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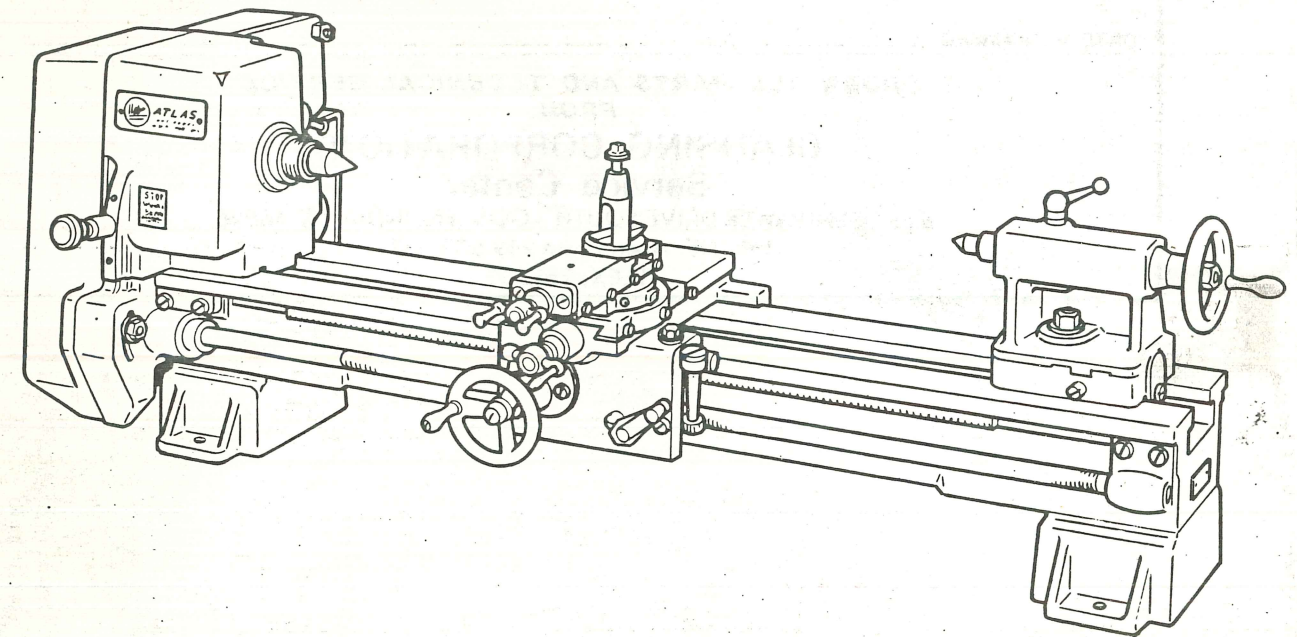
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1. Repair parts orders — for all of our product lines
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8/77 1st change 5/10/80 11

OPERATING INSTRUCTIONS and PARTS LIST

ATLAS



6 INCH METAL TURNING LATHE

MODEL 10100

CLAUSING

CORPORATION
SPECIAL PRODUCTS GROUP

2019 N. PITCHER ST., KALAMAZOO, MICH. 49007

10100

IMPORTANT — YOUR CLAUSING WARRANTY
is NOT effective unless this card is returned —

Your Warranty ➔ **THIS IS YOUR PERMANENT RECORD**

MACHINE SERIAL NO: _____ MODEL NO: _____

NAME OF PURCHASER _____

STREET _____

CITY, ZONE, STATE _____

PURCHASED FROM _____

DATE PURCHASED _____

**ORDER ALL PARTS AND TECHNICAL SERVICE
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WARRANTY

The Clausing Corporation, Kalamazoo, Michigan, warrants that each Product will be free from defects in material and workmanship for one year from the date of delivery to the User.

Clausing will correct any defects without charge. Parts will be repaired or replaced at Clausing's option. Warranty work will normally be performed at the User's plant, but at the option and expense of Clausing, the Product, or any part thereof, may be returned to Clausing for the service. User shall provide access to the Product during regular business hours and shall provide such other assistance as determined necessary by Clausing.

Clausing shall not be responsible for expenditures made or incurred by the User for repairs of the Product. The warranty is void for any Product that has been subjected to neglect, misuse, accident, or improper operation, or that has been tampered with or altered in any way.

The foregoing warranty is exclusive and in lieu of all other warranties, express or implied, except as to title, including any implied warranty of MERCHANTABILITY or of FITNESS FOR A PARTICULAR PURPOSE.

The liability of Clausing under this warranty, or for any loss or damage to the equipment, whether the claim is based on contract or negligence, shall not in any case exceed the cost of correcting defects in the equipment as herein provided and upon the expiration of the warranty period all such liability shall terminate. The foregoing shall constitute the exclusive remedy of the User and the exclusive liability of Clausing.

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**CLAUSING CORPORATION
KALAMAZOO, MICHIGAN 49007**

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.

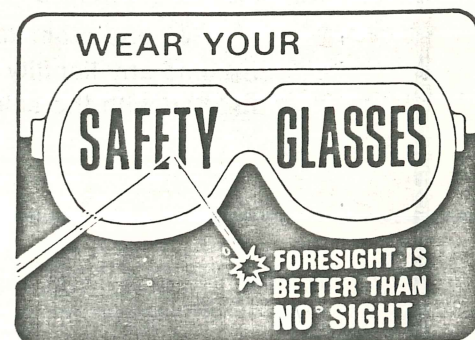
17. AVOID ACCIDENTAL STARTING

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.



THIS MANUAL APPLIES TO ATLAS 6" LATHE FROM SERIAL NO. 007328 TO _____

10100 SERIES LATHE

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811 Eisenhower Drive, South
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For more complete information regarding the operation of metal-cutting lathes refer to Atlas Manual of Lathe Operation available through Clausing Corporation.

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 nut — 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.

After cleaning, move carriage toward tailstock end for better balance.

If skid has been removed — lift by bed feet or underside of bed — **DO NOT** use lead screw, handwheels or levers.

LATHE BENCH

A rigid bench is essential for precision work.

A wood bench built to the following specifications will provide a solid foundation for the lathe.

Bench must have a clear hardwood top at least 1 - 5/8" thick, cleated or well doweled to form a rigid table. Bench should be built using bolted construction.

Bench legs should be solid 4" x 4"s, well braced and securely anchored to bench top — provide legs with lugs for bolting securely to floor.

ANCHORING BENCH TO FLOOR

Bench must be bolted to floor.

A concrete floor is the best foundation. Wood floor should be rigid and capable of supporting the weight of the lathe without deflection.

Make sure the legs rest solidly on the floor.

Place wood bench in final location — to provide working room, back leg should be 3 feet from wall. Mark the location of mounting holes.

Use anchor bolts to secure bench to concrete floor — use lag screws to secure to wood floor.

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

Reposition bench and start anchor or lag screws — **DO NOT TIGHTEN** until bench is level.

LEVELING THE BENCH

Use one precision level at least 6" long — place level on bench top — refer to Fig. 1 for level positions.

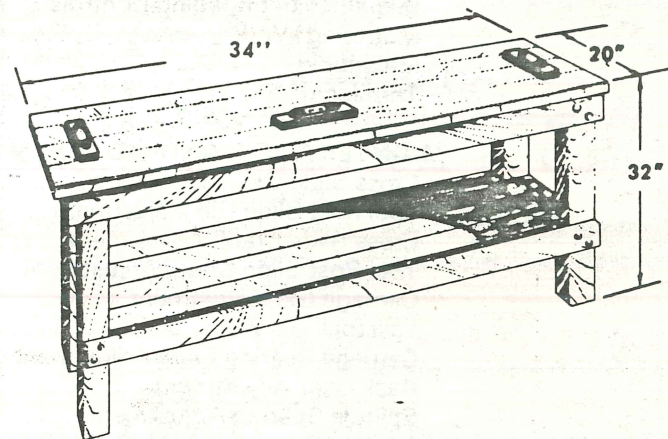


FIGURE 1

Place shims as required between bench legs and floor until the bench is approximately level. Shims should be of hardwood or metal.

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

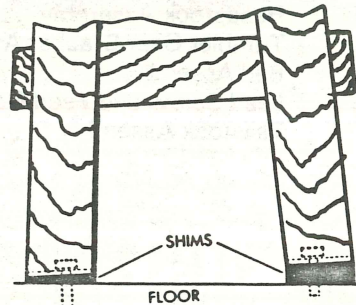


FIGURE 2

Tighten the anchoring bolts or lag screws securely.

Recheck the level of bench — unequal tightening of anchoring bolts may have pulled the bench out of level.

POSITION LATHE ON BENCH

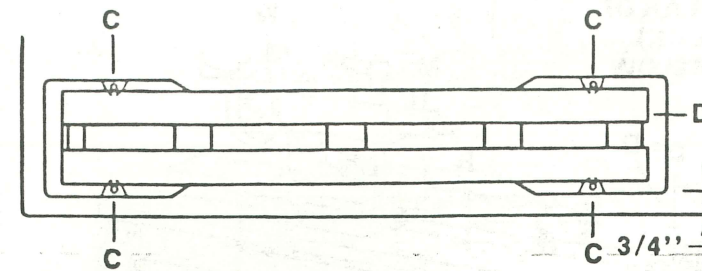


FIGURE 3

Remove bolts from skid and place the lathe on the bench in the position shown in Fig. 3 with front edge of the lathe leg (D) about 3/4" from the front of the bench. Mark the position of four mounting holes (C).

Move lathe and drill four holes in bench top. Reposition lathe and start bolts — **DO NOT TIGHTEN** bolts securely until after lathe has been leveled.

LEVELING

The lathe should be kept perfectly level at all times. When carelessly mounted, 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.

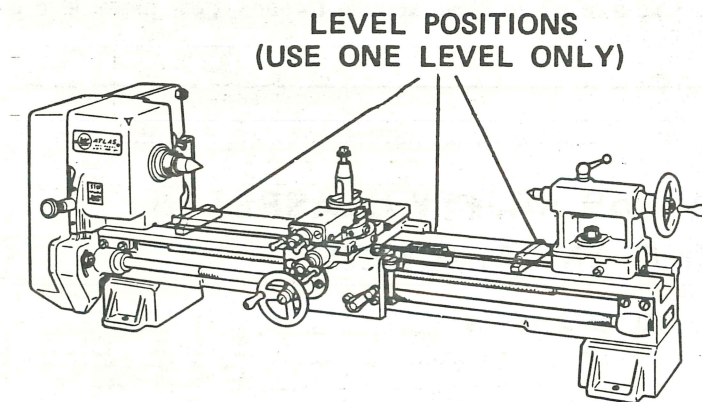


FIGURE 4

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. 4 for level positions.

