37 TYPING UNIT BASE

DESCRIPTION AND OPERATION, ADJUSTMENTS, LUBRICATION, AND DISASSEMBLY AND REASSEMBLY

CONTENTS

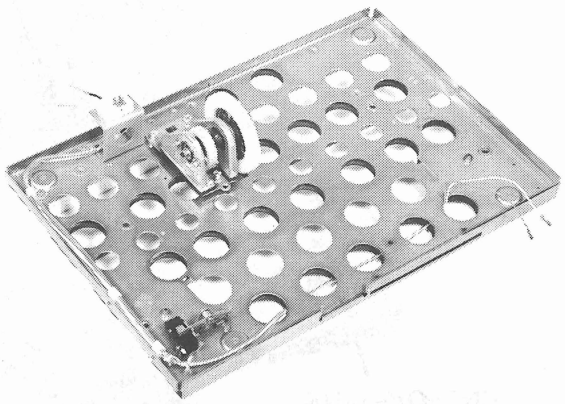


Figure 1 - 37 Typing Unit Base

Prepared for American Telephone and Telegraph Company by Teletype Corporation

1. GENERAL

1.01 This section contains information for the typing unit base (Figure 1) which consists of the intermediate gear assembly, end-of-line margin indicator switch, and reset mechanism (Figure 2). It is reissued to incorporate disassembly and reassembly information for the reset mechanism and the intermediate gear assembly which was removed from Section 574-321-705. Arrows in the margin indicate changes and additions.

1.02 The base provides facilities for mounting the Model 37 typing unit and motor unit. Figure 3 illustrates a base which provides mounting facilities for the Model 37 Wide Platen Typing Unit.

1.03 Photographs are used to identify the mechanisms and specific parts mentioned in the various procedures covered in this section.

2. DESCRIPTION AND OPERATION

BASE

2.01 The base pan consists of a reinforced metal plate with two typing unit mounting guide studs and nine weld nuts for mounting the typing unit and motor to the pan.

2.02 An electrical receptacle bracket w/connector is mounted at the rear center surface of the base.

Note: When the service unit cables enter the console at the rear of the cover, the receptacle bracket should be mounted perpendicular to the rear edge of the base.

RESET MECHANISM

2.03 Facilities are available for three point mounting of the keyboard reset mechanism on the front surface of the base.

2.04 Power from the motor (mounted on the rear surface of the base) is passed through the intermediate gear mechanism, through a typing unit main shaft, to the reset mechanism. Reset mechanism motion is transferred to the keyboard through an H-plate to reset a tripped keyboard. A detailed description of the reset mechanism operation is given in Section 574-321-101.

INTERMEDIATE GEAR ASSEMBLY

2.05 The intermediate gear assembly consists of helical gears and overload clutch and is mounted at the rear center surface of the base. The assembly transfers motor unit driving power

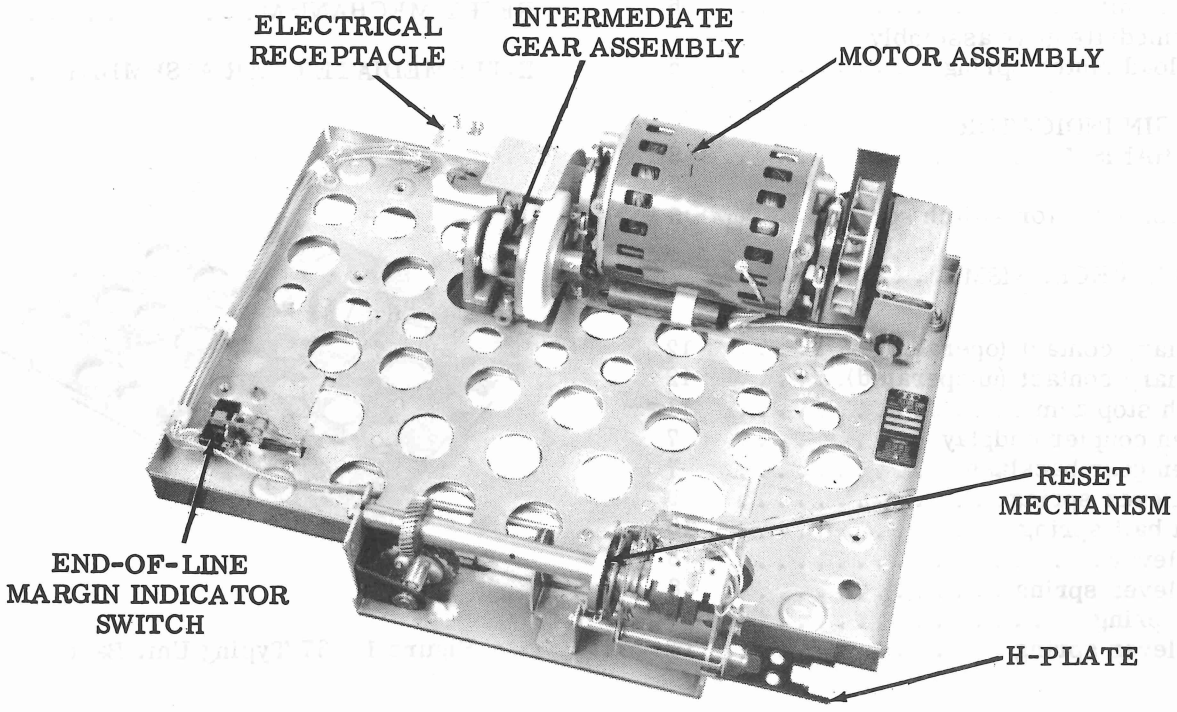


Figure 2 - Typing Unit Base With Motor

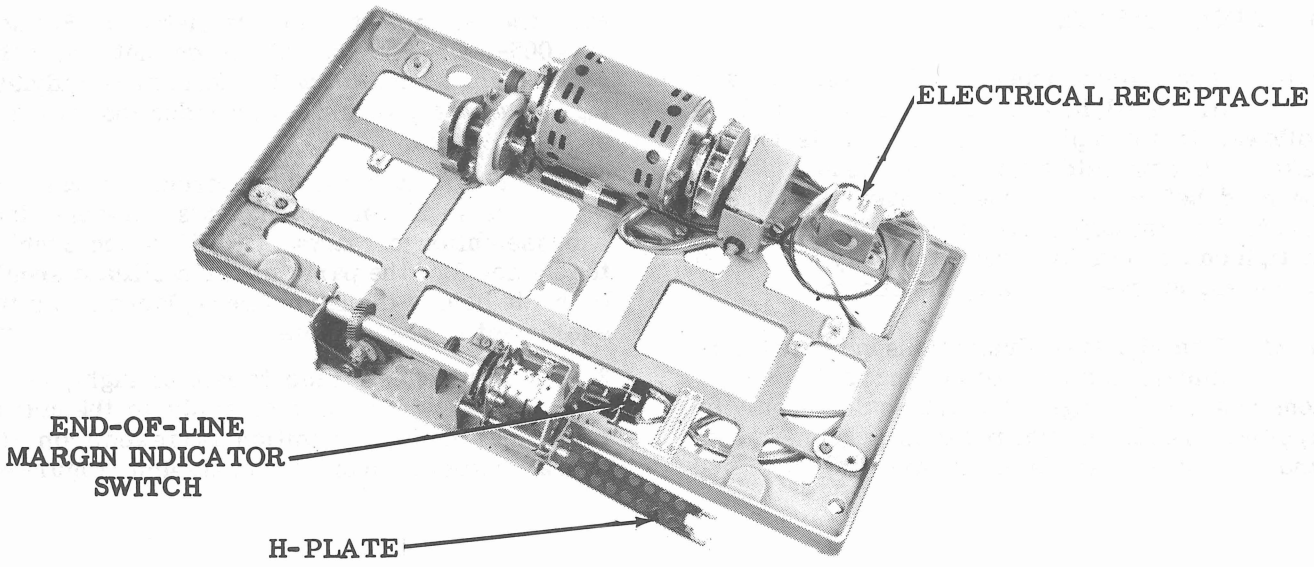


Figure 3 - Typing Unit Base (Wide Platen) With Motor

to the typing unit and also provides overload protection between typing unit and motor unit.

