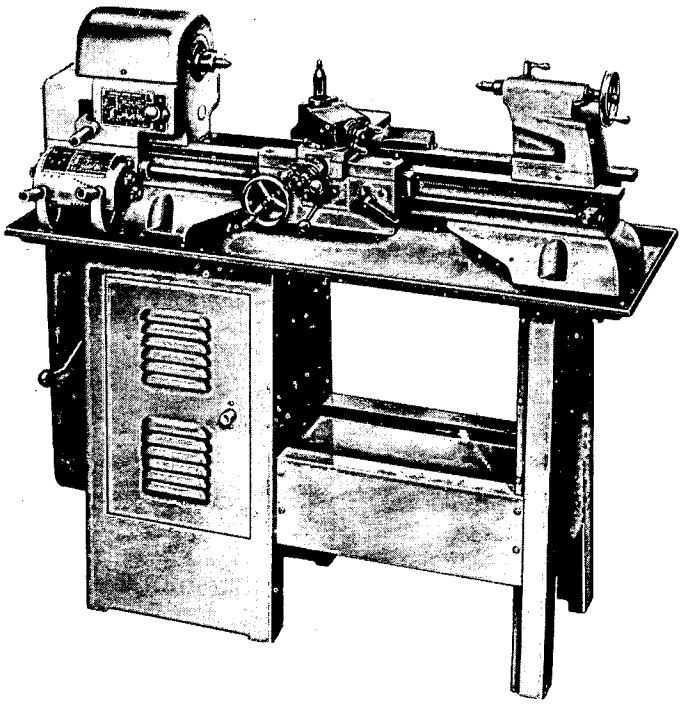
Sears

owners manual

MODEL NO.
101.28990

CAUTION:
READ RULES FOR SAFE OPERATION AND INSTRUCTIONS CAREFULLY



Sears **CRAFTSMAN**®

12" METAL TURNING LATHE

- **Assembly**
- **Installation**
- **Operating**
- **Repair Parts**

SC 3585 A

Sold by SEARS, ROEBUCK AND CO., Chicago, IL. 60684 U.S.A.
and SIMPSONS-SEARS LIMITED, Toronto, Ontario, Canada.

64572

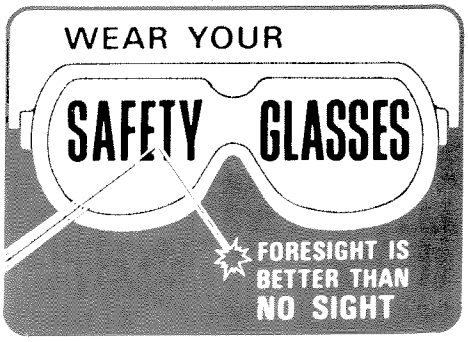
Printed in U.S.A.

CLAUSING CORPORATION

SAFETY RULES FOR POWER TOOLS

1. **KNOW YOUR POWER TOOL**
   Read the owner's manual carefully. Learn its application and limitations as well as the specific potential hazards peculiar to this tool.
2. **GROUND ALL TOOLS**
   If tool is equipped with three-prong plug, it should be plugged into a three-hole receptacle. If adapter is used to accommodate two-prong receptacle, the adapter wire must be attached to a known ground. Never remove third prong.
3. **KEEP GUARDS IN PLACE**
   and in working order.
4. **REMOVE ADJUSTING KEYS AND WRENCHES**
   Form habit of checking to see that keys and adjusting wrenches are removed from tool before turning on tool.
5. **KEEP WORK AREA CLEAN**
   Cluttered areas and benches invite accidents.
6. **AVOID DANGEROUS ENVIRONMENT**
   Don't use power tools in damp or wet locations. Keep work area well illuminated.
7. **KEEP CHILDREN AWAY**
   All visitors should be kept a safe distance from work area.
8. **MAKE WORKSHOP KID PROOF**
   — with padlocks, master switches, or by removing starter keys.
9. **DON'T FORCE TOOL**
   It will do the job better and be safer at the rate for which it was designed.
10. **USE RIGHT TOOL**
    Don't force tool or attachment to do a job it was not designed for.
11. **WEAR PROPER APPAREL**
    No loose clothing or jewelry to get caught in moving parts.
12. **USE SAFETY GLASSES**
    Also use face or dust mask if cutting operation is dusty.
13. **SECURE WORK**
    Use clamps or a vise to hold work when practical. It's safer than using your hand, frees both hands to operate tool.
14. **DON'T OVERREACH**
    Keep your proper footing and balance at all times.
15. **MAINTAIN TOOLS IN TOP CONDITION**
    Keep tools sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.
16. **DISCONNECT TOOLS**
    before servicing and when changing accessories such as blades, bits, cutters.
17. **AVOID ACCIDENTAL STARTING**
    Make sure switch is "OFF" before plugging in cord.
18. **USE RECOMMENDED ACCESSORIES**
    Consult the owner's manual. Use of improper accessories may be hazardous.

The operation of any power tool can result in foreign objects being thrown into the eyes, which can result in severe eye damage. Always wear safety glasses or eye shields before commencing power tool operation.



Sears

12" METAL TURNING LATHE

MODEL NO.
101.28990

Sears
SERVICE is at YOUR SERVICE wherever YOU live or move in the U.S.A.

CAUTION:
READ RULES FOR SAFE OPERATION AND INSTRUCTIONS CAREFULLY

How to ORDER Repair Parts

The Model Number will be found on a plate attached to your Lathe at the right end of the bed. Always mention the Model Number when requesting service or repair parts for your Craftsman 12" Metal Turning Lathe.

All parts listed herein may be ordered from any SEARS, ROEBUCK AND CO. or SIMPSONS-SEARS LIMITED retail or catalog store. If the parts you need are not stocked locally, your order will be electronically transmitted to a Sears Repair Parts Distribution Center for expedited handling.

WHEN ORDERING REPAIR PARTS, ALWAYS GIVE THE FOLLOWING INFORMATION:

1. PART NUMBER
2. PART DESCRIPTION
3. MODEL NUMBER
4. NAME OF ITEM

CRAFTSMAN PRODUCTS:

CRAFTSMAN 12" METAL TURNING LATHE FULL ONE YEAR WARRANTY

If, within one year from the date of purchase, this Craftsman 12" Metal Turning Lathe fails due to a defect in material or workmanship, we will repair it free of charge.

This warranty service is available by simply contacting any Sears store or Service Center throughout the United States.

Sears, Roebuck and Co.

Sold by SEARS, ROEBUCK AND CO., Chicago, IL. 60684 U.S.A.
and SIMPSONS-SEARS LIMITED, Toronto, Ontario, Canada.

This Manual Applies To The Sears CRAFTSMAN® 12" Lathe

MODEL NUMBERS

101.28990

CONTENTS

PARTS INDEX

CAUTION: READ THIS! --

BEFORE TURNING HANDWHEELS OR CRANKS -- avoid damaging precision surfaces and parts.

Carriage and tailstock are LOCKED TO BED and should not be moved until bed is cleaned.

Leave the lathe on the skid -- easier to move.

Check bags and cartons for parts.

Read all instructions -- a few minutes now may save hours later.

Clean the lathe -- machined surfaces are coated with rust preventive which must be removed -- see CLEANING.

Handle with care -- this lathe is a precision machine.

CLEANING

Leave carriage and tailstock locked in position until exposed bed ways are cleaned.

Using a good grease solvent, thoroughly remove the rust-preventive from exposed bed ways -- tops, sides, bottoms -- and from all other machined surfaces.

Next, loosen the carriage lock screw (located on top of carriage at right side) and move carriage to a clean section of bed. Then, loosen tailstock clamp lever -- move tailstock -- and finish cleaning bed ways.

Use a stiff bristle brush (not wire) to clean lead screw and carriage rack.

Apply a light coating of machine oil to all machined surfaces -- for protection.

Don't use an air hose -- it could blow dirt or grit into bearing surfaces.

For long service life -- make it a habit to clean and lubricate regularly.

MOVING AND LIFTING

Leave lathe bolted on skid, it is easier to move to final location.

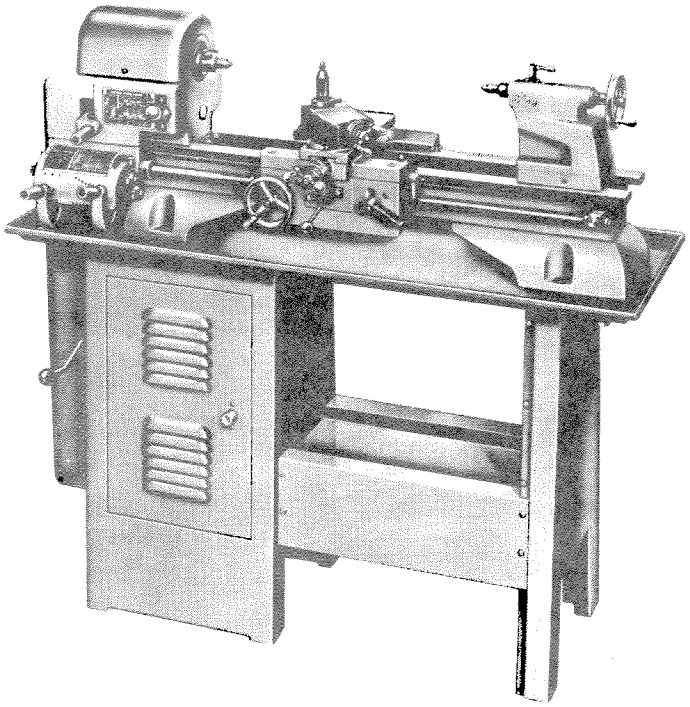
Slide skid or use rollers to move lathe to final location.

DO NOT use chip pan to lift lathe.

CAUTION

ALWAYS WEAR SAFETY GLASSES WHEN OPERATING ANY MACHINE.

MOUNTING CABINET MODEL LATHE



A reinforced concrete floor is the best foundation. Wood floor should be rigid and capable of supporting the weight of the lathe without deflection -- if the floor is not solid, it should be reinforced, or cut away and a concrete foundation installed.

Make sure the legs rest solidly on the floor.

ANCHORING TO FLOOR

Cabinet must be bolted to floor.

Use anchor bolts to secure cabinet to concrete floor -- use lag screws to secure to wood floor.

Place lathe in final location -- to provide working room, back of cabinet should be 2 feet from wall.

Remove lathe from skid.

Mark the location of mounting holes.

Move machine, drill holes and install anchor nuts in concrete floor -- drill pilot holes for lag screws in wood floor.

Reposition machine and start anchor bolts or lag screws -- DO NOT TIGHTEN until motor is installed.

INSTALLING COUNTERSHAFT BELT

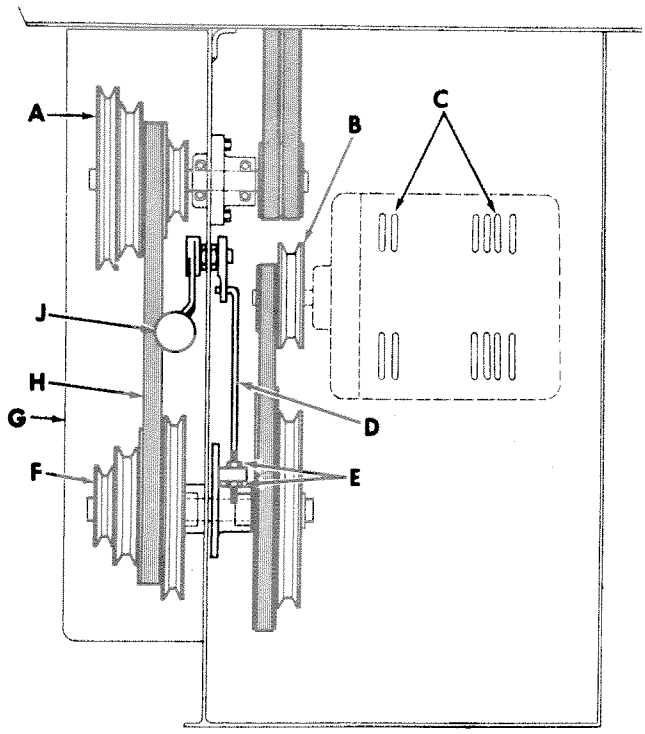


FIGURE 1

Open belt guard (G, Fig. 1) and install long countershaft belt (H) on spindle drive shaft pulley (A) and then on countershaft pulley (F).

To tension countershaft belt:

1. Move belt tension lever (J) to lowest position.
2. Adjust two hex nuts (E) on the lever rod (D) until belt is properly tensioned.

NOTE: Properly tensioned belt should depress approximately 1/2" with light finger pressure -- too much tension will cause excessive wear.

INSTALLING MOTOR

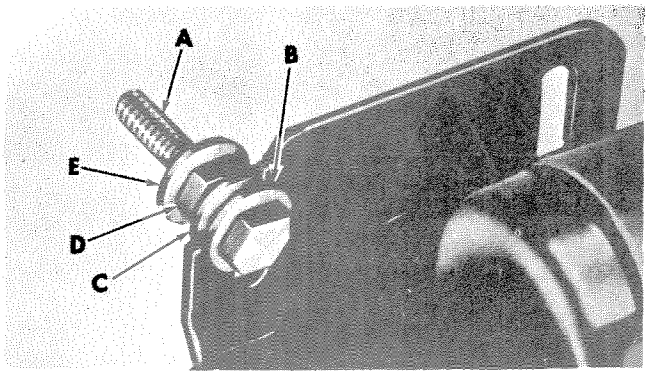


FIGURE 2

1. Install four motor mounting bolts (A, Fig. 2) with washers (B) on motor and lock them in place with washers (C) and hex jam nuts (D).

2. Slide motor pulley (B, Fig. 1) on motor shaft (large step toward motor) -- DO NOT TIGHTEN set screw.

3. Open motor compartment door.

4. Install a washer (E, Fig. 2) on each motor mounting bolt (A).

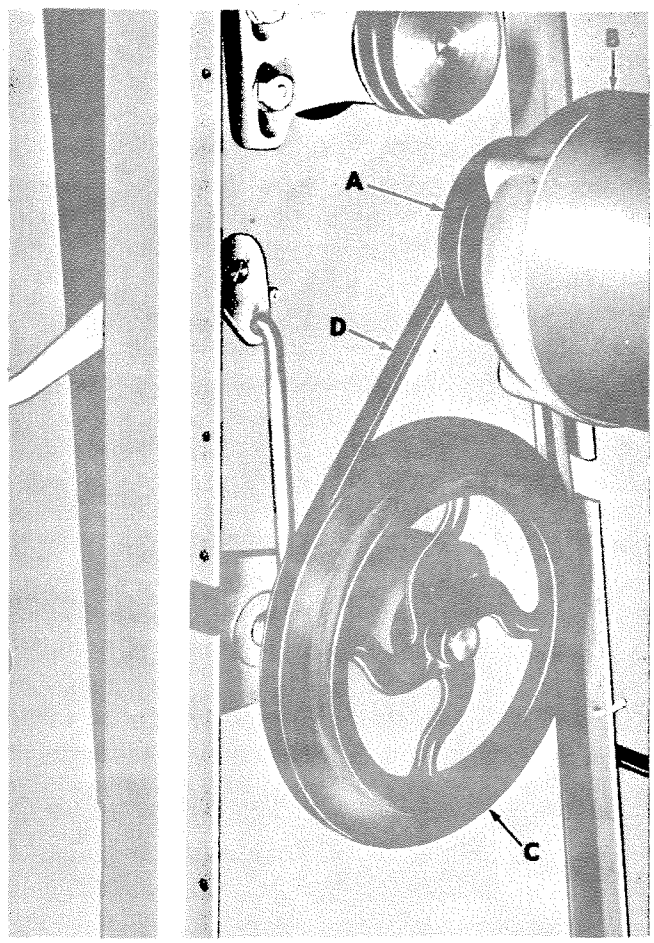


FIGURE 3

5. Mount motor (B, Fig. 3) to INSIDE BACK PANEL OF CABINET by sliding mounting bolts thru slots (C, Fig. 1) in back of cabinet. Hold motor in position with wooden block. Go around to back of cabinet and start hex nuts on mounting bolts -- DO NOT TIGHTEN securely.

