(5) Select either the washer or pressure plate to be used in new configuration.

(6) Select the correct sized bushing for use in the new arrangement, and insert the shoulder screw into the bushing.

(7) Place the washer or pressure plate in the correct position on the bracket and insert the shoulder screw (with bushing) through the hole as shown in **Figure 2-13.** Secure the assembly with the original No. 10 lockwasher and nut, using a 3/8-inch Nut Driver.

(8) Assemble the unused components as shown in **Figure 2-13**, making sure the pressure plate or washer is retained on the inside of the bracket, and the unused bushing is on the outside of the bracket. Insert shoulder screw.

NOTE

Two holes are provided for mounting unused components. If the pressure plate is to be stored, use the lower hole. If the washer is being stored, use the upper hole.

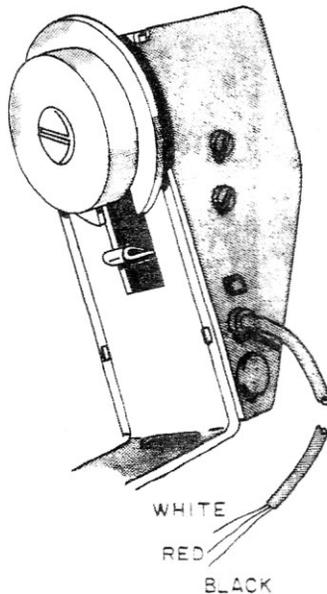(9) Secure the assembly of unused components with the original No. 10 lockwasher and nut using a 3/8-inch Nut Driver.

2-9. SENSOR UNIT FOR LOW PAPER ALARM

As an option, requested at the time of ordering, your mach- may be equipped with a Sensor Unit for Low Paper Alarm. This Sensor Unit is installed on the left side of the Paper Roll Bracket Assembly as shown in **Figure 2-14** (Rear View).

Depending upon its intended application, this Sensor Unit may be wired into the teleprinter (as in most Selective Calling applications), or its connecting wires may be shipped un- connected for hook-up to some external signalling device by by the installer.

WHITE
RED
BLACK

Figure 2-14. Sensor Unit for Low Paper Alarm
(Rear View)

The Sensor Unit contains either a "Normally-open" or "Normally-closed" pair of switch contacts which are activated when the teleprinter has reached the end of a roll of paper. Wire colour code is as follows:

White Lead - Common Switch Contact
Red Lead - Normally-open Switch Contact
Black Lead - Normally-closed Switch Contact

Installer should connect the proper pair of leads from the Sensor Unit to the particular external alarm device which is to be used.

2-10. LOGIC BOARD PROGRAMMING OPTIONS

Under normal circumstances the teleprinter is ready to be put into operation just as it arrives from the factory. If specified at the time of ordering, the Logic Board in your machine was programmed to provide the options you requested. In some instances, however, it may be necessary for the installing technician to change the printing requirements of the unit, and the following charts provide the information necessary to do this.

The various printing options available on your particular machine will depend on which Logic Board Series is installed in that unit. The Status Card attached to the teleprinter will identify the series of Logic Board used in your machine. For

instance, if the Status Card identifies the Logic Board as being a 7052-03, the unit then has a 7050 Series Logic Board, and the appropriate chart should be consulted for programming information.

The printing options are controlled by means of an 8-position dual-inline switch array located on the Logic Board in the front left-hand corner of the Electronics Base. In order to gain access to this switch array, it will be necessary to follow the procedure outlined in Paragraph 2-11b. In most cases a label is affixed to the Logic Board showing ON and OFF positions of the switches. If a label is not present, the ON positions is *toward the numbers*.

7050 SERIES

Switch in ON position activates Option

1. Bell on "J"
2. Bell on "S"
3. No Print on "H"
4. No Print on "G"
5. No Print on "F"
6. Carriage Return on Line Feed
7. Line Feed on Carriage Return
8. Unshift on Space

7060 SERIES

Switch in ON position activates Option

1. Carriage Return on Line Feed
2. Monitor
3. Line Feed on Carriage Return
4. Bell on "S"
5. Bell on "J"
6. Unshift on Space

7981 SERIES

Switches 1, 2, 3, 4		Have no Effect

Switch 5   OFF - 3-, 5-Character Selective Calling
                 ON   - 2-Character 83B3

Switch 6   OFF - Normal
                 ON   - **BOLD FACE HEADING** (Note: Switch 6 creates Bold
                     Face headings only if Switch 5 is OFF.)

Switch 7   OFF - Selective Calling Enabled
                 ON   - Selective Calling Disabled

Switch 8   OFF - 72-Character Line
                 ON   - 40-Character Line

Line Feed Switch   Left - 1½-Line Feed
                         Center - Single-Line Feed
                         Right - Double Line Feed

Jumper JU-3   Deleted - Normal
                     Inserted - Five-Bell Alarm Option
                     † *CAUTION* † Jumper *must be deleted*
                     on AA - AF Series machines.

Jumper JU-4   Deleted - Normal

7086/7986 SERIES

Switch 1   OFF - Normal
                 ON   Test Message Prints when power is turned ON.

Switch 2   OFF - Normal
                 ON   - Last Character Visibility (LCV) ON

		EIGHT-LEVEL	FIVE-LEVEL
Switch 3	OFF & Switch 4	OFF - 64-Character Mode	Sw 3 OFF — Normal
"	OFF " " "	ON - 96-Character Mode	Sw 3 ON — Full Monitor
"	ON " " "	OFF - 128-Character Mode	Sw 4 OFF — Bell on 'J' (CCITT No. 2)
"	ON " " "	ON - 128-Character Special	Sw 4 ON — Bell on 'S' (U.S.)
Switch 5	OFF & Switch 6	OFF - Normal	Sw 5 OFF — Normal
"	OFF " " "	ON - New Line on Car. Ret.	Sw 5 ON — New Line on Line Feed
"	ON " " "	OFF - New Line on Line Feed	Sw 6 OFF — Normal
"	ON " " "	ON - New Line on Line Feed	Sw 6 ON — New Line on Carriage Return

Switch 7   OFF & Switch 8 OFF - 69-Character Line
   ″   OFF ″   ″   ″   ON - 72-Character Line
   ″   ON   ″   ″   ″   OFF - 7 4-Character Line
   ″   ON   ″   ″   ″   ON - 80-Character Line

Line Feed Switch
　　　　　　　　　　　　Left - 1½-Line Feed
　　　　　　　　　　　　Center - Single-Line Feed
　　　　　　　　　　　　Right - Double-Line Feed

Jumper JU-3
　　　　　　　　　　　　Deleted - Normal
　　　　　　　　　　　　Inserted - Five-Bell Alarm Option
　　　　　　　　　　　　† *CAUTION* † Jumper *must be deleted*
　　　　　　　　　　　　on AA - AF Series Machines.

Jumper JU-4
　　　　　　　　　　　　Deleted - Normal

---

†† WARNING ††

VOLTAGES DANGEROUS TO LIFE ARE PRESENT IN THIS EQUIPMENT! Disconnect unit from AC Power Source *before* attempting access to teleprinter's internal components.

2-11. INTERNAL ACCESS

a. To Remove Teleprinter Cover:

(1) Cut the paper and remove excess paper which may be threaded around the platen.

(2) Pull off the platen knob from the platen shaft.

(3) Loosen the screw on the rear of the cover (shown in **Figure 2-15**) until it clears the retaining bracket slot by approximately ¼ inch. This single screw holds the teleprinter cover to the printer base.

Figure 2-15. Teleprinter Cover Removal

SECTION 2

CAUTION

To avoid damage to the platen shaft when removing the cover, carefully move the Typing Unit Cover to the left so as to clear the platen shaft.

(4) Refer to **Figure 2-15.** Slide the cover forward (toward the front of the machine) slightly to permit the cover mounting lip to disengage from its retainer at the front of the printer base.

(5) Slowly and carefully lift upward and to the left, removing the teleprinter's cover.

(6) **To Replace Cover:** Reverse steps (1) through (5).

† † †

b. **To Gain Access to Printed Circuit Board Assemblies:**

(1) Remove the Typing Unit Cover as directed in Subparagraph "a" above.

