MONROBOT XI

EDGE CARD READER AND PUNCH

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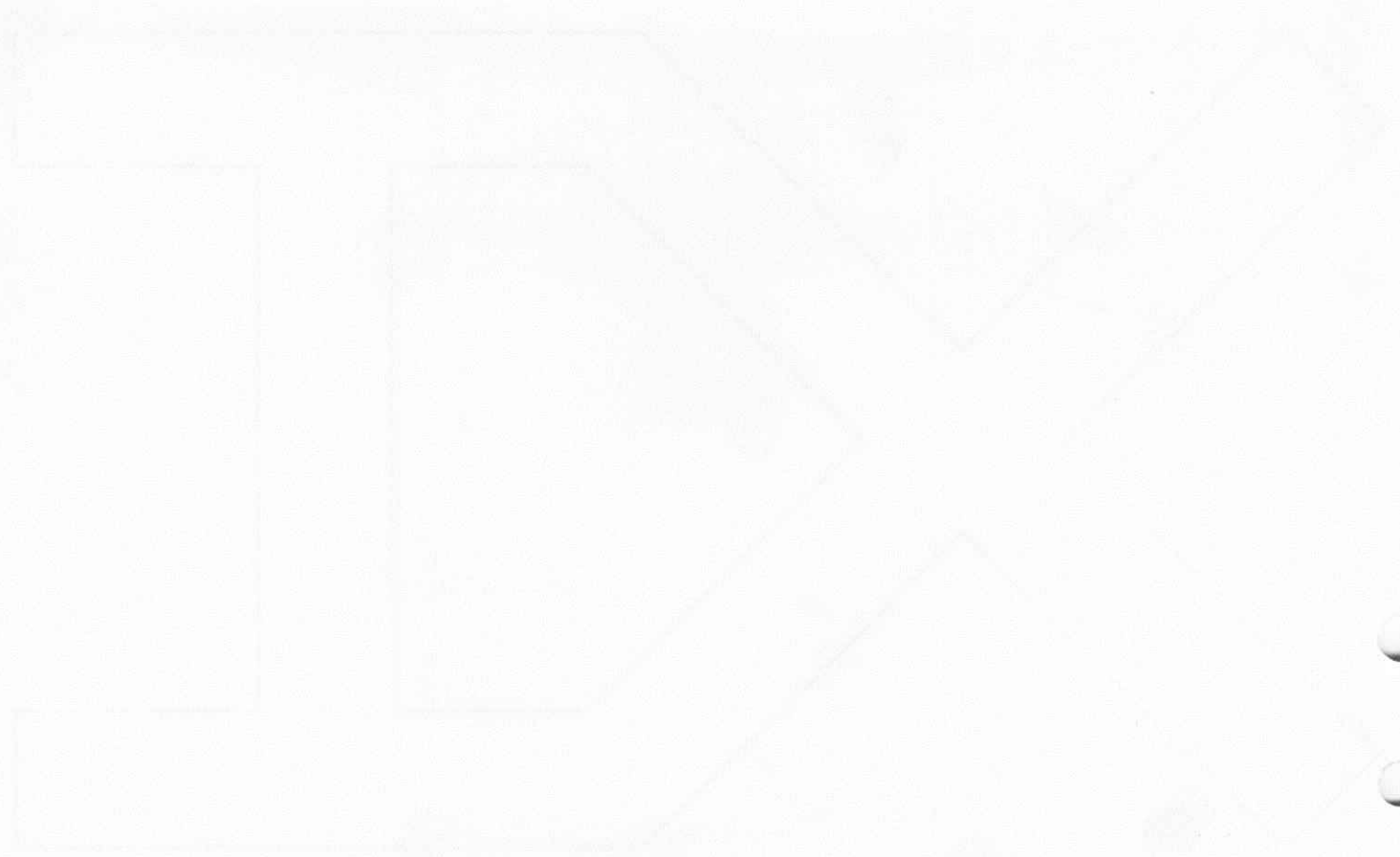
EDGE CARD DEVICES

An edge card reader and punch can be employed as input/output devices to the Monrobot XI. These devices can be supplied to accept edge punched cards only or to utilize eight and/or five channel tape as well.

EDGE CARD READER

A flat guide plate serves to position the edge card or punched tape. The plate must be raised and the edge card or tape inserted so that the read pins will align themselves to the punching in the card or tape. When the guide plate is raised the computer will receive a busy signal and reading from the device will not be permitted.

