

**MODEL M1019**  
**13<sup>1</sup>/<sub>2</sub>" X 40"**  
**GEAR HEAD LATHE**



**OWNER'S MANUAL**  
*(FOR MODELS MANUFACTURED SINCE 1/10)*

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WARNING: NO PORTION OF THIS MANUAL MAY BE REPRODUCED IN ANY SHAPE OR FORM WITHOUT

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# WARNING

Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:

- Lead from lead-based paints.
- Crystalline silica from bricks, cement, and other masonry products.
- Arsenic and chromium from chemically treated lumber.

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

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**USE THE QUICK GUIDE PAGE LABELS TO SEARCH OUT INFORMATION FAST!**

# INTRODUCTION

## Woodstock Technical Support

We stand behind our machines! In the event that questions arise about your machine, parts are missing, or a defect is found, please contact Woodstock International Technical Support at (360) 734-3482 or send e-mail to: [tech-support@shopfox.biz](mailto:tech-support@shopfox.biz). Our knowledgeable staff will help you troubleshoot problems and send out parts for warranty.

If you need the latest edition of this manual, you can download it from <http://www.shopfox.biz>. If you still have questions after reading the latest manual, or if you have comments please contact us at:

Woodstock International, Inc.  
Attn: Technical Support Department  
P.O. Box 2309  
Bellingham, WA 98227

## About Your New 13½" x 40" Gear Head Lathe

Your new SHOP FOX® 13½" x 40" Gear Head Lathe has been specially designed to provide many years of trouble-free service. Close attention to detail, ruggedly built parts and a rigid quality control program assure safe and reliable operation.

This Model M1019 13½" x 40" Gear Head Lathe has 8 speed settings—78 RPM through 2100 RPM—powered by a 2 HP motor and delivered through a precision gear head system. The combination of cast iron construction, quick-change gear box, flame-hardened headstock gears, and precision-ground induction hardened bedways provide a solid lathe for any machinist. The Model M1019 also comes with a 6" 3-jaw chuck, an 8" 4-jaw chuck, a 4-way turret tool post, plus steady and follow rests. The Model M1019 also includes a 12" faceplate, and MT#3 live and dead centers.

Woodstock International, Inc. is committed to customer satisfaction in providing this manual. It is our intent to make sure all the information necessary for safety, ease of assembly, practical use and durability of this product is included.



# Machine Specifications

Design Type ..... Floor Model Gear Head Lathe

## Motor:

Type ..... TEFC Capacitor Start Induction  
 Horsepower ..... 2 HP  
 Phase/Voltage ..... Single-Phase, 220V  
 Amps ..... 12A  
 Cycle and RPM..... 60Hz/1725 RPM  
 Power Transfer ..... V-Belt Drive

## Overall Dimensions:

Overall Dimensions ..... 71½" L X 26" D X 52½" H  
 Height of Center Line ..... 45½"  
 Footprint ..... 71" x 22"  
 Lathe Weight (Shipping) ..... 1330 lbs.  
 Lathe Weight (Net) ..... 1261 lbs.

## Capacity:

Swing Over Bed ..... 13½"  
 Swing Over Gap ..... 19"  
 Swing Over Saddle ..... 8"  
 Distance Between Centers ..... 40"  
 Spindle Bore ..... 1<sup>7</sup>/<sub>16</sub>"  
 Spindle Nose ..... D1-4 Cam-Lock  
 Spindle Nose Taper ..... #5 Morse Taper  
 Carriage Travel ..... 35"  
 Cross Slide Travel ..... 6¼"  
 Compound Slide Travel ..... 2<sup>7</sup>/<sub>8</sub>"  
 Maximum Tool Size ..... ½" x ½"  
 Lead Screw ..... 7/8" x 8 TPI  
 Longitudinal Feedrate Range ..... 0.0036"-0.1005" Inches/Rev  
 Cross Feedrate Range ..... 0.00123"-0.0345" Inches/Rev  
 Tailstock Barrel Taper ..... #3 Morse Taper  
 Tailstock Barrel Travel ..... 3½"  
 8 Spindle Speeds ..... 78, 128, 210, 330, 510, 830, 1360, 2100 RPM  
 Thread Range Inch ..... 40 @ 4-112 TPI  
 Thread Range Metric ..... 40 @ 0.2-6mm

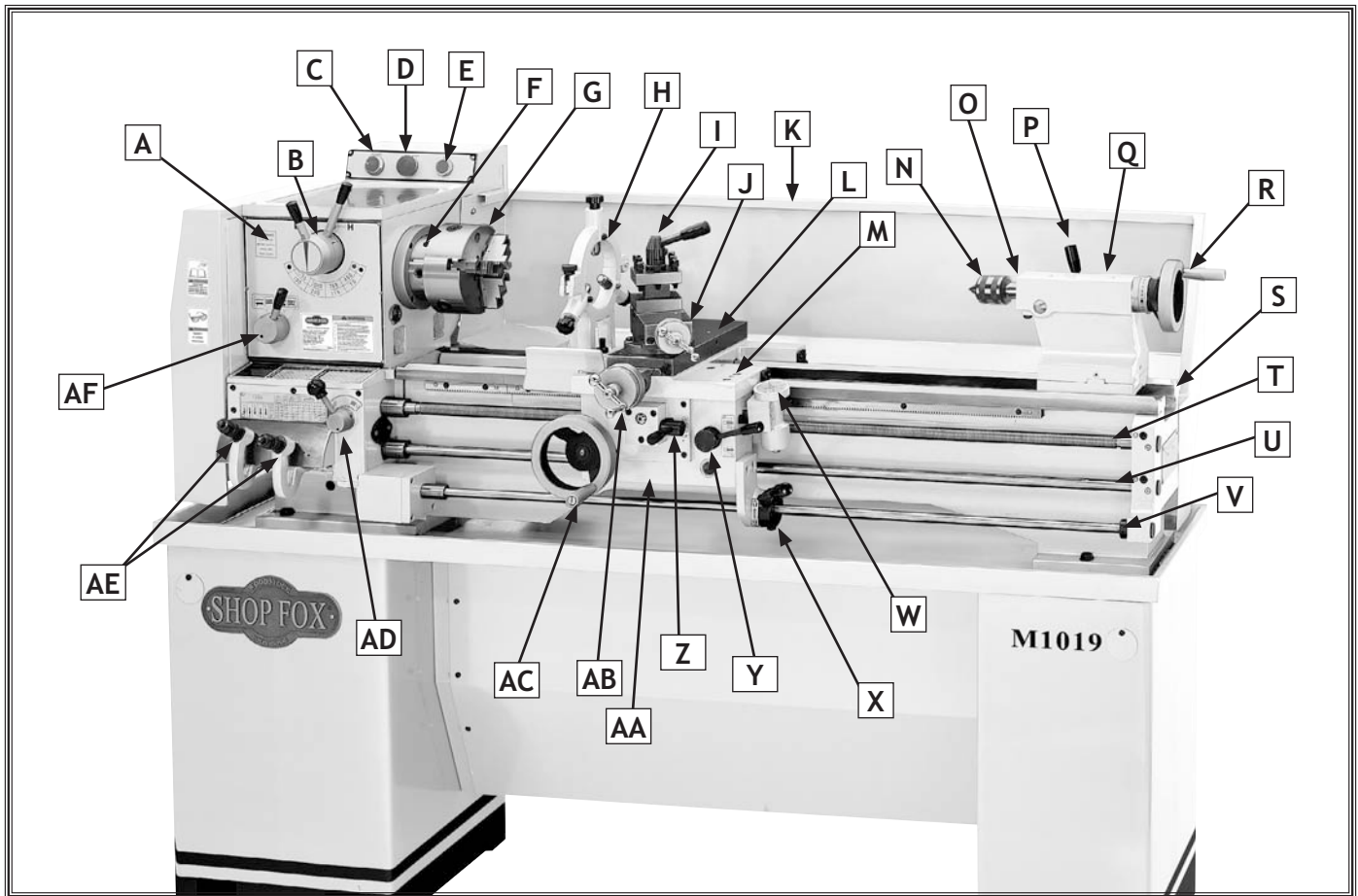
## Construction

Stand, Headstock, and Body ..... Cast Iron  
 Bed Ways ..... Induction Hardened  
 Head Stock Gears ..... Flame Hardened

## Features:

..... 6" 3-Jaw Chuck with 2-Piece Jaws & an 8" 4-Jaw Chuck  
 ..... 12" Faceplate  
 ..... Steady Rest & Follow Rest  
 ..... 4-Way Turret Tool Post  
 ..... MT#3 Live Center & Two MT#3 Dead Centers

# Controls and Features



Please take time to become familiar with the location of the controls and features on this machine. These controls and features will be mentioned throughout the manual and knowing them is essential to understanding the instructions, safety, and operations described in this manual.

- |    |                                |     |                               |
|----|--------------------------------|-----|-------------------------------|
| A. | Headstock                      | Q.  | Tailstock                     |
| B. | Spindle Speed Selection Levers | R.  | Tailstock Handwheel           |
| C. | Power Indicator Light          | S.  | Bed Ways                      |
| D. | Emergency Stop Switch          | T.  | Lead Screw                    |
| E. | Jog Button                     | U.  | Feed Rod                      |
| F. | Spindle                        | V.  | Spindle FORWARD/REVERSE Rod   |
| G. | Three-Jaw Chuck                | W.  | Thread Dial                   |
| H. | Steady Rest                    | X.  | Spindle FORWARD/REVERSE Lever |
| I. | Four-Way Tool Post             | Y.  | Half-Nut Lever                |
| J. | Compound Slide                 | Z.  | Feed Selector Lever           |
| K. | Backsplash                     | AA. | Carriage Apron                |
| L. | Cross Slide                    | AB. | Cross Feed Handwheel          |
| M. | Carriage                       | AC. | Longitudinal Feed Handwheel   |
| N. | Live Center                    | AD. | Feed/Lead Selector Knob       |
| O. | Quill                          | AE. | Feed Speed Selection Levers   |
| P. | Quill Lock                     | AF. | Feed Direction Selector       |

# SAFETY

**READ MANUAL BEFORE OPERATING MACHINE.  
FAILURE TO FOLLOW INSTRUCTIONS BELOW WILL  
RESULT IN PERSONAL INJURY.**



Indicates an imminently hazardous situation which, if not avoided, **WILL** result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, **COULD** result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, **MAY** result in minor or moderate injury.

## **NOTICE**

This symbol is used to alert the user to useful information about proper operation of the equipment, and/or a situation that may cause damage to the machinery.

## Standard Safety Instructions


1. **Thoroughly read the Instruction Manual before operating your machine.** Learn the applications, limitations and potential hazards of this machine. Keep the manual in a safe and convenient place for future reference.
2. **Keep work area clean and well lighted.** Clutter and inadequate lighting invite potential hazards.
3. **Ground all tools.** If a machine is equipped with a three-prong plug, it must be plugged into a three-hole grounded electrical receptacle or grounded extension cord. If using an adapter to aid in accommodating a two-hole receptacle, ground using a screw to a known ground.
4. **Wear eye protection at all times.** Use safety glasses with side shields or safety goggles that meet the appropriate standards of the American National Standards Institute (ANSI).
5. **Avoid dangerous environments.** Do not operate this machine in wet or open flame environments. Airborne dust particles could cause an explosion and severe fire hazard.
6. **Ensure all guards are securely in place and in working condition.**
7. **Make sure switch is in the OFF position** before connecting power to machine.
8. **Keep work area clean, free of clutter, grease, etc.**
9. **Keep children and visitors away.** Visitors must be kept at a safe distance while operating unit.
10. **Childproof your workshop** with padlocks, master switches or by removing starter keys.
11. **Stop and disconnect the machine when cleaning, adjusting or servicing.**



12. **Do not force tool.** The machine will do a safer and better job at the rate for which it was designed.
13. **Use correct tool.** Do not force machine or attachment to do a job for which it was not designed.
14. **Wear proper apparel.** Do not wear loose clothing, neck ties, gloves, jewelry, and secure long hair away from moving parts.
15. **Remove chuck keys, rags, and tools.** Before turning the machine on, make it a habit to check that all chuck keys and wrenches have been removed.
16. **Avoid using an extension cord.** But if you must use one, examine the extension cord to ensure it is in good condition. Immediately replace a damaged extension cord. Always use an extension cord that uses a ground pin and connected ground wire. Use an extension cord that meets the amp rating on the motor nameplate. If the motor is dual voltage, be sure to use the amp rating for the voltage you will be using. If you use an extension cord with an undersized gauge or one that is too long, excessive heat will be generated within the circuit, increasing the chance of a fire or damage to the circuit.
17. **Keep proper footing and balance** at all times.
18. **Lock the mobile base from moving before feeding the workpiece into the machine.**
19. **Do not leave machine unattended.** Wait until it comes to a complete stop before leaving the area.
20. **Perform machine maintenance and care.** Follow lubrication and accessory attachment instructions in the manual.
21. **Keep machine away from open flame.** Operating machines near pilot lights or open flames creates a high risk if dust is dispersed in the area. Dust particles and an ignition source may cause an explosion. Do not operate the machine in high-risk areas, including but not limited to, those mentioned above.
22. **If at any time you are experiencing** difficulties performing the intended operation, stop using the machine! Then contact our technical support or ask a qualified expert how the operation should be performed.
23. **Habits—good and bad—are hard to break.** Develop good habits in your shop and safety will become second-nature to you.
24. **Be aware that certain metal shavings and cutting fluids may cause an allergic reaction** in people and animals, especially when cutting fumes can be inhaled. Make sure you know what type of metal and cutting fluid you will be exposed to and how to avoid contamination.

# Additional Safety Instructions for Metal Lathes

SAFETY



**! WARNING**  
 READ and understand this entire instruction manual before using this machine. Serious personal injury may occur if safety and operational information is not understood and followed. **DO NOT** risk your safety by not reading!

**! CAUTION**  
 USE this and other machinery with caution and respect. Always consider safety first, as it applies to your individual working conditions. No list of safety guidelines can be complete—every shop environment is different. Failure to follow guidelines could result in serious personal injury, damage to equipment or poor work results.

1. **CLEARING CHIPS.** Always use a brush to clear chips. Never clear chips when the chuck is moving.
2. **TOOL SELECTION.** Always select the right cutter for the job, and make sure it is sharp. The right tool decreases strain on the lathe components and provides a better finish.
3. **CHUCK KEY SAFETY.** Always remove chuck key. Never let go of the chuck key while it is still in the chuck.
4. **MOUNTING WORKPIECE.** Make sure workpiece is properly held in chuck before starting lathe. A workpiece thrown from the chuck may severely injure you or a bystander.
5. **CHANGING SPEEDS.** Turn lathe **OFF** and allow the spindle to completely stop before changing speeds.
6. **CHANGING CHUCKS.** Large lathe chucks are very heavy and sometimes awkward to hold. Get assistance when installing large chucks. Protect your hands and the precision ground ways by using a chuck cradle or piece of plywood over the ways of the lathe when installing chucks.
7. **WORKPIECE CLEARANCE.** Make sure workpiece has adequate clearance before starting machine. Check tool and tool post clearance, and chuck and saddle clearance before starting the lathe.
8. **SPEED SELECTION.** Always use the appropriate feed and speed rates. Using the correct speed increases operator control, which decreases the possibility of operator injury.
9. **STOPPING LATHE.** Never attempt to slow or stop the lathe chuck by using your hand.
10. **LEAVING LATHE.** Always shut the lathe **OFF** before you leave it unattended. An unsupervised lathe that is running invites accidents.
11. **AVOIDING ENTANGLEMENT.** Tie up long hair or ponytails, and secure or remove loose clothing to avoid entanglement with moving parts.
12. **AVOIDING A CRASH.** Make sure no part of the tool, tool holder, compound slide, cross slide, or carriage will contact the chuck during operation.
13. **AUTOMATIC FEEDS.** Release automatic feeds after completing a job. Automatic feeds left engaged leave little time for an unsuspecting operator to avoid a "crash" after turning the lathe **ON**.

# Avoiding Potential Injuries

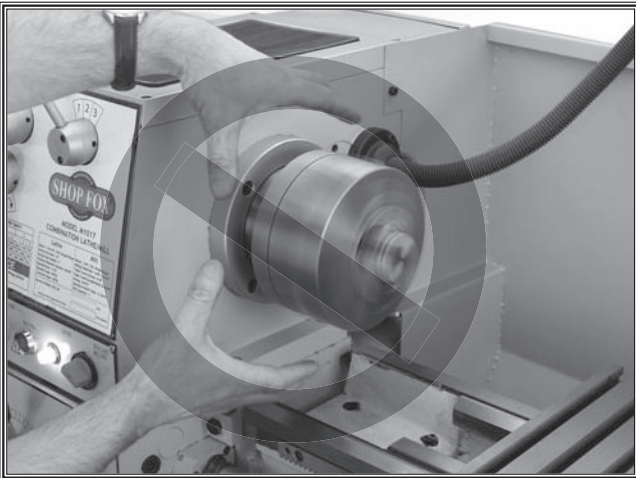
SAFETY



**Figure 1.** Protecting the bed ways and working safely with electricity.



**Figure 3.** Always wear safety glasses.



**Figure 2.** Never use hands to stop spindle.



**Figure 4.** Never take your hand off of the chuck key when inserted in spindle or chuck.

# ELECTRICAL

## 220V Operation

The SHOP FOX® Model M1019 is prewired for 220 volt, single-phase operation. You will need a NEMA-style 6-15 plug and outlet (see Figure 5).

The motor supplied with this gear head lathe is rated at 2 HP and will draw approximately 12 amps during 220 volt operation.

For 220V operation, only connect your machine to a circuit that is protected by a 15 amp circuit breaker.

**▲ CAUTION:** Using a circuit breaker rated higher than 15 amps will increase the risk of fire!

Keep in mind that a circuit being used by other machines or tools at the same time will add to the total load being applied to the circuit. Add up the load ratings of all machines on the circuit. If this number exceeds the rating of the circuit breaker or fuse, use a different circuit.

## Extension Cords

We do not recommend using an extension cord for 220V equipment. Instead, arrange the placement of your machinery and installed wiring to eliminate the need for extension cords. If you must use an extension cord, please use the following guidelines:

- Use cords rated for Standard Service
- Never exceed a length of 50 feet
- Use cords with 12 ga. wire or bigger
- Ensure cord has a ground wire and pin
- Do not use cords in need of repair

## Grounding

This machine must be grounded! The electrical cord supplied with this machine does not come with a 220 volt plug. Use a plug with a ground pin. If your outlet does not accommodate a ground pin, have it replaced by a qualified electrician or have an appropriate adapter installed and grounded properly. An adapter with a grounding wire does not guarantee the machine will be grounded. A ground source must be verified.

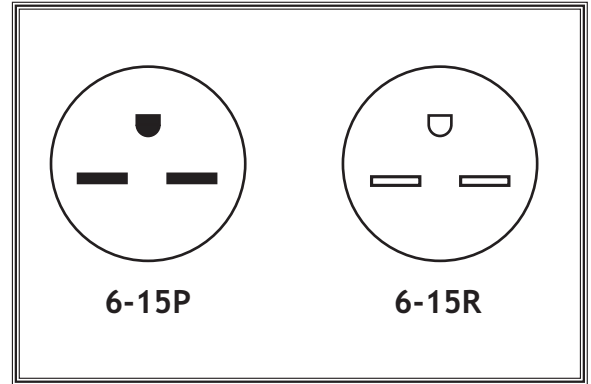


Figure 5. Typical 220V 15 Amp 3-prong plug and outlet.

### **▲ WARNING**


This equipment must be grounded. Verify that any existing electrical outlet and circuit you intend to plug into is actually grounded. If it is not, it will be necessary to run a separate 12 AWG copper grounding wire from the outlet to a known ground.

# SET UP

## Unpacking

The SHOP FOX® Model M1019 has been carefully packaged for safe transporting. If you notice the machine has been damaged, please contact your authorized SHOP FOX® dealer immediately.

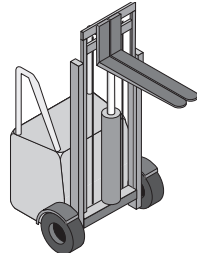
	<p><b>!WARNING</b>  <b>SUFFOCATION HAZARD!</b>          Immediately discard all plastic bags and packing materials to eliminate choking/suffocation hazards for children and animals.</p>
---	---

<p><b>!WARNING</b></p> 
<p>READ and understand this entire instruction manual before using this machine. Serious personal injury may occur if safety and operational information is not understood and followed. DO NOT risk your safety by not reading!</p>

## Items Needed for Set Up

The following items are needed, but not included, to setup your machine:

- Fork Lift or other power lifting equipment
- Webbing Slings (Minimum of 1500 lb lifting capacity)
- Precision Level
- Safety Glasses (for each person)
- Solvent for cleaning
- Shop Rags for cleaning

<p><b>!WARNING</b></p> 
<p>The Model M1019 has a shipping weight of 1330 lbs. Serious personal injury may occur if safe moving methods are not followed. You will need power lifting equipment and assistance to remove this machine from the crate. Otherwise, serious personal injury may occur.</p>

SETUP

# Inventory

The following is a description of the main components shipped with the SHOP FOX® Model M1019. Lay the components out to inventory them.

Main Contents (Figure 6)		QTY
A.	Model M1019 Gear Head Lathe .....	1
B.	Base (In their own boxes) .....	2
C.	Steady Rest (Mounted on Lathe) .....	1
D.	Follow Rest (Not Shown) .....	1
E.	Kick Plate and Support Brackets .....	1

Loose Items and Small Wooden Box Contents (Figure 7)		QTY
F.	12" Faceplate .....	1
G.	8" Four-Jaw Universal Chuck with Key Camlock Studs with Set Screws .....	1 3
H.	Chip Tray .....	1
I.	Backsplash .....	1

Tool Box Contents (Figure 8)		QTY
J.	Handwheel Handles .....	3
K.	Oiler .....	1
L.	Drill Chuck with Key B16 .....	1
M.	Live Center .....	1
N.	Wrench for Tool Post with Handle .....	1
O.	Large Chuck Key with Handle .....	1
P.	Spindle Sleeve Adapter .....	1
Q.	Drill Chuck Arbor B16 X MT3 .....	1
R.	#3 Morse Taper Dead Centers .....	2
S.	Phillips and Flat Head Screwdrivers .....	1 Ea
T.	Hex Wrenches 2.5, 3, 4, 5, 6, & 8 mm .....	1 Ea
U.	Open-End Wrenches .....	1 Ea
	9/11, 10/12, 12/14, & 17/19mm .....	1 Ea
V.	Chuck Key (3-jaw & spindle) .....	1
W.	Gear, Metric Threading .....	1
X.	Brass Dowel .....	2
Y.	Hardware Bag .....	1
	–Flat Washers 12mm .....	6
	–Hex Bolts M12-1.75 x 45 .....	6
	–Phillips Head Screws M6-1 x 10 .....	16
	–Lock Washers 6mm .....	4
	–Hex Nuts M6-1 .....	6

If any parts appear to be missing, check the packaging to be sure the parts are not in the packing materials. If any parts are missing, find the part number in the back of this manual and contact Woodstock International, Inc. at (360) 734-3482 or at [tech-support@shopfox.biz](mailto:tech-support@shopfox.biz).

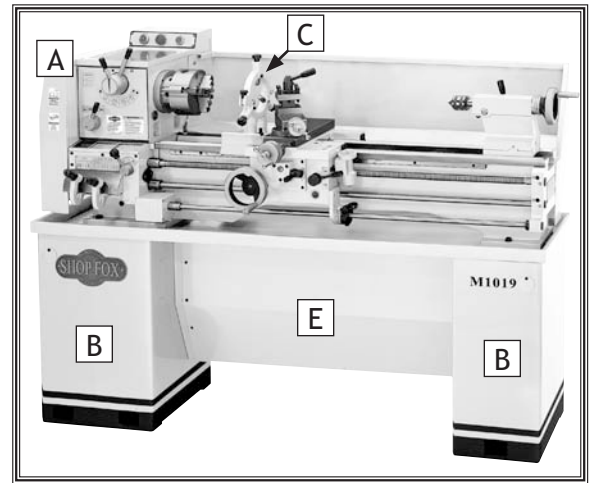


Figure 6. Main contents.

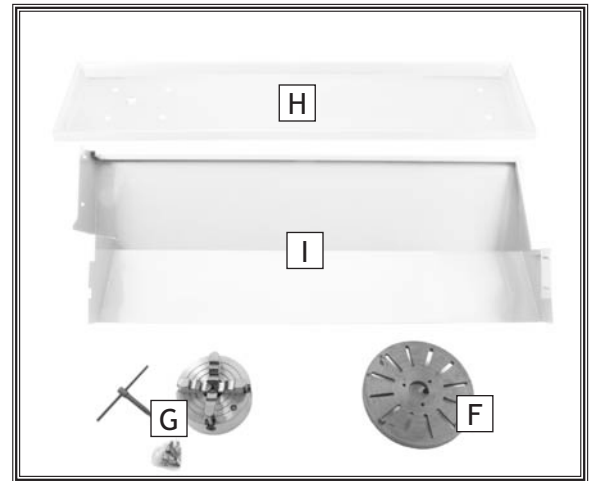


Figure 7. Loose items and small wooden box contents.

