4A TAPE WINDER
(MOTOR DRIVEN)
DESCRIPTION, REQUIREMENTS, PROCEDURES, AND LUBRICATION

CONTENTS — PAR. NO.

1. GENERAL

1.01 This section contains descriptive information for the 4A tape winder and provides the requirements, adjusting procedures, and lubrication instructions for maintaining it.

1.02 The 4A tape winder accommodates 1000 feet of 11/16-inch chadless tape, is capable of serving units operating at speeds of 60, 75, or 100 words per minute, and has provisions permitting manual unwinding of tape from the tape reel. Its initial application was in the 28F teletypewriter cabinet of the 28 automatic sending and receiving set of the 82B1 teletypewriter switching system. A further application was in the 28A typing reperforator cabinet.

1.03 The tape winder consists of a tape-reel assembly of the one-reel type, a frame which supports the reel as it revolves and which provides means for guiding tape onto the tape reel, a motor with power cord and plug, and a base plate on which the frame and motor bracket are mounted. The tape winder is 12-3/4 inches high and occupies floor space approximately 20-1/2 inches long and 5 inches wide. Where the winder is used in a 28F teletypewriter cabinet, it fits into a mounting in the tape-winder compartment of the cabinet. The unit can easily be lifted off the mounting and out of this cabinet for maintenance. **Fig. 1**