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

Refer to Fig. 5 for approximate size of shim. If the outer or inner edges of legs bear on bench top, bed may be twisted or bowed. Next, level the bed at headstock and tailstock — see Fig. 4. 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. Tighten the four mounting bolts securely and recheck level readings.

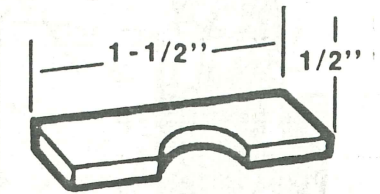


FIGURE 5

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

MOUNTING MOTOR

Place motor pulley on motor shaft with small step toward motor.

NOTE: The lathe is designed for a 1/3 HP, 1725-1750 rpm motor — of the type shown in our catalog.

Position motor on lathe bench to align motor pulley with, and parallel to, spindle pulley.

With tension pulley in uppermost position place belt over motor and spindle pulleys. Position motor to tighten belt — just enough so it is possible to shift the belt.

Bolt motor in this position.

Tighten belt by moving tension pulley down on belt and locking in place — see (A) Fig. 6.

NOTE: Properly tensioned belt will pull a normal cutting load — too much tension will cause excessive wear of bearings and shafts.

Install belt — pulley guard.

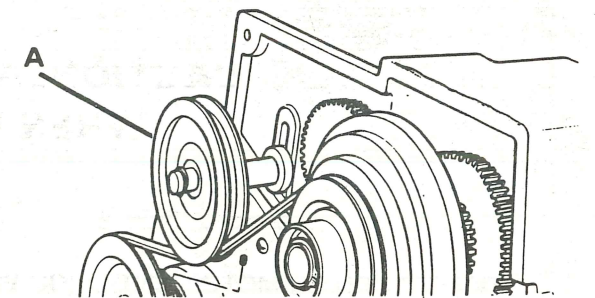


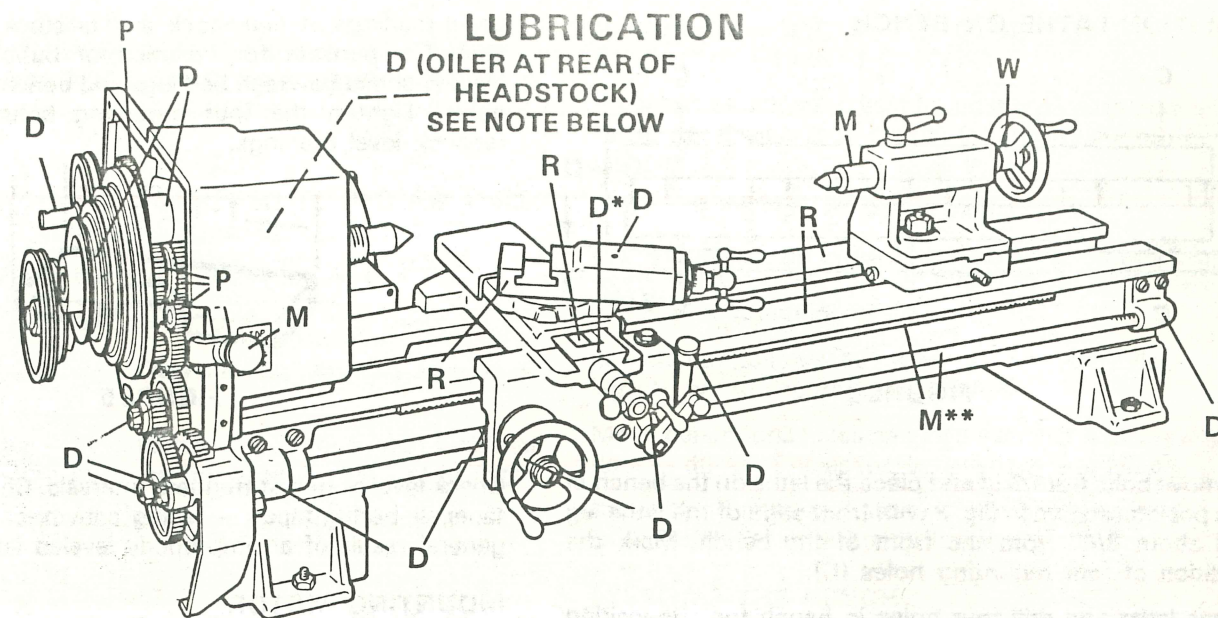
FIGURE 6

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 motor so that pulley rotates in a clockwise direction as viewed from pulley end.

DO NOT OPERATE THE LATHE UNTIL
— the bed has been leveled, see page 1.
— the lathe has been lubricated, see page 3.
— the operating instructions have been read, see pages 3 - 9.



LUBRICATION

D (OILER AT REAR OF HEADSTOCK)
SEE NOTE BELOW

IMPORTANT—LUBRICATE LATHE BEFORE OPERATING

CODE

- D—DAILY oil with S.A.E. No. 20 oil
- W—WEEKLY oil with S.A.E. No. 20 oil
- M—MONTHLY oil with S.A.E. No. 20 oil
- R—REGULARLY clean and keep oiled at all times.
- P—PERIODICALLY lubricate gear teeth with a cling type

outer gear lubricant to obtain smoother, more quiet operation. Remove oil and dirt before applying grease.

- *Remove screw to oil bearing.
- **About once a month clean with kerosene and a brush, then cover with oil.

NOTE: To lubricate spindle bearings, fill oiler until oil seeps out of side of headstock underneath spindle.

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.

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 — 55 to 300 rpm — required for heavy cuts and large diameter work.

To engage the BACK GEAR DRIVE:

1. Turn off motor.
2. Remove belt — pulley guard.
3. Pull coupling (A Figure 7) to disengage pulley and gear.

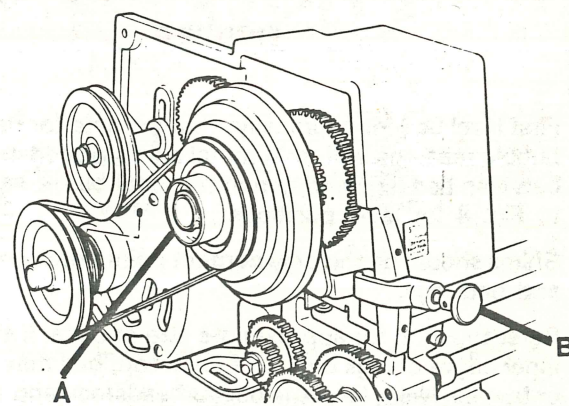


FIGURE 7

4. Move back gear lever (A Figure 8), on rear of headstock, up to engage gears. It may be necessary to rotate pulley by hand so gears will mesh.

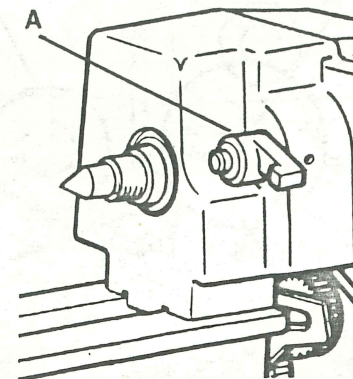


FIGURE 8

DIRECT DRIVE provides high spindle speeds from 430 to 2300 rpm.

To engage DIRECT DRIVE:

1. Turn off motor.
2. Remove belt — pulley guard.
3. Move back gear lever (A Figure 8) down to disengage gears.
4. Push on coupling (A Figure 7) and turn spindle pulley by hand until coupling slides in, locking pulley and gear together.
5. Replace guard.

CHANGING SPINDLE SPEEDS:

1. Turn off motor.
2. Remove belt-pulley guard.
3. Loosen belt by moving tension pulley up away from belt.

SPINDLE R.P.M. CHART		
BACK GEAR	SPINDLE PULLEY	DIRECT DRIVE
300		2300
190		1450
120		900
55		430

FIGURE 9

4. Shift belt to position for speed desired, as indicated on spindle speed chart (Figure 9).
5. Tighten belt by moving tension pulley down on belt and locking in place.
6. Replace guard.

Much of the success in metal cutting depends upon the choice of cutting speeds. Too slow a speed not only wastes time, but leaves a rough finish — too high a speed burns the tool.

HEADSTOCK

LEAD SCREW DIRECTION LEVER (B Figure 7) has three positions. Center position is neutral — gear train is disengaged and lead screw does not turn. The upper and lower holes are either forward or reverse positions depending on the gear set up.

NOTE: Whenever a new gear train has been set up, shift the lever to test the direction of the carriage travel.

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

GEAR SET UPS FOR THREADS AND FEEDS

The gear set up used determines the rate of rotation of lead screw in relation to the rpm of the spindle.

To simplify gear set ups the three different gear bracket positions have been assigned letters. The outer end of the longest bracket slot is called "Pos. A," the inner portion of the same slot is "Pos. B." The lower slot is called "Pos. C." The "B" position of gear is the position toward the headstock — the "F" position is away from the headstock. See Figure 10.

FIG. 1		FIG. 2		FIG. 3		FIG. 4		FIG. 5		FIG. 6		FIG. 7		FIG. 8																																																																																																																																																																																																																											
THREADS PER INCH	GEAR ON SCREW	POSITION C	POSITION B	POSITION A	SPINDLE STUD GEAR	FIG.	THREADS PER INCH	GEAR ON SCREW	POSITION C	POSITION B	POSITION A	SPINDLE STUD GEAR	FIG.	THREADS PER INCH	GEAR ON SCREW	POSITION C	POSITION B	POSITION A	SPINDLE STUD GEAR	FIG.																																																																																																																																																																																																																					
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FIGURE 10

Before setting up a train of change gears, examine one of the change gear stud assemblies which hold the change gears to the gear bracket. See Figure 11.

