

35A LINE CONTROLLER FOR
8A1 DATA SELECTIVE CALLING SYSTEM
INSTALLATION

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A. Installation of Gear Set and Timing Belt	6	1.01 This section provides the installation instructions for the 35A Line Con- troller. The 35A Line Controller is the controlling device for an 8A1 Data Selective Calling System. This section is being reissued to change the designation 35A-1 Line Controller to 35A Line Controller and incorporate the latest engineering changes and additions. Since this is a general revision, marginal arrows used to indicate changes have been omitted.	
B. Mounting Reperforator Assembly on Cabinet Cradle	9	1.02 With the front panel closed, the 35A Line Controller stands 37 inches high and occupies an area of 24 inches by 24 inches. A clearance of 14 inches is required behind the cabinet to permit the upper and lower cover assembly to be opened without striking the wall. The front panel when opened, will extend approximately 6 inches beyond the front edge of the cabinet. When completely assembled, the 35A Line Controller will weigh approximately 250 pounds.	
DISTRIBUTOR W/BASE AND MOTOR UNIT	10	1.03 Reference made to left or right, front or rear, and top or bottom apply to the cabinet in its normal operating position as viewed from the front.	
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1.04 Refer to Section 581-121-700 whenever specific references are made to mechanical requirements and adjustments. The wiring diagrams can be found in Section 581-121-400.

2. UNPACKING

2.01 The 35A Line Controller is disassembled, and shipped in five separate cartons. The cartons contain the following major components (Figure 1):

(a) Cabinet assembly.

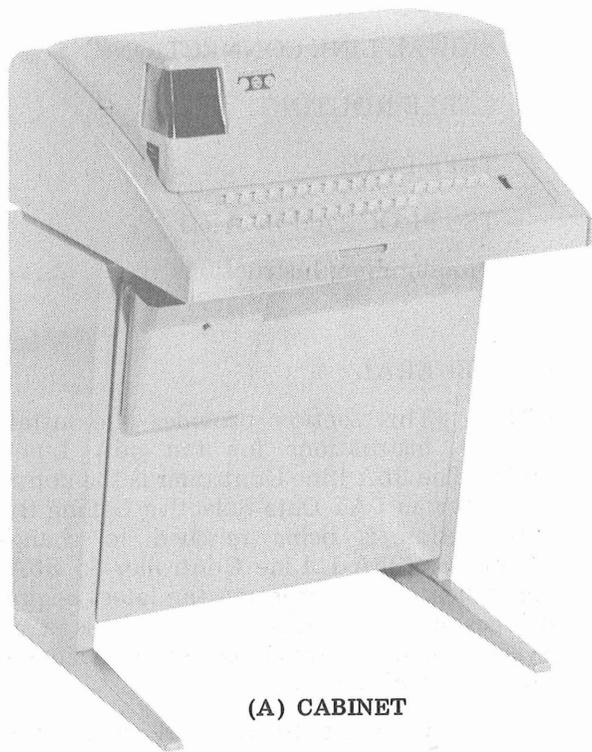
(b) Dc power supply.

(c) Control module.

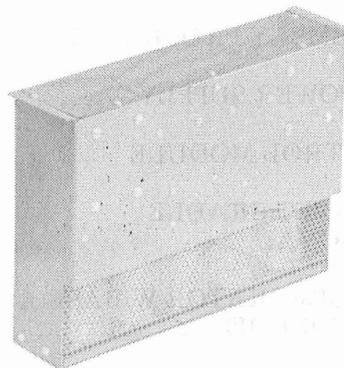
(d) Reperforator (tape punch) w/base and motor unit.

(e) Distributor w/base and motor unit.

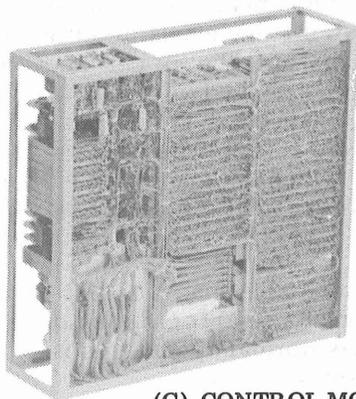
Unpack each carton carefully to avoid marring paint finishes or losing small parts. Since all the components are mounted in the cabinet, the cabinet should be unpacked and prepared first.



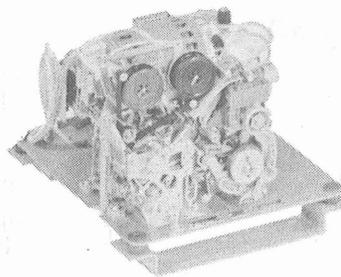
(A) CABINET



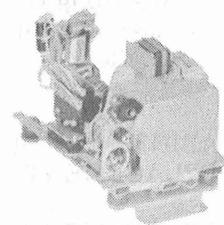
(B) DC POWER SUPPLY



(C) CONTROL MODULE



(D) REPERFORATOR



(E) DISTRIBUTOR

Figure 1 - 35A Line Controller Components

CABINET PREPARATION

2.02 To aid in assembly, it is recommended that the cover assembly and the lower front panel be removed.

CAUTION: THE COVER ASSEMBLY WHEN OPENED, CAUSES AN UNBALANCE TO THE EMPTY CABINET.

A. Cover Removal

2.03 Use the following procedure to remove the cover assembly.

- (a) Remove the lower cover lock screw from each front corner of the cabinet (Figure 2). Do not discard the lock screws.
- (b) Press the two upper cover latch release buttons, and open the upper cover to its latched position (Figure 3). Release the

