28 KEYBOARD SEND-RECEIVE (KSR) AND RECEIVE-ONLY (RO)

TELETYPEWRITER SETS

DESCRIPTION

1. GENERAL

1.01 The 28 Keyboard Send-Receive (KSR) Teletypewriter Sets are electromechanical apparatus that provide terminal facilities for exchanging page-printed messages over appropriate transmission facilities including telegraph lines, telephone networks, and radio channels. An operator sends the messages by typing them on a keyboard, and the originating set and those at distant stations print them on page-width copy paper or continuous business forms. The sets translate the messages to a serial start-stop (teletypewriter) code for transmission and convert the code to printed characters at the point of reception. They will operate at various speeds up to 100 words per minute.

1.02 The 28 Receive-Only (RO) Sets are similar to the KSR Sets, but have no keyboard sending facilities. They are used in applications that require only the reception of page-printed messages.

1.03 The KSR and RO Sets can be used for recorded communication either cross office or cross country. With the proper modifications, they will function in dial or other switched-line networks. Utilizing the capabilities of a built-in switching device, the stunt box, the Sets will operate in selective calling systems (par. 5.01), and provide local or remote control of external equipment or operations.

2. VARIATIONS

2.01 The sets are available in several configurations to meet varying installation and operational requirements:

(a) Floor Model Set - A floor-standing set with additional space for accessory equipment (Fig. 1).

(b) Table Model Set - Identical to the Floor Model Set except that it contains no additional space and it rests on a table (Fig. 2).

(c) Rack Mounted Set - Equipped with a close-fitting enclosure, is compact and rests on an equipment rack or on a table (Fig. 3).

(d) Wall Mounted Set - May be mounted on a wall surface to conserve floor space (Fig. 4).

(e) Multiple KSR and RO Set - Provides two RO and one KSR, or three RO sets in a single enclosure (Fig. 5).

