NAVSHIPS 94456

TECHNICAL MANUAL

for

TELETYPEWRITER TYPING REPERFORATOR SETS

TT-192/UG, TT-192A/UG, TT-253/UG, TT-253A/UG, TT-274/UG and TT-292/UG

TELETYPE CORPORATION
SKOKIE, ILLINOIS

DEPARTMENT OF THE NAVY
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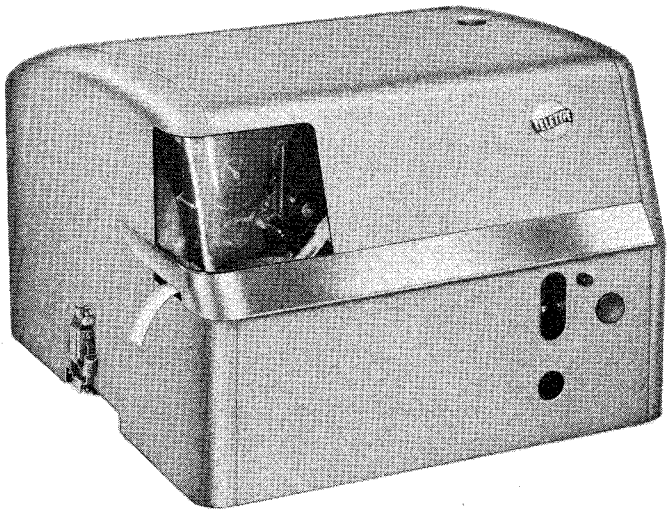


Figure 1-1A. Typing Reperforator Set TT-192/UG and TT-274/UG

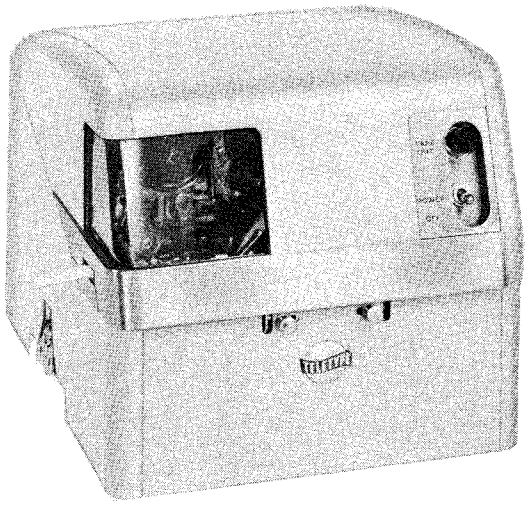


Figure 1-1B. Typing Reperforator Set TT-192A/UG

Figure 1-1C. Typing Reperforator Set TT-253/UG, TT-253A/UG and TT-292/UG

Figure 1-1. Typing Reperforator Sets Complete

SECTION 1
GENERAL INFORMATION

1-1. SCOPE OF INSTRUCTION BOOK.

a. This instruction book describes Typing Reperforator Sets TT-192/UG, TT-192A/UG, TT-253/UG, TT-253A/UG, TT-274/UG and TT-292/UG, illustrated in figure 1-1. It includes information concerning their installation, adjustment, operation and maintenance. Any references to TT-192/UG apply equally to all other typing reperforator sets unless specific reference is made to an exclusive feature of TT-192/UG.

b. Specific references to TT-192A/UG, TT-253/UG, TT-253A/UG, TT-274/UG and TT-292/UG have been made only to the extent needed for clarity. Specific references to these typing reperforator sets are not to be construed as equally applicable to all of these units or to all of the typing reperforator sets. Repetition of descriptions and instructions common to the individual units has been avoided in both text and illustration to the maximum extent consistent with clarity.

c. In general, TT-192A/UG and TT-274/UG are similar to TT-192/UG, and TT-253A/UG and TT-292/UG are similar to TT-253/UG.

1-2. PURPOSE OF THE EQUIPMENT.

a. GENERAL. — The typing reperforator is an electromechanical apparatus, the primary function of which is to receive messages transmitted in a teletypewriter circuit established between two or more ships or stations connected by a radio or wire telegraph channel. The messages received are recorded both in typed characters and punched code holes upon standard teletype message tape suitable for message transmission through other teletypewriter apparatus. Where a keyboard is used in connection with the typing reperforator, the equipment may be used for either receiving or sending messages in the teletypewriter circuit.

(1) Transmission between stations is accomplished electrically by use of the five-unit start-stop signaling code, which utilizes a 7.42 unit or a 7.00 unit transmission pattern. Typing Reperforator Set TT-253A/UG is designed for 7.00 unit transmission.

(2) The nominal operating speed of the equipment is 368 operations per minute (o.p.m.) which is approximately 60 words per minute (w.p.m.). By changing a variable speed intermediate gear mechanism, the receiving only typing reperforators may be operated at speeds of 460 o.p.m. (75 w.p.m.) or 600 o.p.m. (100 w.p.m.) as required for synchronization with the speed at which the message received was transmitted. Keyboard mounted equipment (TT-253/UG, TT-253A/UG and TT-292/UG) may be adapted to the same speed range variations by installing different gear sets, which are not supplied with the typing reperforators but which are available as optional equipment.

(3) The basic typing reperforator is composed of four components: a base or keyboard-base, a cover, a motor and a typing reperforator mechanism. (See table 1-1.) Motors and typing reperforator mechanisms are interchangeable between Typing Reperforator Sets TT-192/UG, TT-253/UG, TT-274/UG and TT-292/UG.

(4) The equipment is wired for operation on 0.060 ampere signal line current at the factory, but by making wiring changes at the selector magnets and adjusting selector magnet armature springs, it may be adapted for operation on 0.020 ampere signal line current.

(5) Tape used for perforating and imprinting messages is 11/16 inch wide and is supplied in eight-inch rolls on a two-inch spool. The equipment perforates the tape in round fully perforated or chadless (hinged chad) code holes imprinted six characters in advance of the coded character in the tape and behind the feed holes. Feed holes are punched in the tape by the typing reperforator at a ten hole per inch spacing.

b. TT-192A/UG. — This typing reperforator is a miniaturized version of the receiving only equipment. It is designed for installations where minimum overall space and weight requirements must be met. Its function is identical to that of Typing Reperforator Set TT-192/UG.

c. TT-253/UG. — This typing reperforator is mounted on a keyboard-base which permits it to function in the signal line as a transmitting unit. The keyboard signal generator is wired in series with the reperforator mechanism to permit use of the common external signal circuit for either send or receive operation. When used to send a message, the equipment monitors its own transmission by preparing a typed, perforated tape of the message. A standard teletype keyboard converts the mechanical input intelligence into electrical impulses.

d. TT-253A/UG. — This equipment is identical to Typing Reperforator Set TT-253/UG (paragraph 1-2c), except that it has been modified for 7.00 unit transmission. The keyboard-base includes a synchronous pulse mechanism consisting of magnet and contacts.

TABLE 1-1. TYPING REPERFORATOR SET COMPONENTS

COMPONENT		TYPING REPERFORATOR SET					
NAME	MANUFACTURER'S DESIGNATION	TT-192/UG	TT-192A/UG	TT-253/UG	TT-253A/UG	TT-274/UG	TT-292/UG
COVER	LRC202	X				X	
COVER, MINIATURIZED	LRC205		X				
CABINET	LSRC200			X	X		X
BASE	LRB8	X				X	
BASE, MINIATURIZED	LRB31		X				
KEYBOARD-BASE	LTRK1ARN			X			X
KEYBOARD-BASE	LTRK5ARN				X		
MOTOR, AC SYNCHRONOUS	LMU3	X		X	X		
MOTOR, MINIATURIZED	LMU24		X				
MOTOR, AC GOVERNED	LMU4					X	X
TYPING REPERFORATOR	LPR9AWA	X		X		X	X
TYPING REPERFORATOR, MINIATURIZED	LPR40AWA		X				
TYPING REPERFORATOR	LPR53AWA				X		
GEAR SET - 60 W.P.M.	161293			X	X	X	X
GEAR SET - 75 W.P.M.	161294			X	X	X	X
GEAR SET - 100 W.P.M.	161295			X	X	X	X

The reperforator mechanism produces fully perforated tape with the typed character positioned between the feed holes. The set is equipped for remote control non-interfering letters tape feed-out.

e. TT-274/UG AND TT-292/UG. — These typing reperforators are driven by a 115 V.a.c. series wound governed motor. In all other features, they are identical, respectively, to TT-192/UG and TT-253/UG. TT-274/UG is for receiving only. TT-292/UG is designed for send or receive operation, with local transmission monitored on the perforated tape produced in the set.

1-3. DESCRIPTION OF MAJOR COMPONENTS.

a. BASE. — The base, or keyboard-base, serves to mount or support the components of the typing reperforator. They incorporate the necessary electrical and mechanical features for interconnection of the components and for connection to external power and signal sources. On Typing Reperforator Set TT-192A/UG, the base includes a main power supply fuse. The main power switch is located on the base. The base also mounts a tape container equipped with low tape warning switches and a low tape indicator lamp. A synchronous pulse transmission contact is included on the keyboard-base for TT-253A/UG sets.

(1) DOUBLE PLATE BASE (TT-192/UG and TT-274/UG). (See figure 1-2.) — The base used for Typing Reperforator Sets TT-192/UG and TT-274/UG is peculiar to that equipment. The manufacturer's designation for this base is LRB8.

(a) The base consists of two steel plates mechanically isolated by shock mounts to reduce noise

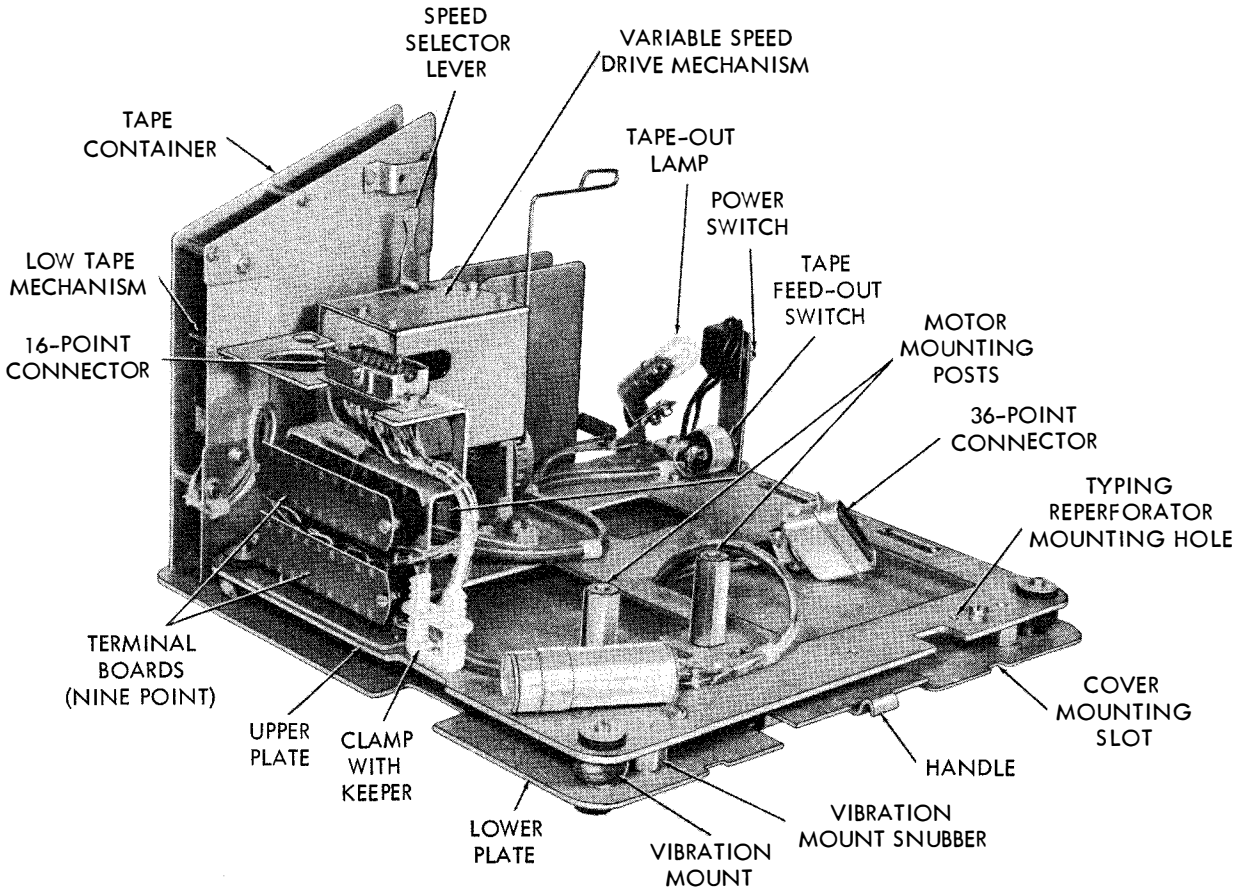


Figure 1-2. TT-192/UG and TT-274/UG Double Plate Base (Rear View)

and vibration when the equipment mounted on the base is in operation. A motor, typing reperforator mechanism and cover mount on or over the base.

(b) A variable speed intermediate gear mechanism connects the motor and the reperforator. The tape container for the reperforator is also base mounted, with two roller guides directing the tape into the reperforator.

(c) The main power switch and tape feed-out switch are mounted at the front of the base in a position accessible when the hinged cover is raised. Electrical connections which are located on a mounting bracket at the rear of the base include a 16-point connector for external wiring, a 36-point connector adapted to the typing reperforator mechanism cable connector, and two terminal boards. Two tape-out switches, one to activate a remote warning device and one to light a warning lamp on the equipment, are located on the tape container. The tape-out warning lamp is mounted at the front of the base adjacent to the switching positioned behind an indicator lens when the cover is in place.

(2) MINIATURIZED BASE (TT-192A/UG). (See figure 1-3.) — The base used for Typing Reperforator Set TT-192A/UG is peculiar to that equipment. The manufacturer's designation for this base is LRB31.

(a) Designed for maximum reduction of space and weight requirements, the miniaturized base is a double-plate base similar in basic features to the LRB8 base described in paragraph 1-3a(1). There are differences in both the design and location of components functionally common to the two bases.

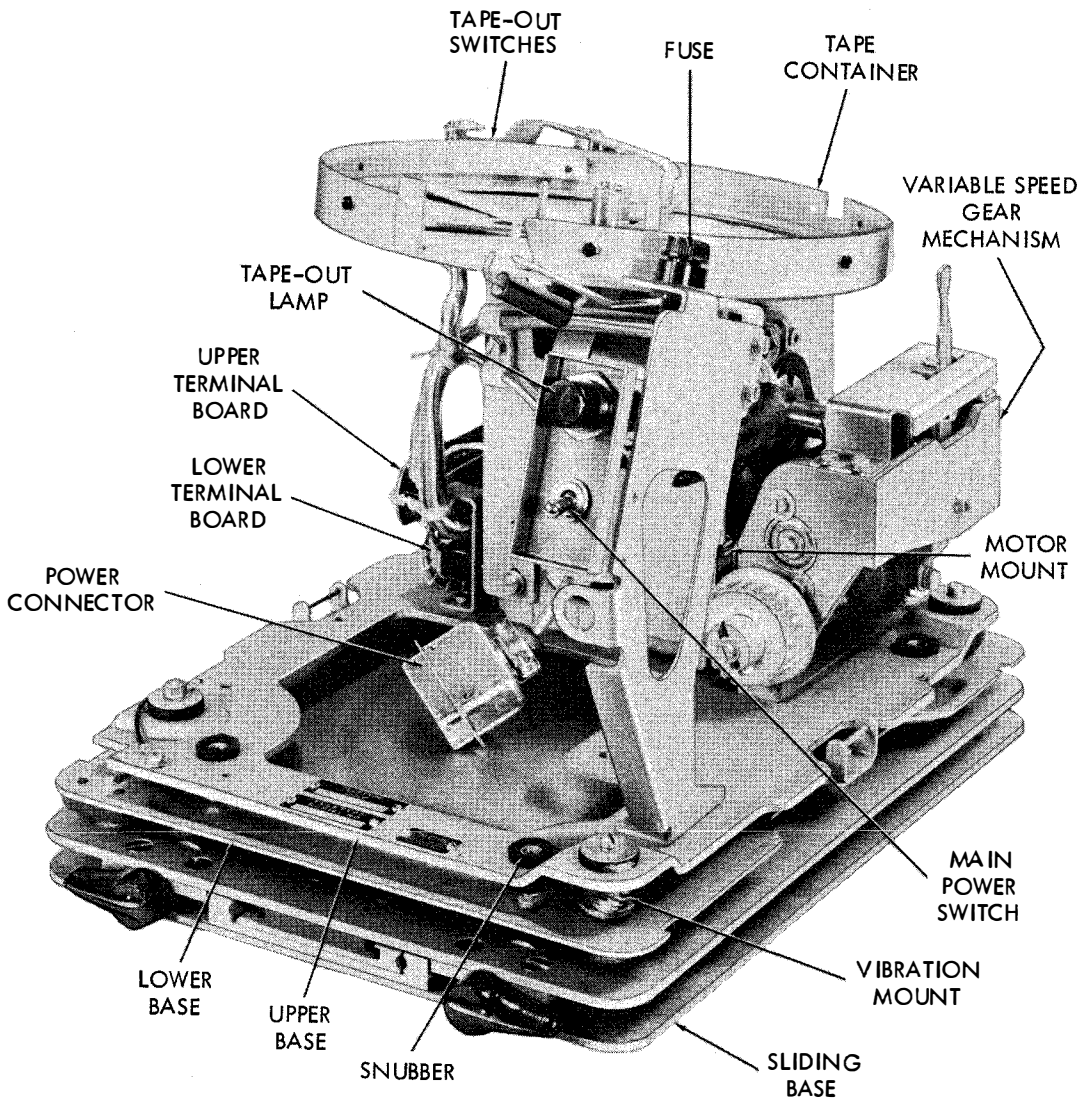


Figure 1-3. TT-192A/UG, Miniaturized Base

(b) The miniaturized base mounts a smaller motor than that used on the standard size base. Other components mounted on or over the base are a typing reperforator mechanism and a cover.

(c) A variable speed intermediate gear mechanism connects the motor and the reperforator. The tape container for the reperforator is bracket mounted on the base above the other components.

(d) The main power switch is mounted on a bracket at the front of the base, accessible through an aperture in the front of the cover. There is no tape feed-out switch. Mounted immediately above the power switch is the low tape indicator lamp operated by one of two switches on the tape container. The other switch is wired to energize a remote tape-out warning device. Electrical connections are located on a mounting bracket at the left of the base. These include a main power receptacle and fuse, a 16-point connector adapted to the typing reperforator mechanism cable connector, and two terminal boards.

(e) A sliding sub-base beneath the miniaturized base permits quick, easy access to the operating mechanisms, particularly where the installation is in cramped quarters. The entire base slides forward approximately two-thirds of its installed position. An interlocking mechanical feature between the two parts of the sub-base prevents accidental over-extension of the slide when it is operated. The sub-base may be welded or bolted to the bulkhead.

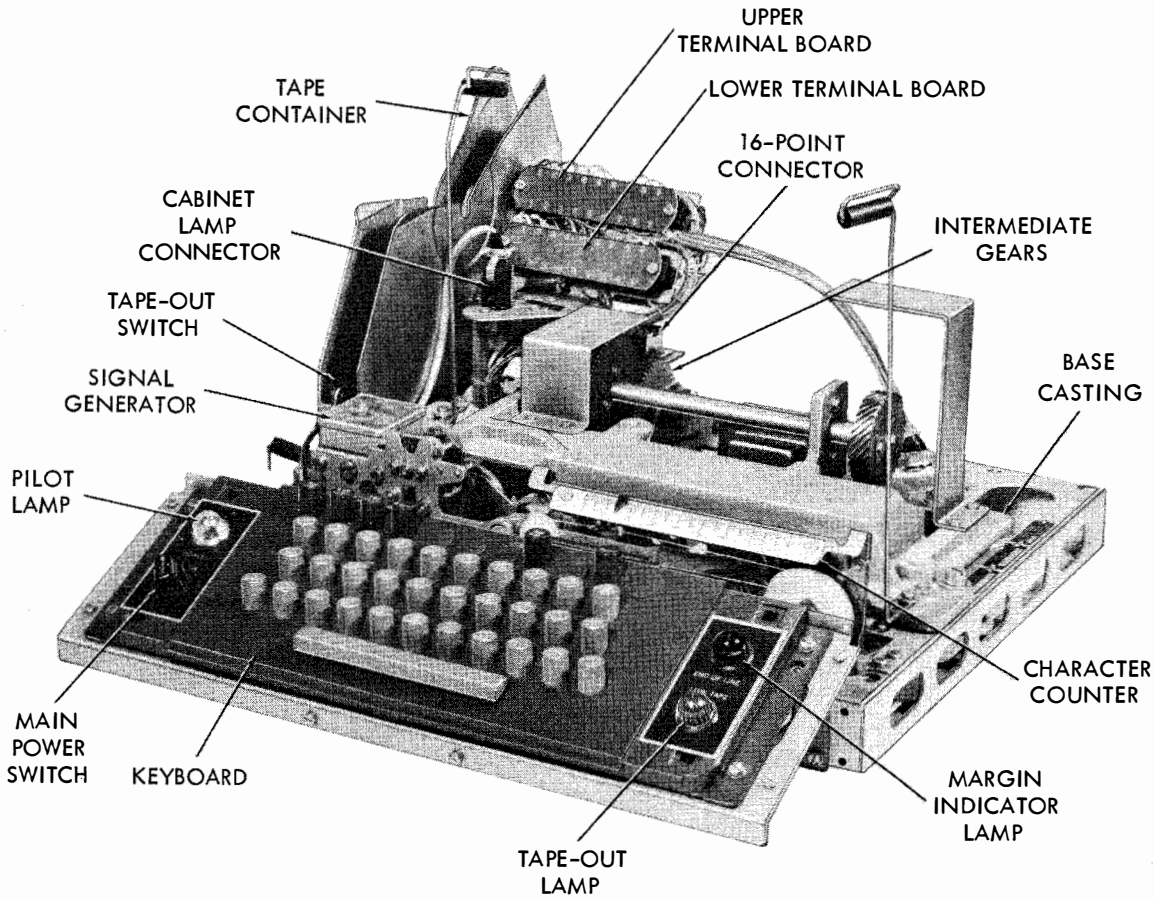


Figure 1-4. TT-253/UG, TT-253A/UG and TT-292/UG, Keyboard Base

(3) KEYBOARD-BASE (TT-253/UG and TT-292/UG). (See figure 1-4.) — The base used for Typing Reperforator Sets TT-253/UG and TT-292/UG is peculiar to that equipment. The manufacturer's designation is keyboard LTRK1. With this base, the typing reperforator may be used for the exchange of messages between two or more ships or stations connected by a radio or wire telegraph channel.

(a) Components mounted on or over the keyboard-base are a motor, a typing reperforator mechanism and a cover. The keyboard-base incorporates the mechanical and electrical features required for message transmission through a standard teletype keyboard mechanism.

(b) An intermediate gear mechanism connects the motor and the reperforator mechanism and the keyboard signal generator. Operating speed of the equipment may be changed by changing gear sets, which are not supplied with the typing reperforators but are available as optional equipment.

(c) Other keyboard mounted features are a tape container and three tape guide rollers, a character counter mechanism, and standard keyboard features, such as keyboard locking and unlocking and repeat mechanisms.

(d) The main power switch is located on the left side of the keyboard. Immediately above the rotary ON-OFF power switch is a white pilot light to indicate that the set is powered. At the right of the keyboard are indicator lamps illuminated to warn of low tape or end-of-line on transmission. The keyboard also features switches, operated by keyboard keys, to activate tape back space, tape feed-out and signal line break features. Electrical interconnections between components of the keyboard are made through three terminal boards mounted at the rear. The terminal board bracket also has connectors for cables to the tape-out switch and to the cabinet lamps. The tape-out circuit and the cabinet lamp circuit are operated on 6 V. a.c. through a transformer at the rear of the keyboard-base.

(4) KEYBOARD-BASE (TT-253A/UG). — The base used for Typing Reperforator Set TT-253A/UG (manufacturer's designation LTRK5) is similar to the TT-253/UG base (paragraph 1-3.a(3)). It has a synchronous pulse mechanism consisting of contacts and clutch magnet to adapt the equipment to 7.00 unit transmission.

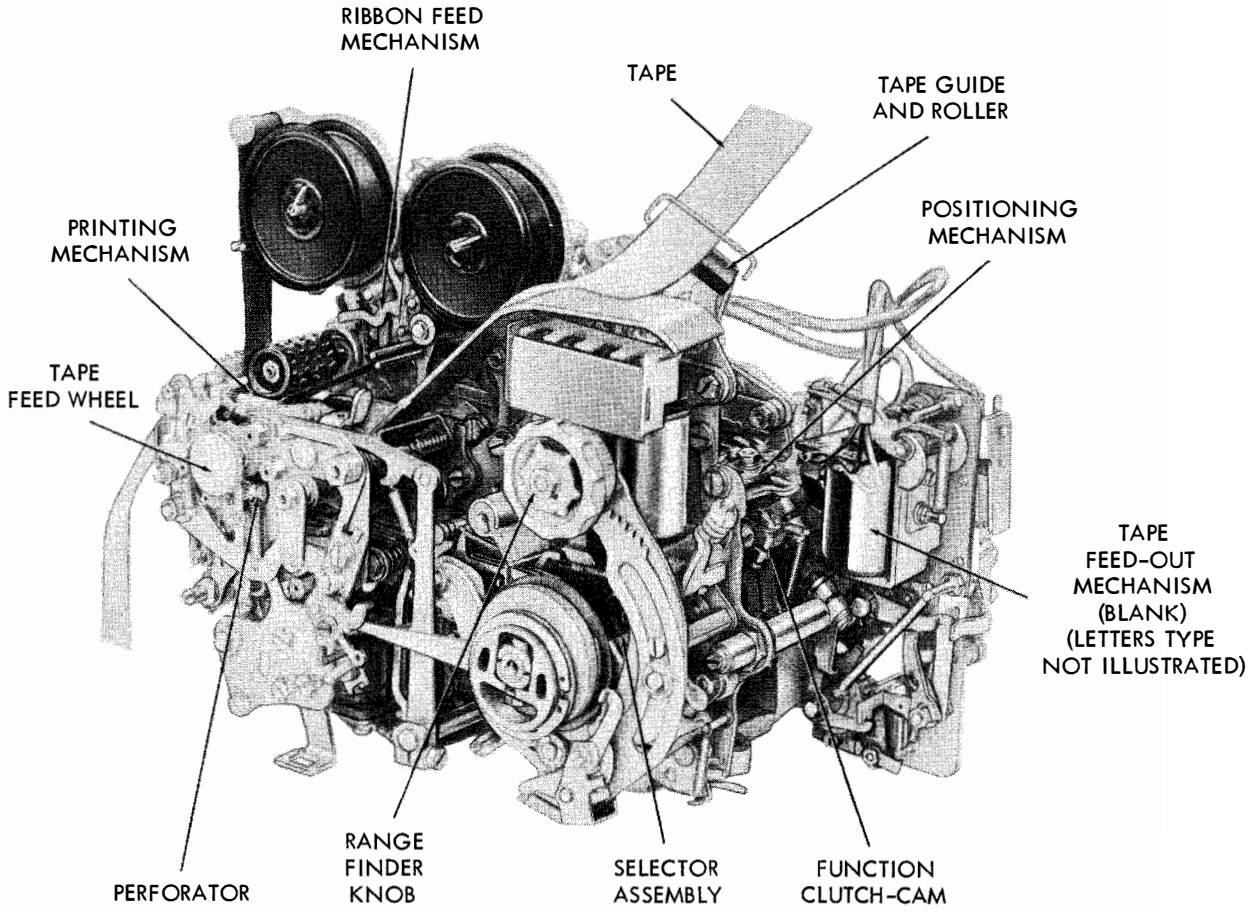


Figure 1-5. Typing Reperforator

b. TYPING REPERFORATOR. (See figure 1-5.) — The typing reperforator mechanism is a receiving only apparatus designed to convert electrical signal impulses to simultaneously punched and printed code and character representations on a continuous strip of teletypewriter paper tape. The mechanism consists of a receiving selector mechanism, a transfer mechanism, a perforating mechanism, a printing mechanism, and a non-interfering tape feed-out mechanism. The apparatus is operated by a double clutch main shaft geared to the motor through mechanisms on the base.

(1) Typing reperforators for the six typing reperforator sets covered in this handbook are essentially the same. Since TT-192/UG and TT-192A/UG are receiving only sets, the back space mechanism is not operative, but it is included in the perforator mechanism. TT-192A/UG utilizes an automatic non-interfering letters tape feed-out mechanism. TT-253A/UG utilizes a remote control letters tape feed-out. The latter set is equipped for punching fully perforated tape; all others prepare chadless (hinged chad) tapes.

(2) Electrical requirements for the typing reperforators are supplied through a 16-point connector which mates with a receptacle mounted on the base. Electrical features of the equipment are the selector magnets, wired in series with the external signal circuit; the signal bell contacts; the back space magnet and the tape feed-out solenoid. The latter feature is to be found only on those sets equipped with the non-interfering tape feed-out. The solenoid is operated either through a keyboard key (TT-253/UG, TT-253A/UG and TT-292/UG) or through a push button switch at the front of the base (TT-192/UG and TT-274/UG).

c. MOTORS. — The 115 V a.c. motors (synchronous or series wound governed) are self-contained components mounted on the base or keyboard-base. Each motor is designed to operate at 3600 r.p.m., and variations in operating speed are obtainable through changes in intermediate gear mechanisms. Power from an external power supply to the motor is controlled through a main power switch located on the base. There is a protective fuse in the power circuit for Typing Reperforator Set TT-192A/UG. There is

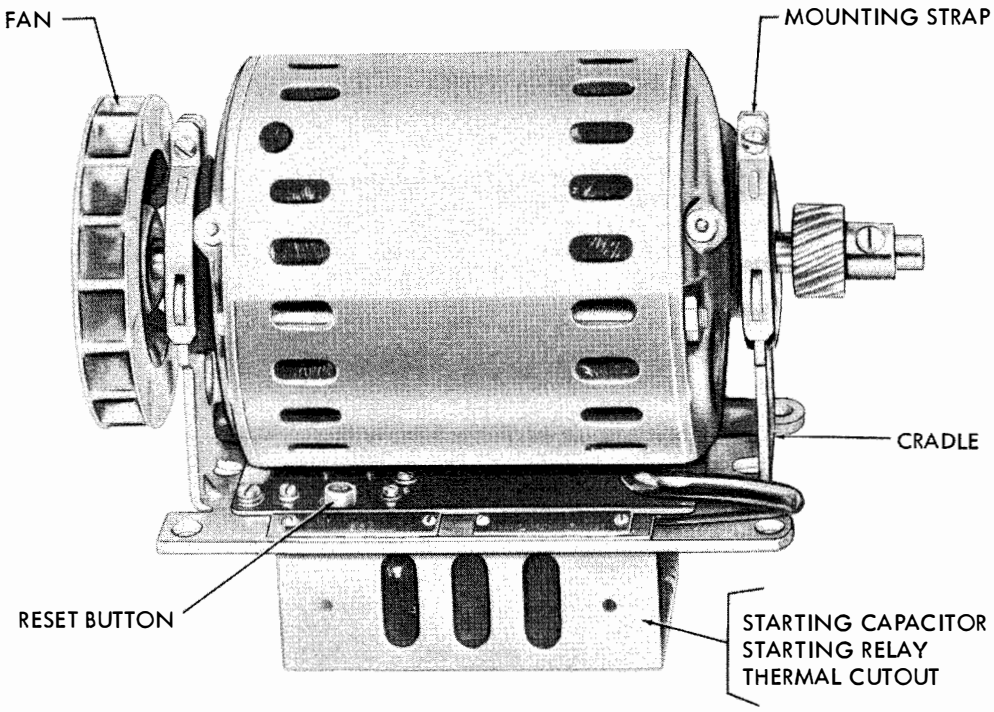


Figure 1-6. Synchronous Motor (TT-192/UG, TT-253/UG and TT-253A/UG)

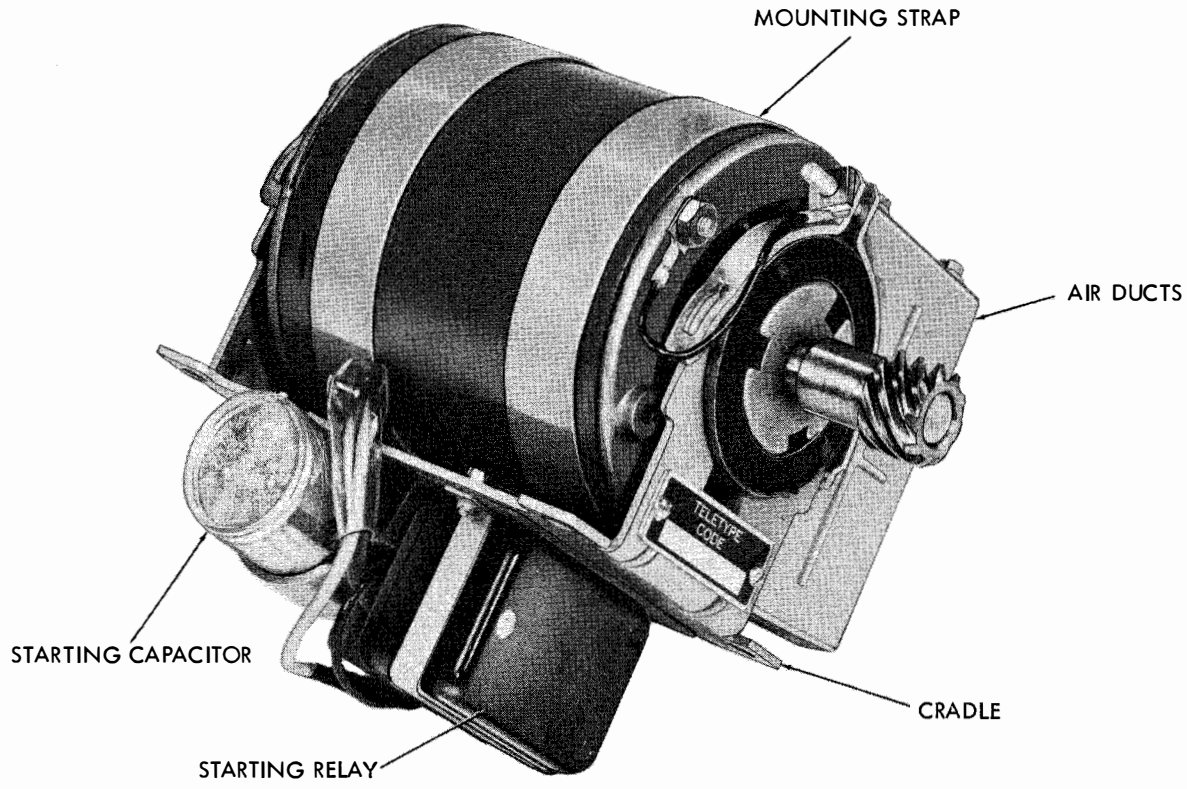


Figure 1-7. Miniaturized Motor (TT-192A/UG)

an additional protective thermal cutout switch on the synchronous motors. A miniaturized synchronous motor is used on TT-192A/UG. The miniaturized motor and the standard motor are not interchangeable.

(1) TT-192UG, TT-253/UG and TT-253A/UG. (See figure 1-6.) — The motor furnished with these typing reperforator sets is a 1/20 h.p., 115 V, 60 cycle a.c., wound stator, two pole, single phase, capacitor start synchronous motor. A combination handwheel and fan is mounted on one end of the motor shaft. A motor-starting relay and capacitor, together with the thermal cutout switch, are mounted in a compartment on the underside of the motor. The thermal cutout switch (manually reset) serves to protect the motor windings from excessive heating. The motor proper is supported by a cradle to which it is held by straps at each end. Resilient mounts on the hubs of the motor and bells reduce transmission of vibration to the base. A vacuum chad disposal mechanism is attached to the fan end of the motor on TT-253A/UG installations.

(2) MINIATURIZED MOTOR (TT-192A/UG). (See figure 1-7.) — The motor furnished with this typing reperforator set is a 1/40 h.p., 115 V, 60 cycle a.c., wound stator, two pole, single phase, capacitor start synchronous motor. A motor-starting relay and capacitor, together with the thermal cutout switch, are mounted beneath the cradle which supports the motor. The motor is held to the cradle by straps on each end of the shaft. Resilient mounts on the hubs of the motor end bells reduce transmission of vibration to the base. This is a compact, lightweight motor design. There is no external fan to ventilate the motor, but two air ducts bracketed around the motor deflect air circulated by ventilating vanes on the armature through vent holes in the typing reperforator cover.

(3) TT-274/UG AND TT-292/UG. (See figure 1-8.) — A governed motor similar to the standard sized synchronous motor in location, mounting and function (see paragraph 1-3.c(1)) is used with Typing Reperforator Sets TT-274/UG and TT-292/UG. The unit is 1/15 hp, 115 volt, 50-60 cycle a.c. governed motor adjusted to operate at a governed speed of 3600 rpm. A combined governor and cooling fan are mounted on the ball bearing supported motor shaft. An electromechanical governor is wired in series with the armature and two field windings. Targets for speed checking are marked on the governor cover. The

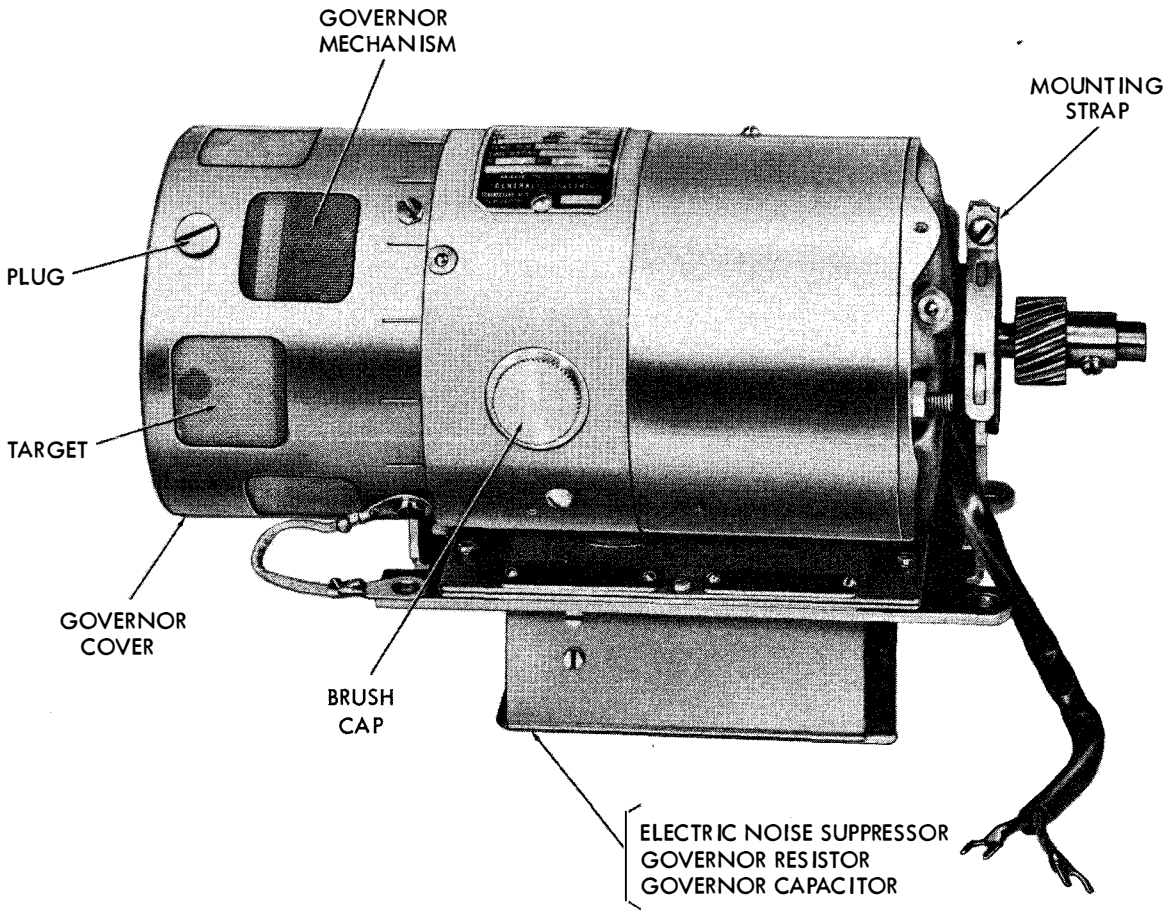


Figure 1-8. Governed Motor (TT-274/UG and TT-292/UG)

entire motor is shielded electrically to minimize radio interference. A shielded compartment beneath the motor houses the governor resistor and capacitors and an electrical noise suppressor across the power leads.

d. CABINET OR COVER. — The cabinet or cover is a sheet metal enclosure to protect the mechanisms of the typing reperforator set and to reduce operating noise. Windows in the cover permit visual access to the printed, perforated tape as it is prepared, and the tape emerges from the cover through an aperture at a point at which the tape can be torn off conveniently when the operator so desires. The cabinet or cover is equipped with a hinged access door to facilitate tape loading and minor operational maintenance. The cabinet supplied with Typing Reperforator Sets TT-253/UG, TT-253A/UG and TT-292/UG are furnished with illuminating lamps for the perforator and the character counter.

(1) CABINET (TT-253/UG, TT-253A/UG and TT-292/UG). (See figure 1-9.) — This cabinet houses the keyboard-base mounted typing reperforator set. It is a two piece sheet metal enclosure consisting of a shock mounted base plate and a cover. The keyboard portion of the base protrudes through the front of the cover. The base of the unit is fastened to the cabinet base plate. A hinged door opens forward over the keys across the front of the cabinet. A copyholder and line guide are mounted on the right side of the door, and two windows at the center provide visual access to the tape. An aperture at the bottom of the left window is for tape emission and cut-off. Both the tape and the character counter are illuminated from inside the cabinet door on a circuit connected to the base by a cable and connector in the cabinet.

(2) COVER (TT-192/UG and TT-274/UG). (See figure 1-10.) — This cover is peculiar to Typing Reperforator Sets TT-192/UG and TT-274/UG. It provides a protective enclosure for the base, motor unit and typing reperforator mechanism. It fits closely around the typing reperforator and rests on the lower plate of the double plate base (paragraph 1-3a(1)). A lid which is held in its open position by a friction arm permits access to the reperforator to load tape and change ribbons. The lid is equipped with a tape emission slot, a chrome finished handle and a window through which the tape printing and perforating may be viewed. A red translucent button on the lid is positioned so as to be illuminated by the tape-out lamp on the base. An opening in the rear permits admission of external power and signal line cables.

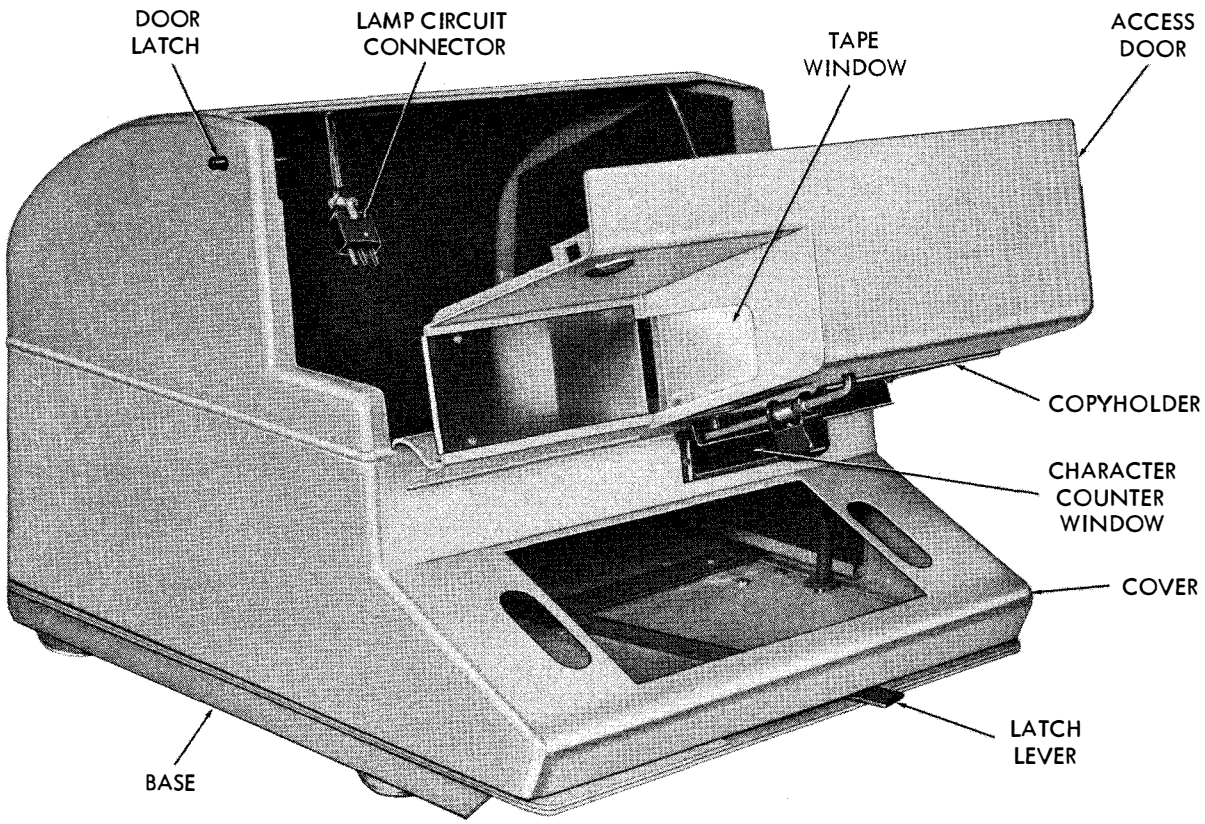


Figure 1-9. Cabinet (TT-253/UG, TT-253A/UG and TT-292/UG

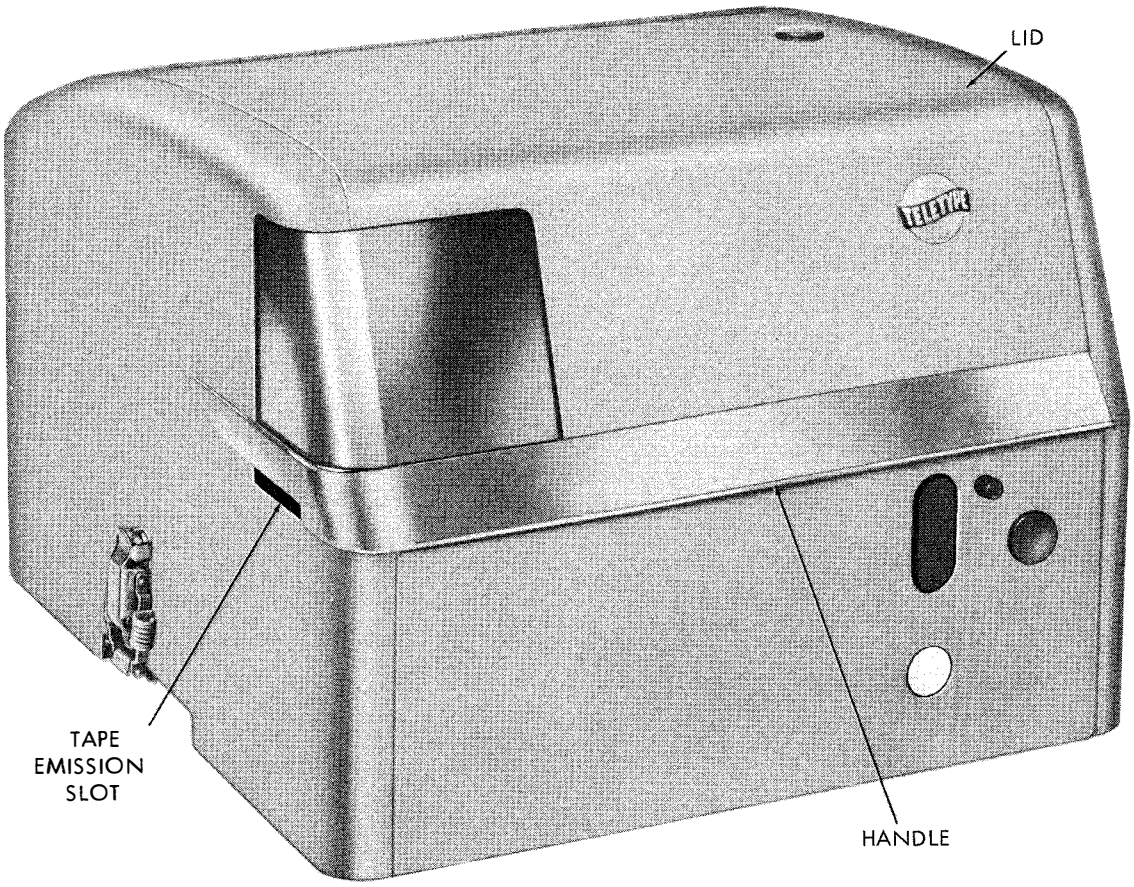


Figure 1-10. Cover (TT-192/UG and TT-274/UG)

(3) MINIATURIZED COVER (TT-192A/UG). (See figure 1-11.) — A miniaturized cover provides a protective enclosure for the base, motor unit and typing reperforator mechanism of the TT-192A/UG. The cover rests on the lower plate of the base and is moved with the extension of the sliding base. A hinged cover permits access to the equipment for tape loading and changing ribbons. A window permits viewing of the tape printing and perforating, and an aperture beneath the window serves as a tape emission slot and cut-off. Openings at the front and rear of the cover provide, respectively, for cable entry and for access to the main power switch and tape-out lamp.

1-4. REFERENCE DATA.

a. NOMENCLATURE. — Typing Reperforator Set

TT-192/UG,	TT-253A/UG,
TT-192A/UG,	TT-274/UG, or
TT-253/UG,	TT-292/UG

b. CONTRACT DATA. — NObsr 85475.

c. CONTRACTOR. — Teletype Corporation, Skokie, Illinois.

d. COGNIZANT NAVAL INSPECTOR. — Inspector of Naval Materiel, Chicago 6, Illinois.

e. NUMBER OF PACKAGES INVOLVED IN COMPLETE SHIPMENT OF EQUIPMENT (INCLUDING EQUIPMENT SPARES).

(1) Typing Reperforator Set TT-192/UG 5 Boxes

(2) Typing Reperforator Set TT-192A/UG 5 Boxes

(3) Typing Reperforator Set TT-253/UG 5 Boxes

f. TOTAL CUBICAL CONTENTS OF EQUIPMENT (INCLUDING EQUIPMENT SPARES).

(1) Typing Reperforator Set TT-192/UG

(a) Crated . . . . . 8.5 cu. ft.

(b) Uncrated . . . . . 4.4 cu. ft.

(2) Typing Reperforator Set TT-192A/UG

(a) Crated . . . . . 8.5 cu. ft.

(b) Uncrated . . . . . 4.3 cu. ft.

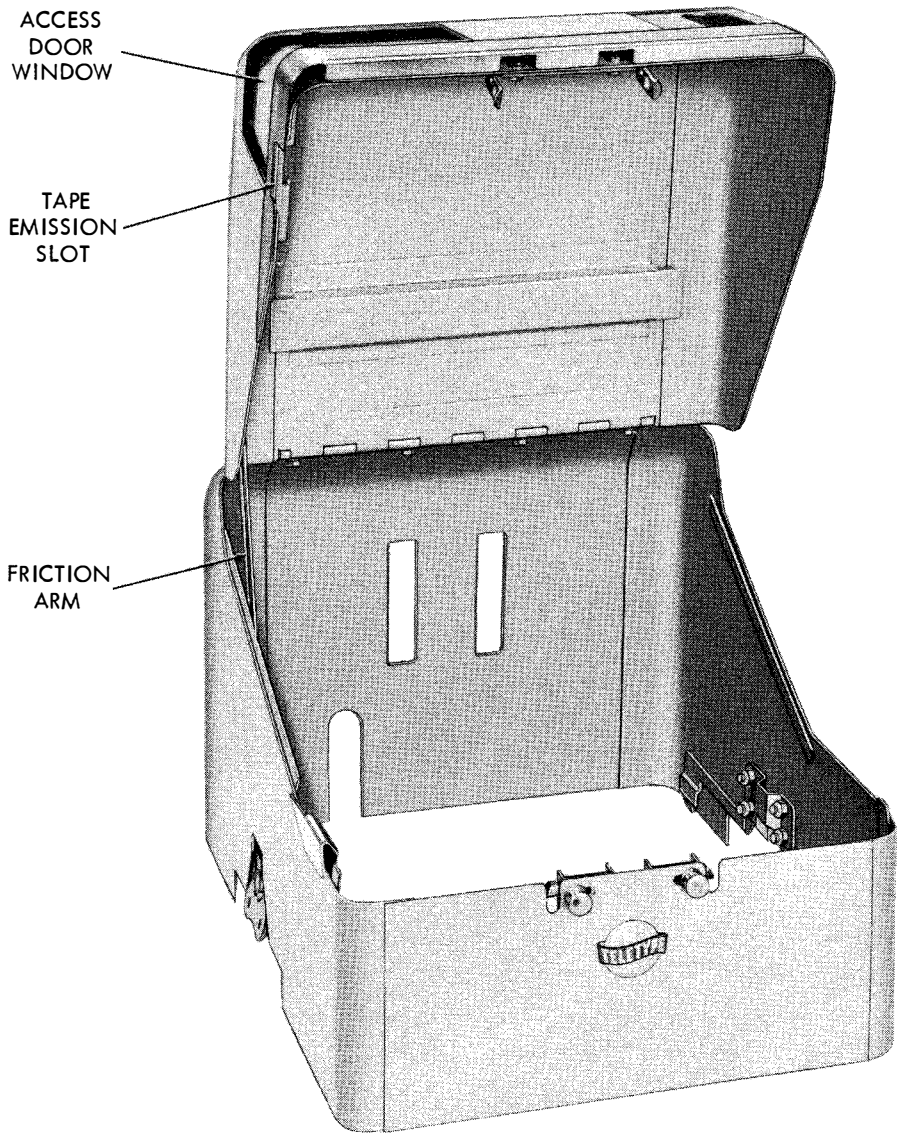


Figure 1-11. Miniaturized Cover (TT-192A/UG)

(3) Typing Reperforator Set TT-253/UG

(a) Crated . . . . . 18.2 cu. ft.

(b) Uncrated . . . . . 10.0 cu. ft.

g. TOTAL WEIGHT OF EQUIPMENT (INCLUDING EQUIPMENT SPARES).

(1) Typing Reperforator Set TT-192/UG

(a) Crated . . . . . 115 lbs.

(b) Uncrated . . . . . 61 lbs.

(2) Typing Reperforator Set TT-192A/UG

(a) Crated . . . . . 110 lbs.

(b) Uncrated . . . . . 57 lbs.

(3) Typing Reperforator Set TT-253/UG

(a) Crated . . . . . 238 lbs.

(b) Uncrated . . . . . 119 lbs.

(4) Typing Reperforator Set TT-253A/UG

(a) Crated . . . . . 238 lbs.

(b) Uncrated . . . . . 119 lbs.

TABLE 1-2. EQUIPMENT SUPPLIED

QTY PER EQPMT	NAME OF UNIT / TYPING REPERFORATOR SET	MFGR'S DESIGNATION	NAVY DESIGNATION						OVER-ALL DIMENSIONS (IN INCHES)			VOL. CU. FT.	WT. LBS.
			TT-192/UG	TT-192A/UG	TT-253/UG	TT-253A/UG	TT-274/UG	TT-292/UG	HEIGHT	WIDTH	DEPTH		
1	Cover	LRC202	X				X		9-1/2	13	14-1/2	1.03	9.5
1	Cover, Miniaturized	LRC205		X					9-1/4	10	12	0.65	8.5
1	Cabinet	LSRC200			X	X		X	13-3/4	17	18-3/4	2.40	44.0
1	Base	LRB8	X				X		9	13	13-1/2	0.91	12.0
1	Base, Miniaturized	LRB31		X					10-1/4	10	12	0.71	11.5
1	Keyboard-Base	LTRK1ARN			X			X	11-1/4	15-1/2	17-1/4	1.75	19.5
1	Keyboard-Base	LTRK5ARN				X			11-1/4	15-1/2	17-1/4	1.75	19.5
1	Motor, Synchronous	LMU3	X		X	X			5-3/4	8-1/2	4	0.11	9.0
1	Motor, Miniaturized	LMU24		X					5-1/4	5-1/2	4-1/2	0.07	4.0
1	Motor, Governed	LMU4					X	X	5-3/4	8-1/2	4	0.11	10.0
1	Typing Reperforator	LPR9AWA	X		X		X	X	7-1/2	8	6-3/4	0.25	9.5
1	Typing Reperforator	LPR40AWA		X					7-1/2	8	6-3/4	0.25	9.5
1	Typing Reperforator	LPR53AWA				X			7-1/2	8	6-3/4	0.25	9.5
1	Connector		X	X	X	X	X	X	2-1/4	2-1/2	1-1/4	0.05	0.25
1	Gear Set				X	X		X					
TOTALS								TT-292/UG				4.51	87.0
								TT-274/UG				2.30	41.0
								TT-253A/UG				4.51	86.0
								TT-253/UG				4.51	86.0
								TT-192A/UG				1.73	33.75
								TT-192/UG				2.30	40.0

(5) Typing Reperforator Set TT-274/UG

(a) Crated . . . . . 116 lbs.

(b) Uncrated . . . . . 62 lbs.

(6) Typing Reperforator Set TT-292/UG

(a) Crated . . . . . 239 lbs.

(b) Uncrated . . . . . 120 lbs.

NOTE

Volume and weight data for equipment furnished are tabulated in tables 1-2 and 1-3. Equipment required but not supplied is listed in table 1-4.

h. ELECTRICAL CHARACTERISTICS.

(1) SIGNAL. — Typing reperforator sets are factory wired for application of an external neutral signal of 0.060 ampere to the selector magnets. Wiring changes may be made in the selector magnet circuits to adapt equipment for 0.020 ampere operation. Output telegraph signal (TT-253/UG, TT-253A/UG or TT-292/UG) must be on-off direct current, nominally 0.060 ampere (or 0.020 ampere) from an external source. The equipment may be wired for operation on a polar signal, but such operation requires the use of a different signal generator contact box than that normally supplied with the keyboard. For TT-253A/UG sets, an external 50 ma control circuit is required to operate synchronous pulsed transmission.

(2) POWER SUPPLY REQUIREMENTS.

(a) A.C. SYNCHRONOUS MOTOR (LMU3).

Input voltage . . . . . 115 volts, ± 10 per cent, a.c.
Phase . . . . . single
Frequency . . . . . 60 cycles ± 0.5 cps
Input current, starting . . . . . 9 amps
Running . . . . . 1.85 amps
Watts . . . . . 65 Watts
Power factor . . . . . No load, 23.7 per cent
Full load, 38.5 per cent
Heat dissipation . . . . . 50 Watts
Horsepower . . . . . 0.050 h.p.

(b) MINIATURIZED A.C. SYNCHRONOUS MOTOR (LMU24).

Input voltage . . . . . 115 volts, ± 10 per cent, a.c.
Phase . . . . . single
Frequency . . . . . 60 cycles ± 0.5 cps

TABLE 1-3. SHIPPING DATA

SHIPPING BOX NO.	CONTENTS		OVER-ALL DIMENSIONS (IN INCHES)			VOL. CU. FT.	WT. LBS.
	NAME OF UNIT	MFGR'S DESIGNATION	HEIGHT	WIDTH	DEPTH		
1	COVER OR CABINET	LRC202,	10-3/4	14-1/2	14-3/4	1.4	15
		LRC205, or	11-3/8	12-1/4	14-1/2	1.4	13
		LSRC200	17-1/4	19-3/4	22-1/8	4.7	60
2	BASE OR KEYBOARD-BASE	LRB8,	11-1/8	15	15	1.4	18
		LRB31,	10-3/4	12-1/8	14-1/4	1.8	15
		LTRK1ARN, or	15-1/4	19-1/4	21-1/4	7.0	31
		LTRK5ARN	15-1/4	19-1/4	21-1/4	7.0	31
3	MOTOR	LMU3,	7-7/8	5-7/8	10-3/8	0.3	9
		LMU4, or	7-7/8	5-7/8	10-3/8	0.3	9
		LMU24	7-7/8	6-3/4	7-1/2	0.2	5
4	TYPING REPERFORATOR	LPR9,	12-1/8	11-1/8	13-1/2	1.0	15
		LPR40, or	12-1/8	11-1/8	13-1/2	1.0	15
		LPR53	12-1/8	11-1/8	13-1/2	1.0	15
5	CONSOLIDATED PACKAGE		4	11	10	0.3	4

TABLE 1-4. EQUIPMENT REQUIRED BUT NOT SUPPLIED

QUANTITY PER EQUIPMENT	NAME OF UNIT
1	Set of tools as listed in Section 5, Paragraph 5-2
1	NAVSHIPS 98363 Change 1 to tool Equipment TE-50-B
1	External power connector
1	DXD Distortion Test Set TS-652/GG
1	NAVSHIPS 91654, Operating Instructions, DXD Signal Distortion Test Set TS-652/GG

Input current, starting . . . . . 5 amps
Running, no load . . . . . 1.05 amps
Full load. . . . . 1.25 amps
Horsepower . . . . . 0.025 h.p.

(c) AC GOVERNED MOTOR (LMU4).

Input voltage. . . . . 115 volts ± 10 per cent, a.c.
Phase . . . . . single
Frequency . . . . . 50 to 60 cycles
Input current, starting. . . . . 1.75 amps
Running . . . . . 1.00 amp
Watts . . . . . 95 watts
Power factor . . . . . No load, 71 per cent
Full load, 66.8 per cent
Heat dissipation . . . . . 75 watts
Horsepower . . . . . 0.50 h.p.

i. PERMISSIBLE TEMPERATURES.

(1) Ambient: -20°C (-4°F) to + 50°C (+122°F).

(2) Temperature rise: Not in excess of +40°C (+104°F) above ambient temperature.

SECTION 2
INSTALLATION

2-1. GENERAL.

Typing Reperforator Sets TT-192/UG, TT-192A/UG, TT-253/UG, TT-253A/UG, TT-274/UG and TT-292/UG are each packed in five cardboard cartons (table 1-3). Four of these contain one of the following items: cabinet or cover, motor, base or keyboard-base, or typing reperforator. The fifth carton contains spare parts and, where applicable, sets of gears, a 16-point connector mating with the base receptacle, or a sliding base.

2-2. UNPACKING THE EQUIPMENT.

Carefully slit the cardboard cartons along sealed edges. Avoid penetration to a depth which might scratch or mar the finish of the equipment. Lift the components carefully from the cartons, and unwrap the protective packaging materials. Remove and discard the nuts, washers and bolts attaching the components to wooden packing blocks. Discard the blocks.

2-3. INSTALLING THE BASE.

a. GENERAL. All of the equipment covered in this manual is self-contained, designed for and adaptable for operation without bulkhead installation. Space required for installation of each of the units is detailed in figure 2-1. The location selected should be convenient to external cabling, including power and signal supply lines. Any of the units may be bulkhead mounted. The sliding sub-base provided with TT-192A/UG may be bolted or welded to the operating deck. Figure 2-2 indicates drilling specifications for bulkhead installation.

(1) As it is packed in the shipping carton, the base is completely assembled. The tape container and intermediate gear mechanism are installed and factory adjusted for normal installation. Removal of the tape container will be required to install major components on the base for Typing Reperforator Set TT-192A/UG.

(2) Snubbers (figures 1-2 and 1-3) are provided at four places on the TT-192/UG, TT-192A/UG, and TT-274/UG bases for immobilizing the shock mounting of the base when the equipment is installed on bulkhead shock mounting devices.

(3) Internal wiring for the base assembly is factory installed. On the keyboard-base, it will be necessary to unwrap the protective covering on the tape-out switch connector and plug the connector into the mating receptacle on the terminal board mounting bracket. Remove the tape-out indicator lamp from the cloth bag and insert the bayonet type tape-out lamp in its socket on the base for TT-192/UG and TT-274/UG. All other lamps are factory installed.

(4) External connections to the base will be made as described in paragraph 2-4.

b. TT-192/UG and TT-274/UG. — No further installation is required if the base is placed on a flat level surface within the required dimensional tolerances, within access to external cable connections. If the installation is to be bulkhead mounted, remove the four triangular telephone type feet beneath the lower base. Discard the feet and mounting hardware, and install shock mounts beneath each corner of the base as indicated in figure 2-2. Screw the shock mounted base to the bulkhead. Remove four screws and washers H908 and H909 from the base and thread them into the four snubbers O930, tightening until the base shock mounts are immobilized.

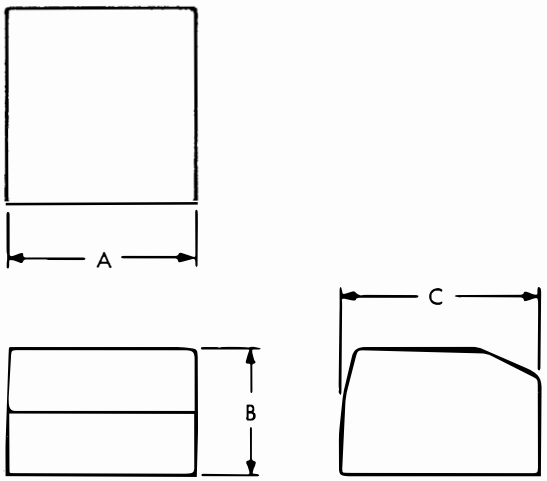
c. TT-192A/UG. — There are four installation options for the base used with Typing Reperforator Set TT-192A/UG. Check the dimensional requirements in figure 2-1. Determine the accessibility of external power and signal connections. These are connected directly to the upper and lower terminal boards as described in paragraph 2-4. If an external signal bell or warning device is required, it is to be connected to terminal 4 of the upper terminal board and terminal 3 of the lower terminal board.

(1) The base can be operated without special installation by resting it upon a flat, level surface.

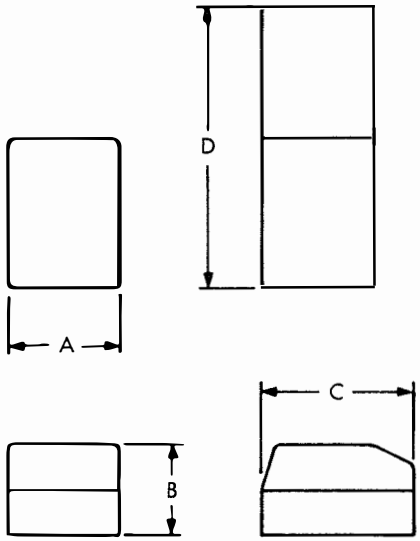
(2) The base may be mounted upon shock mounts fastened to the bulkhead. Remove the four triangular telephone feet beneath the lower base. Discard the feet and mounting hardware, and install shock mounts beneath each corner of the base as indicated in figure 2-2. Screw the shock mounted base to the bulkhead. Rotate the four special nuts H974 to compress the rubber snubbers O930 against the upper base, immobilizing the base shock mounts.

(3) The base may be mounted upon its sliding base (figure 2-3) (supplied packaged in the consolidated shipping carton), with the sliding base welded to the bulkhead. Remove the four leather feet from the reperforator base. Discard the feet, but retain the hardware.

(a) Unlock the upper plate by rotating release knobs I1000 and I1001 to extend the plate to its fully extended position (figure 2-4).



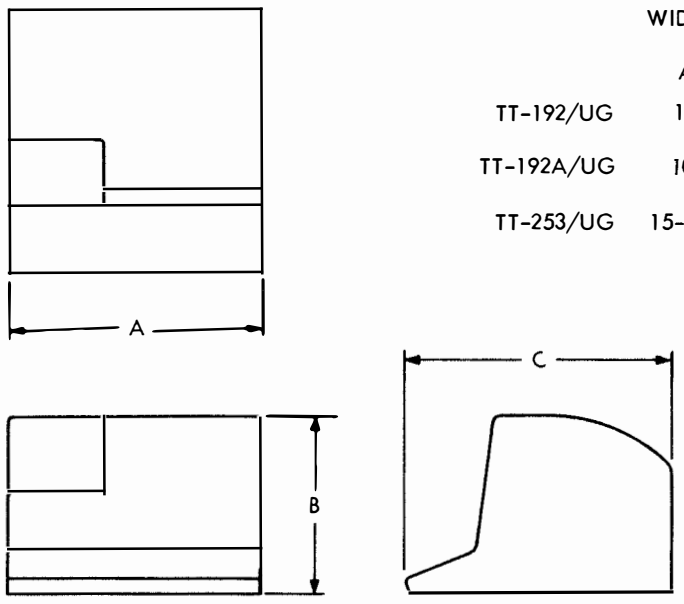
TT-192/UG



TT-192A/UG

MINIMUM MOUNTING DIMENSIONS

	WIDTH	HEIGHT	DEPTH	DEPTH (BASE EXTENDED)
	A	B	C	D
TT-192/UG	13	9	13-1/2	-
TT-192A/UG	10	9-1/4	12	24
TT-253/UG	15-1/2	11-1/4	17-1/4	-



TT-253/UG

Figure 2-1. Outline and Mounting Dimensions

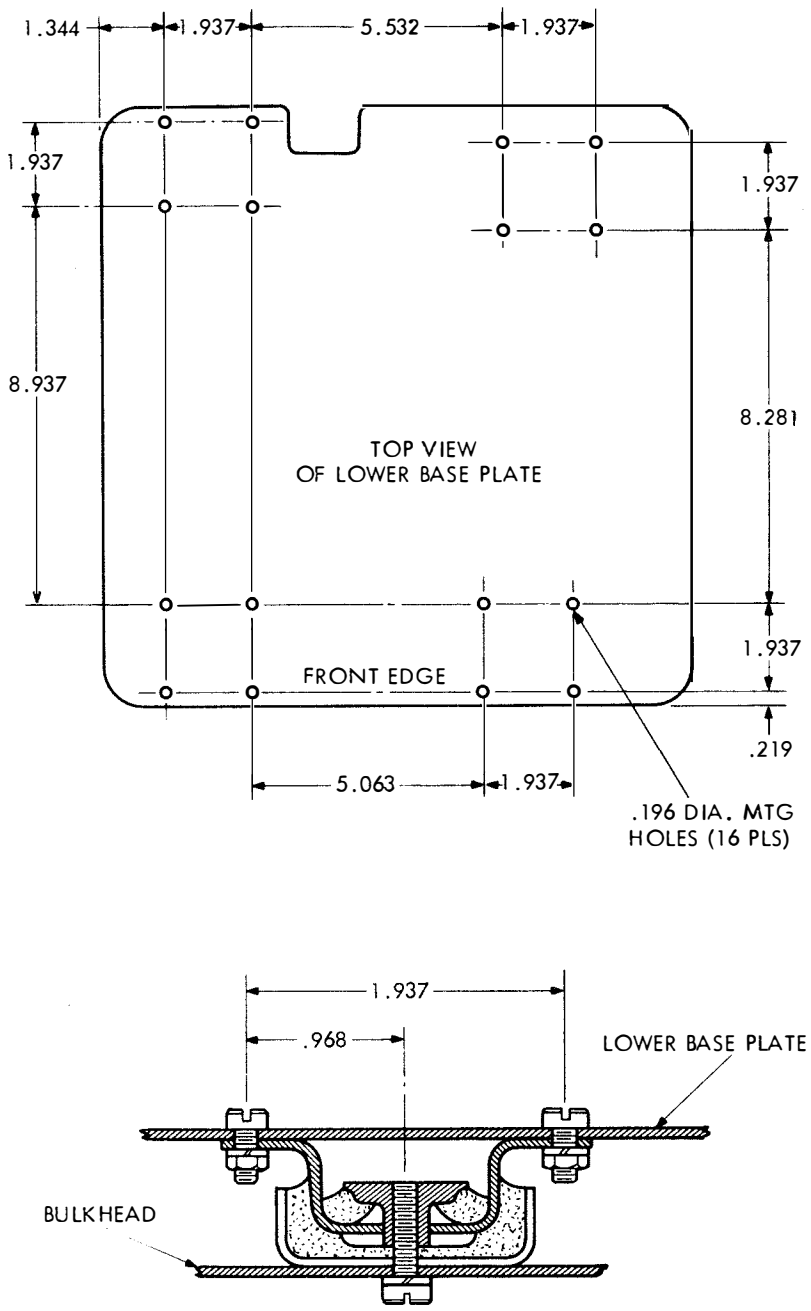


Figure 2-2. Bulkhead Installation Drilling Specifications

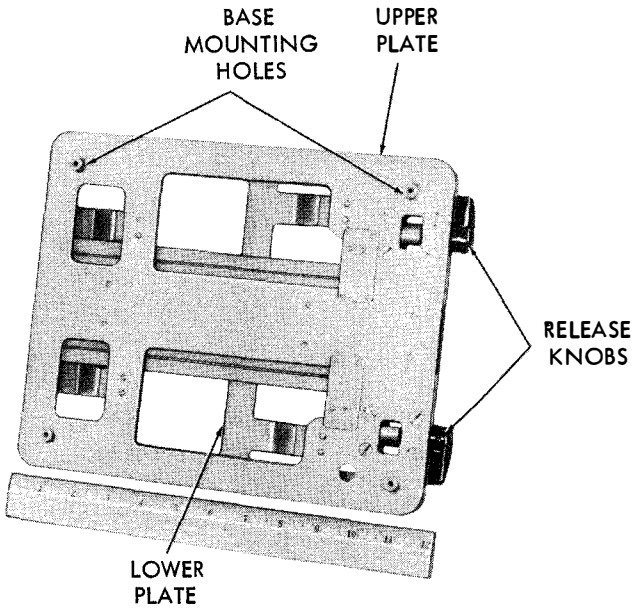


Figure 2-3. Sliding Sub-Base, Retracted (TT-192A/UG)

(b) Depress the locking lever at the rear of the assembly, and separate the two plates.

(c) Weld the lower plate to its bulkhead location, applying the welds only to the twelve-inch (side) dimensions of the plate.

(d) Use the hardware retained in removing the mounting feet to secure the top half of the sliding base to the reperforator base.

(e) Slip the upper half of the sliding base on the lower plate until locked in the extended position. Rotate the two locking knobs to retract the upper plate fully and lock in position.

(4) The base may be mounted upon its sliding base, which in turn is fastened to the bulkhead by screws threaded into tapped holes in the corners of the lower plate. Assemble the reperforator base upon the sliding base as directed in paragraph 2-3c(3). If shock mounts are installed beneath the sliding base, immobilize the reperforator base shock mounts as directed in paragraph 2-3c(2).

d. TT-253/UG, TT-253A/UG, and TT-292/UG. — The keyboard-base used in Typing Reperforator Sets TT-253/UG, TT-253A/UG and TT-292/UG mounts on the sub-base (figure 2-4) supplied as part of the cabinet. To remove the cabinet from the sub-base, move the latch lever (figure 1-9) at the center of the cabinet to the left. Lift the cabinet from the sub-base, and install the sub-base on the bulkhead. Shock mount assemblies for bulkhead installation are riveted to the sub-base.

(1) Mount the keyboard-base by inserting four studs H2475 through the keyboard-base into bushings O2475 on the sub-base.

(2) Select the desired intermediate shaft driving gear (for 60, 75 or 100 w.p.m. operation) from the consolidated shipping package. Assemble the gear to the hub with two screws and lock washers H254 and H255 furnished on the hub. Assemble the deeply concave face of the gear against the hub.

2-4. POWER AND LINE CONNECTIONS.

a. All external connections to typing reperforator sets are made through the base or keyboard-base (paragraph 2-3). Cable entries to the base are so designed as to admit the cable to the equipment through an aperture at the rear of the cabinet or cover.

b. For Typing Reperforator Sets TT-192/UG, TT-253/UG, TT-253A/UG, TT-274/UG and TT-292/UG external power and signal supply and associated circuits, such as an external signal bell or tape-out warning device, are to be supplied in a single cable terminated in a 16-point connector (J100 or J851) furnished with the equipment. The connector mates with the base receptable (P100 or P851). Typical external cable connections are illustrated in figure 2-5. Strap terminals 1 and 9 with 20 gauge wire. Connect the grounded side of the 120 V a.c. power supply to terminal 2 and the ungrounded side to terminal 11. Connect the positive side of the signal to terminal 8 and the negative side to terminal 16. If a signal bell (external) is used, connect one side to terminal 10 and the other to terminal 4 of the external cable connector. For TT-253A/UG sets, connect the external synchronous pulse circuit at terminals 4 and 5.

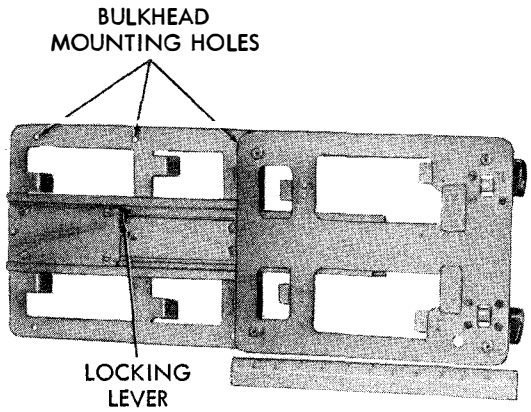


Figure 2-4. Sliding Sub-Base, Fully Extended (TT-192A/UG)

c. For Typing Reperforator Set TT-192A/UG, wire signal and power supplies directly to the terminal boards. Connect the ungrounded side of 115 V a.c. to terminal 1 and the grounded side to terminal 7 of the upper terminal board. Connect the positive signal to terminal 2 and the negative signal to terminal 8 of the lower terminal board. If an external signal bell is required, connect it across terminal 4 of the upper terminal board and terminal 3 of the lower terminal board.

d. In assembling components to the TT-192A/UG base, it may be necessary to disconnect the tape container. To reinstall the tape container, wire the switch leads to the upper terminal board as follows:

terminal 3 - green
terminal 4 - red
terminal 5 - white
terminal 6 - black

e. The equipment is factory wired for operation on a 0.060 ampere neutral signal circuit. The selector magnets in the typing reperforator mechanism are parallel wired. If 0.020 or 0.030 ampere current is supplied in the base installation, it will be necessary to rewire the selector magnets in series. See wiring diagram figure 6-159. When an external line relay is used, wire for 0.030 ampere operation.

f. Check for secure installation of the ground screw located below and to the right of the 16-point connector on the keyboard base and of the two ground straps between the terminal board and the base and between the base and the sub-base on the other two units. Be sure a good external ground is supplied through terminal 3 of J101 or J801. Connect the external ground to terminal 1 of the lower terminal board on TT-192A/UG.

CAUTION

A good ground is important for satisfactory operation of the equipment.

g. Refer to figure 6-170 for main power distribution through the typing reperforator sets.

2-5. ASSEMBLY OF EQUIPMENT.

a. GENERAL. — Complete assembly of the typing reperforator set involves installation of the remaining major components on the base installation. In the order of their installation, these are the motor, the typing reperforator and the cover or cabinet. Except for external electrical connections, which must be completed before the cover is assembed, these installations can generally be made prior to base installation (paragraph 2-3). Some of the hardware required in these installations is furnished in a cloth bag which is tied to the base assembly.

CAUTION

Be sure external power and signal supplies are off before assembling the typing reperforator sets.

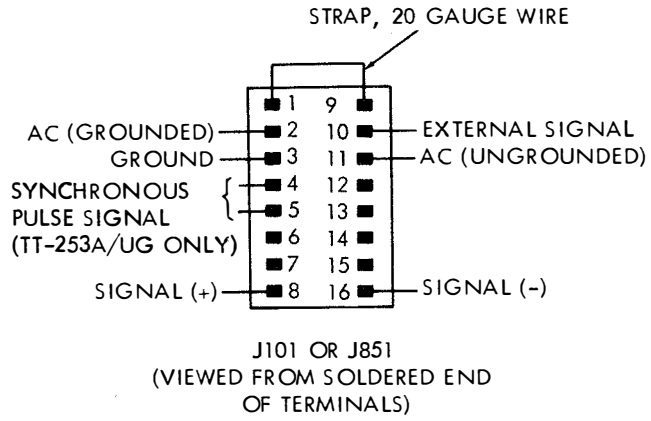


Figure 2-5. Typical External Connections (TT-192/UG, TT-253/UG, TT-253A/UG, TT-274/UG and TT-292/UG

b. MOTOR. — Assemble the motor pinion to the motor shaft before installing the component on the base. The pinion will be found in the cloth bag attached to the base, except in the case of TT-253/UG, TT-253A/UG and TT-292/UG, where it will be packed with the intermediate driving gear in the consolidated shipping carton. Assemble the pinion with the hub at the end of the shaft, away from the motor. A rubber isolation mount may be furnished with the gear. If it is not furnished, attach the gear with the screw and lock washer on the motor shaft. To install the isolation mount, insert the gear in the mount, and attach the gear and the mount to the shaft with two mounting studs threaded into the motor shaft.

NOTE

The rubber isolation mount is standard equipment furnished with pinions selected for TT-253/UG, TT-253A/UG and TT-292/UG.

(1) TT-192/UG and TT-274/UG.

(a) Remove the motor adjusting bracket, two screws and lock washers H882 and H883 from the cloth bag attached to the base. Assemble the bracket beneath the gear end of the motor with the center hole of the bracket extending beyond the motor mounting plate.

(b) Remove stud H888 from the cloth bag attached to the base. Assemble the large diameter of the stud in the motor mounting post nearest the gear shift mechanism, and fasten approximately half way into the post.

(c) Remove the gear mechanism grease retainer.

(d) Remove two motor mounting screws H882, three lock washers H883 and H887 and one nut H886 from the cloth bag attached to the base. Assemble the motor and adjusting bracket over the three motor mounting posts, fastening attaching hardware friction tight.

(e) Connect the motor leads to terminals 7 and 9 of the lower terminal board. The leads are interchangeable.

(f) Proceed to installation of the typing reperforator (paragraph 2-5c(2)) before aligning the motor and gear shift mechanism.

(2) TT-192A/UG.

(a) Remove the tape container from the base by removing two mounting screws attaching it to the control panel and the three screws retaining the container to its front bracket. It is not necessary to disconnect the tape-out switch leads if the disassembled tape container can be placed close to the base.

(b) Remove four screws attaching the grease retainer and lift the grease retainer over the shift lever to remove it from the casting.

(c) Install the motor to the motor mount casting using the four screws, washers and flat washers furnished screwed into the casting.

1. Remove the front tape container bracket from the motor mount casting, noting its position with reference to the casting so that it may be reassembled in the same position.

2. Attach the motor to its casting friction tight.

3. Position the motor so the pinion is centered above the vertical faces of the drive gear and perpendicular to its center line as determined by visual reference. Tighten the motor mounting hardware.

4. If the exhaust duct touches the motor mount casting, reposition the duct by loosening its mounting screw.

(d) Connect the motor leads to terminals 8 and 9 of the upper terminal board. The leads are interchangeable.

(e) Reassemble the front tape container bracket to the motor mount casting in the same position noted when it was removed (paragraph 2-5b(3)(a)).

(3) TT-253/UG, TT-253A/UG and TT-292/UG.

(a) Remove the gear guard from the cloth bag attached to the base. Assemble the motor to the base, using four screws, lock washers and washers located in the cloth bag. Beneath the left rear mounting screw, install the gear guard.

(b) Remove the fiber insulator from the four-terminal block and connect the motor leads to terminals 1 and 2. The leads are interchangeable. Replace the insulator.

(c) TT-253A/UG. — Connect the chad removal mechanism to the fan end of the motor. Proceed to installation of the typing reperforator (paragraph 2-5c) before installing the chad chute.

c. TYPING REPERFORATOR. — A cloth bag attached to the base mechanism contains the typing reperforator drive sprocket or gear and hub assembly; a timing belt, where required; and attaching hardware for the typing reperforator. The tape container on the TT-192A/UG base must be removed (paragraph 2-5b(2)(a)) prior to installation of the typing reperforator mechanism. Remove the grease retainer from the variable speed drive mechanism (TT-192/UG and TT-274/UG, paragraph 2-5b(1)(c), or TT-192A/UG, paragraph 2-5b(2)(b)). Loosen the anchor bracket A1552 mounting screw H1580 on the front of the punch mechanism.

NOTE

In installing the typing reperforator mechanism, tighten the anchor bracket to the base plate before tightening the mounting screw on the punch mechanism. With the reperforator correctly positioned on the base and its mounting screws friction tight, hold the anchor bracket firmly against the base, and tighten the screw attaching it to the reperforator.

(1) TT-192/UG and TT-274/UG. — Attach the sprocket to the reperforator hub, attaching the screws furnished with hub so that the screw heads are on the deeper inset of the sprocket. Mount the reperforator on the base as follows:

(a) Center the reperforator over its mounting holes in the base, with the timing belt slipped loosely over the sprockets of the reperforator and the intermediate gear mechanism.

(b) Start the screw, lock washer and flat washer H1583, H1584 and H1585 through the anchor bracket into the proper tapped hole in the base plate. Do not tighten.

(c) Start the three reperforator mounting screws with lock washers and washers H809, H810 and H811 into the proper tapped holes in the base. Do not tighten.

(d) Press the anchor bracket against the base and tighten the screw holding the bracket to the reperforator. Tighten the screw holding the bracket to the base.

(e) Tighten the three reperforator mounting screws.

(f) Check timing belt and gear adjustments (figure 6-135). If gear mesh adjustments are necessary, loosen the tape container mounting screws and pivot the tape container to one side.

(g) Tighten the motor mounting screws (paragraph 2-5b(1)(d)). Replace the tape container and tighten its mounting screws.

(h) Loosen two fillister head screws in each socket hub. Loosen, but do not remove, the hex head screw in each hub, and move each hub in or out on its shaft as required to center the track of the belt on each hub as nearly as possible. Retighten the screws.

(i) Connect the 36-point connector from the base to the typing reperforator receptacle, and lock the wire clamps at each end of the receptacle over the connector.

(2) TT-192A/UG. — Remove and discard the hub attached to the typing reperforator main shaft, and replace with the hub and gear assembly packaged in the cloth bag attached to the base. Use the screw and lock washer furnished in the cloth bag to attach the hub to the shaft. Attach the sprocket at the end of the shaft, hub toward the reperforator. Drape the timing belt over the sprocket on the reperforator.

(a) Simultaneously slip the timing belt over the variable speed mechanism sprocket and position the typing reperforator approximately over its three mounting holes.

(b) Start the screw with lock washer and flat washer H1583, H1584 and H1585, mounting the anchor bracket into the tapped hole in the base. Do not tighten.

(c) Start three reperforator mounting screws with lock washer and flat washer H891, H892 and H893 into mounting holes on the base plate. Do not tighten.

(d) Take up timing belt slack by moving the reperforator to the left and back. The belt should have just enough slack so that a slight pressure on its center will cause a deflection of approximately 1/16 inch. It must not be tight.

(e) Tighten three reperforator mounting screws. Press the anchor bracket against the base, and tighten the screw holding the bracket to the reperforator. Tighten the screw holding the bracket to the base.

(f) Loosen but do not remove the screws attaching the sprockets to the reperforator drive shaft and to the variable speed mechanism. Adjust the position of the sprockets so that the timing belt is running as close to the center of each as possible. Retighten the screws.

(g) Replace the tape container, using hardware removed in its disassembly (paragraph 2-5b(2)(a)).

(h) Connect the 36-point connector from the base to the typing reperforator receptacle, and lock the wire clamps at each end of the receptacle over the connector.

(3) TT-253/UG, TT-253A/UG AND TT-292/UG. — Remove the hub from the main shaft of the typing reperforator, discarding the hub and retaining the mounting hardware. Attach the flanged hub furnished in the cloth bag attached to the base, using the retained screw and lock washer. Attach the gear furnished in the cloth bag, using three screws and the special spring washer provided in the bag.

(a) Install the typing reperforator by attaching three screws, lock washers and washers H978, H979 and H980 furnished in the cloth bag attached to the base. Start the screws in the three tapped holes in the casting mounted on the keyboard-base. Do not tighten.

(b) Move the typing reperforator and, if necessary, the sprocket hub on the reperforator shaft to center the driven gear over the drive gear.

(c) Hold the anchor bracket over the tapped hole on the arm extending in front of the casting, and tighten the screw retaining the bracket to the reperforator. Tighten the anchor bracket to the base, and tighten the three reperforator mounting screws.

(d) Assemble the chad chute mechanism to the vacuum chad disposal mechanism by attaching both ends of the flexible tubing connecting the two parts. Install the chad disposal bag beneath the motor, tightening it in place with the draw string furnished.

(e) Connect the 36-point connector from the base to the typing reperforator receptacle, and lock the wire clamps at each end of the receptacle over the connector.

d. CABINET OR COVER. — Install the cabinet or cover after all other components are assembled on the base and external wiring has been completed.

(1) The cover for Typing Reperforator Sets TT-192/UG, TT-192A/UG and TT-274/UG rests upon the lower base, completely enclosing the mechanisms. Be sure the cables are positioned within the apertures at the rear of the cover. Be sure the cover does not touch the upper base plate. Push the cover down upon its spring detents. Clamp the latches on the sides of the cover to lock the cover on the base.

(2) The cabinet used to enclose components for Typing Reperforator Sets TT-253/UG, TT-253A/UG and TT-292/UG rests upon a sub-base (paragraph 2-3d). The base mechanisms may be installed or removed from the sub-base without disassembly from the base by removal or installation of four studs in the corners of the base. To install the cover on the sub-base, move the latch lever at the front of the sub-base to the left, and set the cabinet over the entire mechanism. Check that the cables enter the aperture provided at the rear of the cabinet. Move the latch lever to the right to lock the cabinet in position.

WARNING

Avoid damage to the character counter mechanism when setting the cabinet over the keyboard.

(3) Depress the latch button on the sides or front of the hinged cabinet or cover door to open the door for access to the equipment. In installation of cabinets for TT-253/UG, TT-253A/UG and TT-292/UG, open the access door and connect the cabinet connector to its mating receptacle on the base terminal board bracket.

2-6. MECHANICAL CHECKING OF EQUIPMENT.

a. Check mating of all connectors and receptacles. Check screw terminal connections and lamps for loosening or breakage. Check the fuse (TT-192A/UG only).

b. Make sure that the main power switch is in down (OFF) position before closing the main power line to the equipment.

c. Refer to paragraph 3-2a for instructions on installing paper and ribbon.

d. Apply a thin film of grease to all gears.

e. Check installation of the chad chute mechanism and bag (TT-253A/UG).

2-7. OPERATING TESTS.

a. With the signal line open, turn the external power supply on.

CAUTION

Be sure the main power switch is in down (OFF) position before turning on the external power supply.

(1) Turn the main power switch to up (ON) position. Motors should operate.

(2) Gear mechanisms should operate without chatter, excessive vibration, or whine. Check intermediate gear mechanisms (TT-192/UG, TT-192A/UG and TT-274/UG) in each operating range by shutting off the power switch and moving the gear lever to a different speed range indication. Turn the power on. The typing reperforator will operate more rapidly at each higher rate indicated on the gear shift mechanism. Speed changes on Typing Reperforator Sets TT-253/UG, TT-253A/UG and TT-292/UG require changes in the gear and pinion set selection.

WARNING

Do not attempt to change operating speed through the variable speed gear shift mechanisms while the equipment is in operation under power. It may, however, be necessary to rotate the motor fan or intermediate gear sprocket by hand slightly to engage the gears in the desired speed range.

(3) Remove the tape supply to check operation of the tape-out warning lamp. With tape removed, lamp should light when power switch is on. Lamp should be out when full roll of tape is in place.

(4) Visually check operation of the tape feed-out magnet armature when the tape feed-out button or key is pressed or depressed (not applicable to TT-192A/UG). The armature should be pulled down. Tape feed-out will not take place, however, since the equipment is running open (no signal circuit) and tape feed is continuous.

b. Close the external signal circuit. The typing reperforator should run closed (marking signal circuit) unless and until an incoming signal initiates perforating and typing functions.

c. Check an incoming message by inspecting the typed tape and comparing the coded equivalent (six characters in advance of the typed character) with the typed character. The punch mechanism and the typing mechanism are factory adjusted for satisfactory operation without installation adjustment. The quality of the input signal, however, may require refinement of the orientation range setting. Refer to paragraph 6-4e.

d. If a local signal test circuit and signal generator are available, compare the typed and perforated tape output with the signal input locally generated for test purposes. In the case of Typing Reperforator Set TT-253/UG, TT-253A/UG and TT-292/UG installations, depress the KYBD UNLOCK key and type a test message, which can be checked against the simultaneously received tape message.

e. Check keyboard functions of the TT-253/UG, TT-253A/UG and TT-292/UG sets by operating the keys under power and checking the tape prepared in the typing reperforator.

NOTE

An external synchronizing pulse must be supplied through the 16-point keyboard connector before the TT-253A/UG keyboard can be operated. See paragraph 2-4b.

(1) Turn the main power switch clockwise to ON position. Note that the pilot lamp above the switch lights immediately.

(2) Depress the KYBD UNLOCK key.

(3) Type any typical test message. Note that the indicator on the character counter advances one unit for each character. The character counter lamp at the right side of the keyboard should be illuminated between 66 and 68 characters. Depress the CAR RET key when the end-of-line indicator lamp is lit. The lamp should be extinguished, and the character counter indicator should return to zero position.

(4) Depress the TAPE B SP key. Tape in the typing reperforator should be moved one character to the right at the punch block.

(5) Depress the TAPE FO key. Tape should automatically feed out of the typing reperforator to a pre-determined length. During the feed-out cycle, depress any character key. Feed-out should be interrupted, and the correct code for the key depressed should be typed.

(6) Depress the RPT key in combination with any character key. Transmission of that character should be continuous until the character key is released.

(7) Depress the BRK key. While the key is depressed, the typing reperforator should run open, indicating an interruption in the signal circuit.

(8) Depress the KYBD LOCK key. All character keys should be locked.

f. The power driven back space is factory installed in the typing reperforator mechanism but is not operative on Typing Reperforator Sets TT-192/UG, TT-192A/UG and TT-274/UG, which are receiving only equipment. An automatic non-interfering letters tape feed is peculiar to the typing reperforator mechanism of TT-192A/UG. At the end of a message, this feature automatically meters out a pre-determined length of tape punched in all five levels. If a signal is received during the feed-out cycle, the first character sensed in the signal circuit will be typed as the feed-out cycle is stopped. A remote control letters tape feed-out is used on TT-253A/UG.

g. If irregularities in operation are observed, notify authorized maintenance personnel. (In any case of failure of a part, complete ELECTRONIC FAILURE REPORT form DD787 and forward to BuShips.)

2-8. INDICATOR LAMPS AND ALARMS.

a. GENERAL. — The only alarm or indicator used on Typing Reperforator Sets TT-192/UG, TT-192A/UG and TT-274/UG is the tape-out lamp. Switches to operate an external warning device are provided in both of these sets, but the bell or other warning must be installed externally, normally in a power distribution panel not furnished with this equipment. TT-253/UG, TT-253A/UG and TT-292/UG sets have three warning lamps on the face of the keyboard: at the left a power supply pilot lamp, and at the right (top) an end-of-line indicator lamp and (bottom) a tape-out lamp.

b. TAPE-OUT LAMP. The tape-out lamp is connected with the outer or lower switch in the tape container (TT-192/UG, TT-192A/UG, and TT-274/UG) or with the single switch in the TT-253/UG, TT-253A/UG and TT-292/UG tape container. The normally open switch is closed when the diameter of the tape is reduced to a pre-determined minimum. The alarm lamps for each unit are:

(1) TT-192/UG and TT-274/UG. — A bayonet type 120 V incandescent lamp located at the front right corner of the base, and visible through a red indicator lens on the front of the cover.

(2) TT-192A/UG. — An indicator lamp and lens (red) assembly located on the control panel and visible through an aperture on the cover. A 120 V neon glow lamp is mounted beneath the lens.

(3) TT-253/UG, TT-253A/UG and TT-292/UG. — A 6 V a.c. lamp visible through an amber lens mounted on the right side of the keyboard, beneath the end-of-line indicator lamp.

c. PILOT LAMP (TT-253/UG, TT-253A/UG and TT-292/UG). — A 120 V a.c. neon type lamp mounted beneath a clear indicator at the left side of the keyboard, above the main power switch, is illuminated at all times when the main power switch is on.

d. END-OF-LINE INDICATOR (TT-253/UG, TT-253A/UG and TT-292/UG). — A 6 V a.c. lamp visible through a red lens mounted on the right side of the keyboard above the tape-out lamp is illuminated when the typed message reaches the 66th to 68th space from the beginning of a line. The lamp should remain lighted until the carriage return key is depressed.

e. EXTERNAL ALARMS. — External alarms or warning devices are not furnished with the typing reperforator sets. Switches to initiate an external alarm are provided, however, as a tape-out signal and for an upper case "S" signal impulse received in the signal circuit. Wiring of these alarms depends upon external circuitry.

2-9. FINAL CHECKS.

The equipment has been thoroughly tested and adjusted at the factory and should not require further adjusting.

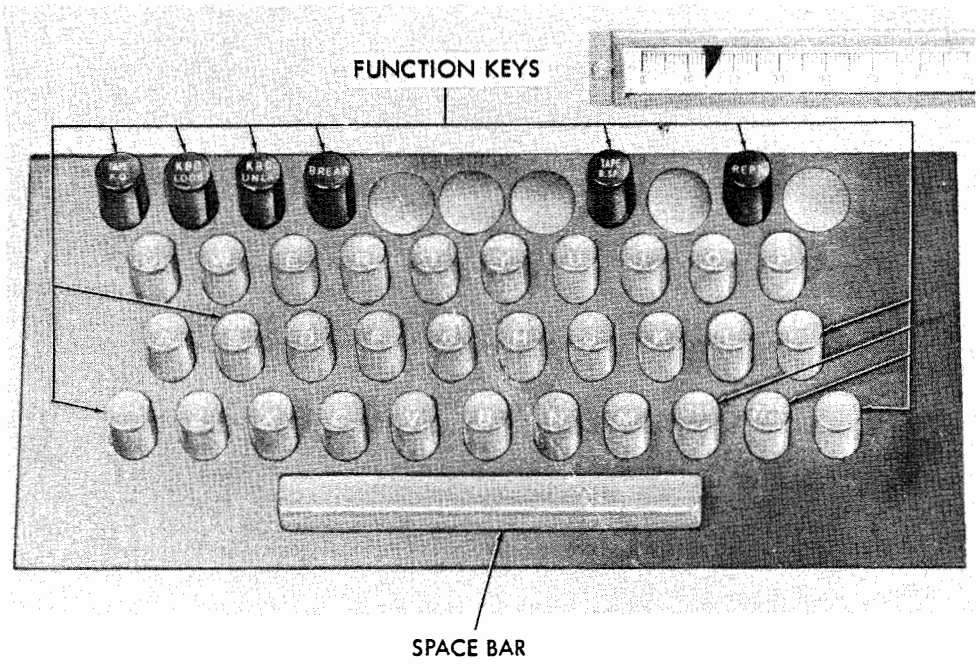


Figure 3-1. Keyboard (TT-253/UG, TT-253A/UG and TT-292/UG)

SECTION 3
OPERATOR'S SECTION

3-1. INTRODUCTION.

a. Typing reperforator sets are designed primarily to serve as receive only signal line monitoring equipment in which a message tape is prepared for direct reading from printed characters and for subsequent electronic transmission of its punch coded characters. An additional feature of Typing Reperforator Sets TT-253/UG, TT-253A/UG and TT-292/UG permits its use as either a message originating or receiving station. This equipment is designed for use in the exchange of electrically transmitted messages between two or more stations which are similarly equipped and connected by a radio or wire telegraph channel. Either transmission (TT-253/UG, TT-253A/UG and TT-292/UG only) or reception utilizes standard communications symbols exchanged at a nominal speed of 60, 75 or 100 w.p.m., depending on the installed gear set or on the operator's selection of a speed range available through a variable speed mechanism (TT-192/UG, TT-192A/UG and TT-274/UG). The operating speed must be the same as the speed of equipment at distant ships or stations on the telegraph channel.

b. Typing Reperforator Set TT-192A/UG is a miniaturized unit designed for minimum space and weight considerations. It is a receive only set identical in all on-line functions with Typing Reperforator Set TT-192/UG.

c. Typing Reperforator Sets TT-253/UG, TT-253A/UG and TT-292/UG are send or receive sets equipped with a keyboard-base suitable for message transmission. Transmitted messages are simultaneously monitored by the typing reperforator mechanism of the set.

(1) The keyboard is essentially similar to the keyboard of a conventional typewriter. The following differences should be noted.

(a). The keyboard of the teletypewriter (figure 3-1) has only three rows of conventional keys.

(b) A fourth row of keys (red keys) and several of the standard keys on the teletypewriter are intended for non-typing functions. The left hand key in the upper row (TAPE F.O.) is an example of a key for a non-typing function (tape feed-out) used only to operate local equipment (off-line). The left hand key in the bottom row (FIGS) is an example of a standard key intended for a non-typing function (shift to figures, or upper case characters) used to operate all equipment on the signal line, including local equipment (on-line).

(2) Some non-typing functions are represented by code punching variations in the tape and printed symbols, such as for line feeding, carriage return, space, and blank. These operations are not applicable to typing reperforator equipment. Other non-typing functions are represented by code punching variations in the tape, printed symbols and operating functions in the typing reperforator, such as figures, letters and signal bell.

(3) The keyboard must be operated with a uniform rhythm in order to prevent omission errors in the copy due to speed in excess of that for which the machine is adjusted.

d. Perforated, typed tape is simultaneously punched and typed in response to signal line impulses, whether originated locally (keyboard sets) or at a distant station. Typing is done by a printing hammer which impresses tape and an inked ribbon against a selected character on the cylindrical typewheel embossed with standard communications symbols and symbolic equivalents of non-typing functions. The printed character occurs six units after the point at which the chadless five-unit code for the character is punched into the tape by the perforator.

e. TT-253A/UG equipment prints between feed holes, since the prepared tape is fully perforated.

f. The equipment is arranged for operation on five-unit start-stop permutation code signals electrically transmitted at nominal speeds of 368, 460 or 600 o.p.m., or 60, 75 or 100 w.p.m. Conversion from one speed to another can be made through the variable gear shift mechanism, except in the case of TT-253/UG, TT-253A/UG and TT-292/UG which require gear changes. Receiving speed must be the same as transmitting speed at the distant station.

3-2. PREPARATIONS FOR USE.

a. RIBBON AND TAPE. — Threading the inked ribbon is identical for all typing reperforator sets. Tape threading is identical for all units within the typing reperforator mechanism, but the path from the tape container is adapted to the design of each of the units.

(1) RIBBON. (See figure 3-2.) — Open the cabinet or cover access door. The ribbon mounts in a vertical position at the top of the reperforator, held in place on each of two ribbon spool shafts by a toggle lever. Engage the hook on the end of the ribbon in the hub of an empty ribbon spool (retain one spool if replacing a used ribbon). Wind a few turns of the ribbon onto the empty spool to make sure that the reversing

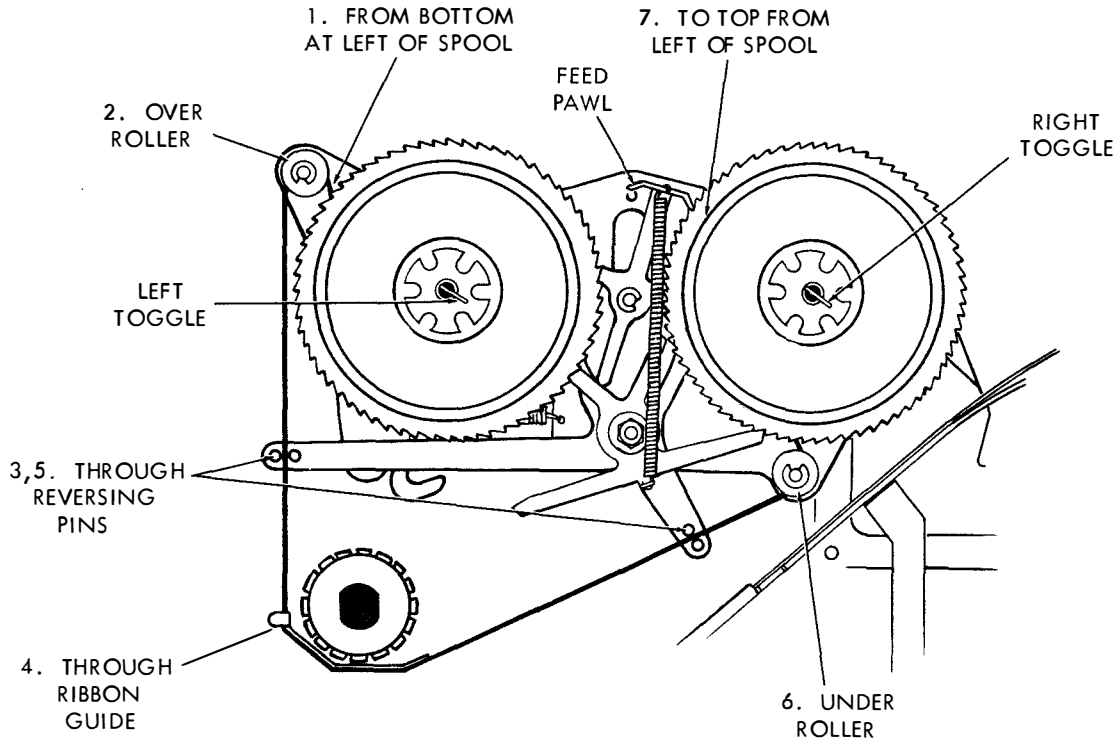


Figure 3-2. Path of Ribbon

eyelet has been wound upon the spool. The left spool winds clockwise, the right counterclockwise. Install the empty spool over the open toggle of its spindle, and turn the spool slightly until the driving pins on the shaft engage the holes in the rear of the spool. Close the toggle, and thread the ribbon around the roller, through the reversing pins (making sure the eyelet is always above the pins) for both spools, over the left (or under the right) roller and to the opposite spindle. Place the spool on the spindle. Rotate the spool to take up the slack in the ribbon. Latch the second toggle. The ribbon properly installed should feed from the outside of each ribbon spool and should reverse whenever an eyelet engages a set of reversing pins.

(2) PATH OF TAPE. (See figure 3-3.) — All typing reperforator sets print upon and perforate standard teletypewriter tape supplied in eight-inch rolls on a two-inch spool. Remove the tape container hub from the tape container and insert it through the spool. (TT-192/UG and TT-274/UG, insert from left side of tape roll; TT-192A/UG, TT-253/UG, TT-253A/UG and TT-292/UG, insert from right side of tape roll, when tape unwinds from bottom and rear of roll.) Insert hub and roll into tape container to feed from bottom of roll (TT-192A/UG only, from left of roll). Be sure the tape-out switch lever is riding on the outer edge of the tape roll when the tape is installed in the container.

(a) TT-192/UG and TT-274/UG. — Thread the tape under the lower roller on the tape guide and through the upper loop of the guide from the right, into the tape chute of the typing reperforator mechanism.

(b) TT-192A/UG. — Thread the tape around the roller of the tape guide from the right and into the tape chute of the typing reperforator mechanism.

(c) TT-253/UG, TT-253A/UG and TT-292/UG. — Thread the tape under the lower (left) guide roller, over the center roller from the left, over the right roller, and into the tape chute of the typing reperforator mechanism.

(d) TYPING REPERFORATOR. — Cut or tear the leading end of the tape square and feed it from the base tape guide roller or loop into the tape chute. Push the tape downward around the die wheel to the point where it will be engaged by the feed wheel. Turn the manual feed thumb screw counterclockwise to thread the tape between the feed wheel and the die wheel, under the tape shoe, and through the punch block.

(e) Extend the tape beyond the edge of the cabinet or cover tape aperture, closing the access door with the tape protruding.

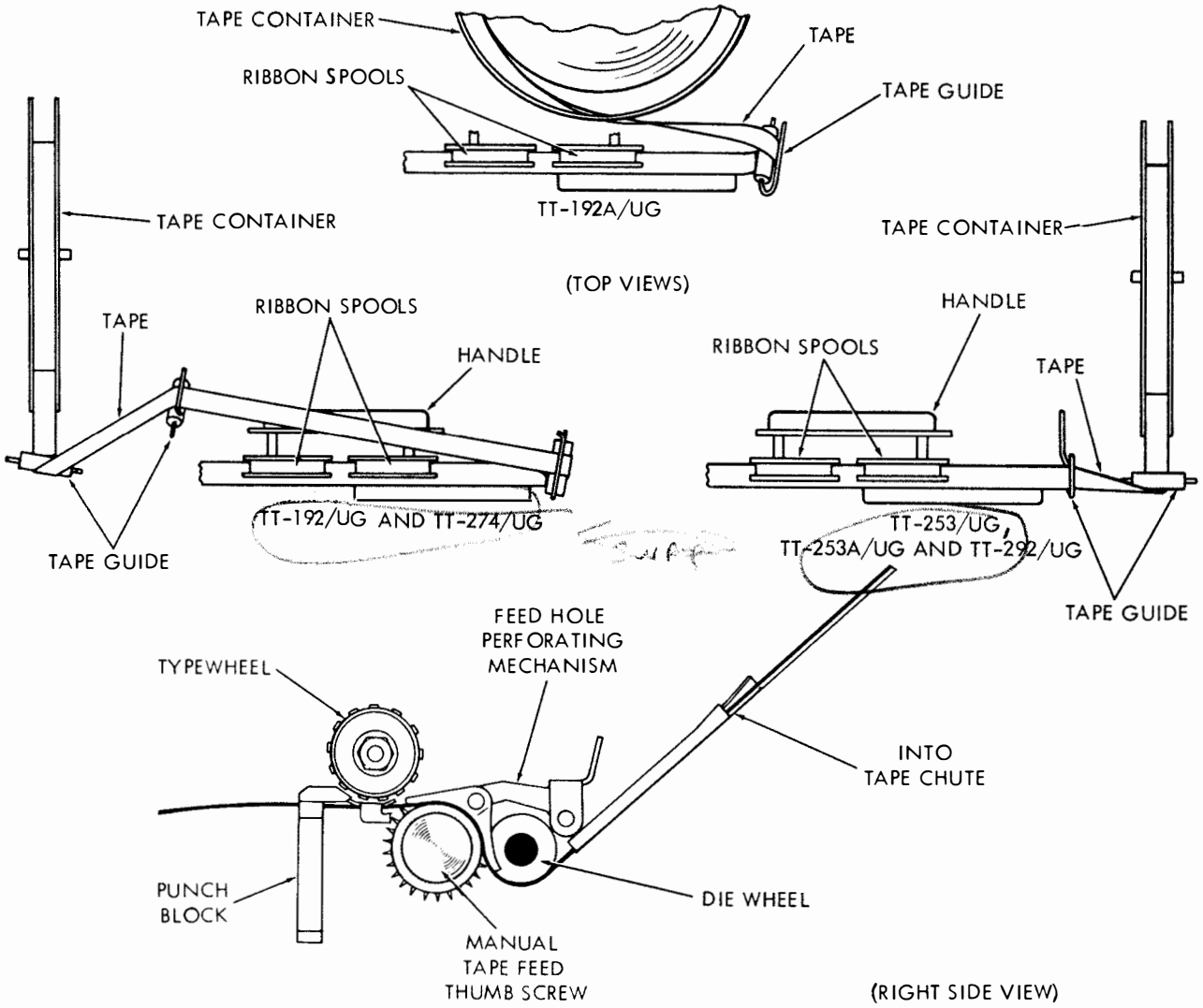


Figure 3-3. Path of Tape

b. POWER SWITCH. — Turn the power switch to its ON position to prepare the equipment for automatic operation as receive only sets responsive to incoming signal line impulses. On Typing Reperforator Sets TT-192/UG, TT-192A/UG and TT-274/UG the main power switch (figures 3-4 and 3-5) is a toggle type switch located at the right side of the front of the cover and accessible through apertures in the cover. Move the toggle to up position to turn the power ON. TT-253/UG, TT-253A/UG and TT-292/UG sets are equipped with a rotary type switch at the left side of the keyboard (figure 3-6). Rotate counterclockwise to ON position. The pilot light immediately above the switch will be illuminated when power is on.

c. SPEED SELECTION. — Typing Reperforator Sets TT-253/UG, TT-253A/UG and TT-292/UG will operate only at the speed determined in the selection of motor pinion and drive gear sets. Other equipment will

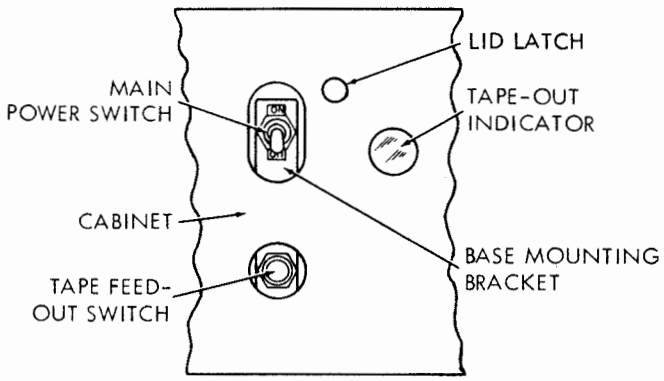


Figure 3-4. Operating Controls (TT-192/UG and TT-274/UG

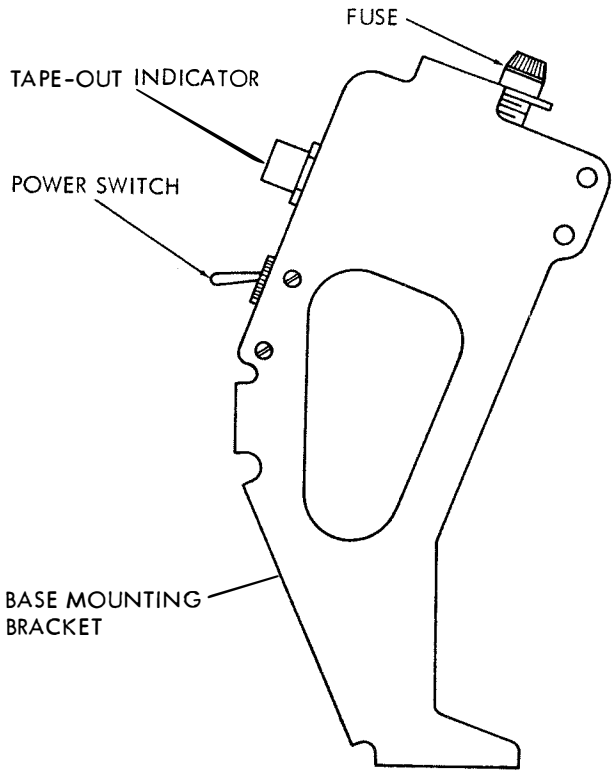


Figure 3-5. Control Panel (Cover Removed) (TT-192A/UG)

operate at 60, 75 or 100 w.p.m., depending on the gear ratio selected in the base mounted variable speed mechanism. Since this is receiving only equipment, the speed selection will be governed by the operating speed of the distant transmitting station equipment. To change the gear ratio, turn off the main power switch and allow the motor to coast to a stop. Open the hinged cover lid, and move the gear change lever to the desired speed. Rotate the motor fan or the intermediate gear sprocket slightly if the gear change lever does not readily fall into the detent adjacent to the desired speed range index on the variable speed mechanism cover.

d. KEYBOARD OPERATION (TT-253/UG, TT-253-A/UG and TT-292/UG). — Ascertain that the signal line is not in use. Transmission from the keyboard while an incoming signal is being received in the typing reperforator will garble both messages on all equipment on the signal line. Depress the KYBD UNLK key in the upper row of keys to ready the keyboard for transmission.

3-3. CONTROLS AND INDICATORS.

a. TAPE FEED-OUT. — Mechanical feed-out of an adjustable, predetermined length of tape without opening the cabinet or cover is initiated automatically on Typing Reperforator Set TT-192A/UG or by the operator on other equipment. The operator controlled mechanism is electrically energized. The push button switch (figure 3-4) to initiate tape feed-out on TT-192/UG and TT-274/UG is located immediately beneath the main power switch. On keyboard sets, this function is initiated by depressing the TAPE F.O. key (figure 3-1) on the keyboard. On TT-192A/UG tape feeds out automatically whenever message transmission stops. Each mechanism automatically interrupts tape feed-out and resumes code perforation and typing on the first incoming signal received.

b. TAPE-OUT LAMP. — All typing reperforator sets are equipped with a tape-out warning lamp wired to a circuit closed automatically when about 3/4 inch of tape remains on the roll in the tape container. The indicator is behind a red lens on the front of the TT-192/UG, TT-192A/UG and TT-274/UG cover (figures 3-4 and 3-5) or an amber lens at the right of the keyboard (figure 3-8).

c. CHARACTER COUNTER. — (TT-253/UG, TT-253A/UG and TT-292/UG.) When operated as transmitting equipment, an indicator above and to the right of the keyboard (figure 3-8) records in increments of one character the length of the message transmitted up to the 72-character equivalent of a page-printed teletypewriter line. When 66 to 68 characters have been typed, an end-of-line indicator lamp (red) at the right of the keyboard is illuminated. The lamp circuit is opened and the character counter indicator returned to zero position whenever the CAR RET key is depressed.

3-4. ORIENTATION RANGE.

In order to use the receiving margin of the typing reperforator selector mechanism to best advantage, the starting position of the selector cam-clutch must be located at the most favorable angle, midway between the extremes of marking bias (set runs closed) or spacing bias (set runs open) in the incoming signal. This is accomplished by positioning

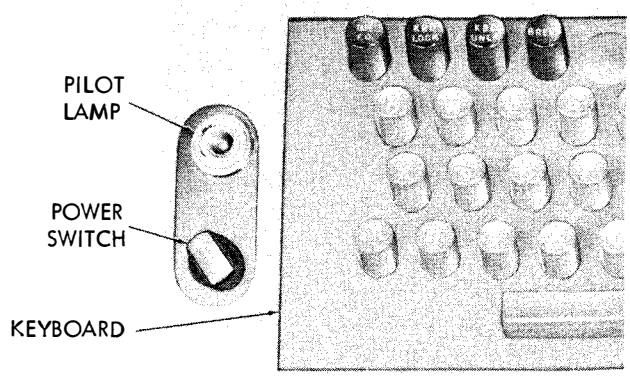


Figure 3-6. Main Power Switch and Pilot Lamp (TT-253/UG, TT-253A/UG and TT-292/UG)

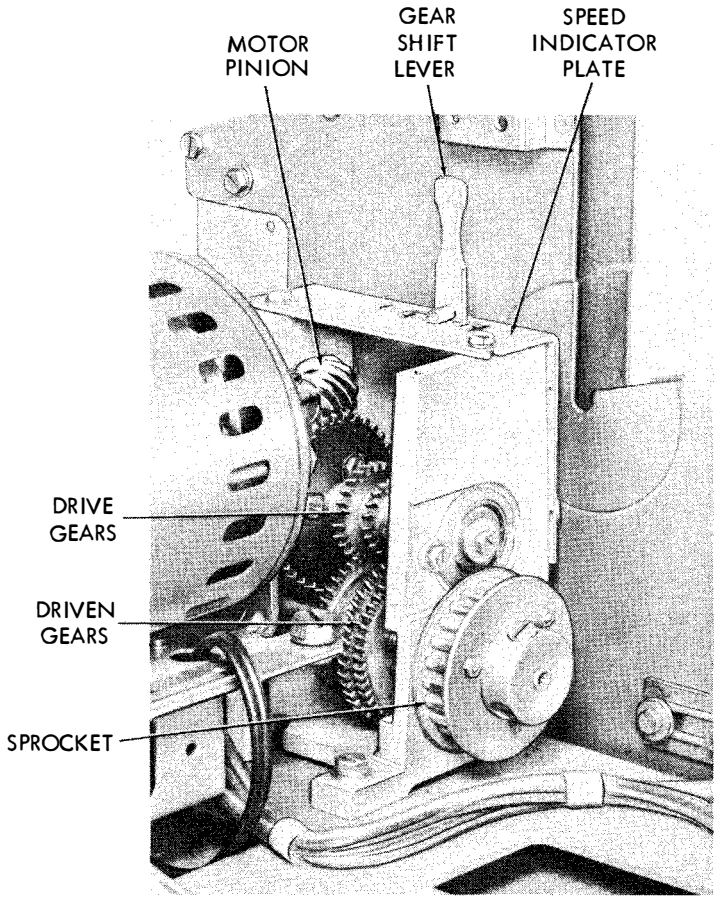


Figure 3-7. Variable Speed Intermediate Gear Mechanism (TT-192/UG Illustrated)

the clutch stop arm (figure 6-73) with the range finder knob. The adjustment will be made by authorized maintenance personnel following procedures outlined in Section 6, paragraph 6-4e.

3-5. RECEIVING OPERATION.

Receiving operation is an entirely automatic response of the equipment to an incoming signal. Operator attention is required only for tape handling. Replenish the tape supply at the earliest possible break in transmission after the tape-out lamp is illuminated. Depress the feed-out key or button (except TT-192A/UG) to feed tape through the cover or cabinet tape aperture beyond the last character transmitted. Use the bottom edge of the cover window to tear off the message tape, using caution to avoid loss of any part of the message.

3-6. TRANSMITTING OPERATION (TT-253/UG, TT-253A/UG and TT-292/UG).

a. Follow preparation for use instructions (paragraph 3-2d) prior to operation of Typing Reperforator Sets TT-253/UG, TT-253A/UG and TT-292/UG for message transmission.

b. Hold the BREAK key depressed for at least two seconds to insure starting of motors in the signal circuit which are controlled by a delay feature and to lock the keyboards on the circuit prior to transmission.

c. Press the CAR RET and LF key to bring the carriages of all page printers on the signal circuit to the beginning of a new line.

d. Press the BREAK key prior to transmission in each instance where the circuit has been idle for one minute, to start motors in the circuit which are controlled by a delay feature.

3-7. SUMMARY OF OPERATIONS.

a. Turn the main power switch to ON position.

b. (TT-192/UG, TT-192A/UG and TT-274/UG only.) Select a gear speed ratio compatible with that of transmitting equipment in service on the signal line. Shut off the power switch before changing gear ratios.

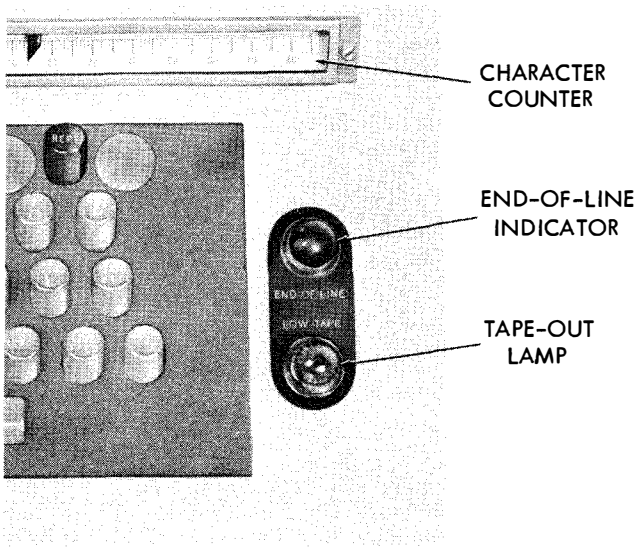


Figure 3-8. Character Counter and End-of-Line Indicator Lamp (TT-253/UG, TT-253A/UG and TT-292/UG)

c. Energize the tape feed-out circuit optionally by depressing the keyboard feed-out key or by pulsing the feed-out switch at the front of the cover. (Not applicable to TT-192A/UG.)

d. (Keyboard sets only.) For message transmission, proceed as follows:

(1) Depress the KYBD UNLK key.

(2) Depress the BREAK key for at least two seconds, and repeat this step whenever the equipment has been idle for one minute.

(3) Depress the CAR RET and LF keys.

(4) Type the desired message.

e. Replenish the tape supply in the tape container promptly when the tape-out lamp is lighted.

f. To shut down the equipment, turn the main power switch to OFF position.

3-8. OVERLOAD CUTOUT.

The a.c. synchronous motor supplied with Typing Reperforator Sets TT-192/UG, TT-253/UG and TT-253A/UG is equipped with a thermal circuit breaker to protect against excessively high temperatures which might develop in case of a prolonged overload that would be insufficient to stall the motor. Once operated, the cutout device must be reset manually by pressing a reset button (figure 1-6) on the motor plate at the rear of the motor before the equipment can be restarted. Allow the motor to cool at least 5 minutes before manually depressing the red button.

CAUTION

If the motor stops and does not restart in response to regularly operated controls, check the fuse in the external power supply. If the fuse has not blown, check the motor for excessive temperature. Where excessive temperature is indicated, rotate the motor by hand to determine whether any abnormal mechanical condition is present. If the load appears normal, leave the cabinet or cover door open and permit the temperature to drop before resetting the cutout. If the motor continues to trip the cutout switch, or if any abnormal load conditions cannot be readily corrected, notify authorized maintenance personnel.

3-9. MOTOR SPEED SETTING (TT-274/UG AND TT-292/UG).

Motor speed requires attention only when the governed motor is used (TT-274/UG and TT-292/UG). Notify authorized maintenance personnel if adjustment is required. Motor speed adjustment procedures are described in Section 6, paragraph 6-46 (3). To check motor speed, hold the repeat key and a character key simultaneously operated. At 60 w.p.m. speed, 60 characters should be typed and perforated in ten seconds (at 75 speed, 44 characters in 5 seconds; at 100 speed 57 characters in 5 seconds).

3-10. ROUTINE CHECKS.

a. Routine periodic operator checks are indicated in table 3-1.

b. During normal operations, observe the printed tape from time to time for recurrent errors or garbling not readily traceable to operator error. Compare the punched code with its corresponding printed character (six characters behind the punched code). Any difference between the printed character and the punched code is indication of typing reperforator failure. When operating the keyboard compare the tape reproduction with the typed message.

c. Notify authorized maintenance personnel promptly of any indications of equipment failure.

NOTICE TO OPERATORS

Operators shall not perform any of the following emergency procedures without proper authorization.

3-11. EMERGENCY MAINTENANCE.

a. FUSE LOCATION. — The only equipment internally protected by a fuse is Typing Reperforator Set TT-192A/UG. Raise the cover door for access to the fuse at the right of the base, adjacent to the tape container. See table 3-2.

WARNING

Never replace a fuse with one of higher rating unless continued operation of the equipment is more important than probable damage. If a fuse burns out immediately after replacement do not replace a second fuse until the cause has been corrected.

b. MOTOR CUTOUT SWITCH. — (Not applicable to TT-192A/UG, TT-274/UG and TT-292/UG.) If the motor becomes overheated, restart by depressing the red button on the thermal cutout switch. Allow the equipment to cool approximately five minutes before resetting the switch. Check for indications of a mechanically related overload on the motor.

c. LAMP REPLACEMENTS. — Illumination and indicator lamp locations and specifications vary for each of the typing reperforator sets. Replacement data is summarized in table 3-3. Note that cabinet lamps and indicators for keyboard sets, except for the pilot lamp, are all in the 6 V a.c. circuit operated off the base transformer.

TABLE 3-1. ROUTINE CHECK CHART

WHAT TO CHECK	HOW TO CHECK	REMARKS
EACH WATCH		
1. General operation	Apply operating tests as detailed in Section 2, paragraph 2-7	If irregularities occur, notify authorized maintenance personnel
2. Chad container	(TT-253A/UG only) Inspect visually for over filling	Empty when half to three-quarters full.
DAILY ROUTINE		
1. Tape supply	Replace if less than 1/2-inch of tape remains on spool in tape container	Install in container to feed from bottom of roll, toward front of cabinet for typing perforator, toward rear for typing reperforator
2. Condition of ribbon	Change if copy is too light	Be sure ribbon is in guides and ribbon eyelets are on spool side of reversing levers
3. Condition of type on type wheel	Manually position the typewheel for letters or figures by sliding the letters push bar back and forth; clean the typewheel with a soft cloth dipped in type cleaning solvent or with a mastic type cleaner	Power switches should be "OFF." Be sure ribbon is not disturbed
4. Condition of cover glasses	Clean if required by means of soft cloth	Be sure ribbon or tape are not disturbed
5. Lamps and Lenses	Tighten or replace loose or burned out illumination or indicator lamps; clean lenses by means of a soft cloth	Be sure replacement is of same type and size removed
6. Timing belt (on auxiliary typing reperforator)	Move typing reperforator forward slightly by loosening three mounting screws	Some slack in belt is required
QUARTERLY ROUTINE		
1. Orientation range	Note should be made of the pointer setting on the range scale so that if it is disturbed for any reason it can be repositioned conveniently. If a further check is necessary, see Section 6, paragraph 6-4.	Abnormal signal line conditions may require changes in the setting as an expediency. When normal line conditions are restored, normal setting should be re-established.
2. Motor speed	(TT-274/UG and TT-292/UG only.) With REPT key and any character key depressed, 60 characters should be typed in 10 seconds at 60 w.p.m. (at 75 speed, 44 characters in 5 seconds; at 100 speed 57 characters in 5 seconds)	Turn governor adjusting screw (figure 1-8) in direction indicated by stamping on motor governor housing

TABLE 3-2. FUSE LOCATION AND SYMPTOMS OF FUSE FAILURE

EQUIPMENT	POWER SWITCH	MOTOR	BLOWN FUSE	VALUE (AMPS)	COMMENTS
TT-192A/UG	ON	Inoperative	F925	3.0	Above terminal board bracket. Protects A.C. power supply

TABLE 3-3. LAMP REPLACEMENT DATA

EQUIPMENT	REFERENCE DESIGNATION SYMBOL	FUNCTION	LOCATION	VOLTS	WATTS	AMPS	BASE
TT-192/UG and TT-274/UG	I850	Tape-out Indicator	Front right corner of base	115	6		Bayonet
TT-192A/UG	I925	Tape-out Indicator	Terminal board mounting bracket	115 Neon			Bayonet
TT-253/UG TT-253A/UG and TT-292/UG	I276	Main power pilot lamp	Above main power switch	115 Neon			Bayonet
	I279	End-of-line Indicator lamp	Right side of keyboard, top	6-8		0.25	Bayonet
	I281	Tape-out indicator	Right side of keyboard, bottom	6-8		0.25	Bayonet
	I2400	Tape illumination	Inside cabinet door at left	6-8		1.14	Bayonet
	I2401	Character counter illumination	Inside cabinet door at right	6-8		1.14	Bayonet

SECTION 4
THEORY OF OPERATION

4-1. GENERAL.

a. This section covers the operating principles and circuit descriptions of Typing Reperforator Sets TT-192/UG, TT-192A/UG, TT-253/UG, TT-253A/UG, TT-274/UG and TT-292/UG. Basically, the typing reperforator is a receiving only mechanism. In TT-253/UG, TT-253A/UG and TT-292/UG it is adapted by the addition of a keyboard-base to send-receive operation. The equipment operates in a radio or wire telegraph channel connecting two or more ships or stations equipped with compatible units. In either sending or receiving, the equipment prepared a typed and punch coded message tape suitable for storage and subsequent automatic transmission on associated teletypewriter equipment. TT-192A/UG is a miniaturized version of the receive only mechanism intended for installations where space and weight considerations must be kept to a minimum.

b. The signals received or transmitted and received by these sets are of the neutral type (open and close) direct current, 7.42 unit start-stop pattern, with a nominal speed of 368 operations per minute (o.p.m.). Gearing changes can adapt the equipment to 460 or 600 o.p.m. speeds. The equipment is factory wired for operation on 0.060 ampere line current, but can readily be adapted to 0.020 or 0.030 ampere operation. Typing Reperforator Set TT-253A/UG is equipped for operation on a 7.00 unit signal transmission pattern.

c. The typing reperforator sets are driven by an a.c. motor (synchronous or governed) mounted on the base or keyboard-base and geared through an intermediate gear mechanism to the reperforator and (TT-253/UG, TT-253A/UG and TT-292/UG only) to the keyboard. The intermediate gear mechanism (except keyboard sets) provides a selection of three gear ratios to vary the operating speed of the equipment by manually moving a gear change lever. Synchronous motors (TT-192/UG, TT-192A/UG, TT-253/UG and TT-253A/UG) require a power supply of 115 volts (plus or minus 10 per cent) 60 cycle, single phase alternating current. Power requirements for the governed motor (TT-274/UG and TT-292/UG) are the same except that variations of from 50 to 60 cycles frequency can be corrected by the governor. To avoid loss in receiving margin with synchronous motors, the frequency regulation must be within plus or minus one-half cycle. TT-192A/UG incorporates a miniaturized version of the motor with the same basic electrical characteristics.

d. The general electrical and mechanical relationships of the components of the typing reperforator sets are shown in figure 4-1, System Block Diagram.

4-2. SIGNALING CODE.

a. The various components of the typing reperforator set operate on the principle of electro-mechanical conversion of message characters representing standard communications practice (figure 4-2) in terms of a signal code. Teletypewriter equipment utilizes the Baudot code, a five-unit start-stop signaling code in which each character or function is represented by a combination of current and no-current time intervals. In a neutral teletypewriter circuit, intervals during which current flows in the signal circuit are referred to as "marking" elements, and intervals during which no current flows as "spacing" elements. Every combination includes five elements that carry the intelligence, each of which may be either marking or spacing. The intelligence elements are preceded by a start element (always spacing) and are followed by

TABLE 4-1. INTEROPERATION OF 7.42 AND 7.00 UNIT TRANSMISSION PATTERNS

TRANSMISSION PATTERN	OPERATIONS PER MINUTE	BAUD	PULSE LENGTH (SECONDS)	FREQUENCY (CYCLES PER SECOND)	CHARACTERS PER SECOND
7.42	368	45.5	0.022	22.75	6
7.00	390	45.5	0.022	22.75	6.5
7.42	404	50	0.020	25	6.7
7.00	428	50	0.020	25	7.1
7.42	460	56.9	0.0175	28.45	7.7
7.42	600	74.2	0.0135	37.1	10
7.00	636	74.2	0.0135	37.1	10.6

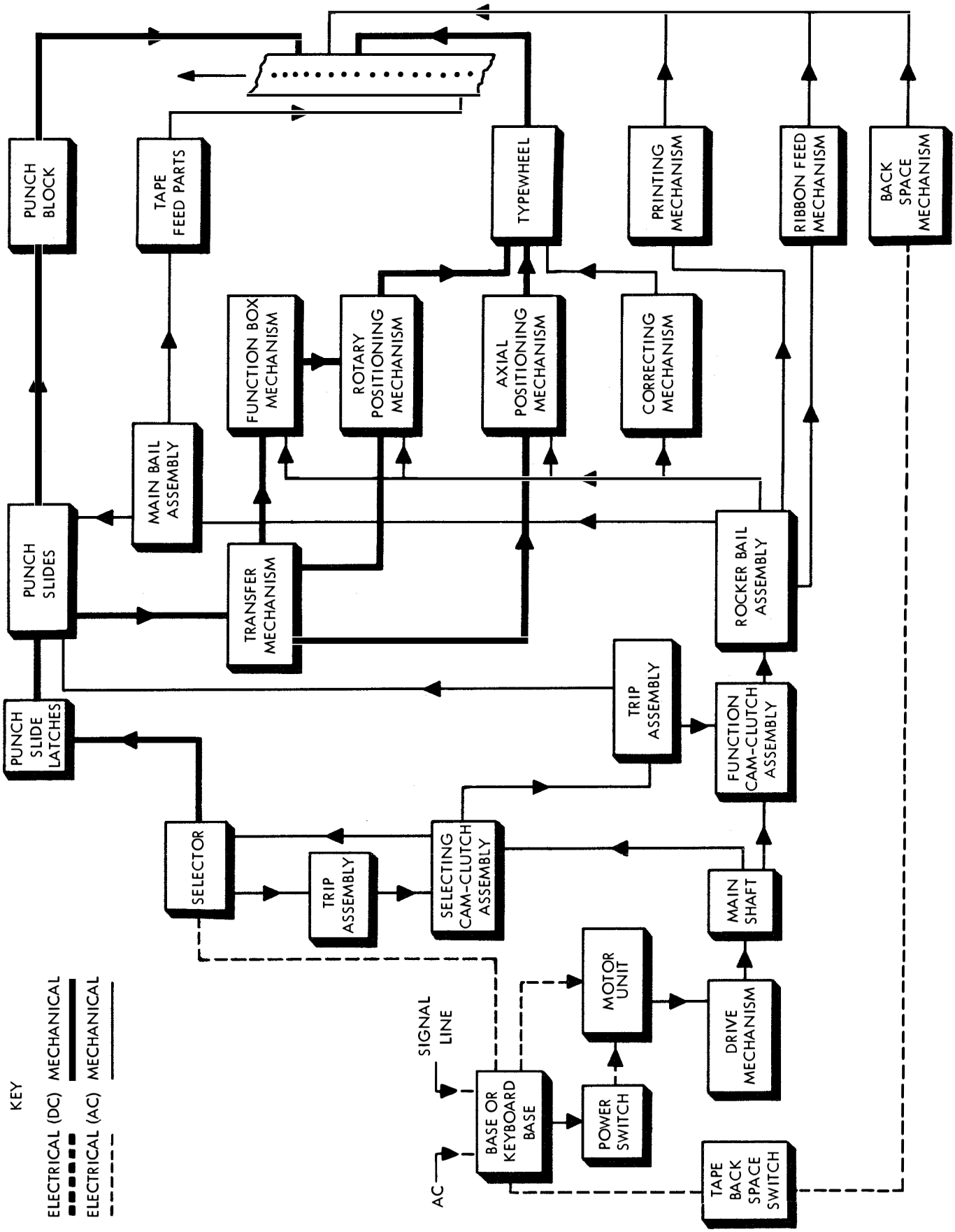


Figure 4-1. System Block Diagram

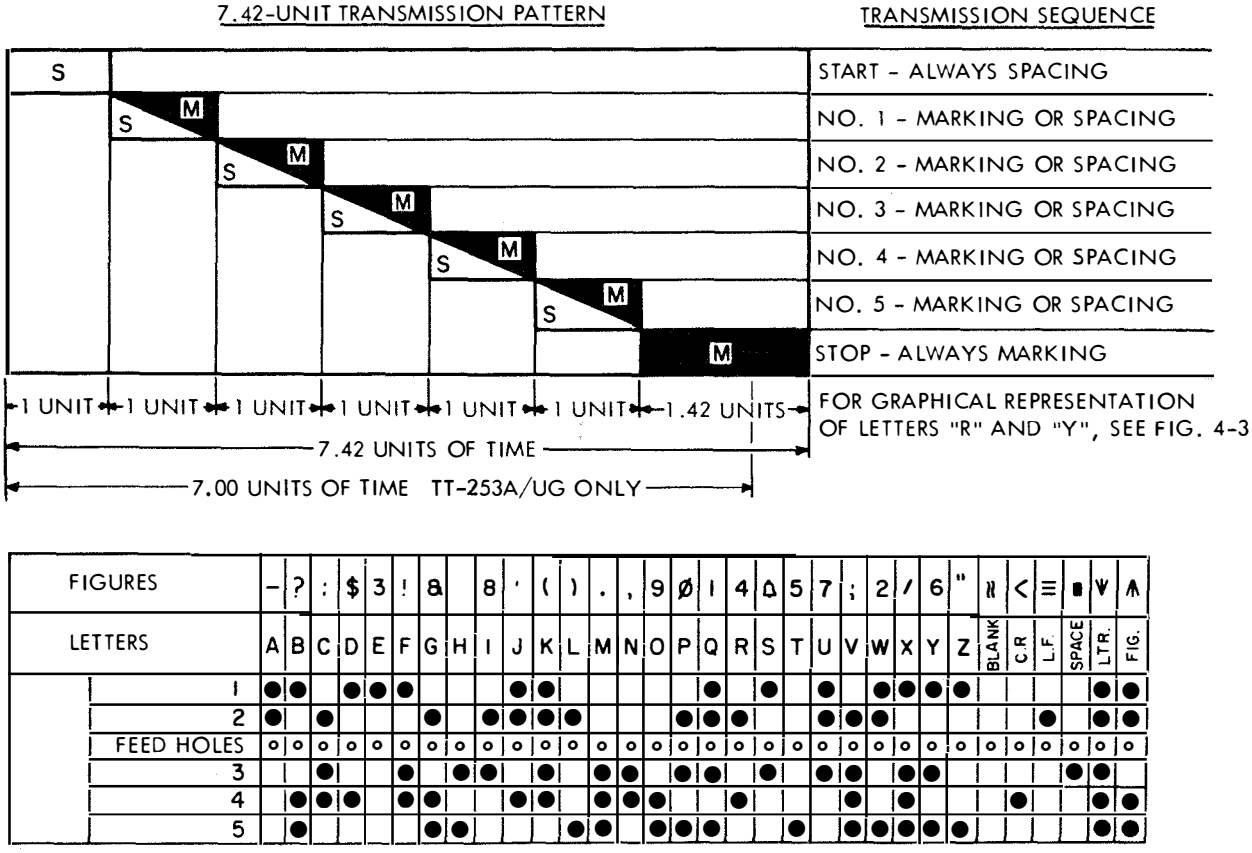


Figure 4-2. Signal Code

a stop element (always marking) which is 1.42 times as long as each of the other elements. Thus, each combination consists of 7.42 units of time (referred to as a 7.42 unit transmission pattern). The start and stop elements provide for mechanical synchronization between the transmitting and receiving equipment. A graphic illustration of the marking and spacing elements in each sequence may be found in figure 4-3, code representation of the letters R and Y. All five elements are marked in the letters code. The blank code is comprised of five spacing elements.

b. The total number of permutations of a five-unit code is two to the fifth power, or 32. In order to transmit more than 32 characters and functions, a letters-figures shift operation is designed into the equipment, permitting each permutation, excluding those used to shift and unshift the apparatus, to represent two characters or functions.

c. Some telegraph systems employ a 7.00 unit transmission pattern in which the stop element is equal to each of the other elements. Typing Reperforator Set TT-253A/UG is specifically designed to transmit a 7.00 unit signal pattern. Inter-operation between 7.42 and 7.00 apparatus is satisfactory providing the operating speeds selected yield identical

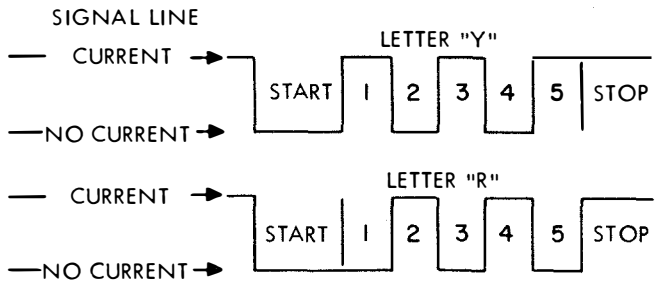


Figure 4-3. Code Representation of the Letters "R" and "Y"

unit pulse lengths. (See table 4-1.) The signaling frequency is expressed in dot cycles per second. One cycle consists of one current pulse followed by a no-current pulse. The equipment speed in baud (common in international usage) is equal to twice the frequency. Speed in words per minute is roughly equivalent to one-sixth the operations per minute.

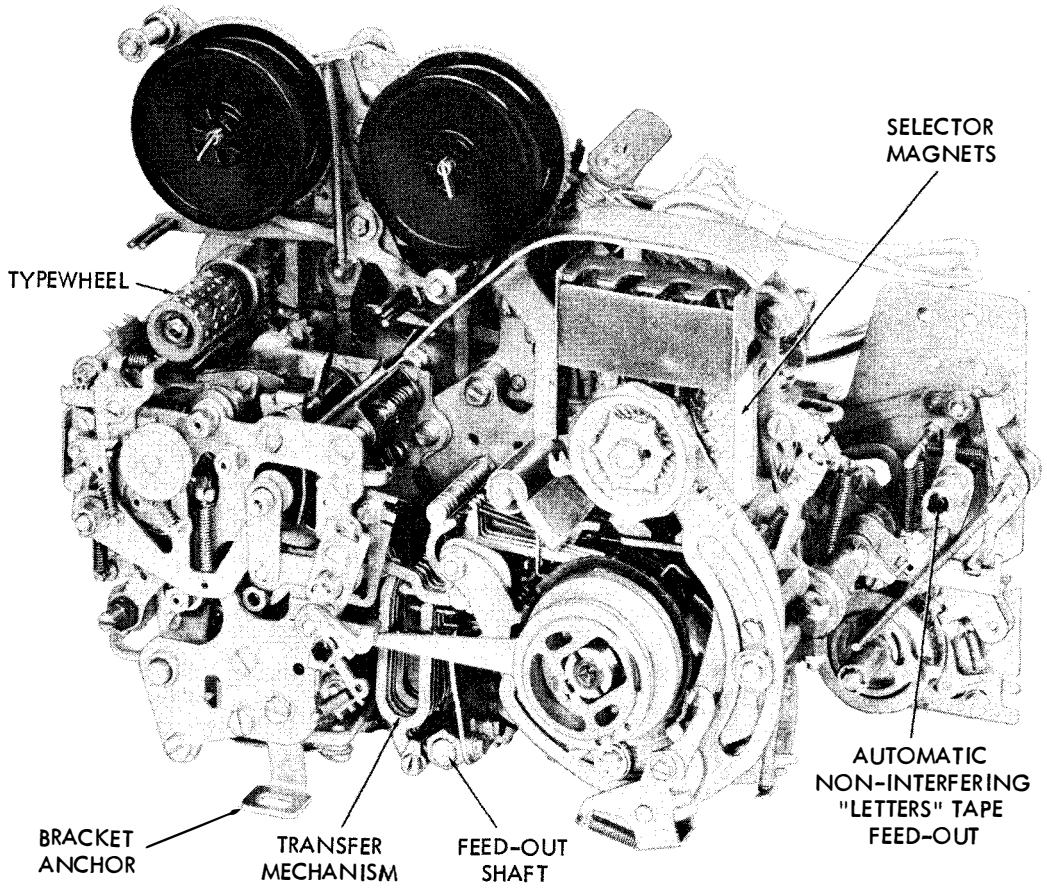


Figure 4-4. Typing Reperforator (Front View, TT-192A/UG)

4-3. TYPING REPERFORATOR.

a. GENERAL. (Figures 4-4 and 4-5.) — The typing reperforator mechanisms are functionally identical with the exception of provisions for non-interfering tape feed-out and tape perforation. An electrically controlled blank tape feed-out mechanism is applicable only to TT-192/UG (figure 4-5), TT-253/UG, TT-274/UG and TT-292/UG. An automatic letters tape feed-out is peculiar to TT-192A/UG (figure 4-4). A remote control letters feed-out is peculiar to TT-253A/UG. The typing reperforator mechanism is mounted to the base or keyboard-base and driven by the motor through the intermediate gear mechanism. The connection to the intermediate gear mechanism is by direct gearing (TT-253/UG only) or by a timing belt (TT-192/UG or TT-192A/UG) supported on sprockets attached to the typing reperforator (figure 4-5) and to the variable speed mechanism driving shaft. Fully perforated tape is produced by TT-253A/UG. All other sets produce chadless (hinged chad) message tape.

(1) The mechanism is operative only in response to a line signal. It is a receiving only component, therefore operable only under on-line conditions, although in the case of keyboard sets the line signal may be generated in the keyboard of the typing reperforator set. The only off-line functions are tape feed-out and tape back space. The latter feature is built into all sets but is operative only on reperforators installed in TT-253/UG, TT-253A/UG and TT-292/UG, which have a keyboard controlled back space function.

(2) Both a.c. and d.c. (signal) electrical requirements for the typing reperforator are supplied through a 36-point receptacle P2250. (See figure 4-6 for schematic wiring diagram.) The main power circuit from the power switch on the base is shunted through this receptacle (terminals 35 and 36) so that removal of the typing reperforator from the set opens the power circuit.

(3) The typing reperforator operates from a single main shaft. Two cam-clutch mechanisms control

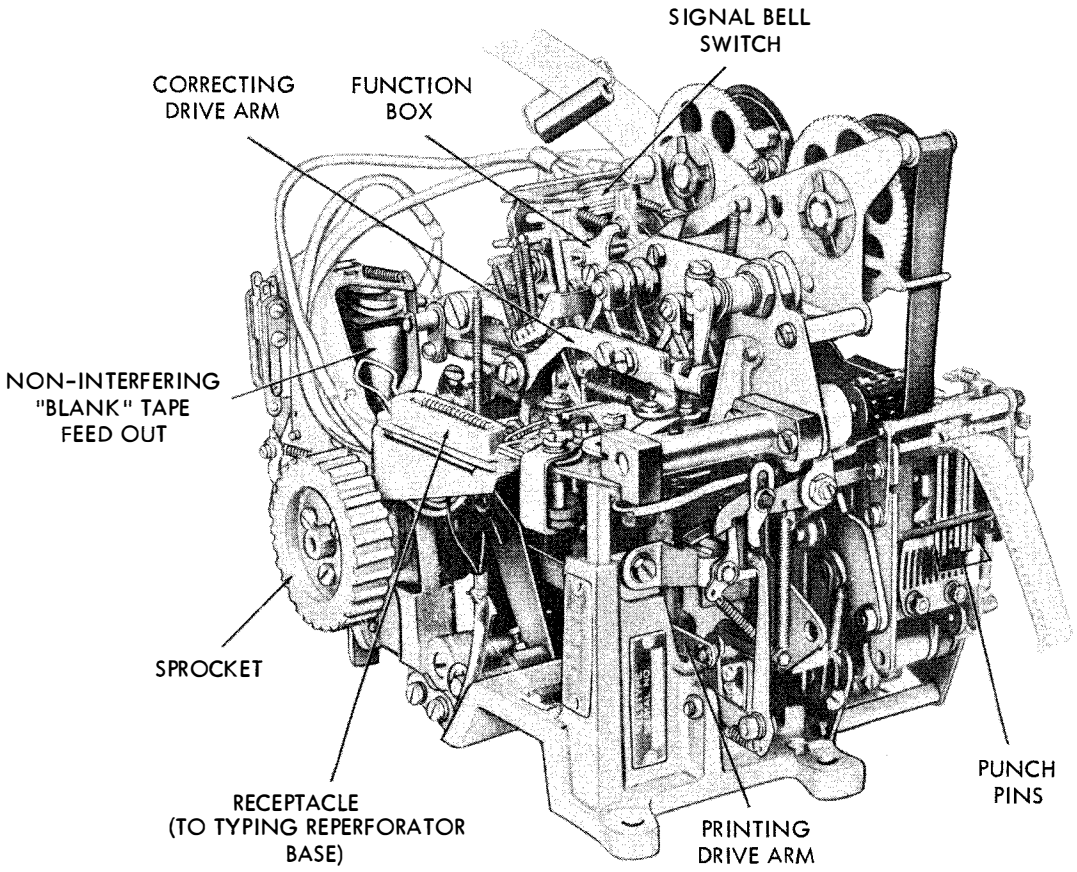


Figure 4-5. Typing Reperforator (Rear View, TT-192/UG and TT-274/UG)

the selecting and the printing and perforating phases of operation, respectively. The purpose of the selecting mechanism is to convert the sequential electrical signal line impulses (marking or spacing) into the mechanical action required to operate the reperforator. The second, or function, cam-clutch mechanism controls the printing and perforating mechanisms.

(4) The signaling code combinations are applied to the selecting mechanism in electrical form. The start pulse of each code combination causes the selector magnet armature to trip the selecting cam-clutch. Driven by the main shaft, the cam-clutch begins its cycle and imparts timed motion to the selector, which converts the code combinations into corresponding mechanical arrangements. Near the end of each selecting cycle, the selecting cam-clutch trips the function cam-clutch and permits the punch slides of the perforator to receive the arrangements from the selector. The selecting cam-clutch is then disengaged by the stop pulse of the code and remains inoperative until the next start pulse is received.

(5) The punch slides distribute intelligence from the selector in the form of mechanical arrangements to the punch block and to the transfer mechanism. The mechanism, in turn, carries the information to the function box and the axial and rotary positioning mechanisms. At the receipt of the letters or figures code combinations, the function box causes the rotary mechanism to shift the typewheel. The positioning mechanisms, in conjunction with the correcting mechanism, position the typewheel so that the proper characters are selected. The ribbon feed mechanism supplies the ink, and the printing mechanism provides the impact to print the selected characters.

(6) The perforator main bail assembly, driven by the rocker bail, imparts motion to the tape feed parts and the punch slides. The feed parts punch feed holes and advance the tape. A power driven back space mechanism repositions tape in the punch block for corrections. The punch slides, having received intelligence from the keyboard, cause pins in the punch block to perforate combinations of holes corresponding to the code combinations.

(7) The function cam-clutch operates approximately one cycle behind the selecting cam-clutch.

b. CLUTCH OPERATION. — When the clutch stop lever is tripped, the clutch shoes engage a serrated

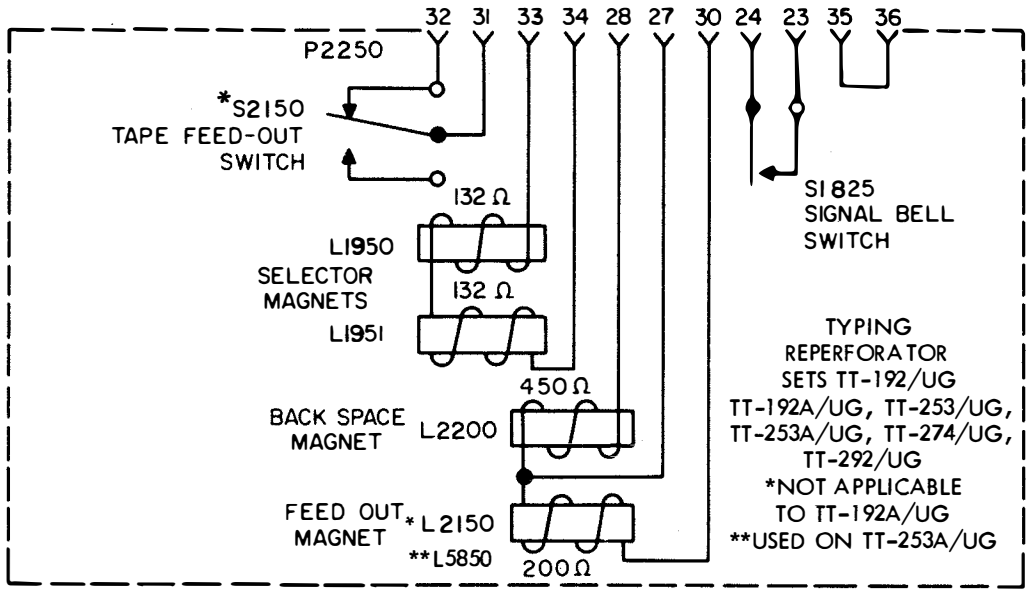


Figure 4-6. Typing Reperforator, Schematic Wiring Diagram

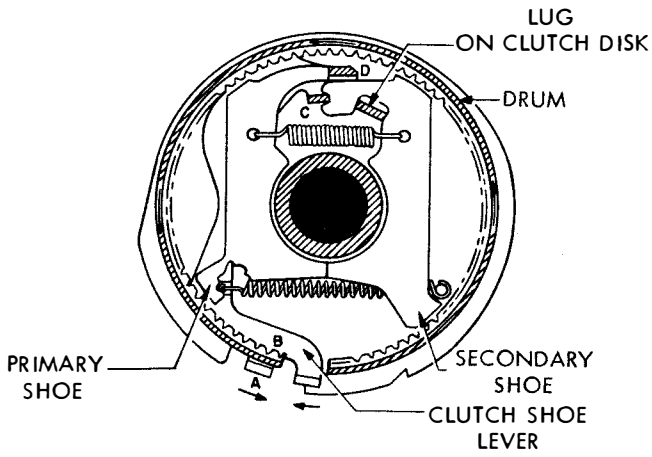


Figure 4-7. Clutch Disengaged

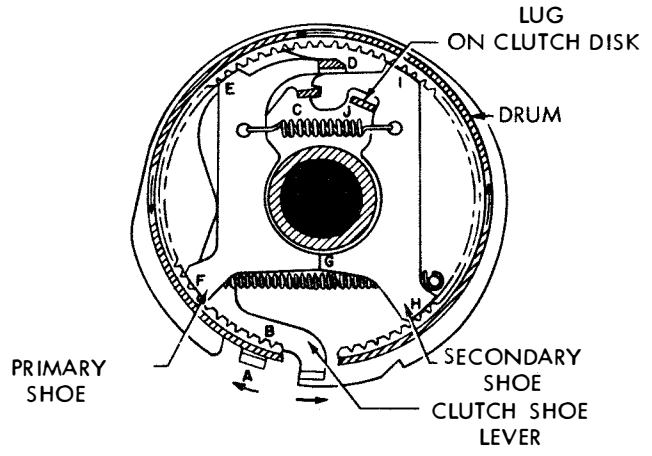


Figure 4-8. Clutch Engaged

surface on the inside of the clutch drum. When power is on (motor operating), the clutch drum rotates continuously as an integral part of the main shaft. Since the clutch shoes are mounted on a plate that is part of a cam assembly, the cam rotates upon clutch engagement.

(1) Figure 4-7 shows a clutch disengaged. Disengagement is caused by bringing together lug A on the cam-clutch disk and the lower end of clutch shoe lever B. The upper end of lever B pivots about its ear C and allows its other ear D to move toward the right. The upper spring then pulls the two shoes together and away from the drum.

(2) Figure 4-8 shows the same clutch engaged. This is accomplished by releasing the lower end of lever B. The upper end of lever B pivots about its ear C (which bears against the upper end of the secondary shoe) and moves its ear D, and the upper end of the primary shoe, toward the left until the shoe makes contact with the drum at point E. As the drum turns counterclockwise, it drives the primary shoe downward, so that it again makes contact with the drum, this time at point F. There, the combined forces acting on the primary shoe cause it to push against the secondary shoe at point G. The lower end of the secondary shoe then bears against the drum at point H. The revolving drum acts to drive this shoe upward so that it again makes contact with the drum at point I. Since the forces involved are multiplied at each of the preceding steps, the final force developed at point I is very great. This force is applied to the lug J on the clutch-cam disk to cause it to turn in step with the drum. The cam disk is a part of the selector or function cam mechanism, which rotates upon engagement of its clutch.

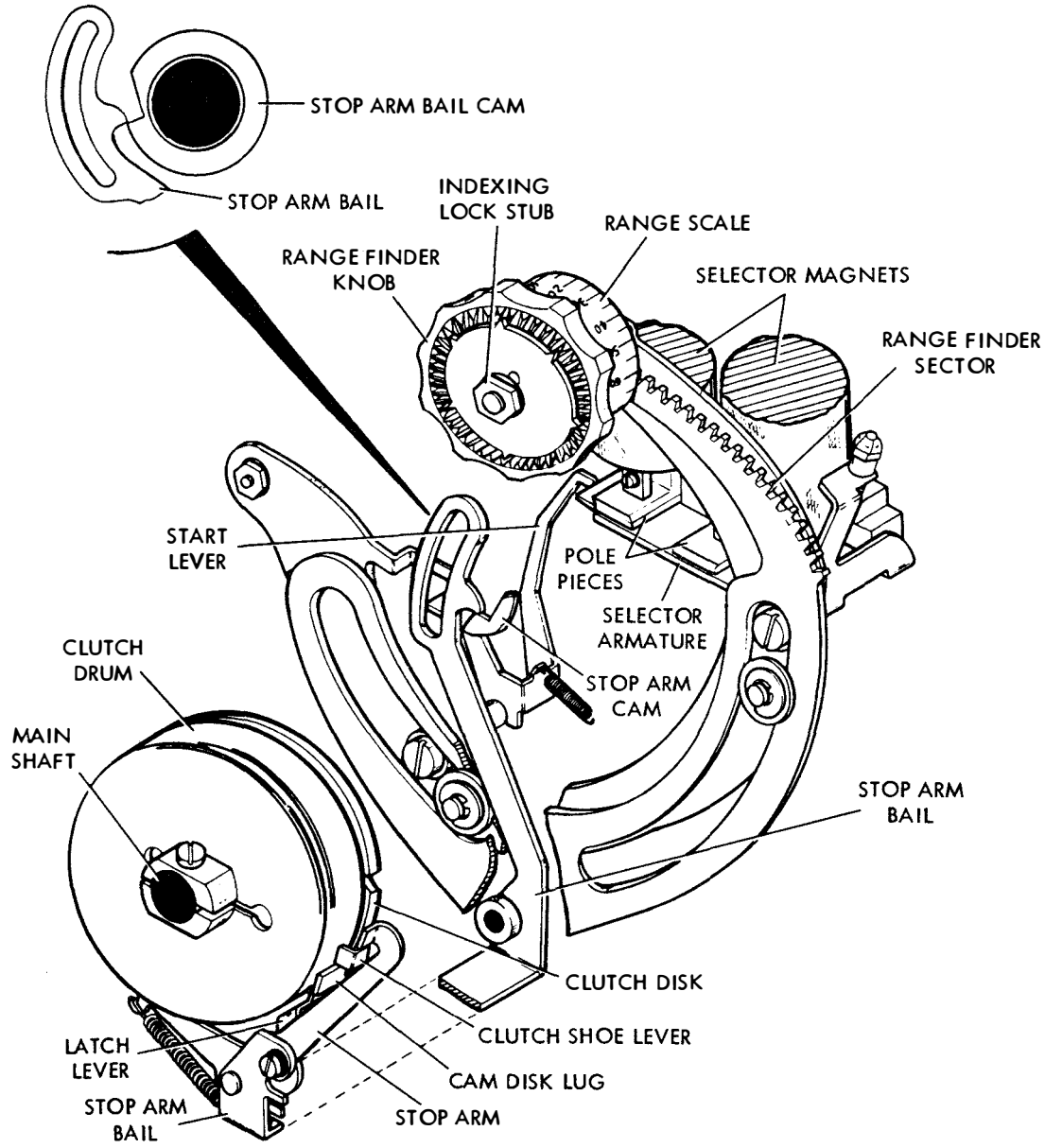


Figure 4-9. Range Finder and Selector Cam-Clutch Assembly

(3) Both the selecting clutch and the function clutch make one complete revolution when tripped. The latch lever rides the clutch disk (figure 4-9) as the clutch rotates. When the clutch shoe lever strikes the stop arm, the inertia of the cam disk assembly causes it to continue to turn until its lug makes contact with the lug on the clutch shoe lever. At this point, the latch lever drops into the indent in the cam disk, and the clutch is held disengaged until the stop lever again is tripped.

c. SELECTION. — The selecting mechanism is made up primarily of a selector (figure 4-9) and a cam-clutch (figure 4-10). These translate the signaling code into mechanical arrangements which govern printing and perforation of the tape.

(1) The selector consists of two selector magnet coils L1950 and L1951 and the associated levers, arms, bails and slides necessary to convert the electrical elements of the start-stop code to the mechanical arrangement necessary in tape printing and perforation.

(2) The selector cam-clutch comprises, from right to left (figure 4-10): the clutch; the stop arm bail cam; the fifth, the fourth, and the third selector lever cams; the cam for the spacing and the marking lock

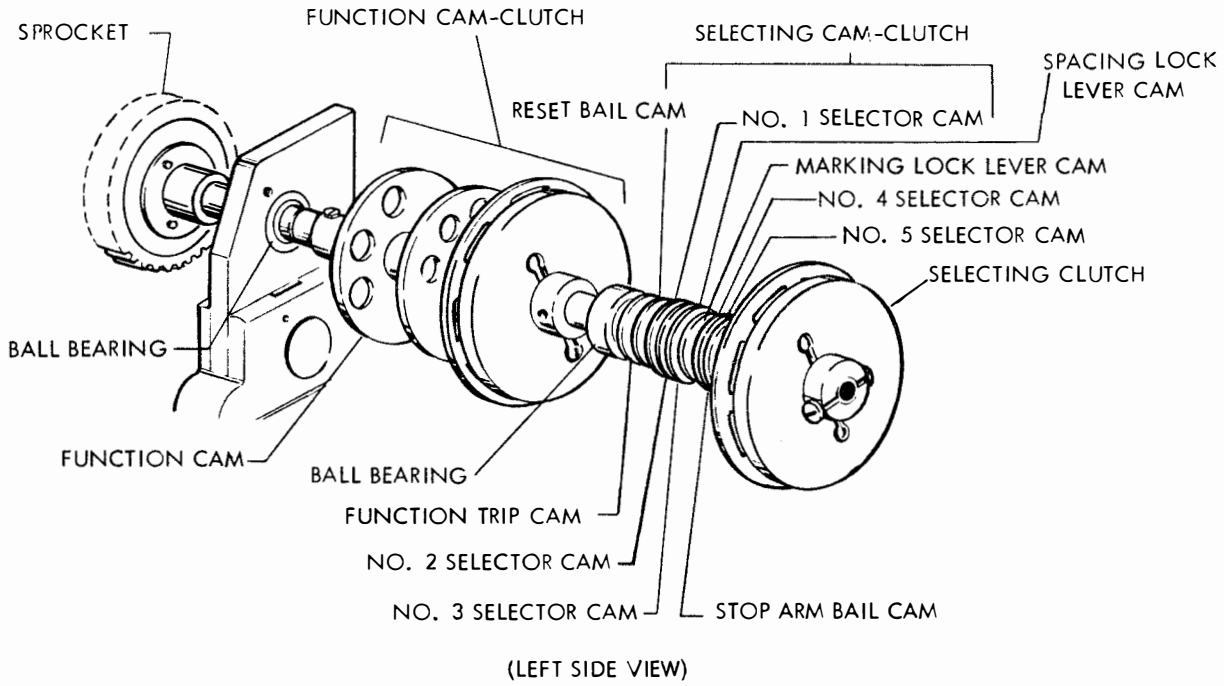


Figure 4-10. Selector Cam-Clutch

levers; the second and the first selector lever cams; the push lever reset bail cam; and the function clutch trip cam.

(3) For Typing Reperforator Set TT-192A/UG cam-clutches, an additional cam, for tape feed-out, is positioned between the reset bail cam and the function clutch-cam.

(4) During the time in which a closed line circuit (marking) condition exists, the selector magnet coils are energized and hold the selector armature against the selector magnet pole pieces. In this stop position, the selector armature blocks the start lever (figure 4-9). While the signal for any character or function is being received, the start (spacing) element releases the selector armature, which, under the tension of its spring, moves away from the magnet cores and thus unlatches the start lever.

(a) The start lever turns clockwise under the tension of its spring, to move the stop arm bail into the indent of its cam. As the stop arm bail rotates about its pivot point, the attached stop arm is moved out of engagement with the clutch shoe lever.

(b) The selector cam-clutch engages and begins to rotate. The stop arm bail immediately rides to the high point of its cam, where it remains to hold the start lever away from the selector armature during the signaling time.

(c) When the stop element at the end of the signal is received, the selector armature is pulled up to block the start lever. Thus, the stop arm bail is prevented from dropping onto the low part of its cam (stop position of the cam-clutch), and the attached stop arm is held so as to stop the clutch shoe lever.

(5) The series of five selecting levers, a marking lock lever, and spacing lock lever ride their respective cams on the selector cam-clutch (figure 4-11). As the marking and spacing signal elements are applied to the selector magnet, the selector cam-clutch rotates and actuates the selector levers.

(a) When a spacing impulse is received, the marking lock lever is blocked by the end of the armature and the spacing lock lever swings toward the right (right end view) above the armature and locks it in the spacing position until the next signal transition is due. Extensions on the marking lock lever prevent the selector levers from following their cams (figure 4-11).

(b) When a marking element of the signal is received, the spacing lock lever is blocked by the end of the armature and the marking lock lever swings to the right below the armature to lock it in the marking position until the next signal transition is due. During this marking condition, the selector levers are not blocked by the marking lock lever extensions, but are permitted to move against their respective cams. The selecting lever that is opposite the indent in its cam, while the armature maintains a marking condition, swings to the right or selected position momentarily.

(c) Each selecting lever has an associated push lever which drops into a notch on the top of the selecting lever when it falls into its cam indent.

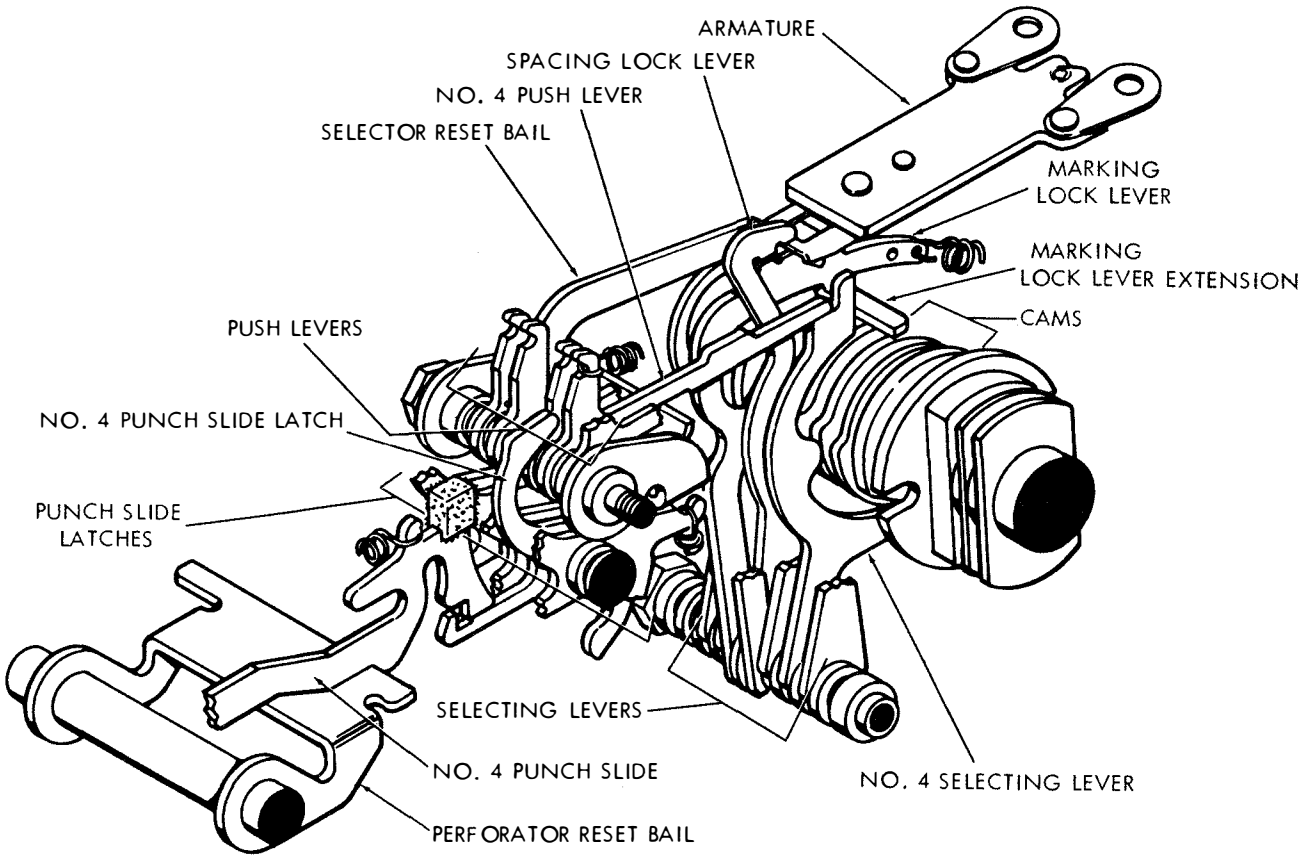


Figure 4-11. Selecting Mechanism

As the selector cam-clutch turns, each selecting lever together with its latched push lever is moved toward the left and held there until all five code impulses have been received. At that time, all selected push levers are positioned to the left and all unselected push levers are positioned to the right.

(d) The selected push levers, in moving to the left, rotate associated punch slide latches counterclockwise (figure 4-11). Just before the fifth push lever is selected, the selecting cam, through the function trip assembly, causes the perforator reset bail to release the punch slides. The unselected latches retain their associated slides to the right, while the selected latches permit their slides to move to the left under spring tension.

(e) During the latter part of the function cycle, the reset bail returns the punch slides to their unselected position. The latches, under spring tension, return to their unselected position when the selected push levers are repositioned at the beginning of the next cycle.

d. ORIENTATION. — For optimum performance, the selecting mechanism should be adjusted to sample the signaling code elements at the most favorable time. This is referred to as orientation.

(1) To determine this adjustment, the operating margins are established through the range finder (figure 4-9). This provides a means of varying the time of sampling by rotating the starting position of the stop arm on the selector cam-clutch to a point midway between the extremes of marking bias (set runs closed) and spacing bias (set runs open).

(2) When the range finder knob (figure 4-9) is pushed inward and rotated, its attached range finder gear moves the range finder sector (which mounts the stop arm bail, stop arm and latch lever) either clockwise or counterclockwise about the selector cam-clutch. This changes the angular position at which the selector cam-clutch stops with respect to the selecting levers. When an optimum setting is obtained, the range finder knob is released. Its inner teeth engage the teeth of the indexing lock stud to lock the range finder mechanism in position. The setting may be read on the range scale opposite the fixed index mark.

e. FUNCTION CAM-CLUTCH AND CLUTCH TRIP ASSEMBLY. (See figure 4-12.)

(1) The trip assembly which initiates the mechanical motion transfer from the main shaft to the typing and perforating mechanisms is shown in its unoperated

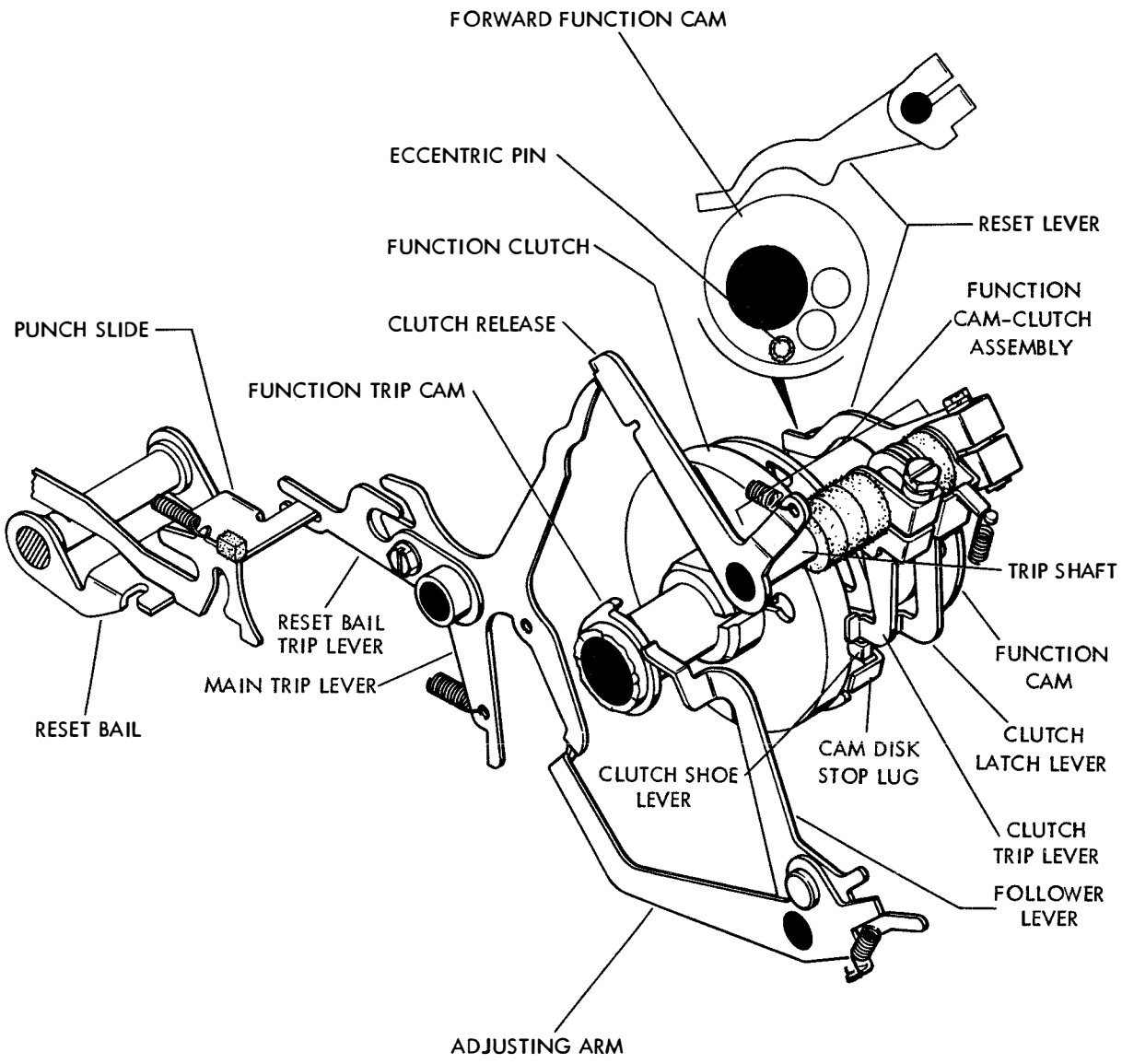


Figure 4-12. Function Cam-Clutch and Clutch Trip Assembly

condition in figure 4-12. The main trip lever is rotated counterclockwise by the selector cam-clutch when the function trip cam raises the follower lever near the end of the selecting cycle. Immediately the lower part of the function trip cam allows the follower lever to return to its unoperated position, and the main trip lever is free to move under the clutch release when the trip shaft raises the release.

(2) A reset bail trip lever attached to the main trip lever lowers the perforator reset bail and releases the punch slides. An upper arm of the main trip lever moves out of the way of the clutch release, which falls against a downstop and rotates a trip shaft counterclockwise. Immediately the trip lever latch allows the main trip lever to return to its unoperated position, the upper arm moving down against the clutch release.

(3) When the trip shaft is rotated by the release, it moves the clutch trip lever out of engagement with the clutch shoe lever. The clutch engages to begin the function cycle.

(4) About midway through the function cycle, an eccentric pin on the function cam lifts a reset arm which rotates the trip shaft clockwise. The clutch release is moved upward, allowing the main trip lever to rotate fully clockwise, raising the reset bail. The eccentric pin then moves out from under the

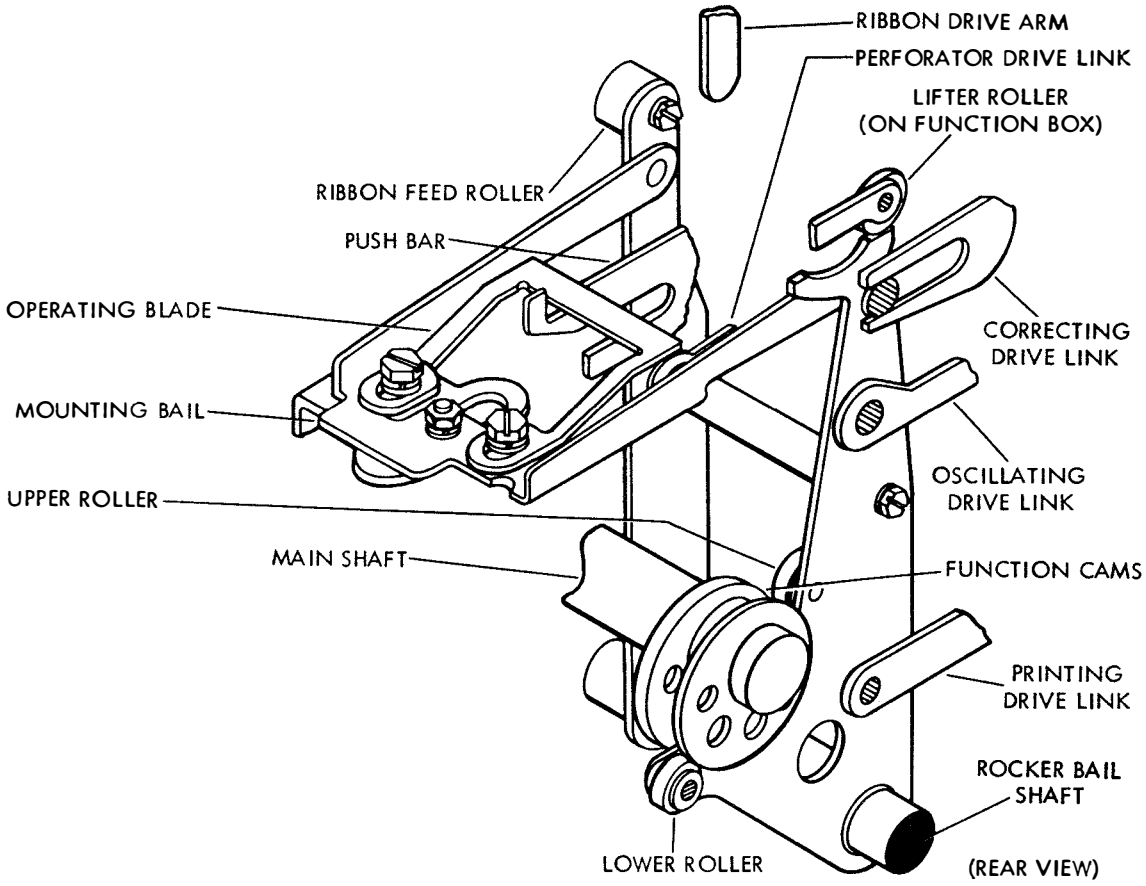


Figure 4-13. Rocker Bail Assembly

reset arm, and the clutch release is permitted to return to its unoperated position against the main trip lever. When the cam-clutch assembly completes its cycle, the clutch shoe lever strikes the trip lever, and the clutch is disengaged.

f. ROCKER BAIL. (See figure 4-13.) The rocker bail distributes motion received from the function cam-clutch. The bail is shown in its home position in figure 4-13. Each function cycle, the function cams bear against rollers and cause the bail to rock to the left (as viewed from the front of figure 4-13) during the first part of the cycle, and then back to the home position during the latter part of the cycle. In so doing, it sets the following functions into operation:

(1) Perforation.

(2) Function box sequences.

(3) Push bar operation in axial and rotary positioning mechanisms.

(4) Oscillating assembly.

(5) Corrector assembly.

(6) Printing.

(7) Ribbon feed.

g. TRANSFER OF INTELLIGENCE. (See figure 4-14.) Near the end of each selector cam-clutch cycle, the transfer mechanism moves the input intelligence in the form of a mechanical arrangement from the punch slides to the function box and positioning mechanisms. Included in the mechanism are five linkages, each of which is associated with a punch slide. A linkage consists of a transfer lever, a pulse beam and a bell crank. Since the linkages are similar, the No. 4 linkage shown in its entirety in figure 4-14 is typical.

(1) The linkages associated with the unselected punch slides remain in their unselected position as shown in figure 4-14. However, the selected slides, in moving to the left, pivot the associated transfer levers, which in turn move corresponding pulse beams clockwise (as viewed from above). The selected beams allow associated bell cranks, under spring tension, to pivot counterclockwise, and lift attached push bars. The push bars control the positioning mechanism. In the period of the last half of the function cycle, the selected slides are moved back to the right and return the linkages to their unselected positions.

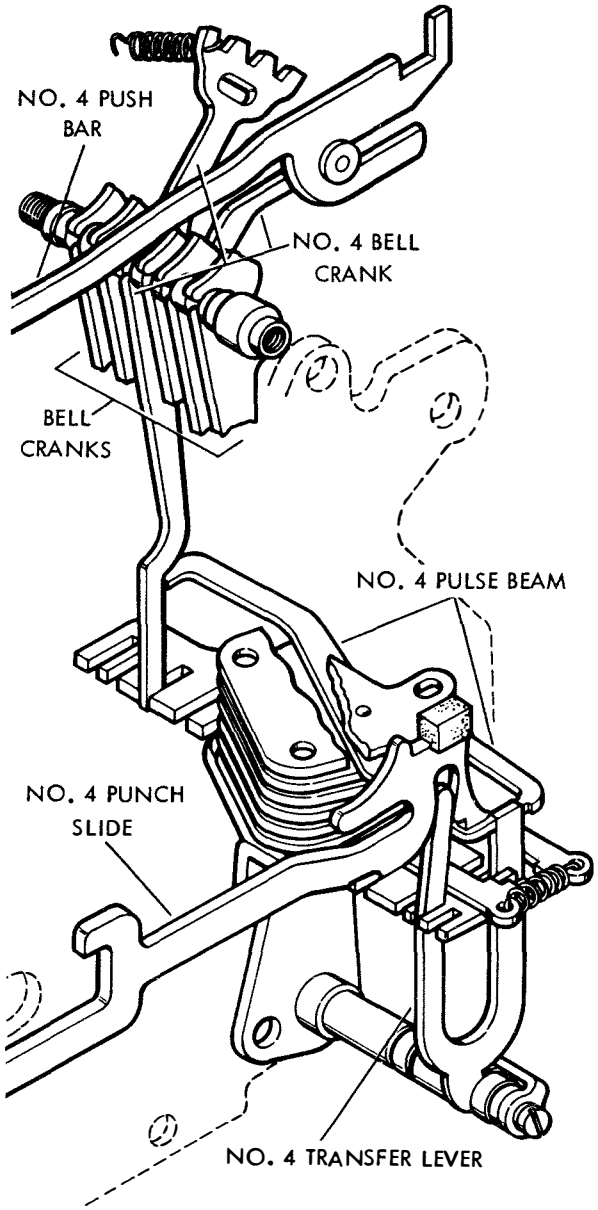


Figure 4-14. Transfer Mechanism

(2) Slotted upper arms of the bell cranks extend up into the function box. An additional bell crank, not associated with a transfer linkage, is specifically concerned with the letters-figures shift.

h. TAPE PERFORATING AND FEEDING.

(1) GENERAL. — The perforator mechanism punches feed holes, advances the tape and perforates combinations of chadless code holes corresponding to the code combinations received from the selector by the punch slides, which select proper pins in a punch block assembly (figure 4-15). Motion from the rocker bail is distributed to the pins and the tape feeding parts by a main bail assembly, which includes a toggle bail, a toggle shaft, a slide post, toggle links, drag links, and the punch slide reset bail.

(2) PERFORATING. (Figures 4-15 and 4-16.) — The perforator mechanism applied to all typing reperforator sets except TT-253A/UG produces a chadless (hinged chad) message tape (figure 4-15). TT-253A/UG produces fully perforated tape.

(a) As described in paragraph 4-3e(2), near the end of the keyboard selecting cycle, the reset bail is lowered and releases the five punch slides (figure 4-15). The selected slides move to the left, and the unselected slides are retained to the right by their latches. In the selected position, a projection of each slide extends over the slide post. During the first part of the function cycle, the rocker bail moves to the left and, by means of a drive link and rocker arm, rotates the toggle shaft and bail counterclockwise. Toggle links attached to the front and rear of the bail lift the slide post and move the reset bail to the left. The selected slides are carried upward by the post and force the associated pins through the tape. The slides pivot about the same point as the drag links, and thus become an integral part of the main bail assembly during the perforating stroke. A retractor bail (not applicable to TT-253A/UG), which engages notches in the punch pins, is pivoted clockwise as the pins move up through the tape. Approximately midway through the function cycle, the function trip assembly lifts the reset bail.

(b) (Chadless tape — not applicable to TT-253A/UG.) During the last half of the cycle, the toggle bail is rotated clockwise and lowers the punch slides. The reset bail, moved to the right by the toggle links, drives the slides back to their unselected positions, where it holds them until the next operation. The retractor bail, under spring pressure, holds the punch pins down against the slides until the pins are retracted below the tape. The notches in the pins are long enough to allow the retractor bail to pivot its full amount without lifting the unselected pins against the tape, but are short enough to permit the bail to serve as a downstop for the pins, and thus hold them in the block. A compression spring is mounted on the No. 3 punch pin, and four tension springs are hooked to the slide post and the retractor bail. The main bail assembly, the retractor bail, and the selected slides and punch pins move as a unit during the perforating stroke, and the retractor bail tension springs are not part of the load on the toggle shaft. The openings in the block above the tape, through which the selected pins protrude, are semi-circular, so that only the rear portion of the hole is severed.

(c) (Fully Perforated Tape — TT-253A/UG.) During the last half of the cycle, the toggle bail is rotated clockwise pulling the slide post down and lowering the selected punch slides. The punch slides, which engage notches in their respective punch pins, pull the punch pins down below the tape. The main

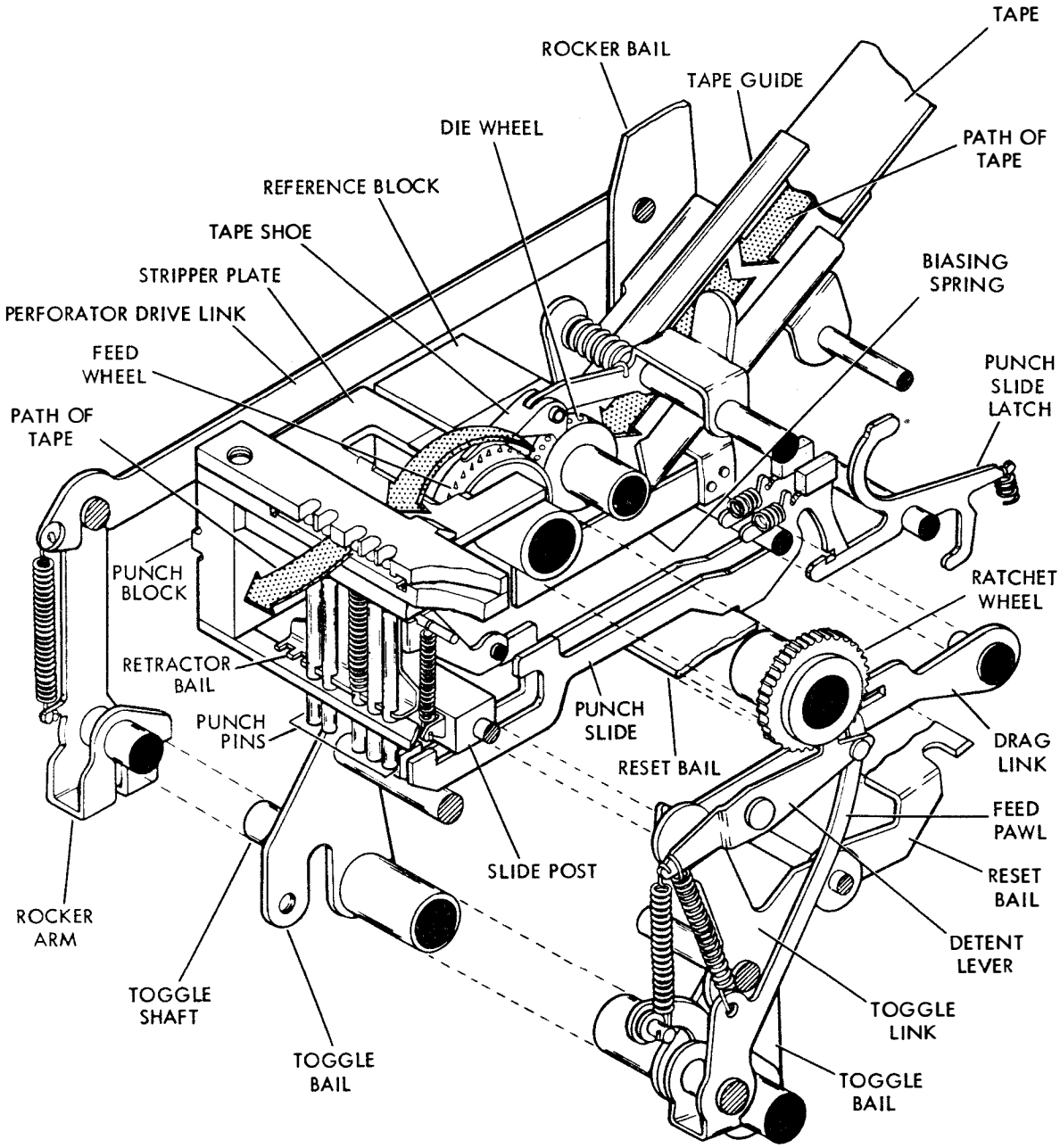


Figure 4-15. Perforator Mechanism (Chadless Tape - Not Applicable to TT-253A/UG)

bail assembly and the selected punch slides and their associated punch pins move as a unit during the perforating stroke. The openings in the die block above the tape, through which the pins protrude, are circular, so that the entire hole is punched.

(d) (Fully Perforated Tape — TT-253A/UG.) A chad chute mounted on the punch block connects with a vacuum mechanism on the far end of the motor and carries the chad punched from the tape to a container beneath the motor.

(3) FEEDING. — Tape feeding is accomplished after perforation, during the last half of each function cycle. The tape is threaded down through a tape guide and then up between a feed wheel and die wheel (figures 4-15 and 4-16). A feed pawl driven by the toggle bail acts upon a ratchet and rotates the feed wheel, which, by means of sharp pins and holes in the die wheel, rolls feed holes into the tape and advances it one character at a time. A detent with a roller that rides on the ratchet holds the feed wheel and tape in position during perforation. The detent and feed pawl springs are so positioned that the pressure of the

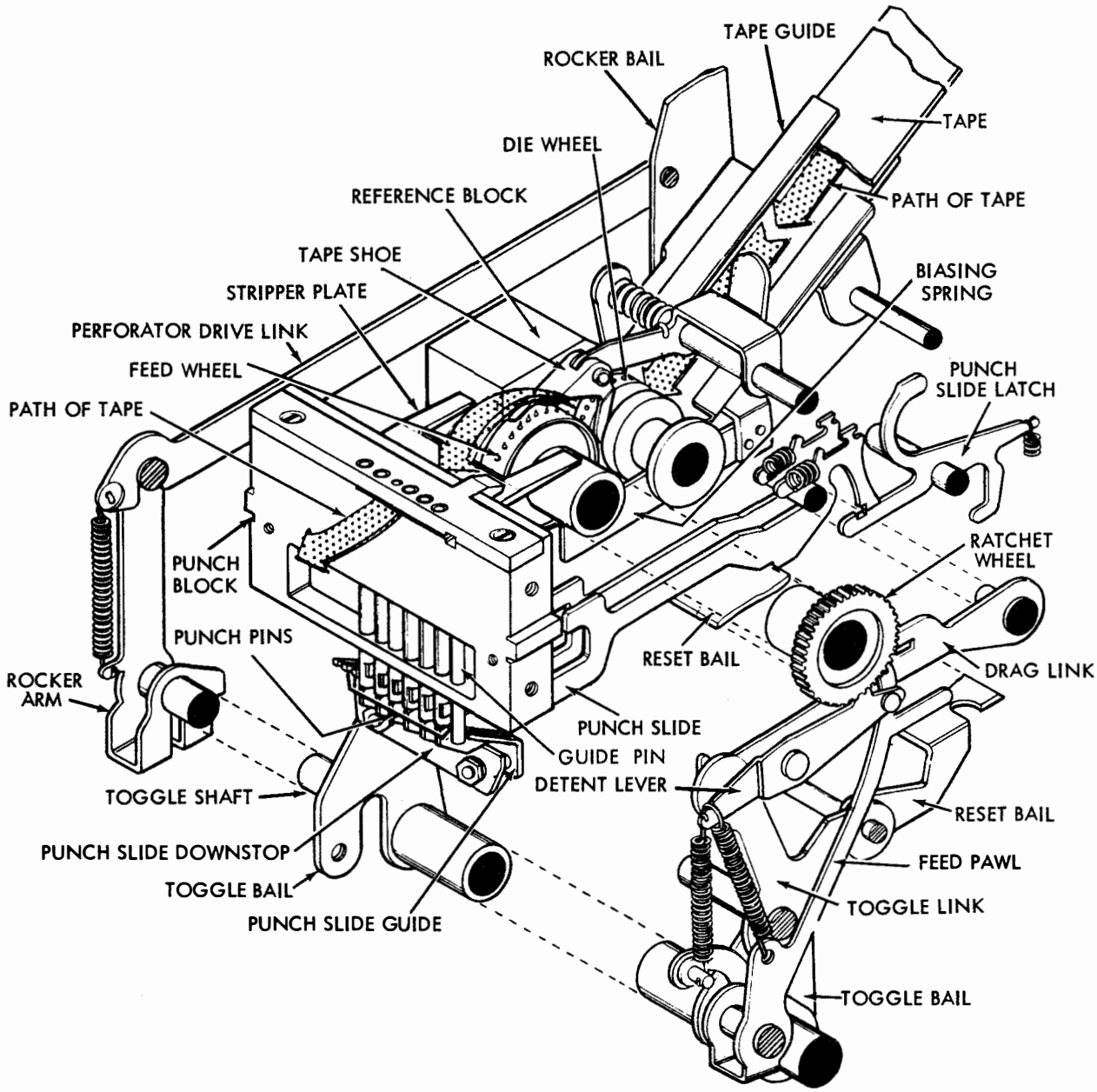


Figure 4-16. Perforator Mechanism (Fully Perforated Tape) (TT-253A/UG)

detent on the ratchet is high during the first half of the cycle, so as to hold the tape in position during perforation, but is low during idling and the last half of the cycle, to facilitate tape threading and feeding. A tape shoe retains the tape on the feed wheel, and a guide spring holds it back against a reference block so that the feed holes are punched a uniform distance from the edge. The tape is stripped from the feed wheel by a stripper plate, passes into the punch block where it is printed and perforated, and finally emerges at the left. A guide spring, by holding the tape back against a reference surface on the block, maintains a uniform relationship between the code perforations and the edge of the tape.

