FRIDEN FLEXOWRITER® SFD

Systems Flexowriter Double Case

TECHNICAL MANUAL

Friden
EDGE PUNCHED CARD
Friden, Inc.
San Leandro, Calif.

ABCDEFGHIJ
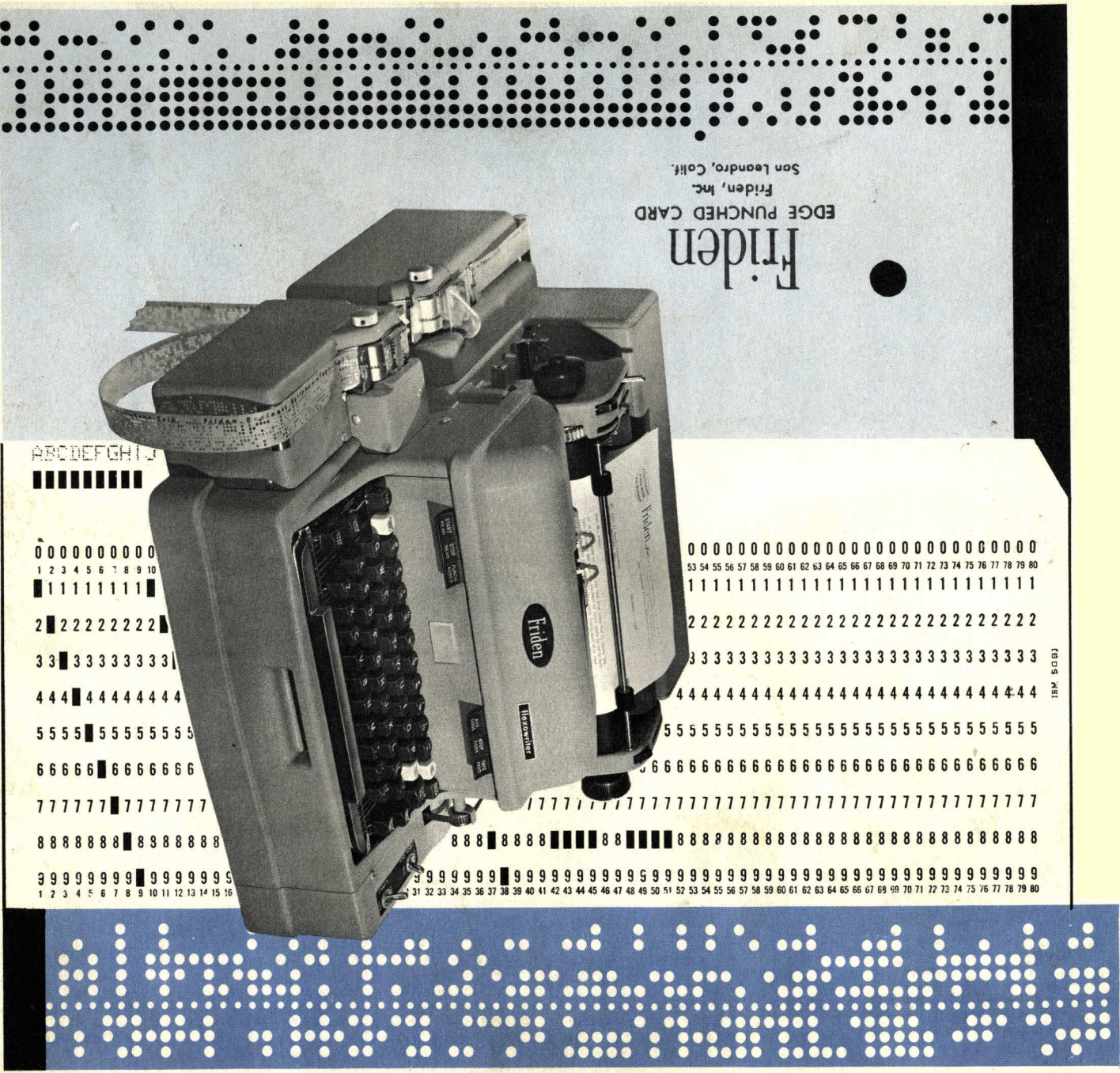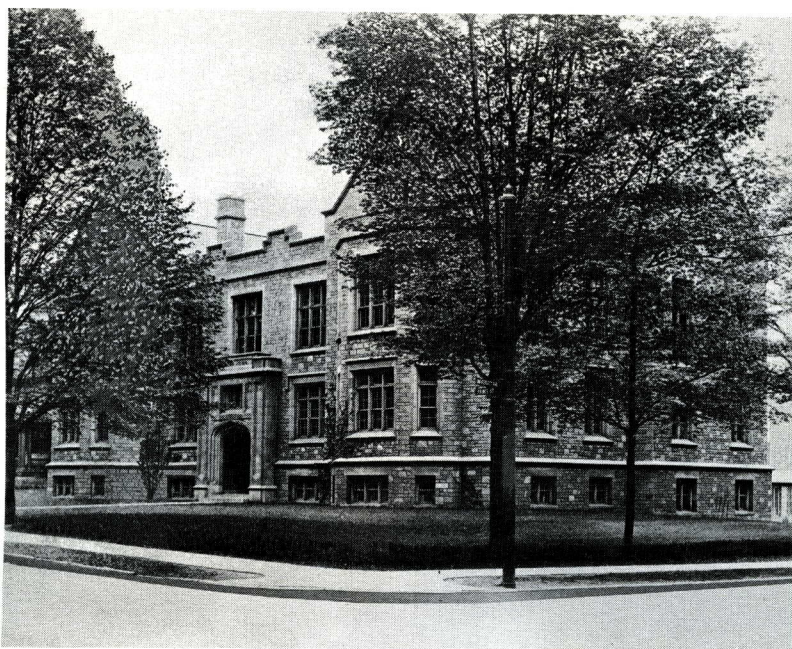
FLASHBACK......

In April of 1951, the first Flexowriter, Model FL (Flexowriter Letterwriter) was released for sale to the commercial market. This model Flexowriter, automatic writing machine, was based on 6-channel tape, employing 64 code combinations. Basic repetitive automatic letterwriting was its original application; however, Users and Salesmen began to extend the applications of this model to simple systems applications such as: inventory control, multiple listing, updating price lists and parts lists, policy writing, and purchase order preparation.

To meet the need for a standard machine with greater flexibility, capable of accepting cable-connected auxiliary reading units for systems applications, the Friden Model SFD (Systems Flexowriter Double Case) was developed. This machine, based on 8-channel Systems Code, employing 256 code combinations, is further described and explained in this release.
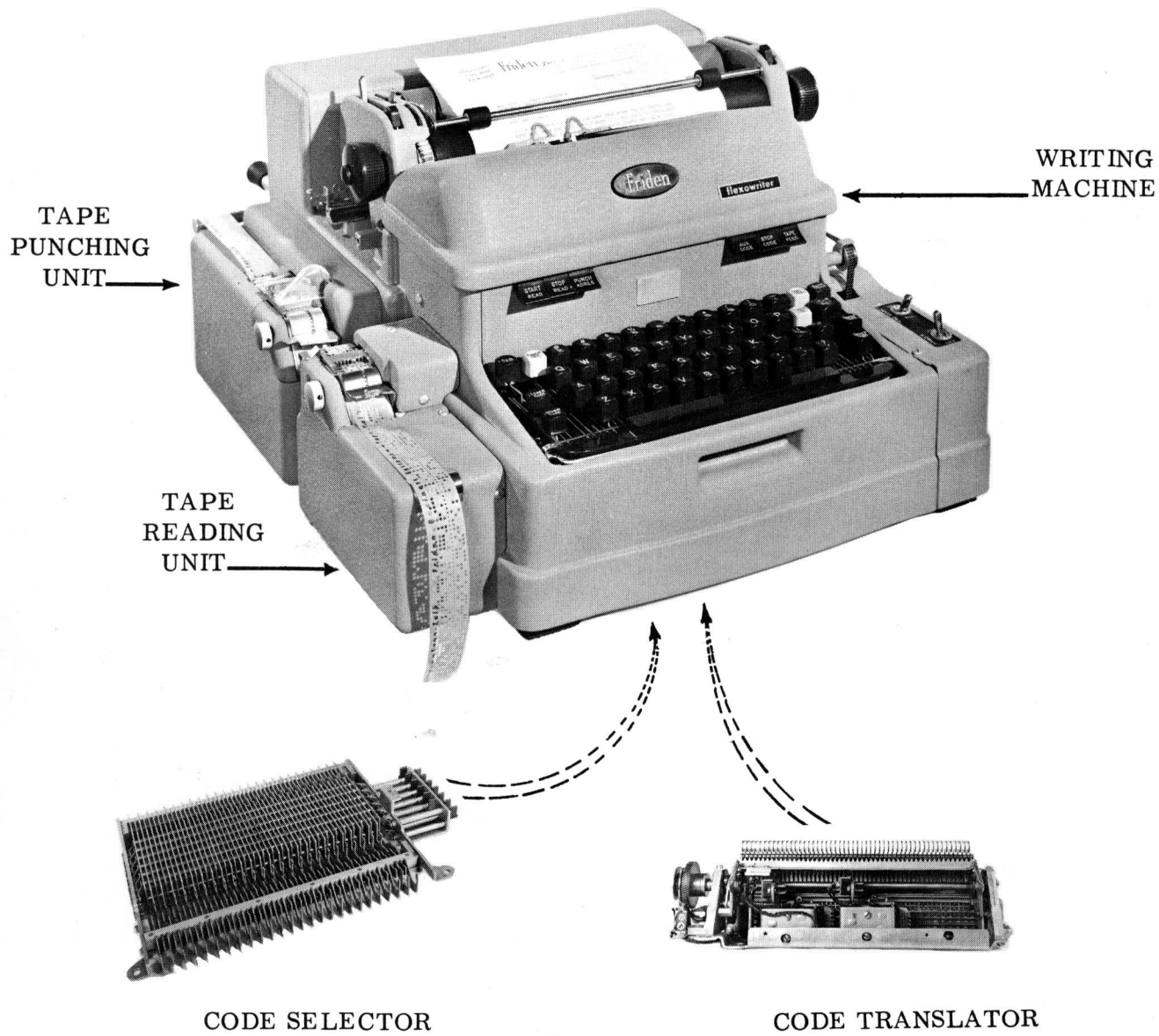

Composition for this manual was set on the Friden Justowriter, tape-operated composing machine, a product of Friden, Inc.

CONTENTS

TAPE
PUNCHING
UNIT

WRITING
MACHINE

TAPE
READING
UNIT

CODE SELECTOR

CODE TRANSLATOR

The Friden Model SFD (Systems Flexowriter Double Case) is a heavy duty automatic writing machine capable of writing a document automatically from coded 8-channel Punched Paper Tape, Edge-Punched Cards, or Tabulating Cards. For the purposes of introduction, tape will be used as a basis. Edge-Punched Card and Tabulating Card Units will be described later on in this release. This punched tape can be "read" from its own Reading Unit to write a document, or any one of several auxiliary cable-connected Reading Units, including the Friden Selectadata* Models. It is further capable of punching this tape with codes either manually, or automatically as a by-product of the reading operation.
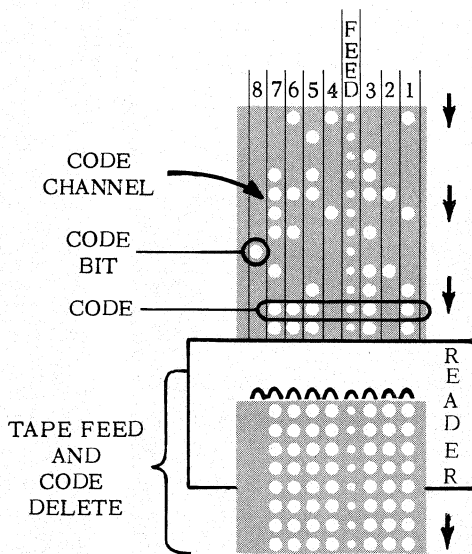
The 8-Channel Systems Codes punched tape prepared on the Model SFD, can be used to operate other Flexowriters, IBM 046 and 047 and Remington Rand Tape-to-Card Convertors, and may be transmitted over standard telephone and telegraph lines from Models 7, 8A, and 8C Teledata* Transmitter-Receivers.

The versatility of the Model SFD makes it adaptable to business systems where selective punching of only one by-product tape is required, as well as all repetitive writing applications.

COMPONENTS

The Model SFD is made up of five components which can be combined to form several varieties of this model. The five components are: The Reading Unit, the Code Translator, the Writing Machine, the Code Selector, and the Punching Unit.

> The Reading Unit: The Reading Unit "senses" codes in the tape and transforms each code into a series of electrical impulses which are sent to the Code Translator.

> The Code Translator: The Code Translator converts these electrical impulses into a mechanical action, causing the keylever on the Writing Machine corresponding to that code, to be operated.

> The Writing Machine: The Writing Machine contains the power supply, the keylevers, and all necessary equipment to allow the Flexowriter to write a document.

> The Code Selector: When a keylever is operated manually or by action of the Code Translator, the Code Selector converts this mechanical action into a series of electrical impulses, corresponding to the code for that keylever, and sends them to the Punching Unit.

*Copywrited Trade Name

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The Punching Unit: If the Punching Unit is on at the time the electrical impulses are received from the Code Selector, a code will be perforated into the tape by the Punching Unit.
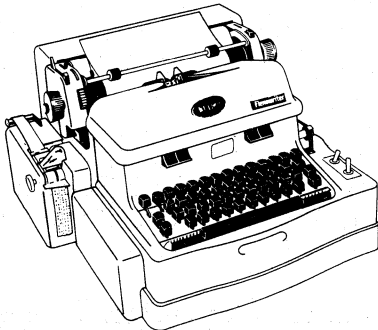
COMBINATIONS AVAILABLE

RECORDER-REPRODUCER:

The Recorder-Reproducer contains all of the five components listed above. This combination allows the operator to punch a tape while manually writing a document; to write a document automatically from a tape previously punched; and to punch a tape while automatically writing a document. From now on, all further discussion of the Model SFD will refer to the Recorder-Reproducer unless otherwise indicated.
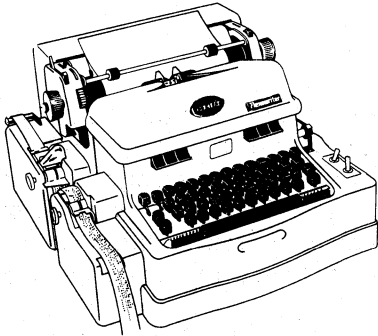
THE MODEL SFD RECORDER:

The Model SFD Recorder consists of the Writing Machine, Code Selector, and Punching Unit. When a keylever is depressed, the Writing Machine writes the character or performs the function indicated on that keylever. Simultaneously, a code is punched into the tape. There is a code assigned to every keylever and function on the Model SFD. Thus, one writing operation produces both a document and a by-product punched tape containing all or part of the information in that document.

THE MODEL SFD REPRODUCER:

The Model SFD Reproducer consists of the Writing Machine, Code Translator, and Reading Unit. When the Reading Unit "senses" a code combination in the punched tape, the Code Translator selects and operates the corresponding keylever, and the Writing Machine writes the character or performs the function indicated on that keylever. Therefore, a punched tape produced on the Model SFD Recorder can be used in the Reproducer to automatically reproduce a document without further operator effort. Since the tape is re-useable, many copies of a document can be produced from one writing operation.

2
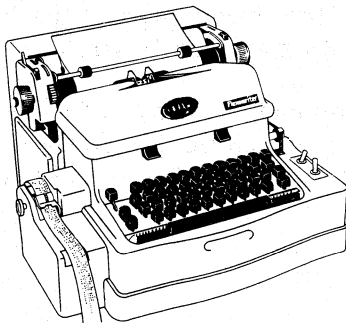
GENERAL:

      WEIGHT: 85 pounds (approx.)
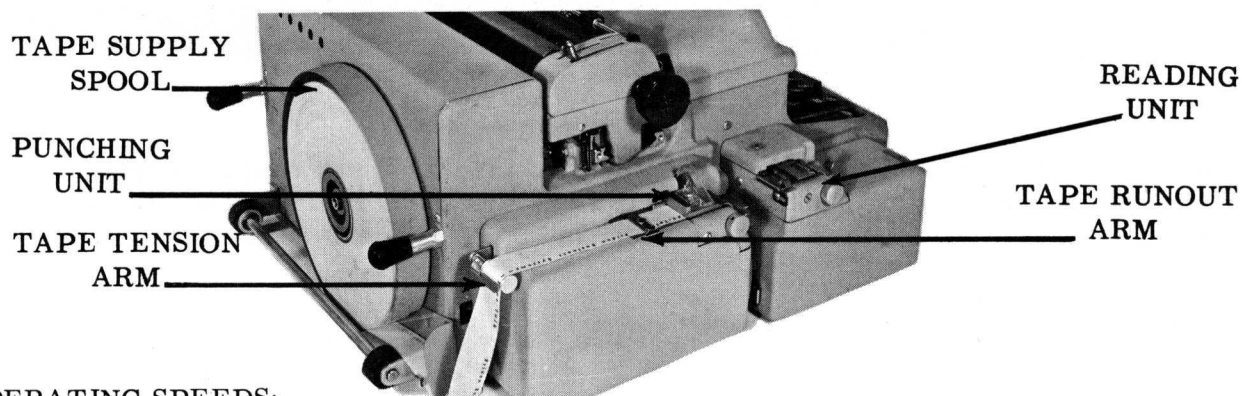   SHIPPING WEIGHT: 135 pounds (approx.)
      SIZE: Width 17 1/2 inches, Height 10 inches, Length 20 inches
      COLOR: Friden Tan
      ELECTRICAL POWER: 110-115 Volt 60 Cycle AC

OPERATING SPEEDS:

The PUNCHING UNIT can be operated at a sustained speed of 1000 codes punched per minute (approximately 200 five-letter words), and will handle any two keylever operations occuring at the rate of 1,200 per minute. This is well beyond the speed which any operator can operate the keylevers of any writing machine.

The READING UNIT operates at the rate of 571 codes read per minute (approximately 100 five-letter words), which is faster than any operator can manually operate any writing machine for a sustained period.

The above figures indicate the high reliability of the Flexowriter Punching Unit, that it will operate faster than codes can manually or automatically be sent to it for punching.

TAPE SUPPLY SPOOL:

The TAPE SUPPLY SPOOL holds one thousand-foot roll of tape. Each roll can contain 120,000 codes (10 codes per inch).

TAPE TENSION ARM:

The TAPE TENSION ARM acts as a safeguard against tape feeding failure. If the tape should fail to feed properly from the Tape Supply Spool, the Tape Tension Arm will cause the keyboard to lock against further operation until the difficulty has been corrected.

TAPE RUNOUT ARM:

The TAPE RUNOUT ARM is held in position by the tape in the Punching Unit. It guards against the Tape Supply Spool running out of tape without the operator's knowledge. If this should happen, the Tape Runout Arm will cause the keyboard to become locked against further operation until more tape is inserted.

KEYBOARD:

The Model SFD is equipped with four rows of keylevers which are slightly stepped for ease of operation. There are 41 printing keylevers, 10 functional keylevers and the space bar. Only 2 1/2 ounces of pressure and a movement of 1/4 inches is necessary to operate any keylever.

KEYLEVER INTERLOCK:

The keyboard is interlocked against depression of more than one key at a time. This feature prevents collision of type bars and mispunching of codes in the tape.

ACCURACY CHECK:

A special electrical circuit is provided which causes the keyboard to become locked against further operation in the event it is operated in a manner that might cause inaccurate punching.

CASE SHIFT:

The type basket shifts to select between upper and lower case characters (capital and small letters). Duplicate shift keys are provided on each side of the keyboard. An operation of each shift keylever is required for shifting in either direction.

CARRIAGE RETURN:

Operation of the CAR RET keylever causes the carriage to return to the left margin and moves the platen up to the next writing line.

TABULATION:

Operation of the TAB keylever causes the carriage to move to the left until a Tab Stop is reached. These Tab Stops are manually placed in a rack located behind the platen and may be in increments of two letter spaces. This feature is used to move the carriage across areas where spacing is not practical.

