21	A
02	2	02	2	42	B	22	B
03	L	43	L	43	T	62	T
04	4	04	4	44	D	24	D
05	N	45	N	45	V	65	V
06	0	46	0	46	W	66	W
07	7	07	7	47	G	27	G
10	8	10	8	5Ø	H	30	H
11	R	51	R	51	Z	71	Z
12	C_R	75**	ILLEGAL	52	+	20**	BACKSPACE
13	+	20**	STOP	53	•	33	•
14	+	20**	PUNCH ON	54	+	20**	PRINT RGSTR.
15	+	20**	SKIP	55	C_R	75**	ILLEGAL
16	+	20**	TRANS. READ	56	+	20**	PNCH #2 ON
17	+	20**	FIRST LINE	57	+	20**	PNCH OFF
20	SPACE	15	SPACE	60	&	17	&
21	J	41	J	61	/	61	/
22	K	42	K	62	S	62	S
23	3	03	3	63	C	23	C
24	M	44	M	64	U	64	U
25	J	05	5	65	E	25	E
26	6	06	6	66	F	26	F
27	P	47	P	67	X	67	X
30	Q	50	Q	7Ø	Y	70	Y
31	9	11	9	71	I	31	I
32	C_R	76**	ILLEGAL	72	◻	76**	LOWER CASE
33	$	53	$	73	,	73	,
34	+	20**	NON PRINT	74	!	57**	UPPER CASE
35	C_R	75**	ILLEGAL	75	*	54	*
36	C_R	75**	ILLEGAL	76	+	20**	TAB
37	#	52	#	77	+	20**	DELETE

Table 2-30. Dura Mach 10 Eight-Channel-Code Upper-Case

Translation Table*

ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER	ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER
	ALPHA	OCTAL			ALPHA	OCTAL	
ØØ	-	40	-, STOP, DEL.***	40	B	22	B, BACK SP.***
01	Y	70	Y, TAB***	41	H	30	H
02	≠	56**	CAR. RETURN	42	C_R	75**	ILLEGAL
03	≠	56**	NON PRINT	43	C_R	75**	ILLEGAL
04	Q	50	Q, SPACE***	44	K	42	K
05	P	47	P	45	E	25	E
06	+	20	+, PRT. RGSTR.***	46	N	45	N
07	J	41	J	47	T	63	T
10	□	36**	UPPER CASE	5Ø	≠	56**	SKIP RESTORE
11	?	37	?	51	L	43	L
12	≠	56**	PNCH. OFF	52	C_R	75**	ILLEGAL
13	C_R	75**	ILLEGAL	53	C_R	75**	ILLEGAL
14	'	73	', 1st LINE***	54	C	23	C
15	:	14	:	55	D	24	D
16	F	26	F, PNCH. ON***	56	U	64	U
17	G	27	G	57	X	67	X
20	W	66	W Lower Case***	60	(	74	(
21	S	62	S,	61	)	34	)
22	C_R	75**	ILLEGAL	62	C_R	75**	ILLEGAL
23	C_R	75**	ILLEGAL	63	C_R	75**	ILLEGAL
24	I	31	I	64	¢	77	¢
25	"	55	"	65	%	35	%
26		33		66	@	72	@
27	>	16**	DEGREE°	67	Z	71	Z
30	C_R	75**	ILLEGAL	7Ø	C_R	75**	ILLEGAL
31	Q	46	0	71	$	53	$
32	C_R	75**	ILLEGAL	72	C_R	75**	ILLEGAL
33	C_R	75**	ILLEGAL	73	C_R	75**	ILLEGAL
34	A	21	A	74	*	54	*
35	R	51	R	75	&	17	&
36	V	65	V	76	#	52	#
37	M	44	M	77	(	74**	[