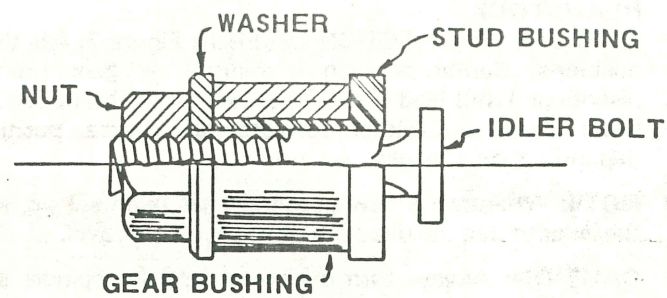


FIGURE 11

Each stud assembly has an outer gear bushing long enough to accommodate two gears. The bushing has a double key which fits into the keyways in the gears. The bushing and two gears (or gear and steel spacer) fit over a sleeve and the assembly is bolted to the gear bushing. The washer is a bearing for the outer end of the gear bushing.

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 — see Figure 13.

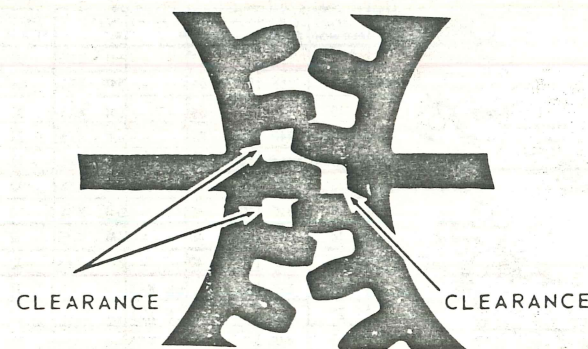


FIGURE 13

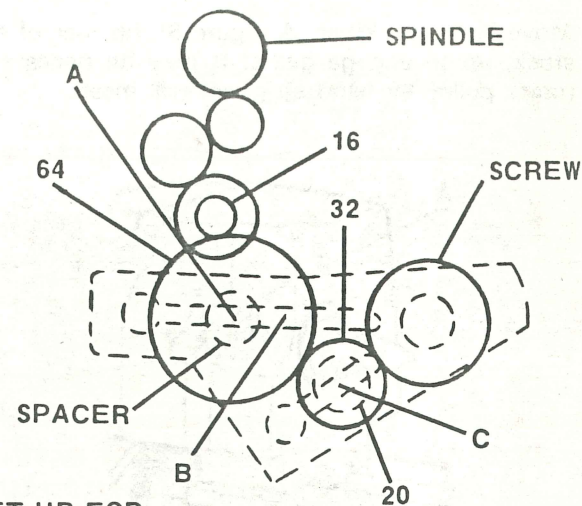
A suggested method to obtain proper clearance is:

1. Place a strip 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 small amount of grease, preferably a "cling type outer gear" lubricant applied to gear teeth, will aid in obtaining smoother, more quiet operation.

NOTE: Remove all oil, grease and dirt before applying lubricant.

A REPRESENTATIVE GEAR SET-UP for 36 threads per inch.



SET-UP FOR
36 THREADS

FIGURE 14

1. Place 36 tooth gear on front position of leadscrew stub.
2. Place 20 tooth gear and 32 tooth gear on sleeve and mount in "Pos. C" on gear bracket with 32 tooth gear in front position. Tighten so that 32 tooth gear meshes with 36 tooth gear in screw position. The 20 tooth gear is a spacer.
3. Place 64 tooth gear and steel spacer on sleeve and mount in "Pos. A" on gear bracket with 64 tooth gear in front position. Tighten so that 64 tooth gear meshes with 32 tooth gear in "Pos. C."
4. Swing entire gear bracket upward and tighten so that the 64 tooth gear meshes with the 16 tooth stud gear. The gear bracket is tightened in position by locking the nut (A Figure 15) on the side of the leadscrew support bracket.

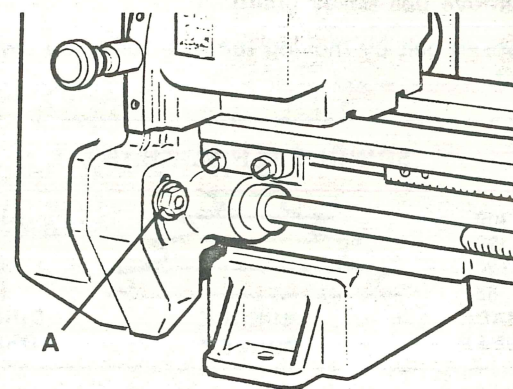


FIGURE 15

Shift the leadscrew direction lever to test the direction of carriage travel before starting to cut a thread. After the lever has been shifted to the proper position, it should not be moved until the thread has been completed. This is important because a shift in the lever position destroys the relation between the threading dial and the lathe spindle and causes splitting the thread.

CARRIAGE

Carriage moves along the bed by hand or by power feed and supports the cross slide, compound rest, tool post and cutting tool.

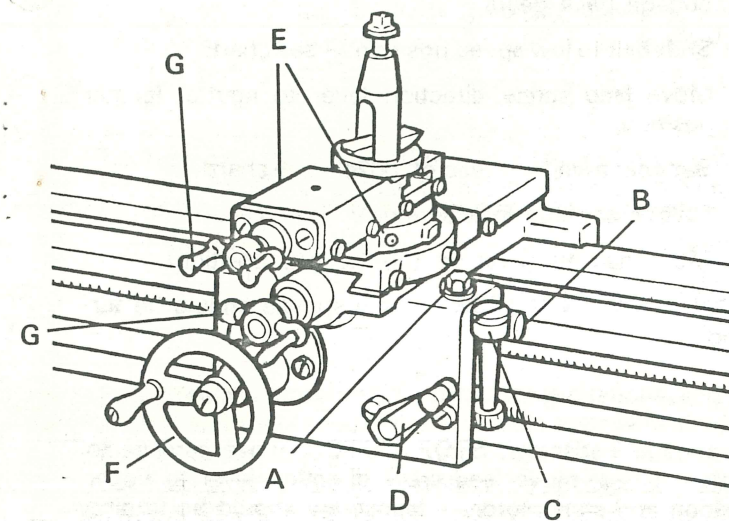


FIGURE 16

HANDWHEEL (F, Figure 16) 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.

TOOL POST SLIDE can be turned in a complete circle, by loosening the two socket set screws (E) and is graduated in degrees from 0° to 180° so that any angle can be cut.

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.

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.

Without the threading dial, it would be necessary to wind the tool out of the thread at the end of each cut. Then, without disengaging half-nuts, reverse the rotation of the motor to bring the carriage back to the starting point for each successive cut.

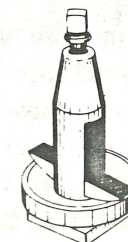


FIGURE 17

The tool post holds the tool rigidly in position for cutting operations — refer to Figure 17.

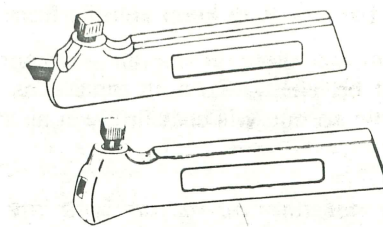


FIGURE 18

Tool bit holders permit the use of small, inexpensive and replaceable tool bits — refer to Figure 18.

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.

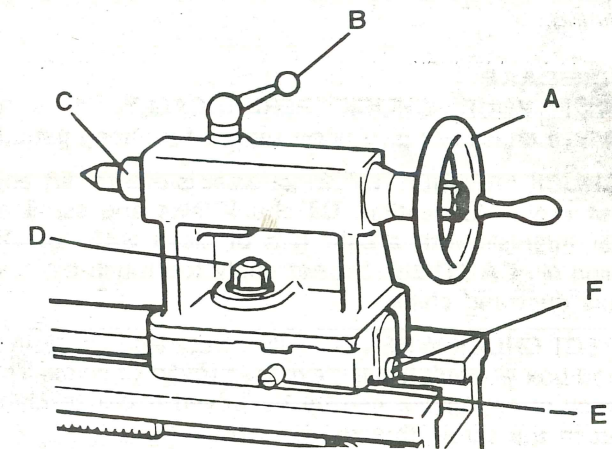


FIGURE 19

RAM LOCK LEVER (B, Figure 19) 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.

Lock tailstock to lathe bed by tightening nut (D).

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

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.

- Place lathe in back gear to keep spindle from turning.
- 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

- 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.
- 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.

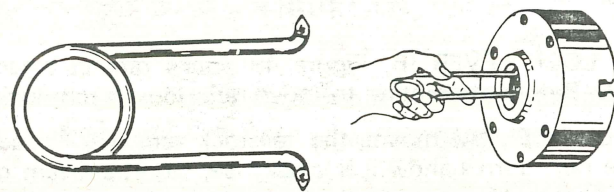


FIGURE 20

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 20.

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.

SEQUENCE OF ENGAGING CONTROLS FOR OPERATING LATHE

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

- Engage back gears.
- Shift belt to low speed position — see chart.
- Move lead screw direction lever to neutral (center position).
- Set gear train for a feed of .0024" (see chart).
- Unlock carriage lock screw.
- Move half-nut lever up (disengaged position).

NOW TURN ON MOTOR — only spindle should be turning.

To engage leadscrew: **STOP MOTOR**, move carriage to center of bed, move leadscrew direction lever to upper position and start motor — leadscrew should be turning very slowly. Now engage half-nut lever, causing carriage to travel toward headstock.

MOUNTING THE WORK

Common methods of holding the work in the lathe are — between centers, in a chuck, on the face plate, and on a mandrel.

Whenever practicable, the work is held between centers. There are two steps in mounting work between centers: Locating the center points at each end of the work, and countersinking and drilling the ends to accommodate the lathe centers.

On round work, centers are usually located with either the hermaphrodite caliper or the center head attachment for a steel square. On the centering of square, hexagon and other regular-sided stock, lines are scribed across the ends from corner to corner. The work is then center punched at the point of intersection.

After the ends have been countersunk, the work is mounted between centers. Be sure that the "tail" or bent portion of the lathe dog fits into the face plate slot without resting on the bottom of the face plate slot.

Bring the tailstock up close to the end of the stock and lock in place. Turn the tailstock center into the countersunk hole and lock in such a position that the play is taken up between centers but not so tight that the work will not freely rotate. **PLACE PLENTY OF WHITE LEAD AT POINT OF BEARING ON TAILSTOCK CENTER.**

MACHINING

Cuts, especially heavy ones, should always be made toward the headstock. In this way most of the pressure is toward the live center which revolves with the work. Cutting toward the tailstock puts a heavy additional pressure on the tailstock center and is quite likely to damage the center.