(2) Note the orientation of—*and tag*— the four P.C. Connector Boards to the right of the typing unit. **Consult Figure 2-16.**

(3) Disconnect the four P.C. Connector Boards at the right side of the Typing Unit by simply pulling upward on each of them. [NOTE: Machines having ribbon mechanisms have an additional connector attached to the top of two of the P.C. Connector Boards. This connector can be removed together with the other boards, and must be re-installed as shown in **Figure 2-16** when re-assembling unit.]

CAUTION

These Connector Boards *must* be re-installed in the proper direction when re-assembling the unit, or serious damage to the teleprinter may result.

Consult **Figure 2-16** as you Proceed.

(4) Remove the five Power Supply Cover mounting screws located on the top of the unit in the Paper Roll Bracket area.

(5) Grasping the sides the the Power Supply Cover, lift upward to remove the cover. **This exposes the Power Supply printed circuit boards.**

(6) Remove the four printer base mounting screws, securing the Printer Base to the Electronics Base.

(7) Slowly and carefully lift upward Printer Base by grasping the sides of the base. DO NOT grasp the typing unit assembly to remove base. Once removed, **this exposes the electronics base**, containing Logic, Driver and Input printed circuit board assemblies.
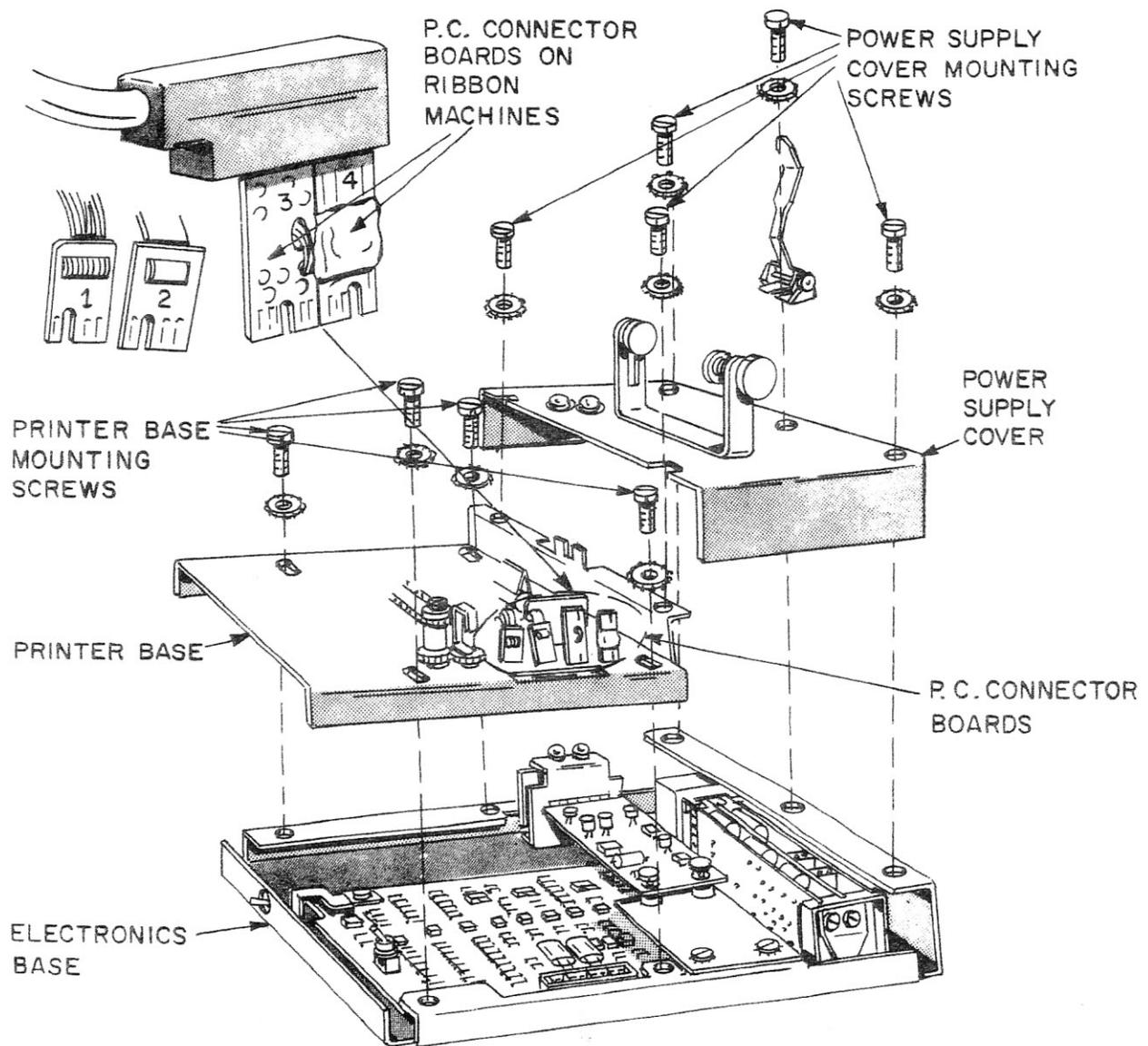
(8) **To Re-assemble Cabinet,** reverse steps (1) through (7).

Figure 2-16. Removal of Power Supply Cover and Printer Base

2-12. PAPERWINDER INSTALLATION

The optional Paperwinder Assembly comes packed in a separate container and must be installed on the teleprinter by the servicing technician.

TO INSTALL PAPERWINDER ASSEMBLY:

(1)   Place the teleprinter Power ON/OFF switch in the OFF position.

(2)   Refer to **Paragraph 2-8** of this Section, and configure the Paper Roll Bracket Assembly as shown in either **Figure 2-13a** or **2-13c**, depending on the type of paper to be used on the unit. (**NOTE:** These Paper Roll Bracket Assemblies use the Pressure Plate.)

(3)   Remove and discard the three machine screws along the top rear edge of the Power Supply Cover. See **Figure 2-16.**

(4)   Position the Paperwinder Mounting Bracket over the Power Supply Cover so all three mounting holes are properly aligned.

(5)   Using the two 8-32 x 15/16 machine screws, No. 8 lockwashers, and No. 8 flatwashers supplied with the Paperwinder Assembly, temporarily secure the front of the Paperwinder mounting bracket to the Power Supply Cover. See **Figure 2-17.**
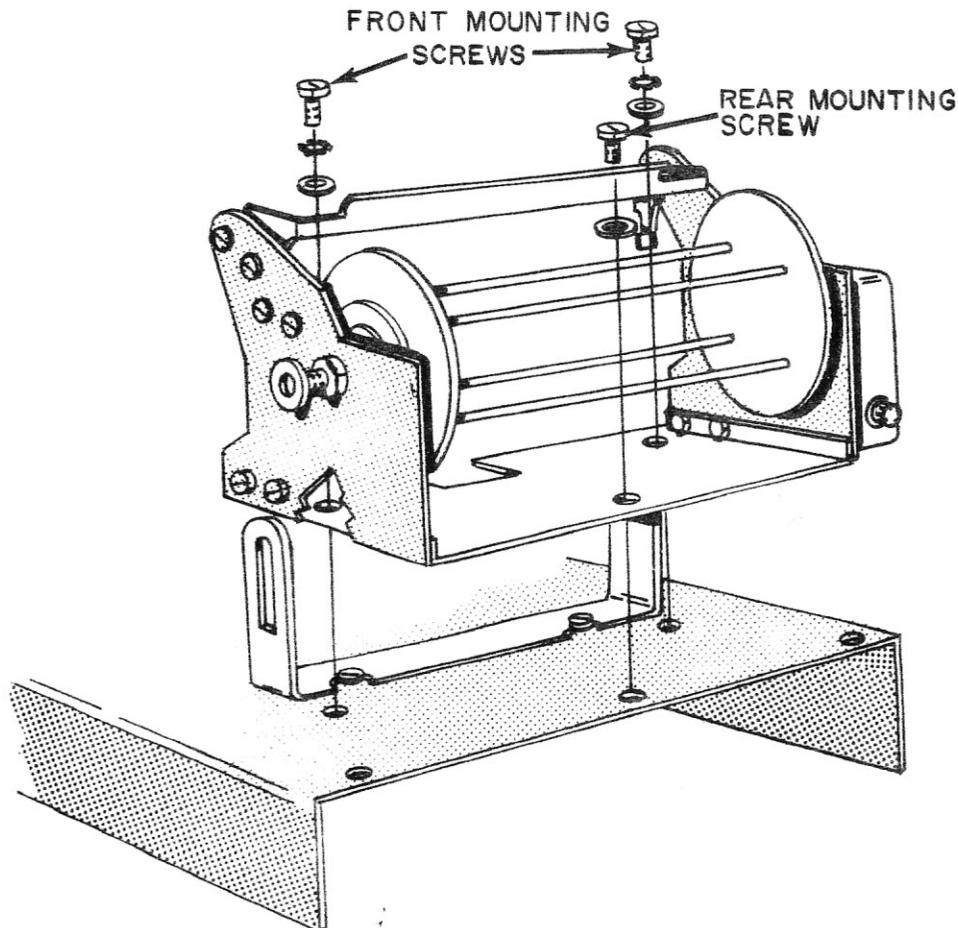
Figure 2-17. Paperwinder Installation Diagram

