

CLAUSING SERVICE CENTER

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SERVICE & PARTS MANUAL

MODEL NO. 8540

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FILE NO. 8540

**THIS MANUAL APPLIES TO CLAUSING HORIZONTAL MILLS
From Serial No. 800200 To 801282**

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for

Models 8540, 8541, 8550, and 8551

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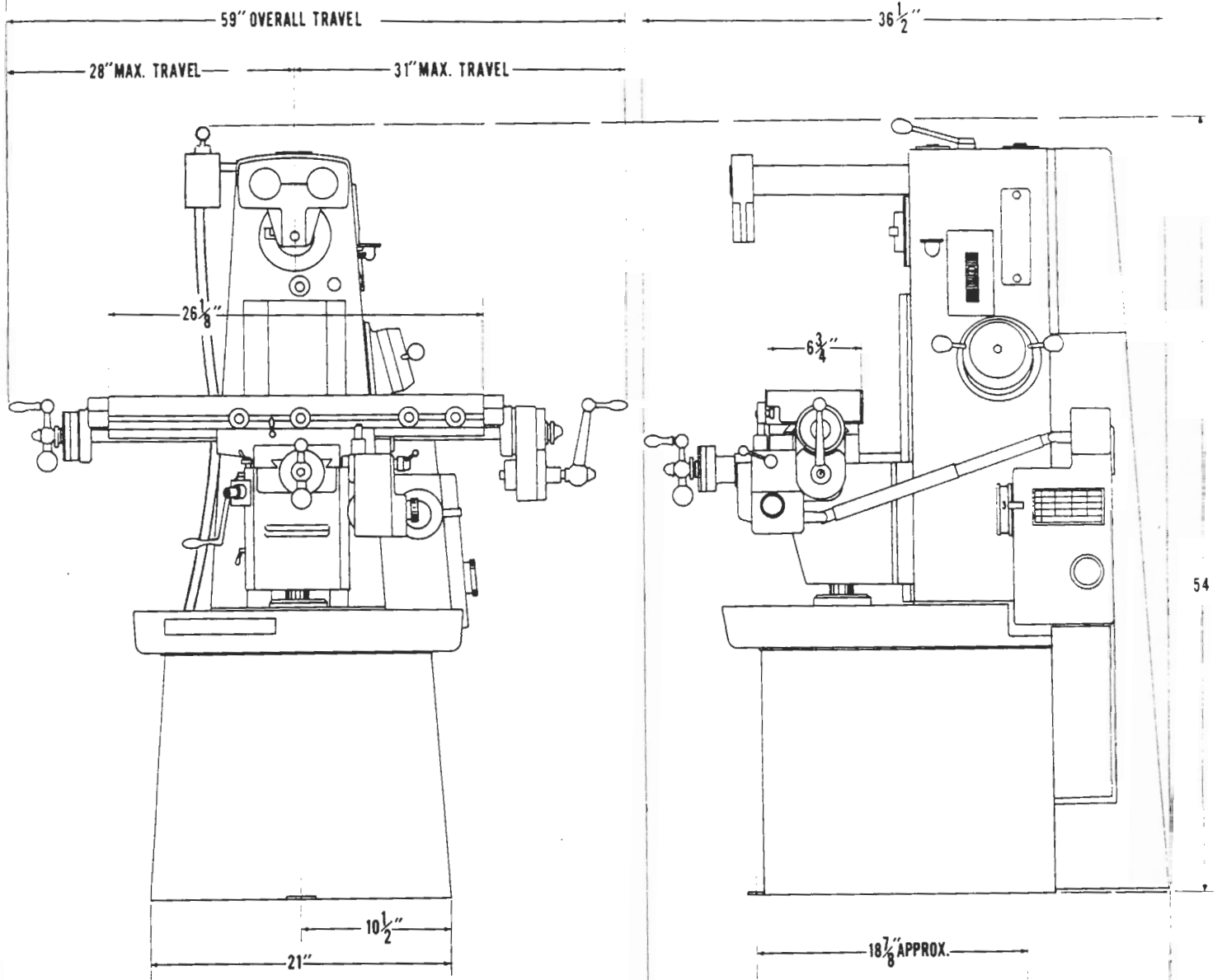
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GENERAL DIMENSIONS -- CLAUSING HORIZONTAL MILLING MACHINE



SPECIFICATIONS

SPINDLE	
TAPER	# 30 AMERICAN STD.
HOLE	21/32"
SPINDLE R.P.M.	
DIRECT	360-2000
BACK GEAR	52-280
DRIVE	VARIABLE SPEED
TABLE TRAVEL	
LONGITUDINAL	17 1/4" HAND FEED MODEL 15 3/8" POWER FEED MODEL
TRANSVERSE	5"
VERTICAL	14"
TABLE FEED (IN./MIN.)	
	12 FEEDS:
	.44; .62; .85; 1.06; 1.32; 1.86; 2.55; 3.18; 3.96; 5.58; 7.65; 9.54
TABLE T-SLOT (TOP)	
	9/16" (FOR 1/2" T-BOLT)
MOTOR	
	1 1/2 H.P. 1725 R.P.M. SINGLE OR 3 PH.
MAX. CUTTER DIA.	
	6"



DIVISION, ATLAS PRESS COMPANY
KALAMAZOO, MICHIGAN 49001

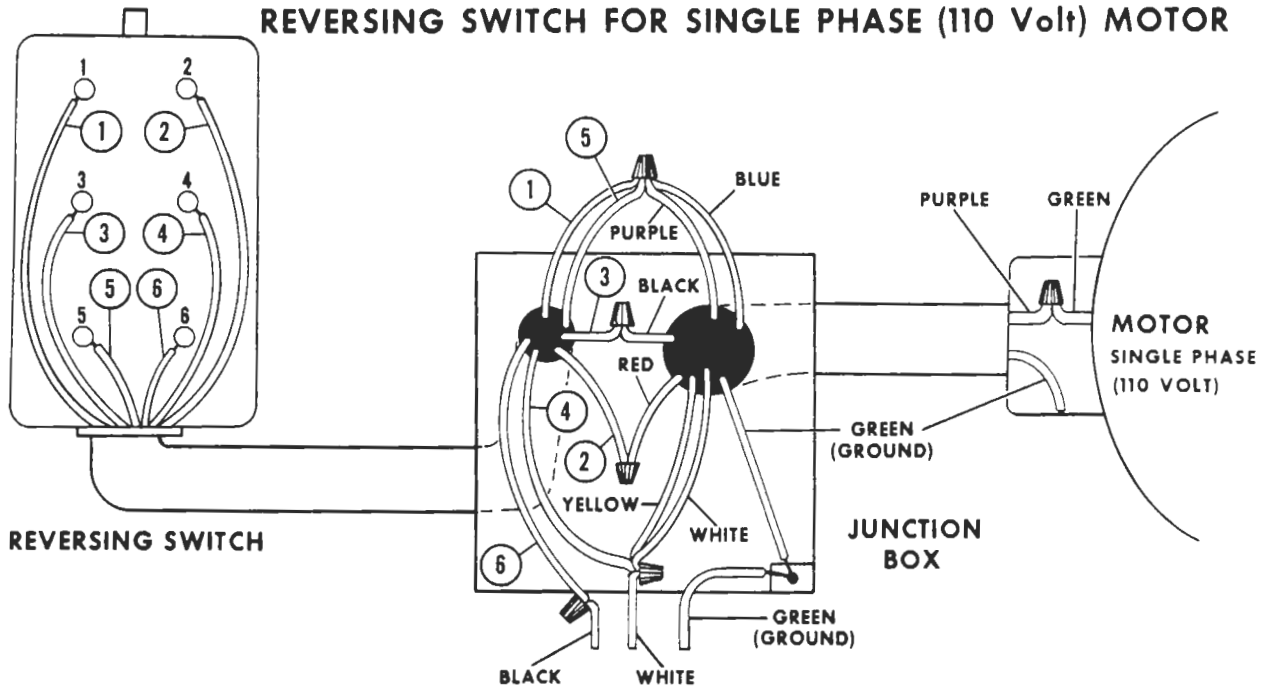
WIRING INSTRUCTIONS

for
8540 SERIES
CLAUSING HORIZONTAL
MILLING MACHINE

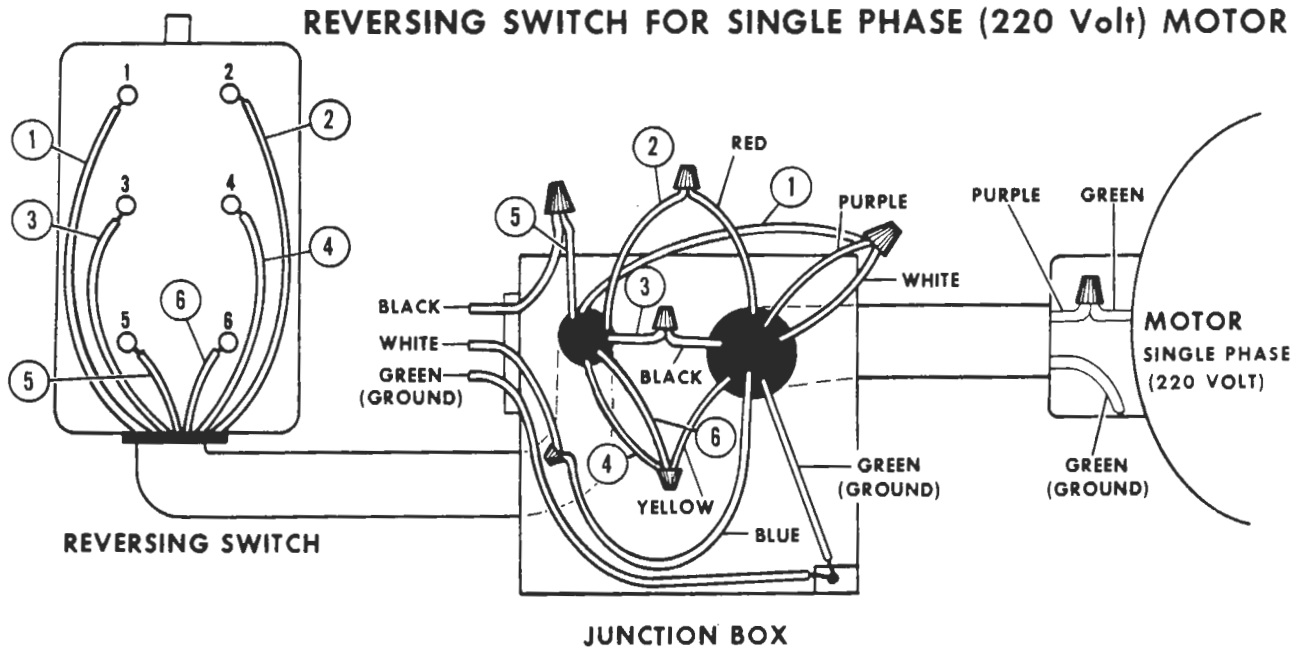
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REVERSING SWITCH FOR SINGLE PHASE (110 Volt) MOTOR

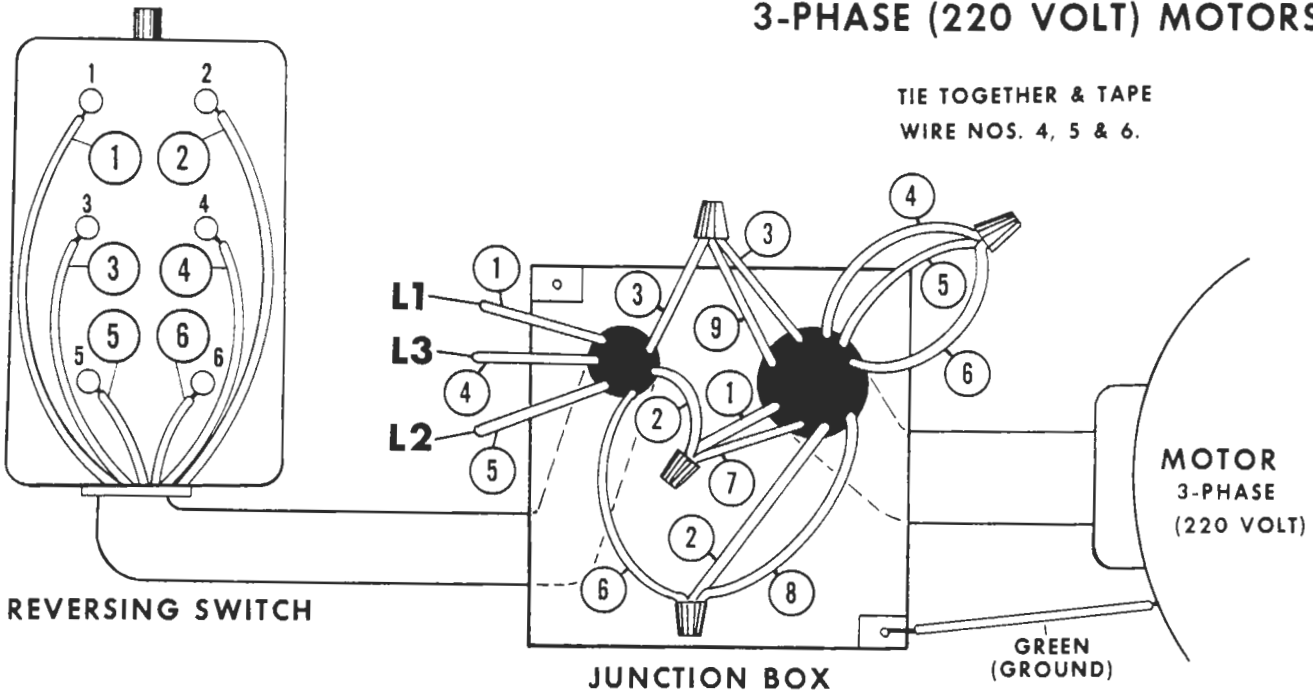


REVERSING SWITCH FOR SINGLE PHASE (220 Volt) MOTOR

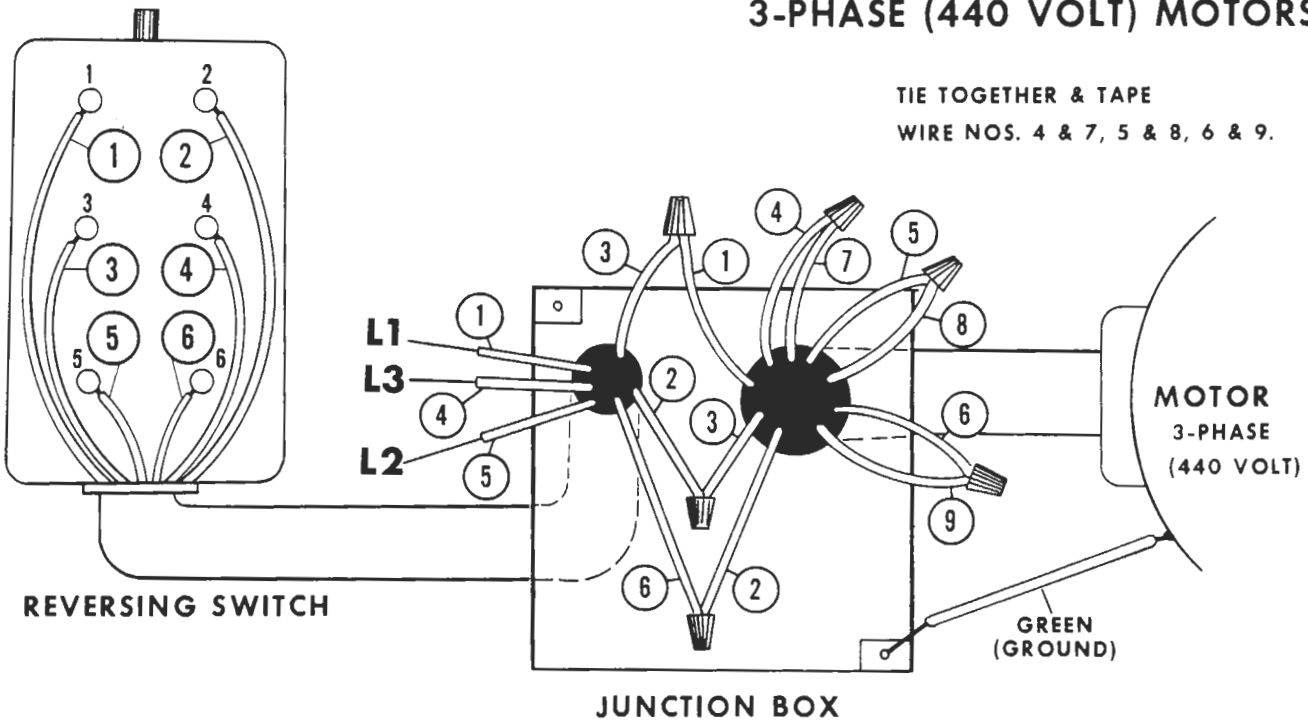


NOTE: TO REVERSE ROTATION INTERCHANGE WIRES 2 & 3 IN JUNCTION BOX.

3-PHASE (220 VOLT) MOTORS



3-PHASE (440 VOLT) MOTORS



NOTE: TO REVERSE ROTATION OF MOTOR INTERCHANGE ANY TWO LINE LEADS L1, L2 OR L3.

