HARDINGE®

Bridgeport®

INSTALLATION, OPERATION, MAINTENANCE, AND PARTS LIST

SERIES I
MILLING MACHINES

TP5260

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Manual No. M-450
Part No. M -0009500-0450

Litho in U.S.A.
June, 2003

CHAPTER 3 - MAINTENANCE

2J-HEAD

MAINTENANCE PROCEDURES

Motor Removal

1. Run head to adjust to lowest speed.
2. Disconnect power.
3. Remove three screws “A” and cover “B”, Figure 3.1.
4. Using the two screws “A”, compress spring “C”.
5. Rotate the speed changer to the highest speed.
6. Remove the reversing switch from the belt housing.
7. Remove the two securing screws “D”.
8. Lift the motor and rest the case on stud “E”, Figure 3.2.
9. Ease the belt over the lower drive disc and remove the motor.

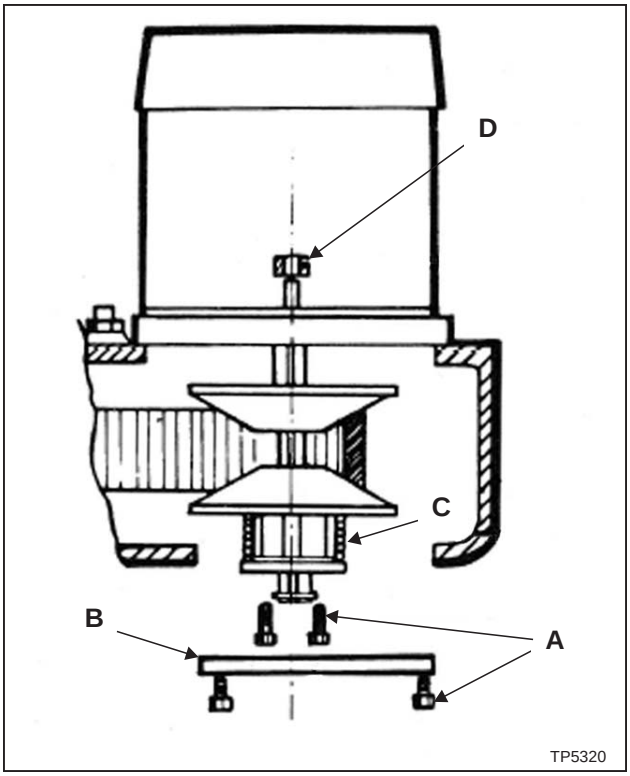

Figure 3.1 - Motor Removal
Front View

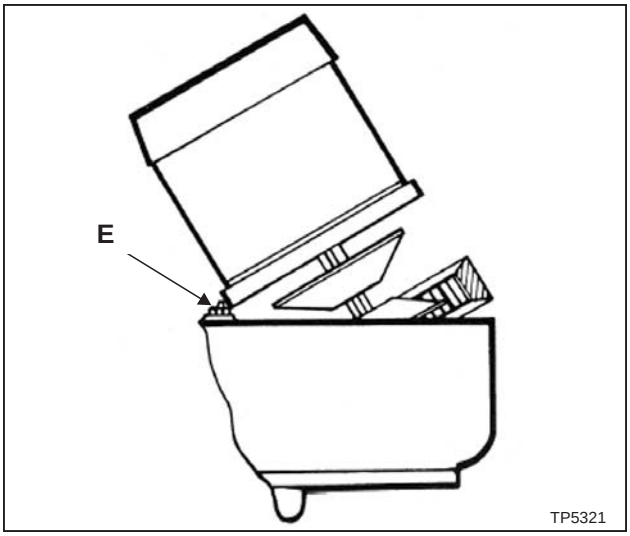

Figure 3.2 - Motor Removal
Side View

Drive Belt Replacement

1. Remove the motor as described on Page 3-1.
2. Remove the three screws “F”, Figure 3.3, insert into the adjacent tapped holes and withdraw bearing housing “G”.
3. Remove the two screws and the bushings “H”.
4. Remove four screws “I” and one screw “J”.
5. Remove four screws securing speed changer “K”.
6. Remove top housing “L”. Tap to clear the dowels.
7. Replace the belt.