When the guide plate is lowered reading of the edge card or punched tape will be permitted. The guide plate must be raised after reading to release the edge card or tape from the device. The reader does not have a "no tape" switch. If there is no tape or card in the reader and the plate is down the computer will accept input from the device (sexadecimal XX).

The edge card reader can be mounted in a console drawer of the computer and is then furnished with a tape supply pan and rewind reel. If desired it may also be placed on top of the computer console with other provisions made for the handling of punched tape.

EDGE CARD PUNCH

If punched tape is used the tape gate is opened and tape is inserted in the normal manner. If edge cards are to be punched the gate is opened and cards are inserted with the locating pin in the hole of the first card.

The punch is equipped with two switches, "Tape Feed" and "Selector." The "Selector" switch must be up when using edge cards and down when using paper tape.

When paper tape is selected the "Tape Feed" switch will produce 7 channel tape feed as long as the switch is held in the raised position.

When edge cards are selected raising the "Tape Feed" switch momentarily will cause the punch to advance the cards to the round locator hole in the next card. The last card punched may then be removed.

Card advance on the edge card punch may also be under computer control. The special sexadecimal output code OT when sent to the edge card punch will cause punching in the 8, 2, and 1 bit positions (sexadecimal T) followed by card advance to the locator hole in the next card. This may be done by the control register output command S50T (device #2 assumed) or by output of the T code from FA 5.

The first card in each group or "train" of cards should have the leading edge trimmed after punching to allow proper insertion in the edge card reader. The trimmer is a standard accessory furnished by the edge card manufacturer.

The edge card punch may be mounted in a drawer if the computer console or may be placed on the console.

PROGRAM FOR PREPARATION AND VERIFICATION OF
EDGE PUNCHED CARDS

I. **PURPOSE**

This program will punch edge-punch cards for any alpha-numeric data entered from the typewriter.

When punching has been completed the data may be verified by printout.

The edge card punch program allows:

    (1)   Voiding a card at any time.

    (2)   Automatic positioning of a new card when the end code or VOID code has been punched.

    (3)   Operator interruption of the punching process to allow <u>non-numeric</u> data to be typed but not punched.

    (4)   Insertion of identification codes.

The verifying program :

    (1)   Prints the contents of the punched cards.

    (2)   Automatically positions the next card in the reader when an end code or VOID code is read, but allows the operator to "form up" the paper when a VOID occurs.

II. **OPERATING INSTRUCTIONS**

    1.   The edge card reader and punch must be connected to device #2.

    2.   Turn all switches OFF.

    3.   Press RESET, type 37X03100.

    4.   Press LOAD and START.   The program will be read into the computer.

    5.   Place form in proper position in the typewriter, set margin and tab stops.   Place blank edge cards on the punch.

6. Turn ON Switch #1 and leave it on.

Four feed holes and a Start Code 80 will be punched and RDY will be typed.

7. Type the alpha-numeric data which is to be punched.

8. When an identification code is to be punched, touch BACKSPACE. An asterisk will be printed but not punched, enter any digit 2-8. Another asterisk will be printed but not punched. Continue from Step 7.

9. When non-numeric data is to be typed but not punched, touch BACK-SPACE. An asterisk will be printed but not punched, type any non-numeric data which will not be punched ending with any digit 2-8. Another asterisk will be printed but not punched. Continue from Step 7.

10. When a VOID is desired, touch BACKSPACE, an asterisk will be printed, enter the digit 9. VOID will be printed and punched and an asterisk will be printed. The VOID code automatically positions a new card in the punch. When RDY has been printed, continue from Step 7.

11. When all data for a given entry has been made touch BACKSPACE. An asterisk will be printed. Enter the digit 1. Another asterisk will be printed.

This end code will automatically position a new card in the punch. When RDY has been printed, continue with Step 7.

12. If a parity error occurs during the punch routine, the typewriter will SPACE and BACKSPACE and a "P" will type. Re-enter the character that caused the parity error and continue.

13. While the last card is being punched turn OFF Switch #1.

14. After the end code for the last card has been entered the computer will be waiting for a switch to be turned ON. This allows the operator to place the punched cards in the reader for verification or to place another "train" of cards in the punch.

15. (a) If the punching operation is to continue turn ON Switch #1 and leave it ON. When RDY has been printed, continue with Step 7.

    (b) If verification is desired place cards in the reader and turn ON Switch #2 and leave it ON.

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16. If a VOID card is read, the word VOID will be printed and the computer will HALT. This allows the operator to "form up" the paper. Press START and the verify operation will continue.