(6) Using the 6-32 x 3/8 pan-head machine screw and large flat washer supplied with the Paper-winder Assembly, secure the rear center position of the Paperwinder mounting bracket to the Power Supply Cover. See **Figure 2-17.**

(7) Assemble the Paperwinder Take-up Reel by inserting the tapered ends of each pair of rods into their respective holes in the opposite reel disc.

(8) Pull outward on the spring-loaded knob and hold it firmly while seating the motor drive shaft into the center of the left hub of the Take-up Reel and aligning the right hub of the reel with the spindle in the spring-loaded knob. Release the knob.

(9) Follow procedure outlined in **Paragraph 3-2b** for loading paper roll into machine.

(10) If required, slide the Paper Roll Bracket either to the left or right (loosen its two mounting

screws using an offset common-head screw-driver) until the left edge of the paper roll s 1/4 or 7/32 of an inch from the left edge o the window opening.

(11) Adjust the Paperwinder Assembly until approximately 1/32-inch visual clearance exists between the inside face of the right-hand reel disc and the right edge of the paper roll.

(12) Tighten the three mounting screws to permanently secure the Paperwinder Assembly to the Teleprinter Power Supply Cover.

(13) Again consult **Paragraph 3-2b** (steps 8-11) of Section 3 for procedure for threading paper into Paperwinder.

(14) Plug the Paperwinder Power Cord into an AC power outlet of the proper voltage (**Check tag attached to power cord**) and frequency. Turn both Paperwinder and Teleprinter Power Switches to the ON position.

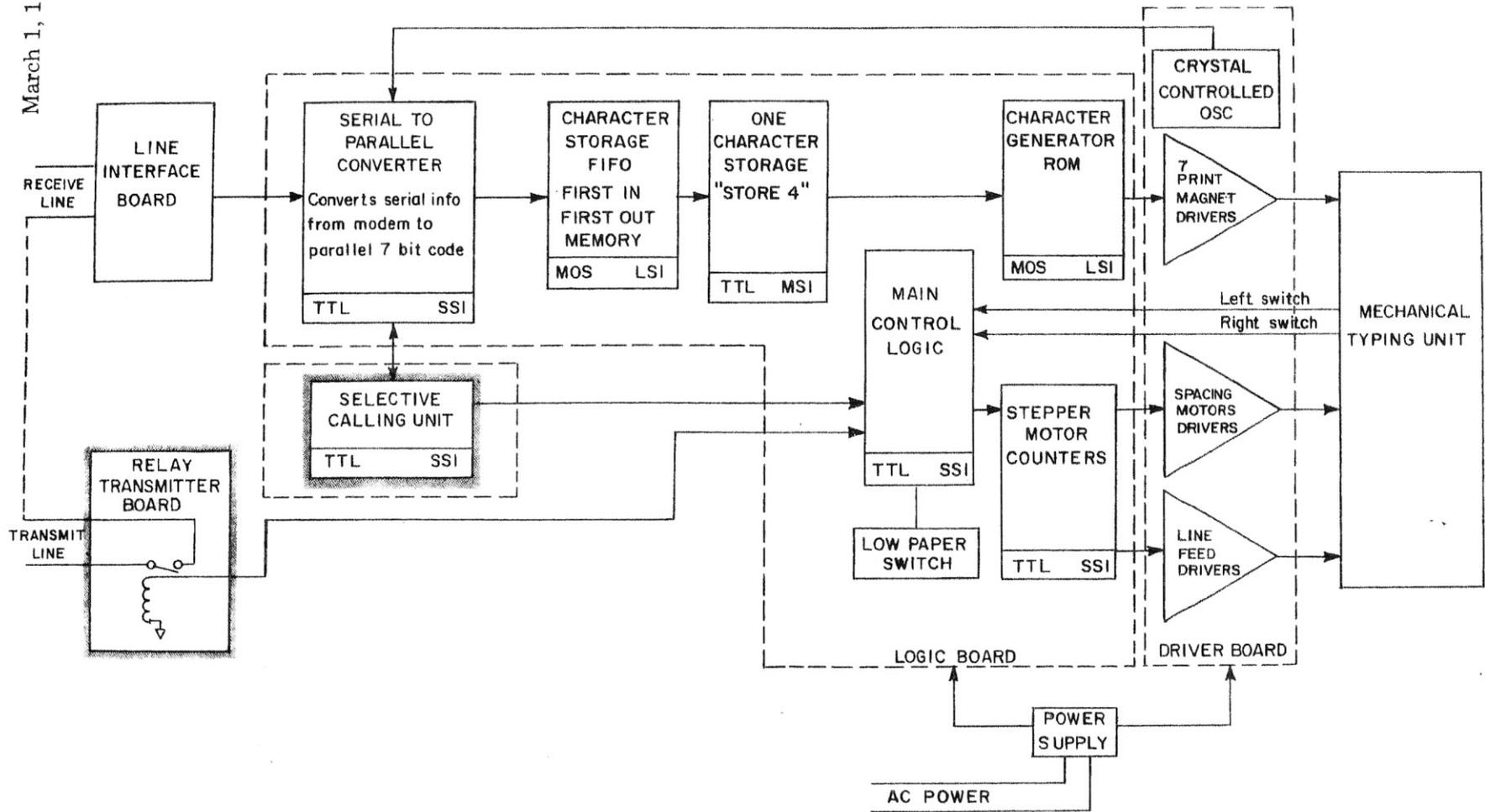## 2-13. SYSTEMS INTEGRATION

The following page contains a Block Diagram pertaining to Series AE and AF Teleprinters.

The Diagram depicts the interconnection of the various electronic systems used in the machine. In those cases where shading appears around the block, this denotes an optional electronic circuit.

LINE INTERFACE BOARD

RECEIVE LINE

SERIAL TO PARALLEL CONVERTER

Converts serial info from modem to parallel 7 bit code

TTL   SSI

CHARACTER STORAGE FIFO

FIRST IN FIRST OUT MEMORY

MOS   LSI

ONE CHARACTER STORAGE "STORE 4"

