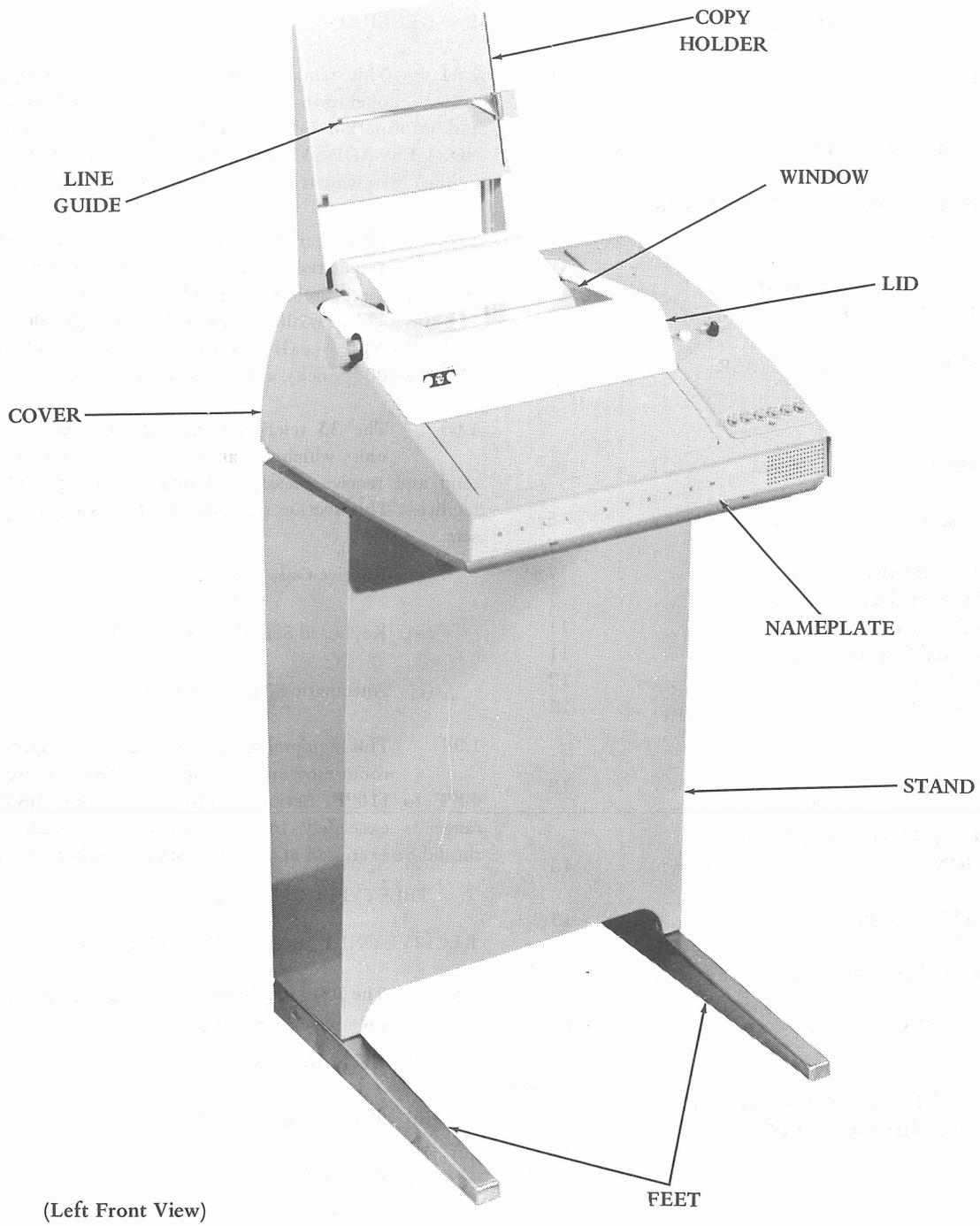


33 TELETYPEWRITER SETS

GENERAL DESCRIPTION AND OPERATION

CONTENTS	PAGE	1. GENERAL
1. GENERAL	1	1.01 This section provides a general description and operation of 33 teletypewriter sets. It is reissued to add information on operating temperature and on sets for NO. 1 ESS-ADF (ADNET), 85A1, 86A1, and 86B1 Selective Calling. Marginal arrows indicate changes or additions. ←
2. TELETYPEWRITER SETS	1	
RECEIVE-ONLY (RO) TELETYPEWRITER SET	1	1.02 This section describes the 33 sets and their associated components. For more complete coverage of set circuitry and individual components, refer to Sections 574-121-100 (keyboard), 574-122-100 (printer), 574-123-100 (call control), 574-124-100 (reader), 574-125-100 (punch), and 574-126-100 (cover). ←
KEYBOARD SEND-RECEIVE (KSR) TELETYPEWRITER SET	3	
AUTOMATIC SEND-RECEIVE (ASR) TELETYPEWRITER SET	3	
3. COMPONENTS	5	1.03 The 33 teletypewriter sets are electromechanical units which use an 8-level start-stop signal code to send and receive messages through associated transmitting facilities. This section describes the following teletypewriter sets:
A. Keyboard	5	(a) Receive-Only (RO)
B. Typing Unit	7	(b) Keyboard Send-Receive (KSR)
C. Motor and Drive Parts	7	(c) Automatic Send-Receive (ASR)
D. Call Control Unit	7	
E. Stand	11	
F. Cover and Subbase	11	
G. Tape Reader	12	
H. Tape Punch	12	
4. SET FEATURES	12	1.04 This equipment is intended to be operated in a room environment within the temperature range of 40°F to 110°F. Serious damage to it could result if this range is exceeded. In this connection particular caution should be exercised in using acoustical or other enclosures. ←
5. TYPICAL TELETYPEWRITER SET OPERATION	13	
LOCAL OPERATION	13	2. TELETYPEWRITER SETS
ON-LINE OPERATION	13	RECEIVE-ONLY (RO) TELETYPEWRITER SET
6. TECHNICAL DATA	14	2.01 The RO set (Figure 1) receives and prints messages on a paper copy. It consists of:
7. 33 SETS FOR NO. 1 ESS-ADF (ADNET), 85A1, 86A1, AND 86B1 SELECTIVE CALLING	15	(a) Keyboard blank
GENERAL DESCRIPTION	15	(b) Typing unit
TECHNICAL DATA	17	(c) Call control
		(d) Stand (if so equipped)
		(e) Cover



(Left Front View)

Figure 1 - Receive-Only (RO) Teletypewriter Set

2.02 The RO set can only be used to receive and print messages from other connected sets. Sending is limited to the answer-back mechanism.

KEYBOARD SEND-RECEIVE (KSR) TELETYPEWRITER SET

2.03 The KSR set (Figure 2) receives and prints messages on a paper copy. It can generate messages from its keyboard and answer-back mechanism. The KSR consists of:

- (a) Keyboard
- (b) Typing unit
- (c) Call control
- (d) Stand (if so equipped)
- (e) Cover

2.04 The KSR set can be used in the following ways:

- (a) To generate and send messages from its keyboard.

- (b) To receive and print messages from other connected sets and its own keyboard.