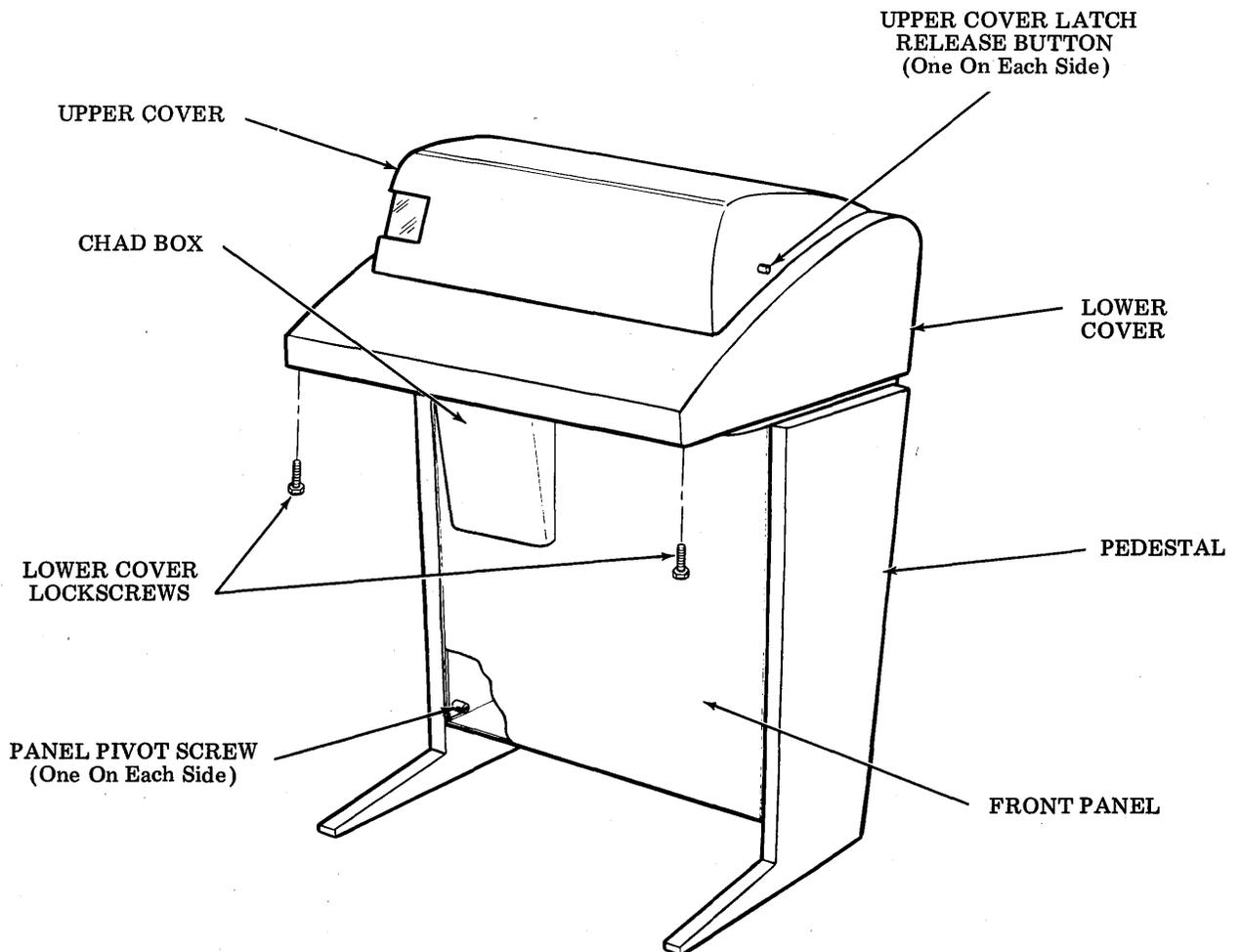


Figure 2 - Identification and Location of Cabinet Parts

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lower cover by deflecting the lower cover latch toward the rear, and, by means of the hand hold provided, raise the lower cover to its open position (Figure 4).

(c) The two lock screws removed in Step (a) are used to secure the lower cover during shipment. For storage, screw the lock screws into the retainer clips on the lower cover brackets holding the height adjustment screws (Figure 5).

(d) Remove the stop bracket against the left hinge of the lower cover (Figure 6). Disconnect the copyright connectors.

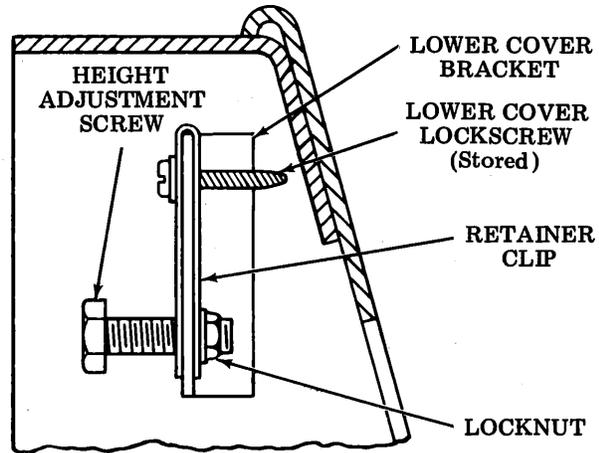


Figure 5 - Lower Cover Lockscrew in Stored Position

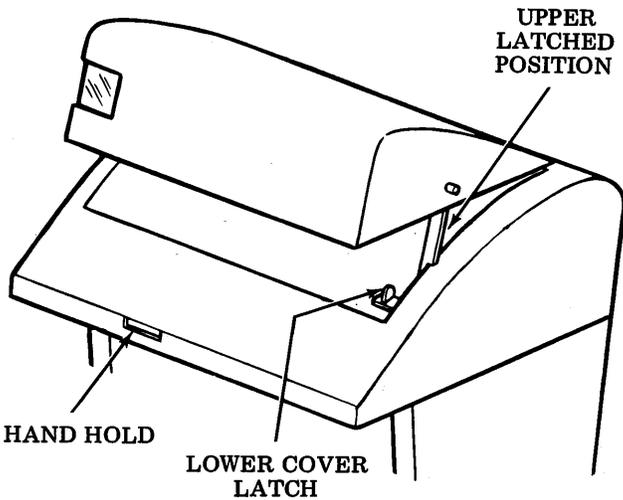


Figure 3 - Upper Cover Latched Open

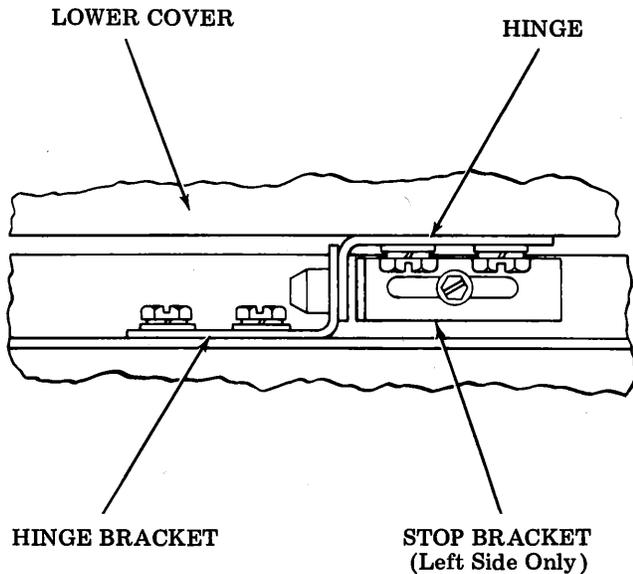


Figure 6 - Lower Cover Hinge and Stop Bracket

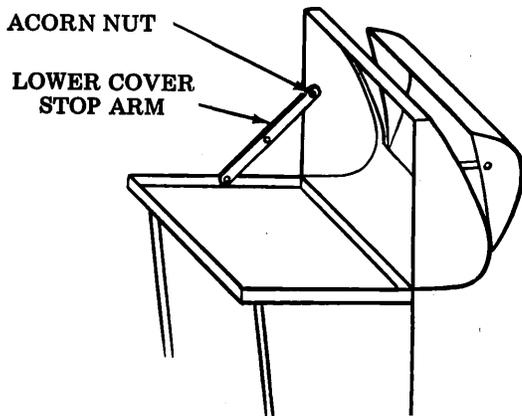


Figure 4 - Lower Cover Opened

(e) Remove the acorn nut holding the stop arm to the lower cover (Figure 4).

CAUTION: THE COVER IS FREE TO FALL AND MUST BE HELD IN PLACE WHEN THE ACORN NUT AND STOP ARM ARE REMOVED.