TYPING UNIT

COPY HOLDER

KEYBOARD
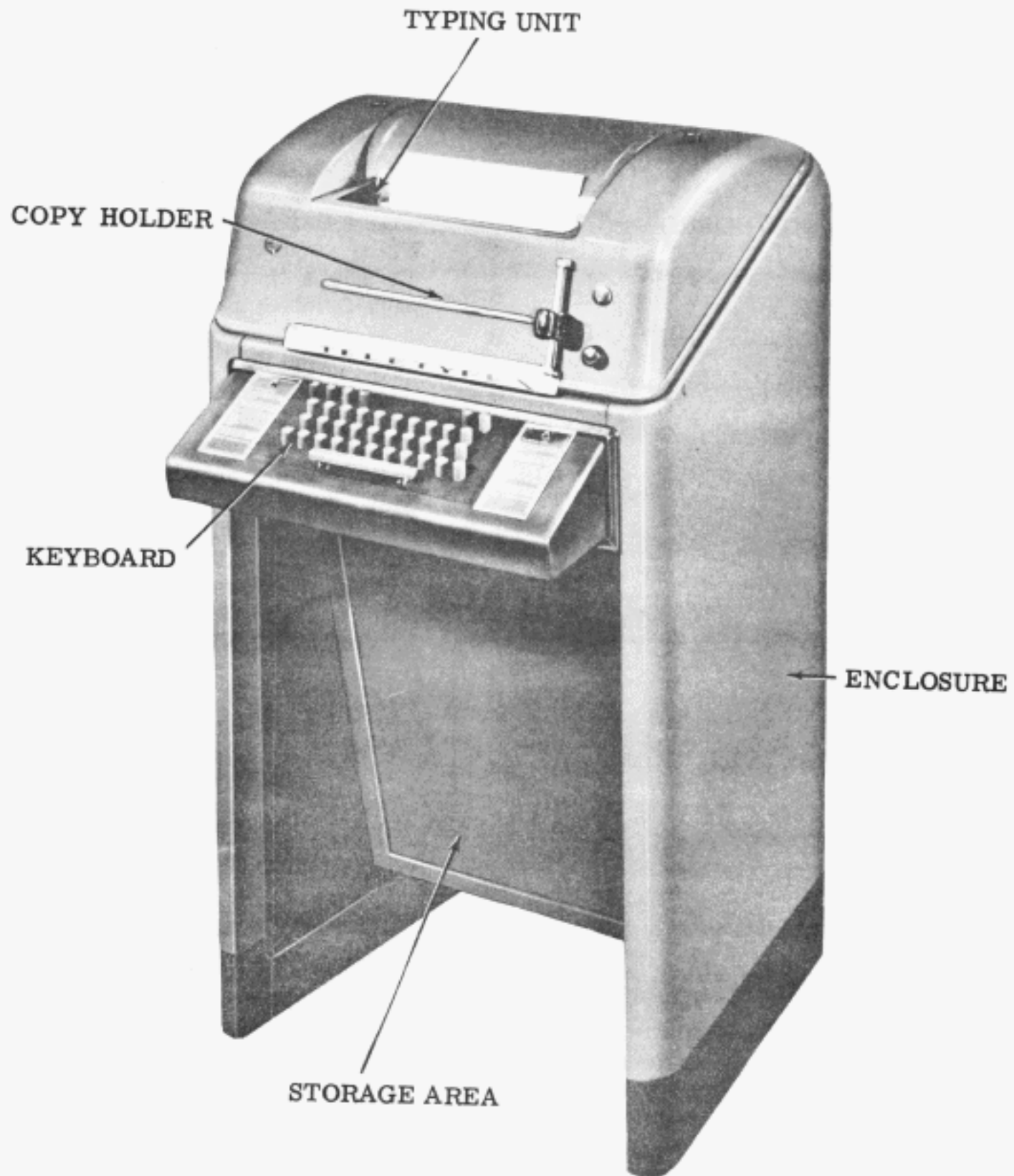
ENCLOSURE

STORAGE AREA

Figure 1 - Floor Model Keyboard Send-Receive (KSR) Teletypewriter Set

3. COMPONENTS

3.01 The component complement of a KSR Set may vary from one installation to another, depending upon the operational requirements. In general, a KSR Set consists of a typing unit, a keyboard base, motor unit, electrical service unit, and enclosure. A complete description of these components will be found in the appropriate section for a particular component.

3.02 The motor unit and typing unit are mounted on the base portion of the keyboard. The motor unit supplies rotary motion through a gear set to the typing unit which, in turn, supplies it to the keyboard. Gear sets may be interchanged to obtain various operating speeds up to 100 WPM. The keyboard and electrical service unit are mounted in a cabinet or enclosed by covers. The receive-only base replaces the keyboard in the Receive-Only Set.
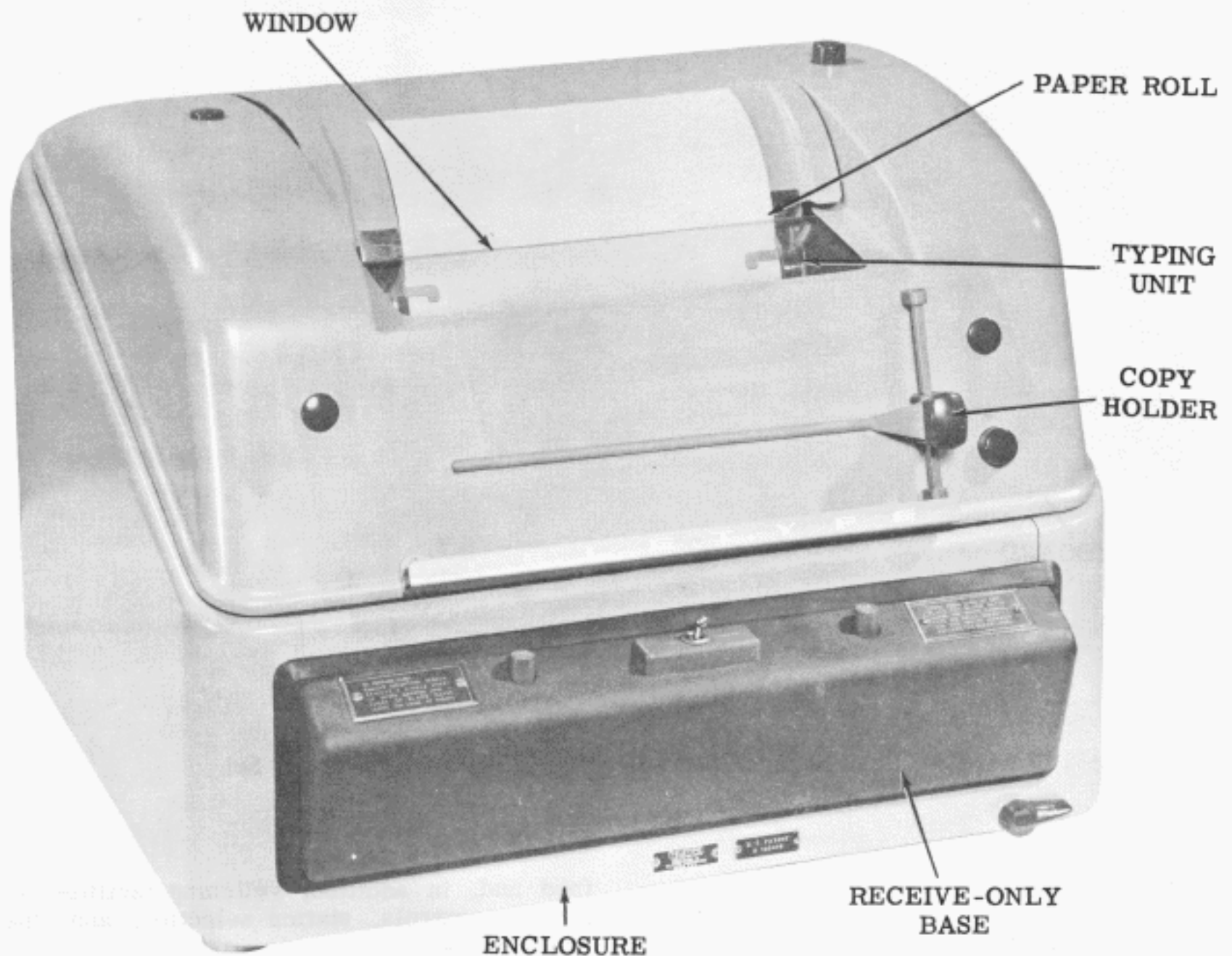

