# 28 Typing and Nontyping Perfomators

## Lubrication

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## 1. GENERAL

1.01 This section contains the specific lubrication procedures for the 28 Typing and Nontyping Perforators. Included in the section are recent engineering changes and additions bringing it generally up-to-date.

1.02 The 28 Typing and Nontyping Perfomators should be lubricated as directed in this section. The figures indicate points to be lubricated and the kind and quantity of lubricant to be used. Lubricate the perforators just prior to placing them in service. After a few weeks in service, relubricate to make certain that all points receive lubrication. The following lubrication schedule should be followed thereafter:
OPERATING SPEEDS IN WORDS PER MINUTE

<table>
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<th>OPERATING SPEEDS</th>
<th>LUBRICATION INTERVAL</th>
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<tr>
<td>60</td>
<td>3000 hours or 1 year*</td>
</tr>
<tr>
<td>75</td>
<td>2400 hours or 9 months*</td>
</tr>
<tr>
<td>100</td>
<td>1500 hours or 6 months*</td>
</tr>
<tr>
<td>150</td>
<td>1000 hours or 6 months*</td>
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*Whichever occurs first.

1.03 Use TP88970 oil at all locations where the use of oil is indicated. Use TP88973 grease on all surfaces where grease is indicated.

1.04 All spring wicks and felt oilers should be saturated. The friction surfaces of all moving parts should be thoroughly lubricated. Over lubrication, however, which will permit oil or grease to drip or be thrown on other parts, should be avoided. Special care must be taken to prevent any oil or grease from getting between electrical contacts.

1.05 Apply a thick film of grease to all gears.

1.06 Apply oil to all cams, including the camming surfaces of each clutch disc.

1.07 The photographs show the paragraph numbers referring to particular line drawings of mechanisms and where these mechanisms are located on the unit. Parts in the line drawings are shown in an upright position unless otherwise specified.

1.08 The illustration symbols indicate the following lubrication directions:

- O Apply 1 drop of oil.
- O2 Apply 2 drops of oil.
- O3 Apply 3 drops of oil.
- O20 Apply 20 drops of oil, etc.
- G Apply thin film of grease.
- SAT Saturate (felt oilers, washers, wicks) with oil.
2. LUBRICATION

2.01 PERFORATOR MECHANISM RESET AND PERFORATOR MECHANISM IN UPRIGHT POSITION

(TOP VIEW)

2.02 PERFORATOR CLUTCH DRIVING SHAFT MECHANISM (NON-TYPING ONLY)

02 BALL BEARING

PERFORATOR CLUTCH DRIVING SHAFT

2.03 PERFORATOR CLUTCH AND RESET CAM MECHANISM

02 ROLLER PIVOT

FUNCTION CAM NEEDLE BEARING (3)

03 CAMMING SURFACE (EACH CAM)

04 BOTH ENDS OF SLEEVE AND OIL HOLE IN SLEEVE

FUNCTION CAM

RESET CAM SLEEVE
2.04 PERFORATOR CLUTCH MECHANISM (NON-TYPING ONLY)

SAT FELT WASHER
0 HOOKS-EACH END
0 LATCHING SURFACE
0 LATCHING SURFACE

CLUTCH LATCH LEVER
SPRING
CLUTCH TRIP LEVER
CLUTCH LATCH LEVER

2.05 PERFORATOR CLUTCH GEAR MECHANISM (NON-TYPING ONLY)

G GEAR TEETH

PERFORATOR CLUTCH DRIVE AND DRIVEN GEARS

2.06 ROCKER BAIL MECHANISM (NON-TYPING ONLY)

SAT FELT WASHER
SAT FELT WICK (USE OIL HOLE)

ROCKER BAIL
ROCKER BAIL
2.07 PERFORATOR MECHANISM (continued) REST PERFORATOR TRANSMITTER IN UPRIGHT POSITION

2.08 REAR BEARING BRACKET GEAR MECHANISM

2.09 PERFORATOR TRIP LEVER MECHANISM (NON-TYPING ONLY)

0 CONTACT SURFACE
SAT FELT WICK
SAT FELT WASHER
0 BEARING SURFACE
0 HOOKS-EACH END
0 ENGAGING SURFACE

PERFORATOR TRIP LEVER
PERFORATOR TRIP LEVER
CLUTCH RELEASE
PERFORATOR TRIP LEVER
SPRING
PERFORATOR TRIP LEVER LATCH
2.10 PUNCH SLIDE LATCH MECHANISM

