28 TRANSMITTER-DISTRIBUTOR BASE
ANSWER-BACK MECHANISM

ADJUSTMENTS

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1. GENERAL

1.01 This section has been revised to include recent engineering changes and additions, and to rearrange the text, so as to bring the section generally up-to-date. Since this is an extensive revision, marginal arrows ordinarily used to indicate changes have been omitted.

1.02 This section contains the specific requirements and adjustments for the 28 transmitter-distributor base answer-back mechanism.

1.03 Maintenance procedures which apply only to mechanisms of a particular design, are so indicated in the titles of the paragraphs which contain these particular adjustment requirements.

1.04 The adjustments of each unit are arranged in a sequence that should be followed if a complete readjustment of the unit were undertaken. The tools and spring scales required to perform these adjustments are listed in the applicable section. After an adjustment is completed, be sure to tighten any nuts or screws that are loosened. The adjusting illustrations indicate tolerances, positions of moving parts, spring tensions and the angles at which scales should be applied when measuring spring tensions.

1.05 References made to left or right, up or down, front or rear, etc apply to the unit in its normal operating position as viewed from the front.

1.06 When a requirement calls for a clutch to be disengaged, the clutch shoe lever must be fully latched between its trip lever and latch-lever so that the clutch shoes release their tension on the clutch drum.

Note: When the distributor shaft is rotated by hand, the clutch does not fully disengage upon reaching its stop position. In order to relieve drag and permit the main shaft to rotate freely, apply pressure on the lug of the clutch disk with a screwdriver to cause it to engage its latchlever and fully disengage the clutch.
1.07 All electrical 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. Check contacts for pitting and corrosion and clean or burnish them before making specified adjustment or tolerance measurement. Avoid sharp kinks or bends in the contact springs.

CAUTION: KEEP ALL ELECTRICAL CONTACTS FREE OF OIL AND GREASE.

Figure 1 - 28 Transmitter-Distributor Base Answer-Back Mechanism (Front View)

Figure 2 - 28 Transmitter-Distributor Base Answer-Back Mechanism (Rear View)
2. BASIC UNIT

2.01 Clutch Triplever and Armature Mechanism

CLUTCH TRIP ARMATURE AIR GAP

REQUIREMENT
AIR GAP BETWEEN ARMATURE AND MAGNET ASSEMBLY BRACKET:
MIN. 0.004 INCH --- MAX. 0.008 INCH
WHEN ARMATURE IS HELD FLUSH AGAINST MAGNET CORE.

TO ADJUST
REMOVE ARMATURE EXTENSION SPRING, LOOSEN SPRING POST
AND HINGE MOUNTING SCREW AND POSITION HINGE.

TO CHECK:
APPLY AC POWER. IF EXCESS CHATTER IS PRESENT, REFINISH
THE ADJUSTMENT BY INCREASING OR DECREASING THE AIR
GAP UNTIL THE CHATTER IS ELIMINATED.

NOTE: THIS IS A REVERSIBLE ARMATURE. FOR USE WITH DC CURRENT, THE HEAVY CHROME PLATED
SIDE STAMPED C MUST BE FACING THE MAGNET CORE. FOR USE WITH AC CURRENT THE ARMATURE
MUST BE REVERSED SO THAT THE SIDE STAMPED C IS AWAY FROM THE MAGNET CORE.

CLUTCH TRIP LEVER

REQUIREMENT
CLEARANCE BETWEEN ARMATURE EXTENSION LEVER
AND LATCHING SURFACES OF CLUTCH TRIP LEVER:
MIN. 0.020 INCH --- MAX. 0.030 INCH
WHEN CLUTCH TRIP LEVER IS ON HIGH PART OF CAM.

TO ADJUST
LOOSEN PLATE ADJUSTING SCREW AND PLATE
MOUNTING SCREW, INSERT SCREWDRIVER IN SLOT
ADJACENT TO ADJUSTING SCREW AND POSITION
PLATE FOR REQUIRED CLEARANCE.

ARMATURE EXTENSION

REQUIREMENT
CLEARANCE BETWEEN ARMATURE EXTENSION LEVER AND CLUTCH
TRIP LEVER
MIN. 0.030 INCH --- MAX. 0.040 INCH
WHEN CLUTCH TRIP LEVER IS ON HIGH PART OF CAM AND
ARMATURE IS FLUSH AGAINST CORE (PLAY TAKEN UP WITH SPRING).