17. If a parity error occurs during the verify routines, the device 1 input and parity lights will be lit. Lift the plate on the reader, move the card back one space to the left, lower the plate and touch the SPACE BAR on the typewriter. The character which caused the error will then be re-read.

III. NOTES FOR PUNCH ROUTINE

1. The first card of every "train" will have four feed holes and a start code 80 (carriage return) punched automatically.

2. When the BACKSPACE is touched, the computer will output a space and an asterisk to the typewriter and will ignore all following non-numeric entries. When a numeric entry other than 1 or 9 is made, the computer will output another asterisk to the typewriter and will punch a code which is 80 plus the entered digit. (For example, if a 5 were entered, a sexadecimal 85 would be punched.) All data following the entry of the code will be punched.

    The purpose of this is to allow the programmer a range of codes which he may utilize in some other operation.

3. Entry of a 9 in (2) above will VOID the card. (It should be noted that although only the particular card is voided, the entire "train" must be re-punched.) Entry of the 9 will cause the computer to output VOID to the punch and a sexadecimal 89 followed by four feed holes and positions a new card in the punch.

4. Entry of a 1 in (2) above causes the computer to output a sexadecimal 89 followed by four feed holes and positions a new card in the punch.

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PROGRAM

PUNCH AND VERIFY EDGE CARDS

PAGE	DATE	PROGRAMMER
100		

REGISTER		CONTENTS		NOTES
100	A	U401		Test Switch 1
	B	7104		Jump to prepare edge punch cards
101	A	U402		Test Switch 2
	B	714S		Jump to verify edge punch cards
102	A	U404		Test Switch 3
	B	7169		Jump to print labels
103	A	3100		Loop until a switch is set.
	B	0000		
104	A	V127	100	Load a 9
	B	T004		Save
105	A	V128		Load 1V backspace
	B	T003		Save
106	A	V129		Load 80 carriage return
	B	T000		Save
107	A	S57X		Punch feed holes
	B	S57X		
108	A	S57X		
	B	312S		
109	A	S329	12 T	Print R
	B	S334		D
10S	A	S358		Y
	B	S780		Carriage return punch & type
10T	A	2200	126	Input character
	B	T005	115	Store for output
10U	A	7124		Test parity
	B	W003		Subtract backspace
10V	A	610X		Backspace entered
	B	S47X		Punch character
10W	A	310T		Loop to input
	B	0000		
10X	A	S340		Space
	B	S370		Asterisk

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PAGE	DATE	PROGRAMMER
110		

REGISTER		CONTENTS		NOTES
110	A	2200		Input a character
	B	T005		Store
111	A	6110		Loop if space entered
	B	W004		Subtract 9
112	A	6114		9 entered Jump void return
	B	7118		Digit 1-8 entered
113	A	3110		Alpha character entered - loop
	B	0000		
114	A	S715	112	Print and punch V
	B	S726		O
115	A	S779		I
	B	S734		D
116	A	S100		No operation
	B	351U		Jump mark to output end code
117	A	3120	11W	Jump to output feed code
	B	0000	119	
118	A	351U	112	Jump mark to output end code
	B	W11X		
119	A	6117		Ø=End code entered
	B	S370		Asterisk
11S	A	310T		Jump to punch
	B	0000		
11T	A	0000		Constant
	B	0007		
11U	A	V005	116	Load digit
	B	X000	118	Add 80
11V	A	T005		Store for output
	B	S47X		Punch code
11W	A	3002		Exit
	B	0000		
11X	A	0000	(118)	Constant: carriage return plus 1
	B	0081		

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PAGE	DATE	PROGRAMMER
120		

REGISTER		CONTENTS	NOTES	
120	A	S57X	117	Feed holes
	B	S57X		
121	A	S57X		
	B	S57X		
122	A	S50T		Card Eject
	B	S370		Type Asterisk
123	A	S380		Carriage return
	B	3100		Loop to test Switches
124	A	S340	10U	Space Parity
	B	S35V		Backspace
125	A	S340		Space
	B	S35V		Backspace
126	A	S367		" P "
	B	310T		
127	A	0000	(104)	Constant
	B	0009		
128	A	0000	(105)	Constant: backspace
	B	001V		
129	A	0000	(106)	Constant: carriage return
	B	0080		
12S	A	S57X	108	Feed hole
	B	S380		Carriage return
12T	A	3109		Jump to punch
	B	0000		
12U	A	0000		Constant: carriage return plus 2
	B	0082		
12V	A	0000		Constant
	B	0002		
12W	A			
	B			
12X	A			
	B			

