TELETYPE
PRINTING TELEGRAPH SYSTEMS

ADJUSTMENTS AND LUBRICATION
MODEL 28
MULTI-MAGNET PERFORATOR
LARP, LARB

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# 245b

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1. GENERAL

a. The adjustments of the multi-magnet reperforator are arranged in a sequence that should be followed if a complete readjustment of the unit were undertaken.

b. After an adjustment has been completed, be sure to tighten any nuts or screws that may have been loosened.

c. Tools and spring scales required to perform the adjustments are listed in Teletype Bulletin 1124B but are not supplied as part of the equipment.

d. The adjusting illustrations, in addition to indicating the adjusting tolerances, positions of moving parts, and spring tensions, also show the angle at which the scale should be applied when measuring spring tensions.

e. From time to time the requirements and procedures for the various adjustments may change. For this reason, the text of the adjustment in the latest issue should be read through before proceeding to make any readjustment.

f. If a part that is mounted on shims is removed, the number of shims used at each of its mounting screws should be noted so that the same shim pile-ups can be replaced when the part is remounted.

g. If parts or assemblies are removed to facilitate readjustments and subsequently replaced, recheck any adjustment that may have been affected by the removal of these parts or assemblies.

h. The spring tensions given in this bulletin are indications not exact values and should be checked with proper spring scales in the position indicated. Springs which do not meet the requirement and for which no adjusting procedure is given should be replaced by new springs.

NOTE
When rotating the main shaft of the reperforator by hand, the clutch does not fully DISENGAGE upon reaching its stop positions. In order to relieve the drag on the clutch and permit the main shaft to rotate freely, apply pressure on a lug of the clutch disk with a screw driver to cause it to engage its latch lever and thus DISENGAGE the internal expansion clutch to prevent the clutch shoes from dragging on the clutch drum.

i. 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 operator's position in front of the unit opposite the motor and terminal blocks.

j. When the requirement calls for the 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. When ENGAGED the clutch shoe lever is unlatched and the clutch shoes are wedged firmly against the clutch drum.

k. All contact points should meet squarely. Smaller contact points should fall wholly within the circumference of its mating larger contact. Contacts having the same diameter should not be out of alignment more than 25 per cent of the contact diameter. Avoid sharp kinks or bends in the contact springs.
(B) CODE MAGNET ARMATURE STOP BRACKET (PRELIMINARY)

Requirement

With code magnet de-energized and clutch disengaged, armature held against its stop bracket clearance between armature and upper magnet core

Min. 0.015 inch
Max. 0.030 inch

To adjust position the armature stop bracket by means of its adjusting slot with its mounting screws loosened.

(B) PUNCH SLIDE LATCH SPRING

Requirement

Clutch disengaged and latched

Min. 2 ozs.
Max. 3-1/2 ozs.

To start code armature moving

Note

The armature spring should hold the armature against the magnet yoke. If necessary, remove stop bracket and bend spring.

(C) PUNCH UNIT POSITION

Requirement

Before making subsequent adjustments, position the punch unit as follows:

Upper and lower right mounting screws centrally located in their elongated holes.

To adjust

Loosen the three mounting screws in the back plate of the unit and the bracket screw in the front plate and position the unit.

FIGURE 1. CODE MAGNET
(1) REQUIREMENT
FUNCTION ARMATURE TRIPPED AFTER THE FUNCTION CLUTCH HAS BEEN SET IN DISENGAGED POSITION, PUNCH SLIDE LATCHES TRIPPED, AND WITH THE CODE MAGNET ARMATURE HELD AGAINST THE UPPER MAGNET CORE, CLEARANCE BETWEEN THE PUNCH SLIDE AND ITS RESPECTIVE PUNCH SLIDE LATCH MIN. 0.002 INCH MAX. 0.015 INCH
TO ADJUSTPOSITION THE MOUNTING BRACKET BY MEANS OF THE ADJUSTING SLOT WITH ITS MOUNTING SCREWS LOOSENED.

(2) REQUIREMENT
BOTH ARMATURES OF THE CODE MAGNET ASSEMBLY SHOULD ALIGN WITH RESPECTIVE PAWLS OR ARMATURE ROD AND MEET REQUIREMENT (1) EQUALLY WITHIN 0.002 INCH
TO ADJUSTPOSITION THE MAGNET YOKE WITH ITS MOUNTING SCREWS LOOSENED.

FIGURE 2. CODE MAGNET
CODE MAGNET ARMATURE STOP BRACKET (FINAL)

REQUIREMENT
CODE MAGNETS DE-ENERGIZED AND THE CLUTCH DISENGAGED AND LATCHED, EACH CODE MAGNET ARMATURE HELD AGAINST ITS STOP BRACKET IT SHOULD CLEAR ITS RESPECTIVE PUNCH SLIDE LATCH OR ARMATURE ROD
MIN. 0.002 INCH
MAX. 0.008 INCH

TO ADJUST
POSITION ARMATURE STOP BRACKET WITH ITS MOUNTING SCREWS LOOSENED.

NOTE
AFTER MAKING THIS ADJUSTMENT, RECHECK THE CODE MAGNET ASSEMBLY ADJUSTMENT AND THE CODE MAGNET ARMATURE STOP BRACKET ADJUSTMENT AND REFINE IF NECESSARY.

FIGURE 3. CODE MAGNET
FUNCTION ARMATURE BRACKET

REQUIREMENT

FUNCTION ARMATURE TRIPPED, ARMATURE TO ALIGN WITH CORE. CLEARANCE BETWEEN ARMATURE AND YOKE
MIN. 0.002-INCH
MAX. 0.005-INCH

TO ADJUST
POSITION THE ARMATURE BRACKET WITH ITS MOUNTING SCREW AND SPRING POST LOOSENED.

FUNCTION MAGNET ASSEMBLY

REQUIREMENT

FUNCTION ARMATURE BAIL HELD AGAINST MAGNET CORE. CLEARANCE BETWEEN THE FUNCTION TRIP LEVER AND THE ARMATURE BAIL.
MIN. SOME
MAX. 0.005-INCH

TO ADJUST
POSITION THE MAGNET ASSEMBLY, BY MEANS OF THE ADJUSTING SLOT, WITH ITS MOUNTING SCREWS LOOSENED.

FIGURE 4. FUNCTION TRIP MAGNET
245B

FUNCTION TRIP LEVER SPRING

ARMATURE BAIL

(A) FUNCTION TRIP LEVER SPRING
REQUIREMENT
WITH THE FUNCTION CLUTCH TRIPPED
MIN. 5 1/2 OZS.
MAX. 7 1/2 OZS.
TO START FUNCTION TRIP LEVER MOVING
AWAY FROM ARMATURE BAIL

FUNCTION TRIP LEVER

(B) FUNCTION ARMATURE BAIL SPRING
(1) REQUIREMENT
CLUTCH DISENGAGED
MIN. 28 OZS.
MAX. 36 OZS.
TO PULL SPRING TO POSITION LENGTH

FUNCTION TRIP LEVER

FUNCTION ARMATURE BAIL SPRING

FIGURE 5. FUNCTION TRIP MAGNET

CHANGE 1
RESET LEVER
REQUIREMENT
RESET LEVER RESTING ON FRONT OF CAM SHOE. CLEARANCE BETWEEN MAIN TRIP LEVER AND RELEASE.
MIN. 0.010 INCH
MAX. 0.020 INCH
TO ADJUST
WITH THE RESET LEVER CLAMP SCREW LOOSENED, PLACE RESET LEVER CENTRALLY ON THE CAM SHOE AND POSITION THE RELEASE AND SHAFT. CHECK ON BOTH SHOES AND ADJUST TO THE SHOE THAT PROVIDES THE LESSER CLEARANCE.