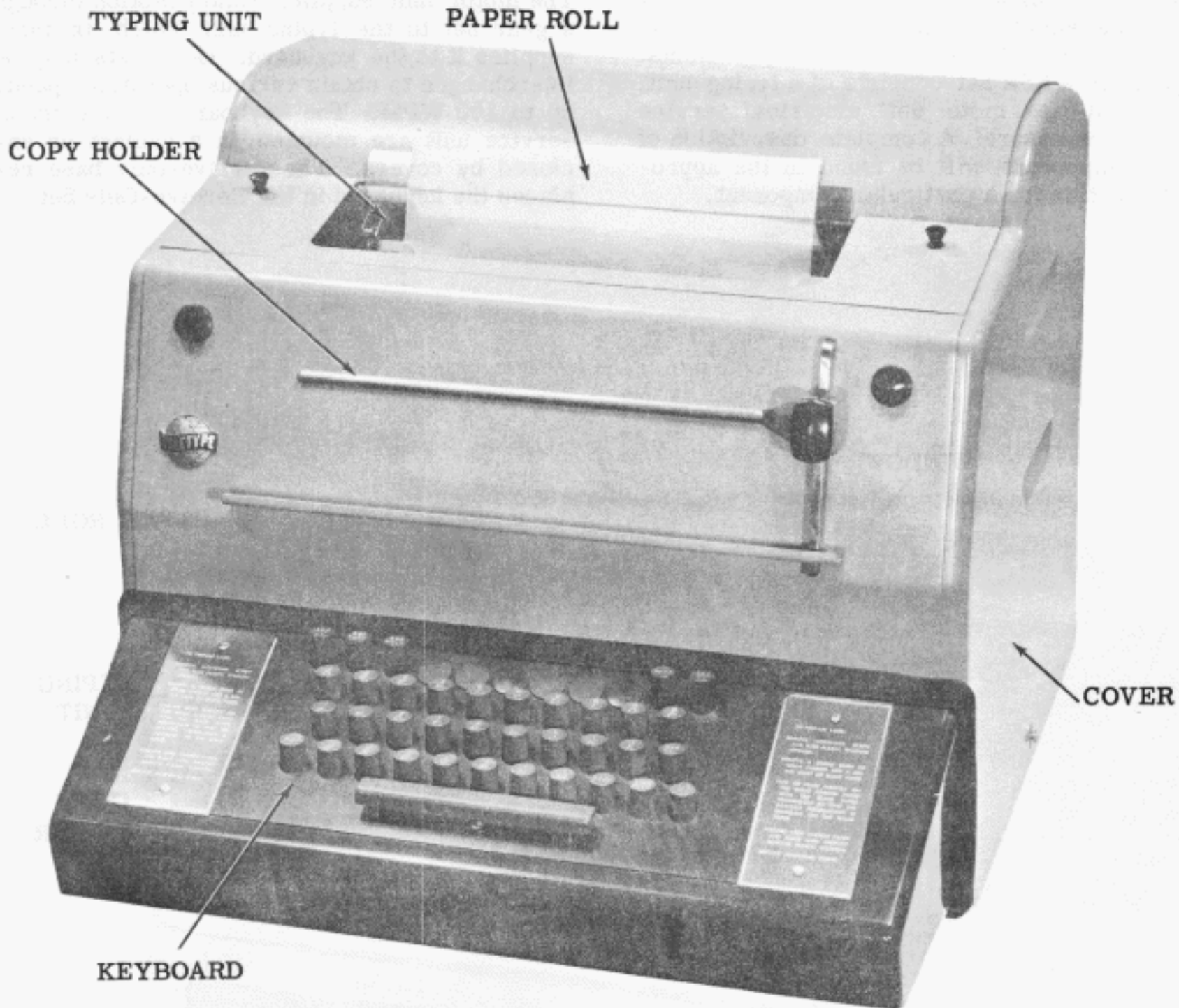Figure 2 - Table Model Receive-Only (RO) Teletypewriter Set

TYPING UNIT   PAPER ROLL

COPY HOLDER

COVER

KEYBOARD

Figure 3 - Rack Mounted Send-Receive (KSR) Teletypewriter Set

TYPING UNIT (Fig. 6)

3.03 The typing unit contains the mechanism necessary for translating electrical input signals into printed, alpha-numeric characters or functional control operations. The unit may be equipped to accommodate either friction or sprocket feed paper, in single or multi-copy form, either rolled or fan folded. It includes a stunt box that provides, non-printing functions such as case shifting, carriage return and line feed and, in addition, switching facilities for remote controls, station selection, and other applications.