The type of tool holder, and the way it is set into the work, should always be such that it tends to swing away from the work on heavy cuts. When cutting at an angle with the compound rest, the tool should be set at a right angle to the surface of the cut, not at a right angle to the center line of the lathe.

Facing cuts represent different cutting relations and tool angles, and tools should preferably be special ground, for that purpose. Smoother cutting and a finer finish can be obtained generally by cutting toward the outside — that is, feeding from the center of work out.

If the tool is ground properly, the point of the tool will not have to be set above or below the center line of the work, but should be set on the center line.

Boring operations require only slightly different tools and methods than those for external turning. With the round tool shank parallel to the lathe center line, set the boring tool into the work with the shank below the center line. Then by putting the cutting edge on exact center line, the correct amount of back rake is provided. The general rules for the use of the external tools apply to boring tools. For maximum rigidity, choose the largest possible boring tool. Take several light cuts rather than a heavy one when boring.

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.

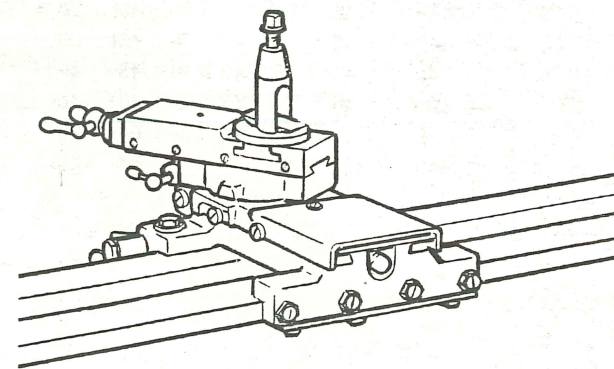


FIGURE 21

RIGHT — Tool post slide is flush with front end of the upper swivel, therefore provides maximum tool support — refer to Figure 21.

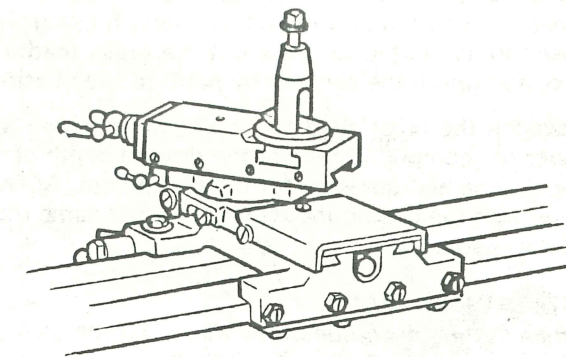


FIGURE 22

WRONG — Unnecessary overhang of tool post slide will result in tool chatter, and could cause the tool post slide to break — refer to Figure 22.

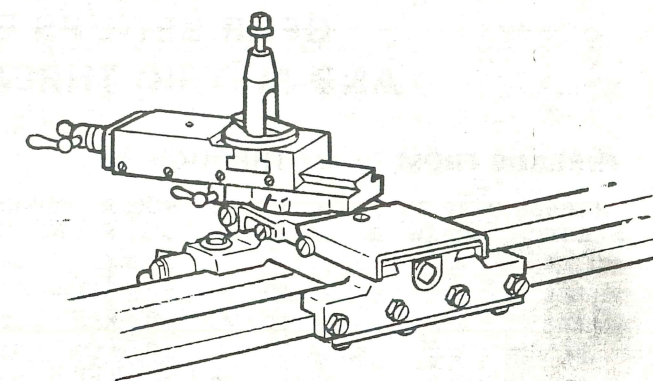


FIGURE 23

WRONG — Tool post slide is too far back — tool overhang is excessive — refer to Figure 23.

THREADING

Only the operation connected with the cutting of the 60 degree thread will be described.

After the work has been properly prepared for threading, set the compound rest at a 29 degree angle so that the tool bit faces in the direction the carriage will travel. Mount the tool holder in the tool post so that the point of the tool is exactly on the lathe center line — tighten the tool post screw just enough to hold the tool holder. Then use a center or thread gauge to set the tool point at an exact right angle to the work. Tap lightly on the back of the tool holder when bringing into position. With the tool point at an exact right angle to the work, recheck center line position and tighten tool post screw.

Check the change gear assembly and the leadscrew direction lever so that the carriage will move in the proper direction. Adjust belts for a speed of 55 R.P.M.

Set the compound rest approximately in the center of its ways and advance the cross feed so that it is set at 0 with the tool close to the work. With the point of the tool about an inch to the right of the start of the thread, advance the tool with the compound rest so that the first cut will be about .003 inch.

Start the lathe and engage the half-nut lever on the carriage. Apply plenty of lubricant to the work. When the tool point has traveled the desired length along the work, raise the half-nut lever, back out the cross feed a turn or two, and return the carriage by hand to the starting point.

Advance the cross feed to its original position at 0, advance the compound rest for the desired depth of cut, and engage the half-nut lever for the second cut. All feeding is done with the compound rest. Follow the same routine on all succeeding cuts.

THREADING DIAL

When cutting *even-numbered threads* (such as 12, 14, 16, 32, etc., per inch), engage the half-nut lever for the first cut when the stationary mark on the outside of the threading dial is in line with *any* of the marks on rotating portion of the dial. Any dial marking may be used for successive cuts.

When cutting *odd-numbered threads* (such as 7, 9, 11, 23, 27, etc., per inch) engage the half nut lever on any mark. For all successive cuts, use the *same* or *opposite* mark.

When cutting *half-numbered threads* (such as 7½, 11½, 12½, etc., per inch), engage the half-nut lever at the *same* number on the threading dial for *each* cut.

PRECAUTIONS: Never disengage the half-nut lever in the middle of the thread without first backing out the tool with the cross-feed.

The threading dial cannot be used for metric threads. For these, the half-nut is closed on the lead screw, and the machine reversed by means of the reversing switch. After each cut and tool withdrawal, the tool is brought back to starting point. The nut remains engaged until the thread is completed.

GEAR SET-UPS FOR THREADS AND FEEDS AND METRIC THREADS NOT SHOWN ON CHART

THREADS FROM 7 - 1/2 THROUGH 78

THREADS PER INCH	GEAR ON SCREW	POS. C		POS. B		POS. A		SPINDLE STUD GEAR
		B	F	B	F	B	F	
7.5	40F	24	64	—	—	64I	XXS	32
12.5	40F	—	—	20	32	64I	XXS	32
13.5	54F	—	—	20	40	46I	XXS	32
21	56F	36	48	—	—	64I	XXS	32
25	40F	—	—	40	32	64I	XXS	32
30	48F	—	—	40	32	64I	XXS	32
33	40B	32	48	—	—	44	40	32
35	40F	XXS	54I	—	—	56	32	32
39	54F	52	36	—	—	56I	XXS	32
42	48F	56	32	—	—	54I	XXS	32
45	40F	XXS	52I	—	—	54	24	32
46	46F	—	—	—	—	XXS	64I	16
49	56F	56	32	—	—	54I	XXS	32
50	40B	—	—	32	40	XXS	64I	16
52	52F	—	—	—	—	XXS	64I	16
54	54F	—	—	—	—	XXS	64I	16
60	48B	—	—	32	40	XXS	64I	16
65	48B	32	52	—	—	40	24	32
69	54B	36	46	—	—	XXS	64I	16
70	40B	—	—	48I	XXS	32	56	16
75	40F	36	24	32	40	XXS	44I	16
77	44B	32	56	—	—	XXS	54I	16
78	54B	36	52	—	—	XXS	64I	16

FEEDS FROM .0021 THROUGH .008

FEED INCHES	GEAR ON SCREW	POS. C		POS. B		POS. A		SPINDLE STUD GEAR
		B	F	B	F	B	F	
.0021	64F	64	20	—	—	24	56	16
.005	64F	64	32	—	—	36	56	16
.006	64B	20	52	—	—	XXS	56I	16
.007	64B	20	54	—	—	40	24	32
.008	64B	20	52	—	—	54	36	32

METRIC THREADS

PITCH MM	GEAR ON SCREW	POS. C		POS. B		POS. A		SPINDLE STUD GEAR
		B	F	B	F	B	F	
.5	54B	44	46	20	40I	36	20	32
.6	56B	36	64	—	—	44	52	32
.7	64B	24	32	—	—	44	52	32
.75	64B	32	40	—	—	44	52	32
.8	54B	46	64	—	—	44	52	32
.9	46B	36	52	—	—	44	52	32
1.0	40B	32	48	—	—	44	52	32
1.25	44F	48	52	—	—	40I	20	32
1.50	44F	40	52I	—	—	46I	20	32
1.75	64B	46	20	XXS	48I	48	46	32
2.0	56B	46	24	XXS	44I	40	46	32
2.5	44F	24	52	—	—	64I	20	32
3.0	44F	20	52	—	—	64I	20	32

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 of 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.

CROSS AND TOOL POST SLIDE CRANK ADJUSTMENT

1. Hold crank and loosen outer nut on end of screw.
2. Hold crank and tighten the inner nut to remove end play in cross feed or compound handle assembly.
3. Hold crank and *securely tighten* outer nut against crank.

CROSS AND TOOL POST SLIDE GIB ADJUSTMENT

1. Loosen Gib Screw Lock Nuts.
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.

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.

TAILSTOCK GIB ADJUSTMENT

Two gib screws, one on each end of the tailstock gib, 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.

BACK GEAR ADJUSTMENT

1. Shift back gear lever upward to engage back gears.
2. Loosen socket set screw (A figure 24).
3. Rotate back gear assembly until gears are in proper mesh.
4. Retighten set screw.

