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TAPE WINDERS—MOTOR DRIVEN

1. GENERAL

1.01 This section describes the 1A, 2A and 3A motor driven tape winders and provides installation and maintenance information for them. These tape winders are used to wind 11/16″ perforator tape and each reel will accommodate a full roll (approx. 1000′) of tape with chadless perforations or approx. 2000′ of tape with fully punched perforations. These tape winders may be used with teletypewriter units operating at 60, 75, or 100 wpm speed.

1.02 The tape winder motor is normally arranged to have power connected to it while power is connected to the associated teletypewriter units and the tape reel is driven through a gear train and a friction clutch arrangement. The rotation of the reel is controlled by the tape passing under a tape arm. When the tape becomes taut, the arm rises and stops the operation of the reel. The motor is equipped with a 30-inch, 3-conductor cord and plug, which extends approximately 20 inches from the clamp on the base plate.

1.03 The tape reels are readily removed by pulling slightly upward and forward to disengage the reel from the driving gear. In this position, the reel bearings rest in notches in the frame and the reel can be turned freely as required.

1.04 The following shall be observed in applying requirements and procedures:

(a) Use appropriate gauges for dimensional measurements.

(b) Use the following scales for tension measurements as the tension values specified are in most cases not absolute values but readings to be obtained on these scales when used in the positions described.

Scale	Tension Range
TP138-55	8 ounces or less
TP138-58	8 ounces to 32 ounces

(c) Before readjusting a part, loosen locking device (clamping screw, lock nut, etc.). Reset locking device after adjustment is completed.

(d) After readjusting a part, check adjustment of related parts which may have been disturbed.
(e) Springs which are outside tension limits and for which no adjustment is provided shall be replaced.
(f) Refer to Teletype Bulletin 1075 for part names and numbers.

2. DESCRIPTION

2.01 The 1A tape winder has two tape reels and is equipped with a 60-cycle synchronous motor. It is intended primarily for use with the 100-type teletypewriter apparatus cabinets.

2.02 The 2A tape winder has a single tape reel and is equipped with a 60-cycle synchronous motor. It can be placed on a table to wind tape from a transmitter-distributor mounted on the same table.

2.03 The 2A tape winder can also be installed in a TP104063 tape winder cabinet which can be mounted on the side of a table for winding tape from a teletypewriter unit on the same table. The TP104063 cabinet is 20" high, 17" deep and 6-15/16" wide. It is made of steel with a brown wrinkle finish and is provided with a resilient mounting for the tape winder. The combination of a 2A tape winder and a 104063M cabinet was coded as a 2B tape winder but this code has been abandoned. The cabinet must be specified separately when required.

2.04 The 3A tape winder has three tape reels and combines the operating structures of 1A and 2A tape winders mounted side by side on a common base plate. A coupling is provided to join the drive shafts of the two structures. It is equipped with a 60-cycle synchronous motor. The 3A tape winder is intended primarily for use in a monitoring typing reperforator cabinet housing three typing reperforator units.

2.05 **Dimensions and Weights**

	1A	2A	3A
Length (parallel to tape reels)..	16"	16"	16"
Width	7-1/4"	7-1/4"	11-1/2"
Height	17-1/2"	17-1/2"	17-1/2"
Weight (without reels)	34 lbs.	25 lbs.	43 lbs.
Weight of tape reels	6 lbs.	3 lbs.	9 lbs.

3. INSTALLATION

3.01 Installation of a tape winder in a cabinet consists of placing the winder in position in the cabinet with the motor toward the rear of the cabinet (or on a table) and

plugging the power cord into the power outlet provided for the tape winder motor. Normally, power should be connected to the tape winder by the operation of the switch which furnishes power to the associated teletypewriter unit.

3.02 If a felt pad is provided for the winder, the tape winder should be located in such a position on the pad that it does not come in direct contact with the cabinet in order to avoid unnecessary noise.

3.03 Check to see that there is no interference between the power cord (or other cords in the cabinet) and the tape stop lever or other moving parts.

3.04 The two halves of a tape reel are usually fastened together with a screw for shipment. This screw should be removed before the reel is placed in service.

4. OPERATION

4.01 To start the tape on a reel, several feet of tape are fed out of the teletypewriter unit, under the tape stop arm and through the drag pins to the tape reel. If the tape winder is equipped with four drag pins which may be referred to as the upper front, upper rear, lower front and lower rear pins, remove and discard the upper rear pin and the TP104679 direction plate. The tape should be fed through the three pins as follows: Under the tape stop arm, under the lower front pin, forward between the upper and lower front pins, over the upper front pin and under the lower rear pin to the tape reel. Pull the tape reel forward so that it does not engage the driving gear. Insert the end of the tape in the slot of the tape reel core with the typing toward the rim of the reel. 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.

