

CLAUSING SERVICE CENTER

811 EISENHOWER DR., SO.
P.O. BOX 877
GOSHEN, IN 46526

SERVICE & PARTS MANUAL

MODEL NO. 5418

SERIAL NO. 001486

Phone 219-533-0371

Fax 219-533-0403

Master

5300/5400

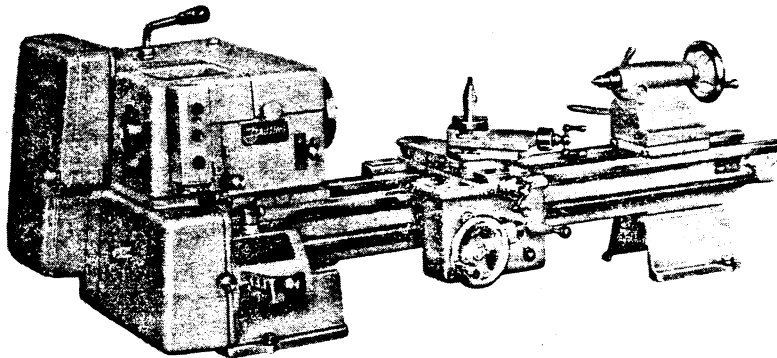
Begins with S/N 001077

LATHE BULLETIN

5300-5400- X

APRIL, 1957

**OPERATING MANUAL
and
PARTS LIST**



**CLAUSING
No. 5300 & 5400 SERIES
12-inch LATHES**



Do Not Operate The Lathe . . .

- **Until** it is properly mounted and leveled. Clamping lathes pass rigid inspection and operating tests before shipment – to maintain its built-in accuracy it must be properly installed.
- **Until** you are acquainted with the lathe and understand all the controls and their functions.
- **Until** you have oiled the lathe.
- **Until** you have carefully read all the instructions.

Then operate the lathe in back gear – get the “feel” of the controls – set up different threads and feeds – engage the power feeds – get acquainted with the lathe before starting a job – doing that will save time and produce better work.

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INSTRUCTIONS FOR ORDERING REPAIR PARTS

IMPORTANT: *The following information must be furnished on all repair part orders:*

1. Model Number and Serial Number of your lathe. This is found on the plate attached to the bed.
2. Part Number and Name of part.
3. Quantity required.

Parts shown coded are standard parts and should be purchased locally.

Parts prices will be quoted on request. We reserve the right to make changes in design and specifications without notice.

Instructions for Mounting and Leveling the Lathe

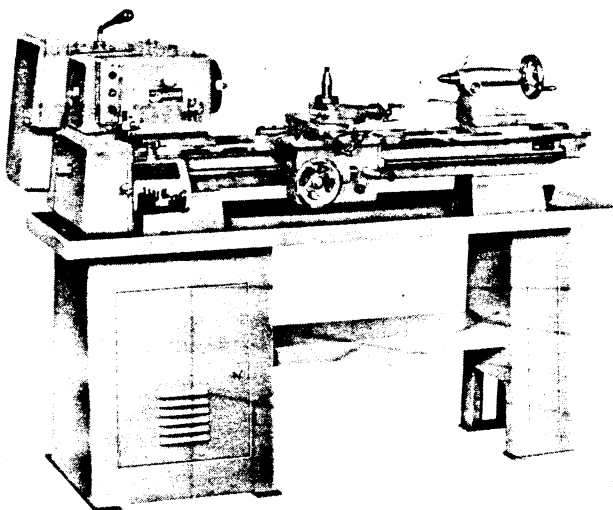
IT IS YOUR RESPONSIBILITY to properly level the lathe — it is the first essential for accurate work and long service life. Satisfactory performance is impossible if the lathe bed is out of level as little as one thousandth of an inch.

To Do It Right -

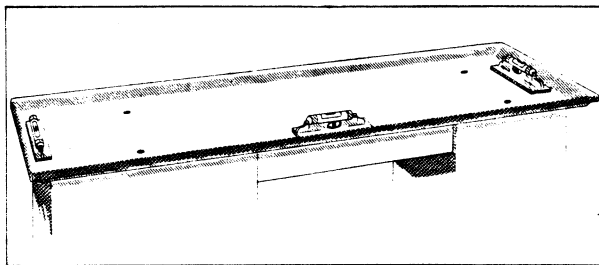
- First install pedestal cabinet or bench before mounting the lathe
- Next level the pedestal cabinet or bench
- Then mount and level the lathe

PEDESTAL CABINET INSTALLATION

1. Mount cabinet on a concrete floor or base whenever possible — if a wood floor is used, it should be well braced, capable of absorbing vibration and withstanding the load. Make sure cabinet rests solidly on the floor.
2. Fasten cabinet to concrete by marking location of mounting holes and drilling holes large enough to re-



1. Lathe mounted on metal cabinet.



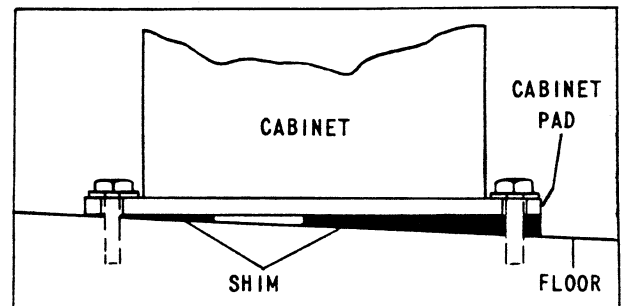
2. Positions to check level readings on cabinet or bench top.

ceive expansion bolts, or set studs or bolts in melted lead. Use lag screws or bolts to fasten cabinet to a wood floor.

Cabinet must be bolted to floor, otherwise vibration will result.

3. Level the cabinet — use a precision machinist level. Place shims as required between pads and floor, to accurately level the top. Shims should be of hardwood or metal and bear under at least 75% of the cabinet pads as shown in Figure 3.

4. Mount the lathe. Two mounting holes are in the cabinet top to fasten the headstock end of the lathe. Position lathe over the holes. Mark and drill two 1/2" dia. holes to fasten the lathe leg at the tailstock end. Bolt lathe to cabinet using bolts furnished. Do not tighten bolts securely. Lathe may now be leveled — see instructions LEVELING THE LATHE, page 5.



3. Use shims made of hardwood or metal to level the cabinet. Shims should bear under at least 75% of the cabinet pads as shown above.

BE SURE YOU HAVE FOLLOWED THESE INSTRUCTIONS COMPLETELY BEFORE LEVELING THE LATHE.

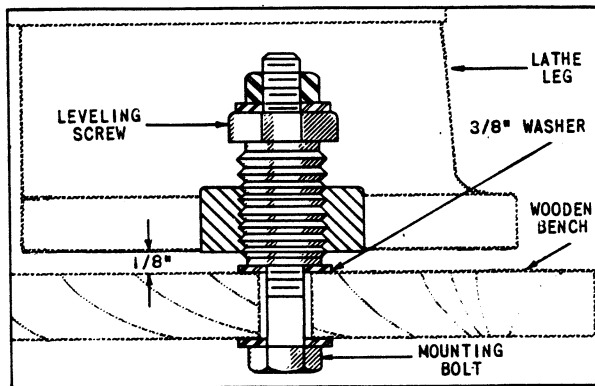
WORK BENCH REQUIREMENTS and INSTALLATION

1. Bench top must be semi-hard or hard wood at least $1\frac{3}{8}$ " thick, cleated or well doweled to form a rigid table. **DO NOT USE SOFTWOODS OR BOARDS NOT CLEATED TOGETHER.**

2. Legs should be of heavy construction — preferably 4" x 4" lumber, provided with lugs for bolting bench to floor. Overall height of bench should be about 28". See Figure 5.

3. Mount bench on a concrete floor or base if possible — if a wood floor is used, it should be well braced, capable of absorbing vibration and withstanding the load. Make sure stand rests solidly on the floor.

4. Fasten stand to concrete by marking location of mounting holes and drilling holes large enough to receive expansion bolts, or set studs or bolts in melted lead. Use lag screws or bolts to fasten bench to a wood floor.

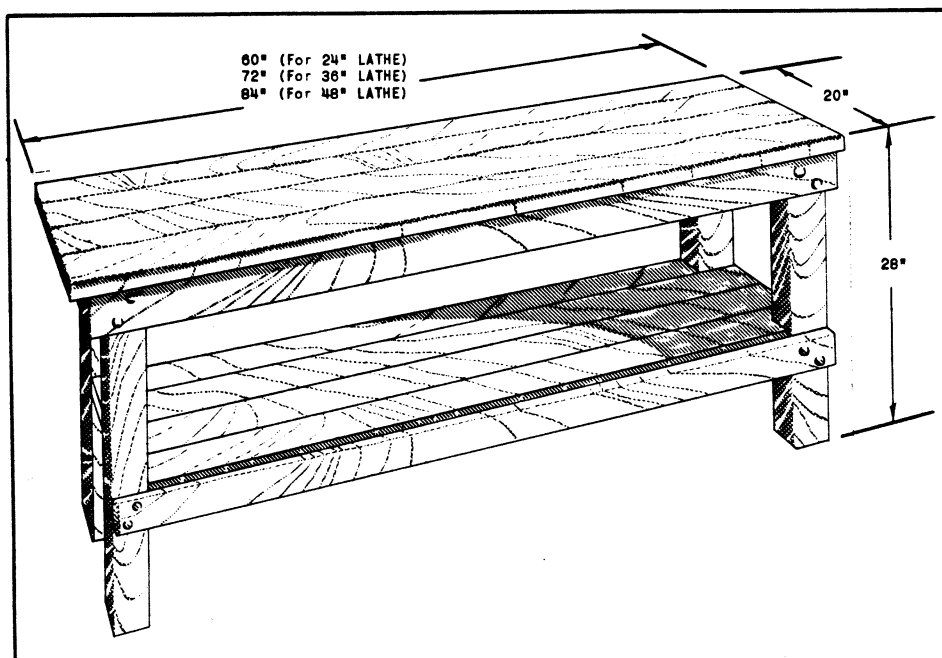


4. Make sure a metal washer is placed between leveling screw and top when using a wood bench.

5. Level bench before mounting lathe — use a precision machinists level. Place shims as required between leg pads and floor to accurately level the top.

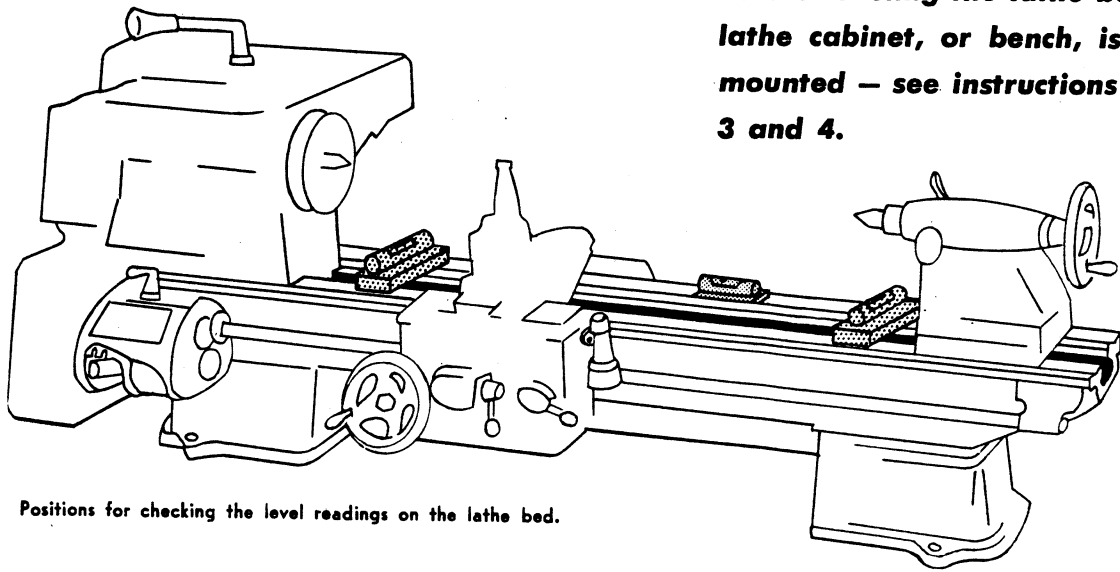
6. Mount the lathe. Mark and drill four $7/16$ " dia. holes in bench top under corresponding holes in lathe legs. Bolt lathe to top using $3/8$ " dia. bolts, placing a $3/8$ " washer between lathe leg and bench top — see Figure 4. Bolts may be inserted from either top or underneath side. Do not tighten bolts securely.

BE SURE YOU HAVE FOLLOWED THESE INSTRUCTIONS COMPLETELY BEFORE LEVELING THE LATHE.



5. Wood bench dimensions for a Clausing 5300 Series Lathe.

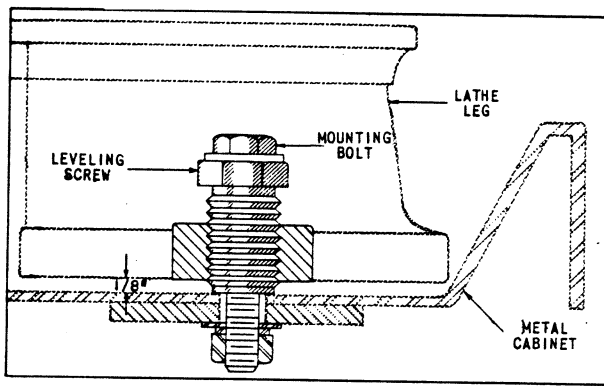
Before leveling the lathe be sure the lathe cabinet, or bench, is properly mounted — see instructions on pages 3 and 4.



6. Positions for checking the level readings on the lathe bed.

Leveling the Lathe

1. Screw down the four leveling screws, raising the lathe so that lathe legs at no point touch cabinet top — approximately $\frac{1}{8}$ " clearance is sufficient — see fig. 7.
2. Use a precision machinist's spirit level to level the lathe. A **VERY SENSITIVE LEVEL SHOULD BE USED**. Level should be at least 6" long and should show a distinct bubble movement when a .003" shim is placed under one end of the level.
3. Lathe bed must be leveled longitudinally to within .002" per foot before leveling the ends.
4. Both ends of the lathe bed — the headstock end and the tailstock end — must be checked with the level



7. The four leveling screws furnished with lathe will quickly and accurately level the lathe.

placed at right angles to the lathe bed — see fig. 6. Use an accurate square to align the level. Place the level on top of the V-ways — about three inches in front of headstock and in front of tailstock.

Note: Clean bed ways thoroughly before leveling lathe — make sure level does not rest on a burr or dent caused by mishandling of the machine.

5. Level reading in both positions must be identical. Compensate variations of bubble readings by turning the leveling screws until lathe is level — see fig. 7.
6. Now tighten the four mounting bolts securely.

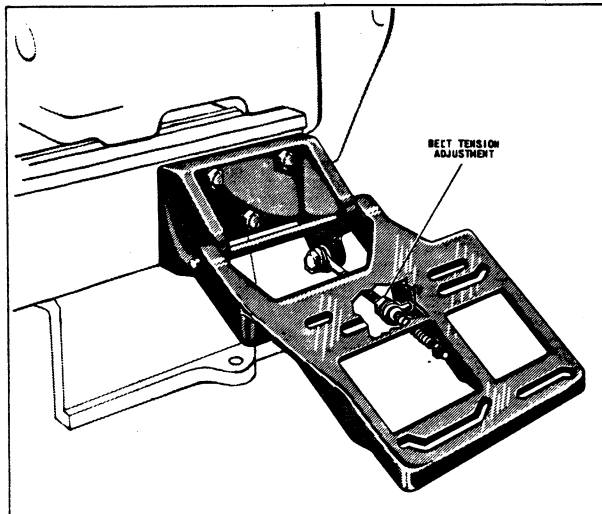
7. Again check the level of the lathe with the level. Tightening the bolts may have pulled lathe bed out of level. If further adjustment is necessary, hold bolt head with wrench while adjusting leveling screws.

CHECK THE LEVEL OF THE LATHE AT FREQUENT INTERVALS to assure accurate turning. If the lathe is not properly leveled, it will twist the bed resulting in misalignment of the headstock and tailstock with the ways, causing lathe to chatter - turn taper - uneven wear - bore taper - face convex or concave - ruin spindle bearings and make carriage bind.

MOUNTING THE MOTOR ON HORIZONTAL COUNTERSHAFT

LATHES

1. Mount motor base assembly to the lathe bed with the three screws furnished.
2. Slide pulley on motor with large step next to motor.
3. Mount motor on motor base and fasten in place with the four bolts furnished.
4. Place belt over pulleys and shift motor until pulleys are aligned and belt is straight, then tighten motor mounting bolts.
5. Adjust spring to obtain proper belt tension — see Figure 8. Belt should be just tight enough to prevent slipping.



8. Motor base mounted to lathe. Adjust spring to obtain proper belt tension.

Oiling the Lathe

Use the lubrication chart furnished with the lathe as a guide for locating the oiling positions.

APRON To fill oil reservoir in apron remove pipe plug on side of apron and use hole for supplying oil. Fill apron to level indicator on side of apron. Maintain this oil level at all times. Use S.A.E. No. 20 machine oil.

GEAR TRAIN Fill oil cup on reverse handle — add oil daily. Place oil in hole in end of sliding gear handle — lubricate weekly. Fill zerk fitting monthly with a light grease for quadrant gear lubrication.

GEAR BOX Apply oil frequently thru oil cups on top of gear box for general lubrication of all moving parts. Gear box bearings are sealed-for-life ball bearings and do not require lubrication.

HEADSTOCK Lubricate the spindle bearings thru the two oil cups on front of headstock. Lubricate back-gear bearings thru oiler in back gear shaft quill. To oil spindle pulley bearing, remove set screw in pulley.

COUNTERSHAFT All the ball bearings in the counter shaft are lubricated for life and permanently sealed against dust and dirt and need no further attention.

OTHER PARTS TO OIL OCCASIONALLY ARE:

1. Right lead screw bearing.
2. Tailstock Ram
3. Tailstock Screw
4. Carriage handwheel shaft
5. Leadscrew
6. Carriage and compound dovetail ways
7. Lathe bed ways
8. Felt wipers on carriage saddle and tailstock.
9. Rim of threading dial

KEEP YOUR LATHE CLEAN

Oil and dirt form an abrasive compound which can easily damage carefully fitted bearing surfaces. Wipe the bed and all polished parts with a clean oily rag at frequent intervals. Use a brush to clean spindle threads, gear teeth, lead screw threads, etc.

Maintenance and Controls

DO NOT OPERATE THE LATHE — until you are thoroughly familiar with all the controls and their functions (read carefully the instructions **MAINTENANCE AND CONTROLS**). Then operate the lathe in back gear — get the "feel" of the controls — set up different threads and feeds — engage the power feeds — get acquainted with the lathe before you start a job — it will save time and produce better work.

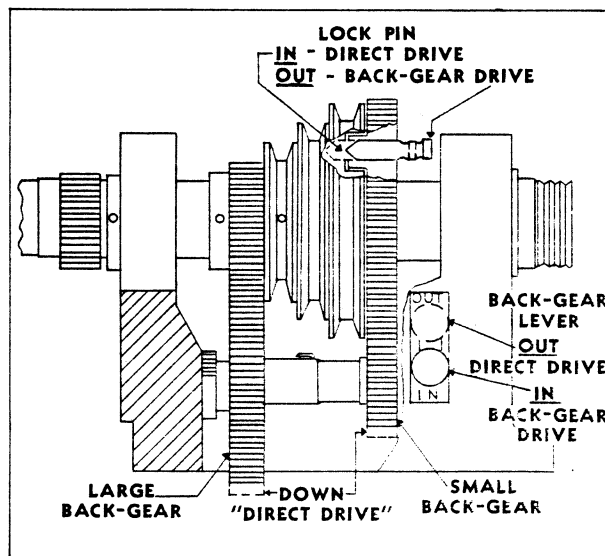
SPINDLE DRIVE

(See Figure 9)

FOR DIRECT DRIVE — turn pulley until lock pin can be reached and engage lock pin with the pulley, locking pulley to the bull gear and spindle. Raise back gear lever to the disengaged, or out, position. Lathe is now in direct drive.

FOR BACK GEAR DRIVE — pull out lock pin, disengaging bull gear from pulley. Lower back-gear lever to the "IN" position, meshing back gears with spindle gears — it may be necessary to rotate spindle pulley to mesh gears.

CAUTION — Always stop motor before changing from one drive to another.

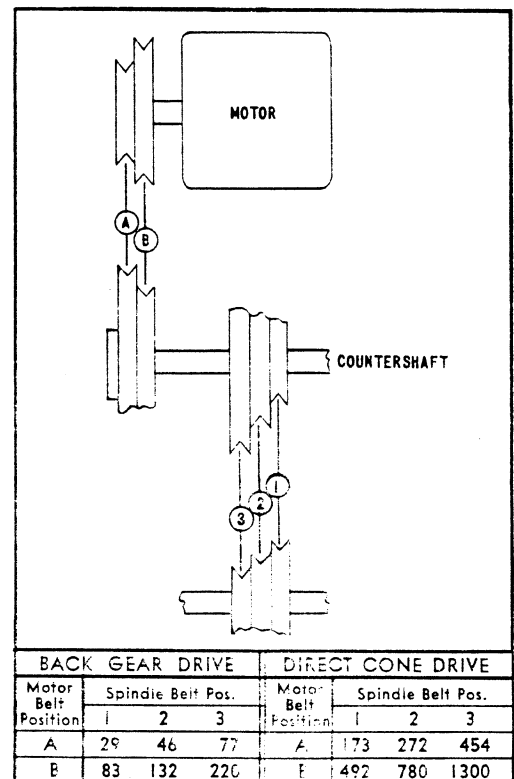


9. Position of back gears, lever and lock pin to drive spindle in back-gear (shaded) and in direct drive (broken line).

LATHE COUNTERSHAFT

Countershaft has friction clutch and brake for instant starting and stopping of the spindle without stopping the motor. Moving clutch lever to left engages spindle drive — to the right disengages it. Moving lever to extreme right tightens the brake shoe stopping the spindle.

Speed changes are made by raising the spindle-countershaft guard which slackens the drive belt for easy belt changes. Raise guard by pushing in and upward on the guard lock knob. The chart, Figure 10, lists the speeds available and shows how they are obtained.