BACK SPACE:

Operation of the Back Space keylever moves the carriage one letter space in reverse.

4

LINE
SPACE
LEVER——

TAB STOP——

RATCHET——

——TAB STOP RACK

——CARRIAGE

——PLATEN
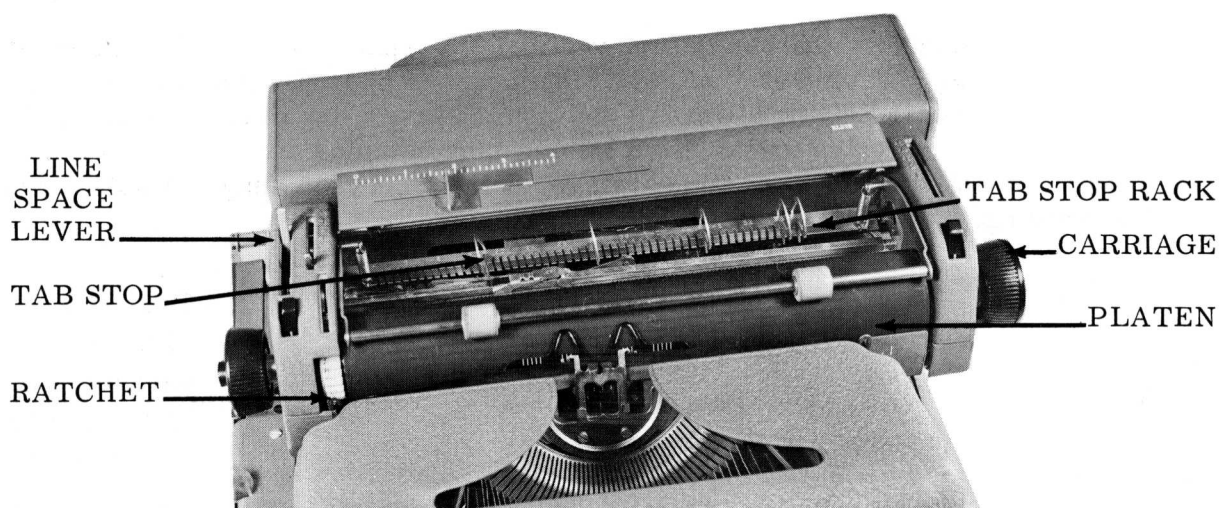
CARRIAGE LENGTHS:

A 12-inch carriage is standard. 16 and 20-inch carriage lengths are available at extra cost. Below is a listing of the maximum sheet sizes and maximum writing lines for each carriage length available:

Carriage Length	Maximum Sheet Size	Maximum Writing Line
12"	11"	9 1/2"
16"	15"	13 1/2"
20"	19"	17 1/2"

PLATENS AVAILABLE:

Platens are supplied in various sizes and grades of hardness for different types of work. The customer is requested to send in copies of the forms to be used on the Model SFD for factory alignment of the type slugs and platen selection. The following platen hardness and sizes are available:

No. 1.   For general typewriting applications, stencil writing, etc.

No. 2.   For general typewriting applications, but slightly harder than No. 1.

No. 3.   Hard platen of same diameter as No. 1 for small number of carbon copies requiring sharp impression. (Normally unsatisfactory for use with less than four or five carbon copies.)

No. 4.   Hard platen, one thirty-second of an inch undersize for large number of carbon copies.

No. 7.   Hard platen, one-sixteenth of an inch undersize for maximum number of carbon copies.

No. 8.   For typewriter applications requiring a platen harder than No. 2 but not as hard as No. 3.

No. 9.   For stencil writing exclusively, flexlastic platens will be furnished as standard equipment at no additional charge. This platen is not recommended for use on correspondence where more than two carbon copies are required.

PLATEN RATCHETS:

The Platen Ratchet Controls the number of vertical line spaces to an inch. The choice of a ratchet is governed by the size of type, and the amount of material required to the page. A 33 tooth ratchet is standard giving 6 lines to the inch; however, any of the ratchets listed below may be had at no extra cost. Some line spacing samples are given below. The Line Spacing Lever mounted on top of the carriage, selects between single, double, and triple vertical line spacing.

This is a sample
of a 33 tooth
ratchet, giving
six lines to
the inch.

This is a sample
of double spacing.

This is a sample

of triple spacing.

This is a sample of a
44 tooth rachet, giving
eight lines to the inch.

This

is double spacing.

This is

a sample of

triple spacing

This is a sample
of a 55 tooth
ratchet, giving
five lines to
the inch.

This is a sample

of double spacing.

This is a sample

of triple spacing.

To get the number of lines in one inch of form, count the number of lines in ten inches of form, move the decimal point one place to the left, and find the nearest number on the chart.

PLATEN RATCHET PART NUMBER	NO. OF TEETH	1 TOOTH	2 TEETH	3 TEETH	4 TEETH	5 TEETH
1042527	27	4.91	2.46	1.64		
1042529	29	5.28	2.64	1.76		
1042533	33	6.00	3.00	2.00		
1042536	36	6.55	3.27	2.18		
1042538	38	6.91	3.46	2.30		
1042539	39	7.09	3.55	2.37		
1042540	40	7.28	3.64	2.43		
1042544	44		4.00	2.66	2.00	
1042544		8.00	4.00	2.66		
1042548	48		4.37	2.91		1.75
1042549	49		4.46	2.97		1.78
1042550	50		4.55	3.03	2.27	
1042551	51		4.64	3.09	2.32	
1042552	52		4.73	3.15	2.37	
1042555	55		5.00	3.33	2.50	
1042557	57		5.18	3.46	2.59	
1042558	58		5.28	3.52	2.64	
1042559	59		5.37	3.58	2.68	
1042562	62		5.64	3.76	2.82	
1042566	66		6.00	4.00	3.00	

TYPE STYLES AVAILABLE:

Elite and Pica type styles are standard; however, the Model SFD may be equipped with any monospacing (all letter spaces equal in width) type style. Elite type gives 12 characters to the inch while Pica type gives 10 characters to the inch. Refer to the "Type Available Catalogue" for alternate type styles.

ELITE: 12 Characters to the horizontal inch.
The quick brown fox jumped over the lazy dogs.
1234567890 ABCDEFGHIJKLMNOPQRSTUVWXYZ @#$%'&*()_":?-/;,.

PICA: 10 Characters to the horizontal inch.
The quick brown fox jumped over the lazy dogs.
1234567890 ABCDEFGHIJKLMNOPQRSTUVWXYZ @#$%'&*()_":?-/;,.

RIBBON:

The Model SFD is equipped with a black-inked nylon ribbon for strength and long wearing qualities. This ribbon is 18 yards long and 7/8 inches wide. The Model SFD will accept any standard typewriter ribbon spool. Refer to the "Accessories and Supplies" section of this release for a listing of other ribbons available (page 31).

A manually operated switch on the right hand side of the Model SFD selects between upper and lower portions of the ribbon (black and red if desired), and Stencil cutting position.

RECORD TAPE:

A one-inch wide paper tape is used and is perforated with an eight-unit code. The code combinations for the various characters and functions are shown on the next page. The code holes are numbered 87654321 from left to right when facing the leading edge of the tape. The tape feeding hole is between the number 3 and 4 code holes and is .394 inches from the right hand edge, and is in line with the code holes. The tape comes in spools of 1000 feet in length capable of holding 120,000 codes (10 codes per inch). It is very durable and may be used hundreds of times. Folding tape for filing or mailing purposes does not injure it.
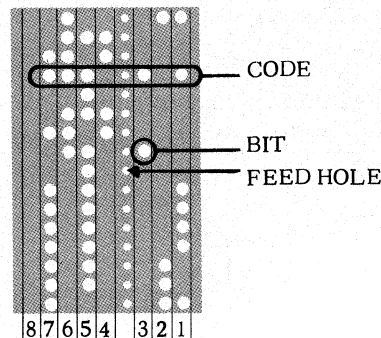

8 7 6 5 4   3 2 1

FRIDEN FLEXOWRITER

MODEL SFD - SYSTEMS FLEXOWRITER DOUBLE CASE

CARD PUNCH   8 CHANNEL   FLEXOWRITER

CARD PUNCH	8	7	6	5	4	•	3	2	1	FLEXOWRITER
0 (ZERO)			6			•				(ZERO) 0 -)
1						•			1	1 - _
2						•		2		2 - @
3				5		•		2	1	3 - #
4						•	3			4 - $
5				5		•	3		1	5 - %
6				5		•	3	2		6 - '
7						•	3	2	1	7 - &
8					4	•				8 - *
9				5	4	•			1	9 - (
A		7	6			•			1	a - A
B		7	6			•		2		b - B
C		7	6	5		•		2	1	c - C
D		7	6			•	3			d - D
E		7	6	5		•	3		1	e - E
F		7	6	5		•	3	2		f - F
G		7	6			•	3	2	1	g - G
H		7	6		4	•				h - H
I		7	6	5	4	•			1	i - I
J		7		5		•			1	j - J
K		7		5		•		2		k - K
L		7				•		2	1	l - L
M		7		5		•	3			m - M
N		7				•	3		1	n - N
O		7				•	3	2		o - O
P		7		5		•	3	2	1	p - P
Q		7		5	4	•				q - Q
R		7			4	•			1	r - R
S			6	5		•		2		s - S
T			6			•		2	1	t - T
U			6	5		•	3			u - U
V			6			•	3		1	v - V
W			6			•	3	2		w - W
X			6	5		•	3	2	1	x - X
Y			6	5	4	•				y - Y
Z			6		4	•			1	z - Z
SPACE				5		•				SPACE
–		7				•				_ - "
/			6	5		•			1	/ - ?
#					4	•		2	1	STOP
$		7		5	4	•		2	1	
,			6	5	4	•		2	1	, - ,
.		7	6		4	•		2	1	. - .
@				5	4	•	3			
%			6		4	•	3			
*		7			4	•	3			PUNCH ON
□		7	6	5	4	•	3			UPPER CASE
&		7	6	5		•				; - :
SKIP			6	5	4	•	3	2		TAB
END CARD 1					4	•	3	2		CONTROL
END CARD 2			6		4	•	3	2	1	PUNCH OFF
COR. TAB				5	4	•	3	2	1	DATA SELECTOR (AUX. 3)
ERROR		7			4	•	3	2	1	FORM FEED (AUX. L)
PI - 1				5	4	•		2		
PI - 2		7			4	•		2		
PI - 3			6		4	•		2		BACK SPACE
PI - 4			6	5	4	•	3		1	
PI - 5		7	6		4	•	3		1	
PI - 6		7		5	4	•	3		1	ADDRESS IDEN. (AUX. J)
PI - 7					4	•	3		1	: / ;
SP - 1		7	6	5	4	•				LOWER CASE
SP - 2		7	6		4	•	3	2		
CR		7		5	4	•	3	2		
TAPE FEED		7	6	5	4	•	3	2	1	TAPE FEED
END LINE	8					•				CAR. RET.
	EL	X	0	CH	8	•	4	2	1	

IBM CHANNEL NUMBERS

8-CHANNEL SYSTEMS CODE:

The 8-CHANNEL SYSTEMS CODE, illustrated on the opposite page, is used on the Model SFD for three main reasons: the coding is compatible with certain allied equipment; 256 code combinations are available; and this coding lends itself to odd-count parity checking. Each of these will be further explained in following paragraphs.
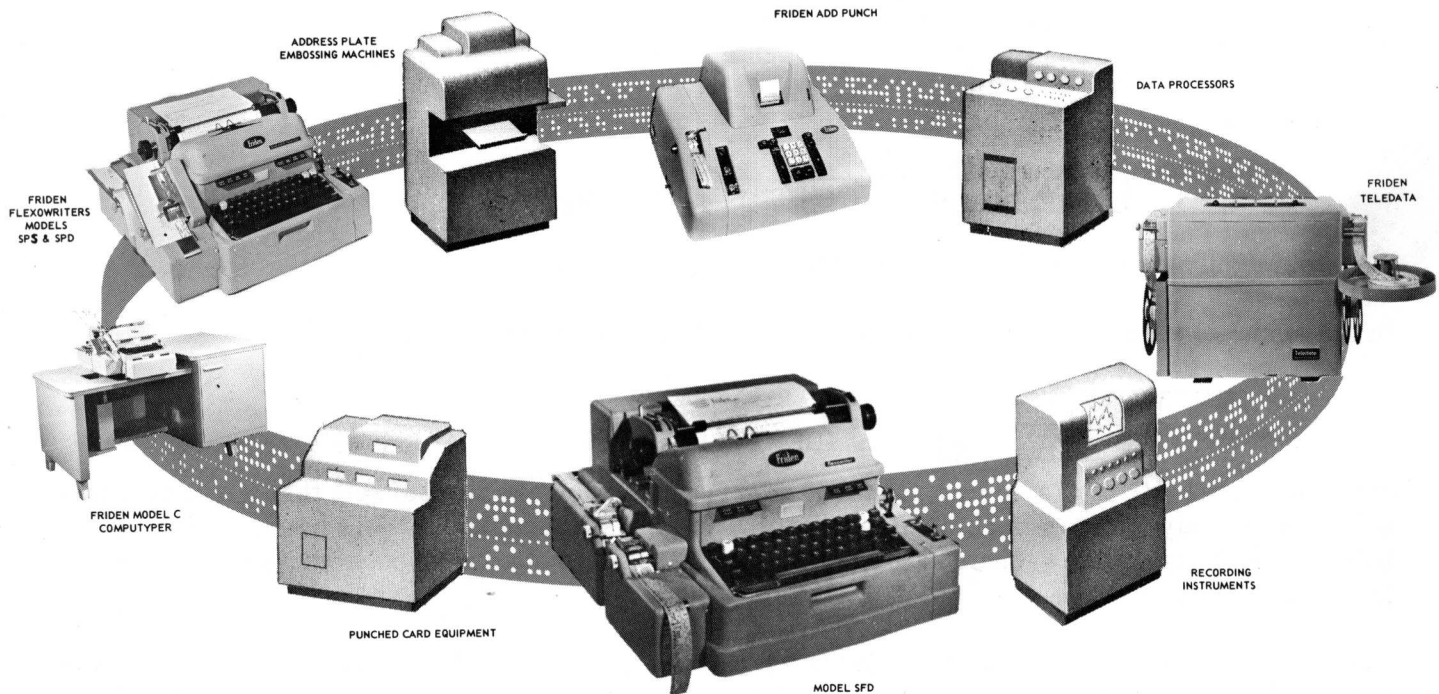

Compatible with allied equipment: In the illustration on the facing page, you will note that the right side shows the coding assigned to the Model SFD. The left side shows the equivalent assignments for the IBM 046 and 047 Tape to Card Convertors. Above the illustration of the tape codes, is the Model SFD channel assignment. Below this illustration, is the equivalent IBM channel assignment. 8-Channel tape, punched on the Model SFD can be used to produce Tabulating Cards on the IBM 046 and 047 Tape to Card Convertors. This is called a "System". A System, generally speaking, is when two or more machines, not necessarily manufactured by the same company, are related through the use of a common means of communication. In this case, 8-Channel Systems Coded Punched Paper Tape (often called "Common Language Tape") is used.

There are many machines, including some of the electronic computers, that use 8-Channel Systems Coded Punched Paper Tape. Some of them are listed below:

1. Friden Flexowriters, Models SFD, SPS, and SPD
2. IBM 046 and 047 Tape to Card Convertors
3. Remington Rand 308-58 Tape to Card Convertors
4. Friden Teledata Models 7, 8A, and 8C
5. Friden Model C Computyper

<u>256 code combinations</u>: 8-Channel Systems Code is called a "Binomial Code". That is, for every code hole position in the tape, there are two possibilities: either a hole is punched, or no hole is punched. In 8-channel tape, there are eight code hole positions (called channels) for each code. The code itself is made up of punching in any combination of these channels. The code for the letter "A", for instance, is punching in the 1,6, and 7 channels.
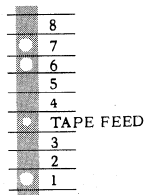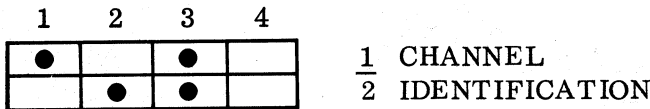
Imagine a strip of one-channel tape.:

1 CHANNEL

There are only two possible code combinations: either a hole, or no hole.

In a 2-channel tape, there are only four possible combinations:

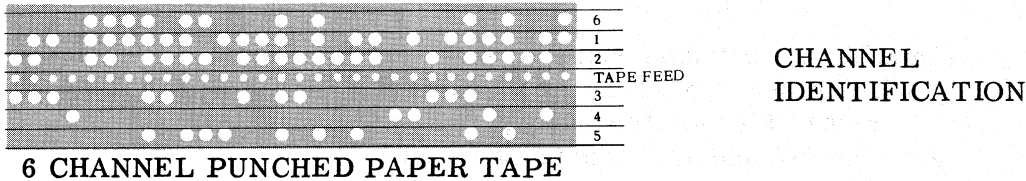<u>1</u> CHANNEL
<u>2</u> IDENTIFICATION

By using a pencil and a scrap piece of paper, you can prove to yourself that 3-channel tape would have only eight possible code combinations; 4-channel tape would have sixteen possibilities; 5-channel, 32; 6-channel, 64; 7-channel, 128; and 8-channel tape would have 256 possible code combinations.

The first commercially useable punched tape was 5-Channel Tape, giving 32 possible code combinations. Much of the communications equipment today still uses 5-channel tape.
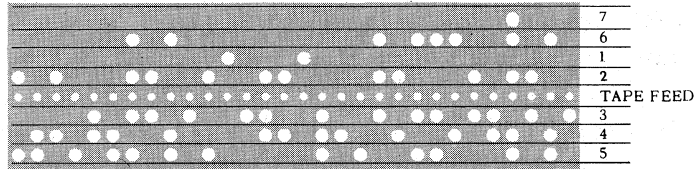
CHANNEL
IDENTIFICATION

5 CHANNEL PUNCHED PAPER TAPE
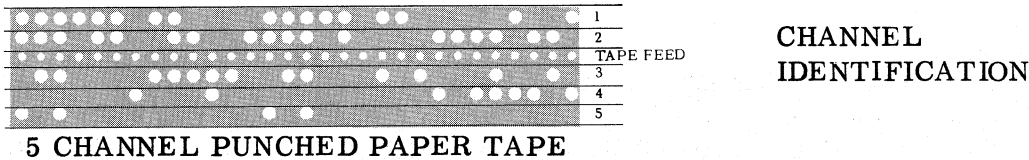
Of the 32 possible codes, 26 are used for the alphabet, and 6 codes are used for machine functions. Machines employing 5-channel coding, write capital letters only, and the type basket shifts into the Upper Case ("Figures") position to write numbers and special characters.

The Friden Model FL (Flexowriter Letterwriter), described on the cover of this release, used 6-channel tape giving 64 possible code combinations.

CHANNEL
IDENTIFICATION

6 CHANNEL PUNCHED PAPER TAPE

These extra codes allowed the Model FL to write both capital and small letters, and provided enough codes for all machine functions, with a few codes left over.

7-Channel tape, giving 128 possible code combinations, is presently used on the Friden Justowriter.
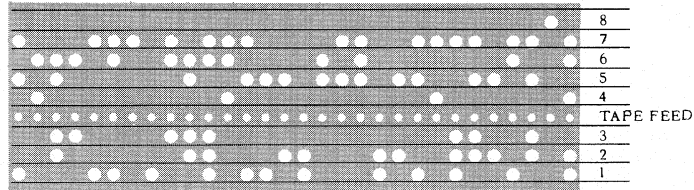

CHANNEL
IDENTIFICATION

7 CHANNEL PUNCHED PAPER TAPE

The Friden Justowriter is a tape-operated composing machine which writes a document automatically and gives justified (even right hand margin) lines. It is used, among other things to prepare page copy for offset presses.

8-Channel tape, giving 256 possible code combinations, is used on the Model SFD.