2.06 The driven gear of the intermediate gear assembly consists of a helical gear with an integral overload clutch lever. The motor unit pinion gear drives the driven gear and overload clutch lever. The overload clutch lever, normally engaged with the clutch drum, rotates the intermediate shaft and driving gear.

2.07 The gear ratio between the motor pinion gear and the driven gear determines the operating speed of the typing unit.

2.08 Overload protection is provided by the overload clutch. Should the typing unit become blocked, the overload clutch arm is disengaged from the clutch drum removing driving torque from the typing unit. To re-engage the clutch, power must be removed from the motor unit and the typing unit main shaft rotated by hand until the clutch arm is latched in the notch of the drum.

MARGIN INDICATOR SWITCH

2.09 The margin indicator switch contains a normally open contact and switch lever. As carriage approaches right margin, a cam on the carriage return spring drum depresses the switch lever. The switch lever then closes the open contact to complete an electrical circuit.

TECHNICAL DATA

2.10 Physical Characteristics

Dimensions

Basic

Height	1 inch
Width	16-1/2 inches
Depth	11 inches

Wide Platen

Height	1 inch
Width	21-7/8 inches
Depth	11 inches

2.11 Characteristics Electrical and Environmental

(a) Reset Mechanism

Keyboard auxiliary contact . . . . . -12.5 v dc (nominal)

(b) Temperature Ranges

This equipment is intended to be operated in a room environment within the temperature range of 40° F to 110° F. Serious damage to it could result if this range is exceeded. In this connection, particular caution should be exercised in using acoustical or other enclosures.

(c) Ambient relative humidity . . . . . From 0 to 95 percent

3. ADJUSTMENTS

3.01 The adjustments in this section are arranged in a sequence that should be followed if a complete readjustment is undertaken. A complete adjusting procedure should be read before attempting to make the adjustment. After an adjustment is completed, be sure to tighten any nuts or screws that may have been loosened, unless otherwise instructed.

3.02 The adjusting illustrations indicate tolerances, positions of moving parts, spring tensions and the angle at which scales should be applied. The tools required to make adjustments and check spring tensions are not supplied with the equipment, but are listed in Section 570-005-800. Springs which do not meet the requirements, and for which there are no adjusting procedures, should be discarded and replaced by new springs.

3.03 Where adjustment instructions call for removal of components, assemblies, subassemblies or parts, all adjustments which the removal of the parts might facilitate should be made before the parts are replaced or as the equipment is reassembled.

3.04 References made to left or right, up or down, front or rear apply to the unit in its normal operating position as viewed from the operator's position in front of the unit (Figure 4).

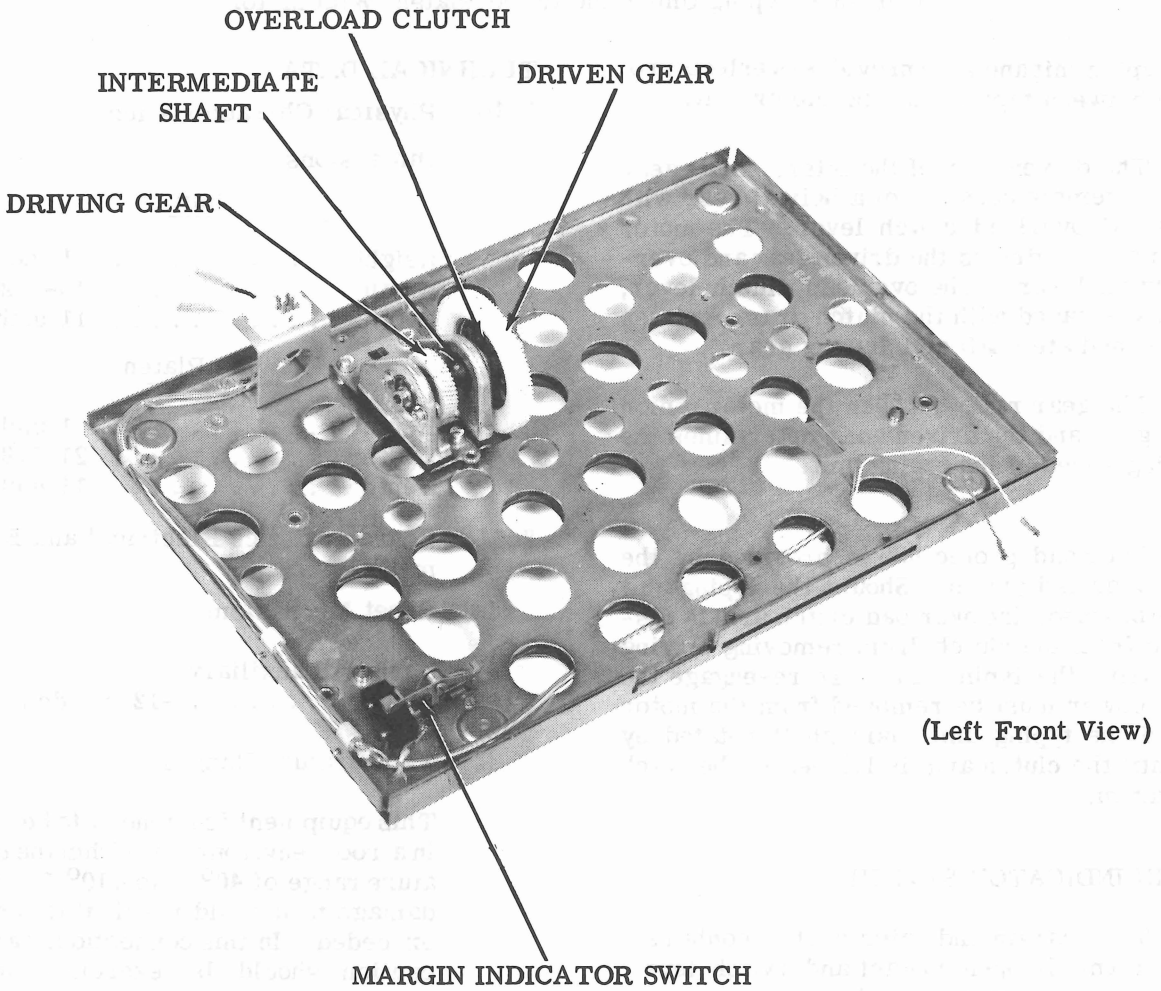


Figure 4 - Base With Intermediate Gear Assembly and Margin Indicator Switch

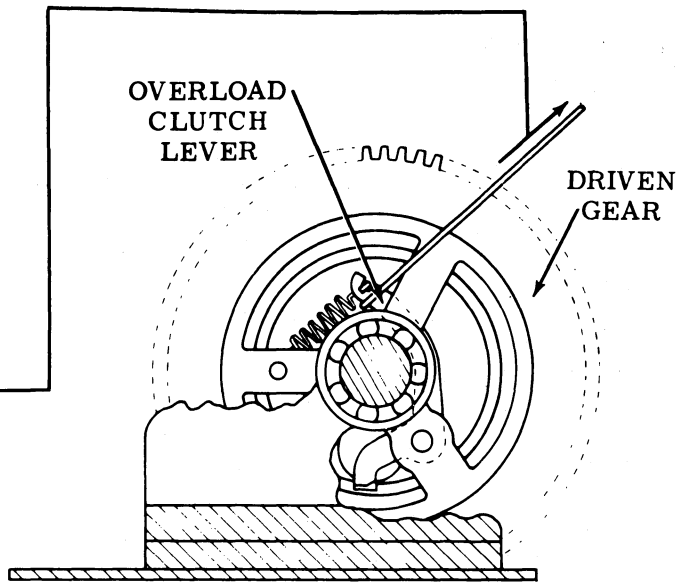
3.05 Margin Indicator and Intermediate Gear Mechanisms

INTERMEDIATE GEAR ASSEMBLY OVERLOAD CLUTCH SPRING

Note: Typing unit must be removed to check the overload clutch spring tension.

To Check
Overload clutch lever in notch. Manually block driven gear to prevent its rotation.

Requirement
Min 40 oz---Max 64 oz to start overload clutch lever moving. Lever must not jump from notch at less than 64 ounces.