TO ADJUST
LOOSEN BRACKET MOUNTING SCREW AND BRACKET ADJUSTING
SCREW AND INSERT SCREWDRIVER INTO SLOT BELOW ADJUSTING
SCREW, AND ADJUST BRACKET.
2.02 Clutch Stop Arm, Clutch Lever, and Cam Follower Guide

**CLUTCH STOP ARM**

**REQUIREMENT**

WITH CLUTCH TRIP LEVER IN LATCHED POSITION, CLUTCH LEVER SHOULD FULLY ENGAGE CLUTCH SHOE LEVER.

**TO ADJUST**

WITH CLUTCH IN STOP POSITION, LOOSEN CLUTCH TRIP CLAMPING SCREW AND ADJUST CLUTCH STOP LEVER TO OBTAIN FULL BITE WITH CLUTCH SHOE LEVER.

**NOTE:** WHEN ARMATURE IS IN ATTRACTED POSITION, CLUTCH STOP ARM SHOULD CLEAR STOP LEVER AND STOP LUG BY AT LEAST SOME CLEARANCE.

**CLUTCH SHOE LEVER**

**REQUIREMENT**

CLEARANCE BETWEEN CLUTCH SHOE LEVER AND EXTENSION SHOULD BE MIN. 0.055 INCH --- MAX. 0.085 INCH GREATER WHEN CLUTCH IS ENGAGED THAN WHEN DISENGAGED.

**TO ADJUST**

LOOSE TWO CLAMP SCREWS IN CLUTCH DISK. ROTATE ADJUSTING DISK TO OBTAIN PROPER CLEARANCE.

**NOTE:** AFTER ABOVE ADJUSTMENT IS MADE, DISENGAGE CLUTCH AND ROTATE DRUM IN NORMAL ROTATION TO MAKE CERTAIN IT DOES NOT DRAG ON SHOES. IF DRUM DRAGS, REFINE ADJUSTMENT.

**CAM FOLLOVER GUIDE**

**REQUIREMENT**

CAM FOLLWTER GUIDE ORIENTED SO CENTER CAM FOLLOWER IS FULLY ON CAM WHEN FOLLOWER IS MOVED SIDEWAYS IN GUIDE SLOT. OTHER MUST HAVE AT LEAST 75% BITE WHEN MOVED IN EITHER DIRECTION, AND BE FREE IN THEIR GUIDE SLOTS.

**TO ADJUST**

POSITION CAM FOLLOWER GUIDE WITH ITS MOUNTING SCREWS LOOSENED. AFTER TIGHTENING CHECK FOR FREENESS.
2.03 Distributor Block Assembly, Distributor Contact Gap, and Clutch Shoe Lever Spring

**DISTRIBUTOR BLOCK ASSEMBLY**

**REQUIREMENT**

DISTRIBUTOR BLOCK ASSEMBLY POSITIONED ON CASTING SO THAT ROCKER LEVERS ARE FULLY ENGAGED WITH THE BAKELITE ON THE FOLLOWER LEVERS.

**TO ADJUST**

LOosen DISTRIBUTOR BLOCK ASSEMBLY MOUNTING SCREWS AND POSITION BLOCK LEFT OR RIGHT TO OBTAIN REQUIREMENT.

**DISTRIBUTOR CONTACT GAP**

**REQUIREMENT**

CONTACT GAP SHOULD BE MIN. 0.020 INCH --- MAX. 0.030 INCH WITH CAM FOLLOWER LEVER ON HIGH PART OF CAM.

**TO ADJUST**

TURN CONTACT SCREW AT SOCKET END UNTIL DESIRED GAP IS OBTAINED. CHECK ALL CONTACT GAPS.

NOTE: POSITION FOLLOWER ON HIGH OF CAM BY TRIPPING CLUTCH MANUALLY AND ROTATING DISTRIBUTOR SHAFT.

**CLUTCH SHOE LEVER SPRING**

**REQUIREMENT**

CLUTCH ENGAGED. CLUTCH DISK HELD TO PREVENT ITS TURNING:

MIN. 15 OZS. --- MAX. 20 OZS.

TO PULL SHOE LEVER IN CONTACT WITH LUG ON CLUTCH DISK.
2.04 Clutch Shoe and Distributor Cam Follower Springs. Distributor Rocker and Compression Springs

NOTE: AS IT REQUIRES REMOVAL OF CLUTCH FROM SHAFT, THIS SPRING TENSION SHOULD NOT BE CHECKED UNLESS THERE IS GOOD REASON TO SUSPECT THAT IT WILL NOT MEET ITS REQUIREMENT.

