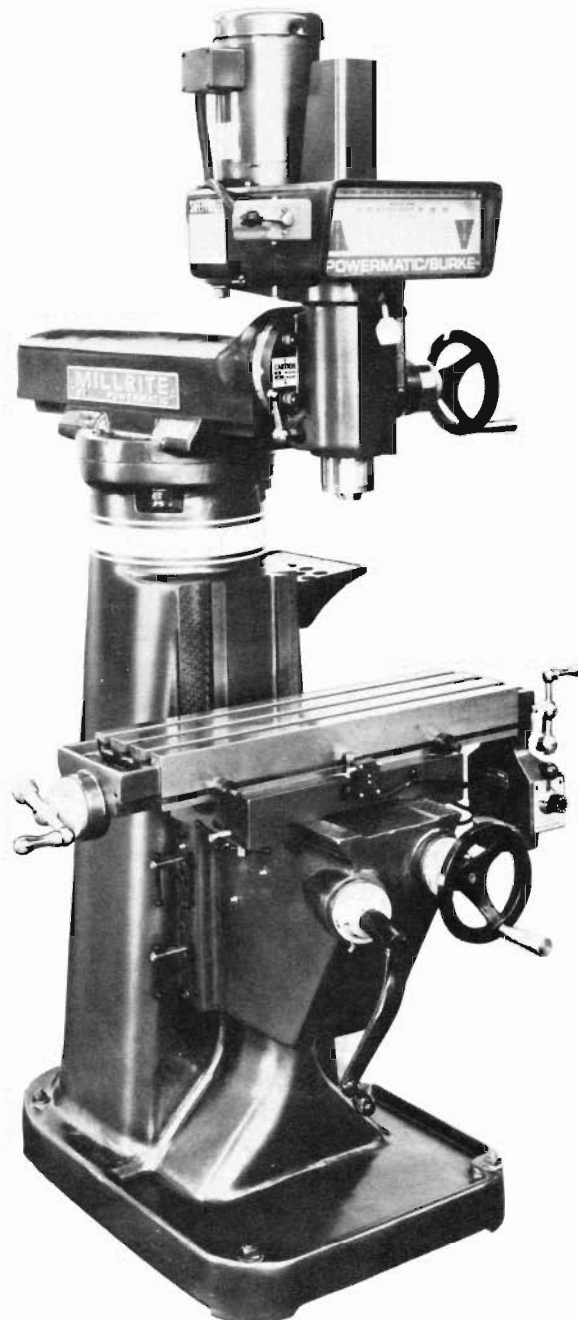


# MILLRITE

## MAINTENANCE INSTRUCTIONS AND PARTS LIST



**THE D.C. MORRISON COMPANY**

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(859) 581-7511 Fax: (859) 581-9642

## MILL SAFETY INSTRUCTIONS

1. **GROUNDING THE MILL:** Make certain that the machine frame is electrically grounded and that a grounding lead is included in the incoming electrical service. In cases where a cord and plug are used, make certain that the grounding lug connects to a suitable ground. Follow the grounding procedure indicated by the National Electric Code.
2. **EYE SAFETY:** Wear an approved safety face shield, goggles or glasses to protect eyes when operating the Mill.
3. **PERSONAL PROTECTION:** Before operating the machine, remove tie, rings, watch and other jewelry and roll up sleeves above the elbow. Remove all outer loose clothing and confine long hair. Protective type foot wear should be worn. Hearing protectors should be used where noise exceeds the level of exposure allowed in Section 1910.95 of the OSHA regulations. **DO NOT WEAR GLOVES.**
4. **WORK AREA:** Keep the floor around the machine clean and free of tools, tooling, stock, chips and other foreign material, and oil, grease or coolant to minimize the danger of tripping or slipping. Be sure the machine is free of chips, tools, and everything else not required for the task to be performed. Powermatic Burke recommends the use of anti-skid floor strips on the floor area where the operator normally stands and that each machine's work area be marked off. Make certain the work area is well lighted and ventilated. Provide for adequate work space around the machine.
5. **DISCONNECT** Machine electrics before any maintenance is performed. All maintenance and repair work should be performed only by someone qualified to do so.
6. **REPLACEMENT PARTS:** Use only Powermatic Burke or factory authorized replacement parts and accessories; otherwise, the warranty and guarantee will be null and void.
7. **HAND SAFETY:** Keep hands away from the cutting tool and work area when the machine is under power.
8. **MACHINE ADJUSTMENTS:** Make all machine adjustments with power off except speed on a variable speed model.
9. **AVOID ACCIDENTAL STARTING:** Make certain the motor switch is in the off position before connecting power to the machine.
10. **LIGHTING:** Be sure the machine area is well lighted and ventilated. Follow the requirements of the OSHA regulations.

## SPECIFICATIONS

**Spindle:**

Taper.....R-8 (standard), No. 9 B & S, No. 2 Morse, No. 3 Morse, No. 30 NS

**Speed:**

**(A) Step-Pulley Model (RPM)**

- (1) With 1/2 HP Gearmotor ..... 75,130,215,350,690,1080
- (2) With 3/4 HP Gearmotor ..... 65,105,180,290,575,860
- Or. .... 130,215,360,580,1150,1720
- Or. .... 195,325,545,870,1730,2590
- Or. .... 260,435,725,1160,2300,3440
- (3) With 1 HP 900 RPM Motor..... 190,320,530,850,1680,2520
- (4) With 1 HP 1200 RPM Motor (standard) ..... 260,435,725,1160,2300,3440
- (5) With 1 HP 1800 RPM Motor..... 390,660,995,1760,3490,5220

**(B) Variable-Speed Model (RPM Range)**

- (1) With 1 HP 900 RPM Motor (standard) ..... 275 to 2250
- (2) With 1 HP 1200 RPM Motor..... 350 to 3000
- (3) With 1 HP 1800 RPM Motor..... 500 to 4500

**Table:**

Size of working surface ..... 7" x 27" (177.8mm x 685.8mm) (standard)  
 ..... 8" x 32" (203.2mm x 812.8mm)  
 ..... 8" x 36" (203.2mm x 914.4mm)

T-Slots, Number and size..... Three, 11/16" (17.45mm) Wide, 2-1/8" (53.98mm) Between slots

**Dials Graduation:**

- (A) Inch (standard) .....001" (.03mm)
- (B) Metric.....(.02mm)
- (C) Inch/Metric .....001"/(.02mm)

**Range:**

**Longitudinal table travel:**

- (A) 7" x 27" Table (standard) ..... 16" (406.4mm) (manual) (standard)  
 ..... 14" (355.6mm) (powerfeed)
- (B) 8" x 32" Table..... 21" (533.4mm) (manual)  
 ..... 19" (482.6mm) (powerfeed)
- (C) 8" x 36" Table..... 25" (635mm) (manual)  
 ..... 23" (584.2mm) (powerfeed)

**Cross, Table travel:**

- (A) With 8" Knee (standard) ..... 8" (203.2mm)
- (B) With 13" Knee..... 13" (330.2mm)

**Vertical, knee travel:**

- (A) Without coolant tank (standard) ..... 15" (381mm)
- (B) With coolant tank..... 11" (279.4mm)

**Quill Travel:**

**Distance, Spindle Nose (R-8) To Table Top:**

- (A) With plain overarm (standard) ..... 1-3/4" (44.5mm) (minimum)
- (B) With compound overarm ..... 2-1/4" (57.2mm) (minimum)

**Power-feed Options (feed rates)**

..... Traverse speed 40IPM (16.93mm/SEC)  
 ..... Feed speed 3/4IPM (.3mm/SEC) to 25IPM (10.58mm/SEC)

**Riser block option between column and turret.....**

**5" (127mm)**

**Spindle to column face:**

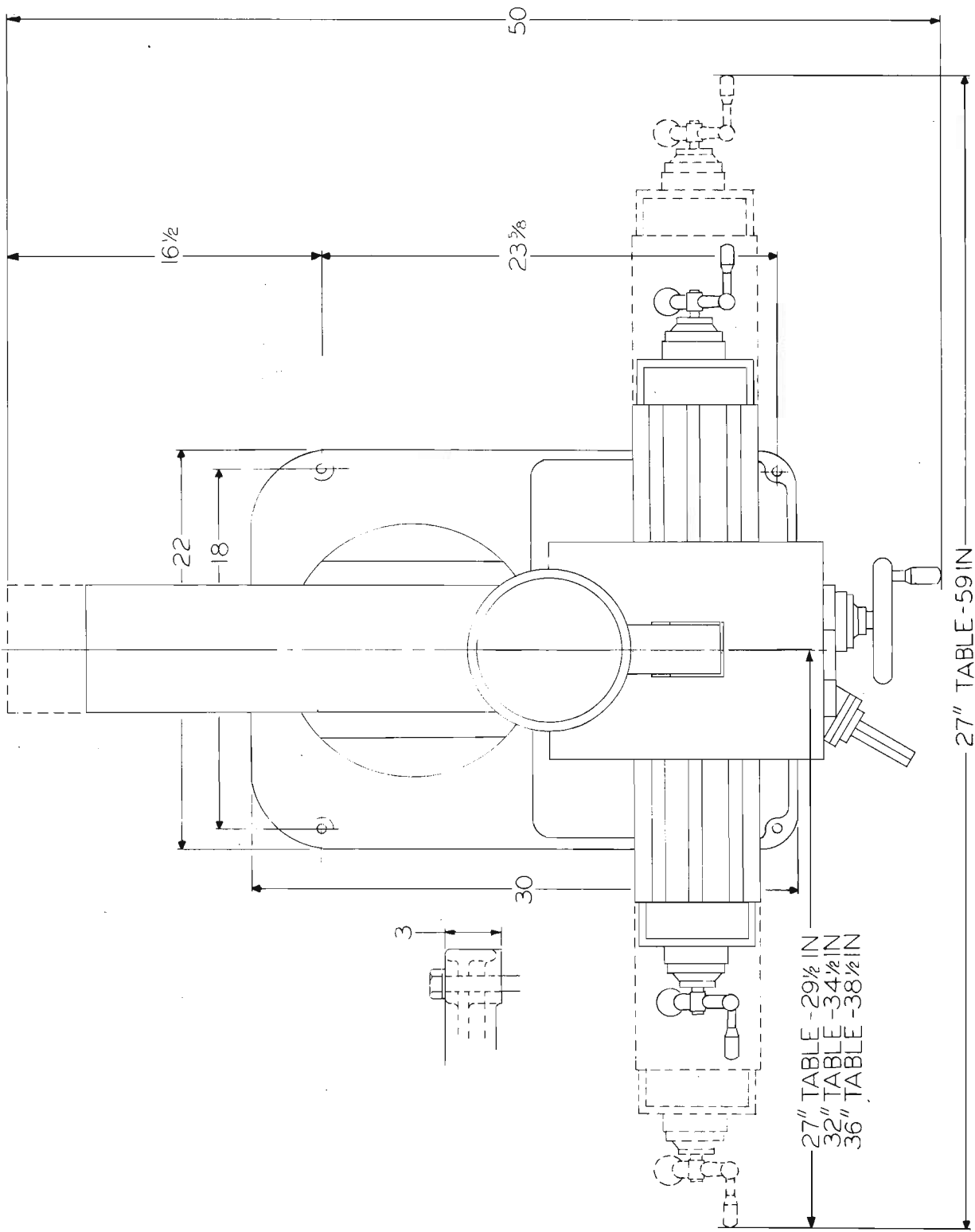
- (A) With plain overarm (standard) ..... 4" (102mm) minimum, 16-1/2" (419mm) maximum
- (B) With compound overarm ..... 6-1/2" (165mm) minimum, 17" (432mm) maximum

**Range:**

Max. allowable size or weight of cutting tool and assembly..... 1" end mill (25.4mm)

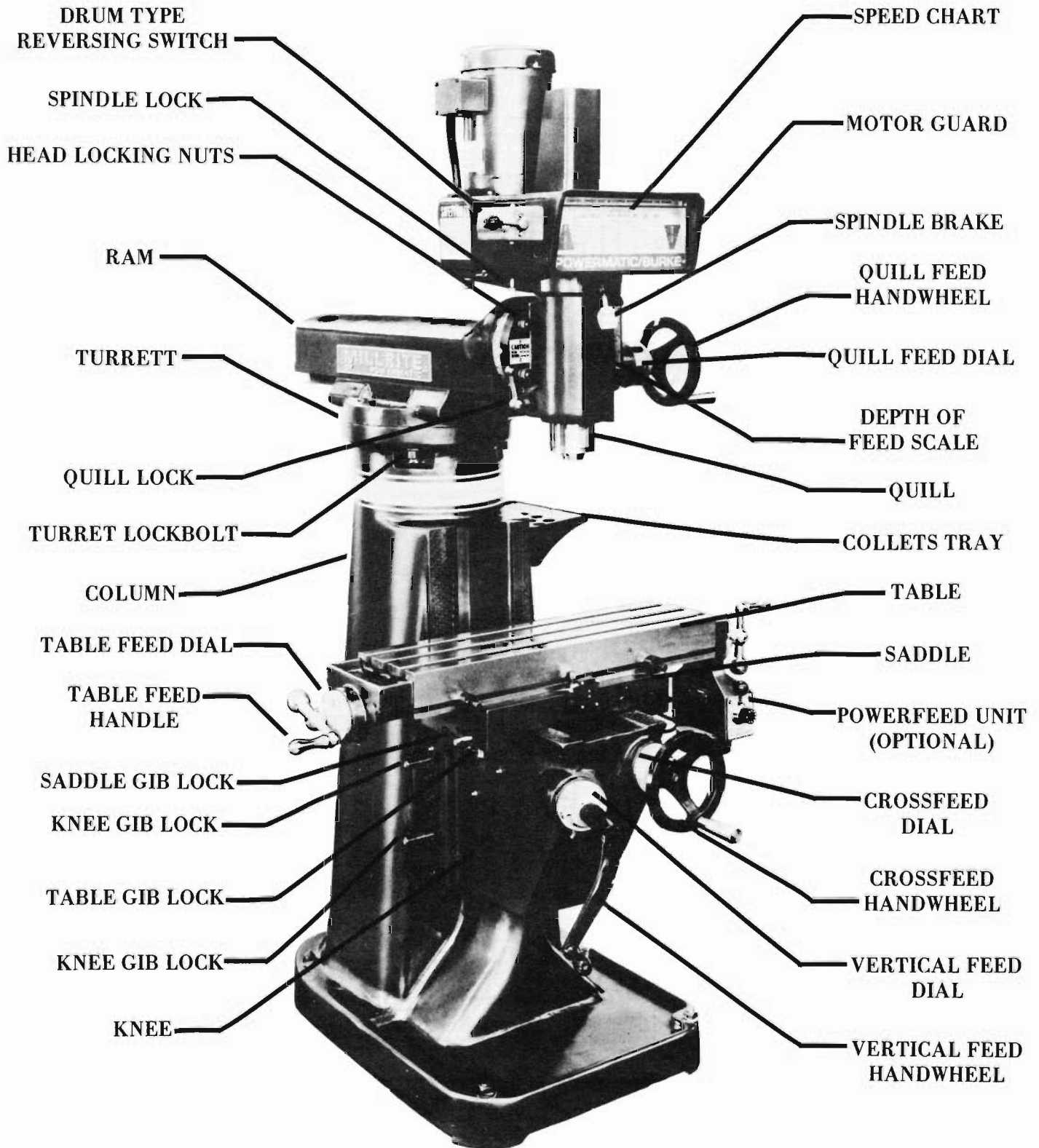
Max. recommended weight of work piece and fixture..... 375 Lbs. (170 Kg.)

(Refer to the American National Standard – Safety requirements for the construction, care, and use of drilling, milling and boring machine.)





In order to become proficient in the use of a Millrite, the operator should first learn the location and function of all controls. He should then operate each control, except the variable speed hand-wheel, with the power off in order to get the feel of how it operates. This is a general overall view of the Millrite showing the location and names of the major components and controls.



CRANE -  
1 TON MIN.

FIG 5  
LIFTING THE  
MACHINE

PROPER LIFTING  
SLING

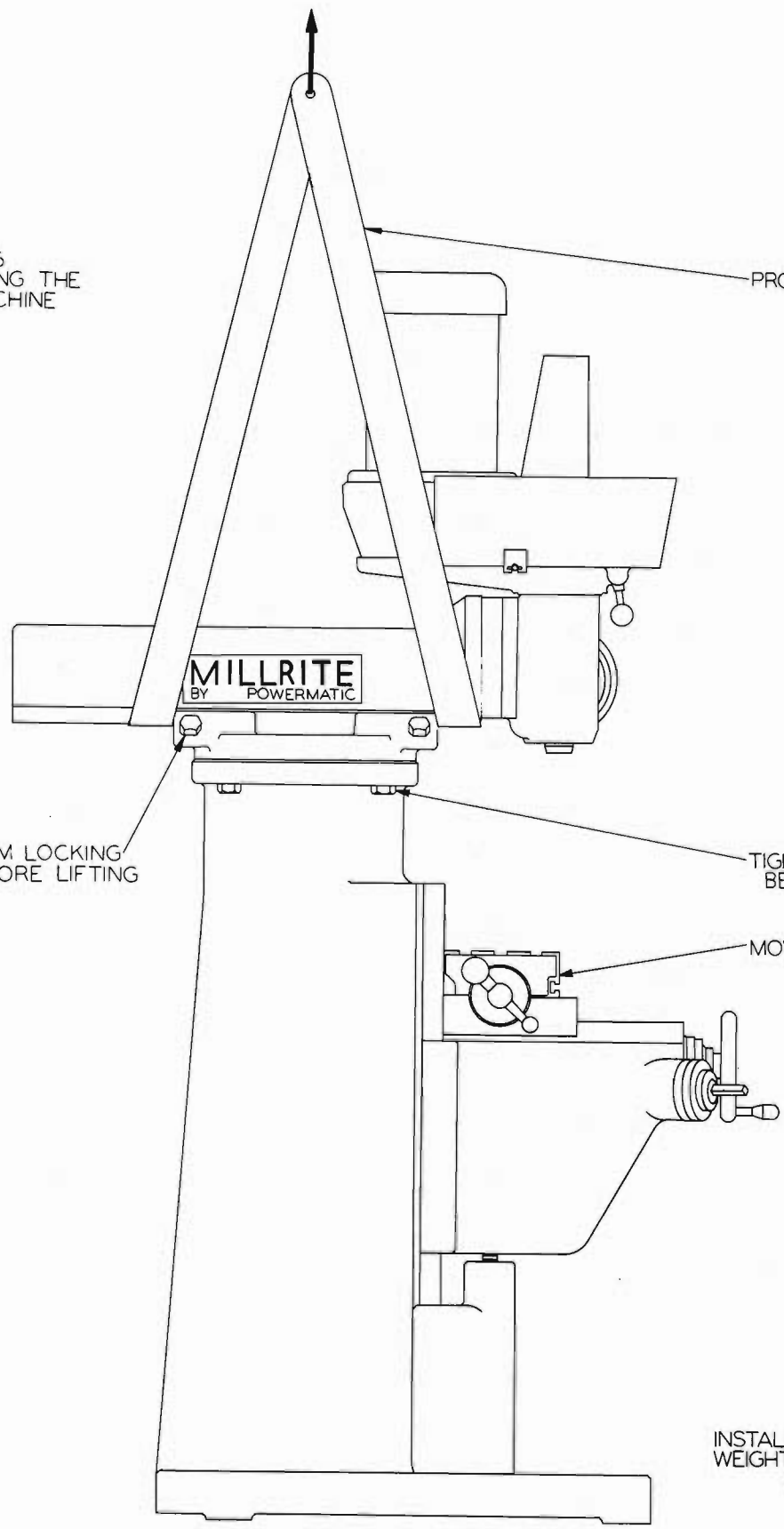
MILLRITE  
BY POWERMATIC

TIGHTEN RAM LOCKING  
BOLTS BEFORE LIFTING

TIGHTEN 4 BOLTS  
BEFORE LIFTING

MOVE TABLE AGAINST  
COLUMN

INSTALLED GROSS  
WEIGHT OF MACHINE  
1600LBS



**UNCRATING:** The Millrite is an accurate, precision built machine tool. It should be carefully uncrated and inspected. Be sure that all items listed on the packing slip are contained in the crate. Report any shortages immediately. In the event of shipping damage please make a notation on the bill of lading, have the delivering carrier sign to this effect, and notify Powermatic Burke.

**STANDARD EQUIPMENT CARTON CONTAINS THE FOLLOWING ITEMS:**

- 1 – Draw Bar
- 1 – Crank Handle
- 1 – Safety requirements for the construction, care and use of Milling Machine.
- 1 – Installation and Maintenance Manuals
- 1 – Operating Instructions Manual
- 1 – Warranty Card

Carefully read the Operating Instruction Manual before operating machine. Fill out the Warrantee card and return to Powermatic Houdaille, Inc.

**HANDLES:** When crating, the two table handles are taped to table end brackets. The head fine quill feed handwheel is turned to face the machine. This handwheel should be reversed and the table handles should be assembled before operating. Slide table handles and the head fine quill feed handwheel over the key, located in the head screw, table screw and cross travel screw. Tighten set screws located in the handles and handwheel.

**INSTALLATION OF MILL:** The machine should remain on the skid until moved to its assigned working area. Position the head in its normal upright position. **CAUTION** – refer to article “POSITIONING HEAD” before attempting this maneuver. Rotate the motor mounting bracket to the back of the machine. Tighten motor mount bolt and the head locking nuts. Position the overarm as shown in figure 4 and tighten overarm locking nuts. Remove the four bolts holding the machine to the skid. Use care in lifting the machine from the skid. If a overhead crane is used, be sure the capacity is at least 2000 pounds and lift the mill by placing a sling under the ram as illustrated in Fig. 4. Place the machine on a solid level floor, preferably concrete, in a dry well lighted area. When placing machine on a concrete foundation, it is advisable to use a little grout (thin mortar) to take care of any unevenness in the concrete as well as to provide a solid foundation at all points. When setting machine on a floor that has surface irregularities, shims should be used to correct this condition to the greatest extent possible. **NOTE:** It is recommended that the machine be lagged to the floor. See Fig. 5 for installation layout.

**LEVELING MACHINE:** Set machine by leveling the work table lengthwise and crosswise with a precision level.

**CLEANING:** Thoroughly clean protective coating from machine with suitable cleaning solution. **WARNING:** It is not recommended that gasoline or any other highly inflammable solvent be used. **DO NOT** move the table, saddle, knee or any moveable part until all ways have been well cleaned and lubricated. (see lubrication page ) Then, by hand, move table, saddle and knee to limit stop in one direction. Clean and lubricate exposed ways and then move each unit to the opposite limit stop and similarly clean and lubricate the exposed ways. Loosen bolts to unlock the ram, and move it forward and backward to the full length in order to clean and lubricate with SAE NO. 10 oil.

### SAFEGUARDING THE HAZARD AREA

The safeguarding of the hazard area requires knowledge of the workpiece, its fixture or clamping method, the operation to be performed, the cutter, if coolant is to be used and in what form, the direction, quantity and velocity of the chips created and many other factors which determine the kind and nature of the safeguarding method which will best help to prevent injuries.

The American National Standards Institute standard B11.8-1974 section 5, a copy of which is supplied with this mill, defines responsibility for and the various methods of safeguarding the hazard area. Review its recommendations and determine what method best fits the situation on your operation and install it before using the mill for that operation.

If your company does not possess the technical capability to evaluate what is needed to protect and train operators, there are many capable firms available in most metropolitan areas to perform this service.

**CONNECTING POWER SUPPLY:** To connect the machine to the plant power supply have a qualified electrician proceed as follows:

1. Check required machine voltage and phase against power supply to insure they are the same.
2. Connect machine wiring to power supply making sure connection is in compliance with local electrical codes.
3. Check for correct spindle rotation. (Forward position . . . Counterclockwise)

**LUBRICATION:** Do not operate machine until properly lubricated. A number of Alemite fittings are located in different positions around the machine, as shown in Fig. 4. Using a grease gun filled with Sohio waylube No. 50 or equivalent, lubricate the areas marked A. Using Sohio Tram No. 2 grease, lubricate areas marked B.

