

ENGINEERING SPECIFICATION FOR  
THE MODEL 28 TRANSMITTER DISTRIBUTOR  
LBXD8 AND LBXD22

TABLE OF CONTENTS

<u>Section</u>		<u>Total Pages In Section</u>
I.	General Description and Engineering Requirements	4
II.	Detailed Description and Theory of Operation	4
III.	Adjustments, Special Requirements and Lubrication	7
IV.	Manufacturing Information	3
V.	Installation and Servicing Instructions	5
	Reference Specification 6425S	

\*\*PAGE CHECK LIST

<u>Section</u>	<u>Pages</u>	<u>Date</u>
I.	I-1	10-10-62
	I-2	1-02-62
	I-3	10-10-62
	I-4	10-10-62
II.	II-1	10-10-62
	II-2	10-10-62
	II-3	10-10-62
	II-4	10-10-62
III.	III-1	3-18-63
	III-2	* 1-13-64
	III-3	3-18-63
	III-4	3-21-63
	III-5	3-18-63
	III-6	3-18-63
	III-7	3-18-63
IV.	IV-1	3-21-63
	IV-2	3-21-63
	IV-3	3-21-63
V.	V-1	10-10-62
	V-2	10-10-62
	V-3	10-10-62
	V-4	10-10-62
	V-5	10-10-62

\*ENGINEERING SPECIFICATION FOR THE MODEL 28 TRANSMITTER  
DISTRIBUTORS LBXD8 AND LBXD22

SECTION I

GENERAL DESCRIPTION AND ENGINEERING REQUIREMENTS

1. GENERAL DESCRIPTION

- \*a. The Model 28 Transmitter Distributor LBXD8 is a special unit of the Model 28 Line designed primarily for the high to low reperforator transmitter set which will be used in the Automatic Data Interchange System for the Federal Aviation Agency. The LBXD8 is also used in the New York Telephone AIDS System. The LBXD22 is designed for use in the Service C and O Data Interchange System.
- b. The dimensions of the unit are approximately 6-1/2" in height, 9" in width and 6 1/2" in depth. The unit weighs approximately 25 pounds.
- c. Covers enclose the complete unit similarly to the LXD.
- \*d. Basically the LBXD8 and LBXD22 are two shaft transmitter distributors. The sensing shaft auxiliary contact controls the distributor shaft clutch release magnet electrically when the unit is so operated. However, each shaft may be energized independently of the other by external means. A start-stop control lever, tape-out pin and tight-tape arm control the distributor clutch release magnet electrically.
- \*e. The units are capable of "single wire" or "multiple wire" output and "multiple wire" input to the distributor contacts for sequential distribution. The reading contacts are arranged for neutral or polar operation.
- \*f. The units have a sense-distribute, read-feed cycle of operation.

2. ENGINEERING REQUIREMENTS

- \*a. Operational Features of the LBXD8 and LBXD22
  - \*(1) The LBXD shall read five level code with provisions for expansion to eight levels.
  - (2) A 7.42 unit distributor cam shall be used.
  - (3) The unit shall be capable of operating at speeds up to 100 WPM (7.42 Unit Code) with gear changes only (single cycle).
  - (4) The unit shall be equipped with a three position control handle. Position one is run, position two is stop and position three is free wheeling. Movement from position one to position two shall open the start-stop switch contact, and stop the transmitter while depressing the tape-out pin. Movement from position two to position three shall allow the feed wheel to free wheel and shall keep the riding tape-out pin depressed. Movement from position two to position one shall start the unit and allow the tape-out pin to sense for tape. Movement from position three to position two shall suppress free wheeling of the feed wheel.

- (5) The unit shall contain a tight tape mechanism designed to stop transmission if the tape becomes taut when the tape is being fed into the unit horizontally or at a higher angle to the sensing head.
- (6) The LBXD shall be equipped with a riding tape-out pin advanced four characters.

b. Mechanical Requirements

- (1) The LBXD shall consist of a reader and distributor, each capable of being actuated independently of the other from either a local or remote source.
- (2) The basic design of the storing and distributing mechanism shall be similar to the pivoted sensing head transmitter distributor (LAXD).
- (3) The LBXD shall accommodate chadless or fully perforated tape, having in line or advanced feed holes and .100 inch code hole spacing.
- (4) The design shall provide easily removable sub-assemblies. Adjustments of related sub-assemblies shall not be affected when removing a given sub-assembly wherever possible.
- (5) A hinged tape lid shall be provided, and shall be spring biased to open; the lid and operating mechanism are to be identical, where practicable, to that of the LXD. The tape lid shall accommodate chadless or fully perforated tape without readjustment.
- (6) An index mark shall be provided seven characters ahead of the sensing pins for use with tape having printed characters.
- (7) Guides shall be provided to aid the tape entering the sensing head.
- (8) A minimum of 3 full wheel teeth shall engage tape passing over the sensing pins.
- (9) Motions shall be simple harmonic wherever possible.
- (10) A design objective shall be a maintenance interval consistent with that established for the Model 28 line.
- (11) Framing and material shall be in accordance with the 28 Type program.
- (12) The effective sensing pin travel shall be as long as practical to give good sensing pin margins.
- (13) Sensing pin pressure shall be in the range of 2 to 3 ounces.
- (14) The design shall consider co-ordination and mounting with all other units of the Model 28 line.
- (15) The LBXD shall be equipped with a riding tape out pin, advanced four characters ahead of the sensing pins (.400 between center lines), to stop transmission at the end of the tape.



NOTE: This pin shall be depressed when moving the control handle from run to stop position and shall remain depressed in the free wheel position.

- (16) The LBXD shall be operable with apparatus equipped with transmitter control.
- (17) The LBXD shall be equipped with the following auxiliary contacts:
  - (a) A contact operated by the reader cam sleeve shall close not earlier than 3 milliseconds @ 100 WPM after the space to mark transition and not later than  $180^{\circ}$  of the sensing cycle. The contact shall re-open at  $340^{\circ}$  and remain open when the reader is stopped.
  - (b) A contact operated by the reader cam sleeve shall close at  $82^{\circ}$  and open at  $162^{\circ}$  of the sensing cycle.
  - (c) A contact operated by the distributor cam sleeve shall close at  $20^{\circ}$  of the distributor cycle and open at  $340^{\circ}$ , and shall remain open when the distributor is stopped. This contact shall in all cases, bridge the start, and the No. 1 through 5 pulses.
- (18) The mark to space and space to mark transitions shall occur as early in the sensing cycle as is practicable and no later than  $147^{\circ}$ .
- (19) The design shall permit the addition of a contact which shall close when the tape lid is safely closed.
- (20) Covers shall be provided to enclose all operating mechanisms.
- \* (21) Design consideration shall be given to the application of the LBXD8 to the Model 28 Automatic Send-Receive (ASR) Set. The LBXD22 shall be designed for use on the Multiple Transmitter Distributor Base, LMXB204.
- (22) The overall dimensions are not to exceed 6-1/2" in height, 9" in width, and  $6\frac{1}{2}$ " in depth.

c. Electrical Requirements

NOTE: Requirements to hold regardless of operating speed.