(f) Remove the cover assembly by sliding to the right and lifting clear.

B. Front Panel Removal

2.04 If the chad box (Figure 2) is mounted on the panel, remove the chad box by raising its right edge and sliding it out to the right. Then remove the front panel using the following procedure:

- (a) Release the panel by pressing the two lock buttons located near the top of the pedestal (Figure 7). Lower the panel and let it rest on the floor.
- (b) Using the handles provided, remove the panel cover by sliding the cover toward the front.
- (c) Remove the two pivot screws holding the front panel to the pedestal.
- (d) Remove the panel.

3. ASSEMBLY PROCEDURE

3.01 With the cabinet unpacked and prepared according to the instructions in 2.02 through 2.04, mount the four major components in the cabinet.

DC POWER SUPPLY

3.02 The dc power supply can be mounted easier by laying the cabinet on its back. Using Figure 8 as a guide, proceed as follows:

- (a) Remove a TP151630 retainer screw and TP2191 lockwasher from the left and right mounting brackets. The mounting brackets are attached to the bottom side of the cabinet pan.
- (b) Orient the power supply with the flanges up and the connectors to the right.

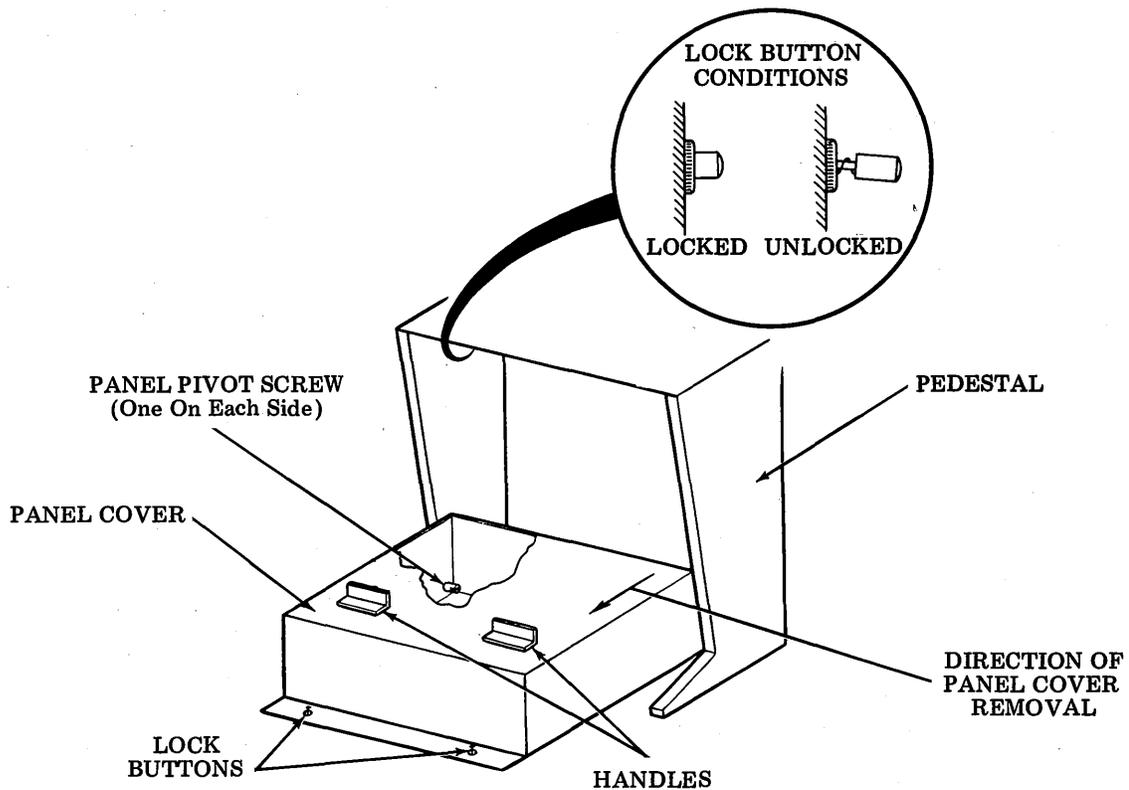


Figure 7 - Front Panel Opened

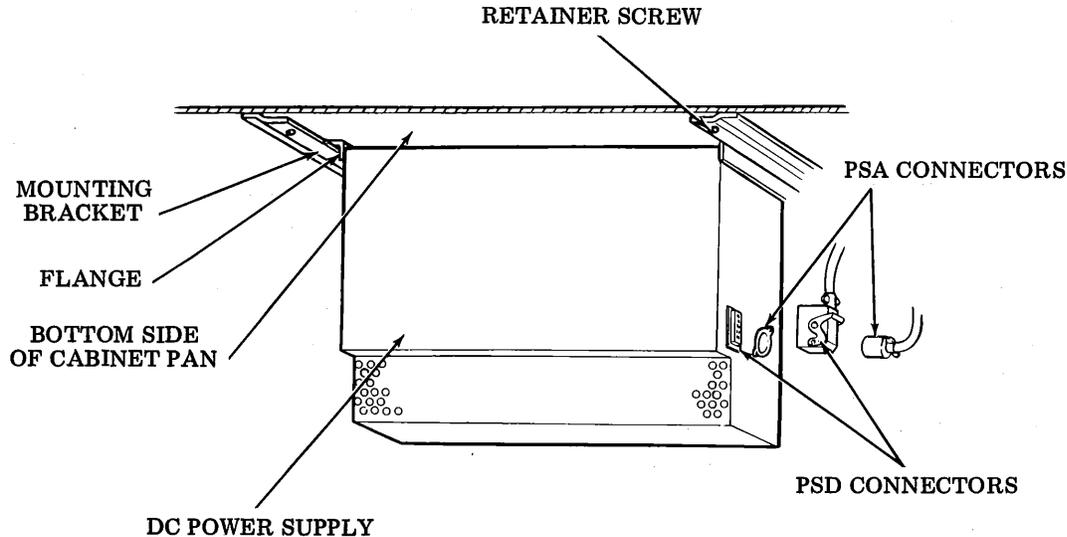


Figure 8 - Dc Power Supply Mounted in Cabinet

- (c) Insert the flanges of the power supply into the openings between the mounting brackets and bottom side of the cabinet pan, and slide the module in place.
- (d) Replace retainer screws and lock-washers removed in Step (a).
- (e) Mate the PSA and PSD connectors whose cables originate from the electrical service assembly.
- (f) If the cabinet was laid on its back, stand it up on its legs.
- (c) Attach the ground strap to the control module.
- (d) Replace the panel cover (Figure 7).
- (e) Route the power cord.
- (f) Raise the front panel to its closed position and lock into place by pressing each lock button. (Locked and unlocked conditions are illustrated in Figure 7.)
- (g) Connect the loose end of the TP308411 ground strap, which was attached to the control module in 3.03(c), to the cabinet floor with the TP107116 star washer, TP105711 flat washer, and TP151630 screw that are in the muslin bag tied to the cabinet frame.

