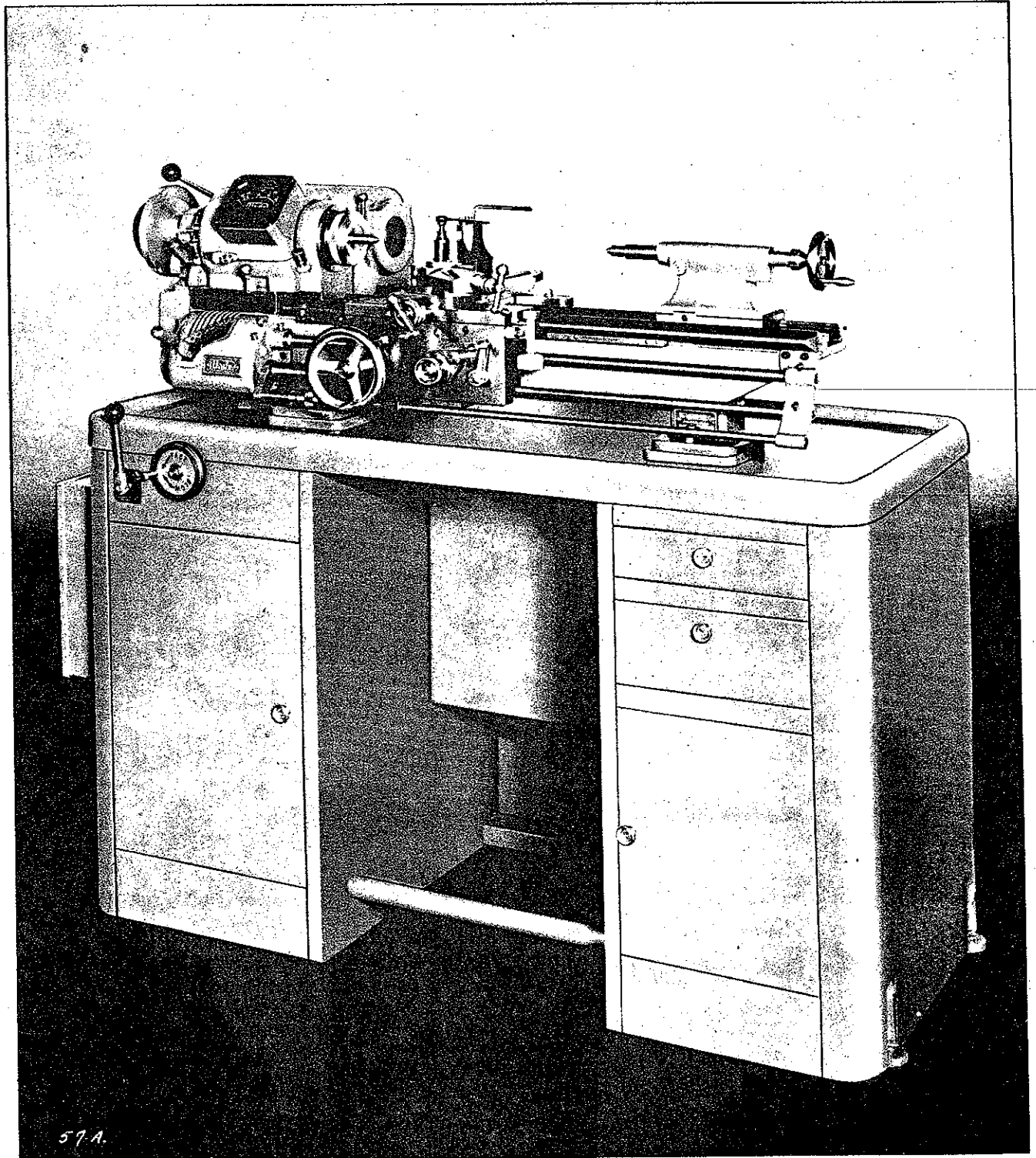


# WADE No. 8 A TOOLMAKERS PRECISION LATHE



57A.

**WADE MACHINE TOOL MFG, INC.**  
120 EASTERN AVENUE  
CHELSEA, MASSACHUSETTS 02150  
(617) 884-2000

## *Specifications*

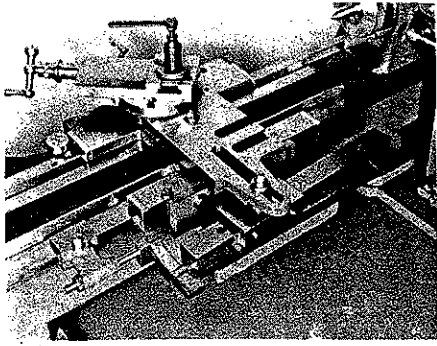
|                                                    |             |
|----------------------------------------------------|-------------|
| Length of Bed .....                                | 44"         |
| Distance between centers .....                     | 24"         |
| Swing over Bed .....                               | 8½"         |
| Swing over Cross Slide .....                       | 5½"         |
| Swing over Compound Slide .....                    | 2½"         |
| Size of Tools .....                                | ⅜" x ¾"     |
| Cross Slide Travel .....                           | 5"          |
| Tailstock Spindle Travel .....                     | 3¼"         |
| Compound Slide Travel .....                        | 2½"         |
| Collet Capacity .....                              | 1"          |
| Taper Standard for Centers .....                   | No. 2 Morse |
| Clear Hole through Spindle .....                   | 1 3/16"     |
| Height above bench to center line of Spindle ..... | 12"         |

## *Standard Equipment*

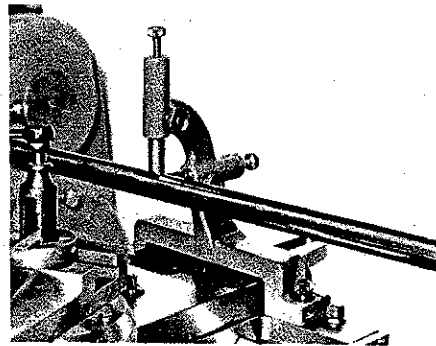
Bed, Headstock with draw-in Spindle, Tailstock, Slide Rest with power feeds, Steady Rest, Dog Face Plate and Centers, Taper Collet for Live Center, Quick Change Gear Box, Threading Dial, Threading Stop, Carriage Stop and 8" Slotted Face Plate.

# *Index Sheet*

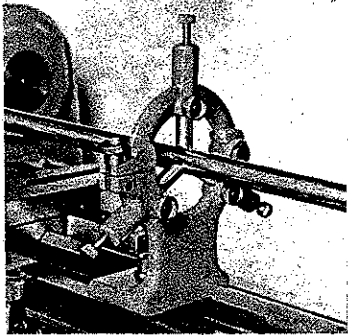
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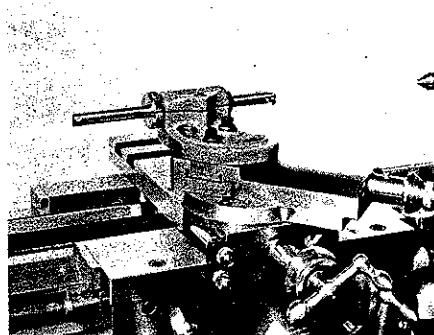
Taper Attachment



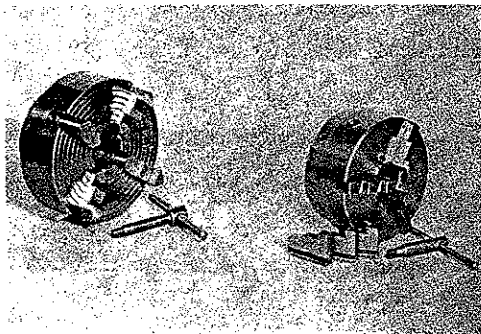
Follow Rest



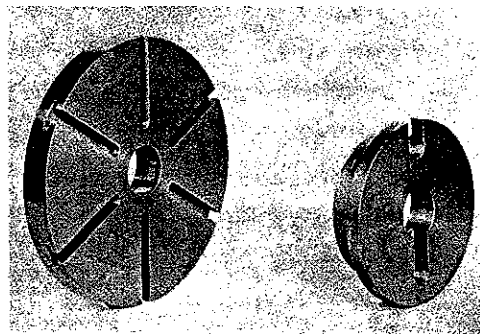
Steady Rest



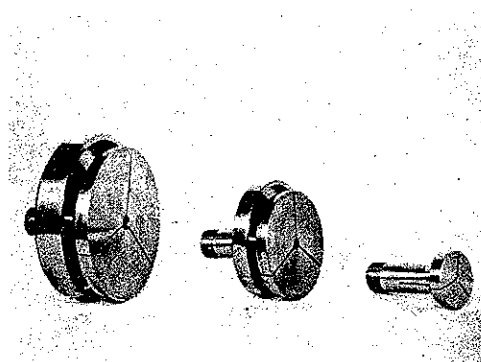
Boring & Turning Tool Holder



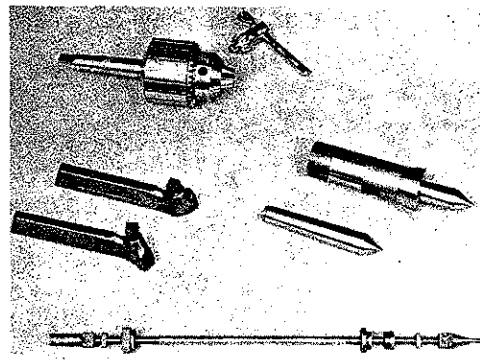
3 & 4 Jaw Chucks



Face Plates



Step Chucks



Collet Stop, Drill Chuck Etc.

## LEVELING LATHE

After all the slushing oil has been removed from the new lathe, the controls properly connected and the location has been decided on, the first and most important thing is to level the lathe bed. Unless this is done properly, it is impossible to do the accurate work for which it was built.

### TOOLS

Precision level, graduated to .0005 of an inch per foot, see Fig. 1.  
Bar of steel turned similar to Fig. 2  
Micrometer (Preferable graduated in .0001")  
Wrenches suitable for jack screws  
Two size blocks .3750"



Fig. 1. Precision Level

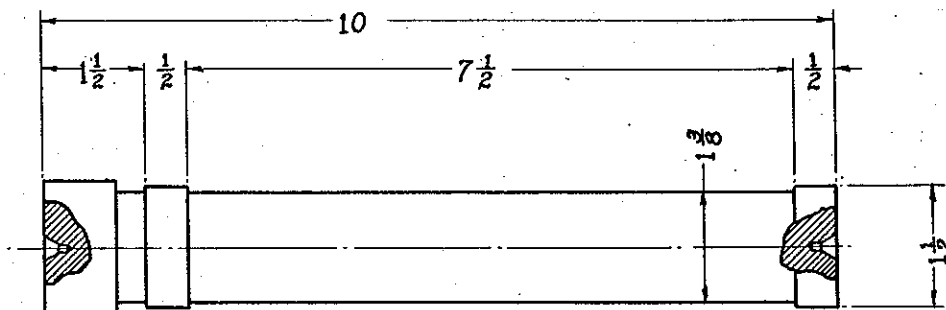


Fig. 2. Test Bar

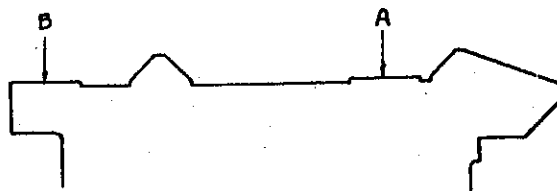


Fig. 3. Lathe Bed Outline

## PROCEDURE

After the lathe has been thoroughly cleaned, place the precision level on way marked (A) Fig. 3, and by adjusting the jack screws see that the bed is approximately level longitudinally.

Check the transverse level of the bed at the head end. First, by placing the size blocks at (A) and (B) Fig. 3 and supporting the precision level on these blocks. This end of the bed is leveled by placing shims in the necessary places and then securely fastened.

Move the size blocks to the tailstock end and by using the jack screws level this end of the bed. Make a final check on the longitudinal leveling and if necessary, correct with the jack screws. Be sure the transverse level of the bed is not disturbed during this last operation.

## TURNING TEST

As a final check on the alignment of the lathe bed, the turning test is necessary to insure accurate work.

In case a precision level is not available all leveling may be done this way. Turn a piece similar to Fig. 2. This bar is held either in a collet (1") or a chuck. After the bar has been rough turned, set the lathe for the slowest open belt speed and the finest feed and take a finish chip of not over .001 of an inch in depth. Measure both collars with a micrometer and if the diameters are within .0003 of being equal, the lathe may be considered level. If the outer collar is large, raise the outer jack screw. (1/6 of a turn will make an approximate change of .0005 of an inch in the difference in diameters.)

If the inner collar is large, raise the rear jack screw and take another chip off both collars. When both collars measure within .0003 of each other, tighten the hold-down bolts. Be sure this is done carefully in order not to disturb the jack heights.

This bar should be kept with the tools for the lathe, as it will prove useful for realigning the tailstock after taper work and for a periodic check-up of the leveling of the lathe.