- (1) The clutch trip magnets shall be capable of operating from the following power sources:
  - (a) 110-120 volts, D.C.
  - (b) 45-55 volts, D.C.

NOTE: The operating time of the clutch magnets must be such that the condition stated in Paragraph 2.b. (17) is met. The release time of the distributor clutch magnet must be such that the unit will operate with apparatus equipped with transmitter control.

- (2) The time interval between the leading edge of the synchronizing pulse (when used) and the leading edge of the start baud, for two or more units, shall not vary in excess of  $\pm 5$  milliseconds when these units are set anywhere within their adjustment range.
- (3) The time interval between the leading edge of the synchronizing pulse (when used) and the leading edge of the start baud, for any one unit, shall not vary in excess of  $\pm 1.5$  milliseconds at any one setting of its adjustment range.
- \* (4) The reader portion of the LBXD shall utilize transfer type code reading contacts that are electrically isolated from the signal line.
- (5) The distributor contacts shall be terminated at the frame connector, this shall permit distribution of external five wire inputs.
- (6) The reader contacts are to be latched prior to the end of the distributor start pulse and after the start of the distributor stop pulse.
- (7) Two auxiliary reader contacts shall be provided. The timing shall conform to Paragraph 2.b. (17) (a) and (b).
- (8) One auxiliary distributor contact shall be provided. The timing shall conform to Paragraph 2.b. (17) (c).
- (9) The clutch magnet current limiting resistor is to be provided externally to the unit.
- (10) Reading of successive marking code perforations shall not result in a contact opening in excess of one and one-half milliseconds, regardless of speed of operation.

SECTION II

DETAILED DESCRIPTION AND THEORY OF OPERATION

1. DETAILED DESCRIPTION

\*a. The Model 28 Transmitter Distributor consists of two side frames held apart by separators and two intermediate side plates onto which all the mechanisms mount, a cover plate, a top plate and a tape guide plate. Mounted on the tape guide plate are the red tape lid release button and two adjustable tape guides. Each tape guide is scored with a line 7 characters ahead of the sensing pins. Mounted on the tape guide plate but overhanging by the top plate and the tape guide plate is the tape lid. Mounted along side of the tape lid is a gray green control lever. The tape sensing pins extend through slots in the top plate. The feed wheel pins extend through a slot in the top plate and a slot in the tape guide plate. The tape-out pin also extends through the top plate through the tape guide plate. Two shafts are located within the machine: (1) the sensing shaft (2) the distributor shaft. Each rotate at the same speed through an idler gear connected to the drive gears on the clutch. The distributor shaft includes an outboard gear which is connected through the intermediate gear assembly to the drive motor pinion.

\*\*b. The LBXD8 and LBXD22 are electrically identical units. Mechanical operation of both units is identical. These differences are in the outboard drive gear on the distributor shaft and the distribution shaft itself. The LBXD22 is designed for operation on Multiple Unit Mounting Base LMXB204.

2. THEORY OF OPERATION

a. The operation as described starts with the transmitter distributor in the idle line condition, the drive motor running, tape in the transmitter distributor, the external portions of the transmitter distributor circuit complete and follows the normal sequence of events.

\*(1) The control lever is pushed to run position. The cam surface of the lever cams the control button bail and causes it to pivot on its axis. The control button bail in pivoting causes the stop switch latch to pivot and release the stop switch latch bail. The stop switch latch bail, by action of its spring, pulls away from actuation of the stop switch permitting the stop switch to close the sensing clutch trip magnet circuit. The sensing clutch trip magnet is energized and pulls in its armature. The armature is fastened to the armature ex-



tension bail and in being pulled to the magnet core causes the armature extension bail to cam the clutch trip lever latch and releases the clutch trip bail.

- (2) The clutch trip bail upon moving disengages the trip lever from the stop arm on the sensing clutch. Engagement of the clutch starts the sensing cam rotating. Through the auxiliary contact located on the sensing cam, the distributor cam magnet is similarly tripped. Rotation of the sensing cam produces the following sequence of events by virtue of the relationship to the cam contours and timing.
- (3) The sensing pins are allowed to rise by rotation of their bell cranks. If the pin is free to move through a perforation in the tape it continues to follow the sensing bail upward to its fully extended position. If, however, the pin is restricted by a blank in the tape, the pin is restricted from moving to its fully extended position. Each pin which moves to its fully extended position allows a pusher to fall in behind the recesses on the bell crank through action of its spring. These pushers remain stationary until the bell cranks begin their downward rotation through the sensing bail's return stroke.
- (4) The reset arm of the clutch reset begins to cam back to the reset position. The reset is completed in  $43^{\circ}$  of shaft rotation.
- (5) After this action has progressed for approximately  $1/4$  of a revolution the feed pawl begins to reset and the distributor clutch trip auxiliary contact closes.
- (6) The pushers begin to move downward. They engage their associated slides on the contact block, which rotate the contact levers and close contacts on the sensing block. Just before contact is made the stripper bail strips the latches which were holding the slides on the sensing block in position during the previous cycle. Before completion of this cycle the latches are allowed to reset so that the slides that were pushed down through the pushers are again latched, and the pushers which were not selected remain in their upper position through action of their springs. The distributor clutch trip auxiliary contact opens and the sensing auxiliary contact closes by the camming of the auxiliary lever through the cam sleeve. The above actions in paragraph (6) take place during the stop start interval of the distributor cam.

- (7) The feed lever is cammed out so that the feed bail rotates and the feed pawl begins to engage the next tooth on the feed wheel.
  - (8) The distributor cam has already started to rotate. As the No. 1 through No. 5 pulses are opened and closed for a predetermined interval on the distributor cam the signal is distributed during each interval if that associated contact has been closed through the sensing block contacts. The cycle is then repeated if the magnet remains energized.
  - (9) At approximately 250° of shaft rotation, the feed wheel starts to move one space, and the pushers on the sensing block are stripped.
  - (10) As the reader shaft approaches the end of the cycle, the feeding is completed and the sensing auxiliary contact opens.
- b. Stopping the action, as described, starts at the point where the sensing pins have been extended and are sensing no tape in the transmitter distributor.
- (1) As soon as the sensing pins for the pulses cannot tell the difference between no tape and perforations, the transmitter distributor acts as if five perforations were sensed and goes through the actions previously described.
  - (2) The tape-out senses there is no tape in the transmitter distributor and the action is the same as that for the first pulse, except instead it allows its extension bail to pivot and operate the actuator on the tape-out switch which opens the clutch trip magnet circuit. The clutch trip magnet is no longer energized, release its armature which permits the armature extension to pivot out of its position of blocking the clutch trip lever latch. The clutch trip lever latches the clutch trip bail.
  - (3) The clutch trip bail in being latched permits the clutch trip lever to block the stop lug on the clutch. The inertia causes it to rotate far enough after being blocked to permit the clutch latch to fall into the notch on the clutch cam disk.
  - (4) Similarly stopping the unit can be completed through the control lever. Positioning the lever in the stop or center position rotates the bail enough to actuate the stop-start switch causing a break in the clutch trip magnet circuit. The stop-start switch and the tape-out switch are connected in series.



c. Clutch Operation

- (1) See LXD Specification 6285S.

d. Tape Lid Operation

- (1) See LXD Specification 6285S.

e. Control Lever

- (1) Start Transmission - See Paragraph 2.a.(1).