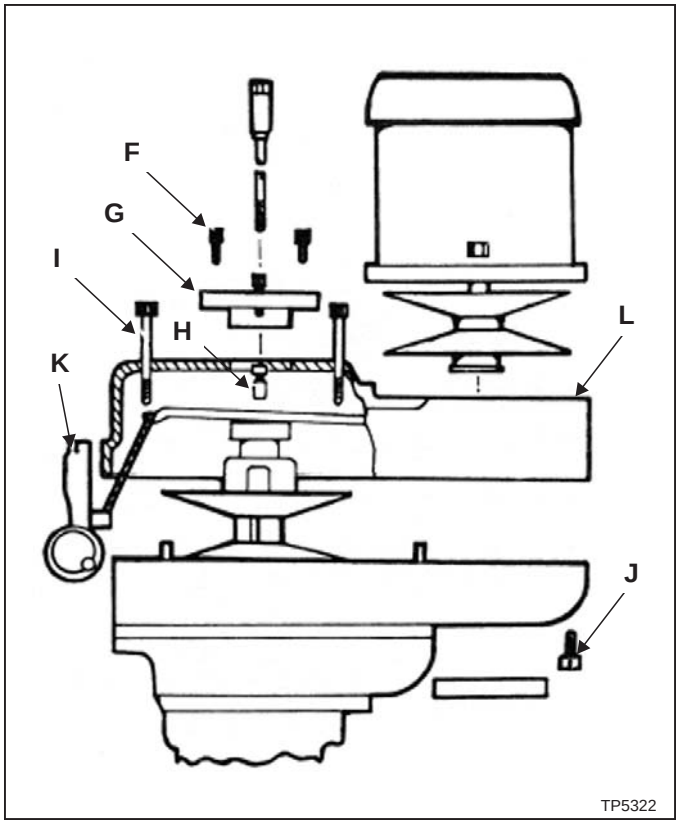

Figure 3.3 - Drive Belt Replacement

Timing Belt Replacement

1. Remove the motor.
2. Lower the quill to full extent.
3. Remove the two lower cap screws “M”, Figure 3.4, from the speed changer housing.
4. Remove the four cap screws “N”.
5. Remove the top assembly “O”, and tap to clear dowels
6. Replace the belt.

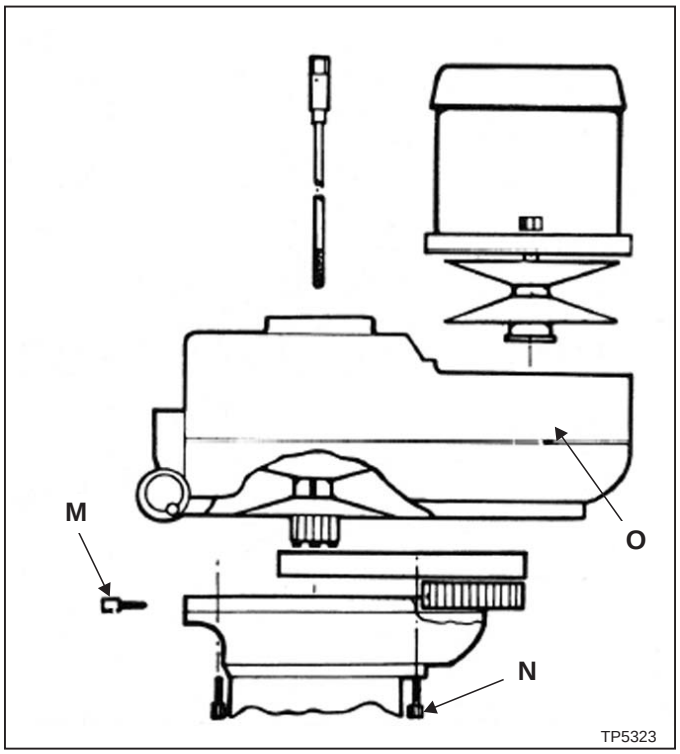

Figure 3.4 - Timing Belt Replacement

Brake Shoe Replacement

1. Remove the top section.
2. Remove the two screws “P”, Figure 3.5.
3. Remove the clutch hub assembly “Q”.
4. Replace the brake shoes “R”.
5. Remove the bearing, drive discs and circlips from the hub assembly “Q”.
6. Replace the bearing and housing “S”.
7. Thread hub “B” through the bearing and reassemble the discs, etc.

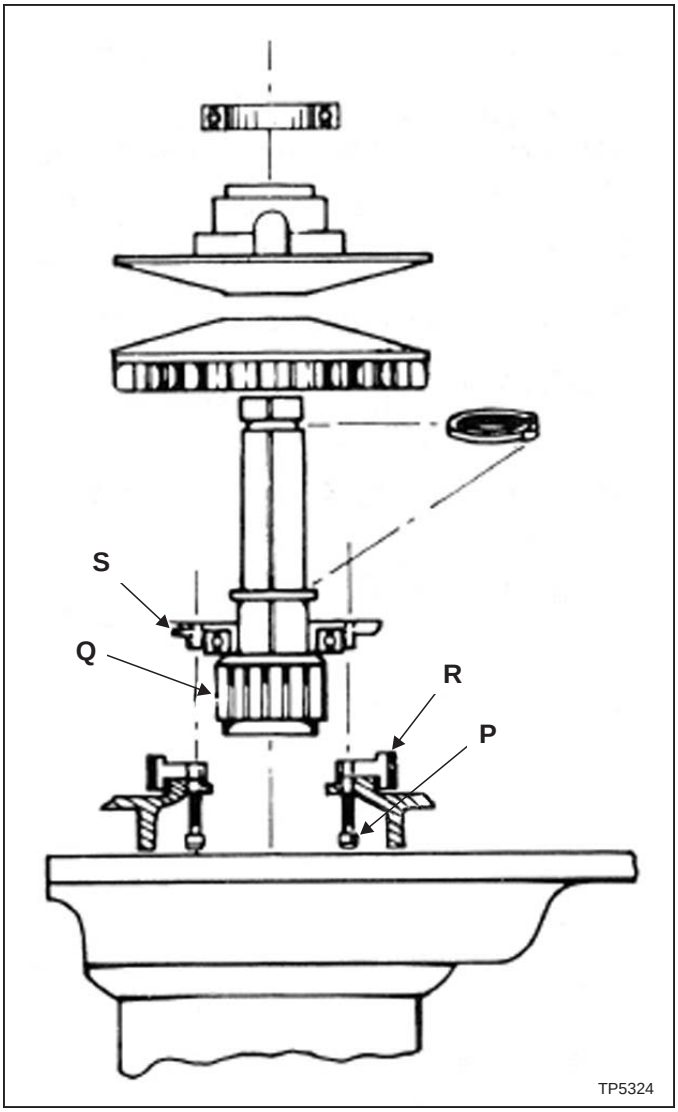

Figure 3.5 - Brake Shoe Replacement

MAINTENANCE PROCEDURES

Micro Feed Trip Assembly and Quill Removal

1. Remove screw “A” and ball reverse lever “B”, Figure 3.6.
2. Remove retaining ring “C”, screw “D” and arm “E”.
3. Thread shaft “F” through micro nuts and remove.
4. Remove screw “G” and stop “H”.
5. Remove quill.
6. Clean all areas, oil liberally and reassemble.
7. Check correct operation of micro feed trip assembly together with feed trip linkage as per feed tripping adjustment (see Figure 3.8).