(4) POWER DRIVE BACK SPACE MECHANISM (TT-253/UG, TT-253A/UG and TT-292/UG). (See figure 4-17.) — The power drive back space mechanism is used to back space perforated tape to delete errors in typed information. The erroneously punched character is obliterated by pressing the LTRS keylever. Back spacing is accomplished automatically by pressing the TAPE B. SP. keylever on the keyboard. The detailed operation is as follows:

(a) When the TAPE B. SP. keylever is depressed, the switch associated with the tape back space button assembly is closed. The circuit to the magnet assembly of the power drive back space mechanism is then energized, causing the armature bail to be pulled down.

(b) When the armature bail is pulled down, an extension on the bail disengages the drive link latch, which drops and engages a notch in the eccentric arm.

(c) The eccentric arm driven by the perforator main shaft moves to the right. This action causes the bell crank handle to be depressed through a system of linkage between the drive link latch and the bell crank.

(d) (Not applicable to TT-253A/UG.) Depressing the handle of the bell crank causes the rake to be rotated counterclockwise through the gearing of the rake and the segment gear. The rake teeth contact and depress the chads of the tape.

(e) When the bell crank handle is partially depressed, it contacts an extension of the perforator feed pawl. Further movement downward causes the perforator feed pawl to be disengaged from the feed wheel ratchet.

(f) The back spacing feed pawl then engages the feed wheel ratchet and rotates the feed wheel clockwise, back spacing the tape to the next row of perforations. Back spacing is continued until the erroneously punched character for the first of several erroneously punched characters is above the pins.

(g) The LTRS keylever is then operated to obliterate the erroneously punched characters and all punched characters that follow.

(h) When the magnet assembly is de-energized upon release of the TAPE B. SP. keylever, the armature bail extension moves upward, and disengages the drive link from the eccentric arm. In the unoperated position, the fork of the eccentric arm slides freely along the pivot post of the drive link.

(i) Although the mechanism required for power drive back spacing is incorporated in Typing Reperforator Sets TT-192/UG, TT-192A/UG and TT-274/UG exactly as in keyboard sets, there is no connection with a back space swich or keylever. As receiving only on-line equipment, these sets do not utilize back spacing.

(5) NON-INTERFERING BLANK TAPE FEED-OUT (TT-192/UG, TT-253/UG, TT-274/UG and TT-292/UG. (See figure 4-18.) — A non-interfering blank tape feed-out mechanism provides a means of feeding out a predetermined length of blank tape when the signal line is idle. Its operation is triggered by an electrical impulse initiated by pushing a feed-out switch (TT-192/UG and TT-274/UG) or depressing a feed-out key (TT-253/UG and TT-292/UG). When the switch is closed, a d.c. pulse built up in capacitor C175 or C850 through diode CR175 or CR150 momentarily closes the feed-out magnet L2150 in the reperforator.

(a) INITIATION AND FEEDING. — The feed-out pulls an armature down, and an armature bail, through a roller and lock lever, rotates a release arm counterclockwise (figure 4-18). The release arm unlatches a drive arm, which under spring tension falls against an eccentric collar on the main shaft. A latch engages the release arm at its right end, and thus holds the mechanism in its operated condition. As the eccentric collar is rotated by the main shaft, it imparts an oscillating motion through the drive arm, a drive shaft and a feed pawl arm to a feed pawl, which acts on a ratchet to rotate the perforator feed wheel and advance the tape.

(b) METERING AND TERMINATION.

1. When, in response to the initiating pulse, the release arm rotates counterclockwise, it permits a lifter lever to lower a metering feed pawl and an outer ratchet check pawl onto two metering ratchets. Every sixth tooth of these ratchets is deeper than the others. An eccentric riding on the main shaft transfers an oscillating motion to the metering feed pawl, which advances counterclockwise each revolution of the shaft. As long as it is engaging the shallow teeth of the inner ratchet, the feed pawl is prevented from engaging the outer ratchet. However, when a deep tooth comes up, the pawl engages and advances both ratchets. Thus, a six to one reduction ratio is designed into the mechanism. Check pawls prevent the ratchets from rotating clockwise.

2. As the ratchets are revolved in the manner described above, at a predetermined time, an extension of an adjusting plate (adjustable for different lengths of tape) riding on the front ratchet moves up and rotates a latch arm and attaching kickout arm clockwise. If at this time the armature is in the attracted position, a roller on the kickout arm acts on a camming surface of the lock lever to cause the roller on the lock lever to be disengaged from the armature bail. If the armature is not attracted, the lock lever is not disturbed. As the latch arm continues to pivot, an extension carries the latch with it, thus unlatching the release arm. The release arm, under spring tension, pivots clockwise, latches the drive arm and causes the lifter lever to lift the metering pawls off the ratchets. Feed-out terminates, since the drive arm no longer receives motion from the eccentric collar. A spring returns the forward

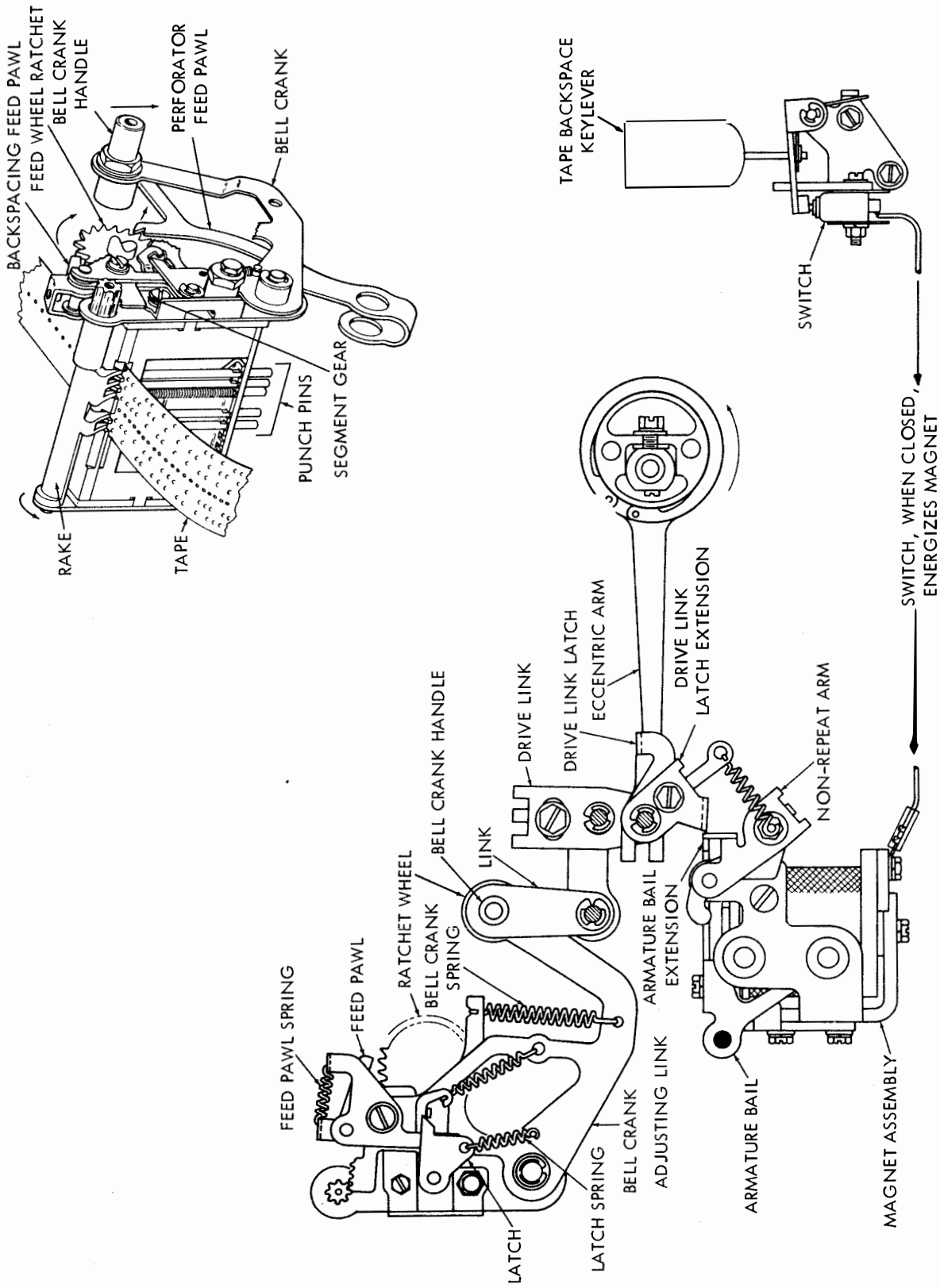


Figure 4-17. Power Drive Back Space Mechanism

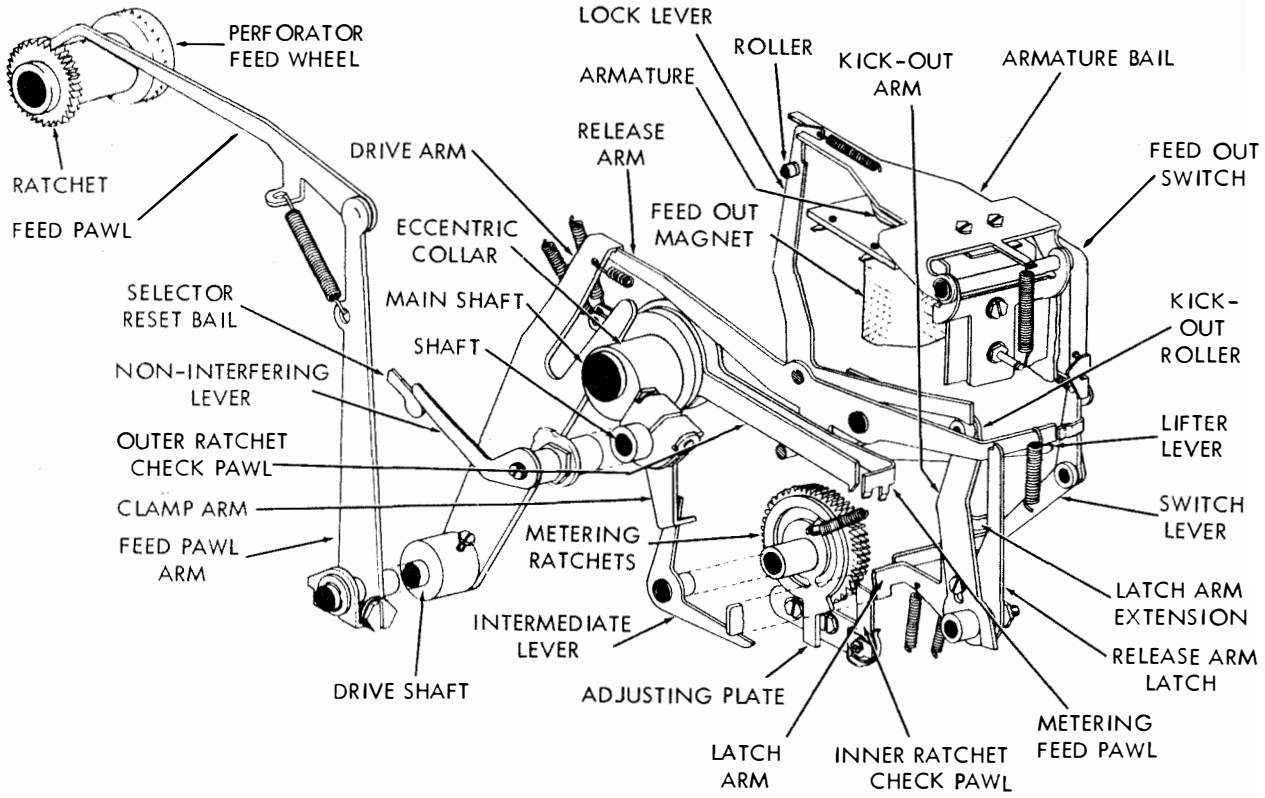


Figure 4-18. Non-Interfering Blank Tape Feed-Out Mechanism

ratchet and the adjusting plate to their start position. As the extension of the adjusting plate swings up and engages the latch arm, it also pivots a switch lever which actuates a switch mounted on the rear of the feed-out frame. The switch is momentarily opened or closed, depending on the choice of contacts.

(c) NON-INTERFERENCE. — If a code combination is received during the feed-out interval, the selector reset bail rises and pivots, a non-interfering lever rotates the latch arm clockwise, and the feed-out operation is terminated as described in paragraph 4-3h(5)(b)2.

(6) AUTOMATIC NON-INTERFERING LETTERS TAPE FEED-OUT (TT-192A/UG). (See figure 4-19.) — Automatic non-interfering "letters" tape feed-out is peculiar to TT-192A/UG. It operates to feed out a predetermined length of tape punched with the five-hole "letters" code. The mechanism automatically initiates tape feed-out after a fixed period of idle signal line. It may be adjusted to feed out lengths of tape 3.6 inches to 18 inches in length. Should the operation be interrupted by an incoming message, feed-out automatically stops and the message is printed and perforated without loss of the initial character.

(a) INITIATION.

1. The feed-out operation is automatically initiated by a fixed period of idle signal line. Through the interaction of a drive link operated by the rocker bail and a follower activated by the reset bail cam in the selector, the mechanism recognizes the end of a message. The timing of the selector while receiving a message is such that the reset bail cam raises its follower during the first part of the selector cycle. The follower, through a linkage, lowers a latch lever which permits a release lever to rotate clockwise. When the release lever is in its clockwise position, the mechanism is in its unoperated condition, as explained in paragraph 4-3h(6)(b)3 below. When the rocker bail goes to its extreme left position during the middle of the function cycle, the attached drive link rotates the release lever counterclockwise and places the mechanism in its operated condition, as explained in paragraph 4-3h(6)(b)2 below. Each time a new character is received, the above sequence occurs.

2. End of message recognition is obtained when the release lever is rotated counterclockwise by the rocker bail and then is not permitted to rotate clockwise by the follower.

(b) METERING AND FEED-OUT.

1. When the release lever rotates conterclockwise, it lowers a front check pawl onto two metering ratchets. These function as described in paragraph 4-3h(5)(b)1 above.

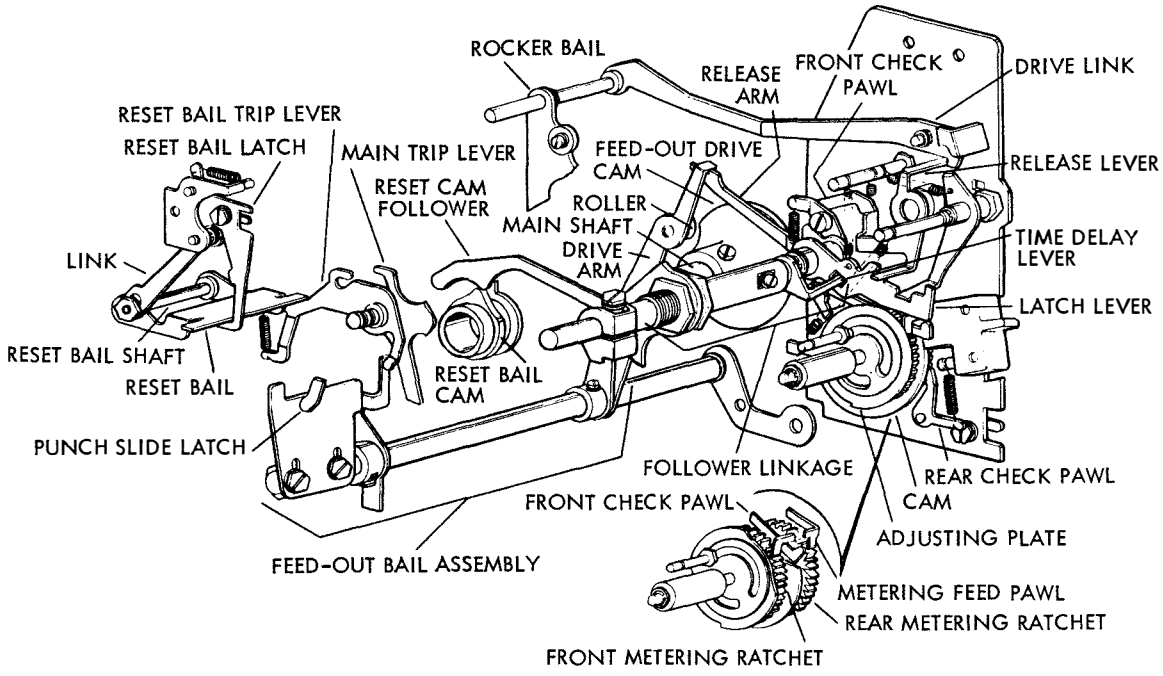


Figure 4-19. Automatic Non-Interfering Letters Tape Feed-Out Mechanism

2. A time delay lever rides on a cam attached to the front ratchet. When the front ratchet rotates, the time delay lever rides to the low part of the cam and causes a release arm to release the drive arm of a feed-out bail assembly. A roller on the drive arm then rides, under spring pressure, on a feed-out drive cam on the main shaft. As the shaft rotates, each time the roller rides to the low part of the cam, the feed-out bail assembly does two things: 1) rotates the main trip lever counterclockwise and trips the function clutch, and 2) rotates the punch slide latches counterclockwise and sets up a letters code combination. Thus, the reperforator feeds out letters tape in the same manner as if the function clutch and punch slides had been actuated by the selector.

3. As the ratchets are rotated as described above, an adjusting plate on the front ratchet reaches the position where it rotates the latch lever clockwise. The latch lever, in turn, performs two actions: 1) through the time delay lever causes the release arm to latch the drive arm and terminate feed-out, and 2) permits the release lever to move to its clockwise position and lift the metering feed pawl and front check pawl off the ratchets. A spring returns the front ratchet to its start position. The mechanism remains in its unoperated condition until the next code combination is received. The adjusting plate is adjustable for varying lengths of tape feed-out.

(c) NON-INTERFERENCE.

1. When the first character of an incoming message is received during feed-out, the selector clutch is tripped and the reset cam follower causes the release lever to rotate clockwise. Feed-out is terminated, as described in paragraph 4-3h(6)(b)3. The incoming message is perforated.

2. When the first character is received during feed-out, the relationship between the selector cam and the function cam could be such that the reset bail would release the punch slides before the slides are fully reset. In this case, the first character of the incoming message would be lost. The purpose of the storage assembly is to prevent this. The storage assembly consists of a reset bail latch that is moved by a link attached to the reset bail shaft. During normal reception of messages, the link pushes the latch out of the way of the reset bail prior to the bail's being lowered by the main trip lever. Whenever the condition described above occurs, the latch holds the bail in engagement with the slides until they are fully reset, so that they may recognize the first character set up in the punch slide latches by the selector.

(7) REMOTE CONTROL NON-INTERFERING LETTERS TAPE FEED-OUT (TT-253A/UG). (See figure 4-20.)

(a) INITIATION MECHANISM — The feed-out operation is initiated by a pulse (115 volt DC ± 10% with 600 ohms series resistance) from a tape feed-out button. The pulse is applied to a feed-out magnet when typing reperforator is in an idling condition. When the magnet is energized, the armature bail moves the blocking bail out of engagement with the drive

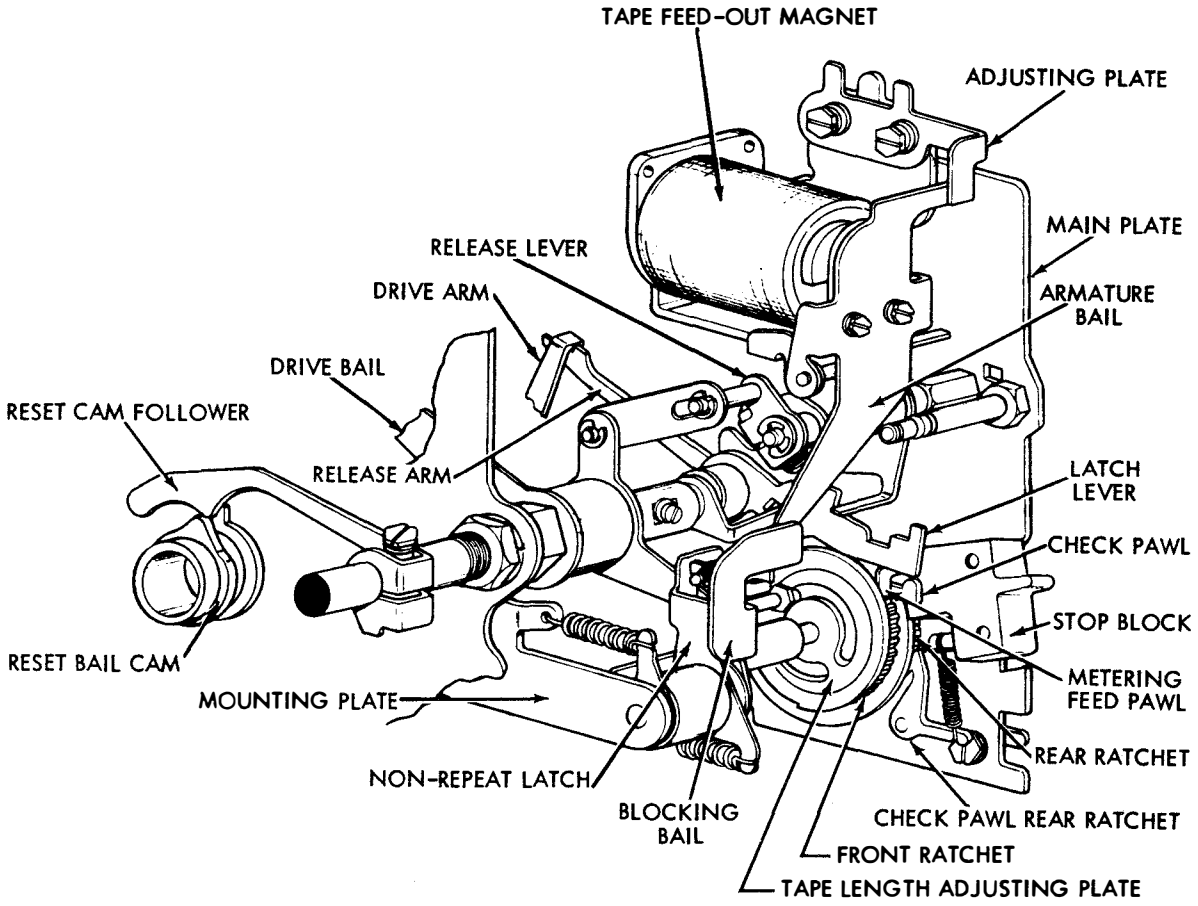


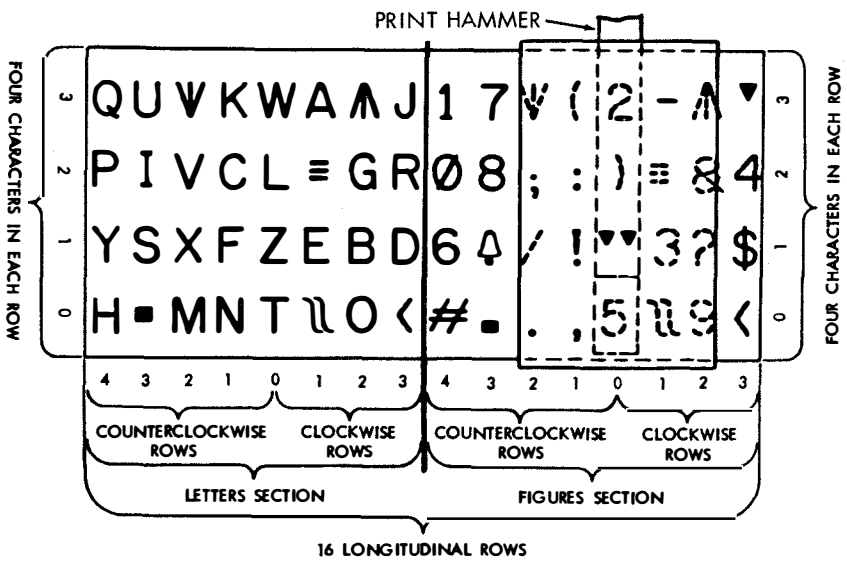
Figure 4-20. Remote Control Non-Interfering Letters Tape Feed-Out (TT-253A/UG)

bail assembly. The drive bail, which is spring loaded, falls into the indent of its cam and the connecting link positions the release lever on the lower step of the latch lever. If the start magnet is held energized longer than one cycle, the non-repeat latch prevents the drive bail from again falling into the indent of its cam. The non-repeat latch is delayed one cycle by the spring loaded blocking latch on the drive bail. As the drive bail reaches the indent of its cam the blocking latch rides over the non-repeat latch. The drive bail then reaches the high part of its cam and the non-repeat latch falls into engagement with the drive bail. When the start magnet is de-energized, the spring loaded blocking bail again engages the drive bail and simultaneously disengages the non-repeat latch.

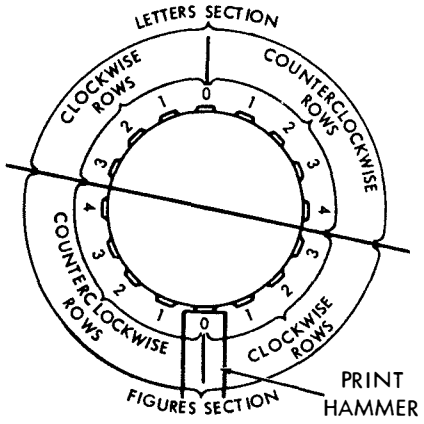
(b) METERING MECHANISM — When the drive bail positions the release levers on the lower step of the latch lever as described above, metering takes place. The release lever has now permitted the check pawl and feed pawl to engage two adjacent ratchets. One of the ratchets is fed continually by the feed pawl. This ratchet has a deeper notch at every sixth tooth so that the pawl engages the second ratchet on every sixth feed cycle. After the second ratchet has rotated an amount equivalent to two teeth, a follower, riding a cam attached to the ratchet, drops off its peak and unblocks the tripping mechanism. After a predetermined length of tape has been fed (as measured by the second ratchet) the latch lever is actuated, as it would be by the selector cam on receipt of a message, and the tripping mechanism is blocked preventing further feeding. Simultaneously, the feed pawls are lifted off the ratchets and the ratchets return to their zero position.

(c) TRIPPING MECHANISM — A bail that follows a cam attached to the reperforator main shaft engages the clutch trip lever and punch slide latches. When the bail cam follower enters the detent of its cam, the bail operates the function clutch trip lever and punch slide latches initiating a "letters" cycle of the punch. Each time the reperforator main shaft rotates one revolution a "letter" cycle is initiated, provided the bail is not blocked by the latch lever. If an incoming message trips the latch lever, the "letters" punching cycle is immediately blocked from any further operation.

(d) STORAGE MECHANISM — The purpose of the storage mechanism is to hold the reset bail in engagement with the slides until the slides are fully reset so that they may recognize the first character



A
(TOP VIEW)
SHOWING CYLINDRICAL SURFACE IN A PLANE



B
(FRONT VIEW)
SHOWING 16 LONGITUDINAL ROWS

Figure 4-21. Typical Typewheel Character Arrangement

set up in the punch slide latches by the selector. This mechanism consists of a latch that is operated by a link attached to the punch slide reset bail toggle. During reception of an incoming message the toggle mechanism pushes the latch out of the way of the reset bail prior to its being stripped by the clutch trip lever.

i. TYPING.

(1) GENERAL. — The characters used to type the input intelligence (letters, figures and symbols representing various functions) are embossed on the cylindrical surface of a bakelite typewheel (figure 4-21). Standard communications symbols are reproduced by the typing reperforator sets, but the sets can readily be converted to the representation of other characters, such as aerological data. During the function cycle, the rotary and axial positioning mechanisms (figures 4-22 and 4-23), having received the intelligence from the transfer mechanism, position the wheel so that the character represented by the input code permutation is selected. Following typewheel positioning, the correcting mechanism accurately aligns the selected character. Then the printing mechanism (figure 4-24), by means of a printing hammer, drives the tape and inked ribbon against the wheel and imprints the character. A ribbon feed mechanism (figure 4-25) advances the ribbon and reverses its direction of feed when one of two ribbon spools is depleted. Near the end of the function cycle, the axial positioning mechanism retracts the typewheel and ribbon guide so that the last printed character is visible. The letters or figures code combination sets up an arrangement in the transfer mechanism which permits the function box (figure 4-26) to operate and cause the rotary positioning mechanism to shift the typewheel through 180 degrees of rotation.

(2) TYPEWHEEL POSITIONING.

(a) GENERAL.

1. A typical typewheel character arrangement is shown in figure 4-21b, in which the wheel's cylindrical surface is shown rolled out into a plane. There are 16 longitudinal rows, each of which is made up of four characters numbered 0 to 4 from front to rear. The surface is divided into two sections, a letters and figures section, each containing eight rows. The fifth row counterclockwise from the division line in both sections is numbered 0, and there are four rows in one direction from 0, numbered 1 to 4 and designated as counterclockwise rows, and three rows in the other, numbered 1 to 3 designated as clockwise rows. It should be noted that the clockwise and counterclockwise modifiers refer to the direction of rotation of the wheel to select the rows, and not to their position on the wheel.

2. Each printing operation (excluding those devoted to the letters-figures shift) begins and ends with the typewheel in the home position of the section containing the character to be printed. (For example, with the No. 0 character of the No. 0 row in the figures or letters section at the point of contact. Actually, inasmuch as the wheel is retracted to show the last printed character, the No. 0 character is slightly to the rear, but for this discussion it will be assumed

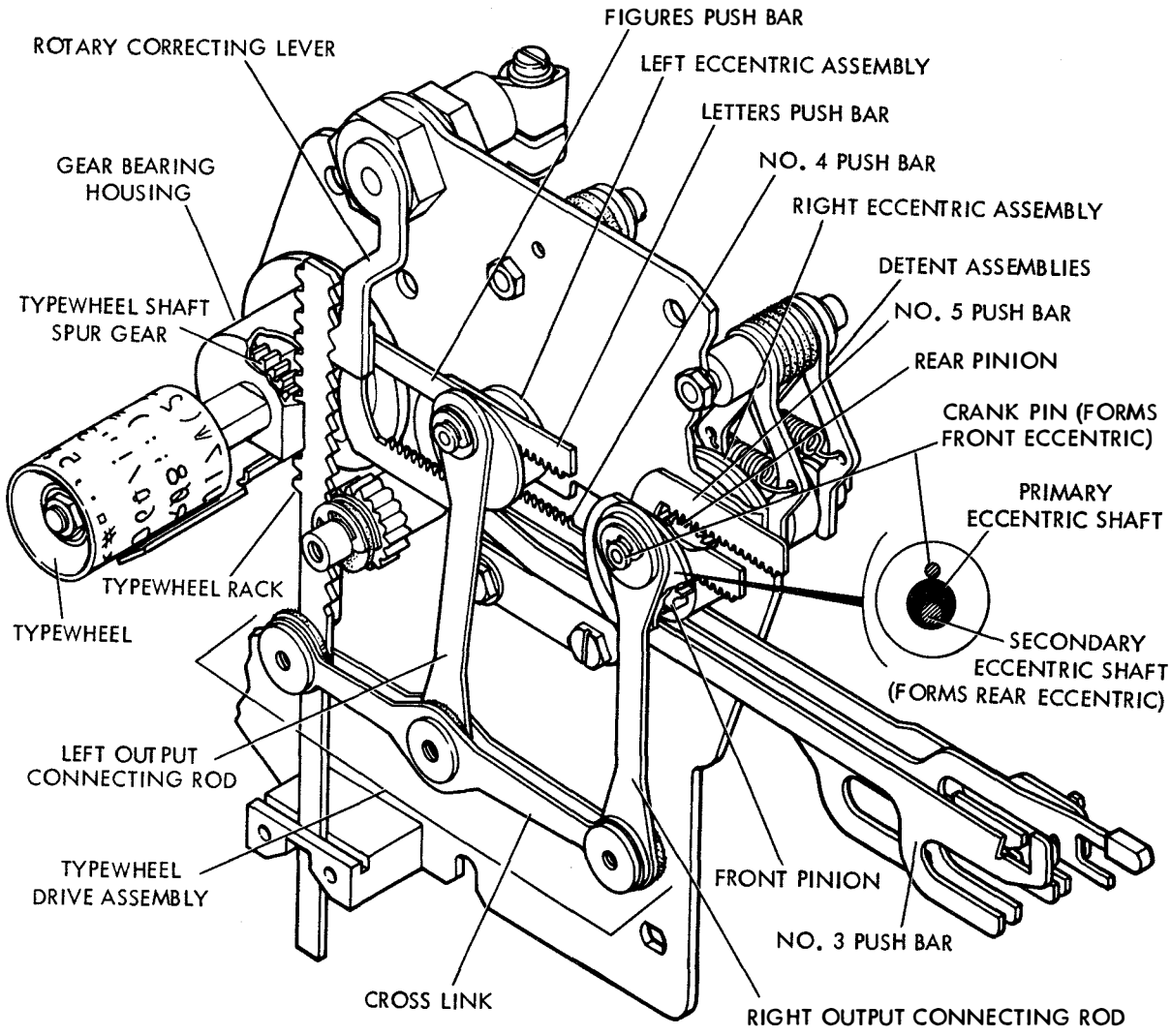


Figure 4-22. Rotary Positioning Mechanism

that it is at the point of contact.) During the printing operation, the axial and rotary positioning mechanisms, transferring separate but simultaneous motions to the wheel, position it so that the character represented by the keyboard input code combination is at the point of contact of the hammer at the time of printing. The rotary mechanism, which is controlled by the No. 3, 4, and 5 selecting elements of the code, revolves the wheel, so as to select the proper row. The axial mechanism, which is governed by the No. 1 and 2 elements, moves it forward and rearward along its axis so as to select the proper character in the row. The letters-figures shift, which consists of rotating the wheel eight rows from the home position of one section to that of the other, requires a separate operation of the equipment and results in the printing of the letters or figures symbol.

3. To illustrate the above, if the typewheel is in the figures condition, as shown in figure 4-21, and the numeral "5" is to be printed, there is no movement of the wheel during the printing operation, because "5" is already at the point of contact of the hammer. If, however, the letter "I" is to be printed, the keyboard code for letters must first be received to shift the typewheel eight rows to the letters home position. Then, during the next operation, the typewheel is rotated three rows counterclockwise and moved forward two characters, so the "I" is at the point of contact with the hammer. Printing takes place, and the typewheel is then returned to the letters home position.

(b) ROTARY POSITIONING. (See figures 4-22 and 4-27.) — The rotary positioning mechanism revolves the typewheel so that the row containing the character to be printed is aligned with the print hammer at the time of printing.

1. Mounted on the front plate, the rotary positioning mechanism includes two eccentric assemblies as shown in figures 4-22 and 4-27. Each assem-

bly includes a primary shaft, a section of which is formed into a pinion. A secondary shaft, mounted in the primary and offset from its center, forms an eccentric, referred to as the rear eccentric. A portion of the secondary shaft is also a pinion, and a crank pin mounted on its disk-like forward surface forms a secondary, or front, eccentric. Each of the four pinions of the two eccentric assemblies is engaged by the rack of a push bar: the No. 3 bar engages the rear pinion, and the No. 5 engages the right pinion. The left front pinion is engaged by both the letters and figures push bar.

2. The eccentric assemblies are linked to a typewheel shaft by a drive assembly as shown in figure 4-22. The typewheel is secured to the front of the shaft, which is supported by a bearing housing mounted at the left rear of the front plate (figure 4-23). A spur gear which meshes with the typewheel rack rides on the shaft in a bearing housing. The shaft is free to move axially in the housing and through the spur gear, but flats in the shaft circumference which bear against flats in the gear ensure its rotating when the gear rotates in response to movements of the typewheel rack.

3. When, in response to a marking pulse, a push bar is lifted by its bell crank (paragraph 4-3h(1)), the rocker bail operating blade (see figures 4-13 and 4-27) engages a slot in the bar and moves it to the left during the first part of the function cycle. The bar, by means of its rack and mating pinion, rotates the associated eccentric one half revolution where it is locked in position by a detent assembly while printing takes place. When the bail rocks back to the right during the latter part of the cycle, it returns the bar and eccentric to their home positions, where the eccentric is again detented. (The preceding does not apply to the No. 5 push bar, which is designed so that it is selected (moved to the left) on spacing rather than marking, nor to the left-front eccentric, which affects the letters-figures shift, and whose operation is covered in paragraph 4-3i(2)(e). In both assemblies, one half revolution of the rear eccentric results in its maximum vertical displacement, which is transferred through the front eccentric to a crank pin. Similarly, one half revolution of the front eccentric results in its maximum displacement being transferred to the crank pin. If both eccentrics are rotated, the displacement of the crank pin is equal to the algebraic sum of the two displacements, which may be in either the same or opposite directions. Both assemblies are so designed that, if the displacement of the front eccentric is taken to be one unit, the displacement of the front eccentric is four units. Four permutations are thus available: zero (neither eccentric displaced), one (rear eccentric displaced), four (front eccentric displaced), and three or five units, depending on how the assembly is set up (both eccentrics displaced).

4. In the right assembly, the home position of the rear eccentric is down, and the home position of the front eccentric is up (figure 4-27). Thus, their displacements are in opposite directions (up for the rear and down for the front), and their aggregate displacement is three units downward. Any displacement occurring in the right assembly is imparted to the typewheel rack in equal quantity, but opposite direction. For example, if the No. 5 push bar is selected, it causes the right rear eccentric to be displaced, and one unit of upward motion is transferred through a right output connecting rod to the right end of a cross link (figure 4-22). The cross link pivots about a left output connecting rod, and at its left end imparts one unit of downward displacement to the typewheel rack. The rack rotates the spur gear, shaft, and typewheel one row of characters clockwise from the home position, and the No. 1 clockwise row (figure 4-21) is presented to the print hammer at the time of printing. On its right stroke, the No. 5 push bar returns the eccentric and the typewheel to their home positions. In a similar manner, selection of the No. 3 push bar results in a four unit downward displacement of the right front eccentric, and displacement of the right front eccentric and a four-row counterclockwise rotation of the typewheel. Selection of both the three and five type bars results in a three-row counterclockwise rotation of the typewheel.

5. The home position of the left rear eccentric is up, and any displacement appearing in the left assembly is transferred to the typewheel rack in double quantity in the same direction. When the No. 4 push bar is selected, the left rear eccentric is displaced one unit downward. This movement is conveyed through the left output connecting rod to the approximate midpoint of the cross link. The cross link pivots about the right output connecting rod, and its left end imparts two units of downward movement to the typewheel rack, which rotates the typewheel two rows clockwise from its home position.

6. When both eccentric assemblies are displaced, the motion occurring in the typewheel rack is equal to the algebraic sum of the motions resulting from each assembly. For example, three units of upward displacement from the right assembly and two units of downward displacement from the left assembly occur as one unit (3-2 = 1) of upward displacement in the rack, and a counterclockwise rotation of one row in the typewheel. If neither the No. 3, 4, nor 5 push bar is selected, the mechanism remains inactive, and printing takes place in the No. 0 row. Excluding the left front eccentric, which is used only for the letters-figures shift, there are eight permutations available in the other three eccentrics, making it possible to select any of the eight rows in a given section (figure 4-21).

(c) AXIAL POSITIONING. (See figures 4-23, 4-24, and 4-27.) — The function of the axial positioning mechanism is to position the typewheel so that the proper character in the selected row is aligned with the hammer at the time of printing, and to retract the typewheel and ribbon guide at the end of the function cycle, so that the last typed character is visible.

1. The axial positioning mechanism mounts on an axial bracket supported by the frame and the front plate and includes an eccentric assembly similar to those of the rotary positioning mechanism (figures

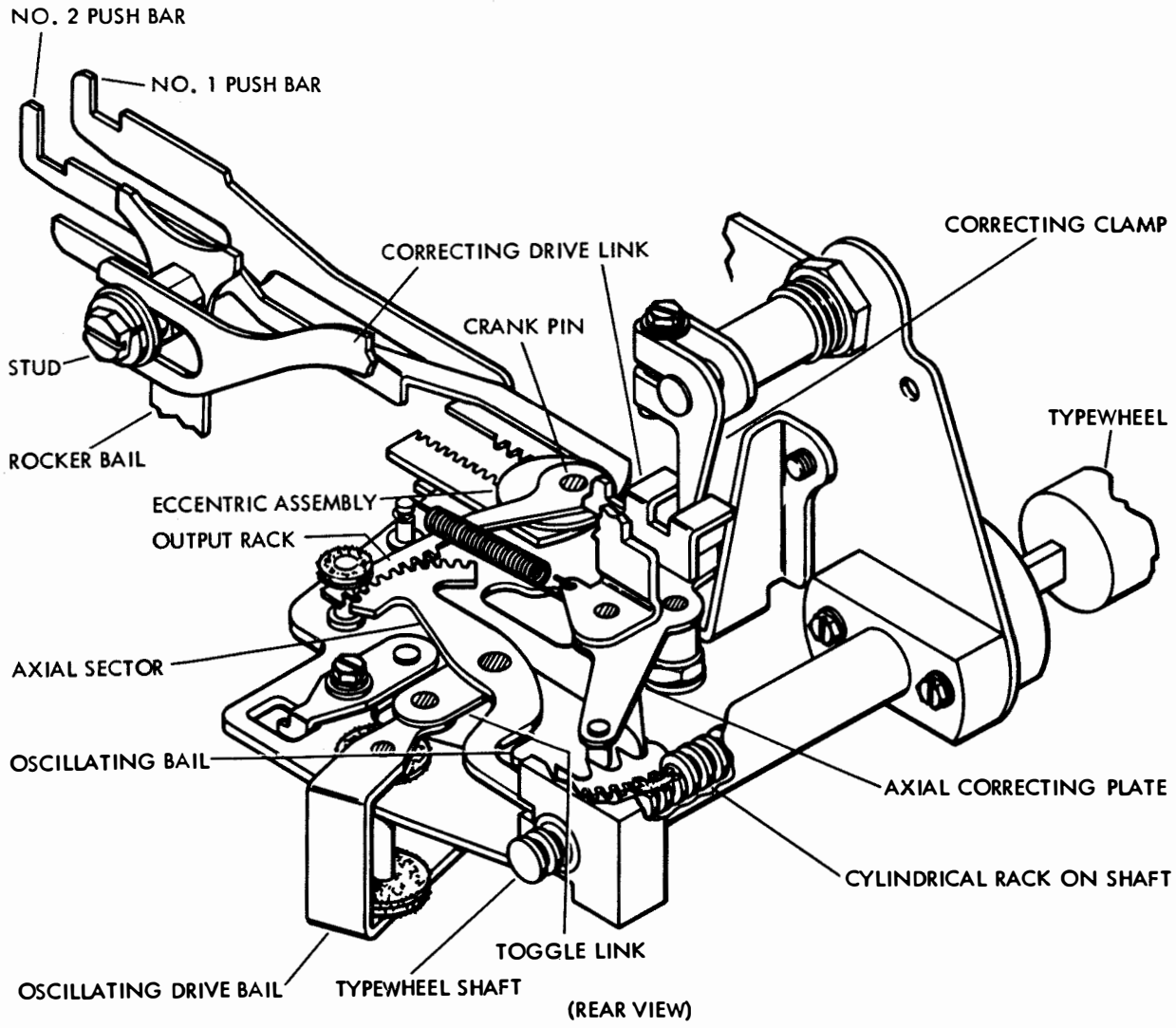


Figure 4-23. Axial Positioning Mechanism

4-23 and 4-27). Two eccentrics — a lower, whose pinion is driven by the No. 1 push bar, and upper, whose pinion is driven by the No. 2 push bar — rotate in a horizontal plane in bearing housings attached to the bracket. The eccentric assembly is linked to the typewheel shaft by an axial output rack and sector, as shown in figure 4-23.

2. The selection of either the No. 1 or No. 2 push bar results in the maximum displacement toward the rear of the associated eccentric, and the eccentrics are so designed that, if the displacement of the lower is taken to be one unit, that of the upper is two units. Again, four permutations are available at the crank pin: zero (neither eccentric displaced), one (lower eccentric displaced), two (upper eccentric displaced) and three (both eccentrics displaced).

3. If during a function cycle neither push bar is selected, no motion occurs in the axial positioning mechanism, with the exception of that resulting from the oscillating assembly (paragraph 4-3i(2)(c)4 below), and the No. 0 character of the selected row is aligned with the hammer at the time of printing (figure 4-21). On the other hand, if the No. 1 push bar is selected, it causes the lower eccentric to revolve, and one unit of displacement to be transferred by the crank pin to the axial output rack. The rack moves to the rear and passes the motion to the axial sector, which pivots counterclockwise (as viewed from above). The right end of the sector, by means of a cylindrical rack in the typewheel shaft, moves the typewheel one character forward from its home position. The No. 1 character is printed, and, when the push bar reverts to its unselected position, it returns the axial linkage and typewheel to their home positions. If the No. 2 push bar is selected, the No. 2 character is printed, and if both push bars are selected, the No. 3 character is printed. The cylindrical rack has no lead, and the shaft can thus be rotated while being moved axially.

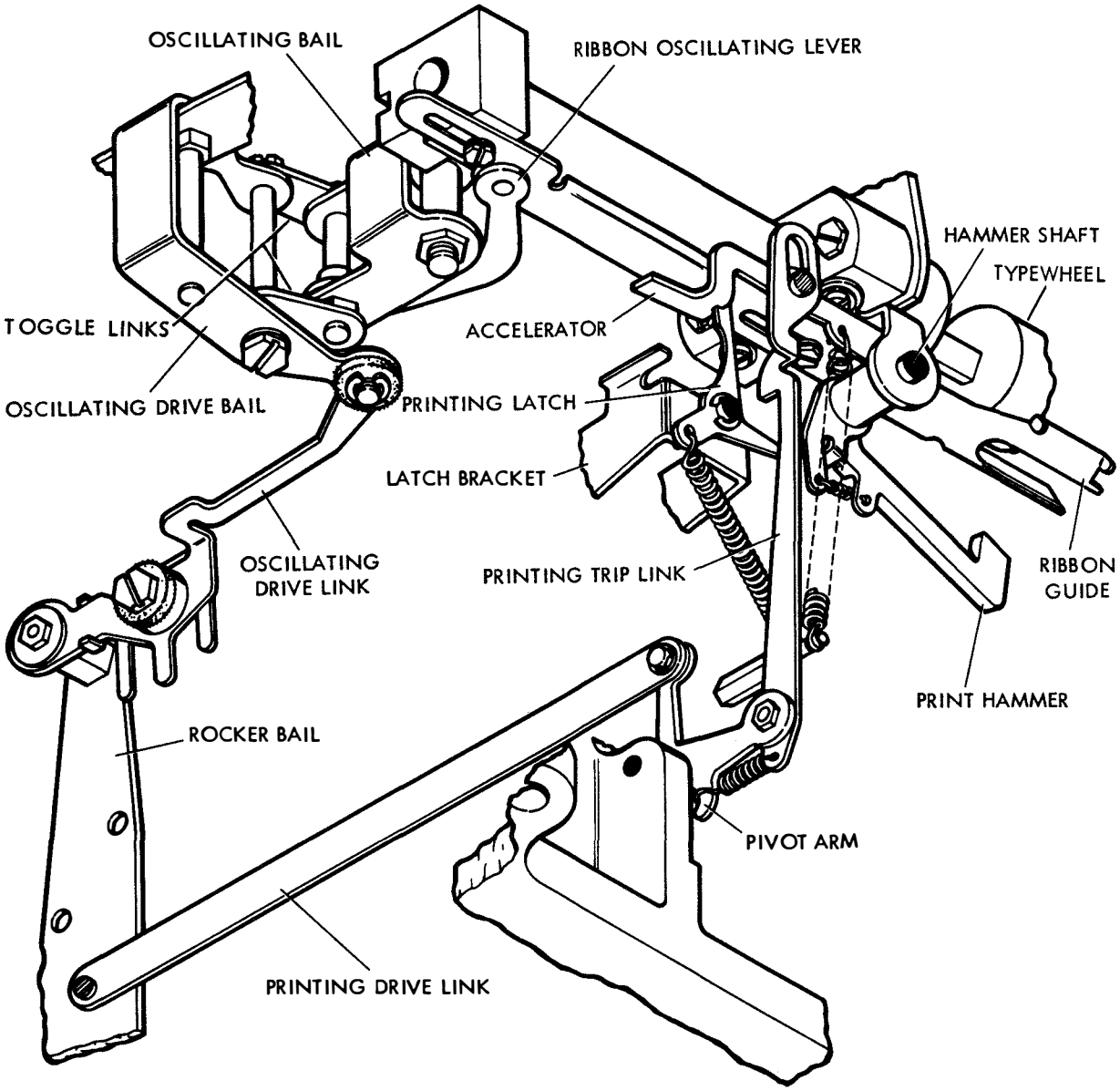


Figure 4-24. Printing Mechanism

4. With each cycle of the function clutch, an oscillating drive link transfers from the rocker bail an unselected motion to an oscillating drive bail (figures 4-23 and 4-24). This movement is passed by toggle links to the oscillating bail and the sector pivot. The effect of this action is to introduce a separate motion to the sector, tending to cause it to pivot about the teeth on the output rack. During the fore part of the function cycle, if no axial push bar is selected, the right end of the sector is moved forward slightly and positions the No. 0 character for printing. At the end of any cycle, the sector retracts the typewheel slightly, so that the last printed character is visible. Concurrent with the above operation, a ribbon oscillating lever is made to pivot about its left end, and with each cycle project and retract the ribbon guide, which would obstruct the view of the character (figure 4-24).

(d) CORRECTION. (See figures 4-22 and 4-23.)

1. After the typewheel has been positioned by the axial and rotary positioning mechanisms, the selected character is more accurately aligned for printing by the correcting mechanism, which compensates for any play and backlash in the positioning linkages. Each function cycle, the rocker bail transfers motion through a correcting drive link to a correcting clamp and shaft (figure 4-23). The shaft pivots a rotary correcting lever (figure 4-22), which is equipped with an

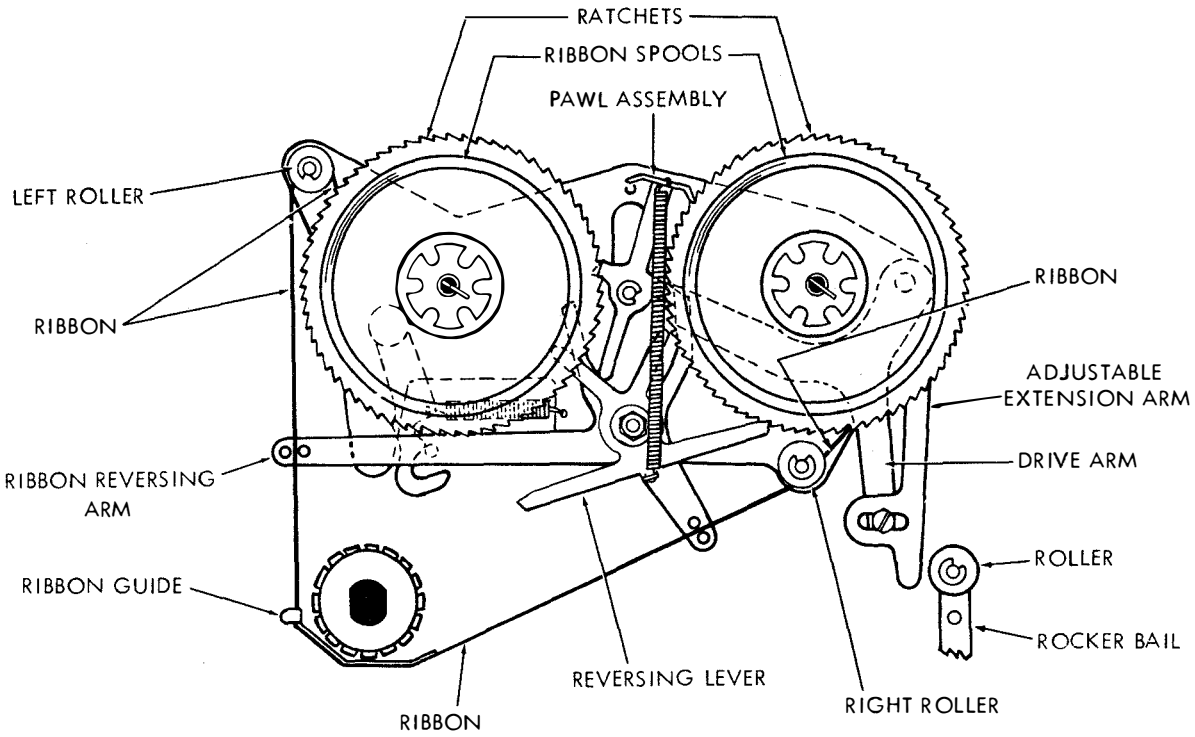


Figure 4-25. Ribbon Feed Mechanism

indention that engages a tooth in a typewheel rack. There is a tooth in the rack for each row of characters (16 in all), and they are so correlated with the typewheel that when a tooth is engaged by the corrector, its row is accurately aligned with the print hammer. Axial correction, which is accomplished simultaneously, is similar to rotary correction. The drive link rotates an axial correcting plate counterclockwise (as viewed from the top), and a roller mounted on the plate engages a notch in the axial sector (figure 4-23). Thus, the typewheel is accurately aligned in both fields of motion just before printing takes place. During the latter part of the function cycle, a correcting drive link spring returns the correcting mechanism to its home position.

2. Since the rocker bail is the source of motion for both the push bars and the positioning mechanisms, corrections must take place at a point near enough to the extreme travel of the bail that it does not interfere with the movement of the typewheel rack or axial sector. In addition, because the rocker bail controls the tripping of the print hammer, which occurs very late in the bail's stroke, it becomes necessary to utilize the time between the tripping of the hammer and its striking the paper to accomplish correction. The delay in actuating the correcting mechanism is effected by allowing a drive stud on the rocker bail to slide in an elongated slot in the correcting drive link during the early part of the cycle.

(e) FUNCTION BOX. (See figures 4-4, 4-26 and 4-28.) — The function box is mounted on two plates at the upper rear of the typing reperforator mechanism. Its purposes are to initiate the mechanical changes in the positioning mechanisms for shifting from letters to figures or from figures to letters and to close contacts on recognition of a signal bell input code. The signal bell contacts are not wired to any bell or alarm in the typing reperforator set, but they may be wired for an external bell, commonly located on an associated teletypewriter power distribution panel.

1. LETTERS-FIGURES SHIFT. (See figure 4-26.) The purpose of the letters-figures shift is to rotate the typewheel from the home position in one section to that of the other section (figure 4-21). It is accomplished through the function box mechanism.

a. When the unit is in the letters condition, as shown in figures 4-22 and 4-26, and the figures code combination (1M, 2M, 3S, 4M, 5M) is received, the transfer mechanism sets up the figures arrangement in the bell cranks during the keyboard input cycle. Then, as the rocker bail moves from its home position during the first part of the function cycle, a lifter roller under spring pressure follows a camming surface on the rear arm of the bail (figure 4-26), and the lifter allows letters and figures function blades to move down and, by means of tines on their lower surface, feel for an opening in the slotted upper arms of the bell cranks.

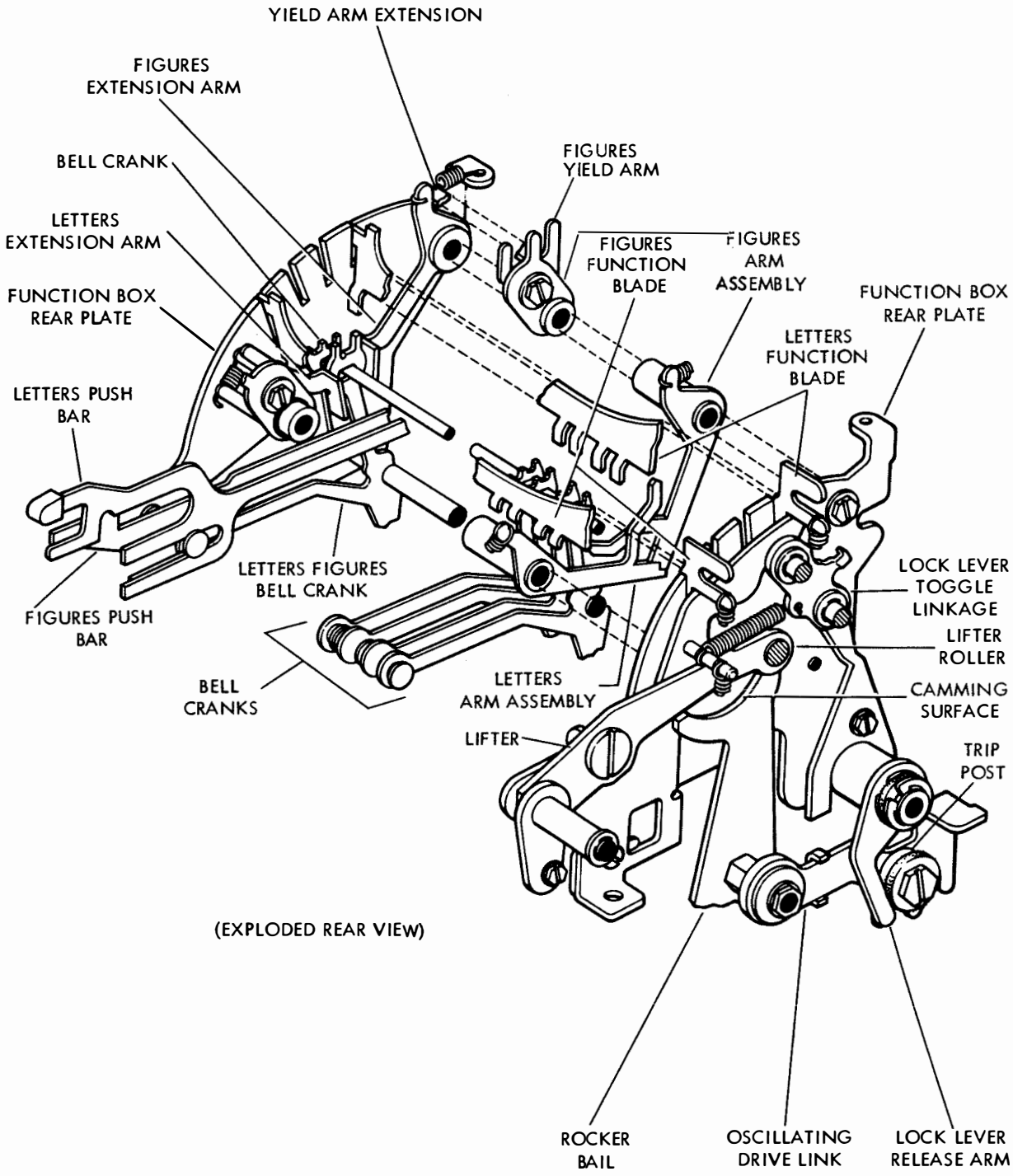


Figure 4-26. Function Box

b. The slot arrangement of the bell cranks No. 1, 2, 4, and 5 are identical and permit the entry of both function blades, when all are selected. However, on receipt of the figures code combination, the No. 3 bell crank permits entry of the figures blade, while blocking the letters blade. In moving all the way down, the figures blade encounters a projection of a figures arm assembly, and causes the arm assemblies to shift from their letters to figures position. A yield arm extension attached to the figures arm assembly pivots a figures extension arm away from the letters-figures bell crank. A letters extension arm, under spring tension, rotates the bell crank clockwise (figure 4-26), and the bell crank

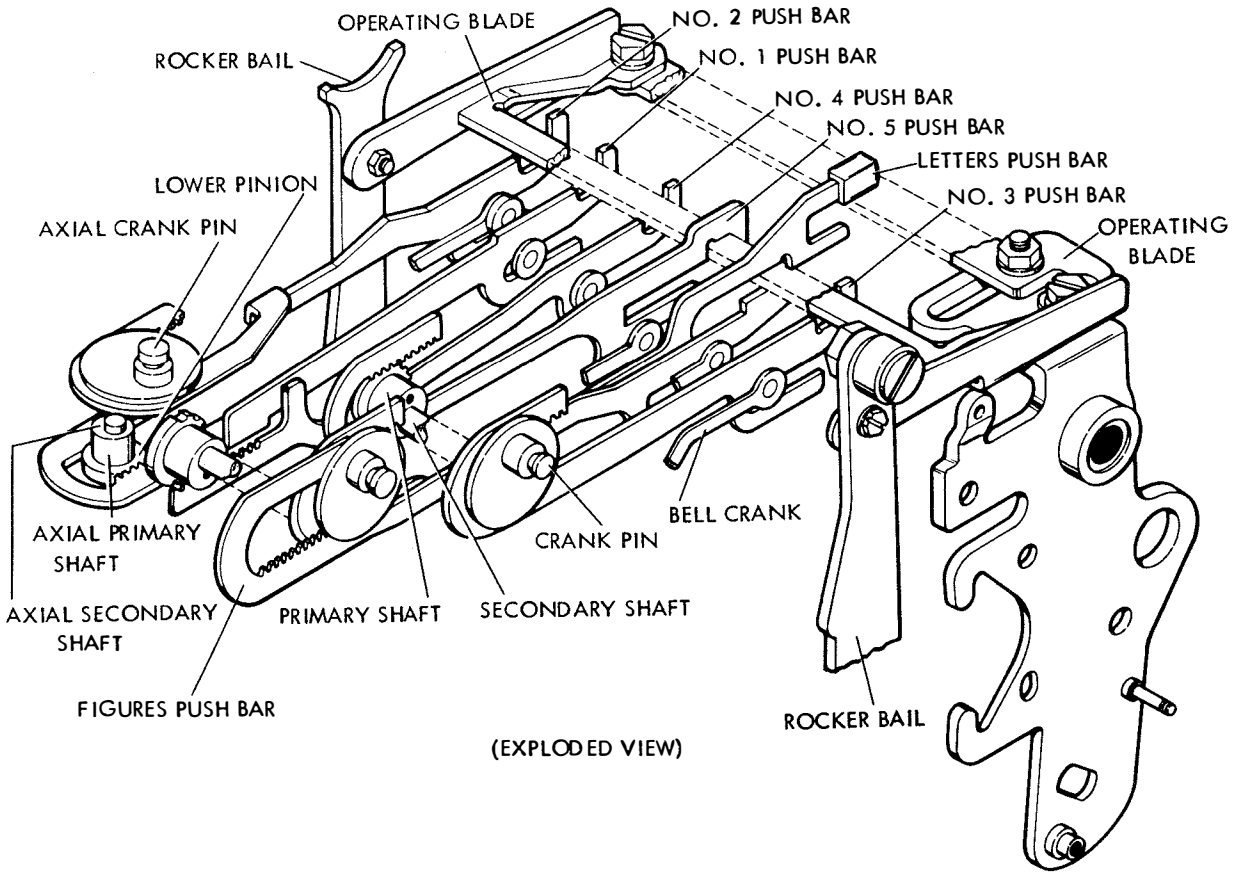


Figure 4-27. Push Bars and Eccentric Assemblies

lifts the letters and figures push bars. As the bail reaches its extreme position, the lifter is cammed up and raises the function blades.

c. While the letters-figures bell crank is being positioned by the function box, the No. 1, 2, and 4 push bars are selected, the typewheel is moved forward two rows clockwise and three characters forward and the figures symbol is printed. On its return stroke, the rocker bail operating blade encounters a shoulder on the figures push bar (which was lifted as described above) and moves the bar to the right, as viewed from the front in figures 4-22 and 4-27. The common pinion moves the letters push bar to the left, and the left front eccentric shifts from its up to down position. Since the typewheel has been displaced two rows clockwise during the first part of the cycle, it is rotated six more rows to the figures home position (see paragraph 4-3i(2)(b)5. As the bail returns to its home position during the last half of the cycle, a lock lever toggle linkage (figure 4-26) prevents the lifter roller from following its camming surface, and the lifter holds the function blades up, so that they do not drop onto the bell cranks. As the bail nears its home position, a trip post riding on the oscillating drive link strikes a lock release arm, buckling the toggle linkage and permitting the lifter roller to again fail on the bail camming surface.

d. In a manner similar to that described above, when the letters code combination (1M, 2M, 3M, 4M, 5M) is received, the function box causes the letters-figures bell crank to lower the letters and figures push bars. The typewheel is rotated two rows counterclockwise during the first part of the cycle, and six more rows to the letters home position during the last part of the cycle, and the letters push bar is moved to the right. The preliminary two-row rotation of the typewheel, which is made possible by selecting the No. 5 push bar on spacing rather than marking, provides less throw and smoother operation than would be possible if the complete eight-row displacement were made during the latter part of the cycle. Each operation, the lifter permits the function blades to move down and probe for an opening, but, except for the shift operations, they are blocked by slotted arms of the bell cranks.

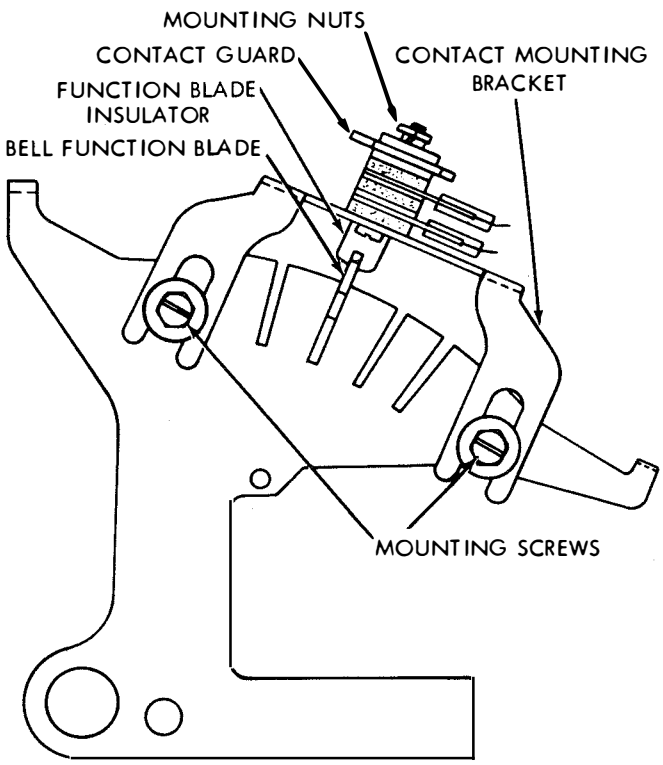


Figure 4-28. Signal Bell Switch and Function Mechanism

2. SIGNAL BELL. (See figure 4-28.) — When in the figures position the "S" code impulse is received at the selector unit, the number 1 and 3 bell cranks rotate in response to the marking pulses, and the number 5 bell crank rotates in response to a spacing pulse. In this position, the slotted arms at the top of the bell crank permit the signal bell function blade, installed in the slots behind the letters blade, to drop under spring tension as described in paragraph 4-3i(2)(e)1. A contact fixed to the function blade drops with the blade and permits the normally open signal bell switch to close. In the letters position, the figures bell crank blocks the signal bell function blade.

(3) PRINTING. (See figure 4-24.)

(a) After the typewheel has been positioned and corrected, the printing mechanism supplies the impact which drives the paper and ribbon against the selected character. It accomplishes this operation by means of a print hammer, which is mounted on a shaft supported by a bracket attached to the typewheel bearing housing. In its unoperated condition, as illustrated in figure 4-24, the hammer is held against an accelerator by a relatively weak spring. The accelerator is mounted on the hammer shaft, and is retained by a printing latch in its upper position, against the tension of a relatively strong spring.

(b) The rocker bail, during the fore part of the function cycle, moves a printing drive link to the right (as viewed from the rear in figure 4-24) and causes a pivot arm to rotate clockwise. The arm lowers a trip link, which slides in an elongated slot. Near the end of the rocker bail's travel, the trip link pivots the latch, which releases the accelerator. Under the spring tension, the accelerator snaps down and impels the hammer upward. The face of the hammer drives the tape and inked ribbon up against the typewheel and imprints the selected character on the tape. The accelerator does not follow the hammer through the complete printing stroke. Near the end of its travel, the accelerator encounters a projection on a latch bracket, and inertia carries the hammer the rest of the way. As the rocker bail returns to its home position, it causes the trip link to move up, release the latch, and return the accelerator to its latched position.

(4) RIBBON FEEDING. (See figure 4-25.)

(a) The characters are typed in ink supplied by an inked ribbon, which is held between the tape and the typewheel by a guide and advanced by the ribbon feed mechanism (figure 4-25). The path of the ribbon is down to the right off the top of a right spool, under a right roller, to the left through pins on a reversing arm, through the guide, up through pins on a front reversing arm, over a left roller and down to the right on the bottom of a left spool.

(b) Each function cycle, as the rocker bail nears the end of its left travel, a roller mounted on its forward arm pivots a drive arm clockwise. The drive arm lifts a feed pawl, which advances the ribbon by rotating a ratchet and ribbon spool one tooth. A retaining pawl, under spring tension, detents the ratchet, while the feed pawl, during the latter part of the function cycle, is lowered so as to engage the next tooth. Each operation, the ribbon is advanced in this manner until the ribbon feed mechanism is reversed.

(c) When a spool is almost depleted, a rivet in the ribbon encounters pins on a reversing arm. The stress applied through the ribbon as it is rolled on the other spool pivots the arm. As the pawl assembly is lowered at the end of the next operation, an extension strikes the reversing arm, and the pawl is shifted to the other ratchet. The pawl's rounded lower extension pivots a reversing lever, which shifts the retaining pawl, so that it engages the opposite ratchet. The ribbon will then feed in the opposite direction until again reversed. A detent holds the reversing arm in position until next reversed.

4-4. BASE MECHANISMS.

a. GENERAL. — A different base mechanism is supplied with each typing reperforator set. In some instances, a sub-base is furnished to support or mount the base in its bulkhead installation. The base or sub-base, or both, shock mount the operating equipment and isolate operating noise and vibration. Where shock mounts are used on the sub-base, provision is

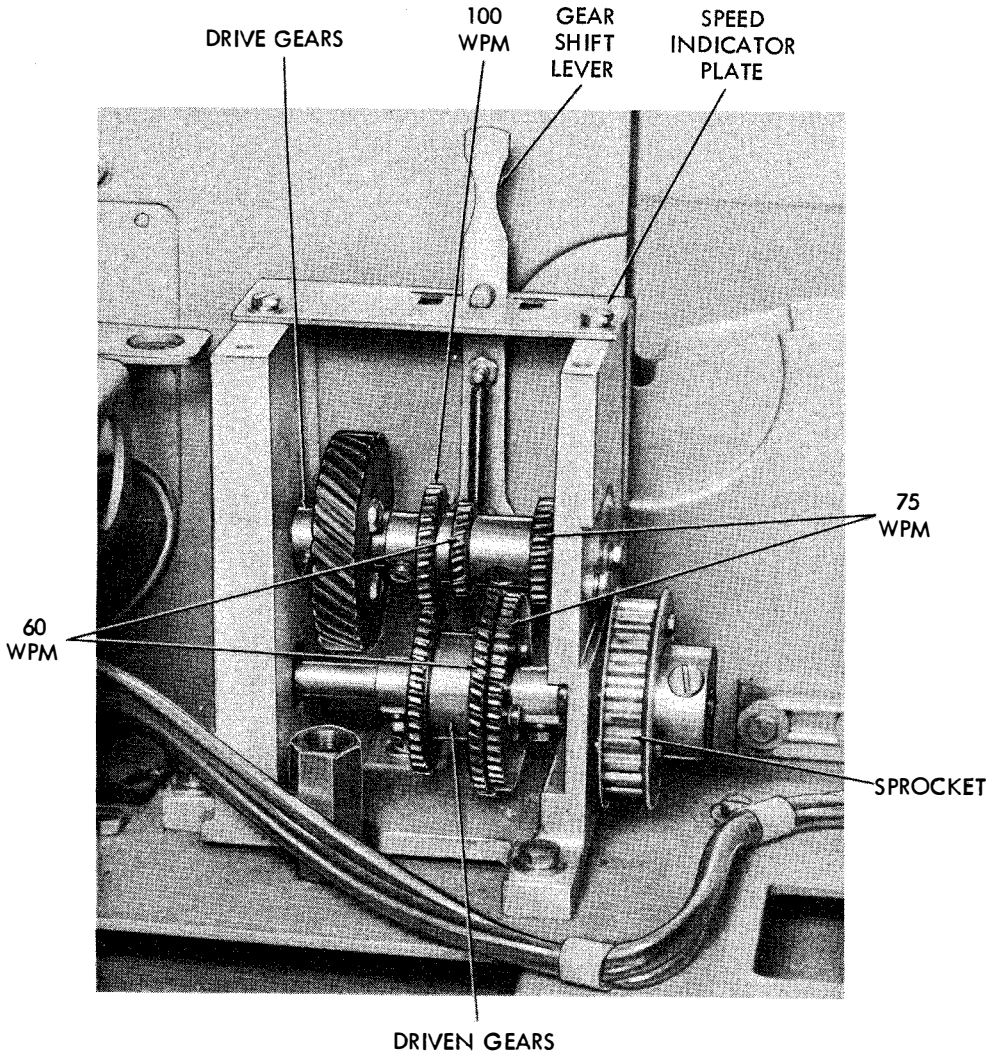


Figure 4-29. Variable Speed Intermediate Gear Mechanism

made for immobilizing the base vibration dampeners. The main purpose of the base is to mount the components of the typing reperforator set and to interconnect these components electrically (see figure 4-28) and mechanically. External electrical connections are made to the base, on which the main power switch is mounted. The base intermediate gear mechanism interconnects the motor and the typing reperforator and (on keyboard sets only) the signal generator. A tape container is mounted on all bases.

b. VARIABLE SPEED INTERMEDIATE GEAR MECHANISM (TT-192/UG, TT-192A/UG and TT-274/UG). (See figure 4-29.) Typing Reperforator Sets TT-192/UG, TT-192A/UG and TT-274/UG are designed with base mounted gear shift mechanisms. While not identical, the mechanisms are similar in function and design. The mechanism permits instantaneous adjustment of the operating speed of the typing reperforator, to synchronize it with the transmission speed of the incoming signal.

(1) A motor pinion gear attached to the motor shaft drives the main driving gear on a hub at the front end of the lower of two of the variable speed intermediate gear mechanism shafts. Three gears fastened to hubs which rotate with the lower shaft are driving gears. From the front, the first gear drives at 75 w.p.m. speed; the second, smallest gear at 60 w.p.m.; and the largest gear, at the right, at 100 w.p.m.

(2) On the upper shaft, spaced so the gears will clear the non-mating driving gears in the shifting operation but will mate for the selected gear ratio, are three driven gears. The driven gears slide freely horizontally on a hub fastened to the shaft but are keyed to rotate the shaft, regardless of which gear

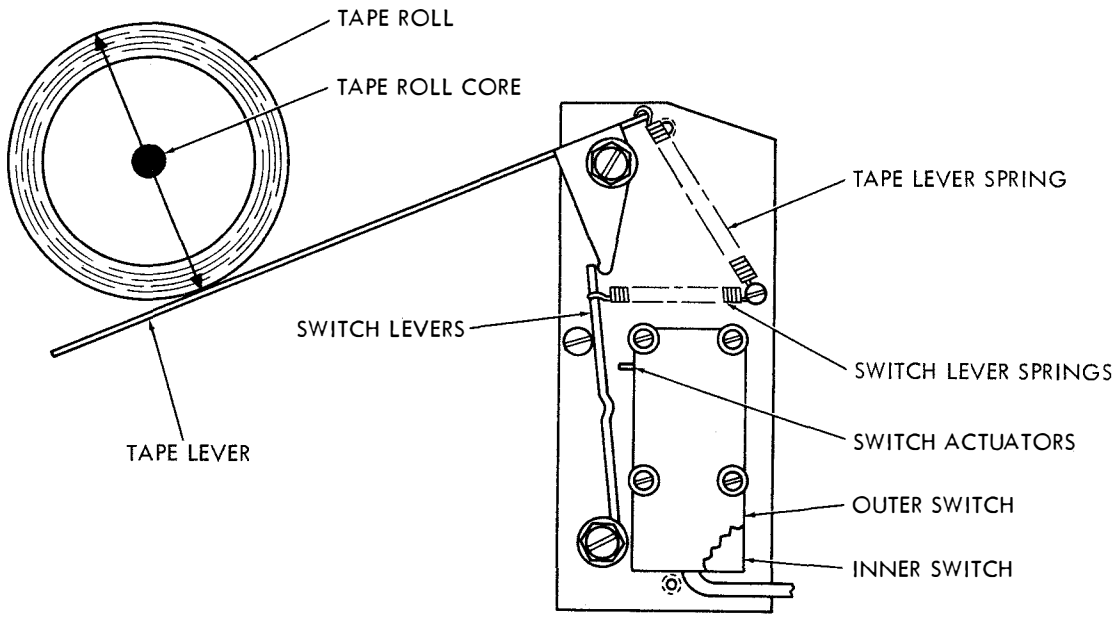


Figure 4-30. Typical Tape-Out Switch (TT-192/UG Illustrated)

combination has been selected. From the front, the gears on the top shaft are first, the driven gear for 75 w.p.m. operation; second, the largest gear, for 60 w.p.m.; and third, the smallest gear, for 100 w.p.m.

(3) Between the second and third gear and separated from the gears by spacers is a gear block on which the shift lever slides. Manually positioning the gear shift handle releases the three position detent in the bottom of the housing and permits the movement of the handle to the right or left, as required to select a gear ratio. The selected ratio is indicated by indexed detents in the grease retainer covering the mechanism. At the rear, the mechanism is in position for 75 w.p.m. operation. The center position is for 100 w.p.m., and the front index is for 60 w.p.m.

(4) The gear ratio selected must be the same as that on the distant station transmitting equipment. The upper shaft drives a hub and driving sprocket at its front end. The sprocket is connected through a timing belt to operate the typing reperforator at the selected speed.

CAUTION

Do not attempt to shift gears while set is in operation.

c. TAPE CONTAINER. — Tape containers mounted on the typing reperforator base are designed to contain and feed standard teletypewriter tape from eight inch rolls. TT-192/UG, TT-253/UG, TT-253A/UG, TT-274/UG and TT-192/UG bases have upright tape containers. The tape container for TT-192A/UG is mounted on two brackets across the top of the motor and typing reperforator. Each tape container has a tape-out switch (figure 4-28) to illuminate a base-mounted tape-out warning lamp when the supply of tape is down to less than 3/4 inch on the 2 inch tape core. There are two identical switches operated by a single tape lever in the TT-192/UG, TT-192A/UG and TT-274/UG tape containers. The outer, or upper, switch operates the reperforator tape-out alarm. The inner, or lower, switch may be wired to energize an external warning or alarm signal.

d. BASE (TT-192/UG AND TT-274/UG) OR MINIATURIZED BASE (TT-192A/UG). — Base mechanisms for Typing Reperforator Sets TT-192/UG, TT-192A/UG and TT-274/UG are double plate assemblies, isolated by rubber vibration mounts. When external shock mounting is installed, the vibration mounts are immobilized. A sliding sub-base is furnished as part of the set for optional installation with the miniaturized base. With the exception of their intermediate gear mechanisms and tape containers, the base and miniaturized base are passive mechanisms requiring no explanation of theory of operation.

(1) Vibration mount isolation for TT-192/UG, and TT-274/UG is accomplished by installing four screws and lock washers H908 and H909 supplied in tapped holes in the upper plate into four snubbers O859 mounted to the lower plate. Tightening the screws joins the two plates firmly and compresses the resilient vibration mounts.

(2) Vibration mount isolation for TT-192A/UG is accomplished by turning up four special nuts H974

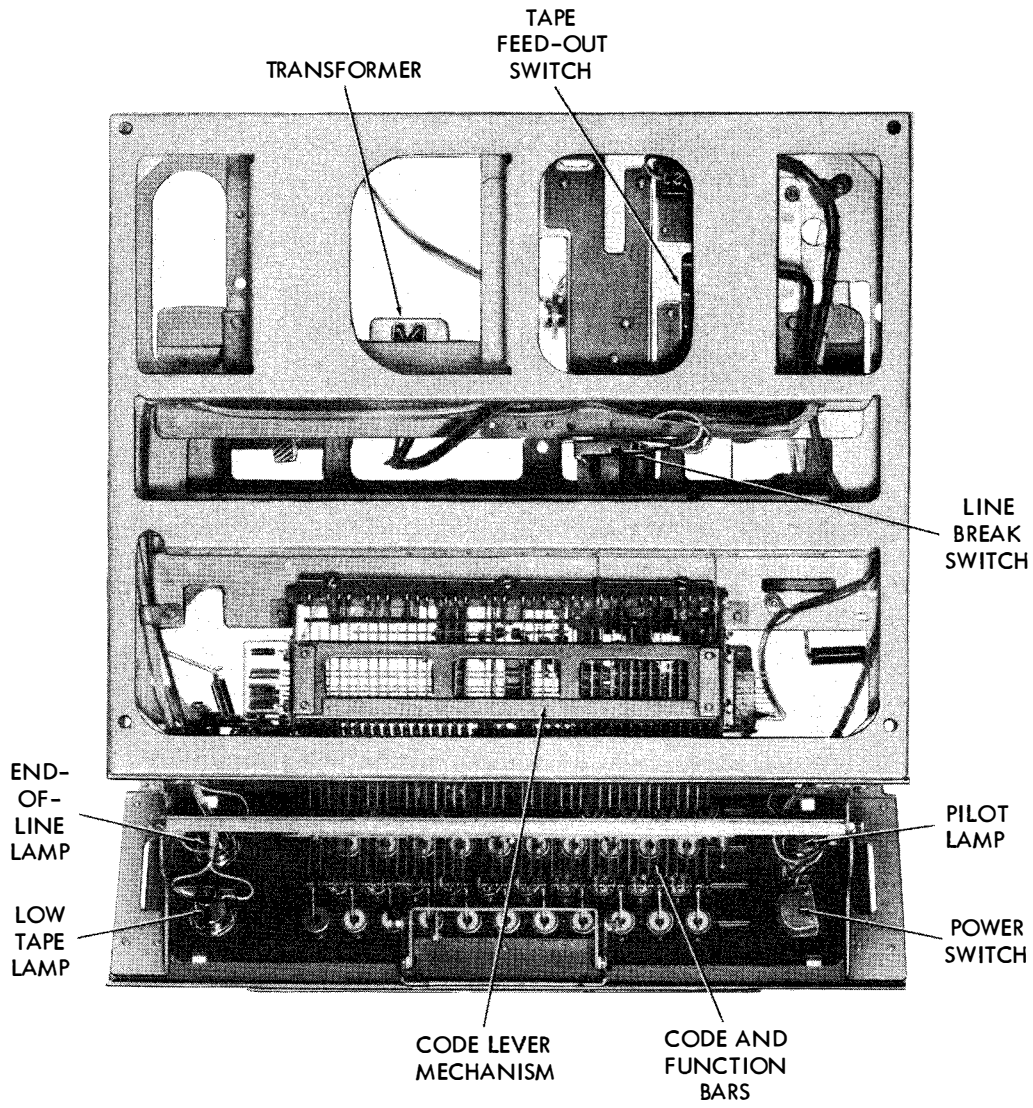


Figure 4-31. Keyboard-Base (Bottom View, TT-253/UG and TT-292/UG)

against rubber snubbers O930 which are similar in appearance to the vibration mounts. Compressing the snubbers separates the two plates and removes all bearing load from the four vibration mounts.

(3) When the bulkhead mounted sliding base (figures 2-3 and 2-4) is used with TT-192A/UG, the lower base plate is mounted to the upper plate of the sliding base. Rotation of the two knobs on the lower base unlocks the sliding portion of the mechanism and permits extension to the point where removal of the cover for access to the mechanism is more convenient than in the fully retracted position. A positive lock fastens the upper plate in fully extended position, but the lock may be released by depressing the lock lever between the plates at the center of the mechanism. The entire upper sliding base and attached typing reperforator base may then be removed.

e. KEYBOARD-BASE (TT-253/UG, TT-253A/UG AND TT-292/UG). (See figures 1-4, 4-31 and 4-32.) — Typing Reperforator Sets TT-253/UG, TT-253A/UG and TT-292/UG, send-receive sets, are mounted on a keyboard-base. The base is a two-piece base consisting of a rectangular metal stamping mounting the keyboard at the front, the motor at the rear, and the tape container at the left. A base casting on which an intermediate gear shaft and the typing reperforator are mounted is assembled on top of the base. The gear shaft connects the base mounted intermediate gear mechanism, driven by the motor,

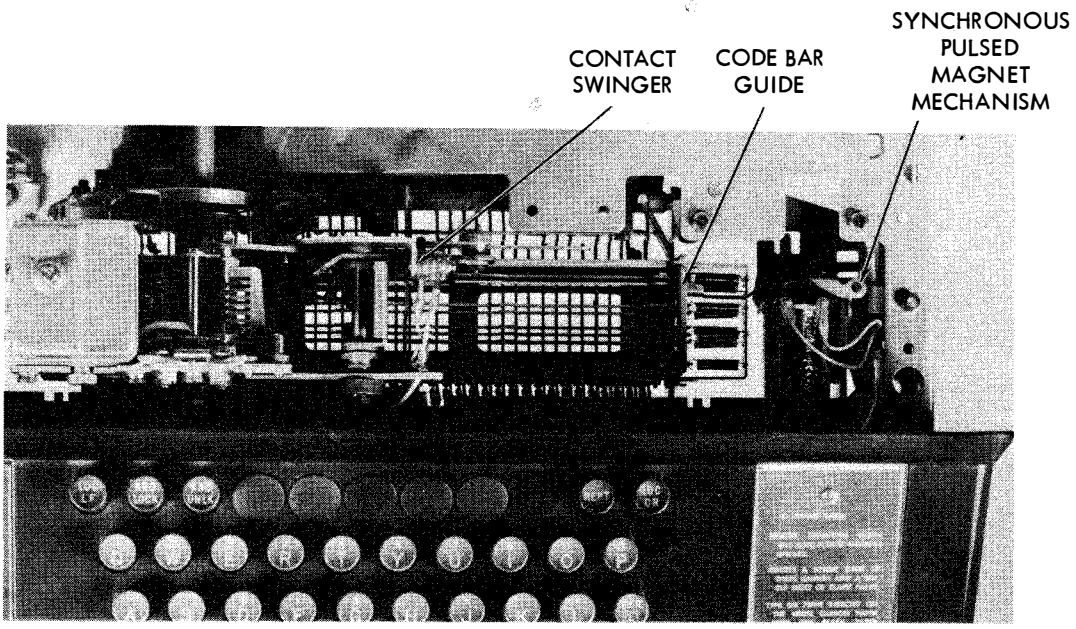


Figure 4-32. Keyboard-Base (Top View, TT-253A/UG)

and the keyboard signal generator at the left and the typing reperforator at the right. The primary purpose of the keyboard is to convert input messages (typed) into electrical signal code. There is no operating relationship between the keyboard and the typing reperforator, although the typing reperforator does monitor keyboard transmission on the single series wired signal circuit connecting both mechanisms. On Typing Reperforator Set TT-253A/UG (figure 4-32), the keyboard is further equipped with a synchronous pulse magnet mechanism and contacts for 7.00 unit transmission. This keyboard also mounts a chad chute between the reperforator and the motor area.

(1) GENERAL. — The keyboard consists of a code bar mechanism with key levers and a signal generator mechanism. It is electrically or mechanically equipped to initiate a variety of teletypewriter functions, in addition to conversion of typed characters to signal code. Some of these functions are simultaneously transmitted through the signal circuit and stored in typed perforated tape prepared in the typing reperforator. The functions include:

(a) Electrical line break.

(b) Carriage return.

(c) Line feed.

(d) Repeat.

(e) Keyboard lock.

(f) Keyboard unlock.

(g) Character counter (end-of-line switch).

(h) Tape back space.

(i) Tape feed-out.

(j) Signal bell on upper case (figures) "S" when receiving equipment electrical components include a signal or alarm device.

(2) CODE BAR MECHANISM. — The code bar mechanism is located on the front underside portion of the keyboard. Each keylever in the lower three rows and the space bar is connected to a code lever, and each keylever in the upper row is connected to a function lever, except the tape back space key, which is directly connected to a switch. The code bar mechanism of the TT-253A/UG keyboard is modified slightly to accommodate synchronous pulse transmission (see paragraph 4-4f).

(a) The code and function levers pivot about points near their midportions (figure 4-33). Located above the rear half of the code levers and running parallel with the keyboard are, from rear to front, the code lever upstop; the clutch trip bar; the numbers 1, 2, 3, 4 and 5 code bars; two character counter bars (carriage return and counter, respectively); and the lock bar. The rear portion of each code lever or function lever is normally held downward by a spring, so that the front end, with its attached keylever, is held upward.

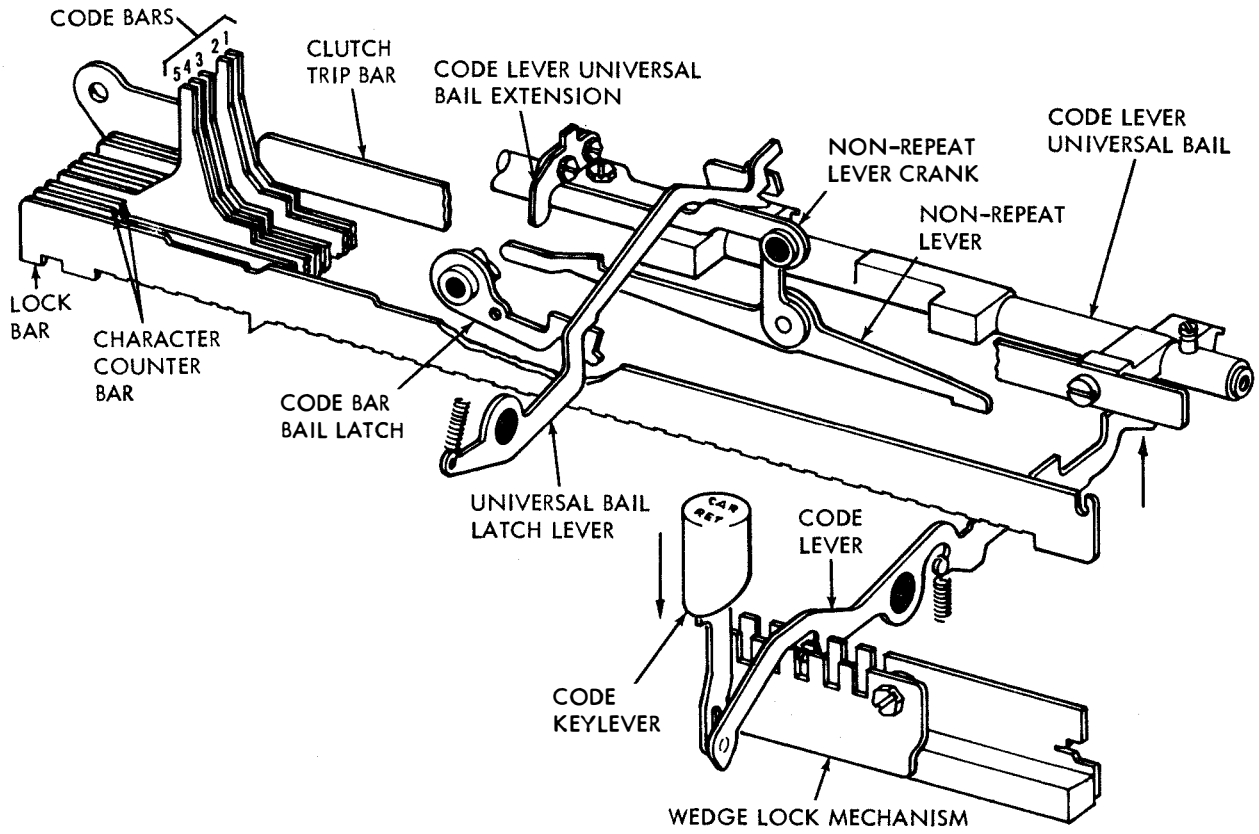


Figure 4-33. Code Bar and Code Lever Universal Bail Mechanism (TT-253/UG and TT-292/UG Illustrated)

(b) A wedgelock is mounted on the projection of the lower front portion of all code levers (figure 4-34). If one of these levers is operated, the wedgelock moves downward between the lock balls in the lock ball channel and crowds them together. This prevents any other lever with a wedgelock from being operated at the same time.

(c) With the signal generator shaft in its stop position, the code bars and clutch bar are held toward the left (viewed from the front) against the tension of their springs by the latched-up code bar bail.

(d) When any keylever in the three lower rows or the space bar is depressed, the rear end of the associated code lever engages and rotates the code lever universal bail counterclockwise (see figure 4-33). The extension on the code lever universal bail disengages from the stop at the rear of the universal bail latch lever. This then moves downward under the tension of its spring. As the lever drops, it strikes the code bar bail latch and carries it downward (figure 4-35). When the corner of the code bar bail latch falls beyond the centerline of the needle bearing mounted on the code bar bail, the code bar bail is released and swings to the right.

(e) Upon being freed, the code bar bail, the clutch trip bar and the selected code bars are pulled up to the right by their springs. Unselected code bars are stopped from moving to the right by the operated keylever or space bar. For example, if the L lever is depressed, code bars 1, 3 and 4 will be stopped by the code lever engaging teeth on the underside of the code bars. The teeth on code bars 2 and 5 are omitted in this area, and the bars are permitted to move to their extreme right hand position (figure 4-36).

(f) The code bars have vertical extensions that engage a curved part of the signal generator transfer levers (figure 4-37). The code bars which are permitted to move to the right carry with them their respective transfer levers.

(g) When the clutch trip bar moves to the right, it trips the signal generator clutch stop lever. The clutch then engages and rotates the signal generator cam.

(3) SIGNAL GENERATOR CLUTCH. — When the clutch shoe stop lever is tripped, the clutch shoes engage the drum as described in paragraph 4-3b. When power is on (motor unit operating), the clutch drum is driven continuously by the intermediate gear shaft in

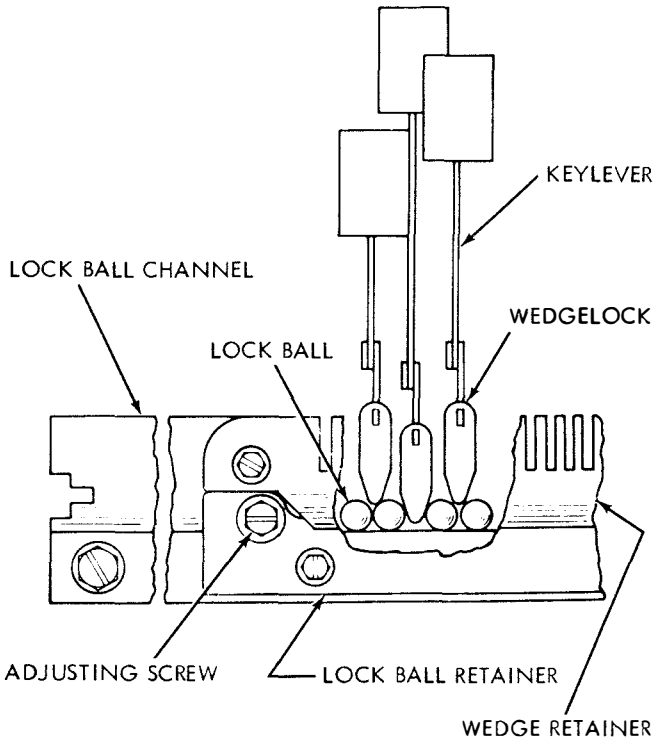


Figure 4-34. Wedgelock Mechanism

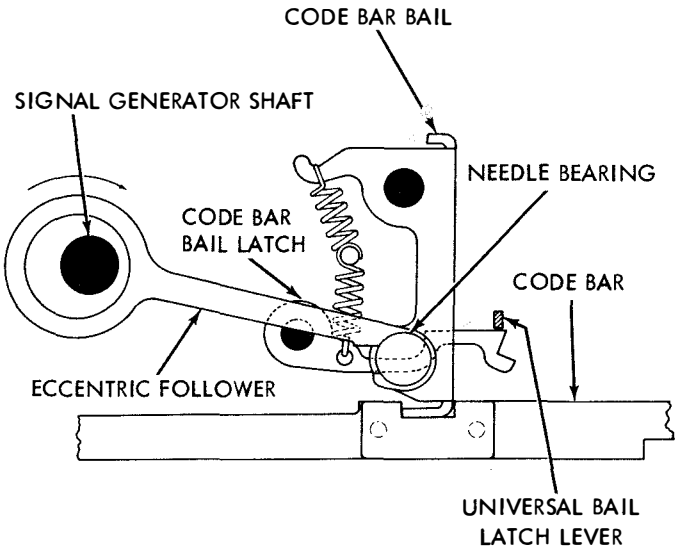


Figure 4-35. Code Bar Bail Mechanism

a clockwise direction (viewed from the front) because it is a part of the geared signal generator shaft. Since the clutch shoes are mounted on a plate that is part of the cam assembly, the signal generator cam rotates upon engagement of the clutch.

(4) SIGNAL GENERATOR MECHANISM. — The signal generator mechanism is located on the top front part of the keyboard. A drive shaft geared at the rear to the base intermediate shaft, a cam-clutch assembly mounted on the forward end of the shaft, an eccentric follower to operate the code bar bail mechanism from the cam shaft, a transfer mechanism, and a contact box are the essential features of the signal generator. Its purpose is to convert the mechanical input from the keyboard to the electrical signal sequence corresponding to that input. To the point of tripping the cam-clutch mechanism, operation in response to keyboard input is manually powered mechanical, through leverage and pivot points and detents. The cam-clutch applies the power of the motor to the operation. The signal generator originates an electrical signal pattern (marking or spacing) on the signal line, corresponding to the manual keyboard input intelligence.

(a) As stated in paragraph 4-4e(2)(f), each of the five code bars operates its own transfer lever (figure 4-37). In addition to these five transfer levers, there are two others which are not associated with code bars. These originate start and stop pulses.

(b) The cam lobes are numbered from 1 through 8 from rear to front. There are seven signal pulse lobes on the cam (one for each transfer lever). The eighth cam lobe is used to actuate the locking bail.

(c) The cam lobes are so arranged that when the cam rotates (clutch engaged), lobe 3 engages its transfer lever first and moves it downward. Almost at the same time, the eighth lobe from the rear begins to move the locking bail upward. A blade on the locking bail engages in slots on the selected transfer levers and locks them in position. Unselected transfer levers are locked in the left position as the blade blocks their movement. Thus, in the first few degrees of cam rotation, the permutated position of the transfer lever is locked and the code bars are free to be reset in their normal latched positions.

(d) Transfer lever 3 is the start pulse transfer lever. There is no code bar to engage this lever, hence it is always held to the left by its own spring. As cam lobe 3 moves this lever down, the hook on the upper right of the lever engages the right hand

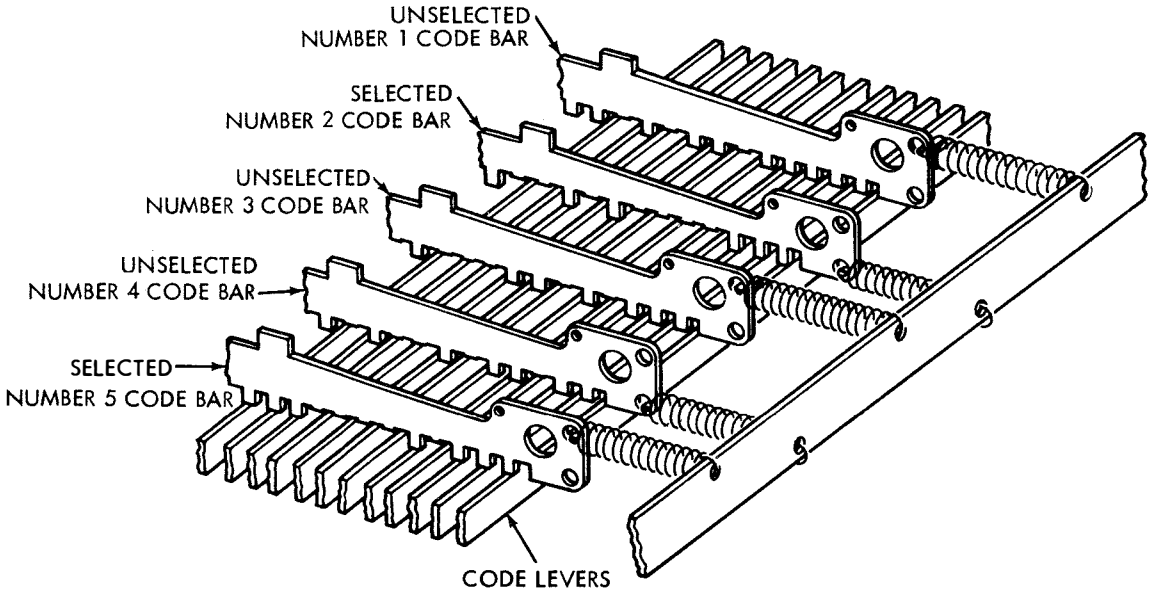


Figure 4-36. Code Bar Selection (TT-253/UG and TT-292/UG Illustrated)

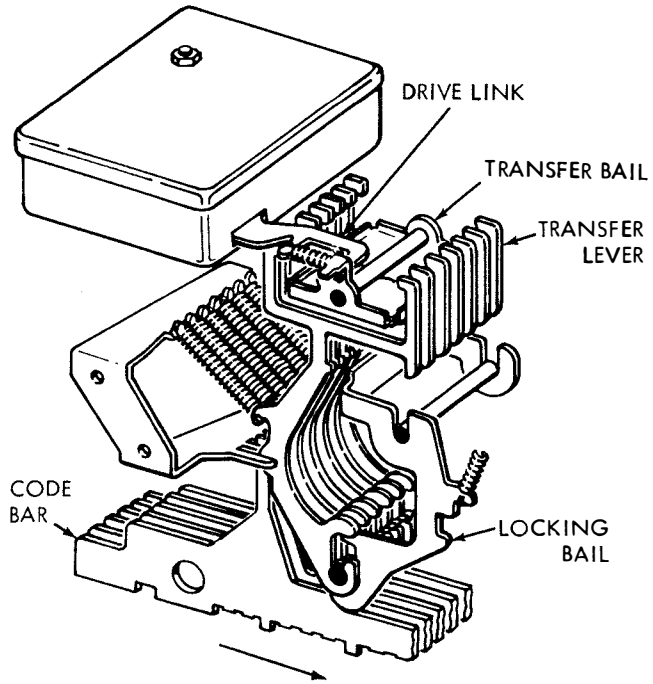


Figure 4-37. Transfer Lever Mechanism (TT-253/UG and TT-292/UG Illustrated)

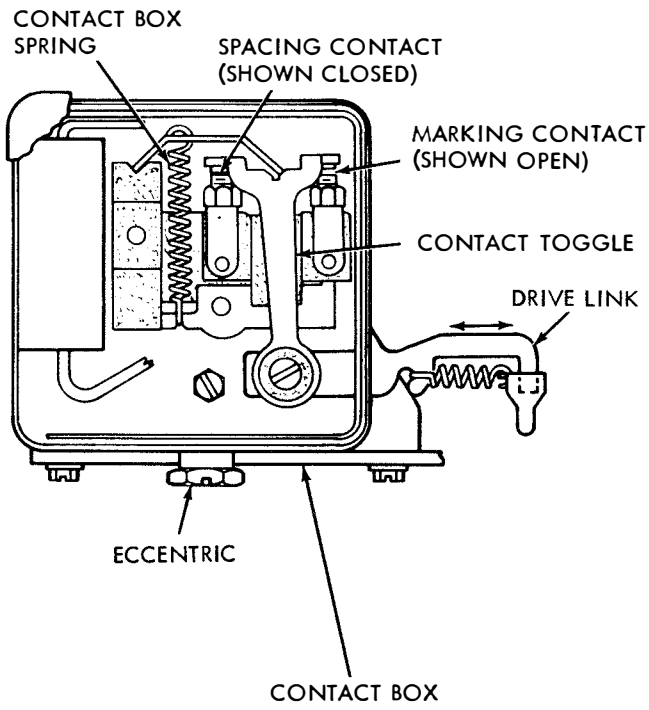


Figure 4-38. Contact Box Mechanism (TT-253/UG and TT-292/UG Illustrated)

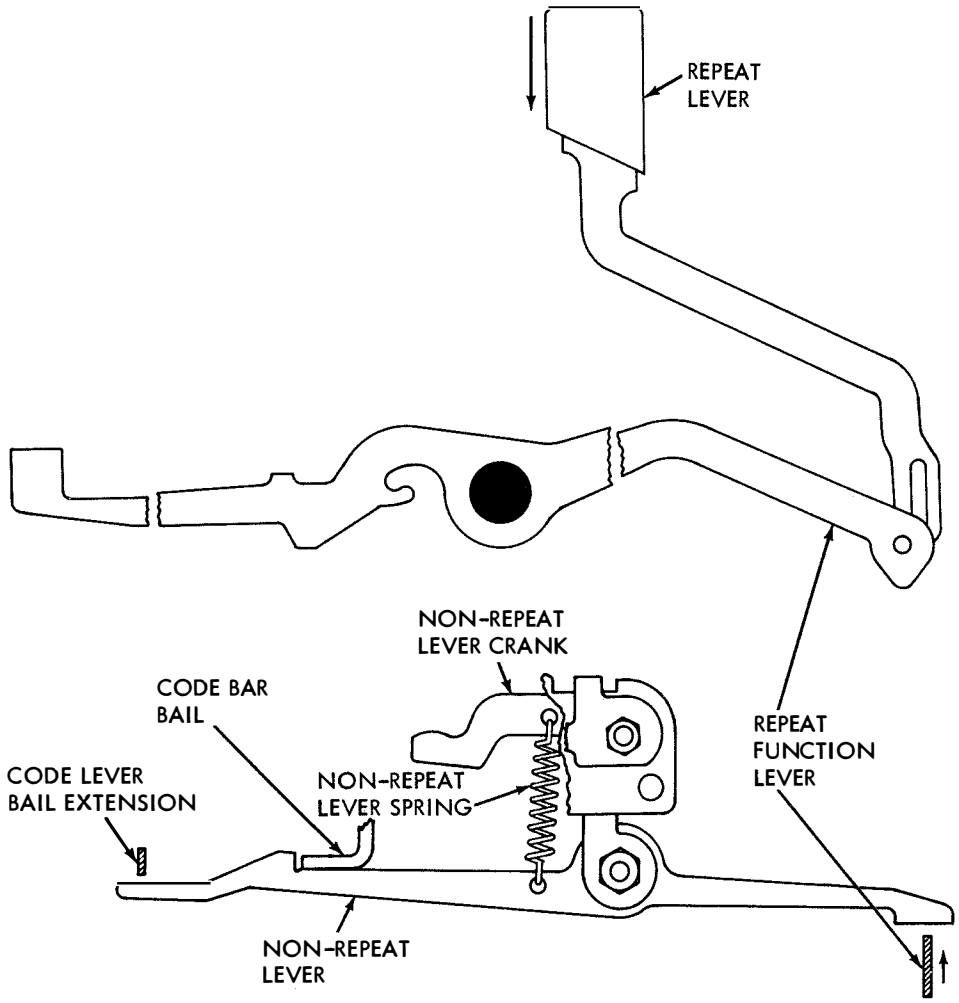


Figure 4-39. Repeat Mechanism

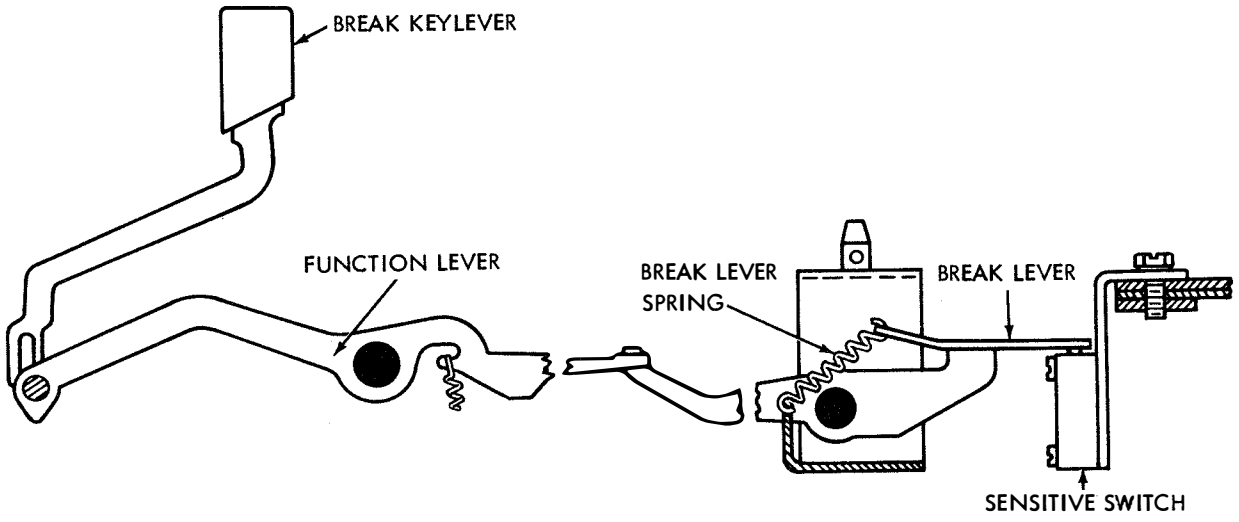


Figure 4-40. Electrical Line Break Mechanism

side of the transfer bail. This trips the transfer bail to the right and pulls the contact drive link (figure 4-37) to the right. The resulting action of the contact toggle is such that the marking contacts open and the spacing contacts close, Under this condition there is "no current" in the signal circuit. This is known as a spacing pulse. Thus, the first pulse (or start pulse) of any character transmission is always a spacing (no current) pulse.

(e) Lobe 1 and its transfer lever move downward next. For the character L it has been shown (paragraph 4-4e(2)(e)) that transfer lever 1 is positioned to the left. In turn, the upper right hook of this lever would pull downward on the transfer bail, rotating it clockwise. This pushes the drive link (figure 4-35) to the right, thereby opening the marking contacts and allowing a spacing (no current) pulse to be transmitted. Since, however, this is the first transmission following the start pulse, the transfer bail and drive link are already in the spacing position and are not repositioned by movement of lobe 1.

(f) When lobe 2 and its transfer lever (letter L transmission), transfer lever 2 is positioned to the right. The upper left hook pulls downward on the bail, rotating it counterclockwise, pushing the drive link to the left and closing the marking contacts, allowing a marking (current) pulse to be transmitted.

(g) Similarly, transfer levers 4, 5 and 6 are pulled down by their respective cam lobes, or are unaffected if the preceding pulse was the same. The resulting pulse will be marking if the transfer lever is to the right or spacing if it is to the left.

(h) Transfer lever 7 is the stop pulse transfer lever. This lever is permanently held to the right by a stop pin; therefore, the resulting pulse, the stop pulse, is always marking (current on).

(i) The locking bail holds the transfer levers in their permutated positions until after the beginning of the fifth pulse. Then cam lobe 8 pulls the bail down out of locking position and all selected transfer levers are free to return to their left position.

(j) Reset of the code bars is accomplished by means of an eccentric on the front of the cam which drives an eccentric follower (figure 4-35). The follower engages an eccentric stud on the side of the code bar bail and pulls the bail to the left as the cam rotates. As the code bar bail moves to the left, the code bar bail latch clears the needle bearing stud and is pulled upward into locking position under tension of the spring to latch or reset the code bar bail. As the code bar bail is moved into reset position, it engages projections on the permutated code bars, clutch trip bar, and a stop on the non-repeat lever, thus moving all these elements to the left, into latched, reset position.

(5) REPEAT MECHANISM. — Operation of the REPT keylever simultaneously with one of the keylevers in the three lower rows or the space bar disables the non-repeat mechanism and causes the character or function selected to be repeated as long as the REPT keylever is held operated. The operated REPT keylever causes its function lever to raise the right end of the non-repeat lever (figure 4-39) and rotates it about its pivot point. In this position, the non-repeat lever cannot be engaged and operated by the code bar bail; therefore, the non-repeat lever crank will not reset the operated code bar bail latch. The code bar bail and universal bail latch lever are thus maintained in their operated positions, and the code bar bail follows the eccentric movement back and forth until the REPT keylever is released.

(6) ELECTRICAL LINE BREAK MECHANISM. (See figure 4-40.) — The electrical line break mechanism provides a means of interrupting signal circuit as an alerting signal for automatic equipment sometimes used in the teletypewriter system. Interruption of the line current is accomplished by depressing the BREAK keylever.

(a) When the BREAK keylever is depressed, its function lever pivots and raises the front end of the break lever. The rear portion of the break lever depresses the actuator pin of the sensitive switch, which opens the normally closed contacts. This action breaks the continuity of the signal line, causing transmission of a break (no current) signal.

(b) When the BREAK keylever is released, the tension of the switch spring and the break lever spring cause the function lever to return the keylever to its normal position, and the switch contacts to their normal closed condition.

(7) KEYBOARD LOCK MECHANISM. — Operation of the (red) KYBD LOCK keylever causes its function lever to raise the keyboard lock bar pawl (figure 4-41). In its upper position, the pawl releases the keyboard lock bar, and a spring pulls the bar to the right. In this position, projections on the lower side of the bar block the upward movement of any code lever and the repeat function lever.

(8) KEYBOARD UNLOCK MECHANISM. — Operation of the (red) KYBD UNLK keylever causes its function lever to rise against a camming surface on the keyboard lock bar and drive the bar toward the

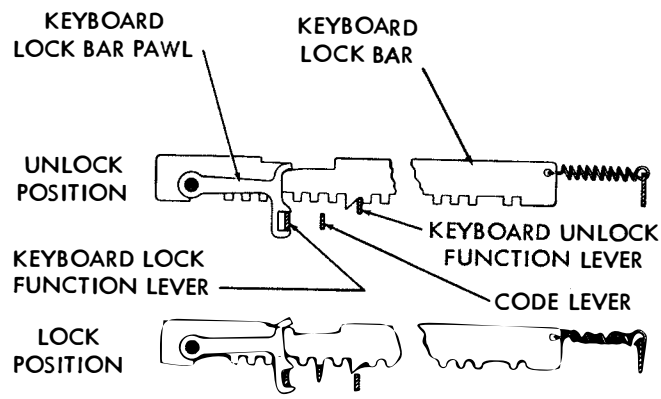


Figure 4-41. Keyboard Lock Mechanism

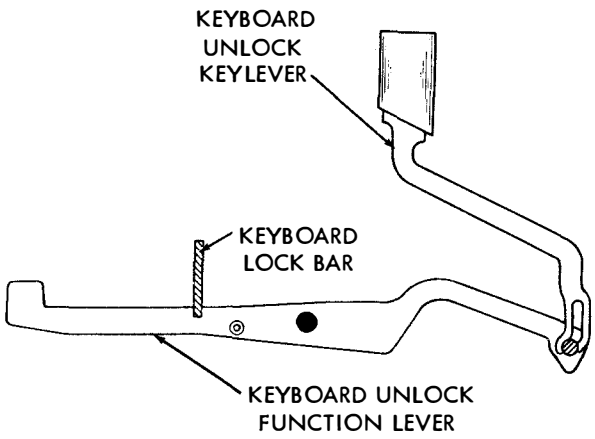


Figure 4-42. Keyboard Unlock Mechanism

left until the lock bar pawl drops into a notch in the lock bar (figures 4-41 and 4-42). In this position, the projections on the lock bar lie between the code levers and offer no interference with their operation.

(9) TAPE BACK SPACE. — Depressing the TAPE B.SP. keylever directly activates a switch which controls the back space function on the typing reperforator (see paragraph 4-3h(4)). The keylever is spring loaded to return to its unoperated position after each operation. There is no associated function lever for this keylever, and the code bar mechanism is not affected by its operation. The operation is isolated from the signal generator mechanism and does not affect other units in the line circuit. The purpose of the back space function is to permit eradication of an erroneous character code, or codes, by reperforating such codes, using the five-hole perforated letters code.

(10) TAPE FEED-OUT. — The TAPE F.O. keylever operates a sensitive switch located at the rear of the base. Although the switch is actuated through a function lever, the use of this key is an off-line operation and has no effect on the code bars.

(11) CHARACTER COUNTER MECHANISM. (See figures 4-43 and 4-44.) — The character counter is driven mechanically from the code bar mechanisms through the counter and counter reset bars located in the second and third (from front) slots of the code bar basket. These code bars drive projections which engage the forks of the feed and reset bails of the counter. As the code bars fall to the right when a key on the keyboard is struck, the counter mechanism is tripped. These functions may be divided into three distinct phases of operation of the counter mechanism: stepping, counter reset and restart.

(a) STEPPING. — Referring to sequence A, figure 4-45, as a key is struck, the code bars fall to the right, carrying with them feed bail (1). The drive bail, which is linked to the feed bail, moves to the left slightly more than one tooth. As the code bars are reset under power, stepping bail (1) moves clockwise, causing the drive lever to advance the ratchet

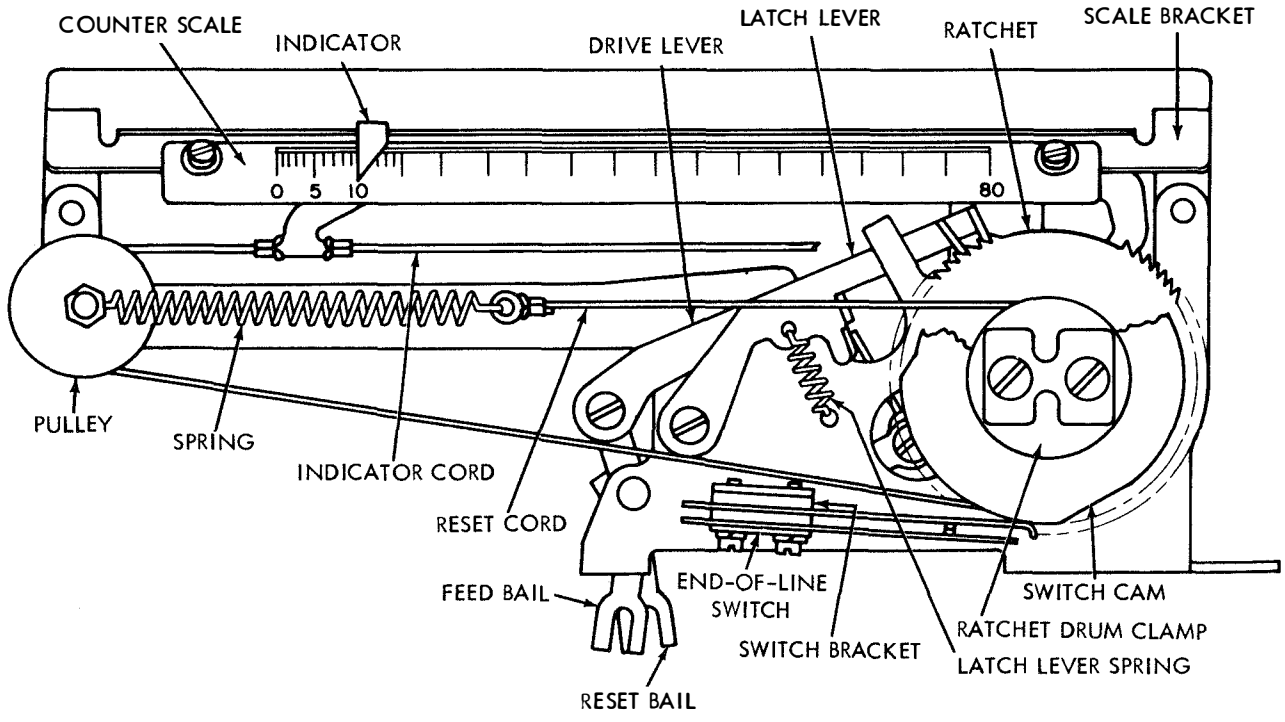


Figure 4-43. Character Counter Mechanism (Front View)

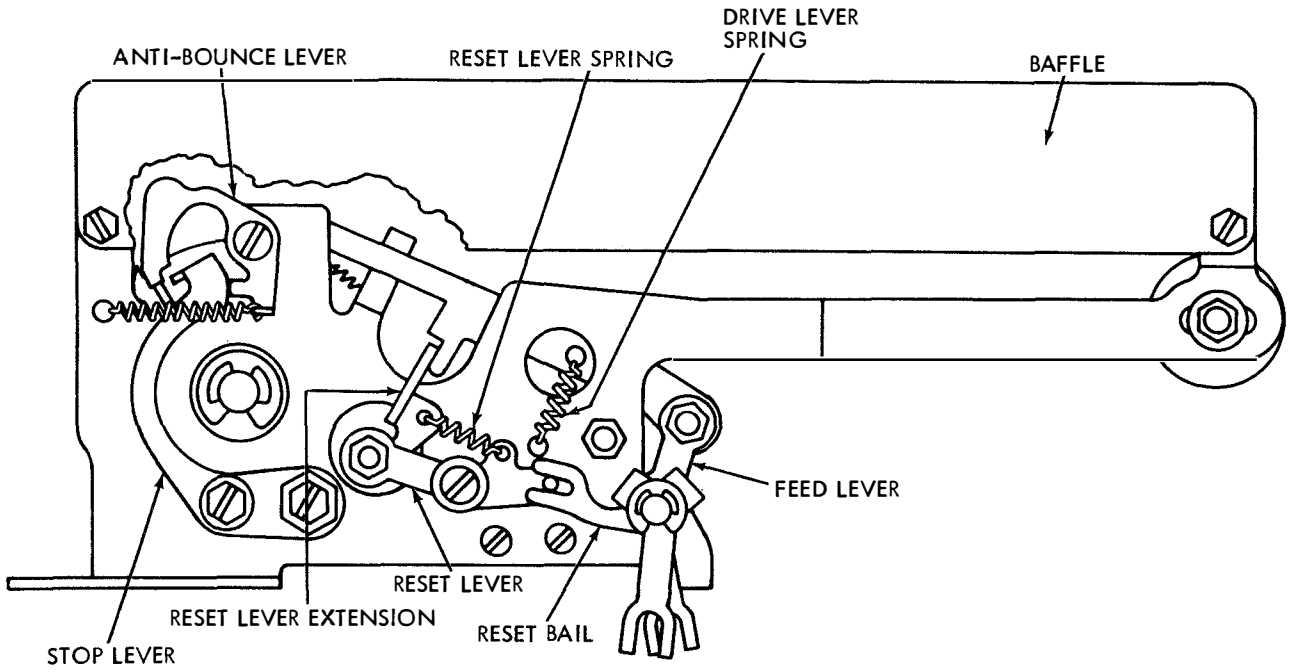


Figure 4-44. Character Counter Mechanism (Rear View)

drum one tooth. The drive pawl prevents the ratchet drum from rotating counterclockwise until it is again tripped for the following character. When this occurs, the ratchet drum rotates slightly counterclockwise, coming to rest against the latch lever.

(b) COUNTER RESET.

1. Sequence B, figure 4-45, illustrates the tripped position of the counter mechanism for a reset function. Reset bail (2) moves counterclockwise as its code bar falls to the right, causing the reset lever in turn to rotate clockwise. As the reset lever rotates clockwise, the reset lever extension moves downward until it falls under the shoulder of the projection on the drive and latch levers under the action of its spring. When the counter bars are reset as in C, figure 4-45, the reset bail is rotated clockwise to its original position, causing the reset lever to rotate counterclockwise, carrying both the drive and latch levers out of engagement with the ratchet teeth. The mechanism remains in this condition, and the ratchet drum assembly rotates rapidly counterclockwise (under the action of its return spring) until it reaches its zero position.

2. As the ratchet drum reaches its zero position, a stop on the ratchet strikes a stop lever fastened to the frame. The elastic impact is transmitted through the stop lever to the anti-bounce lever, whose lower end is normally in contact with the stop lever. The anti-bounce lever rotates counterclockwise, dropping in behind the ratchet stop. As the ratchet drum rebounds from the stop lever, its stop strikes the anti-bounce lever, preventing further motion and maintaining the anti-bounce lever in its actuated position. The ratchet continues to operate between the stop lever and anti-bounce lever until the energy in the system has been largely dissipated. The ratchet stop then remains in contact with the stop lever, permitting the anti-bounce lever to return to its normal position.

(c) RESTART. — Sequence D, figure 4-45, illustrates the restarting action of the counter mechanism for the character following a carriage return. As a key on the keyboard is depressed, the counter code bar falls to the right, the feed bail moves counterblockwise and the drive lever moves to the left. As the drive lever moves to the left, it is disengaged from the reset lever extension and falls into engagement with the ratchet tooth. As the code bars are reset under power, the feed bail rotates clockwise, and the feed lever begins to move to the right. As it does, its projection pushes the reset lever extension to the right and out of engagement with the latch lever, which falls into engagement with the ratchet drum. As the drive lever completes its stroke, it steps the ratchet one tooth, as in the normal stepping operation.

(d) END-OF-LINE SWITCH. (See figure 4-43.) — Operation of the end-of-line switch is controlled by a switch cam. The switch cam rotates with the ratchet drum and can be adjusted to close the switch at any typed line length from 10 to 80 characters.

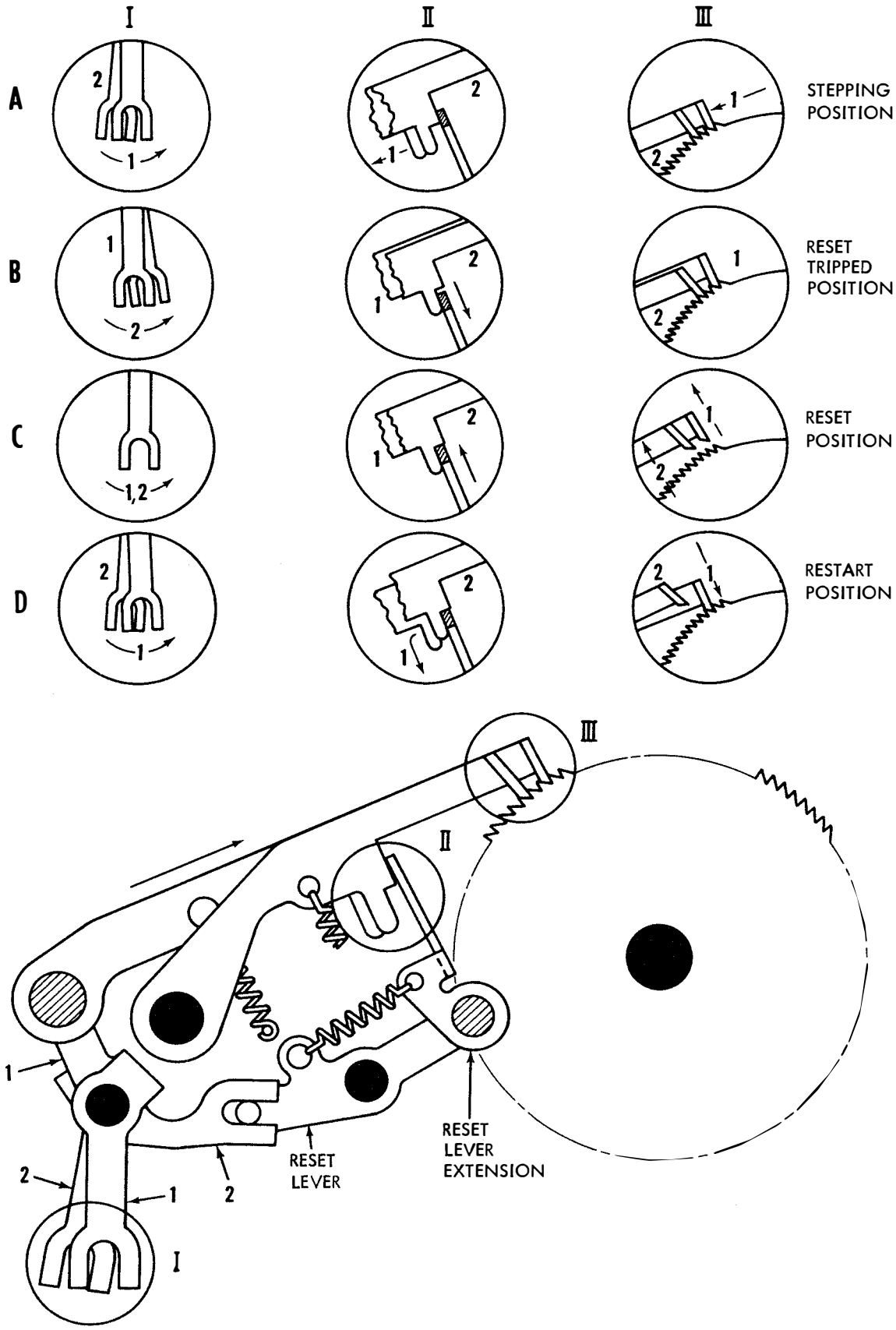


Figure 4-45. Operation of the Character Counter Mechanism

(12) SYNCHRONOUS PULSE MECHANISM (TT-253A/UG). — The synchronous pulsed transmission mechanism provides a means of initiating signal transmission from the keyboard, at a predetermined rate, upon reception of an 0.050 ampere external clocking pulse of 20 millisecond deviation.

1. When any green key on the keyboard is depressed, the reset bail moves right and releases all selected code bars as described in paragraph 4-4e(2)(d). Also released is the universal code bar which moves right and closes the clutch magnet conditioning contacts setting up the clutch trip magnet to receive the external clocking pulse.

2. Upon reception of the external clocking pulse, the clutch trip magnet energizes and unlocks the clutch trip bar. As the clutch trip bar moves to the right it engages the clutch trip bail extension and trips the signal generator clutch, allowing the signal generator cam shaft to rotate and transmit the proper sequential signal. After one complete revolution of the signal generator cam shaft, the reset bail returns to the starting position, resetting all code bars and the clutch trip bar.

4-5. CABINET OR COVER.

a. COVER (TT-192/UG AND TT-274/UG). — The cover completely encloses the typing reperforator set and rests on the lower base. The cover should not touch the upper base or any of the apparatus mounted thereupon. Access to the main power switch and the tape feed-out switch are through an aperture in the front of the cover, and cable access is through an aperture in the rear. A hinged access door extends across the front of the cover. A button at the right side of the cover, just beneath the door, releases the door latch and permits the door to swing upward. Two latches, one at either side of the cover, are unlatched by pulling the latch away from the cover and down until it clears the dog on the lower base to which it locks.

b. MINIATURIZED COVER (TT-192A/UG). — The miniaturized cover completely encloses the typing reperforator set, resting upon the lower base plate without touching the upper plate or the mechanisms attached thereto. A hinged access door extends across the top and front of the cover. Two latch buttons which engage detents in the access door must be moved toward the center of the cover to open and raise the door. Access to the main power switch is through an aperture in the hinged door. The cover is latched to the base plate by spring detent clips.

c. CABINET (TT-253/UG, TT-253A/UG AND TT-292/UG). — The bottom of the cover serves as a lower base plate for the keyboard-base. Two eccentric arms latch the sides of the cover to the base plate. Move the latch lever at the center of the cover to the right to latch the cover to the base. The cabinet is illuminated by two 6 V a.c. lamps, for the carriage return indicator and the tape, respectively. Both lamps are located on the inside of a hinged access door. Depress a button at either side of the cabinet to unlatch the access door, which swings forward. A connector on the cabinet lamp cable mates with a receptacle on the base terminal board bracket to supply power for cabinet illumination.

4-6. MOTORS.

a. SYNCHRONOUS MOTORS. (See figure 4-46.) — Typing reperforator sets driven by a.c. synchronous motors use either a standard size 0.050 h.p. motor (LMU3) or a miniaturized 0.020 h.p. motor (LMU24). The latter is peculiar to TT-192A/UG.

(1) TT-192/UG, TT-253/UG AND TT-253A/UG. — The standard synchronous motor used on these sets is an 0.050 h.p., 3600 r.p.m., two pole, wound stator, ball bearing motor with a squirrel cage type rotor. The stator has two windings, a main operating winding and an auxiliary starting winding.

(a) The auxiliary winding is in series with a 170 mf electrolytic capacitor and with a current operated motor starting relay. The initial starting current causes the relay to pull up and its contacts to close the auxiliary winding circuit. As the motor gains speed, the current flowing through the motor, and through the relay coil, decreases. When a predetermined current value has been reached, the relay armature is released, the relay contacts are opened and

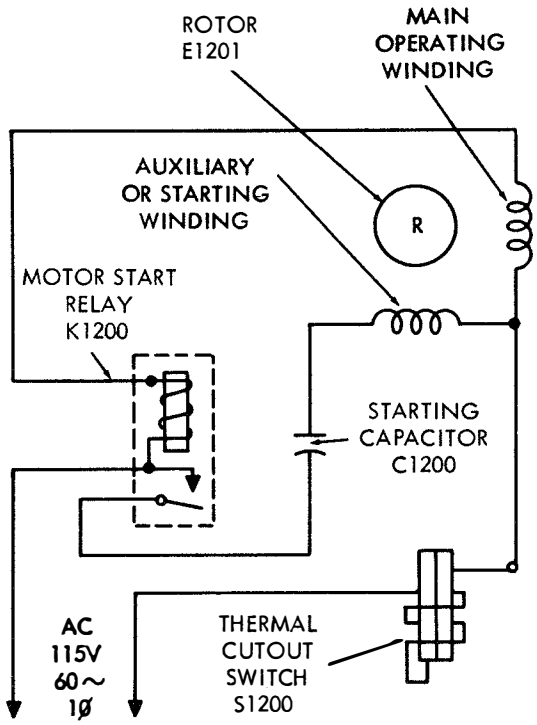


Figure 4-46. Synchronous Motor Schematic Wiring Diagram (TT-192/UG, TT-253/UG and TT-253A/UG)

the auxiliary winding circuit is disconnected from the line. The rotor continues to accelerate until it reaches synchronous speed (3600 rpm). The motor is wired in such a manner that the fan revolves counterclockwise when viewed from the fan end.

(b) The starting relay and capacitor together with a thermal cut-out switch are mounted in a compartment on the underside of the motor. The thermal cut-out switch is in series with both the main and the auxiliary motor windings, and if excessive current is drawn by the motor, due, for example, to a blocked rotor, the switch will open the circuit. This is to prevent overheating and possible damage to the motor if it is stalled. The switch may be manually reset if tripped by depressing the red button which projects upward through the motor mounting plate. Allow the motor to cool at least five minutes before manually depressing the red button.

(c) There are two fans located within the motor housing, one at each end of the rotor. These flow cooling air through the slots in the end bells and exhaust it through slots in the motor housing. The end bells have rubber vibration mounts on which the motor rests in its mounting cradle. The rubber mounts are held in the mounting bracket by mounting straps. The motor shaft has a tapped hole for use in fastening the intermediate shaft driving helical gear. All end play is taken up by a conical shaped spring, which bears against the outer race of one of the ball bearings. The motor mounting bracket is fastened to the keyboard by four screws and lock washers.

(2) TT-192A/UG. — The miniaturized motor used on this typing reperforator set is an 0.020 h.p., 3600 r.p.m. similar to the standard size motor in operation (paragraph 4-6a(1)). It is not equipped with a thermal cut-out switch. Cooling air circulation is directed through two ducts mounted around the outside of the motor housing.

b. VACUUM CHAD DISPOSAL MECHANISM (TT-253A/UG). — To dispose of the chad refuse produced in the preparation of fully perforated tape, TT-253A/UG motors have been modified at the fan end to accommodate a vacuum type chad chute. The chads are drawn by a vacuum produced by the motion of the motor fan from the top of the perforator into a bag attached beneath the motor at the rear of the set.

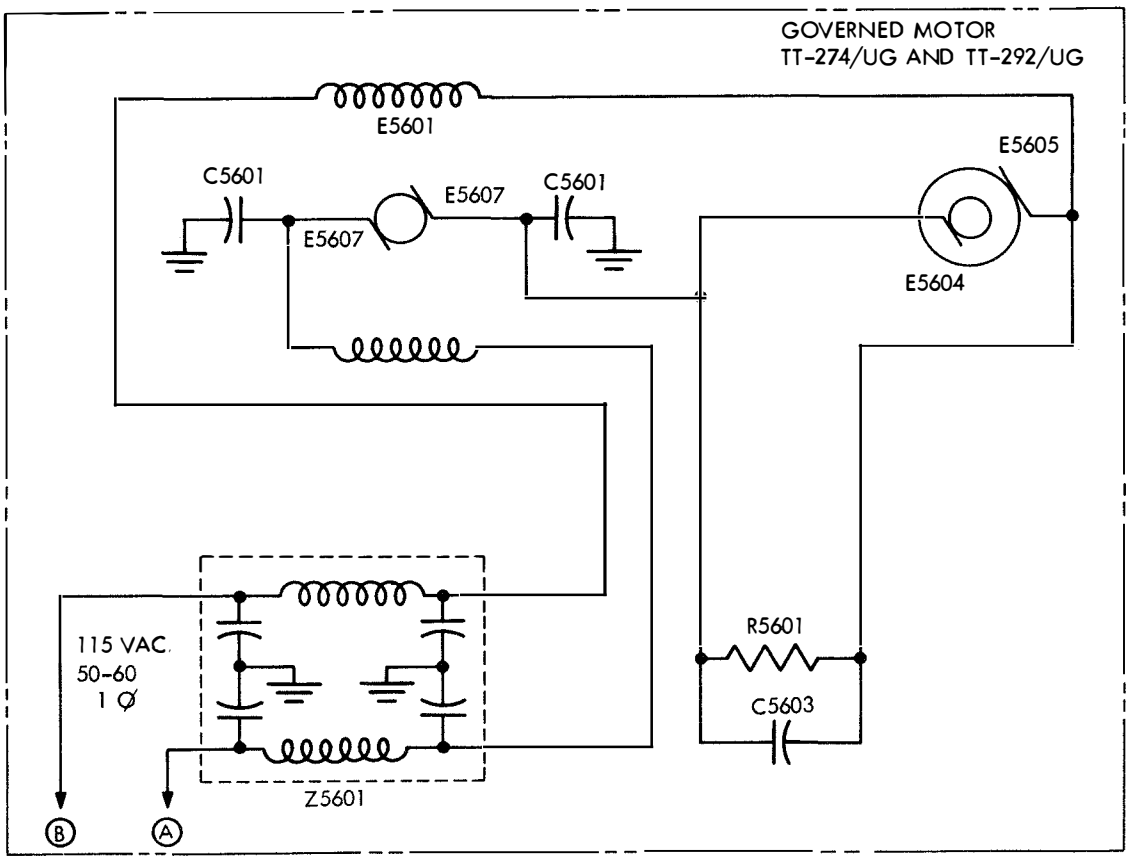


FIGURE 4-47. GOVERNED MOTOR SCHEMATIC WIRING DIAGRAM (TT-274/UG AND TT-292/UG)

Figure 4-47. Governed Motor Schematic Wiring Diagram (TT-274/UG and TT-292/UG)

c. GOVERNED MOTOR (TT-274/UG AND TT-292/UG). (See figure 4-47.) — Typing Reperforator Sets TT-274/UG and TT-292/UG are driven by a.c. series wound governed motors. The motor used is a single phase, 115 volt (plus or minus 10 percent) alternating current adaptable to 50 to 60 cycles per second.

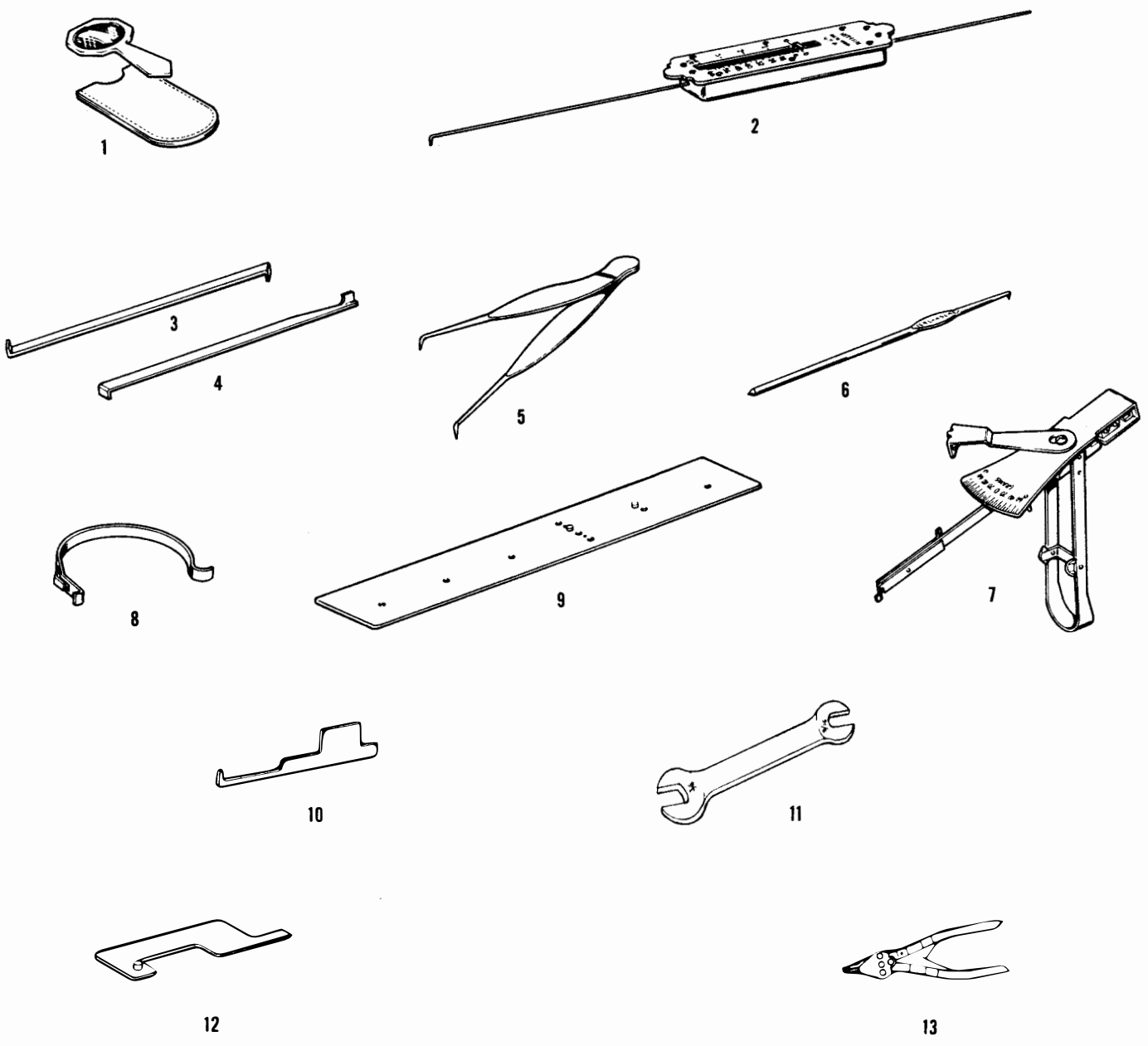
(1) The governed motor is an 0.050 h.p., 3600 r.p.m. ball bearing motor which depends on an electro mechanical governor for its speed regulation. The armature is wired in series with two field windings and the governor contacts. A 250 ohm, 40 watt resistor and an 0.5 mf capacitor are connected in parallel with the governor contacts. When the contacts are closed, the resistor is shorted out. When the contacts are open, the resistor is in series with the motor, to limit its operating current, and thus reduce its speed. The capacitor serves as a spark suppressor for the governor contacts.

(a) The combination fan and governor is mounted on one end of the motor shaft. The fan draws cooling air through the motor housing, and also serves as a mounting plate for the governor slip rings and for the governor contact mechanism (mounted on opposite sides of the fan). Connections to the two slip rings, which are wired to the governor contacts, are made by means of two carbon brushes mounted on the ends of the motor housing. Normally, the governor contact spring holds the governor contact against a contact screw. When the motor shaft exceeds a predetermined speed, centrifugal force developed on the contact briefly overcomes the tension of the spring, and the governor contact leaves the contact screw until the motor slows down. The tension on the contact spring may be adjusted to maintain motor speed at 3600 r.p.m.

(b) Means are provided to compare the motor speed with a standard in making the contact spring tension adjustment. An aluminum cover fits against the side of the fan and encloses the governor contact mechanism. The outside of the cover is finished in white, with four black stripes equally spaced about its periphery. This serves as a target, which should appear to stand almost still at 3600 r.p.m. when viewed through the moving shutter of a 120 vibrations per second tuning fork.

(c) The two motor brushes are protected by 0.5 mf capacitors connected between the brushes and the grounded frame of the motor. These tend to by-pass any electrical noise created by the brushes as they make and break contact with the various segments of the armature commutator. The motor is wired in such a manner that the armature rotates counterclockwise when viewed from the governor end.

(d) The method of mounting the governed motor is similar to the method of mounting the synchronous motor (paragraph 4-6a(1)(c)). The housing beneath the motor mounting bracket contains both the 250 ohm resistor and the 0.50 mf capacitors in the governor circuit, as well as an electrical noise suppressor across the power leads.



1. MAGNIFYING LENS
2. 64-OZ SPRING SCALE
3. OFFSET SCREWDRIVER
4. OFFSET SCREWDRIVER
5. TWEEZERS
6. SPRING HOOK PUSH TOOL
7. 70-GRAM SPRING SCALE
8. ARMATURE CLIP
9. TAPE GAUGE W/PINS
10. CONTACT ADJUSTING TOOLS
11. DOUBLE END WRENCH
12. PUNCH BALL ARM GAUGE W/PINS
13. TRUARC PULLER PLIERS

Figure 5-1. Tools

SECTION 5

TROUBLE SHOOTING AND PREVENTIVE MAINTENANCE

5-1. GENERAL.

a. Preventive maintenance is applied for the purpose of detecting and correcting troubles before they develop to the point of interference with satisfactory operation of the equipment. Proper lubrication, but not over-lubrication, is an important preventive maintenance measure. Use care to prevent the introduction of trouble when work on the equipment is necessary. Do not disturb adjustments unnecessarily.

b. A thorough visual inspection of the equipment during periodic checks may uncover conditions that could possibly cause trouble later. The appearance of oxidized (red) metal dust adjacent to any bearing surface may indicate insufficient lubrication. A dislodged attaching part should always be correctly identified and replaced, and all associated parts should be adjusted at once. The adjustable clearances of working parts should also be observed. A visual examination should be accompanied by a manual one. Connections at terminal boards should be checked for tightness. Nuts and screws that lock adjustable features should be carefully observed for looseness and tightened if necessary. While cleaning the units, care should be exercised to avoid damage or distortion to delicate springs, weakening their tension. Electrical contact points should be kept free and clear of dirt, oil, corrosion or pitting. Check that operating clearance has been maintained when a contact has been cleaned.

NOTE

The attention of maintenance personnel is invited to the requirements of Chapter 67 of the Bureau of Ships Manual of the latest issue.

5-2. TOOLS.

Tool equipment TE-50-B and the tools listed in table 5-1 (see figure 5-1) are required for the maintenance of Typing Reperforator Sets TT-192/UG, TT-192A/UG, TT-253/UG, TT-253A/UG, TT-274/UG and TT-292/UG. These tools are not supplied as parts of the equipment.

TABLE 5-1. LIST OF TOOLS

ITEM NO. (FIG. 5-1)	TELETYPE PART NUMBER	NAVY DESIGNATION	DESCRIPTION
1	73408		Lens, magnifying; with case. Bausch & Lomb Optical, Code No. 06175, Part No. 8-123-40
2	82711		Scale, spring; 64 ounce.
3	94644		Screwdriver, offset. Western Electric Co., Code No. 64959, Part No. 206.
4	94645		Screwdriver, offset. Western Electric Co., Code No. 64959, Part No. 207.
5	151392		Tweezers. Samuel Harris Co., Code No. 27395, Part No. 67.
6	151959		Tool, spring hook, pull. Boye Needle Co., Code No. 71111, Part No. 12.
7	152223		Scale, spring; 70 grams. Western Electric Co., Code No. 64959, Part No. 68C.
8	152292		Clip, Armature
9	156011		Tape gauge w/pins
10	156170		Contact adjusting tool
11	129537		Double end wrench
12	159926		Rocker arm gauge
13	160396		Truarc puller pliers. Berry Bearing Co., Code No. 70788, Part No. 2-22
14 (not illustrated)	DXD	TT-383B/GG	Distortion test set

5-3. ROUTINE MAINTENANCE CHECK CHART.

Routine maintenance shall be performed as directed in table 5-2.

TABLE 5-2. ROUTINE MAINTENANCE CHECK CHART

WHAT TO CHECK	HOW TO CHECK	PRECAUTIONS
GENERAL		
1. Accumulations of dust and dirt.	Check for accumulation of dust, grime, grease and dirt. Clean with soft lint-free cloth.	Do not use air hose. Be sure that springs or other parts are not disturbed in cleaning. Avoid brushing dust or dirt into bearings or other moving parts.
2. Dislodged parts or hardware.	Identify parts correctly and replace promptly.	Check possible effect of loose or missing parts on adjustments (step 17).
3. (TT-192A/UG) Free and clear air passages to cover louvres and motor ducts.	Remove or clear any external obstructions to cover vents and clean motor ducts.	Do not set cover against a wall or other equipment which would obstruct free passage of air through the cover louvres.
4. (TT-253A/UG) Chad chute.	Inspect bag for overfilling or incorrect installation.	Bag should be emptied when half to three-quarters filled. Draw string must be tightly closed when installed.
5. (TT-274/UG and TT-292/UG) Motor Brushes.	Remove and replace if length is less than 3/8 in. Wipe and blow off accumulated carbon dust.	Be sure brush springs are properly installed.
CABINET OR COVER		
6. Glass.	Clean with soft, lint-free cloth moistened with mild soapy water.	Avoid scratches. Replace badly scratched cover or cabinet windows.
7. Dents or cracks.	Repair or replace cover.	Be sure no part of cover touches upper base plate or operating mechanisms.
8. Hinges and doors.	Check for loose attaching parts, proper fit, latching.	
9. Attachment to base.	Visually and manually inspect latch mechanisms or spring detents.	
LAMPS, FUSE, CABLES, CONNECTORS		
10. Broken or burned out lamps.	Table 3-3.	Be sure specifications for replacement lamp meet the requirements of the set.

TABLE 5-2. ROUTINE MAINTENANCE CHECK CHART (CONT)

WHAT TO CHECK	HOW TO CHECK	PRECAUTIONS
11. Cable or lead insulation worn, frayed or burned, brittle or broken.	Inspect visually and manually.	Discharge capacitor by pulsing tape feed-out if reperforator connector is in place, or by shorting capacitor terminals with an insulated screwdriver. (Not applicable to TT-192A/UG.)
12. Terminal boards.	Inspect for loose screws and disconnected leads.	
13. Connectors and receptacles.	Inspect for proper mating and for condition of soldered connections.	
14. (TT-192A/UG) Fuse.	Visually inspect fuse and fuse holder.	Replace only with fuse of required capacity. See table 3-2.
TIMING BELT		
15. (TT-192/UG, TT-192A/UG and TT-274/UG.) There should be some slack but not excessive slack in timing belt.	Excess slack may indicate loose intermediate gear or reperforator mountings.	
SELECTOR RESPONSE		
16. Selector setting.	Visually inspect selector index setting and compare with normal operating setting for the equipment.	
17. Selector Response.	If the selector responds to distorted signals in the manner specified in section 6, paragraph 6-4e, no maintenance is required. If the requirements are not met, the following routine should be observed:	
	a. Clean the magnet pole faces by running a clean piece of paper between them and the armature.	Be sure no lint is left on the armature.
	b. Examine selector parts for wear and replace if worn.	
	c. Check adjustments of selector. See figures 6-64, 6-68, 6-69 and 6-70.	
	d. Check selector mechanism springs and replace if necessary.	
ADJUSTMENTS		
18. Adjustments.	Most adjustments will remain within specification limits for the life of the equipment and therefore do not require checking unless trouble occurs. The following adjustments should be checked and remade if necessary.	Exercise extreme precaution to avoid overtightening screws, which might result in stripping.

TABLE 5-2. ROUTINE MAINTENANCE CHECK CHART (CONT)

WHAT TO CHECK	HOW TO CHECK	PRECAUTIONS
19. Adjustments (Cont)	a. Clutches. See figures 6-64, 6-65, 6-98 and 6-152. b. Signal generator contact. See figure 6-153.	
LUBRICATION		
20. Lubrication.	For disassembly prior to lubrication see instructions in section 6, paragraph 6-3. Remove the typing reperforator from the base or keyboard base. Examine all mechanisms for signs of lubrication failure, usually evidenced by the presence of red powdery substance at point of failure. If failure is observed, parts should be examined and if damaged they should be replaced. Lubricate the equipment in accordance with figures 5-2 through 5-34, and wipe off excessive lubricant with a clean cloth.	Be sure that springs are not disengaged and that other parts are not disturbed in examination and lubrication.

5-4. TROUBLE SHOOTING.

a. GENERAL. — Failures of the equipment can be traced functionally by means of the trouble shooting chart, table 5-3. A step-by-step analysis of the behavior of the equipment in response to the tabulated checks will indicate the area of trouble in which to apply remedial measures outlined below and referenced in the chart. Since, in most cases, each check step is conditioned by the procedure in preceding steps, examine all preliminary procedures before rechecking any step or otherwise performing any trouble shooting check out of sequence. An eliminative process relative to probable troubles indicated should greatly facilitate clearing faulty operation at any point in the equipment. In any case where a part fails, an ELECTRONIC FAILURE REPORT, form DD787, should be prepared and forwarded to BuShips. (See paragraph 6-1.)

(1) When check of an adjustment is indicated, care should be exercised not to disturb the adjustment or related adjustments. Reference is made to adjustment illustrations in Section 6 as required. If adjustments are found to be needed, check paragraph 6-4 to determine if related adjustments may be required.

(2) For removal and repair procedures, when indicated, refer to paragraph 6-3 and to the exploded views of the equipment contained in Section 6.

(3) Comprehensive electrical analysis of equipment is generally not required in trouble shooting. Mechanical adjustments, when properly completed, will in most cases insure satisfactory electrical performance. If available, a Signal Distortion Test Set TS-383B/GG (used in accordance with procedures outlined in NAVSHIPS 91654) may be installed in the signal line to evaluate the quality of the signal produced by the keyboard base (TT-253/UG) or the response to a signal by the selector unit. The following are common signal line troubles usually distinguishable without special test equipment.

(a) "Open." Related teletypewriter equipment on the signal line "runs open" as a result of failure of the marking or current-on element of the signal.

(b) "Closed." Related teletypewriter equipment on the signal line "runs closed" as a result of failure of the spacing or current-off element of the signal.

(c) "Garbling" is a condition in which the typed or perforated message does not correspond to the keyboard generated or signal line message input.

(d) "Marking bias" advances the beginning of each marking impulse with respect to the beginning of the character cycle.

(e) "Spacing bias" delays the beginning of each marking impulse.

(f) "Marking end distortion" delays the end of each marking impulse.

(g) "Spacing end distortion" advances the end of each marking impulse.

TABLE 5-3. TROUBLE SHOOTING CHART

STEP AND EQPMT*	PROCEDURE AND NORMAL INDICATION	TROUBLE	NEXT STEP	CORRECTION (REF PARAGRAPH)
1	Main power switch ON; motor starts	Motor does not start	Check external power	5-4b(1)(a)
			Check 16-point connector	5-4b(1)(d)
			Check 36-point connector	5-4b(1)(f)
			Check motor connections at terminal board	5-4b(2)(a)
			Check main switch	5-4b(1)(g)
2 (C)	Main power switch ON; pilot lamp is lighted	Pilot lamp out	Check external power	5-4b(1)(a)
			Check 16-point connector	5-4b(1)(d)
			Check pilot lamp bulb	5-4b(1)(b)
			Check terminal board connections	5-4b(1)(e)
3 (C)	Cabinet illumination lamps light	Cabinet illumination lamp failure	Check connector	5-4b(1)(h)
			Check lamps and sockets	5-4b(1)(i)
			Check transformer	5-4b(1)(j)
4 (B)	Main power switch ON; motor starts	Motor does not start	Check fuse	5-4b(1)(c)
5 (A, C)	Main power switch ON; motor starts	Motor does not start	Check thermal cut-out	5-4b(2)(b)
6 (E)	Motor starts	Motor does not start	Check governor brushes	5-4(2)(d)1
7	Motor runs	Motor runs at incorrect speed	Check power supply frequency	5-4b(2)(c)
8 (E)	Motor runs	Motor runs at incorrect speed	Check governor setting	5-4b(2)(d)2
			Check governor resistor and capacitors	5-4(b)(2)(d)3
9	Mechanical motion is transmitted to typing reperforator main shaft	Main shaft does not rotate	Check intermediate gear mechanism	5-4b(3)(a)
		Gears howl	Check motor pinion and drive gear mesh	5-4b(3)(a)
		Gears chatter	Check motor pinion and drive gear mesh	5-4b(3)(a)

* — Equipment code: A — TT-192/UG and TT-274/UG B — TT-192A/UG C — TT-253/UG, TT-253A/UG and TT-292/UG D — TT-253A/UG E — TT-274/UG and TT-292/UG
No code: Applicable to all sets.

TABLE 5-3. TROUBLE SHOOTING CHART (CONT)

STEP AND EQPMT*	PROCEDURE AND NORMAL INDICATION	TROUBLE	NEXT STEP	CORRECTION (REF PARAGRAPH)
10 (A, B)	Mechanical motion is transmitted to typing reperforator main shaft	Main shaft does not rotate	Check variable speed gear mechanism	5-4b(3)(b)
			Check timing belt	5-4b(3)(c)
11	Mechanical motion is transmitted to signal generator shaft	Signal generator shaft does not rotate	Check intermediate gear shaft and gears	5-4b(3)(a)
12	Signal line (external) or signal test set signal applied to set; typing reperforator operates	Set runs open	Check external signal	5-4b(4)(a)
			Check 16 point and 36-point connectors and receptacles	5-4(1)(d), (f)
			Check terminal boards	5-4b(1)(e)
			Check selector magnets	5-4b(4)(b)
			Check selector mechanism	5-4b(4)(c)
			Check selector adjustments	5-4b(4)(d)
			Check for open break switch	5-4b(4)(e)
			Check signal generator	5-4b(4)(f)
		Set runs closed on verifiable signal input	Check input signal and selector mechanism	5-4b(4)
13 (C)	Signal line (external)or signal test set signal applied to set; typing reperforator operates	Set runs open	Check for open break switch	5-4b(4)(e)
			Check signal generator	5-4b(4)(f)
14	Apply alternate R and Y signal input; R and Y are typed and perforated	Failure in typing and perforating	Check function clutch	5-4b(5)
		Intermittent error	Check signal supply	5-4b(6)(a)
			Check range finder	5-4b(6)(b)
			Check selector mechanism	5-4b(6)(c)
		Gaining or losing a pulse	Check mechanical linkage	5-4b(7)(a)
			Check selector	5-4b(7)(b)
		Perforating failure	Check rocker bail and trip mechanisms	5-4b(9)(a)
			Check perforator adjustments	5-4b(9)(b)

TABLE 5-3. TROUBLE SHOOTING CHART (CONT)

STEP AND EQPMT*	PROCEDURE AND NORMAL INDICATION	TROUBLE	NEXT STEP	CORRECTION (REF PARAGRAPH)
14 (Cont.)	Apply alternate R and Y signal input; R and Y are typed and perforated (Cont)	Punch pins fail to penetrate tape	Check perforator adjustments	5-4b(10)
		Tape does not feed	Check for binds or obstructions in tape container or path of tape	5-4b(11)(a)
			Check perforator adjustments	5-4b(11)(b)
		Feed holes incorrectly spaced	Check perforator adjustments	5-4b(11)(b)
		Typing failure		
		No printing	Check ribbon installation	5-4b(12)(a)
		Ribbon feed or reverse failure	Check position of eyelet	5-4b(12)(b)
			Check ribbon feed mechanism	5-4b(12)(c)
15 (E)	Apply alternate R and Y signal input; R and Y are typed and perforated	Typing failure	Check printing and ribbon feed mechanism	5-4b(12)(d)
		Perforating failure	Check chad disposal mechanism	5-4b(3)(d)
16	If distortion test set is used, apply FIGS and LTRS input; proper shift character is printed and corresponding code is perforated	LTRS or FIGS shift failure	Check function mechanism	5-4b(13)(a)
			Check typewheel positioning mechanism	5-4b(13)(b)
		Printing failure		
		Letters not positioned squarely for printing	Check positioning mechanism	5-4b(14)(a)
		Only top or bottom of character prints	Check axial and rotary correcting mechanism	5-4b(14)(b)
			Check oscillating drive link and bail	5-4b(14)(c)
		Characters too light or smudged	Check print hammer adjustment	5-4b(14)(d)
17 (A, C)	Signal line idle (marking); depress tape feed-out switch or TAPE F.O. key; tape is fed out to preset length	Tape does not feed	Check diode and capacitor circuit. CAUTION: Discharge capacitor before examining equipment	5-4b(15)(a)

TABLE 5-3. TROUBLE SHOOTING CHART (CONT)

STEP AND EQPMT*	PROCEDURE AND NORMAL INDICATION	TROUBLE	NEXT STEP	CORRECTION (REF PARAGRAPH)
17 (A, C) (Cont)	Signal line idle (marking); (Cont)		Check feed-out magnet	5-4b(15)(b)
			Check feed-out switch	5-4b(15)(c)
			Check mechanical linkage	5-4b(15)(d)
		Incorrect length of tape feeds out	Check feed-out adjustments	5-4b(15)(d)
18 (A, C)	While tape is feeding, interrupt feed-out with incoming signal; feed-out stops and first character of signal is typed and perforated	Tape continues to feed	Check feed-out adjustments	5-4b(15)(d)
		Loss of first character of incoming signal	Check feed-out adjustments	5-4b(15)(d)
19 (B)	Signal transmission ends; tape automatically feeds out to preset length, typed and perforated for "letters"	Tape does not feed	Check mechanical linkage with selector mechanism	5-4b(15)(e)
			Check feed-out adjustments	5-4b(15)(d)
		Incorrect length of tape feeds out	Check feed-out adjustments	5-4b(15)(d)
20 (B)	While tape is feeding interrupt feed-out with incoming signal; feed-out stops and first character of signal is typed and perforated	Tape continues to feed	Check feed-out adjustments	5-4b(15)(d)
		Loss of first character of incoming signal	Check feed-out adjustments	5-4b(15)(d)
			Check mechanical linkage with selector and perforator	5-4b(15)(e)
21	Lift tapeout of tape container; tape-out lamp lights	Tape-out lamp fails to light	Check mechanical linkage to tape-out switch	5-4b(16)(a)
			Check lamp and socket	5-4b(16)(b)
22 (A, B)	Lift tape out of tape container; tape-out lamp lights	Tape-out lamp fails to light	Check outer or lower tape-out switch	5-4b(16)(c)
23 (C)	Lift tape out of tape container; tape-out lamp fails to light	Tape-out lamp fails to light	Check connector	5-4b(16)(d)
			Check transformer	5-4b(16)(e)
24	Replace tape roll (with at least one inch of tape on core); tape-out lamp is extinguished	Tape-out lamp continues to burn	Check tape-out switch	5-4b(16)(c)

TABLE 5-3. TROUBLE SHOOTING CHART (CONT)

STEP AND EQPMT*	PROCEDURE AND NORMAL INDICATION	TROUBLE	NEXT STEP	CORRECTION (REF PARAGRAPH)
25 (C)	BREAK key depressed; typing reperforator runs open	Break signal transmission failure	Check for short in normally closed break switch	5-4b(17)(a)
			Check mechanical linkage from BREAK keylever	5-4b(17)(b)
26 (C)	KYBD LOCK key depressed; keys in lower three rows will not operate	Keyboard lock failure	Check mechanical linkage	5-4b(18)
			Check keyboard lock adjustments	5-4b(18)
27 (C)	KYBD UNLK key depressed; typing produces typed, perforated tape corresponding to input message	Keyboard transmission does not operate typing reperforator correctly	Recheck steps 12 through 16	
			Check signal generator contacts	5-4b(4)(f)
			Check mechanical linkage of code bars to signal generator	5-4b(19)(a)
			Check signal generator clutch	5-4b(19) (b)
			Check adjustments	5-4b(19)(c)
28 (D)	KYBD UNLK key depressed; typing produces typed, perforated tape corresponding to input message	Keyboard transmission does not operate typing reperforator correctly	Check external clocking signal	5-4b(19)(d)
			Check synchronous pulse contacts	5-4b(19)(d)
			Check synchronous pulse magnet	5-4b(19)(d)
29 (C)	Keyboard operating; character counter advances one unit for each character or space typed and end-of-line lamp lights between 66th and 68th space	Character counter failure	Check mechanical linkage to code bar mechanism	5-4b(20)(a)
			Check character counter adjustments	5-4b(20)(b)
		End-of-line lamp fails to light	Check lamp and socket	5-4b(20)(c)
			Check end-of-line switch contacts	5-4b(20)(d)
			Check transformer	5-4b(20)(e)
			Adjust switch bracket and cam	5-4b(20)(f)

TABLE 5-3. TROUBLE SHOOTING CHART (CONT)

STEP AND EQPMT*	PROCEDURE AND NORMAL INDICATION	TROUBLE	NEXT STEP	CORRECTION (REF PARAGRAPH)
30 (C)	CAR RET key depressed; character counter indicator returns to zero and end-of-line lamp is extinguished	Indicator fails to return to zero position	Check mechanical linkage within character counter mechanism	5-4b(20)(a)
			Check reset mechanism	5-4b(20)(g)
		End-of-line lamp stays lighted	Check switch contacts	5-4b(20)(d)
			Adjusts switch bracket and cam	5-4b(20)(f)
31 (C)	REPT key and any other character key (or space bar) held depressed simultaneously; character (or space) is typed and perforated continuously until REPT key is released	Repeat function fails	Check mechanical linkage	5-4b(21)
			Check repeat mechanism adjustments	5-4b(21)
32 (C)	TAPE B. SP. key depressed; last perforated character is moved to right (in punch mechanism) in line with punch pins	Tape fails to back space	Check switch contacts	5-4b(22)(a)
			Check back space magnet (in typing reperforator)	5-4b(22)(b)
			Check mechanical linkage of back space mechanism (in typing reperforator)	5-4b(22)(c)
			Check adjustments (in typing reperforator)	5-4b(22)(c)
33 (C)	LTRS key depressed; letters code perforation obliterates previously punched (erroneous) code	Back space correction fails	Check for binds in mechanical linkage (in typing reperforator)	5-4b(22)(c)
			Check rake adjustment	5-4b(22)(d)
			Recheck perforating mechanism (Step 11)	
34	Turn main power switch to OFF position; motor stops	Power remains on	Check main power switch	5-4b(1)(g)

b. ELIMINATION OF TROUBLE INDICATIONS. (See table 5-3. Follow steps in numerical order, and be sure correct procedure has been followed if an indication is not normal.) Trouble elimination procedures are common to all typing reperforator sets unless otherwise indicated. In the trouble shooting chart (table 5-3) steps applicable only to some of the sets are coded in the first column, Step and Equipment, as follows:

A - Typing Reperforator Sets TT-192/UG and TT-274/UG
B - Typing Reperforator Set TT-192A/UG
C - Typing Reperforator Sets TT-253/UG, TT-253A/UG and TT-292/UG
D - Typing Reperforator Set TT-253/UG
E - Typing Reperforator Sets TT-274/UG and TT-292/UG

(1) MAIN POWER DISTRIBUTION FAILURE.

(a) Check external power supply for 115 V a.c. applied to pins 2 (grounded side) and 11 (ungrounded) of external cable connector or (TT-192A/UG) to terminals 1 (ungrounded) and 7 of the lower terminal board on the miniaturized set only.

(b) (Keyboard Sets.) Check pilot lamp and socket.

NOTE

The pilot lamp socket contains a built-in lamp protecting resistance. Replace the socket if lamp replacement does not correct pilot lamp failure but subsequent steps indicate that power failure is not a problem.

(c) (TT-192A/UG.) Check fuse. If open, check mechanical linkage from motor through typing reperforator manually for excessive load before replacing fuse. If a fuse burns out immediately upon installation, check for shorted wiring in the motor or the tape-out circuit.

(d) Check solder connections to terminals of 16-point connector and receptacle. Check for loose or missing contacts within the case and for broken body moldings. Check the case for breaks or dents. Check the mating of the connector and receptacle and the operation of the latch locking the two in mated position.

(e) Check for loose connections on the terminal boards. Refer to the wiring diagram, figure 6-171, for location of straps and jumpers on each set.

(f) Check solder connections to terminals of 36-point connector and receptacle. Terminals 35 and 36 of the connector (attached to the typing reperforator) must be strapped on the soldered end, and the connector must be mated with the base receptacle to complete the power distribution (a.c.) circuit in the set. Check for loose or missing contacts within the case and for broken body moldings. Check the case for breaks or dents. Check the mating of the connector and receptacle and the operation of wire latches locking the two in mated position.

(g) Check main power switch. Short the leads to the switch with an insulated screwdriver or an insulated jumper wire. Replace switch if shorting out the switch eliminates the power failure.

(h) (Keyboard Sets.) Check connector (attached to cabinet cable) and receptacle (on base terminal board bracket) for good condition and proper mating in the event of cabinet illumination lamp failure.

(i) (Keyboard Sets.) Check cabinet illumination lamps (2) and sockets.

(j) (Keyboard Sets.) Check for burned out base mounted transformer and loose transformer leads at motor terminal block.

(2) MOTOR FAILURE.

(a) Check motor connections. (All leads are interchangeable.)

1. (TT-192/UG and TT-274/UG.) Lower terminal board terminals 3 and 7.

2. (TT-192A/UG.) Upper terminal board terminals 8 and 9.

3. (Keyboard Sets.) Motor terminal board terminals 1 and 2.

(b) (TT-192/UG, TT-253/UG and TT-253A/UG.) Check for open thermal cut-out switch at the rear of the motor mounting bracket. If the red switch button is raised, rotate the motor manually and check mechanical linkages to the motor shaft for an obstruction. Depress the switch button. If the cut-out operates shortly after the motor switch has been reset, allow the motor to cool for five minutes and check further for the cause of overheating before resetting.

(c) If synchronous motor operates at incorrect speed, check for 60 cycle (plus or minus 0.5 cycle) frequency in the external power supply.

(d) GOVERNED MOTOR (TT-274/UG AND TT-292/UG).

1. Examine motor brushes and replace if length is less than 3/8 of an inch. Wipe off and blow off accumulated carbon dust. Relationship of brush to slip rings should be maintained. Be sure brush springs are in place.

2. Check governor adjustment, figure 6-150. If motor runs at incorrect speed, check for 115 V. a.c. power line supply. If line voltage is adequate and stable, use a 120 V.p.s. tuning fork to check the governor (paragraph 6-4b(3)(b)). Adjust if required.

3. If motor runs at incorrect speed, check for open governor resistor. If motor speed is uncontrollable, check for short in governor capacitor or for sticking contacts. Check contact spring and burnish, readjust or replace contacts (figure 6-150).

(3) MECHANICAL POWER TRANSMISSION FAILURE.

(a) Check mechanical linkage through intermediate gear mechanism. Adjust mesh of pinion and drive gear for barely perceptible backlash when drive gear is centered vertically and horizontally beneath pinion.

(b) (TT-192/UG, TT-192A/UG and TT-274/UG.) Check mechanical linkage through variable speed drive mechanism. Note that gears are properly installed and securely fastened to their shaft or sleeve. Check for sheared gear mounting screws. Check condition of gears and remove any foreign objects in the gear mechanism. Visually inspect gear mesh when the gear change lever is in each of its three positions.

(c) (TT-192/UG, TT-192A/UG and TT-274/UG.) Check condition and tension of the timing belt. Belt should not be too tight. If belt appears too loose (yields more than 1/16-inch in response to slight pressure midway between the two sprockets) check for loosened screws attaching either the reperforator or the intermediate gear mechanism, or both, to the base.

(d) (TT-253A/UG.) Check vacuum chad disposal mechanism and disposal container. Lines should be tight to avoid vacuum loss. Container should be emptied when half to three-quarters full to prevent back-up of chads in chad chute. Faulty perforation may result from clogged chad chute.

(4) TYPING REPERFORATOR RUNS OPEN OR CLOSED.

(a) Check for open signal line external to set. Check for 0.060 ampere 115 V d.c. signal circuit (unless selector magnets have been series wired for 0.020 or 0.030 ampere operation). If operating on 0.030 ampere circuit, check the external signal line relay.

(b) Check for open selector magnets or faulty connections on the selector unit of the typing reperforator. Drag a thin piece of clean paper between the armature and the magnet cores to clean a dirty or oily armature. Be sure no lint is left beneath the magnet cores.

(c) Check for binding mechanisms in the selector unit. Check linkage for free operation. Check the clutch adjustment, figure 6-64, with particular attention to failure of the stop lever to latch or release.

(d) Check selector adjustments, figures 6-69, 6-68, 6-70, 6-72, and 6-74 in the order indicated.

(e) (Keyboard Sets.) Check for open signal break switch (normally closed) on the keyboard. Check signal break key linkage to switch.

(f) (Keyboard Sets.) Check signal generator contacts and mechanical linkages.

(5) TYPING REPERFORATOR FUNCTION FAILURE. — Check operation and mechanical linkage of the function clutch. Note that the clutch is tripped near the end of the operating cycle of the selector clutch.

(6) INTERMITTENT ERRORS.

(a) Check for inadequate or excessive signal line current or defective external signal line relay (paragraph 5-4b(4)(a)).

(b) Check the range finder setting for position above or below the range of the incoming signal. See paragraph 6-4e for adjustment.

(c) Check selector adjustments, figures 6-69 and 6-71.

(7) GAINING OR LOSING A PULSE.

(a) Check for binds in the selector and transfer mechanisms. Note in particular free operation of the linkage involved in the particular pulse gained or lost, as determined by analyzing errors for a common (1, 2, 3, 4 or 5 pulse) addition or omission.

(b) Check selector adjustments 6-69 and 6-71.

(8) GARBLING. — Check the code perforations against the typed character of the input tape. If the two are the same, garbling may be traceable to the input signal.

(a) Check axial and rotary positioning mechanism and adjustments (figures 6-104 through 6-109). Check free movement of linkages around eccentrics from selector unit to punch pins and through bell cranks to push bars.

(b) (TT-192/UG, TT-192A/UG and TT-274/UG.) Check variable speed intermediate gear mechanism for setting compatible with transmission speed of input signal.

(c) (Keyboard Sets.) Check contact box for capacitor leakage.

(9) PERFORATING FAILURE.

(a) Check function clutch and cam mechanisms (figures 6-66 and 6-67) and rocker bail operation. Check positioning of punch (figure 6-77).

(b) Check adjustments, figures 6-66, 6-67, 6-77 and 6-80.

(10) PUNCH PINS FAIL TO PENETRATE. — Check adjustment (figure 6-78). (TT-253A/UG. Check chad chute. See paragraph 5-4b(13)(d).)

(11) TAPE FEED FAILURE.

(a) Check for obstructions or binds in tape container or in path of tape into typing reperforator.

(b) Check adjustments (figures 6-81 through 6-84).

(12) TYPING FAILURE.

(a) Check proper installation of ribbon, particularly through ribbon carrier beneath typewheel.

(b) Check position of eyelets on ribbon above the ribbon reverse arms at both spools.

(c) Check ribbon feed mechanism and operating arm adjustment (figure 6-115).

(d) (TT-253A/UG.) For typing failure on fully perforated tapes, proceed to check of adjustments 6-110, 6-113 and 6-114 if other checks do not correct failure.

(13) LETTERS-FIGURES SHIFT FAILURE.

(a) Check mechanical linkage of function box mechanism and adjustments (figures 6-93 through 6-95 and 6-98 through 6-100).

(b) Check axial and rotary positioning mechanism linkage and adjustments (figures 6-104 through 6-109).

(14) PRINTING FAILURE.

(a) Check axial and rotary positioning mechanism linkage and adjustments (figures 6-104 through 6-109).

(b) Check and adjust axial and rotary correcting mechanism for firm positioning of correcting plate roller (axial) or correcting lever lobes (rotary) simultaneously with activation of the printing hammer.

(c) Check oscillating drive link and bail. Mechanism may be withdrawing type wheel prior to printing hammer stroke. Adjust (figure 6-104).

(d) Adjust the printing hammer (figure 6-112).

(15) TAPE FEED-OUT FAILURE.

(a) (Not applicable to TT-192A/UG.) Observe pull-in of feed-out armature when feed-out button or key is depressed. Check diode, capacitor and resistance circuit elements.

CAUTION

After shutting off main power switch and before disconnecting typing reperforator, always depress feed-out switch or key to discharge the capacitor. Check discharge of capacitor by shorting its two contacts with an insulated screwdriver before checking the feed-out circuit.

(b) (Not applicable to TT-192A/UG.) Check for open feed-out magnet or loose leads at the magnet. Check the power supply lead common to the feed-out magnet and the back space magnet at both its terminals.

(c) (Not applicable to TT-192A/UG.) Check the normally open feed-out switch.

(d) (All sets.) Check mechanical linkage through feed-out mechanism. Check tape feed-out adjustments (TT-192/UG, TT-253/UG, TT-253A/UG, TT-274/UG and TT-292/UG, figures 6-129 through 6-138 and 6-140 through 6-143) (TT-192A/UG, figures 6-131 through 6-139 and 6-140 through 6-143).

(e) (TT-192A/UG.) Check mechanical linkage with selector mechanism and perforator.

(16) TAPE-OUT ALARM FAILURE.

(a) Check mechanical linkage to tape-out switch for bent or broken components or missing springs.

(b) Check tape-out lamp and socket. (TT-192A/UG has a resistor built into the socket. See NOTE at paragraph 5-4b(1)(b).)

(c) Check tape-out switch on tape container. (TT-192/UG, TT-192A/UG and TT-274/UG check outer or lower switch. Inner or upper switch is for signal or alarm external to the set.)

(d) (Keyboard Sets.) Check the connector and receptacle for connecting the tape container to the base terminal board mounting bracket. Be sure the connector at the end of the tape container cable is properly mated with the receptacle.

(e) (Keyboard Sets.) Check for burned out base transformer or loose transformer leads.

(17) (KEYBOARD SETS.) BREAK SIGNAL FAILURE.

(a) Check for a short in the normally closed break switch.

(b) Check mechanical linkage from BREAK keylever to switch. Operation of the keylever should not affect the code bar mechanism.

(18) (KEYBOARD SETS.) KEYBOARD LOCK OR UNLOCK FAILURE. — Check mechanical linkage of KYBD LOCK and KYBD UNLK keys through code bar mechanism.

(19) (KEYBOARD SETS.) KEYBOARD TRANSMISSION FAILURE.

(a) Check mechanical linkage of code bars to signal generator mechanism.

(b) Check operation and adjustment of signal generator clutch (figure 6-152).

(c) Check signal generator and keyboard adjustments (figures 6-153 through 6-160).

(d) Synchronous Pulse Mechanism (TT-253A/UG).

1. Check synchronous pulse contact (figure 6-162) for faulty, dirty or maladjusted points if keyboard transmission fails.

2. Check synchronous pulse magnet adjustment (figure 6-161).

3. Check externally supplied clocking signal (115 V ac) at pins 4 and 5 of J851.

(20) (KEYBOARD SETS.) CHARACTER COUNTER FAILURE.

(a) Check mechanical linkage to code bar mechanism. Be sure character counter operating forks are positioned over the pins on the right end of their respective code bars.

(b) Check character counter adjustments (figures 6-163 through 6-165).

(c) Check end-of-line lamp and socket.

(d) Check for dirty or maladjusted switch contacts in the character counter mechanism.

(e) Check for burned out base mounted transformer or loose transformer leads.

(f) Adjust end-of-line switch bracket and cam (figure 6-163).

(g) Check mechanical linkage of character counter reset mechanism.

(21) (KEYBOARD SETS) REPEAT FAILURE.— Check freedom of linkage and mating of repeat key-lever and code bar non-repeat lever. Check adjustments (figures 6-156 and 6-157).

(22) (KEYBOARD SETS.) TAPE BACK SPACE FAILURE.

(a) Check for defective back space switch located immediately beneath the TAPE B. SP. key. Since the switch is relatively inaccessible, it can be more easily checked at terminals 4 and 6 of the lower terminal board (orange lead and red lead).

(b) Check for open magnet coil on the typing reperforator. Check for loose leads at the magnet and check both terminals of the common power supply lead between the back space magnet and the feed-out magnet.

(c) Check the mechanical linkages in the back space mechanism on the typing reperforator and their adjustments (figures 6-117 through 6-123). The mechanism should operate freely and without binding on downward movement of the magnet armature, and the tape feed-out operating arm should be lifted out of engagement with the tape feed sprocket.

(d) Check the rake adjustment (figure 6-117).

(e) Recheck perforator (step 11).

5-5. LUBRICATION.

a. Lubricate the typing reperforator set as directed in figures 5-2 through 5-35, inclusive. These figures indicate the points to be lubricated and the type and quantity of lubricant to be used. Lubricate the typing reperforator set just prior to placing it in service. After a few weeks in service, relubricate to make certain that all points receive lubricant.

b. In service, the following lubrication schedule should be followed:

c. For normal or high temperature (5° to 55°C or 41° to 131°F) use Teletype KS7470 oil at all locations where the use of oil is indicated. For lower temperatures, dilute the KS-7470 oil with kerosene (half and half). Use MIL-G-3278 grease on all surfaces where grease is indicated, except the motor bearings. Apply two drops of KS-7470 oil to motor bearings every four months (depress oiler with metal object). If the motor is disassembled at any time, repack the bearings with MIL-G-3278 grease.

d. All springs, wicks and felt oilers should be saturated. The friction surfaces of all moving parts should be thoroughly lubricated. Over-lubrication which will permit oil or grease to drip or be thrown to other parts should be avoided.

e. Exercise special caution to prevent any oil or grease from getting between the armatures and the pole pieces of the selector magnets, the tape back space magnet or the tape feed-out magnet. Electrical contact surfaces must be kept free of oil.

OPERATING SPEED (Words per Minute)	LUBRICATING INTERVAL (Whichever Occurs First)
60	3,000 hours or 1 year
75	2,400 hours or 9 months
100	1,500 hours or 6 months

f. Apply a thick film of grease (MIL-G-3278) to all gears. When gear changes are made to change operating speed (TT-253/UG only), lubricate the replacement pinion and gear when the change is made.

g. For visual identification, lubrication instructions have been keyed to photographs of the equipment. The first digit is a hyphenated numeral corresponding to the figure number in which the photograph will be found. The second digit in the key is a letter to indicate the reference point on that photograph. (For example, 5-2(A) is a lubrication instruction for a part illustrated photographically in figure 5-2, and

at point (A) on that figure.) The detailed instruction will always appear either on or on pages immediately subsequent to the figure containing the photographic illustration.

h. Specific lubricant requirements and the amount of lubricant are indicated at each lubrication instruction in accordance with the following code:

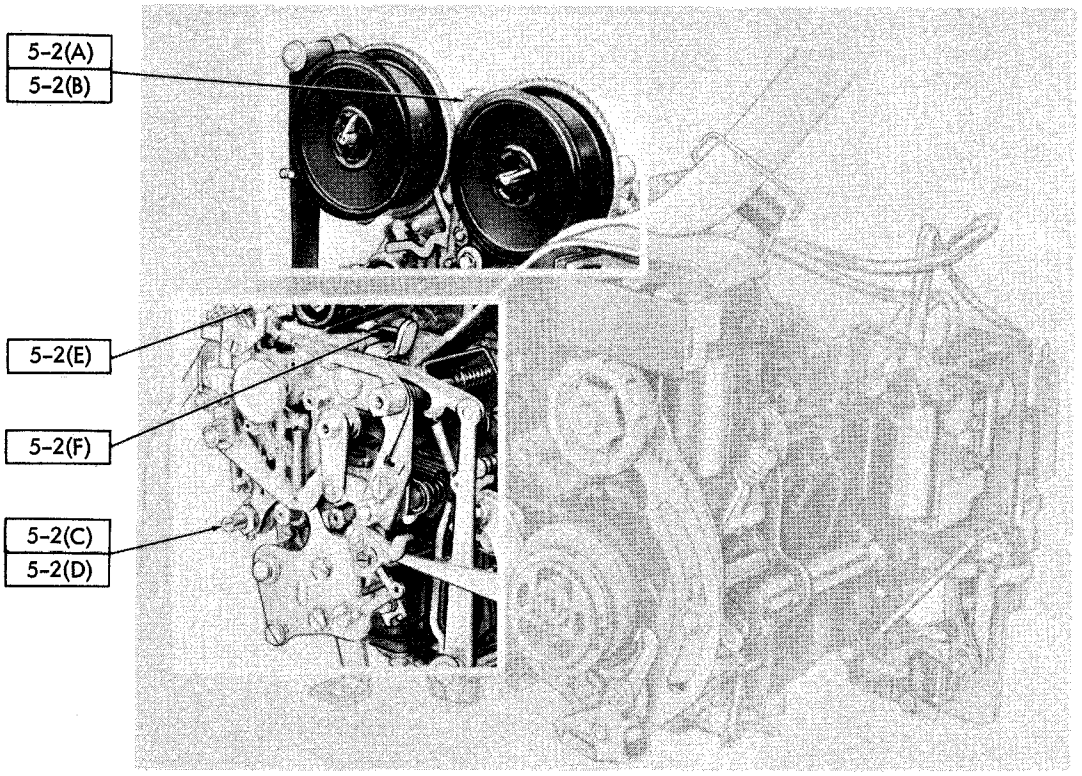
O	Apply 1 drop of KS-7470 oil
O2	Apply 2 drops of KS-7470 oil
O3	Apply 3 drops of KS-7470 oil
O20	Apply 20 drops of KS-7470 oil
SAT	Saturate (felt oilers, washers, wicks) with KS-7470 oil
G	Apply thin film of MIL-G-3278 grease

i. Lubricate according to the applicable lubrication instructions whenever parts or assemblies are removed and reassembled, or when handling the equipment for adjustment purposes may have removed some or all of the lubricant.

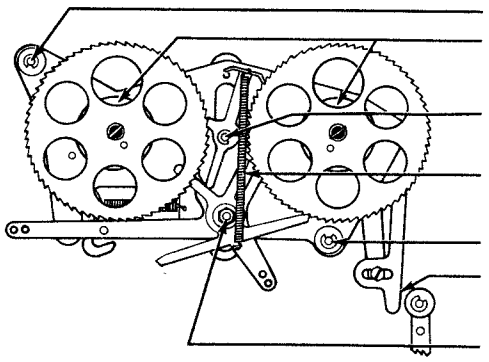
NOTE

During each lubrication period, check the following adjustments:

Printing trip link, figure 6-111
Typewheel, figure 6-112
Print hammer, figure 6-112.