2.11 PUNCH MECHANISM - REST PERFORATOR TRANSMITTER IN UPRIGHT POSITION
2.12 TAPE SHOE ARM MECHANISM

- BEARING SURFACE (2) (FRONT AND REAR)
- TAPE SHOE
- TAPE SHOE ARM

2.13 RETRACTOR BAIL MECHANISM

- HOOKS-EACH END (4 SPRINGS)
- FELT WASHERS (2-FRONT & REAR)
- RETRACTOR BAIL SPRING
- RETRACTOR BAIL

2.14 PUNCH PIN MECHANISM

- GUIDES AND NOTCHES (3 PLACES)
- PUNCH PINS
- RETRACTOR SPRING

2.15 PUNCH SLIDE MECHANISM

- ENGAGING SURFACE
- HOOKS-EACH END (5 SPRINGS)
- PUNCH SLIDE GUIDE SPRINGS
- RESET BAIL
2.16 PERFORATED MECHANISM FOR FULLY PERFORATED TAPE

SLIDING SURFACE (6) (UPPER GUIDE) PUNCH PIN

SLIDING SURFACE (6) (LOWER GUIDE) PUNCH PIN

SLIDING SURFACE (6) PUNCH PIN

SLIDING SURFACE (6) PUNCH SLIDE GUIDE

HOOKS-EACH END SPRING

2.17 PERFORATOR MECHANISM

RATCHET TEETH (2) FEED WHEEL

PIVOT POINT (FELT WASHER) FEED WHEEL

PIVOT POINT (FELT WASHER) DIE WHEEL

PIVOT POINTS (2) HANDWHEEL BEARING
2.18 FEED WHEEL MECHANISM

0 BEARING SURFACE
0 RATCHET TEETH
(SAT)
0 FELT WASHER
0 FELT WASHER
SAT FELT WICKS (2)
SAT HOOKS-EACH END
(SAT) (2 SPRINGS)
SAT FELT WASHER

FEED WHEEL KNOB
FEED WHEEL
FEED WHEEL
DIE WHEEL
SPRING WICKS
SPRING
FEED PAWL

2.19 RESET BAIL MECHANISM

(SAT) FELT WASHER (2
WASHERS - FRONT
& REAR)
(SAT) FELT WASHERS (2
WASHERS - FRONT
& REAR)
0 ENGAGING SURFACE
0 ENGAGING SURFACE
SAT FELT WASHERS (2
WASHERS - FRONT
& REAR)
SAT FELT WASHERS (2
WASHERS - FRONT
& REAR)

TOGGLE LINKS
RESET BAIL
RESET BAIL
TOGGLE BAIL
TOGGLE BAIL

2.20 ROCK ARM MECHANISM

(SAT) FELT WASHER
0 ENGAGING SURFACE
0 HOOKS-EACH END
(SAT) FELT WICK
0 BEARING SURFACE

DRIVE LINK
ROCKER ARM
SPRING
SPRING WICK
ROCKER ARM
2.21 TYPING PERFORATOR
NOTE: PLACE PERFORATOR IN UPRIGHT POSITION.

2.22 RIBBON FEED MECHANISM (LATE DESIGN)

- HOOKS (2)
- PIVOT POINT
- PIVOT
- PIVOT POINTS (2)
- SPRING
- FEED PAWL
- CHECK PAWL
- REVERSING ARM
- CONTACTING SURFACE
- FELT WASHER
- DRIVE ARM
- ADJUSTABLE EXTENSION
- DRIVE ARM ROLLER
2.23 RIBBON FEED MECHANISM (LATE DESIGN)

- Hooks (2)
- Springs (2)
- Ratchet wheel
- Rollers (2)
- Ratchet wheel
- Pivot
- Detent
- Contacting surfaces