FUNCTION CLUTCH TRIPPED, CLEARANCE BETWEEN TRIP LEVER AND CLUTCH SHOE LEVER
MIN. 0.010 INCH -- MAX. 0.030 INCH
AT POINT WHERE CLEARANCE IS LEAST.
TO ADJUST
REMOVE TAPE GUARD. POSITION STOP BRACKET WITH MOUNTING SCREWS FRICTION TIGHT
FUNCTION CLUTCH TRIP LEVER

(1) REQUIREMENT
THE FUNCTION CLUTCH TRIP LEVER SHOULD ENGAGE THE CLUTCH SHOE LEVER BY THE FULL THICKNESS OF THE SHOE LEVER.

(2) REQUIREMENT
THE END PLAY IN THE SHAFT SHOULD BE MIN. SOME MAX. 0.006 INCH

TO ADJUST
WITH THE RELEASE RESTING ON THE MAIN TRIP LEVER, POSITION THE TRIP LEVER ON ITS SHAFT WITH ITS CLAMP SCREW LOOSENED.

NOTE
CHECK AT STOP NEXT TO NOTCH IN ADJUSTING DISK

FIGURE 7. CLUTCH TRIP MECHANISM
CLUTCH LATCH LEVER SPRING

REQUIREMENT

CLUTCH IN STOP POSITION BUT NOT LATCHED.

MIN. 12 OZS.

MAX. 15 OZS.

TO START LATCH LEVER MOVING

CAM DISK

CLUTCH LATCH LEVER

CLUTCH LATCH LEVER SPRING

FIGURE 8. CLUTCH TRIP MECHANISM

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CHANGE 2
THE CLUTCH SHOULD HAVE SOME END PLAY MAX. 0.015 INCH

TO CHECK
DISENGAGE THE CLUTCH AND TAKE UP PLAY FOR MAX.

TO ADJUST
POSITION THE DRUM TO EXTREME FRONT WITH ITS MOUNTING SCREWS LOOSENED. THEN POSITION THE COLLAR.

GAP BETWEEN CLUTCH SHOE LEVER AND ITS STOP LUG SHOULD BE 0.055 INCH TO 0.080 INCH GREATER WHEN CLUTCH IS ENGAGED THAN WHEN THE CLUTCH IS DIS-ENGAGED.

TO CHECK
DISENGAGE THE CLUTCH AND MEASURE THE GAP. TRIP THE CLUTCH AND ROTATE IT ONE REVOLUTION. AGAIN MEASURE THE GAP WITH THE CLUTCH THUS ENGAGED.

NOTE
CHECK AT STOP LUG NEXT TO NOTCH IN ADJUSTING DISK

TO ADJUST
LOOSEN THE TWO CLAMP SCREWS ON THE CLUTCH DISK. ENGAGE A WRENCH OR SCREWDRIVER ON THE LUG ON THE ADJUSTING DISK AND ROTATE THE DISK.

NOTE
AFTER THE ABOVE ADJUSTMENT IS MADE, DISENGAGE THE CLUTCH, REMOVE THE DRUM MOUNTING SCREW AND ROTATE THE DRUM IN ITS NORMAL DIRECTION OF ROTATION TO MAKE CERTAIN THAT IT DOES NOT DRAG ON THE SHOE.

CLEARANCE BETWEEN THE ROLLER AND THE CAM AT THE POINT WHERE THE CLEARANCE IS THE LEAST MIN. SOME MAX. 0.005 INCH

TO ADJUST
POSITION THE LOWER ROLLER WITH ITS MOUNTING SCREW LOOSENED.

FIGURE 9. MAIN SHAFT AND ROCKER BAIL
In order to check the tension of these springs, it is necessary to remove the clutch from the main shaft; therefore they should not be checked unless there is good reason to believe that they do not meet the requirements.

**Requirement**
- Clutch drum removed.
- Spring scale applied to primary shoe at a tangent to the friction surface.
- Min. 3 ozs.
- Max. 5 ozs.

To start the primary shoe moving away from the secondary shoe at the point of contact.

**Requirement**
- Clutch engaged, cam disk held to prevent turning. Spring scale pulled at tangent to clutch.
- Min. 16 ozs.
- Max. 22 ozs.

To move shoe lever in contact with stop lug.

**Figure 10. Clutch Mechanism**
ROCKER BAIL GUIDE

REQUIREMENT
CLEARANCE BETWEEN UPPER ROLLER AND RESET SHOES; BETWEEN LOWER ROLLER SCREW HEAD AND FRONT ROCKER CAM; BETWEEN ROCKER BAIL AND REAR ROCKER CAM.

MIN. SOME
MAX. 0.010 INCH

TO ADJUST
POSITION ROCKER BAIL GUIDE WITH MOUNTING SCREWS LOOSENED

FIGURE 11. ROCKER BAIL GUIDE
FUNCTION TRIP LEVER

REQUIREMENT

FUNCTION ARMATURE TRIPPED AFTER THE FUNCTION CLUTCH HAS BEEN SET IN DISENGAGED POSITION. THE MAIN TRIP LEVER SHOULD CLEAR THE RELEASE MIN. 0.010 INCH MAX. 0.020 INCH

TO ADJUST

HOLD THE FUNCTION TRIP LEVER AGAINST ARMATURE BAIL, POSITION LOWER TRIP LEVER AND ITS SHAFT WITH THE FUNCTION TRIP LEVER CLAMP SCREW LOOSENED.

NOTE

THE RESET LEVER MUST CLEAR FUNCTION CAM PINS WHILE THIS ADJUSTMENT IS BEING MADE

FUNCTION ARMATURE BAIL
FUNCTION TRIP LEVER
RELEASE

MAIN TRIP LEVER

PUNCH SLIDE

PUNCH SLIDE LATCH

MAIN SHAFT

RESET LEVER

SHAFT

CLAMP SCREW

LOWER TRIP LEVER

FIGURE 12. FUNCTION TRIP MECHANISM
RESET LEVER

REQUIREMENT
FUNCTION ARMATURE TRIPPED. SHAFT ROTATED UNTIL RESET LEVER IS AT END POINT OF CAM SHOE. CLEARANCE BETWEEN ARMATURE BAIL AND FUNCTION TRIP LEVER.

MIN. 0.005 INCH
MAX. 0.015 INCH

TO ADJUST
WITH RESET LEVER CLAMP SCREW LOOSENED, PLACE THE RESET LEVER CENTRALLY ON A CAM SHOE. HOLD THE RESET LEVER AGAINST THE CAM SHOE AND POSITION THE FUNCTION TRIP LEVER AND SHAFT. CHECK ON BOTH SHOES AND ADJUST TO THE SHOE THAT PROVIDES THE LESSER CLEARANCE.

NOTE
RECHECK THE FUNCTION TRIP LEVER ADJUSTMENT AND REFINE BOTH ADJUSTMENTS IF NECESSARY

FIGURE 13. FUNCTION TRIP MECHANISM
(A) MAIN TRIP LEVER SPRING

Requirement

Function Clutch tripped

MIN. 1-1/2 OZS.
MAX. 3 OZS.