Lubricate the Timken bearings in the quill every 200 hours of operation. To accomplish this; First lower the quill until the pipe plug is exposed. Then remove the pipe plug and pack the area with Sohio Sacram No. 2 or equivalent. **DO NOT OVERFILL** as this may cause excessive heating in the spindle.

Specifically, the best grease to use for this purpose is a shot fibre, medium sponge grease, with sodium soap base. This is not a critical requirement, however, the main concern is not to lubricate these bearings too often or too heavily.

Lightly oil the top of the table and the outside surfaces of the quill with SAE No. 10 oil, not less than once a month while the machine is in use.

**POSITIONING THE HEAD:** The head is mounted in the swivel disc with four T-bolts and nuts.

1. (Standard) Model without worm/worm wheel drive: To reposition (swivel) the head, loosen three nuts and crack loose the fourth nut only enough to allow the head to move when hand force is used. Reposition (swivel) the head. Tighten the four nuts. **CAUTION: NEVER** loosen all four nuts.
2. Model with optional worm/worm wheel drive: To reposition (swivel) the head, loosen four nuts. Crank the shaft until the head reaches the position desired. Tighten the four nuts.

**REPOSITIONING (TILT) HEAD (ON MACHINE WITH OPTIONAL COMPOUND OVERARM):** The compound swivel disc is locked to the overarm with two screws on top.

1. (Standard) Model without worm/worm wheel drive: To reposition (tilt) the head, crack loose the two screws only enough to allow the head to move when hand force is used. Reposition (tilt) the head. Tighten the two screws. **CAUTION: NEVER** loosen both screws.
2. Model with optional worm/worm wheel drive: To reposition (tilt) the head, loosen the two screws. Crank the shaft until the head reaches the position desired. Tighten the two screws.

**ALIGNMENT OF HEAD:** In case of precision boring or work of that nature, where it is necessary to have head perfectly square with the table, or when the position of the head has been changed, it is absolutely necessary to sweep the table with an indicator to make sure the head is in a true vertical position. This is most easily accomplished by securing an indicator to the spindle nose to in a test bar held in the spindle.

**NOTE:** When indicating as in figures 7 and 8, it should be noted that the table is fitted to be slightly high in front, approximately .0005".

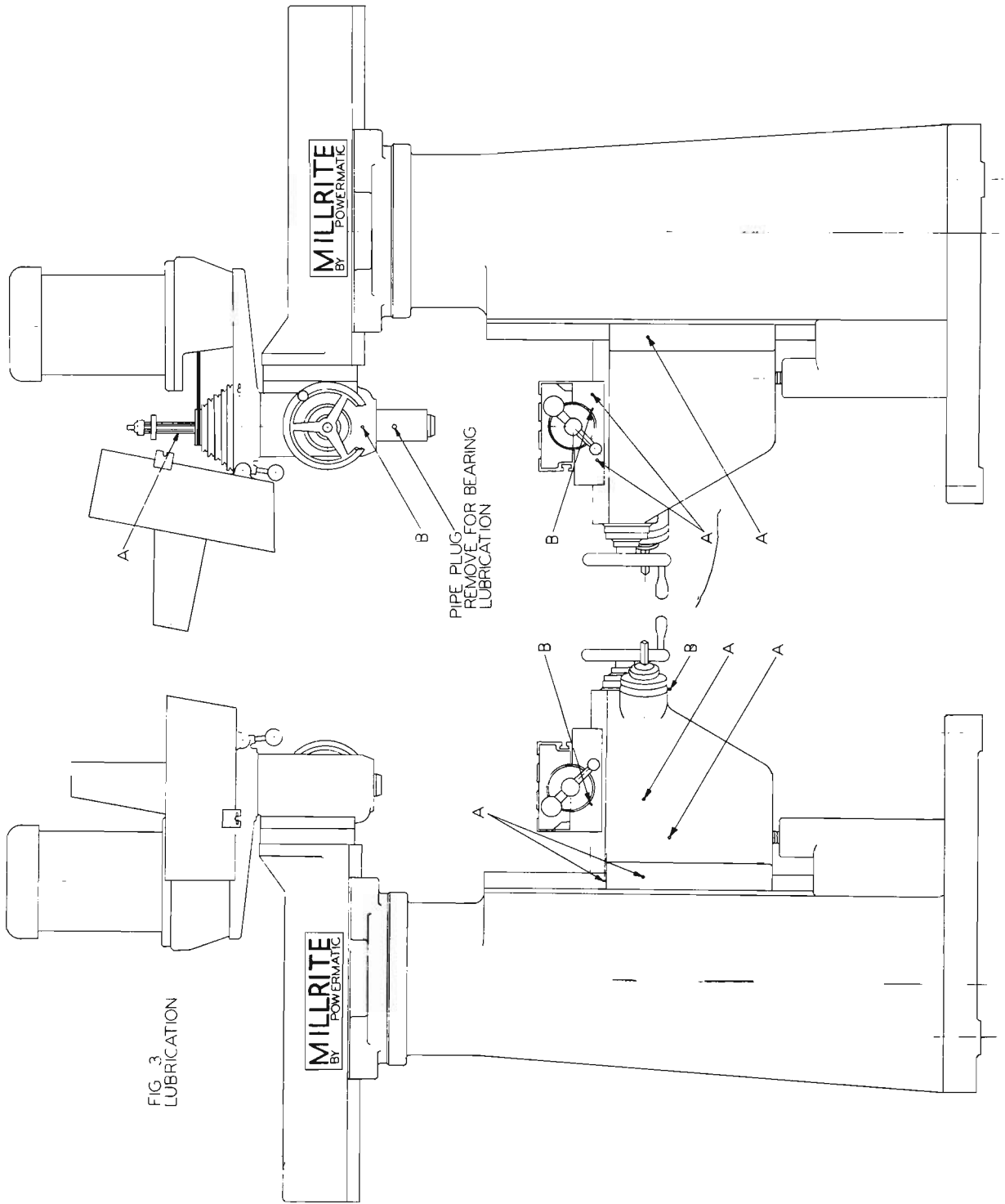


FIG. 3  
LUBRICATION

FIG. 8  
TRAMING "Y" AXIS(HEAD)  
R-8 TEST ARBOR(REF) WITH  
.001 INDICATOR

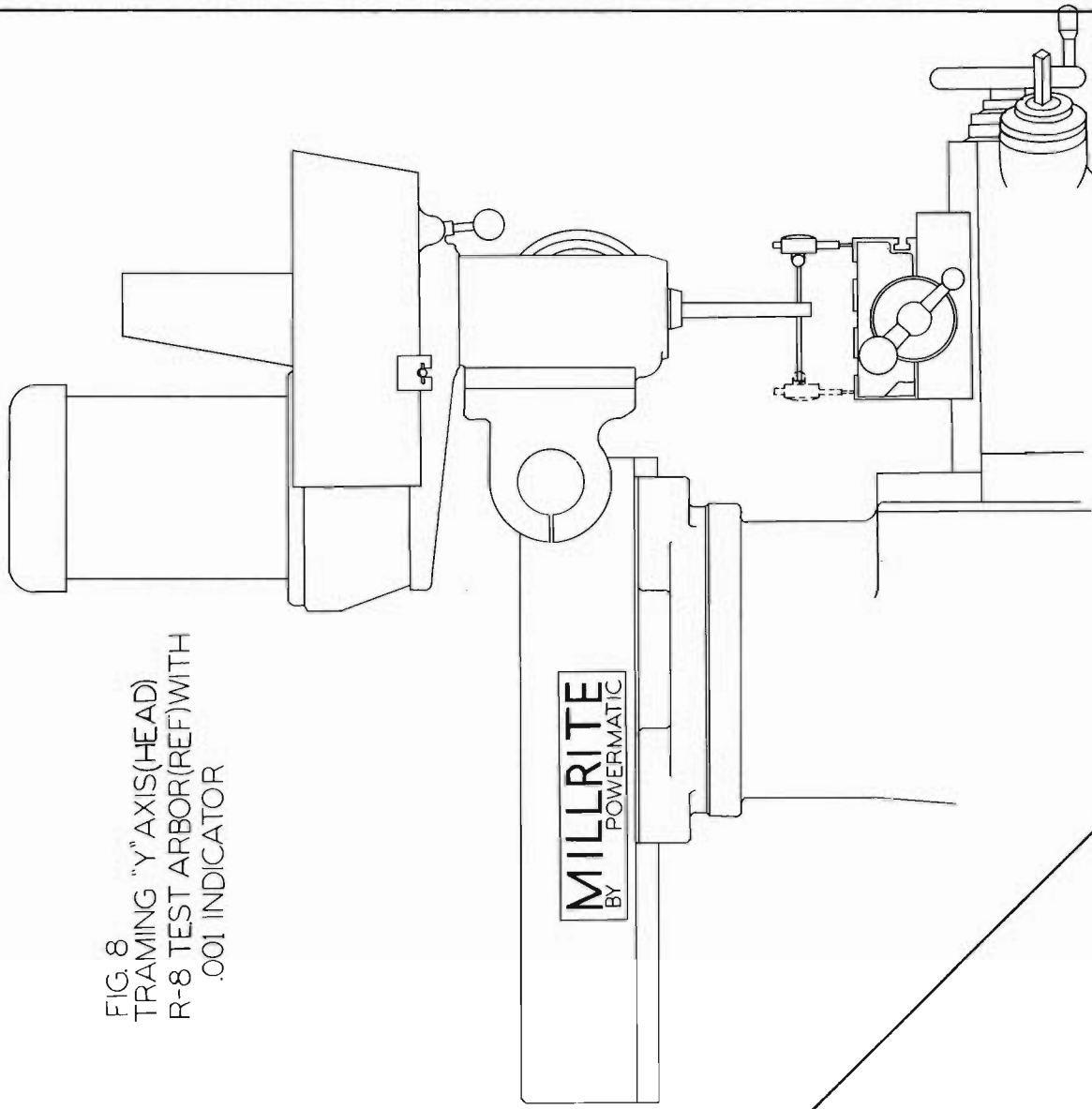
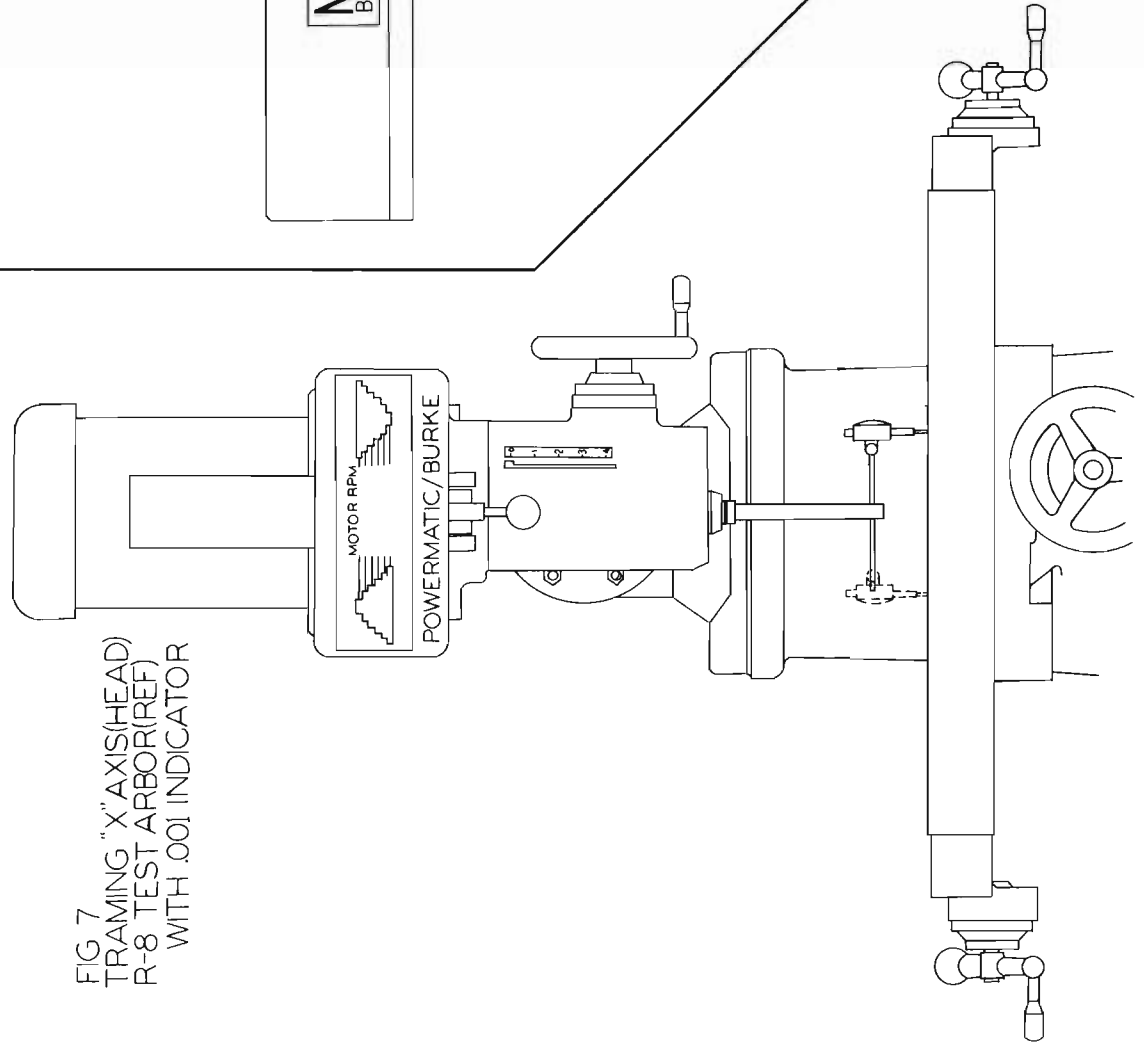
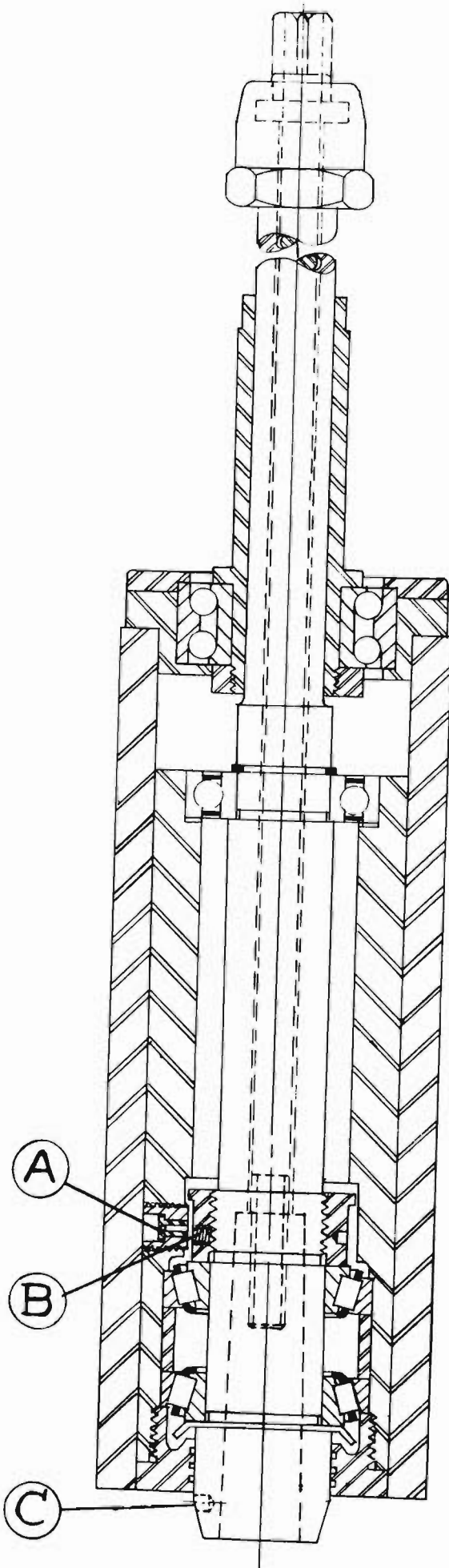


FIG 7  
TRAMING "X" AXIS(HEAD)  
R-8 TEST ARBOR(REF)  
WITH .001 INDICATOR



## TO ADJUST PRELOAD OF TIMKEN BEARINGS ON MILLRITE SPINDLE

1. Feed out quill until plug "A" is exposed.
2. Remove plug "A" with 5/16" Hex. key.
3. Rotate spindle manually until 1/4" socket set screw "B" in preloading nut is accessible through plug hole.
4. Insert pin wrench in any of (3) 3/16" radial holes in preloading nut. Be careful not to damage thread in plug hole.
5. Turn spindle at "C" position to right to increase preload or vise versa.
6. Assure proper seating of bearing races on spindle by lightly tapping top and bottom of spindle. Rotate spindle to feel the "drag" on the bearings. There should be no noticeable drag when running predominately at high spindle speeds.
7. Tighten set screw "B" and replace outer plug "A" in quill. Make sure that plug clears quill housing, But do not force it in too far or it might interfere with inner rotating parts.



**KNEE GIBS:** To adjust the standard gib on the knee, back off the jam nuts on the seven gib adjusting screws. Adjust the top and bottom screws in, until a light drag is felt when raising or lowering the knee. Lock their jam nuts. Now proceed with the second screw from the top and bottom and adjust in the same as the first two screws. Then adjust the next two outside screws and finish up with the center and final screw. Be sure to relock all jam nuts as each screw is adjusted.

**KNEE—TAPER GIB:**

- A. Loosen bottom gib screw 1/4 turn.
- B. Raise knee, by turning vertical screw, approximately one inch.
- C. Tighten top gib screw until tight.
- D. Move knee up and down. Continue steps A,B,C, and D until movement has proper feel.

**SADDLE GIB:** To adjust the standard saddle gib, back off all three set screws. Snug down the socket head cap screw in the gib so that a slight drag is felt when moving the saddle. Adjust the set screws in until they are tight. Check for free motion in both directions.

**SADDLE—TAPER GIB:**

- A. Position saddle away from the column (approximately to the end of the knee).
- B. Loosen the gib screw, to the rear of the saddle, 1/4 turn.
- C. Tighten the front gib screw tight.
- D. Using cross feed screw move saddle away from and towards the column.
- E. Continue steps A,B,C, and D until movement has light drag feel.

**TABLE GIB:** To adjust the standard table gib it will be necessary to remove the table, saddle assembly from the knee. To accomplish this, it will be necessary to remove the saddle screw assembly. Remove the handwheel, dial and then the screw support. By removing the three socket head cap screws holding it in the saddle, rotate the screw until it is free from the saddle nut remove the screw assembly. Unlock the table and saddle and then remove the saddle gib by removing the four socket head cap screws holding it in the saddle. Lift the table and saddle assembly off the knee and set it on a bench or on the floor, table down.

Back off all set screws. Snug all cap screws. Using the table handcrank check for a slight drag. Adjust the set screws in until they are tight. Check for free motion in both directions. Lightly oil the table and saddle ways and reinstall on the knee. Mount the saddle gib and adjust it per preceding instructions. Reinstall saddle dial bracket and screw.

**TABLE—TAPER GIB:**

- A. Position table to the left hand side of the machine. This will aid getting to the one gib screw.
- B. Tighten the table gib adjusting screw, then turn table feed screw.
- C. Repeat steps A and B until table movement has light drag feel.

**GOOD HOUSEKEEPING:** Good housekeeping is of major importance on preventative maintenance. A clean machine will operate much longer, easier and more efficiently than a dirty one. Keep the mill clean and free of chips, by using a chip rake or brush. **DO NOT USE AIR** to blow chips from **OR USE HANDS** to remove chips from the machine.

**CONDITION OF ACCESSORIES:** The condition of tool holders, tools, jig and fixtures, vised, dividing heads and other accessories are important. Inspect these items on a regular basis. Keep them clean and coated with a film of light oil to prevent rust. Inspect the tapers and diameters of all tools and tool holders. Remove nicks and dents which would interfere with the proper seating of the taper. In insert type tools, index or replace damaged inserts.

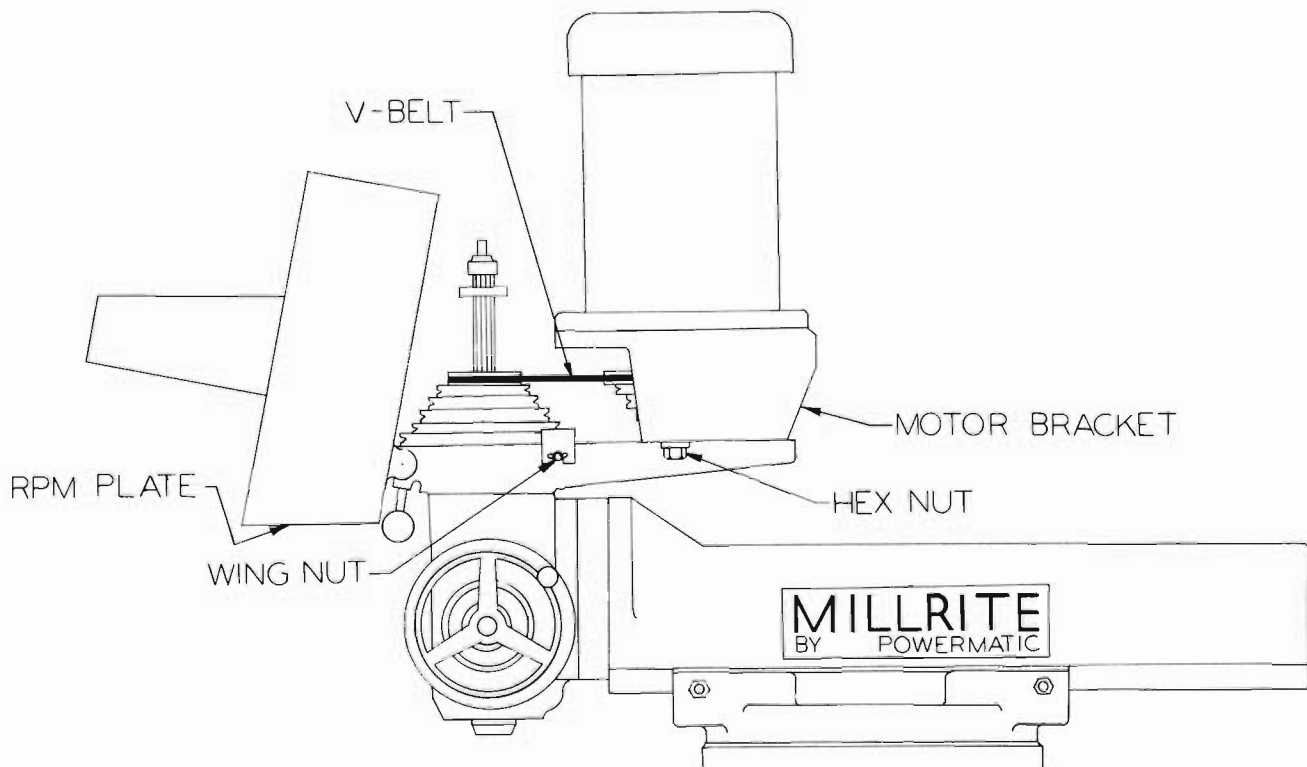
**OVERALL CONDITION OF MACHINE:** A periodic inspection and adjustment on a regular basis of not less than once every 6 months for:

- A. Loose screws
- B. Worn belts
- C. Worn, damaged or missing parts
- D. Loose gibs
- E. Improperly operating adjusting screws for the knee, saddle, table and quill
- F. Excessive lost motion in dials
- G. Improper lubrication
- H. Loose electrical connections
- I. Column out of level and in twist
- J. Bad bearings

Any problems discovered should be repaired as soon as possible and if operator safety is involved, the machine should be electrically locked out and red tagged until the repairs are made.

**REPLACE BELT—STEP PULLEY:** To replace a belt on a step pulley model, loosen the two wing nuts on each side of the belt guard and swing the guard forward. Loosen the two 1/2" hex nuts locking the motor bracket. Pull the motor bracket forward toward the front pulley. The belt is free to be removed from the machine and a replacement can be added. Swing the motor bracket back to tension the belt and lock in position. Close the belt guard and lock it in position.