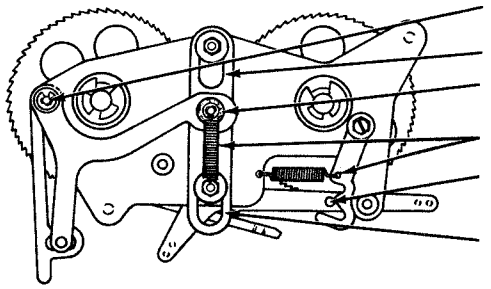


5-2A RIBBON FEED MECHANISM



O2	PIVOT POINTS (2)	RIBBON ROLLER
SAT	PIVOT POINT (FELT WASHER)	SHAFT
O2	PIVOT POINT	FEED PAWL
O	HOOKS - EACH END	SPRING
O2	PIVOT POINTS (2)	RIBBON ROLLER
G	CONTACT SURFACE	DRIVE ARM
O2	PIVOT POINT	REVERSING LEVER RETAINING PAWL

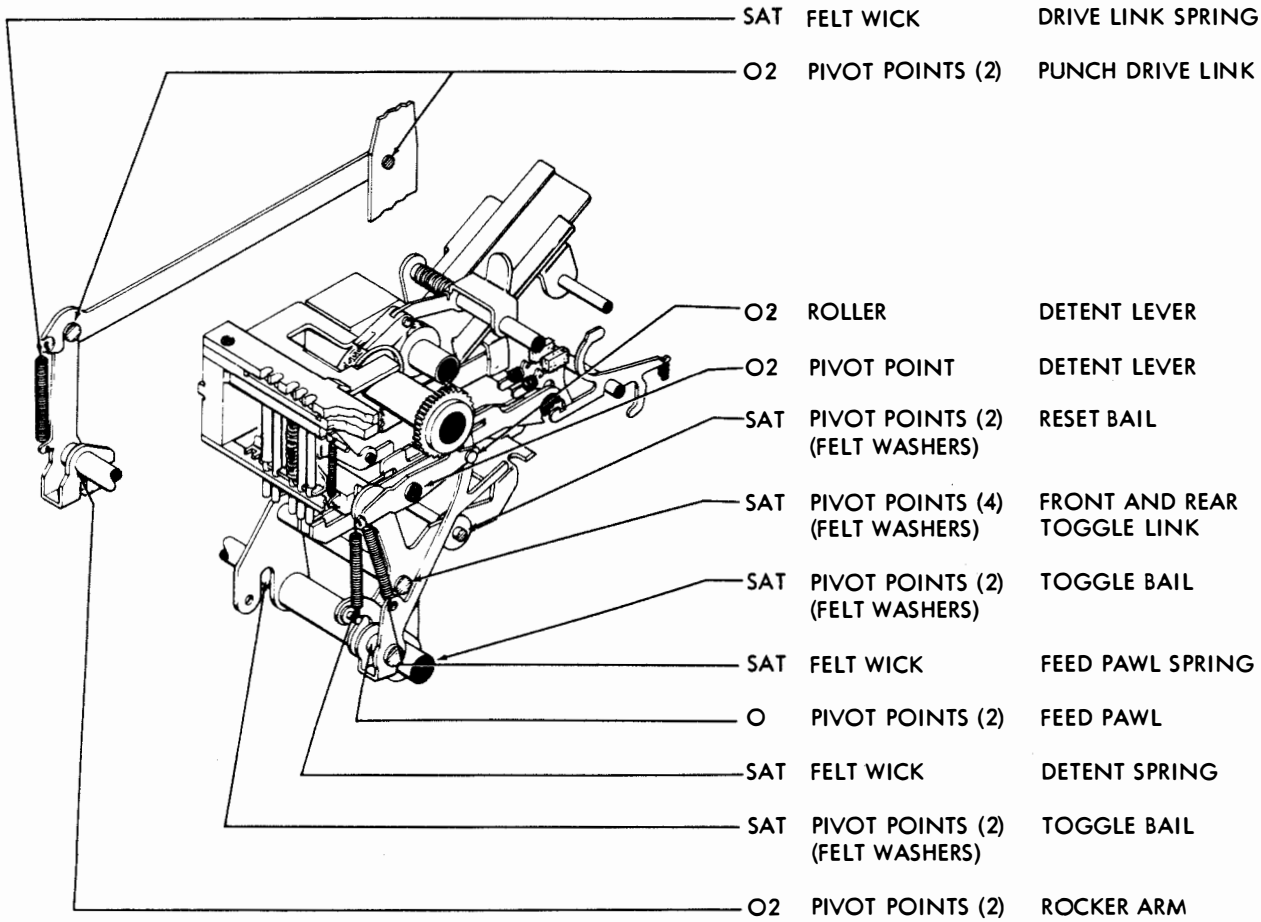
5-2B RIBBON FEED MECHANISM



O2	PIVOT POINT	DRIVE ARM
G	SLIDING SURFACE	DRIVE PLATE
SAT	PIVOT POINT (FELT WASHER)	DRIVE ARM
O	HOOKS - EACH END (2)	SPRINGS
G	CONTACT POINT	DETENT
G	SLIDING SURFACE	DRIVE PLATE

Figure 5-2. Ribbon Feed Mechanism Lubrication

5-2C PERFORATOR MECHANISM



5-2D PERFORATOR MECHANISM

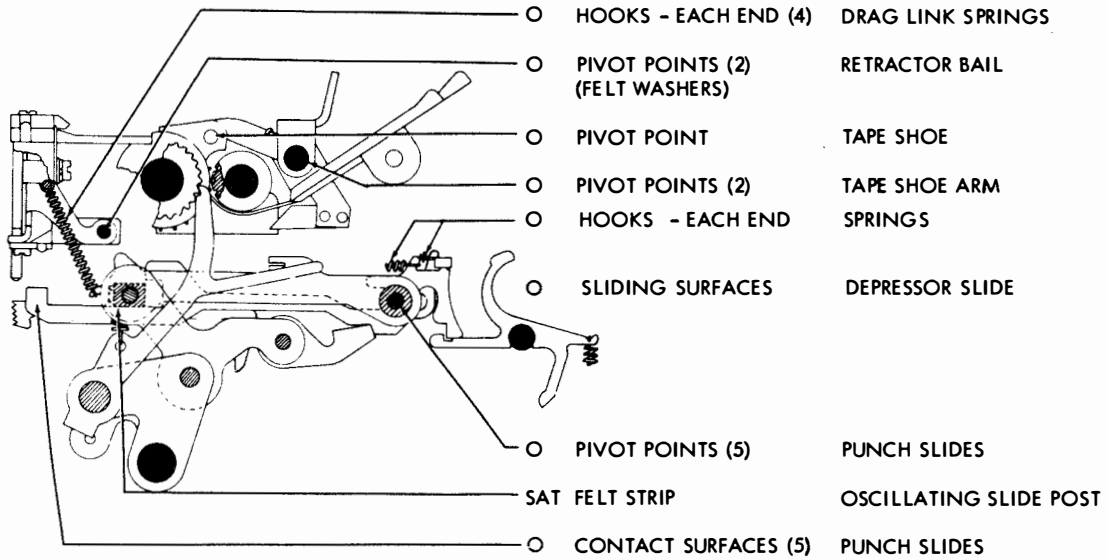
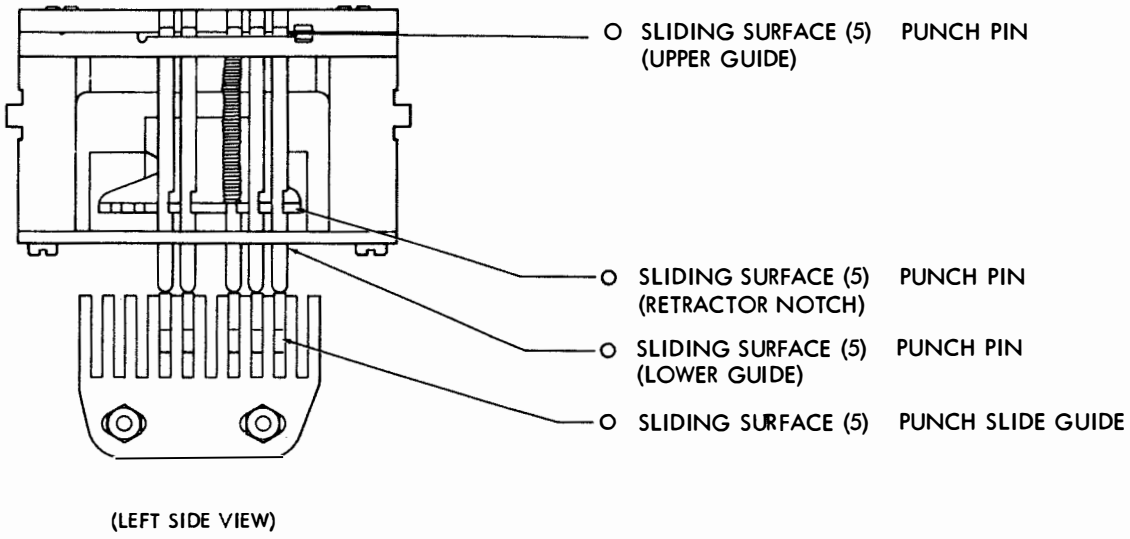


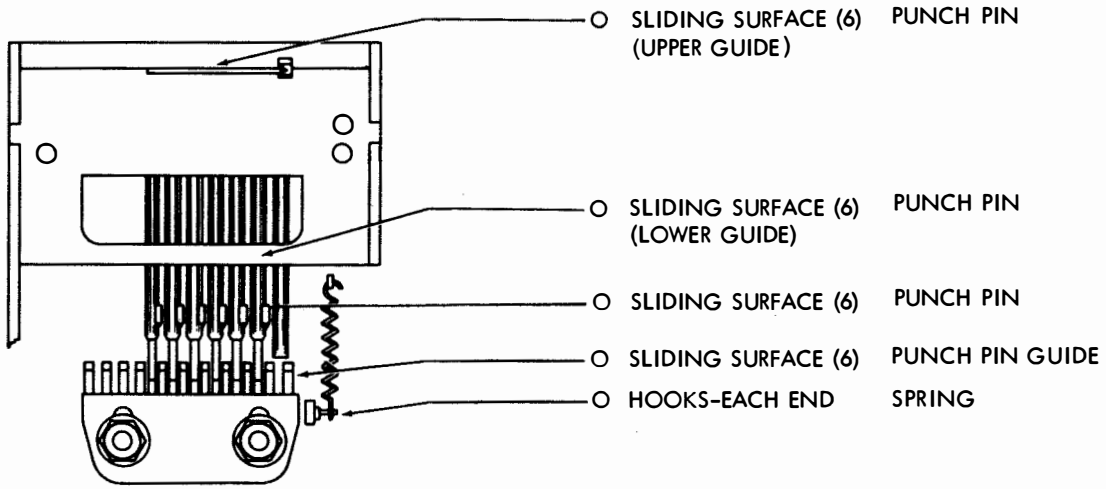
Figure 5-3. Perforator Mechanism Lubrication

5-2E PERFORATOR MECHANISM (CHADLESS TAPE)



(LEFT SIDE VIEW)

5-2E PERFORATOR MECHANISM (FULLY PERFORATED TAPE - TT-253A/UG)



5-2F PERFORATOR MECHANISM

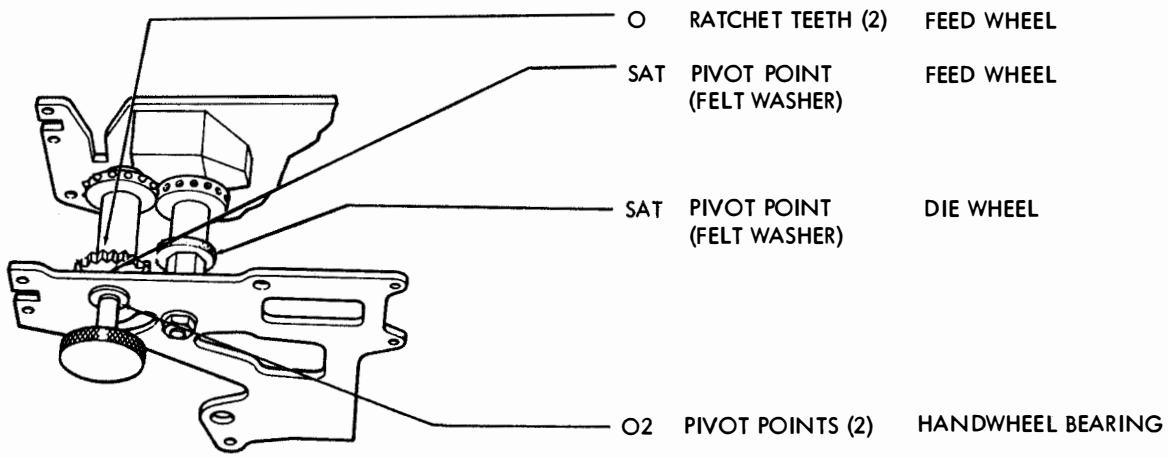
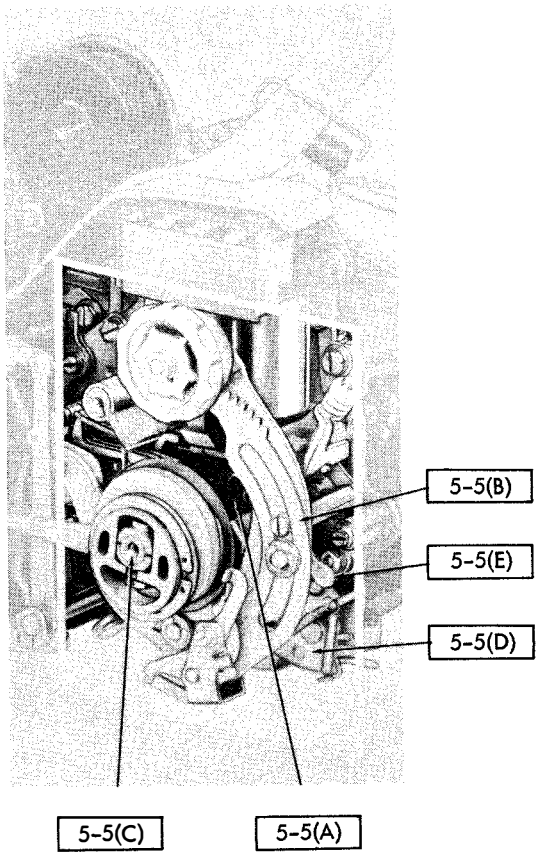


Figure 5-4. Perforator Mechanism Lubrication

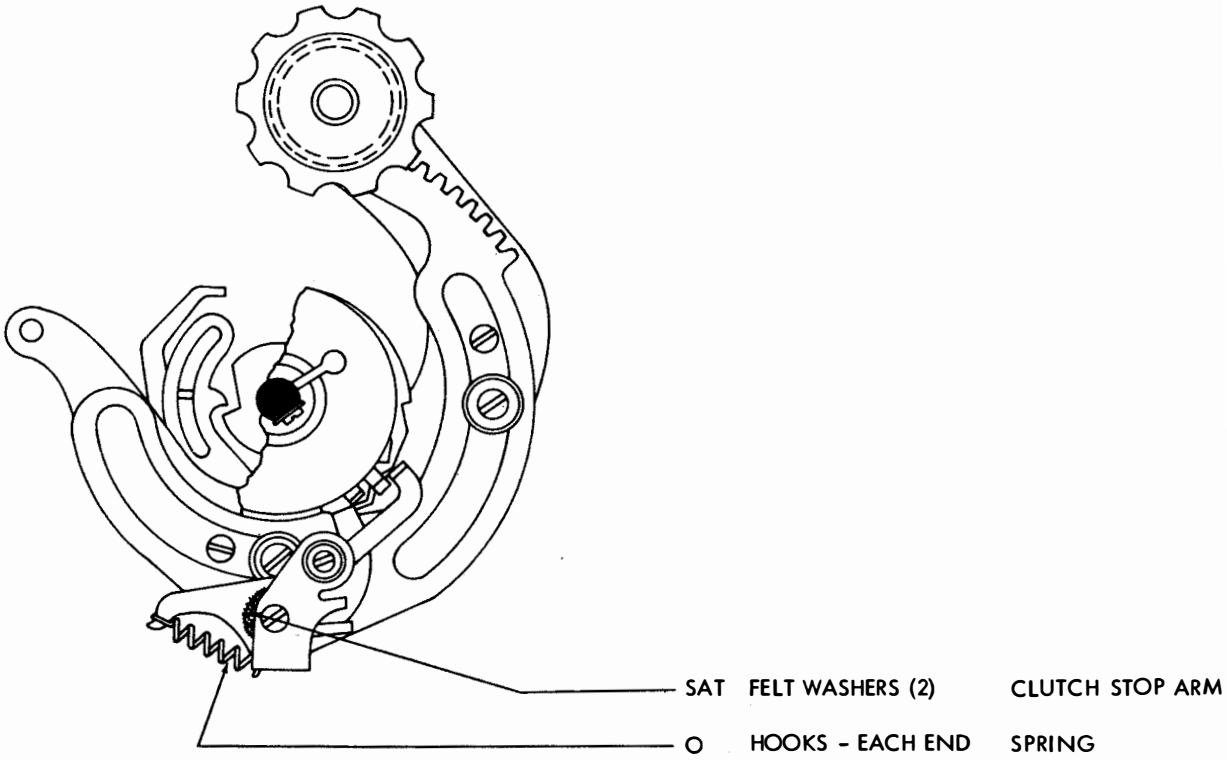


5-5A SELECTING MECHANISM

O2	BEARING GUIDE SLOTS (5)	PUSH LEVER GUIDE
SAT	FELT WICK	SELECTOR WICK
O	HOOKS - EACH END (12)	SPRINGS
O2	ENGAGING SURFACES (5)	PUSH LEVERS
O2	GUIDE SLOT	MARKING LOCK LEVER
O	HOOKS - EACH END (12)	SPRINGS
O2	BEARING GUIDE SLOTS (6)	SELECTOR LEVER GUIDE
O2	GUIDE SLOTS	SELECTOR AND PUSH LEVER GUIDE

Figure 5-5. Selecting Mechanism Lubrication

5-5B RANGE FINDER MECHANISM



5-5C MAIN SHAFT MECHANISM

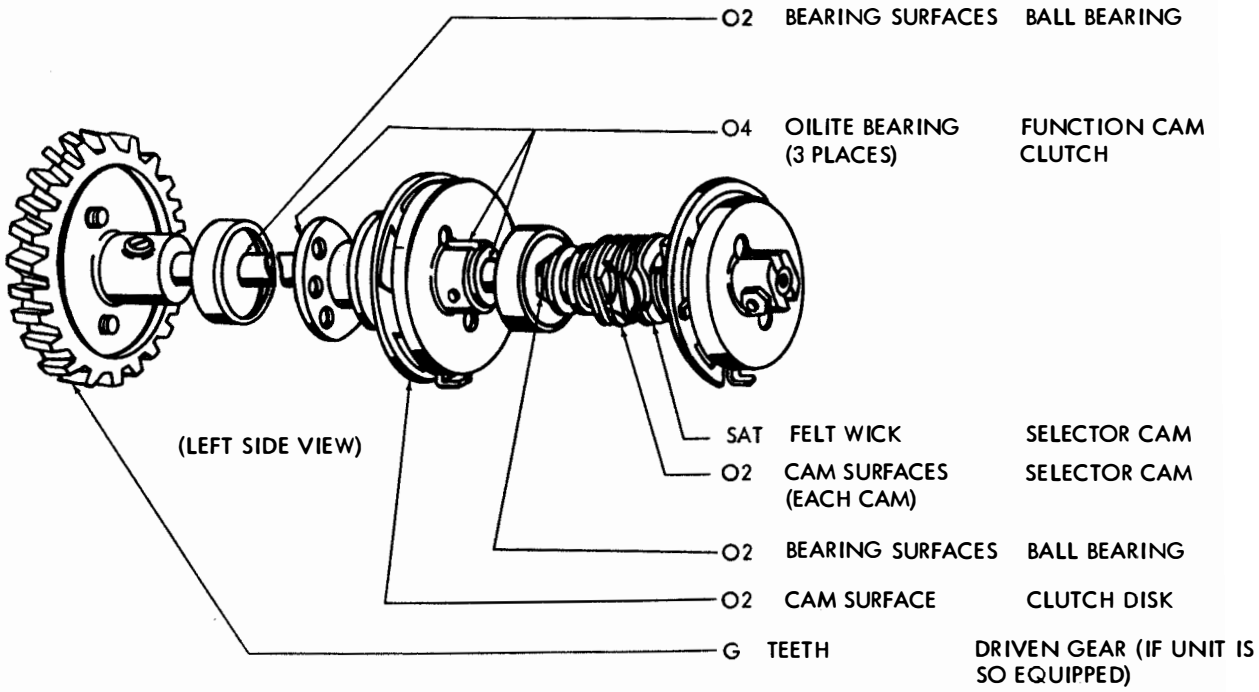
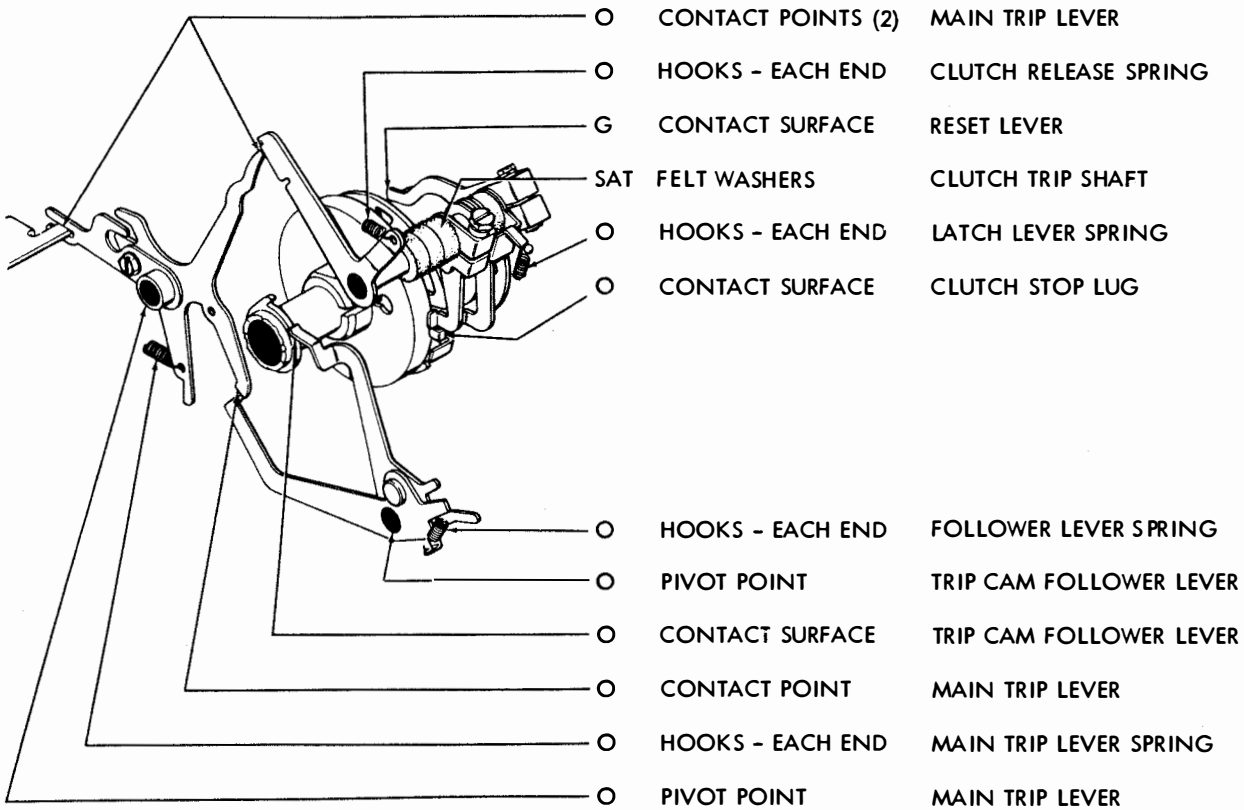


Figure 5-6. Range Finder Mechanism and Main Shaft Lubrication

5-5D FUNCTION CAM — CLUTCH



5-5E OIL RESERVOIR

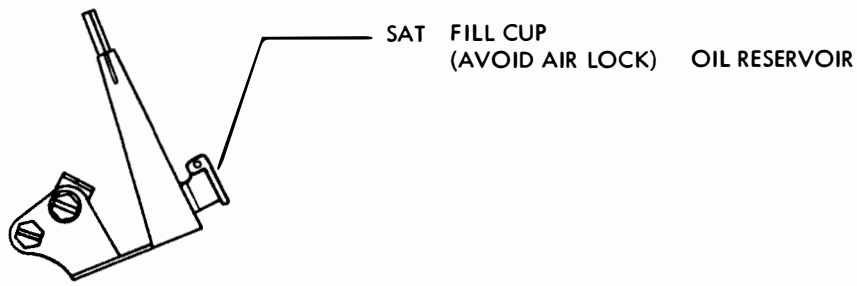
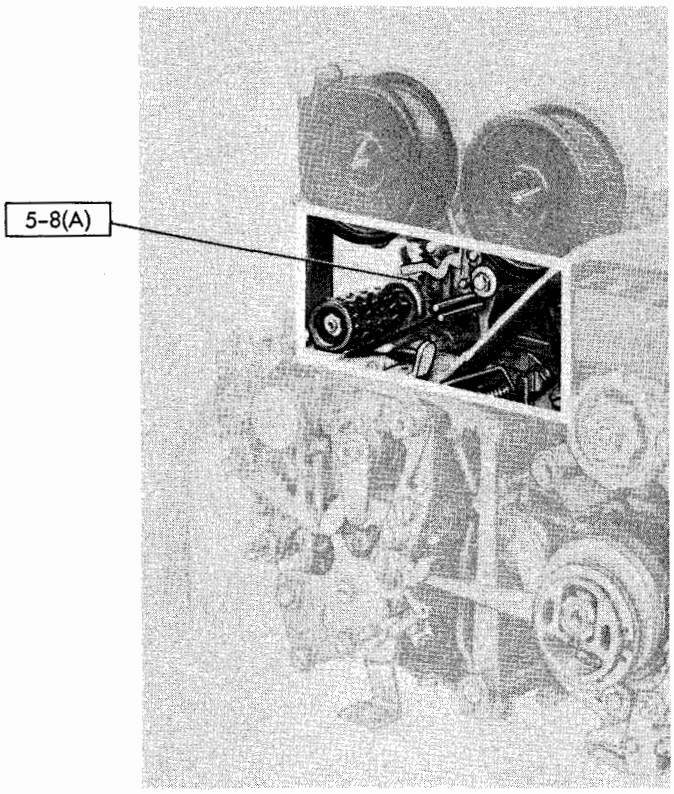


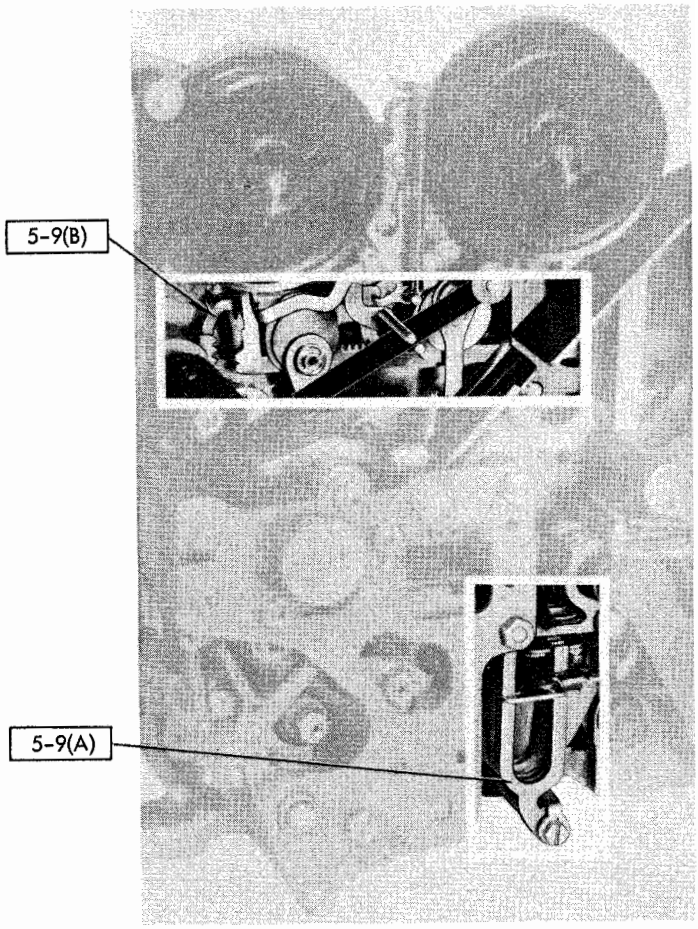
Figure 5-7. Selector and Function Cam-Clutch Mechanisms Lubrication



5-8A ROTARY POSITIONING MECHANISM

G	TEETH	ROTARY OUTPUT RACK	
O2	OIL HOLE	TYPE WHEEL HOUSING	
G	SPECIAL TEETH	ROTARY OUTPUT RACK ROTARY CORRECTING LEVER	
O2	PIVOT POINT		ROTARY CORRECTING LEVER SHAFT
O2	PIVOT POINTS (2)		CONNECTING RODS
SAT	PIVOT POINTS (FELT WASHERS)		DETENT LEVERS (8)
O	HOOKS - EACH END		SPRINGS (4)
G	CONTACT POINTS		DETENT LEVERS (8)
O2	SLIDING SURFACE	ROTARY OUTPUT RACK	
SAT	PIVOT POINTS (3) (FELT WASHERS)	CROSS LINKS	

Figure 5-8. Rotary Positioning Mechanism Lubrication



5-9A TRANSFER MECHANISM

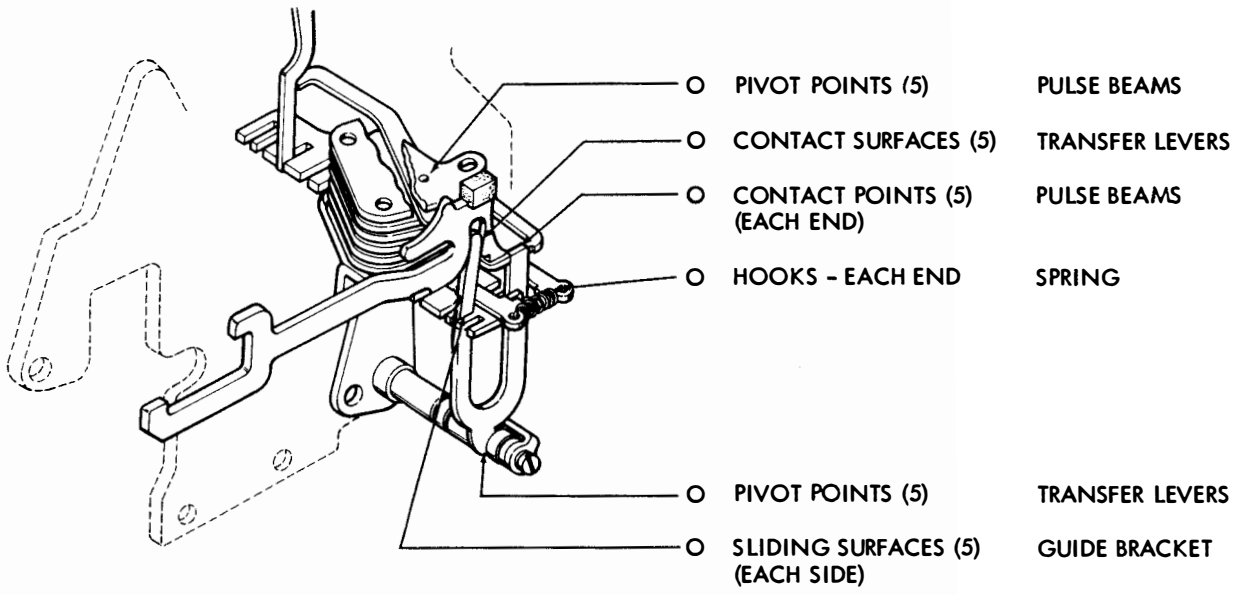
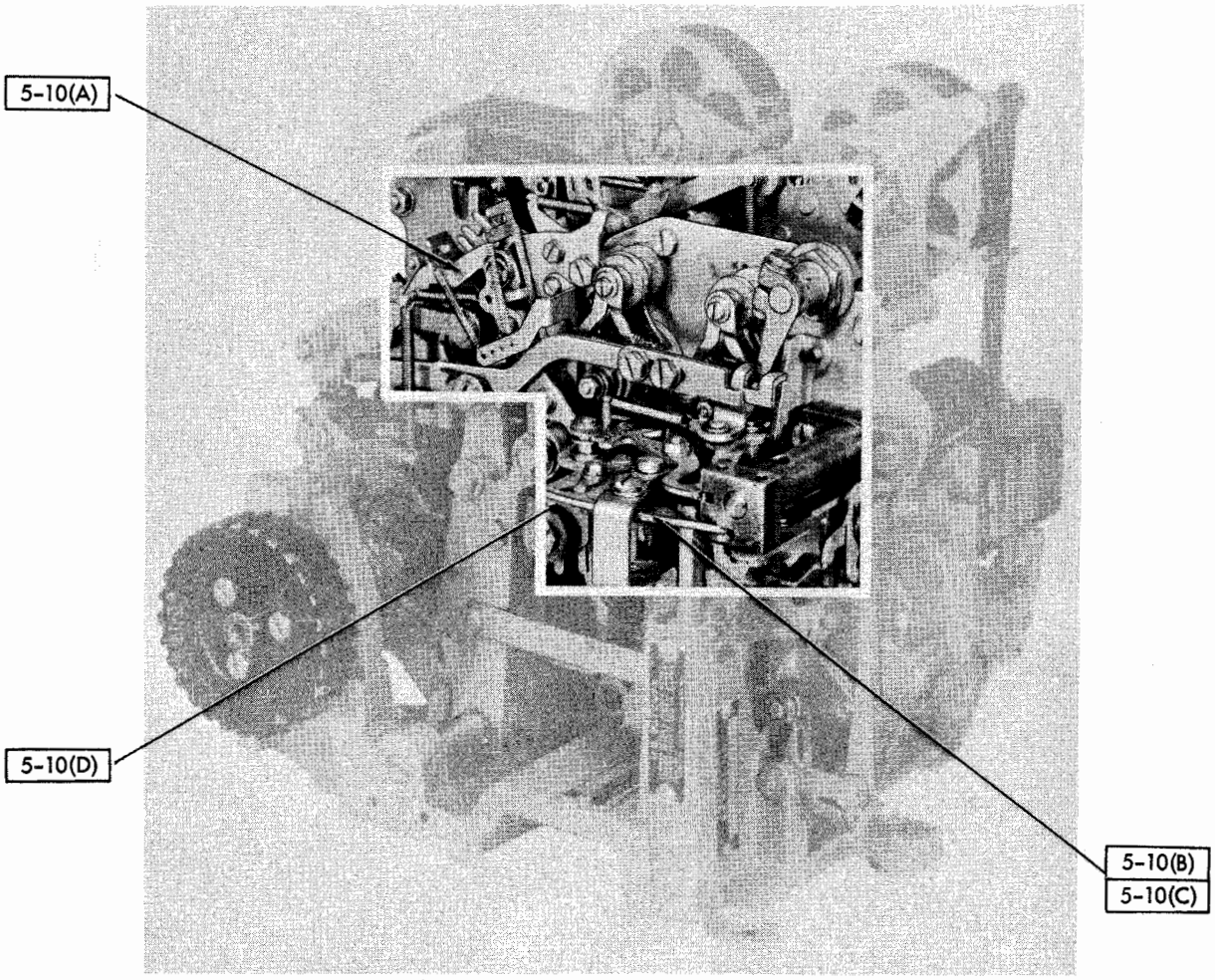


Figure 5-9. Transfer Mechanism Lubrication



5-9B RACK
5-10A PUSH BARS

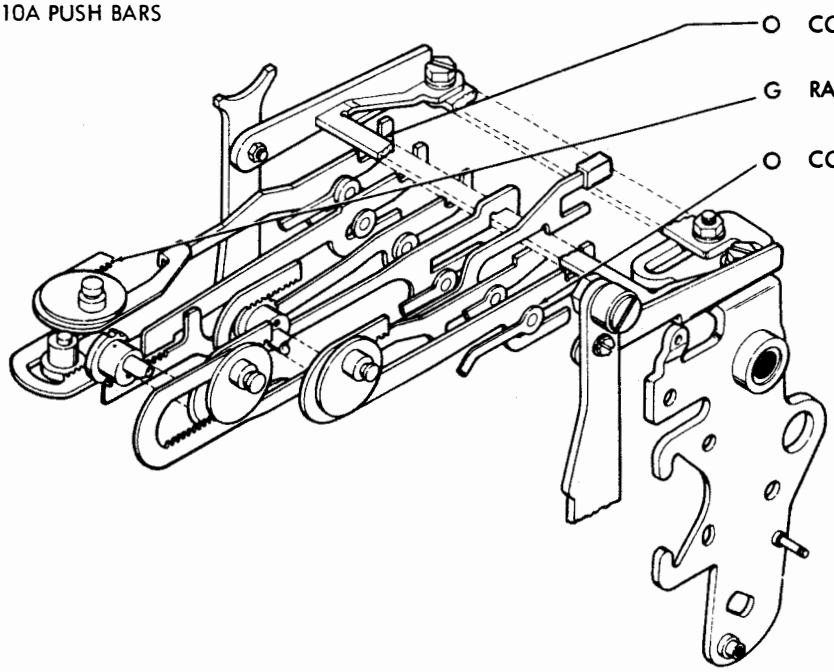


Figure 5-10. Racks and Push Bars Lubrication

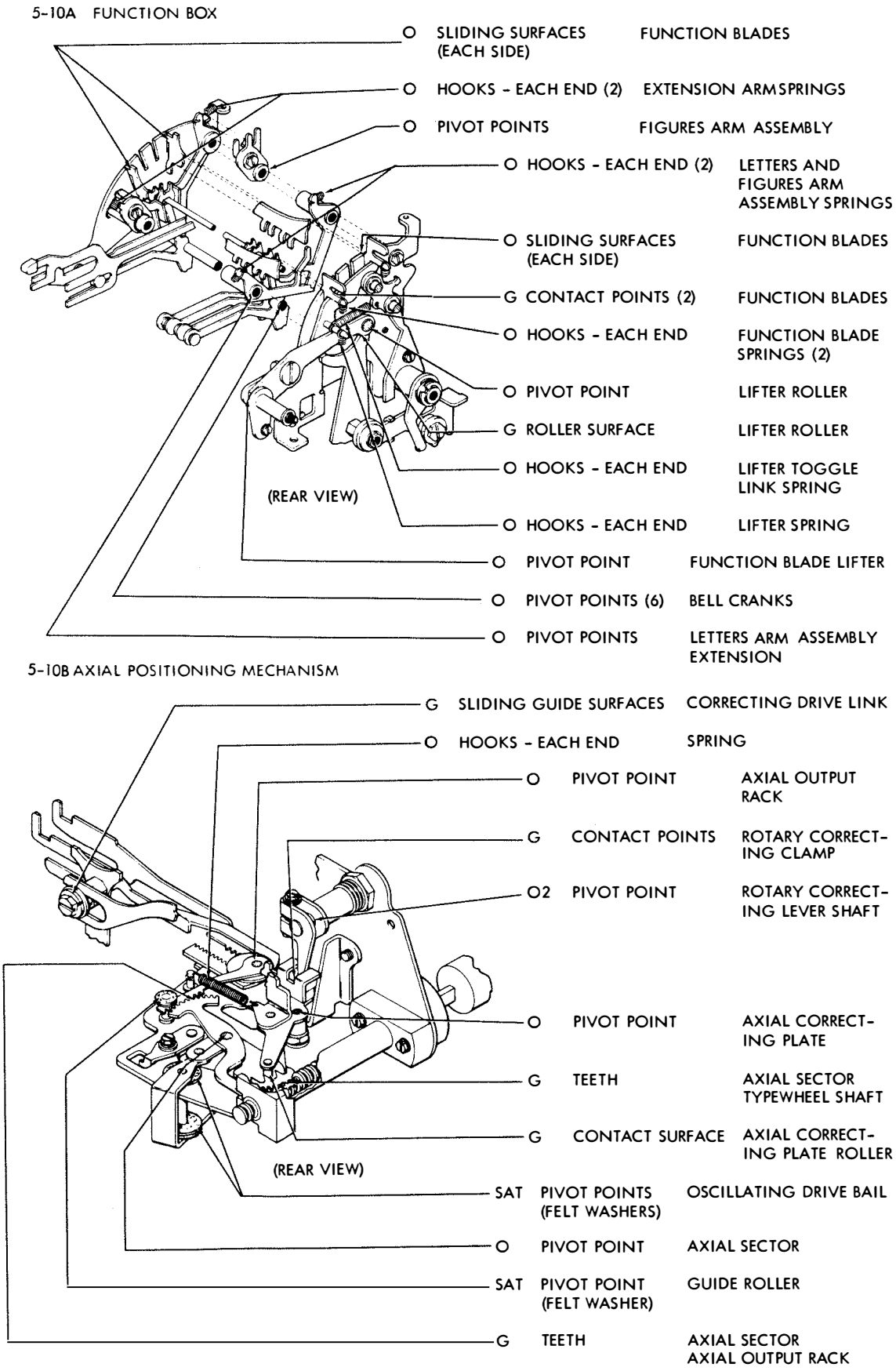
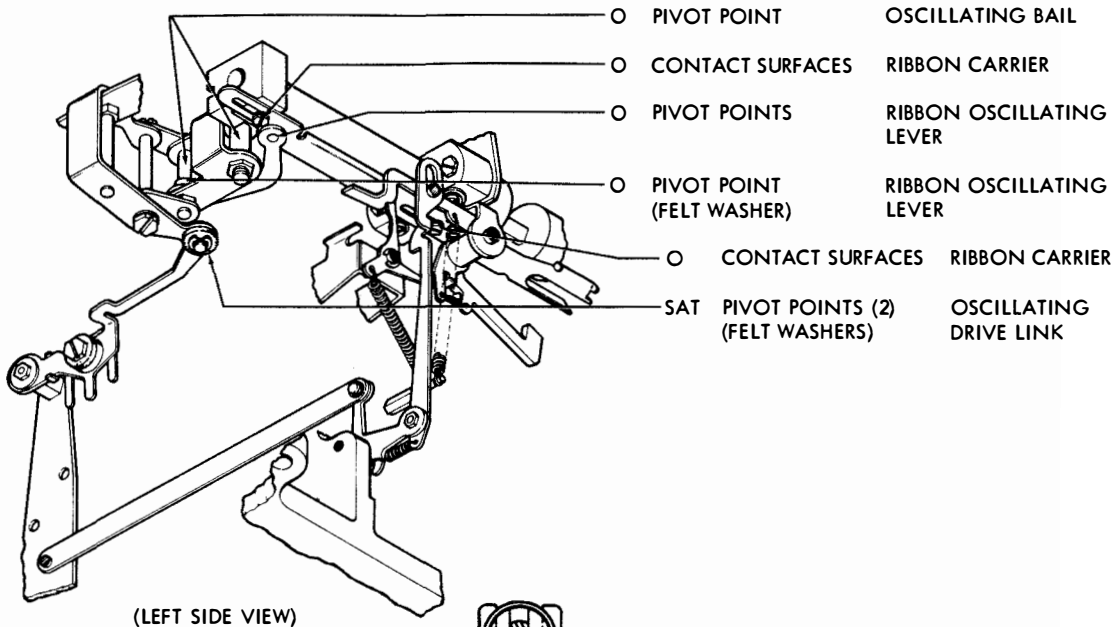
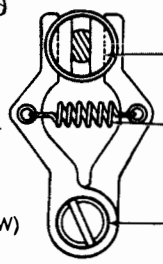


Figure 5-11. Function Box and Axial Positioning Mechanism Lubrication

5-10C AXIAL POSITIONING MECHANISM



5-10D DETENT ASSEMBLIES (TWO ON AXIAL POSITIONING MECHANISM.



TYPING REPERFORATOR UNIT — REAR VIEW

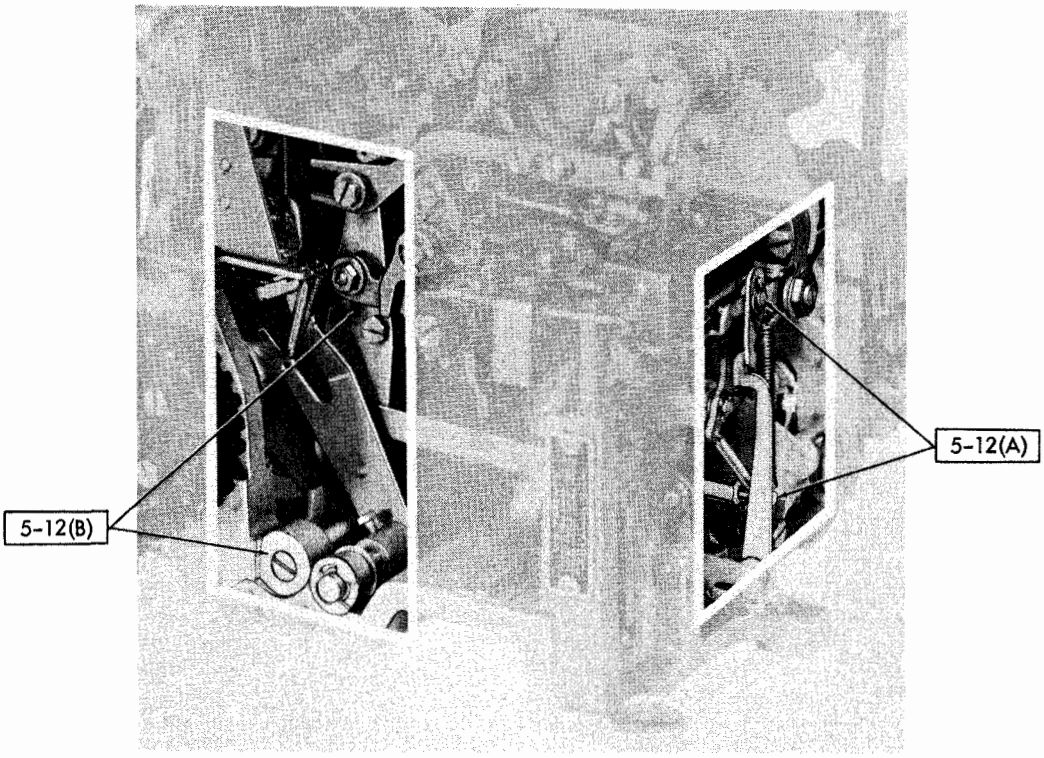
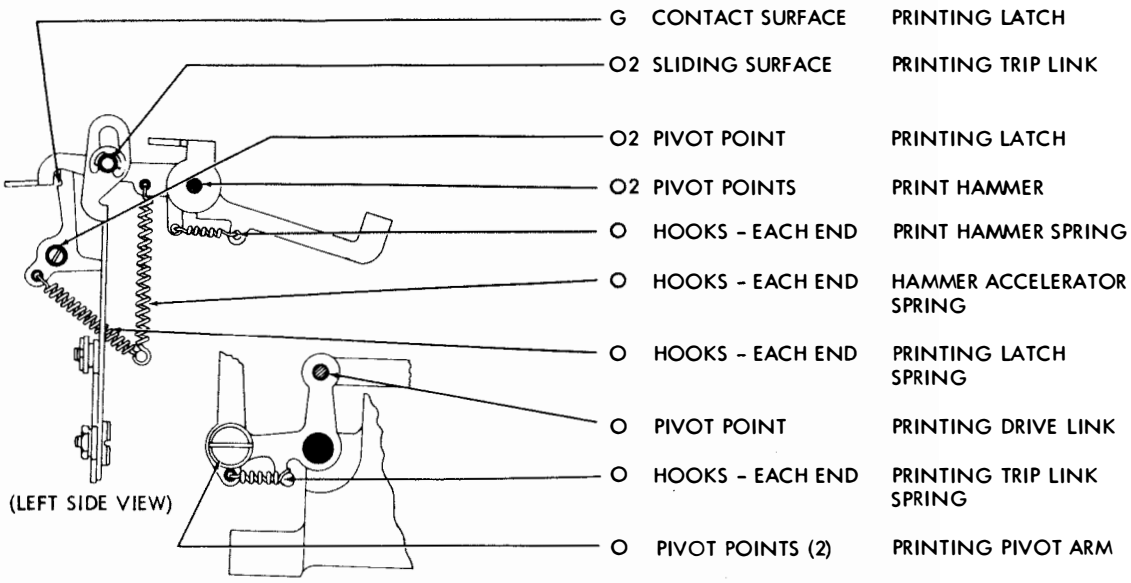


Figure 5-12. Axial Positioning Mechanism Lubrication

5-12A PRINTING MECHANISM



5-12B ROCKER BAIL MECHANISM

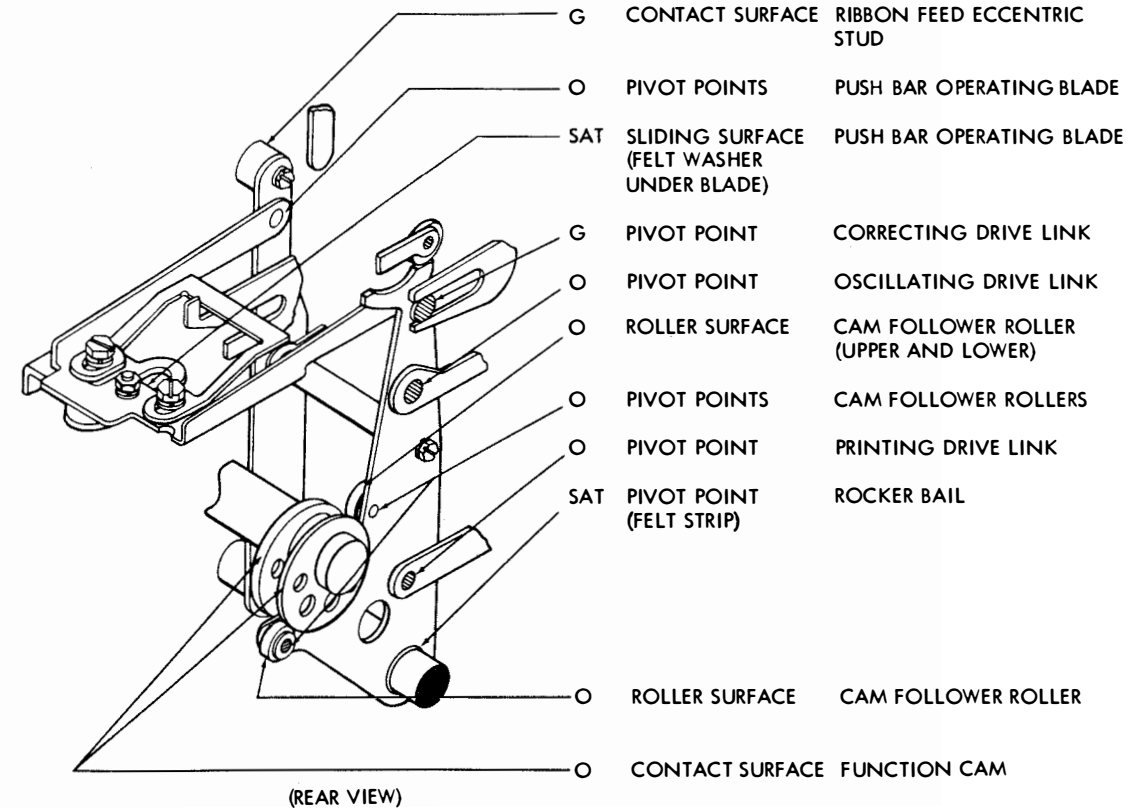
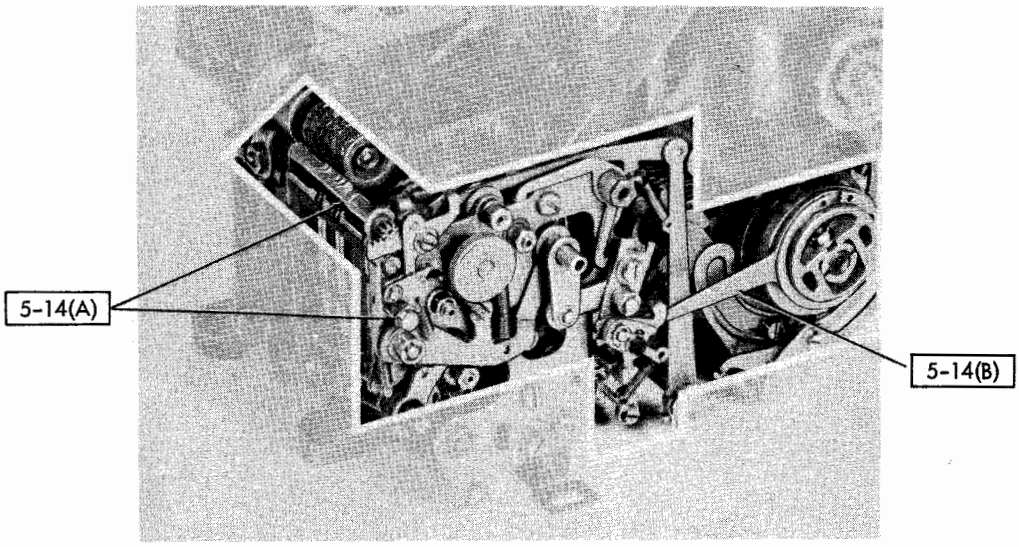
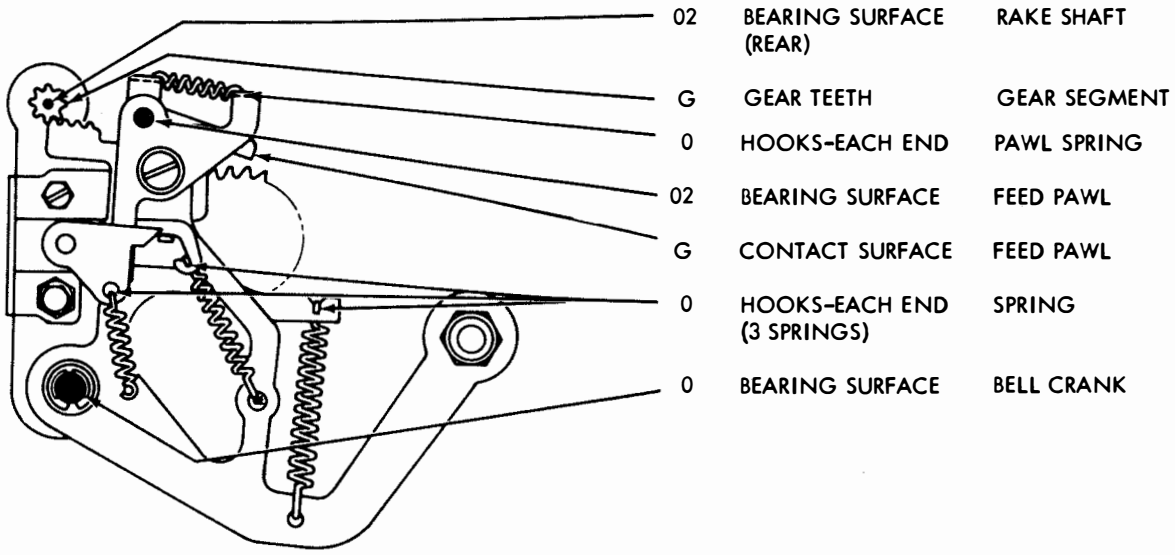


Figure 5-13. Printing and Rocker Bail Mechanisms Lubrication



5-14A MANUAL BACKSPACE MECHANISM



5-14B POWER DRIVE BACKSPACE MECHANISM

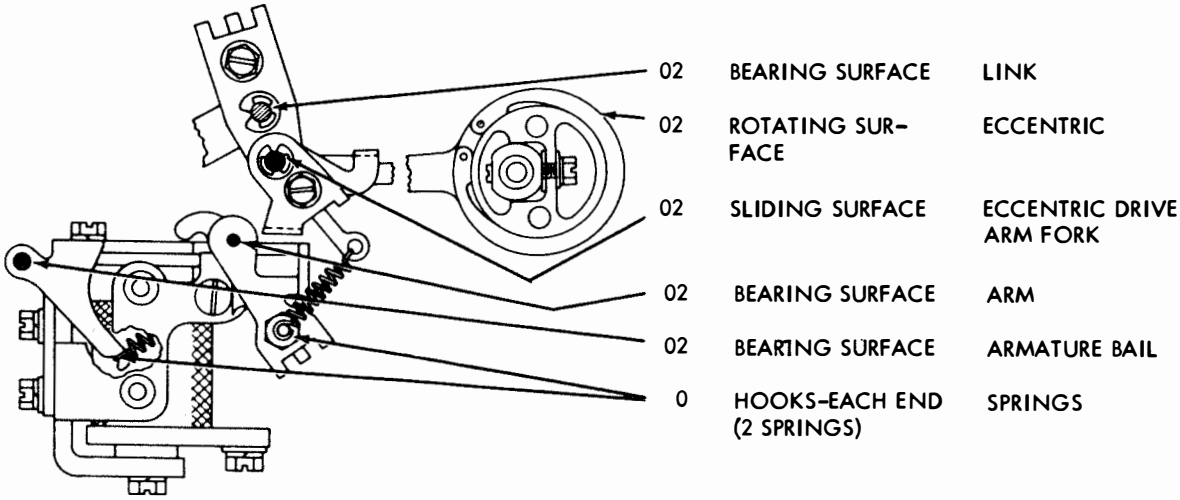
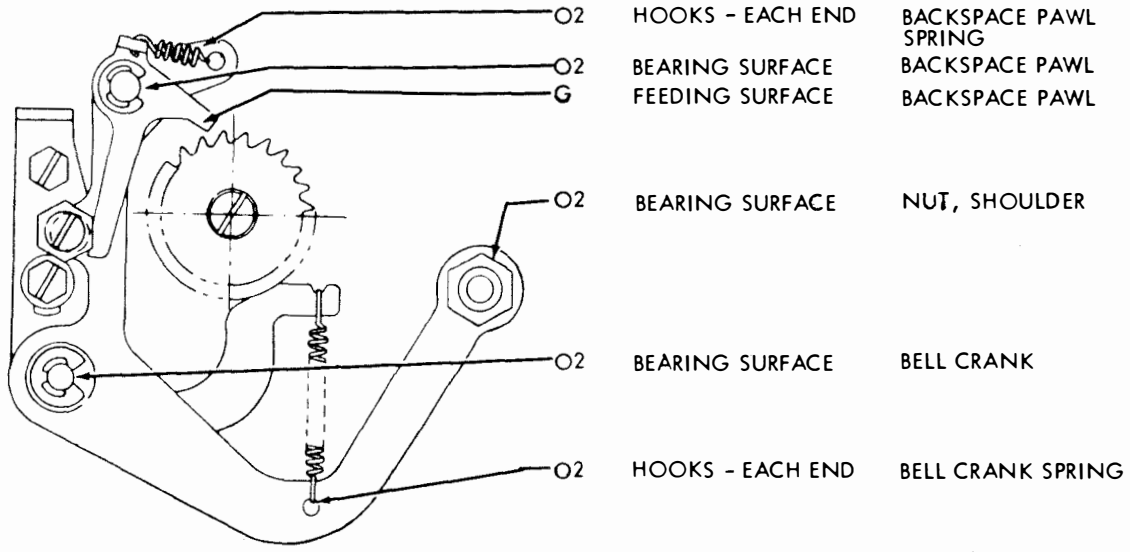


Figure 5-14. Back Space Mechanism Lubrication (Not Applicable to TT-253A/UG)

5-14A POWER DRIVE BACKSPACE MECHANISM FOR FULLY PERFORATED TAPE



5-14B POWER DRIVE BACKSPACE MECHANISM FOR FULLY PERFORATED TAPE

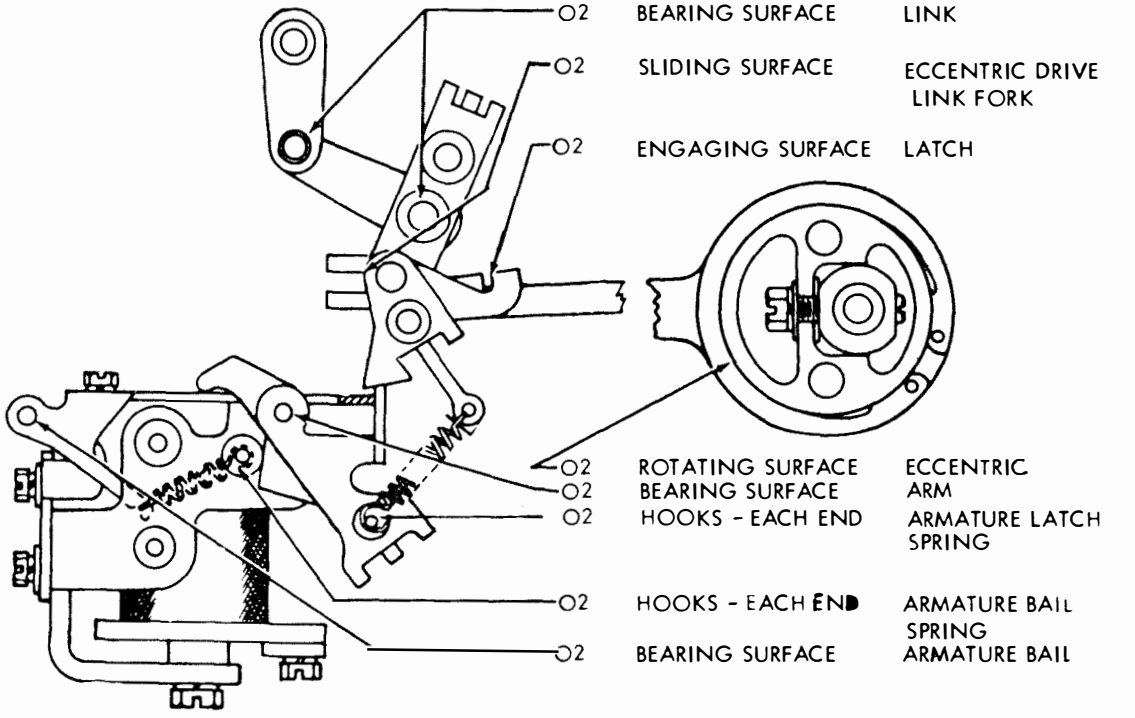
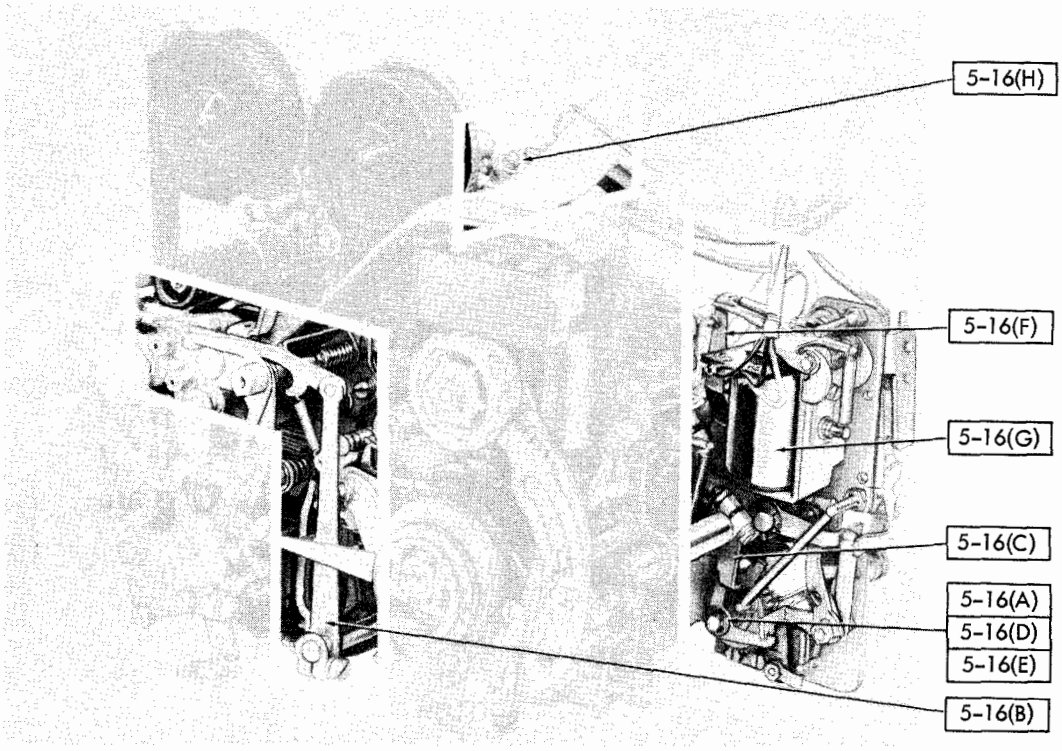


Figure 5-15. Back Space Mechanism Lubrication (TT-253A/UG)



5-16A AUTOMATIC NON-INTERFERING LETTERS TAPE FEED OUT MECHANISM (TT-192/UG ILLUSTRATED)

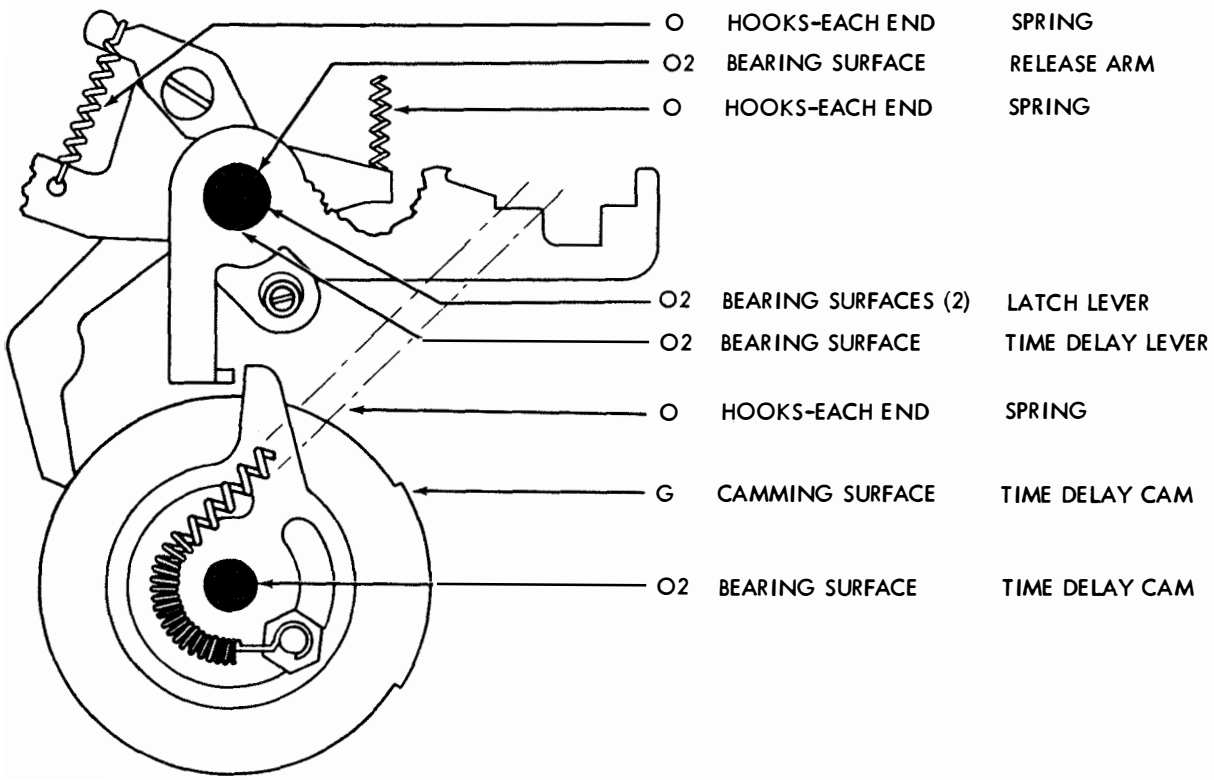
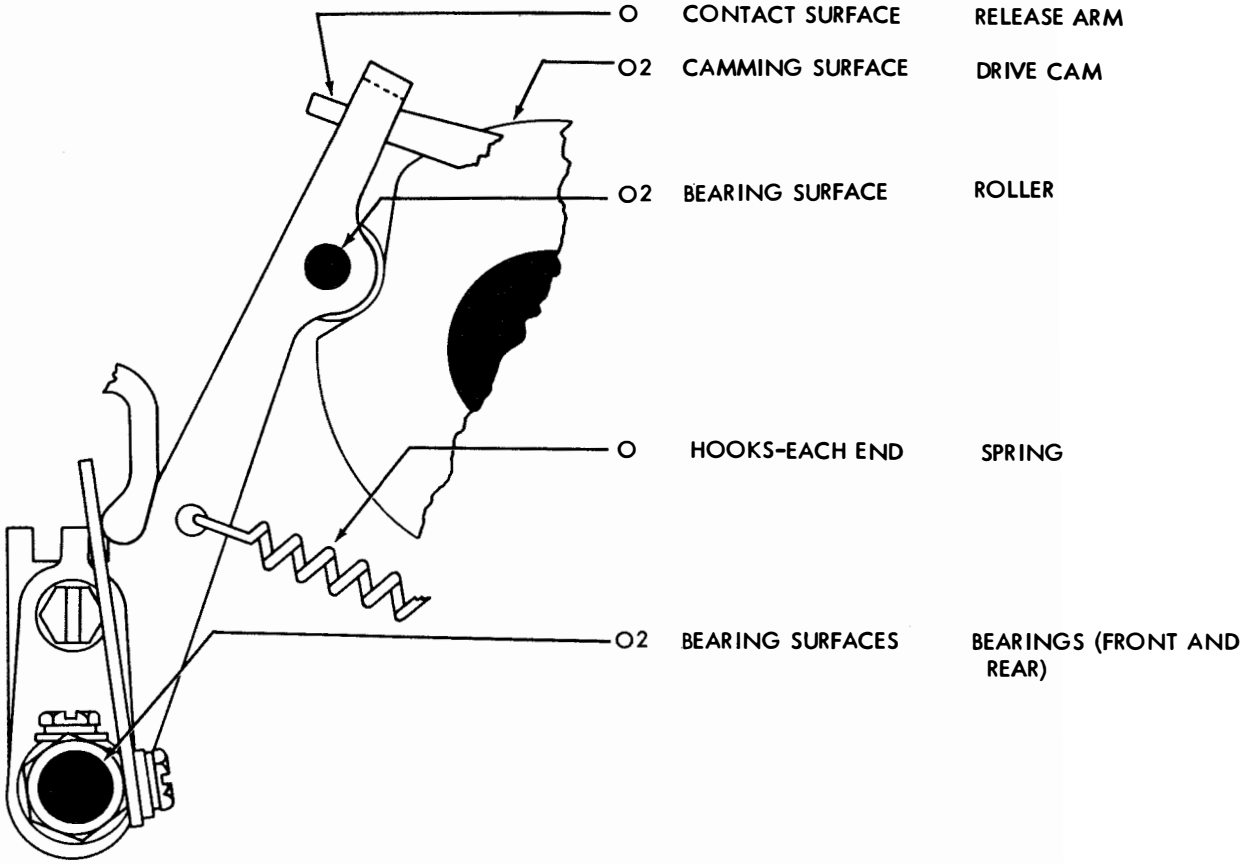


Figure 5-16. Tape Feed-Out Mechanism Lubrication

5-16B AUTOMATIC NON-INTERFERING LETTERS TAPE FEED OUT MECHANISM



5-16C AUTOMATIC NON-INTERFERING LETTERS TAPE FEED OUT MECHANISM

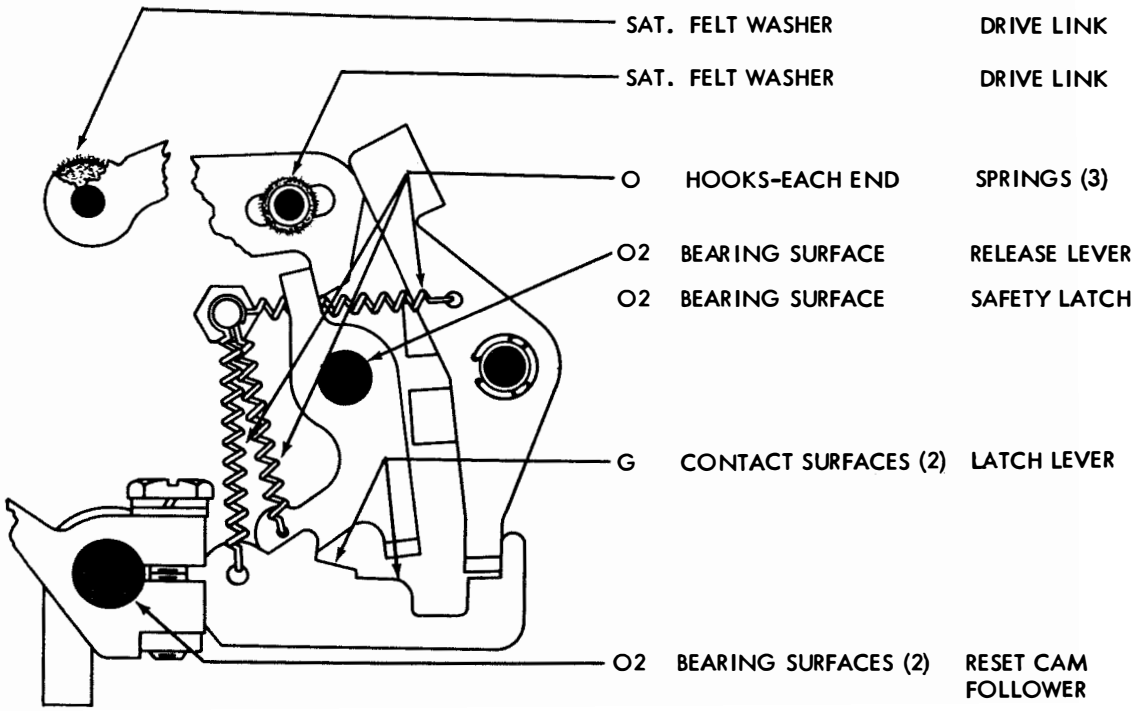
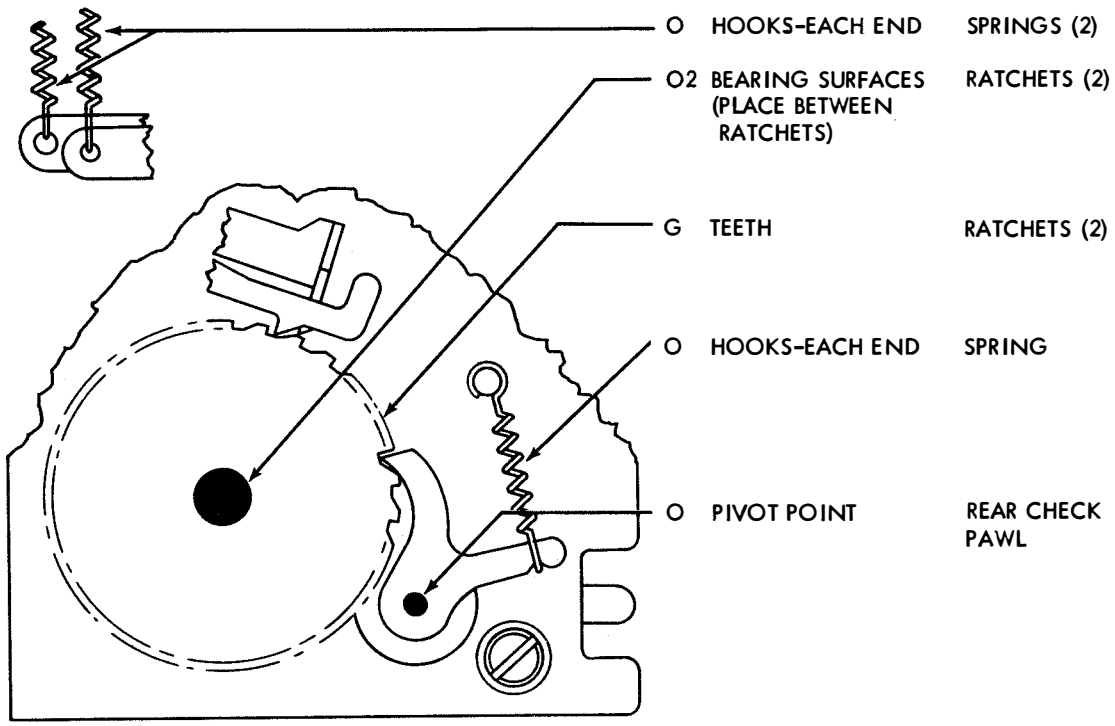


Figure 5-17. Tape Feed-Out Mechanism Lubrication

5-16D TAPE FEED OUT MECHANISM



5-16E TAPE FEED OUT MECHANISM (TT-192A/UG AND TT-253A/UG)

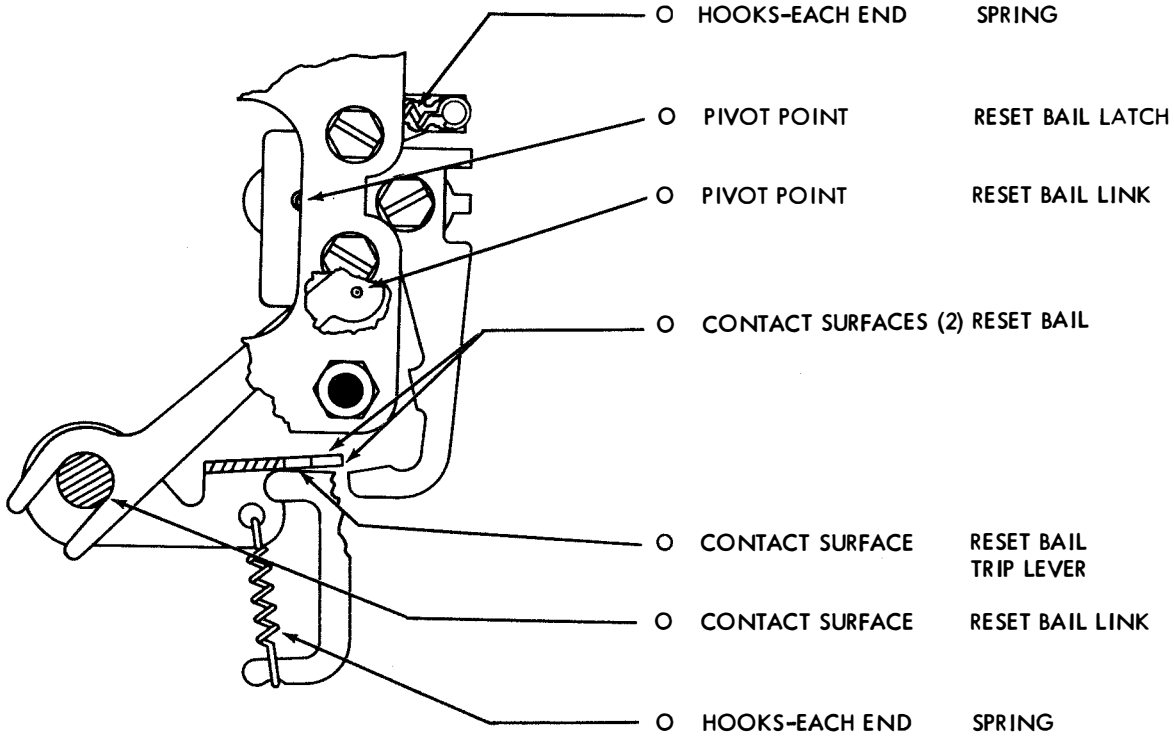


Figure 5-18. Tape Feed-Out Mechanism Lubrication

5-16E BLANK TAPE FEED-OUT MECHANISM (TT-192/UG, TT-253/UG, TT-274/UG AND TT-292/UG)

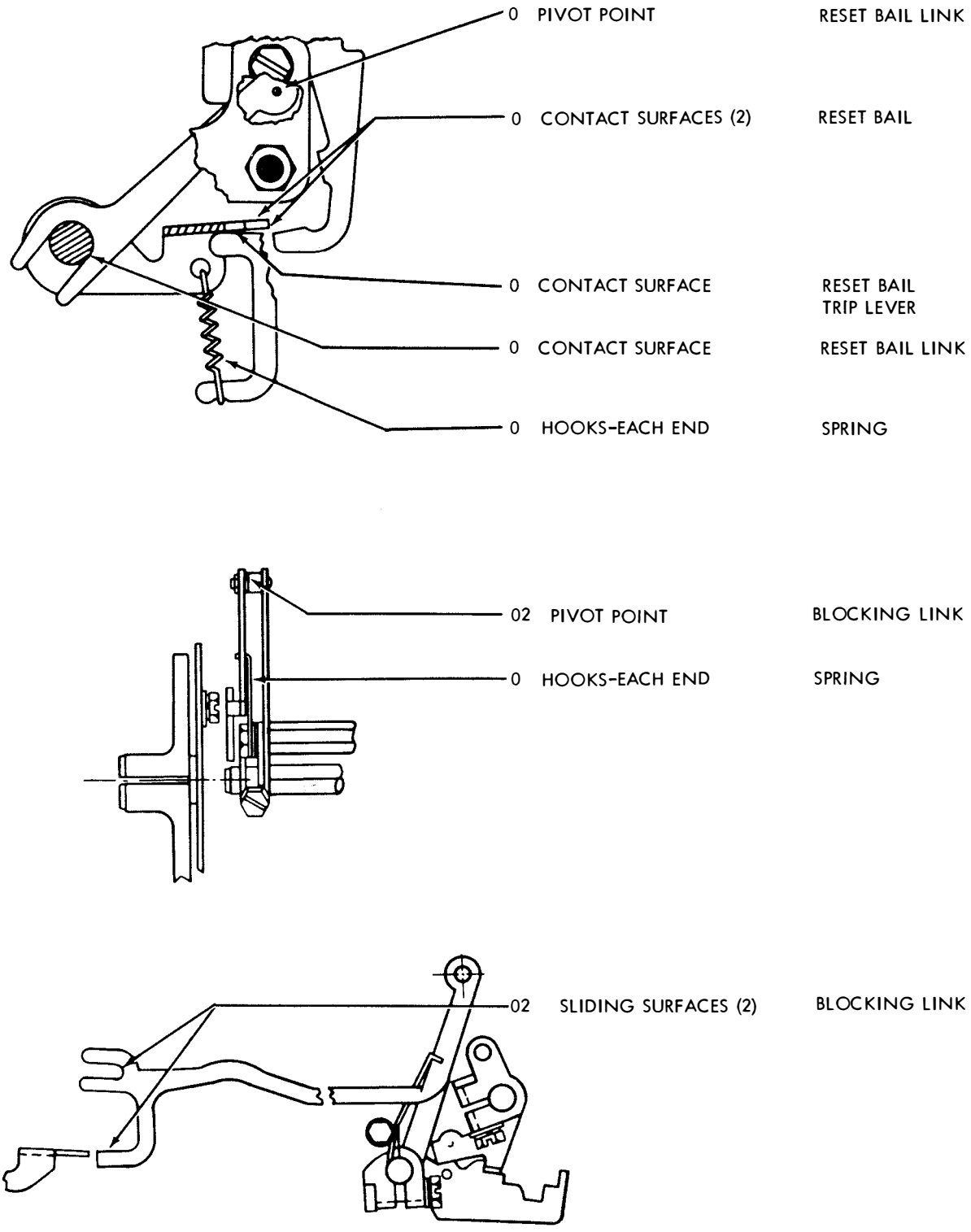
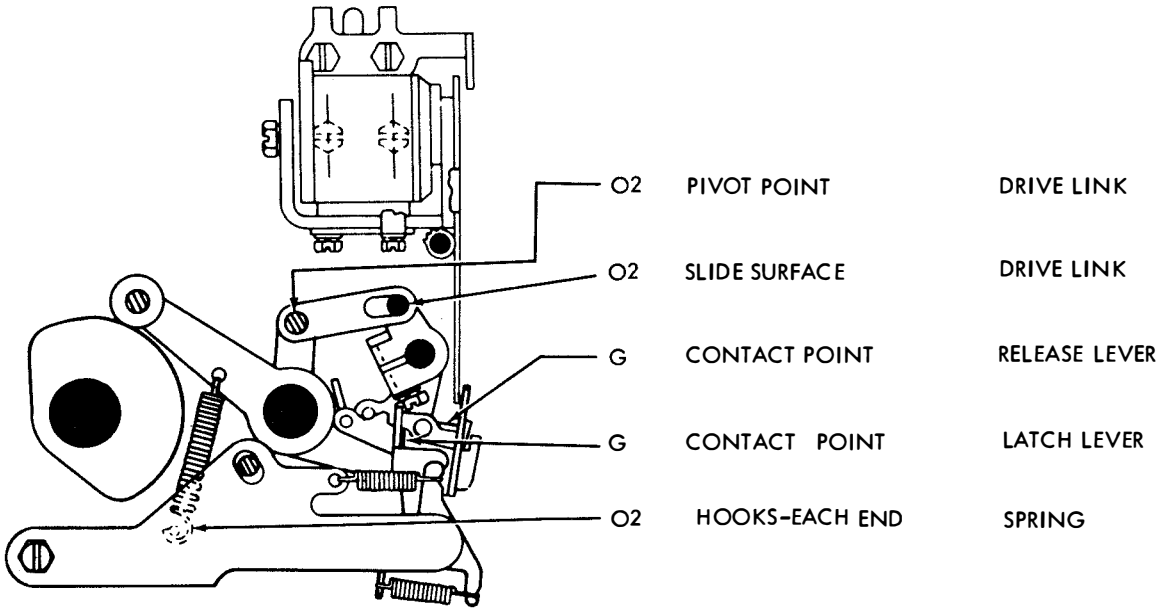


Figure 5-19. Blank Tape Feed-Out Mechanism Lubrication (Not Applicable to TT-192A/UG and TT-253A/UG)

5-16F REMOTE CONTROL TAPE FEED-OUT MECHANISM (NOT APPLICABLE TO TT-192A/UG)



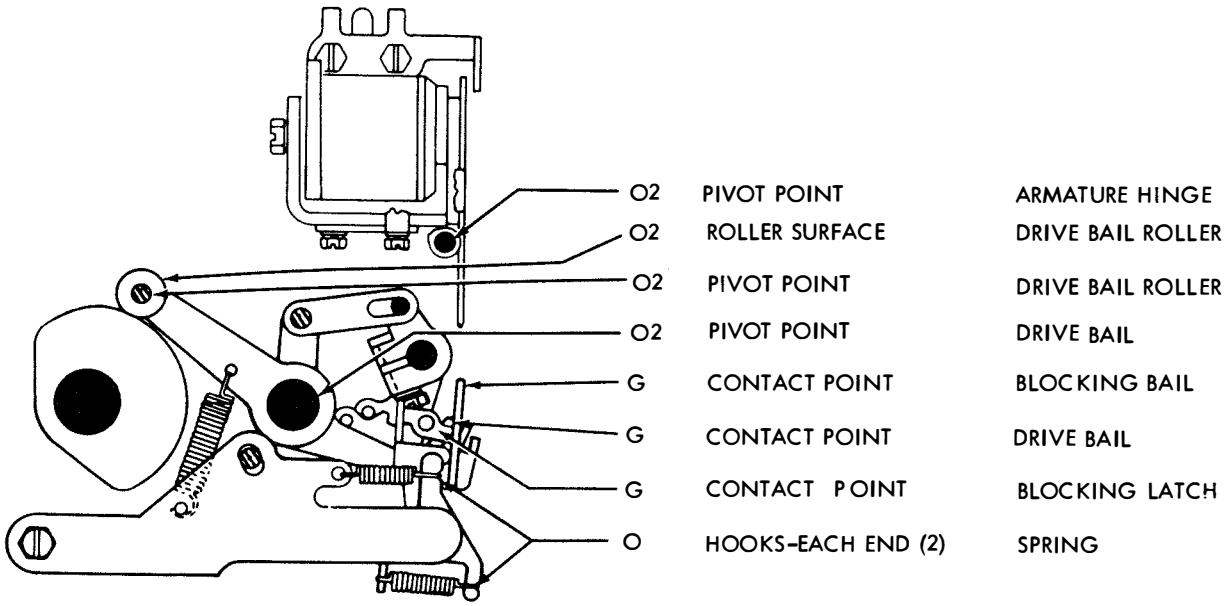
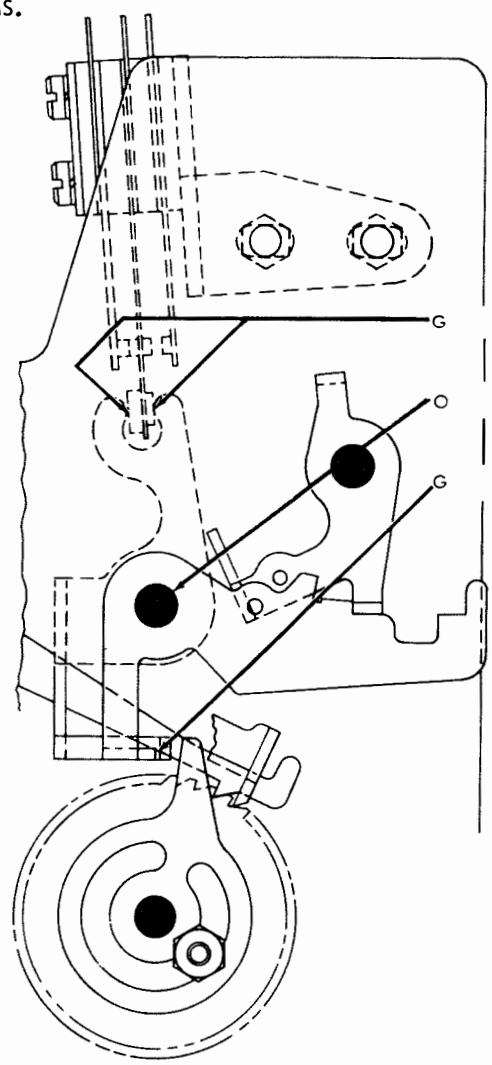


Figure 5-20. Remote Control Tape Feed-Out Mechanism Lubrication (Not Applicable to TT-192A/UG)

5-16G

END OF FEED-OUT TIMING CONTACT FOR NON-INTERFERING LETTERS AND BLANK FEED-OUT MECHANISMS.



5-16H SIGNAL BELL

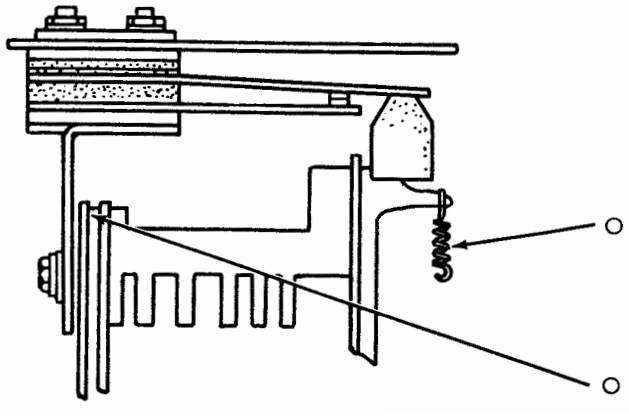
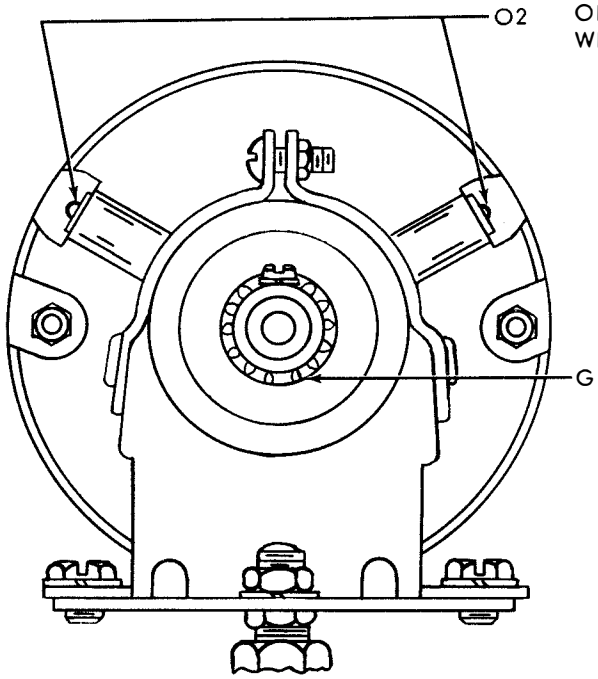


Figure 5-21. Tape Feed-Out Mechanism Lubrication and Signal Bell Switch Lubrication

MOTOR UNITS

(NOT APPLICABLE TO TT-192A/UG)



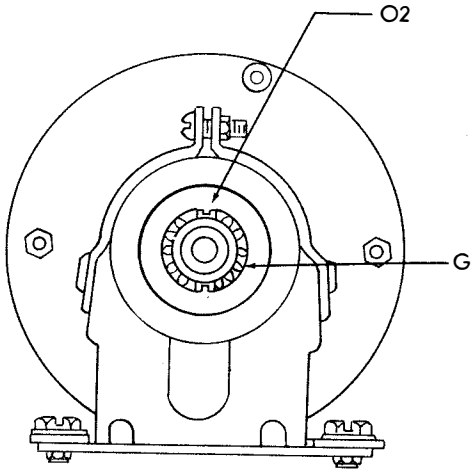
OILER* (4)---(DEPRESS OILER WITH METAL OBJECT.)

MOTOR SHAFT

TEETH

GEARS

(TT-192A/UG)



OILER* (2)

MOTOR SHAFT

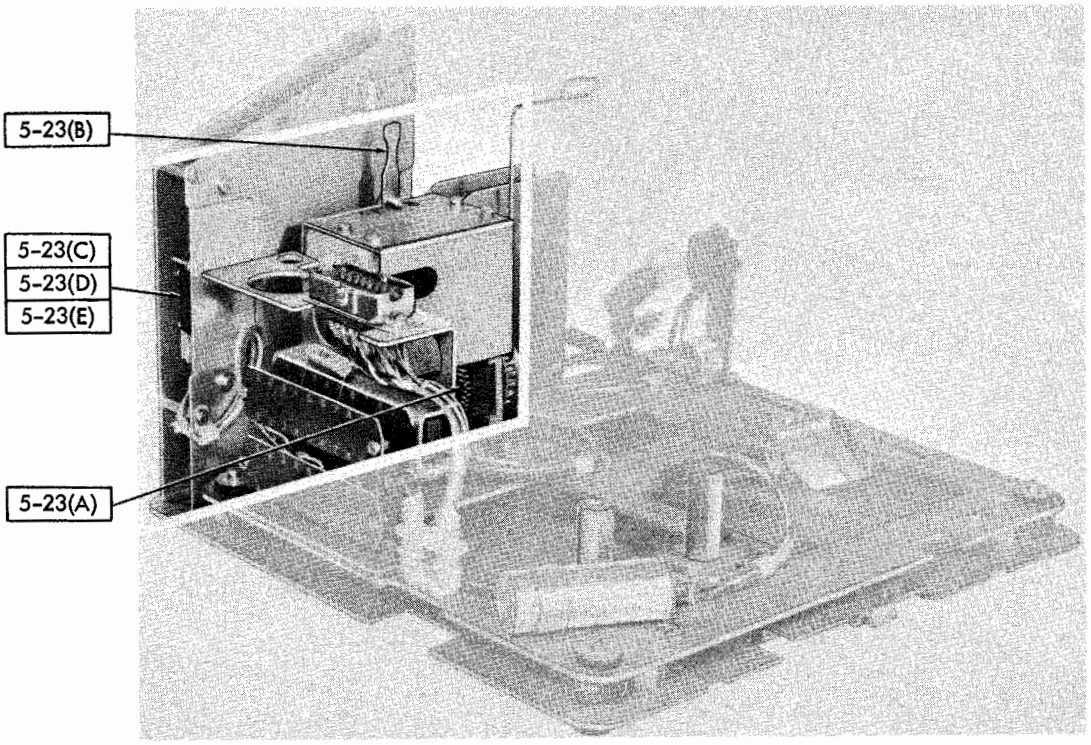
TEETH

GEARS

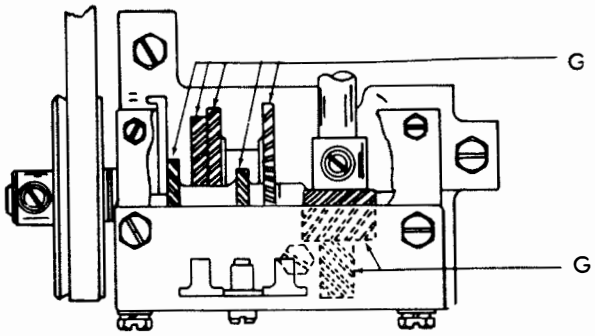
NOTE: DO NOT LUBRICATE SPROCKETS.

* APPLY OIL EVERY FOUR MONTHS. IF MOTOR IS DISASSEMBLED AT ANY TIME, REPACK BEARINGS WITH GREASE. DO NOT REPACK BEARINGS OTHERWISE.

Figure 5-22. Motor Lubrication



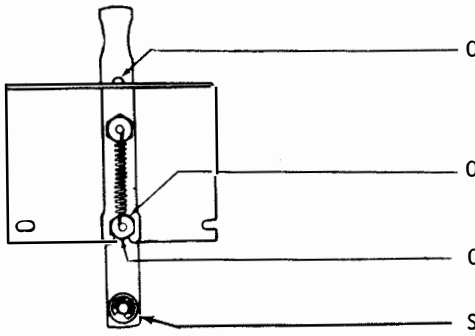
5-23A VARIABLE SPEED DRIVE MECHANISM



G	TEETH	GEARS
G	TEETH	GEARS

(TOP VIEW)

5-23B VARIABLE SPEED DRIVE MECHANISM

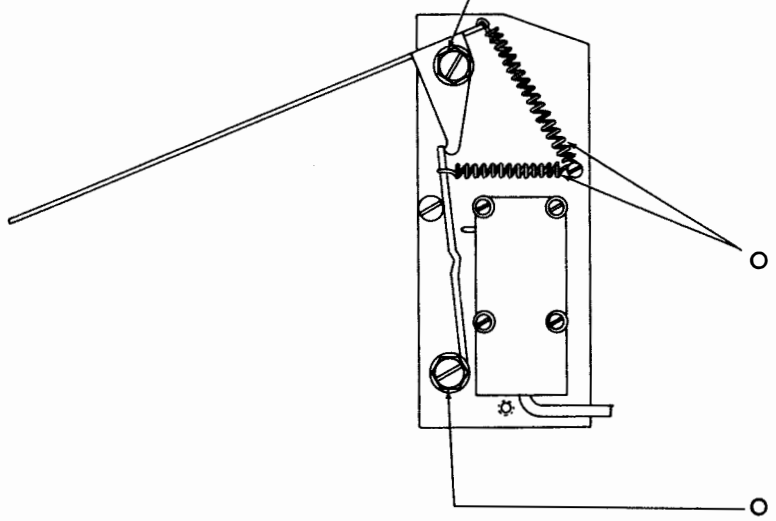


03	DETENT POST	SELECTOR LEVER
03	SLOT	SELECTING LEVER
03	BEARING SURFACE	SELECTING LEVER PILOT SCREW
SAT	PIVOT	FELT WASHER

(LEFT SIDE VIEW)

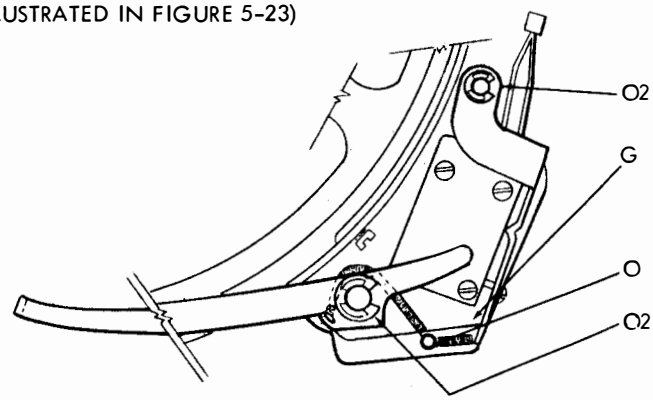
Figure 5-23. Variable Speed Intermediate Gear Mechanism Lubrication (TT-192/UG Illustrated) (Applicable to TT-192A/UG and TT-274/UG)

5-23C TT-192/UG AND TT-274/UG TAPE-OUT SWITCH



(RIGHT SIDE VIEW)

5-23D (TT-192A/UG) TAPE-OUT SWITCH
(NOT ILLUSTRATED IN FIGURE 5-23)



(TOP VIEW)

5-23E TT-253/UG, TT-253A/UG AND TT-292/UG TAPE-OUT SWITCH

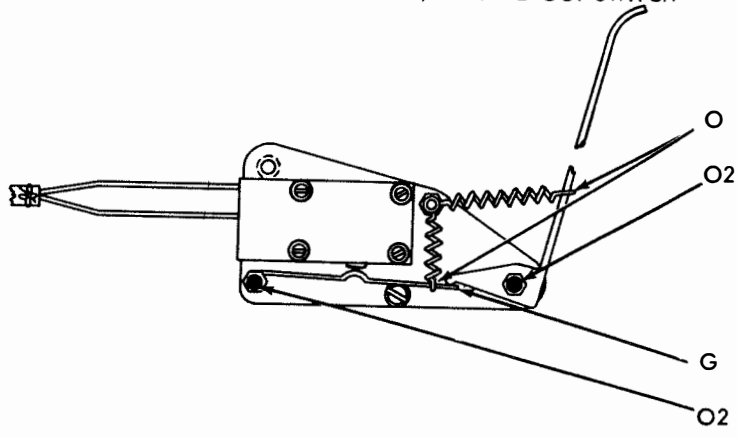


Figure 5-24. Tape-Out Switch Lubrication

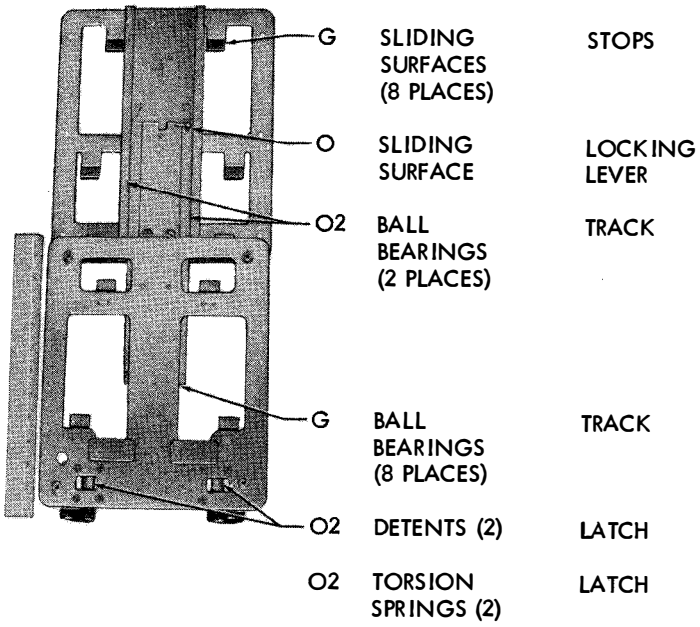
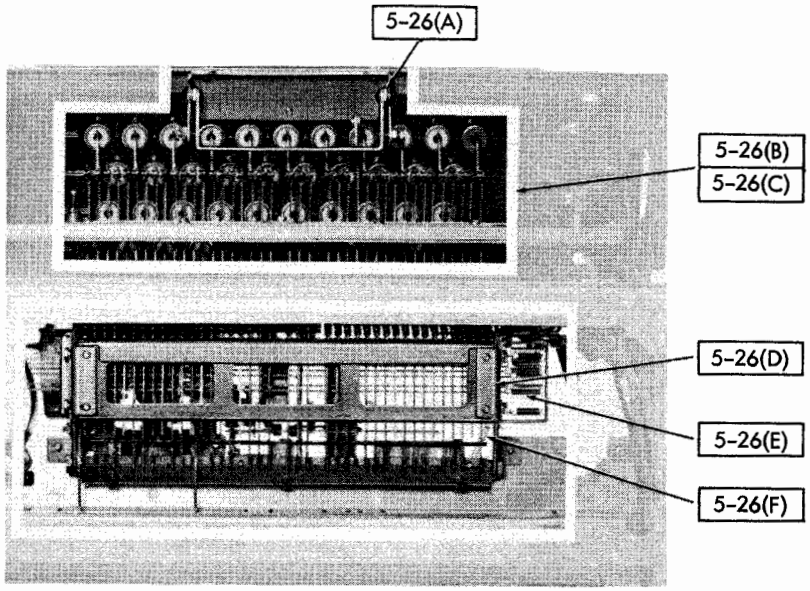
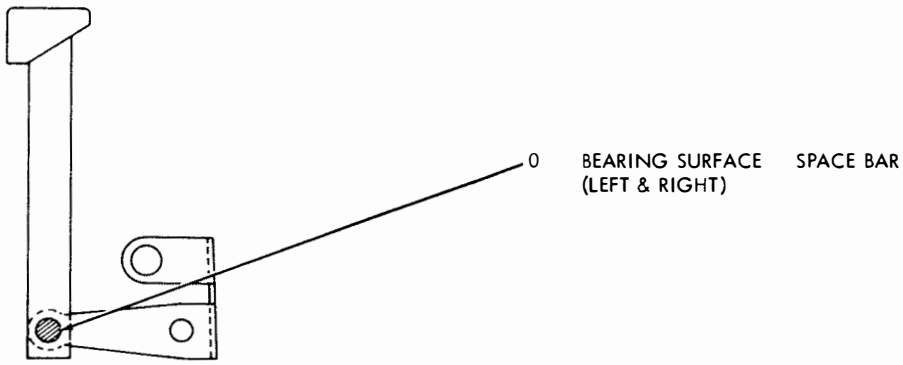


Figure 5-25. Sliding Sub-Base Lubrication (TT-192A/UG)



5-26A SPACE BAR MECHANISM

NOTE: FIGURES 5-26 THROUGH 5-33 APPLICABLE ONLY TO TT-253/UG, TT-253A/UG AND TT-292/UG.



5-26B KEYLEVER MECHANISM

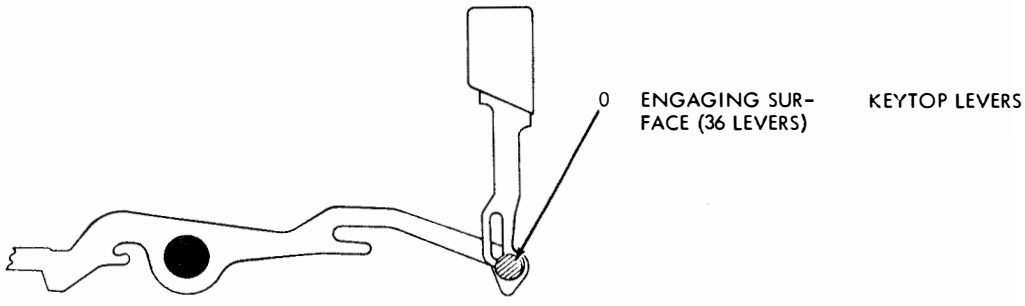
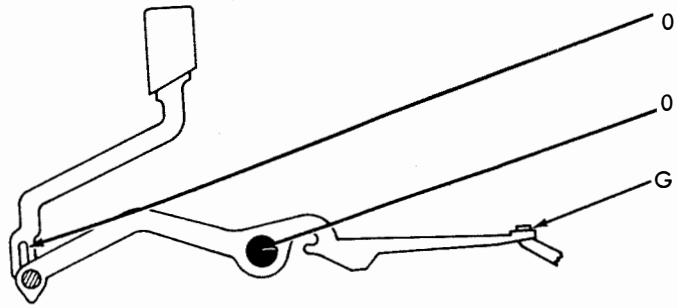


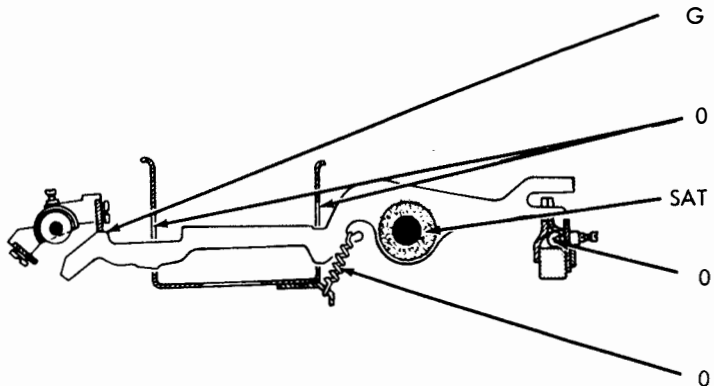
Figure 5-26. Space Bar and Key Lever Mechanisms Lubrication

5-26C BREAK LEVER MECHANISM



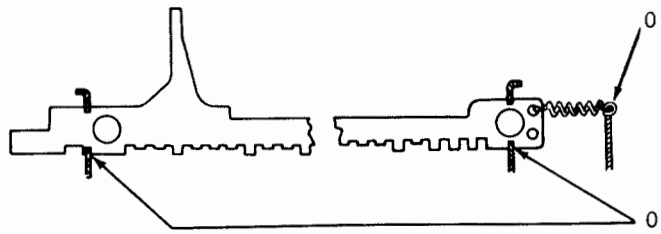
0	ENGAGING SURFACE	BREAK KEYLEVER
0	BEARING SURFACE	FUNCTION LEVER
G	CONTACT SURFACE	BREAK LEVER

5-26D CODE LEVER MECHANISM



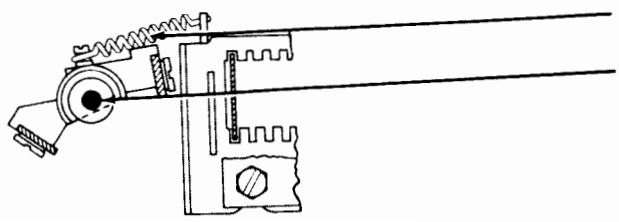
G	CONTACTING SURFACE (32 LEVERS)	CODE LEVER UNIVERSAL BAIL
0	GUIDE SLOTS (32 LEVERS)	CODE LEVERS
SAT	FELT WASHERS (6 WASHERS)	CODE LEVER SHAFT
0	BEARING SURFACES (32 WEDGES)	LOCK BALL TRACK
0	HOOKS-EACH END (40 SPRINGS)	SPRING

5-26E CODE BAR MECHANISM



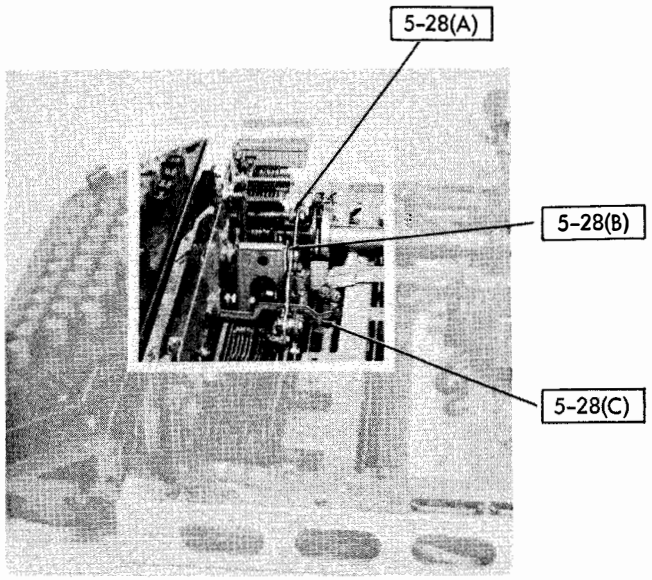
0	HOOKS-EACH END (8 SPRINGS)	SPRING
0	GUIDE SLOTS (LEFT AND RIGHT-TOP AND BOTTOM)	CODE BAR GUIDES

5-26F CODE LEVER UNIVERSAL BAIL MECHANISM



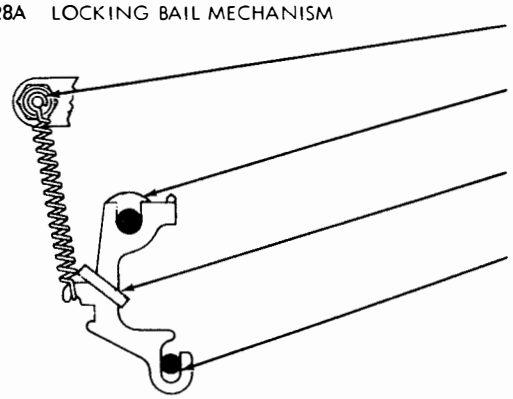
0	HOOKS-EACH END	SPRING
02	BEARING SURFACE	CODE LEVER UNIVERSAL BAIL

Figure 5-27. Break Lever, Code Lever, Code Bar and Code Lever Universal Bail Mechanisms Lubrication



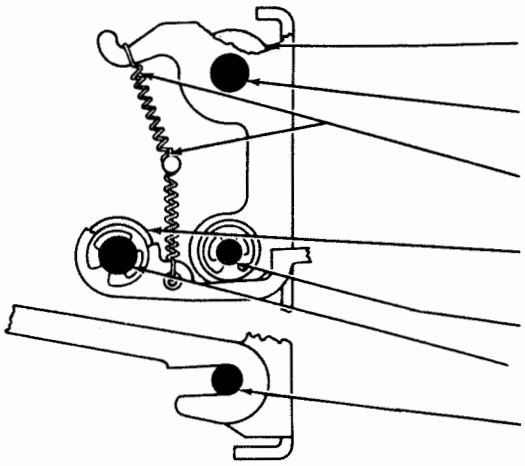
(RIGHT SIDE VIEW)

5-28A LOCKING BAIL MECHANISM



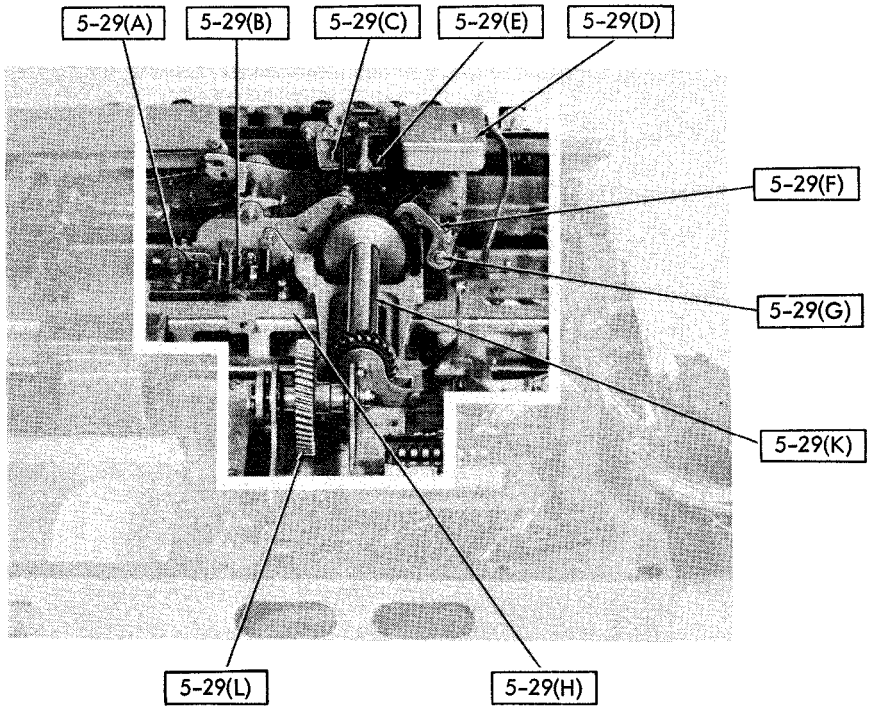
0	HOOKS-EACH END	SPRING
SAT	FELT WASHERS (2 WASHERS - FRONT AND REAR)	LOCKING BAIL POST
SAT	FELT WICK	CAMMING SURFACES
0	GUIDE SLOTS (3 SLOTS)	LOCKING BAIL

5-28B CODE BAR BAIL MECHANISM

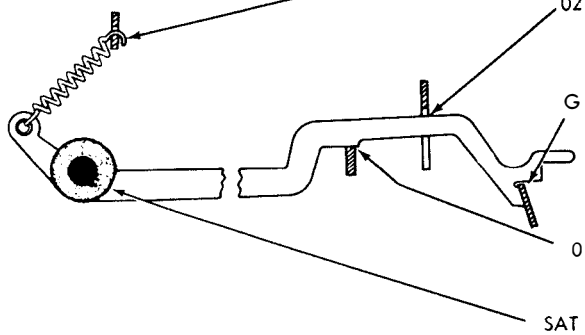


SAT	FELT WASHERS (TWO WASHERS)	CODE BAR BAIL
0	BEARING SURFACE (2 PLACES)	CODE BAR BAIL
0	HOOKS-EACH END (2 SPRINGS)	SPRING
SAT	FELT WASHER	CODE BAR BAIL LATCH
04	BEARING	CODE BAR BAIL
02	BEARING SURFACE	CODE BAR BAIL LATCH
02	ENGAGING SURFACE	ECCENTRIC FOLLOWER

Figure 5-28. Locking Bail and Code Bar Mechanisms Lubrication

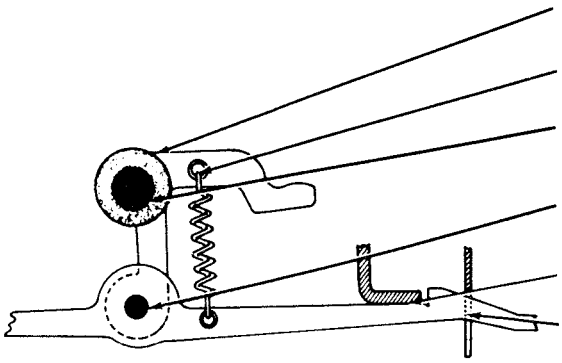


5-28C UNIVERSAL BAIL LATCH MECHANISM



0	HOOKS (EACH END)	SPRING
02	GUIDE SLOT (EACH SIDE OF SLOT)	UNIVERSAL BAIL LATCH LEVER
G	ENGAGING SURFACE	CODE BAR BAIL EXTENSION
0	ENGAGING SURFACE	RESET BAIL LATCH
SAT	FELT WASHER	UNIVERSAL BAIL LATCH LEVER

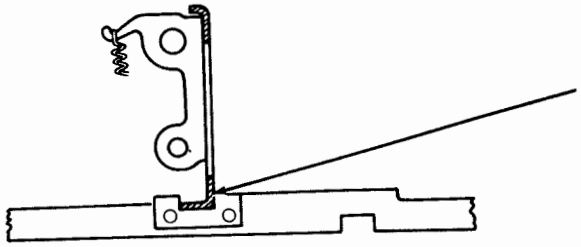
5-29A NON-REPEAT LEVER MECHANISM



SAT	FELT WASHER	NON-REPEAT LEVER CRANK
0	HOOKS-EACH END	SPRING
02	BEARING SURFACE	NON-REPEAT LEVER CRANK
02	BEARING SURFACE	NON-REPEAT LEVER
G	ENGAGING SURFACE	NON-REPEAT LEVER
02	GUIDE SLOT	NON-REPEAT LEVER

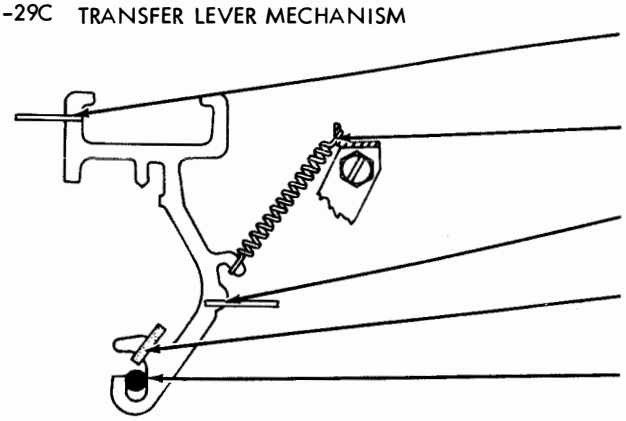
Figure 5-29. Universal Bail Latch Lever and Non-Repeat Lever Mechanisms Lubrication

5-29B CLUTCH TRIP BAR MECHANISM



G SAT	SLOT	CLUTCH TRIP BAR WEAR PLATE

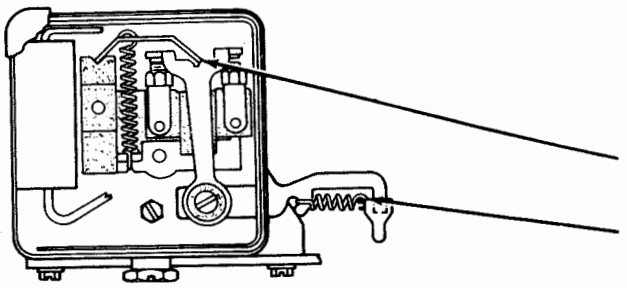
5-29C TRANSFER LEVER MECHANISM



0	GUIDE SLOTS	TRANSFER LEVERS (7 LEVERS)
0	HOOKS-EACH END (7 SPRINGS)	SPRING
0	GUIDE SLOTS	TRANSFER LEVERS (7 LEVERS)
SAT	FELT WASHERS (4 WASHERS)	CAMMING SURFACES
0	GUIDE SLOTS	TRANSFER LEVERS (7 LEVERS)

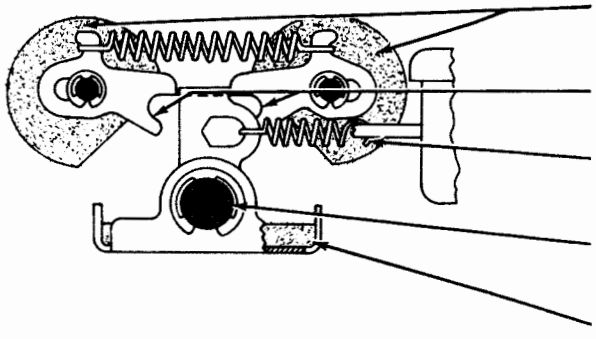
5-29D CONTACT BOX

DISASSEMBLY: REMOVE NUT AND LOCK WASHER SECURING CONTACT BOX COVER AND REMOVE COVER.



G	ENGAGING SURFACE	CONTACT TOGGLE
0	HOOKS-EACH END	SPRING

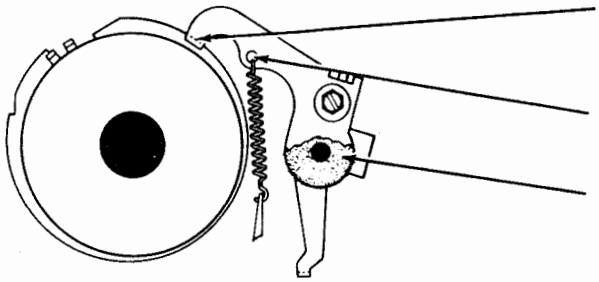
5-29E TRANSFER BAIL MECHANISM



SAT	FELT WASHERS (2 WASHERS)	LATCHES
G	ENGAGING SURFACES	TRANSFER BAIL
0	HOOKS-EACH END (2 SPRINGS)	SPRING
02	BEARING SURFACE (EACH END)	TRANSFER BAIL
SAT	OIL WICK	TRANSFER BAIL

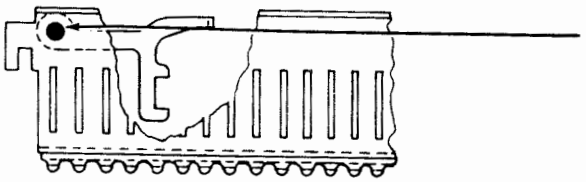
Figure 5-30. Clutch Trip Bar, Transfer Bail, Transfer Lever and Contact Box Mechanisms Lubrication

5-29F KEYBOARD CLUTCH MECHANISM



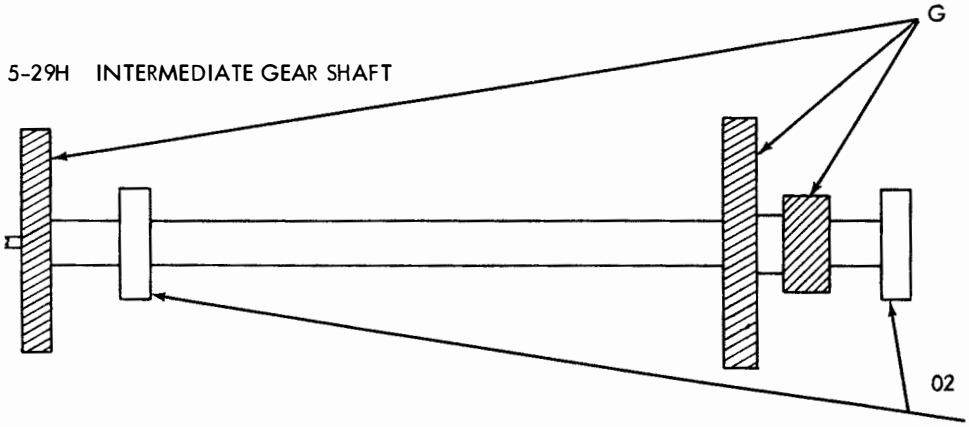
02	LATCHING SURFACE	CLUTCH STOP LEVER AND CLUTCH LATCH LEVER
0	HOOKS-EACH END (2 SPRINGS)	SPRING
SAT	FELT WASHERS (2 FRONT & REAR)	CLUTCH TRIP BAIL

5-29G LOCK BAR LATCH MECHANISM



0	BEARING SURFACE	LOCK BAR LATCH

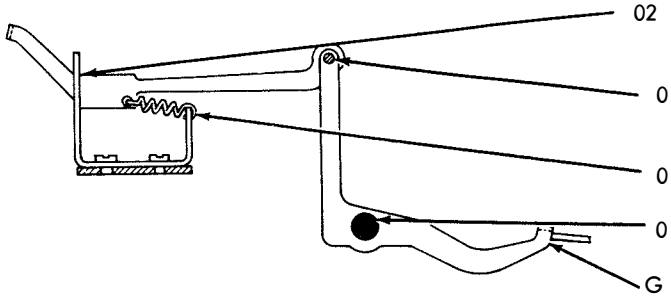
5-29H INTERMEDIATE GEAR SHAFT



G	TEETH (3 GEARS)	INTERMEDIATE GEARS
02	BALL BEARING (2)	INTERMEDIATE GEAR SHAFT

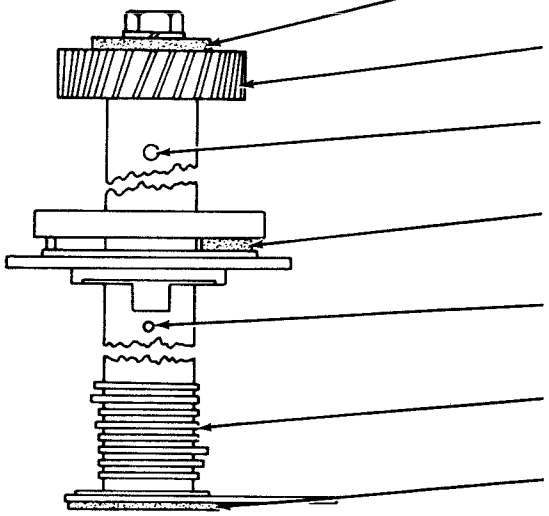
Figure 5-31. Clutch, Lock Bar Latch and Intermediate Gear Shaft Mechanisms Lubrication

5-29J TAPE FEED-OUT SWITCH



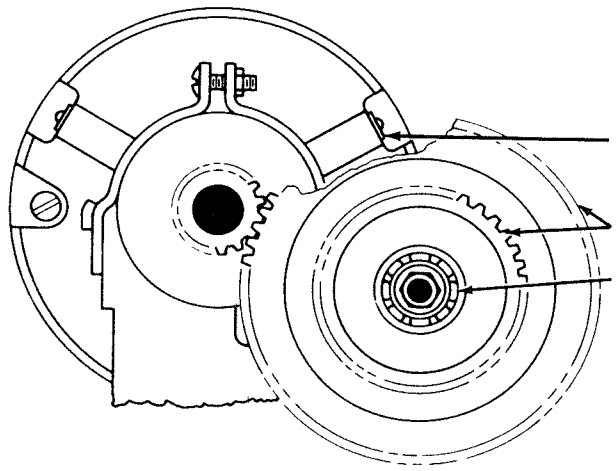
02	GUIDE SLOT	LOCAL LINE FEED TRIP LINK
0	BEARING SURFACE	LOCAL LINE FEED FUNCTION LEVER
0	HOOKS-EACH END	SPRING
0	BEARING SURFACE	FUNCTION BAIL
G	ENGAGING SURFACE	LOCAL LINE FEED FUNCTION LEVER

5-29K SIGNAL GENERATOR SHAFT



SAT	FELT WASHER	SIGNAL GENERATOR SHAFT
G	GEAR TEETH	SIGNAL GENERATOR SHAFT
020	OIL HOLE	SIGNAL GENERATOR SHAFT
04	INTERNAL MECHANISM	KEYBOARD CLUTCH
SAT	FELT WICK	
020	OIL HOLE	SIGNAL GENERATOR CAM
02	CAMMING SURFACE EACH CAM	SIGNAL GENERATOR CAM
SAT	FELT WASHER	SIGNAL GENERATOR SHAFT

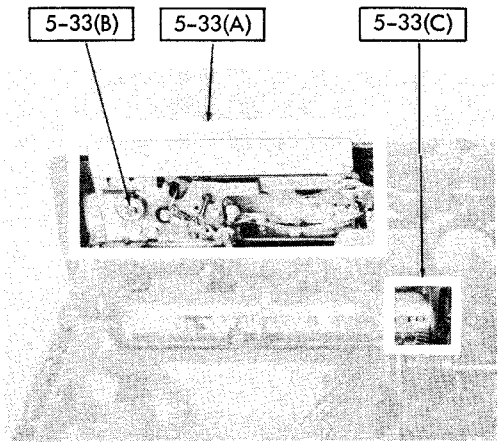
*5-29L INTERMEDIATE GEAR MECHANISM



02	OILER-EACH END (RIGHT AND LEFT)	MOTOR SHAFT
G	TEETH (2 GEARS)	INTERMEDIATE GEARS
02	BALL BEARING (2 BEARINGS)	INTERMEDIATE GEAR SHAFT

*APPLY OIL EVERY FOUR MONTHS. IF MOTOR IS DISASSEMBLED AT ANY TIME, REPACK BEARINGS WITH GREASE. DO NOT REPACK BEARINGS OTHERWISE.

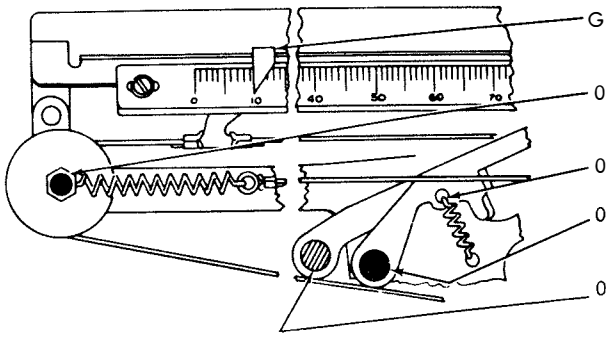
Figure 5-32. Tape Feed-Out Switch, Signal Generator Shaft and Intermediate Gear Mechanisms Lubrication



(REAR VIEW)

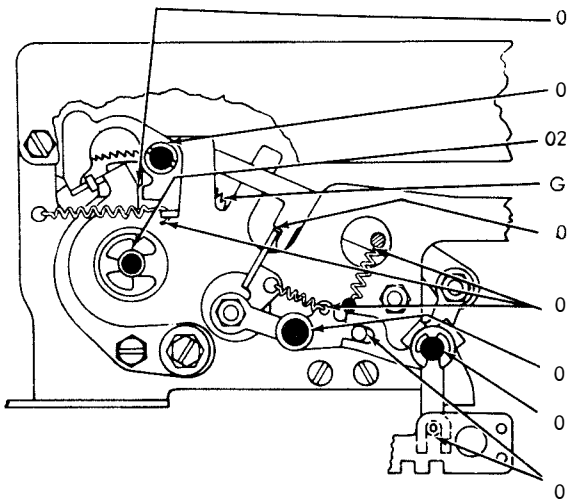
(REST KEYBOARD IN UPRIGHT POSITION)

5-33A CHARACTER COUNTER MECHANISM



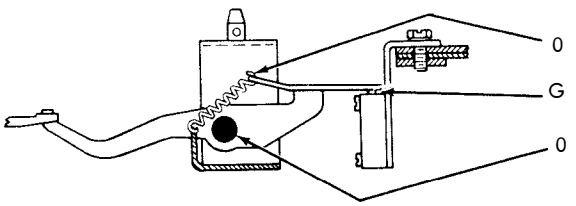
G	ENGAGING SURFACE	COUNTER SCALE BRACKET
0	BEARING SURFACE	INDICATOR CORD PULLEY
0	HOOKS-EACH END	SPRING
0	BEARING SURFACE	RATCHET LATCH LEVER
0	BEARING SURFACE	RATCHET DRIVE LEVER

5-33B CHARACTER COUNTER MECHANISM



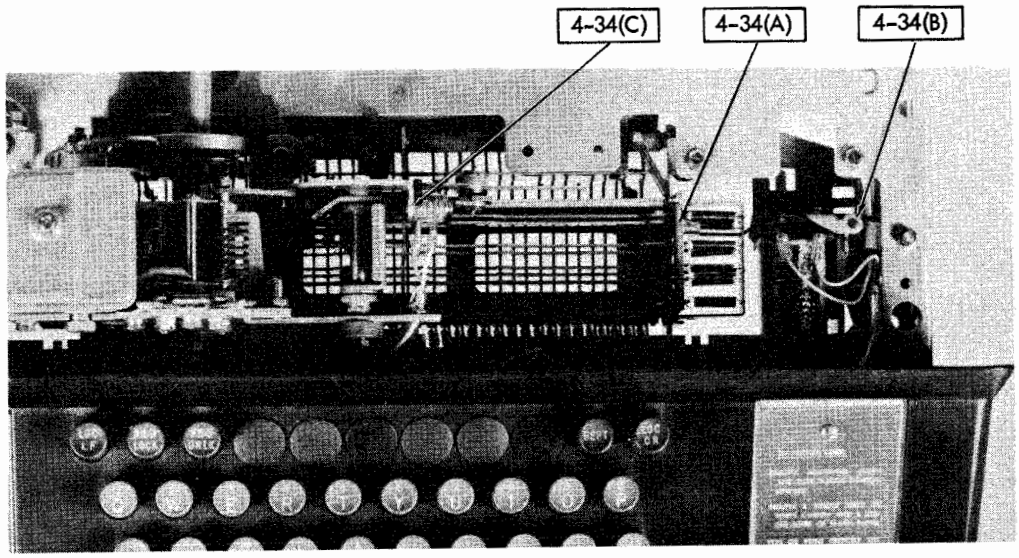
0	CONTACT SURFACE	ANTI-BOUNCE LATCH
0	BEARING SURFACE	ANTI-BOUNCE LATCH
02	BEARING SURFACE	RATCHET DRUM
G	TEETH	RATCHET
0	ENGAGING SURFACES (2 PLACES)	RESET LEVER EXTENSION
0	HOOKS-EACH END (3 SPRINGS)	SPRING
0	BEARING SURFACE	RESET BAIL
0	BEARING SURFACE	DRIVE LEVER FEED BAIL
0	ENGAGING SURFACES (3 SURFACES)	DRIVE LEVER FEED BAIL & RESET BAIL

5-33C ELECTRICAL LINE BREAK MECHANISM

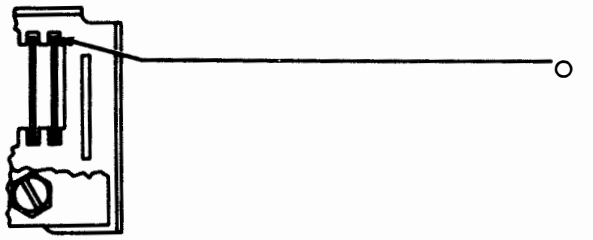


0	HOOKS-EACH END	SPRING
G	CONTACT SURFACE	SENSITIVE SWITCH
0	BEARING SURFACE	BREAK LEVER

Figure 5-33. Character Counter and Line Break Mechanisms Lubrication

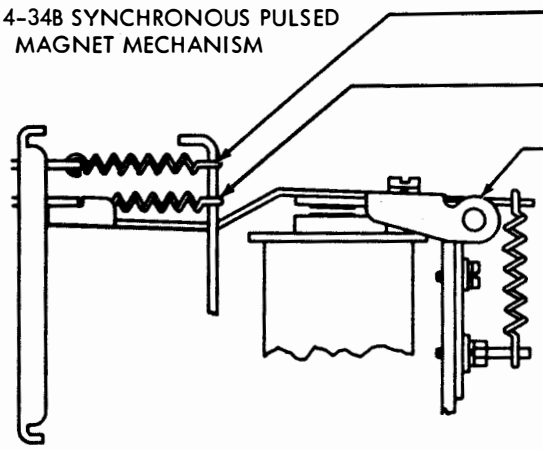


4-34A CODE BAR GUIDE



O GUIDE SLOTS (LEFT, RIGHT, TOP AND BOTTOM)

4-34B SYNCHRONOUS PULSED MAGNET MECHANISM

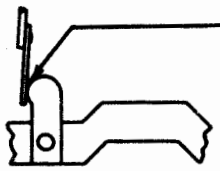


O HOOKS-EACH END UNIVERSAL CODE BAR SPRING

O HOOKS-EACH END CLUTCH TRIP BAR SPRING

SAT FELT WASHERS ARMATURE-PIVOT

4-34C CONTACT SWINGER



G ENGAGING SURFACE

Figure 5-34. Synchronous Pulse Mechanism Lubrication (TT-253A/UG)

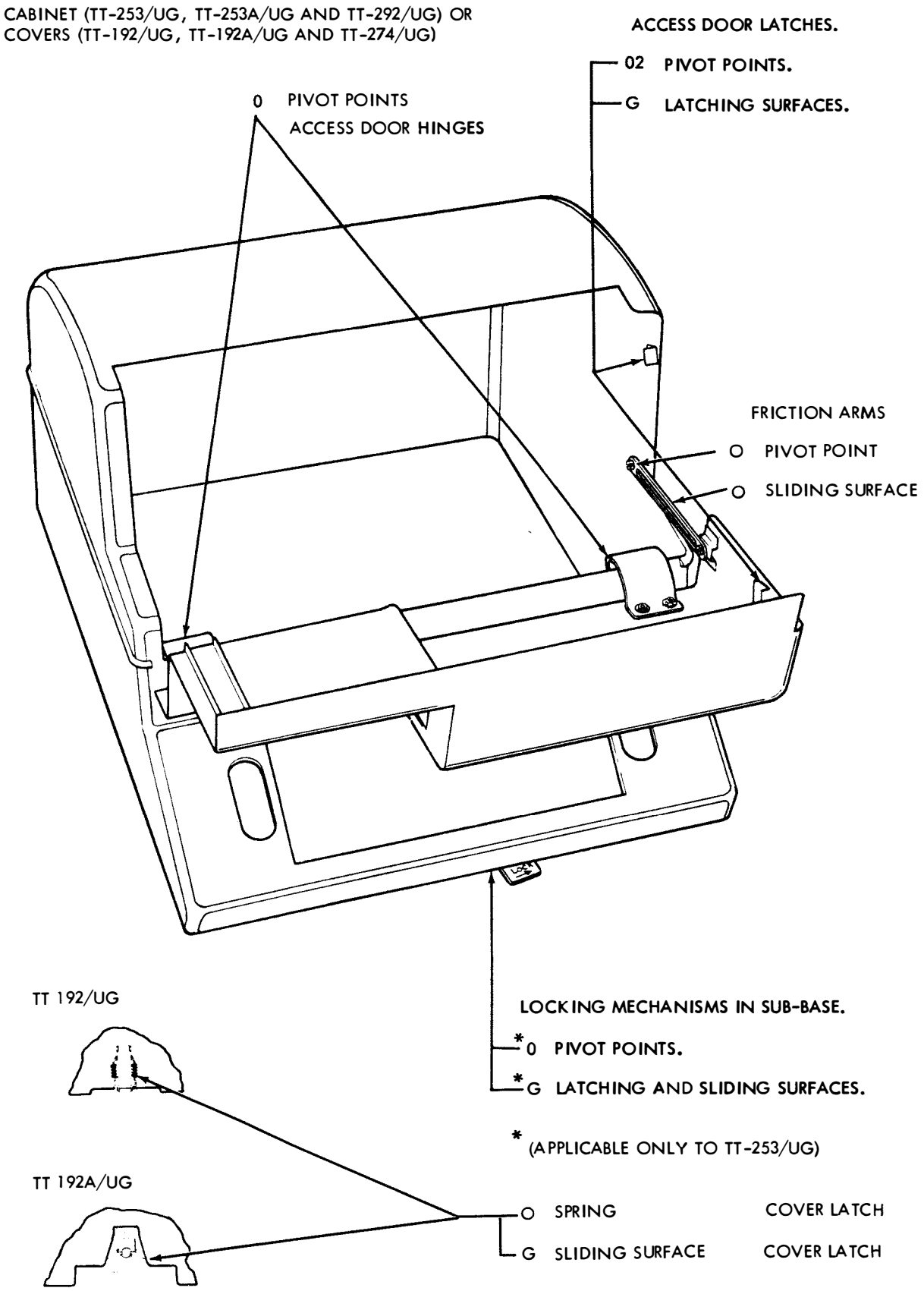


Figure 5-35. Cabinet or Cover Lubrication

SECTION 6
SERVICE AND REPAIR

6-1. FAILURE REPORT.

Report each failure of the equipment, whether caused by a defective part, wear, improper operation, or an external cause. Use ELECTRONICS FAILURE REPORT form DD787. Each pad of the forms includes full instructions for filling out the forms and forwarding them to the Bureau of Ships. However, the importance of providing complete information cannot be emphasized too much. Be sure that you include model number and serial number of the equipment (from the equipment identification plate), the type number and serial number of the major unit (from the major unit identification plate), and the type number and reference designation of the particular defective part (from the technical manual). Describe the cause of the failure completely, continuing on the back of the form if necessary. Do not substitute brevity for clarity. And remember — there are two sides to the failure report —

YOUR SIDE

Every FAILURE REPORT is a boost for you:

1. It shows that you are doing your job.
2. It helps make your job easier.
3. It insures available replacements.
4. It gives you a chance to pass your knowledge on to every man on the team.

BUREAU SIDE

The Bureau of Ships uses the information to:

1. Evaluate present equipment.
2. Improve future equipment.
3. Order replacements for stock.
4. Prepare field changes.
5. Publish maintenance data.

Always keep a supply of failure report forms on board. You can get them from the nearest Forms and Publications Supply Post.

6-2. GENERAL.

a. The information in this section is planned so as to provide maintenance personnel with effective means for location and clearing trouble. It is necessary that the technicians be thoroughly familiar with the theory of operation of the equipment (Section 4) and with the adjusting routine (paragraph 6-4) before attempting any maintenance procedures.

b. Exploded illustrations, figures 6-1 through 6-63 are grouped on a functional basis, insofar as possible. They are keyed to the Maintenance Parts List, Table 7-2, by their reference designations. See Table 7-1 for the systematic assignment of reference designation numbers to the major components. The arrangement of the major components in the exploded illustrations is as listed below:

Component	Figure
Base (TT-192/UG and TT-274/UG)	6-18, 6-22, 6-24 through 6-26
Miniaturized Base (TT-192A/UG)	6-19, 6-23, 6-24 through 6-26
Keyboard-base (TT-253/UG and TT-292/UG	6-1, 6-2, 6-4 through 6-17, 6-21
Keyboard-base (TT-253A/UG)	6-1 through 6-17, 6-20
Synchronous Motor (TT-192/UG and TT-253/UG)	6-27
Synchronous Motor (TT-253A/UG)	6-27, 6-28
Miniaturized Motor (TT-192A/UG)	6-29
Governed Motor (TT-274/UG and TT-292/UG)	6-30, 6-31
Typing Reperforator	6-32 through 6-58
Cover (TT-192/UG and TT-274/UG)	6-62
Miniaturized Cover (TT-192A/UG)	6-63
Cabinet (TT-253/UG, TT-253A/UG and TT-292/UG)	6-60, 6-61

c. Tools required for service and repair, including removal and replacement of parts and assemblies and adjustment, are listed in table 5-1. These are not supplied as part of the equipment.

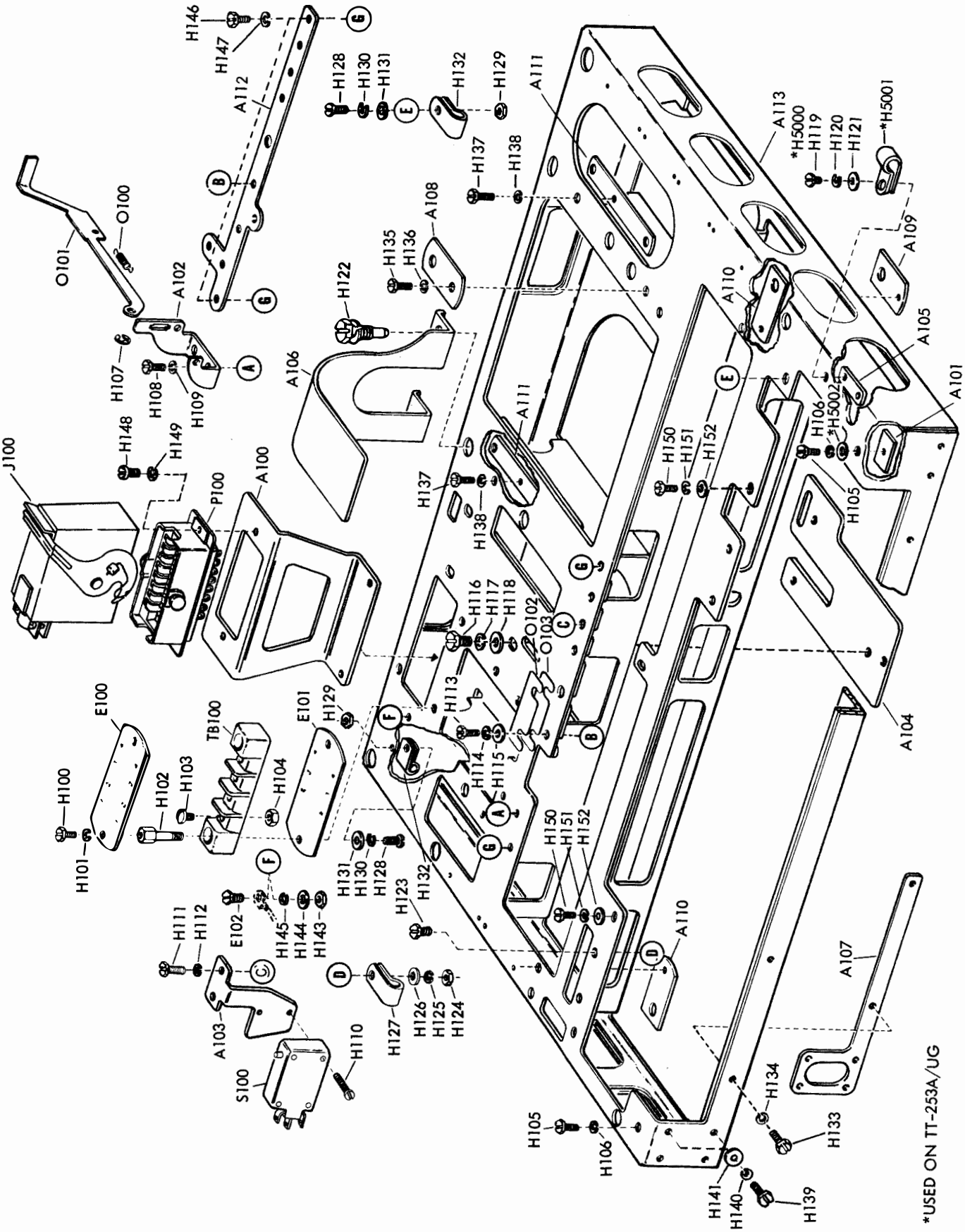


Figure 6-1. Keyboard - Base (TT-253/UG, TT-253A/UG and TT-292/UG)

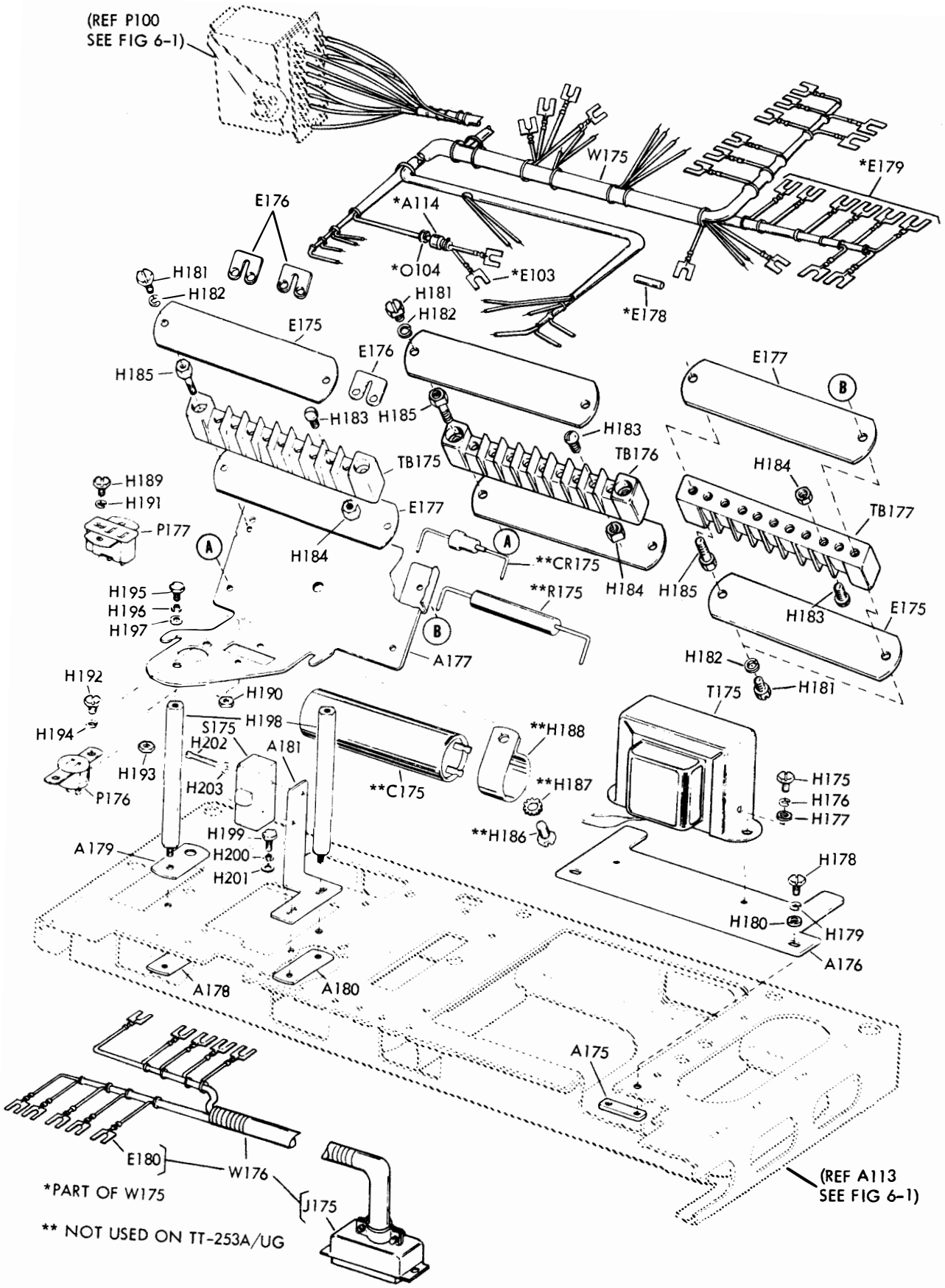


Figure 6-2. Keyboard - Base (TT-253/UG, TT-253A/UG and TT-292/UG)

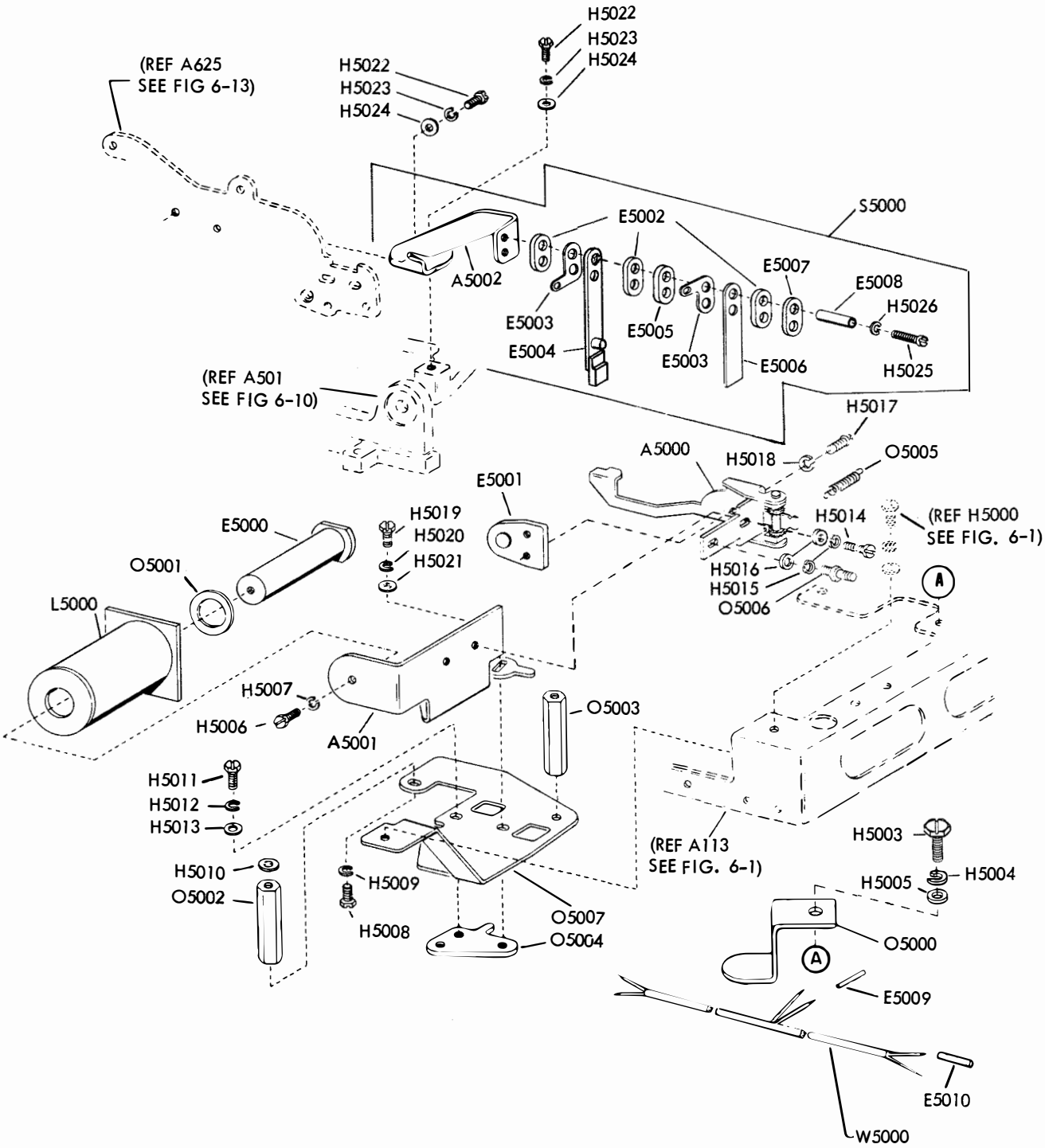


Figure 6-3. Synchronous Pulse Mechanism (TT-253A/UG)

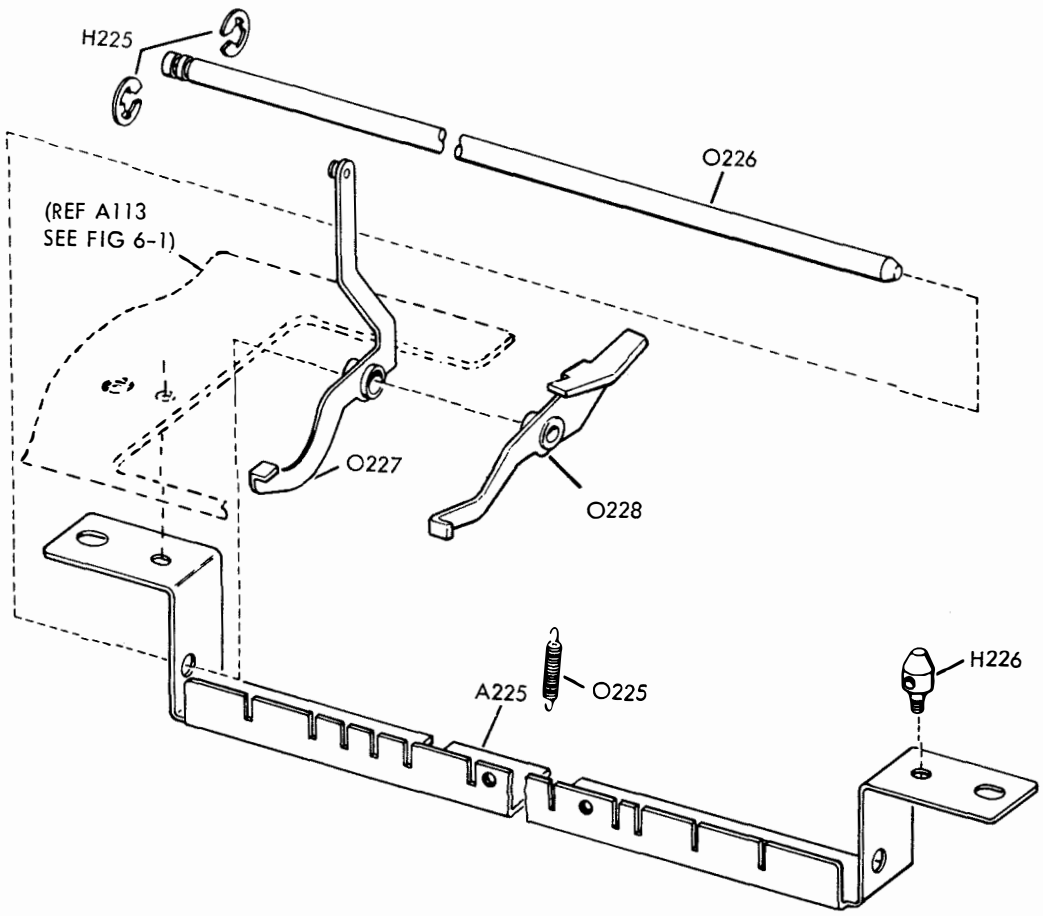
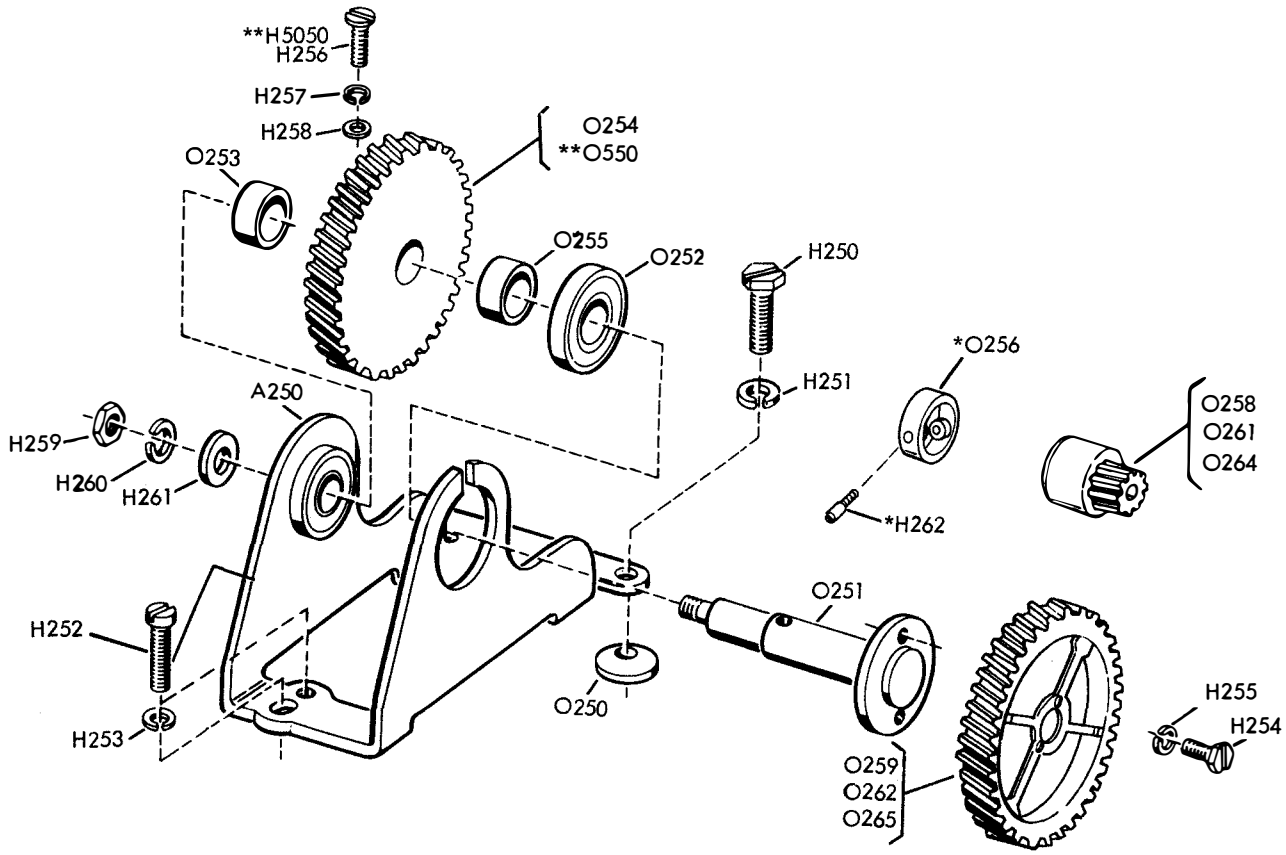


Figure 6-4. Keyboard - Base, Function Bail Mechanism (TT-253/UG, TT-253A/UG and TT-292/UG)



GEAR SETS			
SPEED	SET	PINION	DRIVEN GEAR
60 WPM	O257	O258	O259
75 WPM	O260	O261	O262
100 WPM	O263	O264	O265

*PART OF O257, O260 AND O263
**USED ON TT-253A/UG

Figure 6-5. Keyboard - Base, Intermediate Gear Mechanism (TT-253/UG, TT-253A/UG and TT-292/UG)

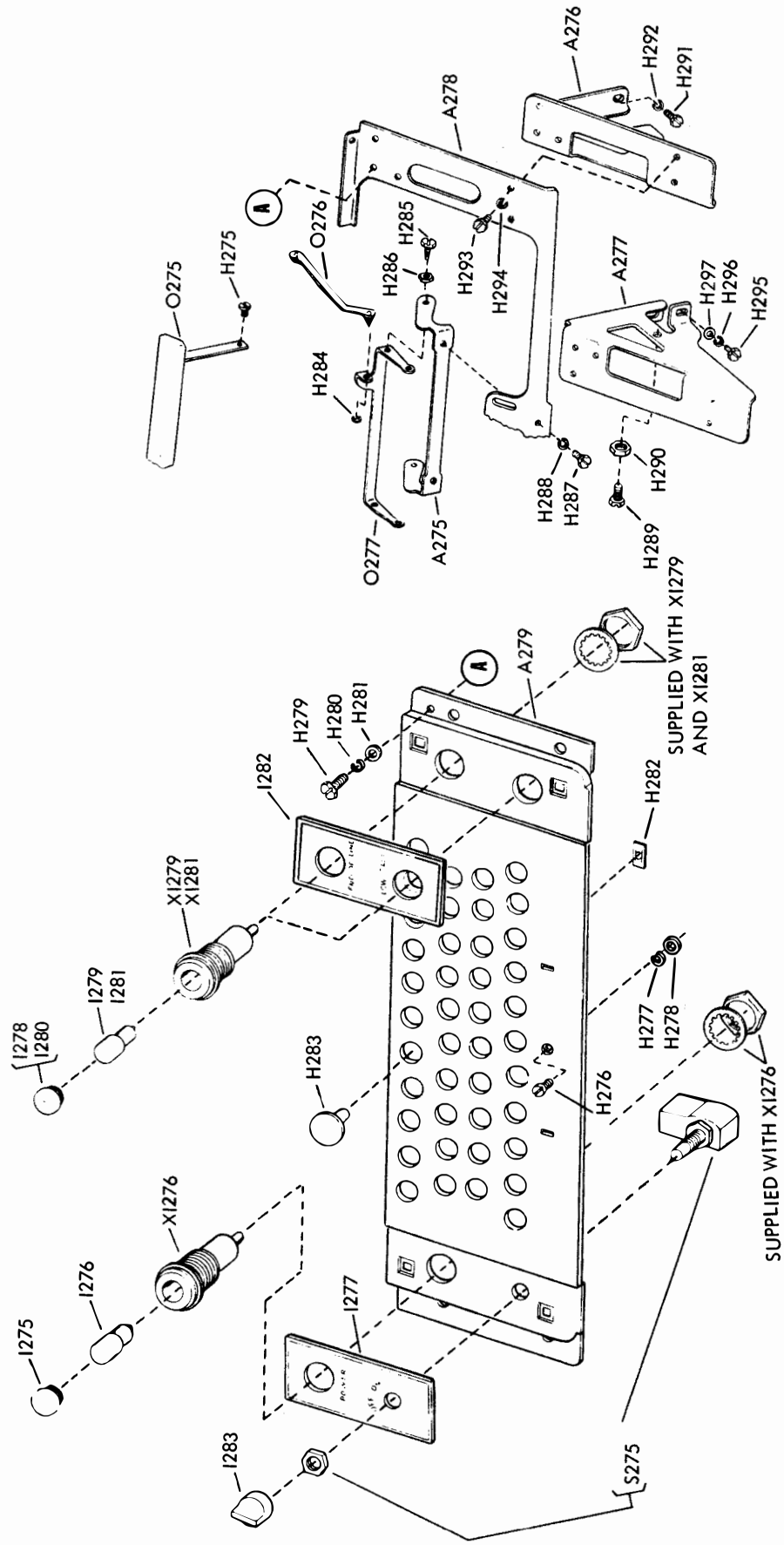


Figure 6-6. Keyboard - Base, Keyboard Assembly (TT-253/UG, TT-253A/UG and TT-292/UG)

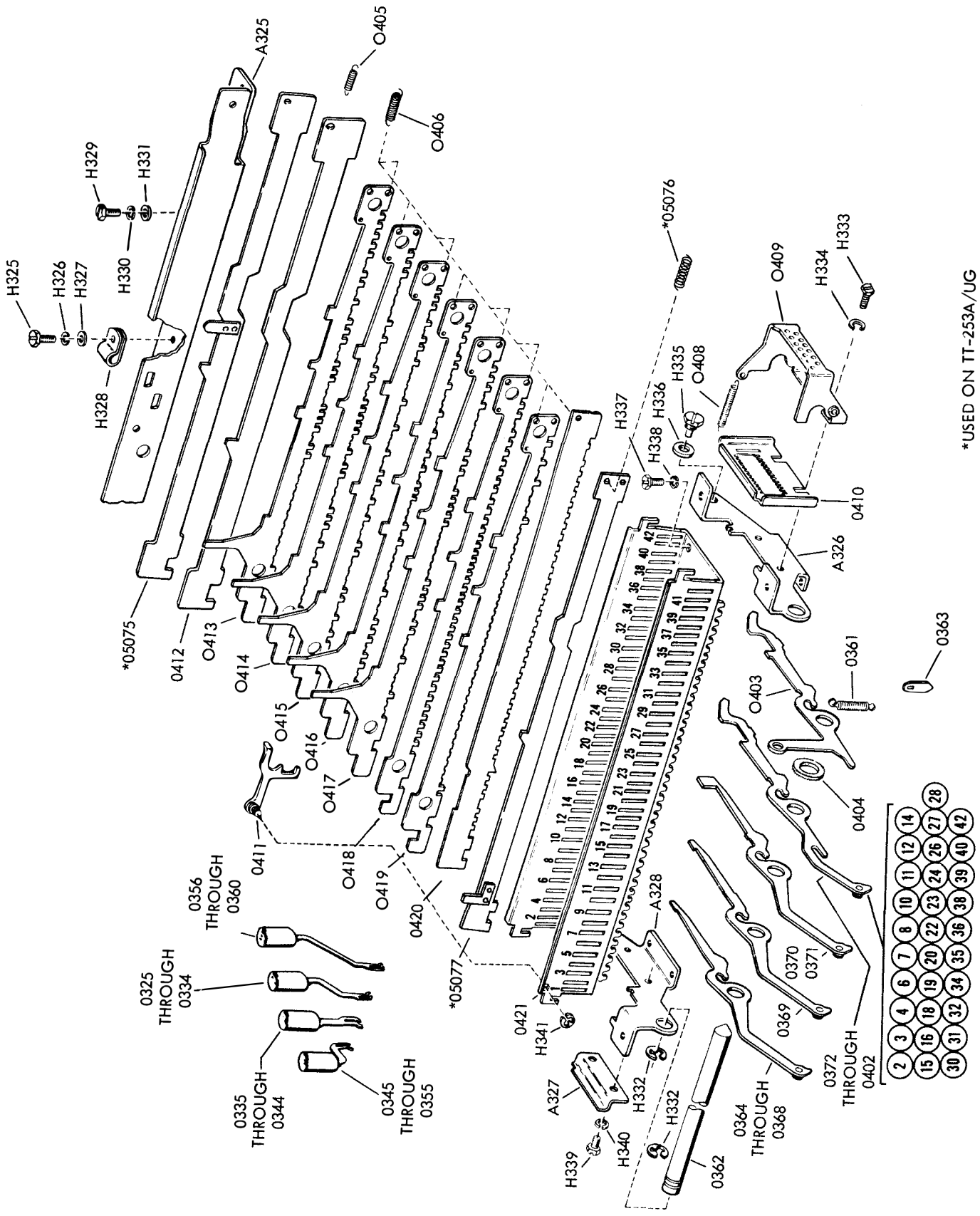


Figure 6-7. Keyboard - Base, Code Bar Mechanism (TT-253/UG, TT-253A/UG and TT-292/UG)

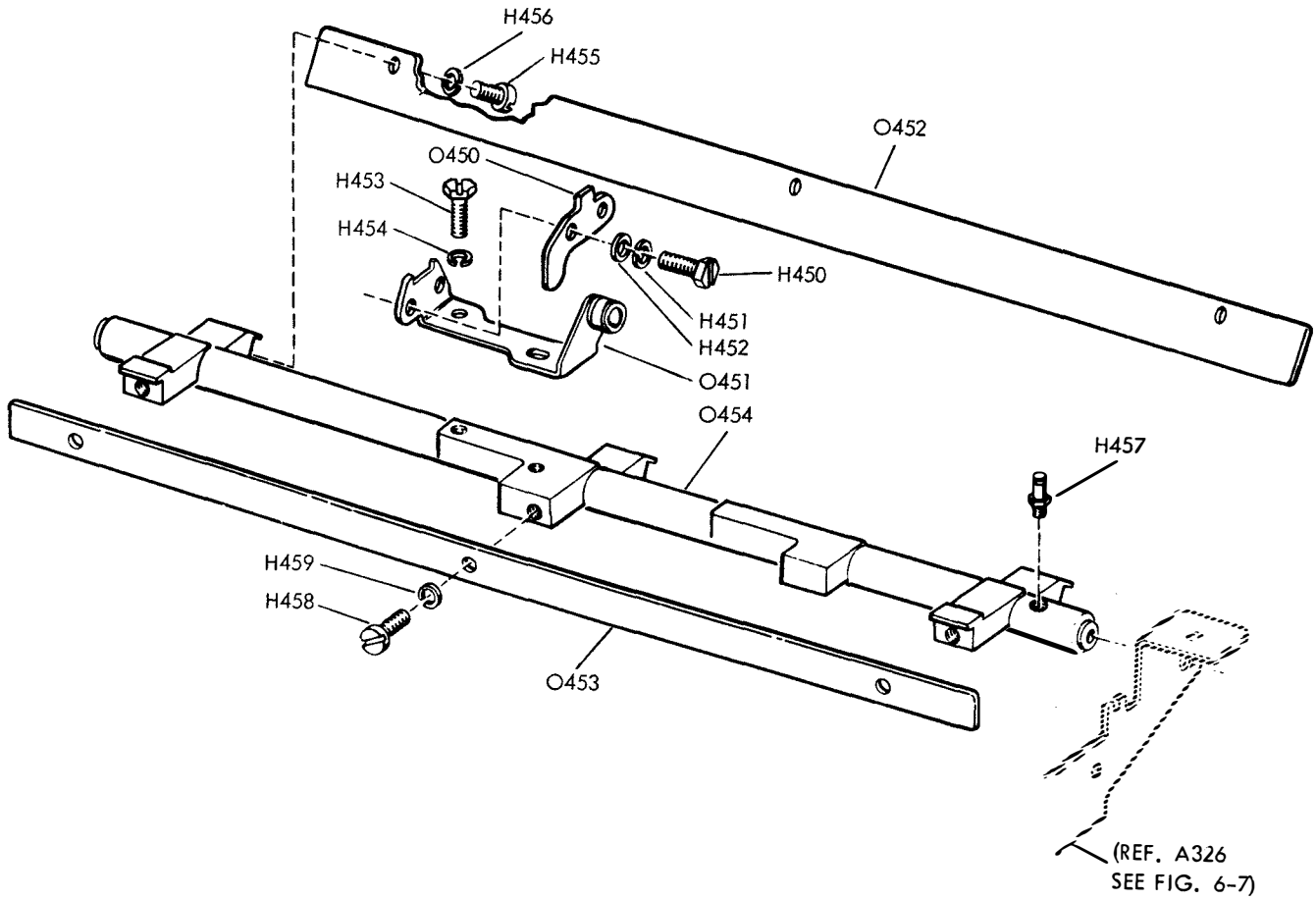


Figure 6-8. Keyboard - Base, Universal Bail Assembly (TT-253/UG, TT-253A/UG and TT-292/UG)

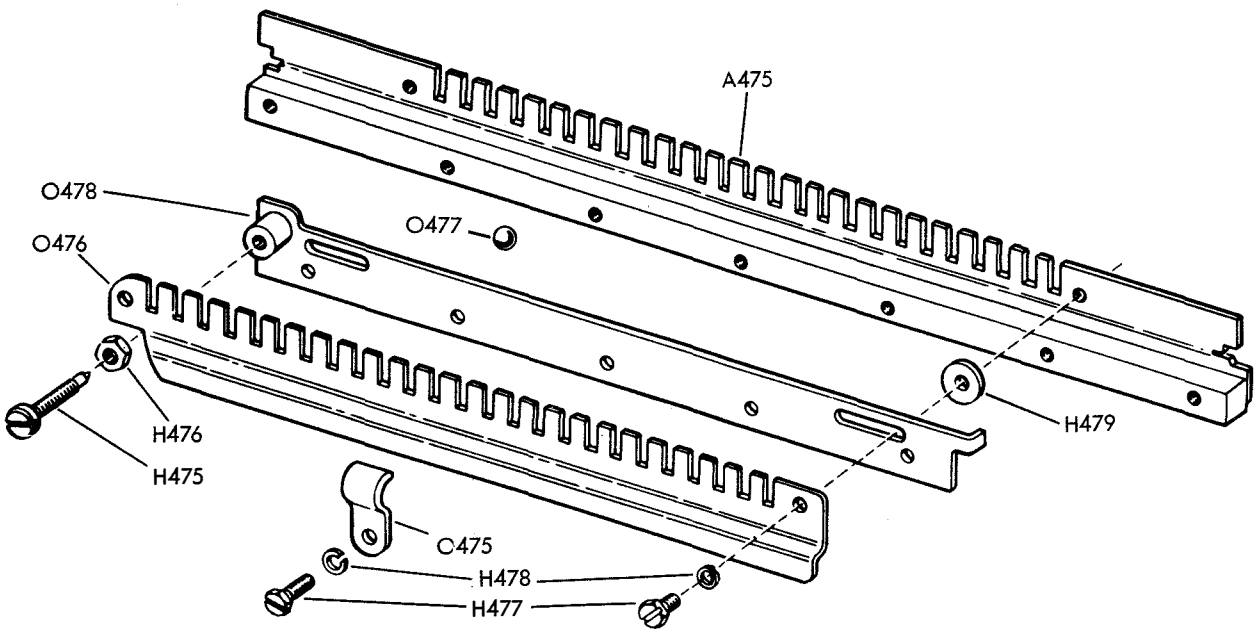


Figure 6-9. Keyboard - Base, Wedgelock Ball Track Mechanism (TT-253/UG, TT-253A/UG and TT-292/UG)

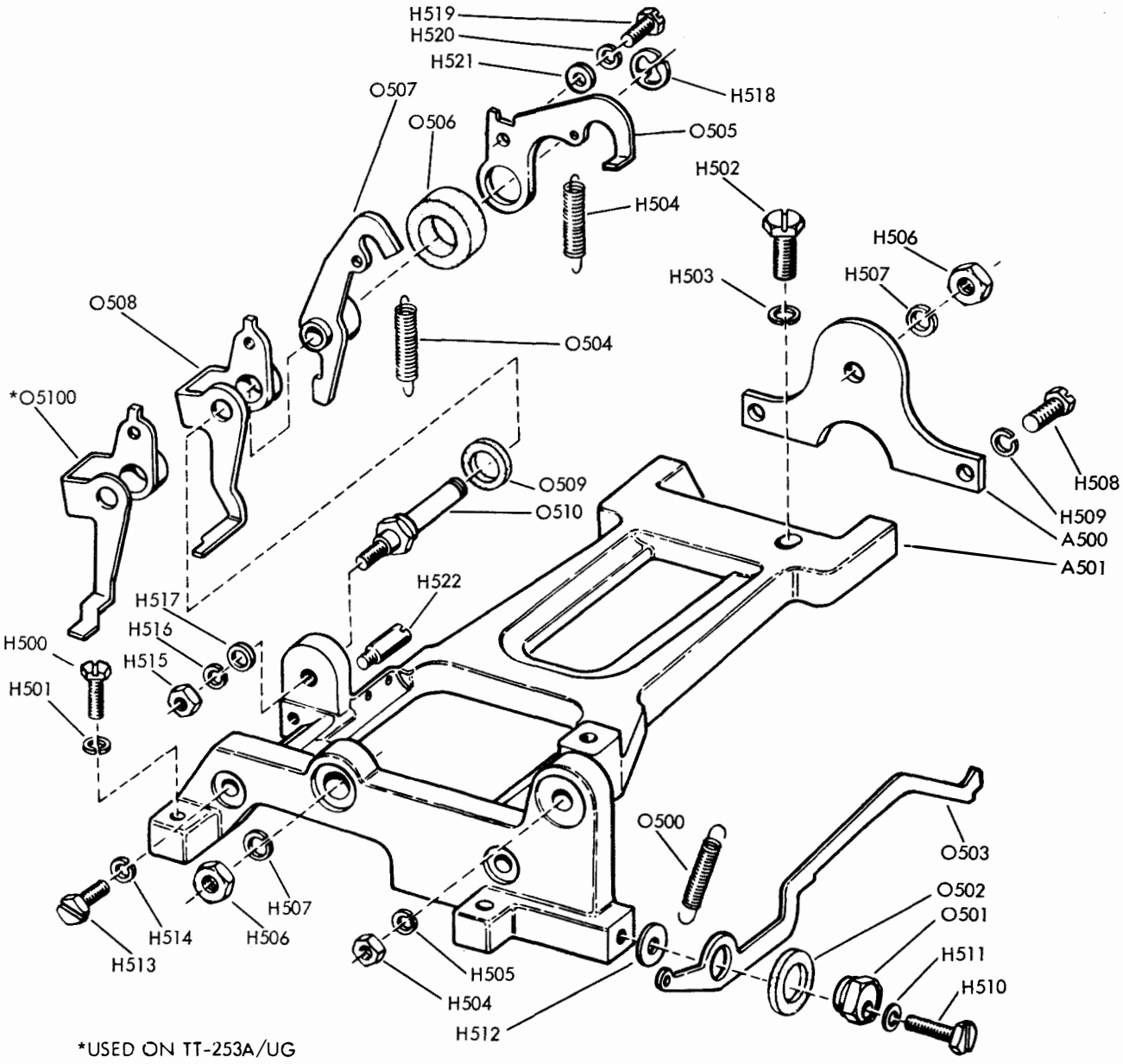


Figure 6-10. Keyboard - Base, Signal Generator Frame Mechanism (TT-253/UG, TT-253A/UG and TT-292/UG)

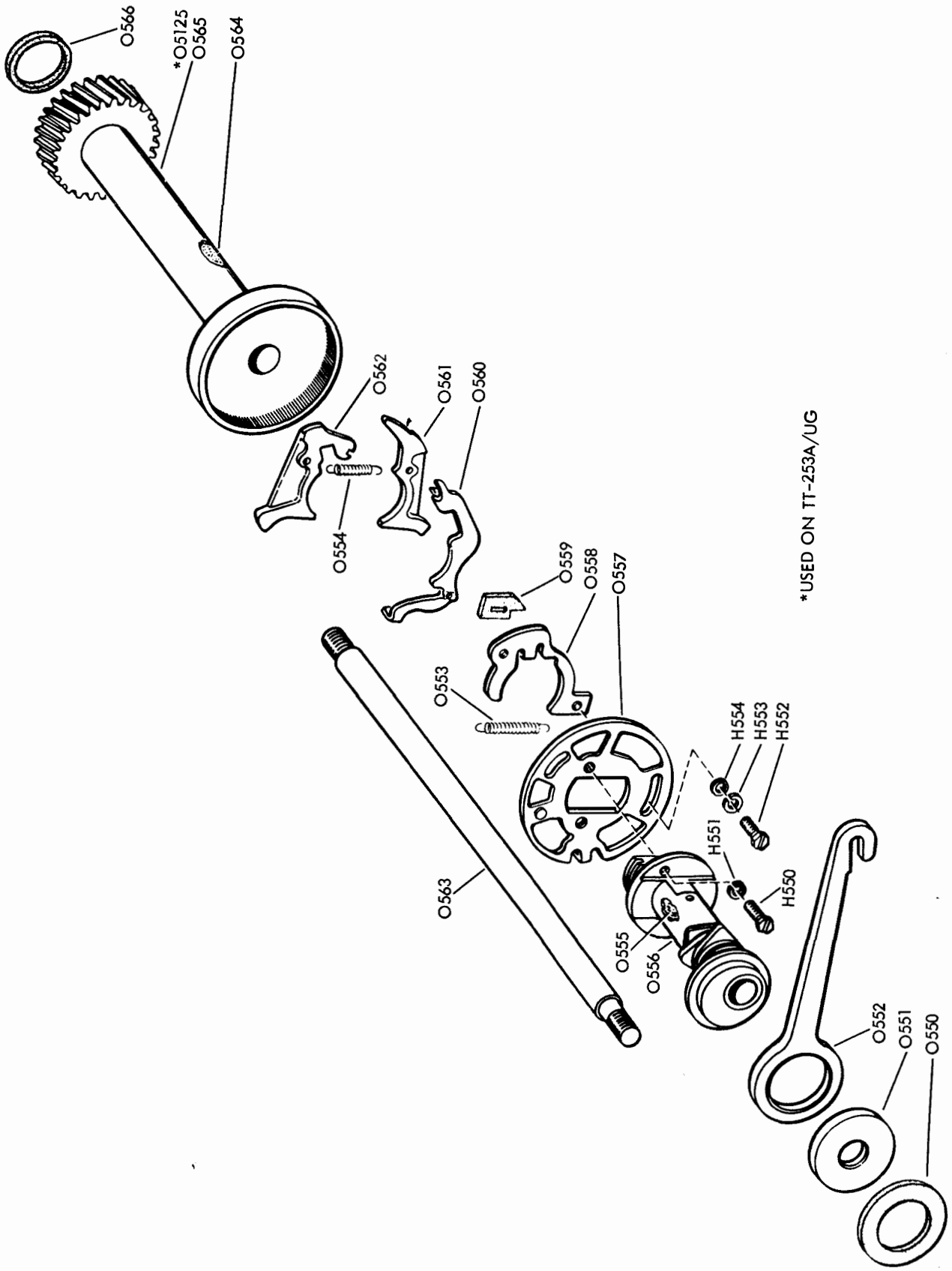


Figure 6-11. Keyboard - Base, Signal Generator Shaft Mechanism (TT-253/UG, TT-253A/UG and TT-292/UG)

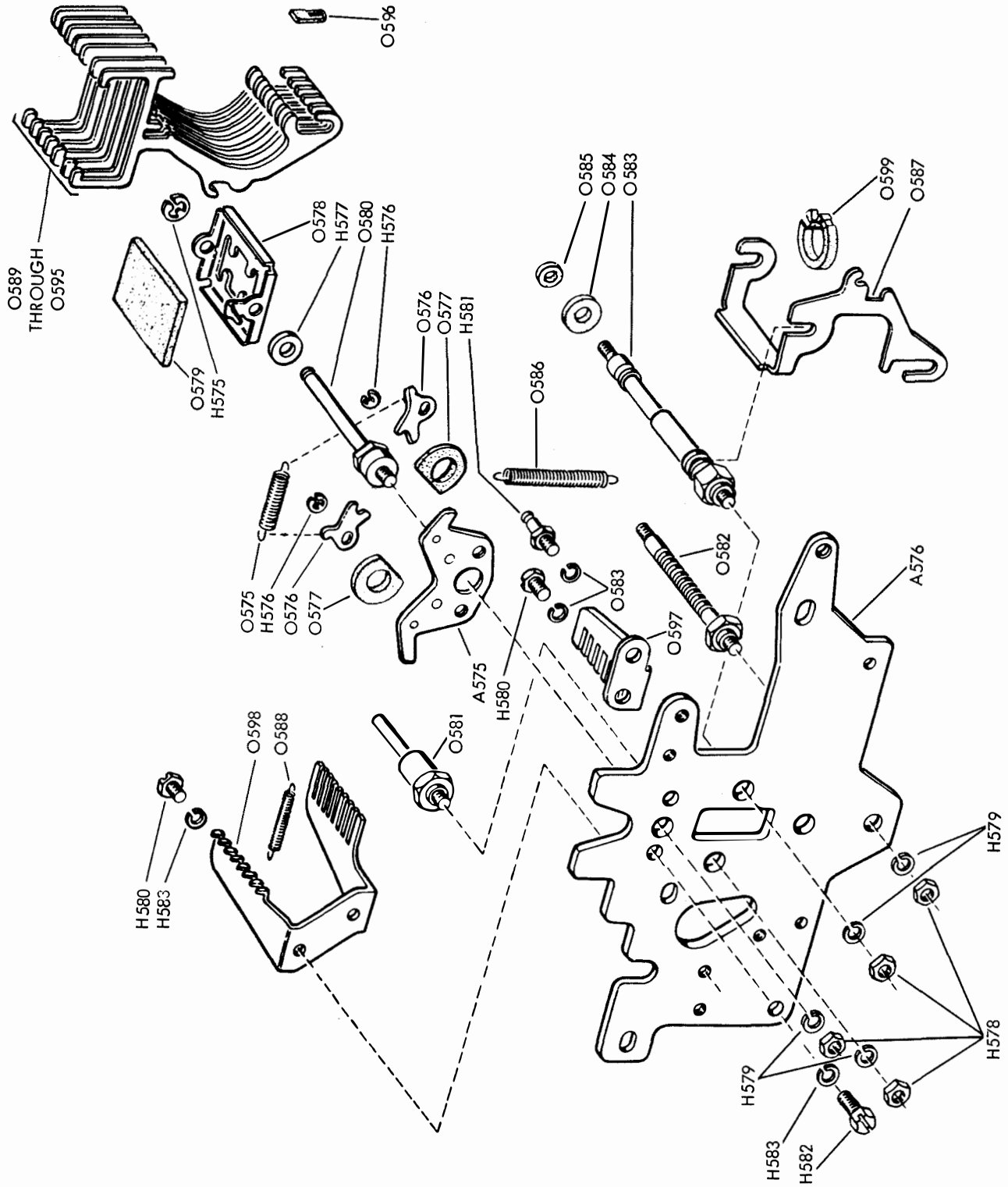


Figure 6-12. Keyboard - Base, Signal Generator Front Plate Mechanism (TT-253/UG, TT-253A/UG and TT-292/UG

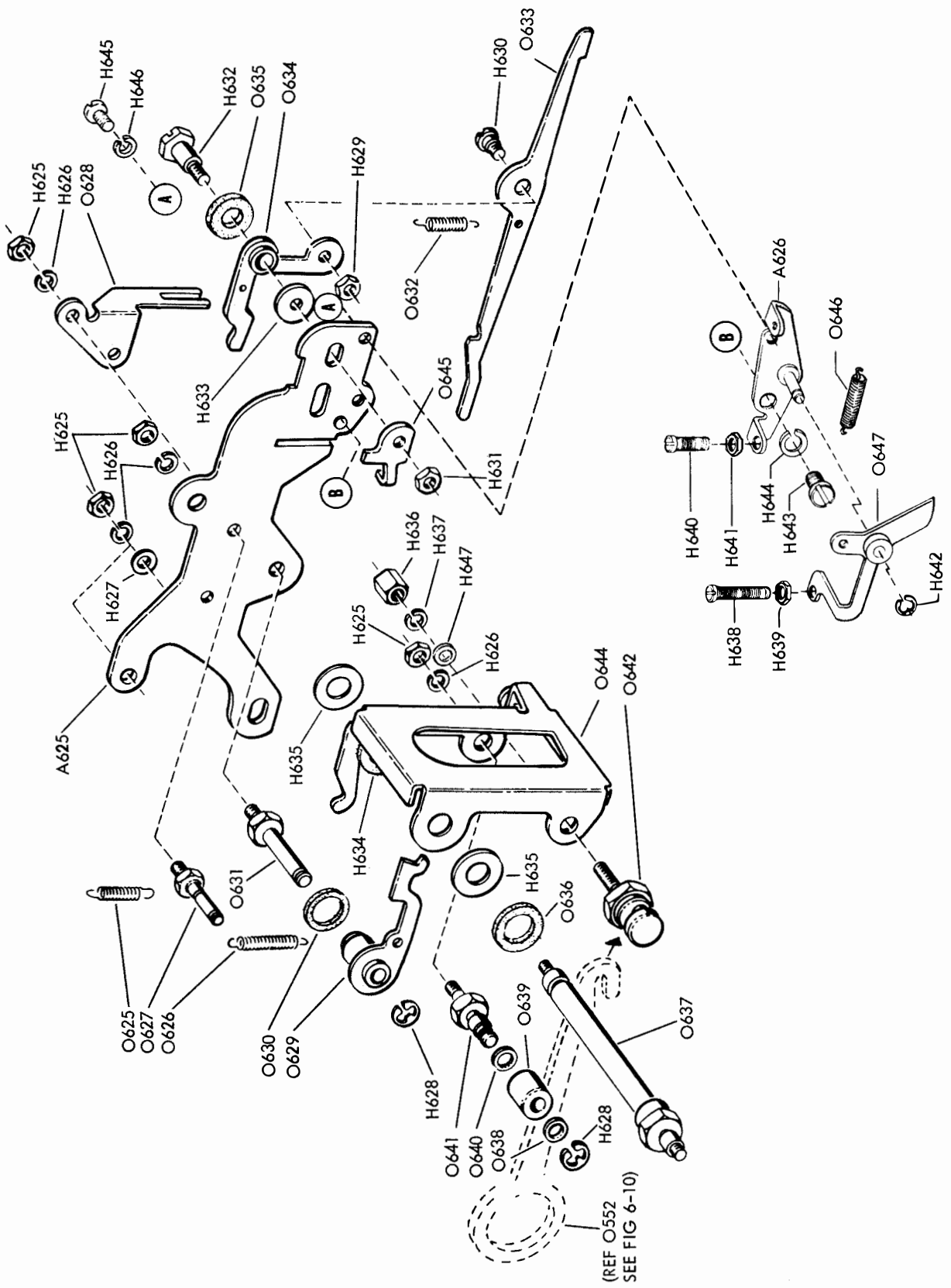


Figure 6-13. Keyboard - Base, Signal Generator Rear Plate Mechanism (TT-253/UG, TT-253A/UG and TT-292/UG)

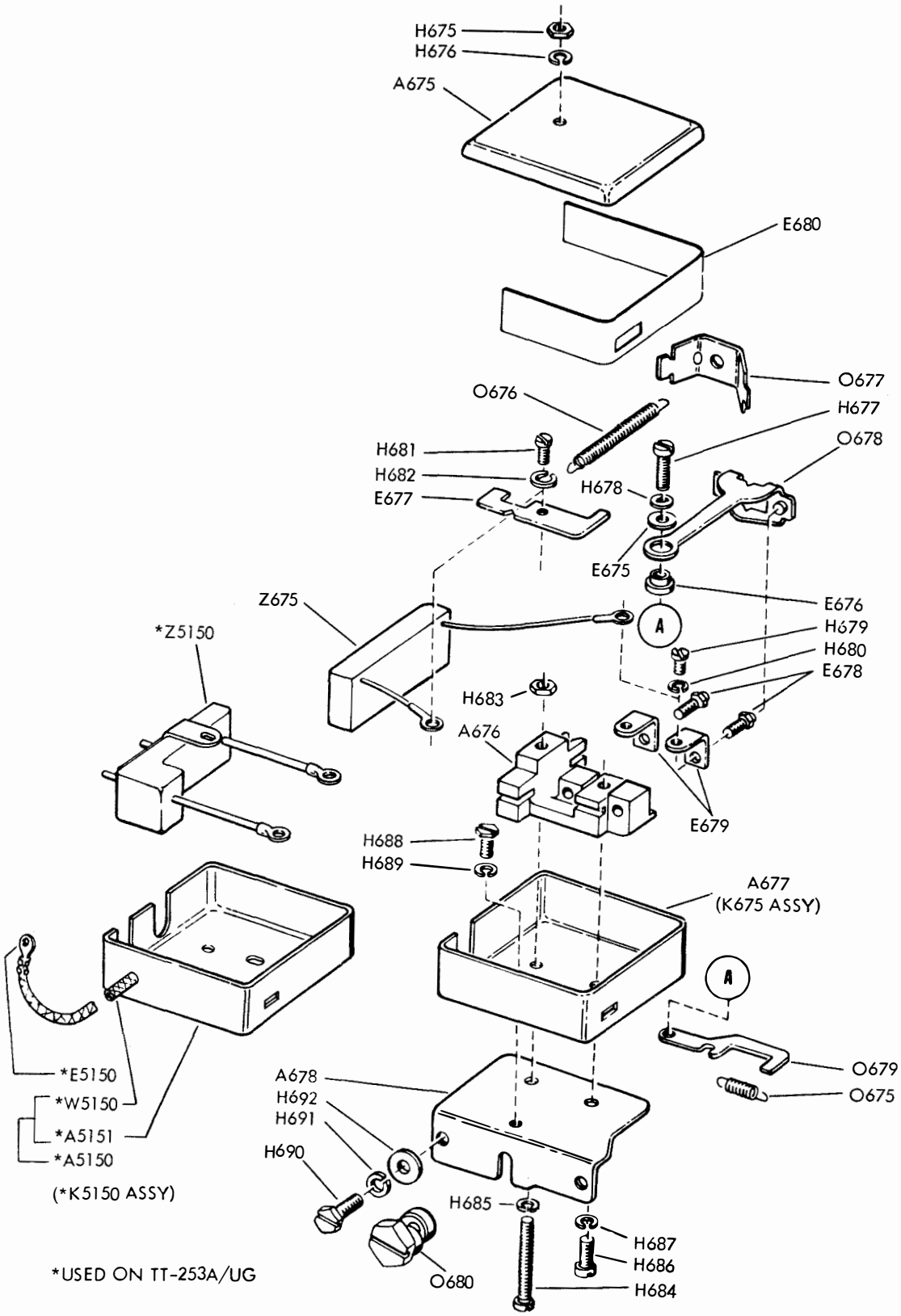


Figure 6-14. Keyboard - Base, Signal Generator Contact Box Mechanism (TT-253/UG, TT-253A/UG and TT-292/UG)

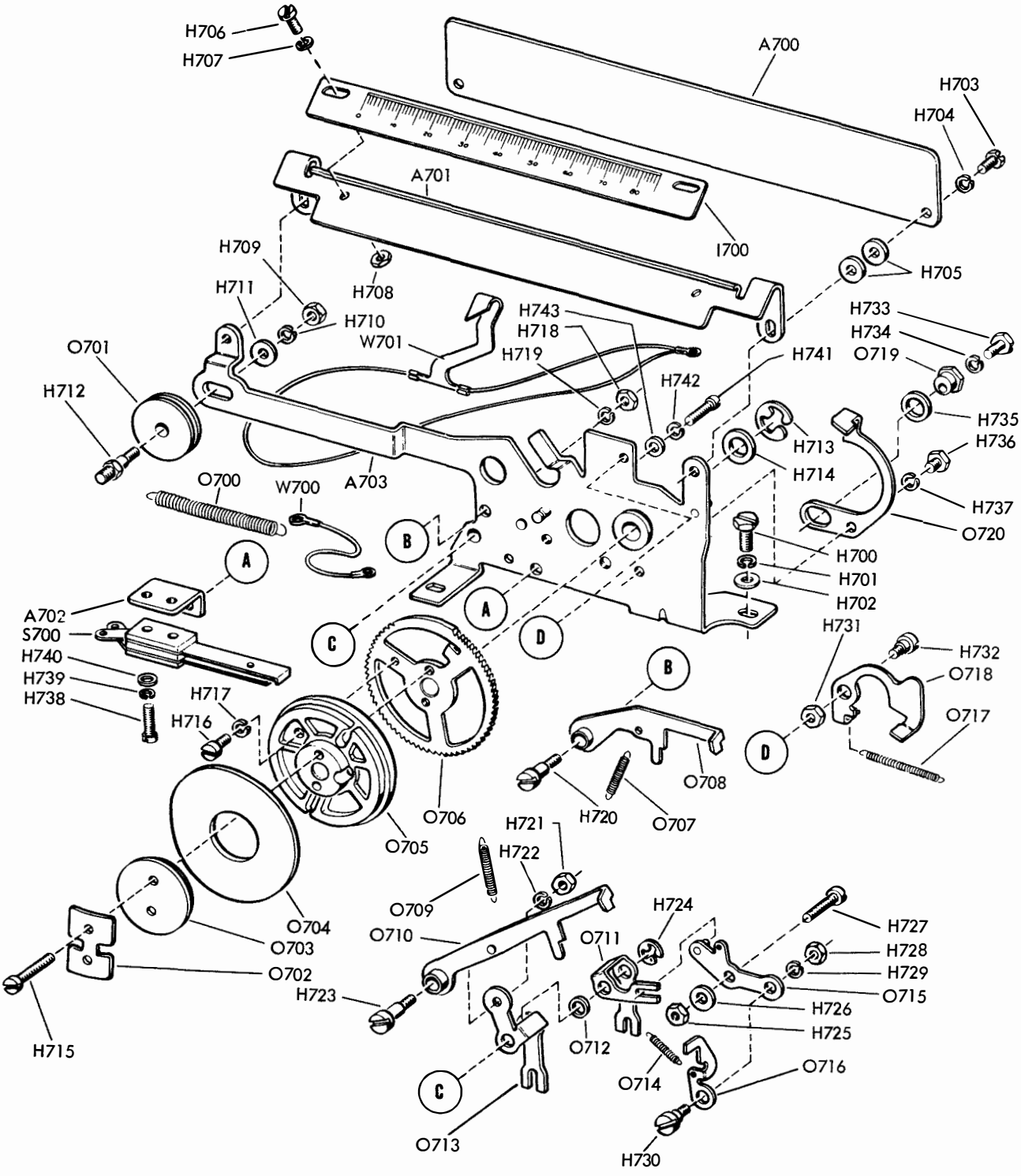
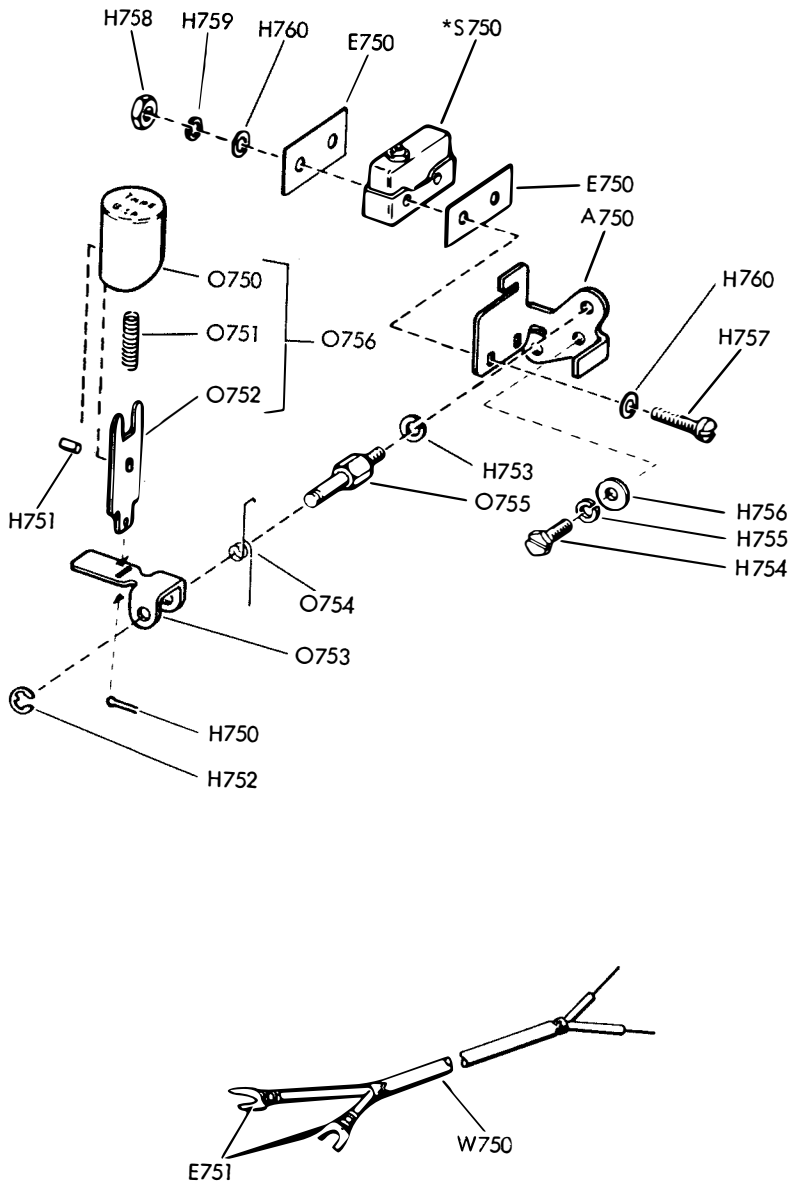


Figure 6-15. Keyboard - Base, Character Counter Mechanism (TT-253/UG, TT-253A/UG and TT-292/UG)



*PART OF W750

Figure 6-16. Keyboard - Base, Tape Back Space Button and Back Space Cable (TT-253/UG, TT-253A/UG and TT-292/UG)