SEND-RECEIVE KEYBOARD AND RECEIVE-ONLY BASE (Figs. 2 and 6)

3.04 Both the send-receive keyboard and the receive-only base provide mounting facilities for the typing unit, motor, driving gears, and various mechanisms required for control of

TYPING UNIT

COPY HOLDER

KEYBOARD

ENCLOSURE

ACCESS DOOR
(ENCLOSES ELECTRICAL
SERVICE UNIT AND
PAPER SUPPLY)
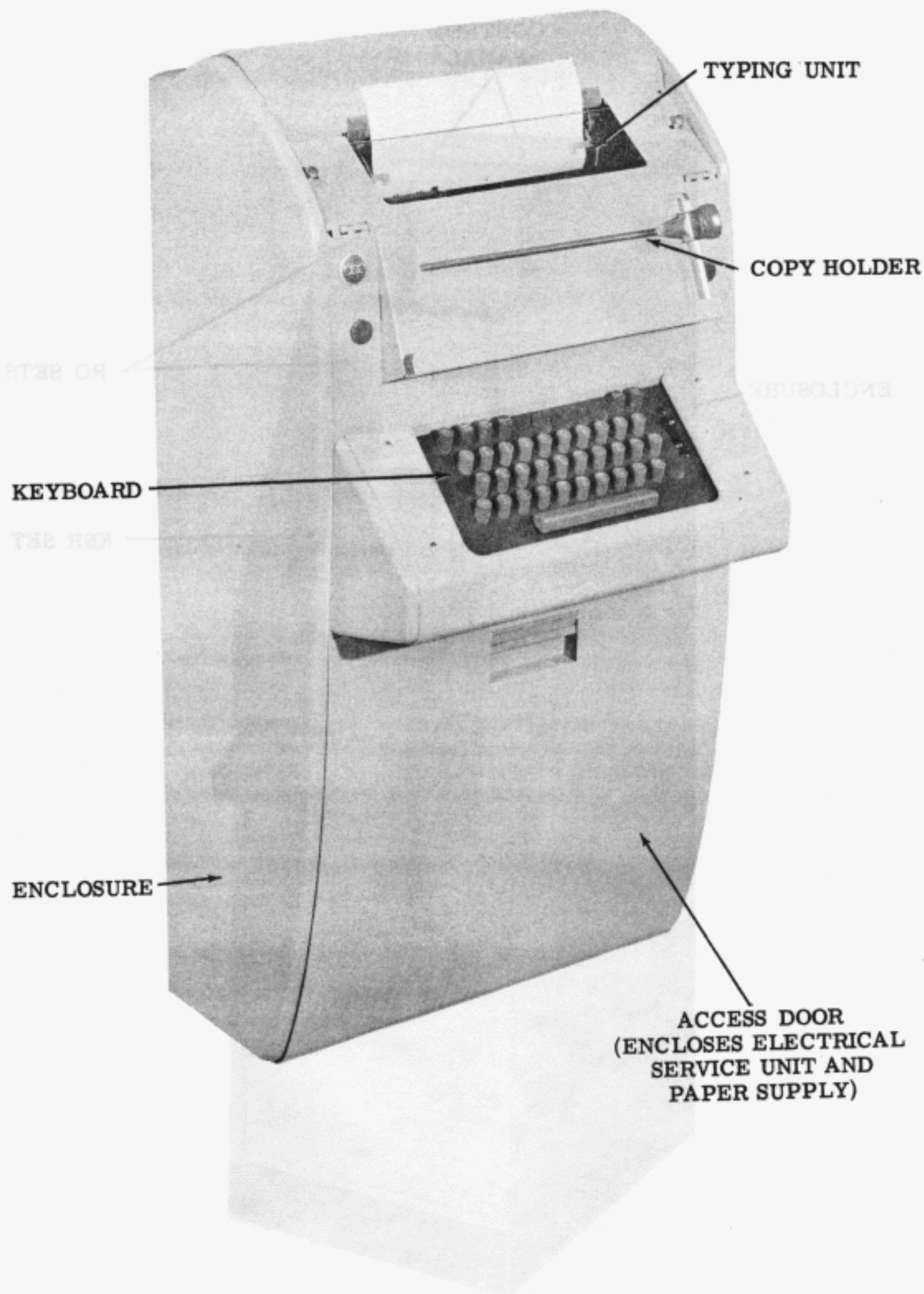
Figure 4 - Wall Mounted Send-Receive (KSR) Teletypewriter Set