**REPLACE BELT—VARIABLE SPEED:** Lower the quill to its lowest point and lock in place. Remove the three button head cap screws from either side of the belt guard with a 1/8" Allen wrench. Using a screw driver remove the four self tapping screws from the lower plate on the belt guard. At the front remove the molding and plate. Remove the speed adjusting cam by unscrewing the shoulder bolt in its center with a 5/16" Allen wrench. Lift the guard up and loosen and remove the four 5/16" socket head cap screws attaching the front plate to the lower plate and remove the front plate. Take hold of one side of the belt and pull out to force the belt into its bottom position in the motor pulley. Drive out the pivot pin in the yoke arm and remove the yoke arm. Slip the belt out of the spindle pulley. Loosen and remove the four 1/2" hex head mounting screws holding the motor bracket to the lower plate. Tilt the motor, motor bracket and belt guard up to remove the belt. Place a new belt in the motor pulley and pull out to bottom it in the pulley and retrace the previous steps.



#### REMOVING TABLE:

1. Slide eyebolt and tee-slot key assembly to the center of the table and tighten.
2. Affix crane hook to the eye bolt.
3. Position the table approximately 8 inches to the right hand side of the saddle center line. This positions the table screw nut approximately to the center of the table screw.
4. Remove the right hand table end bracket assembly.
  - A. Remove crank handle by loosening the set screw.
  - B. Remove the Woodruff key in the table screw.
  - C. Loosen thumb screw in the dial and slide dial off table screw.
  - D. Remove three socket head cap screws holding right table bracket to the table.
5. Remove the left hand table end bracket assembly.
  - A. Remove crank handle by loosening the set screw.
  - B. Remove the Woodruff key in the table screw.
  - C. Loosen thumb screw in the dial and slide the dial off the table screw.
  - D. Loosen bearing take-up nut and remove it and the outer thrust bearing.
  - E. Remove three socket head cap screws holding the left table bracket to the table.
  - F. With the crane supporting the table, slide the table from the saddle.
  - G. When placing table on work bench, place clean cardboard between dovetail and work bench.
  - H. Before reassembly, clean and lightly oil the table ways.

#### REMOVING SADDLE: It will be necessary to remove the table, saddle assembly.

- A. Remove the handwheel, dial and then the screw support by removing the three socket head cap screws holding it in the saddle.
- B. Rotate the screw until it is free from the saddle nut.
- C. Remove the saddle screw assembly.
- D. Unlock the table and saddle and then remove the saddle gib by removing the four socket head cap screws holding it to the saddle.
- E. Lift the table, saddle assembly off the knee and set it on a bench.
- F. If the table must be removed refer to table removal instructions.

#### REMOVING KNEE:

- A. Loosen four nuts top of column and swivel turret, overarm assembly approximately 90 Deg.
- B. Center the table to the saddle and lock in position.
- C. Position saddle towards the column, as close as possible, but be sure it clears the top of the column and then lock.
- D. Loosen set screw, that holds the vertical feed nut.
- E. Position lifting sling around each end of the table.
- F. Gently lift table, saddle, and knee assembly from the column.
- G. If a desire exists to remove the table, saddle assembly, this should be done before steps A - G.

#### REPLACE SPINDLE WITHOUT REMOVING QUILL:

1. Secure quill lock with quill in lowered position.
2. Remove motor and draw bar.
3. Take off spindle pulley, after loosening the set screw in the spindle pulley nut and unscrewing it.
4. Mark the position of the pulley sleeve for re-assembly, unscrew 3 flat head screws that hold it in place and take it off.
5. Remove quill nut. Note: This nut has a left hand thread.
6. Unscrew the pipe plug in the rear of the quill.
7. Take off the snap ring on top of the spindle that holds it in position.
8. Tap the spindle lightly and it will drop out.
9. The new spindle is furnished with pre-adjusted and greased gearings so that to install it merely reverse the above procedure.

CAUTION: Be sure that the snap ring is replaced with the correct side up.

**REMOVE MOTOR (STEP PULLEY):** Loosen two wing nuts on each side of the guard and swing the guard forward. Loosen the two 1/2" hex nuts that lock the motor housing to the motor head plate and slide the motor housing forward. Remove the "V" belt and the 1/2" hex nuts. Disconnect the electrical wiring and fitting from the motor conduit box. Lift the motor, pulley and motor housing assembly from the motor plate. Remove the pulley retaining snap ring and loosen the set screw located in the pulley. Remove the housing and pulley by loosening the bolts in the motor adapter plate and sliding the pulley and housing from the motor shaft. Remove motor adapter plate.

**REMOVE MOTOR (VARIABLE SPEED):** Lower the quill to its lowest point and lock in place. Remove the three button head cap screws from both sides of the belt guard with a 1/8" Allen wrench. Using a screw driver remove the four self tapping screws from the lower plate on the belt guard at the front. Remove the moulding and lower plate. Remove the speed adjusting cam by unscrewing the shoulder bolt in its center with a 5/16" Allen wrench. Lift the guard up and remove the four 5/16" socket head cap screws attaching the front plate to the lower plate and remove the front plate. Take hold of one side of the belt and pull out to force the belt into its bottom position in the motor pulley. Drive out the pivot pin in the yoke arm and remove the yoke arm. Slip the belt out of the spindle pulley. Remove the four 1/2" hex head mounting screws holding the motor bracket to the lower plate, tilt the motor, motor bracket and belt guard up to remove the belt. Remove the guard, then lift the motor, pulley and motor mounting bracket assembly from the motor plate. Remove the retaining snap ring and slide pulley from the motor shaft. Remove motor mounting bracket.

#### **POWER FEED INSTALLATION:**

1. Remove the handle, dial, key and end cap from the right hand end of the milling machine.
2. Tap leadscrew 1/4-20 thread, 3/8 deep.
3. Rework dial per Print A-466
4. Slide A-468 spacer and A-470 bearing race on shaft.
5. Move the table to the extreme left hand position in order to have the leadscrew as close to the nut as possible.
6. Screw the two 5/16-8 transfer screws into the outer holes that were used to support the original right hand bearing bracket.
7. Slide the Mill Table Feed with the C-680 or C-241 adaptor in place over the A-682 bearing race and lightly tap the adaptor against the points of the transfer screws marking the proper location for drilling.
8. Remove the C-680 or C-241 adaptor from the table feed and drill out two holes in the indicated places to 21/64 Dia. Attach the adaptor to the mill using the 5/16-18 x 1-3/4" socket cap screws supplied.
9. Due to the variations in the length of the Millrite leadscrew, it may be necessary to shorten the spacer somewhat. The spacer and the bearing race should stick out about 1-1/32" from the inside surface of the adaptor casting. See drawing D-164. Modify as required.

**DRIVE UNIT INSTALLATION:** Leave bearing race on leadscrew and place feed unit on the adaptor using the 1/4-20 x 1" socket head cap screws.

#### **DIAL AND HANDCRANK INSTALLATION:**

1. After the bevel gear has been properly shimmed, the dial should be shimmed to provide .005" spacing between the drive unit housing and the dial, This is important in order to keep chips out of the drive unit. Four washers are provided for this. (Two solid and two laminated)
2. Add A-780 sleeve and A-779 shaft extension. Secure with the screw provided.
3. Slide collar to dial and secure.
4. Add the key in the shaft extension. Install handle and secure.

#### LIMIT SWITCH INSTALLATION: (8" TABLE)

1. Remove the two cap screws holding the existing "Tee" stop piece.
2. Insert the two cylindrical standoffs into the counter bored holes in the "Tee" stop piece.
3. Put the limit switch assembly over the two standoffs and screw down the complete assembly using the cap screws supplied.
4. Replace the existing adjustable table stop pieces with the pair furnished.  
Note: For proper operation of the limit switch assembly, the electrical stop should be engaged .4" before the mechanical stop is struck. This allows for coasting of the table when the feed is on the high speed setting. The table stop pieces should be turned until the proper spacing is provided, in each direction.  
CAUTION: Do not allow the stop pieces to strike the body of the limit switch assembly.
5. The limit switch cable should be held off the ways using the cable clamp enclosed. Drill and tap 8-32 into the table to secure the cable clamp.

#### LIMIT SWITCH INSTALLATION: (7" TABLE)

1. Remove the adjustable stops and replace with A-465 table stop pieces as shown on the Drawing D-164.
2. Locate the limit switch assembly as shown, being sure to carefully center it over the stop in, drill and tap 5/16-18 x 1/2" deep into two places.
3. Install limit switch assembly.  
Note: For proper operation of the limit switch assembly, the electrical stop should be engaged .4" before the mechanical stop is struck. This allows for coasting of the table when the feed is on the high speed setting. Trim table stops to adjust, if required.  
CAUTION: Do not allow the stop pieces to strike the body of the limit switch assembly.
4. The limit switch cable should be held off the ways using the cable clamp enclosed. Drill and tap a 8-32 hole into the table to secure the cable clamp.

#### CROSS TRAVEL POWERFEED:

1. Remove handwheel dial and woodruff key from cross feed leadscrew. Save key and handwheel.
2. Rework dial to drawing A-466.
3. Drill and ream leadscrew for shaft extension. Hole must be concentric to leadscrew o.d. to within .001 T.I.R.

#### POWER UNIT INSTALLATION:

1. Slip bearing race on leadscrew against thrust collar.
2. Slide the adaptor and power feed unit against the bearing bracket. Spot the two 9/32 holes (below the center line into the bearing bracket).
3. Remove feed unit and bearing bracket. Tap 1/4 - 20 thread through two places.
4. Return bearing bracket and feed unit to the mill and fasten using the two 1/4 - 20 x 1-1/2 socket head screws. (The screws may have to be shortened to clear the mounting boss for the bearing bracket.)

#### BEVEL GEAR INSTALLATION:

1. Insert shaft extension, then drill through leadscrew with 1/8 diameter drill. Push in 1/8 x 5/8 roll pin - file ends smooth.
2. See attached sheet. Note feed type number for correct instructions. Add A-1863 key.

### KNEE POWERFEED

1. Remove dial collar dial, thrust collar and endcap.
2. Secure internal thrust collar. A special set screw is provided for this. It will be necessary to drill through the mill in line with the center of the thrust collar.
  - A. Measure dimension on your mill and mark on outside boss.
  - B. Drill 3/8 Dia. through boss.
  - C. Drill No. 29 (.136) through collar and approximately 1/2" into leadscrew. Tap collar 8-32 thread.
  - D. Install A242 screw.
  - E. Replace endcap and external thrust collar.
3. Rework dial per print A-1658.
4. Slip bearing race on the gear shaft against the collar.
5. Place feed unit over bearing race and against the boss. Spot the two holes through the unit using a 9/32 Dia. drill. Remove unit and tap 1/4-20 thread, 1/2" deep. Also tap gear 1/4-20 thread in shaft 1/2" deep.

**DRIVE UNIT INSTALLATION:** Replace feed unit over the race against the mill and secure with the 1/4-20 x 1-1/4 socket cap screws.

**BEVEL GEAR INSTALLATION:** Note feed type number for correct instructions. Utilize the shaft extension to aid in shimming of gear. Leave the assembly in place and drill through pilot hole with No. 13 (.183) drill. Ream drill 3/16 Dia. Insert 3/16 x 1-1/4 roll pin.

### DIAL AND HANDCRANK INSTALLATION:

1. Place a few shims on the dial hub and slip on the dial. Remove shims until dial is spaced about .005" from the housing. Add collar.
2. Add the spring, handcrank, washer and Tru-arc.

**LIMIT SWITCH INSTALLATION:** Limit switch on type 90 feed only. Refer to Drawing C-1941

## MILL POWER FEED OPERATION

**GENERAL** — Plug the feed into a source of 120 volt, 60 cycle, AC power having a current capacity of 5 amperes.

**CAUTION:** All electrical apparatus should be properly grounded. The feed is provided with a 3 wire cord that includes a ground terminal. Do not cut this terminal off. On installations where the cord is wired to a junction box be sure to ground the green wire. The feed direction is controlled by the main operating handle; handle to left, feed to left; handle to right, feed to right; handle in center, feed is stopped, completely disengaged and the power is turned off. Feed rate is controlled by the black center knob. Feed rate is electronically regulated, which means that the feed will remain constant at any setting regardless of load, within the capacity of the table feed.

**RAPID TRAVERSE:** A button is provided on the table feed which allows the feed rate to be increased to rapid without disturbing the selected feed rate. Do not hit the electrical stop in rapid traverse.

**OVERLOAD PROTECTION:** The circuit and motor are protected by a circuit breaker which will open when the feed is under excessive load. To reset, disengage feed, wait a few minutes, then push red button on the back side of the housing. **DO NOT REPEATEDLY OVERLOAD THE FEED.** If the circuit breaker opens, then the cutting load should be reduced before proceeding.

**LIMIT SWITCHES:** The limit switch is designed as a safety stop only and is not intended to be used as an accurate stop. The stopping point will be affected by the speed of the motor at the time the limit stop is struck. When the feed has shut itself off against a stop, the feed may be reversed and it will automatically feed in the direction away from the stop without having to disengage the unit and crank away from the electrical stop.

**CAUTION:** Do not hit stop in rapid traverse mode. Feed will coast into stop and may be damaged.

**CAUTION:** Do not allow this feed to drive into any positive stop as damage to the feed and the milling machine may result. Always leave the stops set to where they will at least prevent the feed from feeding against the end of the table travel.

**CAUTION:** Every attempt has been made to seal this feed. However, excessive amounts of coolants can work their way in and ultimately damage the feed. For long life, keep the unit as dry as possible. Wipe down at the end of each day.

**MOTOR BRUSHES:** The motor is a commutator type with the brushes accessible from the outside. The replacement brush is available from your dealer or the factory. Please provide the serial number of your feed with your order.

**LUBRICATION:** At assembly and every three months thereafter, grease the roller bearing and bevel gear with bearing grease. Every three months of operation, remove the bottom cover and grease the large spur gear. **DO NOT OVER-GREASE THE SPUR GEAR.** Damage to the motor may result. **NOTE:** The small hole on the back of the feed near the top is a drain hole. Do not attempt to oil machine through this hole. Damage will result.

**NOTE:** Connect to 110 volt, 50/60 cycle power only.

### INSTRUCTIONS FOR INSTALLING RIGHT ANGLE ATTACHMENT

1. Tighten the set screw located between the two holding cap screws to spread the casting for ease of assembly.
  2. Secure the attachment arbor on the spindle by means of the draw bar provided, but do not lock it too tight. Once the taper is properly seated a snug fit will suffice.
  3. Loosen the center set screw.
  4. Secure the attachment in position by tightening the cap screws.
- CAUTION:** If the set screw is not released prior to securing the cap screws, the attachment will be twisted and severely damaged.

### ALIGNING THE ATTACHMENT AND OUTBOARD SUPPORT

1. Insert the drive arbor in the attachment spindle, and re-position the outboard support until the pilot of the arbor fits the bearing properly.
2. Place an indicator in the machine table with its pointer against the side of the arbor.
3. Feed the table in and out, and re-position the turret of the machine until the arbor is at a true 90 Deg. angle to the in/out table movement.

### PARTS ORDERS

Quicker and better service will result when ordering repair parts if you will adhere to the following instructions. These seven requirements are essential:

1. Give complete serial number of machine.
2. Give part name and number.
3. State quantity wanted.
4. Specify how and where to ship — Do not say “Ship the quickest way”. Be definite and state agency desired, that is — air mail, parcel post (special delivery), parcel post (regular), express, motor freight, rail freight, etc.
5. List each specific individual piece or assembly that is required in the order. If only certain parts of a unit are required, never use the word “complete”, it always raises a question as to how much of a unit to supply.
6. Parts must be ordered through Powermatic Burke Dealers.
7. Give your Complete Address, zip code and telephone number.

### TROUBLE SHOOTING

1. CHATTER	
A. Incorrect Speed or Feed	Consult milling feed and speed tables for correct setting
B. Lack of Rigidity in Set Up	Reduce tool and/or quill overhangs, add additional champing and/or back-up work piece. Reduce feed rate and depth of cut
C. Tool Loose in Holder	Lock in holder or change to proper holder
D. Draw Bar Loose	Tighten draw bar or check for damaged threads on draw bar or in holder. Check holder and spindle taper for flaws or dirt. Replace if required
E. Unused Motions Not Locked	Lock all motions not used: quill, table, saddle, or knee
F. Loose Gibs	Adjust all gibs
G. Loose Overarm or Head	Lock overarm to column and head to overarm
2. SPINDLE RUNNOUT EXCEEDS STD.	
A. Spindle Bearings Loose	Adjust preload per maintenance manual
B. Bad or Incorrect Bearings	Replace bearings

## TROUBLE SHOOTING (cont'd.)

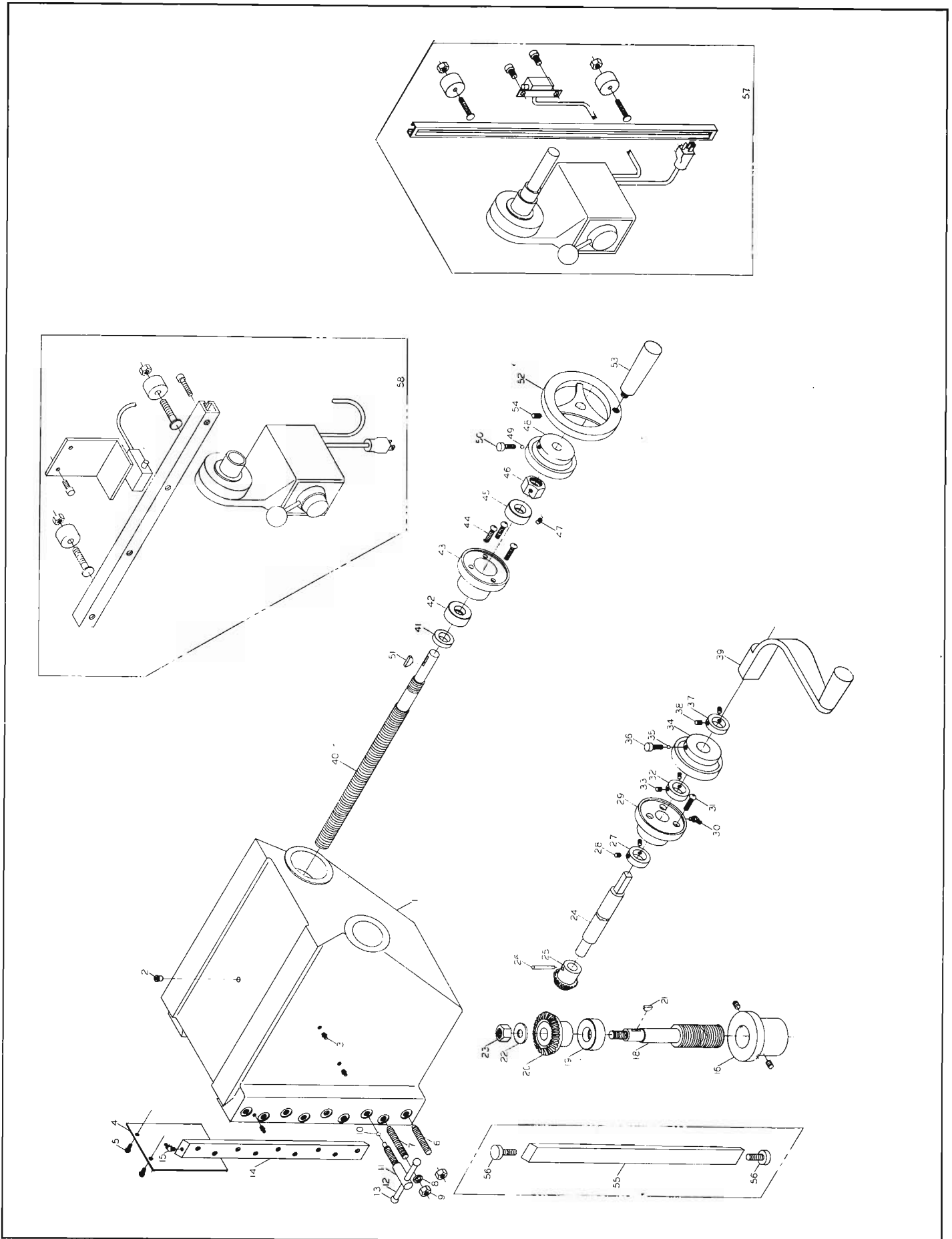
3. SPINDLE RUNS HOT	
A. Excessive Preload	Reduce preload to the setting indicated in the maintenance manual
B. Incorrect Lubrication	Check for overfilling with grease or for no lubrication
C. Bad Bearing	Replace bearing
4. END PLAY IN SPINDLE	
A. No Preload	Adjust preload to the setting indicated in the maintenance manual
B. Front Cap Loose	Tighten front cap with a spanner wrench. It should lock up on the bearings, not against the face of the quill
5. END PLAY IN QUILL. ADJUSTMENT	
A. Worn Nut or Screw (Fine Feed)	Replace nut and/or screw
B. Worn Gears (Fine Feed)	Replace gears
C. Excess Backlash in Gears (Fine Feed)	Using a 5/16 allen wrench loosen the set screw in the adjusting nut at the bottom of the quill cover by holding the adjusting nut with a spanner wrench. Adjust the nut using the spanner wrench and then re-lock the set screw
D. Backlash Between Gear and Rack (Rapid Feed Quill)	Adjust gear by unlocking set screw in cover and rotating eccentric bushing while holding quill handwheel from rotating
6. SLIDES LOOSE	
A. Table Gib (Std.) Loose	Remove saddle handwheel, dial and screw. Remove table and saddle assembly and place on the floor or table. Adjust gib by back out the set screws (3) and tightening the cap screws (4). Reinstall table saddle and handwheel assembly
B. Saddle Gib (Std.) Loose	Adjust gib by backing off the set screws (3) and tightening down the cap screws (4).
C. Knee Gib (Std.) Loose	Unlock the jam nuts on the (7) gib adjusting set screws on the left side of the knee. Starting with the top and bottom set screw adjust in until it binds up the knee and then back off until the knee moves freely. Lock the jam nut. Finish adjusting the balance of the screws in the same fashion, one at a time
7. END PLAY IN MOTION SCREWS	
A. End Play in Table Screws	Remove left end handcrank and dial loosen set screw in threaded collar. Adjust collar to minimize end play and lost motion in dial
B. End Play in Saddle Screw	Remove handwheel and dial unlock set screw in threaded collar Adjust collar to minimize end play and lost motion in dial. Adjust split saddle nut by tightening the cap screw in the column side of the nut
C. End Play in Knee Adjustment	Remove outside collar and dial. Unlock set screw in threaded collar and adjust collar to minimize end play and lost motion in dial. If Lost motion is still excessive screw and nut worn and may need to be replaced
8. HEAD NOT SQUARE TO TABLE	
A. Head not Square Left to Right	Clamp an indicator in the spindle so that it can be used to tram the table surface. Maximum error allowed is .001/foot. Loosen the thread of the four head covering screws. Back off on the fourth bolt but keep it snug. Realign head and relock the four mounting screws
B. Head not Square Front to Back (On Machines Equipped with Compound Overarms)	Unclamp compound overarm by loosening the two cap screw on each side of the trunnion only enough to allow motion with a 3/8 allen wrench. Rotate the head and check by traming with an indicator mounted on the spindle. Maximum error allowed .001/foot



COLUMN TURRET AND OVERARM ASSY.