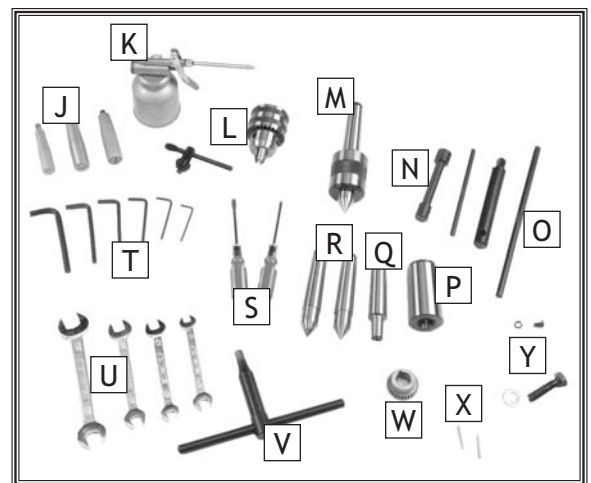


Figure 8. Tool box contents.

# Cleaning Machine

The table and other unpainted parts of your lathe are coated with a waxy grease that protects them from corrosion during shipment. Clean this grease off with a solvent cleaner or citrus-based degreaser. **DO NOT** use chlorine-based solvents such as brake parts cleaner or acetone—if you happen to splash some onto a painted surface, you will ruin the finish.

	<h2>CAUTION</h2>
	<p><b>ALWAYS</b> work in well-ventilated areas far from possible ignition sources when using solvents to clean machinery. Many solvents are toxic when inhaled or ingested. Use care when disposing of waste rags and towels to be sure they <b>DO NOT</b> create fire or environmental hazards.</p>

# Machine Placement

- **Floor Load:** Your lathe weighs 1261 lbs. distributed in a 71" x 22" footprint. We recommend placing this machine on concrete floors only.
- **Working Clearances:** Consider existing and anticipated needs, size of material to be processed through the machine, and space for auxiliary stands, work tables or other machinery when establishing a location for your gear head lathe (see **Figure 9**).
- **Lighting:** Lighting should be bright enough to eliminate shadow and prevent eye strain.
- **Electrical:** Electrical circuits must be dedicated or large enough to handle amperage requirements. Outlets must be located near each machine, so power or extension cords are clear of high-traffic areas. Follow local electrical codes for proper installation of new lighting, outlets, or circuits.

<h2>WARNING</h2>
<p><b>NEVER</b> use flammables such as gas or other petroleum-based solvents to clean your machine. These products have low flash points and present the risk of explosion and severe personal injury!</p>

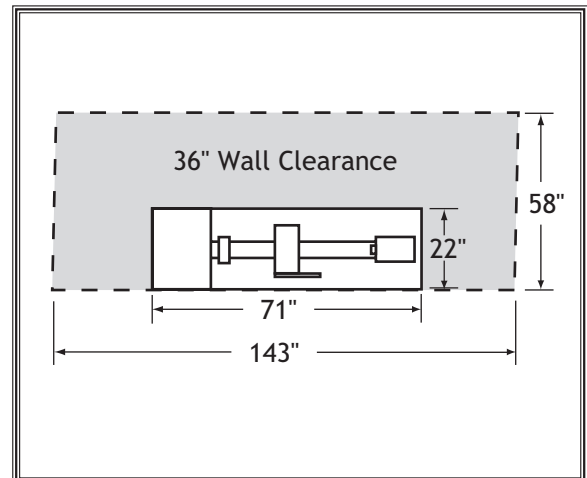


Figure 9. Minimum wall clearances.

<h2>WARNING</h2>
<p><b>MAKE</b> your shop "child safe." Ensure that your workplace is inaccessible to youngsters by closing and locking all entrances when you are away. <b>NEVER</b> allow untrained visitors in your shop when assembling, adjusting or operating equipment.</p>

SETUP

# Assembling and Moving

1. Remove the stands from their box and place them on the floor close to the final location of the lathe.
2. Attach the kick plate brackets to the stand with the M6-1 x 10 Phillips head screws and attach the kick plate to the brackets with the remaining Phillips head screws and hex nuts.
3. Place the chip tray on top of the stands. Line up the holes in the tray with the holes on top of the stands.

## WARNING

Use webbing slings with a minimum of 1500 lb capacity. Serious injury or death could occur if the slings break and the lathe falls.

4. Thread the slings behind all rods and around the bedway casting as shown in **Figure 11** to avoid damaging the lead screw, feed rod, or ON/OFF rod.

**Note:** Move the carriage to adjust the lathe balance.

5. Use a fork lift or an overhead crane to raise the lathe off of the crate and move it over the stands.
6. Line up the holes in the base of the lathe with the stand holes and slowly lower the lathe into place. Thread M12-1.75 X 45 hex bolts with washers through the holes in the lathe, chip tray, and the stand.
7. Attach the backslash to the lathe using the fasteners already in the lathe.
8. Move the lathe to its final location using the lifting method pictured in **Figure 11**.

## Handwheel Handles

To attach the handles to the handwheels, do these steps:

1. Using a screwdriver, thread the tailstock and longitudinal handles (**Figure 12**) into the handwheels.
2. Thread the crossfeed handle into the handwheel and tighten with an 11mm wrench.



Figure 10. Assembled lathe.

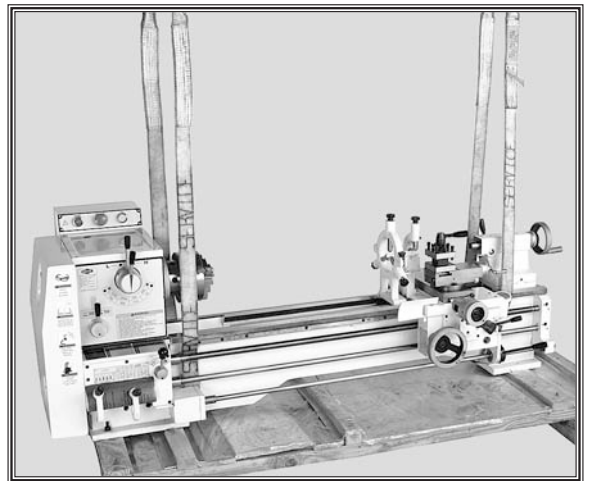


Figure 11. Lifting method for lathe.

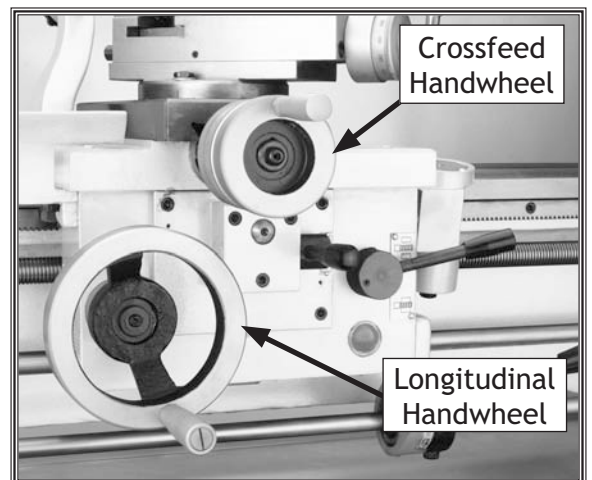


Figure 12. Longitudinal and crossfeed handle locations.



## Mounting to Shop Floor

Although not required, we recommend that you mount your new machine to the floor. Because this is an optional step and floor materials may vary, floor mounting hardware is not included. Generally, you can either bolt your machine to the floor or mount it on machine mounts. Both options are described below. Whichever option you choose, it will be necessary to level your machine with a precision level.

### Bolting to Concrete Floors

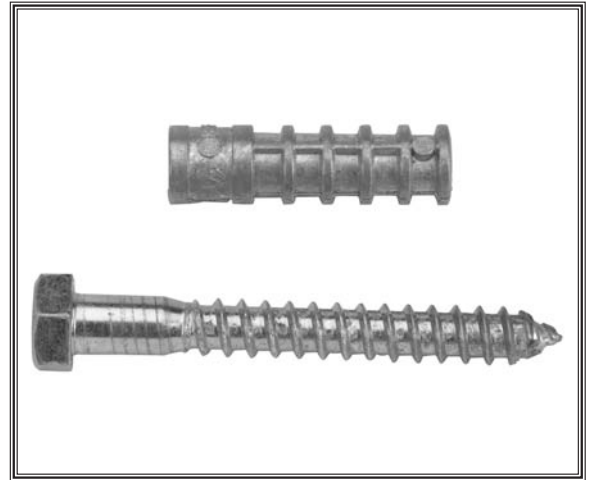
Lag shield anchors with lag bolts (**Figure 13**) and anchor studs (**Figure 15**) are two popular methods for anchoring an object to a concrete floor. We suggest you research the many options and methods for mounting your machine and choose the best that fits your specific application.

### **NOTICE**

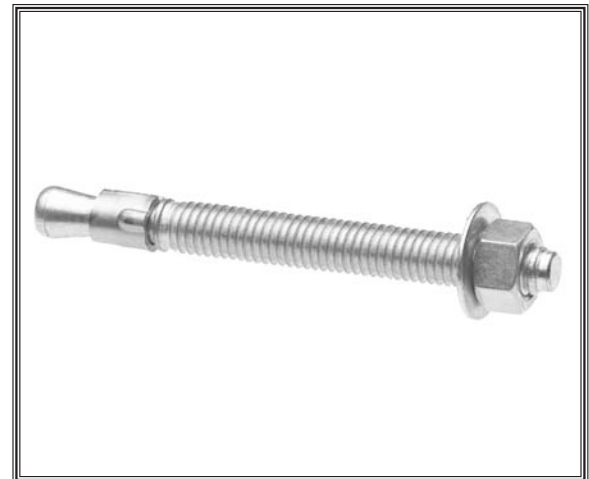
Anchor studs are stronger and more permanent alternatives to lag shield anchors; however, they will stick out of the floor, which may cause a tripping hazard if you decide to move your machine at a later point.

### Using Machine Mounts

Using machine mounts, shown in **Figure 15**, gives the advantage of fast leveling and vibration reduction. The large size of the foot pads distributes the weight of the machine to reduce strain on the floor.



**Figure 13.** Typical lag shield anchor and lag bolt.



**Figure 14.** Typical anchor stud.



**Figure 15.** Machine mount example.

# OPERATIONS

## General

The Model M1019 will perform many types of operations that are beyond the scope of this manual. Many of these operations can be dangerous or deadly if performed incorrectly.

The instructions in this section are written with the understanding that the operator has the necessary knowledge and skills to operate this machine. **If at any time you are experiencing difficulties performing any operation, stop using the machine!**

If you are an inexperienced operator, we strongly recommend that you read books, trade articles, or seek training from an experienced lathe operator before performing any unfamiliar operations. **Above all, your safety should come first!**

### NOTICE

Failure to follow start up and spindle break-in procedures on Page 30 before operating your machine will likely cause rapid deterioration of spindle and other related parts.

## Turning On Power

Once plugged in, the lathe always has power. The green "Power" light shown in Figure 16 will be lit to indicate a live connection. If you depress the EMERGENCY STOP button, the power light will go out and cut power to machine operations only. Twisting the EMERGENCY STOP button clockwise and letting it pop out will restore power to machine operations. To cut power to the machine entirely, you will need to unplug or disconnect the lathe from the power source.

**! WARNING**



Always wear safety glasses when operating the gear head lathe. Failure to comply may result in serious personal injury.

**! WARNING**



DO NOT investigate problems or adjust the lathe while it is running. Wait until the machine is turned **OFF**, unplugged and all working parts have stopped before proceeding!

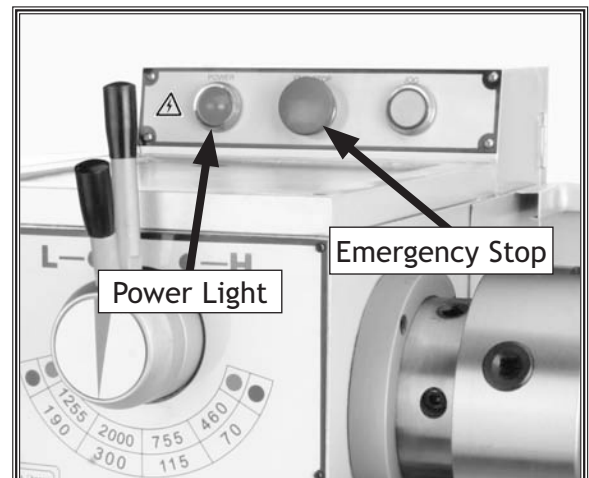


Figure 16. Power light and emergency stop locations.

# Three-Jaw Direct Mount Scroll Chuck

Three-jaw scroll chucks feature hardened steel jaws that self-center the workpiece within 0.002"-0.003". These jaws are reversible for chucking large diameter workpieces. The three-jaw direct mount scroll chuck featured in these instructions has three cam-lock studs that mount directly to the chuck and hold the chuck tight to the spindle nose.

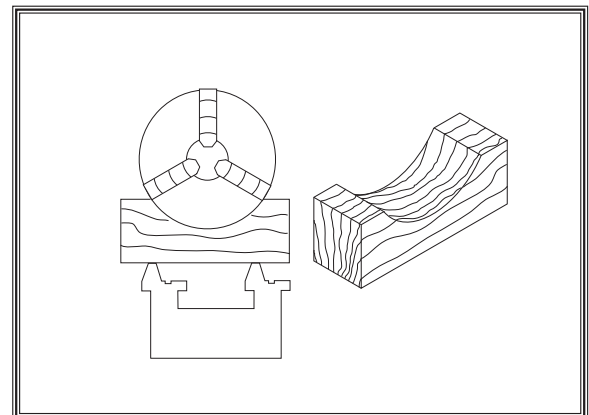
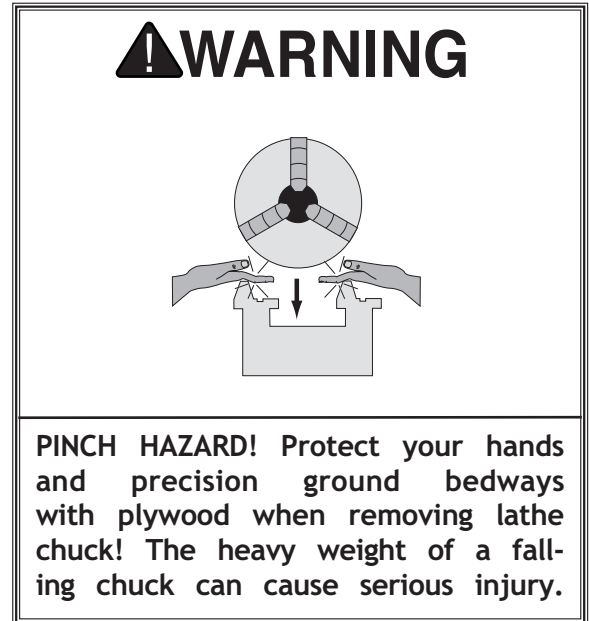
To remove or mount your three-jaw direct mount scroll chuck you will need the following tools:

- Chuck Key
- Dead Blow Hammer
- A Chuck Cradle or a piece of plywood large enough to span the bedways and support the weight of the chuck
- Breaker Bar (optional)

To remove the existing chuck, do these steps:

1. **UNPLUG THE LATHE!**
2. Lay a chuck cradle or protective layer of plywood over the bedways to protect the precision ground surfaces from damage and to prevent fingers from being pinched (see **Figure 17**).
3. Loosen the 3 cam-locks by turning the chuck key counterclockwise until the mark on the cam-lock aligns with the single mark on the spindle nose in **Figure 18**. This will be approximately one-third of a turn. If you look carefully, you will see the cam-lock rise up out of the spindle nose. If the cam-lock stud does not freely release from the cam-lock, wiggle the cam-lock until the cam-lock stud releases.

**Note:** These cam-locks may be very tight. A breaker bar may be used to add leverage.



**Figure 17.** Simple chuck cradle made of scrap lumber.



**Figure 18.** Indicator arrows.

4. Using a dead blow hammer or other soft mallet, lightly tap around the outer circumference of the chuck body to break the chuck free from the cam-locks and from the spindle nose taper.
5. With a rocking motion, carefully remove the chuck from the spindle nose (see Figure 19).

**⚠ CAUTION**

Large chucks are very heavy. Always get assistance when removing or installing large chucks to prevent personal injury or damage to the chuck or lathe.

To install the three-jaw scroll chuck, do these steps:

1. **UNPLUG THE LATHE!**
2. Lay a chuck cradle or protective layer of plywood over the bedways to protect the precision ground surfaces from damage and to prevent fingers from being pinched.
3. If the three-jaw scroll chuck does not have the cam-lock studs assembled, screw the cam-lock studs into the chuck body.
4. Using your calipers, measure the height of the cam-lock studs from the previously installed chuck (see Figure 20).
5. Adjust the cam-lock studs in the three-jaw chuck to match the measurement from the previous chuck.

**Note:** Trial-and-error adjustment will be needed if you do not have a previous cam-lock stud to reference.

6. Once the proper length is obtained, thread in the cap screws to lock the cam-lock studs into position.
7. Lift the chuck, and insert the studs onto the spindle nose (see Figure 19).
8. Tighten each cam-lock clockwise until you feel the cam-lock engage the cam-lock stud. Continue to turn until you can't turn any further. You will see the chuck body draw-up to the spindle nose. Ideally the cam-lock mark will fall between the two pointed arrows on the spindle nose (see Figure 21).

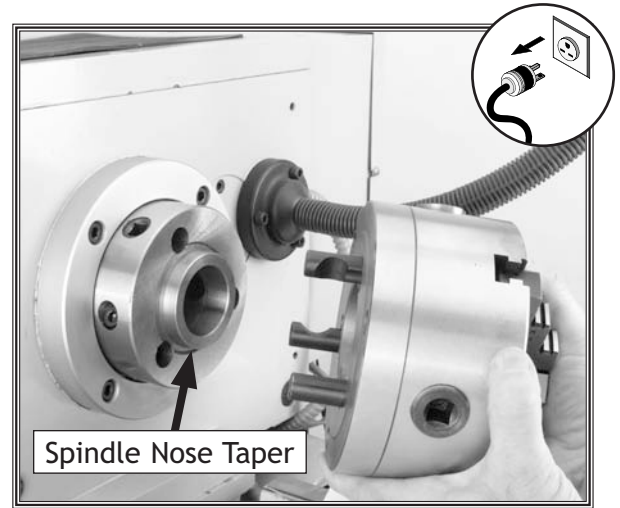


Figure 19. Installing and removing a small chuck.



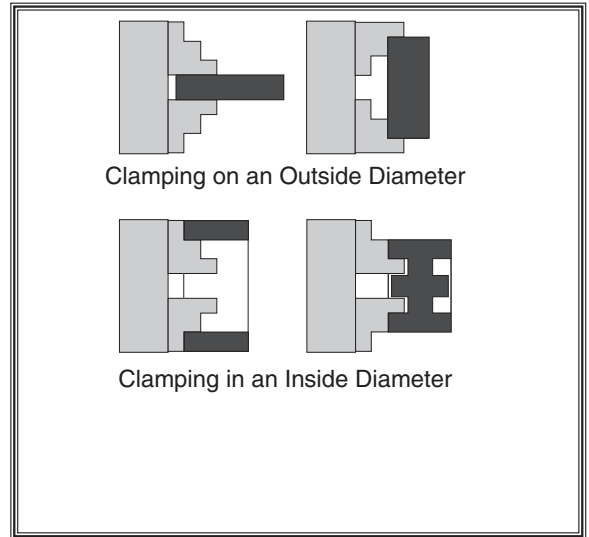
Figure 20. Measuring height of cam-lock studs.



Figure 21. Tightening the cam-locks.

To load a workpiece, do these steps:

1. With the chuck key, open the jaws so the workpiece lays flat against the chuck face and jaw step, or fits in the through hole. For jaw and work holding options, see **Figure 22**.
2. Turn each jaw until it makes contact with the workpiece.
3. Turn the chuck by hand to make sure you have even contact with all three jaws and the workpiece is centered.
  - If the workpiece is off center, loosen the jaws and adjust the workpiece.
  - If the workpiece is centered, tighten the jaws.



**Figure 22.** Loading a workpiece.

**⚠ WARNING**

Securely clamp your workpiece and remove the chuck key! Thrown objects from a lathe can cause serious injury or death to the operator and to bystanders many feet away.

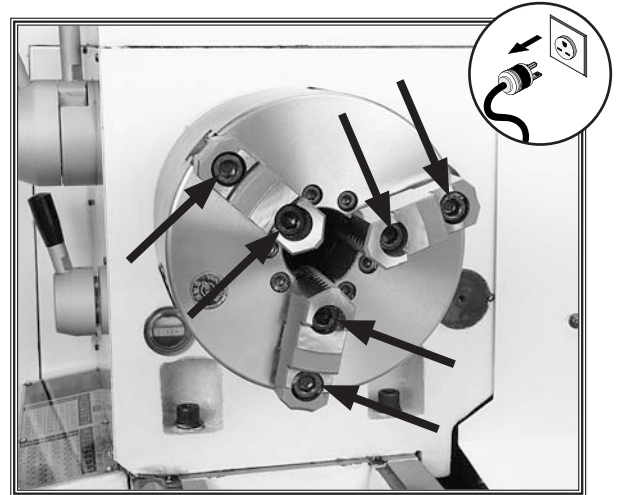
## Reversing Jaws

The three-jaw chuck on the Model M1019 comes with two-piece hardened-steel jaws. When in the outside configuration, the jaws are used to hold the workpiece from the outer diameter. The inside jaw configuration is for holding larger work from the inside diameter. The inside jaw configuration can also hold a workpiece from the outside when held in the central position (see **Figure 22**).

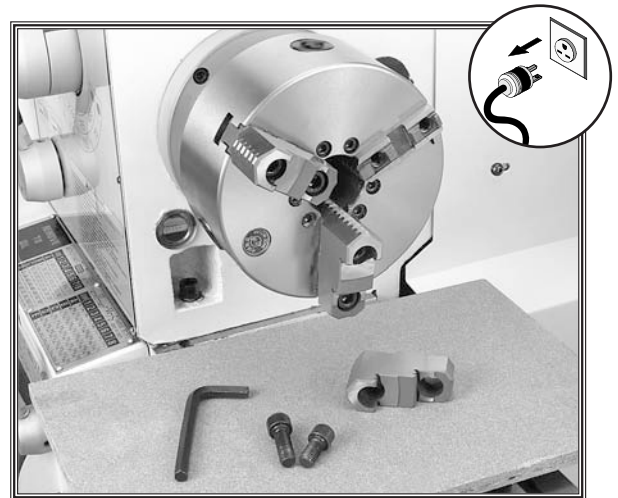
To reverse the jaws, do these steps:

1. Remove the cap screws shown in **Figure 23** with an 8mm hex wrench, and remove the jaw.
 

**Note:** Reverse one jaw at a time to prevent mixing up the order.
2. Rotate the jaw 180° and replace it as shown in **Figure 24**.
3. Replace the cap screws. Make sure the longer cap screw remains in the thicker part of the jaw.



**Figure 23.** Cap screws securing the 3-jaw chuck.



**Figure 24.** Reversing the chuck jaws.

# Four-Jaw Direct Mount Independent Chuck

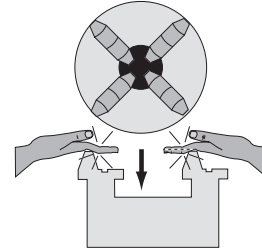
Four-jaw chucks feature hardened steel jaws that are adjusted independently. Each jaw can be removed from the chuck body and reversed. Independent jaw adjustment and reversal allows for a wide range of work holding versatility.

The four-jaw direct mount independent chuck featured in these instructions mounts the same way as the three-jaw chuck. Refer to the three-jaw chuck instructions beginning on Page 17.

## CAUTION

Large chucks are very heavy. Always have assistance when removing or installing large chucks to prevent personal injury or damage to the chuck or lathe.

## WARNING



**PINCH HAZARD!** Protect your hands and precision ground bedways with plywood when removing lathe chuck! The heavy weight of a falling chuck can cause serious injury.

To load a workpiece, do these steps:

1. With the chuck key, open each jaw so the workpiece will lay flat against the chuck face.
2. Support the workpiece.
3. Lock the tailstock and then turn the tailstock quill so the dead center makes contact with the center point of your workpiece.
4. Turn each jaw until it just makes contact with the workpiece.
5. Tighten each jaw in small increments. After you have adjusted the first jaw, continue tightening in opposing sequence (see Figures 25 & 26). Check frequently to make sure you have not wandered off your center point due to applying too much pressure to a single jaw.



Figure 25. Centering workpiece.

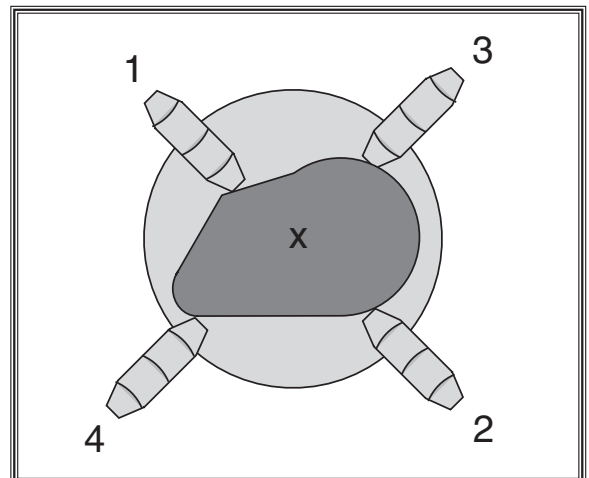


Figure 26. Jaw tightening sequence.

6. After the workpiece is held in place, back the tailstock away and rotate the chuck by hand. The center point will move if the workpiece is out of center (see **Figure 27**).
7. Make fine adjustments by slightly loosening one jaw and tightening the opposing jaw until the workpiece is precisely aligned.
8. Use a lower RPM when machining heavy eccentric workpieces.