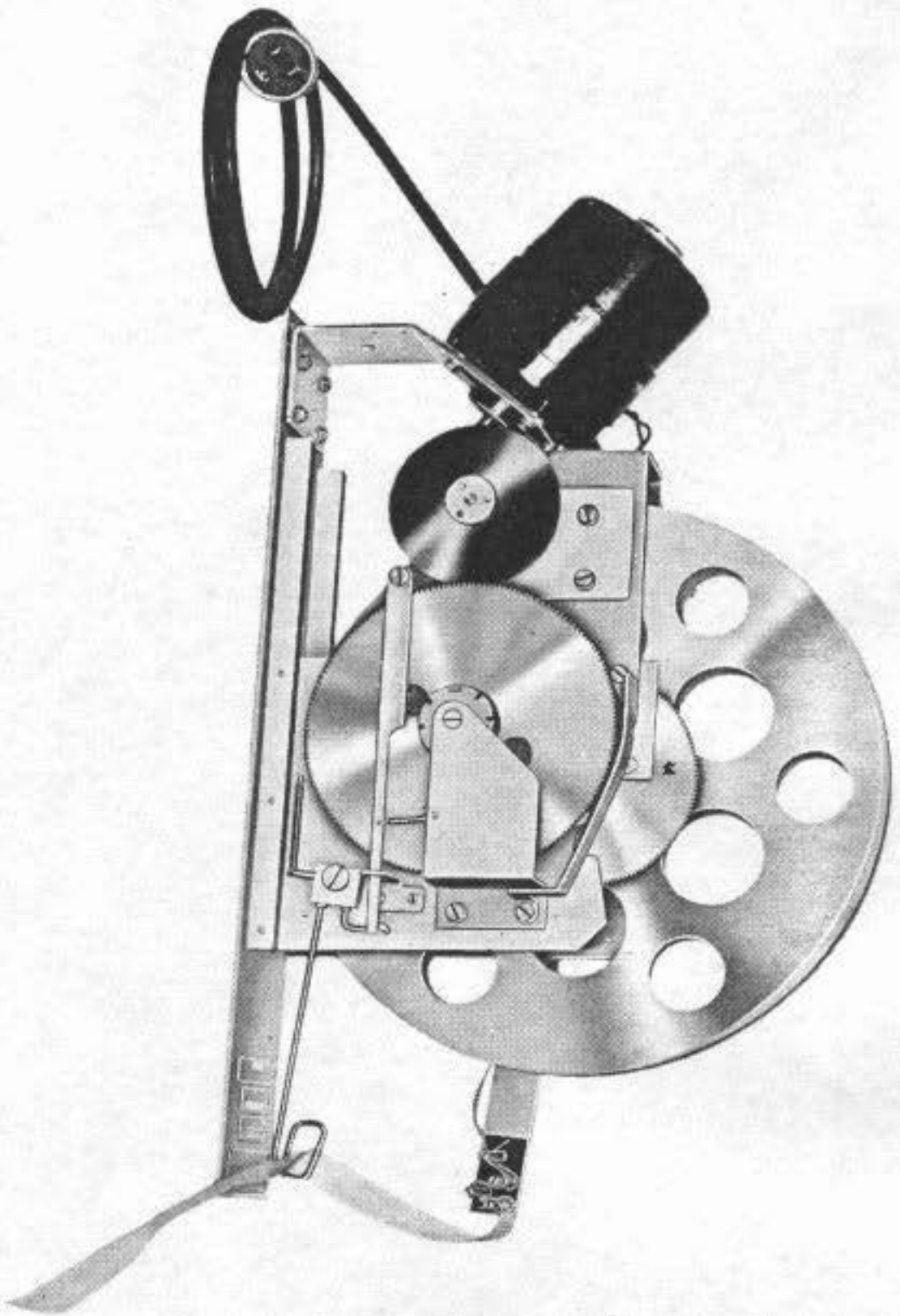


Fig. 1—4A Tape Winder Ready for Operation

1.04 **Tape-reel Assembly:** The metal tape-reel assembly is of split-disc construction and has a metal shaft which drops into a slotted bearing on each of the two side plates of the reel support frame. The tape-reel discs are 12 inches in diameter. Each has a fiber core of approximately 2 inches diameter fastened at the inner center of the reel disc. A clamping device serves to fasten the two discs together and then the two fiber cores form the winding core of the tape-reel assembly. One metal tape-reel disc has a gear fastened to its outer surface for driving the reel. **Fig. 2**

1.05 **Support Frame:** The frame is made up of two metal side plates having slotted bearings to hold the tape-reel assembly in position. On one side plate are mounted a tight tape arm, a gear train, and a drive clutch for the tape reel. The drive clutch is of the friction type, actuated by the tight tape arm, so that the reel will be put into motion or stopped as required. On the other side plate are mounted the power switch with its power cord and plug, a tape-guide bracket with drag pins to control the travel of the tape from the tight tape arm to the reel, and a directional plate to illustrate the proper threading of the tape through the drag pins.

1.06 **Motor:** The tape winder is driven by a 115-volt ac, 50/60 cycle, 1/40 hp shaded-pole-type motor mounted on a bracket supported by the base plate.

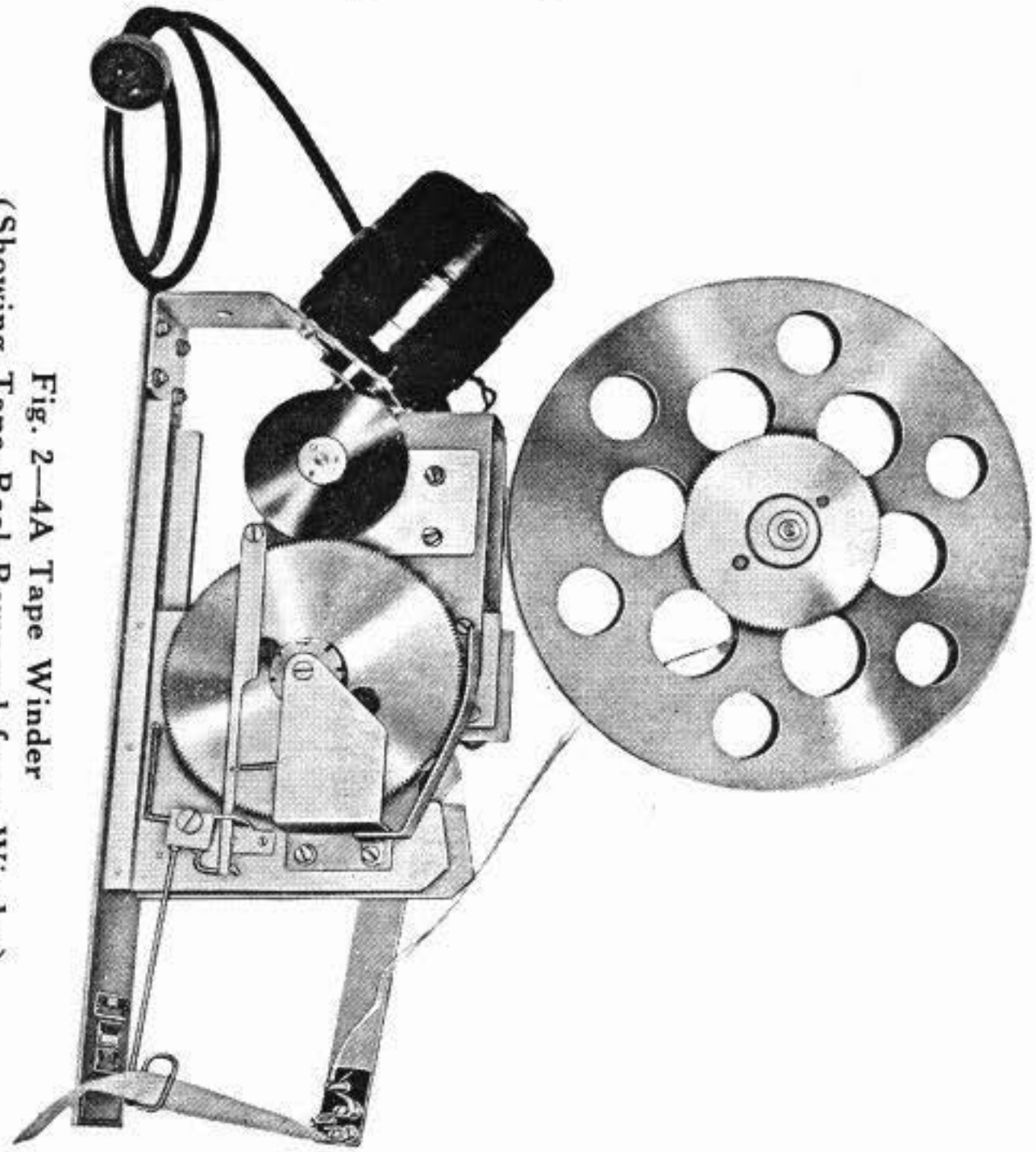


Fig. 2—4A Tape Winder
(Showing Tape Reel Removed from Winder)