COLUMN, TURRET AND OVERARM

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	ITEM NO.	PART NUMBER	description	QTY.
1	2100005	ASSY., COLUMN (INCL. ITEMS 1 THRU 9)	2	46	6980057	WORM, 14 1/29, SINGLE, 8P, STEEL	1
2	3098008	COLUMN	1	47	6827030	PIN, TAPER # 4 x 1	2
3	3590001	PILOT, TURRET	1	48	6064004	ROLLER, THRUST	2
4	3818001	TURRET	1	49	6064015	RACE, THRUST	4
5	4058014	BOLT, TEE, 5/8-11	4	50	2250146	GUARD	1
6	6861704	WASHER, 5/8	4	51	6710061	SCREW, BUT HD. SOC. CAP #10 - 24 x 1/4	1
7	6520011	NUT, HEX, HEAVY FULL, 5/8-11	4				2
8	3773032	STUD, OVERARM CLAMP	2				
9	6861704	WASHER, 5/8	2				
10	6520011	NUT, HEX, HEAVY FULL, 5/8-11	2				
11	2200040	ASSY., PLAIN OVERARM (INCL. ITEMS 10 THRU 17)	1				
12	3556002	OVERARM, PLAIN	1				
13	3127005	DISC, SWIVEL	1				
14	6716013	SCREW, SOC. HD. CAP 3/8 - 16 x 1 1/4	6				
15	3684237	SCALE	1				
16	6747015	SCREW, DRIVE #2 x 1/4	7				
17	3058013	BOLT, TEE, 1/2 - 13	4				
18	6861511	WASHER, 1/2	4				
19	6518015	NUT, HEX, HEAVY FULL, 1/2 - 13	4				
20	2200042	ASSY., COMPOUND OVERARM (INCL. ITEMS 13 THRU 24)	1				
21	3556003	OVERARM, COMPOUND	1				
22	3711006	SHAFT, COMPOUND SWIVEL	1				
23	6627006	PIN, TAPER #8 x 4"	2				
24	3684238	SCALE, COMPOUND SWIVEL	1				
25	6747015	SCREW, DRIVE, #2 x 1/4	3				
26	3068101	BRACKET, COMPOUND	1				
27	6718053	SCREW, SOC. HD. CAP. 1/2-13 x 1 3/4	2				
28	2200047	ASSY. SWIVEL DISC (INCL. ITEMS 13 THRU 17 & ITEMS 25 THRU 33)	1				
29	3595316	DISC, SWIVEL	1				
30	6609003	FITTING, GREASE, 90°	1				
31	6716014	SCREW, SOC. HD. CAP, 3/8 - 16 x 2 1/2	1				
32	3237305	GEAR, WORM	6				
33	6714172	SCREW, SOC. HD. CAP, 1/4 - 20 x 3 1/2	1				
34	6980003	WORM	3				
35	3700093	SHAFT, TILTING HEAD	1				
36	6420000	KEY, WOODRUFF, #3, 1/8 x 1/2	1				
37	6714092	SCREW, SOC. HALF DOG PT. SET, 1/4 - x x 3/4	1				
38	2100017	ASSY., TURRET RISER BLOCK (INCL. ITEMS 2, 5, & 6 & ITEMS 34 thru 37)	1				
39	3735039	SPACER, COLUMN	1				
40	3773068	STUD, SPACER, 5/8 - 11	1				
41	3761049	STOP, KNEE	4				
42	6715020	SCREW, SOC. HD. CAP, 5/16 - 18 x 1	1				
43	2100026	ASSY., GEARED TILTING DRIVE (INCL. ITEMS 38 THRU 51)	3				
44	3237341	GEAR, WORM 8P, 36T, STEEL	1				
45	6714024	SCREW, SOC. HD. CAP 1/4 - 20 x 2	1				
46	6623012	PIN, DOWEL 1/4 x 1	3				
47	3064451	BRACKET	2				
48	6714024	SCREW, SOC. HD. CAP 1/4 - 20 x 2	1				
49	6623012	PIN DOWEL 1/4 x 1	1				
50	6609004	FITTING, GREASE, STRAIGHT	2				
51	3700118	SHAFT	3				



KNEE AND SADDLE SCREW ASSEMBLY

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2100001	ASSY., KNEE (INCL. ITEMS 1 THRU 39)	1
2	3398001	KNEE	1
3	6609029	FITTING, OIL	1
3	6609004	FITTING, GREASE, STRAIGHT	1
4	3104068	PLATE, COVER	4
5	6710062	SCREW, BUT. HD. SOC. CAP, #10-24 x 3/8	1
6	6716132	SCREW, SOC. HALF DOG PT. SET, 3/8 - 16 x 2	2
7	6716133	SCREW, SOC. HALF DOG PT. SET, 5/8 - 16 x 2 1/4	3
8	6861312	WASHER, HIGH COLLAR LOCK WASHER, 3/8	4
9	6516009	NUT, HEX, JAM, 3/8 - 16	4
10	6054008	BALL, BRASS, 1/4 DIA.	7
11	2200056	ASSY. CLAMP SCREW (INCL. ITEMS 11 THRU 13)	2
12	3680016	SCREW, CLAMP	2
13	3268002	HANDLE	1
14	3406016	KNOB, HANDLE	1
14	2200001	ASSY., KNEE GIB (INCL. ITEMS 14 & 15)	1
15	3244043	GIB, KNEE	1
15	6609036	FITTING, GREASE, 45°	1
16	3526018	NUT, VERT. FEED	1
17	6715013	SCREW, SOC. CUP PT. SET, 5/16 - 18 x 3/8	1
18	3692022	SCREW, VERT. FEED	1
19	6064011	BEARING, THRUST	1
20	3237306	GEAR, BEVEL, 32T-12P-20°	1
21	6420012	KEY, WOODRUFF #5, 1/8 x 5/8	1
22	6861501	WASHER, PLAIN, 1/2	1
23	6518007	NUT, HEX, LOCK TYPE, 1/2 - 13	1
24	2200002	ASSY., VERTICAL FEED SHAFT (INCL. ITEMS 24 THRU 26)	1
24	3700024	SHAFT, VERT. FEED	1
25	3237307	GEAR, BEVEL, 16T-12P - 20°	1
26	6627025	PIN, TAPER, #3 x 1 1/2	1
27	3096057	COLLAR	1
28	6714119	SCREW, SOC. CUP PT. SET, 1/4 - 20 x 1/4	2
29	2200003	ASSY., ELEVATING SHAFT BEARING (INCL. ITEMS 29 & 30)	1
29	3046009	BEARING, VERT. FEED SHAFT	1
30	6609036	FITTING, GREASE 45°	1
31	6714147	SCREW, BUT. HD. SCOC. CAP, 1/4 - 20 x 1	1
32	2096057	COLLAR	3
33	6714119	SCREW, SOC. CUP PT. SET, 1/4 - 20 x 1/4	1
34	3125001	DIAL, VERT. FEED	2
35	6054008	BALL, BRASS, 1/4 DIA.	1
36	3689058	SCREW, THUMB, 5/16 - 18	1
37	3096057	COLLAR	1
38	6714119	SCREW, SOC. CUP PT. SET, 1/4 - 20 x 1/4	2
39	3107005	CRANK	1
40	2100033	ASSY., SADDLE SCREW (INCL. ITEMS 40 THRU 34)	1
40	3692008	SCREW, SADDLE	1
41	3096056	COLLAR	1
42	6064012	BEARING, THRUST	1
43	3046008	BEARING, SADDLE SCREW	1
44	6714147	SCREW, BUT. HD. SOC. CAP, 1/4 - 20 x 1	1
45	6064012	BEARING, THRUST	3
46	3526014	NUT, BEARING TAKE UP	1
47	6714119	SCREW, SOC. CUP PT. SET, 1/4 - 20 x 1/4	1
48	3125002	DIAL	1
49	6054008	BALL, BRASS, 1/4 DIA.	1
50	3689058	SCREW, THUMB, 5/16 - 18	1

KNEE AND SADDLE SCREW ASSEMBLY

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
51	6420001	KEY, WOODRUFF #9, 3/16 x 3/4	1
52	2200038	ASSY. HANDWHEEL (INCL. ITEMS 52 and 53)	1
52	3271042	HANDWHEEL, 7"	1
53	3268037A	HANDLE	1
54	6714119	SCREW, SOC. CUP PT. SET, 1/4 - 20 x 1/4	1
55	3244082	GIB, KNEE, TAPERED	1
56	3689057	SCREW, GIB	2
57	2100052	POWERFEED, SERVO TYPE	1

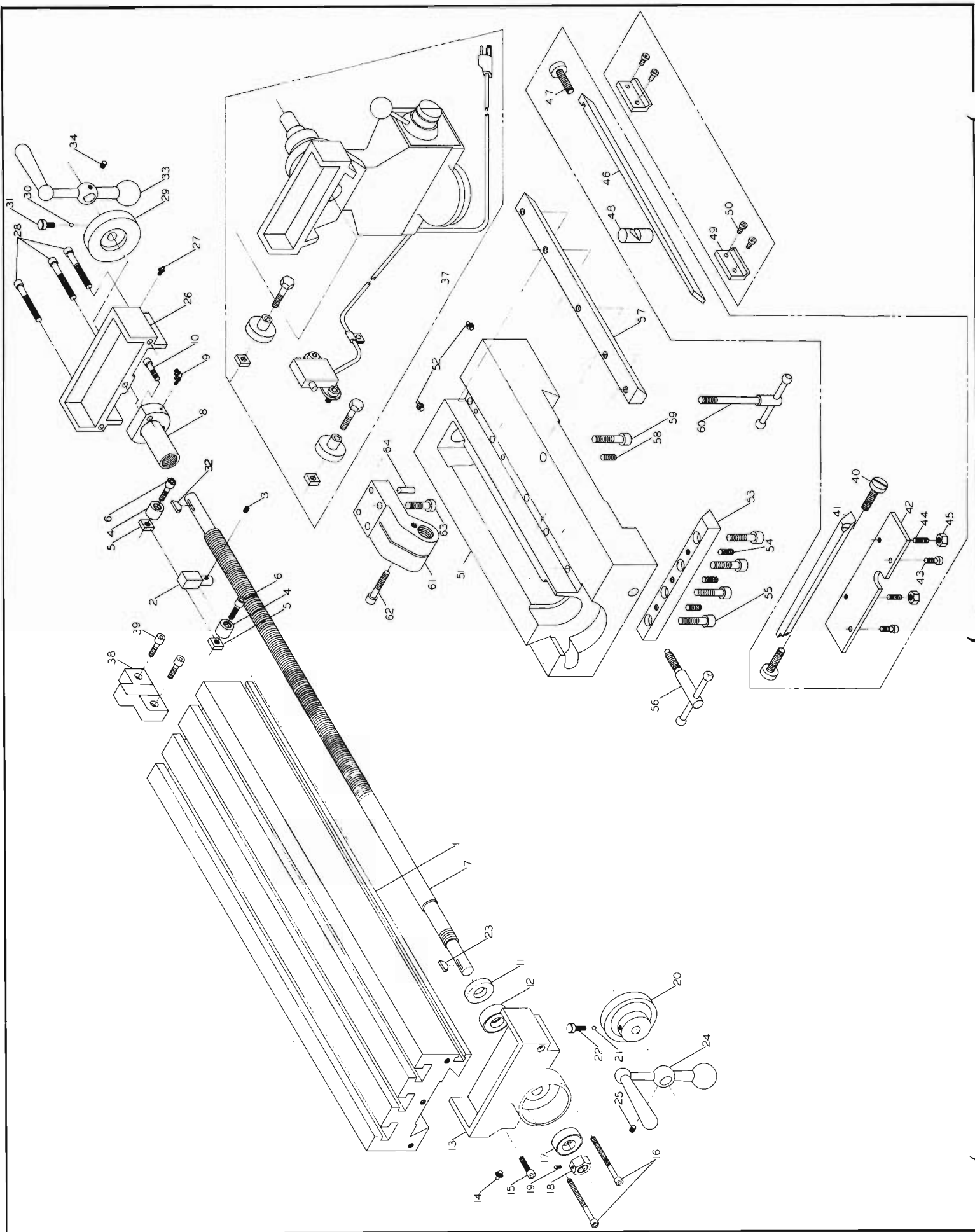
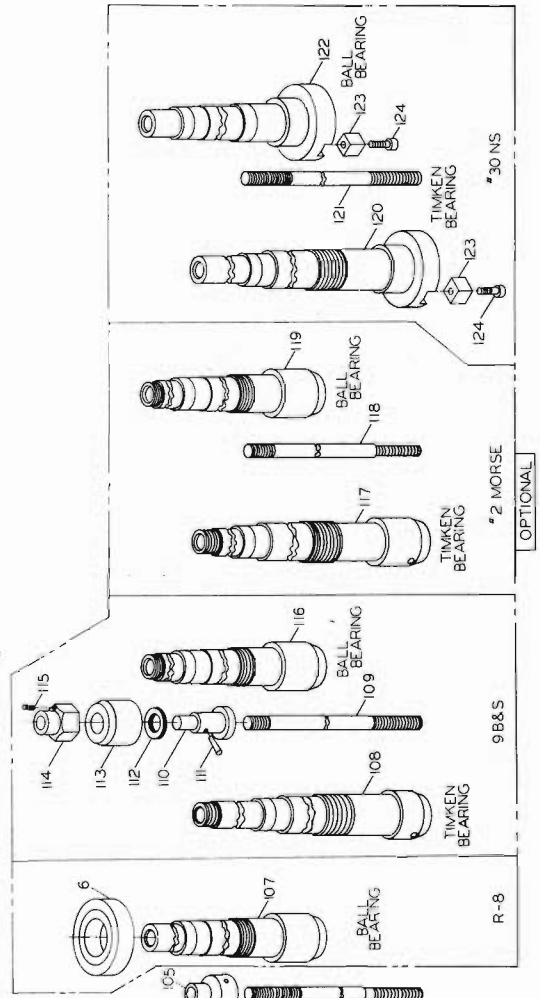
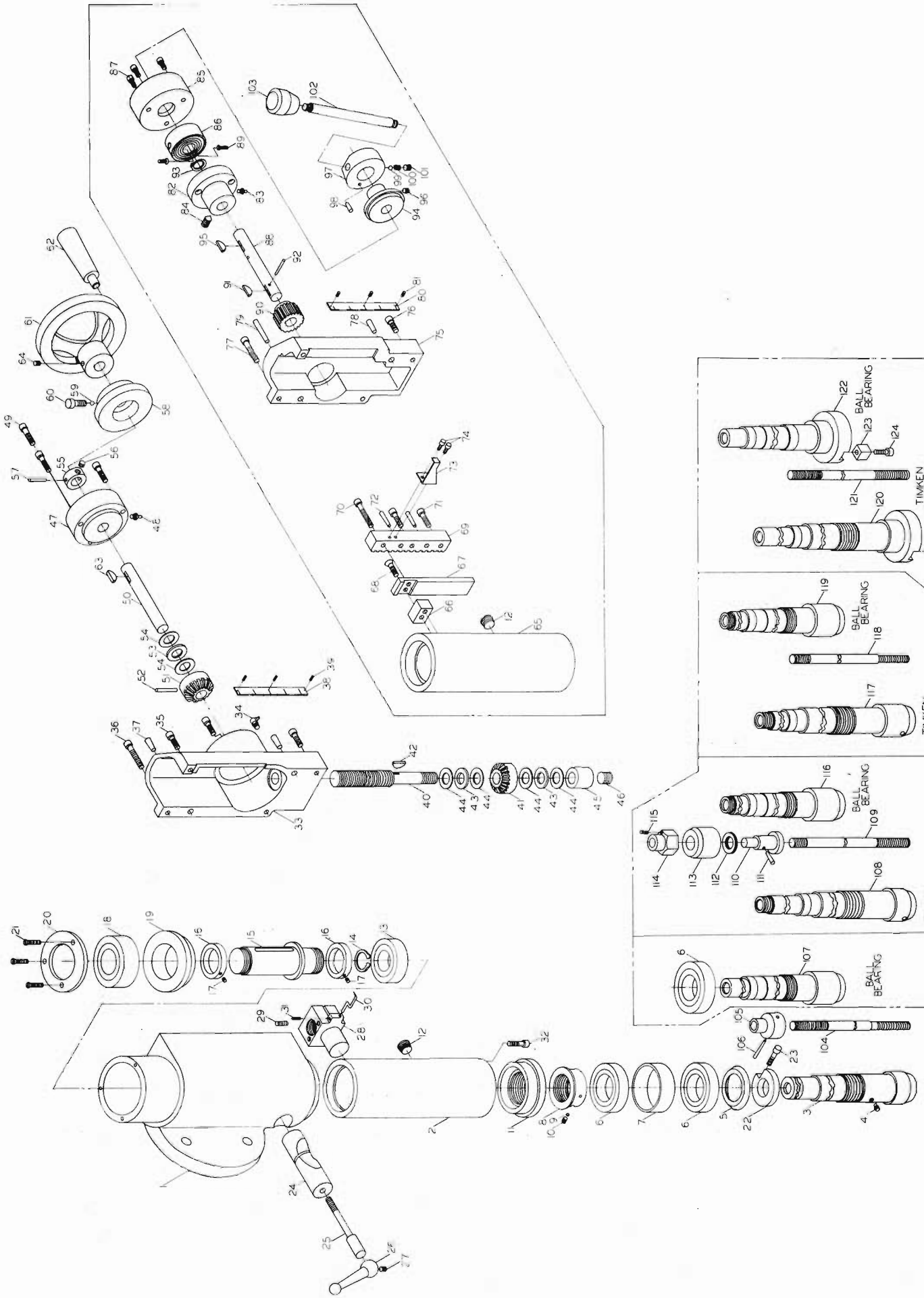


TABLE AND SADDLE ASSEMBLY

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2100004	ASSY., TABLE (INCL. ITEMS 1 THRU 49)	1
2	3797084	TABLE, 7' x 27'	1
3	3761016	STOP	1
4	6714119	SCREW, SOC. CUP PT. SET 1/4 - 20 x 1/4	1
5	3761017	STOP	2
6	6515019	NUT, SQ. 5/16 - 18	2
7	6715174	SCREW, SOC. HD. CAP 5/16 - 18 x 7/8	2
8	3692007	SCREW, TABLE	1
9	3526015	NUT, TABLE FEED	1
10	6609036	FITTING, GREASE 45°	1
11	6715020	SCREW, SOC. HD. CAP, 5/16 - 18 x 1	3
12	3096056	COLLAR	1
13	6064012	BEARING, THRUST	1
14	3064202	BRACKET, TABLE L. H.	1
15	6609004	FITTING, GREASE, STRAIGHT	1
16	6715020	SCREW, SOC. HD. CAP 5/16 - 18 x 1	1
17	6715173	SCREW, SOC. HD. CAP 5/16 - 18 x 3	2
18	6064012	BEARING, THRUST	1
19	3526014	NUT, BEARING, TAKE UP	1
20	6714119	SCREW, SOC. CUP PT. SET, 1/4 - 20 x 1/4	1
21	3125002	DIAL	1
22	6054008	BALL, BRASS, 1/4 DIA.	1
23	3689058	SCREW, THUMB, 5/16 - 18	1
24	6420001	KEY, WOODRUFF #9, 3/16 x 3/4	1
25	3268045	HANDLE, CRANK	1
26	6714119	SCREW, SOC. CUP PT. SET, 1/4 - 20 x 1/4	1
27	3064203	BRACKET, TABLE R. H.	1
28	6609004	FITTING, GREASE, STRAIGHT	1
29	6715029	SCREW, SOC. HD. CAP, 5/16 - 18 x 2 1/2	3
30	3125002	DIAL	1
31	6054008	BALL, BRASS, 1/4 DIA.	1
32	3689058	SCREW, THUMB, 5/16 - 18	1
33	6420001	KEY, WOODRUFF #9, 3/16 x 3/4	1
34	3268045	HANDLE, CRANK	1
35	6714119	SCREW, SOC. CUP PT. SET, 1/4 - 20 x 1/4	1
36	2100051	POWERFEED, SERVO TYPE	1
37	3761019	STOP, TABLE (FOR 8' TABLE)	1
38	6715025	SCREW, SOC. HD. CAP, 5/16 - 18 x 3/4 (FOR 8' TABLE)	2
39	3689057	SCREW, GIB	2
40	3244050	GIB, SADDLE TAPER GIB	2
41	3595035	PLATE	1
42	6714085	SCREW, BUT. HD. SOC. CAP, 1/4 - 20 x 5/8	1
43	6714092	SCREW, SOC. HALF DOG PT. SET, 1/4 - 20 x 3/4	2
44	6514001	NUT, HEX FULL, 1/4 - 20	2
45	3244051	GIB, TABLE TAPER	1
46	3689057	SCREW, GIB	1
47	3448029	LOCK, TABLE GIB	1
48	3854012	WIPER	4
49	6710063	SCREW, BUT. HD. SOC. CAP #10 - 24 x 1/2	2
50	2200005	ASSY., SADDLE (INCL. ITEMS 50, 60 THRU 63)	1
51	3680002	SADDLE	1
52	6609004	FITTING, GREASE STRAIGHT	2
53	3244045	GIB, SADDLE	1
54	6715118	SCREW, SOC. HALF DOG PT. SET 5/16 - 18 x 3/4	3
55	6716134	SCREW, FILLISTER HD. MACH. 3/8 - 16 x 1 1/4	4
56	2200057	SCREW, ASSY., SADDLE CLAMP	1
57	3244044	GIB, TABLE	1

TABLE AND SADDLE ASSEMBLY

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
56	6715118	SCREW, SOC. HALF DOG PT. SET, 5/16 - 18 x 3/4	3
57	6716165	SCREW, FILL. HD. MACH., 3/8 - 16 x 1 3/4	4
58	2200058	SCREW, ASSY., TABLE CLAMP	1
59	3526016	NUT, CROSSFEED	1
60	6715027	SCREW, SOC. HD. CAP 5/16 - 18 x 1 3/4	1
61	6716013	SCREW, SOC. HD. CAP, 3/8 - 16 x 1 1/4	1
62	6623026	PIN, DOWEL, 5/16 DIA. x 1 1/4	2