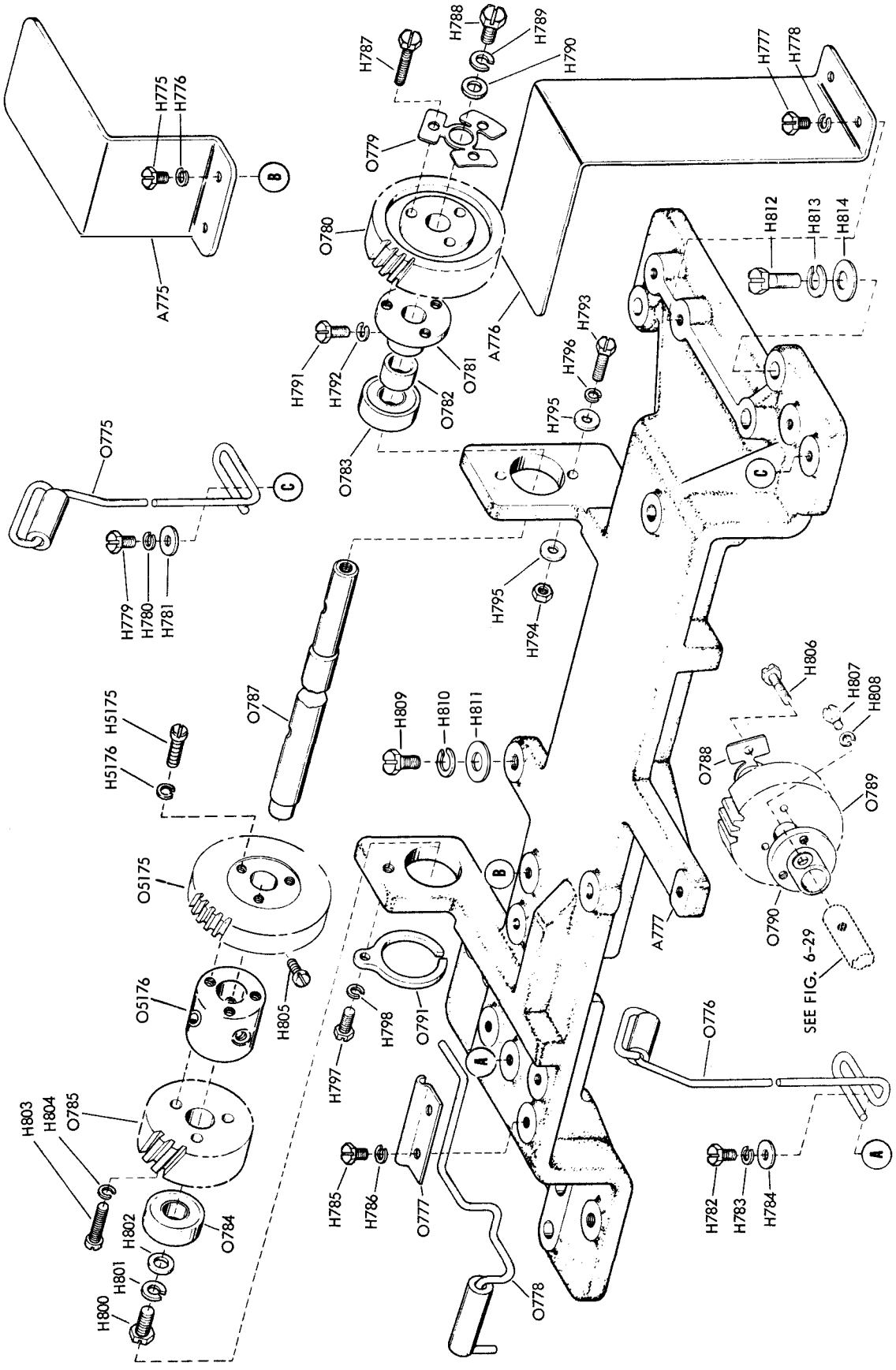


Figure 6-17. Keyboard - Base, Casting Assembly (TT-253/UG, TT-253A/UG and TT-292/UG)

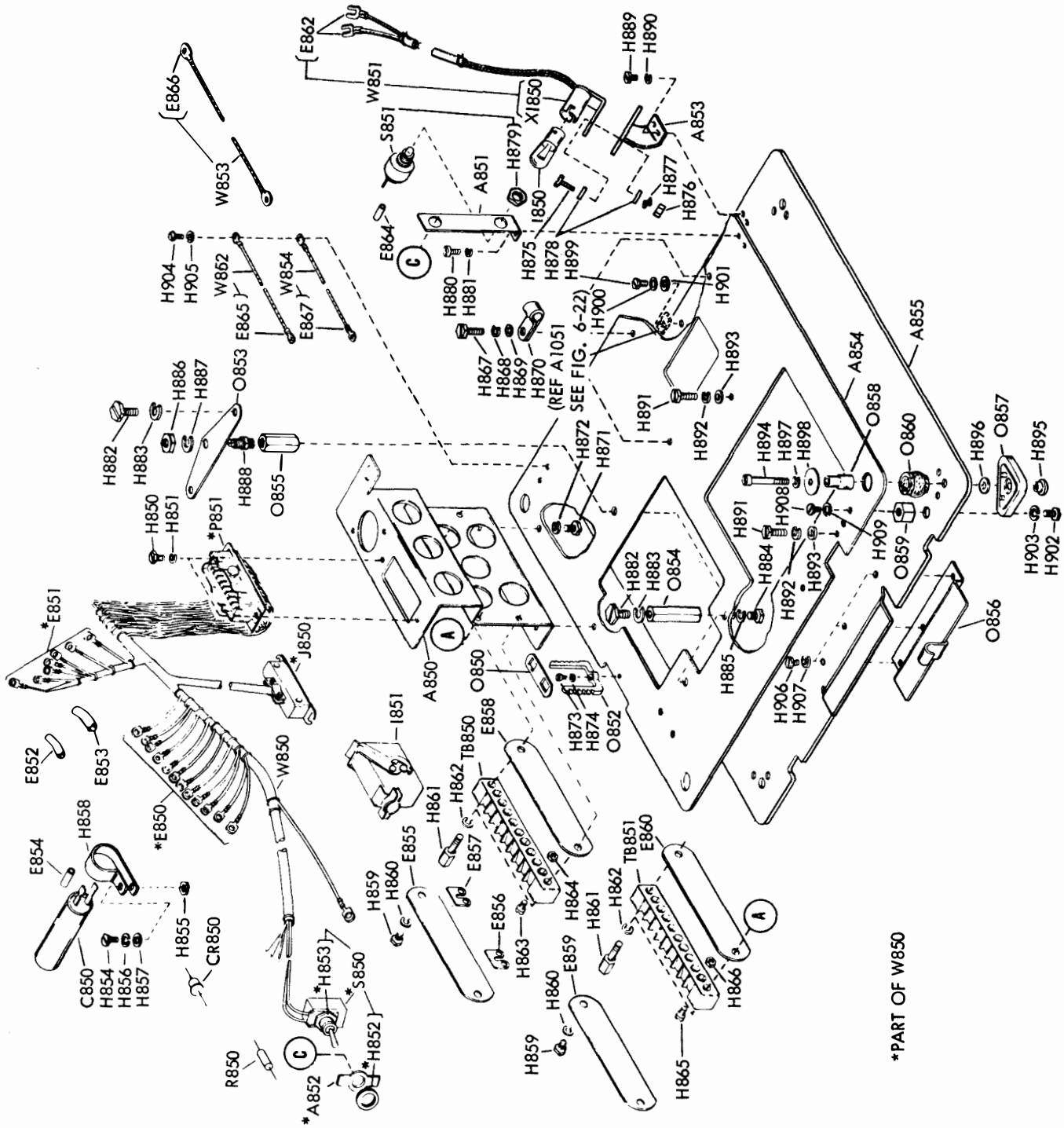


Figure 6-18. Base (TT-192/UG and TT-274/UG)

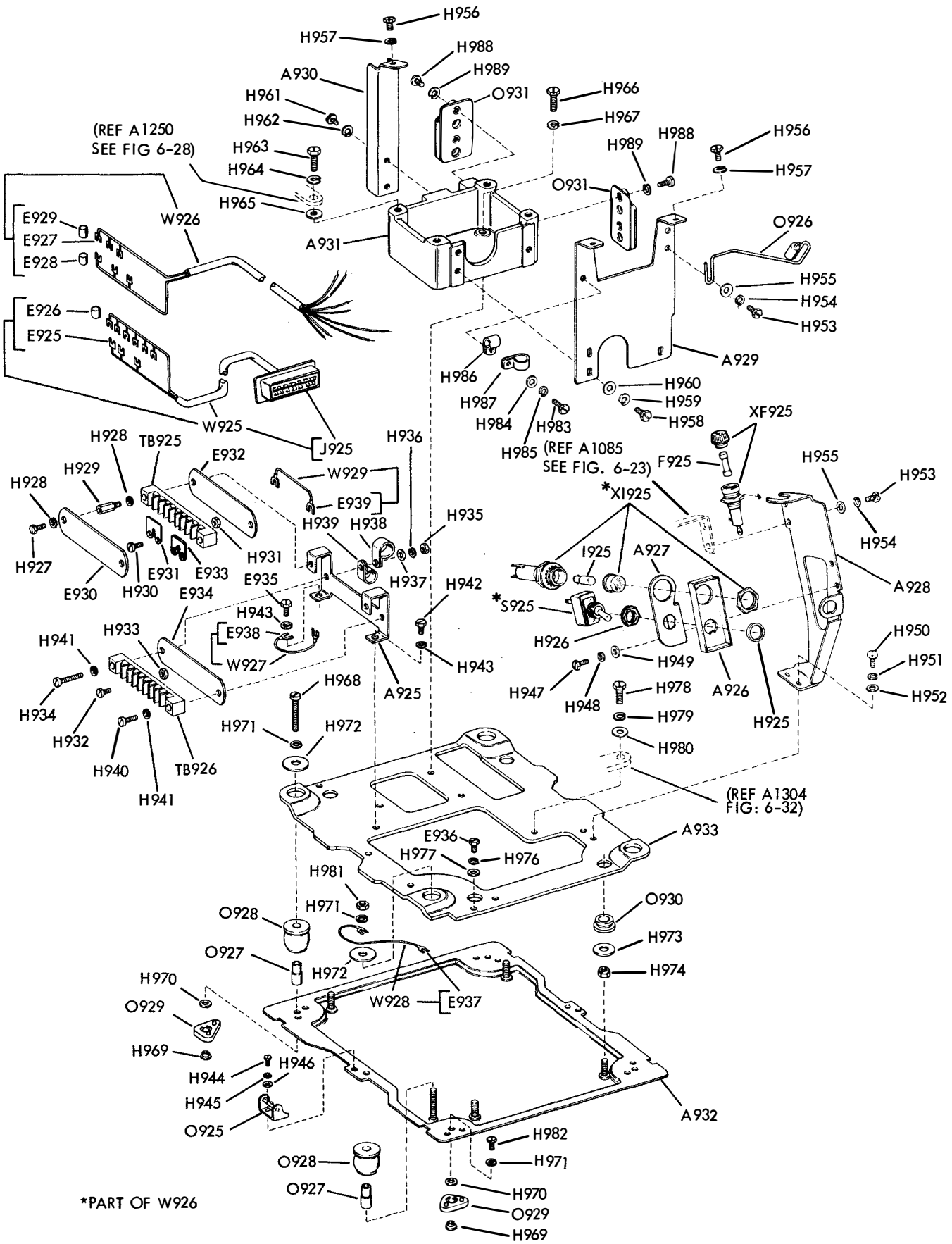


Figure 6-19. Miniaturized Base (TT-192A/UG)

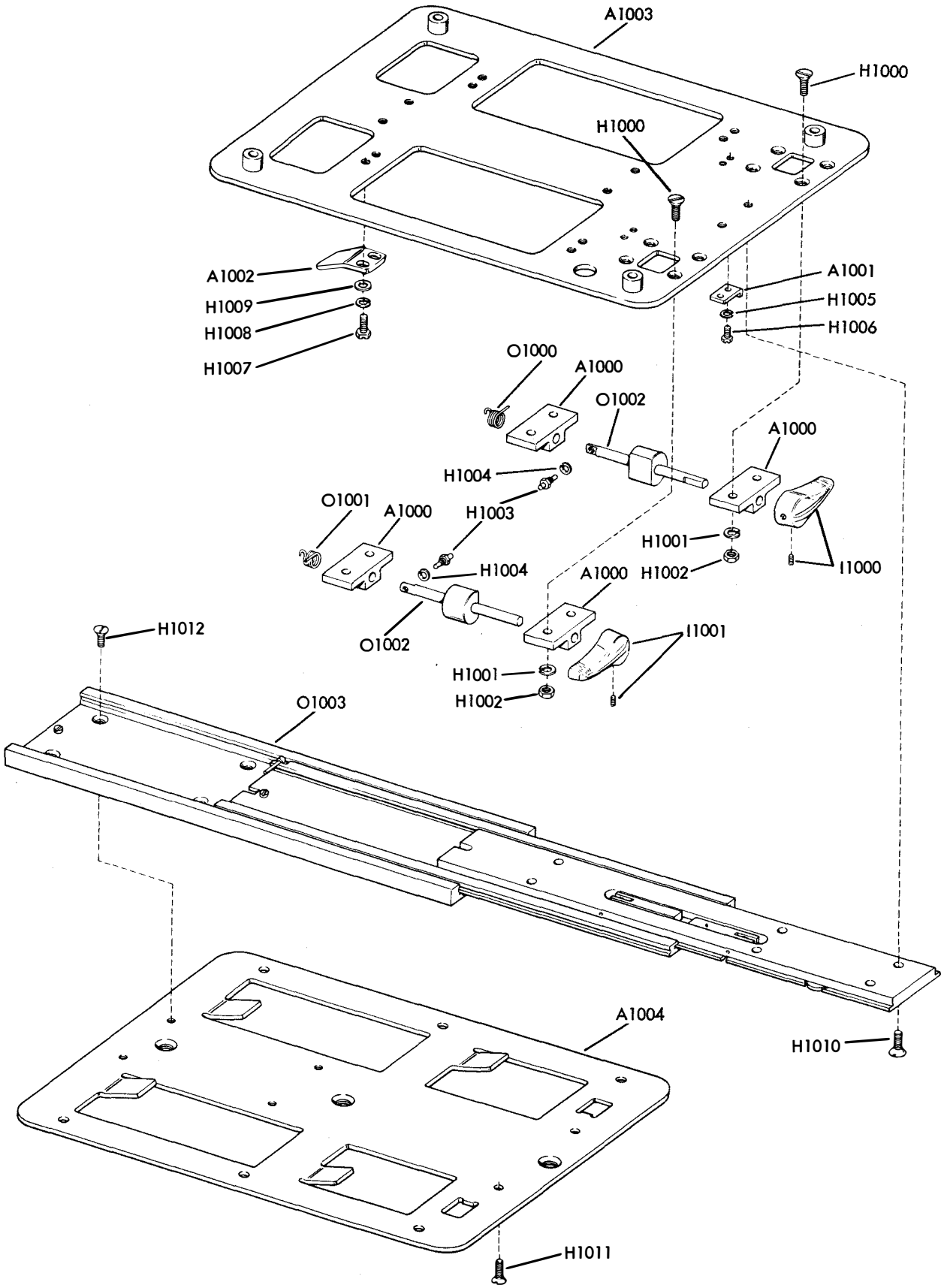


Figure 6-20. Sliding Sub-Base (TT-192A/UG)

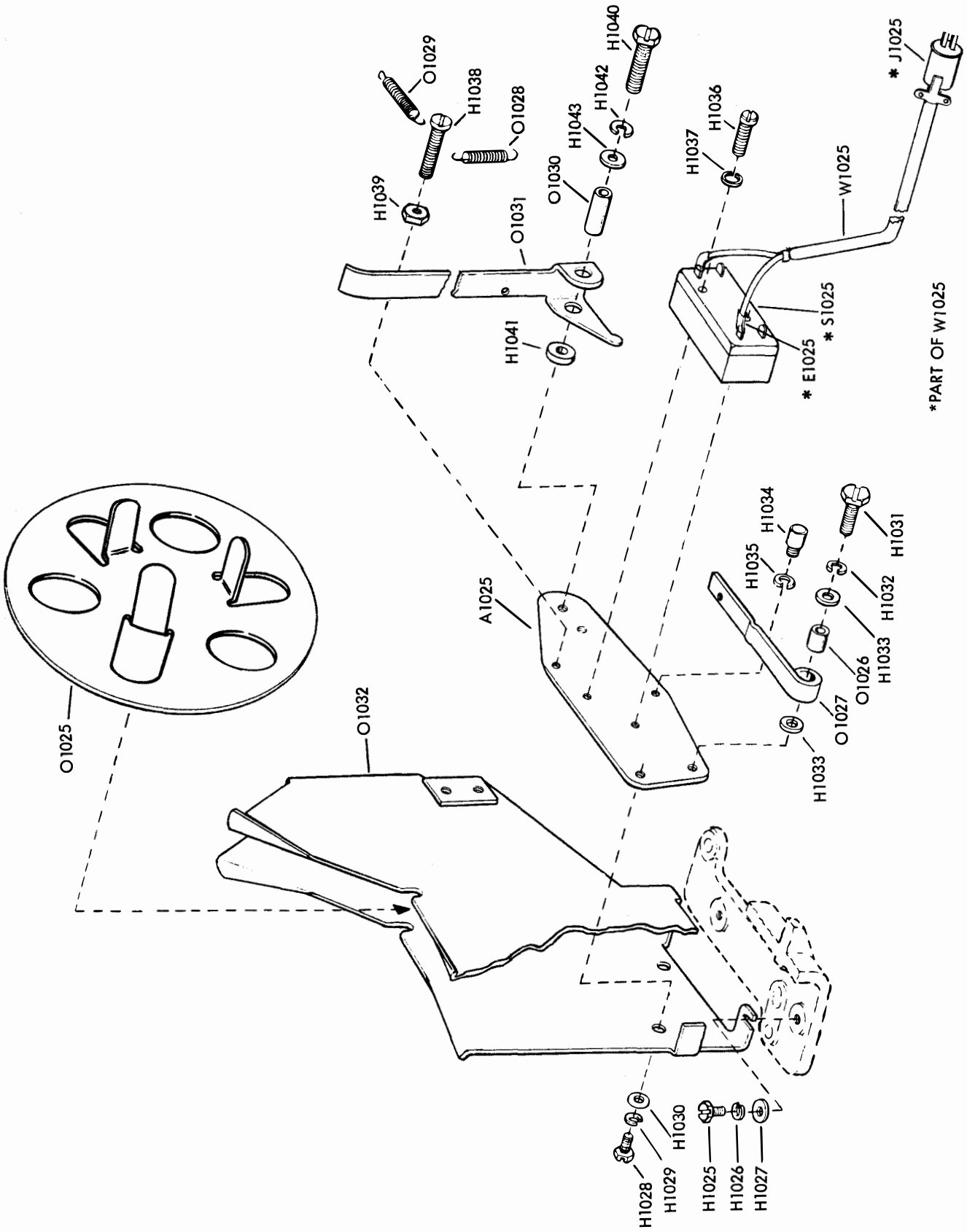


Figure 6-21. Tape Container Assembly (TT-253/UG, TT-253A/UG and TT-292/UG)

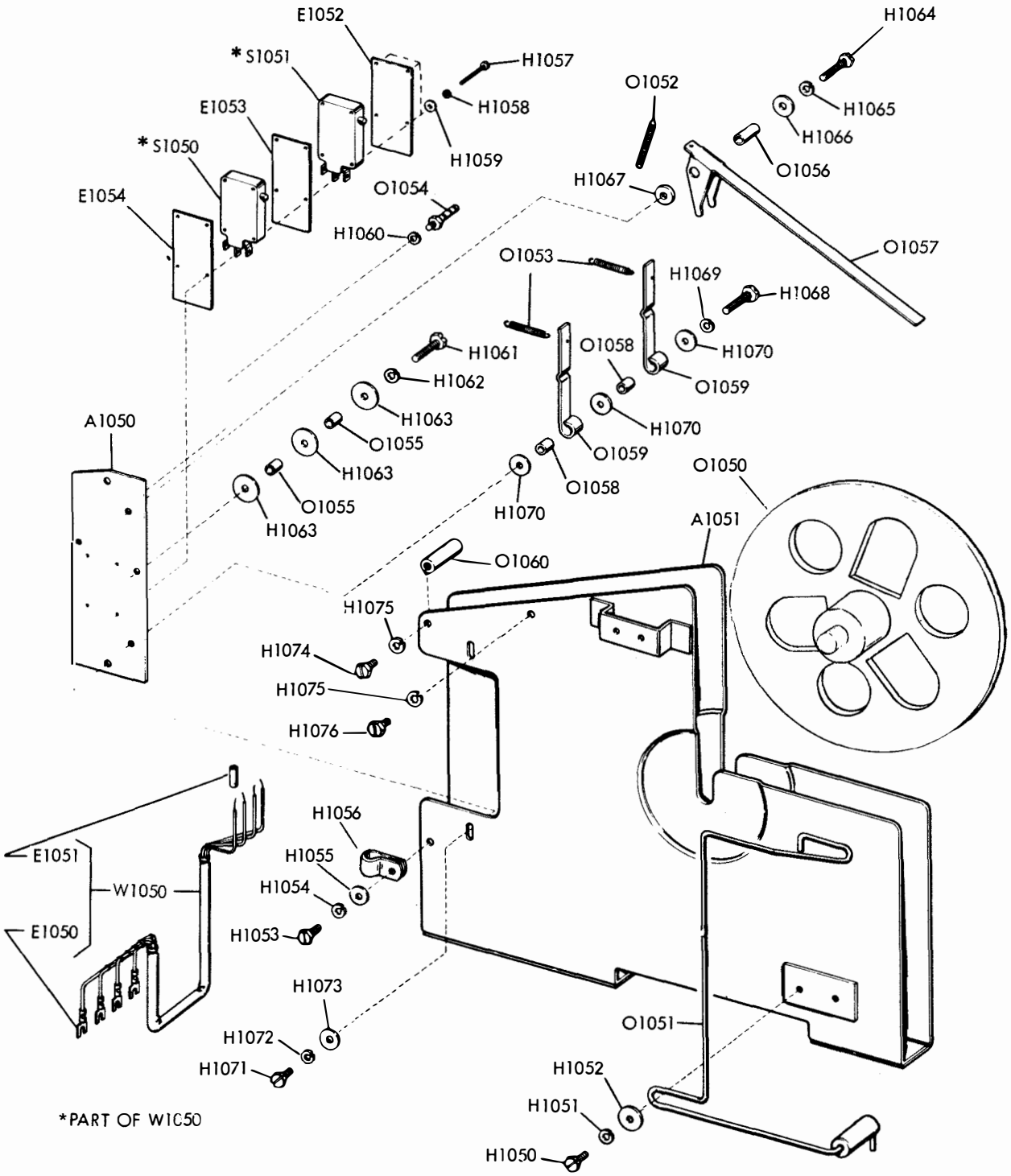
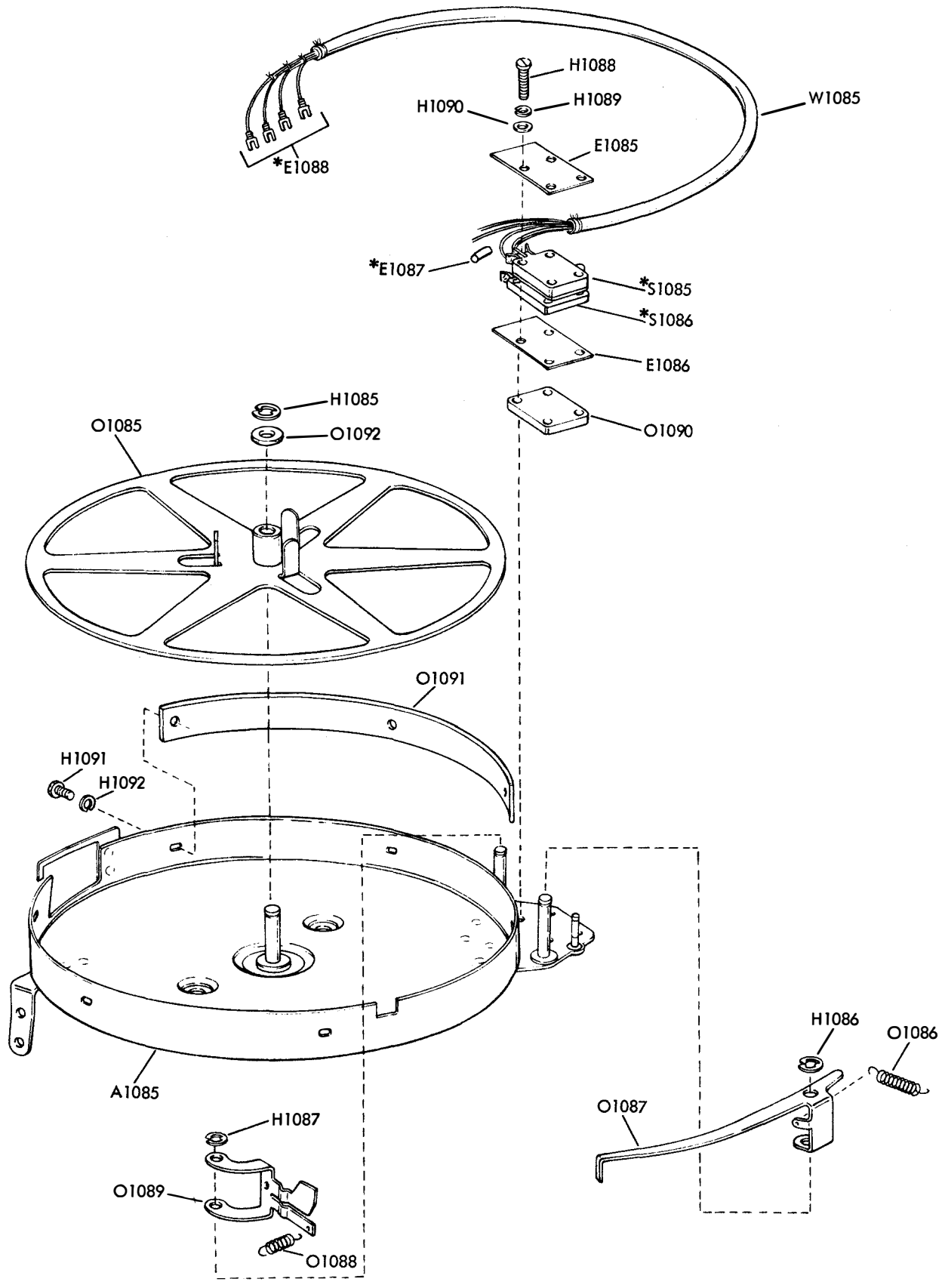


Figure 6-22. Tape Container Assembly (TT-192/UG, TT-253A/UG and TT-292/UG)



*PART OF W1085

Figure 6-23. Tape Container Assembly (TT-192A/UG)

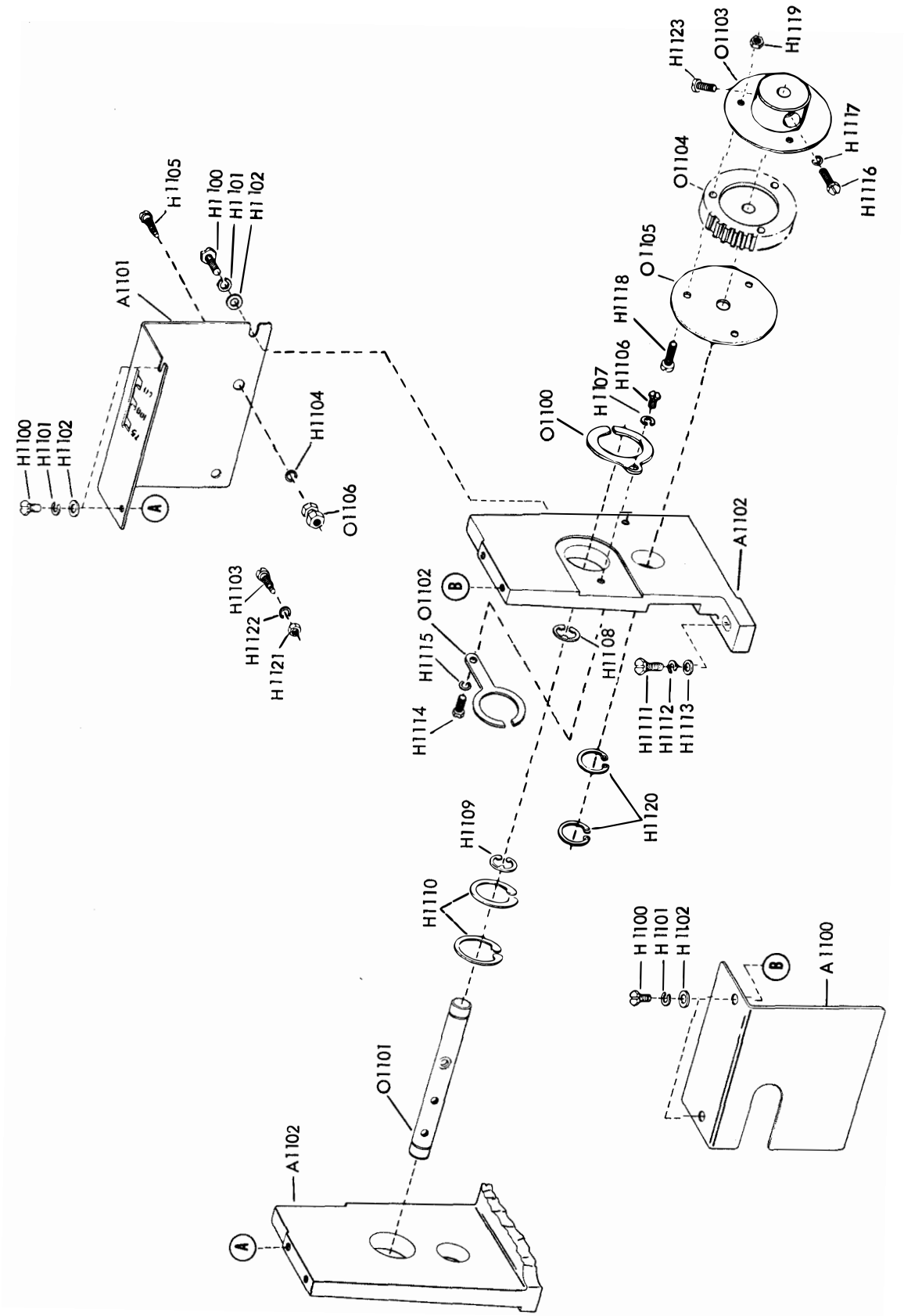


Figure 6-24. Variable Speed Intermediate Gear Mechanism (TT-192/UG and TT-274/UG)

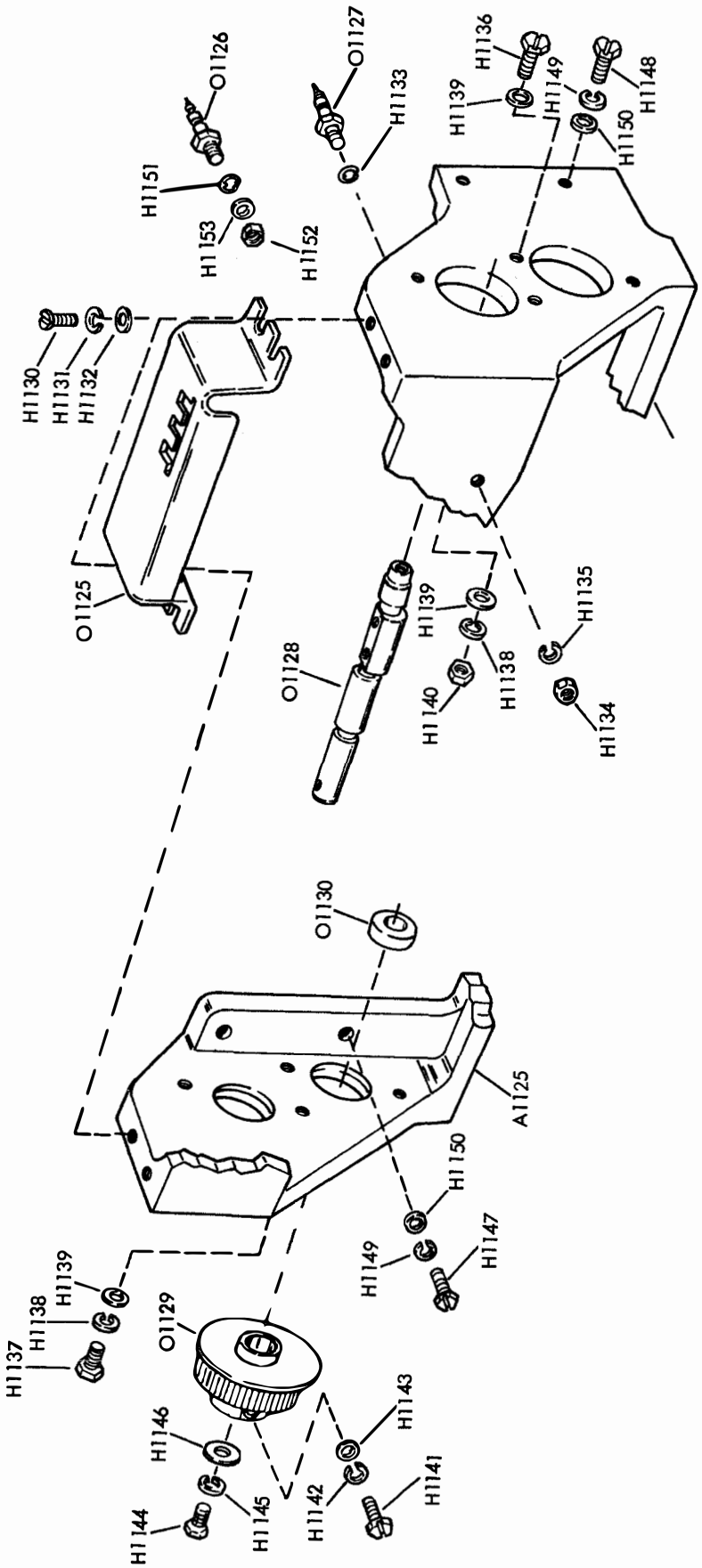


Figure 6-25. Variable Speed Intermediate Gear Mechanism (TT-192A/UG)

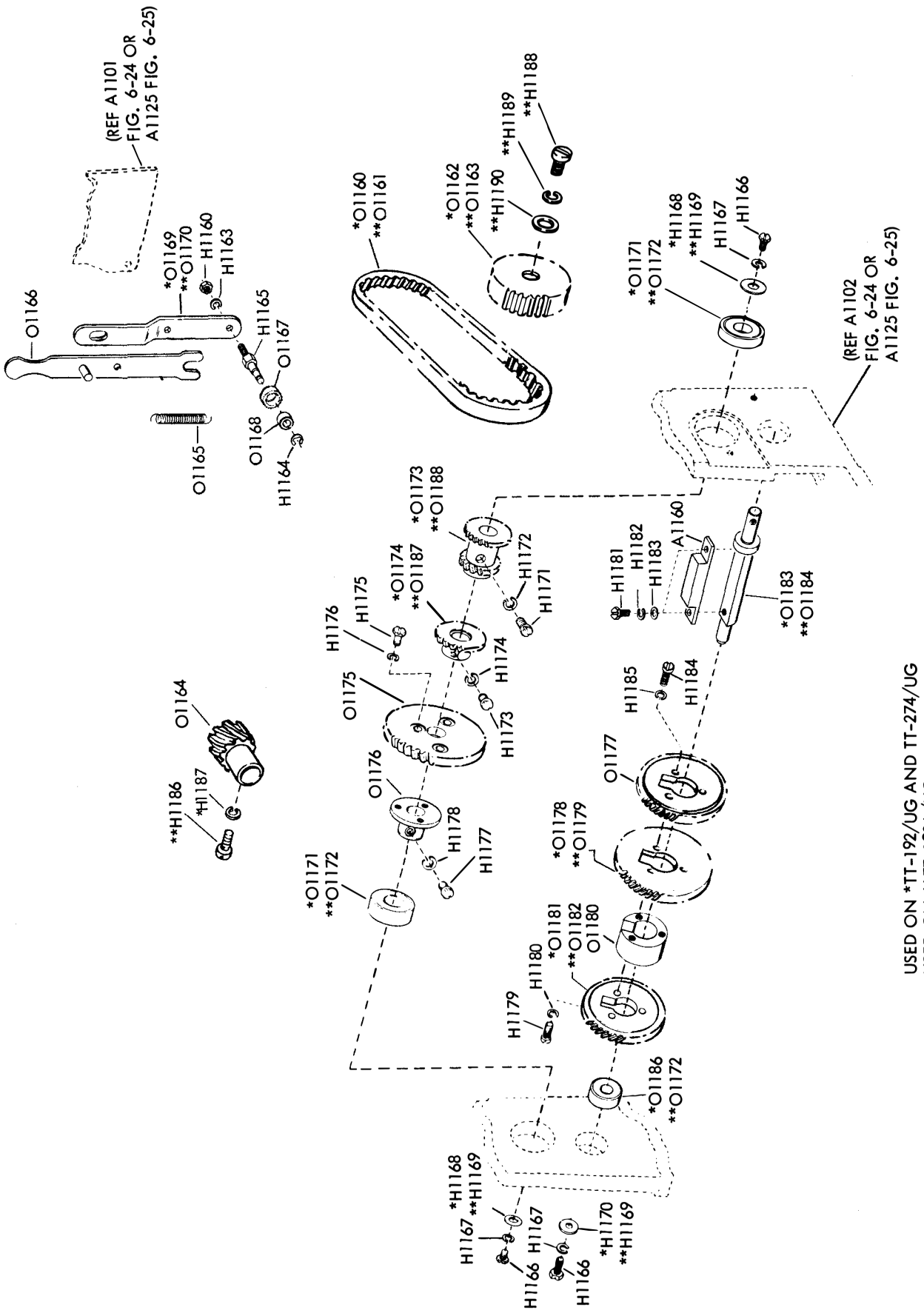


Figure 6-26. Variable Speed Intermediate Gear Mechanism (TT-192/UG, TT-192A/UG and TT-274/UG)

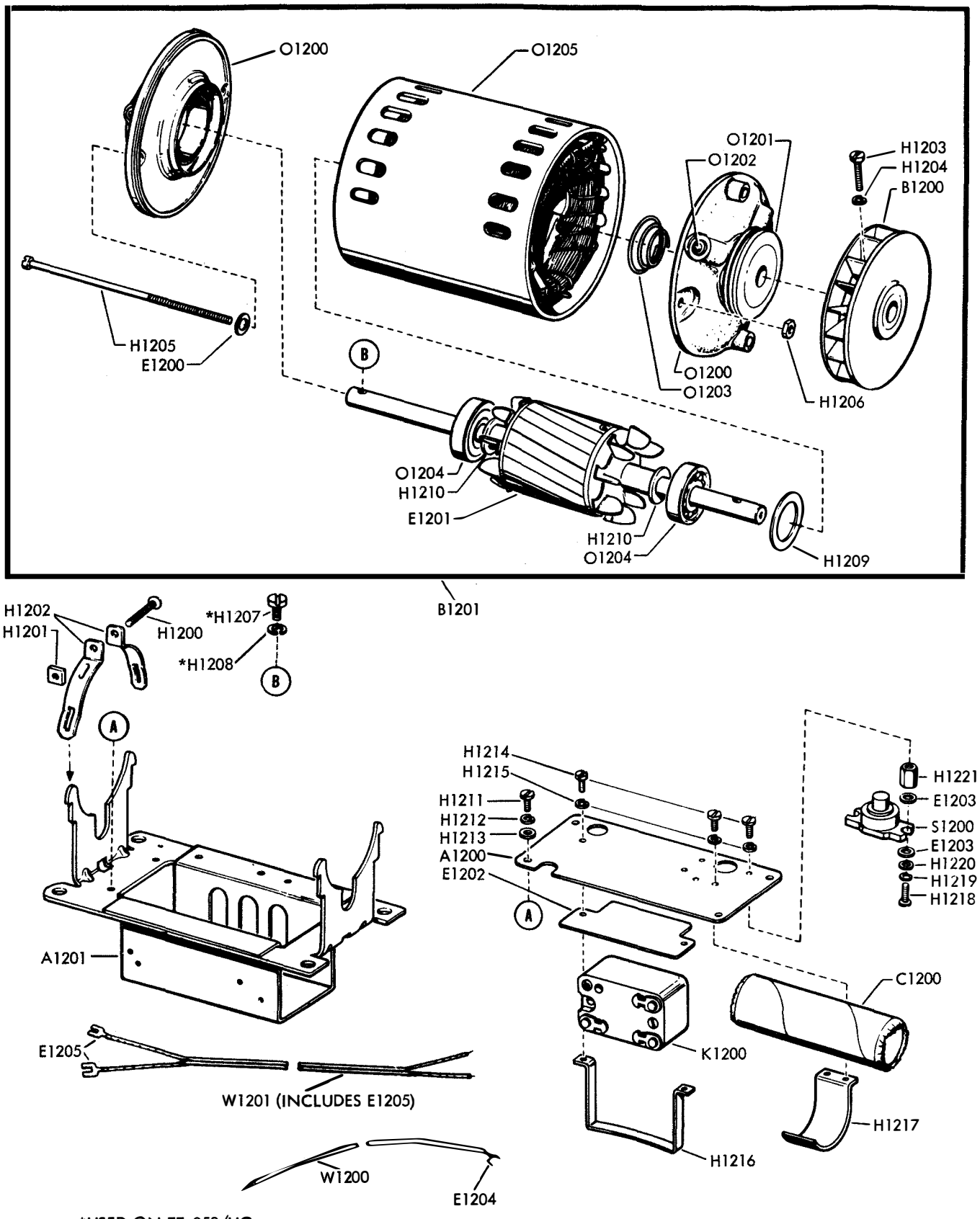


Figure 6-27. Synchronous Motor Unit (TT-192/UG, TT-253/UG and TT-253A/UG)

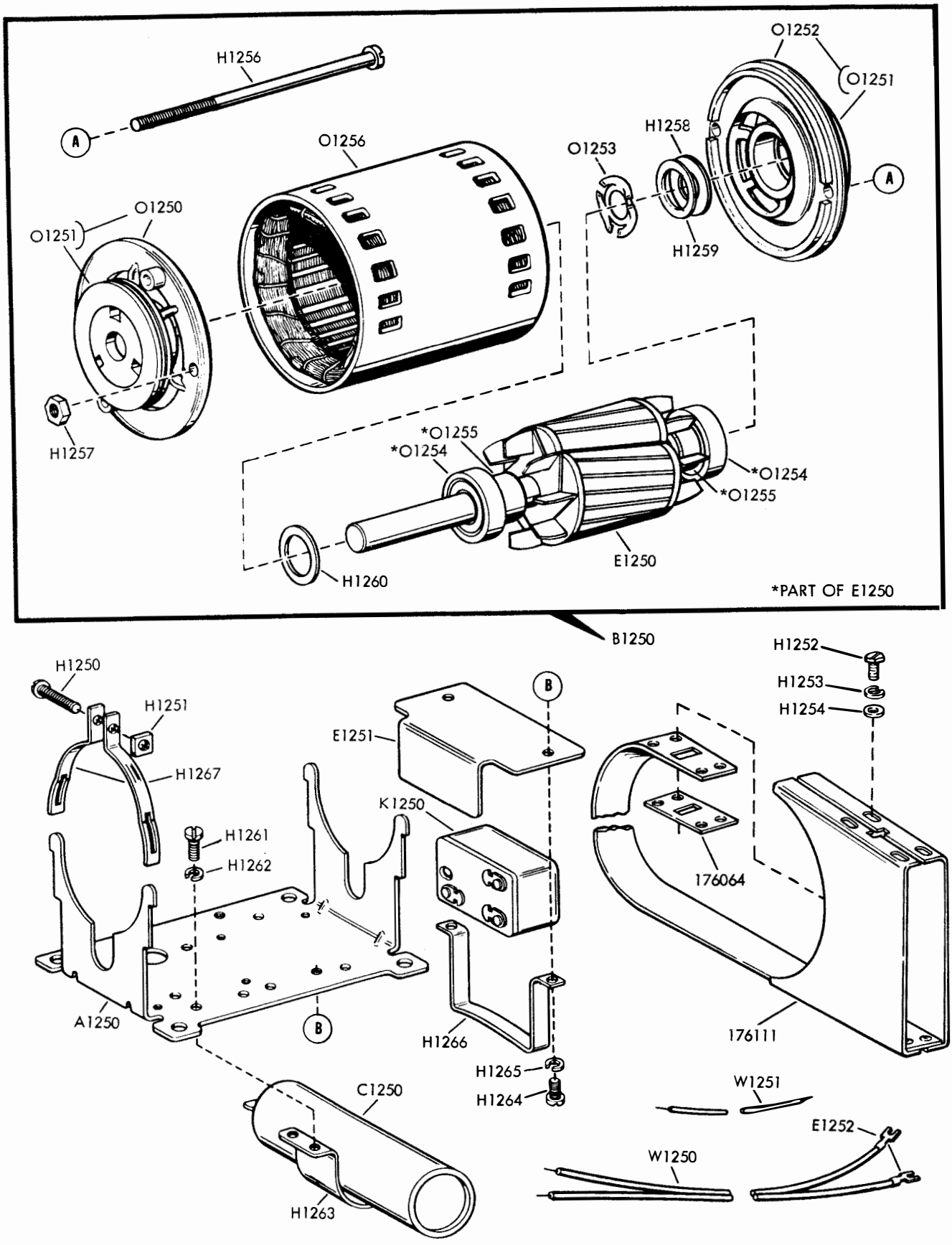


Figure 6-28. Synchronous Motor Unit, Miniaturized (TT-192A/UG)

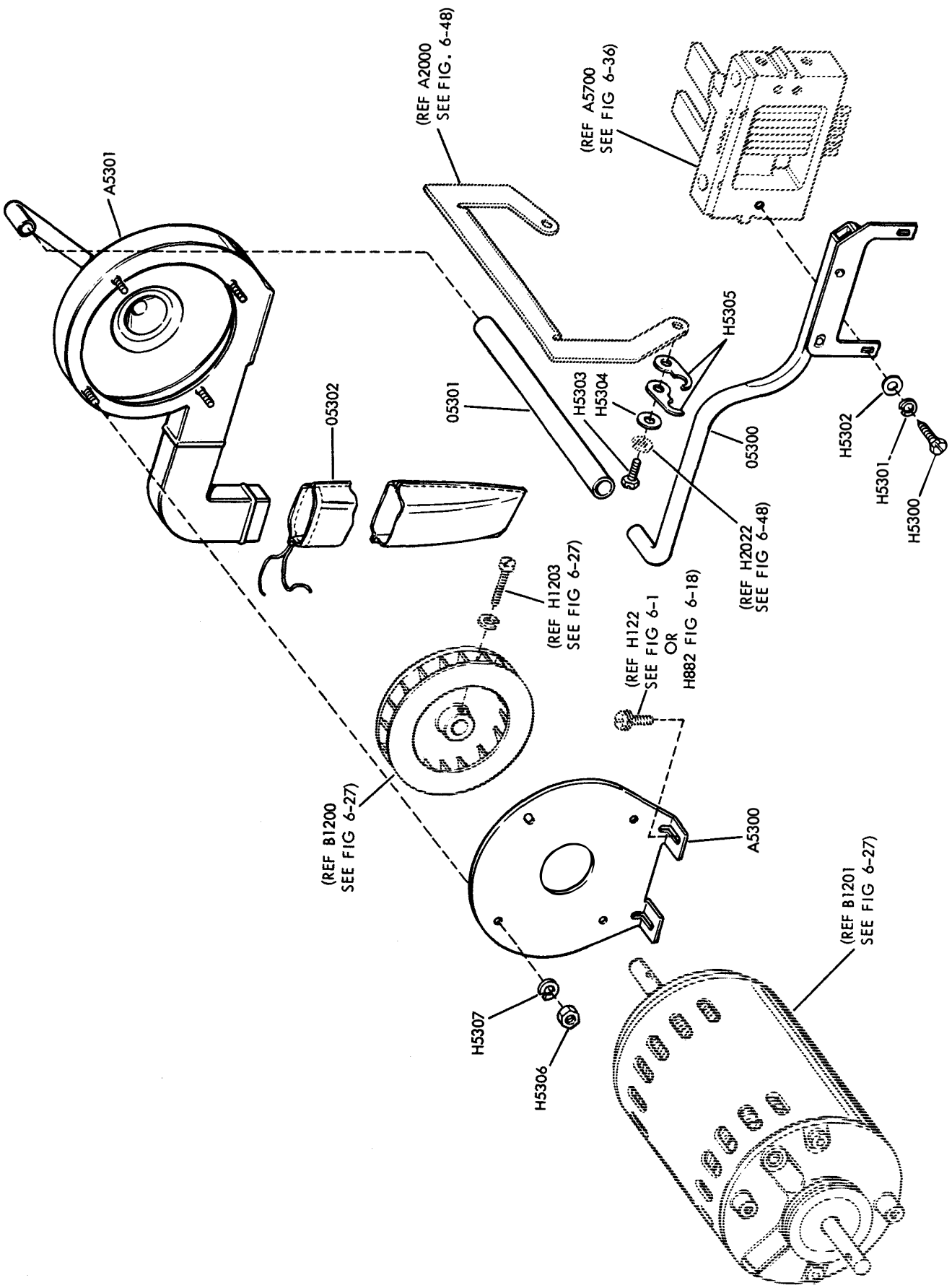


Figure 6-29. Vacuum Chad Disposal Mechanism (TT-253A/UG)

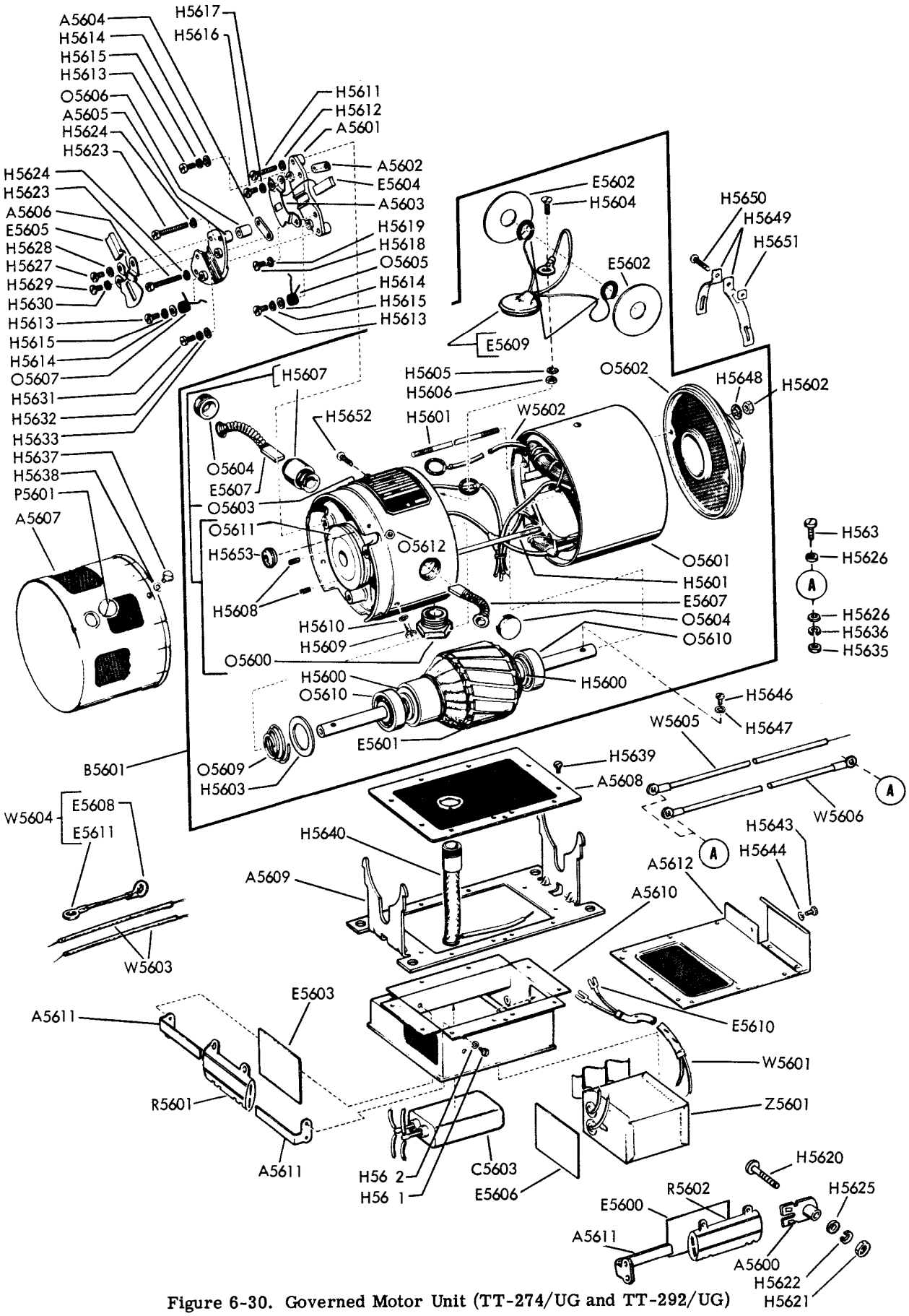


Figure 6-30. Governed Motor Unit (TT-274/UG and TT-292/UG)

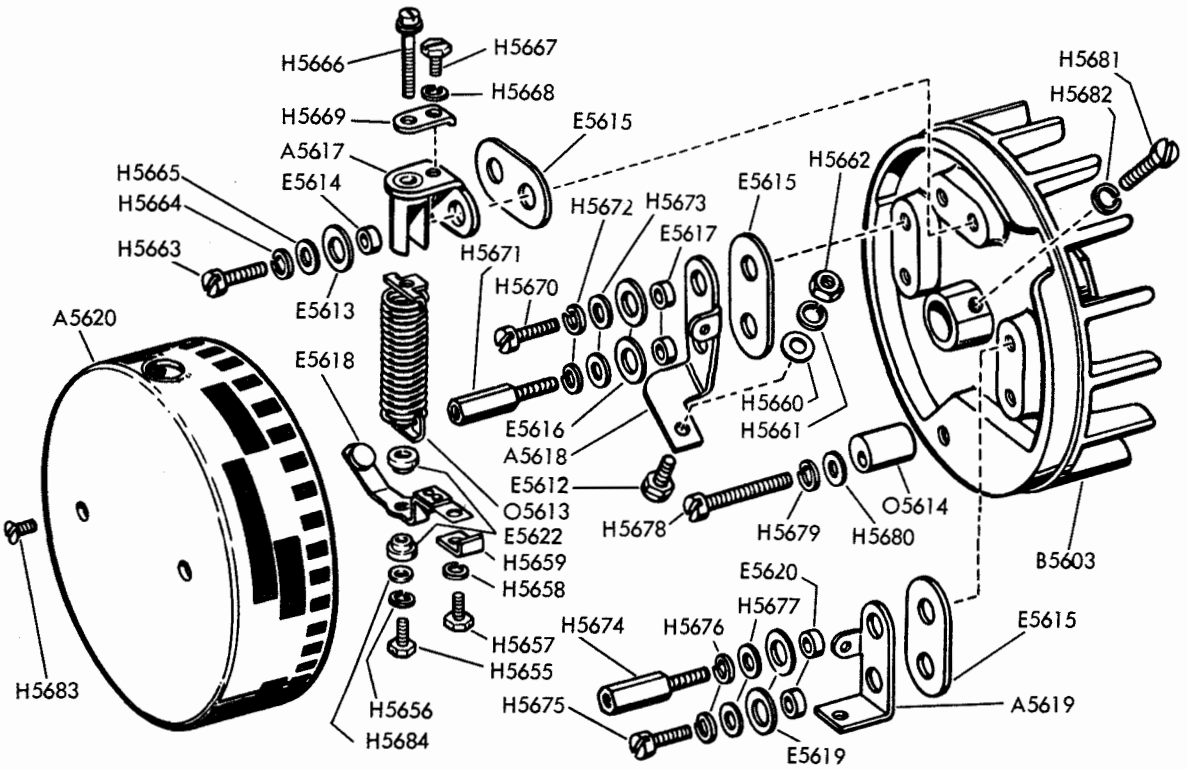


Figure 6-31. Governed Motor Unit (TT-274/UG and TT-292/UG)

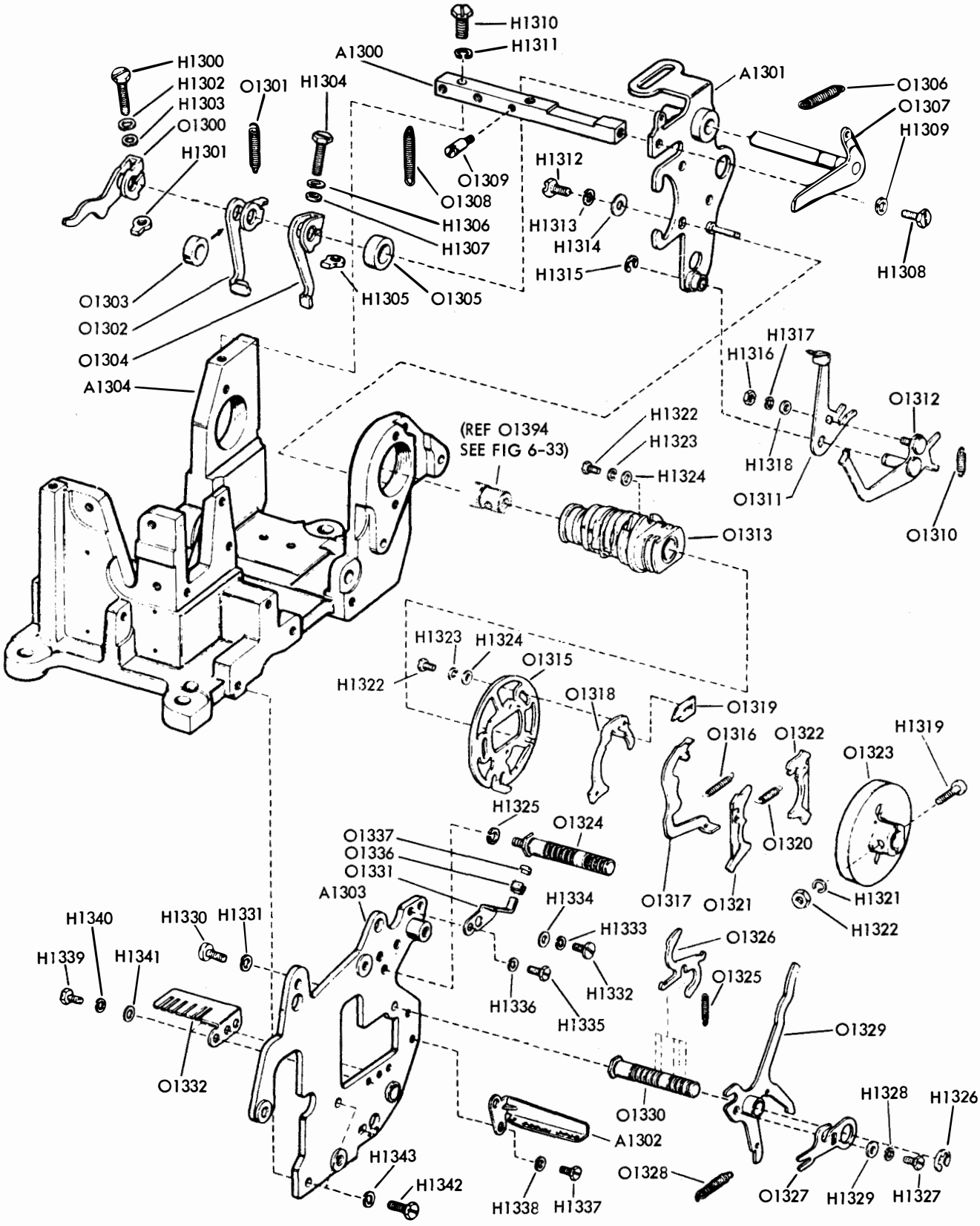


Figure 6-32. Typing Reperforator, Frame Mechanism

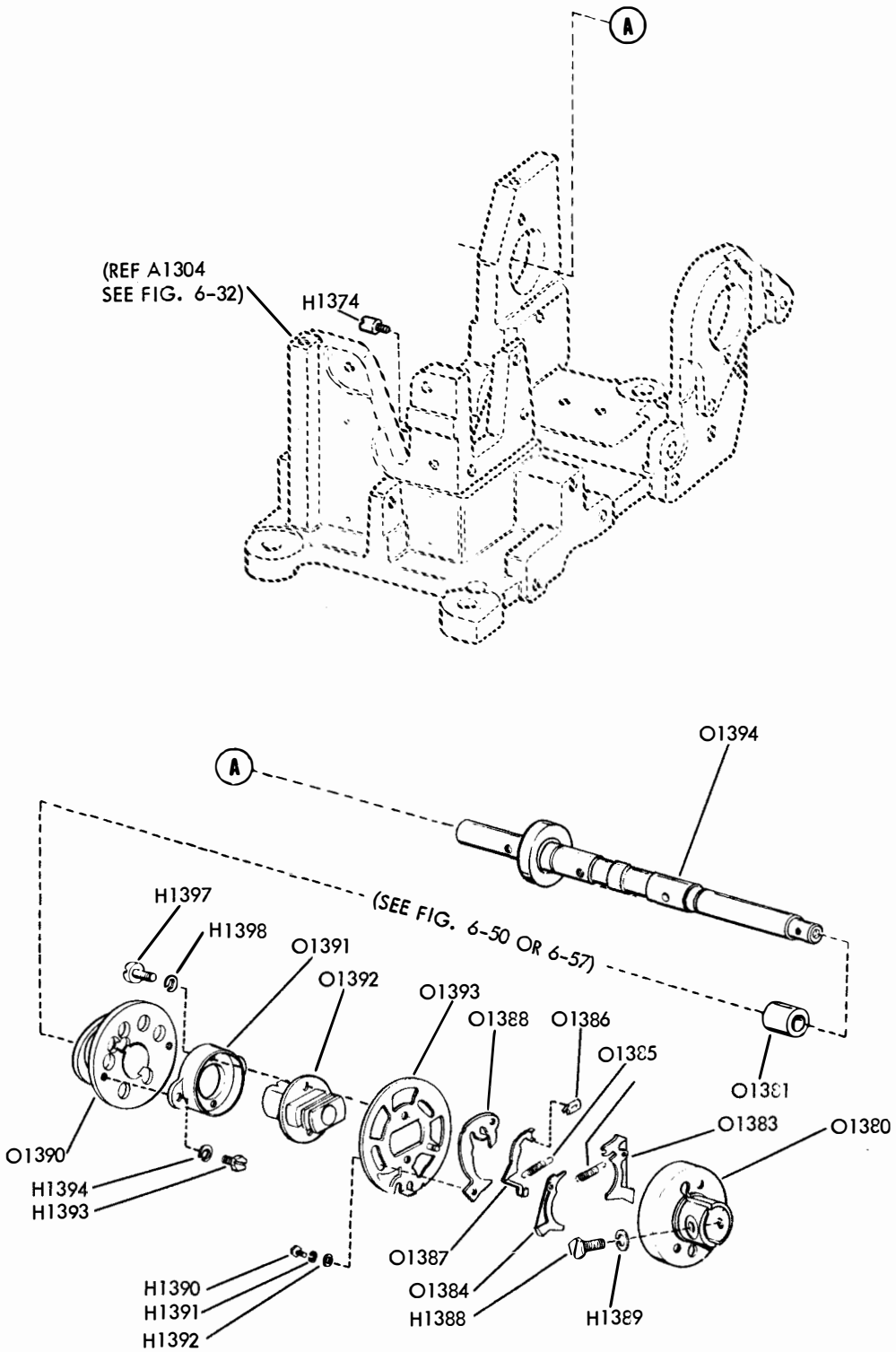


Figure 6-33. Typing Reperforator, Frame and Main Shaft Mechanisms

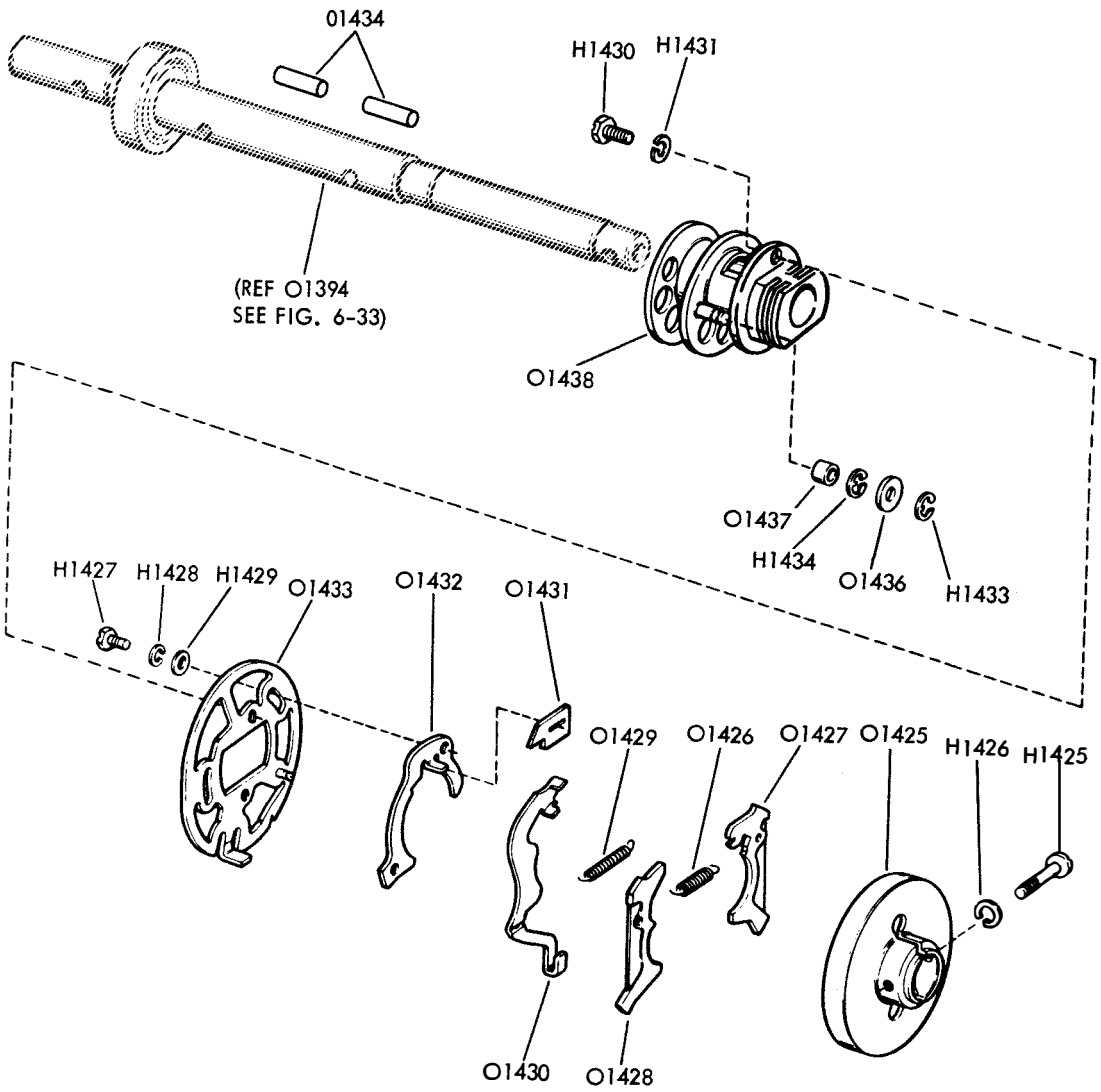
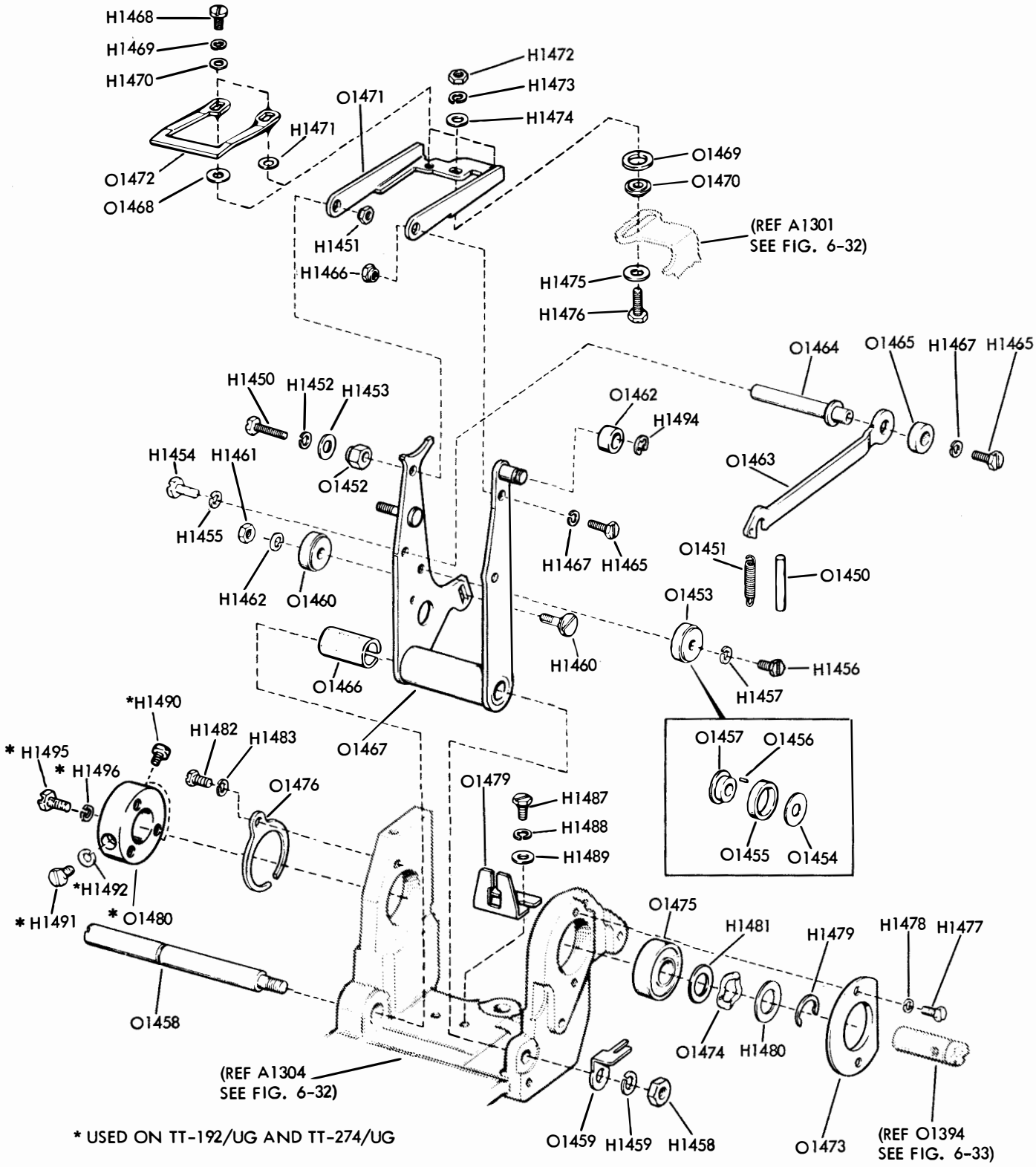


Figure 6-34. Typing Reperforator, Main Shaft Mechanism



* USED ON TT-192/UG AND TT-274/UG

Figure 6-35. Typing Reperforator, Frame Mechanism

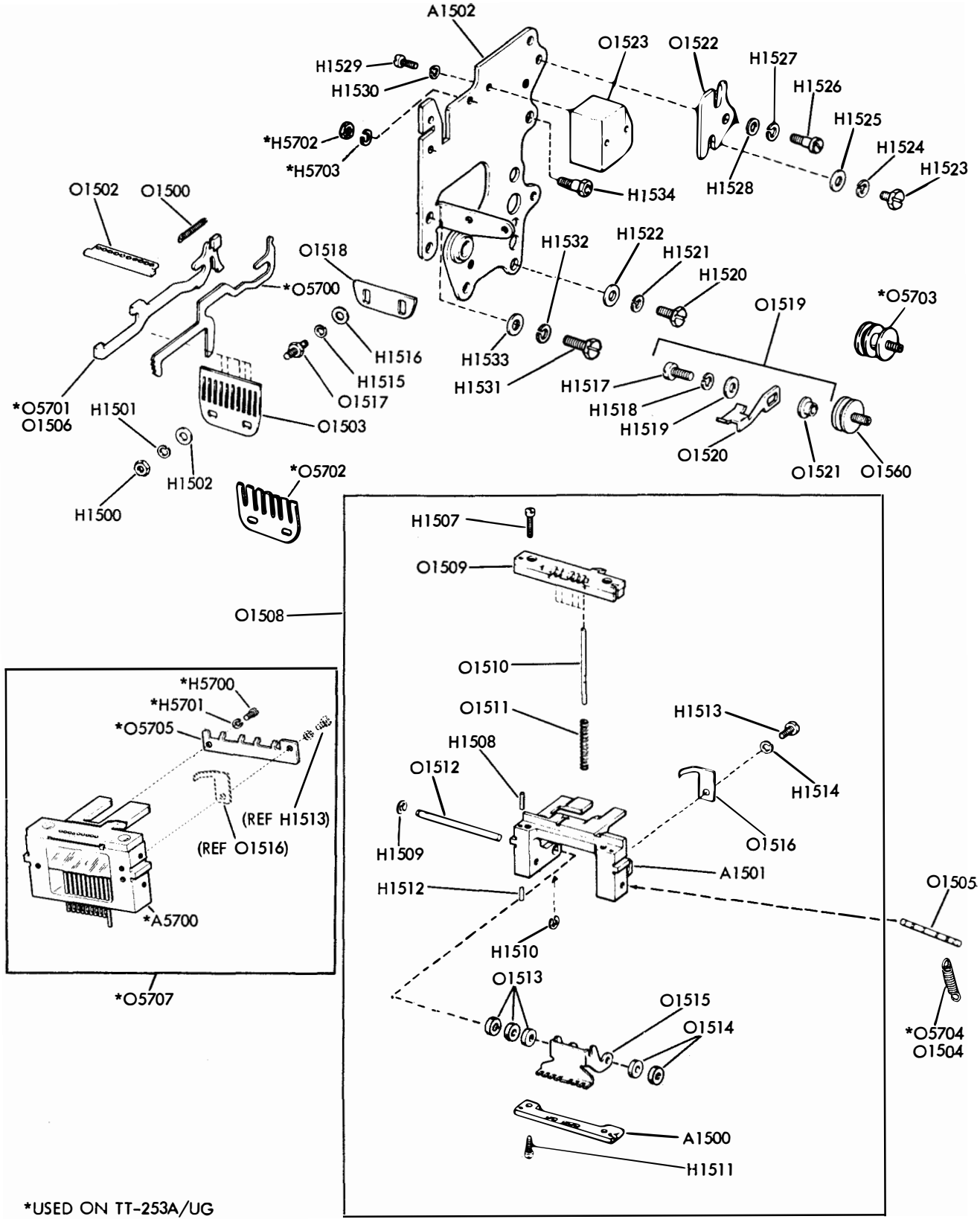
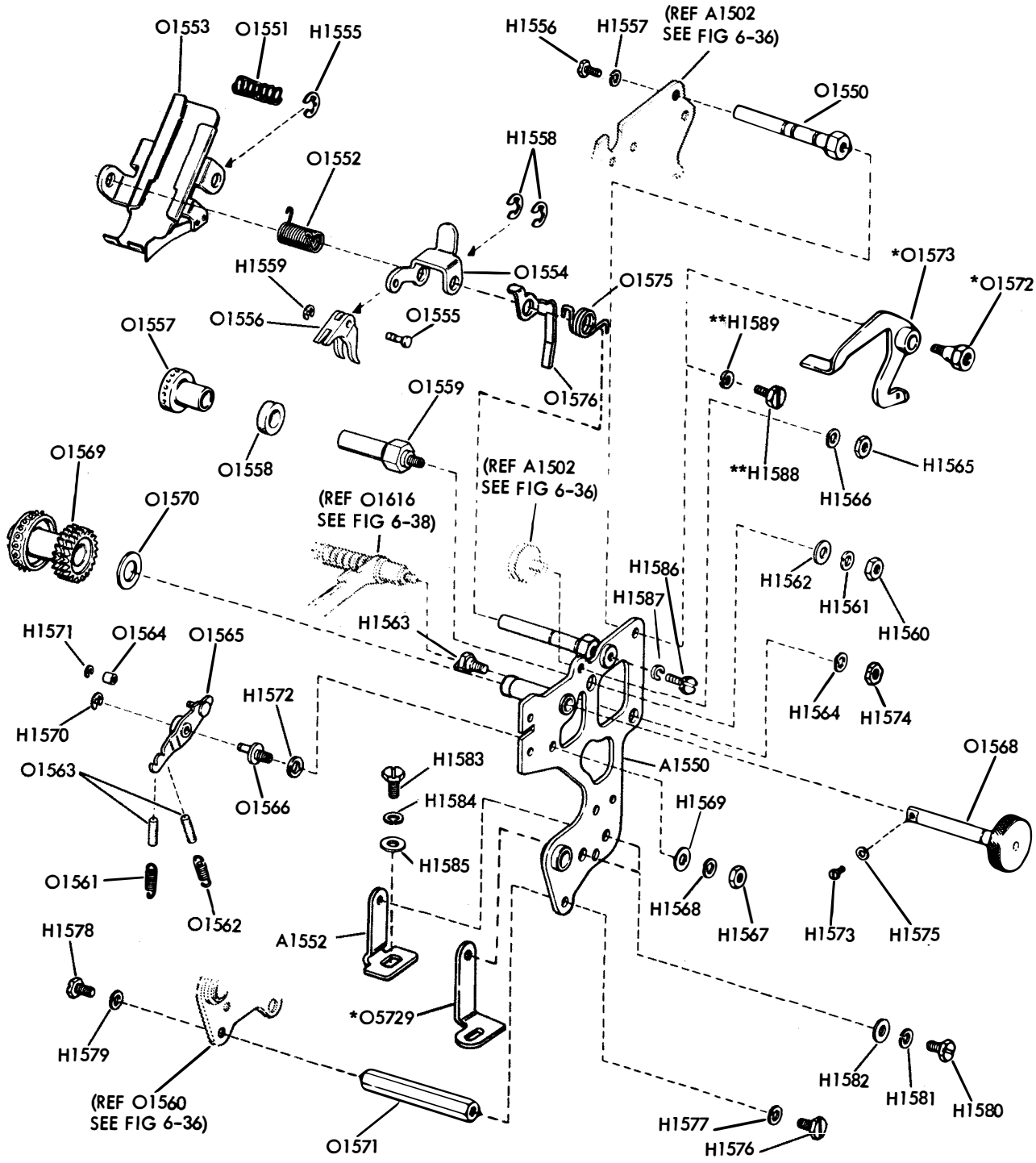


Figure 6-36. Typing Reperforator, Perforator Mechanism



*USED ON TT-253A/UG

Figure 6-37. Typing Reperforator, Perforator Mechanism

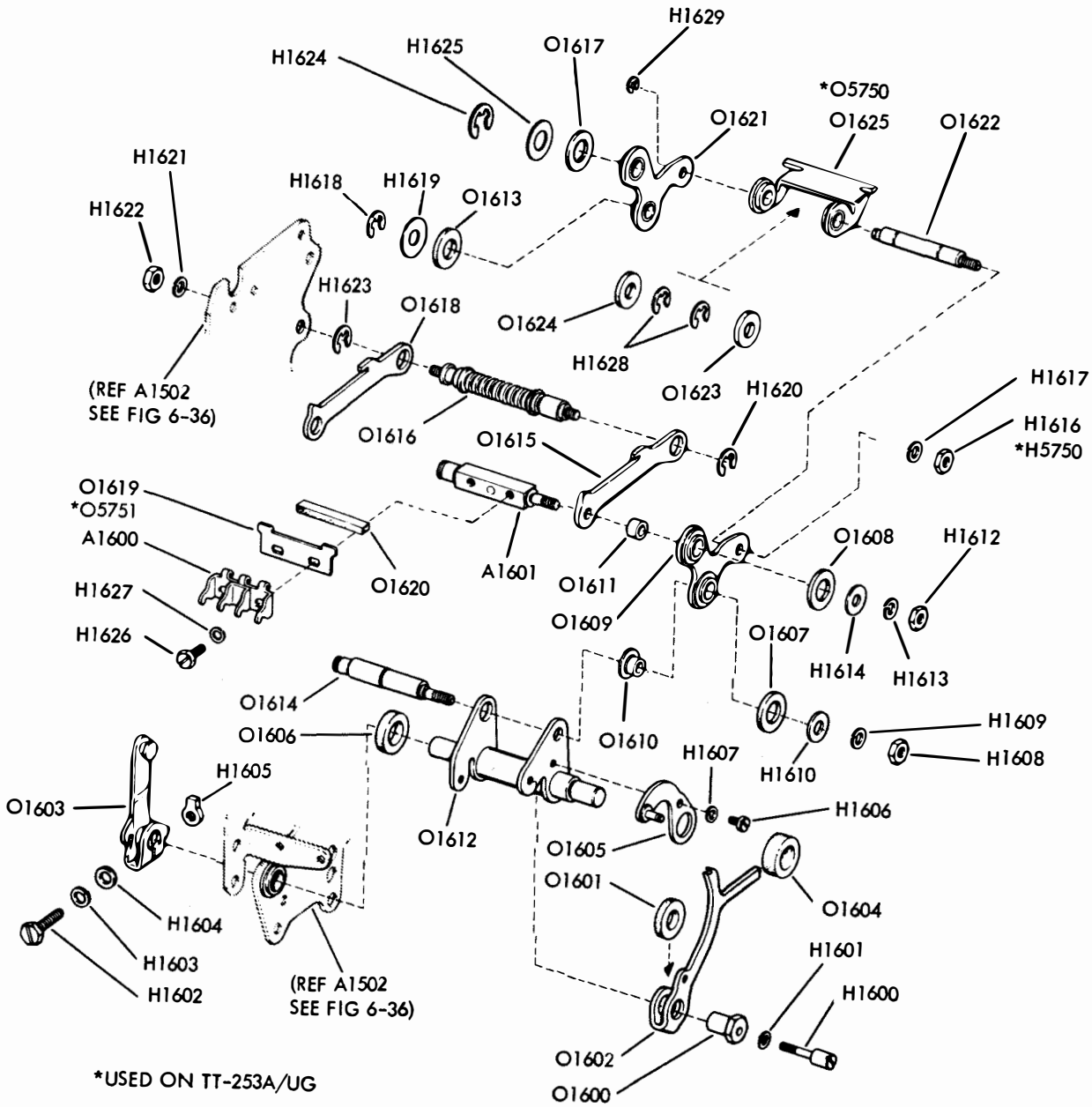


Figure 6-38. Typing Reperforator, Perforator Mechanism

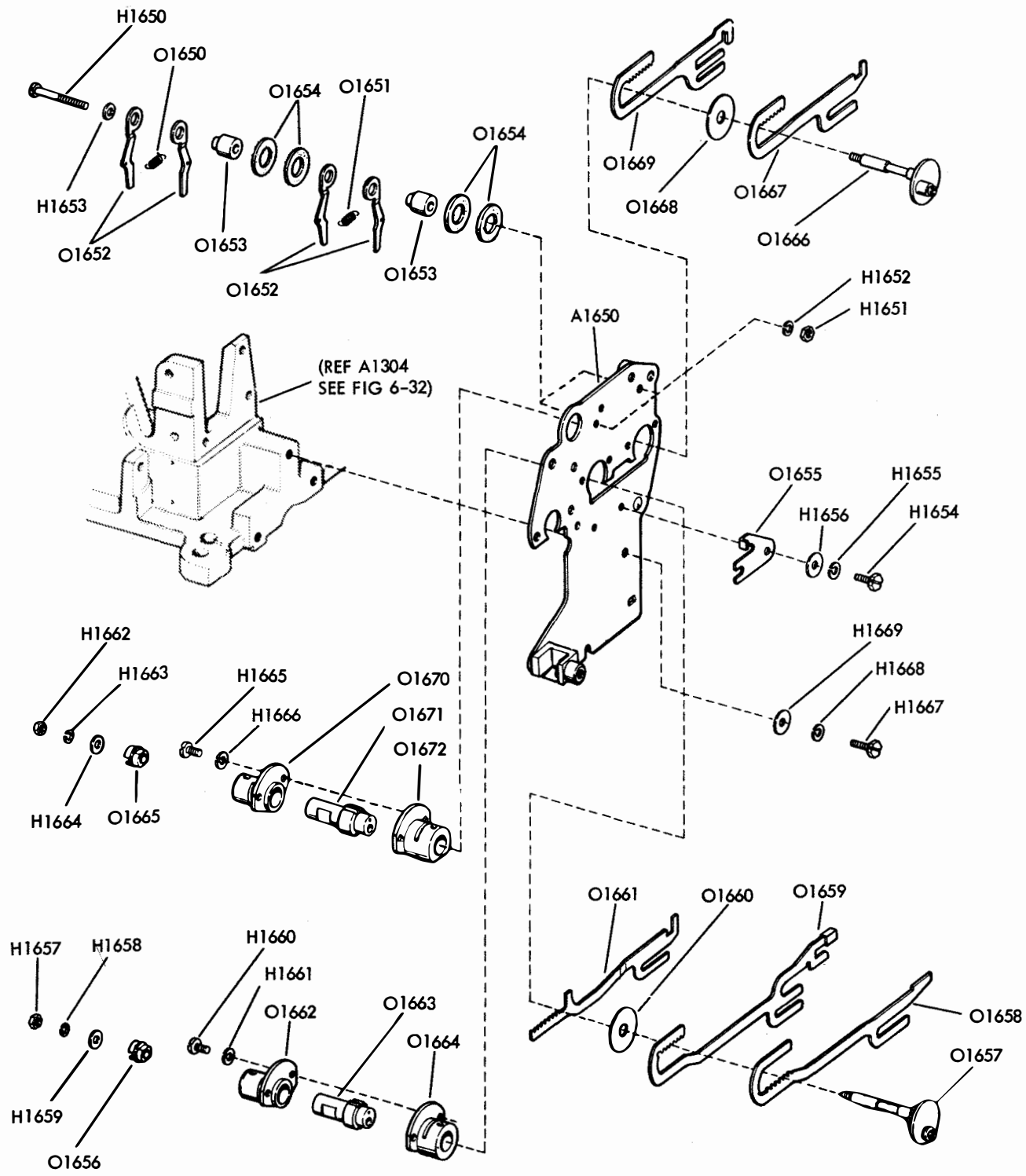
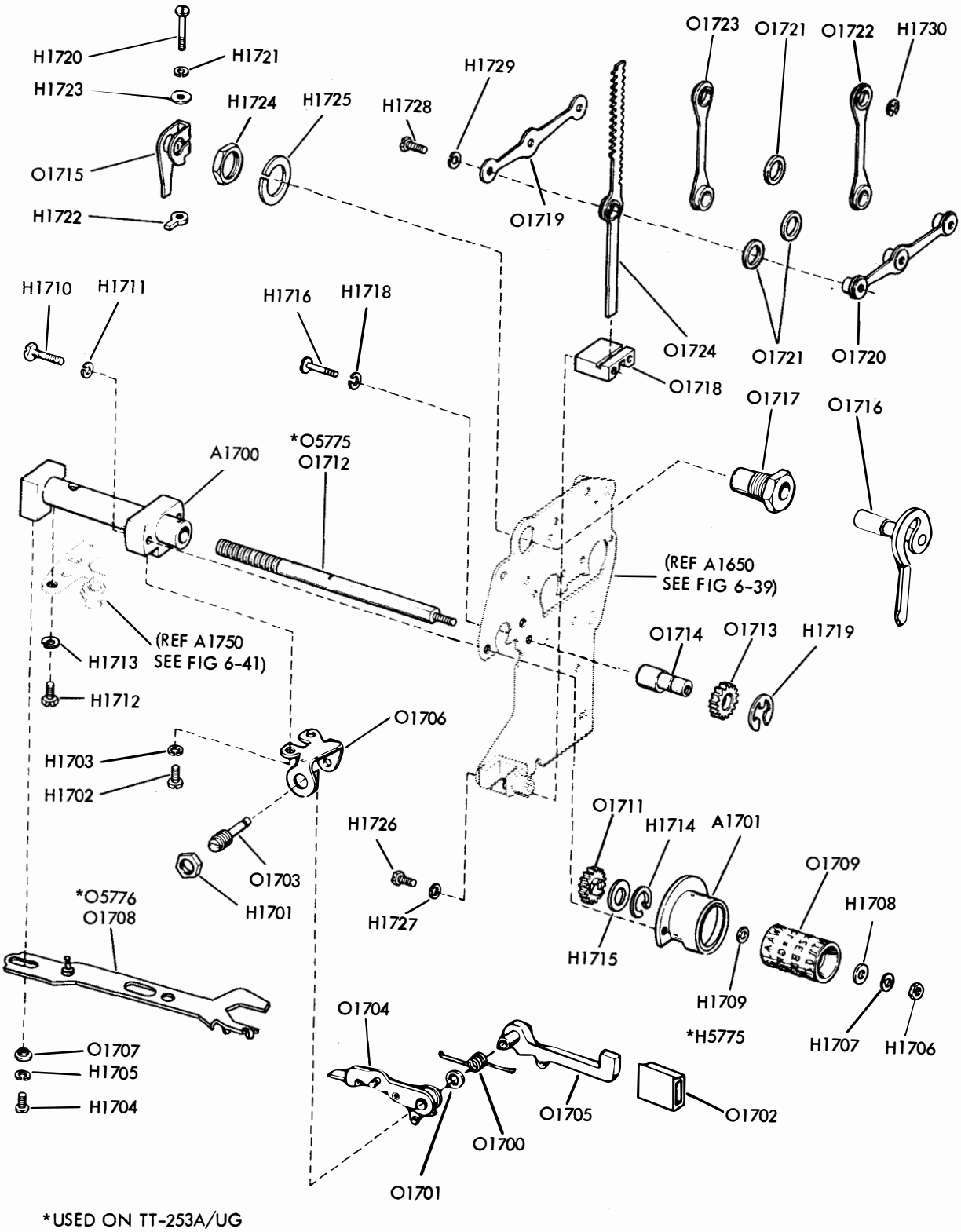


Figure 6-39. Typing Reperforator, Rotary Positioning Mechanism



*USED ON TT-253A/UG

Figure 6-40. Typing Reperforator, Rotary Positioning Mechanism

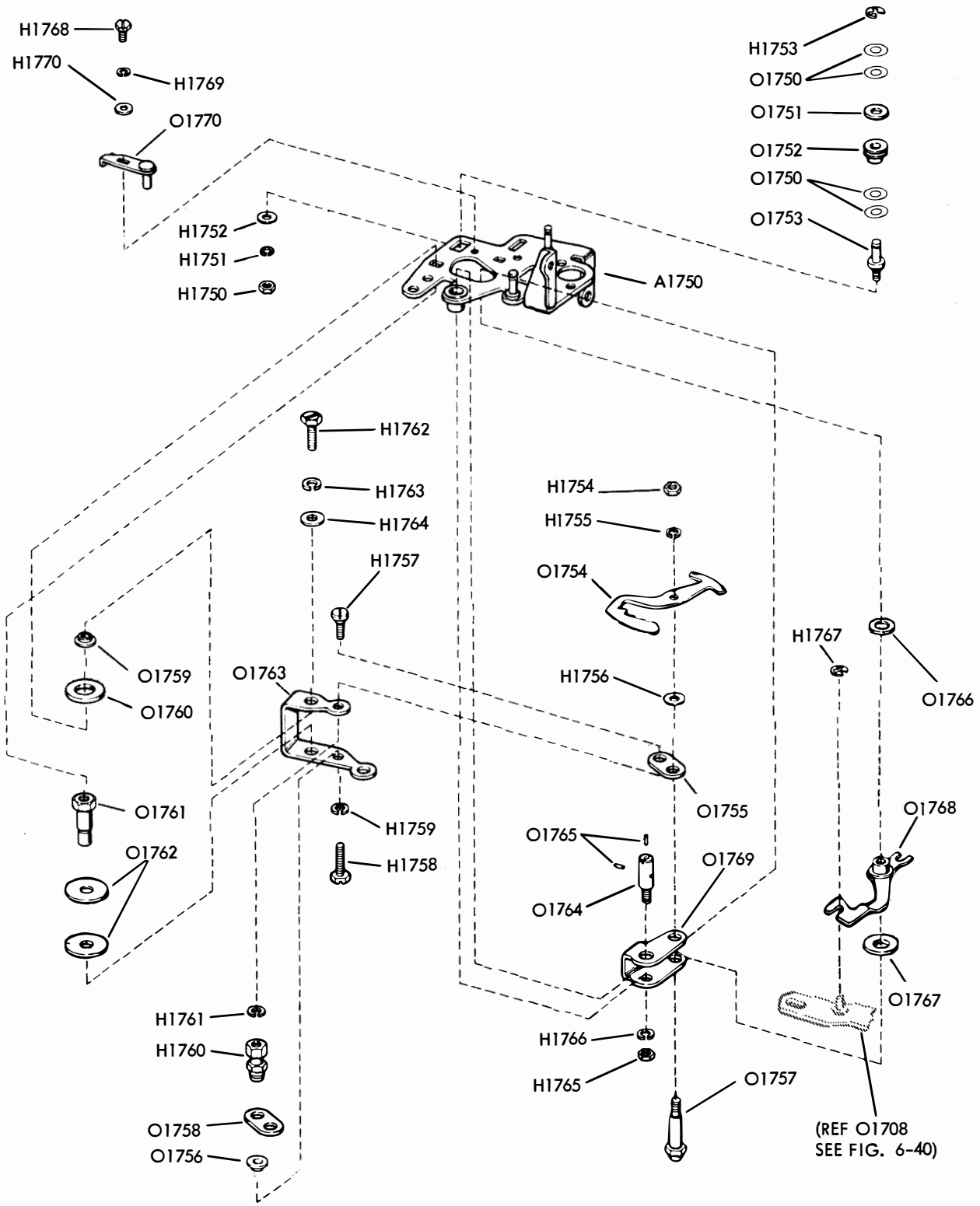


Figure 6-41. Typing Reperforator, Axial Positioning Mechanism

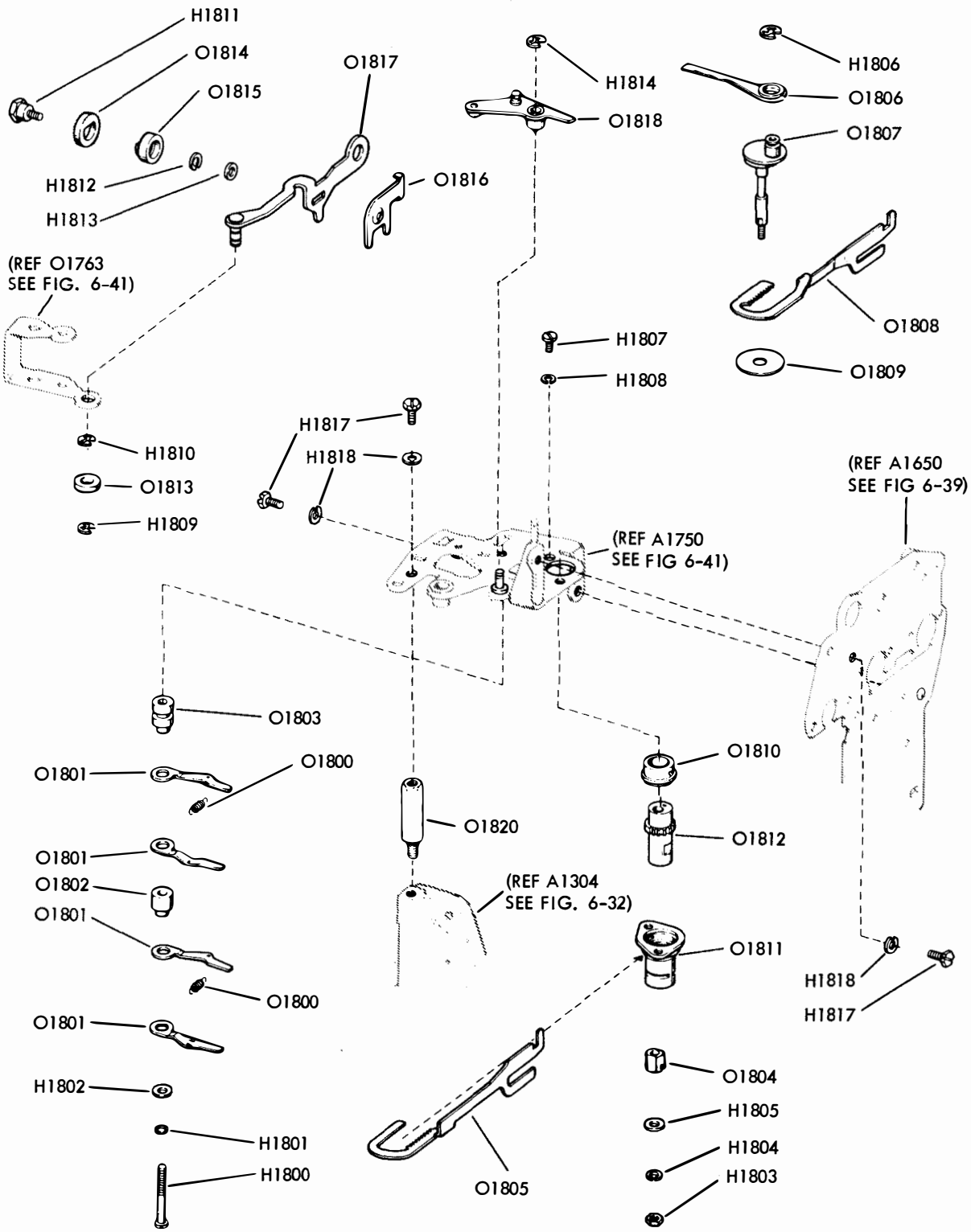


Figure 6-42. Typing Reperforator, Axial Positioning Mechanism

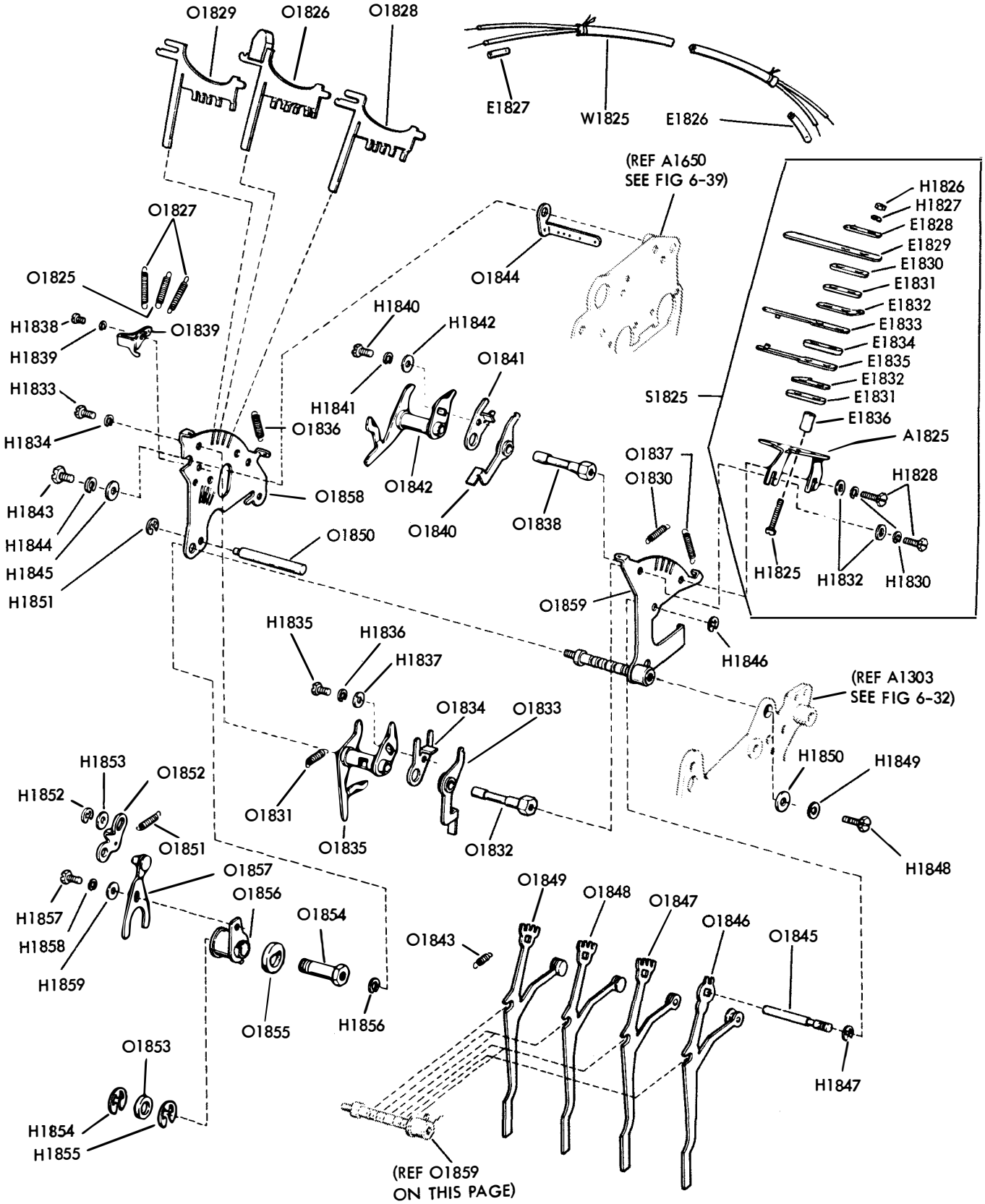


Figure 6-43. Typing Reperforator, Function Box and Signal Bell Contact Mechanisms

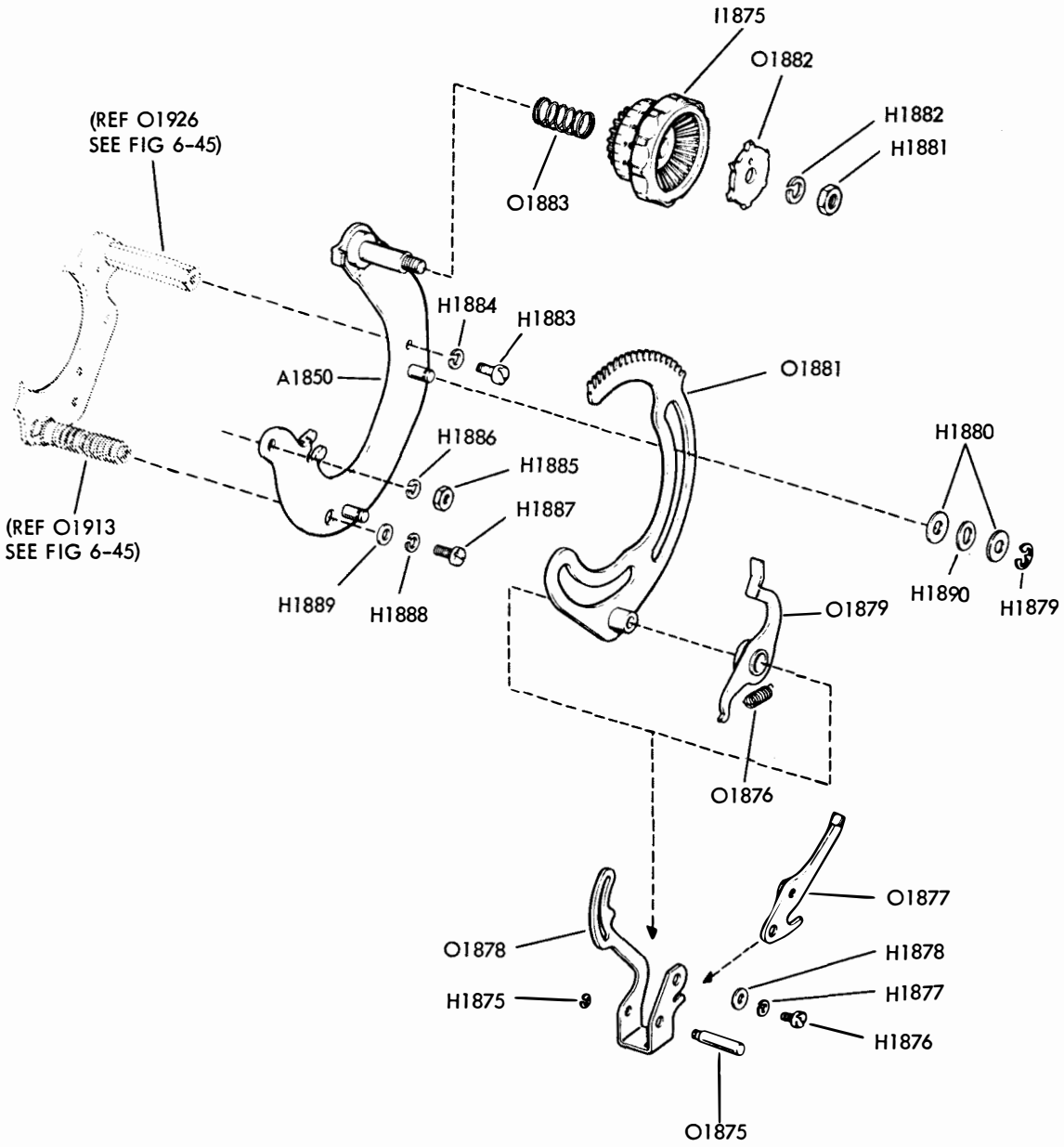


Figure 6-44. Typing Reperforator, Range Finder Mechanism

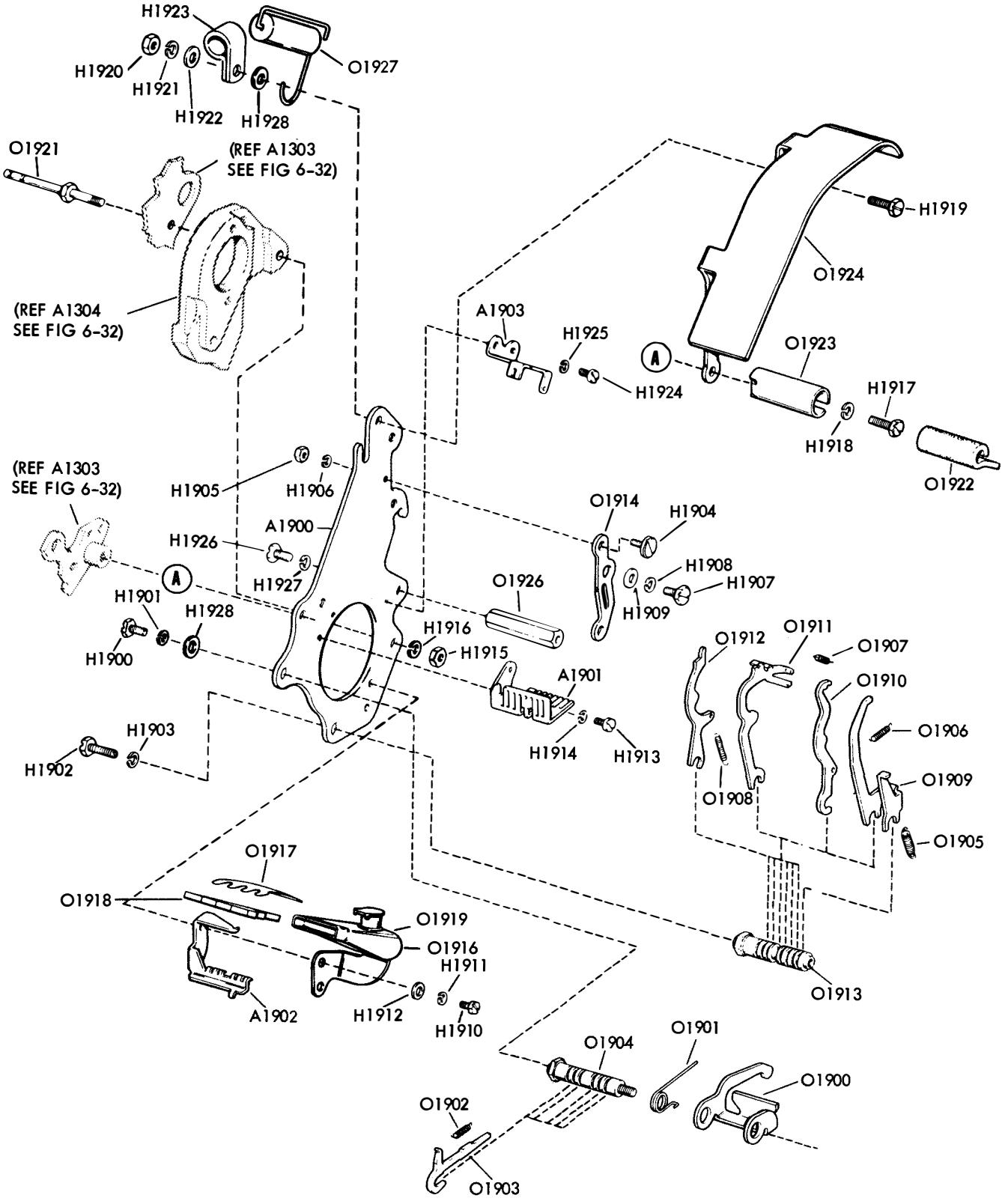


Figure 6-45. Typing Reperforator, Selecting Mechanism

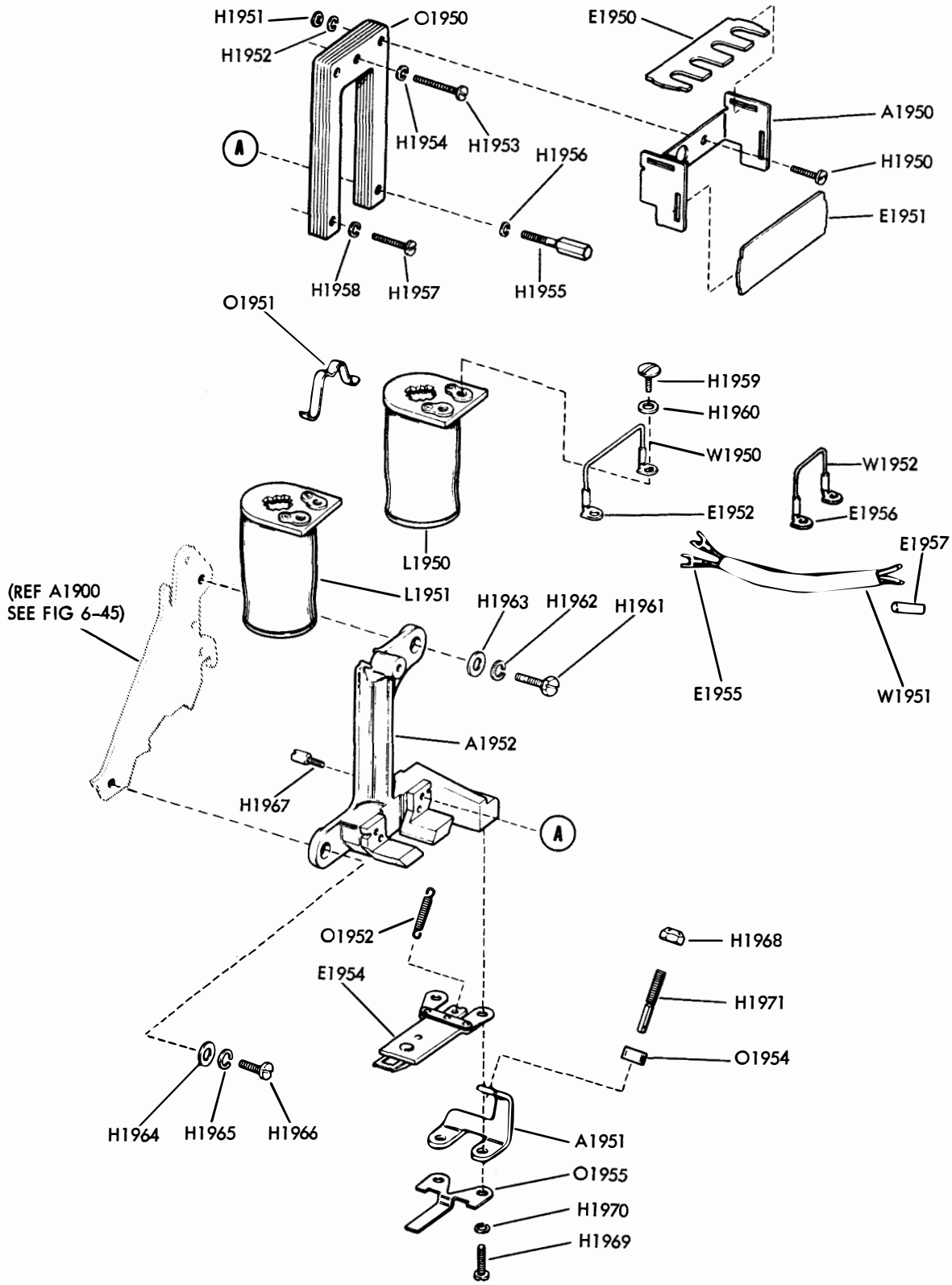


Figure 6-46. Typing Reperforator, Selecting Mechanism

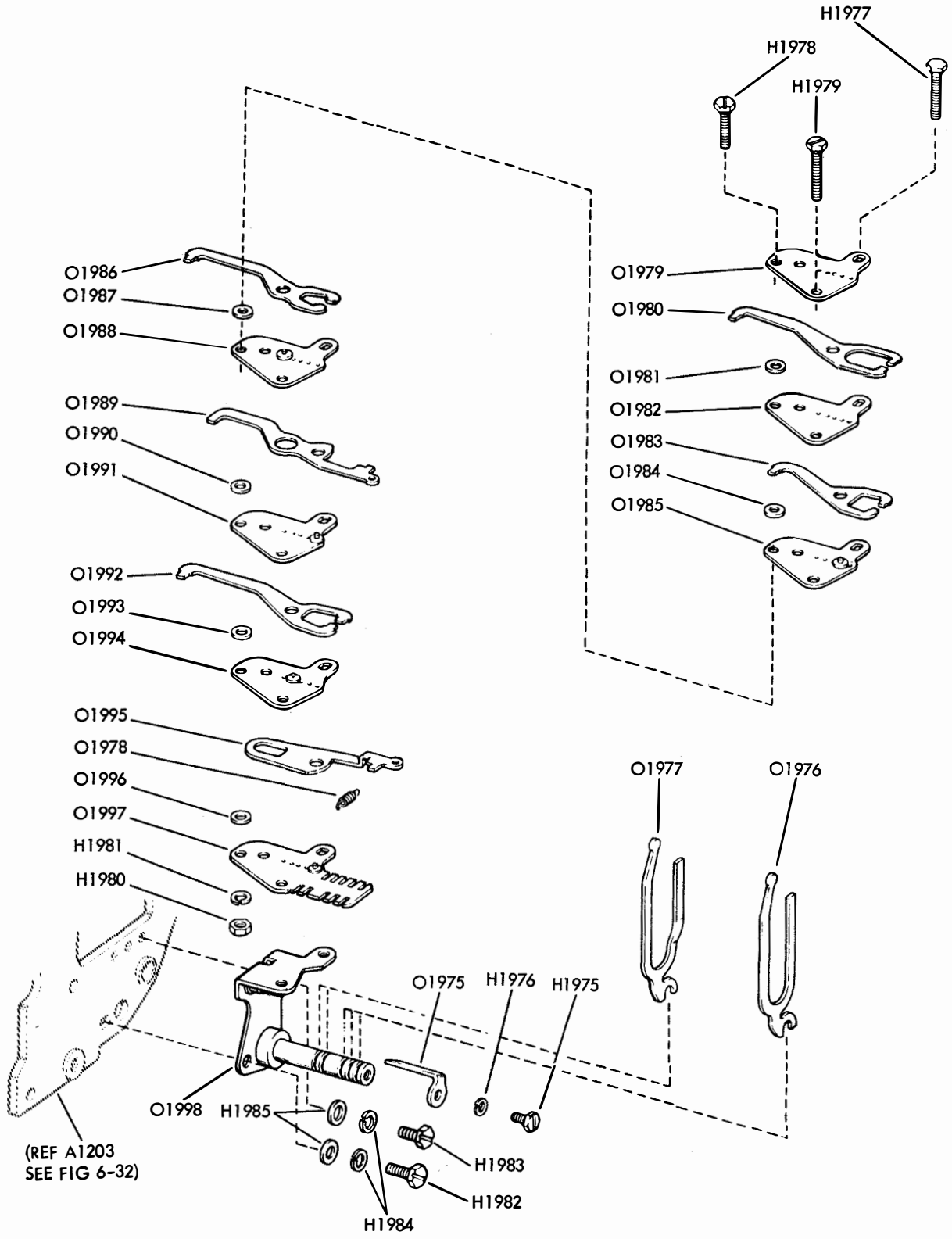


Figure 6-47. Typing Reperforator, Transfer Mechanism

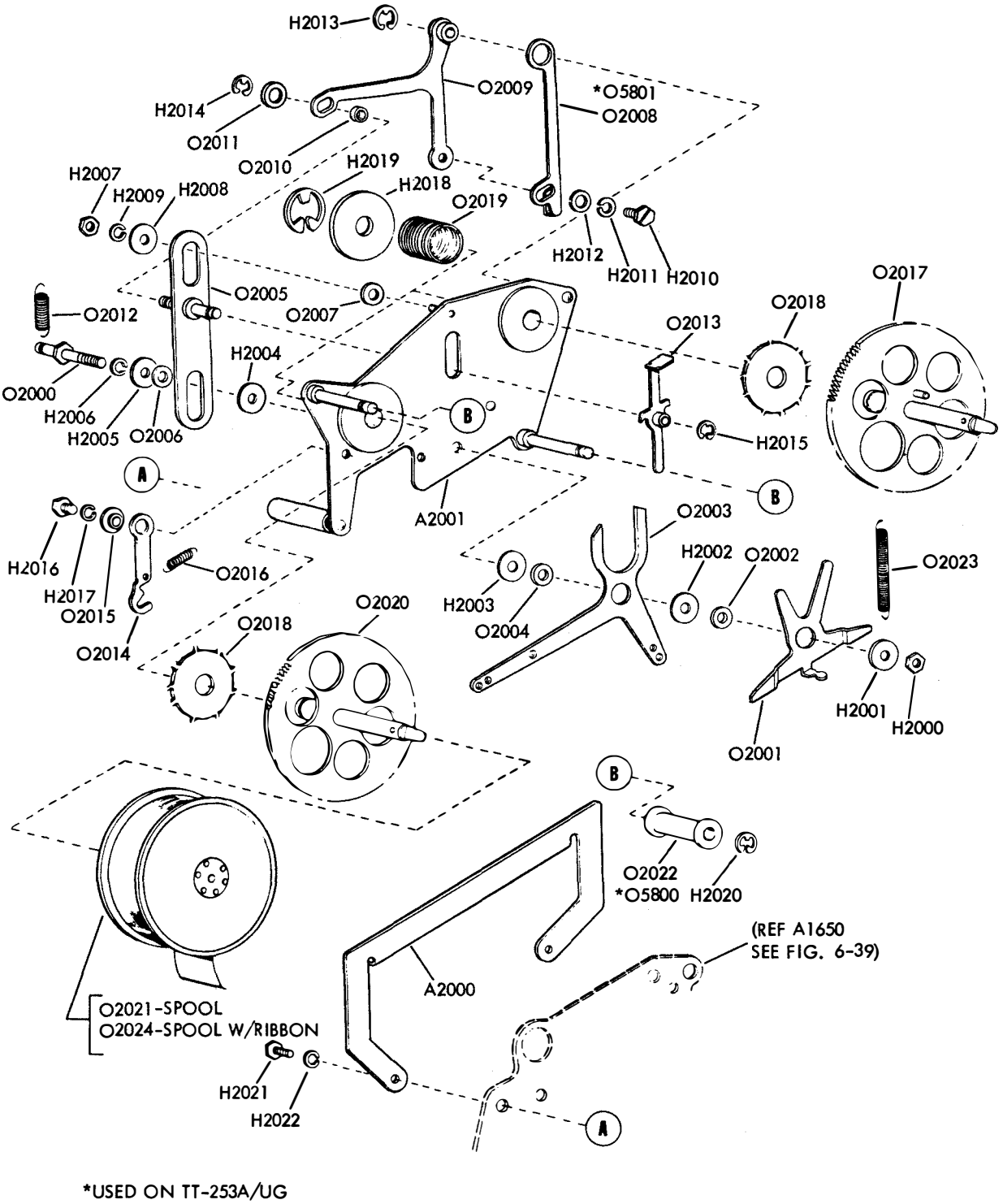


Figure 6-48. Typing Reperforator, Ribbon Feed Mechanism

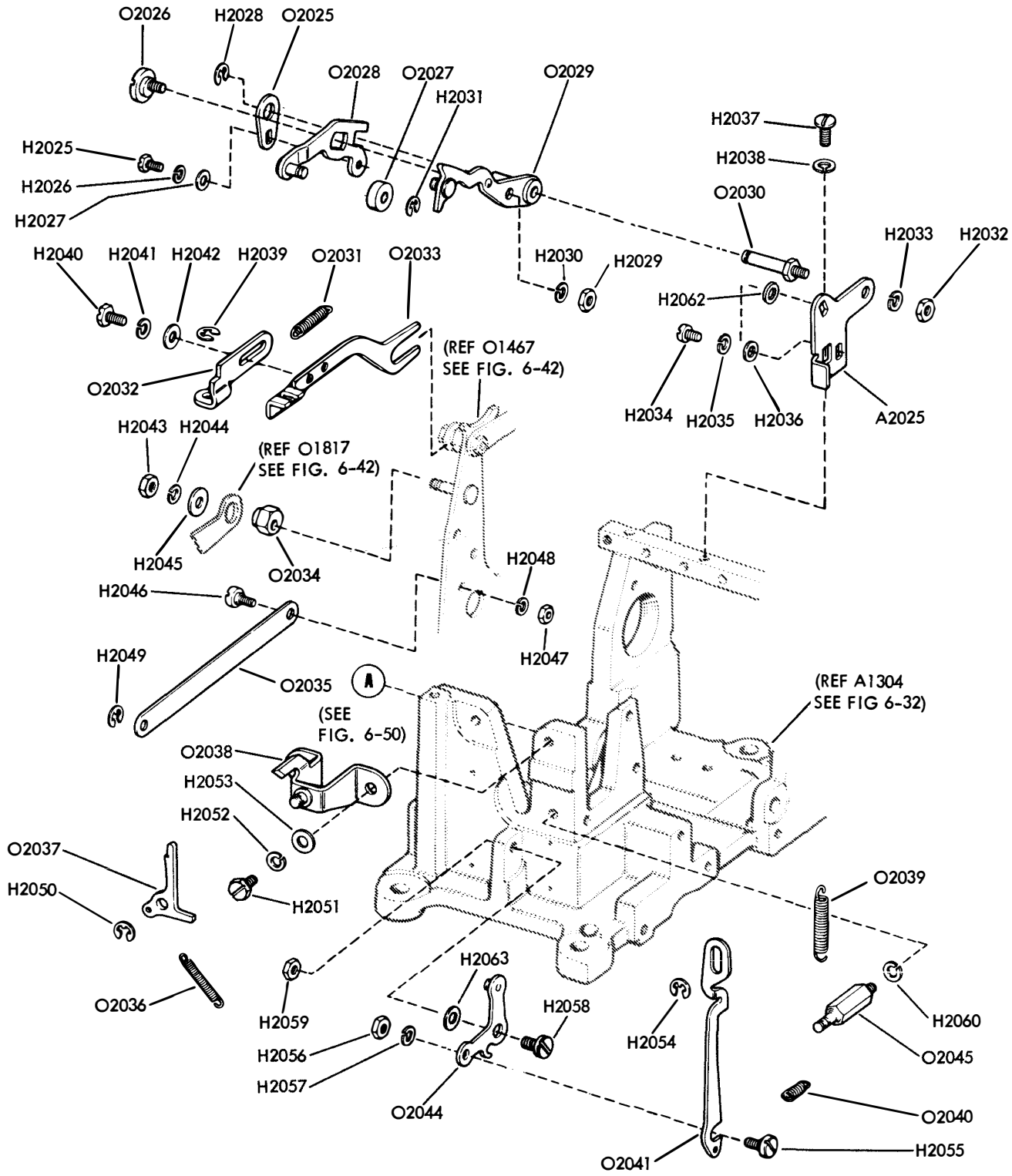


Figure 6-49. Typing Reperforator, Typing Mechanism

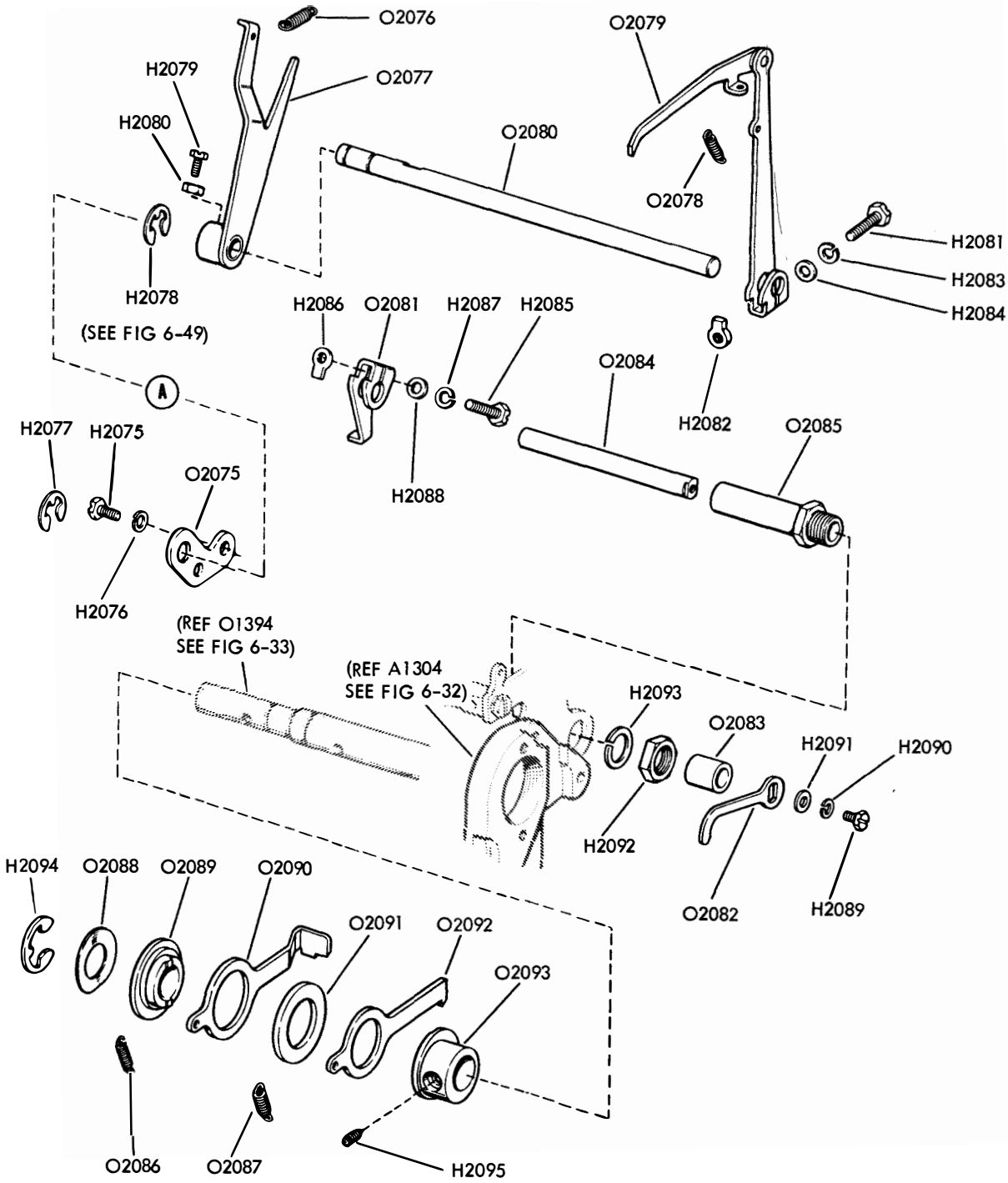


Figure 6-50. Typing Reperforator, Non-Interfering Blank Tape Feed-Out Mechanism

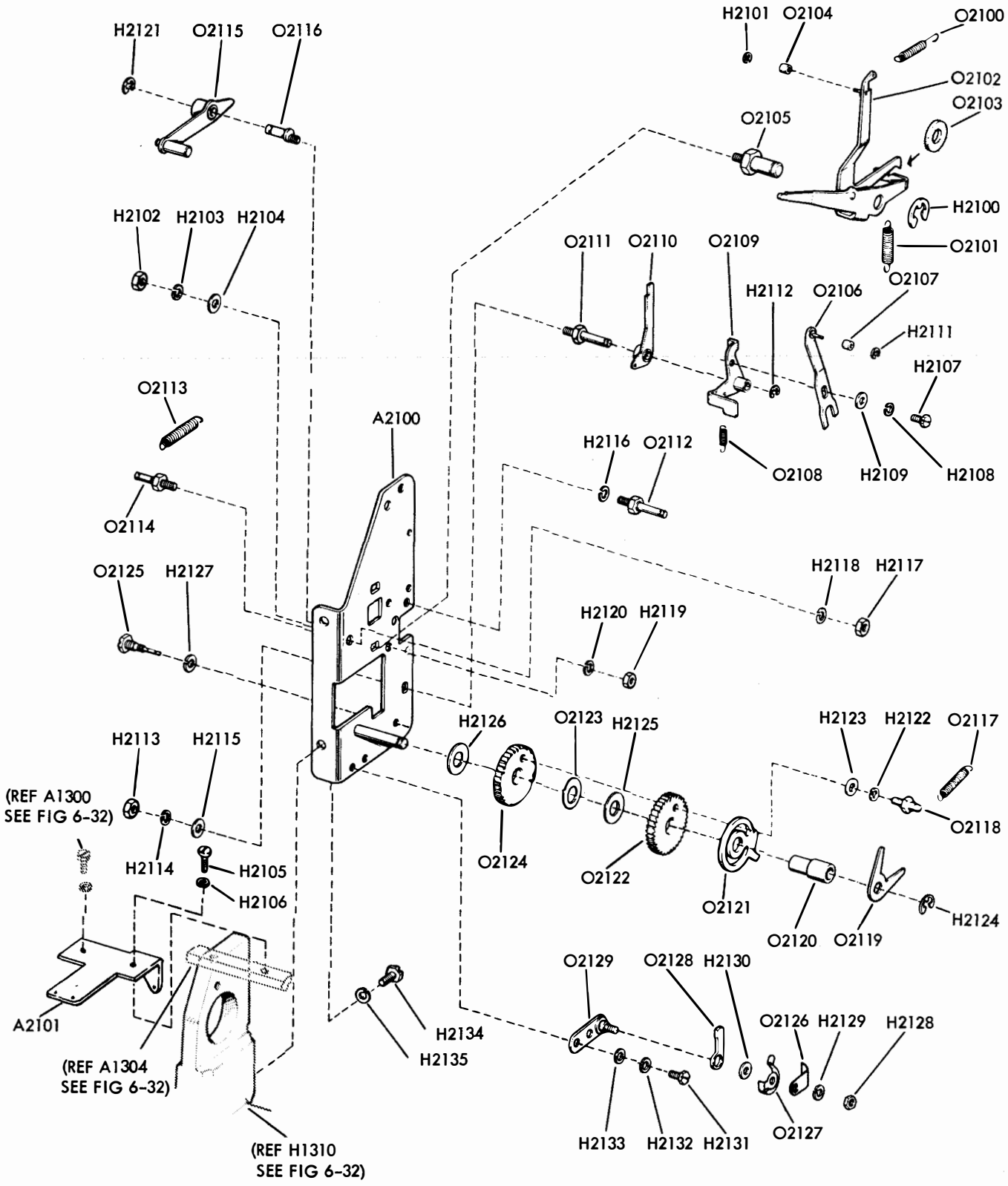


Figure 6-51. Typing Reperforator, Non-Interfering Blank Tape Feed-Out Mechanism

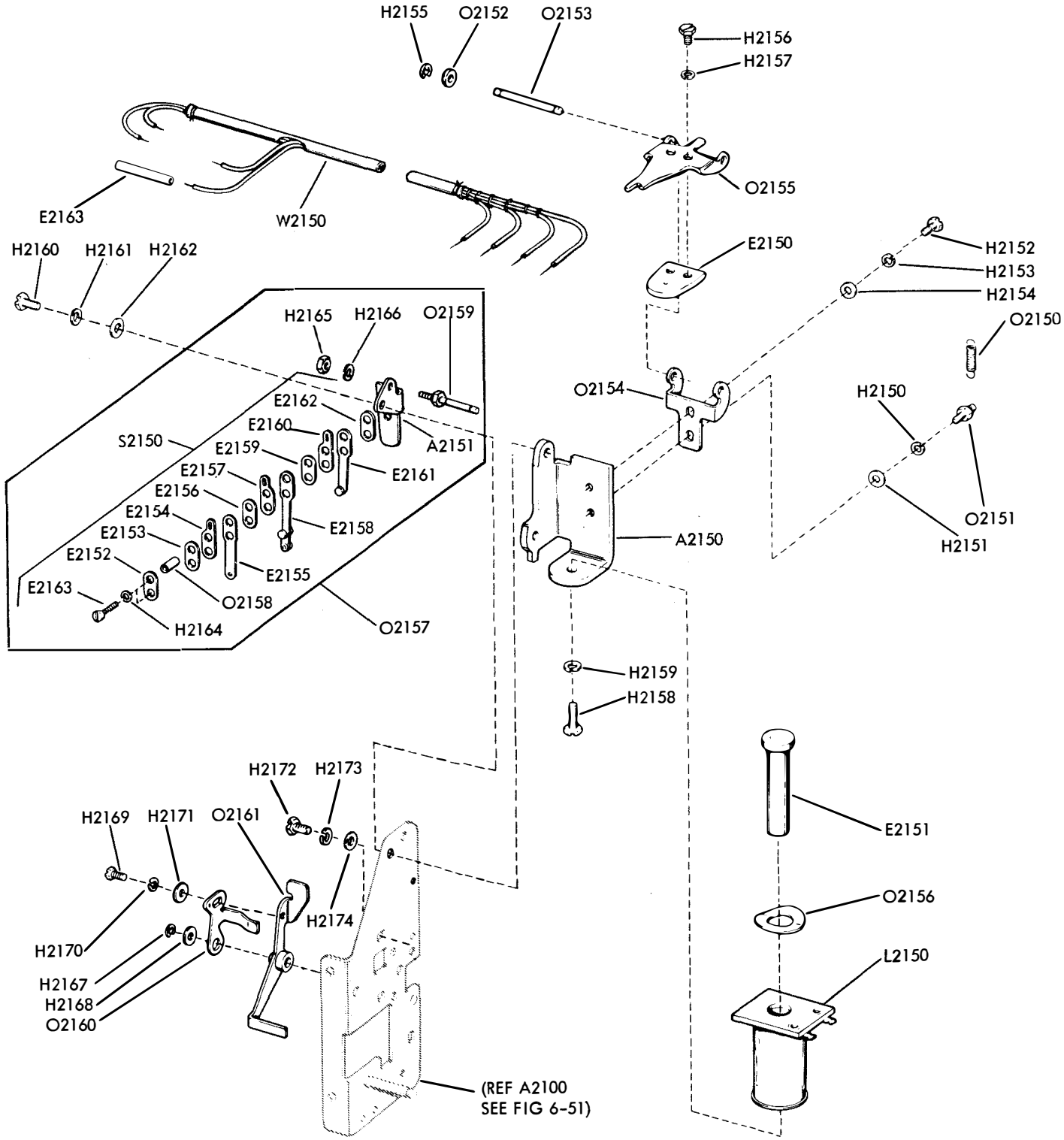


Figure 6-52. Typing Reperforator, Non-Interfering Blank Tape Feed-Out Mechanism

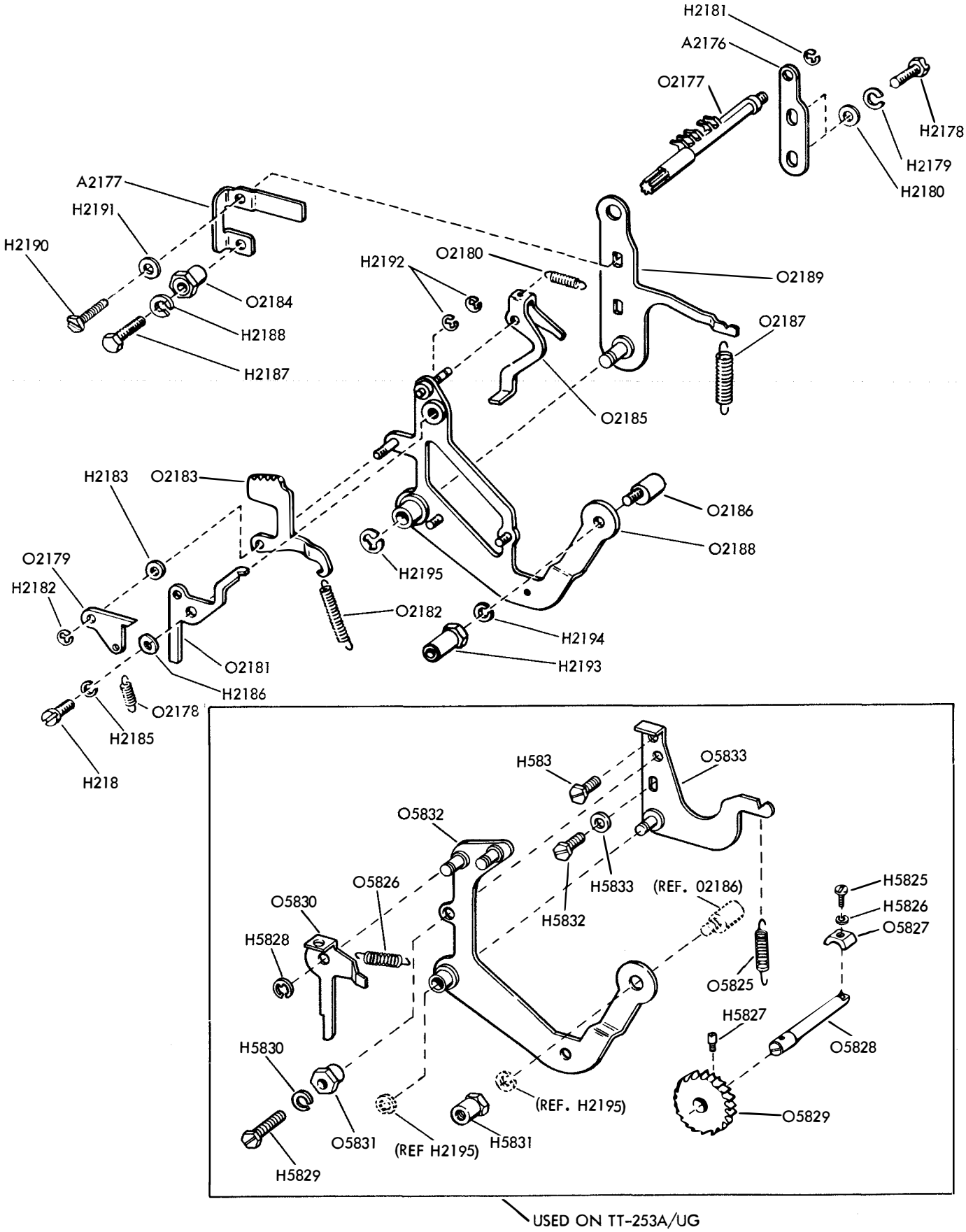


Figure 6-53. Typing Reperforator, Tape Back Space Mechanism

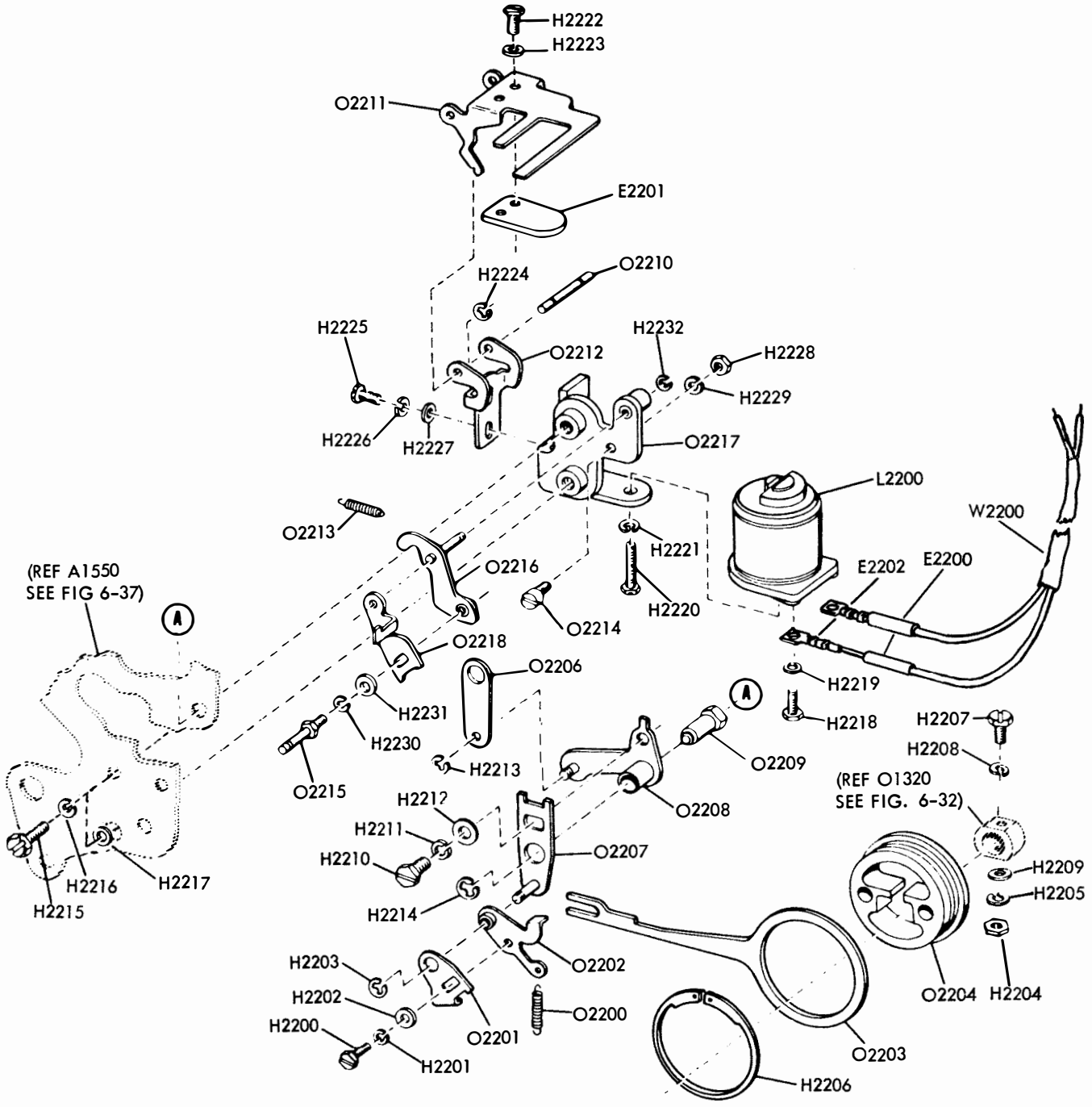


Figure 6-54. Typing Reperforator, Power Drive Back Space Mechanism

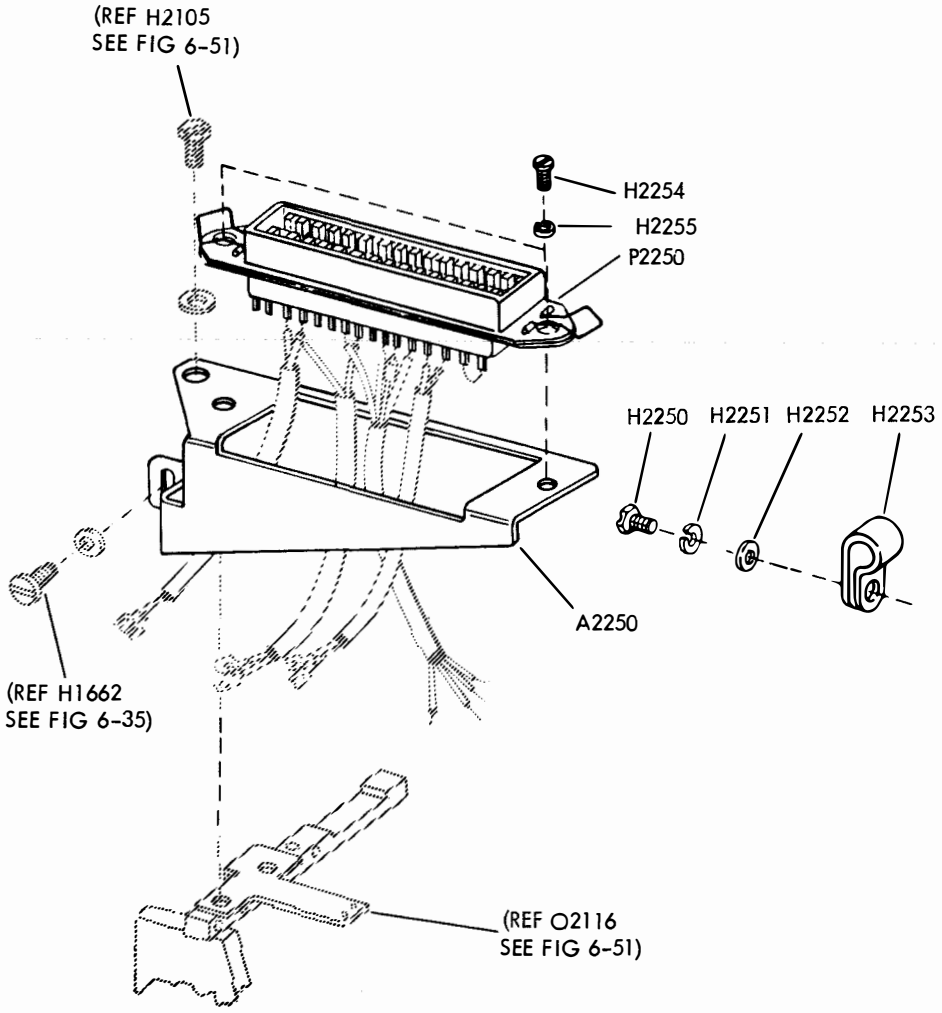


Figure 6-55. Typing Reperforator, Cables

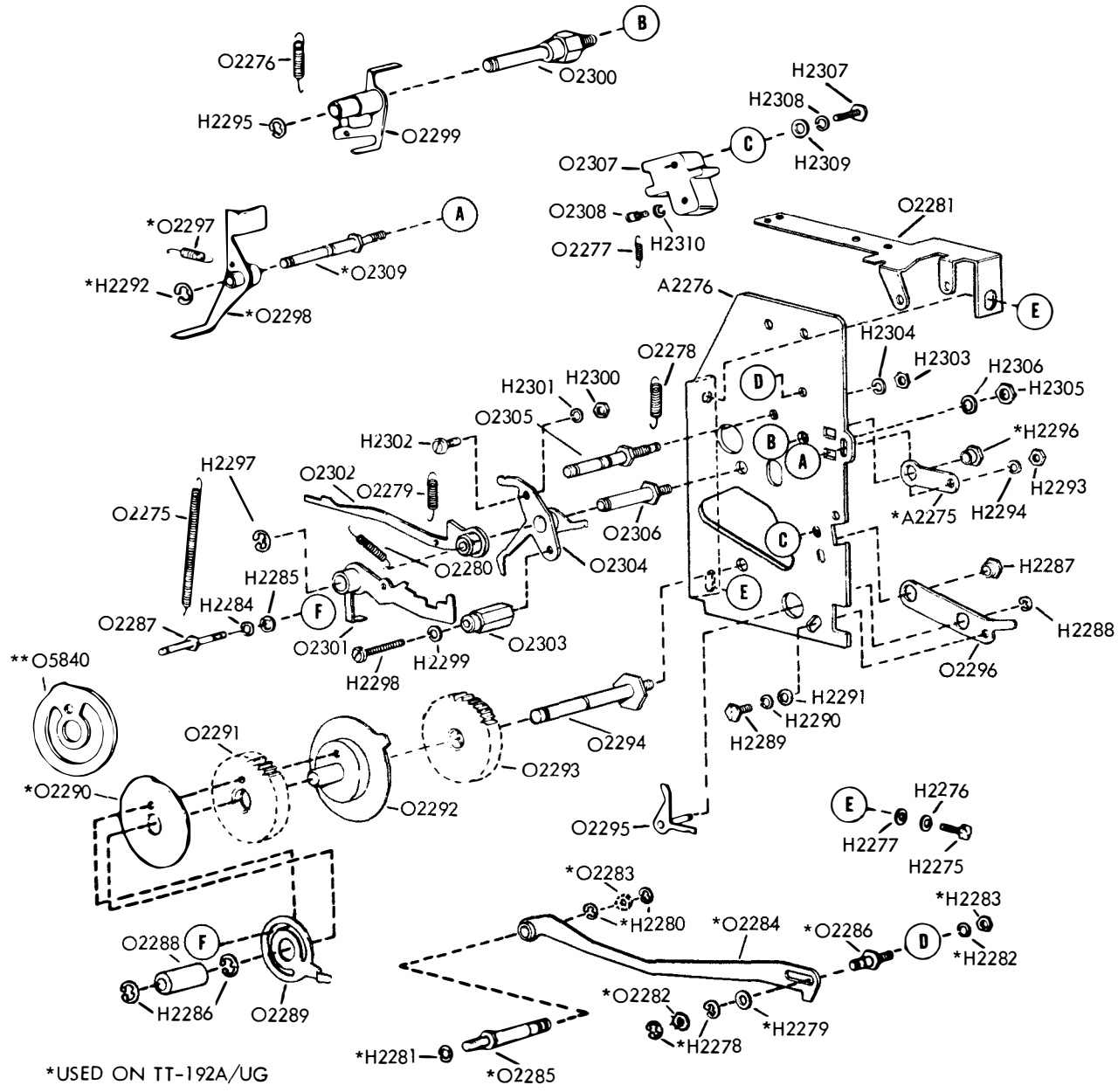
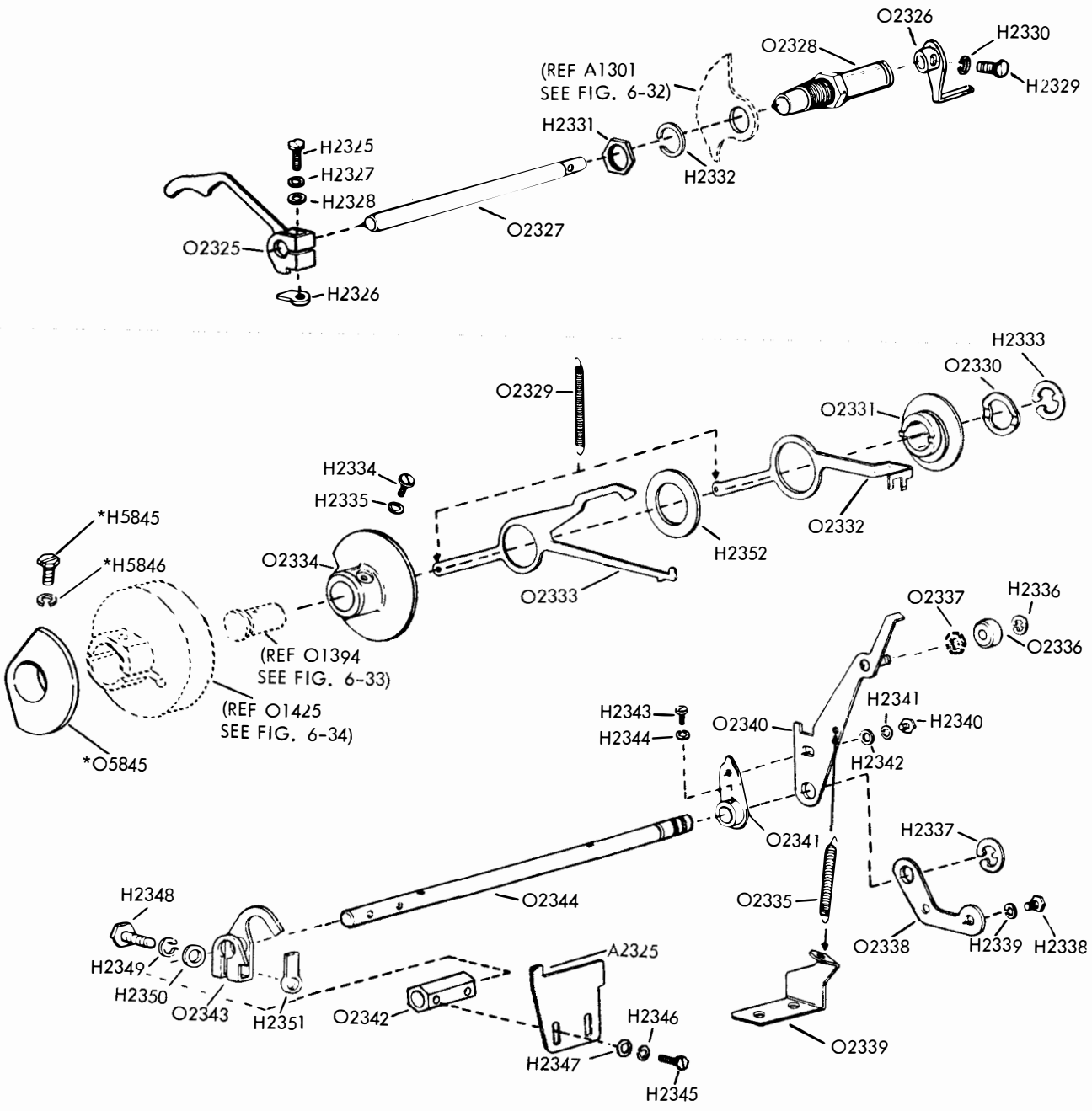


Figure 6-56. Typing Reperforator, Non-Interfering Letters Tape Feed-Out (TT-192A/UG and TT-253A/UG)



*USED ON TT-253A/UG

Figure 6-57. Typing Reperforator, Non-Interfering Letters Tape Feed-Out (TT-192A/UG and TT-253A/UG)

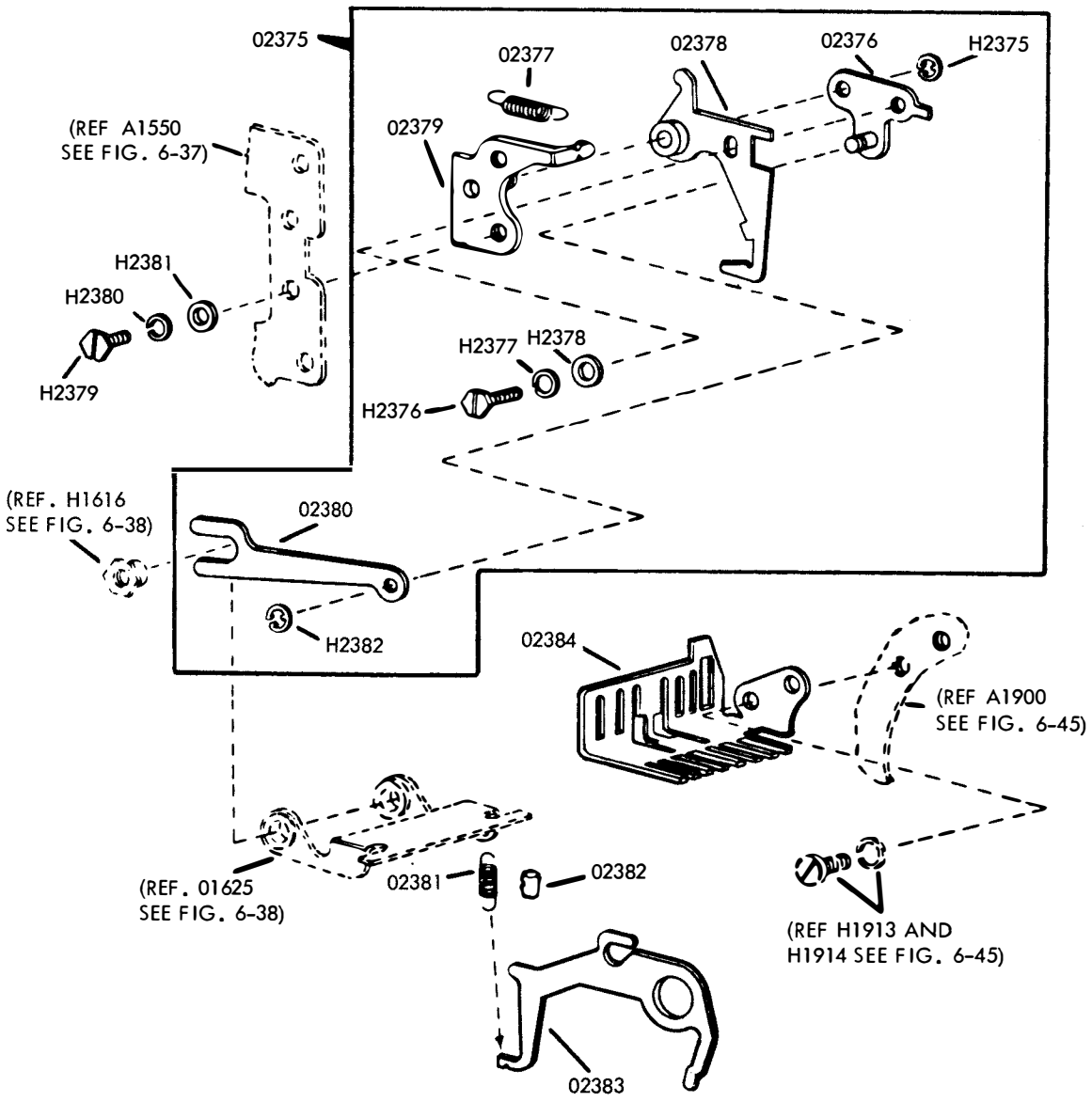


Figure 6-58. Typing Reperforator, Non-Interfering Letters Tape Feed-Out (TT-192A/UG and TT-253A/UG)

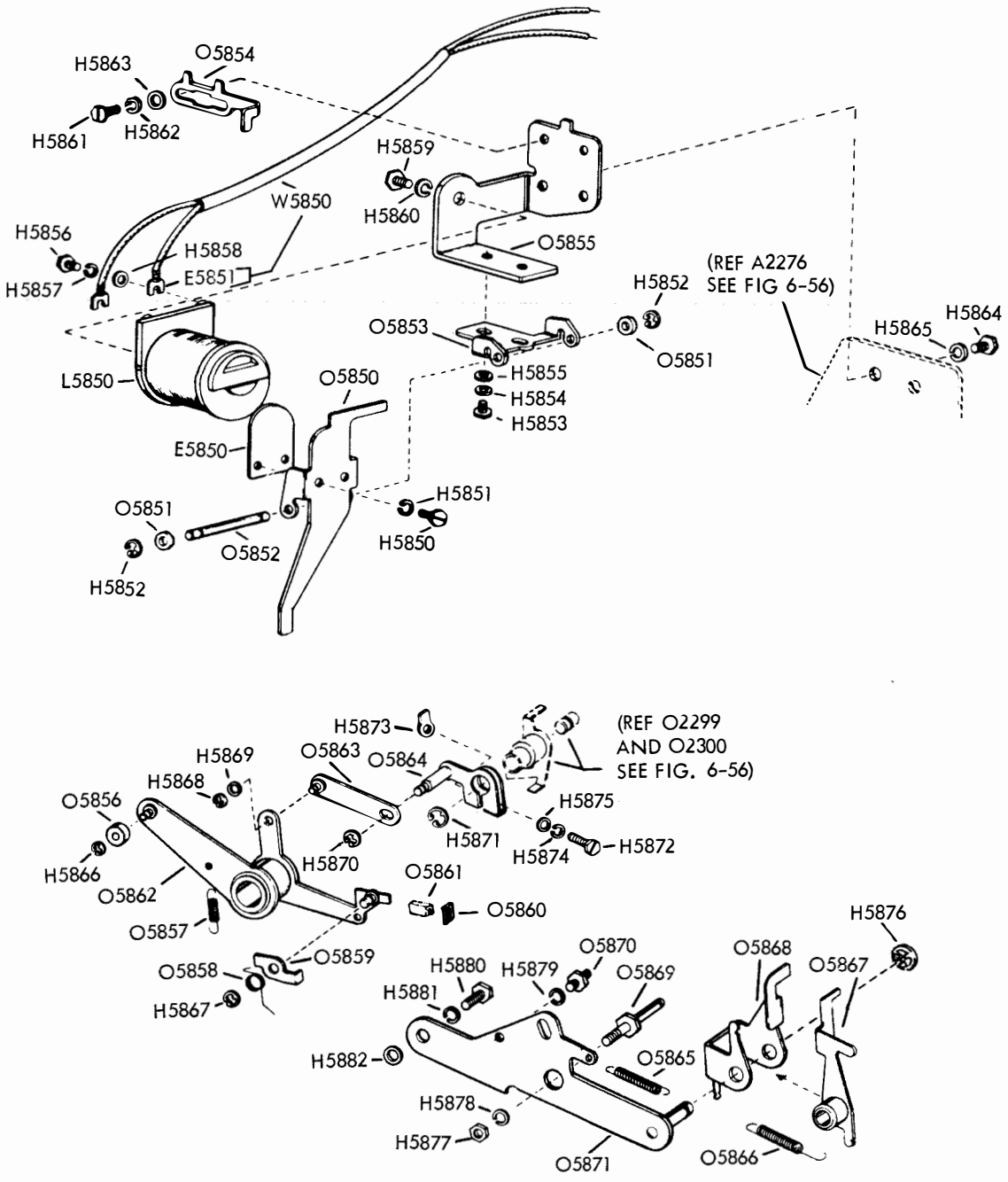


Figure 6-59. Remote Control Non-Interfering Letters Tape Feed-Out (TT-253A/UG)

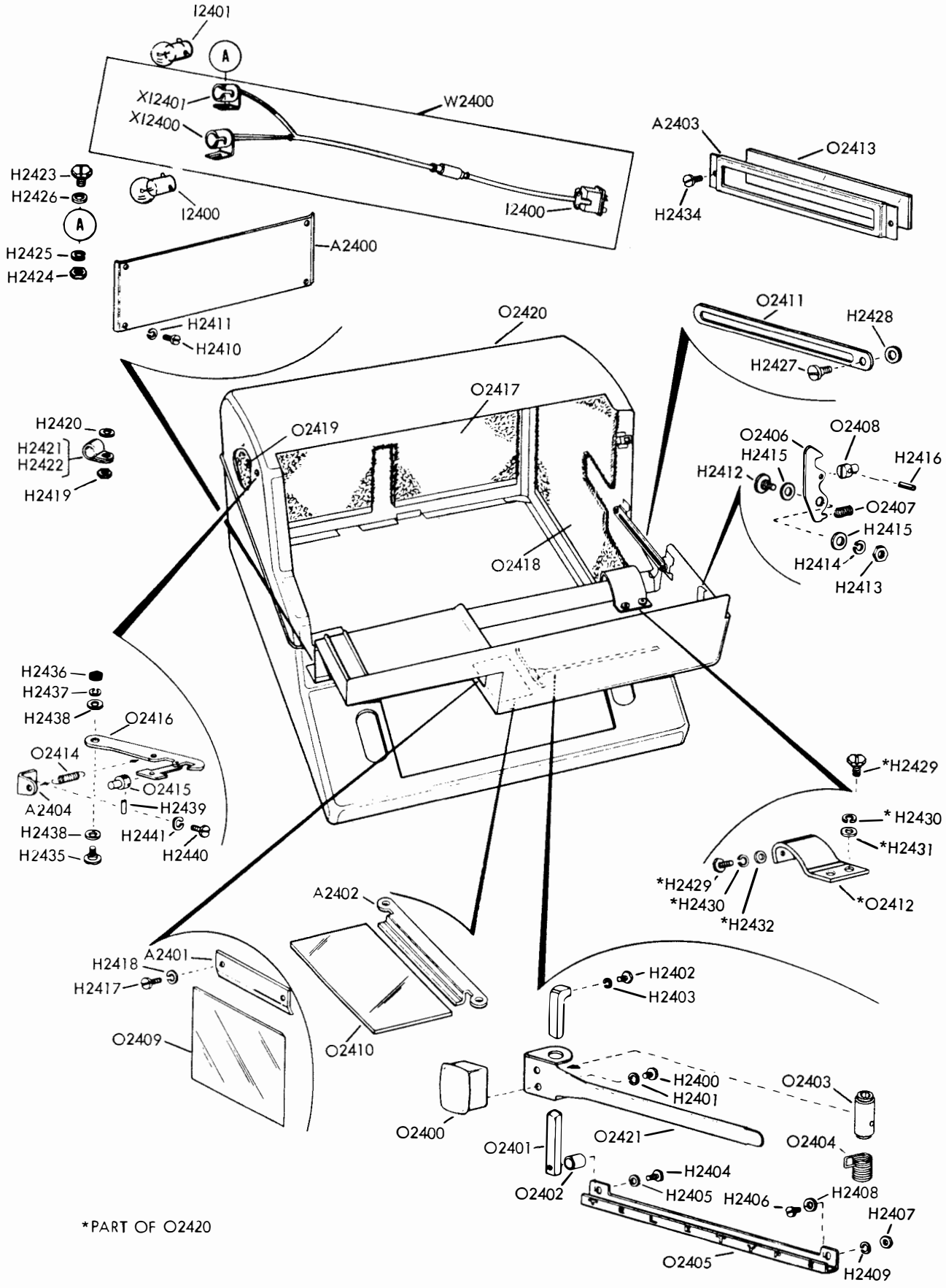


Figure 6-60. Cabinet (TT-253/UG, TT-253A/UG and TT-292/UG)

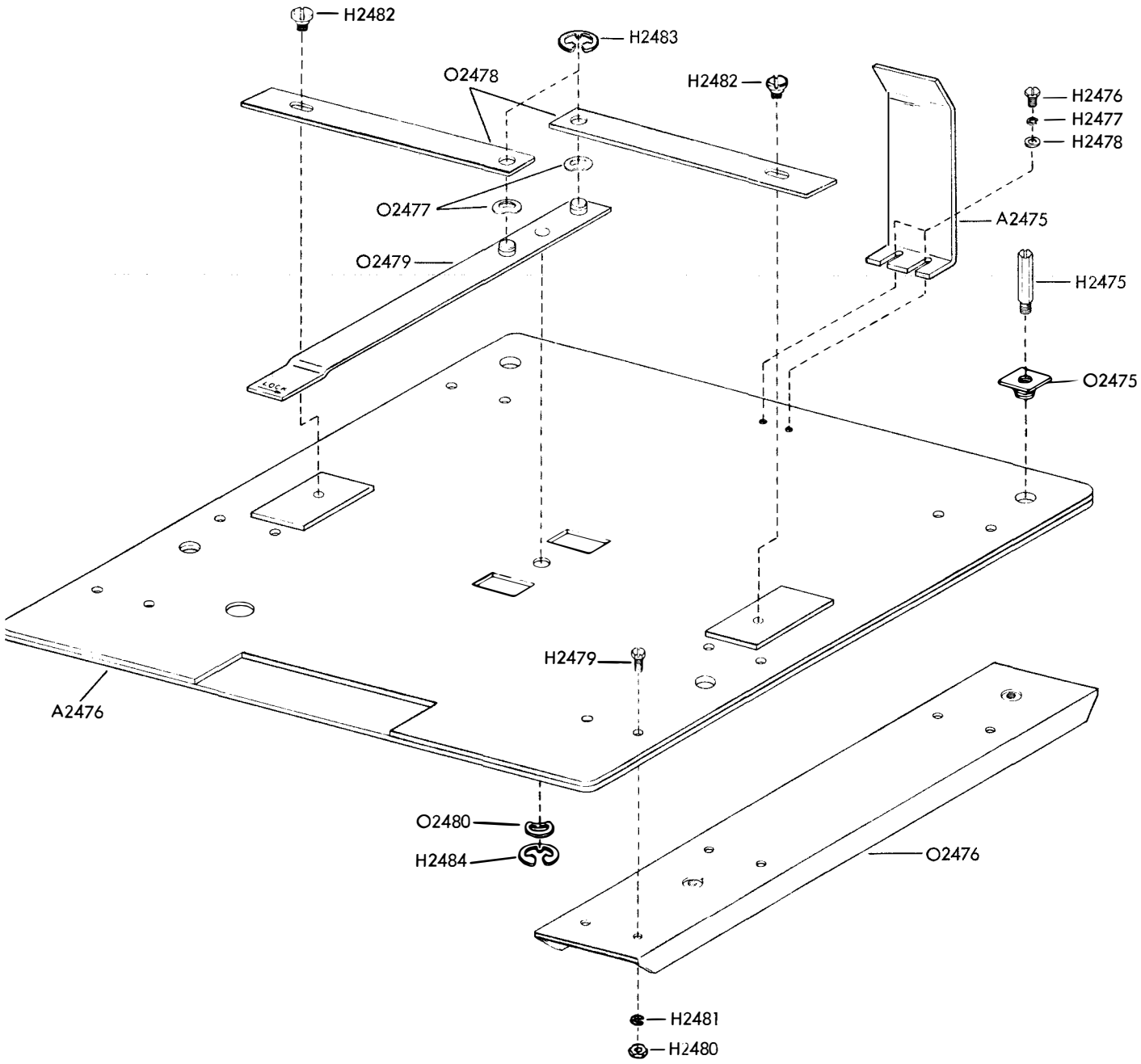


Figure 6-61. Cabinet, Sub-Base (TT-253/UG, TT-253A/UG and TT-292/UG)

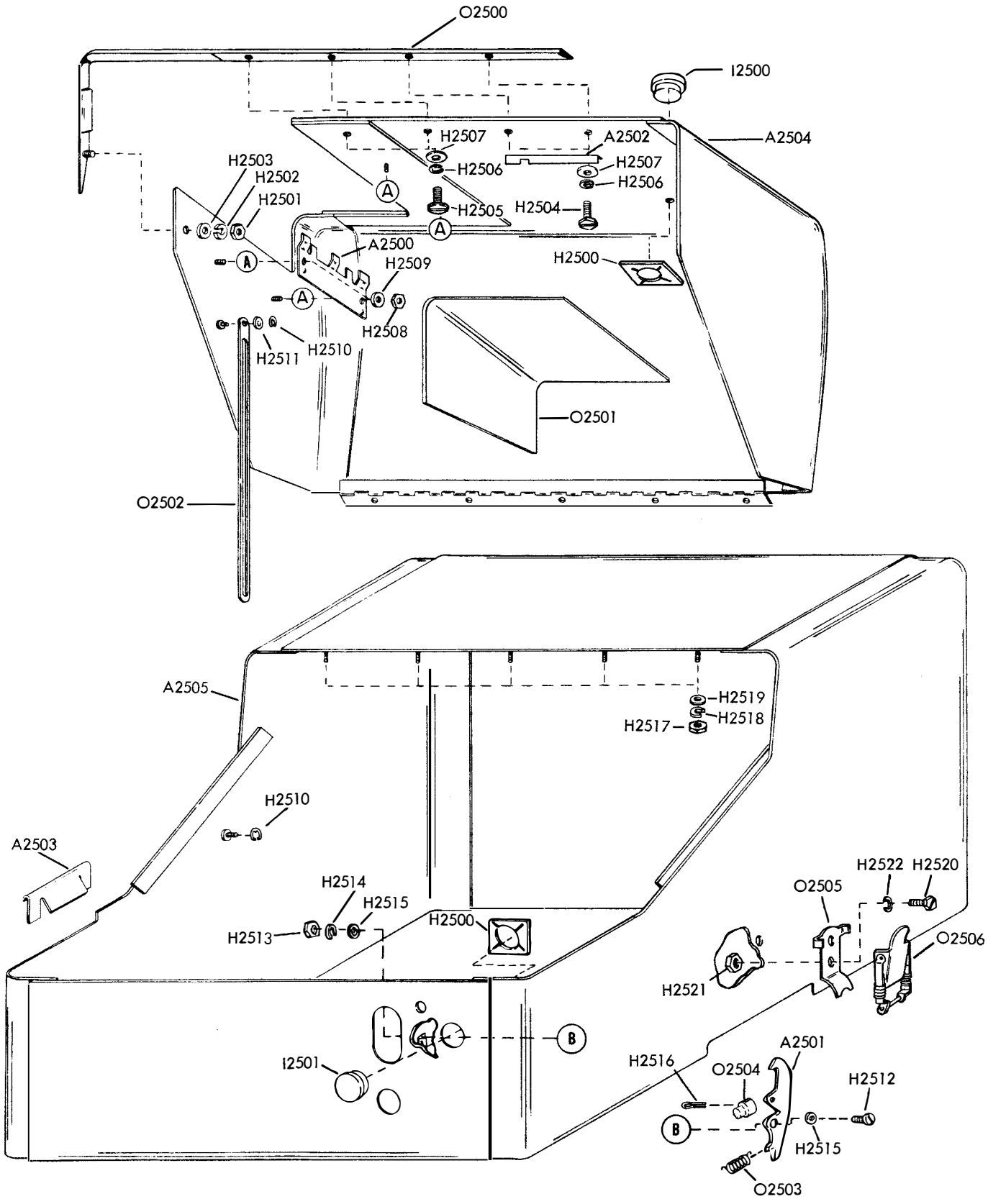


Figure 6-62. Cover (TT-192/UG and TT-274/UG)

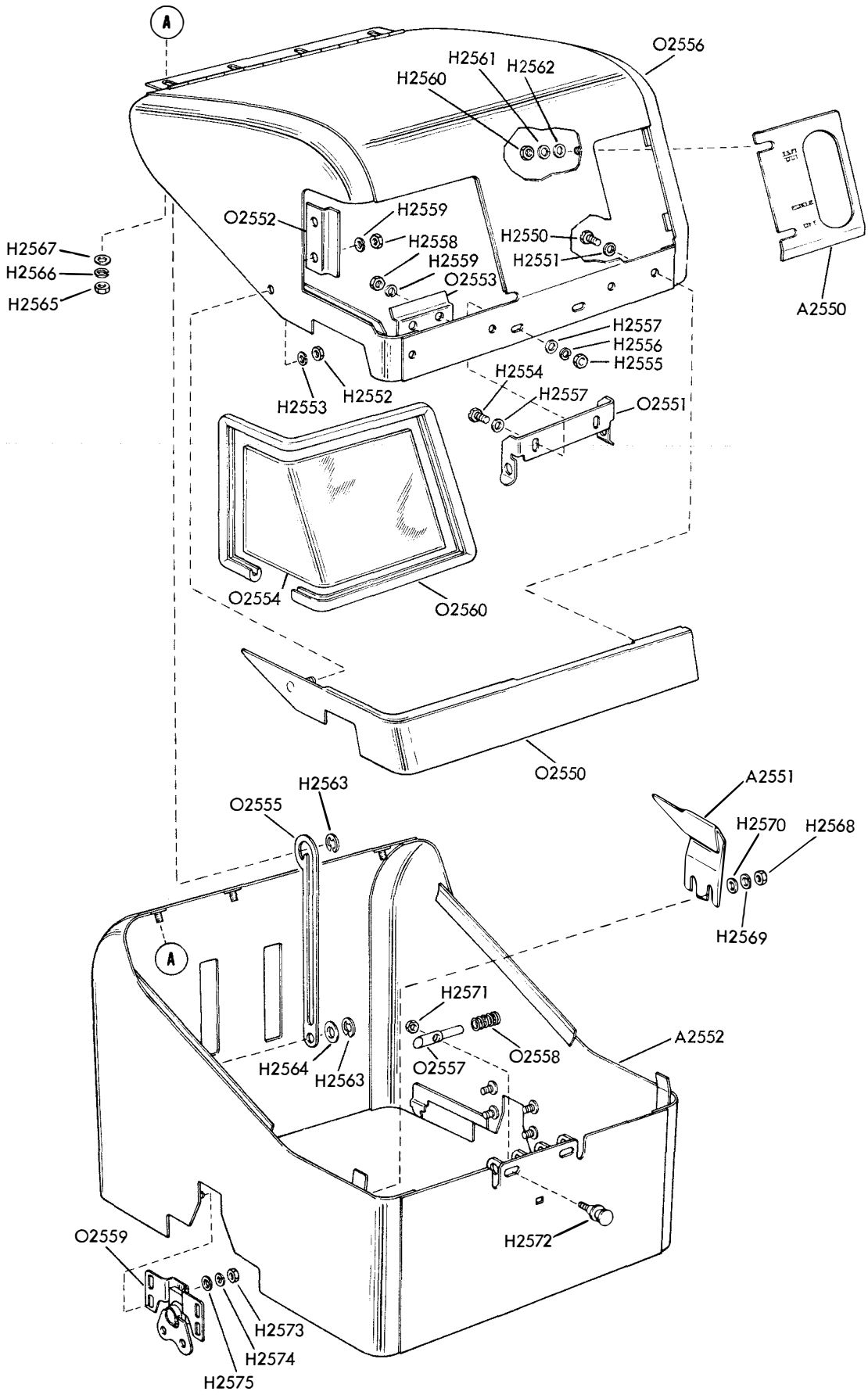


Figure 6-63. Miniaturized Cover (TT-192A/UG)

6-3. REMOVAL AND REPAIR.

a. GENERAL. — Refer to the appropriate exploded view illustration for location and visual identification of parts and detailed disassembly and reassembly features. Refer to table 7-2, List of Maintenance Parts, for nomenclature and reference information. Most maintenance, lubrication and adjustment can be accomplished by removing the major components from the equipment. Insofar as possible, further disassembly should be confined to assemblies, which can frequently be removed without disturbing adjustments, clearances and spring tensions (paragraph 6-4).

NOTE

If a part is mounted on shims, the number of shims used at each of its mounting screws should be noted at the time of removal, so that the same shim pile up can be replaced when the part is reassembled. Retaining rings are of spring steel and have a tendency to release suddenly. Hold the ring with the left hand to prevent rotation, and place the blade of a suitable screw driver in one of the slots of the retaining ring. Rotate the screw driver in the direction to increase the diameter of the retaining ring. It will come off easily without springing. Avoid loss of springs in disassembly by holding one spring loop with the left hand while gently removing the opposite loop with a spring hook or suitable probe. Do not stretch or distort springs in removal.

(1) Turn the main power switch to OFF position (down) (keyboard sets, only, rotate switch counterclockwise) before removing the cover or cabinet.

CAUTION

(Not applicable to Typing Reperforator Set TT-192A/UG.) Before disconnecting the typing reperforator (36-point) connector, depress the TAPE F.O. key or tape feed button (after shutting off the main switch). This precaution will discharge the tape feed-out capacitor harmlessly. An alternate procedure would be to short the two leads on the capacitor manually with an insulated screw driver before servicing these sets. There is no capacitor required in TT-192A/UG.

(2) Disconnect the cable connection to the external power and signal supply (16-point connector) before removing base mounted components. Since this type of connector is not provided with TT-192A/UG, if there is an external power control, shut off external power.

b. CABINET OR COVER. (See figures 6-60 through 6-63.)— The cabinet or cover of any typing reperforator set may be removed without tools and does not require removal of any attaching hardware. If minor adjustment, inspection or service attention is required, access may be through the hinged cover door. A push button latch or latches or (on TT-192A/UG) two spring loaded detent knobs will release the cover door, which can then be raised or (on keyboard sets) pulled forward to open position.

(1) TT-192/UG AND TT-274/UG. —Two spring loaded clamps fasten the cover to the lower base plate. Pull the latch levers down and away from the sides of the cover to disengage the locking strap from the lug on the base plate. Lift the cover up to remove from the base plate. Disassembly of the cover is as indicated in figure 6-62. Reassemble in the reverse order of disassembly. Be sure the reinstalled cover does not touch the upper base plate or any of the base mounted operating equipment.

(2) TT-192A/UG. — The sliding sub-base on which this equipment may be mounted can be either fully extended or removed from the bulkhead mounting for convenience in removing the cover to the miniaturized typing reperforator set. To fully extend the base, rotate the two locking knobs I1000 and I1001 (figure 6-20) and pull the upper base forward to its locked position. To remove the upper base, and typing reperforator, depress the lock at the center of the rear of the sliding base, and slide the equipment forward. Lift the cover from the base. Disassembly of the cover is as indicated in figure 6-63. Reassemble in the reverse order of disassembly.

(3) TT-253/UG (CABINET). — Unlatch the cover from the cover base plate by moving locking lever O2479 (figure 6-61 to the left. Disconnect J2400 (figure 6-60) connecting the cabinet illumination lamp cable to the base. Carefully lift the cabinet from the base. Disassembly of the cabinet is as illustrated in figure 6-60. Unless replacement of sockets or cable is indicated, do not unsolder cable leads. Remove the cable by removing cable clamps H2421 and H2422 if the hinged access door requires disassembly. Disassembly of the base plate is as indicated in figure 6-61. Prior to disassembly of the base plate, remove the base and base mounted mechanism by removing four H2475 studs, one in each corner of the base. Reassembly of the cabinet is to be in the reverse of the order of disassembly of its components. Move the latch lever to the right to lock the cabinet on the base plate. Connect J2400 to P177 (figure 6-2).

c. MOTORS. — Remove the cabinet or cover (paragraph 6-3b). Although the same motor is used on Typing Reperforator Sets TT-192/UG, TT-253/UG and TT-253A/UG, removal and replacement procedures differ for the two sets. Disassembly of the motor is the same in both instances. Removal of the governed motor requires the same procedures outlined for TT-192/UG and TT-253/UG. A miniaturized motor is used for TT-192A/UG.

(1) TT-192/UG and TT-274/UG. — Remove two screws and lock washers H882 and H883 and nut and lock washer H886 and H887 (figure 6-18) attaching the motor to mounting studs on the base. Remove adjusting plate O853 by removing two additional H882 and H883 screws and washers. Remove the variable

speed gear assembly cover A1100 by removing two screws, lock washers and flat washers H1100, H1101 and H1102 (figure 6-24). Disconnect motor leads at terminals 7 and 9 of the lower terminal board. Lift the motor from the base. Disassembly of the synchronous motor (TT-192/UG) is as illustrated in figure 6-27. Disassembly of the governed motor (TT-274/UG) is as illustrated in figures 6-30 and 6-31. Reassemble in the reverse order of disassembly. The motor leads are interchangeable at terminals 7 and 9.

(2) MINIATURIZED MOTOR (TT-192A/UG). — Remove the tape container (paragraph 6-3e(1)(b). Remove four screws, lock washers and washers H963, H964 and H965 (figure 6-19). Remove the grease retainer from the variable speed gear assembly by removing two screws, lock washers and washers H1130, H1131 and H1132 (figure 6-25). Disconnect the motor leads at terminals 8 and 9 of the upper terminal board. Lift the motor from the base. Remove the air ducts O1257 by removing screw, lock washer and washer H1252, H1253 and H1254 each duct. Disassembly of the motor is as illustrated in figure 6-28. Reassemble in the reverse order of disassembly. Be sure the air ducts are parallel and on the same side of the motor. Motor leads are reversible at terminals 8 and 9.

(3) TT-253/UG, TT-253A/UG and TT-292/UG. — Remove four screws H122 (figure 6-2) to remove the motor and the gear guard from the mounting base. Disassemble the vacuum chad chute mechanism (TT-253A/UG) as illustrated in figure 6-28. Disconnect the motor at terminals 1 and 2 of the motor terminal board, and lift the motor from the base. Disassembly of the synchronous motor (TT-253/UG and TT-253A/UG) is as illustrated in figure 6-27. Disassembly of the governed motor (TT-292/UG) is as illustrated in figures 6-30 and 6-31. Reassemble in the reverse order of disassembly, fastening the gear guard under the left rear corner of the motor. Motor leads at terminals 1 and 2 are reversible.

d. TYPING REPERFORATOR. — Remove the cabinet or cover (paragraph 6-3b). Remove the screw, lock washer and washer H1583, H1584 and H1585 figure 6-36) attaching the anchor bracket A1552 to the base. Remove three screws, lock washers and washers (TT-192/UG, H809, H810 and H811, figure 6-17; TT-192A/UG, H891, H892 and H893, (figure 6-18): TT-253/UG, H978, H979 and H980 (figure 6-19)). Disconnect the 36-point connector. Remove the timing belt (TT-192/UG and TT-192A/UG). Lift the typing reperforator from the base.

(1) RIBBON MECHANISM. (See figure 6-48.)— Remove two screws and lock washers H2021 and H2022 retaining the ribbon mechanism and typing reperforator carrying handle from the typing reperforator. Disassembly is as indicated in figure 6-44. To reassemble and install, reverse the procedure followed in disassembly. For ribbon installation, see paragraph 3-2a(1).

(2) TAPE BACK SPACE MECHANISM. (See figures 6-53 and 6-54.)

(a) Disassembly of the back space mechanism is as shown in figure 6-53.

(b) Loosen nut H2204 (figure 6-54) and pull the eccentric arm mechanism from the typing reperforator drive shaft, exercising caution to avoid bending the arm. Disassemble the power drive mechanism as shown in figure 6-54. Disconnect the back space cable leads at the magnet if removal of the magnet is indicated.

(c) To reassemble the back space mechanism reverse the procedures followed in disassembly of the mechanism and of the power drive, in that order. The magnet leads are reversible.

(3) SELECTOR CAM-CLUTCH. (See figure 6-34.)

(a) Lift the push lever reset bail cam follower O1900 (figure 6-45) from its cam and latch it in its raised position on the push lever guide by pushing it toward the left. Lift the selector levers and the marking lock lever from their cams by moving the marking lock lever forward until the armature drops behind it.

(b) Remove screw and lock washer H1425 and H1426 (figure 6-34) which mount the selector clutch drum O1425, and position the cam-clutch so that the stop lug on disk O1433 is in the uppermost position.

(c) Hold start lever O1909 (figure 6-45) and spacing lock lever O1910 away from their cams with the thumb and forefinger of the left hand. Withdraw the cam-clutch assembly by pulling forward while rocking it back and forth slightly.

(d) Disassembly of the selector cam clutch is as shown in figure 6-34.

(e) To replace the cam-clutch assembly, reverse the procedure used in removing it, except, as the cam-clutch approaches its fully installed position, move the trip shaft lever and the cam-clutch latch lever so that they ride on their respective cams. Restore the push lever reset bail and the armature to their operating position.

(4) SELECTOR MECHANISM. (See figures 6-44 and 6-45.) Remove the tape back space mechanism (paragraph 6-3d(2)) and the selector cam-clutch (paragraph 6-3d(3)).

(a) Remove the felt wick O1922 (figure 6-45). Remove the screw and lock washer which secures the selector unit and the tape guide chute O1924 to the front plate of the typing reperforator. It may at this time be convenient to screw H1919 and nut, lock washer and washer H1920, H1921 and H1922 to remove the tape chute, but this will also remove the cable clamp attaching typing reperforator wiring to the mechanism.

(b) Disconnect leads to the selector magnets.

(c) Remove the nut and lock washer H1915 and H1916 and lift the selector mechanism from the typing reperforator casting.

(d) Disassembly of the selector is as shown in figures 6-44 and 6-45.

(e) To reassemble the selector mechanism, reverse the procedure followed in disassembly and removal.

(5) SELECTOR MAGNET ASSEMBLY. (See figure 6-46.)— Remove the selector assembly, disconnecting leads to the selector magnets.

(a) Remove two screws H1883 and H1887 (figure 6-44), lock washers H1884 and H1888 and washer H1889 and nut H1885 and lockwasher H1886 attaching the range finder to the selector. Remove the range finder.

(b) Remove magnet assembly mounting screws, lock washers and washers H1961 through H1966 (figure 6-46) and remove the assembly.

(c) Disassembly of the magnet assembly is shown in figure 6-46.

(d) To replace the magnet assembly, reverse the procedure used in removing it.

(6) PUNCH ASSEMBLY. (See figures 6-36 through 6-38.) — Disengage the main drive link spring O1451 (figure 6-35) from the link O1463 and separate the link from the rocker arm O1603 (figure 6-38). Remove screw, lock washer and washer H1982, H1984 and H1985 (figure 6-47). Remove the back space mechanism (paragraph 6-3d(2)). Remove screw, lock washer and washer H1848, H1849 and H1850 (figure 6-43). Remove two screws and lock washers H1342 and H1343 retaining the perforator to the main frame. Carefully pull the perforating mechanism straight forward, to clear the bell cranks at the right and the printing hammer at the top. In following illustrated disassembly procedures, note indicated differences (figures 6-36 through 6-38) in parts applicable only to fully perforated tape punches (TT-253A/UG) and chadless punches (all other sets).

(a) FRONT PLATE MECHANISM. (See figure 6-37.)

1. Remove screw H1576, stud H1553 and lock washers H1577 and H1554. Remove post 2209 (figure 6-54) and lock washer H1564 (figure 6-37). Remove nut, lock washer and washer H1560, H1561 and H1562. Remove post O1572 and lock washer H1589 and arm O1573 (except that TT-192A/UG utilizes screw H1588 instead of post and arm).

2. Disconnect springs O1561 and O1562, and remove the front plate and attached mechanisms. Disassembly is as shown in figure 6-37.

3. To reassemble and install the front plate mechanisms, reverse the order of disassembly.

(b) REAR PLATE MECHANISMS. (See figure 6-36.)— Remove the front plate mechanism (paragraph 6-3d(6)(a)).

1. Remove screws, lock washers and washers H1520 through H1522 and H1526 through H1528. Remove screw H1531, lock washers H1532 and H1535 and washers H1533 and H1536 and nut H1534, and separate the rear plate from the main typing reperforator plate A1303.

2. Disassembly of the rear plate mechanism and the punch block, O1508, is as indicated in figure 6-36, except refer also to figure 6-58, non-interfering automatic letters tape feed-out, in disassembly of TT-192A/UG sets.

3. Reassemble in the reverse order of disassembly.

(c) TRANSFER MECHANISM (See figure 6-47.)— Remove the punch assembly (paragraph 6-3d(6)). Remove screw, lock washer and washer H1983, H1984 and H1985 to separate the transfer mechanism from the main perforator plate. Disassembly of the transfer mechanism is as indicated in figure 6-47. Reassemble in the reverse of the order of disassembly.

(d) PUNCH REASSEMBLY. — To reinstall the punch mechanism, follow the procedure used in removing and disassembling the mechanisms. Be sure the transfer levers are properly engaged with the punch bars and with the bell cranks.

(7) TYPING MECHANISM.

(a) Remove the ribbon mechanism, tape back space mechanism, selector mechanism and punch assembly (paragraphs 6-3d(1) through 6-3d(5)).

(b) Remove the operating blade O1472 (figure 6-35) by removing two screws, lock washers and washers H1469, H1470 and H1471 and shims O1468.

(c) Remove retaining ring H2054 and disconnect the printing trip link O2041 (figure 6-49). Disconnect the oscillating drive link O2033 by removing screw, lock washer and washer H1450, H1452 and H1453 and eccentric O1452 (figure 6-35).

(d) Remove springs 2039 (figure 6-49) and O1308 (figure 6-32) from the accelerator O1705 (figure 6-40) and the lifter O2029 (figur6-49).

(e) Remove screw H2037 and lock washer H2038 and detach lifter plate A2025 from bar A1300 (figure 6-32).

(f) Remove one screw and lock washer H1817 and H1818 from post O1820 (figure 6-42). Screw, lock washer H1848, H1849 and H1850 are previously detached in removal of the punch mechanism, and the front plate of the function mechanism is free for removal.

(g) Remove retaining ring H1719 to detach screw and lock washer H1717 and H1718 and eccentric shaft O1714 and gear O1713 (figure 6-40).

(h) Remove three screws, lock washers and washers H1667, H1668 and H1689 retaining the front plate A1650 to the frame (figure 6-39). Remove the front plate and attached typing mechanisms from the frame as illustrated in figure 6-39.

(i) To remount the typing mechanism, reverse the procedure used in removing and disassembling it.

(8) FUNCTION BOX MECHANISM. (See figure 6-43.)— Remove the typing mechanism (paragraph 6-3d(7)) to remove the function box. Parts of the function box, including the signal bell switch, can be disassembled as indicated in figure 6-43 without removal from the equipment.

(a) Remove two screws, lock washers and washers H1828, H1830 and H1832, and remove switch bracket A1825 from the front function plate O1859.

(b) Disassemble switch S1825 to disconnect leads from cable W1825 to remove the function box from the reperforator.

(c) Remove screw, lock washer and two washers H1843, H1844 and H1845 attaching the function box to rear plate O1858 and spring bracket O1828 to the front mechanism. Disassembly of the function box is as shown in figure 6-43.

(d) To reassemble and install the function box, reverse the procedure followed in disassembly and removal.

(9) AXIAL PLATE ASSEMBLY. (See figures 6-41 and 6-42.)— Remove the typing mechanism from the reperforator (paragraph 6-3d(7)).

(a) Remove spring O2031 (figure 6-49) from the connecting drive link O2033. Remove retaining ring H2039 to detach the connecting drive link.

(b) Remove retaining H1767 (figure 6-41) to detach the ribbon oscillating lever O1768.

(c) Remove two screws and lock washers H1817 and H1818 (figure 6-42) attaching the axial plate A1750 (figure 6-41) to the front plate A1650 (figure 6-39) in two places. Remove the axial plate assembly.

(d) Disassembly of the axial plate assembly is as illustrated in figures 6-41 and 6-42.

(e) To reassemble and remount the axial plate assembly, reverse the procedure used in disassembly. The rearmost tooth space on sector O1754 (figure 6-41) must mesh with the rearmost tooth on the typewheel shaft rack O1729 (figure 6-40), and the forward tooth on the sector must mesh with the second tooth space on the shaft. There is an extra tooth space on the forward portion of the shaft's rack.

(10) FRONT PLATE ASSEMBLY. (See figures 6-39 and 6-40.)— Remove the typing mechanism, the function box and the axial plate assembly (paragraphs 6-3d(7) through 6-3d(9)). Disassemble the remaining components of the front plate assembly as illustrated in figures 6-39 and 6-40. To reassemble, reverse the order of disassembly.

(11) ROCKER BAIL ASSEMBLY. (See figure 6-35.)— Remove the typing mechanism from the typing reperforator (paragraph 6-3d(7)).

(a) Disconnect the printing drive link O2035 (figure 6-49) by removing retaining ring H2049.

(b) Remove nut, lock washer, washer, felt washer, bushing, washer and screw H1472, H1473, H1474 O1469, O1470, H1475 and H1476 from the operating blade mounting bail O1471 (figure 6-35).

(c) Remove nut H1458 and lock washer H1459, and remove the rocker bail shaft O1458. Remove the rocker bail. Disassembly is as shown in figure 6-35.

(d) To replace the rocker bail, reverse the procedure used to remove it. Replace guide O1459 under lock washer H1459 in reassembly.

(12) BLANK TAPE FEED-OUT (TT-192/UG, TT-253/UG, TT-274/UG and TT-292/UG). (See figures 6-50, 6-51 and 6-52.)

(a) Remove power drive backspace mechanism (paragraph 6-3d(2)(b)). Remove spring O2076 from drive arm O2077 (figure 6-50). Loosen the drive arm set screw H2079. Remove retaining rings H2077 and H2078, and remove the shaft from the front of the typing reperforator.

(b) Disassemble the perforator drive mechanism as illustrated in figure 6-50, and proceed to main shaft disassembly paragraph 6-3d(14) for further disassembly.

(c) Disconnect spring O2100 (figure 6-51) from spring post O2159 (figure 6-52). Remove nut and lock washer H2165 and H2166 retaining the spring post and screw, lock washer and washer H2160, H2161 and H2162 retaining the switch assembly and magnet. Disassembly of these assemblies is as shown in figure 6-52.

(d) Remove two screws and lock washers H2134 and H2135 and remove the non-interfering blank tape feed-out mechanism from the typing reperforator. Disassemble as shown in figure 6-51.

(e) Reassemble after reinstallation of main shaft in the reverse of the order of disassembly.

(13) LETTERS TAPE FEED-OUT (TT-192A/UG and TT-253A/UG.) (See figures 6-56 through 6-58.) — The automatic letters tape feed-out peculiar to Typing Reperforator Sets TT-192A/UG is partially disassembled in disassembly of the punch mechanism

(paragraph 6-3d(6)(b)(2). For disassembly of parts of the mechanism on the typing reperforator main shaft, proceed to paragraph 6-3d(14). For disassembly of remote control feature (TT-253A/UG) refer to figure 6-59.

(a) Remove retaining ring H2337 and loosen set screw H2343 in O2341 (figure 6-57) and pull the drive shaft from the front of the mechanism. Disassemble drive components as shown in figure 6-57, 6-58 or 6-59.

(b) Remove two screws, lock washers and washers H2275, H2276 and H2277 and remove the feed-out mechanism from the reperforator. Disassemble as shown in figure 6-56.