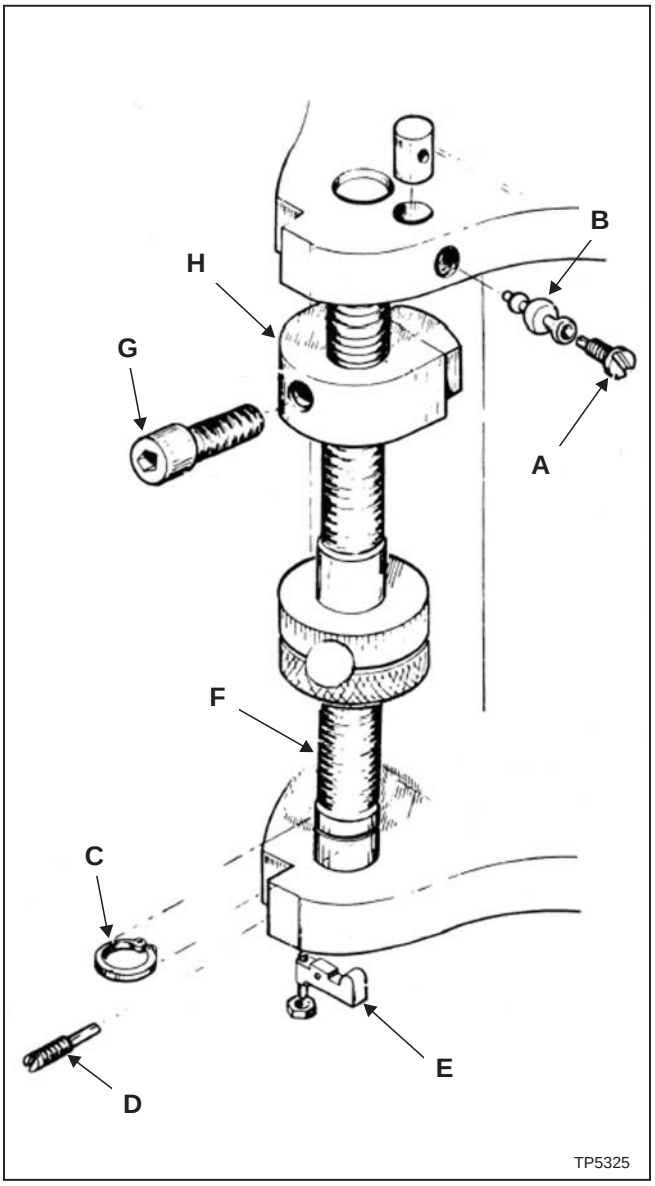

Figure 3.6 - Micro Feed Trip Assembly and Quill Removal

Balance Spring Replacement

1. With quill in maximum up position apply quill lock.
2. Remove screw “I”, hub “J”, and key “K”, Figure 3.7.
3. Remove screws “L”, allowing housing to rotate slowly releasing spring tension.
4. Lift end of spring from pin on the pinion shaft.
5. Rotate housing “M” counter-clockwise from head casting.
6. Remove spring from housing and replace.
7. Refit spring to main housing casting. Turn housing clockwise until spring locates on pin in pinion shaft.

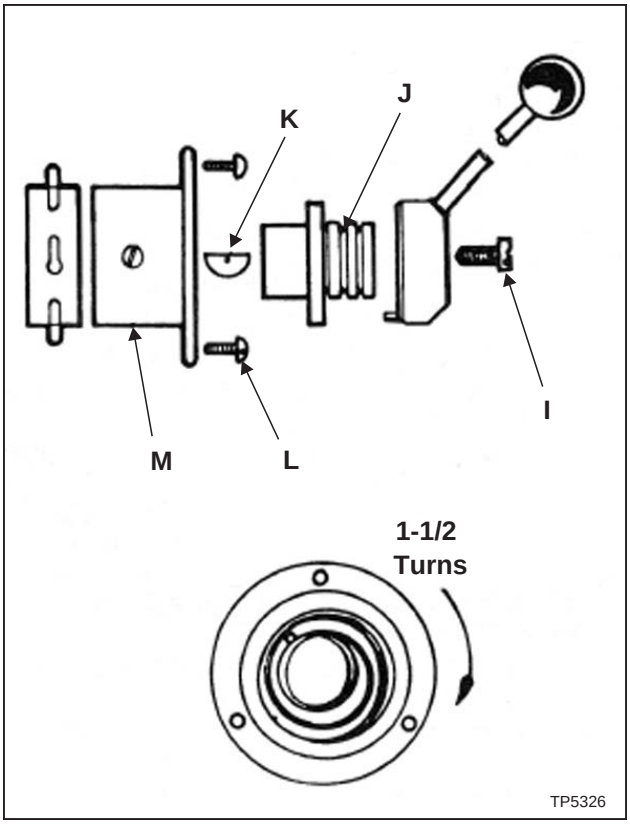

Figure 3.7 - Balance Spring Replacement

Feed Trip Adjustment

1. Release locknut “N”, Figure 3.8.
2. Engage trip handle lever “P”.
3. Adjust micro nuts against quill stop “O”.
4. Slowly turn adjusting screw “Q” until lever “P” trips. If set to light will not be able to drill.
5. At this point secure locknut “N”.
6. Check for quick action response.