2.24 ROTARY POSITIONING MECHANISM (TYPING PERFORATOR ONLY)

- G: Teeth
- Rotary output rack
- Type wheel housing
- Special teeth
- Rotary output rack
- Rotary correcting lever
- Pivot point
- Rotary correcting lever shaft
- Pivot points (2)
- Connecting rods
- Pivot points (felt washers)
- Detent levers (8)
- Springs (4)
- Contact points
- Detent levers (8)
- Sliding surface
- Rotary output rack
- Pivot points (3)
- (felt washers)
- Cross links
2.25 **TRANSFER MECHANISM** (TYPING PERFORATOR ONLY)

- PIVOT POINTS (5)
- CONTACT SURFACES (5)
- CONTACT POINTS (5) (EACH END)
- HOOKS - EACH END
- PULSE BEAMS
- TRANSFER LEVERS
- PULSE BEAMS
- SPRING
- TRANSFER LEVERS
- GUIDE BRACKET

2.26 **PUSH BARS** (TYPING PERFORATOR ONLY)

- G RACK TEETH (7)
- O CONTACT SURFACES (7)
- PUSH BARS
- PUSH BARS
- CONTACT SURFACES (6)
- PUSH BARS
2.28 FUNCTION CAM — CLUTCH TRIP MECHANISM

- CONTACT POINTS (2)
- MAIN TRIP LEVER
- HOOKS — EACH END
- CLUTCH RELEASE SPRING
- CONTACT SURFACE
- RESET LEVER
- FELT WASHERS
- CLUTCH TRIP SHAFT
- HOOKS — EACH END
- LATCH LEVER SPRING
- CONTACT SURFACE
- CLUTCH STOP LUG
- CONTACT POINT
- MAIN TRIP LEVER
- HOOKS — EACH END
- MAIN TRIP LEVER SPRING
- PIVOT POINT
- MAIN TRIP LEVER
2.31 AXIAL POSITIONING MECHANISM (TYPING PERFORATOR ONLY)

- PIVOT POINT
- CONTACT SURFACES
- PIVOT POINTS
- PIVOT POINT (FELT WASHER)
- CONTACT SURFACES
- SAT
- PIVOT POINTS (2) (FELT WASHERS)

OCCILLATING BAIL
RIBBON CARRIER
RIBBON OSCILLATING LEVER
RIBBON OSCILLATING LEVER
RIBBON CARRIER
OSCILLATING DRIVE LINK

(LEFT SIDE VIEW)

2.32 DETENT ASSEMBLIES (TWO ON AXIAL POSITIONING MECHANISM)

- DETENT POINTS
- HOOKS - EACH END
- SAT
- PIVOT POINTS (FELT WASHERS)

DFTENT LEVERS (4)
DFTENT LEVER SPRINGS (2)
DFTENT LEVERS (4)

(BOTTOM VIEW)

2.33 SHAFT MECHANISMS (TYPING PERFORATOR ONLY)

* IF FUNCTION CAM NEEDLE BEARINGS ARE DISSASSEMBLED AT ANY TIME, REPACK BEARINGS WITH GREASE.

G
- TEETH
- CAMMING SURFACES
- BEARING SURFACES
- CAMMING SURFACE
- BEARING SURFACE
- BEARING SURFACES
- O2
- O
- O
- 06

- FUNCTION CAM NEEDLE BEARING SLEEVES (3)
- BOTH ENDS OF SLEEVE AND OIL HOLE IN SLEEVE
- CLUTCH CAM DISK
- FUNCTION CLUTCH DRUM
- BALL BEARINGS (2)
- TEETH
- GEAR
2.34 PRINTING MECHANISM (TYPING PERFORATOR ONLY)

- G CONTACT SURFACE
- O2 SLIDING SURFACE
- O2 PIVOT POINT
- O2 PIVOT POINTS
- O HOOKS - EACH END
- O HOOKS - EACH END
- O HOOKS - EACH END
- O PIVOT POINT
- O HOOKS - EACH END
- O PIVOT POINTS (2)

PRINTING LATCH
PRINTING TRIP LINK
PRINTING LATCH
PRINT HAMMER
PRINT HAMMER SPRING
HAMMER ACCELERATOR SPRING
PRINTING LATCH SPRING
PRINTING DRIVE LINK
PRINTING TRIP LINK SPRING
PRINTING PIVOT ARM