TTL   MSI

CHARACTER GENERATOR ROM

MOS   LSI

CRYSTAL CONTROLLED OSC

7 PRINT MAGNET DRIVERS

MECHANICAL TYPING UNIT

Left switch
Right switch

RELAY TRANSMITTER BOARD

TRANSMIT LINE

SELECTIVE CALLING UNIT

TTL   SSI

MAIN CONTROL LOGIC

TTL   SSI

LOW PAPER SWITCH

STEPPER MOTOR COUNTERS

TTL   SSI

SPACING MOTORS DRIVERS

LINE FEED DRIVERS

LOGIC BOARD

DRIVER BOARD

POWER SUPPLY

AC POWER

2-20

BLOCK DIAGRAM
AA—THRU—AF
SERIES LOGIC

SECTION 3
Operation

3-1. GENERAL

This section deals with procedures which are basically the operator's responsibility. Paper and ribbon installation are frequently-performed activities for the operator, and if they are done consistantly in the correct manner, the operational reliability of the teleprinter can be significantly prolonged. It is, then, of great importance that operators fully understand the proper methods for performing the procedures outlined in this section.
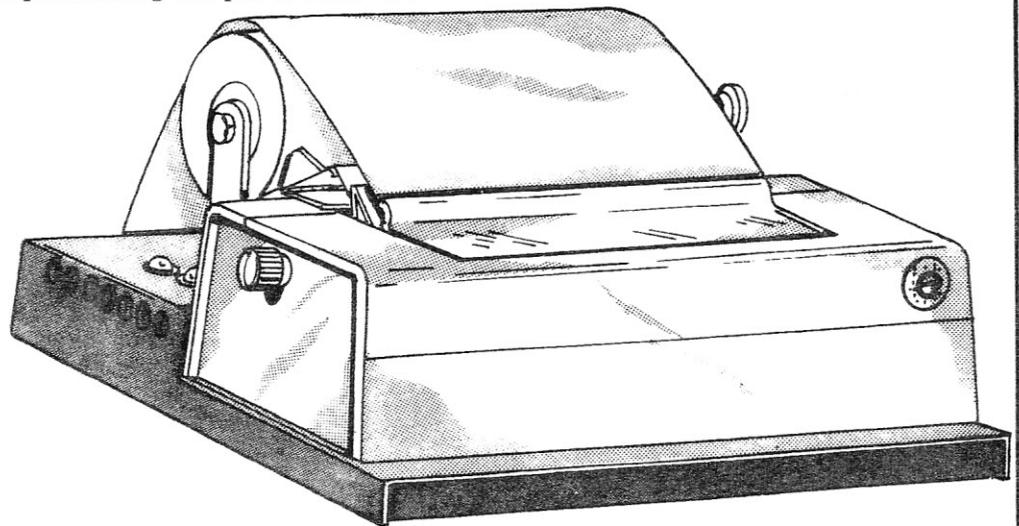
Once the teleprinter has been correctly installed, as described in **Section 2,** it is basically ready for operation. It will, however, probably require the installation of paper and/or a ribbon. If any abnormal conditions are observed while following the instructions in this section, it is recommended that you notify an authorized service technician before proceeding further.

3-2. PAPER INSTALLATION

a. TYPES OF PAPER

Series AF Teleprinters which are equipped with ribbon mechanisms use any standard teleprinter paper 8½ inches (215 mm) wide, with a roll diameter of 5 inches (127mm) or less and an inner core (spindle) diameter of 1 inch (25.4 mm). Current Paper Roll Bracket assemblies are designed to automatically accept the narrower 210 mm paper rolls as well.

Series AF Teleprinters with ribbon mechanisms can also use pressure-sensitive paper if the Paper Roll Bracket is converted—as described in **Paragraph 2-8**—to accomodate the smaller 7/16-inch spindle diameter. Up to three plies of either type of paper can be used.

Units which are not equipped with ribbon mechanisms use pressure-sensitive, ink-encapsulated paper. This paper is available in 8½-inch (215 mm), 210 mm, or 6-inch widths, with a 5-inch (127 mm) roll diameter and 7/16-inch core diameter. Again, up to three-ply paper may be used.

b. PAPER LOADING

The correct loading of paper into the machine is the single most important function which must be performed by the operator. Use **Figure 3-1** to identify parts of the teleprinter which are referred to in the following procedure. **Figure 3-2** illustrates a side view of the correctly-threaded paper path through the machine.
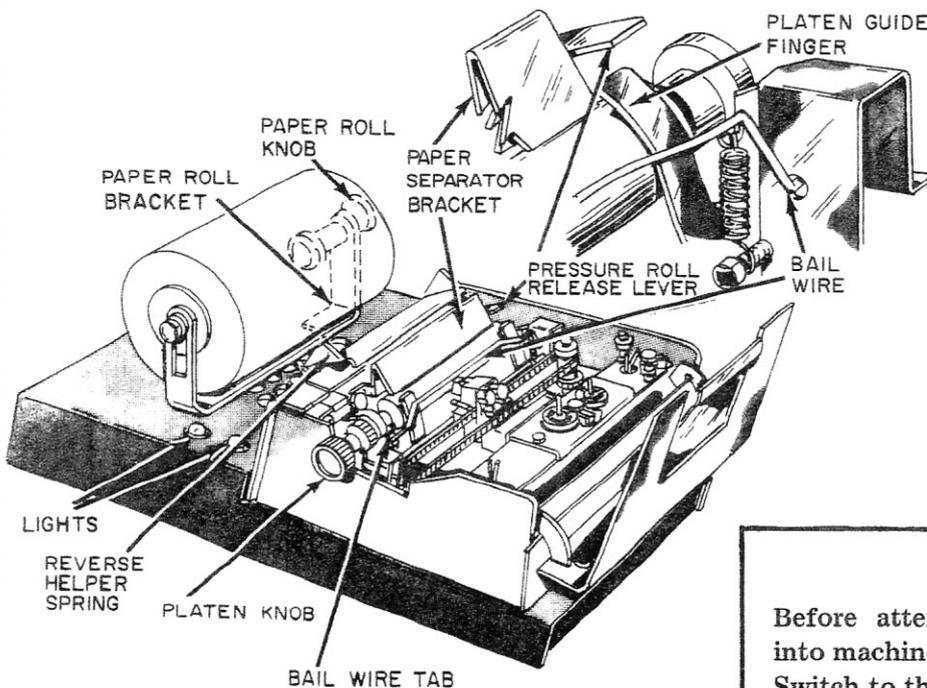
Figure 3-1. Typing Unit Component Identification

> CAUTION
>
> Before attempting to load paper into machine, turn the Power ON/OFF Switch to the OFF position. (If the machine is equipped with a Paperwinder, its Power Switch must also be placed in the OFF position.)

To Load Paper:

(1) Remove the gum label or adhesive securing the starting edge of the paper roll.

(2) Display a sufficient amount of paper spoiled by the adhesive and tear or cut it off with a pair of scissors. (A square cut makes initial insertion of paper easier.)

(3) Pull outward on the paper roll knob and insert the paper roll into the paper roll bracket assembly so that the paper feeds from the underside of the roll. (See **Figure 3-2.**) Release the paper roll knob, allowing the bushing on the knob to settle into the paper roll core.

Figure 3-2. Paper Threading Diagram

(4) Raise the hinged lid of the front cover and pull forward on the bail wire tab, located on the left side of the bail wire (See **Figure 3-1.**), to move the bail wire away from the platen.

(5) Pass the starting edge of the paper roll over the hinged Reverse Helper Spring assembly and insert it into the opening between the Separator Bracket and the upper hex tie rod. (*Insert paper as far as it will go without wrinkling.*)

(6) Rotate the platen knob toward the rear of the unit to advance the paper around the platen and back over the Separator Bracket. If the paper is slightly off-center, depress the Pressure Roll Release Lever (See **Figure 3-1.**) and center the paper manually.

(7) Return the bail wire to its original position and close the hinged lid.

If a Paperwinder assembly is *not* being used, the paper threading procedure is complete. The Power ON/OFF Switch may be returned to the **ON** position.

† † †

If a Paperwinder assembly is being used, leave the Power Switches in the **OFF** position and complete the threading procedure described below. Refer to **Figure 3-3.**

(8) Visually check to see that no interference exists between the inside faces of the Paperwinder Reel and the edge of the paper roll.
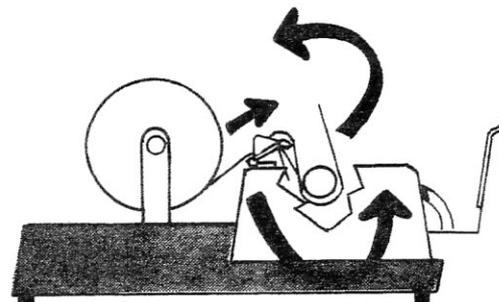
NOTE

For your convenience, the paper is often marked with RED WARNING STRIPES to indicate the end of the roll. When they appear, paper should be changed at next convenient interval.