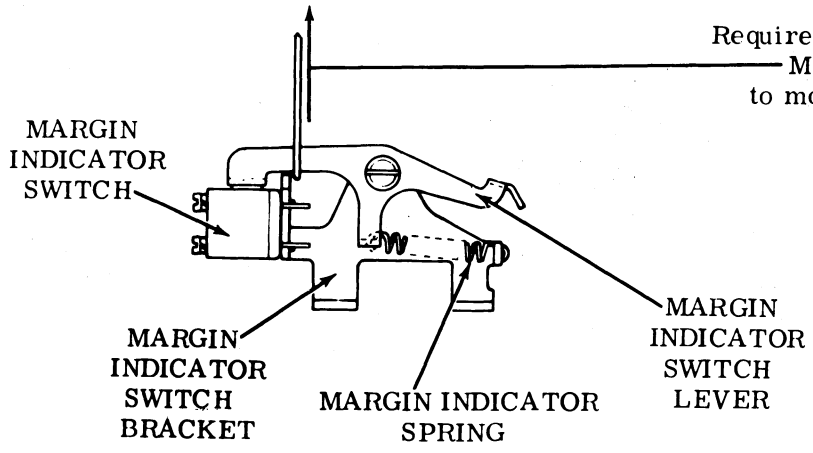


(Left Side View)

MARGIN INDICATOR SWITCH SPRING

To Check
Remove typing unit.

Requirement
Min 7 oz---Max 11 oz to move lever free of pin.



(Front View)

3.06 Intermediate Gear Mechanism (continued)

Note: These adjustments are required only when keyboard unit, typing unit, and motor unit are mated after installation or reassembly of unit.

INTERMEDIATE DRIVING GEAR TO TYPING UNIT

Requirement

There should be a perceptible amount of backlash between typing unit driven gear and intermediate driving gear at the highest point of intermediate gear.

To Adjust

Loosen five motor unit mounting screws and rotate motor unit away from intermediate gear assembly. Loosen three intermediate gear bracket screws friction tight. Position entire intermediate gear assembly using adjusting slot at rear of bracket until perceptible amount of backlash exists. Tighten three intermediate gear bracket screws.

INTERMEDIATE DRIVEN GEAR TO MOTOR UNIT

To Check

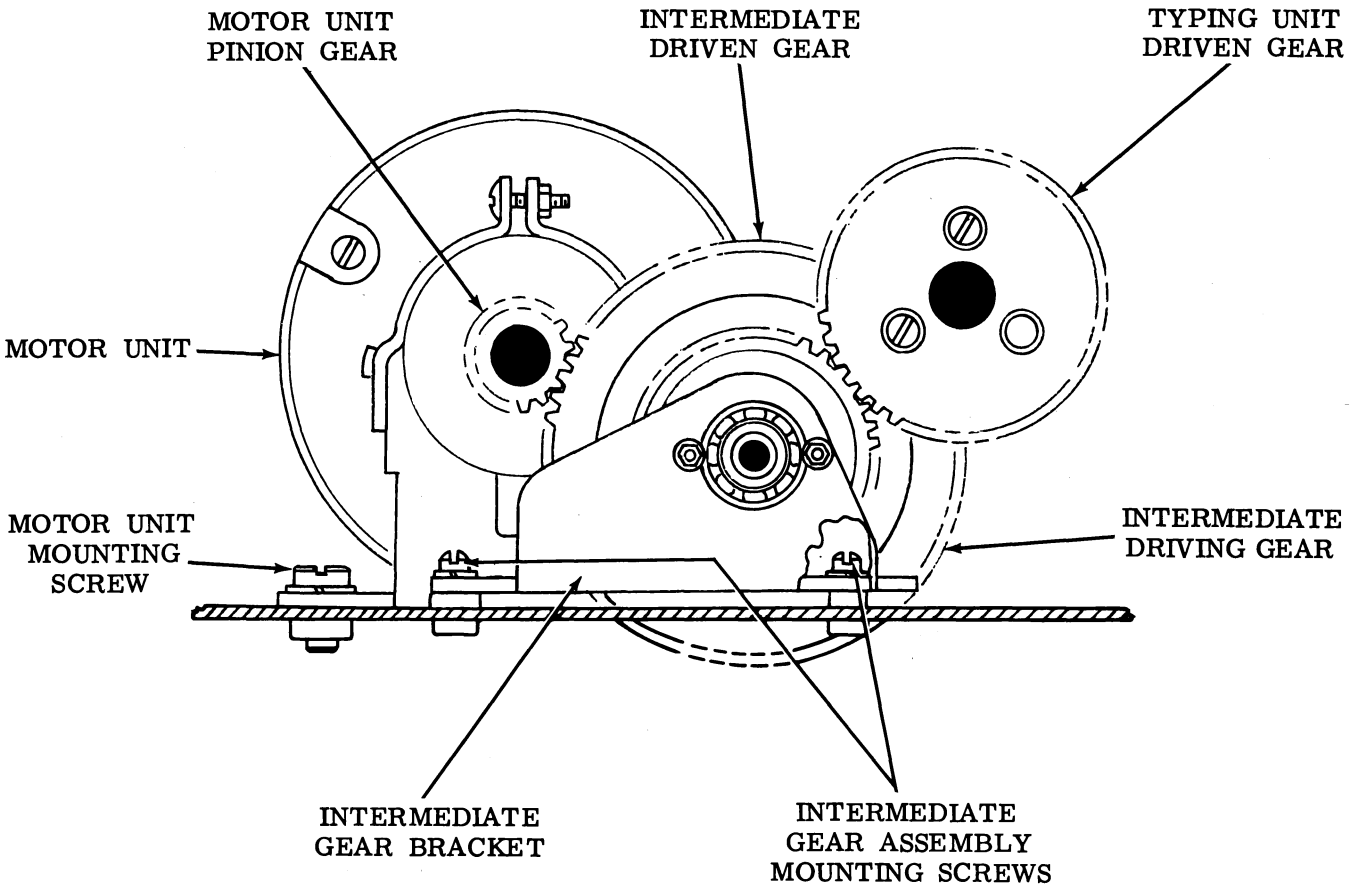
Hold intermediate driven gear and rotate motor unit fan.

Requirement

There should be a perceptible amount of backlash between motor unit pinion gear and intermediate driven gear at the highest point of intermediate gear.

To Adjust

With five motor unit mounting screws holding motor mounting plate friction tight, move motor unit away or toward intermediate gear until a perceptible amount of backlash exists. Tighten screws.



3.07 Reset Mechanism

DRIVEN GEAR BACKLASH

To Check
Hold driving gear stationary.

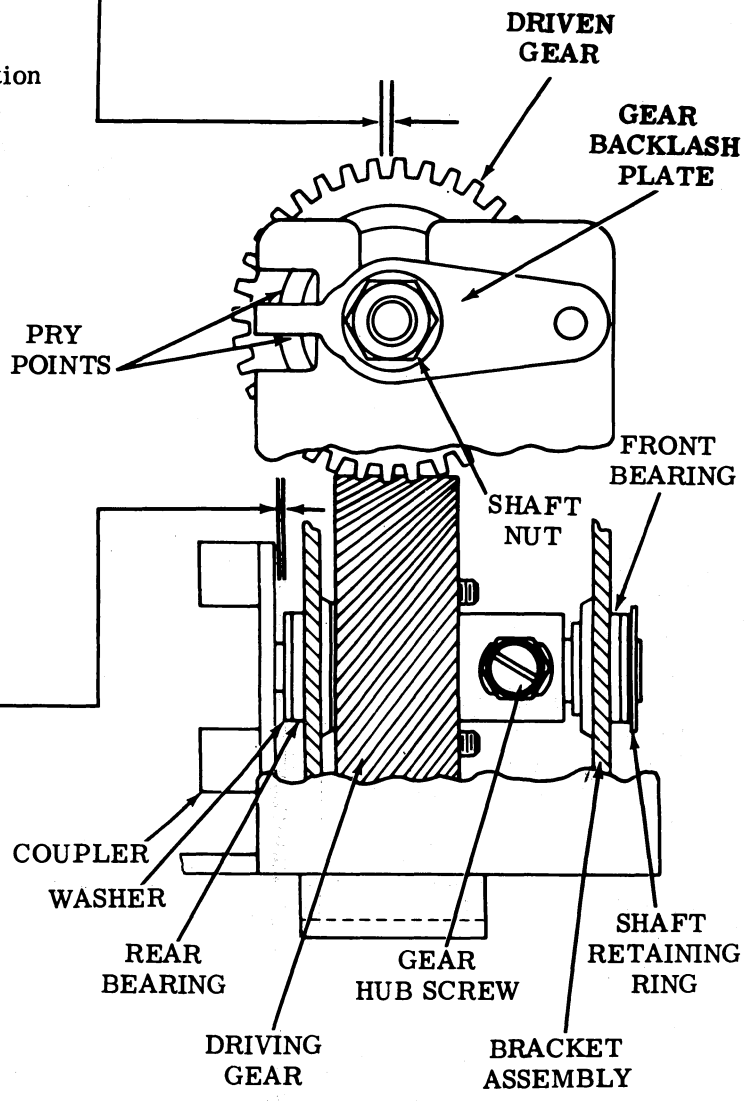
Requirement
Min some---Max 0.030 inch play between driving gear and driven gear (measured at periphery of driven gear tooth where play is at a minimum).