INSTALLATION

CAUTION: Table, saddle, knee, and overarms are locked in place. Before trying controls, read the instructions on pages 7 and 8 to prevent damage.

FOUNDATION

Your Clausing milling machine requires a solid foundation -- the floor on which it is installed must be heavy enough to support the weight of the machine without noticeable deflection, and it must be reasonably level.

Concrete Floors -- A reinforced concrete floor is the best foundation, for it provides a rigid base, minimizes vibration from adjacent machines, and resists deflection.

Wood Floors -- should be carefully checked for strength. Place a precision level on floor where machine is to be located, then move a hand truck with average load past it -- if bubble in level shows noticeable movement, the floor should be reinforced and the machine located over pillar or support beams.

CLEANING

Before moving table, saddle, knee or overarms, use a good grease solvent and remove the rustproof coating from the unpainted surfaces. Use a stiff brush to clean knee lift screw.

Do not use an air hose to clean -- it could force dirt or grit into bearing surfaces.

After cleaning, cover the unpainted surfaces with a light coating of machine oil.

Don't operate the machine until it is properly lubricated -- refer to page 5 for instructions.

Frequent cleaning and oiling is essential to the service life of any machine.

MOVING AND LIFTING

Leave machine on skid -- it simplifies moving the machine to its final location.

Important: If milling machine has been removed from skid, it can be picked up by straddling base with fork lift and lifting under oil tray -- use wood to protect finish.

Important: If a sling is used, lock overarm bars securely in place, wrap a heavy pad around them for protection.

Then insert sling as shown in figure 1. Raise machine about one inch off floor and move table to obtain balance.

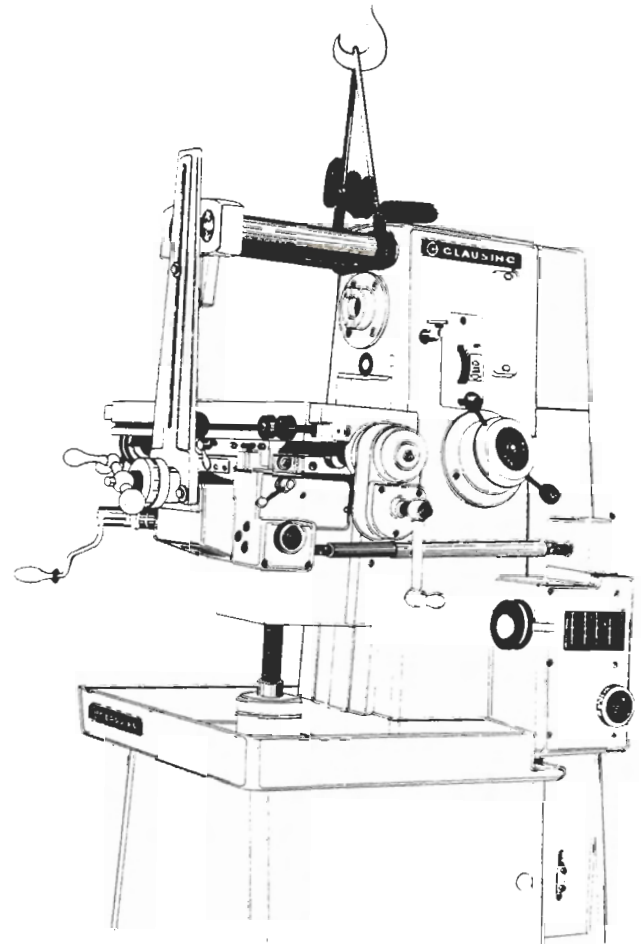


Figure 1

ELECTRICAL CONNECTIONS

The nameplate on the motor specifies the operating voltage and current.

Before connecting power supply, make sure the voltage corresponds with that of the motor. If there is any question, verify by calling your power company.

ANCHORING TO CONCRETE FLOOR

Use anchor bolts to secure milling machine to concrete floor.

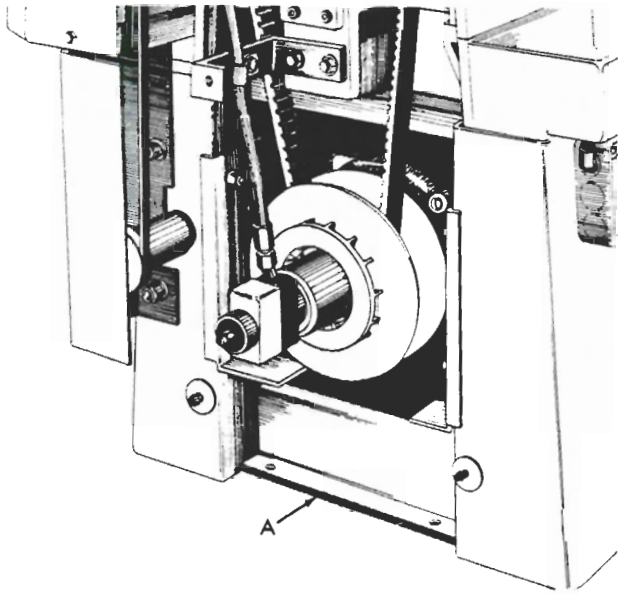


Figure 2

1. Remove lower guard to expose the holes in rear mounting flange (A, fig. 2).
2. Position the machine and mark the three bolt locations.

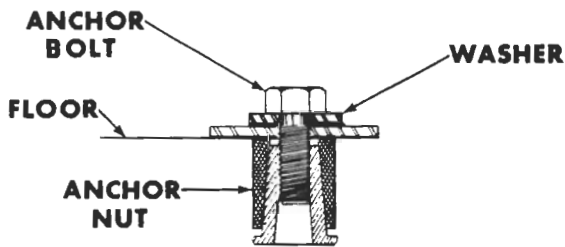


Figure 3

3. Move machine out of the way and drill holes for the nuts -- install nuts. Refer to figure 3.
4. Place machine mounting flanges over anchor nuts and start the bolts -- do not tighten, see leveling.

ANCHORING TO WOOD FLOOR

Use lag screws to anchor machine to wood floor.

1. Remove lower guard to expose the holes in rear mounting flange (A, fig. 2).

2. Set the machine in position and mark the location of screws.
3. Move milling machine out of the way, and drill lag screw pilot holes.
4. Place machine mounting flanges over lag screw holes and start lag screws -- do not tighten -- see leveling.

LEVELING

Clean table thoroughly and center it.

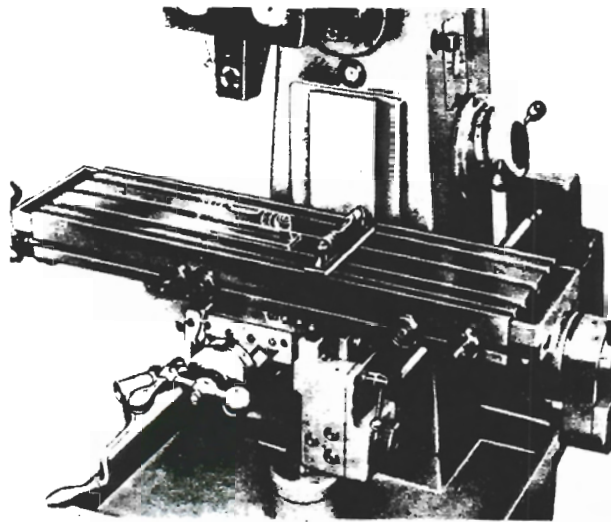


Figure 4

1. Using a precision level* at least 6" long, check table top at positions shown in figure 4.
2. Place steel shims under the mounting flanges until table is level in all directions.
3. Also place shims under base to evenly distribute weight of machine -- recheck leveling.
4. Securely tighten the three anchoring bolts or lag screws and recheck leveling.

IMPORTANT: Recheck leveling at frequent intervals.

* A precision level will show a distinct bubble movement when a .003 shim is placed under one end.

IMPORTANT

KEEP YOUR MILLING MACHINE CLEAN -- Oil and dirt form an abrasive compound which will damage bearing surfaces. Wipe the table and all machined surfaces with a clean oily rag at frequent intervals.

LUBRICATION CHART - - CLAUSING HORIZONTAL MILLING MACHINE

CODE

D - DAILY

- D1 - Use S.A.E. No. 20 oil.
- D2 - Clean, then use S.A.E. No. 20 oil.
- D3 - Use S.A.E. No. 20 oil. Fill to over-flow hole in oiler.

W - WEEKLY use S.A.E. No. 20 oil.

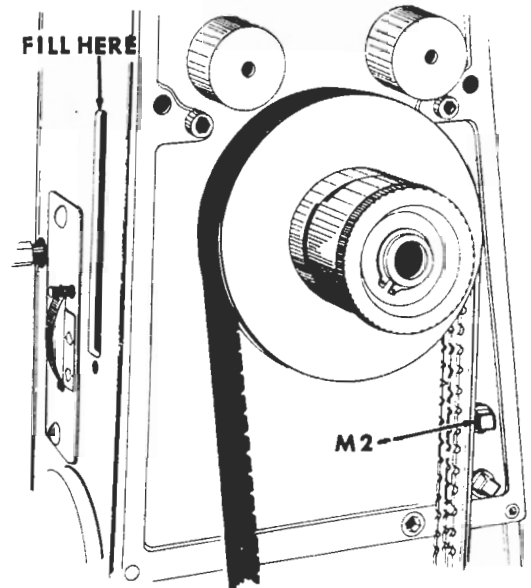
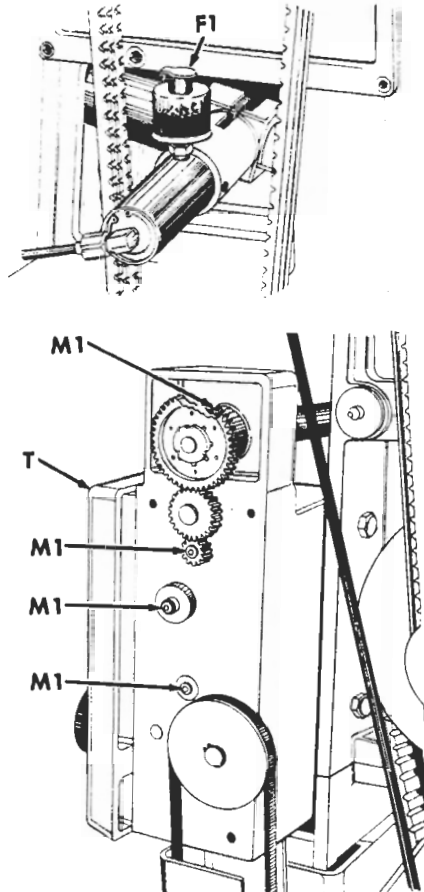
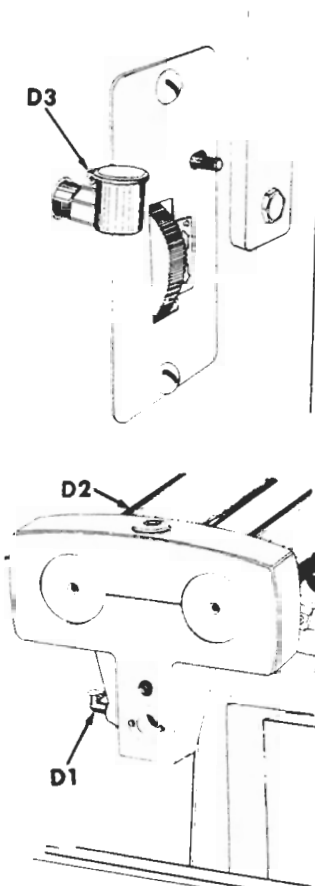
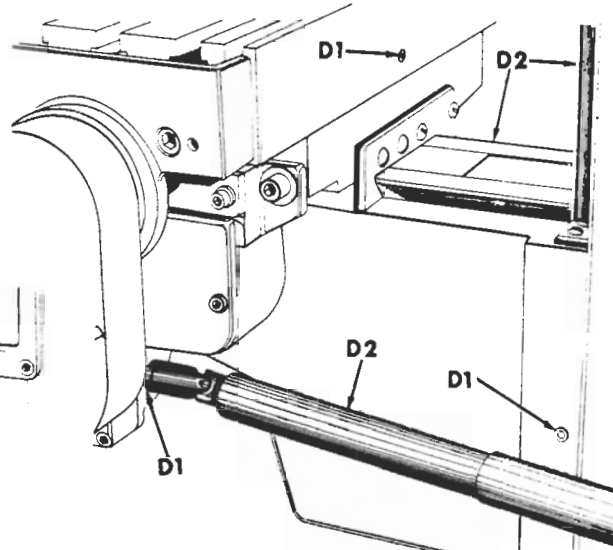
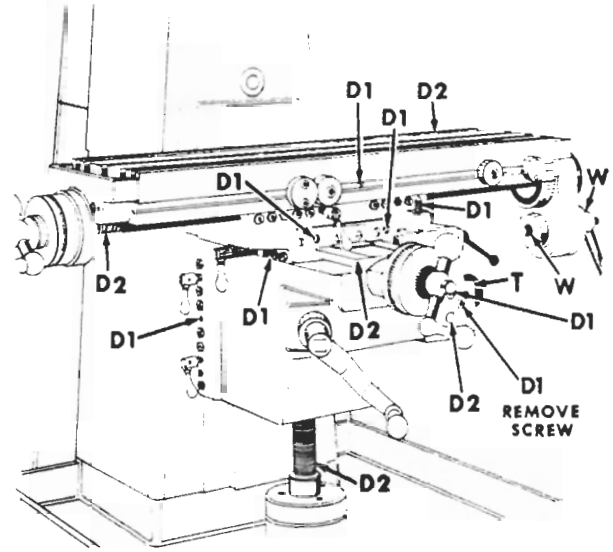
M - MONTHLY

- M1 - Remove gear box cover -- fill ball oilers with S.A.E. No. 20 oil.
- M2 - Place back gear in "OUT" position, remove upper column guard and upper pipe plug. If no oil runs out, remove cover from right side of column and add S.A.E. No. 140 Hypoid Extreme Pressure oil until it runs out upper pipe plug hole. Replace plug and guards.

F - FREQUENTLY

- F1 - With motor running and variable dial turned to low speed, fill with Shell Tellus No. 27 or equivalent.

T - TWICE A YEAR remove cover, clean then, lubricate gear teeth with a No. 1 consistency grease.
IMPORTANT: All bearings in variable speed pulleys are pre-lubricated at factory and do not require lubrication.



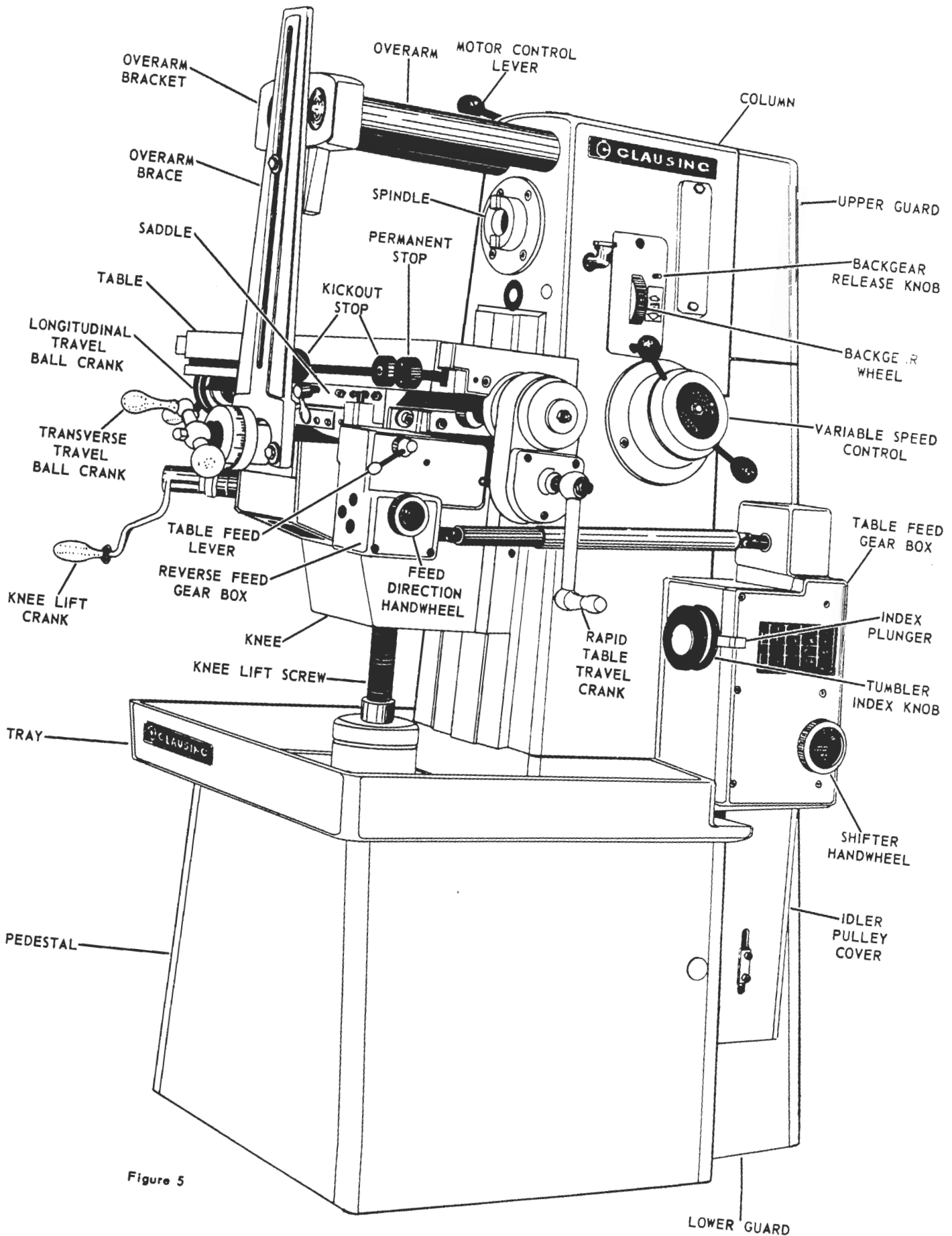


Figure 5

CONTROLS AND OPERATION

Do not operate milling machine until you are thoroughly familiar with all controls and their functions. The machine is shipped from factory with gears set for direct drive, and table, knee and cross slide locked. Read the instructions carefully -- get acquainted with the machine before you start a job.