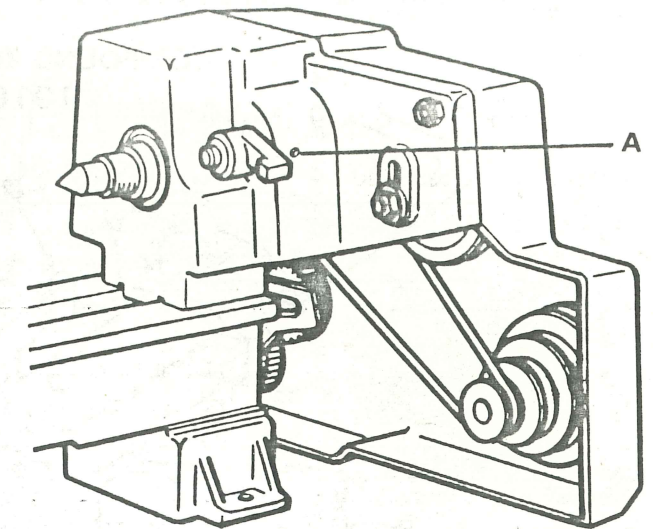


FIGURE 24

CARRIAGE FEED HANDWHEEL ADJUSTMENT

1. Loosen two screws (A Figure 25).
2. Insert Allen Wrench in hole (B).
3. Rotate handwheel assembly to proper gear mesh.
4. Retighten two screws (A).

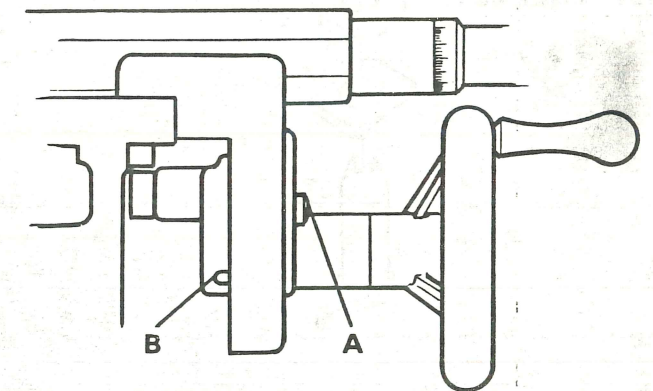


FIGURE 25

SPINDLE BEARING ADJUSTMENT

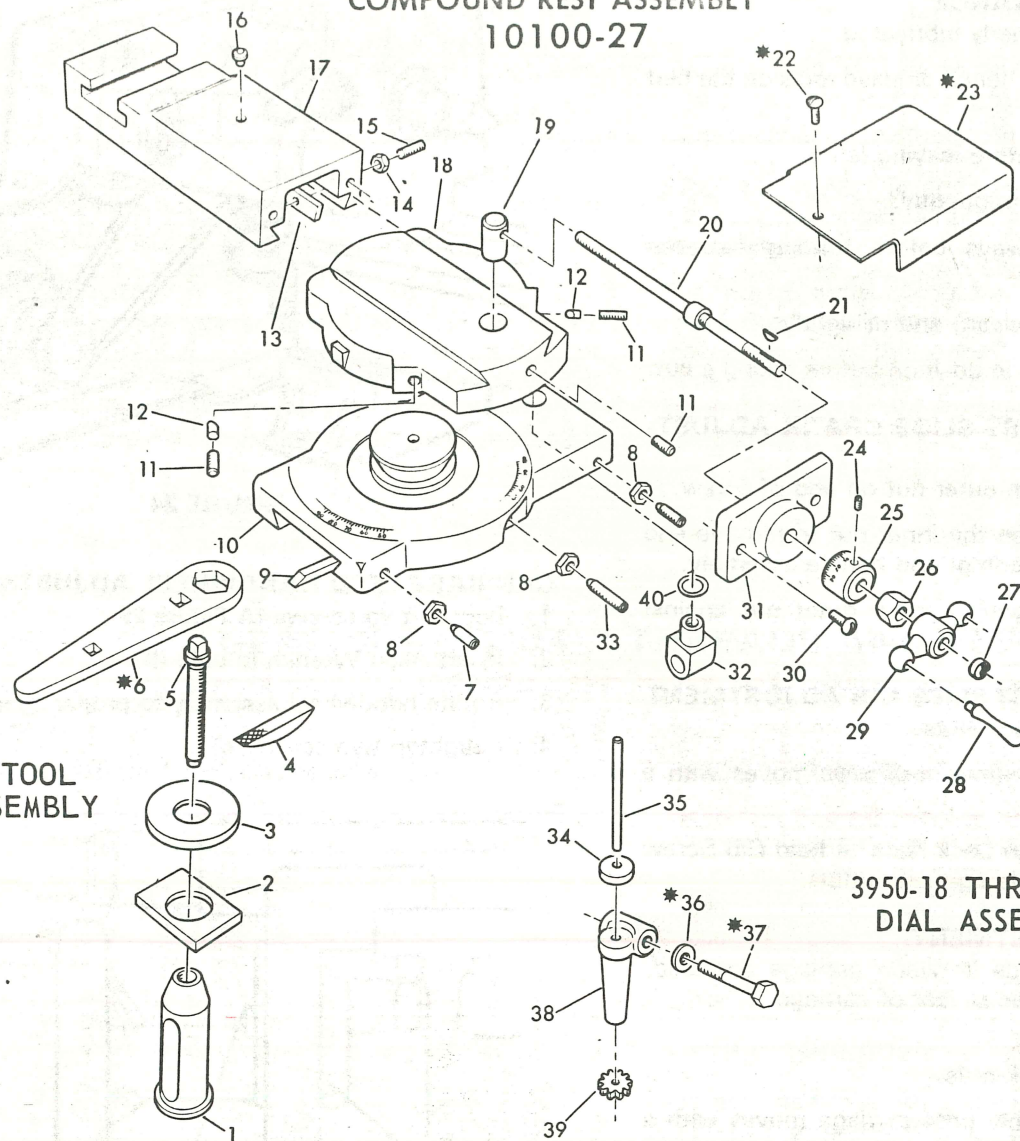
Spindle bearings have been preloaded at factory and seldom require adjusting. If spindle play is noticeable when spindle is pushed back and forth, follow these instructions:

Before making adjustment, bring spindle to operating temperature by running at medium speed in direct drive for an hour.

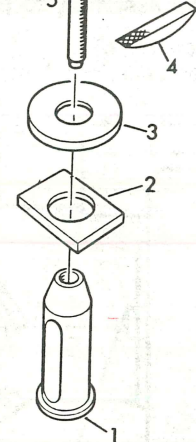
1. Remove belt-pulley guard and loosen belt.
2. Loosen set screw in take-up nut next to back gear on spindle.
3. Tighten nut until spindle end play is eliminated.
4. When end play has been removed, lock collar in this position.
Rotate spindle by hand to make sure it turns freely. If adjustment is too tight, readjust take-up nut.
5. Replace belt and belt-pulley guard.

ATLAS 6" METAL TURNING LATHE, MODEL No. 10100

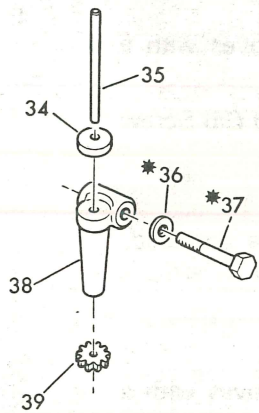
COMPOUND REST ASSEMBLY 10100-27



M6-39X TOOL POST ASSEMBLY



3950-18 THREADING DIAL ASSEMBLY

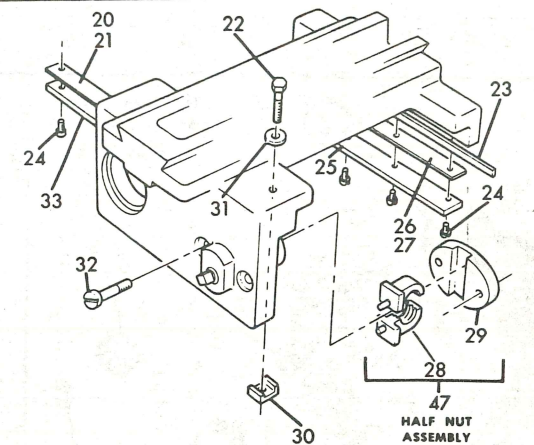
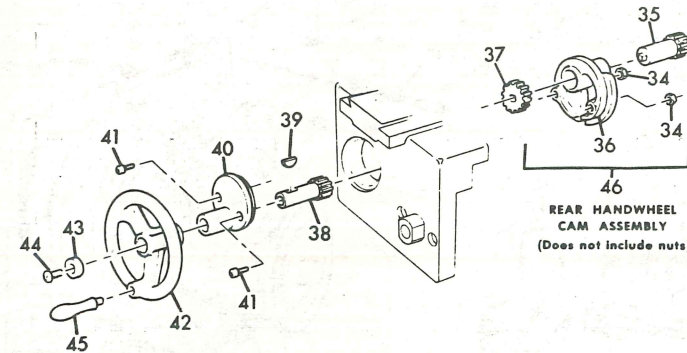
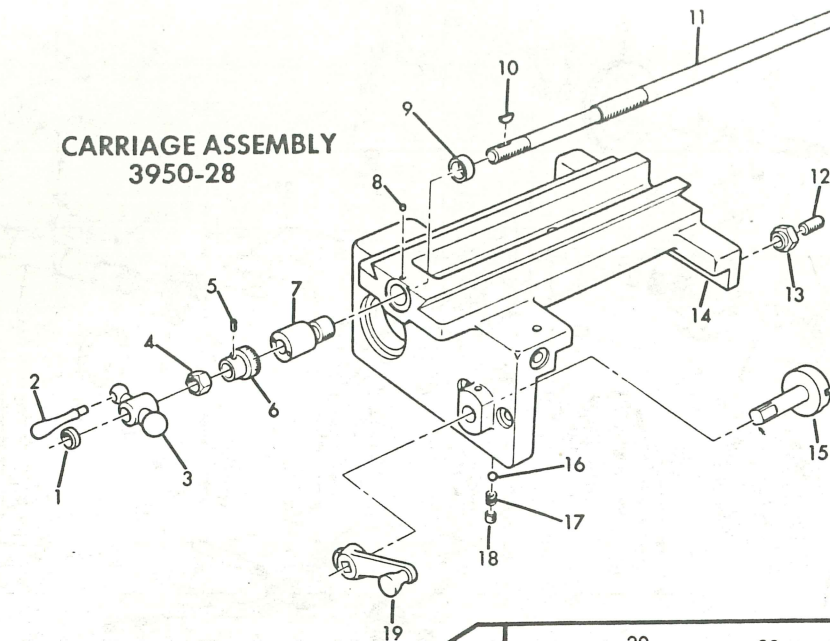