To start main trip lever moving.

(B) RELEASE SPRING

Requirement

Function Clutch tripped

MIN. 3 1/2 OZS.
MAX. 5 1/2 OZS.

To start the release moving.

FIGURE 14. RESET MECHANISM
(A) MAGNET RELEASE CONTACT GAP

(1) REQUIREMENT
CLUTCH DISENGAGED AND LATCHED THERE SHOULD BE NO GAP BETWEEN THE CONTACTS

(2) REQUIREMENT
CONTACT BAIL ROLLER ON THE HIGH PART OF ITS CAM THE CONTACT GAP SHOULD BE MIN. 0.020 INCH MAX. 0.040 INCH
TO ADJUST BEND THE SHORT CONTACT SPRING WITH ITS STIFFENER AND ALSO THE LONG CONTACT SPRING IF NECESSARY.

(C) MAGNET RELEASE CONTACT SPRINGS

(1) REQUIREMENT
CONTACT BAIL ROLLER ON HIGH PART OF CAM SPRING SCALE HOOKED TO SHORT SPRING AT CONTACT POINT
MIN. 1 1/2 OZS.
MAX. 2 1/2 OZS.
TO MOVE SHORT CONTACT SPRING AWAY FROM ITS STIFFENER

(2) REQUIREMENT
CLUTCH DISENGAGED AND LATCHED, SPRING SCALE HOOKED AT CONTACT POINT OF LONG CONTACT,
MIN. 1 1/2 OZS.
MAX. 2 1/2 OZS.
TO OPEN CONTACTS TO ADJUST BEND CONTACT SPRINGS. RECHECK CONTACT GAPS.

(B) MAGNET RELEASE CONTACT BAIL
REQUIREMENT
WITH CLUTCH DISENGAGED AND LATCHED CLEARANCE BETWEEN END OF BAIL AND INSULATOR ON LONG SPRING
MIN. 0.005
MAX. 0.010
TO ADJUST ROTATE ADJUSTING SCREW WITH LOCK NUT LOOSENED.

FIGURE 15. MAGNET RELEASE CONTACT

CHANGE 1
NOTE
BEFORE PROCEEDING WITH THE PUNCH UNIT ADJUSTMENTS, CHECK THE ROCKER BAIL ROLLER ADJUSTMENT

PUNCH ROCK ARM POSITION
REQUIREMENT
WITH BLANK CODE COMBINATION SELECTED AND THE UPPER ROCKER BAIL ROLLER ON THE HIGH PART OF ITS CAM, PUNCH SLIDE GUIDE REMOVED, DOWNSTOP STUDS LOOSENED, GAUGE NO. 159926 APPLIED TO THE PUNCH UNIT, CLEARANCE BETWEEN THE GAUGE AND THE FEED PAWL STUD
MIN. 0.002 INCH
MAX. 0.005 INCH
WHEN PLAY IN DRIVE LINK IS TAKEN UP FOR MINIMUM CLEARANCE.

TO ADJUST POSITION THE TOGGLE BAIL SHAFT AND, BEFORE TIGHTENING THE CLAMPING SCREW, POSITION THE ROCKER ARM HORIZONTALLY TO PROVIDE AT LEAST 0.002 END PLAY OF THE SHAFT. PLACE DOWNSTOP PLATE IN LOWERMOST POSITION AND TIGHTEN THE DOWNSTOP STUD. REPLACE THE PUNCH SLIDE GUIDE SO THAT EACH SLIDE IS IN ALIGNMENT WITH ITS RESPECTIVE PUNCH PIN.

FIGURE 15. PUNCH MECHANISM
(B) PUNCH SLIDE DOWNSTOP POSITION
REQUIREMENT
FUNCTION CLUTCH DISSENGAGED. UP AND
DOWN PLAY AT LEFT END OF PUNCH SLIDES
TAKEN UP TOWARD TOP, CLEARANCE BE-
TWEEN PUNCH SLIDES AND THEIR DOWNSTOP
PLATE
MIN. SOME
MAX. 0.010 INCH

TO ADJUST
REMOVE PUNCH SLIDE STUDS AND LOOSEN DOWN-
STOP PLATE MOUNTING STUDS AND POSITION
THE DOWNSTOP PLATE TIGHTEN STUDS AND
REPLACE GUIDE.

(C) PUNCH SLIDE GUIDE POSITION
REQUIREMENT
LETTERS SELECTED, FUNCTION CLUTCH ENGAG-
ED AND ROTATED UNTIL THE PUNCH SLIDES
JUST TOUCH THE PUNCH PINS. THE PUNCH
SLIDES SHOULD ALIGN CENTRALLY WITH THEIR
RESPECTIVE PUNCH PINS (GAUGED BY EYE).
TO ADJUST
POSITION THE PUNCH SLIDE GUIDE WITH ITS
MOUNTING NUTS LOOSENED.

FIGURE 17. PUNCH MECHANISM

CHANGE 1
(1) REQUIREMENT
LETTERS COMBINATION SELECTED, FUNCTION CLUTCH TRIPPED, PUNCH SLIDES AGAINST THEIR DOWNSTOP, RESET LEVER AT HIGHEST POINT OF ITS TRAVEL. CLEARANCE BETWEEN LOWER EDGE OF SLIDE AND UPPER EDGE OF RESET BAIL MIN. SOME MAX. 0.007 INCH WHEN PLAY IS TAKEN UP FOR MINIMUM

(2) REQUIREMENT
CLUTCH DISENGAGED AND LATCHED. PUNCH SLIDE RESET BAIL SHOULD FULLY ENGAGE THE NOTCHES IN THE PUNCH SLIDES.

TO ADJUST POSITION RESET BAIL TRIP LEVER BY MEANS OF ITS ADJUSTING SLOT, WITH ITS CLAMP SCREW LOOSENED.

FIGURE 18. PUNCH SLIDE TRIP MECHANISM
(1) REQUIREMENT
FUNCTION CLUTCH DISENGAGED AND LATCHED, CLEARANCE BETWEEN PUNCH SLIDE LATCH AND A PUNCH SLIDE
MIN. 0.015 INCH
MAX. 0.025 INCH

(2) PUNCH SLIDES SELECTED AND RESET BAIL IN ITS EXTREME LEFT HAND POSITION, CLEARANCE BETWEEN THE RESET BAIL AND ITS NOTCH ON THE PUNCH SLIDES
MIN. 0.020 INCH

TO ADJUST
ROTATE THE RESET BAIL ECCENTRIC SHAFT WITH ITS LOCK NUT LOOSENED. KEEP THE INDENTATION IN THE ECCENTRIC SHAFT HIGH AND TO THE LEFT OF A VERTICAL CENTERLINE THROUGH THE SHAFT.

FEED PAWL
REQUIREMENT
FUNCTION CLUTCH DISENGAGED, INDENTATION IN DETENT LEVER ECCENTRIC AT RIGHT ANGLE TO LEVER, DETENT ROLLER IN CONTACT WITH RATCHET WHEEL, HIGH PART OF FEED PAWL ECCENTRIC TO THE RIGHT OF ITS LOCK SCREW, THE FEED PAWL SHOULD ENGAGE THE FIRST TOOTH BELOW A HORIZONTAL CENTERLINE THROUGH THE RATCHET WHEEL WITH NO PERCEPTIBLE CLEARANCE.