## LUBRICATION

### HEADSTOCK

Two oil cups; Fig. 4 (A) at the front of the head should be checked to see they are full each time the lathe is used. These should be kept filled with oil, equivalent to Colonial Beacon "Spinesso #38", before the lathe is started. Do not add oil while lathe is running.

On the back gear quill, there is an oil hole cover that should be filled before using the back gears. Put a few drops of oil on the gears themselves each time they are used.

When the draw bar is used a film of machine oil should be applied to the draw bar where it bears in the spindle (D) Fig. 5. Be sure the spindle at (C) is absolutely clean as a little dirt here can do a great deal of damage.

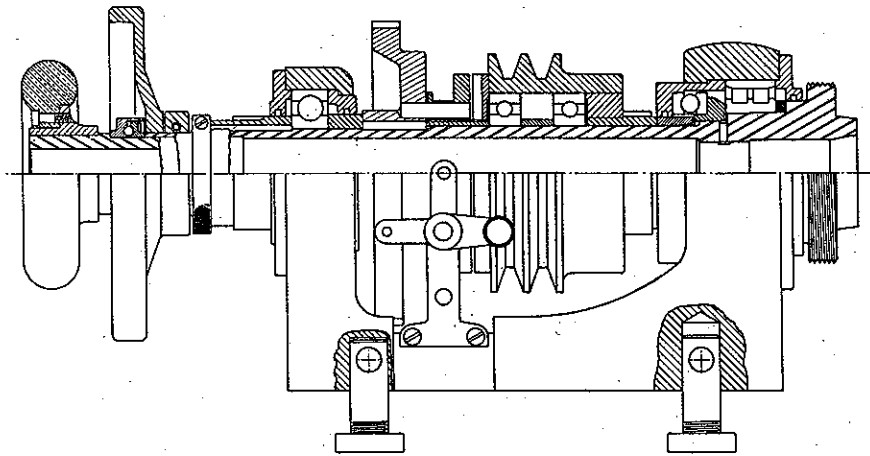


Fig. 4 Sectional View of Headstock

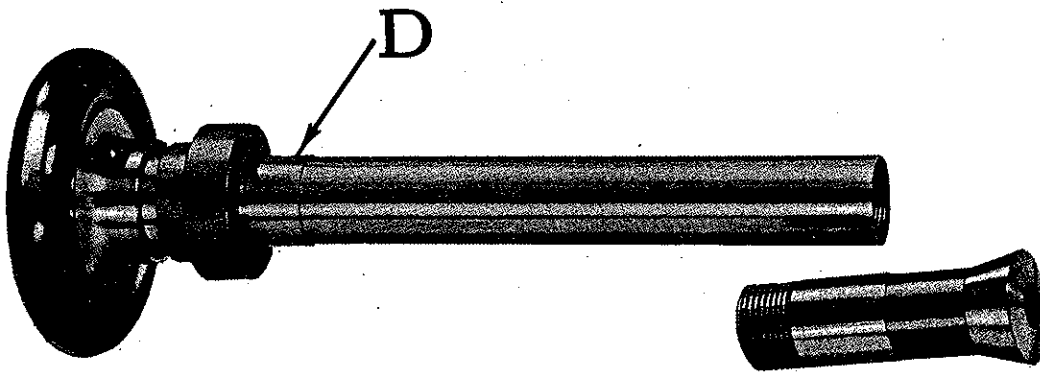


Fig. 5 Collet and Draw Bar

## GEAR BOX AND CHANGE GEARS

Oil cups on the gear box are filled every day before starting the machine.

The pick-off gear cover should be removed and oil injected daily where marked. See Fig. 7. The sliding gear and the gear guard oil cup should receive attention daily with a good grade of machine oil.

## SLIDE REST AND APRON

Fill all oil cups daily with a good grade of machine oil.

All dovetails and ways should be oiled often enough to maintain a thin film of oil.

The feed rod and lead screw bearings should be oiled daily and the lead screw itself oiled before cutting a thread.

A convenient method of filling smaller ball valve oilers is to depress the ball cover with a scriber or small wire and pour the oil on this. The oil in turn runs down into the hole, with a minimum of leakage.

## MOTOR DRIVE

The only lubrication required for the drive is either clearly indicated by oil cups on the outside of the housing or indicated in raised letters as on the removable cover over the variable speed pulley on the right side of the housing. These cups should be filled with a good grade of machine oil weekly.

All other bearings in this drive unit are sealed for life and require no additional lubrication. The motor, unless tagged differently, has grease lubricated bearings and need not be lubricated but once a year.

## CUTTING SCREW THREADS

The purpose of these instructions is to acquaint the mechanic with the setting up of the 8A lathe for screw cutting and not for instruction in the actual machining.

| SLIDING GEAR |   | THREADS PER INCH |    |    |     |    |    |    |    | TOP LEVER | PICK OFF GEAR |       | FEED<br>TOP LEVER<br>CENTRAL<br>10 TIMES<br>*THREADS<br>APPROX. |
|--------------|---|------------------|----|----|-----|----|----|----|----|-----------|---------------|-------|-----------------------------------------------------------------|
| OUT          | * | 12½              | 11 | 10 | 9   | 8  | 7  | 6½ | 6  | RIGHT     | INNER         | OUTER |                                                                 |
|              |   | 25               | 22 | 20 | 18  | 16 | 14 | 13 | 12 | LEFT      | 72            | 96    |                                                                 |
| IN           | * | 50               | 44 | 40 | 36  | 32 | 28 | 26 | 24 | RIGHT     |               |       |                                                                 |
|              |   | 100              | 88 | 80 | 72  | 64 | 56 | 52 | 48 | LEFT      |               |       |                                                                 |
| OUT          | * |                  |    | 15 |     |    |    |    |    | RIGHT     | 92            |       |                                                                 |
|              |   |                  |    | 30 | 27  |    |    |    |    | LEFT      |               |       |                                                                 |
|              | * |                  |    |    | 11½ |    |    |    |    | RIGHT     |               |       |                                                                 |

Fig. 6 Index Plate for Quick Change Gear Box

By using the quick change gear box 32 standard pitches can be cut without resorting to pick-off gears. All are American standard pitches from 6 to 100 threads per inch and are spotted on the index plate, Fig. 8. In addition 11-1/2, 27, 15, 30, 60 and 120 which are frequently used, non-standard pitches can be cut with the use of pick-off gears furnished as standard equipment with the lathe. The instructions on the index plate should be sufficient for cutting these pitches, with the possible exception of the 60 and 120 pitches. These are obtained by moving the sliding gear in, when arranged to cut either 15 or 30 threads per inch.

A threading dial is furnished as standard equipment with this lathe. A few simple rules should be followed when using this dial, they are:

1. When cutting any whole number thread, the half nuts may be engaged at any of the four lines. Succeeding cuts may be taken at any line.
2. When cutting 1/2 threads (6 1/2, 11 1/2, etc.) use numbers opposite each other (2 and 4) or (1 and 3). Succeeding cuts must be taken at either the same line or the line directly opposite it.



Fig. 7, Pick Off Gears

To change pick-off gears, first remove (A) in Fig. 7. This allows both pick-off gears to be removed. Before replacing any gears loosen (B) to allow bracket to move freely. Adjust gears so there is a small amount of back-lash and tighten (B). Replace (A); oil where marked, and turn gear train by hand to be sure nothing binds.

## METRIC SCREW THREADS

In order to cut a wide range of metric threads, the following extra pick-off gears are required, 127, 120, 112, 105, 102 and 100.

Metric Screw Thread Chart

| Millimeter Pitch | Inner Pick-off Gears | Outer Pick-off Gears | Gear Box Arranged to cut threads per inch |
|------------------|----------------------|----------------------|-------------------------------------------|
| .25              | 127                  | 120                  | 72                                        |
| .3               | 127                  | 100                  | 50                                        |
| .4               | 127                  | 96                   | 36                                        |
| .5               | 127                  | 120                  | 36                                        |
| .6               | 127                  | 100                  | 25                                        |
| .7               | 127                  | 112                  | 24                                        |
| .75              | 127                  | 100                  | 20                                        |
| .8               | 127                  | 96                   | 18                                        |
| .85              | 127                  | 102                  | 18                                        |
| .9               | 127                  | 96                   | 16                                        |
| 1.0              | 127                  | 120                  | 18                                        |
| 1.25             | 127                  | 100                  | 12                                        |
| 1.5              | 127                  | 100                  | 10                                        |
| 1.75             | 127                  | 105                  | 9                                         |
| 2.0              | 127                  | 120                  | 9                                         |
| 2.25             | 127                  | 105                  | 7                                         |
| 2.5              | 127                  | 100                  | 6                                         |

Formula for extra screw threads

$$\frac{A}{B} = \frac{3T}{4G} \quad \text{or} \quad T = \frac{4AG}{3B}$$

A - Inner Gear

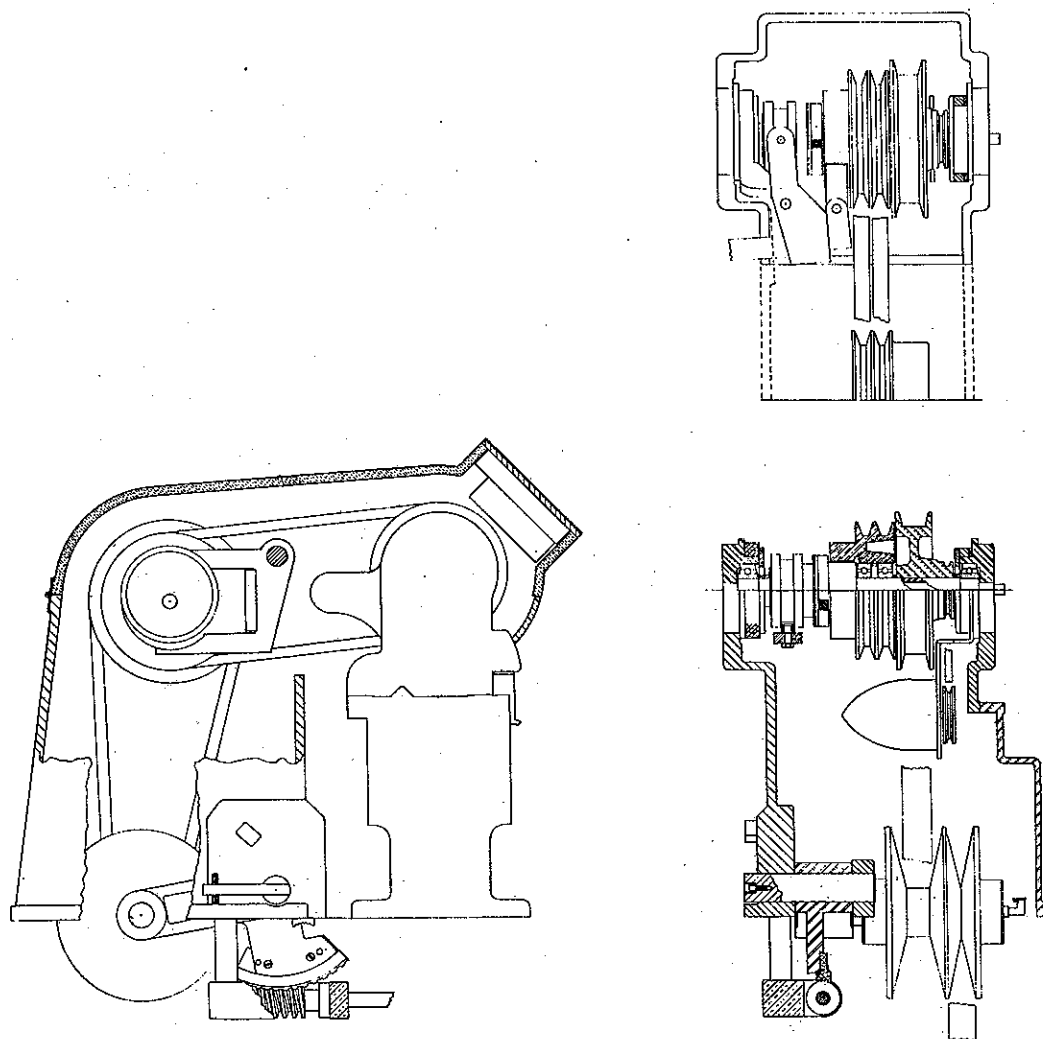
B - Outer Gear

T - Threads per inch

G - Thread from upper 4 rows of index as most convenient factor

When cutting metric threads do not use the threading dial as there is no relationship between the dial and metric threads. The lathe must be reversed, leaving the nut engaged with the lead screw.

## VARIABLE SPEED DRIVE



Speed range 32 to 2000 R.P.M.

A 1200 R.P.M. motor drives a variable pitch double sheave. This sheave moves through an arc controlled by the handwheel on the front of the cabinet to give a speed range of 7 to 1 with open belts. The overall ratio of 63 to 1 is made possible by the use of 9 to 1 back gears for the low speed range. The back gears ensure adequate torque at these low speeds.

The countershaft, mounted directly behind the headstock spindle, is driven by a wide section V-belt from the variable pulley. This, in turn, is coupled to the pulley driving the pair of matched spindle belts by a multi-disc clutch. The lever, which actuates this clutch, comes out over the rear of the headstock. With the clutch in the off position, toward the operator, a brake may be applied by additional pressure toward the operator.