OPTIONAL

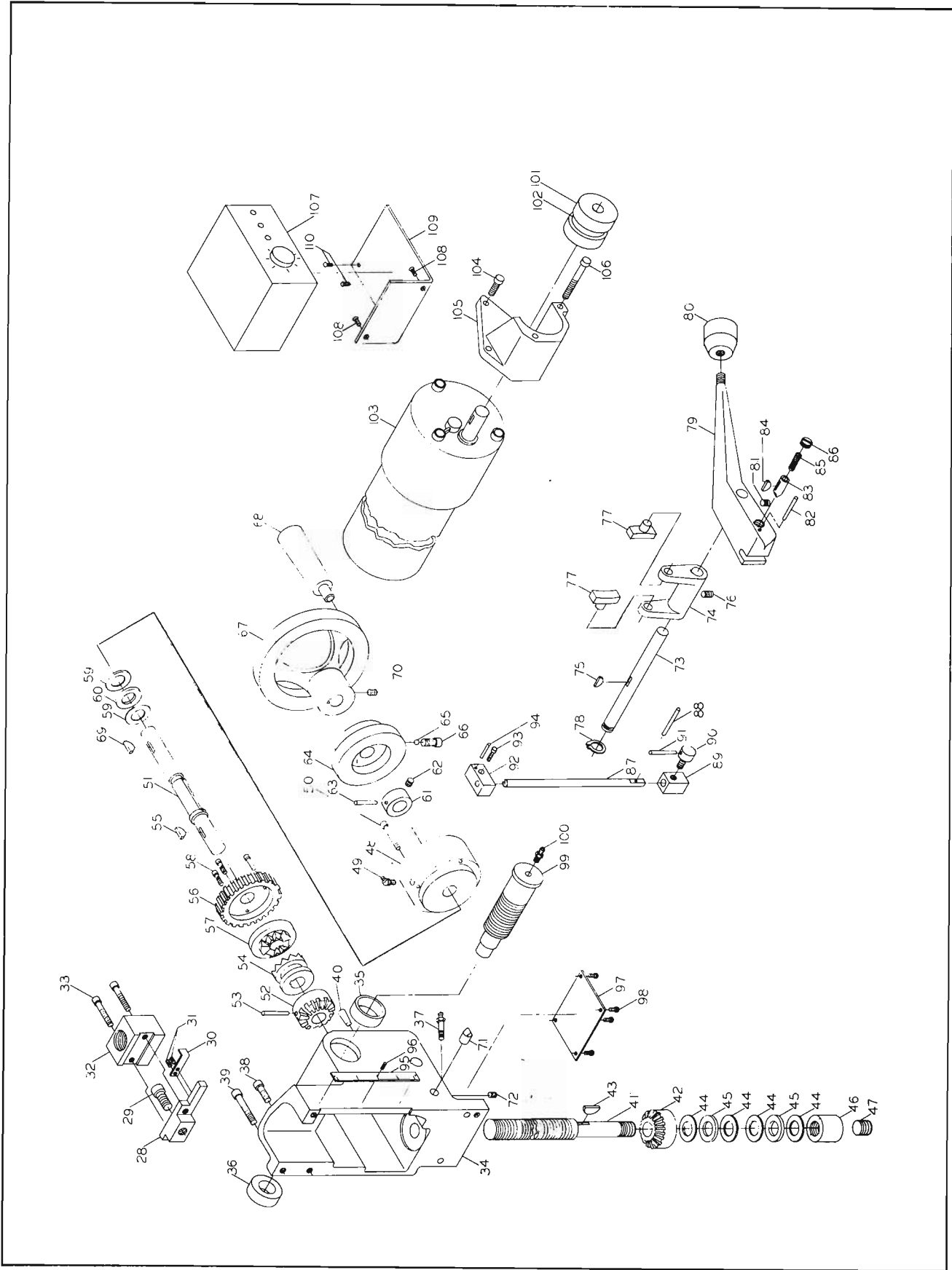
9B&S

#2 MORSE

#30 NS

R-8

ITEM NO.		PART NUMBER		DESCRIPTION		QUANTITY	
HEAD ASSY., (RAPID AND FINE FEED)		HEAD ASSY., (RAPID AND FINE FEED)		HEAD ASSY., (RAPID AND FINE FEED)		HEAD ASSY., (RAPID AND FINE FEED)	
1	2100013	ASSY., FINE QUILL FEED (INCL. ITEMS 1 THRU 64 & 104 (THRU 122))	1	ASSY., R-8 DRAW BAR (INCL. ITEMS 104 THRU 122)	1		
2	2200018	ASSY., HEAD (INCL. ITEMS 1 & 2)	1	ROD, DRAWBAR	1		
3	2275009	HEAD, (INCL. ITEMS 3 THRU 10)	1	NUT, DRAWBAR	1		
4	3640014	QUILL	1	PIN, TAPER #3 x 1 1/4	1		
5	3748041	SPINDLE, R-8 TIMKEN BEARING	1	PIN, TAPER #3 x 1 1/4	1		
6	3731002	SLINGER, GREASE	1	SPINDLE, R-8 BALL BEARING	1		
7	3737014	NUT, BEARING TAKE-UP	1	ROD, DRAWBAR, #9 B & S	1		
8	3726021	SHOE	1	END, DRAWBAR, #9 B & S	1		
9	6714119	SCREW, SOC. CUP PT. SET, 1/4 - 20 x 1/4	1	PIN, TAPER, #2 x 3/4"	1		
10	3526020	NUT, QUILL	1	BEARING, THRUST ROLLER	1		
11	6636013	PLUG	1	CAP, DRAWBAR	1		
12	6060110	BEARING, BALL	1	CONNECTOR, DRAW BAR	1		
13	6670006	RING, RETAINING	1	SCREW, SOC. CUP PT. SET, 1/4 - 20 x 3/8	1		
14	3728020	SLEEVE, PULLER	1	SPINDLE, #9 B & S, BALL BEARING	1		
15	3526024	SORT, SLEEVE	2	SPINDLE, #2 MORSE, TIMKEN BEARING	1		
16	6060102	BEARING, BALL	2	SPINDLE, #2 MORSE, BALL BEARING	1		
17	6060102	BEARING, BALL	2	SPINDLE, #2 MORSE, BALL BEARING	1		
18	3086000	CAGE, BEARING	1	ROD, DRAWBAR, #9 B & S	1		
19	3104074	COVER, BEARING CAGE	1	END, DRAWBAR, #9 B & S	1		
20	6710096	SCREW, FLT. HD. MACH. #10 - 24 x 1	3	PIN, TAPER, #2 x 3/4"	1		
21	3526022	NUT, STOP	1	BEARING, THRUST ROLLER	1		
22	3526022	SCREW, SOC. HD. CAP 1/4 - 20 x 3/4	1	CAP, DRAWBAR	1		
23	3092018	CLAMP, QUILL	1	CONNECTOR, DRAW BAR	1		
24	3689020	SCREW, CLAMP	1	SCREW, SOC. CUP PT. SET, 1/4 - 20 x 3/8	1		
25	3092019	HANDLE, GIB CLAMP	1	SPINDLE, #9 B & S, BALL BEARING	1		
26	6715211	SCREW, SOC. CUP PT. SET 5/16 - 18 x 1/4	1	SPINDLE, #2 MORSE, TIMKEN BEARING	1		
27	3526023	NUT, QUILL FEED CONNECTOR	1	SPINDLE, #2 MORSE, BALL BEARING	1		
28	6714185	SCREW, SOC.-CUP PT. SET 1/4 - 20 x 5/8	1	SPINDLE, #30 NS, TIMKEN BEARING	1		
29	3604019	POINTNER	2	ROD, DRAWBAR, #30 NS	1		
30	6710090	SCREW, SOC. CUP PT. SET, #10 - 24 x 1/2	1	KEY, DRIVE	1		
31	6714025	SCREW, SOC. HD. CAP 1/4 - 20 x 7/8	1	SCREW, SOC. HD. CAP 1/4 - 20 x 3/4	2		
32	6040689	FILTER, GIB FEED	1	SCREW, SOC. HD. CAP, #10 - 24 x 3/8	1		
33	6714018	SCREW, SOC. HD. CAP 1/4 - 20 x 3/4	1	SCREW, SOC. HD. CAP, #10 - 24 x 3/8	1		
34	6714018	SCREW, SOC. HD. CAP 1/4 - 20 x 3/4	1	SCREW, SOC. HD. CAP, #10 - 24 x 3/8	1		
35	6714017	SCREW, SOC. HD. CAP 1/4 - 20 x 1/2	1	SCREW, SOC. HD. CAP, #10 - 24 x 3/8	1		
36	6714017	SCREW, SOC. HD. CAP 1/4 - 20 x 1/2	1	SCREW, SOC. HD. CAP, #10 - 24 x 3/8	1		
37	6623029	SCALE	2	SCREW, SOC. HD. CAP, #10 - 24 x 3/8	1		
38	6747015	SCREW, DRIVE #2 x 1/4	1	SCREW, SOC. HD. CAP, #10 - 24 x 3/8	1		
39	2200020	ASSY., QUILL FEED SCREW (INCL. ITEMS 40 THRU 42)	3	SCREW, FLAT HD. MACH. #8 - 32 x 1/2	1		
40	3692014	SCREW, QUILL FEED	1	GEAR, SPUR 15T-12P - 14 1/2°	1		
41	3237304	GEAR, BEVEL, 18T - 12P - 20°	1	KEY, WOODRUFF #9 3/16 x 3/4	1		
42	6420012	KEY, WOODRUFF #5 1/8 x 5/8 DIA.	1	KEY, WOODRUFF #9 3/16 x 3/4	1		
43	6064013	BEARING, THRUST ROLLER	1	KEY, WOODRUFF #9 3/16 x 3/4	1		
44	6064014	BEARING, THRUST RACE	2	RING, RETAINING	1		
45	3526019	NUT	4	PLATE, HOLE	1		
46	6720024	SCREW, SOC. CUP PT. SET, 5/8 - 11 x 1/2	1	KEY, WOODRUFF #9 3/16 x 3/4	1		
47	6460010	BEARING, BEVEL GEAR (INCL. ITEMS 47 THRU 57)	1	SCREW, SOC. HALF DOG POINT SET, #10 - 24 x 3/16	1		
48	6714016	SCREW, BEVEL GEAR, STRAIGHT	1	RING, HANDLE	1		
49	6714016	SCREW, SOC. HD. CAP 1/4 - 20 x 1"	1	PIN, DOWEL, 1/4 DIA. X 1/2	1		
50	3701038	SHAFT, HANDWHEEL	3	PIN, DOWEL, 1/4 DIA. X 1/2	1		
51	3237304	GEAR, BEVEL 18T - 12P - 20°	1	BALL, STEEL, 1/4 DIA.	1		
				SPRING, 1/4 O.D.	1		
				HANDLE, #30 NS, TIMKEN BEARING	1		
				KNOB, PLASTIC	1		

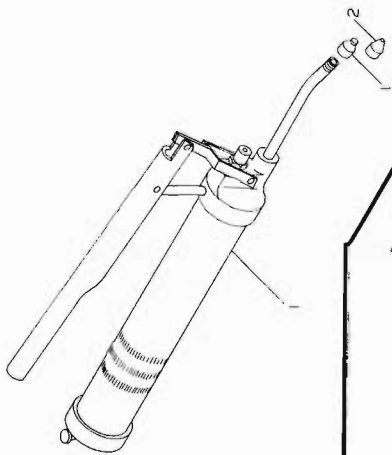
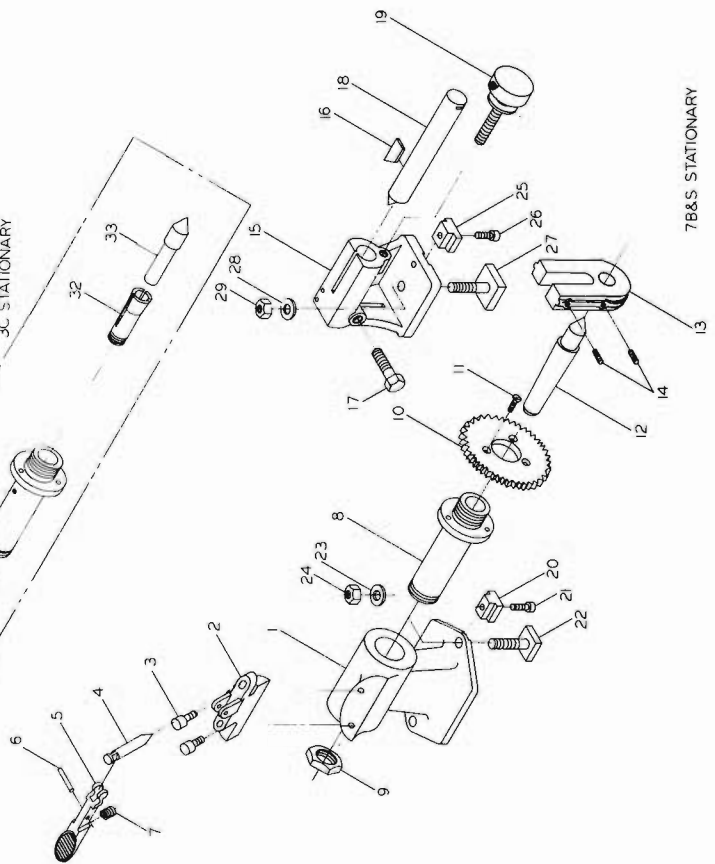
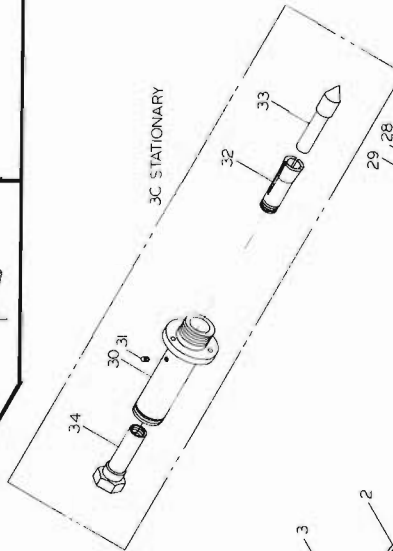
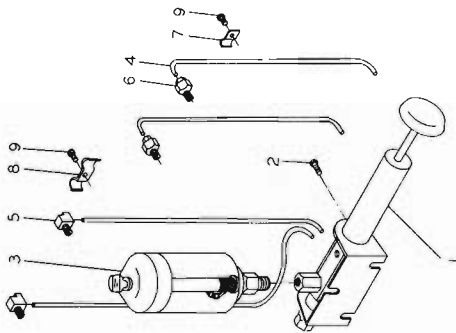
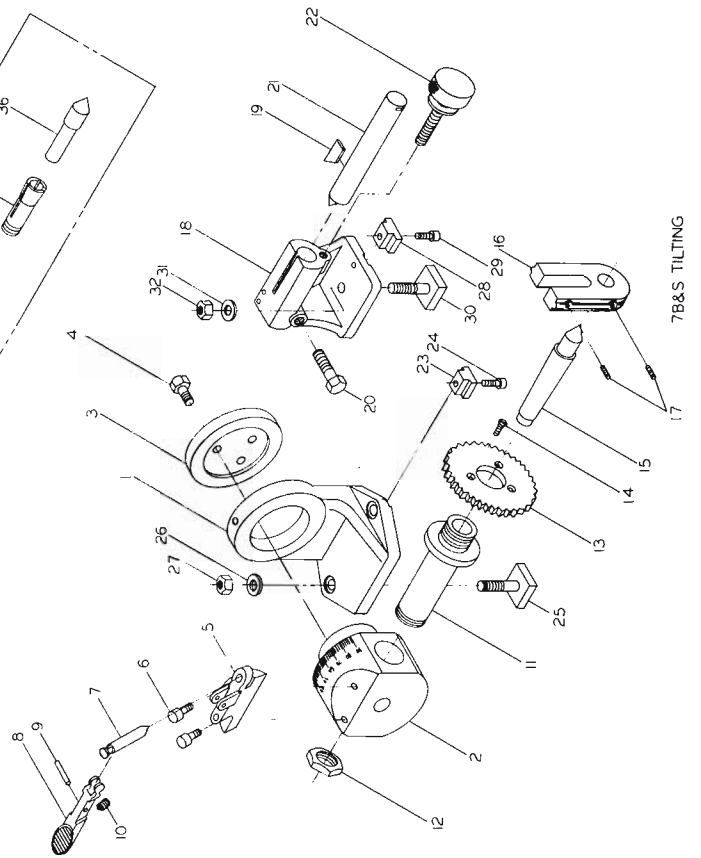
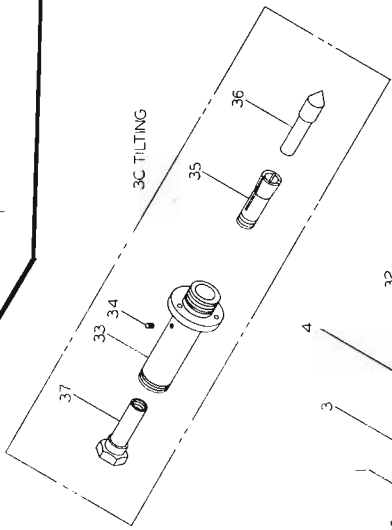
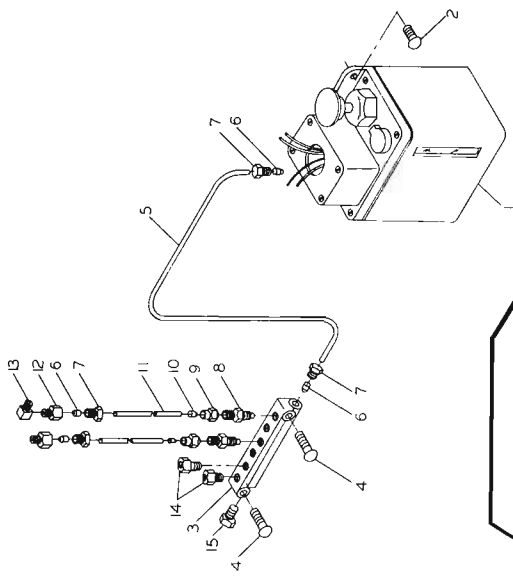


HEAD ASSEMBLY (POWER QUILL FEED)

HEAD ASSEMBLY (POWER QUILL FEED)

HEAD ASSEMBLY (POWER QUILL FEED)

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2100033	ASSY. POWER QUILL FEED (INCL. ITEMS 1, 3 THRU 110)	1	55	6420001	KEY, WOODRUFF, #9, 3/16 x 3/4	1	110	6708079	SCREW, RD. HD. MACH. #6 - 32 x 1/4	2
2	377019	HEAD	1	56	3237080	GEAR, WORM, 30T - 12P - 14 1/2°	1	111	3044146	ROD, DRAW BAR	1
3	3640014	QUILL	1	57	3095036	CLUTCH	1	112	3527011	NUT, DRAW BAR	1
4	3749041	SPINDLE, R-8 TIMKEN BEARING	1	58	6710015	SCREW, SOC. HD. CAP. #10 - 20 x 1/2	3	113	6627004	PIN, TAPER #3 x 1 1/4	1
5	6714191	SLINGER, GREASE	1	59	6064013	BEARING, THRUST ROLLER	1				
6	6062006	BEARING, TIMKEN	2	60	6064014	BEARING, THRUST RACE	2				
7	3737014	SPACER	1	61	3097003	COLLAR	1				
8	3526021	NUT, BEARING TAKE UP	1	62	6715211	SCREW, SOC. CUP PT. SET, 5/16 - 18 x 1/4	1				
9	3723006	SHOE, BEARING	1	63	6627024	DIAM. SCREW, FEED HEAD	1				
10	3723006	SHOE, BEARING	1	64	6054004	BALL, BRASS, 1/4 DIA.	1				
11	3526020	NUT, QUILL	1	65	3689058	SCREW, THUMB, 5/16 - 18	1				
12	6636013	PLUG	1	66	3271042	HANDWHEEL, 7"	1				
13	6060110	BEARING, BALL	1	67	3268037A	HANDLE	1				
14	6060110	RING, RETAINING	1	68	6420001	KEY, WOODRUFF #9, 3/16 x 3/4	1				
15	3728020	SLEEVE, PULLEY	1	70	6714119	SCREW, SOC. CUP PT. SET, 1/4 - 20 x 1/4	1				
16	3526024	NUT, PULLEY SLEEVE	2	71	3582022	PIN, TRIP	1				
17	6710102	SCREW, SOC. HALF DOG PT. SET, #10 - 24 x 3/16	2	72	6714119	SCREW, SOC. CUP PT. SET, 1/4 - 20 x 1/4	1				
18	6061015	BEARING, BALL	1	73	3704015	SHAFT, SHIFTER	1				
19	3085000	CAGE, BEARING	1	74	3216005	FORK, SHIFTER	1				
20	3104074	COVER, BEARING CAGE	1	75	6420000	KEY, WOODRUFF #3, 1/8 x 1/2	1				
21	6710096	SCREW, FLAT HD. MACH., #10-24 x 1	3	76	6714003	SCREW, SOC. CUP PT. SET, 1/4 - 20 x 3/8	2				
22	3526022	NUT, STOP	1	77	3725005	SHOE, SHIFTER FORK	1				
23	6714018	SCREW, SOC. HD. CAP. 1/4 - 20 x 3/4	1	78	6670018	RING, RETAINING	1				
24	3689020	CLAMP, QUILL	1	79	3268024	HANDLE, PLASTIC	1				
25	3689020	CLAMP, QUILL	1	80	3402251	SCREW, SOC. CUP PT. SET, 1/4 - 20 x 1/4	1				
26	3092019	HANDLE, STOP CUP PT. SET, 5/16 - 18 x 1/4	1	81	6714119	SCREW, SOC. CUP PT. SET, 1/4 - 20 x 1/4	1				
27	3095006	CONECTOR, QUILL	1	82	6627016	PIN, TAPER, #1 x 1 1/4	1				
28	6715018	SCREW, SOC. HD. CAP. 3/8 - 16 x 3/4	1	83	3582021	PIN, TRIP	1				
29	3604021	POINTER	1	84	6420013	KEY, WOODRUFF #2, 3/32 x 1/2	1				
30	6710061	SCREW, BUT. HD. SOC. CAP. #10-24 x 1/4	2	85	3755256	SPRING	1				
31	3526072	NUT, QUILL FEED	1	86	3690042	SCREW, ADJ.	1				
32	6714014	SCREW, SOC. HD. CAP. 1/4 - 20 x 1 1/4	2	87	3670080	ROD, TRIP	1				
33	3104071	COVER, POWER QUILL FEED	1	88	6620013	PIN, ROLL, 1/8 DIA. x 1 1/2	1				
34	3070029	BUSHING, BRONZE	1	89	3761020	STOP, ADJ.	1				
35	6609005	FITTING, GREASE, LONG STRAIGHT	1	90	3690041	SCREW, ADJ. STOP	1				
36	6714017	SCREW, SOC. HD. CAP. 1/4 - 20 x 3/4	3	91	6627016	PIN, TAPER, #1 x 1 1/4	1				
37	6609005	FITTING, GREASE, LONG STRAIGHT	1	92	3068203	BRACKET, UPPER	1				
38	6714018	SCREW, SOC. HD. CAP. 1/4 - 20 x 1 1/2	3	93	6710015	SCREW, SOC. HD. CAP. #10 - 24 x 1/2	1				
39	6714017	SCREW, SOC. HD. CAP. 1/4 - 20 x 1 1/2	2	94	6626004	PIN, SPRING, 1/8 DIA. x 3/4	1				
40	2200020	ASSY. QUILL FEED SCREW (INCL. ITEMS 41 THRU 43)	1	95	3684239	SCALE	3				
41	3692014	SCREW, QUILL FEED, 12P, 20°	1	96	6747015	SCREW, DRIVE #2 x 1/4	1				
42	3237304	GEAR, BEV, 12P, 20°	1	97	6710013	SCREW, BUT. HD. SOC. CAP. #10 - 24 x 1/4	4				
43	6064013	BEARING, THRUST ROLLER	2	98	6710013	SCREW, BUT. HD. SOC. CAP. #10 - 24 x 1/4	4				
44	6064014	BEARING, THRUST RACE	2	99	3665008	WORM	1				
45	3528019	NUT	4	100	6609004	FITTING, GREASE, STRAIGHT	2				
46	3220024	SCREW, SOC. CUP PT. SET, 5/8 - 11 x 1/2	1	101	6162017	COUPLING	1				
47	2200031	ASSY. BEVEL GEAR BEARING (INCL. ITEMS 48 THRU 63)	1	102	6400004	INSERT, COUPLING	1				
48	3046011	BEARING, BEVEL GEAR	1	103	6474301	GEARMOTOR	1				
49	6609006	FITTING, GREASE #45	1	104	6714018	SCREW, SOC. HD. CAP. 1/4 - 20 x 3/4	3				
50	6710012	SCREW, SOC. HD. CAP. #10-24 x 1 1/4	4	105	3063296	BRACKET, MTR. MOUNTING	2				
51	3701040	SHAFT, HANDWHEEL	1	106	6714024	SCREW, SOC. HD. CAP. 1/4 - 20 x 2	1				
52	3237304	GEAR, BEVEL, 18 T - 12P - 20°	1	107	6147003	CONTROL, QUILL POWERFEED	1				
53	6627004	PIN, TAPER, #3 x 1 1/4	1	108	6706031	SCREW, FLAT HD. MACH. #6 - 32 x 3/8	2				
54	3095035	CLUTCH, SLIDING	1	109	3068209	BRACKET	1				



STATIONARY INDEXING HEAD

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2100260	ASSY. STATIONARY INDEXING (INCL. ITEMS 1 THRU 34)	1
2	3980125	HEADSTOCK	1
3	3980132	BRACKET	1
4	6714015	SCREW SOC. HD. CAP 1/4 - 20 x 1/2	2
5	3980131	PLUNGER	1
6	3980133	LEVER-PAWL	1
7	6627015	PIN TAPER #1 x 1"	1
8	3980134	SPRING	1
9	3980130	SPINDLE #7 B & S	1
10	3980135	NUT HEX. 1 1/8 - 20	1
11	6710079	SCREW FLAT HD. MACHINE #10 - 24 x 1/2	3
12	3980137	CENTER #7 B & S	1
13	3980138	DRIVER	1
14	6710090	SCREW SOC. CUP PT. SET #10 - 24 x 1/2	2
15	2200062	TAILSTOCK ASSY.	1
16	3980141	TAILSTOCK	1
17	3980143	KEY	1
18	6716032	SCREW HEX HD. CAP 3/8 - 16 x 1 1/2	1
19	3980142	CENTER TAILSTOCK	1
20	3980144	SCREW TAILSTOCK	1
21	3980192	KEY	0(2)
22	6710016	SCREW SOC. HD. CAP #10 - 24 x 5/8	0(2)
23	3980312	BOLT TEE 3/8 - 16	0(2)
24	6861314	WASHER TEE BOLT FLAT 3/8	0(2)
25	6516001	NUT HEX. FULL 3/8 - 16	0(2)
26	3980192	FOR BURKE BENCH TABLE 1/2" TEE SLOT	0(2)
27	6710016	KEY	0(2)
28	3980312	SCREW SOC. HD. CAP #10 - 24 x 5/8	0(2)
29	6861314	BOLT TEE 3/8 - 16	0(2)
30	6516001	WASHER TEE BOLT FLAT 3/8	0(2)
31	3980129	NUT HEX FULL 3/8 - 16	0(2)
32	3980129	SPINDLE #3C	1
33	6710102	SCREW SOC. HALF DOG POINT SET #10 - 24 x 3/16	1
34	6154230	COLLET #3C. 1/2	1
35	3980136	CENTER	1
36	3980139	SLEEVE DRAW-IN	1