**CLUTCH SHOE SPRING**

REQUIREMENT
CLUTCH DRUM REMOVED.
MIN. 3 OZS. --- MAX. 5 OZS.
TO START PRIMARY SHOE MOVING AWAY FROM SECONDARY SHOE.

**DISTRIBUTOR CAM FOLLOWER SPRING**

REQUIREMENT
DISTRIBUTOR BLOCK REMOVED
MIN. 1/2 OZ. --- MAX. 1-1/2 OZ.
TO START CAM FOLLOWER LEVER MOVING WHEN LEVER IS ON HIGH OF CAM.

**ROCKER SPRING**

**DISTRIBUTOR ROCKER SPRING**

REQUIREMENT
WITH COMPRESSION SPRINGS REMOVED AND CONTACTS INITIALLY ADJUSTED SO CONTACT SURFACE IS APPROXIMATELY 1/32 INCH BELOW OUTER SURFACE OF CONTACT BLOCK:
MIN. 3 OZS. --- MAX. 4 OZS.
TO SEPARATE CONTACTS.

**COMPRESSION SPRING**

**DISTRIBUTOR ROCKER COMPRESSION SPRING**

REQUIREMENT
WITH COMPRESSION SPRINGS INSTALLED
MIN. 6-1/2 OZS. --- MAX. 9-1/2 OZS.
TO JUST SEPARATE CONTACTS.
2.05 Clutch Trip Lever, Magnet Armature Bail, and Latch Lever Springs

**CLUTCH TRIP LEVER SPRING**

**REQUIREMENT**
CLUTCH TRIPPED AND ARMATURE HELD AGAINST MAGNET CORE.
MIN. 2 OZS. --- MAX. 3-1/2 OZS.
TO START TRIP LEVER MOVING.

**CLUTCH MAGNET ARMATURE BAIL SPRING**

**REQUIREMENT**
CLUTCH MAGNET TRIPPED AND SHAFT ROTATED MANUALLY UNTIL TRIP FOLLOWER IS ON HIGH OF CAM.
MIN. 2 OZS. --- MAX. 4-1/2 OZS.
TO START ARMATURE EXTENSION LEVER MOVING.

**ARMATURE BAIL SPRING**

**CLUTCH LATCH LEVER SPRING**

**REQUIREMENT**
CLUTCH LATCH LEVER ON LOW OF CLUTCH DISK (BUT NOT LATCHED)
MIN. 2-1/2 OZS. --- MAX. 4-1/2 OZS.
TO START LATCH LEVER MOVING.
2.06 Clutch Latch Contact, Cam and Code Blade Springs, and Auxiliary Contact Gap

NOTE: TO CHECK TENSIONS (A) AND (B), REMOVE ENTIRE ANSWER BACK MECHANISM FROM ITS BRACKET, REMOVE MESSAGE DRUM AND TAKE OFF THE CONTACT BLOCK.

(A) CLUTCH LATCH CONTACT SPRING

REQUIREMENT
MIN. 1/2 OUNCE
MAX. 1-1/2 OUNCES
TO START CLUTCH LATCH CODE BLADE LEVER MOVING WHEN THE LEVER IS RESTING AGAINST CAM SLEEVE.

(C) AUXILIARY CONTACT GAP

1. REQUIREMENT
INSULATOR ON CONTACT SWINGER SHOULD BE FLUSH WITH OUTER EDGE OF CLUTCH MAGNET ARMATURE EXTENSION
TO CHECK – GAGE BY EYE WITH CLUTCH DISENGAGED.
TO ADJUST POSITION CONTACT ASSEMBLY BRACKET WITH TWO MOUNTING SCREWS LOOSESED.

2. REQUIREMENT
GAP BETWEEN SWINGER CONTACT AND LOWER CONTACT SHOULD BE
MIN. 0.012 INCH --- MAX. 0.020 INCH
TO CHECK UNIT IN STOP POSITION (CLUTCH DISENGAGED) AND CLUTCH MAGNET ARMATURE RELEASED (NOT ATTRACTED).
TO ADJUST POSITION CONTACT ASSEMBLY WITH TWO MOUNTING SCREWS LOOSESED.

3. REQUIREMENT
a. GAP BETWEEN SWINGER CONTACT AND UPPER CONTACT SHOULD BE CLOSED UNDER CONDITIONS OF REQUIREMENT 2.

(b) CAM AND CODE BLADE LEVER SPRING

REQUIREMENT
MIN. 1-1/2 OUNCES
MAX. 2-1/2 OUNCES
TO START CAM AND CODE BLADE LEVERS MOVING WHEN THE LEVERS ARE ON HIGH PART OF RESPECTIVE CAMS.