1.07 **Base Plate:** This is a metal base plate approximately 18-1/4 inches long and 3-1/4 inches wide. It mounts the support frame and the motor-support bracket with the motor. There are no projections below the bottom surface of the plate. Two holes are provided in the base plate for mounting purposes when required, as in the 28A typing reperforator cabinet.

2. PLACEMENT OF TAPE

2.01 The 4A tape winder is designed to wind tape approaching the winder from the side opposite the gear train and at a level of approximately 3 inches above the base plate. Tape can be wound directly on the fiber core of the tape-reel assembly of the 4A tape winder. Tape can also be wound on a partially filled tape reel or on a cardboard core of a roll of perforator tape slipped on the tape-reel fiber core.

A. Directly on the Fiber Core of the Tape Reel

2.02 To start tape directly on the empty tape-reel core of the 4A tape winder, feed several feet of tape through the tight tape arm, and through the drag pins in accordance with the instructions on the directional plate mounted on the tape-guide bracket. Pull the tape reel forward so that it does not engage the driving gear. Fold the end of the tape and insert it in the slot of the tape-reel core. Rotate the tape reel by hand by moving the top of the reel toward the rear about two revolutions to secure the tape on the core. Push the tape reel back into its operating position.

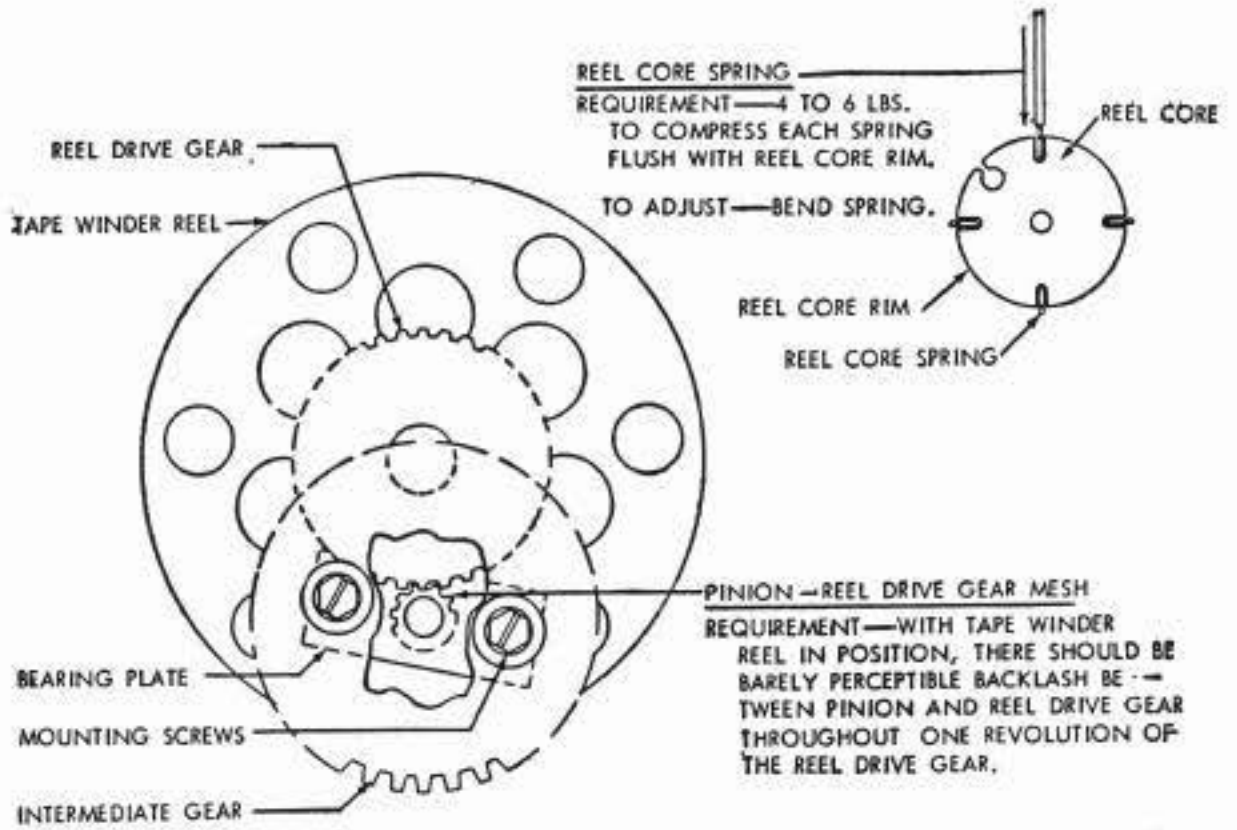
B. On a Partially Filled Tape Reel or on a Cardboard Core on the Tape Reel