SECTION 3
OPERATION

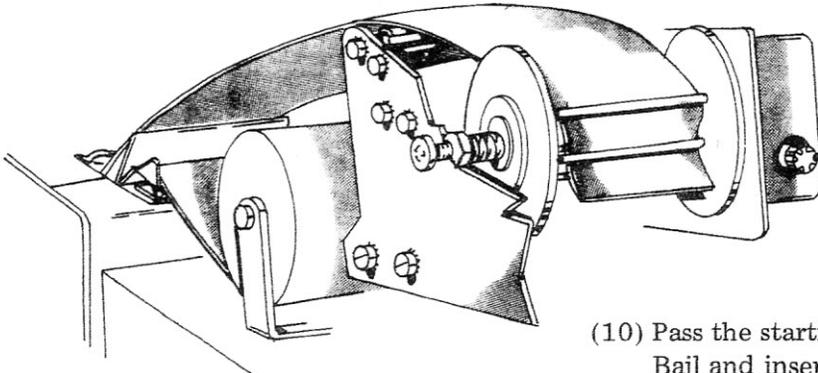(9) Turn the Platen Knob *counterclockwise* to advance the paper approximately two feet.

Figure 3-3. Paperwinder Threading Diagram

(10) Pass the starting edge of the paper over the Paperwinder Bail and insert it between any two rods on the Take-up Reel, as shown in **Figure 3-3**.

(11) Turn the Paperwinder Power ON/OFF Switch to the **ON** position. (The Paperwinder Reel will be begin to rotate, taking up any slack in the paper.)

c. **REMOVAL OF PAPER FROM PAPERWINDER**

(1) Turn the Paperwinder and Teleprinter Power Switches to their **OFF** positions.

(2) Support the underside of the paper wrapped around the Paperwinder Take-up Reel with one hand , and with the other hand pull outward on the Reel Release Knob.

(3) While still holding the Reel Release Knob, move the Take-up Reel toward the Reel Release Knob to free the left reel hub from the motor drive shaft.

(4) When the left reel hub has cleared the motor drive shaft, remove the Paperwinder Take-up Reel from the Paperwinder Mounting Bracket and release the knob.

(5) Vertically position the Paperwinder Take-up Reel on a flat surface and pull upward on the top reel disc, separating the two parts of the Take-up Reel as shown in **Figure 3-4**. **The paper can now be removed.**
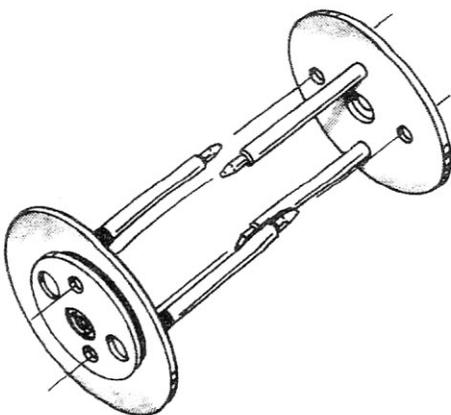

Figure 3-4. Paperwinder Take-up Reel

(6) Re-assemble the Paperwinder Take-up Reel by inserting the tapered ends of each pair of rods into their respective holes on the opposite reel disc. See **Figure 3-4**.

3-3. RIBBON INSTALLATION

Series AF Teleprinters which are equipped with Ribbon Mechanisms are designed to use a standard NYLON TELE-PRINTER RIBBON with spools. It is *imperative* that a NYLON ribbon be used to avoid the build-up of cotton fibre in the carriage assembly. These ribbons may be ordered from Extel Corporation under Part No. 5103. The ribbon should be discarded when the printed characters become il-legible or too light to read. **Additional ribbon life may be obtained by simply switching ribbon spool positions, thus inverting the ribbon.**

Raise the hinged lid of the teleprint-er cover and note the diagram af-fixed to the inside of the cover. This diagram is reproduced here as **Figure 3-5** and reference should be made to it while installing the rib-bon to ensure that proper threading path is followed.

> **CAUTION**
>
> Place the teleprinter's Power Switch in the OFF position before attempt-ing Ribbon Installation. Damage to the carriage assembly and ribbon may result if unit is printing while ribbon is being installed.
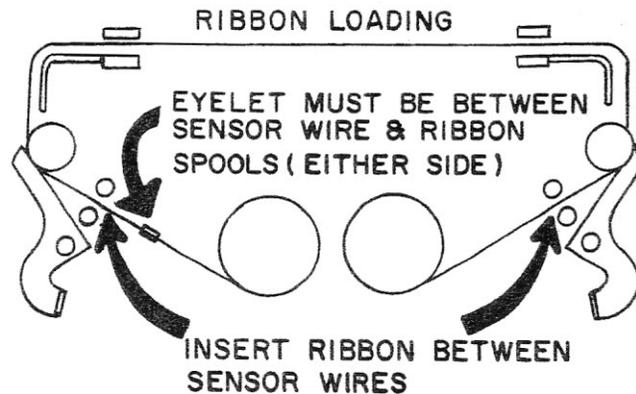

Figure 3-5. Ribbon Threading Diagram

To Install Ribbon:

(1) Gently pull forward on the Bail Wire Tab (Shown in Figure 3-1.) to move the bail wire away from the platen.

(2) Carefully clear the ribbon from the left- and right-hand sensing wires. Depress one of the break arms inwardly (toward the rear of the machine) and lift ribbon free from its guide spool. Repeat this procedure for the other brake arm. Unthread the ribbon from remaining guides adjacent to the platen. See **Figure 3-5.**

(3) **If your replacement ribbon has a new take-up spool preconnected to it, proceed to Step 4.**

If the replacement spools are *not* ribbon preconnected, you will have to engage the hook at the end of the ribbon over the protruding arrow in the hub of the empty spool. If no

> **CAUTION**
>
> Extreme caution should be observed when removing the ribbon from be-tween the carriage and platen. Do **not attempt to pull back on carriage assembly**, as serious damage may result.
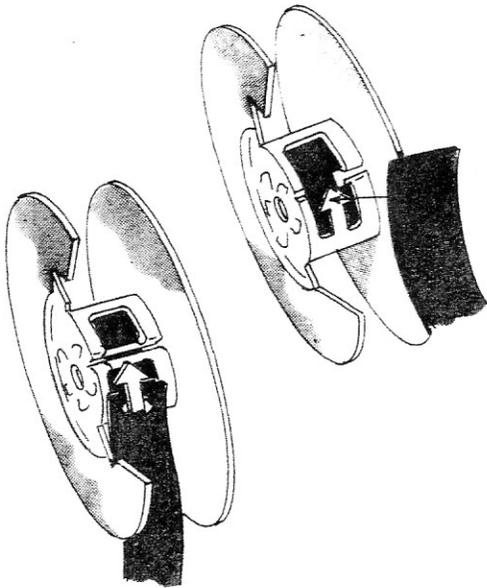
Figure 3-6. Attachment of Ribbon to Spool

hook is supplied, pierce the end of the ribbon over the point of the arrow. (See **Figure 3-6.**) Wind the ribbon onto the spool, rotating the spool in the direction indicated by the arrow. Continue winding ribbon onto the spool until the reversing eyelet has been wrapped around the spool.

(4) Ensuring that the reversing eyelet is wrapped onto the take-up spool, place that spool on one of the spindles, being certain that it is engaged on the guide pin under the spool.

(5) Unwind approximately 18 inches of ribbon from the full spool and then place that spool on the other spindle, engaging it on its guide pin.

NOTE

Be sure that the orientation of the spools and ribbon is as shown in **Figure 3-5.**

(6) Starting from the full-ribbon spool, thread the ribbon through the sensing wire. Then, depress and hold the brake arm inward (toward the rear of the machine) while guiding the ribbon around the guide spool. Re- the brake arm.

(7) Guide the ribbon around the platen guide and then adjacent to the platen. When reaching the carriage, *CAREFULLY* guide the ribbon between the carriage and the platen.

(8) Continue threading the ribbon through the remaining guides on the other side, i.e. around the platen guide and guide spool, through the sensing wire.

(9) Rotate the take-up spool until the slack in the ribbon is removed, and again check to be certain the reversing eyelet is between the sensing wire and take-up spool. **(If the eyelet is not in this position, damage could be caused to the ribbon mechanism,and the ribbon will not reverse automatically.)**

(10) Return the bail wire to its original position, close the hinged lid, and place the Power ON/OFF Switch in the **ON** position.

CAUTION

Extreme caution should be observed when placing the ribbon between carriage and platen. **Do not attempt to pull back on carriage assembly** or serious damage may result.