10. Spindle speed chart, listing speeds available, and diagram showing how they can be obtained.

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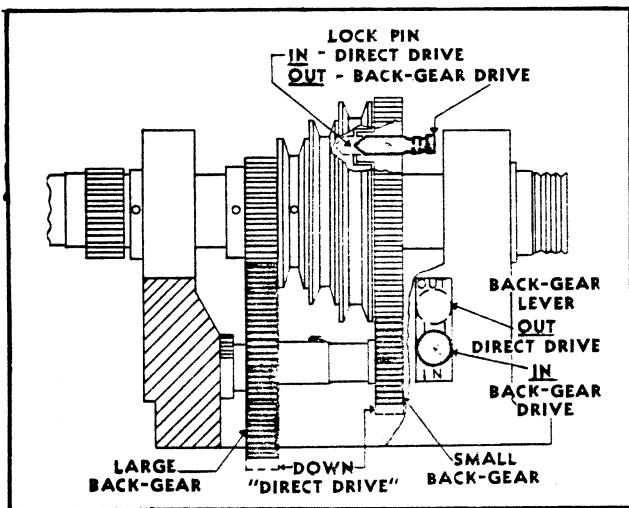
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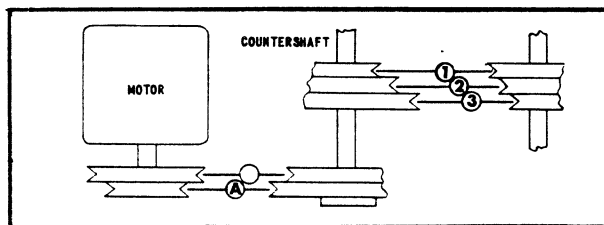


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Countershaft has friction clutch and brake for instant starting and stopping of the spindle without stopping the motor. Moving clutch lever to left engages spindle drive — to the right disengages it. Moving lever to extreme right tightens the brake shoe stopping the spindle.

Speed changes are made by raising the spindle-countershaft guard which slackens the drive belt for easy belt changes. Raise guard by pushing in and upward on the guard lock knob. The chart, Figure 10, lists the speeds available and shows how they are obtained.



BACK GEAR DRIVE			DIRECT CONE DRIVE				
Motor Belt Position	Spindle Belt Pos.			Motor Belt Position	Spindle Belt Pos.		
	1	2	3		1	2	3
A	29	46	77	A	173	272	454
B	83	132	220	B	492	780	1300

10. Spindle speed chart, listing speeds available, and diagram showing how they can be obtained.

CLUTCH AND VARIABLE SPEED DRIVE

CLUTCH DRIVE — has friction clutch and brake for instant starting and stopping of the spindle without stopping the motor. Moving clutch lever located on front of cabinet to the right engages spindle drive — to the left disengages it. Moving lever to extreme left tightens the brake shoe stopping the spindle.

Variable Speed Drive provides speeds between 35 and 270 RPM in back gear drive, and 210 to 1600 RPM in open drive, as shown on chart located above control handle. Handle control for instant speed changes is located on front of cabinet.

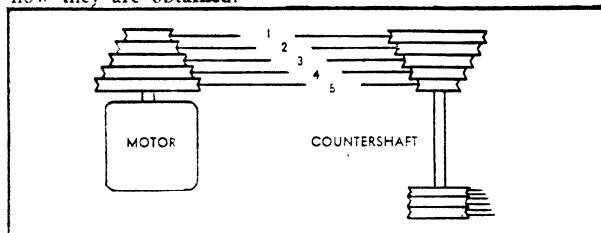
CAUTION: DO NOT

1. Turn control handle unless motor is running.
2. Tension belts too tight.
3. Allow belt slippage.

Failure to observe these precautions will result in burned and stretched belts or flat spots on the belts that will cause vibration.

UNDERNEATH DRIVE

CHANGING SPEEDS — raise belt tension lever to loosen belts from pulleys — lever is accessible through cabinet door. Shift belt to position desired and then lower lever to tension belt. The chart, Figure 10A, lists the speeds available and how they are obtained.

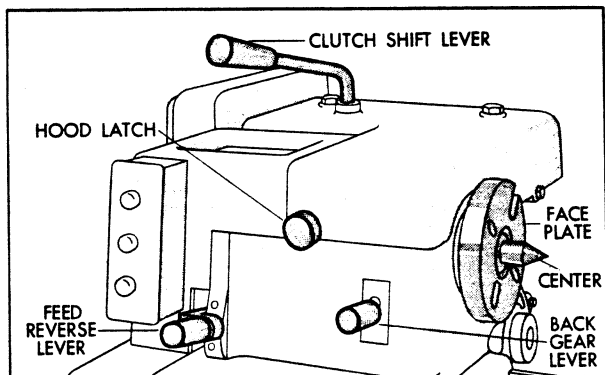


SPINDLE SPEEDS PER RPM									
BACK GEAR DRIVE					DIRECT DRIVE				
BELT POSITIONS					BELT POSITIONS				
1	2	3	4	5	1	2	3	4	5
35	65	100	160	270	210	375	650	995	1600

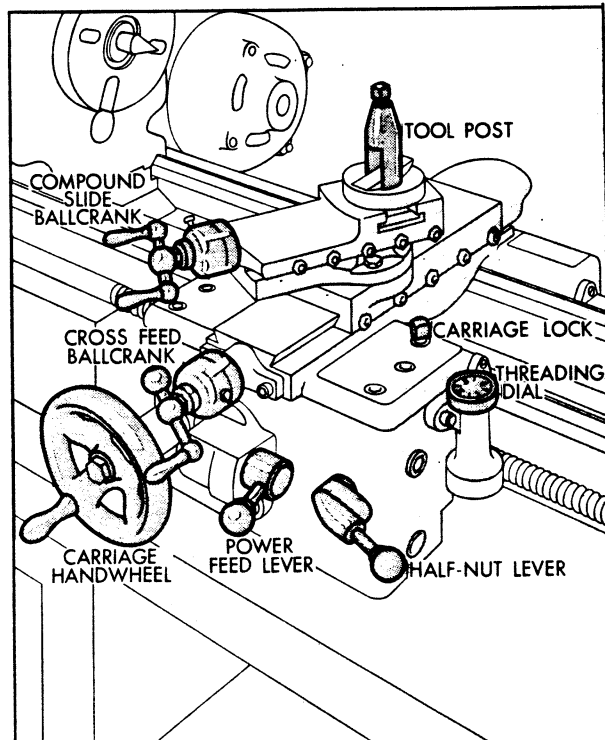
10A. Spindle Speed Chart for underneath drive lathes.
7B (For Lathes with Serial No.s above 001078)

FEED REVERSE LEVER

The feed reverse lever, or lead screw direction lever, is located on left side of headstock, Figure 11. Lever has three positions. Center position is neutral and disengages gear train. Upper position moves carriage toward tailstock. Lower position moves carriage toward headstock. *This lever should not be moved while lathe is operating at high speeds — it may strip the gears or result in serious damage to the lathe.* It is possible to quickly reverse lead screw at lower speeds if desired.



11. Lathe headstock and controls.



12. Controls on the lathe carriage.

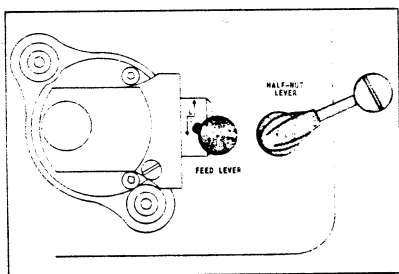
AUTOMATIC APRON

Figure 12 gives the names and positions of the carriage controls. The carriage handwheel moves the carriage along the lathe bed. The cross feed and compound slide ball cranks move the carriage slide and tool rest in and out.

The carriage lock screw is used to lock the carriage to the bed — use it for facing or cut-off operations only.

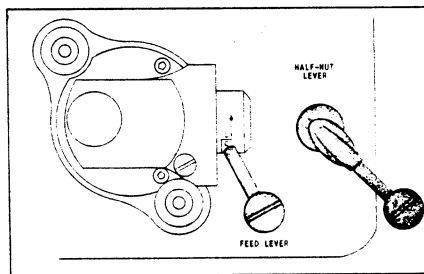
IMPORTANT — Use the half-nut lever for threading only — never for feeds. It will prolong the life of the lead screw, and preserve its accuracy for threading operations.

The power feed lever controls the operation of both power longitudinal and power cross feeds — the half-nut lever engages the half-nuts with the lead screw.



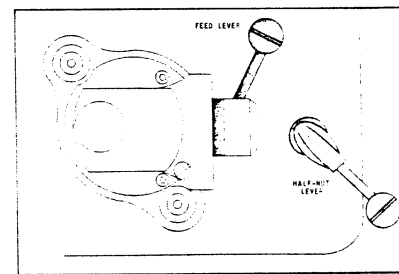
13. THREADING

Place feed lever at the horizontal position. Shift half-nut lever upwards to engage half-nuts with lead screw. Use the half-nuts for threading only — never for feeds.



14. POWER CROSS FEED

To engage power cross feed, place half-nut lever in the down position — the feed handle cannot be moved until half-nut lever is in this position. Move feed handle downward to the vertical position.



15. LONGITUDINAL FEED

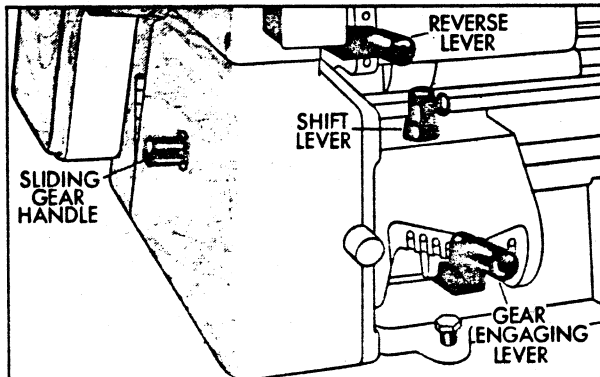
To engage longitudinal feed, first make sure half-nut lever is in the down position. Shift feed lever sideways to the right about $\frac{1}{4}$ " and then upwards to the vertical position.

When one of these levers is engaged, the other is locked and cannot be moved — DO NOT FORCE. The positions of the levers to obtain a thread or feed are illustrated in Figures 13, 14 and 15. The direction of feed is controlled by the reverse lever on front of headstock.

SELECTION OF THREADS AND FEEDS

Study the chart on the gear box — it lists the threads and feeds available and indicates the position of the controls for thread or feed desired. Figure 16 illustrates and names these controls.

NOTE: The gear chart shows only the carriage longitudinal feeds that are commonly used. Many other feeds can be obtained — these are shown in the table, Figure 17, along with the cross feeds available. To obtain one of these longitudinal or cross feeds, set up the lathe gear box for the equivalent thread as shown in the table. FOR EXAMPLE — To obtain a carriage longitudinal feed of .0033", set up the controls to cut 44 threads.



16. Controls used to obtain a thread or feed.

SEQUENCE OF ENGAGING CONTROLS FOR THREADS OR FEEDS ARE OUTLINED BELOW:

1. Disengage the carriage feed controls.
2. Move sliding gear handle "In" or "Out" as indicated on chart for thread or feed desired.
3. Release and lower gear engaging lever.
4. To make sure gears in the quick-change gear box will engage, first start motor. Now move gear engaging lever to the slot directly below thread or feed desired. Raise lever and snap plunger into position.
5. Next, check the chart for position of the shift lever. There are three positions — center, left and right. Shift the lever to position indicated on chart. (It may take a few seconds for the dog gears to engage if the lathe is in back gear or turning slowly.) Lathe is now ready to cut thread or feed.

The threading dial is used in thread cutting and indicates the proper time to engage the half-nut lever so that the cutting tool will enter the same groove of the thread for each cut.

When cutting even numbered threads engage the half-nut lever at any one of the markings on the

threading dial for each cut of the thread. When cutting odd numbered threads, engage the half-nut lever for the first cut and all successive cuts at either the 1 or 2 positions on the dial. When cutting half-numbered threads, engage the half-nut lever at the same mark on the threading dial for each cut of the thread.

CARRIAGE FEED CHART

Thds. Per Inch	Carriage Long Feed	Cross Feed	Thds. Per Inch	Carriage Long Feed	Cross Feed
4	.0367	.00917	32	.0046	.0011
4.5	.0326	.0081	36	.0041	.0010
5	.0293	.0073	40	.0036	.0009
5.5	.0267	.0066	44	.0033	.0008
5.75	.0255	.0063	46	.0031	.00079
6	.0244	.0061	48	.0030	.00076
6.5	.0226	.0056	52	.0028	.00070
6.75	.0218	.0054	54	.0027	.00068
7	.0209	.0052	56	.0026	.00065
8	.0183	.0045	64	.0022	.00057
9	.0163	.0040	72	.0020	.00052
10	.0147	.0036	80	.0018	.00045
11	.0134	.0033	88	.0017	.00041
11.5	.0127	.0032	92	.0016	.00039
12	.0122	.0030	96	.0015	.00038
13	.0113	.0028	104	.0014	.00035
13.5	.0109	.0027	108	.00136	.00034
14	.0105	.0026	112	.0013	.000325
16	.0092	.0023	128	.0011	.00027
18	.0081	.0020	144	.00094	.000235
20	.0073	.0018	160	.00092	.000225
22	.0066	.0016	176	.00083	.00020
23	.0063	.00159	184	.00079	.000197
24	.0061	.00152	192	.00076	.000190
26	.0056	.0014	208	.00070	.000175
27	.0054	.00136	216	.00068	.00017
28	.0052	.0013	224	.00065	.00016

17. Chart listing available threads per inch with equivalent carriage longitudinal and power cross feeds.

TAILSTOCK

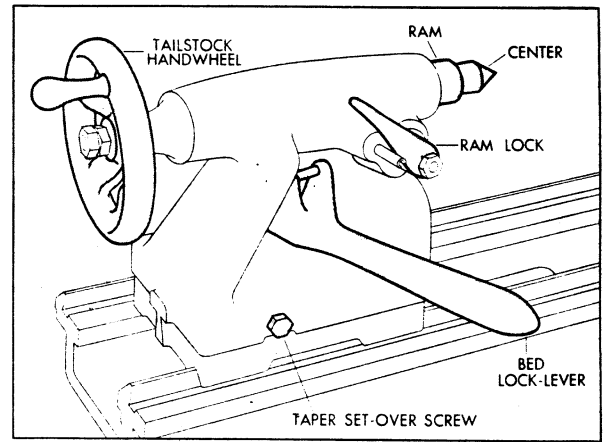
(See Figure 18)

Tailstock is securely locked to the bed with the lever-controlled bed lock located on the rear of the tailstock. Graduations on the ram simplify accurate boring and drilling. Ram is locked in place with the lock handle located on top of tailstock. Before inserting the center in the tailstock ram, clean both tapers thoroughly with a dry cloth.

Tailstock can be set over 1" for taper turning by first loosening the bed clamp and then adjusting the screws on front and back of tailstock base.

MOUNTING CHUCKS AND FACE PLATES

1. Carefully wipe face of chuck hub and threads (or face plate) clean of dirt and chips.
2. Carefully wipe spindle threads and shoulder clean of any dirt and chips.
3. Oil lathe spindle threads with a light film of clean oil — chuck or face plate will thread more freely on spindle.
4. Tighten belt, or place lathe in back gear to hold spindle firmly in position.
5. Screw chuck or face plate on spindle, turning it rapidly as it nears spindle shoulder so it will seat firmly against spindle shoulder face. Make sure threads are not crossed — chuck or face plate should thread on spindle easily.



18. Controls on the lathe tailstock.

TO REMOVE CHUCK OR FACE PLATE

1. To remove chuck, rotate chuck until wrench hole is on top. Lock spindle by engaging back gears without pulling out lock pin. Now place chuck wrench in chuck and pull. If chuck doesn't release, tap BASE OF WRENCH lightly with a mallet. Remove chuck carefully so as not to damage spindle threads. Disengage back gears.
2. To remove face plate, lock spindle by engaging back gears without pulling out lock pin, tap slot in face plate with a lead or brass hammer in a counterclockwise direction. Remove face plate carefully so as not to damage spindle threads. Disengage back-gears.

CAUTION — Do not turn power on with the spindle locked — never remove chuck or face plate while lathe is running.

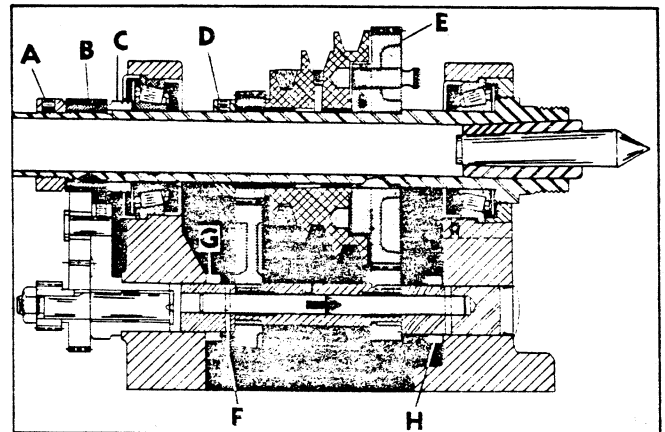
Service and Adjustments

SPINDLE BEARING ADJUSTMENT

If the spindle turns too freely, or if play is noticeable when spindle is pushed back and forth, adjust the bearing as follows:

1. Loosen lock screw in take-up collar "A" (Figure 19) and tighten collar until all spindle play has been removed.
2. To determine correct bearing preload, give spindle pulley a sharp spin with your hand — pulley should rotate about one turn. If it doesn't, adjust collar "A", then recheck.

CAUTION — Do not tighten collar too tightly — spindle should rotate freely.



19. Sectional view of the lathe headstock showing spindle and back-gear arrangement.

BELT ADJUSTMENT ON HORIZONTAL COUNTERSHAFT LATHES

SPINDLE BELT — This belt can be easily adjusted with the four countershaft adjusting screws. see Figure 22. Belt should be just tight enough to prevent its slipping when hood is lowered.

IMPORTANT — *Do not tighten the four countershaft adjusting screws too tightly — it may compress the outer bearing sleeve and distort the bearing, causing permanent damage. Turn screws up until they are finger tight, then about $\frac{1}{8}$ " turn more, and lock.*

MOTOR BELT — Correct motor belt tension is obtained by adjusting the spring tension nut located on underneath side of motor base — see Figure 8. Belt should be just tight enough to prevent slipping.

BELT ADJUSTMENT ON UNDERNEATH DRIVE LATHES

ADJUSTING SPINDLE BELTS — the spindle drive belts may be adjusted by loosening the two screws on the hanger and moving the hanger on the two vertical supporting rods.

ADJUSTING MOTOR BELT — motor belt may be adjusted by moving the collars located beneath the motor base tension springs.

ADJUSTING VARIABLE SPEED BELTS — the countershaft and motor belts may be adjusted by loosening the four screws in the variable speed hanger and motor base and moving them on the two vertical supporting rods.

HOW TO REMOVE HEADSTOCK SPINDLE

(See Figure 19)

1. Remove guard that covers top left side of headstock.
2. Remove screw that holds top of quadrant to headstock. At the same time loosen nut that's on the screw.
3. Loosen lock screw at bottom of quadrant and lower quadrant assembly.
4. Pull out the feed reverse lever and remove the feed reverse gear assembly from headstock.
5. Loosen the lock screw in collar "A" and remove collar — make sure not to lose brass plug beneath screw.
6. Slide spindle gear "B" off spindle. If gear sticks, tap it lightly with a piece of wood. Remove key from spindle with pliers.
7. Next, remove the grooved collar "C."
8. Loosen lock screw in collar "D."
9. Wedge two pieces of wood between headstock and large spindle gear "E" on both sides of spindle. Then, with a soft hammer drive spindle out the front of headstock until key that drives the spindle gear "E" is exposed. Remove key with pliers.
10. Now continue to drive out the spindle — BE SURE to catch it as it is released from the headstock.
11. If spindle belt is being replaced, first remove the countershaft — see REMOVING COUNTERSHAFT SPINDLE ASSEMBLY, page 12, then continue as follows.

12. Remove the two screws and sleeves that hold the hood to countershaft support bracket and remove hood.

13. Remove countershaft support bracket from rear of headstock. Bracket is held with three screws and two dowel pins. After screws are removed, pry bracket off headstock.

RE-ASSEMBLING THE HEADSTOCK SPINDLE

1. Clean all parts thoroughly, including the bearings, and lightly file off all burrs from the spindle.
2. Place new belt, or bearings in position — make sure front spindle bearing and washer are tight against spindle shoulder.
3. Place spindle through front of headstock and then slide on the large spindle gear, pulley, collar "D" and belt. Replace key. Position gear tight against spindle shoulder and spindle pulley against the gear. Then lock collar "D" against spindle pulley. **IMPORTANT** — Use palm of your hand or a soft hammer when replacing the spindle — it will avoid damaging the precision surfaces of the spindle nose.
4. Place rear spindle bearing cone on spindle and carefully tap it on to spindle just far enough to mount spindle gear "B", and start collar "A" on the spindle threads.
5. Tighten collar "A", moving bearing farther on spindle — tighten until collar stops at end of threads.
6. Remove collar "A" and gear "B" and place spacer "C" on spindle. Replace gear, collar and tighten collar until no lateral play in spindle can be felt when tapping spindle back and forth with the hand.
7. Again remove collar and gear and replace bearing dust cover and key in spindle.
8. Replace gear "B" and take-up collar "A". Tighten collar until all lateral (end) and radial (side) play has been removed from the spindle. Check by tapping back and forth with a soft hammer. **DO NOT** tighten collar too tightly — spindle should rotate freely.
9. To determine correct bearing preload, give spindle pulley a sharp spin with your hand — pulley should rotate about one turn. If it doesn't, adjust collar "A", then recheck. When properly adjusted, tighten lock screw in collar "A" — make sure brass plug is beneath screw.
10. Replace front dust cover.
11. Replace tumbler assembly.
12. Raise quadrant so gears are in mesh and lock in position with screw and nut that holds upper end of quadrant to headstock clamp. Tighten screw until screw head is against quadrant, then tighten nut against back of quadrant.
13. Tighten lock screw on lower part of quadrant.
14. Replace headstock guard.
15. If spindle belt is being replaced, install countershaft as follows.
16. Fasten countershaft support bracket to rear of headstock — make sure bracket is between the belt.
17. Replace hood — adjust so it's flush with front of headstock.
18. Mount countershaft spindle assembly — see page 13, RE-ASSEMBLING COUNTERSHAFT SPINDLE ASSEMBLY.