To Adjust
Loosen shaft nut to friction tight. Insert screwdriver between pry points and position gear backlash plate to meet requirement. Tighten shaft nut.

DRIVEN COUPLER ENDPLAY

Requirement
Min some---Max 0.037 inch between driven coupler and washer.

To Adjust
Remove gear hub screw and shaft retaining ring. Remove driven coupler and shaft from bracket assembly and bearings. Add or remove, as required, washers between driven coupler and rear bearing to meet requirement. Reassemble, replace retaining ring, and tighten screw.



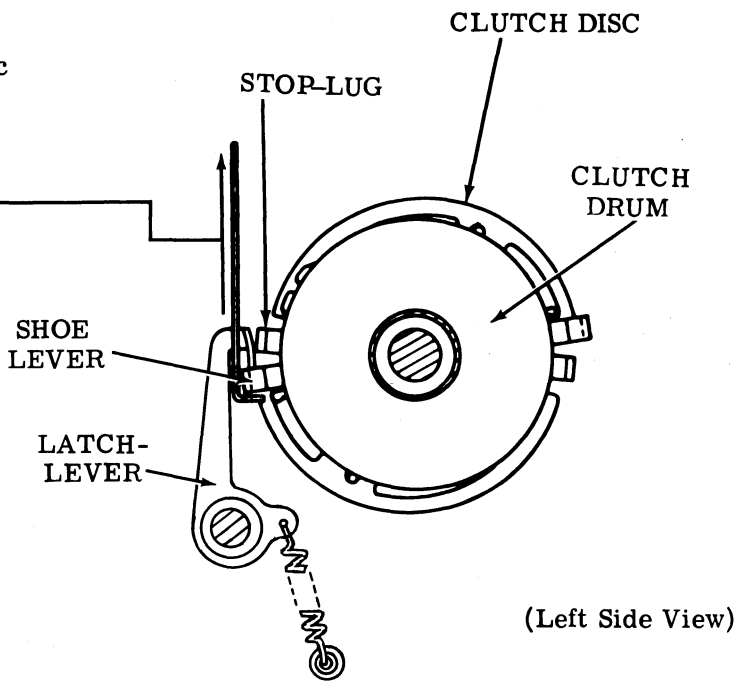
(Left Side View)

3.08 Reset Mechanism (continued)

SHOE LEVER SPRING

To Check
Engage the clutch. Hold the trip lever away from shoe lever while checking requirement. Also hold the clutch disc to prevent its turning while checking requirement.

Requirement
Min 7 oz---Max 9 oz to pull shoe lever into contact with stop lug.



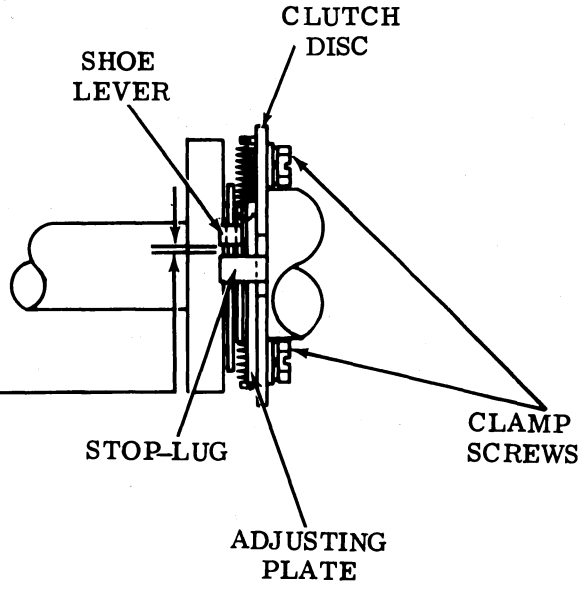
(Left Side View)

SHOE LEVER

To Check
Engage clutch and momentarily place 32 ounces of tension on shoe lever. Measure gap between shoe lever and stop lug. Disengage (latch) clutch and remeasure.

Requirement
Min 0.055 inch---Max 0.085 inch greater gap when clutch is engaged (shoe lever unlatched) than when disengaged.

To Adjust
Loosen clamp screws friction tight. Hold clutch disc and engage a screwdriver or wrench onto lug on adjusting plate. Rotate adjusting plate into position to meet requirement. Tighten clamp screws.



(Rear View)

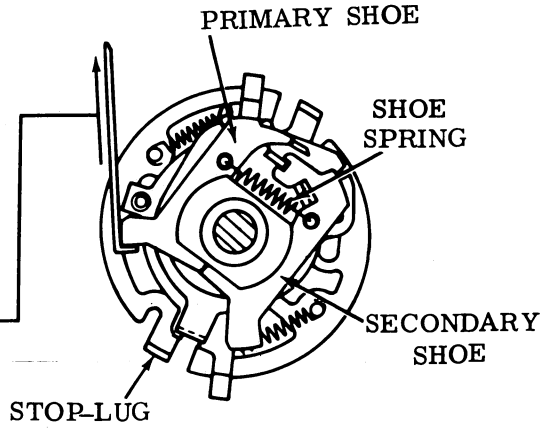
3.09 Reset Mechanism (continued)

SHOE SPRING

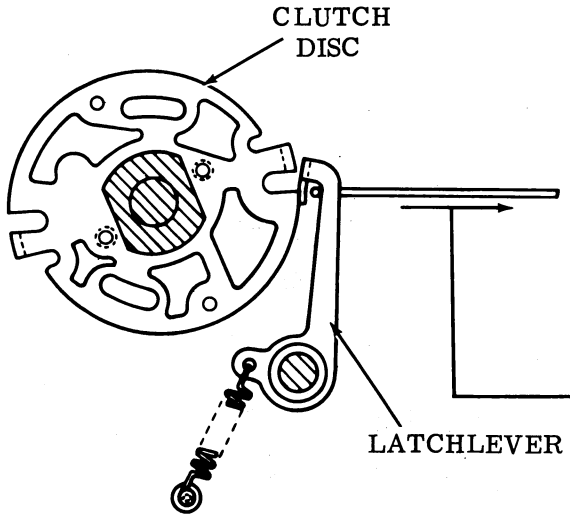
Note: To check shoe spring tension, it is necessary to remove the clutch drum. It therefore should not be checked unless there is good reason to believe that it does not meet requirements. Refer to appropriate section for disassembly and reassembly procedures.

To Check
Remove clutch disc and shoe assembly from clutch drum.

Requirement
Min 3 oz---Max 5 oz to start primary shoe moving.



(Internal View Left Side)



(Right Side View)

LATCHLEVER SPRING

To Check
Disengage clutch. Manually unlatch latchlever from clutch disc.

Requirement
Min 1/2 oz---Max 2-1/4 oz to start latchlever moving.