To adjust the brake or clutch, it is necessary to remove the four cap screws at the rear of the drive housing, remove the screw in the center of the housing top - this allows you to get at the cap screw that holds the clutch lever in place. After the clutch lever has been removed, the top housing may be lifted for clutch adjustment, brake adjustment, etc.

## VARIABLE SPEED DRIVE (Continued)

### Belt Adjustment

The spindle belts are adjusted by loosening the four cap screws in the top of the housing and turning the countershaft end caps with the tool post wrench until the belts are snug. The end caps should be turned clockwise, looking from the tailstock end of the lathe.

### Lubrication

The only lubrication required for the drive is either clearly indicated by oil cups on the outside of the housing or indicated in raised letters as on the removable cover over the variable speed pulley on the right side of the housing. This oil cup should be filled with a good grade of machine oil weekly. All other bearings in this drive unit are sealed for life and require no additional lubrication. The motor should be regreased approximately once every year.

The clutch on the countershaft may require adjusting periodically and complete instructions for doing this are fastened to the inside of the top cover.

The electrical control for the motor is a full magnetic starter providing thermal overload protection plus low voltage and no voltage protection. A master drum switch operates the magnetic coils on the starter on a pilot circuit insuring safe foolproof control of the motor.

The variable speed belts are adjusted automatically by the counterweight and shock absorber system on the rear of the motor. If after a long period of time it becomes necessary to increase the motion to the motor base sufficient blocks under the motor base support may be removed and the necessary motion restored.

## GENERAL INFORMATION

Never use compressed air for cleaning the lathe as it will lodge chips in between slides and other hard to reach places.

Clean the lathe every day or after every job is completed.

Never use oil of unknown characteristics on any part of this machine.

If the overload switch on the motor trips, be sure to find the cause of the overload before resetting it.

Never lay files or similar tools on the lathe bed.

The compound and cross slide gibs are adjusted by self binding screws. If these screws are tightened up and then backed off  $1/4$  of a turn they should be about right for general work.

The saddle gib is tapered. To tighten it, the adjusting screw facing the tailstock must first be loosened. Tighten the head end screw sufficiently to bring the gib to the desired fit and retighten the screw facing the tailstock.

When ordering repair parts or additional attachments give both the part number and the serial number of the lathe.

Example: 1 - Transmitter pin spring #8AN-67; Lathe #241. The serial number will be found on the end of the lathe bed. The lists and drawings on the following pages will enable you to find the part number.

The swivel slide has at least two index marks visible at all times. The side index reads zero when the compound slide is traveling parallel with the cross slide. Use this index when your angle is measured from a plane at right angles to the axis of the lathe, as is thread cutting. The front and rear index give one-half the included angle directly, without calculation.

## INSTRUCTIONS FOR WADE THREAD-LOCK SPINDLE NOSE

This spindle nose is the same general form as the Cam-Lock Spindle Nose; that is, the short taper ensures radial concentricity and the broad flat surface behind the taper provides a true surface to clamp against.

The driving button takes all the turning torque, so the sole function of the thread segment on the clamping ring is to pull the plate or chuck against the above mentioned true surfaces.

To put a chuck on this spindle nose the procedure is:

Turn the clamp ring as far as it will go clockwise, or in the direction opposite the locking arrow.

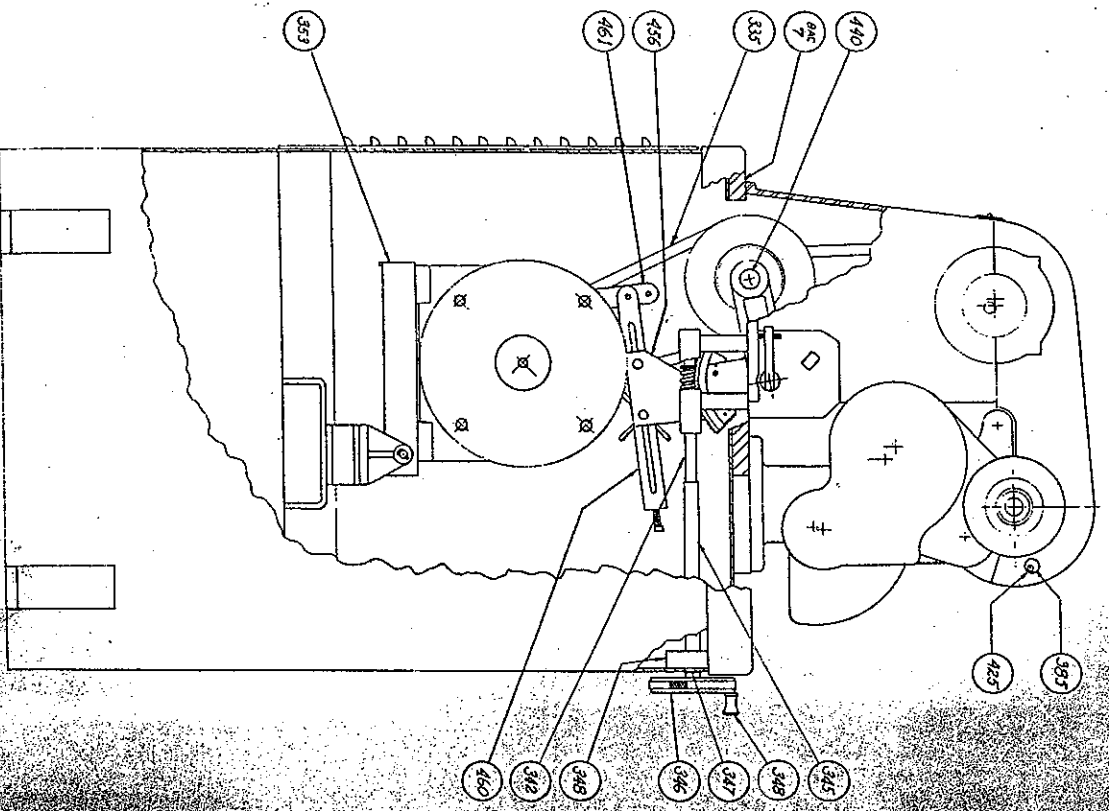
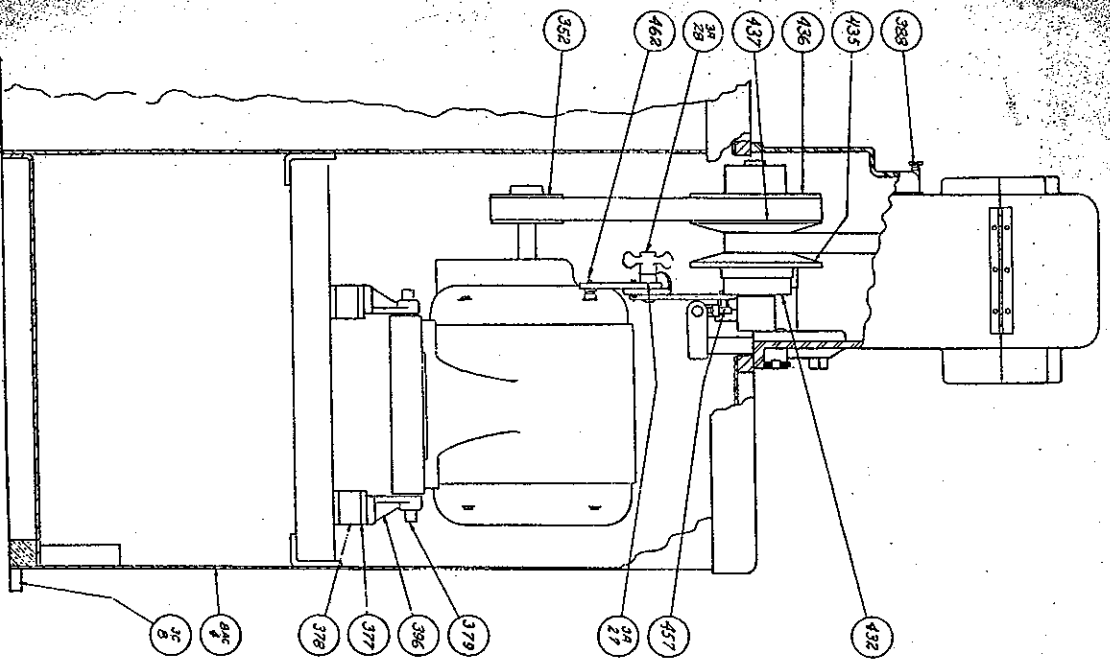
Line up the driving button with the hole in the spindle. This will automatically line up the thread segments with the openings in the spindle thread.

Turn the clamp ring by hand about an eighth of a turn. This will hold the chuck in place temporarily. The final tightening is accomplished with the pin wrench, supplied with the machine. In all, about  $1/5$  of a turn is necessary to tighten the chuck in place through differential thread with a clamping force approximately equal to 40 threads per inch.

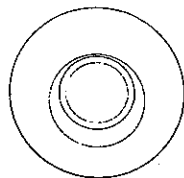
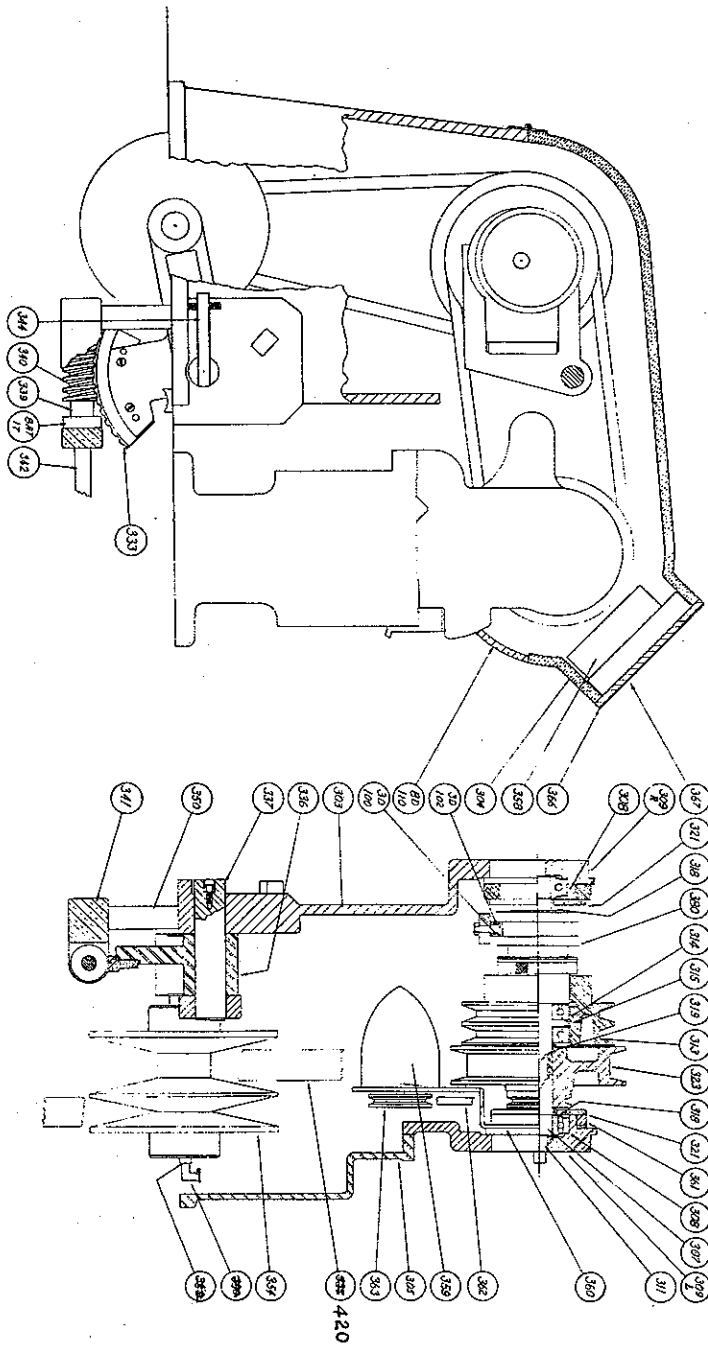
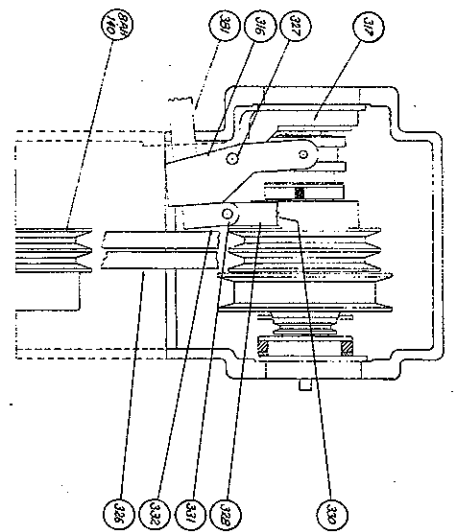
It goes without saying, both the spindle face and taper and the mating parts, must be absolutely clean to assure accurate work.