DRIVE CONTROLS

Machine is shipped set for direct drive. Before turning on the switch, engage the back gears.

To engage the back gear drive:

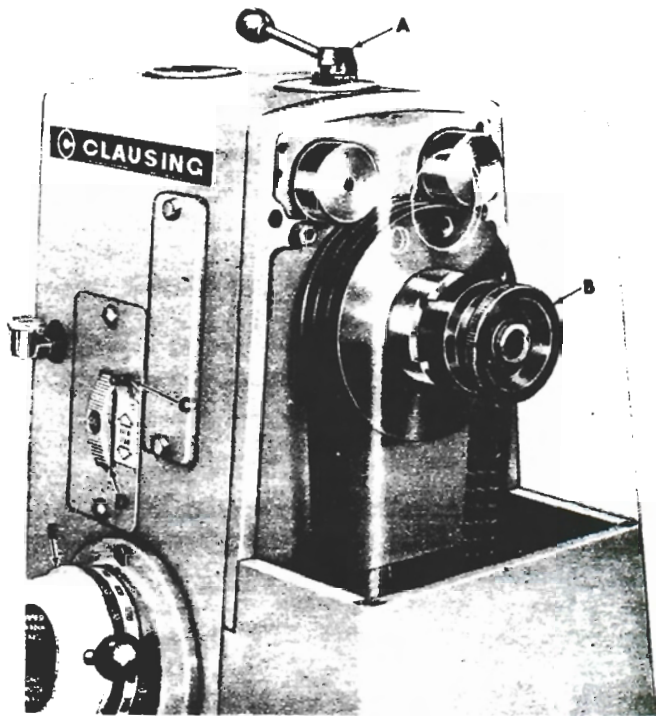


Figure 6

1. Disengage coupling (B, fig. 6) from drive pulley by pulling away from column.
2. Move release pin (C) to right, hold momentarily and turn wheel (D). Release pin and continue turning wheel until the word "IN" appears, and pin indexes in place.

Back gear drive provides the slow spindle speeds from 52 to 280 RPM.

To engage direct drive:

1. Stop spindle--move switch lever (A) to OFF position --refer to Motor Control Instructions.
2. Engage coupling (B) with drive pulley by pushing towards column -- rotate coupling if necessary.
3. Move release pin (C) to right, hold momentarily and turn wheel (D). Release pin and continue turning wheel until the word "OUT" appears and pin indexes in place.

Direct drive provides high spindle speeds from 380 to 2000 RPM.

CAUTION: Spindle must come to a complete stop before changing from one drive to the other.

CHANGING SPINDLE SPEEDS

Caution: DO NOT TURN CONTROL DIAL UNLESS MOTOR IS RUNNING.

Control dial (E), located on side of column, changes speeds by actuating the hydraulic system. The low range indicated on the dial is for back gear drive -- the high range, direct drive.

NOTE: A bypass valve prevents damage to the hydraulic system in the event the control dial is turned while motor is not running. However, the dial reading may no longer be correct in relation to spindle RPM.

To correct dial reading:

1. Start the motor -- turn control dial to 360 RPM (52 RPM if mill is in back gear).
2. Hold at this speed, exerting slight pressure for 30 seconds.

MOTOR CONTROL

Motor control lever (A) located on top of switch drum at upper left of column -- has three positions -- FORWARD, OFF and REVERSE.

CAUTION: Always allow spindle to stop before reversing rotation.

TABLE, SADDLE AND KNEE CONTROLS

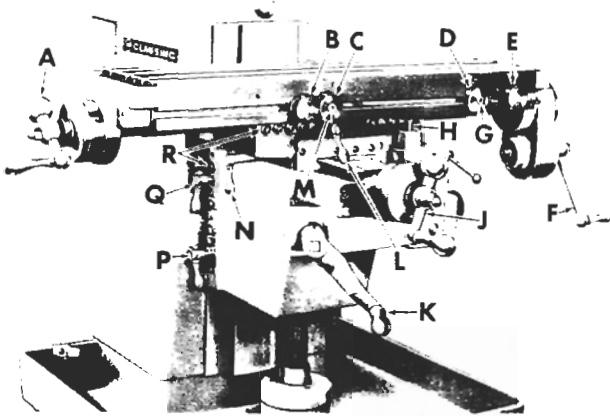


Figure 7

Vertical Table Travel: Before moving table, unlock screws (P and Q, fig. 7). Crank (K) controls raising and lowering of table.

Transverse Table Travel: Unlock screw (N). Ball-crank (J) controls transverse travel of table.

Longitudinal Table Travel: Unlock screw (L). Cranks (A and F) control longitudinal table travel. Crank (F) at right has three positions:

1. CENTER position is neutral.
2. OUT position is standard -- 0.10" travel per revolution of crank.
3. IN position is rapid feed -- rapid is four times standard feed.

Micrometer dials are graduated in .001" -- knurled knob locks the dials at the zero reading.

Adjustable kickouts (C and D) automatically disengage power feed by tripping the rod (H).

To set kickout stops:

1. Loosen screws (G and M) and slide to position desired and retighten securely.

NOTE: If more table travel is needed than can be obtained by using the adjustable kickouts, remove them from table and use permanent stops (B) and (E).

Stops (B) and (E) are permanently located safety kickouts and should not be removed.

POWER LONGITUDINAL FEED MODELS

TABLE FEED GEAR BOX mounted on right side of column controls rate of table travel. **CAUTION:** Move rapid feed crank (F) to neutral position before setting gear box.

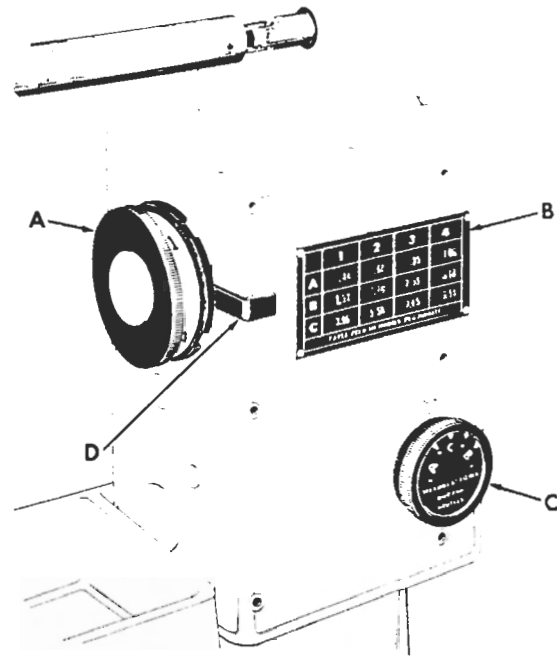


Figure 8

To set gear box:

1. Select feed desired from chart (B, fig. 8).
2. Press in index plunger (D) and turn tumbler index knob (A) to position indicated on chart.
3. Position shifter handwheel (C) -- dots (.) between letters are neutral positions.

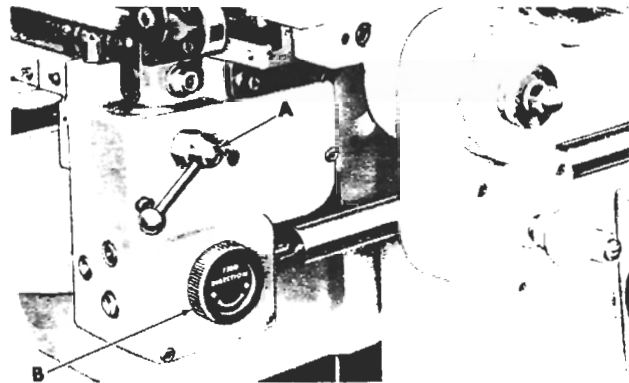


Figure 9

Lever (A, fig. 9) on gear box at right end of table controls table power feed. Lever has two positions: up is engaged, down disengaged.

Handwheel (B) controls direction of table travel. *Important:* Lever (A) must be disengaged before changing direction of table travel.

NOTE: Drive from gear box to table has slipping clutch.

MOUNTING CUTTER ARBOR

This machine is equipped with #30 American Standard spindle nose.

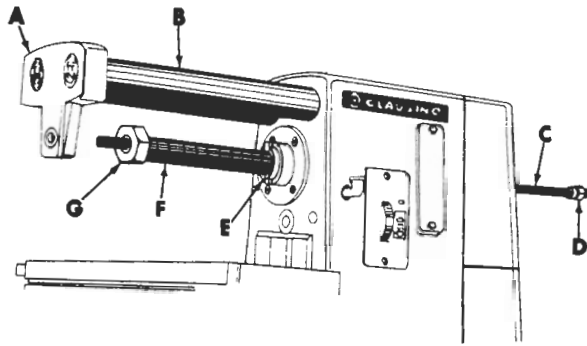


Figure 10

Slab mills, side mills and metal slitting saws are mounted on an arbor supported at one end by the spindle (E, fig. 10), and at the other end by the overarm support bracket (A). Keys in spindle face drive cutter arbor.

Overarm Locks: Use socket wrench (furnished) to lock or unlock overarms (B).

Wrench also fits lock screw in overarm bracket (A).

To mount cutter arbor:

1. Clean spindle nose and arbor shank, and wipe dry.
2. Place arbor (F) into spindle nose. CAUTION: Tighten cutter arbor nut (G) securely before starting machine.
3. Clean drawbar (C), screw into arbor and tighten nut (D) -- arbor should be drawn in tight.
4. Slip overarm support bracket over end of arbor and lock in place. CAUTION: Cutter arbor (F) should NOT run over 500 RPM.

To remove cutter arbor:

1. Loosen and remove overarm support bracket.
2. Loosen nut on drawbar.
3. With brass hammer tap the end of drawbar until arbor is loosened.
4. Remove drawbar and arbor.

MAINTENANCE AND ADJUSTMENTS

PREVENTIVE MAINTENANCE

Always keep machine clean and properly lubricated.

Always shut off power before leaving machine.

Recheck level of table frequently.

Lock knee and saddle before machining.

Make sure overarms are securely locked in place.

ADJUSTING KNEE, SADDLE AND TABLE GIB

When properly adjusted, knee, saddle and table move with a slight drag.

To adjust:

1. Loosen the gib screw lock nuts (R, fig. 7).
2. Adjust gib screws evenly until the slide moves with a slight drag.
3. Tighten the gib screw lock nuts -- hold gib screw with screw driver while tightening lock nuts.

TENSIONING POWER FEED BELTS

Power feed belts have been properly tensioned at factory and seldom require adjustment. When adjustment is necessary, follow these instructions:

To tension vertical power feed belt:

1. Remove lower guard.

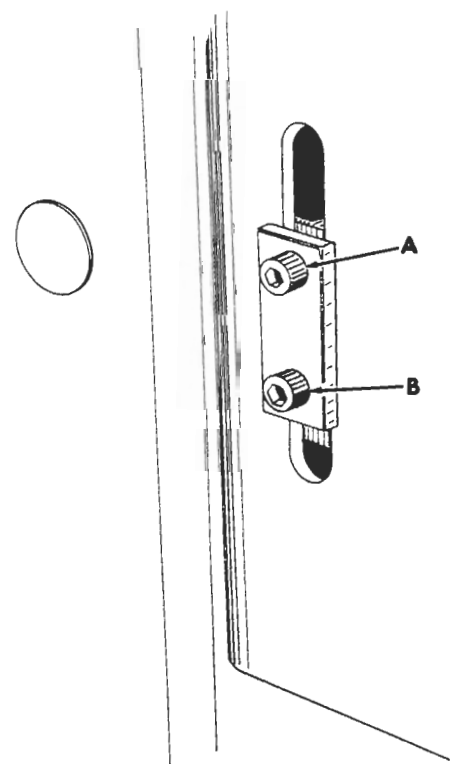


Figure 11

2. Loosen screws (A and B, fig. 11).

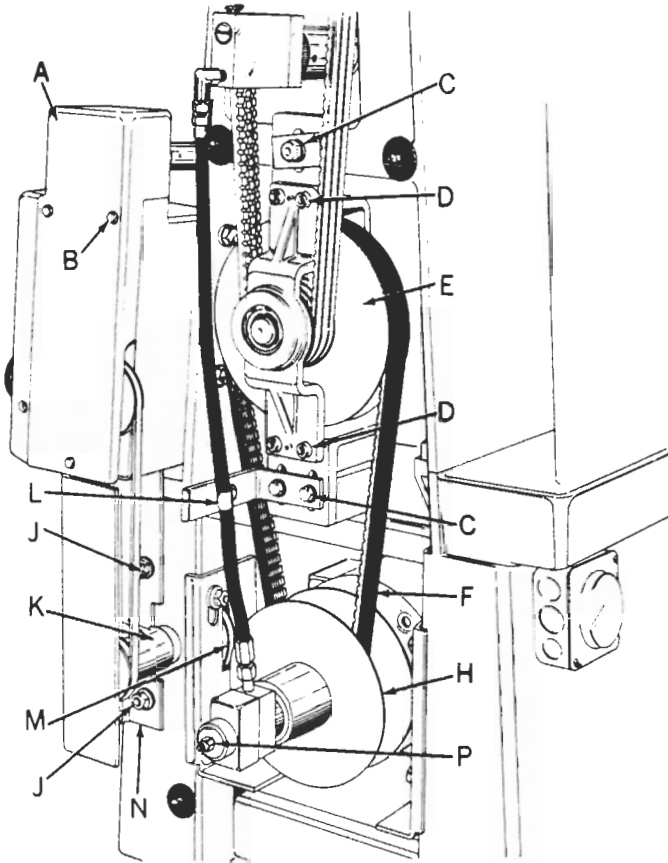


Figure 12

3. Move power feed pulley assembly (K, fig. 12) until belt is properly tensioned.

4. Tighten screws (A and B, fig. 11).

NOTE: Properly tensioned power feed belts should depress approximately $\frac{1}{2}$ " with light finger pressure -- too much tension causes excessive wear.

5. Replace lower guard.

To tension horizontal power feed belt:

1. Remove lower guard
2. Loosen two lock nuts (J, fig. 12).
3. Slide bracket assembly (N) until belt is properly tensioned.
4. Tighten lock nuts (J).
5. Replace lower guard.

TENSIONING SPINDLE BELTS

1. Remove upper and lower guards.
2. Remove clamp holding hydraulic line (L, fig. 12).

3. Loosen the three screws (C) holding countershaft assembly to column.
4. With a small lever (screw driver) force countershaft assembly downward, and retighten three screws (C).
5. Remount clamp that holds hydraulic line (L).

NOTE: Properly tensioned, spindle belts should depress approximately $\frac{1}{2}$ " with light finger pressure -- too much tension causes excessive wear.

IMPORTANT: Whenever spindle belts are replaced or tensioned, variable drive belts must be readjusted.

6. Start motor.
7. Check adjustment of variable drive belt -- refer to ADJUSTING VARIABLE SPEED BELT.

ADJUSTING VARIABLE SPEED BELT

1. With guards removed and motor on, turn variable control to lowest speed. Variable speed belt (F, fig. 12) should be flush with outside of countershaft pulley (E), with a tachometer on spindle, speed should register approximately 200 rpm.
2. Turn variable control to highest speed -- variable speed belt should be flush with outside of motor pulley (H) and tachometer should register approximately 2000 rpm.

If variable speed belt is not flush in either step 1 or 2 or tachometer does not register proper speed:

3. Turn motor off.
4. Hold variable pulley (H) so it will not rotate, turn lock nut (P) -- clockwise or counterclockwise until spindle speed is correct.

If steps 1 through 4 still do not give proper speeds:

5. Turn motor off.
6. Adjust motor belt by loosening four nuts (G) and moving motor assembly up or down until belt is properly adjusted -- steps 1 and 2.
7. When properly tensioned, belts should be slightly convex -- refer to fig. 13.
8. Replace guards.