4.02 If it is necessary to start a piece of tape on a partially filled reel, the ends of the two tapes should be stapled or otherwise fastened together in order to permit the tape to be pulled back or unwound from the reel as a continuous piece. Do not use staples if the tape may be used again in a transmitter-distributor. The tapes should be stapled together between the drag pins and the reel so that the stapled joint is not required to feed through the drag pins where it might snag and tear the tapes. If a stapler is not available unwind about three turns of the tape from the reel, place the end of the new tape under the tape on the reel and rewind thus securing the end of the new tape by friction.

5. APPARATUS REQUIREMENTS AND ADJUSTING PROCEDURES

5.01 The **Cross Shaft** shall rotate freely. To check, remove the mounting screw from the driven gear on the cross shaft and move the gear out of engagement with the motor pinion.

(a) To adjust a single reel unit, loosen the right-hand bearing bracket mounting screws so that the bracket can be moved by tapping it lightly. Position the bracket so that the shaft is free. Tighten the mounting screws and recheck the adjustment. Reposition the cross shaft gear by replacing its mounting screw and tighten the screw.

(b) To adjust a double reel unit, loosen the right-hand winder assembly mounting screws so that the winder assembly can be moved by tapping it lightly. Position the winder assembly so that the shaft is free and tighten the mounting screws. If further adjustment is necessary, loosen the mounting screws in the outer plates, shift the plates and tighten the mounting screws. Recheck the adjustment.

5.02 The **Cross Shaft Bearings** shall extend outside of the side plates or bearing bracket approximately an equal amount and the cross shafts shall have some end play, Max. .006". Gauge by eye and feel.

(a) To adjust, position the bearings by means of their lock nuts.

5.03 There shall be a minimum amount of back lash between the **Motor Pinion** and the **Cross Shaft Gear.** Check throughout a complete revolution of the cross shaft. A vertical plane through the axis of the pinion shall coincide with a vertical plane through the center of the gear parallel to the sides.

(a) To adjust the back lash, increase or decrease the number of shims under the motor feet. To align the gear and pinion utilize the play in the motor mounting holes.

5.04 There shall be some gear play, Max. .010", between the **Tape Reel Gear** and the **Clutch Shaft Pinion** and also between the clutch shaft gear and the fibre gear with the tape reel in its operating position. Gauge by feel. Check throughout a complete revolution of the tape reel.

(a) To adjust, reposition the clutch shaft bearing plate and the outer bearing bracket.

5.05 The **Clutch Shaft Gear** shall be parallel to the left side plate and shall engage the middle of the toothed portion of the fibre gear.

(a) To adjust, reposition the clutch shaft outer bearing bracket. Recheck Paragraph 5.04.

5.06 The end of the **Stop Lever** shall be parallel to the face of the stop cam when the lever is in engagement with the stop cam.

(a) To adjust, reposition stop lever mounting post.

Note: The surface on the end of the stop lever which engages the stop cam shall be smooth and polished, otherwise difficulty may be encountered in making some of the following adjustments.

5.07 The high part of the stop cam shall clear the end of the stop lever by Min. .035", Max. .070" with the stop lever resting against the bottom of the slot in the guide.

(a) To adjust, reposition the **Stop Lever Guide** by means of its mounting screws.

5.08 The end of the **Tape Arm** which engages the tape shall be approximately parallel to the base plate.

(a) To adjust, reposition the tape arm by means of its lock nut.

5.09 The end of the **Tape Stop Arm** shall be approximately the same height above the base plate as the end of the tape arm when the formed end of the tape stop arm is approximately at a right angle to the side plate and the stop lever held in the bottom of its guide slot by the tape stop arm.

(a) To adjust, remove the mounting block, loosen the tape stop arm lock nut and advance or withdraw the tape stop arm from its mounting block. Lock it in position so that the end is at a right angle to the side plate. Replace the mounting block.

5.10 It shall require a pull of Min. 10 ozs., Max. 14 ozs. to hold the **Clutch Disc** stationary, with the motor running, the stop lever held away from the stop cam and the tape reel disengaged from the driving pinion. To measure, hook a 32 oz. scale over the lug on the adjustable disc and pull vertically upward at a right angle to the radius.

(a) To adjust, reposition the clutch disc.

Note: This measurement should only be made after the felt friction washers have been freshly lubricated and the motor has been running for at least 10 minutes with the tape arm raised and the reel disengaged from its driving pinion.

5.11 The **Tape Arm Spring** tension shall be Min. 4-1/2 ozs., Max. 6-1/2 ozs. with the stop lever held against the bottom of the notch in the guide. To measure, hook an 8 oz. scale over the horizontal part of the tape stop arm and pull parallel with the base toward the front of the unit.