AUTOMATIC SEND-RECEIVE (ASR) TELETYPEWRITER SET

2.05 The ASR set (Figures 3 and 4) receives and records messages on paper tape and/or page copy. It can generate messages from its keyboard, tape reader, and answer-back mechanism. The ASR consists of:

- (a) Keyboard
- (b) Typing unit
- (c) Call control
- (d) Stand (if so equipped)
- (e) Cover
- (f) Tape reader
- (g) Tape punch

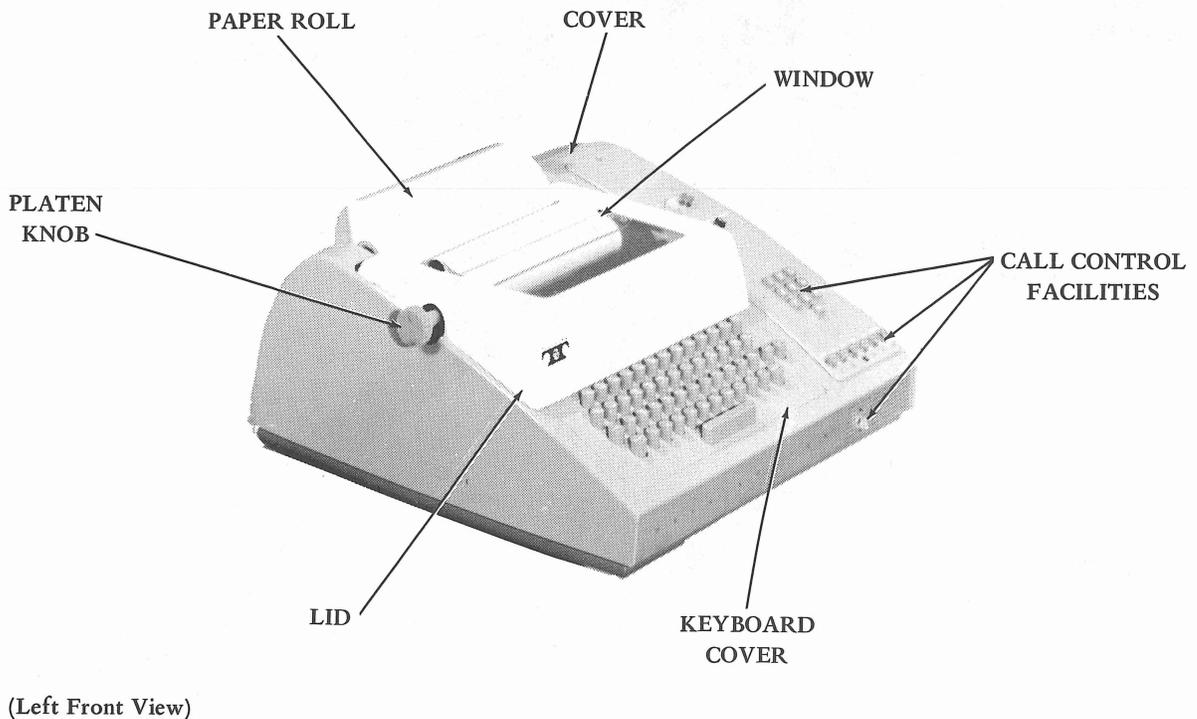


Figure 2 - Keyboard Send-Receive (KSR) Teletypewriter Set (Without Stand)