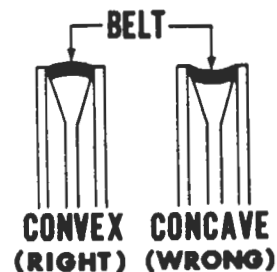


Figure 13

REPLACING VARIABLE SPEED BELT

1. With machine running, turn variable dial to highest speed (2000 or 280 RPM), then turn motor off.
2. Remove upper and lower guards.
3. Turn variable dial back to low speed stop and hold there for 30 seconds to permit hydraulic bypass valve to open.

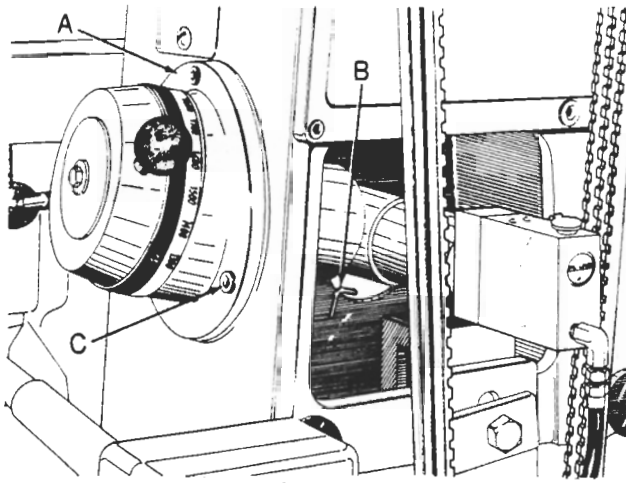


Figure 14

4. Lock dial in low speed position with pin (B, fig. 14).
5. Remove clamp holding hydraulic line (L, fig. 12).
6. Loosen the three screws (C) holding countershaft assembly to column.
7. Slip spindle belts off spindle pulley, then slide countershaft assembly down until variable belt is loose.
8. Remove belt (F) from motor pulley (H).
9. Loosen four socket cap screws (D) in front countershaft bracket, and pull complete countershaft pulley assembly out of rear countershaft bracket.
10. Remove spindle belts and variable belt (F) from countershaft pulley (E). CAUTION: Variable pulley is spring-loaded and will snap closed when belt is removed.

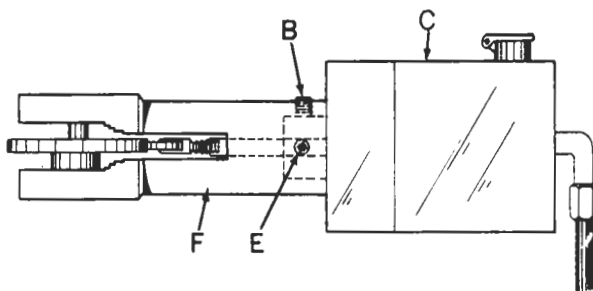


Figure 15

11. Loosen two set screws (B and E, fig. 15) in variable cam housing (F) and slide cylinder (C) out of housing.
12. Slide variable belt up and off end of hydraulic control line.

13. Install new variable belt -- slide it down control line.
14. Line up set screw mark on variable control cylinder with set screw hole (E) in cam housing -- tighten set screws.
15. Place variable belt and spindle belts on countershaft pulley. Install countershaft pulley assembly into rear countershaft bracket, and tighten the four cap screws.
16. Place variable belt on motor pulley.
17. Replace belts on spindle pulley.
18. Check tension of spindle belts -- refer to TENSIONING SPINDLE BELTS steps 3, 4 and 5.

REPLACING POWER FEED BELTS

To replace vertical power feed belt:

1. Remove lower guard.
2. Remove three screws (B, fig. 12) and power feed cover (A).
3. Loosen two screws (A and B, fig. 11).
4. Move power feed pulley assembly (K, fig. 12) up and remove old belt.
5. Place new belt over pulleys.
6. Retension belt -- refer to TENSIONING POWER FEED BELTS steps 3, 4 and 5.

To replace horizontal power feed belt:

1. With Mill running, turn variable speed dial to highest range (280 or 2000 rpm), then turn motor off.
2. Remove upper and lower guards.
3. Turn variable dial to lowest speed and lock in place with pin (B, fig. 14).
4. Loosen two screws (J, fig. 12) and bracket (N).
5. Remove power feed belt from power feed pulley (M).
6. Remove clamp holding hydraulic line (L).
7. Loosen four screws (G) holding motor base and remove variable belt from motor pulley.
8. Slide power feed belt over motor pulley and up hydraulic line.

9. Loosen two screws (B & E, fig. 15) in variable cam housing (F) and slide control cylinder (C) out of housing.
10. Remove power feed belt and replace with new belt.
11. Line up set screw mark on variable cylinder with set screw hole (E) in cam housing --- tighten set screws.
12. Slide power feed belt over variable motor pulley and on power feed motor pulley.
13. Place variable belt (F, fig. 12) on variable motor pulley (H).
14. For proper belt tension refer to ADJUSTING VARIABLE SPEED BELTS steps 1-5.
15. After variable belts have been properly adjusted and tensioned --- place power feed belt on power feed pulley assembly (K).
16. Move power feed pulley assembly (K) until belt is properly tensioned.
17. Tighten two screws (A and B, fig. 11).

NOTE: Properly tensioned power feed belts should depress approximately $\frac{1}{2}$ " with light finger pressure -- too much tension causes excessive wear.

18. Replace guards.

ADJUSTING SPINDLE BEARINGS

Spindle bearings have been preloaded at factory and seldom require adjustment. When spindle end play develops, follow these instructions to correct:

1. Make adjustment only when spindle is at operating temperature -- run spindle at medium speed for one-half hour.

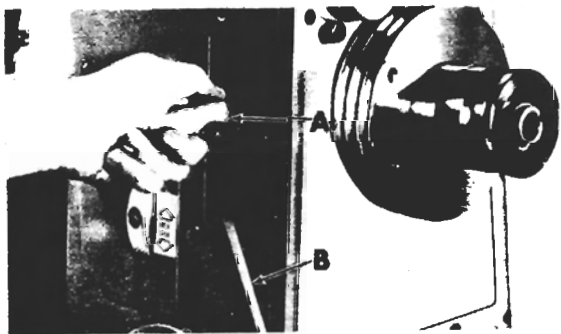


Figure 16

2. Remove cover (B, fig. 16).
3. Remove upper and lower guards.
4. Remove clamp holding hydraulic line (L, fig. 12).
5. Loosen three screws (C) holding countershaft assembly to column and remove spindle belts from spindle pulley. Spindle must turn freely.

6. Disengage back gears -- turn wheel to "Out" position.
7. Loosen set screw in bearing adjusting nut and tighten nut with spanner wrench (A, fig. 16) until spindle end play has been eliminated.
8. To determine correct bearing preload, give spindle a sharp spin with your hand -- spindle should rotate about one turn. If it doesn't, adjust nut and recheck.
9. Tighten set screw in bearing adjusting nut.
10. Replace spindle belts.
11. Retension belts -- refer to TENSIONING SPINDLE BELTS, Steps 4, 5, 6 and 7.
12. Replace cover.

REPLACING LOWER VARIABLE CONTROL CYLINDER

1. With mill running, turn variable speed dial to highest speed -- 2000 rpm in open belt drive or 280 in back gear. Then turn motor off.
2. Remove motor guard.
3. Turn variable dial to lowest range and lock in place with pin (B, fig. 14).

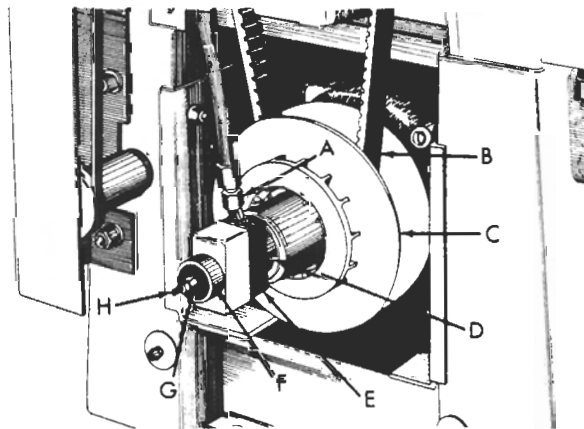


Figure 17

4. Measure distance from end of shaft (H, fig. 17) to nut (G). Note: Record this dimension.
5. Disconnect fitting (A) and drain oil from unit.
6. Hold variable pulley (C) from rotating and remove locknut (G).
7. Pull dual hydraulic cylinder (E) and outer half of variable pulley (C) off the shaft.
8. Press dual hydraulic cylinder (E) with bearing (D) from variable pulley (C).
9. Slide new hydraulic cylinder with bearing into variable pulley hub (C) then slide the assembly onto shaft (H).
10. Start locknut (G) on shaft (H).

11. Hold the variable pulley (C) so it will not rotate and turn locknut (G) onto shaft (H) until distance from end of the shaft (H) to locknut (G) is the same as step 4.
12. Start fitting (A) onto hydraulic cylinder (E).
13. Fill oil reservoir.
14. Keep oil reservoir filled, hold variable dial against low speed stop until oil runs out around fitting (A) —it takes a few minutes for oil to run down.
15. Tighten fitting (A).
16. Remove lock pin (B, fig. 14).
17. Start mill motor. Hold variable control against low speed stop for 30 seconds—turn variable dial to highest speed—then back to lowest speed a few times. Control should stay at 52 rpm.

NOTE: Watch dial for a few seconds. If it doesn't remain at 52 rpm, the hydraulic system must be bled to remove trapped air.

To remove air from hydraulic system:

- A. Start mill motor.
- B. Hold variable control against low speed stop for 30 seconds.
- C. Turn variable dial to highest speed—then back to lowest speed a few times.
- D. Turn variable dial to low speed stop, and release—pointer should remain at 52 RPM.

NOTE: If dial moves, repeat steps A, B and C.

18. Replace motor guard.

REPLACING UPPER VARIABLE CONTROL CYLINDER

1. With mill running, turn variable speed dial to highest speed--2000 rpm in open belt drive or 280 rpm in back gear. Then turn motor off.
2. Remove motor guard.
3. Remove hydraulic hose (C, Fig. 18); use container to catch oil.
4. Loosen the two set screws (A) and remove upper cylinder (B) and rod assembly (E) from housing (D).

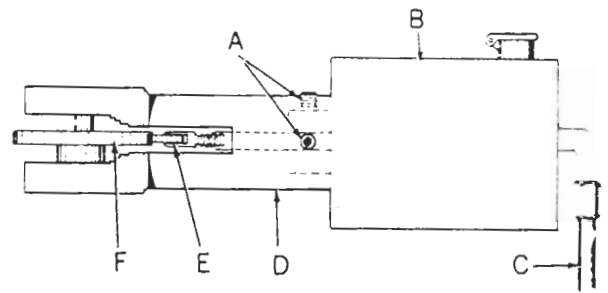


Figure 18

5. Insert set screw end of new rod assembly (E) into housing (D). Hold the rod firmly against cam roller (F) and turn speed control against low speed stop.

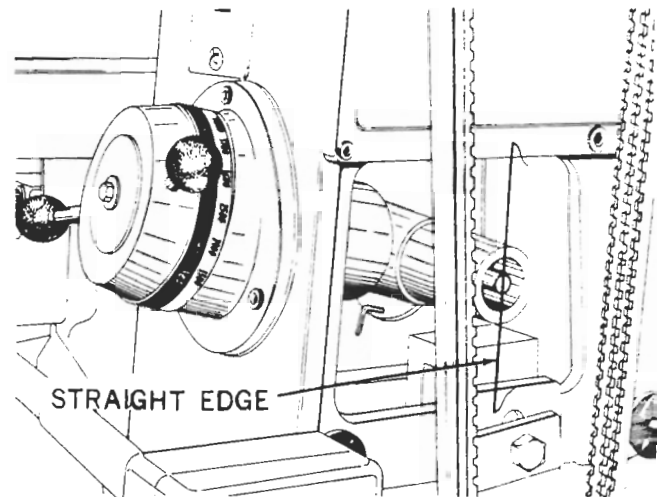


Figure 19

6. The end of rod (E) must be flush with face of housing (D)—use a straightedge to check as shown in figure 19.
7. Remove rod (E, Fig. 18) from housing (D) and insert rod into upper cylinder (B) making sure socket set screw end is exposed.
8. Hold speed control firmly against low speed stop while mounting upper cylinder (B) against housing (D)—secure with set screws (A).

IMPORTANT: Upper cylinder assembly must be solidly against housing face.

9. Install hydraulic line (C).
10. Fill cylinder with hydraulic oil. Start mill and turn speed control to low speed stop and hold. Oil will drain from reservoir and bleed system. Add oil until reservoir is full. Turn speed control to high speed stop and return to low speed stop. Continue this cycle adding oil as needed (check sight window) until system is bled completely.

PARTS INDEX

MAY, 1975

For Horizontal Mills From Serial No. 800200 To 801282

Pedestal	15.2
Column Casting and Guard	16.3
Spindle and Back Gear Assembly	17, 17.1
Table	18
Saddle	19
Knee	20.1
Electrical Assembly.	21, 21.1, 21.2
Saddle Gear Box.	22.1 & 23.1
Gear Box.	24.2 & 25.2
Idler Pulley	26.1
Countershaft	27, 27.1
Variable Speed Control.	28.3
Variable Speed Motor Pulley	29, 29.1

INSTRUCTIONS FOR ORDERING REPAIR PARTS

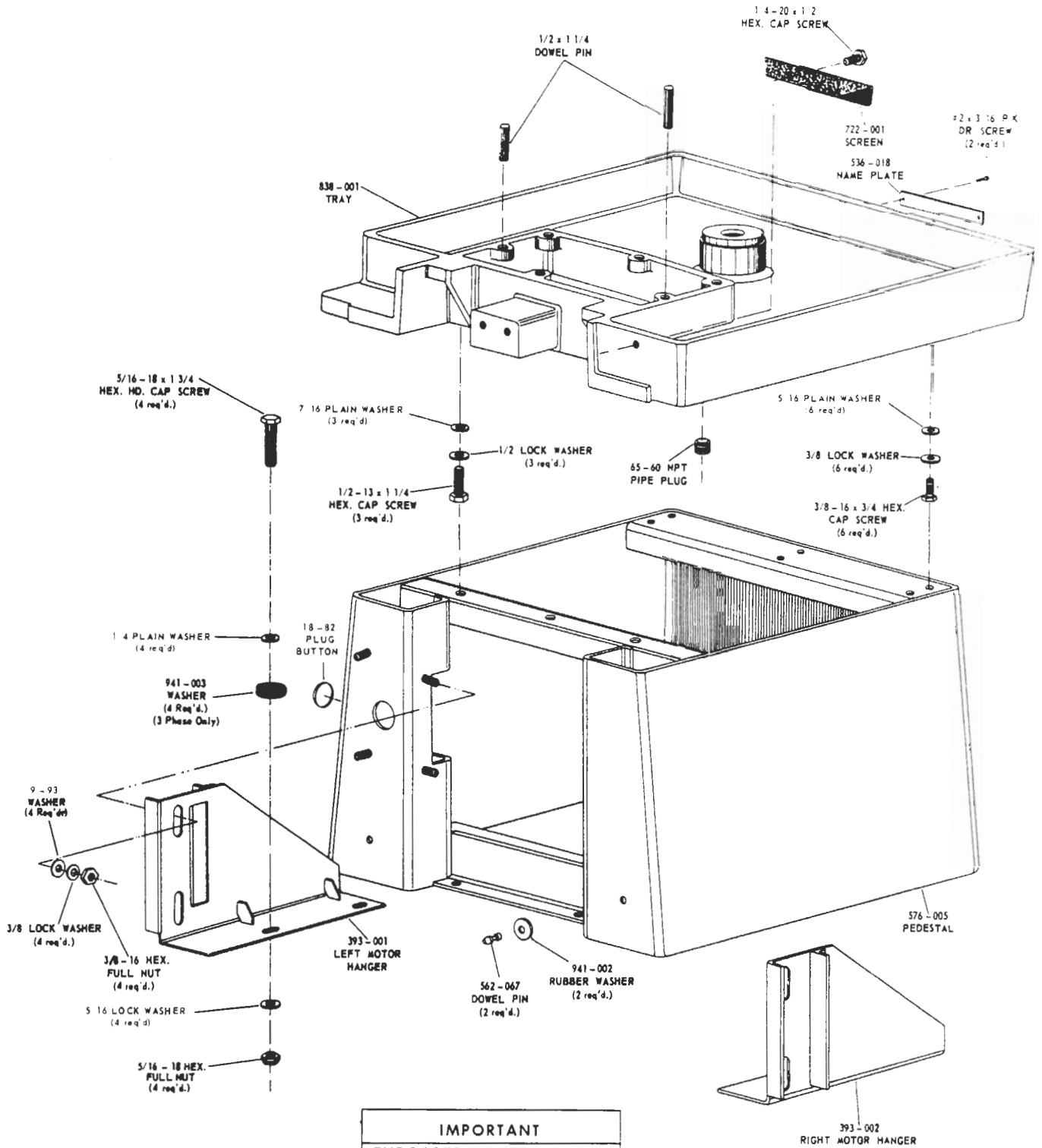
It is important to furnish the following information in addition to QUANTITY required:

1. PART NUMBER
2. PART NAME
3. MODEL and SERIAL NUMBER of machine tool - - you'll find both on the metal plate attached to machine - - note illustration below.