2.35 ROCKER BAIL MECHANISM (TYPING PERFORATOR ONLY)

- G CONTACT SURFACE
- O PIVOT POINTS
- SAT SLIDING SURFACE (FELT WASHER UNDER BLADE)
- G PIVOT POINT
- O PIVOT POINT
- O ROLLER SURFACE
- O PIVOT POINTS
- O PIVOT POINT
- SAT PIVOT POINT (FELT STRIP)
- O ROLLER SURFACE
- O CONTACT SURFACE

RIBBON FEED ECCENTRIC STUD
PUSH BAR OPERATING BLADE
PUSH BAR OPERATING BLADE
CORRECTING DRIVE LINK
OSCILLATING DRIVE LINK
CAM FOLLOWER ROLLER (UPPER AND LOWER)
CAM FOLLOWER ROLLERS
PRINTING DRIVE LINK
ROCKER BAIL
CAM FOLLOWER ROLLER
FUNCTION CAM
2.36 MANUAL AND POWER DRIVE BACKSPACE MECHANISM FOR CHADLESS TAPE

NOTE: REST PERFORATOR TRANSMITTER IN UPRIGHT POSITION.

(FRONT VIEW)

2.37 MANUAL AND POWER DRIVE BACKSPACE MECHANISM FOR CHADLESS TAPE

02 BEARING SURFACE (REAR) RAKE SHAFT

G GEAR TEETH GEAR SEGMENT

0 HOOKS-EACH END PAWL SPRING

02 BEARING SURFACE FEED PAWL

G CONTACT SURFACE FEED PAWL

0 HOOKS-EACH END (3 SPRINGS) SPRING

02 BEARING SURFACE BELL CRANK
2.38 MANUAL AND POWER DRIVE BACKSPACE MECHANISM FOR FULLY PERFORATED TAPE

- Hooks - Each End
- Bearing Surface
- Feeding Surface
- Backspace Pawl
- Spring

- O2

- Nut, Shoulder
- Bell Crank
- Bell Crank Spring

2.39 POWER DRIVE BACKSPACE MECHANISM (EARLY DESIGN)

- Bearing Surface
- Rotating Surface
- Engaging Surface
- Sliding Surface
- Link
- Eccentric
- Latch
- Eccentric Drive
- Arm Fork
- Arm
- Armature Bail
- Springs

- O2

- (2 Springs)
2.40 POWER DRIVE BACKSPACE MECHANISM (LATEST DESIGN)

O2 BEARING SURFACE  LINK

O2 ENGAGING SURFACE  LATCH

O2 ROTATING SURFACE  ECCENTRIC

O2 SLIDING SURFACE  ECCENTRIC DRIVE ARM FORK

O2 ENGAGING SURFACE  LATCH

HOOKS - EACH END  SPRINGS
(2 SPRINGS)
2.41 SINGLE AUXILIARY TIMING CONTACTS MECHANISM

- CONTACT SURFACE
- CONTACT BAIL
- HOOKS-EACH END
- SPRING
- SAT
- FELT WASHERS
- ARM AND CONTACT BAIL

2.42 TAPE-OUT SWITCH MECHANISM

- HOOKS-EACH END (2 SPRINGS)
- SPRINGS
- BEARING SURFACE (FRONT AND REAR)
- TAPE LEVER
- CONTACT SURFACE
- SWITCH LEVER
- BEARING SURFACE
- SWITCH LEVER

2.43 PERFORATOR GEAR AND MOTOR PINION

- G GEAR TEETH
- REPERFORATOR MOTOR PINION
- G GEAR TEETH
- DRIVEN GEAR
2.44 UNSHIFT ON SPACE MECHANISM

- HOOKS-EACH END
- SLOT
- GUIDE EXTENSION
- SPRING
- FUNCTION BOX REAR PLATE
- FUNCTION BOX FRONT PLATE
- FUNCTION BLADE

2.45 SIGNAL BELL CONTACT MECHANISM

- CONTACT SURFACE
- HOOKS-EACH END
- CONTACT SURFACE
- SLIDING SURFACES
- SENSING FINGERS
- FUNCTION BLADE
- FUNCTION BLADE
- FUNCTION BLADE
- FUNCTION BLADE

(RIGHT SIDE VIEW)