CONTROL MODULE

3.03 With the power supply installed and the cabinet standing upright, replace the front panel (but not its cover) by means of the two pivot screws removed in 2.04(c). With the front panel open (top of the panel resting on the floor), mount the control module as follows:

- (a) Place the control module (Figure 9) on the open front panel with connectors $\Phi 1$ and $\Phi 2$ toward the pivots and the wiring side of the control module resting on the panel. (The circuit cards, relays, step switch, etc, should be facing upward.)
- (b) Mate the $\Phi 1$ and $\Phi 2$ plugs with their proper receptacles.

CABINET CRADLE REMOVAL

3.04 Remove the four mounting screws that secure the cabinet cradle to the four adjusting bushings, and lift the cradle out of the cabinet (Figure 12).

REPERFORATOR W/BASE AND MOTOR UNIT

A. Installation of Gear Set and Timing Belt

Note: If the gear set and timing belt are already installed, disregard the instructions of Paragraph 3.05 and proceed to Paragraph 3.06.

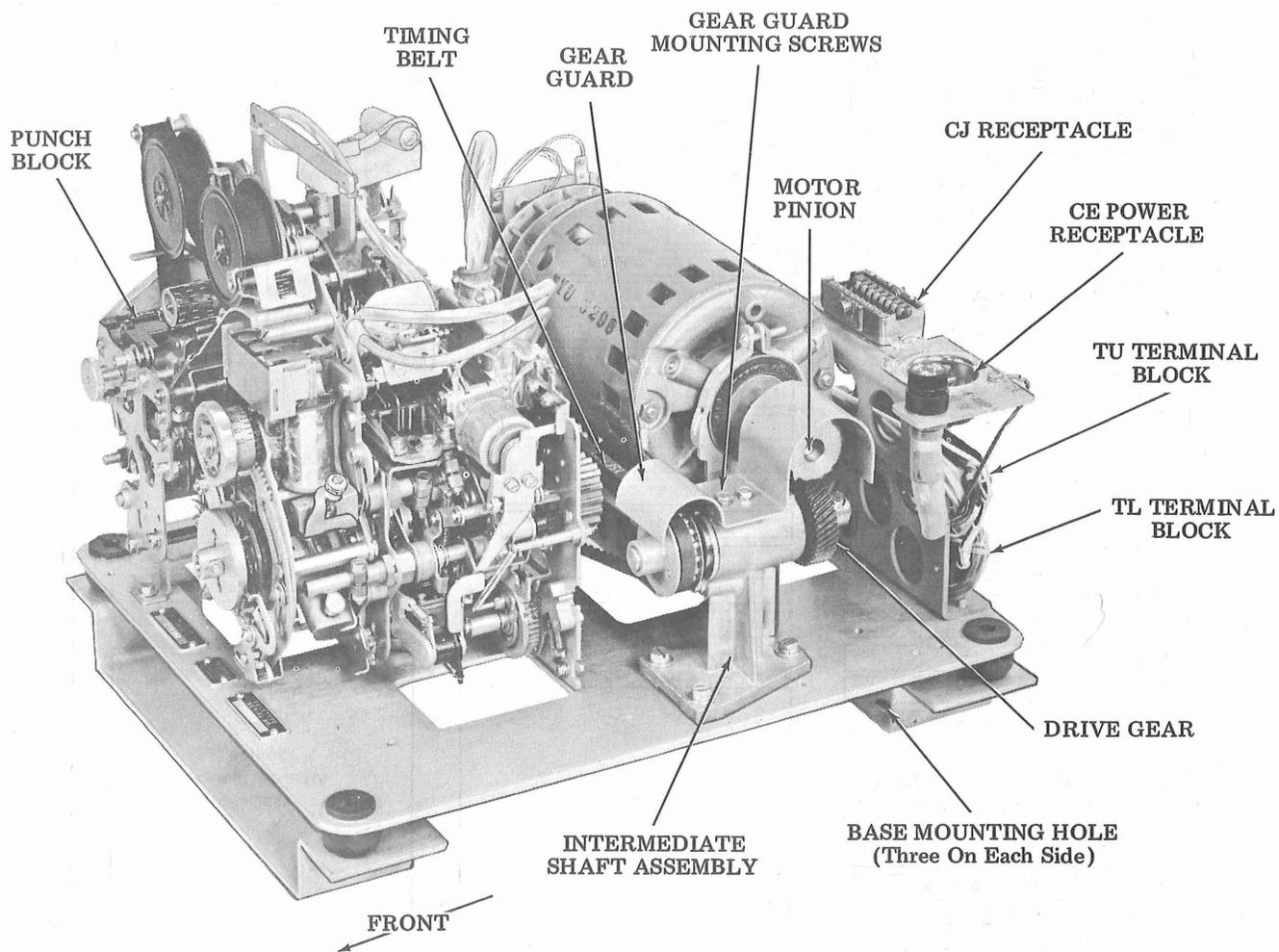


Figure 10 - Reperforator W/Base and Motor Unit

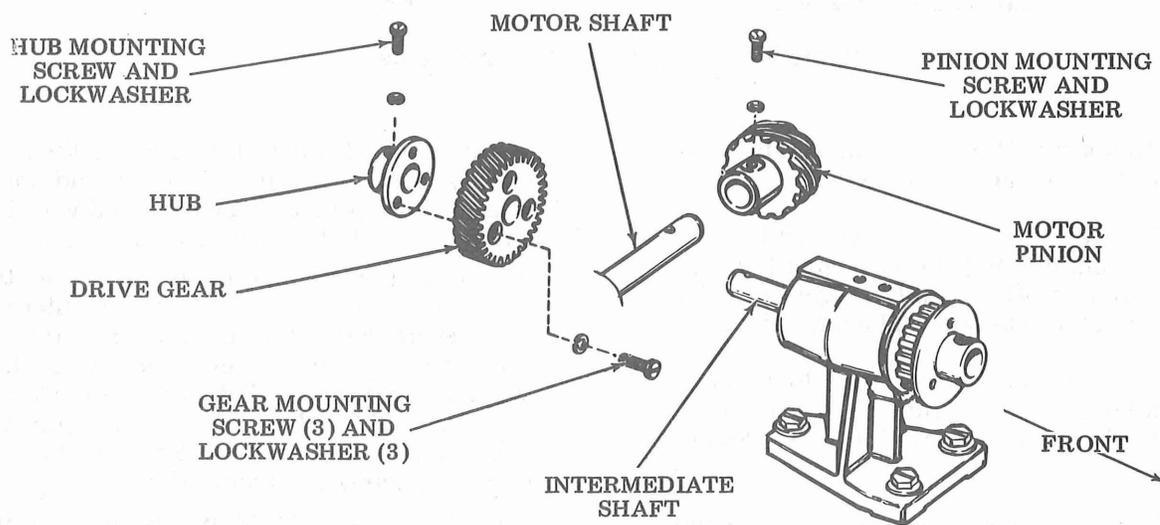


Figure 11 - Installation of Reperforator Gear Set

- (f) Mount the timing belt onto its sprockets (Figure 10).
- (g) Adjust the gear mesh and timing belt tension as specified in the appropriate section.
- (h) Replace the gear guard and mounting hardware removed in Step (a).