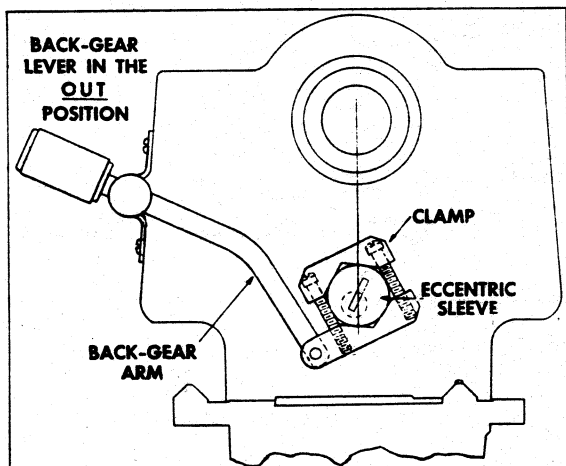
HOW TO REMOVE BACK GEARS

(See Figure 19)

1. Remove headstock spindle — see instructions "HOW TO REMOVE HEADSTOCK SPINDLE", page 11.
2. Place back-gear lever in the OUT position.
3. Loosen lock screws in collars "G" and "H" — see Figure 19.
4. Drive out groov pin "F" that holds back-gear shaft to eccentric sleeve.
5. **IMPORTANT:** Mark the position of the back-gear lever clamp on the right eccentric sleeve, then loosen clamp screws. Marking position of clamp will make it easier to position clamp in its original place on the eccentric sleeve when parts are replaced.
6. Now, with a brass rod or drift, drive out the back-gear shaft and eccentric sleeve through front of headstock.
7. Remove back-gears from headstock.

RE-ASSEMBLING THE BACK-GEARS

1. Lightly file all burrs from the back-gear shaft.
2. Replace the left back-gear eccentric sleeve and collar "G" — hole in eccentric should be straight down.
3. Slide back-gear shaft, with right eccentric sleeve, through front of headstock, replacing collar "H", back-gear lever clamp and back-gears. Continue sliding shaft through headstock and into left eccentric sleeve.
4. Line up groov pin hole in left eccentric with shaft and replace groov pin "F".
5. Replace headstock spindle — see RE-ASSEMBLING THE HEADSTOCK SPINDLE, steps 1 through 3.
6. Now position the back-gears to line up with the spindle gears and tighten collars "G" and "H" lightly against sides of headstock.
7. Place back-gear lever in the out position. Line up marks on clamp and right eccentric sleeve and tighten clamp screws.
8. Assemble remainder of headstock spindle parts — steps 4 through 14.

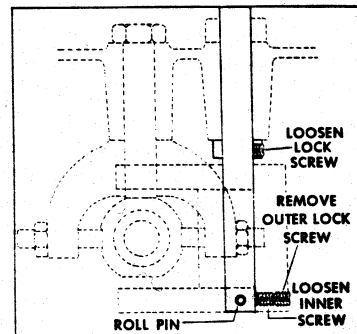


20. When replacing the back-gear shaft, make sure shaft is positioned as shown.

9. Run lathe in back-gear drive to check the mesh of the back-gears. If lathe runs noisy, or if there's too much play between the gears, stop motor and shift right eccentric sleeve — see BACK-GEAR ADJUSTMENT, below.

BACK-GEAR ADJUSTMENT

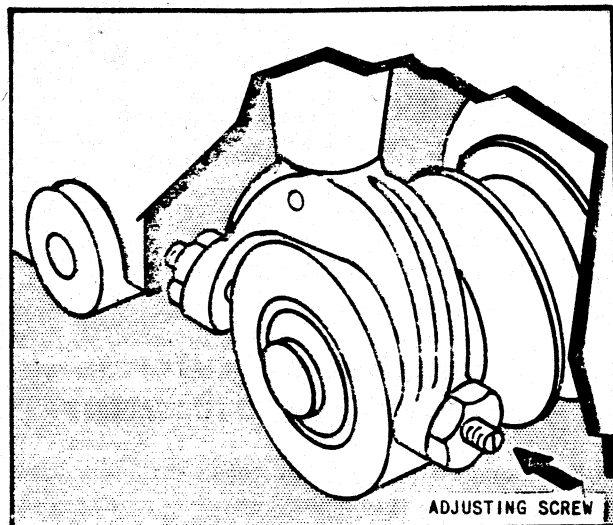
To adjust gear mesh, or gear play, between the back-gears and spindle-gears, shift back-gear lever upward to the OUT position. Next loosen back-gear lever clamp screws — see Figure 20. Remove cap in right end of headstock, and with a screwdriver turn the eccentric sleeve slightly. Tighten clamp screws, and check gear mesh by placing lever in back-gear position. Repeat adjustment if necessary until gears are in proper mesh.



21. Loosen lock screws in collar and shift yoke when removing the countershaft spindle assembly.

REMOVING HORIZONTAL COUNTERSHAFT SPINDLE ASSEMBLY

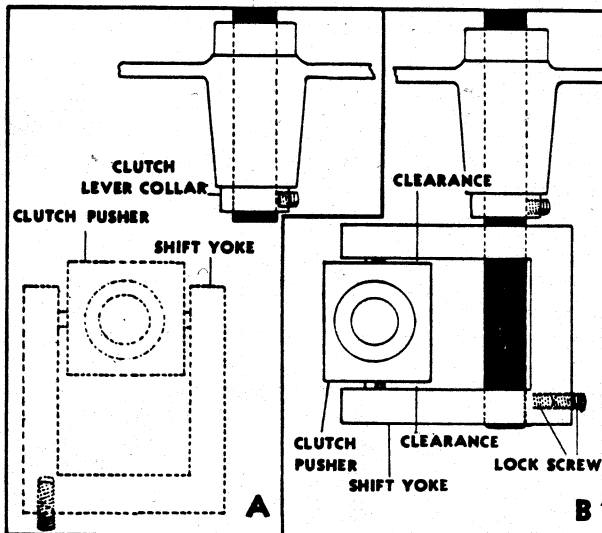
1. Remove motor belt and loosen lock screw in countershaft pulley and remove pulley.
2. Remove the two lock screws and roll pin that holds clutch lever in shift yoke — see Figure 21.
3. Next loosen the lock screw in clutch lever located directly under hood.
4. Remove clutch lever. It may be necessary to drive it out — use a $\frac{1}{2}$ " brass rod and hammer. Catch the shift yoke, and collar as lever is removed.
5. Loosen the nuts on the two rear countershaft hanger adjusting screws (Figure 22) and then loosen adjusting screws just enough to remove complete countershaft spindle assembly.



22. Loosen the rear adjusting screws on each hanger to remove countershaft spindle assembly.

RE-ASSEMBLING HORIZONTAL COUNTERSHAFT SPINDLE ASSEMBLY

1. Place countershaft spindle assembly in bearing hangers and tighten the two rear countershaft adjusting screws. Tighten just enough to hold spindle in bearing hangers. Lock in place with the lock nuts.
2. Slide clutch lever through hole in top of hood. Replace clutch lever collar and temporarily position about 1/2" above end of lever — tighten screw in collar just enough to hold collar in place.
3. Turn clutch pusher (see Figure 23A) so pins are in a horizontal position.
4. Now slide shift yoke over the clutch pusher pins and swing yoke up so it's in line with clutch lever — see Figure 23B. Push lever through shift yoke. Line up hole in lever with hole in yoke. Lock yoke to lever with the two socket set screws and replace roll pin.
5. Make sure shift yoke isn't touching upper or lower slip ring. If it is loosen collars on lever above and below hood and adjust lever. Lock in this position by locking collars against hood.
6. Replace countershaft spindle pulley, and belt. Large step of pulley should be toward outside.



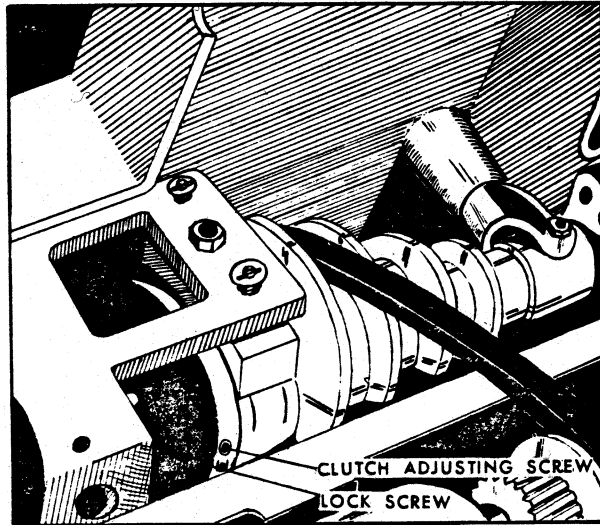
23. Installing the shift yoke.

HORIZONTAL CLUTCH COUNTERSHAFT ADJUSTMENT

If the countershaft clutch slips when the spindle drive is engaged, adjust as follows:

First loosen the lock screw that's in the face of the clutch hub—see Figure 24. Then tighten clutch adjust-

ing screw just enough to prevent slippage—retighten lock screw. **DO NOT** tighten screw too tight—spindle drive will not disengage when clutch lever is moved to the right if screw is too tight.

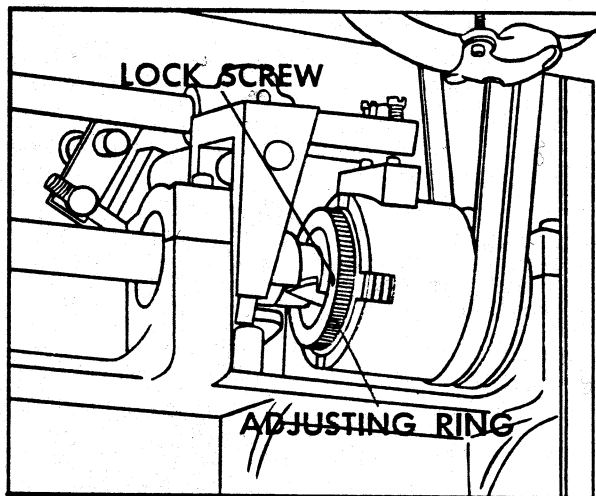


24. Tighten clutch adjusting screw if countershaft clutch slips when spindle drive is engaged.

UNDERNEATH DRIVE CLUTCH ADJUSTMENT

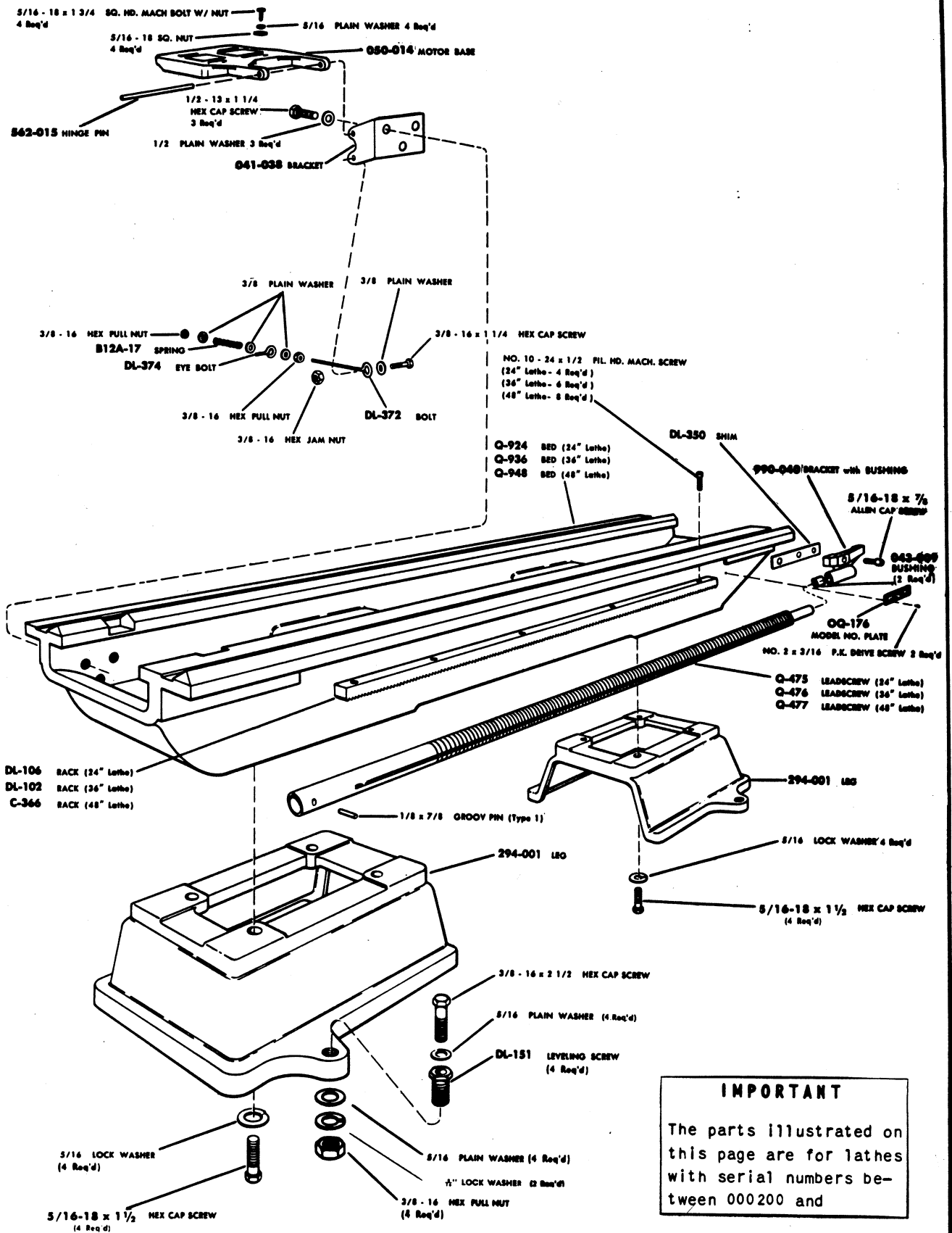
Adjusting Clutch—if the countershaft clutch slips when spindle drive is engaged, adjust as follows:

First loosen the lock screw in the adjusting ring as shown in Figure 25—accessible through rear panel of cabinet. Then turn the adjusting ring clockwise just enough to prevent slippage. Do Not adjust too tightly—spindle drive will not disengage when clutch lever is moved to the left if ring is turned too tight.



25. Tighten adjusting ring of countershaft clutch when spindle drive is engaged.

BED AND LEADSCREW ASSEMBLY



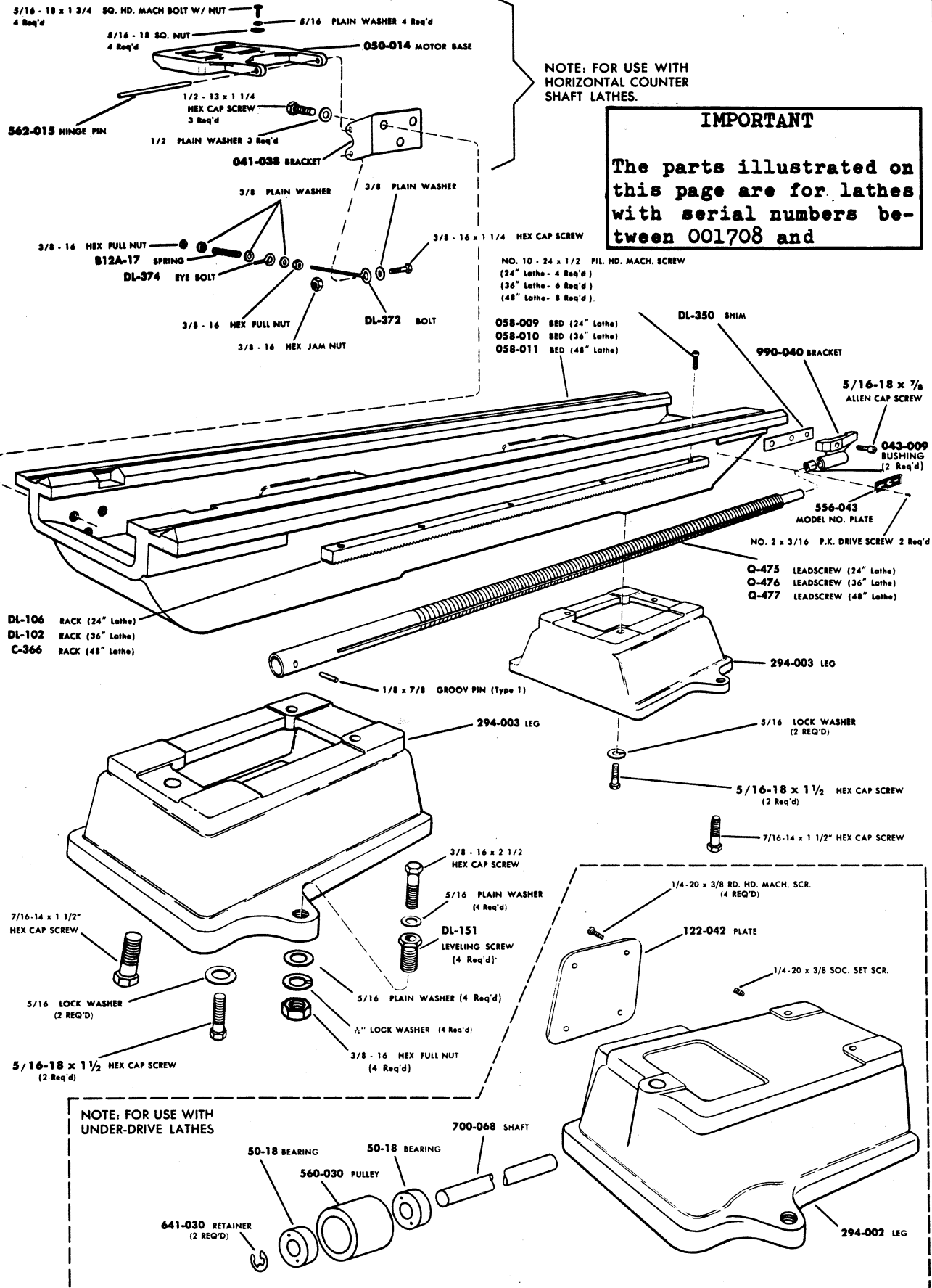
IMPORTANT

The parts illustrated on this page are for lathes with serial numbers between 000200 and

BED AND LEADSCREW ASSEMBLY

NOTE: FOR USE WITH HORIZONTAL COUNTER SHAFT LATHES.

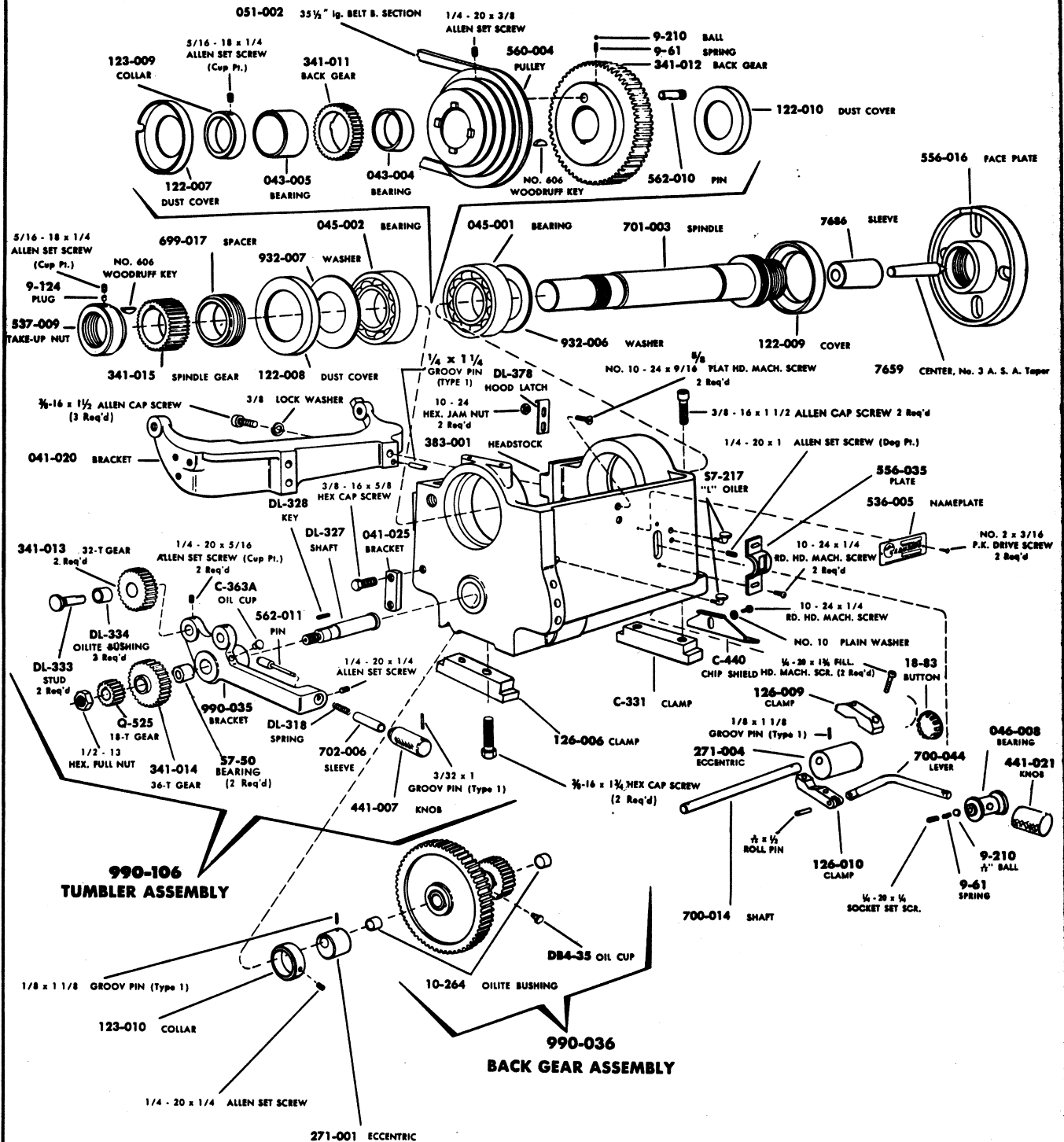
IMPORTANT
The parts illustrated on this page are for lathes with serial numbers between 001708 and



NOTE: FOR USE WITH UNDER-DRIVE LATHES

HEADSTOCK ASSEMBLY 990-038

(LESS 556-016 AND 041-012)