## Faceplate

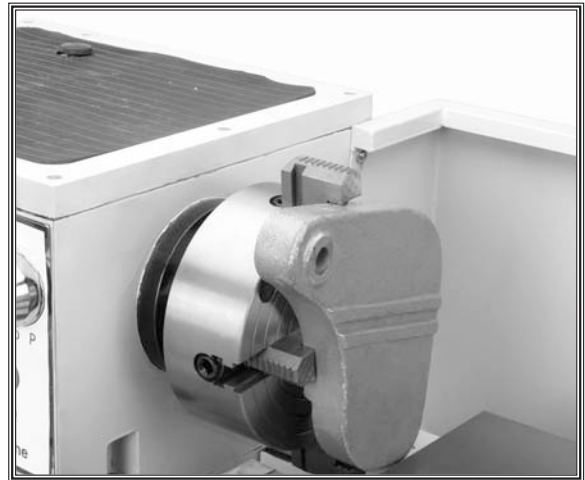
The faceplate is used to turn non-cylindrical parts and for off-center turning. Install the faceplate according to the instructions for three-jaw chucks found on **Page 17**.

To load a workpiece, do these steps:

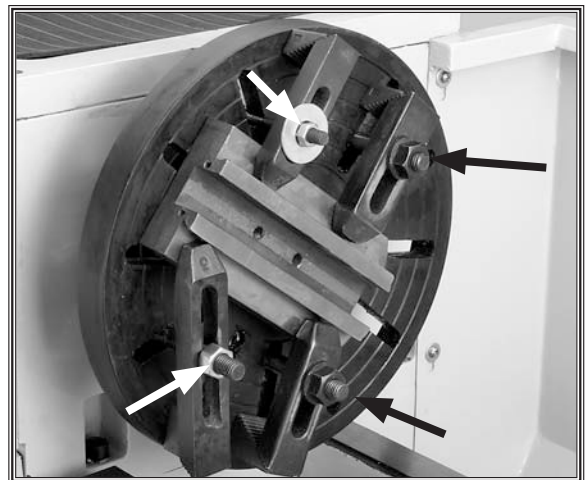
1. Support the workpiece and slide the dead center, installed in the tailstock, to the workpiece.
2. Lock the tailstock and turn the tailstock quill so the dead center applies enough pressure to the center point of your workpiece to hold it in place. For more information refer to **Centers** on **Page 25**.
3. Lock the tailstock quill when sufficient pressure is applied to hold the workpiece in place. Additional support may be needed, depending on the workpiece.
4. Secure the workpiece with a minimum of three independent clamping devices (see **Figure 28**). Failure to follow this step may lead to deadly injury to yourself or bystanders. Take into account rotation and the cutting forces applied to the workpiece when clamping to the faceplate. **Make sure your clamping application will not fail!**
5. Use a lower RPM when machining heavy eccentric workpieces.

### WARNING

Use a minimum of three independent clamping devices when turning eccentric workpieces. Failure to provide adequate clamping will cause workpiece to eject.



**Figure 27.** Properly held workpiece for offset machining at low RPM.



**Figure 28.** Faceplate with properly clamped eccentric in four locations.

### WARNING



Securely clamp your workpiece and remove the chuck key! Thrown objects from a lathe can cause serious injury or death to the operator and to bystanders many feet away.

# Tailstock

The tailstock (Figure 29) of the Model M1019 lathe can be used to support workpieces with the use of a live or dead center. It can drill or bore holes in the center of a part with a #3 tapered shank drill, or using a drill chuck fitted with a #3 taper and a drill. It can also be used for cutting shallow tapers by using the offset adjustment.

To operate the tailstock, do these steps:

1. Slide the tailstock to the desired position.
2. Pull up on the tailstock lock handle to lock the tailstock in place.

To operate the tailstock quill, do these steps:

1. With the tailstock locked, push down the quill lock handle to unlock.
2. Turn the quill feed handle clockwise to feed/move the quill towards the spindle, or counterclockwise to move it away from the spindle.
3. Pull up on the quill lock handle to lock the quill in place.

To install a tapered drill chuck, do these steps:

1. With the tailstock locked, push down to unlock the quill lock handle.
2. Turn the quill feed handle clockwise to extend the quill about one inch.
3. Insert tapered drill arbor (Figure 30), or a tapered shank drill (Figure 31), into the quill until the taper is firmly seated. The matching tapers hold the arbor.
4. Turn the quill feed handle clockwise to feed the drill bit into the rotating workpiece.
5. To remove the chuck taper, turn the quill feed handle counterclockwise until the chuck is pushed out from the tailstock taper.

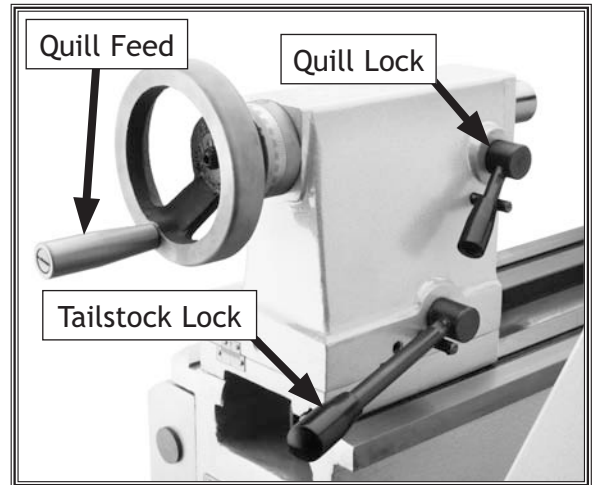


Figure 29. Tailstock and quill lock handles in locked position.



Figure 30. Setting up tailstock for drilling.



Figure 31. Tapered shank drill fitting into quill taper.



## Cutting Shallow Tapers with Tailstock

The tailstock can be offset to cut a shallow taper on a part.

To set up the tailstock to cut tapers, do these steps:

1. Lock the tailstock in position.
2. Loosen the set screw located on the end of the tailstock (see **Figure 32**).
3. Alternately loosen and tighten the two side adjustment screws until desired offset is indicated on the offset scale (see **Figure 33**).
4. Tighten the set screw located on the end of the tailstock to lock the setting.


To return the tailstock back to original position, repeat the process until the centered position is indicated on the scale.

## Tailstock Alignment

The tailstock on the Model M1019 is aligned at the factory with the headstock. We recommend that you take the time to ensure that the tailstock is aligned to your own desired tolerances.

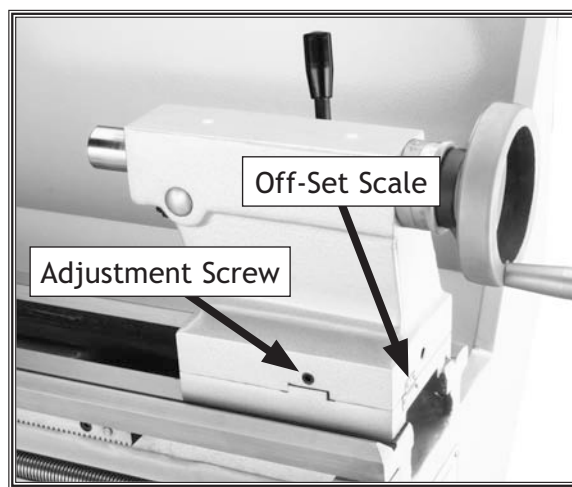
To align the tailstock, do these steps:

1. Using an engineer's precision level on the bedways, make sure the lathe is level side-to-side and front-to-back. If the lathe is not level, correct this condition before proceeding.
2. Get two pieces of steel round stock, 2.00" in diameter x 6.00" long.
3. Center drill both ends of one piece of the round stock. Set it aside for use in **Step 6**.
4. Using the other piece of stock, make a dead center by turning a shoulder to make a shank. Flip the piece over in the chuck and turn a 60° point (see **Figure 34**).

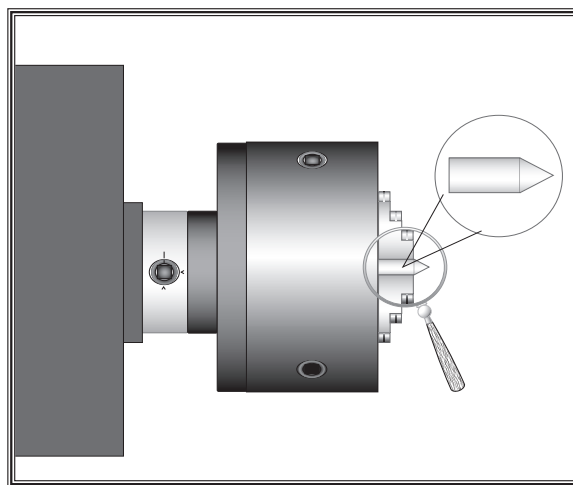
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**Figure 32.** Tailstock off-set adjustments.



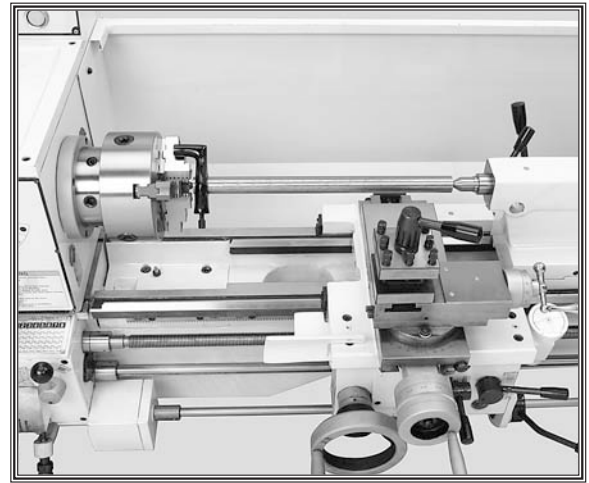
**Figure 33.** Off-set scale.



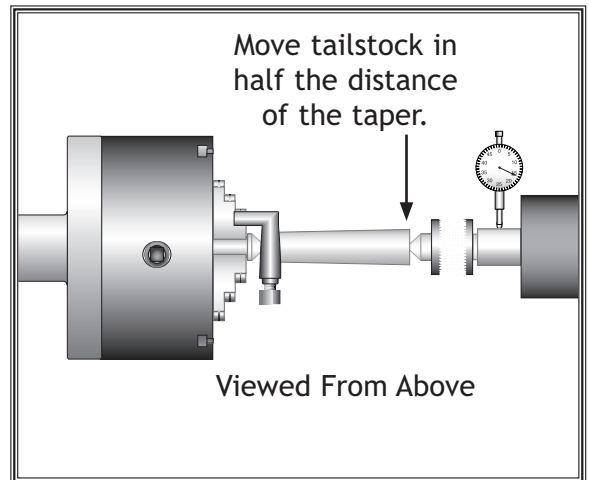
**Figure 34.** Tailstock centering dead center.

**Note:** As long as the dead center remains in the chuck, the point of your center will remain true to the spindle axis. Keep in mind that the point will have to be refinished whenever it is removed and returned to the chuck. For more information refer to **Centers** on **Page 25**.

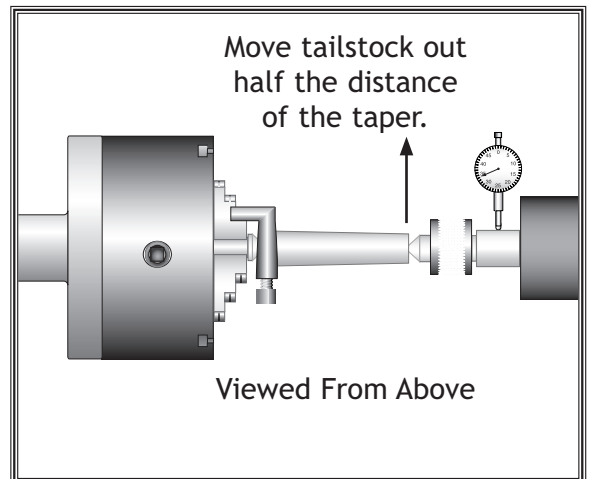
5. Place the live center in the tailstock.
6. Attach a lathe dog to the bar stock and mount it between centers (see **Figure 35**).
7. Turn approximately 0.010" off the diameter.
8. Measure the stock with a micrometer.
  - If the stock is fat at the tailstock end, the tailstock needs to be moved toward the operator half the distance of the amount of the taper (see **Figure 36**).
  - If the stock is thinner at the tailstock end, the tailstock needs to be moved away from the operator half the distance of the amount of the taper (see **Figure 37**).
9. Mount a dial indicator so the dial plunger is on the tailstock barrel before making adjustments to the tailstock.
10. Refer to **Cutting Shallow Tapers with Tailstock** on **Page 23** for making adjustments to the tailstock center. Turn another 0.010" off of the diameter and check for a taper. Repeat this process as necessary until the desired amount of accuracy is achieved.



**Figure 35.** Checking tailstock alignment.



**Figure 36.** Tailstock adjustment option #1.



**Figure 37.** Tailstock adjustment option #2.

## Centers

The Model M1019 lathe is supplied with a live center, a HSS MT#3 dead center, and an MT#3 dead center that is carbide tipped. The supplied MT#5-#3 sleeve fits into the spindle taper to hold an MT#3 center.

The dead center is used in the tailstock to support workpieces. When used in the tailstock, make sure to keep the dead center tip and workpiece lubricated.

To install a dead or live center, do these steps:

1. Feed the quill out about 1" so that the dead center can be inserted.
2. Insert the dead center into the quill opening (see **Figure 38**). Matching tapers provide the locking action.
3. Move the tailstock into position and lock in place.
4. Feed the quill into the workpiece.

**Note:** Make sure there is a center drilled hole in the end of workpiece for the dead center.

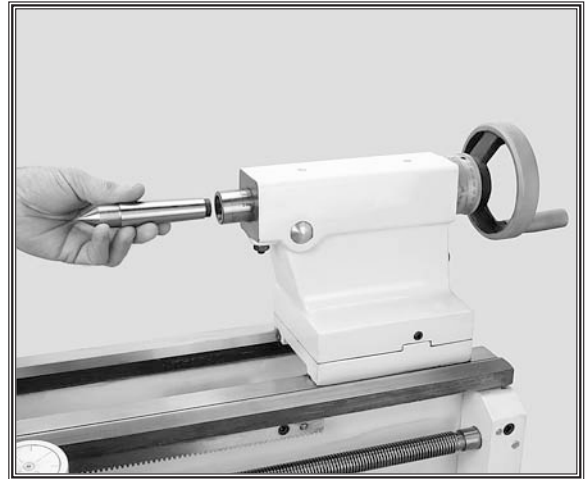
5. Lock the quill into place once the live center and the part rotate together. The quill may need to be adjusted during operation.
6. To remove the dead center, retract the quill until the dead center pops free.

The dead center can also be used in the spindle. The most common application is when using the faceplate (see **Figure 39**).

To install the dead center in the spindle, do these steps:

1. Remove the chuck from the spindle.
2. Install the dead center in the spindle sleeve.
3. Install the sleeve into the spindle opening.
4. Attach the faceplate to the spindle.

**Note:** When using the dead center in the spindle, use a lathe dog so that your part will rotate with the spindle and not spin on the dead center tip.



**Figure 38.** Inserting dead center.



**Figure 39.** Typical faceplate and dead center setup.

### **NOTICE**

Failure to keep dead center point well lubricated will damage dead center and workpiece.

## Steady Rest

The steady rest serves as a support for long shafts (l/d ratio of 3:1 or greater). The steady rest can be placed anywhere along the length of the part.

To install/use the steady rest, do these steps:

1. Place the steady rest on the lathe bedways so the triangular notch fits over the angled portion of the rear bedway.
2. Loosen the three set screws so the finger position can be adjusted (see **Figure 40**).
3. Loosen the knurled screw and open the steady rest so a workpiece can fit inside (see **Figure 41**).
4. Position the steady rest where desired. Tighten the bolt at base of the steady rest to secure in place.
5. Close the steady rest so that the workpiece is inside the fingers and tighten the knob.
6. Set the fingers snug to the workpiece and secure by tightening the set screws. Fingers should be snug and allow rotational movement of the workpiece. Lubricate the finger tips with an anti-seize grease during operation.
7. After prolonged use, the fingers will show wear. Either mill or file the tips for a new contact surface.

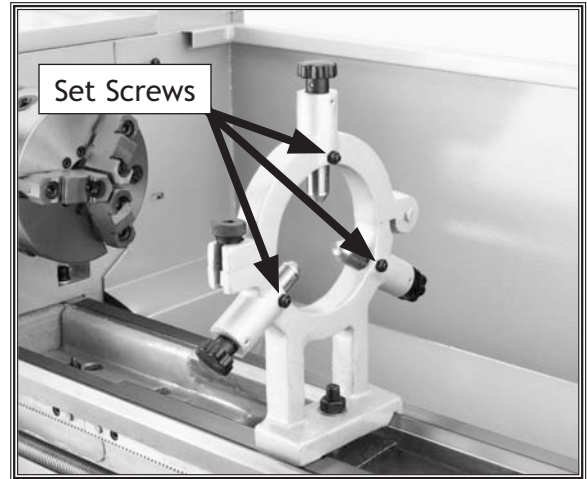


Figure 40. Steady rest adjustments.

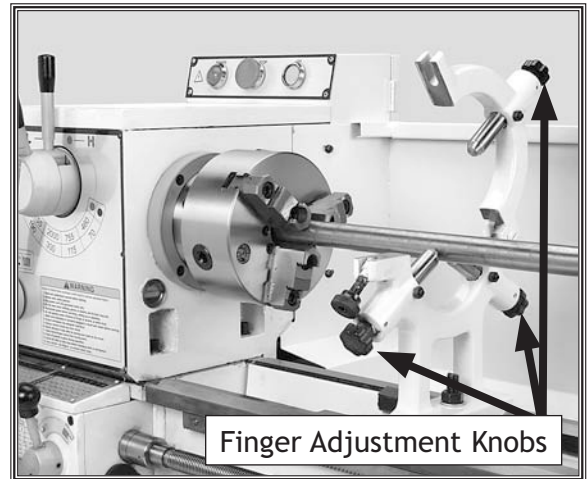


Figure 41. Positioning workpiece in steady rest.

## Follow Rest

The follow rest in **Figure 42** is mounted on the saddle and follows the movement of the tool. It can be attached/removed by two cap screws located at the base of the follow rest. The follow rest requires only two fingers as the cutting tool acts as the third. The follow rest is used on long, slender parts to prevent flexing of the workpiece from the pressure of the cutting tool.

The sliding fingers are set similar to those of the steady rest, —free of play but not binding. Always lubricate during operation. Remove the follow rest from the saddle when not in use. After prolonged use, the fingers will need to be milled or filed to cleanup the contact surface.



Figure 42. Follow rest attachment.

## Setting Compound Slide

The compound slide is used to cut tapers on parts or to set the proper infeed angle when threading. It may also be used to cut specific lengths longitudinally, when set parallel to the spindle axis.

The compound slide handwheel has a graduated dial for precise inch feed increments. The base of the compound slide has a graduated scale for angular setup.

To set the angular position, do these steps:

1. Loosen the two hex nuts, one on each side of the compound slide (see **Figure 43**).
2. Rotate the compound slide to the desired angular position. Use the scale at the base of the slide and the indicator marks on the carriage to set the position.
3. Tighten the two hex nuts. Be sure to not overtighten, as you may strip threads.

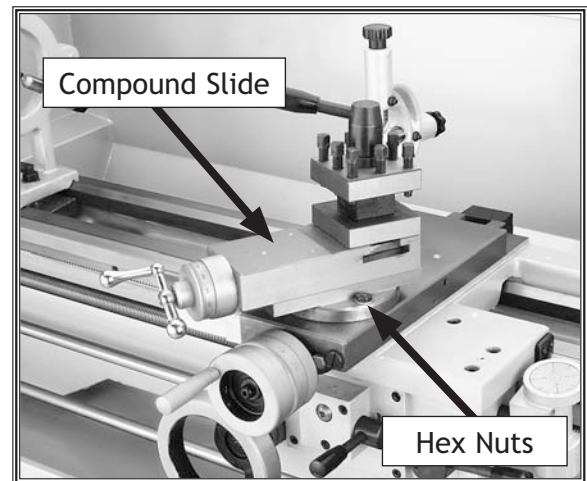
## Four-Way Tool Post

The four-way tool post is mounted on top of the compound slide, and allows a maximum of four tools to be loaded simultaneously.

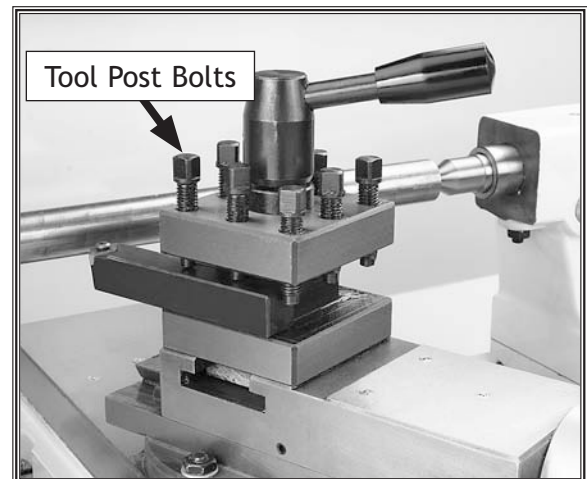
The four-way tool post allows for quick indexing to new tools. This is accomplished by rotating the top handle counterclockwise and then rotating the tool post to the desired position. Rotate the top handle clockwise to lock the tool into position.

To load the tool post, do these steps:

1. Choose the desired cutting tool.
2. Loosen the tool post bolts so that the cutting tool can fit underneath the tool post bolts.
3. Use a minimum of two tool post bolts to hold down the cutting tool and tighten firmly (see **Figure 44**).
4. Repeat **Steps 1-3** for the three remaining openings, as needed.



**Figure 43.** Compound slide set at an angle.



**Figure 44.** Tool holder and tool post.

# Gap Removal

The Model M1019 comes equipped with a gap section below the spindle that can be removed for turning large diameter parts or when using a large diameter faceplate.

The gap is installed, then ground, at the factory during lathe assembly for precise fit and alignment. Factors during the remaining assembly apply additional forces to the gap; therefore, replacing the gap to the original position will be very difficult. **If you choose to remove the gap, we don't recommend attempting to replace it.**

To remove the gap, do these steps:

1. Find the two taper pin nuts located on the bed of the gap (see Figure 45).
2. Using an open-ended wrench, tighten the nut. This will cause the taper pin to release. Remove the taper pin and repeat for the second nut.
3. Remove the four cap screws and tap the outside of the gap with a dead blow hammer to loosen, and remove the gap section.

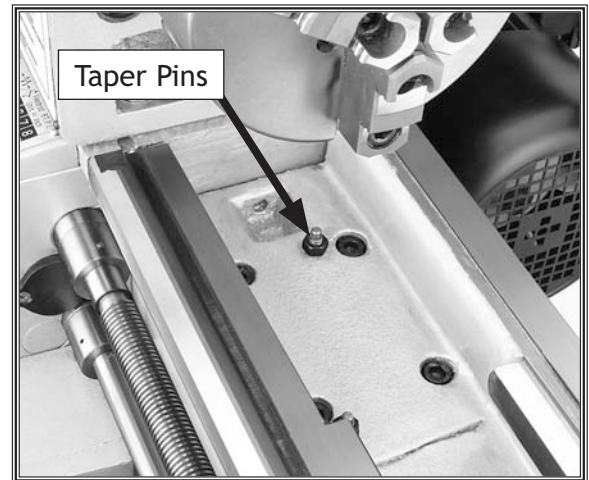


Figure 45. Lathe gap.

# Manual Feed

This section will review the individual controls on the carriage and provide descriptions of their uses (see Figure 46).

## Longitudinal Handwheel

The longitudinal handwheel moves the carriage left or right along the bed. This handwheel is used when setting up the machine or when manual control is desired during turning operations.

## Cross Feed Handwheel

The cross feed handwheel moves the top slide toward and away from the work. Turning the dial clockwise moves the slide toward the workpiece.

## Compound Slide Handwheel

The compound slide handwheel controls the position of the cutting tool relative to the workpiece. The compound slide is adjustable for any angle within its range. Angle adjustment is controlled by cap screws on the base of the compound slide.

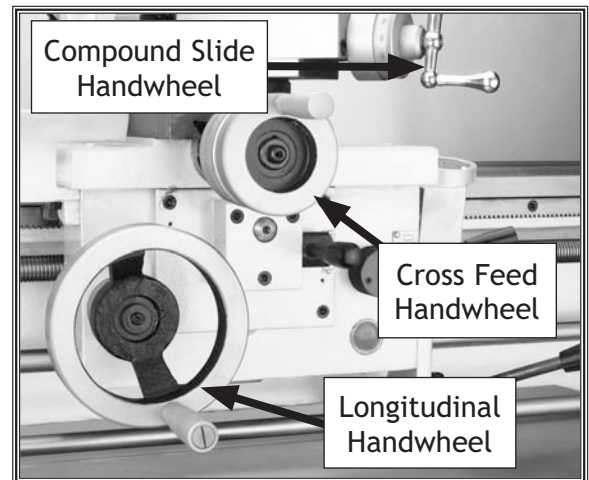


Figure 46. Carriage Controls.

# Setting RPM

To determine the needed RPM, do these steps:

1. Use the table in **Figure 47** to determine the cutting speed required for the material of your workpiece.

**⚠ WARNING**

Failure to follow RPM and feedrate guidelines may threaten operator safety from ejected parts or broken tools.

2. Determine the final diameter, in inches, for the cut you are about to take.

**Note:** For this step you will need to average out the diameters or work with the finish diameter for your calculations.

