28 REPERFORATOR-TRANSMITTER UNIT
REQUIREMENTS AND ADJUSTMENTS

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1. GENERAL

1.01 This section contains the requirements and adjustments for the 28 reperforator-transmitter unit. This section, the section covering teletypewriter general requirements and adjustments, and the sections referred to in this section, provide the complete adjusting information for the reperforator-transmitter unit.

1.02 The reperforator-transmitter unit is made up of a single magnet typing or nontyping reperforator, a pivoted-head multi-contact transmitter-distributor, a motor, and drive gears assembled on a casting.

1.03 In this section all references to direction apply to the unit in its normal operating position with the viewer facing the right side of the unit; the reperforator to the right and the transmitter-distributor to the left.

1.04 Where a requirement calls for the clutch to be disengaged, the clutch-shoe lever must be fully latched between its tripler lever and latchlever so that the clutch shoes release their tension on the clutch drum. When engaged, the clutch-shoe lever is unlatched and the clutch shoes are wedged firmly against the clutch drum.

Note: When rotating either the sensing shaft or distributor shaft by hand, the clutch does not fully disengage upon reaching its stop position. In order to relieve the drag on the clutch and permit the shaft to rotate freely, apply pressure on the lug of the clutch disc with a screwdriver to cause it to engage its latchlever, and thus disengage the internal-expansion clutch shoes from the clutch drum.

1.05 When rotating the drive-shaft gear by hand, rotate in a counterclockwise direction as viewed from the exposed side of the drive-shaft gear.

1.06 The figures in this section 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 apparatus were being made. In some cases where an illustration shows
interrelated parts, the sequence that should be followed in checking the requirements and making the adjustments is indicated by the letters (A), (B), (C), etc.

2. REQUIREMENTS AND ADJUSTMENTS

2.01 Typing Reperforator of Unit So Equipped: Refer to the section covering 28 single magnet typing reperforator requirements and adjustments.

2.02 Nontyping Reperforator of Unit So Equipped: Refer to the section covering 28 single magnet nontyping reperforator requirements and adjustments.

2.03 Transmitter-Distributor Unit: Refer to the section covering 28 transmitter-distributor unit requirements and adjustments.

2.04 Motor Unit: Refer to the section covering 28 motor unit requirements and adjustments.

2.05 Variable Features of Unit: Requirements and adjustments for the variable features are as specified in the sections containing the requirements and adjustments for the previously mentioned components of the 28 reperforator-transmitter unit.
2.06 Shift Gear Mechanism

**Shift Gear Key Alignment**
- Requirement: Shift gear assembly should slide freely on its shaft.
- To adjust: Position key bar with mounting screws loosened while sliding gear assembly along shaft.

**Shift Gear Alignment (Transmitting and Receiving Ends)**
- Requirement: Driven shift gear assembly gears should align approximately centered on their respective driving gears on cross shaft assembly.
- To adjust: Position locating plate with mounting screws loosened. Check three shift positions.

**Note**
- Make certain that the two portions of the shift gears on the cross shaft assembly are mounted with no clearance between them. If there is clearance, loosen dual gear mounting screw and eliminate clearance before making above adjustment.
2.07 Fixed Speed, Idler, and Cross Shaft Driven Gear Mechanisms

**Fixed Speed Driven Gear**

**Fixed Speed Gear Alignment (Receiving End)**
Requirement — Fixed Speed Driven Gear should be approximately centered on Fixed Speed Driving Gear.

To adjust — Position Fixed Speed Driven Gear with Hub Mounting Screw loosened.

**Cross Shaft Driven Gear**

**Idler Gear**

**Idler-Cross Shaft Driven Gear Mesh Requirement** — Some backlash max. 0.003 inch between Idler Gear and Cross Shaft Driven Gear throughout one revolution of Idler Gear.