3-4. MESSAGE REMOVAL

a. SINGLE-COPY PAPER

To remove a received message on single-copy paper from the teleprinter (assuming it is not equipped with a Paperwinder), turn the platen knob to advance the paper to a point which allows adequate clearance between the last printed line and the top surface of the viewing window. Pull the paper **FORWARD AND TO THE RIGHT OR LEFT** against the edge of the viewing window to sever the printed message from the remaining paper.
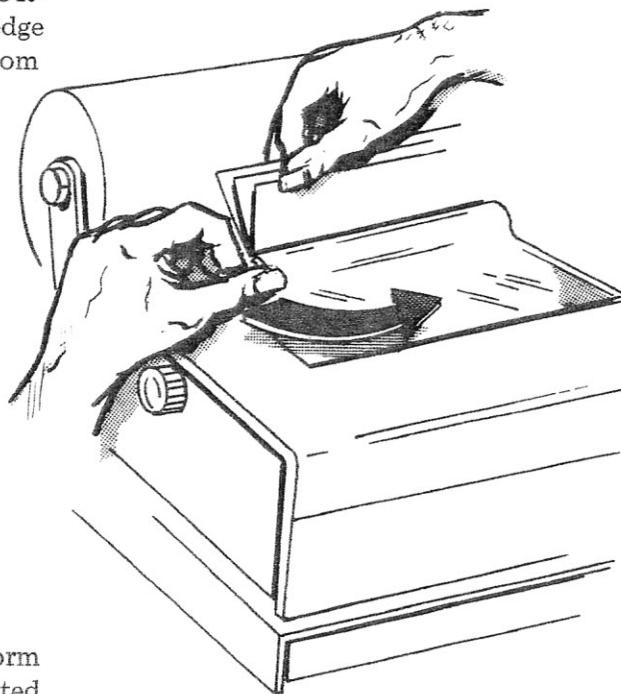
b. MULTI-COPY PAPER

When removing multiple copies from the machine, perform the following steps to eliminate uneven, ragged or mutilated message material:

Figure 3-7. Multi-Copy Tear-off Diagram

(1) Place thumb of left hand on printer cover while holding the papers *feeding* the teleprinter with fingers of the same hand. See **Figure 3-7.** (This will keep paper from feeding through the machine as tension is created on it during the tearing-off process.)

(2) While pressure is being applied with the left hand, grasp paper at left corner with right hand and **PULL SMARTLY FORWARD AND TO THE RIGHT** against the cutting edge of the viewing window, as illustrated in **Figure 3-7.** The resulting separation will be straight and parallel to the lines of copy.
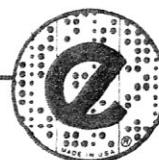
3-5. CONTROL SWITCHES

a. Line Feed Switch

Figure 3-8 shows the location of the Line Feed Switch at the lower left-hand side of the front of the unit. This is usually a two-position switch, allowing the choice of either single- or double-line feed, or single- or 1½-line feed, operation. But, with certain Logic Board installations the switch may be of the three-position type, allowing single-line feed when placed to the *left*, 1½-line feeds when positioned in the *center*, and double-line feeds when placed to the extreme *right*. From time to time the operator may wish to use this switch to alter the spacing between lines of copy.
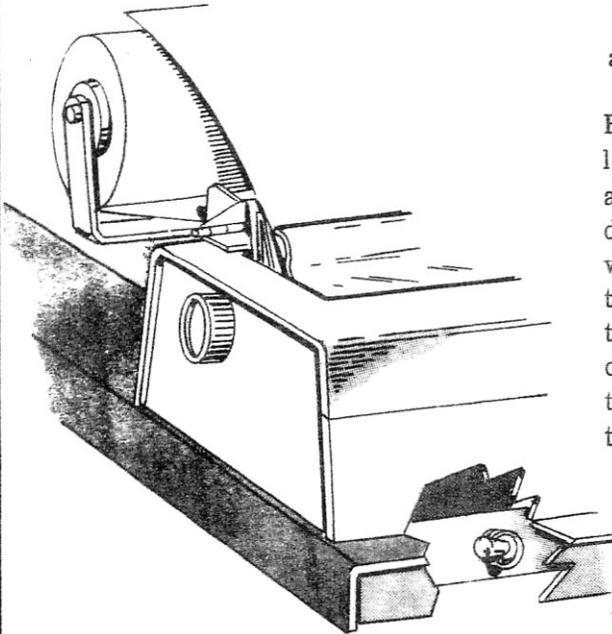
Figure 3-8. Line Feed Switch Location

b. Speed Switch

The teleprinter is equipped to operate at either of two speeds (baud rates), determined by crystals installed within the unit. **Figure 3-9** shows the location of the switch at the front right-hand corner of the printing mechanism base. Access to the switch is obtained by lifting the hinged lid in the teleprinter cover.
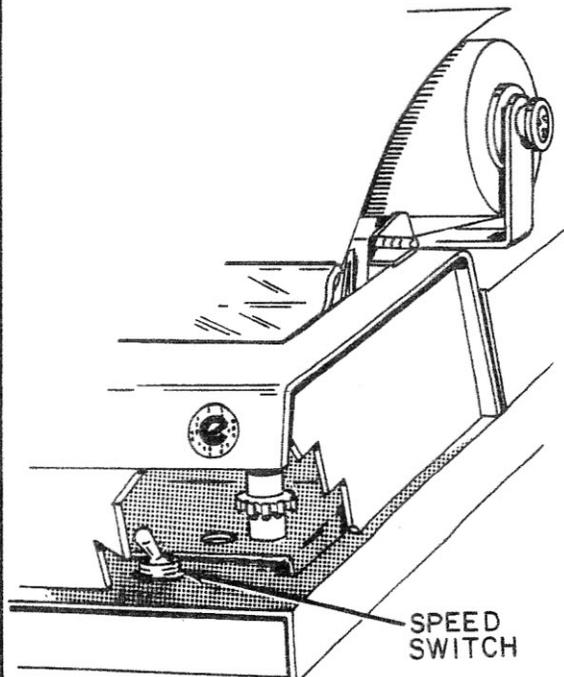
> *CAUTION*
>
> Power to the unit must be OFF when changing from one operating speed to another.

In order to reach the switch on **units employing a Ribbon Mechanism**, it is necessary to insert the finger through the carriage drive belt, locating the switch in the opening provided in the Ribbon Mechanism frame.

On certain occassions the transmitting facility may inform the user that they are changing the baud rate at which they are transmitting data. This will necessitate the operator moving the Speed Switch to its alternate position.

SPEED SWITCH

Figure 3-9. Speed Switch Location

c. Full Monitor Switch

Figure 3-10 shows the location of this switch on the left-hand side of the machine, adjacent to the Paper Roll Bracket. When this switch is ON the teleprinter will print out the symbols for all functions, while performing all functions **except** "carriage return" and "line feed". While in the Full Monitor mode, the unit will print the unique symbols for "carriage return" and "line feed", but will not execute these mechanical operations at the time they are called for in the text. Rather, the teleprinter will completely fill each line with the maximum number of characters permitted and then automatically perform the "carriage return" and "line feed" operations.

The user will find this mode of operation useful when it is desirable to conserve paper usage and produce compact print-out of copy.

d. Rail Monitor Switch

Machines equipped with this switch allow the user to monitor all Rail Shift symbols. In the ON position the switch permits the machine to print the unique symbols for "upper" and "lower" rail. Location of this switch is shown in **Figure 3-10**.

e. Last Character Visibility (LCV) Switch

When the LCV Switch, shown in **Figure 3-10**, is in the ON position, a special interval line feed causes the paper to be advanced upward whenever a pause of more than one second occurs in the movement of the carriage across the platen. This moving of the paper upward aids considerably in viewing the last characters printed. When incoming traffic resumes, the platen then retracts the paper to its original position and printing continues where it had previously stopped.
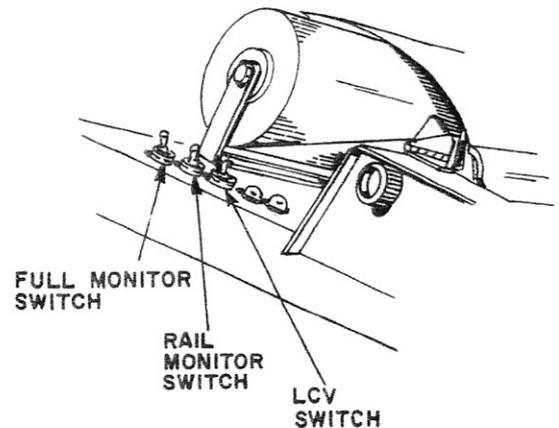
3-6. OPERATOR-LEVEL MAINTENANCE

In general, Series AE and AF Teleprinters will provide trouble-free performance for long periods of time without

FULL MONITOR
SWITCH

RAIL
MONITOR
SWITCH

LCV
SWITCH

Figure 3-10. Monitor Switch Locations

SECTION 3

4-1. EMERGENCY BROADCAST SYSTEM (EBS) RELAY OPTION

CAUTION

Disconnect teleprinter from AC Power Source before attempting to install EBS Relay.