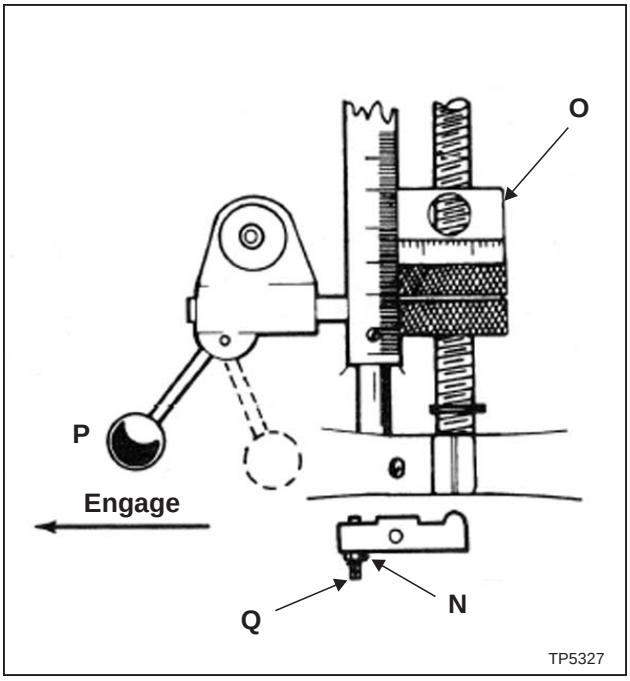

Figure 3.8 - Feed Trip Adjustment

Collet Aligning Screw Replacement

1. Use felt pen, mark reference line on quill and nose cap “S”, Figure 3.9.
2. Remove set screw “R”.
3. Unscrew nose cap “S”.
4. Remove lock screw “T” and collet aligning screw “U”.
5. Replace “U”; insert collet and check that the dog on the end of the screw does not interfere with the bottom of the guide slot.
6. Replace lock screw “T”.
7. Replace nose cap “S”; check felt pen markings for correct alignment.
8. Replace set screw “R”. CAUTION - DO NO OVERTIGHTEN as this will cause distortion.
9. Check gap “V” (.003”, .08mm)

- CAUTION -

Do not attempt to remove nose cap before removing set screw “R”. Doing so will cause serious damage.

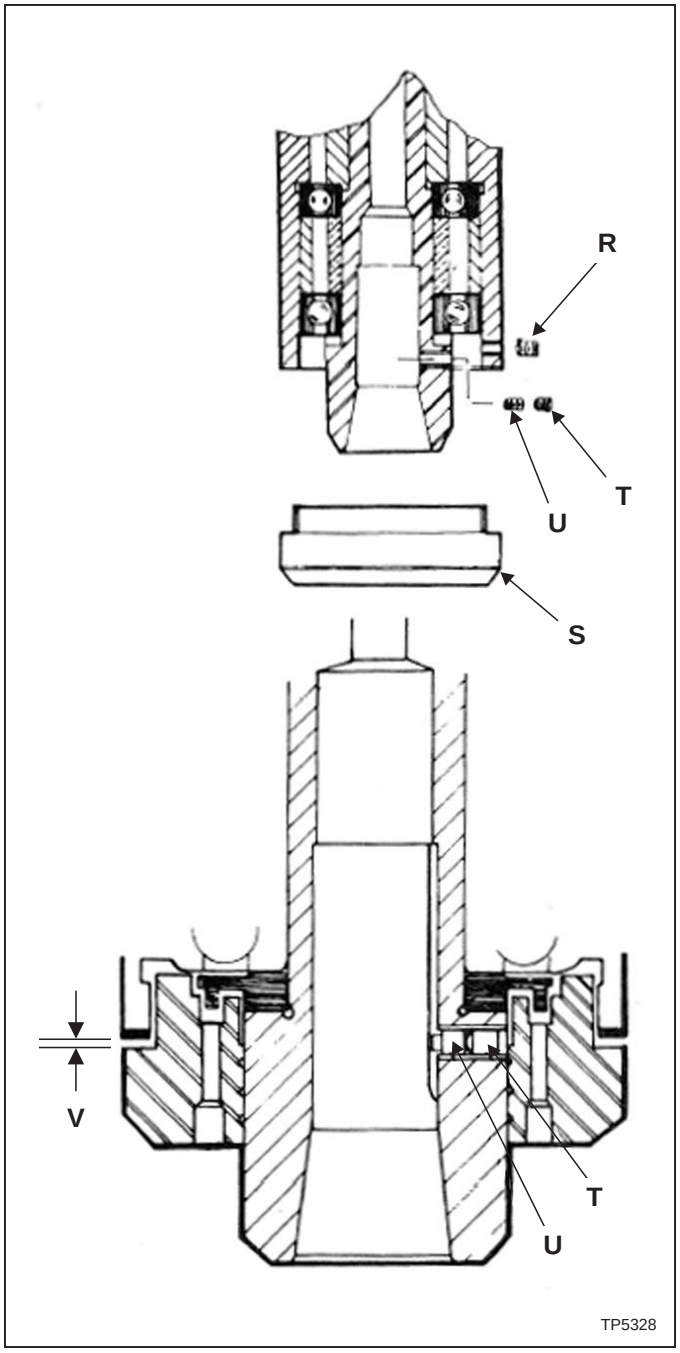

Figure 3.9 - Collet Aligning Screw Replacement

GIB STRIP ADJUSTMENT

MAINTENANCE PROCEDURES

Adjustment of Table Gib

The table is provided with a full length tapered gib in the saddle, and an adjusting screw on the left side (see Figure 3.10). To take up gib, tighten gib adjusting screw slightly and repeat until a slight drag is felt when moving the table by hand.

