INSTRUCTIONS FOR INSTALLING AND ADJUSTING THE MODEL 28 THREE REEL RIM DRIVEN TAPE WINDER TW14, TW15, TW19, TW20, AND TW21 AND THE 164516 MODIFICATION KIT TO PROVIDE REEL FULL ALARM; THE SINGLE REEL RIM DRIVEN TAPE WINDER TW18, AND THE 194770** MODIFICATION KIT TO PROVIDE A COVER; AND DOUBLE REEL RIM DRIVEN TAPE WINDER TW206 AND TW207

The chart below pertains to Bell System only:

UNIT	TELETYPE CODE	BELL SYSTEM CODE
Tape Winder	TW18	5B
Tape Winder	TW20	5A

1. GENERAL

a. The Model 28 Rim Driven Tape Winder is a complete unit consisting of tape reels and a structure on which are mounted the power and driving mechanism, a tape tension device, a clutch engage and disengage device, rollers for the tape reel engagement and a contact arrangement to provide for a full reel alarm. The unit is for general application with a capacity of 1000 feet of chadless tape per reel.

b. The TW14 and TW15 are alike, except the TW15 is equipped with the Tape Reel Full Alarm Feature. They both include a power on-off switch, necessary wiring, and fusing.

c. The TW18 Tape Winder is equipped with a tape reel full alarm, power on-off switch, necessary wiring, and fusing, and accepts either 5, 6, 7, or 8 level tapes.

d. The narrow style three reel rim driven TW19 Tape Winder, used in the Model 28 Automatic Send-Receive (ASR) Cabinet, allows winding of 5, 6, 7, or 8 level tape from the transmitter, keyboard punch and auxiliary mounted perforator simultaneously.

e. The three reel TW20 Tape Winder accepts either 5, 6, 7, or 8 level tapes and includes a power switch and fuse.

f. The TW21 is similar to the TW15 except that two locking type connectors are provided, one for the motor circuit and one for the tape reel full alarm circuit. Also, a motor power switch is provided.

g. The TW14, TW15, TW21, and TW206 accept 5-level tape only. The TW207 accepts 8-level tape and two tape guides are furnished to allow routing the tape from the side.

h. The TW206 or TW207 double reel winders are equipped with a cover, switch, fuse, and a double tape maze to increase the sensitivity when pulling tape from an LXD or LBXD Reader.

i. For field installation, the 164516 modification kit provides a reel full alarm for the TW14. This kit consists of the following parts:

3	2191	Lockwasher	3	151630	Screw
1	3598	Nut	2	155753	Sleeve, Insulating
2	3599	Nut	1	162708	Rod, Pivot
1	74701	Spring	3	162714	Arm
2	110743	Lockwasher	1	164483	Contact Assembly
2	119634	Button, Plug	1	164491	Cable Assembly
1	151442	Screw	1	172933	Bracket, Spring

j. The 194770** modification kit provides a self-contained enclosure for the TW18 Tape Winder which makes it suitable for mounting on table tops or mounting shelves, ie, on the Automatic Send-Receive (ASR) Set. This kit consists of the following parts:

1	194772**	Cover	1	194773**	Pan, Base

k. The double asterisks (**) represent a two-letter suffix which indicates the color or paint finish.

l. For parts ordering information refer to Teletype Parts Bulletin 1075B.

2. INSTALLATION

a. The tape winders are packed in two cartons; the winder in one and the three tape reels in the other. Unpack by cutting the sealed edges, being careful not to mar the finish. Observe all caution labels and instructions.

b. Remove the four 161552 shoulder screws and 2669 lockwashers from the bag attached to the winder. Pass the shoulder screws through the three vibration mounts which are away from the motor (the winder is not secured at the fourth vibration mount position). Place a lockwasher on each of the four screws and secure the winder. On some installations the four 161552

shoulder screws are not required; place the tape winder with vibration mounts over the mounting studs provided in the cabinet. A mating receptacle for the six-terminal connector plug on the winder is furnished (in bag) with the winder. (TW21 uses a three terminal twist-lock connector.) (TW206 uses no connector, but has a power cord wired into the unit.) Refer to Figure 3 and Figure 8 (TW206) for tape threading information. On those tape winders that accept various level tapes a tape guide is provided which is adjustable to accommodate the various widths of tape.

c. Installation of the 164516 Modification Kit (Figure 4):

(1) Assemble two 162714 arms to the 162708 pivot rod using two 151630 screws and two 2191 lockwashers. Do not assemble the remaining 162714 arm that rides the right hand tape reel.

(2) Assemble the 151442 screw and 3598 nut to the center 162714 arm.

(3) Solder the 164491 cable to the 164483 contact assembly.

(4) Assemble the 164483 contact assembly and 172933 spring bracket to the 162705 motor mounting plate using the 110743 lockwasher and 3599 nut.

(5) Install the pivot rod into the tape winder.

(6) Install the 74701 spring and the remaining 162714 arm with its 151630 screw and 2191 lockwasher to the pivot rod.

(7) Solder the remaining leads of the 164491 cable to the 6 pt. connector. See Wiring Diagram 5939WD. Use the two 155750 insulating sleeves to cover the soldered connections.

(8) Insert the 119634 plug button into the opening on the 162700 bracket.

(9) The actual WD for the TW207 is 7768WD.

d. Installation of the 194770** Modification Kit (Figure 5): Insert the flanges of the vibration mounts on the tape winder into the holes of the base pan, as follows: Turn the tape winder, with the vibration mounts upside down on a table top and place the base pan over the mounts. The holes in the pan which are closest to the end of the base should be toward the front of the winder (Figure 7). Push down on the base pan over each mount and insert the mount into the hole in the base pan using a screwdriver. A drop of oil on the mount will permit easier assembly. Place the cover over the winder and rest it on the pan.