ITEM NO.	PART NO.	DESCRIPTION
M6-39X TOOL POST ASSEMBLY		
1.	M6-39	Post, Tool
2.	M6-136	Tool Post Anchor
3.	M6-40	Washer, Tool Post
4.	9-41	Rocker, Tool Post
5.	M6-148	Screw, Tool Post Set
6.	937-054	Wrench
3950-27 COMPOUND REST ASSEMBLY		
**7.		Screw, H'dless Set Screw #10-32 x 5/8 (Dog Pt., 2 Req'd)
8.	10-226	Nut, Gib Screw (3 Req'd)
9.	345-076	Gib, Combination (Comp. Rest)
10.	M6-301	Compound Rest Swivel (Lower)
**11.		Screw, Soc. Set Screw 1/4-20 x 1/2 (Cup Pt., 3 Req'd)
12.	M6-309	Pin, Compound Lock Plunger (2 Req'd)
13.	345-076	Gib, Combination (Tool Post Slide)
14.	M6-223	Gib, Lock Nut (4 Req'd)
**15.		Screw, H'dless Set Screw #8-32 x 1/2 (Dog Pt., 4 Req'd)
16.	W30-16	Oiler
17.	704-073	Compound Rest Tool Post Slide
18.	M6-302	Swivel, Tool Post (Upper)
19.	M6-306	Nut, Tool Post Slide
20.	3950-19	Compound Rest Screw & Collar Assembly

ITEM NO.	PART NO.	DESCRIPTION
**21.		#204 Woodruff Key
**22.		Screw, Rd. Hd. Mach. Screw #10-24 x 3/8
*23.	342-148	Guard, Carriage Slide
**24.		Screw, H'dless Set Screw #8-32 x 3/16 (Cup Pt.)
25.	M6-48	Graduated Collar
**26.		Nut, Hex Jam Nut 1/4-20
27.	M6-263	Compound Ball Crank Nut
28.	M6-104	Handle, Ball Crank (2 Req'd)
29.	3950-23	Compound Rest Crank & Handle Assembly
**30.		Screw, Rd. Hd. Mach. Screw #10-24 x 1/2 (2 Req'd)
31.	556-386	Compound Rest Thrust Plate
32.	M6-19A	Nut
**33.		Screw, H'dless Set Screw #10-32 x 3/4 (Dog Pt.)
*40.	932-165	Washer, Carriage Slide Nut (AR)
3950-18 THREADING DIAL ASSEMBLY		
34.	M6-62	Dial, Threading
35.	M6-65	Shaft, Threading Dial
**36.		3/16 Washer, Plain
**37.		Screw, Hex Cap Screw 1/4-20 x 1-1/8
38.	M6-63	Body, Threading Dial
39.	M6-64A	Pinion, Threading Dial
*Parts not part of the assembly.		
**Standard hardware item - may be purchased locally.		

ATLAS 6" METAL TURNING LATHE, MODEL No. 10100

CARRIAGE ASSEMBLY 3950-28

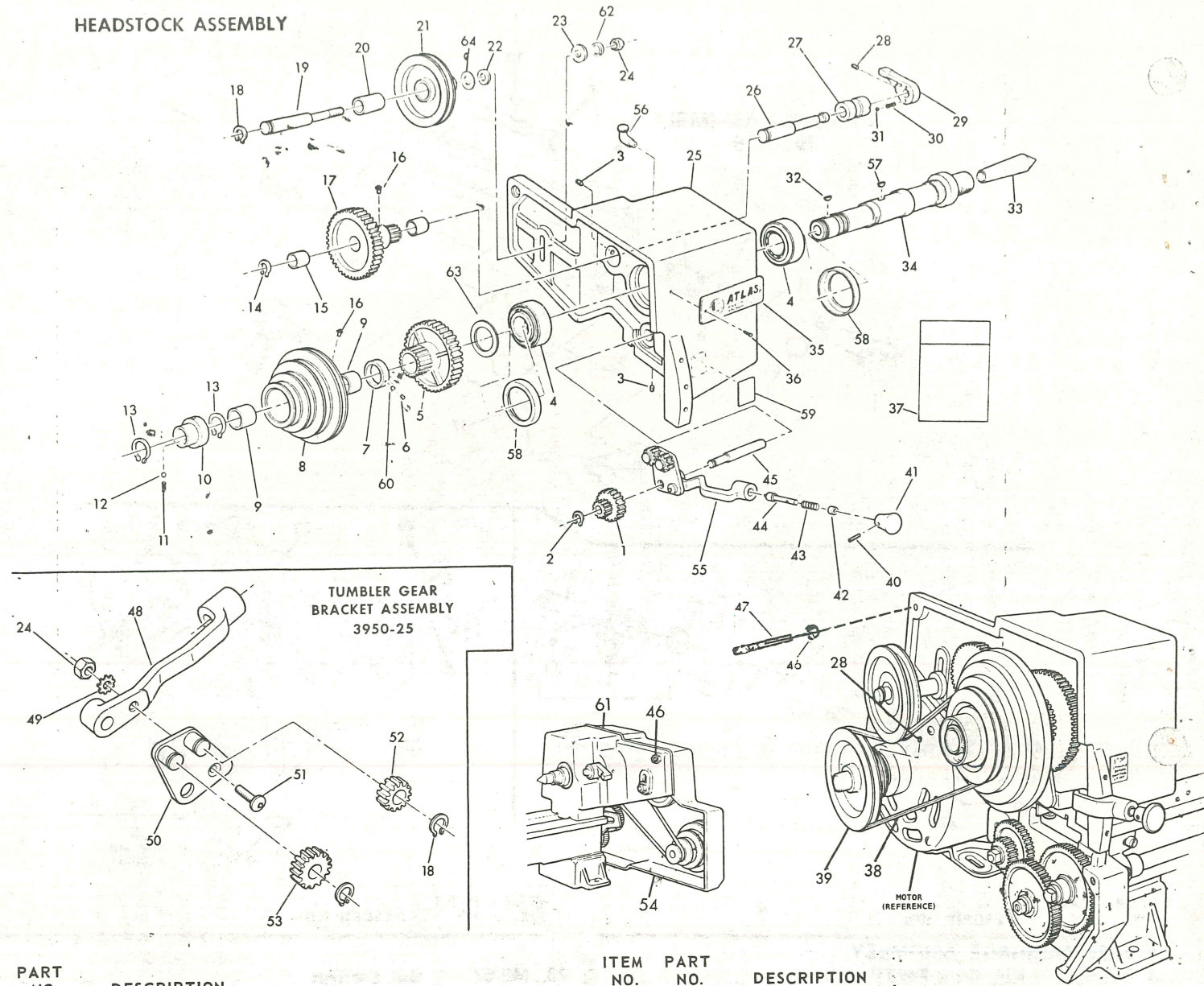


ITEM NO.	PART NO.	DESCRIPTION
3950-28 CARRIAGE ASSEMBLY		
1.	M6-262	Nut, Cross Feed Ball Crank
2.	M6-104	Ball, Crank Handle - Large
3.	3950-22	Cross Feed Crank & Handle Assembly (Includes Item 2)
**4.		Hex. Jam Nut, 5/16-24
**5.		Screw, Hd/less Set (Cup Pt.), #8-32 x 3/16
6.	M6-17	Carriage Graduated Collar
7.	M6-46	Bearing, Carriage Slide Screw
**8.		Screw, Hd/less Set (Cup Pt.) #8-32 x 1/8
9.	M6-74	Washer, Carriage Screw Thrust
**10.		#1 Woodruff Key, 204
*11.	M6-36A	Carriage Slide Screw
**12.		Screw, Hd/less Set (Dog Pt.), (4 Req'd), #10-32 x 5/8
13.	10-226	Nut, Gib Screw (4 Req'd)
14.	147-003	Carriage
15.	M6-38	Cam, Split Nut
16.	9-210	Ball, 3/16 Dia.
17.	697-031	Spring
18.		Screw, Hd/less Set (Cup Pt.), 1/4-20 x 3/16
19.	M6-29	Lever, Split Nut
20.	711-017	Shim, Carriage - Front (.002")
21.	711-018	Shim, Carriage - Front (.003")
**22.		Screw, Hex. Hd. Cap, 1/4-20 x 1-1/8

ITEM NO.	PART NO.	DESCRIPTION
23.	M6-57	Gib, Carriage
**24.		Screw, Fil.Hd. Mach., #10-24 x 3/8 (6 Req'd)
25.	M6-55	Plate, Carriage Bearing
26.	711-015	Shim, Carriage - Rear (.002")
27.	711-016	Shim, Carriage - Rear (.003")
28.	M6-12A	Nut, Split (2 Req'd)
29.	M6-13A	Guide
30.	M6-14	Clamp, Carriage
**31.		Washer, Plain 3/16
**32.		Screw, Fill. Hd. Mach., 1/4-20 x 11/16 (2 Req'd)
33.	M6-54	Plate, Carriage Bearing
34.		#10-24 Hex Jam Nut (2 Req'd)
35.	577-014	Pinion, Carriage Traverse Shaft
36.	129-045	Cam, Rear Handwheel
37.	M6-102	Gear, Carriage Travel
38.	M6-67	Pinion, Carriage Handwheel
**39.		Woodruff Key #404
40.	129-044	Cam, Front Handwheel
**41.		Screw, Fill. Hd. 10-24 x 7/8 (2 Req'd)
42.	3950-20	Handwheel & Handle Assy. (Includes Item 45)
43.	M6-93	Washer, Change Gear
**44.		Screw, Rd. Hd. 1/4 - 20 x 1/2
45.	9-104	Handle
**46.	10100-21	Rear Handwheel Cam Assy.
47.	M6-12AX	Half Nut Assembly