- (2) Stop Transmission.

(a) When the lever is pushed into the stop position the cam surfaces of the lever cams the control button bail causing the bail to pivot. The bail in pivoting transfers its motion to the stop switch latch bail. The stop switch latch bail operates the stop switch actuator and opens the clutch magnet circuit.

- (3) Stop Transmission with Free Wheeling Feed Wheel

(a) The same as e. (2) in operation except the lever travels farther and, in addition, pushes the feed pawl and stud detent away from the feed ratchet and leaves the tape feed wheel free to rotate.

f. Electrical Circuits

- (1) The transmitter distributor has two electrical circuits; the clutch trip magnet circuit and the signal circuit. The clutch trip magnet circuit consists of the clutch trip magnet coils in series with the stop-start switch and the tape-out switch. The signal circuit consists of the transmitter contacts and distributor contacts in series. This connection is made external to the LBXD by the customer.

SECTION III

ADJUSTMENTS, SPECIAL REQUIREMENTS, AND LUBRICATION

1. ADJUSTMENTS

a. Adjustments: (See LBXDL Specification 6425S except omit the following Storing Block Assembly Adjustments.)

(1) Storing Block Adjustment (Preliminary) - Section III.

(2) Storing Contact Adjustment - Section III.

b. Storing Block Adjustments

\*\* NOTE: It is recommended that the following adjustments be made with the contact assemblies removed from the unit. Use a 172060 Adjusting Tool to bend the contacts. For each adjustment, start with the contact pile-up farthest from the handle of the bending tool to avoid disturbing completed adjustments.

(1) Contact Assembly Adjustments (Preliminary)

\* (a) Backstop - Normally Closed Contact (See Figure 3)

\*\* 1. The five or eight swingers designated #1 in Figure 3 shall be parallel to the mounting plate and in line with each other, as gaged by eye.

\*\* 2. Bend the backstop to meet the requirement.

\* (b) Spring Tension - Normally Closed Contact Against Backstop (See Figure 4)

\*\* 1. With the swinger held away from the normally closed contact, it shall require 2 to 6 ounces (applied perpendicularly at the contact point) to move the stationary leaf of the normally closed contact away from its backstop using an 8 ounce spring scale.

\*\* 2. Bend the stationary leaf of the marking contact to meet this requirement. To increase the tension of the leaf against the backstop, it may be necessary to bend the backstop away from the contact leaf, form the contact leaf to increase the tension, and reposition the backstop to meet the requirement of Paragraph 1.b.(1)(a).

\* (c) Normally Closed Contact Spring Tension (See Figure 5)

\*\* 1. It shall require 35 to 50 grams applied just below the contact point to open the normally closed contact.

\*\* 2. Bend the swinger to meet this requirement.

(d) Normally Open Contact Gap (See Figure 6)

1. Requirement: The normally open contact gap shall be .010 to .015 with the swinger at rest. (The normally open contact is the contact which is open when the contact assembly is removed from the unit, or in the unit, when the slides are in their selected position).
2. To Adjust: Bend the normally open contact backstop to meet this requirement.

(e) Normally Open Contact Spring Tension (See Figure 7)

1. It shall require 35 to 50 grams applied just below the contact point to move the normally open contact spring away from its backstop.
2. Bend the normally open contact spring to meet this requirement. To increase the tension of the leaf against the backstop, it may be necessary to bend the backstop away from the contact leaf, form the contact leaf to increase the tension, and reposition the backstop to meet the requirement of Paragraph 1.b.(1)(d).

NOTE: Use 172060 Adjusting Tool to bend contacts.

**\*\*c.** Contact Assembly Horizontal Adjustment

- (1) Requirement: As viewed from the bottom of the storing block assembly, the contact assembly swingers shall be approximately centered on their respective sensing slide extensions as gaged by eye.
- (2) To adjust: Loosen the contact assembly mounting screws and position to meet requirement.

**\*d.** Slide Lever Adjustment (Figures 1 and 2)

- (1) Requirement: With the contact assemblies installed in the unit, and the slides selected and latched, there shall be .005" to .020" between all sensing slides and contact swingers.
- (2) To Adjust: Loosen the contact assembly mounting bar lock nuts and the contact assembly bracket mounting screws to friction tight. Insert an Allen wrench and position the contact assemblies as per requirement by rotating the bar and pivoting the contact assembly bracket.

**2.** SPECIAL REQUIREMENTS (Spring Tensions)

**a.** (See LBXD1 Specification 6425S except omit the following Storing Block Assembly Spring Tensions.)

- (1) 159804 Contact Slide Spring Tension - Section III.
- (2) 159095 Contact Extension Lever Spring Tension - Section III.

**b.** Contact Slide Spring Tension

- (1) Requirement:
  - (a) It shall require 6 to 9 ounces to stretch the spring to installed length.



(2) To Measure:

- (a) With the slides in their uppermost position (Blank selected latches stripped) hook an 8 ounce spring scale on the spring loop and pull to installed length.

3. LUBRICATION

- a. Refer to Specification 6425S.
- b. A light film of KS7471 Grease shall lubricate the bakelite actuator on the slides and the transfer type reader contact leaf spring extensions.

NOTE: Exercise extreme caution when lubricating so as not to expose the contacts to grease.