NOTE: Screws and nuts shown without part numbers should be purchased locally. We reserve the right to make changes in design and specifications without notice.

PEDESTAL ASSEMBLY

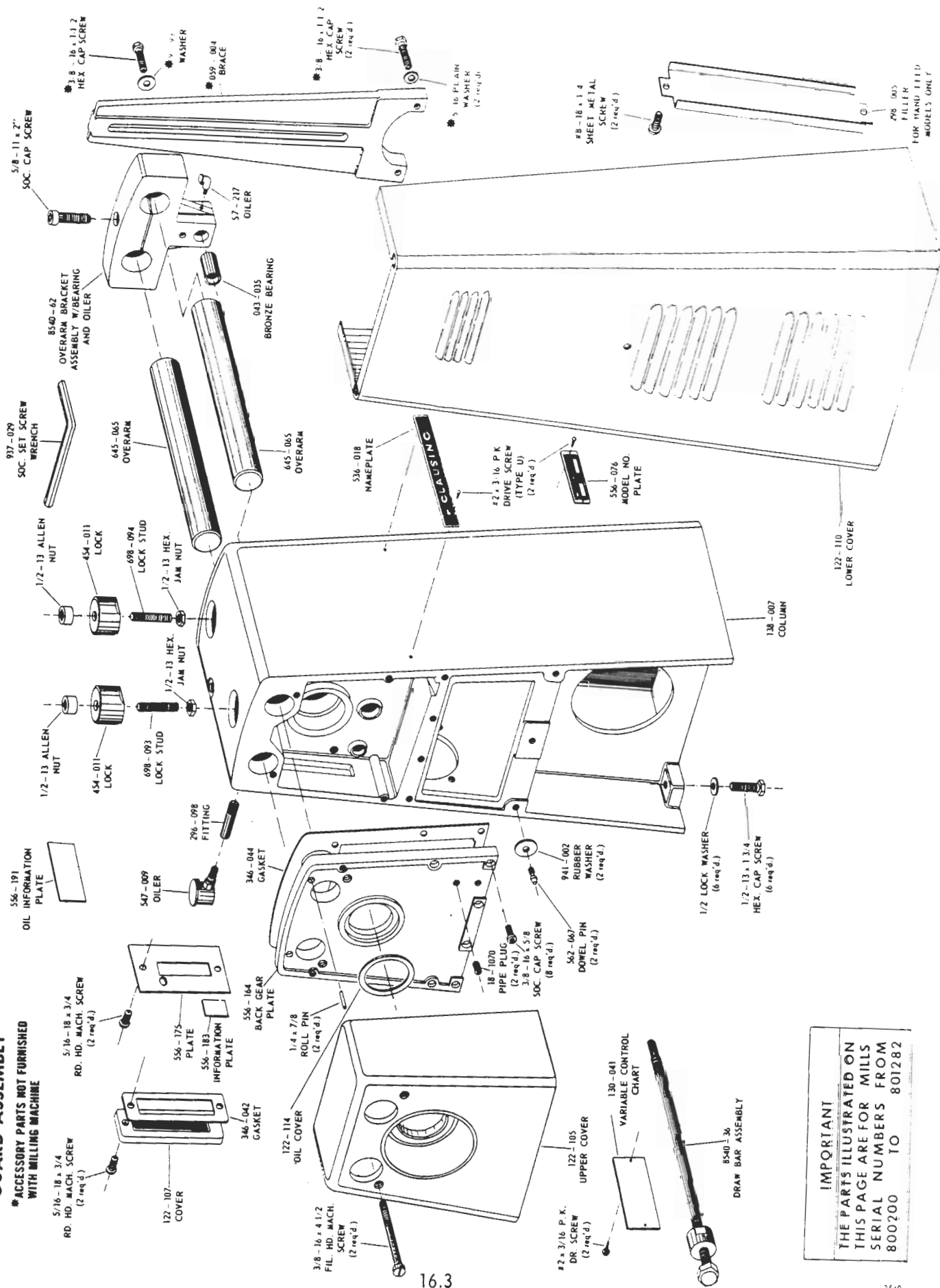


IMPORTANT

THE PARTS ILLUSTRATED ON THIS PAGE ARE FOR MILLS SERIAL NUMBERS FROM 800200 TO 801282

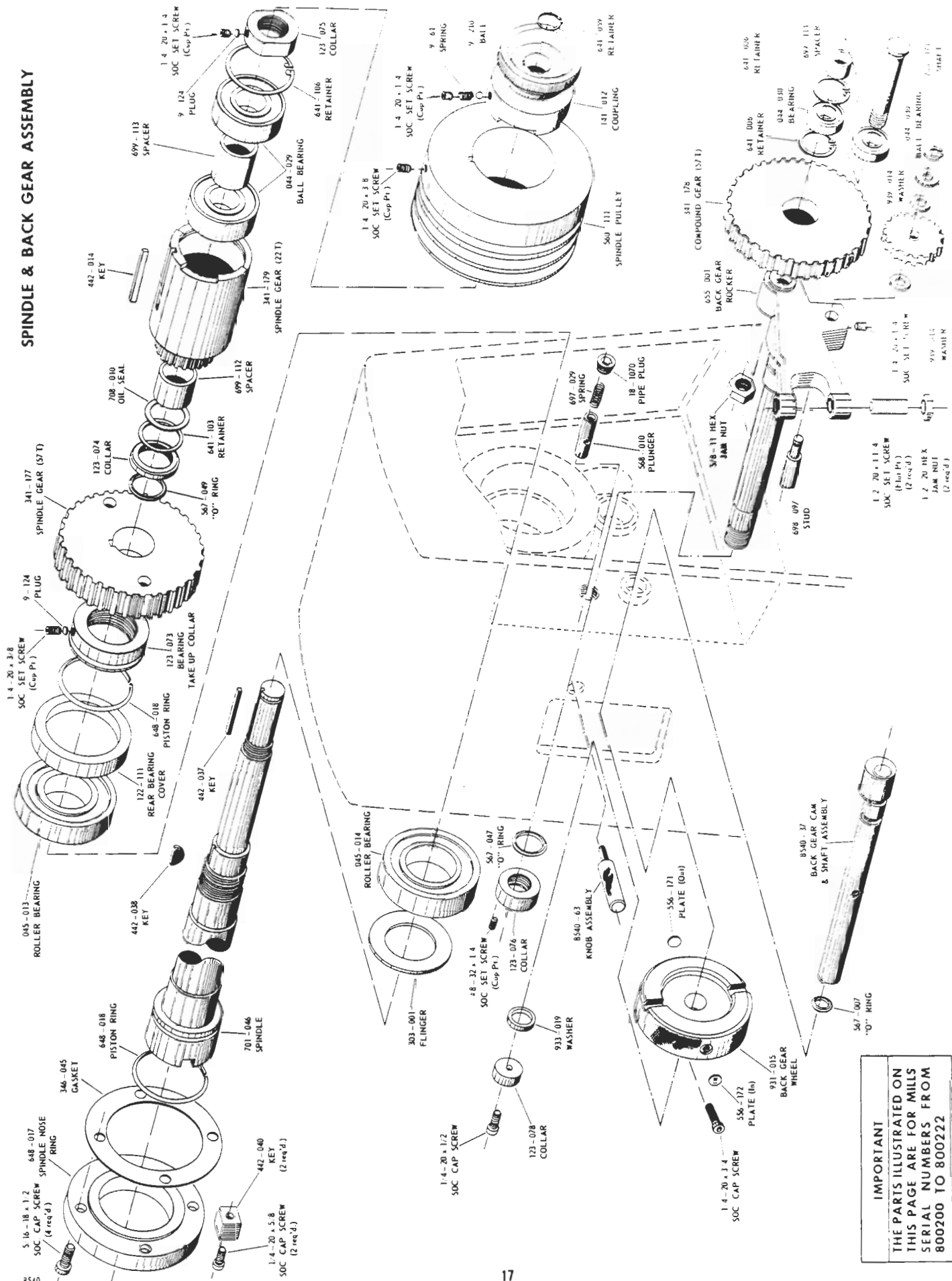
COLUMN CASTING AND GUARD ASSEMBLY

* ACCESSORY PARTS NOT FURNISHED WITH MILLING MACHINE



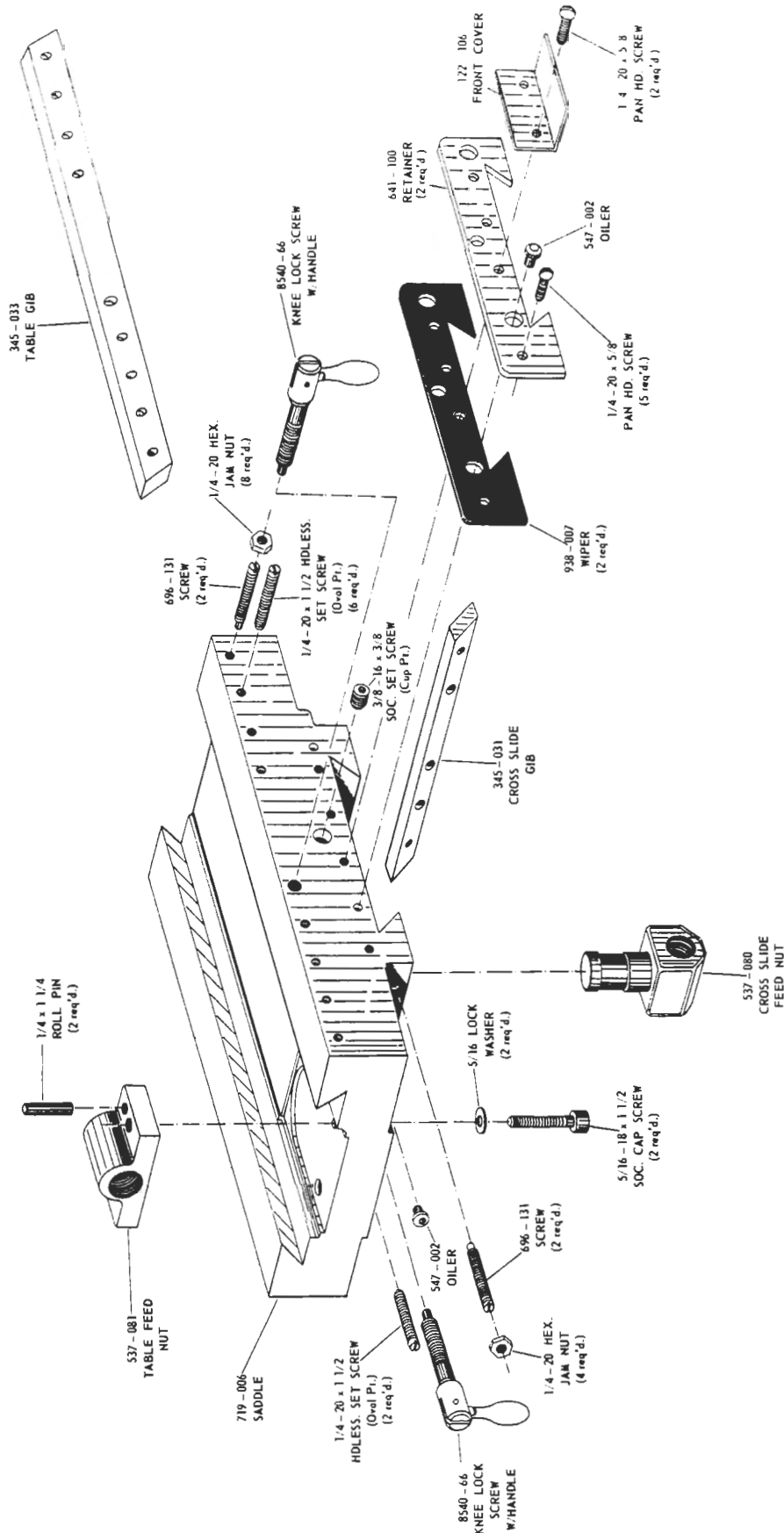
IMPORTANT
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SPINDLE & BACK GEAR ASSEMBLY



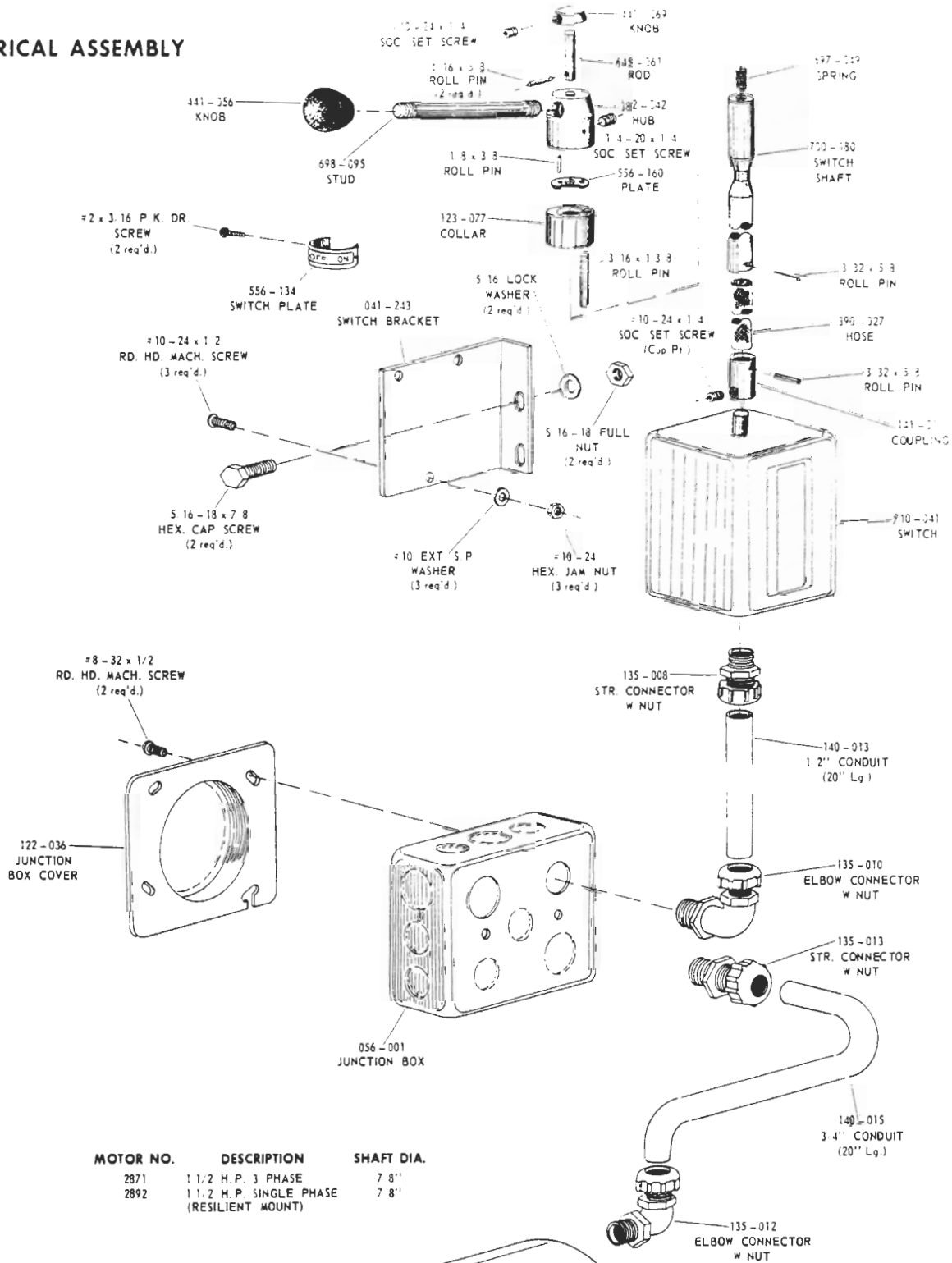
IMPORTANT
 THE PARTS ILLUSTRATED ON
 THIS PAGE ARE FOR MILLS
 SERIAL NUMBERS FROM
 800200 TO 800222