2.03 If it is necessary to start a piece of tape on a partially filled tape reel, or on a cardboard core of a roll of perforator tape with only several turns of tape remaining on the ring, proceed as follows: Fasten together the ends of the two tapes in order to permit the tape to be pulled back or rewound from the reel as a continuous piece. If a stapler is used to do this, staple the tapes between the drag pins and the tape reel so that the stapled joint is not required to feed through the drag pins where it might snag and tear the tapes. **Do not use staples if the tape may be used again in a transmitter-distributor.** Where a stapler is not used, unwind about three turns of tape from the reel, place the end of the new tape under the tape on the reel, press the tapes together, and rewind; thus securing the end of the new tape by friction.

3. REQUIREMENTS AND ADJUSTING PROCEDURES

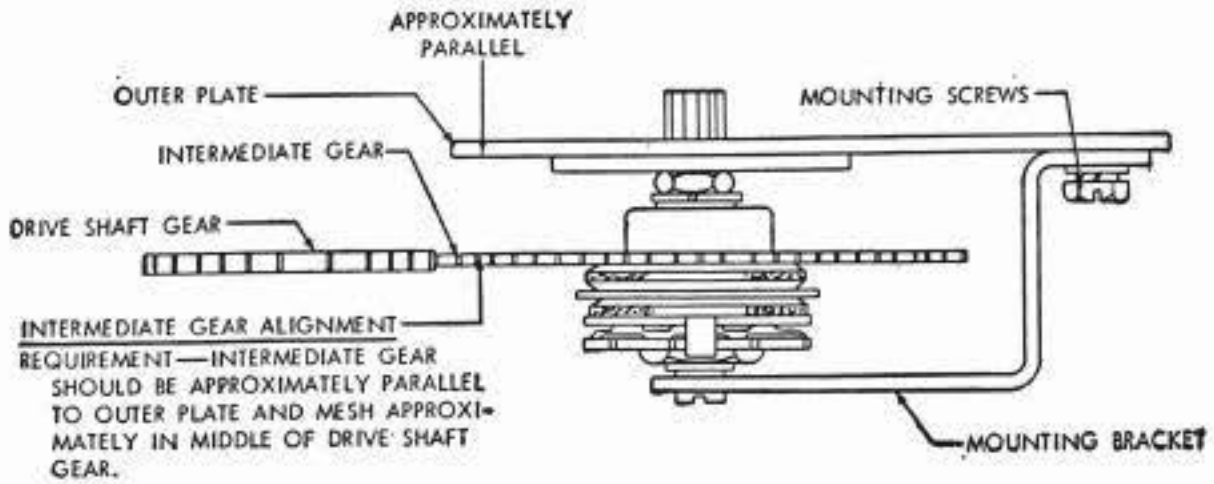
3.01 The following figures show the adjusting tolerances, positions of moving parts and spring tensions. The illustrations are arranged so that the adjustments are in the sequence that would be followed if a complete readjustment of the 4A tape winder were being made.