3. Use the following formula to determine the needed RPM for your operation:

$$(\text{Cutting Speed} \times 4) / \text{Diameter of cut} = \text{RPM}$$

4. With the calculated RPM, examine the spindle speed chart on the front of the headstock to find the closest match.

**Note:** In most cases the calculated RPM will be in between the available spindle RPMs and you will need to use your judgement about choosing a higher or lower spindle RPM.

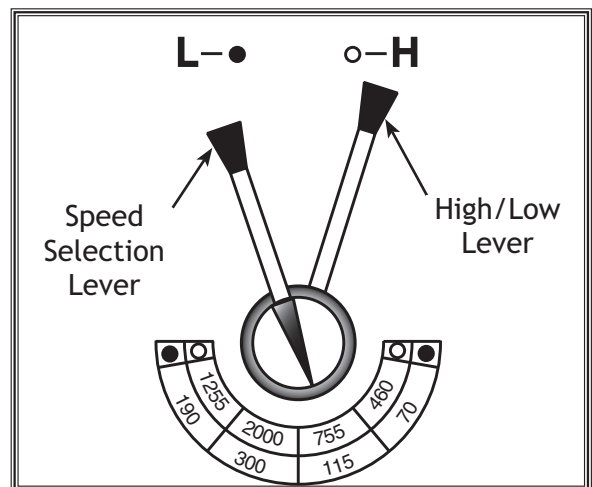
5. Make sure the spindle is completely stopped before proceeding.
6. Move the HIGH/LOW lever shown in **Figure 48** to the appropriate setting for the RPM that you are selecting.
7. Move the speed selection lever to the desired RPM setting.

**Note:** You may need to rotate the spindle by hand to get the levers to properly engage.

Workpiece Material	Cutting Speed (sfm)
Aluminum & alloys	300
Brass & Bronze	150
Copper	100
Cast Iron, soft	80
Cast Iron, hard	50
Mild Steel	90
Cast Steel	80
Alloy Steel, hard	40
Tool Steel	50
Stainless Steel	60
Titanium	50
Plastics	300-800
Wood	300-500

**Note:** For carbide cutting tools, double the cutting speed. These values are a guideline only. Refer to the *MACHINERY'S HANDBOOK* for more detailed information.

**Figure 47.** Cutting speed table for HSS cutting tools.



**Figure 48.** Spindle speed selectors.

OPERATIONS

# Start Up and Spindle Break-in Procedures

It is essential to closely follow the proper break-in procedures to ensure trouble free performance. Complete this process once you have familiarized yourself with all instructions in this manual.

To begin the start up and break-in procedure, do these steps:

1. Check oil levels in headstock and apron. Follow all lubrication procedures highlighted in **Lubrication on Page 36** of this manual.
2. Make sure there are no obstructions around or underneath the spindle.
3. Set the spindle speed to the lowest RPM, refer to section **Setting RPM on Page 29**.
4. Turn the spindle ON/OFF switch shown in **Figure 49** to the right and up for clockwise spindle rotation, and to the right and down for counterclockwise rotation.
5. Turn the lathe **ON** and let it run for a minimum of 10 minutes in the clockwise direction and another 10 minutes in the counterclockwise direction.
6. Turn the lathe **OFF**, change gears to the next highest RPM and repeat this step for each RPM setting.

**NOTICE**

Failure to follow start up and spindle break-in procedures will likely cause rapid deterioration of spindle and other related parts.

**NOTICE**

Check all oil levels and lubrication points before starting lathe. Excessive wear will result on moving parts not lubricated!



Figure 49. Spindle ON/OFF switch.



## Power Feed

The carriage has longitudinal and cross slide power feed capabilities. The carriage can feed right or left, and the cross slide can also feed in or out.

To engage the power feed, do these steps:

1. Turn the spindle **OFF** and wait until it comes to a complete stop before making any gear changes.
2. Move the feed direction lever to the desired setting. The arrow above the screw thread icon indicates the direction of longitudinal feed. Cross feed directions are as follows: when the arrow points left, the cross feed is away from the spindle axis; when arrow points right, the cross feed is towards the spindle axis (see **Figure 50**).

**Note:** These instructions are valid with a counter-clockwise rotation of the spindle. All directions reverse when spindle rotation is reversed.

3. Set the Feed Rod/Lead Screw selector shown in **Figure 51** to Feed Rod.
4. Push the power feed lever shown in **Figure 52** to the left and up to engage the cross feed. Pull the power feed lever to the right and down to engage the longitudinal feed.
5. Return the lever to the center position to disengage the power feed.

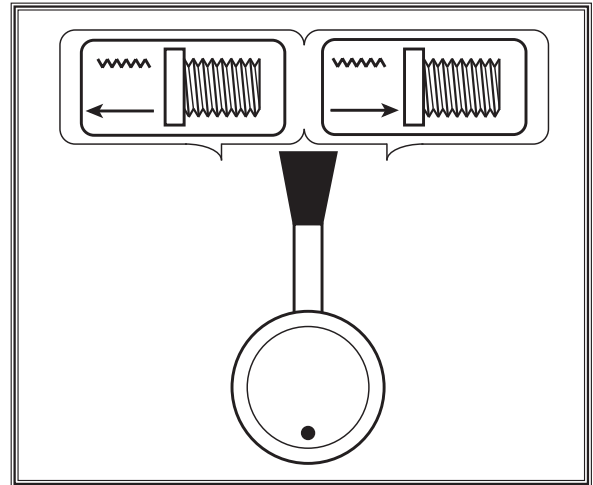


Figure 50. Feed direction selector.

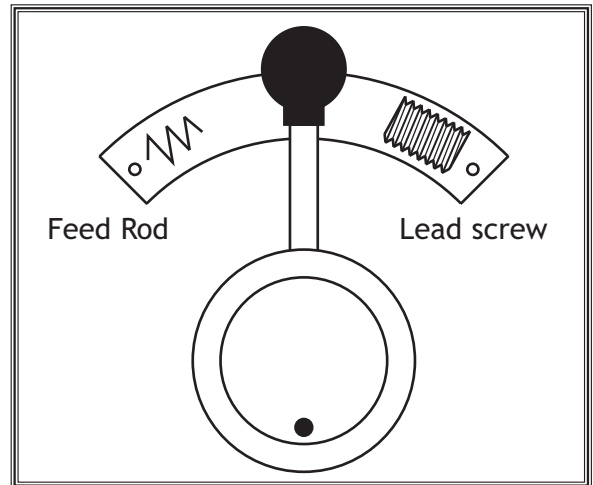


Figure 51. Feed Rod/Lead Screw Selector.

### NOTICE

Feedrate is based on spindle RPM. High feedrates combined with high spindle speeds result in a rapidly moving carriage or cross slide. Pay close attention to the feedrate you have chosen and keep your hand poised over the feedswitch. Failure to fully understand this will cause the carriage to crash into the spindle.

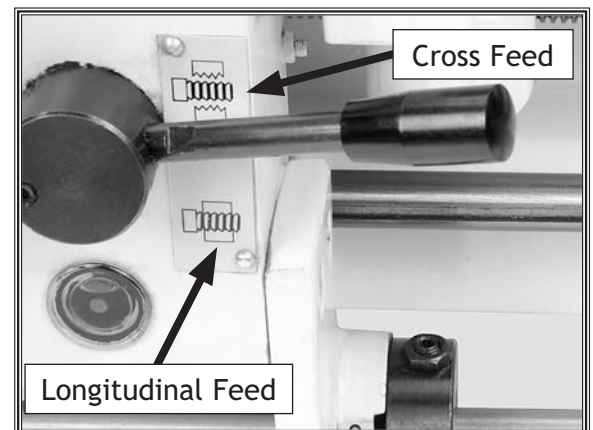


Figure 52. Cross/Longitudinal Feed Selector.

# Setting Feedrate

Feedrate is determined by the machined material, the type of tooling used, and by the desired finish. Refer to the *MACHINERY'S HANDBOOK* for further information.

To set the feedrate, do these steps:

1. Turn the spindle **OFF** and wait until it comes to a complete stop before making any gear changes.
2. Set the power feed as described on **Page 31**.
3. Use the feedrate chart (**Figure 54**) to determine the lever combination for the desired feedrate. The upper value in each cell of the feedrate chart is for the longitudinal feed. The lower value is for the cross feed.

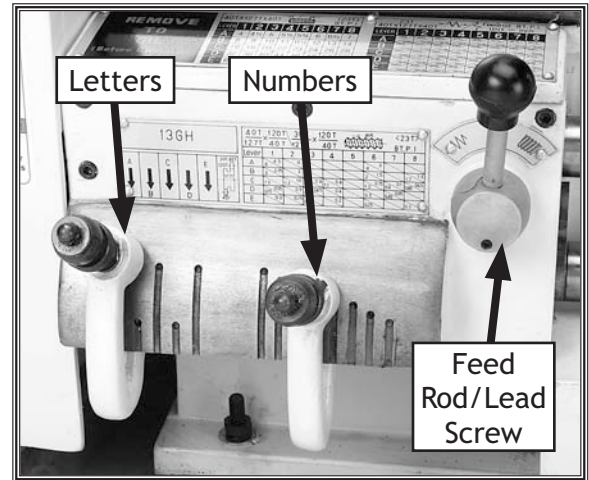


Figure 53. Feedrate control levers.

**Example:** To set the lathe to the slowest cross feedrate of 0.0012" per inch, locate 0.0012 on the chart. The lever combination on the chart is E and 8.

4. Change the feedrate using the levers shown in **Figure 53**. The left lever is for letters, and the right is for numbers.
5. Pull the knob on the lever and rotate it down. Line up the lever with the desired character, rotate the lever up, and allow the pin to engage in the hole.

**Note:** You may need to rotate the chuck by hand or move the longitudinal handwheel to get levers and gears to engage.

23T 40T x 127T x 40T		Feedrod 8 T.P.I. Unit = Inch							
LEVER	1	2	3	4	5	6	7	8	
A	0.1005 0.0345	0.0893 0.0318	0.0804 0.0276	0.0731 0.0251	0.0699 0.024	0.067 0.023	0.0618 0.0213	0.0574 0.0197	
B	0.0502 0.0172	0.0447 0.0154	0.0402 0.0138	0.0365 0.0126	0.0349 0.012	0.0335 0.0115	0.0309 0.0106	0.0287 0.0098	
C	0.0251 0.0086	0.0223 0.0077	0.0201 0.0069	0.0183 0.0063	0.0175 0.006	0.0167 0.0058	0.0155 0.0053	0.0143 0.0049	
D	0.0126 0.0043	0.0112 0.0038	0.01 0.0035	0.0091 0.0031	0.0088 0.003	0.0084 0.0029	0.0077 0.0027	0.0072 0.0025	
E	0.0063 0.0022	0.0056 0.0019	0.005 0.0017	0.0046 0.0016	0.0044 0.0015	0.0042 0.0014	0.0039 0.0013	0.0036 0.0012	

Figure 54. Feedrate Chart in IPR.

# Thread Settings

The Model M1019 lathe is capable of cutting inch threads without changing gears but metric threads require a gear change. This will be explained in the next sub-section.

To set up for cutting threads, do these steps:

1. Turn the spindle **OFF** and wait until it comes to a complete stop before making any gear changes.
2. Find the desired metric thread pitch from **Figure 55** or the desired TPI for inch threads from **Figure 57**. Work to the left and up to determine the correct lever settings. These charts are also on the front of the headstock.

**Example:** To cut 20 TPI thread, the handle combination would be C and 3.

3. Move the Feed Rod/Lead Screw selector to the lead screw position and move the feed direction selector to the desired thread direction (see **Figure 58**).

**Note:** You may need to rotate the spindle by hand or move the apron for the gears to engage.

4. Move the same levers used for feedrate to the appropriate letter/number setting by pulling the knob on the lever and rotating it down. Line up the lever with the desired character, rotate the lever up, and allow the pin to engage in the hole.

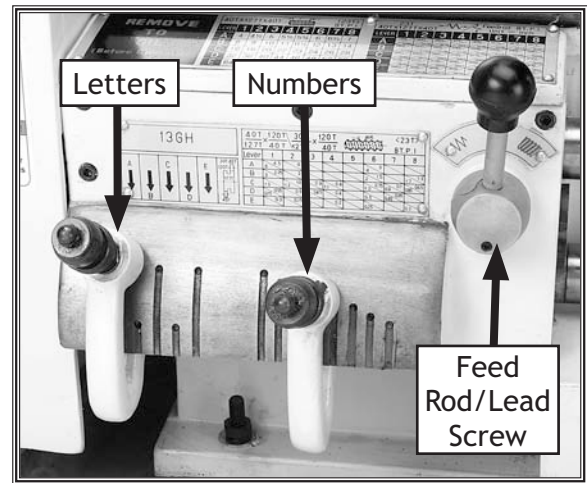


Figure 56. Feedrate control levers.

40T x 127T x 40T		1"		(23T)		8 TPI		
LEVER	1	2	3	4	5	6	7	8
A	4	4½	5	5½	5¾	6	6½	7
B	8	9	10	11	11½	12	13	14
C	16	18	20	22	23	24	26	28
D	32	36	40	44	46	48	52	56
E	64	72	80	88	92	96	104	112

Figure 57. Inch thread chart.

40T x 120T / 127T x 40T		30T x 120T / 127T x 40T		mm		(23T)		8 TPI	
	1	2	3	4	5	6	7	8	
A	4.5	4				3			
B	2.25	2				1.5		1.3	
C	1.5	1.0	0.9	0.8		0.75	0.7	0.65	
D	0.55	0.5	0.45	0.4		0.5	0.45	0.35	
E	0.3	0.25	0.3	0.2		0.25		0.2	

**Note:** The thread pitch listed in the upper right of each cell corresponds to the gear combination on the right of the top of the chart. The thread pitch in the lower left of the cell corresponds to the gear combination on the left.

Figure 55. Metric thread chart.

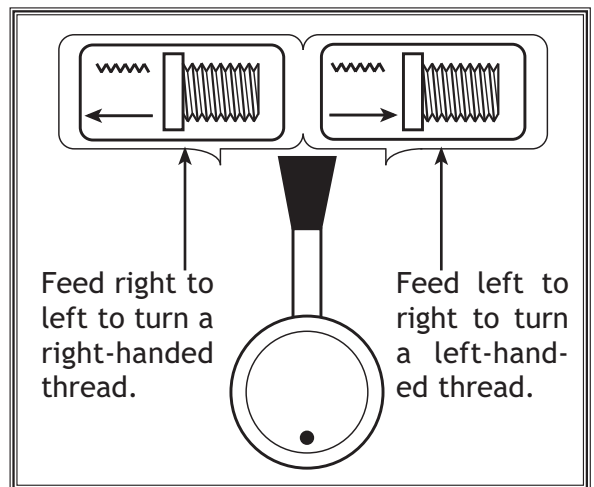


Figure 58. Left/right hand threads.

**⚠ CAUTION**

**DO NOT** engage the half nut when spindle is operating at over 200 RPM. Disregarding this warning may cause damage to the leadscrew and bearings.

OPERATIONS

# Changing Gears for Metric Threads

The gears can be reconfigured to machine metric threads by installing a 30T gear or rearranging the existing gears depending on the desired thread.

To change the gears, do these steps:

1. **DISCONNECT THE POWER TO THE LATHE!**
2. Remove the end cover door to expose the gears.
3. To set the gears in the 30T/127T X 120T/40T configuration, remove the hex nut and the slot head screw (Items A and C shown in **Figure 59**).

- Loosen the hex nuts, Items G & E, and the cap screw, Item F, shown in **Figure 59** and drop the large gear set out of its mesh.
- Remove the 40T gear, Item B in **Figure 59**, and replace it with the 30T gear.
- Remove the 40T gear, Item D, turn it around, and put it back on the shaft.

4. To set the gears in the 40T/127T X 120T/40T configuration, remove the slot head screw shown in **Figure 59**, Item C.

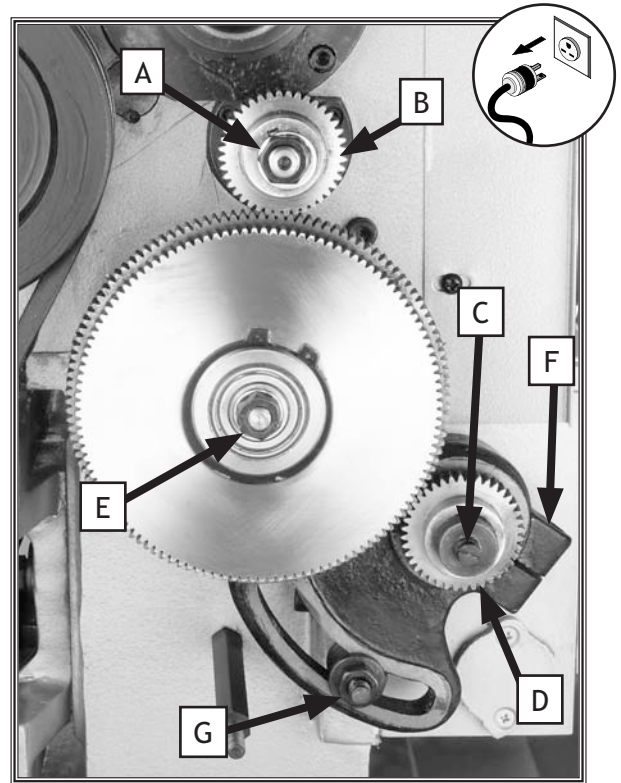
- Loosen hex nuts, Items G & E, and the cap screw, Item F, shown in **Figure 59** and drop the large gear set out of its mesh.
- Remove the 40T gear, Item D, turn it around, and put it back on the shaft.

5. Replace the fasteners that hold the gears in place. **DO NOT** overtighten. Overtightening will make them difficult to remove.

6. Move the large gears until they mesh with the smaller gears. Make sure there is a backlash of 0.002"-0.003" between gears and tighten the cap screw and hex nut to hold the gears in place.

**Note:** Setting the gears too tight will cause excessive wear and noise, setting the gears too loose may cause slippage and possibly break gear teeth.

7. Close the end cover door and connect the power.

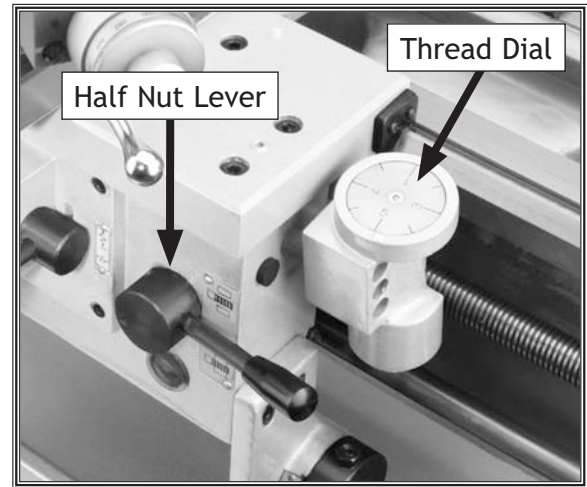


**Figure 59.** Gear change locations.

# Threading Operation

To cut threads, do these steps:

1. Set the compound rest to the appropriate angle for the given thread you want to cut. For a Unified National Series (UNF) thread, this is 29° off of vertical to the spindle axis.
  2. Set the tool tip perpendicular to the workpiece and center it vertically.
  3. Make sure the thread dial (**Figure 60**) is engaged with the lead screw. If not, use a hex wrench to loosen the screw and rotate the thread dial until the gear engages with the lead screw, then tighten the screw to hold the dial in place.
  4. Select the RPM you want to use. A slower RPM will give you more time to react, especially if threading over a short distance or threading up to a shoulder.
  5. Examine the thread charts (inch or metric) and set the feedrate selectors as explained on **Page 33**.
  6. Turn **ON** the spindle to verify settings. Check to see that the lead screw is turning and verify that the carriage moves in the correct direction by engaging the half nut lever shown in **Figure 60**.
  7. Once you are confident the settings are correct, disengage the half nut and turn **OFF** the spindle.
  8. Examine the thread dial chart to determine which numbers on the thread dial will engage the half nut.
- Note:** To maintain accuracy and consistency, engage the half nut on the same mark on each pass. Failure to start on the same number each time may lead to cutting off the thread made in the previous pass.
9. If cutting metric threads, you will not use the thread dial. Once the half nut is engaged, you must leave it engaged until the threads are complete.



**Figure 60.** Half nut and thread dial locations.

Indicator Scale			
TPI	Scale	TPI	Scale
4	1 - 4	24	1 - 8
4 ½	1	26	1 or 3
5	1	28	1 - 4
5 ½	1	32	1 - 8
6	1 or 3	36	1 - 4
6 ½	1	38	1 or 3
7	1	40	1 - 8
8	1 - 8	44	1 - 4
9	1	46	1 or 3
9 ½	1	48	1 - 8
10	1 or 3	52	1 - 4
11	1	56	1 - 8
11 ½	1	64	1 - 8
12	1 - 4	72	1 - 8
13	1	76	1 - 4
14	1 or 3	80	1 - 8
16	1 - 8	88	1 - 8
18	1 or 3	92	1 - 4
19	1	96	1 - 8
20	1 - 4	104	1 - 8
22	1 or 3	112	1 - 8
23	1		

**Figure 61.** Thread dial chart.

## CAUTION

**DO NOT** engage the half nut when spindle is operating at over 200 RPM's. Disregarding this warning may cause damage to the leadscrew and bearings.

OPERATIONS

# MAINTENANCE

## General

Regular periodic maintenance on your SHOP FOX® Model M1019 will ensure its optimum performance. Make a habit of inspecting your machine each time you use it.

Check for the following conditions and repair or replace when necessary:

- Loose mounting bolts.
- Worn switch or safety features.
- Worn or damaged cords and plugs.
- Damaged V-belt.
- Any other condition that could hamper the safe operation of this machine.

## Cleaning

Make sure to disconnect the lathe before cleaning it. Clean your machine every day or more often as needed. Remove chips as they accumulate. Chips left on the machine soaked with water based coolant will invite oxidation and gummy residue to build up around moving parts. Preventative measures like this will help keep your lathe running smoothly. Always be safe and responsible with the use and disposal of cleaning products.

## Lubrication

The headstock and apron use SAE 20W or an ISO 68 non-detergent gear oil or an equivalent lubricant. The oil level should be kept at the indicator mark in the sight glasses, as shown in Figures 62 & 63. After three months of operation, drain the oil completely and refill. After the initial complete oil change, change the headstock oil on an annual basis or more frequently if heavier machine use requires it.

## Maintenance Schedule

### Every 6-8 Hours of Running Time:

- Lubricate all ball fittings.
- Clean and wipe down lathe.

### Every Year:

- Replace headstock and apron gear oil.
- Inspect V-Belt and replace if needed.

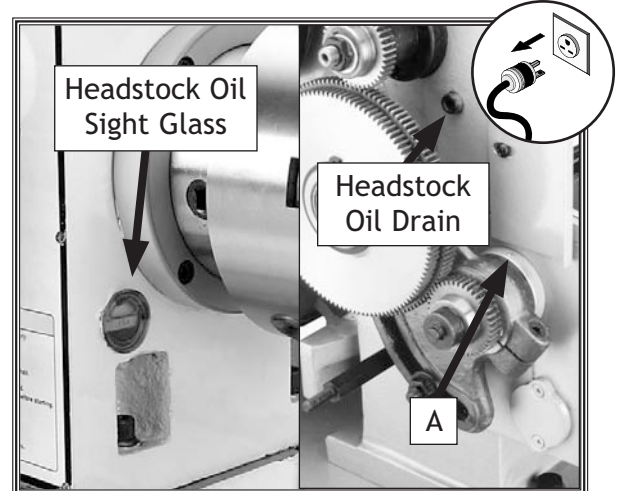
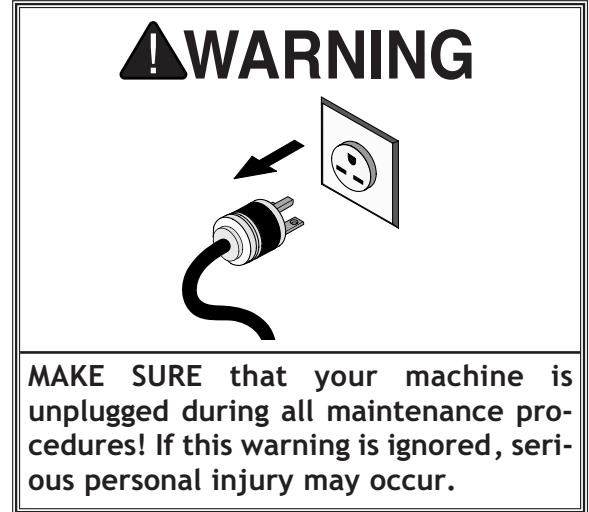


Figure 62. Headstock oil sight, filler, and drain locations.

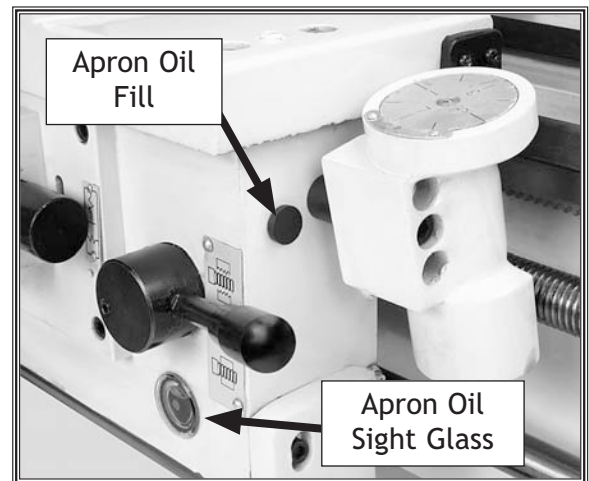


Figure 63. Apron oil sight, filler, and drain locations.