# VARIABLE SPEED DRIVE FOR 8A

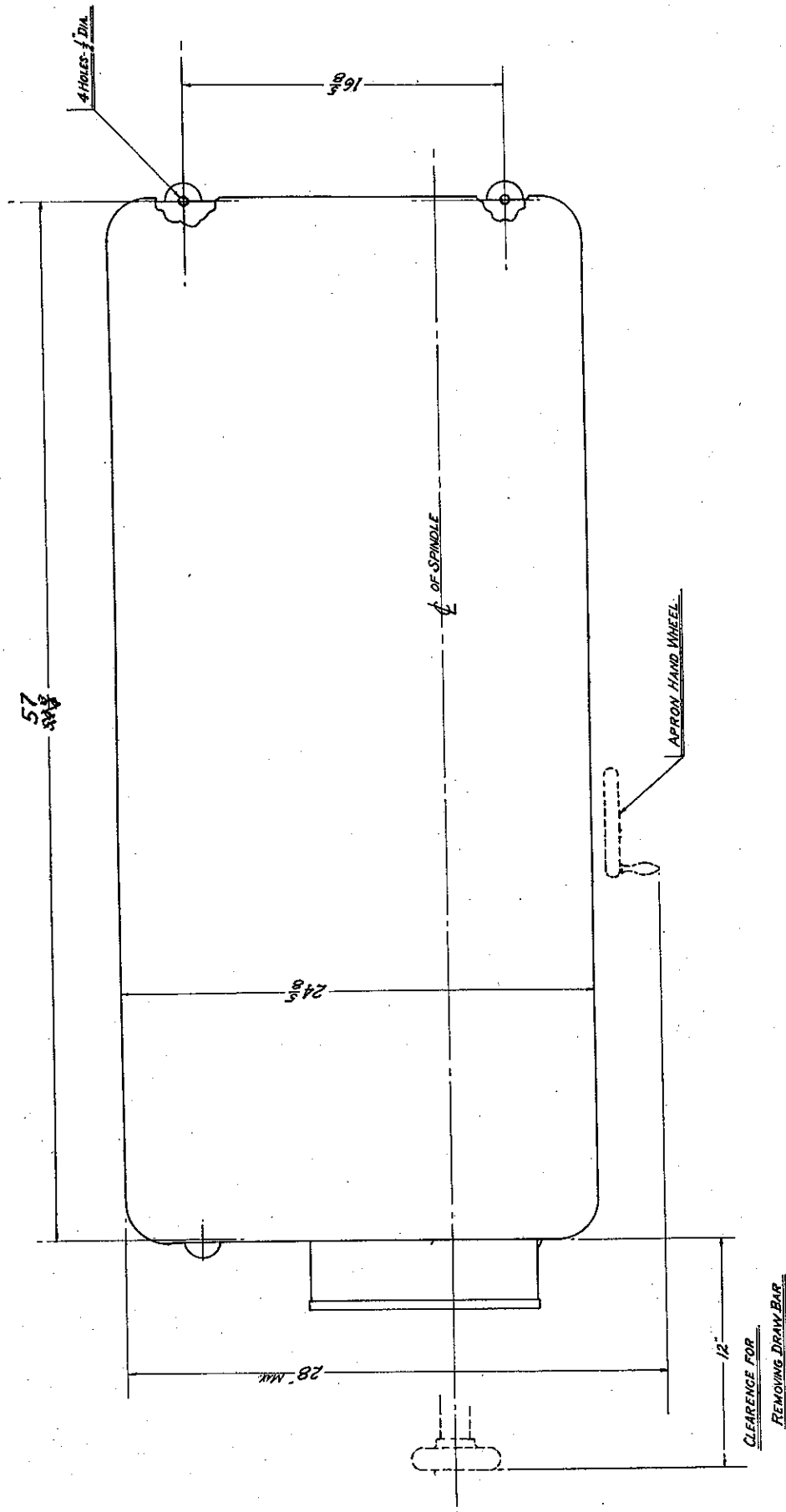
| Part No. | Name                                             | Part No. | Name                                                 |
|----------|--------------------------------------------------|----------|------------------------------------------------------|
| 8D-300   | V.S. Drive Assembly                              | 8D-359   | V.S. Drive Speed Indicator Pickup                    |
| 8D-301   | V.S. Drive Housing                               | 8D-360   | V.S. Drive Speed Indicator Pickup Brk.               |
| 8D-304   | V.S. Drive Housing Top Cover                     | 8D-361   | V.S. Drive Speed Indicator Pickup Brk. Ret. Ring     |
| 8D-305   | V.S. Drive Housing Side Cover                    | 8D-362   | V.S. Drive Speed Indicator Belt                      |
| 8D-307   | V.S. Countershaft                                | 8D-363   | V.S. Drive Speed Indicator Pulley                    |
| 8D-308   | V.S. Countershaft Bearings                       | 8D-364   | V.S. Drive Speed Indicator Pulley Screw              |
| 8D-309   | V.S. Countershaft Brng. Cap                      | 8D-365   | V.S. Drive Speed Indicator Adjusting Screw           |
| 8D-310   | V.S. Countershaft Brngs. Cap Pin                 | 8D-366   | V.S. Drive Speed Indicator Cover                     |
| 8D-311   | V.S. Countershaft Adjusting Rod                  | 8D-367   | V.S. Drive Speed Indicator Bezel                     |
| 8D-313   | V.S. Countershaft Clutch Pulley                  | 8D-372   | V.S. Drive Speed Indicator Dial 2000 RPM             |
| 8D-314   | V.S. Countershaft Clutch Pulley Brngs.           | 8D-373   | V.S. Drive Speed Indicator Dial 2800 RPM             |
| 8D-315   | V.S. Countershaft Clutch Pulley Brngs. Ret. Ring | 8D-375   | Motor Base Support 1/2"                              |
| 8D-316   | V.S. Countershaft Clutch Yoke                    | 8D-376   | Motor Base Support 3/4"                              |
| 8D-317   | V.S. Countershaft Clutch Yoke Brng.              | 8D-377   | Motor Base Support 1/4"                              |
| 8D-318   | V.S. Countershaft Clutch Spacer                  | 8D-378   | V.S. Drive Motor Base Support Block 1"               |
| 8D-319   | V.S. Countershaft Clutch Pulley Spacer           | 8D-379   | V.S. Drive Motor Base Hinge Pin                      |
| 8D-321   | V.S. Countershaft Clutch Yoke Brng. Plate        | 8D-380   | V.S. Drive Clutch                                    |
| 8D-322   | V.S. Countershaft Clutch Yoke Brng. Plate Screw  | 8D-381   | V.S. Drive Clutch Handle                             |
| 8D-323   | V.S. Countershaft Pulley                         | 8D-382   | V.S. Drive Clutch Handle Extension                   |
| 8D-324   | V.S. Countershaft Pulley Key                     | 8D-383   | V.S. Drive Clutch Handle Extension Special           |
| 8D-325   | V.S. Countershaft Pulley Key Screw               | 8D-384   | V.S. Drive Clutch Handle Knob                        |
| 8D-326   | V.S. Countershaft Belts                          | 8D-385   | Stop Pin Bushing                                     |
| 8D-327   | V.S. Countershaft Clutch Yoke Pivot              | 8D-386   | Stop Pin                                             |
| 8D-328   | V.S. Countershaft Brake Shoe                     | 8D-387   | V.S. Drive Cover Hinges                              |
| 8D-329   | V.S. Countershaft Brake                          | 8D-388   | V.S. Drive Side Cover Screw                          |
| 8D-330   | V.S. Countershaft Brake Shoe Lining              | 8D-389   | V.S. Drive Variable Pitch Pulley Oil Cup Adapter     |
| 8D-331   | V.S. Countershaft Brake Shoe Pivot               | 8D-390   | V.S. Drive Variable Pitch Pulley Oil Cup             |
| 8D-332   | V.S. Countershaft Brake Shoe Bracket             | 8D-391   | V.S. Drive Motor Base Counterweight                  |
| 8D-333   | V.S. Pulley Gear Sector                          | 8D-392   | V.S. Drive Motor Base Counterweight Pulley           |
| 8D-334   |                                                  | 8D-393   | V.S. Drive Motor Base Counterweight Pulley Stud      |
| 8D-335   | V.S. Pulley Belts                                | 8D-394   | V.S. Drive Motor Base Counterweight Cable            |
| 8D-336   | V.S. Pulley Bracket                              | 8D-395   | V.S. Drive Motor Base Counterweight Arm              |
| 8D-337   | V.S. Pulley Shaft                                | 8D-396   | V.S. Drive Motor Base Counterweight Bracket          |
| 8D-338   | V.S. Pulley Shaft Screws                         | 8D-397   | V.S. Drive Motor Base Shock Absorber Cyl.            |
| 8D-339   | V.S. Pulley Adj. Worm Spacer                     | 8D-398   | V.S. Drive Motor Base Shock Absorber Cyl. Cap        |
| 8D-340   | V.S. Pulley Adj. Worm                            | 8D-399   | V.S. Drive Motor Base Shock Absorber Cyl. Pivot      |
| 8D-341   | V.S. Pulley Adj. Worm Bracket                    | 8D-400   | V.S. Drive Motor Base Shock Absorber Cyl. Base Link  |
| 8D-342   | V.S. Pulley Adj. Worm Shaft                      | 8D-401   | V.S. Drive Motor Base Shock Absorber Piston          |
| 8D-343   |                                                  | 8D-402   | V.S. Drive Motor Base Shock Absorber Piston Rod      |
| 8D-344   | V.S. Pulley Adj. Stop Arm                        | 8D-403   | V.S. Drive Motor Base Shock Absorber Piston Rod Link |
| 8D-345   | V.S. Pulley Adj. Shaft Extension                 | 8D-404   | V.S. Drive Motor Pulley for 50 Cycle                 |
| 8D-346   | V.S. Pulley Adj. Hand Wheel                      | 8D-408   | Control Panel Shift Lever Shaft Arm                  |
| 8D-347   | V.S. Pulley Adj. Hand Wheel Brng.                | 8D-409   | Control Panel                                        |
| 8D-348   | V.S. Pulley Hand Wheel Brng. Cap                 | 8D-410   | Control Panel Shift Lever Shaft                      |
| 8D-349   | V.S. Pulley Adj. Hand Wheel Handle               | 8D-411   | Control Panel Shift Lever Shaft Extension            |
| 8D-350   | V.S. Pulley Adj. Worm Bracket Rods               | 8D-412   | Control Panel Shift Lever Shaft Ext. Brng. Conn.     |
| 8D-351   | V.S. Pulley Adj. Hand Wheel Stud                 | 8D-413   | Control Panel Shift Lever Connecting Rod             |
| 8D-352   | V.S. Drive Motor Pulley                          | 8D-414   | Drum Switch Lever                                    |
| 8D-353   | V.S. Drive Motor Adj. Base                       | 8D-425   | Locking Pin                                          |
| 8D-354   | V.S. Drive Variable Pitch Pulley                 | 8D-432   | V.S. Pulley Left Bearing Housing                     |
| 8D-358   | V.S. Drive Speed Indicator                       | 8D-435   | V.S. Pulley Left End Plate                           |
|          |                                                  | 8D-436   | V.S. Pulley Right End Plate                          |
|          |                                                  | 8D-437   | V.S. Pulley Center Plate                             |
|          |                                                  | 8D-440   | V.S. Pulley Inner Shaft                              |
|          |                                                  | 8D-456   | Upper Belt Adj. Link Arm                             |
|          |                                                  | 8D-457   | Upper Belt Adj. Link Arm Stud                        |
|          |                                                  | 8D-460   | Lower Belt Adj. Link Arm                             |
|          |                                                  | 8D-461   | Lower Arm Extension                                  |
|          |                                                  | 8D-462   | Lower Arm Stud                                       |