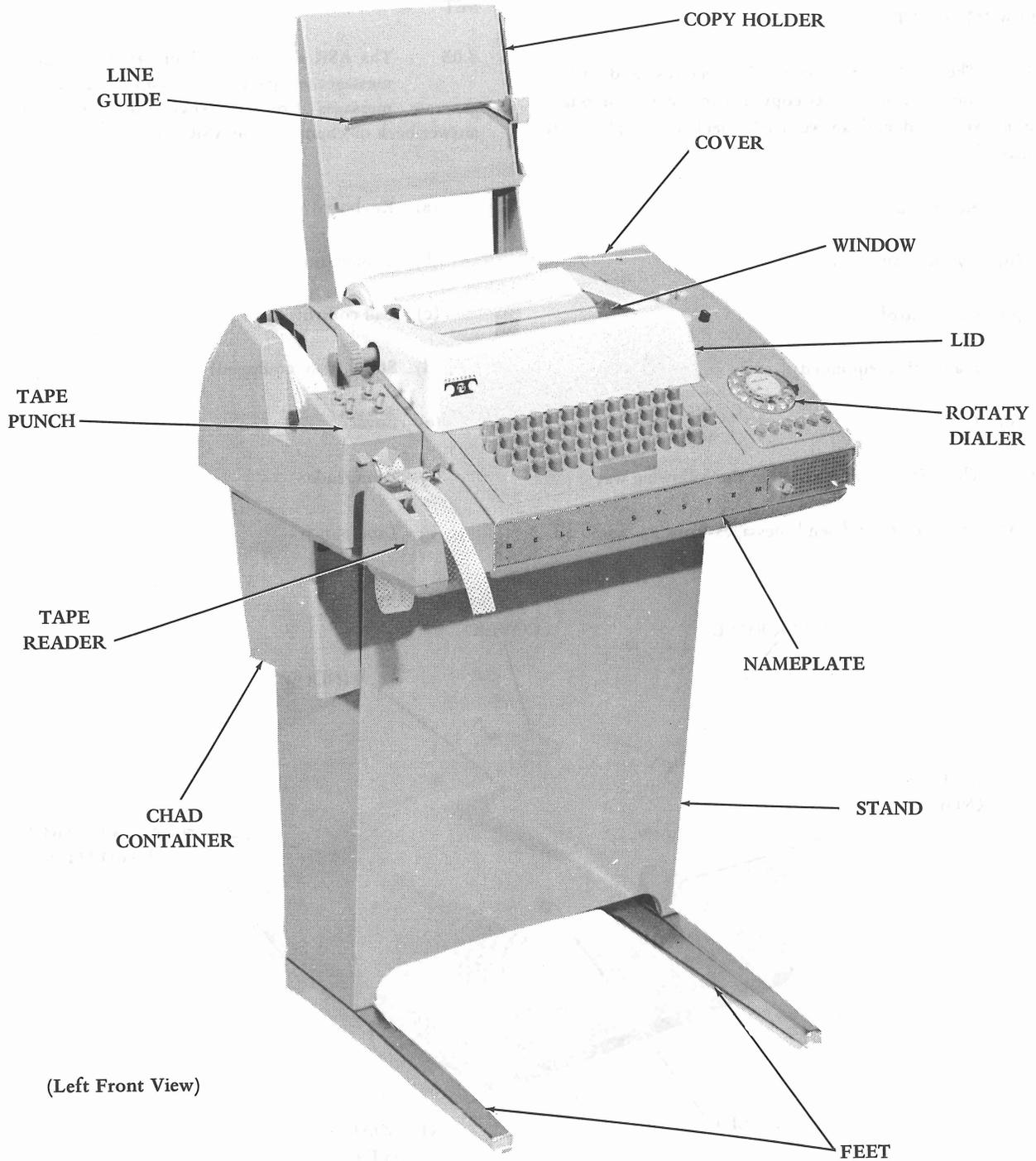


Figure 3 - Automatic Send-Receive (ASR) Teletypewriter Set

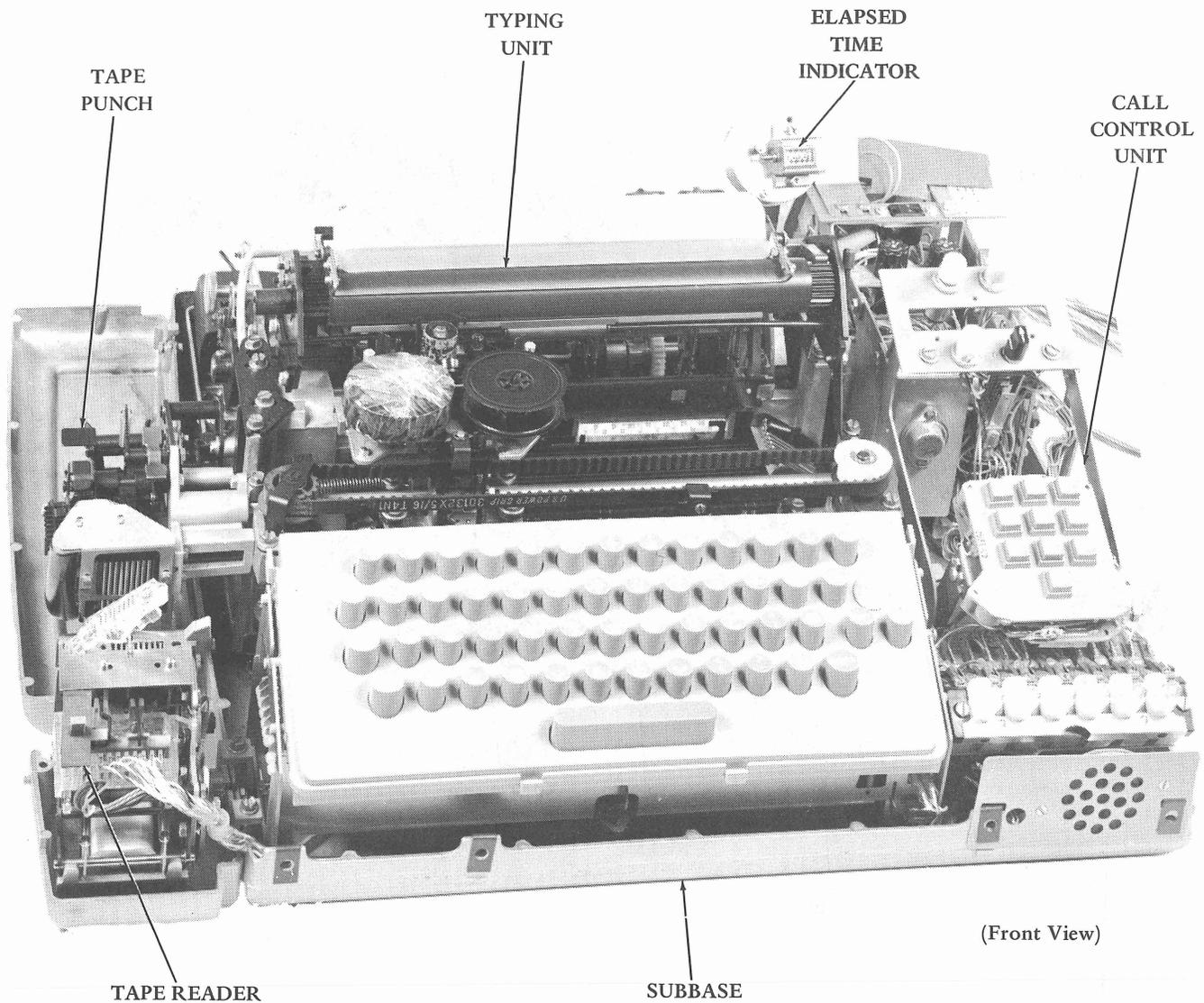


Figure 4 - Automatic Send-Receive (ASR) Teletypewriter Set (Without Cover and Stand)

2.06 The ASR set can be used in the following ways:

- (a) To send messages from the keyboard while making a printed page copy with or without punching tape.
- (b) To receive messages from line and print them on page copy with or without punching tape.
- (c) To prepare tape locally from keyboard for later sending while making a printed page copy.
- (d) To send messages from tape while making a page copy with or without punching tape.

3. COMPONENTS

3.01 A general outline of component operation is given in the following paragraphs. For detailed component description, refer to its associated section.

A. Keyboard

3.02 In conjunction with a distributor mechanism on the typing unit, the keyboard (Figure 5) provides facilities for generating messages by the manual operation of a group of keys.

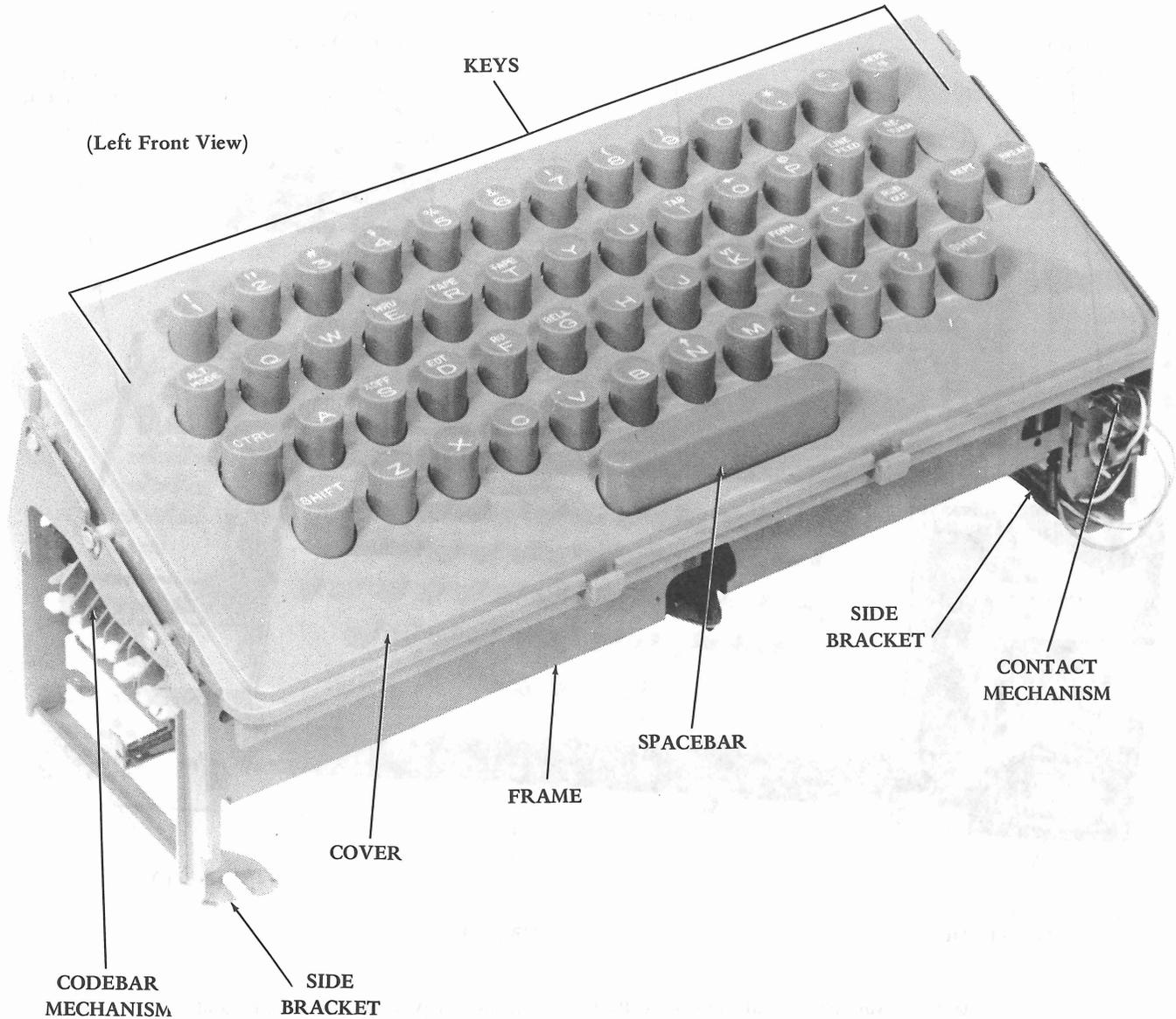


Figure 5 - 33 Keyboard

3.03 The 33 keyboard closely resembles a typewriter keyboard. It has four rows of keys and generates an 8-level start-stop signaling code. It includes the following components:

- (a) A spacebar and keys similar to those on a typewriter.
- (b) A codebar mechanism which converts the manual depression of the keys to mechanical positions corresponding to the proper code combinations.

(c) A contact mechanism in which the codebar mechanism sets up the code combinations for conversion to start-stop signals by the distributor.

Note: Keyboards equipped with even parity have a second contact mechanism on the left side of the frame.

(d) A frame and two side brackets which support the mechanisms and a cover which serves as a guide for the keys.

(e) A cable with connector which electrically interconnects the keyboard with the call control unit.

3.04 The RO keyboard is blank. It does not have keytops, cabling, codebar or contact mechanisms.

B. Typing Unit

3.05 The typing unit (Figures 6 and 7) is the set receiving print-out component. The typing unit receives start-stop signals from the call control unit and converts them into mechanical motions which print the messages, perform functions, and, in the case of the ASR, perforate tape.

3.06 The typing unit consists of:

(a) A main shaft which receives motion from the drive parts and distributes it to the various mechanisms through three (four) internal expansion clutches.

Note: Friction feed typing units have three clutches. Sprocket feed typing units have four clutches.

(b) A selector mechanism which converts the start-stop signals to corresponding mechanical arrangements that control a codebar mechanism.

(c) A codebar mechanism which controls printing, functions, and, in the case of the ASR, tape perforation.

(d) A printing carriage which prints the messages on the paper. The characters are embossed on the cylindrical surface of a typewheel.

(e) A function mechanism which enables the typing unit to perform functions supplementary to printing.