MAINTENANCE

Ball fittings are responsible for the majority of the machine lubrication. To lubricate ball fittings, clean the outside of the ball fitting, depress the ball with the tip of the oil can nozzle and squirt a little oil inside the fitting.

To lubricate the following areas, do these steps every day:

1. Wipe off the oil port before and after oiling to keep out contaminants.
2. Oil the areas listed below with one to two shots of SAE 20W non-detergent oil or equivalent. Some areas may require fewer or more shots depending on use. These areas include:
  - A. **Gearbox Input Shaft:** Remove end access panel and oil the gearbox input shaft (see Figure 62).
  - B. **Quick Change Gearbox:** Remove the gearbox cover plate as shown in Figure 64 and oil each recessed hole (five to six drops).
  - C. **Apron:** Lubricate two oil ports on apron top (see Figure 65).
  - D. **Cross Slide:** Lubricate three oil ports (see Figure 65).
  - E. **Cross Slide Handle:** Lubricate one oil port (see Figure 65).
  - F. **Compound Rest:** Lubricate three oil ports (see Figure 65).
  - G. **Carriage:** Lubricate two oil ports. One of the ports is on top of the longitudinal handwheel (see Figure 65).
  - H. **Thread Dial Indicator:** Lubricate one oil port (see Figure 65).
  - I. **Tailstock:** Lubricate three oil ports (see Figure 66).
  - J. **Lead Screw and Feed Rod:** Lubricate two oil ports (see Figure 66).
3. Coat the chuck scroll and chuck jaw scroll teeth with #2 lithium grease. Apply a light film of 20W oil to the spindle camlocks and chuck body. DO NOT apply any lubrication to the clamping surfaces.



Figure 64. Quick change gearbox cover.

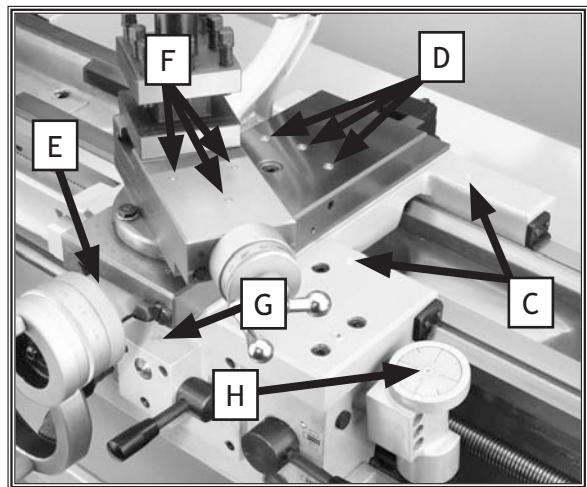


Figure 65. Carriage ball fittings.

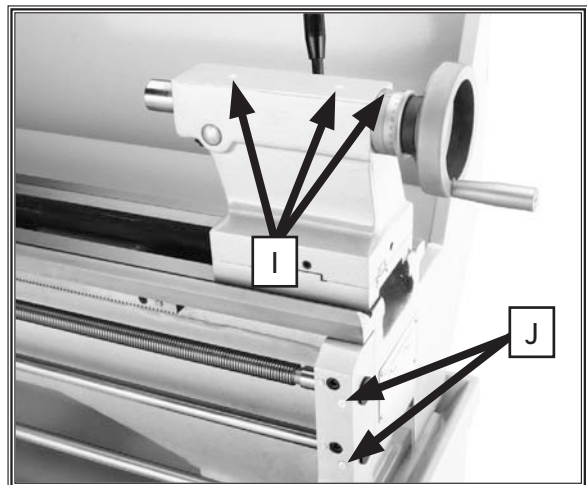


Figure 66. Tailstock ball fittings.

## NOTICE

Failure to follow lubrication guidelines will lead to rapid deterioration of lathe components.

# SERVICE

## General

This section covers the most common service adjustments or procedures that may need to be made during the life of your machine.

If you require additional machine service not included in this section, please contact Woodstock International Technical Support at (360) 734-3482 or send e-mail to [tech-support@shopfox.biz](mailto:tech-support@shopfox.biz).

## Cross Feed Backlash

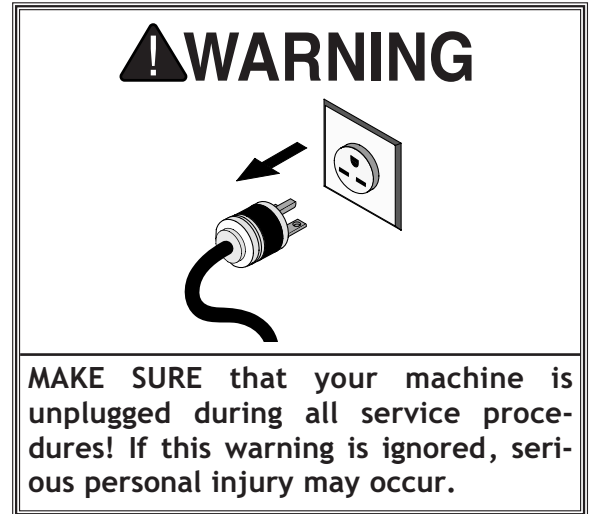
Backlash is the amount of play found in a lead screw. It can be found by turning the cross slide handwheel in one direction, and then turning the handwheel the other direction. When the cross slide begins to move, the backlash has been taken up.

To adjust the backlash, do these steps:

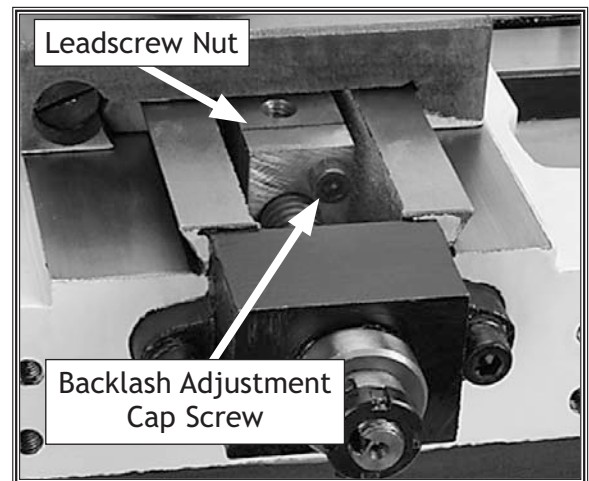
1. Feed the cross slide toward the operator until it reaches the end of its travel.
2. Remove the cap screw that secures the cross slide leadscrew nut (see **Figure 67**).
3. Rotate the cross slide handle to feed the leadscrew nut out from under the cross slide as shown in **Figure 68**.
4. Tighten the backlash adjustment cap screw shown in **Figure 68** in small increments.
5. Test after each adjustment until the backlash amount is acceptable.

**Note:** Avoid overtightening the backlash adjustment cap screw. Overtightening will cause excessive wear to the sliding block and lead screw.

6. Feed the leadscrew nut back under the cross slide and replace the cap screw removed in **Step 1**.



**Figure 67.** Cap screw for securing the leadscrew.



**Figure 68.** Leadscrew nut.



## Gibs

The saddle, cross feed, compound rest, and tailstock lock can all be adjusted on the Model M1019 lathe.

**Note:** When adjusting gibs, keep in mind that the goal of gib adjustment is to remove sloppiness without causing the slides to bind. Loose gibs may cause poor finishes on the workpiece and may cause undue wear on the slide. Over-tightening may cause premature wear on the slide, lead screw, and nut.

**To adjust the saddle gib, do these steps:**

1. Hold the set screws with a hex wrench and then loosen the four hex nuts found at the bottom rear of the cross slide. Back each hex nut off one full turn (see **Figure 69**).
2. Turn the set screws with a hex wrench until a slight resistance is felt. DO NOT overtighten.
3. Move the carriage with the handwheel to feel the current drag. Adjust the set screws until the desired drag is achieved.

**Note:** Overtightening will cause excessive premature wear on the gibs.

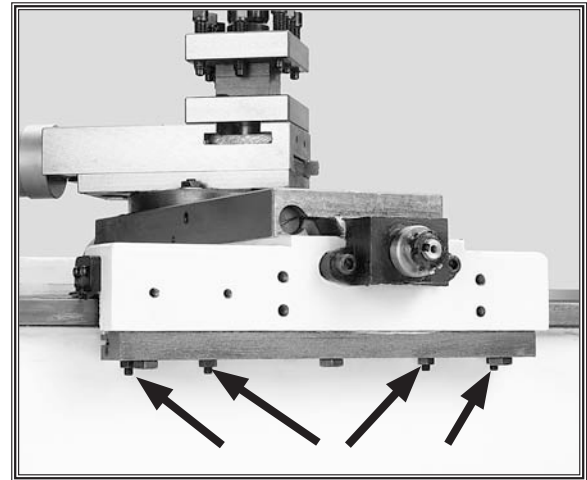
4. Hold the set screws in place and tighten the hex nuts.

**To adjust the cross slide gib, do these steps:**

1. Loosen the rear gib screw approximately one turn. (see **Figure 70**).
2. Tighten the front gib screw a quarter turn (see **Figure 71**).
3. Turn the cross feed handwheel to feel the current drag and adjust the front screw until the desired drag is achieved.

**To adjust the compound rest gib, do these steps:**

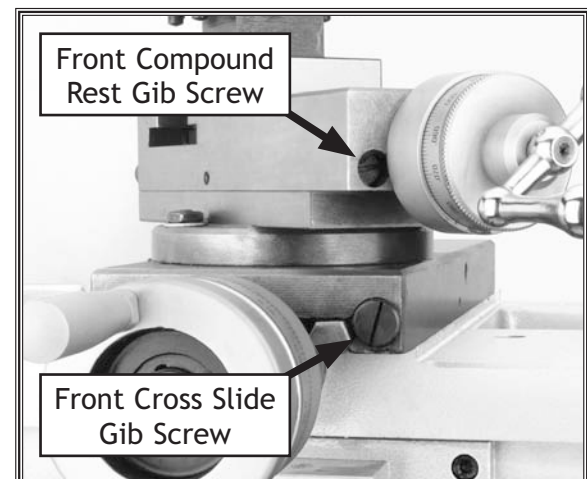
1. Loosen the rear gib screw approximately one turn.
2. Tighten the front gib screw a quarter turn.
3. Turn the cross feed handwheel to feel the current drag and adjust the front screw until the desired drag is achieved.



**Figure 69.** Saddle gib adjustments.



**Figure 70.** Rear cross feed gib screw.



**Figure 71.** Front cross feed gib screw.

To adjust the tailstock lock, do these steps:

1. Move the tailstock lock handle to the unlocked position.
2. Slide the tailstock to an area that will allow access to the hex nut under the tailstock block.
3. Tighten the tailstock hex nut 1/4 turn. Test to see that sufficient clamping pressure is applied so the tailstock will not move. Repeat as necessary (see Figure 72).

## Replacing V-Belt

To replace the V-belts on the lathe, do these steps:

1. **DISCONNECT THE POWER TO THE LATHE!**
2. Remove the backsplash from the back of the lathe.
3. Remove the end cover on the headstock and the pulley cover.
4. Remove the tension off the old V-belts by loosening the motor mount bolts (Figure 73) and sliding the motor up.
5. Remove the old belts and install the new ones. Always replace these belts in pairs.
6. Pull down on the motor and tighten the motor mount bolts.
7. Test the V-belt tension by applying approximately 8 lbs. of force to the belts. When correctly tensioned this will cause approximately 3/4" of deflection.
8. Replace the pulley cover, the end cover, and the backsplash. Then reconnect the machine to its power source.

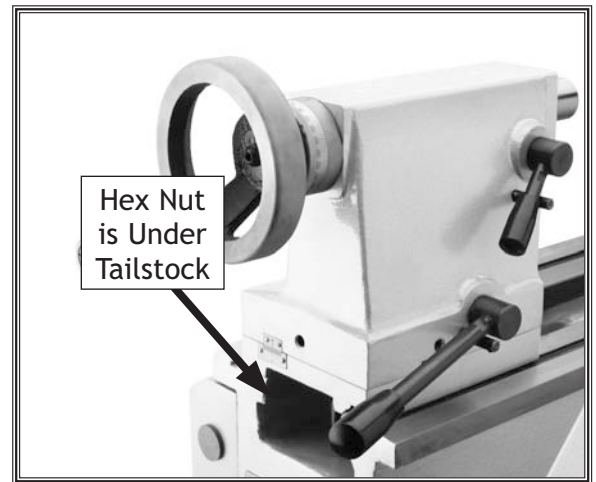


Figure 72. Tailstock nut and gib adjustment.

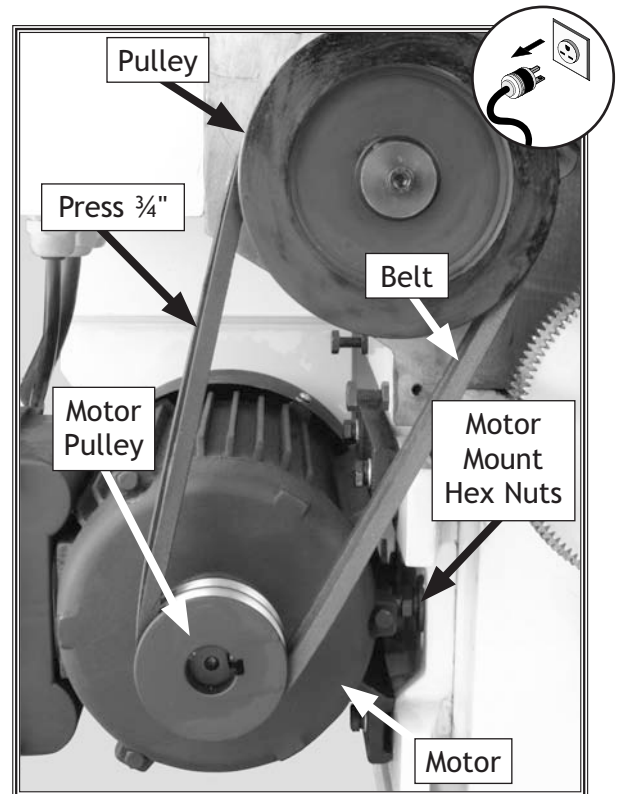


Figure 73. V-belt adjustments.

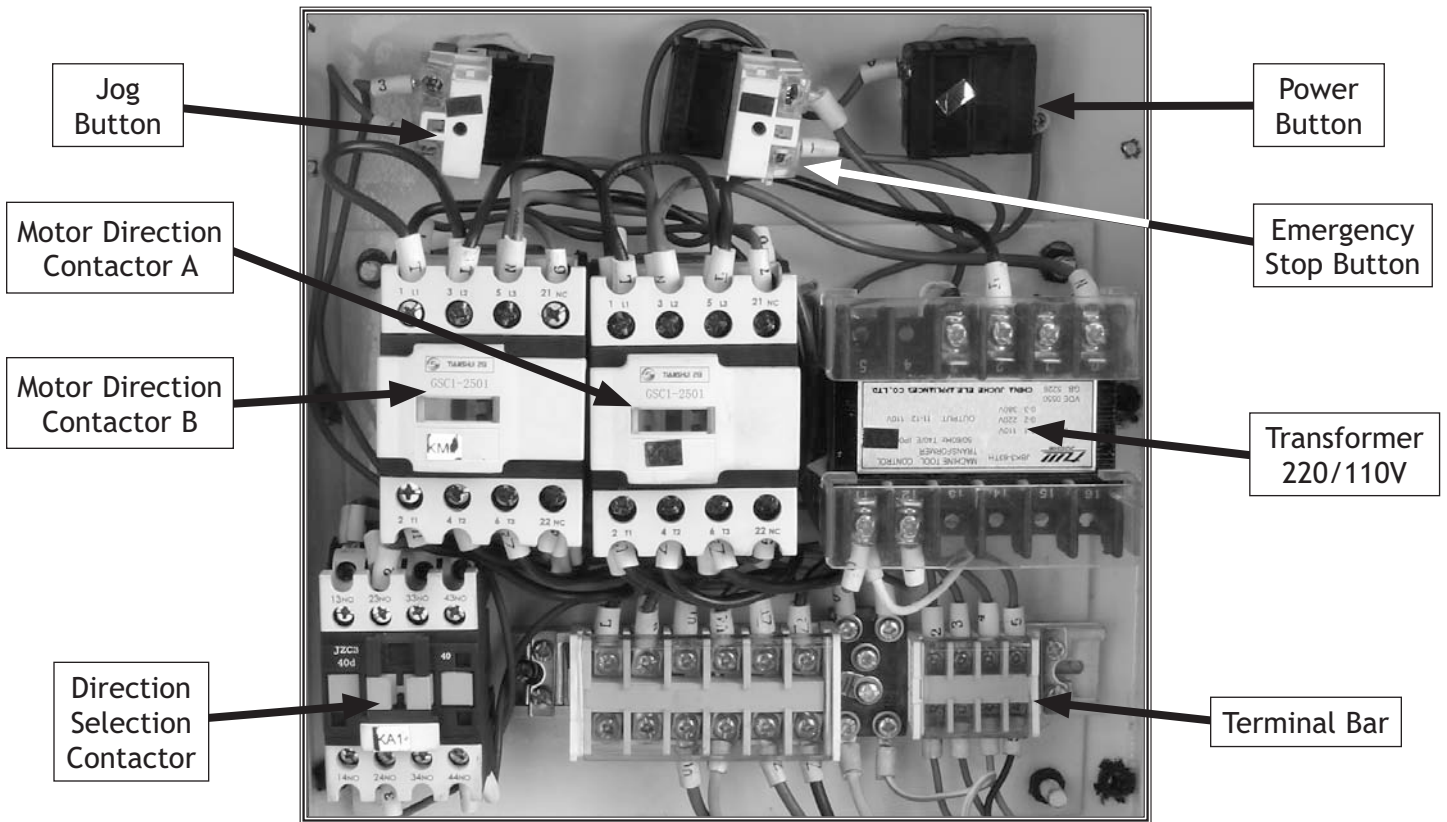


Figure 74. M1019 Electrical panel.

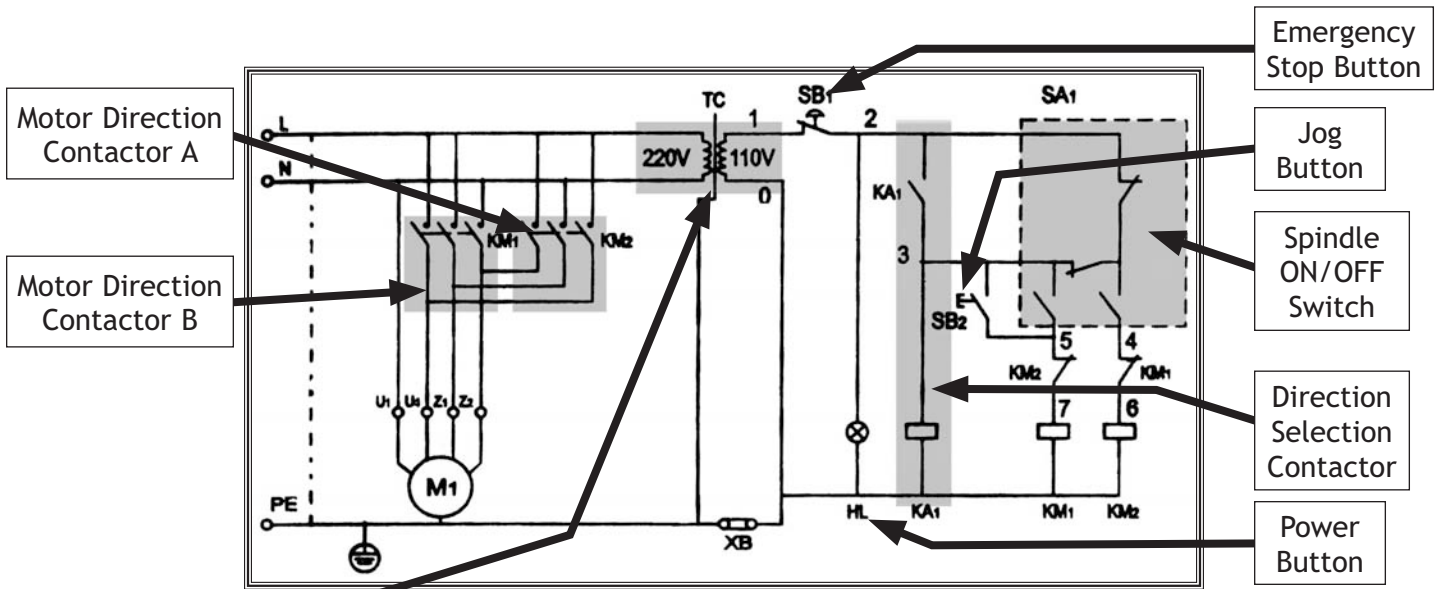


Figure 75. M1019 Electrical schematic.

Transformer 220/110V

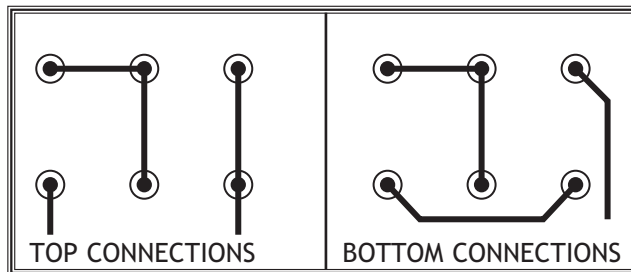


Figure 76. M1019 Motor wiring diagram.

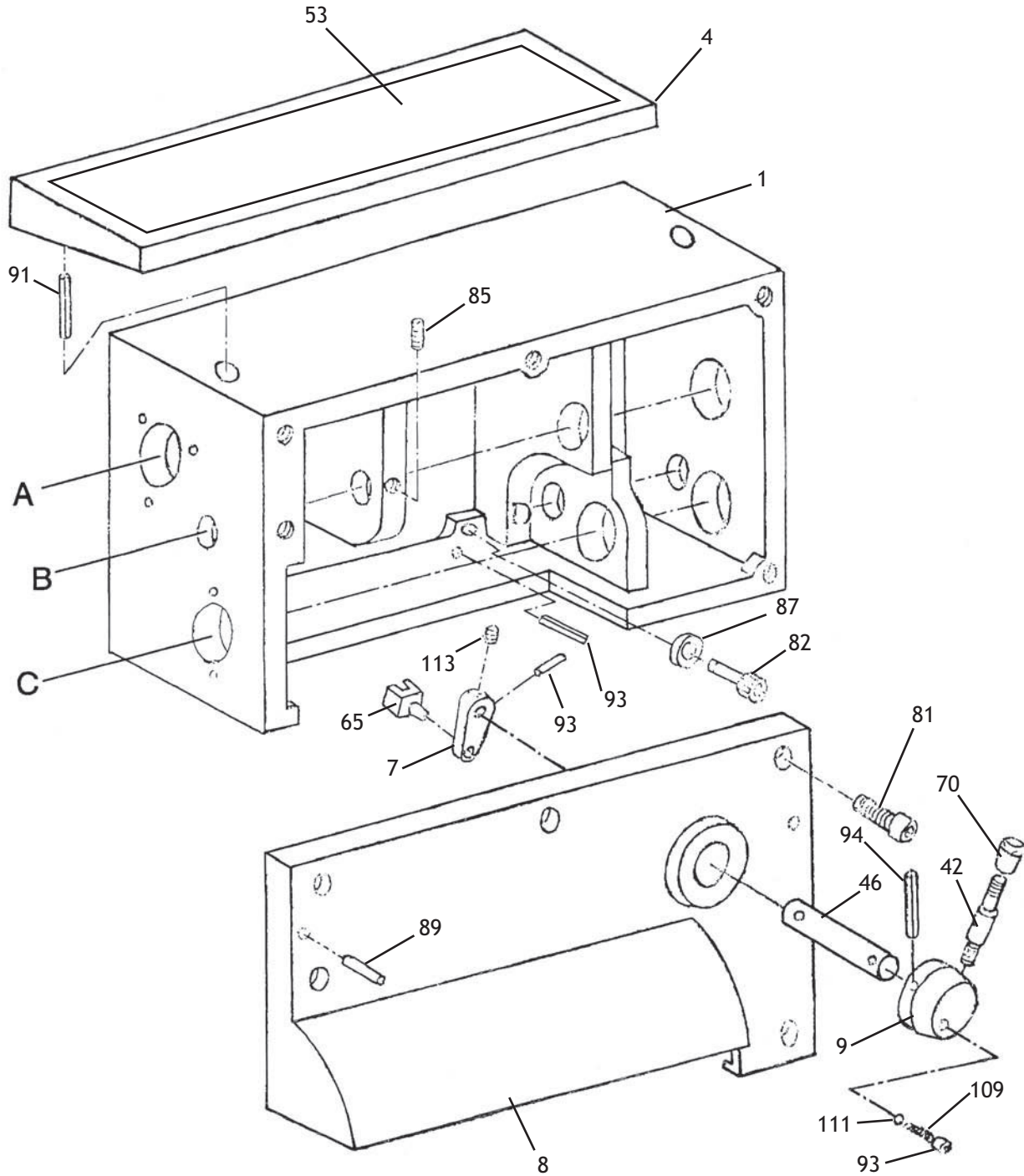
# Troubleshooting

This section covers the most common lathe problems. DO NOT make any adjustments until the lathe is unplugged and moving parts have come to a complete stop.