If the EBS Relay Option was requested at the time of ordering, the unit has been equipped with a special transformer assembly which includes a socket for accepting an EBS relay. This relay, and a barrier strip for mounting on the outside of the teleprinter cabinet, are ship-separately with the machine.

The EBS Relay Option provides the user with a normally-open pair of contacts which function merely as a line closure, suitable for wiring in series (similar to a single-pole/single-throw switch) with some external signaling device, such as a bell, horn or light. The relay contacts are closed in response to an incoming "Bell-on-S" or "Bell-on-J" character.

NOTE

The label adjacent to the dual in-line switches on the Logic Board describes which switch to have in the ON position for "Bell on S" or "Bell on J".

TO INSTALL EBS RELAY:

(1) To gain access to the relay socket, follow instructions in **Paragraph 2-11b**, describing access to Printed Circuit Board Assemblies.

(2) Locate the relay socket adjacent to the Power Transformer within the teleprinter electronics base and insert relay module.

(3) Pins 1 and 5 of the relay socket have been wired in parallel with the bell coil, while the separate pair of wires, available to the installer, are wired to Pins 3 and 8—the normally-open contacts of the relay.

(4) Mount the two-lead barrier strip on the exterior rear panel of the electronics base.

(5) Consult **Figure 4-1** below as you connect the two wires from Pins 3 and 8 of the relay socket to the barrier strip.

(6) Re-assemble teleprinter cabinet as per instructions in **Paragraph 2-11b** in SECTION 2 of this manual.
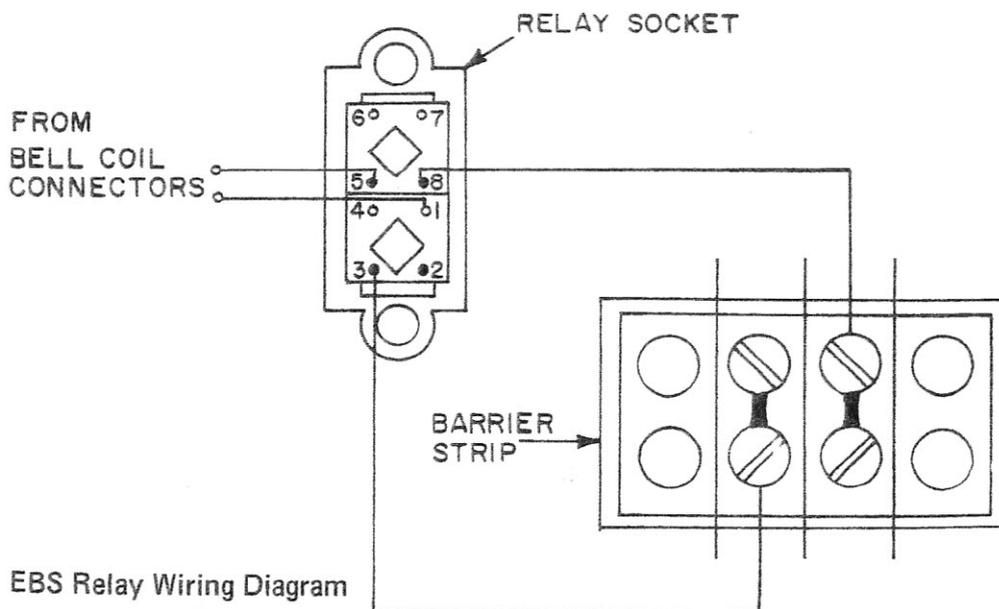

Figure 4-1. EBS Relay Wiring Diagram

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4-2. 7305 SELECTIVE CALLING PROGRAMMING

The selective calling board provides the following programmable features: (1) print control, (2) call directing codes, (3) end of selection coding, (4) end of message coding, (5) answerback programming, (6) acknowledgement delay, and (7) acknowledge timing. Provisions are also available on the selective calling board for discrete call directing codes to activate a remote receiver or auxiliary transmitter. However, special factory modifications are necessary to achieve these programmable features.

Wire jumpers are strapped to selective calling terminals or pads, shown in **Figure 4-2**, and are used to implement the features described in the following paragraphs.

a. Print Control

The print control strapping permits the unit to print between the reception of the EOM/alert code and End of Selection (EOS) code. The three variations of strapping are outlined below with reference to **Figure 4-2**.

If no strapping is used for pads 64-65-66, the teleprinter, upon reception of any programmed CDC, becomes enabled and prints its own "V" or "M" answerback code, all other CDC codes, acknowledgements (ACKs), and the EOS code.

If pads 64-65 are strapped, the unit will print only after receiving its own CDC code and the EOS code. It will not print its own ACK or the EOS code.

If pads 64-65-66 are strapped, the teleprinter will print all CDC codes, all ACKs on the circuit and the EOS code.

b. Call Directing Codes (CDC's)

Call directing codes (CDC's) are assigned to a receiving teleprinter or group of receiving teleprinters to enable their selection or the activation of a remote receiver or transmitter. A given unit may be assigned five different CDC codes. These codes may be used for the following purposes: (1) STATION SELECTION-- for the teleprinter only, (2) GROUP SELECTION-- for the selection of several teleprinters on a circuit, (3) REMOTE OR AUXILIARY RECEIVER SELECTION-- for activating an auxiliary receiving device, such as a printer or tape punch, and (4) AUXILIARY TRANSMITTER POLLING-- for activating an auxiliary transmitter, such as a tape reader. The strapping for these codes is described below. It should be noted that only those codes to be used need be assigned and strapped. The end of selection (EOS) code strapping is described separately.

Call directing codes for a single teleprinter can be one to six characters in length. The length for group call directing codes is a one or two character sequence. End of message (EOM) takes a four character code sequence. A description for one, two and six character strapping is given below with reference to **Figure 4-2**.

(1) Single Character

If a single character selection is desired, strap the first control input terminal such as I-1, II-1, etc. to the "ANY" terminal and strap the second control input terminal such as, I-2, II-2, etc. to the desired control character terminal.

If a single lower case character is desired, strap the first control input terminal to lower case "LC", and strap the second control input terminal to the desired control character.

If a single upper case character is desired, strap the first control input terminal (I-1, II-1, etc.) to the upper case "UC" terminal, and strap the second control input terminal to the desired control character terminal.

(2) Two Characters

Strap the first control input terminal (such as I-1, II-1, etc.) to the first control character of the sequence, and strap the second control input terminal (such as I-2, II-2, etc.) to the second control character of the sequence.

An example would be I-1 to "F" and I-2 to "0", thus giving the two-character control code sequence of "FO" for a single teleprinter selection.

(3) Six Characters and Combinations

A six character Call Directing Code can be assigned to a single station, permitting many individual teleprinters to be selected. Strap the Call Directing Code as described below, using **Figure 4-2** as a reference.

- First character to V-1.

- Second character to V-2, 62 to IV-1.

- Third character to IV-2, 59 to II-1.