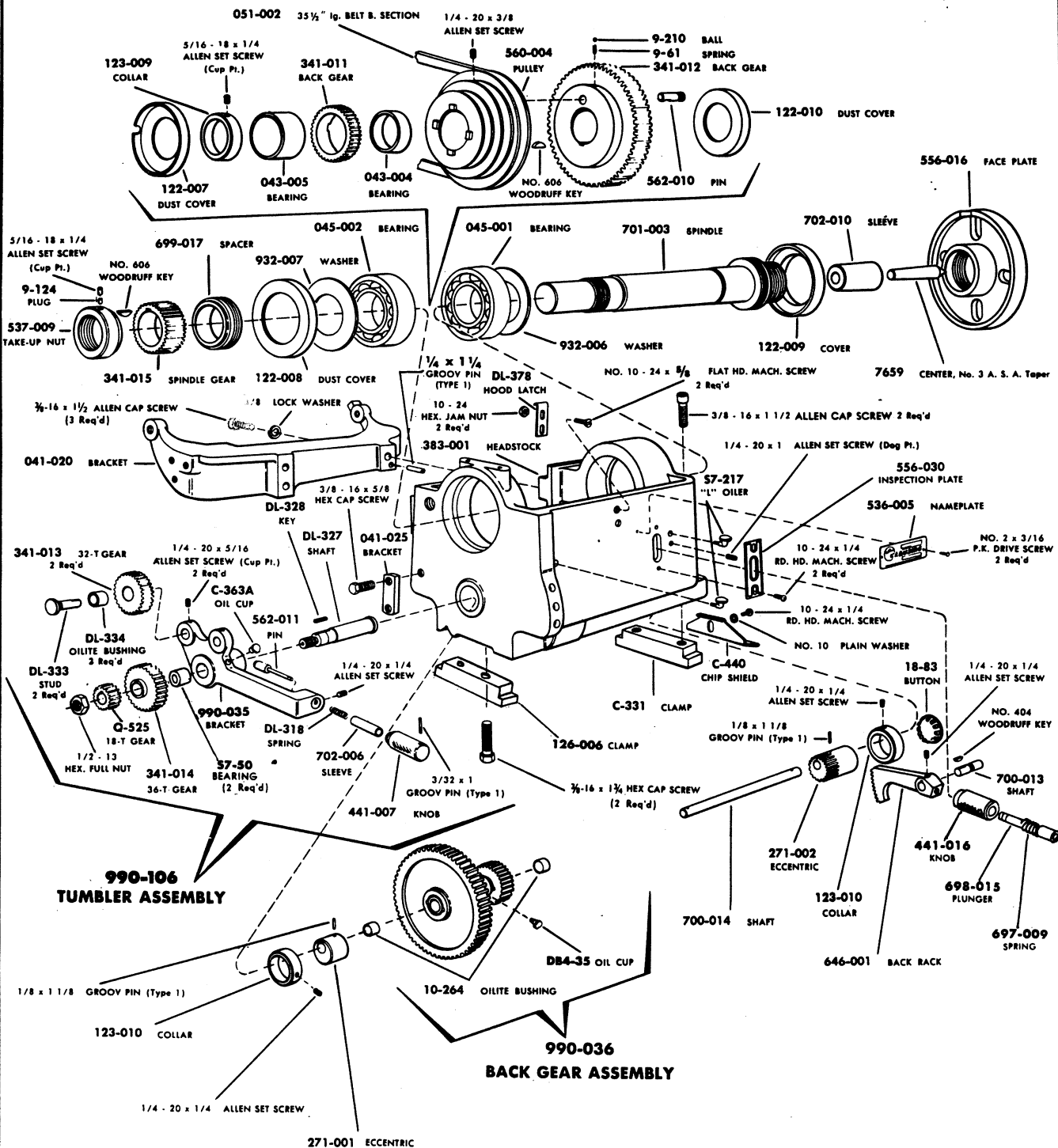


IMPORTANT

The parts illustrated on this page are for lathes with serial numbers between 000200 and 000581

HEADSTOCK ASSEMBLY 990-038

(LESS 556-016 AND 041-012)

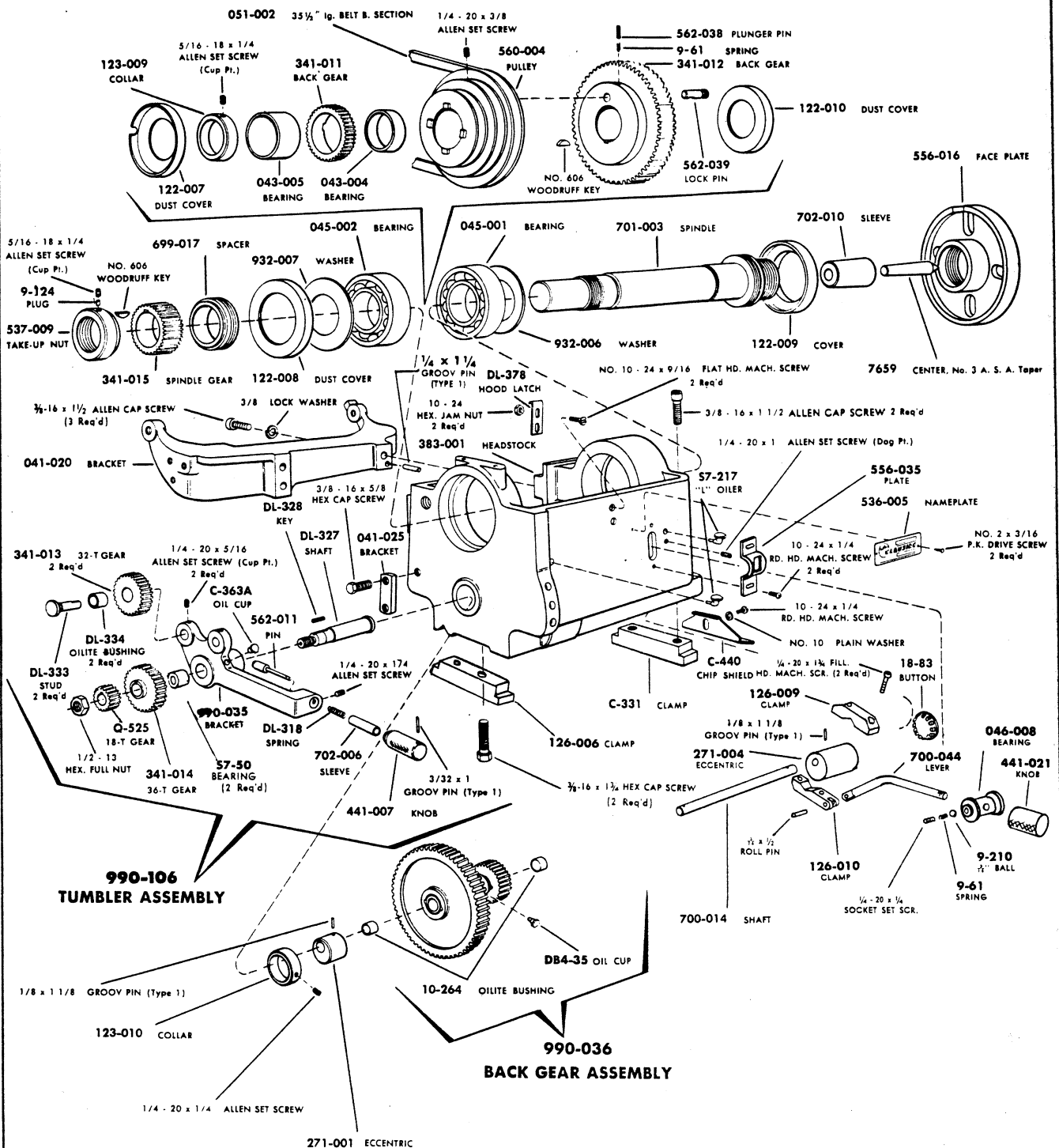


HEADSTOCK ASSEMBLY 990-038

(LESS 556-016 AND 041-020)

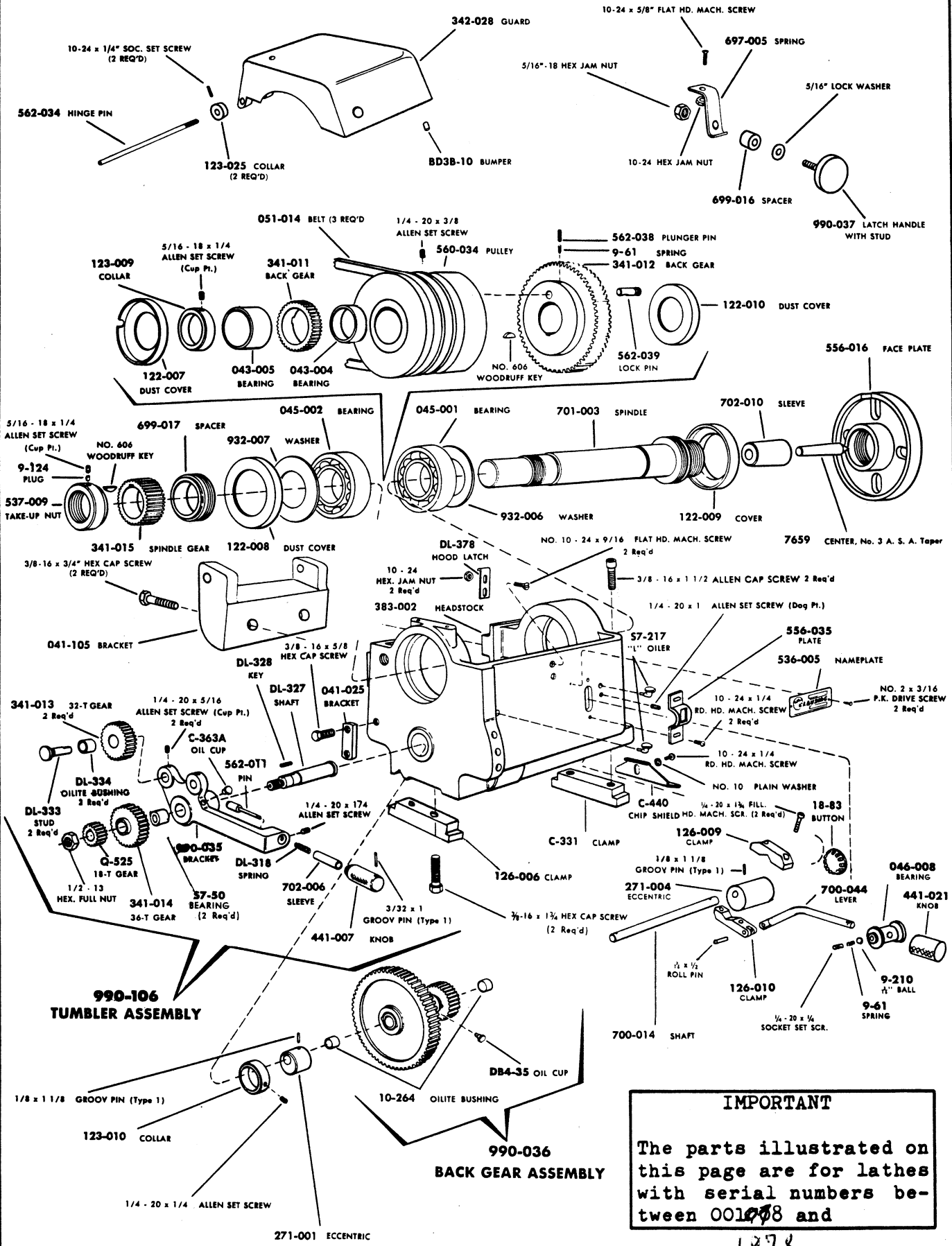
IMPORTANT

The parts illustrated on this page are for lathes with serial numbers between 001078 and



HEADSTOCK ASSEMBLY

(LESS 556-016, 342-028 AND 041-105)

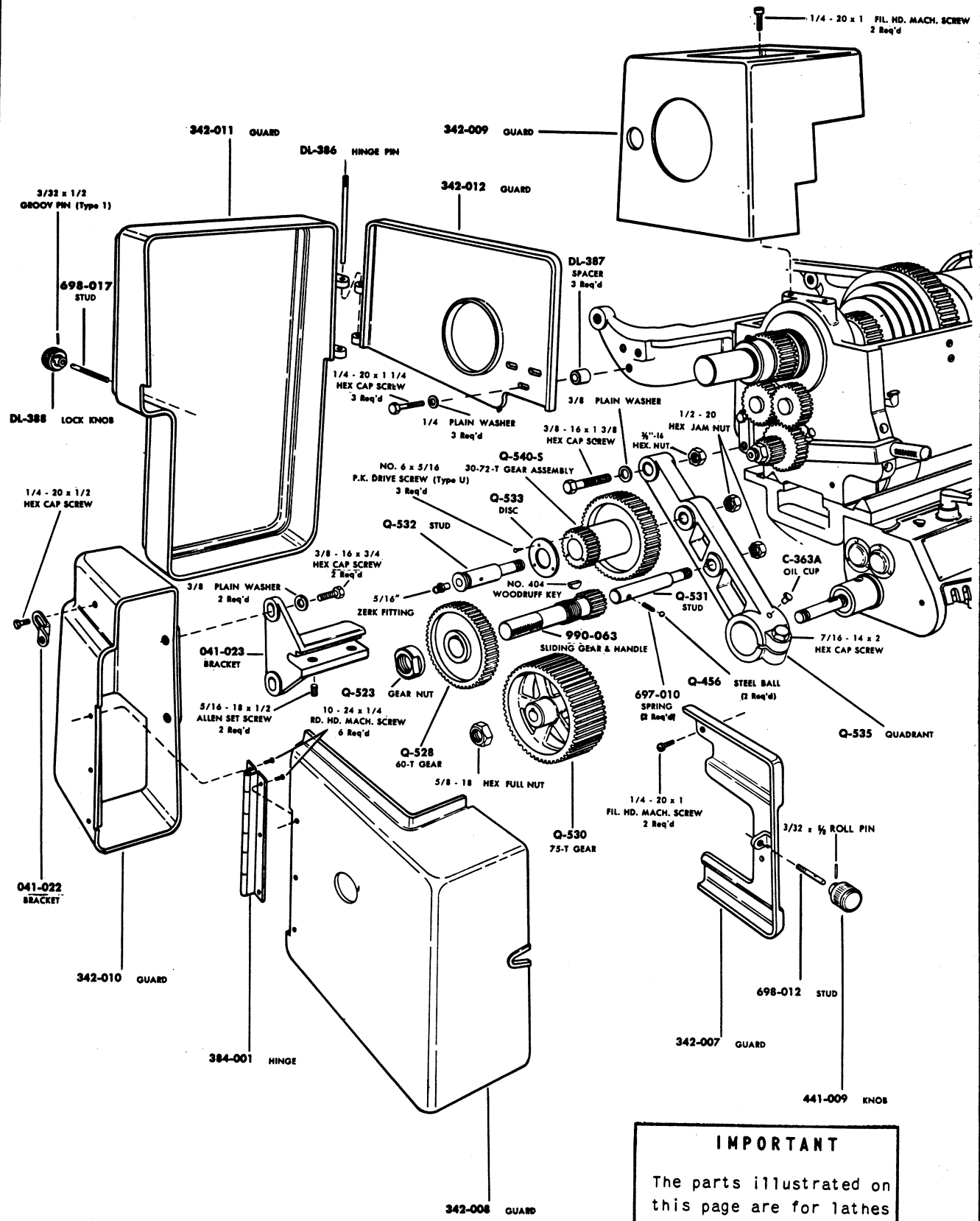


IMPORTANT

The parts illustrated on this page are for lathes with serial numbers between 001008 and

1278

QUICK CHANGE GEAR TRAIN

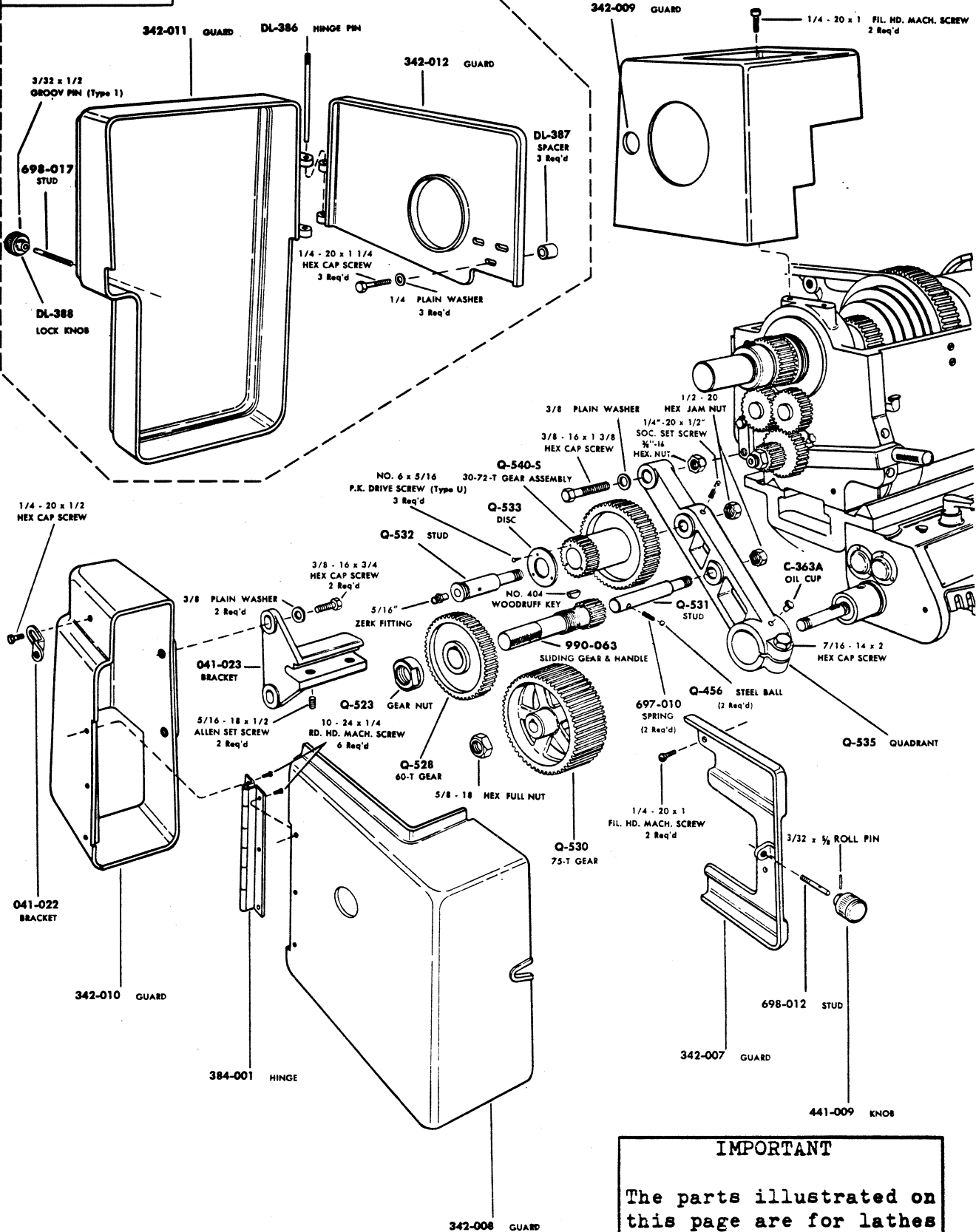


IMPORTANT

The parts illustrated on this page are for lathes with serial numbers between 000200 and

QUICK CHANGE GEAR TRAIN

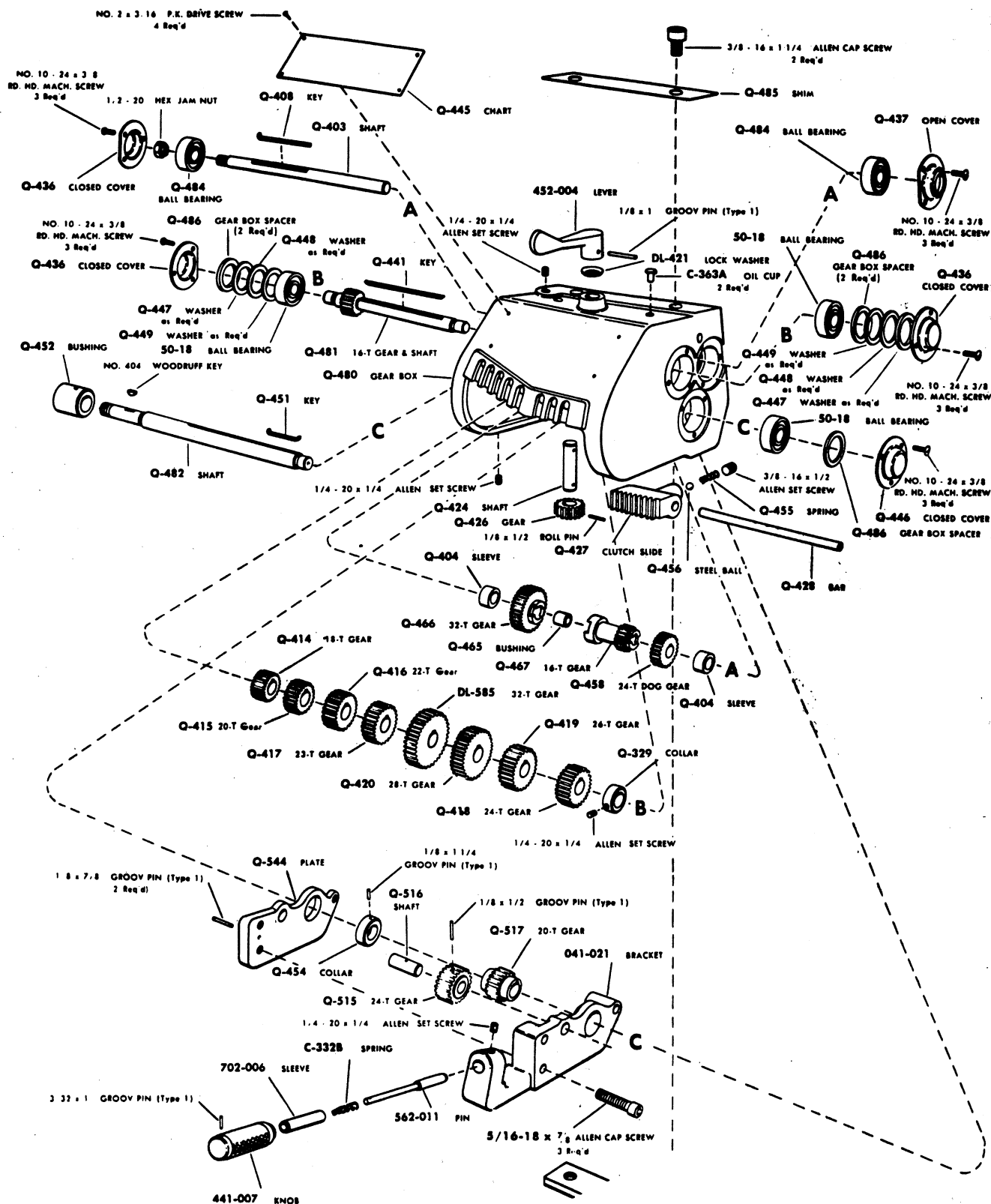
NOTE: FOR USE WITH HORIZONTAL COUNTER-SHAFT LATHES



IMPORTANT

The parts illustrated on this page are for lathes with serial numbers between 000728 and