TO ADJUST
ROTATE THE FEED PAWL ECCENTRIC

NOTE
THIS ADJUSTMENT IS RELATED TO FEED HOLE SPACING AND THE TWO ADJUSTMENTS MUST BE MADE AT THE SAME TIME.

FIGURE 19. PUNCH UNIT RESET AND FEEDING MECHANISM
FEED HOLE SPACING (PRELIMINARY)

REQUIREMENT
WITH INDENT OF DIE WHEEL ECCENTRIC STUD POINTING DOWNWARD, CLEARANCE BETWEEN DIE WHEEL AND FEED WHEEL:

- MIN. 0.002 INCH

TO ADJUST
POSITION DIE WHEEL ECCENTRIC STUD WITH LOCK NUT LOOSENED.

NOTE:
BEFORE PROCEEDING WITH THE FOLLOWING ADJUSTMENTS, CHECK BOTH TAPE GUIDE SPRING TENSIONS (FIGURE 23).

FEED HOLE SPACING (FINAL)
(1) REQUIREMENT
WITH TAPE REMOVED, MIN. OF 0.002 INCH CLEARANCE BETWEEN FEED WHEEL AND DIE WHEEL.

(2) TO CHECK
PERFORATE IN ORDER SIX SEQUENCES MADE UP OF NINE BLANK CODE COMBINATIONS FOLLOWED BY A LETTERS COMBINATION. OPEN CHADs SO THAT CODE HOLES ARE VISIBLE. PLACE TAPE OVER SMOOTH SIDE OF 156011 TAPE GAUGE SO THAT FIRST NO. 2 CODE HOLE IS CONCENTRIC WITH FIRST (0.072 INCH) HOLE IN GAUGE (SEE NOTE BELOW).

REQUIREMENT
SECOND THROUGH FIFTH HOLE IN GAUGE VISIBLE THROUGH NO. 2 CODE HOLES IN TAPE. CIRCULAR PORTION OF SIXTH NO. 2 CODE HOLE ENTIRELY WITHIN CORRESPONDING (0.086 INCH) HOLE IN GAUGE.

(3) REQUIREMENT
WITH TAPE SHOE HELD AWAY FROM FEED WHEEL, FEED PAWL AND DETENT DISENGAGED AND TAPE REMOVED, FEED WHEEL SHOULD ROTATE FREELY.

TO ADJUST
(1) WITH TAPE REMOVED, KEEPING INDENT BELOW CENTER OF STUD, POSITION DIE WHEEL ECCENTRIC STUD WITH LOCK NUT LOOSENED SO THAT CLEARANCE BETWEEN FEED WHEEL AND DIE WHEEL IS

- MIN. 0.002 INCH

(2) REFINE THE ABOVE ADJUSTMENT TO MEET REQUIREMENT (2). MOVE INDENT IN ECCENTRIC STUD TOWARD FEED WHEEL TO DECREASE AND AWAY FROM FEED WHEEL TO INCREASE FEED HOLE SPACING. CAUTION: WITH TAPE REMOVED, MAKE SURE FEED WHEEL-DIE WHEEL CLEARANCE IS A MIN. OF 0.002 INCH.

(3) FAILURE TO MEET REQUIREMENT (3) INDICATES DIE WHEEL ECCENTRIC STUD HAS BEEN OVER ADJUSTED. REFINE.

NOTE:
FIRST THROUGH FIFTH HOLES IN GAUGE ARE SAME SIZE AS CODE HOLES IN TAPE (0.072 INCH DIAMETER), BUT SIXTH HOLE IN GAUGE IS LARGER (0.086 INCH). THIS ARRANGEMENT ALLOWS 0.007 INCH VARIATION IN 5 INCHES.

FIGURE 20. TAPE FEED MECHANISM
DETENT
REQUIREMENT
A PIECE OF TAPE CONTAINING NINE FEED HOLES FOLLOWED BY A LETTERS COMBINATION PERFORATED ON THE REPERFORATOR MUST CONFORM TO THE 156011 TAPE GAUGE. THE LATERAL CENTERLINE THROUGH THE CODE HOLES IN THE TAPE SHOULD COINCIDE WITH A LATERAL CENTERLINE THROUGH THE HOLES IN THE GAUGE.

TO ADJUST
ROTATE THE DETENT ECCENTRIC CLOCKWISE TO MOVE THE FEED HOLES TOWARD THE HINGED EDGE OF THE CODE HOLES AND COUNTERCLOCKWISE TO MOVE THE FEED HOLES TOWARD THE TRAILING EDGE OF THE CODE HOLES. TIGHTEN THE ECCENTRIC LOCK NUT AND REFINISH THE FEED PAWL ADJUSTMENT.

RECHECK FEED PAWL ADJUSTMENT

FIGURE 21. PUNCH DETENT
FEED HOLE LATERAL ALIGNMENT

REQUIREMENT

WHEN A PIECE OF TAPE CONTAINING NINE FEED HOLES FOLLOWED BY A LETTERS COMBINATION ARE PERFORATED BY THE REPERFORATOR AND CHECKED BY THE TAPE GAUGE THE CODE HOLES IN THE TAPE SHOULD BE CONCENTRIC WITH THE HOLES IN THE GAUGE

TO ADJUST

TURN THE FEED WHEEL ADJUSTING SCREW IN OR OUT WITH ITS LOCK NUT LOOSENED.

REFINE DETENT ADJUSTMENT IF NECESSARY.

FIGURE 22. TAPE FEED MECHANISM

CHANGE 1
(A) PUNCH SLIDE SPRING

REQUIREMENT
LETTERS COMBINATION SET UP AND PUNCH SLIDES IN SELECTED POSITION UNDER THE PUNCH PINS.
MIN. 2-1/4 OZS.
MAX. 3-1/4 OZS.
TO START EACH SLIDE MOVING

(B) PUNCH PIN RETRACTOR SPRING

(1) REQUIREMENT (COMPRESSION SPRING ONLY)
CLUTCH DISENGAGED AND LATCHED,
PUNCH RETRACTOR BAIL SPRINGS UNHOOKED AT LOWER END. SCALE APPLIED FIRST TO NO. 1 PUNCH PIN AND NEXT TO NO. 5 PUNCH PIN
MIN. 15 OZS.
MAX. 32 OZS.
TO LIFT THE RETRACTOR BAIL AWAY FROM THE LOWER GUIDE OF THE PUNCH BLOCK.

(2) REQUIREMENT (COMBINED COMPRESSION AND RETRACTOR BAIL SPRING) CLUTCH DISENGAGED AND LATCHED, RETRACTOR BAIL SPRINGS HOOKED, SCALE APPLIED TO NO. 3 PUNCH PIN TO START THE RETRACTOR BAIL MOVING.
MIN. 4 LBS.
MAX. 5 LBS.

FIGURE 23. PUNCH MECHANISM
(A) Tape Guide Spring (Tape Chute)

Requirement
Clutch disengaged and tape threaded through the punch assembly. It should require
Min. 1/2 oz.
Max. 1 oz.

To just move the spring away from the tape
To adjust
Bend the spring

(B) Tape Guide Spring (Punch Block)

(1) Requirement
With the tape removed from the punch block, the tape guide spring should rest against the clearance slot in the block in a symmetrical manner.