(e) The TW207 mounts on the left side of the ASR Set on the 320278 shelf assembly. The two tape guides are mounted under the 173952 spring posts on TW207. The shorter guide 196926 is placed on the reel nearest the cabinet and guides the tape from the LXD. The 196927 guide is placed on the reel farthest from the cabinet which winds tape from the reperforator. Place one of the 146815 roller springs on each of the tape guides.

3. THEORY OF OPERATION

a. A knurled drive wheel is mounted on the motor driven shaft and rotates continuously. The tape reel is positioned on two rollers and rotates when its rim engages the drive wheel. The tape reel rim is placed in or out of engagement with the drive wheel by the position of the rear roller. This roller is mounted on an arm that is part of the clutch engage-disengage device. The position of this arm (up or down) is obtained indirectly from the flow of tape that is looped through the tape arm. When the tape arm is near the bottom of its travel or moving up, the tape reel will rotate. When the arm is latched in the up position or moving down, the tape reel will not rotate.

b. The end of the tape is threaded about six inches through the posts at the center of the reel and wound two or more turns manually to secure the tape to the reel, then brought under the post and up between the backstop and the chad depressor and on to the tape arm (see Figure 3 and 8). When the tape arm is lifted manually to its latched position, the reel will be disengaged from the drive wheel allowing for rapid unwinding of tape. The proper tape tension is obtained and sufficient pressure is exerted on the chad to insure a capacity of 1000 feet of tape being wound on the reel. The tape winder provides a full reel contact arrangement to which the customer may connect a visible or audible alarm.

4. ADJUSTMENTS (Figures 1 through 8)

a. GEAR - There should be a barely perceptible amount of backlash between the motor pinion and the driven gear at point of least clearance. To adjust, loosen the four screws that secure the motor mounting plate to the side frames and position the plate. Tighten the screws.

NOTE

The adjustment may be refined if there is an excess of gear noise.

b. CLUTCH ENGAGE-DISENGAGE (Figure 1) - With the end of the 162718 arm resting on the top side of the 163528 latching lug, the periphery of the tape reel should be clear of the knurled portion of the drive wheel assembly. To adjust, lift the 162716 tape arm so that the 162718 arm rests on the top side of the 163528 latching lug. With a tape reel in place and the

motor running, loosen the 3598 and 74807 nuts to allow turning of the 164481 eccentric screw. While the tape reel is being driven, turn the eccentric screw counterclockwise approximately 1/8 of a turn beyond the point where the tape reel just ceases to be driven. This results in some clearance between the knurled portion of the drive wheel assembly and the tape reel rim. When the requirement is met, hold the eccentric screw and tighten the 3598 nut first and then the 74807 nut. To check: With the motor running, move the 162716 tape arm to a position where the 162718 arm touches the underside of the 163528 latching lug. In this position the tape reel should be in full engagement with the drive wheel assembly. With the 162718 arm resting on the top side of the 163528 latching lug the drive wheel should not rotate. Refine adjustment if necessary.

c. FULL REEL ALARM ARM ADJUSTING SCREW (Figure 4 for three reel winder) (Figure 6 for single reel winder) - With the 162714 arm approximately 3/8" inside the tape reel (edge of the nylon) the 151442 screw should just allow the contacts to close (the contact closure point may be varied so as to provide an earlier or later full reel indication). With no tape on the reel the 151442 screw should hold the swinger contact to provide at least 0.020" contact gap. To adjust, loosen the 3598 nut and turn the screw to a position which satisfies both requirements. Tighten the nut.

d. FULL REEL ALARM CONTACT PRESSURE (Figure 4A) - With the 151442 screw held away from the swinger contact spring it should require 1 to 3 ozs. to separate the contacts. To measure, place the push end of an 8 oz. scale on the swinger contact spring, adjacent to the contact points, and push vertically downward.

e. TAPE ARM (Figure 1 and 7)

(1) The 162716 tape arm should fall freely when allowed to drop, by means of its own weight, through its operating arc. Bend the arm, if necessary, to meet this requirement.

(2) The 162716 tape arm, after being raised until it latches on the 163528 latch lug, and then while being lowered, shall trip the 163528 latch within 1/8" to 1/2" of the winder base. Bend the arm slightly downward at the mid-point to lower the trip-off point of the 163528 latch. Bend the arm slightly upward at the mid-point to raise the trip-off point.

f. CLUTCH ASSEMBLY

(1) While lifting the 162716 tape arm, observe that the 162718 arm should latch on the bottom of the 163528 latch lug (see Figure 2) and then snap upward when the 163528 latch is cammed out by the post on the 163526 bracket.

(2) While lowering the 162716 tape arm, observe that the 162718 arm should latch on the top of the 163528 latch lug (see Figure 1) and then snap downward when the 163528 latch is again cammed out by the post on the 163526 bracket.

(3) The 163528 latch should be free to operate between the 162718 arm and 163526 bracket.

(4) Repeat the above procedures several times and check that the parts move freely without binding and rubbing on each other. To adjust, straighten or replace any bent or binding parts.

g. TAPE ARM SENSITIVITY (TW206 or TW207) (Figure 7) - The tape sensing arm should cause no excessive pulling on the tape running through the reader or punch. To adjust, slide the "U" bracket toward the rear of the winder to obtain maximum sensitivity of the tape arm. With the winder pulling tape under operating conditions, observe that the sensing arm must exert sufficient pull on the tape. If necessary, slide the "U" bracket forward to increase the pull. The "U" bracket should fall within the range of 3-1/2 inches to 10-1/4 inches from the pivot point of the 147710 tape arm.