(f) A paper feed mechanism which vertically positions paper or forms. The mechanism can be adjusted for single or double line feed.

(g) A spacing mechanism which positions the printing carriage so that the characters are properly located horizontally on the paper or form.

(h) A disc and brush type distributor mechanism which converts parallel signal output to serial output to serial start-stop signals for the transmission facilities.

(i) A base casting which provides mounting facilities for the mechanisms.

(j) Two cables with connectors which provide inter-connection with the call control unit.

(k) An answer-back mechanism which, in conjunction with the distributor, will automatically transmit a sequence of characters for station identification. It may be coded to transmit any sequence of up to 20 characters and may be actuated locally or remotely.

3.07 Friction feed typing units use 8-1/2 inch paper, which will accommodate 74 characters per line, 10 characters per inch and 6 vertical lines of copy per inch. During normal operation, one original and one carbon of printed copy can be prepared. Sprocket feed sets use sprocket fed forms. A total of 72 characters may be printed in a line on an 8-1/2 inch wide form, with 10 characters per inch. The set will accommodate 6 lines of printed characters per inch. Varying with the weight of the carbon, the set will normally print one original and two copies.

C. Motor and Drive Parts

3.08 The motor (Figure 8) is an integral part of the typing unit which provides motive force needed for the units mechanical motion. It is provided by a 2-pole single-phase synchronous motor which operates from a 115-volt 60 hertz ac source and develops 33 millihorsepower at 3600 rpm (3000 rpm for 50 hertz operation).

3.09 The motor is equipped with sleeve bearings and consists basically of a housing, end bells, a wound stator, and a squirrel-cage rotor with shaft which rides on sleeve bearings. Cooling is provided by three fans – two within the end bells and one at the left end of the shaft. The motor is mounted by rubber vibration mounts which are clamped in a cradle formed by the typing unit's base casting. A start capacitor and a current-operated start relay are mounted on the base casting to the left of the motor. A pinion on the right end of the shaft transfers the rotary motion generated by the motor to a set of drive parts which consists of a gear pulley and motor belt.

D. Call Control Unit

3.10 The call control unit (Figure 9) is mounted on the set subbase. It serves as a bridge between the teletypewriter set and the transmitting facilities. Generally, the call control unit serves to initiate, accept, control and complete incoming calls. A power supply, local-remote control circuits, and a selector magnet driver circuit are some of it's basic elements.

3.11 A speaker is mounted at the front of the call control unit. Immediately behind and above the speaker is a row of six illuminating pushbuttons designated

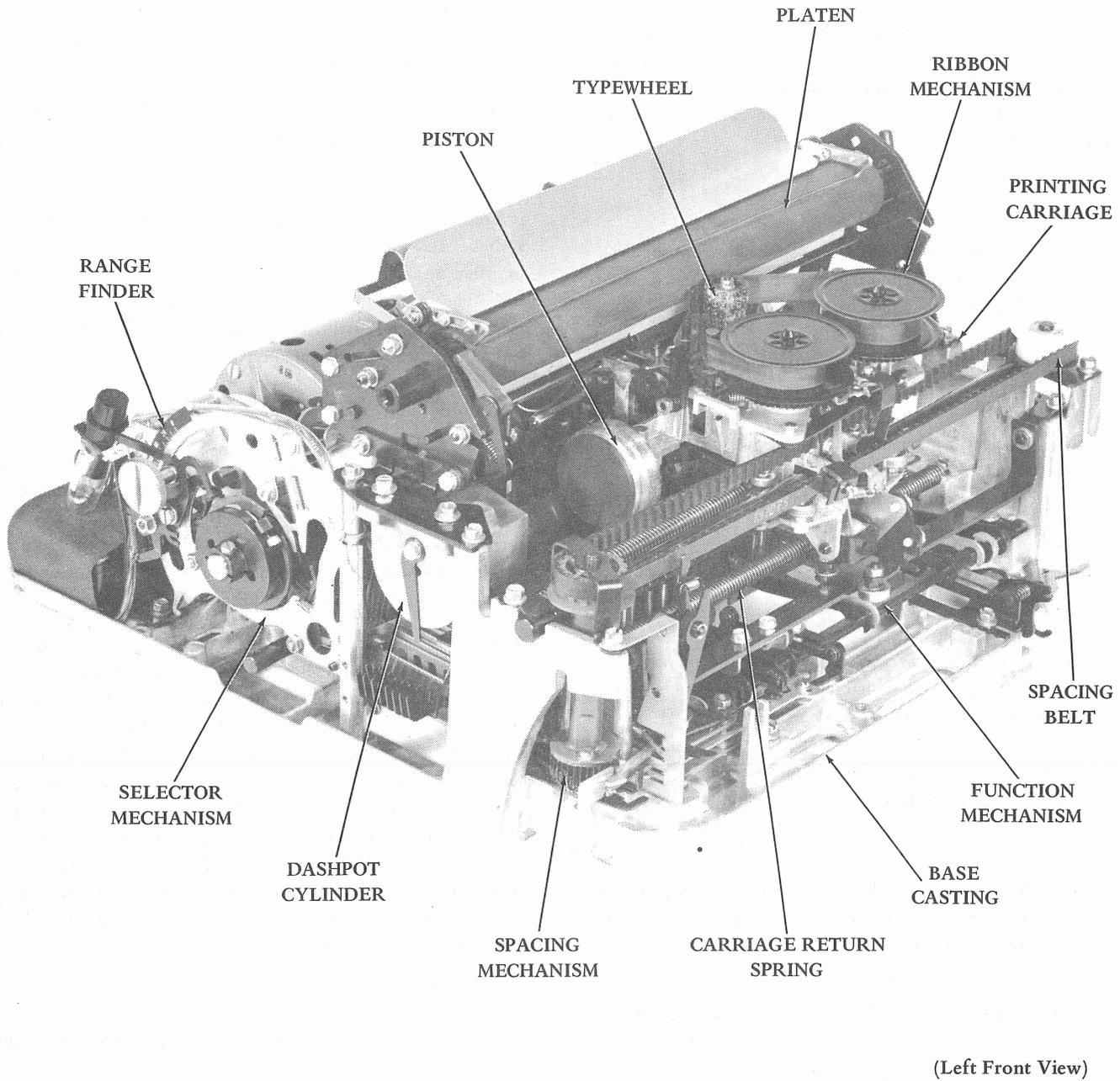


Figure 6 - Typing Unit (Friction Feed)