B. Mounting Reperforator Assembly on Cabinet Cradle

3.06 There are two (2) TP304125 brackets, six (6) TP151723 screws, six (6) TP2669 lockwashers and six (6) TP35826 flat washers supplied with the reperforator base.

Center the slotted holes in the brackets over the tapped holes in the cradle (Figure 12). These holes are located to the left of the tape container. Secure the brackets to the cradle with the screws, lockwashers, and flat washers and tighten finger-tight.

3.07 Position the reperforator with base and motor over the two mounting brackets on the cradle. Insert the grommets attached to the base, into the holes in the bracket. The punch block of the reperforator (Figure 10) should be on the left front corner. Adjust the brackets so that the base of the reperforator is approximately 1/16 inch away from the tape container.

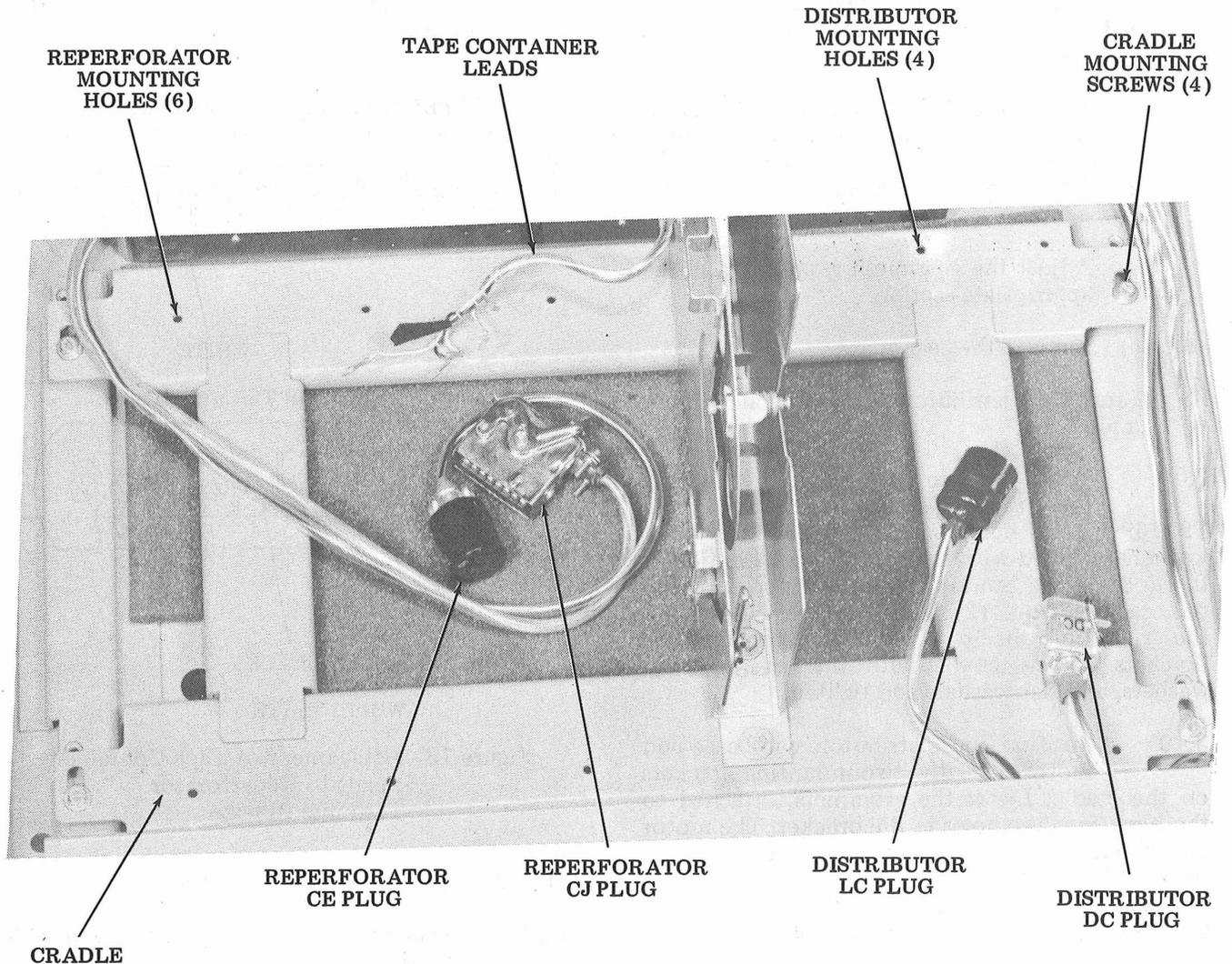


Figure 12 - Upper Component Mounting Details

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DISTRIBUTOR W/BASE AND MOTOR UNIT (Figure 14)

A. Installation of Gear Set

Note: If the gear set is already installed, disregard the instructions in 3.08 and proceed to 3.09.

3.08 Before mounting the distributor assembly in the cradle, install the TP156659 gear set as follows:

- (a) Remove the gear guard and set aside.
- (b) Place the TP156805 pinion retainer over the shoulder of the TP156629 pinion gear. Mount the pinion with retainer onto the motor shaft using two TP156806 posts. The posts and retainer are in the muslin bag tied to the base.
- (c) Mount the TP156628 intermediate gear to the intermediate drive shaft assembly using two (2) TP151631 screws and two (2) TP2191 lockwashers found in the muslin bag.
- (d) Adjust the gear mesh as specified in the appropriate section.
- (e) Replace the gear guard.

B. Mounting Distributor Assembly on Cabinet Cradle

3.09 There are two (2) TP304111 brackets, four (4) TP151723 screws, four (4) TP2669 lockwashers, and four (4) TP35826 flat washers supplied with the distributor base. Center the holes in the brackets over the tapped holes in the cradle (Figure 12). These holes are located to the right of the tape container. Secure the brackets to the cradle with the screws, lockwashers, and flat washers and tighten.

3.10 Position the distributor, with base and motor, over the two mounting brackets on the cradle. Insert the grommets, attached to the base, into the holes in the bracket. The motor unit should be on the right when viewed from the front of the cradle.

CABINET CRADLE REPLACEMENT

3.11 With the reperforator and distributor mounted on the cabinet cradle, replace the cradle in the cabinet by reversing the removal procedure in 3.04.

3.12 Electrical connections to the reperforator, distributor, and tape container are as follows:

- (a) Connect the tape container leads as shown in Figure 13. The leads originate from the tape container and terminate on the reperforator terminal blocks TU and TL.
- (b) Connect the CE and CJ cable connectors extending from the electrical service unit, located inside the cabinet, to the CE and CJ bracket mounted connectors on the reperforator.
- (c) Connect the DC and LC cable connectors extending from the electrical unit, located inside the cabinet, to the DC and LC bracket mounted connectors on the distributor.