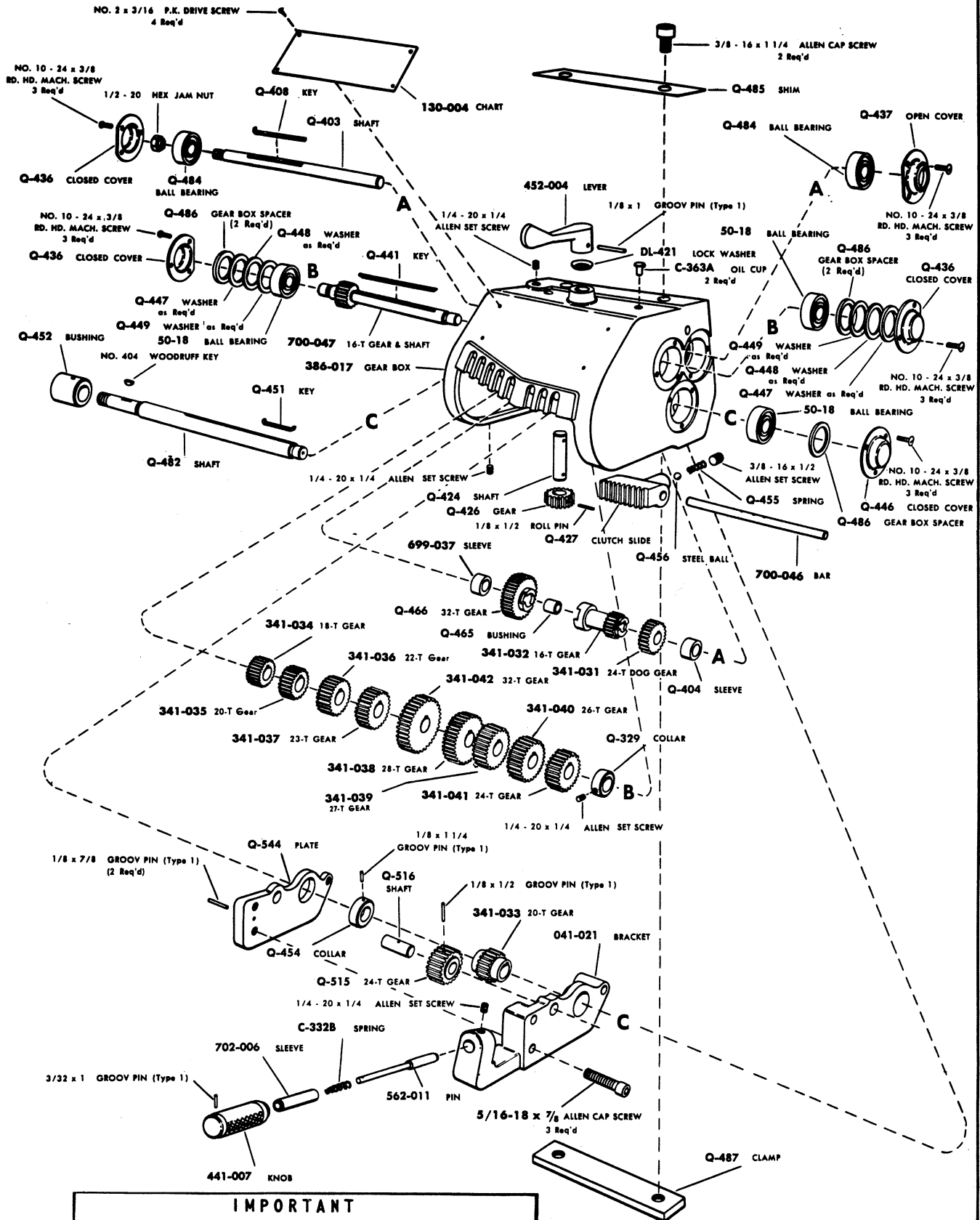
QUICK-CHANGE GEAR BOX ASSEMBLY



IMPORTANT

The parts illustrated on this page are for lathes with serial numbers between 000200 and 000679

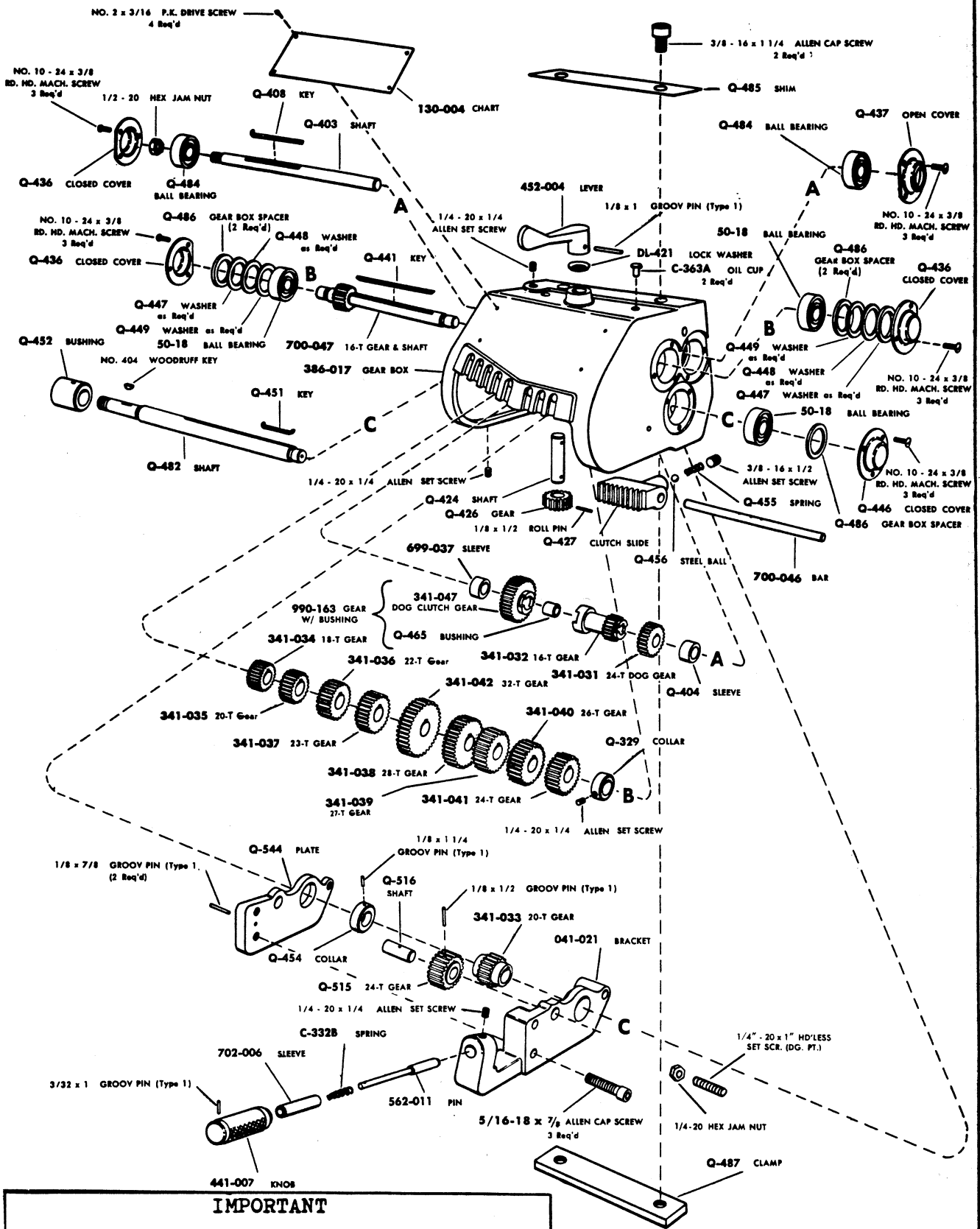
QUICK-CHANGE GEAR BOX ASSEMBLY



IMPORTANT

The parts illustrated on this page are for lathes with serial numbers between 000674 and

QUICK-CHANGE GEAR BOX ASSEMBLY



IMPORTANT

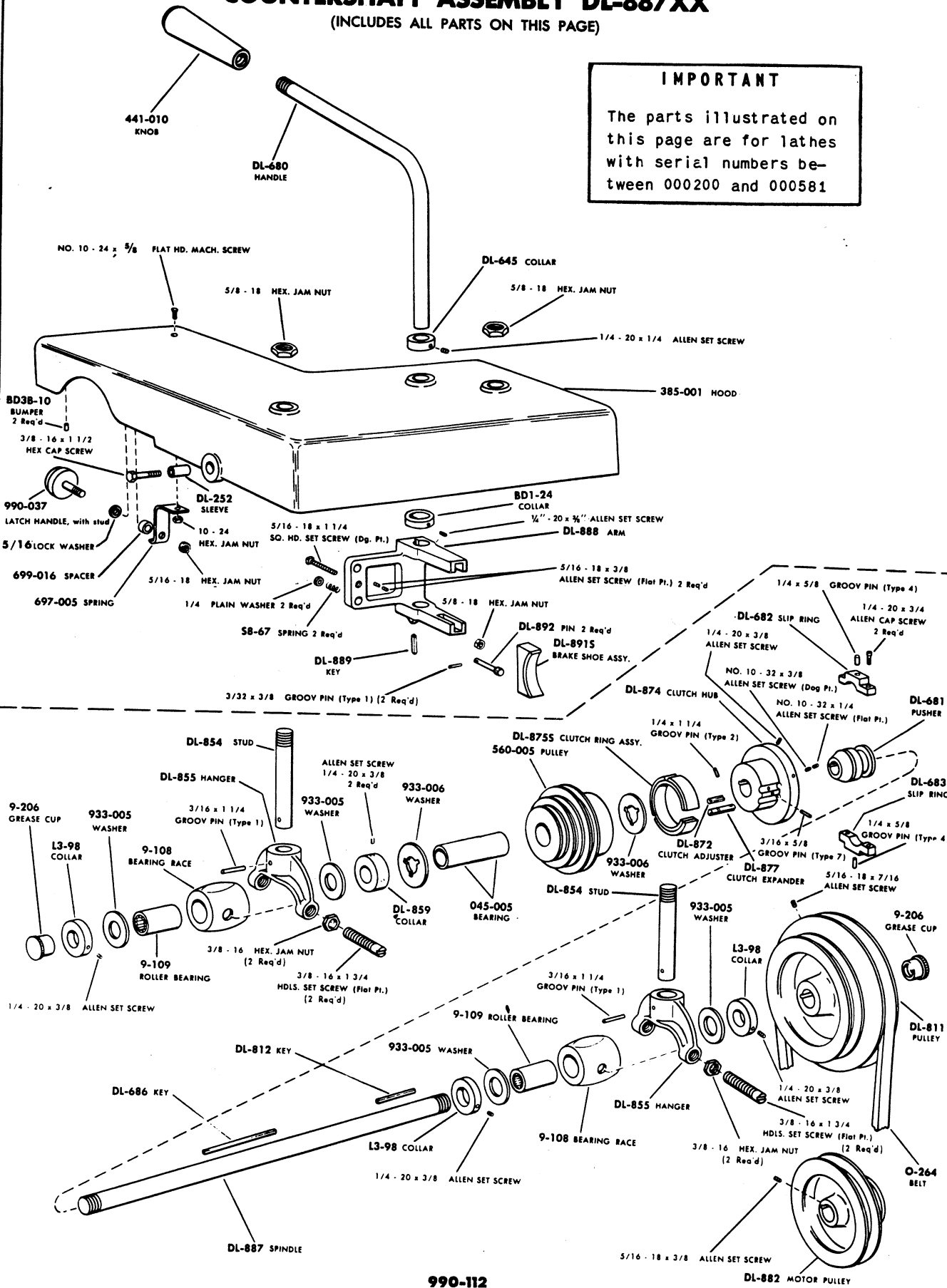
The parts illustrated on this page are for lathes with serial numbers between 001057 and

COUNTERSHAFT ASSEMBLY DL-887XX

(INCLUDES ALL PARTS ON THIS PAGE)

IMPORTANT

The parts illustrated on this page are for lathes with serial numbers between 000200 and 000581



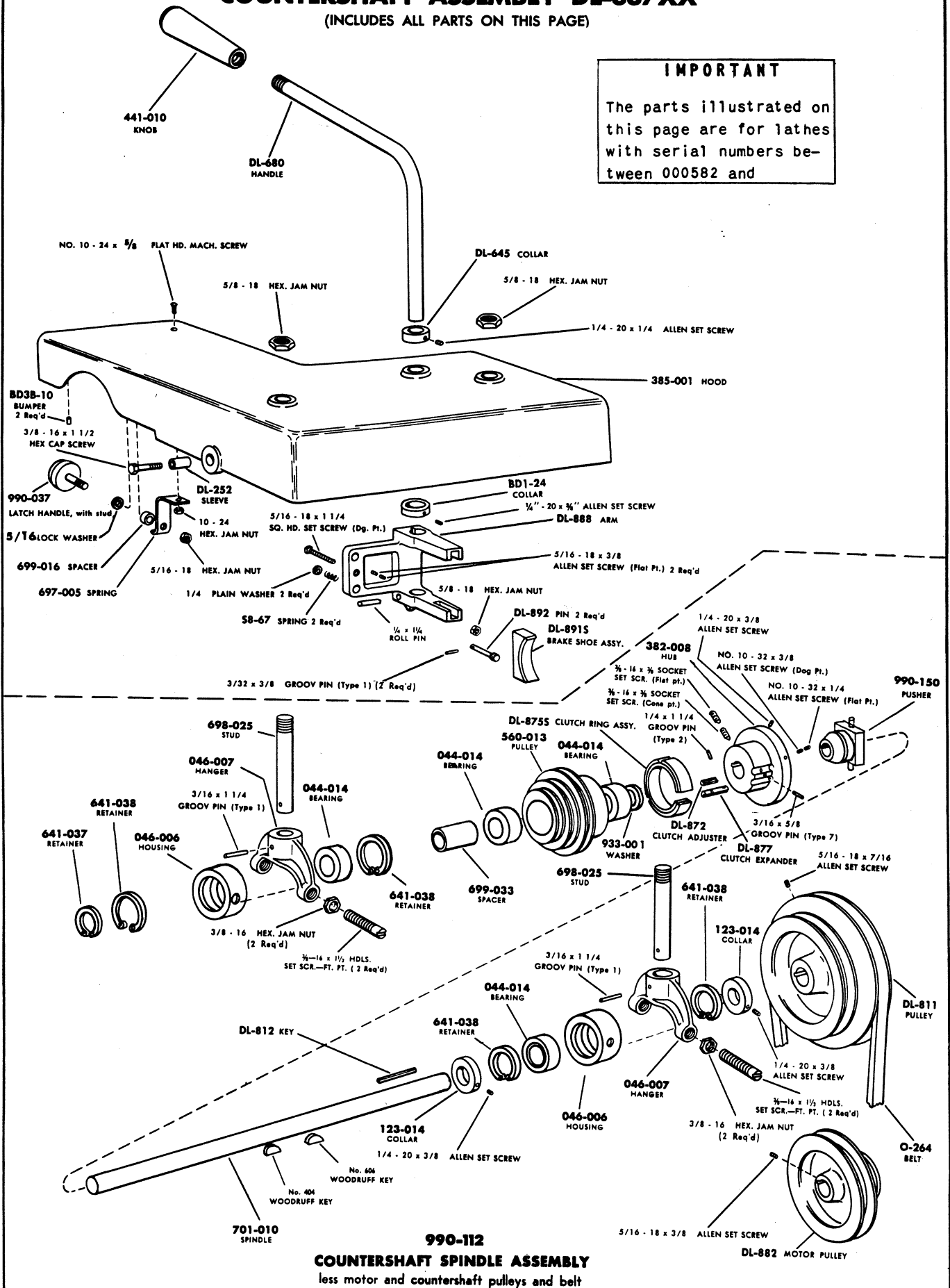
990-112
COUNTERSHAFT SPINDLE ASSEMBLY

COUNTERSHAFT ASSEMBLY DL-887XX

(INCLUDES ALL PARTS ON THIS PAGE)

IMPORTANT

The parts illustrated on this page are for lathes with serial numbers between 000582 and