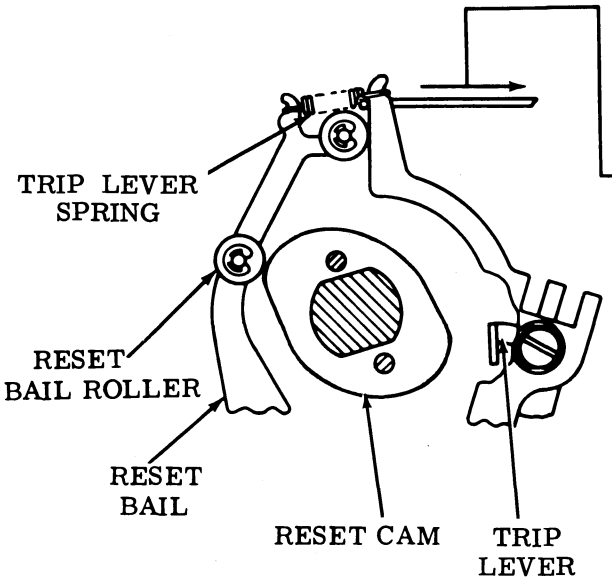
3.10 Reset Mechanism (continued)

Note: Typing unit must be removed to measure spring tensions.

TRIP LEVER SPRING

To Check
Engage clutch and rotate shaft until reset bail roller is on high part of reset cam.

Requirement
Min 2-1/2 oz---Max 4-3/4 oz to start trip lever moving.

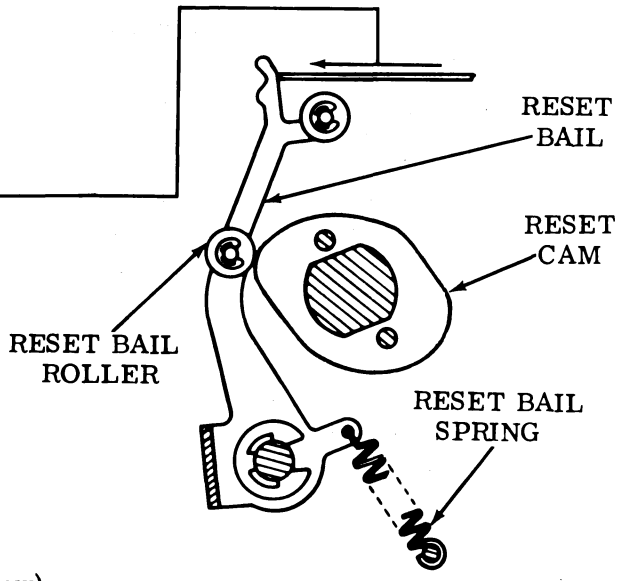


(Right Side View)

RESET BAIL SPRING

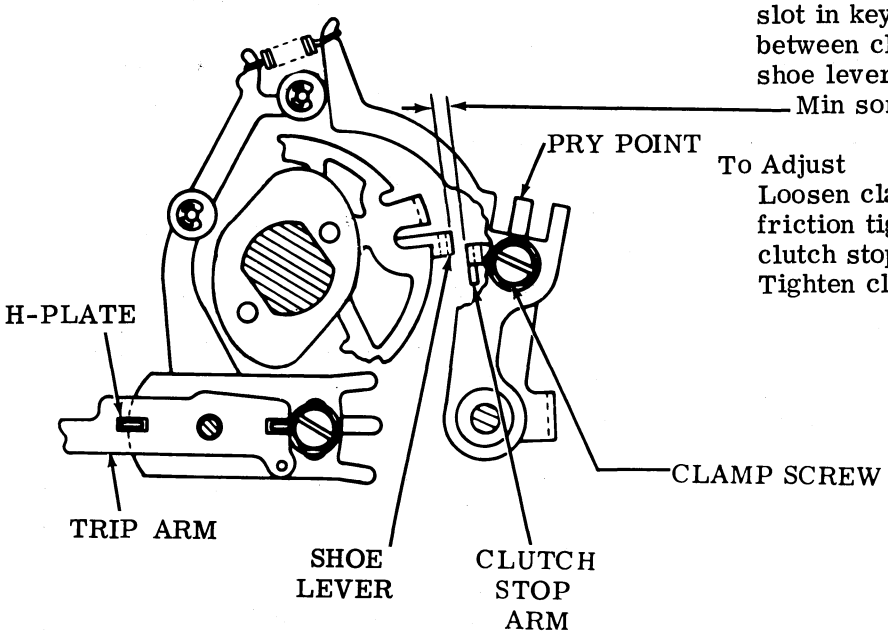
To Check
Remove H-plate. Unhook stop arm spring. Rotate shaft until reset bail roller is on high part of cam.

Requirement
Min 1 oz---Max 1-1/2 oz to start reset bail moving.



(Right Side View)

3.11 Reset Mechanism (continued)



(Right Side View)

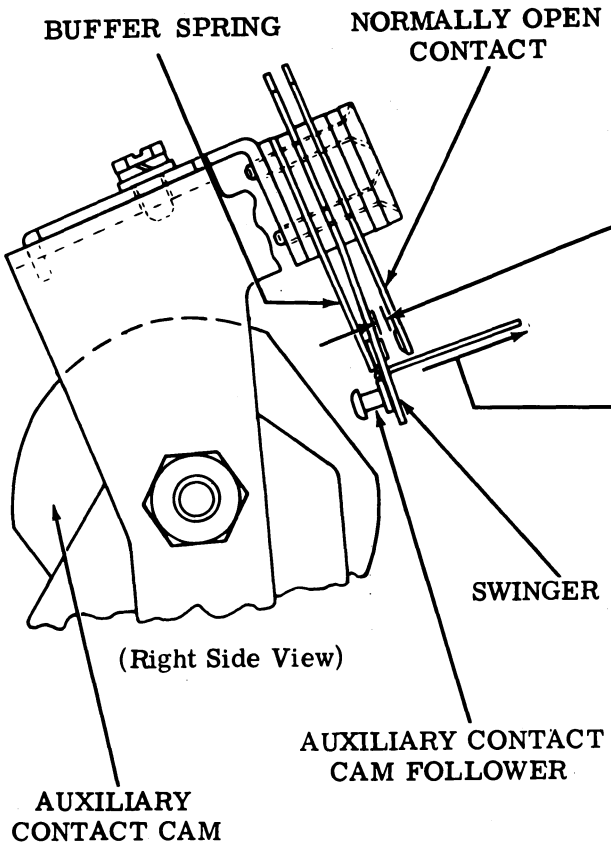
CLUTCH STOP ARM

To Check
Trip keyboard.

Requirement
With trip arm at uppermost position of slot in keyboard frame, clearance between clutch stop arm and each shoe lever should be
Min some---Max 0.025 inch

To Adjust
Loosen clamp screw on clutch stop arm friction tight. Using pry point, position clutch stop arm to meet requirement. Tighten clamp screw.

3.12 Reset Mechanism (continued)



AUXILIARY CONTACT (UNOPERATED)

To Check
Auxiliary contact cam follower free from auxiliary contact cam.

(1) Requirement
Min 0.010 inch---Max 0.016 inch between swinger contact and normally open contact.

To Adjust
Bend normally open contact.

(2) Requirement
Min 20 grams---Max 35 grams to start swinger contact moving.

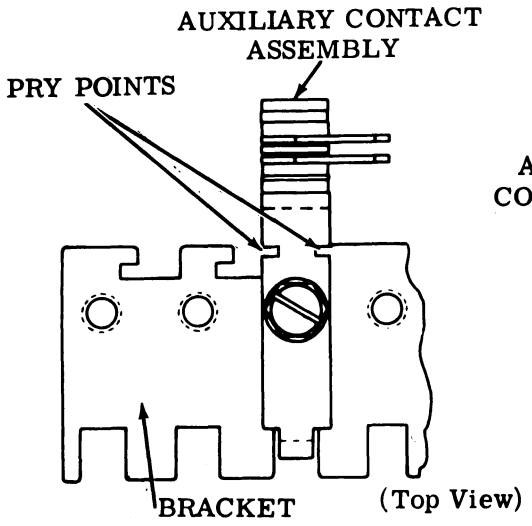
To Adjust
Bend swinger.