(2) Requirement
With tape in the punch block and the reporerator operating under power, the spring should not distort the edge of the tape
To adjust
Bend the spring and position it with its mounting screw loosened

Figure 24. Punch Mechanism
(A) FEED PAWL SPRING

REQUIREMENT
FUNCTION CLUTCH DISENGAGED AND LATCHED. DETENT SPRING UNHOOKED FROM TOGGLE BAIL

MIN. 3 OZS.
MAX. 4-1/2 OZS.

TO START THE DETENT LEVER MOVING

DETENT LEVER MOVING

DETENT SPRING

TOGGLE BAIL

(B) DETENT LEVER SPRING

REQUIREMENT
FUNCTION CLUTCH DISENGAGED AND LATCHED. FEED PAWL SPRING UNHOOKED.

MIN. 7 OZS.
MAX. 10 OZS.

TO START THE DETENT LEVER MOVING.

DETENT LEVER SPRING

FIGURE 25. TAPE FEED MECHANISM

CHANGE 2
TAPE SHOE TORSION SPRING

REQUIREMENT

MIN. 15 OZS.
MAX. 18 OZS.

TO MOVE TAPE SHOE FROM FEED WHEEL

FIGURE 26. FEED WHEEL
E. VERIFYING READER

NOTE
ALL ADJUSTMENTS SHOULD BE MADE WITH THE
LEFT COVER PLATE REMOVED

(A) TAPE LID

REQUIREMENT
WITH THE TAPE LID HELD DEPRESSED AGAINST
THE TOP PLATE, THE LID SHOULD
TOUCH THE GUIDE AT BOTH BEARING POINTS

TO ADJUST
LOosen TWO SCREWS WHICH SECURE THE
TAPE LID TO THE HINGED BRACKET. HOLD
THE TAPE LID DEPRESSED AND TIGHTEN THE
SCREWS.

(B) TAPE LID CLEARANCE

REQUIREMENT
WITH TAPE LID HELD CLOSED, THE LATCH
SHOULD MOVE FREELY OVER THE LATCHING
SURFACE WITH
MINIMUM CLEARANCE

TO ADJUST
POSITION THE TAPE LID LATCH WITH ITS
MOUNTING SCREW LOOSENEd.

NOTE
IT MAY BE NECESSARY TO OPERATE
THE MECHANISM TO GAIN ACCESS
TO THE SCREW.

Figure 27. Verifying Reader Tape Lid

Change 1
(A) VERIFYING CONTACT LEVER (PRELIMINARY)

(1) REQUIREMENT
All verifying contact levers should be positioned perpendicular to the contact block
to adjust rotate the contact screws.

(2) REQUIREMENT
Clutch latched in stop position clearance between contact lever and contact screw approximately 0.065 inch
to adjust rotate the contact screws with 104457 wrench.

(B) SENSING SLIDE ALIGNMENT

REQUIREMENT
The sensing slides should pass approximately through the center of the code holes in a perforated tape.
to adjust insert a piece of tape, perforated with letters code combination, in the tape guide. Position the tape guide with its mounting screws loosened.

NOTE
If the tape lid and/or the tape lid shaft interfere with the punch die plate, loosen the three screws which attach the verifier to the punch assembly and provide clearance.

FIGURE 28. VERIFYING CONTACTS
SENSING SLIDE REQUIREMENT
WITH THE PUNCH DRIVE LINK IN ITS EXTREME RIGHHAND POSITION AND THE CLUTCH DISENGAGED AND LATCHED, THE TOP OF THE HIGHEST PIN SHOULD BE FLUSH TO 0.005 BELOW THE TAPE GUIDE.

TO ADJUST
ROTATE THE SENSING SLIDE ECCENTRIC GUIDE POST WITH ITS LOCK NUT LOOSENED, KEEPING THE HIGH PART OF THE ECCENTRIC TOWARD THE LEFT.

SENSING SLIDE STROKE REQUIREMENT
WITH THE PUNCH DRIVE LINK IN ITS EXTREME LEFT POSITION, THE HIGHEST SENSING SLIDES SHOULD EXTEND ABOVE TOP OF GUIDE
MIN. 0.060 — MAX. 0.070 INCH

TO ADJUST
POSITION THE TOGGLE SHAFT IN THE VERIFIER DRIVE ARM WITH THE CLAMP SCREW LOOSENED.
With the tape lid latched, the sensing slides should be on the approximate centerline of the slots in the tape lid plate.

To adjust position the tape lid plate with its mounting screws loosened.

When sensing slides are in their uppermost position, the clearance between end of universal contact lever and its slide min. some max. 0.010 inch.

To adjust position contact block with its mounting screws loosened.

The verifier contact levers should move freely within their guide plate.

To adjust position the guide plate with its mounting screws loosened.
CONTACT GAP (FINAL)

REQUIREMENT
THE UNIVERSAL CONTACTS SHOULD CLOSE AFTER READING CONTACTS HAVE CLOSED AND SHOULD OPEN BEFORE THE CODE READING CONTACTS OPEN.

TO CHECK
USE A 100 WPM TYPE DISTORSION TEST SET WITH A 200 WPM TYPE SCALE. VIEW THE SHORTER SIGNALS FOR EACH CONTACT. THE UNIVERSAL CONTACT CLOSURE SHOULD BE 120 - 20 UNITS ON THE 7.42 CODE ARRANGEMENT. THE CODE READING CONTACTS SHOULD BE 135 - 15 UNITS.

TO ADJUST
TURN THE RESPECTIVE CONTACT SCREW

NOTE
THE VERIFYING READER SHOULD ACTUALLY BE READING THE LETTERS CODE COMBINATION TAPE TO ADJUST CONTACT GAP PROPERLY.

FIGURE 31. VERIFYING CONTACTS AND SENSING SLIDES

CHANGE 1
(A) ARMATURE BRACKET

REQUIREMENT

THE ARMATURE SHOULD ALIGN WITH THE MAGNET YOKE. IT SHOULD ALSO BE PARALLEL TO THE MAGNET CORE.

TO CHECK

HAVE THE CLUTCH DISENGAGED. TRIP THE CLUTCH, DEPRESS THE TAPE FEED-OUT MAGNET ARMATURE BAIL.

TO ADJUST

POSITION THE ARMATURE BRACKET WITH ITS MOUNTING SCREW AND SPRING POST LOOSENED.

(B) TAPE FEED-OUT ARMATURE BAIL SPRING

REQUIREMENT

TAPE FEED-OUT MAGNET DE-ENERGIZED, ARMATURE BAIL SPRING UNHOOKED AT BAIL

MIN. 22 OZS,
MAX. 26 OZS.

TO PULL SPRING TO POSITION LENGTH

FIGURE 32. TAPE FEED-OUT MAGNET

1-32

CHANGE 1
TAPE FEED-OUT MAGNET ASSEMBLY

REQUIREMENT
ARMATURE BAIL IN ENERGIZED POSITION. THE CHECK PAWL AND FEED PAWL EACH IN DEEP NOTCH OF THEIR RESPECTIVE RATCHET WHEEL. THE ARMATURE BAIL SHOULD CLEAR EACH PAWL
MIN. 0.010 INCH
MAX. 0.020 INCH
THROUGHOUT A COMPLETE REVOLUTION OF THE MAIN SHAFT.

TO CHECK
HAVE THE CLUTCH DISENGAGED. TRIP THE CLUTCH. DEPRESS THE ARMATURE BAIL AND HOLD IT WHILE ROTATING THE MAIN SHAFT A COMPLETE REVOLUTION

TO ADJUST
POSITION THE MAGNET ASSEMBLY, BY MEANS OF ITS ADJUSTING SLOT, WITH THE UPPER AND LOWER YOKE MOUNTING SCREWS LOOSENED. SEE FIGURE 32.