6. Move motor pulley (A, Fig. 3) on the shaft until it aligns with countershaft pulley (C) -- tighten set screw securely.

7. Place belt (D) on motor and countershaft pulleys.

8. Move belt tension lever to lowest position.

9. Raise motor until belt is properly tensioned -- block in position. Then tighten jam nuts securely at the back of cabinet.

LEVELING THE CABINET

Clean bed ways thoroughly.

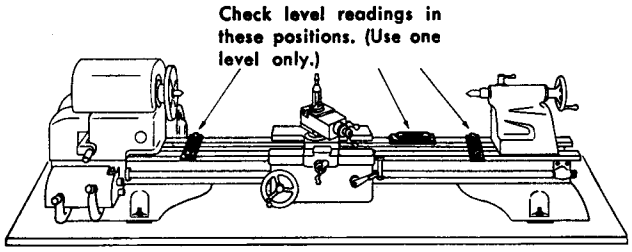


FIGURE 4

Use one precision level at least 6" long -- place level on bed ways -- refer to Fig. 4 for level positions.

Place shims as required between cabinet pad and and floor until the lathe is approximately level.

NOTE: Doing this eliminates excessive shimming between top of cabinet and bed legs when leveling lathe bed.

NOTE: Shims should be of hardwood or metal and bear under the cabinet pads -- refer to Fig. 5.

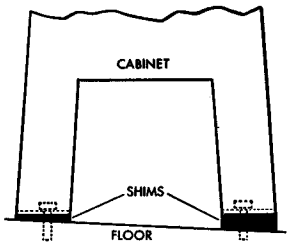


FIGURE 5

Tighten the anchoring bolts or lag screws securely. Recheck the level of cabinet -- unequal tightening of anchoring bolts may have pulled the cabinet out of level.

After the cabinet is approximately level -- level the bed until it is exactly level -- see LEVELING THE BED.

ELECTRICAL CONNECTIONS

Before connecting motor, make sure that line voltage corresponds with the requirements of the motor. If there is any question, call your power company.

Wire switch and motor so that pulley rotates in a clockwise direction.

DO NOT OPERATE THE LATHE UNTIL

- the bed has been leveled, see page 6.
- the lathe has been lubricated, see page 7.
- the operating instructions have been read, see pages 8-11.

LEVELING THE BED

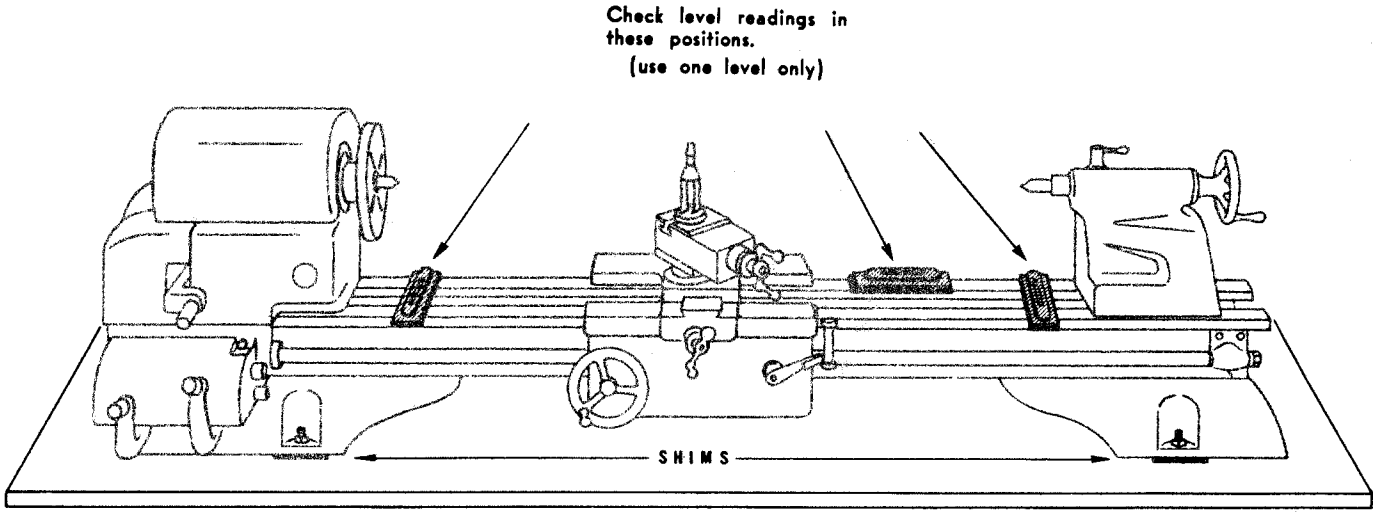


Figure 6

The bed should be kept perfectly level at all times. When carelessly leveled, the bed may become twisted. Even a slight amount of twist will move centers out of alignment and result in inaccurate work and excessive wear. Make it a habit to regularly check the level of the bed.

THIS IS IMPORTANT:

Use one precision level at least 6" long -- level should show a distinct bubble movement when a .003" shim is placed under one end.

Clean the bed ways thoroughly.

1. First level bed longitudinally, compensate for variations of bubble readings with thin metal shims *placed around bolts* between bed legs and bench top until bed is level -- refer to Fig. 6 for leveling positions.

   Shim should be the only contact point between bench top and bed legs.

   Refer to Fig. 7 for approximate size of shim.

   If the outer or inner edges of legs bear on bench top, bed may be twisted or bowed.

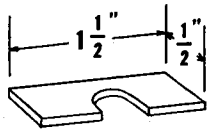


Figure 7

2. Next, level the bed at headstock and tailstock -- see Fig. 6. Place level at right angles to the bed -- use a square to align the level. *Do not turn level end for end.*

   Level readings at headstock and tailstock must be identical. Compensate for variation of bubble readings by placing shims between bed legs and bench top at the bolt holes.

3. Tighten the four mounting bolts securely and recheck level readings.

   Check level of bed at frequent intervals. Chatter, turning taper, boring taper, facing convex or concave is usually the result of an improperly leveled bed.

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

LUBRICATION CHART -- 12" METAL TURNING LATHE

CODE

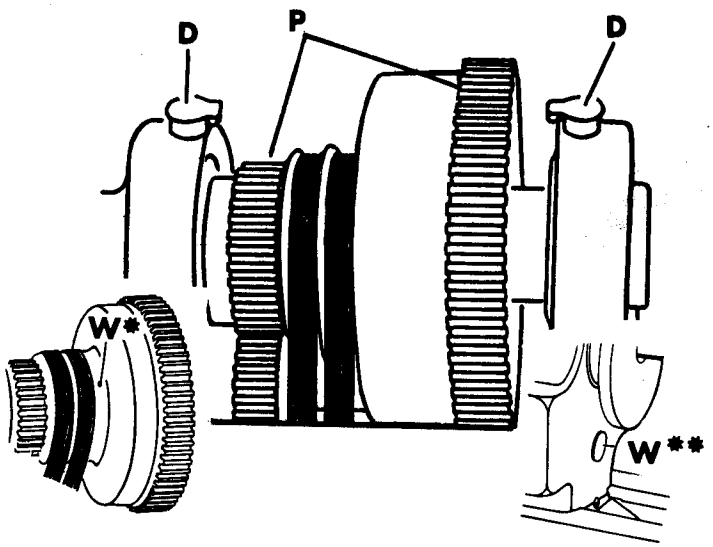
D - DAILY oil with S.A.E. No. 20 oil.

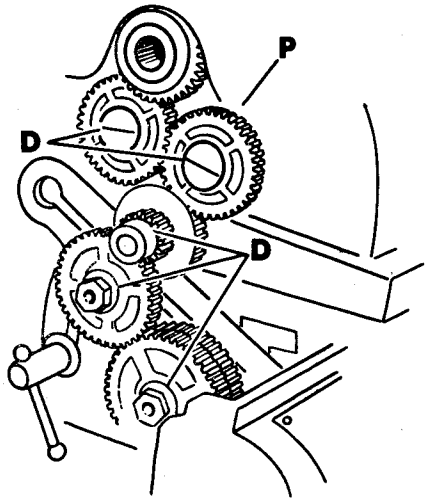
W - WEEKLY oil with S.A.E. No. 20 oil.

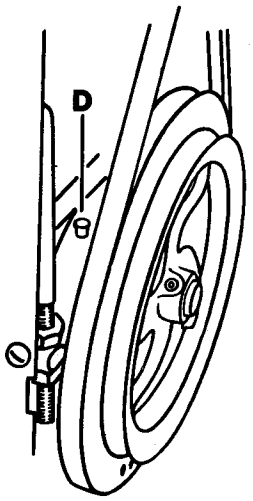
M - MONTHLY clean with kerosene, then oil with S.A.E. No. 20 oil.

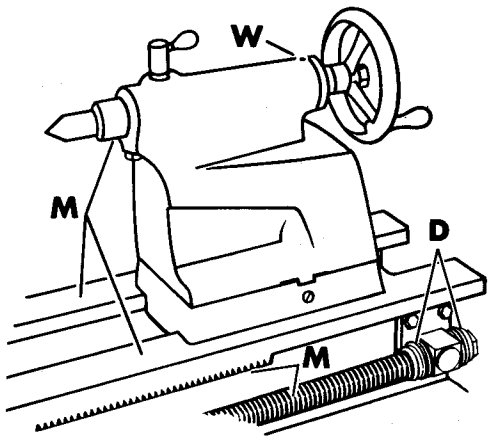
P - PERIODICALLY lubricate gear teeth with Keystone No. 122 gear lubricant or equivalent. Remove oil and dirt before applying grease.

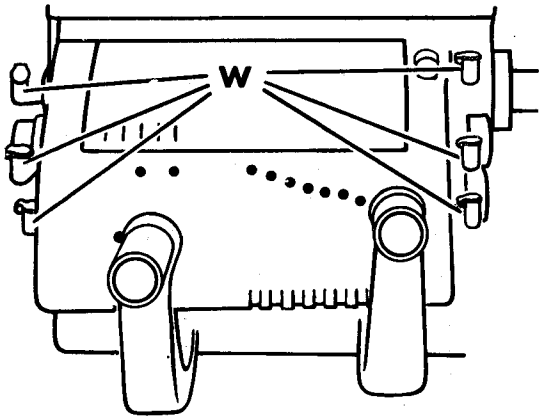
* Remove SCREW.
** Remove PLUG.
*** Lubricate rocker shaft pin at this point.
**** Fill to TOP.

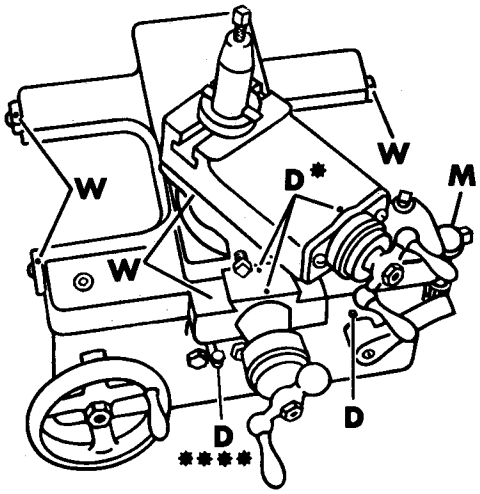












IMPORTANT — LUBRICATE LATHE BEFORE OPERATING

CAUTION: ALWAYS WEAR SAFETY GLASSES WHEN OPERATING ANY MACHINE

CONTROLS AND OPERATION

DON'T TURN ON MOTOR UNTIL YOU'VE READ THESE INSTRUCTIONS. As you read, make a dry run with each of the controls -- start with BACK GEAR CONTROLS.

BACK GEAR CONTROLS

BACK GEAR DRIVE provides the slow spindle speeds -- 28 to 345 rpm -- required for heavy cuts and large diameter work.

To engage the BACK GEAR DRIVE:

1. Turn off motor.

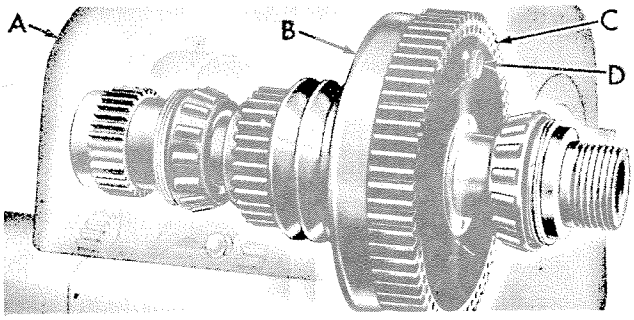


FIGURE 8

2. Raise headstock cover (A, Fig. 8) and pull out lock pin (D), disengaging bull gear (C) from pulley (B).

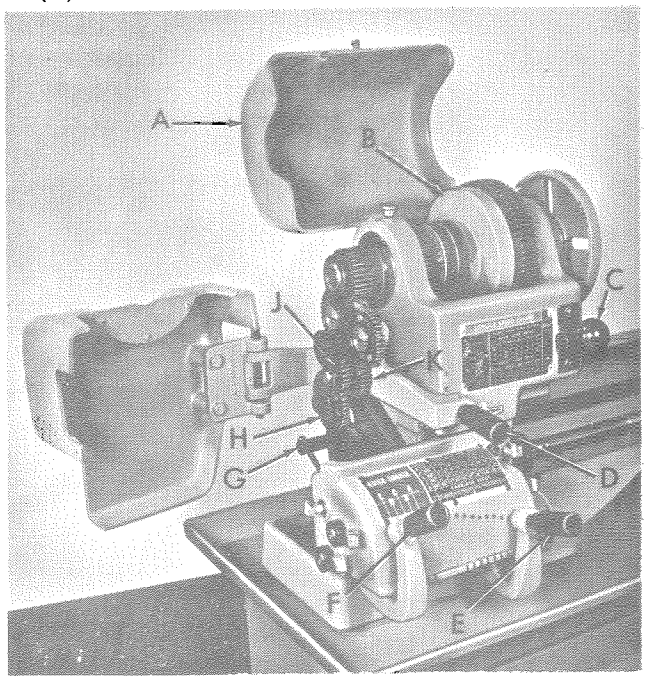


FIGURE 9

3. Move back gear lever (C, Fig. 9) to "IN" (engaged position) by pulling on knob, then pushing down and in. It may be necessary to rotate spindle pulley by hand so gears will mesh.