To adjust — Add or remove shims between base and Tape Winder Drive Bracket, keep equal number of shims on each side.
2.08 Idler Gear—Motor Pinion Mesh

Bracket Mounting Screws

Idler Gear

Motor Pinion

Motor

Tape Winder Drive Bracket

Idler Gear—Motor Pinion Mesh
Requirement — Some Backlash
Max. 0.003 inch
Between Idler Gear and
Motor Pinion Throughout One
Revolution of Idler Gear.

To Adjust—Position Tape Winder
Drive Bracket with Mounting
Screws Loosened.
2.09 Vertical Alignment of Pivoted Sensing Head and Punch and Transmitter Driving and Distributor Shaft Driven Gear Mesh

**VERTICAL ALIGNMENT OF PIVOTED SENSING HEAD AND PUNCH**

**REQUIREMENT**

WITH PIVOTED SENSING HEAD AGAINST PUNCH BLOCK, TOP PLATE OF SENSING HEAD SHOULD BE:

- MIN. FLUSH
- MAX. 0.010 INCH BELOW BOTTOM SURFACE OF TAPE SLOT IN PUNCH BLOCK.

**TO ADJUST**

POSITION HEIGHT ADJUSTING SCREW, ON SENSING END OF UNIT, WITH LOCK NUT AND MOUNTING SCREW LOOSENED.

**TRANSMITTER DRIVING AND DISTRIBUTOR SHAFT DRIVEN GEAR MESH**

**REQUIREMENT**

SOME BACKLASH

MAX. 0.003 INCH

BETWEEN DISTRIBUTOR SHAFT DRIVEN GEAR ON TRANSMITTER AND TRANSMITTER DRIVING GEAR ON BASE. CHECK THROUGHOUT ONE COMPLETE REVOLUTION OF LARGER GEAR.

**TO ADJUST**

POSITION TWO HEIGHT ADJUSTING SCREWS, ON DISTRIBUTOR END OF UNIT, WITH LOCK NUTS AND MOUNTING SCREWS LOOSENED. TURN SCREWS EVENLY TO MAINTAIN PARALLELISM BETWEEN UNITS. RECHECK VERTICAL ALIGNMENT OF PIVOTED SENSING HEAD AND PUNCH.
2.10 Horizontal Alignment of Pivoted Sensing Head and Punch and Tape Depressor

**Horizontal Alignment of Pivoted Sensing Head and Punch Requirement**

When one tape lid extension is centered on respective area between punch pin slots, remaining extensions should be fully within their respective areas.

**To Adjust**

Loosen transmitter-distributor and horizontal positioning eccentric mounting screws. Shift unit to meet requirement. Tighten unit mounting screws. Position eccentric against rear plate of transmitter-distributor and tighten its mounting screw.

**Note**

It may be necessary to position the reperforator unit if the requirement cannot be met by the adjustment of the transmitter-distributor. If necessary, position the reperforator in the same manner as the transmitter-distributor.

**Tape Depressor**

1. Requirement:
   - Tip of depressor extension should be centered between #2 and #3 punch pin slots in punch block.
   - To adjust:
     - Position depressor extension with its two adjusting screws loosened.
   - Requirement:
     - Depressor extension should be positioned min. flush max. .000 below top surface of punch block.
   - Requirement:
     - Clearance between tape depressor extension and punch block min. 0.040 inch max. 0.080 inch
   - To adjust:
     - Position by moving tape depressor extension angularly and/or horizontally with lock nut on depressor loosened.

**Note**

If requirement (2) is still not met, rotate bar at top of transmitter-distributor (to which depressor bracket is secured) with four mounting screws of bar assembly loosened. Make sure clearance between punch block and depressor extension (at mounting stud) is maximum possible while still meeting requirement.

**Requirement**

With tape following normal path, and pivoted head approximately 15 characters from punch block, tape edge should not touch depressor.