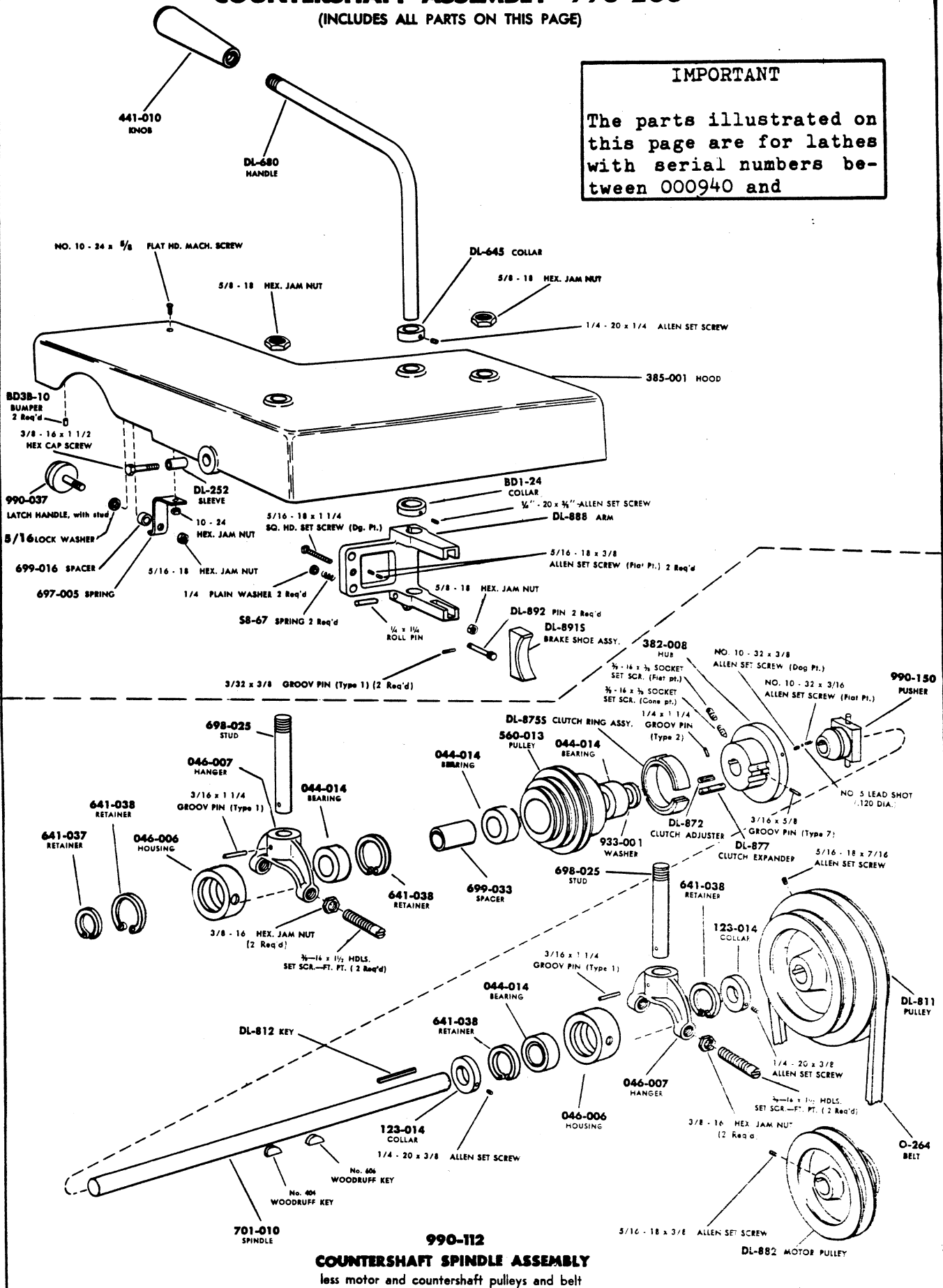


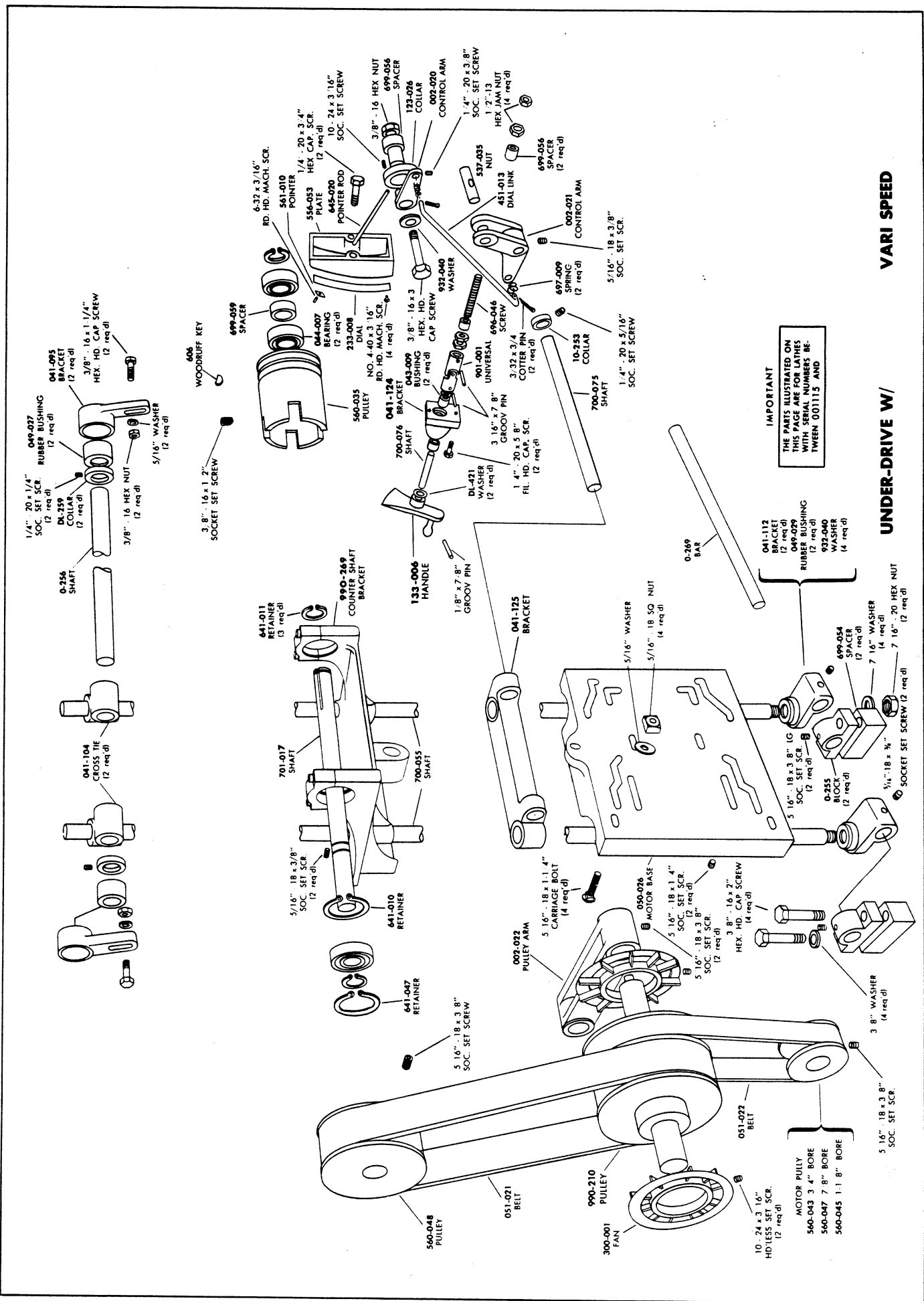
COUNTERSHAFT ASSEMBLY 990-208

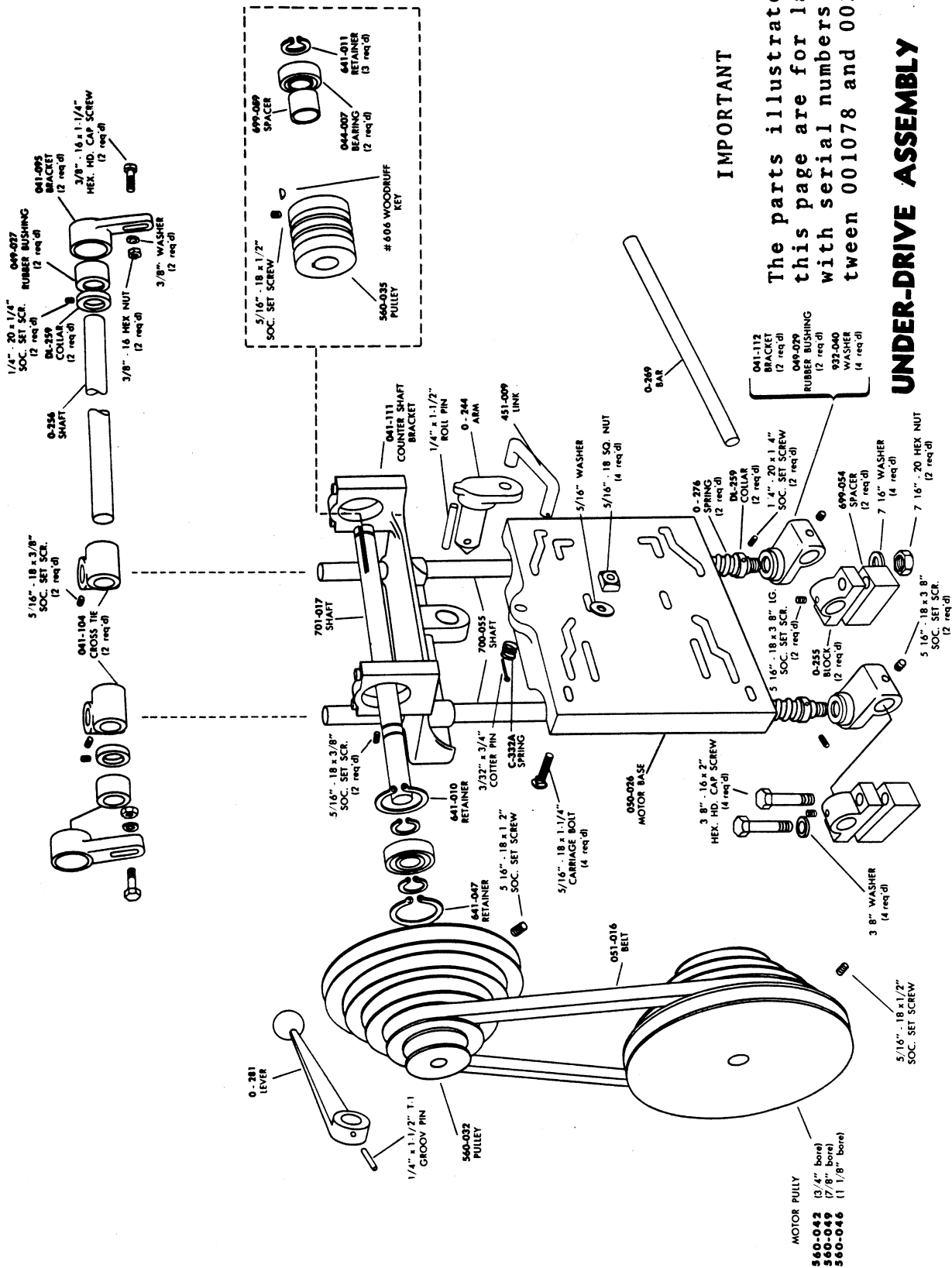
(INCLUDES ALL PARTS ON THIS PAGE)

IMPORTANT

The parts illustrated on this page are for lathes with serial numbers between 000940 and



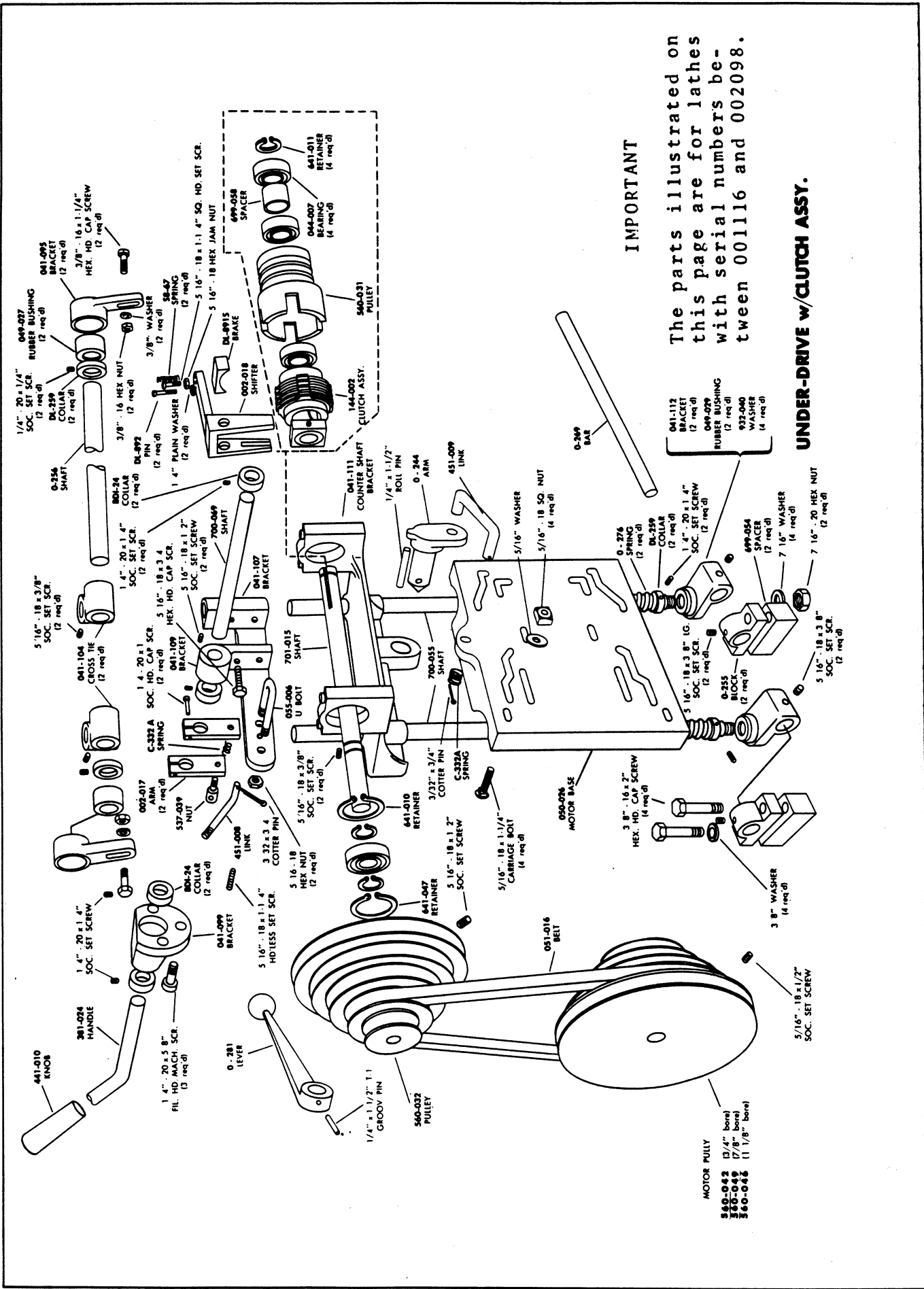




IMPORTANT

The parts illustrated on this page are for lathes with serial numbers between 001078 and 002098.

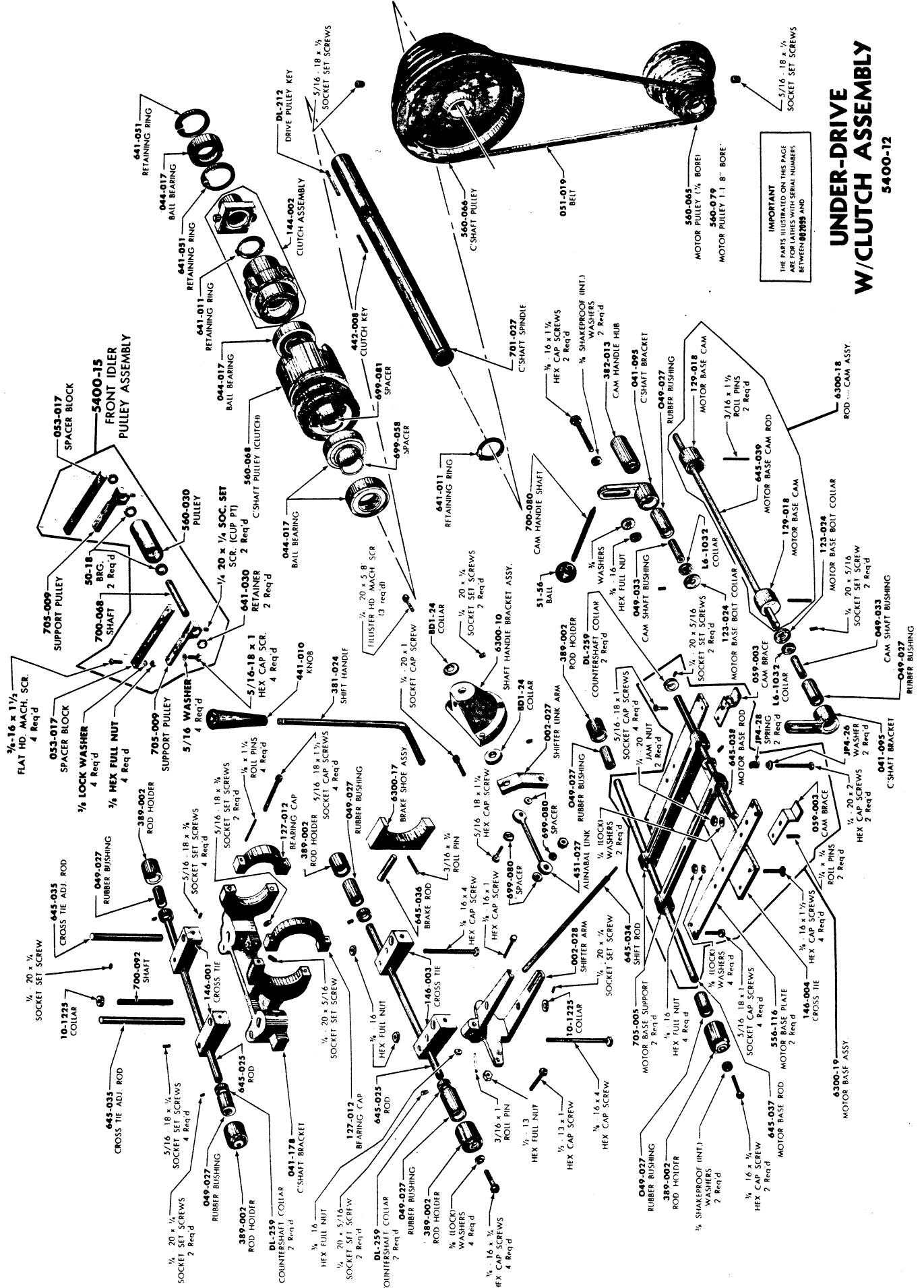
UNDER-DRIVE ASSEMBLY



IMPORTANT

The parts illustrated on this page are for lathes with serial numbers between 001116 and 002098.

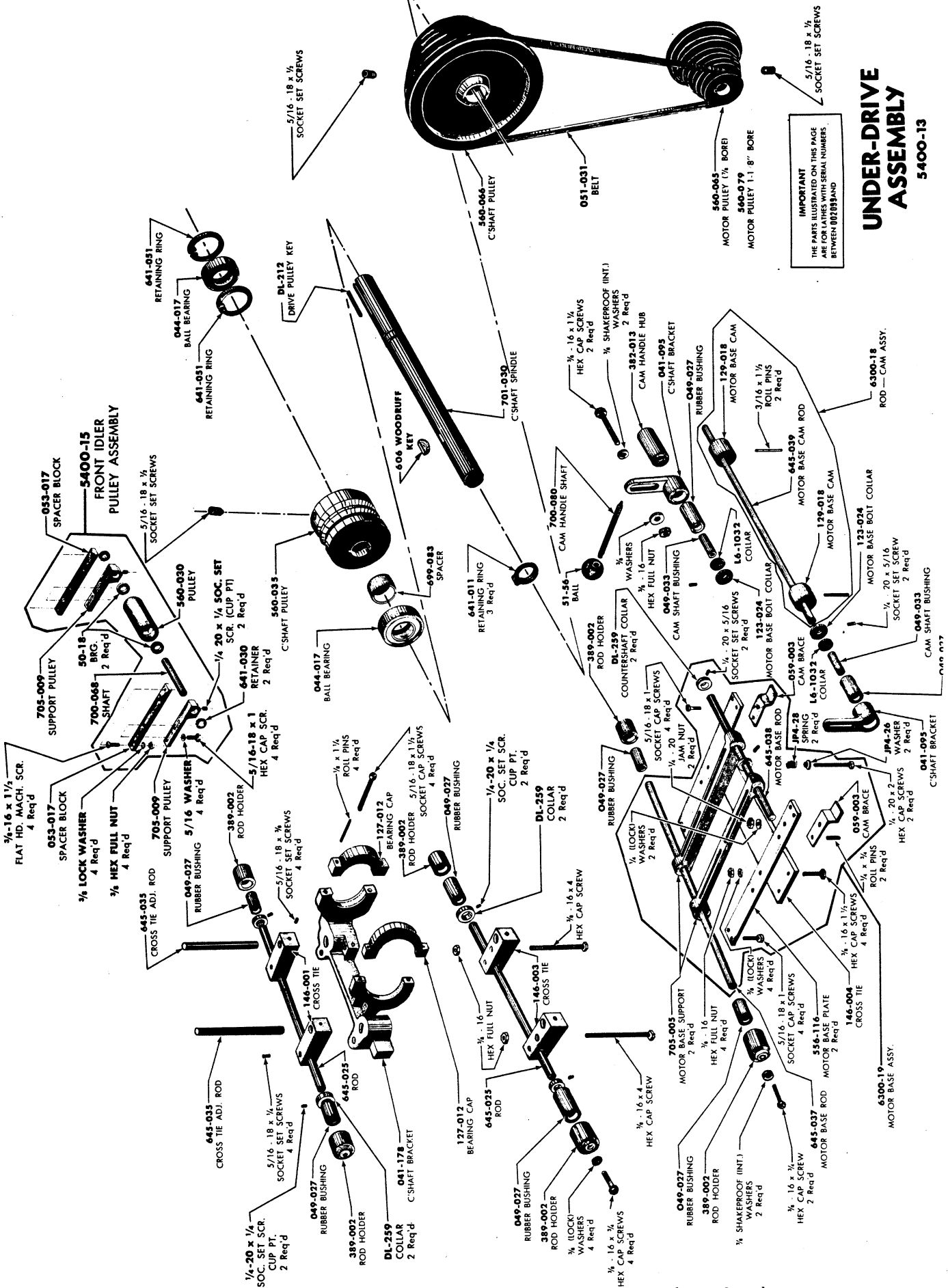
UNDER-DRIVE w/CLUTCH ASSY.



IMPORTANT
THE PARTS ILLUSTRATED ON THIS PAGE
ARE FOR LATHES WITH SERIAL NUMBERS
BETWEEN 007099 AND

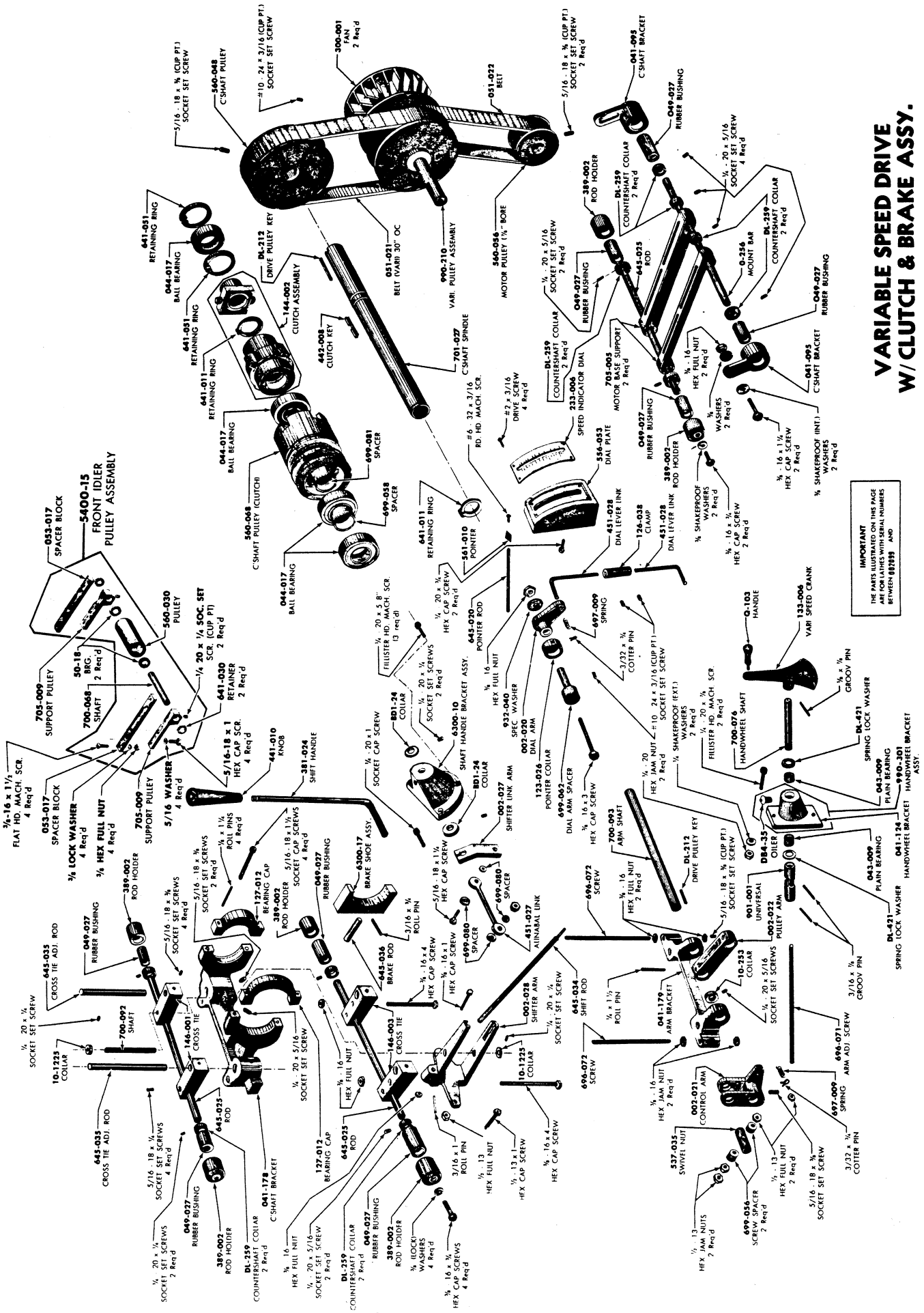
UNDER-DRIVE W/CLUTCH ASSEMBLY

5400-12



IMPORTANT
THE PARTS ON THE FACE
AND FOR THESE WITH SERIAL NUMBERS
BETWEEN 002080 AND

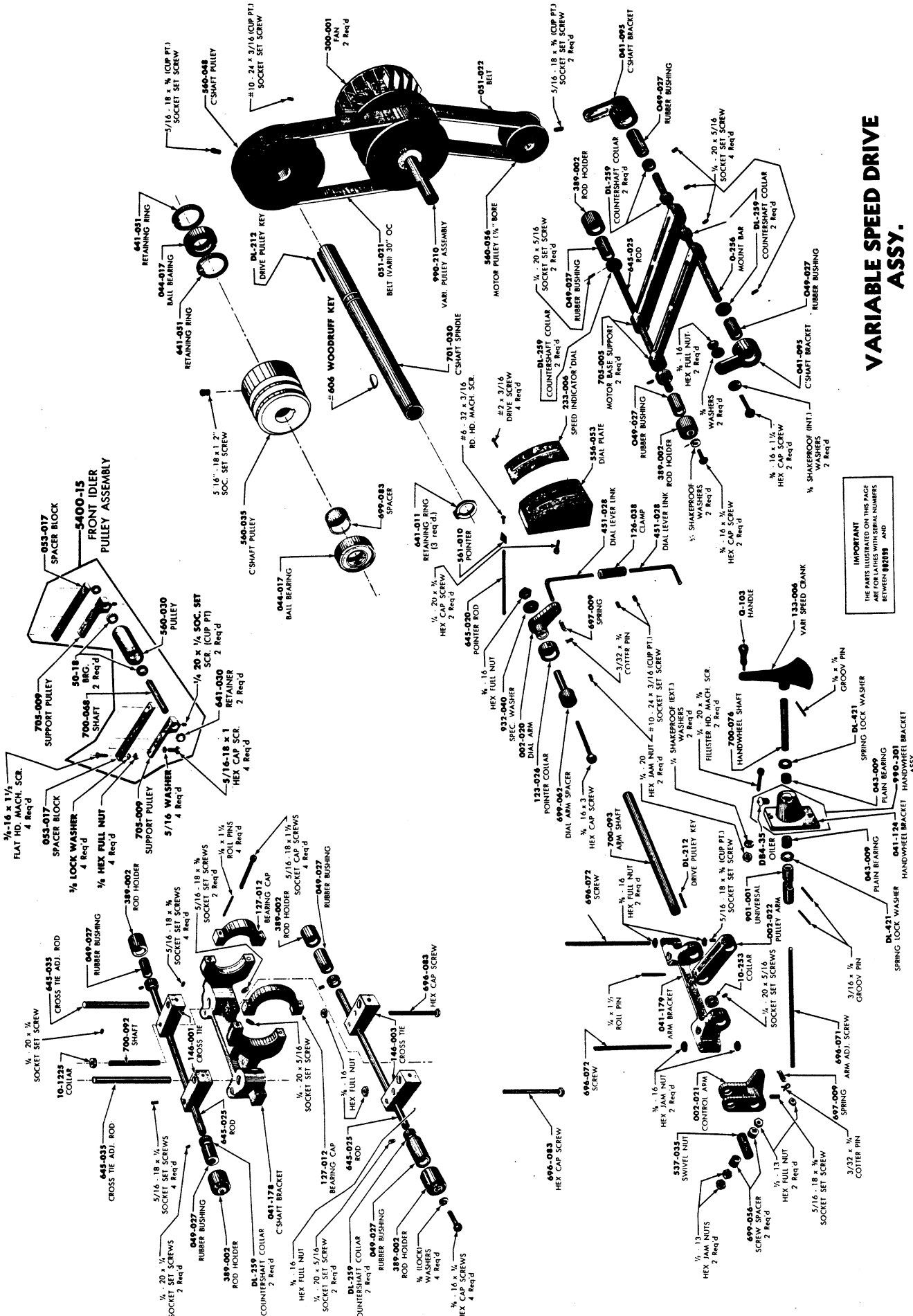
UNDER-DRIVE ASSEMBLY 5400-13



VARIABLE SPEED DRIVE W/CLUTCH & BRAKE ASSY.