CAUTION: The position of the back gear lever (C, Fig. 9) should not be changed unless motor is "OFF" and spindle has stopped turning.

DIRECT DRIVE provides high spindle speeds from 164 to 2072 rpm.

To engage DIRECT DRIVE:

1. Turn off the motor.
2. Raise headstock cover (A, Fig. 8). Push on lock pin (D), and turn spindle pulley by hand until pin slides in, locking bull gear and pulley together.
3. Move back gear lever (C, Fig. 9) to "OUT" (disengaged position) by pulling on knob, then pushing up and in.

CHANGING SPINDLE SPEEDS:

1. Stop motor.
2. Move belt tension lever upward to loosen belt tension.
3. Open countershaft guard and door to motor compartment -- shift belts to positions required for desired speed, as indicated on "SPINDLE SPEED CHART."
4. Move lever down to tighten belts.

HEADSTOCK

LEAD SCREW DIRECTION LEVER (D, Fig. 9) has three positions. Center position is neutral -- gear train is disengaged and lead screw does not turn. Upper position moves carriage toward tailstock. Lower position moves carriage toward headstock.

CAUTION: Always turn off motor and let spindle stop before shifting lead screw direction lever.

QUICK-CHANGE GEAR BOX

Quick-change mechanism determines the rate of rotation of lead screw in relation to the rpm of the spindle.

The left LEVER (F, Fig. 9) on quick-change box shifts to five positions -- A, B, C, D and E.

LEVER (E) on right side of quick-change box shifts to nine positions, numbered on bottom of chart. The indexing holes for this lever are directly below the thread or feed desired.

SLIDING GEAR (H) has two positions. IN position is toward headstock and meshed with the 32-tooth compound gear (K). OUT position is away from the headstock and meshes with the 16-tooth compound gear (J). The position of the sliding gear (IN or OUT) is shown on the chart in the same row as thread or feed desired.

Loosen QUADRANT LOCK (G) to mesh sliding gear with compound gear. After gears are properly meshed, tighten the lock. Be sure to allow sufficient clearance between the two meshing gears.

CAUTION: Always stop motor and spindle before changing feeds. If quick-change levers do not index, do not force, merely rotate spindle by hand until levers slide easily into position.

CARRIAGE

Carriage moves along the bed by hand or by power feed and supports the cross slide, compound rest, tool post and cutting tool. The apron, anchored to front of carriage, contains the power cross and longitudinal feed controls.

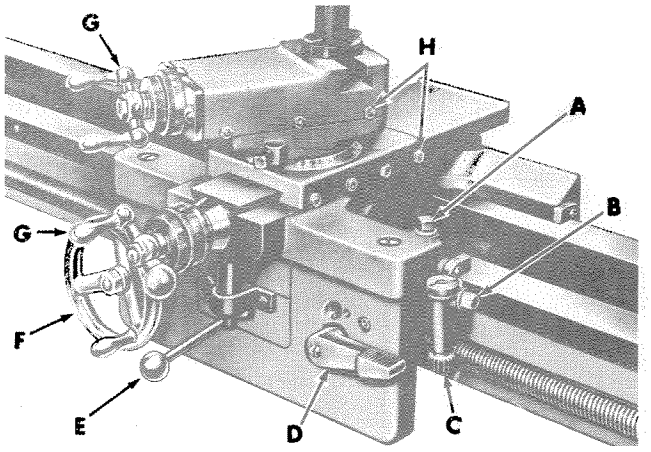


FIGURE 10

HANDWHEEL (F, Fig. 10) manually moves carriage along the lathe bed.

CROSS FEED AND TOOL POST SLIDE CRANKS (G) move the cross slide and tool post slide in and out. Crank collars are graduated in thousandths of an inch.

CARRIAGE LOCK SCREW (A) locks carriage to bed for facing or cutoff operations.

HALF-NUT LEVER (D) engages half-nuts with lead screw for threading and longitudinal feeding. When lever is moved down, it engages half-nuts with lead screw -- carriage travels along bed as lead screw turns. CAUTION: Always loosen carriage lock screw before engaging half-nuts.

CROSS FEED LEVER (E) controls power feed of cross slide. Move cross feed lever down to engage, up to disengage.

THREADING DIAL (C) performs the important function of indicating the proper time to engage the half-nut lever so that tool will enter the same groove of the thread on each successive cut.

To avoid excessive wear of threading dial gear, loosen clamp screw (B) and swing gear away from lead screw when not threading.

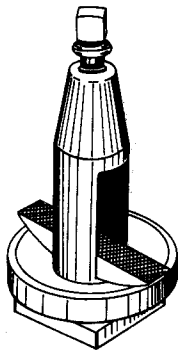


FIGURE 11

The tool post holds the tool rigidly in position for cutting operations -- refer to figure 11.

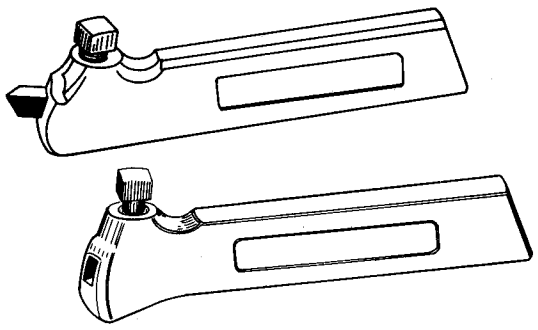


FIGURE 12

Tool bit holders permit the use of small, inexpensive and replaceable tool bits ---refer to figure 12.

In order to avoid undesirable overhang, tool bits should be clamped so the cutting end of the tool bit is as close to the holder as the work will permit, and, the tool holder should be as far back in the tool post as possible.

The cutting edge of the tool should be placed on lathe center line.

TAILSTOCK

The tailstock supports long work, and holds tools for drilling and reaming operations.

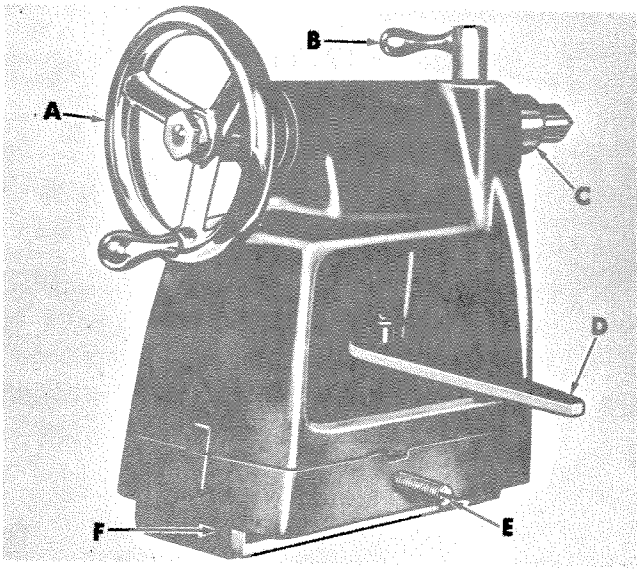


FIGURE 13

RAM LOCK LEVER (B, fig. 13) locks ram in place. NOTE: Before attempting to move ram, loosen ram lock.

HANDWHEEL (A) moves the tailstock ram (C). To advance ram, turn handwheel clockwise, to retract ram or eject center, turn counterclockwise.

BED CLAMP LEVER (D) locks tailstock to lathe bed.

The tailstock may be set over for taper turning by loosening the bed clamp lever and adjusting the two setover screws (E).

SEQUENCE OF ENGAGING CONTROLS FOR OPERATING LATHE

After trying out each of the controls, do a practice setup, following these steps:

1. Engage back gears.
2. Shift belts to low speed position--see chart.
3. Move lead screw direction lever to neutral (center position).
4. Engage quick-change levers--left hand in position 1, right in position 7.
5. Move sliding gear to out position.
6. Unlock carriage lock screw.
7. Move half-nut lever up (disengaged position).
8. Move cross feed lever up (disengaged position).

NOW TURN ON MOTOR -- only spindle should be turning.

To engage lead screw and quick-change gear box: Stop motor, move lead screw direction lever to bottom position and start motor -- lead screw should be turning very slowly. Now engage half-nut lever, causing carriage to travel toward headstock.

Set up different threads and feeds -- engage power feeds -- get familiar with the controls. This will save time later and help you produce better work.

PROPER POSITION OF TOOL POST SLIDE

For maximum tool support, the front edge of the tool post slide should be positioned flush with the front end of the upper swivel.

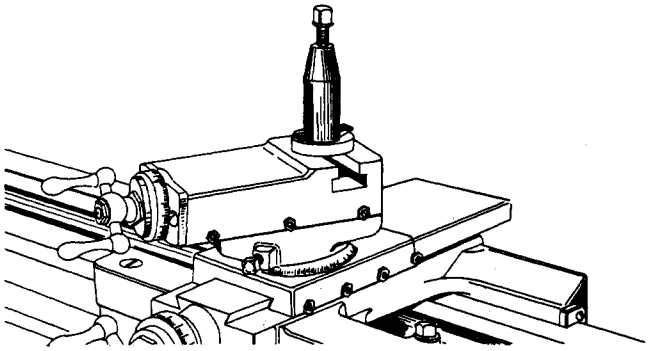


FIGURE 14

RIGHT -- Tool post slide is flush with front end of the upper swivel, therefore provides maximum tool support -- refer to figure 14.

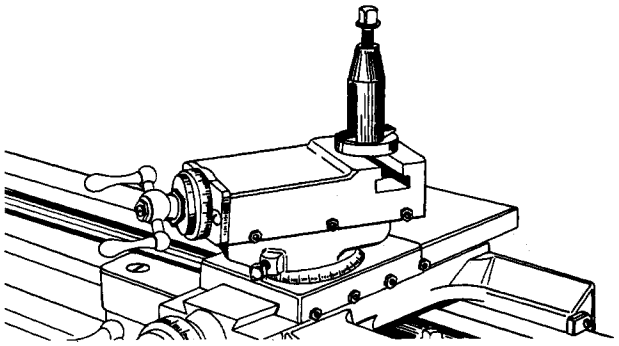


FIGURE 15

WRONG -- Unnecessary overhang of tool post slide will result in tool chatter, and could cause the tool post slide to break -- refer to figure 15.

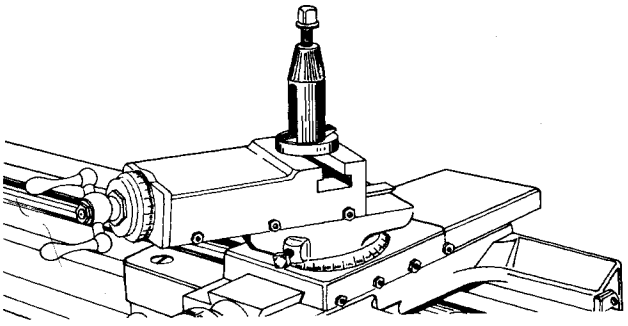


FIGURE 16

WRONG -- Tool post slide is too far back -- tool overhang is excessive -- refer to figure 16.

MOUNTING CHUCKS AND FACE PLATES

1. Carefully wipe face of hub and threads clean of dirt and chips.
2. Carefully clean spindle threads and shoulder.
3. Cover spindle threads with a light film of clean oil. Nicks, burrs, chips or dirt on the lathe spindle threads, pilot or shoulder--or on the chuck pilot, threads or shoulder--will throw the chuck out of alignment and result in inaccurate work.
4. Place lathe in back gear to keep spindle from turning.
5. Screw chuck or face plate on spindle--do not force, it should thread on easily. Turn it rapidly as it nears spindle shoulder so hub will seat firmly against spindle shoulder face

CAUTION -- Do not turn power on with the spindle locked.

TO REMOVE CHUCK OR FACE PLATE

1. Place board under chuck to protect bed ways, rotate chuck until wrench hole is on top. Lock spindle by engaging back gears. 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 and tap slot in face plate with a lead or brass hammer in a counterclockwise direction. Remove face plate carefully to prevent damaging spindle threads. Disengage back gears.

CAUTION -- Never remove chuck or face plate while lathe is running.

CHUCK CARE

INSPECT YOUR CHUCK PERIODICALLY. If used properly, a chuck will give good service for a long period.

OIL CHUCK FREQUENTLY. Most wear is due to dirt and lack of proper lubrication. Oil chuck jaws and scroll at regular intervals with a light film of clean SAE No. 10 machine oil. CAUTION: Do not apply too much oil -- it collects dust and chips.

PROTECT CHUCK WHEN NOT IN USE. Place chuck in a covered box -- don't leave it exposed to dirt or chips. The accuracy of any chuck can be destroyed if dirt or chips collect in the scroll, threads, jaws or slots.

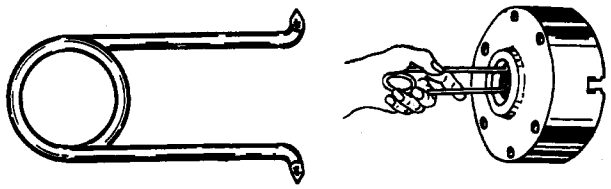


Figure 17

Use a tooth brush to clean spindle threads. A bent wire filed on ends to a V-shape should be used to remove dirt and chips from chuck threads ---refer to figure 17.

To maintain chuck accuracy, NEVER abuse your chuck.

KEEP THE LATHE CLEAN. Oil and dirt form an abrasive compound which can easily damage bearing surfaces. Wipe the bed and all machined surfaces with a clean oily cloth at frequent intervals. Use a brush to clean spindle, gear teeth, lead screw threads, etc.

MAINTENANCE AND ADJUSTMENTS

PREVENTIVE MAINTENANCE

Keep lathe clean and properly lubricated.

Don't use lathe for a work bench or leave tools on the bed ways.

Always shut off power before leaving lathe.

Recheck level oi the bed frequently.

Lock tailstock to bed ways before turning between centers.

Keep lead screw threads clean, and oil lightly.

Securely lock cutting tool in position before taking a cut.

TAILSTOCK GIB ADJUSTMENT

Two gib screws (F, fig. 13), one on each of the tailstock gibs, regulate the tightness of tailstock between the bed ways.

To adjust:

Tighten both gib screws until both ends of the gib bear evenly against bed way with equal pressure, and tailstock slides smoothly.

CARRIAGE BEARING PLATE ADJUSTMENT

Carriage bearing plates, which bear on underside of front and back ways, hold the carriage firmly to the bed. Plates have shims of varying thickness for wear adjustment.

ADJUSTING SPINDLE BEARINGS

Spindle bearings have been preloaded at factory and seldom require adjusting. If spindle spins too freely or play is noticeable when spindle is pushed back and forth, follow these instructions:

To adjust:

1. Make adjustment only when spindle is at operating temperature -- run spindle at medium speed for about one hour.
2. Stop motor.