SADDLE ASSEMBLY

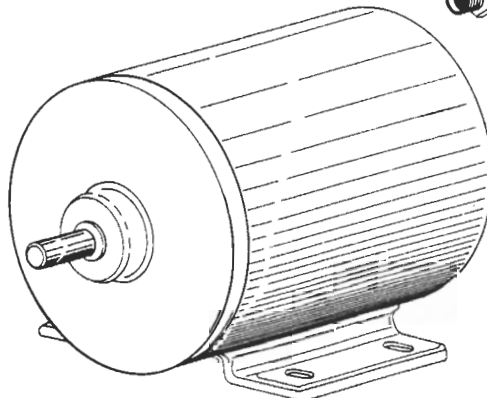


IMPORTANT
 THE PARTS ILLUSTRATED ON
 THIS PAGE ARE FOR MILLS
 SERIAL NUMBERS FROM
 800200 TO 801282

ELECTRICAL ASSEMBLY

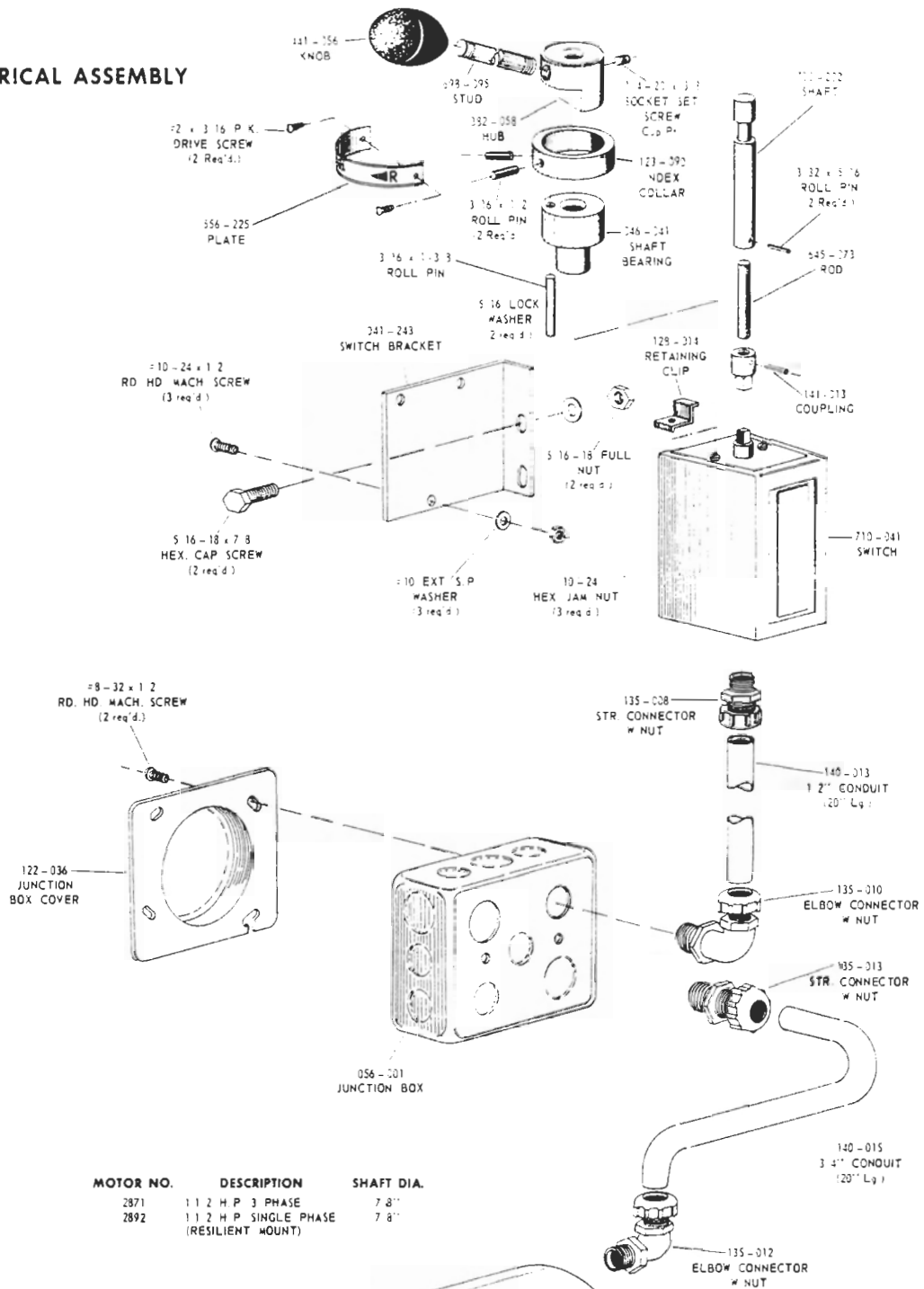


MOTOR NO.	DESCRIPTION	SHAFT DIA.
2871	1 1/2 H.P. 3 PHASE	7 8"
2892	1 1/2 H.P. SINGLE PHASE (RESILIENT MOUNT)	7 8"

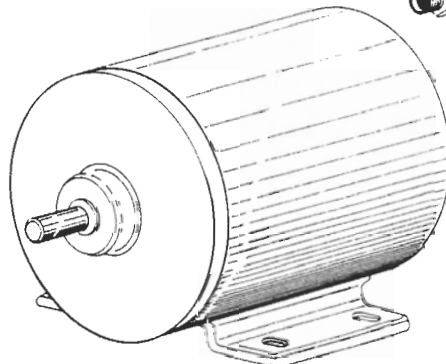


IMPORTANT
THE PARTS ILLUSTRATED ON THIS PAGE ARE FOR MILLS SERIAL NUMBERS FROM 800200 TO 800816

ELECTRICAL ASSEMBLY



MOTOR NO.	DESCRIPTION	SHAFT DIA.
2871	1 1/2 H.P. 3 PHASE	7/8"
2892	1 1/2 H.P. SINGLE PHASE (RESILIENT MOUNT)	7/8"



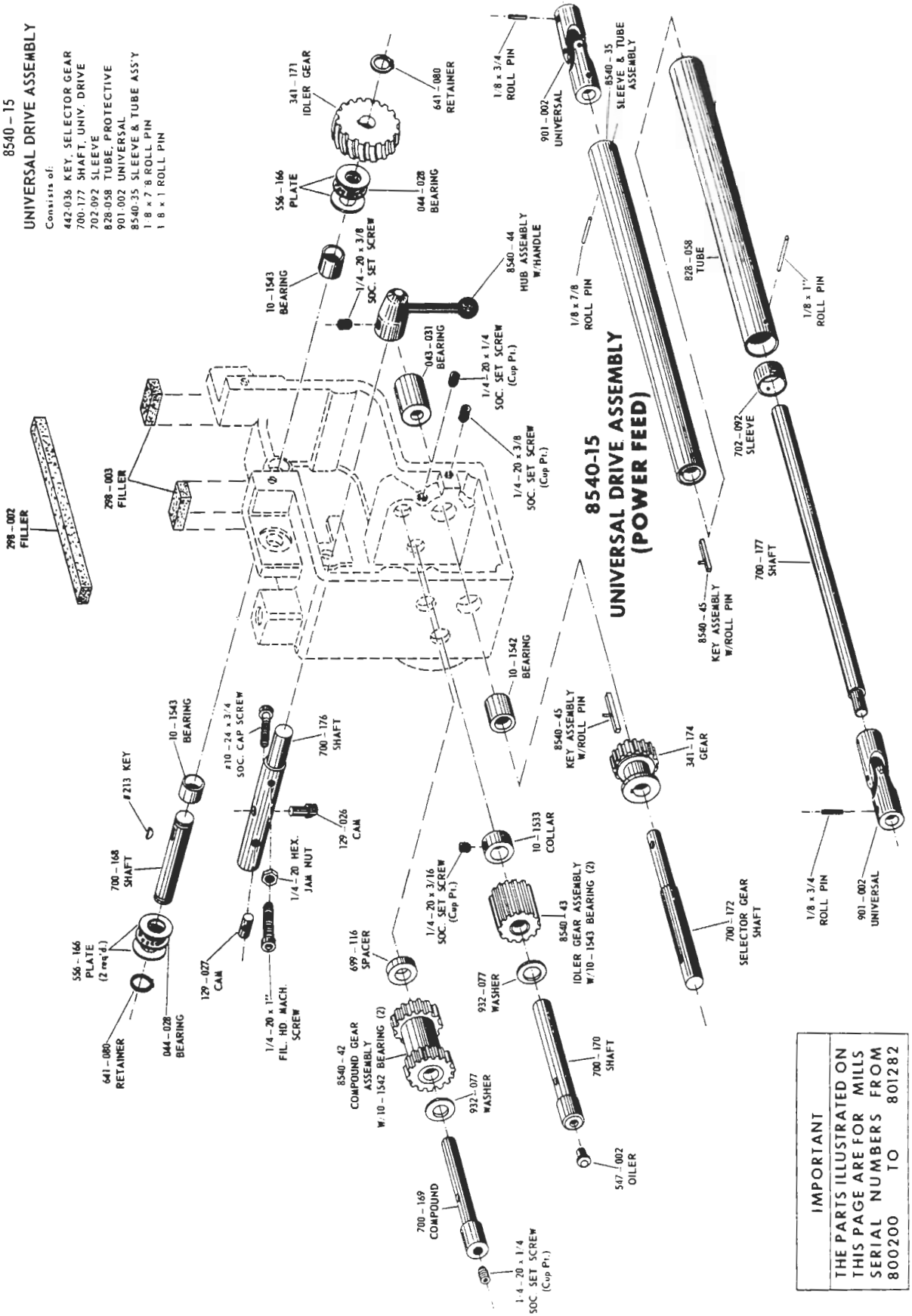
IMPORTANT
 THE PARTS ILLUSTRATED ON THIS PAGE ARE FOR MILLS SERIAL NUMBERS FROM 800817 TO 801157

8540-15

UNIVERSAL DRIVE ASSEMBLY

Consists of:

- 442-036 KEY, SELECTOR GEAR
- 700-177 SHAFT, UNIV. DRIVE
- 702-092 SLEEVE
- 828-058 TUBE, PROTECTIVE
- 901-002 UNIVERSAL
- 8540-35 SLEEVE & TUBE ASSY
- 1 8 x 7 8 ROLL PIN
- 1 8 x 1 ROLL PIN



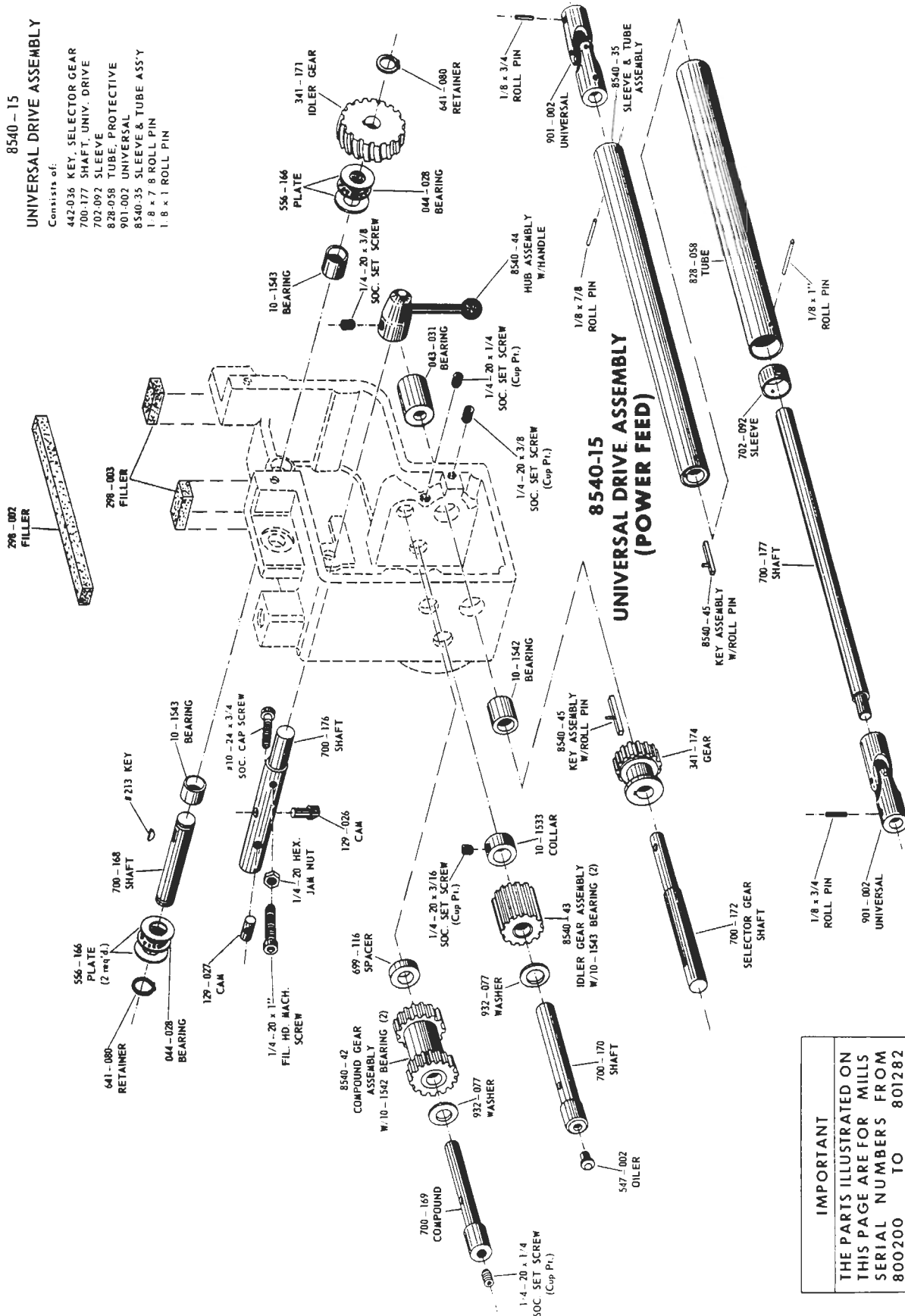
IMPORTANT
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 SERIAL NUMBERS FROM
 800200 TO 801282

8540-15

UNIVERSAL DRIVE ASSEMBLY

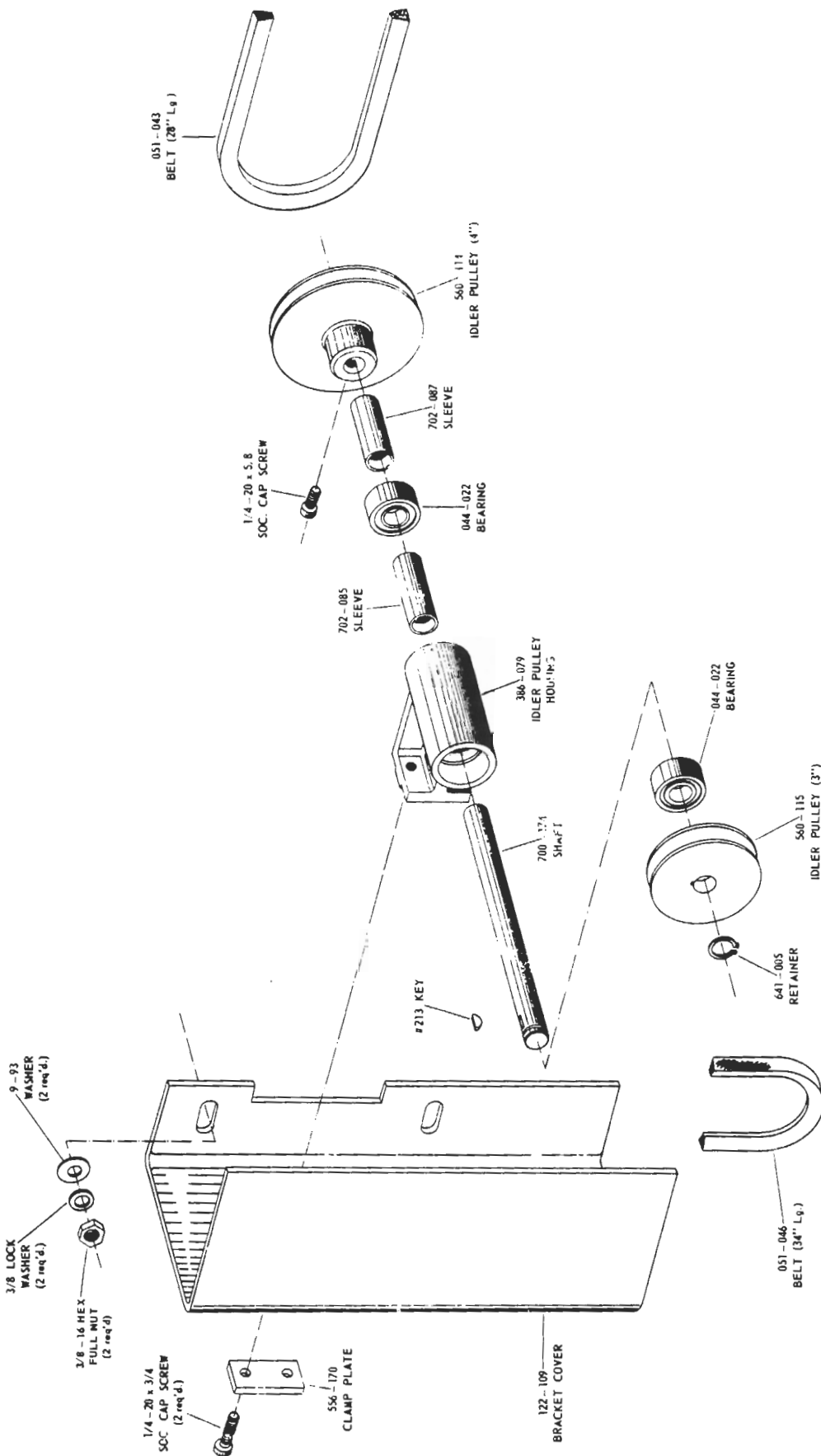
Consists of:

- 442-036 KEY, SELECTOR GEAR
- 700-177 SHAFT, UNIV. DRIVE
- 702-092 SLEEVE
- 828-058 TUBE, PROTECTIVE
- 901-002 UNIVERSAL
- 8540-35 SLEEVE & TUBE ASSY
- 1.8 x 7.8 ROLL PIN
- 1.8 x 1 ROLL PIN