ARMATURE UPSTOP

REQUIREMENT
WITH THE ARMATURE BAIL RELEASED, BOTH THE FEED PAWL AND CHECK PAWL SHOULD CLEAR THE RATCHET WHEEL TEETH
MIN. 0.002 INCH
MAX. 0.007 INCH

TO ADJUST
POSITION THE ARMATURE UPSTOP BY MEANS OF ITS ADJUSTING SLOT WITH ITS MOUNTING SCREWS LOOSENED. SEE FIGURE 32.

TAPE FEED-OUT

ADJUSTING PLATE

(b)

TAPE FEED-OUT LENGTH

REQUIREMENT
THE ADJUSTING PLATE ON THE RATCHET WHEELS SHOULD BE POSITIONED TO PERMIT THE DESIRED LENGTH OF TAPE TO BE FED OUT.

TO ADJUST
POSITION THE ADJUSTING PLATE WITH ITS LOCK NUT LOOSENED.

FIGURE 33. TAPE FEED-OUT MECHANISM

CHANGE 2
(A) TAPE FEED-OUT PAWL SPRINGS

REQUIREMENT
TAPE FEED-OUT MAGNET DE-ENERGIZED AND
FEED PAWL ADVANCED. SPRINGS UNHOOKED
FROM THEIR BRACKET.

<table>
<thead>
<tr>
<th>FEED PAWL</th>
<th>CHECK PAWL</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIN. 1 1/2 OZS.</td>
<td>2 OZS.</td>
</tr>
<tr>
<td>MAX. 2 1/2 OZS.</td>
<td>3 OZS.</td>
</tr>
</tbody>
</table>

TO PULL SPRINGS TO POSITION LENGTH.

(B) RATCHET WHEEL SPRING

REQUIREMENT
TAPE FEED-OUT MAGNET DE-ENERGIZED,
FEED WHEEL SPRING UNHOOKED
MIN. 1 OZS.
MAX. 2 OZS.
TO PULL SPRING TO POSITION LENGTH

(C) SWITCH LEVER SPRING

REQUIREMENT
TAPE FEED-OUT MAGNET DE-ENERGIZED,
SPRING SCALE HOOKED TO LEVER AT SPRING HOLE.
MIN. 4 OZS.
MAX. 6 OZS.
TO MOVE SWITCH LEVER AWAY FROM SWITCH.

NOTE
WHEN SWITCH LEVER IS HELD AWAY, IT
SHOULD REQUIRE 2 TO 4 OZS. TO PUSH
SWITCH PLUNGER IN.

Figure 34. TAPE FEED-OUT MECHANISM

Change 1
(A) TAPE-OUT LEVER
REQUIREMENT
TAPE-OUT LEVER SHOULD BE ABLE TO PUSH BOTH SWITCH LEVERS AWAY FROM SWITCH ACTUATORS BUT SHOULD NOT BE ABLE TO LIFT WOOD FILLER WITH DEPLETED TAPE ROLL OUT OF SLOTS IN TAPE CONTAINER.

TO ADJUST IF REQUIREMENT IS NOT MET, CHECK TAPE OUT LEVER AND SWITCH LEVER SPRING TENSIONS (BELOW).

(B) TAPE-OUT LEVER SPRING
REQUIREMENT
MIN. 6 OZS. ---- MAX. 8 OZS.
TO PULL SPRING TO LENGTH OF 1 17/32 INCHES.

(C) SWITCH LEVER SPRINGS (2)
REQUIREMENT
MIN. 1 3/4 OZS. ---- MAX. 2 1/4 OZS.
TO PULL SPRING TO LENGTH OF 1 5/16 INCHES.

FIGURE 35. TAPE-OUT MECHANISM
NOTE:

THE INNER ELEMENTS ARE THESE NEARER THE MOUNTING PLATE; THE OUTER ELEMENTS, THOSE FARTHER FROM THE MOUNTING PLATE.

SWITCH LEVER REQUIREMENT
(1) OUTER SWITCH SHOULD OPERATE BEFORE INNER SWITCH.
(2) BOTH SWITCHES SHOULD OPERATE WITHIN LIMITS OF MOTION OF TAPE-OUT LEVER AND WHEN DIAMETER OF TAPE ROLL IS:

MIN. 2-5/16 INCHES ---- MAX. 2-7/16 INCHES

TC WHEN USING A 2-INCH DIAMETER CORE OR MIN. 1-5/16 INCHES -- MAX. 1-7/16 INCHES

WHEN USING A 1-INCH DIAMETER CORE.

TO ADJUST
BEND OUTER SWITCH LEVER TOWARD SWITCH ASSEMBLY.

NOTE:
ADJUSTMENT CAN BE FACILITATED BY REMOVING SWITCH MECHANISM FROM TAPE CONTAINER.

SWITCH MECHANISM MOUNTING PLATE REQUIREMENT
OUTER SWITCH SHOULD JUST OPERATE WHEN DIAMETER OF TAPE ROLL IS REDUCED TO APPROXIMATELY 2-3/8 INCHES.

WHEN USING A 2-INCH DIAMETER CORE OR APPROXIMATELY 1-3/8 INCHES WHEN USING A 1-INCH DIAMETER CORE.

TO ADJUST
BEND OUTER SWITCH TOWARD SWITCH ASSEMBLY

NOTE:
ADJUSTMENT CAN BE FACILITATED BY REMOVING SWITCH MECHANISM FROM TAPE CONTAINER.

FIGURE 36. TAPE-OUT MECHANISM
TAPE CONTAINER POSITION

(1) REQUIREMENT
There should be adequate clearance between the tape feed-out mounting bracket and the wire tape guide mounting screw.
To adjust position the tape container with its mounting screws loosened.

(2) REQUIREMENT
There should be adequate clearance between the tape container and the function magnet armature spring.
To adjust position the perforator casting with its mounting screws loosened.

(3) REQUIREMENT
The tape should be aligned with the tape chute
To adjust bend the wire tape guide.

MOTOR DRIVE GEAR
MAIN SHAFT DRIVEN GEAR
LOCK NUT
ADJUSTING STUD

MOTOR GEAR
REQUIREMENT
There should be a barely perceptible amount of backlash between the motor drive gear and the main shaft driven gear at the point where backlash is the least
To adjust rotate the adjusting stud with its lock nut loosened

CAUTION
If the motor should become blocked for several seconds, the thermal cut-out switch will break the circuit. Should this happen, allow the motor to cool at least 5 minutes before manually depressing the red button. Avoid repeated depression.

FIGURE 37. MOTOR

CHANGE 2
1. GENERAL

a. For illustrations of parts referred to herein, see Teletype Multi-Magnet Reperforator Parts Bulletin 1166B.

NOTE

When removing a part which is mounted on shims, the number of shims used at each mounting screw should be noted so that the same shim pile-ups can be replaced when the part is re-mounted. Retaining rings (tru-arc) are of spring steel and have a tendency to release suddenly. Loss of these can be minimized as follows: Hold retaining ring with the left hand to prevent rotation. Place the blade of a suitable screwdriver in one of the slots of the retaining ring. Rotate the screwdriver in a direction to increase the diameter of the retaining ring. It will come off easily without flying.

b. Reperforator

(1) To remove the reperforator from the base, proceed as follows:

(a) Remove the two cable clamps that retain the reperforator cable on the base.