NOTE

The following spring tensions apply to all three tape reel positions.

h. 7634 LATCH SPRING TENSION (Figure 1) - It should require 2 to 4 ozs. to start the 163528 latch moving. To measure, lift 162716 tape arm so that the 162718 arm disengages the 163528 latch lug. Hook an 8 oz. scale to the latch, just above the spring hole, and pull horizontally forward.

i. 163523 TAPE ARM SPRING TENSION (31 coil turns) (Figure 2) (TW14, TW15, TW21), 199522 TAPE ARM SPRING TENSION (29 coil turns) (Figure 2) (TW18, TW19, TW20, TW206, TW207)

NOTE

The upper loop of the spring must be positioned as shown on Figure 2. The 147743 "U" brackets (if used) should be removed during this adjustment.

With the 162718 arm latched under the lug of the 163528 latch it should require 12 to 15 ozs. (units equipped with the 199552 spring - 13 to 16 ozs.) to start the 162716 tape arm moving. On TW206 or TW207 the requirement should be 19 to 22 ozs. To measure, hook a 32 oz. scale to the tape arm as shown on Figure 2 and pull vertically upward.

j. 22015 CHAD DEPRESSOR SPRING TENSION (Figure 3) - It should require 7 to 9 ozs. to pull the depressor away from its backstop. To measure, hook a 32 oz. scale over the end of the 172981 spring arm (position hook in approximate center of arm) and pull at right angle to the spring arm.

k. 74701 ARM SPRING TENSION (for the Three Reel Winder - Figure 4) - It should require 7 to 10 ozs. to move the 162714 arm to a position where the contacts just close. To measure, hook a 32 oz. scale to the arm, adjacent to the spring hole, and pull vertically upward.

l. REEL FULL ARM SPRING TENSION (Figure 6 - for the Single Reel Winder) - It should require 4 to 8 ozs. to move the 176173 arm to a position where the contacts just close. To measure, hook an 8 oz. scale to the arm, adjacent to the spring hole and pull horizontally.

5. SERVICING THE 173937 MOTOR

a. If the 173937 induction motor is disassembled at any time and the 197992 plastic thrust washers which are mounted on each end of the 197991 rotor are removed from the shaft, replace with the burr side or unmarked side facing into the aluminum thrust collar mounted on rotor shaft. The smooth side or yellow ink marked side should face the sleeve bearing that is mounted in each end shield of the motor.

NOTE

Follow this reassembly method in order to prevent damage to the motor sleeve bearings.

b. Reassemble the motor by placing the 197962 rear end shield nearest to the lead end of the 197990 stator to maintain the proper direction of rotation for the motor shaft (counterclockwise - viewed from leads end of motor).

c. Reassemble both of the 197961 and 197962 end shields with their oil holes located in the same direction as the motor leads.

d. Replace the two 197993 clamp screws and tighten the 122209 nuts. The motor shaft should rotate freely.

6. LUBRICATION - Use standardized lubricants.

a. Apply a light film of grease on the gears.

b. Apply one drop of oil on each of the pivot points and on all latching and camming surfaces.

c. Apply one drop of oil on each spring loop.

NOTE

Do not apply grease or oil to the knurled drive wheel or nylon tape reel rim.

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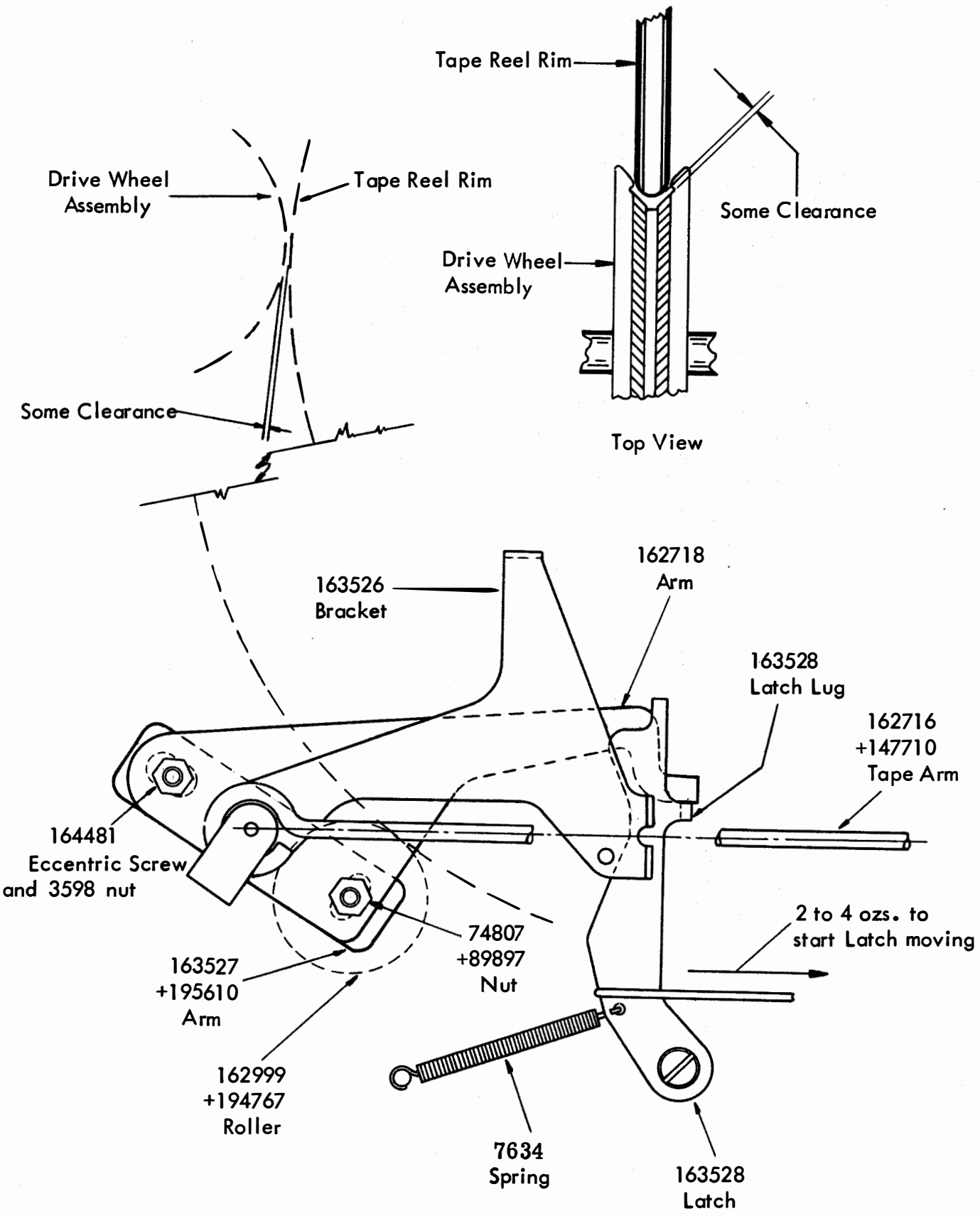