CONTROL
PANEL

RO SETS

ENCLOSURE

KSR SET
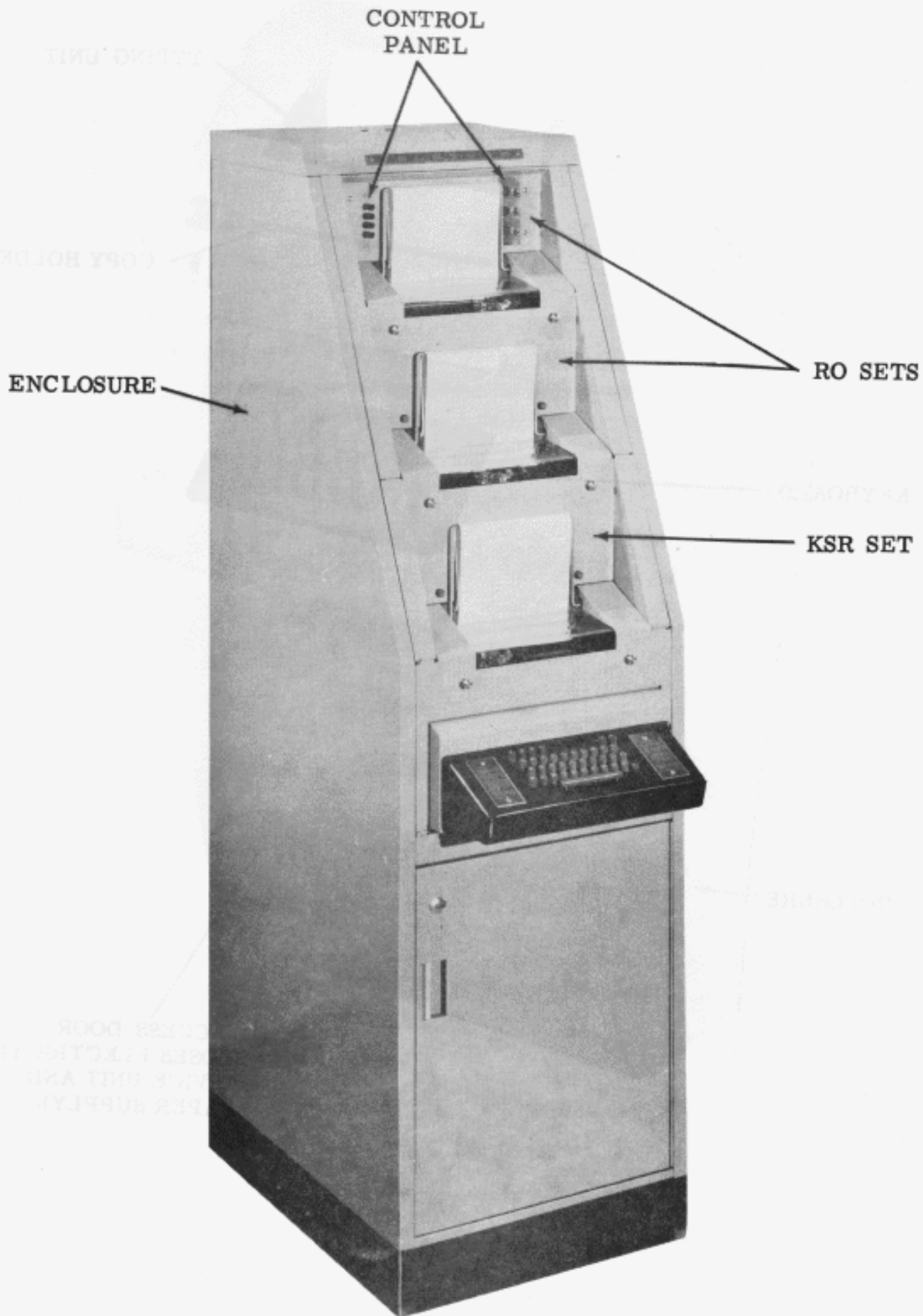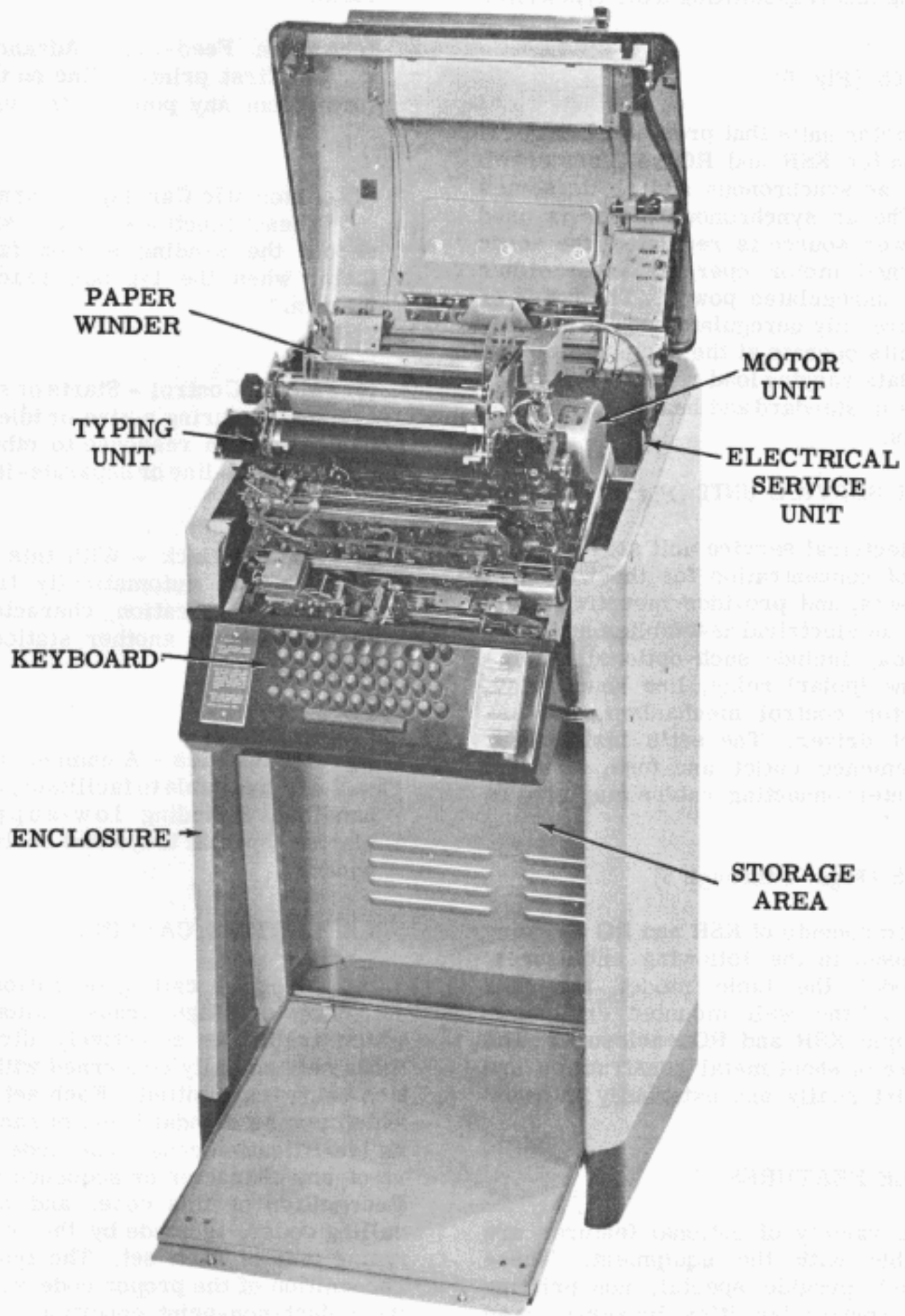
Figure 5 - Typical Multiple KSR and RO Set