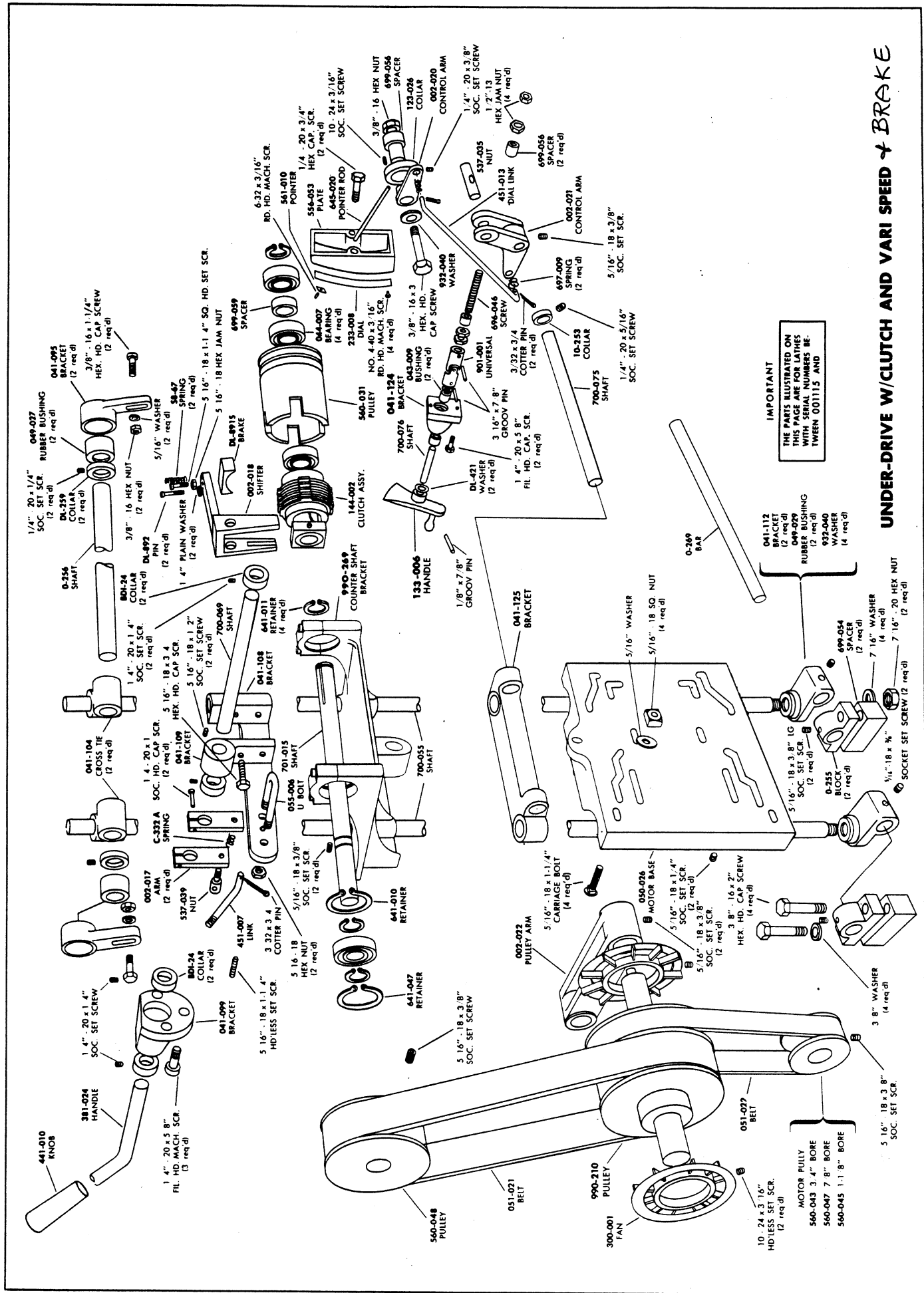
5400-11

IMPORTANT
THE PARTS ILLUSTRATED ON THIS PAGE
ARE FOR LATHES WITH SERIAL NUMBERS
BETWEEN 822935 AND



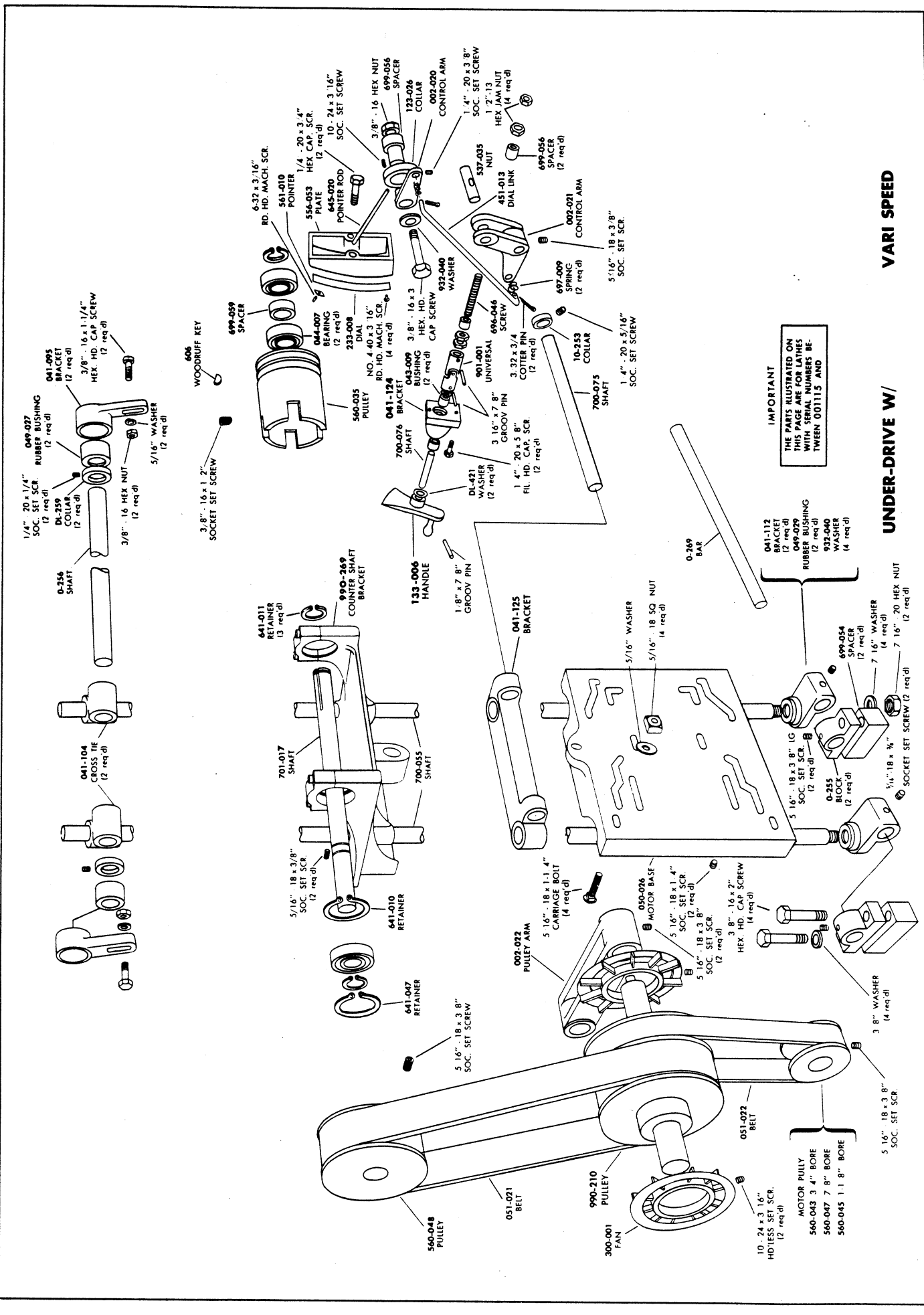
**VARIABLE SPEED DRIVE
ASSY.**
5400-16

IMPORTANT
THE PARTS ILLUSTRATED ON THIS PAGE
ARE FOR LATHES WITH SERIAL NUMBERS
BETWEEN 82295 AND



IMPORTANT
 THE PARTS ILLUSTRATED ON
 THIS PAGE ARE FOR LATHES
 WITH SERIAL NUMBERS BE-
 TWEEN 001115 AND

UNDER-DRIVE W/CLUTCH AND VARI SPEED BRAKE



VARI SPEED

UNDER-DRIVE W/

IMPORTANT
THE PARTS ILLUSTRATED ON THIS DRAWING ARE FOR LATHES WITH SERIAL NUMBERS BETWEEN 001115 AND

041-112
049-029
049-029
932-040

0-249
BAR
041-112
049-029
049-029
932-040

0-255
BLOCK
699-054
7 1/16" WASHER
7 1/16" .20 HEX NUT

5 1/8" .18 x 3 8" SOC. SET SCR.
0-255
BLOCK
699-054
7 1/16" WASHER
7 1/16" .20 HEX NUT

5 1/8" .18 x 3 8" SOC. SET SCR.
0-255
BLOCK
699-054
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0-255
BLOCK
699-054
7 1/16" WASHER
7 1/16" .20 HEX NUT

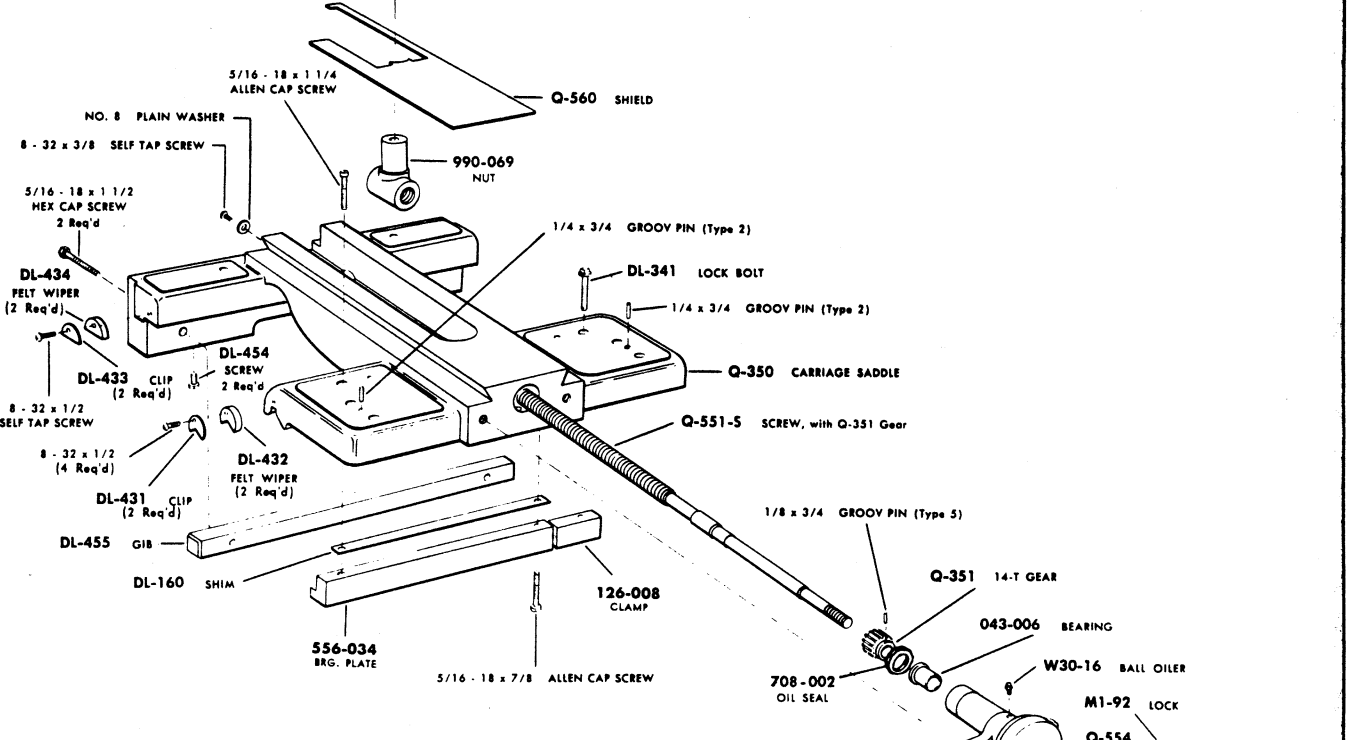
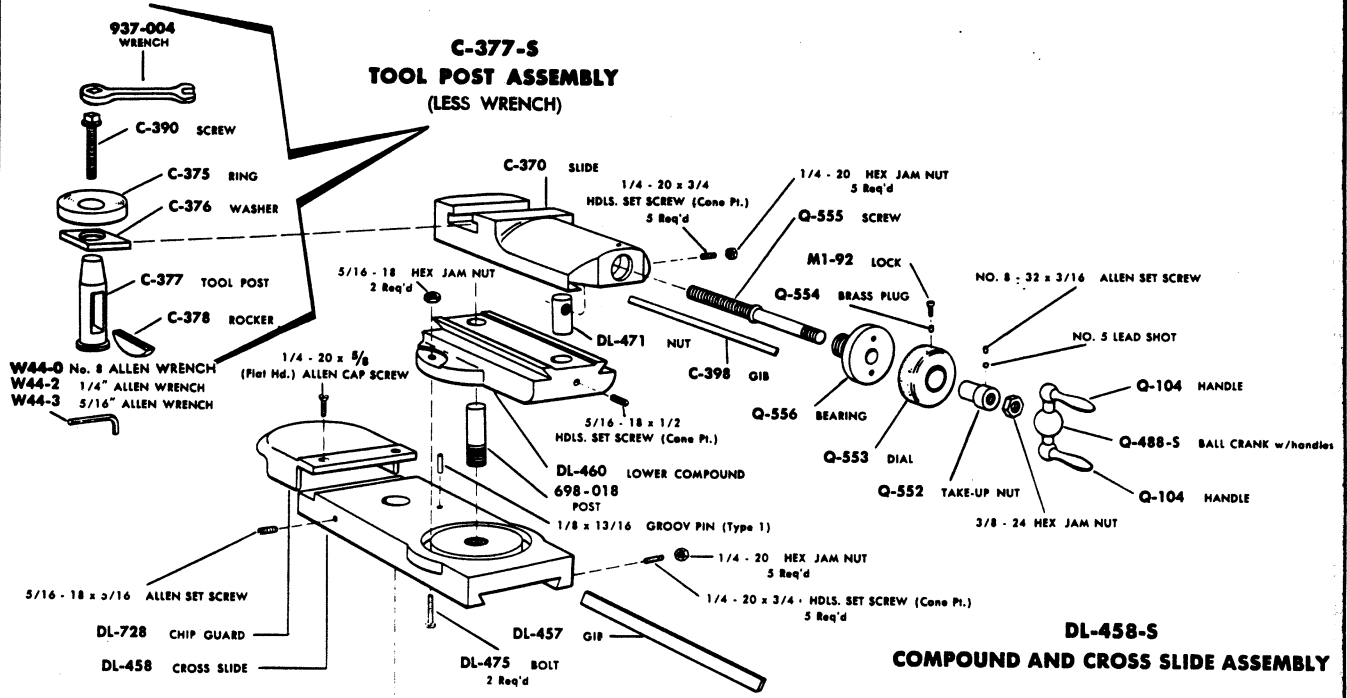
5 1/8" .18 x 3 8" SOC. SET SCR.
0-255
BLOCK
699-054
7 1/16" WASHER
7 1/16" .20 HEX NUT

5 1/8" .18 x 3 8" SOC. SET SCR.
0-255
BLOCK
699-054
7 1/16" WASHER
7 1/16" .20 HEX NUT

5 1/8" .18 x 3 8" SOC. SET SCR.
0-255
BLOCK
699-054
7 1/16" WASHER
7 1/16" .20 HEX NUT

5 1/8" .18 x 3 8" SOC. SET SCR.
0-255
BLOCK
699-054
7 1/16" WASHER
7 1/16" .20 HEX NUT

CARRIAGE SADDLE AND COMPOUND ASSEMBLY



IMPORTANT

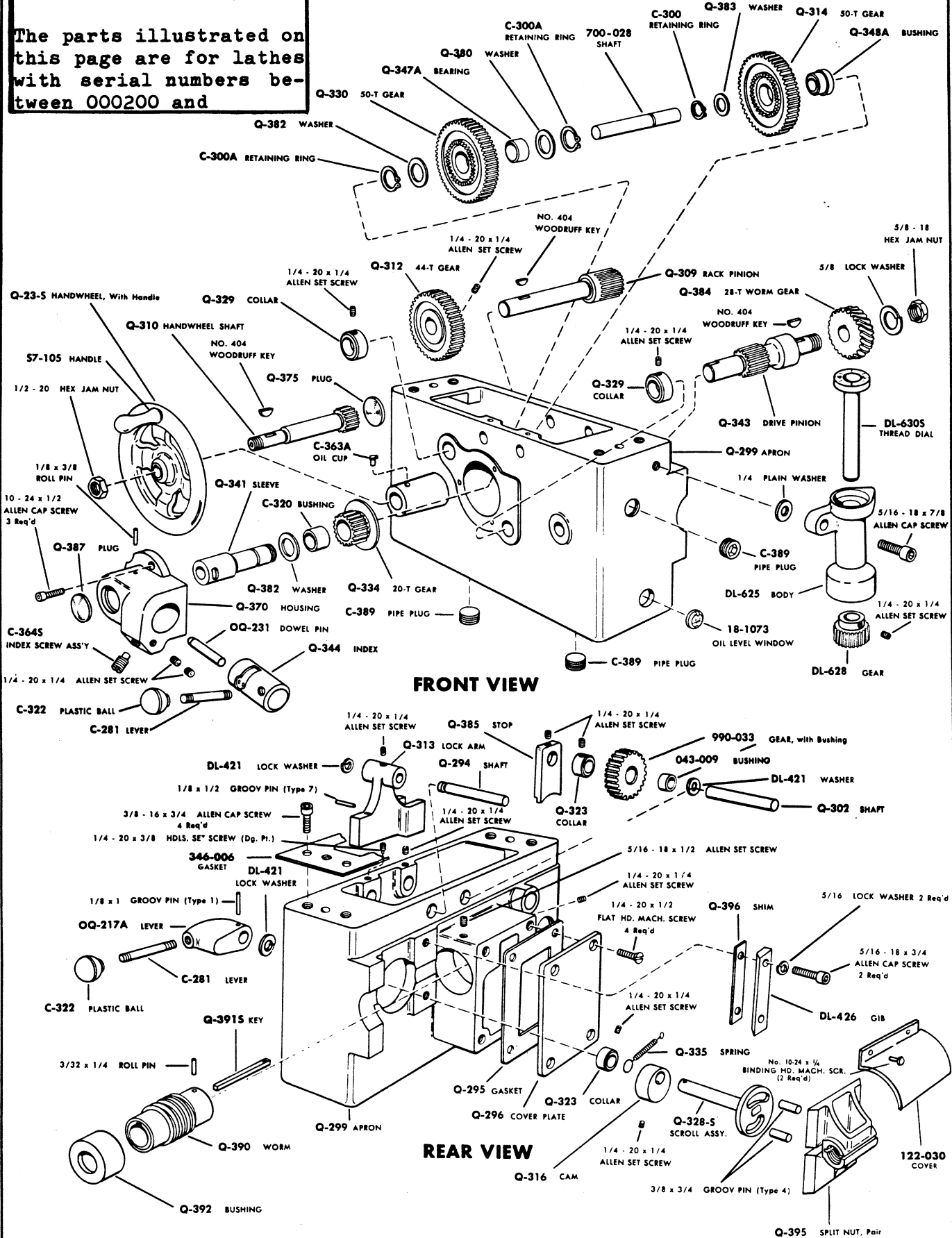
The parts illustrated on this page are for lathes with serial numbers between 000200 and

CARRIAGE APRON ASSEMBLY Q-299-S

(LESS THREADING DIAL)

IMPORTANT

The parts illustrated on this page are for lathes with serial numbers between 000200 and