**To Adjust**

Refine tape depressor adjustment as specified in the section containing the requirements and adjustments for the 2BO transmitter-distributor unit.
2.11 Last Character Contact Switch, Rear Tape Guide Bracket and Roller

(A) REAR TAPE GUIDE BRACKET
REQUIREMENT
WITH REPERFORATOR OPERATING UNDER POWER AND DRAWING TAPE FROM SUPPLY REEL, TAPE SHOULD SQUARELY ENTER CENTER OF TAPE CHUTE (TAPE TWISTED A QUARTER - TURN CLOCKWISE AS IT ENTERS CHUTE).
TO ADJUST POSITION REAR TAPE GUIDE BRACKET WITH ITS MOUNTING SCREWS LOOSENED.

(B) REAR TAPE GUIDE ROLLER
REQUIREMENT
TAPE SHOULD RIDE APPROXIMATELY CENTERED ON TAPE ROLLERS WHEN REPERFORATOR IS OPERATING UNDER POWER AS IN (A).
TO ADJUST LOOSEN ROLLER BRACKET LOCK NUT AND POSITION BRACKET WHILE TAPE IS IN MOTION.
NOTE RECHECK REAR TAPE GUIDE BRACKET ADJUSTMENT.

(C) LAST CHARACTER CONTACT SWITCH
REQUIREMENT
WITH CONTACT SWITCH COVER REMOVED, TAPE INSERTED IN PUNCH UNIT AND PIVOTTED SENSING HEAD, AND PIVOTTED SENSING HEAD POSITIONED ONE CHARACTER AWAY FROM PUNCH BLOCK, THERE SHOULD BE A CLEARANCE BETWEEN TAPE DEFLECTOR EAR AND INSULATOR ON LONG CONTACT SPRING.
MIN. 0.010 INCH
MAX. 0.015 INCH

(TOP VIEW)
MOUNTING SCREWS
TWIST
TAPE CHUTE

PIVOTTED SENSING HEAD
ONE CHARACTER AWAY

LONG CONTACT SPRING

(2) REQUIREMENT
WITH PIVOTTED SENSING HEAD AGAINST PUNCH BLOCK, THERE SHOULD BE A GAP BETWEEN THE CONTACTS.
MIN. 0.005 INCH
TO ADJUST POSITION CONTACT BRACKET WITH MOUNTING SCREWS LOOSENED.

MOUNTING SCREWS
2.12 Oil Shield

OIL SHIELD REQUIREMENT
OIL SHIELD SHOULD BE APPROXIMATELY CENTERED BETWEEN MOTOR SHAFT AND TAPE WINDER DRIVE BELT.
TO ADJUST
POSITION OIL SHIELD WITH ITS MOUNTING SCREWS LOOSENED.
2.13 Code Hole and Sensing Pin Alignment

**CODE HOLE-SENSING PIN ALIGNMENT**

**NOTE**
All preceding adjustments between transmitter-distributor and typing or non-typing reperforator should be completed and requirements met before proceeding with following final adjustments.

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**TO CHECK**
With a loop of LTRS tape (perforated under power by the reperforator) between reperforator and transmitter-distributor, and pivoted sensing head resting against its backstop, manually trip sensing shaft clutch and rotate shaft until sensing pins are in their uppermost position.

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**1. REQUIREMENT**
The sensing pins should be approximately centered laterally on code holes.

**TO ADJUST**
Refine punch feed hole lateral alignment as specified in section containing the requirements and adjustments for the 28 typing reperforator.

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**2. REQUIREMENT**
Sensing pins should be positioned toward rear edge of code hole.

**MIN. 0.008 INCH CLEARANCE BETWEEN PIN AND REAR EDGE. CHECK FIVE PLACES.**

**TO ADJUST**
Check tape quality for compliance with TP156011 tape gauge and, if necessary, refine detent adjustment as specified in the section containing the requirements and adjustments for the 28 typing reperforator.

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**NOTE**
If requirement still is not met, position pivoted sensing head top plate in required direction with its mounting screws loosened. Recheck last character contact switch adjustment.

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**3. REQUIREMENT**
As code holes are opened by sensing pins, there should be some clearance between sides of chad and tape lid extensions. Check ten places.

**TO ADJUST**
Position pivoted sensing head top plate laterally with its mounting screws loosened. Recheck (2).