8 CHANNEL PUNCHED PAPER TAPE

Not all of these codes are used to control the Flexowriter. Of the 256 codes, 127 are "Address Codes" used to identify items of information when the Model SFD is used with the Friden Selectadata cable-connected. Some of the other codes are used to control other cable-connected Reading Units.

Odd-count Parity Check: The 8-Channel Systems Code, used on the Model SFD, employs what is known as, "odd-count Parity". As we have seen, there are 256 possible code combinations, of which 127 are Address Codes. Of the remainder, only 65 are actually used to control the Model SFD and allied equipment. Only those code combinations with an odd number of bits are used. The following code combinations would be considered "valid" codes:

1	- 1
1,2,3,	- 7
1,2,3,4,5	- DATA SELECT
1,2,3,4,5,6,7	- TAPE FEED
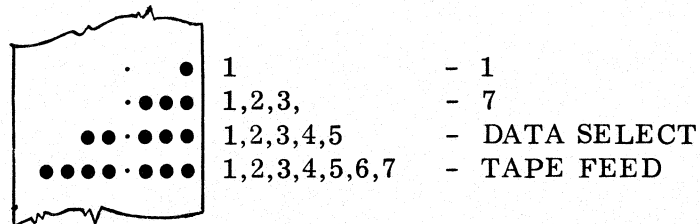
Notice all employ a total of 1,3,5 or 7 holes, all odd numbers. By the same token, the following would be invalid codes:

1,2
1,2,3,4
1,2,3,4,5,6
1,2,3,4,5,6,7,8
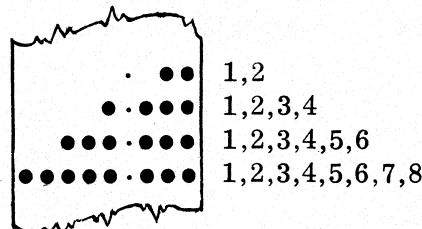
Notice all employ a total of 2,4,6 or 8 holes, all even numbers.

11

The reason for this is that certain allied equipment, especially electronic computers, demand an unusually high degree of accuracy. They usually employ a checking device called a "Parity Check" to check each code for a odd number of bits. The Punching Unit on all Flexowriters has a high degree of dependability; however, there is the possibility that a mechanical failure could cause one of the Punch Pins to fail to operate. In that case, an even number of bits would be punched. The code would then be considered "out of parity", and the Parity Check would detect it and record an error.

A Parity Check can be installed on the Model SFD if desired. (See page 18).

FLEXOWRITER MODEL SFD

Systems Flexowriter Double Case
With Tape Punch And Tape Reader
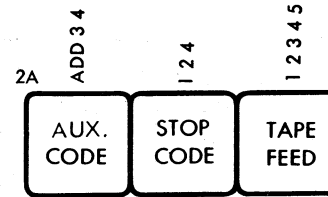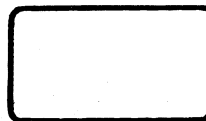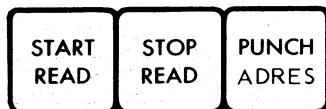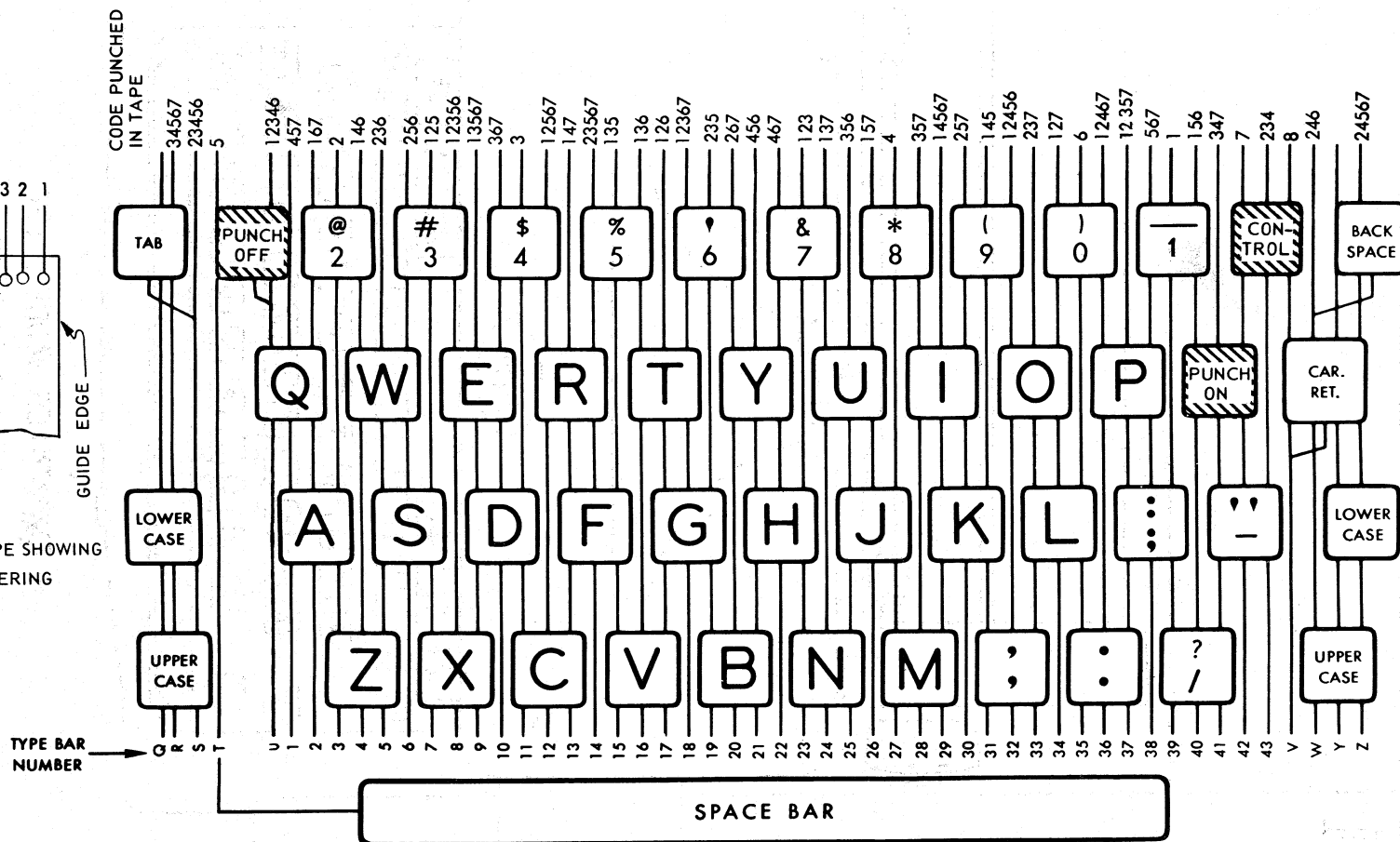(Standard Equipment)

13

STANDARD TYPE
- PICA – 1044286
- ELITE – 1044287
- PRESTIGE PICA – 1273-965
- LARGE ELITE – 1274-028
- BOOKFACE ACADEMIC – 1274-049

THIS MACHINE TO BE PAINTED TAN – 1043398
SHADED KEYBUTTONS
ARE TAN, WITH BROWN
FILLER.

POS. U, 41, & 43
DO NOT ESCAPE

PUNCH ON

START READ (S3) STOP READ (S4) PUNCH ADRES (S5) S6

AUX. CODE (S8) STOP CODE (S9) TAPE FEED (S10) S7

2A ADD 3 4 1 2 4 1 2 3 4 5 6 7

CODE PUNCHED IN TAPE

SECTION OF TAPE SHOWING
CHANNEL NUMBERING

8 7 6 5 4 FEED 3 2 1

GUIDE EDGE

14

TAB PUNCH OFF @2 #3 $4 %5 '6 &7 *8 (9)0 —1 CONTROL BACK SPACE

Q W E R T Y U I O P PUNCH ON CAR. RET.

LOWER CASE A S D F G H J K L : : : LOWER CASE

UPPER CASE Z X C V B N M : : ?/ UPPER CASE

TYPE BAR NUMBER

SPACE BAR

S2
SEL.
OFF
ALL
PUNCH
ON
POWER
OFF

S1

NO. 155R3

FLEXOWRITER # 1044284
MODEL SFD. RECORDER REPRODUCER

STANDARD FEATURES

<u>POWER ON-OFF</u> Operation of this switch from OFF to ON position turns on the power, and allows the Model SFD to be used

<u>PUNCH SELECT-OFF-ALL</u> When this switch is in the ALL position, all operations of the Model SFD will be recorded in the tape, whether these operations com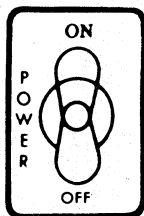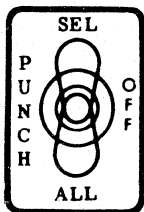e from manual keyboarding or are automatic operations from punched tape in the Reading Unit. The PUNCH ON and PUNCH OFF keylevers have no control, and punch their respective codes when operated.

When in the OFF position, the Punching Unit will not operate regardless of whether the PUNCH ON and PUNCH OFF keylevers are used.

When in the SELECT position, the Punching Unit is turned on and off by means of the PUNCH ON and PUNCH OFF keylevers, which operate only to perform their function and do not punch codes.
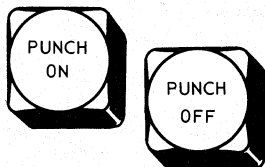
The PUNCH ON and PUNCH OFF keylevers turn the Punching Unit on and off when the Punch Control Switch is in the SELECT position. They may be controlled manually, or automatically from a punched tape in the Reading Unit.
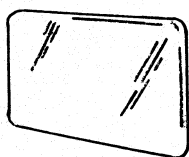
The PANEL INDICATING LIGHT is lit when the Punching Unit is on.

The TAPE FEED Panel Switch feeds tape through the Punching Unit as long as the switch is depressed. The Punching Unit must be on for this operation to occur.
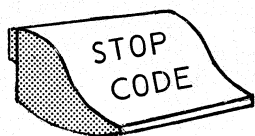
When the STOP CODE panel switch is depressed, a code is punched into the tape. When this code is read by the Reading Unit, the reading operation will stop, however; this code will not reperforate itself in the Punching Unit.

15
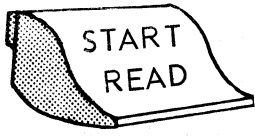
When the START READ panel switch is depressed and released, the Reading Unit will start operating. Holding this switch depressed will stop the reading action until the switch is released.

When the STOP READ panel switch is depressed, the reading action will stop.

The INPUT CONNECTOR is used to connect any one of the following cable-connected Auxiliary Reading Units or Selectadata Models to the Model SFD. When such a unit is not attached, this is covered by a mating connector to allow standard operation.

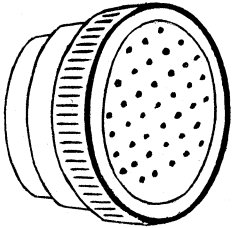| MODEL	DESCRIPTION
ATR	Auxiliary Tape only Reader
ATR-SD	Auxiliary Tape only Reader for Synchro-Duplex operation
ATR-D	Auxiliary Tape only Reader with Manual Data Selector
ATR-D-SD	Auxiliary Tape only Reader with Manual Data Selector for Synchro Duplex operation
ATCR	Auxiliary Tape or Edge Card Reader
ATCR-D	Auxiliary Tape or Edge Card Reader with Manual Data Selector
ACR	Auxiliary Tab Card Reader
ACR-D	Auxiliary Tab Card Reader with Manual Data Selector
STR	Selectadata Tape only Reader
STR-SD	Selectadata Tape only Reader for Synchro Duplex operation
STR-D	Selectadata Tape only Reader with Manual Data Selector
STR-D-SD	Selectadata Tape only Reader with Manual Data Selector for Synchro Duplex operation
STR-A	Selectadata Tape only Reader with Automatic Address Selection
STR-A-SD	Selectadata Tape only Reader with Automatic Address Selection for Synchro-Duplex operation
STR-AD	Selectadata Tape only Reader with Automatic Address Selection and Manual Data Selector
STR-AD-SD	Selectadata Tape only Reader with Automatic Address Selection and Manual Data Selector for Synchro Duplex operation
AAEO-P	Auxiliary Input Control Adding Machine

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The coding system for identification of the Auxiliary Input Units is as follows:

A	Auxiliary
S	Selectadata
T	Tape only
TC	Tape and Edge-Punched Card
C	Tabulating Card
R	Reading Unit
-SD	for Synchro-Duplex operation
-D	with Manual Data Selector
-S	with Automatic Address Selection
AAEO-P	Auxiliary Input Adding Machine

The Control keylever will punch its assigned code if the PUNCH SELECT-OFF-ALL switch is in the ALL position. When this code is read by either the Model SFD or the cable-connected Reading Unit, the reading action automatically switches to the other unit.
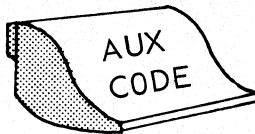
The AUXILIARY CODE panel switch is provided for the punching of auxiliary control codes. When this switch manually depressed, and any keylever is operated, the number 3 and 4 code holes will be added to the keylever's code. Depression of this switch and operation of the "L" keylever, punches a code used to control an automatic line finder carriage; operation of the "3" keylever punches a code for controlling a Manual Data Selector; and operation of the "J" keylever punches an address identification code for use in automatic selection of addresses in a Selectadata operation.
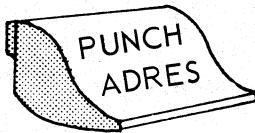
The PUNCH ADRES panel switch is provided for punching address codes in a tape to be used in a Selectadata Tape Reader. The operation of this switch is the same as the AUX CODE panel switch, except that it adds the number 8 code hole to whichever keylever is operated.

17

CUSTOMIZING THE MODEL SFD

Provisions have been built into the Model SFD to permit the following changes from standard specifications to be made in the field or prior to shipment from the factory.

KEYBOARD:

Substitution of characters in place of standard characters shown on the keyboard chart on page 14 can be made. This involves changing only the type bars and keylever buttons involved. The coding will remain the same. A charge will be made for each character change involved. Refer to the "Type Available catalogue for these alternate characters.

CODE REPRODUCTION:

Normally, when the Punch Control switch is in the SELECT position, the codes for PUNCH ON, PUNCH OFF, and CONTROL, do not reproduce themselves in the Punching Unit when read, or from manual operation on the keyboard. A kit of electrical parts is available to cause these codes to reproduce. With this modification, in order to cause the PUNCH ON code to reproduce, two such codes must be used: one to cause the function, and the other to punch its code.

> NOTE: Stop Code, Form Feed Code, Address Identification Code, Data Select Code and all other codes not found on the keyboard cannot be made to reproduce.

PARITY CHECK:

Provision is made in the Model SFD for the addition of an Odd-Count Parity Check. Since all standard codes used on the Model SFD have an odd number of bits, (see page 11), Parity Check guards against the mispunching of an even number of bits due to a mechanical failure.

Parity Check does not prevent errors. It merely detects them as they occur.

Parity Check does not detect human error. It will only aid in detecting a mechanical or electrical failure.

If a bit of dust, for instance, prevented the electrical contacts to one of the punch magnets from closing, an even number of bits would be punched. The Parity Check would immediately detect this and cause the keyboard to lock against further operation.

A Parity Check of this nature is not absolutely foolproof. If two punch pins fail to operate on a given code, an erroneous odd-bit code will still result and the Parity Check will not detect it. The construction of the Flexowriter is such; however, that the possibility of these "compensating" errors is very slight. The proven reliability of the Flexowriter Punching Units is such that the extra cost of the Parity Check is unwarranted in the ordinary installation.

In certain instances, however, Parity Check is desirable. This is true in applications where the consequences of an error due to mechanical failure are extreme. In an installation involving a high cost computer, even an isolated error can be intolerable. Where tapes are used locally and soon after they are punched, the consequence of errors is not as severe as when the tapes are used at a later time or at some remote location where it is difficult to refer to the source of information for the correction of errors.

Edge-Punched Card
Punch Unit

Edge-Punched Card
Reader Unit
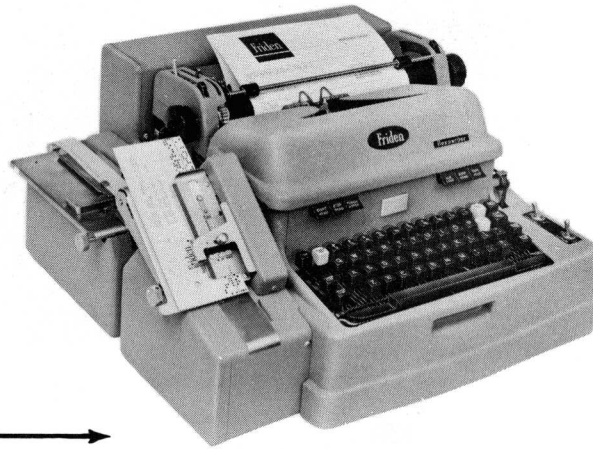
EDGE-PUNCHED CARD PUNCH AND READER UNITS:

Electrical circuits are provided for factory or field installation of units to accomodate Edge-Punched Cards as well as tape. Edge-Punched Cards are punched along the edge with the same codes, and are read in the same manner as tape. Speed of insertion into the Reading Unit, as well as handy filing methods make Edge-Punched Cards particularly well adapted to systems applications where a large amount of variable or interchangeable information is necessary for each separate document.

NOTE: Edge Card Punch Unit cannot be installed on machines equipped with a 20-inch carriage.

How Edge-Punched Cards are used:

Documents Prepared
Automatically
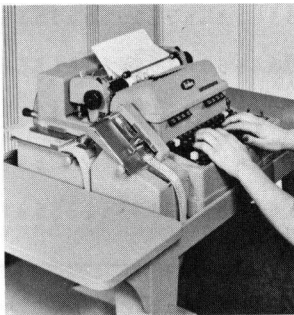
Flexowriter edge punches cards manually or auto-matically from punched paper tape.
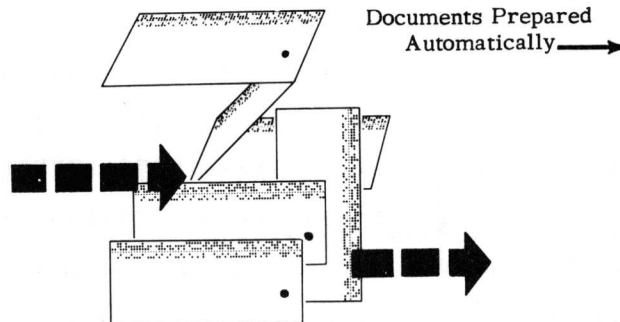
Fanfold cards are cut into one, two or three units for ease of handling and filing.
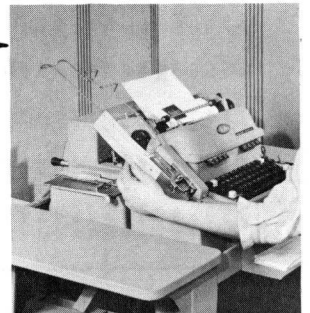
Edge-Punched Cards are filed for ease of selection for insertion into the Flexowriter for document preparation.

TABULATING CARD READER UNIT:

The Friden Tabulating Card Reader Unit may be factory or field installed in place of Tape only, or Edge-Punched Card Reader Units. This unit reads standard Hollerith coded tabulating cards.

Tab Cards are another method of storing data for reuse. Many businesses large and small use some form of Punched Card Accounting.

The Tab Cards themselves use twelve channels, and can contain a maximum of 80 codes. The Flexowriter Tab Card Reader Unit will recognize 65 different Tab Card codes, and convert these codes into their corresponding 8-Channel Systems Code. This permits exactly the same control codes to be obtained from a Tab Card as from punched tape, so that all the flexibility of the Flexowriter is retained. Another manual, titled, "The Friden Tab Card Reader", will discuss this in more detail.

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PIN TO PIN DIMENSIONS

PINS

PINS

PIN FEED PLATENS:

Pin Feed Platens are available at extra cost for factory or field installation. These are special platens having pins at either end to accommodate a type of continuous form (joined end to end), perforated on both sides, and having multiple copies interleaved with carbon paper. The chief advantages of Pin Feed Platens are: positive "registration", that is, the writing areas match exactly on the original form and all carbon copies; and speed of operation when a great number of the same forms are to be used. Once the first form in a continuous series has been inserted, no further operator effort is needed for this operation.