(c) Reassemble the letters feed-out mechanism in TT-192A/UG sets only and the remote control letters tape feed-out in TT-253A/UG sets only in the reverse order of disassembly.

(14) MAIN SHAFT. (See figures 6-33, 6-34, 6-50 (except on TT-192A/UG and 6-57 (TT-192A/UG).) — Remove the selector mechanism and selector cam-clutch (paragraphs 6-3d(3) and 6-3d(4)) and the tape feed-out mechanism (paragraph 6-3d(13) or 6-3d(14)).

(a) Remove spring O1301 from the function clutch latch lever O1332 (figure 6-32). Remove retaining ring H1479 (figure 6-35), flat washers H1480 and H1481 and spring washer H1474 from the front end of the main shaft O1394 (figure 6-33). Remove screw and lock washer H1482 and H1483 retaining the rear bearing clamp O1476 (figure 6-35).

(b) Remove screw H1388 and lock washer H1389 from the function clutch drum O1380 (figure 6-33)

(c) Not applicable to TT-192A/UG.) Remove screw H2095 from eccentric O2093 (figure 6-50). Remove retaining ring H2094 from the main shaft.

(d) (TT-192A/UG.) Remove screw and lock washer H2334 and H2335 from cam O2334 (figure 6-57). Remove retaining ring H2333 from the main shaft.

(e) Carefully withdraw the main shaft and rear bearing out of the front bearing (from the rear), retaining the clutch and cam and feed-out components in the order of their disassembly, as indicated in figure 6-33 and figures 6-50 or 6-57. Remove the gear and hub from the rear of the shaft and remove the rear bearing.

(f) To replace the main shaft, reverse the procedure used to remove it. When inserting the shaft into the cam-clutch, hold the latter firmly so that the drum is not pushed off the clutch, and compress the clutch and cam disk together, so the holes in the drum and the clutch bearings are aligned.

(15) TYPING REPERFORATOR REASSEMBLY. — To reassemble and install the typing reperforator mechanism, reverse the procedure followed in removal. Attach the anchor bracket A1552 (figure 6-37) to the base before tightening screw H1580, which attaches the bracket to the typing reperforator.

e. BASE. — Remove the cabinet or cover (paragraph 6-3b), motor (paragraph 6-3c) and typing reperforator (paragraph 6-3d). Remove the upper plate of the sliding sub-base (TT-192A/UG, paragraph 6-3b(2)) or the cabinet base (Keyboard sets, paragraph 6-3b(3)) by removing hardware at the four corners of the base. The hardware is attached from the bottom on TT-192A/UG and from the top on the keyboard sets. Disassembly of the sliding sub-base is as indicated in figure 6-20. Disassembly of the cabinet base is covered in figure 6-61.

(1) TAPE CONTAINER. (See figures 6-21 through 6-23.) — Remove tape spool from container. The tape container may be removed from the base and laid aside within the limits of the length of the tape-out switch cables. For complete disassembly, remove the tape-out switch or switches. Unsolder switch leads only as required for switch replacement.

(a) TT-192/UG. (See figure 6-22.) — Loosen two screws H899 (figure 6-18) attaching the tape container to the lower base and slide the tape container free of the base. Disassemble as indicated in figure 6-22. Reassemble in the reverse order of disassembly.

(b) TT-192A/UG. (See figure 6-23.) — Remove the screws and washers attaching the tape container to the control panel bracket and the motor mount bracket respectively. Disassembly is as indicated in figure 6-23. Reassemble in the reverse order of disassembly.

(c) KEYBOARD SETS. (See figure 6-21.) Loosen screw H1025 attaching the tape container to the base mounted casting and slide the tape container free of the base. Disconnect J1025 from receptacle P176 (figure 6-2). Disassembly is as indicated in figure 6-21. Reassembly is in the reverse order of disassembly. There is only one tape-out switch on these typing reperforator sets. Reconnect J1025.

(2) INTERMEDIATE GEAR MECHANISM. — Remove the gear mechanisms from the base. (TT-192/UG and TT-274/UG) — Remove four screws, lock washers and washers H1111, H1112 and H1113 (figure 6-24). (TT-192/UG) — Remove four screws, H1147 and H1148, four lock washers and washers H1149 and H1150 (figure 6-25). (TT-253/UG, TT-253A/UG and TT-292) — Remove the base casting by removing four screws, washers and lock washers H812, H813, and H814 (figure 6-17), and remove the keyboard intermediate gear mechanism (figure 6-5) by removing three screws, H250 and H252, and three lock washers H251 and H253.

(a) VARIABLE SPEED MECHANISM (TT-192/UG, TT-192A/UG and TT-274/UG). (See figures 6-24 through 6-26.) — Although identical in function

and similar in design, minor differences in disassembly features are indicated in the two variable speed mechanisms. Refer to figure 6-24 for features peculiar to disassembly of Typing Reperforator Sets TT-192/UG and TT-274/UG. Refer to figure 6-25 for features peculiar to disassembly of Typing Reperforator Set TT-192A/UG. Disassembly of common features, except as noted in the illustration, will be as indicated in figure 6-26.

(b) TT-253/UG, TT-253A/UG and TT-292/UG. (See figures 6-5 and 6-17.) — Disassemble the keyboard intermediate gear assembly as indicated in figure 6-5. Disassemble the intermediate gear casting assembly as indicated in figure 6-17.

(3) BASE (TT-192/UG AND TT-274/UG). (See figure 6-18.) — Disconnect cable leads at terminal boards TB850 and TB851, detaching two screws and lock washers H859 and H860 and insulators E855 and E859 for access to terminals. Remove screw, lock washer and washer H867, H868 and H869 to detach cable clamp H870 from the base. Remove nut H852 (part of switch S850) to remove the switch from its bracket A851. Remove nut H879 to remove the tape feed-out switch S851 from the same bracket. Remove two screws and lock washers H850 and H851 to disassemble P851 from bracket A850. Compress the sides of cable clamp O852 to remove the keeper, O850 and separate the cable from the base. Remove screw and lock washer H875 and H878 to separate the cable from the base. Remove screw and lock washer H875 and H878 to separate the tape-out lamp socket from its bracket

(a) Disassemble the base as shown in figure 6-18.

(b) Reassemble the base in the reverse order of disassembly. Refer to wiring diagram figure 6-171 in reassembly of the cable. If external shock mounts are to be used, immobilize the four base shock mounts O860 by assembling screw and lock washer H908 and H909 through the upper base plate A854 and into the top threads of the four snubbers, O859. O859 in turn is fastened to the lower plate A855 in its normal, unoperated fashion, by screw and lock washer H902 and H903.

(4) MINIATURIZED BASE (TT-192A/UG). (See figures 6-19 and 6-20.) — Remove two base cables W925 and W926 (figure 6-19) by disconnecting terminal board leads (paragraph 6-3e(3)) and removing cable clamps H938 and H939, which are attached by a nut, lock washer and washer H935, H936 and H937 to stud H929 on the terminal board bracket A925.

(a) Disassembly of the base is as shown in figure 6-19.

(b) Disassembly of the sliding sub-base (when applicable) is as shown in figure 6-20.

(c) Reassemble in the reverse of the order of disassembly. Refer to the wiring diagram figure 6-171 in reassembly of the cables. If external shock mounts are to be used, immobilize the four base shock mounts by turning four compression nuts H974 counterclockwise to compress O930 until the weight of the upper base plate A933 is removed from the four shock mounts O928.

(5) KEYBOARD-BASE (TT-253/UG, TT-253A/UG and TT-292/UG). (See figures 6-1 through 6-16.) — Remove the tape container and intermediate gear mechanisms (paragraph 6-3e(2) and 6-3e(3)). Remove electrical components only to the extent required for their repair or replacement or for the removal of mechanical parts to which the components are attached. For complete disassembly of the keyboard base, remove electrical components and cables W175 and W176 as indicated in paragraph 6-3e(5)(a).

(a) ELECTRICAL COMPONENTS. — For complete disassembly of the keyboard-base, remove individual electrical components as indicated, without disassembling soldered components from their cables.

1. Refer to figure 6-1 and disassemble the 16-point connector P100, the tape feed-out switch S100, the motor terminal board TB100, disconnecting the leads, and cable clamps H132 (two) and H127.

2. Refer to figure 6-2 and disassemble the transformer T175, the link break switch S175, receptacles P176 and P177 and terminal boards TB175 (upper), TB176 (lower) and TB177 (rear, auxiliary), disconnecting the leads.

3. Refer to figure 6-6 and disassemble the main power switch S275 and the pilot lamp, tape-out lamp and end-of-line lamp sockets XI176, XI179 and XI181.

4. Refer to figure 6-14 and remove the signal generator leads at E677 and E679. (TT-253A/UG only. Disassemble the synchronous pulse mechanism contacts and magnet as illustrated in figure 6-3.)

5. Remove the character counter (paragraphs 6-3e(4)(6)). Refer to figure 6-15 and remove two screws, lock washers and washers H738, H739 and H740 to remove switch S700 from the character counter mechanism.

6. Refer to figure 6-16 and remove tape back space switch leads E751 on cable W750. Remove cable W750.

7. Remove cable assemblies W176 and W177 (figure 6-2).

8. Reassemble in the reverse order of disassembly. Carefully check all soldered connections. Push insulating sleeves over the bare terminals they are designed to protect.

(b) CHARACTER COUNTER. (See figure 6-15.) — Removal of the character counter mechanism is desirable prior to removing the signal generator and

is a prerequisite to servicing the code bar mechanism. If service to the character counter is not required, it may be removed to the distance allowed by the end-of-line switch leads. Do not unsolder leads unless switch S401 is to be removed.

1. To detach the character counter from the keyboard, remove two screws, lock washers and washers H700, H701 and H702 and lift the mechanism from the keyboard as far as permitted by the end-of-line switch leads. One of the mounting screws is located beneath these lead wires. It is accessible by inserting a screw driver between A700 and A701.

WARNING

In removing the forward mounting screw, use an insulated screw driver. The screw is located between the soldered terminals of switch S401, which would be live at any time the main power is on. Exercise caution to avoid damage to the insulating sleeves on these leads or to the adjacent wires leading to the back space switch.

2. If it is necessary to remove the character counter after it has been detached from the keyboard, remove two screws, lock washers and washers H738, H739 and H740 to remove switch S700 from the switch bracket A701. Do not remove the bracket.

3. Disassembly is as shown in figure 6-15.

4. To reassemble and install, reverse the procedure used in disassembly. Note that the forks on O711 and O713 engage pins on the character counter code bars O419 and O418, respectively (figure 6-7).

(c) SIGNAL GENERATOR. (See figures 6-10 through 6-14.) — It is convenient but not essential to remove the character counter (paragraph 6-3e(5)(a)) prior to removal of the signal generator. Remove two screws and lock washers H500 and H501 from the front of frame A501 (figure 6-10). Remove screw and lock washer H502 and H503 at the rear of the frame. Lift the frame carefully from the keyboard, tilting the left edge first to clear the code bar extensions, and moving the entire assembly to the right to disengage the non-repeat lever O633 (figure 6-13). It is possible to manipulate the frame and its components considerably within the limits of the leads to the signal generator. If the assembly is to be removed from the keyboard, proceed to removal of the contact box.

CAUTION

If the non-repeat lever O633 is pulled down approximately 90 degrees from normal position, its spring might be stretched beyond elastic limits, resulting in malfunction of the assembly.

1. CONTACT BOX. (See figure 6-14.) — Remove two screws, lock washers and washers H690, H691 and H692 and lift the contact box assembly K675 and bracket A678 from the signal generator. To remove the contact box, remove nut H675 and lock washer H676 and remove cover A675. Tag and disconnect the leads to terminals E677 and E679, and remove the rubber grommet and cable from the side of the box. Disassembly is as indicated in figure 6-14.

2. SHAFT AND CAM-CLUTCH. (See figures 6-10 and 6-11.) — Release springs O504 on stop levers O505 and O507 (figure 6-10). Remove two nuts and lock washers H506 and H507 retaining shaft O563 (figure 6-11) to A501. Remove two screws and lock washers H508 and H509 to remove the rear shaft mounting plate A500 (figure 6-10). Remove shaft O563 by rotating until the clutch cams clear the transfer levers. Remove the shaft, clutch and cam mechanisms by compressing shoe lever O560 against the stop lug on the clutch disk O557 and sliding the mechanisms from the shaft. Disassemble as indicated in figure 6-11.

3. FRONT AND REAR PLATE MECHANISMS. (See figures 6-12 and 6-13.) — After removal of the shaft and cam-clutch mechanisms, the front and rear plates can be removed from the signal generator frame. Remove nut and lock washer H504 and H505 (figure 6-10). Detach the plates from the frame by removing two screws and lock washers H513 and H514. To separate the rear plate assembly, detach three nuts and lock washers H625 and H626 and washer H627 (figure 6-13). Disassemble as indicated in figure 6-13. Disassemble the remaining front plate mechanism as indicated in figure 6-12.

4. To reassemble and install the signal generator mechanism, reverse the procedure followed in disassembly. Be sure the transfer levers O589 through O595 (figure 6-11) are riding upon their proper cams on the cam-clutch mechanism. Replace O550, O551 and O552 on the front of the shaft before inserting it through the front plate, and be sure that eccentric O260 engages the follower stud O642 (figure 6-13). The non-repeat lever O633 must be located in the slot of guide O628, with its left end engaged under the universal bail extension O450 (figure 6-8). Push the universal bail back to clear O628 in positioning the frame on the keyboard. Push the clutch code bar O413 (figure 6-7) to the left until it engages the bail on the signal generator. Engage the five vertical extensions on the code bar levers in slots behind transfer levers O589 through O595, counting from the front. Do not tighten down the signal generator frame unless it fits squarely and easily over the mounting holes without binding. If there seems to be a bind, recheck the positioning of the code bar extensions, the clutch code bar, the non-repeat lever and the universal bail.

(d) KEYBOARD. (See figure 6-6.) — Remove keyboard electrical components (paragraph 6-3e (5)(a)3) and the signal generator (paragraph 6-3e (5)(b)).

1. Remove two screws and lock washers H291 and H292 attaching brackets A276 and A277 to the base A113 (figure 6-1). Remove four screws, lock washers and washers H150, H151 and H152 which attach code lever guide brackets A326 and A328 (figure 6-7) to A122. Remove two screws, lock washers and washers H329, H330 and H331 attaching A325 to A122. Tip up the front of the keyboard, and pull the keyboard and code bar mechanism free of the base.

2. To reassemble, reverse the procedure followed in disassembly. All function levers are under their corresponding function bails except the keyboard lock function lever, which fits on top of its function bail. When reassembling, depress the KYBD LOCK keylever, so that the lock function lever will go over its bail.

(e) SPACE BAR. (See figure 6-6.) — Remove the space bar O275 by removing two shoulder screws H275 attaching it to the space bar bail O277. Pull the space bar from the keylever guide A279. Further disassembly is indicated in figure 6-6. Reassemble in the reverse order of disassembly.

(f) KEYLEVER GUIDE. (See figure 6-6.) — Remove the keyboard electrical components (paragraph 6-3e(5)(a)3) and the space bar (paragraph 6-3e(5)(e)). Remove three screws H276 and H279 (two) and three lock washers and washers H277, H278, H280 and H281.

1. Work the keylever guide A279 off the key tops, and let the keylevers fall free.

2. To reassemble, replace the guide plate over the keylevers, flopping all levers to the rear. Place the guide plate on the frame A278 and push the keylevers into their respective holes, starting with the bottom row and proceeding upward to the top row. Replace hardware H276 through H281.

(g) KEYLEVER. (See figure 6-7.) — Depress the key to be removed to locate it under the keylever guide, if a keylever is to be removed singly. Remove the keylever guide (paragraph 6-3e(5)(f)) to remove all keylevers.

1. Use keylever removal tool No. 151383 (included in TE-50-B, not supplied as part of the equipment). Insert the smaller lug of the keylever remover in the slot of the keylever, and engage the shoulder of the larger lug on the top of the code lever. Pry upward to unsnap the keylever from the code lever. The plastic key top should not be removed from any keylever to change a character. See figure 6-7 for disassembly.

2. To replace the keylever, place the fork of the keylever over the stud on the code lever. Support the code lever from underneath, and press the keylever into position.

(h) KEYBOARD WEDGELOCK MECHANISM. (See figure 6-9.)

1. Loosen adjusting screws and lock nuts H289 and H290 (figure 6-6) at either side of the keyboard.

2. Holding the wedgelock assembly in place to prevent its falling when released, remove two screws, lock washers and washers H295, H296 and H297, attaching the assembly to brackets A276 and A277. Carefully pull the channel away from the code bars without dislodging the wedgelocks O363 (figure 6-7) from their code bars. Disassemble as indicated in figure 6-9.

3. To replace the wedgelock mechanism, reverse the procedure used in removing it. Replace any dislodged wedgelock O363 individually on its code bar. Note that there are no wedgelocks provided for the function keylever code bars and the space bar code bar.

(i) CODE LEVERS. (See figure 6-7.) Remove the keyboard and subsequently disassembled mechanisms through the wedgelock assembly (paragraph 6-3e(5)(d) through 6-3e(5)(h)).

1. Remove wedgelocks O363 from the code bars.

2. Unhook springs O361 from the code lever guide O421.

3. Remove two retaining rings H332 securing the code bar lever shaft O362 between A326 and A328. Carefully slide the shaft free of the code levers, retaining each part removed from the shaft in the order in which it was removed. Slide the levers out of the code bar guide carefully from the front. Disassembly is as illustrated in figure 6-7.

4. To replace code bars, reverse the procedure followed in disassembly. Be sure the order of insertion of the code levers in the guide slots is the same as when disassembled. When wedgelocks are replaced, note that there are none for function and space bar code levers.

(j) TAPE BACK SPACE KEYLEVER AND SWITCH. (See figure 6-16.) — Remove two screws, lock washers and washers H754, H755 and H756, and remove the tape back space keylever assembly and mounting bracket A750. Disassembly is as indicated in figure 6-16. If switch S750 is to be removed, remove cable W750 from the base. To reinstall the keylever and switch, reverse the procedure used in disassembly.

(k) FUNCTION BAIL BRACKET. (See figure 6-4.) — Only the tape feed out switch and the signal line break switch are operated by levers pivoted on the function bail bracket. In most instances troubles can be eliminated without removal of these function levers, either in linkage or in switch operation. If

disassembly is required, follow the procedure indicated in figure 6-4. Reassemble in the reverse of the order of disassembly.

(l) CODE BARS. (See figure 6-7.) Remove the keyboard and associated mechanisms as described in paragraphs 6-3e(5)(d) through 6-3e(5)(i). Remove springs O406 and O408, and remove screws and lock washers H333 and H334 to detach the spring bracket and guide and mounting bracket O410, O409 and A326 from O421. Disassemble as shown in figure 6-7. Reassemble and install in the reverse of the order of disassembly. Replace the universal bail on its pilot screws before attaching bracket A326 (see paragraph 6-3e(5)(l)).

(m) UNIVERSAL BAIL MECHANISM. (See figure 6-8.) — When bracket A326 is removed in code bar disassembly, the universal bail pilot screw and lock washer H385 and H386 will be separated from the bail. Disengage the other end of the bail, and disassemble in accordance with figure 6-8. Install the universal bail, assembled in reverse order of disassembly, before attaching bracket A138 in reassembling the code bars.

6-4. ADJUSTMENTS.

a. GENERAL.

(1) ADJUSTMENT SEQUENCE. — The adjustments of each component of the typing reperforator set are arranged in a sequence that would be followed if a complete readjustment of the equipment were undertaken. This sequence will not be strictly consecutive and should be followed with attention to peculiarities of each of the sets covered in this handbook. Where an adjustment, tolerance or spring tension occurs more than once in the equipment, it has been illustrated only once, in its first sequential occurrence in a complete adjustment of the equipment. Subsequent occurrences are cross referenced to the first description of that adjustment.

(2) ILLUSTRATION ORIENTATION. — It is assumed that the mechanisms depicted in the illustrations are viewed from a position in front of the equipment, unless the illustration is specifically identified as another view. References in the text to "left" or "right" designate the viewer's left or right as he faces the front of the fully assembled equipment.

(3) DATE FURNISHED. — The adjusting illustrations, in addition to indicating adjustment tolerances, positions of moving parts and spring tensions, also show the angle at which a scale should be applied in measuring spring tensions. The spring tensions given are indications (not exact values) and should be checked with the proper spring scales in the position indicated. Springs which do not meet the requirement and for which no adjusting procedure is given should be replaced by new springs.

(4) TOOLS. — Tools required to make the adjustments and test the spring tensions are listed in table 5-1. These tools are not supplied with the teletypewriters but are available as accessory equipment.

(5) REMOVAL OF MECHANISMS. — Where adjustment instructions call for removal of components, assemblies, sub-assemblies, or parts, refer to Removal and Repair, paragraph 6-3. If parts are removed, all adjustments which the removal of these parts might facilitate should be made before the parts are replaced, or as the equipment is reassembled. When a part mounted on shims is removed, the number of shims at each mounting screw should be noted, so that the identical pile-ups can be made when the part is replaced. Unless it is specifically stated to the contrary, after an adjustment has been made, all nuts and screws that were loosened should be tightened.

(6) ELECTRICAL CONTACTS. — All contact points should meet squarely. Contacts with the same diameter should not be out of alignment more than 25 per cent of the contact diameter. Always check contacts for pitting or corrosion and clean or burnish contacts before making a specified adjustment or tolerance measurement. Avoid sharp kinks or bends in the contact springs.

(7) CLUTCHES. — When the requirement calls for a clutch to be disengaged, the clutch shoe lever must be fully latched between the trip lever and latch lever, so that the clutch shoes release their tension on the drum. When engaged, the clutch shoe lever is unlatched, and the clutch shoes are wedged firmly against the clutch drum.

NOTE

When clutch shafts are rotated manually, the clutch will not fully disengage. Where a procedure calls for disengagement, rotate the clutch to its stop position, apply a screw driver to the cam disk stop lug, and turn the disk in the normal direction of shaft rotation until the latch lever seats in its notch in the disk.

(8) MANUAL OPERATION. — When an adjustment requirement calls for setting up a static equivalent of any operational cycle, the components may be operated manually. Rotate the input shaft in the direction it would rotate under power. This may be determined by tracing gear trains and shafts to the motor. The direction of rotation of the motor shaft is clockwise, as viewed from the pinion end of the motor.

(a) KEYBOARD-BASE (TT-253/UG, TT-253A/UG and TT-292/UG). — Rotate the signal generator shaft through one complete operating cycle to clear any code combination inadvertently set up previously.

Depress the KYBD UNLK key, and set up the desired combination by depressing the desired key before starting another cycle of the desired key before starting another cycle of the signal generator shaft. There are no mechanical linkages between the keyboard code bar mechanism and the typing reperforator.

(b) TYPING REPERFORATOR. — Hold the selector magnet armature operated by means of an armature clip (figure 5-1), and rotate the main shaft to bring all clutches to their stop position. Fully disengage all clutches as described in paragraph 6-4a(7). Release the armature momentarily to permit the selector clutch to engage. Turn the main shaft slowly until the No. 5 selector lever has moved just to the peak of its cam. Strip from the selector levers the push levers which are spacing in the code combination to be selected. The selector levers move in succession, starting with the inner level (number one). Continue to rotate the main shaft until all operations initiated by the selector clear through the unit, and the function clutch has been tripped. Continue main shaft rotation until all actions initiated by the function clutch clear the unit.

NOTE

The armature clip is attached to the armature by carefully inserting the flat-formed end of the clip over the top of the pole pieces and hooking the extruded projection under the edge of the armature. The top end of the clip should then be hooked over the top of the selector coil terminal bakelite guard. The spring tension of the clip will hold the armature in the marking (attracted) position.

(9) THERMAL CUT-OUT SWITCH (TT-192/UG, TT-253/UG AND TT-253A/UG). — Should the rotor of the synchronous motor (except TT-192A/UG) become blocked for several seconds due to an overload, the thermal cut-out switch will interrupt power to the motor until the manual reset button is depressed. Allow at least 5 minutes for the motor to cool before attempting to reset the switch to start the motor.

b. COMPONENT ADJUSTMENT SEQUENCES.

(1) TYPING REPERFORATOR. — The standard adjustments for the typing reperforator are described in figures 6-64 through 6-143. Adjustments in figures 6-144 through 6-151 are related to the base or miniaturized base, and 6-154 through 6-165 are related to the keyboard-base and should be rechecked after installation of the typing reperforator on the base. Note that tape feed-out mechanism adjustments, figures 6-123 through 6-143 are either not applicable to or applicable only to TT-192A/UG and TT-253A/UG, as indicated in the figure title.

(2) BASE OR KEYBOARD BASE. — The standard adjustments for the base mechanisms are described in figure 6-144 through 6-165.

(3) MOTOR. — The standard motor adjustment is covered in connection with the keyboard-base or base adjustments, figures 6-149 and 6-150. Synchronous motor speed is not adjustable, but if incorrect motor speed is indicated, check the frequency of the externally supplied a.c. power. Governed motor speed is adjusted as indicated in figure 6-150 and paragraph 6-3c(4).

(4) CABINET OR COVER. — The standard adjustments are described in figure 6-166 through 6-169, with specific application to typing reperforator sets indicated in each figure title.

c. TILT OPERATION. — All adjustments when properly refined will enable the typing reperforator sets to function satisfactorily when the equipment is tilted at up to 30 degrees from vertical in four directions.

d. FINAL TEST. — After all adjustments have been made and the equipment is assembled, apply the operating tests indicated in Section 2, paragraph 2-7.

e. ORIENTATION. — When a signal distortion test set TT-383B/GG is used (in accordance with procedures outlined in NAVSHIPS 91654) for determining the receiving margins of the typing reperforator selector mechanism, and where the condition of the components is equivalent to that of new equipment, the range and distortion tolerances tabulated in table 6-1 should be met. To adjust, refine the selector armature spring tension (figure 6-70).

(1) When a signal test set is not available, the orientation range can be best determined while receiving the characters RY from a distant station. Rotate the range finder knob (figure 6-73) in one direction until errors appear in the typed copy.

(2) Retract the range finder setting slowly until the error disappears. Note this position.

(3) Rotate the range finder knob in the opposite direction, and determine the opposite limit of accurate signal reception in the same manner.

(4) Set the range finder midway between the determined limits.

TABLE 6-1. SELECTOR MARGIN MINIMUM REQUIREMENTS

CURRENT	SPEED IN W. P. M.	POINTS RANGE WITH ZERO DISTORTION	PERCENTAGE OF MARKING AND SPACING BIAS TOLERATED	END DISTORTION TOLERATED WITH SCALE AT BIAS OPTIMUM SETTING
0.060 amp. (windings parallel)	60 75 100	72	40	35
0.020 amp. (windings series)	60 75 100	72	40	35

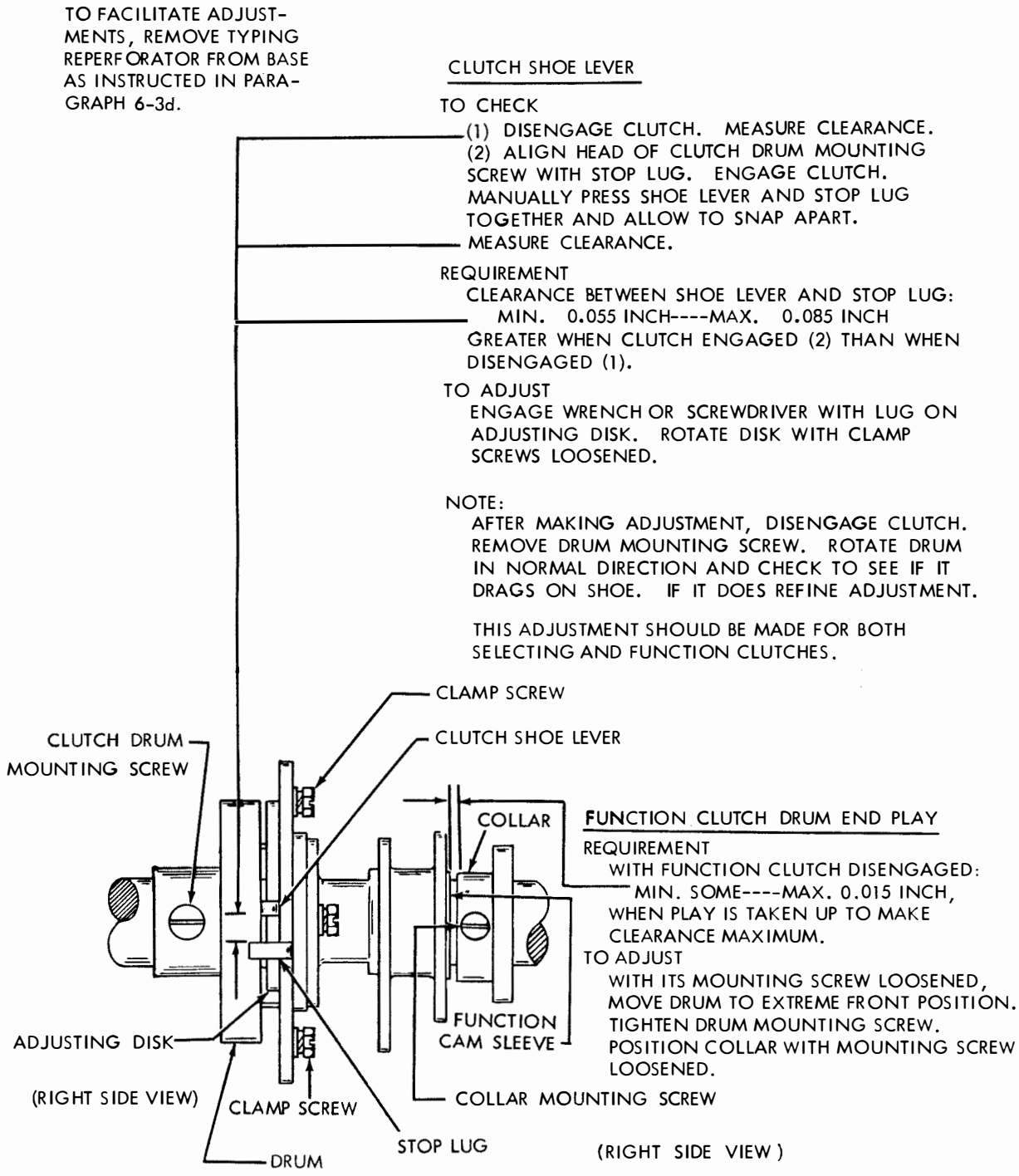
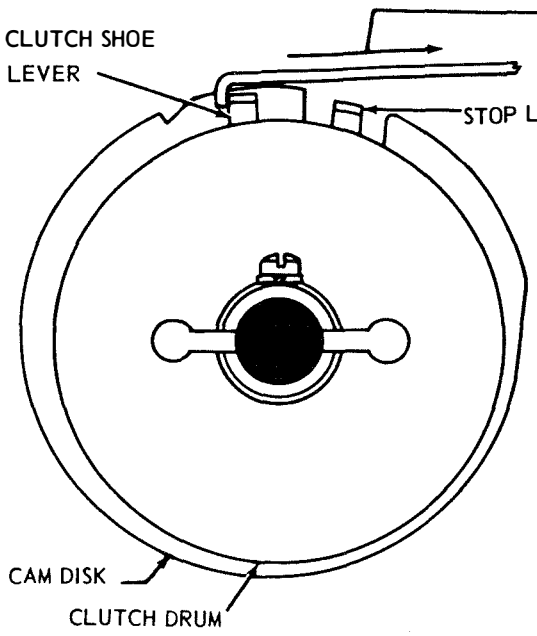


Figure 6-64. Selecting and Function Cam-Clutch Mechanisms



CLUTCH SHOE LEVER SPRING TENSIONS

REQUIREMENT

CLUTCH ENGAGED. HOLD CAM DISK TO PREVENT TURNING. SPRING SCALE PULLED AT TANGENT TO CLUTCH.

MIN. 15 OZS.

MAX. 20 OZS.

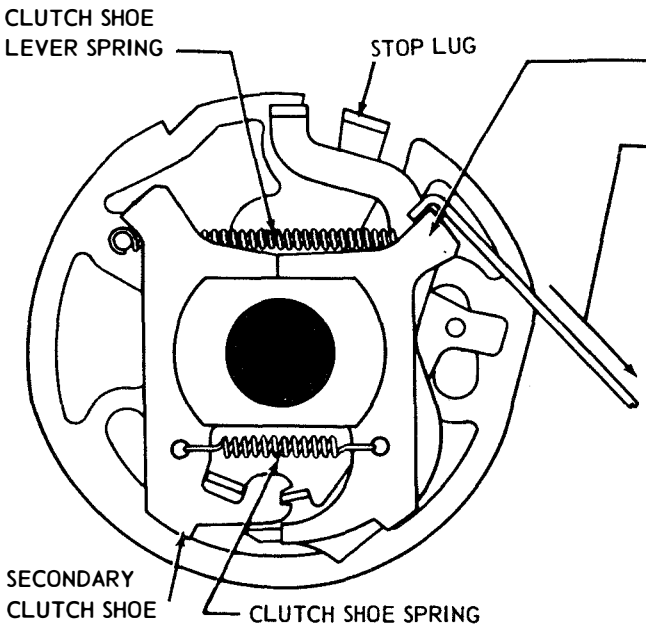
TO MOVE THE SHOE LEVER IN CONTACT WITH THE STOP LUG.

NOTE 1

REQUIREMENTS ARE ADJUSTED AT THE FACTORY AND SHOULD NOT BE DISTURBED UNLESS ASSOCIATED MECHANISMS HAVE BEEN REMOVED FOR SERVICING OR THERE IS REASON TO BELIEVE THAT THE REQUIREMENTS ARE NOT MET.

NOTE 2

REMOVE MECHANISM FROM BASE PRIOR TO ADJUSTMENT (SEE FIGURE 6-144). INVERT UNIT AND ROTATE MAIN SHAFT UNTIL CLUTCH SHOE LEVER AND STOP LUG ARE UP.



CLUTCH SHOE SPRING TENSION

NOTE 3

IN ORDER TO CHECK THIS SPRING TENSION, IT IS NECESSARY TO REMOVE THE CLUTCH FROM THE MAIN SHAFT. THEREFORE, IT SHOULD NOT BE CHECKED UNLESS THERE IS GOOD REASON TO BELIEVE THAT IT DOES NOT MEET ITS REQUIREMENT.

REQUIREMENT

CLUTCH DRUM REMOVED. SPRING SCALE APPLIED TO PRIMARY SHOE AT A TANGENT TO THE FRICTION SURFACE.

MIN. 3 OZS.

MAX. 5 OZS.

TO START THE PRIMARY SHOE MOVING AWAY FROM SECONDARY SHOE AT POINT OF CONTACT.

Figure 6-65. Clutch Mechanisms

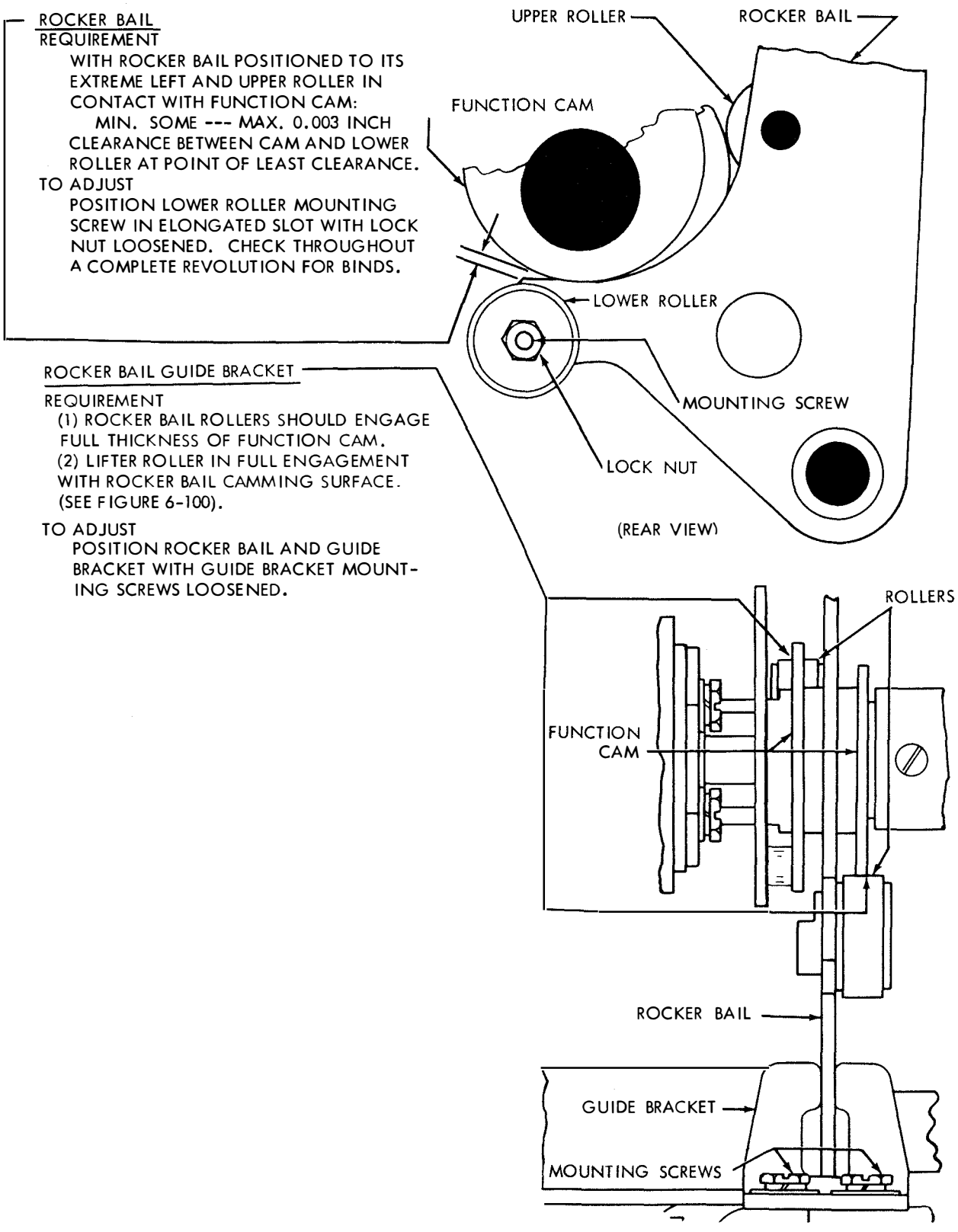


Figure 6-66. Function Mechanism

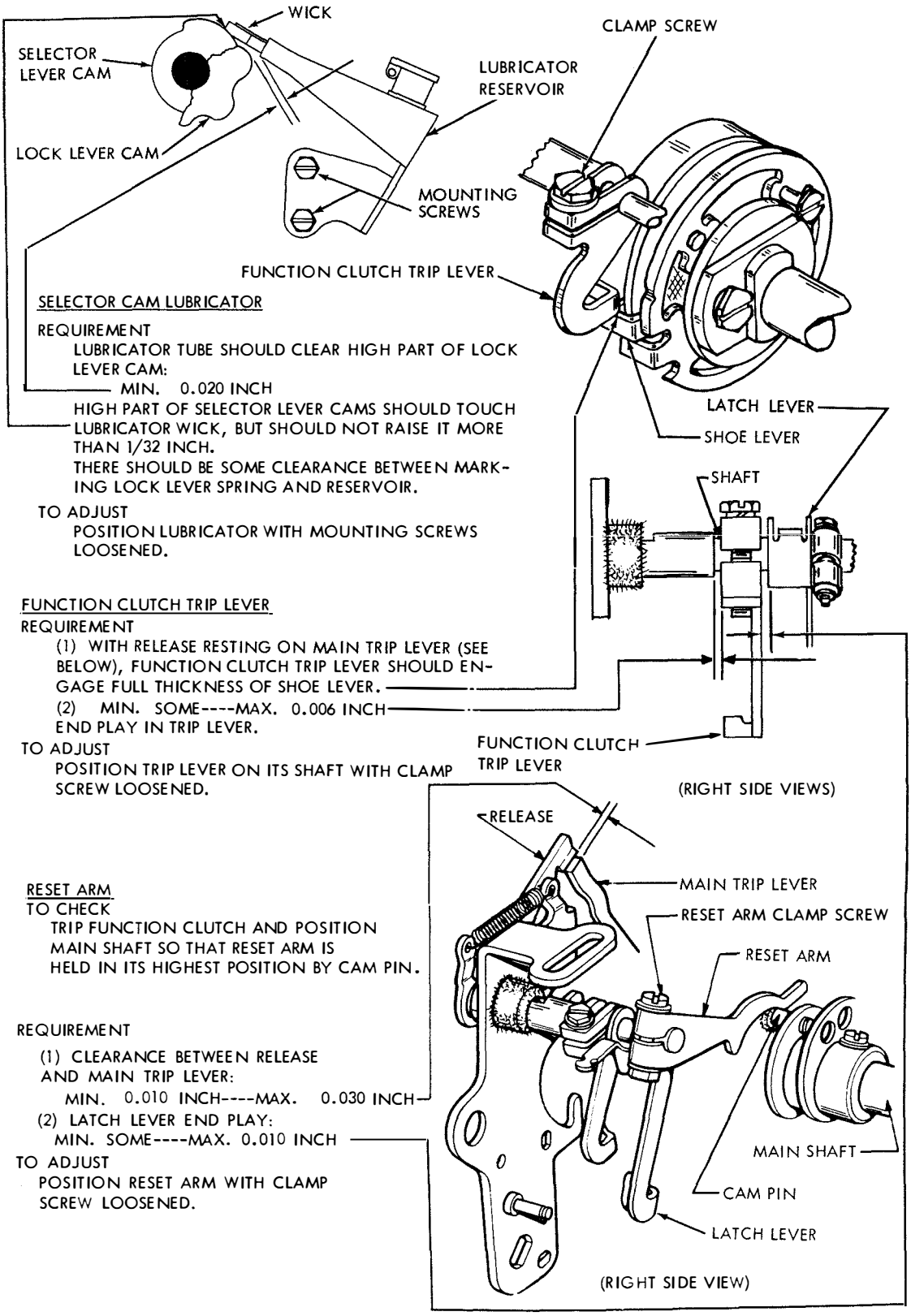
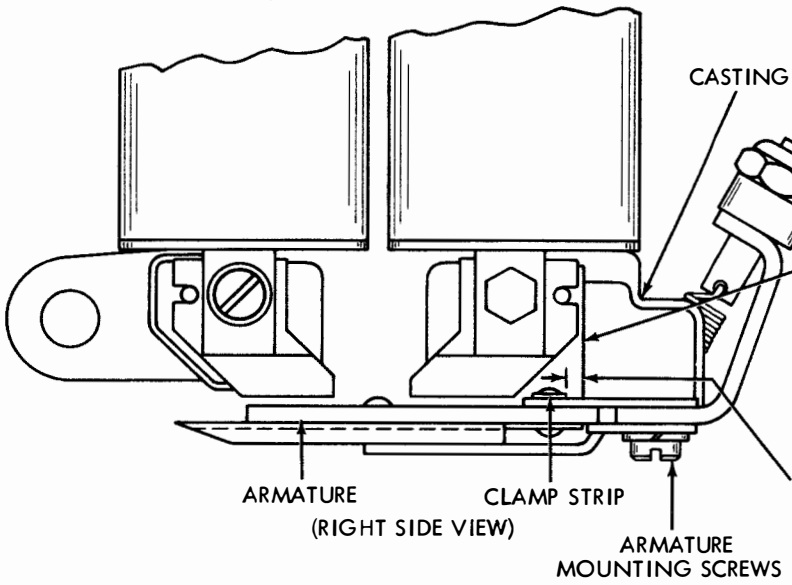


Figure 6-67. Function Mechanism

NOTE: TO FACILITATE MAKING THE FOLLOWING ADJUSTMENTS, REMOVE THE RANGE FINDER AND SELECTOR MAGNET ASSEMBLIES. TO INSURE BETTER OPERATION, PULL A PIECE OF KS BOND PAPER BETWEEN THE ARMATURE AND THE POLE PIECES TO REMOVE ANY OIL OR FOREIGN MATTER THAT MAY BE PRESENT. MAKE CERTAIN THAT NO LINT OR PIECES OF PAPER REMAIN BETWEEN THE POLE PIECES AND ARMATURE.

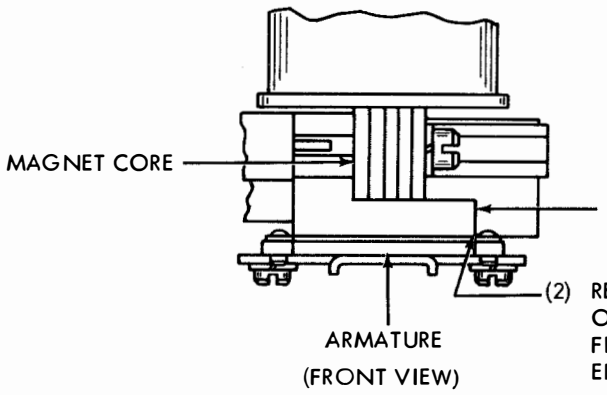


SELECTOR ARMATURE

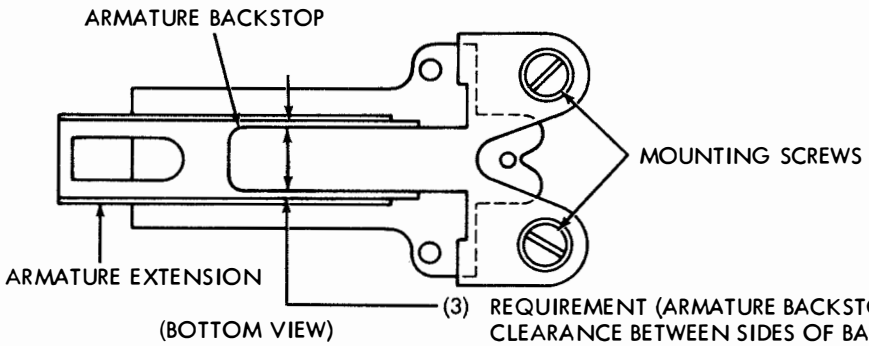
NOTE

THIS REQUIREMENT NEED NOT BE MADE NOR CHECKED IF THE SELECTOR MAGNET BRACKET AND RECEIVING MARGIN REQUIREMENTS ARE MET.

(1) REQUIREMENT (ARMATURE CLAMP STRIP)
CLEARANCE BETWEEN ARMATURE CLAMP STRIP AND CASTING.
MIN. 0.025 INCH
MAX. 0.045 INCH



(2) REQUIREMENT (ARMATURE ALIGNMENT)
OUTER EDGE OF ARMATURE SHOULD BE FLUSH WITHIN 0.015 INCH WITH OUTER EDGE OF POLE PIECES.

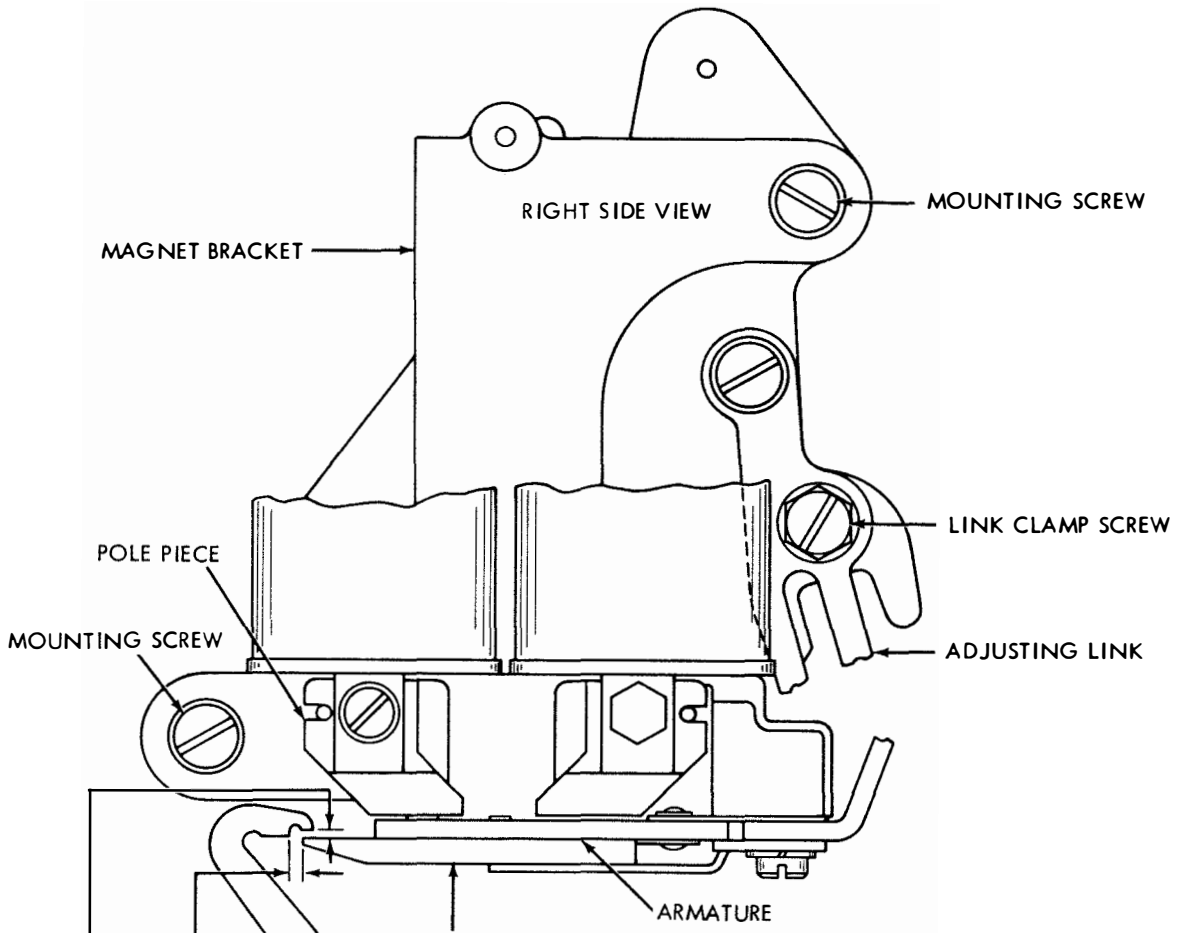


(3) REQUIREMENT (ARMATURE BACKSTOP ALIGNMENT)
CLEARANCE BETWEEN SIDES OF BACKSTOP AND SIDES OF ARMATURE EXTENSION.
MIN. 0.010 INCH

TO ADJUST

1. POSITION ARMATURE SPRING ADJUSTING NUT TO HOLD ARMATURE FIRMLY AGAINST PIVOT EDGE OF CASTING.
2. POSITION ARMATURE AND BACKSTOP WITH MOUNTING SCREWS LOOSENED.

Figure 6-68. Selector Armature



SELECTOR MAGNET BRACKET

(1) REQUIREMENT
SPACING LOCK LEVER ON HIGH PART OF CAM. ARMATURE IN CONTACT WITH POLE PIECE. CLEARANCE BETWEEN END OF ARMATURE EXTENSION AND SHOULDER ON SPACING LOCK LEVER.
MIN. 0.020 INCH
MAX. 0.035 INCH
TO ADJUST
LOOSEN TWO MAGNET BRACKET MOUNTING SCREWS AND ADJUSTING LINK CLAMP SCREW. POSITION MAGNET BRACKET BY MEANS OF ADJUSTING LINK AND TIGHTEN LINK CLAMP SCREW ONLY.

(2) REQUIREMENT
SPACING LOCK LEVER ON HIGH PART OF CAM. ARMATURE IN CONTACT WITH POLE PIECE. SOME CLEARANCE BETWEEN UPPER SURFACE OF ARMATURE EXTENSION AND LOWER SURFACE OF SPACING LOCK LEVER WHEN LOCK LEVER IS HELD DOWNWARD.
MAX. 0.003 INCH
TO ADJUST
POSITION UPPER END OF MAGNET BRACKET. TIGHTEN TWO MAGNET BRACKET MOUNTING SCREWS. RECHECK REQUIREMENT (1).

Figure 6-69. Selector Magnet Bracket

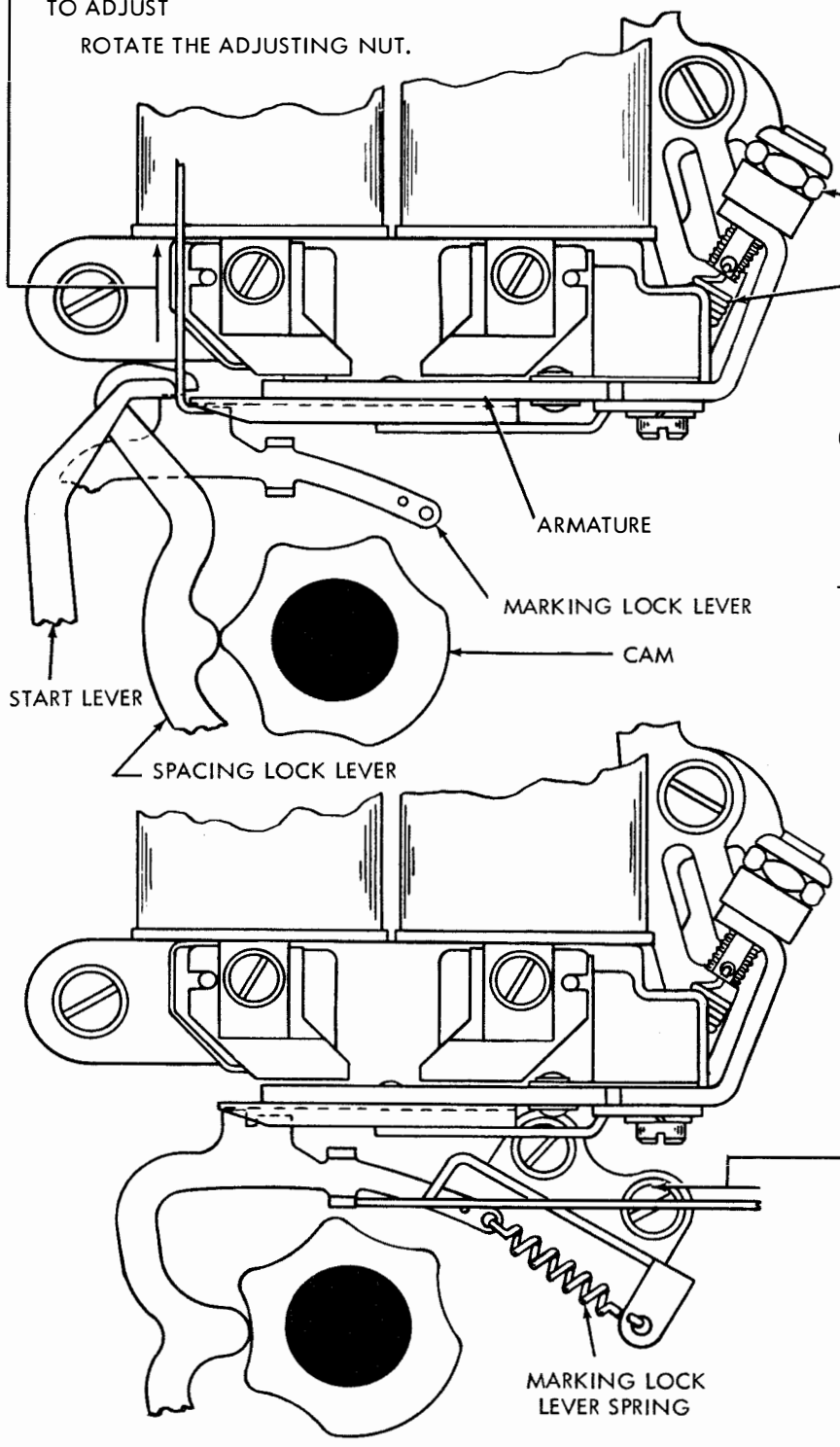
SELECTOR ARMATURE SPRING TENSION

(1) REQUIREMENT (WHEN NO DISTORTION TEST SET IS AVAILABLE)

WITH THE MARKING LOCK LEVER, SPACING LOCK LEVER, AND START LEVER ON HIGH PART OF THEIR CAMS. SCALE APPLIED AS NEARLY VERTICAL AS POSSIBLE AT END OF ARMATURE EXTENSION. IT SHOULD REQUIRE APPROXIMATELY 3 OZS. TO PULL ARMATURE TO MARKING POSITION.

TO ADJUST

ROTATE THE ADJUSTING NUT.



(2) REQUIREMENT

(USING DISTORTION TEST SET) SELECTOR SHOULD BE RELATIVELY FREE OF INTERNAL BIAS WHEN CHECKED AS SPECIFIED IN TEST SET DIRECTIONS.

TO ADJUST

VARY TENSION OF ARMATURE SPRING BY ROTATING ADJUSTING NUT.

NOTE

SEE TABLE 6-1 FOR SELECTOR MARGIN ADJUSTMENT (FINAL)

MARKING LOCK LEVER SPRING TENSION

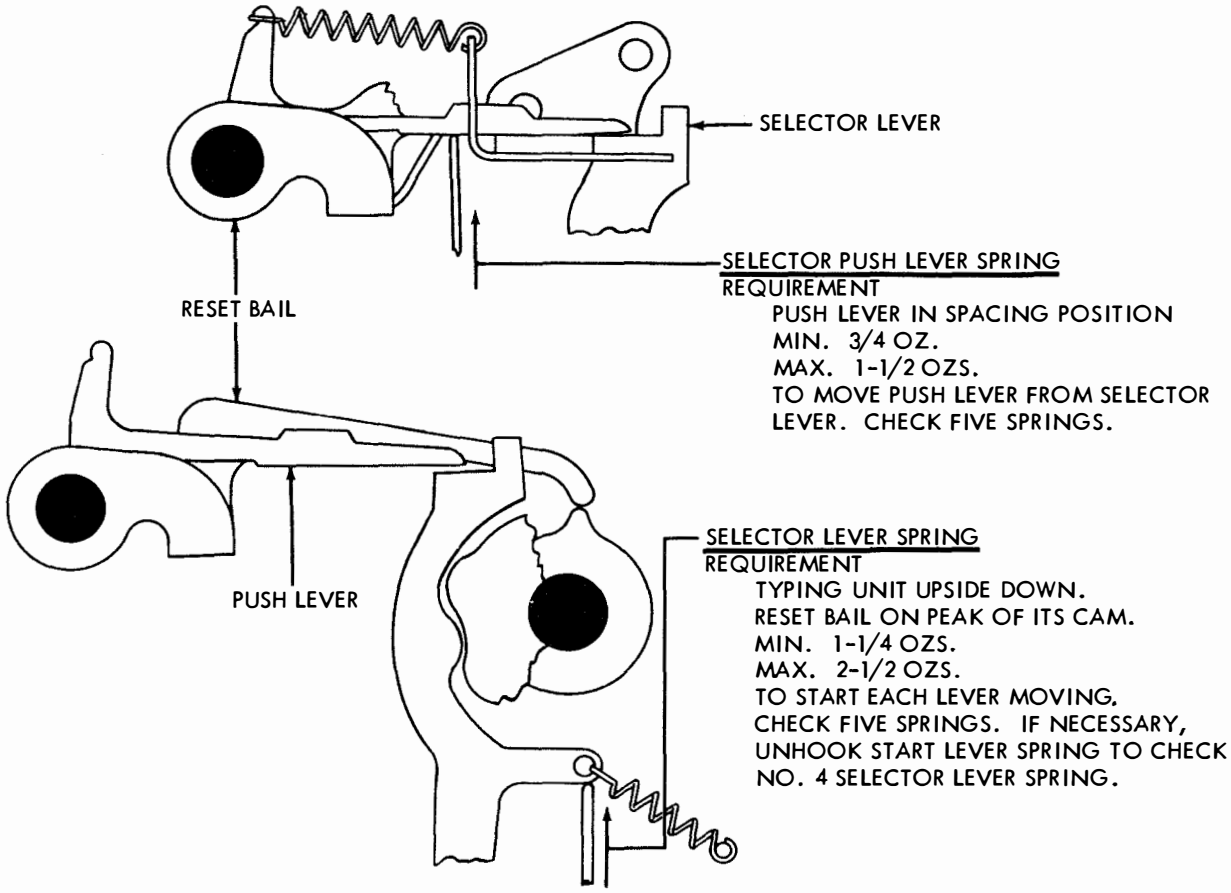
REQUIREMENT

LETTERS COMBINATION SELECTED, MAIN SHAFT ROTATED UNTIL SELECTOR CLUTCH IS DISENGAGED, PUSH SCALE APPLIED HORIZONTALLY TO LOWER HORIZONTAL EXTENSION OF LOCK LEVER.

MIN. 1-1/2 OZS.
MAX. 3 OZS.

TO START LEVER MOVING.

Figure 6-70. Selector Spring Tensions



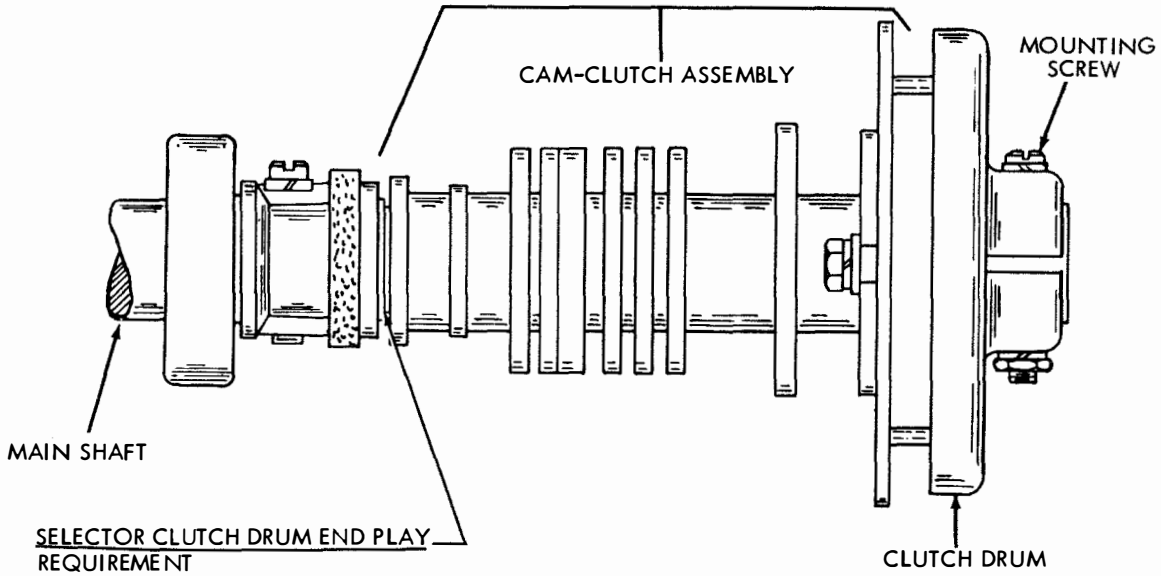
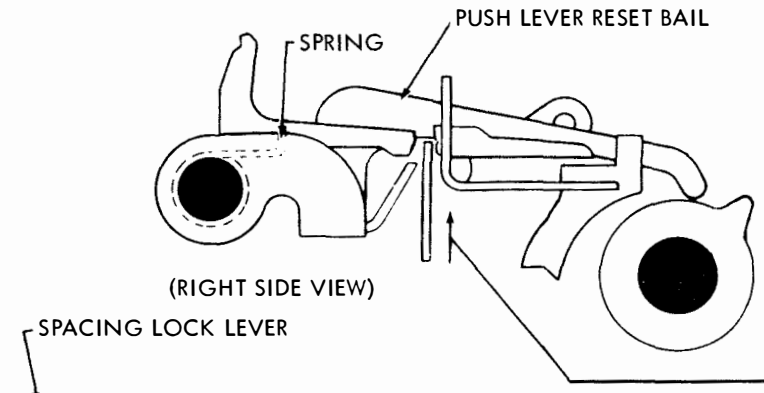
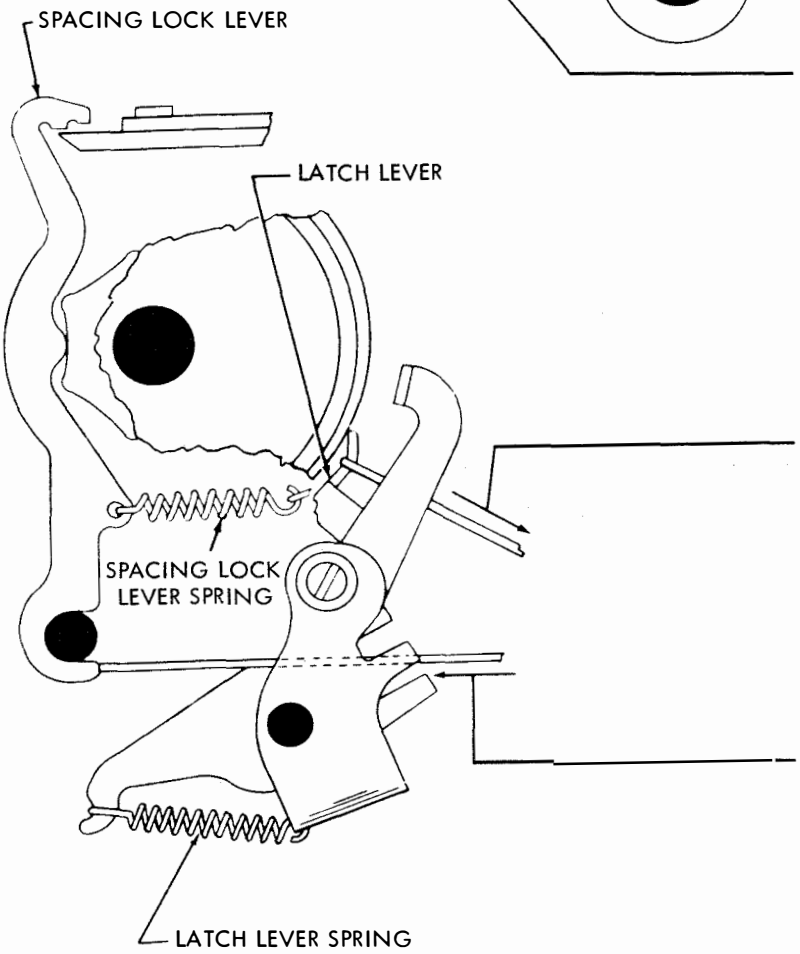


Figure 6-71. Selector Cam-Clutch





PUSH LEVER RESET BAIL

SPRING TENSION

REQUIREMENT

PUSH LEVER BAIL ON LOW PART OF CAM. 32 OZ. SCALE APPLIED TO RESET BAIL
MIN. 4 OZS.
MAX. 8 OZS.
TO MOVE BAIL FROM CAM.

SELECTOR CLUTCH LATCH LEVER SPRING

REQUIREMENT

LATCH RESTING ON LOW PART OF ITS CAM DISK.
MIN. 2 OZS.
MAX. 3-1/2 OZS.
TO START THE LATCH MOVING.

SPACING LOCK LEVER SPRING

REQUIREMENT

SELECTOR ARMATURE RELEASED. SPACING LOCK LEVER ON ANY LOW PART OF ITS CAM. SPRING SCALE APPLIED TO LOWER END OF SPACING LOCK LEVER.
MIN. 3 OZS.
MAX. 6 OZS.
TO MOVE SPACING LOCK LEVER FROM ITS PIVOT SHAFT.

Figure 6-72. Selector Clutch Spring Tensions

NOTE: REPLACE RANGE FINDER AND SELECTOR MAGNET ASSEMBLY

RANGE FINDER KNOB PHASING

REQUIREMENT

WITH RANGE FINDER KNOB TURNED TO EITHER END OF RACK, ZERO MARK ON SCALE SHOULD BE WITHIN 3 POINTS OF SCRIBED LINE ON RANGE FINDER PLATE.

TO ADJUST

REMOVE MOUNTING NUT, DISENGAGE KNOB FROM RACK AND POSITION KNOB. RE-ENGAGE KNOB WITH RACK AND REPLACE MOUNTING NUT.

SELECTOR CLUTCH STOP ARM

REQUIREMENT

RANGE SCALE SET AT 60. SELECTOR CLUTCH DISENGAGED. ARMATURE IN MARKING POSITION. CLUTCH STOP ARM SHOULD ENGAGE CLUTCH SHOE LEVER BY APPROXIMATELY FULL THICKNESS OF SHOE LEVER.

TO ADJUST

POSITION STOP ARM ON STOP ARM BAIL WITH CLAMP SCREW LOOSENED.

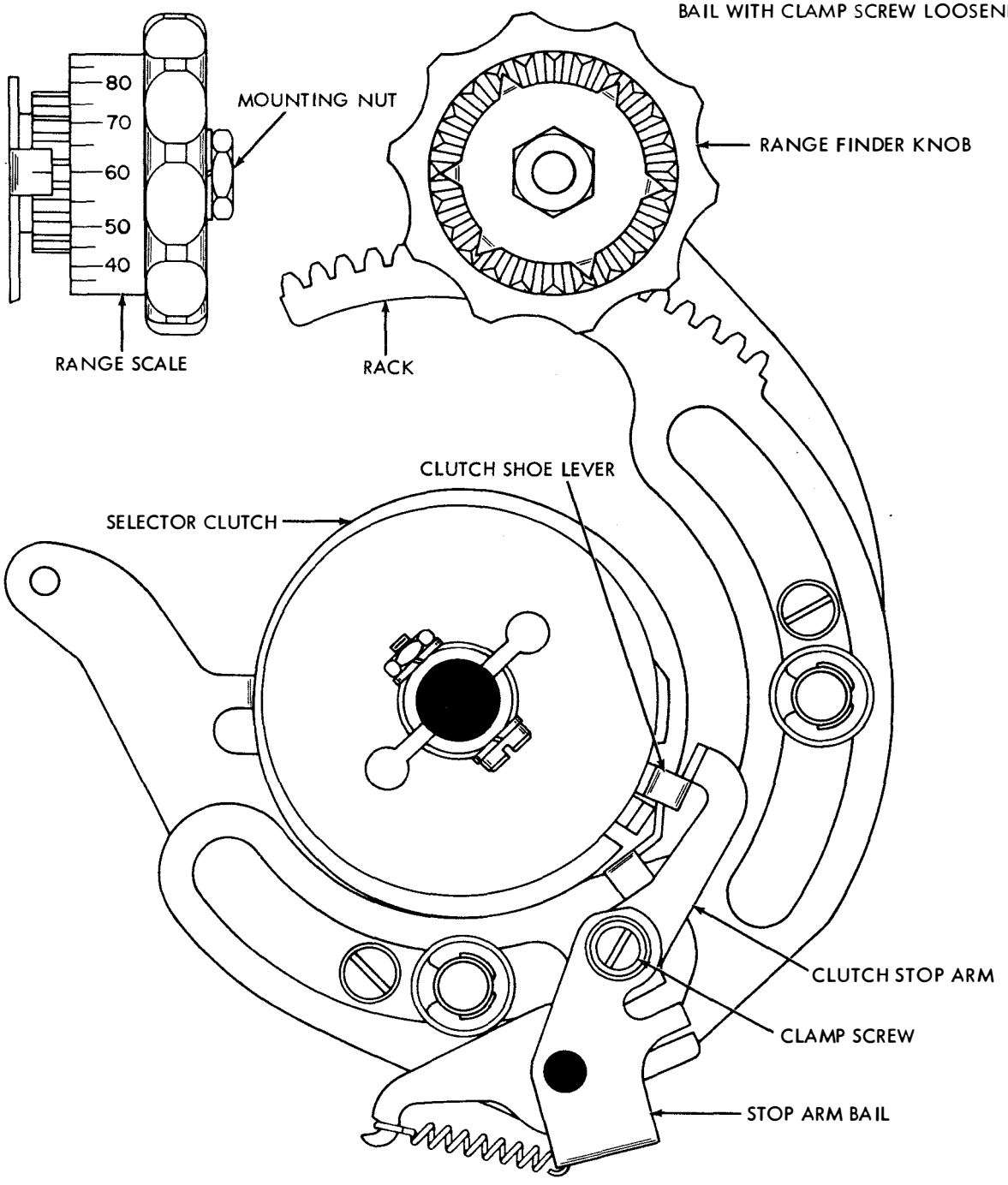
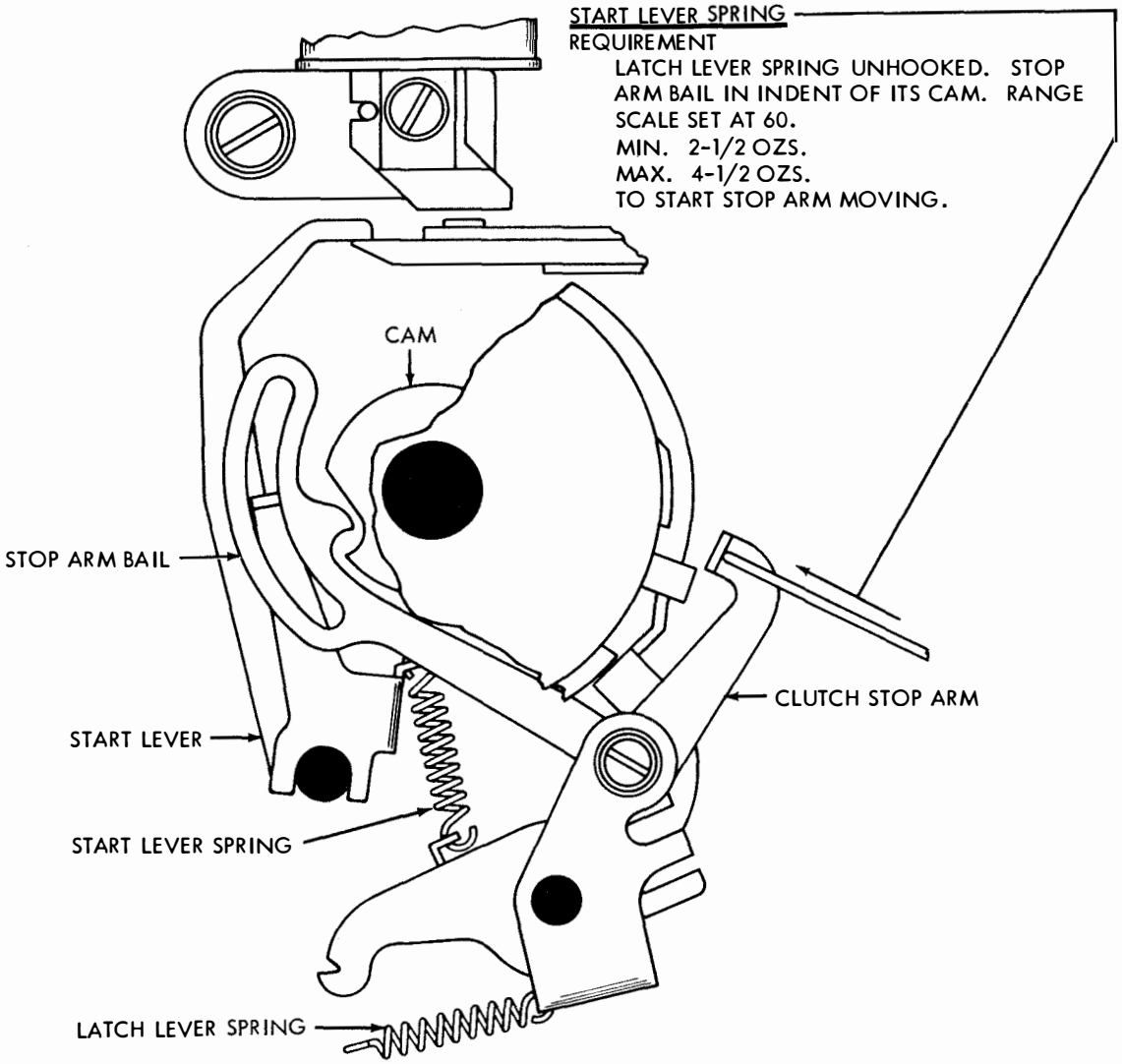


Figure 6-73. Range Finder



SELECTOR RECEIVING MARGIN

WHEN A SIGNAL DISTORTION TEST SET IS USED FOR DETERMINING THE RECEIVING MARGINS OF THE SELECTOR, AND WHERE THE CONDITION OF THE COMPONENTS IS EQUIVALENT TO THAT OF NEW EQUIPMENT, THE RANGE AND DISTORTION TOLERANCES BELOW SHOULD BE MET.

SELECTOR RECEIVING MARGIN MINIMUM REQUIREMENTS

CURRENT	SPEED IN W.P.M.	POINTS RANGE WITH ZERO DISTORTION	PERCENTAGE OF MARKING AND SPACING BIAS TOLERATED	END DISTORTION TOLERATED WITH SCALE AT BIAS OPTIMUM SETTING
0.060 AMP. (WINDINGS PARALLEL)	60 75 100	72	40	35
0.020 AMP. (WINDINGS SERIES)	60 75	72	40	35

TO ADJUST: REFINE THE SELECTOR ARMATURE SPRING (FIGURE 6-68)

Figure 6-74. Selector Clutch Start Lever

*TT-192A/UG—SUBSTITUTE ADJUSTMENT IN FIGURE 6-136.

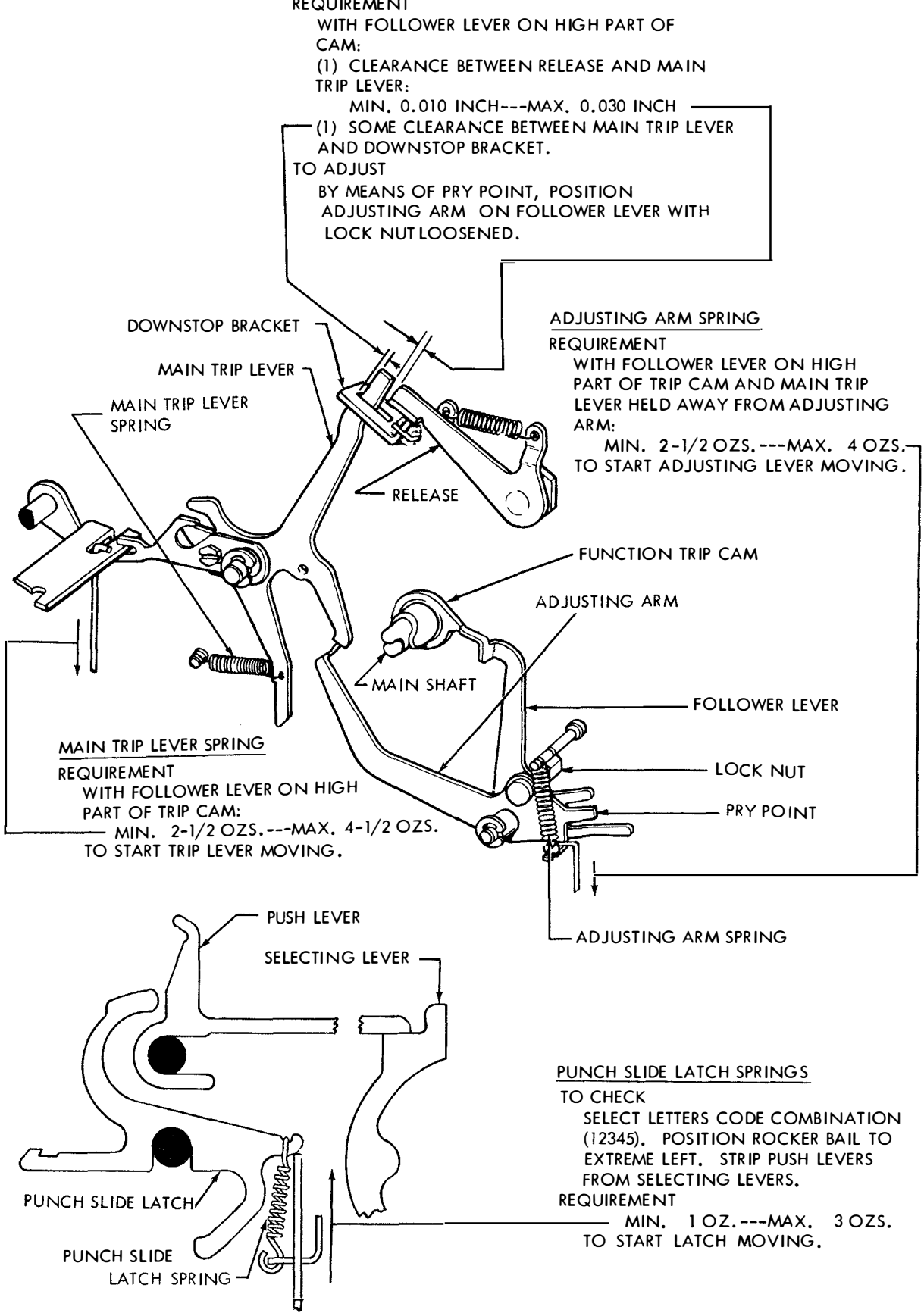
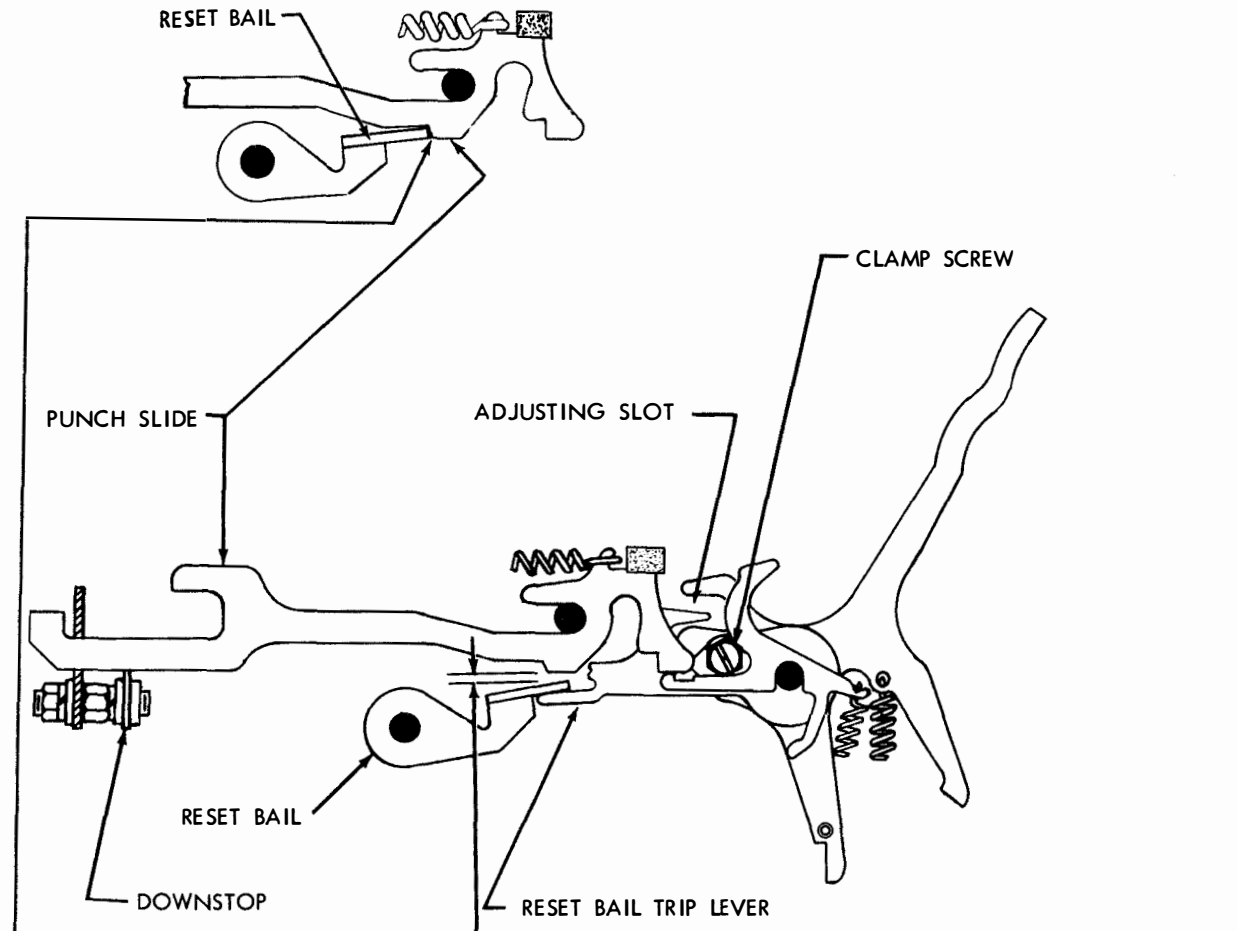


Figure 6-75. Function Mechanism



RESET BAIL TRIP LEVER

(1) TO CHECK
SELECT LETTERS CODE COMBINATION (12345). ROTATE MAIN SHAFT UNTIL FOLLOWER LEVER IS ON HIGH PART OF TRIP CAM. POSITION PUNCH SLIDES AGAINST DOWNSTOP. TAKE UP PLAY IN RESET BAIL SO THAT CLEARANCE BETWEEN BAIL AND PUNCH SLIDES IS MINIMUM.

REQUIREMENT
MIN. SOME --- MAX. 0.007 INCH AT SLIDE WHERE CLEARANCE IS LEAST.

(2) REQUIREMENT
WITH CLUTCHES FULLY DISENGAGED (SEE PAR. 6-4a(7)), RESET BAIL SHOULD FULLY ENGAGE NOTCHES IN PUNCH SLIDES WHEN PLAY IS TAKEN UP TO MAKE ENGAGEMENT LEAST.

TO ADJUST
WITH CLAMP SCREW LOOSENED, POSITION RESET BAIL TRIP LEVER BY MEANS OF ITS ADJUSTING SLOT.

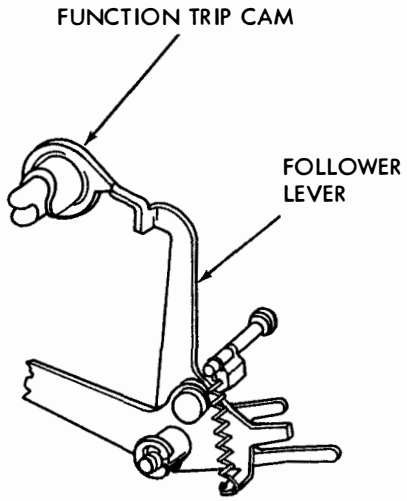
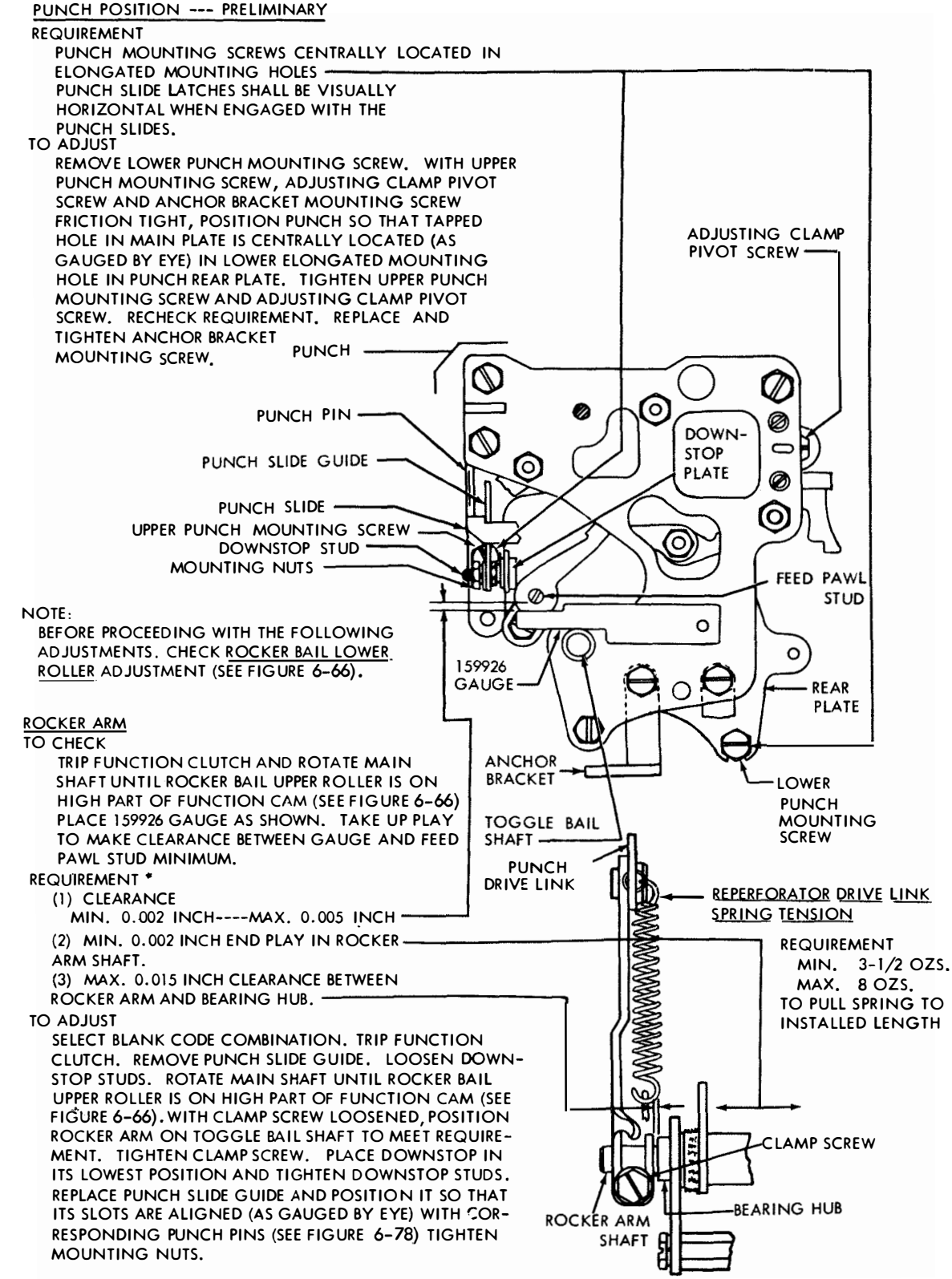
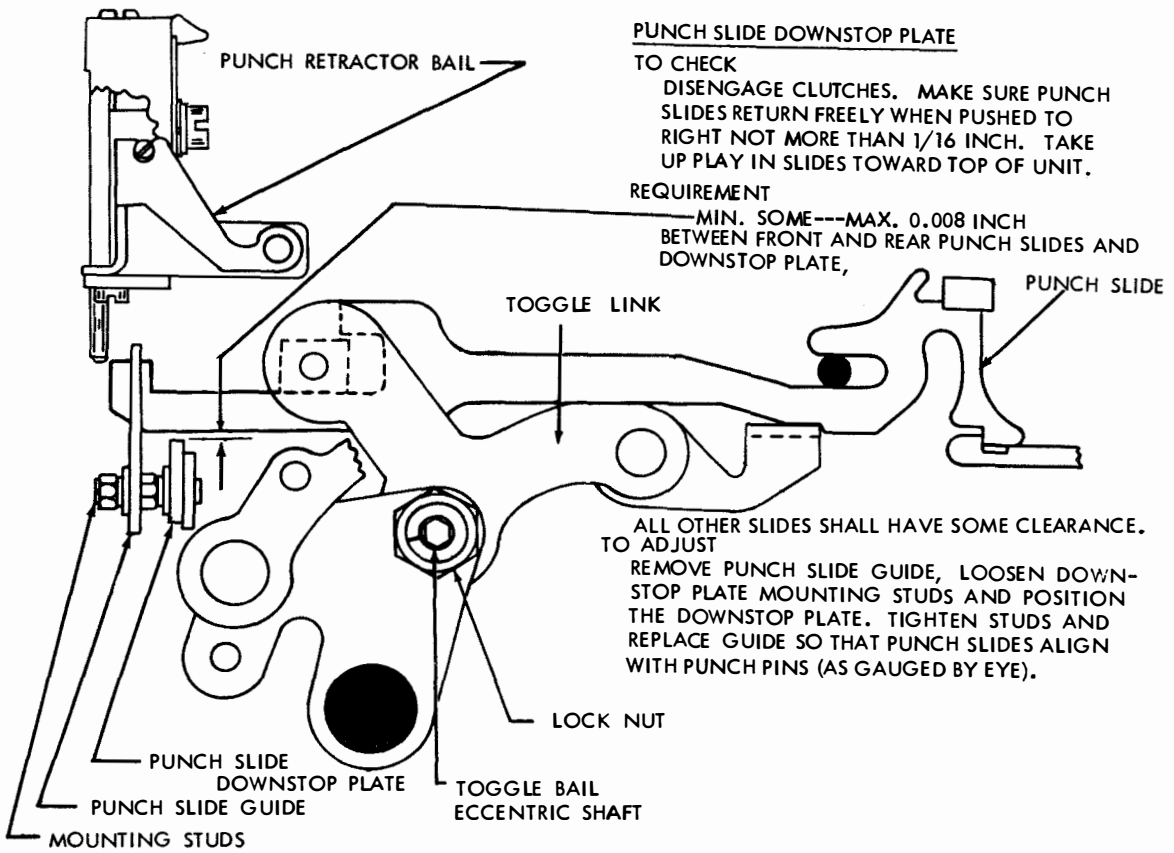


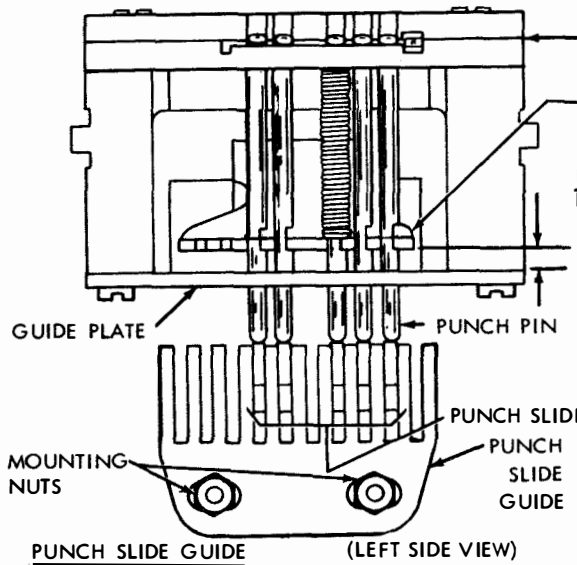
Figure 6-76. Reset Bail Lever



* AFTER FEED PAWL ADJUSTMENT (FIGURE 6-81) HAS BEEN MADE, IF PUNCH PIN PENETRATION (FIGURE 6-78) AND FEED PAWL REQUIREMENTS ARE MET, THIS REQUIREMENT SHOULD BE CONSIDERED FULFILLED.

Figure 6-77. Punch Mechanism





PUNCH PIN PENETRATION

REQUIREMENT

LETTERS SELECTED. FUNCTION CLUTCH ENGAGED AND ROTATED UNTIL PUNCH PINS HAVE TRAVELED MAXIMUM DISTANCE INTO THE DIE PLATE. CLEARANCE BETWEEN LOWER EDGE OF PUNCH RETRACTOR BAIL AND UPPER SIDE OF GUIDE PLATE (MEASURED ADJACENT TO THE 1 AND 5 PUNCH PIN WHERE CLEARANCE IS LEAST).

MIN. 0.060 INCH
MAX. 0.070 INCH

TO ADJUST

ROTATE THE TOGGLE BAIL ECCENTRIC SHAFT WITH ITS LOCK NUT LOOSENED. KEEP THE INDENTATION IN THE ECCENTRIC SHAFT TO THE LEFT OF A VERTICAL CENTERLINE THROUGH THE SHAFT.

PUNCH SLIDE GUIDE

REQUIREMENT

LETTERS SELECTED. FUNCTION CLUTCH ENGAGED AND ROTATED UNTIL THE PUNCH SLIDES JUST TOUCH THE PUNCH PINS. THE PUNCH SLIDES SHOULD ALIGN CENTRALLY WITH THEIR RESPECTIVE PUNCH PINS (GAUGED BY EYE).

TO ADJUST

POSITION THE PUNCH SLIDE GUIDE WITH ITS MOUNTING NUTS LOOSENED.

NOTE

THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO CHADLESS TAPE MECHANISM. REFER TO FIGURE 6-79 FOR SIMILAR FULLY PERFORATED TAPE MECHANISM ADJUSTMENTS.

Figure 6-78. Punch Mechanism

NOTE: THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO FULLY PERFORATOR TAPE MECHANISM. REFER TO FIGURE 6-78 FOR SIMILAR CHADLESS TAPE MECHANISM ADJUSTMENTS.

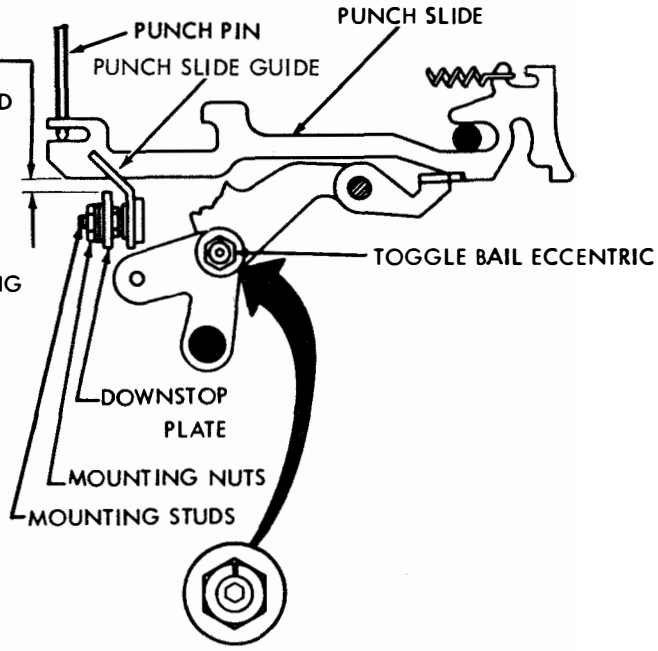
PUNCH SLIDE DOWNSTOP POSITION

REQUIREMENT

FUNCTION CLUTCH DISENGAGED AND LATCHED PLAY IN THE PUNCH SLIDES TAKEN UP TOWARD THE TOP, CLEARANCE BETWEEN EACH PUNCH SLIDE AND THE DOWNSTOP PLATE
MIN. SOME
MAX. 0.008 INCH

TO ADJUST

POSITION DOWNSTOP PLATE WITH IT MOUNTING LOCK NUTS LOOSENED.



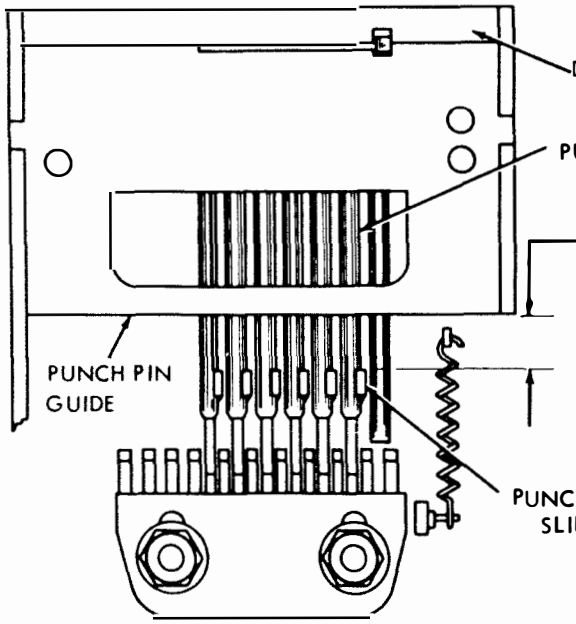
PUNCH SLIDE GUIDE

REQUIREMENT

THE PUNCH SLIDES SHOULD ALIGN WITH THEIR CORRESPONDING PUNCH PINS AND BE FREE OF BINDS AFTER TIGHTENING THE GUIDE MOUNTING STUDS. EACH PUNCH SLIDE SHOULD RETURN FREELY AFTER BEING PUSHED IN NOT MORE THAN 1/16 INCH.

TO ADJUST

POSITION THE GUIDE WITH ITS MOUNTING STUDS FRICTION TIGHT.



PUNCH PIN PENETRATION

REQUIREMENT

WITH LETTERS SELECTED. FUNCTION CLUTCH ENGAGED AND ROTATED UNTIL PUNCH PINS HAVE TRAVELED MAXIMUM DISTANCE INTO THE DIE PLATE. CLEARANCE BETWEEN UPPER EDGE OF EACH SLIDE AND LOWER SIDE OF PUNCH HOLDER:
MIN. 0.025 INCH
MAX. 0.035 INCH

TO ADJUST

ROTATE THE TOGGLE BAIL ECCENTRIC SHAFT WITH ITS LOCK NUT FRICTION TIGHT. KEEP INDENTATION IN THE ECCENTRIC SHAFT TO THE LEFT OF A VERTICAL CENTER LINE THROUGH THE SHAFT.

Figure 6-79. Punch Mechanism for Fully Perforated Tape (TT-253A/UG)

PERFORATOR POSITION----FINAL

(1) TO CHECK
SELECT LETTERS CODE COMBINATION (12345). ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS.
REQUIREMENT
CLEARANCE BETWEEN PUNCH SLIDE AND PUNCH SLIDE LATCH:
MIN. 0.020 INCH----MAX. 0.030 INCH
AT SLIDE WHERE CLEARANCE IS LEAST.
TO ADJUST
LOOSEN PERFORATOR MOUNTING SCREWS, ADJUSTING CLAMP LOCK SCREW, ADJUSTING CLAMP PIVOT SCREW AND ANCHOR BRACKET SCREW UNTIL FRICTION TIGHT. PLACE TIP OF SCREW DRIVER BETWEEN SCREW AND RIM OF PRY HOLE AND PRY PERFORATOR UP OR DOWN. TIGHTEN ONLY ADJUSTING CLAMP LOCK SCREW.

(2) TO CHECK
SELECT "V" CODE COMBINATION (-2345). TRIP FUNCTION CLUTCH AND MOVE ROCKER BAIL TO EXTREME LEFT.
REQUIREMENT
CLEARANCE BETWEEN STRIPPER PLATE AND TYPEWHEEL CHARACTER "M":
MIN. 0.060 INCH---MAX. 0.075 INCH
TO ADJUST
REMOVE RIBBON FROM CARRIER (FIGURE 6-110). POSITION PERFORATOR WITH TWO MOUNTING SCREWS, ADJUSTING CLAMP PIVOT SCREW AND ANCHOR BRACKET SCREW LOOSENED. CHECK RESET BAIL TRIP LEVER REQUIREMENT (FIGURE 6-76) FOR SOME CLEARANCE AND ADJUST IF NECESSARY.

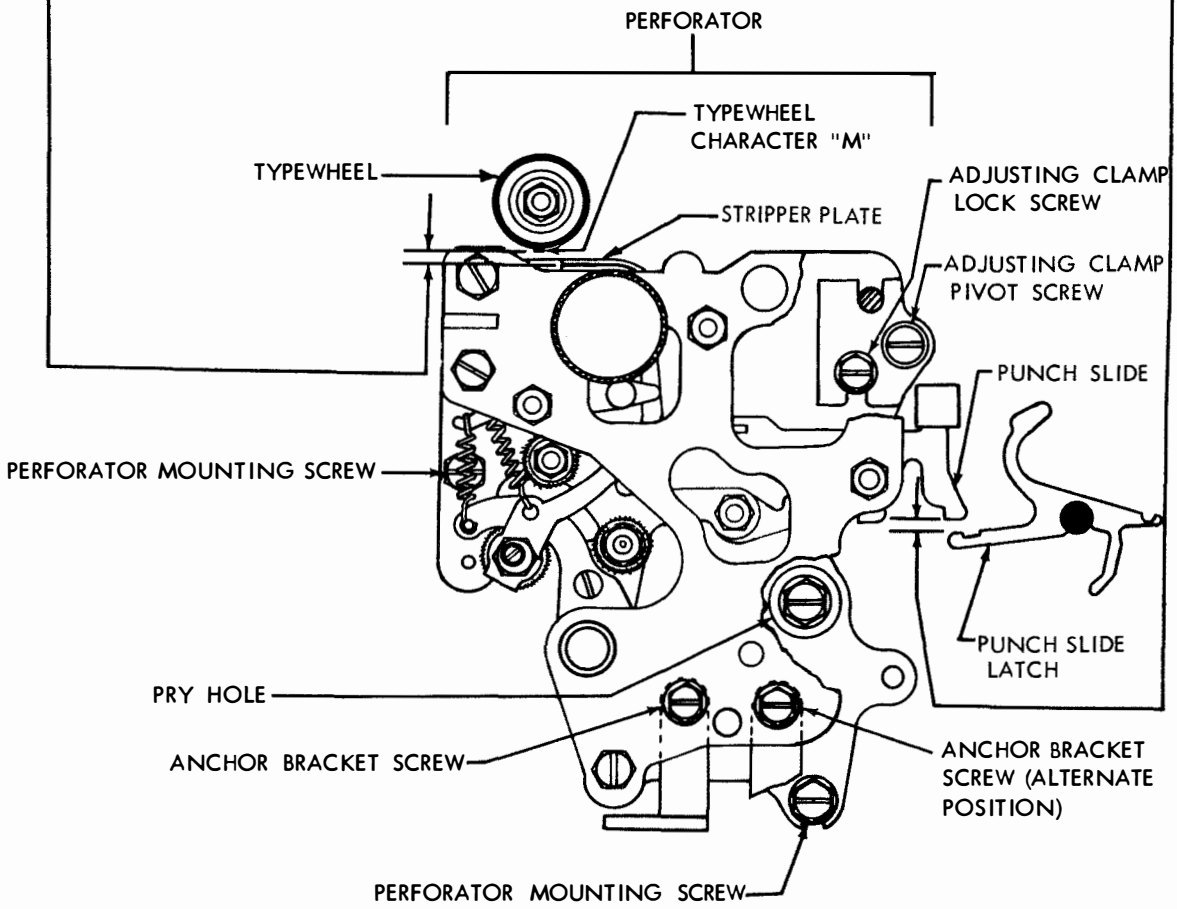


Figure 6-80. Punch Mechanism

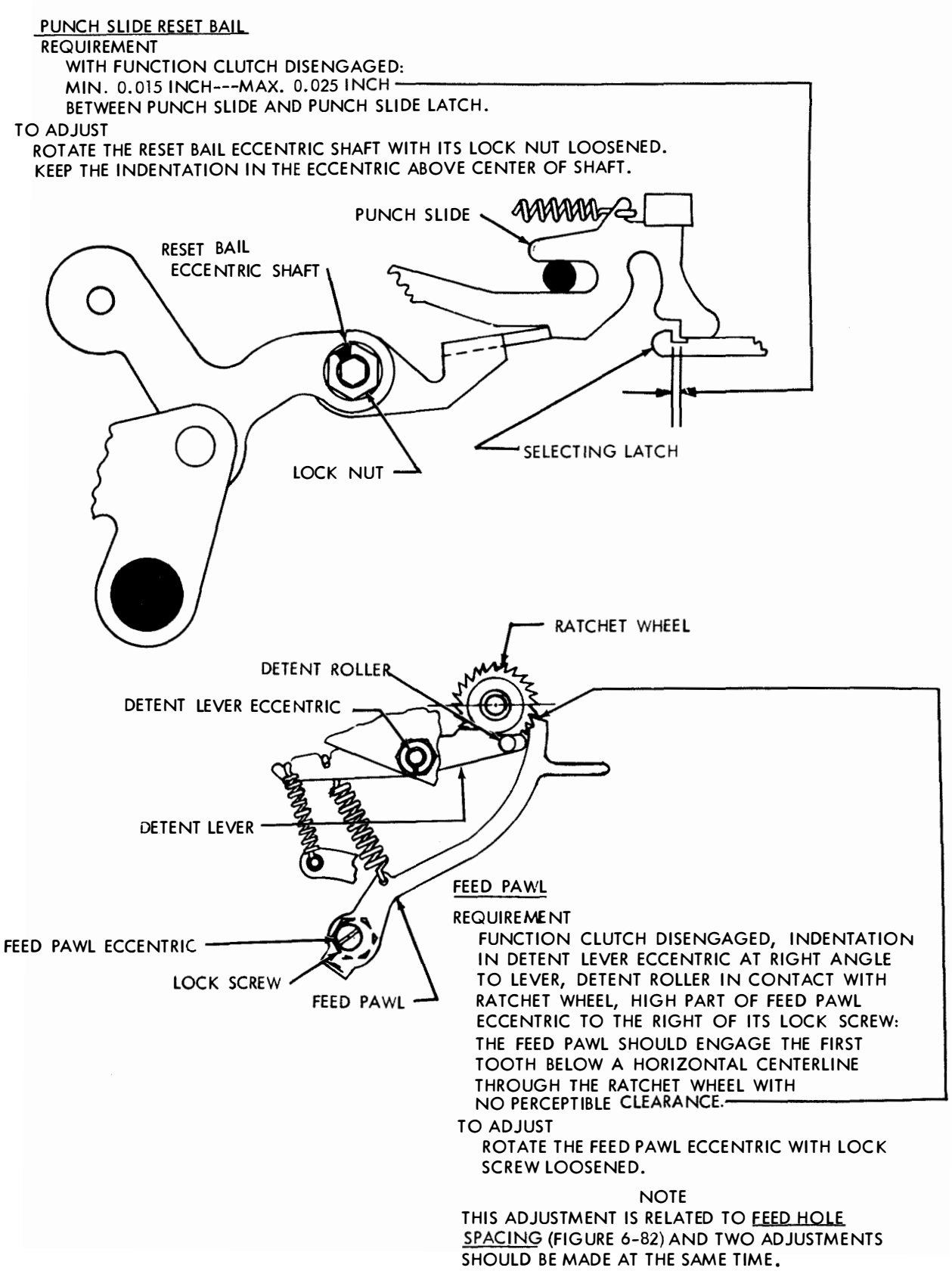


Figure 6-81. Punch Slide Reset and Feeding Mechanisms

NOTE

THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO CHADLESS TAPE MECHANISM. REFER TO FIGURE 6-87 FOR SIMILAR FULLY PERFORATED TAPE MECHANISM ADJUSTMENTS.

FEED HOLE SPACING (PRELIMINARY)

REQUIREMENT

WITH INDENT OF DIE WHEEL ECCENTRIC STUD POINTING DOWNWARD, CLEARANCE BETWEEN DIE WHEEL AND FEED WHEEL:

MIN. 0.002 INCH----------MAX. 0.004 INCH

TO ADJUST

POSITION DIE WHEEL ECCENTRIC STUD WITH LOCK NUT LOOSENED.

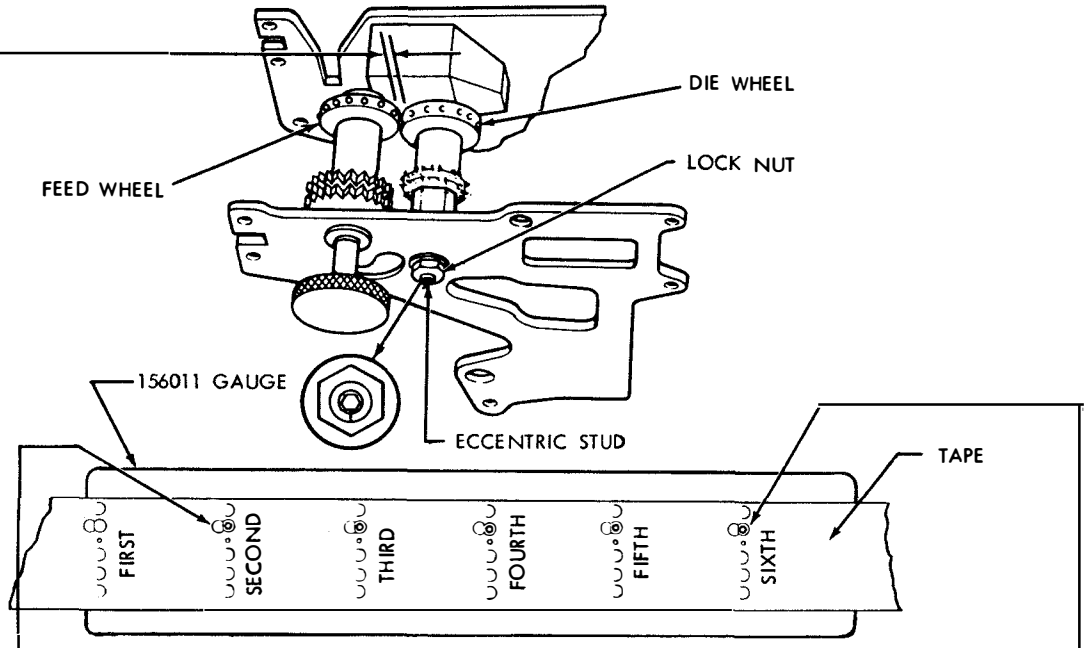
NOTE:

BEFORE PROCEEDING WITH THE FOLLOWING ADJUSTMENTS, CHECK BOTH TAPE GUIDE SPRING TENSIONS (FIGURE 6-86).

FEED HOLE SPACING (FINAL)

(1) REQUIREMENT

WITH TAPE REMOVED, MIN. OF 0.002 INCH CLEARANCE BETWEEN FEED WHEEL AND DIE WHEEL.



(2) TO CHECK

PERFORATE IN ORDER SIX SEQUENCES MADE UP OF NINE BLANK CODE COMBINATIONS FOLLOWED BY A LETTERS COMBINATION. OPEN CHADS SO THAT CODE HOLES ARE VISIBLE. PLACE TAPE OVER SMOOTH SIDE OF 156011 TAPE GAUGE SO THAT FIRST NO. 2 CODE HOLE IS CONCENTRIC WITH FIRST (0.072 INCH) HOLE IN GAUGE (SEE NOTE BELOW).

REQUIREMENT

SECOND THROUGH FIFTH HOLE IN GAUGE VISIBLE THROUGH NO. 2 CODE HOLES IN TAPE. CIRCULAR PORTION OF SIXTH NO. 2 CODE HOLE ENTIRELY WITHIN CORRESPOND-IND (0.086 INCH) HOLE IN GAUGE.

((3) REQUIREMENT

WITH TAPE SHOE HELD AWAY FROM FEED WHEEL, FEED PAWL AND DETENT DISENGAGED AND TAPE REMOVED, FEED WHEEL SHOULD ROTATE FREELY.

TO ADJUST

(1) WITH TAPE REMOVED, KEEPING INDENT BELOW CENTER OF STUD, POSITION DIE WHEEL ECCENTRIC STUD WITH LOCK NUT LOOSENED SO THAT CLEARANCE BETWEEN FEED WHEEL AND DIE WHEEL IS

MIN. 0.002 INCH----------MAX. 0.004 INCH.

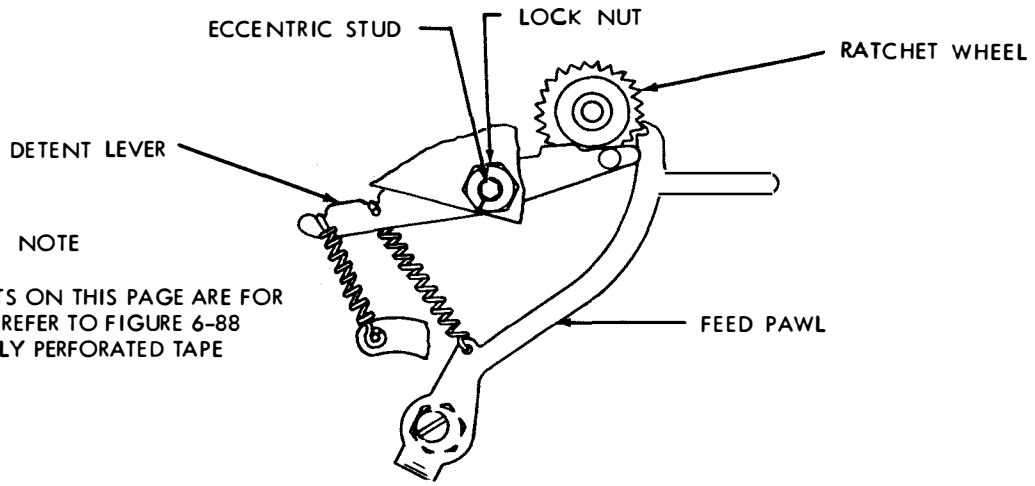
(2) REFINE THE ABOVE ADJUSTMENT TO MEET REQUIREMENT (2). MOVE INDENT IN ECCENTRIC STUD TOWARD FEED WHEEL TO DECREASE AND AWAY FROM FEED WHEEL TO INCREASE FEED HOLE SPACING. CAUTION: WITH TAPE REMOVED, MAKE SURE FEED WHEEL-DIE WHEEL CLEARANCE IS A MIN. OF 0.002 INCH.

(3) FAILURE TO MEET REQUIREMENT (3) INDICATES DIE WHEEL ECCENTRIC STUD HAS BEEN OVER ADJUSTED. REFINE.

NOTE:

FIRST THROUGH FIFTH HOLES IN GAUGE ARE SAME SIZE AS CODE HOLES IN TAPE (0.072 INCH DIAMETER). BUT SIXTH HOLE IN GAUGE IS LARGER (0.086 INCH). THIS ARRANGEMENT ALLOWS 0.007 INCH VARIATION IN 5 INCHES.

Figure 6-82. Feed Hole Spacing



NOTE

THE ADJUSTMENTS ON THIS PAGE ARE FOR CHADLESS TAPE. REFER TO FIGURE 6-88 FOR SIMILAR FULLY PERFORATED TAPE ADJUSTMENTS.

DETENT

REQUIREMENT

A PIECE OF TAPE CONTAINING NINE FEED HOLES FOLLOWED BY A LETTERS COMBINATION PERFORATED ON THE PERFORATOR MUST CONFORM TO THE 156011 TAPE GAUGE.

THE LATERAL CENTERLINE THROUGH THE CODE HOLES IN THE TAPE SHOULD COINCIDE WITH A LATERAL CENTERLINE THROUGH THE HOLES IN THE GAUGE.

TO ADJUST

ROTATE THE DETENT ECCENTRIC CLOCKWISE TO MOVE THE FEED HOLES TOWARD THE HINGED EDGE OF THE CODE HOLES AND COUNTERCLOCKWISE TO MOVE THE FEED HOLES TOWARD THE TRAILING EDGE OF THE CODE HOLES. TIGHTEN THE ECCENTRIC LOCK NUT AND REFINE THE FEED PAWL ADJUSTMENT.

RECHECK FEED PAWL ADJUSTMENT (FIGURE 6-81).

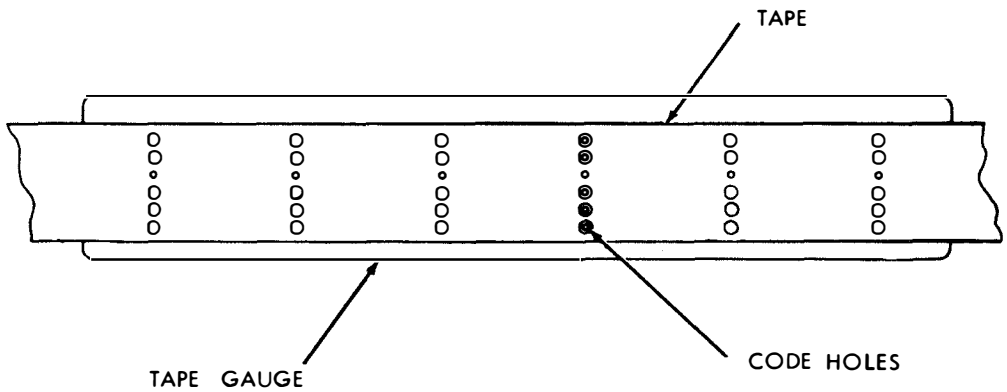
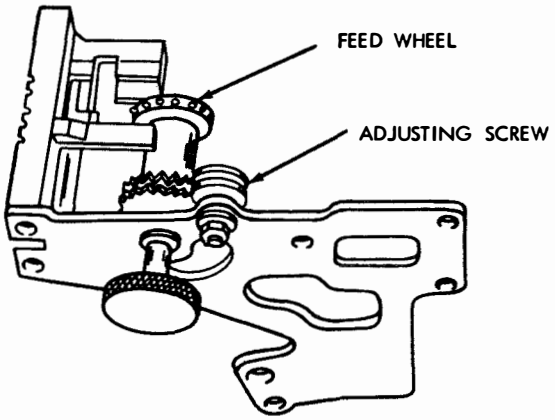
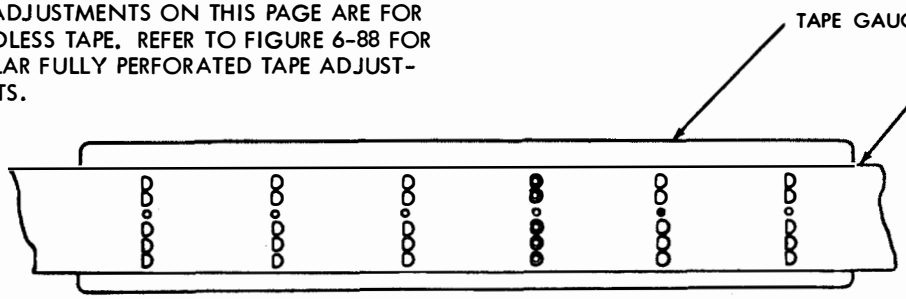


Figure 6-83. Punch Detent



NOTE

THE ADJUSTMENTS ON THIS PAGE ARE FOR CHADLESS TAPE. REFER TO FIGURE 6-88 FOR SIMILAR FULLY PERFORATED TAPE ADJUSTMENTS.



FEED HOLE LATERAL ALIGNMENT

REQUIREMENT

WHEN A PIECE OF TAPE CONTAINING NINE FEED HOLES FOLLOWED BY A LETTERS COMBINATION ARE PERFORATED BY THE PERFORATOR AND CHECKED BY THE TAPE GAUGE, THE CODE HOLES IN THE TAPE SHOULD BE

CONCENTRIC WITH THE HOLES IN THE GAUGE

TO ADJUST

TURN THE FEED WHEEL ADJUSTING SCREW IN OR OUT WITH ITS LOCK NUT LOOSENED.

REFINE DETENT LEVER ADJUSTMENT IF NECESSARY. (FIGURE 6-83)

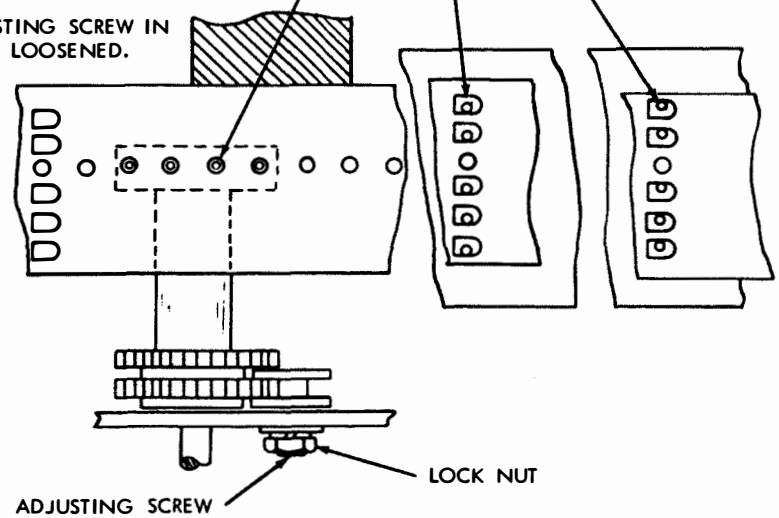
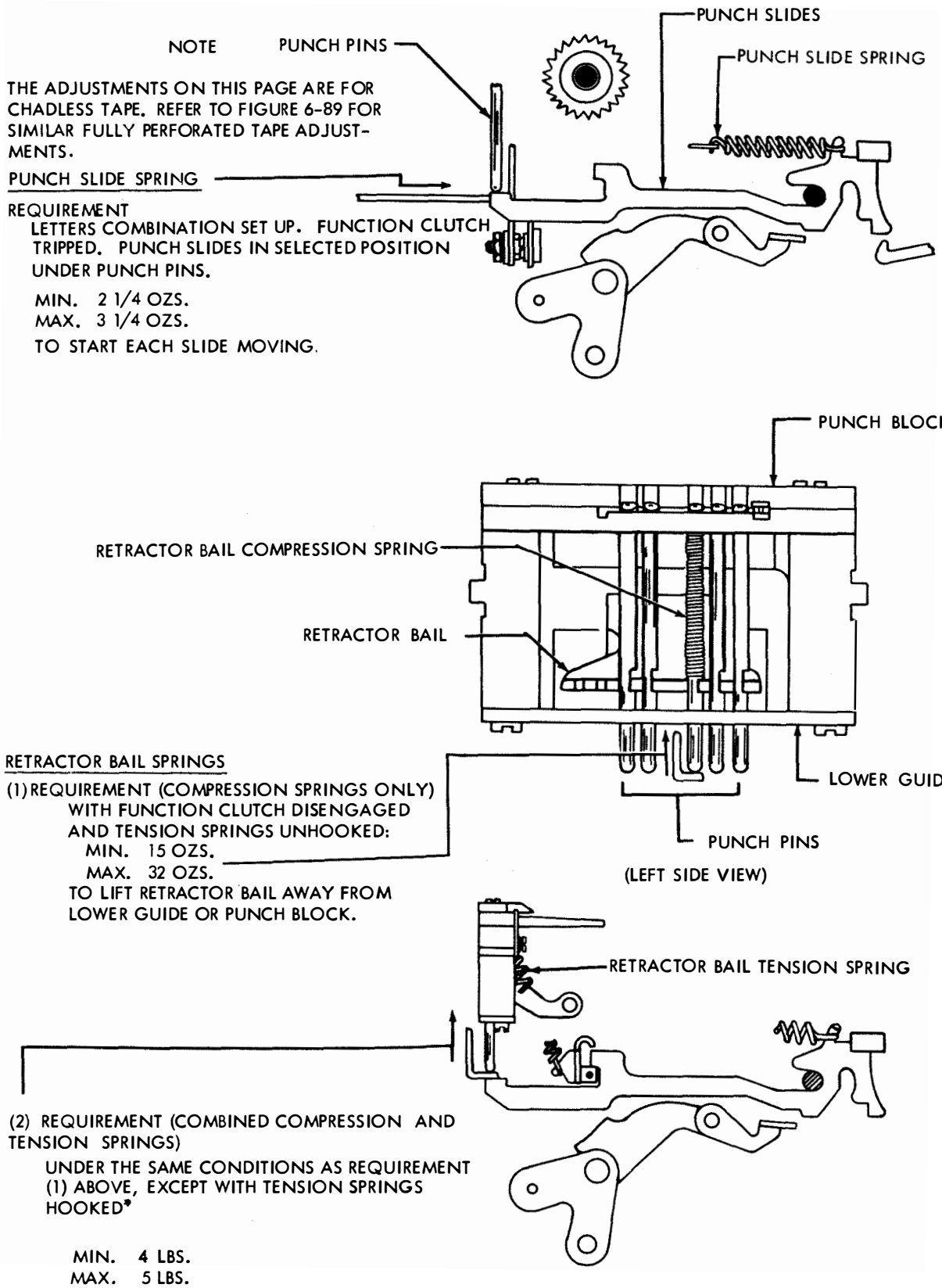
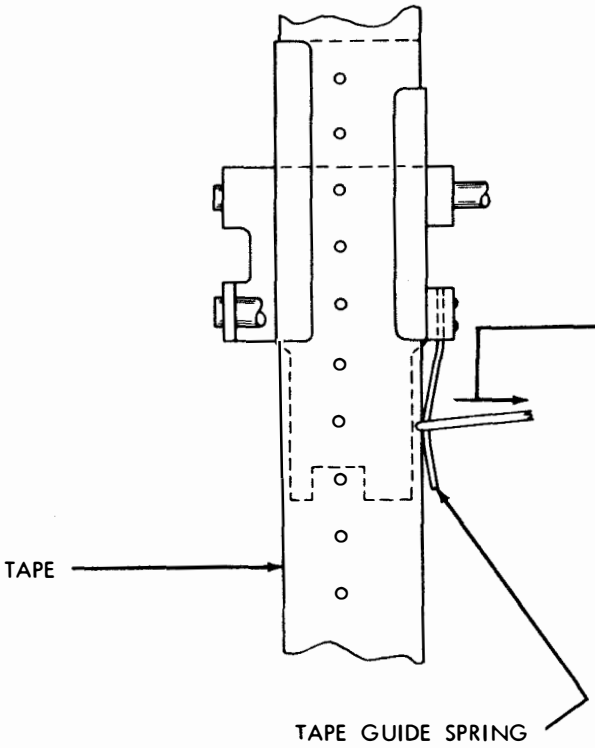


Figure 6-84. Tape Feed Hole Lateral Alignment



*TO FACILITATE REHOOKING TENSION SPRINGS, PLACE PUNCH PINS IN UPPERMOST POSITION.

Figure 6-85. Punch Mechanism



NOTE

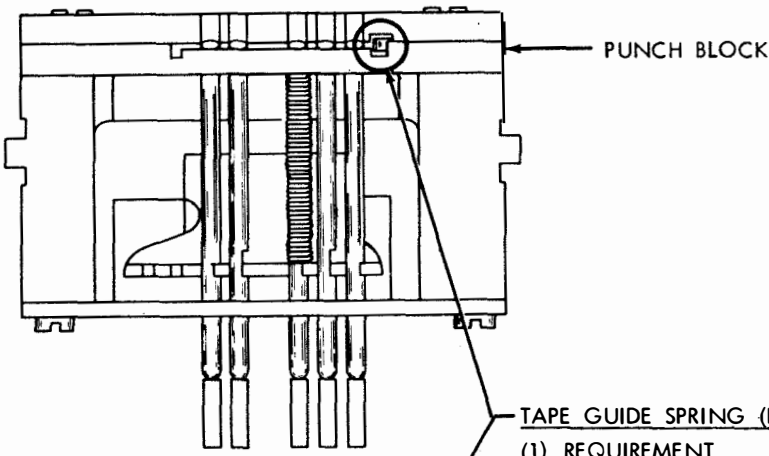
THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO CHADLESS TAPE MECHANISM ADJUSTMENTS. REFER TO FIGURE 6-89 FOR FULLY PERFORATED TAPE MECHANISM ADJUSTMENTS.

TAPE GUIDE SPRING (TAPE CHUTE)

REQUIREMENT
CLUTCH DISENGAGED AND TAPE THREADED THROUGH THE PUNCH ASSEMBLY IT SHOULD REQUIRE
MIN. 1/2 OZ.
MAX. 1 OZ.

TO JUST MOVE THE SPRING AWAY FROM THE TAPE

TO ADJUST
BEND THE SPRING



TAPE GUIDE SPRING (PUNCH BLOCK)

(1) REQUIREMENT
WITH THE TAPE REMOVED FROM THE PUNCH BLOCK THE TAPE GUIDE SPRING SHOULD REST AGAINST THE CLEARANCE SLOT IN THE BLOCK IN A SYMMETRICAL MANNER.

(2) REQUIREMENT
WITH TAPE IN THE PUNCH BLOCK AND THE PERFORATOR OPERATING UNDER POWER, THE SPRING SHOULD NOT DISTORT THE EDGE OF THE TAPE

TO ADJUST
BEND THE SPRING AND POSITION IT WITH ITS MOUNTING SCREW LOOSENED

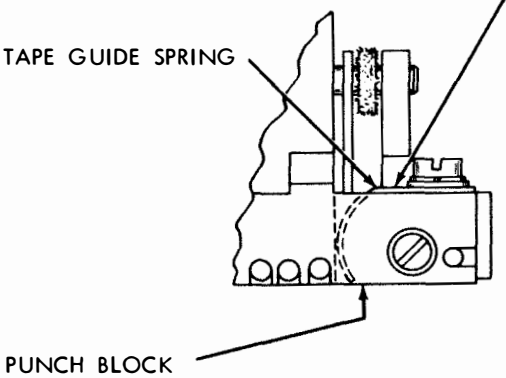
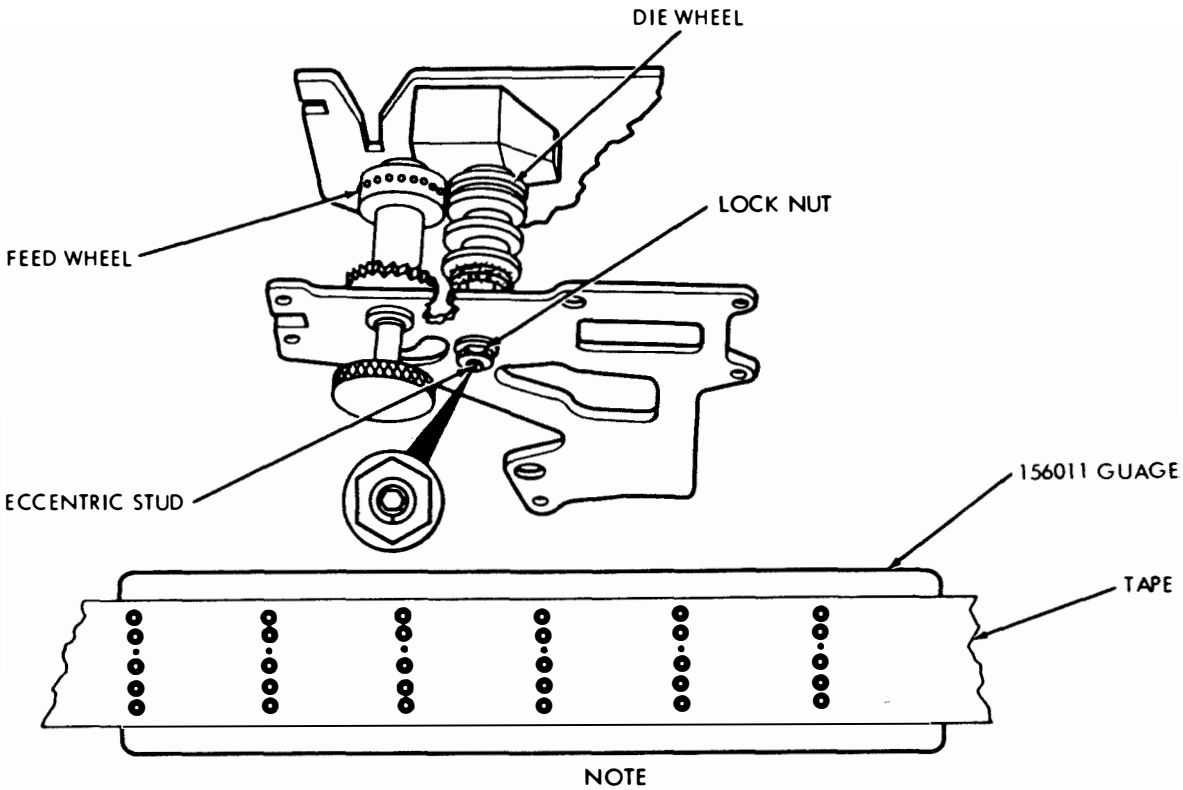


Figure 6-86. Punch Mechanism

NOTE
THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO FULLY PERFORATED TAPE MECHANISM. REFER TO FIGURE 6-82 FOR SIMILAR CHADLESS TAPE MECHANISM ADJUSTMENTS.



NOTE
BEFORE PROCEEDING WITH THE FOLLOWING ADJUSTMENT CHECK BOTH TAPE GUIDE SPRING TENSIONS (FIGURE 1-26).

FEED HOLE SPACING

(1) REQUIREMENT

WITH A PIECE OF TAPE PERFORATED WITH SIX SERIES OF 9 BLANK CODE COMBINATIONS FOLLOWED BY A LETTERS COMBINATION PLACED OVER THE SMOOTH SIDE OF THE 156011 TAPE GAUGE SO THAT THE CIRCULAR PORTION OF THE FIRST NUMBER 2 CODE HOLE IN THE TAPE IS CONCENTRIC WITH THE FIRST HOLE OF THE TAPE GAUGE, THE NEXT FOUR HOLES IN THE TAPE GAUGE SHOULD BE VISIBLE THROUGH THE NUMBER 2 CODE HOLES IN THE TAPE AND THE CIRCULAR PORTION OF THE LAST (SIXTH) NUMBER 2 CODE HOLE IN THE TAPE SHALL BE ENTIRELY WITHIN THE 0.086 DIAMETER HOLE OF THE TAPE GAUGE.

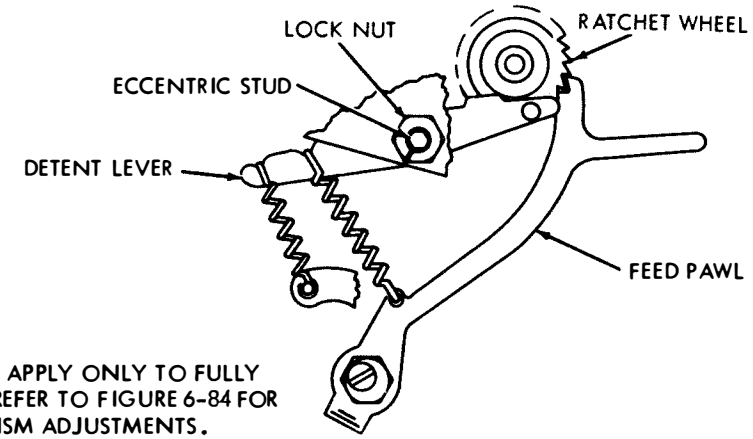
(2) REQUIREMENT

WITH TAPE SHOE HELD AWAY FROM FEED WHEEL, FEED PAWL AND DETENT DISENGAGED AND TAPE REMOVED, FEED WHEEL SHOULD ROTATE FREELY.

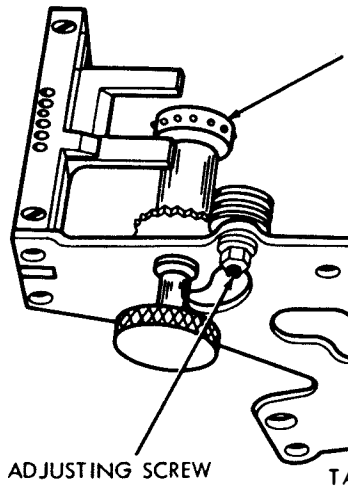
TO ADJUST

WITH TAPE REMOVED FROM THE PUNCH MECHANISM, LOOSEN THE ECCENTRIC LOCK NUT AND ROTATE THE DIE WHEEL ECCENTRIC SHAFT UNTIL IT BINDS AGAINST THE FEED WHEEL. BACK OFF THE ECCENTRIC UNTIL THE DIE WHEEL IS JUST FREE. KEEP THE INDENT OF THE ECCENTRIC BELOW THE HORIZONTAL CENTERLINE OF THE STUD. REFINE ADJUSTMENT FOR REQUIREMENT (1), IF NECESSARY, BY MOVING THE DIE WHEEL TOWARD THE FEED WHEEL TO DECREASE THE CHARACTER SPACING AND AWAY FROM THE FEED WHEEL TO INCREASE THE CHARACTER SPACING.

Figure 6-87. Perforator Mechanism for Fully Perforated Tape (TT-253A/UG)



NOTE
THE ADJUSTMENTS ON THIS PAGE APPLY ONLY TO FULLY PERFORATED TAPE MECHANISM. REFER TO FIGURE 6-84 FOR SIMILAR CHADLESS TAPE MECHANISM ADJUSTMENTS.



FEED HOLE LATERAL ALIGNMENT (DETENT)

(1) REQUIREMENT

WHEN A PIECE OF TAPE IS PERFORATED WITH A SERIES OF BLANK CODE COMBINATIONS THE INDENTATIONS OF THE FEED WHEEL SHALL BE FULLY PUNCHED OUT.

TO ADJUST

RIGHT OR LEFT, ROTATE THE DETENT LEVER ECCENTRIC STUD CLOCKWISE TO MOVE THE FEED WHEEL PERFORATION TOWARDS THE LEADING EDGE OF THE CODE HOLES, AND COUNTERCLOCKWISE TO MOVE THE FEED WHEEL PERFORATIONS TOWARD THE TRAILING EDGE OF THE CODE HOLES. REFINE THE FEED PAWL ADJUSTMENT.

FRONT TO REAR, LOOSEN THE LOCK NUT ON THE ADJUSTING SCREW AND TURN THE SCREW CLOCKWISE TO MOVE TAPE TOWARD REFERENCE EDGE (REAR), AND COUNTERCLOCKWISE TO MOVE THE TAPE AWAY FROM REFERENCE EDGE (FRONT).

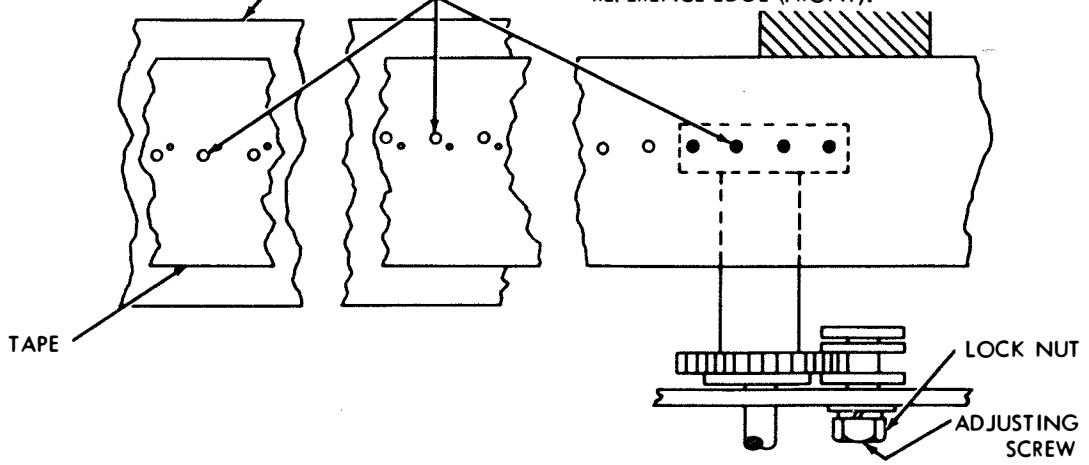


Figure 6-88. Perforator Mechanism for Fully Perforated Tape (TT-253A/UG)

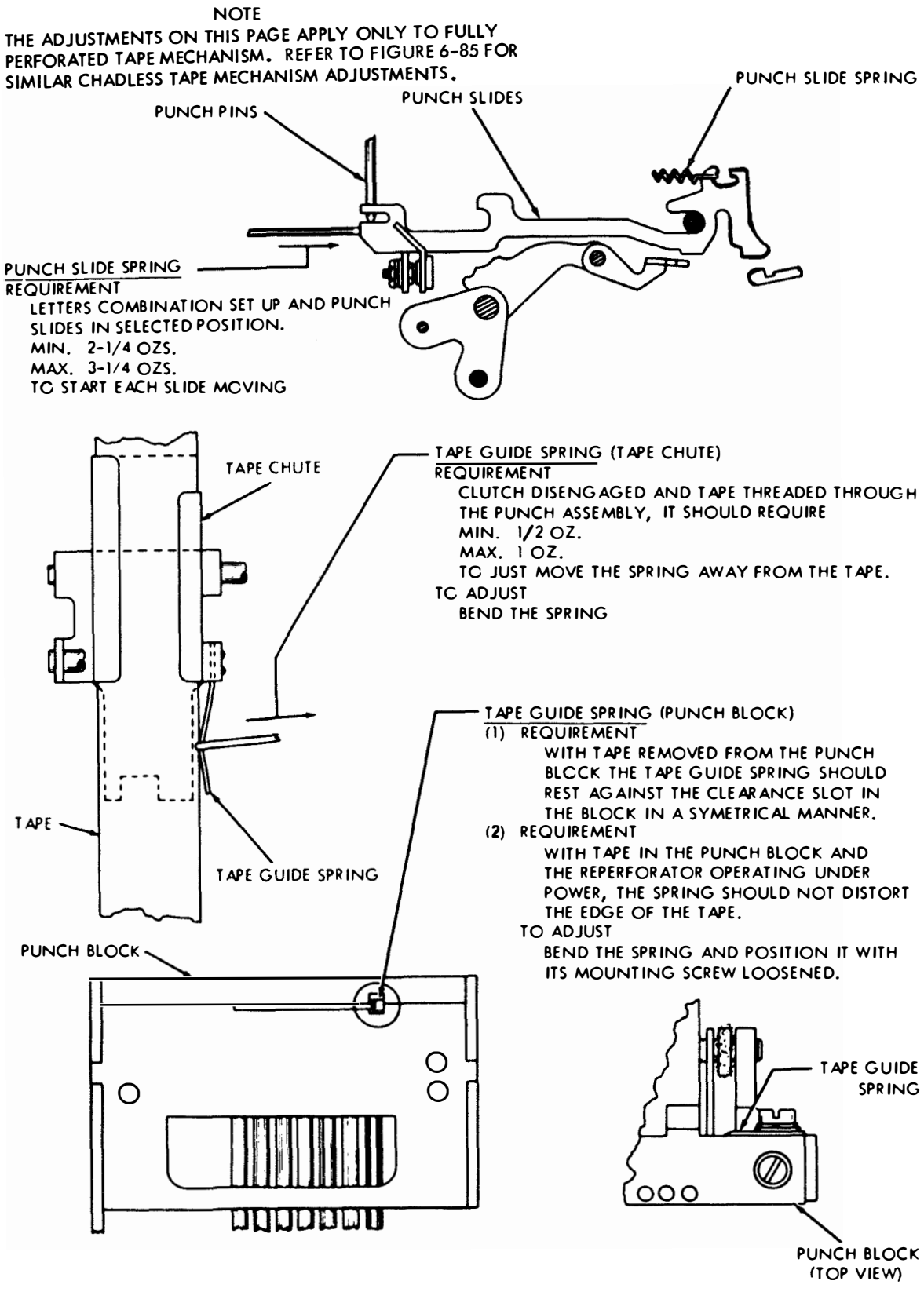
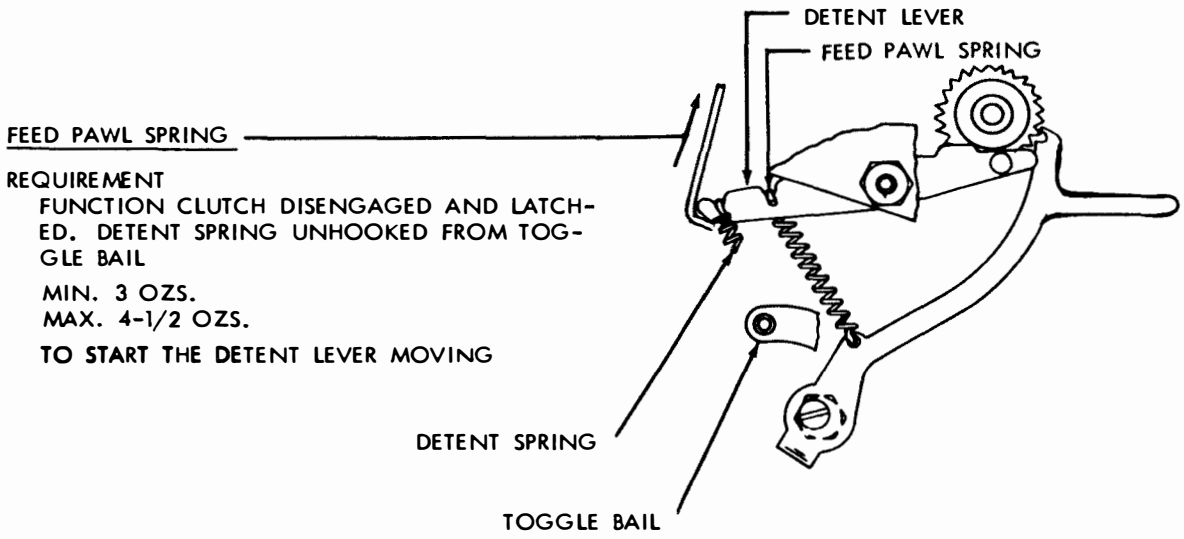


Figure 6-89. Perforator Mechanism for Fully Perforated Tape (TT-253A/UG)



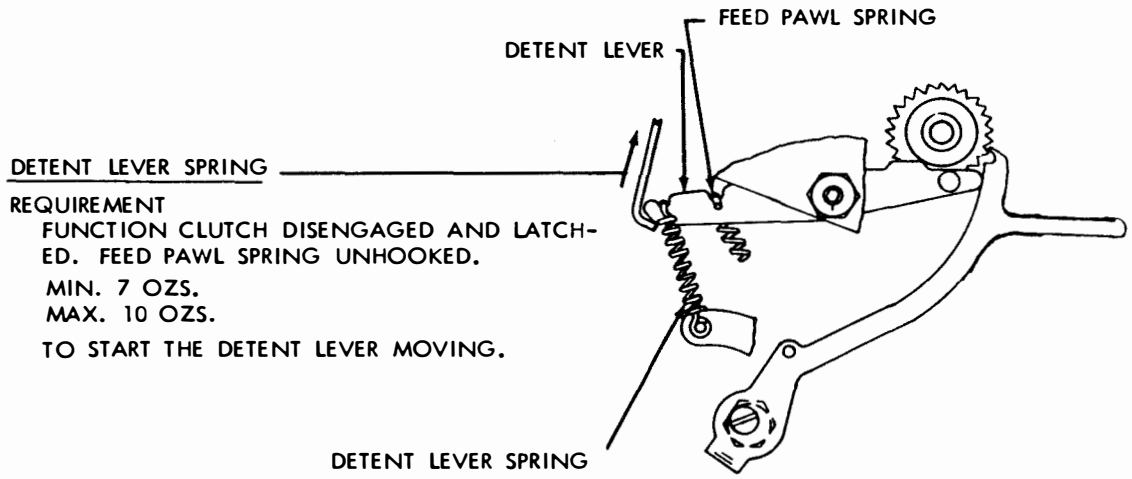


Figure 6-90. Tape Feed Mechanism

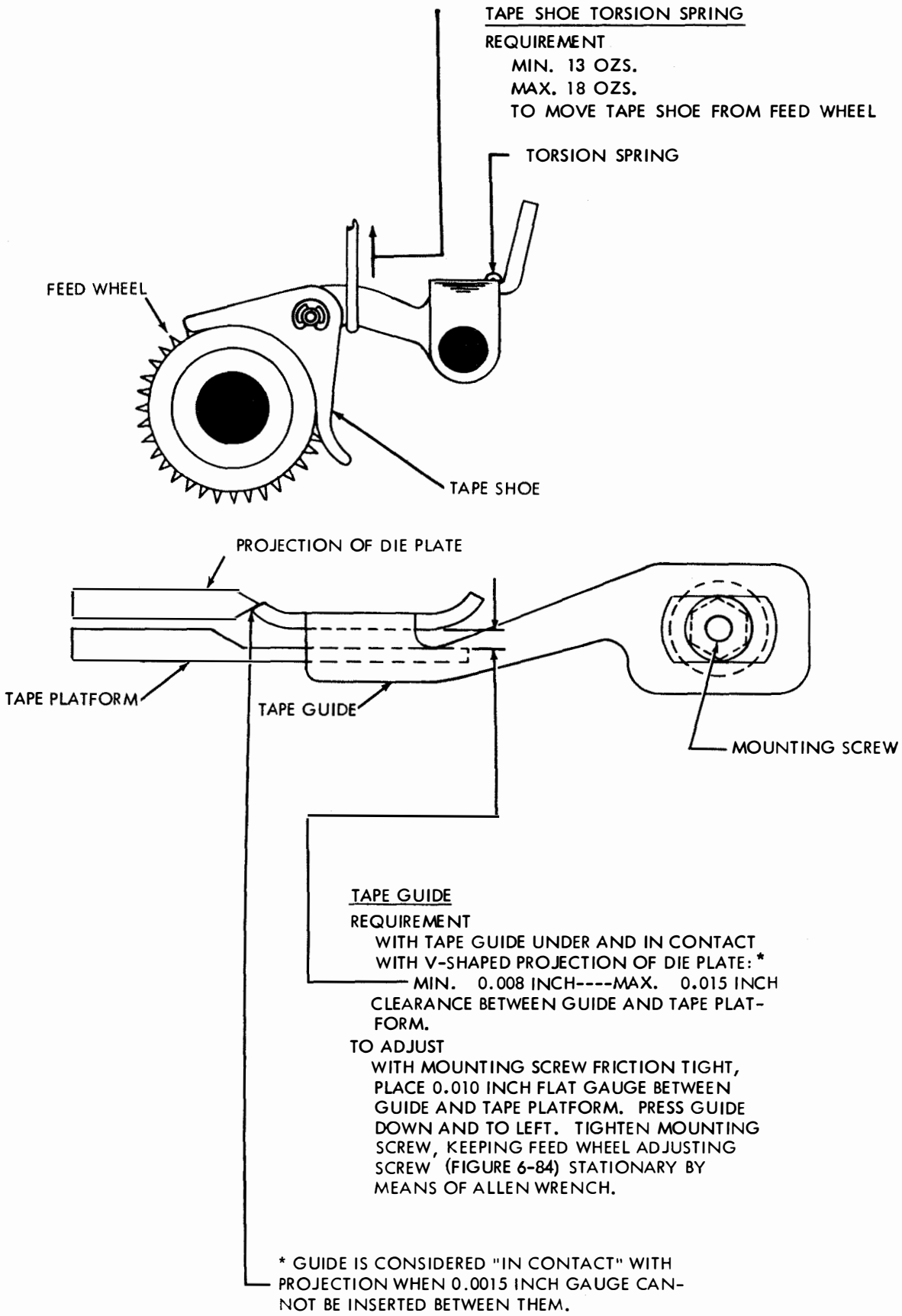


Figure 6-91. Feed Wheel and Tape Guide

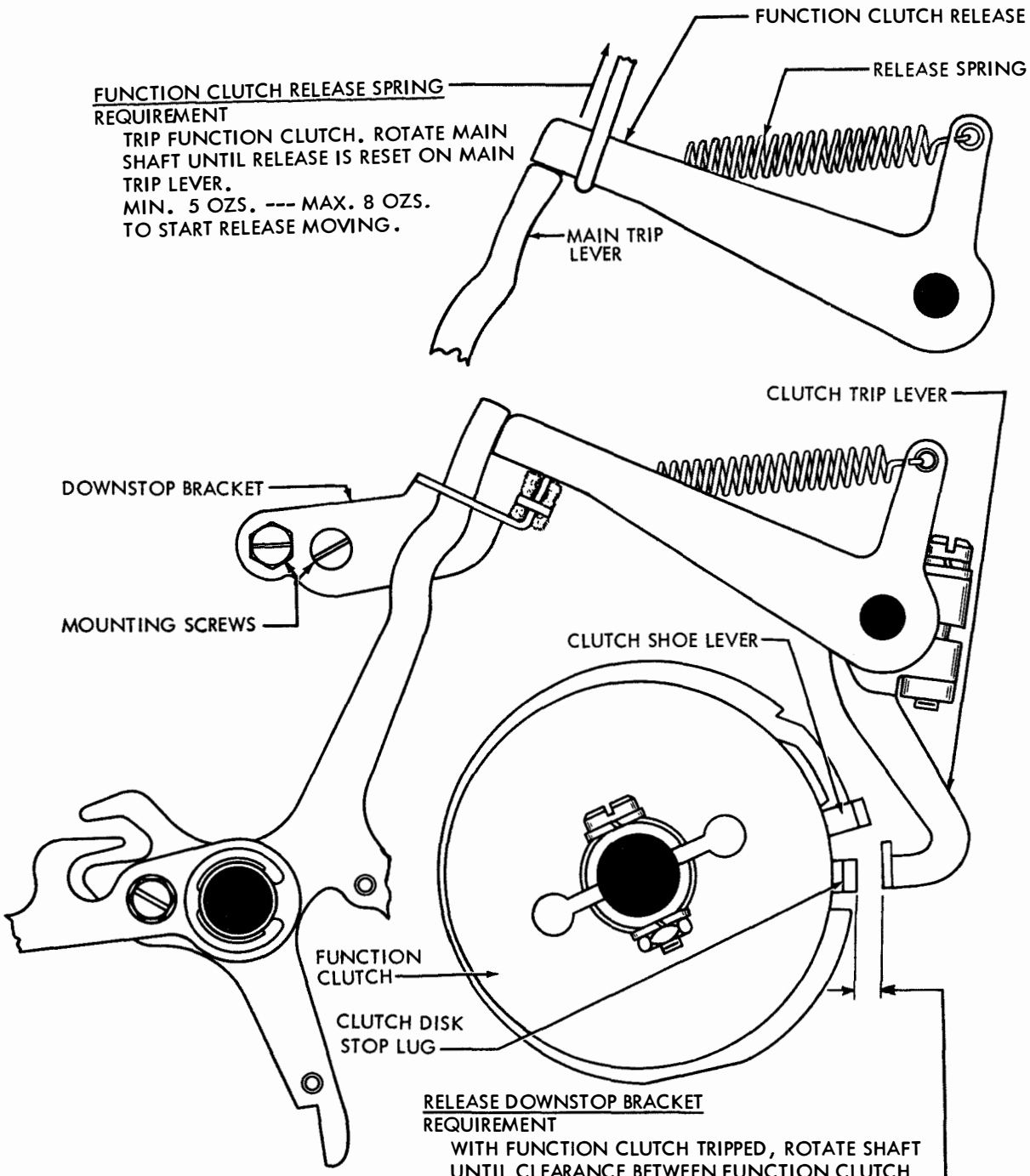


Figure 6-92. Release Downstop Bracket

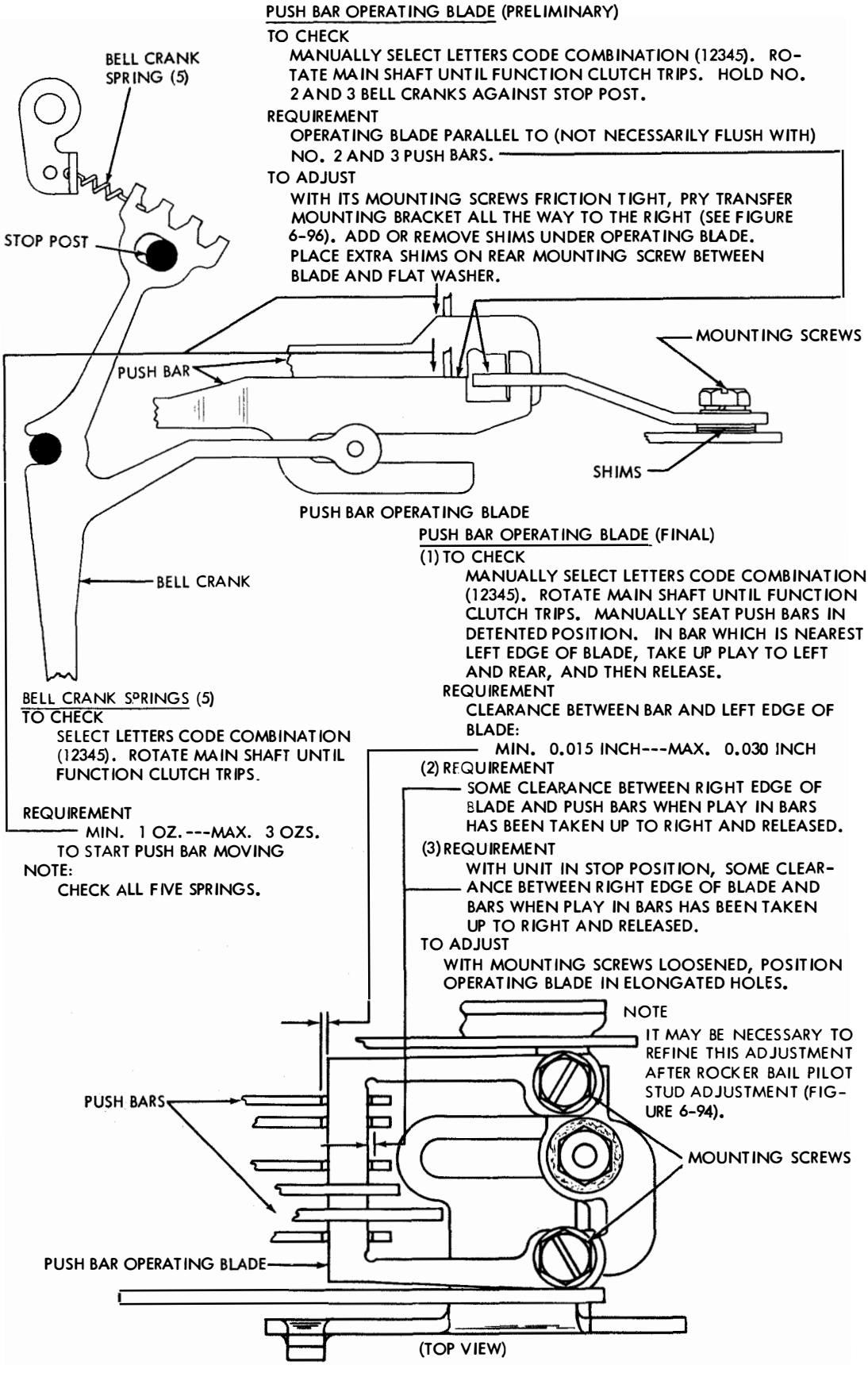
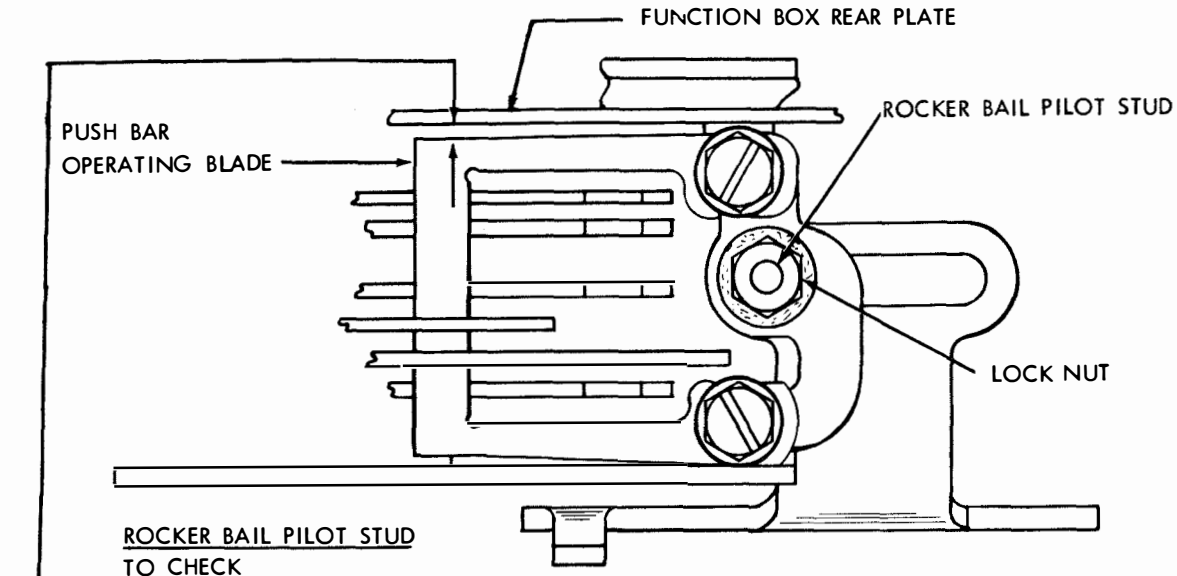
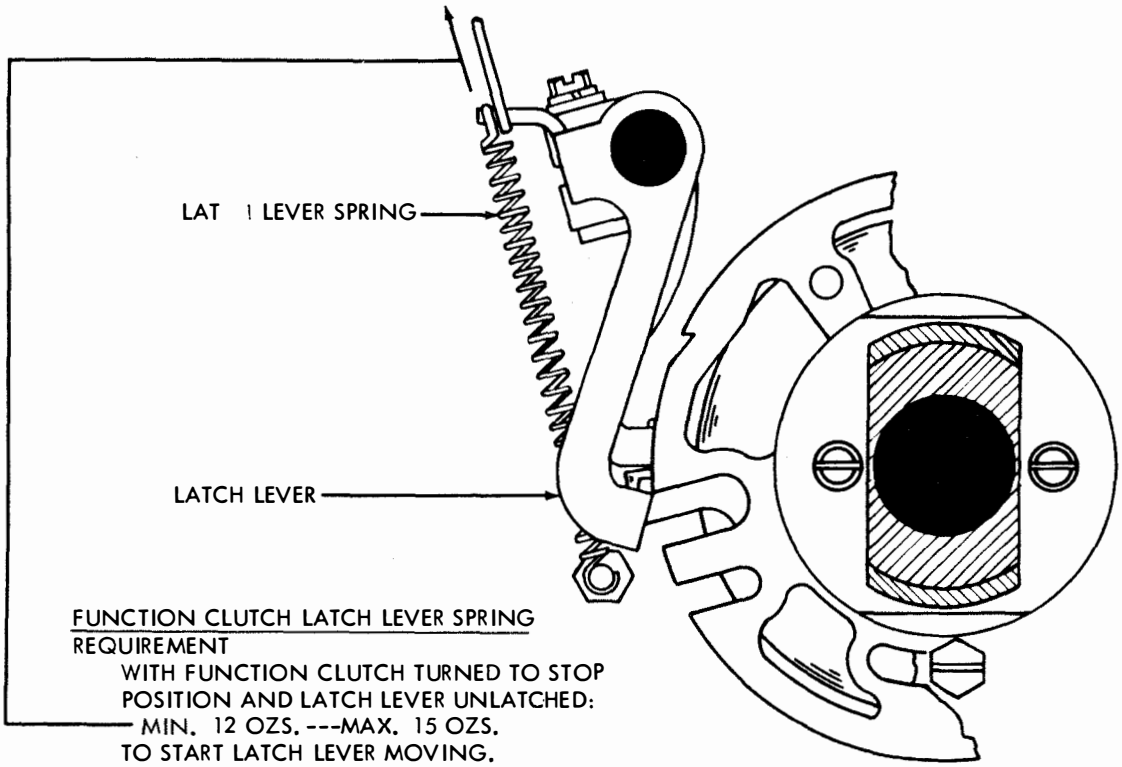


Figure 6-93. Function Mechanism



ROCKER BAIL PILOT STUD
TO CHECK
SELECT BLANK COMBINATION. POSITION ROCKER BAIL TO ITS EXTREME LEFT.
REQUIREMENT
CLEARANCE BETWEEN FUNCTION BOX REAR PLATE AND PUSH BAR OPERATING BLADE:
MIN. 0.005 INCH---- 0.020 INCH
WHEN PLAY IS TAKEN UP TO MAKE CLEARANCE MINIMUM.
TO ADJUST
POSITION ROCKER BAIL PILOT STUD IN ELONGATED HOLE WITH LOCK NUT LOOSENED.

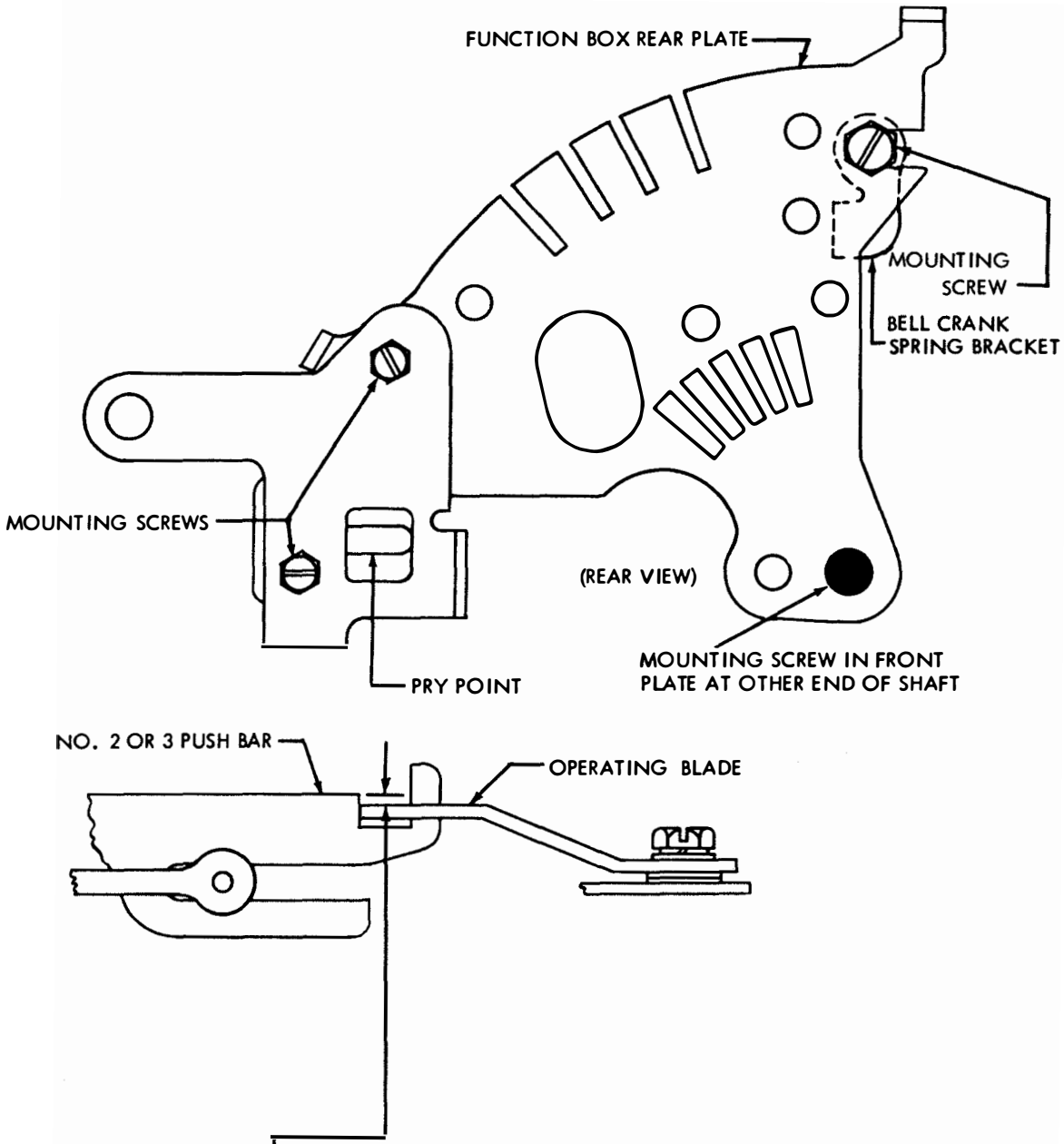
(TOP VIEW)



FUNCTION CLUTCH LATCH LEVER SPRING
REQUIREMENT
WITH FUNCTION CLUTCH TURNED TO STOP POSITION AND LATCH LEVER UNLATCHED:
MIN. 12 OZS. ---MAX. 15 OZS.
TO START LATCH LEVER MOVING.

(REAR VIEW)

Figure 6-94. Function Mechanism



NOTE:

TT-192A/UG—REFINE THIS ADJUSTMENT WITHIN ITS LIMITS TO INCREASE OPERATING MARGIN OF SET.

FUNCTION BOX

TO CHECK

MANUALLY SELECT LETTERS CODE COMBINATION (12345). ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS, PUNCH SLIDES ARE DISENGAGED FROM LATCHES (FIGURE 6-81) AND BLADE JUST TOUCHES PUSH BARS. IN NO. 2 AND 3 PUSH BARS, TAKE UP PLAY DOWNWARD AND RELEASE.

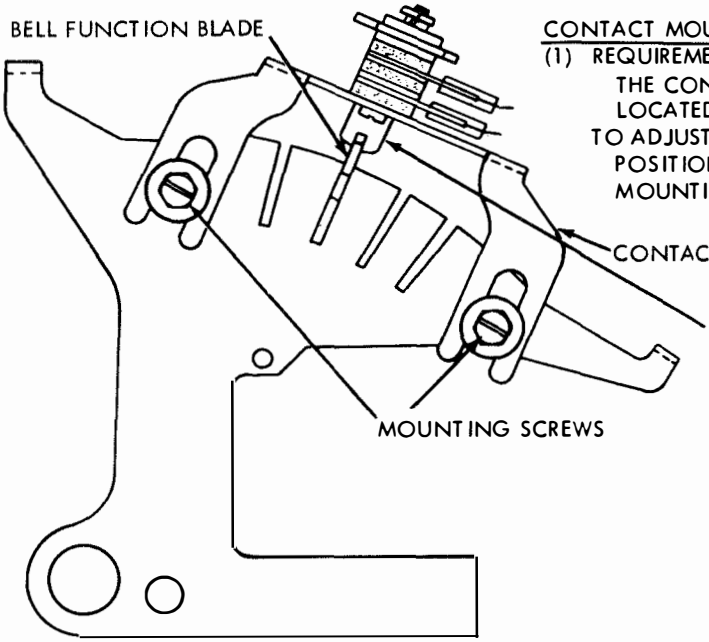
REQUIREMENT

TOP SURFACE OF OPERATING BLADE FLUSH TO 0.020 INCH BELOW TOP SURFACE OF NO. 2 AND 3 PUSH BARS.

TO ADJUST

USING PRY POINT, POSITION FUNCTION BOX WITH THREE MOUNTING SCREWS IN REAR PLATE AND ONE MOUNTING SCREW IN FRONT PLATE LOOSENED. CHECK POSITION OF BELL CRANK SPRING BRACKET.

Figure 6-95. Function Box Mechanism



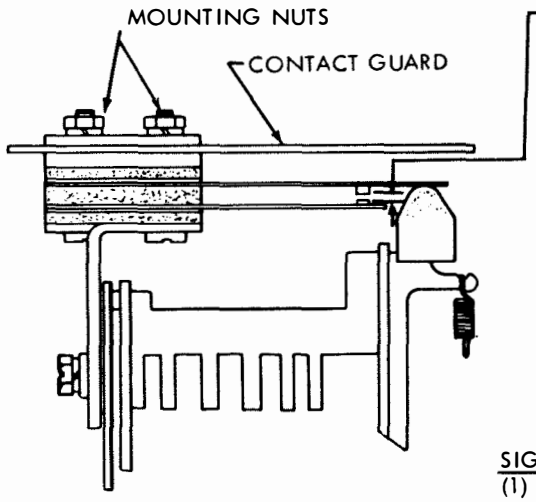
CONTACT MOUNTING BRACKET

(1) REQUIREMENT

THE CONTACT ASSEMBLY SHOULD BE CENTRALLY LOCATED ON THE BELL FUNCTION BLADE INSULATOR

TO ADJUST

POSITION THE CONTACT BRACKET WITH ITS MOUNTING SCREWS LOOSENED.



(2) REQUIREMENT

LETTERS CODE COMBINATION SELECTED. BELL FUNCTION BLADE IN BLOCKED POSITION.

MIN. 0.015 INCH

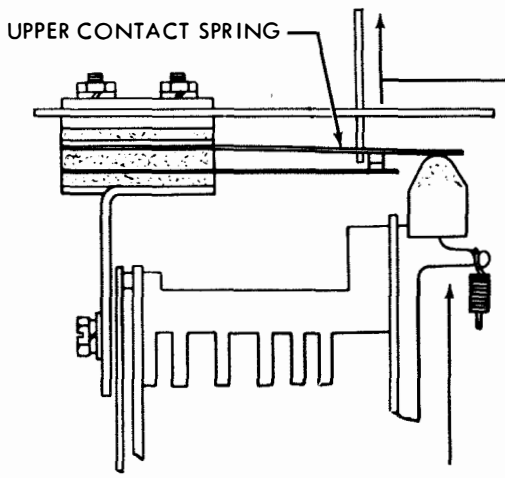
MAX. 0.025 INCH

GAP BETWEEN CONTACT POINTS

(3) WITH BELL FUNCTION BLADE SELECTED THE CONTACT SHOULD CLOSE.

TO ADJUST

POSITION THE CONTACT BRACKET WITH ITS MOUNTING SCREWS LOOSENED.



SIGNAL BELL CONTACT

(1) REQUIREMENT

CONTACT SPRING APPROXIMATELY PARALLEL TO TOP OF BRACKET.

TO ADJUST

BEND CONTACT SPRING

(2) REQUIREMENT

MIN. 1-1/2 OZS.

MAX. 2-1/2 OZS.

TO SEPARATE THE CONTACTS.

TO ADJUST

BEND UPPER CONTACT SPRING.

(3) REQUIREMENT

CONTACT GUARD SHOULD BE CENTRALLY LOCATED OVER THE CONTACT SPRINGS.

TO ADJUST

POSITION GUARD WITH MOUNTING NUTS LOOSENED.

FUNCTION BLADE SPRING, SEE FIGURE 6-99.

Figure 6-96. Signal Bell Contact Mechanism

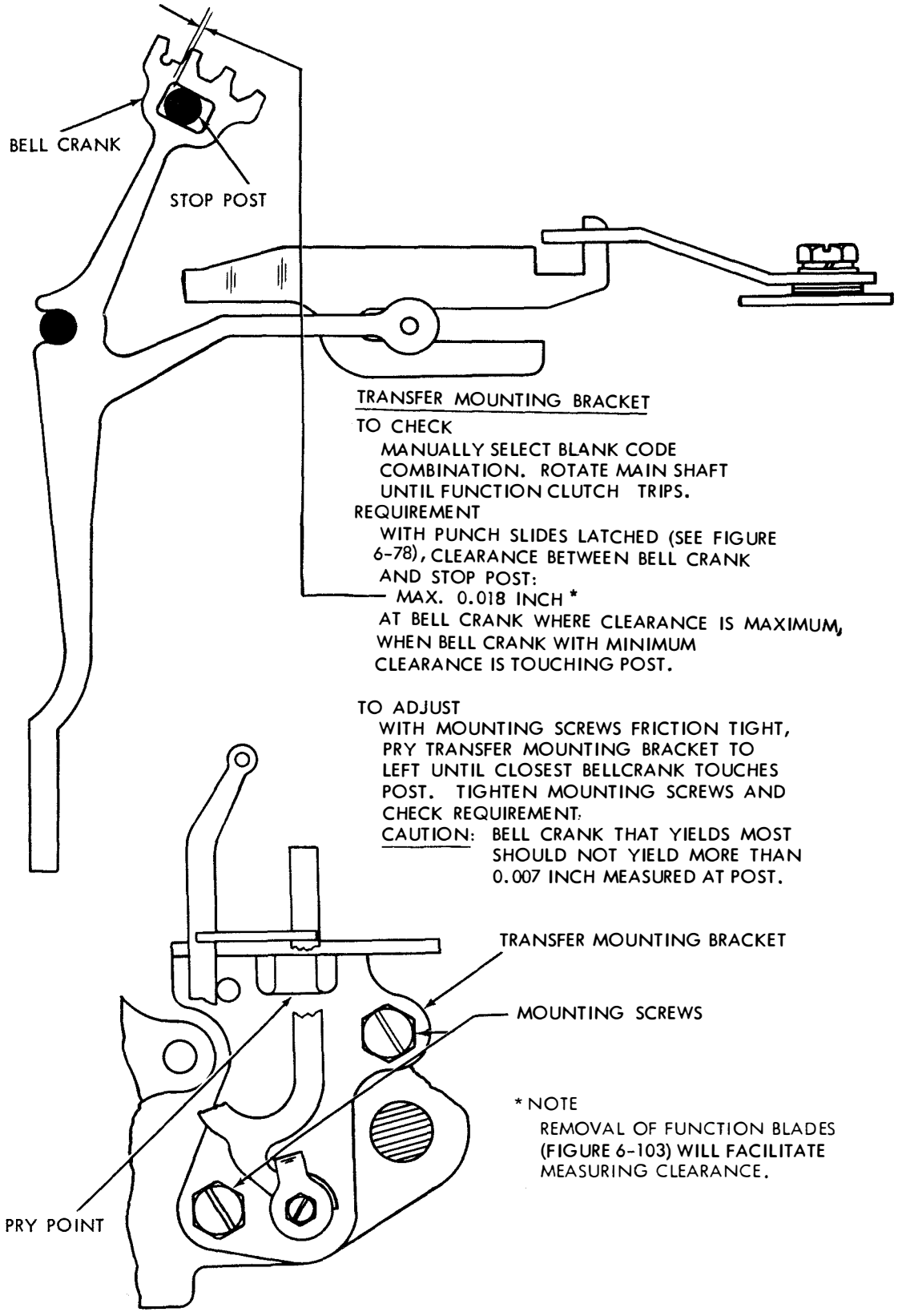


Figure 6-97. Transfer Mechanism

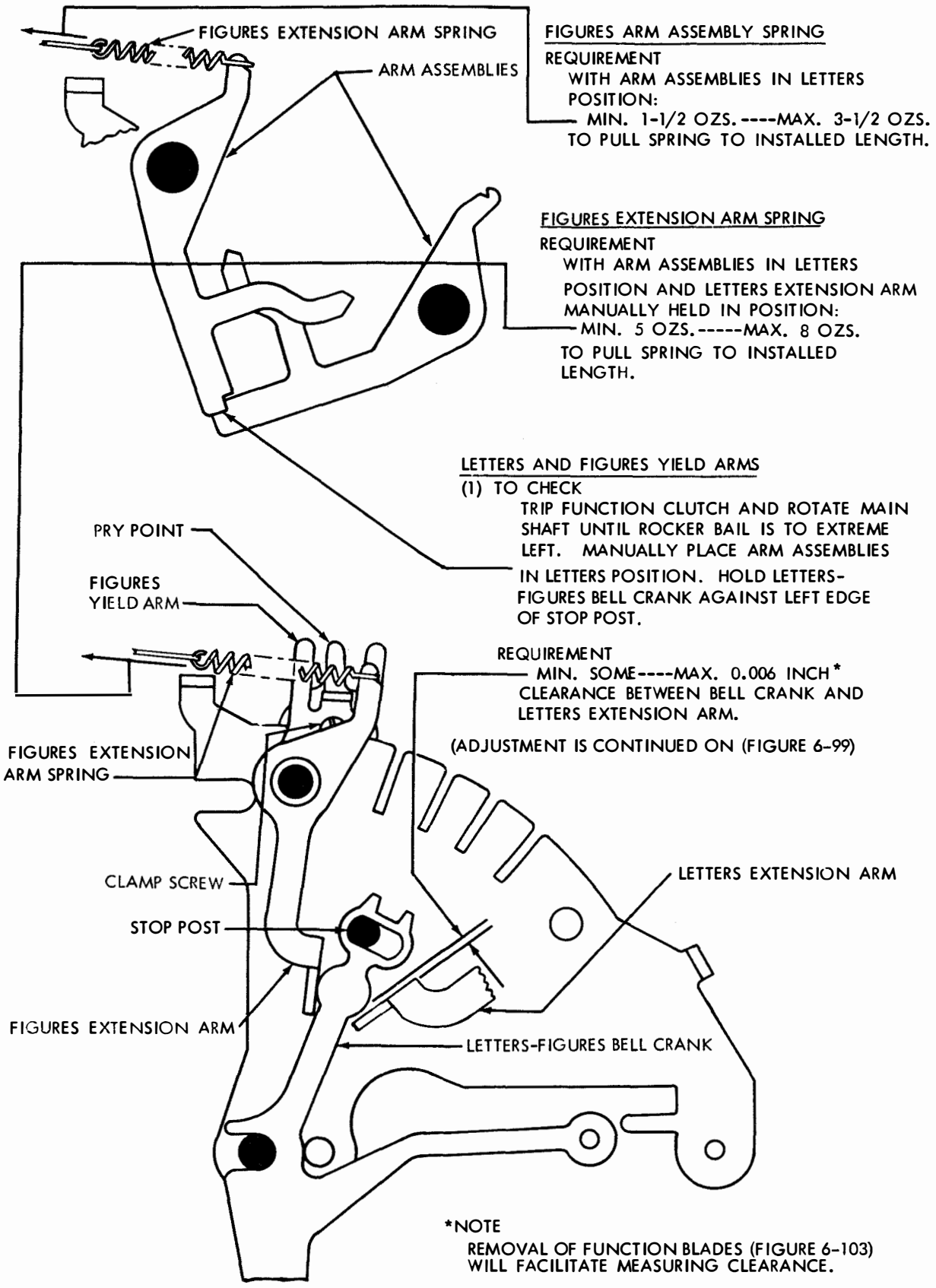
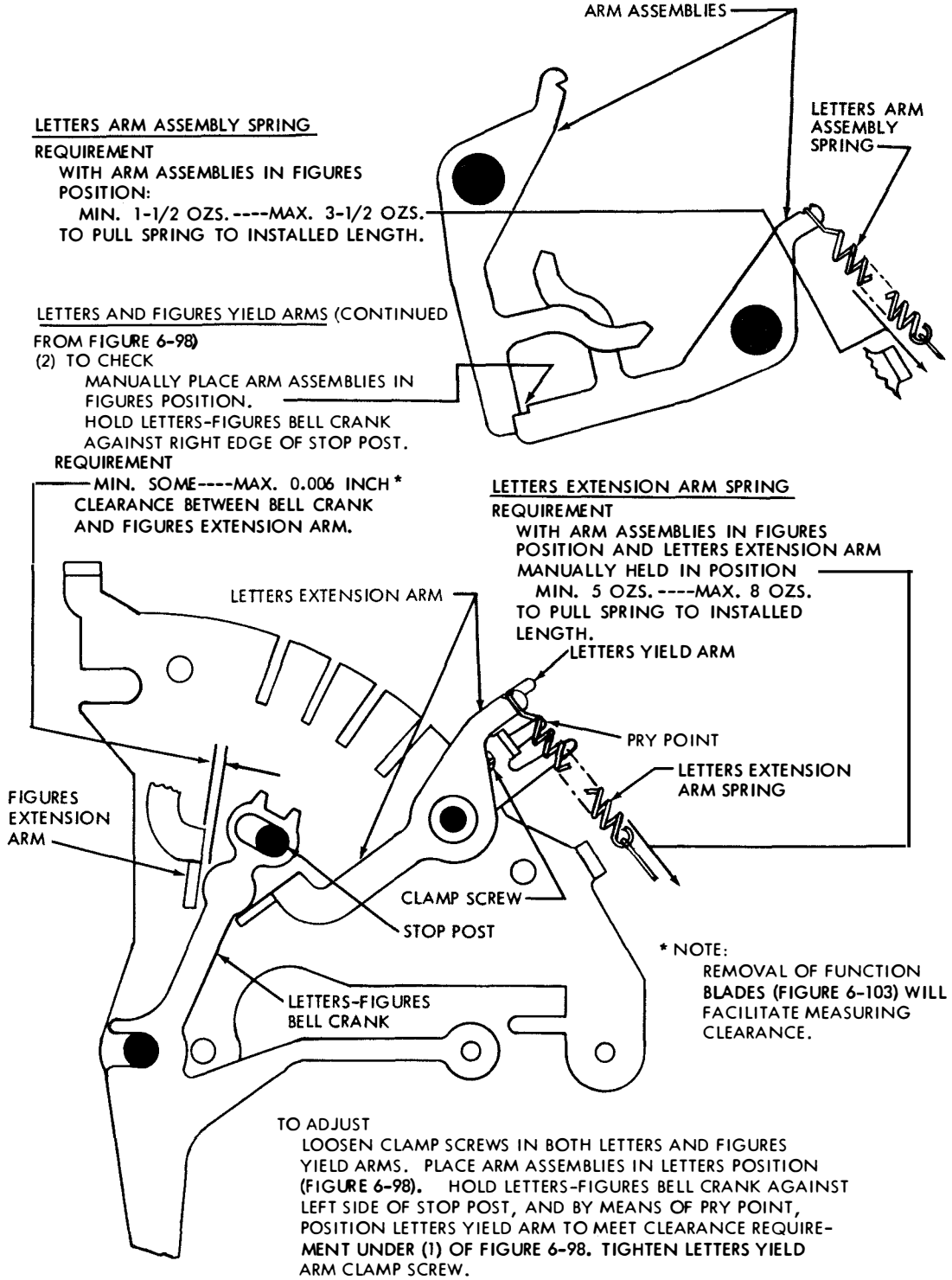


Figure 6-98. Function Box Mechanism



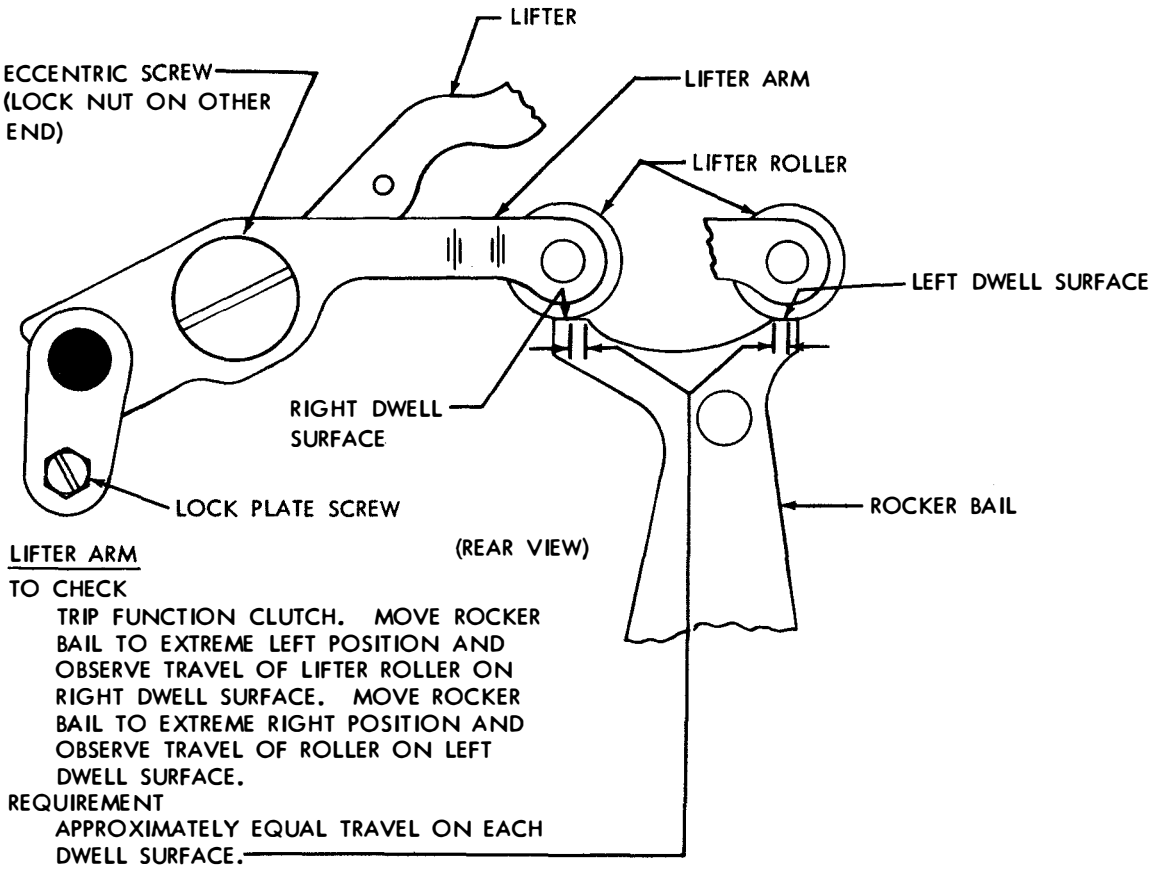
TO ADJUST

LOOSEN CLAMP SCREWS IN BOTH LETTERS AND FIGURES YIELD ARMS. PLACE ARM ASSEMBLIES IN LETTERS POSITION (FIGURE 6-98). HOLD LETTERS-FIGURES BELL CRANK AGAINST LEFT SIDE OF STOP POST, AND BY MEANS OF PRY POINT, POSITION LETTERS YIELD ARM TO MEET CLEARANCE REQUIREMENT UNDER (1) OF FIGURE 6-98. TIGHTEN LETTERS YIELD ARM CLAMP SCREW.

PLACE ARM ASSEMBLIES IN FIGURES POSITION. HOLD LETTERS-FIGURES BELL CRANK AGAINST RIGHT SIDE OF STOP POST, AND BY MEANS OF PRY POINT POSITION FIGURES YIELD ARM (FIGURE 6-84) TO MEET REQUIREMENT UNDER (2) ABOVE. TIGHTEN FIGURES YIELD ARM CLAMP SCREW.

CAUTION: ARM ASSEMBLIES MAY CHANGE POSITION DURING ADJUSTMENT. AS TIGHTENING OF SCREWS MAY AFFECT ADJUSTMENT, RECHECK REQUIREMENTS.

Figure 6-99. Function Box Mechanism



LIFTER ARM

TO CHECK

TRIP FUNCTION CLUTCH. MOVE ROCKER BAIL TO EXTREME LEFT POSITION AND OBSERVE TRAVEL OF LIFTER ROLLER ON RIGHT DWELL SURFACE. MOVE ROCKER BAIL TO EXTREME RIGHT POSITION AND OBSERVE TRAVEL OF ROLLER ON LEFT DWELL SURFACE.

REQUIREMENT

APPROXIMATELY EQUAL TRAVEL ON EACH DWELL SURFACE.

TO ADJUST

LOOSEN LOCK PLATE SCREW UNTIL FRICTION TIGHT. WITH ECCENTRIC SCREW LOCK NUT FRICTION TIGHT, POSITION LIFTER ARM ON LIFTER. TIGHTEN LOCK PLATE SCREW. DO NOT TIGHTEN LOCK NUT.

LIFTER ARM ECCENTRIC SCREW

REQUIREMENT

WITH FUNCTION CLUTCH DISENGAGED;

(1) CLEARANCE BETWEEN CLOSEST PROJECTION OF BELL CRANKS AND ASSOCIATED LETTERS OR FIGURES FUNCTION BLADE PROJECTION: MIN. 0.008 INCH----MAX. 0.020 INCH

(2) MIN. 0.005 INCH CLEARANCE FOR FUNCTION BLADES OTHER THAN LETTERS AND FIGURES IF UNIT IS SO EQUIPPED.

TO ADJUST

POSITION LIFTER ARM ECCENTRIC SCREW WITH LOCK NUT LOOSENED.