Figure 6 - Floor Model Keyboard Send-Receive (KSR) Teletypewriter Set (Interior View)

the set. Unlike the receive-only base, the send-receive keyboard is equipped with mechanisms for generating and transmitting a teletypewriter signal.

MOTOR UNITS (Fig. 6)

3.05 The motor units that provide mechanical motion for KSR and RO sets are of two basic types: ac synchronous and ac/dc series governed. The ac synchronous motor is used when the power source is regulated; the ac/dc series governed motor operates from either regulated or unregulated power. The latter is required where only unregulated power is available. The units operate at the same speed, and to accommodate varying load requirements they are available in standard and heavy-duty horse-power ratings.

ELECTRICAL SERVICE UNIT (Fig. 6)

3.06 The electrical service unit serves as the area of concentration for the wiring of KSR and RO sets, and provides mounting facilities for various electrical assemblies and components. It may include such optional assemblies as a line (polar) relay, line shunt relay, rectifier, motor control mechanism, and selector magnet driver. The set's main power switch, convenience outlet and fuse, terminal blocks, and interconnecting cables may also be included.

ENCLOSURES (Figs. 1 through 5)

3.07 The components of KSR and RO sets may be housed in the following enclosures: the floor model, the table model, the rack mounted cover, the wall mounted enclosure, and the multiple KSR and RO enclosure. The enclosures are of sheet metal construction and are finished internally and externally in baked enamel.

4. VARIABLE FEATURES

4.01 A wide variety of optional features are available with the equipment. These features, which provide special, non-printing operations or control facilities, or serve as an aid in operation, are in most cases readily installed in the field. Some of the features are described briefly below.