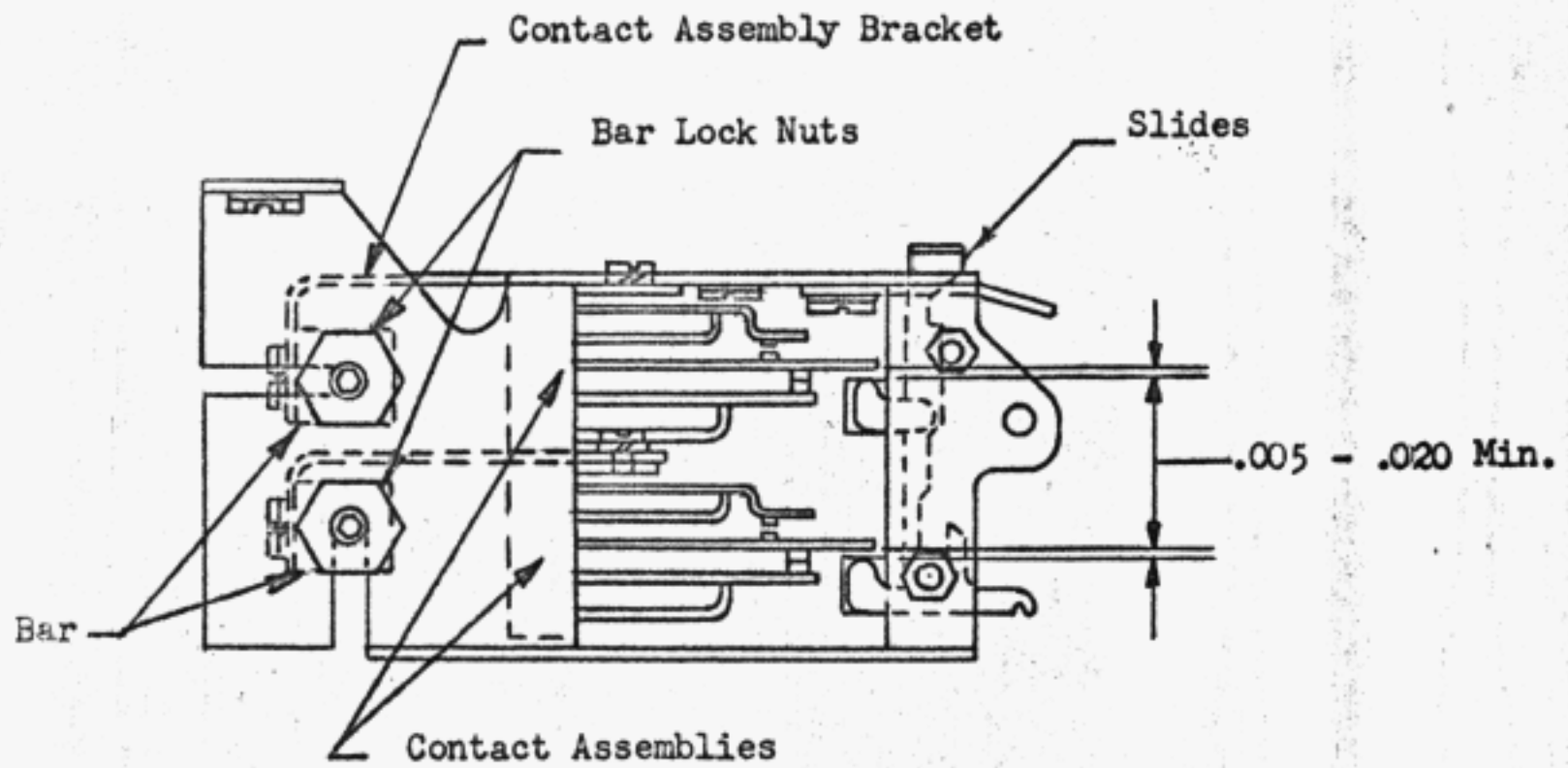


FIGURE 1

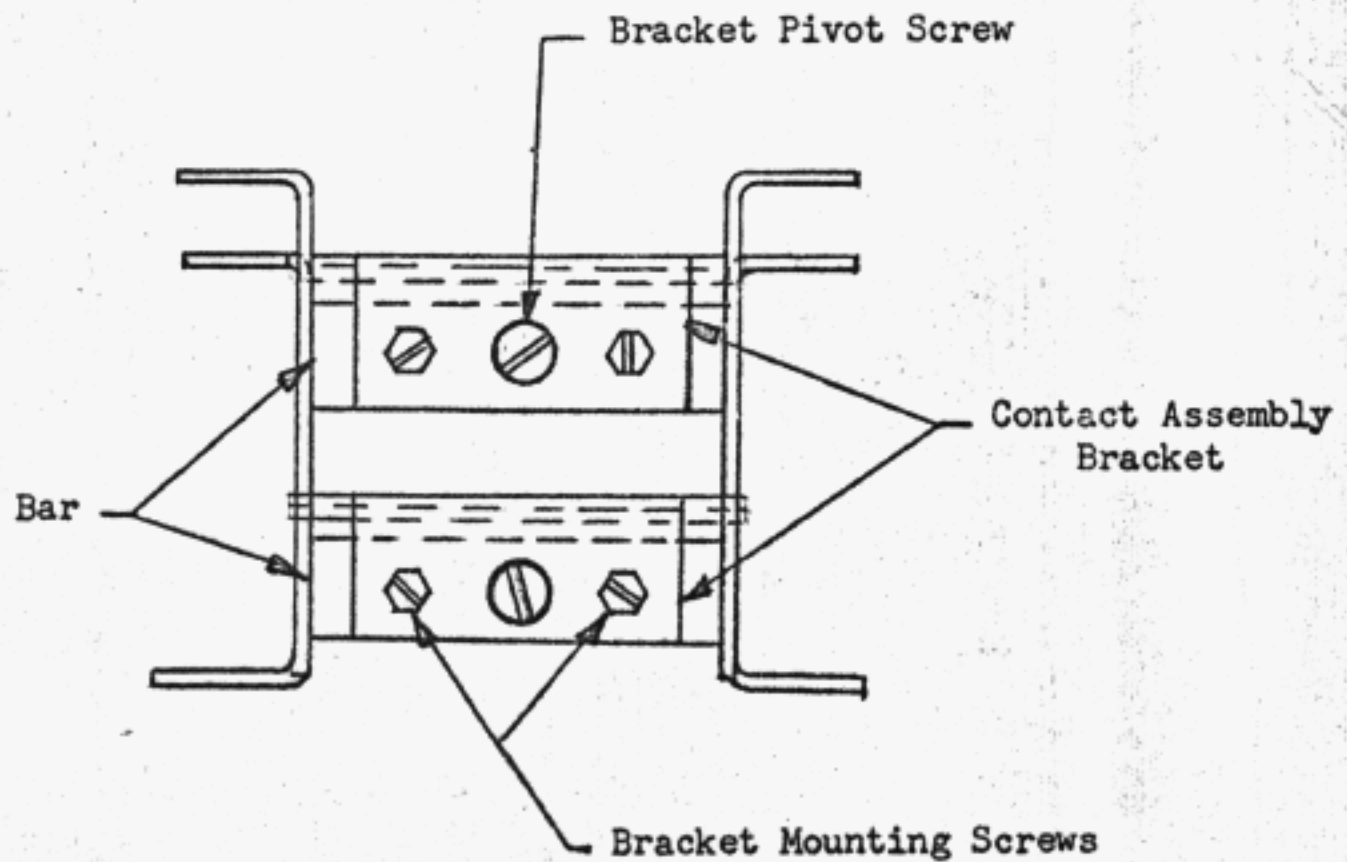


FIGURE 2