The platens themselves come in two halves called, "sectors". For forms of different widths, different sectors must be used. A 33-tooth ratchet is standard, although 44, 55, and 66-tooth ratchets are also available at no extra cost. See page 6 for the line spacing of these ratchets.

Several different modifications of Pin Feed Platen parts are used to allow a greater maximum form width to be used without going to the next size larger carriage. These are: Thin Draw Nuts, Pin Type Variable, Collar inside Pinwheel, and combinations of these. The terms only refer to modifications of platen parts to allow a greater maximum form width to be used with a particular carriage length, and have no effect on the operation of the Pin Feed Platen itself.

When ordering Pin Feed Platens, be sure to specify the overall form width to be used. The pin-to-pin dimension will be one-half inch smaller than this figure. The chart below lists the various Pin Feed Platens available for the carriage lengths, and the maximum form width each will take.

Pin Feed Platens	12" Carriage Maximum Form Width	16" Carriage Maximum Form Width	20" Carriage Maximum Form Width
Regular	9 3/8"	13 5/32"	17 1/16"
With Thin Draw Nuts	9 13/16"	13 13/16"	17 13/16"
With Pin Type Variable	10 3/16"	14 3/16"	18 3/16"
With Pin Type Variable And Thin Draw Nuts	10 9/16"	14 9/16"	18 9/16"
With Pin Type Variable And Thin Draw Nuts, And Collar Inside Pin-Wheel	10 11/16"	14 11/16"	18 11/16"

Automatic
Line Finder
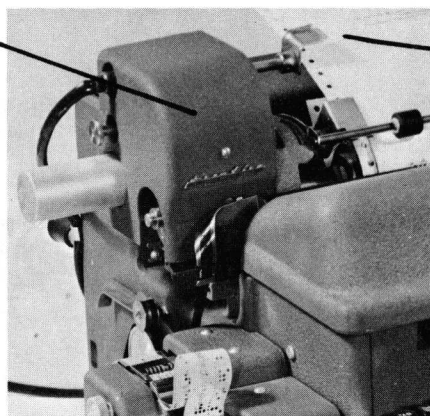
Automatic
Positioning

ELECTRIC LINE FINDER:

With the addition of a control kit, the Model SFD will accomodate an Electric Line Finder. An Electric Line Finder can be used with a Pin Feed Platen for easier handling of continuous forms. A small electric motor powers the Pin Feed Platen so that only one operation is necessary to move from the bottom of one form to the first writing line of the next. It can also move the form over areas otherwise requiring several Carriage Return operations. The principal advantages of an Electric Line Finder are speed and convenience.

The control kit provides parts so that the Electric Line Finder can be controlled from a code in the tape. This is generally the AUX CODE plus the "L" keylever; however, if a reproducing code is desired, Type Bar #38 (see page 14) is used and is coded 1-2-3-4-7.

CABLE-CONNECTED INPUT UNITS:

An Input Connecter is provided as a standard feature on the Model SFD (see page 16). This allows a variety of Auxiliary and Selectadata Reader Units to be cable-connected. With any one of these units attached, the reading action can be obtained from either the Flexowriter Reader Unit or a cable-connected unit, producing what is called a "Duplex" operation. Switching the reading action from one unit to the other is accomplished by using the CONTROL code (see page 17).

There are four base input units:

> Auxiliary Duplex
> Auxiliary Synchro-Duplex
> Selectadata Duplex
> Selectadata Synchro-Duplex

Auxiliary Duplex Units provide only the ability to switch the reading action. They will be further explained in detail in this release.

The Synchro-Duplex bases were originally designed to be used with Flexowriters equipped with a Tab Card Reader Unit; however tape and edge-punched cards will work equally well. When in "Synchronous" operation, the Synchro-Duplex Units exercise complete control over the functions of the Flexowriter, including the Flexowriter Reading Unit. Another release, titled, "Friden Synchro-Duplex Readers" will discuss this in more detail.

22
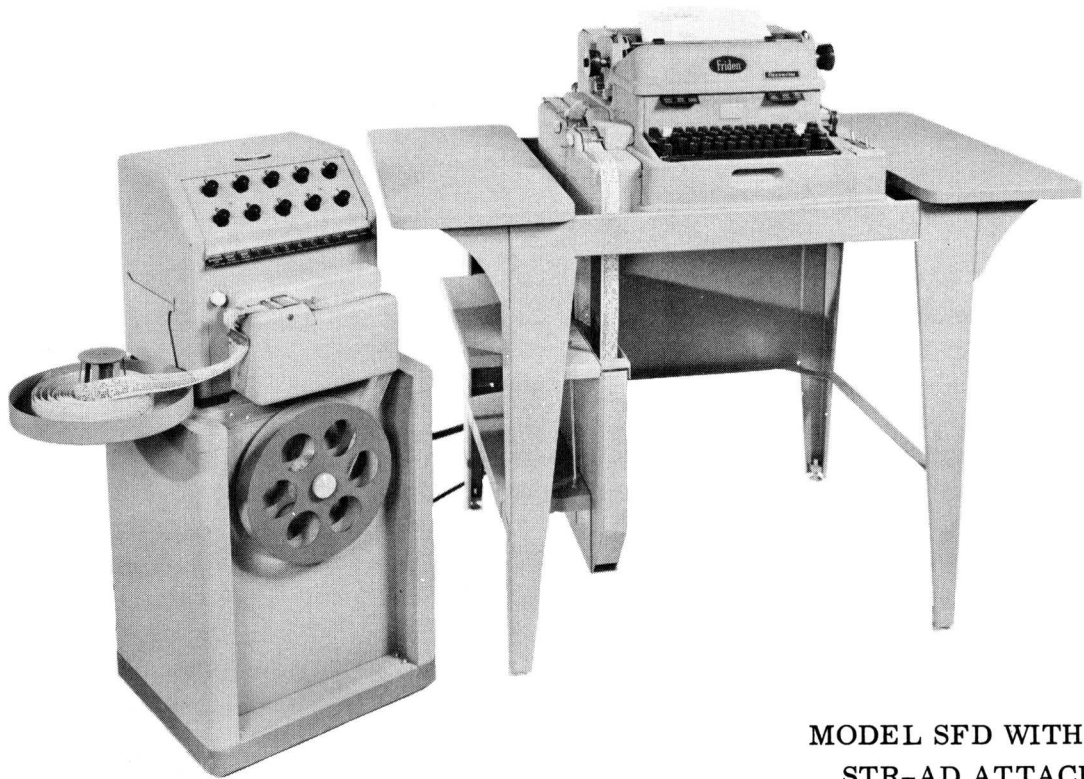
MODEL SFD WITH MODEL
STR-AD ATTACHED

Selectadata Duplex Units have the added feature of being able to skip through (Search) sections of tape until a preselected Address Code is read. The "searching operation" will then stop. The reading of data following this Address Code is accomplished in the regular manner. Another release, titled, "The Friden Selectadata" will discuss this operation in more detail.

To the Auxiliary Duplex base, any one of three Reading Heads may be installed:
> Tape only
> Tape or Edge-Punched Card
> Tab Card

Edge-Punched Card and Tab Card Reading Heads are not available on Selectadata or Synchro-Duplex Models.

A Manual Data Selector is available on all of these units. It allows the Flexowriter to write either one or two sets of preselected digits automatically from a code which can be read in either Reading Unit. This feature will be further explained in this release (see page 59).

On certain Selectadata Models, Automatic Address Selection is available. This allows the Searching operation to be initiated from a code in the tape. This feature will be further explained in the release titled "The Friden Selectadata".

One other Input Unit is also available. This is an Adding Machine, Model AAEO-P. This unit will be further explained in a later release.

THE MODEL SFD PRESIDENT

THE MODEL SFD - PRESIDENT

GENERAL DESCRIPTION

The Model SFD - President, shown on the opposite page, is built to the same specifications; uses the same 8-Channel Systems Code; has the same features; and can be "Customized", the same as the standard Model SFD described on the preceding pages, with the exceptions listed below. The Model SFD President is used in applications where exceptionally fine printing copy is desired, such as: "Executive" letters, Offset Master preparation, and all repetitive writing applications where a distinctive document is required.

PROPORTIONAL SPACING:

The Model SFD - President uses proportional spaced type styles. That is, each character occupies an area in proportion to its size. In monospacing type styles, used on the standard Model SFD, each character occupies the same amount of space regardless of its size, Monospacing type styles are rated as to the number of characters in a horizontal inch, ie: Elite - 12 characters to the inch; Pica - 10 characters to the inch. Proportional spaced type styles give each separate character a value of from one to five units of space in proportion to its size. Refer to the chart on page 28 for the unit value of each character.

STANDARD SPACING		PROPORTIONAL SPACING		UNIT WIDTH
i	iiii	i	iiii	2 units
o	oooo	o	oooo	3 units
w	wwww	w	wwww	4 units
m	mmmm	m	mmmm	5 units

Standard Spacing

Vertical lines are formed by the white spaces between the rows of characters as shown by the ruled lines.

Proportional Spacing

In the proportionally typed page there are no vertical lines to distract the eye of the reader.

Spacing between words is accomplished in the following manner. The Space Bar gives two units of space, and the Back Space keylever gives one unit of space in reverse. For example, to get three units of space, operate the Space Bar twice, and the Back Space keylever once: 2 + 2 - 1 = 3.

CARRIAGE LENGTHS:

The model SFD President is available in 12 and 16-inch carriage lengths only. See page 27 for the Type Styles available in these lengths.

STANDARD TYPE
- PICA – 1044286
- ELITE – 1044287
- PRESTIGE PICA – 1273-965
- LARGE ELITE – 1274-028
- BOOKFACE ACADEMIC – 1274-049

THIS MACHINE TO BE PAINTED TAN – 1043398
SHADED KEYBUTTONS
ARE TAN, WITH BROWN
FILLER.

POS. U, 41, & 43
DO NOT ESCAPE

8 7 6 5 4 3 2 1
FEED

GUIDE EDGE

SECTION OF TAPE SHOWING
CHANNEL NUMBERING

TYPE BAR
NUMBER

CODE PUNCHED
IN TAPE

PUNCH
ON

ADD 8

START READ — S3
STOP READ — S4
PUNCH ADRES — S5
S6

2A
ADD 3 4
1 2 4
1 2 3 4 5 6 7

AUX. CODE — S8
STOP CODE — S9
TAPE FEED — S10
S7
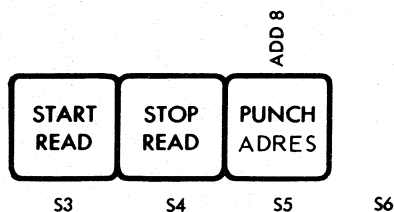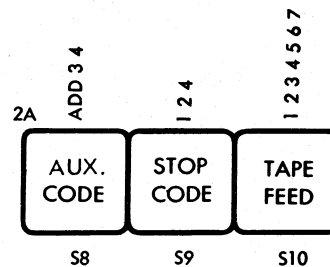
CUSTOMIZING FEATURES

WIRING FOR
1045681 – ELECTRIC LINE FINDER
1044120 – PARITY CHECK
1044121 – EDGE CARD PUNCH
1044960 – EDGE CARD READER
1044122 – REPRODUCING PUNCH
CONTROL CODES, IN
SELECT POSITION

TAB

PUNCH OFF

@ 2
# 3
$ 4
% 5
' 6
& 7
* 8
(9
) 0
— 1
CON-TROL
BACK SPACE

Q W E R T Y U I O P
PUNCH ON
CAR. RET.

LOWER CASE
A S D F G H J K L : ;
LOWER CASE

UPPER CASE
Z X C V B N M ; : ? /
UPPER CASE

SPACE BAR
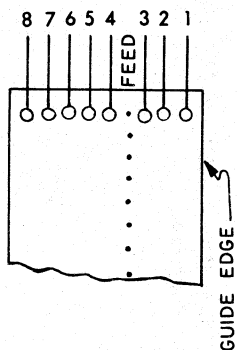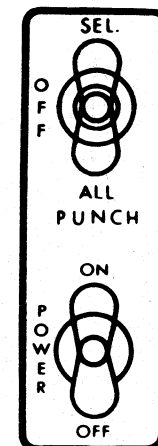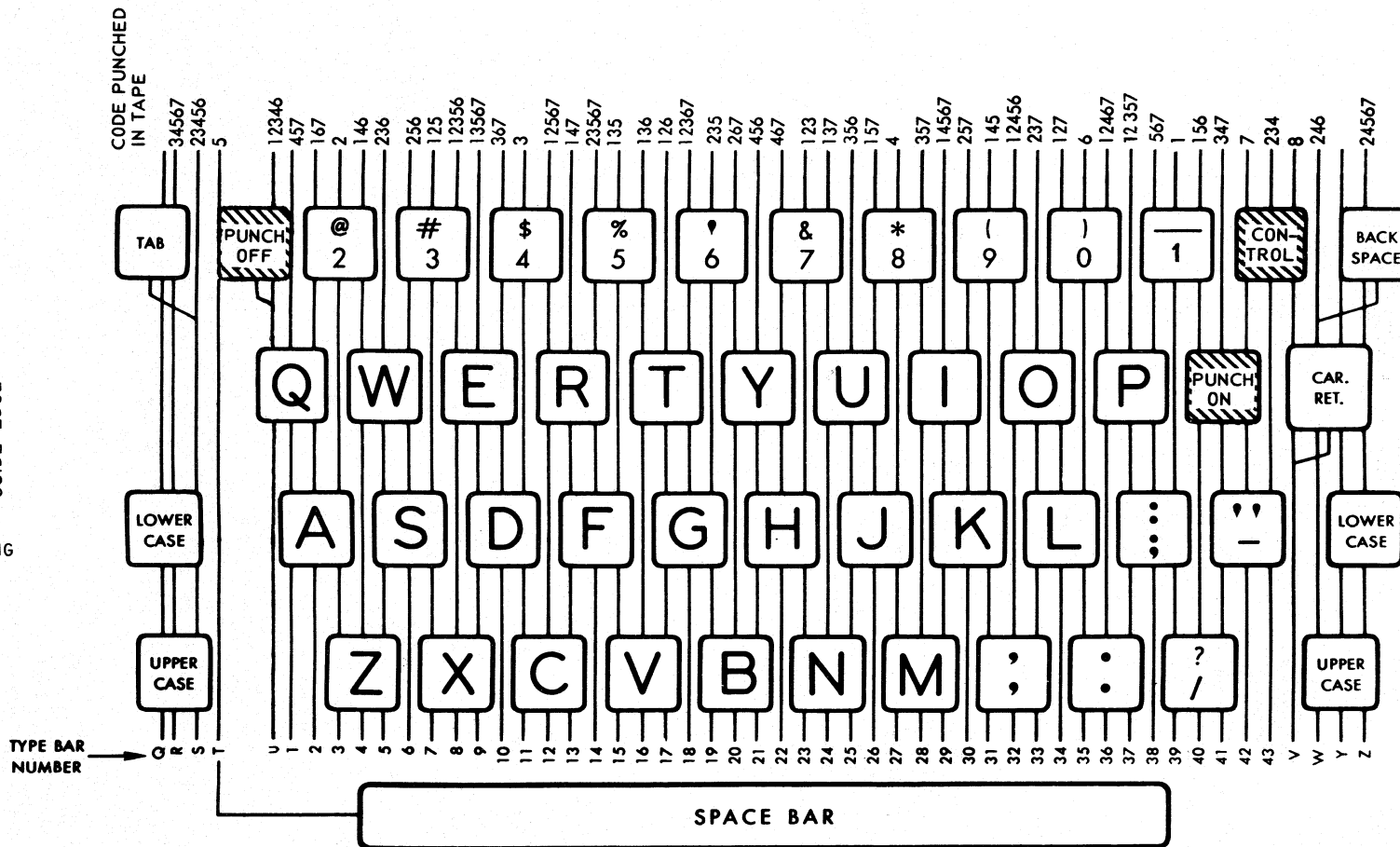
SEL.
OFF
ALL PUNCH
ON
POWER
OFF
S2
S1

NO. 155R3

FLEXOWRITER # 1044284
MODEL SFD. RECORDER REPRODUCER

NO. 155R3

CARBON RIBBON FEED MECHANISM:

A Carbon Ribbon Feed Mechanism is a standard feature on the Model SFD – President. Facilities are here for fabric ribbon also. The Carbon Ribbon itself is a narrow paper ribbon used one time only. It gives clear sharp characters suitable for Offset Masters and photographic reproduction. Two widths are available: 5/16 and 9/32 inches, and the choice depends upon the size of the type to be used. It comes in spools of four inches in diameter and 645 feet long.

TYPE AVAILABLE:

The Model SFD – President is available in the proportional spaced type styles listed below. Sizes are indicated by the "escapement" in inches of one unit of space. Character height is referred to as "Point Size", and the smaller the point number, the smaller the type.

TYPE STYLE	POINT SIZE	ESCAPEMENT	CARRIAGE LENGTH	
COMMERCIAL	14	1/32"	12-16	
BOLD FACE #1	12	1/32"	12-16	
BOLD FACE ITALIC	12	1/32"	12-16	
GALVIN	12	1/32"	12-16	
SECRETARIAL	12	1/32"	12-16	
ROGERS	11	1/32"	12-16	
DOCUMENTARY	11	1/32"	12-16	
TESTIMONIAL	11	1/32"	12-16	
MODERN	10	1/32" *	12-16 *	Stock machine
BOOKTYPE	10	1/32"	12-16	
COPPERPLATE	10	1/36"	12-16	
REGISTRY	10	1/36"	12-16	
MID-CENTURY	10	1/36"	12-16	
HERITAGE	10	1/36"	12-16	
NEWSTYPE	8	1/48" **	12 only **	Not
GALVIN 8 POINT	8	1/48" **	12 only	recommended

SOME TYPE STYLE SAMPLES:

COMMERCIAL

**This is a sample of Commercial type
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz 12345678
90**

BOLD FACE

This is a sample of Bold Face type
ABCDEFGHIJKLMNOPQRSTUVWX
YZ abcdefghijklmnopqrstuvwxyz 12
34567890

GALVIN

This is a sample of Galvin type
ABCDEFGHIJKLMNOPQRSTUV
WXYZ abcdefghijklmnopqrstuvw
xyz 1234567890

BOLD FACE ITALIC

*This is a sample of Bold Face Italic type
ABCDEFGHIJKLMNOPQRSTUVWXYZ ab
cdefghijklmnopqrstuvwxyz 1234567890*

SECRETARIAL

This is a sample of Secretarial type
ABCDEFGHIJKLMNOPQRSTUVWXY
Z abcdefghijklmnopqrstuvwxyz 12345
67890

DOCUMENTARY

This is a sample of Documentary type
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz 12345678
90

MODERN

This is a sample of Modern type
ABCDEFGHIJKLMNOPQRSTUVW
XYZ abcdefghijklmnopqrstuvwxyz
1234567890

MID-CENTURY

This is a sample of Mid-Century type
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz 12345678
90

BOOKTYPE

This is a sample of Booktype type style
ABCDEFGHIJKLMNOPQRSTUVWXYZ a
bcdefghijklmnopqrstuvwxyz 1234567890

GALVIN 8-POINT

This is a sample of Galvin 8-Point Type style
ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefg
hijklmnopqrstuvwxyz 1234567890

CHARACTER		UNIT WIDTH	
a	A	3	4
b	B	3	4
c	C	3	4
d	D	3	4
e	E	3	4
f	F	2	4
g	G	3	4
h	H	3	4
i	I	2	2
j	J	2	3
k	K	3	4
l	L	2	4
m	M	5	5
n	N	3	4
o	O	3	4
p	P	3	4
q	Q	3	4
r	R	3	4
s	S	3	3
t	T	2	4
u	U	3	4
v	V	3	4
w	W	4	5
x	X	3	4
y	Y	3	4
z	Z	3	4

CHARACTER		UNIT WIDTH	
1	—	3	3
2	@	3	4
3	#	3	3
4	$	3	3
5	%	3	4
6	'	3	2
7	&	3	4
8	*	3	3
9	(	3	2
0	)	3	2
.	.	2	2
,	,	2	2
/	?	3	3
–	"	3	3
;	:	2	2

The following accessories and supplies are available for use on all Systems Models Flexowriters. Supplies are ordered through the Friden Service Department.