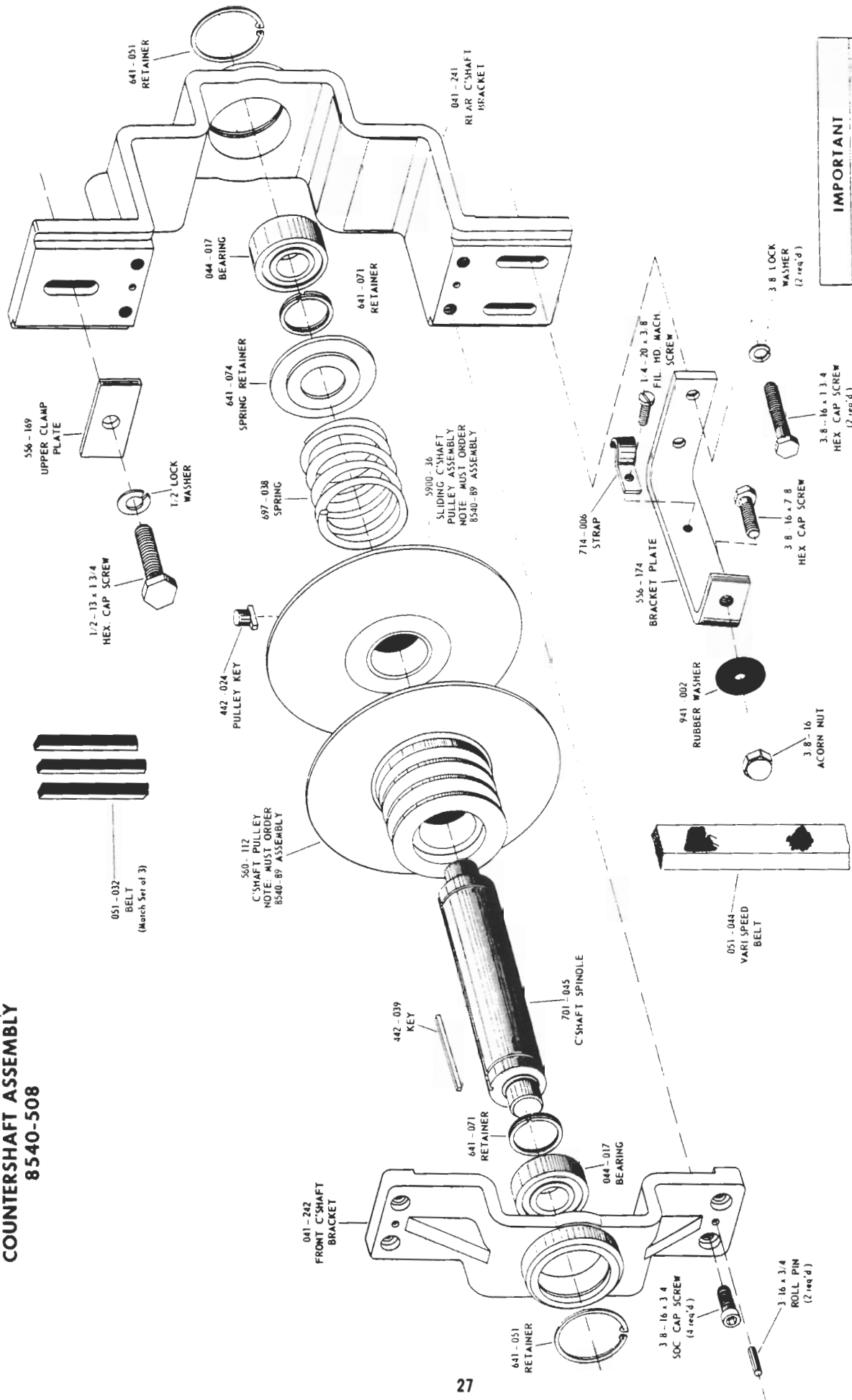
IMPORTANT
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SERIAL NUMBERS FROM
800200 TO 801282

IDLER PULLEY ASSEMBLY (POWER FEED)



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 SERIAL NUMBERS FROM
 800200 TO 801282

COUNTERSHAFT ASSEMBLY 8540-508



IMPORTANT
THE PARTS ILLUSTRATED ON THIS PAGE ARE FOR MILLS SERIAL NUMBERS FROM 800200 TO 800470

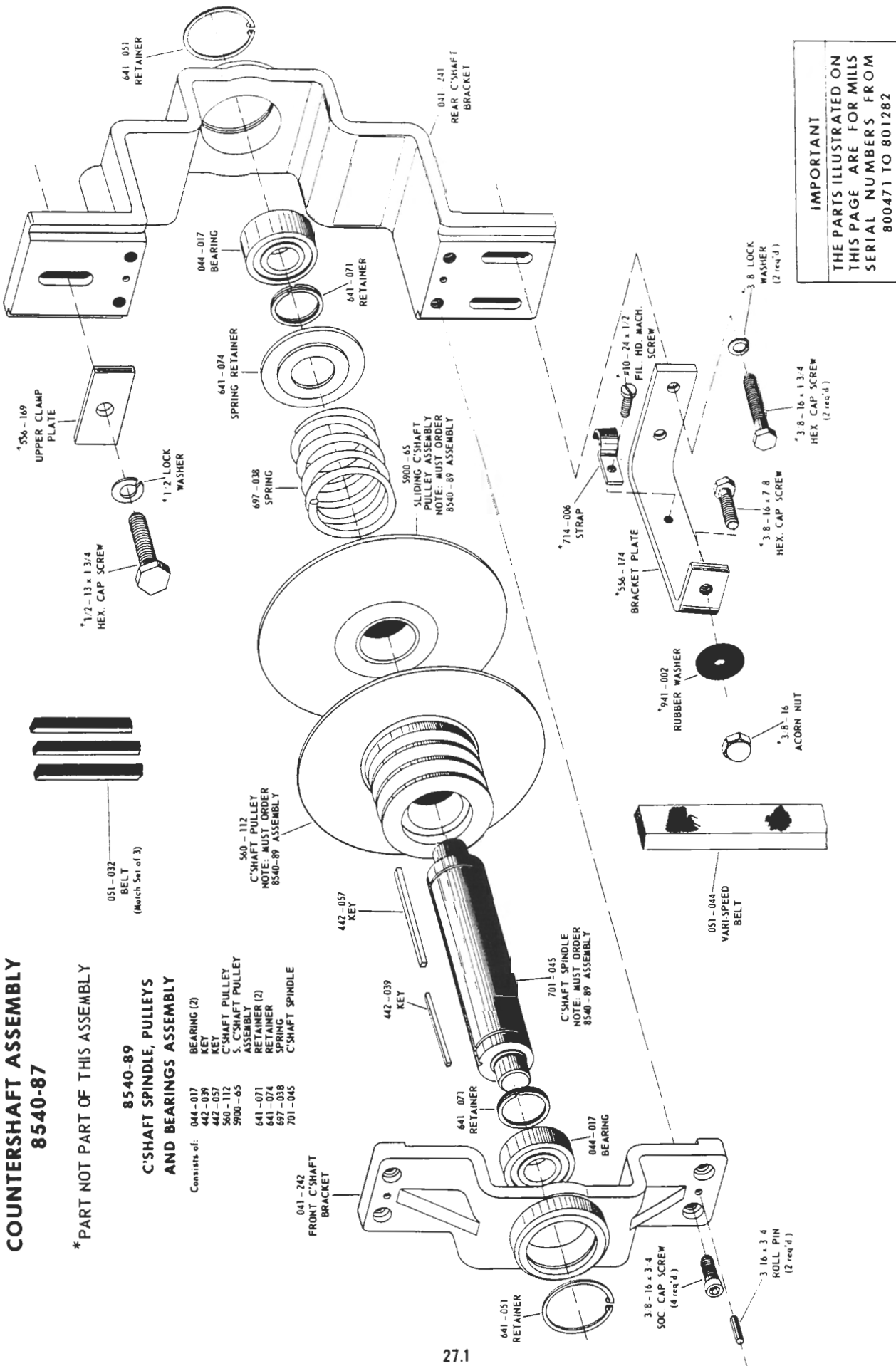
COUNTERSHAFT ASSEMBLY 8540-87

* PART NOT PART OF THIS ASSEMBLY

8540-89

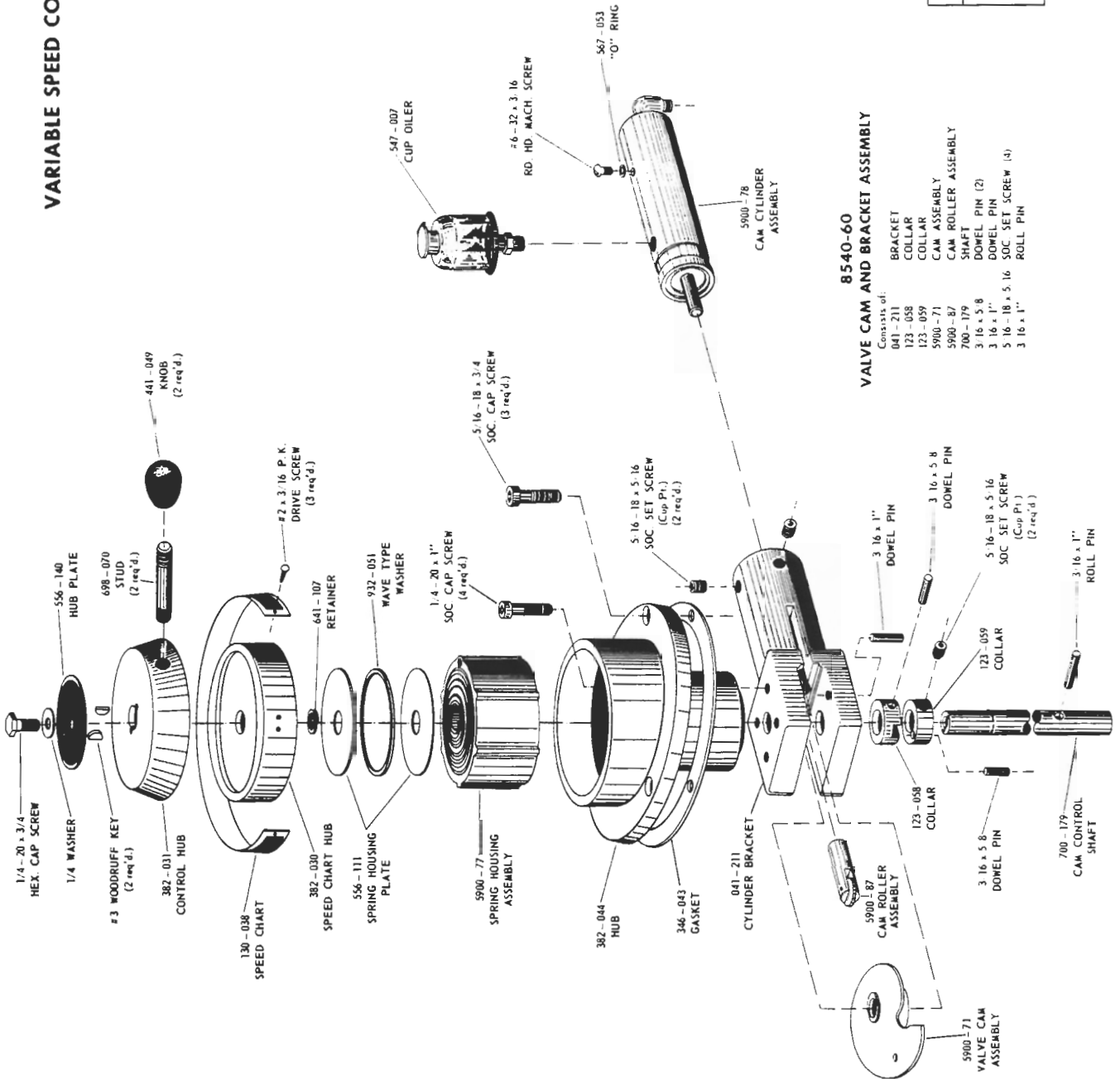
C'SHAFT SPINDLE, PULLEYS AND BEARINGS ASSEMBLY

- Consists of:
- 044-017 BEARING (2)
 - 442-039 KEY
 - 442-057 C'SHAFT PULLEY
 - 560-112 C'SHAFT PULLEY ASSEMBLY
 - 641-071 RETAINER (2)
 - 641-074 SPRING
 - 697-038 C'SHAFT SPINDLE
 - 701-045



IMPORTANT
THE PARTS ILLUSTRATED ON THIS PAGE ARE FOR MILLS SERIAL NUMBERS FROM 800471 TO 801282

VARIABLE SPEED CONTROL



IMPORTANT
 THE PARTS ILLUSTRATED ON
 THIS PAGE ARE FOR MILLS
 SERIAL NUMBERS FROM
 800200 TO 801138

8540-60 VALVE CAM AND BRACKET ASSEMBLY

- Consists of:
- 041-211 BRACKET
 - 123-058 COLLAR
 - 123-059 COLLAR
 - 5900-71 CAM ASSEMBLY
 - 5900-71 CAM ROLLER ASSEMBLY
 - 700-179 SHAFT
 - 3-16 x 5-8 DOWEL PIN (2)
 - 3-16 x 1" DOWEL PIN
 - 5-16-18 x 5-16 SOC SET SCREW (4)
 - 3-16 x 1" ROLL PIN

- 1/4-20 x 3/4 HEX. CAP SCREW
- 1/4 WASHER
- 556-140 HUB PLATE
- 698-070 STUD (2 req'd.)
- #3 WOODRUFF KEY (2 req'd.)
- 382-031 CONTROL HUB
- 441-049 KNOB (2 req'd.)

- 130-038 SPEED CHART
- 382-030 SPEED CHART HUB
- 641-107 RETAINER
- 932-051 WAVE TYPE WASHER
- 556-111 SPRING HOUSING PLATE
- 5900-77 SPRING HOUSING ASSEMBLY
- 1-4-20 x 1" SOC. CAP. SCREW (4 req'd.)
- 5-16-18 x 3-4 SOC. CAP. SCREW (3 req'd.)
- #2 x 3-16 P.K. DRIVE SCREW (3 req'd.)
- 547-007 CUP OILER

- 382-044 HUB
- 346-043 GASKET
- 041-211 CYLINDER BRACKET
- 5900-78 CAM CYLINDER ASSEMBLY
- 5-16-18 x 5-16 SOC SET SCREW (2 req'd.)
- 5-16-18 x 5-16 SOC SET SCREW (Cup Pt.) (2 req'd.)
- 5-16-18 x 5-16 SOC SET SCREW (2 req'd.)
- 5-16-18 x 5-16 SOC SET SCREW (Cup Pt.) (2 req'd.)
- 567-053 "O" RING

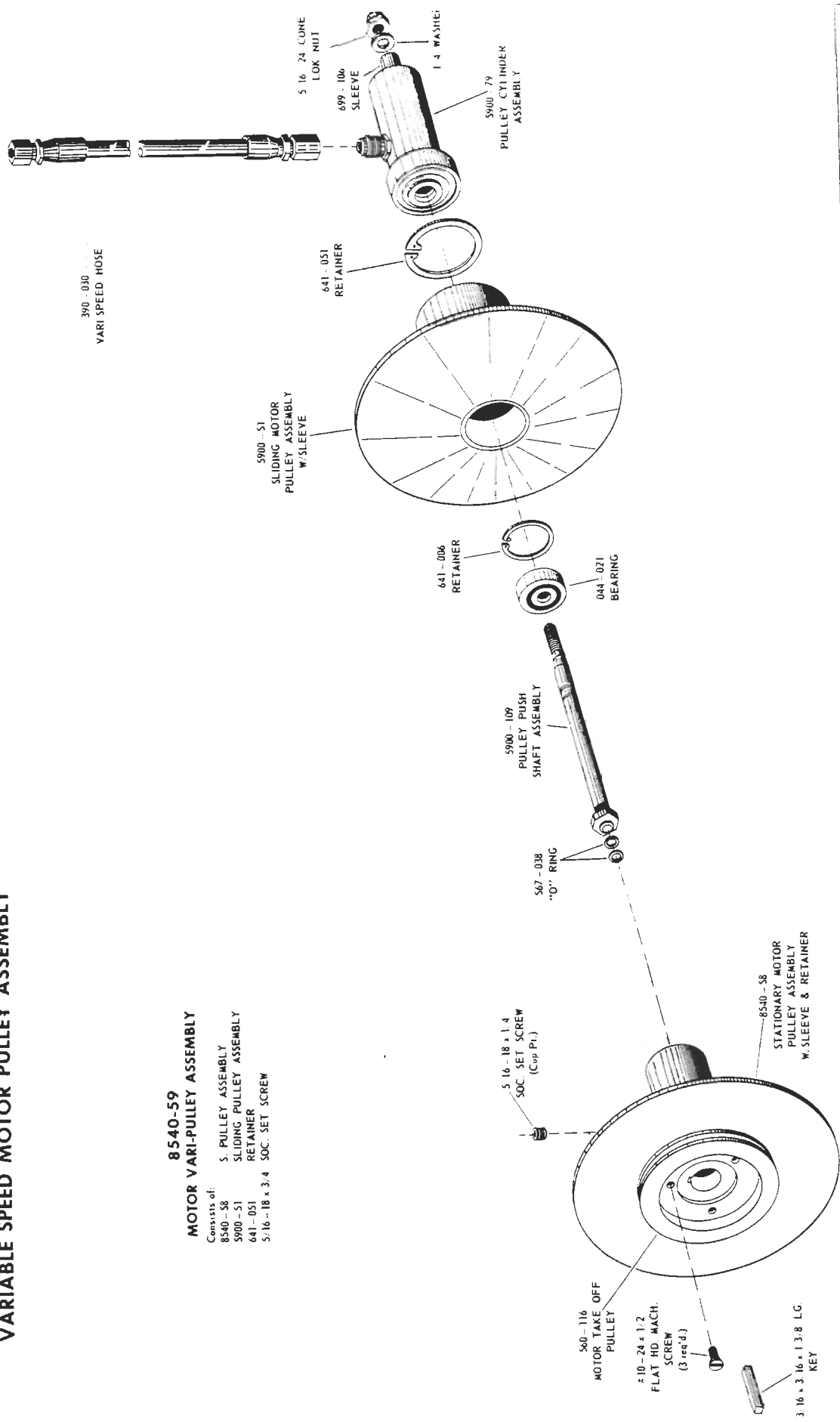
- 5900-71 VALVE CAM ASSEMBLY
- 5900-71 VALVE CAM ASSEMBLY
- 123-058 COLLAR
- 123-059 COLLAR
- 3-16 x 5-8 DOWEL PIN
- 3-16 x 5-8 DOWEL PIN
- 3-16 x 1" DOWEL PIN
- 5-16-18 x 5-16 SOC SET SCREW (Cup Pt.) (2 req'd.)
- 700-179 CAM CONTROL SHAFT
- 3-16 x 1" ROLL PIN