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PAGE	DATE	PROGRAMMER
130		

REGISTER		CONTENTS		NOTES
130	A	V147	14S	Load 80
	B	T000		Store
131	A	V148		Load 81
	B	T004		Store
132	A	2400	13X	Read 1 character
	B	713X		Test parity
133	A	W000		Subtract carriage return
	B	6135		Ø = Start code entered
134	A	3132		Loop
	B	0000		
135	A	2400	133	Read 1 character
	B	7140		Test parity
136	A	T005		Store for output
	B	W004		Subtract end code 81
137	A	713T		Legal character
	B	613U		Ø - End code entered
138	A	X149		Add 1 to derive code digit
	B	314T		Loop to input
139	A	S370	14U	Asterisk
	B	S27X		Digit
13S	A	S370		Asterisk
	B	3135		
13T	A	S27X	117	Output character
	B	3135		Loop to input
13U	A	S370	137	Asterisk
	B	S301		"1"
13V	A	S370		Asterisk
	B	S380		Carriage return
13W	A	3100		Jump to test switches
	B	0000		
13X	A	3541		Jump mark to parity
	B	3132		Jump to read

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140		

REGISTER		CONTENTS		NOTES
140	A	3541	135	
	B	3135		
141	A	W146		Subtract 8000 0000 Parity
	B	6132		$\emptyset$ = Pin hole
142	A	220X		Halt on parity - input space
	B	3143		
143	A	S35V		Output backspace
	B	3002		Exit
144	A	T004	16U	Store 1
	B	315W		
145	A	315W		
	B	0000		
146	A	8000	(141)	Constant
	B	0000		
147	A	0000	(130)	Constant
	B	0080	(16T)	
148	A	0000	(131)	Constant
	B	0081	(169)	
149	A	0000	(138)	Constant
	B	0001		
14S	A	S380	101	Carriage return
	B	3130		Jump to start
14T	A	T005	138	Store for output
	B	W14X		Test for void
14U	A	614V		$\emptyset$ = Void
	B	3139		Jump to output code number
14V	A	S380	14U	Carriage return
	B	000X		Halt
14W	A	3100		Jump to test switches
	B	0000		
14X	A	0000	(14T)	
	B	0009		

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PAGE	DATE	PROGRAMMER
150		

REGISTER		CONTENTS		NOTES
150	A	2400		Read character
	B	7162		Test parity
151	A	T005		Store for output
	B	W000		Subtract 81 end code
152	A	7154		Legal character
	B	W004		Subtract 2
153	A	615T		$\emptyset$ = Carriage return
	B	3167		
154	A	V005	152	Load character
	B	W001		Subtract tab
155	A	6157		$\emptyset$ Tab entered
	B	S27X		Output character
156	A	3150		Loop to input
	B	0000		
157	A	S380	155	Carriage return
	B	3158		No operation
158	A	2400		Input character
	B	7163		Test parity
159	A	W001		Subtract 1W tab
	B	6158		Loop if tab
15S	A	3150		Jump to input
	B	0000		
15T	A	2400	153	Read character
	B	7164		Test parity
15U	A	W000		Subtract 81 end code
	B	6100		Jump to test switches
15V	A	315T		Loop
	B	0000		
15W	A	2400	145	Read character
	B	7161		Test parity
15X	A	W003		Subtract 80 carriage return
	B	6150		$\emptyset$ = carriage return start code

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PAGE	DATE	PROGRAMMER
160		

REGISTER		CONTENTS		NOTES
160	A	315W		Loop to read
	B	0000		
161	A	3565	15W	Jump mark to parity return
	B	315W		Return to main line
162	A	3565	151	Jump mark to parity return
	B	3150		Return to main line
163	A	3565	158	Jump mark to parity return
	B	3158		Return to main line
164	A	3165		
	B	315T		
165	A	W146		Subtract 8000 0000 Parity return
	B	615W		Ø = Pin hole - Jump to read
166	A	220X		Input space if parity error
	B	3143		
167	A	W11T	153	Subtract 7
	B	316V		
168	A	0000	(16S)	
	B	001W		
169	A	V148	102	Load 81
	B	T000		Store
16S	A	V168		Load 1W tab
	B	T001		Store
16T	A	V147		Load 80 carriage return
	B	T003		Store
16U	A	V149		Load 1
	B	3144		
16V	A	616W	167	Ø = Code 89 vocal
	B	3150		
16W	A	S380		Carriage return
	B	000X		Halt
16X	A	3100		Jump to test switches
	B	0000		

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