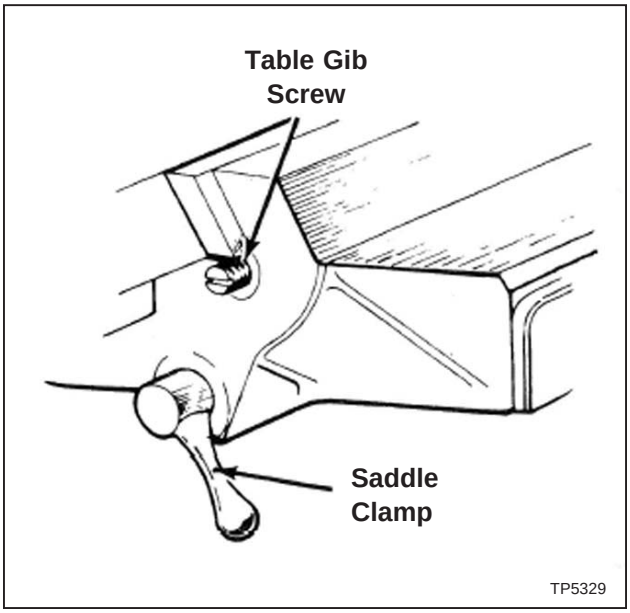

Figure 3.10 - Table Gib Adjustment

Adjustment of Saddle and Knee Gibs

A tapered gib is used for adjusting the saddle bearing on the knee. This forms a guide for the saddle. To tighten gib, the same principle as described above is used; however, the chip wiper has to be removed first (see Figure 3.11).

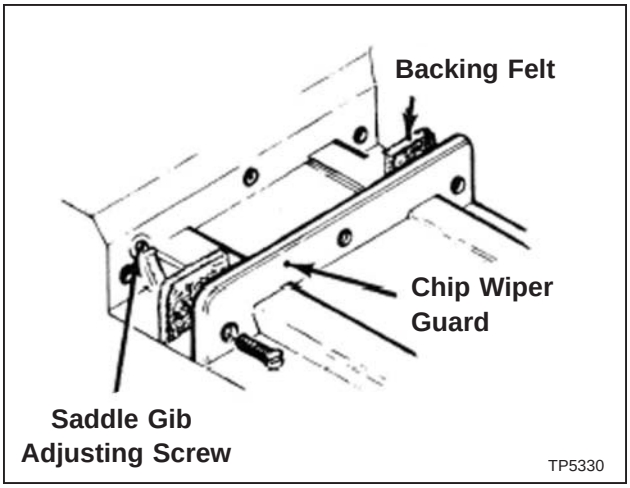

Figure 3.11 - Saddle and Knee Gibs Adjustment

Adjustment of Knee Gib

Remove chip wiper and adjust screw until smooth movement is attained (see Figure 3.12).

- NOTE -

Loose gibs will cause loss of machine accuracy.

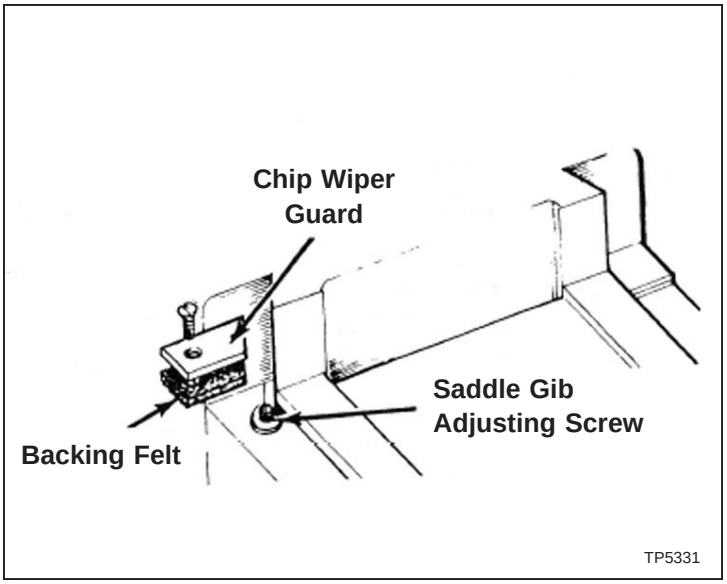

Figure 3.12 - Knee Gib Adjustment

TABLE SCREW

MAINTENANCE PROCEDURES

Backlash Adjustment

1. Crank the table to the lift.
2. Withdraw “W”, Figure 3.13, half a turn.
3. Tighten screw “X” while slowly turning handle “Y” until minimum backlash is obtained over entire travel.
4. Finally, lock screw “W” on to “X”.
5. Used only with old style nuts not new split nuts.
6. Backlash is set approximately ,003” - .005” on new machines.
7. Backlash is set at .003” to .005” max.

- NOTE -

Older machines do not contain split nuts.