ATLAS 6" METAL TURNING LATHE, MODEL No. 10100

HEADSTOCK ASSEMBLY

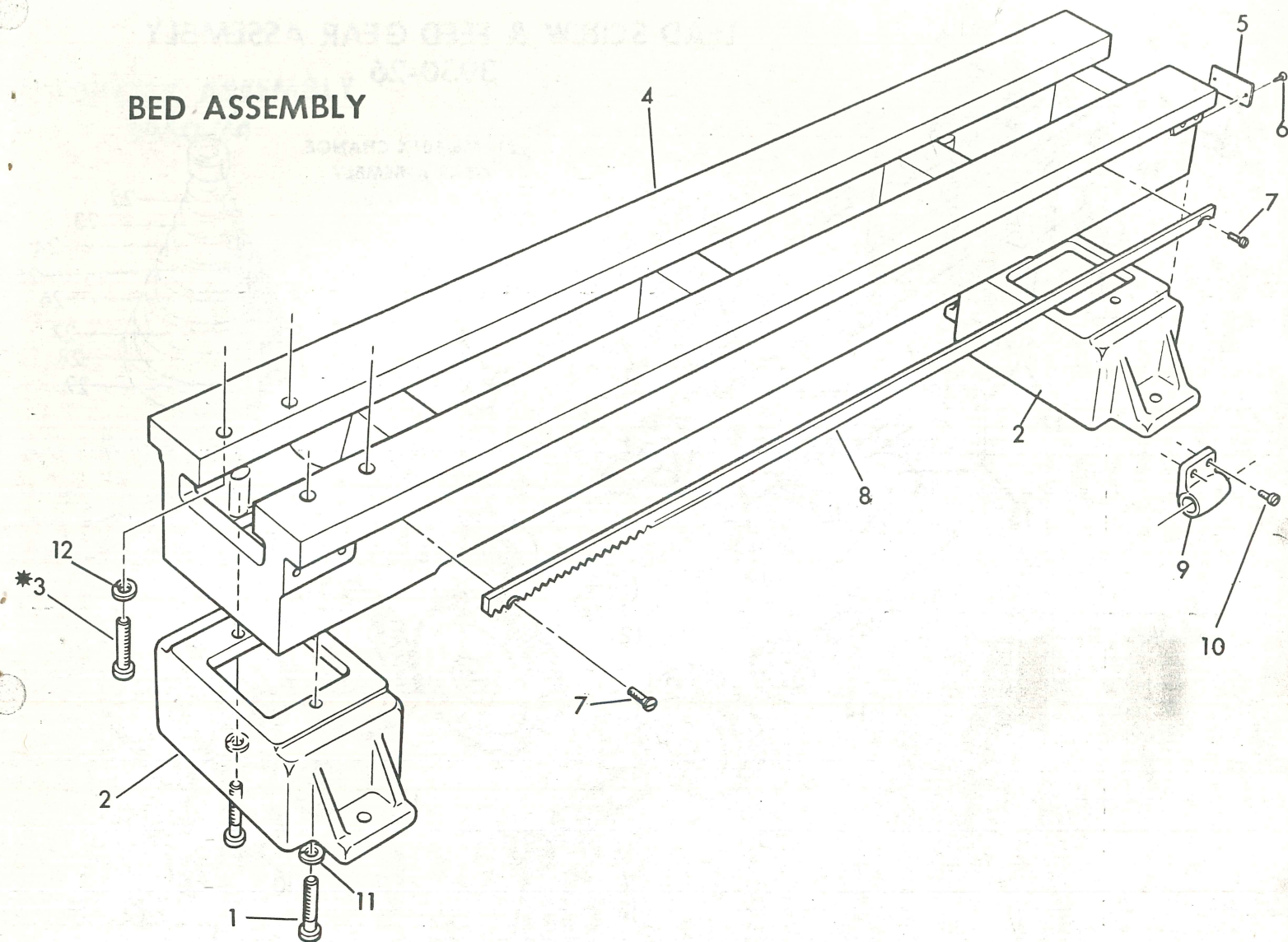


ITEM NO.	PART NO.	DESCRIPTION
1.	M6-101-16	Gear, Change (32-T) (Small 16-T)
2.	641-082	Retainer, Ring
**3.		Screw, Soc. Set, 5/16-18 x 3/8 (Cup Pt.) (2 Req'd)
4.	045-032	Bearing, Roller (2 Req'd)
5.	341-374	Gear, Spindle Back (Large) (62-T) (Small 32-T)
**6.		Screw, Set Screw, #10-24 x 3/16 (Cup Pt.)
7.	537-201	Nut, Take-up 10100-14 Spindle
8.	560-194	Pulley, Spindle
9.	049-213	Bushing, Spindle Pulley (2 Req'd) Pulley & Bushing Ass'y.
10.	141-030	Coupling, Direct Drive (Include W30 - 16 Oiler, Ball)
11.	M6-257	Spring
12.	M6-214	Ball, 1/8 Dia.
13.	641-084	Retainer, Ring (2 Req'd)
14.	641-107	Retainer, Ring
15.	049-107	Bushing (2 Req'd) 3950-13 Back Gears & Bushing Ass'y.
16.	W30-16	Oiler, Ball (2 Req'd)
17.	341-375	Gears, Back (58-T)
18.	641-080	Retainer, Ring (3 Req'd)
19.	700-333	Shaft, Belt Tension Pulley 3950-12 Belt Tensioner Pulley & Bushing Ass'y.
20.	10-264	Bushing
21.	560-196	Pulley, Belt Tensioner
**22.		Washer, 1/4 Plain
23.	932-155	Washer, Belt Tension Shaft
**24.		Hex. Nut, 1/4-20 (2 Req'd)
25.	383-020	Headstock
26.	700-332	Shaft, Backgear Eccentric
27.	702-162	Sleeve, B. G. Eccentric Shaft
**28.		Screw, Soc. Set, 1/4-20 x 3/8 (Cup Pt.) (2 Req'd)
29.	452-063	Lever, Backgear Shift
30.	9-61	Spring (2 Req'd)
31.	9-210	Ball, 3/16 Steel (2 Req'd)
**32.	442-012	Woodruff Key, Special

ITEM NO.	PART NO.	DESCRIPTION
33.	9-88	Center #2 MT
34.	701-088	Spindle, Headstock
35.	536-037	Nameplate, Atlas
**36.		P. K. Drive Screw, Type "U", #2 x 3/16 (2 Req'd)
37.	130-065	Chart, Threading & Speed
38.	051-075	Belt, Spindle
39.	560-195	Pulley, Drive
**40.		Groove Pin, 3/32 x 7/16
41.	441-072	Knob
42.	702-163	Sleeve, Tumbler Index
43.	58-63	Spring
44.	L3-23	Plunger, Rev. Tumbler
45.	700-331	Shaft, Tumbler Gear Bracket
**46.		Nut, Hex., 1/4-20 (2 Req'd)
**47.		Screw, HD/Less Set, 1/4-20 x 3-1/4 (Cup Point)
48.	041-463	Bracket, Tumbler Gear
**49.		1/4 External Shakeproof Washer
50.	3950-11	Tumbler Gear Studs & Plate Assembly
**51.		Screw, Flat Hd. Cap, 1/4-20 x 3/4 (hex. soc. type)
52.	M6-101-20	Gear, Change (20-T)
53.	M6-101-24	Gear, Change (24-T)
54.	3950-10	Guard & Knobs Assembly
55.	3950-25	Tumbler Gear Bracket Assembly
56.	57-217	Oiler
57.		Woodruff Key #404
58.	M6-71	Dust Cover
59.	231-027	Decal, Tumbler Lever
60.	557-100	Plus, Brass
61.	490-015	Molding, Guard
**62.		1/4 Spring Lock Washer
63.	932-164	Washer, Special
64.	933-028	Washer, Fibre

ATLAS 6" METAL TURNING LATHE, MODEL No. 10100

BED ASSEMBLY



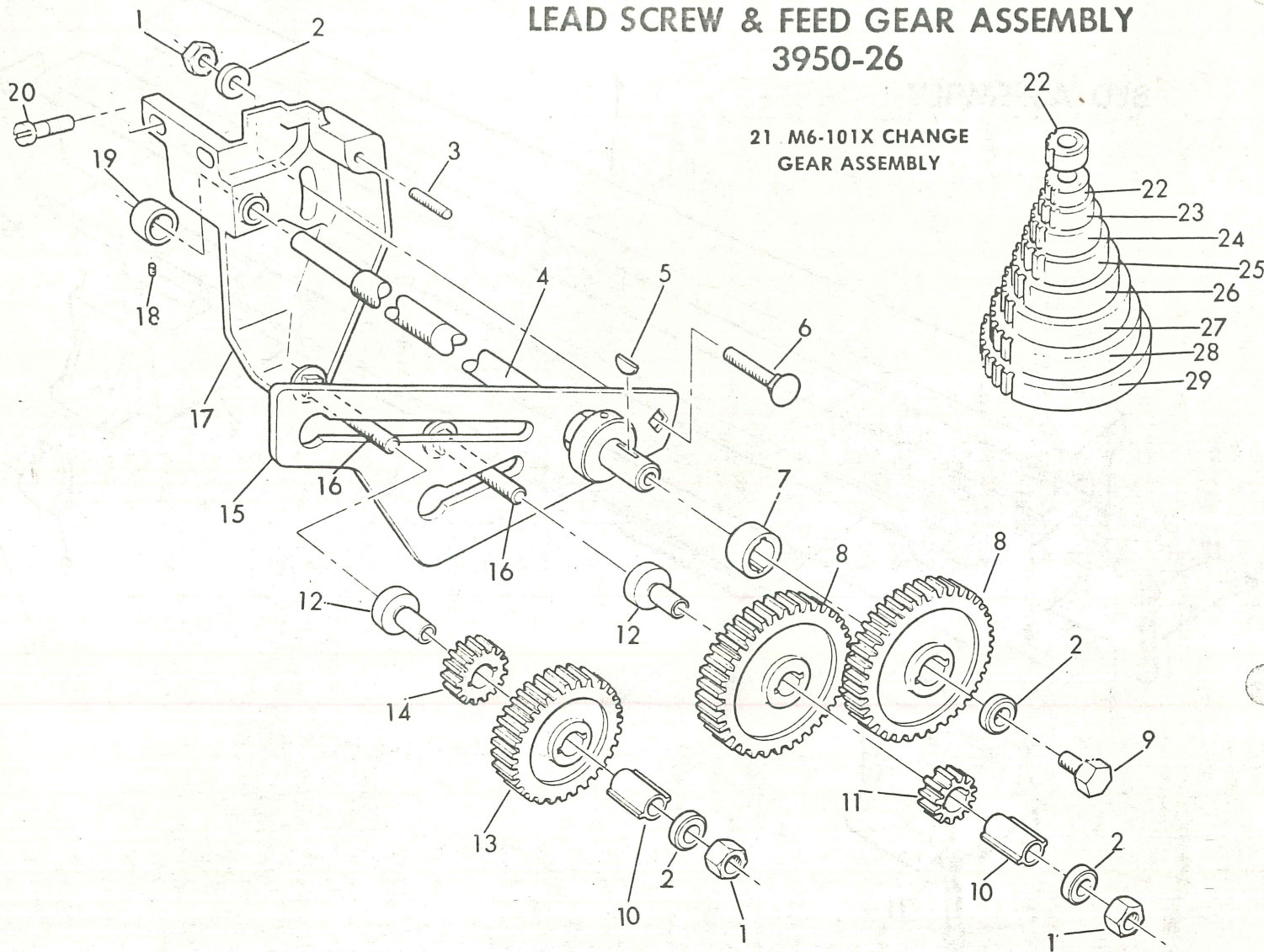
ITEM NO.	PART NO.	DESCRIPTION
BED ASSEMBLY		
** 1.		Screw, Fill. Hd. Mach., 1/4-20 x 7/8 (4 Req'd)
2.	294-016	Foot (2 Req'd)
** 3.		Screw, Phillips Fill. Hd. Mach., 5/16-18 x 7/8 (4 Req'd)
4.	058-039	Bed, Lathe
5.	10F-176	Nameplate, Model Number
** 6.		Screw, P. K. Drive (Type "U"), #2 x 3/16 (2 Req'd)