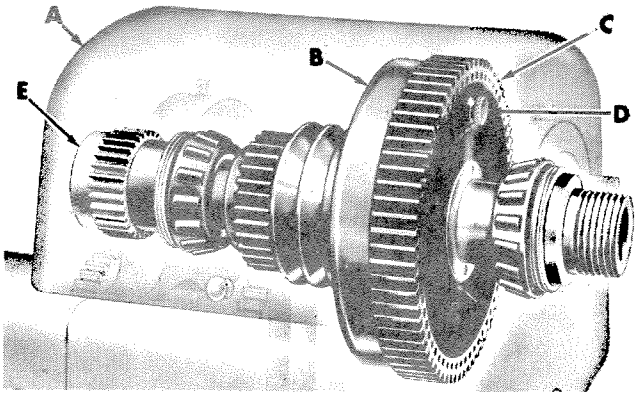


Figure 18

3. Raise headstock cover (A, Fig. 18) and pull out lock pin (D) disengaging bull gear (C) from pulley (B).
4. Loosen mounting bracket holding countershaft and slip spindle belts off spindle pulley.
5. Loosen set screw in bearing adjusting nut (E) and tighten nut until spindle end play has been eliminated.
6. Give bull gear (C) a sharp spin with your hand – bull gear should rotate about a half turn. If it doesn't, adjust nut (E) and recheck.
7. Tighten set screw in adjusting nut.
8. Place belts on pulleys, and check belt tension.

CROSS AND TOOL POST SLIDE GIB ADJUSTMENT

1. Loosen Gib Screw Lock Nuts (H, Fig. 10).
2. Adjust Gib Screws evenly until slide moves with a slight drag.
3. Tighten the Gib Screw Lock Nuts -- hold Gib Screw with screw driver while tightening nuts.

CARRIAGE GIB ADJUSTMENT

If horizontal play develops between carriage and bed, tighten the four gib screws at rear of carriage.

To adjust:

1. Loosen gib screw lock nuts.
2. Turn gib screws evenly until carriage moves with a slight drag.
3. Hold screws with screw driver and tighten the lock nuts.

COMPOUND AND CROSS FEED CRANK ADJUSTMENT

1. Hold crank and loosen lock nut on end of screw.
2. Hold crank and tighten the $\frac{7}{8}$" nut to remove end play in cross feed or compound handle assembly.
3. Hold crank and *securely tighten* lock nut against crank.

LEAD SCREW SAFETY CLUTCH ADJUSTMENT

Clutch is preset at factory. If adjustment is necessary, it should be set at 5 foot pounds.

To adjust:

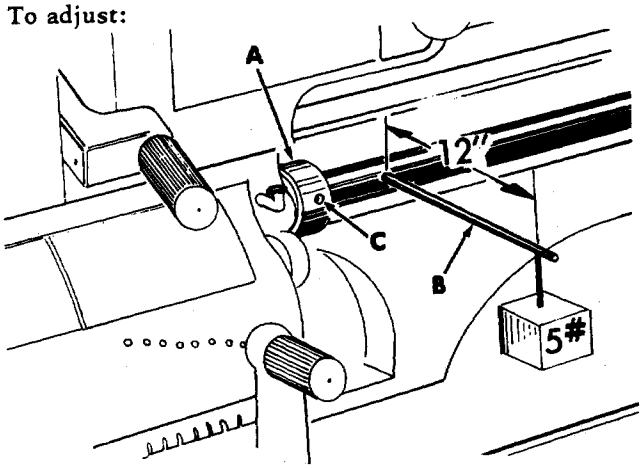


Figure 19

1. Insert $\frac{1}{4}$" rod (B, fig. 19) in the hole in lead screw near clutch.
2. Hang a 5 lb. weight on rod 12 inches from lead screw.
3. While holding quadrant gears, insert 1/8" rod in hole (C) and tighten collar (A) until clutch is properly adjusted.

   NOTE: When lead screw safety clutch is properly adjusted, the 5 lb. weight will move slowly down. If it moves too fast, tighten collar (A). If it doesn't move, loosen collar (A).

   IMPORTANT: Clutch collar is self-locking.

CHECKING LEAD SCREW ALIGNMENT

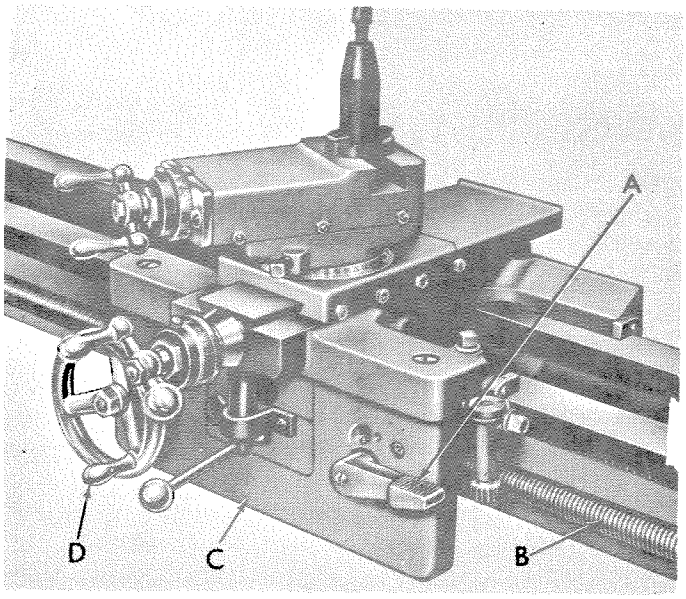


FIGURE 20

1. Raise half nut lever (A, Fig. 20) disengaging half nuts from lead screw (B).

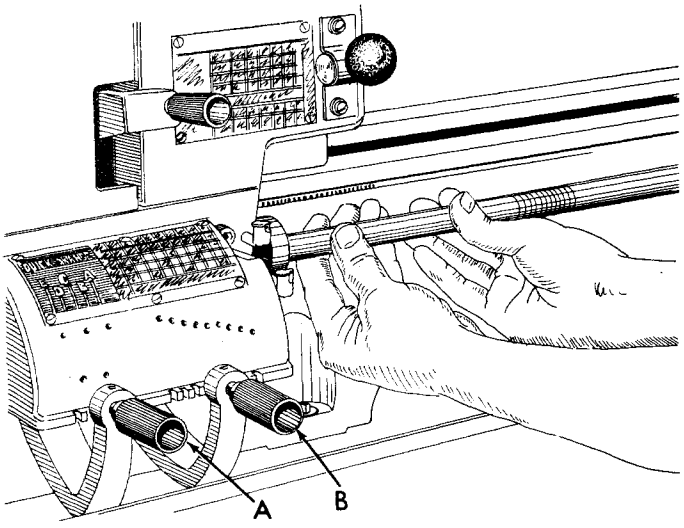


FIGURE 21

2. Disengage quick change levers (A and B, Fig. 21).

Lead screw should turn freely when rotated with fingers as shown in figure 21.

If lead screw binds or turns hard, adjustment of lead screw alignment is necessary.

ADJUSTING LEAD SCREW ALIGNMENT

1. Move tailstock to extreme end of lathe bed and lock.

2. Move carriage (C, Fig. 20) to tailstock end of lathe.

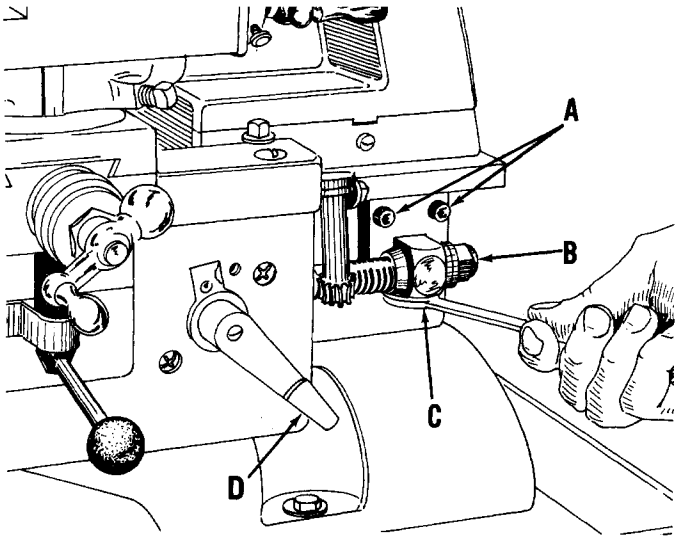


FIGURE 22

3. Loosen but do not remove socket cap screws (A, Fig. 22).

4. Loosen but do not remove hex cap screw (C), or socket set screw on some lathes.

5. Lower half nut lever (D) as shown above to engage half nuts.

CAUTION: WHEN ENGAGING HALF NUTS BE SURE HALF NUTS AND LEAD SCREW THREADS MESH FULLY – IT MAY BE NECESSARY TO MOVE CARRIAGE (C, FIG. 20) SLIGHTLY WITH HANDWHEEL (D) WHILE ENGAGING HALF NUTS.

6. Tighten screws (A, Fig. 22).

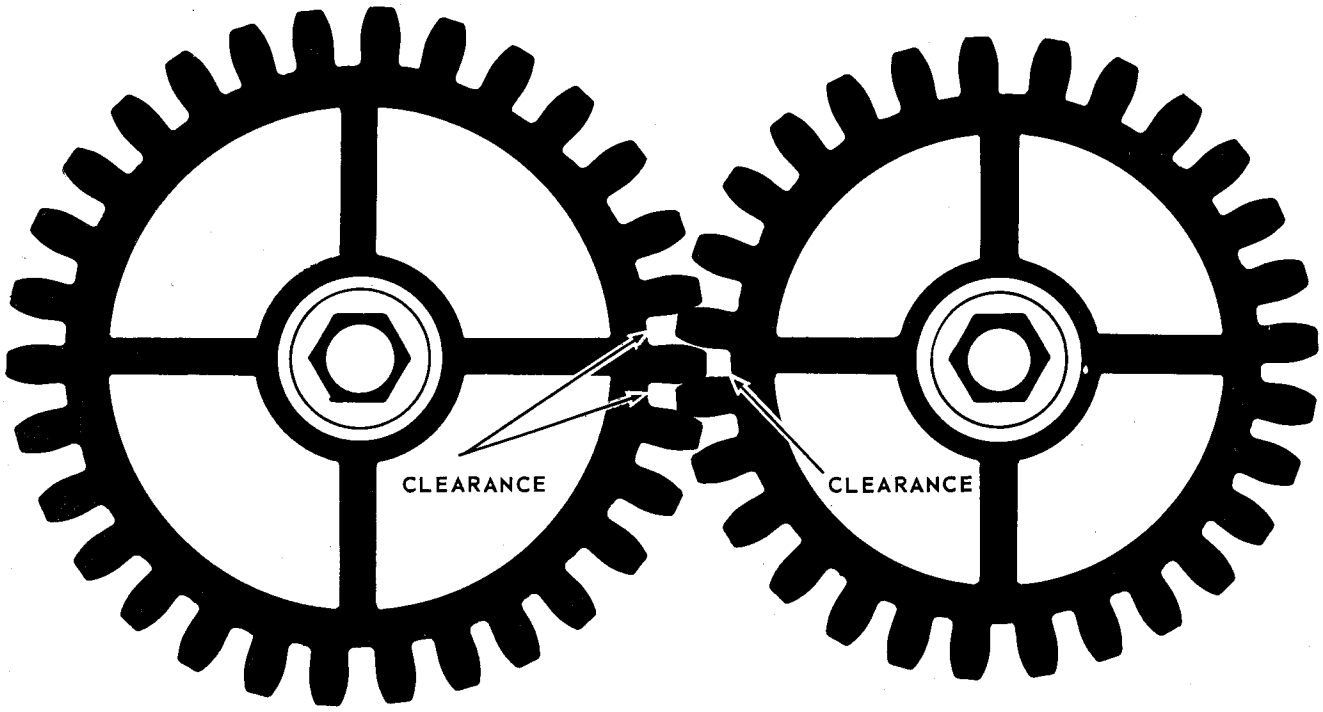
7. Tighten screw (C, Fig. 22).

8. Rock carriage back and forth using handwheel (D, Fig. 20) and check lead screw end play.

   If end play is evident, tighten cone lock nut (B, Fig. 22) just enough to eliminate play - - do not over-tighten.

CAUTION: DO NOT OVER-TIGHTEN CONE LOCK NUT (B).

GEAR CLEARANCE



View of two meshing gears showing gear clearance.

When setting up gear train, sufficient clearance must be allowed between two meshing gears. Gear clearance does not reduce accuracy of a thread cutting operation because all play, or back lash, is taken up in one direction.

A SUGGESTED METHOD TO OBTAIN PROPER GEAR CLEARANCE IS:

1. *Place a sheet of thick wrapping paper between the teeth of two meshing gears.*
2. *Tighten gears in position.*
3. *Remove paper.*

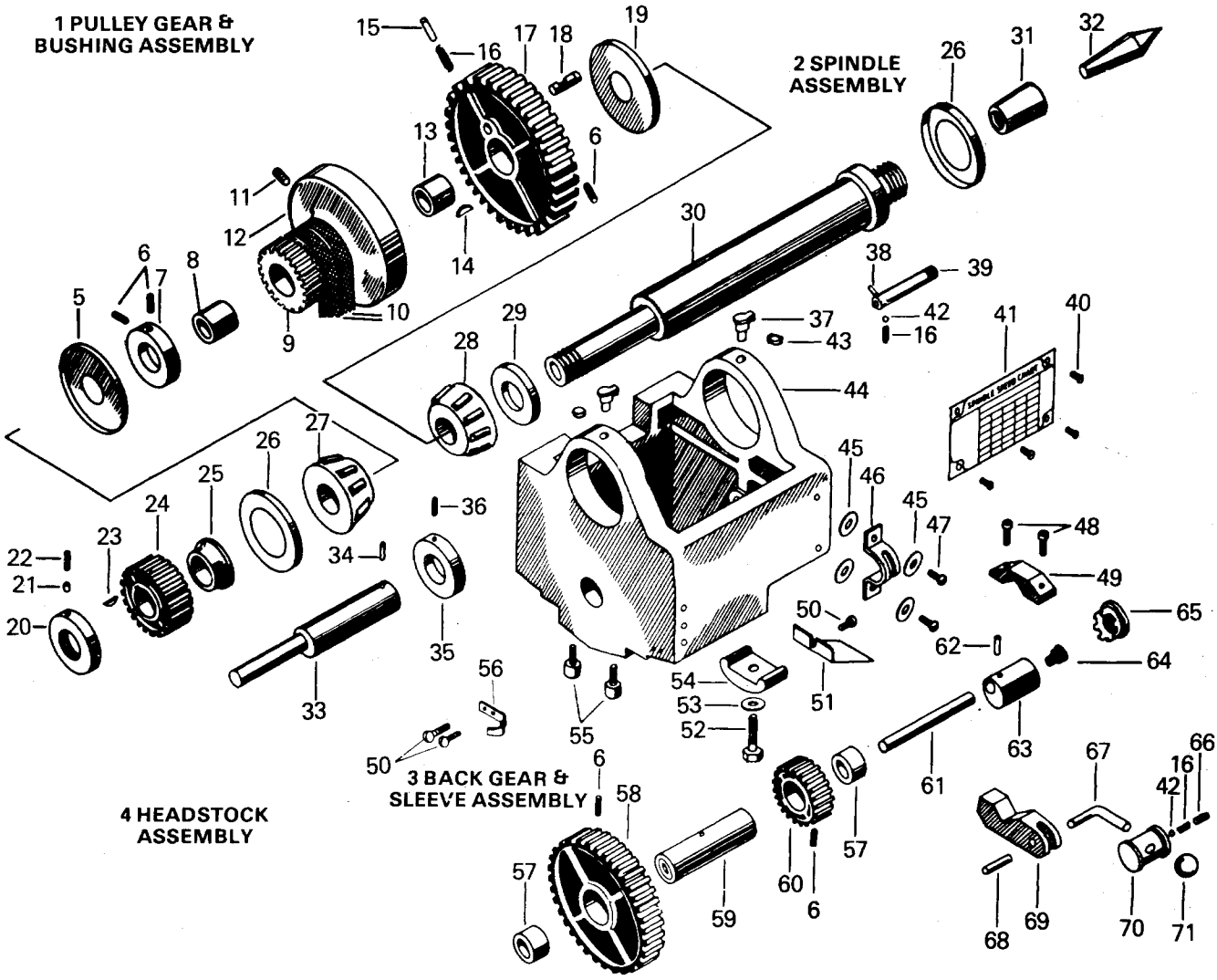
Clean gears occasionally to remove any chips which become lodged in gear teeth. Chips in gear teeth result in inaccuracies when cutting screw threads. A wad of cloth placed in the rear end of spindle will prevent chips from working into gear teeth.