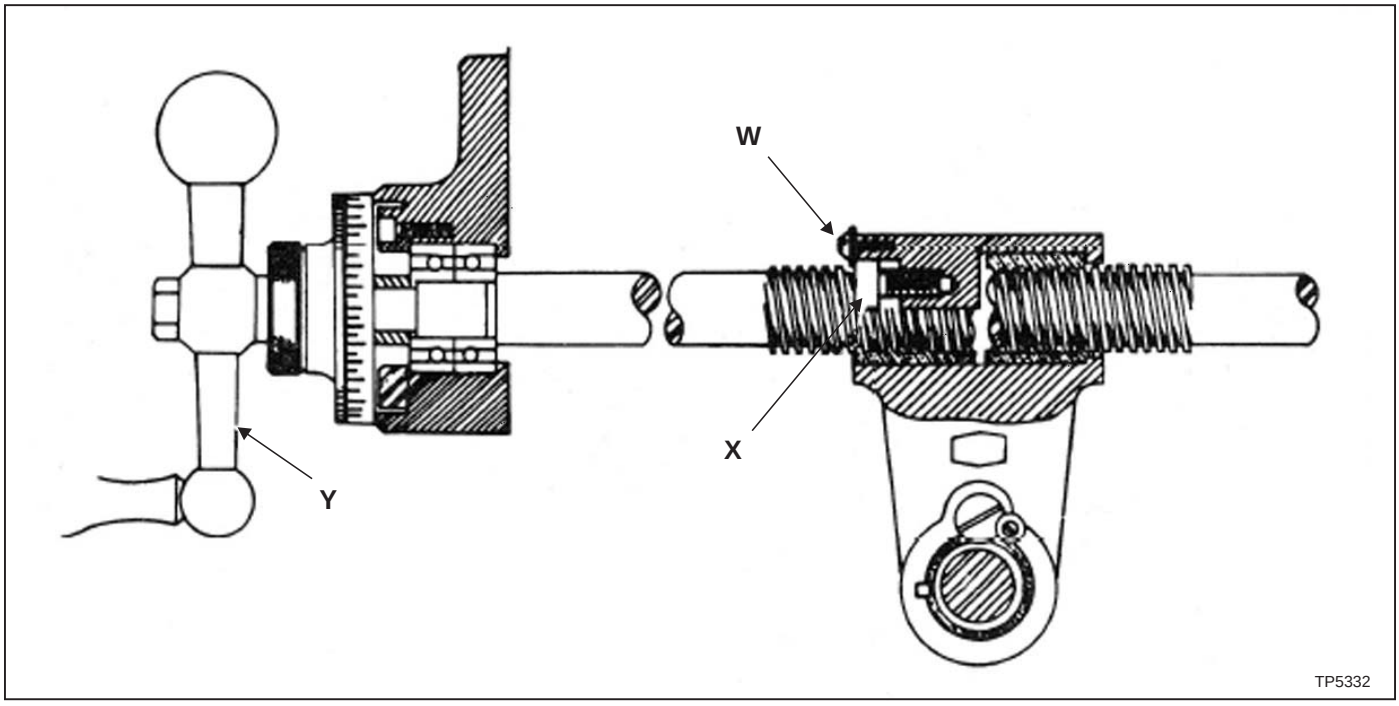

Figure 3.13 - Backlash Adjustment

CROSS SCREW ASSEMBLY

MAINTENANCE PROCEDURES

Backlash Adjustment

1. Crank the saddle to mid position
2. Remove four socket head cap screws securing bracket “D”, Figure 3.14, to knee.
3. Pull the saddle forward to expose screws “A” and “B” through hole in front of knee.
4. Loosen screw “A”.
5. While slowly turning handle “C”, tighten screw “B” until minimum backlash is obtained over entire travel.
6. Lock screw “A” onto “B”.
7. Finally crank the saddle to the front of the knee and replace four screws securing bracket “D” to knee.
8. Backlash is set at .003” to .005” max.

- NOTE -

Older machines do not contain split nuts.