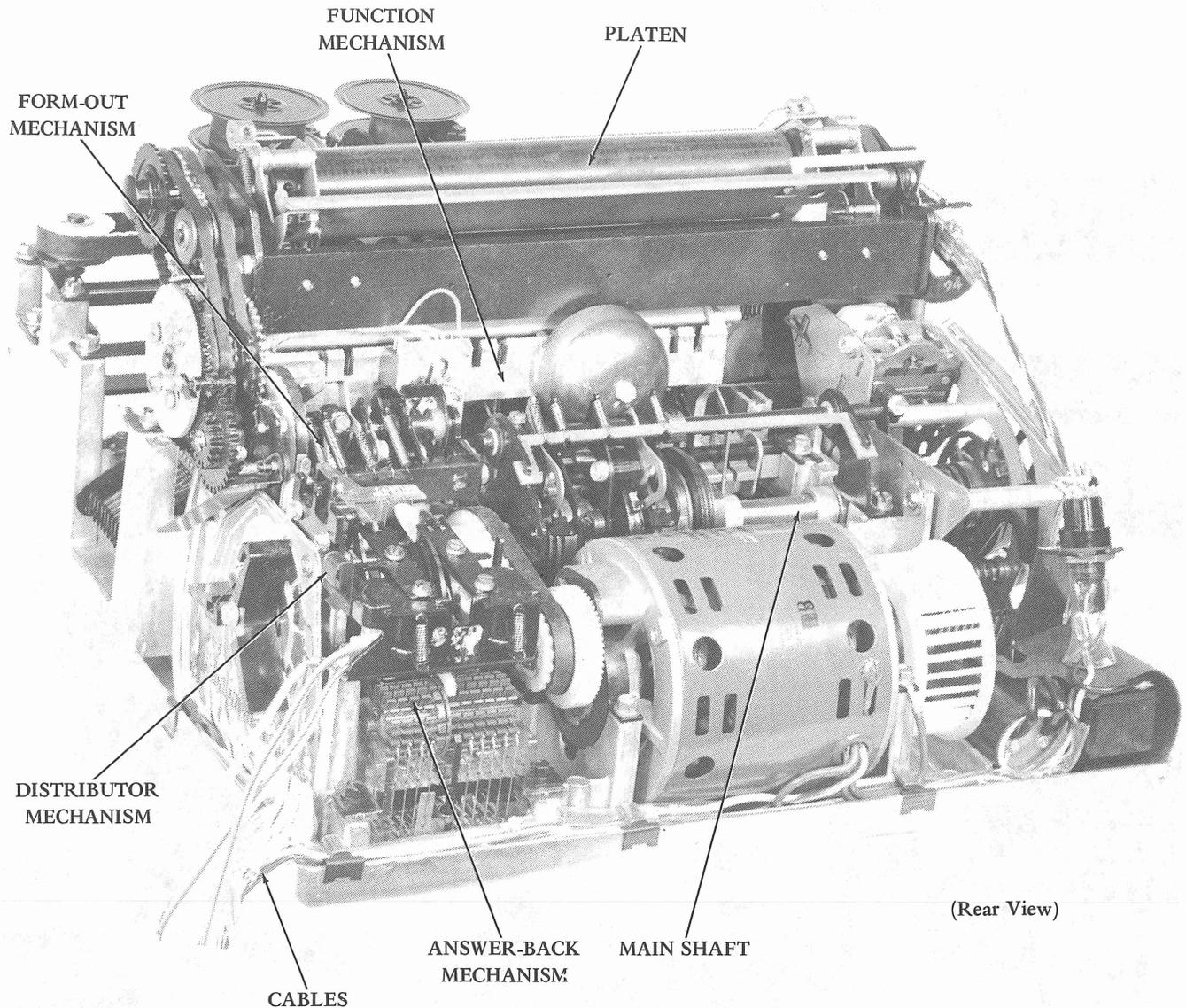


Figure 7 - Typing Unit (Sprocket Feed)

from left to right as ORIG (originate), CLR (clear), ANS (answer), TST (test), LCL (local), and BUZ-RLS (buzzer release).

3.12 Immediately behind the front row of illuminating pushbuttons is either a rotary or TOUCH-TONE® dialer for making connections with called stations through dial switching facilities. Behind the dialer is a cluster of four controls: A combined BRK-RLS (break-release) lamp and pushbutton (white, upper), a REST (restrain) lamp (amber), an OUT OF SERV (out-of-service)

lamp (white, lower), and a NORMAL RESTORE (out-of-service) switch.

3.13 Some call control units are equipped with an automatic pulsing or tone card dialer. These units have two slots located behind the BRK-RLS and REST lamps. One slot is used for storage of the dialing cards and the other for insertion of a card into the dialer. In addition, a START bar and a RELEASE bar (or only a START bar) are located behind either the rotary or TOUCH-TONE dialer. These are used to initiate operation of the automatic dialer, and to facilitate release of the dialing card from the dialer.

(Rear View)