(b) Disconnect the reperforator cable from the three terminal blocks on the base.

(c) Remove the 151631 screw, 2191 lock washer and 7002 washers that anchor the reperforator to the base plate.

(d) Remove the three 156887 screws, 2669 lock washers and 3438 flat washers (Figure 3) from the base and remove the reperforator.

(e) To replace the reperforator, reverse the procedure followed in removing it. Route and connect the cables to the terminal blocks on the base as shown on Wiring Diagram 3258WD.

(2) Verifying Reader

(a) Remove the two cable clamps from the reader cable.

(b) Disconnect the reader cable leads from the middle terminal block at the rear of the base.

(c) Remove the 151722 screw and 2191 lock washer that secure the lower mounting extension of the rear plate of the reader to the rear plate of the perforator unit (Figure 4).

(d) Remove the two lower 152893 screws and 3640 lock washers from the front and rear plates supporting the punch block (Figure 4). Replace the screws and lock washers after detaching the reader.

(e) Disengage the 159039 toggle shaft arm from the drive link slot and remove the reader.

(f) To replace the reader, reverse the procedure followed in removing it. Connect the cable to the middle terminal block as shown on Wiring Diagram 3258WD.

(3) Tape Feed-Out Assembly

(a) Remove the cable clamp that retains the cable on the base.

(b) Disconnect the cable leads from the lower terminal block at the rear of the base.

(c) Remove the two 151630 screws and 2191 lock washers which mount the feed-out assembly to the main frame (Figure 15).

(d) To replace the assembly, reverse the procedure followed in removing it.

(4) Perforator Unit

(a) Unhook the 74701 rocker arm spring (Figure 11).

(b) Remove the 151630 screw, 2191 lock washer and 7002 washer that anchor the perforator unit to the base plate (Figure 3).

(c) Remove the two 151630 screws and 2191 lock washers; the 151632 screw, 2191 lock washer and 7002 flat washer that secure the unit to the main plate (Figure 4).

(d) Disengage the rocker arm from its slot in the drive link and remove the unit.

(e) To replace the unit, reverse the procedure followed in removing it. Make certain that the 156-059 slide bar reset bail (Figure 6) engages the 159430 trip lever (Figure 13).
(5) Magnet Release Contact Assembly
   (a) Unhook, at the upper end, the 110437 springs (Figure 14) attached to the tape feed-out pawl and the check pawl (Figure 12).
   (b) Unsolder the wires of the cable at the contact terminals.
   (c) Remove the cable clamp holding the cable to the frame.
   (d) Remove the two 131631 screws and 2191 lock washers that secure the contact assembly (Figure 14) and remove the contact assembly.
   (e) To replace the contact assembly, reverse the procedure followed in removing it.

(6) Function Magnet Assembly
   (a) Unsolder the wires from the function magnet (Figure 16).
   (b) Remove the 82725 function trip lever spring and the 74962 armature spring.
   (c) Remove the two 151632 screws and 2191 lock washers (Figure 16) which secure the magnet assembly and remove it.
   (d) To replace the assembly, reverse the procedure followed in removing it.

(7) Code Selector Mechanism
   (a) Disconnect the code magnet cable from the upper terminal block on the base.
   (b) Remove the cable clamp holding the cable to the base.
   (c) Remove the two 3598 nuts, 151632 screws and 2191 lock washers that secure the code selector mechanism plate to the main plate (Figure 10) and remove the mechanism.
   (d) To replace the mechanism, reverse the procedure followed in removing it. Make certain that the 112631 spring is hooked to the 156472 spring post and that the rods associated with the code magnet armatures are in position.

(8) Rocker Bail Assembly
   (a) Unhook the 74701 spring from the drive link (Figure 11).
   (b) Remove the retaining ring from the 156366 rocker bail shaft at the rear of the rocker bail (Figure 11).
   (c) Remove the nut, lock washer and flat washer from the outer end of the rocker bail shaft and pull the shaft from the main casting.
   (d) To replace the assembly, reverse the procedure followed in removing it. Make certain to position the two 95814 spacers as shown on Figure 11.

(9) Function Trip Shaft Assembly (159025)
   (a) Unhook the 82725 spring from the 159023 function trip lever (Figure 13).
   (b) Unclamp and remove the 159023 function trip lever.
   (c) Unclamp and remove the 159033 lower reset lever.
   (d) Remove the 74547 collar.
   (e) Withdraw the 159025 shaft assembly.
   (f) To replace the assembly, reverse the procedure followed in removing it.

(10) Clutch Trip Shaft Assembly (159544)
    (a) Remove the 90573 spring from the release (Figure 13).
    (b) Remove the 112631 spring (Figure 10) from the 150355 clutch latch lever (Figure 13).
    (c) Unclamp and remove the 158173 clutch lever reset cam.
    (d) Remove the 150355 clutch latch lever.
    (e) Unclamp and remove the 150356 clutch trip lever.
    (f) Withdraw the clutch trip shaft assembly.
    (g) To replace the clutch trip shaft assembly, reverse the procedure followed in removing it.

(11) 156474 Bar and 158934 Stop Bracket (Figure 13)
    (a) Remove the code selector mechanism as described in paragraph 1.b.(7).
    (b) Remove the 151630 screw and 2191 lock washer that secure the 158934 stop bracket (Figure 13).
    (c) Remove the 151693 screw and 2191 lock washer from the outer end of the rocker bail shaft and pull the shaft from the main casting.
washer that secure the 156474 bar to the main casting and remove the bar.

(d) To replace the bar and stop bracket reverse the procedure followed in removing it.

(12) Main Shaft Assembly

(a) Remove the code selector mechanism as described in paragraph 1.b.(7).

(b) Remove the gear hub with the gear from the rear end of the shaft.

(c) Remove the 156403 bearing retainer (Figure 11) at the front end of the shaft.

(d) Remove the 119655 retainer ring, 151639 washer and 151638 spring washer (Figure 11) from the outer side of both front and rear bearings.

(e) Remove the 119656 retainer ring associated with the feed out metering mechanism (Figure 12).

(f) Remove the 151632 screw and 2191 lock washer that secures the 156153 eccentric collar to the main shaft (Figure 12).

(g) Remove the 150040 screw and 2191 lock washer that secures the 150000 clutch drum to the main shaft.

(h) Slide the front and rear bearings off the shaft.

(i) Push the shaft toward the front so that the rear end of the assembly can be pivoted out of the rear bearing mounting hole and then withdraw it from the front bearing mounting hole.

(j) Replace the hardware removed in steps (f) and (g).

(k) To replace the main shaft, reverse the procedure followed in removing it.

(13) Transfer Mechanism

(a) Remove the three 151632 screws, 2191 lock washers and one 7002 flat washer that secure the 159-473 main plate (Figure 13) and remove the main plate assembly.

(b) Remove the two 151737 screws and 110743 lock washers that secure the 159011 spring bracket (Figure 13) to the main plate and remove the bracket.