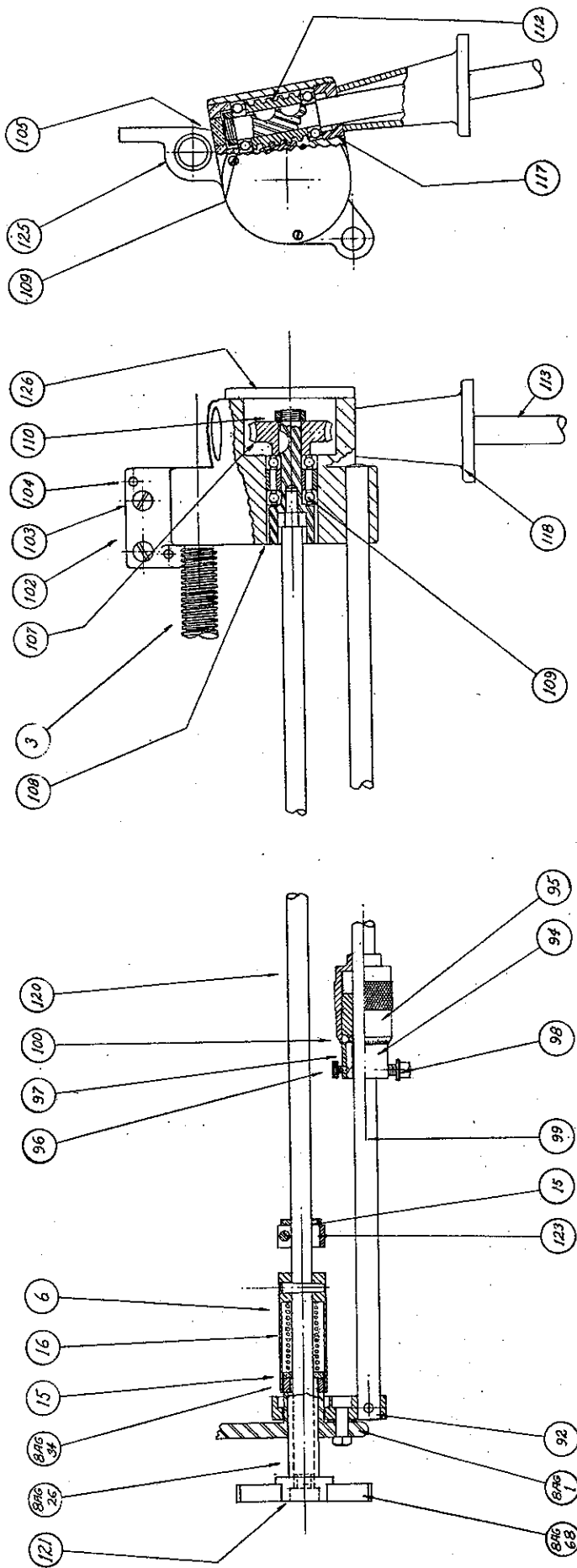
Drive Assembly



# Drive Assembly



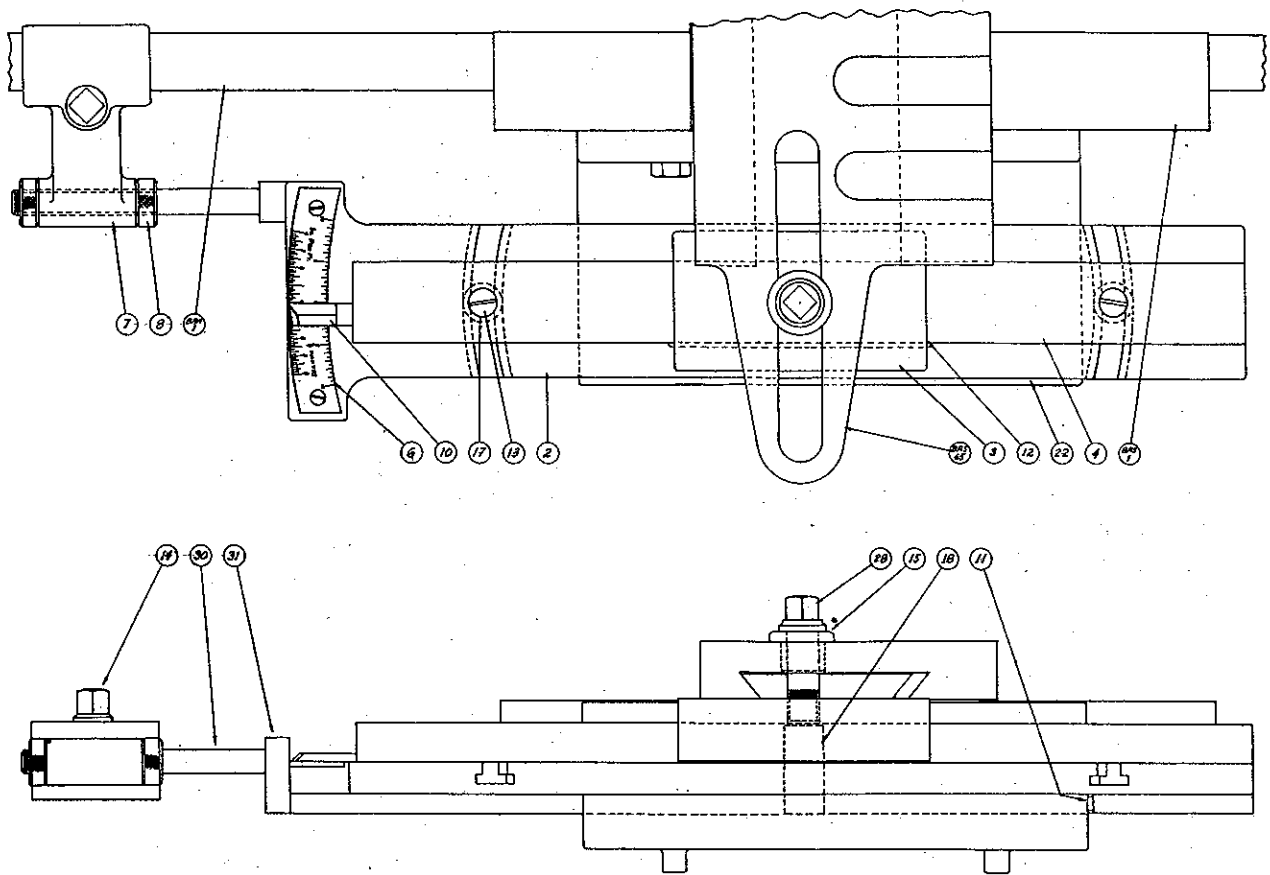
FLOOR PLAN



## Special Feed Rod Drive

### MICROMETER ATTACHMENT

| Part No. | Name                             |
|----------|----------------------------------|
| 8AA-89   | Micrometer Body Clamp Screw Plug |
| 8AA-90   | Micrometer Assembly              |
| 8AA-91   | Micrometer Outboard Bracket      |
| 8AA-92   | Micrometer Bracket               |
| 8AA-93   | Micrometer Stop Bracket          |
| 8AA-94   | Micrometer Body                  |
| 8AA-95   | Micrometer Barrel                |
| 8AA-96   | Micrometer Barrel Clamp Screw    |
| 8AA-97   | Micrometer Barrel Clamp Rod      |
| 8AA-98   | Micrometer Body Clamp Screw      |
| 8AA-99   | Micrometer Rod                   |
| 8AA-100  | Micrometer Barrel Clamp          |

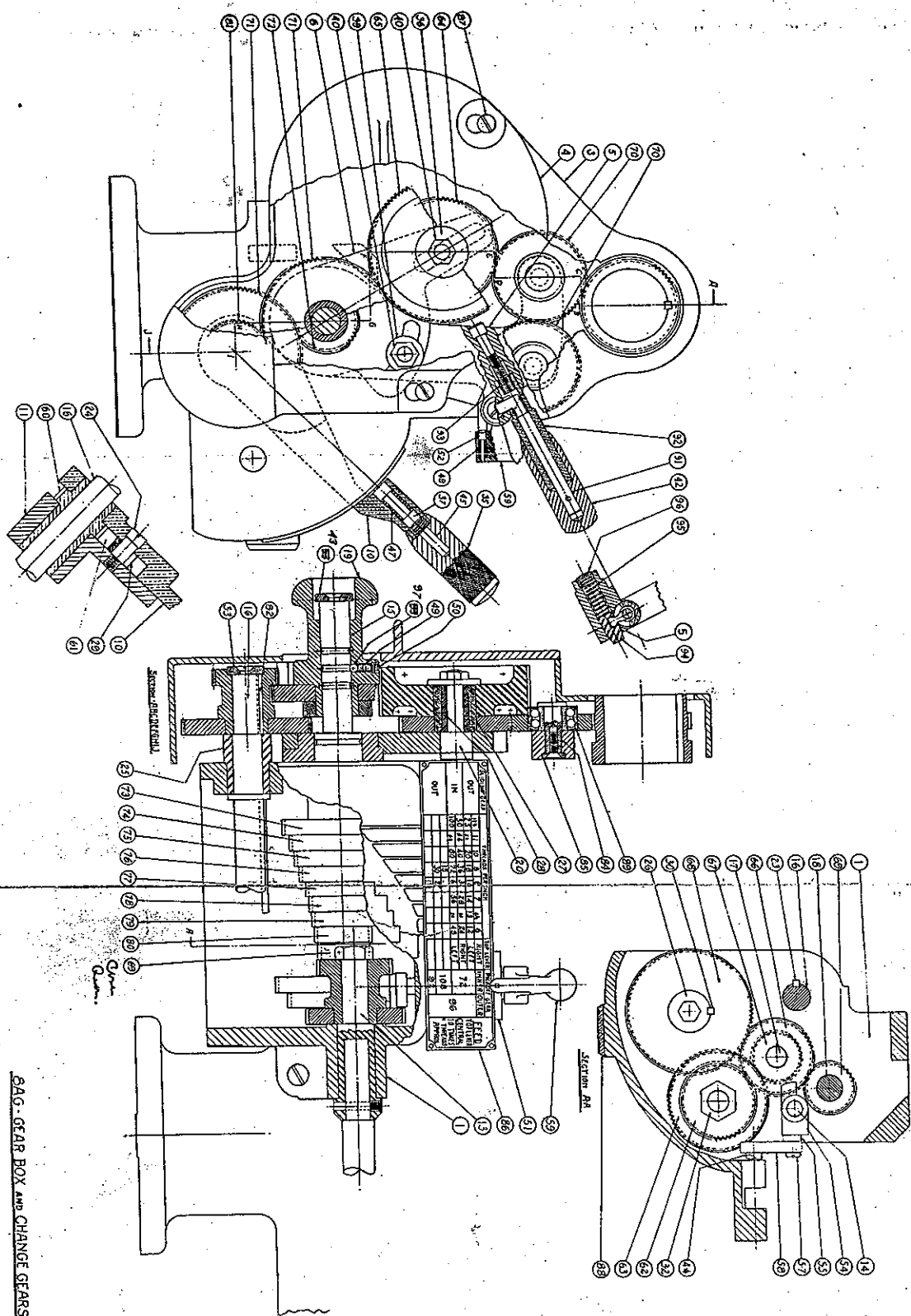


### TAPER TURNING ATTACHMENT

| Part No. | Name                            |
|----------|---------------------------------|
| 8AB-2    | Table                           |
| 3        | Top Slide                       |
| 4        | Adjustable Table                |
| 6        | Table Scale                     |
| 7        | Anchor Bolt Bracket             |
| 8        | Anchor Bolt Check Nuts          |
| 10       | Pointer                         |
| 11       | Base Gib                        |
| 12       | Top Gib                         |
| 13       | Lock Screws                     |
| 14       | Anchor Bolt Bracket Clamp Screw |
| 15       | Connecting Link Clamp Bushing   |
| 17       | Lock Screw Nuts                 |
| 18       | Center Post                     |
| 19       | Top Slide Gib Screw             |
| 20       | Base Slide Gib Screw            |
| 22       | Base                            |
| 28       | Connecting Link Clamp Screw     |
| 30       | Anchor Bolt                     |
| 31       | Anchor Bolt Head                |