Note: On old style units equipped with a TP4730 tape arm spring, 39Ts .218" O.D. giving 2 to 4 ozs. tension, the spring should be replaced by a TP74702 spring, 42Ts .117" O.D. giving 4-1/2 to 6-1/2 ozs. tension.

5.12 The **Stop Lever Spring Tension** shall be Min. 1 oz., Max. 2 ozs. to start the lever moving away from the low part of the cam and the cam held (manually) so that it does not bear against the end of the stop lever. To measure, hook an 8 oz. scale over the stop lever at the spring hole and pull in line with the spring toward the rear of the unit.

5.13 With the motor running and the tape stop arm held away from the stop lever, hook an 8 oz. scale over the stop lever at the point of engagement with the tape stop arm and pull horizontally toward the rear of the unit. It shall require a pull of Max. 1-1/2 ozs. to release the stop cam. If a pull of more than 1-1/2 ozs. is required, recheck the clutch torque, stop lever spring tension and check for binding at the stop lever bearing, the tape arm bearing and at the point of engagement of the stop lever and the stop cam.

6. LUBRICATION

6.01 Unless otherwise specified, apply one drop of oil at each of the places indicated.

(a) Cross shaft bearings
(b) Cross shaft bearing felt oiler—saturate
(c) Motor pinion and gear—grease
(d) Fibre gears—grease
(e) Clutch shaft bearing—inner
(f) Clutch shaft bearing—outer
(g) Clutch shaft friction washers—saturate
(h) Stop cam KS-7471 Grease on rim of cam
(j) Stop lever pivot screw
(k) Stop lever—KS-7471 Grease at point of engagement with cam and with trip lever
(l) Tape lever pivot screws
(m) Stop cam lever spring loops
(n) Tape lever spring loops

6.02 In order to keep the tape reel clean do not lubricate the following places:

(a) Tape reel gear
(b) Clutch shaft pinion
(c) Tape reel shaft bearings

7. MAINTENANCE INSPECTIONS AND TESTS

7.01 The clutch torque shall be checked and readjusted, if necessary, and the tape winder lubricated at the time the associated teletypewriter apparatus is inspected and lubricated.

8. WIRING DIAGRAM

8.01 The wiring diagram of the 1A, 2A and 3A motor driven tape winders with synchronous motor is based upon Drawing BR-214637, Issue 2.

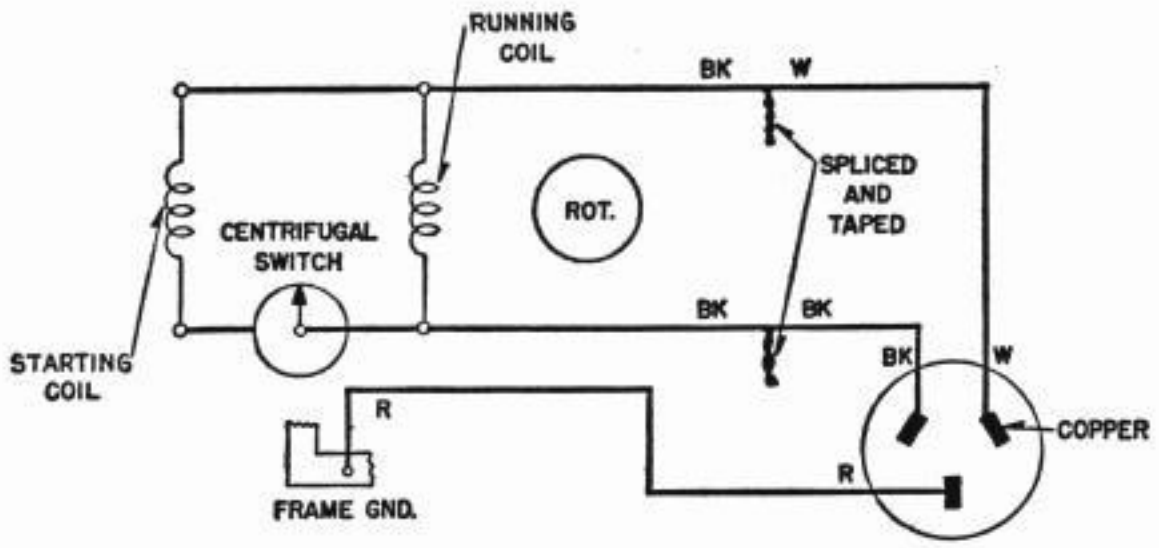

Fig. 1—Wiring Diagram 1A, 2A and 3A Tape Winders