ITEM NO.	PART NO.	DESCRIPTION
** 7.		Screw, Flat. Hd. Mach 1/4-20 x 1/2 (2 Req'd)
8.	646-027	Carriage Traverse Rack
9.	M6-16	Bearing, Feed Screw (Right)
**10.		Screw, Fill. Hd. Mach., 1/4-20 x 1/2 (2 Req'd)
**11.		1/4 Spring Lock Washer (4 Req'd)
12.		5/16 Spring Lock Washer (4 Req'd.)

** Standard hardware item - may be purchased locally.

ATLAS 6" METAL TURNING LATHE, MODEL No. 10100

LEAD SCREW & FEED GEAR ASSEMBLY 3950-26



21 M6-101X CHANGE GEAR ASSEMBLY

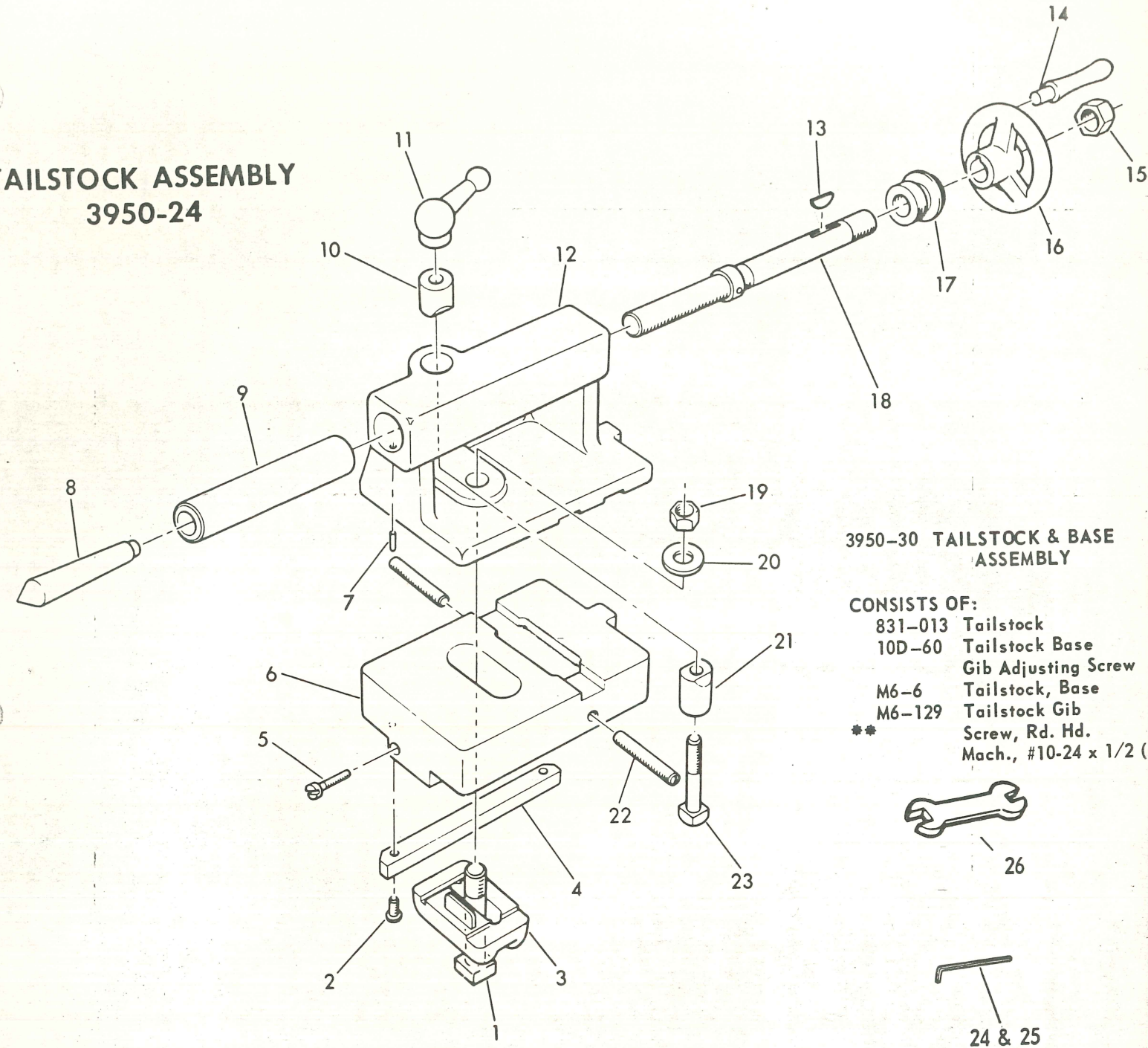
ITEM NO.	PART NO.	DESCRIPTION
3950-26 LEAD SCREW & FEED GEAR ASSEMBLY		
**1.		1/4-20 Hex. Nut (3 Req'd)
2.	M6-93	Washer, Change Gear (3 Req'd)
**3.		1/4-20 x 1 Screw, Headless Set (Cup Pt.)
4.	3950-16	Feed Screw & Collar Assembly
**5.		#404 Woodruff Key
**6.		1/4-20 x 1 Bolt, Carriage
7.	M6-165	Spacer, Gear (3 Req'd)
8.	M6-101-64	Gear, Change (64-T) (2 Req'd)
**9.		1/4-20 x 3/8 Screw, Hex. Hd. Cap
10.	M6-70	Bushing, Compound Gear (2 Req'd)
11.	M6-101-20	Gear, Change (20-T)
12.	M6-73	Sleeve, Change Gear (2 Req'd)
13.	M6-101-48	Gear, Change (48-T)
14.	M6-101-24	Gear, Change (24-T)
15.	041-464	Bracket, Change Gear

ITEM NO.	PART NO.	DESCRIPTION
**16.		1/4-20 x 1-1/2 Bolt, Carriage (2 Req'd)
17.	046-045	Bearing, Feed Screw-Left
**18.		1/4-20 x 3/16 Screw, Soc. Set (Cup Pt.)
19.	L2-682	Collar
**20.		1/4-20 x 1/2 Screw, Fill. Hd. Mach. (2 Req'd)
CHANGE GEAR ASSEMBLY		
21.	M6-101X	Change Gear Assembly
22.	M6-101-32	Gear, Change (32-T) (2 Req'd)
23.	M6-101-36	Gear, Change (36-T)
24.	M6-101-40	Gear, Change (40-T)
25.	M6-101-44	Gear, Change (44-T)
26.	M6-101-46	Gear, Change (46-T)
27.	M6-101-52	Gear, Change (52-T)
28.	M6-101-54	Gear, Change (54-T)
29.	M6-101-56	Gear, Change (56-T)

* Standard hardware item - may be purchased locally.

ATLAS 6" METAL TURNING LATHE, MODEL No. 10100

TAILSTOCK ASSEMBLY 3950-24



3950-30 TAILSTOCK & BASE ASSEMBLY

- CONSISTS OF:
- 831-013 Tailstock
 - 10D-60 Tailstock Base
 - Gib Adjusting Screw
 - M6-6 Tailstock, Base
 - M6-129 Tailstock Gib
 - ** Screw, Rd. Hd. Mach., #10-24 x 1/2 (2 Req'd)

ITEM NO.	PART NO.	DESCRIPTION
3950-24 TAILSTOCK ASSEMBLY		
**1.		Screw, Square Hd. Mach., 3/8-16 x 2-1/2
**2.		Screw, Rd. Hd. Mach., #10-24 x 1/2 (2 Req'd)
3.	M6-7	Tailstock Clamp
4.	M6-129	Tailstock Gib
5.	10D-60	Tailstock Base Gib Adjusting Screw (2 Req'd)
6.	M6-6	Tailstock Base (Must order 3950-30)
**7.		Roll Pin, 1/8 x 5/16
8.	L2-80	Center, #1 M. T.
9.	M6-8	Tailstock Ram
10.	M6-45	Tailstock Ram Lock Sleeve
11.	M1-47	Arbor Support Lock Handle
12.	831-013	Tailstock (Must order 3950-30)
**13.		Woodruff Key, #404
14.	9-104	Handle
**15.		Nut, Hex. Conelock, 3/8-16

ITEM NO.	PART NO.	DESCRIPTION
16.	3950-20	Handwheel W/Handle
17.	M6-30	Tailstock Screw Bearing
18.	3950-17	Screw Tailstock Ram W/Collar
**19.		Hex. Nut, 3/8-16
**20.		Washer, 5/16 Plain
21.	M6-44	Tailstock Ram Lock Sleeve
**22.		Screw, Hd./Less Set, 1/4-20 x 1-3/4 (Oval Pt.) (2 Req'd)
**23.		Screw, Square Hd. Mach., 1/4-20 x 1-3/4

MISCELLANEOUS PARTS

*24.	937-018	Wrench
*25.	937-020	Wrench
*26.	M6-312	Wrench

* Parts not part of the assembly.
** Standard hardware item - may be purchased locally.