REASSEMBLE ANSWER BACK MECHANISM

b. GAP BETWEEN SWINGER CONTACT AND UPPER CONTACT SHOULD BE
MIN. 0.012 INCH --- MAX. 0.020 INCH
TO CHECK CLUTCH TRIPPED AND ARMATURE HELD ATTRACTION.
TO ADJUST BEND UPPER CONTACT SPRING FOR BOTH a AND b.
2.07 Answer-Back Position, Message Drum End Play, Cam Follower Blade Clearance
and Clutch Latching Contact Gap

(D) CLUTCH LATCHING CONTACT GAP
REQUIREMENT
- GAP BETWEEN CLUTCH LATCHING CONTACTS SHOULD BE
  MIN. 0.025 INCH
  MAX. 0.035 INCH
TO CHECK
- ROTATE MESSAGE DRUM UNTIL CLUTCH LATCH CODE BLADE LEVER IS RESTING ON STOP PROJECTION OF STOP BLADE.
TO ADJUST
- POSITION CONTACT SCREW

(C) MOUNTING SCREWS

(B) MOUNTING SCREWS

(A) ANSVER BACK POSITION
REQUIREMENT
- BACKLASH BETWEEN DRIVEN GEAR AND ITS DRIVER SHOULD BE
  MIN. 0.005 INCH
  MAX. 0.010 INCH
TO ADJUST
- POSITION ANSWER BACK BRACKET WITH 4 MOUNTING SCREWS LOOSENED.

(3) MESSAGE DRUM END PLAY
REQUIREMENT
- END PLAY BETWEEN MESSAGE DRUM AND BRACKET OR DRIVE PLATE SHOULD BE
  MIN. SOME
  MAX. 0.012 INCH
TO ADJUST
- POSITION REAR MESSAGE DRUM BRACKET WITH THE TWO MOUNTING SCREWS LOOSENED. KEEP BRACKET SQUARE WITH DRUM DRIVE PLATE, FEED PAWL MUST CONTACT BACKSTOP SCREW BY MORE THAN HALF PAWL THICKNESS.

ISS 4. SECTION 573-129-700
2.08 Feed Pawl Clearance (Preliminary and Final), Feed Pawl and Detent Lever Springs, and Detent Roller Position

NOTE: REMOVE SHOULDER SCREW AND TAKE OFF ANSWER-BACK DRIVEN GEAR

(E) FEED PAWL CLEARANCE (PRELIMINARY)

REQUIREMENT
CLEARANCE BETWEEN LATCHING SURFACE OF FEED PAWL AND FEED PROJECTION OF CODE BLADE ON MESSAGE DRUM SHOULD BE
MIN. 0.010 INCH
MAX. 0.015 INCH

TO CHECK
DIENGAGE CLUTCH

TO ADJUST
LOOSEN PLATE MOUNTING SCREW AND ECCENTRIC RETAINING NUT TO FRICITION TIGHT.
POSITION ECCENTRIC WITH SCREW DRIVER THROUGH HOLE PROVIDED IN BRACKET. DO NOT TIGHTEN NUT OR SCREW, OR REPLACE DRIVEN GEAR UNTIL REFIXING ADJUSTMENT (I) IS MADE.

(F) FEED PAWL SPRING

REQUIREMENT
MIN. 1 1/2 OUNCES
MAX. 2 1/2 OUNCES

TO START FEED PAWL MOVING WHEN THE CLUTCH IS DIENGAGED AND FEED PAWL IN STOP POSITION.

(G) DETENT ROLLER POSITION

1. REQUIREMENT
ROLLER ON DETENT LEVER SHOULD BE FIRMLY SEATED BETWEEN TWO DETENT PROJECTIONS OF CODE BLADES IN MESSAGE DRUM.

TO CHECK - DIENGAGE CLUTCH

2. REQUIREMENT
CODE BLADE PROJECTIONS (TINES) ON MESSAGE DRUM SHOULD BE CENTRALLY LOCATED WITH RESPECT TO CAM FOLLOWER CODE BLADE (GAGE BY EYE).

TO CHECK
TRIP CLUTCH, ROTATE MAIN SHAFT TO INDEX MESSAGE DRUM FOR NEXT CHARACTER.