3.02 Reel Core, Pinion and Reel-drive-gear Mesh, and Intermediate Gear

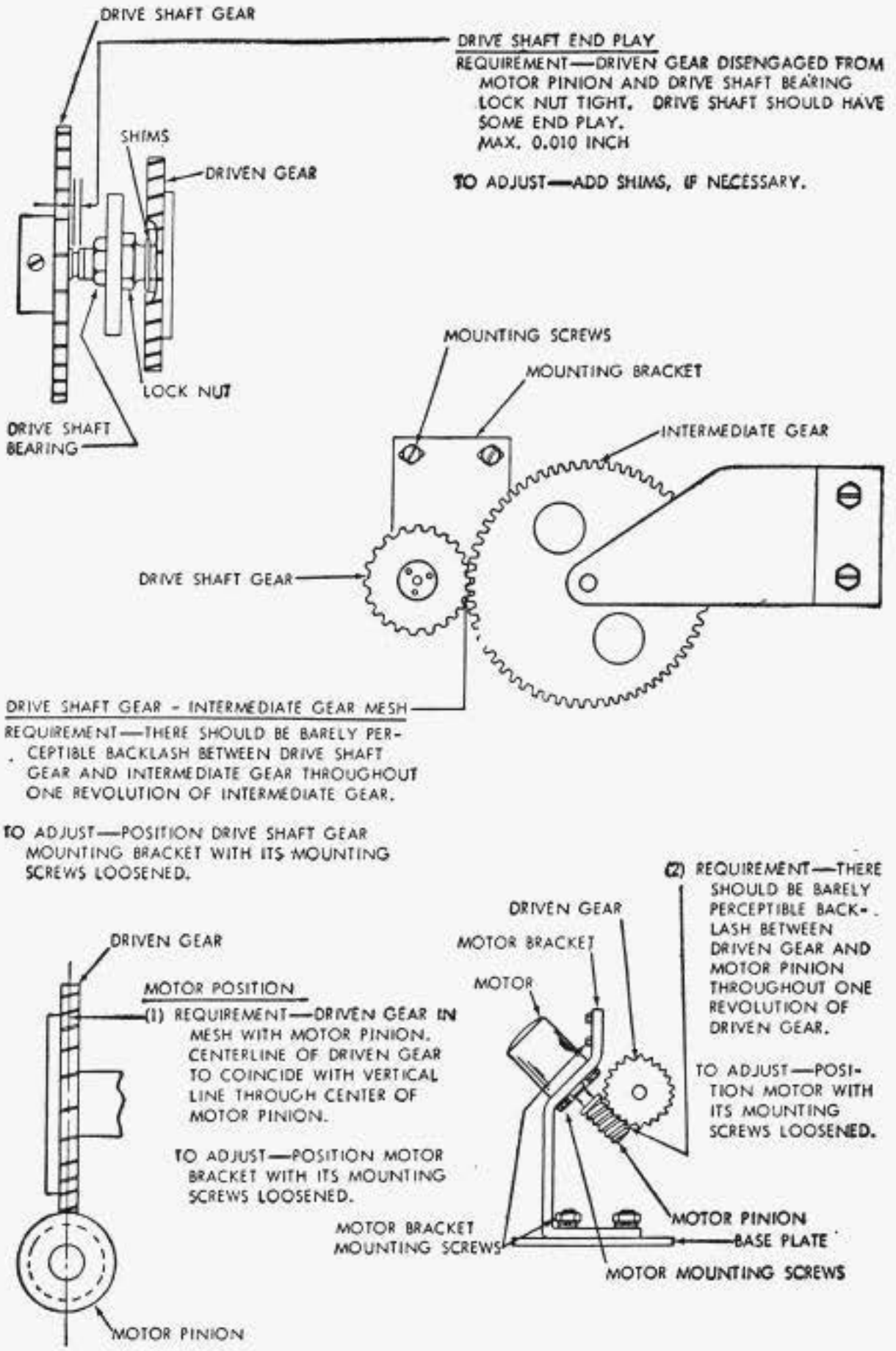


NOTE

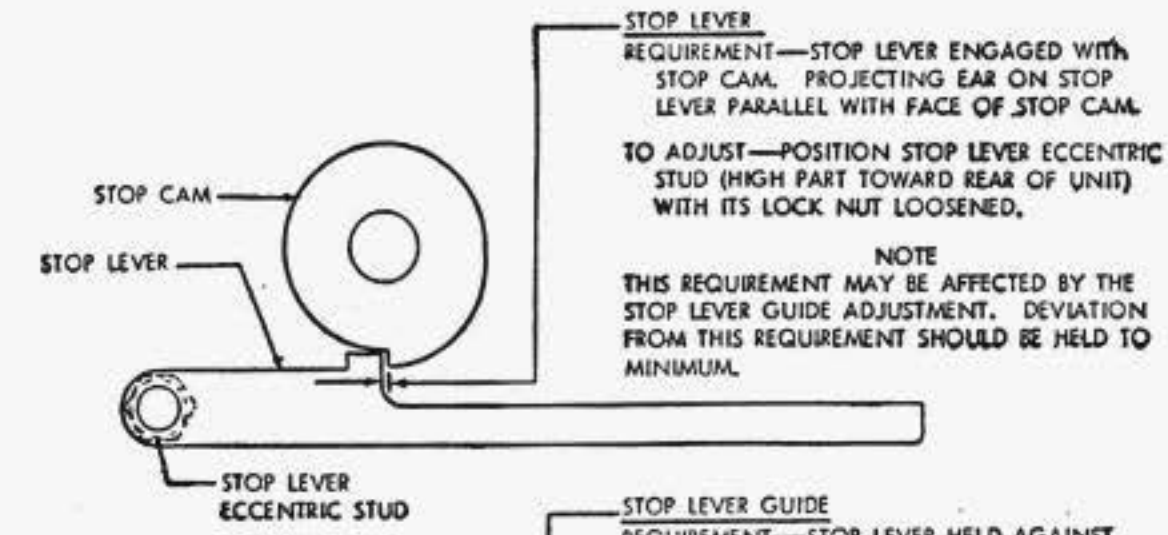
THIS ADJUSTMENT SHOULD BE RECHECKED IF TAPE WINDER REELS ARE INTERCHANGED BETWEEN UNITS.