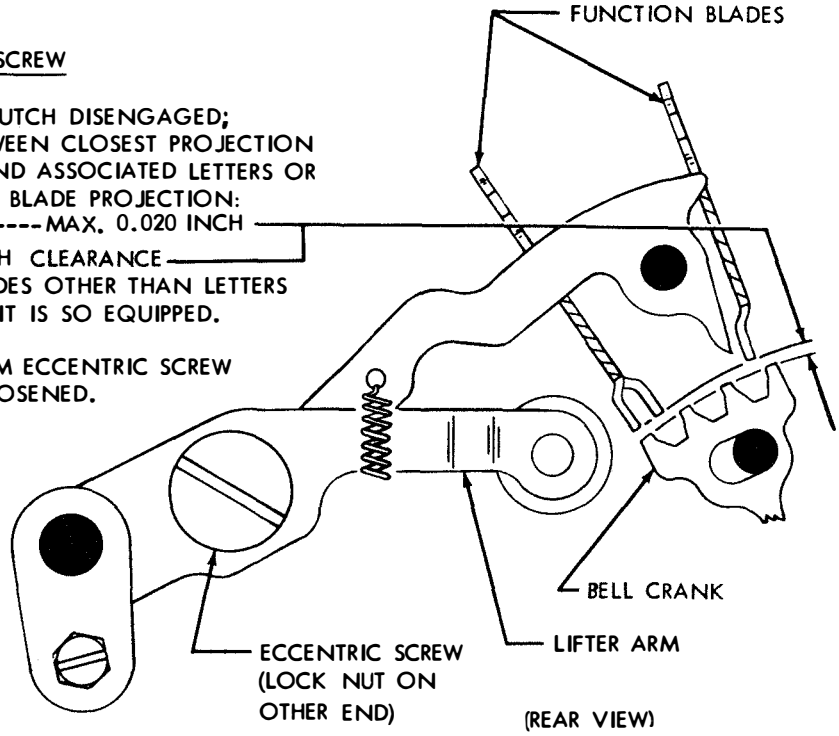
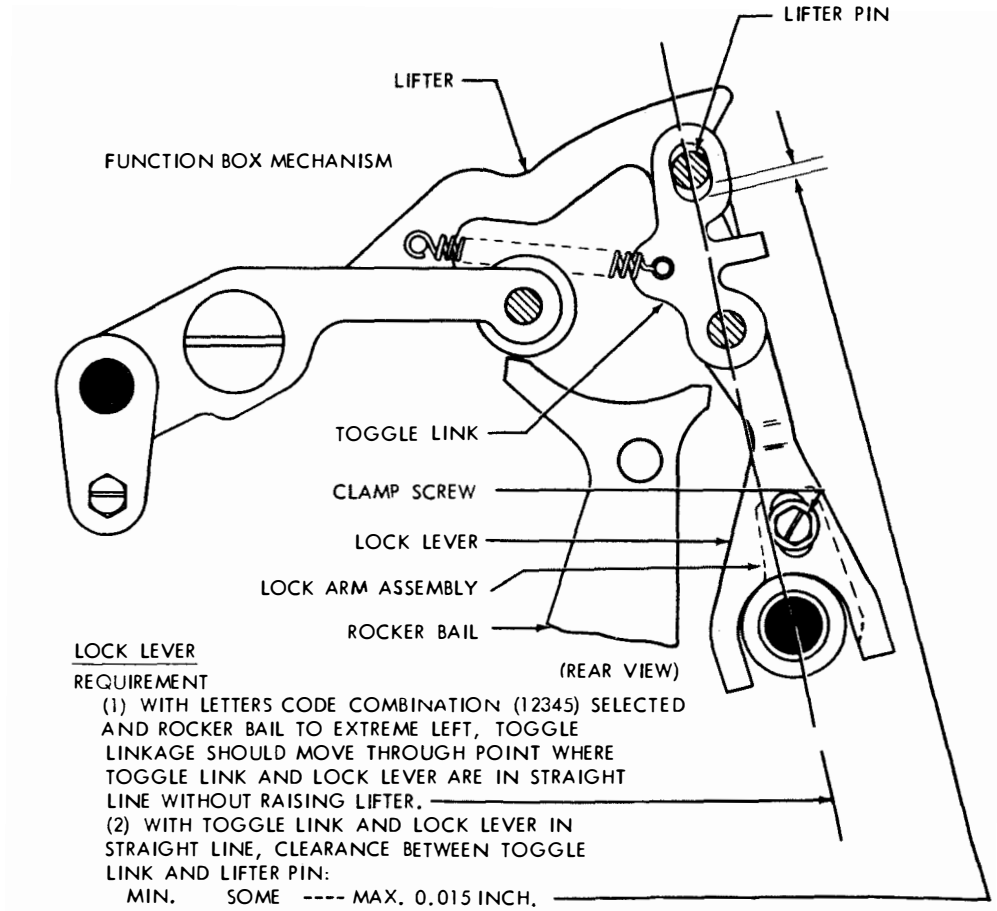


Figure 6-100. Function Box Mechanism



LOCK LEVER

REQUIREMENT

(1) WITH LETTERS CODE COMBINATION (12345) SELECTED AND ROCKER BAIL TO EXTREME LEFT, TOGGLE LINKAGE SHOULD MOVE THROUGH POINT WHERE TOGGLE LINK AND LOCK LEVER ARE IN STRAIGHT LINE WITHOUT RAISING LIFTER.

(2) WITH TOGGLE LINK AND LOCK LEVER IN STRAIGHT LINE, CLEARANCE BETWEEN TOGGLE LINK AND LIFTER PIN:

MIN. SOME ---- MAX. 0.015 INCH.

TO ADJUST

POSITION LOCK LEVER ON LOCK ARM ASSEMBLY WITH CLAMP SCREW FRICTION TIGHT.

NOTE:

TO AVOID INTERFERENCE WITH LOCK LEVER, IT MAY BE NECESSARY TO MOVE HIGH PART OF CORRECTING DRIVE LINK ECCENTRIC BUSHING (SEE FIGURE 6-107) ABOVE HORIZONTAL CENTER LINE.

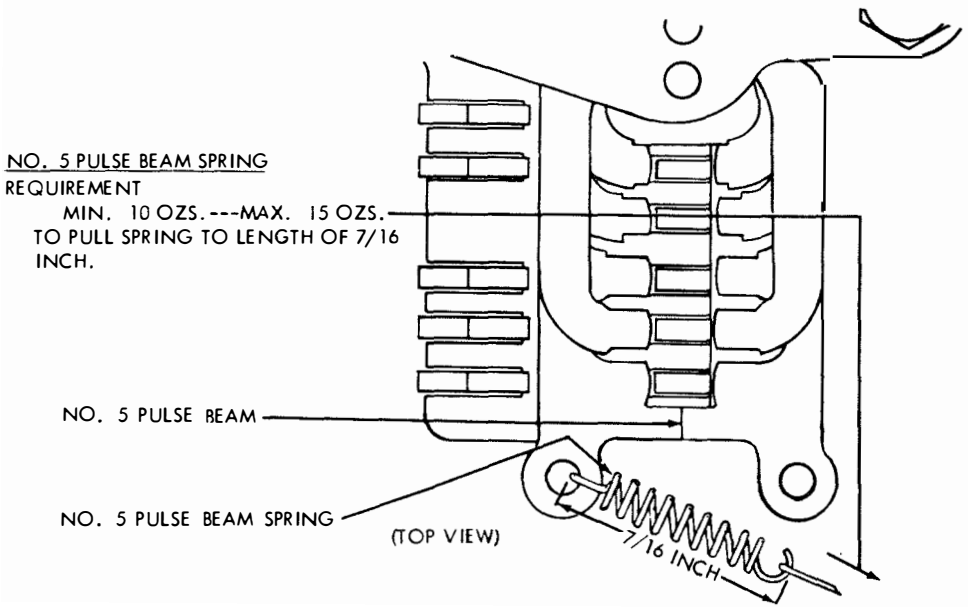


Figure 6-101. Perforator and Transfer Mechanism

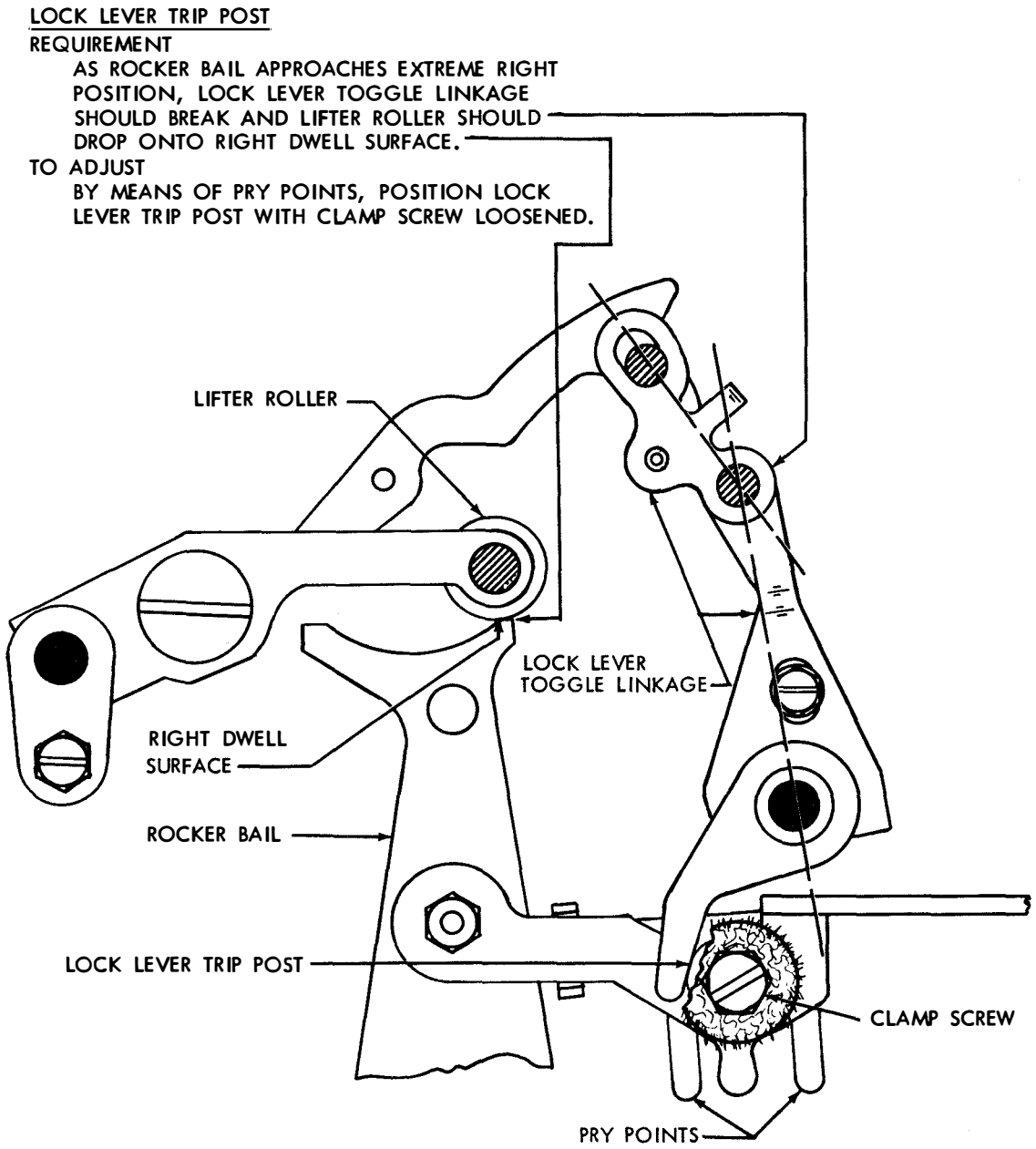


Figure 6-102. Lock Lever Trip Post

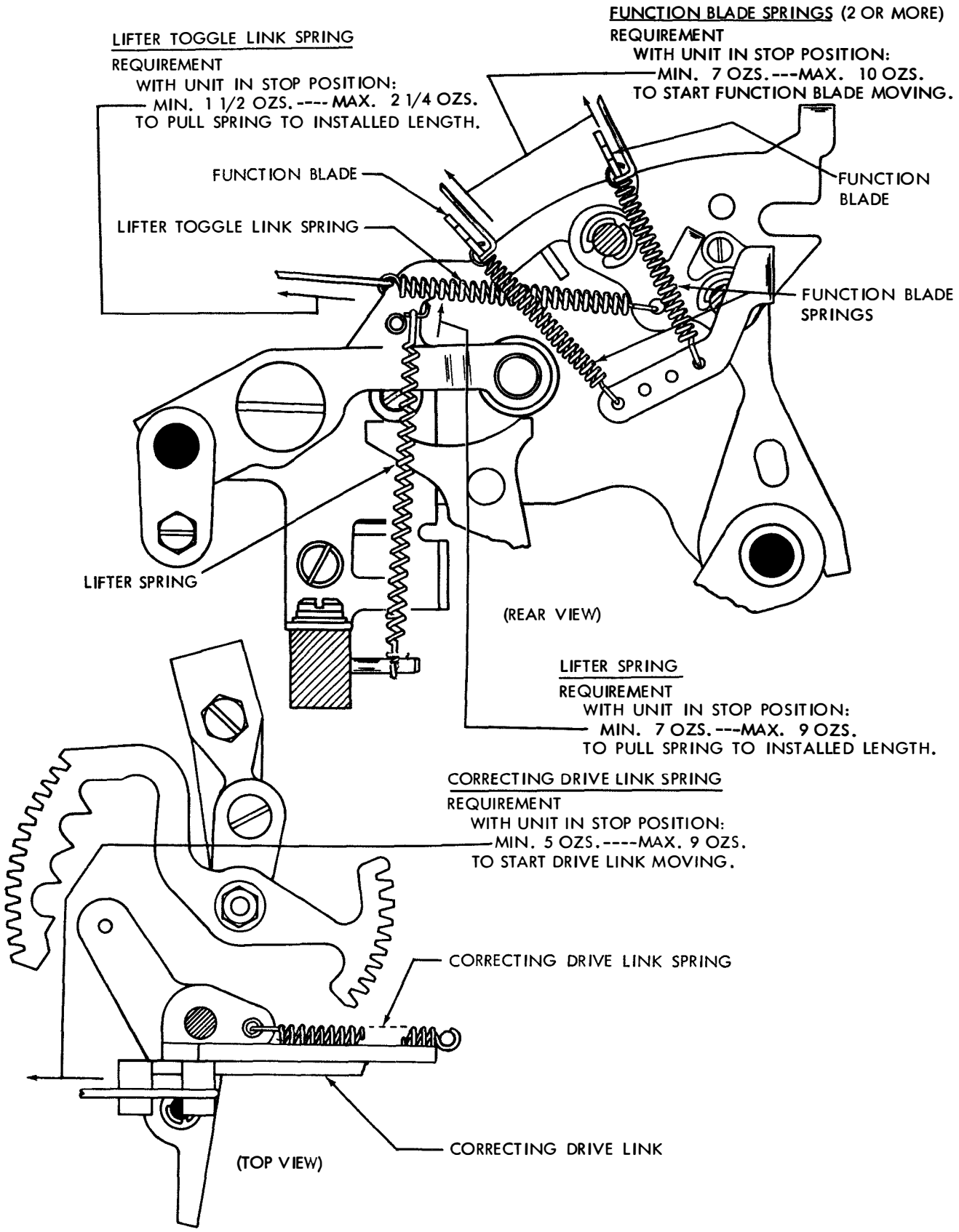


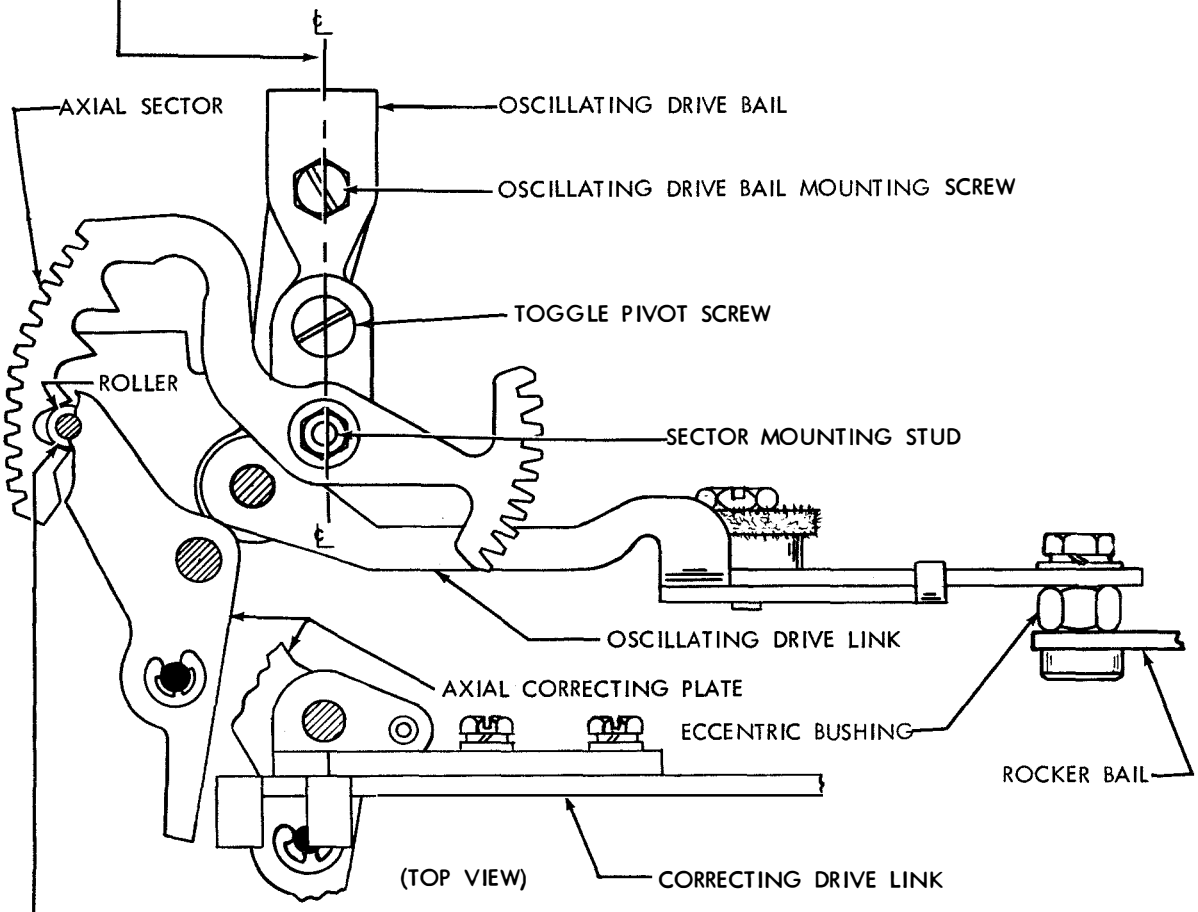
Figure 6-103. Function Box and Correcting Mechanisms

OSCILLATING DRIVE LINK

TO CHECK
POSITION ROCKER BAIL TO ITS EXTREME LEFT.

REQUIREMENT
SECTOR MOUNTING STUD, TOGGLE PIVOT SCREW AND OSCILLATING DRIVE BAIL MOUNTING SCREW SHOULD APPROXIMATELY LINE UP.

TO ADJUST
POSITION OSCILLATING DRIVE LINK BY MEANS OF ITS ECCENTRIC BUSHING.



OSCILLATING DRIVE BAIL

TO CHECK
MANUALLY SELECT BLANK CODE COMBINATION. ROTATE MAIN SHAFT UNTIL ROCKER BAIL IS TO EXTREME LEFT.

REQUIREMENT
ROLLER ON AXIAL CORRECTING PLATE SEATED FIRMLY IN CENTER OF FIRST NOTCH OF AXIAL SECTOR.

TO ADJUST
WITH OSCILLATING DRIVE BAIL MOUNTING SCREW LOOSENED, POSITION CORRECTING DRIVE LINK SO THAT ROLLER FITS SNUGLY IN FIRST NOTCH. ROLLER SHOULD RIDE CENTRALIZED IN NOTCH WITH NOTCH TOUCHING BOTH SIDES, AND DRIVE BAIL SHOULD BE LOOSE AND IN POSITION CORRESPONDING TO THAT OF CORRECTING PLATE.

Figure 6-104. Axial Positioning Mechanism

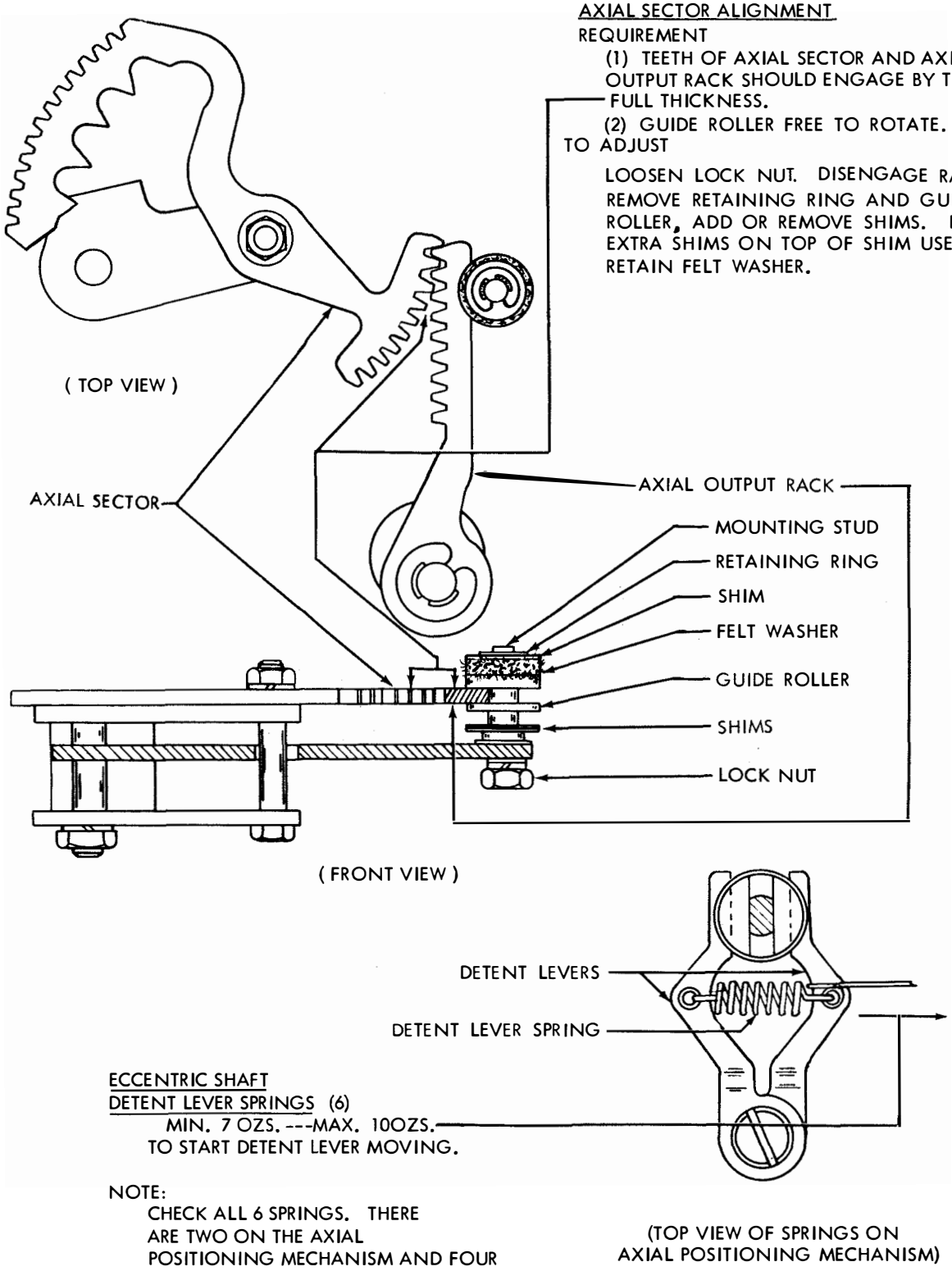
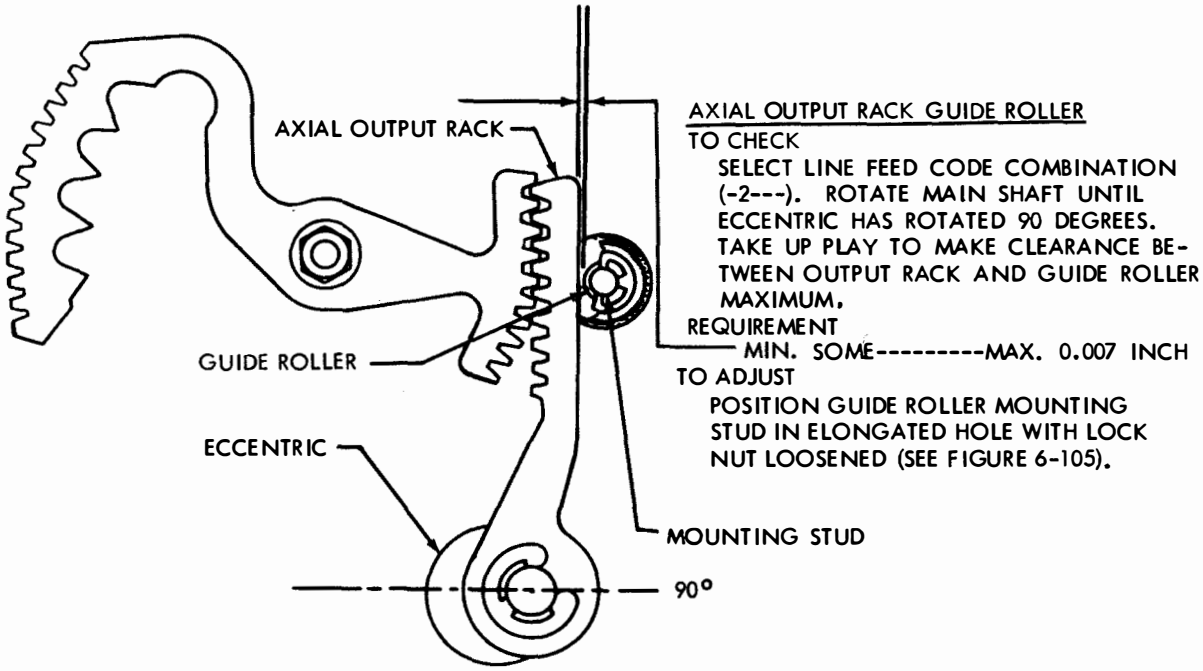
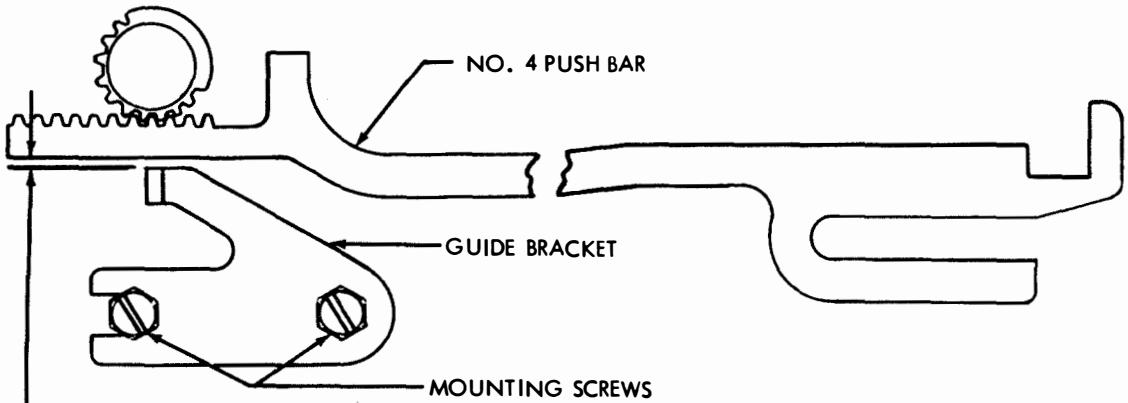


Figure 6-105. Axial Positioning Mechanism



(TOP VIEW)



PUSH BAR GUIDE BRACKET

TO CHECK
MANUALLY SELECT CARRIAGE RETURN CODE COMBINATION (---4-). ROTATE MAIN SHAFT SO THAT NO. 4 PUSH BAR MOVES THROUGH COMPLETE RANGE OF TRAVEL.

REQUIREMENT
WHEN PLAY IS TAKEN UP TO MAKE CLEARANCE MAXIMUM:
MIN. SOME----MAX. 0.008 INCH
BETWEEN NO. 4 PUSH BAR AND GUIDE BRACKET THROUGHOUT COMPLETE TRAVEL OF BAR.

TO ADJUST
POSITION GUIDE BRACKET WITH MOUNTING SCREWS LOOSENED.

Figure 6-106. Axial and Rotary Positioning Mechanisms

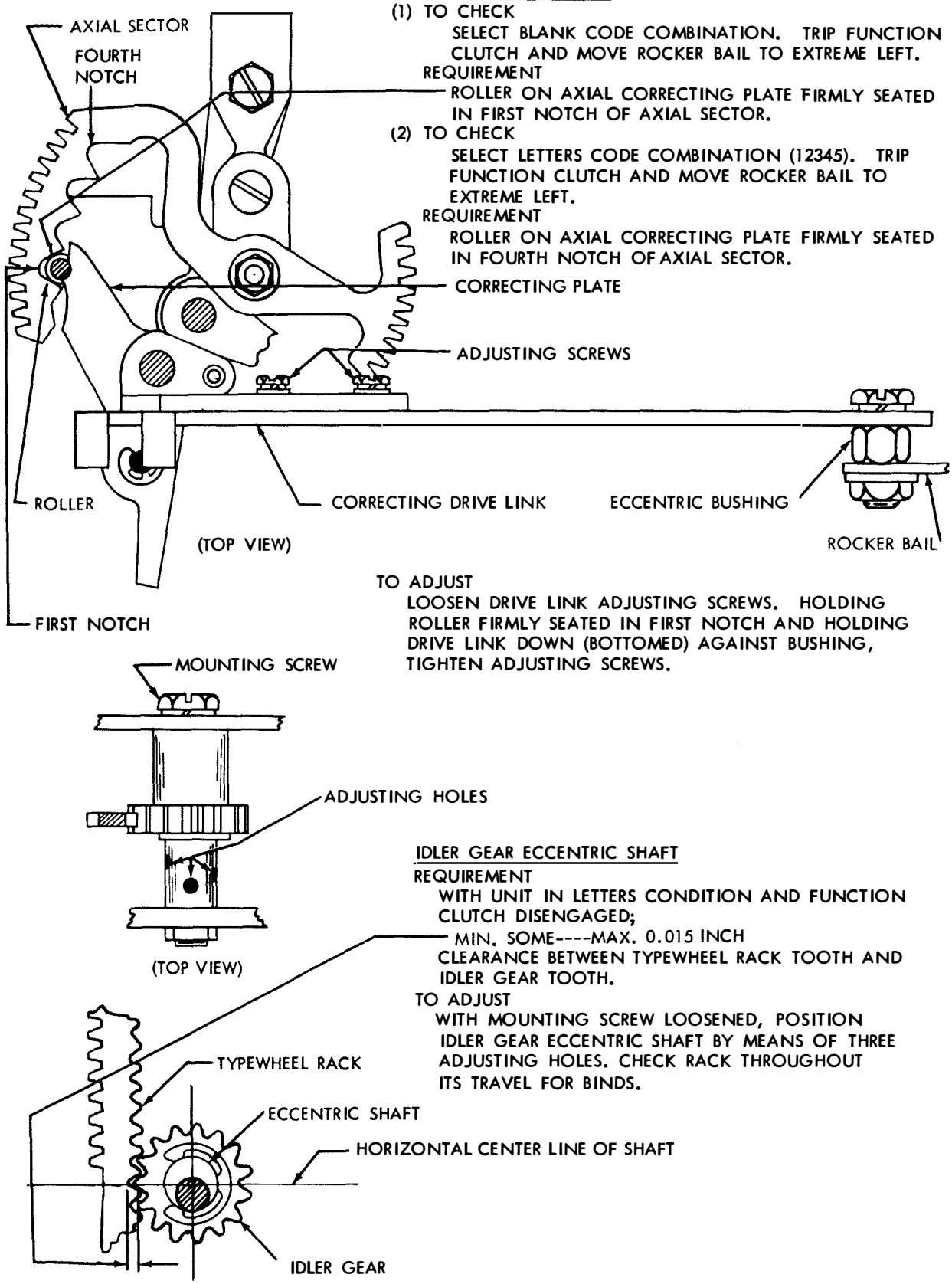


Figure 6-107. Correcting Mechanism

ROTARY CORRECTING LEVER

(1) TO CHECK

LOOSEN CORRECTING CLAMP ADJUSTING SCREW. WITH UNIT IN FIGURES CONDITION, SELECT NO. 9 CODE COMBINATION (---45). TRIP FUNCTION CLUTCH AND POSITION ROCKER BAIL TO EXTREME LEFT. MANUALLY SEAT ROTARY CORRECTING LEVER IN TYPE WHEEL RACK.

REQUIREMENT

SECOND TOOTH FROM TOP OF RACK SEATED BETWEEN LOBES OF CORRECTING LEVER.

TO ADJUST

LOOSEN ECCENTRIC BUSHING LOCK NUT. WITH CLAMP ADJUSTING SCREW LOOSENED AND CORRECTING LEVER PIVOT TO RIGHT OF CENTER LINE, POSITION CORRECTING LEVER. TIGHTEN BUSHING LOCK NUT. DO NOT TIGHTEN CLAMP ADJUSTING SCREW AT THIS TIME.

(2) TO CHECK

IN A MANNER SIMILAR TO THAT DESCRIBED ABOVE CHECK ENGAGEMENT OF FIFTH TOOTH (--34- CODE COMBINATION SELECTED IN FIGURES CONDITION), NINTH TOOTH (---4- CODE COMBINATION SELECTED IN LETTERS CONDITION) AND SIXTEENTH TOOTH (--3-5 CODE COMBINATION SELECTED IN LETTERS CONDITION).

TO ADJUST

REFINE ADJUSTMENT UNDER (1) ABOVE.

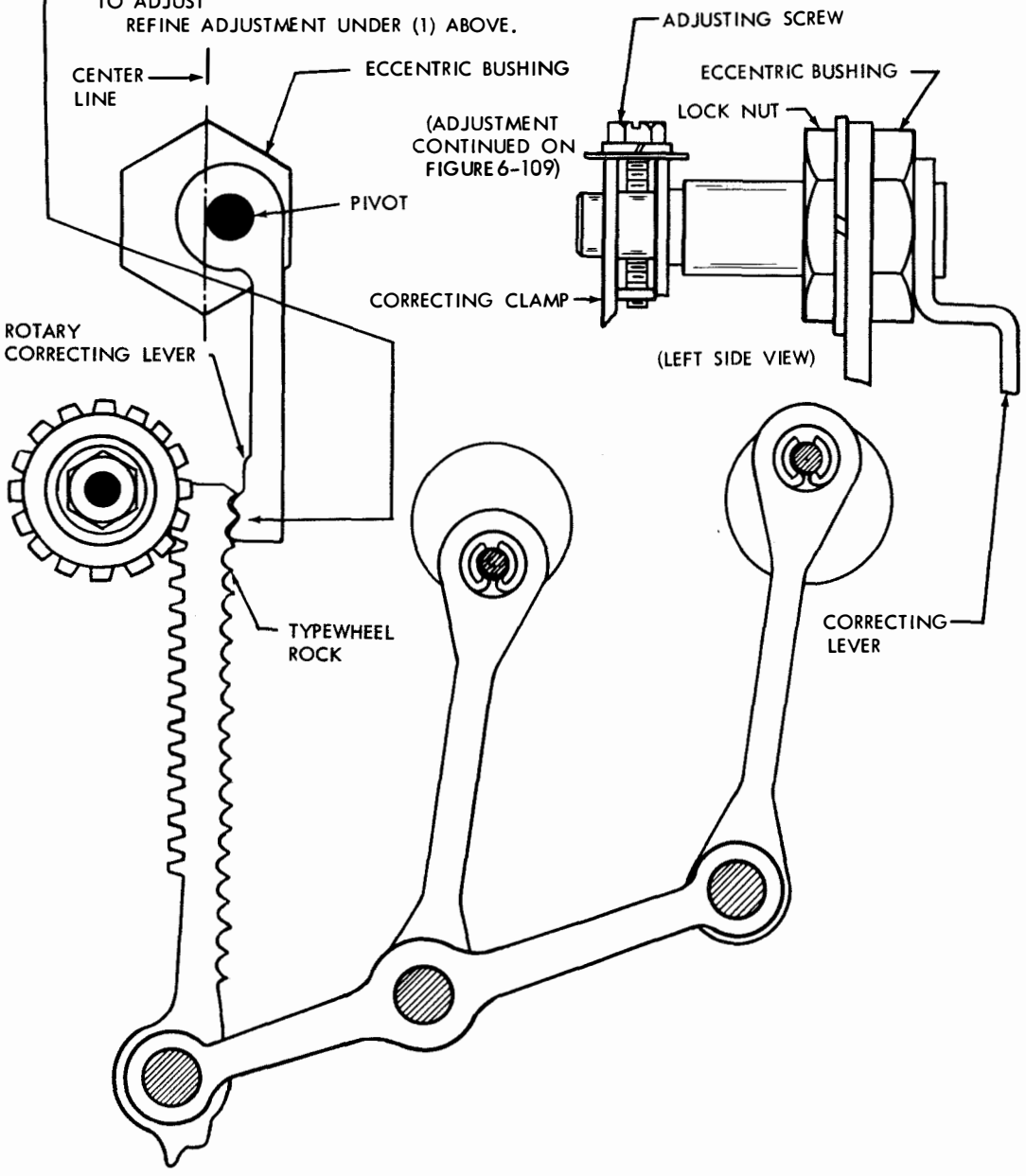
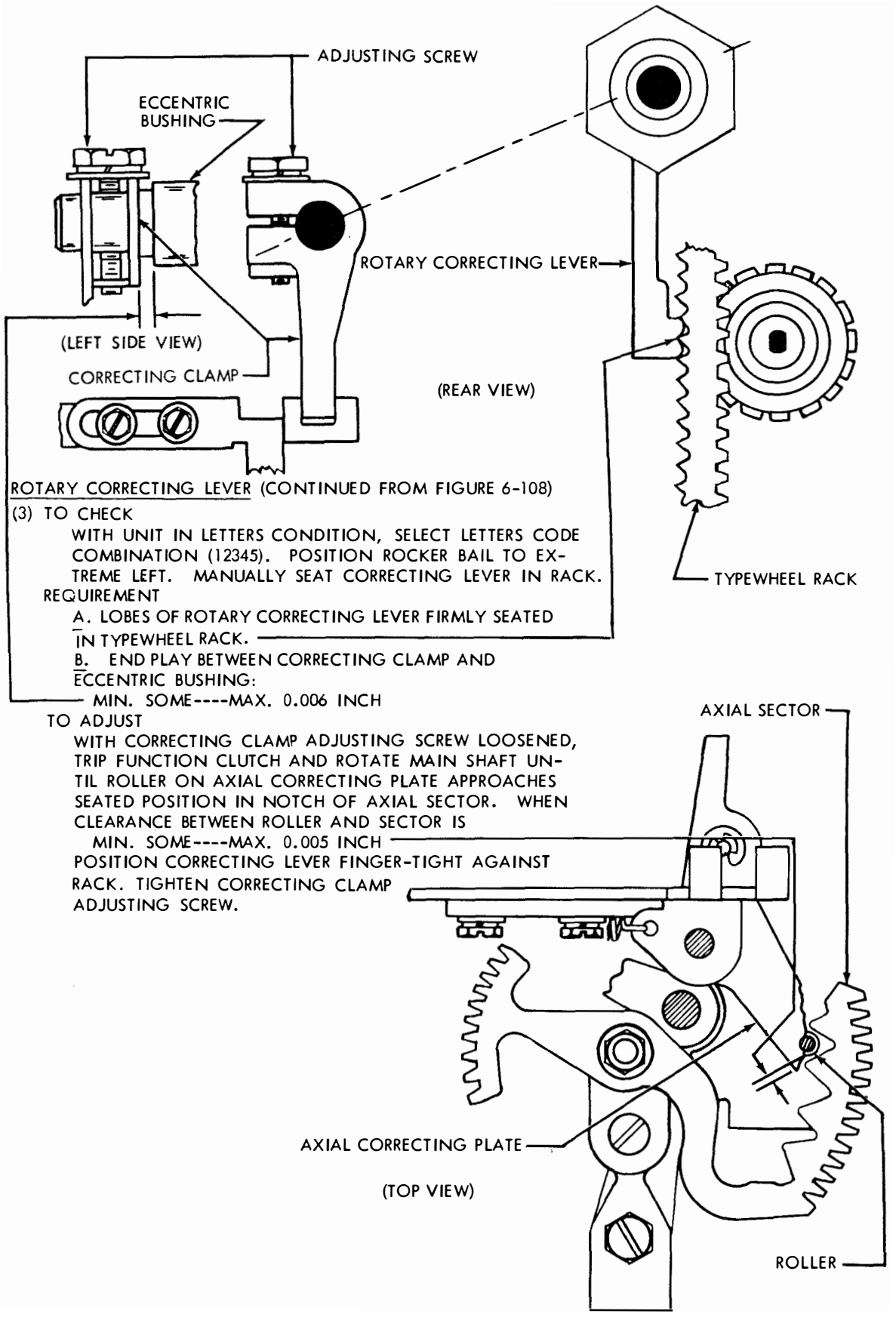


Figure 6-108. Rotary Correcting Lever



ROTARY CORRECTING LEVER (CONTINUED FROM FIGURE 6-108)

(3) TO CHECK

WITH UNIT IN LETTERS CONDITION, SELECT LETTERS CODE COMBINATION (12345). POSITION ROCKER BAIL TO EXTREME LEFT. MANUALLY SEAT CORRECTING LEVER IN RACK.

REQUIREMENT

A. LOBES OF ROTARY CORRECTING LEVER FIRMLY SEATED IN TYPEWHEEL RACK.

B. END PLAY BETWEEN CORRECTING CLAMP AND ECCENTRIC BUSHING:
MIN. SOME----MAX. 0.006 INCH

TO ADJUST

WITH CORRECTING CLAMP ADJUSTING SCREW LOOSENED, TRIP FUNCTION CLUTCH AND ROTATE MAIN SHAFT UNTIL ROLLER ON AXIAL CORRECTING PLATE APPROACHES SEATED POSITION IN NOTCH OF AXIAL SECTOR. WHEN CLEARANCE BETWEEN ROLLER AND SECTOR IS
MIN. SOME----MAX. 0.005 INCH
POSITION CORRECTING LEVER FINGER-TIGHT AGAINST RACK. TIGHTEN CORRECTING CLAMP ADJUSTING SCREW.

Figure 6-109. Rotary Correcting Lever

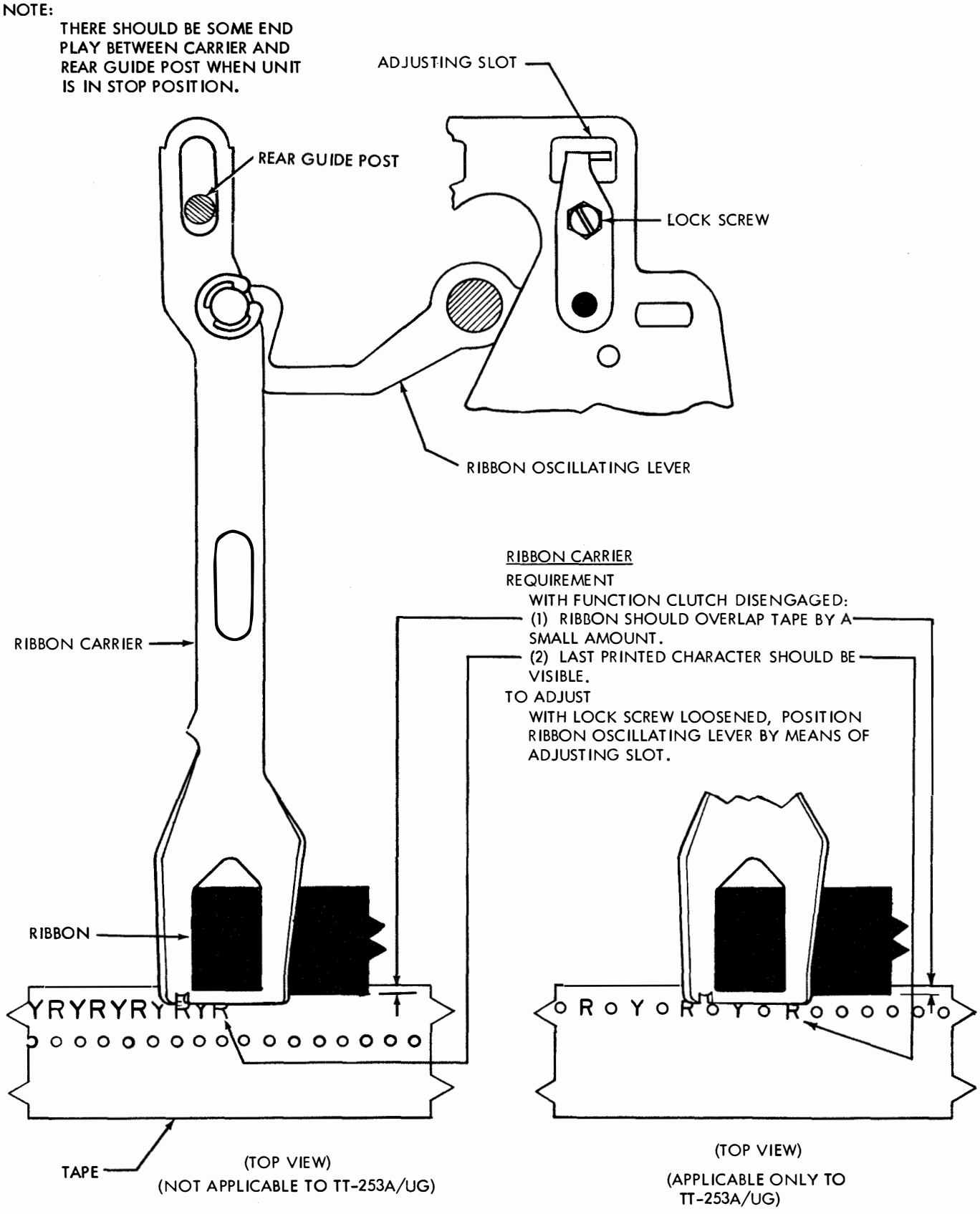


Figure 6-110. Ribbon Oscillating Mechanism

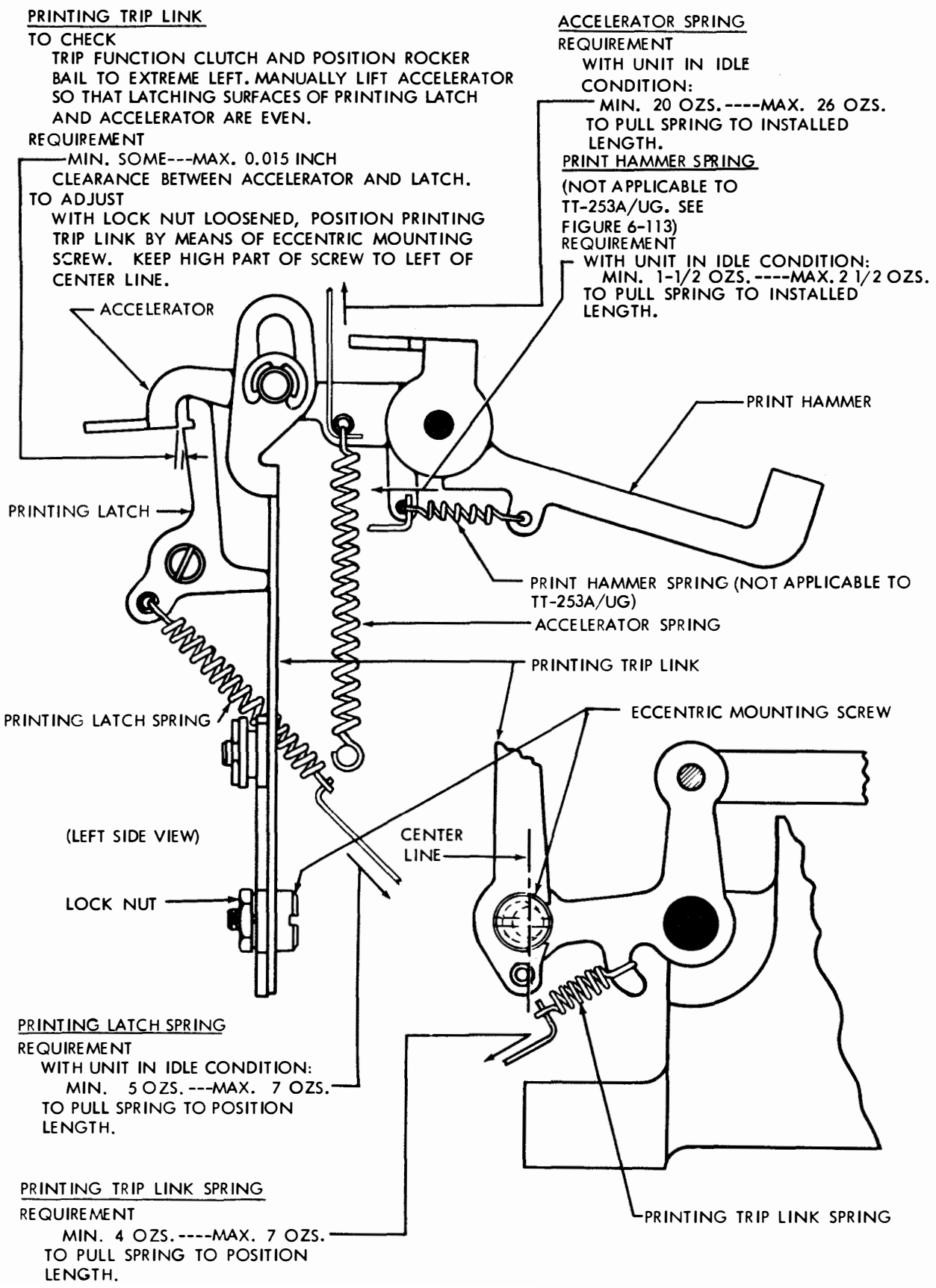
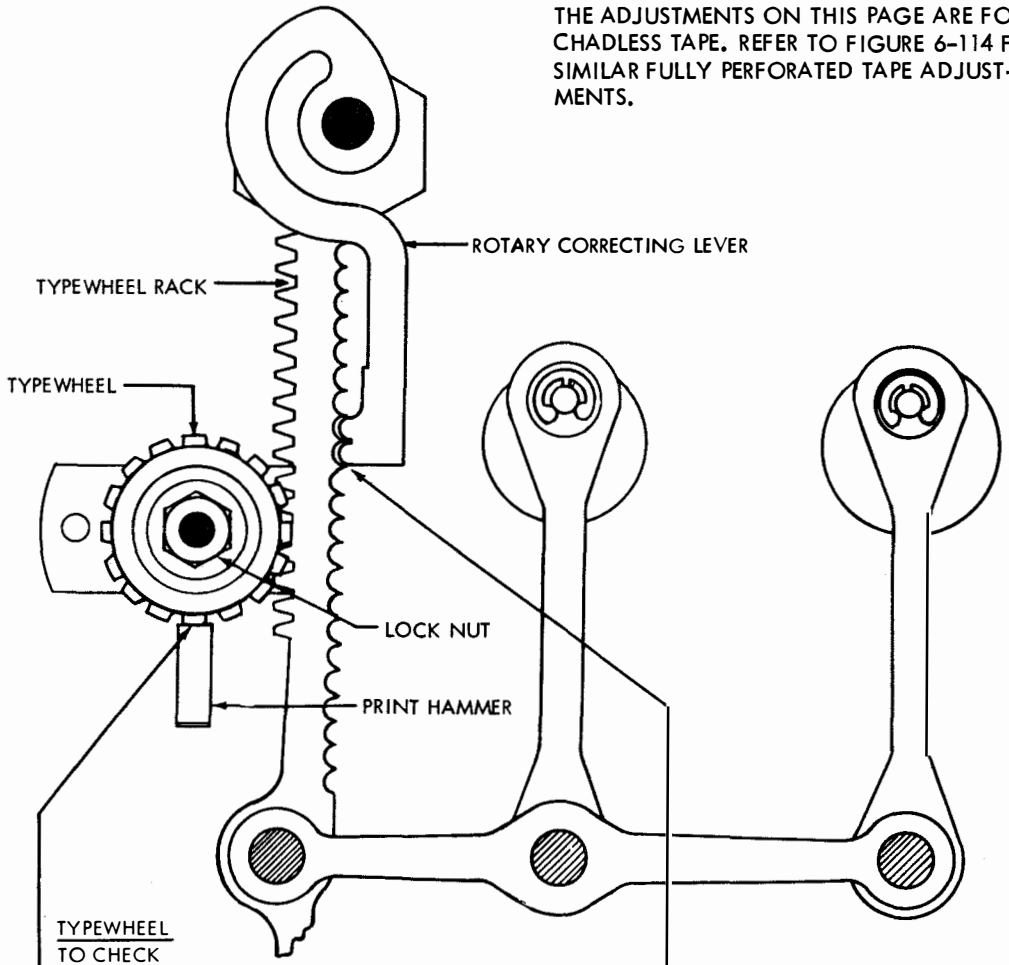


Figure 6-111. Printing Mechanism

NOTE

THE ADJUSTMENTS ON THIS PAGE ARE FOR CHADLESS TAPE. REFER TO FIGURE 6-114 FOR SIMILAR FULLY PERFORATED TAPE ADJUSTMENTS.



TYPEWHEEL

TO CHECK

SELECT "M" CODE COMBINATION (--345). PLACE ROCKER BAIL TO EXTREME LEFT. CORRECTING LEVER SHOULD BE FIRMLY SEATED IN TYPEWHEEL RACK.

REQUIREMENT

TYPEWHEEL ALIGNED SO THAT FULL CHARACTER IS PRINTED UNIFORMLY.

TO ADJUST

POSITION TYPEWHEEL WITH LOCK NUT LOOSENED. CHECK PRINTING BY MANUALLY LIFTING ACCELERATOR (FIGURE6-111)TO LATCHED POSITION AND RELEASING IT.

NOTE: FOR BEST RESULTS IT MAY BE NECESSARY TO MAKE PRINT HAMMER ADJUSTMENT (BELOW) AND THEN REFINE THIS ADJUSTMENT.

PRINT HAMMER

REQUIREMENT

WHEN OPERATING UNDER POWER, PRINT HAMMER AND TYPEWHEEL ALIGNED SO AS TO OBTAIN BEST QUALITY OF PRINTING.

TO ADJUST

POSITION ECCENTRIC STUD WITH LOCK NUT LOOSENED.

NOTE: IT MAY BE NECESSARY TO REMAKE TYPEWHEEL ADJUSTMENT (ABOVE) AND THEN REFINE THIS ADJUSTMENT.

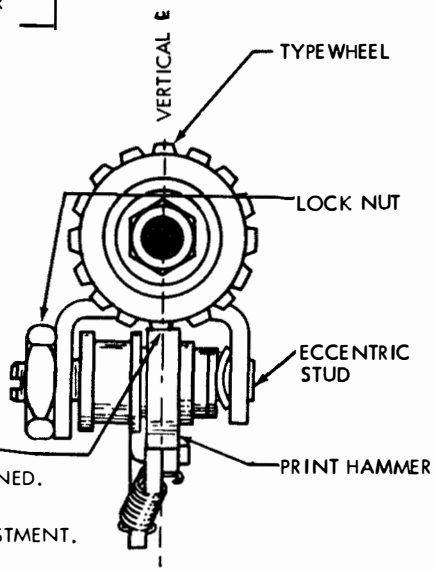


Figure 6-112. Printing Mechanism

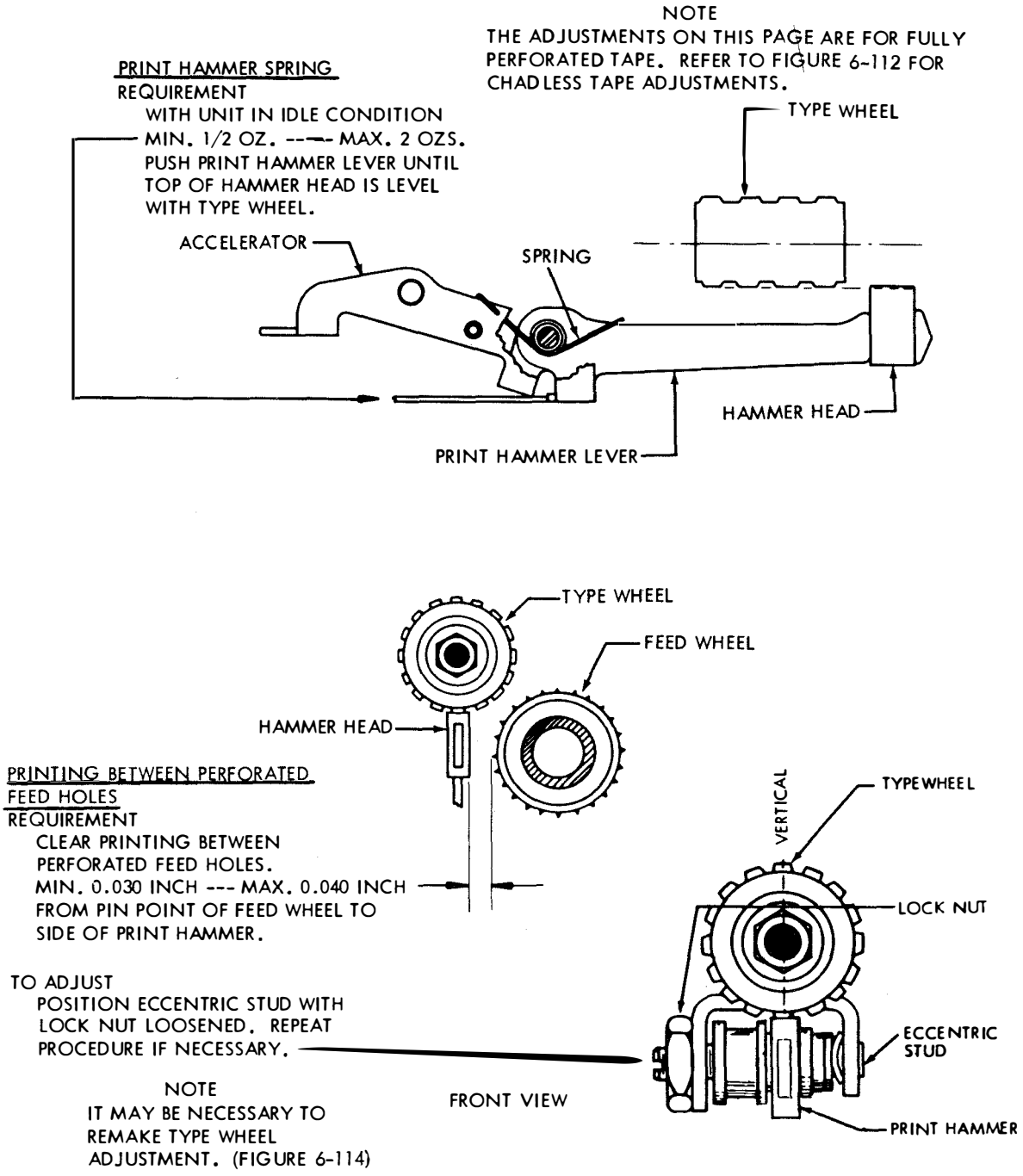
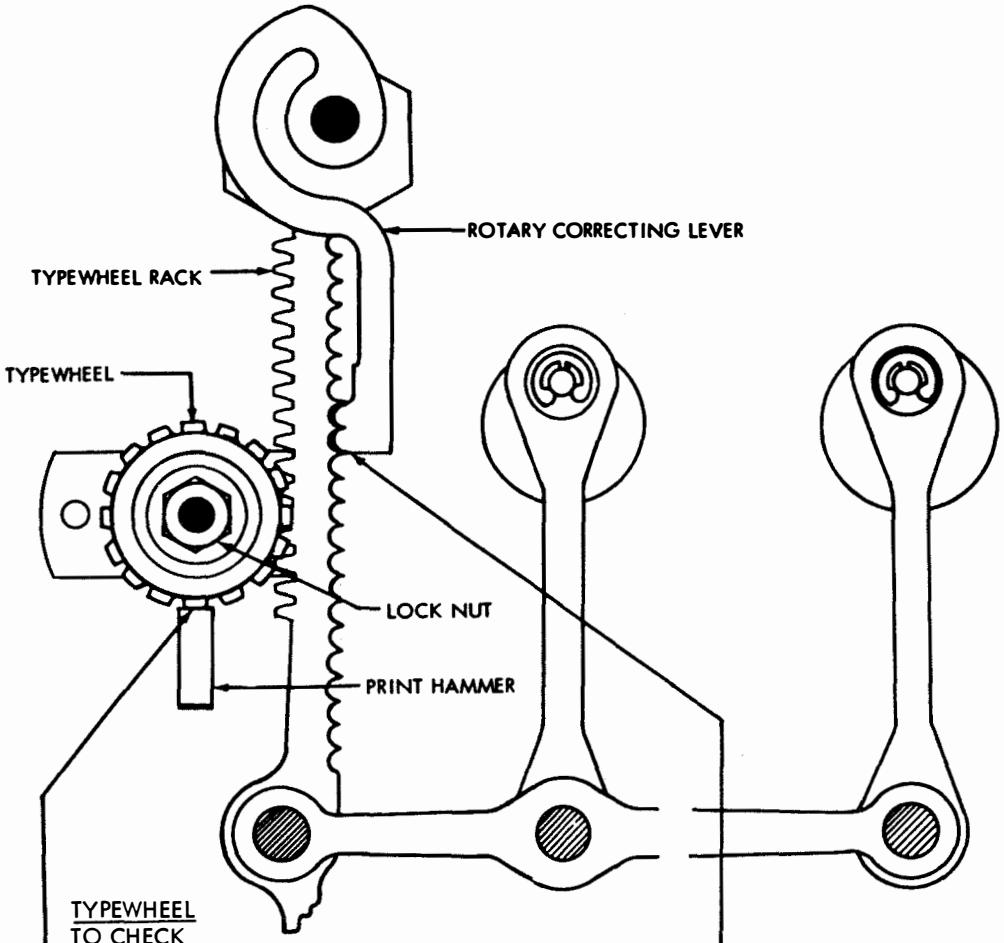


Figure 6-113. Printing Mechanism for Fully Perforated Tape (TT-253A/UG)

NOTE
THE ADJUSTMENTS ON THIS PAGE ARE FOR FULLY PERFORATED TAPE. REFER TO FIGURE 6-112 FOR CHADLESS TAPE ADJUSTMENTS.



TYPEWHEEL
TO CHECK
SELECT "M" CODE COMBINATION (--345). PLACE ROCKER BAIL TO EXTREME LEFT. CORRECTING LEVER SHOULD BE FIRMLY SEATED IN TYPEWHEEL RACK.
REQUIREMENT
TYPEWHEEL ALIGNED SO THAT FULL CHARACTER IS PRINTED UNIFORMLY.
TO ADJUST
POSITION TYPEWHEEL WITH LOCK NUT LOOSENED. CHECK PRINTING BY MANUALLY LIFTING ACCELERATOR TO LATCHED POSITION AND RELEASING IT.

NOTE: FOR BEST RESULTS IT MAY BE NECESSARY TO MAKE PRINTING BETWEEN PERFORATED FEED HOLES ADJUSTMENT, FIGURE 6-113, AND THEN REFINE THIS ADJUSTMENT.

Figure 6-114. Printing Mechanism for Fully Perforated Tape (TT-235A/UG)

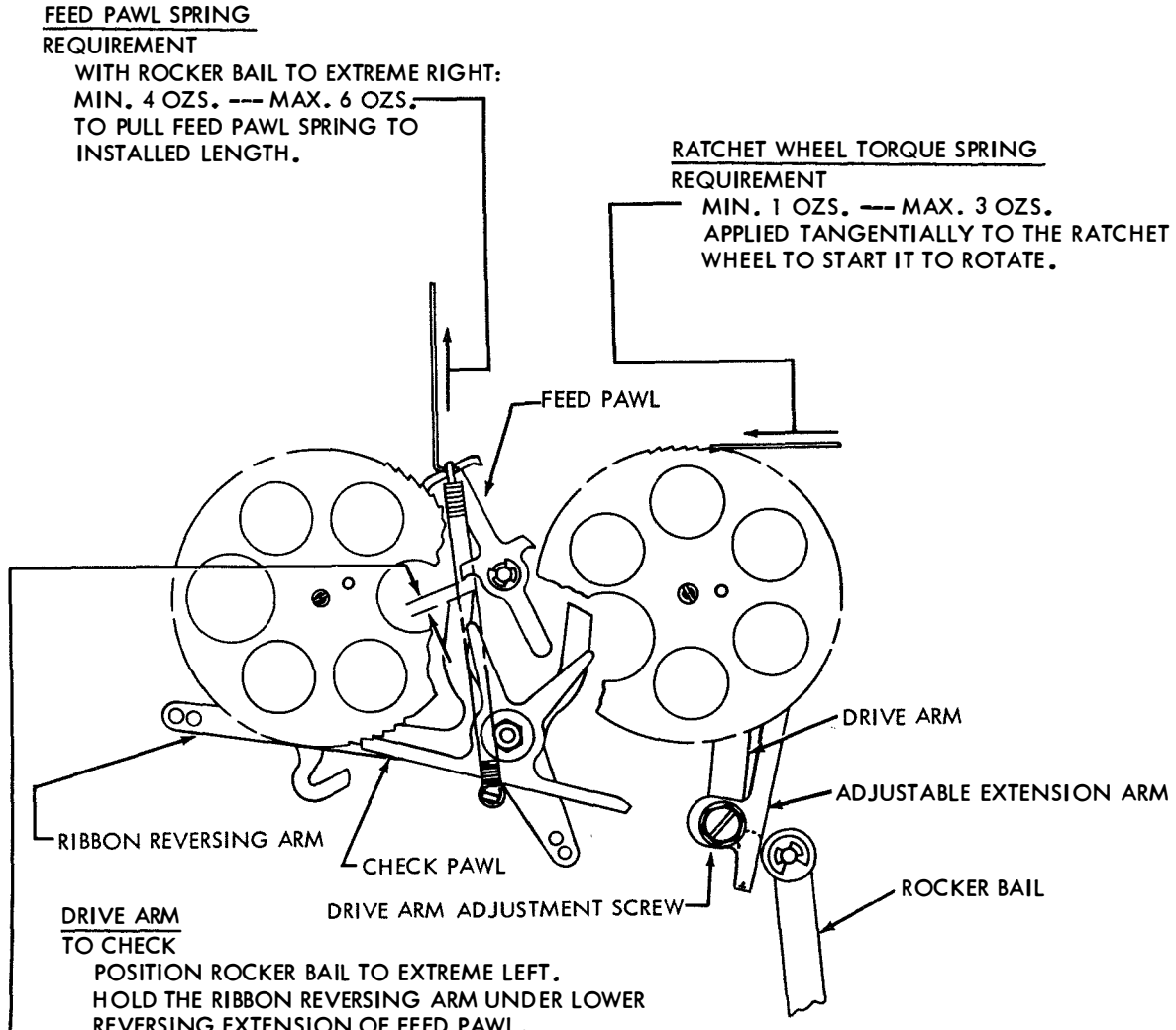


Figure 6-115. Ribbon Feed Mechanism

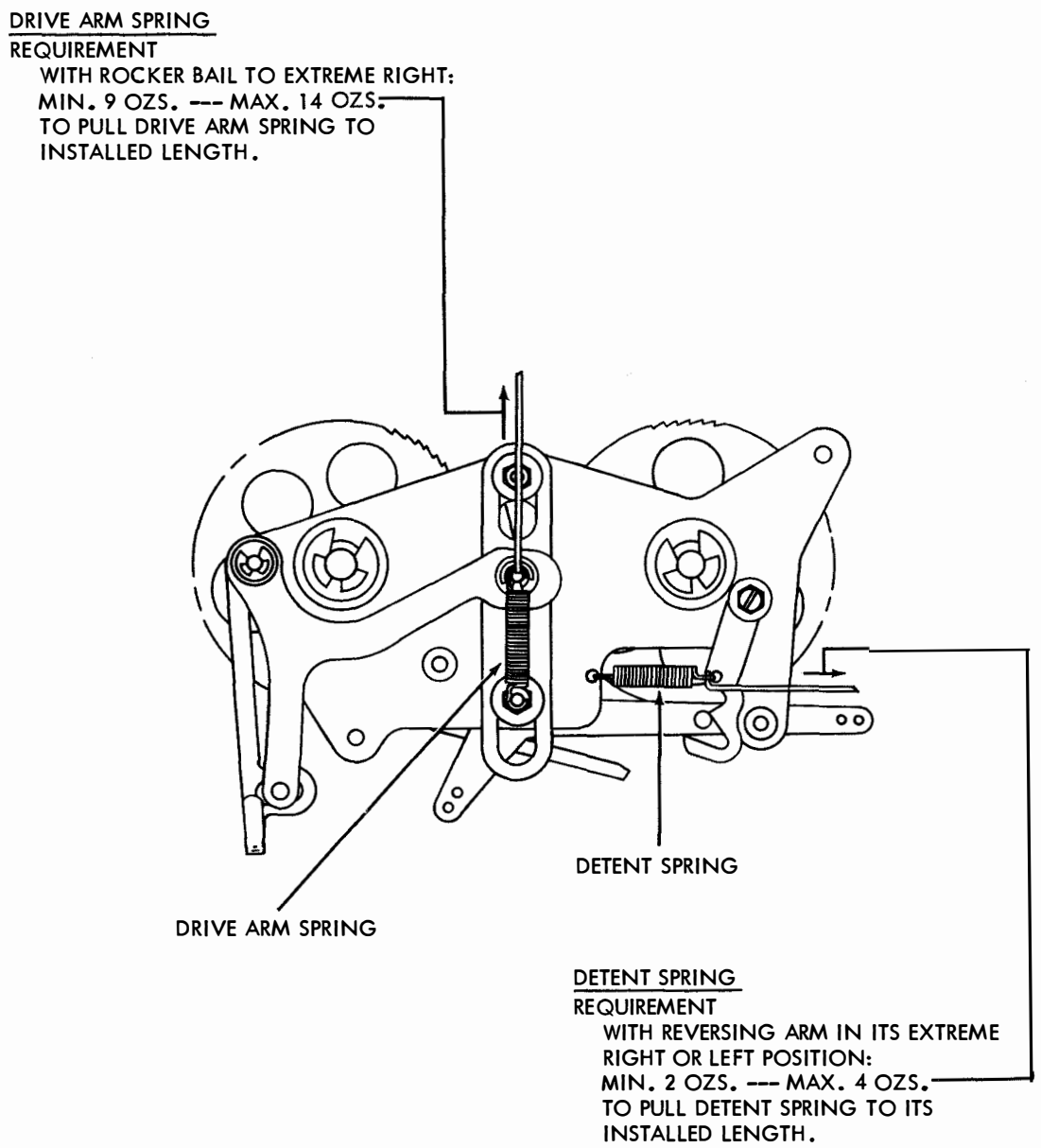
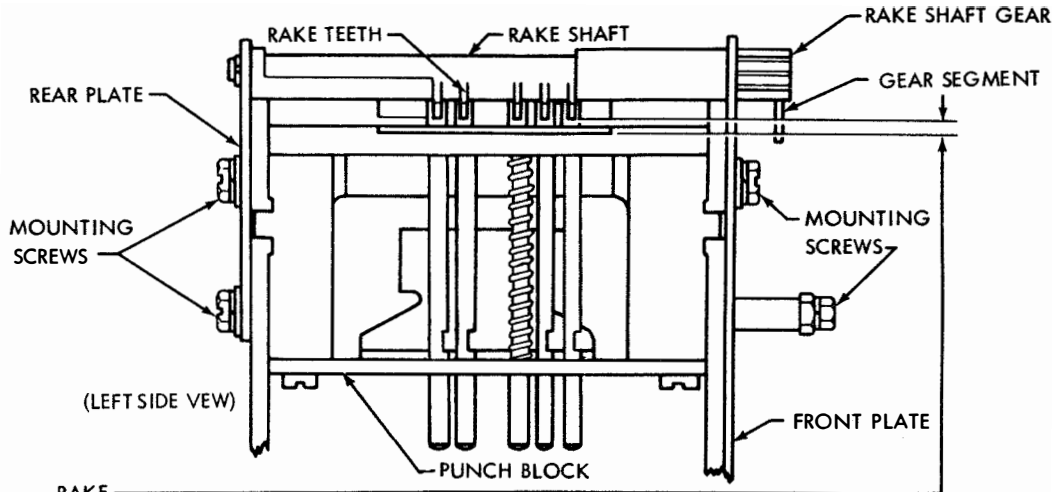


Figure 6-116. Ribbon Feed Mechanism



RAKE

(1) REQUIREMENT

WITH ROTATIONAL PLAY TAKEN UP TO LEFT, BOTTOM SURFACE OF RAKE TEETH SHOULD BE IN SAME VERTICAL PLANE AS LEFT SIDE OF PUNCH BLOCK.

TO ADJUST

REMOVE TWO MOUNTING SCREWS FROM REAR PLATE. POSITION RAKE SHAFT GEAR IN RELATION TO GEAR SEGMENT. REPLACE MOUNTING SCREWS.

(2) REQUIREMENT

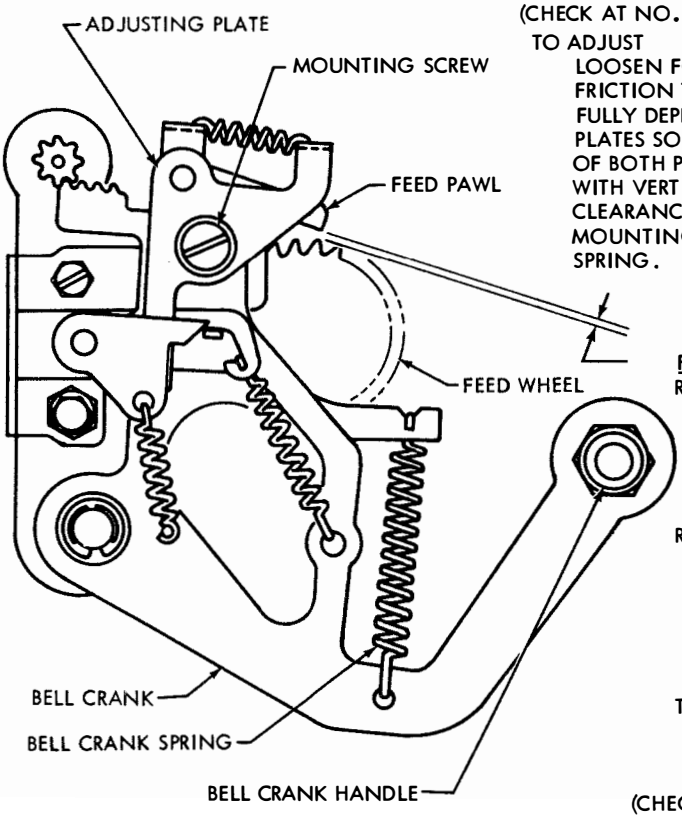
WITH BELL CRANK SPRING UNHOOKED AND RAKE IN OPERATED POSITION, CLEARANCE BETWEEN RAKE TEETH AND TAPE SLOT:

MIN. 0.007 INCH-----MAX. 0.011 INCH

(CHECK AT NO. 1 AND 5 PUNCH PINS.)

TO ADJUST

LOOSEN FOUR MOUNTING SCREWS UNTIL FRICTION TIGHT. WITH BELL CRANK HANDLE FULLY DEPRESSED, POSITION FRONT AND REAR PLATES SO THAT LEFT EDGES OF BOTH PLATES ARE APPROXIMATELY IN LINE WITH VERTICAL PLANE OF PUNCH BLOCK AND CLEARANCE MEETS THE REQUIREMENT. TIGHTEN MOUNTING SCREWS AND REPLACE BELL CRANK SPRING.



FEED PAWL CLEARANCE

REQUIREMENT (PRELIMINARY)

(1) WITH BACKSPACE BELL CRANK ROTATED CLOCKWISE, BACKSPACE FEED PAWL SHOULD MISS FIRST TOOTH BY A CLEARANCE OF:

MIN. 0.006 INCH

MAX. 0.040 INCH

REQUIREMENT (FINAL)

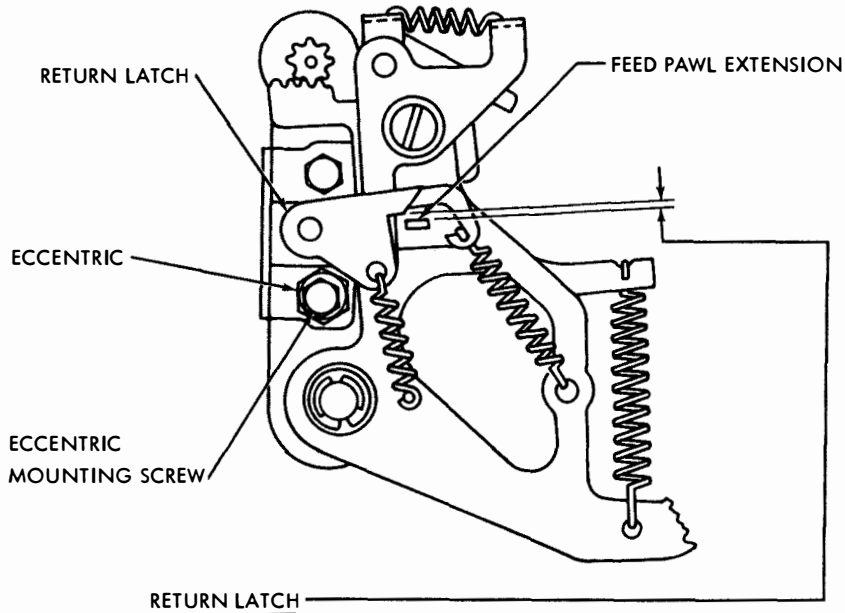
(2) BACKSPACE FEED PAWL SHOULD MISS FIRST TOOTH AND ENGAGE SECOND TOOTH BY AT LEAST 1/2 OF RIGHT ENGAGING SURFACE OF FEED PAWL (AS GAUGED BY EYE) WHEN THE FEED PAWL FIRST CONTACTS RATCHET TOOTH.

TO ADJUST

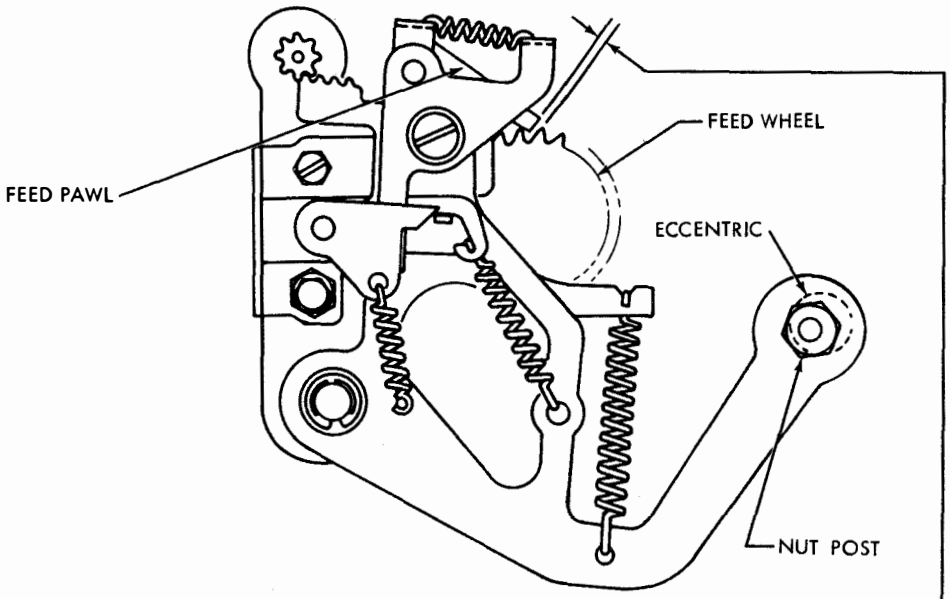
POSITION ADJUSTING PLATE WITH MOUNTING SCREW FRICTION TIGHT.

(CHECK WITH FEED WHEEL SHAFT OIL HOLE IN THE UPPERMOST POSITION AND RECHECK EACH 90 DEGREES ABOUT PERIPHERY OF FEED WHEEL.)

Figure 6-117. Back Space Mechanism (For Chadless Tape)



RETURN LATCH
REQUIREMENT
BACKSPACE MECHANISM IN UNOPERATED POSITION.
CLEARANCE BETWEEN RETURN LATCH AND FEED PAWL EXTENSION
MIN. 0.004 INCH
MAX. 0.020 INCH
TO ADJUST
ADJUST ECCENTRIC WITH MOUNTING SCREW FRICTION TIGHT.



FEED PAWL (PRELIMINARY WHEN POWER DRIVE IS USED)
REQUIREMENT
BACKSPACE MECHANISM IN OPERATED POSITION. FEED WHEEL RATCHET IN DETENTED POSITION. CLEARANCE BETWEEN FEED WHEEL RATCHET TOOTH AND FEED PAWL
MIN. SOME
MAX. 0.003 INCH
TO ADJUST
BY MEANS OF 0.060 INCH ALLEN WRENCH, ROTATE ECCENTRIC WITH NUT POST FRICTION TIGHT.

Figure 6-118. Back Space Mechanism (For Chadless Tape)

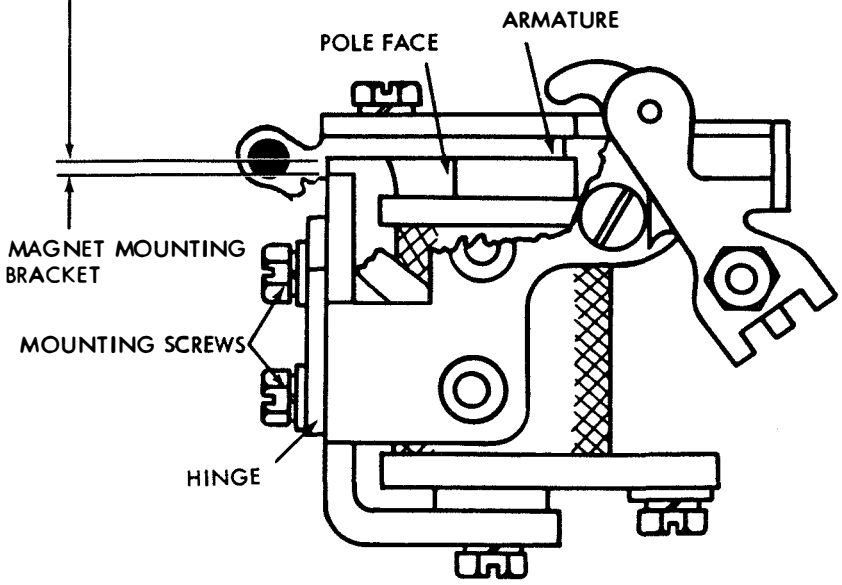
ARMATURE HINGE

REQUIREMENT

WITH ARMATURE HELD AGAINST POLE FACE (ARMATURE BAIL SPRING UNHOOKED):
MAX. 0.003 INCH
BETWEEN ARMATURE AND MAGNET MOUNTING BRACKET WITH PLAY TAKEN UP FOR MINIMUM.

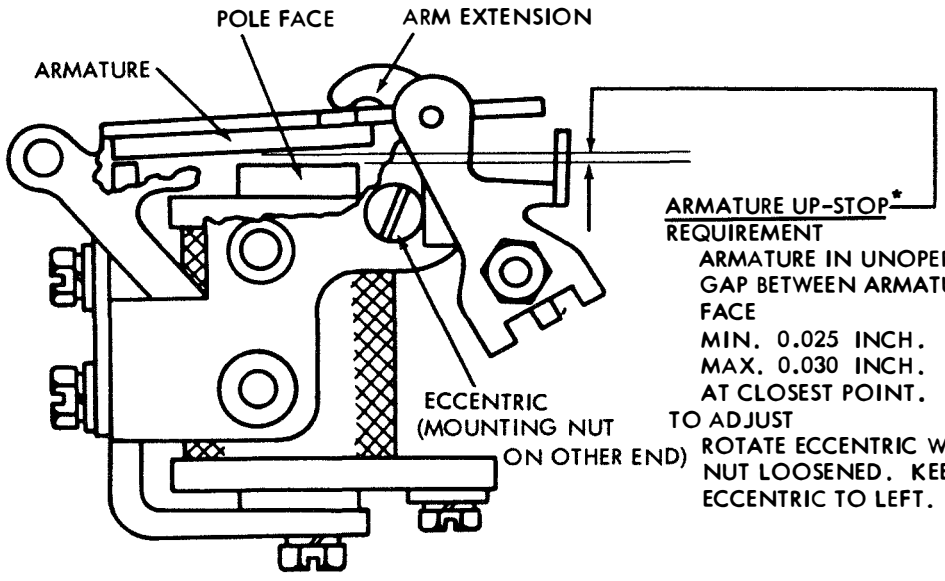
TO ADJUST

WITH MOUNTING SCREWS LOOSENED, POSITION HINGE. WHILE ADJUSTMENT IS BEING MADE, ARMATURE SHOULD TOUCH FRONT AND REAR OF POLE FACE.



* NOTE

THIS ADJUSTMENT IS MADE AT FACTORY AND SHOULD NOT BE DISTURBED UNLESS A REASSEMBLY OF THE UNIT IS UNDERTAKEN. IF NECESSARY TO MAKE THIS ADJUSTMENT, THE PUNCH UNIT SHOULD BE REMOVED. SEE DISASSEMBLY AND REASSEMBLY PARAGRAPH 6-3d(6). REMAKE PUNCH UNIT POSITION ADJUSTMENT.



ARMATURE UP-STOP*

REQUIREMENT

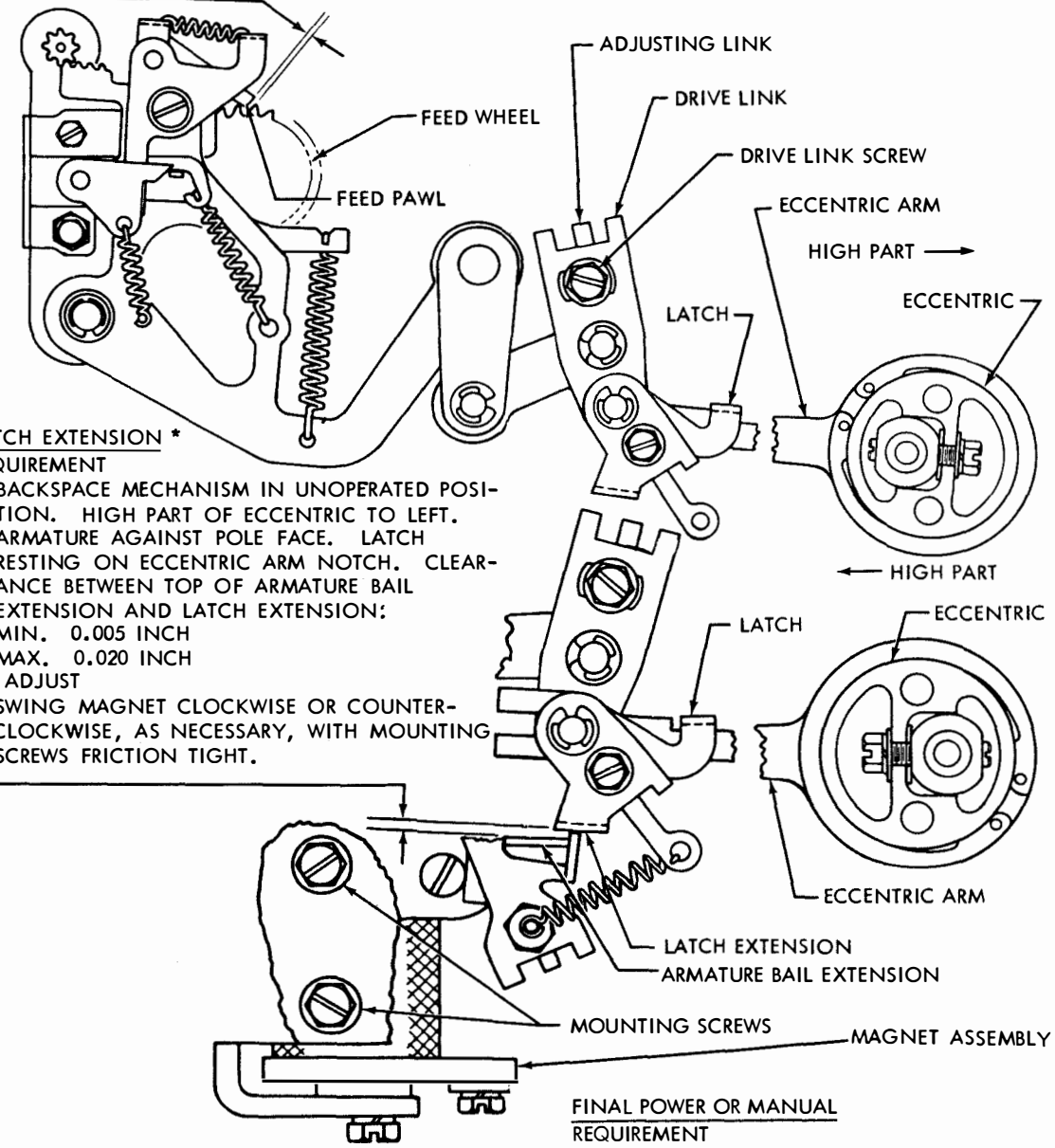
ARMATURE IN UNOPERATED POSITION.
GAP BETWEEN ARMATURE AND POLE FACE
MIN. 0.025 INCH.
MAX. 0.030 INCH.
AT CLOSEST POINT.

TO ADJUST

ROTATE ECCENTRIC WITH MOUNTING NUT LOOSENED. KEEP HIGH PART OF ECCENTRIC TO LEFT.

Figure 6-119. Power Drive Back Space Mechanism (For Chadless Tape)

DRIVE LINK
REQUIREMENT
BACKSPACE MECHANISM IN OPERATED POSITION. FEED WHEEL RATCHET IN DETENTED POSITION. LATCH ENGAGED WITH ECCENTRIC ARM. HIGH PART OFECCENTRICTO RIGHT. CLEARANCE BETWEEN FEED PAWL AND FEED WHEEL RATCHET TOOTH:
MIN. SOME---MAX. 0.003 INCH
TO ADJUST
BY MEANS OF PRY POINT, POSITION ADJUSTING LINK WITH DRIVE LINK SCREW FRICTION TIGHT.

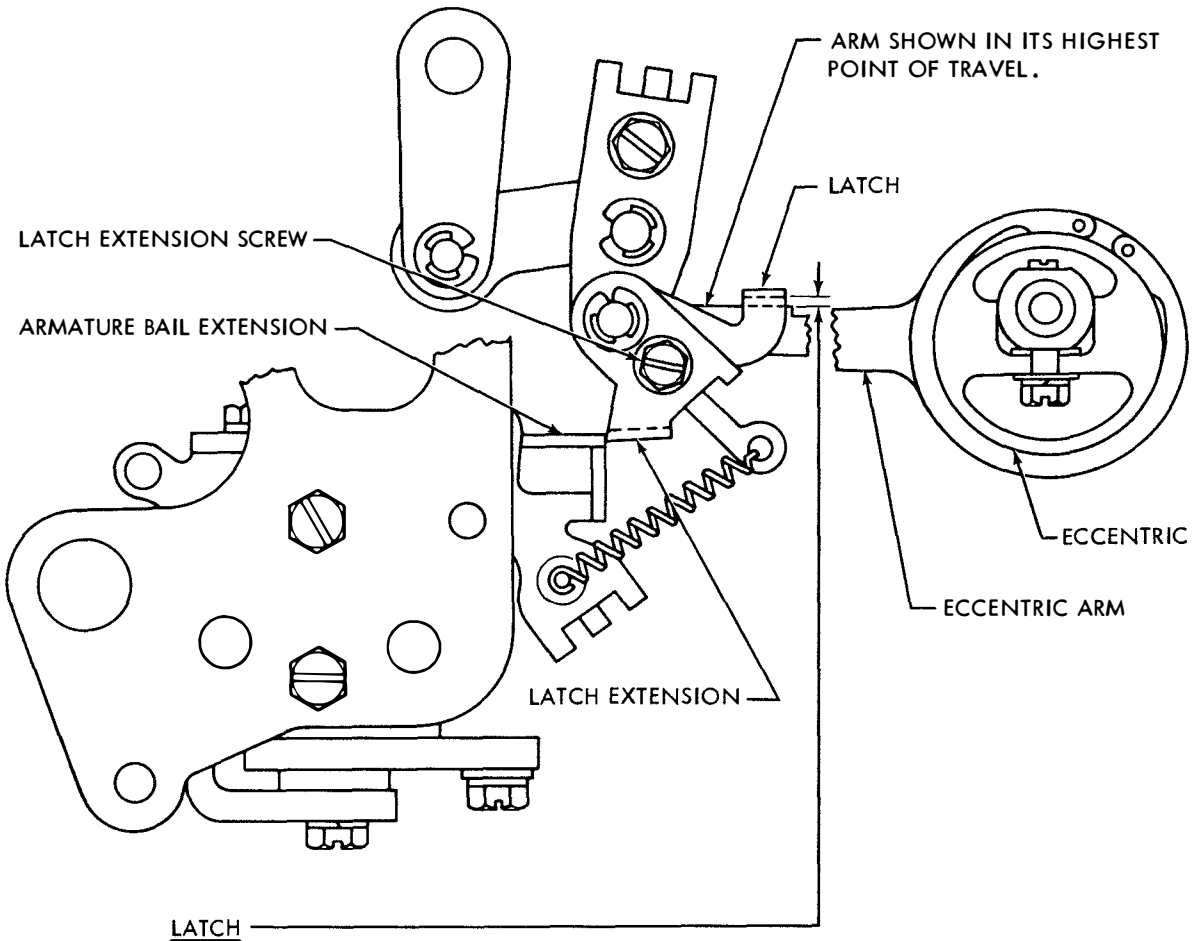


LATCH EXTENSION *
REQUIREMENT
BACKSPACE MECHANISM IN UNOPERATED POSITION. HIGH PART OF ECCENTRIC TO LEFT. ARMATURE AGAINST POLE FACE. LATCH RESTING ON ECCENTRIC ARM NOTCH. CLEARANCE BETWEEN TOP OF ARMATURE BAIL EXTENSION AND LATCH EXTENSION:
MIN. 0.005 INCH
MAX. 0.020 INCH
TO ADJUST
SWING MAGNET CLOCKWISE OR COUNTERCLOCKWISE, AS NECESSARY, WITH MOUNTING SCREWS FRICTION TIGHT.

FINAL POWER OR MANUAL
REQUIREMENT
OPERATE UNDER POWER, TAPE IN PUNCH UNIT. FEED WHEEL SHAFT OIL HOLE IN UPPERMOST POSITION, OPERATE BACKSPACE MECHANISM ONCE. RATCHET WHEEL SHOULD BE BACKED ONE SPACE TO FULLY DETENTED POSITION.
NOTE
A FULLY DETENTED POSITION IS DEFINED AS: "WITH DETENT ROLLER IN CONTACT WITH RATCHET WHEEL, PUNCH UNIT FEED PAWL SHOULD ENGAGE FIRST TOOTH BELOW HORIZONTAL CENTER LINE OF RATCHET FEED WHEEL WITH NO PERCEPTIBLE CLEARANCE."
TO ADJUST
REFINE FEED PAWL ADJUSTMENTS.

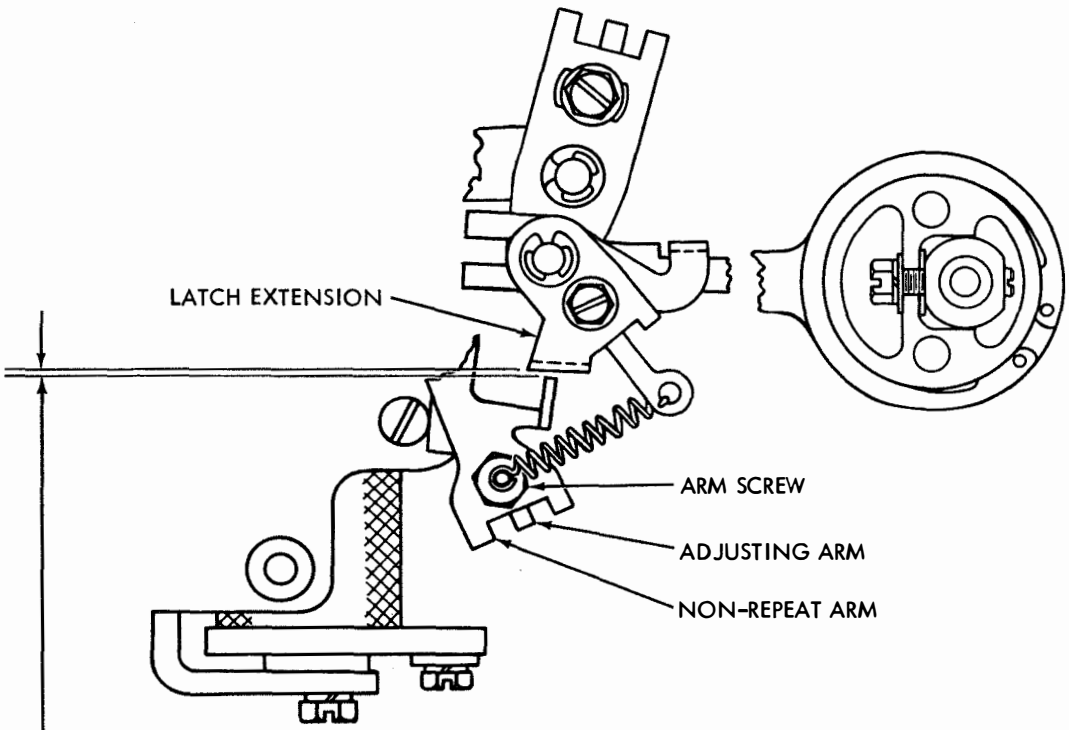
*NOTE:
THIS ADJUSTMENT IS MADE AT FACTORY AND SHOULD NOT BE DISTURBED UNLESS A REASSEMBLY OF THE UNIT IS UNDERTAKEN. IF NECESSARY TO MAKE THIS ADJUSTMENT, THE PUNCH UNIT SHOULD BE REMOVED. SEE DISASSEMBLY AND REASSEMBLY. REMAKE PUNCH UNIT POSITION ADJUSTMENT.

Figure 6-120. Power Drive Back Space Mechanism (For Chadless Tape)



LATCH
REQUIREMENT
BACKSPACE MECHANISM IN UNOPERATED POSITION. ARMATURE OFF POLE FACE (DE-ENERGIZED). LATCH EXTENSION AGAINST END OF ARMATURE BAIL EXTENSION. ECCENTRIC ARM AT ITS CLOSEST POINT TO UNDERSIDE OF LATCH. CLEARANCE BETWEEN LATCH AND ECCENTRIC ARM.
MIN. 0.005 INCH
MAX. 0.025 INCH
TO ADJUST
POSITION LATCH WITH LATCH EXTENSION SCREW LOOSENED.

Figure 6-121. Power Drive Back Space Mechanism (For Chadless Tape)



NON-REPEAT ARM

REQUIREMENT

BACKSPACE MECHANISM IN UNOPERATED POSITION. CLEARANCE BETWEEN TOP SURFACE OF NON-REPEAT ARM AND LOWEST POINT OF LATCH EXTENSION

MIN. 0.002 INCH

MAX. 0.010 INCH

TO ADJUST

POSITION ADJUSTING ARM WITH ARM SCREW LOOSENED FRICTION TIGHT.

Figure 6-122. Power Drive Back Space Non-Repeat Arm (For Chadless Tape)

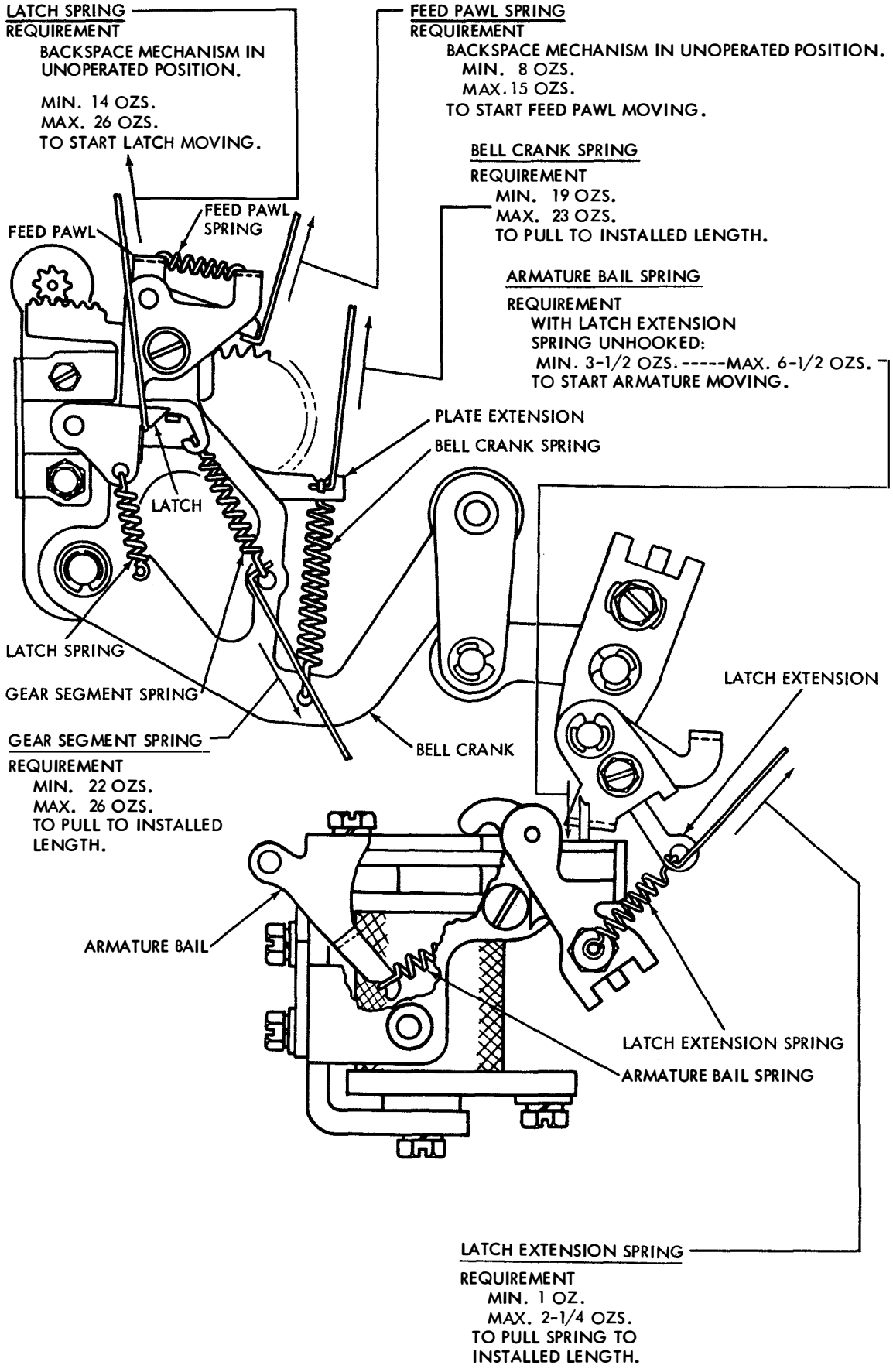


Figure 6-123. Power Drive Back Space Mechanism (For Chadless Tape)

POWER DRIVE BACKSPACE MECHANISM
FOR FULLY PERFORATED TAPE.

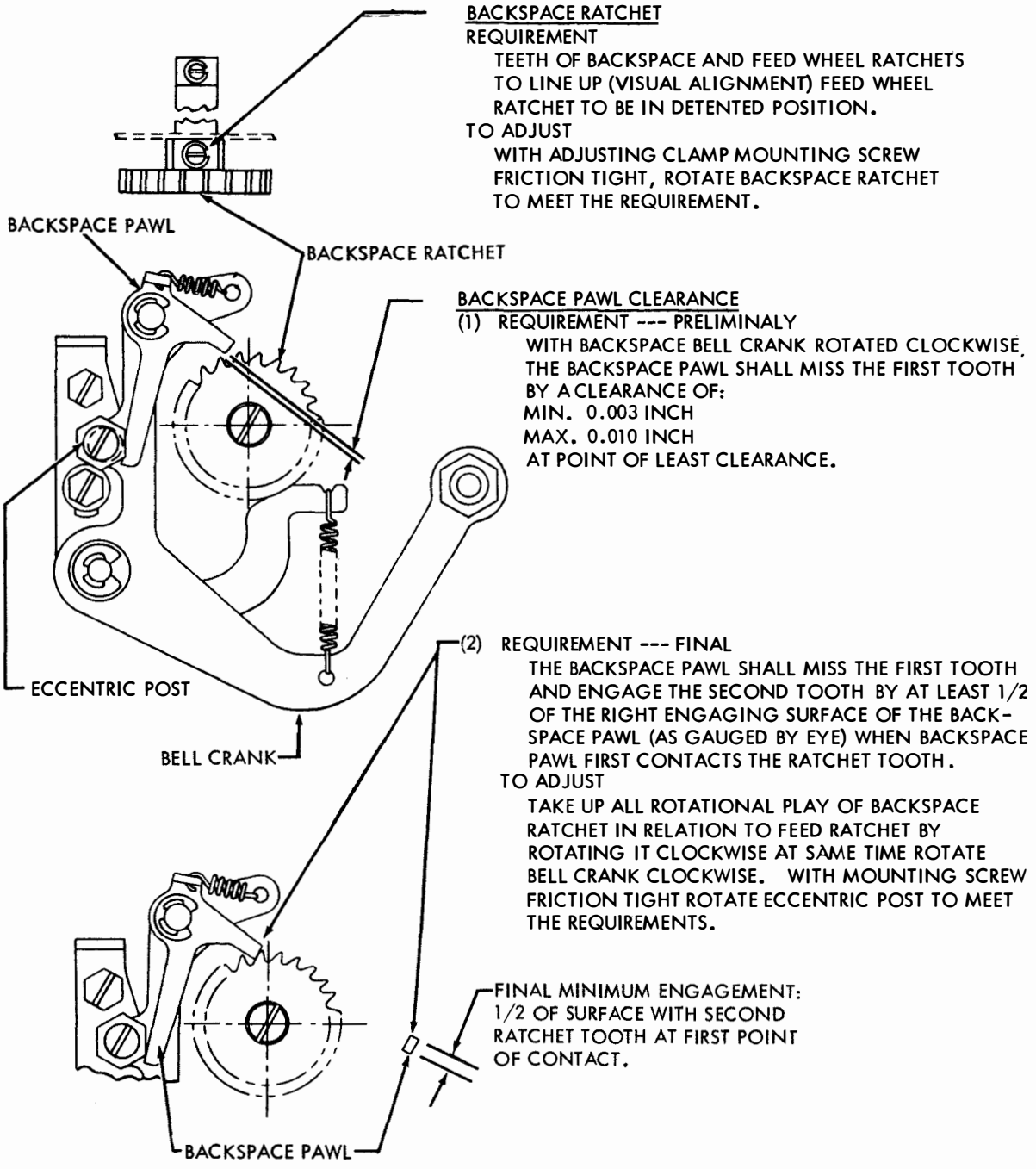
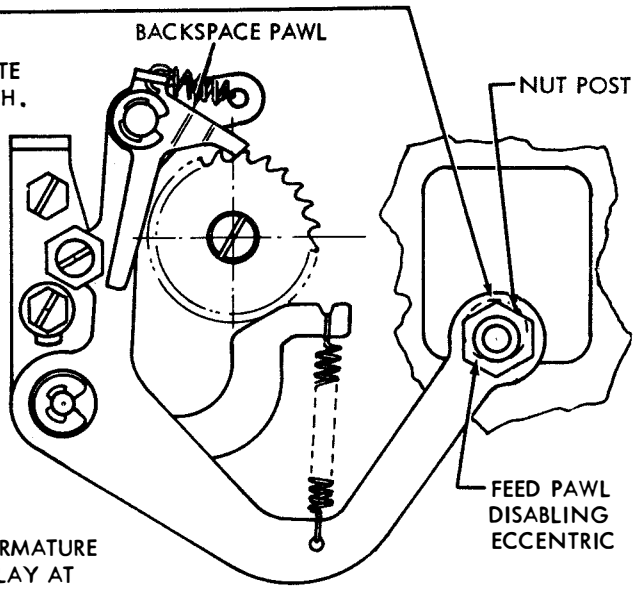


Figure 6-124. Back Space Mechanism (TT-253A/UG)

FEED PAWL DISABLING
REQUIREMENT
WHEN BELL CRANK IS IN OPERATED POSITION HIGH SIDE OF FEED PAWL DISABLING ECCENTRIC SHOULD BE IN UPPERMOST POSITION.
TO ADJUST
WITH NUT POST FRICTION TIGHT, ROTATE ECCENTRIC WITH A 0.060" ALLEN WRENCH.



ARMATURE HINGE
REQUIREMENT
WITH ARMATURE BAIL SPRING REMOVED, ARMATURE HELD AGAINST THE POLE FACE, TAKE UP PLAY AT HINGE IN A DOWNWARD DIRECTION. CLEARANCE BETWEEN THE ARMATURE AND MAGNET BRACKET.
MIN. SOME
MAX. 0.004 INCH
TO ADJUST
WITH HINGE MOUNTING SCREWS FRICTION TIGHT, POSITION HINGE. ARMATURE SHOULD TOUCH FRONT AND REAR OF POLE FACE. TIGHTEN SCREWS AND RECHECK ADJUSTMENT.

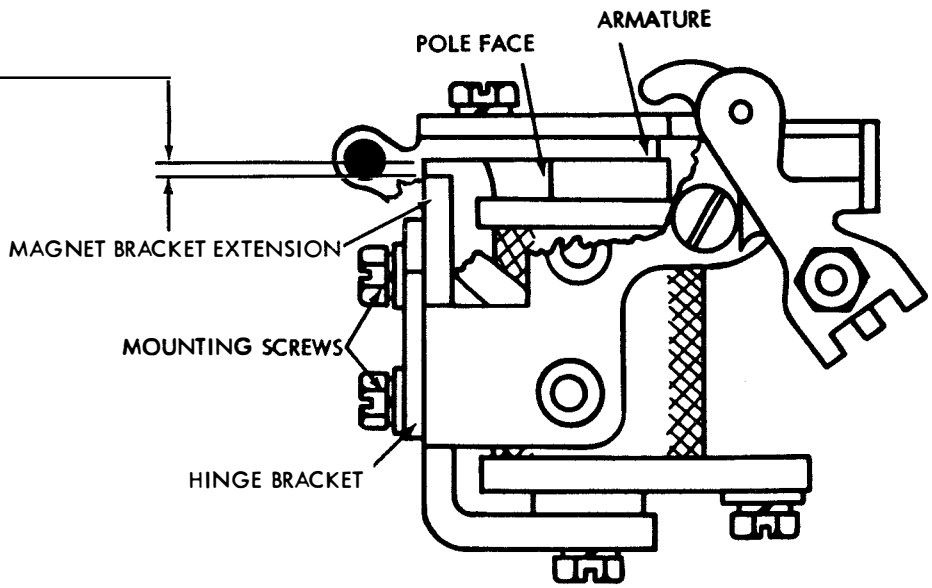


Figure 6-125. Back Space Mechanism (TT-253A/UG)

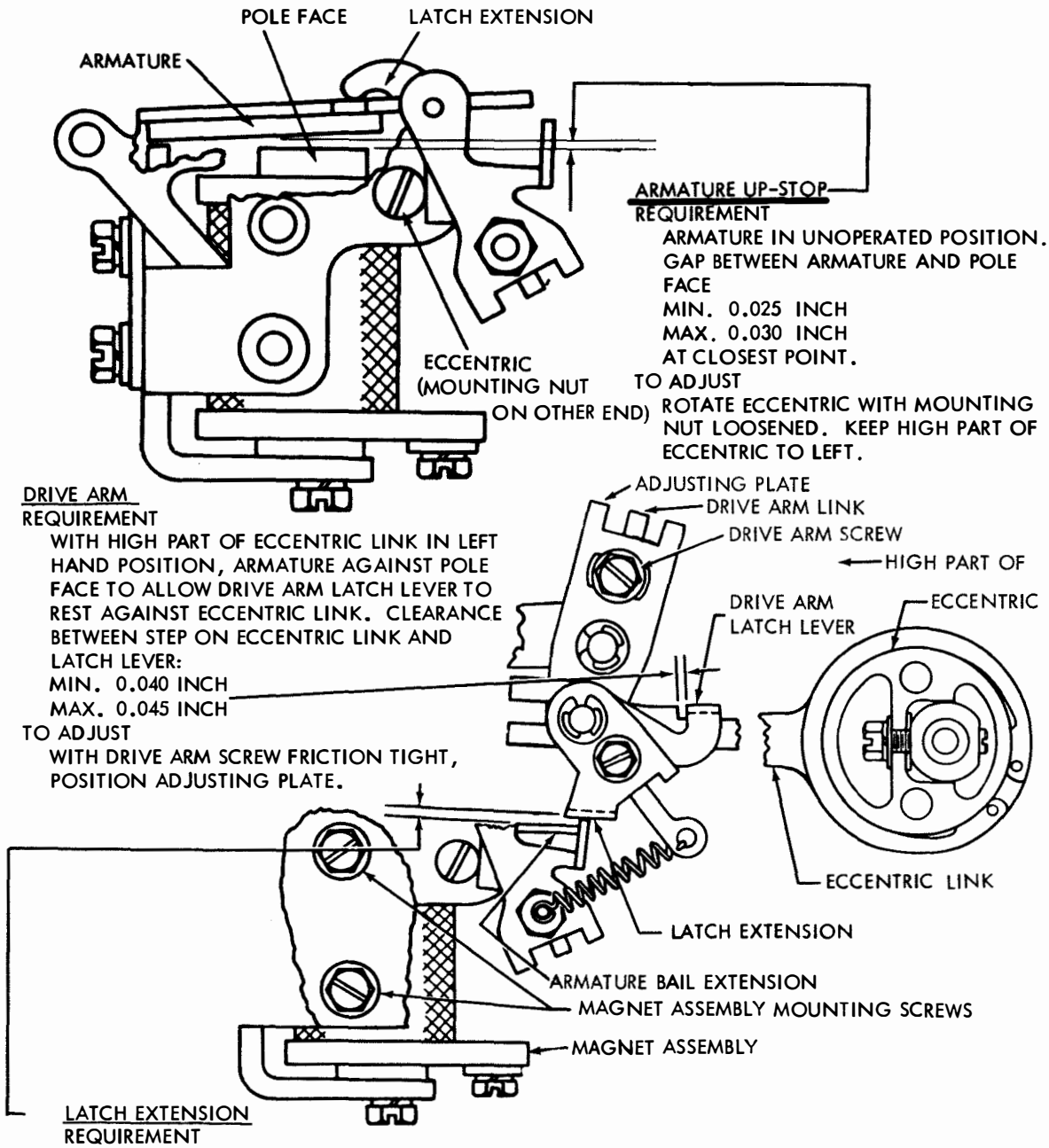


Figure 6-126. Back Space Mechanism (TT-253A/UG)

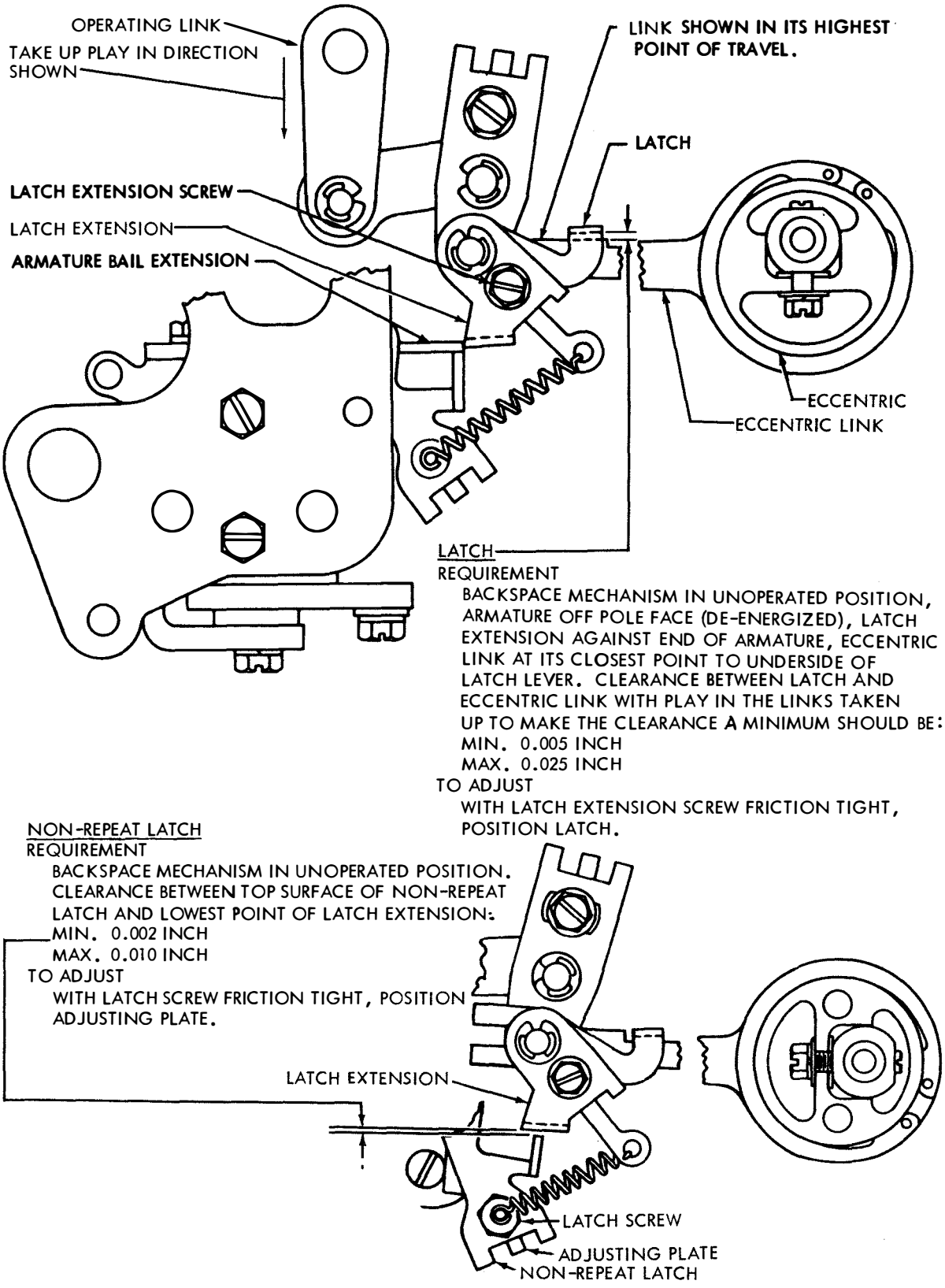


Figure 6-127. Back Space Mechanism (TT-253A/UG)

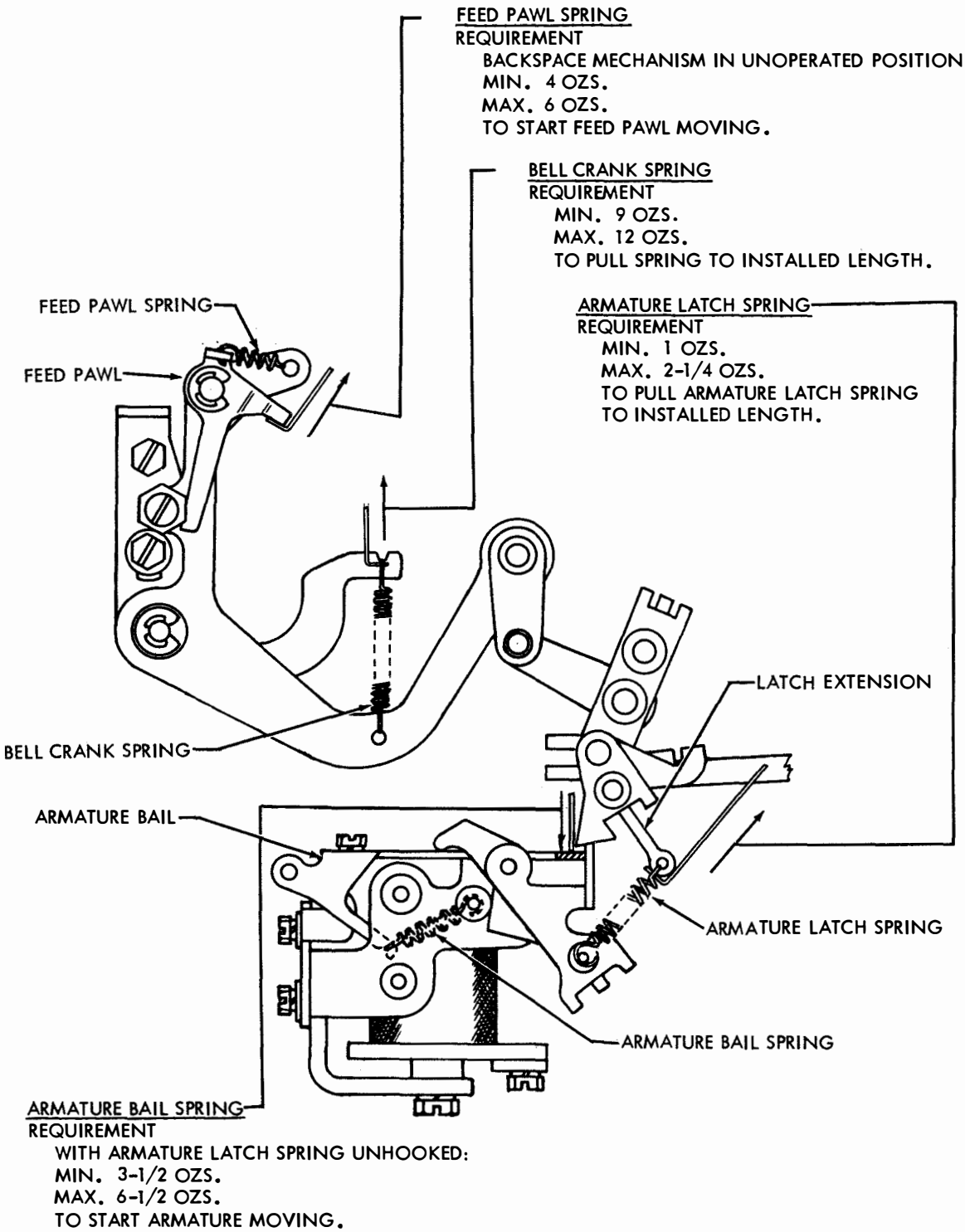


Figure 6-128. Back Space Mechanism (TT-253A/UG)

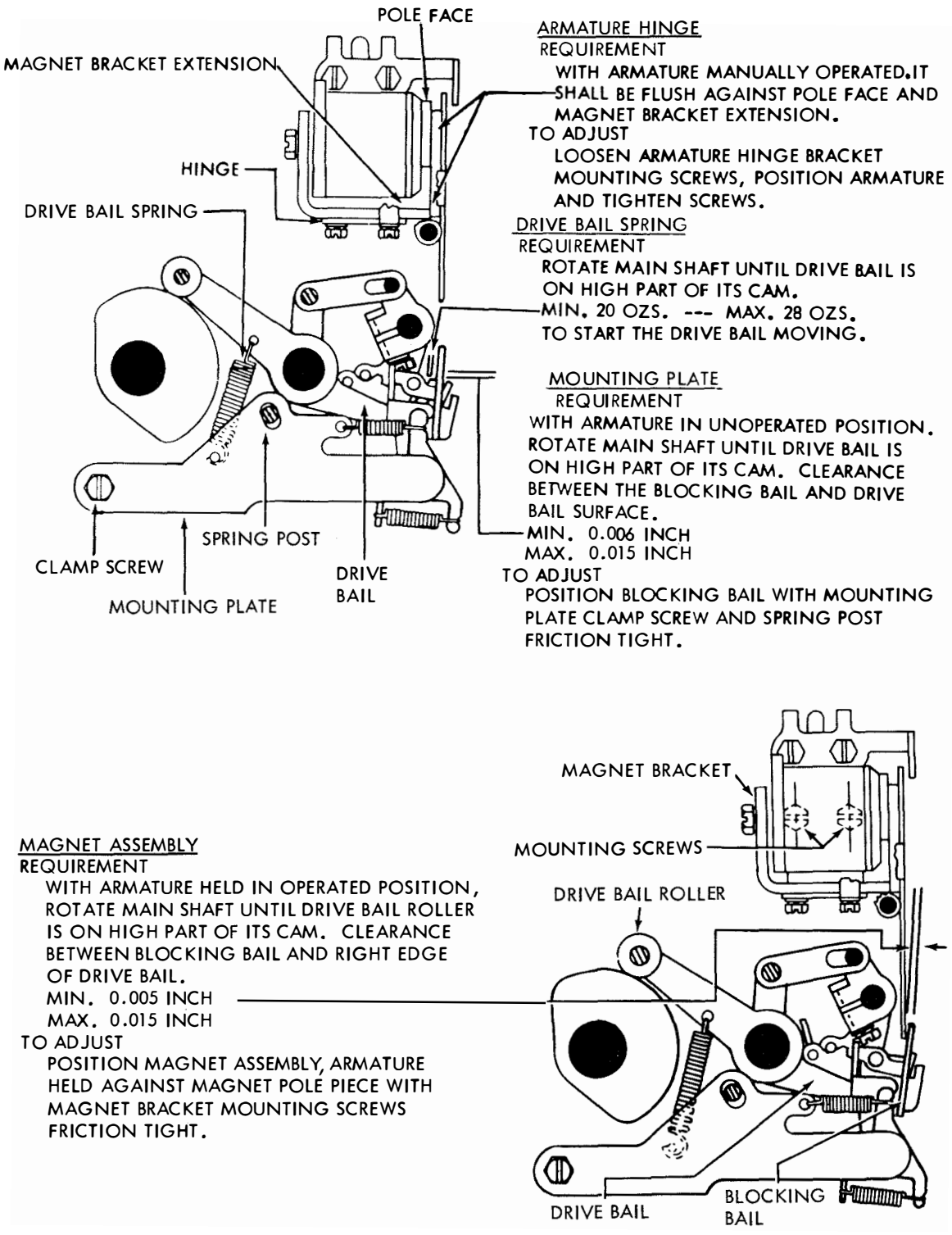


Figure 6-129. Remote Control Tape Feed-Out Mechanism (Not Applicable to TT-192A/UG)

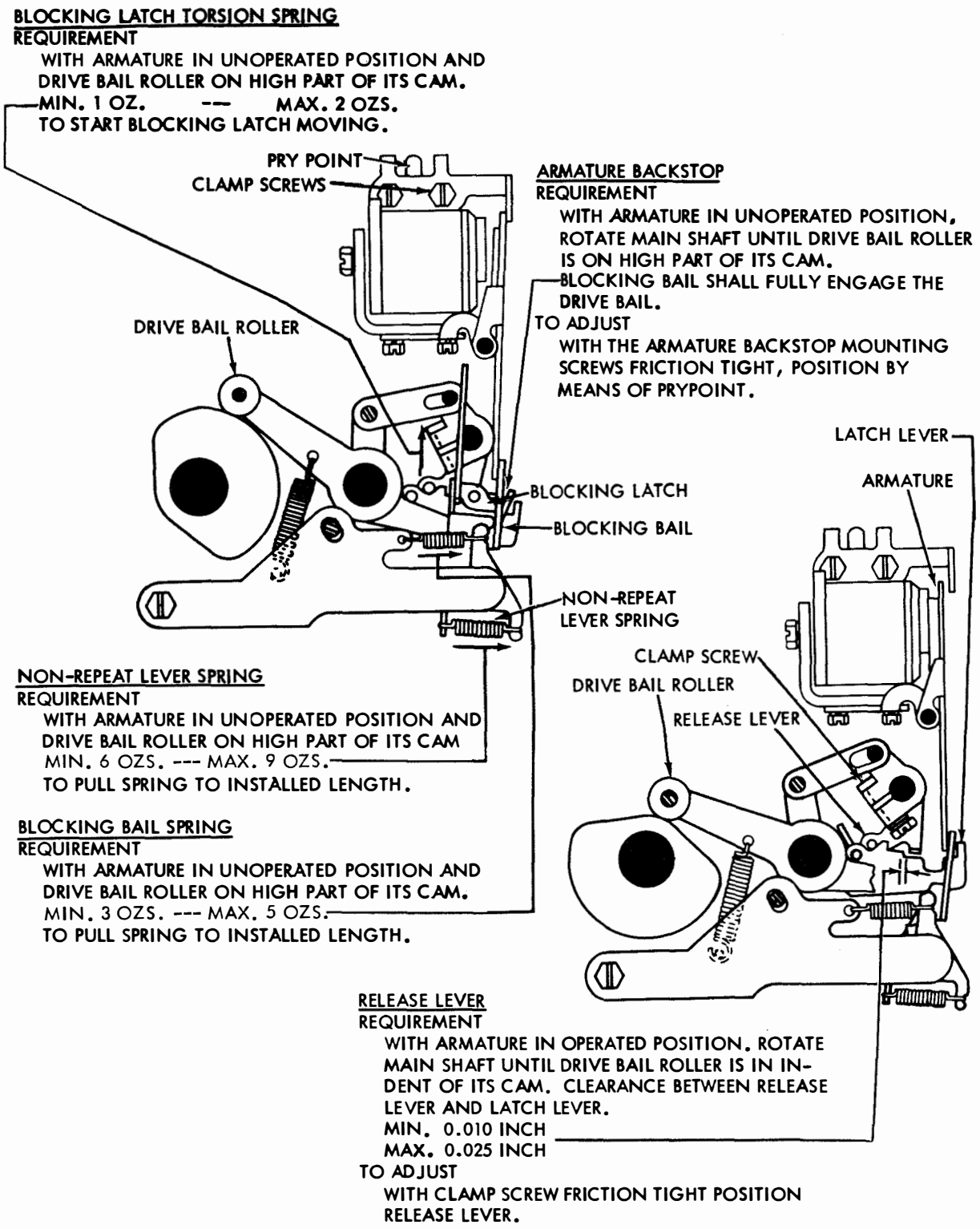
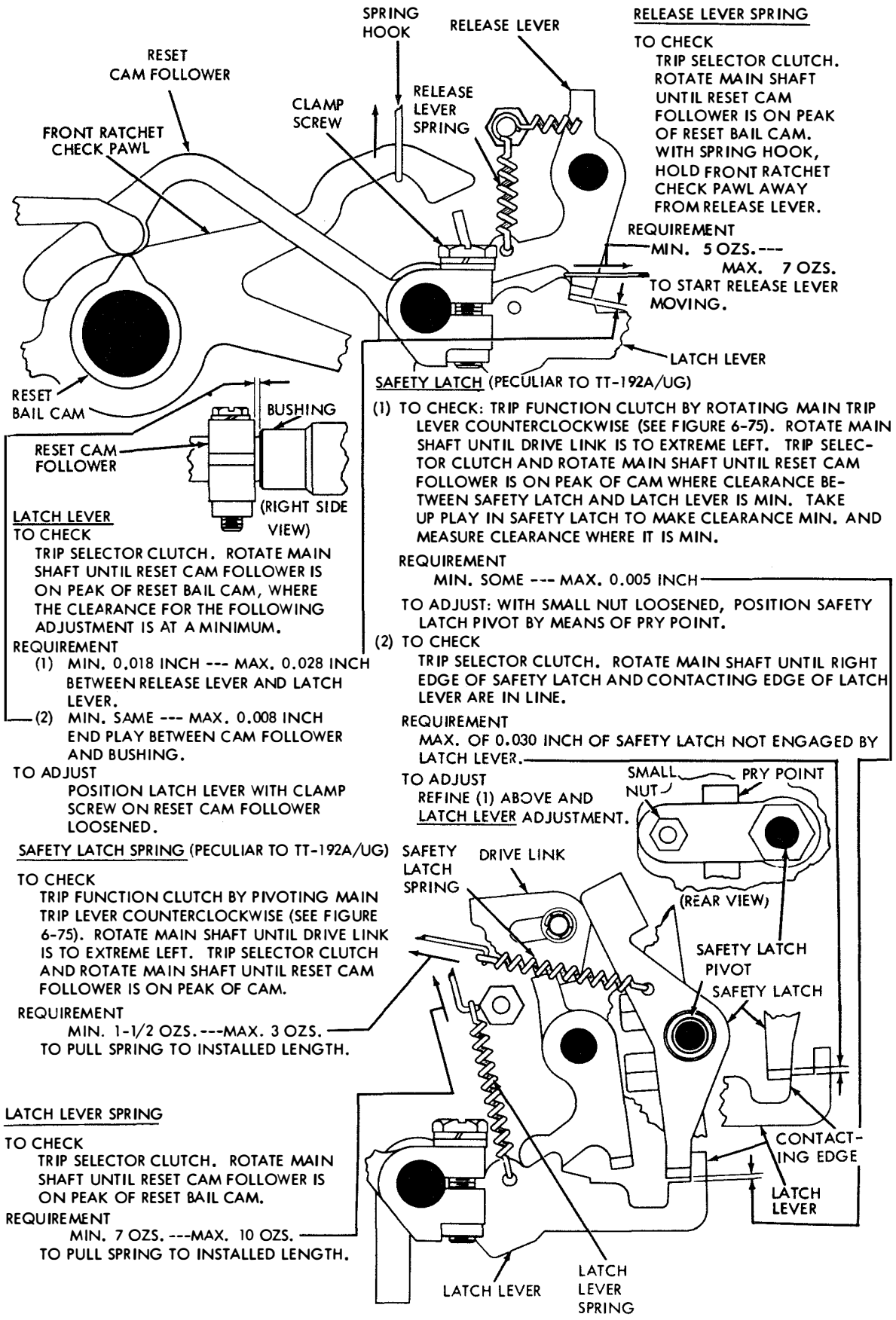


Figure 6-130. Remote Control Tape Feed-Out Release Arm (Not Applicable to TT-192A/UG)



RELEASE LEVER SPRING

TO CHECK
TRIP SELECTOR CLUTCH. ROTATE MAIN SHAFT UNTIL RESET CAM FOLLOWER IS ON PEAK OF RESET BAIL CAM. WITH SPRING HOOK, HOLD FRONT RATCHET CHECK PAWL AWAY FROM RELEASE LEVER.

REQUIREMENT
MIN. 5 OZS.---
MAX. 7 OZS.
TO START RELEASE LEVER MOVING.

LATCH LEVER

TO CHECK
TRIP SELECTOR CLUTCH. ROTATE MAIN SHAFT UNTIL RESET CAM FOLLOWER IS ON PEAK OF RESET BAIL CAM, WHERE THE CLEARANCE FOR THE FOLLOWING ADJUSTMENT IS AT A MINIMUM.

REQUIREMENT
(1) MIN. 0.018 INCH --- MAX. 0.028 INCH BETWEEN RELEASE LEVER AND LATCH LEVER.
(2) MIN. SAME --- MAX. 0.008 INCH END PLAY BETWEEN CAM FOLLOWER AND BUSHING.

TO ADJUST
POSITION LATCH LEVER WITH CLAMP SCREW ON RESET CAM FOLLOWER LOOSENED.

SAFETY LATCH (PECULIAR TO TT-192A/UG)

(1) TO CHECK: TRIP FUNCTION CLUTCH BY ROTATING MAIN TRIP LEVER COUNTERCLOCKWISE (SEE FIGURE 6-75). ROTATE MAIN SHAFT UNTIL DRIVE LINK IS TO EXTREME LEFT. TRIP SELECTOR CLUTCH AND ROTATE MAIN SHAFT UNTIL RESET CAM FOLLOWER IS ON PEAK OF CAM WHERE CLEARANCE BETWEEN SAFETY LATCH AND LATCH LEVER IS MIN. TAKE UP PLAY IN SAFETY LATCH TO MAKE CLEARANCE MIN. AND MEASURE CLEARANCE WHERE IT IS MIN.

REQUIREMENT
MIN. SOME --- MAX. 0.005 INCH

TO ADJUST: WITH SMALL NUT LOOSENED, POSITION SAFETY LATCH PIVOT BY MEANS OF PRY POINT.

(2) TO CHECK
TRIP SELECTOR CLUTCH. ROTATE MAIN SHAFT UNTIL RIGHT EDGE OF SAFETY LATCH AND CONTACTING EDGE OF LATCH LEVER ARE IN LINE.

REQUIREMENT
MAX. OF 0.030 INCH OF SAFETY LATCH NOT ENGAGED BY LATCH LEVER.

TO ADJUST
REFINE (1) ABOVE AND LATCH LEVER ADJUSTMENT.

SAFETY LATCH SPRING (PECULIAR TO TT-192A/UG)

TO CHECK
TRIP FUNCTION CLUTCH BY PIVOTING MAIN TRIP LEVER COUNTERCLOCKWISE (SEE FIGURE 6-75). ROTATE MAIN SHAFT UNTIL DRIVE LINK IS TO EXTREME LEFT. TRIP SELECTOR CLUTCH AND ROTATE MAIN SHAFT UNTIL RESET CAM FOLLOWER IS ON PEAK OF CAM.

REQUIREMENT
MIN. 1-1/2 OZS.---MAX. 3 OZS.
TO PULL SPRING TO INSTALLED LENGTH.

LATCH LEVER SPRING

TO CHECK
TRIP SELECTOR CLUTCH. ROTATE MAIN SHAFT UNTIL RESET CAM FOLLOWER IS ON PEAK OF RESET BAIL CAM.

REQUIREMENT
MIN. 7 OZS. ---MAX. 10 OZS.
TO PULL SPRING TO INSTALLED LENGTH.

Figure 6-131. Tape Feed-Out Mechanism

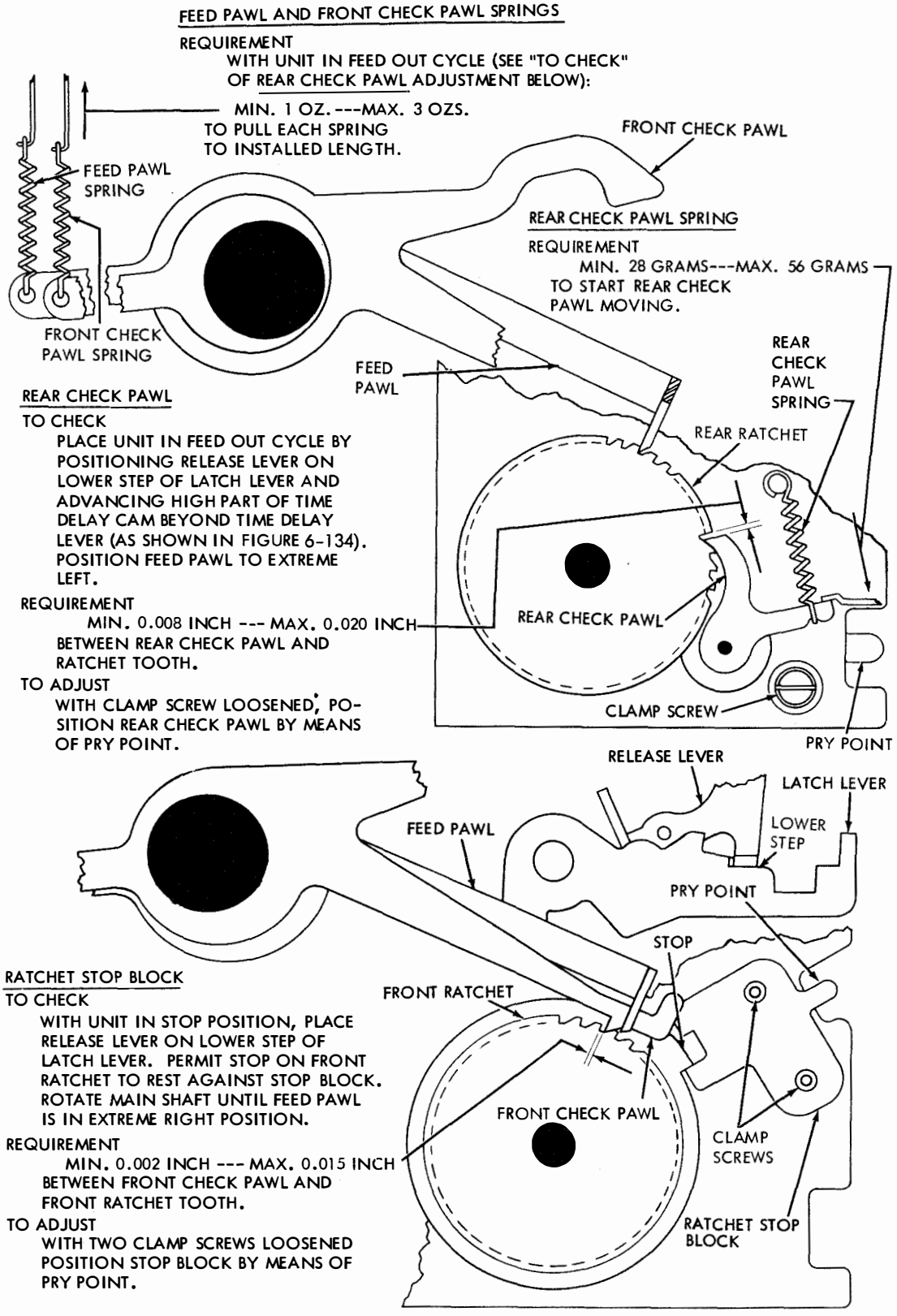


Figure 6-132. Tape Feed-Out Mechanism

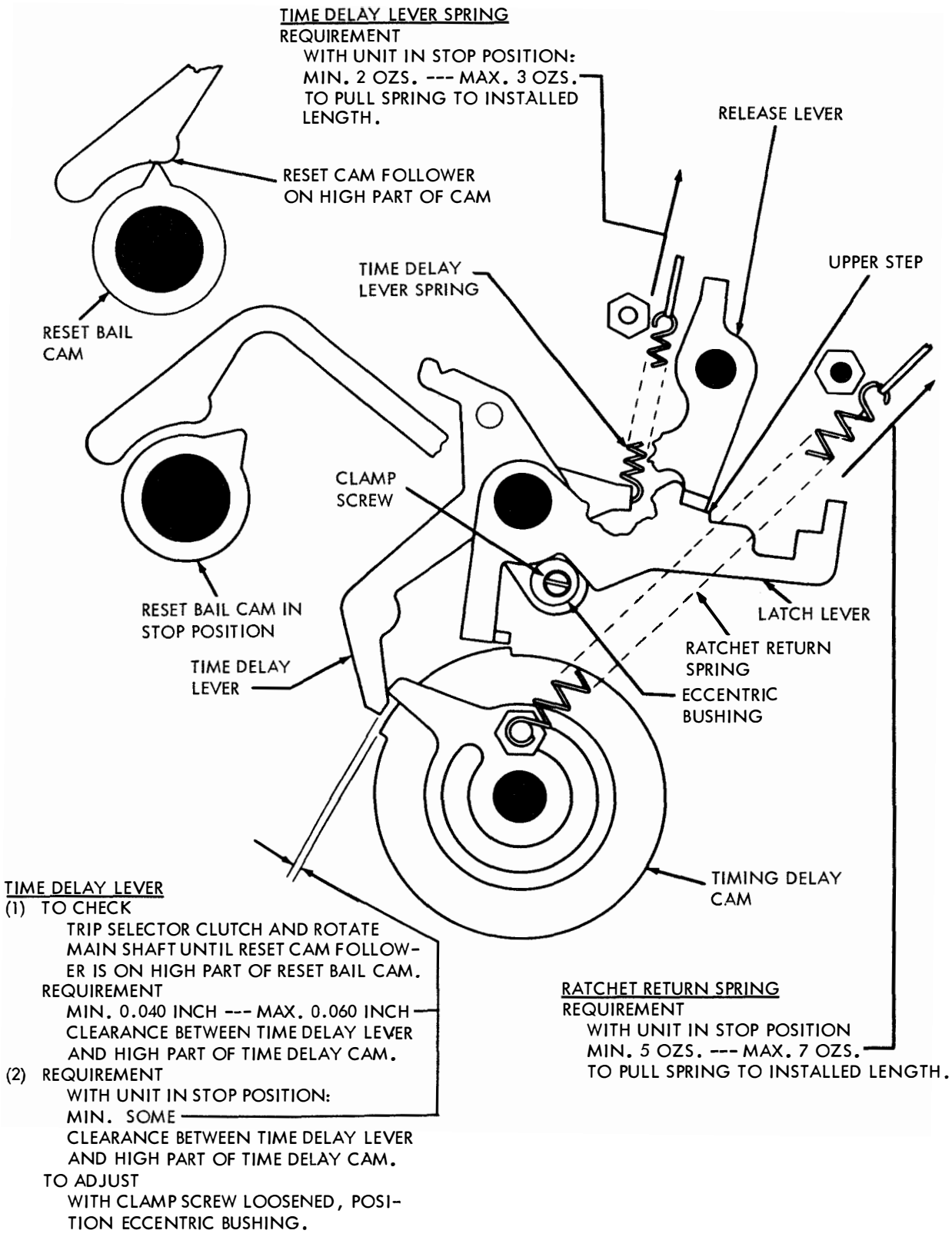


Figure 6-133. Tape Feed-Out Mechanism

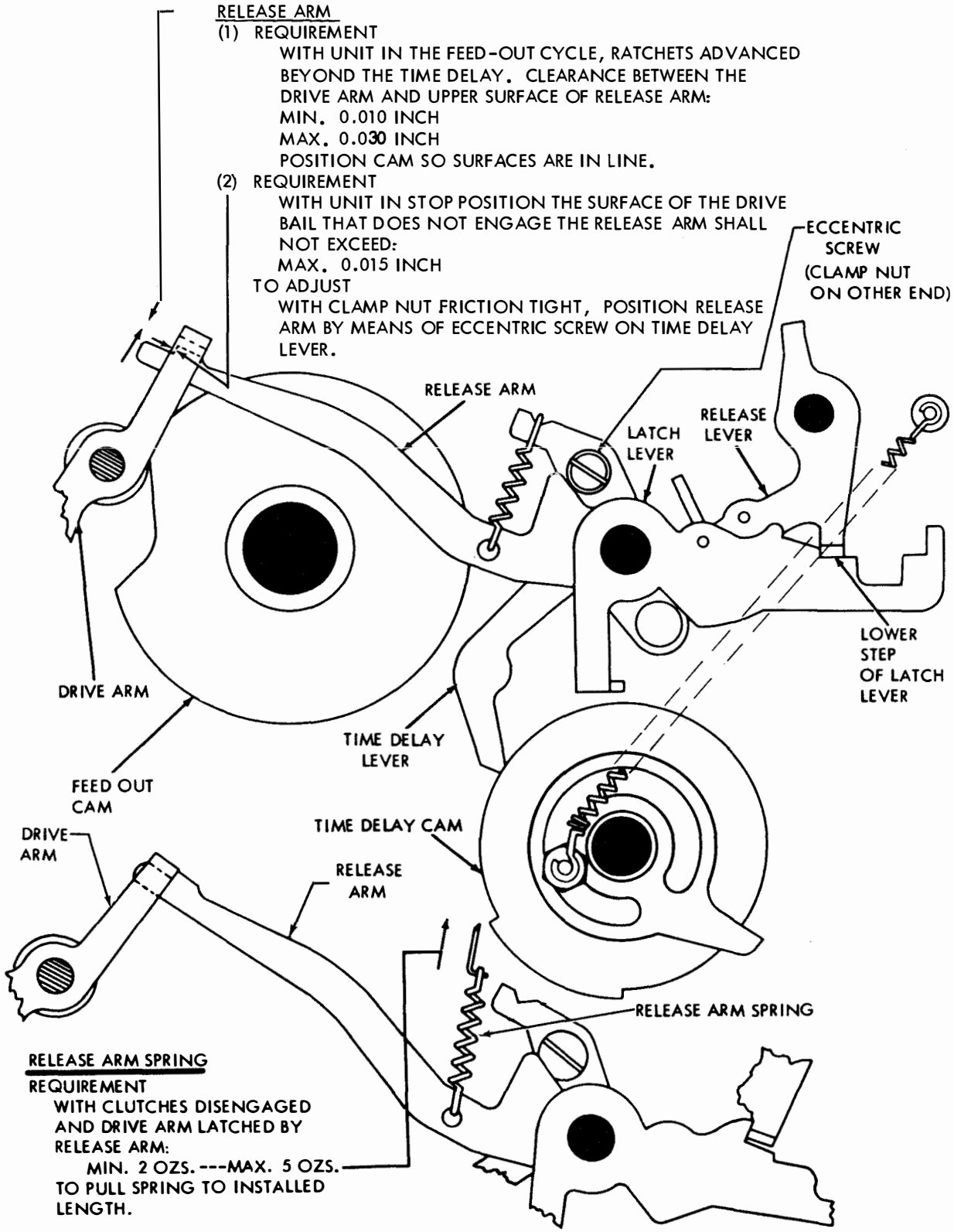
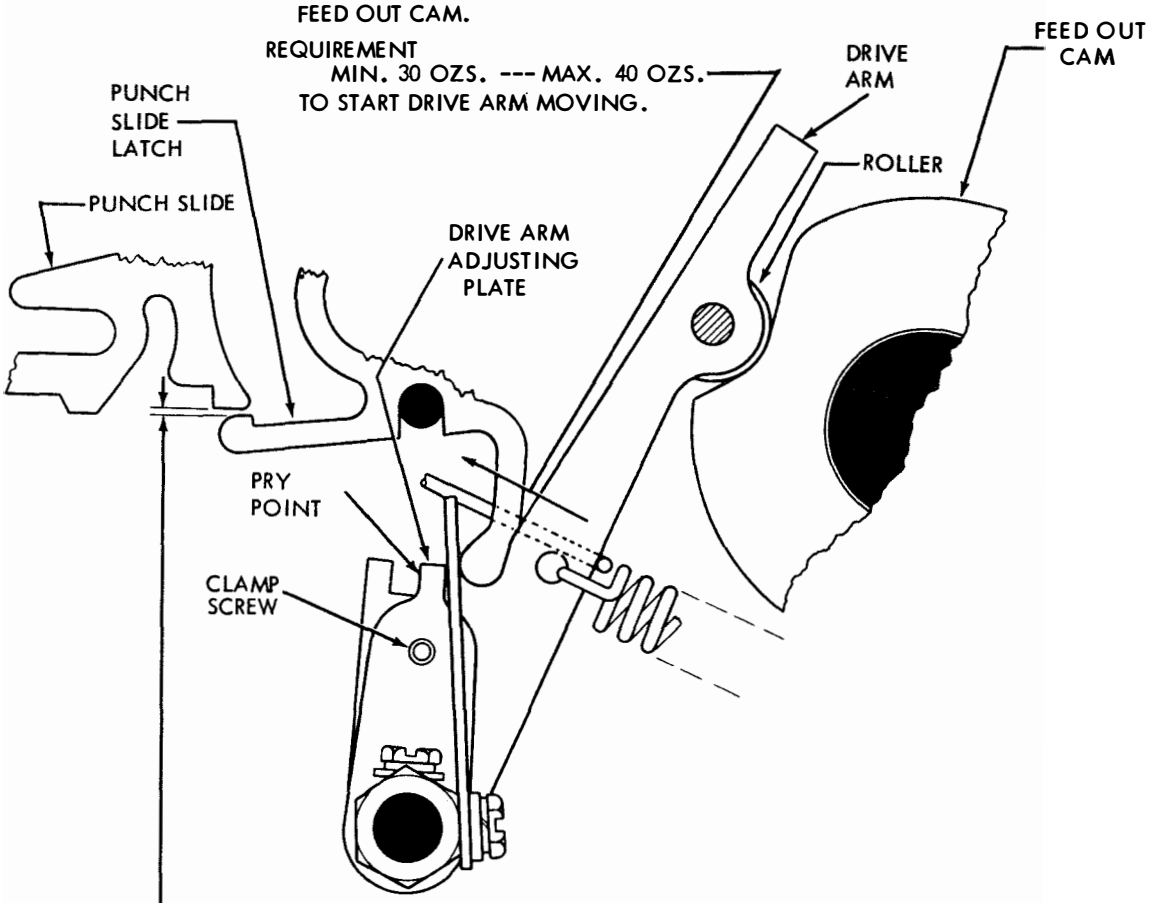


Figure 6-134. Tape Feed-Out Mechanism

DRIVE ARM SPRING

PLACE UNIT IN FEED OUT CYCLE BY POSITIONING RELEASE LEVER ON LOWER STEP OF LATCH LEVER AND ADVANCING HIGH PART OF TIME DELAY CAM BEYOND TIME DELAY LEVER (AS SHOWN IN FIGURE 6-134). ROTATE MAIN SHAFT UNTIL DRIVE ARM ROLLER IS ON LOW PART OF FEED OUT CAM.

REQUIREMENT
MIN. 30 OZS. --- MAX. 40 OZS. TO START DRIVE ARM MOVING.



DRIVE ARM ADJUSTING PLATE (NOT APPLICABLE TO TT-253A/UG)

TO CHECK

SET UP BLANK CODE COMBINATION (-----) IN SELECTOR. PLACE UNIT IN FEED OUT CYCLE BY POSITIONING RELEASE LEVER ON LOWER STEP OF LATCH LEVER AND ADVANCING HIGH PART OF TIME DELAY CAM BEYOND TIME DELAY LEVER (AS SHOWN IN FIGURE 6-134). ROTATE MAIN SHAFT UNTIL DRIVE ARM ROLLER IS ON LOW PART OF FEED OUT CAM. MAKE SURE THAT RESET BAIL IS IN LOWER POSITION.

REQUIREMENT

MIN. 0.010 INCH---MAX. 0.030 INCH BETWEEN PUNCH SLIDE AND PUNCH SLIDE LATCH AT SLIDE WHERE CLEARANCE IS LEAST.

TO ADJUST

WITH CLAMP SCREW LOOSENED, POSITION DRIVE ARM ADJUSTING PLATE BY MEANS OF PRY POINT.

Figure 6-135. Tape Feed-Out Mechanism

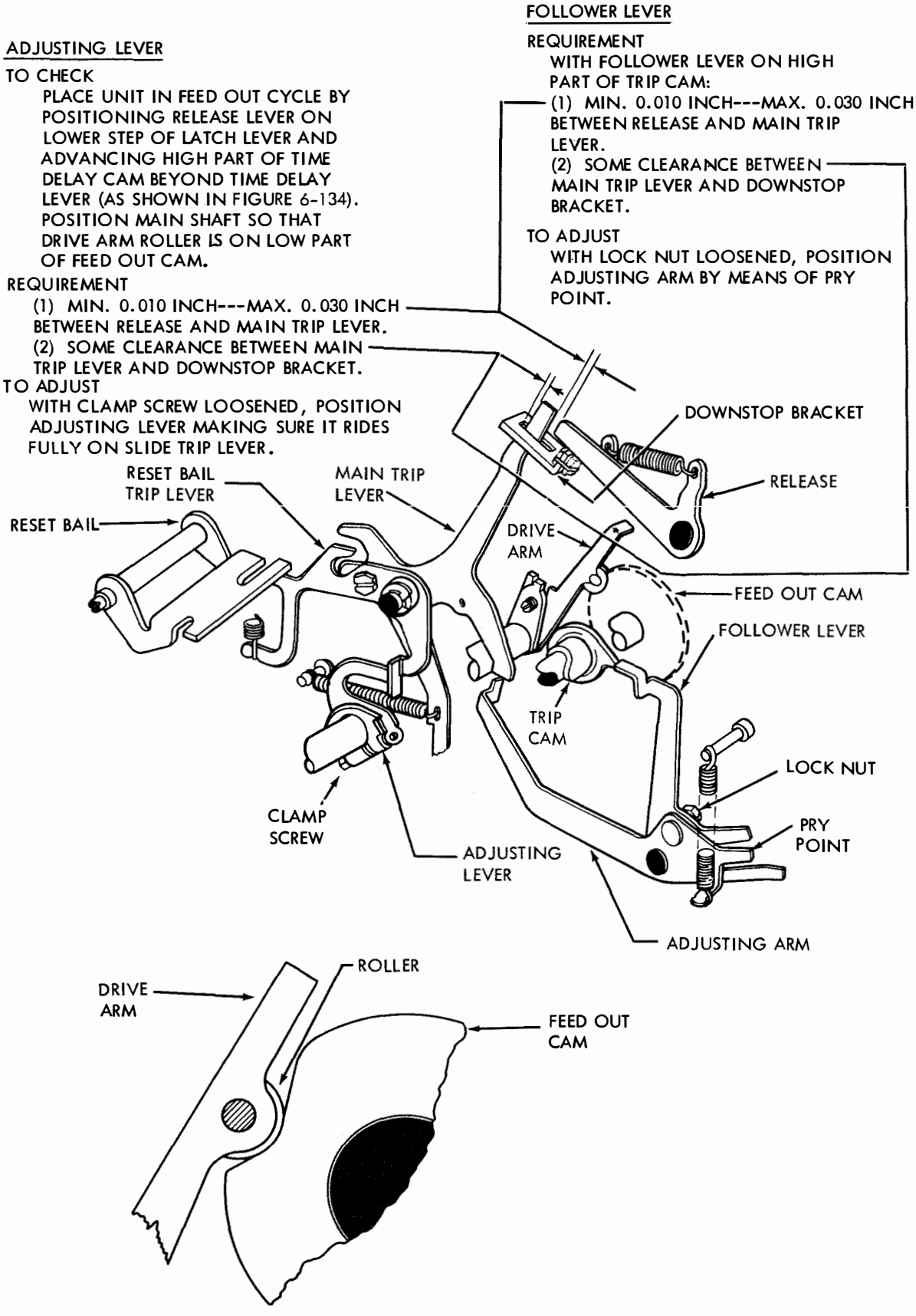


Figure 6-136. Tape Feed-Out Mechanism

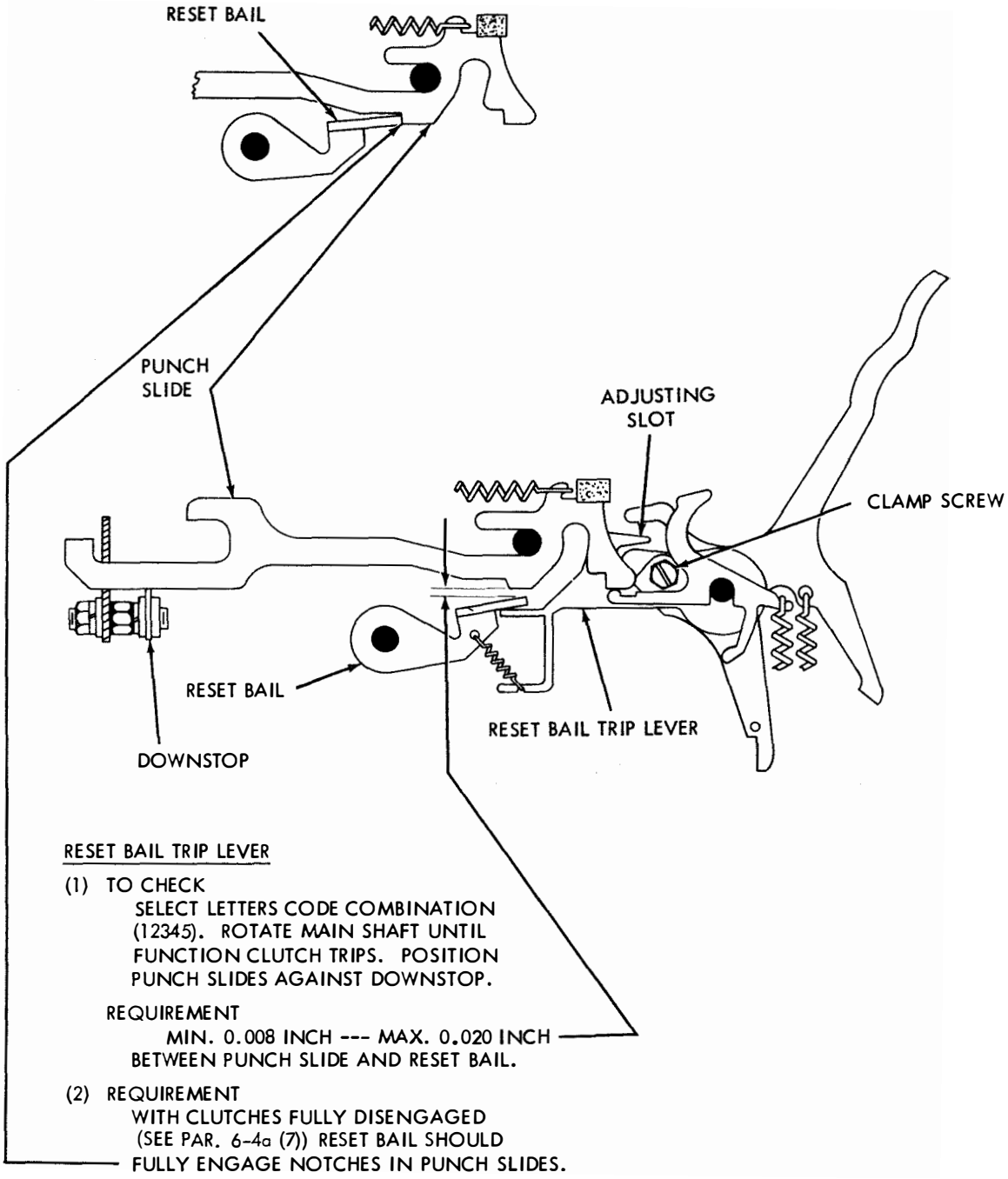
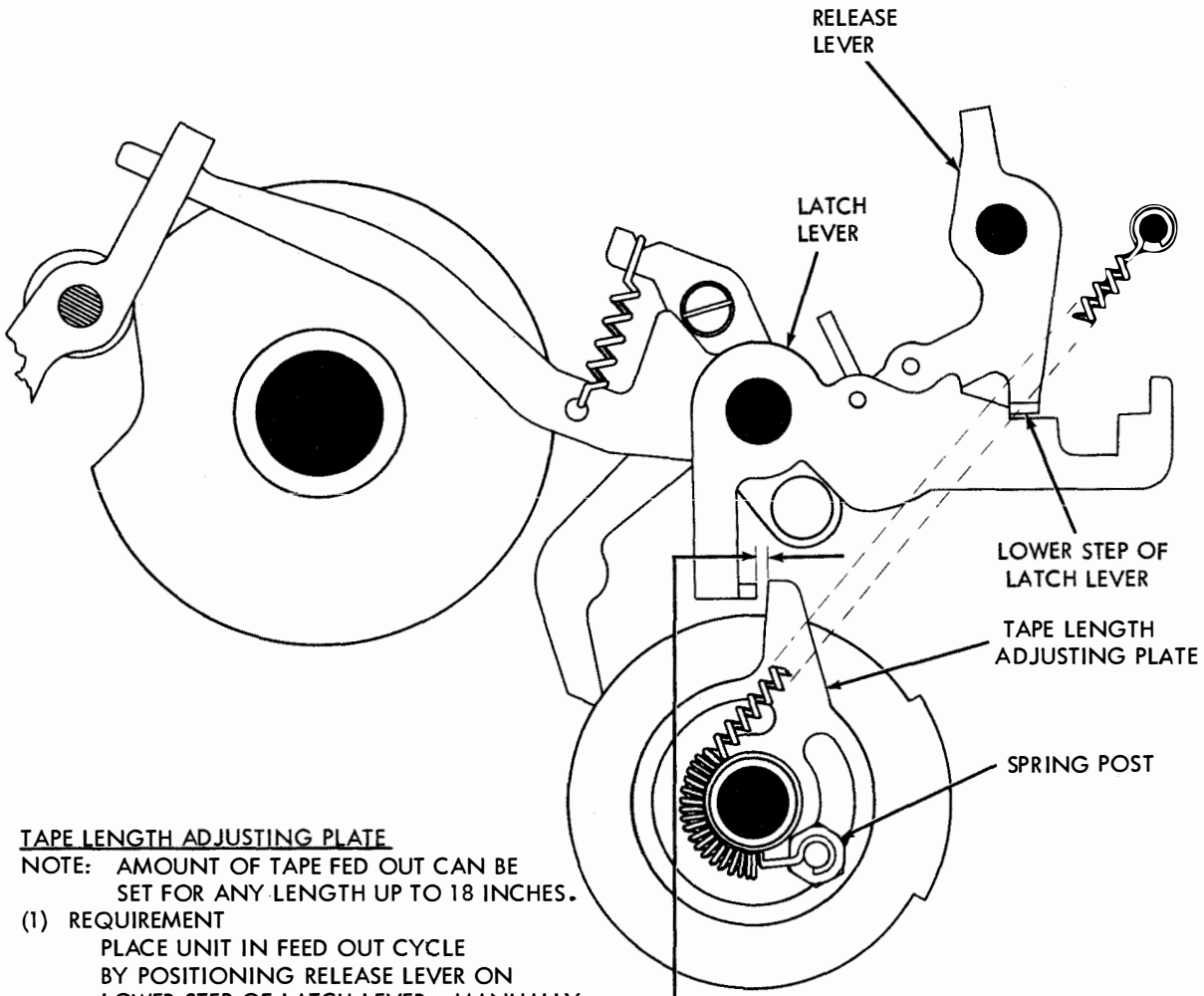


Figure 6-137. Tape Feed-Out Mechanism



TAPE LENGTH ADJUSTING PLATE

NOTE: AMOUNT OF TAPE FED OUT CAN BE SET FOR ANY LENGTH UP TO 18 INCHES.

(1) REQUIREMENT

PLACE UNIT IN FEED OUT CYCLE BY POSITIONING RELEASE LEVER ON LOWER STEP OF LATCH LEVER. MANUALLY ADVANCE RATCHETS SO THAT FRONT RATCHET IS IN TOOTH PRECEDING TRIP OFF. ROTATE MAIN SHAFT UNTIL FEED PAWL IS IN EXTREME LEFT POSITION. CLEARANCE BETWEEN ADJUSTING PLATE AND LATCH LEVER PROJECTION: MIN. 0.002 INCH --- MAX. 0.020 INCH

(2) REQUIREMENT

WHEN OPERATING UNDER POWER, UNIT SHOULD FEED OUT CORRECT LENGTH OF TAPE.

TO ADJUST

WITH SPRING POST LOOSENED, POSITION ADJUSTING PLATE.

Figure 6-138. Tape Feed-Out Mechanism

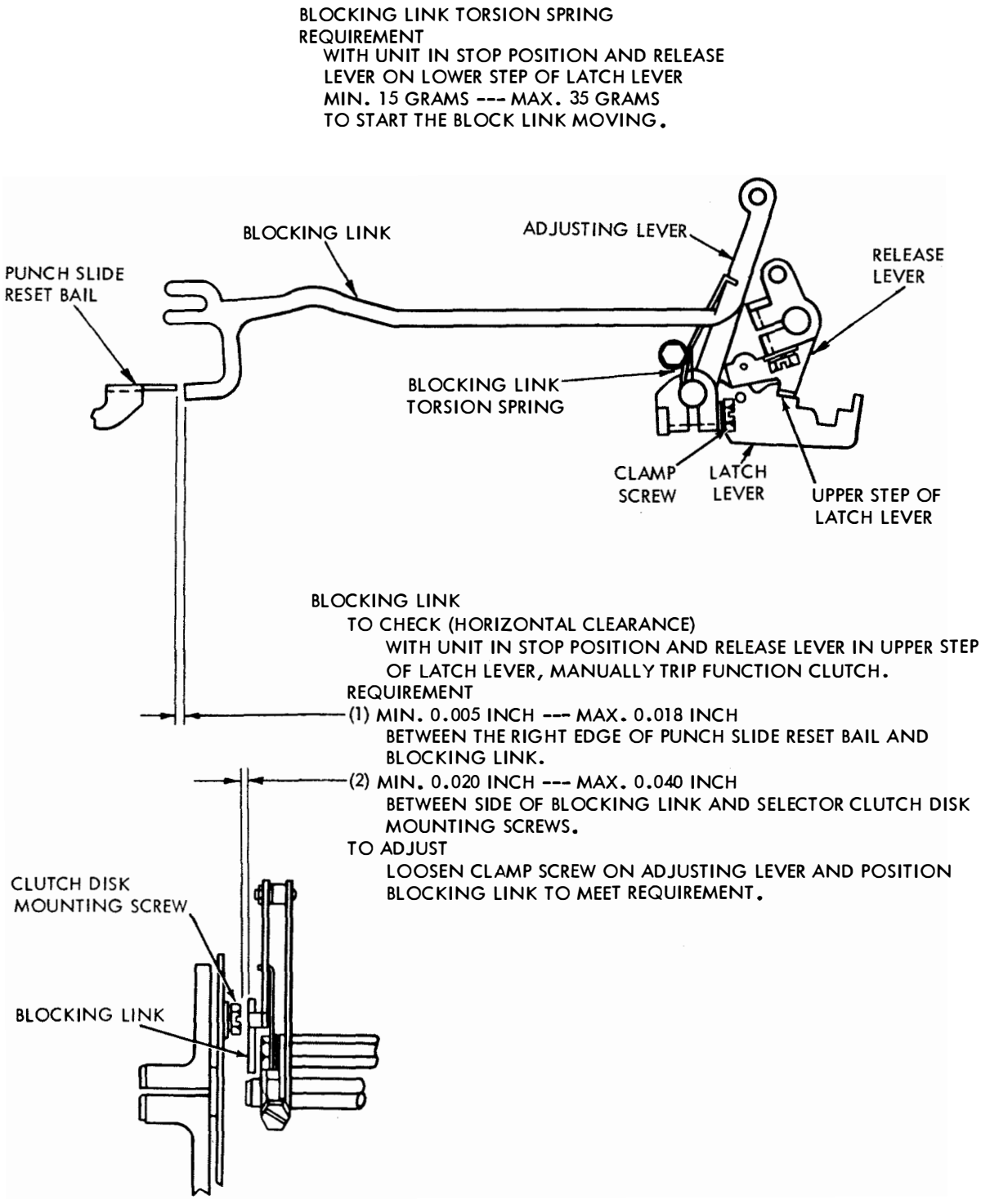
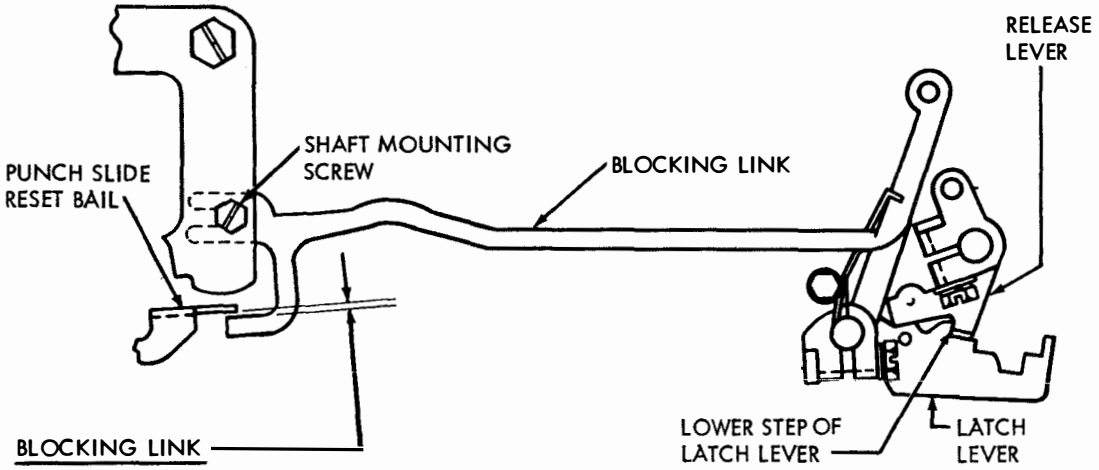


Figure 6-139. Blank Tape Feed-Out Mechanism (Not Applicable to TT-192A/UG and TT-253A/UG)



TO CHECK (VERTICAL CLEARANCE)
WITH UNIT IN STOP POSITION AND RELEASE LEVER ON LOWER STEP OF LATCH LEVER.
REQUIREMENT
MIN. 0.005 INCH ---MAX. 0.018 INCH
VERTICAL CLEARANCE BETWEEN PUNCH SLIDE RESET BAIL AND BLOCKING LINK.
TO ADJUST
LOOSEN BLOCKING LINK SHAFT MOUNTING SCREW AND POSITION SHAFT TO MEET REQUIREMENT.

RESET BAIL TRIP LEVER SPRING

TO CHECK
DISENGAGE BOTH CLUTCHES.
TRIP FUNCTION CLUTCH BY PIVOTING MAIN TRIP LEVER COUNTERCLOCKWISE
HOLD RESET BAIL TRIP LEVER UP AGAINST RESET BAIL.
REQUIREMENT
MIN. 18 OZS. ---MAX. 24 OZS. TO PULL SPRING TO INSTALLED LENGTH.

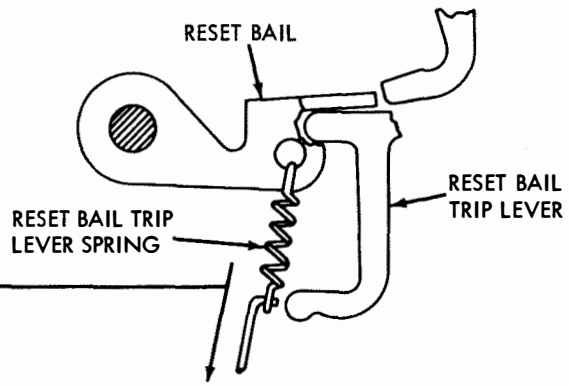
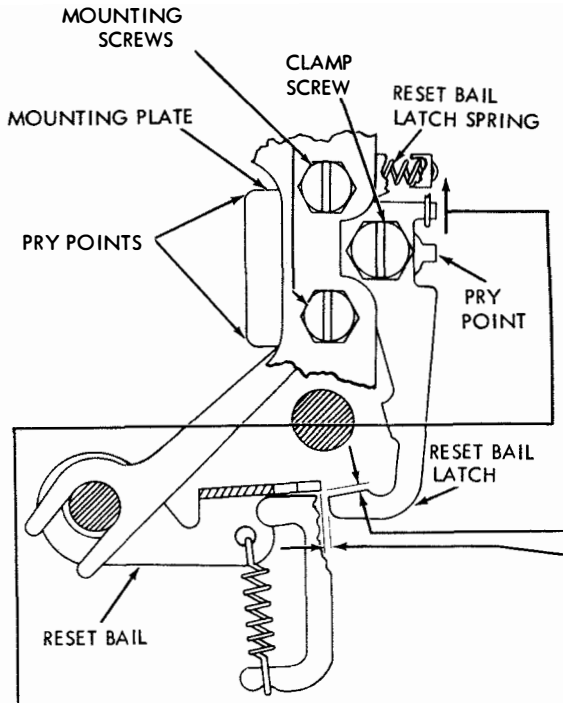


Figure 6-140. Blank Tape Feed-Out Mechanism (Not Applicable to TT-192A/UG and TT-253A/UG)



RESET BAIL LATCH

(1) TO CHECK (VERTICAL CLEARANCE) SELECT LETTERS CODE COMBINATION (12345). ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS AND PUNCH SLIDES ARE TO EXTREME LEFT. SET UP BLANK CODE COMBINATION (-----) IN SELECTOR BY STRIPPING ALL PUSH LEVERS FROM SELECTING LEVERS (SEE FIGURE 6-75). ROTATE MAIN SHAFT UNTIL PUNCH SLIDES ARE JUST LATCHED.

REQUIREMENT
MIN. 0.008 INCH---MAX. 0.020 INCH BETWEEN RESET BAIL AND RESET BAIL LATCH.

TO ADJUST
WITH MOUNTING SCREWS LOOSENED, POSITION MOUNTING PLATE BY MEANS OF PRY POINTS.

(2) REQUIREMENT (HORIZONTAL CLEARANCE) WITH CLUTCHES DISENGAGED,
MIN. 0.005 INCH---MAX. 0.020 INCH BETWEEN RESET BAIL AND RESET BAIL LATCH.

TO ADJUST
POSITION RESET BAIL SO THAT APPROX. HALF ITS THICKNESS IS BELOW TOP SURFACE OF ITS LATCH. WITH CLAMP SCREW LOOSENED, POSITION RESET BAIL LATCH BY MEANS OF PRY POINT.

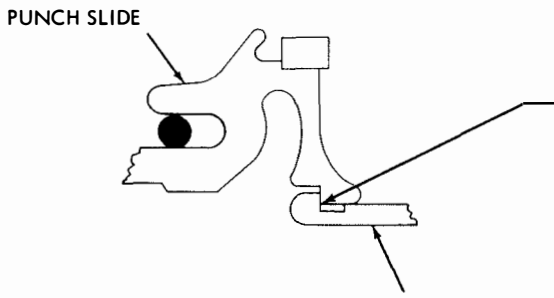
RESET BAIL LATCH SPRING

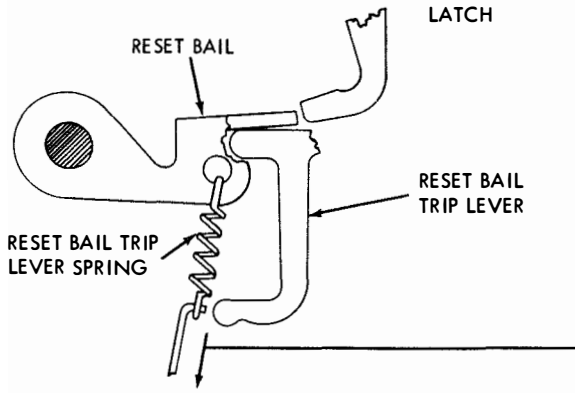
REQUIREMENT
WITH UNIT IN STOP CONDITION:
MIN. 1 OZ.---MAX. 3 OZS.
TO START RESET BAIL LATCH MOVING.

(3) TO CHECK
SELECT LETTERS CODE COMBINATION (12345). ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS. SET UP BLANK CODE COMBINATION (-----) IN SELECTOR BY STRIPPING ALL PUSH LEVERS FROM SELECTING LEVERS (SEE FIGURE 6-75). ROTATE MAIN SHAFT TO STOP POSITION.

REQUIREMENT
PUNCH SLIDES LATCHED BY PUNCH SLIDE LATCHES

TO ADJUST
REFINE (1) AND (2) ABOVE.





RESET BAIL TRIP LEVER SPRING

TO CHECK
DISENGAGE BOTH CLUTCHES. TRIP FUNCTION CLUTCH BY PIVOTING MAIN TRIP LEVER COUNTERCLOCKWISE (SEE FIGURE 6-75). HOLD RESET BAIL TRIP LEVER UP AGAINST RESET BAIL.

REQUIREMENT
MIN. 18 OZS.---MAX. 24 OZS. TO PULL SPRING TO INSTALLED LENGTH.

Figure 6-141. Letters Tape Feed-Out Mechanism (TT-192A/UG and TT-253A/UG)

END OF FEED-OUT TIMING CONTACT FOR NON-INTERFERING LETTERS AND BLANK FEED-OUT MECHANISMS.

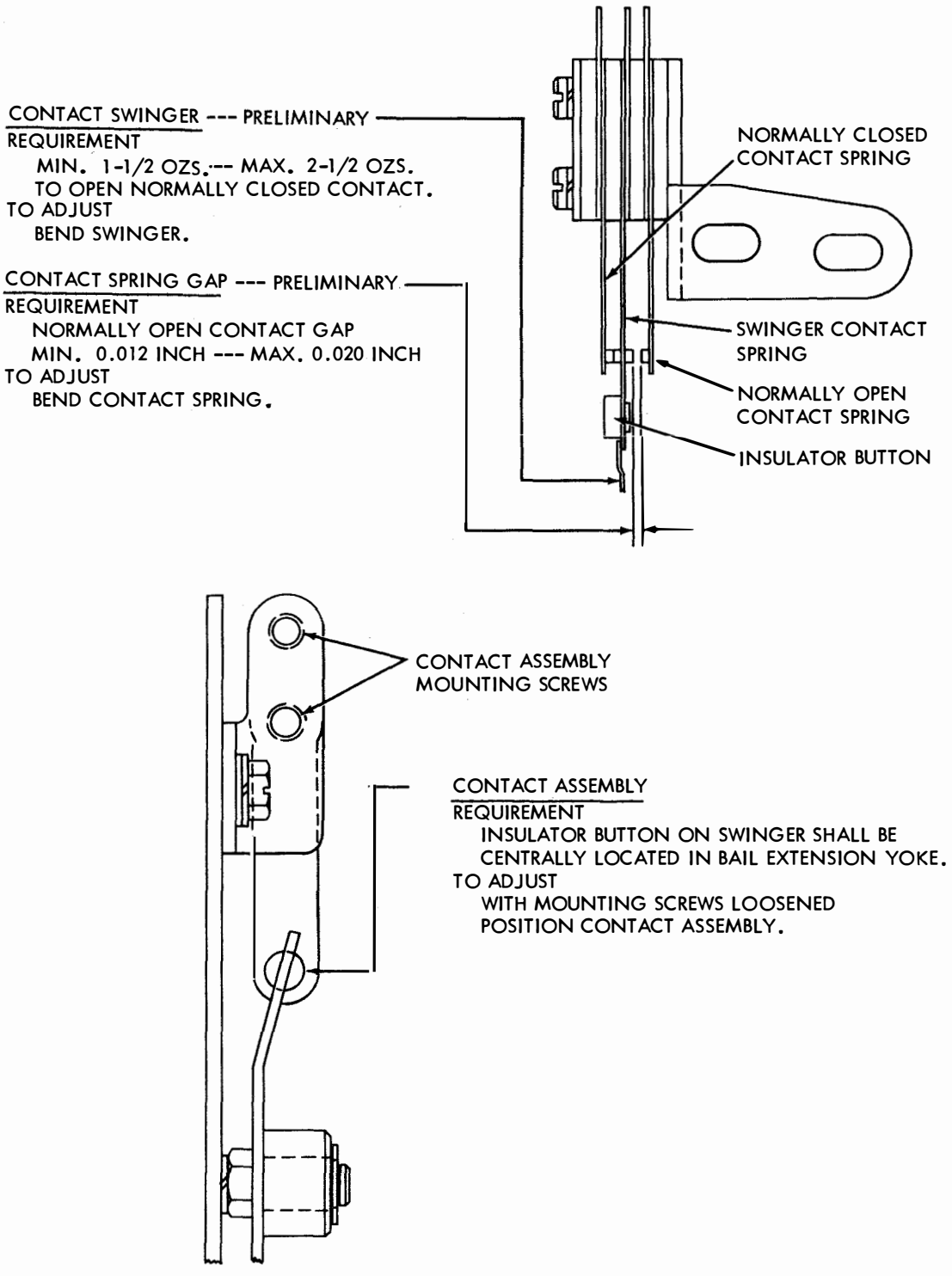


Figure 6-142. Tape Feed-Out Mechanism

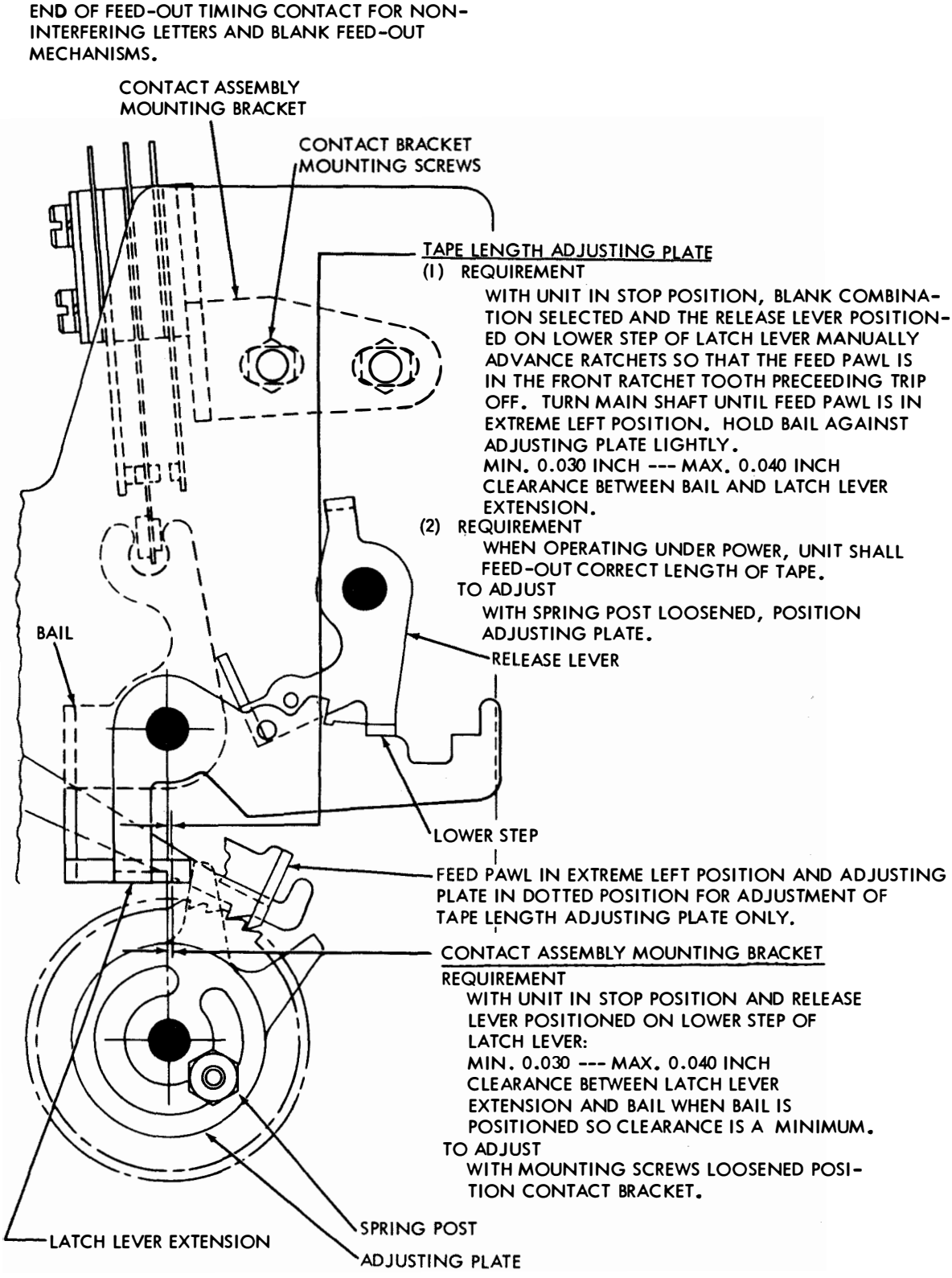
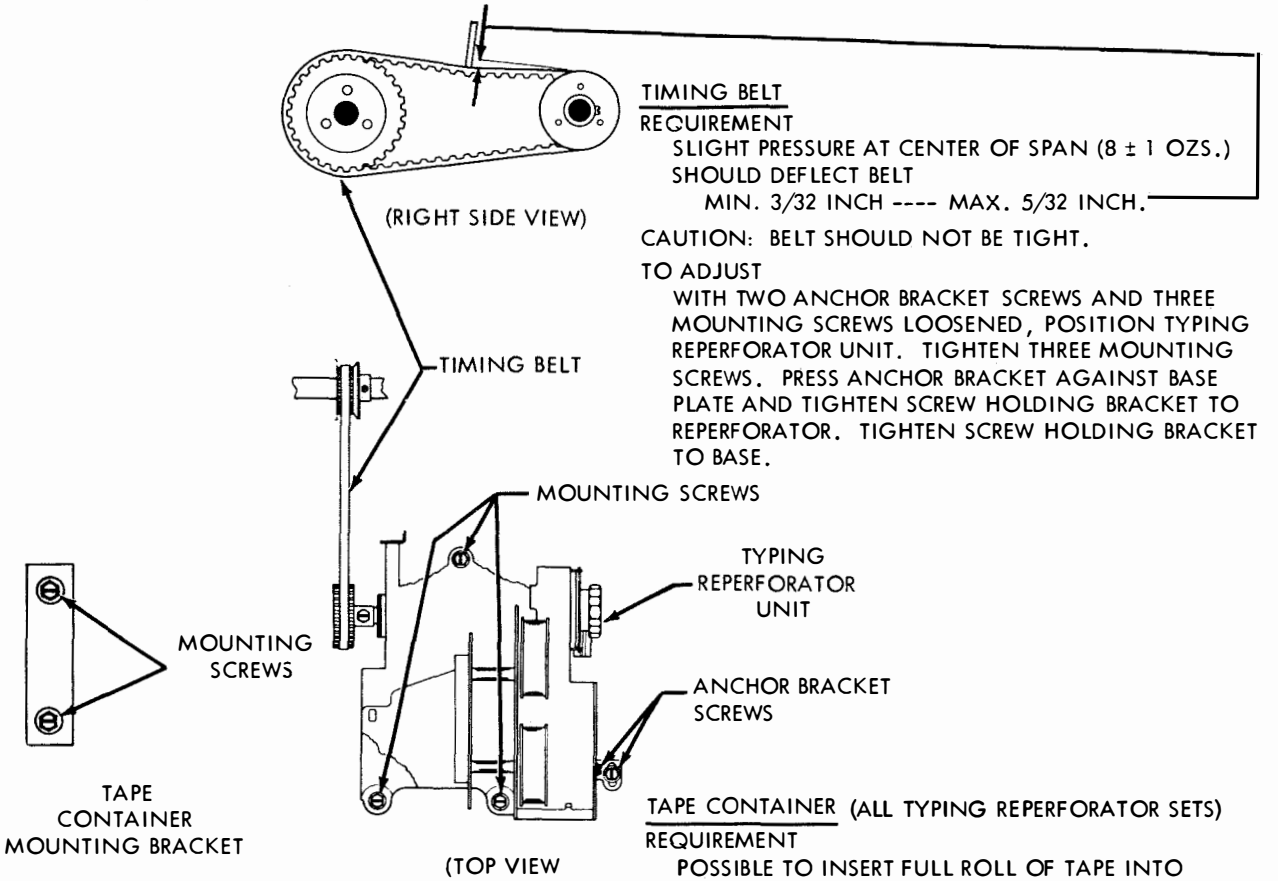


Figure 6-143. Tape Feed-Out Mechanism

(TT-192/UG, TT-192A/UG AND TT-274/UG)



TIMING BELT

REQUIREMENT

SLIGHT PRESSURE AT CENTER OF SPAN (8 ± 1 OZS.) SHOULD DEFLECT BELT MIN. 3/32 INCH ---- MAX. 5/32 INCH.

CAUTION: BELT SHOULD NOT BE TIGHT.

TO ADJUST

WITH TWO ANCHOR BRACKET SCREWS AND THREE MOUNTING SCREWS LOOSENED, POSITION TYPING REPERFORATOR UNIT. TIGHTEN THREE MOUNTING SCREWS. PRESS ANCHOR BRACKET AGAINST BASE PLATE AND TIGHTEN SCREW HOLDING BRACKET TO REPERFORATOR. TIGHTEN SCREW HOLDING BRACKET TO BASE.

TAPE CONTAINER (ALL TYPING REPERFORATOR SETS)

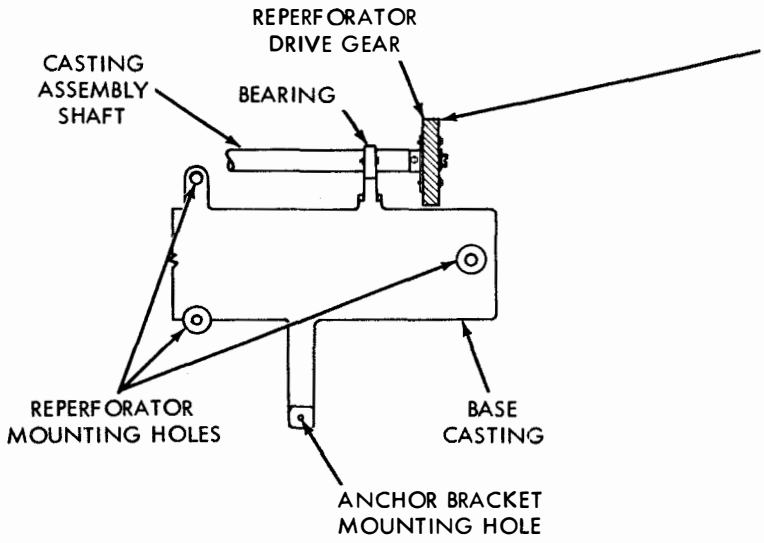
REQUIREMENT

POSSIBLE TO INSERT FULL ROLL OF TAPE INTO TAPE CONTAINER THROUGH ACCESS DOOR IN DOME.

TO ADJUST

POSITION TAPE CONTAINER WITH TWO MOUNTING SCREWS LOOSENED

(TT-532/UG, TT-253A/UG AND TT-292/UG)



TYPING REPERFORATOR SHAFT GEAR MESH

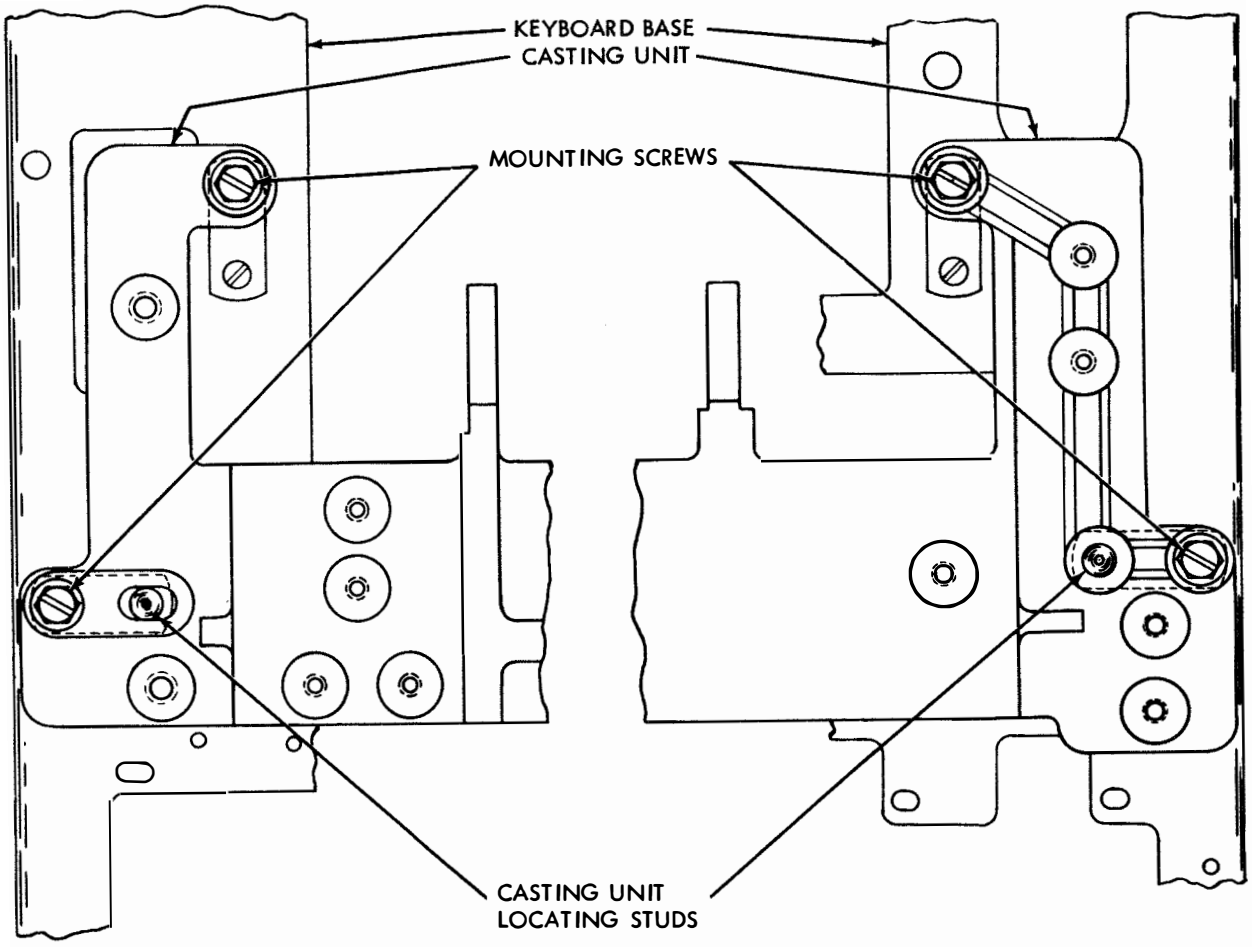
REQUIREMENT

CENTER THE GEAR ON THE TYPING REPERFORATOR MAIN SHAFT WITH THE GEAR ON THE CASTING ASSEMBLY SHAFT.

TO ADJUST

POSTION THE TYPING REPERFORATOR IN ITS OVER SIZE MOUNTING HOLES WITH ITS MOUNTING SCREWS LOOSENED AND ADJUST HUB ON REPERFORATOR.

Figure 6-144. Typing Reperforator, Base Mounting



CASTING ASSEMBLY TO KEYBOARD BASE

REQUIREMENT

THERE SHOULD BE A BARELY PERCEPTIBLE AMOUNT OF BACKLASH BETWEEN THE CASTING ASSEMBLY MAIN SHAFT DRIVEN GEAR AND ITS DRIVING GEAR AT THE POINT WHERE THE BACKLASH IS THE LEAST.

TO ADJUST

WITH THE FRONT FEET OF THE CASTING ASSEMBLY PLACED OVER THE LOCATING STUDS PROVIDED ON THE KEYBOARD BASE AND ITS MOUNTING SCREWS LOOSENED, POSITION THE CASTING ASSEMBLY UTILIZING ITS OVERSIZE MOUNTING HOLES.