(a) Horizontal Tabulator - Permits rapid movement of the typebox to predetermined positions on the copy paper.

(b) Vertical Tabulator - Advances a form to any predetermined position within the form.

(c) Form Feed-Out - Advances a form to the first printing line on the succeeding form from any point on the previous form.

(d) Automatic Carriage Return - Line Feed - These functions occur simultaneously should the sending station fail to initiate them, when the typebox reaches the right margin.

(e) Motor Control - Starts or stops the set's motor during active or idle transmission periods, or in response to other, predetermined signal-line or separate-line conditions.

(f) Answer-Back - With this feature, KSR sets can automatically transmit their station identification character sequence, upon request of another station, or by local control.

(g) Accessories - A number of accessories are available to facilitate paper and form handling, including low-supply indicator alarms, special trays and shelves, and paper winders.

5. SELECTIVE CALLING

5.01 Selective calling operation is a method of message transmission control, in which traffic is selectively directed only to those sets actually concerned with the information being transmitted. Each set in the circuit, which may be standard line or radio, is assigned an identification code. The code may be made up of any character or sequence of characters. Recognition of this code, and other selective calling codes, is made by the stunt box in the typing unit of each set. The typing unit, upon recognition of the proper code, will be placed in the select-non-print condition. When this occurs, direct printing is suppressed while the selector mechanism and the stunt box remain active. In this way, the typing unit monitors signal line conditions, but does not respond, either to print or to perform a function, until it receives instructions in the form of selective calling code sequences.

6. TECHNICAL DATA

SIGNAL REQUIREMENTS

A. Sequential - Five intelligence levels, with start-stop pulses.

   (1) Neutral - Selector magnets directly connected to signal line.

   (2) Polar - Line relay or selector magnet driver required.

B. Parallel (Neutral) - An accessory multi-wire distributor unit is necessary to con-vert parallel input to required sequential form.

POWER REQUIREMENTS (TYPICAL)

A. Sets with Synchronous Motor Units - 115 vac, ±10%, 60 ± .75% cycles, single phase.

B. Sets with Governed Motor Units

   (1) 115 vac ±10%, 50-60 cycles, single phase.

   (2) 115 vdc with external resistance.

OPERATING SPEEDS

Characters or Operations	Per-Minute	600	460	428	404	400	390	368
	Per-Second	10.0	7.7	7.1	6.7	6.7	6.5	6.1
Unit Code		7.42	7.42	7.00	7.42	7.50	7.00	7.42
Bauds (Bits-per-second)		74.2	56.9	50.00			45.5	
Frequency (Cycles/Second)		37.1	28.4	25.00			22.8	
Length in Milliseconds	One Character	100	130	140	149	150	154	163
	Unit Pulse	13.5	17.6	20.0	20.0	20.0	22.0	22.0
	Stop Pulse	19.1	24.9	20.0	28.5	30.0	22.0	31.2

APPROXIMATE DIMENSIONS (INCHES)

Set	Height	Width	Depth
Floor Model KSR	39	20-1/2	24
RO	39	20-1/2	21
Table Model KSR	16	20-1/2	24
RO	16	20-1/2	21
Rack Mounted KSR	12	17	24
RO	12	17	21
Wall Mounted KSR	30-3/4	16-1/2	14-1/2
RO	30-3/4	16-1/2	11-1/2
Typical Multiple KSR and RO	72	21-1/2	28

PRINTED CHARACTERS

A. Type Pallet Arrangements - Standard, upper case arrangements include:

(1) Communications (Punctuation symbols)

(2) Fractions

(3) Weather symbols

Individual pallets for upper and lower case characters are available separately for field installation.

B. Type Styles and Spacing (Typical)

Style	Character Height		Horizontal Characters Per Inch		Vertical Lines Per Inch	
	Caps	Fraction	Single - SPACE - Double		Single - FEED - Double	
Murray	.103"	.162"	10	5	6	3
Gothic	.103"	none	10	5	6	3
Gothic	.103"	.162"	12	6	6	3
Long Gothic	.120"	.170"	10	5	6	3
Large Gothic	.180"	.180"	10	5	-	3

PLATENS

	Friction Feed	Sprocket Feed
Construction	Rubber covered cylinder, fixed to platen shaft.	Rubber covered cylinder, free on platen shaft.
Length	8-3/4"	Selected for desired form width.
Paper Width	Any width up to 8-1/2"	Minimum: 3-5/8" Maximum: 9"
Characters per line (10 per inch)	Margin is adjustable from 1 to 85 characters	Margin is adjustable from 1 to maximum number indicated in chart.