3.03 Drive Shaft and Motor Position



3.04 Tape Winder Control Mechanism



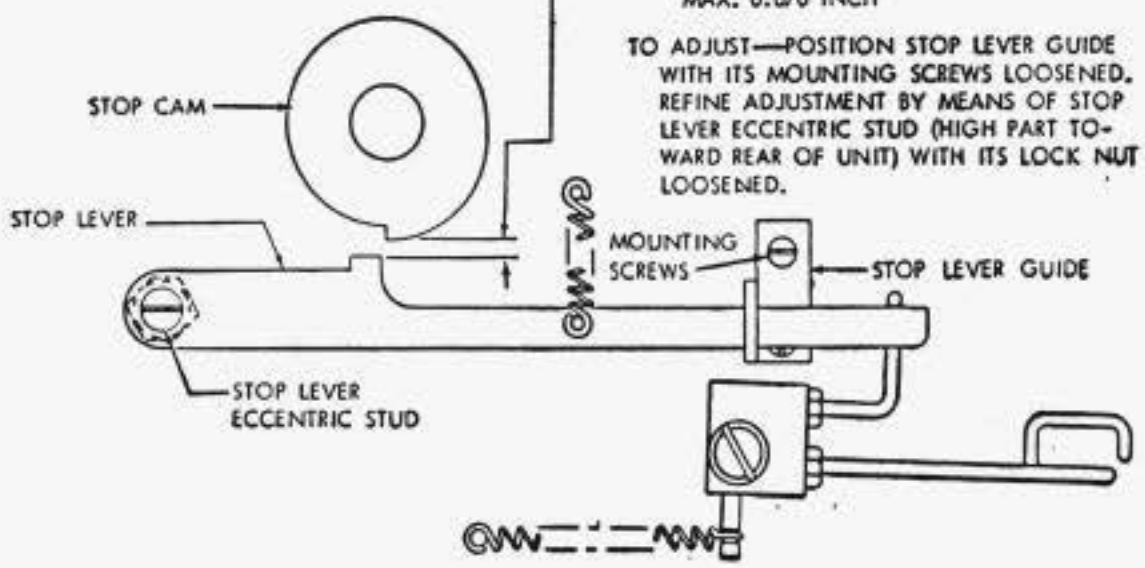
STOP LEVER

REQUIREMENT—STOP LEVER ENGAGED WITH STOP CAM. PROJECTING EAR ON STOP LEVER PARALLEL WITH FACE OF STOP CAM.

TO ADJUST—POSITION STOP LEVER ECCENTRIC STUD (HIGH PART TOWARD REAR OF UNIT) WITH ITS LOCK NUT LOOSENED.

NOTE

THIS REQUIREMENT MAY BE AFFECTED BY THE STOP LEVER GUIDE ADJUSTMENT. DEVIATION FROM THIS REQUIREMENT SHOULD BE HELD TO MINIMUM.

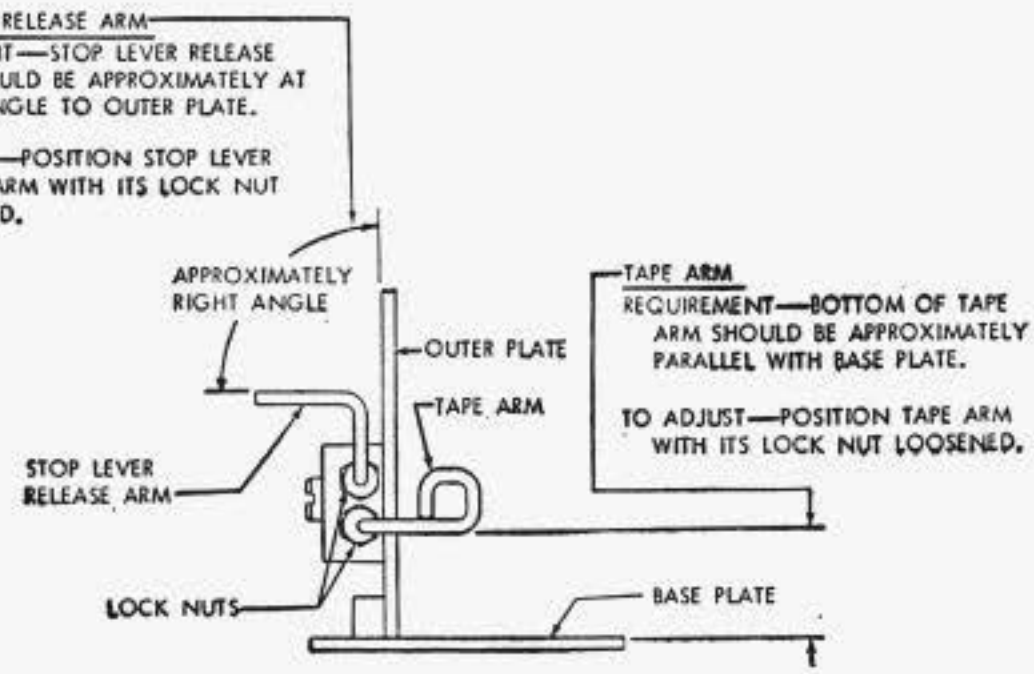


STOP LEVER GUIDE

REQUIREMENT—STOP LEVER HELD AGAINST BOTTOM OF SLOT IN STOP LEVER GUIDE. CLEARANCE BETWEEN HIGH PART OF STOP CAM AND TOP OF PROJECTING EAR ON STOP LEVER.