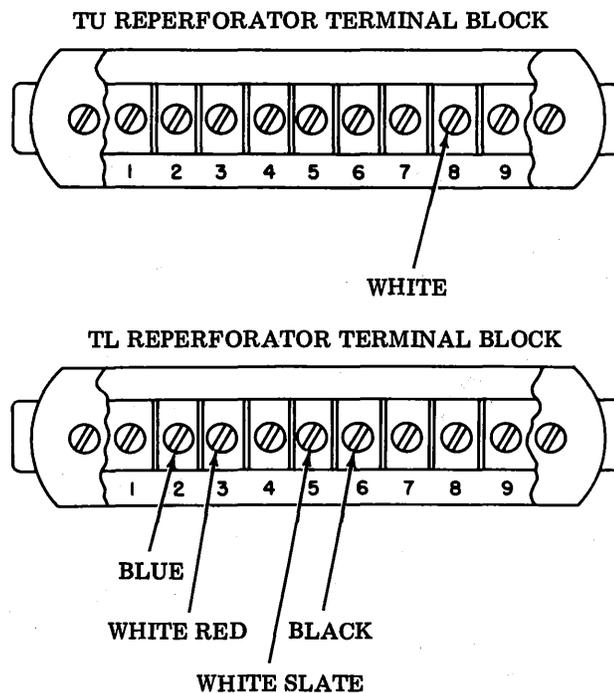


Figure 13 - Attachment of Tape Container Leads to Reperforator Terminal Blocks

REPLACEMENT OF COVER ASSEMBLY

3.13 Replace the cover assembly by reversing the procedure in 2.03.

Note 1: If the motor running contacts on the reperforator interfere with the closing of the lower cover, loosen the six screws that

secure the reperforator mounting brackets to the cradle and position the brackets until there is no more interference. Retighten the six screws.

Note 2: If the distributor motor and lower cover touch when the cover is closed, loosen the four screws that secure the reperforator mounting brackets to the cradle and position the brackets until the motor and cover no longer touch. Retighten the four screws.

4. FINAL PREPARATION

ADJUSTMENTS

A. Components

4.01 Adjust the cradle (height and front-to-rear) and the distributor base. Refer to the appropriate section for the requirements and adjustments.

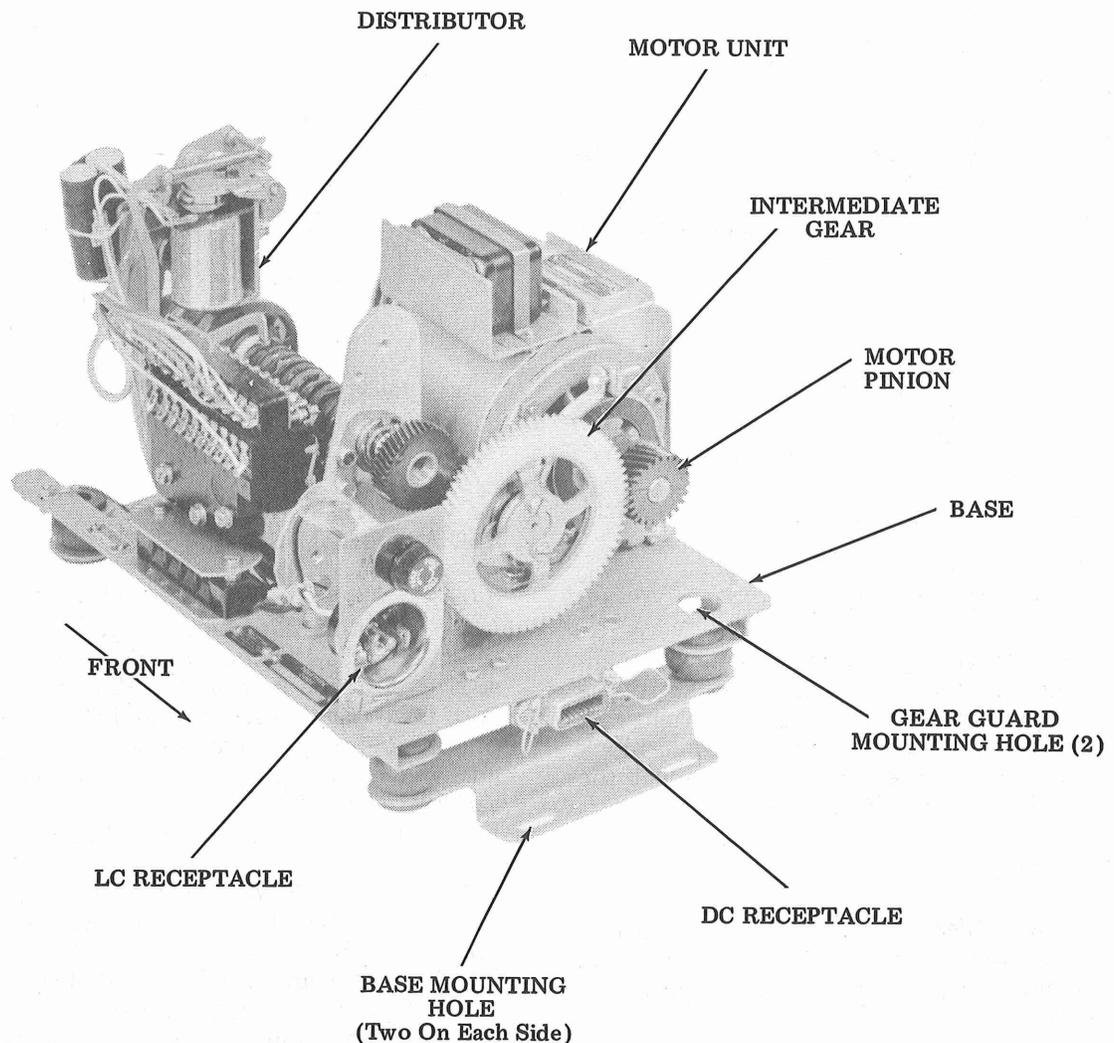


Figure 14 - Distributor W/Base and Motor Unit (Gear Guard Removed)

B. Chad Chute Extension

4.02 Feed the chad chute extension up through the hole in the pan. Remove the metal chad chute from the reperforator punch block (Figure 15). Slip the upper end of the extension over the lower end of the chad chute. Replace the chad chute on the punch block.

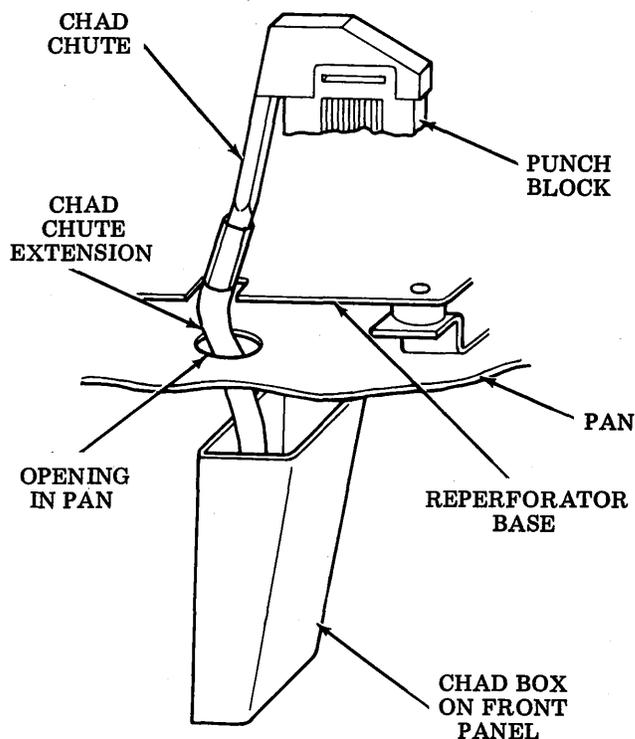


Figure 15 - Chad Disposal System

SIGNAL LINE CONNECTIONS

4.03 Route the signal line through the opening in the lower right rear of the pedestal, up through the opening in the right rear of the pan, and to the signal line terminal block on the electrical service assembly. Connect the signal line as indicated in Figure 16.