GREASE GUN LUBRICATOR

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2100039	ASSY. GREASE GUN LUBRICATOR (INCL. ITEMS 1 thru 3)	1
2	6340003	GUN, GREASE	1
	6284107	COUPLER, GREASE GUN	1

DESCRIPTION

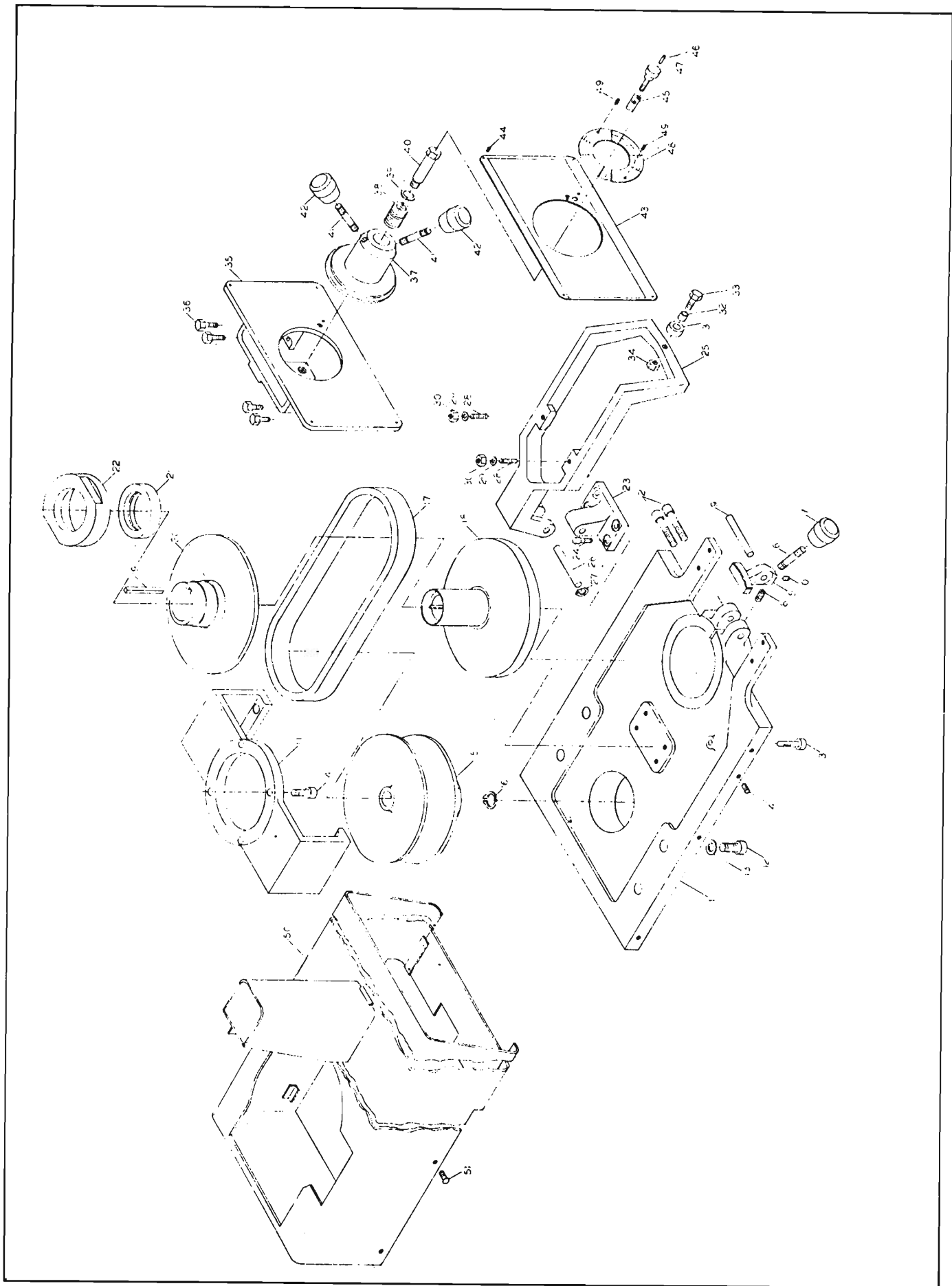
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2100038	ASSY. ONE-SHOT METERED LUBRICATOR (INCL. ITEMS 1 THRU 9)	1
2	6449005	LUBRICATOR	1
3	6710062	SCREW, BUT. SOC. CAP. #10 - 24 x 3/8	3
4	6449006	RESERVOIR	1
5	6833013	TUBING, NYLON, 1/8 OD.	4
6	6609034	ELBOW, MALE	2
7	6609033	CONNECTOR, MALE	2
8	6609024	CLIP, TUBE	2
9	6609025	CLIP, TUBING	2
	6710061	SCREW, BUT. HD. SOC. CAP #10 - 24 x 1/4	4

TILTING INDEXING HEAD

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2100261	ASSY. TILTING INDEXING HEAD (INCL. ITEMS 1 THRU 37)	1
2	3980127	BASE	1
3	3980126	CRADLE	1
4	3980128	PLATE	1
5	6714175	SCREW HEX. CAP 5/16 - 18 x 7/8	3
6	3980132	BRACKET	1
7	6714015	SCREW SOC. HD. CAP 1/4 - 20 x 1/2	2
8	3980131	PLUNGER	1
9	3980133	LEVER PAWL	1
10	6627015	PIN TAPER #1 x 1"	1
11	3980134	SPRING	1
12	3980130	SPINDLE #7 B & S	1
13	3980160	NUT HEX. 1 1/8 - 20	1
14	3980135	PLATE INDEX	1
15	6710079	SCREW FLAT HD. MACHINE #10 - 24 x 1/2	3
16	3980137	CENTER #7 B & S	1
17	3980138	DRIVER	1
18	6710090	SCREW SOC. CUP PT. SET #10 - 24 x 1/2	2
19	3980141	TAILSTOCK	1
20	3980143	KEY	1
21	6716032	SCREW, HEX HD. CAP 3/8 - 16 x 1 1/2	1
22	3980142	CENTER TAILSTOCK	1
23	3980192	KEY	1
24	6710016	SCREW SOC HD. CAP #10 - 24 x 5/8	2
25	3980312	BOLT TEE 3/8 - 16	2
26	6861314	WASHER TEE BOLT FLAT 3/8	2
27	6516001	NUT HEX FULL 3/8 - 16	2
28	3980192	KEY	2
29	6710016	SCREW SOC. HD. CAP #10 - 24 x 5/8	2
30	3980312	BOLT TEE 3/8 - 16	2
31	6861314	WASHER TEE BOLT FLAT 3/8	2
32	6516001	NUT HEX. FULL 3/8 - 16	2
33	3980129	SPINDLE #3C	1
34	6710102	SCREW SOC. HALF DOG PT. SET #10 - 24 x 3/16	1
35	6154230	COLLET #3C 1/2	1
36	3980136	CENTER	1
37	3980139	SLEEVE DRAW-IN	1

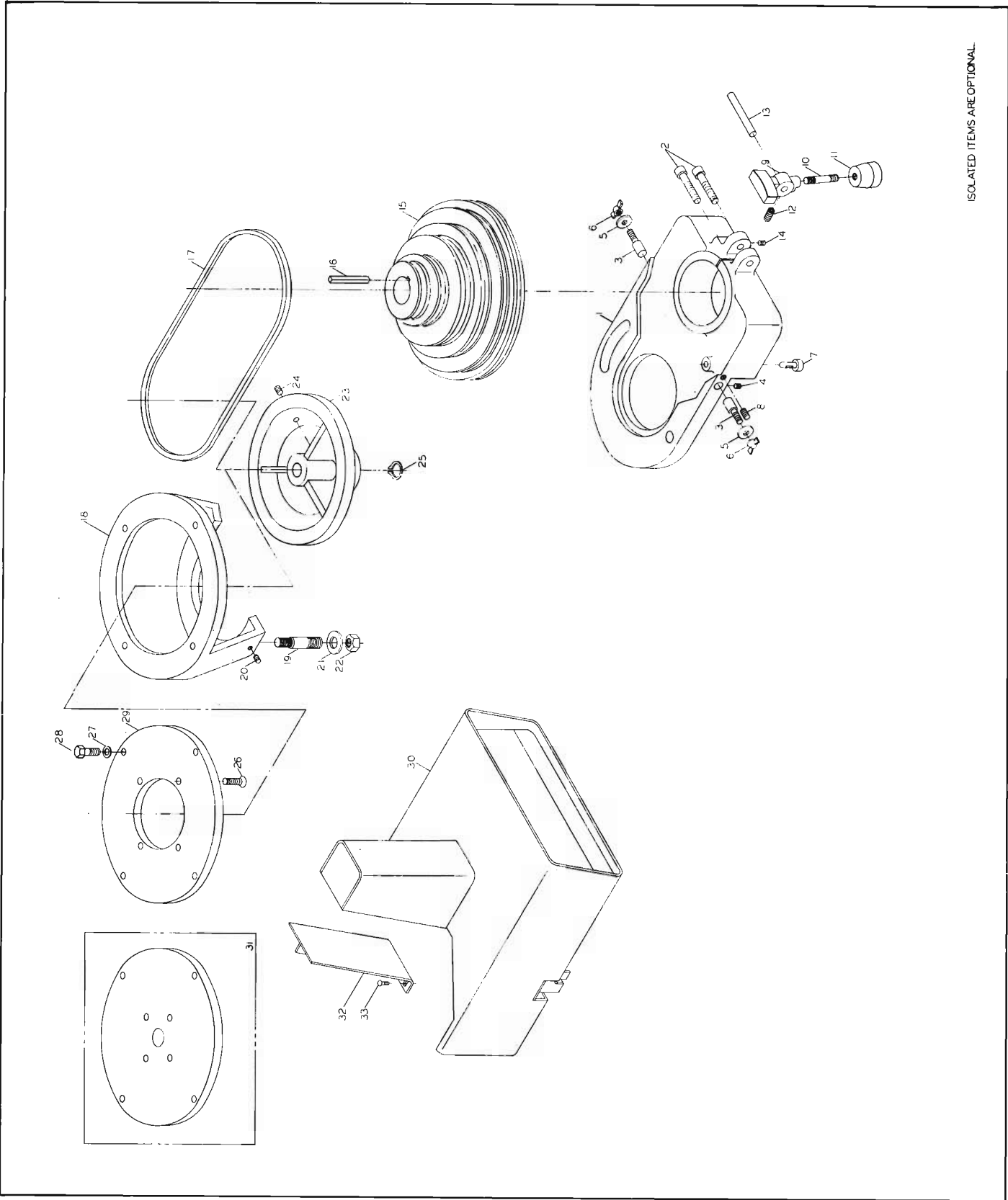
AUTOMATIC LUBRICATOR

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2100025	ASSY. AUTOMATIC LUBRICATOR	1
2	6449012	LUBRICATOR	2
3	6714085	SCREW, BUT. HD. SOC. CAP. 1/4-20 x 5/8	2
4	6609040	FITTING, OIL	1
5	6716016	SCREW, BUT HD. SOC. CAP. 1/4-20 x 1"	2
6	6833024	TUBING, NYLON	1
7	6609041	FITTING, OIL	6
8	6609022	FITTING, OIL	2
9	6609011	FITTING, OIL	4
10	6609021	FITTING, OIL	4
11	6609041	FITTING, OIL	4
12	6833024	TUBING, NYLON, 5/32 OD.	4
13	6609022	FITTING, OIL	4
14	6609042	FITTING, OIL	4
15	6609018	FITTING, OIL	2
	6609043	FITTING, OIL	3



SPINDLE ASSEMBLY (V/S)

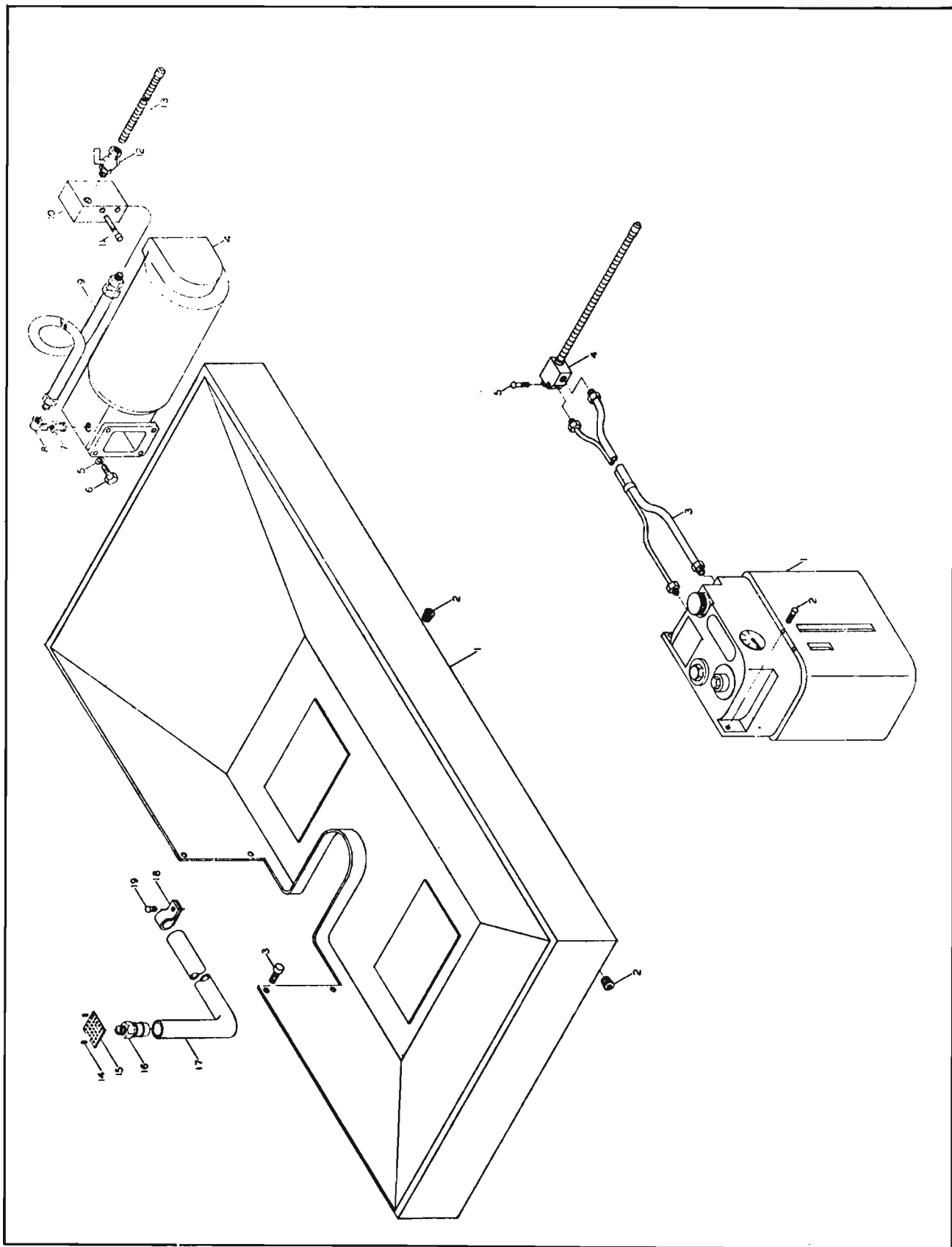
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	3595379	PLATE, HEAD	1
2	6716019	SCREW, SOC. HD. CAP, 3/8 - 16 x 2	2
3	3582020	PIN, PULLEY LOCK	1
4	6714090	SCREW, SOC. HALF DOG. PT., 1/4 - 20 x 1/2	1
5	3426053	LEVER, BRAKE	1
6	3268022	HANDLE, BRAKE	1
7	3406201	KNOB, PLASTIC	1
8	6813072	SPRING, 3/8 O.D. COMPRESSION	1
9	3584027	PIN, PIVOT	1
10	6714009	SCREW, SOC. CUP PT. SET, 1/4 - 20 x 1/4	1
11	3776065	SUPPORT, MOTOR	1
12	6718001	SCREW, SOC. HD. CAP, 1/2 - 13 x 1	4
13	6861501	WASHER, PLAIN, 1/2	4
14	6716143	SCREW, SOC. HD. CAP, 3/8 - 16 x 1	4
15	2719071	SHEAVE, ASSY., MOTOR	1
16	6670002	RING, RETAINING	1
17	6077162	BELT, VS.	1
18	2200050	SHEAVE, ASSY. FIXED SPINDLE	1
19	3388026	KEY, SQ. 1/4 x 2 1/2	1
20	3388234	KEY, VS PULLEY	2
21	3719074	SHEAVE, SLIDING SPINDLE	1
22	6060189	BEARING, BALL	1
23	3659021	RETAINER, BEARING	1
24	3064435	BRACKET	1
25	6714018	SCREW, SOC. HD. CAP, 1/4 - 20 x 3/4	4
26	3063298	FOLLOWER, CAM	1
27	3584027	PIN, PIVOT	1
28	6670078	RING, RETAINING	2
29	6714093	SCREW, SOC. HALF DOG POINT SET, 1/4 - 20 x 1	2
30	6861100	WASHER, LOCK 1/4	2
31	6514001	NUT, HEX FULL, 1/4 - 20	2
32	3673032	ROLLER, VS CAM	1
33	6095043	BUSHING	1
34	6715032	SCREW, HEX HD. CAP 5/16 - 18 x 1	1
35	6515009	NUT, HEX JAM, 5/16 - 18	1
36	3776066	SUPPORT, CAM	1
37	6714019	SCREW, SOC. HD. CAP, 1/4 - 20 x 5/8	4
38	3076048	CAM, VS	1
39	6813006	SPRING, COMPRESSION	1
40	6861702	WASHER, NYLON	1
41	6718029	SCREW, HEX, SOC. SHOULDER, 1/2 - 13 x 2	1
42	3268022	HANDLE	2
43	3406201	KNOB, PLASTIC	2
44	3330309	PLATE, NAME	1
45	6747000	SCREW, DRIVE, #4 x 3/16	4
46	3092037	CLAMP	1
47	6626008	PIN, SPRING, 1/8 DIA. x 1/2	1
48	6430029	KNOB	1
49	3684269	DIAL, SPEED	1
50	6747000	SCREW, DRIVE, #4 x 3/16	2
51	2250145	GUARD	1
	6710062	SCREW, BUT. HD. SOC. CAP, 1/4 - 20 x 3/8	6