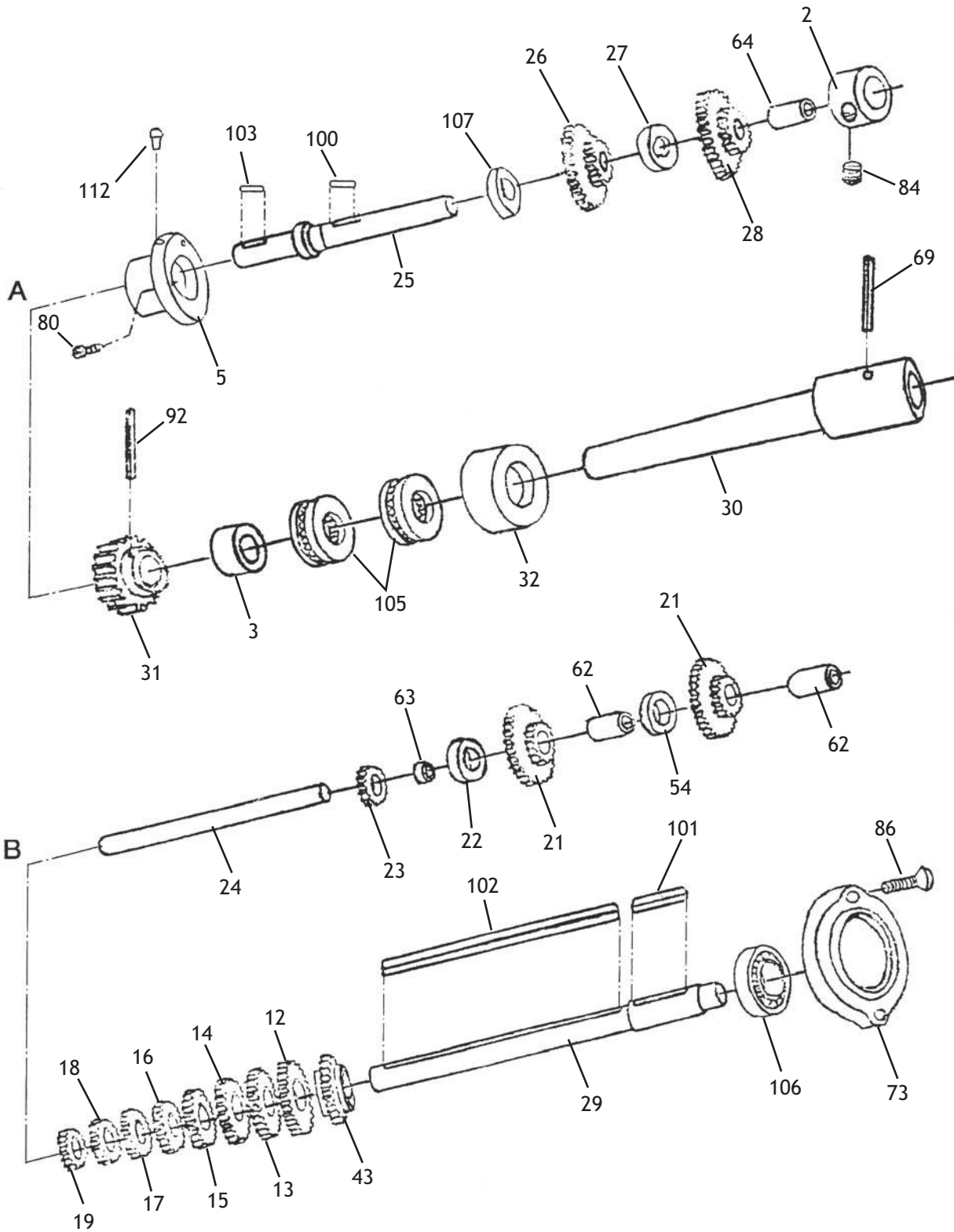
SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Motor will not start.	<ol style="list-style-type: none"> <li>1. Low voltage.</li> <li>2. Open circuit in motor or loose connections.</li> <li>3. Faulty start capacitor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check power supply for proper voltage.</li> <li>2. Inspect all lead connections on motor and magnetic switch for loose or open connections.</li> <li>3. Replace start capacitor.</li> </ol>
Fuses or circuit breakers trip open.	<ol style="list-style-type: none"> <li>1. Short circuit in line cord or plug.</li> <li>2. Short circuit in motor or loose connections.</li> <li>3. Incorrect fuses or circuit breakers in power supply.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inspect cord or plug for damaged insulation and shorted wires and replace extension cord.</li> <li>2. Inspect all connections on motor for loose or shorted terminals or worn insulation.</li> <li>3. Install correct fuses or circuit breakers.</li> </ol>
Motor overheats.	<ol style="list-style-type: none"> <li>1. Motor overloaded.</li> <li>2. Air circulation through the motor restricted.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce load on motor.</li> <li>2. Clean out motor to provide normal air circulation.</li> </ol>
Carriage hard to move.	<ol style="list-style-type: none"> <li>1. Carriage lock is tightened down.</li> <li>2. Chips have loaded up on bedways.</li> <li>3. Bedways are dry and in need of lubrication.</li> <li>4. Longitudinal stops are interfering.</li> <li>5. Gibs are too tight.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check to make sure table locks are fully released.</li> <li>2. Frequently clean away chips that load up during turning operations.</li> <li>3. Lubricate bedways and handles.</li> <li>4. Check to make sure that stops are floating and not hitting the center stop.</li> <li>5. Loosen gib screw(s) slightly.</li> </ol>
Loud, repetitious noise coming from machine.	<ol style="list-style-type: none"> <li>1. Chuck is hitting the carriage or tool post.</li> </ol>	<ol style="list-style-type: none"> <li>1. Shut lathe <i>OFF!</i> Hit emergency stop button or step on foot pedal.</li> </ol>
Machine is loud when cutting. Overheats or bogs down in the cut.	<ol style="list-style-type: none"> <li>1. Excessive depth of cut.</li> <li>2. RPM or Feedrate wrong for operation.</li> <li>3. Dull cutters.</li> </ol>	<ol style="list-style-type: none"> <li>1. Decrease depth of cut.</li> <li>2. Refer to RPM Feedrate chart for appropriate rates.</li> <li>3. Sharpen or replace cutters.</li> </ol>
Tailstock quill will not feed out of tailstock.	<ol style="list-style-type: none"> <li>1. Quill lock is tightened down.</li> </ol>	<ol style="list-style-type: none"> <li>1. Unlock.</li> </ol>
Bad surface finish.	<ol style="list-style-type: none"> <li>1. Wrong RPM or feedrate.</li> <li>2. Dull tooling or poor tool selection.</li> <li>3. Too much play in gibs.</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust for appropriate RPM and feedrate.</li> <li>2. Sharpen tooling or select a better tool for the intended operation.</li> <li>3. Tighten gibs.</li> </ol>
Gear change levers will not shift into position.	<ol style="list-style-type: none"> <li>1. Gears not aligned in headstock.</li> </ol>	<ol style="list-style-type: none"> <li>1. Rotate spindle by hand until gear falls into place.</li> </ol>
Can't remove tapered tool from quill.	<ol style="list-style-type: none"> <li>1. Quill had not retracted all the way back into the tailstock.</li> <li>2. Debris was not removed from taper before inserting into quill.</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn the quill handwheel until it forces taper out of quill.</li> <li>2. Always make sure that taper surfaces are clean.</li> </ol>

# PARTS

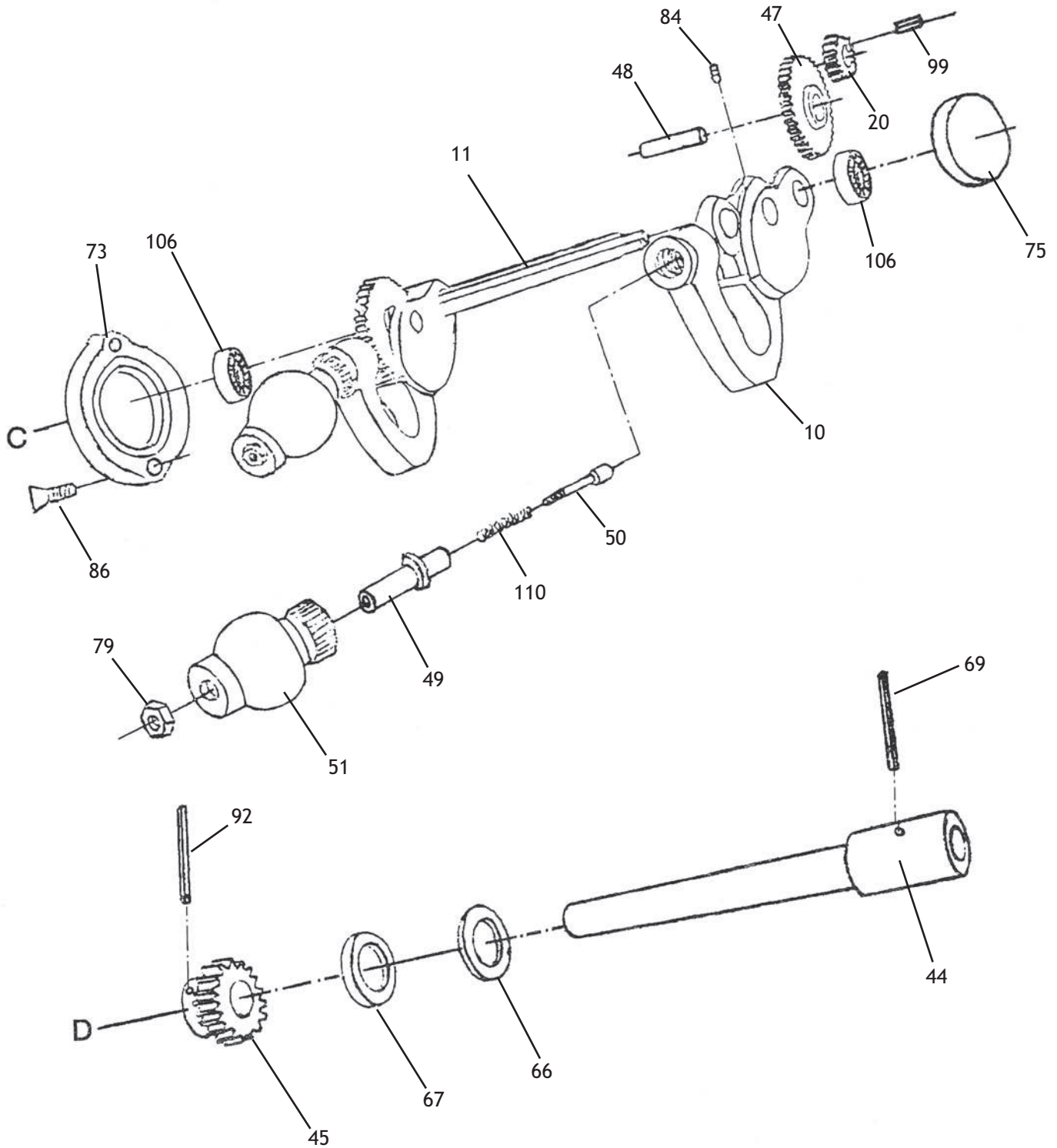
## Gearbox Assembly



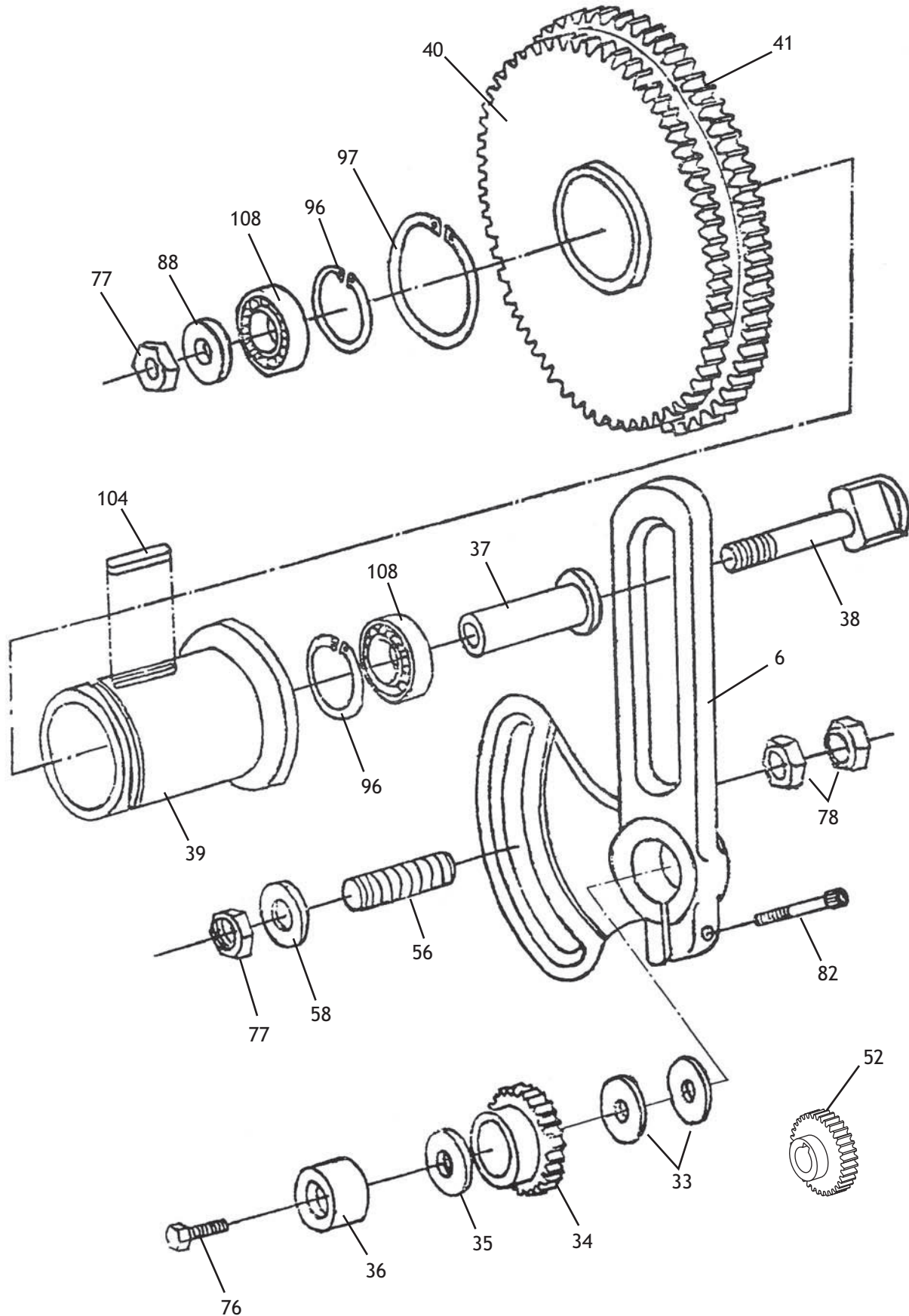
# Gearbox Breakdown



# Selector Lever Assembly



# Change Gear Assembly



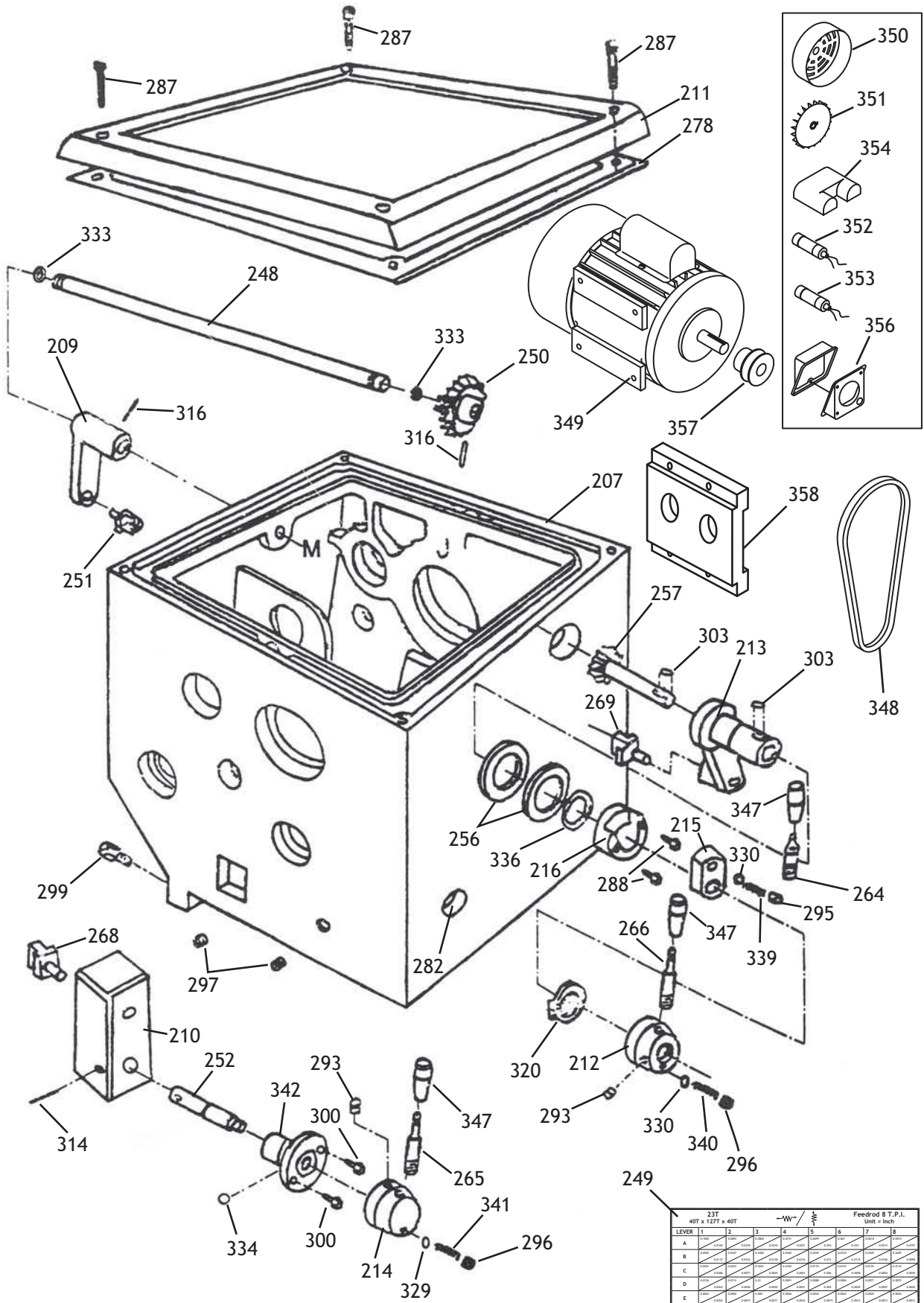


# Gearbox Parts

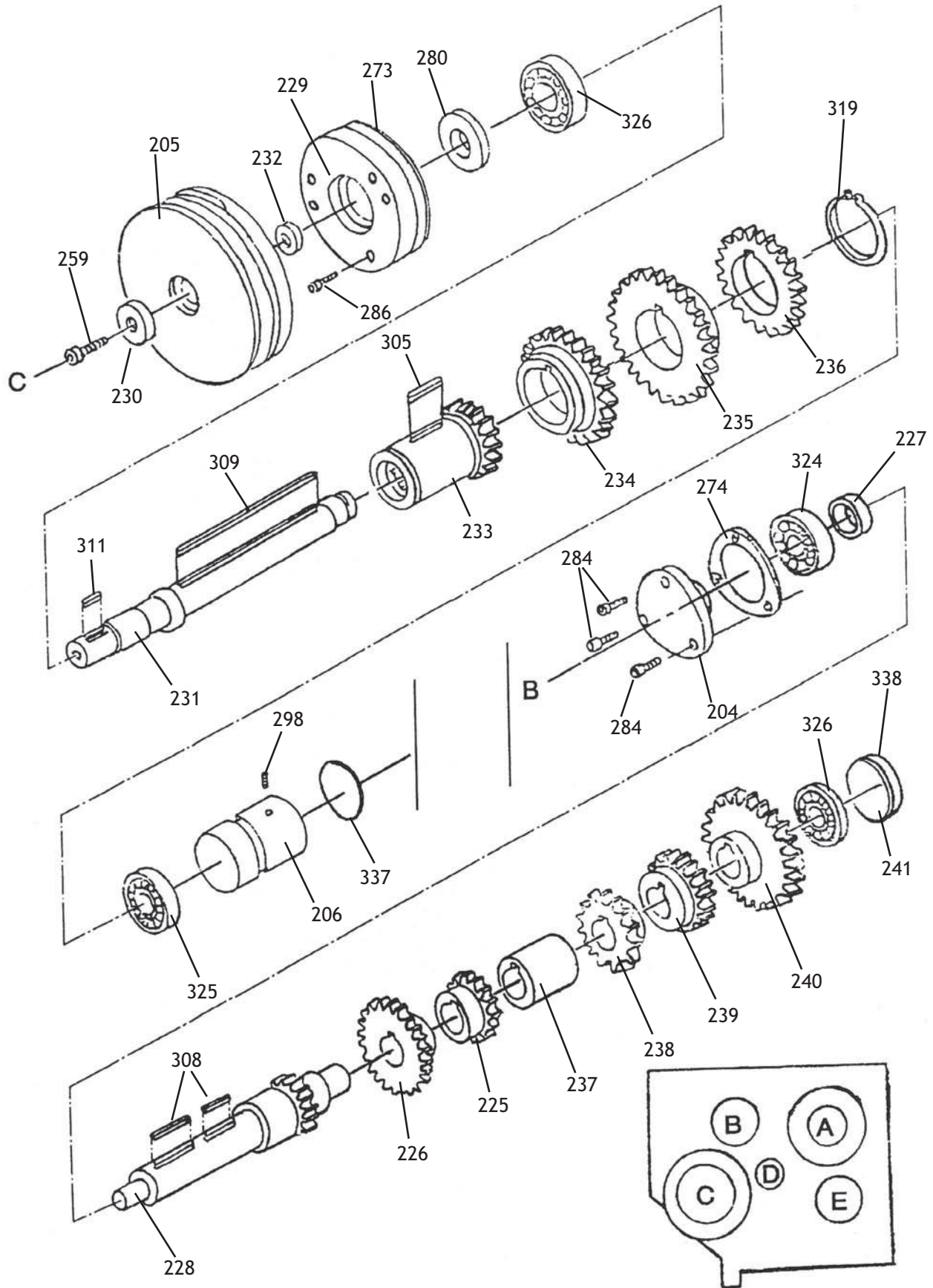
REF	PART #	DESCRIPTION
1	XM1019001	GEARBOX CASTING
2	XM1019002	LOCK COLLAR
3	XM1019003	COLLAR
4	XM1019004	COVER
5	XM1019005	BEARING CAP
6	XM1019006	BRACKET
7	XM1019007	LEVER ARM
8	XM1019008	GEARBOX COVER
9	XM1019009	HANDLE BODY
10	XM1019010	HANDLE BODY
11	XM1019011	LEVER SHAFT
12	XM1019012	GEAR III 28T
13	XM1019013	GEAR II 26T
14	XM1019014	GEAR I
15	XM1019015	GEAR VI 23T
16	XM1019016	GEAR IV 22T
17	XM1019017	GEAR III 20T
18	XM1019018	GEAR II 18T
19	XM1019019	GEAR I 16T
20	XM1019020	GEAR 16T
21	XM1019021	GEAR 32/16T
22	XM1019022	COVER
23	XM1019023	GEAR 16T
24	XM1019024	SHAFT
25	XM1019025	SHAFT
26	XM1019026	GEAR 32/16T
27	XM1019027	COVER
28	XM1019028	GEAR 82/16T
29	XM1019029	SHAFT
30	XM1019030	SHAFT
31	XM1019031	GEAR 40T
32	XM1019032	BEARING BRIDGE
33	XM1019033	COLLAR
34	XM1019034	GEAR 40T
35	XM1019035	COLLAR
36	XM1019036	SHAFT COVER
37	XM1019037	COLLAR
38	XM1019038	SPECIAL SCREW
39	XM1019039	COLLAR
40	XM1019040	GEAR 120T
41	XM1019041	GEAR 127T
42	XM1019042	LEVER
43	XM1019043	GEAR 24T
44	XM1019044	SHAFT
45	XM1019045	GEAR 24T
46	XM1019046	SHAFT
47	XM1019047	GEAR 32T
48	XM1019048	SHAFT
49	XM1019049	SHAFT
50	XM1019050	THREADED PIN