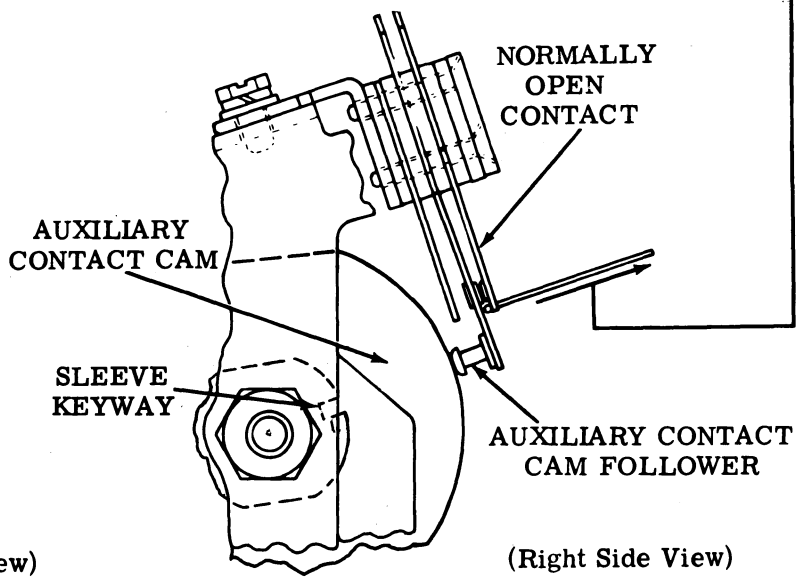
AUXILIARY CONTACT (OPERATED)

To Check
Position auxiliary contact cam follower on high part of auxiliary contact cam with sleeve keyway in line with contact cam follower.

Requirement
Min 30 grams---Max 45 grams to start normally open contact moving.

To Adjust
Loosen clamp screw friction tight. Insert screwdriver between pry points and position auxiliary contact assembly to meet requirement. Tighten clamp screw.





4. LUBRICATION

4.01 Figures of each mechanism are used to show the lubrication area. The paragraph numbers on the figure refer to the specific lubrication points. References made to the front, top, rear, left, or right, apply to the keyboard unit in the position normally viewed by the operator.

4.02 Lubricate the unit before placing it in service and just prior to putting it in storage.

4.03 After approximately 200 hours or four weeks of operation (whichever comes first) relubricate the unit to make certain that no mechanisms have been missed. Thereafter, lubricate the mechanisms according to the following schedule:

100 wpm	2,000 hr or 9 mo*
150 wpm	1,500 hr or 6 mo*

*Whichever occurs first.

CAUTION: WHEN THE UNIT IS FUNCTIONALLY UTILIZED, REMOVE POWER FROM EQUIPMENT BEFORE LUBRICATING.

4.04 The following list of symbols applies to the specific lubrication instructions given in each paragraph:

SYMBOL	MEANING
D	Keep dry, no lubricant permitted.
O	Oil with KS7470 oil as instructed.
G	Apply KS7471 grease.

Note: In general, the symbols indicate the type of lubricant. Quantity of lubricant is normally given with the text associated with specific lubrication instructions. An exception to this method is where the exact number of drops of oil is specified. For example, O1, O2, O3, etc, refer to 1, 2, 3, etc, drops of oil.

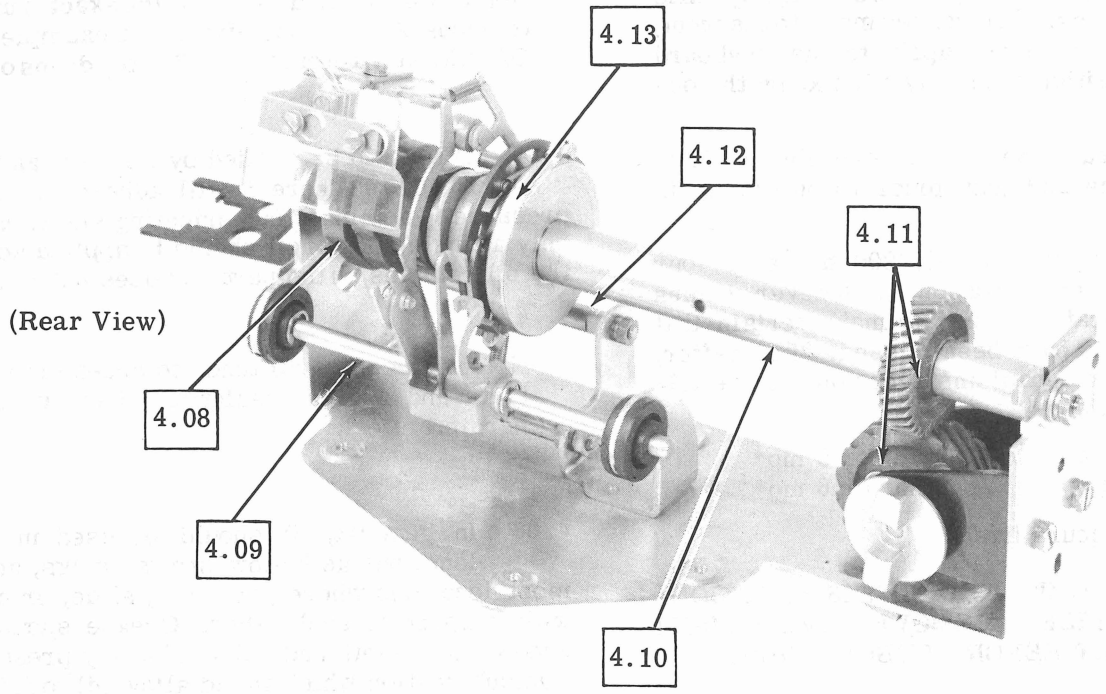
4.05 Oil should be applied by means of an oiler to points where it will adhere or where pressure is nominal. In lubricating small parts, only a single drop of oil should be applied so that the oil remains on the part and does not run off.

Note: Excessive oil tends to creep onto contacts and wiring insulation where it has a harmful effect.

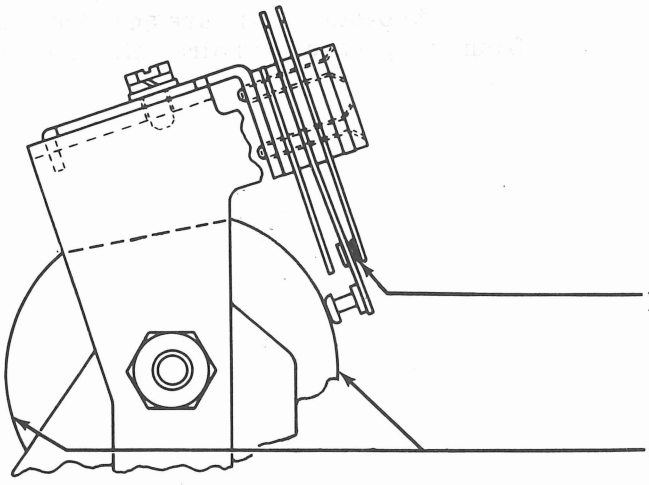
4.06 In general, oil should be used in such locations as hollow shafts, wicks, and in most locations where parts rub, slide, or move with respect to each other. Grease should be used on gear teeth and points of heavy pressure. Overlubrication which would allow oil to drip or grease to be thrown on other parts should be avoided. Capillary action and vaporization tend to keep a film of oil on the mechanisms. This prevents rust and provides sufficient lubrication to many points.

4.07 Protective pad TP124828 is available to protect furniture and floor coverings from oil, grease, and dirt while lubricating the unit.