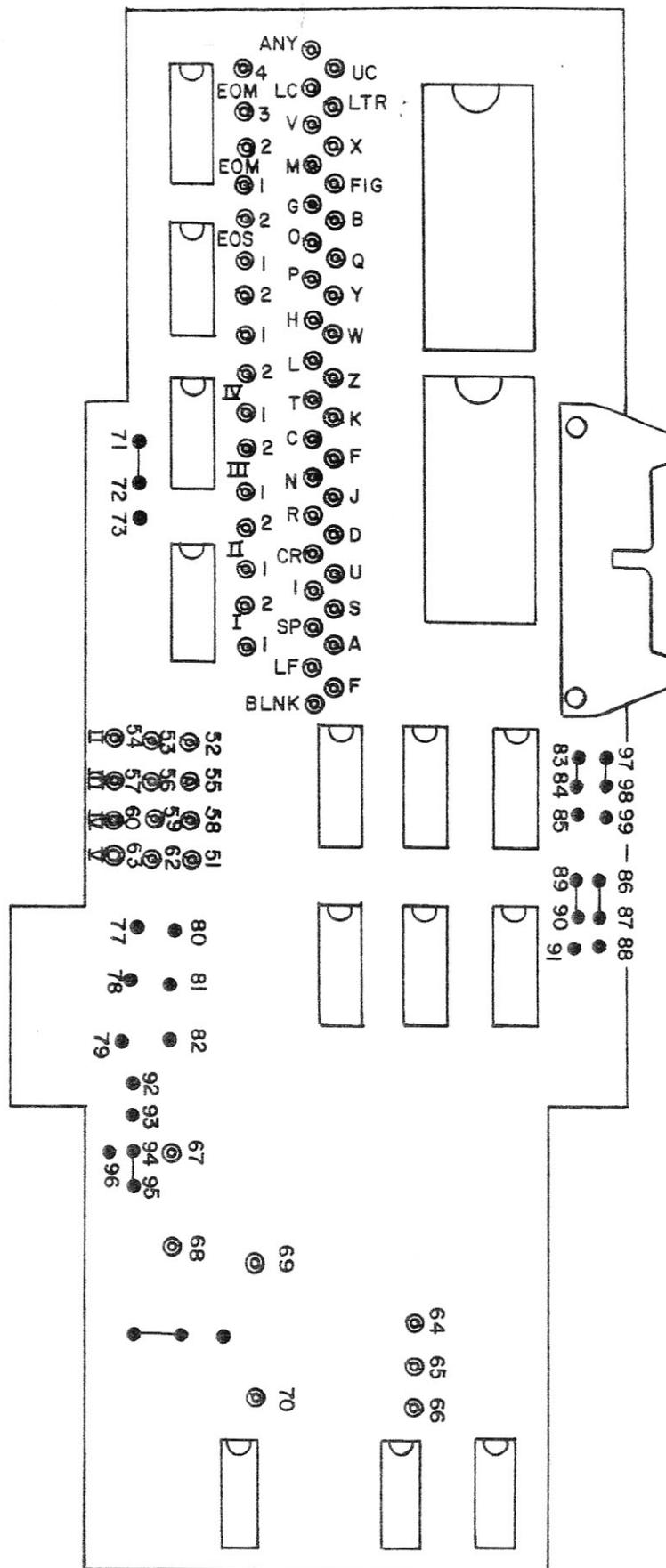- Fourth character to III-2, 56 to II-1.

Figure 4-2. 7305 Selective Calling Strapping Points

- Fifth character to II-2, 53 to I-1.

- Sixth character to I-2.

c. Station Selection

This requires a unique code which is assigned to a specific teleprinter. It can be one to six control characters in length, as described previously in section on CDC's.   Control inputs I-1 and I-2 are normally used for one- or two-character codes; a six-character code requires the use of all control input terminals. Other combinations that can be used are one five-character CDC plus one two-character CDC; one four-character CDC plus one three-character CDC; and two three-character CDC's plus one two-character CDC.

d. Group Selection

One- or two-character sequence CDC codes can be assigned to each teleprinter station to select a group of teleprinters. A station may have up to four different group code assignments, but remember only one teleprinter within each group may be assigned the answerback function.

- The first code assignment is made by strapping control input terminal II-1 and II-2 to the desired   two-character sequence, as previously described, and strapping printer-select terminals 53-54 for station printing.   If the optional ACK feature is required, terminals 52-53 must be strapped.

- A second code assignment can be made by strapping terminals III-1 and III-2 to the desired two-character sequence. Also strap terminals 56-57 for station printing and terminals 55-56 if an ACK is required.

- A third code assignment can be made by strapping terminals IV-1 and IV-2 to the desired two-character sequence. Also strap terminals 59-60 for station printing and terminals 58-59 if an ACK is required.

- A fourth code assignment can be made by strapping group terminals V to the desired two-character sequence. Also strap terminals 62-63 for station printing and terminals 61-62 if an ACK is required.

e. Remote or Auxiliary Receiver Selection

Provision is made on the selective calling board for a discrete CDC code to turn on and off a remote auxiliary receiver, such as a paper tape punch. A one-or two-digit Call Directing Code can be assigned to activate the remote receiver. This code is wired from terminals V-1 and V-2 (REMOTE) to the desired control characters mentioned in the Group Selection Paragraph above. Before attempting to perform the following strapping requirements, ascertain that the teleprinter has been factory programmed to implement the remote receiver feature.

- Terminals 62-63 are strapped to activate the station printer and terminals 61-62 are strapped if an ACK is required.

- A high-level polarity output is provided when terminals 86-87 are strapped.

- A low-level polarity output is provided by strapping terminals 87-88.

- If terminals 80, 81, or 82 are not strapped, the remote receiver will be enabled upon receipt of the CDC. If it is desired that the remote receiver be enabled 250 ms after receipt of CDC, terminals 81 and 82 are strapped. For the remote receiver to be enabled upon the receipt of an "EOS", strap terminals 80-81.

f. Auxiliary Transmitter Polling

A provision is made on the selective calling board for a discrete TSC (Transmitter Start Code) to operate an associated transmitter, such as a tape reader. Before performing the following strapping instructions, ascertain that the teleprinter has been programmed to implement this feature.

- Strap terminals IV-1 and IV-2 (TRANSMIT) to the desired two-character sequence mentioned in the Group Selection paragraph above.

- If printing of the Auxiliary Transmitter's message is desired, strap control code terminals 59-60.

- An acknowledgement is provided by strapping terminals 58-59.

g. End of Selection Code (EOS)

This is a two-character code which: (1) switches selected teleprinters to the "print" mode, (2) places unselected teleprinters in the "non-print" condition and (3) inhibits recognition of any further call directing codes. Programming of the EOS code requires two-control characters in sequence as follows:

- Strap EOS-1 to the first control character of the sequence.

- Strap EOS-2 to the second control character of the sequence.

h. End of Message Code (EOM)

A maximum of four control characters can be used for the End Of Message code (EOM) which conditions all teleprinters on the system loop to the "select" mode before any messages are received. When a four control-character sequence is used for the EOM code, strap each EOM terminal to the desired control character. If a two-character sequence EOM code is desired, strap terminals EOM-1 and EOM-2 to the "any" terminal, the first control character (or U.C.) to EOM-3, and EOM-4 to the second control character.

i. Answerback (ACK) Programming

(1) Group Codes

When assigning group codes for specific teleprinters, the acknowledgement (ACK) strapping is optional. The strapping for this feature has been previously described under the Call Directing Codes paragraph.

(2) Acknowledgement Polarity

The teleprinter is factory-strapped to provide a negative-going acknowledgement polarity signal on the "ACK output line", and pads 74-75 have been strapped to acheive this. For a positive-going acknowledgement polarity signal, remove the strap between pads 74-75, and strap pads 75-76. If no acknowledgement signal is required, remove the strap between pads 74-75.

(3) Acknowledgement Timing

The length of the acknowledgement answerback can be controlled either by the remote end-period signal (negative or positive) or the low paper alarm contacts. However, the teleprinter is always factory-programmed for remote end-period signal control. With the remote end-period signal control, resistor R9 is normally selected for four-bit intervals at the lowest operating Baud rate, resulting in a "V" or "M" acknowledgement. A negative-going remote end-period signal is provided when pads 94-95 are strapped, and a positive-going remote end-period control signal when pads 93-94 are strapped. For low paper alarm control, pads 92-93 are strapped, and the strap between pads 94-96 is removed. Resistor R9 is selected for 2 bit intervals at the operating Baud rate for a "V" ACK and resistor R11 is selected for 3 bit intervals for a "M" NACK when the low paper alarm grounding contact is connected to input terminal 5.

j. Selective Calling Board Access

To gain access to the Selective Calling Printed Circuit Board within the teleprinter's electronics base, follow the instructions on Internal Access contained in **Paragraph 2-11b** of Section 2 of this manual.