Table 2-32. Dura Mach 10 Eight-Channel-Code Lower-Case

Translation Table*

ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER	ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER
	ALPHA	OCTAL			ALPHA	OCTAL	
ØØ	-	4Ø**	-, STOP, DELETE***	40	B	22	b, BACK SP.***
01	Y	7Ø	Y, TAB***	41	H	3Ø	h
02	≠	56**	CAR. RETURN	42	CR	75**	ILLEGAL
03	≠	56**	NON-PRINT	43	CR	75**	ILLEGAL
04	Q	50	q, SPACE***	44	K	42	k
05	P	47	P	45	E	25	c
06	=	13	=, PRNT RESTR***	46	N	45	n
07	J	41	j	47	T	63	t
10	␣	36**	UPPER CASE	5Ø	≠	56**	SKIP RESTR.
11	/	61	/	51	L	43	l
12	≠	56**	PUNCH OFF	52	CR	75**	ILLEGAL
13	CR	75**	ILLEGAL	53	CR	75**	ILLEGAL
14	,	73	,, 1st LINE***	54	C	23	c
15	;	32	;	55	D	24	d
16	F	26	f, PUNCH ON***	56	U	64	u
17	G	27	g	57	X	67	x
20	W	66	W Lower Case***	60	9	11	9
21	S	62	s	61	0	00	0
22	CR	75**	ILLEGAL	62	CR	75**	ILLEGAL
23	CR	75**	ILLEGAL	63	CR	75**	ILLEGAL
24	I	31	i	64	6	Ø6	6
25	'	12	'	65	5	Ø5	5
26	•	33	•	66	2	Ø2	2
27	!	57	!	67	Z	71	Z
30	CR	75**	ILLEGAL	7Ø	CR	75**	ILLEGAL
31	0	46	0	71	4	Ø4	4
32	CR	75**	ILLEGAL	72	CR	75**	ILLEGAL
33	CR	75**	ILLEGAL	73	CR	75**	ILLEGAL
34	A	21	a	74	8	1Ø	8
35	R	51	r	75	7	Ø7	7
36	V	65	v	76	3	Ø3	3
37	M	44	m	77	1 or)	01 or 34**	1 or]

Table 2-34. Burroughs BLC Eight-Channel-Code

Translation Table*

ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER	ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER
	ALPHA	OCTAL			ALPHA	OCTAL	
ØØ	-	40	-,EOL***	40	0	00	0
01	1	01	1	41	A	21	A
02	2	02	2	42	B	22	B
03	L	43	L	43	T	63	T
04	4	04	4	44	D	24	D
05	N	45	N	45	V	65	V
06	O	46	O	46	W	66	W
07	7	07	7	47	G	27	G
10	8	10	8	5Ø	H	30	H
11	R	51	R	51	Z	71	Z
12	!	57**	x	52	≠	56	≠
13	#	52	#	53	•	33	•
14	*	54	*	54	%	35	%
15	?	37	?	55	(	74	(
16	>	16	>	56	<	60	<
17	□	76**	≤	57	?	55	?
20	BLANK	15	BLANK	60	&	17	&
21	J	41	J	61	/	61	/
22	K	42	K	62	S	62	S
23	3	03	3	63	C	23	C
24	M	44	M	64	U	64	U
25	5	05	5	65	E	25	E
26	6	06	6	66	F	26	F
27	P	47	P	67	X	67	X
30	Q	50	Q	7Ø	Y	70	Y
31	9	11	9	71	I	31	I
32	:	14	:	72	+	20	+
33	$	53	$	73	,	73	,
34	@	72	@	74	(	74**	⊏
35	)	34	)	75	=	13	=
36	;	32	;	76	)	34**	⊐
37	□	36**	≥	77	¢	77**	TAPE FEED

Table 2-36. Dura Mach 10 Eight-Channel-Code Item-Marked-Control-Character Translation Table*

ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER	ADDRESS (TABLE +) OCTAL	HONEYWELL 6 BIT CHARACTER		EQUIVALENT BCD CHARACTER
	ALPHA	OCTAL			ALPHA	OCTAL	
ØØ	≺	60	STOP, DEL.***	40	≠	57**	BACK SPACE
01	≠	57**	TAB	41			
02	C_R	75**	ILLEGAL	42			
03	C_R	75**	ILLEGAL	43			
04	SPACE	15	SPACE	44			
05	C_R	75**	ILLEGAL	45			
06	≠	57**	PRT. RGSTR.	46			
07	C_R	75**	ILLEGAL	47			
10	"	" "	"	5Ø			
11	"	" "	"	51			
12	"	" "	"	52			
13	"	" "	"	53			
14	≠	57**	1st LINE	54			
15	C_R	75**	ILLEGAL	55			
16	≠	57**	PUNCH ON	56			
17	C_R	75**	ILLEGAL	57			
20	C_R	75**	"	60			
21		76	LOWER CASE	61			
22	C_R	75**	ILLEGAL	62			
23	"	"	"	63			
24	"	"	"	64			
25	"	"	"	65			
26	"	"	"	66			
27	"	"	"	67			
30	"	"	"	7Ø			
31	"	"	"	71			
32	"	"	"	72			
33	"	"	"	73			
34	"	"	"	74			
35	"	"	"	75			
36	"	"	"	76			
37	"	"	"	77			

HONEYWELL
ELECTRONIC
DATA
PROCESSING
WELLESLEY HILLS,
MASSACHUSETTS 02181