CABLE ROUTING

4.04 The cables should be dressed and tied to present a neat appearance and should follow the general routing as shown in Figures 17 and 18.

4.05 Secure the TP304137 copylight cable to the lower cover of the cabinet with the clamp and screws that are in the muslin bag tied to the service unit.

TAPE PATH

4.06 Place the tape reel core into a roll of tape and place both into the tape container so that the tape unwinds from the top of the roll (Figure 19). Twist the free end of the tape 1/4 turn in the clockwise direction, pass the tape through the tape guide, twist the tape 1/4 turn in the counterclockwise direction, pass over the post and under the depressor of the tape slack mechanism, and into the tape chute of the reperforator.

Note: The tape should be twisted so that the upper surface of the tape feeding into the reperforator, is the outer surface of the tape as it unwinds from the tape supply roll.

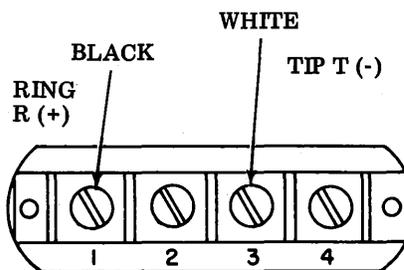


Figure 16 - Signal Line Connections on Electrical Service Assembly

TSC PROGRAM BOARD

4.07 The Transmitter Start Code (TSC) program board (Figure 20) must be programmed with one variable character for each start code to be used and in the order in which it is to be transmitted. The fixed character, DC₀, is pre-programmed as part of the TSC logic output and will always precede the transmission of the variable character. The TSC program board is located in the control module (Figure 9).

4.08 All TSC variable (second) characters are alpha block graphics with bit 6 always spacing and bit 7 always marking. Therefore, code levels 6 and 7 are prewired; code levels 1 through 5 and 8 must be programmed with the required binary information. To establish even parity, code level 8 is marking if the total number of marking bits for code levels 1 through 7 is odd. Or code level 8 is spacing if the total number of marking bits for 1 through 8 is already even.

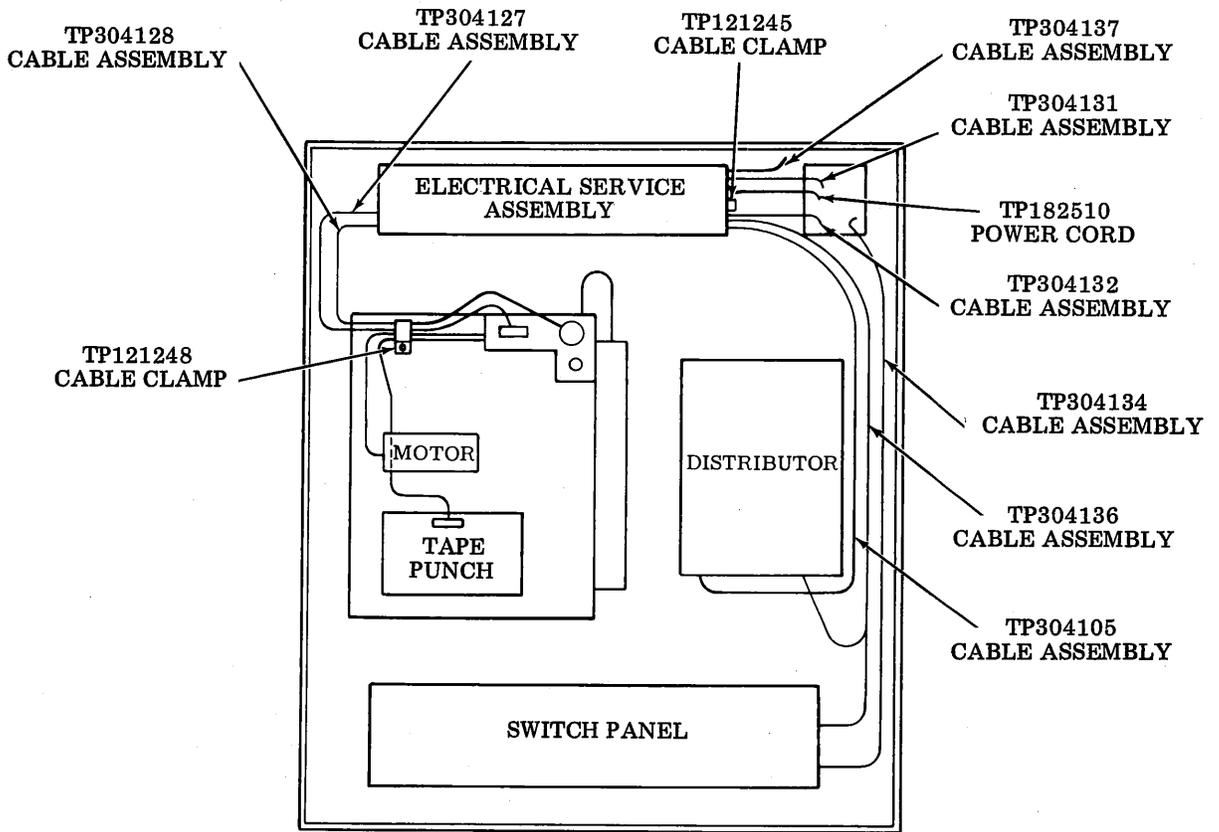


Figure 17 - Upper Compartment Components and Cable Routing (Top View)