FRIDEN FLEXOWRITER STAND:

The FRIDEN FLEXOWRITER STAND is especially designed to hold a Flexowriter at the correct working height to give plenty of working area, and to provide space for accessory equipment. It is of all-steel construction with adjustable legs for leveling. A materials box underneath holds long tapes and provides a chute and box for the "chad" (perforations from the tape or edge punched cards).

> SIZE: 40 1/2 inches wide, 28 inches high, 24 inches deep.
> WEIGHT: 58 pounds.
> SHIPPING WEIGHT: 78 pounds.
> FINISH: Friden Tan Fine Wrinkle.
> SHELVES: 10 inches wide and 24 inches deep are standard; however, shelves 18 inches wide may be had at extra cost. Holes have been drilled through the upper shelf to allow installation of a Tape Winder.

For Flexowriters equipped with Edge-Punched Card, or Tabulating Card Units, a special stand is offered, identical with the above, with the exception that it is 42 3/4 inches wide to allow ample working room for these units.

FRIDEN TAPE WINDER:

The FRIDEN TAPE WINDER is a sturdy, motor driven unit, used to wind tape in a long continuous roll after it has been punched on the Flexowriter. It may also be used to rewind punched tape after coming from the Reading Unit. The feet of the Friden Tape Winder are drilled with holes so that it may be easily bolted to the upper shelf of the Flexowriter Stand beneath the Punching Unit.
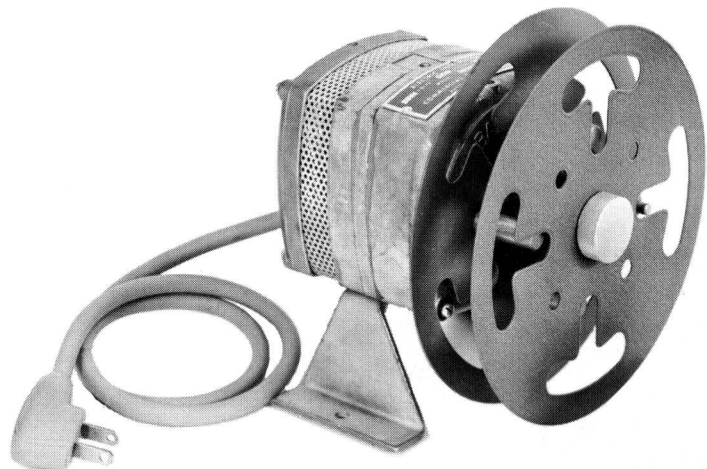
SIZE: 6 inches wide, 5 1/4 inches deep, and 6 1/4 inches high.
WEIGHT: 4 3/4 pounds
SHIPPING WEIGHT: 9 pounds
POWER: 115 Volt 60 Cycle AC
CAPACITY: 375 feet of tape

FRIDEN TAPE UNWINDER:

The FRIDEN TAPE UNWINDER is designed for holding rolls of tape for feeding into the Flexowriter Reading Unit. The tape unwinds from the inside out, and may be used directly as it comes from the Friden Tape Winder. The Friden Tape Winder fits on the upper shelf of the Flexowriter Stand, beneath the Reading Unit.

SIZE: 3 1/2 inches high, 6 inches in diameter
WEIGHT: 8 ounces
SHIPPING WEIGHT: 1 pound
FINISH: Friden Tan Fine Wrinkle
CAPACITY: 375 feet of tape
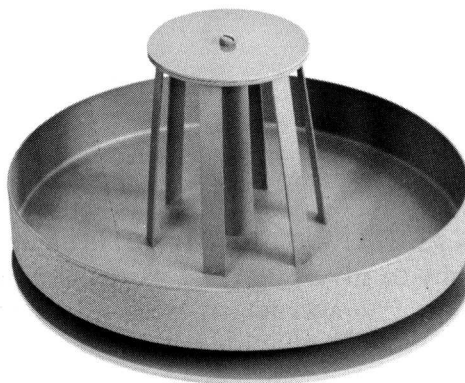
FRIDEN TAPE FILING BOXES:

FRIDEN TAPE FILING BOXES are glasine-lined and are ideal for storing punched paper tape. Provision is made on the outside of each box for easy identification of the contents. Tape Filing Boxes are available in two sizes, 4" x 4" x 1", and 6" x 6" x 1". The 4" Box holds about 150 to 200 feet of punched tape. The 6" Box holds about 450 to 500 feet of punched tape. Friden Tape Filing Boxes are obtained through the Friden Service Department.
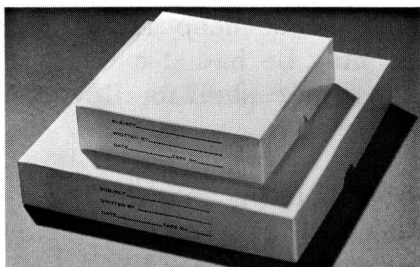
FRIDEN TAPE CEMENT:

FRIDEN TAPE CEMENT is expressly made to splice punched paper tape when a continuous or looped tape is required. It is easy to apply, water soluble, and adheres strongly for long runs. Friden Tape Cement comes in plastic squeeze-type containers holding two ounces. It is obtained through the Friden Service Department.

FRIDEN RIBBONS:

FRIDEN RIBBONS are especially adapted to the high-speed operation of Flexowriters. All fabric ribbons are tested for durability, clean reproduction, and fast ink recovery. Carbon ribbons, used on the Model SFD President, are tested for strength, durability, and capabilities of paper stocks and Offset Masters.

Fabric ribbons are 18 yards long and 9/16 inches wide. They come in either nylon or silk. Black, and black and red are the colors. All are available in the following ink densities: #40, #50, and #60. The following ink densities for the Type Styles available are recommended: Elite, #40; Pica, #50; and larger type styles such as Pica Gothic, #60.

One blue ribbon is also available, 18 yards long, #50 inking.

A Dura Clear*, Electromatic ribbon, 18 yards long, #40 inking, is available for the preparation of offset masters.

Carbon Ribbons come in two lengths: 645 feet, and 2,600 feet. The 645 foot spool is four inches in diameter and is used on the Model SFD-President, and Friden Justowriter Recorders. The 2,600 foot spool is eight inches in diameter and is used on Friden Justowriter Reproducers only. Two ribbon widths can be had: 9/32 inches for smaller type styles, and 5/16 inches for larger type styles. For especially sharp reproduction, a special ribbon is available in the 2,600 foot spool, either width.

A Static-Treated Mylar Carbon Ribbon is available in rolls, 4-inches in diameter, 1,200 feet long, and 5/16-inches wide. This ribbon gives clear, sharp reproduction and cannot break.

All ribbons are obtained through the Friden Service Department.
* Patented Trade Mark.

FRIDEN TAPE:

FRIDEN TAPE is oil-impregnated and strong fibered for long wear. Folding does not injure it, and it is ideally suited for mailing, filing, and long term storage. Paper tape comes in rolls of 1000 feet in length, each roll capable of holding 120,000 codes (10 to the inch). Six colors are available: pink, yellow, green, grey, blue, and buff. Black opaque tape for photo-electric operation is available.
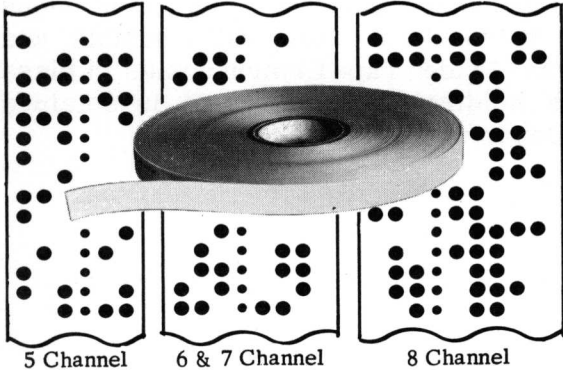
Mylar tape, an extremely tough and long lasting, bonded plastic tape is also available. It is used in applications where unusually long life is desired.


5 Channel   6 & 7 Channel   8 Channel

5-channel tape is 11/16 inches wide; 6 & 7-channel tape is 7/8 inches wide; and 8-channel tape is one inch wide. Tape is obtained from the Friden Service Department.

FRIDEN EDGE-PUNCHED CARDS:

FRIDEN EDGE-PUNCHED CARDS are especially designed for use in Flexowriters having Edge-Punched Card Punch and Reader Units. They are made of superior wear-resistant stock to assure maximum use. Friden Edge-Punched Cards are available with marginal feed-hole punching on either one or two sides. Cards may be ordered with printing if required for certain customer applications. A pre-punched positioning hole is provided for positive positioning of each card in the first code punching position in the Punching Unit. Friden Edge-Punched Cards are obtained from the Friden Service Department.

Single Edge-Punched Card

With reasonable care, each edge-Punched Card has a life of 800 to 1000 passes through the Reading Unit.

Mylar Cards, with the same qualities as Mylar Tape (see above) are also available through a supplier.
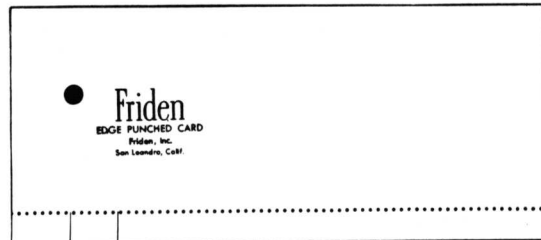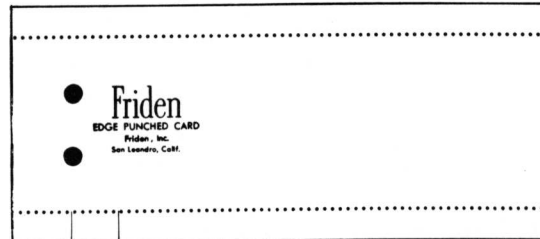
Double Edge-Punched Card

SIZE: 3 inches wide, 7 inches long, and approximately .007 inches thick. Cards are fanfolded every 7 inches in continuous packets of 250.

COLOR: White, pink, green, grey, blue, and yellow. Double Edge Punched Cards are available in white color only.

CODE CAPACITY: In general, ten codes per inch, the same as tape; however, one code position is lost in the Card Cutting operation. Therefore, single cards have a code capacity of 69 codes; series of two cards have a code capacity of 139 codes; and series of three cards have a code capacity of 209 codes.

EXTENDED CARD GUIDES:

Extensions for the tables of the Punching and Reading Units are available to accommodate extra wide edge Cards manufactured by Acme Visible, Diebold, Royal McBee, Tab, VISI-record, Vue-Fax, and other companies supplying approved edge Cards.

FRIDEN EDGE-PUNCHED CARD CUTTER:
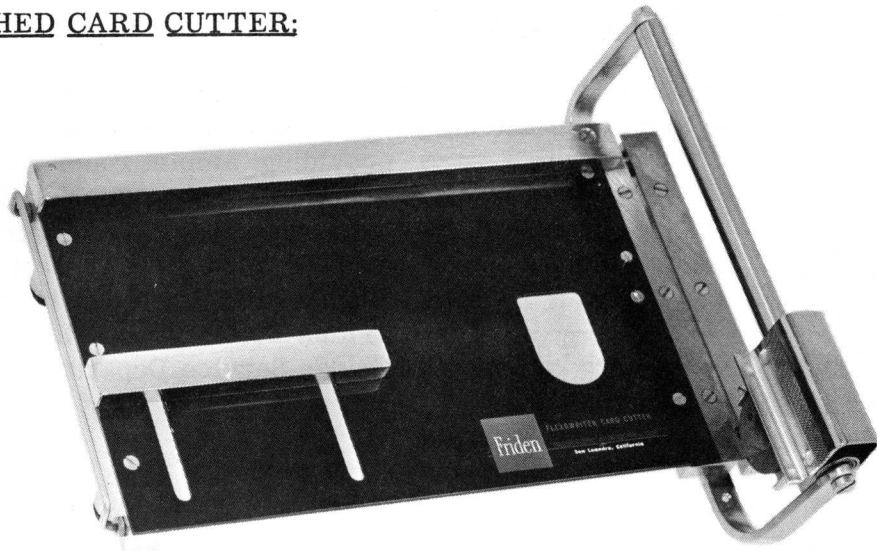
The FRIDEN EDGE-PUNCHED CARD CUTTER is specifically designed for the precision cutting of Flexowriter Edge-Punched Cards. Continuous packets of these cards may be cut into units of one, two or three cards accurately and with ease. A single motion of the double-edged cutting wheel removes the entire folded section, leaving a perfect leading edge on the card. The cutting wheel is guarded assuring safe operation.

SIZE: 15 inches long, 9 1/2 inches wide, and 4 inches high
WEIGHT: 5 Pounds
SHIPPING WEIGHT: 6 Pounds (approx.)
CUTTING BLADE: All steel double-edged wheel, self sharpening
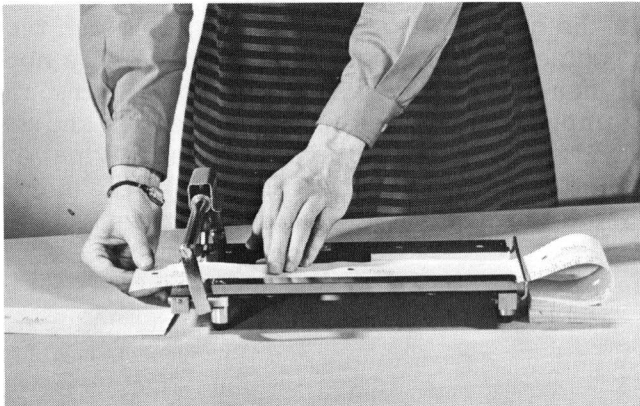
- Insert the lead card of a continuous pack under with guide at left of cutter.

- Draw card to the right until positioned over the guide hole and feed hole pins.

- Hold the card down on the plate and move cutter across card in one easy motion.

- Disengage the card from the positioning pins and advance the next card to the right.

- Place card over positioning pins in cutting position.

- If labels are placed over guide holes it is recommended that cards be cut first.

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FRIDEN SELF-ADHERING LABELS:

FRIDEN SELF-ADHERING LABELS make identification of Friden Edge-Punched Cards fast and simple. Available in rolls of 250 labels, each label is 1 1/4 inches long and 4 inches wide, providing ample room for the writing of all information edge-punched into the corresponding card. One easy motion removes the label from the carrier strip. An excellent quality adhesive insures permanent adherence of the label to the card. Friden Self-Adhering labels are obtained from the Friden Service Department.
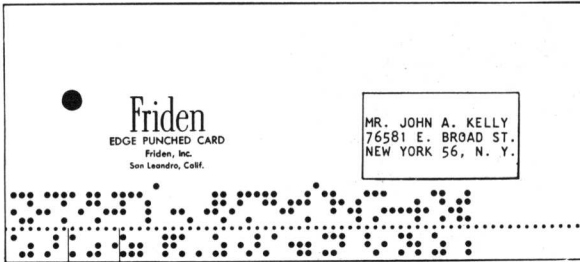
FRIDEN LABEL HOLDER:

The FRIDEN LABEL HOLDER is available for 12, 16, and 20-inch, carriages. The labels are fed squarely into the Flexowriter platen with the aid of the Friden Label Holder. Designed so that Flexowriter operation is not hindered, labels may be written manually or automatically as the corresponding card is being edge-punched. The Friden Label Holder moves with the carriage, assuring no horizontal creepage of labels in the platen. The Friden Label Holder can be easily removed at any time.
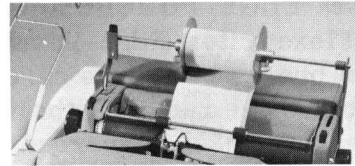
FRIDEN TYPE AND PLATEN CLEANER:

The FRIDEN TYPE AND PLATEN CLEANER is the quick, clean and safe way to clean type bars and platens of Flexowriters. This Cleaner comes in 6 oz. spray-type cans and is non-toxic and non-inflamable. To clean type bars and platens, simply remove the protective cover and depress the valve, spraying all exposed areas. Wipe with cloth or blotter. Friden Type and Platen Cleaner is obtained from the Friden Service Department.

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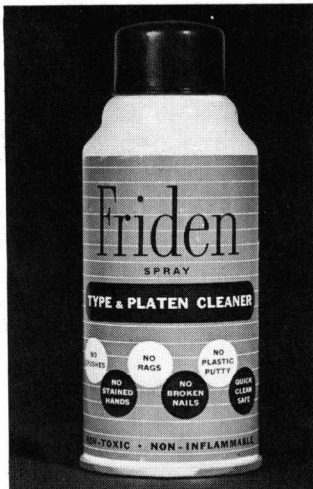
simple programming for the MODEL SFD

31 PRINCE STREET, ROCHESTER 7, N. Y.

September 11, 19XX

Mr. John Jones
234 Main St.
Rochester, N.Y.

Dear Mr. Jones:

The Friden Model SFD, Systems Flexowriter Double Case, is writing
this letter to you at the rate of 100 words per minute through the
medium of 8-channel punched paper tape. As a by-product of this
operation, another tape has been automatically prepared, containing
your name and address, for automatic envelope preparation.

All manual writing operations may be performed automatically on the
Friden Model SFD. These operations include:

>   TABULATING
>   BACK SPACING
>   UNDERSCORING
>   CARRIAGE RETURN

The Friden Model SFD is used by banks, insurance companies,
universities, and all types of manufacturing industries. Why not
add a Friden Model SFD to your business?

>   Sincerely yours,

>   Education Department

RIF:rf

PROGRAMMING
FOR
THE MODEL SFD

The letter shown on the facing page is an example of a Personalized Form Letterwriting Application, especially suited to the Model SFD. The complete letter, except for the inside address, and salutation was automatically written. In addition, the Punching Unit was automatically turned on and off to pick up the inside address in tape for automatic preparation of the envelopes. All this was accomplished through the use of a Program Tape.

PROGRAM TAPE:

A Program Tape is used in the Reading Unit, and contains all the necessary codes for all functions of the machine, including all horizontal and vertical spacing, punch control, and also all data that is constant in each document to be produced. In this case, that data is the date and body of the letter. The operator has only to write in the variable data, name, address, date, and touch the START READ panel switch. The Program Tape is prepared with the PUNCH CONTROL Switch in the ALL position, and read with the PUNCH CONTROL Switch in the SELECT position. Any tape that comes from the Punching Unit as a result of reading the Program Tape is called a "Select Tape".

<pre>
                        used to   ┌─DOCUMENT
       PROGRAM TAPE - control──►KEYBOARD - producing◄
                                                            └─SELECT TAPE
</pre>

The Program Tape may be glued together at the ends with FRIDEN TAPE CEMENT, forming a loop, to eliminate the need for reinserting the tape for each document to be produced.

The following illustrations show how the programming was accomplished in this case.

ABBREVIATIONS USED:

The following abbreviations are used in these Programming charts:

CR	–	Carriage Return Code	ON	–	Punch On Code
TAB	–	Tabulation Code	OFF	–	Punch Off Code
UC	–	Upper Case Code	SP	–	Space Code
LC	–	Lower Case Code	STP	–	Stop Code
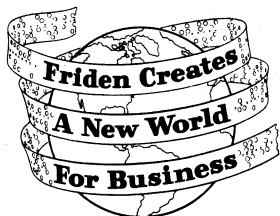
START POSITION WHEN INSERTING NEW LETTERHEAD

MARGIN

TAB

TAB

MANUALLY WRITTEN

September 11, 19XX

Mr. John Jones
234 Main St.
Rochester, N.Y.

Dear Mr. Jones:

The Friden Model SFD, Systems Flexowriter Double Case, is writing this letter to you at the rate of 100 words per minute through the medium of 8-channel punched paper tape. As a by-product of this operation, another tape has been automatically prepared, containing your name and address, for automatic envelope preparation.