RESET MECHANISM



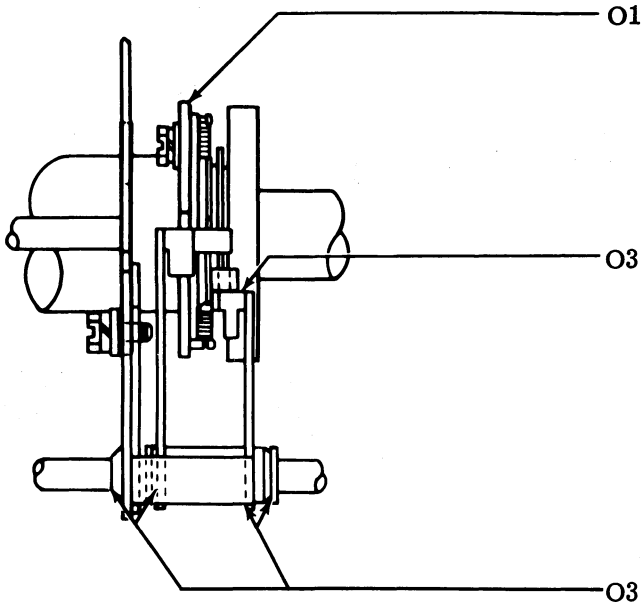
4.08 Auxiliary Contact Cam



D	Contacts	Auxiliary Contact
O1	Camming Surface	Auxiliary Contact Cam

(Right Side View)

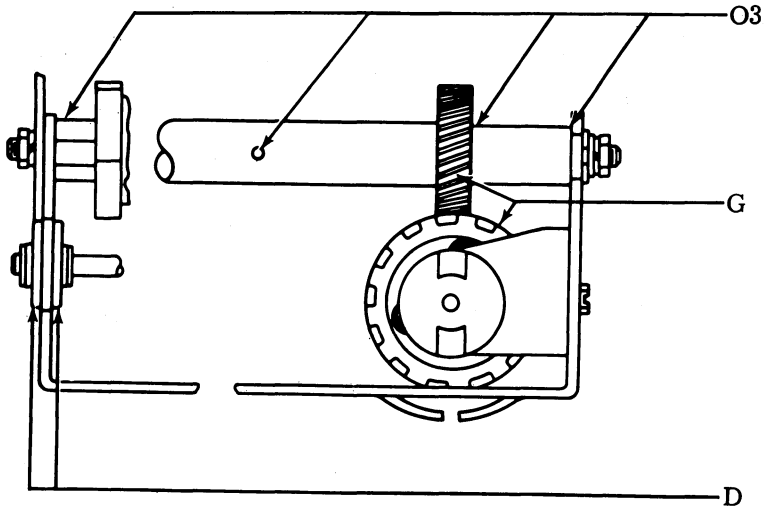
4.09 Clutch and Stop Arm Shaft



O1	Camming Surface	Clutch Disc
O3	Engaging Surfaces	Clutch Shoe and Stop Arm
O3	Bearing Surfaces	Stop Arm Shaft

(Rear View)

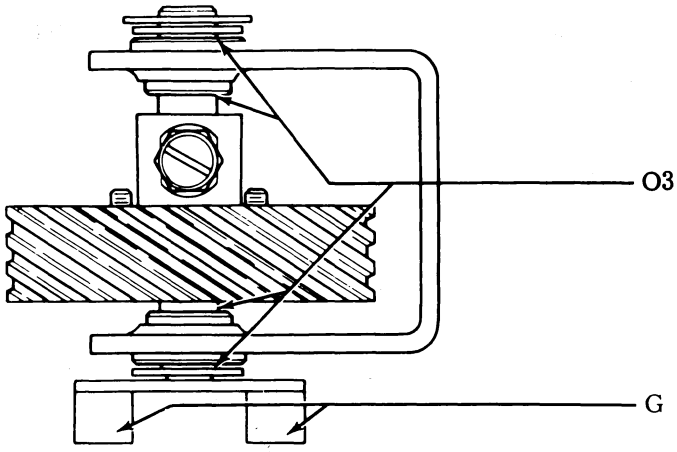
4.10 Main Shaft and Gears



O3	Bearing Surfaces, Oil Hole	Main Shaft
G	Teeth, Thin Coat	Driving and Driven Gears
D	Grommets (4)	Stop Arm Shaft

(Rear View)

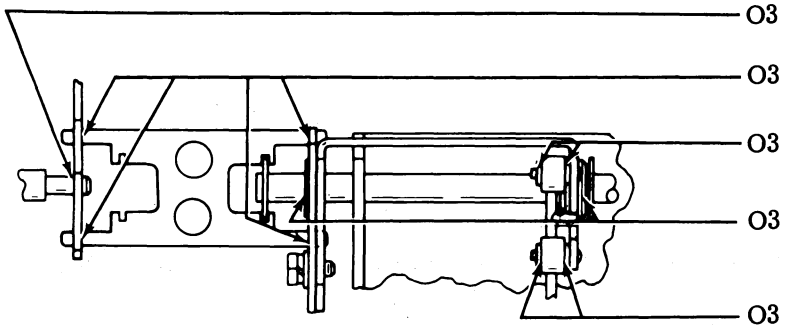
4.11 Driven Coupler and Driving Gear Shaft



O3	Bearing Surfaces	Driving Gear Shaft
G	Thin Coat on Engaging Surfaces	Driven Coupler

(Top View, Left End)

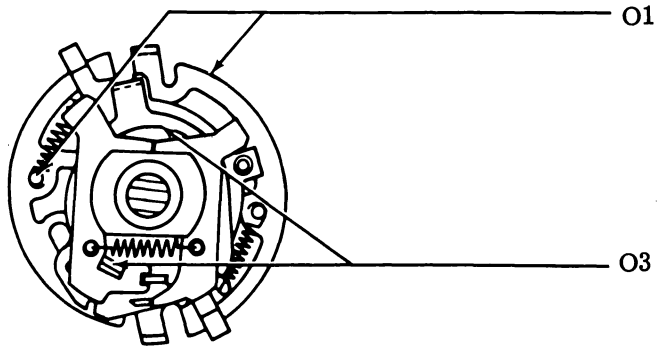
4.12 Reset Bail



O3	Bearing Surface	Trip Arm Post
O3	Engaging Surfaces	H-Plate
O3	Bearing Surfaces	Reset Bail Roller
O3	Bearing Surfaces	Reset Bail Bearing Shaft
O3	Bearing Surfaces	Trip Roller

(Top View, Right End)

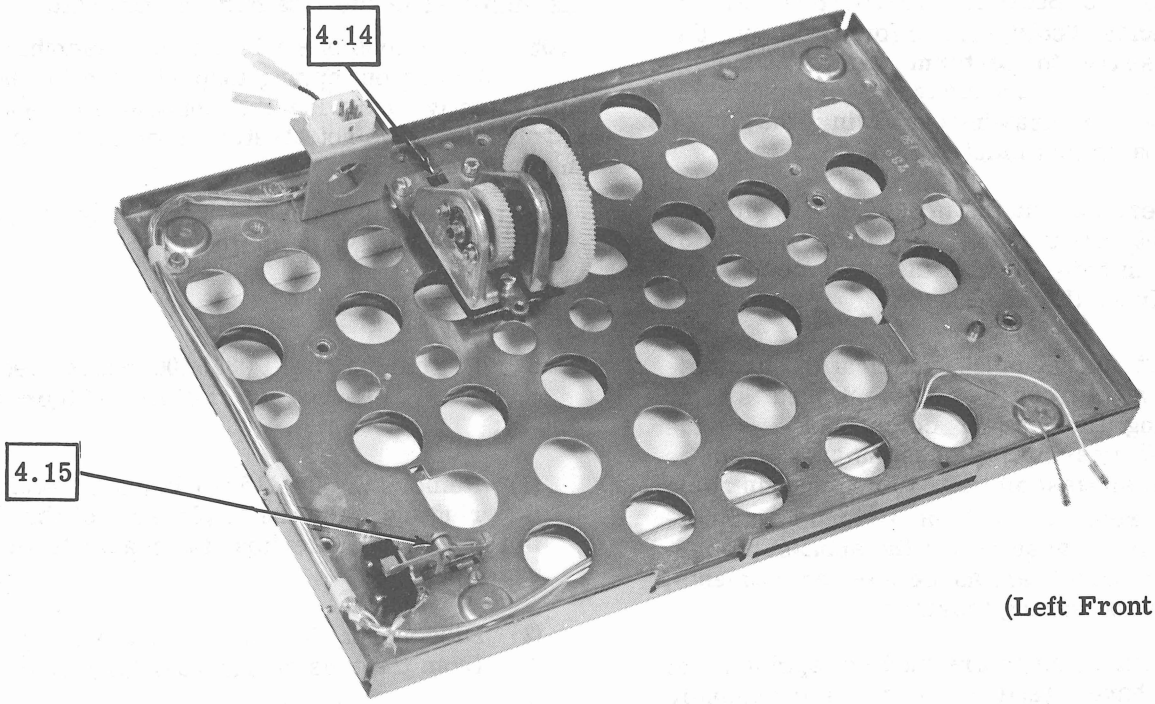
4.13 Clutch



O1	Camming Surface, Hooks	Clutch Disc, Spring
O3	Surface, Wick	Internal Mechanism