SPROCKET FEED PLATENS

Form Width in Inches	Maximum Characters* Per Line	Form Width in Inches	Maximum Characters* Per Line
9	77	5-3/4	44
8-1/2	72	5-1/2	42
8	67	5	37
7-1/2	62	4-1/2	32
7	57	4-5/16	30
6-1/2	52	4-1/4	29
6-3/8	51	4	27
6-1/4	50	3-5/8	23
6	47		

*Based on ten characters per inch with allowance of three characters for platen end play.
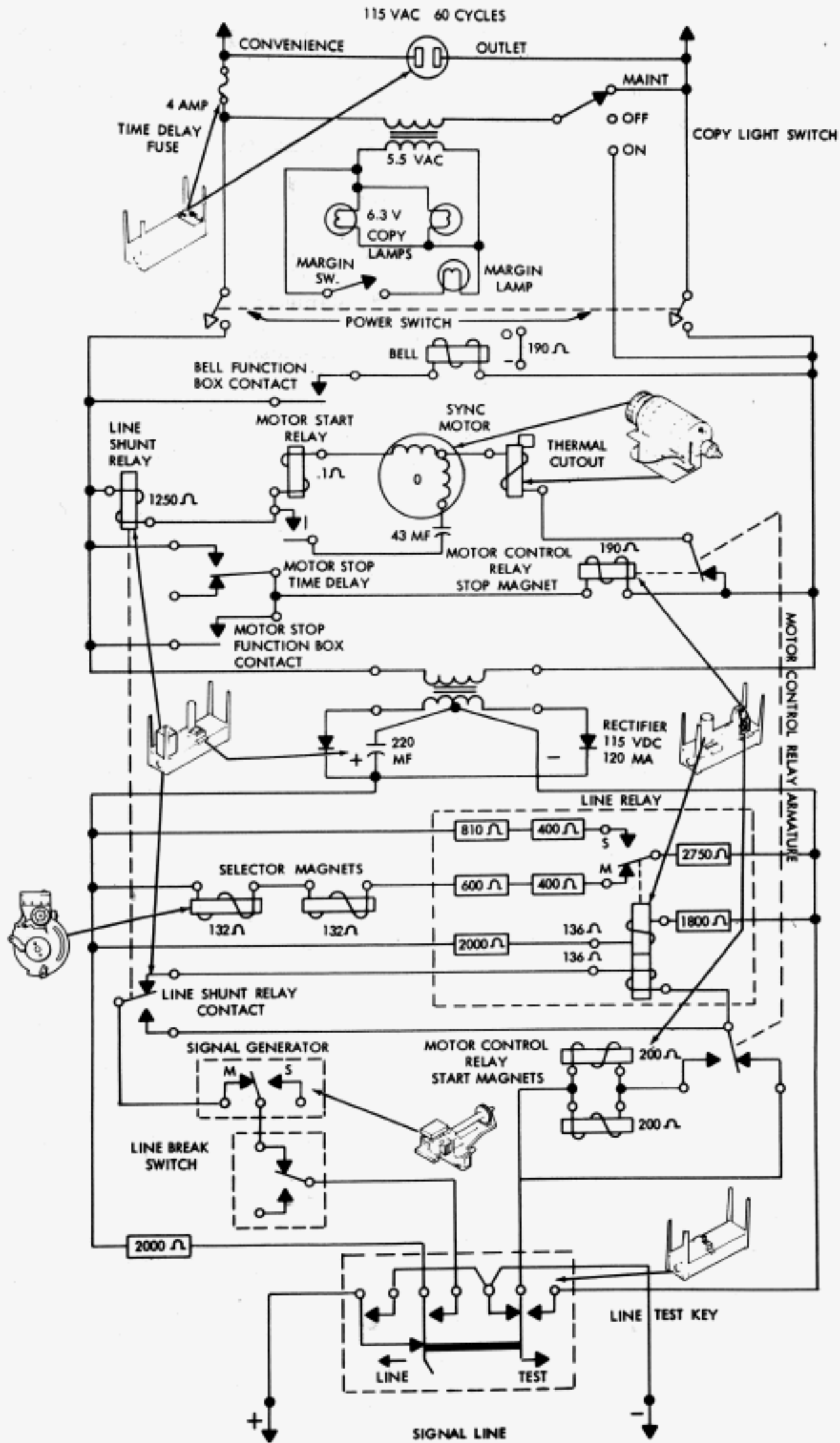
Figure 7 - Typical Keyboard Send-Receive (KSR) Teletypewriter Set (Schematic Diagram)

TYPING UNIT RIBBON

Style . . . . Black record ribbon

Length . . . . 33 feet

Width . . . . 1/2 inch

Thickness . . . . 0.0055 inch

TYPING UNIT PAPER (FRICTION FEED)

Type . . . . Standard yellow paper roll

Outside diameter . . . . 4-1/2 inch

Width . . . . 8.45 inch

Length . . . . 325 feet

Core diameter . . . . 1 inch

Core thickness . . . . 0.125 inch