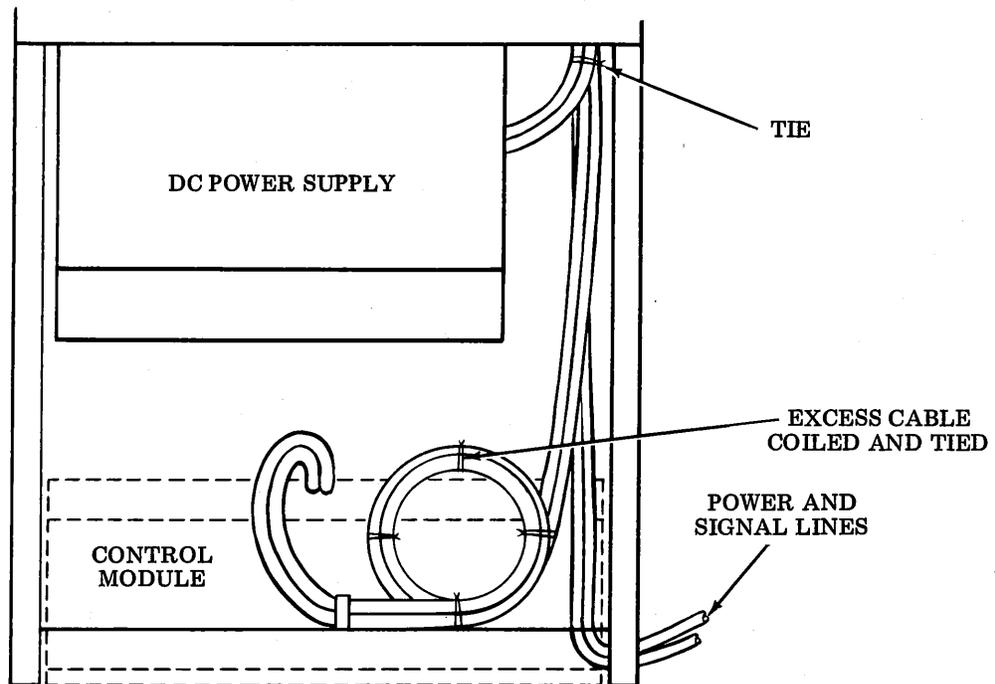


Figure 18 - Lower Compartment Components and Cable Routing (Front View)

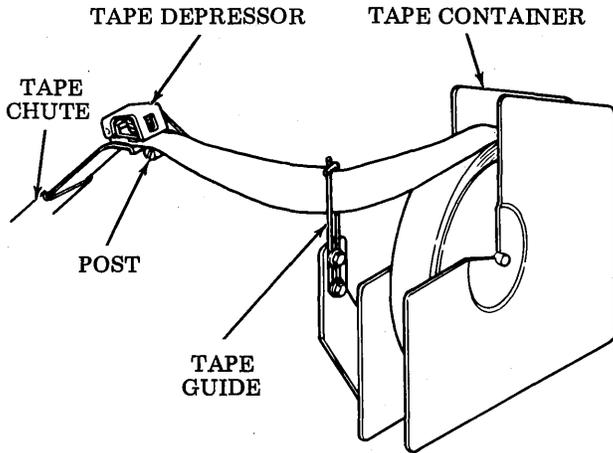


Figure 19 - Tape Path

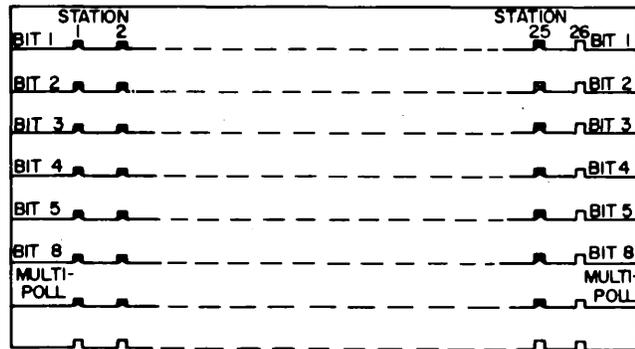


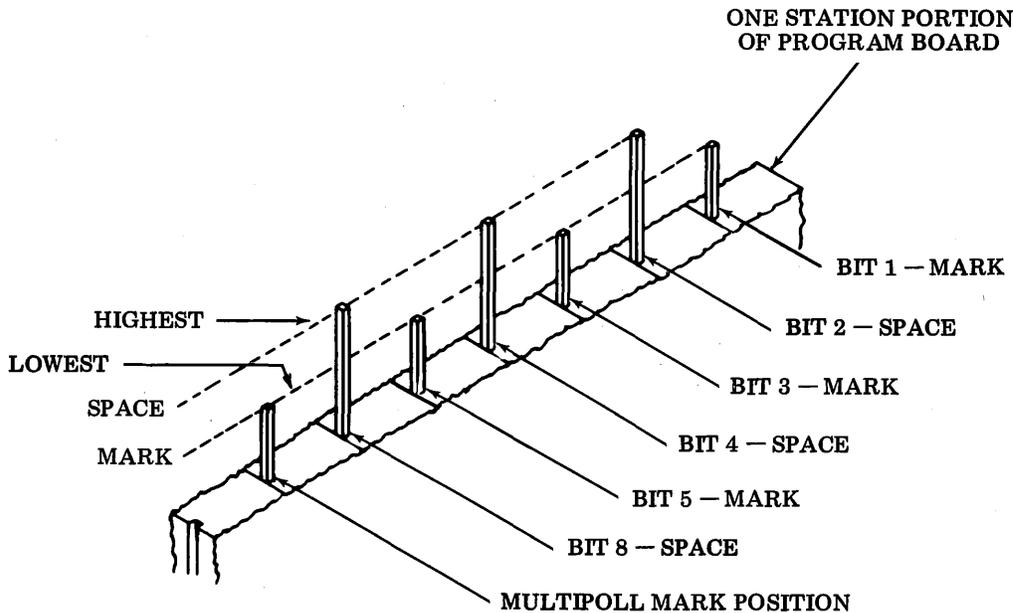
Figure 20 - TSC Program Board

4.09 In addition, the TSC program board contains a row of pins for selecting a multipoll option. When selected, the Line Controller will repoll the given sending station more than once during a single scan. A sending station can send up to six individual messages when selected for a multipoll.

Programming Instructions

4.10 To program the variable (second) character of the Transmitter Start Codes, proceed as follows (example given in Figure 21):

- (a) Select the station position and the character to be programmed.



A STATION POSITION IS TO BE CODED WITH THE CHARACTER "U". BIT PINS 1, 3 AND 5 ARE PUSHED TO THEIR LOWEST POSITION FOR MARKING. BIT PINS 2 AND 4 ARE PULLED TO THEIR HIGHEST POSITION FOR SPACING. SINCE BITS 1, 3, 4, AND 7 TOTAL TO AN EVEN NUMBER, BIT PIN 8 IS PULLED TO ITS HIGHEST POSITION FOR SPACING. MULTIPOLL PIN IS PUSHED TO ITS LOWEST POSITION SINCE MULTIPOLLING OF THIS STATION IS DESIRED.

Figure 21 - Station Programmed With Character "U" and Multipoll Option

- (b) For bits 1 through 5 (disregard 6, 7, and 8 for the moment):
 - (1) For each bit marking, push the bit pin to its lowest position.
 - (2) For each bit spacing, pull the bit pin to its highest position.
- (c) Bits 6 and 7 are prewired with bit 6 always spacing and bit 7 always marking. They are not on the program board.
- (d) Push or pull the bit 8 pin to make the total number of marking bits per character even, remembering that bit 7 is always marking.
- (e) A multipoll pin should be in its highest position (spacing) if a station is to be polled only once. If a station is to be selected for multipoll operation, ie, polled up to six times for sending up to six messages during a single scan, the multipoll pin should be depressed to its lowest position (marking).