LUBRICATION

A small amount of S.A.E. No. 30 oil or grease (we recommend Keystone No. 122 Gear Lubricant or equivalent) applied to gear teeth, will aid in obtaining smoother, more quiet operation.

NOTE: Remove oil and dirt before applying grease.

CRAFTSMAN 12" METAL TURNING LATHE, MODEL #101.28990



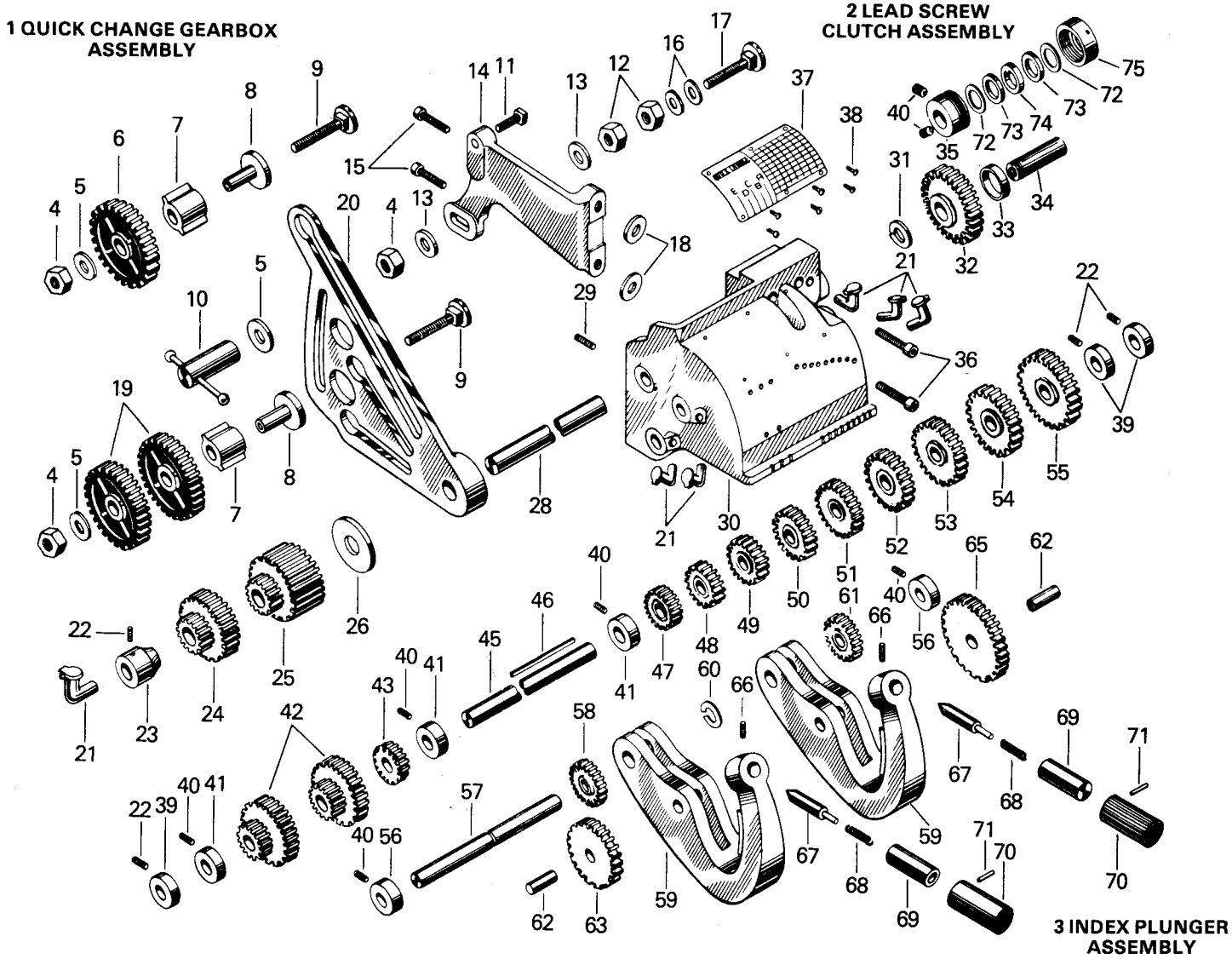
KEY NO.	PART NO.	DESCRIPTION
1	**3990-36**	**PULLEY, GEAR & BUSHING ASSEMBLY**
	Consists of:	
8	043-018	Bearing
9	10-242	Spindle Back Gear (Small)
11	10-257	Special Oil Screw
12	560-050	Pulley, Spindle
13	10-258	Bushing
2	**3980-35**	**SPINDLE ASSEMBLY**
	Consists of:	
28	045-026	Bearing, Roller
29	10A-5	Collar
30	10-31T	Head, Spindle
31	9-138	Sleeve, Center
32	9-88	Center, #2 M.T.
3	**3980-17**	**BACK GEAR & SLEEVE ASSEMBLY**
	Consists of:	
6	102570	*1/4-20 x 3/8 Soc. Set Screw (Cup Pt.) (2)
57	10-249	Bushing, Back Gear (2)
58	10-243	Back Gear - Large
59	10-248	Sleeve, Back Gear
60	10-244	Back Gear - Small

KEY NO.	PART NO.	DESCRIPTION
4	**3990-45**	**HEADSTOCK ASSEMBLY**
	Consists of:	
1	3990-36	Pulley Gear & Bushing Assy
2	3980-35	Spindle Assembly
3	3980-17	Back Gear & Sleeve Assembly
5	10A-8	Inside Baffle Plate (L)
6	102570	*1/4-20 x 3/8 Soc. Set Screw (Cup Pt.) (3)
7	10A-89	Collar, Spindle Thrust (w/Set Screw)
10	BD3M-34	Belt (1/2 x 43" Lg) (2)
14	442-010	Key
15	9-60	Plunger, Reverse Lever
16	9-61	Spring, Rev. Lever Plunger (3)
17	10-241	Spindle Back Gear - Large (w/Pin & Plunger)
18	10-256	Back Gear Lock Pin
19	10A-7	Inside Baffle Plate (R)
20	9-32	Head Spindle Collar (L) (w/Set Screw)
21	9-124	Plug, Set Screw
22	456813	*1/4-20 x 3/16 Headless Set Screw (Cup Pt.)
23	106751	*#606 Woodruff Key
24	9-100-32	Spindle Gear
25	10A-6	Spacer
26	10A-3	Dust Cover (2)
27	045-027	Bearing
33	271-006	Eccentric, Back Gear
34	9414258	*1/8 x 3/4 Roll Pin
35	10-253	Collar, Set (w/Set Screw)
36	102705	*1/4-20 x 1/4 Hd'less Set Screw (Cup Pt.)
37	9-204	Oil Cup (2)

KEY NO.	PART NO.	DESCRIPTION
38	456636	*5/32 x 7/16 Roll Pin
39	10-42A	Pulley Index Pin
40	145366	†*#2 x 3/16 P.K. Drive Screw (4)
41	130-068	†Speed Chart
42	9-210	Steel Ball (2)
43	557-097	Plug, Felt (2) 557-047
44	383-003	Headstock (w/Oilers)
45	9414401	*#10 Washer (4)
46	556-035	Plate, Back Gear
47	110486	*#10-24 x 3/8 Fill. Hd. Mach. Screw (2)
48	138203	*1/4-20 x 1-1/2 Soc. Cap Screw (2)
49	126-018	Clamp, Shift
50	———	†*#8 x 1/4 Pan Hd. Self Tapping Screw (Type B)
51	122-044	†Cover
52	100161	†*1/2-13 x 1-3/4 Hex. Hd. Cap Screw
53	10-262	†Headstock Clamp Washer
54	9-97	†Clamp
55	138202	†*5/16-18 x 1 Soc. Hd. Cap Screw (2)
56	MI-53	†Spring Clip
61	700-074	Shaft, Back Gear
62	142486	*1/8 x 3/4 Groove Pin (Type A)
63	271-005	Eccentric, Back Gear
64	DB4-35	Oiler, Ball
65	557-006	Plug, Button
66	102569	*1/4-20 x 1/4 Soc. Set Screw (Cup Pt.)
67	700-073	Shaft, Shift
68	189110	*1/8 x 3/4 Groove Pin (Type A)
69	126-017	Clamp, Shift
70	046-015	Bearing, Back Gear Shift
71	51-56	Feed Handle Ball

†Not part of the Assembly
*Standard hardware item - may be purchased locally.

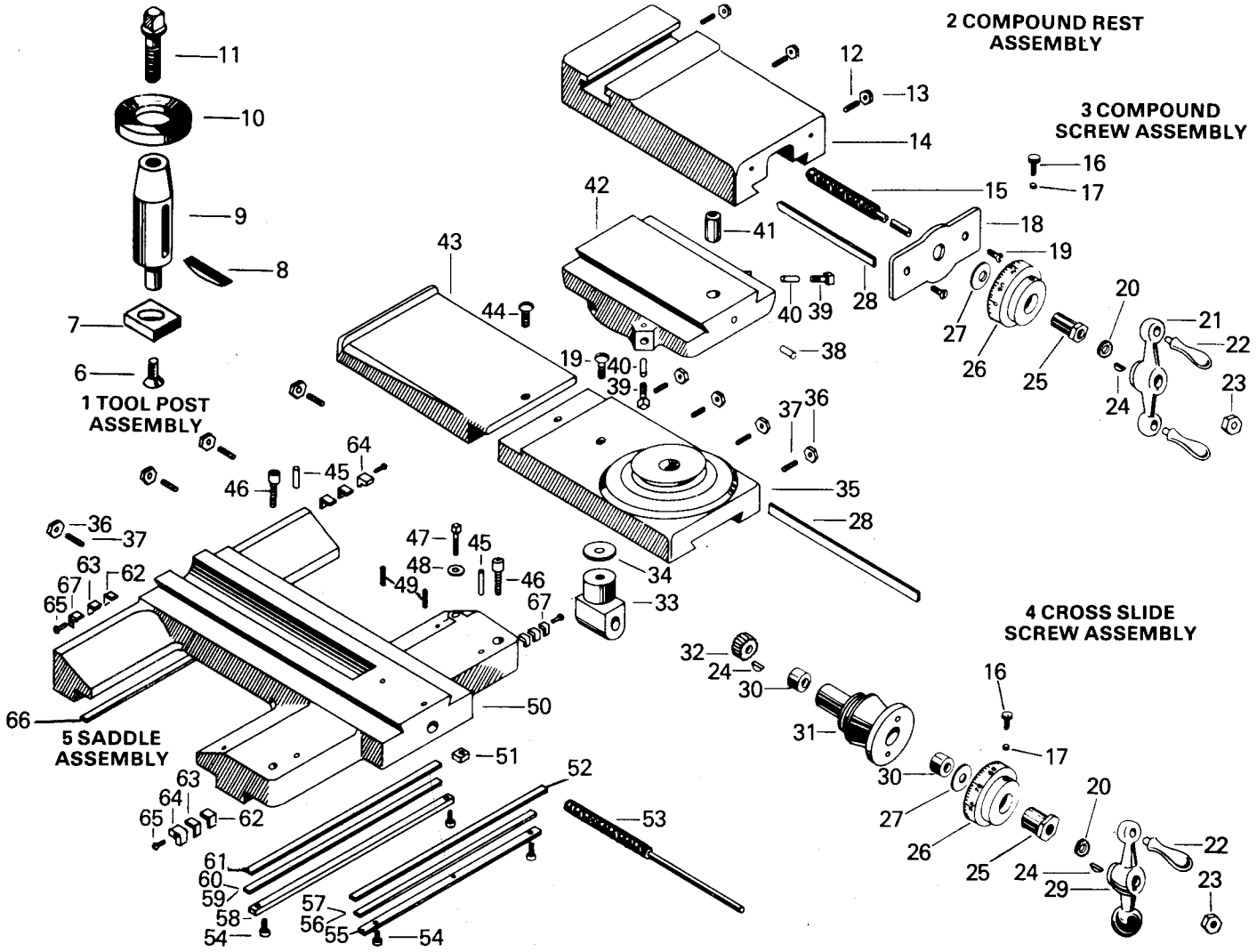
CRAFTSMAN 12" METAL TURNING LATHE, MODEL #101.28990