# GEAR BOX AND CHANGE GEARS

| Part No. | Name                             | Part No. | Name                             |
|----------|----------------------------------|----------|----------------------------------|
| 8AG-1    | Gear Box Frame                   | 8AG-50   | Sliding Gear Knob Ret. Screw     |
| 2        | Pick-off Gear Rear Cover         | 51       | Interm. Feed Gear Latch Plate    |
| 3        | Pick-off Gear Guard              | 52       | Interm. Feed Gear Latch          |
| 4        | Pick-off Gear Front Cover        | 53       | Lower Shaft Gear Washer          |
| 5        | Reverse Gear Brkt.               | 54       | Interm. Feed Fork                |
| 6        | Pick-off Gear Brkt.              | 55       | Interm. Feed Link                |
| 7        | Change Gear Train Assembly       | 56       | Interm. Feed Link Screw          |
| 8        | Pick-off Gear Wrench             | 57       | Interm. Feed Lever Screw         |
| 10       | Tumbler Lever                    | 58       | Interm. Feed Lever               |
| 11       | Tumbler Lever Hub                | 59       | Interm. Feed Gear Handle         |
| 12       | Lead Screw Gear Shaft Dowel      | 60       | Tumbler Gear                     |
| 13       | Lead Screw Gear Shaft            | 61       | Tumbler Gear Idler               |
| 14       | Interm. Feed Folk Stud           | 62       | Lead Screw Gear 48 T.            |
| 15       | Sliding Gear Shaft Extension     | 63       | Lead Screw Gear 64 T.            |
| 16       | Tumbler Lever Shaft              | 64       | Pick-off Gear Inner              |
| 17       | Interm. Feed Gear Stud           | 65       | Pick-off Gear Outer              |
| 18       | Gear Cone Shaft                  | 66       | Interm. Feed Gear 48 T.          |
| 19       | Sliding Gear Knob                | 67       | Interm. Feed Gear 32 T.          |
| 20       | Pick-off Gear Stud               | 68       | Feed Shaft Clutch Gear           |
| 21       | Pick-off Gear Brkt. Locking Stud | 69       | Cone Gear Long                   |
| 23       | Tumbler Gear Key                 | 70       | Reverse Gear 60 Teeth            |
| 24       | Tumbler Gear Idler Stud          | 71       | Sliding Gear 84 Teeth            |
| 25       | Lower Shaft Bushing              | 72       | Sliding Gear 42 Teeth            |
| 26       | Feed Shaft Extension             | 73       | Cone Gear 75 Teeth               |
| 27       | Pick-off Gear Bushing            | 74       | Cone Gear 66 Teeth               |
| 28       | Pick-off Gear Bearing            | 75       | Cone Gear 60 Teeth               |
| 29       | Tumbler Gear Idler Bushing       | 76       | Cone Gear 54 Teeth               |
| 30       | Feed Shaft Extension Key         | 77       | Cone Gear 48 Teeth               |
| 31       | Gear Cone Shaft Key              | 78       | Cone Gear 42 Teeth               |
| 32       | Lead Screw Gear Shaft Nut        | 79       | Cone Gear 39 Teeth               |
| 33       | Interm. Feed Gear Pin            | 80       | Cone Gear 36 Teeth               |
| 34       | Feed Shaft Extension Nut         | 81       | Lower Shaft Gear 42 Teeth        |
| 35       | Tumbler Gear Index Handle        | 82       | Lower Shaft Gear Key             |
| 36       | Pick-off Gear Washer             | 83       | Interm. Feed Gear Stud Washer    |
| 37       | Tumbler Gear Index Spring Bush.  | 84       | Reverse Gear Bearing Stud        |
| 38       | Tumbler Gear Shifting Pin Bush.  | 85       | Reverse Gear Bearing Stud Washer |
| 39       | Reverse Gear Washer              | 86       | Thread Chart Plate               |
| 40       | Reverse Gear Nut                 | 87       | Pick-off Gear Cover Screws       |
| 41       | Reverse Gear Index Pin           | 88       | Name Plate                       |
| 42       | Reverse Gear Index Handle        | 89       | Reverse Gear Bearing             |
| 43       | Sliding Gear Washer              | 91       | Twist Handle Lever               |
| 44       | Interm. Feed Gear Lever Shaft    | 92       | Twist Handle Bushing             |
| 45       | Tumbler Gear Index Pin           | 93       | Twist Handle Bushing Plug        |
| 47       | Tumbler Gear Index Spring        | 94       | Reverse Gear Plunger             |
| 48       | Reverse Gear Index Spring        | 95       | Reverse Gear Plunger Spring      |
| 49       | Interm. Feed Gear Handle Spring  | 96       | Reverse Gear Plunger Spring Cap  |
| 50       | Sliding Gear Knob Ret. Screw     |          |                                  |



SAG - GEAR BOX AND CHANGE GEARS

## INSTRUCTIONS FOR RADIUS TURNING ATTACHMENT

This attachment is for producing spherical surfaces, either concave or convex (ball shapes), and for machining half-round grooves or half-round collars on shafts or bar work.

For these different operations two tool holders are furnished which fit the attachment interchangeably. The tool holder with the upright cutter (8B-27) is required to turn grooves or collars on the bar because its shape avoids interference with the bar. Only the point comes in contact with the work. This is an exclusive feature of the Wade Radius Attachment. This tool holder may also be used on ball turning and a variety of other shapes.

The tool holder with the horizontal cutter (8B-31) is primarily for turning concave spherical surfaces on the end of a bar but may also be used for ball turning or other shapes.

To operate:

(1) Remove Base Slide (8AS-65) and replace it with the Radius Turning Attachment. The Base Slide is removed by turning the ball crank clockwise until the nut runs off the screw. This allows the base to slide freely off the dovetail saddle way. The same nut (8AS-33) is used on the radius turner as on the Base Slide, this nut should be tightened before setting the attachment to zero.

The most important part of setting up this attachment is to locate the exact center line of the lathe in relation to the radius attachment. This setting block (8B-49), furnished, is used with the key in the "A" position, to establish the center line. The tailstock spindle is exactly 1" diameter and the face of the setting block is .500 from the center line, so if the block is brought up until it just touches the tailstock spindle, the center line of the attachment will be on the center line of the lathe. Be sure the backlash is in the proper relation to the radius being turned. When the center has been found, set the base slide dial to zero.

Set the tool to the desired radius. This may be accomplished by the use of the setting block (supplied with the machine) and gage blocks, scale, or by taking a chip on a piece of work. The latter method is, of course, the most accurate. When setting for the desired radius do not touch the base slide dial but feed the tool to the correct diameter with the small dial on the tool block. The radius established, it merely remains to take the necessary chips to reduce the work to a finished form. The actual feed is accomplished by backing the base slide off and taking a series of chips, until the return is made to the original setting of zero. The piece may be checked for roundness with a micrometer.

The above applies to a ball. A concave on the end of a bar is made by feeding the saddle along the bed to a predetermined stop. The setting block key, when placed in the "B" position, brings the face of the block two inches from the center line of the attachment. This position is useful when turning a concave on the end of a bar, as the tool must be on the opposite side of the center line and on the opposite side of the lathe, for a starting position from the position for turning a ball. There is an almost infinite variety of shapes that can be generated on a bar by changing the center line of the attachment in relation to the center line of the lathe, and in all cases, the important thing to bear in mind is this center line relationship. With the desired radius set on the tool block, the clamping gib may be tightened to insure rigidity.

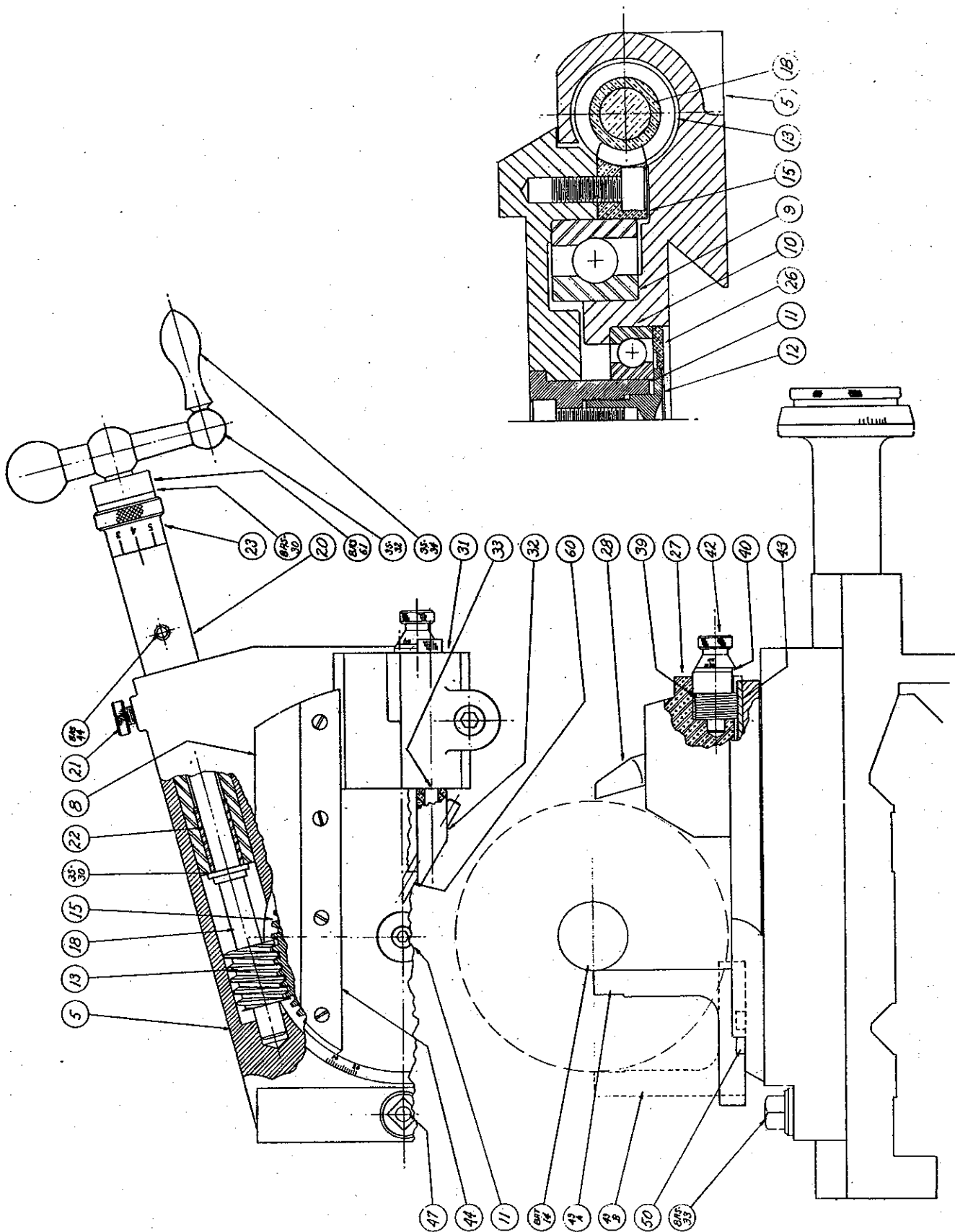
The tool-holding swivel rotates on ball bearings under a preload set at the factory. The bearings are lubricated and sealed and should not be touched unless absolutely necessary. The swivel is actuated by a worm driving a worm gear, or the worm assembly may be pulled out of engagement, after loosening the knurled head screw on the right hand side and the swivel turned by hand. This feature is valuable for turning wooden laps, non-ferrous metal - in other words, light work.

The tool blocks are provided with a graduated dial adjustment which, in the zero position, allows rapid positioning of the tool to approximately the correct position. The final adjustment may be made with the dial on the tool block.

## 8B

## RADIUS TURNING ATTACHMENT

| PART NO. | NAME                                        |
|----------|---------------------------------------------|
| 8B-1     | Radius Turning Attachment Assembly          |
| 8B-2     | Radius Turning Attachment Assembly Exploded |
| 8B-5     | Base Slide                                  |
| 8B-6     | Base Slide Gib                              |
| 8B-7     | Base Slide Gib Screws                       |
| 8B-8     | Swivel                                      |
| 8B-9     | Swivel Bearing Upper                        |
| 8B-10    | Swivel Bearing Lower                        |
| 8B-11    | Swivel Bearing Stud                         |
| 8B-12    | Swivel Bearing Stud Lock                    |
| 8B-13    | Worm                                        |
| 8B-14    | Worm Taper Pin                              |
| 8B-15    | Worm Wheel                                  |
| 8B-16    | Worm Wheel Screws                           |
| 8B-17    | Worm Wheel Dowels                           |
| 8B-18    | Worm Shaft                                  |
| 8B-19    | Worm Shaft Thrust Ring                      |
| 8B-20    | Worm Shaft Bushing                          |
| 8B-21    | Worm Shaft Bushing Retaining Screw          |
| 8B-22    | Worm Shaft Bearing                          |
| 8B-23    | Worm Shaft Dial                             |
| 8B-24    | Worm Shaft Dial Key                         |
| 8B-26    | Swivel Bearing Cap, Lower                   |
| 8B-27    | Vertical Tool Holder                        |
| 8B-28    | Vertical Tool Bit                           |
| 8B-29    | Vertical Tool Bit Clamp Screw               |
| 8B-31    | Horizontal Tool Holder                      |
| 8B-32    | Horizontal Tool Holder Shank                |
| 8B-33    | Horizontal Tool Holder Clamp                |
| 8B-34    | Horizontal Tool Bit                         |
| 8B-35    | Horizontal Tool Bit Clamp                   |
| 8B-36    | Horizontal Tool Bit Clamp Screw             |
| 8B-39    | Tool Holder Feed Screw                      |
| 8B-40    | Tool Holder Feed Screw Dial Bushing         |
| 8B-41    | Tool Holder Feed Screw Rack Screw           |
| 8B-42    | Tool Holder Feed Screw Dial                 |
| 8B-43    | Tool Holder Feed Screw Rack                 |
| 8B-44    | Tool Holder Gib                             |
| 8B-45    | Tool Holder Gib Screw                       |
| 8B-46    | Tool Holder Gib Clamp Screws                |
| 8B-47    | Base Nut Clamp                              |
| 8B-49    | Set Block for 8A                            |
| 8B-50    | Set Block Stop                              |