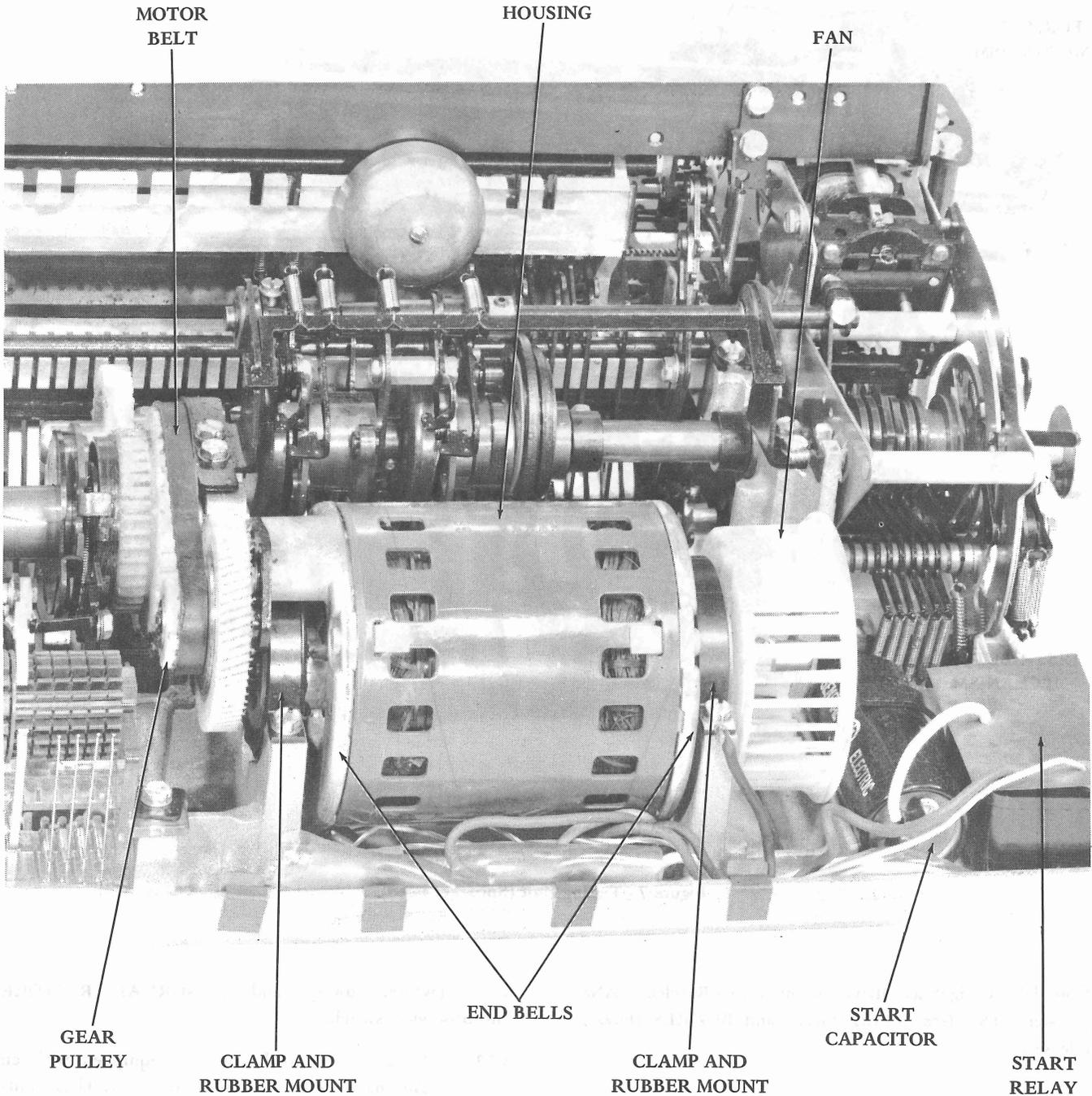


Figure 8 - Motor and Drive Parts

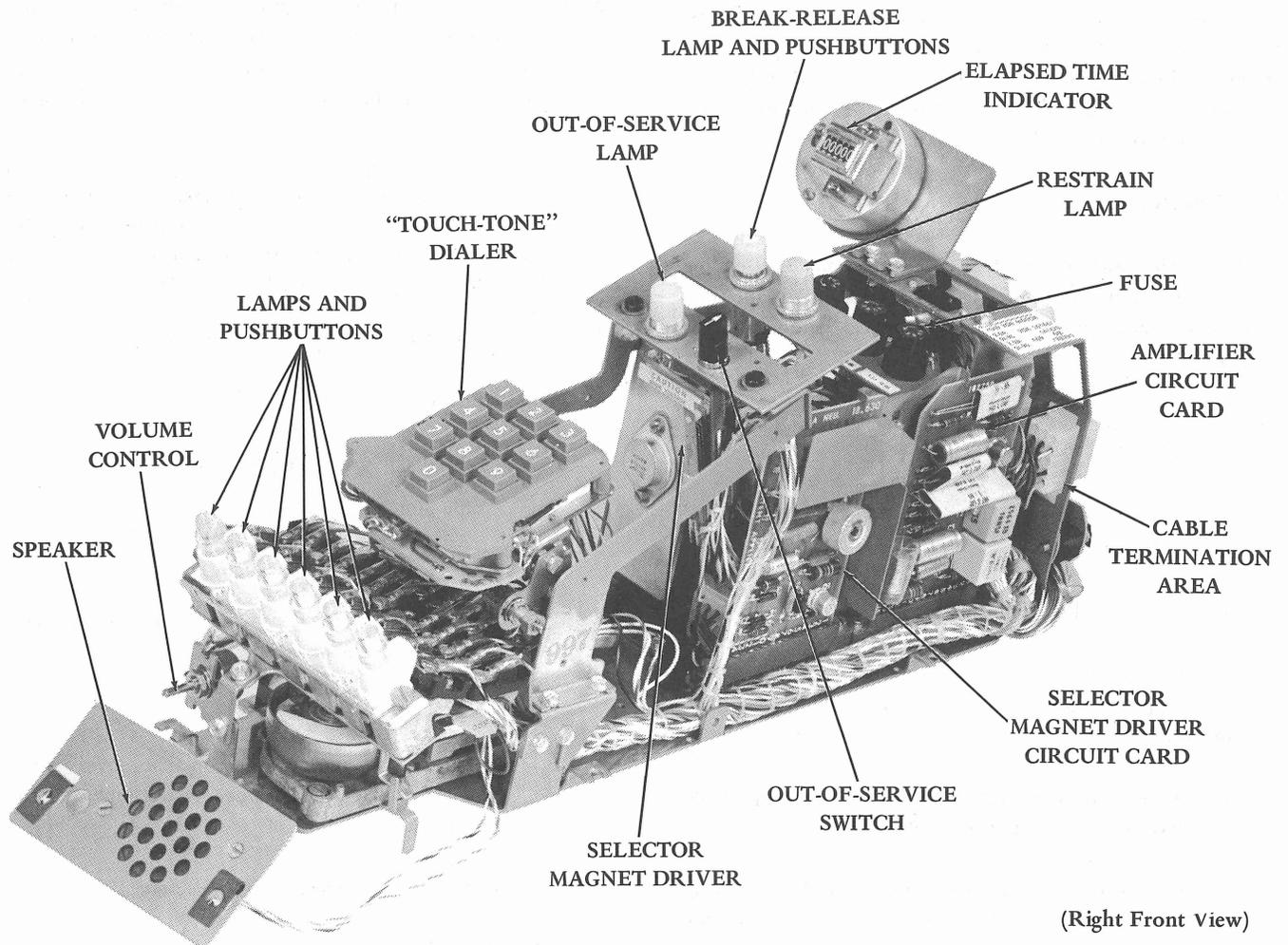


Figure 9 - Typical Call Control Unit

3.14 In addition to the above, the call control unit includes the following features:

- (a) A cable termination area, at the rear, which provides eight male receptacles for interconnection of components.
- (b) A 9-point terminal board for connection of telephone line and power line.
- (c) An ac power cord with polarized plug for connection of the teletypewriter set to the power line.
- (d) Two cables assemblies with 50-point connectors for connections to the data set.

E. Stand

3.15 The sheet metal stand (Figure 1) supports the subbase and components at a convenient operating level. It consists of chrome feet, equipped with leveling screws, and an enclosure which will house auxiliary apparatus such as a data set. A removable rear panel provides access to the enclosure. If desirable, the feet of the stand may be bolted to the floor.

F. Cover and Subbase

3.16 A plastic cover (Figure 2) provides a decorative and protective enclosure for the set components. A lid, which is spring detented in its open position, may be raised

to gain access to the typing unit for changing ribbon or installing paper or forms. A window permits viewing the copy and provides a cutting-edge for tearing the paper or forms. Depressions at the rear of the cover hold the paper roll spindle. Mounting slots are provided for copyholder. A nameplate is mounted at the front. All of the major components are mounted on the subbase (Figure 4).

G. Tape Reader

3.17 The tape reader (Figure 4) is the message sending component. The reader senses perforated tape code holes and transforms them into electrical parallel output signals.

3.18 The complete tape reader package includes the following:

- (a) A tape-sensing mechanism which senses the tape code holes.
- (b) A tape feed mechanism which advances the tape.
- (c) A feed magnet and armature arrangement which supplies motion for the sensing and feed mechanisms.
- (d) A magnet-controlled clutch trip mechanism which actuates the distributor mechanism.
- (e) A power pack, mounted in the enclosure of the stand, which provides current rectification for the feed magnet.
- (f) A cable which interconnects the tape reader with the power pack, the magnet pulsing contact, and the call control unit.
- (g) Tape-out and tight-tape mechanisms which will stop the tape reader when it runs out of tape or when the tape becomes taut.
- (h) A free-wheeling mechanism which permits the tape to be moved freely through the tape reader.
- (i) A frame which is mounted on the typing unit's subbase and provides mounting facilities for the other mechanisms, excluding the power pack and clutch trip mechanism.
- (j) A base casting and plastic cover which provides a protective and decorative enclosure for the tape reader.

H. Tape Punch

3.19 The tape punch (Figure 4) is the message tape preparing component. The punch receives intelligence through a direct mechanical linkage to the typing unit. The code is punched and recorded in 1 inch wide paper tape.

Note: When preparing tape, all functions, such as form-out, carriage return, line feed, etc, must be followed by a fill character such as delete. This fill character is required because the tape reader will not stop immediately due to mechanical delay.

3.20 The tape punch includes the following:

- (a) A tape punch drive mechanism.
- (b) An intelligence-transfer mechanism.
- (c) A tape-punching mechanism.
- (d) A tape feed and guide mechanism.
- (e) A base casting which provides mounting facilities for the various mechanisms.
- (f) A tape supply reel.
- (g) A pan casting and two-piece plastic cover which provides a protective and decorative enclosure for the tape punch.
- (h) A container to collect the paper (chad).

4. SET FEATURES

4.01 Following is a brief description of set functions and accessories commonly used with teletypewriter sets.

- (1) Carriage Return – Carriage returned to left margin.
- (2) Line Feed – Copy paper advanced vertically.
- (3) Space – Carriage spaced one character to the right.
- (4) Space Suppression – Carriage spacing suppressed when a function, other than Space, is sensed by typing unit.
- (5) Print Suppression – Printing suppressed when a function is sensed by the typing unit.
- (6) Rubout – Character deletion code.
- (7) End-Of-Line Bell – Bell rings to indicate carriage approaching right margin.

- (8) Acknowledge (ACK) – Set receiver ready to receive.
- (9) End-Of-Transmission (EOT) – Transmission terminated.
- (10) Who Are You (WRU) – Answer-back enquiry.
- (11) X-on and X-off – Turns reader (ASR sets w/automatic readers, only) on and off, respectively.
- (12) Line Break – Places set in an open line condition. A BREAK keytop on the keyboard actuates line break.
- (13) Repeat – Provides continuous character printing (or function response) when both REPT and character (or function) keytops are depressed together.
- (14) Answer-Back – A mechanism coded with a predetermined sequence of characters used for identification purposes. The mechanism may be actuated locally or remotely.
- (15) Print-Nonprint – When operated, this solenoid mechanism disables set printing and functions. When unoperated the set will print and execute its operations in normal fashion.
- (16) Even Parity Keyboard – Keyboard generated code is always transmitted with an even number of marking pulses.
- (17) Numeric Keyboard – Has a numeric, rather than alpha, keytop arrangement. The keyboard can, if necessary, accommodate a limited number of alpha characters and nonprint functions such as CARRIAGE RETURN, LINE FEED, etc.
- (18) Sprocket Feed – Typing unit uses sprocket fed forms and can produce one original and two copies of recorded message.
- (19) Form-Out (sprocket feed only) – Form-out advances the forms to a predetermined length. The mechanism is adjustable to various form length.
- (20) Paper-Out Alarm (sprocket feed only) – A set equipped with this feature will activate an alarm when the supply of forms is exhausted. The set will ring for an incoming call and the ANS lamp will flash, however, the set will refuse to accept the call.
- (21) Automatic Carriage Return Line Feed (friction feed sets only) – Upon reaching the right margin, the carriage is automatically returned and the copy paper is advanced vertically one line.
- (22) Low-Paper Alarm (friction feed only) – When paper roll reaches a certain level a switch activates an alarm which indicates low-paper supply. Incoming calls will ring set, flash ANS lamp, but will not be accepted.
- (23) Copyholder – Consists of a page support and indicator to hold and mark the message page for the typist.
- (24) Sheet Metal Stand – Supports the typing unit subbase and components.
- (25) Automatic Punch Control (ASR set) – This feature allows a number of operating modes for turning the tape punch ON and OFF. The tape punch can be turned ON and OFF manually or automatically. The punch can also be equipped with ON-LOCK which locks the tape punch in the ON mode.
- (26) TD Call In (ASR set) – Activate tape reader by momentarily closing ACK contacts. The tape reader can be activated by closing a set of X-on (Reader On) contacts, or by manually placing the tape reader in the ON mode.
- (27) Elapsed Time Indicator – Keeps a running total of set motor operation.