+ Used on TW206

FIGURE 1

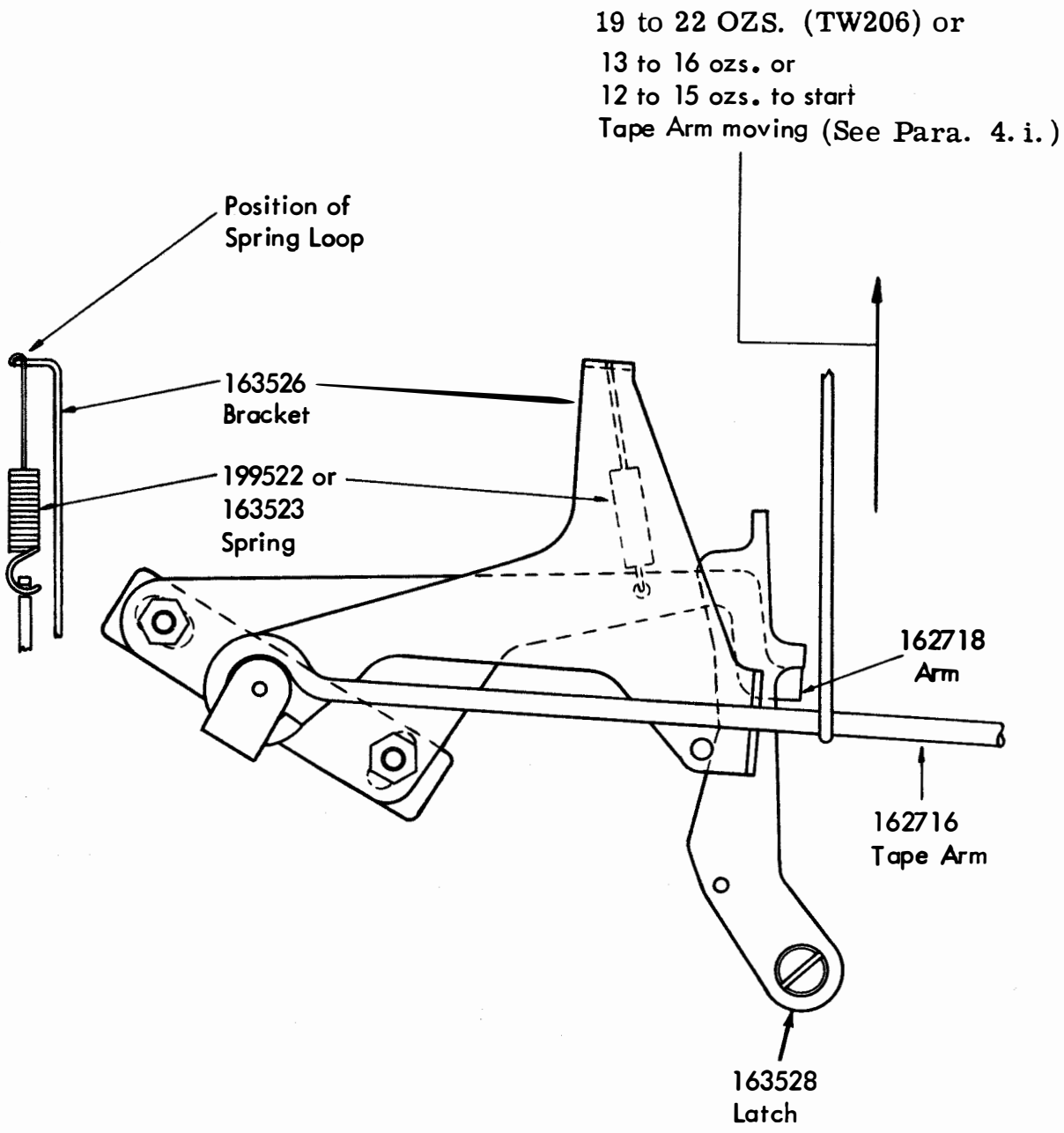
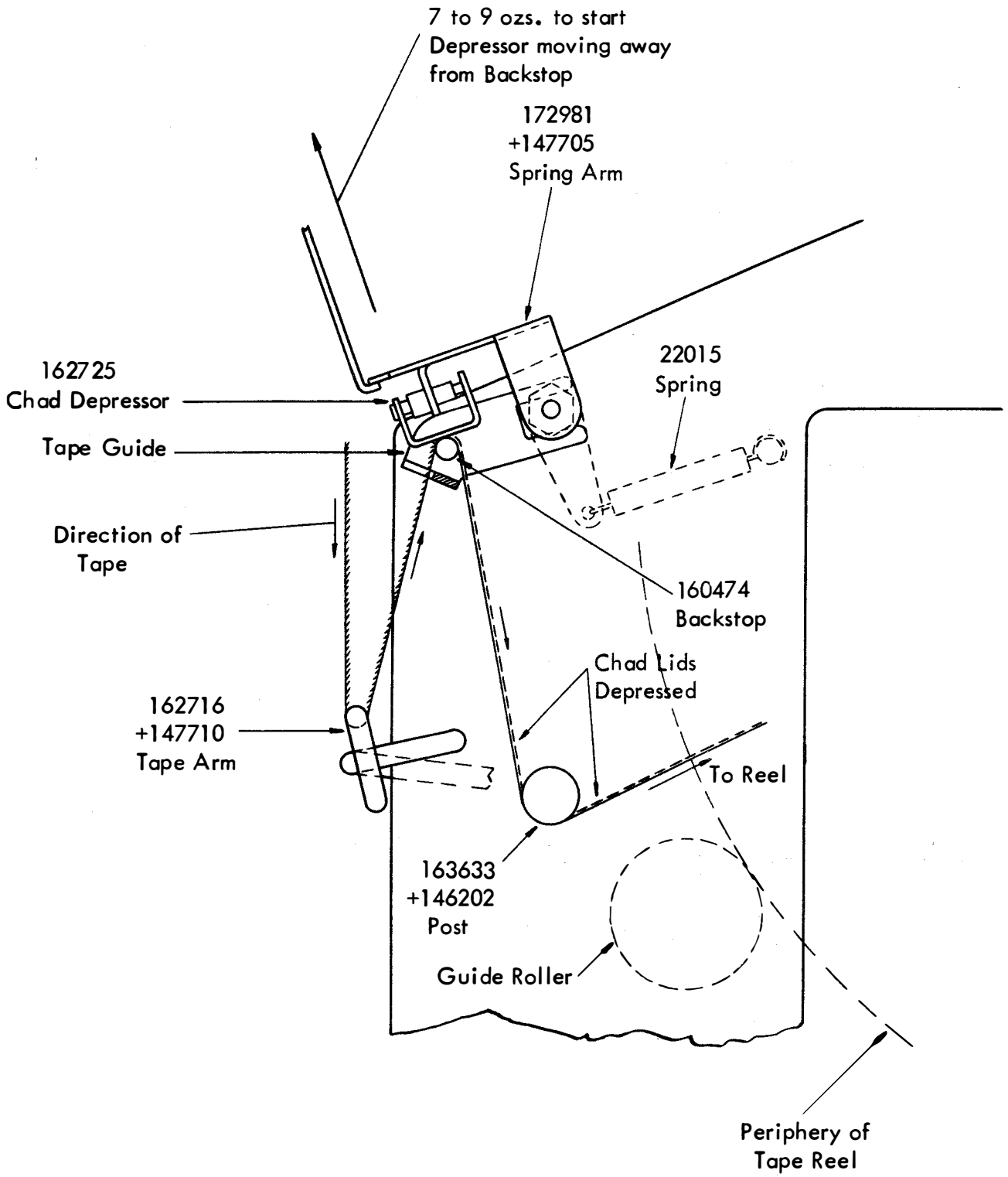