(c) To replace the transfer mechanism, reverse the procedure followed in removing it.
SECTION 3
LUBRICATION

1. GENERAL

   a. The Reperforator should be lubricated before being stored or placed in service. After a few weeks of service, relubricate to make certain that all points receive lubrication. Thereafter relubricate every 1500 hours of operation or every six months, whichever comes first.

   b. Use Teletype KS-7470 oil at all locations where the use of oil is indicated. Use KS-7471 grease on all surfaces where grease is indicated, except the motor bearings. Apply two drops of KS-7470 oil to motor bearings every four months (depress oiler with metal object). If the motor is disassembled at any time, repack the bearings with KS-7471 grease. Do not repack bearings otherwise.

   c. Apply a thin film of grease to all gears. Apply oil to all cams, including the camming surfaces of each clutch disk. All sliding surfaces are to be lubricated to prevent wear. All pivot points, spring ends and felt washers are to be lubricated with oil.

   d. Unless otherwise specified, one or two drops of oil at each of the places indicated will be sufficient. Oil both loops of all helical springs that exert a nominal tension of less than 2-1/2 pounds. Apply grease to both loops of all helical springs that exert a nominal tension of 2-1/2 pounds or more. Use oil for lubrication at all the places listed in the following paragraphs, except where grease is specified.

2. LUBRICATION POINTS

<table>
<thead>
<tr>
<th>Part</th>
<th>Lubricate At</th>
<th>Lubricant</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Multi-Magnet Code Selector</td>
<td>Pivot</td>
<td>Oil Lightly</td>
</tr>
<tr>
<td>(1) Code Armature</td>
<td>Contact With Armature</td>
<td>Oil Lightly</td>
</tr>
<tr>
<td>(2) Armature Bracket Spring</td>
<td>Bearing Surfaces</td>
<td>Oil Lightly</td>
</tr>
<tr>
<td>(3) Rod</td>
<td>Pivot, Armature</td>
<td>Oil</td>
</tr>
<tr>
<td>(4) Punch Slide Latch</td>
<td>Rod</td>
<td>Oil</td>
</tr>
<tr>
<td></td>
<td>Punch Slide</td>
<td>Oil</td>
</tr>
<tr>
<td>b. Function Mechanism</td>
<td>Pivot</td>
<td>Oil</td>
</tr>
<tr>
<td>(1) Function Magnet Armature</td>
<td>Function Trip Lever</td>
<td>Grease</td>
</tr>
<tr>
<td>(2) Reset Cam</td>
<td>Pins On Reset Disk</td>
<td>Grease</td>
</tr>
<tr>
<td>(3) Rest Lever</td>
<td>Pins On Reset Disk</td>
<td>Grease</td>
</tr>
<tr>
<td>(4) Main Trip Lever</td>
<td>Pivot</td>
<td>Oil</td>
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<td></td>
<td>Release</td>
<td>Grease</td>
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<td>Lower Trip Lever</td>
<td>Grease</td>
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<td>Reset Ball Trip Lever Fork</td>
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<td></td>
<td>Clutch Shoe Lever</td>
<td>Grease</td>
</tr>
<tr>
<td></td>
<td>Clutch Disk</td>
<td>Grease</td>
</tr>
<tr>
<td></td>
<td>Pivots</td>
<td>Oil</td>
</tr>
<tr>
<td></td>
<td>Cam Surfaces</td>
<td>Grease</td>
</tr>
<tr>
<td></td>
<td>Pivots</td>
<td>Oil</td>
</tr>
<tr>
<td></td>
<td>Rocker Bail</td>
<td>Oil</td>
</tr>
<tr>
<td>(5) Clutch Trip Lever</td>
<td>Clutch Lever</td>
<td>Grease</td>
</tr>
<tr>
<td>(6) Clutch Latch Lever</td>
<td>Clutch Trip Lever</td>
<td>Grease</td>
</tr>
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<td>(7) Clutch Trip Shaft</td>
<td>Internal Components</td>
<td>Oil</td>
</tr>
<tr>
<td>(8) Rocker Bail Rollers</td>
<td>Disk Pins</td>
<td>Grease</td>
</tr>
<tr>
<td>(9) Shaft</td>
<td>Rollers</td>
<td>Grease</td>
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<tr>
<td>(10) Drive Link</td>
<td>Bearings</td>
<td>Oil &amp; Grease</td>
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<td>c. Main Shaft Assembly</td>
<td>Pivot</td>
<td>Oil</td>
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<tr>
<td>(1) Clutch Disk</td>
<td>Roller</td>
<td>Grease</td>
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<tr>
<td>(2) Clutch Shoe Lever</td>
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<tr>
<td>(3) Clutch Mechanism</td>
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</tr>
<tr>
<td>(4) Cam Assembly</td>
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<tr>
<td>(5) Main Shaft</td>
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<tr>
<td>(6) Magnet Release Contact</td>
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<tr>
<td>Bail Assembly</td>
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</tbody>
</table>
Part | Lubricate At | Lubricant
---|---|---
(7) Feed Pawl And Check Pawl | Eccentric Collar | Oil
d. Punch Mechanism
(1) Rocker Arm | Pivot And Spring Wick | Oil
(2) Drive Link | Pivots | Oil
(3) Toggle Bail | Bearing Felt Oilers | Oil
(4) Toggle Links (2) | Bearing Felt Oilers | Oil
(5) Punch Slide Reset Bail | Bearing Felt Oilers | Oil
(6) Punch Slide Post | Felt Oilier | Oil
(7) Punch Slides | Pivot And Sliding Surfaces | Oil
(8) Punch Slide Guide | Slots | Oil
(9) Punch Slide Springs | Hooks | Oil
(10) Detent | Pivot, Roller, Spring Hooks | Oil
(11) Feed Pawl | Pivot, Spring Hooks | Oil
(12) Detent Spring | Wick | Oil
(13) Feed Pawl | Wick | Oil
(14) Feed Wheel | Felt Oilier Ratchet Wheel Teeth | Oil
(15) Die Wheel | Felt Washer | Oil
(16) Tape Shoe Arm | Pivot | Oil
(17) Tape Shoe | Pivot | Oil
(18) Feed Wheel Shaft | Bearing (Knob-end) | Oil
(19) Punch Retractor Bail (2) | Pivot And Felt Oilier | Oil
(20) Punch Pin | Guides (2), Retractor Notches | Oil
(21) Retractor Springs | Spring Hooks And Compression Springs | Oil
e. Verifying Reader
(1) Toggle | Pivots | Oil
(2) Tape Lid | Pivots | Oil
(3) Sensing Slides | Bearing Surfaces | Oil
(4) Slide Guides | Slots | Oil
(5) Contact Lever Guide | Slots | Oil
(6) Drive Link | Rocker Arm Pivots | Grease
(7) Contact Lever | Pivots, Sensing Slides | Grease
f. Tape Feed-Out Mechanism
(1) Armature Ball | Pivots | Oil
(2) Armature Spring | Feed Pawl And Check Pawl | Grease
(3) Switch Lever | Hooks | Oil
(4) Ratchet Wheel | Pivot, Spring Hooks | Oil
(5) Feed Pawl And Check Pawl | Plunger | Grease
(6) Feed Pawl And Check Pawl Springs | Bearing, Teeth, Spring Hooks | Oil
(7) Felt Oilers | Eccentric Pivot | Oil
(8) Felt Oilers | Hooks | Oil
(9) Felt Oilers | All | Oil
g. Base
(1) Tape-Out Lever | Pivot, Spring Hooks | Oil
(2) Tape-Out Switch Lever | Pivot, Spring Hooks | Oil
h. Motor Oilers
| Each End | Oil
i. Gears
| Teeth | Grease