5. TYPICAL TELETYPEWRITER SET OPERATION

LOCAL OPERATION

5.01 The ASR and KSR teletypewriter sets may be used for local (off-line) message preparation for future transmission or to produce printed copy for immediate use.

ON-LINE OPERATION

5.02 A message generated from the keyboard (KSR or ASR sets) or tape reader (ASR set only) is directly sensed and recorded by the tape punch (ASR only) and/or typing unit.

5.03 The call control in conjunction with the data set, provides facilities for initiating, accepting, controlling, and completing calls. A call generated from the originating terminal is passed through the call control, the associated data set, and on to the transmission lines. Incoming calls pass through the call control selector magnet driver and on to the typing unit selector mechanism.

SECTION 574-100-101

5.04 A ringer mechanism furnishes an audible indication of incoming calls. A small speaker with volume control provides help in originating a call by audible monitoring of the dial tone, ringing, and busy signals. Voice communication is not provided.

6. TECHNICAL DATA

6.01 Speed: 100 wpm (600 opm)

Note: Wpm = words per minute, opm = operations per minute.

6.02 Transmission Code: 8-level start-stop signals with 11-unit transmission pattern.

6.03 Dimensions and Weight (approximate):

(a) KSR

Width 18-5/8 inches
 Depth 18-1/2 inches
 Height 8-3/8 inches
 Weight 40 pounds

(b) RO

Width 18-5/8 inches
 Depth 18-1/2 inches
 Height 8-3/8 inches
 Weight 39 pounds

(c) ASR

Width 22 inches
 Depth 18-1/2 inches
 Height 8-3/8 inches
 Weight 44 pounds

(d) Stand

Width 17-3/4 inches
 Height 24-1/2 inches
 Depth at Top of Enclosure 8 inches
 Depth at Bottom of Enclosure 6-1/2 inches
 Length of feet 17-3/4 inches
 Weight 12 pounds

6.04 Electrical:

Power Requirements 115 volts ac $\pm 10\%$
 60 hertz ± 0.45 single phase
 Signal Line Current 0.020 ampere
 Nominal Input to Selector 0.500 ampere at
 20 volts dc

6.05 Printing and Paper or Form Handling:

(a) Feed

Friction or Sprocket Six lines per inch,
 adjustable for single
 or double line feed

(b) Paper or Form

Friction Feed 8-1/2 inches wide,
 max 5-inch diameter roll
 Sprocket Feed 8-1/2 inches wide; 7-, 8-1/2,
 9-, 10-, 11-, and 12-inch form
 lengths or multiples of
 1/3 or 1/2 thereof

(c) Characters and Line

Friction Feed . . . 10 characters per inch, max 74
 character line
 Sprocket Feed . . . 10 characters per inch, max 72
 character line

(d) Legible Copies

Friction Feed: Original and one copy
 Sprocket Feed: Original and two copies

6.06 Motor:

Type Synchronous, capacitor start
 Input 115 volts ac $\pm 10\%$, 60 hertz
 (or 50 hertz) ± 0.45 hertz, single phase
 Input Current 2 amperes
 Output 33 millihorsepower
 Speed 3600 rpm (3000 @ 50 hertz)
 Temperature Rating 50° C continuous
 Power Factor 0.40%

6.07 Tape Reader

(a) Dimensions and Weight (approximate)

Feeding and Sensing Portion

Width 3-1/2 inches
 Depth 4 inches
 Height 3-1/2 inches
 Weight 2 pounds

Power Pack

Width 6-1/4 inches
 Depth 2-1/2 inches
 Height 2-3/4 inches
 Weight 1 pound

(b) Power Pack - Electrical

High Voltage:

Input 115 volts ac $\pm 10\%$, 60 hertz ± 0.45 ,
single phase
Output Min 137 volts dc @ 0.160 ampere

Low Voltage (Rectifier for Relay*):

Input 48 volts ac
Output 32 volts ± 8 volts dc
Heat Dissipation (with tape
reader operating 17 watts

*Applicable to tape reader equipped with automatic reader control.

CAUTION: HIGH VOLTAGE PERSISTS 10 SECONDS AFTER POWER REMOVED.

(c) Feed Magnet

Power Dissipation 2-1/4 watts
Nominal Attract Time 8-11 milliseconds
at 0.220 ampere
Nominal Release Time 7-10 milliseconds

6.08 Tape Punch:

(a) Dimensions and Weight (approximate)

Width 3-1/2 inches
Height 7-1/2 inches
Depth 13-1/4 inches
Weight 1-1/2 pounds

(b) Tape Specifications

Levels 8-level
Width 1 inch
Code Combinations Per Inch 10
Feed Hole Diameter 0.0465 inch

7. 33 SETS FOR NO. 1 ESS-ADF (ADNET), 85A1, 86A1, AND 86B1 SELECTIVE CALLING

GENERAL DESCRIPTION

7.01 The 33 sets for NO. 1 ESS-ADF and 85A1 Switching Systems include two ASR sets (friction and sprocket feed) and two RO sets (friction and sprocket feed). The ASR sets may be used alone or in conjunction with RO sets serving as auxiliary receivers.

7.02 Controls for the teletypewriter and the station controller are provided by an attendant set which mounts in front of the call control unit. Located on the call control unit are additional controls. The ASR set has a mode switch (ON-LINE, OFF-LINE) and two auxiliary keys (AUX ON, AUX OFF). The RO set has the AUX ON and AUX OFF keys.

7.03 Interfacing for the teletypewriter and the station controller is via a 50-pin connector. The Teletypewriter Set Interface Table shows the interface circuits and a brief functional description.

7.04 The ASR set may be operated alone or with an RO set serving as an auxiliary receiver. A mode switch located on the call control unit places the set on-line or off-line (local).

7.05 In local the ASR set typing unit is under the control of the keyboard or tape reader. For maintenance purposes the motor may be turned on or off by the power switch on the call control unit. The tape punch may be turned on or off manually by the operator using the pushbuttons on the punch, or automatically upon receiving the DC2 and DC4 codes. Test jacks for driving or monitoring the signal line in the off-line mode are provided on the call control unit. The red jack is labeled SDG/RCVG and the black jack CKT GRD.

7.06 In the line mode the set is under the control of the controller and the keyboard lock prevents the keyboard from functioning. Thus the keyboard is not functional on-line. The motor is also under control of the controller.

7.07 If an auxiliary receiver is used with the ASR set, it may be controlled by depressing the AUX ON or AUX OFF key. The auxiliary receiver may also be turned on or off by action of the DC2 and DC4 stunt box contacts respectively. When the auxiliary receiver is called in, the print nonprint mechanism in the ASR set is energized placing the set in the nonprint mode. The RO set, serving as the auxiliary receiver, prints the message until DC4 or ETX is received by the master station (ASR set) selector.

7.08 The RO set may be used as a terminate only receiver or, as mentioned in 7.07, as an auxiliary receiver. The AUX ON and AUX OFF keys on the call control unit bezel serve to place the set in the on or off mode. As an auxiliary receiver the RO set may also be turned on or off by receipt of DC2 and DC4 which activate corresponding stunt box contacts in the primary set.