All manual writing operations may be performed automatically on the Friden Model SFD. These operations include:

TABULATING
BACK SPACING
UNDERSCORING
CARRIAGE RETURN

The Friden Model SFD is used by banks, insurance companies, universities, and all types of manufacturing industries. Why not add a Friden Model SFD to your business?

Sincerely yours,

Education Department

RIF:rf

AUTOMATICALLY WRITTEN

MARGIN: 12
PAPER GUIDE: 0
TABS: 24, 32, & 35

MARGIN   TAB   TAB

September 11, 19XX

PROGRAM TAPE

```
      C  C  T  T  U                        C  C
      R  R  A  A  C   SEPTEMBER 11, 19XX   R  R
            B  B
```

SELECT TAPE

This programming shows writing of the date. As yet, there is no need for tape punching, so the Punching Unit has not yet been turned on. At least one Carriage Return Code is always used in the beginning to position the document. Two Tabulation codes are needed to bring the carriage to the "paragraph" Tab Stop, and the "date" Tab Stop. The date is in the Program Tape as this is constant data for this form letter. For clarity, functional codes have been omitted from words and phrases used here.

Mr. John Jones
234 Main St.

PROGRAM TAPE

```
    O  C  U  S                    C  S
    N  R  C  T      (NAME)        R  T      (ADDRESS)
          P                          P
```

SELECT TAPE

```
    C  U                          C
    R  C        MR. JOHN JONES    R      234 MAIN ST.
```

The Punching Unit is automatically turned on with the ON code in the Program Tape. Everything following this code will now be punched into the Select Tape until an OFF code is read. To position the envelope, a Carriage Return code is brought into the Select Tape. The Stop Code stops the reading action to allow the operator to write in the name, which is variable data. She then touches the START READ panel switch and the reading action continues, bringing the carriage to the next writing line, where it again stops to allow the operator to write in the address. Note that with the Punch Control Switch in the SELECT position, the codes for PUNCH ON, PUNCH OFF, and STOP CODE, perform their functions, but do not reproduce themselves into the Select Tape.

Rochester, N. Y.

Dear Mr. Jones:

The Friden Model SFD, Systems Flexowriter Double Case, is writing
this letter to you at the rate of 100 words per minute through the
medium of 8-channel punched paper tape. As a by-product of this
operation, a paper tape has been automatically prepared, containing

PROGRAM TAPE

C	U	S		C	O	C		S	U	S		U	C	C	
R	C	T	(CITY STATE)	R	F	R DEAR		P	C	T	(NAME)	C : R	R	THE ETC.
		P			F					P					

SELECT TAPE

C	U		C	
R	C	Rochester,N.Y.	R	

After the City-State has been typed and punched into the Select Tape, the Punching Unit is auto-
matically turned off with the OFF code, and will no longer be used for the duration of this
document. Carriage Return codes line space the machine to the next writing line. The Program
Tape writes the salutation and the reading action is stopped again by the Stop Code to allow
the operator to fill in the name. The rest of the letter is automatically written from the Pro-
gram Tape. A Stop Code (not shown) is always the last code in a Program Tape. If the tape
has been glued into a loop, the operator merely inserts another sheet of stationery, and the
next copy of this form letter is ready to be typed.

After all the letters have been typed, the operator removes the Program Tape, inserts the
Select Tape into the Reading Unit, and is then ready to automatically address the envelopes.

THE MODEL ATR

Auxiliary Tape only Reader
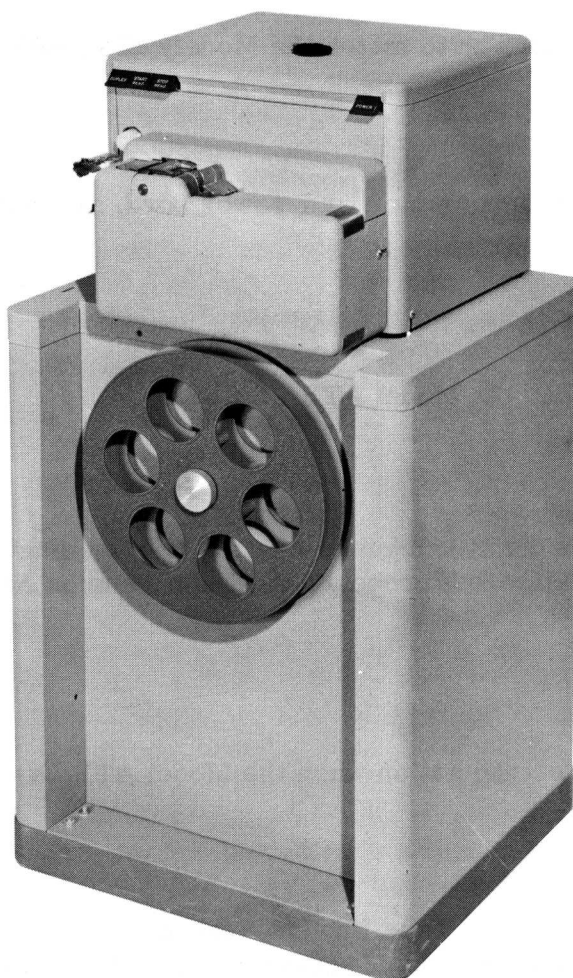
DESCRIPTION:

The Model ATR, Auxiliary Tape only Reader, is an auxiliary tape reading unit that can be cable-connected to a Friden Model SFD, SPS, or SPD. With this unit attached, tape reading can be switched alternately from the Flexowriter Reading Unit and the Model ATR. The CONTROL keylever on the Flexowriter, punches a code which when read by either reading unit, will cause the reading operation to switch to the other unit. When the Model ATR is used with the Model SFD, SPS, or SPD, the operation is called a "Duplex" application.

APPLICATIONS:

The Model ATR is well adapted to automatic letterwriting applications and systems where an extra tape reading unit is required.

SPECIFICATIONS

COLOR:

The Model ATR comes in Friden Tan to match the Models SFD, SPS, and SFD.

POWER:

The Model ATR contains its own motor and power cord, and operates on 110-115 Volt 60 Cycle AC.

INDICATING LIGHT:

An Indicating Light goes on when the Model ATR is reading tape.

TAPE TENSION ARM:

The Tape Tension Arm acts as a safeguard against tape feeding failure. If the tape should become caught or otherwise fail to feed properly, the Tape Tension Arm will cause the reading action to stop.

TAPE RUNOUT ARM:

The Tape Runout Arm stops reading action when the Model ATR has run out of tape.

UNWIND REEL:

The Model ATR is equipped with a Tape Unwind Reel, 8 1/2 inches in diameter and capable of holding a thousand-foot roll of tape. Each separate roll can contain 120,000 codes (10 codes to the inch). Tape is pulled from the inside out, just as it is wound on the Tape Winder (see below).

STAND AND TAPE WINDER:

The Model ATR comes equipped with a Stand, which is mounted on four caster wheels for easy moving. It also contains two shelves in the back.

The Tape Winder is attached to the Stand, and is driven from a spring belt powered by the Model ATR. The Tape Winder will hold a thousand feet of punched tape (one full roll).

RECORD TAPE:

This model uses a one inch wide paper tape, punched with 8-channel systems code. The tape may be punched on any Friden Model SFD, SPS, or SPD.

POWER CORD⎯⎯⎯⎯⎯⎯→
CABLE⎯⎯⎯⎯⎯⎯⎯⎯⎯

| DUPLEX | START READ | STOP READ | | POWER |

TAPE
TENSION ARM⎯⎯⎯⎯
TAPE
RUNOUT ARM⎯⎯⎯⎯⎯

AUXILIARY TAPE READER
MODEL ATR
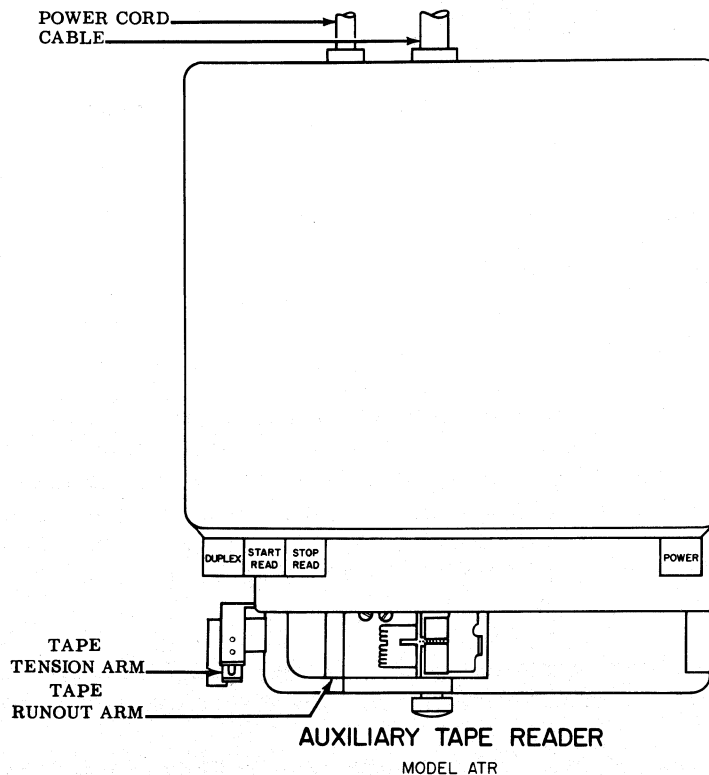
FEATURES
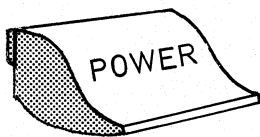
POWER SWITCH:

Depression of the POWER Switch, turns on the power in the Model ATR.

START READ SWITCH:

When the START READ switch is depressed and released, the tape reading action will start in the Model ATR. Holding this switch depressed, will stop the reading action until it is released.

STOP READ SWITCH:

Depression of the STOP READ switch will cause the reading action to stop.
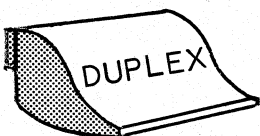
DUPLEX SWITCH:

The DUPLEX switch is a locking-type switch, which when in the "down" position, puts the Model ATR under automatic control from the Flexowriter. When in the "up" position, no automatic switching will occur, and both the Flexowriter Reading Unit and the Model ATR must be started and stopped by operation of their respective START READ and STOP READ switches. The Flexowriter is under the control of whichever Reading Unit is operating at the time.

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Friden, *Inc.* SAN LEANDRO • CALIFORNIA

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31 PRINCE STREET, ROCHESTER 7, N. Y.

September 11, 19XX

Mr. John Doe
234 Main St.
Rochester, N.Y.

Dear Mr. Doe:

This letter, Mr. Doe, was written automatically from a
strip of 8-channel punched paper tape on the Friden Model
SFD Systems Flexowriter Double Case). The inside address,
including the salutation and your name on the first line,
was inserted automatically by the Friden Model ATR (Auxiliary
Tape only Reader), which is cable-connected to the Friden
Model SFD.

Every letter written on the Friden Model SFD has the neat,
even print work of an individual piece of correspondence.

The Friden Model SFD with Model ATR makes a Duplex system
widely used in all types of business. Ask your Friden special-
-ist to give you a demonstration and, at the same time, some
cost saving case histories of our many users.

Yours very truly,

Education Department

RIF:rf

Friden, *Inc.* SAN LEANDRO • CALIFORNIA

----

31 PRINCE STREET, ROCHESTER 7, N. Y.

September 11, 19XX

Mr. Alan Smith
789 Elm St.
Albany, New York

Dear Mr. Smith:

This letter, Mr. Smith, was written automatically from a
strip of 8-channel punched paper tape on the Friden Model

The letters shown on the facing page are another example of a Personalized Form Letter-writing Application. This time, however; the inside address, salutation, and the name on the first line have been inserted from a tape read in the Model ATR. The date and body of the letter are written automatically from the Program Tape in the Reading Unit of the Model SFD. Not only does this make for a speedier, more accurate operation, but the tape read on the Model ATR, becomes a permanent mailing list and may be used over and over again for different letters. The complete letter is written at the rate of 100 words per minute with no delay for operator insertions. Since the tape containing the addresses is proofread, accuracy is assured.

For the purpose of showing the programming, a Select Tape is punched giving the name and address for automatic envelope addressing. With a permanent mailing list, only one such tape need be prepared.

No operator attendance is necessary for this operation except for inserting the letterheads. Even this may be eliminated by the use of a pin feed platen and continuous forms.

31 PRINCE STREET, ROCHESTER 7, N. Y.

MARGIN

TAB

START
POSITION
WHEN INSERTING
NEW LETTERHEAD

September 11, 19XX

Mr. John Doe
234 Main St.
Rochester, N.Y.

Dear Mr. Doe:

This letter, Mr. Doe, was written automatically from a
strip of 8-channel punched paper tape on the Friden Model
SFD Systems Flexowriter Double Case). The inside address,
including the salutation and your name on the first line,
was inserted automatically by the Friden Model ATR (Auxiliary
Tape only Reader), which is cable-connected to the Friden
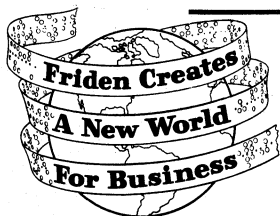Model SFD.

Every letter written on the Friden Model SFD has the neat,
even print work of an individual piece of correspondence.

The Friden Model SFD with Model ATR makes a Duplex system
widely used in all types of business. Ask your Friden special-
-ist to give you a demonstration and, at the same time, some
cost saving case histories of our many users.

Yours very truly,

Education Department

RIF:rf

Friden, Inc. SAN LEANDRO • CALIFORNIA

Friden Creates
A New World
For Business
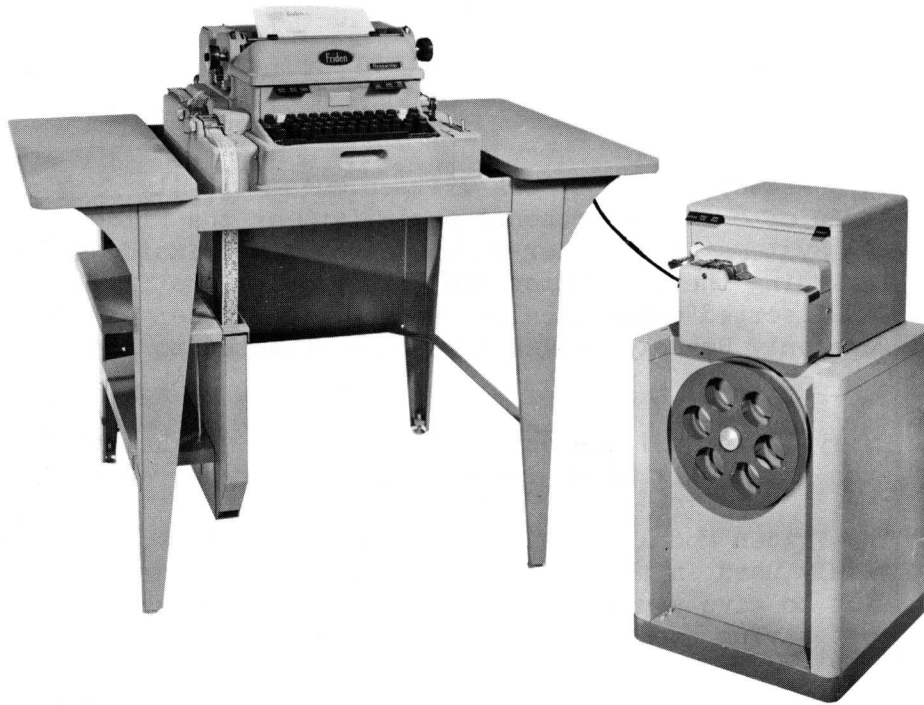
31 PRINCE STREET, ROCHESTER 7, N. Y.

September 11, 19XX

Mr. Alan Smith
789 Elm St.
Albany, New York

Dear Mr. Smith:

This letter, Mr. Smith, was written automatically from a
strip of 8-channel punched paper tape on the Friden Model

ABBREVIATIONS:

The following abbreviations are used in the programming charts:

CR	–	Carriage Return Code	CNT	–	Control Code
TAB	–	Tabulation Code	ON	–	Punch On Code
UC	–	Upper Case Code	OFF	–	Punch Off Code
LC	–	Lower Case Code	SP	–	Space Code

MARGIN: 20
PAPER GUIDE: 1
TAB STOP: 40

```
            MARGIN                              TAB

                                                │September 11, 19XX

            │
            │
            │Mr. John Doe
```
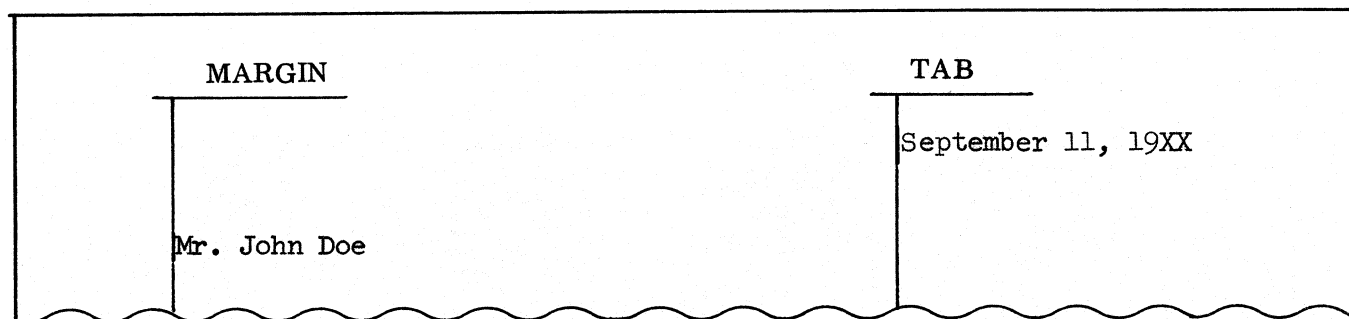
PROGRAM TAPE
```
C  C  T  U                      C  C  O  C
R  R  A  C   SEPTEMBER 11, 19XX  R  R  N  N
      B                                   T
```

ATR TAPE
```
                              C  U
                              R  C    MR. JOHN DOE
```

SELECT TAPE
```
                              C  U
                              R  C    MR. JOHN DOE
```

The Punch Control Switch is in the SELECT position. Since the first data to be read is from the Program Tape, the START READ switch on the Model SFD is depressed to begin the operation. Two Carriage Return codes position the document; the TAB code brings the carriage to the "date" tab stop; and the date is written. Two more Carriage Return codes are used. The Punching Unit is turned on by the ON code. The CNT (CONTROL) code then switches the reading action to the Model ATR which begins to read the tape containing the inside address. Since the Punching Unit is on, this information is punched into the tape. Note again that PUNCH ON, PUNCH OFF, STOP, and CONTROL codes do not reproduce into the Select Tape when the Punch Control switch is in the SELECT position.

```
    234 Main St.
    Rochester, N.Y.
```

PROGRAM TAPE

```
```

ATR TAPE

C			C	U		C	C
R	234 MAIN ST.		R	C	ROCHESTER, N.Y.	R	N
							T

SELECT TAPE

C			C	U		C
R	234 MAIN ST.		R	C	ROCHESTER, N.Y.	R

The inside address is completed and the CNT code switches the reading action back to the Program Tape in the Model SFD reading unit.

```
    Dear Mr. Doe:
```

PROGRAM TAPE

O	C		S	C		U	C	C
F	R	DEAR MR.	P	N		C :	R	R
F				T				

ATR TAPE

		U		C
	C	DOE	N	
			T	

SELECT TAPE

```
```

The Punching Unit is turned off and is not turned on again for the duration of this document. Note that the Punch Control codes are in the Program Tape, since once the Select Tape containing the names and addresses has been prepared, it may be used over and over again, for envelope addressing. The salutation is written and the reading action is switched to the Model ATR to fill in the name. Note that as few codes as possible are in the address tape being read from the Model ATR. This is to allow as much information as possible to be included in that tape. This not only simplifies filing methods, but saves time in the insertion of fewer tapes. The reading action is switched back to the Model SFD, which writes in the colon and Carriage Returns down to the first writing line.