Figure 6-145. Casting Assembly Mounting (TT-253/UG, TT-253A/UG and TT-292/UG)

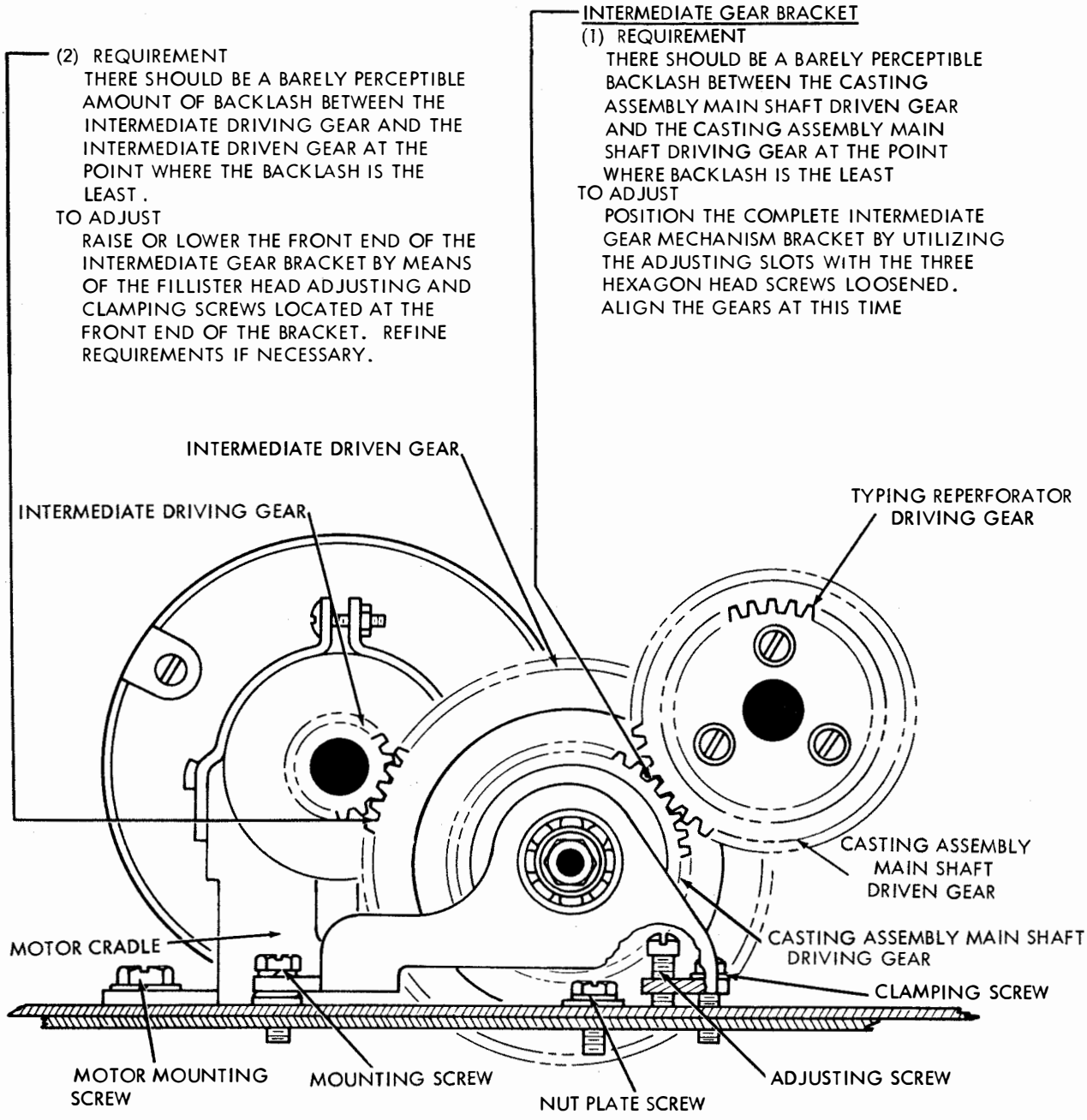


Figure 6-146. Intermediate Gear Mechanism (TT-253/UG, TT-253A/UG and TT-292/UG)

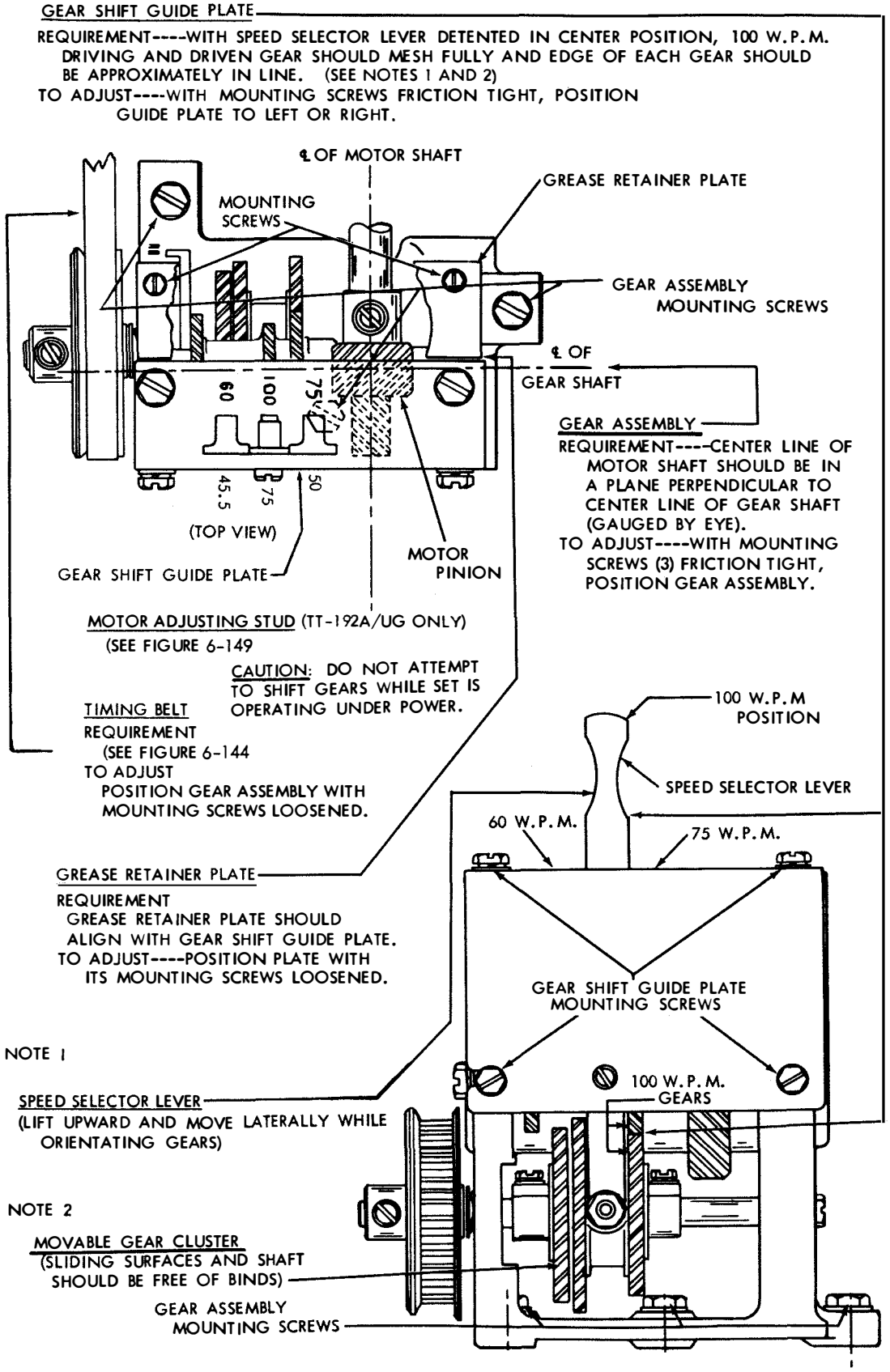
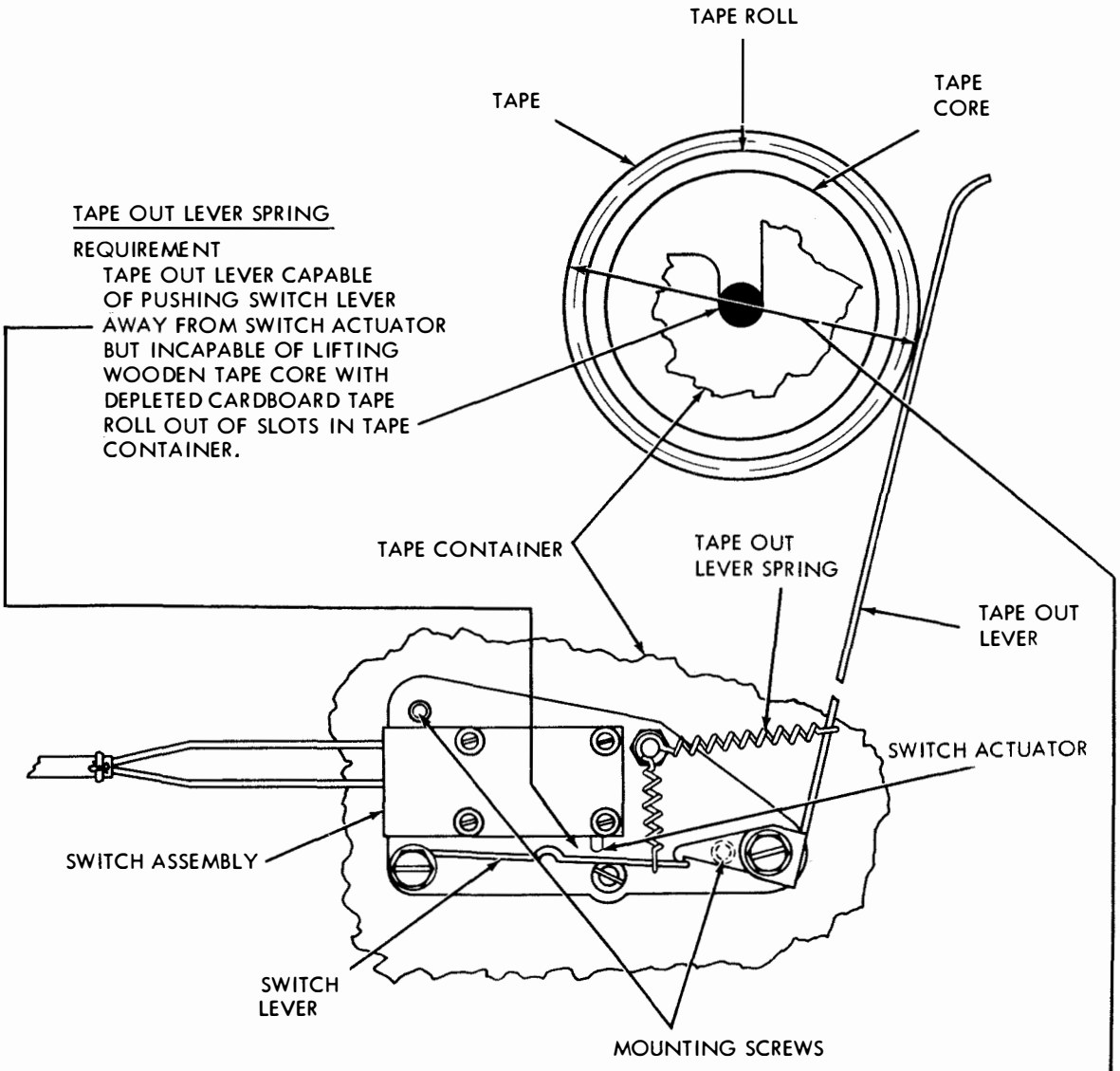


Figure 6-147. Variable Speed Intermediate Gear Mechanism (TT-192/UG, TT-192A/UG and TT-274/UG)



TAPE OUT LEVER SPRING

REQUIREMENT
TAPE OUT LEVER CAPABLE OF PUSHING SWITCH LEVER AWAY FROM SWITCH ACTUATOR BUT INCAPABLE OF LIFTING WOODEN TAPE CORE WITH DEPLETED CARDBOARD TAPE ROLL OUT OF SLOTS IN TAPE CONTAINER.

NOTE

TT-253/UG ILLUSTRATED. REQUIREMENTS APPLY TO TT-192/UG, TT-192A/UG OR TT-274/UG. ALTHOUGH SWITCH ACTION DIFFERS, TWO SWITCHES ARE OPERATED BY THE SINGLE TAPE-OUT LEVER IN TT-192/UG, TT-274/UG OR TT-192A/UG. THE OUTER (TT-192/UG OR TT-274/UG) OR LOWER (TT-192A/UG) ACTIVATES THE TAPE-OUT LAMP CIRCUIT. THE OTHER SWITCH MAY BE WIRED TO EXTERNAL EQUIPMENT.

TAPE OUT SWITCH ASSEMBLY

REQUIREMENT
SWITCH OPERATE WHEN DIAMETER OF TAPE ROLL:
MIN. 2-3/8---MAX. 2-3/4 IN.
(CHECK WITH TEST LAMP.)

TO ADJUST
WITH TWO MOUNTING SCREWS LOOSENED, POSITION SWITCH ASSEMBLY ON TAPE CONTAINER.

Figure 6-148. Tape-Out Switch Mechanism

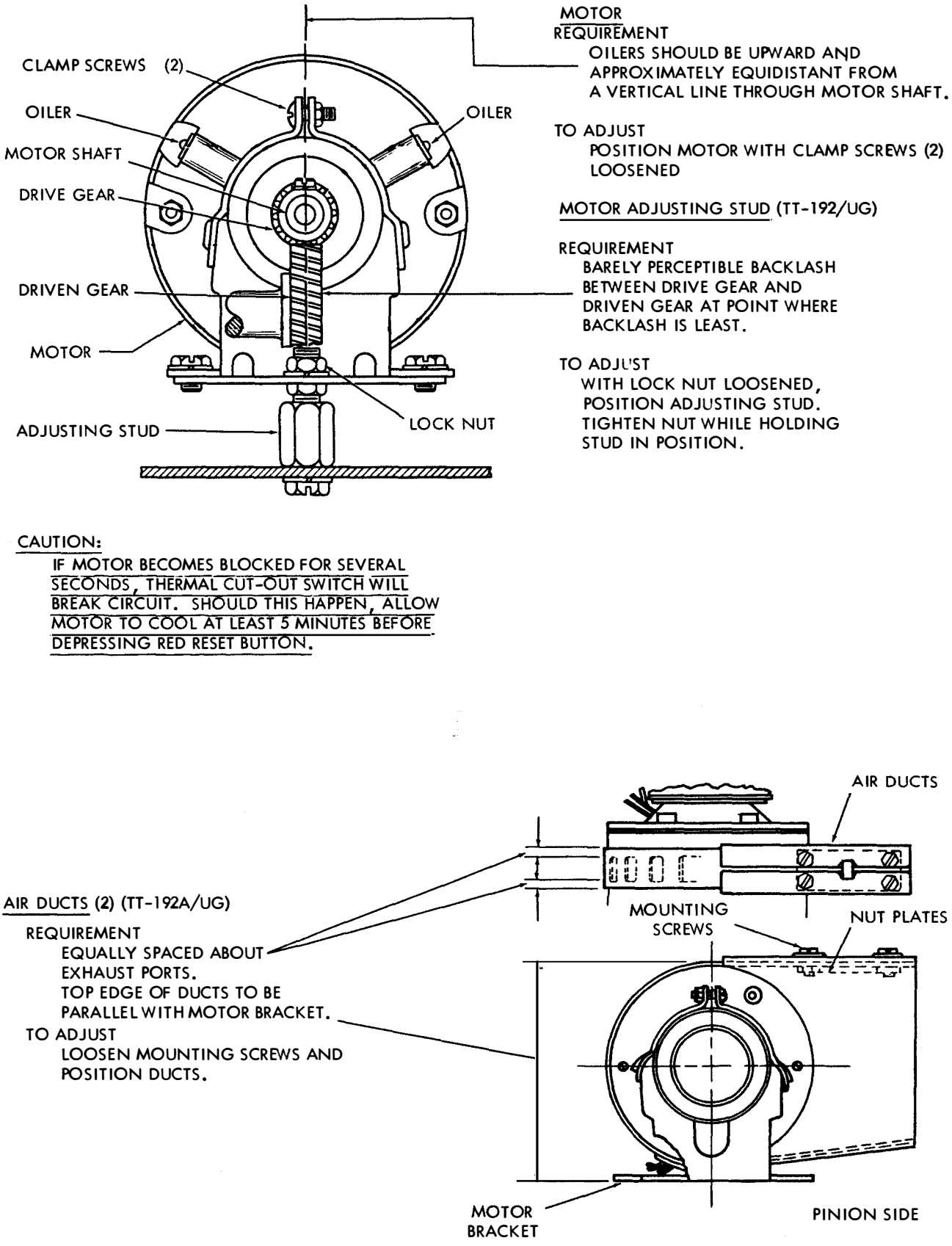
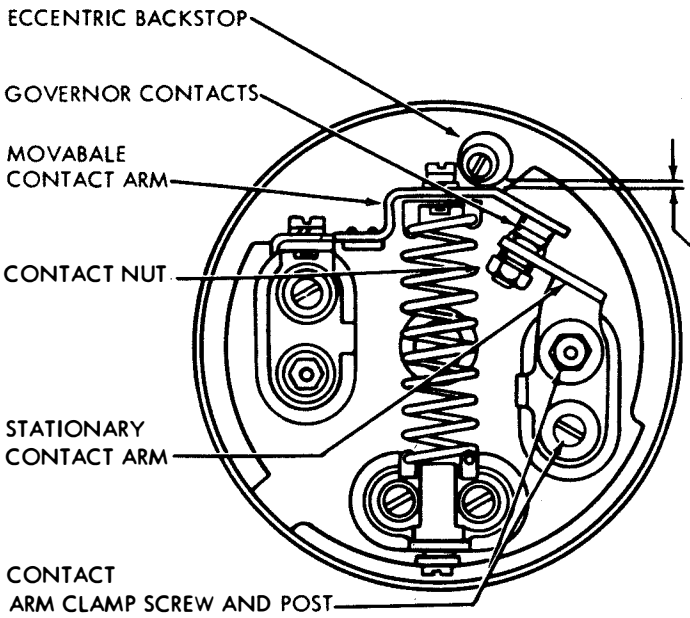


Figure 6-149. Synchronous Motors (TT-192/UG, TT-192A/UG, TT-253/UG and TT-253A/UG)

GOVERNED MOTOR POSITIONING

REQUIREMENT

MOTOR SHOULD BE CENTRALLY POSITIONED IN ITS RUBBERMOUNTS SO AS TO PROVIDE AT LEAST 0.020 CLEARANCE BETWEEN THE MOTOR HOUSING AND THE CRADLE AT THE GOVERNOR END. THE CABLE SHOULD ALSO CLEAR THE GROMMET IN THE SCREEN BY AT LEAST 0.030 INCH.



GOVERNOR CONTACT

REQUIREMENT

THE CONTACTS SHOULD MEET SQUARELY AND NOT OVERLAP MORE THAN 0.010 INCH.

TO ADJUST

POSITION THE STATIONARY CONTACT AND CONTACT ARM WITH THE CLAMP SCREW AND POST LOOSENED.

GOVERNOR CONTACT BACKSTOP

REQUIREMENT

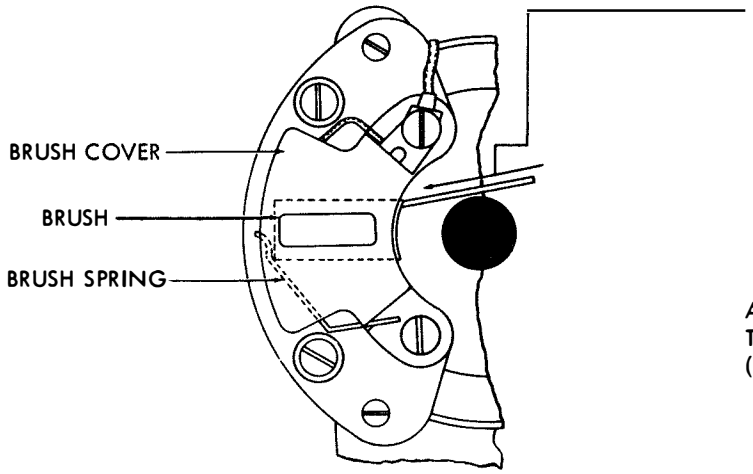
CLEARANCE BETWEEN THE MOVABLE CONTACT ARM AND ITS ECCENTRIC BACKSTOP.

MIN. 0.020 INCH

MAX. 0.040 INCH

TO ADJUST

ROTATE THE ECCENTRIC BACKSTOP WITH CLAMPING SCREW LOOSENED.



GOVERNOR BRUSH SPRING TENSION

REQUIREMENT

GOVERNOR FAN REMOVED.

MIN. 4 OZS.

MAX. 6 OZS.

TO MOVE THE SPRING FLUSH WITH BRUSH COVER.

NOTE

AFTER THE BRUSHES HAVE WORN DOWN TO TWO-THIRDS THEIR ORIGINAL LENGTH (11/16 INCH), THEY SHOULD BE REPLACED.

NOTE

IT IS POSSIBLE TO ADJUST THE MOTOR AT SOME MULTIPLE OF THE CORRECT SPEED.

GOVERNED MOTOR SPEED ADJUSTMENT

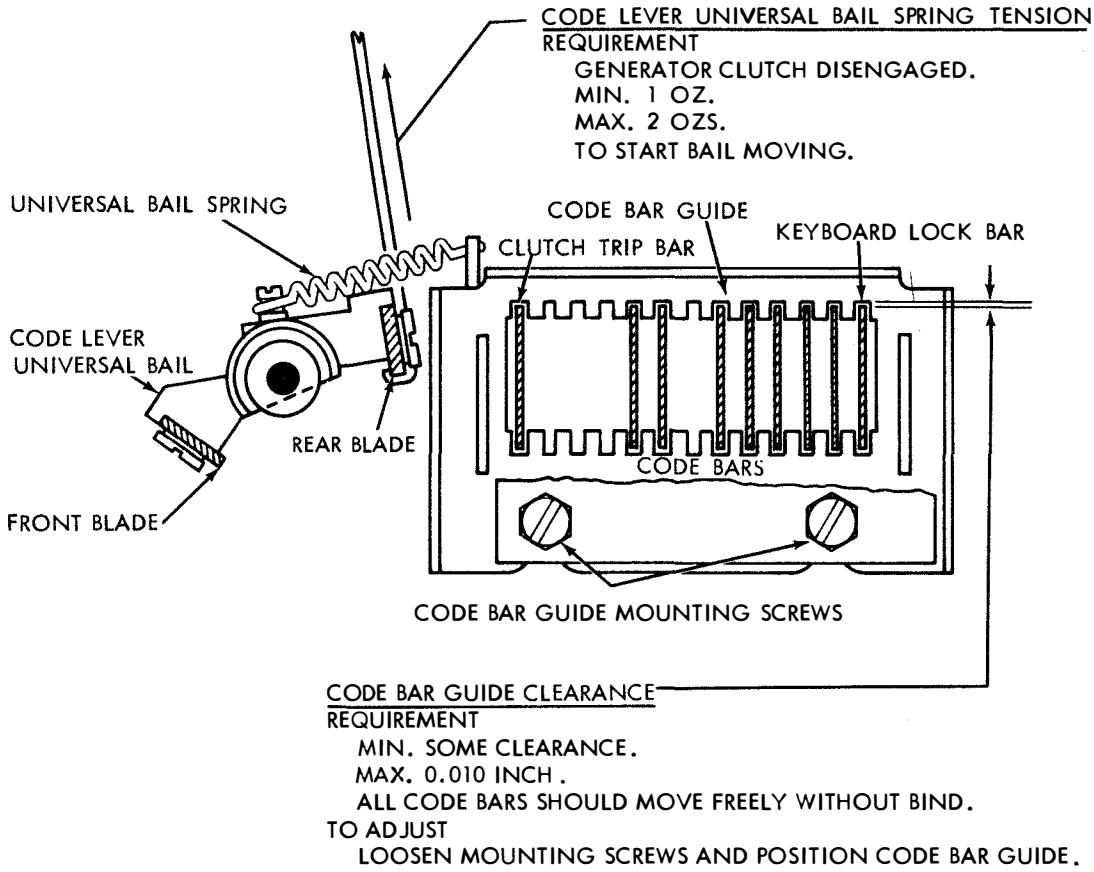
REQUIREMENT ---

WITH THE TARGET ILLUMINATED AND VIEWED THROUGH THE VIBRATING SHUTTERS OF A 120 VPS TUNING FORK, THE SPOTS SHOULD APPEAR STATIONARY WHILE THE MOTOR IS ROTATING.

TO ADJUST ---

STOP THE MOTOR AND TURN THE ADJUSTING SCREW AS INDICATED ON THE GOVERNOR COVER.

Figure 6-150. Governed Motor (TT-274/UG and TT-292/UG)



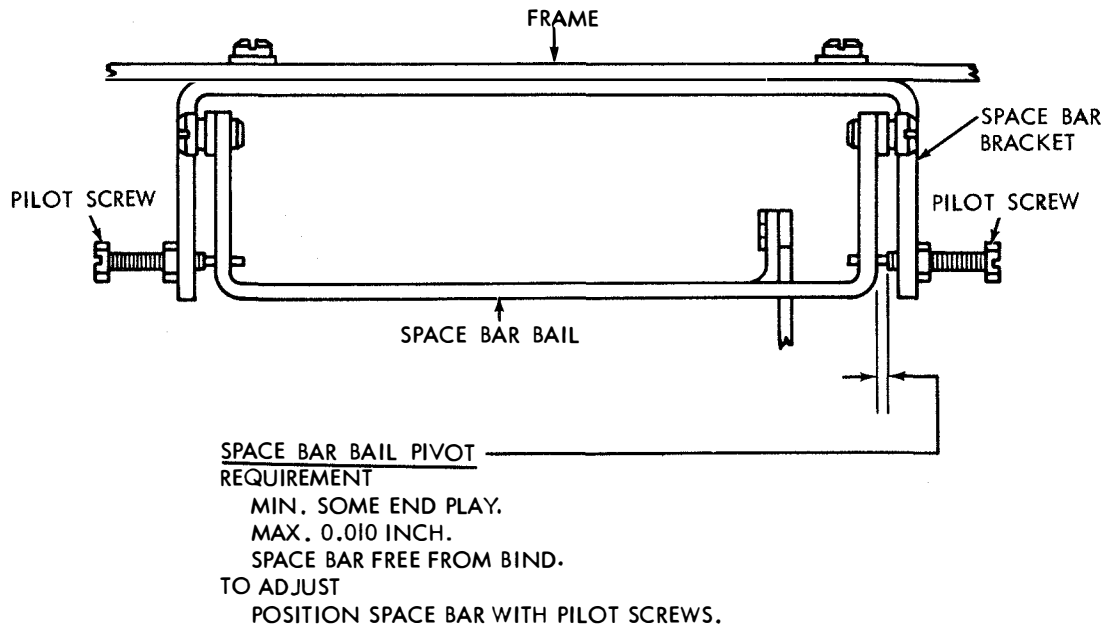
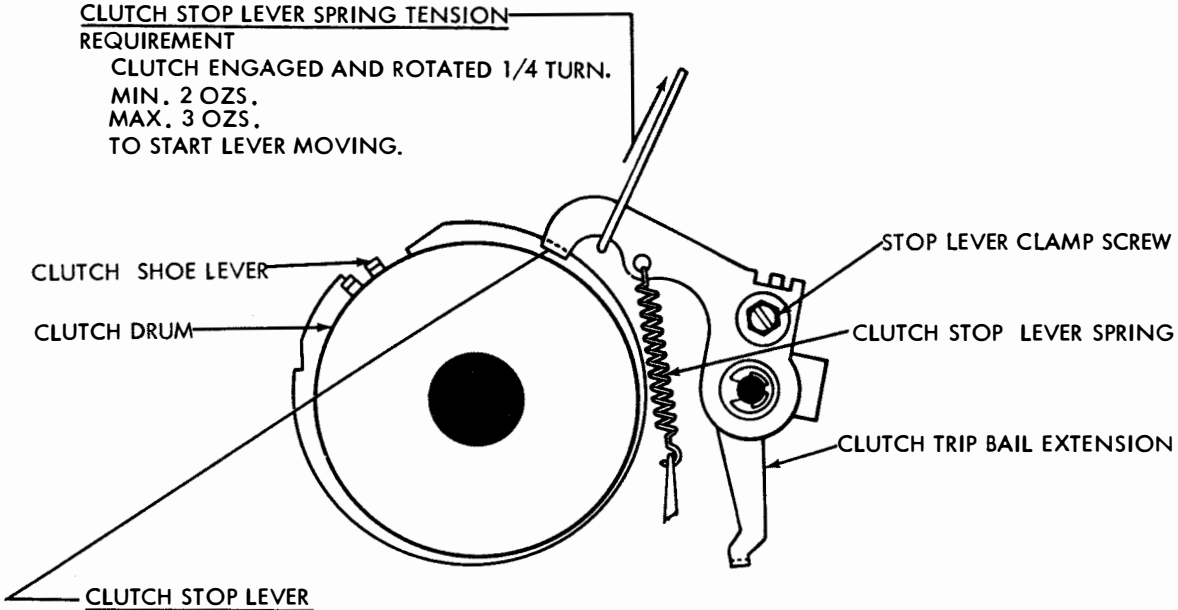
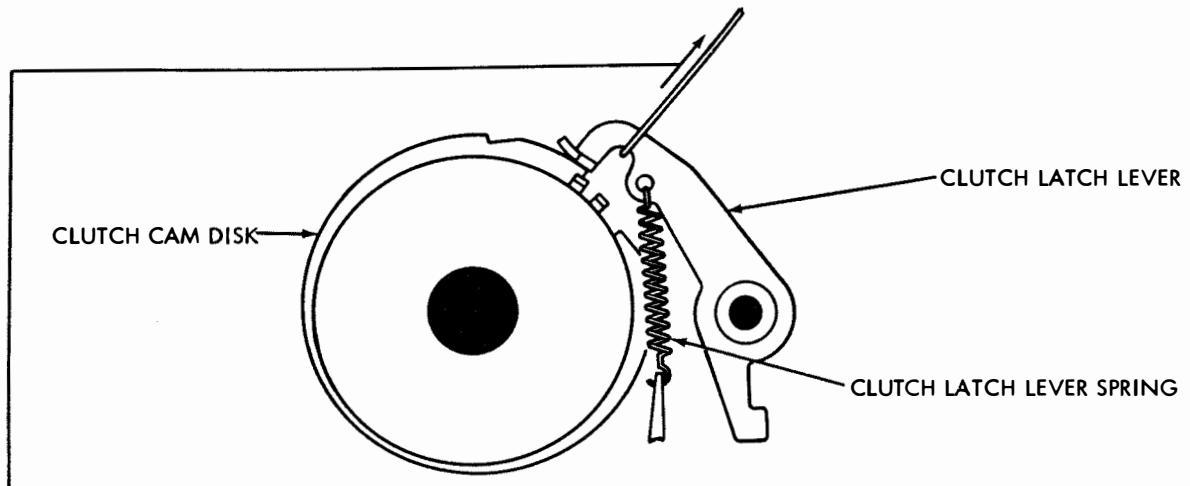


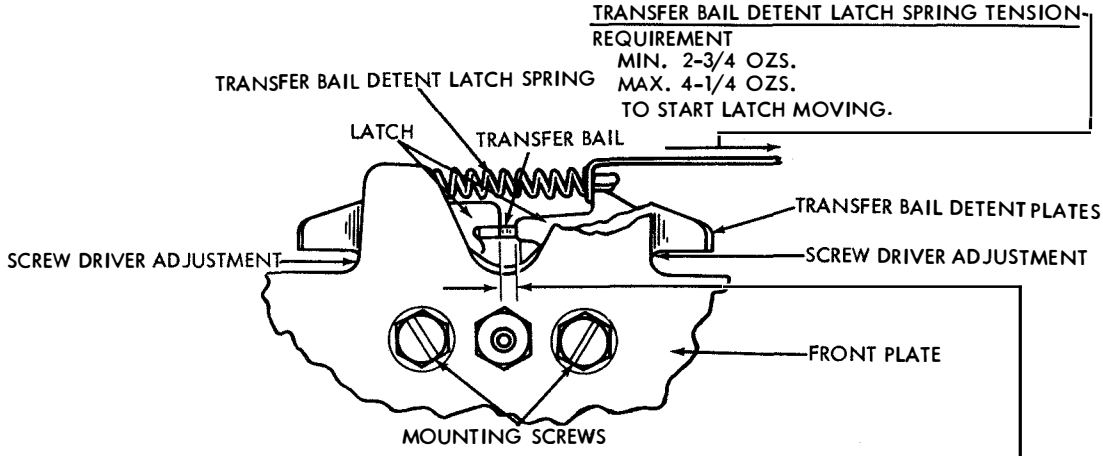
Figure 6-151. Code Bar and Space Bar Mechanisms (TT-253/UG, TT-253A/UG and TT-292/UG)





CLUTCH SHOE LEVER	SEE FIGURE 6-64
CLUTCH DRUM POSITION	SEE FIGURE 6-65
CLUTCH SHOE LEVER SPRING TENSION	SEE FIGURE 6-65
CLUTCH SHOE SPRING TENSION	SEE FIGURE 6-65

Figure 6-152. Signal Generator Clutch (TT-253/UG, TT-253A/UG, and TT-292/UG)



CONTACT BOX CONTACT CLEARANCE

REQUIREMENT

MARKING AND SPACING GAPS SHOULD BE EQUAL WITHIN 0.001 INCH.

TO CHECK

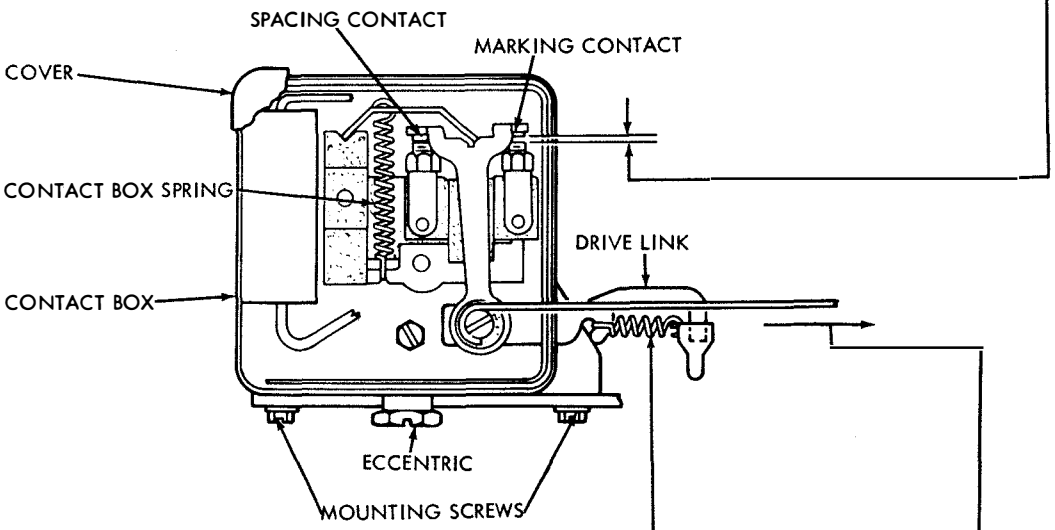
DEPRESS V KEYLEVER AND ROTATE SIGNAL GENERATOR CAM SLEEVE UNTIL EACH CONTACT HAS FULLY OPENED.

TO ADJUST

LOOSEN MOUNTING SCREWS AND MOVE CONTACT BOX BY MEANS OF ECCENTRIC.

NOTE

CHECK BY MEANS OF SIGNAL CHECKING DEVICE WHERE POSSIBLE, AND CAREFULLY REFINE THE ADJUSTMENT TO ELIMINATE ALL BIAS FROM THE SIGNALS BY EQUALIZING THE CURRENT-ON AND CURRENT-OFF INTERVALS.



CONTACT BOX DRIVE LINK SPRING TENSION

REQUIREMENT

SPRING REMOVED FROM LINK
MIN. 11 OZS.
MAX. 13 OZS.
AT 0.438 INCH

CONTACT BOX SPRING TENSION

REQUIREMENT

TRANSFER BAIL HELD CLEAR OF DRIVE LINK.
MIN. 2 OZS.
MAX. 3 OZS.
TO START LINK MOVING.

Figure 6-153. Transfer Bail and Contact Box Mechanisms (TT-253/UG, TT-253A/UG and TT-292/UG)

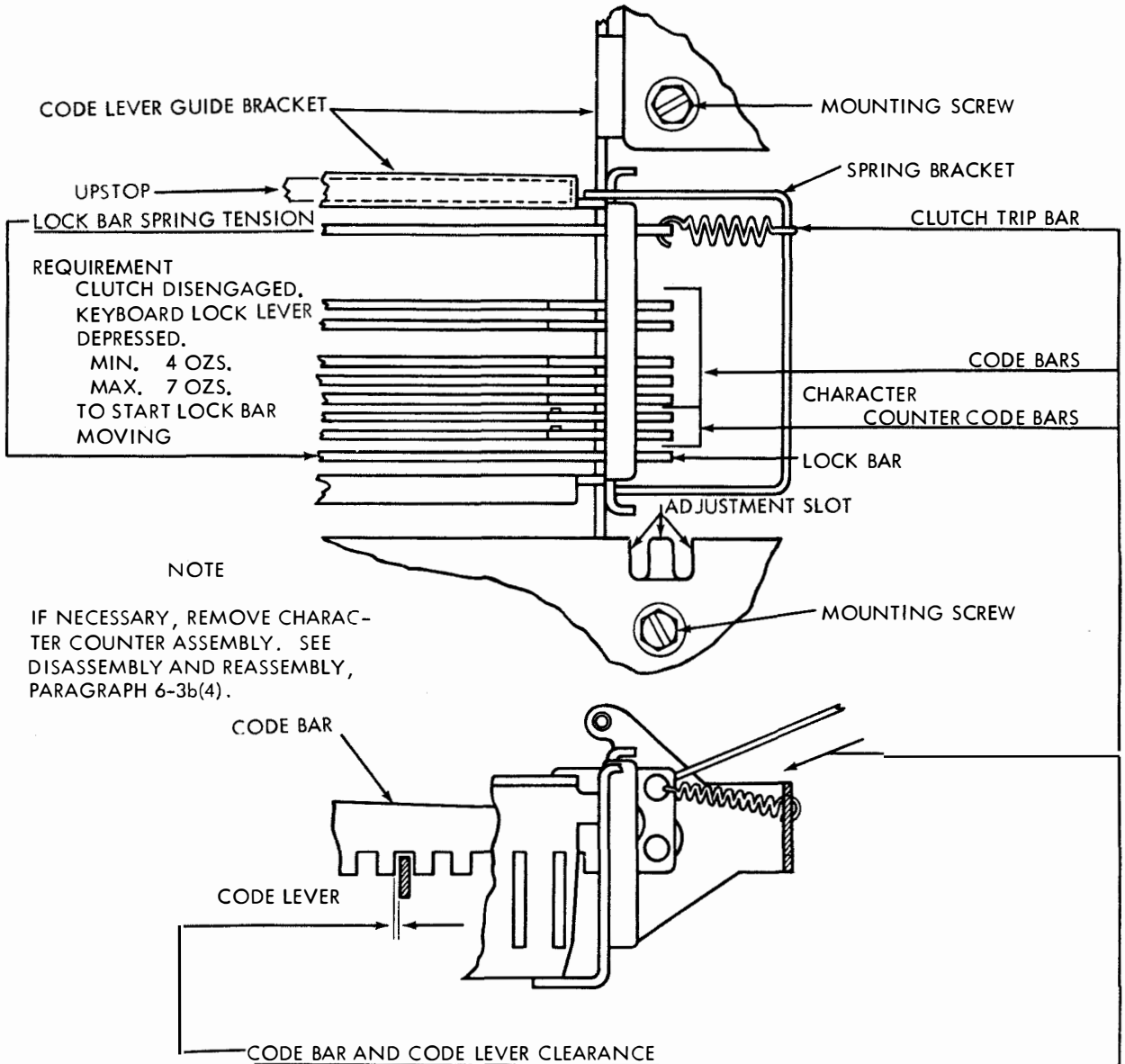


Figure 6-154. Code Bar and Code Lever Mechanisms (TT-253/UG, TT-253A/UG and TT-292/UG)

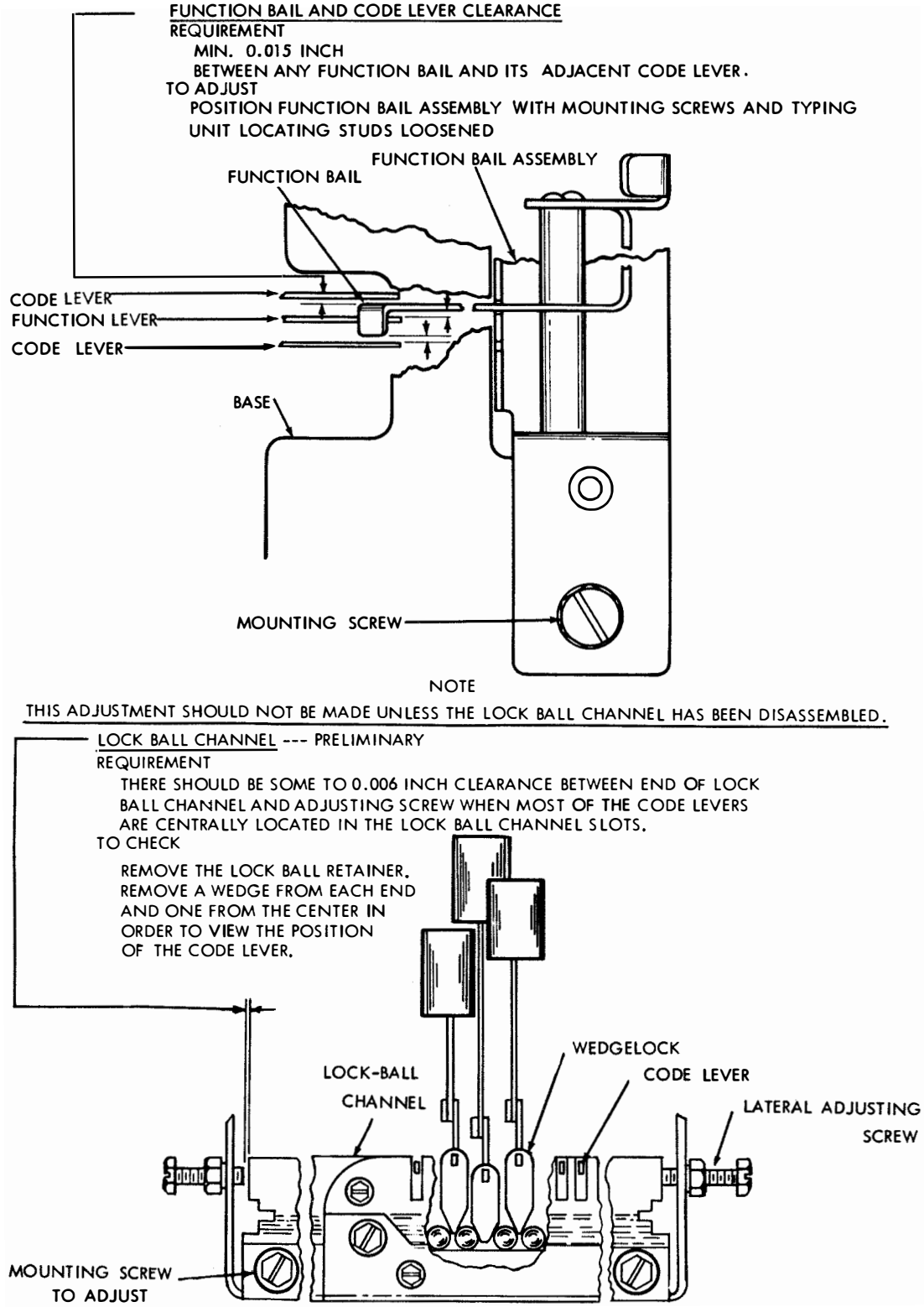
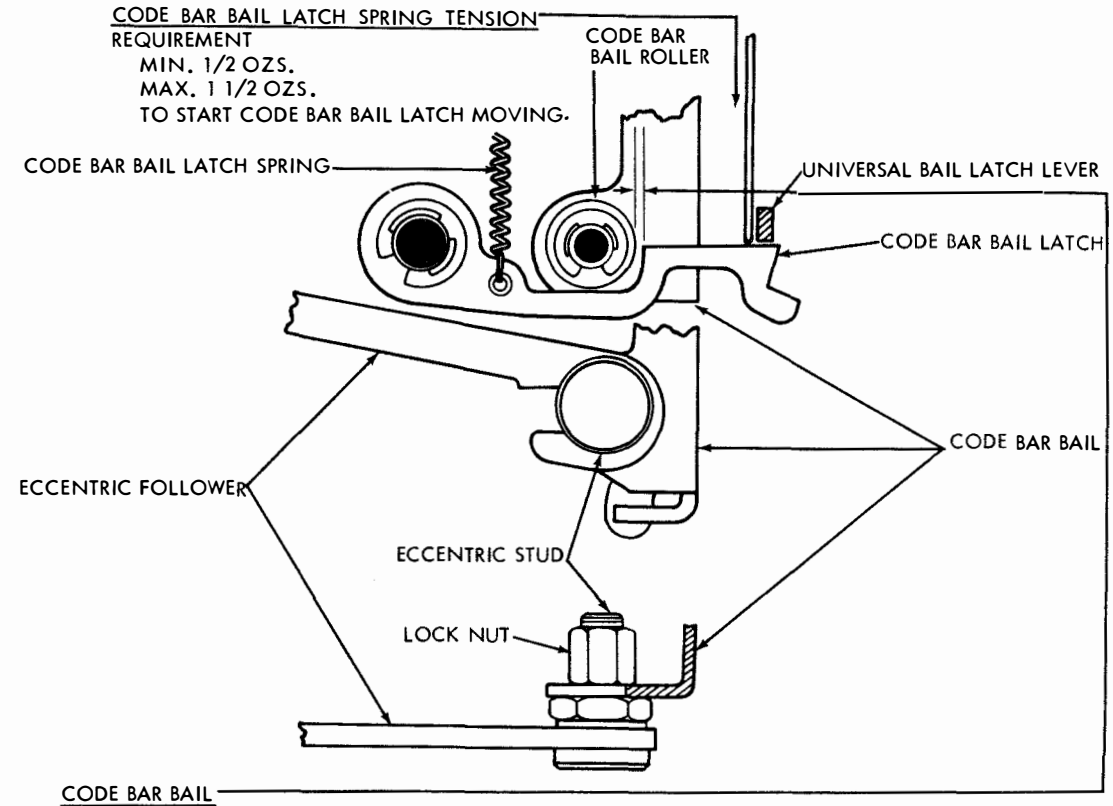
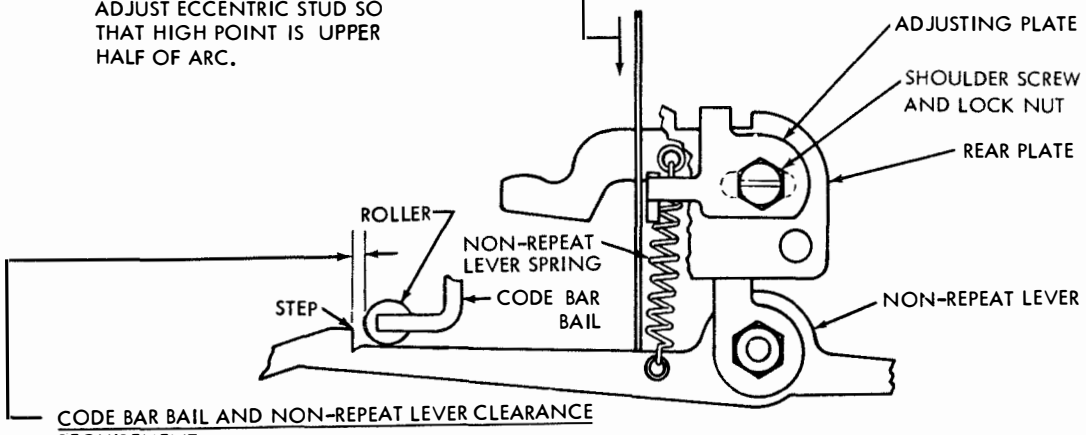


Figure 6-155. Function Bail and Lock Ball Track Mechanisms (TT-253/UG, TT-253A/UG, and TT-292/UG)



CODE BAR BAIL
REQUIREMENT
CAM ECCENTRIC AND ARM WHICH HOLD THE BAIL IN EXTREME RESET POSITION TO THE LEFT.
MIN. 0.004 INCH
MAX. 0.012 INCH
BETWEEN CODE BAR BAIL ROLLER AND CODE BAR BAIL LATCH
TO ADJUST
WITH LOCK NUT LOOSENED, ADJUST ECCENTRIC STUD SO THAT HIGH POINT IS UPPER HALF OF ARC.

NON-REPEAT LEVER SPRING TENSION
REQUIREMENT
ANY KEYLEVER DEPRESSED
MIN. 2 OZS.
MAX. 3-1/4 OZS.
TO START NON-REPEAT LEVER MOVING DOWNWARD.



CODE BAR BAIL AND NON-REPEAT LEVER CLEARANCE
REQUIREMENT
MECHANISM IN INITIAL TRIP-OFF POSITION, ANY KEY DEPRESSED, NO POWER.
MIN. 0.010 INCH
MAX. 0.020 INCH
BETWEEN ROLLER OF CODE BAR BAIL AND NON-REPEAT LEVER PICK-UP STEP.
TO ADJUST
LOOSEN LOCK NUT AND SHOULDER SCREW AND MOVE MECHANISM LEFT OR RIGHT

Figure 6-156. Function Bail, Code Bar Bail and Non-Repeat Lever Mechanisms (TT-253/UG, TT-253A/UG and TT-292/UG)

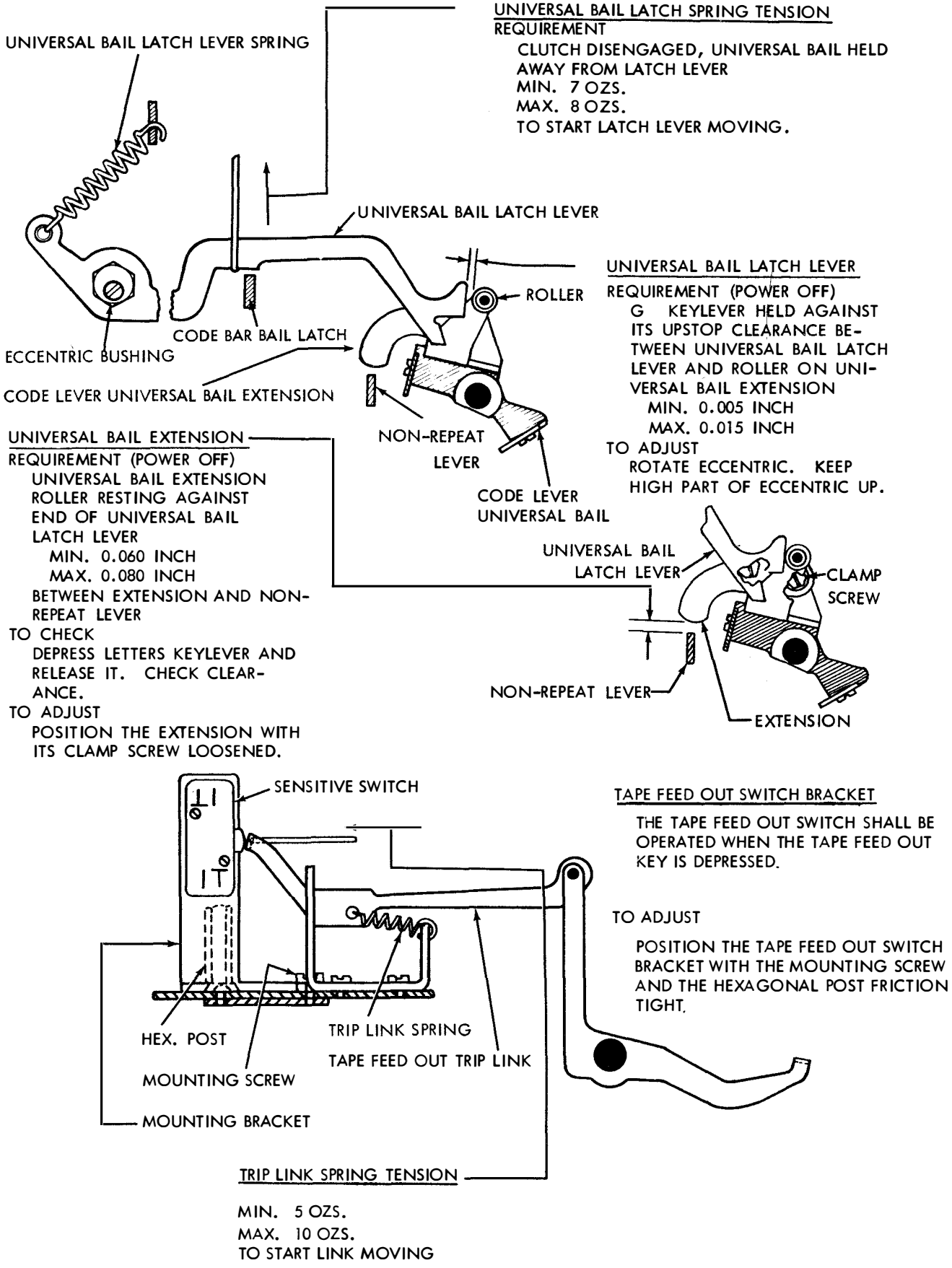


Figure 6-157. Universal Bail Latch Lever and Tape Feed-Out Switch Bracket Mechanisms (TT-253/UG, TT-253A/UG and TT-292/UG)

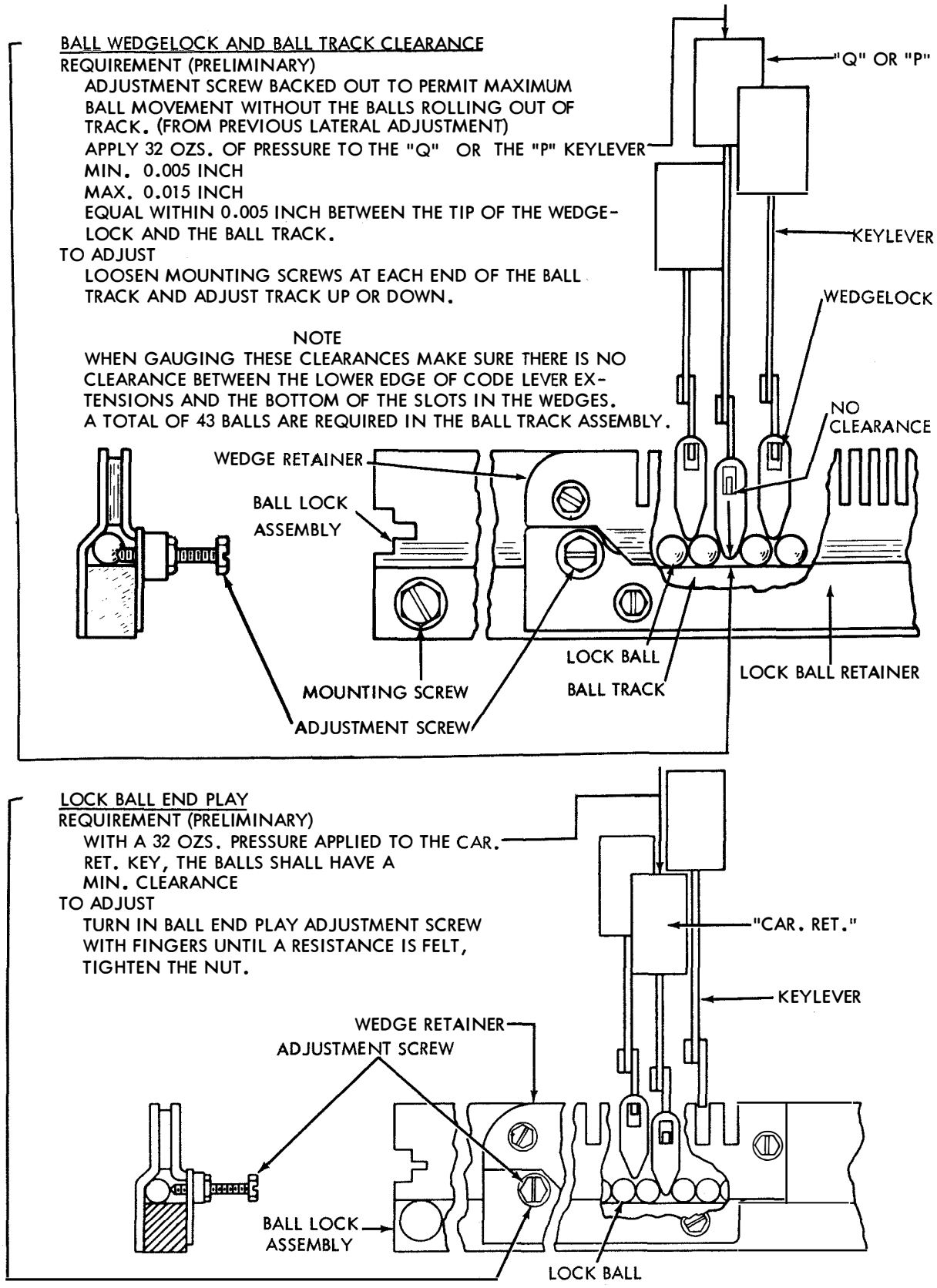
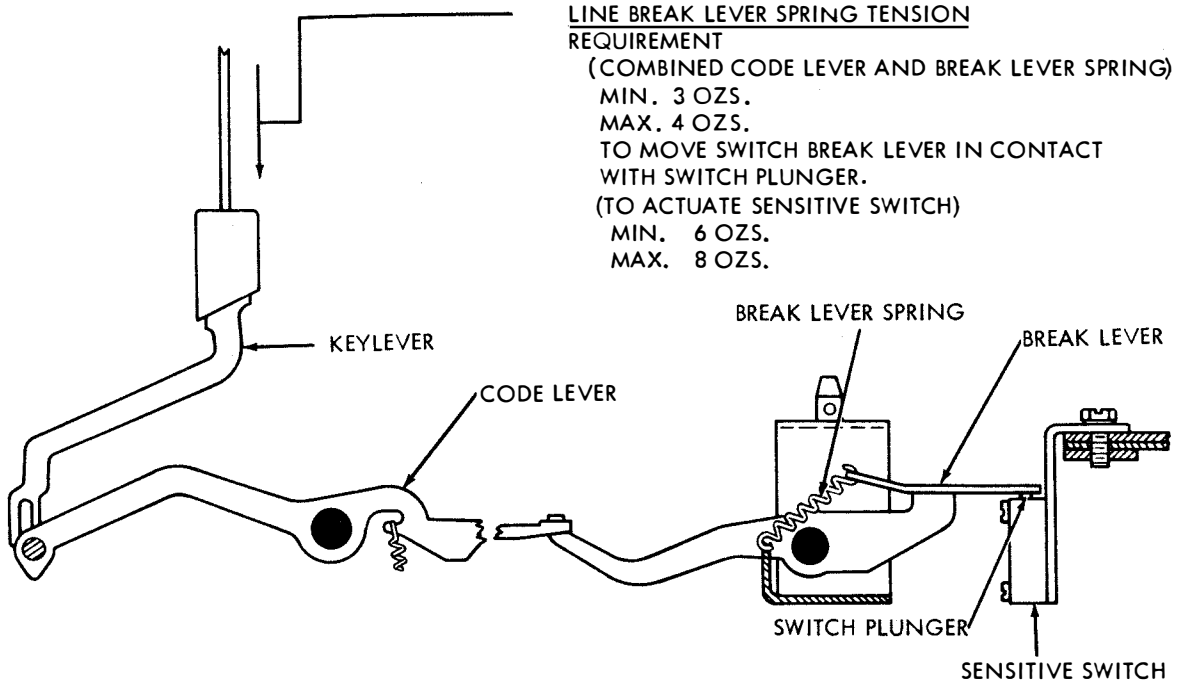


Figure 6-158. Wedgelock and Ball Track Mechanisms (TT-253/UG, TT-253A/UG and TT-292/UG)



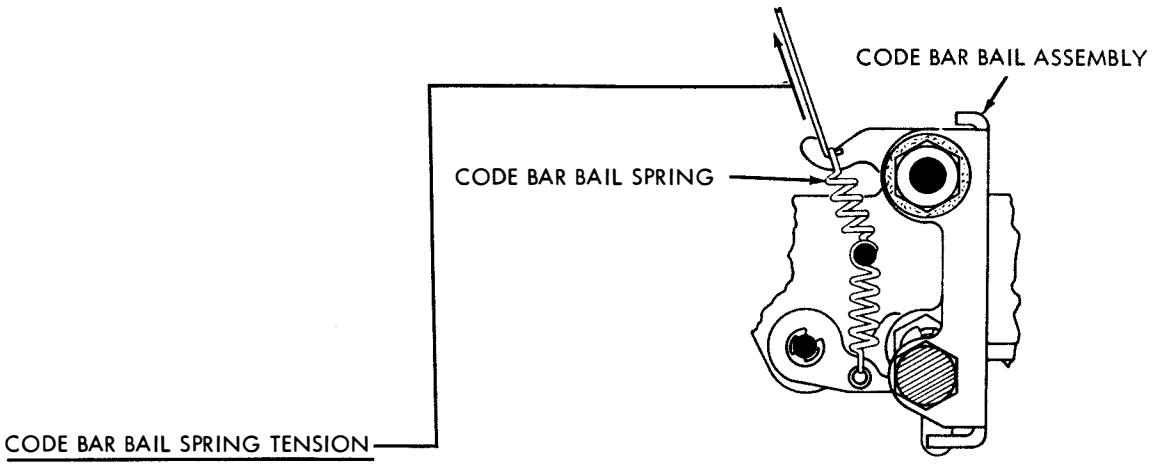
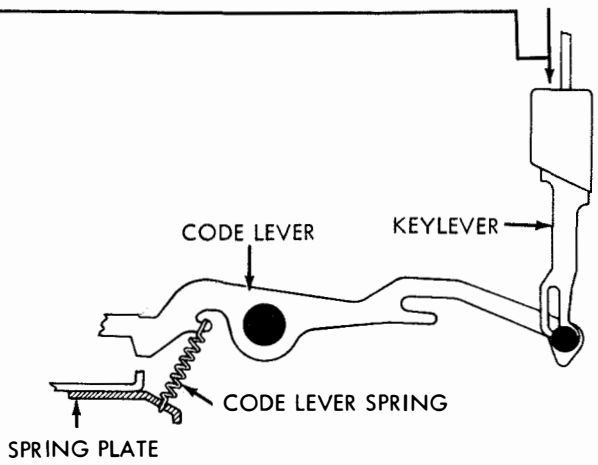


Figure 6-159. Line Break and Code Bar Bail Mechanisms (TT-253/UG, TT-253A/UG and TT-292/UG)

CODE LEVER SPRING TENSION

(1) REQUIREMENT
MIN. 1 OZ. ---- MAX. 2 OZS.
TO START CODE LEVER MOVING DOWNWARD.
(2) REQUIREMENT
POWER ON. GENERATOR CLUTCH DISENGAGED.
MIN. 3 OZS. ---- MAX. 5 OZS.
TO OPERATE KEYLEVER OR SPACE BAR.



TRANSFER LEVER LOCKING BAIL SPRING TENSION
REQUIREMENT
SPRING UNHOOKED FROM POST.
MIN. 5 OZS.
MAX. 6 OZS.
TO PULL TO INSTALLED LENGTH.

TRANSFER LEVER SPRING TENSION
REQUIREMENT
CLUTCH DISENGAGED.
MIN. 1 1/2 OZS.
MAX. 2 1/2 OZS.
TO START EACH OF 7 LEVERS MOVING.

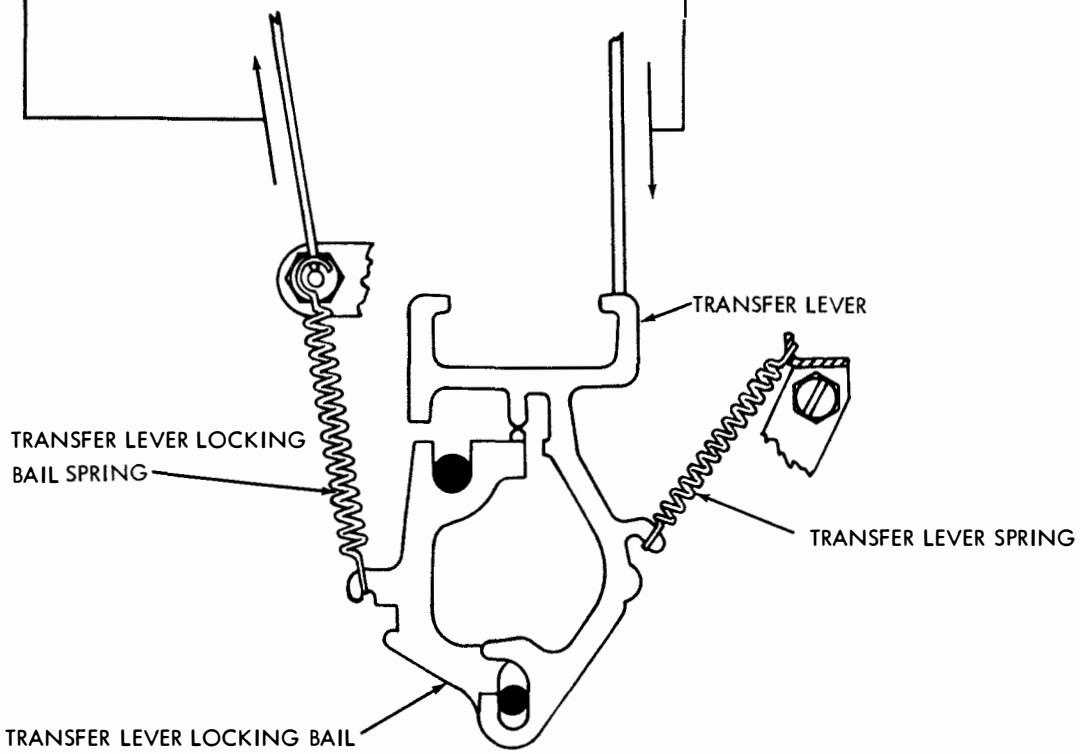


Figure 6-160. Code Lever and Transfer Lever Mechanisms (TT-253/UG, TT-253A/UG and TT-292/UG)

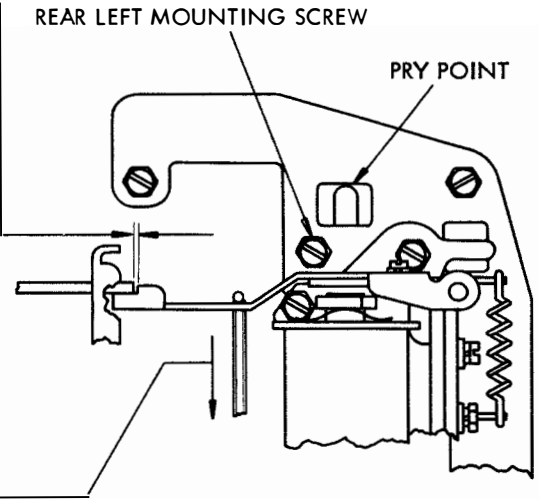
MOUNTING BRACKET

TO CHECK
WITH MAGNET NOT ATTRACTED AND CLUTCH TRIP BAR IN FURTHEST LEFT POSITION.

REQUIREMENT
MIN. 0.005 INCH --- MAX. 0.015 INCH BETWEEN CLUTCH TRIP BAR AND ARMATURE LEVER.

TO ADJUST
POSITION MOUNTING BRACKET WITH THREE MOUNTING SCREWS LOOSE BY MEANS OF PRY POINT.

NOTE
TIGHTEN REAR LEFT MOUNTING SCREW AND MAKE MOUNTING BRACKET ADJUSTMENT



MAGNET ARMATURE

TO CHECK
CLUTCH TRIP BAR IN EXTREME LEFT POSITION. HOOK 32 OZ. SCALE TO ARMATURE LEVER AS SHOWN. MEASURE AT RIGHT ANGLE TO ARMATURE LEVER AS INDICATED.

REQUIREMENT
MIN. 3 OZS. --- MAX. 5 OZS.
TO PULL ARMATURE LEVER FROM CLUTCH TRIP BAR.

ARMATURE HINGE

REQUIREMENT
WITH ARMATURE IN ATTRACTED POSITION ARMATURE FLUSH WITH POLE FACE AND MAGNET BRACKET EXTENSION.

TO ADJUST
POSITION ARMATURE WITH HINGE BRACKET MOUNTING SCREW AND SPRING POST LOOSE.

MOUNTING BRACKET

TO CHECK
WITH ARMATURE LEVER HELD AGAINST MAGNET POLE FACE AND CLUTCH TRIP BAR IN FURTHEST RIGHT POSITION.

REQUIREMENT
MIN. 0.005 INCH --- MAX. 0.015 INCH BETWEEN CLUTCH TRIP BAR AND ARMATURE LEVER.

TO ADJUST
WITH RIGHT REAR AND LEFT FRONT MOUNTING BRACKET SCREWS LOOSE POSITION MOUNTING BRACKET BY MEANS OF PRY POINT.

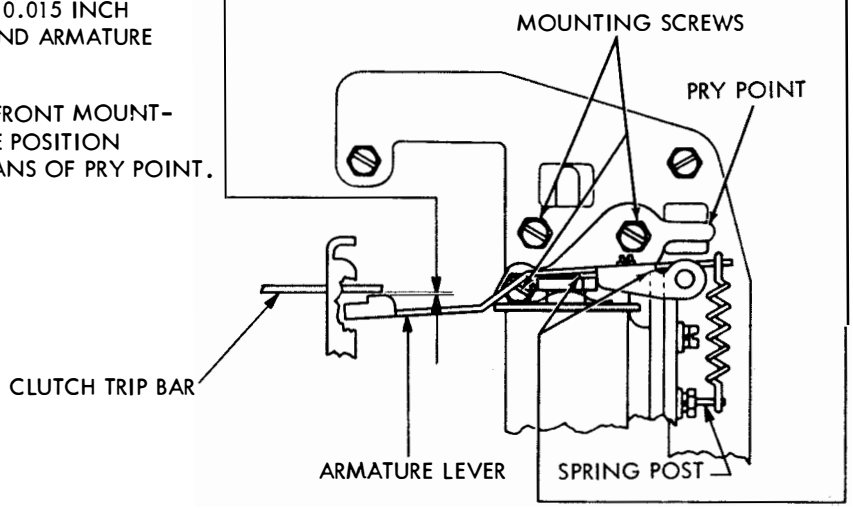
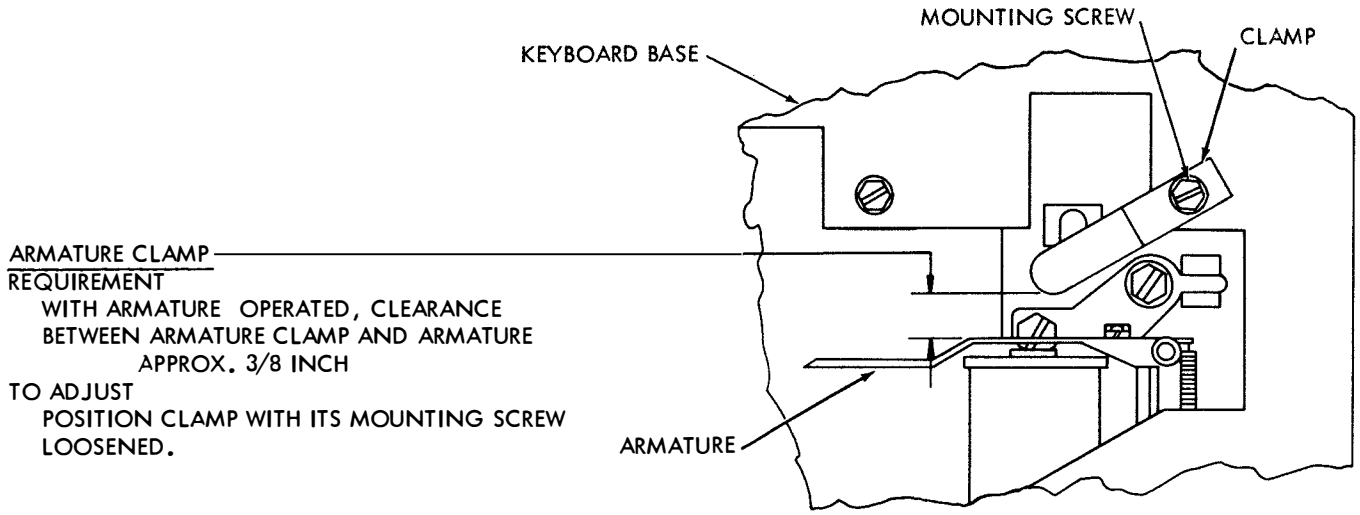
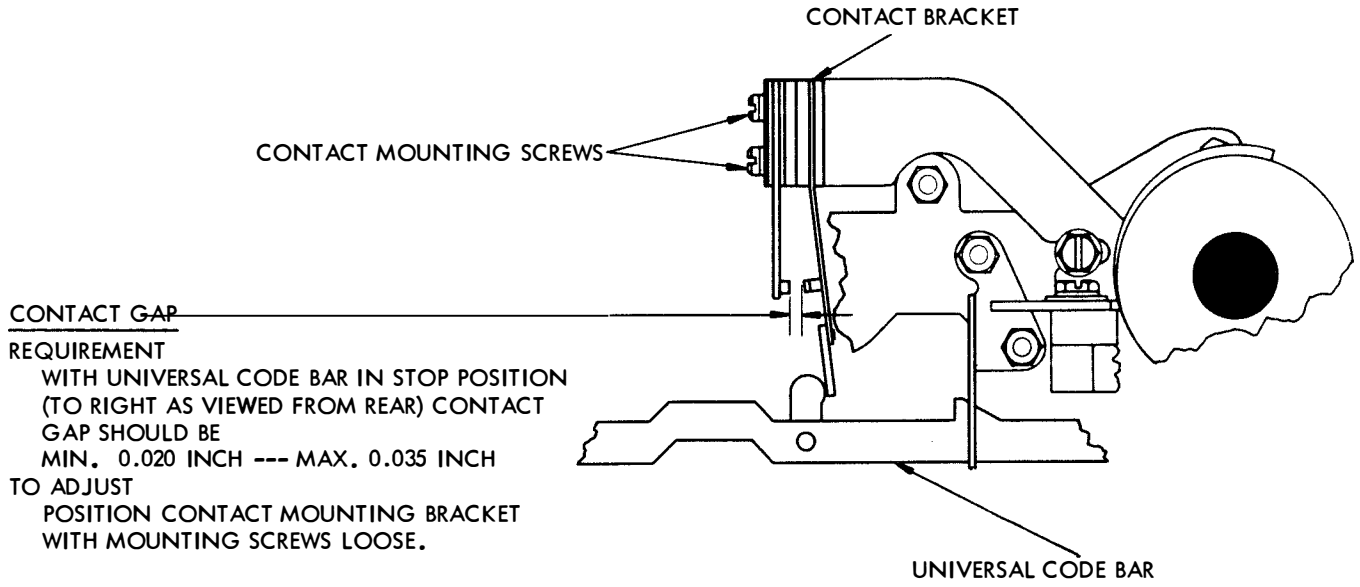


Figure 6-161. Synchronous Pulse Mechanism (TT-253A/UG)





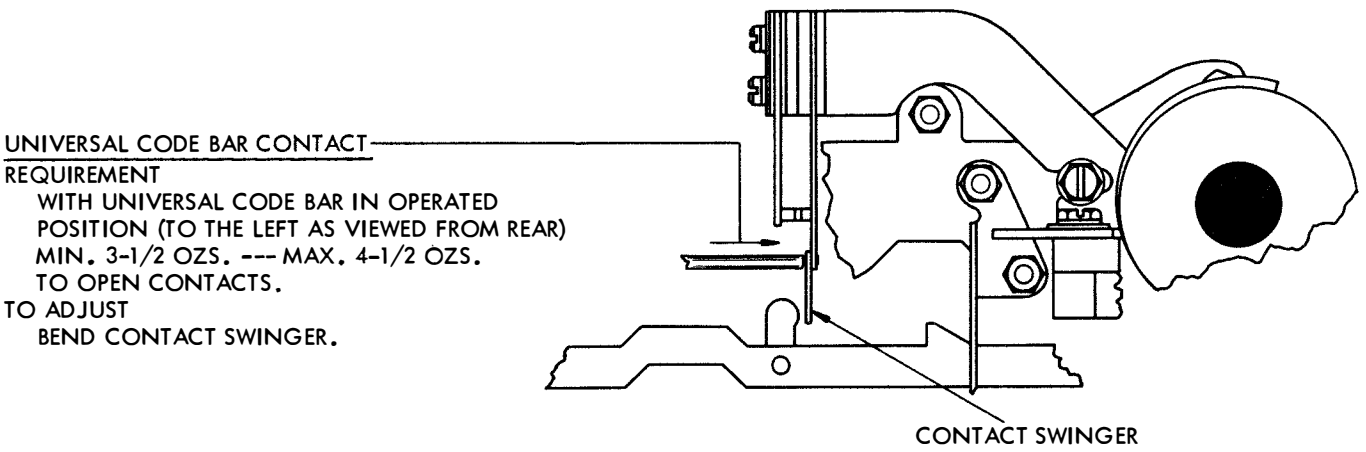
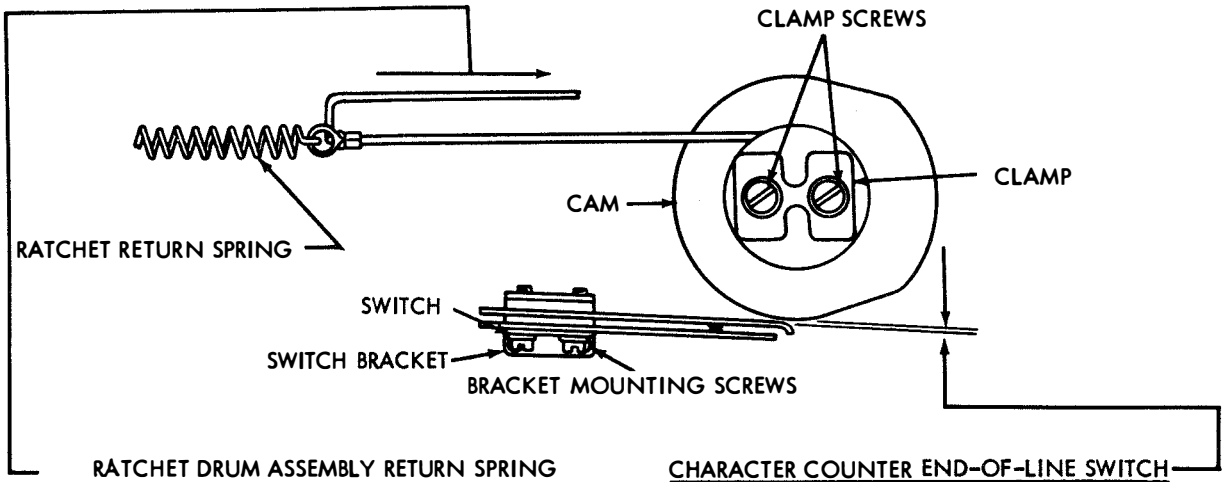


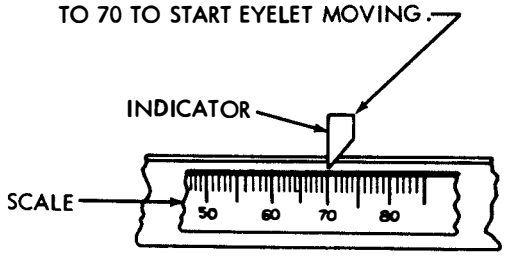
Figure 6-162. Synchronous Pulse Mechanism (TT-253A/UG)



RATCHET DRUM ASSEMBLY RETURN SPRING

REQUIREMENT

1-1/2 TO 2-1/2 OZS. WHEN INDICATOR POINTS TO 0 TO START EYELET MOVING.
3-1/2 TO 6-1/2 OZS. WHEN INDICATOR POINTS TO 70 TO START EYELET MOVING.



CHARACTER COUNTER END-OF-LINE SWITCH

(1) REQUIREMENT (REMOVE CHARACTER COUNTER)
THE SWITCH SHOULD CLOSE AT A PRESET NUMBER OF CHARACTERS WITH A SMALL AMOUNT OF OVERTRAVEL BY BOTH CONTACT SPRINGS.

(2) REQUIREMENT
CLEARANCE BETWEEN LONG CONTACT SPRING AND LOW PART OF CAM.
MIN. 0.012 - MAX. 0.025 INCH

TO ADJUST
POSITION SWITCH BRACKET WITH ITS MOUNTING SCREWS LOOSENED. THEN SET COUNTER TO THE DESIRED COUNT. LOOSEN CAM CLAMP SCREWS AND POSITION CAM UNTIL CONTACTS CLOSE WITH SOME OVERTRAVEL. REPLACE UNIT.

CHARACTER COUNTER SCALE BRACKET

REQUIREMENT
CHARACTER COUNTER BRACKET ADJUSTED TO UPPERMOST POSITION.

TO ADJUST
LOOSEN LOCK SCREWS AND POSITION BRACKET. CORD SHOULD REMAIN IN STRAIGHT LINE.

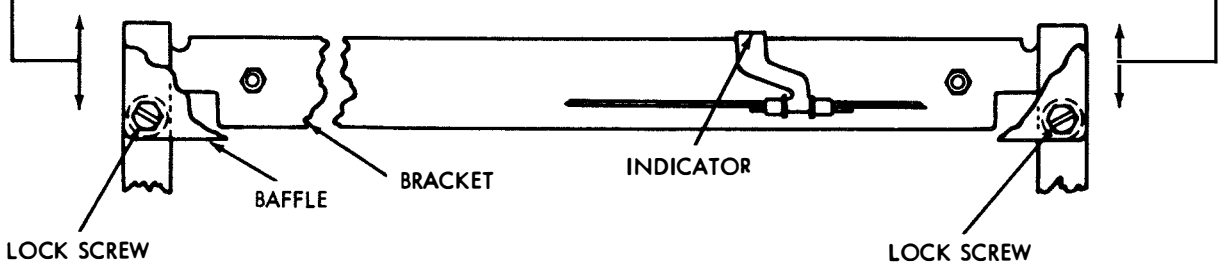


Figure 6-163. Character Counter Mechanism (TT-253/UG, TT-253A/UG and TT-292/UG)

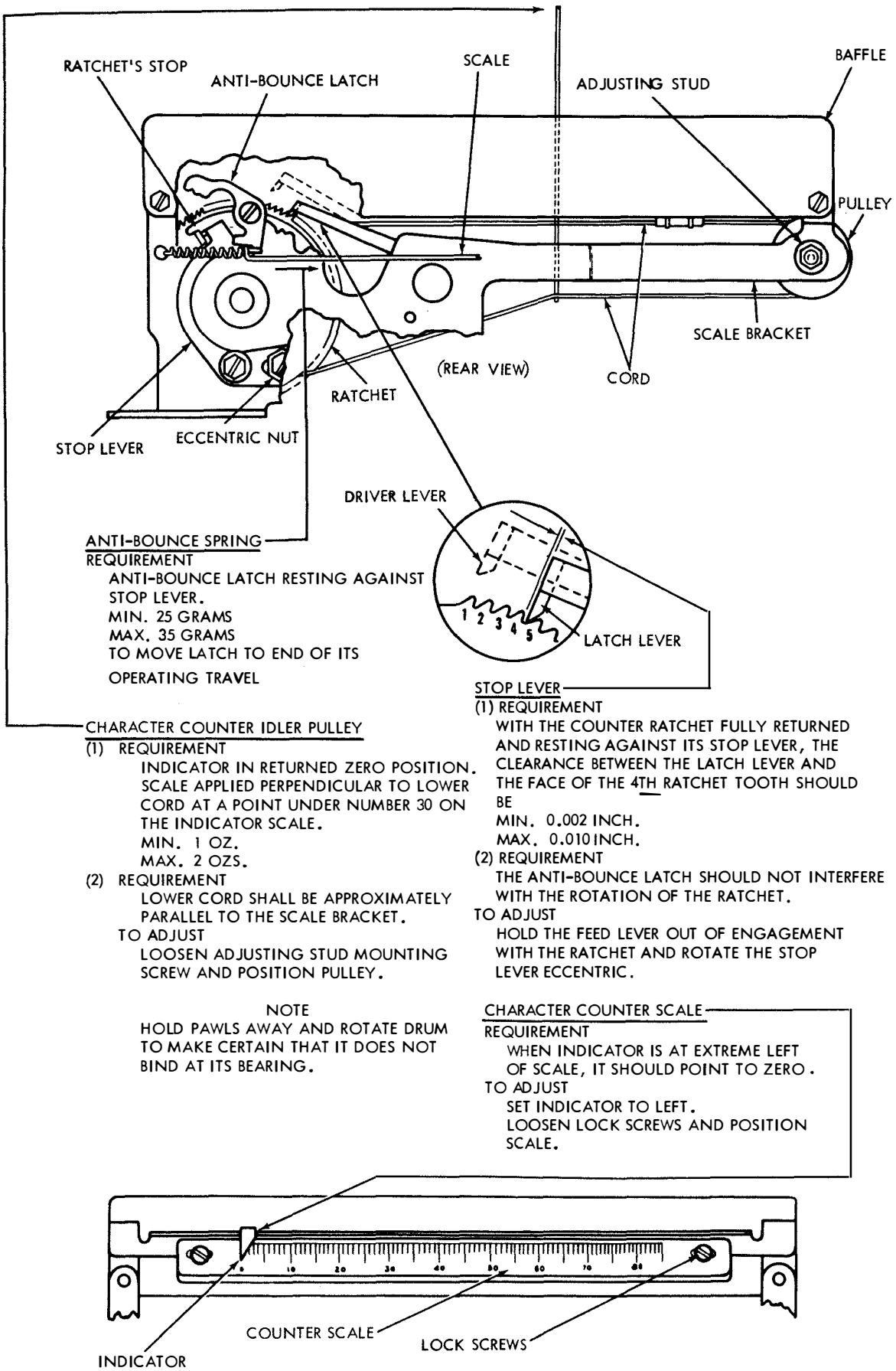


Figure 6-164. Character Counter Mechanism (TT-253/UG, TT-253A/UG and TT-292/UG)

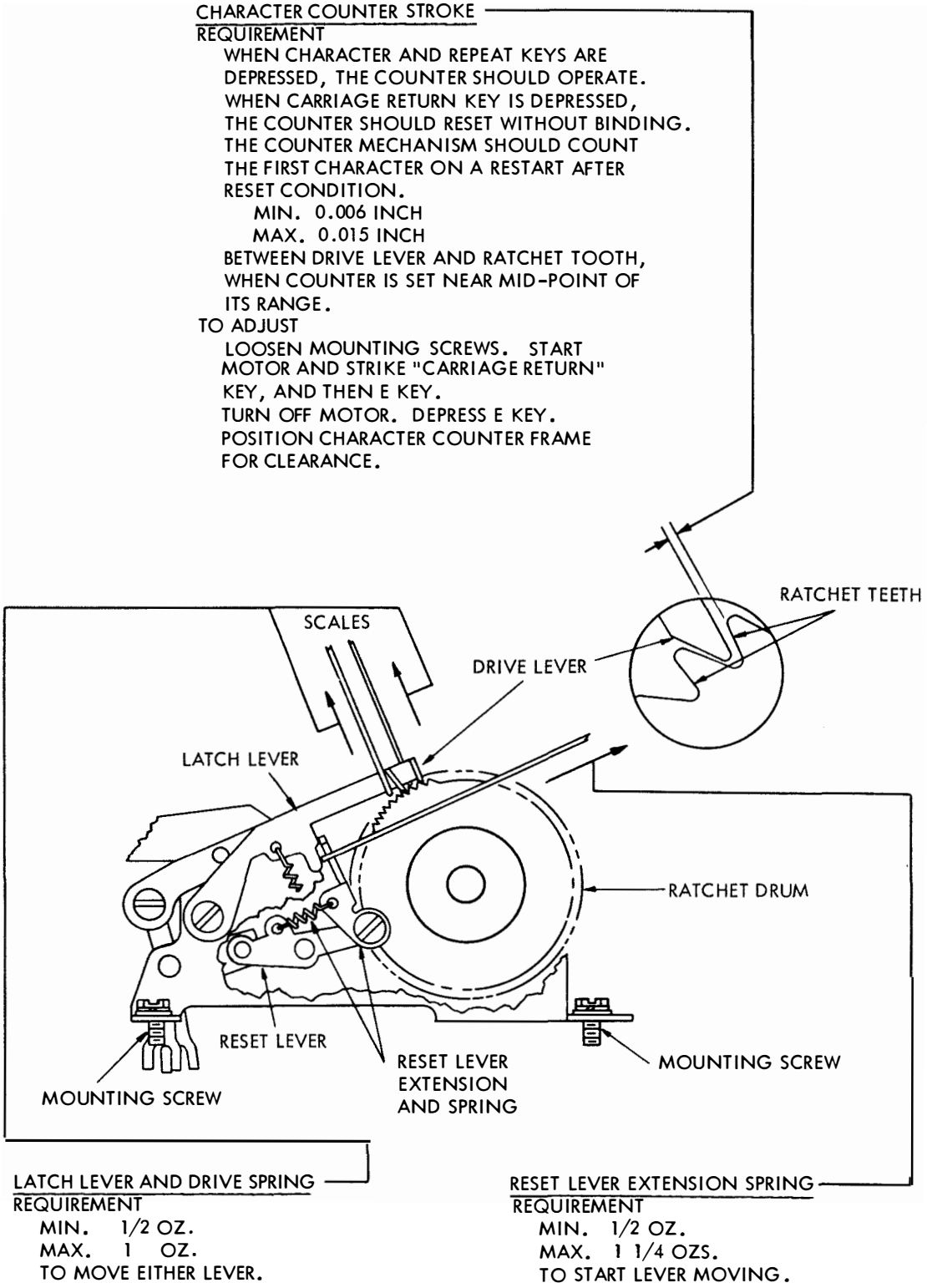


Figure 6-165. Character Counter Mechanism (TT-253/UG, TT-253A/UG and TT-292/UG)

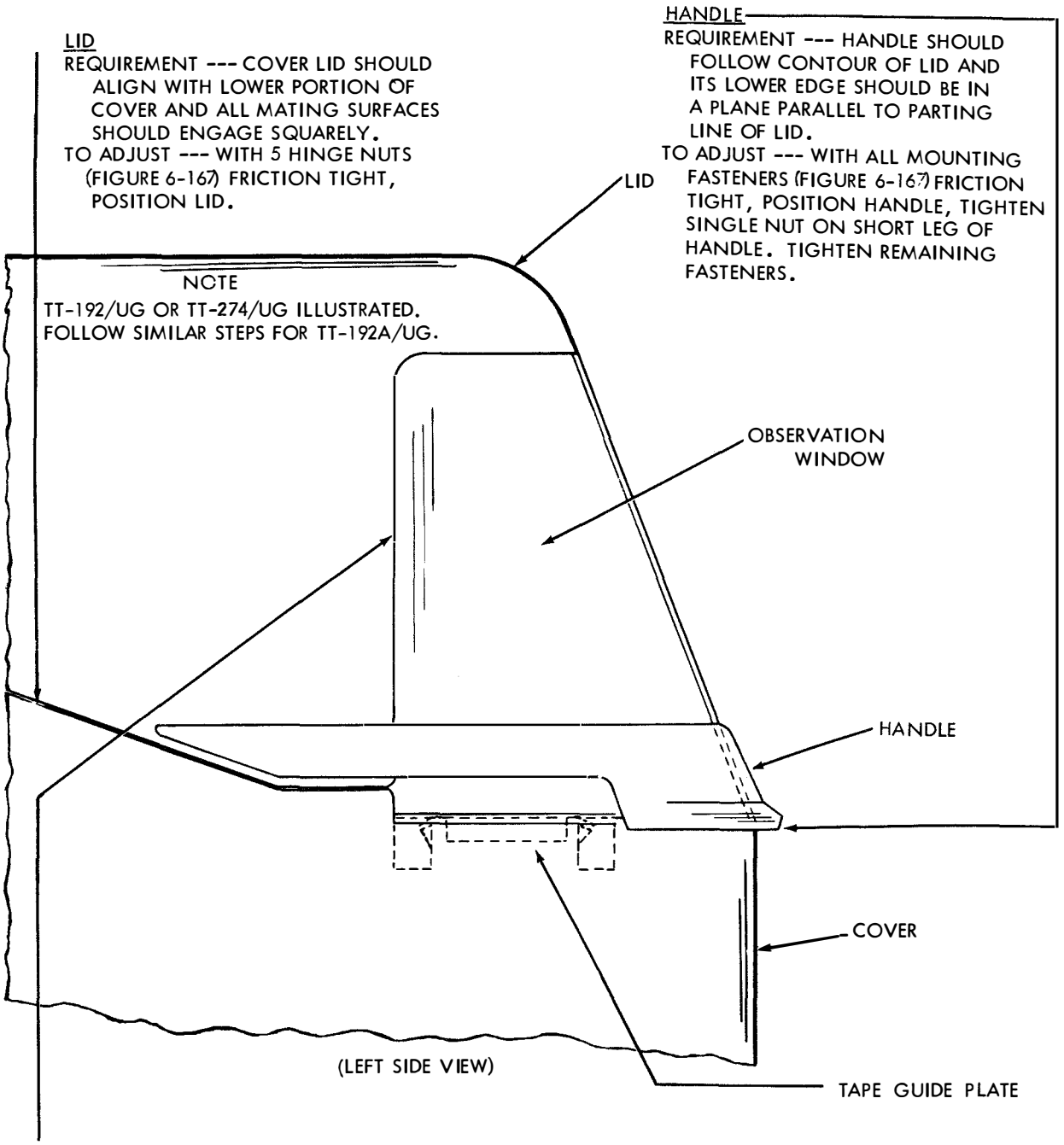
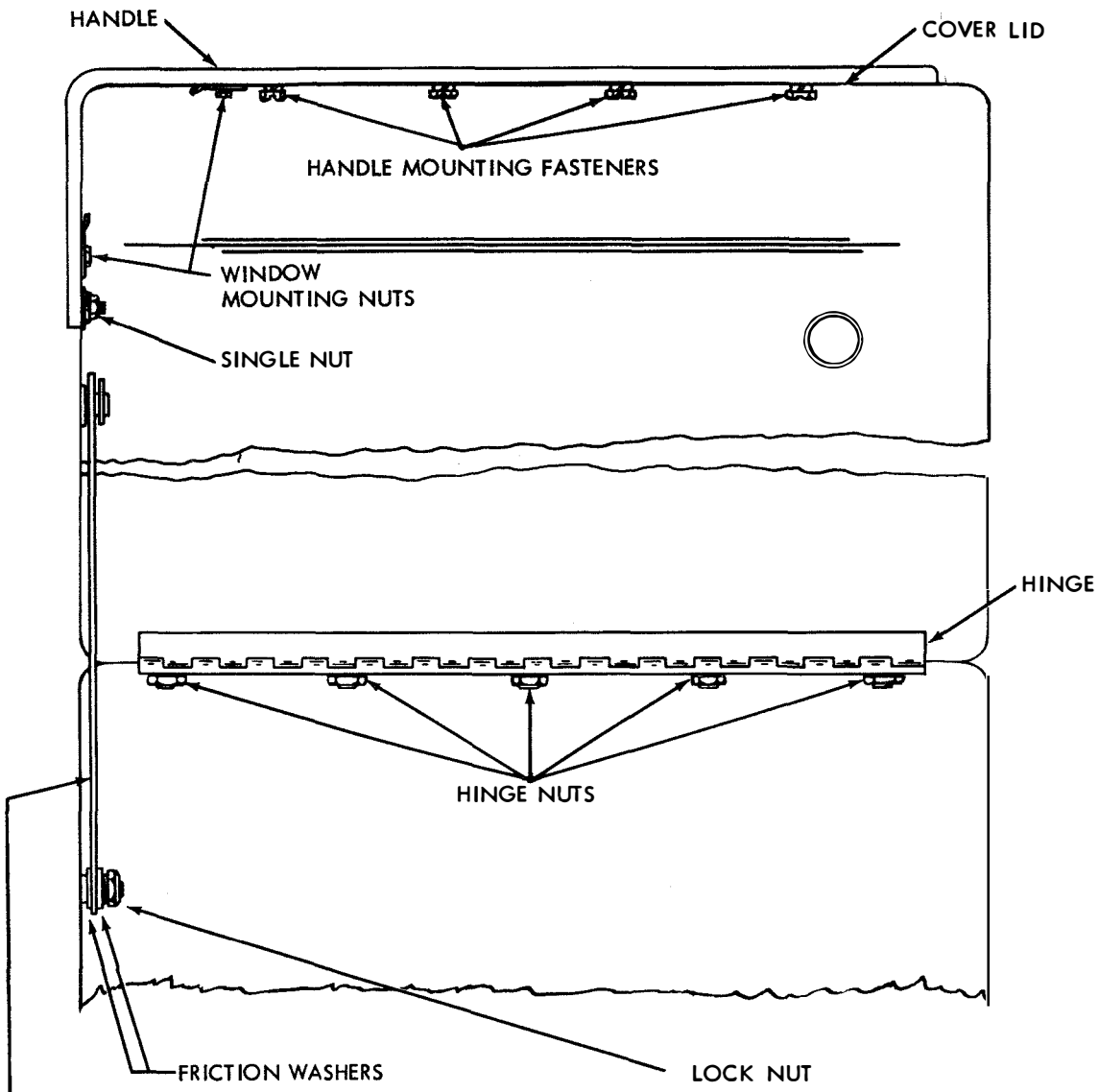


Figure 6-166. Cover or Miniaturized Cover (TT-192/UG, TT-192A/UG and TT-274/UG)



NOTE

TT-192/UG OR TT-274/UG ILLUSTRATED.
FOLLOW SIMILAR STEPS FOR TT-192A/UG.

FRICTION ARM

REQUIREMENT----WITH LID IN ITS UPPERMOST POSITION, IT SHOULD REQUIRE A LIGHT PRESSURE TO MOVE LID DOWNWARD. (LID SHOULD NOT FALL OF ITS OWN WEIGHT).
TO ADJUST----TIGHTEN OR LOOSEN FRICTION WASHER ASSEMBLY LOCK NUT.

Figure 6-167. Cover or Miniaturized Cover (TT-192/UG, TT-192A/UG and TT-274/UG)

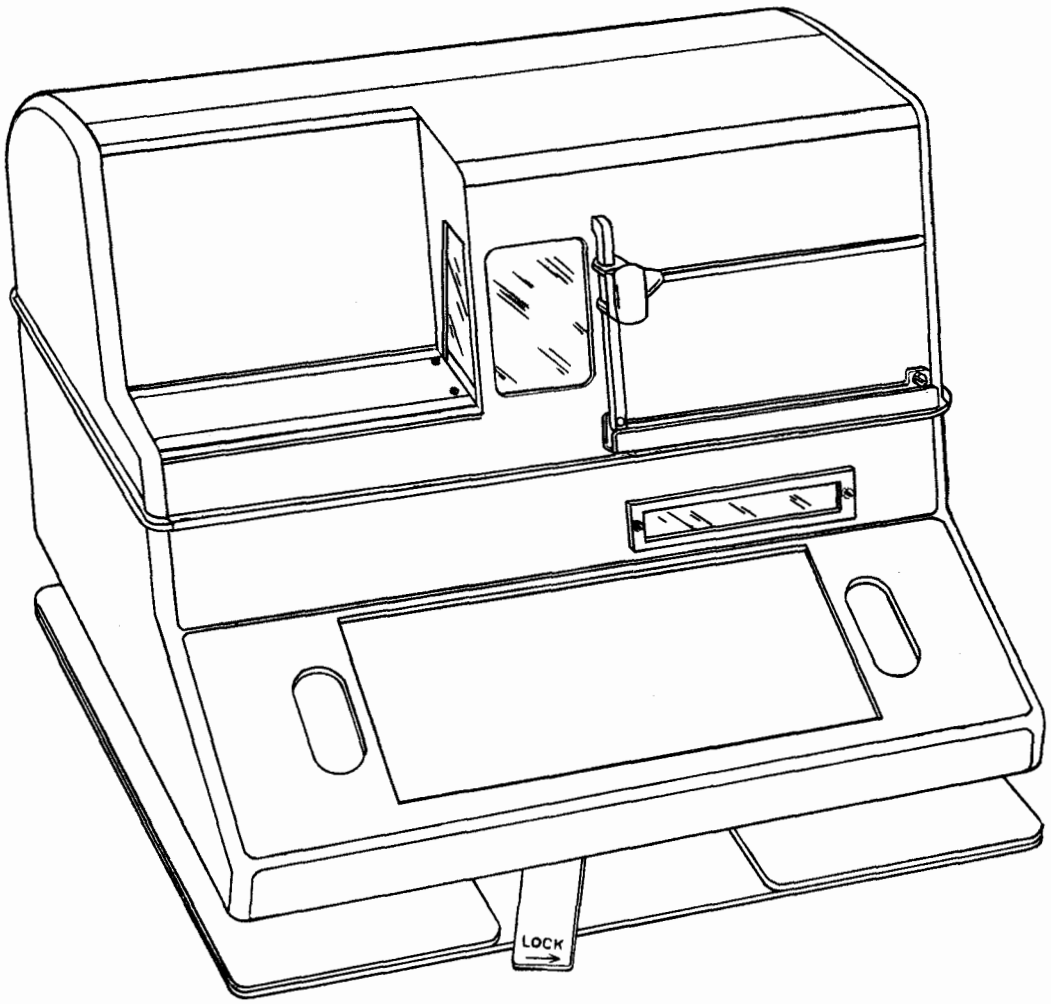
COVER

REQUIREMENT

(1) ACCESS DOOR LATCHED WHEN CLOSED.
(2) MIN. OF PLAY IN DOOR.

TO ADJUST

POSITION THE LATCHES WITH MOUNTING SCREWS FRICTION TIGHT.



COPYHOLDER

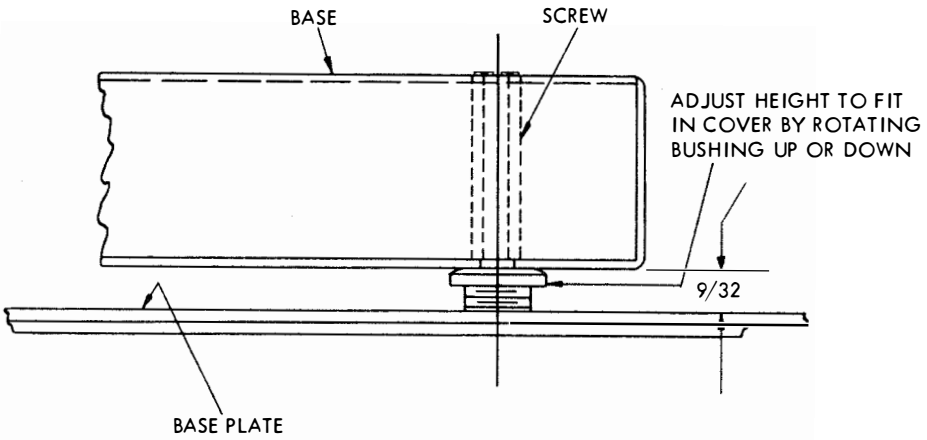
REQUIREMENT

TENSION ON THE LINE GUIDE SHOULD BE SUFFICIENT TO HOLD THE LINE GUIDE FROM SLIPPING DOWN THE SHAFT AND TO HOLD THE COPY IN PLACE.

TO ADJUST

REMOVE THE TWO MOUNTING SCREWS FROM INSIDE THE COVER, REMOVE THE LINE GUIDE AND TURN THE SQUARE SHAFT TO A NEW POSITION. REPLACE THE LINE GUIDE AND MOUNTING SCREWS.

Figure 6-168. Cabinet, Latch and Copyholder (TT-253/UG, TT-253A/UG and TT-292/UG)



ALIGNMENT OF COVER TO BASE PLATE ASSEMBLY

REQUIREMENT

THE COVER SHOULD FIT AROUND THE KEYTOP GUIDE AND REST ON THE BASE PLATE

TO ADJUST

PRELIMINARY

LOOSEN FOUR BASE MOUNTING SCREWS AND ADJUST THE ASSOCIATED BUSHINGS SO THE SPACE BETWEEN THE BASE PLATE AND KEYBOARD BASE IS APPROXIMATELY 9/32 INCH AT ALL FOUR CORNERS.

FINAL

PLACE THE COVER OVER THE COMBINED KEYBOARD BASE AND BASE PLATE ASSEMBLY IF THE REQUIREMENT IS NOT MET ADJUST ACCORDINGLY.

WINDOW

REQUIREMENT

VERTICAL CLEARANCE BETWEEN THE TEARING EDGE OF THE SLIDE WINDOW IN THE DOOR AND THE TOP SURFACE OF THE TAPE AFTER IT LEAVES THE PUNCH IN A HORIZONTAL PLANE.

MIN. 1/16 INCH

MAX. 3/32 INCH

TO ADJUST

POSITION WINDOW WITH CLAMP SCREWS FRICTION TIGHT.

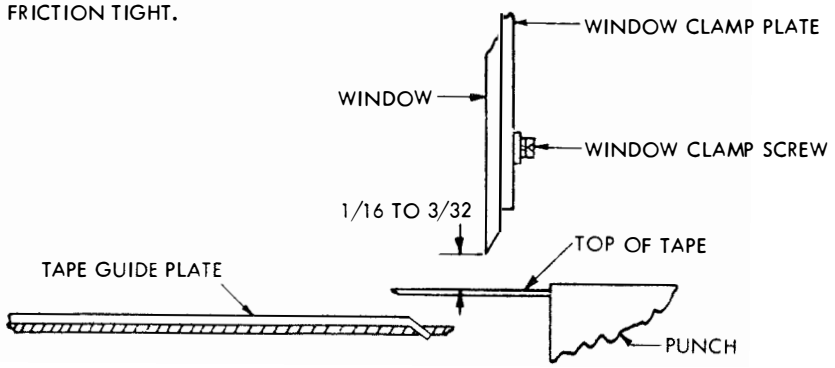


Figure 6-169. Cabinet, Base Plate and Window Alignment (TT-253/UG, TT-253A/UG and TT-292/UG)

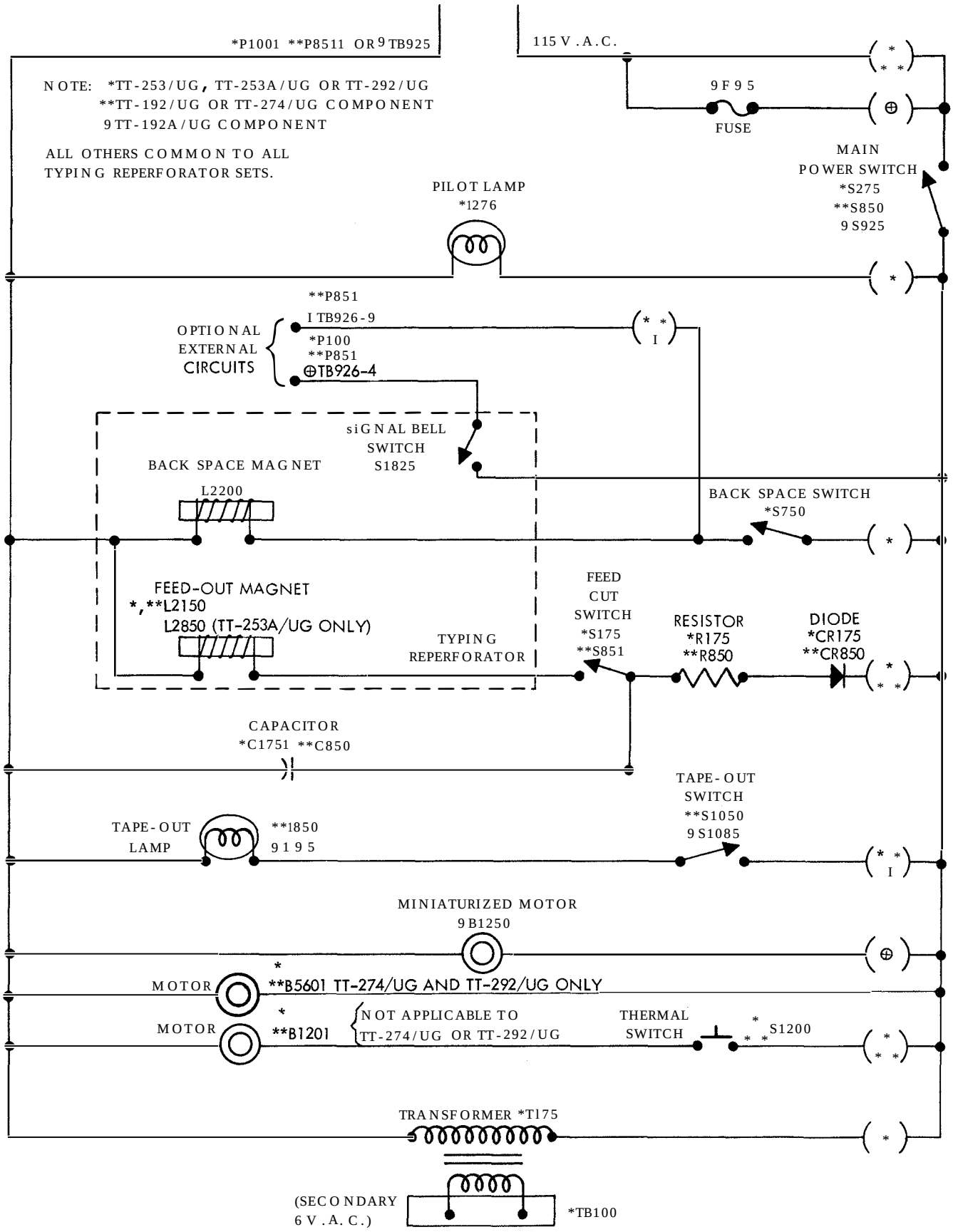


Figure 6-170. Main Power Distribution Diagram

6-5. WIRING DIAGRAMS.

Figures 6-170 through 6-172 are system wiring diagrams. Winding data for components of the system is contained in table 6-2.

TABLE 6-2. WINDING DATA

REF. DESIG-NATION	TELETYPE PART NUMBER	MANUFACTURE AND MFR PART NUMBER	WINDING	WIRE SIZE	TURNS	DC RESISTANCE OHMS	HIPOT AC VOLTS	REMARKS
K1200	151923	R.B.M. Mfg. Co. 91252-52	Single				500	Motor start Relay
K1250	173425	R.B.M. Mfg. Co. 91252-309	Double				500	Motor start Relay
L1950	254M	Teletype 254M	Single	No. 33	3600	132	500	Selector Magnet 115 V d.c.
L1951	254M	Teletype 254M	Single	No. 33	3600	132	500	Selector Magnet 115 V d.c.
L2150	252M	Teletype 252M	Single	No. 33	4980	200	500	Tape Feed-Out Magnet 115 V d.c.
L2200	224M	Teletype 224M	Single	No. 36	5000	450	500	Tape Back Space Magnet 115 V a.c.
L5000	263M	Teletype 263M	Single				500	Synchronous Pulse Magnet, 115 V a.c.
L5850	274M	Teletype 224M	Single	No. 36	5000	450	500	Tape Feed-Out Magnet, 115 V d.c.
T175	158286	Midwest Coil and Transformer Co. 285P2	Double			Pri 28.5 Sec 0.3	500	Lamp Circuit Transformer 115 V a.c.

NOTES

1. WIRING LEGEND:

DISTANT TERMINATING AREA → A - 1 - W-BL
DISTANT TERMINAL DESIGNATION
WIRE COLOR CODE

2. COLOR CODE:

BK	BLACK
BL	BLUE
BR	BROWN
G	GREEN
O	ORANGE
P	PURPLE
R	RED
S	SLATE
W	WHITE
Y	YELLOW
W-BK	WHITE-BLACK
W-BL	WHITE-BLUE
W-BR	WHITE-BROWN
W-G	WHITE-GREEN
W-O	WHITE-ORANGE
W-P	WHITE-PURPLE
W-R	WHITE-RED
W-S	WHITE-SLATE
W-Y	WHITE-YELLOW

3. UNIT WIRED FOR 115 V A.C. POWER INPUT AND 115 V D.C. SIGNAL. CONNECTORS VIEWED FROM SOLDER TERMINAL ENDS. ALL CONTACTS SHOWN IN UNOPERATED POSITION.

4. TERMINAL DESIGNATIONS IN PARENTHESIS NOT MARKED ON COMPONENTS.

5. STRAP EXTERNAL CONNECTOR TERMINALS 1 AND 9 WITH 20 GUAGE WIRE.

6. TT-192A/UG EXTERNAL SIGNAL BELL TERMINALS ARE AREA 16 TERM 3 AND AREA 17 TERM 4 WHEN REQUIRED.

7. SPARES ARE PART OF CABLE AND ARE TIED BACK AT RECEPTACLE, AREA 21.

8. * - APPLICABLE ONLY TO TT-192A/UG.
** - NOT APPLICABLE TO TT-192A/UG.
***APPLICABLE ONLY TO TT-253A/UG.

9. STRAP TYPING REPERFORATOR RECEPTACLE (AREA 43) TERMS. 35 AND 36 WITH 20 GAUGE WIRE.

10. SELECTOR MAGNETS FACTORY WIRED FOR 0.060 AMPERE OPERATION. WIRE IN SERIES WITH EXTERNAL RESISTANCE FOR 0.020 WHEN AN EXTERNAL LINE RELAY IS USED, WIRE FOR 0.030 AMPERE OPERATION AMPERE SERVICE.

11. MOTOR LEADS ARE INTERCHANGEABLE.

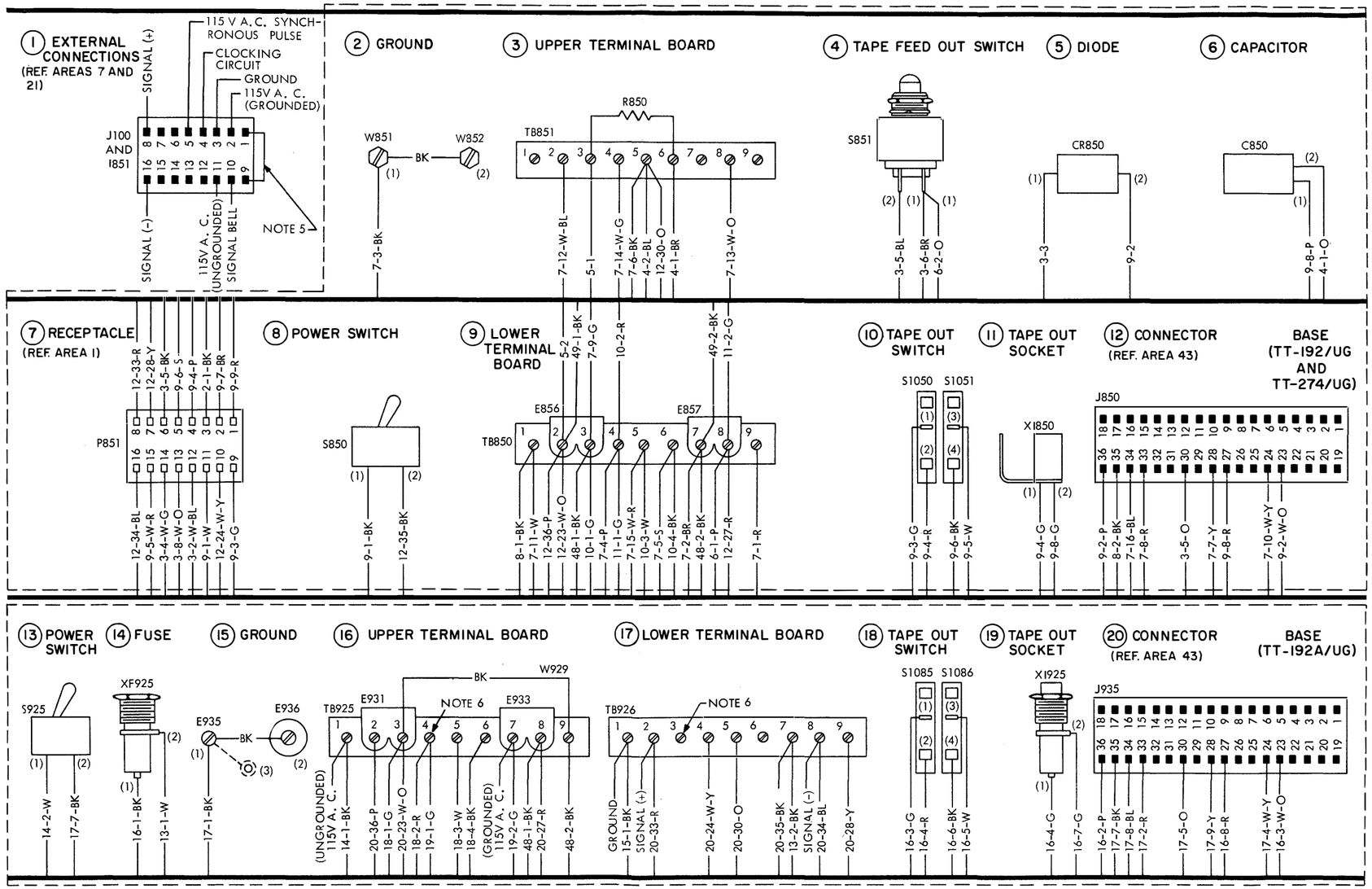


Figure 6-171. Typical Reperforator Sets TT-192/UG, TT-192A/UG, TT-253/UG, TT-253A/UG TT-274/UG and TT-292/UG, Actual Wiring Diagram (Sheet 1 of 2)

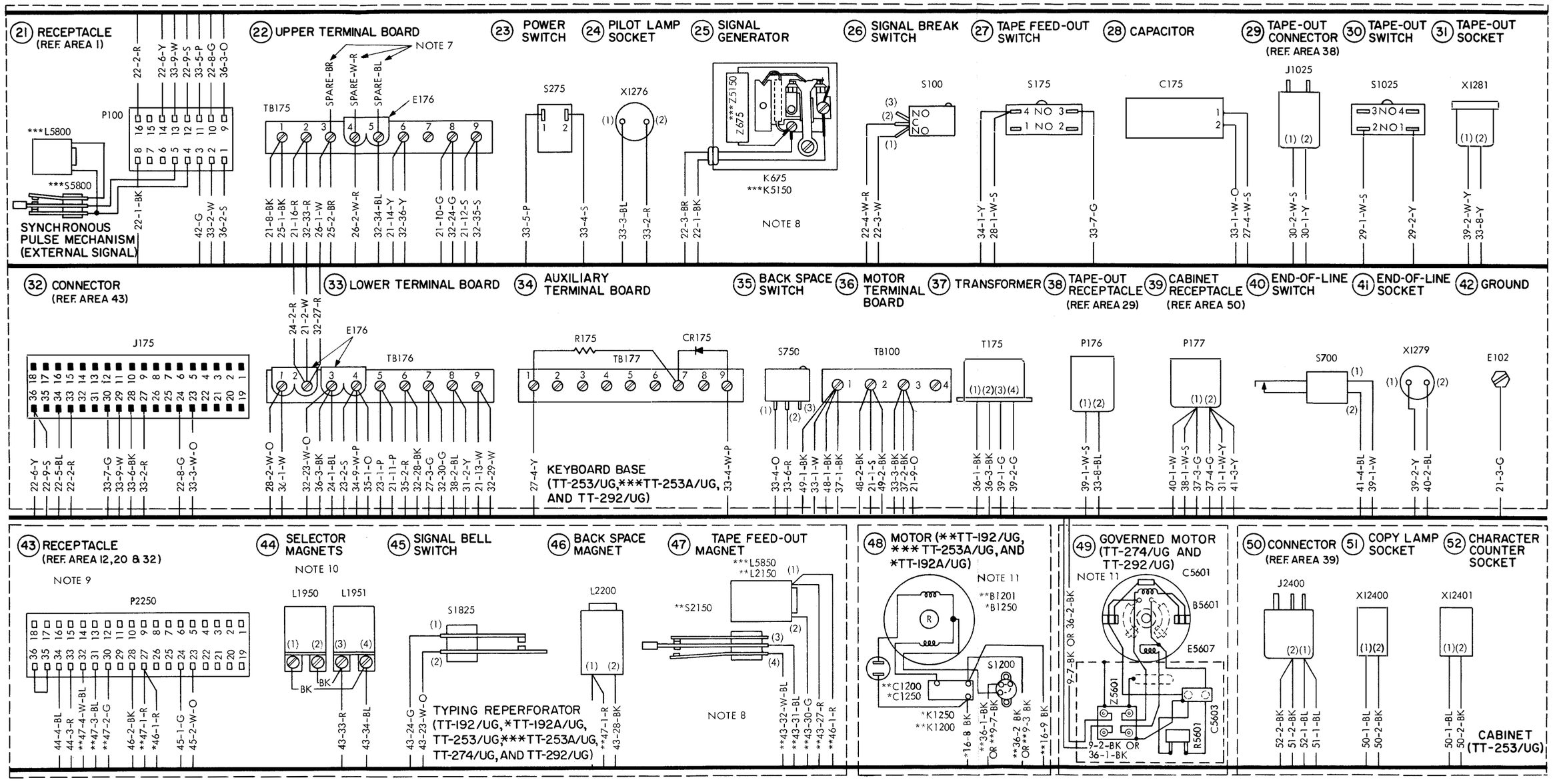
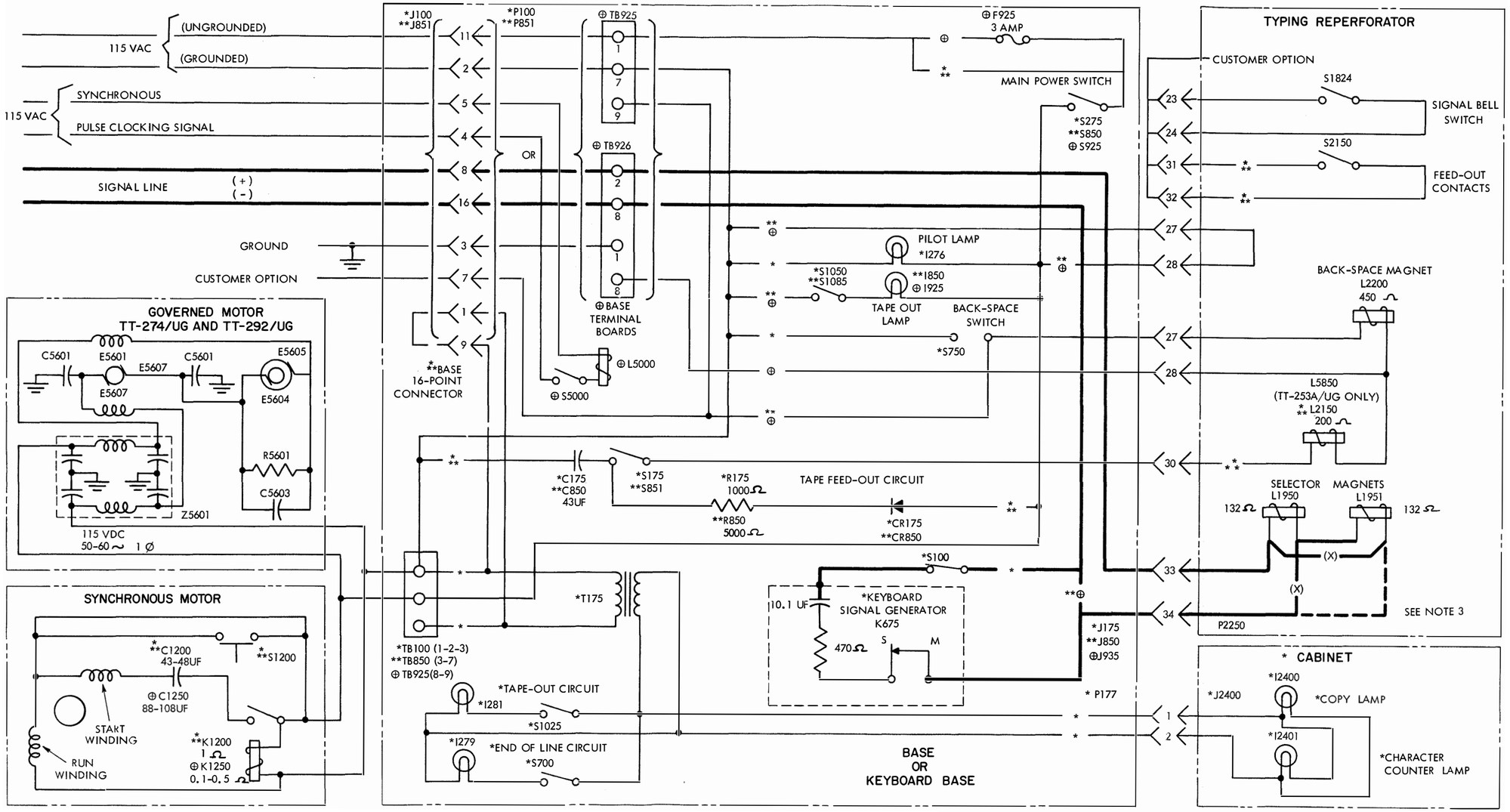


Figure 6-171. Typical Reperforator Sets TT-192/UG, TT-192A/UG, TT-253/UG, TT-253A/UG TT-274/UG and TT-292/UG, Actual Wiring Diagram (Sheet 2 of 2)



NOTES:

1. *=TT-253/UG, TT-253A/UG, TT-292/UG
   **=TT-192/UG, TT-274/UG
   ⊕=TT-192A/UG
2. ALL CONTACTS SHOWN IN UNOPERATED POSITION
3. SELECTOR MAGNETS SHOWN WIRED FOR 0.060 AMPERE OPERATION. FOR 0.020 AMPERE CIRCUIT, ADD DASH LINE (– – –) AND DELETE CONNECTIONS MARKED (X) ON SELECTOR MAGNET

Figure 6-172. Typing Reperforator Sets TT-192/UG, TT-192A/UG, TT-253/UG, TT-253A/UG, TT-274/UG, and TT-292/UG, Schematic Wiring Diagram

SECTION 7
PARTS LIST

7-1. INTRODUCTION.

Reference designations have been assigned to identify all maintenance parts of the equipment. They are used for marking the equipment (adjacent to the part they identify) and are included on drawings, diagrams, and the parts list. The letters of a reference designation indicate the kind of part (generic group). The number differentiates between parts of the same generic group. Parts of the same first component are numbered from 101 to 1199. Parts of the second component are numbered from 1200 to 1299. Consecutive series of 100 numbers have been assigned to each major component in which there are more than 100 parts in a generic group. Stock numbers of parts used in this equipment may be obtained by referring to the Stock Number Identification Table (SNIT) published by E.S.O.

7-2. LIST OF MAJOR UNITS.

Table 7-1 is arranged by groups of reference designations applicable to a major component. Thus, when the reference designation of a part is known, the table will furnish ready reference to the major component in which it is used. The table also gives the following information for each major component: (1) official nomenclature (see columns 3 and 4); (2) quantity in one equipment (column 2); and (3) location of its parts in table 7-2 (column 5).

7-3. MAINTENANCE PARTS LIST.

Table 7-2 lists all major components and their maintenance parts. The parts of each major component are grouped together. Column 1 lists the reference series of each major unit, followed by the reference designations of the various group in alphabetical and numerical order, in groups of not more than 100 parts in each generic group. Column 2 refers to the explanatory notes that appear in paragraph 7-5. Column 3 gives the name and describes the various parts. Complete information is given for all key parts (parts differing from any part previously listed in this table) and sub-key parts (parts identical with a key part, but appearing for the first time within a major component.) The name and description are omitted for other parts, but reference is made to the key part or sub-key part for the data. The contractor (code No. 59433) part number is furnished in each key and sub-key description, and in the case of vendor parts has been added for reference in parentheses following the manufacturer's code and part number. The manufacturer's name and address, when other than the contractor, may be found by referring to the List of Manufacturers, table 7-3. Column 4 indicates how the part is used and gives its functional location in the equipment. Column 5 indicates the figure number of the pictorial illustration on which the part is identified. The figures appear in Section 6.

7-4. LIST OF MANUFACTURERS.

Table 7-3 lists manufacturers of parts used in the equipment. The first column indicates the code number used in table 7-2 or elsewhere in this handbook to identify manufacturers. Manufacturers are listed in numerical order of their code numbers.

7-5. NOTES.

The following provide additional information about items listed in table 7-2, as referenced in column 2 of that table.

1. Common to TT-292/UG, TT-253/UG and TT-253A/UG.
2. Peculiar to TT-253A/UG.
3. Common to TT-292/UG and TT-253/UG.
4. Common to TT-192/UG and TT-274/UG.
5. Peculiar to TT-192A/UG.
6. Common to TT-192/UG, TT-192A/UG and TT-274/UG.
7. Common to TT-192A/UG, TT-253/UG and TT-253A/UG.
8. Peculiar to TT-192/UG.
9. Common to TT-274/UG and TT-292/UG.
10. Common to TT-192/UG, TT-274/UG, TT-292/UG and TT-253/UG.
11. Common to TT-192A/UG and TT-253A/UG.
12. Common to TT-253/UG and TT-253A/UG.

TABLE 7-1. TYPING REPERFORATOR SET, LIST OF MAJOR COMPONENTS

REF. DES.	QUANTITY	NAME OF MAJOR COMPONENT	DESIGNATION	PAGE
100 to 1199 5000 to 5199	1	BASE	LRB8	7-2
		BASE, MINIATURIZED	LRB31	7-2
		KEYBOARD-BASE	LTRK1ARN	7-66
		KEYBOARD-BASE	LTRK5ARN	7-2
1200 to 1299 5200 to 5699	1	MOTOR, AC SYNCHRONOUS	LMU3	7-30
		MOTOR, MINIATURIZED	LMU24	7-30
		MOTOR, AC GOVERNED	LMU4	7-68
1300 to 2399 5700 to 5899	1	TYPING REPERFORATOR	LPR9AWA	7-33
		TYPING REPERFORATOR	LPR40AWA	7-33
		TYPING REPERFORATOR	LPR53AWA	7-73
2400 to 2499	1	CABINET	LSRC200	7-62
2500 to 2599		COVER	LRC202	7-65
		COVER, MINIATURIZED	LRC205	7-65

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
A100	1	BRACKET: 161950	Supports P100	6-1
A101	1	PLATE, NUT: 154076	Retains A325 on A113	6-1
A102	1	BRACKET: 154106	Supports O101	6-1
A103	1	BRACKET: 154039	Supports S100	6-1
A104	1	PLATE: 154085	Retains A250 on A113	6-1
A105	1	PLATE, NUT: 158215	Retains A703 on A113	6-1
A106	1	GUARD: 152045	Guards O254	6-1
A107	1	PLATE, NUT: 154087	Retains A276 and A277 on A113	6-1
A108	1	PLATE, NUT: 151118	Retains A827 on A113	6-1
A109	1	PLATE, MOUNTING: 151146	Retains A827 on A113	6-1
A110	1	Same as A109	Retains A827 on A113	6-1
A111	1	PLATE, MOUNTING: 151113	Retains A1201 on A113	6-1
A112	1	PLATE: 154088	Retains A102, A501 and A103 on A113	6-1
A113	1	BASE: 154000	Mounting and support for keyboard assemblies	6-1
A114	1	PLATE, STRAIN RELIEF: 154173	Prevents strain on E103	6-2
A175	1	Same as A105	Retains A176 on A113	6-2
A176	1	PLATE: 161942	Mounts T175	6-2
A177	1	BRACKET: 161905	Supports TB175, TB176, TB177, P177, P176 and C175	6-2
A178	1	Same as A109	Retains H198 and A827 on A113	6-2
A179	1	Same as A108	Retains H198 and A827 on A113	6-2
A180	1	PLATE, NUT: 161904	Retains A181 and H204 on A113	6-2
A181	1	BRACKET: 161903	Supports S175	6-2
		(Continued. See A200)		

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
C175	3	CAPACITOR, FIXED, ELECTROLYTIC: 125 V ac working, max working temperature 50 c, insulated aluminum can, approx 3-3/16 in. lg x 1-1/16 in. diam, mfg. code No. 74861, part No. AX7 (code 59433 part No. 122245) (Continued. See C850)	Furnishes current for feed-out magnet	6-2
CR175	3	SEMICONDUCTOR DEVICE, DIODE: p i v 300 volts average, forward current 750 ma at 25°C, mfg. code No. 24446, part No. IN539 (code 59433 part No. 160307) (Continued. See CR850)	Furnishes d.c. current for tape feed-out circuit	6-2
E100	1	INSULATOR: 150966	Insulates TB100 terminals	6-1
E101	1	Same as E100	Insulates TB100 from A113	6-1
E102	1	SCREW: 6-40 x 5/16 hex 151631	W175 ground screw	6-1
E103	1	TERMINAL, LUG: 131099	W175 terminals	6-2
E175	1	INSULATOR, TERMINAL BOARD: 151412	Insulates TB175, TB176 and TB177 terminals	6-2
E176	1	STRAP, TERMINAL: 151827	Jumper strap for TB175 and TB176	6-2
E177	1	Same as E175	Insulates TB175, TB176 and TB177 from A177	6-2
E178	1	SLEEVE, INSULATING: 155752	Insulates W175	6-2
E179	1	TERMINAL, LUG: mfg code No. 00779, part No. C-41470 (code 59433 part No. 151626)	W175 terminals	6-2
E180	1	Same as E179 (Continued. See E675)	W176 terminal	6-2
H100	1	SCREW: 6-40 x 1/4 hex 151630	Retains E100 on H102	6-1
H101	1	WASHER, LOCK: 2191	Retains E100 on H102	6-1
H102	1	STUD: 151335	Spaces E100 from TB100 and retains TB100 and E101 on A113	6-1
H103	1	SCREW: 6-40 x 5/16 Fil 111017	Terminal screw for TB100	6-1
H104	1	NUT: 6-40 hex 151416	Retains H103 on TB100	6-1
H105	1	SCREW: 6-40 x 3/8 hex 151632	Retains A325 on A113	6-1
H106	1	Same as H101	Retains A325 on A113	6-1
H107	1	RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-15 (code 59433 part No. 119651)	Retains O101 on O227	6-1
H108	1	Same as H105	Retains A102 on A113	6-1
H109	1	Same as H101	Retains A102 on A113	6-1
H110	1	SCREW: 2-56 x 3/8 fil 125181	Retains S100 on A103	6-1
H111	1	SCREW: 6-40 x 9/16 hex 153841	Retains A103 on A113	6-1
H112	1	Same as H101	Retains A103 on A113	6-1
H113	1	Same as H105	Retains A501 on A113	6-1
H114	1	Same as H101	Retains A501 on A113	6-1
H115	1	WASHER, FLAT: 7002	Retains A501 on A113	6-1
H116	1	SCREW: 10-32 x 3/8 hex 151723	Retains A104 on A113	6-1
H117	1	WASHER, LOCK: 2669	Retains A104 on A113	6-1
H118	1	WASHER, FLAT: 3438	Retains A104 on A113	6-1
H119	1	SCREW: 6-40 x 5/16 hex 151631	Retains A105 on A113	6-1
H120	1	Same as H101	Retains A105 on A113	6-1
H121	1	Same as H115	Retains A105 on A113	6-1

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H122	1	SCREW, MOUNTING: 1/4-32 151678	Retains A106 on A113	6-1
H123	1	SCREW: 4-40 x 3/8 fil 153817	Retains H127 on A113	6-1
H124	1	NUT: 4-40 hex 3599	Retains H127 on A113	6-1
H125	1	WASHER, LOCK: 3640	Retains H127 on A113	6-1
H126	1	Same as H115	Retains H127 on A113	6-1
H127	1	CLAMP, LOOP: Nylon, mfg. code No. 71616, part No. CPC-1953-2B (code 59433 part No. 121242)	Clamps W175 to A113	6-1
H128	1	Same as H105	Retains H132 on A113	6-1
H129	1	NUT: 6-40 hex 3598	Retains H132 on A113	6-1
H130	1	Same as H101	Retains H132 on A113	6-1
H131	1	Same as H115	Retains H131 on A113	6-1
H132	1	CLAMP, LOOP: Nylon, mfg. code No. 71616, part No. CPC-1953-4 (code 59433 part No. 121244)	Clamps W175 to A113	6-1
H133	1	Same as H105	Retains A107 on A113	6-1
H134	1	Same as H101	Retains A107 on A113	6-1
H135	1	Same as H105	Retains A108 on A113	6-1
H136	1	Same as H101	Retains A108 on A113	6-1
H137	1	Same as H105	Retains A111 on A113	6-1
H138	1	Same as H101	Retains A111 on A113	6-1
H139	1	Same as H105	Retains A276 and A277 on A113	6-1
H140	1	Same as H101	Retains A276 and A277 on A113	6-1
H141	1	Same as H115	Retains A276 and A277 to A113	6-1
H143	1	Same as H129	Retains W175 to A113	6-1
H144	1	Same as H115	Retains W175 on A113	6-1
H145	1	Same as H101	Retains W175 to A113	6-1
H146	1	Same as H105	Retains A112 on A113	6-1
H147	1	Same as H101	Retains A112 on A113	6-1
H148	1	SCREW: 4-40 x 1/4 Fil 151637	Retains P100 on A100	6-1
H149	1	Same as H125	Retains P100 on A100	6-1
H150	1	Same as H105	Retains A326 and A328 on A113	6-1
H151	1	Same as H101	Retains A326 and A328 on A113	6-1
H152	1	Same as H115	Retains A326 and A328 on A113	6-1
H175	1	Same as H119	Retains T175 on A176	6-2
H176	1	Same as H101	Retains T175 on A176	6-2
H177	1	Same as H115	Retains T175 on A176	6-2
H178	1	Same as H119	Retains A176 on A113	6-2
H179	1	Same as H101	Retains A176 on A113	6-2
H180	1	Same as H115	Retains A176 on A113	6-2
H181	1	Same as H100	Retains E175 on H185	6-2
H182	1	Same as H101	Retains E175 on H185	6-2
H183	1	Same as H103	Terminal screw for TB175, TB176 and TB177	6-2
H184	1	Same as H104	Retains H183 on TB175, TB176 and TB177	6-2
H185	1	Same as H102	Supports E175	6-2
H186	3	SCREW: 10-32 x 5/16 hex 121575	Retains H188 on A177	6-2
H187	3	WASHER, LOCK: 151572	Retains H188 on A177	6-2
H188	3	CLAMP, TUBE: 161964	Clamps C175 to A177	6-2
H189	1	Same as H100	Retains P177 on A177	6-2
H190	1	NUT: 6-40 hex 3606	Retains P175 on A177	6-2
H191	1	Same as H101	Retains P177 on A177	6-2
H192	1	Same as H100	Retains P176 on A177	6-2
H193	1	Same as H190	Retains P176 on A177	6-2

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H194	1	Same as H101	Retains P176 on A177	6-2
H195	1	Same as H119	Retains A177 on H198 and H204	6-2
H196	1	Same as H101	Retains A177 on H198 and H204	6-2
H197	1	Same as H115	Retains A177 on H198 and H204	6-2
H198	1	POST, SUPPORTING: 161908	Supports A177	6-2
H199	1	Same as H119 (Continued. See H200)	Retains A181 on A113	6-2
J100	1	CONNECTOR: 159541	External power supply connector. Mates with P100	6-1
J175	1	CONNECTOR, PLUG: 161239 (Continued. See J850)	Connects reperforator to base	6-2
O100	1	SPRING: 112630	Applies tension to O101	6-1
O101	1	LINK: 153252	Operates S100	6-1
O102	1	SHIM: 0.005 in., 154199	Spaces A501 from A113	6-1
O103	1	SHIM: 0.014 in., 154201	Spaces A501 from A113	6-1
O104	1	GROMMET, RUBBER: 154156 (Continued. See O225)	Protects W175 from A677	6-2
P100	1	RECEPTACLE: 159542	Termination of W176. Mates with external power supply cable	6-1
P176	1	RECEPTACLE: 100657	Mates with J1025	6-2
P177	1	RECEPTACLE: 108953 (Continued. See P851)	Mates with J2400	6-2
R175	2	RESISTOR, FIXED, COMPOSITION: 1000 ohms, ± 3%, 10 watts, mfg. code No. 44655, part No. 882-11 (code 59433 part No. 161965) (Continued. See R850)	Tape feed-out circuit resistance	6-2
S100	1	SWITCH, SENSITIVE: SPDT, 10 amp, 125 V ac, plunger type, 0.007 in. movement differential, 0.040 in. max. pretravel, 0.025 in. max. overtravel, 6 oz. operating pressure, mfg. code No. 80411, part No. IMD12AXX (code 59433 part No. 151329)	Interrupts signal line circuit on operation of 0360	6-1
S175	1	SWITCH, SENSITIVE: 2 circuit, double break, plunger type, 0.150 in. movement differential, 4 oz. operating pressure, mfg. code No. 30323, part No. 11-330-012 (code 59433 part No. 158163) (Continued. See S275)	Tape feed-out switch	6-2
T175	1	TRANSFORMER ASSY: 163522	Furnishes 6 V dc current for cabinet, tape-out and end-of-line circuits	6-2
TB100	1	BLOCK, TERMINAL MOTOR: 151415	Terminal block for W175	6-1
TB175	1	BOARD, TERMINAL UPPER: 151411	Upper terminal board for W175 and W176	6-2
TB176	1	Same as TB175	Lower terminal board for W175 and W176	6-2
TB177	1	Same as TB175 (Continued. See TB850)	Auxiliary terminal board for W175	6-2
W175	1	CABLE ASSY: 161878	Connects reperforator to base	6-2
W176	1	CABLE ASSY: 161892 (Continued. See W700)	Connects base to external power supply	6-2

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
A225	1	BRACKET, FUNCTION BAIL: 154059	Supports O226 and guides O227 and O228	6-4
A250	1	BRACKET: 151228	Supports O252 and O254	6-5
A275	1	BRACKET: 154119	Supports O277	6-6
A276	1	BRACKET, RIGHT: 154211	Supports A28 and A475	6-6
A277	1	BRACKET, LEFT: 154210	Supports A279 and A475	6-6
A278	1	FRAME, FRONT: 154212	Supports A279	6-6
A279	1	PLATE, KEYTOP GUIDE: 161891 (Continued. See A325)	Supports I277, I282, S275, X275, X276 and X277	6-6
H200	1	Same as H101	Retains A181 on A113	6-2
H201	1	Same as H115	Retains A181 on A113	6-2
H202	1	SCREW: 2-56 x 5/8 fil 1210	Retains S175 on A181	6-2
H203	1	WASHER, LOCK: 93117	Retains S175 on A181	6-2
H204	1	Same as H198	Supports A177	6-2
H225	1	RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-25 (code 59433 part No. 119653)	Retains O226 on A225	6-4
H226	1	STUD: 162333	Positions A827 on A113	6-4
H250	1	SCREW: 10-32 x 5/8 hex 151724	Retains A250 and O250 on A113	6-5
H251	1	Same as H117	Retains A250 and O250 on A113	6-5
H252	1	SCREW: 10-32 x 3/4 fil 151725	Retains A250 on A113 and adjusts A250 on A113	6-5
H253	1	Same as H117	Retains A250 on A113	6-5
H254	1	Same as H119	Retains drive gear on intermediate gear mechanism	6-5
H255	1	Same as H101	Retains drive gear on intermediate gear mechanism	6-5
H256	3	SCREW: 6-40 x 3/8 fil 151346	Retains O254 on O251	6-5
H257	1	Same as H101	Retains O254 on O251	6-5
H258	1	WASHER, FLAT: 8330	Retains O254 on O251	6-5
H259	1	NUT: 10-32 hex 112626	Retains O251 on A250	6-5
H260	1	Same as H117	Retains O251 on O254	6-5
H261	1	Same as H118	Retains O251 on A250	6-5
H262	1	POST: 6-40 161301	Retains O256 on E1201	6-5
H275	1	SCREW: 6-40 shoulder 151223	Pivot for and retains O275 on O277	6-6
H276	1	SCREW: 6-40 x 1/2 fil 151659	Retains A279 on A278	6-6
H277	1	Same as H115	Retains A279 on A278	6-6
H278	1	Same as H258	Retains A279 on A278	6-6
H279	1	Same as H119	Retains A279 on A278	6-6
H280	1	Same as H101	Retains A279 on A276	6-6
H281	1	Same as H115	Retains A279 on A276	6-6
H282		NUT, SHEET SPRING: Steel, mfg. code No. 78553, part No. C159-012-1 (code 59433 part No. 117608)	Retains H283 on A279	
H283	1	PLUG, PLASTIC: 154197	Plugs unused keytop guide holes of A279	6-6
H284	1	Same as H107	Retains O276 on O277	6-6
H285	1	SCREW: 6-40 pivot 151224	Supports and provides pivot for O277	6-6
H286	1	Same as H129	Adjusts H285	6-6
H287	1	Same as H100	Retains A275 on A278	6-6
H288	1	Same as H101	Retains A275 on A278	6-6
H289	1	SCREW: 6-40 x 13/32 hex 156632	Adjusts A475	6-6

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H290	1	Same as H129	Adjusts H289	6-6
H291	1	Same as H119	Retains A276 on A113	6-6
H292	1	Same as H101	Retains A276 on A113	6-6
H293	1	Same as H100	Retains A278 on A276	6-6
H294	1	Same as H101	Retains A278 on A276	6-6
H295	1	Same as H119	Retains A475 on A276 and A277	6-6
H296	1	Same as H101	Retains A475 on A276 and A277	6-6
H297	1	WASHER, FLAT: 125015 (Continued. See H325)	Retains A475 on A276 and A277	6-6
I275	1	CAP: 118384	Cap for XI276	6-6
I276	1	LAMP, GLOW: mfg. code No. 24446, part No. NE-51H (code 59433 part No. 161215)	Power indicating lamp	6-6
I277	1	PLATE: 161907	S275 indicator plate	6-6
I278	1	CAP: 161932	Cap for XI276	6-6
I279	1	LAMP, INCANDESCENT: 6-8 V, 0.25 amps, miniature bayonet type base, mfg. code No. 24446, part No. MAZDA No. 44 (code 59433 part No. 161957)	End of line indicating lamp	6-6
I280	1	CAP: 161910	Cap for XI277	6-6
I281	1	Same as I279	Low tape indicating lamp	6-6
I282	1	PLATE: 161906	XI279 and XI281 nameplate	6-6
I283	1	KNOB: 161911 (Continued. See I700)	Knob for S275	6-6
O225	1	SPRING: 49420	Applies tension to O228	6-4
O226	1	SHAFT: 154092	Supports O227 and O228	6-4
O227	1	LEVER (TAPE F.O.): 154066	Operates O101	6-4
O228	1	LEVER, BREAK: 154037	Operates S100	6-4
O250	1	BUTTON, PIVOT: 151712	Adjustment pivot for A250	6-5
O251	1	SHAFT: 154663	Drives O254	6-5
O252	1	BEARING, BALL, ANNULAR: mfg. code No. 43991, part No. S-3R (code 59433 part No. 104827)	Bearing for O251	6-5
O253	1	SPACER: 154662	Spaces O254 from A250	6-5
O254	3	GEAR, HELICAL: 163440	Drives O836	6-5
O255	1	SPACER: 151126	Spaces O254 from O252	6-5
O256	1	RETAINER, PINION: 159287	Retains O258, O261 or O264 on E1201	6-5
O257	1	GEAR SET, 60 WPM: 161293	Drives O254 through O251	6-5
O258	1	PINION 60 WPM: 159278	Drives O259	6-5
O259	1	GEAR, 60 WPM: 159279	Drives O251	6-5
O260	1	GEAR SET, 75 WPM: 161294	Drives O254 through O251	6-5
O261	1	PINION, 75 WPM: 159281	Drives O262	6-5
O262	1	GEAR, 75 WPM: 159282	Drives O251	6-5
O263	1	GEAR SET, 100 WPM: 161295	Drives O254 through O251	6-5
O264	1	PINION, 100 WPM: 159284	Drives O265	6-5
O265	1	GEAR, 100 WPM: 159285	Drives O251	6-5
O275	1	BAR, SPACE: 151045	Operates O276	6-6
O276	1	LINK, SPACE CODE: 154021	Operates O403	6-6
O277	1	BAIL, SPACE BAR: 154117 (Continued. See O325)	Operates O276	6-6
S275	1	SWITCH, ROTARY SPST: 250 V ac, 3 amps, peak current 10 amps, mfg code No. 04009, part No. 1561-B (code 59433 part No. 161912) (Continued. See S700)	Power switch	6-6

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
XI276	1	LAMPHOLDER: Single contact bayonet miniature type with built-in 1.8K resistor, mfg. code No. 72619, part No. 95408H-9 (code 59433 part No. 161909)	Holds I276	6-6
XI279	1	LAMPHOLDER: Single contact bayonet miniature type socket, mfg. code No. 72619, part No. 95410-9 (code 59433 part No. 161954)	Holds I279	6-6
XI281	1	Same as XI279 (Continued. See XI850)	Holds I281	6-6
A325	1	BRACKET, FRONT: 154055	Supports A326, A328, A501, A703, A750 and H328)	6-7
A326	1	BRACKET, RIGHT: 154068	Supports O362, O409 and O421	6-7
A327	1	BRACKET, STOP: 154072	Controls movement of O413 through O420	6-7
A328	1	BRACKET, LEFT: 154069 (Continued. See A475)	Supports A327, O362 and O421	6-7
H325	1	Same as H119	Retains H328 on A325	6-7
H326	1	Same as H101	Retains H328 on A325	6-7
H327	1	Same as H115	Retains H328 on A325	6-7
H328	1	Same as H127	Clamps W750 to A325	6-7
H329	1	Same as H100	Retains A326 and A328 on A325	6-7
H330	1	Same as H101	Retains A326 and A328 on A325	6-7
H331	1	Same as H115	Retains A326 and A328 on A325	6-7
H332	1	RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-31 (code 59433 part No. 119654)	Retains O362 on A326 and A328	6-7
H333	1	Same as H100	Retains O409 and O410 on A326	6-7
H334	1	Same as H101	Retains O409 and O410 on A326	6-7
H335	1	SCREW, PIVOT: 154071	Pivot for O454	6-7
H336	1	WASHER, FLAT: 76081	Protects A326	6-7
H337	1	SCREW: 6-40 x 3/16 hex 151722	Retains O421 on A326 and A328	6-7
H338	1	Same as H101	Retains O421 on A326 and A328	6-7
H339	1	Same as H100	Retains A327 on A328	6-7
H340	1	Same as H101	Retains A327 on A328	6-7
H341	1	RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-14 (code 59433 part No. 119650) (Continued. See H450)	Retains O411 on O421	6-7
O325	1	KEYLEVER, ROW 2: 151292	Operates O373	6-7
O326	1	KEYLEVER, ROW 2: 151293	Operates O376	6-7
O327	1	KEYLEVER, ROW 2: 151294	Operates O379	6-7
O328	1	KEYLEVER, ROW 2: 151295	Operates O382	6-7
O329	1	KEYLEVER, ROW 2: 151296	Operates O385	6-7
O330	1	KEYLEVER, ROW 2: 151297	Operates O388	6-7
O331	1	KEYLEVER, ROW 2: 151298	Operates O391	6-7
O332	1	KEYLEVER, ROW 2: 151299	Operates O394	6-7
O333		KEYLEVER, ROW 2: 151300	Operates O397	
O334	1	KEYLEVER, ROW 2: 151301	Operates O400	6-7
O335	1	KEYLEVER, ROW 3: 151302	Operates O374	6-7
O336	1	KEYLEVER, ROW 3: 151303	Operates O377	6-7
O337	1	KEYLEVER, ROW 3: 151304	Operates O380	6-7
O338	1	KEYLEVER, ROW 3: 151305	Operates O383	6-7
O339	1	KEYLEVER, ROW 3: 151306	Operates O386	6-7
O340	1	KEYLEVER, ROW 3: 152009	Operates O389	6-7

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O341	1	KEYLEVER, ROW 3: 151308	Operates O392	6-7
O342	1	KEYLEVER, ROW 3: 151309	Operates O395	6-7
O343	1	KEYLEVER, ROW 3: 151310	Operates O398	6-7
O344	1	KEYLEVER, ROW 3: 151311	Operates O401	6-7
O345	1	KEYLEVER, ROW 4: 151312	Operates O372	6-7
O346	1	KEYLEVER, ROW 4: 151313	Operates O375	6-7
O347	1	KEYLEVER, ROW 4: 151314	Operates O378	6-7
O348	1	KEYLEVER, ROW 4: 151315	Operates O381	6-7
O349	1	KEYLEVER, ROW 4: 151316	Operates O384	6-7
O350	1	KEYLEVER, ROW 4: 151317	Operates O387	6-7
O351	1	KEYLEVER, ROW 4: 151318	Operates O390	6-7
O352	1	KEYLEVER, ROW 4: 151319	Operates O393	6-7
O353	1	KEYLEVER, ROW 4: 151320	Operates O396	6-7
O354	1	KEYLEVER, ROW 4: 151321	Operates O399	6-7
O355	1	KEYLEVER, ROW 4: 151322	Operates O402	6-7
O356	1	KEYLEVER, ROW 1: 161931	Operates O364	6-7
O357	1	KEYLEVER, ROW 1: 155843	Operates O369	6-7
O358	1	KEYLEVER, ROW 1: 155844	Operates O370	6-7
O359	1	KEYLEVER, ROW 1: 151290	Operates O365	6-7
O360	1	KEYLEVER, ROW 1: 151291	Operates O371	6-7
O361	1	SPRING: 151425	Applies tension to O364 through O402	6-7
O362	1	SHAFT, CODE BAR LEVER: 154016	Pivot for O364 through O402	6-7
O363	1	WEDGE, LOCKING: 154080	Locks O477 balls until operation completed	6-7
O364	1	LEVER, FUNCTION: 154123	Operates O227	6-7
O365	1	Same as O364	Operates O228	6-7
O366	1	Same as O364	Sets up code for vacant key position	6-7
O367	1	Same as O364	Sets up code for vacant key position	6-7
O368	1	Same as O364	Sets up code for vacant key position	6-7
O369	1	LEVER, FUNCTION: 154122	Sets up code for KBD lock	6-7
O370	1	LEVER, FUNCTION: 154124	Sets up code for KBD UNLK	6-7
O371	1	Same as O370	Sets up code for RPT	6-7
O372	1	LEVER, CODE BAR: 154120	Sets up code for FIGS shift	6-7
O373	1	Same as O372	Sets up code for 1 and Q	6-7
O374	1	Same as O372	Sets up code for — and A	6-7
O375	1	Same as O372	Sets up code for " and Z	6-7
O376	1	Same as O372	Sets up code for 2 and W	6-7
O377	1	Same as O372	Sets up code for BELL and S	6-7
O378	1	Same as O372	Sets up code for 1 and X	6-7
O379	1	Same as O372	Sets up code for 3 and E	6-7
O380	1	Same as O372	Sets up code for $ and 0	6-7
O381	1	Same as O372	Sets up code for : and c	6-7
O382	1	Same as O372	Sets up code for 4 and R	6-7
O383	1	Same as O372	Sets up code for ! and F	6-7
O384	1	Same as O372	Sets up code for ; and V	6-7
O385	1	Same as O372	Sets up code for 5 and T	6-7
O386	1	Same as O372	Sets up code for & and G	6-7
O387	1	Same as O372	Sets up code for ? and B	6-7
O388	1	Same as O372	Sets up code for 6 and Y	6-7
O389	1	Same as O372	Sets up code for blank and H	6-7
O390	1	Same as O372	Sets up code for ' and N	6-7

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O391	1	Same as O372	Sets up code for 7 and U	6-7
O392	1	Same as O372	Sets up code for ' and J	6-7
O393	1	Same as O372	Sets up code for . and M	6-7
O394	1	Same as O372	Sets up code for 8 and I	6-7
O395	1	Same as O372	Sets up code for (and K	6-7
O396	1	Same as O372	Sets up code for LTRS shift	6-7
O397	1	Same as O372	Sets up code for 9 and 0	6-7
O398	1	Same as O372	Sets up code for) and L	6-7
O399	1	Same as O372 (Continued. See O400)	Sets up code for LINE FEED	6-7
A475	1	CHANNEL ASSY: 154175 (Continued. See A500)	With O478 forms channel for O477 and guides O364 through O402	6-9
H450	1	SCREW: 4-40 x 3/16 hex 151152	Retains O450 on O451	6-8
H451	1	WASHER, LOCK: 110743	Retains O450 on O451	6-8
H452	1	WASHER, FLAT: 125011	Retains O450 on O451	6-8
H453	1	SCREW: 4-40 3/16 hex: 152893	Retains O451 on O454	6-8
H454	1	Same as H451	Retains O451 on O454	6-8
H455	1	SCREW: 4-40 x 11/64 fil 139752	Retains O452 on O454	6-8
H456	1	Same as H451	Retains O452 on O454	6-8
H457	1	POST: 156574	Anchor for O408	6-8
H458	1	Same as H455	Retains O453 on O454	6-8
H459	1	Same as H451	Retains O453 on O454	6-8
H475	1	SCREW, ADJUSTING: 6-40 hex 151843	Adjusts spacing and retains O477 in channel	6-9
H476	1	Same as H129	Locks H475 in position	6-9
H477	1	Same as H453	Retains O476 and O478 on A475	6-9
H478	1	Same as H125	Retains O476 and O478 on A475	6-9
H479		WASHER, FLAT: 151080 (Continued. See H500)	Spaces O478 from A475	
O400	1	Same as O372	Sets up code for Ø and P	6-7
O401	1	Same as O372	Sets up code for CAR RET	6-7
O402	1	Same as O372	Sets up code for BLANK	6-7
O403	1	LEVER, CODE BAR: 154121	Sets up code for space	6-7
O404	1	WASHER, FELT: 150991	Lubricates O364 through O402	6-7
O405	1	Same as O225	Applies tension to O412	6-7
O406	1	SPRING: 2415	Applies tension to O413 through O419	6-7
O407	1	SPRING: 3870	Applies tension to O420	6-7
O408	1	SPRING: 110437	Applies tension to O454	6-7
O409	1	BRACKET, SPRING: 154013	Anchors O405, O406 and O407	6-7
O410	1	GUIDE, CODE BAR: 154008	Guides O412 through O420	6-7
O411	1	LATCH ASSEMBLY, LOCK: 154023	Latches O420	6-7
O412	3	BAR, CLUTCH: 154129	Operates O644	6-7
O413	1	BAR, CODE #1: 154001	Operates O589	6-7
O414	1	BAR, CODE #2: 154002	Operates O590	6-7
O415	1	BAR, CODE #3: 154003	Operates O592	6-7
O416	1	BAR, CODE #4: 154004	Operates O593	6-7
O417	1	BAR, CODE #5: 154005	Operates O594	6-7
O418	1	BAR, CARRIAGE RETURN CODE: 158015	Operates O711	6-7
O419	1	BAR, CHARACTER COUNTER CODE: 158107	Operates O713	6-7
O420	3	BAR, LOCKING: 154052	Latches O420	6-7
O421	1	GUIDE, CODE LEVER: 154070	Guides O364 through O402	6-7
O450	1	EXTENSION: 154238	Latches O633	6-8
O451	1	EXTENSION: 154239	Mounts O450 and roller for O503	6-8

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O452	1	BLADE, REAR: 154184	Limits rotation of O454	6-8
O453	1	BLADE, FRONT: 154183	Operates O243	6-8
O454	1	BAIL: 154179	Mounts O451, O452, O453 and H457	6-8
O475	1	RETAINER, CLAMP: 111343	Retains O476 on A475	6-9
O476	1	RETAINER, WEDGE: 154086	Retains O363 on O372 through O403 and guides O372 through O403	6-9
O477	1	BALL, LOCK: 104710	Prevents two keys from operating at once	6-9
O478	1	RETAINER, BALL: 154082 (Continued. See O500)	Supports O477	6-9
A500	1	PLATE, REAR: 154101	Supports O563	6-10
A501	1	FRAME: 154200	Supports signal generator mechanism	6-10
A575	1	PLATE, DETENT: 154036	Supports O576 and O577 and limits movement of O576	6-12
A576	1	PLATE, FRONT: 154009 (Continued. See A625)	Supports signal generator front plate mechanism	6-12
H500	1	Same as H111	Retains A501 on A325	6-10
H501	1	Same as H101	Retains A501 on A325	6-10
H502	1	SCREW: 10-32 x 3/4 hex 74805	Retains A501 on A113	6-10
H503	1	Same as H117	Retains A501 on A113	6-10
H504	1	Same as H129	Retains O637 on A501	6-10
H505	1	Same as H101	Retains O637 on A501	6-10
H506	1	Same as H259	Retains O563 on A500 and A501	6-10
H507	1	Same as H117	Retains O563 on A500 and A501	6-10
H508	1	Same as H119	Retains A500 on A501	6-10
H509		Same as H101	Retains A500 on A501	
H510	1	SCREW: 6-40 x 1/2 hex 151442	Retains O501, O502, O503 and H512 on A501	6-10
H511	1	Same as H101	Retains O501, O502, O503 and H512 on A501	6-10
H512	1	WASHER, FLAT: 76099	Spaces O503 from A501	6-10
H513	1	Same as H119	Retains A576 on A501	6-10
H514	1	Same as H101	Retains A576 on A501	6-10
H515	1	Same as H129	Retains O510 on A501	6-10
H516	1	Same as H101	Retains O510 on A501	6-10
H517	1	Same as H115	Retains O510 on A501	6-10
H518	1	RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-18 (code 59433 part No. 119652)	Retains O505, O506, O507 and O508 on O510	6-10
H519	1	Same as H450	Retains O505 on O508	6-10
H520	1	Same as H451	Retains O505 on O508	6-10
H521	1	Same as H452	Retains O505 on O508	6-10
H522	1	STUD: 117416	Restricts movement of O507 and O508	6-10
H550	1	SCREW: 4-40 x 3/16 hex 151737	Retains O555 on O557	6-11
H551	1	Same as H451	Retains O555 on O557	6-11
H552	1	Same as H550	Retains O558 on O557	6-11
H553	1	Same as H451	Retains O558 on O557	6-11
H554	1	WASHER, FLAT: 42823	Retains O558 on O557	6-11
H575	1	Same as H107	Retains O578 on O580	6-12

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H576	1	RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-9 (code 59433 Part No. 119648)	Retains O576 and O577 on A575	6-12
H577	1	WASHER, FLAT: 156509	Spaces O578 from O580	6-12
H578	1	Same as H129	Retains O580, O581, O582 and O583 on A576	6-12
H579	1	Same as H101	Retains O580, O581, O582 and O583 on A576	6-12
H580	1	Same as H337	Retains O597 and O598 on A576	6-12
H581	1	POST, SPRING: 154047	Retains O597 on A576 and anchors O586	6-12
H582	1	SCREW: 6-40 x 1/4 hex 1020	Retains A575 on A576	6-12
H583	1	Same as H101 (Continued. See H625)	Retains A575, O597 and O598 on A576	6-12
O500	1	SPRING: 4702	Applies tension to O503	6-10
O501	1	BUSHING, ECCENTRIC: 154096	Pivot for O503	6-10
O502	1	Same as O404	Lubricates O502 and O503	6-10
O503	1	LEVER, LATCH: 154236	Operates O629	6-10
O504	1	Same as O407	Applies tension to O507	6-10
O505	1	LEVER, CLUTCH STOP: 154034	Engages O560	6-10
O506	1	WASHER, FELT: 74755	Lubricates O510	6-10
O507	1	LEVER, CLUTCH LATCH: 154033	Releases O505	6-10
O508	3	BAIL, CLUTCH TRIP: 154053	Engages O412 to release O505	6-10
O509	1	WASHER, FELT: 115122	Lubricate O510	6-10
O510	1	POST: 154046	Pivot for O507 and O508	6-10
O550	1	WASHER, FELT: 154138	Lubricates O551, O552, O556 and O563	6-11
O551	1	WASHER, SPACER: 154083	Spaces O556 from A501	6-11
O552	1	FOLLOWER, ECCENTRIC: 154019	Operates O644	6-11
O553	1	SPRING: 151728	Applies tension to O558	6-11
O554	1	SPRING: 150421	Applies tension to O560 and O561	6-11
O555	1	WICK, OILER: 156503	Lubricates O563	6-11
O556	3	CAM, SIGNAL GENERATOR: 154154	Operates O552, O587 and O589 through O595	6-11
O557	1	DISC ASSY: 154694	Drives O556	6-11
O558	1	DISC, ADJUSTING: 150013	Drives O557	6-11
O559	1	WICK, OILER: 150029	Lubricates keyboard clutch	6-11
O560	1	LEVER, SHOE RELEASE: 150026	Engages and disengages O561 and O562	6-11
O561	1	SHOE, PRIMARY: 150044	Permits O562 to drive O557 when in engaged position	6-11
O562	1	SHOE, SECONDARY: 150043	Drives O557	6-11
O563	1	SHAFT, SIGNAL GENERATOR: 154030	Mounts O556 and O565	6-11
O564	1	WICK, OILER: 154029	Lubricates O563	6-11
O565	3	SLEEVE ASSY: 154032	Operate keyboard clutch when O561 and O562 are in engaged position	6-11
O566	1	WASHER, FELT: 120824	Lubricates O563	6-11
O575	1	SPRING, DETENT: 80581	Applies tension to O576	6-12
O576	1	LATCH: 156516	Holds O578 in position	6-12
O577	1	WASHER, FELT: 108370	Lubricates O576	6-12
O578	1	BAIL, TRANSFER: 154010	Holds O579 and operates O679	6-12
O579	1	WICK, OILER: 154217	Lubricates O589 through O595	6-12
O580	1	POST, TRANSFER BAIL: 154105	Pivot for O578	6-12

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O581	1	POST, STOP: 154041	Limits movement of O589 through O595	6-12
O582	1	POST, GUIDE: 154014	Pivot and guide for O589 through O595 and guide for O587	6-12
O583	1	POST, LOCKING BAIL: 154018	Guides O587	6-12
O584	1	WASHER, FELT: 161346	Lubricates O583	6-12
O585	1	WASHER, FLET: 150923	Lubricates O583	6-12
O586	1	SPRING: 70388	Applies tension to O587	6-12
O587	1	BAIL, LOCKING: 154140	Locks O589 through O595 in position	6-12
O588	1	SPRING: 154178	Applies tension to O589 through O595	6-12
O589	1	LEVER, SELECTOR: 154040	Operates O578	6-12
O590	1	Same as O589	Operates O578	6-12
O591	1	Same as O589	Operates O578	6-12
O592	1	Same as O589	Operates O578	6-12
O593	1	Same as O589	Operates O578	6-12
O594	1	Same as O589	Operates O578	6-12
O595	1	Same as O589	Operates O578	6-12
O596	1	WICK, OILER: 156630	Lubricates O556	6-12
O597	1	GUIDE, SELECTOR LEVER: 154011	Guides O589 through O595	6-12
O598	1	GUIDE, SELECTOR LEVER: 154012	Guides O589 through O595 and anchors O588	6-12
O599	1	WICK, FELT: 120870 (Continued. See O625)	Lubricates O587	6-12
A625	1	PLATE, SIGNAL GENERATOR, REAR: 154102	Supports signal generator mechanism	6-13
A626	3	PLATE: 163813	Pivot for O647	6-13
A675	1	COVER, CONTACT BOX: 154131	Cover for A677	6-14
A676	1	BASE: 154194	Mounting base for signal generator contact mechanism	6-14
A677	3	BOX, CONTACT: 154130	Container for contact mechanism	6-14
A678	1	BRACKET: 154056 (Continued. See A700)	Supports A677	6-14
E675	1	WASHER, INSULATING: 151182	Insulates O678 from H678	6-14
E676	1	BUSHING, INSULATING: 156663	Insulates O678 from H677	6-14
E677	1	TERMINAL: 154042	Terminal for conductors from W175 and Z675	6-14
E678	1	SCREW, CONTACT: 154045	Sends spacing and marking impulses by making and breaking with O678 and retains E679 on A676	6-14
E679	1	TERMINAL, LUG: 154043	Terminal for conductor from W175 and Z675	6-14
E680	1	STRIP, INSULATOR: 154189 (Continued. See E750)	Insulates contact mechanism from A677	6-14
H625	1	Same as H129	Retains O582, O583, O627, O628 and O637 to A625 and O641 to O644	6-13
H626	1	Same as H101	Retains O582, O583, O627, O628 and O637 to A625 and O641 to O644	6-13
H627	1	Same as H115	Retains O284 on A625	6-13
H628	1	Same as H107	Retains O629 and O630 on O631	6-13

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H629	1	NUT: 4-40 hex 86742	Retains O633 on O634	6-13
H630	1	SCREW: 4-40 shoulder 151036	Retains O633 on O634	6-13
H631	1	Same as H190	Retains O645, H633, O634 and O635 on A625	6-13
H632	1	SCREW: 6-40 shoulder 154051	Pivot for O634, support for O635 and H633 and retains O645 on A625	6-13
H633	1	Same as H297	Spaces O634 from A625	6-13
H634	1	WASHER, FELT: 90679	Lubricates O637	6-13
H635	1	WASHER, FLAT: 111767	Spaces O644 from H625	6-13
H636	1	NUT: 6-40 hex 151427	Retains O642 on O644	6-13
H637	1	Same as H101	Retains O642 on O644	6-13
H638	3	SCREW: 4-40 x 7/8 fil 151731	Regulates movement of O633	6-13
H639	3	Same as H124	Locks H638 in position	6-13
H640	3	SCREW: 4-40 x 3/8 fil 151686	Stop for O645	6-13
H641	3	Same as H124	Locks H640 to A626	6-13
H642	3	Same as H576	Retains O647 on A626	6-13
H643	3	SCREW: 6-40 x .188 151692	Retains A626 on A625	6-13
H644	3	Same as H101	Retains A626 on A625	6-13
H645	3	Same as H450	Retains A626 on A625	6-13
H646	3	Same as H451	Retains A626 on A625	6-13
H647	1	WASHER, FLAT: 8449	Retains O642 on O644	6-13
H675	1	Same as H124	Retains A675 on A677	6-14
H676	1	Same as H125	Retains A675 on A677	6-14
H677	1	SCREW: 2-56 x 9/32 fil 125126	Retains O678 on O679	6-14
H678	1	WASHER, LOCK: Steel, mfg. code No. 78189, part No. 1202 (code 59433 part No. 90791)	Retains O678 on O679	6-14
H679	1	SCREW: 4-40 x 1/8 fil 1293	Retains terminal of W175 and Z675 on E679	6-14
H680	1	Same as H451	Retains terminal of W175 and Z675 on E679	6-14
H681	1	Same as H679	Retains terminal of W175 and Z675 to Z677	6-14
H682	1	Same as H451	Retains terminal of W175 and Z675 to E677	6-14
H683	1	NUT: 4-40 hex 151880	Retains A676 on A677 and A677 on A678	6-14
H684	1	Same as H638	Retains A676 on A677 and H677 on A678	6-14
H685	1	Same as H125	Retains A676 on A677 and A677 on A678	6-14
H686	1	Same as H640	Retains A676 on A677 and A677 on A678	6-14
H687	1	Same as H125	Retains A676 on A677 and A677 on A678	6-14
H688	1	Same as H450	Retains A677 on A678	6-14
H689	1	Same as H125	Retains A677 on A678	6-14
H690	1	Same as H105	Retains A678 on A576	6-14
H691	1	Same as H101	Retains A678 on A576	6-14
H692	1	Same as H115 (Continued. See H700)	Retains A678 on A576	6-14
K675	2	BOX, SIGNAL GENERATOR CONTACT: 154165 (Continued. See K1200)	Sets up marking and spacing elements in signal line	6-14
O625	1	SPRING: 154215	Applies tension to O644	6-13
O626	1	SPRING: 154191	Applies tension O629	6-13

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O627	1	POST, SPRING: 154089	Anchors O625	6-13
O628	1	GUIDE, NON-REPEAT LEVER: 154091	Guides O633	6-13
O629	1	LATCH, RESET BAIL: 158268	Retains O644 in latched position	6-13
O630	1	Same as O509	Lubricates O631	6-13
O631	1	POST, PIVOT: 154079	Pivot for O629	6-13
O632	1	SPRING: 7603	Applies tension to O633	6-13
O633	1	LEVER, NON-REPEAT: 154237	Operates O634	6-13
O634	1	PAWL, NON-REPEAT: 154027	Operates O503	6-13
O635	1	Same as O585	Lubricates H632	6-13
O636	1	WASHER, FELT: 150990	Lubricates O637	6-13
O637	1	POST: 154015	Pivot for O644	6-13
O638	1	WASHER, PLASTIC: 159334	Spaces O639 on O641	6-13
O639	1	BEARING, ROLLER, NEEDLE: mfg. code No. 60380, part No. B-2-1/2-4 x (code 59433 part No. 154084)	Bearing for O629	6-13
O640	1	WASHER, PLASTIC: 159327	Spaces O637 on O641	6-13
O641	1	STUD: 154241	Shaft for O639	6-13
O642	1	STUD, ECCENTRIC: 154017	Links O552 to O644	6-13
O644	1	BAIL, CODE BAR: 154240	Operates O412 through O419 and O633	6-13
O645	1	PLATE, ADJUSTMENT: 154386	Adjusts position of O634	6-13
O646	3	SPRING: 76422	Applies tension to O647	6-13
O647	3	LEVER: 163814	Blocks operation of O454	6-13
O675	1	SPRING: 86304	Applies tension to O679	6-14
O676	1	SPRING: 151820	Applies tension to E677 and O677	6-14
O677	1	LINK, TOGGLE: 151180	Holds O678 in position	6-14
O678	1	TOGGLE, CONTACT: 151171	Sends spacing and marking impulses by making and breaking with E678	6-14
O679	1	LINK, DRIVE: 156644	Operates O678	6-14
O680	1	ECCENTRIC: 154095 (Continued. See O700)	Adjusts position of A678	6-14
Z675	3	CAPACITOR-RESISTOR: 1, 0.1 mfd. ± 20%, 300 V dc working, 1,470 ohms, 1/2 w (code 59433 part No. 154166) (Continued. See Z5150)	Signal line radio interference suppressor	6-14
A700	1	BAFFLE: 158019	Cover for character counter indicator mechanism	6-15
A701	1	BRACKET: 158046	Mounts I700	6-15
A702	1	BRACKET: 158021	Mounts S700	6-15
A703	1	BRACKET, CHARACTER COUNTER: 155969	Supports character counting mechanism	6-15
A750	1	BRACKET: 155957	Supports backspace button mechanism	6-16
A775	1	GUARD, GEAR: 161900	Guards O785 and O786	6-17
A776	1	GUARD, GEAR: 161901	Guards O780	6-17
A777	1	BRACKET, MACHINED: 161951 (Continued. See A850)	Mounts reperforator, tape container, A775, A776, O775, O776 and O778	6-17
E750	1	INSULATOR: 155994	Insulates S750	6-16
E751	1	Same as E179 (Continued. See E850)	W750 terminal	6-16
H700	1	Same as H119	Retains A703 on A113 and A325	6-15
H701	1	Same as H101	Retains A703 on A113 and A325	6-15

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H702	1	Same as H115	Retains A703 on A113 and A325	6-15
H703	1	SCREW: 4-40 x 21/64 hex 153799	Retains A700 and I700 on A703	6-15
H704	1	Same as H451	Retains A700 and I700 on A703	6-15
H705	1	WASHER, FLAT: 150411	Spaces A700 from A701	6-15
H706	1	Same as H455	Retains I700 on A701	6-15
H707	1	Same as H451	Retains I700 on A701	6-15
H708	1	Same as H683	Retains I700 on A701	6-15
H709	1	Same as H129	Retains H712 and O701 on A703	6-15
H710	1	Same as H101	Retains H712 and O701 on A703	6-15
H711	1	Same as H115	Retains H712 and O701 on A703	6-15
H712	1	STUD: 158045	Shaft for O701 and retains O701 on A703	6-15
H713	1	Same as H225	Retains O705 and O706 on A703	6-15
H714		WASHER, FLAT: 76081 Same as H336	Retains O705 and O706 on A703	6-15
H715	1	Same as H276	Retains O702 through O705 on O706	6-15
H716	1	Same as H148	Retains O705 on O706	6-15
H717	1	Same as H451	Retains O705 on O706	6-15
H718	1	Same as H190	Retains O710 on A703	6-15
H719	1	Same as H101	Retains O710 on A703	6-15
H720	1	SCREW, SHOULDER: 6-40, 128271	Retains O708 on A703 and acts as pivot for O708	6-15
H721	1	Same as H190	Retains O710 on O713	6-15
H722	1	Same as H101	Retains O710 on O713	6-15
H723	1	Same as H720	Retains O710 on O713 and acts as pivot for O710	6-15
H724	1	RING, RETAINING: Steel, mfg code No. 79136, part No. 5133-18 (code 59433 part No. 119652) Same as H518	Retains O711 and O713 on A703	6-15
H725	1	Same as H190	Retains O715 on A703	6-15
H726	1	WASHER, FLAT: 2481	Retains O715 on A703	6-15
H727	1	SCREW, SHOULDER: 6-40, 97393	Retains O715 on A703	6-15
H728	1	Same as H190	Retains O716 on O715	6-15
H729	1	WASHER, LOCK: Steel, mfg code No. 77252 (code 59433 part No. 124177)	Retains O716 on O715	6-15
H730	1	SCREW, SHOULDER: 6-40, 115141	Retains O716 to O715 and acts as pivot for O716	6-15
H731	1	Same as H190	Retains O718 on A703	6-15
H732	1	SCREW, SHOULDER: 6-40, 1118	Retains O718 on A703 and acts as pivot for O718	6-15
H733	1	Same as H119	Retains H735 and O720 on A703	6-15
H734	1	Same as H101	Retains H735 and O720 on A703	6-15
H735	1	WASHER, FLAT: 155968	Spaces O719 from O720	6-15
H736	1	SCREW: 6-40 x 5/32 hex 119662	Retains O720 on A703	6-15
H737	1	Same as H729	Retains O720 on A703	6-15
H738	1	SCREW: 4-40 x 5/16 fil 151685	Retains S700 on A702	6-15
H739	1	Same as H451	Retains S700 on A702	6-15
H740	1	WASHER, FLAT: 114876	Retains S700 on A702	6-15
H741	1	Same as H148	Retains A702 on A703	6-15
H742	1	Same as H451	Retains A702 on A703	6-15
H743	1	WASHER, FLAT: 104807	Retains A702 on A703	6-15
H750	1	PIN, COTTER: 1/32 x 1/4 76964	Retains O752 on O753	6-16
H751	1	PIN: 155952	Retains O750 on O752	6-16
H752	1	Same as H576	Retains O753 and O754 on O755	6-16
H753	1	Same as H451	Retains O755 on A750	6-16

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H754	1	Same as H450	Retains A750 on A325	6-16
H755	1	Same as H451	Retains A750 on A325	6-16
H756	1	Same as H743	Retains A750 on A325	6-16
H757	1	SCREW: 2-56 x 1/2 104991	Retains E750 and S750 on A750	6-16
H758	1	NUT: 2-56 hex 112627	Retains E750 and S750 on A750	6-16
H759	1	Same as H203	Retains E750 and S750 on A750	6-16
H760	1	WASHER, FLAT: 3624	Retains E750 and S750 on A750	6-16
H775	1	Same as H100	Retains A775 on A777	6-17
H776	1	Same as H101	Retains A775 on A777	6-17
H777	1	Same as H100	Retains A776 on A777	6-17
H778	1	Same as H101	Retains A776 on A777	6-17
H779	1	Same as H119	Retains O775 on A777	6-17
H780	1	Same as H101	Retains O775 on A777	6-17
H781	1	WASHER, FLAT: 76461	Retains O775 on A777	6-17
H782	1	Same as H119	Retains O776 on A777	6-17
H783	1	Same as H101	Retains O776 on A777	6-17
H784	1	Same as H781	Retains O776 on A777	6-17
H785	1	Same as H100	Retains O777 on A777	6-17
H786	1	Same as H101	Retains O777 on A777	6-17
H787	1	SCREW: 6-40 x 5/8 hex 151695	Retains O779 on O780 and O780 on O781	6-17
H788	1	Same as H116	Retains O780 and O781 on O787	6-17
H789	1	Same as H117	Retains O780 and O781 on O787	6-17
H790	1	Same as H118	Retains O780 and O781 on O787	6-17
H791	1	Same as H119	Retains O781 on O787	6-17
H792	1	Same as H101	Retains O781 on O787	6-17
H793	1	Same as H510	Retains O783 on A777	6-17
H794	1	Same as H190	Retains O783 on A777	6-17
H795	1	Same as H297	Retains O783 on A777	6-17
H796	1	Same as H101	Retains O783 on A777	6-17
H797	1	Same as H119	Retains O791 on A777	6-17
H798	1	Same as H101 (Continued. See H800)	Retains O791 on A777	6-17
I700	1	SCALE, COUNTER: 158047 (Continued. See I850)	Perforation counting indicator	6-15
O700	1	SPRING: 159340	Applies tension to W700	6-15
O701	1	PULLEY: 158051	W701 pulley	6-15
O702	1	WASHER, SPRING: 155967	Retains O703, O704, and O705 on O706	6-15
O703	1	CLAMP: 158053	Anchors W700	6-15
O704	1	CAM, SWITCH: 158052	Operates S700	6-15
O705	1	DRUM: 155966	Moves W701	6-15
O706	1	RATCHET: 155965	Moves W701 through O705	6-15
O707	1	SPRING: 22746	Applies tension to O708	6-15
O708	1	LEVER, RATCHET LATCH: 158042	Latches O706	6-15
O709	1	Same as O707	Applies tension to O710	6-15
O710	1	LEVER, RATCHET DRIVE: 158040	Drives O706	6-15
O711	1	BAIL, RESET: 158032	Operates O715	6-15
O712	1	SPACER: 158033	Spaces O711 from O713	6-15
O713	1	BAIL, DRIVE LEVER FEED: 158031	Operates O710	6-15
O714	1	SPRING: 150507	Applies tension to O716	6-15
O715	1	LEVER, RESET: 158036	Operates O716	6-15
O716	1	LEVER: 158038	Operates O708 and O710	6-15
O717	1	SPRING: 152839	Applies tension to O718	6-15
O718	1	LATCH: 155960	Prevents O706 bounce	6-15

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O719	1	BUSHING, ECCENTRIC: 158147	Adjusts O720	6-15
O720	1	LEVER, STOP: 155964	Limits return of O706	6-15
O750	1	KEYTOP: 155959	Operates O752	6-16
O751	1	SPRING: 125247	Applies tension to O750	6-16
O752	1	LEVER, KEY: 155958	Operates O753	6-16
O753	1	BAIL: 155956	Operates S750	6-16
O754		SPRING, TORSION: 155951	Applies tension to O756	
O755	1	STUD: 155953	Supports O753 and O754	6-16
O756	1	KEYTOP ASSY: 155991	Operates O753	6-16
O775	1	GUIDE, TAPE: 161926	Guides tape to reperforator	6-17
O776	1	GUIDE, TAPE: 161925	Guides tape to reperforator	6-17
O777	1	PLATE: 161902	Retains O778 on A777	6-17
O778	1	GUIDE, TAPE: 161927	Guides tape to reperforator	6-17
O779	1	WASHER, SPRING: 161831	Retains O780 on O781	6-17
O780	1	GEAR, HELICAL: 161896	Drives O789	6-17
O781	1	HUB: 161898	Drives O780	6-17
O782	1	SPACER: 161899	Spaces O781 from O783	6-17
O783	1	BEARING, BALL, ANNULAR: mfg. code 24617, part No. 77-R-6 (code 59433 part No. 151633)	O787 bearing	6-17
O784	1	Same as O783	O787 bearing	6-17
O785	3	GEAR, HELICAL: 150441	Drives O565	6-17
O786	3	GEAR, HELICAL: 163590	Drives O787	6-17
O787	1	SHAFT: 161895	Drives O780 through O781	6-17
O788	1	Same as O779	Retains O789 on O790	6-17
O789	1	GEAR, HELICAL: 161897	Drives O1394 through O790	6-17
O790	1	Same as O781	Drives O1394	6-17
O791	1	CLAMP, BEARING: 158745 (Continued. See O850)	Retains O784 on A777	6-17
S700	1	SWITCH, LEAF: 158050	Operates I279	6-15
S750	1	SWITCH: 155954 (Continued. See S850)	Actuates backspace mechanism	6-16
W700	1	CORD, RESET: 158056	Operates O703	6-15
W701	1	CORD, INDICATOR: 158054	Indicates character count on I700	6-15
W750	1	CABLE ASSY: 155992 (Continued. See W850)	Connects S750 to TB175	6-16
A850	4	BRACKET, MOUNTING: 159589	Mounts TB850, TB851 and P851	6-18
A851	4	BRACKET, SWITCH: 162185	Mounts S850 and S851	6-18
A852	4	PLATE, INSTRUCTION: 120175	S850 instruction plate	6-18
A853	4	BRACKET, MOUNTING: 162187	Mounts XI850	6-18
A854	4	BASE PLATE, UPPER: 162184	Support for motor, reperforator and base mechanisms	6-18
A855	4	BASE PLATE, LOWER: 162181 (Continued. See A925)	Mounts A854	6-18
C850	4	Same as C175 (Continued. See C1200)	Provides d.c. pulse for L2150	6-18
CR850	4	Same as CR175	Furnishes d.c. current to tape feed-out circuit	6-18
E850	4	TERMINAL, LUG: 82474	Terminal for W850	6-18
E851	4	SAME AS E850	Terminal for W850	6-18
E852	4	SLEEVE, INSULATING: 155750	Insulates W850	6-18
E853	4	Same as E178	Insulates W850	6-18
E854	4	Same as E852	Insulates C850 terminals	6-18
E855	4	Same as E175	Insulates TB850 terminals	6-18
E856	4	Same as E176	Jumper strap for TB850	6-18

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
E857	4	Same as E176	Jumper strap for TB850	6-18
E858	4	Same as E175	Insulates TB850 from A850	6-18
E859	4	Same as E175	Insulates TB851 terminals	6-18
E860	4	Same as E175	Insulates TB851 from A850	6-18
E862	4	Same as E179	W851 terminal	6-18
E864	4	SLEEVE, INSULATING: 155753	Insulates S851 terminals	6-18
E865	4	TERMINAL, LUG: 82474	W852 terminal	6-18
E866	4	Same as E865	W853 terminal	6-18
E867	4	TERMINAL, LUG: 151626 (Continued. See E925)	W854 terminal	6-18
H800	1	Same as H116	Retains O787 in O784	6-17
H801	1	Same as H117	Retains O787 in O784	6-17
H802	1	Same as H118	Retains O787 in O784	6-17
H803	1	SCREW: 6-40 x 9/16 fil 151693	Retains O785 on O786	6-17
H804	1	Same as H101	Retains O785 on O786	6-17
H805	1	SCREW: 10-32 x 29/64 fil 151690	Retains O786 on O787	6-17
H806	1	Same as H787	Retains O788 on O789 and O789 on O790	6-17
H807	1	Same as H119	Retains O790 on O1394	6-17
H808	1	Same as H101	Retains O790 on O1394	6-17
H809	1	SCREW: 1/4-32 x 5/8 hex 76278	Mounts reperforator on A777	6-17
H810	1	WASHER, LOCK: 2449	Mounts reperforator on A777	6-17
H811	1	WASHER, FLAT: 2846	Mounts reperforator on A777	6-17
H812	1	SCREW: 1/4-32 x 7/8 hex 79890	Retains A777 on A113	6-17
H813	1	WASHER, LOCK: 2322	Retains A777 on A113	6-17
H814	1	Same as H811	Retains A777 on A113	6-17
H850	4	Same as H148	Retains P851 on A850	6-18
H851	4	Same as H125	Retains P851 on A850	6-18
H852	4	NUT: 15/32-32 ring 91684	Retains S850 on A851	6-18
H853	4	NUT: 15/32-32 hex 91683	Retains S850 on A851	6-18
H854	4	Same as H119	Retains H858 on A854	6-18
H855	4	Same as H129	Retains H858 on A854	6-18
H856	4	Same as H101	Retains H858 on A854	6-18
H857	4	Same as H115	Retains H858 on A854	6-18
H858	4	Same as H188	Retains C850 on A854	6-18
H859	4	Same as H100	Retains E855 and E859 on H861	6-18
H860	4	Same as H101	Retains E855 and E859 on H861	6-18
H861	4 4	Same as H102	Spaces E855 from TB850 and E859 from TB851	6-18
H862	4 4	Same as H101	Retains H861 on TB850 and TB851	6-18
H863	4	Same as H103	Terminal screw for TB850	6-18
H864	4	Same as H104	Holds H863 to TB850	6-18
H865	4	Same as H103	Terminal screw for TB851	6-18
H866	4	Same as H104	Retains H865 on TB851	6-18
H867	4	Same as H119	Retains H870 on A854	6-18
H868	4	Same as H101	Retains H870 on A854	6-18
H869	4	Same as H115	Retains H870 on A854	6-18
H870	4	Same as H132	Retains W850 on A854	6-18
H871	4	Same as H186	Retains A850 on A854	6-18
H872	4	Same as H117	Retains A850 on A854	6-18
H873	4	SCREW: 6-40 x 5/16 fil 151658	Retains O852 on A854	6-18
H874	4	Same as H101	Retains O852 on A854	6-18
H875	4	Same as H119	Retains W851 on A853	6-18
H876	4	Same as H129	Retains W851 on A853	6-18

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H877	4	Same as H101	Retains W851 on A853	6-18
H878	4	Same as H115	Retains W851 on A853	6-18
H879	4	Same as H852	Retains S851 on A851	6-18
H880	4	Same as H100	Retains A851 on A854	6-18
H881	4	Same as H101	Retains A851 on A854	6-18
H882	4	SCREW: 1/4-32 x 5/16 hex 156936	Retains motor on O853 and O854	6-18
H883	4	Same as H810	Retains motor on O853 and O854	6-18
H884	4	SCREW: 1/4-32 x 11/32 hex 104124	Retains O854 and O855 on A854	6-18
H885	4	Same as H810	Retains O854 and O855 on A854	6-18
H886	4	NUT: 1/4-32 hex 125224	Retains O853 on H888	6-18
H887	4	Same as H810	Retains O853 on H888	6-18
H888	4	STUD: 156334	Retains O853 on O855	6-18
H889	4	Same as H337	Retains A853 on A854	6-18
H890	4	Same as H101	Retains A853 on A854	6-18
H891	4	SCREW: 10-32 x 9/16 hex 156887	Retains reperforator on A854	6-18
H892	4	Same as H117	Retains reperforator on A854	6-18
H893	4	Same as H118	Retains reperforator on A854	6-18
H894	4	SCREW: 8-32 x 1-1/4 fil 6565	Ground screw for W854 and retains O857 on A855	6-18
H895	4	NUT: 8-32 special 142665	Retains O857 on A855	6-18
H896	4	Same as H118	Retains O857 on A855	6-18
H897	4	WASHER, LOCK: 3646	Retains O857 on A855	6-18
H898	4	WASHER, FLAT: 156337	Retains O857 on A855	6-18
H899	4	SCREW: 10-32 x 1/2 hex 159604 (Continued. See H900)	Retains A1051 on A855	6-18
I850	4	LAMP, INCANDESCENT: 115-125 V, 6 watt 6 CP, clear bulb, double contact bayonet base, mfg. code No. 24446, part No. 656 DC-125 (code 59433 part No. 151562) (Continued. See I925)	Low tape signal lamp	6-18
J850	4	Same as J175	Mates with P2250	6-18
J851	4	Same as J100 (Continued. See J925)	External power supply connector. Mates with P851	6-18
O850	4	KEEPER: 159932	Retains W850 on A854	6-18
O852	4	CLAMP, CABLE: 159931	Retains W850 on A854	6-18
O853	4	BRACKET, ADJUSTING: 156344	Supports motor	6-18
O854	4	POST, SUPPORTING: 156336	Supports motor	6-18
O855	4	POST, SUPPORTING: 156338	Supports motor	6-18
O856	4	HANDLE: 162182	Reperforator base handle	6-18
O857	4	FOOT, TELEPHONE: 99381	Reperforator base supporting foot	6-18
O858	4	BUSHING: 156339	Retains O860 between A854 and A855	6-18
O859	4	BUSHING: 162183	Immobilizes O860	6-18
O860	4	MOUNT, VIBRATION: 159610 (Continued. See O925)	Dampens A855 vibration	6-18
P851	4	Same as P100 (Continued. See P2250)	Mates with J851	6-18
R850	4	RESISTOR, FIXED, COMPOSITION: 5000 ohms, ± 3%, 5 watts, mfg. code No. 44655, part No. 882-6.5 (code 59433 part No. 161873) (Continued. See R5602)	Tape feed-out circuit resistance	6-18

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
S850	4	SWITCH, TOGGLE: SPST, 3 amp, 250 V, mfg. code No. 15605, part No. 8391 K 6 (code 59433 part No. 95320)	Main power switch	6-18
S851	4	SWITCH, PUSH: SPST, push to make 115 V dc, mfg. code No. 80411, part No. 3005-5P (code 59433 part No. 118589) (Continued. See S925)	Tape feed-out switch	6-18
TB850	4	Same as TB175	W 850 lower terminal board	6-18
TB851	4	Same as TB175 (Continued. See TB925)	W 850 upper terminal board	6-18
W850	4	CABLE ASSY: 162574	Connects external power supply to base and base to reperforator	6-18
W851	4	CABLE ASSY: 159592	Low tape signal lamp assy	6-18
W852	4	STRAP, GROUND: 91768	Ground strap	6-18
W853	4	Same as W852	Jumper strap for TB850	6-18
W854	4	STRAP, GROUND: 151819 (Continued. See W925)	Grounds A854	6-18
XI850	4	LAMPHOLDER: 125 V, 75 w, mfg. code No. 72619, part No. 12-271 (code 59433 part No. 151540) (Continued. See XI925)	Low tape lampholder	6-18
A925	5	BRACKET: 176091	Mounts TB925 and TB926	6-19
A926	5	PLATE, PANEL: 176093	Face plate for S925 and XI925	6-19
A927	5	BRACKET: 176117	Mounts S925 and XI925	6-19
A928	5	BRACKET: 176092	Mounts A927 and XF925	6-19
A929	5	BRACKET: 176062	Supports tape container	6-19
A930	5	BRACKET: 176063	Supports tape container	6-19
A931	5	BRACKET: 176090	Supports A1250	6-19
A932	5	PLATE, BASE (LOWER): 176082	Supports A933	6-19
A933	5	PLATE, BASE (UPPER): 176088 (Continued. See A1000)	Support for motor, reperforator and base mechanisms	6-19
E925	5	Same as E179	W925 terminal	6-19
E926	5	Same as E852	Insulates W925 terminals	6-19
E927	5	Same as E179	W926 terminal	6-19
E928	5	Same as E864	Insulates W926 terminals	6-19
E929	5	SLEEVE, INSULATING: 155755	Insulates W926 terminals	6-19
E930	5	Same as E175	Insulates TB925 terminals	6-19
E931	5	Same as E176	Jumper for TB925	6-19
E932	5	Same as E175	Insulates TB925 from A925	6-19
E933	5	Same as E176	Jumper for TB925	6-19
E934	5	Same as E175	Insulates TB926 from A925	6-19
E935	5	SCREW: 6-40 x 1/2 hex 151442	Ground screw for W927	6-19
E936	5	SCREW: 6-40 x 1/4 hex 151630	Ground screw for W928	6-19
E937	5	Same as E867	Terminal for W928	6-19
E938	5	Same as E865	Terminal for W927	6-19
E939	5	Same as E865 (Continued. See E1025)	Terminal for W929	6-19
F925	5	FUSE, CARTRIDGE: 3 amp, 125 V, mfg. code No. 75915, part No. 313003 (code 59433 part No. 142269)	Main power fuse	6-19
H900	4	Same as H117	Retains A1051 on A855	6-18
H901	4	WASHER, CAPTIVE: 159603	Retains A1051 on A855	6-18
H902	4	Same as H186	Retains O859 on A855	6-18
H903	4	Same as H117	Retains O859 on A855	6-18
H904	4	Same as H100	Retains W852 and W854 on A854	6-18