19 to 22 OZS. (TW206) or
13 to 16 ozs. or
12 to 15 ozs. to start
Tape Arm moving (See Para. 4. i.)
Position of
Spring Loop
163526
Bracket
199522 or
163523
Spring
162718
Arm
162716
Tape Arm
163528
Latch

FIGURE 2



+ Used on TW206

FIGURE 3

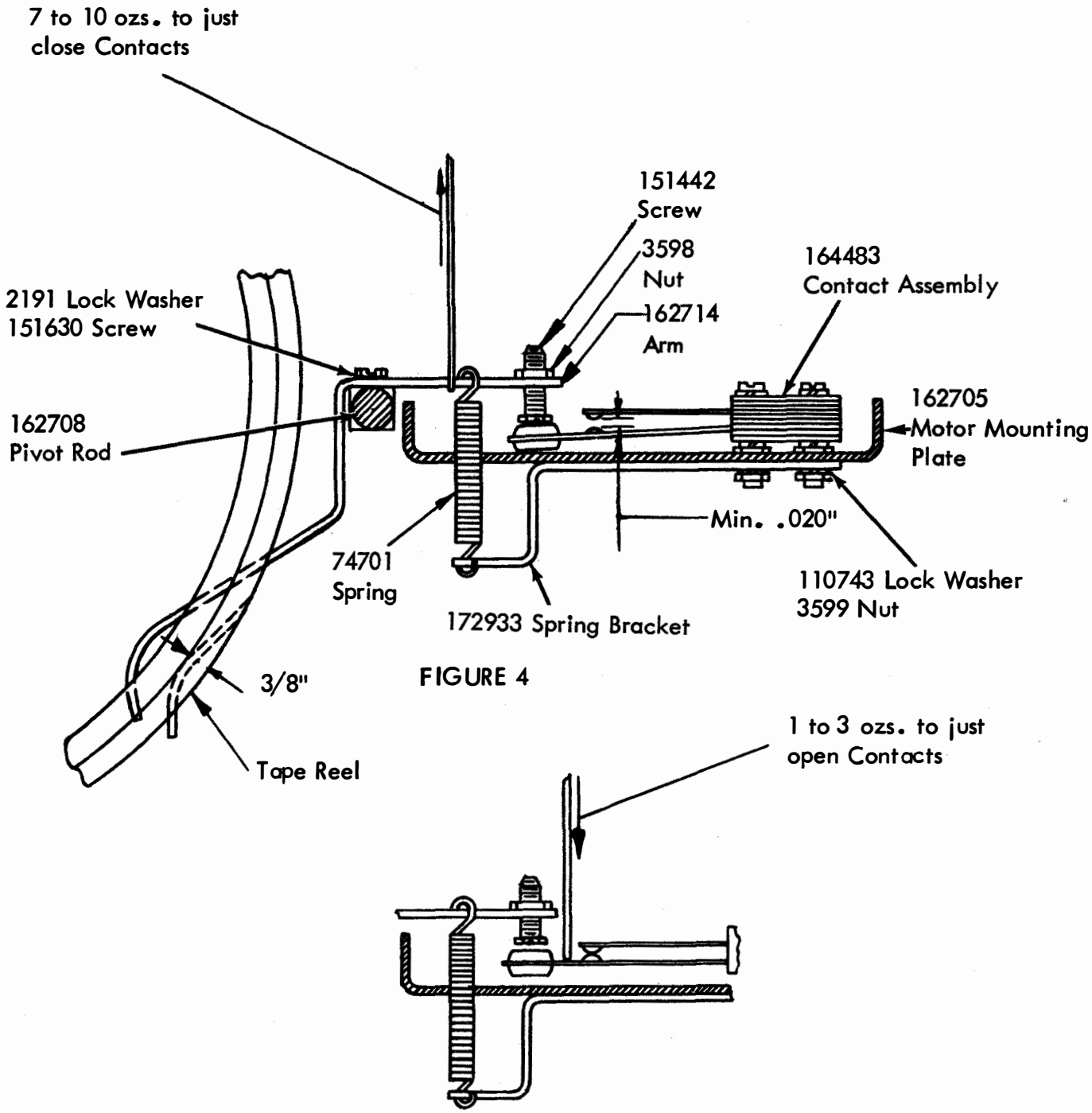
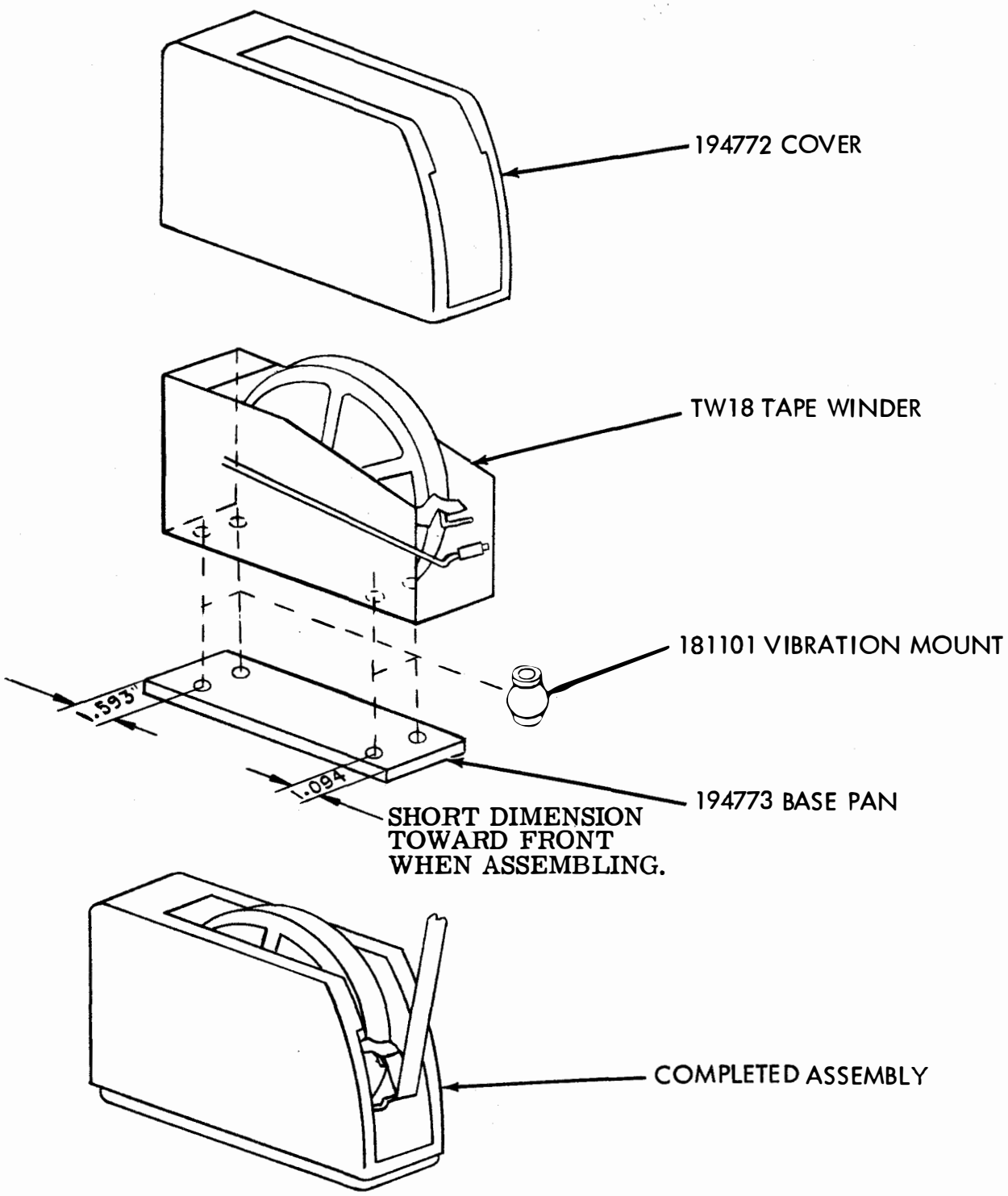