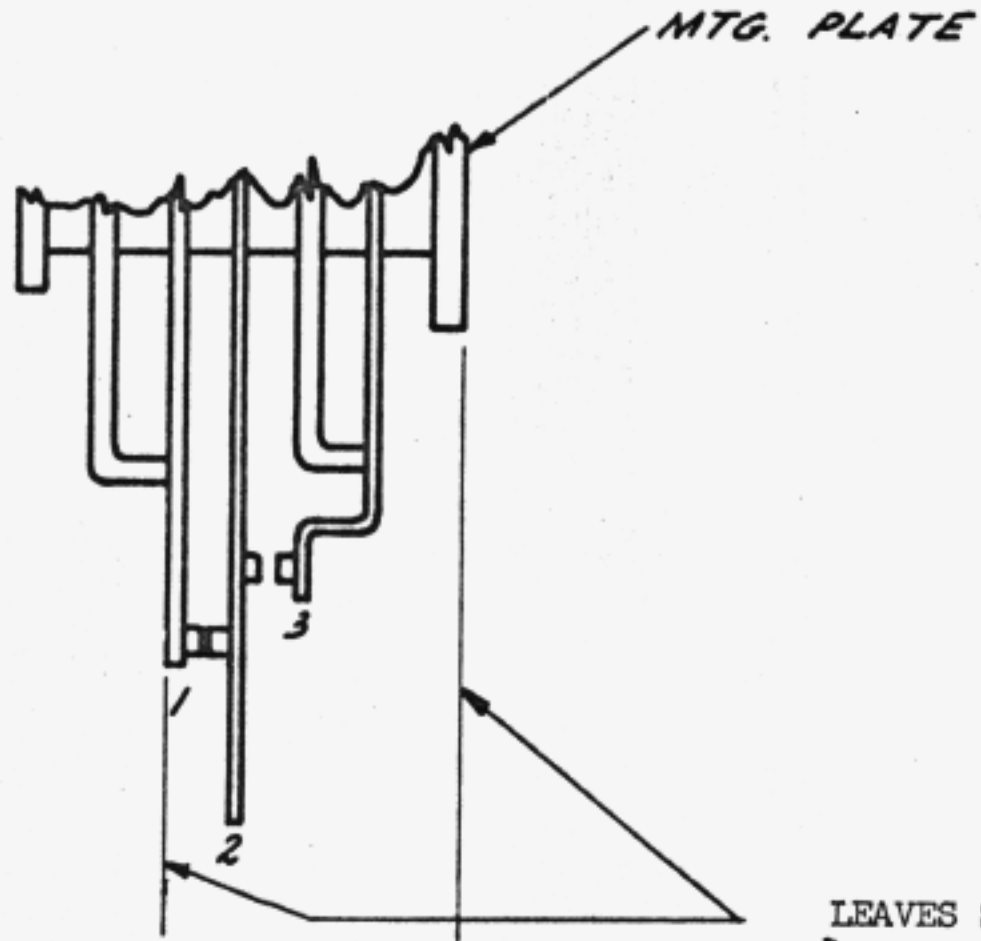


FIGURE 3

LEAVES SHALL  
BE PARALLEL WITH  
MOUNTING PLATE AND  
IN LINE (GAGE BY  
EYE).