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H905	4	Same as H101	Retains W852 and W854 on A854	6-18
H906	4	SCREW: 10-32 x 1/4 hex 151606	Retains O856 on A855	6-18
H907	4	Same as H117	Retains O856 on A855	6-18
H908	4	Same as H186	Immobilizes O860	6-18
H909	4	Same as H117	Immobilizes O860	6-18
H925	5	Same as H852	Retains S925 on A926	6-19
H926	5	Same as H853	Retains S925 on A926	6-19
H927	5	Same as H100	Retains E930 on H930	6-19
H928	5	Same as H101	Retains E930 on H930 and TB925 on A925	6-19
H929	5	Same as H102	Spaces E930 from TB925 and retains TB925 on A925	6-19
H930	5	Same as H103	TB925 terminal screw	6-19
H931	5	Same as H104	Retains H929 on TB925	6-19
H932	5	Same as H103	TB926 terminal screw	6-19
H933	5	Same as H104	Retains H932 on TB926	6-19
H934	5	SCREW: 6-40 x 7/8 fil 151660	Retains TB926, H938, H939 and E934 on A925	6-19
H935	5	Same as H129	Retains TB926, H938, H939 and E934 on A925	6-19
H936	5	Same as H101	Retains TB926, H938, H939 and E934 on A925	6-19
H937	5	Same as H297	Retains TB926, H938, H939 and E934 on A925	6-19
H938	5	CLAMP, LOOP: 121247	Retains W925 on A925	6-19
H939	5	CLAMP, LOOP: 121248	Retains W926 on A925	6-19
H940	5	Same as H100	Retains TB926 and E934 on A925	6-19
H941	5	Same as H101	Retains TB926 and E934 on A925	6-19
H942	5	Same as H100	Retains A925 on A933	6-19
H943	5	Same as H101	Retains A925 and W927 on A933	6-19
H944	5	Same as H100	Retains O925 on A932	6-19
H945	5	Same as H101	Retains O925 on A932	6-19
H946	5	Same as H115	Retains O925 on A932	6-19
H947	5	Same as H100	Retains A927 on A928	6-19
H948	5	Same as H101	Retains A927 on A928	6-19
H949	5	Same as H115	Retains A927 on A928	6-19
H950	5	Same as H119	Retains A928 on A933	6-19
H951	5	Same as H101	Retains A928 on A933	6-19
H952	5	Same as H115	Retains A928 on A933	6-19
H953	5	Same as H100	Retains O926 on A929 and A1085 on A928	6-19
H954	5	Same as H101	Retains O926 on A929 and A1085 on A928	6-19
H955	5	WASHER, FLAT: 151610	Retains O926 on A929 and A1085 on A928	6-19
H956	5	Same as H100	Retains A1085 on A929 and A930	6-19
H957	5	WASHER, LOCK: Steel, mfg. code No. 78189, part No. 1206 (code 59433 part No. 92260)	Retains A1085 on A929 and A930	6-19
H958	5	SCREW, MACHINE: Steel, hex hd, No. 8-32 x 3/8 in. lg. mfg. code No. 77250 (code 59433 part No. 124611)	Retains A929 on A931	6-19
H959	5	Same as H897	Retains A929 on A931	6-19
H960	5	WASHER, FLAT: 44048	Retains A929 on A931	6-19
H961	5	SCREW: 8-32 x 9/32 hex 156768	Retains A930 on A931	6-19
H962	5	Same as H897	Retains A930 on A931	6-19

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H963	5	Same as H116	Retains A1250 on A931	6-19
H964	5	Same as H117	Retains A1250 on A931	6-19
H965	5	WASHER, FLAT: 117535	Spaces A1250 from A931	6-19
H966	5	Same as H250	Retains A931 on A933	6-19
H967	5	Same as H117	Retains A931 on A933	6-19
H968	5	Same as H894	Retains O929 on A932	6-19
H969	5	Same as H895	Retains O929 on A932	6-19
H970	5	Same as H118	Retains O929 on A932	6-19
H971	5	Same as H897	Retains O929 on A932	6-19
H972	5	Same as H898	Retains O929 on A932	6-19
H973	5	WASHER: 176612	Supports O930	6-19
H974	5	NUT, SELF-LOCKING, HEXAGON: Steel, cad. plated, No. 10-32, mfg. code No. 72962, part No. 22NM-02 (code 59433 part No. 176085)	Adjusting nut for O930	6-19
H976	5	Same as H101	Retains W928 on A933	6-19
H977	5	Same as H115	Retains W928 on A932	6-19
H978	5	Same as H891	Retains reperforator on A933	6-19
H979	5	Same as H117	Retains reperforator on A933	6-19
H980	5	Same as H118	Retains reperforator on A933	6-19
H981	5	NUT: 8-32 hex 2263	Retains O928 on A932	6-19
H982	5	Same as H961	Retains O929 on A932	6-19
H983	5	Same as H105	Retains H986 and H987 on A929	6-19
H984	5	Same as H115	Retains H986 and H987 on A929	6-19
H985	5	Same as H101	Retains H986 and H987 on A929	6-19
H986	5	Same as H132	Retains W925 on A929	6-19
H987	5	Same as H938	Retains W926 on A929	6-19
H988	5	SCREW: 10-32 x 3/8 fil 151691	Retains O931 on A931	6-19
H989	5	WASHER, LOCK: 45815 (Continued. See H1000)	Retains O931 on A931	6-19
I925	5	LAMP, GLOW: mfg. code No. 24446,part No. NE-5/H (code 59433 part No. 161215) Same as I276 (Continued. See I1000)	Tape-out lamp	6-19
J925	5	Same as J175 (Continued. See J1025)	W925 receptacle	6-19
O925	5	BRACKET: 176086	Cover latching bracket	6-19
O926	5	GUIDE, TAPE: 176094	Guides tape to reperforator	6-19
O927	5	Same as O858	Retains O928 between A932 and A933	6-19
O928	5	Same as O860	Dampens vibration between A932 and A933	6-19
O929	5	Same as O857	Mounting feet for A932	6-19
O930	5	GROMMET, RUBBER: 0.812 outer dia, 0.375 inner dia, 0.375 thick, mfg. code No. 70485, part No. 91 (code 59433 part No. 176613)	Snubber for vibration isolators	6-19
O931	5	ISOLATOR, VIBRATION: 176079 (Continued. See O1000)	Dampens vibration from B1250	6-19
S925	5	SWITCH, TOGGLE: SPST, 3 amp 250 v, 6 amp - 125 v, mfg. code No. 15605, part No. 8381 K7 (code 59433 part No. 110664) (Continued. See S1025)	Power switch	6-19
TB925	5	Same as TB175	Upper terminal board	6-19
TB926	5	Same as TB175	Lower terminal board	6-19

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
W925	5	CABLE ASSY: 177006	Connects base to reperforator	6-19
W926	5	CABLE ASSY: 176123	Interconnects base components	6-19
W927	5	Same as W852	Ground strap	6-19
W928	5	Same as W854	Ground strap	6-19
W929	5	Same as W852 (Continued. See W1025)	Jumper strap for TB925	6-19
XF925	5	FUSEHOLDER: Extractor post type, mfg. code No. 71400, part No. HKP (code 59433 part No. 116783)	Holder for F925	6-19
XI925	5	LIGHT, INDICATOR: red lens, includes glow lamp, mfg. code No. 72619, part No. 135-408H-XP10-1431 (code 59433 part No. 176095) (Continued. See XI925)	Holds I925	6-19
A1000	5	BLOCK: 176115	Retains O1002 on A1003	6-20
A1001	5	BRACKET: 176116	Limits rotation of O1002	6-20
A1002	5	PLATE, STABILIZER/STOP: 176114	Limits movement of A1003	6-20
A1003	5	PLATE (TOP): 176113	Mounts reperforator set	6-20
A1004	5	PLATE, BOTTOM: 176112	Mounts A1003 and O1003	6-20
A1025	1	PLATE, SWITCH MOUNTING: 161826	Mounts tape-out switch mechanism	6-21
A1050	4	PLATE, MOUNTING: 156342	Mounts tape-out switch mechanism	6-22
A1051	4	PANEL ASSEMBLY: 156460	Houses tape-out switch mechanism and tape	6-22
A1085	5	CONTAINER, TAPE: 176050 (Continued. See A1100)	Mounts reperforator tape and tape-out switch mechanism	6-23
E1025	1	Same as E852	Insulates W1025	6-21
E1050	4	Same as E179	W1050 terminal	6-22
E1051	4	Same as E864	Insulates W1050 terminals	6-22
E1052	4	INSULATOR: 119467	Insulates S1051	6-22
E1053	4	Same as E1052	Insulates S1051 from S1050	6-22
E1054	4	Same as E1052	Insulates S1050 from A1050	6-22
E1085	5	Same as E1052	Insulates S1085	6-23
E1086	5	Same as E1052	Insulates S1085 from O1090	6-23
E1087	5	Same as E864	Insulates W1085 terminals	6-23
E1088	1	Same as E179 (Continued. See E1100)	W1085 terminals	6-21
H1000	5	SCREW: 10-32 x 1/2 flat hd 1264	Retains A1000 on A1003	6-20
H1001	5	Same as H117	Retains A1000 on A1003	6-20
H1002	5	Same as H259	Retains A1000 on A1003	6-20
H1003	5	POST, SHOULDER: 176120	Retains O1001 on O1002 and limits movement of O1002	6-20
H1004	5	Same as H101	Retains H1003 on O1002	6-20
H1005	5	Same as H101	Retains A1001 on A1003	6-20
H1006	5	Same as H100	Retains A1001 on A1003	6-20
H1007	5	Same as H116	Retains A1002 on A1003	6-20
H1008	5	Same as H117	Retains A1002 on A1003	6-20
H1009	5	Same as H965	Retains A1002 on A1003	6-20
H1010	5	SCREW: 10-32 x 3/8 flat hd 35551	Retains O1003 on A1003	6-20
H1011	5	Same as H1000	Retains O1003 on A1004	6-20
H1012	5	SCREW: 10-32 x 1/4 flat hd 123706	Retains O1003 on A1004	6-20
H1025	1	Same as H116	Retains O1032 on A777	6-21
H1026	1	Same as H989	Retains O1032 on A777	6-21

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H1027	1	WASHER, FLAT: 111516	Retains O1032 on A777	6-21
H1028	1	Same as H100	Retains A1025 on O1032	6-21
H1029	1	Same as H101	Retains A1025 on O1032	6-21
H1030	1	Same as H115	Retains A1025 on O1032	6-21
H1031	1	SCREW: 6-40 x 7/16 hex 153538	Supports O1026 and O1027	6-21
H1032	1	Same as H101	Retains O1026 and O1027 on A1025	6-21
H1033	1	Same as H115	Retains O1026 and O1027 on A1025	6-21
H1034	1	STUD: 150992	Limits movement of O1027	6-21
H1035	1	Same as H125	Retains H1034 on A1025	6-21
H1036	1	Same as H202	Retains S1025 on A1025	6-21
H1037	1	Same as H203	Retains S1025 on A1025	6-21
H1038	1	SCREW: 4-40 x 9/16 fil 151733	Anchors O1028 and O1029	6-21
H1039	1	NUT: 4-40 hex 110435	Retains H1038 on A1025	6-21
H1040	1	SCREW: 6-40 x 11/16 hex 153539	Supports O1030 and O1031	6-21
H1041	1	Same as H647	Spaces O1031 from A1025	6-21
H1042	1	Same as H101	Retains O1030 and O1031 on A1025	6-21
H1043	1	Same as H115	Retains O1030 and O1031 on A1025	6-21
H1050	4	Same as H119	Retains O1051 on A1051	6-22
H1051	4	Same as H101	Retains O1051 on A1051	6-22
H1052	4	Same as H955	Retains O1051 on A1051	6-22
H1053	4	Same as H119	Retains H1056 on A1051	6-22
H1054	4	Same as H101	Retains H1056 on A1051	6-22
H1055	4	Same as H115	Retains H1056 on A1051	6-22
H1056	4	CLAMP, LOOP: Nylon, mfg. code No. 71616, part No. CPC-1953-3 (code 59433 part No. 121243)	Retains W1050 on A1051	6-22
H1057	4	SCREW: 10-56 x 3/4 fil 156971	Retains E1052, E1053, E1054, S1050 and S1051 on A1050	6-22
H1058	4	Same as H203	Retains E1052, E1053, E1054, S1050 and S1051 on A1050	6-22
H1059	4	Same as H760	Retains E1052, E1053, E1054, S1050 and S1051 on A1050	6-22
H1060	4	Same as H125	Retains O1054 on A1050	6-22
H1061	4	SCREW: 6-40 x 3/4 hex 151721	Retains O1055 and H1063 on A1050	6-22
H1062	4	Same as H101	Retains O1055 and H1063 on A1050	6-22
H1063	4	WASHER, FLAT: 159543	Guides O1059	6-22
H1064	4	Same as H1040	Retains H1066, O1056 and O1057 on A1050	6-22
H1065	4	Same as H101	Retains H1066, O1056 and O1057 on A1050	6-22
H1066	4	Same as H297	Guides O1057	6-22
H1067	4	Same as H647	Guides O1057	6-22
H1068	4	Same as H1061	Retains H1070, O1058 and O1059 on A1050	6-22
H1069	4	Same as H101	Retains H1070, O1058 and O1059 on A1050	6-22
H1070	4	Same as H297	Guides O1059	6-22
H1071	4	Same as H100	Retains A1050 on A1051	6-22
H1072	4	Same as H101	Retains A1050 on A1051	6-22

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H1073	4	Same as H297	Retains A1050 on A1051	6-22
H1074	4	Same as H119	Retains O1060 on A1051	6-22
H1075	4	Same as H101	Retains O1060 on A1051	6-22
H1076	4	Same as H100	Retains O1060 on A1051	6-22
H1085	5	Same as H225	Retains O1092 and O1085 on A1085	6-23
H1086	5	RING, RETAINING: Steel, mfg code No. 79136, part No. 5133-18 (code 59433 part No. 119652) Same as H518	Retains O1087 on A1085	6-23
H1087	5	RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-18 (code 59433 part No. 119652) Same as H518	Retains O1089 on A1085	6-23
H1088	5	Same as H202	Retains E1085, S1085, E1086 and O1090 on A1085	6-23
H1089	5	Same as H203	Retains E1085, S1085, E1086 and O1090 on A1085	6-23
H1090	5	Same as H760	Retains E1085, S1085, E1086 and O1090 on A1085	6-23
H1091	5	Same as H550	Retains O1091 on A1085	6-23
H1092	5	WASHER, LOCK: 3648 (Continued. See H1100)	Retains O1091 on A1085	6-23
I1000	5	KNOB: 151556	Operates O1002	6-20
I1001	5	Same as I1000 (Continued. See I1875)	Operates O1002	6-20
J1025	1	CONNECTOR: 100658 (Continued. See J2400)	Connector for W1025	6-21
O1000	5	SPRING (LEFT): 176118	Applies tension to O1002	6-20
O1001	5	SPRING (RIGHT): 176119	Applies tension to O1002	6-20
O1002	5	CYLINDER, LOCKING: 176066	Locks A1003 in retracted position	6-20
O1003	5	SLIDE ASSEMBLY: 12 in. lg in closed position, 23 in. lg in open position, mfg. code No. 05236, part No. 150QD-12X-114-L (code 59433 part No. 176121)	Slide for A1003	6-20
O1025	1	REEL, TAPE: 158289	Holds reperforator tape	6-21
O1026	1	BUSHING: 156448	Pivot for O1027	6-21
O1027	1	LEVER: 156449	Operates S1025	6-21
O1028	1	Same as O406	Applies tension to O1027	6-21
O1029	1	SPRING: 90606	Applies tension to O1031	6-21
O1030	1	BUSHING: 156451	Pivot for O1031	6-21
O1031	1	LEVER, TAPE: 158239	Operates O1027	6-21
O1032	1	CONTAINER, TAPE: 164565	Houses tape-out switch mechanism and tape	6-21
O1050	4	Same as O1025	Holds reperforator tape	6-22
O1051	4	GUIDE, TAPE: 156470	Guides reperforator tape	6-22
O1052	4	Same as O1029	Applies tension to O1057	6-22
O1053	4	SPRING: 83877	Applies tension to O1059	6-22
O1054	4	POST, SPRING: 159540	Anchors O1052 and O1053	6-22
O1055	4	Same as O1026	Pivot for arresting movement of O1059	6-22
O1056	4	Same as O1030	Pivot for O1057	6-22
O1057	4	LEVER, TAPE: 156452	Operates O1059	6-22
O1058	4	Same as O1026	Pivot for O1059	6-22
O1059	4	Same as O1027	Operates S1050 and S1051	6-22
O1060	4	POST: 207223 WU	Maintains rigidity of A1051	6-22

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O1085	5	REEL, TAPE: 176058	Mounts reperforator tape	6-23
O1086	5	SPRING: 8286	Applies tension to O1087	6-23
O1087	5	BAIL, TAPE SENSING: 176056	Operates O1089	6-23
O1088	5	SPRING: 28361	Applies tension to O1089	6-23
O1089	5	BAIL, SWITCH: 176057	Operates S1085	6-23
O1090	5	SPACER: 176060	Spaces E1086 from A1085	6-23
O1091	5	RETAINER: 176061	Guides rotation of O1085	6-23
O1092	5	WASHER, FELT: 151245 (Continued. See O1100)	Lubricates A1085 center post	6-23
S1025	1	SWITCH, SENSITIVE: 2 circuit, double break, plunger type, 0.150 in. movement differential, 4 oz. operating pressure, mfg. code No. 30323, part No. 11-330-012 (code 59433 part No. 158163)	Signals low tape supply	6-21
S1050	4	SWITCH, SENSITIVE: SPDT, 3 amp, 125 V ac, plunger type, 0.030 in. movement differential, 0.040 in. maximum pretravel, 0.050 in. maximum overtravel, 20-27 grams operating pressure, mfg. code No. 80411 (code 59433 part No. 124999)	Tape-out switch for external signal circuit	6-22
S1051	4	Same as S1050	Tape-out switch for I850	6-22
S1085	5	Same as S1050	Tape-out switch	6-23
S1086	5	Same as S1050 (Continued. See S1200)	Tape-out switch	6-23
W1025	1	CABLE ASSEMBLY: 163442	Operates I281	6-21
W1050	4	CABLE ASSEMBLY: 156972	Tape-out cable	6-22
W1085	5	CABLE ASSEMBLY: 176124 (Continued. See W1200)	Tape-out cable	6-23
A1100	4	PLATE, GREASE RETAINER: 159433	Protects equipment from variable speed mechanism lubricant	6-24
A1101	4	PLATE, GEAR SHIFT GUIDE: 156968	Guides O1166	6-24
A1102	4	FRAME, GEAR SHIFT: 156965	Houses variable speed drive mechanism	6-24
A1125	5	FRAME, GEAR SHIFT: 176065	Houses variable speed drive mechanism	6-25
A1160	6	BAR: 158741 (Continued. See A1200)	Guides driven gears	6-26
H1100	4	Same as H119	Retains A1100 and A1101 on A1102	6-24
H1101	4	Same as H101	Retains A1100 and A1101 on A1102	6-24
H1102	4	Same as H115	Retains A1100 and A1101 on A1102	6-24
H1103	4	SCREW: 6-40 shoulder 156960	Retains O1166 on O1169	6-24
H1104	4	Same as H101	Retains H1105 on A1101	6-24
H1105	4	SCREW: 6-40 shoulder 156961	Pivot for O1169	6-24
H1106	4	Same as H119	Retains O1100 on A1102	6-24
H1107	4	Same as H101	Retains O1100 on A1102	6-24
H1108	4	RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-37 (code 59433 part No. 119655)	Retains O1101 on A1102	6-24
H1109	4	RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-31 (code 59433 part No. 119654) Same as H332	Retains O1101 on A1102	6-24
H1110	4	RING, RETAINER: 156861	Retains O1171 on A1102	6-24

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H1111	4	Same as H891	Retains A1102 on A854	6-24
H1112	4	Same as H117	Retains A1102 on A854	6-24
H1113	4	Same as H118	Retains A1102 on A854	6-24
H1114	4	Same as H100	Retains O1102 on A1102	6-24
H1115	4	Same as H101	Retains O1102 on A1102	6-24
H1116	4	Same as H510	Retains O1103 on O1183	6-24
H1117	4	Same as H101	Retains O1103 on O1183	6-24
H1118	4	SCREW: 4-40 x 1/2 fil 150089	Retains O1103 and O1104 on O1105	6-24
H1119	4	Same as H683	Retains O1103 and O1104 on O1105	6-24
H1120	4	RING, RETAINER: 156962	Retains O1171 on A1102	6-24
H1121	4	Same as H129	Retains O1166 on O1169	6-26
H1122	4	Same as H101	Retains O1166 on O1169	6-24
H1123	4	Same as H805	Retains O1103 on O1101	6-24
H1130	5	Same as H100	Retains O1125 on A1125	6-25
H1131	5	Same as H101	Retains O1125 on A1125	6-25
H1132	5	Same as H115	Retains O1125 on A1125	6-25
H1133	5	RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-18 (code 59433 part No. 119652) Same as H518	Retains O1166 on 176076	6-25
H1134	5	NUT: 10-32 hex 74807	Retains O1127 on A1125	6-25
H1135	5	Same as H117	Retains O1127 on A1125	6-25
H1136	5	Same as H510	Retains O1172 on A1125	6-25
H1137	5	Same as H105	Retains O1130 and O1172 on A1125	6-25
H1138	5	Same as H101	Retains O1130 and O1172 on A1125	6-25
H1139	5	Same as H955	Retains O1130 and O1172 on A1125	6-25
H1140	5	Same as H129	Retains O1172 on A1125	6-25
H1141	5	Same as H1061	Retains O1129 on O1184	6-25
H1142	5	Same as H101	Retains O1129 on O1184	6-25
H1143	5	Same as H115	Retains O1129 on O1184	6-25
H1144	5	Same as H100	Retains O1184 on A1125	6-25
H1145	5	Same as H101	Retains O1184 on A1125	6-25
H1146	5	Same as H297	Retains O1184 on A1125	6-25
H1147	5	Same as H250	Retains A1125 on A931	6-25
H1148	5	Same as H891	Retains A1125 on A931	6-25
H1149	5	WASHER, LOCK: Steel, mfg. code No. 78189, part No. 1210 (code 59433 part No. 98642)	Retains A1125 on A931	6-25
H1150	5	WASHER, FLAT: 41663	Retains A1125 on A931	6-25
H1151	5	Same as H107	Retains O1166 on O1170	6-25
H1152	5	Same as H129	Retains O1166 on O1170	6-25
H1153	5	Same as H101	Retains O1166 on O1170	6-25
H1160	6	Same as H1134	Retains H1165 on O1169 or O1170	6-26
H1163	6	Same as H117	Retains H1165 on O1169 or O1170	6-26
H1164	6	Same as H107	Retains O1167 and O1168 on H1165	6-26
H1165	6	STUD: 156954	Shaft for O1168	6-26
H1166	6	Same as H100	Retains O1101 and O1103 on A1102 or O1128 and O1184 on A1125	6-26

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192A/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H1167	6	Same as H101	Retains O1101 and O1103 on A1102 or O1128 and O1184 on A1125	6-26
H1168	4	Same as H955	Retains O1128 on A1125	6-26
H1169	5	Same as H297	Retains O1128 and O1184 on A1125	6-26
H1170	4	Same as H115	Retains O1183 on A1102	6-26
H1171	6	Same as H256	Retains O1173 on O1101 or O1128	6-26
H1172	6	Same as H101	Retains O1173 on O1101 or O1128	6-26
H1173	6	SCREW: 6-40 x 7/16 fil 125205	Retains O1174 on O1101 or O1128	6-26
H1174	6	Same as H101	Retains O1174 on O1101 or O1128	6-26
H1175	6	Same as H105	Retains O1175 on O1176	6-26
H1176	6	Same as H101	Retains O1175 on O1176	6-26
H1177	6	Same as H256	Retains O1176 on O1101 or O1128	6-26
H1178	6	Same as H101	Retains O1176 on O1101 or O1128	6-26
H1179	6	SCREW: 4-40 x 11/32 fil 151732	Retains O1181 or O1182 on O1180	6-26
H1180	6	Same as H451	Retains O1181 or O1182 on O1180	6-26
H1181	6	SCREW: 6-40 x 3/8 hex 114125	Retains A1160 on O1183 or O1184	6-26
H1182	6	Same as H729	Retains A1160 on O1183 or O1184	6-26
H1183	6	WASHER, FLAT: 150456	Retains A1160 on O1183 or O1184	6-26
H1184	6	Same as H1118	Retains O1177 and O1178 on O1180 or O1177 and O1179 on O1180	6-26
H1185	6	Same as H451	Retains O1177 and O1178 on O1180 or O1177 and O1179 on O1180	6-26
H1186	5	Same as H256	Retains O1164 on E1250	6-26
H1187	5	Same as H101	Retains O1164 on E1250	6-26
H1188	5	SCREW: 6-40 x 37/64 102465	Retains O1163 on O1394	6-26
H1189	5	Same as H101	Retains O1163 on O1394	6-26
H1190	5	Same as H115 (Continued. See H1200)	Retains O1163 on O1394	6-26
O1100	4	Same as O791	Retains O1171 on A1102	6-24
O1101	4	SHAFT, DRIVE: 156967	Drives O1103	6-24
O1102	4	PLATE, CLAMP: 159991	Retains O1183 on A1102	6-24
O1103	4	HUB, SPROCKET: 156953	Drives O1104	6-24
O1104	4	SPROCKET: 156955	Drives O1160	6-24
O1105	4	RETAINER, BELT: 156956	Retains O1160 on O1104	6-24
O1106	4	BUSHING: 156959	Guides O1166	6-24
O1125	5	BRACKET, GEAR SHIFT: 176078	Guides O1166	6-25
O1126	5	STUD: 176077	Retains O1170 on O1166 and anchors O1165	6-25
O1127	5	STUD: 176076	Guides O1166 and anchors O1165	6-25
O1128	5	SHAFT, DRIVE: 176068	Drives O1184	6-25

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

BASE (TT-192/UG AND TT-274/UG), MINIATURIZED BASE (TT-192/UG) OR KEYBOARD BASE (TT-253/UG, TT-253A/UG AND TT-292/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O1129	5	SPROCKET: 176074	Drives O1161	6-25
O1130	5	BEARING: 117227	O1184 bearing	6-25
O1160	4	BELT, TIMING: 156866	Drives O1162	6-26
O1161	5	BELT, TIMING: 176075	Drives O1163	6-26
O1162	4	GEAR, SPROCKET: 156958	Drives O1394	6-26
O1163	5	GEAR, SPROCKET: 176073	Drives O1394	6-26
O1164	6	GEAR, HELICAL: 156964	Drives O1175	6-26
O1165	6	SPRING: 82725	Applies tension to H1103 or O1126	6-26
O1166	6	LEVER, GUIDE: 156952	Operates O1169 or O1170	6-26
O1167	6	WASHER, FELT: 130892	Lubricates O1168	6-26
O1168	6	ROLLER: 158723	Shifts O1177, O1178 and O1181 or O1177, O1179 and O1182	6-26
O1169	4	LINK: 156951	Operates H1165	6-26
O1170	5	LINK: 176610	Operates H1165	6-26
O1171	4	Same as O783	Bearing for O1101	6-26
O1172	5	Same as O1130	Bearing for O1128 and O1184	6-26
O1173	4	GEAR: 158732	Drives O1177	6-26
O1174	4	GEAR, HELICAL: 158712	Drives O1181	6-26
O1175	6	GEAR: 156949	Drives O1101 or O1128 through O1176	6-26
O1176	6	HUB: 156226	Drives O1101 or O1128	6-26
O1177	6	GEAR: 158733	Drives O1183 or O1184 through A1160	6-26
O1178	4	GEAR: 158734	Drives O1183 through A1160	6-26
O1179	5	GEAR: 163262	Drives O1184 through A1160	6-26
O1180	6	BLOCK: 158740	Spaces O1178 from O1181 or O1179 from O1182	6-26
O1181	4	GEAR: 158716	Drives O1183 through A1160	6-26
O1182	5	GEAR: 176071	Drives O1184 through A1160	6-26
O1183	4	SHAFT: 156950	Drives O1103	6-26
O1184	5	SHAFT: 176069	Drives O1129	6-26
O1186	4	BEARING, BALL: 130499	Bearing for O1183	6-26
O1187	5	GEAR, HELICAL: 176072	Drives O1182	6-26
O1188	5	GEAR: 176099 (Continued. See O1200)	Drives O1177	6-26

MOTOR (TT-192/UG, TT-253/UG OR TT-253A/UG) OR MINIATURIZED MOTOR (TT-192A/UG)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
A1200	7	PLATE, MOUNTING: 151920	Mounts C1200, K1200 and S1200	6-27
A1201	7	CRADLE: 150976	Supports B1201 and accessories	6-27
A1250	5	BRACKET, MOUNTING: 142589 (Continued. See A1300)	Supports B1250 and accessories	6-28
B1200	7	FAN, MOTOR: 123769	Cools motor	6-27
B1201	7	MOTOR, SYNCHRONOUS: 151795	Drives intermediate gear mechanism	6-27
B1250	5	MOTOR, SYNCHRONOUS: 161984	Operates reperforator through variable speed mechanism	6-28

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

MOTOR (TT-192/UG, TT-253/UG OR TT-253A/UG) OR MINIATURIZED MOTOR (TT-192A/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
C1200	7	CAPACITOR, FIXED, ELECTROLYTIC: 125 V ac working, max working temperature 50°C, insulated aluminum can, approx 3-3/16 in. lg x 1-1/16 in. diam, mfg. code No. 74861, part No. AX7 (code 59433 part No. 122245) Same as C175	Starting capacitor for B1201	6-27
C1250	5	CAPACITOR, FIXED, ELECTROLYTIC: 125 V ac working, 88 to 108 uf, max. working temperature 125°F, insulated aluminum can, approx 3-1/4 in. lg by 1-1/16 in. diam., mfg. code No. 74861, part No. 11B117MS (code 59433 part No. 162072) (Continued. See C5601)	Starting capacitor for B1250	6-28
E1200	7	WASHER, FIBER: 153049	Insulates O1200 from H1205	6-27
E1201	7	ROTOR ASSY: 128874	Rotates motor shaft	6-27
E1202	7	PLATE, INSULATOR: 151924	Insulates K1200 from A1200	6-27
E1203	7	WASHER, INSULATOR: 87334	Insulates S1200 from H1220 and H1221	6-27
E1205	7	Same as E1204	W1201 terminal	6-27
E1250	5	ROTOR ASSY: 162465	Rotates motor shaft	6-28
E1251	5	INSULATOR: 162196	Insulates K1250 from A1250	6-28
E1252	5	TERMINAL, LUG: 151626. Same as E861 (Continued. See E1826)	Terminal for W1250	6-28
H1200	7	SCREW: 6-32 x 3/4 RH 151621	Holds H1202 in locking position	6-27
H1201	7	NUT: 6-32 square 151622	Holds H1202 in locking position	6-27
H1202	7	STRAP, MOUNTING: 151620	Retains B1201 in position on A1201	6-27
H1203	7	SCREW: 6-40 x 5/8 fil 150040	Retains B1200 on E1201	6-27
H1204	7	WASHER, LOCK: 2191. Same as H101	Retains B1200 on E1201	6-27
H1205	7	BOLT: 8-32 x 4-11/16 122229	Retains O1200 on O1205	6-27
H1206	7	NUT: 8-32 hex 2263. Same as H981	Retains O1200 on O1205	6-27
H1207	8	SCREW: 6-40 x 3/8 fil 151346. Same as H256	Retains pinion gear on shaft	6-27
H1208	8	Same as H1204	Retains pinion gear on shaft	6-27
H1209	7	WASHER, BEARING: 152297	Supports O1203	6-27
H1210	7	WASHER, FLAT: 122211	Pull washer for O1204	6-27
H1211	7	SCREW: 6-40 x 3/16 fil 151692. Same as H643	Retains A1200 on A1201	6-27
H1212	7	Same as H1204	Retains A1200 on A1201	6-27
H1213	7	WASHER, FLAT: 7002. Same as H115	Retains A1200 on A1201	6-27
H1214	7	SCREW: 4-40 x 1/4 fil 151637. Same as H148	Retains E1202, H1216, H1217 and H1221 to A1200	6-27
H1215	7	WASHER, LOCK: 3640. Same as H125	Retains E1202, H1216, H1217 and H1221 to A1200	6-27
H1216	7	CLAMP: 151925	Supports K1200	6-27
H1217	7	CLAMP: 151922	Clamps C1200 to A1200	6-27
H1218	7	SCREW: 4-40 x 3/8 fil 151686. Same as H640	Retains S1200 on H1221	6-27
H1219	7	Same as H1215	Retains S1200 on H1221	6-27
H1220	7	WASHER, FLAT: 125011. Same as H452	Retains S1200 on H1221	6-27
H1221	7	NUT: 4-40 151926	Spaces S1200 from A1200	6-27
H1250	5	Same as H1200	Retains H1267 in locking position	6-28
H1251	5	Same as H1201	Retains H1267 in locking position	6-28
H1252	5	SCREW: 4-40 x 1/4 hex 152893. Same as H453	Retains O1257 in locking position	6-28
H1253	5	WASHER, LOCK: 93984	Retains O1257 in locking position	6-28
H1254	5	WASHER, FLAT: 2034	Retains O1257 in locking position	6-28
H1255	5	PLATE, NUT: 176064	Retains O1257 in locking position	6-28
H1256	5	Bolt: 6-32 x 3-1/2 fil 162482	Retains O1250 and O1251 on O1256	6-28

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

MOTOR (TT-192/UG, TT-253/UG OR TT-253A/UG) OR MINIATURIZED MOTOR (TT-192A/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H1257	5	NUT: 6-32 hex 172902	Retains O1250 and O1251 on O1256	6-28
H1258	5	WASHER, SHIM: 164894	Spaces E1250 in O1256	6-28
H1259	5	WASHER, SHIM: 164892	Spaces E1250 in O1256	6-28
H1260	5	WASHER, SHIM: 164891	Spaces E1250 in O1256	6-28
H1261	5	Same as H1214	Retains H1263 on A1250	6-28
H1262	5	Same as H1215	Retains H1263 on A1250	6-28
H1263	5	Same as H1217	Clamps C1250 on A1250	6-28
H1264	5	Same as H1214	Retains H1266 on A1250	6-28
H1265	5	Same as H1215	Retains H1266 on A1250	6-28
H1266	5	Same as H1216	Retains K1250 and E1251 on A1250	6-28
H1267	5	Same as H1202 (Continued. See H1300)	Clamps B1250 on A1250	6-28
K1200	7	RELAY, ARMATURE: Coil resistance 0.075 ohms, 0.050 min., 1.0 max., pull-up current 6.1 amps max., drop-out current 5.2 amps min., mfg. code No. 80089, part No. 91252-52 (code 59433 part No. 151923)	Starting relay for B1201	6-27
K1250	5	RELAY, ARMATURE: SPST, 125 V ac, 50-60 cps, main winding resistance 0.5 ohms ± 10%, sec. winding resistance 0.1 ohms ± 10%, pull-in current max 2.1 amps, drop-out current min. 1.8 amps, min. differential 0.1 amp, mfg. code No. 80089, part No. 91252-309 (code 59433 part No. 173425) (Continued. See K5150)	Starting relay for B1250	6-28
O1200	7	SHIELD ASSY, END: 122252	End bells for O1205	6-27
O1201	7	MOUNT, VIBRATION: 153030	Reduces motor vibration in A1201	6-27
O1202	7	OILER, BALL: 122220	B1201 oiler	6-27
O1203	7	SPRING, PRELOADING: 71999	Applies tension to E1201	6-27
O1204	7	BEARING, BALL: 122201	Rotor bearing for O1200	6-27
O1205	7	STATOR: 122251	Operates E1201	6-27
O1250	5	SHIELD ASSY, END: 162467	End bell for O1256	6-28
O1251	5	Same as O1201	Reduces motor vibration in A1250	6-28
O1252	5	SHIELD ASSY, END: 162466	End bell for O1256	6-28
O1253	5	WASHER, SPRING: 162469	Applies tension to E1250	6-28
O1254	5	BEARING, BALL: 164890	E1250 bearing	6-28
O1255	5	COLLAR, THRUST: 164893	Pull washer for O1254	6-28
O1256	5	STATOR: 162464	Operates E1250	6-28
O1257	5	AIR DUCT ASSY: 176111 (Continued. See O1300)	Directs cooling air to E1250 and O1256	6-28
S1200	7	SWITCH, THERMOSTATIC: 122249 (Continued. See S1825)	Current overload switch - prevents overheating	6-27
W1200	7	WIRE, CONNECTOR: 96264R	Connects C1200 and K1200	6-27
W1201	7	CABLE ASSY: 151927	Connects B1201 with TB100 or TB850 (lower)	6-27
W1250	5	WIRE ASSY: 176137	Connects B1250 with TB926	6-28
W1251	5	Same as W1200 (Continued. See W1825)	Connects C1250 and K1250	6-28

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
1300 to 2299		TYPING PERFORATOR TT-252/UG TYPING PERFORATOR TT-265/UG TYPING REPERFORATOR TT-266/UG TYPING REPERFORATOR TT-267/UG	Prepares typed, perforated tape	6-32 through 6-55
A1300		BAR, MOUNTING: 162862	Supports A2025 and O1309	6-32
A1301		BRACKET, TRIP: 156257	Mounts O1307 and O1312	6-32
A1302		BRACKET, SPRING: 159011	Anchors O1325 and O1328 or O1334	6-32
A1303		PLATE, MAIN: 159472	Mounts components of typing reperforator	6-32
A1304		FRAME, MAIN: 156867 (Continued. See A1500)	Supports typing reperforator mechanism	6-32
H1300		SCREW: 6-40 x 5/8 hex 153839.	Holds O1300 to O1307	6-32
H1301		NUT: 6-40 151629. Same as H1555	Holds O1300 to O1307	6-32
H1302		WASHER, LOCK: 2191. Same as H101	Holds O1300 to O1307	6-32
H1303		WASHER, FLAT: 8330. Same as H258	Holds O1300 to O1307	6-32
H1304		Same as H1300	Holds O1304 to O1307	6-32
H1305		Same as H1301	Holds O1304 to O1307	6-32
H1306		Same as H1302	Holds O1304 to O1307	6-32
H1307		Same as H1303	Holds O1304 to H1307	6-32
H1308		SCREW: 6-40 x 1/4 hex 151630. Same as H100	Holds A1300 to A1301	6-32
H1309		Same as H1302	Holds A1300 to A1301	6-32
H1310		SCREW: 6-40 x 1/2 hex 151442. Same as H510	Holds A1300 to A1304	6-32
H1311		Same as H1302	Holds A1300 to A1304	6-32
H1312		SCREW: 6-40 x 5/16 hex 151631. Same as H119	Holds A1301 to A1304	6-32
H1313		Same as H1302	Holds A1301 to A1304	6-32
H1314		WASHER, FLAT: 7002. Same as H115	Holds A1301 to A1304	6-32
H1315		RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-15 (code 59433 part No. 119651) Same as H107	Holds O1311 and O1312 to A1301	6-32
H1316		NUT: 4-40 hex 3599. Same as H124	Holds O1311 to O1312	6-32
H1317		WASHER, LOCK: 3640. Same as H125	Holds O1311 to O1312	6-32
H1318		WASHER, FLAT: 111410	Holds O1311 to O1312	6-32
H1319		SCREW: 6-40 x 9/16 fil 151693. Same as H803	Holds O1323 to O1394	6-32
H1320		NUT: 6-40 hex 3598. Same as H129	Holds O1323 to O1394	6-32
H1321		Same as H1302	Holds O1323 to O1394	6-32
H1322		SCREW: 4-40 x 11/64 hex 151737. Same as H550	Holds O1315 to O1313 and O1318 to O1315	6-32
H1323		WASHER, LOCK: 110743. Same as H451	Holds O1315 to O1313 and O1318 to O1315	6-32
H1324		WASHER, FLAT: 42823. Same as H554	Holds O1315 to O1313 and O1318 to O1315	6-32
H1325		Same as H1302	Holds O1324 to A1303	6-32
H1326		RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-18 (code 59433 part No. 119652) Same as H518	Holds O1329 or O1335 to O1330	6-32
H1327		SCREW: 4-40 x 1/4 hex 152893. Same as H453	Holds O1327 to O1329 or O1335	6-32
H1328		Same as H1323	Holds O1327 to O1329 or O1335	6-32
H1329		WASHER, FLAT: 2034. Same as H1254	Holds O1327 to O1329 or O1335	6-32
H1330		SCREW: 6-40 x 5/16 fil 151658. Same as H873	Holds O1330 to A1303	6-32
H1331		Same as H1302	Holds O1330 to A1303	6-32
H1332		SCREW: 4-40 x 3/16 fil 110434	Holds O1331 to A1303	6-32
H1333		Same as H1323	Holds O1331 to A1303	6-32
H1334		WASHER, FLAT: 125011. Same as H1220	Holds O1331 to A1303	6-32
H1335		SCREW: 4-40 x 5/32 fil 151073	Holds O1331 to A1303	6-32

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H1336		Same as H1323	Holds O1331 to A1303	6-32
H1337		SCREW: 4-40 x 3/16 hex 151152. Same as H450	Holds A1302 to A1303	6-32
H1338		Same as H1319	Holds A1302 to A1303	6-32
H1339		Same as H1337	Holds O1332 to A1303	6-32
H1340		Same as H1323	Holds O1332 to A1303	6-32
H1341		Same as H1220	Holds O1332 to A1303	6-32
H1342		Same as H1312	Holds A1303 to A1304	6-32
H1343		Same as H1302	Holds A1303 to A1304	6-32
H1374		STUD: 152415	Positions Typing Reperforator Keyboard	6-33
H1388		SCREW: 6-40 x 5/8 fil 150040	Holds O1380 to O1394	6-33
H1389		Same as H1302	Holds O1380 to O1394	6-33
H1390		Same as H1322	Holds O1388 to O1393	6-33
H1391		Same as H1323	Holds O1388 to O1393	6-33
H1392		Same as H1324	Holds O1388 to O1393	6-33
H1393		Same as H1322	Holds O1391 to O1390	6-33
H1394		Same as H1323	Holds O1391 to O1390	6-33
H1397		SCREW: 4-40 x 9/32 fil 139697	Holds O1391 and O1393 to O1392	6-33
H1398		Same as H1323 (Continued. See H1425)	Holds O1391 and O1393 to O1392	6-33
O1300		LEVER, RESET ARM: 156318	Operates O1307	6-32
O1301		SPRING, LATCH LEVER: 87401	Applies tension to O1302	6-32
O1302		LEVER, LATCH: 150355	Clutch latch on Typing Reperforator	6-32
O1303		WASHER, FELT: 93356	Lubricates O1307	6-32
O1304		LEVER, CLUTCH TRIP: 150356	Releases O1387	6-32
O1305		WASHER, FELT: 156165	Lubricates O1307	6-32
O1306		SPRING, RELEASE: 76800	Applies tension to O1307	6-32
O1307		RELEASE, CLUTCH: 159544	Operates O1300 and O1304 and pivot for O1302	6-32
O1308		SPRING, LIFTER: 90606. Same as O1029	Applies tension to O2029	6-32
O1309		POST, SPRING: 86506	Anchors O1308	6-32
O1310		SPRING, ADJUSTING ARM: 112634	Applies tension to O1312	6-32
O1311		LEVER, FOLLOWER: 156387	Operates O1312	6-32
O1312		ARM, ADJUSTING: 156388	Adjustment for O1311	6-32
O1313		CAM, SELECTOR W/LUBRICATOR: 156941	Operates O1300, O1477 and O1302 or O1333	6-32
O1314		WICK, OILER: 152494	Lubricates O1313	6-32
O1315		DISK, CLUTCH CAM: 154694. Same as O557	Drives O1313	6-32
O1316		SPRING, SHOE LEVER: 151728. Same as O553	Applies tension to O1317	6-32
O1317		LEVER: 151640	Engages and disengages O1321 and O1322	6-32
O1318		DISK, CLUTCH ADJUSTING: 150013. Same as O558	Drives O1315	6-32
O1319		WICK, FELT: 150029. Same as O559	Lubricates clutch	6-32
O1320		SPRING, CLUTCH SHOE: 150241	Applies tension to O1321 and O1322	6-32
O1321		SHOE, PRIMARY: 150044. Same as O561	Permits O1322 to drive O1318 when in engaged position	6-32
O1322		SHOE, SECONDARY: 150043. Same as O562	Drives O1318 when in engaged position	6-32
O1323		DRUM, CLUTCH: 150001	Drives O1321 and O1322 when they are engaged	6-32
O1324		POST, GUIDE: 156490	Guides O1326	6-32
O1325		SPRING, LATCH: 151103	Applies tension to O1312	6-32
O1326		LATCH, PUNCH SLIDE: 156248	Latches O1506	6-32

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O1327		LEVER, RESET BAIL TRIP: 159430	Operates O1625	6-32
O1328		SPRING: 49084	Applies tension to O1329	6-32
O1329		LEVER, MAIN TRIP: 159431	Operates O1307 and O1327	6-32
O1330		POST, LATCH GUIDE: 156235	Pivot for O1329 and guides O1326	6-32
O1331		BRACKET: 159427	Supports O1336 and O1337	6-32
O1332		GUIDE, BELL CRANK: 159441	Guides O1846 through O1849	6-32
O1336		WICK, FELT: 159429	Lubricates O1336 and O1337	6-32
O1337		RETAINER, WICK: 159428	Retains O1336	6-32
O1380		DRUM, CLUTCH: 158184	Drives O1383 and O1384 when they are engaged	6-33
O1381		BEARING, SLEEVE: 162340	Bearing for O1390 on O1394	6-33
O1382		Same as O1320	Applies tension to O1383 and O1384	6-33
O1383		Same as O1322	Drives O1388 when in engaged position	6-33
O1384		Same as O1321	Permits O1383 to drive O1393 when in engaged position	6-33
O1385		Same as O1316	Applies tension to O1387	6-33
O1386		Same as O1319	Lubricates clutch mechanism	6-33
O1387		Same as O1317	Engages and disengages O1383 and O1384	6-33
O1388		Same as O1318	Drives O1393	6-33
O1390		CAM, FUNCTION: 160354	Operates O1467 and O1300	6-33
O1391		COLLAR, CAM: 159896	Attaches O1392 and O1393 to O1390	6-33
O1392		BEARING: 162341	Sleeve bearing for clutch mechanism	6-33
O1393		Same as O1315	Drives O1392	6-33
O1394		SHAFT, MAIN: 154397	Mounts clutch mechanism and O2179	6-33
		(Continued. See O1425)		
H1425		Same as H1319	Holds O1425 to O1394	6-34
H1426		Same as H1302	Holds O1425 to O1394	6-34
H1427		Same as H1322	Holds O1432 to O1433	6-34
H1428		Same as H1323	Holds O1432 to O1433	6-34
H1429		Same as H1324	Holds O1432 to O1433	6-34
H1430		SCREW: 4-40 x 1/4 hex 152893. Same as H1327	Holds O1433 to O1438	6-34
H1431		Same as H1317	Holds O1433 to O1438	6-34
H1433		RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-12 (code 59433 part No. 119649)	Holds O1436 on O1438	6-34
H1434		Same as H1433	Holds O1437 on O1438	6-34
H1450		Same as H1310	Holds O1452 and O1471 to O1467	6-35
H1451		NUT: 6-40 hex 156399	Holds O1452 and O1471 to O1467	6-35
H1452		Same as H1302	Holds O1452 and O1471 to O1467	6-35
H1453		WASHER, FLAT: 125015. Same as H297	Holds O1452 and O1471 to O1467	6-35
H1454		Same as H1312	Holds O1464 to O1467	6-35
H1455		Same as H1302	Holds O1464 to O1467	6-35
H1456		SCREW: 6-40 x 5/16 fil 111017. Same as H103	Holds O1453 to O1467	6-35
H1457		WASHER, LOCK: Steel, mfg. code No. 77252 (code 59433 part No. 124177) Same as H729	Holds O1453 to O1467	6-35
H1458		NUT: 10-32 hex 125231	Holds O1459 and O1458 to A1304	6-35
H1459		WASHER, LOCK: 2669. Same as H117	Holds O1459 and O1458 to A1304	6-35
H1460		SCREW, SHOULDER: 6-40 156987	Shaft for O1460	6-35

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H1461		Same as H1320	Holds H1460 to O1467	6-35
H1462		Same as H1302	Holds O1460 to O1467	6-35
H1465		Same as H1312	Holds O1471 and O1464 to O1467	6-35
H1466		Same as H1451	Holds O1471 to O1467	6-35
H1467		Same as H1302	Holds O1471 and O1464 to O1467	6-35
H1468		SCREW: 6-40 x 1/4 fil 151657	Holds O1472 to O1471	6-35
H1469		Same as H1302	Holds O1472 to O1471	6-35
H1470		Same as H1303	Holds O1472 to O1471	6-35
H1471		WASHER, FLAT: 176252	Holds O1472 to O1471	6-35
H1472		Same as H1320	Holds O1470 to O1471	6-35
H1473		Same as H1302	Holds O1470 to O1471	6-35
H1474		Same as H1314	Holds O1470 to O1471	6-35
H1475		Same as H1453	Holds O1471 to A1301	6-35
H1476		SCREW: 6-40 x 3/8 hex 151632. Same as H105	Holds O1470 to O1471	6-35
H1477		Same as H1327	Holds O1473 to A1304	6-35
H1478		Same as H1317	Holds O1473 to A1304	6-35
H1479		RING, RETAINING: Steel, mfg. code No. 79136, part No. 5103-37 (code 59433 part No. 156467)	Holds O1475 to O1394	6-35
H1480		WASHER, FLAT: 151246	Holds O1475 to O1394	6-35
H1481		Same as H1480	Holds O1475 to O1394	6-35
H1482		SCREW: 6-40 x 5/16 fil 151630. Same as H1308	Holds O1478 to A1304	6-35
H1483		Same as H1302	Holds O1476 to A1304	6-35
H1487		SCREW: 6-40 x 3/8 hex 151632. Same as H105	Holds O1479 to A1304	6-35
H1488		Same as H1302	Attaches O1479 to A1304	6-35
H1489		Same as H1314	Attaches O1479 to A1304	6-35
H1490	8	SCREW: 10-32 x 5/16 fil 151690. Same as H805	Holds O1480 to O1440	6-35
H1491	8	Same as H1310	Holds O1480 to O1394	6-35
H1492	8	Same as H1302	Holds O1480 to O1394	6-35
H1494		RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-18 (code 59433 part No. 119652) Same as H1326	Holds O1462 to O1467	6-35
H1495	8	Same as H1310	Retains O1480 on O1458	6-35
H1496	8	Same as H1302 (Continued. See H1500)	Retains O1480 on O1458	6-35
O1425		DRUM, CLUTCH: 150000	Drives O1427 and O1428	6-34
O1426		Same as O1320	Applies tension to O1427 and O1428	6-34
O1427		Same as O1322	Drives O1432 when in engaged position	6-34
O1428		Same as O1321	Permits O1427 to drive O1432 when in engaged position	6-34
O1429		Same as O1316	Applies tension to O1430	6-34
O1430		LEVER, CLUTCH SHOE: 150026. Same as O560	Engages and disengages O1427 and O1428	6-34
O1431		Same as O1319	Lubricates clutch mechanism	6-34
O1432		Same as O1318	Drives O1433	6-34
O1433		Same as O1315	Drives O1434	6-34
O1434		ROLLER, NEEDLE: 154398	Roller for O1394	6-34
O1436		WASHER, FELT: 86079	Lubricates O1437	6-34
O1437		ROLLER, FUNCTION CAM: 91139	Operates O1300	6-34
O1438		CAM, FUNCTION: 154396	Operates O1467	6-34
O1450		WICK, FELT: 159548	Lubricates O1451	6-35
O1451		SPRING, ROCKER ARM: 82787	Applies tension to O1463	6-35
O1452		BUSHING: 160839	Operates O2033	6-35
O1453		BEARING ASSY: 159411	Rides O1390 or O1438 and operates O1467	6-35

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O1454		RETAINER, BEARING ROLLER: 156998	Retains O1453 rollers	6-35
O1455		RACE, ROLLER BEARING (OUTER): 156988	O1453 outer race	6-35
O1456		ROLLER, BEARING: 156989	O1453 bearing	6-35
O1457		RACE, ROLLER BEARING (INNER): 156990	O1453 inner race	6-35
O1458		SHAFT, ROCKER BAIL: 156366	Pivot shaft for O1467	6-35
O1459		GUIDE, ADJUSTING LEVER: 156921	Guides O1312	6-35
O1460		Same as O1453	Rides O1390 or O1438 and operates O1467	6-35
O1462		ROLLER, RIBBON FEED DRIVE: 156900	Operates O2011	6-35
O1463		LINK, PERFORATOR DRIVE: 156412	Operates O1603	6-35
O1464		POST, SPACER: 156995	Spaces O1467 and operates O1463	6-35
O1465		WASHER, FELT: 156576	Lubricates O1464	6-35
O1466		OILER, FELT WICK: 156994	Lubricates O1458	6-35
O1467		BAIL, ROCKER: 162350	Operates printing and perforating mechanism	6-35
O1468		SHIM (0.004): 82392	Spaces O1472 from O1471	6-35
O1469		WASHER, FELT: 156877	Lubricates O1470	6-35
O1470		BUSHING, PILOT STUD: 156876	Guides O1471	6-35
O1471		BAIL, OPERATING BLADE MOUNTING: 156871	Operates O1472	6-35
O1472		BLADE, OPERATING: 156872	Operates O1669	6-35
O1473		DISK, MAIN SHAFT BEARING: 156403	Holds O1475 to A1304	6-35
O1474		WASHER, SPRING: 156465	Holds O1475 to O1394	6-35
O1475		BEARING, BALL, ANNULAR: Mfg. code No. 24617, part No. 77-R-6 (code 59433 part No. 151633) Same as O783	Bearing for O1394	6-35
O1476		CLAMP, BEARING: 158745. Same as O791	Holds O1478 to A1304	6-35
O1479		BRACKET, ROCKER BAIL GUIDE: 159625	Guides O1467	6-35
O1480	8	HUB: 162248 (Continued. See O1500)	Drives O1394	6-35
A1500		PLATE, BOTTOM GUIDE: 156102	Guides O1510	6-36
A1501	10	HOLDER, PUNCH: 159923	Mounts parts of punch block assembly	6-36
A1502		PLATE, PERFORATOR REAR: 156024	Supports reperforator mechanism	6-36
A1550		PLATE, PERFORATOR FRONT: 156028	Front plate of reperforator mechanism	6-37
A1552		BRACKET, PERFORATOR MOUNTING: 156184 (Continued. See A1600)	Mounting foot for A1550	6-37
H1500		Same as H1316	Holds O1503 to O1517	6-36
H1501		Same as H1323	Holds O1503 to O1517	6-36
H1502		Same as H1334	Holds O1503 to O1517	6-36
H1507	10	SCREW: 4-40 x 11/64 fil 125138	Holds O1509 to A1501	6-36
H1508	10	DOWEL: 101892	Positions O1509 on A1501	6-36
H1509	10	RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-9 (code 59433 part No. 119648)	Holds O1512 to A1501	6-36
H1510		Same as H1509	Holds O1512 to A1501	6-36
H1511	10	SCREW: 2-56 x 3/16 fil 128002	Holds A1500 to A1501	6-36
H1512	10	DOWEL: 125421	Locates A1500 on A1501	6-36
H1513		Same as H1337	Holds O1516 to A1501	6-36
H1514		Same as H1323	Holds O1516 to A1501	6-36
H1515		Same as H1323	Holds O1518 to A1502	6-36
H1516		Same as H1334	Holds O1518 to A1502	6-36
H1517		SCREW: 6-40 x 5/16 hex 1033	Holds O1520 to O1521 and O1521 to O1560	6-36
H1518		Same as H1302	Holds O1520 to O1521 and O1521 to O1560	6-36

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H1519		Same as H1314	Holds O1520 to O1521 and O1521 to O1560	6-36
H1520		Same as H1312	Holds A1502 to A1303	6-36
H1521		Same as H1302	Holds A1502 to A1303	6-36
H1522		Same as H1314	Holds A1502 to A1303	6-36
H1523		SCREW: 6-40 x 3/16 hex 151722. Same as H337	Holds O1522 to A1502	6-36
H1524		Same as H1302	Holds O1522 to A1502	6-36
H1525		Same as H1314	Holds O1522 to A1502	6-36
H1526		SCREW: SHOULDER 6-40 159621	Holds O1522 to A1502 and A1502 to A1303	6-36
H1527		Same as H1302	Holds O1522 to A1502 and A1502 to A1303	6-36
H1528		Same as H1303	Holds O1522 to A1502 and A1502 to A1303	6-36
H1529		SCREW: 4-40 x 1/4 fil 151637. Same as H148	Holds O1523 to A1502	6-36
H1530		Same as H1323	Holds O1523 to A1502	6-36
H1531		Same as H1476	Holds A1502 to A1503	6-36
H1532		Same as H1302	Holds A1502 to A1503	6-36
H1533		Same as H1314	Holds A1502 to A1503	6-36
H1534		STUD: 161108	Supports O1616	6-36
H1555		Same as H1326	Positions O1551 on O1550	6-37
H1556		Same as H1327	Holds O1550 to A1502	6-37
H1557		Same as H1323	Holds O1550 to A1502	6-37
H1558		Same as H1326	Holds O1554 on A1550	6-37
H1559		Same as H1509	Holds O1556 to O1555	6-37
H1560		NUT: 6-40 hex 151416. Same as H104	Holds O1559 to A1550	6-37
H1561		Same as H1302	Holds O1559 to A1550	6-37
H1562		Same as H1314	Holds O1559 to A1550	6-37
H1563		STUD: 161107	Supports O1616	6-37
H1564		Same as H1302	Holds O1616 to A1550	6-37
H1565		NUT: 6-40 hex 1036	Holds O1560 to A1550	6-37
H1566		Same as H1302	Holds O1560 to A1550	6-37
H1567		NUT: 6-40 hex 161139	Holds O1566 to A1550	6-37
H1568		Same as H1302	Holds O1566 to A1550	6-37
H1569		Same as H1314	Holds O1566 to A1550	6-37
H1570		Same as H1433	Holds O1565 to O1566	6-37
H1571		RING, RETAINING: Steel, mfg code No. 79136, part No. 5133-6 (code 59433 part No. 119647)	Holds O1564 to O1565	6-37
H1572		Same as H1314	Holds O1566 to A1550	6-37
H1573		SCREW: 2-56 x 5/32 fil 160948	Holds O1567 or O1568 to O1569	6-37
H1574		Same as H1320	Holds O1616 to A1550	6-37
H1575		WASHER, LOCK: 93117. Same as H203	Holds O1568 to O1569	6-37
H1576		Same as H1308	Holds O1571 to O1550	6-37
H1577		Same as H1302	Holds O1571 to A1550	6-37
H1578		Same as H1308	Holds O1571 to A1502	6-37
H1579		Same as H1302	Holds O1571 to A1502	6-37
H1580		Same as H1308	Holds A1552 to A1550	6-37
H1581		Same as H1302	Holds A1552 to A1550	6-37
H1582		Same as H1314	Holds A1552 to A1550	6-37
H1583		Same as H1312	Holds A1552 to A113, A854 or A933	6-37
H1584		Same as H1302	Holds A1552 to A113, A854 or A933	6-37
H1585		Same as H1453	Holds A1552 to A113, A854 or A933	6-37
H1586		Same as H1308	Holds O1574 to A1550	6-37

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H1587		Same as H1302	Holds O1574 to A1550	6-37
H1588	3	Same as H1308	Retains O1550 on A1550	6-37
H1589	3	Same as H1302	Retains O1550 on A1550	6-37
H1590		Same as H1320 (Continued. See H1600)	Holds O1616 to A1550	6-37
O1500		SPRING, PUNCH SLIDE: 159560	Applies tension to O1506	6-36
O1502		PLATE, SPRING: 156015	Anchors O1500 and O1501	6-36
O1503		GUIDE, PUNCH SLIDE: 156163	Guides O1506	6-36
O1504	10	SPRING, RETRACTOR BAIL (TENSION): 55063	Applies tension to A1600	6-36
O1505		ROD, RETRACTOR BAIL: 156172	Anchors O1504	6-36
O1506	10	SLIDE, PUNCH: 156089	Operates O1510	6-36
O1508	10	BLOCK, PUNCH ASSY: 159656	Tape perforating mechanism	6-36
O1509	10	PLATES, GUIDE AND DIE: 159657	Guide tape and O1510	6-36
O1510	10	PIN, PUNCH: 156002	Perforates tape	6-36
O1511	10	SPRING, PUNCH PIN: 156166	Applies tension to O1515 to retract punch pins	6-36
O1512	10	SHAFT: 156104	Shaft for O1515	6-36
O1513	10	WASHER, FELT: 153267	Lubricates O1512	6-36
O1514	10	Same as O1513	Lubricates O1512	6-36
O1515	10	BAIL, RETRACTOR: 156106	Retracts O1510 from tape	6-36
O1516		SPRING, PUNCH BLOCK: 156012	Tape edge reference guide	6-36
O1517		STUD, GUIDE MOUNTING: 156173	Supports O1503 and holds O1518 to A1502	6-36
O1518		PLATE, PUNCH SLIDE DOWNSTOP: 156069	Limits downward movement of O1506	6-36
O1519		TAPE GUIDE ASSY: 159365	Guides and depresses tape in at punch block	6-36
O1520		GUIDE, TAPE: 159982	Guides tape	6-36
O1521		SPACER, TAPE GUIDE: 159981	Spaces O1520 from O1560	6-36
O1522		CLAMP, PERFORATOR ADJUSTING: 159622	Adjusts tape feed chute	6-36
O1523		BLOCK, TAPE GUIDE: 156046	Supports O1553	6-36
O1550		POST, TAPE GUIDE: 156040	Supports O1551 and O1553	6-37
O1551		SPRING, TAPE GUIDE: 5363	Applies tension to O1553	6-37
O1552		SPRING, TAPE SHOW TORSION: 156047	Applies tension to O1554	6-37
O1553		GUIDE, TAPE: 156036	Guides tape between O1557 and O1569	6-37
O1554		ARM, TAPE SHOE: 156061	Operates O1556	6-37
O1555		PIVOT, SHOE: 156062	Pivot for O1556	6-37
O1556		SHOE, TAPE: 156052	Holds tape against O1569	6-37
O1557		WHEEL, DIE: 156055	Anvil for O1569	6-37
O1558		Same as O1503	Lubricates O1557	6-37
O1559		STUD, DIE WHEEL ECCENTRIC: 156044	Shaft for O1557	6-37
O1560	10	SCREW, ADJUSTING: 156090	Adjusts position of O1554	6-37
O1561		SPRING: 41382. Same as O361	Applies tension to O1602	6-37
O1562		SPRING: 91120	Applies tension to O1565	6-37
O1563		WICK, FELT: 154698	Lubricates O1561 and O1562	6-37
O1564		ROLLER: 156577	Indexes O1569	6-37
O1565		LEVER, DETENT: 156054	Supports O1564 and anchors O1562	6-37
O1566		STUD, DETENT LEVER ECCENTRIC: 156050	Pivot for O1565	6-37
O1568		SHAFT, FEED WHEEL: 156045	Shaft for O1569	6-37
O1569		WHEEL, FEED: 156008	Advances tape	6-37
O1570		WASHER, FELT: 156019	Lubricates A1550 stud	6-37
O1571		POST, SPACING: 156042	Spaces A1550 from A1502	6-37
O1572	5	POST, SUPPORTING: 161928	Pivot for O1573	6-37
O1573	5	LEVER, W/HUB: 161930	Operates O2079	6-37

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O1574		Same as O1550	Supports O1554, O1552 and O1553	6-37
O1575		SPRING: 164515	Applies tension to O1554 and O1576	6-37
O1576		LEVER: 164511 (Continued. See O1600)	Operates O1554	6-37
A1600	10	BRACKET, SPRING: 156108	Anchors O1504 and holds O1620 to A1601	6-38
A1601		POST, SLIDE: 156009	Operates O1506 and mounts A1600, O1619 and O1620	6-38
A1650		PLATE, FRONT: 159535 (Continued. See A1700)	Mounts typewheel positioning mechanisms	6-39
H1600		SCREW: 4-40 lock 156013	Holds O1600 to O1612	6-38
H1601		Same as H1323	Holds O1600 to O1612	6-38
H1602		Same as H1300	Holds O1603 to O1612	6-38
H1603		Same as H1302	Holds O1603 to O1612	6-38
H1604		Same as H1303	Holds O1603 to O1612	6-38
H1605		Same as H1301	Holds O1603 to O1612	6-38
H1606		Same as H1335	Holds O1605 to O1612	6-38
H1607		Same as H1323	Holds O1605 to O1612	6-38
H1608		Same as H1560	Holds O1607, O1609, O1610 and O1614 to O1612	6-38
H1609		Same as H1302	Holds O1607, O1609, O1610 and O1614 to O1612	6-38
H1610		WASHER, FLAT: 152634	Holds O1607, O1609, O1610 and O1614 to O1612	6-38
H1612		Same as H1320	Holds O1608, O1609, O1611 and O1615 to A1601	6-38
H1613		Same as H1302	Holds O1608, O1609, O1611 and O1615 to A1601	6-38
H1614		Same as H1453	Holds O1608, O1609, O1611 and O1615 to A1601	6-38
H1616	10	Same as H1560	Holds O1609 to O1622	6-38
H1617		Same as H1302	Holds O1609 to O1622	6-38
H1618		Same as H1326	Holds O1613, O1614 and O1621 to O1612	6-38
H1619		WASHER, FLAT: 71437	Holds O1613, O1614 and O1621 to O1612	6-38
H1620		Same as H1326	Holds O1615 to O1616	6-38
H1621		Same as H1320	Holds O1616 to A1502	6-38
H1622		Same as H1302	Holds O1616 to A1502	6-38
H1623		Same as H1326	Holds O1618 to O1516	6-38
H1624		RING, RETAINING: Steel, mfg. code No. 79136, part No. X5133-21 (code 59433 part No. 128357)	Holds O1617, O1621 and O1618 to O1616	6-38
H1625		WASHER, FLAT: 156162	Holds O1617, O1621 and O1618 to O1616	6-38
H1626		Same as H1327	Holds A1600 and O1619 to A1601	6-38
H1627		Same as H1323	Holds A1600 and O1619 to A1601	6-38
H1628		Same as H1326	Holds O1625 to O1622	6-38
H1629		RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-14 (code 59433 part No. 119650). Same as H341	Holds O1621 to O1622	6-38
H1650		SCREW: 4-40 x 15/16 fil 156874	Holds O1650 through O1654 to A1650	6-39

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H1651		Same as H1316	Holds O1650 through O1654 to A1650	6-39
H1652		Same as H1317	Holds O1650 through O1654 to A1650	6-39
H1653		Same as H1220	Holds O1650 through O1654 to A1650	6-39
H1654		Same as H1308	Holds O1655 to A1650	6-39
H1655		Same as H1302	Holds O1655 to A1650	6-39
H1656		Same as H1453	Holds O1655 to A1650	6-39
H1657		Same as H1316	Holds O1657 to O1663	6-39
H1658		Same as H1323	Holds O1657 to O1663	6-39
H1659		Same as H1334	Holds O1657 to O1663	6-39
H1660		SCREW: 6-40 x 7/32 fil 156501	Holds O1662 and O1664 to A1650	6-39
H1661		Same as H1302	Holds O1662 and O1664 to A1650	6-39
H1662		Same as H1316	Holds O1666 to O1671	6-39
H1663		Same as H1323	Holds O1666 to O1671	6-39
H1664		Same as H1334	Holds O1666 to O1671	6-39
H1665		Same as H1660	Holds O1670 and O1672 to A1650	6-39
H1666		Same as H1302	Holds O1670 and O1672 to A1650	6-39
H1667		Same as H1312	Holds A1650 to A1304	6-39
H1668		Same as H1302	Holds A1650 to A1304	6-39
H1669		Same as H1314 (Continued. See H1700)	Holds A1650 to A1304	6-39
O1600		BUSHING, FEED PAWL ECCENTRIC: 156051	Pivot for O1602	6-38
O1601		WASHER, FELT: 90361. Same as O1395	Lubricates O1600	6-38
O1602		PAWL, FEED: 164513	Operates O1569	6-38
O1603		ARM ROCKER: 156884	Operates O1612	6-38
O1604		Same as O1305	Lubricates O1612	6-38
O1605		PLATE: 156077	Anchors O1561	6-38
O1606		WASHER, FELT: 156169	Lubricates O1612	6-38
O1607		WASHER, FELT: 156093	Lubricates O1612	6-38
O1608		Same as O1607	Lubricates A1601	6-38
O1609		LINK, FRONT TOGGLE: 156094	Operates A1601 and O1622	6-38
O1610		BUSHING: 156043	Pivot for O1609	6-38
O1611		BUSHING: 156095	Pivot for O1609	6-38
O1612		BAIL ASSY, TOGGLE: 156070	Operates O1614, O1605 and O1602	6-38
O1613		WASHER, FELT: 150923. Same as O585	Lubricates O1614	6-38
O1614		SHAFT, TOGGLE BAIL ECCENTRIC: 156017	Operates O1609 and O1601	6-38
O1615		LINK, FRONT DRAG: 156016	Links O1616 to A1601 and supports O1502	6-38
O1616		POST, SLIDE GUIDE: 161109	Guides O1506	6-38
O1617		Same as O1607	Lubricates O1622	6-38
O1618		LINK, REAR DRAG: 156099	Links O1616 to A1601 and supports O1502	6-38
O1619		GUIDE, SLIDE POST: 156067	Retains O1620 on A1601	6-38
O1620		STRIP, FELT: 156103	Lubricates A1601	6-38
O1621		LINK, REAR TOGGLE: 156058	Operates O1622 and A1601	6-38
O1622		SHAFT, RESET BAIL ECCENTRIC: 156060	Operates O1625	6-38
O1623		WASHER, FELT: 151222	Lubricates O1622	6-38
O1624		Same as O1623	Lubricates O1622	6-38
O1625	10	BAIL, RESET: 156059	Operates O1327	6-38
O1650		SPRING, DETENT LEVER: 110879	Applies tension to O1652	6-39
O1651		Same as O1650	Applies tension to O1652	6-39
O1652		LEVER, ROTARY DETENT: 156264	Controls rotation of O1671 and O1666	6-39

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O1653		BUSHING, SHOULDER: 156266	Pivot for O1652	6-39
O1654		WASHER, FELT: 150990. Same as O636	Lubricates O1653	6-39
O1655		BRACKET, NO. 4 PUSH BAR GUIDE: 156492	Guides O1661	6-39
O1656		DETENT, ROTARY SHAFT: 161444	Locks O1663 and O1657 in position	6-39
O1657		SHAFT ROTARY, SECONDARY ECCENTRIC (LEFT): 156287	Operates O1723	6-39
O1658		BAR, PUSH, FIGURES: 159532	Operates O1657	6-39
O1659		BAR, PUSH, LETTERS: 159531	Operates O1657	6-39
O1660		SHIM: 159642	Spaces O1659 from O1661	6-39
O1661		BAR, PUSH, NO. 4: 159530	Operates O1663	6-39
O1662		BEARING ROTARY ECCENTRIC (REAR): 156291	Bearing for O1663	6-39
O1663		SHAFT, ROTARY, PRIMARY ECCENTRIC (LEFT): 156277	Positions O1657	6-39
O1664		BEARING ROTARY ECCENTRIC (LEFT FRONT): 156289	Bearing for O1663	6-39
O1665		Same as O1656	Locks O1666 and O1671 in position	6-39
O1666		SHAFT, ROTARY, SECONDARY ECCENTRIC (LEFT): 156286	Operates O1722	6-39
O1667		BAR, PUSH, NO. 3: 159529	Operates O1666	6-39
O1668		Same as O1660	Spaces O1668 from O1669	6-39
O1669		BAR, PUSH, NO. 5: 159528	Operates O1671	6-39
O1670		Same as O1662	Bearing for O1671	6-39
O1671		SHAFT, ROTARY, PRIMARY ECCENTRIC (RIGHT): 156276	Positions O1666	6-39
O1672		BEARING, ROTARY ECCENTRIC (RIGHT FRONT): 156290 (Continued. See O1700)	Bearing for O1671	6-39
A1700		HOUSING, TYPEWHEEL SHAFT: 160943	Houses O1712 and supports O1706 and O1707	6-40
A1701		HOUSING, SPUR GEAR: 161323	Houses O1711	6-40
A1750		BRACKET, AXIAL MOUNTING: 159525 (Continued. See A1825)	Mounts axial positioning mechanism	6-41
H1700		Same as H1433	Holds O1705 to O1703	6-40
H1701		NUT: 10-32 hex 112626. Same as H259	Adjusts O1703	6-40
H1702		SCREW: 6-40 x 7/32 fil 156501. Same as H1660	Holds O1706 to A1700	6-40
H1703		Same as H1302	Holds O1706 to A1700	6-40
H1704		Same as H1327	Holds O1707 to A1700	6-40
H1705		Same as H1317	Holds O1707 to A1700	6-40
H1706		Same as H1320	Holds O1709 to O1712	6-40
H1707		Same as H1302	Holds O1709 to O1712	6-40
H1708		Same as H1314	Holds O1709 to O1712	6-40
H1709	10	WASHER, FLAT: 156390	Holds O1709 to O1712	6-40
H1710		Same as H1310	Holds A1700 and A1701 to A1650	6-40
H1711		Same as H1302	Holds A1700 and A1701 to A1650	6-40
H1712		Same as H1308	Holds A1700 to A1750	6-40
H1713		Same as H1302	Holds A1700 to A1750	6-40
H1714		RING, RETAINER: 156835	Holds O1711 to O1712	6-40
H1715		WASHER, FLAT: 161324	Holds O1711 to O1712	6-40
H1716		SCREW: 6-40 x 1-3/32 hex 159658	Holds O1714 to A1650	6-40
H1717		WASHER, FLAT: 94529	Holds O1705 to O1704	6-40
H1718		Same as H1302	Holds O1714 to A1650	6-40

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H1719		RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-25 (code 59433 part No. 119653). Same as H225	Holds O1713 to O1714	6-40
H1720		Same as H1300	Holds O1715 to O1717	6-40
H1721		Same as H1302	Holds O1715 to O1717	6-40
H1722		Same as H1301	Holds O1715 to O1717	6-40
H1723		Same as H1314	Holds O1715 to O1717	6-40
H1724		NUT: 7/16-32 hex 2199	Holds O1717 to A1650	6-40
H1725		WASHER, LOCK: 2407	Holds O1717 to A1650	6-40
H1726		Same as H1327	Holds O1718 to A1750	6-40
H1727		Same as H1317	Holds O1718 to A1750	6-40
H1728		Same as H1327	Holds O1719, O1724, O1723, O1721, and O1722 to O1720	6-40
H1729		Same as H1323	Holds O1719, O1724, O1723, O1721 and O1722 to O1720	6-40
H1730		Same as H1315	Holds O1722 to O1666 and O1723 to O1657	6-40
H1750		Same as H1316	Holds O1753 to A1750	6-41
H1751		Same as H1317	Holds O1753 to A1750	6-41
H1752		Same as H1220	Holds O1753 to A1750	6-41
H1753		Same as H1433	Holds O1750, O1751 and O1752 to O1753	6-41
H1754		Same as H1320	Holds O1754, O1755, and O1766, O1768 and O1767 to O1757 and O1757 to O1763	6-41
H1755		Same as H1302	Holds O1754, O1755, O1766, O1768 and O1767 to O1757 and O1757 to O1763	6-41
H1756		WASHER, FLAT: 159597	Holds O1754, O1755, O1766, O1768 and O1767 to O1757 and O1757 to O1763	6-41
H1757		SCREW, SHOULDER: 6-40, 86774	Holds O1755 and H1760 to O1763	6-41
H1758		Same as H1310	Holds O1756 and O1758 to H1760	6-41
H1759		Same as H1302	Holds O1756 and O1758 to H1760	6-41
H1760		POST, AXIAL TOGGLE LINK: 156909	Pivot for O1758	6-41
H1761		Same as H1302	Holds O1755 and H1760 to O1763	6-41
H1762		Same as H1310	Holds O1759, O1762 and O1761 to O1763 and O1763 and O1760 to A1750	6-41
H1763		Same as H1302	Holds O1759, O1762 and O1761 to O1763 and O1763 and O1760 to A1750	6-41
H1764		Same as H1314	Holds O1759, O1762 and O1761 to O1763 and O1763 and O1760 to A1750	6-41
H1765		Same as H1320	Holds O1769 and O1764 to A1750	6-41
H1766		Same as H1302	Holds O1769 and O1764 to A1750	6-41
H1767		Same as H1433	Holds O1768 to O1708	6-41
H1768		Same as H1337	Holds O1770 to A1750	6-41
H1769		Same as H1323	Holds O1770 to A1750	6-41
H1770		WASHER, FLAT: 47024 (Continued. See H1800)	Holds O1770 to A1750	6-41
O1700		SPRING: 173978	Applies tension to O1705	6-40
O1701		WASHER, FELT: 156558	Lubricates O1704 and O1705	6-40
O1702		HEAD, HAMMER: 173979	Head for O1705	6-40
O1703		SHAFT, HAMMER: 173977	Pivot for O1704 and O1705	6-40

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O1704		ACCELERATOR, HAMMER: 173981	Operates O1705	6-40
O1705	10	HAMMER, PRINT: 173980	Presses tape against O2001	6-40
O1706		BRACKET, HAMMER MOUNTING: 156931	Supports O1703, O1704 and O1705	6-40
O1707		BUSHING, RIBBON GUIDE: 156489	Guides O1708	6-40
O1708	10	GUIDE, RIBBON: 156869	Guides O2001	6-40
O1709		TYPEWHEEL, ARRANGEMENT RE: 156360	Imprints tape	6-40
O1711		GEAR, TYPEWHEEL SHAFT SPUR, 16 TOOTH: 156389	Operates O1709 radially through O1712	6-40
O1712	10	SHAFT, TYPEWHEEL: 156332	Operates O1709 axially	6-40
O1713		GEAR, IDLER, 15 TOOTH: 159536	Guides O1724	6-40
O1714		SHAFT, IDLER GEAR ECCENTRIC: 159659	Shaft for O1713	6-40
O1715		ARM, CORRECTING CLAMP: 156408	Operates O1716	6-40
O1716		LEVER, ROTARY CORRECTING: 161431	Detents O1724 in printing position	6-40
O1717		BUSHING, ECCENTRIC: 159480	Pivot for O1716	6-40
O1718		BLOCK, TYPEWHEEL RACK GUIDE: 156905	Guides O1724	6-40
O1719		LINK, REAR CROSS: 156242	Holds O1721 through O1724 to O1720	6-40
O1720		LINK, FRONT CROSS: 156241	Operates O1724	6-40
O1721		WASHER, FELT: 115122. Same as O509	Lubricates O1720	6-40
O1722		ROD, OUTPUT, CONNECTING (RIGHT): 156311	Connects O1720 to O1666	6-40
O1723		ROD, OUTPUT CONNECTING (LEFT): 156306	Connects O1720 to O1657	6-40
O1724		RACK, TYPEWHEEL: 156466	Drives O1711	6-40
O1750		SHIM: 90599	Adjusts height of O1752 and holds O1751 against O1752	6-41
O1751		Same as O1436	Lubricates O1753	6-41
O1752		ROLLER, AXIAL RACK GUIDE: 156382	Guides O1806	6-41
O1753		STUD, AXIAL GUIDE ROLLER: 156493	Mounts O1750, O1751 and O1752	6-41
O1754		SECTOR, AXIAL: 156294	Operates O1712	6-41
O1755		LINK, AXIAL TOGGLE: 156322. Same as O1712	Links O1763 to O1769	6-41
O1756		BUSHING SPACER: 160846	Spaces O1758 from O1763	6-41
O1757		POST, SECTOR PIVOT: 156908	Pivot for O1754, O1755, O1769, O1768 and O1758	6-41
O1758		Same as O1712	Links O1763 to O1769	6-41
O1759		BUSHING, DRIVE BAIL: 159522	Pivot for O1763	6-41
O1760		WASHER, FELT: 131016	Lubricates O1759	6-41
O1761		BUSHING, DRIVE BAIL: 159519	Pivot for O1763	6-41
O1762		WASHER, FELT: 101123	Lubricates O1761	6-41
O1763		BAIL, OSCILLATING DRIVE: 159523	Operates O1754, O1769 and O1768 through O1755 and O1758	6-41
O1764		SHAFT, OSCILLATING BAIL: 156321	Pivot for O1769	6-41
O1765		WICK, FELT: 156948	Lubricates O1764	6-41
O1766		WASHER, FELT: 130330	Lubricates O1757	6-41
O1767		WASHER, FELT: 115134	Lubricates O1757	6-41
O1768		LEVER, RIBBON OSCILLATING: 156870	Operates O1708	6-41
O1769		BAIL, OSCILLATING: 156462	Operates mechanisms for withdrawing typewheel and ribbon from imprinted portion of tape	6-41
O1770		LEVER, RIBBON OSCILLATING ADJUSTING: 156369 (Continued. See O1800)	Adjusts O1768	6-41
A1825		BRACKET, CONTACT MOUNTING: 154246	Mounts E1825 and S1825	6-43
A1850		PLATE: 155096. Same as A1334 (Continued. See A1900)	Mounts range finder mechanism	6-44

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
E1826		SLEEVE, INSULATING: 155752. Same as E178	Insulator W1825	6-43
E1827		SLEEVE, INSULATING: 155750. Same as E852	Insulator W1825	6-43
E1828		PLATE, RETAINING: 41732	Holds E1828 through E1831 to A1825	6-43
E1829		GUARD, CONTACT SPRING: 80833	Protects E1833 and E1835	6-43
E1830		PLATE, CLAMP: 97266	Holds E1831 through E1835 to A1825	6-43
E1831		INSULATOR: 82548	Insulates E1832 from E1830 and A1825	6-43
E1832		TERMINAL: 81726	Terminals for E1833	6-43
E1833		CONTACT: 154245	Contact for S1825	6-43
E1834		INSULATOR: 82547	Insulates E1833 from E1835	6-43
E1835		CONTACT: 160404	Contact for S1825	6-43
E1836		BUSHING: 100421	Insulates S1825 pileup from H1825	6-43
		(Continued. See E1950)		
H1800		Same as H1650	Holds O1801, O1802 and O1803 to A1750	6-42
H1801		Same as H1323	Holds O1801, O1802 and O1803 to A1750	6-42
H1802		Same as H1334	Holds O1801, O1802 and O1803 to A1750	6-42
H1803		Same as H1316	Holds O1807 to O1812	6-42
H1804		Same as H1323	Holds O1807 to O1812	6-42
H1805		Same as H1334	Holds O1807 to O1812	6-42
H1806		Same as H1315	Holds O1806 to O1807	6-42
H1807		SCREW: 6-40 x 5/32 fil 156875	Holds O1811 to A1750	6-42
H1808		Same as H1302	Holds O1811 to A1750	6-42
H1809		Same as H1315	Holds O1813 to A1763	6-42
H1810		Same as H1315	Holds O1817 to O1763	6-42
H1811		SCREW, SHOULDER: 6-40, 151700	Holds O1816 to O1817 and mounts O1815	6-42
H1812		Same as H1302	Holds O1816 to O1817	6-42
H1813		Same as H1303	Holds O1816 to O1817	6-42
H1814		Same as H1315	Holds O1818 to O1819	6-42
H1817		Same as H1308	Holds A1750 to O1820 and O1650	6-42
H1818		Same as H1302	Holds A1750 to O1820 and O1650	6-42
H1825		SCREW: 4-40 x 5/8 fil 151688	Secures S1825 pileup to A1825	6-43
H1826		NUT: 4-40 hex 151880. Same as H683	Secures S1825 pileup to A1825	6-43
H1827		Same as H1323	Secures S1825 pileup to A1825	6-43
H1828		Same as H1327	Holds A1825, O1832 and O1838 to O1859	6-43
H1830		Same as H1323	Holds A1825, O1832 and O1838 to O1859	6-43
H1832		Same as H1334	Holds A1825, O1832 and O1838 to O1859	6-43
H1833		Same as H1337	Holds O1832 to O1858	6-43
H1834		Same as H1317	Holds O1832 to O1858	6-43
H1835		Same as H1337	Holds O1834 to O1835	6-43
H1836		Same as H1317	Holds O1834 to O1835	6-43
H1837		Same as H1334	Holds O1834 to O1835	6-43
H1838		SCREW: 4-40 x 1/8 fil 156536	Holds O1839 to O1858	6-43
H1839		Same as H1323	Holds O1839 to O1858	6-43
H1840		Same as H1337	Holds O1841 to O1842	6-43
H1841		Same as H1317	Holds O1841 to O1842	6-43
H1842		Same as H1334	Holds O1841 to O1842	6-43

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H1843		Same as H1312	Holds O1844 and O1858 to A1650	6-43
H1844		Same as H1302	Holds O1844 and O1858 to A1650	6-43
H1845		Same as H1314	Holds O1844 and O1858 to A1650	6-43
H1846		Same as H1433	Holds O1845 to O1859	6-43
H1847		Same as H1433	Holds O1845 to O1859	6-43
H1848		Same as H1312	Holds O1859 to A1303	6-43
H1849		Same as H1302	Holds O1859 to A1303	6-43
H1850		Same as H1314	Holds O1859 to A1303	6-43
H1851		Same as H1433	Holds O1850 to O1858	6-43
H1852		Same as H1315	Holds O1852 to O1857	6-43
H1853		Same as H1314	Holds O1852 to O1857	6-43
H1854		Same as H1624	Holds O1853 to O1854	6-43
H1855		Same as H1624	Holds O1856 to O1854	6-43
H1856		Same as H1302	Holds O1854 to O1859	6-43
H1857		Same as H1337	Holds O1857 to O1856	6-43
H1858		Same as H1323	Holds O1857 to O1856	6-43
H1859		WASHER, FLAT: 156057	Holds O1857 to O1856	6-43
H1875		Same as H1509	Holds O1875 to O1878	6-44
H1876		Same as H1332	Holds O1877 to O1878	6-44
H1877		Same as H1323	Holds O1877 to O1878	6-44
H1878		Same as H1334	Holds O1877 to O1878	6-44
H1879		Same as H1326	Holds O1881 to O1850	6-44
H1880		WASHER, FLAT: 152441	Holds O1881 to O1850	6-44
H1881		Same as H1701	Holds O1882 to O1850	6-44
H1882		Same as H1459	Holds O1882 to O1850	6-44
H1883		Same as H1468	Holds O1884 to O1926	6-44
H1884		Same as H1457	Holds A1850 to O1926	6-44
H1885		Same as H1320	Holds A1850 to O1904	6-44
H1886		Same as H1302	Holds A1850 to O1904	6-44
H1887		Same as H1468	Holds A1850 to O1913	6-44
H1888		Same as H1302	Holds A1850 to O1913	6-44
H1889		Same as H1303	Holds A1850 to O1913	6-44
H1890		WASHER, SPRING: 74283 (Continued. See H1900)	Applies pressure to O1881	6-44
I1875		KNOB, RANGE FINDER: 152436 (Continued. See I2400)	Operates O1881	6-44
O1800		Same as O1650	Applies tension to O1801	6-42
O1801		Same as O1652	Controls rotation of O1807 and O1812	6-42
O1802		Same as O1653	Spaces O1801	6-42
O1803		BUSHING, AXIAL DETENT SHOULDER: 156265	Spaces O1801	6-42
O1804		DETENT, AXIAL SHAFT: 161443	Locks O1812 and O1807 in position	6-42
O1805		BAR, NO. 1 PUSH: 159533	Operates O1812	6-42
O1806		RACK, AXIAL OUTPUT: 156313	Operates O1754	6-42
O1807		SHAFT AXIAL SECONDARY ECCENTRIC: 156288	Operates O1806	6-42
O1808		BAR, NO. 2 PUSH: 159534	Operates O1807	6-42
O1809		SHIM: 0.010 in. 159643	Spaces O1808 from O1810	6-42
O1810		HOUSING, UPPER AXIAL: 156292	Houses O1807 and guides O1808	6-42
O1811		HOUSING, LOWER AXIAL: 156293	Houses O1812 and guides O1805	6-42
O1812		SHOP, AXIAL PRIMARY ECCENTRIC: 156278	Positions O1807	6-42
O1813		WASHER, FELT: 130696	Lubricates O1817	6-42
O1814		DISK, OSCILLATING DRIVE LINK: 90535	Lubricates H1811	6-42
O1815		ROLLER, OSCILLATING DRIVE LINK: 156925	Operates O1856	6-42

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O1816		PLATE, OSCILLATING DRIVE LINK: 156924	Adjusts position of O1815	6-42
O1817		LINK OSCILLATING DRIVE: 159526	Operates O1763	6-42
O1818		PLATE, AXIAL CORRECTING: 156378	Indexes O1754	6-42
O1820		POST, AXIAL BRACKET MOUNTING: 159404	Mounts A1750 to A1304	6-42
O1825		SPRING, FUNCTION BLADE: 154325	Applies tension to O1826	6-43
O1826		FUNCTION, BLADE BELL: 159653	Operates S1825	6-43
O1827		Same as O1825	Applies tension to O1828 and O1829	6-43
O1828		FUNCTION BLADE, FIGURES: 159515	Operates O1833	6-43
O1829		FUNCTION BLADE, LETTERS: 159516	Operates O1840	6-43
O1830		Same as O1825	Applies tension to O1833	6-43
O1831		Same as O1310	Applies tension to O1835	6-43
O1832		SHAFT, ARM ASSEMBLY: 156300	Pivot for O1835 and O1833	6-43
O1833		ARM, EXTENSION (FIGURES): 159481	Operates O1834	6-43
O1834		ARM, YIELD (FIGURES): 159437	Operates O1835	6-43
O1835		ARM ASSEMBLY, FIGURES: 159476	Operates O1658	6-43
O1836		Same as O1310	Applies tension to O1842	6-43
O1837		Same as O1825	Applies tension to O1837	6-43
O1838		Same as O1832	Pivot for O1842 and O1837	6-43
O1839		BRACKET, SPRING: 156268	Anchors O1827	6-43
O1840		ARM, EXTENSION (LETTERS): 159482	Operates O1841	6-43
O1841		ARM, YIELD (LETTERS): 159438	Operates O1842	6-43
O1842		ARM, ASSEMBLY (LETTERS): 159477	Operates O1659	6-43
O1843		SPRING, BELL CRANK: 151398	Applies tension to O1847, O1848 and O1849	6-43
O1844		BRACKET, SPRING: 159483	Anchors O1843	6-43
O1845		POST, BELL CRANK STOP: 159503	Limits movement of O1846 through O1849	6-43
O1846		CRANK, BELL (LETTERS-FIGURES): 159471	Operates O1658 and O1659	6-43
O1847		CRANK, BELL (NO. 3 AND 5): 159450	Operates O1667 and O1669	6-43
O1848		CRANK, BELL (NO. 1 AND %): 159447	Operates O1805 and O1661	6-43
O1849		CRANK, BELL (NO. 2): 159448	Operates O1808	6-43
O1850		POST, FUNCTION BOX SPACER: 156296	Spaces O1858 from O1859	6-43
O1851		SPRING, TOGGLE LINK: 110437. Same as O408	Applies tension to O1852	6-43
O1852		LINK TOGGLE: 159460	Links O1851 to O2029	6-43
O1853		WASHER, FELT: 161347	Lubricates O1854	6-43
O1854		SHAFT, LOCK ARM: 159470	Pivot for O1856	6-43
O1855		Same as O1814	Lubricates O1854	6-43
O1856		ARM, LOCK RELEASE: 156922	Operates O1857	6-43
O1857		ARM, LOCK: 159468	Operates O1852	6-43
O1858		PLATE, FUNCTION BOX, REAR: 156316	Supports function box mechanism	6-43
O1859		PLATE, FUNCTION BOX, FRONT: 159487	Supports function box mechanism	6-43
O1875		SHAFT, STOP ARM: 157261	Pivot for O1877	6-44
O1876		Same as O1561	Applies tension to O1879	6-44
O1877		ARM, STOP: 152432	Latches O1317	6-44
O1878		BAIL: 152438	Operates O1877	6-44
O1879		LATCH, LEVER: 152427	Latches O1315	6-44
O1881		RACK, RANGE FINDER: 152429	Positions O1877 and O1879	6-44
O1882		DETENT, RANGE FINDER: 153489	Locks I1875 in selected position	6-44
O1883		SPRING, KNOB: 152445. Same as O1493 (Continued. See O1900)	Applies tension to I1875	6-44
S1825		CONTACT, SIGNAL BELL: 154247 (Continued. See S2150)	Operates signal bell on auxiliary power distribution panel	6-43
W1825		CABLE ASSY: 162211 (Continued. See W1950)	Connects J2250 and S1825	6-43

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
A1900		PLATE: 152400	Mounts selector mechanism	6-45
A1901		BRACKET: 152403	Guides O1903 and O1909 through O1912	6-45
A1902		BRACKET: 152404	Anchors O1908	6-45
A1903		BRACKET: 152406	Anchors O1907 and guides O1911	6-45
A1950		BRACKET: 152421	Supports E1950 and E1951	6-46
A1951		BRACKET: 152423	Mounts O1953 and O1955	6-46
A1952		BRACKET: 153545	Supports selector magnet assembly	6-46
		(Continued. See A2000)		
E1950		SHIELD: 152458	Shields cable terminals	6-46
E1951		SHIELD: 157237	Insulates L1950 terminals	6-46
E1952		TERMINAL, LUG: Copper, mfg code No. 00779, part No. 30993 (code 59433 part No. 121538)	Terminal for W1950	6-46
E1954		ARMATURE: 153543	Operates O1909	6-46
E1955		TERMINAL, LUG: mfg code No. 00779, part No. C-41470 (code 59433 part No. 151626) Same as E179	Terminals for W1951	6-46
E1956		TERMINAL, LUG: 131099	Terminal for W1952	6-46
E1957		SLEEVE, INSULATING: 155750 (Continued. See E2150)	Insulates W1952	6-46
H1900		Same as H1468	Holds O1904 to A1900	6-45
H1901		Same as H1457	Holds O1904 to A1900	6-45
H1902		Same as H1308	Holds O1913 to A1900	6-45
H1903		Same as H1302	Holds O1913 to A1900	6-45
H1904		SCREW, 4-40 SHOULDER: 96717	Adjust position of O1914	6-45
H1905		Same as H1316	Holds H1904 to A1900	6-45
H1906		Same as H1323	Holds H1904 to A1900	6-45
H1907		Same as H1308	Holds O1914 to A1900	6-45
H1908		Same as H1302	Holds O1914 to A1900	6-45
H1909		Same as H1314	Holds O1914 to A1900	6-45
H1910		Same as H1828	Holds O1916 and O1915 to A1900	6-45
H1911		Same as H1323	Holds O1916 and O1915 to A1900	6-45
H1912		Same as H1329	Holds O1916 and O1915 to A1900	6-45
H1913		Same as H1838	Holds O1920 to A1900	6-45
H1914		Same as H1323	Holds O1920 to A1900	6-45
H1915		Same as H1320	Holds A1900, A1303, and O1921 to A1304	6-45
H1916		Same as H1302	Holds A1900, A1303, and O1921 to A1304	6-45
H1917		SCREW: 6-40 x 7/16 hex 153538. Same as H1031	Holds O1923 and O1924 to A1900	6-45
H1918		Same as H1302	Holds O1923 and O1924 to A1900	6-45
H1919		Same as H1476	Holds O1924, H1923 to A1900	6-45
H1920		Same as H1320	Holds O1924, H1923 to A1900	6-45
H1921		Same as H1302	Holds O1924, H1923 to A1900	6-45
H1922		Same as H1314	Holds O1924, H1923 to A1900	6-45
H1923		CLAMP, LOOP: Nylon, mfg. code No. 71616, part No. CPC-1953-2B (code 59433 part No. 121242). Same as H127	Retains W1825 and W1951 on A1900	6-45
H1924		Same as H1332	Holds O1925 to A1900	6-45
H1925		Same as H1323	Holds O1925 to A1900	6-45
H1926		Same as H1308	Holds O1926 to A1900	6-45
H1927		Same as H1302	Holds O1926 to A1900	6-45
H1928		Same as H1303	Holds O1904 to A1900	6-45
H1950		SCREW: 4-40 x 3/8 fil 151686. Same as H640	Holds A1950 to O1950	6-46
H1951		Same as H1316	Holds A1950 to O1950	6-46

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H1952		Same as H1323	Holds A1950 to O1950	6-46
H1953		Same as H1825	Holds O1950 to A1952	6-46
H1954		Same as H1323	Holds O1950 to A1952	6-46
H1955		POST: 153184	Holds O1950 to A1952	6-46
H1956		Same as H1323	Holds O1950 to A1952	6-46
H1957		SCREW: 4-40 x 1/2 fil 150089. Same as H1118	Holds O1950 to A1952	6-46
H1958		Same as H1323	Holds O1950 to A1952	6-46
H1959		SCREW: 4-40 x 3/16 fil 81778	Holds W1950 and W1951 to L1950	6-46
H1960		WASHER, FLAT: 2438	Holds W1950 and W1951 to L1950	6-46
H1961		Same as H1310	Holds A1952 to A1900	6-46
H1962		Same as H1302	Holds A1952 to A1900	6-46
H1963		Same as H1453	Holds A1952 to A1900	6-46
H1964		Same as H1312	Holds A1952 to A1900	6-46
H1965		Same as H1302	Holds A1952 to A1900	6-46
H1966		Same as H1312	Holds A1952 to A1900	6-46
H1967		Same as H1374	Provides for adjustment of A1952 to O1914	6-46
H1968		NUT, ARMATURE SPRING ADJUSTING: 6-40, 152426	Adjusts tension of O1952 through O1953	6-46
H1969		Same as H1950	Holds O1955; A1951 and E1954 to A1952	6-46
H1970		Same as H1323	Holds A1955; A1951 and E1954 to A1952	6-46
H1971		POST: 152425	Anchors O1952	6-46
H1975		Same as H1337	Holds O1975 to O1998	6-47
H1976		Same as H1323	Holds O1975 to O1998	6-47
H1977		SCREW: 4-40 x 5/8 hex 90052	Holds O1979 through O1997 to O1998	6-47
H1978		SCREW: 4-40 x 1/2 hex 152887	Holds O1979 through O1997 to O1998	6-47
H1979		SCREW: 4-40 x 5/8 hex 158772	Holds O1979 through O1997 to O1998	6-47
H1980		Same as H1316	Holds O1979 through O1997 to O1998	6-47
H1981		Same as H1323	Holds O1979 through O1997 to O1998	6-47
H1982		Same as H1303	Holds O1998 to A1303	6-47
H1983		Same as H1312	Holds O1998 to A1303	6-47
H1984		Same as H1302	Holds O1998 to A1303	6-47
H1985		Same as H1314 (Continued. See H2000)	Holds O1998 to A1303	6-47
L1950		COIL, ELECTROMAGNETIC ACTUATOR: 3600 turns No. 33 CBE wire, 132 ohms ± 10%, 115 V dc, mfg. code No. 59433, part No. 254M	Attracts E1954	6-46
L1951		COIL, SELECTOR MAGNET: Same as L1950 (Continued. See L2150)	Attracts E1954	6-46
O1900		BAIL, RESET: 152410	Operates O1903	6-45
O1901		SPRING: 151701	Applies tension to O1900	6-45
O1902		SPRING: 150048	Applies tension to O1903	6-45
O1903		LEVER, PUSH: 152411	Operates A1326	6-45
O1904		GUIDE: 152401	Guides O1903	6-45
O1905		SPRING: 152891	Applies tension to O1909	6-45
O1906		SPRING: 151714	Applies tension to O1910	6-45
O1907		SPRING: 78533	Applies tension to O1911	6-45
O1908		Same as O1325	Applies tension to O1912	6-45
O1909		LEVER, START: 161342	Operates O1878	6-45

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O1910		LEVER: 152407	Locks E1954 in unattracted position	6-45
O1911		LEVER: 152405	Locks E1954 in attracted position, and stop for O1912	6-45
O1912		LEVER: 152409	Operates O1902	6-45
O1913		GUIDE: 152402	Guides O1909 through O1912	6-45
O1914		LINK: 152412	Adjusts position of A1912	6-45
O1916		LUBRICATOR ASSY: 155090	Lubricates O1313	6-45
O1917		RETAINER: 154621	Depresses O1918	6-45
O1918		WICK, LUBRICATOR: 154620	Lubricates O1313	6-45
O1919		LUBRICATOR: 154622	Lubricant reservoir	6-45
O1921		POST, SPRING: 156472	Anchors O1301	6-45
O1922		WICK, OILER: 152457	Lubricates O1920	6-45
O1923		HOLDER, WICK: 159467	Holds O1922	6-45
O1924		GUARD, TAPE: 156475	Protects tape	6-45
O1926		POST, SELECTOR PLATE MOUNTING: 150687	Spaces A1900 from A1850	6-45
O1950		LAMINATION: 152420	Core for L1950	6-46
O1951		SPRING: 157194	Applies pressure to L1950	6-46
O1952		SPRING: 151715	Applies tension to E1954	6-46
O1954		SPACER: 151603	Spaces H1968 from A1951	6-46
O1955		PLATE: 152424	Limits movement of E1954	6-46
O1975		LOCK, TRANSFER RETAINER: 156221	Holds O1976 and O1977 to O1998	6-46
O1976		LEVER, TRANSFER (NO. 3, 4, AND 5): 159499	Operates O1980, O1983 and O1995	6-47
O1977		LEVER, TRANSFER (NO. 1 AND 2): 159508	Operates O1986 and O1992	6-47
O1978		SPRING, NO. 5 PULSE BEAM: 159459	Applies tension to O1989 and O1995	6-47
O1979		PLATE, TRANSFER: 159492	Top plate to transfer mechanism	6-47
O1980		BEAM, NO. 4 PULSE: 159500	Operates O1848	6-47
O1981		SPACER: 159504	Spaces O1980 from O1982	6-47
O1982		PLATE, TRANSFER: 159489	Positions O1980	6-47
O1983		BEAM, NO. 3 PULSE: 159496	Operates O1847	6-47
O1984		Same as O1981	Spaces O1983 from O1984	6-47
O1985		PLATE, TRANSFER: 159491	Positions O1983	6-47
O1986		BEAM, NO. 1 PULSE: 159501	Operates O1848	6-47
O1987		Same as O1981	Spaces O1986 from O1987	6-47
O1988		PLATE, TRANSFER: 159494	Positions O1986	6-47
O1989		BEAM, NO. 5 PULSE: 159495	Operates O1847	6-47
O1990		Same as O1981	Spaces O1989 from O1991	6-47
O1991		PLATE, TRANSFER: 159490	Positions O1989	6-47
O1992		BEAM, NO. 2 PULSE: 159497	Operates O1849	6-47
O1993		Same as O1981	Spaces O1992 from O1994	6-47
O1994		PLATE, TRANSFER: 159493	Positions O1992	6-47
O1995		LEVER, NO. 5 PULSE BEAM: 159498	Operates O1989	6-47
O1996		Same as O1981	Spaces O1995 from O1997	6-47
O1997		GUIDE, TRANSFER: 159502	Mounts transfer assembly and guides O1976 and O1977	6-47
O1998		BRACKET, TRANSFER MOUNTING: 159488 (Continued. See O2000)	Mounts O1975, O1979 through O1997, guides O1976 and O1977, and anchors O1328	6-47
W1950		STRAP ASSY, SELECTOR: 156880	Jumper for L1950 and L1951 terminals	6-46
W1951		CABLE ASSY, SELECTOR: 162064	Connects L1950 to J2250	6-46
W1952		STRAP ASSEMBLY: 156881 (Continued, See W2150)	Jumper for L1950 and L1951 terminals	6-46

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
A2000		HANDLE: 162850	Handle for reperforator mechanism	6-48
A2001		PLATE: 164521	Mounts ribbon feed mechanism	6-48
A2025		PLATE, LIFTER MOUNTING: 159434 (Continued. See A2100)	Mounts O2030	6-49
H2000		Same as H1826	Retains O2000 through O2006 on A2001	6-48
H2001		WASHER, FLAT: 125802	Retains O2000 through O2006 on A2001	6-48
H2002		SPACER: 86714	Spaces O2001 from O2003	6-48
H2003		Same as H2002	Spaces O2003 from A2001	6-48
H2004		Same as H2001	Spaces O2005 from A2001	6-48
H2005		Same as H2001	Retains O2006 on A2001	6-48
H2006		Same as H1323	Retains O2005 on A2001	6-48
H2007		Same as H1826	Retains O2005 and O2007 on A2001	6-48
H2008		Same as H2001	Retains O2005 and O2007 on A2001	6-48
H2009		Same as H1323	Retains O2005 and O2007 on A2001	6-48
H2010		Same as H1523	Adjusts O2008 on O2009	6-48
H2011		Same as H1302	Adjusts O2008 on O2009	6-48
H2012		Same as H1303	Adjusts O2008 on O2009	6-48
H2013		Same as H1315	Retains O2008 and O2009 on A2001	6-48
H2014		Same as H1433	Retains O2009 on O2005	6-48
H2015		Same as H1433	Retains O2013 on O2005	6-48
H2016		Same as H1322	Retains O2014 and O2015 on A2001	6-48
H2017		Same as H1323	Retains O2014 and O2015 on A2001	6-48
H2018		WASHER, FLAT: 164965	Retains O2019 on A2001	6-48
H2019		Same as H1719	Retains H2018 and O2019 on A2001	6-48
H2020		Same as H1629	Retains O2022 on A2001	6-48
H2021		Same as H1303	Retains A2000 on A1650	6-48
H2022		Same as H1302	Retains A2000 on A1650	6-48
H2025		Same as H1337	Holds O2025 to O2028	6-49
H2026		Same as H1317	Holds O2025 to O2028	6-49
H2027		Same as H1334	Holds O2025 to O2028	6-49
H2028		Same as H1315	Holds O2029 to O2030	6-49
H2029		NUT: 6-40 hex 3606. Same as H190	Holds O2026 and O2028 to O2029	6-49
H2030		Same as H1302	Holds O2026 and O2028 to O2029	6-49
H2031		Same as H1433	Holds O2027 to O2028	6-49
H2032		Same as H1320	Holds O2030 to O2025	6-49
H2033		Same as H1302	Holds O2030 to A2025	6-49
H2034		Same as H1660	Holds A2025 to O1859	6-49
H2035		Same as H1302	Holds A2025 to O1859	6-49
H2036		Same as H1303	Holds A2025 to O1859	6-49
H2037		Same as H1456	Holds A2025 to A1300	6-49
H2038		WASHER, LOCK: Steel, mfg. code No. 78189, part No. 1206 (code 59433 part No. 92260). Same as H957	Holds A2025 to A1300	6-49
H2039		Same as H1315	Holds O2032 to O1818	6-49
H2040		Same as H1308	Holds O2032 to O2033	6-49
H2041		Same as H1302	Holds O2032 to O2033	6-49

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H2042		Same as H1314	Holds O2032 to O2033	6-49
H2043		Same as H1320	Holds O1807 and O2034 to O1467	6-49
H2044		Same as H1302	Holds O1807 and O2034 to O1467	6-49
H2045		Same as H1314	Holds O1807 and O2034 to O1467	6-49
H2046		Same as H1904	Holds O2033 to O1467	6-49
H2047		Same as H1316	Holds O2033 to O1467	6-49
H2048		Same as H1317	Holds O2033 to O1467	6-49
H2049		Same as H1315	Holds O2035 to O2044	6-49
H2050		Same as H1315	Holds O2037 to O2038	6-49
H2051		Same as H1308	Holds O2038 to A1314	6-49
H2052		Same as H1302	Holds O2038 to A1314	6-49
H2053		Same as H1314	Holds O2038 to A1314	6-49
H2054		Same as H1315	Holds O2041 to O1604	6-49
H2055		SCREW: 6-40 fil 156938	Holds O2044 to O2041	6-49
H2056		Same as H1320	Holds O2044 to O2041	6-49
H2057		Same as H1302	Holds O2044 to O2041	6-49
H2058		SCREW, SHOULDER: 6-40, 163429	Holds O2044 to A1304	6-49
H2059		Same as H1320	Holds O2044 to A1304	6-49
H2060		Same as H1302	Holds O2045 to A1304	6-49
H2061		Same as H1453	Holds O2045 to A1304	6-49
H2062		WASHER, FLAT: Same as H1314	Retains O1858 on A2025	6-49
H2063		WASHER, FLAT: Same as H1453	Retains O1844 on A1304	6-49
H2075	10	Same as H1308	Holds O2075 to A1304	6-50
H2076	10	Same as H1302	Holds O2075 to A1304	6-50
H2077	10	RING, RETAINING: 163327	Holds O2080 to O2075	6-50
H2078	10	Same as H2077	Holds O2077 to O2080	6-50
H2079	10	SCREW: 4-40 x 21/64 hex 153799. Same as H703	Holds O2077 to O2080	6-50
H2080	10	Same as H1316	Holds O2077 to O2080	6-50
H2081	10	SCREW: 6-40 by 5/8 hex 153839. Same as H1300	Holds O2079 to O2080	6-50
H2082	10	Same as H1301	Holds O2079 to O2080	6-50
H2083	10	Same as H1302	Holds O2079 to O2080	6-50
H2084	10	Same as H1303	Holds O2079 to O2080	6-50
H2085	10	Same as H1300	Holds O2081 to O2084	6-50
H2086	10	Same as H1301	Holds O2081 to O2084	6-50
H2087	10	Same as H1302	Holds O2081 to O2084	6-50
H2088	10	Same as H1303	Holds O2081 to O2084	6-50
H2089	10	Same as H1337	Holds O2082 to O2084	6-50
H2090	10	Same as H1317	Holds O2082 to O2084	6-50
H2091	10	Same as H2001	Holds O2082 to O2084	6-50
H2092	10	NUT: 3/8-32 hex 2539	Holds O2085 to A1301	6-50
H2093	10	WASHER, LOCK: 73175	Holds O2085 to A1301	6-50
H2094	10	RING, RETAINER: Steel, mfg. code No. 79136, part No. 5133-43 (code 59433 part No. 119656)	Holds H2088 through O2093 to O1394	6-50
H2095	10	SCREW, SET: 6-40, 1256 (Continued. See H2100)	Holds O2093 to O1394	6-50
O2000		POST, SPRING: 164525	Guides O2005 and anchors O2012	6-48
O2001		PAWL, CHECK: 164531	Operates O2013 controls O2020 and O2017 and anchors O2023	6-48
O2002		BUSHING: 164530	Pivot for O2001	6-48
O2003		LEVER, RIBBON REVERSE: 164529	Guides ribbon and O2013	6-48
O2004		BUSHING: 164528	Pivot for O2003	6-48
O2005		SLIDE: 164526	Operates O2013	6-48
O2006		Same as O2004	Guides O2005	6-48
O2007		Same as O2004	Guides O2005	6-48

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O2008	10	LEVER, ADJUSTABLE EXTENSION: 164543	Operates O2009	6-48
O2009		ARM, RIBBON DRIVE: 164541	Operates O2005	6-48
O2010		BUSHING: 97516	Guides O2009	6-48
O2011		WASHER, FELT: 156515	Lubricates O2010	6-48
O2012		SPRING: 160843	Applies tension to O2005	6-48
O2013		PAWL, FEED: 164532	Operates O2001, O2017 and O2020	6-48
O2014		DETENT: 164540	Arrests movement of O2003	6-48
O2015		BUSHING: 157252	Pivot for O2014	6-48
O2016		SPRING: 81731	Applies tension to O2014	6-48
O2017		SHAFT ASSY: 164538	Mounts and turns ribbon spool	6-48
O2018		WASHER, FELT: 164964	Lubricates O2017 and O2020	6-48
O2019		SPRING, RATCHET: 164539	Applies tension to H2018	6-48
O2020		SHAFT ASSY: 164538	Mounts and turns ribbon spool	6-48
O2021		SPOOL, RIBBON: 71681	Feeds and rolls ribbon	6-48
O2022	10	ROLLER: 150327	Accepts O2017 and O2020	6-48
O2023		SPRING: 84226	Applies tension to O2003 and O2013	6-48
O2024		SPOOL, W/RIBBON: 11 yds lg x 0.005 thk, black record, extra heavy inked. Underwood spool, 17 threads per 1/8 in. base, mfg. code No. 83272, part No. 301 (code 59433 part No. 7835).	Holds printing ribbon	6-48
O2025		PLATE, LIFTER ARM LOCK: 159994	Adjusting plate for O2029	6-49
O2026		SCREW, LOCK PLATE ECCENTRIC: 159997	Adjusts O2028	6-49
O2027		ROLLER, LIFTER ARM: 156243	Rides O1462	
O2028		ARM, LIFTER: 159995	Operates O2029	6-49
O2029		LIFTER, FUNCTION BLADE: 156252	Operates O2008, O1829 and O1826	6-49
O2030		STUD, LIFTER PIVOT: 156230	Pivot for O2028 and O2029	6-49
O2031		SPRING: 3870	Applies tension to O2032	6-49
O2032		EXTENSION, CORRECTING DRIVE LINK: 159626	Operates O1818	6-49
O2033		LINK, CORRECTING DRIVE: 156413	Operates O1715 and mounts O2032	6-49
O2034		ECCENTRIC, OSCILLATING DRIVE LINK: 156396	Operates O2033	6-49
O2035		LINK, PRINTING DRIVE: 156937	Operates O2044	6-49
O2036		SPRING: 90615	Applies tension to O2037	6-49
O2037		LATCH, PRINTING: 159654	Latches O1704	6-49
O2038		BRACKET, PRINTING LATCH MOUNTING: 156484	Pivot for O2037	6-49
O2039		SPRING: 95378	Applies tension to O1704	6-49
O2040		Same as O1650	Applies tension to O2041	6-49
O2041		LINK, PRINTING TRIP: 159512	Operates O1704 and O2037	6-49
O2044		ARM, PRINTING PIVOT: 159539	Operates O2041	6-49
O2045		POST, SPRING: 156488	Anchors O2039 and O2036	6-49
O2075	10	BRACKET, SHAFT MOUNTING: 156136	Supports O2080	6-49
O2076	10	SPRING: 22746. Same as O707	Applies tension O2077	6-50
O2077	10	ARM, FEED OUT DRIVE: 156147	Operates O2080	6-50
O2078	10	SPRING: 125268	Applies tension O2079	6-50
O2079	10	PAWL ASSY, FEED OUT: 156991	Operates tape feed wheel ratchet on perforator O2077	6-50
O2080	10	SHAFT, FEED OUT DRIVE: 156152	Shaft for O2077 and O2079 and operates O2079	6-50
O2081	10	ARM, NON-INTERFERING: 159613	Operates O2119	6-50
O2082	10	LEVER, NON-INTERFERING: 156130	Operates O2084	6-50

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NOTES AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O2083	10	COLLAR, NON-INTERFERING LEVER: 156154	Positions O2084	6-50
O2084	10	SHAFT, NON-INTERFERING LEVER: 156125	Mounts O2082, O2083 and O2081 and operates O2081	6-50
O2085	10	BUSHING, CLAMP ARM: 156128	Accepts O2084	6-50
O2086	10	SPRING, METERING PAWL: 82463	Applies tension to O2090	6-50
O2087	10	Same as O2086	Applies tension to O2092	6-50
O2088	10	WASHER, SPRING: 98117	Holds O2089 through O2093 to O1394	6-50
O2089	10	BEARING, ECCENTRIC: 156132	Operates O2090 and O2092	6-50
O2090	10	PAWL, METERING FEED: 156155	Operates O2122 and O2124	6-50
O2091	10	WASHER, FLAT: 156137	Spaces O2090 from O2092	6-50
O2092	10	PAWL, METERING CHECK: 156156	Latches O2125	6-50
O2093	10	COLLAR, FEED OUT ECCENTRIC: 156153 (Continued. See O2100)	Holds O2090 and O2092 to O2089 and operates O2089	6-50
A2100	10	FRAME, FEED OUT MOUNTING: 156139	Mounts feed out mechanism	6-51
A2101	10	BRACKET, SPRING: 159406	Anchors O2076, O2086 and O2087	6-51
A2150	10	BRACKET, FEED OUT MAGNET MOUNTING: 158763	Supports L2150 and O2154	6-52
A2151	10	BRACKET, SWITCH MOUNTING: 162096	Supports S2150	6-52
A2176	10	PLATE: 159900	Pivot for O2177	6-53
A2177	10	BRACKET, GUIDE: 159987 (Continued. See A2250)	Guides O2185 and O2188	6-53
E2150	10	ARMATURE, FEED OUT: 158753	Operates O2155	6-52
E2151	10	CORE, FEED OUT MAGNET: 158754	Core for and holds L2150 to A2150	6-52
E2152	10	Same as E1828	Holds O2158 and E2153 through E2162 to A2151	6-52
E2153	10	Same as E1831	Insulates E2152 from E2154	6-52
E2154	10	TERMINAL: 74728	Terminal for E2155	6-52
E2155	10	CONTACT: 158816	Contact for S2050	6-52
E2156	10	Same as E1834	Insulates E2155 from E2157	6-52
E2157	10	Same as E2154	Terminal for E2158	6-52
E2158	10	CONTACT: 160583	Swinger for S2150	6-52
E2159	10	Same as E1834	Insulates E2158 from E2160	6-52
E2160	10	Same as E2154	Terminal for E2161	6-52
E2161	10	Same as E1835	Contact	6-52
E2162	10	Same as E1831	Insulates E2161 from A2151	6-52
E2163	10	Same as E1827 (Continued. See E2200)	Insulates W2150	6-52
H2100	10	Same as H1719	Holds O2102 and O2103 to O2105	6-51
H2101	10	Same as H1571	Holds O2104 to O2102	6-51
H2102	10	Same as H1320	Holds O2105 to A2100	6-51
H2103	10	Same as H1302	Holds O2105 to A2100	6-51
H2104	10	Same as H1314	Holds O2105 to A2100	6-51
H2105	10	Same as H1312	Holds A2101 to A1300	6-51
H2106	10	Same as H1302	Holds A2101 to A1300	6-51
H2107	10	Same as H1322	Holds O2106 to O2109	6-51
H2108	10	Same as H1317	Holds O2106 to O2109	6-51
H2109	10	Same as H1334	Holds O2106 to O2109	6-51
H2111	10	Same as H1571	Holds O2107 to O2106	6-51
H2112	10	Same as H1433	Holds O2109 and O2110 to O2111	6-51
H2113	10	Same as H1320	Holds O2111 to A2100	6-51

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H2114	10	Same as H1302	Holds O2111 to A2100	6-51
H2115	10	Same as H1314	Holds O2111 to A2100	6-51
H2116	10	Same as H1302	Holds O2112 to A2100	6-51
H2117	10	Same as H1320	Holds O2114 to A2100	6-51
H2118	10	Same as H1302	Holds O2114 to A2100	6-51
H2119	10	Same as H1826	Holds O2116 to A2100	6-51
H2120	10	Same as H1317	Holds O2116 to A2100	6-51
H2121	10	Same as H1315	Holds O2115 to O2116	6-51
H2122	10	Same as H1323	Holds O2121 to O2122	6-51
H2123	10	Same as H1334	Holds O2121 to O2122	6-51
H2124	10	Same as H1326	Holds O2119 through O2124, H2125 and H2126 to A2100	6-51
H2125	10	WASHER, FLAT: 111767. Same as H635	Spaces O2122 from O2124	6-51
H2126	10	Same as H2125	Spaces O2124 from O2100	6-51
H2127	10	Same as H1302	Holds O2125 to A2100	6-51
H2128	10	Same as H1826	Holds O2126, O2127 and O2128 to O2129	6-51 6-51
H2129	10	Same as H1323	Holds O2126, O2127 and O2128 to O2129	6-51
H2130	10	Same as H1220	Spaces O2127 from O2122	6-51
H2131	10	Same as H1337	Holds O2129 to A2100	6-51
H2132	10	Same as H1317	Holds O2129 to A2100	6-51
H2133	10	Same as H1324	Holds O2129 to A2100	6-51
H2134	10	Same as H1312	Holds A2100 to A1304	6-51
H2135	10	Same as H1302	Holds A2100 to A1304	6-51
H2150	10	Same as H1317	Holds O2151 and O2154 to A2150	6-52
H2151	10	Same as H1334	Holds O2151 and O2154 to A2150	6-52
H2152	10	Same as H1327	Holds O2154 to A2150	6-52
H2153	10	Same as H1317	Holds O2154 to A2150	6-52
H2154	10	Same as H1334	Holds O2154 to A2150	6-52
H2155	10	Same as H1433	Holds O2153 and O2155 to O2154	6-52
H2156	10	Same as H1322	Holds E2150 to O2155	6-52
H2157	10	Same as H1317	Holds E2150 to O2155	6-52
H2158	10	Same as H1303	Holds E2151 to A2150	6-52
H2159	10	Same as H1302	Holds E2151 to A2150	6-52
H2160	10	Same as H1312	Holds E2151 to A2100	6-52
H2161	10	Same as H1302	Holds A2151 to A2100	6-52
H2162	10	Same as H1303	Holds A2151 to A2100	6-52
H2163	10	SCREW: 4-40 x 9/16 fil 151733. Same as H1038	Holds O2158 and E2152 through E2162 to A2151	6-52
H2164	10	Same as H1323	Holds O2158 and E2152 through E2162 to A2151	6-52
H2165	10	Same as H1320	Holds O2159 and A2151 to A2100	6-52
H2166	10	Same as H1302	Holds O2159 and A2151 to A2100	6-52
H2167	10	Same as H1629	Holds O2160 and O2161 to A2100	6-52
H2168	10	WASHER, FLAT: 3624. Same as H760	Holds O2160 and O2161 to A2100	6-52
H2169	10	Same as H1337	Holds O2160 to O2161	6-52
H2170	10	Same as H1323	Holds O2160 to O2161	6-52
H2171	10	Same as H1334	Holds O2160 to O2161	6-52
H2172	10	Same as H1308	Holds A2150 to A2100	6-52
H2173	10	Same as H1302	Holds A2150 to A2100	6-52
H2174	10	Same as H1303	Holds A2150 to A2100	6-52
H2178	10	SCREW: 4-40 x 3/8 hex 153817. Same as H123	Holds A2176 and A1501 to A1502	6-53

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H2179	10	Same as H1323	Holds A2176 and A1501 to A1502	6-53
H2180	10	Same as H1334	Holds A2176 and A1501 to A1502	6-53
H2181	10	Same as H1509	Holds O2177 to A2176	6-53
H2182	10	Same as H1509	Holds O2179 and O2183 to O2188	6-53
H2183	10	WASHER: 33765	Spaces O2179 from O2183	6-53
H2184	10	Same as H1335	Holds O2181 to O2188	6-53
H2185	10	Same as H1323	Holds O2181 to O2188	6-53
H2186	10	WASHER, FLAT: 90560	Holds O2181 to O2188	6-53
H2187	10	SCREW: 4-40 x 5/8 hex 122149	Holds O2184, A2177, O2189 and A1501 to A1550	6-53
H2188	10	Same as H1323	Holds O2184, A2177, O2189 and A1501 to A1550	6-53
H2189	10	STUD: 160672	Holds A2177, A2189 and A1501 to A1550 and supports A2175	6-53
H2190	10	Same as H2178	Holds A2177, O2189 and A1501 to A1550	6-53
H2191	10	Same as H1334	Holds A2177, O2189 and A1501 to A1550	6-53
H2192	10	Same as H1509	Holds O2185 to O2188	6-53
H2193	10	NUT (SPECIAL): 160674	Shaft for O2208	6-53
H2194		Same as H1302	Holds H2193 to O2188	6-53
H2195		Same as H1315 (Continued. See H2200)	Holds O2188 to O2189	6-53
L2150	5	COIL, ELECTROMAGNETIC ACTUATOR: 4980 turns No. 33 CBE wire, 200 ohms ± 10%, 115 V dc, mfg. code No. 59433, part No. 252M (Continued. See L2200)	Attracts E2150	6-52
O2100	5	SPRING, LATCH: 159602	Applies tension to O2102	6-51
O2101	5	Same as O2036	Applies tension to O2102	6-51
O2102	5	LATCH ASSY, FEED OUT: 160694	Operates O2115 and O2106	6-51
O2103	5	Same as O1601	Lubricates O2105	6-51
O2104	5	ROLLER: 159617	Bearing surface for O2155	6-51
O2105	5	SHAFT, LATCH ASSEMBLY: 156143	Pivot for O2102	6-51
O2106	5	ARM, KICK-OUT: 159614	Operates O2109	6-51
O2107	5	Same as O2104	Operates O2102	6-51
O2108	5	SPRING, LATCH ARM: 150507. Same as O714	Applies tension to O2109 and O2110	6-51
O2109	5	ARM, LATCH: 159615	Operates O2106 and O2110	6-51
O2110	5	LATCH RELEASE ARM: 159631	Latches O2102	6-51
O2111	5	SHAFT, LATCH: 162098	Pivot for O2109 and O2110	6-51
O2112	5	POST, ANCHOR: 160840	Anchors O2117	6-51
O2113	5	SPRING, SWITCH LEVER: 55090	Applies tension to O2160	6-51
O2114	5	POST, SPRING: 102028	Anchors O2113	6-51
O2115	5	LEVER ASSEMBLY: 159403	Releases O2090 and O2092	6-51
O2116	5	SHAFT, ECCENTRIC: 159400	Pivot for O2115	6-51
O2117	5	SPRING, RATCHET RETURN: 45963	Returns O2122 to start position	6-51
O2118	5	POST, SPRING: 156158	Holds O2121 to O2122 and anchors O2117	6-51
O2119	5	ARM, NON-INTERFERING, INTERMEDIATE: 159616	Operates O2109	6-51
O2120	5	SPACER: 156146	Spaces O2119 from O2121	6-51
O2121	5	PLATE, TAPE LENGTH ADJUSTING: 159636	Adjusts length of normal feed-out operating cycle	6-51
O2122	5	RATCHET, METERING: 156933	Operates on every sixth turn of O2124	6-51

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O2123	5	SHIM, O.010: 5425	Spaces O2122 from O2124	6-51
O2124	5	Same as O2122	Counter for tape length metering mechanism	6-51
O2125	5	POST, SPRING: 159623	Anchors O2101 and O2108	6-51
O2126	5	LOCK, SPRING: 151848	Applies tension to O2127	6-51
O2127	5	SPRING, CHECK PAWL CLOCK:: 112636	Applies pressure to O2128	6-51
O2128	5	PAWL, METERING CHECK (INNER RATCHET): 159606	Prevents reversal of O2124	6-51
O2129	5	PLATE, CHECK PAWL MOUNTING: 159608	Mounts O2126, O2127 and O2128	6-51
O2150	5	Same as O2078	Applies tension to O2155	6-52
O2151	5	POST, SPRING: 158760	Anchors O2150	6-52
O2152	5	Same as O1701	Lubricates O2153	6-52
O2153	5	SHAFT, ARMATURE BAIL: 158758	Shaft for O2155	6-52
O2154	5	HINGE, ARMATURE MOUNTING: 158757	Pivot for O2153	6-52
O2155	5	BAIL, ARMATURE: 160692	Operates O2102	6-52
O2156	5	WASHER, SPRING TENSION: Steel mfg. code No. 78189, part No. 3502-20 (code 59433 part No. 121125)	Applies pressure to L2150	6-52
O2157	5	BRACKET ASSY, SWITCH: 162097	Interrupts tape feed-out on signal input	6-52
O2158	5	BUSHING: 80755	Insulates E2154, E2155, E2157, E2158, E2160, and E2161 from H2163	6-52
O2159	5	Same as O2111	Anchors O2100 and holds A2151 to A2100	6-52
O2160	5	BRACKET, SWITCH LEVER: 156929	Operates O2161	6-52
O2161	5	LEVER, SWITCH: 159637	Operates S2150	6-52
O2177	10	SHAFT, RAKE: 159902	Engages tape perforations	6-53
O2178	10	SPRING, LATCH: 152129. Same as O319	Applies tension to O2179	6-53
O2179	10	LATCH, RETURN: 159910	Stop for O2185	6-53
O2180	10	Same as O2178	Applies tension to O2185	6-53
O2181	10	PLATE: 159911	Anchors O2180	6-53
O2182	10	SPRING, GEAR SEGMENT: 70878	Holds O2183 in contact with O2177	6-53
O2183	10	GEAR, SEGMENT: 159912	Operates O2177	6-53
O2184	10	STUD: 161108	Adjusts O2179	6-53
O2185	10	PAWL, FEED: 159909	Engages teeth on O1589 sprocket	6-53
O2186	10	SCREW, ECCENTRIC: 6-40, 159913	Positions H2193	6-53
O2187		Same as O1504	Applies tension to O2188	6-53
O2188	10	BELLCRANK: 159903	Operates O2183 and O2185	6-53
O2189	10	PLATE: 159901	Pivot for O2177, O2188 and anchors O2187	6-53
		(Continued. See O2200)		
S2150	5	SWITCH: 162095	Interrupts tape feed-out on incoming line signal	6-52
		(Continued. See S5000)		
W2150	5	CABLE ASSY, FEED OUT: 162066 (Continued. See W2200)	Connects L2150 to J2250	6-52
A2250		BRACKET, CONNECTOR: 161240	Mounts P2250	6-55
A2275	5	PLATE: 162776	Adjusts O2300	6-56
A2276	11	PLATE, MAIN: 162773	Mounts non-interfering automatic letters feed-out mechanism	6-56
		(Continued. See A2325)		
E2200		Same as E1827	Insulates terminals of W2200	6-54
E2201		ARMATURE: 159976	Operates O2211	6-54

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
E2202		TERMINAL, LUG: 82474. Same as E850 (Continued. See E5000)	Terminal for W2200	6-54
H2200		Same as H1322	Holds O2201 to O2202	6-54
H2201		Same as H1323	Holds O2201 to O2202	6-54
H2202		Same as H1329	Holds O2201 to O2202	6-54
H2203		Same as H1433	Holds O2201 and O2202 to O2207	6-54
H2204		Same as H1320	Holds O2205 to O1394 and O2204 to O2205	6-54
H2205		Same as H1302	Holds O2205 to O1394 and O2204 to O2205	6-54
H2206		RING, RETAINER: Steel, mfg. code No. 79136 part No. 5108-118 (code 59433 part No. 159962)	Holds O2203 to O2204	6-54
H2207		SCREW: 6-40 x 3/4 hex 151721. Same as H1061	Holds O2205 to O1394 and O2204 to O2205	6-54
H2208		Same as H1302	Holds O2205 to O1394 and O2204 to O2205	6-54
H2209		Same as H1314	Holds O2205 to O1394 and O2204 to O2205	6-54
H2210		Same as H1312	Holds O2207 to O2208	6-54
H2211		Same as H1302	Holds O2207 to O2208	6-54
H2212		WASHER, FLAT: 90790	Holds O2207 to O2208	6-54
H2213		Same as H1433	Holds O2206 to O2208	6-54
H2214		Same as H1315	Holds O2208 to O2209	6-54
H2215		SCREW: 6-40 x 13/32 hex 156632. Same as H289	Holds O2217 to A1550	6-54
H2216		Same as H1302	Holds O2217 to A1550	6-54
H2217		Same as H1314	Holds O2217 to A1550	6-54
H2218		SCREW: 4-40 x 3/16 hex 125215	Holds W2200 terminals to L2200	6-54
H2219		WASHER, FLAT: 3650	Holds W2200 terminals to L2200	6-54
H2220		Same as H1310	Holds L2200 to O2217	6-54
H2221		Same as H1302	Holds L2200 to O2217	6-54
H2222		Same as H1322	Holds E2201 to O2211	6-54
H2223		Same as H1317	Holds E2201 to O2211	6-54
H2224		Same as H1433	Holds O2210 and O2211 to O2212	6-54
H2225		Same as H1330	Holds O2212 to O2217	6-54
H2226		Same as H1317	Holds O2212 to O2217	6-54
H2227		Same as H1329	Holds O2212 to O2217	6-54
H2228		Same as H1316	Holds O2214 to O2217	6-54
H2229		Same as H1317	Holds O2214 to O2217	6-54
H2230		Same as H1323	Holds A2200 to O2216	6-54
H2231		Same as H1329	Holds A2200 to O2216	6-54
H2232		Same as H1509	Holds O2216 to O2217	6-54
H2250		Same as H1308	Holds H2253 to A1304	6-55
H2251		Same as H1302	Holds O2253 to A1304	6-55
H2252		Same as H1314	Holds H2253 to A1304	6-55
H2253		CLAMP, LOOP: Nylon, mfg. code No. 71616, part No. CPC-1953-3 (code 59433 part No. 121243). Same as H1056	Holds W2200 to A1304	6-55
H2254		SCREW: 3-48 x 1/4 fil 42827	Holds J2250 to A2250	6-55
H2255		WASHER, LOCK: 70072	Holds J2250 to A2250	6-55
H2275	5	Same as H1487	Retains A2276 on A1304	6-56
H2276	5	Same as H1302	Retains A2276 on A1304	6-56
H2277	5	Same as H1314	Retains A2276 on A1304	6-56
H2278	11	Same as H1433	Retains O2282 and O2284 on O2286	6-56

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H2279	11	Same as H1329	Retains O2284 on O2286	6-56
H2280	5	Same as H1433	Retains O2283 and O2284 on O2285	6-56
H2281	5	Same as H1302	Retains O2285 in O2383	6-56
H2282	5	Same as H1317	Retains O2286 on A2276	6-56
H2283	5	Same as H1316	Retains O2286 on A2276	6-56
H2284	11	Same as H1317	Retains O2287 on O2292	6-56
H2285	11	Same as H1220	Retains O2287 on O2292	6-56
H2286	11	Same as H1326	Retains O2288 through O2293 on O2294	6-56
H2287	11	NUT, SHOULDER: 163255	Retains O2294 and O2296 on A2276	6-56
H2288	11	Same as H1433	Retains O2295 and O2296 on A2276	6-56
H2289	11	Same as H1828	Retains O2296 on A2276	6-56
H2290	11	Same as H1317	Retains O2296 on A2276	6-56
H2291	11	Same as H1220	Retains O2296 on A2276	6-56
H2292	5	Same as H1315	Retains O2298 on O2309	6-56
H2293	11	Same as H1316	Retains A2275 and O2309 on A2276	6-56
H2294	11	Same as H1317	Retains A2275 and O2309 on A2276	6-56
H2295		Same as H1326	Retains O2299 on O2300	6-56
H2296	5	Same as H2287	Retains A2275 and O2300 on A2276	6-56
H2297	11	Same as H1326	Retains O2301, O2302 and O2304 on A2276	6-56
H2298	11	Same as H1825	Retains O2303 on O2304	6-56
H2299	11	Same as H1317 (Continued. See H2300)	Retains O2303 on O2304	6-56
L2200		COIL, ELECTROMAGNETIC ACTUATOR: 5000 turns No. 36 CBE wire, 4500 ohms, 115 V ac, mfg. code No. 59433, part No. 224M (Continued. See L5000)	Attracts E2201	6-54
O2200		SPRING: 84575	Applies tension to O2202	6-54
O2201		EXTENSION, LATCH: 159959	Latches O2211	6-54
O2202		LATCH: 159958	Latches O2203 and operates O2207	6-54
O2203		ARM, ECCENTRIC: 159961	Operates S2202 and O2207	6-54
O2204		ECCENTRIC: 159983	Operates O2203	6-54
O2206		LINK: 159957	Links H2193 to O2208	6-54
O2207		LINK, DRIVE: 159955	Mounts O2202 and O2201 and operates O2208	6-54
O2208		LINK, ADJUSTING: 159954	Mounts O2207 and operates O2206	6-54
O2209		POST: 159956	Pivot for O2208	6-54
O2210		SHAFT: 159978	Pivot for O2211	6-54
O2211		BAIL, ARMATURE: 159975	Releases O2218	6-54
O2212		HINGE: 159977	Pivot for O2210	6-54
O2213		Same as O2182	Applies tension to O2211	6-54
O2214		SCREW, ECCENTRIC: 159974	Anchors O2213	6-54
O2215		POST, SPRING: 159980	Holds A2200 to O2216 and anchors O2200	6-54
O2216		ARM, ADJUSTING: 159965	Mounts and operates A2200	6-54
O2217		BRACKET: 159973	Mounts L2200 and O2212	6-54

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O2218		ARM, NON-REPEAT: 159979	Blocks O2211 in attracted position and operates O2201	6-54
O2275	11	Same as O2023	Applies tension to O2287	6-56
O2276	11	SPRING: 45104	Applies tension to O2299	6-56
O2277	11	Same as O1907	Applies tension to O2295	6-56
O2278	11	Same as O2086	Applies tension to O2299	6-56
O2279	11	SPRING: 7603. Same as O632	Applies tension to O2302	6-56
O2280	11	SPRING: 4703	Applies tension to O2301	6-56
O2281	11	BRACKET: 162807	Mounts and supports P2250	6-56
O2282	5	Same as O1436	Lubricates O2286	6-56
O2283	5	Same as O1436	Lubricates O2285	6-56
O2284	5	LINK, DRIVE: 162804	Drives reperforator or tape feed-out	6-56
O2285	5	POST: 162761	Shaft for O2284	6-56
O2286	5	SHAFT, DRIVE LINK: 162803	Shaft for O2284	6-56
O2287	11	POST, SPRING: 162799	Operates O2289 through O2292	6-56
O2288	11	ROLLER: 162798	Bearing sleeve for O2275	6-56
O2289	11	PLATE, ADJUSTING: 162797	Feed-out length adjusting plate	6-56
O2290	5	CAM: 162796	Time delay cam operates O2304	6-56
O2291	11	RATCHET: 162795	Front metering ratchet	6-56
O2292	11	HUB, BACKSTOP: 162794	Hub for O2289, O2290 and O2291 and anchor forO2287	6-56
O2293	11	RATCHET: 162793	Rear metering ratchet	6-56
O2294	11	SHAFT: 162791	Shaft for O2288 through O2293	6-56
O2295	11	PAWL, DETENT: 162802	Rear check pawl. Engages O2293	6-56
O2296	11	ARM, DETENT: 162792	Adjusts O2295	6-56
O2297	5	Same as O2280	Applies tension to O2298	6-56
O2298	5	LEVER: 162790	Latches O2299	6-56
O2299	11	LEVER: 162778 (Continued. See O2300)	Unlatches O2332 and O2333	6-56
P2250		RECEPTACLE, CONNECTOR: 161238 (Continued. See P5601)	Connects typing reperforator to base through W850	6-55
W2200		CABLE ASSY: 162207 (Continued. See W2400)	Connects L2200 to key terminal block	6-54
A2325	11	PLATE: 162754 (Continued. See A2400)	Engages perforator slides on incoming signal	6-57
H2300	11	Same as H1316	Retains H2302 on O2304	6-56
H2301	11	Same as H1317	Retains H2302 on O2304	6-56
H2302	11	SCREW, ECCENTRIC: 162784	Guide post for O2333	6-56
H2303	11	Same as H1316	Retains O2305 on A2276	6-56
H2304	11	Same as H1317	Retains O2305 on A2276	6-56
H2305	11	Same as H1320	Retains O2306 on A2276	6-56
H2306	11	Same as H1302	Retains O2306 on A2276	6-56
H2307	11	Same as H2178	Retains O2307 on A2276	6-56
H2308	11	Same as H1317	Retains O2307 on A2276	6-56
H2309	11	Same as H1220	Retains O2307 on A2276	6-56
H2310	11	Same as H1317	Retains O2308 on O2307	6-56
H2325	11	Same as H1300	Retains O2325 on O2327	6-57
H2326	11	Same as H1301	Retains O2325 on O2327	6-57
H2327	11	Same as H1302	Retains O2325 on O2327	6-57
H2328	11	Same as H1303	Retains O2325 on O2327	6-57
H2329	11	SCREW: 4-40 x 5/16 fil 151685. Same as H738	Retains O2326 on O2327	6-57
H2330	11	Same as H1317	Retains O2326 on O2327	6-57

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H2331	11	Same as H2092	Retains O2328 on A1301	6-57
H2332	11	WASHER, LOCK: 73175	Retains O2328 on A1301	6-57
H2333	11	Same as H2094	Retains O2330 through O2334 and H2352 on O1394	6-57
H2334	11	SCREW: 6-40 x 1/2 fil 151659. Same as H276	Retains O2334 on O1394	6-57
H2335	11	Same as H1302	Retains O2334 on O1394	6-57
H2336	11	Same as H1433	Retains O2336 and O2337 on O2340	6-57
H2337	11	Same as H2077	Retains O2338 and O2340 on O2344	6-57
H2338	11	Same as H1308	Retains O2338 on A1304	6-57
H2339	11	Same as H1302	Retains O2338 on A1304	6-57
H2340	11	SCREW: 6-40 x 7/32 hex 156740	Retains O2340 on O2341	6-57
H2341	11	Same as H1302	Retains O2340 on O2341	6-57
H2342	11	Same as H1303	Retains O2340 on O2341	6-57
H2343	11	Same as H1330	Retains O2341 on O2344	6-57
H2344	11	Same as H1302	Retains O2341 on O2344	6-57
H2345	11	Same as H2079	Retains A2325 on O2342	6-57
H2346	11	Same as H1317	Retains A2325 on O2342	6-57
H2347	11	Same as H1220	Retains A2325 on O2342	6-57
H2348	11	Same as H1300	Retains O2343 on O2344	6-57
H2349	11	Same as H1302-	Retains O2343 on O2344	6-57
H2350	11	Same as H1314	Retains O2343 on O2344	6-57
H2351	11	Same as H1301	Retains O2343 on O2344	6-57
H2352	11	Same as O2091	Spaces O2332 from O2333	6-57
H2375	11	RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-9 (code 59433 part No. 119648)	Retains O2376 and O2378 on O2379	6-58
H2376	11	Same as H1337	Retains O2378 on O2376	6-58
H2377	11	Same as H1323	Retains O2378 on O2376	6-58
H2378	11	Same as H1220	Retains O2378 on O237	6-58
H2379	11	Same as H1327	Retains O2379 on A1550	6-58
H2380	11	Same as H1317	Retains O2379 on A1550	6-58
H2381	11	Same as H1220	Retains O2379 on A1550	6-58
H2382	11	Same as H2375 (Continued. See H2400)	Retains O2380 on O2376	6-58
O2300	11	SHAFT: 162775	Shaft for O2299	6-56
O2301	11	LATCH: 162760	Latches O2298	6-56
O2302	11	ARM, BLOCKING: 162786	Latches O2302	6-56
O2303	11	BUSHING, ECCENTRIC: 162785	Operates O2301	6-56
O2304	11	LEVER: 162781	Operates O2301 through O2303	6-56
O2305	11	POST, SPRING: 162774	Spring post for O2228, O2279, and O2280	6-56
O2306	11	SHAFT: 162780	Shaft for O2301, O2302 and O2304	6-56
O2307	11	PLATE, STOP: 162800	-Adjustable stop for O2292	6-56
O2308	11	POST, SPRING: 163114	Anchors O2277	6-56
O2309	5	POST: 162788	Shaft for O2298	6-56
O2325	11	LEVER, CAM FOLLOWER: 162758	Operates O2327	6-57
O2326	11	LEVER: 163326	Trips O2304	6-57
O2327	11	SHAFT: 162757	Operates O2326	6-57
O2328	3	BUSHING: 162756	Supports O2327	6-57
O2329	11	Same as O2117	Applies tension to O2332 and O2333	6-57
O2330	11	WASHER, SPRING: 160842	Applies tension to O2331	6-57
O2331	11	Same as O2089	Operates O2332 and O2333	6-57

TABLE 7-2. TYP(NG REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
O2332	11	PAWL, FEED: 162743	Operates O2291 and O2293	6-57
O2333	11	PAWL, DETENT: 162742	Latches O2293	6-57
O2334	11	CAM: 162741	Retains O2332 and O2333 on O2331 and operates O2331	6-57
O2335	11	SPRING: 86873	Applies tension to O2340	6-57
O2336	11	ROLLER: 162747	Follower roller for O2331	6-57
O2337	11	WASHER, FELT: 101796	Lubricates O2336	6-57
O2338	11	Same as O2075	Operates O1467	6-57
O2339	11	BRACKET, SPRING: 162755	Anchors O2335	6-57
O2340	11	LEVER: 162745	Operates O2341	6-57
O2341	11	LEVER: 162748	Operates O2344	6-57
O2342	11	SPACER: 162753	Mounts A2325 on O2344	6-57
O2343	11	LEVER, ADJUSTING: 176286	Operates O2383	6-57
O2344	11	SHAFT: 162744	Operates O2343	6-57
O2375	11	STORAGE SLIDE ASSY: 162762	Releases O1625 during normal operation	6-58
O2376	11	PLATE: 162770	Trips O2378	6-58
O2377	11	SPRING: 7655	Applies tension to O2378	6-58
O2378	11	LATCH: 162768	Latches or releases O1625	6-58
O2379	11	PLATE: 162766	Pivots O2378 and anchors O2377	6-58
O2380	11	LINK: 162772	Trip link to operate O2376	6-58
O2381	11	SPRING: 76422. Same as O646	Applies tension to O1625	6-58
O2382	11	WICK: 4812	Lubricates O2381	6-58
O2383	11	LEVER, SLIDE TRIP: 162764	Latches O1625 during signal interference of feed-out	6-58
O2384	11	BRACKET: 162765	Reperforator punch slide guide bracket	6-58
		(Continued. See O2400)		
A2400	1	PLATE: 161943	Guides tape	6-59
A2401	1	PLATE, CLAMP: 161835	Retains O2409 on O2420	6-59
A2402	1	BRACKET: 164102	Retains O2410 on O2420	6-59
A2403	1	FRAME, WINDOW: 161935	Retains O2413 on O2420	6-59
A2404	1	BRACKET, SPRING: 83876	Anchors O2414	6-59
A2475	1	BRACKET, GUIDE: 161939	Guides O2420 on A2476	6-60
A2476	1	PLATE ASSY: 161952	Supports TT-253/UG keyboard base	6-60
		(Continued. See A2500)		
H2400	1	SCREW: 4-40 x 5/16 fil 151685. Same as H738	Retains O2400 on O2421	6-59
H2401	1	WASHER, LOCK: 3640. Same as H125	Retains O2400 on O2421	6-59
H2402	1	SCREW: 6-40 x 3/16 hex 151630. Same as H100	Retains A2402 and O2401 on O2420	6-59
H2403	1	WASHER, LOCK: 2191. Same as H101	Retains A2402 and O2401 on O2420	6-59
H2404	1	SCREW: 6-40 x 7/16 hex 153841. Same as H111	Retains A2402, O2401, O2402 and O2405 on O2420	6-59
H2405	1	Same as H2403	Retains A2402, O2401, O2402 and O2405 on O2420	6-59
H2406	1	SCREW: 6-40 x 3/8 fil 151346. Same as H256	Retains O2405 on O2420	6-59
H2407	1	NUT: 6-40 hex 3606. Same as H190	Retains O2405 on O2420	6-59
H2408	1	WASHER, FLAT: 91904	Retains O2405 on O2420	6-60
H2409	1	Same as H2403	Retains O2405 on O2420	6-60
H2410	1	SCREW: 2-56 x 1/8 fil 125112	Retains A2400 on O2420	6-60
H2411	1	WASHER, LOCK: 93118	Retains A2400 on O2420	6-60

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H2412	1	SCREW, SHOULDER: 10-32 70720	Retains O2406 on O2420	6-60
H2413	1	NUT: 10-32 hex 74807. Same as H1134	Retains O2406 on O2420	6-60
H2414	1	Same as H117	Retains O2406 on O2420	6-60
H2415	1	WASHER, FLAT: 101633	Retains O2406 on O2420	6-60
H2416	1	PIN, ROLL: 160664	Retains O2408 on O2406	6-60
H2417	1	SCREW: 6-40 x 5/32 fil 87993	Retains A2401 on O2420	6-60
H2418	1	Same as H2403	Retains A2401 on O2420	6-60
H2419	1	Same as H2407	Retains H2421 and H2422 on O2420	6-60
H2420	1	WASHER, FLAT: 7002. Same as H115	Retains H2421 and H2422 on H2420	6-60
H2421	1	CLAMP, LOOP: Nylon, mfg. code No. 71616, part No. CPC-1953-3 (code 59433 part No. 121243)	Retains W2400 on O2420	6-60
H2422	1	CLAMP, LOOP: Nylon, mfg. code No. 71616, part No. CPC-1953-4 (code 59433 part No. 121244)	Retains W2400 on O2420	6-60
H2423	1	SCREW: 6-40 x 5/16 hex 151631. Same as H119	Retains XI2400 and XI2401 on O2420	6-60
H2424	1	NUT: 6-40 hex 3598. Same as H129	Retains XI2400 and XI2401 on O2420	6-60
H2425	1	Same as H2403	Retains XI2400 and XI2401 on O2440	6-60
H2426	1	Same as H2420	Retains XI2400 and XI2401 on O2440	6-60
H2427	1	SCREW, SHOULDER: 151534	Retains O2411 on O2420	6-60
H2428	1	WASHER, FLAT: 152441. Same as H1880	Retains O2411 on O2420	6-60
H2429	1	Same as H2402	Retains O2412 on O2420	6-60
H2430	1	Same as H2403	Retains O2412 on O2420	6-60
H2431	1	WASHER, FLAT: 3438. Same as H118	Retains O2412 on O2420	6-60
H2432	1	Same as H2420	Retains O2412 on O2420	6-60
H2434	1	SCREW: 4-40 x 1/4 fil 151637. Same as H148	Retains A2403 on O2420	6-60
H2435	1	Same as H2412	Retains O2416 on O2420	6-60
H2436	1	Same as H2413	Retains O2416 on O2420	6-60
H2437	1	WASHER, LOCK: 2669. Same as H2414	Retains O2416 on O2420	6-60
H2438	1	Same as H2415	Retains O2416 on O2420	6-60
H2439	1	Same as H2416	Retains O2415 on O2416	6-60
H2440	1	SCREW: 4-40 x 3/16 hex 88780	Retains A2404 on O2420	6-60
H2441	1	WASHER, LOCK: 110743. Same as H451	Retains A2404 on O2420	6-60
H2475	1	SCREW, SPECIAL: 1/4-32 151549	Retains keyboard base on cabinet sub-base A2476	6-61
H2476	1	Same as H2423	Retains A2475 on A2476	6-61
H2477	1	Same as H2403	Retains A2475 on A2476	6-61
H2478	1	Same as H2420	Retains A2475 on A2476	6-61
H2479	1	SCREW: 10-32 x 1/2 hex 153442	Retains O2476 on A2476	6-61
H2480	1	NUT: 6-32 hex 112626. Same as H259	Retains O2476 on A2476	6-61
H2481	1	WASHER, LOCK: 2669. Same as H2414	Retains O2476 on A2476	6-61
H2482	1	SCREW, SHOULDER: 10-32 152993	Retains O2478 on A2476	6-61
H2483	1	RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-37 (code 59433 part No. 119655)	Retains O2478 on O2479	6-61
H2484	1	Same as H2483 (Continued. See H2500)	Retains O2479 on A2476	6-61

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
I2400	1	LAMP, INCANDESCENT: 6-8 V, 1.14 amp, 6 cp, G-6 clear bulb, C-2R filament, double contact bayonet base, mfg. code No. 24446, part No. 82 (code 59433 part No. 151982)	Cabinet light	6-60
I2401	1	Same as I2400 (Continued. See I2500)	Cabinet light	6-60
J2400	1	CONNECTOR: 92151	W2400 connector. Mates with P177	6-60
O2400	1	HANDLE, COPY HOLDER: 153023	Handle for O2421	6-60
O2401	1	SHAFT, LINE GUIDE: 162590	Supports O2421	6-60
O2402	1	SPACER: 74479	Spaces O2401 from O2405	6-60
O2403	1	BUSHING, LINE GUIDE: 153022	Supports O2404	6-60
O2404	1	SPRING, COPY HOLDER: 153021	Applies tension to O2421	6-60
O2405	1	HOLDER, COPY: 161945	Supports copy	6-60
O2406	1	LATCH: 154407	Latches O2420 lid	6-60
O2407	1	SPRING: 4326	Applies tension to O2406	6-60
O2408	1	BUTTON: 159734	Operates O2406	6-60
O2409	1	WINDOW, SIDE: 161941	Window for O2420	6-60
O2410	1	WINDOW, FRONT: 161940	Window for O2420	6-60
O2411	1	LINK: 161936	Latches O2420 in open position	6-60
O2412	1	BRACKET, HINGE: 161944	Hinge for O2420 lid	6-60
O2413	1	WINDOW: 161934	Window for O2420	6-60
O2414	1	Same as O2381	Applies tension to O2416	6-60
O2415	1	Same as O2408	Operates O2416	6-60
O2416	1	LATCH ASSY: 161937	Latches O2420 lid	6-60
O2417	1	PAD, REAR: 161948	Soundproofs O2420	6-60
O2418	1	PAD, RIGHT SIDE: 161947	Soundproofs O2420	6-60
O2419	1	PAD, LEFT SIDE: 161946	Soundproofs O2420	6-60
O2420	1	COVER: 145325	Cover for TT-253/UG	6-60
O2421	1	GUIDE, LINE: 161961	Clamps copy to O2420	6-60
O2475	1	BUSHING: 152971	Retains H2475 on A2476	6-61
O2476	1	MOUNT, SHOCK: 161949		6-60
O2477	1	WASHER, SPRING TENSION: Steel mfg. code No. 78189, part No. 3502-20 (code 59433 part No. 121125)	Applies tension to O2478	6-61
O2478	1	LATCH: 152925	Latches O2420 to A2476	6-61
O2479	1	HANDLE: 152972	Operates O2478	6-61
O2480	1	Same as O2477 (Continued. See O2500)	Applies tension to O2479	6-61
W2400	1	CABLE ASSY: 161593 (Continued. See W5000)	Cable for cabinet lights	6-60
XI2400	1	LAMPHOLDER: 125 V, 75 W, mfg. code No. 72619, part No. 12-271 (code 59433 part No. 151540). Same as XI850	Socket for I2400	6-60
XI2401	1	Same as XI2400	Socket for I2401	6-60
A2500	4	BRACKET, WINDOW: 159943	Retains O2501 on O2505	6-62
A2501	4	Same as O2406	Latches O2505	6-62
A2502	4	BRACKET, GUIDE: 162191	Tape guide	6-62
A2503	4	PLATE, TAPE GUIDE: 159953	Guides tape	6-62
A2504	4	LID, COVER: 159949	Lid for A2505	
A2505	4	COVER: 162189	Cover for TT-192/UG	6-62
A2550	5	PLATE, SWITCH IDENTIFICATION: 176110	Identifies power switch and tape-out light	6-63
A2551	5	PLATE, TAPE GUIDE: 176101	Guides reperforator tape	6-63
A2552	5	COVER: 176096 (Continued. See A5000)	Cover for TT-192A/UG	6-63

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H2500	4	NUT, SPEED: 151558	Retains I2500 and I2501 on A2504 and A2505	6-62
H2501	4	NUT: 6-32 hex 6345	Retains O2500 on A2504	6-62
H2502	4	Same as H2403	Retains O2500 on A2504	6-62
H2503	4	WASHER, FLAT: 76099. Same as H512	Retains O2500 on A2504	6-62
H2504	4	Same as H2402	Retains O2500 on A2504	6-62
H2505	4	SCREW: 6-40 x 3/16 hex 151722. Same as H337	Retains O2500 on A2504	6-62
H2506	4	Same as H2403	Retains O2500 on A2504	6-62
H2507	4	Same as H2503	Retains O2500 on A2504	6-62
H2508	4	Same as H2424	Retains A2500 on A2504	6-62
H2509	4	Same as H2420	Retains A2500 on A2504	6-62
H2510	4	RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-18 (code 59433 part No. 119652)	Retains O2502 on A2504 and A2505	6-62
H2511	4	WASHER, FLAT: 93001	Retains O2502 on A2504	6-62
H2512	4	Same as H2412	Retains A2501 on A2504	6-62
H2513	4	Same as H2413	Retains A2501 on A2504	6-62
H2514	4	WASHER, LOCK: 2669. Same as H2414	Retains A2501 on A2504	6-62
H2515	4	Same as H2415	Retains A2501 on A2504	6-62
H2516	4	Same as H2416	Retains O2504 on A2501	6-62
H2517	4	Same as H2424	Retains A2504 on A2505	6-62
H2518	4	Same as H2403	Retains A2504 on A2505	6-62
H2519	4	Same as H2420	Retains A2504 on A2505	6-62
H2520	4	SCREW: 6-40 x 5/16 fil 151658. Same as H873	Retains O2506 on A2505	6-62
H2521	4	Same as H2424	Retains O2506 on A2505	6-62
H2522	4	Same as H2403	Retains O2506 on A2505	6-62
H2550	5	Same as H2402	Retains O2550 on O2556	6-63
H2551	5	Same as H2403	Retains O2550 on O2556	6-63
H2552	5	Same as H2501	Retains O2550 on O2556	6-63
H2553	5	Same as H2403	Retains O2550 on O2556	6-63
H2554	5	Same as H2402	Retains O2551 on O2556	6-63
H2555	5	Same as H2424	Retains O2551 on O2556	6-63
H2556	5	Same as H2403	Retains O2551 on O2556	6-63
H2557	5	Same as H2420	Retains O2551 on O2556	6-63
H2558	5	Same as H2407	Retains O2552 and O2553 on O2556	6-63
H2559	5	Same as H2403	Retains O2552 and O2553 on O2556	6-63
H2560	5	Same as H2501	Retains A2550 on O2556	6-63
H2561	5	Same as H2403	Retains A2550 on O2556	6-63
H2562	5	Same as H2420	Retains A2550 on O2556	6-63
H2563	5	RING, RETAINING: Steel, mfg. code No. 79136, part No. 5133-25 (code 59433 part No. 119653). Same as H225	Retains O2555 on A2552 and O2556	6-63
H2564	5	WASHER, FLAT: 71858	Retains O2555 on A2552	6-63
H2565	5	Same as H2407	Retains O2556 on A2552	6-63
H2566	5	Same as H2403	Retains O2556 on A2552	6-63
H2567	5	Same as H2420	Retains O2556 on A2552	6-63
H2568	5	Same as H2407	Retains A2551 on A2552	6-63
H2569	5	Same as H2403	Retains A2551 on A2552	6-63
H2570	5	Same as H2420	Retains A2551 on A2552	6-63
H2571	5	NUT: 4-40 hex 3599. Same as H124	Retains H2572 on O2557	6-63
H2572	5	KNOB: 158649	Operates O2557	6-63
H2573	5	Same as H2407	Retains O2559 on A2552	6-63

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H2574	5	Same as H2403	Retains O2559 on A2552	6-63
H2575	5	Same as H2420 (Continued. See H5000)	Retains O2559 on A2552	6-63
I2500	4	LENS, INDICATOR LAMP: 155083	Lens for I850	6-62
I2501	4	Same as I2500	Alternate tape-out lamp lens	6-62
O2500	4	HANDLE: 159941	Handle for A2504	6-62
O2501	4	WINDOW: 159944	Window for A2504	6-62
O2502	4	ARM: 162195	Latches A2504 in open position	6-62
O2503	4	Same as O2407	Applies tension to A2501	6-62
O2504	4	BUTTON, PUSH: 159734	Operates A2501	6-62
O2505	4	SPRING, LUGGAGE CATCH: Mfg. code No. 14608, part No. 15822 (code 59433 part No. 153449)	Applies tension to O2506	6-62
O2506	4	CATCH, LUGGAGE: Mfg. code No. 14608, part No. 15824 (code 59433 part No. 153448)	Latches A2505 to O856	6-62
O2550	5	HANDLE: 176107	Lifts O2556	6-63
O2551	5	BRACKET, LOCKING: 176108	Latches O2556 to A2552	6-63
O2552	5	BRACKET, WINDOW: 176105	Retains O2554 on O2556	6-63
O2553	5	BRACKET, WINDOW: 176106	Retains O2554 on O2556	6-63
O2554	5	WINDOW: 176103	O2556 window	6-63
O2555	5	ARM, LATCH: 160974	Latches O2556 in open position	6-63
O2556	5	LID: 176097	Lid for A2552	6-63
O2557	5	BOLT: 176102	Locks O2556 in closed position	6-63
O2558	5	SPRING: 111346	Applies tension to O2557	6-63
O2559	5	FASTENER ASSEMBLY: 176098	Latches A2552 to A932	6-63
O2560	5	SEAL, RUBBER CHANNEL: approx 16-1/8 in. lg by 1/4 in. wide, 1/4 in. thick with 0.062 in. wide groove to depth of 1/8 in., mfg. code No. 14370, part No. 100 (code 59433 part No. 176089) (Continued. See O5000)	Seals O2554	6-63

KEYBOARD BASE (TT-253A/UG)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
5000 to 5199		KEYBOARD BASE TT-253A/UG (See also 100 to 1199)	Mounting for motor and typing reperforator. Generates typing signal and on-line and off-line function.	6-1 through 6-3, 6-5, 6-7, 6-10, 6-11, 6-13, 6-14, 6-17
A5000	2	ARMATURE ASSEMBLY: 164651	Armature for L5000	6-3
A5001	2	BRACKET: 164647	Supports L5000 and A5000	6-3

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

KEYBOARD BASE (TT-253A/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
A5002	2	BRACKET: 164653	Supports S5000 pileup	6-3
A5150	2	BOX, W/STRAP: 154226	Container and ground for contact mechanism	6-14
A5151	2	BOX, CONTACT: 154209 (Continued. See A5300)	Container for contact mechanism	6-14
E5000	2	CORE, MAGNET: 158754	Core for and retains L5000 on A5001	6-3
E5001	2	ARMATURE: 158753	Operates A5000	6-3
E5002	2	INSULATOR: 82548	Insulates A5002 from E5003, E5004 from E5003 and E5006 from E5007	6-3
E5003	2	TERMINAL: 81726	Terminal for E5004	6-3
E5004	2	CONTACT SPRING: 193715	Contact for S5000	6-3
E5005	2	INSULATOR: 82547	Insulates E5004 from E5003	6-3
E5006	2	CONTACT PLATE ASSEMBLY: 41720	Contact for S5000	6-3
E5007	2	PLATE, RETAINING: 41732. Same as E1828	Retains E5008 and E5002 through E5006 on A5002	6-3
E5008	2	BUSHING: 86959	Insulates S5000 pileup from H5025	6-3
E5009	2	SLEEVE, INSULATING: 155750	Insulates W5000	6-3
E5010	2	SLEEVE, INSULATING: 155573	Insulates W5000	6-3
E5150	2	TERMINAL: 121539 (Continued. See E5600)	Terminal for W5150	6-14
H5000	2	SCREW: 6-40 x 3/8 hex 151631	Holds 05007 on A113	6-1
H5001	2	CLAMP, LOOP: 121243	Loop clamp for W5000	6-1
H5002	2	WASHER, FLAT: 7002	Holds 05007 on A113	6-1
H5003	2	SCREW: 6-40 x 3/8 hex 151632	Retains 05000 on A113	6-3
H5004	2	WASHER, LOCK: 2191	Retains 05000 on A113	6-3
H5005	2	WASHER, FLAT: 7002	Retains 05000 on A113	6-3
H5006	2	SCREW: 6-40 x 3/8 hex 151632	Retains E5000 on A5001	6-3
H5007	2	WASHER, LOCK: 2191	Retains E5000 on A5001	6-3
H5008	2	SCREW: 6-40 x 1/4 hex 151630	Retains 05002 and 05003 on 05007	6-3
H5009	2	WASHER, LOCK: 2191	Retains 05002 and 05003 on 05007	6-3
H5010	2	WASHER, FLAT: 2481	Retains A5001 on O5002	6-3
H5011	2	SCREW: 6-40 x 5/16 hex 151631	Retains 05004 on 05007	6-3
H5012	2	WASHER, LOCK: 2191	Retains 05004 on 05007	6-3
H5013	2	WASHER, FLAT: 7002	Retains 05004 on 05007	6-3
H5014	2	SCREW: 6-40 x 1/4 fil 151657	Retains A5000 on A5001	6-3
H5015	2	WASHER, LOCK: 2191	Retains A5000 on A5001 and 05006 on A5000	6-3
H5016	2	WASHER, FLAT: 7002	Retains A5000 on A5001 and 05006 on A5000	6-3
H5017	2	SCREW: 4-40 x 5/32 fil 151073	Retains E5001 on A5000	6-3
H5018	2	WASHER, LOCK: 3640	Retains E5001 on A5000	6-3
H5019	2	SCREW: 6-40 x 1/4 hex 151630	Retains A5001 and 05004 on 05007	6-3
H5020	2	WASHER, LOCK: 2191	Retains A5001 and 05004 on 05007	6-3
H5021	2	WASHER, FLAT: 7002	Retains A5001 and 05004 on 05007	6-3
H5022	2	SCREW: 6-40 x 5/16 hex 151631	Retains A5002 on A501 and A625	6-3
H5023	2	WASHER, LOCK: 2191	Retains A5002 on A501 and A625	6-3
H5024	2	WASHER, FLAT: 7002	Retains A5002 on A501 and A625	6-3
H5025	2	SCREW: 4-40 x 9/16 fil 151733	Retains S5000 pileup on A5002	6-3
H5026	2	WASHER, LOCK: 3640	Retains S5000 pileup on A5002	6-3
H5050	2	SCREW: 6-40 x 3/8 hex 151632	Retains 05050 on 0251	6-5
H5175	2	SCREW: 6-40 x 9/16 fil 151693	Retains O5175 on O5176	6-17
H5176	2	WASHER, LOCK: 2191 (Continued. See H5300)	Retains 05175 on 05176	6-17
K5150	2	BOX, SIGNAL GENERATOR CONTACT: 154225	Sets up marking and spacing elements in signal line	6-14

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

KEYBOARD BASE (TT-253A/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
L5000	2	COIL ASSEMBLY, MAGNET: 75000 turns No. 35 CBE wire, 500 V ac 4.45 ohms ± 10%, mfg. code No. 59433, part No. 263M (Continued. See L5850)	Attracts E5001	6-3
O5000	2	CLAMP, ARMATURE: 193654	Retains A5000 in operating position	6-3
O5001	2	WASHER, SPRING: 121125	Applies pressure to L5000	6-3
O5002	2	POST: 164644	Supports A5001	6-3
O5003	2	POST: 164645	Supports O5003	6-3
O5004	2	PLATE, NUT: 164646	Retains A5001 on O5007	6-3
O5005	2	SPRING: 88891	Applies tension to armature bail	6-3
O5006	2	POST, SPRING: 158859	Anchors O5005	6-2
O5007	2	PLATE, MOUNTING: 164649	Mounts A5001	6-3
O5050	2	GEAR, HELICAL: 163460	Drives O836	6-5
O5075	2	BAR, CLUTCH TRIP CODE: 164652	Operates S5000	6-7
O5076	2	BAR, UNIVERSAL CODE: 164656	Applies tension to O5077	6-7
O5077	2	SPRING: 49420		6-7
O5100	2	BAIL, CLUTCH TRIP: 164485	Engages O412 to release O505	6-10
O5125	2	SLEEVE ASSEMBLY: 163519	Operates keyboard clutch	6-11
O5126	2	CAM, SIGNAL GENERATOR: 163368	Operates O552, O587 and O589 through O595	6-11
O5175	2	GEAR, HELICAL: 163459	Drives O787	6-17
O5176	2	HUB: 150440	Spaces O5175 from O5177	6-17
O5177	2	GEAR, HELICAL: 163503 (Continued. See O5300)	Drives O565	6-17
S5000	2	CONTACT ASSEMBLY: 193719	Controls external clocking pulse to L5000	6-3
W5000	2	CABLE ASSEMBLY: 164379	Connects S5000 to L5000	6-3
W5150	2	STRAP: 162337 (Continued. See W5601)	Ground strap	6-14
Z5150	2	FILTER: 154190 (Continued. See Z5601)	Signal line radio interference suppressor	6-14

MOTOR, AC SYNCHRONOUS (TT-253/UG) OR MOTOR, AC GOVERNED (TT-274/UG AND TT-292/UG)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
5200 to 5699		MOTOR, AC SYNCHRONOUS (TT-253A/UG) OR MOTOR, AC GOVERNED (TT-274/UG AND TT-292/UG)	Power source	6-29 through 6-31
A5300	2	PLATE, MOUNTING: 192798	Mounts A5301	6-20
A5301	2	CASING ASSEMBLY, FAN WHEEL: 193561	B1200 housing	6-29
A5600	9	BRACKET, RESISTOR MOUNTING: 152459	Mounts R5602	6-30
A5601	9	MOUNTING, BRUSH: 150884	Guides E5604	6-30
A5602	9	PLATE, CLAMP: 150886	Locks A5603 mounting hardware to A5601	6-30
A5603	9	PLATE, BRUSH: 150885	Retains E5604 on A5601	6-30
A5604	9	PLATE, CLAMP: 150886	Locks A5606 mounting hardware to A5605	6-30
A5605	9	MOUNTING, BRUSH: 150884	Guides E5605	6-30

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

MOTOR, AC SYNCHRONOUS (TT-253/UG) OR
MOTOR, AC GOVERNED (TT-274/UG AND TT-292/UG)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
A5606	9	SAME as A5603	Retains E5605 on A5605	6-30
A5607	9	COVER: 152044	Cover and electrostatic shield for governor	6-30
A5608	9	COVER, CONTAINER: 152037	Cover for A5610	6-30
A5609	9	BRACKET, MOTOR MOUNTING: 152046	Supports B5601	6-30
A5610	9	CONTAINER: 152039	Housing and mount for electrical components	6-30
A5611	9	BRACKET, RESISTOR MOUNTING: 152034	Mounts R5601 and R5602 on A5610	6-30
A5612	9	LID, CONTAINER: 152040	Covers A5610	
A5617	9	BRACKET, GOVERNOR SPRING GUIDE: 150877	Anchors O5613	6-31
A5618	9	BRACKET, CONTACT: 150858	Supports E5612	6-31
A5619	9	BRACKET, CONTACT ARM MOUNTING: 150859	Supports E5618	6-31
A5620	9	COVER, GOVERNOR: 150879 (Continued. See A5700)	Cover for all mounted parts of B5603	6-31
B5601	9	MOTOR, AC SERIES: 150701	Supplies power for auxiliary equipment	6-30
B5603	9	FAN, GOVERNOR: 150997	Cools B5601 and supports governor	6-31
C5601	9	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 500 vdc working, 20,000 mmf, ceramic insulation, 3/4 in. dim. by 1/4 in. thick, mfg. code no. 59433, part no. 122233	Electrical noise suppressor for E5607 and E5608	6-30
C5603	9	CAPACITOR, FIXED, PAPER DIELECTRIC: 1,000 vdc working, 0.5 mfd ± 20%, metal casing hermetically sealed, 2-1/4 in. h, 1-5/16 in. deep, 11/16 in. w, mfg code no. 74861 part no. 2196 (code 59433 part no. 161579)	Starting capacitor for B5601	6-30
E5600	9	SEPARATOR: 152058	Insulates C5603 from A5610	6-30
E5601	9	ARMATURE, MOTOR: 122210	Rotates main shaft	6-30
E5602	9	WASHER, FIBER: 91837	Insulates C5601 from O5603	6-30
E5603	9	Same as E5600	Insulates R5601 from C5603	6-30
E5604	9	BRUSH, ELECTRICAL CONTACT: 150882	Electrical contact brush for E5607	6-30
E5605	9	Same as E5604	Electrical contact brush for E5608	6-30
E5606	9	Same as E5600	Insulates Z5601 terminals from C5603	6-30
E5607	9	BRUSH AND SPRING: 122205	Electrical contact brush for E5604 and E5605	6-30
E5608	9	TERMINAL, LUG: Mfg. code no. 64959, part no. P-216277 (code 59433 part no. 91230)	W5604 terminal	6-30
E5609	9	SPRING, HELICAL CLIP: 151455	Terminals for C5601	6-30
E5610	9	TERMINAL: 151626	W5601 terminal	6-30
E5611	9	TERMINAL, LUG: Mfg. code no. 77147, part no. 2046 (code 59433 part no. 91231)	W5604 terminal	6-30
E5612	9	SCREW, CONTACT: 6320	Contact for resistance circuit of B5601	6-31
E5613	9	WASHER, INSULATING: 150849	Insulates A5617 from H5665	6-31
E5614	9	BUSHING, INSULATING: 150868	Insulates A5617 from H5663	6-31
E5615	9	PLATE, INSULATING: 150850	Insulates A5617, A5618 and A5619 from B5603	6-31
E5616	9	Same as E5613	Insulates A5618 from H5673	6-31

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

MOTOR, AC SYNCHRONOUS (TT-253/UG) OR
MOTOR, AC GOVERNED (TT-274/UG AND TT-292/UG)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
E5617	9	Same as E5614	Insulates A5618 from H5670 and H5671	6-31
E5618	9	ARM, MOVABLE, CONTACT: 150856	Opens and closes resistance circuit for B5601	6-31
E5619	9	Same as E5613	Insulates A5619 from H5677	6-31
E5620	9	Same as E5614	Insulates A5619 from H5674 and H5675	6-31
E5622	9	BUSHING: 152495 (Continued. See E5850)	Insulates E5618 from O5613, H5655 and H5684	6-31
H5300	2	SCREW: 4-40 x 3/16 hex 151152	Retains O5300 on A5700	6-29
H5301	2	WASHER, LOCK: 110743	Retains O5300 on A5700	6-29
H5302	2	WASHER, FLAT: 125011	Retains O5300 on A5700	6-29
H5303	2	SCREW: 6-40 x 3/4 hex 151721	Retains O5300 on A2000	6-29
H5304	2	WASHER, FLAT: 7002	Retains O5300 on A2000	6-29
H5305	2	CLAMP, TUBE: 193579	Retains O5300 on A2000	2-29
H5306	2	NUT: 6-40 hex 3598	Retains A5301 on A5300	6-29
H5307	2	WASHER, LOCK: 2191	Retains A5301 on A5300	6-29
H5600	9	WASHER, PULL: 122211. Same as H1210	Pull washer for O5610	6-30
H5601	9	BOLT, CLAMP: 10-32, 122202	Retains O5602 and O5603 on O5601	6-30
H5602	9	NUT, PLAIN, HEX: Steel, mfg. code no. 24446, part no. N210P16C (code 59433 part no. 151453)	Retains O5602 on O5601	6-30
H5603	9	WASHER, FLAT: 122208	Supports O5609	6-30
H5604	9	SCREW: 6-32 x 5/16 flat hd 125143	Retains C5601 on C5603	6-30
H5605	9	WASHER, LOCK: Steel mfg. code no. 78189, part no. 1206 (code 59433 part no. 92260)	Retains C5601 on O5603	6-30
H5606	9	NUT: 6-32 hex 6345	Retains C5601 on O5603	6-30
H5607	9	HOLDER, BRUSH: 122206	Holder for E5607 and E5608	6-30
H5608	9	SCREW, SET: 8-32, 153102	Set screws for H5607	6-30
H5609	9	SCREW: 6-40 by 1/4 hex 151630. Same as H100	Ground screw	6-30
H5610	9	WASHER, LOCK: 2191. Same as H101	Locks H5609 to O5603	6-30
H5611	9	SCREW: 6-40 x 3/4 fil 151643	Retains A5601 on O5603	6-30
H5612	9	Same as H5610	Retains A5601 on O5603	6-30
H5613	9	SCREW: 6-40 x 3/8 fil 151346. Same as H2406	Retains A5602 and O5605 on A5601 and O5607 and A5604 on A5605	6-30
H5614	9	WASHER, FLAT: 7002. Same as H115	Retains A5602 and O5605 on A5601 and O5607 and A5604 on A5605	6-30
H5615	9	Same as H5610	Retains A5602 and O5605 on A5601 and O5607 and A5604 on A5605	6-30
H5616	9	SCREW: 6-40 x 5/16 fil 151658. Same as H873	Retains A5603 on A5601	6-30
H5617	9	Same as H5610	Retains A5603 on A5601	6-30
H5618	9	SCREW: 6-50 x 1/4 fil 151657. Same as H1468	Retains A5603 on A5601	6-30
H5619	9	Same as H5610	Retains A5603 on A5601	6-30
H5620	9	SCREW: 6-40 x 11/16 fil 1181	Retains A5600 on A5610	6-30
H5621	9	NUT: 6-40 hex 3598. Same as H129	Retains A5600 on A5610	6-30
H5622	9	Same as H5610	Retains A5600 on A5610	6-30
H5623	9	SCREW: 6-40 x 1 in. fil 151661	Retains A5601 and A5605 on O5603	6-30
H5624	9	Same as H5610	Retains A5601 and A5605 on O5603	6-30
H5625	9	WASHER, FLAT: 76099. Same as H512	Retains A5600 on A5610	6-30
H5626	9	WASHER, FLAT: 3624. Same as H760	Retains A5605 on O5603	6-30

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

MOTOR, AC SYNCHRONOUS (TT-253/UG) OR
MOTOR, AC GOVERNED (TT-274/UG AND TT-292/UG)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H5627	9	Same as H5616	Retains A5606 and terminals of E5605 on A5605	6-30
H5628	9	Same as H5610	Retains A5606 and terminals of E5605 on A5605	6-30
H5629	9	Same as H5618	Retains A5606 on A5605	6-30
H5630	9	Same as H5610	Retains A5606 on A5605	6-30
H5631	9	Same as H5613	Retains A5604 on A5605	6-30
H5632	9	Same as H5610	Retains A5604 on A5605	6-30
H5633	9	Same as H5614	Retains A5604 on A5605	6-30
H5634	9	SCREW: 2-56 x 1/4 fil 5740	Retains W5605 and W5606 on R5601 and R5602	6-30
H5635	9	NUT: 2-56 hex 112627. Same as H758	Retains W5605 and W5606 on R5601 and R5602	6-30
H5636	9	WASHER, LOCK: 61085	Retains W5605 and W5606 on R5601 and R5602	6-30
H5637	9	Same as H5609	Retains A5607 on O5603	6-30
H5638	9	Same as H5610	Retains A5607 on O5603	6-30
H5639	9	SCREW: 4-40 x 3/16 hex 151152. Same as H450	Retains A5608 on A5609	6-30
H5640	9	NIPPLE: 152067	Shields B5601 conductors	6-30
H5641	9	Same as H5639	Retains A5611 on A5610	6-30
H5642	9	WASHER, LOCK: 110743. Same as H451	Retains A5611 on A5610	6-30
H5643	9	Same as H5639	Retains A5612 on A5610	6-30
H5644	9	Same as H5642	Retains A5612 on A5610	6-30
H5646	9	Same as H5613	Holds gear to E5601	6-30
H5647	9	Same as H5610	Holds gear to E5601	6-30
H5648	9	WASHER, LOCK: Steel, mfg. code no. 78189 part no. 1210 (code 59433 part no. 98642)	Retains O5602 on O5601	6-30
H5649	9	STRAP, MOUNTING: 151620. Same as H1202	Retains B5601 on A5609	6-30
H5650	9	SCREW: 6-32 x 3/4 rd hd 151621. Same as H1200	Retains H5649 in locking position	6-30
H5651	9	NUT: 6-32 square 151662. Same as H1201	Retains H5649 in locking position	6-30
H5652	9	SCREW: 4-40 x 3/16 rd hd 153103	Motor nameplate screws	6-30
H5653	9	GROMMET, RUBBER: Neoprene, mfg code no. 73773 part no. 625A849AA-81 (code no. 59433 part no. 153101)	Protects B5601 leads	6-30
H5655	9	SCREW: 4-40 x 1/2 fil 151637. Same as H148	Retains E5618 on O5613	6-31
H5656	9	Same as H5642	Retains E5618 to O5613	6-31
E5657	9	Same as H5639	Retains E5611 on A5619	6-31
E5658	9	Same as H5642	Retains E5618 on A5619	6-31
H5659	9	CLAMP, CONTACT ARM: 150857	Clamps E5618 to A5619	6-31
H5660	9	Same as H5614	Retains E5612 on A5618	6-31
H5661	9	Same as H5610	Retains E5612 on A5618	6-31
H5662	9	Same as H5606	Retains E5612 on A5618	6-31
H5663	9	SCREW: 6-40 x 1/2 fil 151659. Same as H276	Retains A5617 and E5615 on B5603	6-31
H5664	9	Same as H5610	Retains A5617 and E5615 on B5603	6-31
H5665	9	Same as H101	Retains A5617 and E5615 on B5603	6-31
H5666	9	SCREW, CLAMPING: 4-40, 150865	Adjusts tension of and holds O5613 to A5617	6-31
H5667	9	Same as H5639	Retains H5669 on A5617	6-31
H5668	9	Same as H5642	Retains H5669 on A5617	6-31

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

MOTOR, AC SYNCHRONOUS (TT-253/UG) OR
MOTOR, AC GOVERNED (TT-274/UG AND TT-292/UG)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H5669	9	CLAMP, ADJUSTING SCREW LOCKING: 150866	Friction clamp for H5666	6-31
H5670	9	Same as H5663	Retains A5618 and E5615 on B5603	6-31
H5671	9	STUD, COVER MOUNTING: 150872	Mounting post for A5620 and retains A5618 and E5615 on B5603	6-31
H5672	9	Same as H5610	Retains A5618 and E5615 on B5603	6-31
H5673	9	Same as H5614	Retains A5618 and E5615 on B5603	6-31
H5674	9	Same as H5671	Mounting post for A5620 and retains A5619 and E5615 on B5603	6-31
H5675	9	Same as H5663	Retains A5619 and E5615 on B5603	6-31
H5676	9	Same as H5610	Retains A5619 and E5615 on B5603	6-31
H5677	9	Same as H5614	Retains A5619 and E5615 on B5603	6-31
H5678	9	Same as H5623	Retains O5614 on B5603	6-31
H5679	9	Same as H5610	Retains O5614 on B5603	6-31
H5680	9	Same as H5614	Retains O5614 on B5603	6-31
H5681	9	Same as H5663	Retains B5603 on E5601	6-31
H5682	9	Same as H5610	Retains B5603 on E5601	6-31
H5683	9	SCREW: 4-40 x 1/4 flat 98712	Retains A5620 on H5671 and H5674	6-31
H5684	9	WASHER, FLAT: 125011. Same as H452 (Continued. See H5700)	Retains E5618 on O5613	6-31
O5300	2	CHUTE ASSEMBLY, CHAD: 192797	Channels chads to O5301	6-29
O5301	2	TUBING: 60038RM	Connects O5300 and A5301	6-29
O5302	2	BAG, CHAD: 193560	Collects chads	6-29
O5600	9	BUSHING, LEAD: 153031	Bushing for B5601 leads	6-30
O5601	9	STATOR: 122221	Operates E5601	6-30
O5602	9	SHIELD ASSY, END: 122253	End bell for O5601	6-30
O5603	9	SHIELD ASSY, END: 122200	End bell for O5601 and mounts A5601, A5605, H5607 and part of series circuit	6-30
O5604	9	CAP, BRUSH: 122204	Retains E5607 and E5608 in H5607	6-30
O5605	9	SPRING, GOVERNOR BRUSH: 150880	Applies pressure to E5604	6-30
O5606	9	COLLAR, SPACING: 150873	Spaces one end of A5605 from O5603	6-30
O5607	9	SPRING, GOVERNOR BRUSH: 150881	Applies pressure to E5605	6-30
O5608	9	SPRING, SEPARATOR: 152078	Applies pressure to and spaces C5703 from Z5601	6-30
O5609	9	SPRING, MOTOR THRUST: 71999 Same as O1203	Applies pressure to E5601	6-30
O5610	9	BEARING, BALL: 122201. Same as O1204	Armature bearing for O5602 and O5603	6-30
O5611	9	MOUNT, VIBRATION: 153030	B5601 vibration mount	6-30
O5612	9	OILER, BALL: 122220. Same as O1202	B5601 oiler	6-30
O5613	9	SPRING, GOVERNOR: 150869	Applies tension to E5618	6-31
O5614	9	BUSHING, ECCENTRIC: 150853 (Continued. See O5700)	Adjustable stop for E5618	6-31
P5601	9	PLUG, GOVERNOR COVER: 152035	Plug for A5607	6-30
R5601	9	RESISTOR, FIXED, WIRE WOUND: 500 ohm, 40 w vitreous resistor, mfg. code No. 63743, part No. 161580 (code 59433 part No. 161580)	Offers resistance to B5601	6-30

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

MOTOR, AC SYNCHRONOUS (TT-253/UG) OR
MOTOR, AC GOVERNED (TT-274/UG AND TT-292/UG)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
R5602	9	Same as R5601	Offers resistance to B5601	6-30
W5601	9	CABLE ASSEMBLY: 152059	Connects B5601 with Z5601	6-30
W5602	9	WIRE ASSEMBLY: 153114	Connects H5607 to governor contact	6-30
W5603	9	STRAP - RESISTOR: 96257	Connects R5601 and C5603	6-30
W5604	9	STRAP, GROUND: 91228	Ground strap	6-30
W5605	9	WIRE ASSEMBLY, ELECTRICAL: 162684	Ground strap	6-30
W5606	9	WIRE ASSEMBLY, ELECTRICAL: 162685 (Continued. See W5850)	Jumper	6-30
Z5601	9	FILTER, RADIO INTERFERENCE: 150 vac, 1.5 amp., mfg. code No. 74861, part No. 2212 (code 59433 part No. 161578)		6-30

TYPING REPERFORATOR (TT-253A/UG)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
5700 to 5899		TYPING REPERFORATOR (TT-253A/UG)	Types and perforates fully perforated tape in response to signal input	6-36 through 6-38, 6-40, 6-48, 6-53, 6-56, 6-57, 6-59
A5700	2	HOLDER, PUNCH: 173760	Mounts punches	6-36
E5850	2	ARMATURE: 159976	Operates O5850	6-59
E5851	2	TERMINAL, LUG: 151626	W5850 terminal	6-59
H5700	2	SCREW: 4-42 x 5/32 hex 151073	Retains O5705 on A5700	6-36
H5701	2	WASHER, LOCK: 110743	Retains O5705 on A5700	6-36
H5702	2	Same as H1320	Retains O5833 on A1502	6-36
H5703	2	Same as H1302	Retains O5833 on A1502	6-36
H5725	2	WASHER, LOCK: 90791	Retains O1568 on O5728	6-37
H5750	2	NUT: 6-40, 179573	Retains O1609 on O1622	6-38
H5775	2	WASHER, FLAT: 173754	Retains O1709 on O5775	6-40
H5825	2	SCREW: 6-40 x 5/16 fil 111017	Retains O5827 on O5828	6-53
H5826	2	WASHER, LOCK: 92260	Retains O5827 on O5828	6-53
H5827	2	SCREW, SPECIAL: 178926	Retains O5829 on O5828	6-53
H5828	2	RING, RETAINING: 119648	Retains O5830 on O5832	6-53
H5829	2	SCREW: 4-40 x 1/4 fil 151637	Retains O5831 on O5832	6-53
H5830	2	WASHER, LOCK: 3640	Retains O5831 on O5832	6-53
H5831	2	NUT, SHOULDER: 178922	Shaft for O2208	6-53
H5832	2	SCREW: 4-40 x 3/8 hex 153817	Retainer O5833 on A1502	6-53
H5833	2	WASHER, FLAT: 125011	Retainer O5833 on A1502	6-53
H5834	2	SCREW: 4-40 x 3/8 hex 153817	Retains O5833 on A1502	6-53
H5845	2	SCREW: 6-40 x 3/4 fil 151642	Retains O5845 on O1394	6-57
H5846	2	WASHER, LOCK: 2191	Retains O5845 on O1394	6-57
H5850	2	SCREW: 4-40 x 11/64 hex 151737	Retains E5850 on O5850	6-59

TABLE 7-2. TYPING REPERFORATOR SETS, LIST OF MAINTENANCE PARTS (Continued)

TYPING REPERFORATOR (TT-253A/UG) (Continued)

REF. DES.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION	FIG. AND INDEX NUMBER
H5851	2	WASHER, LOCK: 3640	Retains E5850 on O5850	6-59
H5852	2	RING, RETAINER: 119649	Retains O5852 on O5853	6-59
H5853	2	SCREW: 4-40 x 1/4 hex 152893	Retains O5853 on O5855	6-59
H5854	2	WASHER, LOCK: 3640	Retains O583 on O5855	6-59
H5855	2	WASHER, FLAT: 125011	Retains O5853 on O5855	6-59
H5856	2	SCREW: 4-40 x 3/16 hex 125215	Retains W5850 on L5850	6-59
H5857	2	WASHER, LOCK: 3640	Retains W5850 on L5850	6-59
H5858	2	WASHER, FLAT: 125011	Retains W5850 on L5850	6-59
H5859	2	SCREW: 6-40 x 1/2 hex 151442	Retains L5850 on O5855	6-59
H5860	2	WASHER, LOCK: 2191	Retains L5850 on O5855	6-59
H5861	2	SCREW: 4-40 x 1/4 hex 152893	Positions O5854 on O5855	6-59
H5862	2	WASHER, LOCK: 3640	Positions O5854 on O5855	6-59
H5863	2	WASHER, FLAT: 125011	Positions O5854 on O5855	6-59
H5864	2	SCREW: 6-40 x 3/16 hex 151722	Retains O5855 on A2276	6-59
H5865	2	WASHER, LOCK: 2191	Retains O5855 on A2276	6-59
H5866	2	RING, RETAINER: 119648	Retains O5856 on O5862	6-59
H5867	2	RING, RETAINER: 119648	Retains O5858 and O5859 onO5862	6-59
H5868	2	RING, RETAINER: 119649	Retains O5863 on O5862	6-59
H5869	2	WASHER, FLAT: 2034	Retains O5863 on O5862	6-59
H5870	2	RING, RETAINER: 119649	Retains O5863 on O5864	6-59
H5871	2	RING, RETAINER: 119655	Retains O5864 on O2299	6-59
H5872	2	SCREW: 6-40 x 5/8 hex 153839	Retains O5864 on O2299	6-59
H5873	2	NUT, SPECIAL: 151629	Retains O5864 on O2299	6-59
H5874	2	WASHER, LOCK: 2191	Retains O5864 on O2299	6-59
H5875	2	WASHER, FLAT: 8330	Retains O5864 on O2299	6-59
H5876	2	RING, RETAINER: 119653	Retains O5868 on O5871	6-59
H5877	2	NUT: 3598	Retains O5869 on O5871	6-59
H5878	2	WASHER, LOCK: 2191	Retains O5869 on O5871	6-59
H5879	2	WASHER, LOCK: 2191	Retains O5870 on O5871	6-59
H5880	2	SCREW: 6-40 x 5/8 hex 153839	Retains O5871 on A2226	6-59
H5881	2	WASHER, LOCK: 2191	Retains O5871 on A2226	6-59
H5882	2	WASHER, FLAT: 8330	Retains O5871 on A2226	6-59
L5850	2	MAGNET: 224M	Attracts E5850	6-59
O5700	2	SLIDE, FEED HOLE PUNCH: 170242	Operates O1511 in A5700	6-36
O5701	2	SLIDE, W/INSULATOR: 170246	Operates pins O1511 in A5700	6-36
O5702	2	GUIDE: 170247	Guides O5700 and O5701	6-36
O5703	2	SCREW, ADJUSTING: 170241	Adjusts position of O1554	6-36
O5704	2	SPRING: 172993	Applies tension to O5751	6-36
O5705	2	BRACKET, SPRING: 172984	Anchors O5704	6-36
O5707	2	PUNCH BLOCK ASSY: 173770	Tape perforating mechanism	6-36
O5725	2	WHEEL, DIE: 170788	Anvil for O5728	6-37
O5726	2	WASHER, FELT: 93356	Lubricates O5727	6-37
O5727	2	STUD, DIE WHEEL: 170219	Shaft for O5725	6-37
O5728	2	WHEEL, FEED: 170779	Advances tape	6-37
O5729	2	FOOT, MOUNTING: 156183	Mounting foot for A1550	6-37
O5750	2	BAIL, RESET: 162763	Operates O1327	6-38
O5751	2	BRACKET: 172983	Anchors O5704 and retains O1620 on A1601	6-38
O5775	2	SHAFT, TYPEWHEEL: 173775	Operates O1709 axially	6-40
O5776	2	GUIDE, RIBBON: 173755	Guides O2001	6-40
O5777	2	HAMMER, PRINT: 173756	Presses tape against O2001	6-40
O5800	2	ROLLER: 176638	Accepts O2017 and O2020	6-48
O5801	2	LEVER, ADJUSTABLE EXTENSION: 178178	Operates O2009	6-48
O5825	2	SPRING: 49420	Applies tension to O5832	6-53
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O5828	2	SHAFT, BACKSPACE: 178924	Shaft for O5829	6-53
O5829	2	RATCHET: 178925	Reverses O5768 for back spacing	6-53
O5830	2	PAWL, BACKSPACE: 178919	Drives O5827	6-53
O5831	2	POST, ECCENTRIC: 178920	Stop for O5830	6-53
O5832	2	CRANK, W/POSTS: 178916	Operates O5830	6-53
O5833	2	PLATE, W/POST: 178921	Retains O5832 on A1502	6-53
O5840	2	CAM: 173691	Feed-out length adjustment	6-56
O5845	2	CAM: 173601	Operates O5862	6-57
O5850	2	BAIL, ARMATURE: 173620	Bracket for E5850	6-59
O5851	2	WASHER, FELT: 156558	Lubricates O5852	6-59
O5852	2	SHAFT: 159978	Pivot for O5850	6-59
O5853	2	HINGE: 159977	Supports O5852	6-59
O5854	2	PLATE, ADJUSTING: 170907	Adjusts travel of E5850	6-59
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O5856	2	ROLLER: 176309	O5845 cam follower	6-59
O5857	2	SPRING: 162809	Applies tension to O5862	6-59
O5858	2	SPRING, TORSION: 173608	Applies tension to O5859	6-59
O5859	2	LEVER: 173607	Operates O5840	6-59
O5860	2	RETAINER, WICK: 159428	Retains O5861 on O5862	6-59
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O5862	2	BAIL: 173606	Operates O5859	6-59
O5863	2	LINK: 173614	Operates O5864	6-59
O5864	2	LEVER: 164888	Operates O2300	6-59
O5865	2	SPRING: 7655	Applies tension to O5868	6-59
O5866	2	SPRING: 55669	Applies tension to O5867	6-59
O5867	2	LEVER: 173616	Operates O2292	6-59
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O5870	2	POST, SPRING: 113039	Retains O5866 on O5871	6-59
O5871	2	PLATE: 1736402	Supports O5867, O5868, O5869 and O5870	6-59
W5850	2	CABLE ASSEMBLY: 173621	Connects L5850 to J2250	6-59

TABLE 7-3. LIST OF MANUFACTURERS

CODE NUMBER	NAME	ADDRESS
00779	AMP, Inc.	Harrisburg, Pa.
04009	Arrow, Hart, and Hegeman Electric Co.	Hartford, Conn.
05236	Jonathan Mfg. Co.	Fullerton, Calif.
06175	Bausch & Lomb Optical Co.	Rochester, N.Y.
14370	Continental Rubber Works	Erie, Pa.
14608	The Corbin Cabinet Lock Division of American Hardware Corp.	New Britain, Conn.
15605	Cutler Hammer, Inc.	Milwaukee, Wis.
24446	General Electric Co.	Schenectady, N.Y.
24617	General Motors Corp.	Detroit, Mich.
27395	Samuel Harris Co.	Chicago, Ill.
30323	Illinois Tool Works	Chicago, Ill.
43991	Norma-Hoffman Bearings Corp.	Stamford, Conn.
59433	Teletype Corporation	Skokie, Ill.
60380	The Torrington Co.	Torrington, Conn.
64959	Western Electric Co.	New York, N.Y.
70485	Atlantic India Rubber Works, Inc.	Chicago, Ill.
70788	Berry Bearing Co.	Chicago, Ill.
71111	Boye Needle Co.	Chicago, Ill.
71400	Bussmann Fuse Division of McGraw-Edison Co.	St. Louis, Mo.
71616	Commercial Plastics Co.	Chicago, Ill.
72619	Dialight Corp.	Brooklyn, N.Y.
72962	Elastic Stop Nut Corp. of America	Union, N.J.
74861	Industrial Condenser Corp.	Chicago, Ill.
75915	Littelfuse, Inc.	Des Plaines, Ill.
77250	Pheoll Mfg. Co.	Chicago, Ill.
77252	Philadelphia Steel and Wire Corp.	Philadelphia, Pa.
78189	Shakeproof, Inc., Division of Illinois Tool Works	Chicago, Ill.
78553	Tinnerman Products, Inc.	Cleveland, Ohio
79136	Waldes Kohinoor, Inc.	Long Island City, N.Y.
80089	RBM Mfg. Co.	Logansport, Ind.
80411	Acro Division of Robert Shaw-Fulton Controls Co.	Columbus, Ohio

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