# 8A BALL BEARING HEADSTOCK

| Part No. | Name                          | Part No. | Name                                            |
|----------|-------------------------------|----------|-------------------------------------------------|
| 8AH-11   | Draw Bar                      | 8AH-139  | Draw Bar for Screw Loc Spindle                  |
| 8AH-17   | Front Cam Rear                | 8AH-140  | Cone Pulley for Variable Speed Drive            |
| 8AH-19   | Nose Cap                      | 8AH-141  | Cone Pulley Spacer                              |
| 8AH-23   | Spindle Adjusting Nut         | 8AH-143  | Retaining Ring for 8AH-128                      |
| 8AH-25   | Cone Pulley Gear Key          | 8AH-144  | Lever Closer Assembly                           |
| 8AH-26   | Front Cam                     | 8AH-145  | Lever Closer Bracket                            |
| 8AH-27   | Back Gear Handle              | 8AH-146  | Lever Closer Thrust Collar                      |
| 8AH-29   | Spindle Back Drive Key        | 8AH-147  | Lever Closer Draw Bar                           |
| 8AH-39   | Spindle Collet Key            | 8AH-150  | Index Plate Assembly                            |
| 8AH-41   | Cam Rear Bolt Nut             | 8AH-151  | Index Bracket                                   |
| 8AH-43   | Cam Bolt Rear                 | 8AH-152  | Index Bracket Screws                            |
| 8AH-101  | Frame                         | 8AH-153  | Index Bracket Dowels                            |
| 8AH-102  | Front Dust Cap                | 8AH-154  | Index Pin                                       |
| 8AH-103  | Roller Bearing Spacer         | 8AH-155  | Index Pin Spring                                |
| 8AH-104  | Roller Collar                 | 8AH-156  | Index Pin Spring Stop                           |
| 8AH-105  | Thrust Bearing                | 8AH-157  | Index Pin Knob                                  |
| 8AH-106  | Thrust Bearing Housing        | 8AH-158  | Index Plate - 45                                |
| 8AH-107  | Spindle                       | 8AH-159  | Index Plate - 56                                |
| 8AH-108  | Spindle Back Gear (96 T)      | 8AH-160  | Index Plate - 60                                |
| 8AH-110  | Cone Pulley Gear              | 8AH-161  | Index Plate - 64                                |
| 8AH-111  | Ball Bearing                  | 8AH-162  | Index Plate - 72                                |
| 8AH-112  | Ball Bearing Spacer           | 8AH-163  | Index Plate - 80                                |
| 8AH-113  | Rear Inside Dust Cap          | 8AH-164  | Index Plate - 84                                |
| 8AH-114  | Rear Outside Dust Cap         | 8AH-165  | Index Plate - 100                               |
| 8AH-115  | Spindle Gear                  | 8AH-166  | Index Plate Clamp Screw                         |
| 8AH-116  | Back Gear Quill               | 8AH-168  | Ball Bearing Pulley Spacer                      |
| 8AH-117  | Back Gear Shaft               | 8AH-169  | Headstock Assembly with Ex.Back<br>Gear Control |
| 8AH-118  | Back Gear Shaft Rear Bushing  | 8AH-170  | Back Gear Control Assembly                      |
| 8AH-119  | Back Gear Shaft Front Bushing | 8AH-171  | Gear Shift Fork                                 |
| 8AH-120  | Back Gear Quill Bushing       | 8AH-172  | Gear Shift Fork Studs                           |
| 8AH-122  | Front Dust Felt               | 8AH-173  | Gear Shift Fork Bracket                         |
| 8AH-123  | Front Inside Dust Felt        | 8AH-174  | Gear Shift Fork Bracket Screws                  |
| 8AH-124  | Rear Dust Felt                | 8AH-175  | Gear Shift Fork Pivot                           |
| 8AH-125  | Spindle Gear Key              | 8AH-176  | Gear Shift Fork Pivot Set Screw                 |
| 8AH-126  | Back Gear                     | 8AH-177  | Gear Shift Eccentric Shaft                      |
| 8AH-127  | Roller Bearing                | 8AH-178  | Gear Shift Handle                               |
| 8AH-128  | Ball Bearing                  | 8AH-179  | Gear Shift Handle Taper Pin                     |
| 8AH-129  | Back Gear Quill Oil Cover     | 8AH-180  | Gear Shift Handle Locking Screw                 |
| 8AH-130  | Back Gear Quill Key           | 8AH-183  | Gear Drive Plate                                |
| 8AH-131  | Back Gear Handle Taper Pin    | 8AH-187  | Gear Drive Studs                                |
| 8AH-132  | Cone Pulley Oil Screw         | 8AH-188  | Pulley Drive Plate                              |
| 8AH-133  | Locking Pin Ball              | 8AH-189  | Pulley Drive Plate Screws                       |
| 8AH-134  | Locking Pin Spring            | 8AH-190  | Pulley Drive Plate Dowels                       |
| 8AH-135  | Cone Pulley Gear Spacer       | 8AH-191  | Pulley Drive Plate Sleeve                       |
| 8AH-137  | Screw Loc Spindle             | 8AH-192  | Shift Fork Bracket Bearing                      |
| 8AH-138  | Handwheel                     | 8AH-193  | Shift Fork Bracket Bearing Screws               |



# APRON

## PART NO. NAME

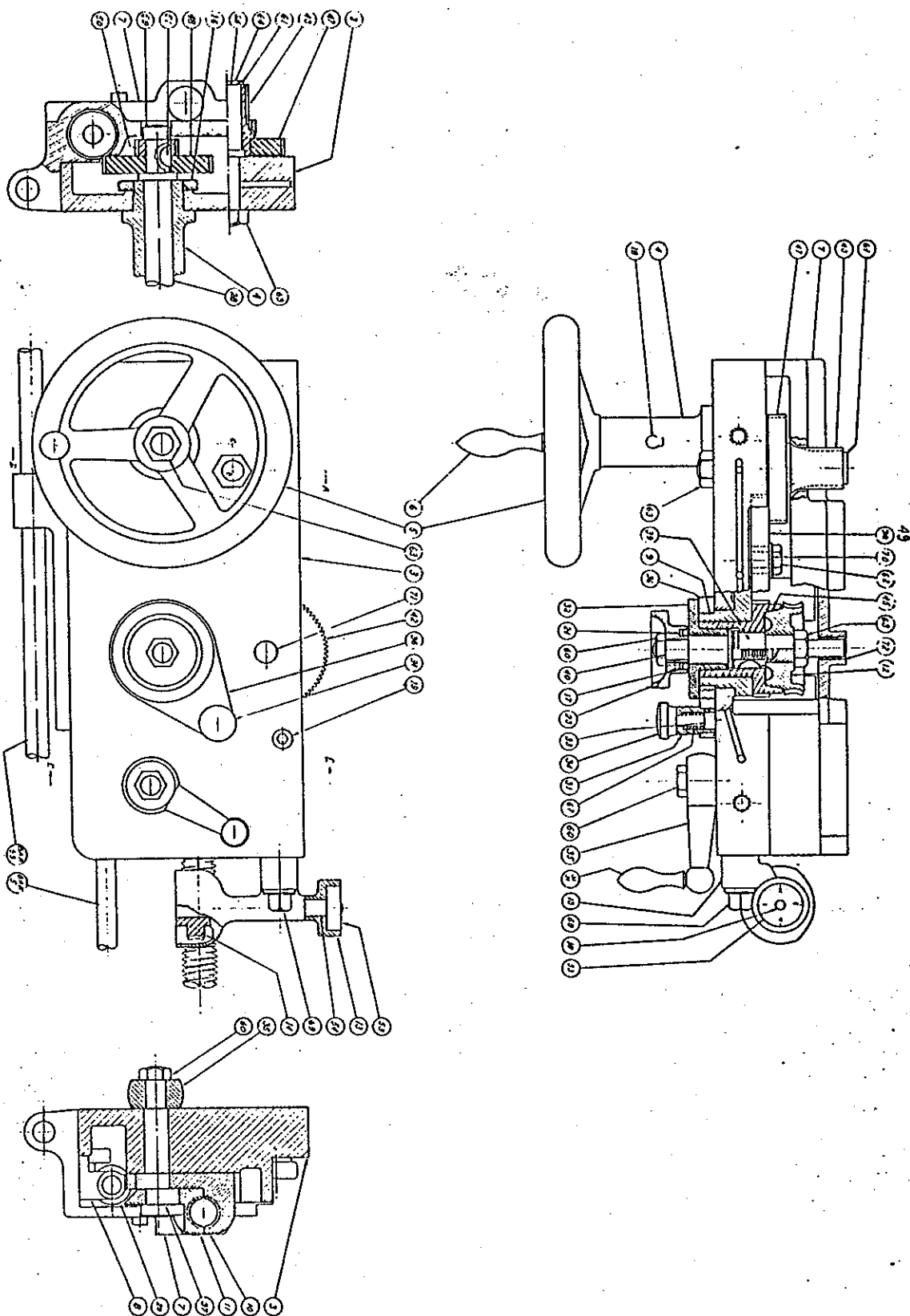
### 8AN-1

- 2
- 3 Apron
- 4 Apron Hub
- 5 Hand Wheel
- 6 Hand Wheel Handle
- 7 Rear Wall
- 8 Interlocking Bolt
- 9 Apron Tumbler
- 10 Lead Nut, Upper
- 11 Lead Nut, Lower
- 12 Worm Wheel and Clutch
- 13 Threading Dial Bracket
- 14 Threading Dial Worm Gear
- 16 Apron Hub Nut
- 17 Thrust Balls
- 18 Threading Dial Oil Cover
- 19 Apron Screws
- 23 Friction Clutch Knob
- 24 Friction Clutch Thrust Washer
- 26 Feed Gear Stud
- 27 Worm Thrust Washer
- 28 Hand Wheel Stud
- 29 Feed Shaft Worm
- 30 Feed Shaft Worm Key
- 31 Transmittor Bushing
- 32 Clutch Screw
- 33 Transmittor Index Pin
- 34 Transmittor Knob
- 35 Lead Nut Lever

## PART NO. NAME

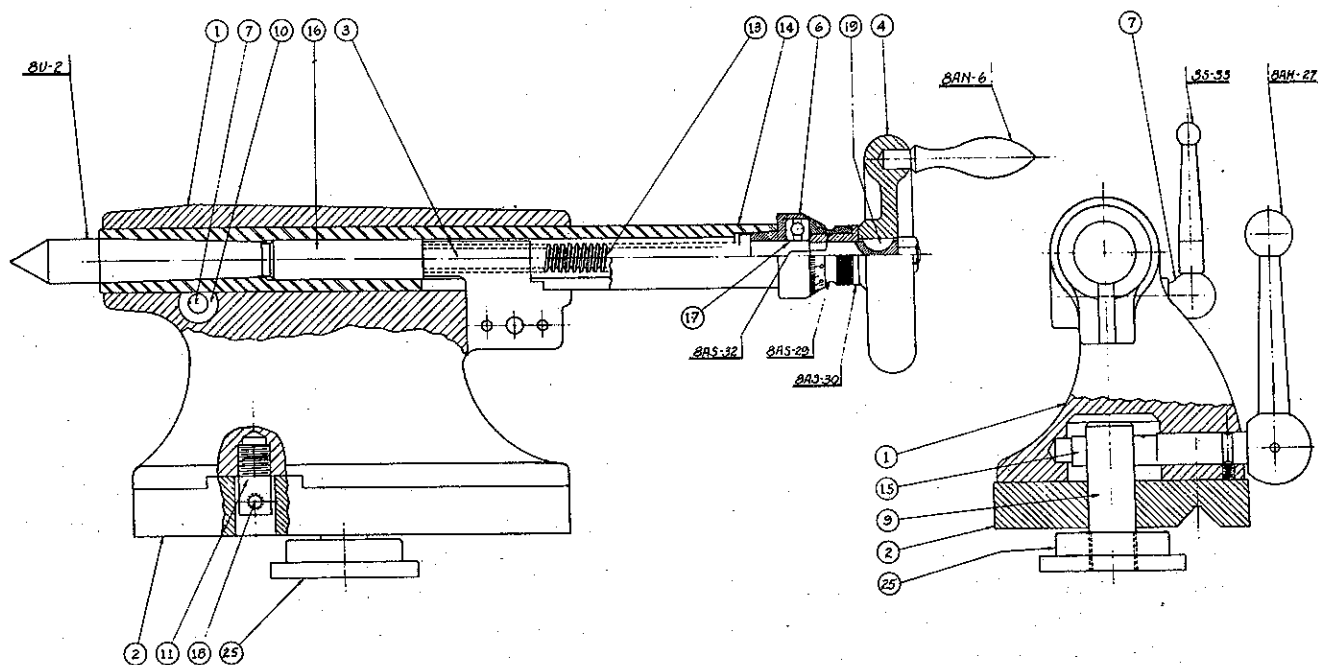
### 8AN-36 Sector

- 37 Lead Cam
- 38
- 39 Clutch Shaft
- 40 Shaft Extension
- 41 Apron Tumbler Gear Stud
- 42 Interm. Gear, Small
- 43 Feed Gear, Small
- 45 Clutch Gear
- 46 Interm. Gear, Large
- 47 Feed Gear, Large
- 48 Hand Wheel Gear
- 49 Apron Tumbler Gear
- 50 Hand Wheel Gear, Small
- 51 Hand Wheel Gear, Key
- 52 Feed Stop Pin
- 54 Threading Dial and Shaft
- 59 Hand Wheel Stud Nut
- 60 Lead Cam Nut
- 61 Feed Gear Washer
- 62 Clutch Nut
- 63 Apron Nut
- 64 Feed Gear Washer Screw
- 66 Tumbler Pin
- 67 Transmittor Pin Spring
- 68 Threading Dial Brkt. Stop Pin
- 69 Threading Dial Brkt. Bolt
- 70 Apron Tumbler Gear Washer
- 71 Inter Gear Stud
- 72 Clutch Shaft Brng.