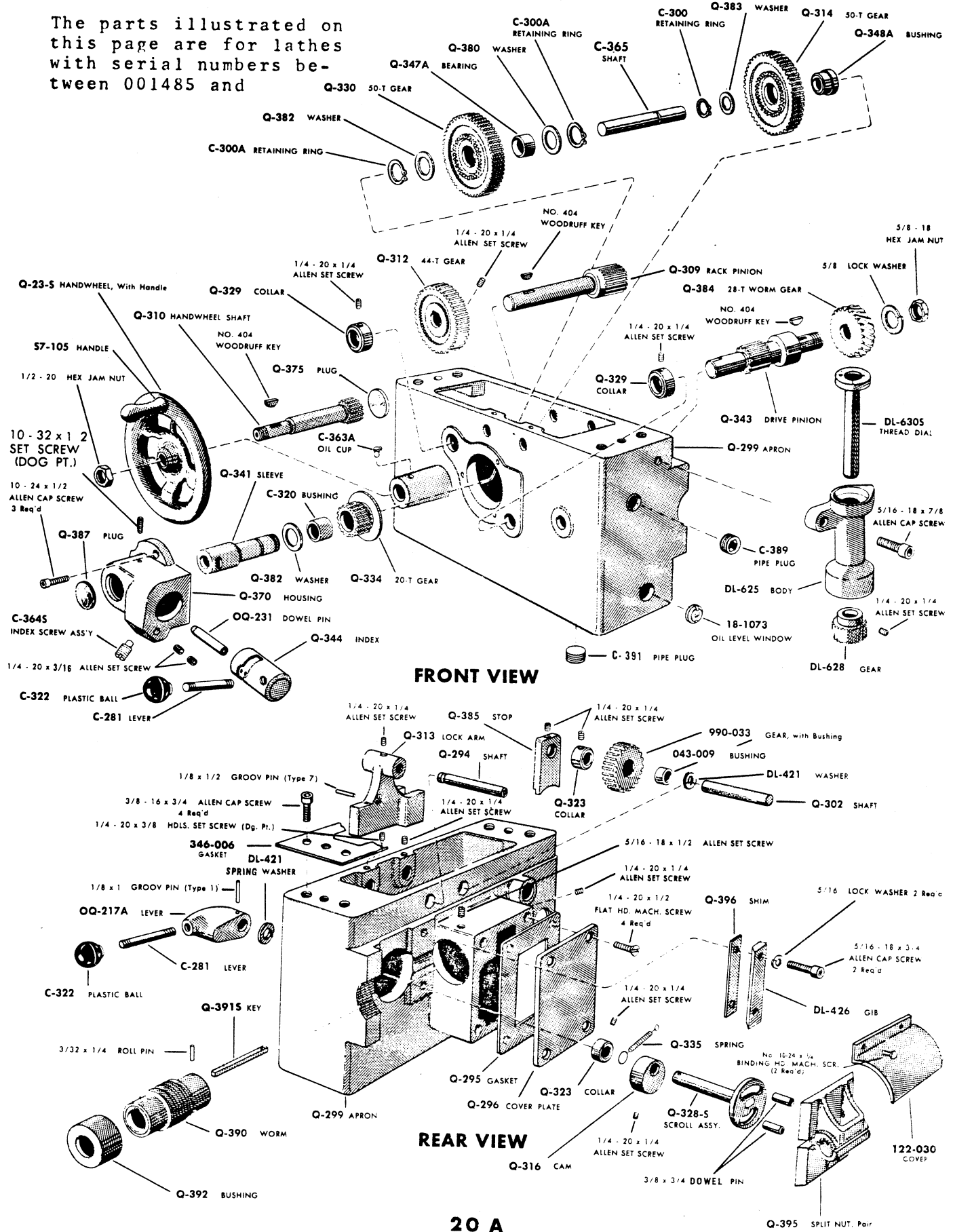


CARRIAGE APRON ASSEMBLY Q-299-S

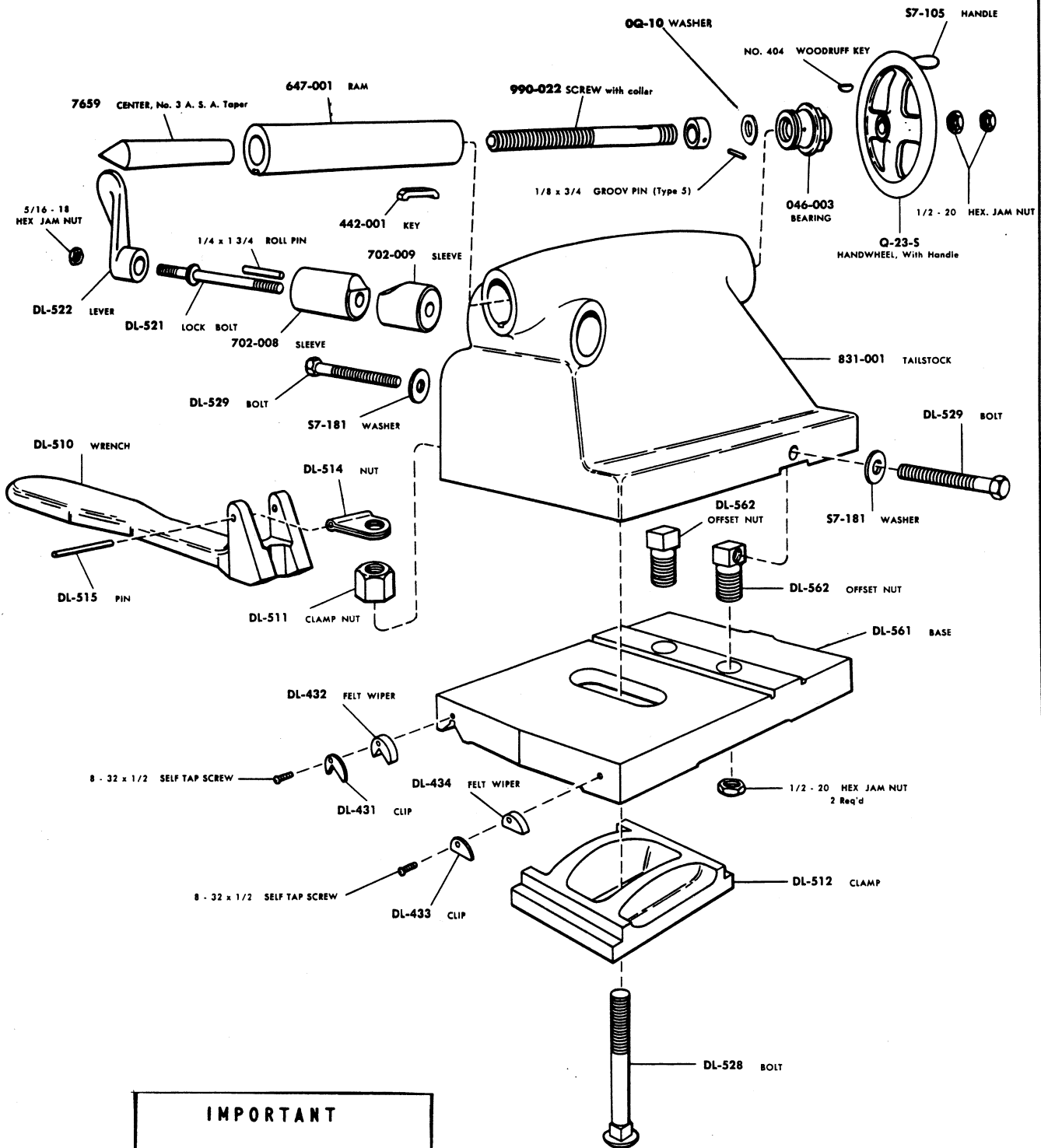
IMPORTANT

(LESS THREADING DIAL)

The parts illustrated on this page are for lathes with serial numbers between 001485 and

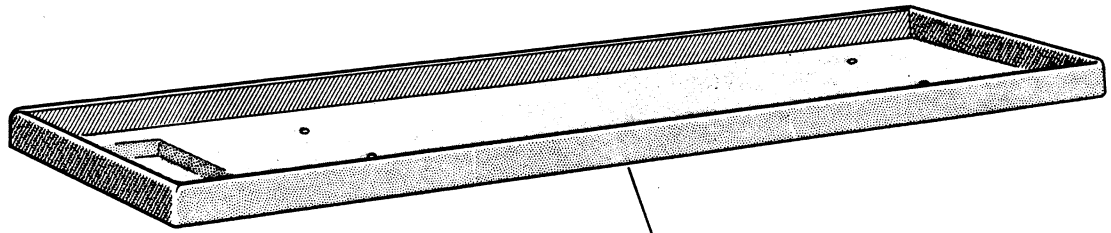


TAILSTOCK ASSEMBLY 990-039



IMPORTANT

The parts illustrated on this page are for lathes with serial numbers between 000200 and



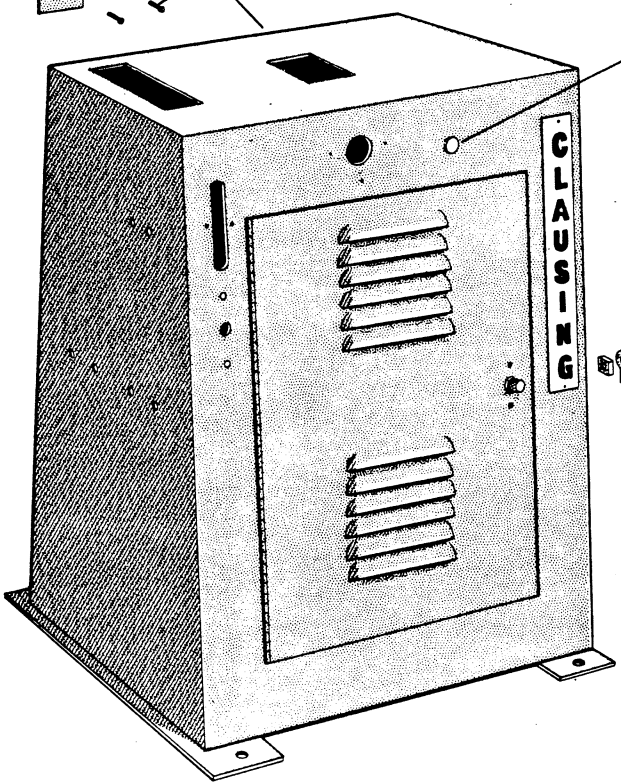
OIL PANS

PART No.	LATHE SIZE
7655	24"
7656	36"
7657	48"

122-041
COVER

6300-28
PEDESTAL ASSEMBLY

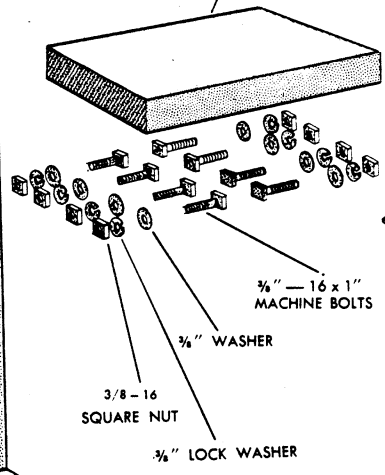
1/4" — 20 x 1/2"
RD. HD. CAP SCREW
2 Req'd.



SHELVES

PART No.	LATHE SIZE
706-005	24"
706-006	36"
706-007	48"

557-014
DOT FASTER



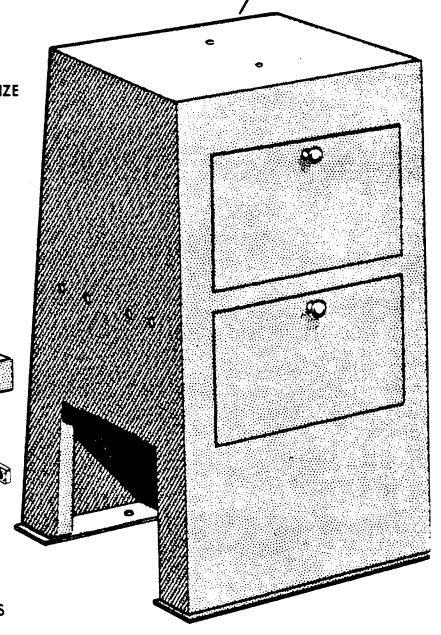
3/8" — 16 x 1"
MACHINE BOLTS

3/4" WASHER

3/8-16
SQUARE NUT

3/4" LOCK WASHER

990-020
PEDESTAL ASSEMBLY



IMPORTANT

The parts illustrated on this page are for lathes with serial numbers between 001078 and

CABINET No.	LATHE SIZE
7672	24"
7673	36"
7674	48"

LATHE CABINET ASSEMBLY

LUBRICATION CHART

CLAUSING 5300 SERIES 12-inch LATHES

IMPORTANT — LUBRICATE LATHE BEFORE OPERATING

CODE

A — FILL TO oil level window with S.A.E. No. 20 oil

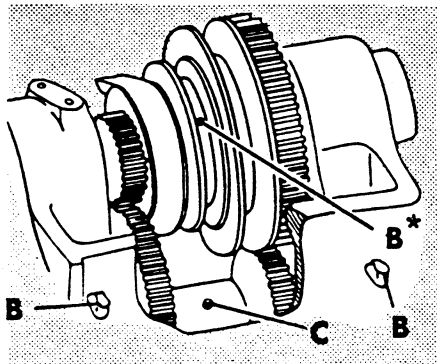
B — OIL DAILY with S.A.E. No. 20 oil

C — OIL WEEKLY with S.A.E. No. 20 oil

D — OIL MONTHLY with S.A.E. No. 20 oil

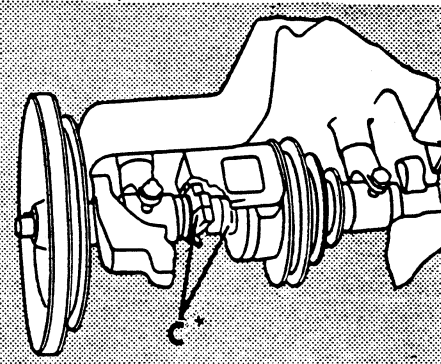
E — KEEP CLEAN and well oiled at all times

F — LUBRICATE with a medium grade automotive cup grease



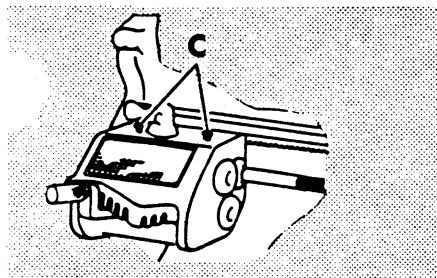
HEADSTOCK AND BACK GEARS

*Remove set screw to oil bearings.

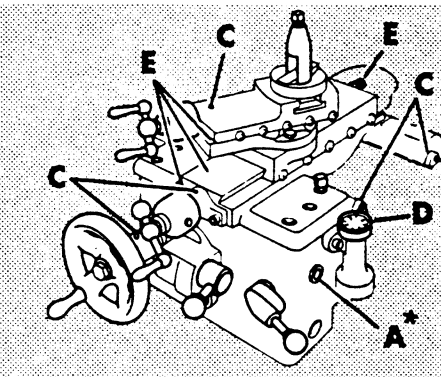


COUNTERSHAFT

*Once a week place a drop or two of oil on clutch pusher and expander pin.

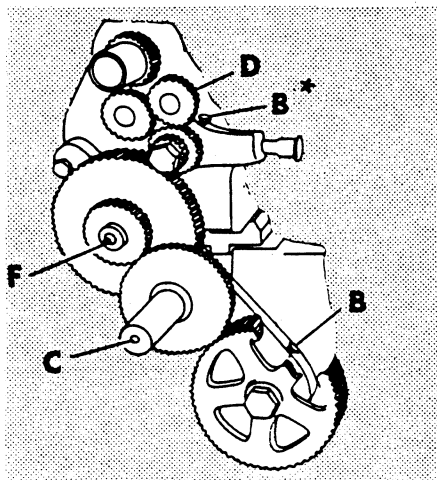


QUICK-CHANGE GEAR BOX



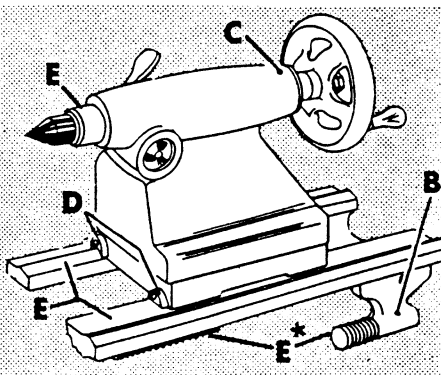
CARRIAGE

*Remove pipe plug and fill apron to oil level window. Maintain this level at all times.



QUICK-CHANGE GEAR TRAIN

*Oil through hole in guard.



TAILSTOCK — LEADSCREW — LEADSCREW BEARING — RACK

*About once a month clean with kerosene and a brush, then cover with oil.

KEEP YOUR LATHE CLEAN

Oil and dirt form an abrasive compound which can easily damage carefully fitted bearing surfaces. Wipe the bed and all polished parts with a clean oily rag at frequent intervals. Use a brush to clean spindle threads, gear teeth, lead screw threads, etc.

CLAUSING DIVISION — ATLAS PRESS COMPANY — KALAMAZOO, MICHIGAN

LUBRICATION CHART

5400 CLAUSING LATHE

CODE

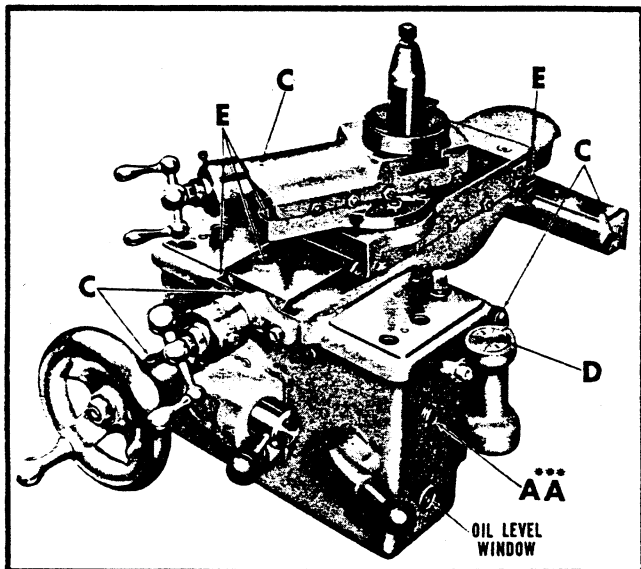
- AA — FILL TO oil level window with S.A.E No. 90 Hypoid gear lubricant only
- B — OIL DAILY with S.A.E. No. 20 oil
- C — OIL WEEKLY with S.A.E. No. 20 oil
- D — OIL MONTHLY with S.A.E. No. 20 oil
- E — KEEP CLEAN and well oiled at all times.
- F — LUBRICATE with a medium grade automotive grease

* Remove plug to oil.

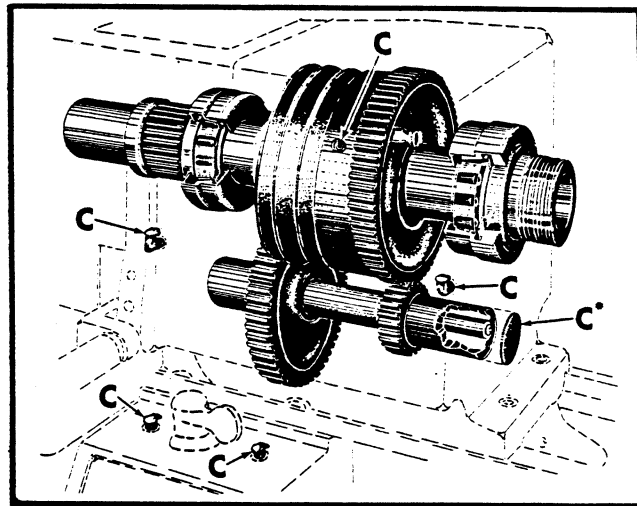
** About once a month clean lead screw threads with kerosene and a brush, then cover with oil.

*** Remove pipe plug and fill apron to oil level window. Maintain this level at all times.

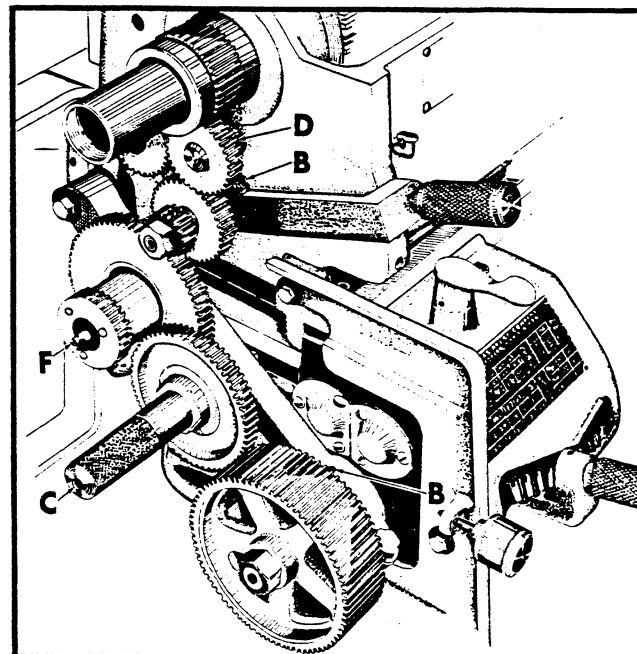
KEEP YOUR LATHE CLEAN



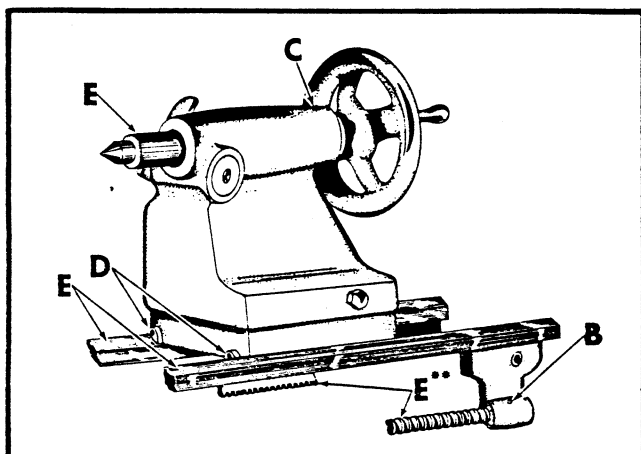
CARRIAGE



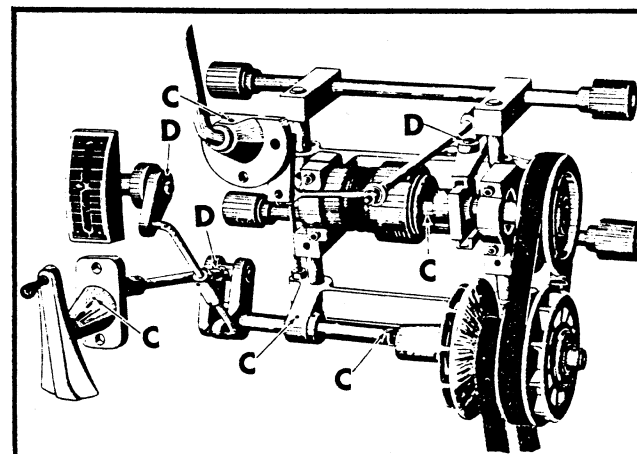
HEADSTOCK AND BACK-GEARS
QUICK-CHANGE GEAR BOX



GEAR TRAIN



TAILSTOCK — LEADSCREW —
LEADSCREW BEARING — RACK



COUNTERSHAFT
DRIVE