KEY NO.	PART NO.	DESCRIPTION
1	**3980-40**	**QUICK CHANGE GEARBOX ASSY.**
		Consists of:
2	**3980-25**	**Lead Screw Clutch Assy.**
3	**3980-14**	**Index Plunger Assy.**
4	102635	*3/8" - 16 Hex Nut (3)
5	9-93	Washer, Change Gear (3)
6	9-101-40A	Gear, Change (40T)
7	9-70	Bushing,Change Gear (2)
8	9-73A	Sleeve, Change Gear (2)
9	9-69A	Bolt, Change Gear (2)
10	3980-39	Lock handle Assy.
11	109186	*3/8-16 x 1-3/4" Sq. Hd Mach. Bolt
12	9-190	3/8-16 Special Hex Jam Nut (2)
13	446200	*3/8" Washer, Plain (2)
14	L6-1002	Bracket, Housing Support
15	151241	*1/4-20 x 1" Phil. Hd. Mach. Scr. (2)
16	9414321	*5/16" Washer, Plain (2)
17	S7-207	Bolt, Machine
18	446142	*3/16" Washer, Plain (2)
19	9-101-48A	Gear, Change (48T) (2)
20	L6-1007	Quadrant, Change Gear
21	S7-217	Oiler (6)
22	102569	*1/4-20 x 1/4" Soc. Set Scr. (4)
23	10-1534	Collar, Compound Gear
24	3980-32	Compound Gear w/Bushing
25	3980-31	Compound Gear w/Bushing
26	L6-1057	Spacer
28	10-1508	Spindle, Compound Gear
29	140869	*10-24 x 5/16" Soc. Set Scr. (Cup Pt.)
30	386-031	Housing Gear
31	L6-1056	Open Type Retaining Ring
32	L6-1030	Gear (30T)
33	9-53	Shim (As Req'd.)
34	700-194	Shaft
36	138227	*5/16-18 x 2-1/4" Soc. Cap Scr. (2)
37	130-007	Thread Chart
38	100736	*6 x 1/4 Pan Hd. Self Tapping Scr. Type A (6)
39	10-1225	Collar(with Set Screw) (3)
40	221183	*1/4-20 x 3/16" Soc. Set Scr. (Cup Pt.) (5)
41	10-1533	Collar (with Set Screw) (3)
42	3980-33	Compound Gear w/Bushing (2)
43	3980-34	Gear w/Busing (16T)
45	L6-1009	Spindle Stack Gear
46	L6-1036	Key
47	L6-1014	Gear (16T)
48	10-1515	Gear (18T)
49	10-1516	Gear (20T
50	10-1517	Gear (22T)
51	10-1518	Gear (23T)
52	10-1519	Gear (24T)
53	10-1520	Gear (26T)
54	10-1521	Gear (28T)
55	10-1522	Gear (30T)
56	BD1-24	Collar (with Set Screw) (2)
57	L6-1011	Spindle, Change Gear Tumbler
58	10-1523	Gear (20T)
59	10-1586	Lever, Change Gear (2)
60	L6-1054	Open Type Retaining Ring
61	10-1512	Gear (20T) Stack Tumbler Drive
62	10-1588 &	Shaft, Tumbler (2)
63	3980-37	32T Gear w/Bushing
65	3980-38	45T Gear w/Busing
66	140867	*10-24 x 3/16" Soc. Set Scr. (2)
2	**3980-25**	**LEAD SCR. CLUTCH ASSY.**
		Consists of:
35	386-091	Clutch Housing
40	221183	*1/4-20 x 3/16" Soc. Set Scr. (2)
72	932-057	Washer, Clutch (2)
73	933-017	Washer, Clutch (2)
74	238-004	Driver Clutch
75	127-028	Cap, Clutch
3	**3980-14**	**INDEX PLUNGER ASSY.**
		Consists of :
67	10-1231	Plunger, Tumble (2)
68	S8-63	Spring, Plunger (2)
69	10-1244	Sleeve, Tumbler (2)
70	441-029	Knob (2)
71	142954	*3/32 x 3/4" Groove Pin (2)

*Standard hardware item - may be purchased locally.
&Corrected part number.

CRAFTSMAN 12" METAL TURNING LATHE, MODEL #101.28990



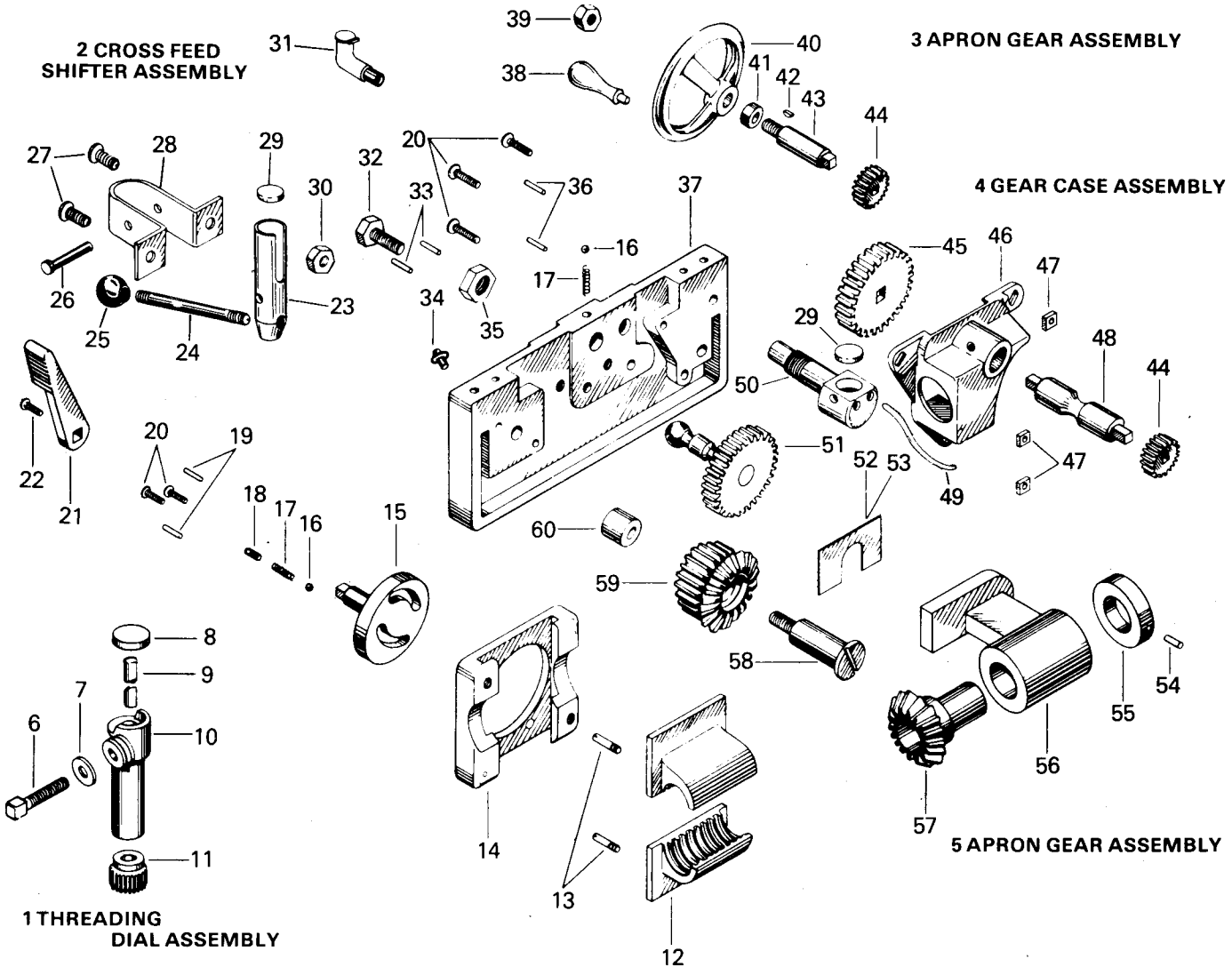
KEY NO.	PART NO.	DESCRIPTION
1	**9-39X**	**TOOL POST ASSEMBLY**
	Consists of:	
6	9-137A	Stud, Tool Post
7	9-136A	Anchor, Tool Post
8	9-41	Rocker, Tool Post
9	9-39	Tool Post
10	9-40	Washer, Tool Post
11	9-148	Screw, Tool Post
2	**3980-75**	**COMPOUND REST ASSEMBLY**
	Consists of:	
3	3980-22	Compound Screw Assembly
12	——	#10-32 x 1-1/8 Hd'less Set Screw (Dog Pt.) (3)
13	10-226	Nut, Gib Screw (3)
14	704-017	Slide, Tool Post
19	113955	*1/4-20 x 1/2 Rd. Hd. Mach. Screw (2)
28	345-077	Gib, Compound Rest Tool Slide
35	704-015	Slide, Lower Compound
36	10-225	Nut, Gib Screw (4)
37	102822	*1/4-28 x 1-1/4, Hd'less Set Screw (Dog Pt.) (4)
38	102569	*1/4-20 x 1/4 Soc. Set Screw (Cup Pt.)
39	102897	*3/8-16 x 1-1/4 Sq. Hd. Set Screw (2)
40	10-309	Pin, Swivel Lock Plunger (2)
41	537-040	Nut, Tool Post Slide
42	704-016	Slide, Compound Rest Swivel
43	122-046	Cover, Slide
44	110500	*#10-24 x 1/2 Rd. Hd. Mach. Screw

KEY NO.	PART NO.	DESCRIPTION
3	**3980-22**	**COMPOUND SCREW ASSEMBLY**
	Consists of:	
15	696-048	Screw, Compound Rest
16	M1-92	Lock, Graduated Collar
17	557-028	Plug, Micro Feed Dial
18	046-016	Bearing, Tool Post Slide
20	114606	*3/8 Ext. Shakeproof Washer
21	10D-308	Crank, Compound Rest Ball (w/Handle)
22	9-104	Handle, Cross Feed Wheel (2)
23	10D-262	Nut, Special Ball Crank
24	106749	*#404 Woodruff Key
25	049-089	Bushing
26	233-016	Dial, Microfeed
27	M6-255	Washer, Back Gear
4	**3980-18**	**CROSS SLIDE SCREW ASSEMBLY**
	Consists of:	
16	M1-92	Lock, Graduated Collar
17	557-028	Plug, Microfeed Dial
20	114606	*3/8 Ext. Shakeproof Washer
22	9-104	Handle, Crossfeed Wheel
23	10D-262	Nut, Special Ball Crank
24	106749	*#404 Woodruff Key (2)
25	049-089	Bushing
26	233-016	Dial, Microfeed
27	M6-255	Washer, Back Gear
29	L2-61A	Crank, Small Ball (w/Handle)
30	10F-45	Bearing (2)
31	046-017	Bearing, Crossfeed (w/Bushings)
32	10F-33	Gear, Crossfeed Screw
53	696-047	Screw, Crossfeed Slide

KEY NO.	PART NO.	DESCRIPTION
5	**3980-80**	**SADDLE ASSEMBLY**
	Consists of:	
2	3980-75	Compound Rest Assembly
4	3980-18	Cross Slide Screw Assembly
19	113955	*1/4-20 x 1/2 Rd. Hd. Mach. Screw
28	345-077	Gib, Combination
33	537-041	Nut, Carriage Slide
34	9-87	Washer, Carriage Slide Nut (As req'd.)
37	223044	*1/4-28 x 1 Hd'less Set Screw (Dog Pt.) (4)
45	142508	*3/16 x 1-1/4 Groove Pin (2)
46	154101	*3/8-16 x 1-1/4 Soc. Hd. Cap Screw (2)
49	127554	*#8-32 x 1/8 Hd'less Set Screw (Cup Pt.) (2)
50	719-001	Saddle
	MISCELLANEOUS PARTS	
	Consists of:	
36	10-225	Nut, Gib Screw (4)
47	696-049	Screw
48	9-155	Washer
51	9-14	Clamp
52	711-091	Shim (As req'd.)
54	114353	*1/4-20 x 1/2 Fill. Hd. Mach. Screw (4)
55	556-071	Bearing Plate
56	711-043	Shim (.003) (As req'd.)
57	711-044	Shim (.002) (As req'd.)
58	556-070	Bearing Plate
59	711-042	Shim (.002) (As req'd.)
60	711-045	Shim (.003) (As req'd.)
61	711-090	Shim (As req'd.)
62	547-004	Felt Oiler (4)
63	938-003	Wiper (4)
64	641-055	Retainer (2)
65	118534	*#10 x 3/4 Pan Hd. Self Tapping Screw (Type A) (4)
66	345-009	Gib
67	641-056	Retainer (2)

*Standard hardware item - may be purchased locally.

CRAFTSMAN 12" METAL TURNING LATHE, MODEL #101.28990



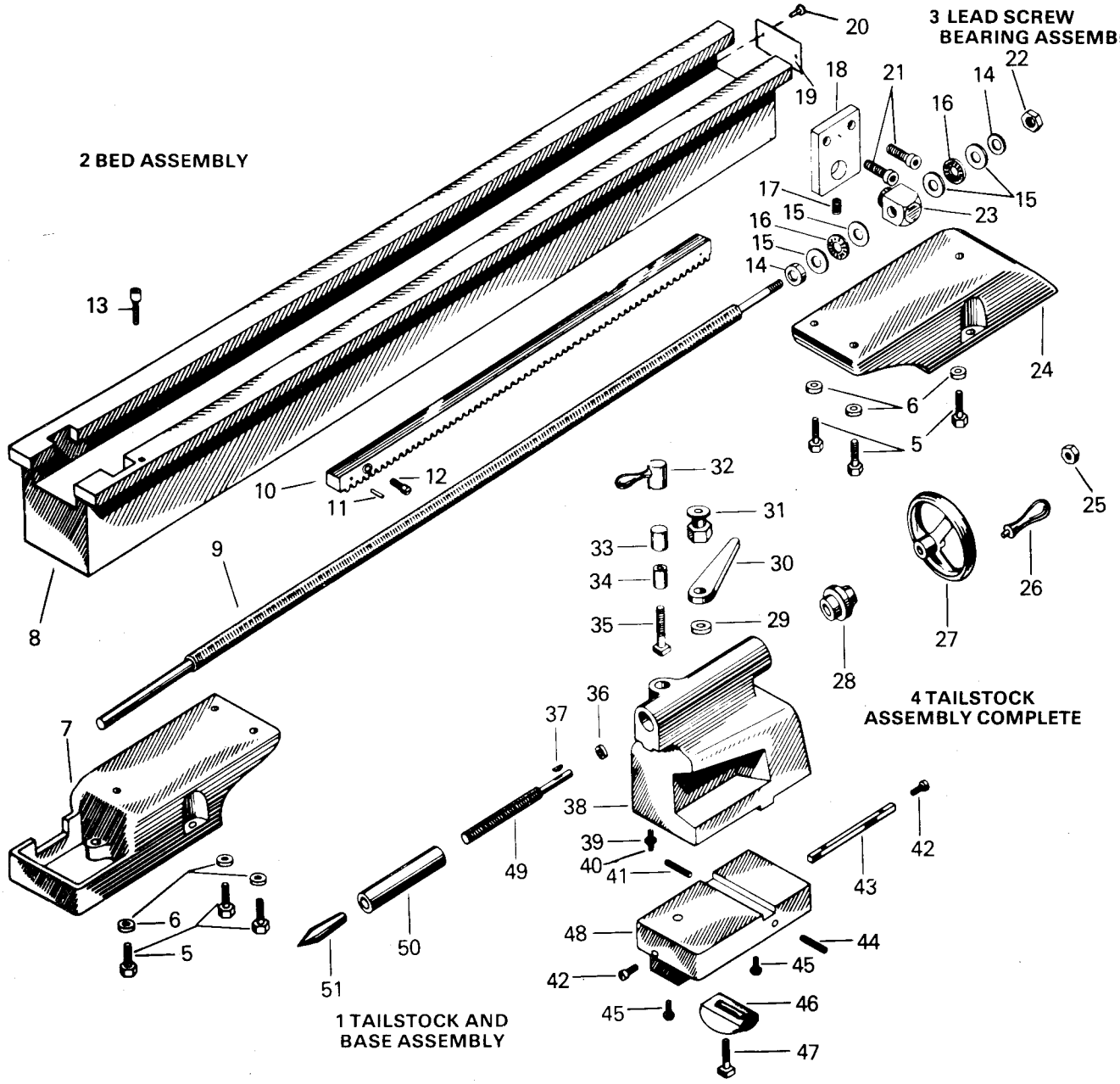
KEY NO.	PART NO.	DESCRIPTION
1	**3980-65**	**THREAD DIAL ASSEMBLY**
		Consists of:
6	9-179	†Screw
7	9-155	†Washer
8	9-62	Dial, Threading
9	9-65	Shaft, Threading Dial
10	9-63	Body, Threading Dial
11	9-64	Pinion, Threading
2	**3980-26**	**CROSS FEED SHIFTER ASSEMBLY**
		Consists of:
23	002-056	Arm
24	381-052	Handle
25	W30-20	Knob
26	104238	*3/16 x 7/8 Solid Flat Hd. Rivet
28	041-283	Bracket
29	557-047	Plug, Felt
3	**3980-28**	**APRON GEAR ASSEMBLY**
		Consists of:
16	9-210	Ball
17	9-61	Spring
29	557-047	Plug, Felt