> This letter, Mr. Doe, was written automatically from a
> strip of 8-channel punched paper tape on the Friden Model
> SFD (Systems Flexowriter Double Case). The inside address,
> including the salutation and your name on the first line.

PROGRAM TAPE

THIS LETTER, MR. C N (NAME), WAS AUT ....
T

ATR TAPE

	U		C			C U		C
	C	DOE	N			R C	MR. ALLEN SMITH	R
			T					

SELECT TAPE

				C U		C
				R C	MR. ALLEN SMITH	R

The first few words are written and the CNT code switches the reading action back to the Model ATR to fill in the name; then back to the Program tape in the Model SFD to continue writing the body of the letter.

A STOP Code (not shown) is programmed at the end of the Program Tape to allow the operator to insert another letterhead.

THE MODEL ATCR
Auxiliary Tape or Edge Card Reader
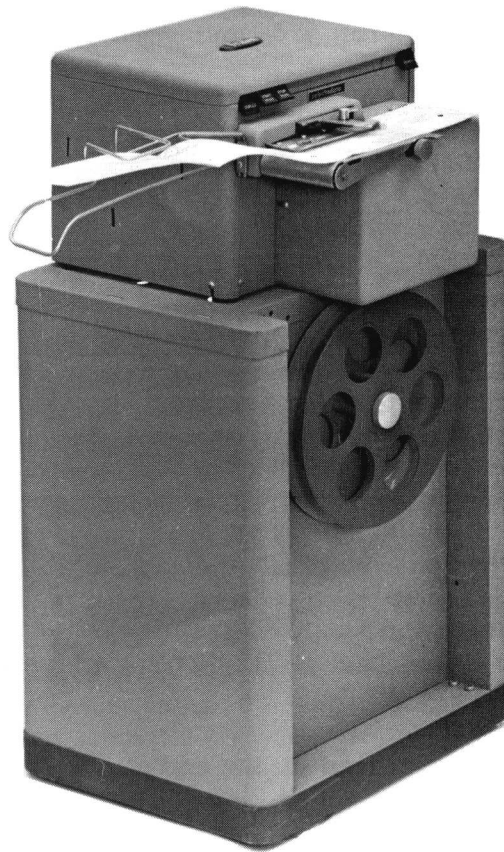
The Model ATCR, Auxiliary Tape or Edge Card Reader, can be cable-connected to any Model SFD, SPS, or SPD, to provide a Duplex system. It is built to the same specifications as the Model ATR, described on the preceding pages, except that the Model ATCR has the ability to read Edge Punched Cards as well as tape. The CONTROL keylever on the Flexowriter controls the switching operation.
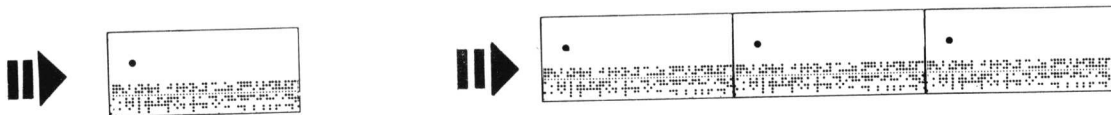
Edge Cards are three inches wide by seven inches long, and may be punched along the edge with the same 8-channel systems code as tape. They come connected together at the ends, and must be cut apart with the Friden Edge Card Cutter. They may be used singly, or in groups of as many as three together. These cards may be punched on the Models SFD, SPS, or SPD, when equipped with Edge Card Units. (see page 19).

APPLICATION:

The Model ATCR is used in Duplex systems requiring an auxiliary Edge Card Reading Unit.
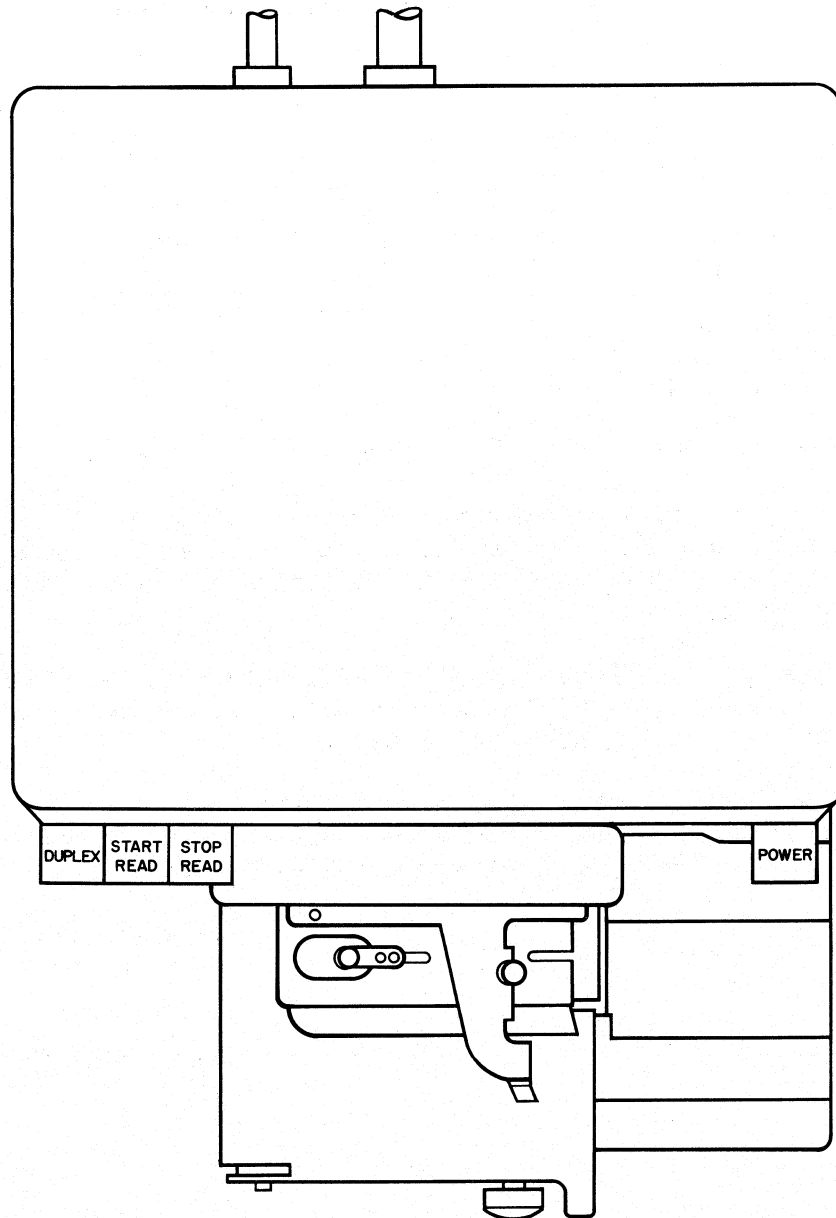
AUXILIARY TAPE OR EDGE CARD READER

MODEL ATCR

The figure shows labeled controls: DUPLEX, START READ, STOP READ, POWER

Friden, *Inc.* SAN LEANDRO · CALIFORNIA

31 PRINCE STREET, ROCHESTER 7, N. Y.

October 8, 19XX

Mr. John Doe
234 Main St.
Rochester, N.Y.

Dear Mr. Doe:

Thank you for your letter inquiring about the Friden Model
SFD (Systems Flexowriter Double Case) automatic writing
machine. We are enclosing literature and specifications for
your reference.

Basically, the Model SFD is a heavy-duty writing machine
which can be operated either manually, or automatically
from 8-channel punched paper tape.

If you would like to have a demonstration of the Flexowriter,
simply call on our Friden sales representative in your city.
He will be happy to show you the Flexowriter.

Yours truly,

Advertising Dept.

RF:rf

The letter on the facing page illustrates another example of a personalized form letterwriting application known as "Variable Paragraph Selection".

Variable Paragraph Selection applications are used when a variety of the same type of letter is desired. In this case, it is answering inquiries about a variety of products. This particular letter shows an answer to an inquiry about the Model SFD. Other letters may answer inquiries about the Model SPS, Selectadata, Tab Card Reader Units, or any other product. The same type of letter will be used to answer all such inquiries. Only the first and second paragraphs will differ with each letter, dpending upon the particular product about which, information is requested.

This letter was written from edge-punched cards on the Model SFD with Edge-Punched Card Punch and Reader Units, with the Model ATCR (Auxiliary Tape and Edge-Punched Card Reader) cable-connected. It is not necessary to use Edge-Punched Card Units on Flexowriters which are to be used with the Model ATCR. They are used here to make a better application.

```
                                              October 8, 19XX


  "HEADER          ⎧  Mr. John Doe
   CARD"           ⎨  234 Main St.
  (MODEL SFD)      ⎩  Rochester, N. Y.

                      Dear Mr. Doe:

    FIRST          ⎧  Thank you for your letter inquiring about the Friden Model
  "PARAGRAPH       ⎨  SFD (Systems Flexowriter Double Case) automatic writing
   CARD"           ⎩  machine.  We are enclosing literature and specifications for
  (MODEL ATCR)        your reference.

   SECOND          ⎧  Basically, the Model SFD is a heavy-duty writing machine
  "PARAGRAPH       ⎨  which can be operated either manually, or automatically
   CARD"           ⎩  from 8-channel punched paper tape.
  (MODEL SFD)

  "CLOSE CARD"     ⎧  If you would like to have a demonstration of the Flexowriter,
  (MODEL ATCR)     ⎨  simply call on our Friden sales representative in your city.
                   ⎩  He will be able to show the Flexowriter.

                                              Yours truly,



                                              Advertising Dept.

                      RF:rf
```
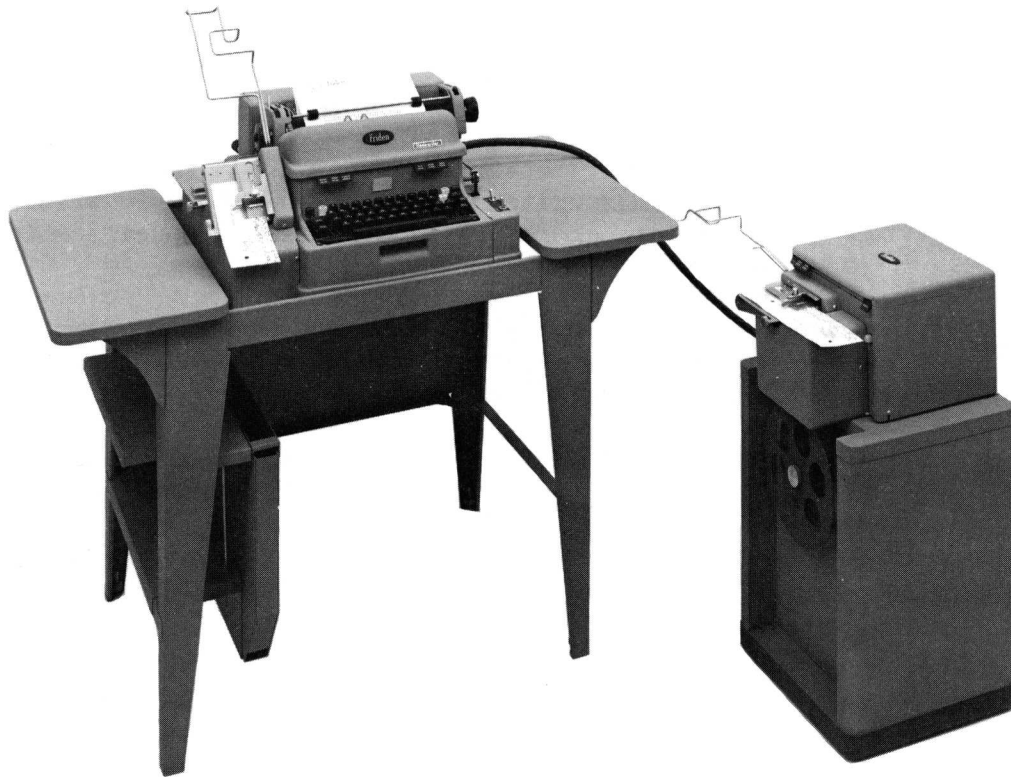
Four series of edge-punched cards were used to write this letter, of which only two are considered constant data: the "Header Card", and the "Close Card".

The "Header Card" contains the date, Stop codes for the operator to manually fill in the inside address, and the salutation, with a Stop code so the operator can fill in the name.

The "Close Card" contains everything from the final paragraph on. The final paragraph will be constant with every letter.

The two "Paragraph Cards" contain the two middle paragraphs and are considered variable data. Listed below are some alternate paragraphs that may be used:

> (1.a) "Thank you for your letter inquiring about the Auxiliary Reader Units that can be cable-connected to any Friden Model SFD, SPS, or SPD, Flexowriter automatic writing machines. We are enclosing literature and specifications for your reference".

(1.b) "Basically, this operation, called a "Duplex" operation, allows 8-channel Punched Paper Tape, Edge-Punched Cards, or Tabulating Cards to be read from two sources to cause automatic writing of a document".

(2.a) "Thank you for your letter enquiring about the Tabulating Card Reader Unit that can be installed on any Model SFD, SPS, or SPD. We are enclosing literature and specifications for your reference".

(2.b) "Basically, this allows the Flexowriter to write a document from IBM Tabulating Cards, quickly and efficiently. It can be used for Billing, Purchase Order Writing, Inventory Control, and many other Systems applications".

The operator begins with a sheaf of correspondence containing customer enquiries about the company's products. Referring to the first enquiry, the operator removes the proper Paragraph cards from the file. The Header Card is inserted into the Flexowriter Reader Unit, and the first Paragraph Card is inserted into the Model ATCR. The Punch Control Switch is in the SELECT position. The operator inserts a letterhead and touches the START READ panel switch.

The Header Card begins to read. When it has finished, a Control code, programmed at the end, switches the reading action to the Model ATCR, where the first Paragraph Card is read. During this operation, the operator removes the Header Card from the Flexowriter Reader Unit, and inserts the second Paragraph Card.

A Control code, programmed at the end of the first Paragraph Card, switches the reading action back to the Flexowriter Reader Unit, and the second Paragraph Card is read.

During this operation, the operator removes the first Paragraph Card from the Model ATCR and inserts the Close Card. A Control code, programmed at the end of the second Paragraph Card, switches the reading action to the Model ATCR, and the letter is completed.

While the letter is being finished, the operator sets up for the next letter to be written. The Header Card is reinserted into the Flexowriter Reader Unit; the Paragraph Cards are filed; and the proper Paragraph Cards for the next letter are removed from the file. When the letter is completed, the operator inserts a fresh letterhead, and the process is ready to be repeated.

A Select Tape, containing the inside address, is automatically punched for automatic envelope addressing.

MARGIN: 20
PAPER GUIDE: 1
TAB STOP: 40

	MARGIN		TAB

START
POSITION

October 8, 19XX

HEADER
CARD

Mr. John Doe
234 Main St.
Rochester, N.Y.

Dear Mr. Doe:

FIRST
PARAGRAPH
CARD

Thank you for your letter inquiring about the Friden Model
SFD (Systems Flexowriter Double Case) automatic writing
machine. We are enclosing literature and specifications for
your reference.

SECOND
PARAGRAPH
CARD

Basically, the Model SFD is a heavy-duty writing machine
which can be operated either manually, or automatically
from 8-channel punched paper tape.

If you would like to have a demonstration of the Flexowriter,
simply call on our Friden sales representative in your city.
He will be happy to show you the Flexowriter.

CLOSE
CARD

Yours truly,

Advertising Dept.

RF:rf

ABBREVIATIONS:

The following abbreviations are used in the programming charts:

CR: Carriage Return Code
TAB: Tabulating
TAB: Tabulation Code
ON: Punch On Code
OFF: Punch Off Code
CNT: Control Code
STP: Stop Code
SP: Space Code

```
                                                    October 8, 19XX



              Mr. John Doe
              234 Main St.
              Rochester, N. Y.
```

HEADER CARD

C C T			C C O C S		C S		C S		C O	
R R A	OCTOBER 8, 19XX	R R N R T		R T		R T		R F	
B			P		P		P		F

SELECT TAPE

C		C		C		C	
R	MR. JOHN DOE	R	234 MAIN ST.	R	ROCHESTER, N.Y.	R	

The programming here begins with the Header Card read in the Model SFD. Two Carriage Return codes position the carriage. The Tab Code brings the carriage to the position to write the date. After the date is written, three Carriage Return Codes bring the carriage into position for writing the inside address. The inside address is to be punched into the Select Tape for automatic envelope addressing, so the On code comes before the third Carriage Return Code to position the envelope. The Stop Codes allow each line of the inside address to be filled in by the operator. When this is completed, the Off Code turns the Punching Unit off, and it is no longer used for the duration of this document.

```
          Dear Mr. Doe:

          Thank you for your letter inquiring about the Friden Model
          SFD (Systems Flexowriter Double Case) automatic writing
          machine.  We are enclosing literature and specifications for
          your reference.
```

HEADER CARD (cont.)   FIRST PARAGRAPH CARD

C		S	S		C	C		C		C	C
R	DEAR	P	T	(NAME):	R	N		R	THANK YOU FOR_____YOUR REFERENCE.	R	N
			P			T					T

A Carriage Return code brings the carriage into position for writing the salutation. The Stop Code allows the operator to fill in the name. The Control code switches the reading action to the Model ATCR, where the first Paragraph Card begins reading. This card contains the complete first paragraph. Only the first and last few words of that paragraph are shown in the programming. When the first paragraph is completed, a Control code switches the reading action back to the Model SFD Reader Unit.

Basically, the Model SFD is a heavy-duty writing machine
which can be operated either manually, or automatically
from 8-channel punched paper tape.

If you would like to have a demonstration of the Flexowriter,
simply call on our Friden sales representative in your city.
He will be happy to show you the Flexowriter.

Yours truly,

Advertising Dept.

RF:rf

SECOND PARAGRAPH CARD

```
C                                        C  C
R     BASICALLY, THE _ _ _ PAPER TAPE . R  N
                                            T
```

CLOSE CARD

```
C                                  C          C  S
R  IF YOU WOULD  _ _ _ DEPT.       R  RF : rf R  T
                                                 P
```

The second Paragraph Card contains the complete second paragraph. Only the first and last words are shown. A Control code switches the reading action to the Model ATCR after this paragraph is completed. The Close Card, read in the Model ATCR, completes the letter. A Stop Code is programmed at the end of the Close Card to allow the operator to insert a fresh letterhead for the next letter.

Auxiliary Tape only Reader with
## Manual Data Selector

The Model ATR-D, Auxiliary Tape only Reader with Manual Data Selector, is an auxiliary tape reading unit which can be cable-connected to any Model SFD, SPS, or SPD, to provide a Duplex operation. It is built to the same specifications as the Model ATR with the addition of the Manual Data Selector on top of the Unit.

Each Dial can be rotated to select a digit from 1 through 9, 0, "S", and Blank. The settings selected may be written on the document starting with the farther row, from left to right, although any readout sequence may be had. For example, in order to get the number below:
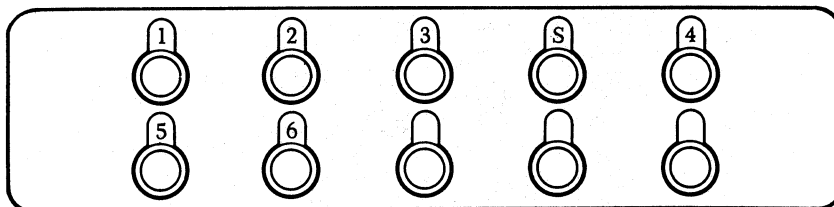
<div align="center">1234567890</div>

the settings are:
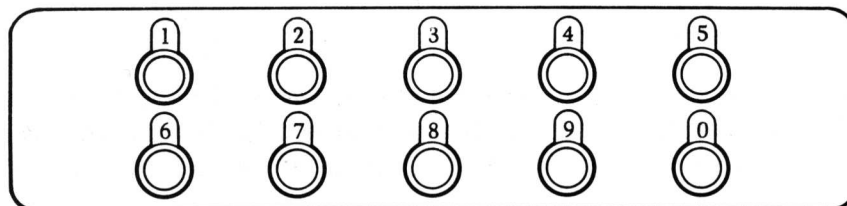
The "S" setting may be wired to produce one letter space. Blank settings will not be indicated on the document. For example, in order to get the number below:

<div align="center">123 456</div>

the settings are:

By changing the last digit before each writing operation, numbers in sequence are produced.