ISOLATED ITEMS ARE OPTIONAL

SPINDLE DRIVE ASSEMBLY

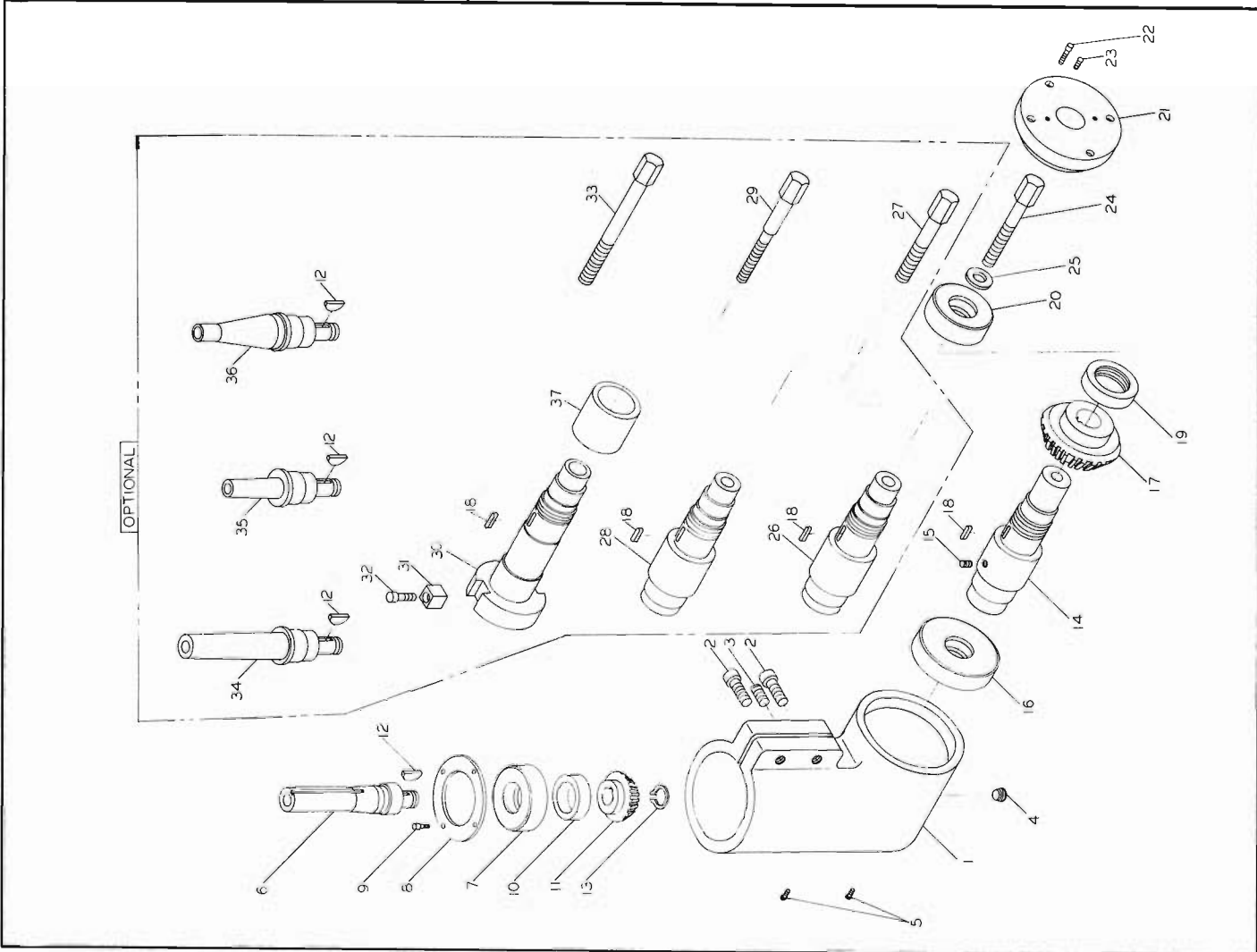
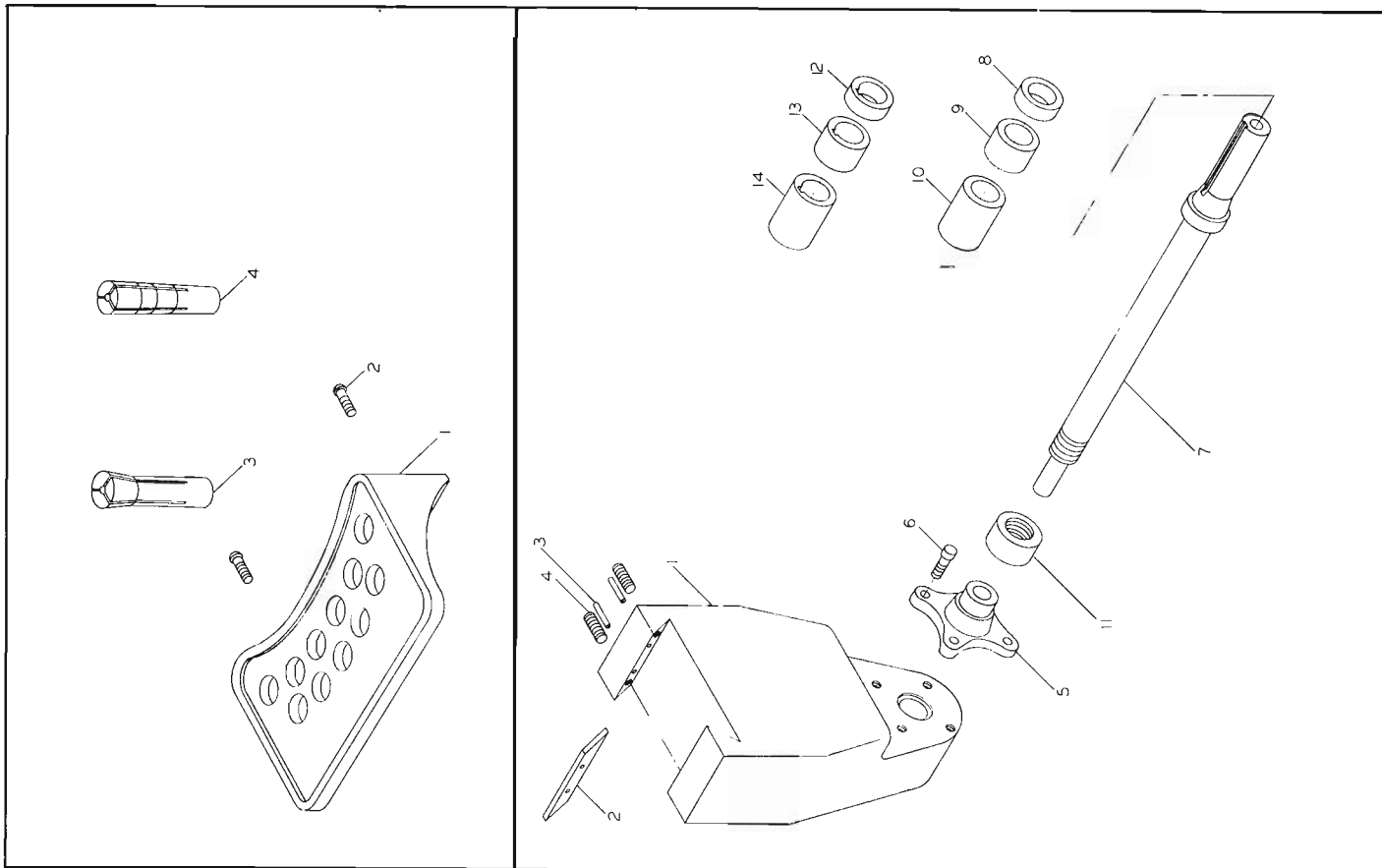
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2100007	HEAD	1
2	3595274	PLATE, HEAD	1
3	6716019	SCREW, SOC. HD. CAP 3/8 - 16 x 2	2
4	3680015	SCREW, CLAMP	2
5	6714119	SCREW, SOC. CUP PT. SET, 1/4 - 20 x 1/4	2
6	6861201	WASHER, PLAIN, 5/16	4
7	6515010	NUT, WING, 5/16 - 18	2
8	3582020	PIN, PULLEY LOCK	1
9	6715116	SCREW, SOC. HALF DOG PT. 5/16 - 18 x 1/2	1
10	3426015	LEVER, BRAKE	1
11	3268022	HANDLE, BRAKE	1
12	3406201	KNOB, PLASTIC	1
13	6813072	SPRING, 3/8 O.D. COMPRESSION	1
14	3584027	PIN, PIVOT	1
15	6714009	SCREW, SOC. CUP PT. SET, 1/4 - 20 x 1/4	1
16	3718022	PULLEY, SPINDLE	1
17	3388026	KEY, SQUARE, 1/4 SQ. x 2 1/2	1
18	6077088	BELT, VEE	1
19	3298098	HOUSING, MOTOR	1
20	3773033	STUDY	2
21	6714003	SCREW, SOC. CUP PT. SET, 1/4 - 20 x 3/8	2
22	6861704	WASHER, 5/8	2
23	6520011	NUT, HEX, HEAVY FULL, 5/8 - 11	2
24	3718021	PULLEY, MOTOR	1
25	6715011	SCREW, SOC. CUP PT. SET, 5/16 - 18 x 3/8	1
26	6670002	RING, RETAINING	1
27	6716148	SCREW, FLAT HD. SOC. CAP, 3/8 - 16 x 1"	4
28	6861300	WASHER, LOCK 3/8	4
29	6716031	SCREW, HEX HD. CAP, 3/8 - 16 x 1"	4
30	3005046	ADAPTER, MOTOR	1
31	2200037	GUARD, BELT	1
32	3005042	ADAPTER, MOTOR	1
33	3104124	COVER, BELT GUARD	1
	6710063	SCREW, BUT. HD. SOC. CAP, #10 - 24 x 1/2	2



FLOOD COOLANT

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2100029	ASSY. COOLANT ATTACHMENT (INCL. ITEMS 1 THRU 19)	1
2	2798016	TANK, COOLANT	2
3	6636020	PLUG, PIPE, 1/4 NPT	4
4	6715025	SCREW, SOC. HD. CAP, 5/16 - 18 x 3/4	1
5	6648020	PUMP, COOLANT	4
6	6861100	WASHER, LOCK, 1/4	4
7	6714049	SCREW, HEX. HD. CAP, 1/4 - 20 x 3/4	4
8	6634055	REDUCER, PIPE, 1/2 to 3/8 NPT	1
9	6634028	ELBOW, PIPE, 90° STREET, 3/8 NPT	1
10	3296010	HOSE	1
11	3055049	BLOCK, COOLANT	1
12	6714017	SCREW, SOC. HD. CAP, 1/4 - 20 x 1 1/2	2
13	6138002	COCK, SHUT OFF, 3/8 NPT, MALE-FEMALE	1
14	6498005	SPOUT COOLANT	1
15	6747015	SCREW	4
16	3687015	SCREEN	1
17	6284149	STEM., MALE HOSE	1
18	6374011	HOSE, RETURN	1
19	6122015	CLAMP, PIPE, 1/2	1
	6714082	SCREW, BUT. HD. SOC. CAP, 1/4 - 20 x 3/8	1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2100024	ASSY. MIST COOLANT (INCL. ITEMS 1 THRU 4)	1
2	6160010	COOLANT UNIT, SPRAYMIST	2
3	6714086	SCREW, BUT. HD. SOC. CAP, 1/4 - 20 x 7/8	1
4	6160009	ASSY. HOSE	1
5	6160007	JET, FLEXIBLE EXTENSION	1
	6714086	SCREW, BUT. HD. SOC. CAP, 1/4 - 20 x 7/8	1



RIGHT ANGLE ATTACHMENT

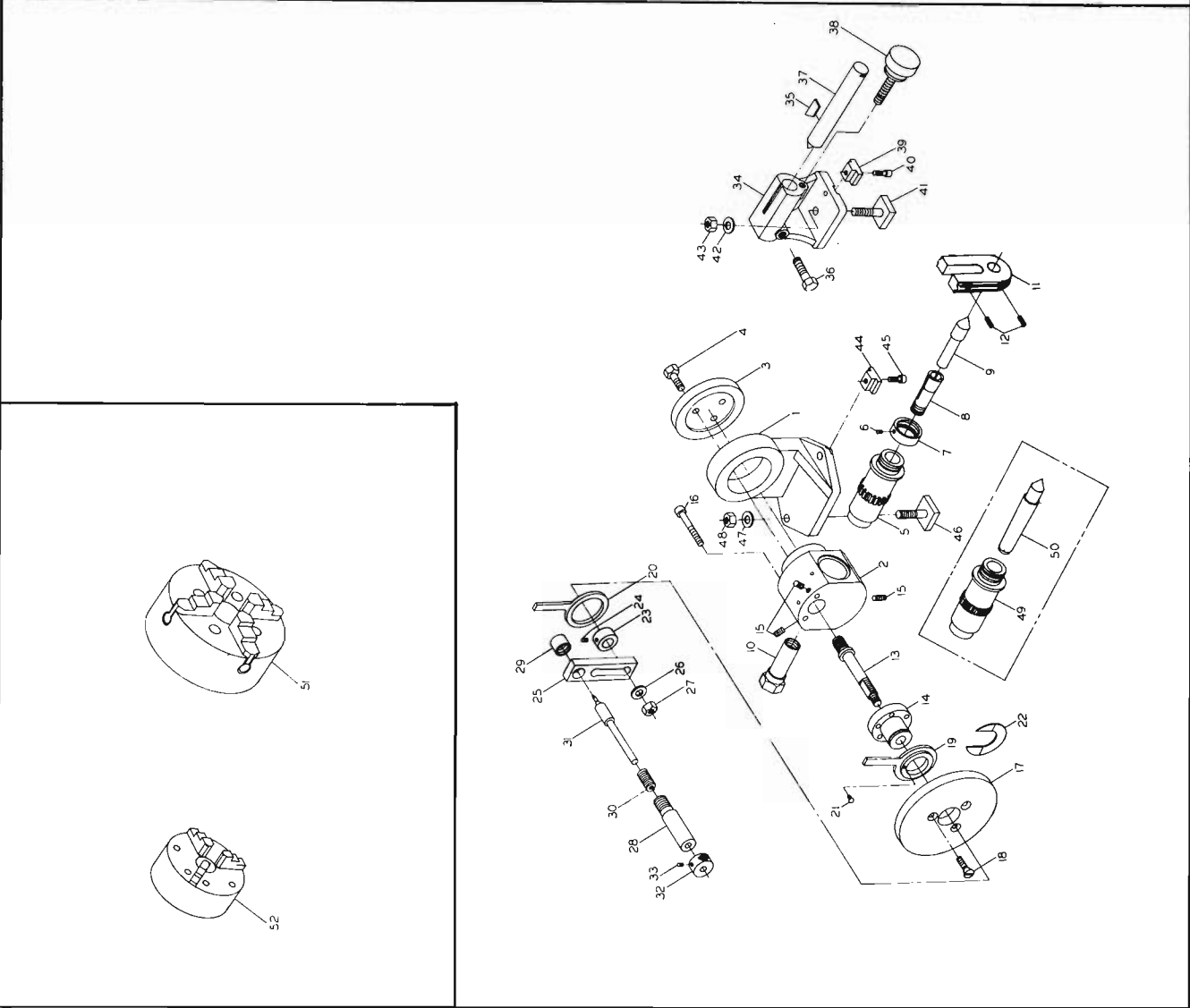
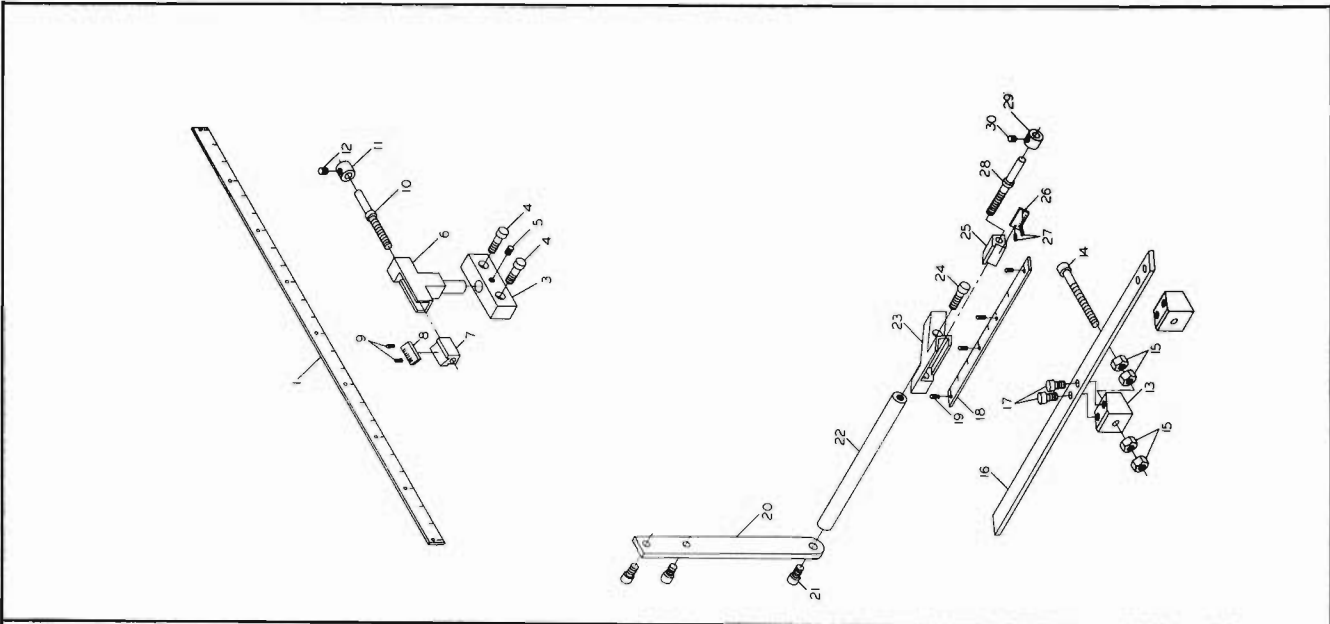
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2100035	ASSY. RIGHT ANGLE ATTACHMENT (INCL. ITEMS 1 THRU 32)	1
2	3056008	BODY, RIGHT ANGLE ATTACHMENT	2
3	6716143	SCREW, SOC. HD. CAP SCR. 3/8 - 16 x 1	1
4	6716100	SCREW, SOC. HD. CAP. SET 3/8 - 16 x 3/4	1
5	6636013	PLUG PIPE, 3/8 - 18 NPTF	1
6	6710061	SCREW, BUT. HD. SOC. CAP #10 - 24 x 1/4	2
7	3706028	SHAFT, R-8	1(1)
8	6060108	BEARING, BALL	1
9	3078046	CAP RETAINER	4
10	6710014	SCREW, SOC. HD. CAP #10 - 24 x 3/8	1
11	3736011	SPACER	1
12	6314038	GEAR SPIRAL BEVEL 16T - 10P - 20°	1
13	6420001	KEY WOODRUFF #9, 3/16 x 3/4	1
14	6670008	RING RETAINING	1
15	3749046	SPINDLE, R-8	1(1)
16	6714089	SCREW, SOC. HALF DOG PT. SET 1/4 - 20 x 3/8	1(1)
17	6060109	BEARING, BALL	1
18	6314039	GEAR, SPIRAL BEVEL 32T - 10P - 20°	1
19	3388045	KEY SQUARE, 1/4 x 3/4	1
20	6549007	NUT, BEARING LOCK	1
21	6060108	BEARING BALL	1
22	3078045	CAP	1
23	6710016	SCREW, SOC. HD. CAP #10 - 24 x 5/8	1
24	6710061	SCREW, BUT. HD. SOC. CAP. #10 - 24 x 1/4	1
25	3044149	BAR, R-8, DRAW	4
26	6861511	WASHER, 1/2	2
27	3749045	SPINDLE, #9 B & S	1(1)
28	3044150	BAR, #9 B & S	1
29	3749103	SPINDLE #2 MORSE	0(1)
30	3044102	BAR DRAW	0(1)
31	3749047	SPINDLE, #30 NS	1
32	3387027	KEY, DRIVE	0(1)
33	6714018	SCREW, SOC. HD. CAP, 1/4 - 20 x 3/4	0(2)
34	3044148	BAR, #30 NS DRAW	0(2)
35	3706027	SHAFT, #9 B & S	0(1)
36	3700101	SHAFT #2 MORSE	0(1)
37	3706029	SHAFT #30 NS	1
	3728023	SLEEVE	0(1)

TRAY AND COLLETS KIT

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2100043	ASSY. TRAY AND COLLETS KIT (INCL. ITEMS 1 THRU 4)	1
2	3806009	TRAY, COLLET	3
3	6715196	SCREW, BUT. HD. SOC. CAP, 5/16 - 18 x 1"	1
4	6154164	COLLET, #9 B & S	1
	6154146	COLLET, R-8	1

OUTBOARD SUPPORT ATTACHMENT

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2100036	ASSY. OUTBOARD SUPPORT ATTACHMENT (INCL. ITEMS 1 THRU 6)	1
2	3785008	SUPPORT, ARBOR	1
3	3244096	GIB	2
4	6626029	PIN, ROLL 3/16 x 1	2
5	6716101	SCREW, SOC. HALF DOG POINT SET 3/8 - 16 x 1	2
6	6069006	BEARING FLANGE	1
7	6715038	SCREW, SOC. HD. CAP 5/16 - 18 x 7/8	4
8	3024077	ARBOR, R-8	1
9	3736019	SPACER, 1/2 LENGTH	2
10	3736020	SPACER, 1 LENGTH	2
11	3736021	SPACER, 2 LENGTH	2
12	3526092	NUT, ARBOR	1
13	3736022	SPACER, 1/2 LENGTH (WITH KEYWAY)	0
14	3736023	SPACER, 1 LENGTH (WITH KEYWAY)	0
	3736024	SPACER, 2 Length (WITH KEYWAY)	0



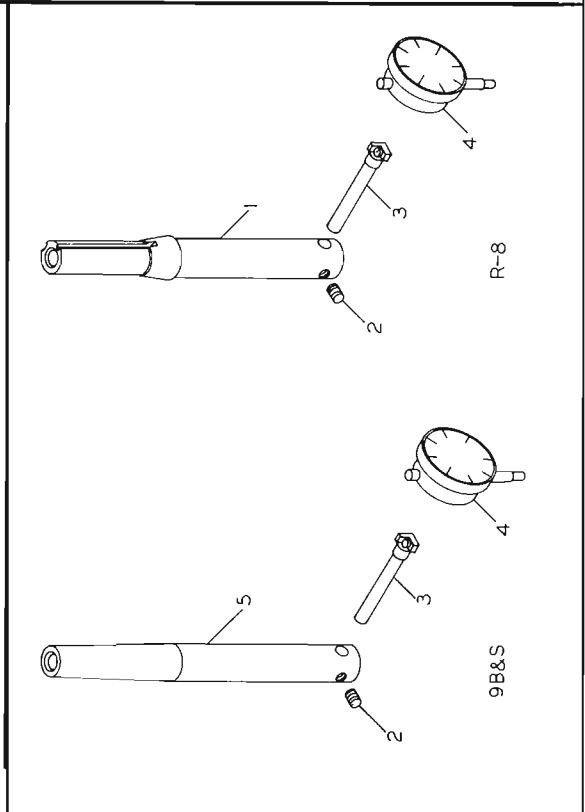
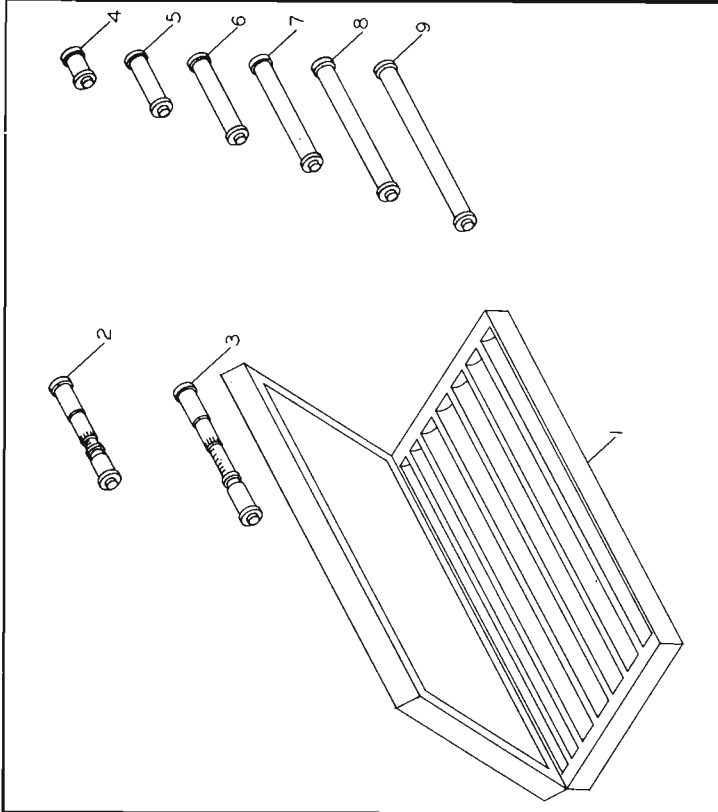
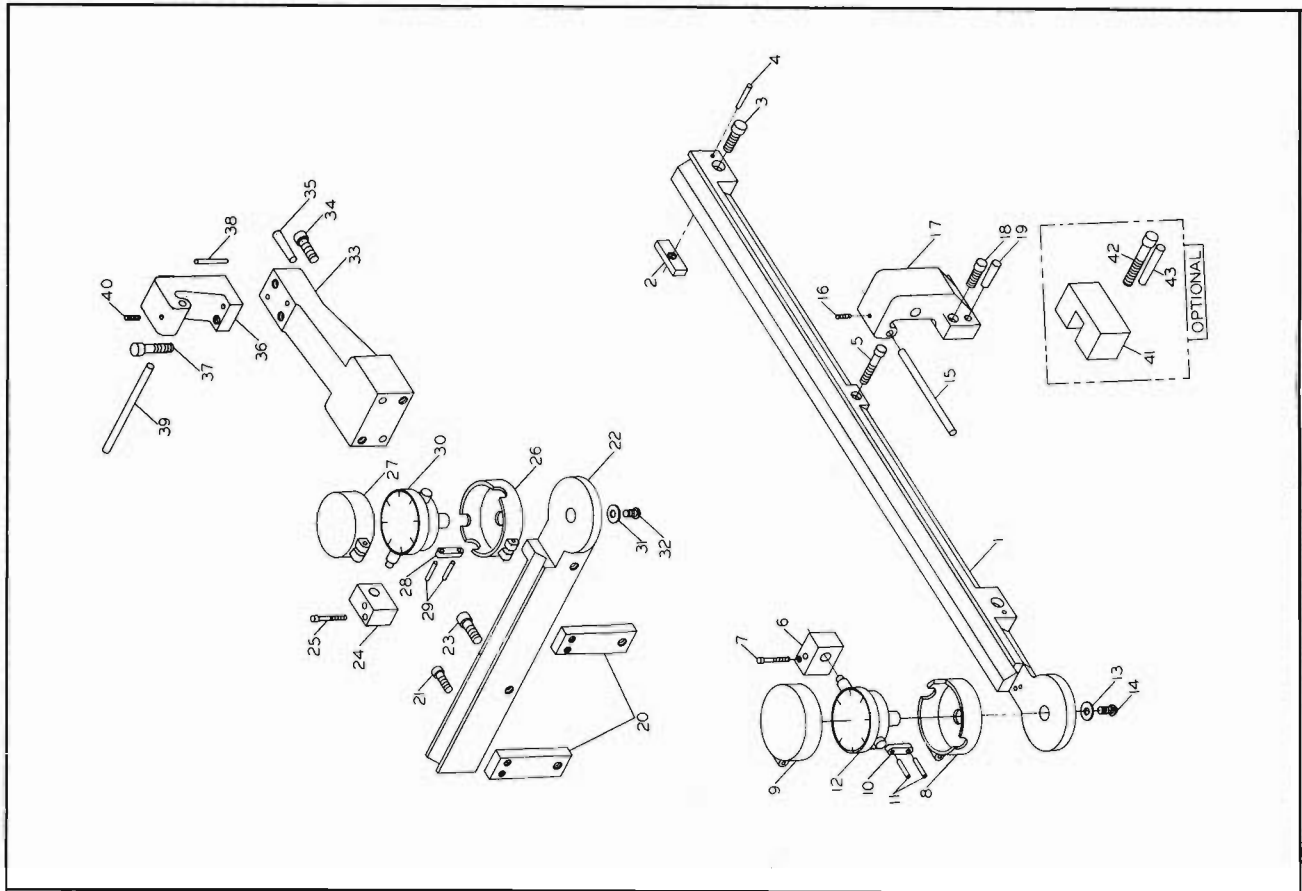
DIVIDING HEAD