Section A-B

Section C-E  
Apron Assembly

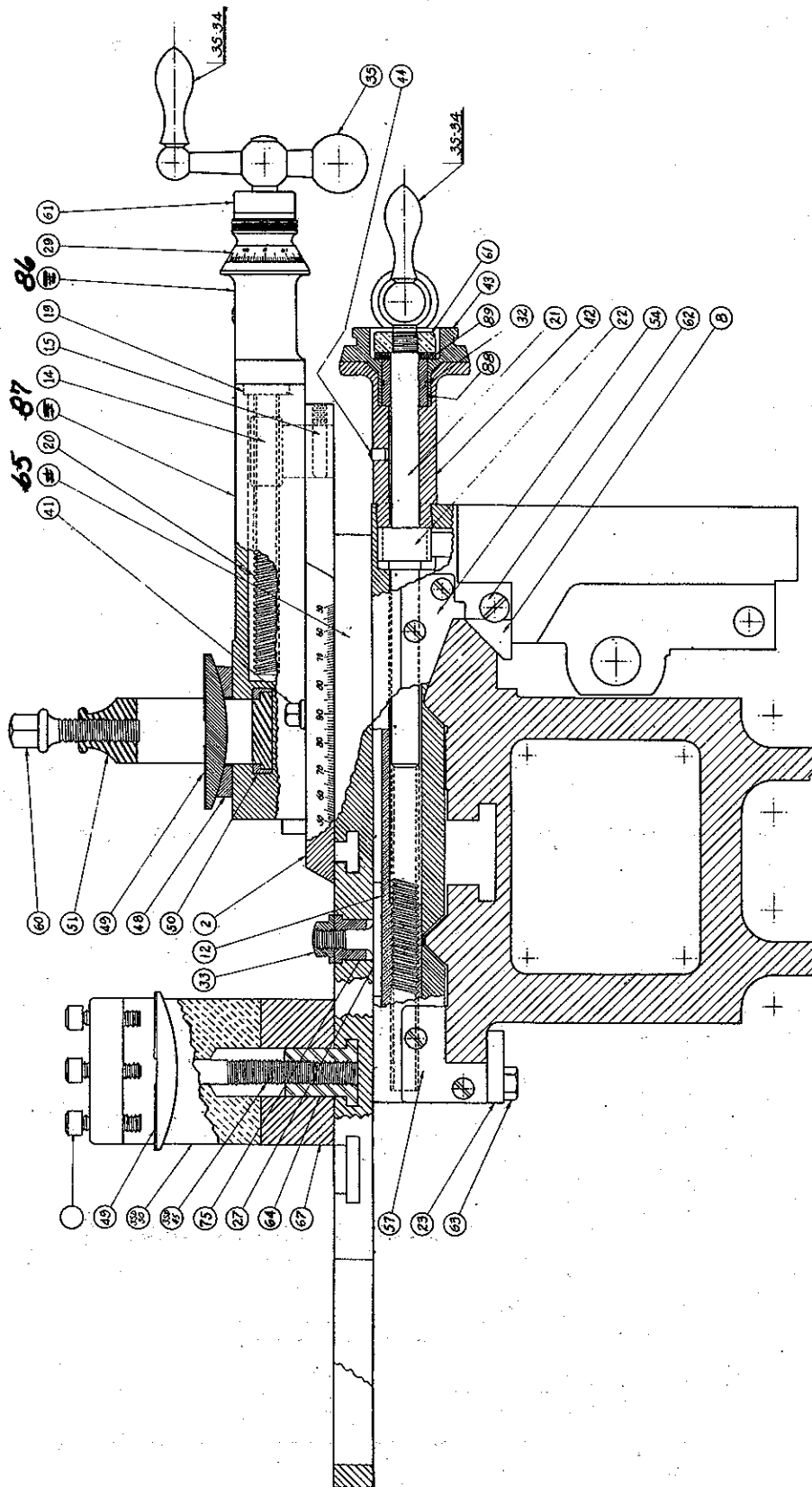


## 8A TAILSTOCK

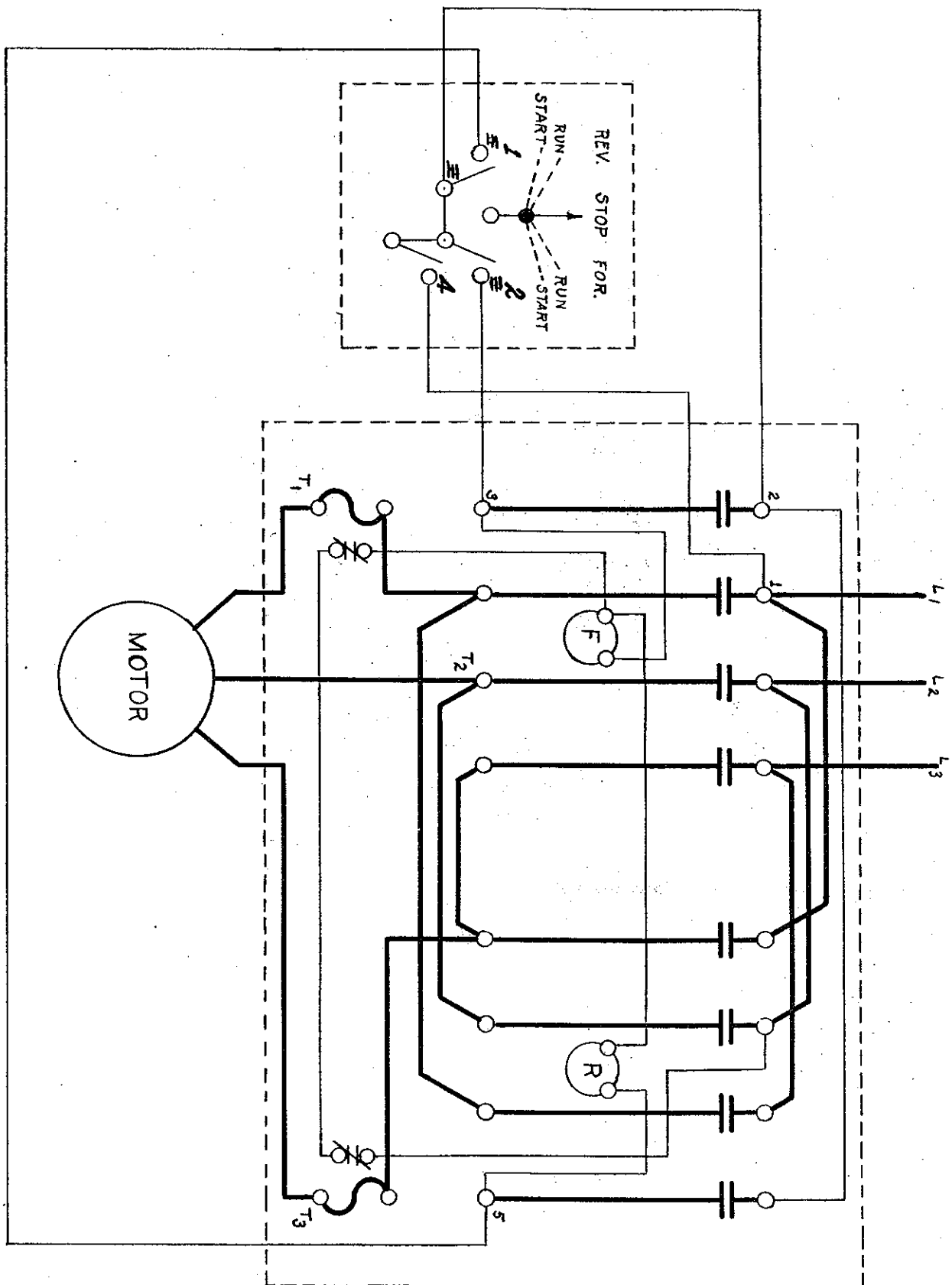
| Part No. | Name                            |
|----------|---------------------------------|
| 8AT-1    | Tailstock Frame                 |
| 8AT-2    | Tailstock Base                  |
| 8AT-3    | Tailstock Feed Nut              |
| 8AT-4    | Tailstock Hand Wheel            |
| 8AT-5    | Tailstock Assembly              |
| 8AT-6    | Tailstock Feed Screw Bearing    |
| 8AT-7    | Tailstock Spindle Bind Screw    |
| 8AT-9    | Tailstock Cam Bolt              |
| 8AT-10   | Tailstock Spindle Bind Plug     |
| 8AT-11   | Tailstock Set Over Nut          |
| 8AT-12   | Tailstock Spindle Bind Plug     |
| 8AT-13   | Tailstock Feed Screw            |
| 8AT-14   | Tailstock Spindle               |
| 8AT-15   | Tailstock Cam                   |
| 8AT-16   | Tailstock Center Knockout       |
| 8AT-17   | Tailstock Thrust Bearing        |
| 8AT-18   | Tailstock Set Over Screw        |
| 8AT-19   | Tailstock Feed Screw Key        |
| 8AT-20   | Tailstock Way Wiper             |
| 8AT-21   | Tailstock Way Wiper Felt        |
| 8AT-22   | Tailstock Way Wiper Screws      |
| 8AT-23   | Tailstock Metric Feed Screw     |
| 8AT-24   | Tailstock Feed Nut Taper Pins   |
| 8AT-25   | Cam Bolt Head for Wide Slot Bed |

# 8A SLIDE REST

| Part No. | Name                                     | Part No. | Name                              |
|----------|------------------------------------------|----------|-----------------------------------|
| 8AS-1    | Saddle                                   | 8AS-48   | Tool Post Ring                    |
| 8AS-2    | Swivel Slide                             | 8AS-49   | Tool Post Wedge                   |
| 8AS-3    | Top Slide                                | 8AS-50   | Tool Post Base                    |
| 8AS-4    | Base Slide                               | 8AS-51   | Tool Post                         |
| 8AS-5    | Top Slide Cap                            | 8AS-52   | Slide Rest Assembly               |
| 8AS-7    | Slide Stop                               | 8AS-53   |                                   |
| 8AS-8    | Carriage Gib                             | 8AS-54   | Front Way Wiper                   |
| 8AS-9    | Carriage Gib Support                     | 8AS-55   | Front Way Wiper Opposite Hand     |
| 8AS-12   | Base Nut                                 | 8AS-56   | Front Way Wiper Felts             |
| 8AS-14   | Top Slide Nut                            | 8AS-57   | Back Way Wiper                    |
| 8AS-15   | Locating Screw                           | 8AS-58   | Back Way Wiper Opposite Hand      |
| 8AS-16   | Top Slide Gib Screw                      | 8AS-59   | Back Way Wiper Felts              |
| 8AS-17   | Base Slide Gib Screw                     | 8AS-60   | Tool Post Screw                   |
| 8AS-19   | Top Slide Screw Washer                   | 8AS-61   | Micrometer Dial Collar            |
| 8AS-20   | Top Slide Screw (feed)                   | 8AS-62   | Carriage Gib Screw                |
| 8AS-21   | Bottom Slide Screw (feed)                | 8AS-63   | Back Gib Bind Screw               |
| 8AS-22   | Bottom Slide Screw Gear                  | 8AS-64   | Clamp Bolt Head                   |
| 8AS-23   | Back Gib                                 | 8AS-65   | Base Slide with Rear Tool Station |
| 8AS-24   | Top Slide Gib                            | 8AS-66   | Base Slide Gib                    |
| 8AS-25   | Bottom Slide Gib                         | 8AS-67   | Base Slide Tool Block Adapter     |
| 8AS-26   | Lower Screw Cover                        | 8AS-68   | Top Slide Screw Metric            |
| 8AS-27   | Base Nut Clamp                           | 8AS-69   | Top Slide Nut Metric              |
| 8AS-28   | Slide Stop Bind                          | 8AS-70   | Base Slide Screw Metric           |
| 8AS-29   | Micrometer Dial                          | 8AS-71   | Base Slide Nut Metric             |
| 8AS-30   | Micrometer Dial Bushing for<br>Top Slide | 8AS-72   |                                   |
| 8AS-31   | Micrometer Dial Bushing Key              | 8AS-73   | Tool Post Wrench                  |
| 8AS-32   | Micrometer Dial Spring                   | 8AS-74   | Base Nut Clamp Screw              |
| 8AS-33   | Base Nut Clamp Nut                       | 8AS-75   | Base Nut Clamp Screw Bushing      |
| 8AS-35   | Feed Screw Ball Crank                    | 8AS-77   | Slide Rest Angle Iron             |
| 8AS-40   | Swivel Slide Bind Nut                    | 8AS-80   | Threading Stop Rod                |
| 8AS-41   | Swivel Slide Bind Bolt                   | 8AS-81   | Threading Stop Lock Screw         |
| 8AS-42   | Base Slide Cap                           | 8AS-82   | Threading Stop Check Nut          |
| 8AS-43   | Base Slide Dial                          | 8AS-83   | Threading Stop Latch              |
| 8AS-44   | Base Slide Cap Oil Cup                   | 8AS-84   | Threading Stop Latch Screw        |
| 8AS-45   | Swivel Plug                              | 8AS-87   | Top Slide - Flat Top              |
| 8AS-46   | Cross Feed Stop Nut                      | 8AS-88   | Dial Bushing For Base Slide       |
| 8AS-47   | Cross Feed Stop Screw                    | 8AS-89   | Dial Bushing Collar               |



Slide Rest Assembly



Wiring Diagram 220-440-3 HP-60 Cy.