<div align="center">
12345
12346
12347
</div>

The Dials must be manually set, but are read automatically from a code in the tape. This code is called the Data Select Code, and is punched by touching the "3" keylever while holding depressed the AUX CODE panel switch. This operation is called "manufacturing" a code. When the Data Select Code is read by the Reading Unit of a Model SFD, SPS, SPD, or the Model ATR-D itself, the digits and spaces on the Dials will be "read out" and written on the document. No CONTROL code is needed to switch the reading operation to the Model ATR-D, and after the readout operation, whichever reading unit read the data select code will continue, the reading action.

The Data Select, when read in any reading unit, will not reproduce into the tape in the punching unit, however; the digits and spaces on the Dial settings themselves will be punched, if the Punching Unit is on at the time of the readout operation.

<div align="center">OPTIONS</div>

SPLIT READOUT:

The Manual Data Selector can be factory or field modified to provide a "Split Readout". That is, two series of digits instead of one can be read out independently of each other. There are still only ten Selector Dials, but any combination of these dials may be used for the separate readouts, such as: five digits and five digits, seven digits and three digits, or even nine digits and one digit. Whichever way the dials are "split", that combination can only be changed by the Friden Service Department.

The separate readouts are obtained in the following manner. The Data Select Code is still the basic code. If it is followed by the sixth bit (the "Zero" keylever), the first series of digits will readout. If it is followed by the seventh bit (the "dash" keylever), the second series of digits will read out.

<div align="center">60</div>

For example, in the setting below:
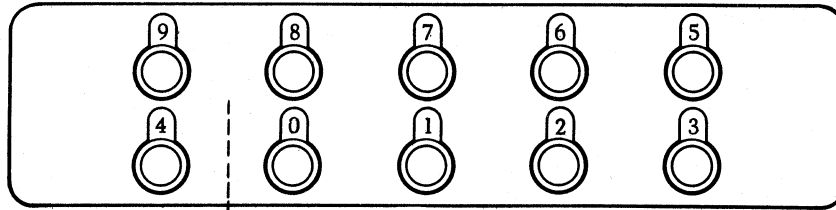
If the Split Readout were six digits and four digits, indicated by the dotted line, the Data Select Code, followed by the sixth bit would read out:

987654

While the Data Select Code followed by the seventh bit would read out:

0123

These readouts are independent of each other, and either readout may be used anywhere on the document.

The readout sequence is not limited to that shown. Any readout sequence can be had.

"S" SUBSTITUTION:

The "S" position on the Selector Dials can readout as a letter space. It may; however, be factory or field modified to read out as a diagonal (/), or a dash (-). If this is so modified, every dial will read out that substitution in the "S" position. Here again, this modification can only be changed by the Friden Service Department.

This modification is useful in certain applications such as where the date is normally indicated like this:

11/09/58

The dial settings for such a readout, with the diagonal in the "S" position, would be:
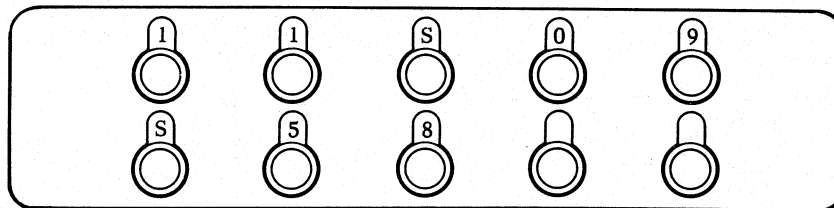
The dash substitution is used where hyphenated numbers are desired.

APPLICATIONS:

The Model ATR-D is used in systems where an auxiliary tape reading unit is required, and also where a constant series of digits, series of digits in sequence or two different series of digits are to be used. Besides automatic letterwriting applications, the Model ATR-D is used in such applications as Sales Order, Purchase Order, Check and Voucher writing, Inventory, Listing and many other systems applications.

September 11 19XX

Mr. John Doe
234 Main St.
Rochester, N. Y.

Dear Mr. Doe:

Thank you for your recent order placed with our company. You
will receive shipment within the next two weeks, and we are sure
you will be well satisfied with your merchandise.

Yours very truly,

September 11, 19XX

Mr. John Doe
234 Main St.
Rochester, N.Y.

Dear Mr. Doe:

Thank you for your recent subscription to the Blank Magazine. Your
subscription number is: 102397. Please use this number when writing
to us concerning a change of address, or for any other reason.

Yours very truly,

September 11, 19XX

Mr. John Doe
234 Main St.
Rochester, N.Y.

Dear Mr. Doe:

The Alumni Association wishes to report that as a result of our
letter of 6/28/59, we have collected two thousand dollars over
our goal of fifteen thousand dollars set for this year's Building
Fund.

We wish to thank all of you who have contributed your time and money
for the realization of this goal.

Yours very truly,

President

RF:rf

PROGRAMMING THE MODEL SFD
WITH THE
MODEL ATR-D ATTACHED

The three examples on the facing page show how the Model ATR-D can be used with the Manual Data Selector. The digits circled show where this feature has been used in the illustrations.

The first letter shows a typical personalized form letter used by all types of manufacturing industries and mail-order houses. The date is inserted by using the Manual Data Selector. This operation eliminates the need for reproducing the letter tape and changing the date daily.

The second letter shows another typical form letter, in this case used by a publishing house, but is also used by manufacturing and other industries for any application where sequential numbering is desired.

The third letter shows a form letter of the type used by many associations. This is an application using both the Split Readout, and "S" Substitution features. In this case a diagonal is used in the "S" position.

In each case, only the significant programming will be shown, as the complete programming is similar to that shown on the previous pages.

ABBREVIATIONS:

The following abbreviations are used in the programming charts:

CR	–	Carriage Return Code	UC	–	Upper Case Code
TAB	–	Tabulating Code	LC	–	Lower Case Code
SP	–	Space Code	STP	–	Stop Code
DS	–	Data Select Code			

```
C C T U              D (S      S        ) C C
R R A C  SEPTEMBER   S (P 11   P  19XX  ) R R
    B
```

DIAL SETTINGS:

```
[S]  [1]  [1]  [S]  [1]
 O    O    O    O    O
[9]  [X]  [Y]  [ ]  [ ]
 O    O    O    O    O
```
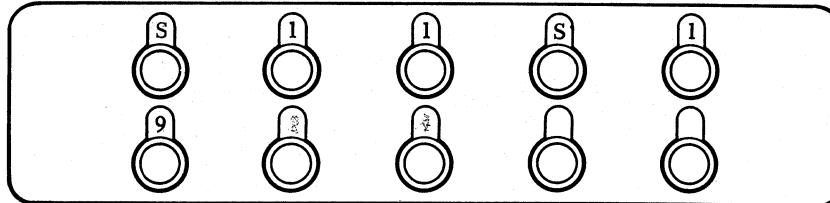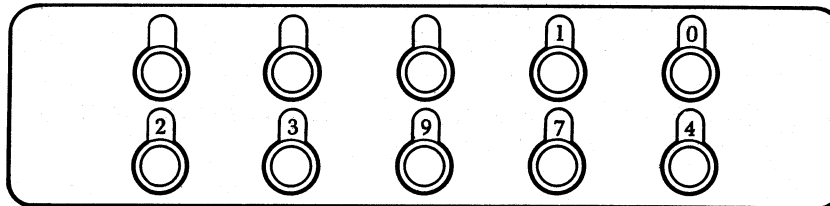
After the month is written, the Data Select Code activates the Manual Data Selector which reads out first a space, the number 11, another space, and the number 19 XX (year). The reading operation then continues. Assuming that this tape is read in the Model SFD, note that no switching codes are needed.

subscription number is: 1023974. Please use this number when writing

```
                        U S L S   D          S U
SUBSCRIPTION   NUMBER   IS C:P C T  S (1023974).P C  PLEASE
                            P
```

DIAL SETTINGS:

```
[ ]  [ ]  [ ]  [1]  [0]
 O    O    O    O    O
[2]  [3]  [9]  [7]  [4]
 O    O    O    O    O
```

Note here that after the colon has been written, a shift code is used to put the Model SFD into the lower case before reading the Data Select Code. If the Model SFD were left in the upper case position before reading the Data Select Code, the document would show:)@#(&$ which is the upper case equivalent of 1023974, the characters desired. Note also, that to allow for numbers of more than seven digits, the blank settings have been used at the beginning of the series. The Stop Code is unnecessary, but is used here to remind the operator to change the last digit on the Dials.
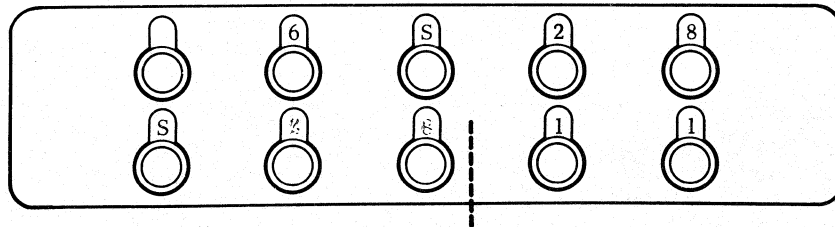
September (11), 19XX

Mr. John Doe
234 Main St.
Rochester, N.Y.

Dear Mr. Doe:

The Alumni ~~Associ~~ation wishes to report that as result of our
letter of (6/28/XX,) we have collected two thousand dollars over
our goal of ~~fifteen~~ thousand dollars set for this year's Building

```
C  C  T  U                    S  D        S              C  C
R  R  A  C    SEPTEMBER        P  S - (11),  P    19XX    R  R
      B
```

DIAL SETTINGS:

The programming here shows both the Split Readout and the diagonal substituted in the "S"
position. The split, indicated by the dotted line, is between the eighth and ninth dials. The
number "11" in the date is readout under control of the Data Select Code followed by the
seventh bit, which is the code for the "dash" keylever. Note that although the dash appears
in the programming, it does not appear on the document. It has become a functional code
when read immediately after the Data Select Code. In any other condition it will read out as
a dash.

```
                        S  D
        LETTER OF    P  S  O   (6/28/XX), WE HAVE
```

This series of digits is readout by the Data Select code followed by the sixth bit, which is the
code for the "Zero" keylever. Note that it makes no difference as to the order in which the
dials are readout. The "S" setting will always read out as a diagonal until changed by the
Friden Service Department.

of Flexowriter Model SFD, applications by business classifications where Flexo-
writers have been sold and are now in use. The type of application for the
Flexowriters is covered under each classification.

ADVERTISING AGENCY
  Financial statements
  Proposals
  Reports
  Market surveys
  Billing like accounts
  Advertising inquiries
  Appointments for account executives
  Duplicator masters

ASSOCIATIONS
  Letters requesting contributions
  Thank you letters to contributors
  Promotion letters during campaign season
  Letters to campaign chairman (city, state and county)
  Press releases
  Committee schedules and reports
  Show announcement
    Rules, regulations
    Contract acknowledgments
    Exibitors
    Reports and data
  Billing
  Stencils and duplicator masters
  Collection letters
  Political campaigns

BANKS
  New account letters
  Closed account letters
  Mortgage department promotion
  Loan department promotion letters
    and acknowledgments of contracts
  Car dealer, appliance dealers loan promotion
  Checking account department personal letters
    re: Service fees, statements
  Stencil writing, plates for duplicators
  Travel club promotions
  Christmas club promotion
  Personalized check printing
  Announcements of all bank services
  Overdrawn account letters
  Dormant account letters
  Mortgage investigations
  Deeds and appraisals
  Safety deposit box promotion
  Time payment plans
  Christmas greetings
  Complaints and adjustments

CITY - PUBLIC RELATIONS
  Letters soliciting conventions
  Letters to manufacturers on new plant sites
  Public relations
  Polls

COURT REPORTING
  Individually typed reports
  Mailing lists
  Masters for duplicators

CREDIT RATING
  Credit letters
  Affidavits
  Research letters
  Survey letters
  Reports of collection
  Credit information

DEALERS - AUTOMOBILE
  New and used car descriptions
    Sales letters
  Service letters
  Service reports
  Apology letters

DEPARTMENT STORES
  Statements
  Billing
  New account letters
  Series collection letters
  Advance sales announcements to customers
  Direct mail promotion
  Sales follow-up letters
  Cancelled account letters
  Executive announcements
  Work schedules
  Payroll checks and envelopes
  Employee investigations
  Clerk sales contests
  Time and work schedules
  New facility and department announcement
  Answer complaint letters
  Exchange and credit correspondence
  Store policy letters
  Tape address lists, special customers

DISTRIBUTORS - (Wholesalers)
  Letters contacting dealers
  Billing like dealers
  Special promotion
  Merchandise - new products
  Service acknowledgements
  Salesmen's Itineraries
  Price Lists and Changes
  Cataloging items
  Purchase Requisitions on orders

EMPLOYMENT
  Application letters to employers
  Client histories
  Surveys of various business requirements
  Employee lists by trade
  Requests for letters of recommendations
  Collection letters
  "Check up" letters (after employee placement)
  Personnel transcripts

ENGINEERING
  Specifications (with or without blueprints)
  Word drawings, parts lists

ENGINEERING (contd.)
Proposals and specifications
Contracts and Agreements
Billing, Statements
Survey letters
Request for prices (with like supplier)
Reports on job progress
Estimates
Laboratory test reports

FINANCIAL INSTITUTIONS
Tabular reports
Financial statements
Profit and loss statements
Transcripts
Property description
Surveys
General letters to clients
Proposals

FOOD MANUFACTURERS
Requests for recipes
Address tapes for mailing campaigns
Invitations to guests
Confidential weekly payroll card data
Employee letters
Bulletins
Statements to dealers
Inventories
Advertising inquiries

GOVERNMENT - (City, state, federal)
V.A. letters of inquiry
Medical reports
Payment letters
Collection letter
Political letters
Campaigns
Surveys - reports
Letters to special license plate holders
Requests for maps, properties, vacation sites, etc.

HOTELS
Reservations - acknowledgements and refusals
Letters concerning lost items
Thank you letters
Collection letters
Promotional letters announcing facilities
Convention letters

INVESTMENT HOUSES
Letters to brokers covering new stock
Bonds
Market forecasts
Price changes
Stock requests
Company reports
Financial statements

INSURANCE
Policy writing
Riders added to policies
Claim settlements
Acknowledging new policies
Letters to agents, salesmen
Agency renewals

INSURANCE (contd.)
Address lists on tape
Letters transmitting policies
Letters on premium lapse
Pre-approach letters to prospects
Proposals
Answering national advertising inquiries
Optional settlement clauses and
    trust agreements for policies
Preparation of income agreements,
    covering disposition to be made
    of policy proceeds
Current divident announcements
Tape mailing lists, prospects,
    policy holders by group and territory
    agents, salesmen
Approvals of disability claims
Cash surrender and policy loan correspondence
Home office salary and anniversary letters
Duplicator masters
Billing

LETTER SHOPS
Special tape mailing lists for customers
Preparing stencils
Preparing paper plates
Preparing photographic masters
Customer letters of all types
Direct mail
Customer billing and statements
Work schedules
Lettershop promotion and campaigns
Survey of Customers
Invitations
Greeting cards

MAIL ORDER
Letter selling facilities
Special tape address lists
Preparation of Elliott stencils
Stencil writing
Campaign letters

MANUFACTURING
Purchasing Department
    Inquiry letters on supplies
    Price data sheets and letters
    Follow up, thank you letters
    Requests for quotations

Central Transcribing Department
    General letters
    Stencils and other duplicator masters
    Bulletins

Billing Department
    Billing of repetitive nature
    Tables
    Monthly account billing
    Statements
    Rental item billing

Personnel Department
    Investigation of new employees
Company policies

MANUFACTURING (contd.)
Bulletins
Authorized collections
Directories
Letters seeking employment

Traffic Department
   Shipping waybills
   Insurance papers
   Labels
   Foreign shipping papers
Advertising Department
   Budgets
   Answering national advertising inquiries
   Direct mail merchandising
   Surveys
   User questionnaires
   Business show promotions and announcements

Executive Department
   Letters to:
      Stockholders
      Suppliers
      Customers
      Employers
      New plans and promotions
      Policies
      Managers
      Official notices
      Meetings

Sales Department
   Quotation letters
   Sales bulletins
   Price data letters
   New accounts
   Processing new orders
   Questionnaires
   Call reports
   Sales address lists
   New product announcements
   Sales meeting
   Acknowledging letters
   Sales forecasts
   Sales records
   Shipping records
   Letters introducing new salesmen
   Appointments for salesmen

Sales Promotion Department
   Contract bulletins
   User data, users list
   National accounts
   Direct mail
   Prospect address list
   Applications of products
   Dealer and sales promotion
   Ad mat service

Accounting Department
   Personalized collection letters
   Repetitive statement writing
   Financial statement reports
   Balance sheets
   Confidential payroll
   Annual reports

MEDICAL
   Answering inquiries re: medicine and formulas
   Doctors' mailing lists
   Credit Dept. collection letters
   Collection letters for delinquent accounts
   Follow up letters
   Thank you letters for remittances
   Good will letters
   Sales promotion letters
   Contacting new prospects
   Thank you letters to new accounts
   Discount letters to jobbers and wholesalers
   Address list for salesmen
   Letters promoting service abilities and advantages

PHARMACEUTICAL
   Answer requests from doctors covering
      new drugs, pills and formulas
   New product announcements

PUBLISHERS
   Letters promoting:
      New subscriptions
      Renewal subscriptions
      Advertising space contract solicitation
      Space contract acknowledgments
   Editorial reprints
   Spot – Radio or TV scripts
   Answering inquiries on services offered
   Directories
   Space sales bulletins
   Salesmen's itineraries
   Rate structure changes
   Surveys
   Balance sheets
   Proposals to potential advertisers
   Circulation statements
   Agency promotion
   Client promotion letters
   Publishers circulation statements
   Direct mail promotions
   Elliot stencil writing
   List of advertisers
   Publication surveys
   Readership surveys
   Repeat ad studies
   Special picture or service offers
   Special issues or directory promotion
   Executive letters to staff
   Publishers comparison charts with other
      allied publications

RADIO
   Radio and television scripts
   Commercials
   Client interviews
   News releases
   Production time sheets
   Program schedules
   Executive orders
   Advertising rates
   Solicitations

SCHOOLS
   Letters to prromote registration

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SCHOOLS (contd.)
    Acknowledging student application letters
    Letters giving time, day and date for registration
    Typewriting stencils
    Duplicator masters
  Sales Department
    Letters
    Booklets
    Contracts
    Special events
    announcements
  Collections
  Show announcements
  Cooking schools and demonstrations
  Flexowriter as a teaching instrument
  Graduation announcements to families
  Research reports
  Teachers' meetings, agendas
  Schedules, reprints for special talks
  Administrative bulletins
  Examination papers
  Medical reports
  Social activities
  Direct mail promotion
  Directories
  Student roster
  School newspaper

TRAVEL AGENCIES
  Itineraries
  Acknowledgments
  Letters of inquiry

TRANSPORTATION – Trucking and Railroads
  Billing:
    Way bills
    Foreign shipping papers
  Rate changes
  Receiving notices
  Shipping notices
  Tracing lost shipments
  Address lists
  Shipping instructions and schedules
  Employee work schedules
  Airlines:
    Promoting flights
    Billing and statement writing to charge accounts
    New customer thank you letters
    1000-Hr. club and others
    Tape address list
    Lost and found department letters
    Complaint letters

UNIONS
  Ledger sheets
  Membership books
  Promoting membership in union

UTILITIES
  Repetitive billing
  Statements
  Complaint letters
  New rate letters
  Answering newspaper ad inquiries
  House organs

UTILITIES (contd.)
  Sales Department
    Letters
    Booklets
    Contracts
    Special events
  Appliance announcements
  Collections
  Show announcements
  Cooking schools and demonstrations

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