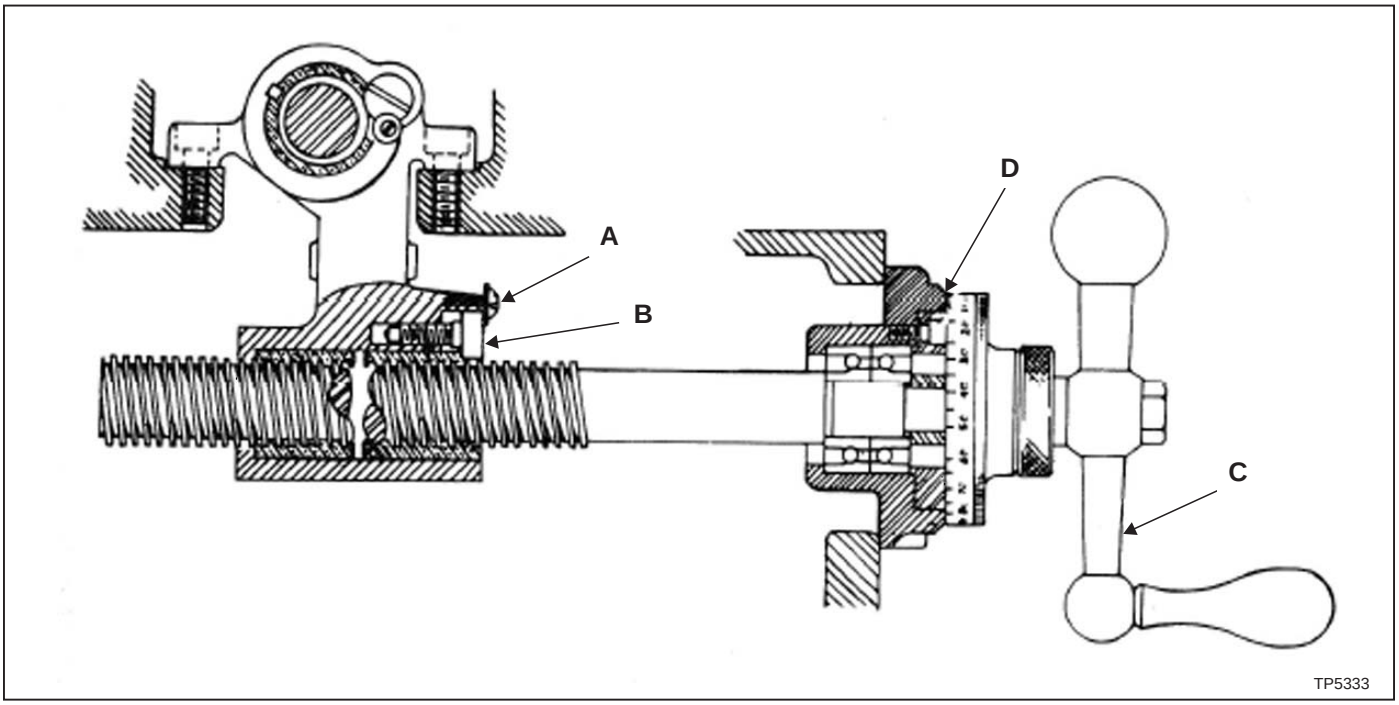

Figure 3.14 - Cross Screw Assembly

MAINTENANCE PROCEDURES

- NOTE -

Add a few drops of Waylube #1180 oil or equivalent into oil cup “E”, Figure 3.15, before operating unit

Changing the Gear Case Oil

Drain and refill the gear case with ½ pint of Mobil 600W oil or equivalent after first two months of normal service and twice yearly thereafter. Oil should flow when both plugs are removed and attachment inverted in the vertical axis. Be sure to replace plugs in proper holes. Top plug “F”, Figure 3.16, is drilled for vent.

- CAUTION -

Remove vent screw from plug “F” before operating machine.

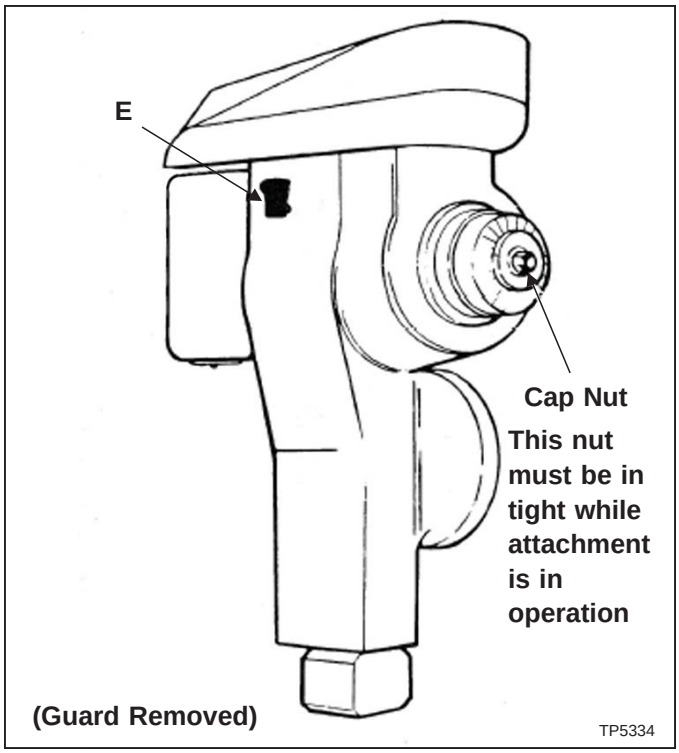

Figure 3.15 - Gear Case (Left Side)

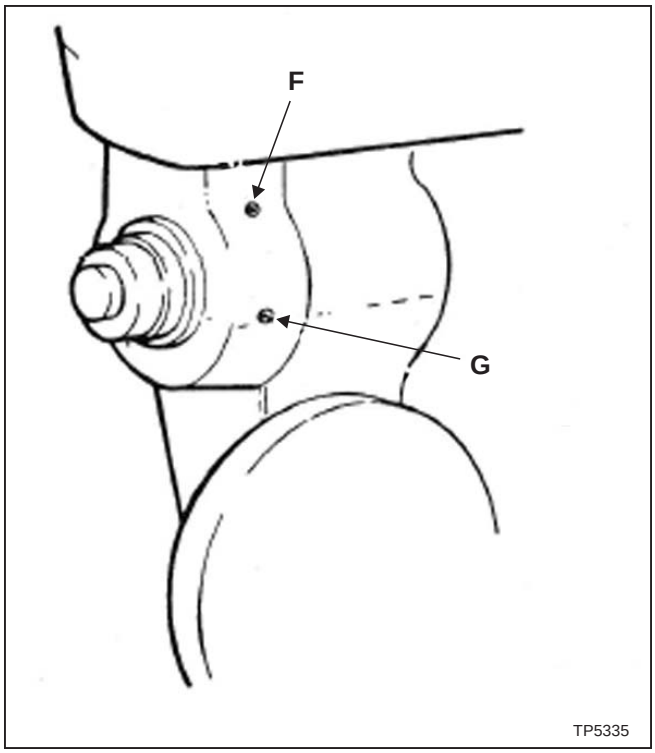

Figure 3.16 - Gear Case (Right Side)