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2100268	ASSY. DIVIDING HEAD	1
2	3980127	BASE	1
3	3980154	CRADLE	1
4	3980128	PLATE	1
5	6714175	SCREW, HEX. HD. CAP, 5/16 - 18 x 7/8	3
6	3980148	SPINDLE #3C	1
7	6710102	SCREW, SOC. HALF DOG PT. SET, #10 - 24 x 3/16	1
8	6154230	COLLET, #3C, 1/2	1
9	3980137	CENTER, #3C	1
10	3980139	SLEEVE, DRAW-N	1
11	3980138	DRIVER	1
12	6710090	SCREW, SOC. CUP POINT SET, #10 - 24 x 1/2	2
13	3980145	SHAFT, WORM	1
14	3980146	BEARING, WORM SHAFT	1
15	6714090	SCREW, SOC. HALF DOG POINT, 1/4 - 20 x 1/2	1
16	6714024	SCREW, SOC. HD. CAP, 1/4 - 20 x 2	3
17	3980158	PLATE, DIVIDING	1
18	6714173	SCREW, FLAT HEAD SOC. CAP, 1/4 - 20 x 3/4	3
19	3980157	SECTOR, INNER	1
20	3980156	SECTOR, OUTER	1
21	6708012	SCREW, RD. HD. MACH., #8 - 32 x 1/4	1
22	3980155	SPRING	1
23	3980159	NUT, WORM SHAFT	1
24	6710064	SCREW, SOC. CUP PT. SET, #10 - 24 x 3/16	1
25	3980150	CRANK	1
26	6861314	WASHER, TEE BOLT FLAT, 3/8	1
27	6516001	NUT, HEX. FULL, 3/8 - 16	1
28	3980151	HANDLE, CRANK	1
29	3980161	NUT, CRANK HANDLE	1
30	3980153	SPRING, COMPRESSION	1
31	3980147	PLUNGER	1
32	3980152	KNOB	1
33	6710064	SCREW, SOC. CUP PT. SET, #10 - 24 x 3/16	1
34	2200062	ASSY. TAILSTOCK (INCL. ITEMS 34 THRU 43)	1
35	3980141	TAILSTOCK	1
36	6716032	SCREW, HEX. HD. CAP, 3/8 - 16 x 1 1/2	1
37	3980142	CENTER, TAILSTOCK	1
38	3980144	SCREW, TAILSTOCK	1
39	3980192	KEY	0(2)
40	6710016	SCREW, SOC. HD. CAP, #10 - 24 x 5/8	0(2)
41	3980312	BOLT, TEE, 3/8 - 16	0(2)
42	6861314	WASHER, TEE BOLT FLAT, 3/8	0(2)
43	6516001	NUT, HEX. FULL, 3/8 - 16	0(2)
44	3980192	KEY	0(2)
45	6710016	SCREW, SOC. HD. CAP, #10 - 24 x 5/8	0(2)
46	3980312	BOLT, TEE, 3/8 - 16	0(2)
47	6861314	WASHER, TEE BOLT FLAT 3/8	0(2)
48	6516001	NUT, HEX. FULL, 3/8 - 16	0(2)
49	3980149	SPINDLE, #7 B & S	1
50	3980137	CENTER #7 B & S	1

VERNIER ATTACHMENT

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2100042	ASSY., VERNIER ATTACHMENT (INCL. ITEMS 1 thru 30)	1
2	3684240	SCALE, TABLE VERNIER	9
3	6747015	SCREW, DRIVE, #2 x 1/4	1
4	3068206	BRACKET, VERNIER BODY	2
5	6715174	SCREW, SOC., HD. CAP, 5/16 - 18 x 7/8	1
6	6714119	SCREW, SOC, CUP, PT, SET, 1/4 - 20 x 1/4	1
7	3761025	BODY	1
8	3730024	SLIDE, VERNIER	1
9	3595211	VERNIER	1
10	6747015	SCREW, DRIVE, #2 x 1/4	2
11	3690043	SCREW, VERNIER	1
12	3406036	KNOB	1
13	6714119	SCREW, SOC, CUP, PT. SET 1/4 - 20 x 1/4	1
14	3068215	BRACKET	2
15	6715173	SCREW, SOC. HD. CAP 5/16 - 18 x 3	2
16	6515001	NUT, HEX FULL, 5/16-18	4
17	3068213	BRACKET	4
18	6710015	SCREW, SOC. HD. CAP #10 - 24 x 1/2	4
19	3684255	SCALE, SADDLE VERNIER	1
20	6747015	SCREW, DRIVE, #2 x 1/4	4
21	3068212	BRACKET	1
22	6715023	SCREW, SOC., HD, CAP, 5/16 - 18 x 1/2	3
23	3068214	BRACKET	1
24	3761050	BODY, VERNIER	1
25	6715020	SCREW, SOC, HD, CAP, 5/16 - 18 x 1	1
26	3730024	SLIDE, VERNIER	1
27	3595211	VERNIER	1
28	6747015	SCREW, DRIVE, #2 x 1/4	2
29	3690043	SCREW, VERNIER	1
30	3406036	KNOB	1
	6714119	SCREW, SOC, CUP, PT, SET, 1/4 - 20 x 1/4	1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	6118064	3 - JAW UNIVERSAL CHUCK	1
2	6118067	4 - JAW INDEPENDENT CHUCK	1



TROUGH AND DIAL INDICATOR

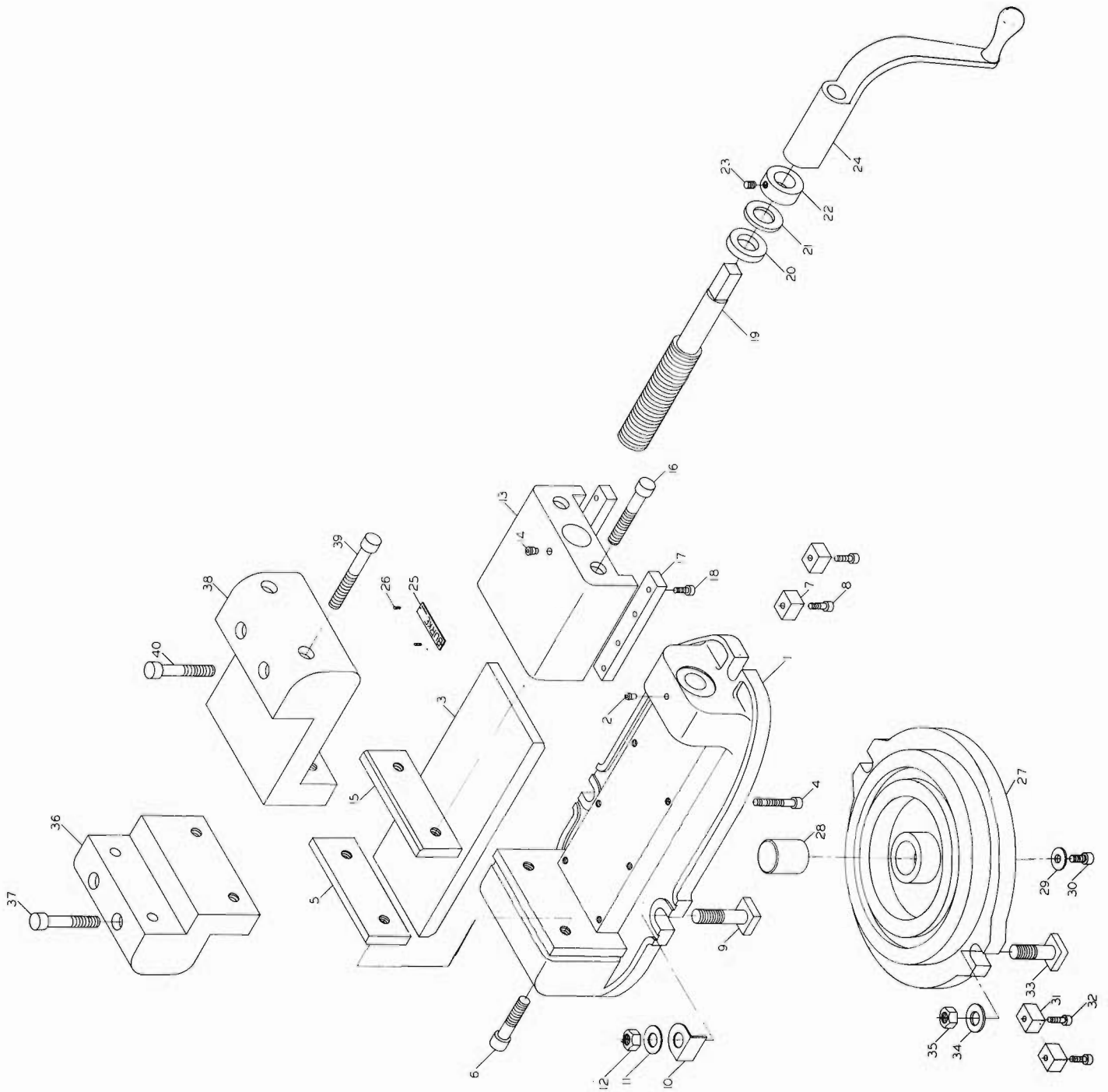
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2100040	ASSY. TROUGH AND DIAL INDICATOR (INCL. ITEMS 1 THRU 43)	1
2	3808002	TROUGH, TABLE	1
3	3387006	KEY	2
4	6715174	SCREW, SOC. HD. CAP 5/16 - 18 x 7/8	2
5	6623022	PIN DOWEL, 1/8 DIA. x 1"	2
6	6714150	SCREW, SOC. HD. CAP, 1/4 - 20 x 1 3/8	1
7	3761024	STOP, INDICATOR	1
8	6710100	SCREW, SOC. HD. CAP #10 - 24 x 1 1/8	2
9	2200032	ASSY. DIAL INDICATOR BOX (INCL. ITEMS 8 THRU 11)	1
10	3042092	BASE, INDICATOR BOX	1
11	3078044	CAP, INDICATOR BOX	1
12	3282018	HINGE	1
13	6626004	PIN, SPRING 1/8 DIA. x 3/4	2
14	6391005	INDICATOR, DIAL	1
15	6861101	WASHER, PLAIN 1/4	1
16	6714082	SCREW, BUT. HD. SOC. CAP, 1/4 - 20 x 3/8	1
17	3670081	ROD ADJUSTING	1
18	6710090	SCREW, SOC. CUP. PT SET #10 - 24 x 1/2	1
19	3761022	STOP, TABLE ADJUSTABLE	1
20	6715025	SCREW, SOC. HD. CAP, 5/16 - 18 x 3/4	2
21	6623012	PIN, DOWEL 1/4 DIA. x 1"	2
22	3068202	BRACKET, SADDLE TROUGH	2
23	6714018	SCREW, SOC. HD. CAP 1/4 - 20 x 3/4	4
24	3808003	THROUGH SADDLE	1
25	6715174	SCREW, SOC. HD. CAP, 5/16 - 18 x 7/8	2
26	3761024	STOP, INDICATOR	1
27	6710100	SCREW, SOC. HD. CAP, #10 - 24 x 1 1/8	2
28	3042092	BASE, INDICATOR BOX	1
29	3078044	CAP, INDICATOR BOX	1
30	3282018	HINGE	1
31	6626004	PIN SPRING 1/8 DIA. x 3/4	2
32	6391005	INDICATOR, DIAL	1
33	6861101	WASHER, PLAIN 1/4	1
34	6714082	SCREW, BUT. HD. SOC. CAP, 1/4 - 20 x 3/8	1
35	3761021	ARM ADJ. STOP SUPPORT	1
36	6715174	SCREW, SOC. HD. CAP 5/16 - 18 x 7/8	2
37	6623008	PIN, DOWEL 3/16 DIA. x 1 1/4	2
38	3761023	STOP, SADDLE ADJUSTABLE	1
39	6715021	SCREW, SOC. HD. CAP 5/16 - 18 x 1 1/4	2
40	6623008	PIN DOWEL 3/16 DIA. X 1 1/4	2
41	3670081	ROD ADJUSTING	1
42	6710090	SCREW, SOC. CUP. PT. SET, #10 - 24 x 1/2	1
43	3055046	BLOCK SPACER	0(1)
			0(2)
			0(2)

MEASURING EQUIPMENT

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2100041	ASSY. MEASURING EQUIPMENT KIT (INCL. ITEMS 1 THRU 9)	1
2	6089019	CASE, WOOD	1
3	6358006	HEAD, MICRO	1
4	6358007	HEAD, MICRO	1
5	6681001	ROD, MEASURING 1"	1
6	6681002	ROD, MEASURING 2"	1
7	6681003	ROD, MEASURING 3"	1
8	6681004	ROD, MEASURING 4"	1
9	6681005	ROD, MEASURING 5"	1
	6681006	ROD, MEASURING 6"	1

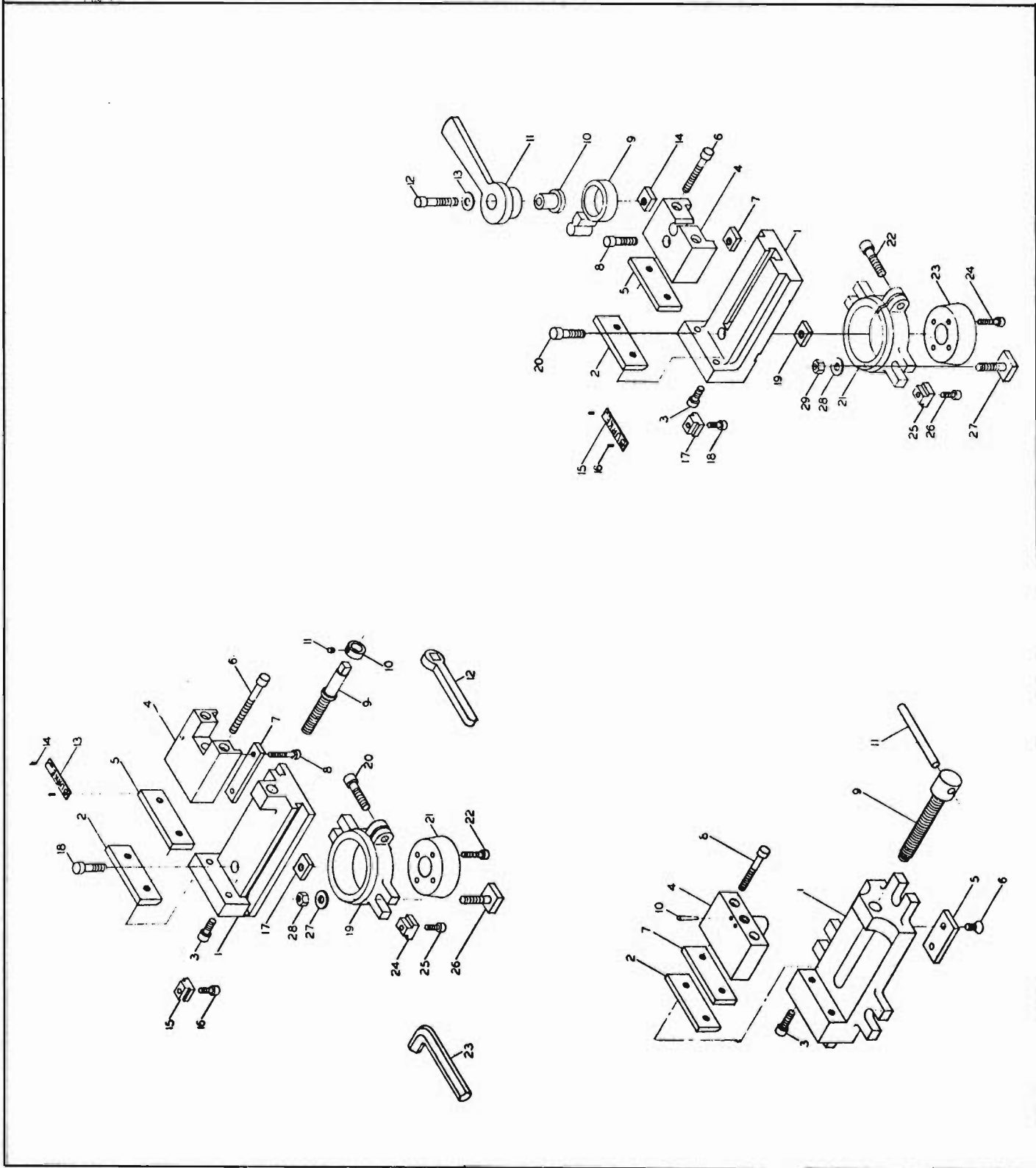
TEST BAR KIT

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2100048	ASSY. TEST BAR, KIT (INCL. ITEMS 1 THRU 5)	1
2	3044173	ARBOR, R-8 TEST	1
3	6715013	SCREW, SOC. CUP PT. SET, 5/16 - 18 x 3/8	1
4	6391004	ROD, DIAL INDICATOR HOLDING	1
5	6391003	INDICATOR, DIAL (FEDERAL C81, REG. BACK)	1
	3024011	ARBOR, #9 B & S TEST	0(1)



HEAVY-DUTY VISE

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	3056006	BODY VISE	1
2	6609006	FITTING OIL	1
3	3595209	PLATE, GUIDE	1
4	6715028	SCREW, SOC. HD. CAP, 5/16 - 18 x 2	8
5	3350011	JAW VISE	1
6	6718005	SCREW, SOC. HD. CAP 1/2 - 13 x 2 1/4	2
7	3770218	STRIP TONGUE	2
8	6714157	SCREW, SOC. HD. CAP 1/4 - 20 x 3/4	2
9	3695065	BOLT, TEE, 5/8 - 11 x 2 1/2	2
10	3250089	GUARD, CHIP	2
11	6861704	WASHER, 5/8	2
12	6520011	NUT, HEX. HEAVY FULL 5/8 - 11	2
13	3730023	SLIDE	1
14	6609029	FITTING, OIL	1
15	3350011	JAW VISE	1
16	6718007	SCREW, SOC. HD. CAP, 1/2 - 13 x 3"	2
17	3595210	PLATE, SLIDE HOLD DOWN	2
18	6714019	SCREW, SOC. HD. CAP 1/4 - 20 x 5/8	8
19	3692015	SCREW, VISE	1
20	3837046	WASHER	1
21	3837023	WASHER	1
22	3096058	COLLAR	1
23	6715013	SCREW, SOC. CUP. PT. SET. 5/16 - 18 x 3/8	1
24	3107003	CRANK	1
25	3330310	PLATE, NAME	1
26	6747032	SCREW, DRIVE #0 x 1/4	2
27	3042093	BASE, SWIVEL	1
28	3584028	PIN, PIVOT	1
29	6861301	WASHER, PLAIN 3/8	1
30	6715024	SCREW, SOC. HD. CAP, 5/16 - 18 x 5/8	1
31	3770218	STRIP, TONGUE	2
32	6714157	SCREW, SOC. HD. CAP 1/4 - 20 x 3/4	2
33	3695084	BOLT, TEE, 5/8 - 11 x 2	2
34	6861704	WASHER, 5/8	2
35	6520011	NUT HEAVY HEX FULL 5/8 - 11	2
36	3350012	JAW SMALL UPPER	1
37	6718071	SCREW SOC. HD. CAP 1/2 - 13 x 2 3/4	2
38	3350013	JAW LARGE UPPER	1
39	6718008	SCREW, SOC. HD. CAP, 1/2 - 13 x 2 3/4	1
40	6718071	SCREW, SOC. HD. CAP 1/2 - 13 x 2 3/4	2



QUICK OPENING VISE

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2100258	ASSY. QUICK OPENING VISE (INCL. ITEMS 1 THRU 29)	1
2	3980096	BODY	1
3	3980099	JAW VISE	2
4	6715025	SCREW, SOC. HD. CAP 5/16 - 18 x 3/4	1
5	3980102	SLIDE	1
6	3980100	JAW VISE	2
7	6715031	SCREW, SOC. HD. CAP, 5/16 - 18 x 2 1/4	1
8	3980109	NUT SLOT	1
9	6716013	SCREW, SOC. HD. CAP, 3/8 - 16 x 1 1/4	1
10	3980107	LINK	1
11	3980106	BUSHING	1
12	3980098	HANDLE	1
13	6716017	SCREW, HD. CAP, 3/8 - 16 x 1 3/4	1
14	6861314	WASHER, TEE BOLT FLAT 3/8	1
15	3980109	NUT, SLOT	1
16	3330310	PLATE, NAME	2
17	6747032	SCREW, DRIVE #0 x 1/4	0(2)
18	3980192	KEY	0(2)
19	6710016	SCREW, SOC. HD. CAP #10 - 24 x 5/8	0(1)
20	3980108	NUT SLOT	0(1)
	6716013	SCREW, SOC. HD. CAP, 3/8 - 16 x 1 1/4	0(2)
	2100269	ASSY SWIVEL/BASE (FOR QUICK OPENING VISE) (INCL. ITEMS 21 THRU 29)	1
	3980110	BASE, SWIVEL	1
	6716015	SCREW, SOC. HD. CAP 3/8 - 16 x 1 1/2	1
	3980111	PLUG	4
	6714016	SCREW, SOC. HD. CAP, 1/4 - 20 x 1	1
	3980192	KEY	0(2)
	6710016	SCREW, SOC. HD. CAP, #10 - 24 x 5/8	0(2)
	3980312	BOLT TEE 3/8 - 16	0(2)
	6861314	WASHER, TEE BOLT FLAT, 3/8	0(2)
	6516001	NUT HEX, FULL 3/8 - 16	0(2)

LIGHT-DUTY VISE

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2100256	ASSY. PLAIN VISE (LIGHT-DUTY) (INCL. ITEMS 1 THRU 28)	1
2	3980095	BODY	1
3	3980099	JAW VISE	2
4	6715025	SCREW, SOC. HD. CAP, 5/16 - 18 x 3/4	1
5	3980101	SLIDE	1
6	3980100	JAW VISE	2
7	6715192	SCREW, SOC. HD. CAP 5/16 - 18 x 3 1/4	2
8	3980097	CLAMP SLIDE	4
9	6714150	SCREW, SOC. HD. CAP 1/4 - 20 x 1 3/8	1
10	3980103	SCREW, VISE	1
11	3980104	COLLAR	1
12	6714164	SCREW, SOC. CUP POINT SET 1/4 - 20 x 3/16	1
13	6980004	WRENCH SQ. BOX 7/16	1
14	3330310	PLATE, NAME	2
15	6747032	SCREW, DRIVE, #0 x 1/4	0(2)
16	3980192	KEY	0(2)
17	6710016	SCREW, SOC. HD. CAP, #10 - 24 x 5/8	0(1)
18	3980108	NUT SLOT	0(1)
	6716013	SCREW, SOC. HD. CAP, 3/8 - 16 x 1 1/4	0(2)
	2100257	ASSY. SWIVEL BASE (FOR LIGHT/DUTY VISE) (INCL. ITEMS 19 THRU 28)	1
	3980110	BASE, SWIVEL	1
	6715015	SCREW, SOC. HD. CAP 3/8 - 16 x 1 1/2	1
	3980111	PLUG	4
	6714016	SCREW, SOC. HD. CAP 1/4 - 20 x 1	1
	6960015	WRENCH (HEX, ALLEN, 5/16)	1
	3980192	KEY	0(2)
	6710016	SCREW, SOC. HD. CAP, #10 - 24 x 5/8	0(2)
	3980312	BOLT TEE 3/8 - 16	0(2)
	6861314	WASHER, TEE BOLT FLAT 3/8	0(2)
	6516001	NUT, HEX, FULL, 3/8 - 16	0(2)

SCHOOL VISE

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2100049	ASSY., SCHOOL VISE KIT (ITEMS 1 THRU 11)	1
2	3056011	BODY, VISE	1
3	3350017	JAW	2
4	3350018	SLIDE	1
5	3595318	FLAT HD. SOC. CAP, 5/16 - 18 x 3/4	2
6	6715198	FLAT HD. SOC. CAP, 5/16 - 18 x 2 1/4	1
7	3350017	JAW	2
8	6715031	SCREW, SOC. HD. CAP 5/16 - 18 x 2 1/4	1
9	3730043	SCREW	2
10	6623022	PIN DOWEL, 1/8 DIA. x 1"	2
11	3268048	HANDLE	1