TO ADJUST
POSITION DETENT ROLLER ASSEMBLY BY MEANS OF ECCENTRIC SCREW LOOSENED TO FRICITION TIGHTNESS.

(H) DETENT LEVER SPRING

REQUIREMENT
MIN. 4 OUNCES
MAX. 5 OUNCES

TO MAKE DETENT LEVER MOVE WHEN ITS ROLLER IS RESTING BETWEEN TWO DETENT PROJECTIONS ON MESSAGE DRUM AND THE CLUTCH DIENGAGED.

(I) FEED PAWL CLEARANCE (FINAL)
RECHECK PRELIMINARY FEED PAWL CLEARANCE ADJUSTMENT (E) AND REFINE IF REQUIRED.
TIGHTEN NUT AND SCREW AND REPLACE THE DRIVEN GEAR AND SHOULDER SCREW.
2.09 Feed Pawl Backstop and Drive Plate Spring

BACKSTOP SCREW

FEED PAWL BACKSTOP REQUIREMENT
CLEARANCE BETWEEN LATCHING SURFACE OF FEED PAWL AND ADJACENT FEED PROJECTION ON MESSAGE DRUM SHOULD BE
MIN. 0.010 INCH
MAX. 0.015 INCH
TO CHECK TRIP CLUTCH, ROTATE MAIN SHAFT SLOWLY UNTIL FEED PAWL REACHES MAXIMUM REARWARD TRAVEL.
TO ADJUST LOOSEN LOCK NUT AND POSITION BACKSTOP SCREW.

MESSAGES DRUM

(K) DRIVE PLATE SPRING REQUIREMENT
MIN. 13 OZS.
MAX. 16 OZS.
TO MOVE FEED PAWL FROM STOP POSITION (CLUTCH DISENGAGED).

FEED PAWL

3. CODING THE ANSWER-BACK FEATURE OF THE TELETYPewriter TRANSMITTER DISTRIBUTOR BASE.

1. THE MESSAGE DRUM HAS A CAPACITY OF 21 CHARACTERS. THE FIRST CHARACTER TRANSMITTED MUST BE A "LETTERS" COMBINATION; THE REMAINING 20 MAY BE ANY CHARACTER DESIRED. CHARACTERS ARE DETERMINED BY DETACHABLE CODE BLADES SET IN THE MESSAGE DRUM. SINCE PROJECTIONS ON THE CODE BLADES ARE USED TO ROTATE THE DRUM, ALL OF ITS 21 SLOTS MUST BE OCCUPIED BY A BLADE.

2. THE LAST CHARACTER TRANSMITTED IS DETERMINED BY A SPECIAL STOP CODE BLADE. THREE STOP BLADES ARE INCLUDED, SO THAT, EQUALLY SPACED ABOUT THE CODE DRUM IT WOULD RESULT IN 3 UNIFORM MESSAGES OF SIX CHARACTERS EACH, PRECEDED BY A "LETTERS" COMBINATION.

3. CODE A BLADE BY BREAKING OFF THE UNWANTED TINES AT THE SCORED LINE AT THE BASE OF THE TINE. THE FIGURES ON PAGE 12 INDICATES WHICH TINES ARE TO BE REMOVED FOR A PARTICULAR CHARACTER. TO PREVENT DISTORTION OF A CODE BLADE, EACH BLADE SHOULD BE HELD SECURELY NEAR THE SCORE MARK OF THE TINE TO BE REMOVED.
4. PLACE AN "O" RING IN THE GROOVE ON THE RIM OF THE MESSAGE DRUM WHICH IS FURTHEST FROM THE SLOT IN THE CENTER PORTION OF THE DRUM. INSTALL A STOP BLADE IN ANY SLOT POSITION IN THE DRUM BY FIRST INSERTING THE BLADE UNDER THE "O" RING AND THEN ROTATING THE BLADE TOWARD THE CENTER OF THE DRUM UNTIL IT IS FULLY SEATED.


☐ — LEAVE TINE
☐ — REMOVE TINE

6. AFTER FILLING THE DRUM, ENCIRCLE THE BLADES BY PLACING ANOTHER "O" RING IN THE GROOVE ON THE OPPOSITE RIM OF THE DRUM.


NOTE:

1. STOP BLADE HAS SAME PROVISIONS FOR INDIVIDUAL CODING AS STANDARD CODE BLADE.

2. WHEN CODING THE BLADES REMOVE THE "O" POSITION TINE ON ALL STOP AND CODE BLADES.