REF	PART #	DESCRIPTION
51	XM1019051	HANDLE
52	XM1019052	GEAR 30T
53	XM1019053	PLATE W/FEED CHART
54	XM10190654	COLLAR
56	XM10190656	STUD M10-1.5 X 60
58	XPW04M	FLAT WASHER 10MM
62	XM1019062	COVER SLEEVE
63	XM1019063	COLLAR
64	XM1019064	BUSHING
65	XM1019065	SLIP FITTING
66	XM1019066	COLLAR
67	XM1019067	COLLAR
69	XM1019069	TAPER PIN 3 X 32
70	XM1019070	HANDLE
73	XM1019073	COVER
75	XM1019075	PLUG
76	XPB04M	HEX BOLT M6-1 X 10
77	XPN02M	HEX NUT M10-1.5
78	XPN02M	HEX NUT M10-1.5
79	XPN01M	HEX NUT M6-1
80	XPSB02M	CAP SCREW M6-1 X 20
81	XPSB01M	CAP SCREW M6-1 X 16
82	XPSB40M	CAP SCREW M8-1.25 X 35
84	XPSS07M	SET SCREW M5-.8 X 5
85	XPSS31M	SET SCREW M5-.8 X 8
86	XPFH05M	FLAT HD SCREW M5-.8 X 12
87	XPW01M	FLAT WASHER 8MM
88	XPW04M	FLAT WASHER 10MM
89	XPRP52M	ROLL PIN 6 X 16
91	XPRP70M	ROLL PIN 5 X 18
92	XPRP27M	ROLL PIN 5 X 28
93	XPRP45M	ROLL PIN 5 X 32
94	XPRP28M	ROLL PIN 5 X 40
96	XPR23M	INT RETAINING RING 40MM
97	XM1019097	EXT RETAINING RING 55MM
99	XPK05M	KEY 4 X 4 X 10
100	XPK47M	KEY 4 X 4 X 15
101	XPK68M	KEY 4 X 4 X 40
102	XM1019102	KEY 4 X 4 X 75
103	XPK20M	KEY 5 X 5 X 15
104	XM1019104	KEY 6 X 6 X 18
105	XP8103	THRUST BEARING 8103
106	XP6002	BALL BEARING 2G80102
107	XP6003	BALL BEARING 60103
108	XP6203	BALL BEARING 60203
109	XM1019109	COMPRESSION SPRING
110	XM1019110	EXTENSION SPRING
111	XM1019111	STEEL BALL 5MM
112	XM1019112	OILER 6MM
113	XPSS05M	SET SCREW M5-.8 X 10

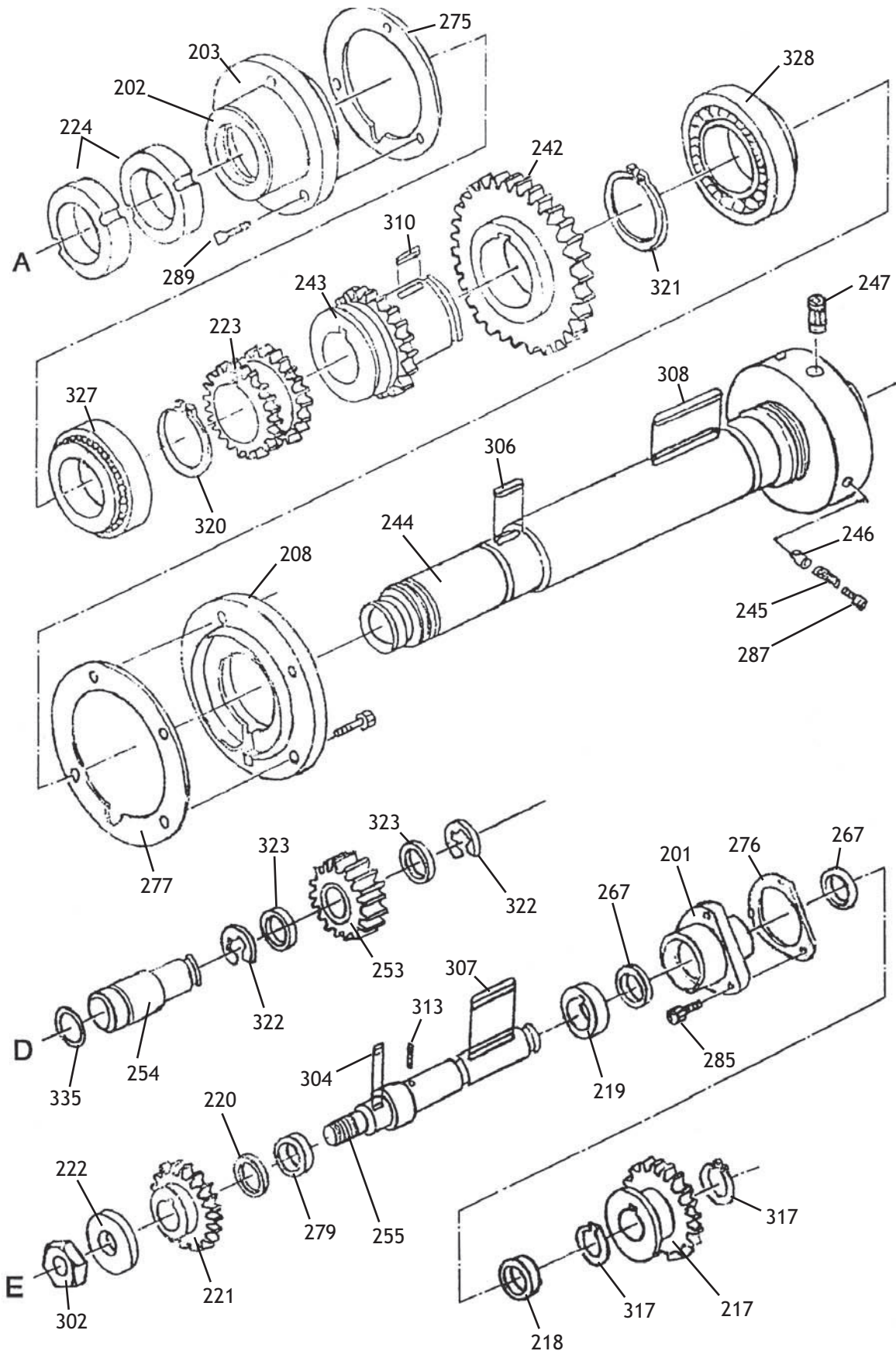
# Gearbox Case



# Headstock Gear Breakdown 1



# Headstock Gear Breakdown 2



PARTS

# Headstock Parts List

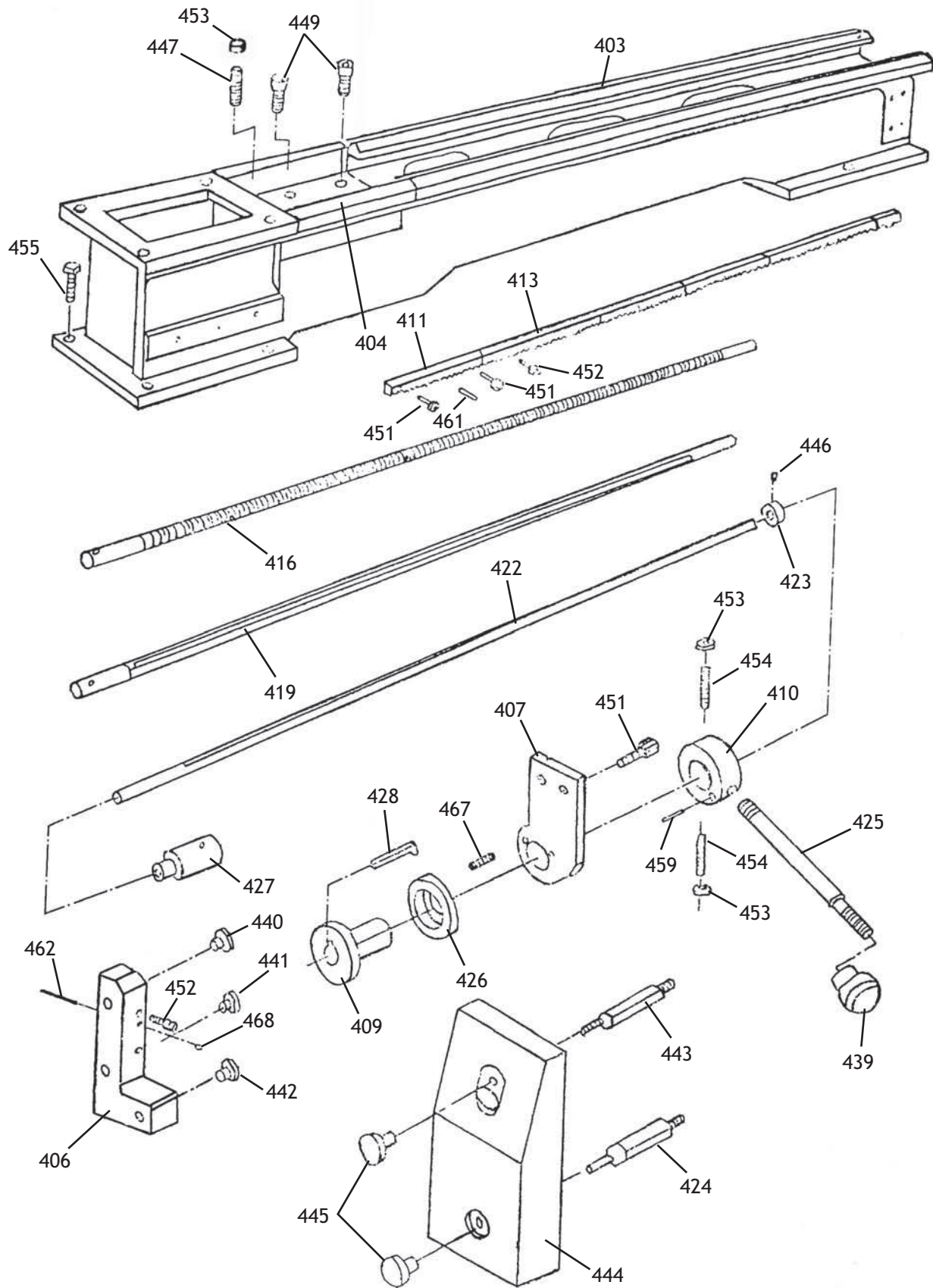
REF	PART #	DESCRIPTION
201	XM1019201	COLLAR
202	XM1019202	COLLAR
203	XM1019203	REAR COVER
204	XM1019204	REAR COVER
205	XM1019205	PULLEY
206	XM1019206	PLUG
207	XM1019207	MAIN CASTING
208	XM1019208	FRONT COVER
209	XM1019209	SHIFT LEVER
210	XM1019210	SHAFT HOUSING
211	XM1019211	COVER
212	XM1019212	HANDLE BODY
213	XM1019213	SHAFT COLLAR
214	XM1019214	HANDLE BODY
215	XM1019215	HANDLE BLOCK
216	XM1019216	HUB
217	XM1019217	GEAR 37T
218	XM1019218	SPACER
219	XM1019219	SPACER
220	XM1019220	SPACER
221	XM1019221	GEAR 40T
222	XPW06M	FLAT WASHER 12MM
223	XM1019223	GEAR 37T
224	XM1019224	ROUND NUT
225	XM1019225	GEAR 43T
226	XM1019226	GEAR 51T
227	XM1019227	SPACER
228	XM1019228	GEAR SHAFT 16T
229	XM1019229	COVER
230	XM1019230	SPACER
231	XM1019231	SHAFT
232	XM1019232	SPACER
233	XM1019233	COLLAR W/GEAR 21T
234	XM1019234	GEAR 29T

REF	PART #	DESCRIPTION
235	XM1019235	GEAR 46T
236	XM1019236	GEAR 38T
237	XM1019237	COLLAR
238	XM1019238	GEAR 26T
239	XM1019239	GEAR 34T
240	XM1019240	GEAR 53T
241	XM1019241	PLUG
242	XM1019242	GEAR 74T
243	XM1019243	GEAR 37T
244	XM1019244	SPINDLE
245	XM1019245	COMPRESSION SPRING
246	XM1019246	LOCKING PIN
247	XM1019247	CAM
248	XM1019248	SHAFT
249	XM1019249	GEAR FEED CHART
250	XM1019250	GEAR 51T
251	XM1019251	COLLAR
252	XM1019252	SHAFT
253	XM1019253	GEAR 30T
254	XM1019254	SHAFT
255	XM1019255	SHAFT
256	XM1019256	FLAT WASHER 30MM
257	XM1019257	GEAR SHAFT
259	XPSB31M	CAP SCREW M8-1.25 X 25
264	XM1019264	HANDLE
265	XM1019265	HANDLE
266	XM1019266	HANDLE SHAFT
267	XM1019267	COLLAR
268	XM1019268	SHIFT FORK
269	XM1019269	SHIFT FORK
273	XM1019273	GASKET
274	XM1019274	GASKET
275	XM1019275	GASKET

REF	PART #	DESCRIPTION
276	XM1019276	GASKET
277	XM1019277	GASKET
278	XM1019278	GASKET
279	XM1019279	OIL SEAL
280	XM1019280	OIL SEAL
282	XM1019282	OIL SIGHT GLASS
284	XPSB23M	CAP SCREW M4-.7 X 12
285	XPSB24M	CAP SCREW M5-.8 X 16
286	XPSB26M	CAP SCREW M6-1 X 12
287	XPSB14M	CAP SCREW M8-1.25 X 20
288	XPSB02M	CAP SCREW M6-1 X 20
289	XPSB06M	CAP SCREW M6-1 X 25
293	XPSS04M	SET SCREW M6-1 X 12
295	XPSS20M	SET SCREW M8-1.25 X 8
296	XPSS16M	SET SCREW M8-1.25 X 10
297	XPSS14M	SET SCREW M8-1.25 X 12
298	XPSS06M	SET SCREW M8-1.25 X 16
299	XPSB45M	CAP SCREW M8-1.25 X 45
300	XPS07M	PHLP HD SCR M4-.7 X 8
302	XPN09M	HEX NUT M12-1.75
303	XPK20M	KEY 5 X 5 X 15
304	XPK14M	KEY 5 X 5 X 18
305	XPK36M	KEY 5 X 5 X 50
306	XPK11M	KEY 6 X 6 X 40
307	XPK44M	KEY 6 X 6 X 50
308	XPK49M	KEY 6 X 6 X 55
309	XPK50M	KEY 6 X 6 X 120
310	XPK51M	KEY 8 X 8 X 18
311	XPK34M	KEY 5 X 5 X 20
313	XPRP44M	ROLL PIN 3 X 10
314	XPRP01M	ROLL PIN 4 X 18
316	XPRP45M	ROLL PIN 5 X 32
317	XPR09M	EXT RETAINING RING 20MM
319	XPEC11M	EXT RETAINING RING 35MM

REF	PART #	DESCRIPTION
320	XPR43M	EXT RETAINING RING 50MM
321	XPR44M	EXT RETAINING RING 72MM
322	XM1019322	E-CLIP 42MM
323	XM1019323	BALL BEARING 7004ZZ
324	XP6204	BALL BEARING 6204ZZ
325	XP6203	BALL BEARING 6203ZZ
326	XP6204	BALL BEARING 6204ZZ
327	XM1019327	BEARING 7210ZZ
328	XM1019328	BEARING 7212D
329	XM1019329	STEEL BALL 5MM
330	XM1019111	STEEL BALL 6MM
333	XM1019333	O-RING 2.4 X 14
334	XM1019334	O-RING 2.4 X 20
335	XM1019335	O-RING 2.4 X 25
336	XM1019336	O-RING 3.1 X 30
337	XM1019337	O-RING 3.1 X 40
338	XM1019338	O-RING 3.1 X 47
339	XM1019339	COMPRESSION SPRING
340	XM1019340	COMPRESSION SPRING
341	XM1019341	COMPRESSION SPRING
342	XM1019342	SHIFT HUB
343	XM1019343	BRASS PIPE (NOT SHOWN)
347	XM1019347	LEVER SLEEVE
348	XM1019348	V-BELT VB-A32
349	XM1019349	MOTOR
350	XM1019350	MOTOR FAN COVER
351	XM1019351	MOTOR FAN
352	XM1019352	START CAPACITOR 200MF 250V
353	XM1019353	RUN CAPACITOR 20MF 440V
354	XM1019354	CAPACITOR COVER
356	XM1019356	MOTOR ELECTRICAL BOX
357	XM1019357	MOTOR PULLEY
358	XM1019358	MOTOR MOUNT

# Lathe Bed



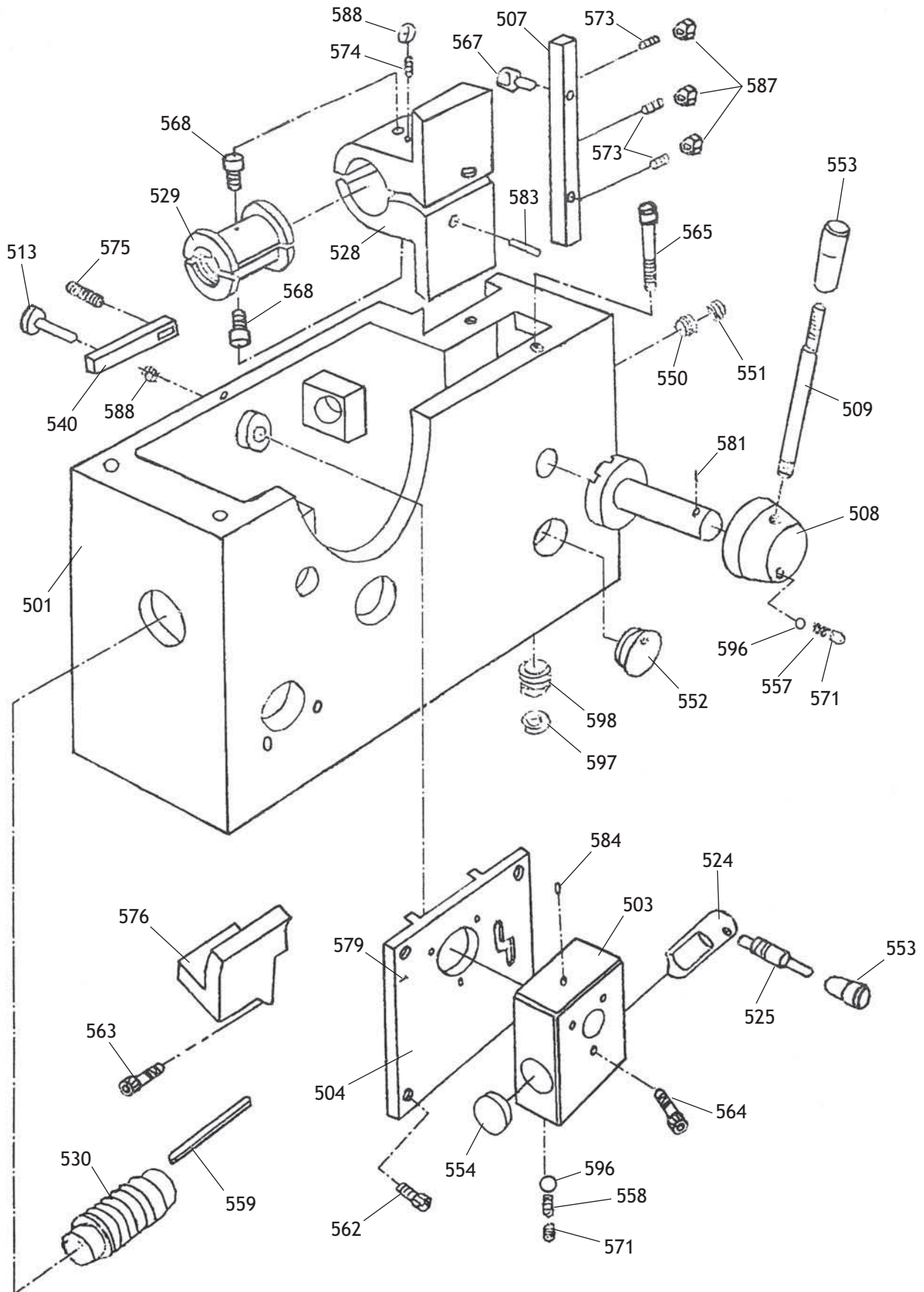
# Lathe Bed

REF	PART #	DESCRIPTION
403	XM1019403	BED
404	XM1019404	GAP
406	XM1019406	BRACKET
407	XM1019407	BRACKET
409	XM1019409	COLLAR
410	XM1019410	HANDLE BODY
411	XM1019411	RACK
413	XM1019413	RACK
416	XM1019416	LEAD SCREW
419	XM1019419	FEED ROD
422	XM1019422	SHAFT
423	XM1019423	COLLAR
424	XM1019424	SHAFT
425	XM1019425	HANDLE SHAFT
426	XM1019426	BRAKE RING
427	XM1019427	COLLAR
428	XM1019428	SPECIAL KEY 4 X 35
439	XM1019439	ROUND KNOB M10-1.5
440	XM1019440	PLUG

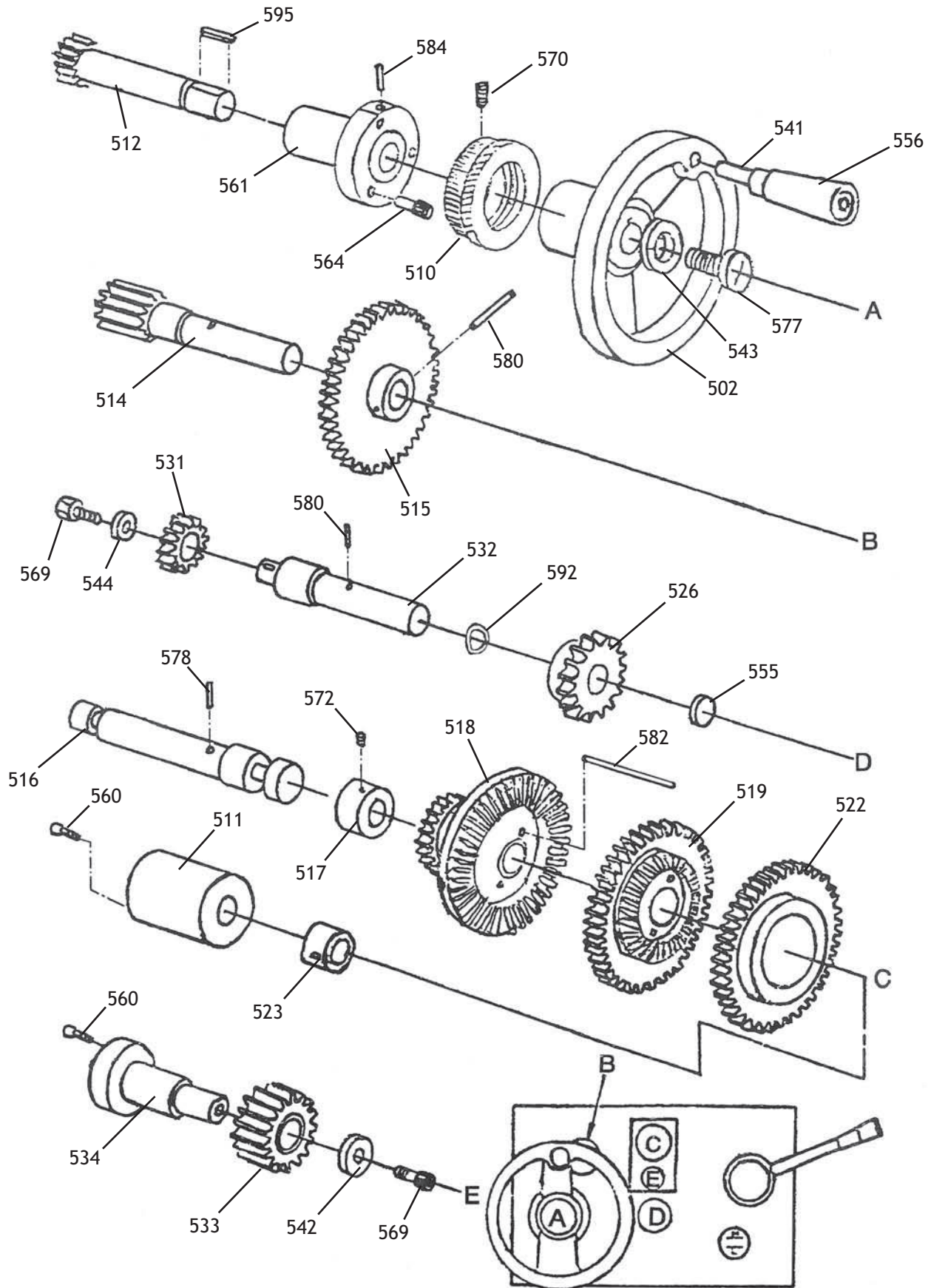
REF	PART #	DESCRIPTION
441	XM1019441	PLUG
442	XM1019442	PLUG
443	XM1019443	THREADED SHAFT
444	XM1019444	COVER
445	XM1019445	LOCK KNOB M8-1.25
446	XPSS31M	SET SCREW M5-.8 X 8
447	XPSS06M	SET SCREW M8-1.25 X 16
449	XPSB47M	CAP SCREW M10-1.5 X 40
451	XPSB02M	CAP SCREW M6-1 X 20
452	XPSB60M	CAP SCREW M8-1.25 X 55
453	XPNO3M	HEX NUT M8-1.25
454	XPSS19M	SET SCREW M8-1.25 X 30
455	XPB38M	HEX BOLT M12-1.75 X 60
459	XM1019459	ROUND PIN 6 X 25
461	XPRP46M	ROLL PIN 6 X 28
462	XPRP34M	ROLL PIN 6 X 55
467	XM1019467	COMPRESSION SPRING
468	XM1019468	OIL PORT 8MM