7.09 Features for the various components of the ASR and RO set include the following:

TELETYPEWRITER SET INTERFACE TABLE

PIN NO.	CIRCUIT	ASR	RO
14	LOST CHARACTER – Break contact opens for 5 msec minimum during 1 thru 5 pulses.	X	X
49	TAPE READER CONTROL – Operating circuit must switch 70 ma at 48 v dc.	X	
32,7	TAPE READER CONTROL LEVER AND TAUT TAPE – Break contact opens in OFF or taut tape (150 ma at 48 v dc max).	X	
30,5	READER TAPE AVAILABLE – Break contact opens when tape is not available (150 ma at 48 v dc max).	X	
2,27,3	FORM FEED INDICATOR – Break-make contact operates for duration of form out (sprocket feed only).	X	X
18,44	FORM FEED CONTACT – Make contact in stunt box operates momentarily (sprocket feed only).	X	X
50	FRAME GROUND – Separated from circuit ground in teletypewriter	X	X
1	CIRCUIT GROUND	X	X
16	SEND DATA – +5 to +25 v (space) - 5 to -25 v (mark)	X	
43	RECEIVE DATA – +3 to +25 v (space) +0.5 to -25 v (mark)	X	X
34,9,35	TAPE PREPARATION (Off-Line mode) – Break-make contact operates when in local (34 and 9 close). 500 ma at 48 v dc max.	X	*
42	TAPE PREPARATION – Break contact operates when in local.	X	
24	MOTOR CONTROL RELAY – Operating circuit must switch 55 ma at 58 v dc (70 ma with Aux Receiver).	X	X
6,36,31	PAPER ALARM (Sprocket Feed) LOW PAPER (Friction Feed) – Break contact opens on paper out or low paper (16 ma at 12 v dc max) Note: Both contacts are not present at the same time. Short is provided for missing contact.	X	X
4,29	SHUNT	X	X
40	POSITIVE 48 VOLTS	X	X
8,33	SHUNT	X	X

*Not used. Pins 9 and 35 are shorted.

(a) Typing Unit – The typing units for both the ASR sets do not have the answer-back mechanism. The typing units have a lost character contact, motor control relay, a reader trip coil, heavy gold plated form-out and paper alarm contacts (sprocket feed), gold alloy low-paper switch (friction feed), and a solenoid operated print nonprint mechanism. The lost character contact and the print nonprint mechanism are further described in 7.10 and 7.11 respectively. The RO sets typing units have no answer-back mechanism and no distributor disc. These typing units have the lost character contact, the motor control relay, heavy gold plated form-out and paper alarm contacts (sprocket feed), gold alloy low-paper switch (friction feed), and the solenoid operated print suppress mechanism. All four typing units have the NEW LINE feature which provides carriage return on receipt of the line feed code (friction and sprocket feed) and carriage return on receipt of form feed (sprocket feed only).

(b) Keyboard – The keyboard used in the ASR set has a lock mechanism which prevents keyboard operation in the on-line mode.

(c) Tape Punch – The tape punch used on the ASR sets is capable of either manual or automatic operation. The punch, as shipped from the factory, has two disabling clips installed in slots A-0 and A-8 which enable the punch for manual operation. Removing the clips enables the punch for automatic operation. Refer to Figure 10 for location and configuration of the disabling clips.

(d) Tape Reader – The reader in the ASR sets is a manual reader having a blocking pawl which allows the control lever to be spring biased to return to STOP from the FREE position. This reader also has control lever and tape available contacts as separate leads to the controller.

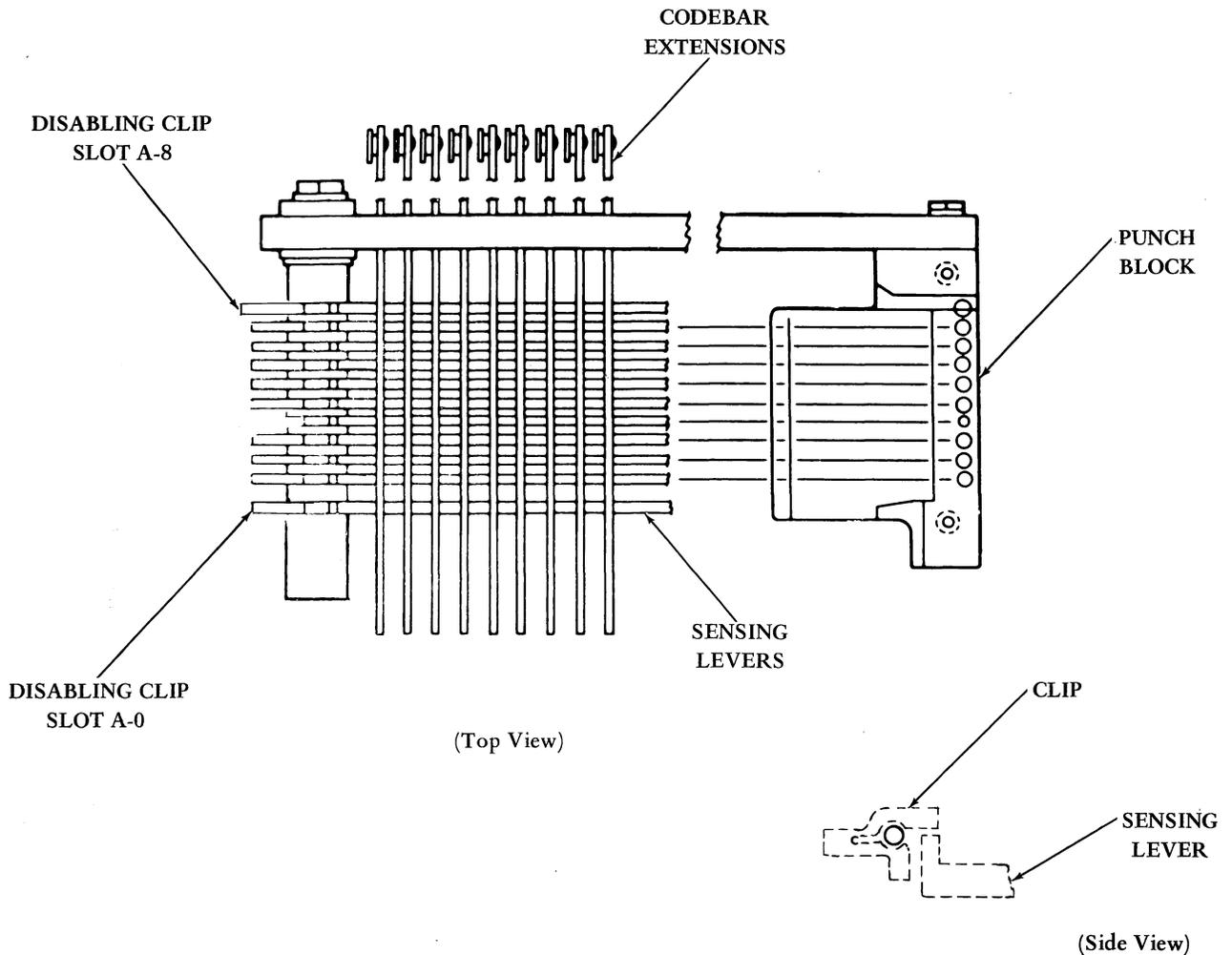


Figure 10 - Tape Punch Disabling Clips

Lost Character Contact

7.10 The lost character contact provides a check to insure that the teletypewriter receives the transmitted character. A contact operates in conjunction with the no. 6 cam of the selector cam assembly and sends an indication to the data auxiliary set in the form of a voltage signal.

Print Nonprint Mechanism

7.11 The print nonprint mechanism prevents the typing unit from printing. A solenoid, when activated, positions a nonprint codebar which blocks all the function levers from operating except the print suppression function lever which operates to suppress printing in normal fashion.

TECHNICAL DATA

7.12 ASR Set:

Input	115 v ac $\pm 10\%$ at 60 Hz $\pm 0.75\%$
Weight	56 pounds
Height	32-7/8 inches
Width	.22 inches
Depth	18-1/2 inches

7.13 RO Set:

Input	115 v ac $\pm 10\%$ at 60 Hz $\pm 0.75\%$
Weight	51 pounds
Height	32-7/8 inches
Width	18-5/8 inches
Depth	18-1/2 inches