KEY NO.	PART NO.	DESCRIPTION
34	W30-16	Oiler
35	271505	*7/16-20 Hex Nut
37	005-006	Apron, Carriage
41	10-264	Bushing
49	———	*Pipe Cleaner, 6"
50	150-002	Cup, Oil
51	3980-24	Shaft Gear Bushing
4	**3980-56**	**GEAR CASE ASSEMBLY**
		Consists of:
44	9-102-12S	Gear, Carriage Traverse
45	341-057	Gear, Carriage Traverse
46	10F-11	Case, Traverse Gear
48	9-68	Shaft, Carriage Pinion
5	**3980-21**	**APRON GEAR ASSEMBLY**
		Consists of:
54	102569	*1/4-20 x 1/4 Soc. Set Screw (Cup Pt.)
55	10F-71	Collar, Mitre Gear
56	046-036	Bearing, Crossfeed Gear
57	341-051	Gear, Mitre
		MISCELLANEOUS PARTS
		Consists of:
12	10F-12	Nut, Split (One Pair)
13	9-66	Stud

KEY NO.	PART NO.	DESCRIPTION
14	9-13	Guide
15	10D-38	Scroll
16	9-210	Ball
17	9-61	Spring
18	102708	*1/4-20 x 5/8 Hd'less Set Screw (Cup. Pt.)
19	142486	*1/8 x 3/4 Groove Pin (2)
20	153801	*1/4-20 x 1-1/4 Phil. Hd. Cap Screw (5)
21	381-026	Handle, Split Nut
22	100856	*#8-32 x 5/8 Oval Hd. Mach. Screw
27	113954	1/4-20 x 3/8 Rd. Hd. Mach. Screw (2)
30	9-190	* Nut
31	S7-217	Oiler
32	100133	*3/8-16 x 3/4 Hex. Cap Screw
33	107317	*3/16 x 1/2 Groove Pin (2)
36	142484	*1/8 x 1/2 Groove Pin (2)
38	9-104	Handle
39	102635	*3/8-16 Hex Nut
40	9-23	Handwheel (w/Handle)
42	106749	* #404 Woodruff Key
43	9-67	Shaft
44	9-102-12S	Gear, Carriage Traverse
52	711-005	Shim (.002)
53	711-006	Shim (.002)
58	698-108	Stud, Mitre Gear
59	341-052	Gear, Mitre - Spur Combination
60	BD1-18	Bushing

*Standard hardware item - may be purchased locally.
†Not part of the assembly.

CRAFTSMAN 12" METAL TURNING LATHE, MODEL #101.28990



KEY NO.	PART NO.	DESCRIPTION
1	**3980-11**	**TAILSTOCK & BASE ASSEMBLY**
	Consists of:	
38	831-002	Tailstock
41	138682	*5/16-18 x 3 Hd'less Set Screw (Oval Pt.)
42	10D-60	Screw, Gib Adjusting (2)
43	345-010	Gib, Tailstock
44	138678	*5/16-18 x 2 Hd'less Set Screw (Oval Pt.)
45	110502	*#10-24 x 3/4 Rd. Hd. Mach. Screw (2)
48	050-035	Base, Tailstock
2	**3980-49**	**BED ASSEMBLY**
	Consists of:	
5	100122	*5/16-18 x 1 Hex Hd. Cap Screw (6)
6	426759	*5/16 Spring Lock Washer (6)
7	294-004	Foot, Bed
8	058-016	Bed, Lathe 54"
10	9-86-54	Rack, Carriage
11	187733	*3/16 x 5/8 Groove Pin (Type 1)
12	L3-202	Screw, Special Fill. Hd. (7)
24	294-005	Foot, Bed

KEY NO.	PART NO.	DESCRIPTION
3	**3980-58**	**LEAD SCREW BEARING ASSEMBLY**
	Consists of:	
9	696-149	Screw, Lead
14	10F-74	Feed Screw Washer (2)
15	556-166	Plate, Thrust Bearing (4)
16	044-028	Bearing, Thrust (2)
17	102569	*1/4-20 x 1/4 Soc. Set Screw (Cup Pt.)
18	041-284	Bracket
22	9415992	*1/2-20 Hex Conelok Nut
23	046-040	Bearing, Lead Screw
4	**3980-50**	**TAILSTOCK ASSEMBLY**
	Consists of:	
1	3980-11	Tailstock & Base Assembly
25	9414201	*3/8-16 Hex. Conelok Nut
26	9-104	Handle, Crossfeed Wheel
27	9-23	Wheel, Hand
28	10D-30	Bearing, Tailstock Screw
29	9414321	*5/16 Plain Washer
30	937-006	Wrench

KEY NO.	PART NO.	DESCRIPTION
31	3980-51	Tailstock Nut Assembly
32	M1-47	Handle, Arbor Support Lock
33	M6-45	Sleeve, Tailstock Ram
34	M6-44	Sleeve, Tailstock Ram
35	109151	*1/4-20 x 1-3/4 Sq. Hd. Mach. Screw
36	9-90	Washer, Ram Screw Thrust
37	106749	*#404 Woodruff Key
39	114501	*1/4-20 Hex. Jam Nut
40	9-165A	Screw, Tailstock Ram Set
46	9-7	Clamp, Tailstock
47	109192	*3/8-16 x 3-1/4 Sq. Hd. Mach. Screw
49	10D-34	Screw, Tailstock Ram
50	9-8	Ram, Tailstock
51	9-88	Center, #2 Morse Taper

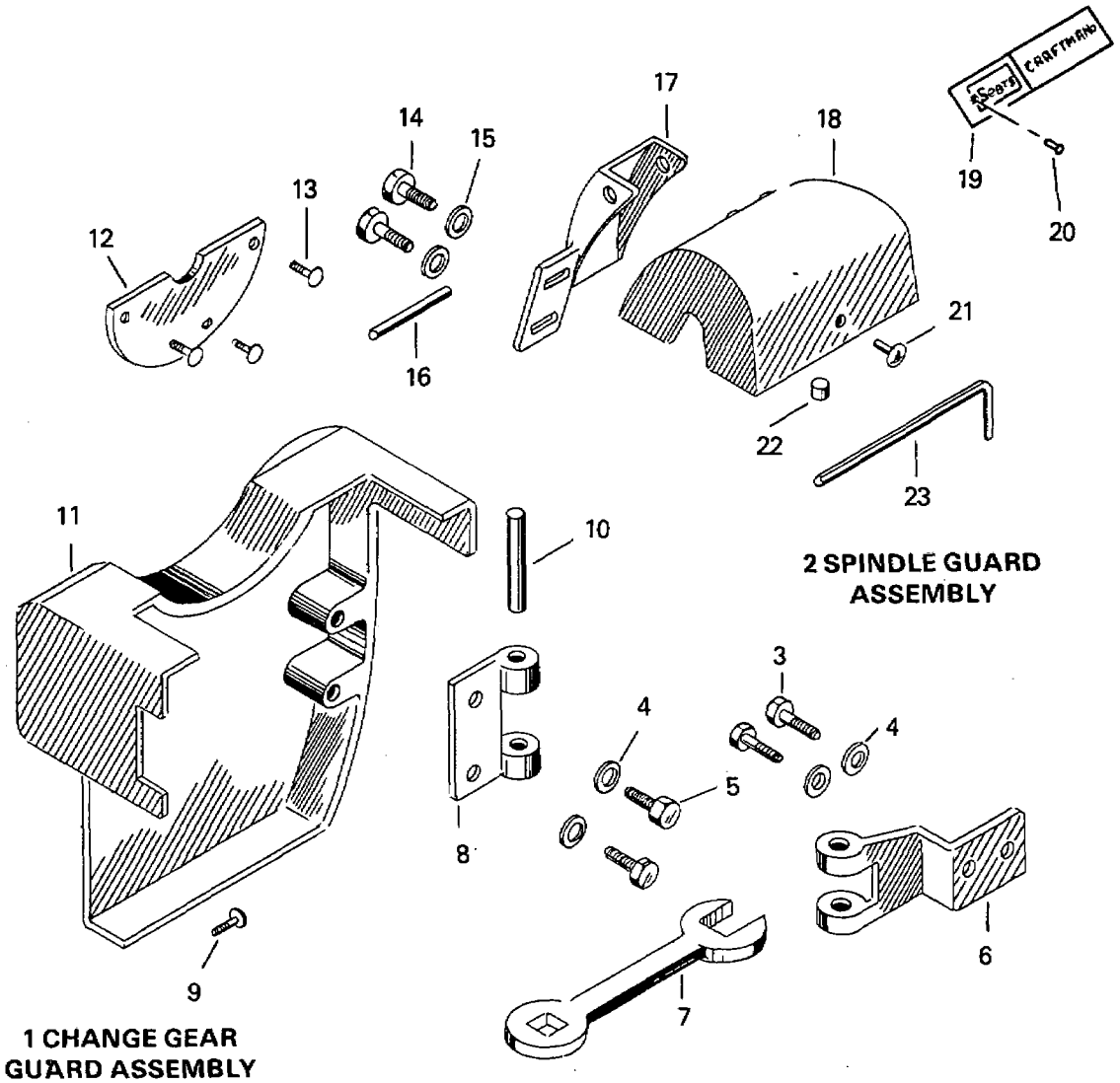
MISCELLANEOUS PARTS

Consists of:

13	217908	*5/16-18 x 7/8 Soc. Cap Screw
19	10F-176	Plate, Model Number (Atlas)
20	145366	*#2 x 3/16 P.K. Drive Screw (2)
21	138202	*1/4-20 x 1 Soc. Cap Screw (2)

*Standard hardware item - may be purchased locally.

CRAFTSMAN 12" METAL TURNING LATHE, MODEL #101.28990

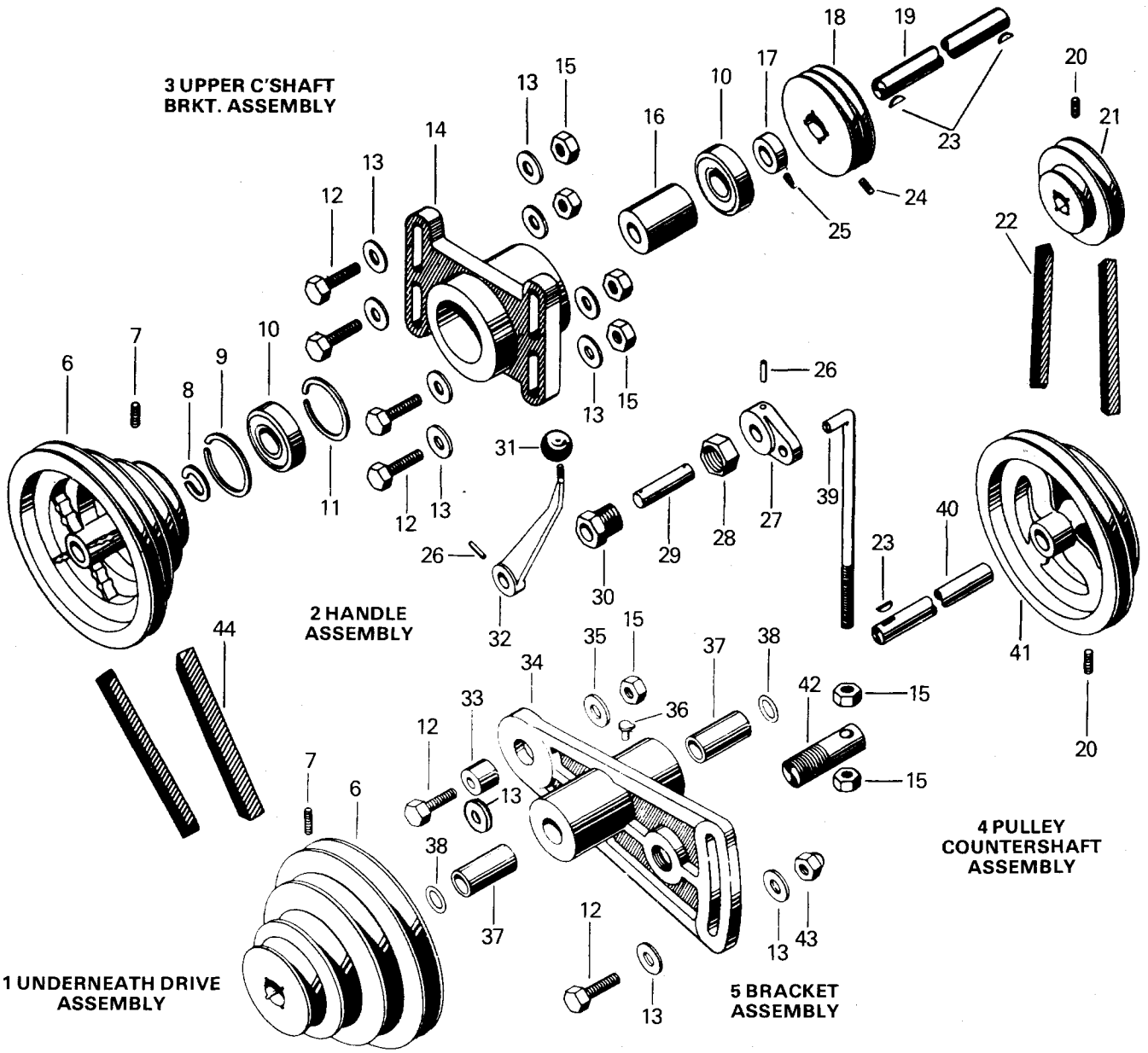


KEY NO.	PART NO.	DESCRIPTION
1	**3980-19**	**CHANGE GEAR ASSY.**
	Consists of:	
4	106261	*1/4 Plain Washer (2)
5	448452	*1/4-20 x 1 Hex Hd. Self Tapping Screw (Type F) (2)
8	041-117	Bracket, Hinge
9	145367	*#4 x 3/16 P.K. Drive Screw
11	342-030	Guard, Change Gear
12	556-068	Plate, Deflector
13	145106	*#8 x 1/4 Rd. Hd. Self Tapping (Type Z) (3)
2	**3990-13**	**SPINDLE GUARD ASSY.**
	Consists of:	
16	562-047	Pin, Hinge
17	041-130	Bracket, Spindle Guard
18	342-033	Guard, Spindle
21	441-107	Knob
22	BD3B-10	Rubber Cushion

KEY NO.	PART NO.	DESCRIPTION
	MISCELLANEOUS PARTS	
	Consists of:	
3	106325	*5/16-18 x 7/8 Hex Hd. Cap Screw (2)
4	106261	*1/4 Plain Washer (2)
6	041-118	Bracket
7	9-115	Wrench
10	9-92A	Hinge Pin
14	100134	*3/8-16 x 1 Hex Hd. Cap Screw (2)
15	9414321	*5/16 Plain Washer (2)
19	536-050	Nameplate, Craftsman
20	145366	*#2 x 3/16 P.K. Drive Screw (2)
23	937-022	5/16 Socket Wrench

*Standard hardware item — may be purchased locally.