MIN. 0.035 INCH
MAX. 0.070 INCH

TO ADJUST—POSITION STOP LEVER GUIDE WITH ITS MOUNTING SCREWS LOOSENED. REFINE ADJUSTMENT BY MEANS OF STOP LEVER ECCENTRIC STUD (HIGH PART TOWARD REAR OF UNIT) WITH ITS LOCK NUT LOOSENED.



STOP LEVER RELEASE ARM

REQUIREMENT—STOP LEVER RELEASE ARM SHOULD BE APPROXIMATELY AT RIGHT ANGLE TO OUTER PLATE.

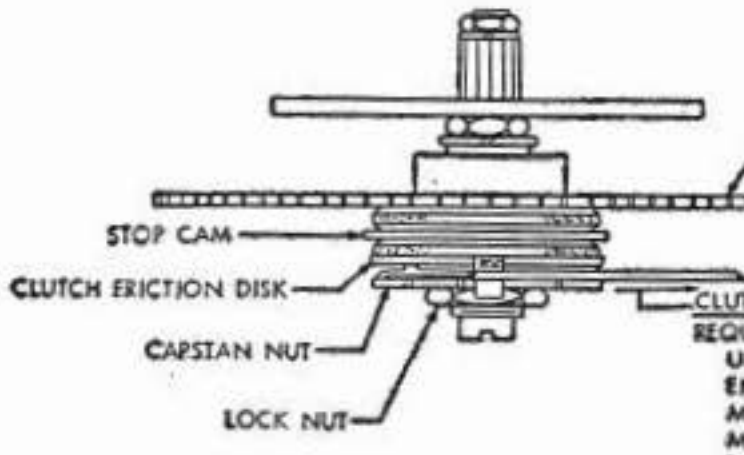
TO ADJUST—POSITION STOP LEVER RELEASE ARM WITH ITS LOCK NUT LOOSENED.

TAPE ARM

REQUIREMENT—BOTTOM OF TAPE ARM SHOULD BE APPROXIMATELY PARALLEL WITH BASE PLATE.

TO ADJUST—POSITION TAPE ARM WITH ITS LOCK NUT LOOSENED.

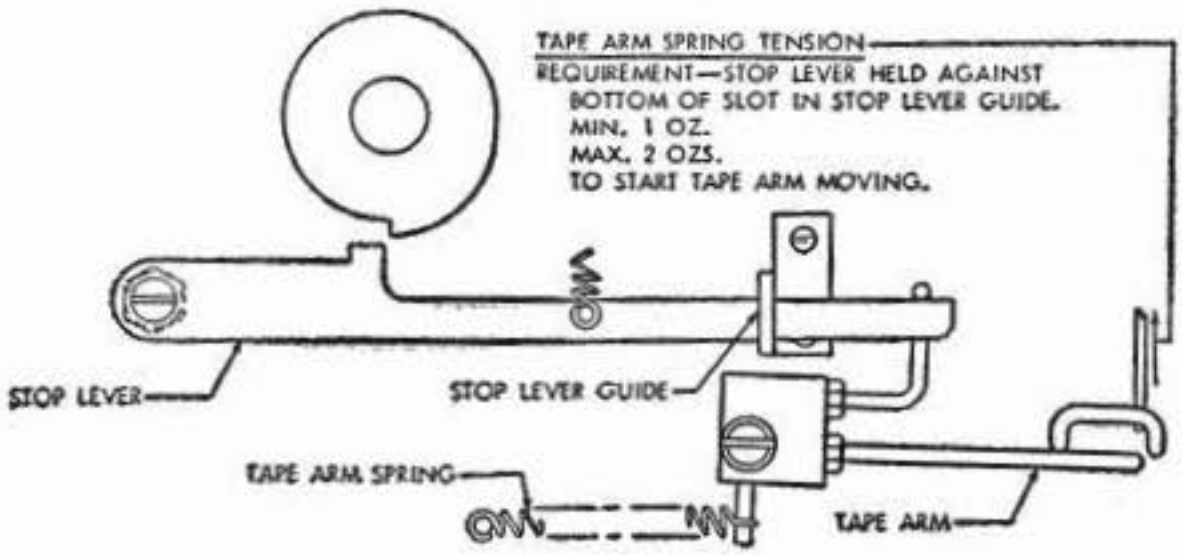
3.05 Clutch Torque, Tape-arm Spring, and Stoplever Spring