FIGURE 4

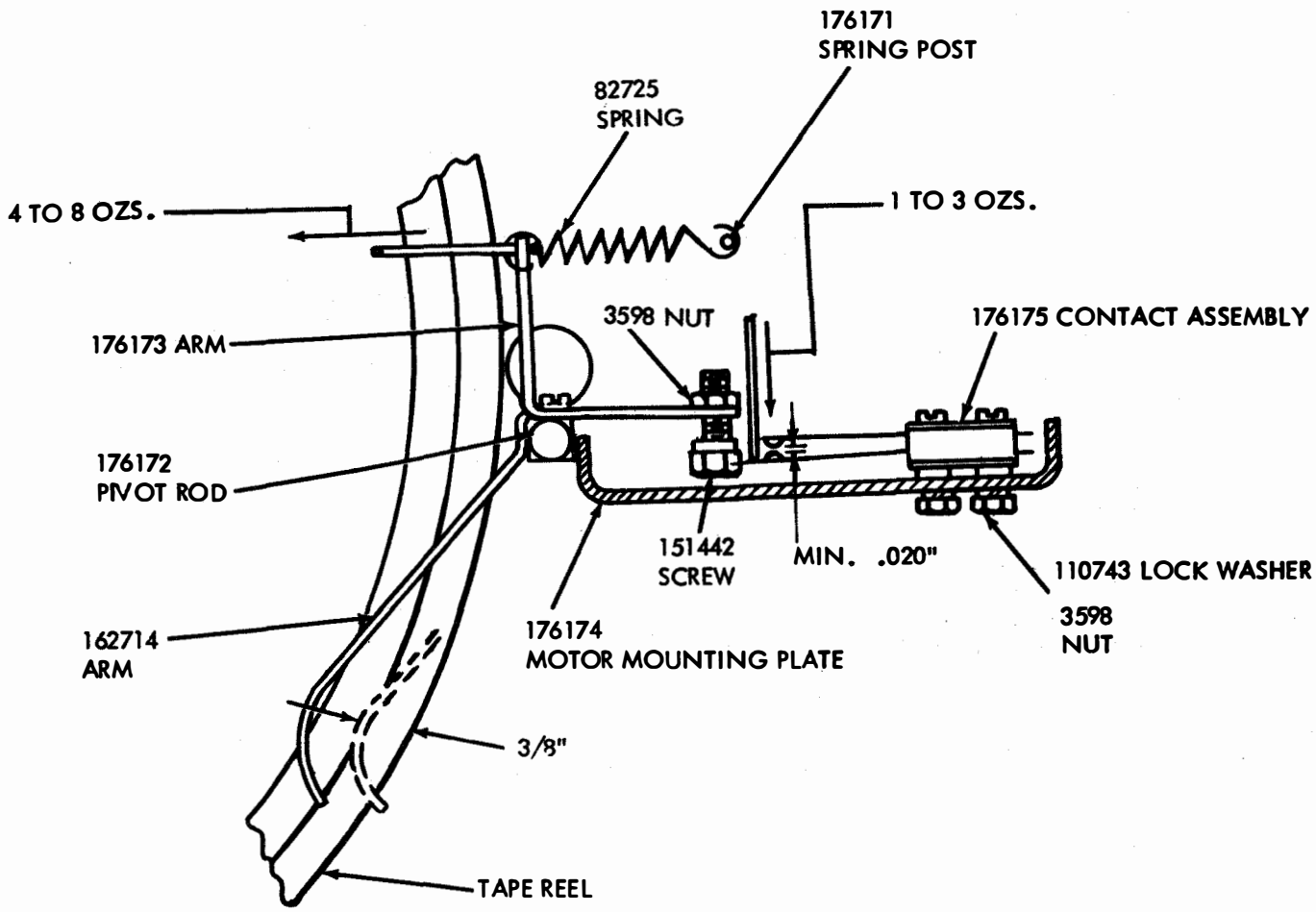
FIGURE 4A

TAPE FULL ALARM FOR TW15 TAPE WINDER



194770 MODIFICATION KIT: TO PROVIDE COVER FOR THE SINGLE REEL RIM DRIVEN TAPE WINDER.

FIGURE 5



TAPE FULL ALARM FOR TW18 TAPE WINDER

FIGURE 6