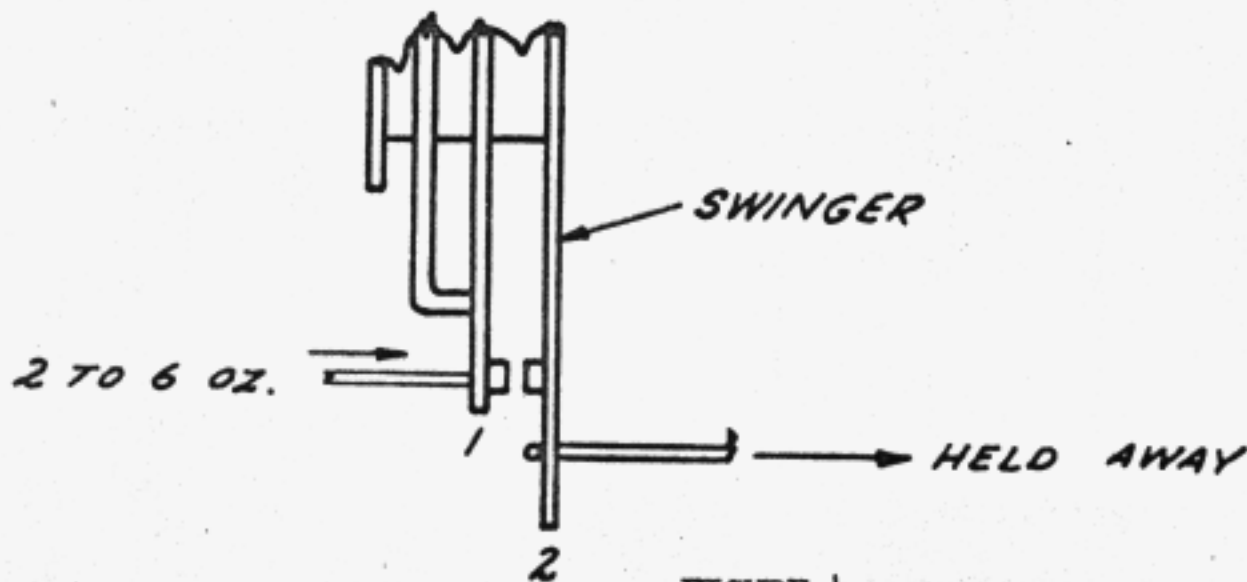


FIGURE 4



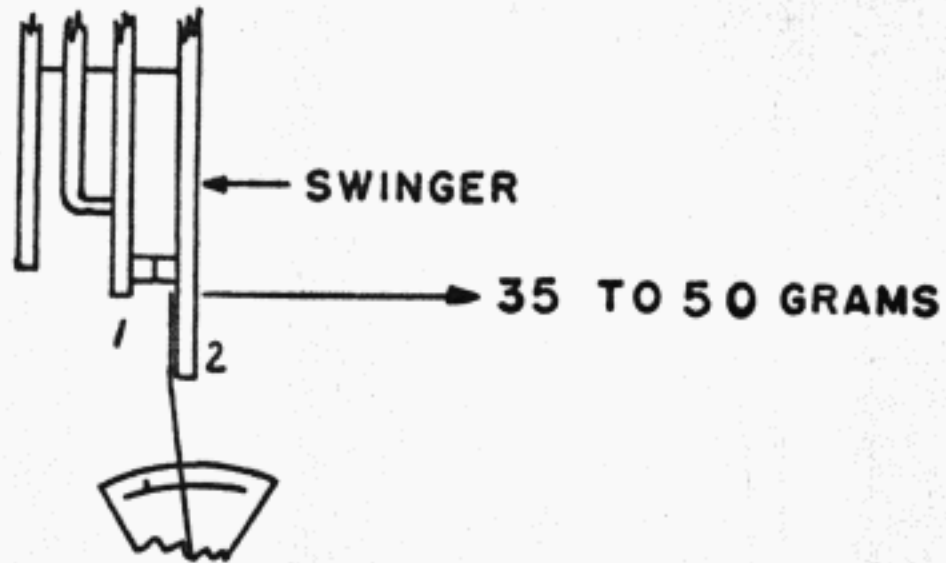


FIGURE 5

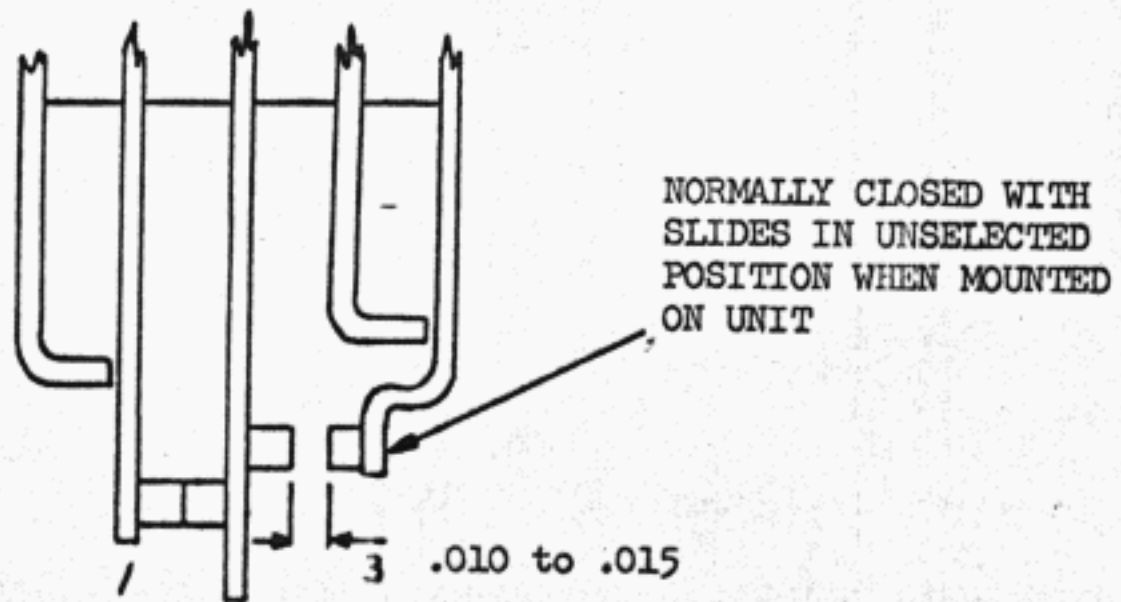


FIGURE 6

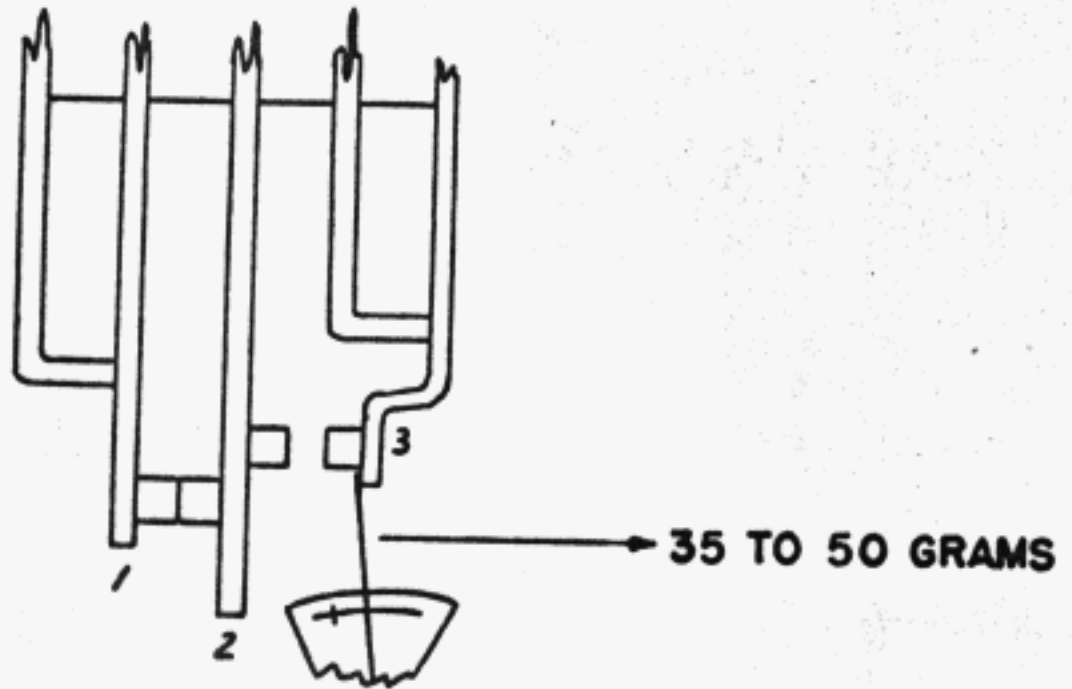


FIGURE 7

SECTION IV

MANUFACTURING INFORMATION

1. GENERAL

- a. Refer to Specification 6425S.

2. SPECIFIC MECHANISMS

- a. Refer to Specification 6425S.

3. MANUFACTURING ASSEMBLY INSTRUCTIONS

- a. Refer to Specification 6425S.

4. CONTACT STROBING

NOTE: Disconnect or disable spark suppression network prior to strobing contacts.

a. Distributor Contacts

- (1) Refer to Specification 6425S.

- (2) Distributor Auxiliary Contacts (60 to 100 WPM)

- (a) Align the end of the stop pulse image with the 142 mark on the stop segment of the DXD scale and adjust the auxiliary contact.

1. The Distributor Auxiliary Contact should:

Close:  $110 \pm 5$  Div. in Stop Pulse  
Open:  $31 \pm 8$  Div. in Stop Pulse

\* b. Transmitter Contacts (1) through (5) - See Figure 8

- (1) While the transmitter is sensing "letters", align the end of the distributor stop pulse segment with the 142 mark on the stop segment of the DXD scale.

- (a) The beginning and end of each pulse (both sensing and reading) shall occur:

1. After 20 Div. in Stop Pulse;  
2. Before 80 Div. in Start Pulse.

- (b) Electrical breaks will be acceptable provided they occur after 20 Div. in stop pulse and before 80 Div. in the start pulse. There



should be no breaks in the transmitter signal pulse. (The electrical breaks occurring within  $\pm 3\%$  tolerance limits of the distributor contacts are acceptable.)

\* c. Sensing Auxiliary Contacts (60 to 100 WPM) - See Figure 8

- (1) With both magnets de-energized and distributor and transmitter clutches latched and in the stop position, turn the motor off.
- (2) With transmitter and distributor shaft gears held against rotation, energize both clutch trip magnets.
- (3) Release gears and turn motor on.
- (4) Align the end of the distributor stop pulse image with the 142 mark on the stop segment of the DXD scale and check the auxiliary contacts.