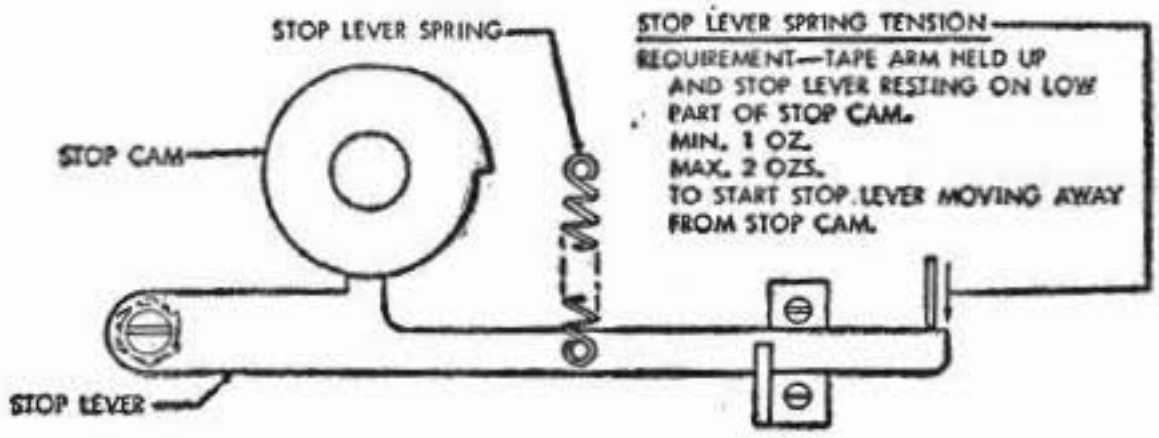
CLUTCH TORQUE
REQUIREMENT—POWER APPLIED TO UNIT. STOP LEVER HELD OUT OF ENGAGEMENT WITH STOP CAM.
MIN. 10 OZS.
MAX. 14 OZS.
TO KEEP CLUTCH FRICTION DISK FROM MOVING.

TO ADJUST—POSITION CAPSTAN NUT WITH LOCK NUT LOOSENED: CLOCKWISE TO INCREASE TENSION, COUNTERCLOCKWISE TO DECREASE TENSION.

NOTE
THIS MEASUREMENT SHOULD BE MADE WHEN UNIT IS WARM FROM OPERATION.



TAPE ARM SPRING TENSION
REQUIREMENT—STOP LEVER HELD AGAINST BOTTOM OF SLOT IN STOP LEVER GUIDE.
MIN. 1 OZ.
MAX. 2 OZS.
TO START TAPE ARM MOVING.



STOP LEVER SPRING TENSION
REQUIREMENT—TAPE ARM HELD UP AND STOP LEVER RESTING ON LOW PART OF STOP CAM.
MIN. 1 OZ.
MAX. 2 OZS.
TO START STOP LEVER MOVING AWAY FROM STOP CAM.

4. LUBRICATION

4.01 The 4A tape winder should be lubricated before it is placed in service in accordance with the principles given in Section P33.014. After that, because of varying conditions at each station, the winder should be lubricated as often as specified by local instructions.

4.02 The lubricants and methods of lubrication are those specified in Section P30.011, and the lubrication symbols used herein are the same as those given in that practice.

4.03 The parts of the 4A tape winder requiring lubrication, the points at which the lubricant should be applied, and the kind and amount of lubricant to be used are given in Table A.

4.04 When lubricating an entire winder it is recommended that the parts requiring oil lubrication be oiled, and then all parts requiring grease lubrication be greased. Over-lubrication, however, which would permit oil or grease to drip or be thrown on other parts should be avoided.

Note: Do not lubricate the tape-reel gear, the clutch-shaft pinion, or the tape-reel-shaft bearings.

Table A—Lubrication Chart

Part	Points of Lubrication	Lubricant
Drive shaft	Bearings	O
Motor	Pinion	G
Fiber gears	Teeth	G
Clutch shaft	Inner bearings	O
Clutch shaft	Outer bearings	O
Clutch shaft	Friction washers	SAT
Stap cam	Cam surface	G
Stoplever	Pivot screw	O
Stoplever	Points of engagement with cam and stoplever release arm	G
Tape arm	Pivot screw	O
Stoplever spring	Both loops	O
Tape-arm spring	Both loops	O

5. ASSOCIATED BELL SYSTEM PRACTICES

5.01 The following Bell System Practices contain information that may be required for use with this section.

Subject	Section
Teletypewriter Apparatus, General Requirements and Procedures	P30.012
Teletypewriter Apparatus, Lubrication, General Requirements	P30.011
Teletypewriter Apparatus, Preparation of Apparatus for Installation	P33.014
Descriptive Information on 28 ASR	P34.102
Descriptive Information on 28 Typing Reperforators.	P34.104
4A Tape Winder, Wiring Diagram	P34.311