TW206

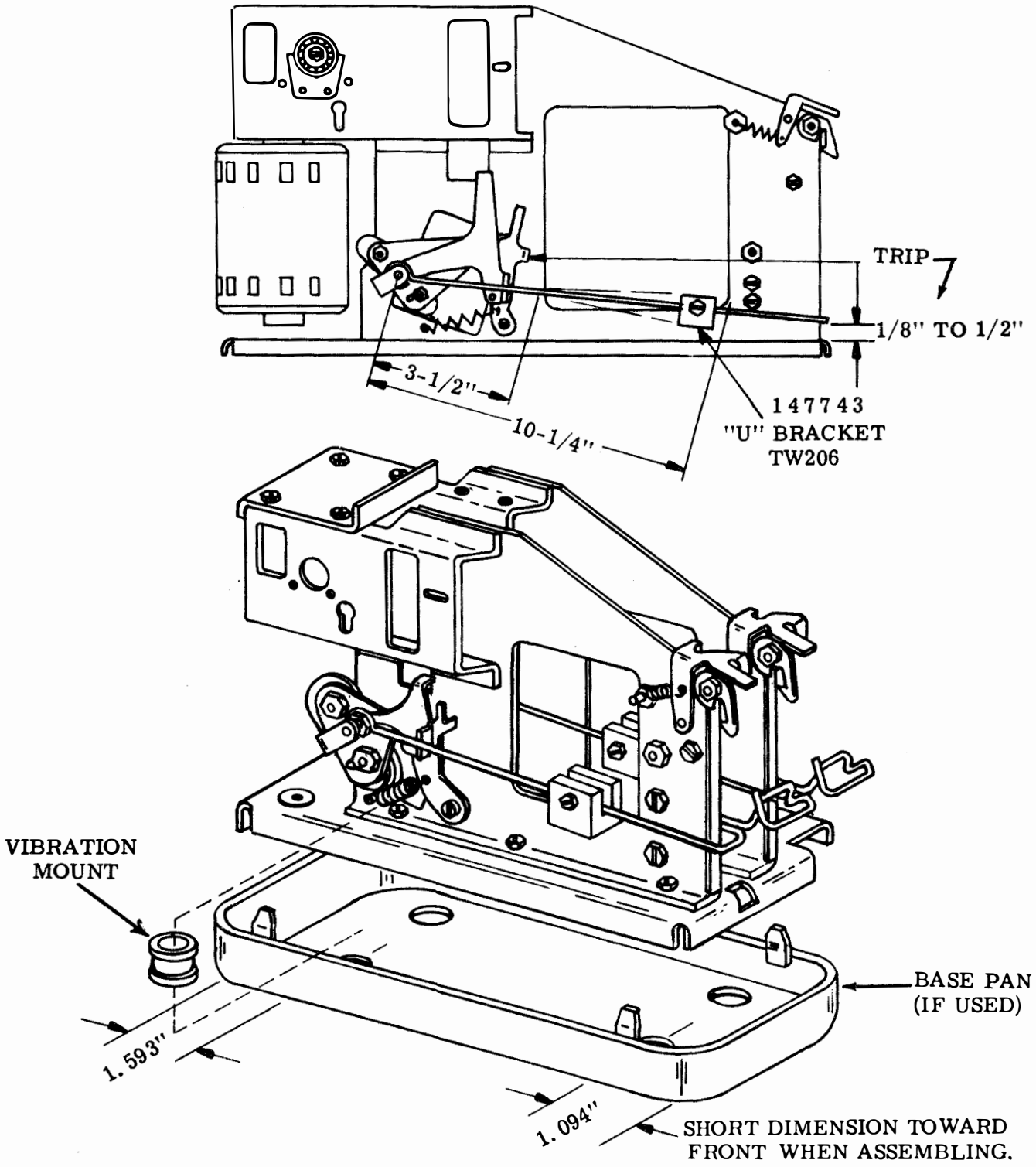


Figure 7

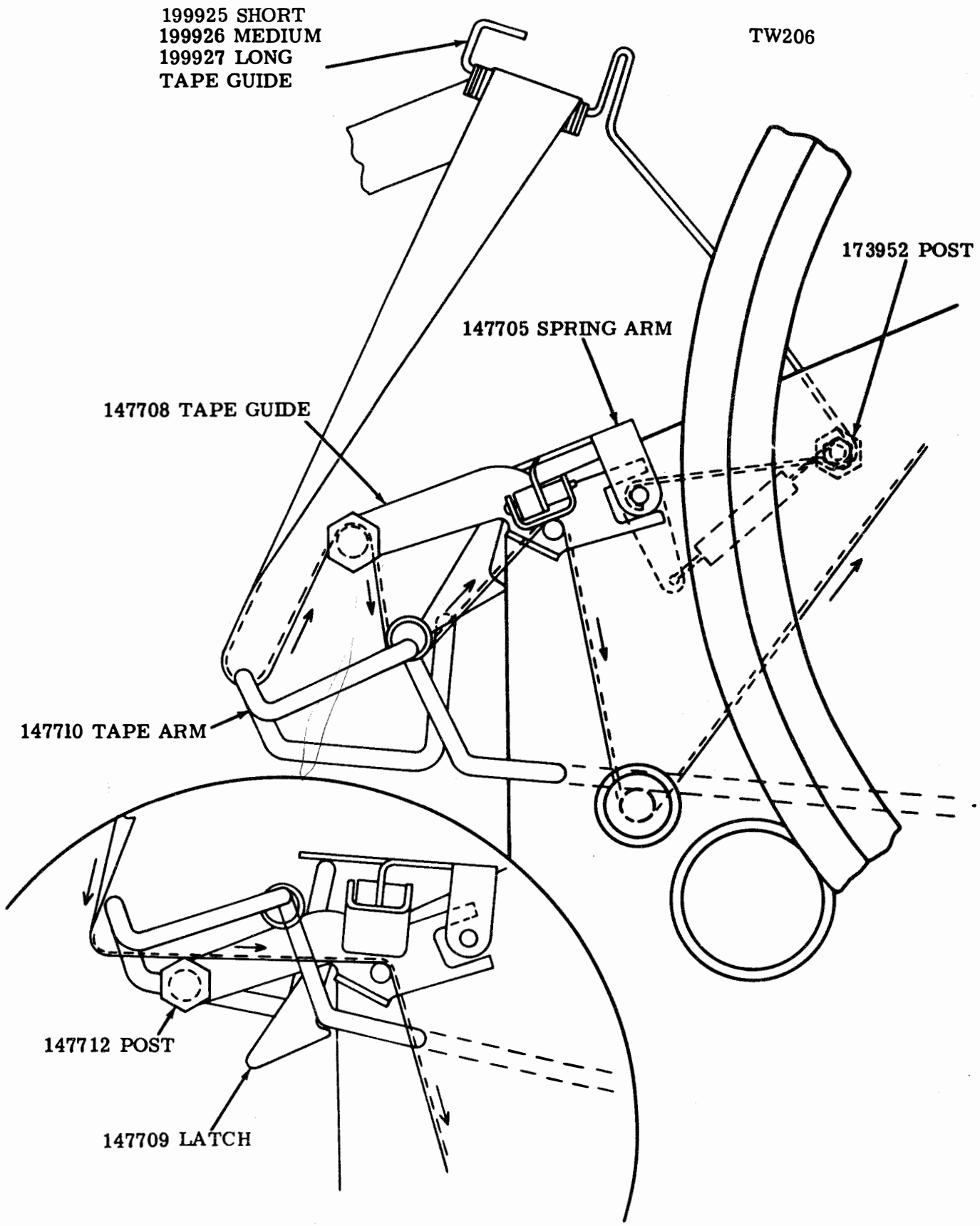

199925 SHORT
199926 MEDIUM
199927 LONG
TAPE GUIDE
TW206
173952 POST
147705 SPRING ARM
147708 TAPE GUIDE
147710 TAPE ARM
147712 POST
147709 LATCH

Figure 8