VARIABLE SPEED MOTOR PULLEY ASSEMBLY

8540-59 MOTOR VARI-PULLEY ASSEMBLY

Consists of:

- 8540-58 PULLEY ASSEMBLY
- 5900-51 SLIDING PULLEY ASSEMBLY
- 641-051 RETAINER
- 5/16-18 x 3/4 SOC. SET SCREW



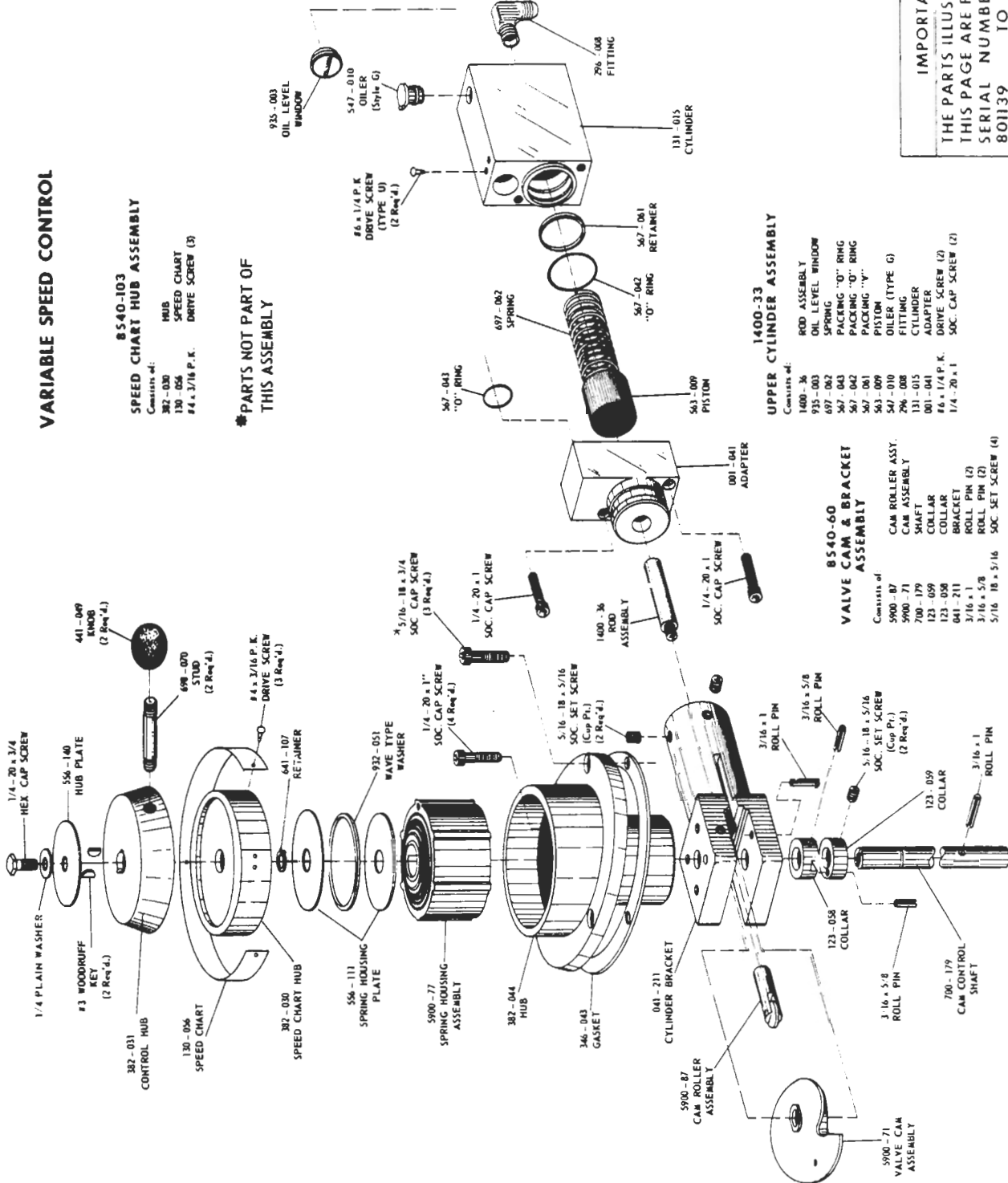
IMPORTANT
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VARIABLE SPEED CONTROL

8540-103 SPEED CHART HUB ASSEMBLY

- Consists of:
 382-030 HUB
 130-056 SPEED CHART
 #4 x 3/16 P.K. DRIVE SCREW (3)

*PARTS NOT PART OF
THIS ASSEMBLY



1400-33 UPPER CYLINDER ASSEMBLY

- Consists of:
 1400-36 ROD ASSEMBLY
 935-003 OIL LEVEL WINDOW
 697-062 SPRING
 567-043 PACKING "O" RING
 567-042 PACKING "O" RING
 567-061 PACKING "V"
 563-009 PISTON
 547-010 OILER (TYPE G)
 296-008 FITTING
 131-015 CYLINDER
 001-041 ADAPTER
 #6 x 1/4 P.K. DRIVE SCREW (2)
 1/4-20 x 1 SOC. CAP SCREW (2)

8540-60 VALVE CAM & BRACKET ASSEMBLY

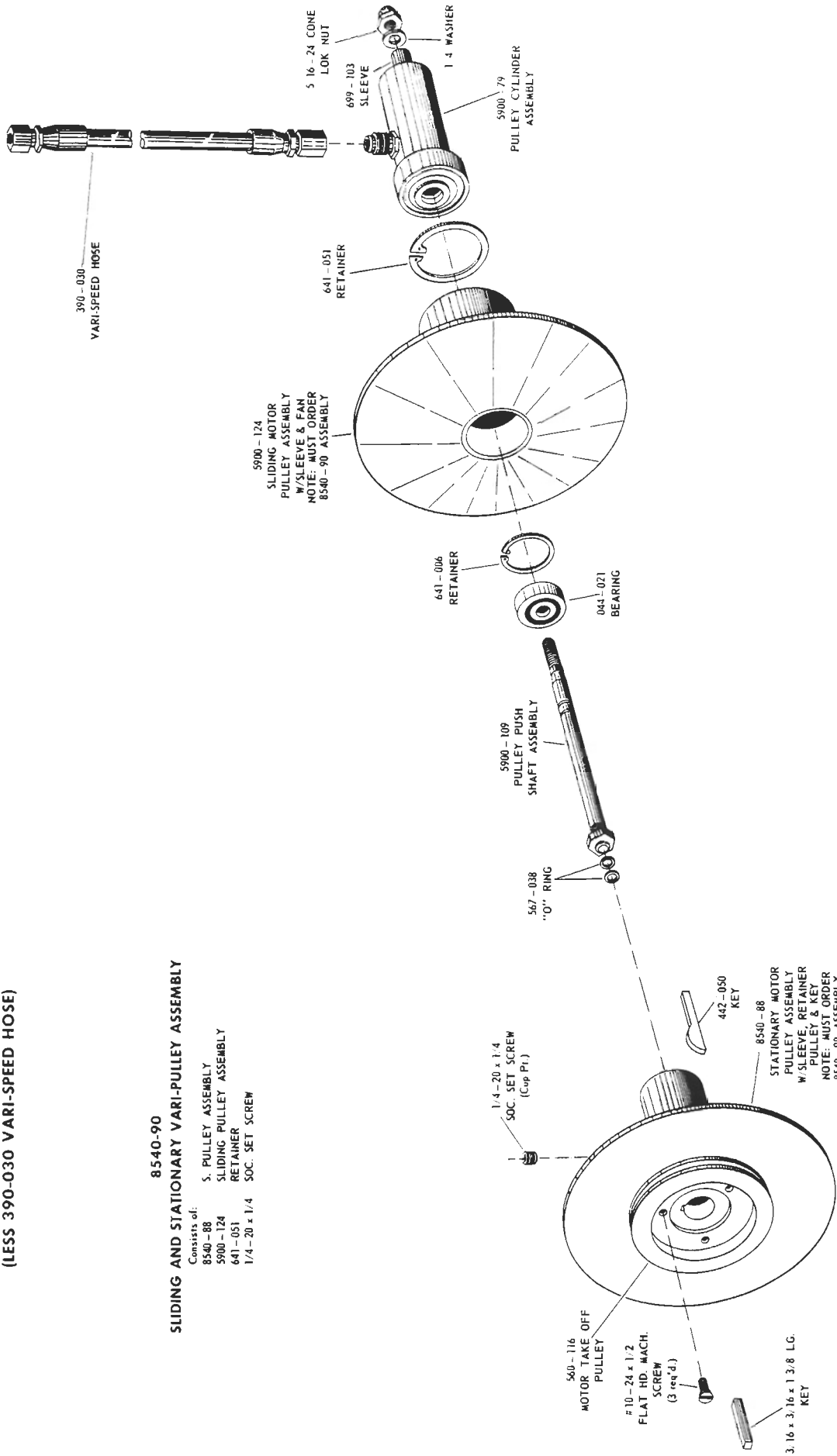
- Consists of:
 5900-87 CAM ROLLER ASST.
 5900-71 CAM ASSEMBLY
 700-179 SHAFT
 123-059 COLLAR
 123-058 COLLAR
 041-211 BRACKET
 3/16 x 1 ROLL PIN (2)
 3/16 x 5/8 ROLL PIN (2)
 5/16 18 x 5/16 SOC. SET SCREW (4)

IMPORTANT
 THE PARTS ILLUSTRATED ON
 THIS PAGE ARE FOR MILLS
 SERIAL NUMBERS FROM
 801139 TO 801282

8540-86 VARIABLE SPEED MOTOR PULLEY ASSEMBLY (LESS 390-030 VARI-SPEED HOSE)

8540-90 SLIDING AND STATIONARY VARI-PULLEY ASSEMBLY

- Consists of:
 8540-88 S. PULLEY ASSEMBLY
 5900-124 SLIDING PULLEY ASSEMBLY
 641-051 RETAINER
 1/4-20 x 1/4 SOC. SET SCREW



IMPORTANT
 THE PARTS ILLUSTRATED ON
 THIS PAGE ARE FOR MILLS
 SERIAL NUMBERS FROM
 800471 TO 800816

VARIABLE SPEED MOTOR PULLEY ASSEMBLY

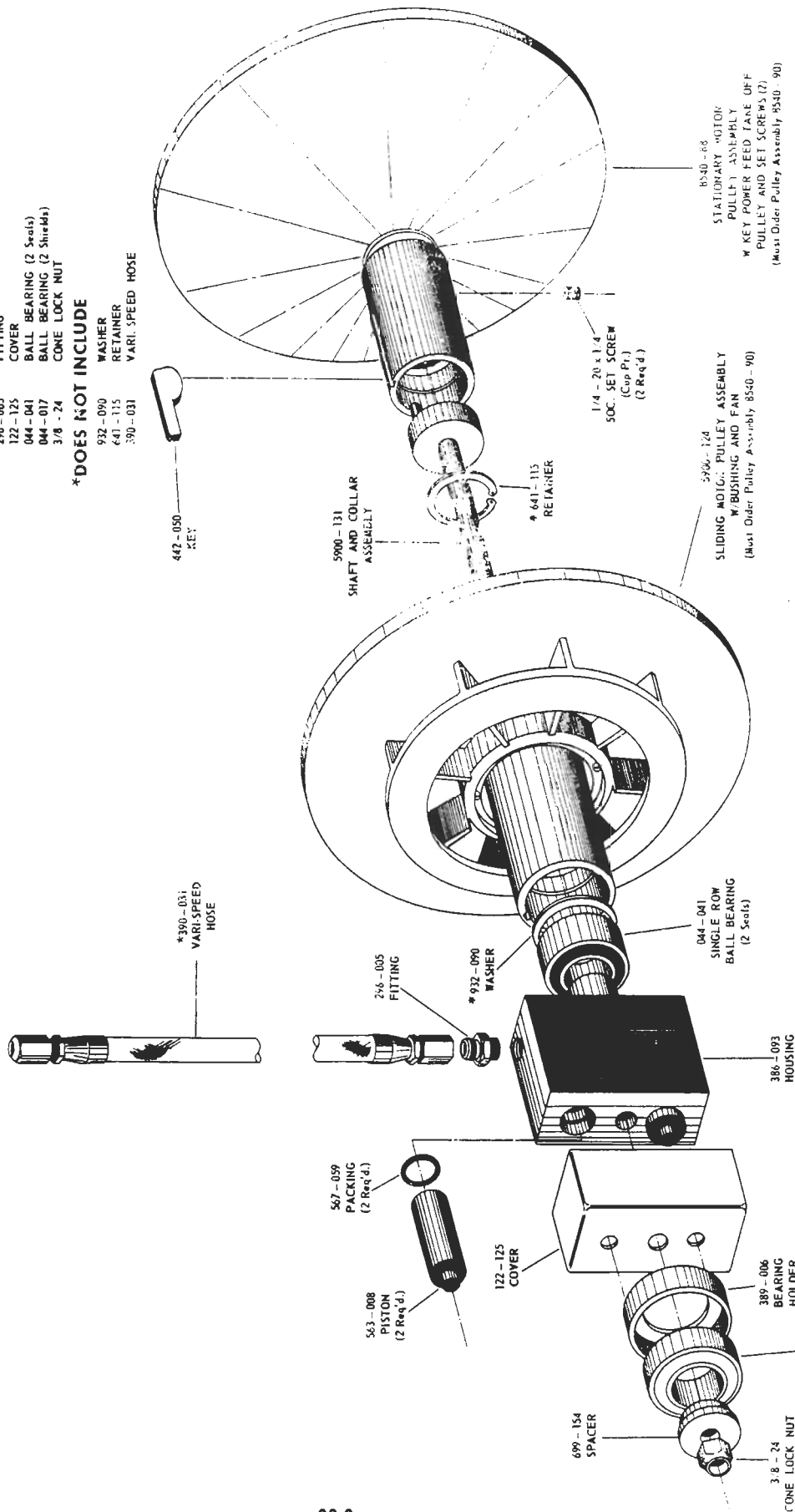
8540-99 CYLINDER AND SHAFT ASSEMBLY

Consists of:

- 5900-131 SHAFT AND COLLAR ASSEMBLY
- 699-154 SPACER
- 567-059 PACKING (2)
- 563-008 PISTON (2)
- 389-006 BEARING HOLDER
- 386-093 HOUSING
- 276-005 FITTING
- 122-125 COVER
- 044-041 BALL BEARING (2 Seals)
- 044-017 BALL BEARING (2 Shields)
- 3/8-24 CONE LOCK NUT

***DOES NOT INCLUDE**

- 932-090 WASHER
- 641-115 RETAINER
- 390-031 VARI. SPEED HOSE



8540-90 SLIDING AND STATIONARY VARI. PULLEY ASSEMBLY

Consists of:

- 8540-88 S. PULLEY ASSEMBLY
- 5900-124 SLIDING PULLEY ASSEMBLY

IMPORTANT

THE PARTS ILLUSTRATED ON THIS PAGE ARE FOR MILLS SERIAL NUMBERS FROM 800817 TO 801282

8540-88
STATIONARY MOTOR PULLEY ASSEMBLY
* KEY POWER FEED TANE OFF PULLEY AND SET SCREWS (2)
(Must Order Pulley Assembly 9540-90)

5900-124
SLIDING MOTOR PULLEY ASSEMBLY * BUSHING AND FAN
(Must Order Pulley Assembly 8540-90)