Removing Motor

1. Loosen the two hex nuts “H”, Figure 3.17, on either side of belt housing.
2. Remove motor.

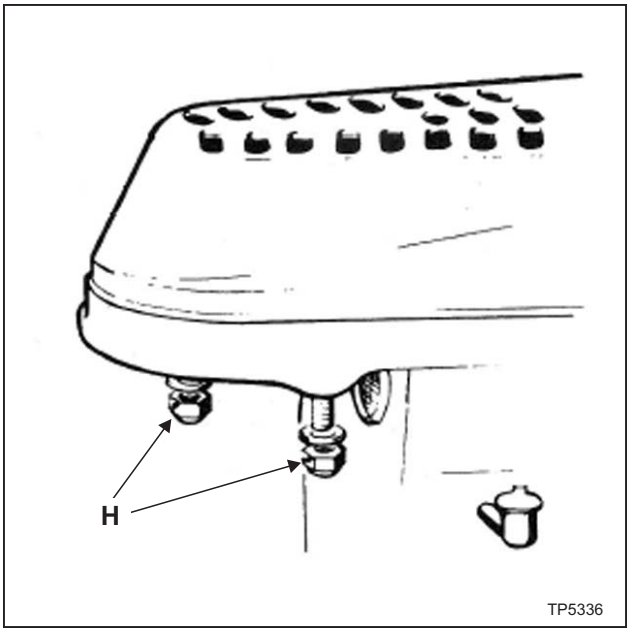

Figure 3.17 - E-Head Motor Removal

Changing Speed

1. To change speed loosen the two hex nuts “I”, Figure 3.18, and move motor forward.
2. Open the belt housing cover “J” and change speed by moving belt “K”, then re-tension.
3. Tighten the two hex nuts “I”.

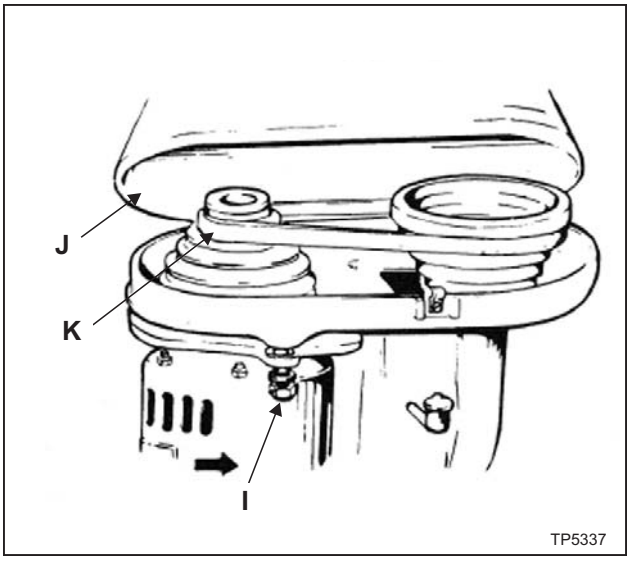

Figure 3.18 - E-Head Speed Adjustment

Removing Reduction Drive Unit or Ram

1. Loosen hex nuts “I”, and remove motor.
2. Remove vee belt pulley “K”, Figure 3.19.
3. Remove two screws “L”, Figure 3.19, from air vent cover “M” and bring the top end of the connecting rod into view.
4. Remove two flat head screws “N” and bearing retaining washer “O”.
5. Remove three socket screws “P”, and split the gear housing from the ram housing.

The reduction drive unit may now be removed complete while the ram may be drawn out downwards from the clapper box end.

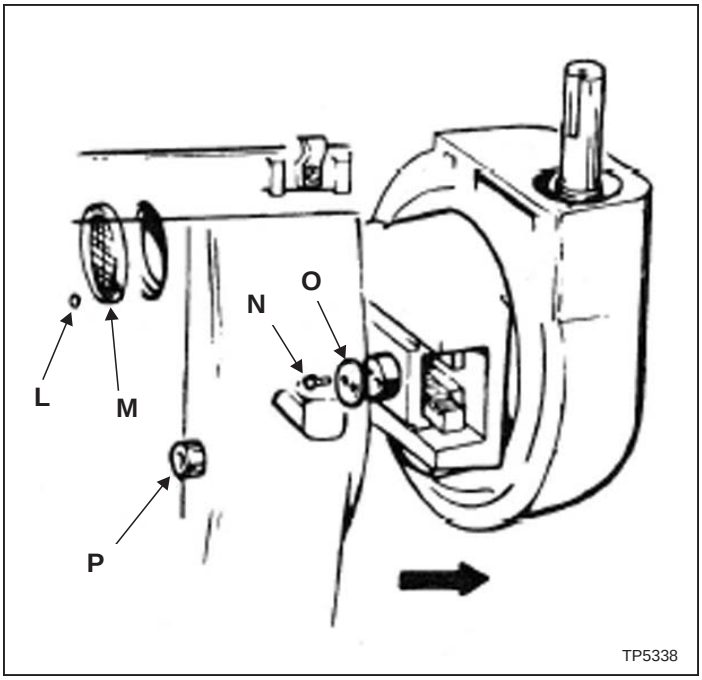

Figure 3.19 - E-Head Reduction Drive Unit Removal

- NOTES -


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