CRAFTSMAN 12" METAL TURNING LATHE, MODEL #101.28990



KEY NO.	PART NO.	DESCRIPTION
1	**3990-12**	**UNDERNEATH DRIVE ASSY.**
	Consists of:	
2	3990-14	Handle Assy.
3	3990-16	Upper C'Shaft Brkt. Assy.
4	3990-20	Pulley C'Shaft Assy.
5	3990-18	Bracket Assy.
6	10-80	Pulley, C'Shaft (2)
7	120680	1/4-20 x 1/2 Soc. Set Scr. (Cup Pt.) (2)
12	100136	* 3/8-16 x 1 1/2 Hex. Hd. Cap Scr. (6)
13	9414321	* 5/16 Plain Washer (11)
15	102635	*3/8-16 Hex Nut (7)
23	106749	*#404 Woodruff Key
28	218200	*7/8-14 Hex Nut
33	699-068	Spacer C'Shaft
35	932-040	Washer
38	9 146	C'Shaft Washer
39	451-014	Link, Shift
43	9414201	*3/8-16 Hex Conelok Nut

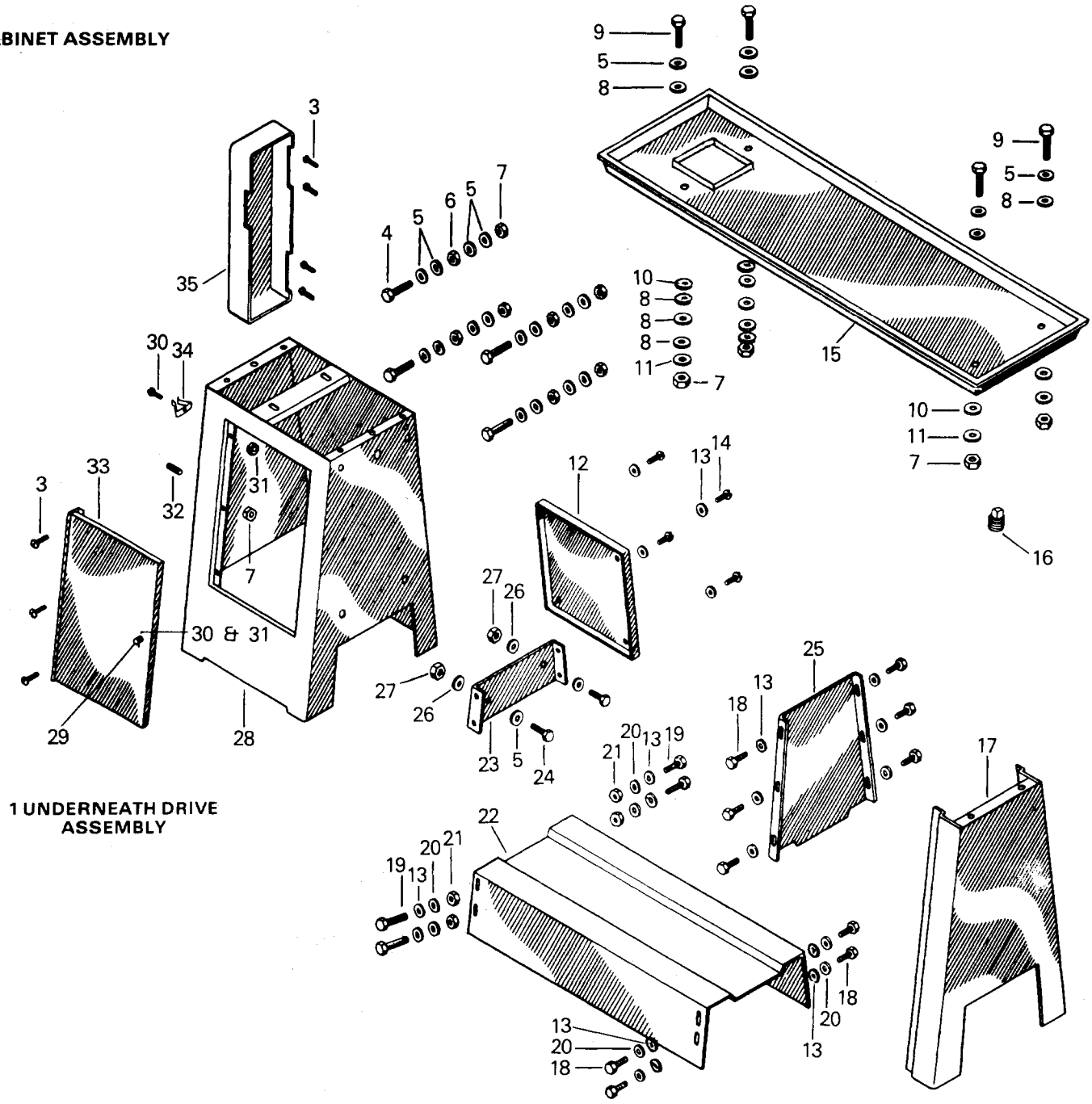
NOTE: See Continuation of 3990-12 Underneath Drive Assembly on Cabinet Assembly Page.

*Standard hardware item-may be purchased locally.

KEY NO.	PART NO.	DESCRIPTION
2	**3990-14**	**HANDLE ASSY.**
	Consists of:	
26	142508	*3/16 x 1 1/4 Groove Pin (2)
27	002-026	Arm, Shift
29	700-077	Shaft, Shift Handle
30	046-020	Bearing, Shift
31	51-56	Feed Handle Ball
32	382-027	Handle, Shift
3	**3990-16**	**UPPER C'SHAFT BRKT. ASSY.**
	Consists of:	
8	641-084	Retainer, Ring
9	641-047	Retainer, Snap Ring
10	52-17F	Bearing (2)
11	641-010	Retainer, Snap Ring
14	041-131	Bracket, C'Shaft
16	699-067	Spacer, Bearing
17	123-084	Collar, Hinge Pin
18	560-051	Pulley, C'Shaft
19	701-020	Spindle C'Shaft
23	106749	*#404 Woodruff Key (2)
24	102570	*1/4-20 x 3/8 Soc. Set Scr. (Cup Pt.)
25	102569	*1/4-20 x 1/4 Soc. Set Scr. (Cup Pt.)

KEY NO.	PART NO.	DESCRIPTION
4	**3990-20**	**PULLEY C'SHAFT ASSY.**
	Consists of:	
20	102582	*5/16-18 x 1/2 Soc. Set Scr. (Cup Pt.)
38	9-146	Washer, C'Shaft
40	701-021	Spindle, C'Shaft
41	560-060	Pulley, C'Shaft
5	**3990-18**	**BRACKET ASSY.**
	Consists of:	
34	041-132	Bracket, C'Shaft
36	9-644	Oiler
37	L3-109	Bushing, C'Shaft (2)
42	698-040	Stud, Shaft
MISCELLANEOUS PARTS		
	Consists of:	
20	102582	*5/16-18 x 1/2 Soc. Set Scr. (Cup Pt.)
21	10-428	Motor Pulley
22	S3-90	Belt
44	051-023	Belt

2 CABINET ASSEMBLY



1 UNDERNEATH DRIVE ASSEMBLY

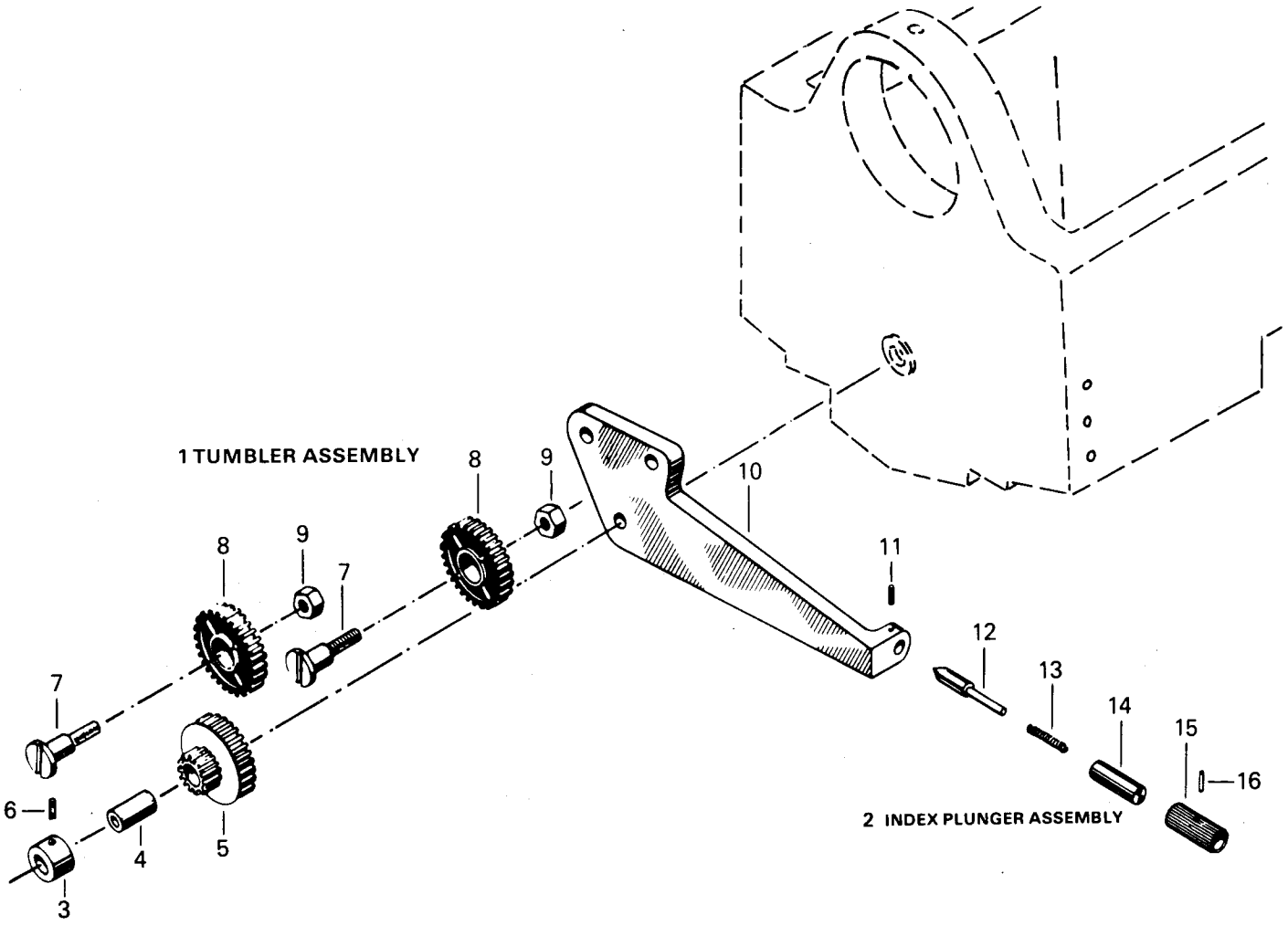
KEY NO.	PART NO.	DESCRIPTION
1	**3990-12**	**UNDERNEATH DRIVE ASSY.**
		Consists of:
2	3990-11	Cabinet Assy.
3	113954	*1/4-20 x 3/8 Rd. Hd. Mach. Scr. (7)
7	102634	*5/16-18 Hex Nut (4)
29	293-003	Fastener, Adjusting Pawl
30	110499	*#10-24 x 3/8 Rd. Hd. Mach. Scr. (4)
31	981-006	#10-24 Hex. Nut (3)
32	102725	*5/16-18 x 1 3/4 Hd/Less Set Scr. (Cup Pt.)
33	235-005	Door
34	S7-142	Clip
35	342-034	Guard, Belt

KEY NO.	PART NO.	DESCRIPTION
2	**3990-11**	**CABINET ASSY.**
		Consists of:
5	941-4321	*5/16 Plain Washer (2)
12	122-049	Cover, Rear
13	446142	*3/16 Plain Washer (18)
14	113959	*1/4-20 x 1 Rd. Hd. Mach. Scr. (4)
17	453-010	Leg, Right
18	106972	*1/4-20 x 1/2 Hex. Hd. Cap Scr. (10)
19	106319	*1/4-20 x 5/8 Hex. Hd. Cap Scr. (4)
20	103319	*1/4 Spring Lock Washer (8)
21	109084	*1/4-20 Hex Nut (4)
22	706-023	Shelf For 54"Bed
23	041-072	Bracket, Shelf
24	100134	*3/8-16 x 1 Hex. Hd. Cap Scr. (2)
25	566-003	Panel, Filler
26	103321	*3/8 Spring Lock Washer (2)
27	102635	*3/8-16 Hex Nut (2)
28	453-011	Leg, Left

KEY NO.	PART NO.	DESCRIPTION
		MISCELLANEOUS PARTS
		Consists of:
4	109168	*5/16-18 x 1 1/2 Sq. Hd. Bolt (4)
5	9414321	*5/16 Plain Washer (20)
6	114502	*5/16-18 Hex. Jam Nut (4)
7	102634	*5/16-18 Hex Full Nut (8)
8	106264	*7/16 Plain Washer (10)
9	100125	*5/16-18 x 1 3/4 Hex Hd. Cap Screw (4)
10	049-031	Bushing, Rubber (4)
11	103320	*5/16 Spring Lock Washer (4)
15	571-002	Pan, Oil
16	18-114	Pipe Plug

*Standard hardware item - may be purchased locally.

28990



KEY NO.	PART NO.	DESCRIPTION
1	**3980-44**	**TUMBLER ASSEMBLY**
	Consists of:	
2	3980-14	Plunger Assembly
7	698-039	Stud, Reverse Gear (2)
8	341-063	Gear, Reverse Tumbler (2)
9	9-190	Nut, Check (2)
10	041-120	Bracket, Reverse Tumbler
11	140867	*#10-24 x 3/16 Soc. Set Screw (Cup Pt.)
2	**3980-14**	**INDEX PLUNGER ASSEMBLY**
	Consists of:	
12	10-1231	Plunger, Tumbler
13	S8-63	Spring, Plunger
14	10-1244	Sleeve, Tumbler
15	441-029	Knob
16	142954	*3/32 x 3/4 Groove Pin
	MISCELLANEOUS PARTS	
	Consists of:	
3	10-1225	Collar (w/Bushing)
4	10-264	Bearing
5	3980-12	Compound Gear & Plate Assembly (w/Bearing)
6	102569	*1/4-20 x 1/4 Soc. Set Screw

*Standard hardware item - may be purchased locally.