(a)	MARKING		SPACING	
	Close	Open	Open	Close
Distributor Clutch Trip Auxiliary	90 $\pm$ 10 Div. in Start Pulse	64 $\pm$ 20 Div. in #2 Pulse	80 $\pm$ 10 Div. in Start Pulse	74 $\pm$ 20 Div. in #2 Pulse
(b) Sensing Auxiliary Contact	80 $\pm$ 10 Div. in #2 Pulse	31 $\pm$ 20 Div. in Stop Pulse	72 $\pm$ 10 Div. in #2 Pulse	41 $\pm$ 20 Div. in Stop Pul.

NOTE: Auxiliary contact breaks not exceeding 1-1/2 DXD Scale Divisions are acceptable.

5. FINAL OPERATING REQUIREMENTS

- a. There shall be no breaks in the transmitted signal pulses.
- b. The beginning and end of the transmitted pulses shall not deviate more than  $\pm 3\%$ .
- c. Check sensing ability by checking distributor output with page printer and closed loop in gate. Check for a minimum of 2 hours.
  - (1) A 1000 OHM 25 watt dropping resistor should be placed externally in series with each clutch trip magnet for 110 V.D.C. operation.
  - (2) Suitable spark suppression shall be provided across each magnet (.25 uf capacitor and 390 OHMS resistor in series recommended).
- d. The tape out contact shall operate from the normally closed with tape in unit to the open position with the absence of tape.

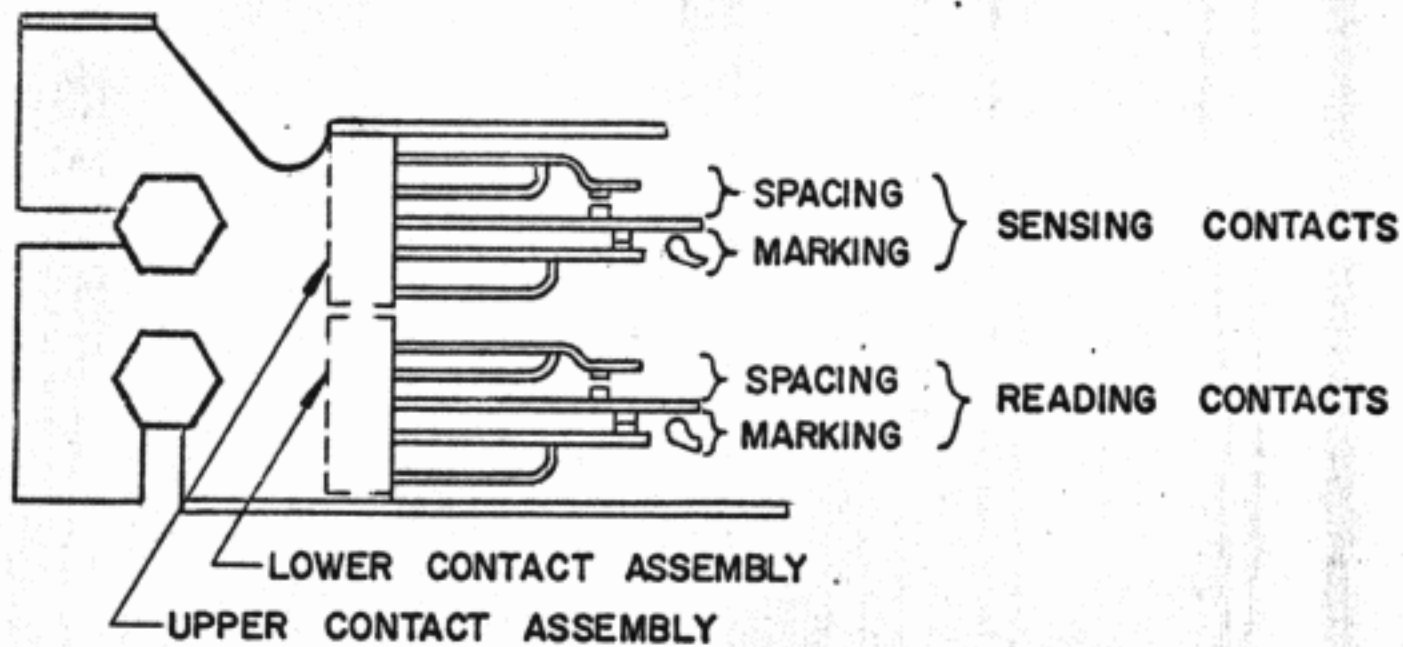


FIGURE 8



SECTION V

INSTALLATION AND SERVICING INSTRUCTIONS

1. INSTALLATION

a. General

- \*(1) The Transmitter Distributor Unit LBXD8 used in the FAA-ADIS High-to-Low RT Set is intended to operate on an LRXB9 Base. An LMU3 Motor mounted to the underside of the base, drives the transmitter distributor unit through a variable speed gearshift assembly. The Transmitter Distributor Unit LBXD8 used in New York Telephone AIDS High-to-Low RT Set VCL239, is mounted on an LRXB20 Base. An LMU30 Motor mounted to the underside of the base drives the transmitter distributor. The Transmitter Distributor Unit LBXD8 used in FAA-CODIS High-to-Low RT VCL237 Set is mounted on an LRXB26. An LMU30 Motor supplies power to the transmitter distributor. The Transmitter Distributor Unit LBXD22 used in the FAA-CODIS Coding Transmitter Terminal LBAC244 is mounted on a Multiple Distributor Base LMXB204. Drive for three transmitter distributors is furnished by one LMU12 Motor.

b. Electrical Connections

- \*(1) All electrical wiring on the LBXD8 terminates in the male halves of two 36 point miniature amphenol connectors. The connector halves are secured to a bracket mounted underneath and toward the rear of the unit. When the transmitter distributor is positioned on an associated LRXB Base, the connector halves on the unit mate with their female counterparts which are secured to a bracket which is interposed between the transmitter distributor of the base. The circuitry is thus continued through the mating connectors to the cables associated with the base and the tape handling stand that the base is mounted on. The transmitter distributor for coding Transmitter Terminal LBXD22 terminates in the male half of one 36 point miniature amphenol connector. The other is not used. Both connectors are mounted on the rear of the LBXD. The LBXD is adapted for multiple mounting by the use of a cradle which is part of 174067 Modification Kit. 174067 Modification Kit is part of the LBXD22. For schematic WD of the preceding units refer to:

LBXD8	3702WD	ADIS, AIDS, CODIS H/L RT
LBXD22	5226WD	Coding-Transmitter TD

\*c. Assembly of Unit to Base - (ADIS-LBXD8), (AIDS-LBXD8), (CODIS-LBXD8)-  
(H/L RT Set).