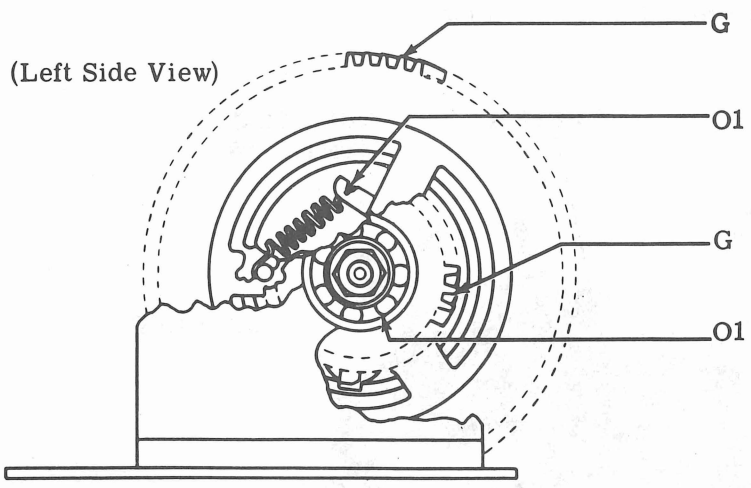
(Internal View)

INTERMEDIATE GEAR AND MARGIN INDICATOR SWITCH MECHANISMS



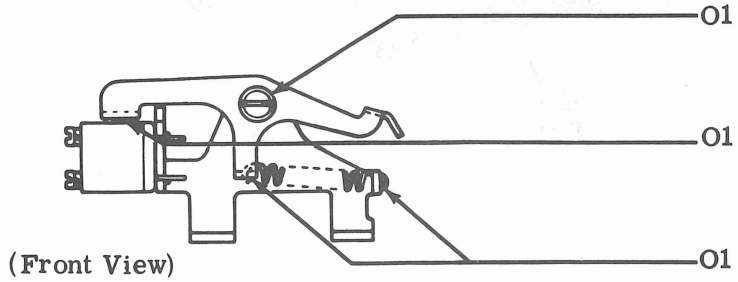
(Left Front View)

4.14 Intermediate Gear Assembly



G	Teeth, Thick Coat	Driven Gear
O1	Hooks (Each End)	Spring
G	Teeth, Thick Coat	Driving Gear
O1	Ball Bearings (2 Bearings)	Shaft

4.15 Margin Indicator Switch



O1	Bearing Surface	Lever Pivot
O1	Engaging Surface	Switch
O1	Hooks	Spring

5. DISASSEMBLY AND REASSEMBLY

5.01 Refer to Section 570-005-800, Maintenance Tools, for information on the tools necessary to perform the disassembly and reassembly procedures; and Section 574-331-800 for drawings showing the location of all parts and mechanisms.

5.02 References in the procedures to left or right, up or down, top or bottom, etc, refer to the unit viewed with the reset mechanism facing the front (Figure 2).

5.03 Most maintenance, lubrication and adjustments can be accomplished simply by removing the subject component from the cabinet. If possible, disassembly should be confined to subassemblies, which can, in some cases, be removed without disturbing adjustments. When reassembling the subassemblies, be sure to check all associated adjustments, clearances and spring tensions.

5.04 Retaining rings are made of spring steel and have a tendency to release suddenly when being removed. Loss of these retainers can be minimized as follows: Hold the retainer with the left hand to prevent it from rotating. Place the blade of a suitable screwdriver in one of the slots of the retainer. Rotate the screwdriver in a direction to increase the diameter of the retainer for removal.

5.05 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. Do not stretch or distort springs in removing them.

CAUTION: REMOVE POWER BEFORE DISASSEMBLING THE UNIT.

RESET MECHANISM

5.06 To remove the TP315100 reset mechanism, proceed as follows (Figures 2 and 5):

(1) Remove the TP315296 H-plate retaining ring and slide the H-plate out of the slots in the TP315399 keyboard trip arm lever and reset bail plate.

(2) Disconnect the push-on cable terminals from the tabs on the auxiliary contacts.

(3) Unscrew the three reset mechanism frame mounting screws.

(4) Remove the reset mechanism by sliding it out.

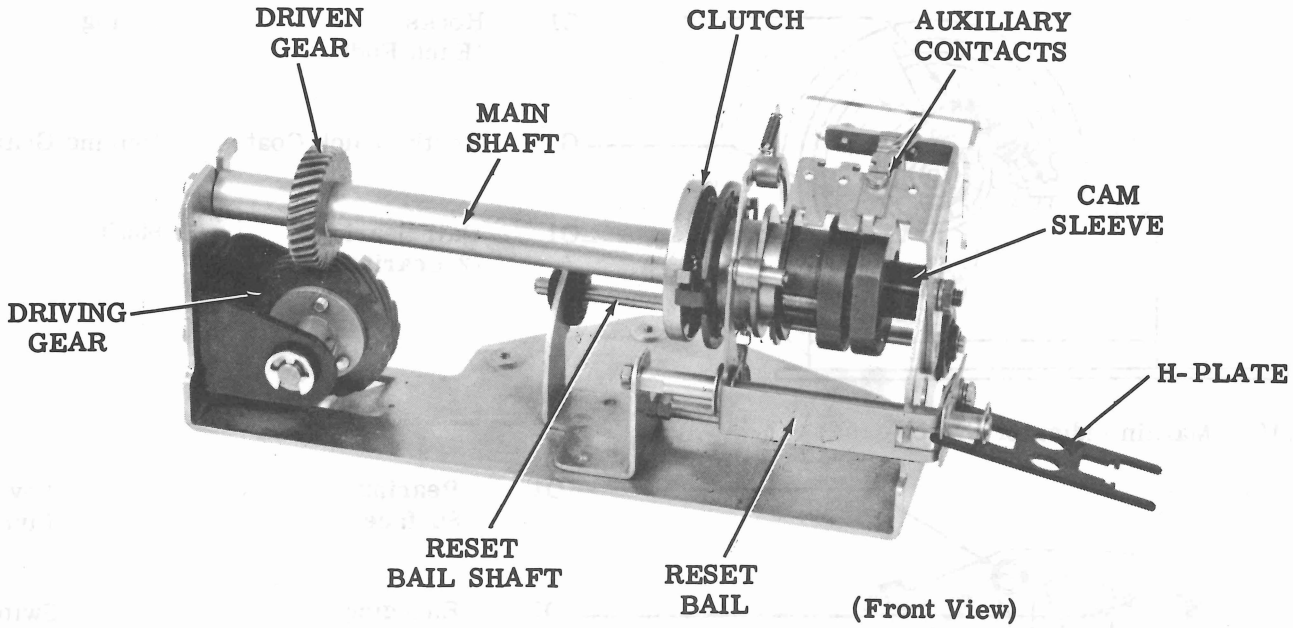


Figure 5 - Reset Mechanism

5.07 Remove the TP315319 auxiliary contact bracket assembly by unscrewing the TP112626 shaft nut and removing the assembly.

5.08 To remove the driven gear clutch-sleeve-cam assembly, proceed as follows:

(1) Remove the TP2605 clutch stop arm spring.

(2) Loosen the TP112626 shaft nuts on each end of the shaft.

(3) Dislodge the gear backlash plate and contact bracket from their locating bosses.

(4) Lift the assembly from the frame.

5.09 Remove the driving gear-shaft-bracket assembly by unscrewing the two bracket mounting screws and removing the assembly.

5.10 To assemble the reset mechanism, reverse the disassembly procedures. Check that the H-plate is properly engaged with the keyboard trip lever mechanism.

INTERMEDIATE GEAR ASSEMBLY

5.11 Remove the intermediate gear assembly by removing the three TP104898 mounting screws (Figure 2).

5.12 Replace the intermediate gear by securing the mounting screws.