- \*(1) Withdraw the cable assembly (Cable No. 170986 - ADIS), (Cable No. 174590-AIDS), (Cable Nos. 174590, 190497 - CODIS H/L RT) with the 170765 Bracket attached through the top of the base far enough to be able to plug the cable connector halves into the mating connector on the LBXD8. Secure the 170765 Bracket to the underside of the LBXD8 Casting, using the two 153441 Hex. Screws and the two 2669 Lockwashers from the 21306PK Muslin Bag tied to base.



(This arrangement functions to retain the mating connector halves together and in addition the bracket (with bushing) provides adjustable mounting feet to secure the LBXD8 Unit to the LRXB Base).

- \* (2) Lower the cable connector unit to the base and thread the two 86850 Screws through the bushings in the bracket and into the tapped holes in the base. Utilize the two 2669 Lockwashers and the two 117535 Flat Washers with these mounting screws.
- (3) Loosen the 151723 Hex. Screw securing the 170867 Bracket to the base at the front of the LBXD8 Unit. Pivot the bracket so that its upper lip is over the front mounting foot of the LBXD8 Unit Casting. Tighten the bracket mounting screw securely.
- \* (4) Installation of the LBXD8 Unit in ADIS will result in the outboard distributor shaft gear meshing with the 159106 Gear-Shift Assembly Output Gear. Adjust this gear mesh as follows:
  - (a) Requirement:
    - 1. There shall be some to .003 backlash between the distributor shaft outboard gear and the gear-shift assembly output gear.
  - (b) To Adjust:
    - 1. Loosen the two 86850 Locking Screws in the threaded bushings at the rear of the LBXD8 Unit. Turn the threaded bushings evenly to maintain parallelism between the base and the distributor unit casting, until the requirement is met. Tighten the locking screws.
- \*\* (5) Installation of LBXD8 for AIDS and CODIS RT Sets is identical to ADIS installation except that the gear shift mechanism is replaced by a single speed gearing mechanism.
- \*\* (6) Installation of the LBXD22 in CODIS Coding Transmitter will result in the meshing of the distributor shaft gear with the cross shaft gear of the gang mounted transmitting distributor base.
  - (a) The LBXD22 is similar to the LBXD8. The shaft of the LBXD22 is longer than the shaft of the LBXD8, so that it can be used for multiple mounting. The LBXD22 is adapted for multiple mounting by Modification Kit 174067. When the LBXD22 is slid onto its base and the cross shaft gear and distributor shaft gears are meshed, a 151724 Screw, 2669 Lockwasher, and 34432 Flat Washer holds the unit in place.
  - (b) There are two 36 Pin Connectors on the bottom of the LBXD22. The one with wires coming from the code reading contacts remounts above the other. Detach both connectors from the LBXD22 and attach to Mounting Plate 161483. Refer to Specification 5940S, Figure 1. Use same 42827 Screw and 70072 Lockwasher as was used to hold connectors to LBXD22.

(c) Requirement: There should be .004 to .008 inch backlash between the Distributor Shaft Gear (162034) and the Cross Shaft Gear (162033). Judge by eye.

1. To adjust: Loosen the 151657 Screws mounting the 161557 Connector Bracket. Position the connector bracket towards the rear of the base. Move both sides of the bracket evenly so that parallelism is maintained. This will provide the slight amount of backlash required. Tighten the locking screws.

## 2. SERVICING

### a. General

- (1) Minor adjustment and lubrication may be accomplished while the unit is on the base.
- (2) Major or complete readjustment should be done with the unit removed from the base.

### b. Disassembly of the LBXD8 Transmitter Distributor

#### (1) Plate Assemblies

- (a) The 158512 Cover Plate may be removed by lifting the left side of the cover.
- (b) The 158520 Top Plate should be removed by loosening the mounting screws on each side.
- (c) The 158518 Tape Guide Plate should be removed by its mounting screws on each side.

#### (2) Oil Reservoir Assembly

- (a) Remove the four screws mounting the 156860 Cross Bar.
- (b) Unhook and remove the two springs from the posts mounted to cross bar.

#### (3) Distributor Block Assembly

- (a) Remove the two mounting screws.
- (b) Withdraw the distributor block and its cable far enough from the unit to permit the required servicing. (Complete removal of the distributor block will require unsoldering all cable leads from the block terminals.)

- (4) Idler Gear Assembly
  - (a) Remove the nut.
  - (b) Remove the assembly before removing sensing and distributor shaft assemblies.
- (5) Distributor Shaft Assembly
  - (a) Remove the five screws holding the bearing clamps on each side of the unit.
  - (b) Lift the assembly out.
- (6) Sensing Shaft Assembly
  - (a) Remove the five screws holding the bearing clamps on each end.
  - (b) Lift shaft assembly and rotate for clearance.
- (7) Feed Wheel
  - (a) Loosen the nut holding the cantilever post.
  - (b) Lift post and slide wheel off.
- (8) Storing Switch Assembly
  - (a) Remove the four screws holding the 170950 Switch Assembly to the casting.
  - (b) Withdraw the switch assembly far enough from the unit to permit the required servicing.
- (9) Pusher and Latch Levers
  - (a) Remove both sets of springs.
  - (b) Slide the 158849 and 158848 Push Levers down.
  - (c) Slide and rotate the 158834 Latch Levers out.
- (10) Sensing Pins
  - (a) Remove all springs.
  - (b) Rotate the bell cranks downward and remove each 158522 Sensing Pin Assembly.

NOTE: The 158832 Sensing Bail eccentric shaft may be positioned to the rear for easier disassembly.

- (11) Plate Assembly



- (a) Remove the 158560 Intermediate Plate by removing the three mounting screws and spacer.
- (b) Remove the two screws holding the 158537 Plate to the center plate assembly.

(12) Center Plate Assembly

- (a) Remove two screws and spring post holding the 158532 Plate Assembly onto the front plate.
- (b) Pull away by lifting center plate, hooked over the pivot shaft, and remove.
- (c) Remove tape out switch.

(13) Sensing Mechanism

- (a) Remove the 158819 Pivot shaft by loosening the nut, set collars, and remove two retainer rings.
- (b) Slide out the shaft and remove the 158810 Latch Bail, 158812 Pusher Bail and the 158526 Feed Lever assemblies.
- (c) Remove the 158831 Sensing Bail.

(14) Clutch Trip Assembly

- (a) Remove the mounting screws and nuts.
- (b) Remove the connector screws.
- (c) Remove tight tape switch bracket mounting screws.
- (d) Remove the 159120 Clutch Trip assemblies with connectors, switches and associated cabling.

(15) Frame Assembly

- (a) Remove all screws and/or nuts securing eccentric shaft to side frame and/or casting.
- (b) Remove all screws mounting front and rear plates to casting.
- (c) Disassemble completely.

c. Assembly of Transmitter Distributor LBXD8

- (1) To assemble the unit, reverse the steps given in b. above, and/or see B/M's for complete reassembly of the unit.

d. Adjustments and Lubrication

- (1) Proceed as in Section III.