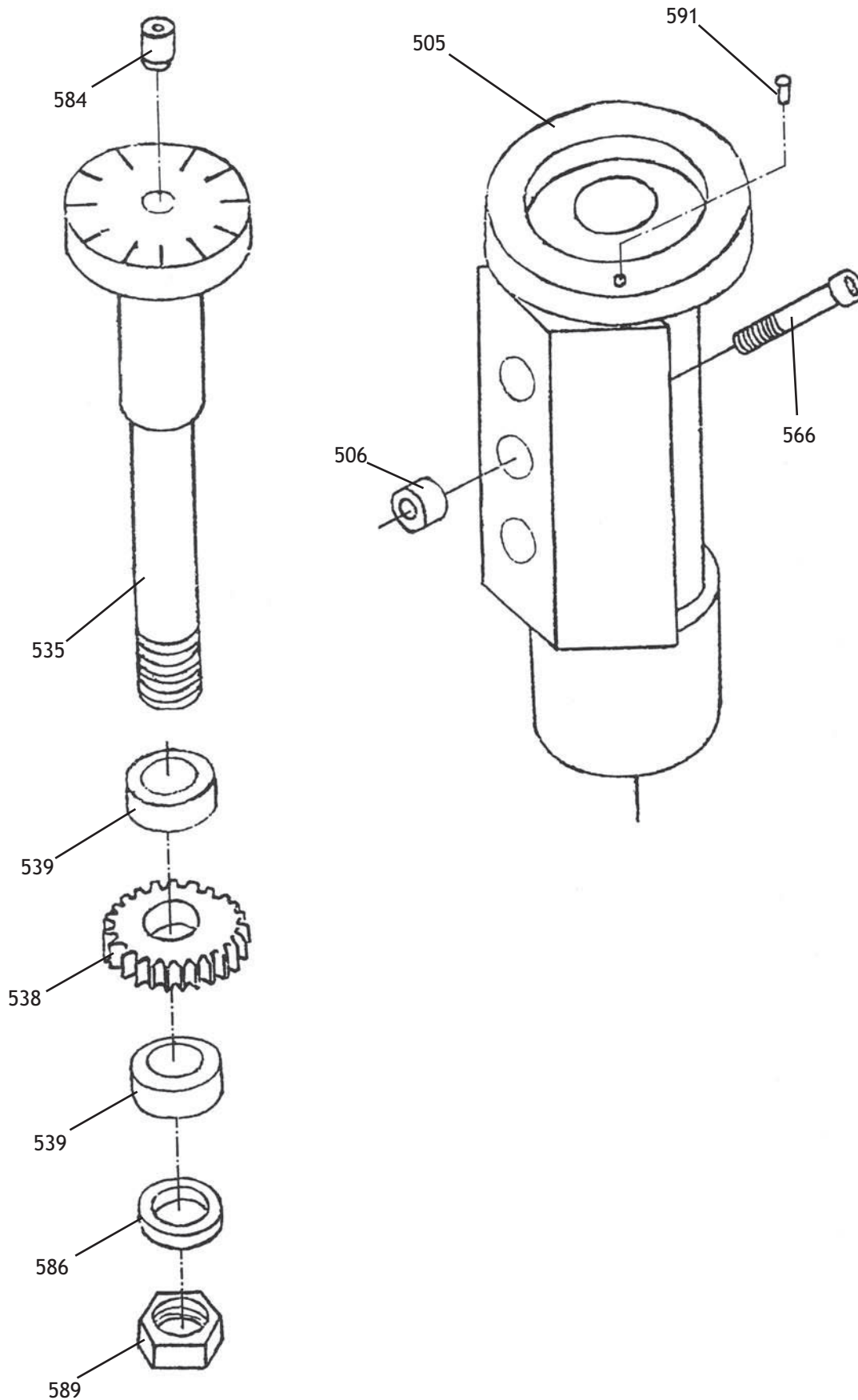
# Apron Assembly



# Apron Gears



# Thread Dial Assembly

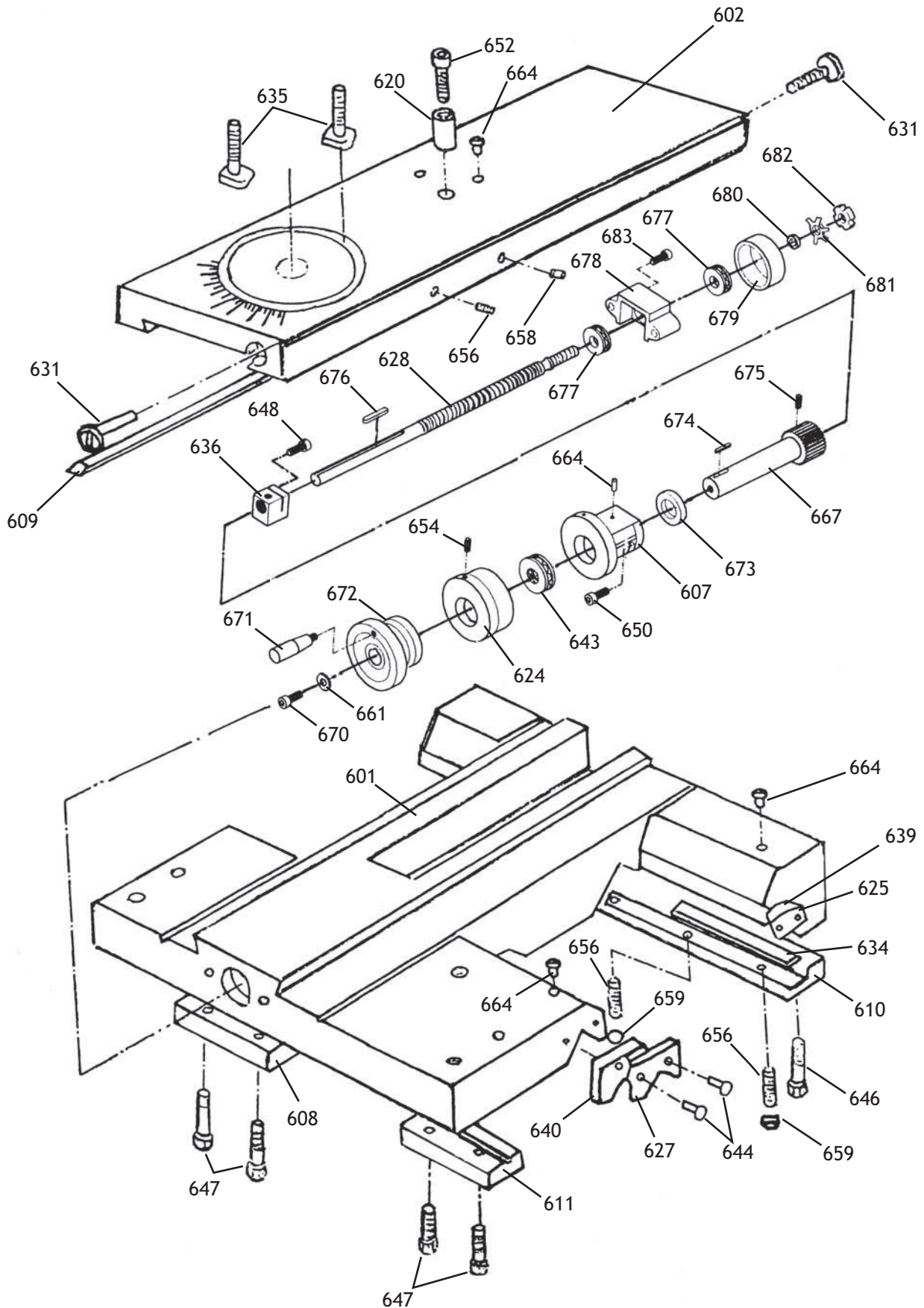


# Apron Parts

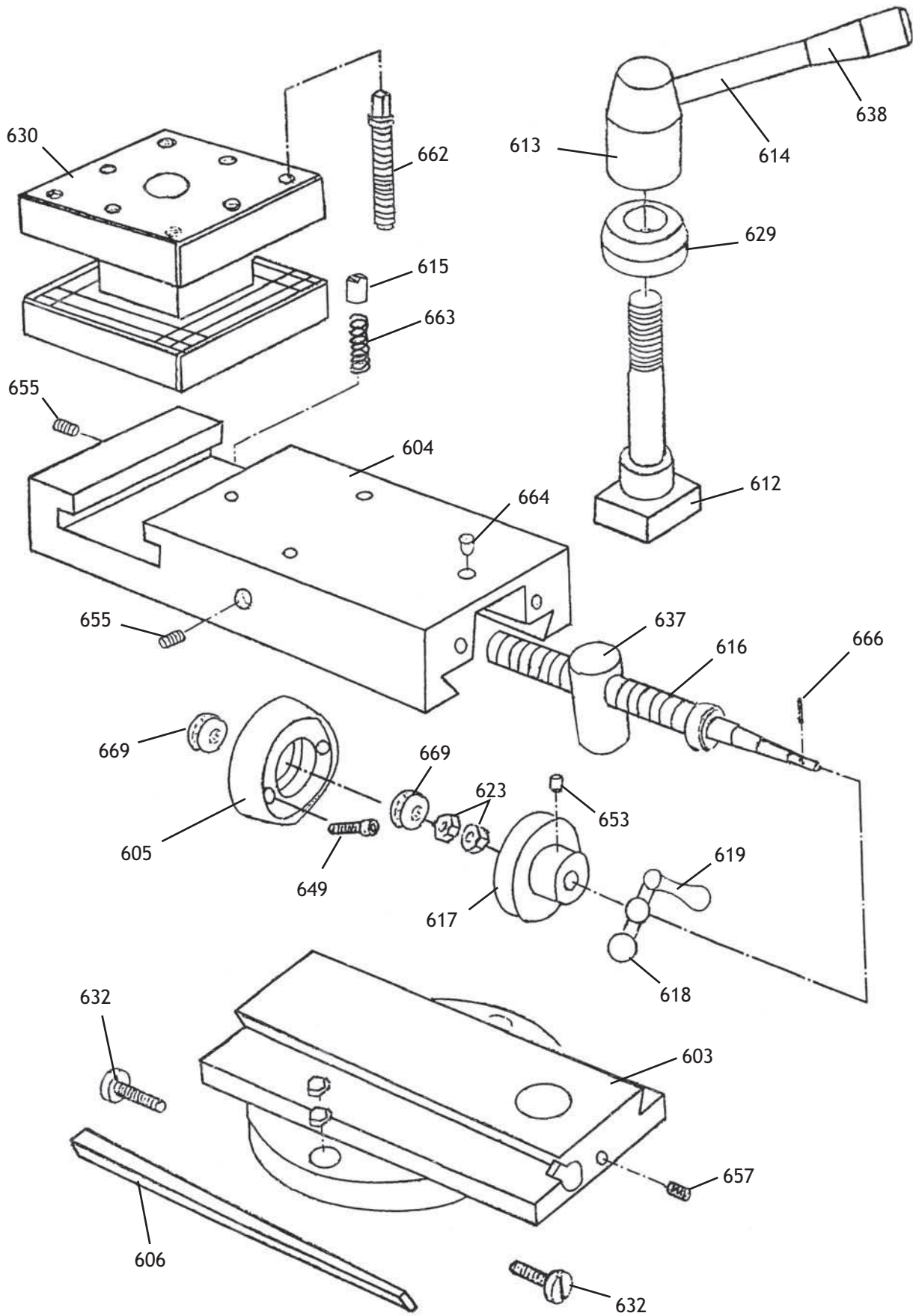
REF	PART #	DESCRIPTION
501	XM1019501	APRON CASTING
502	XM1019502	HANDWHEEL
503	XM1019503	BOX
504	XM1019504	COVER
505	XM1019505	THREADING DIAL BODY
506	XM1019506	SPACER
507	XM1019507	GIB
508	XM1019508	HANDLE BODY
509	XM1019509	HANDLE SHAFT
510	XM1019510	INDEX RING
511	XM1019511	COVER
512	XM1019512	SHAFT
513	XM1019513	GEAR PIN 60T
514	XM1019514	GEAR SHAFT 18T
515	XM1019515	GEAR 60T
516	XM1019516	SHAFT
517	XM1019517	COVER
518	XM1019518	GEAR 30T
519	XM1019519	GEAR 46T
522	XM1019522	GEAR 63T
523	XM1019523	SHIFT FORK
524	XM1019524	SHIFT LEVER
525	XM1019525	SHIFT HANDLE
526	XM1019526	GEAR 40T
528	XM1019528	BRACKET
529	XM1019529	HALF NUT
530	XM1019530	WORM
531	XM1019531	GEAR 22T
532	XM1019532	SHAFT
533	XM1019533	GEAR 18T
534	XM1019534	SHAFT
535	XM1019535	THREADING DIAL SHAFT
538	XM1019538	GEAR 32T
539	XM1019539	SPACER
540	XM1019540	BAR
541	XM1019541	SPECIAL BOLT M8-1.25 X 13
542	XPW03M	FLAT WASHER 6MM
543	XPW03M	FLAT WASHER 6MM
544	XPW03M	FLAT WASHER 6MM
550	XM1019550	OIL SIGHT COLLAR
551	XM1019551	OIL SIGHT COLLAR
552	XM1019552	OIL SIGHT

REF	PART #	DESCRIPTION
553	XM1019553	HANDLE
554	XM1019554	PLUG "A"
555	XM1019555	PLUG "B"
556	XM1019556	HANDLE
557	XM1019557	COMPRESSION SPRING
558	XM1019558	COMPRESSION SPRING
559	XPK15M	KEY 5 X 5 X 35
560	XPSB33M	CAP SCREW M5-.8 X 12
561	XM1019561	HUB
562	XPSB26M	CAP SCREW M6-1 X 12
563	XPSB01M	CAP SCREW M6-1 X 16
564	XPSB06M	CAP SCREW M6-1 X 25
565	XPSB13M	CAP SCREW M8-1.25 X 30
566	XPSB05M	CAP SCREW M8-1.25 X 50
567	XPSB24M	CAP SCREW M5-.8 X 16
568	XPSB26M	CAP SCREW M6-1 X 12
569	XPSB04M	CAP SCREW M6-1 X 10
570	XPSS26M	SET SCREW M5-.8 X 6
571	XPSS02M	SET SCREW M6-1 X 6
572	XPSS01M	SET SCREW M6-1 X 10
573	XPSS34M	SET SCREW M5-.8 X 16
574	XPSS29M	SET SCREW M6-1 X 35
575	XPSS01M	SET SCREW M6-1 X 10
576	XM1019576	BRACKET
577	XPSB26M	CAP SCREW M6-1 X 12
578	XPRP16M	ROLL PIN 3 X 25
579	XPRP03M	ROLL PIN 5 X 20
580	XPRP05M	ROLL PIN 5 X 30
581	XPRP45M	ROLL PIN 5 X 32
582	XPRP49M	ROLL PIN 5 X 25
583	XM1019583	ROLL PIN 8 X 12
584	XM1019468	OILER 8MM
586	XPLW04M	LOCK WASHER 8MM
587	XPN06M	HEX NUT M5-.8
588	XPN01M	HEX NUT M6-1
589	XPN03M	HEX NUT M8-1.25
591	XM1019591	RIVET 3 X 8
592	XM1019592	O-RING 20 X 2.4
595	XPK14M	KEY 5 X 5 X 18
596	XM1019111	STEEL BALL 5MM
597	XPW04M	FLAT WASHER 10MM
598	XM1019598	PLUG M10-1.5 X 1

# Carriage Assembly



# Cross Slide Assembly



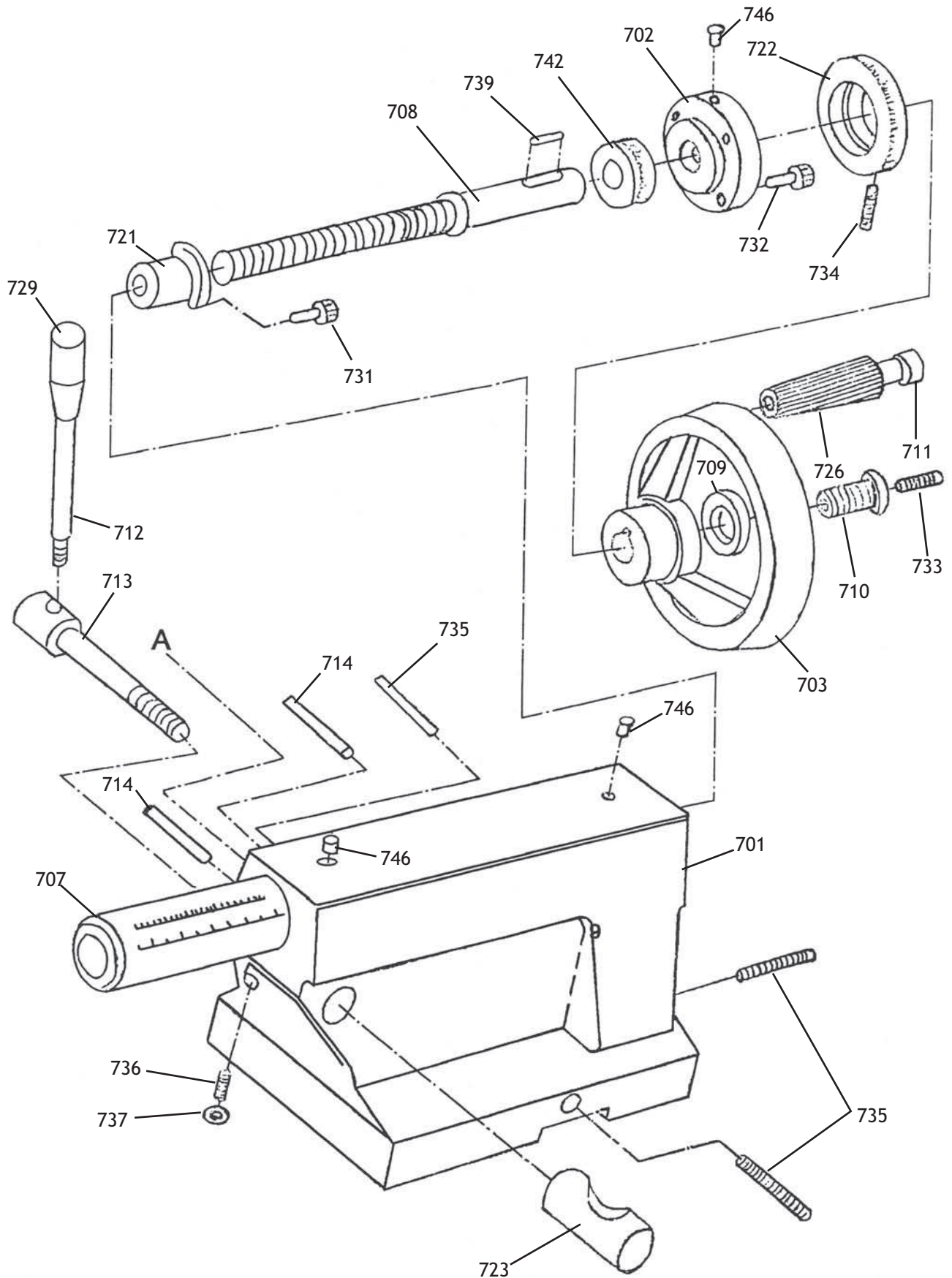
PARTS

## Carriage Parts

REF	PART #	DESCRIPTION
601	XM1019601	SADDLE
602	XM1019602	CROSS SLIDE
603	XM1019603	SWIVEL SLIDE
604	XM1019604	TOP SLIDE
605	XM1019605	COLLAR
606	XM1019606	GIB
607	XM1019607	HUB
608	XM1019608	STRIP
609	XM1019609	GIB
610	XM1019610	STRIP
611	XM1019611	FRONT STRIP
612	XM1019612	SPECIAL T-BOLT
613	XM1019613	HANDLE BASE
614	XM1019614	HANDLE SHAFT
615	XM1019615	STOP
616	XM1019616	LEAD SCREW
617	XM1019617	INDEX RING
618	XM1019618	HANDCRANK
619	XM1019619	HANDLE
620	XM1019620	COLLAR
623	XPNO9M	HEX NUT M12-1.75
624	XM1019624	INDEX RING
625	XM1019625	PLATE
627	XM1019627	PLATE
628	XM1019628	LEAD SCREW
629	XM1019629	BEVELED COLLAR
630	XM1019630	POST BASE
631	XM1019631	GIB ADJUSTING SCREW
632	XM1019632	GIB ADJUSTING SCREW
634	XM1019634	GIB STRIP
635	XM1019635	T-BOLT M8-1 X 42
636	XM1019636	BLOCK
637	XM1019637	LEADSCREW NUT
638	XM1019638	HANDLE
639	XM1019639	WIPER
640	XM1019640	WIPER

REF	PART #	DESCRIPTION
643	XM1019643	THRUST BEARING 8102
644	XPS02M	PHLP HD SCR M4-.7 X 12
646	XPB09M	HEX BOLT M8-1.25 X 20
647	XPB09M	HEX BOLT M8-1.25 X 20
648	XPSB01M	CAP SCREW M6-1 X 16
649	XPSB02M	CAP SCREW M6-1 X 20
650	XPSB06M	CAP SCREW M6-1 X 25
652	XPSB11M	CAP SCREW M8-1.25 X 16
653	XPSS02M	SET SCREW M6-1 X 6
654	XPSS03M	SET SCREW M6-1 X 8
655	XPSS01M	SET SCREW M6-1 X 10
656	XPSS11M	SET SCREW M6-1 X 16
657	XPSS20M	SET SCREW M8-1.25 X 8
658	XPSS16M	SET SCREW M8-1.25 X 10
659	XPNO1M	HEX NUT M6-1
661	XPW01M	FLAT WASHER 8MM
662	XM1019662	TOOL LOCK SCR M10-1.5 X 40
663	XM1019663	COMPRESSION SPRING
664	XM1019468	OILER 8MM
666	XPRP02M	ROLL PIN 3 X 16
667	XM1019667	GEAR
669	XP51101	THRUST BEARING 51101
670	XPSB11M	CAP SCREW M8-1.25 X 16
671	XM1019671	HANDLE
672	XM1019672	COMPOUND HANDWHEEL
673	XM1019673	SPACER
674	XPK48M	KEY 4 X 4 X 20
675	XPSS45M	SET SCREW M3-.5 X 6
676	XPK12M	KEY 5 X 5 X 30
677	XP51101	THRUST BEARING 51101
678	XM1019678	BEARING HOUSING
679	XM1019679	BEARING DUST COVER
680	XM1019680	SPACER
681	XM1019681	TAB WASHER
682	XM1019682	SPANNER NUT
683	XPSB31M	CAP SCREW M8-1.25 X 25

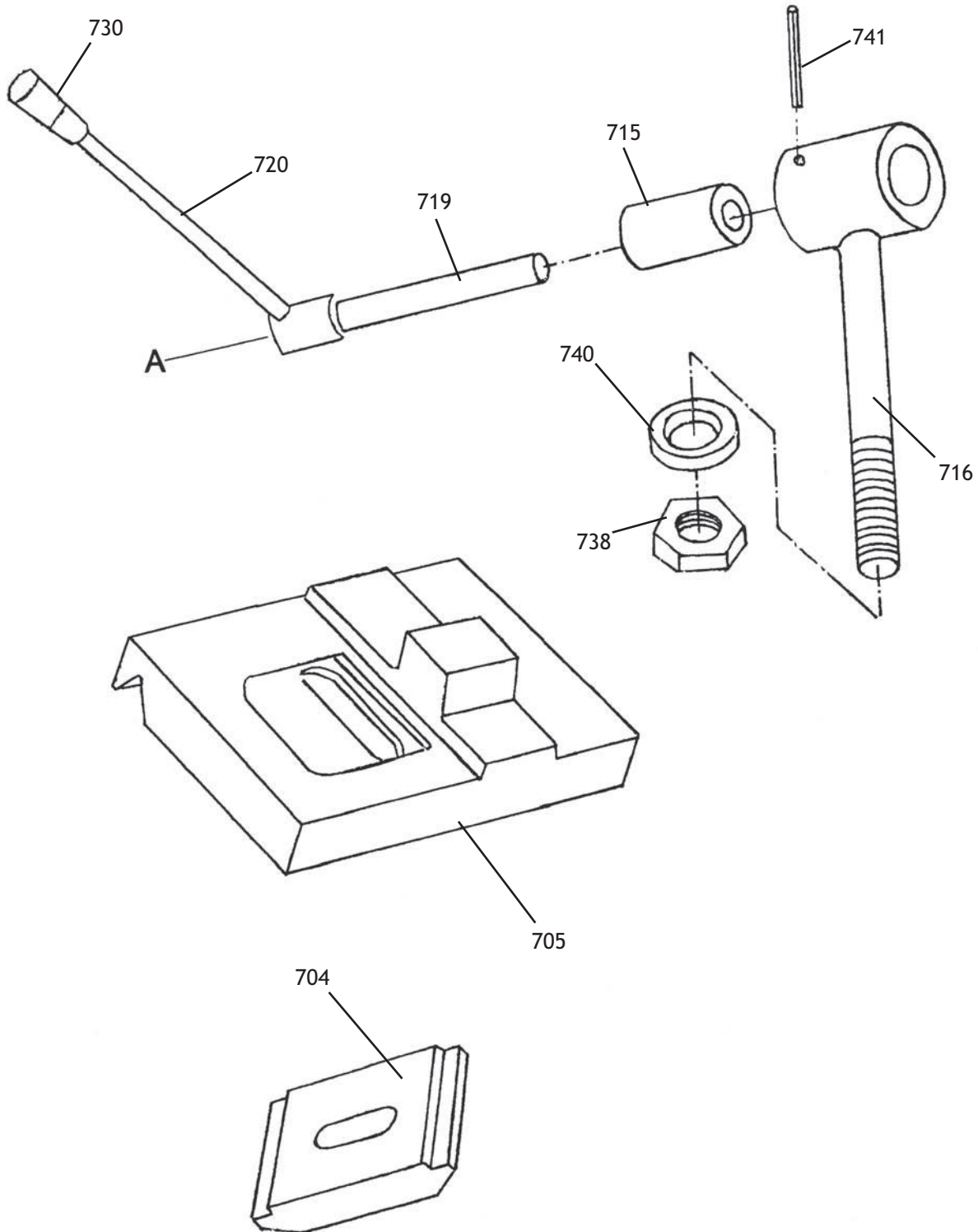
# Tailstock Assembly



PARTS



# Tailstock Lock Assembly

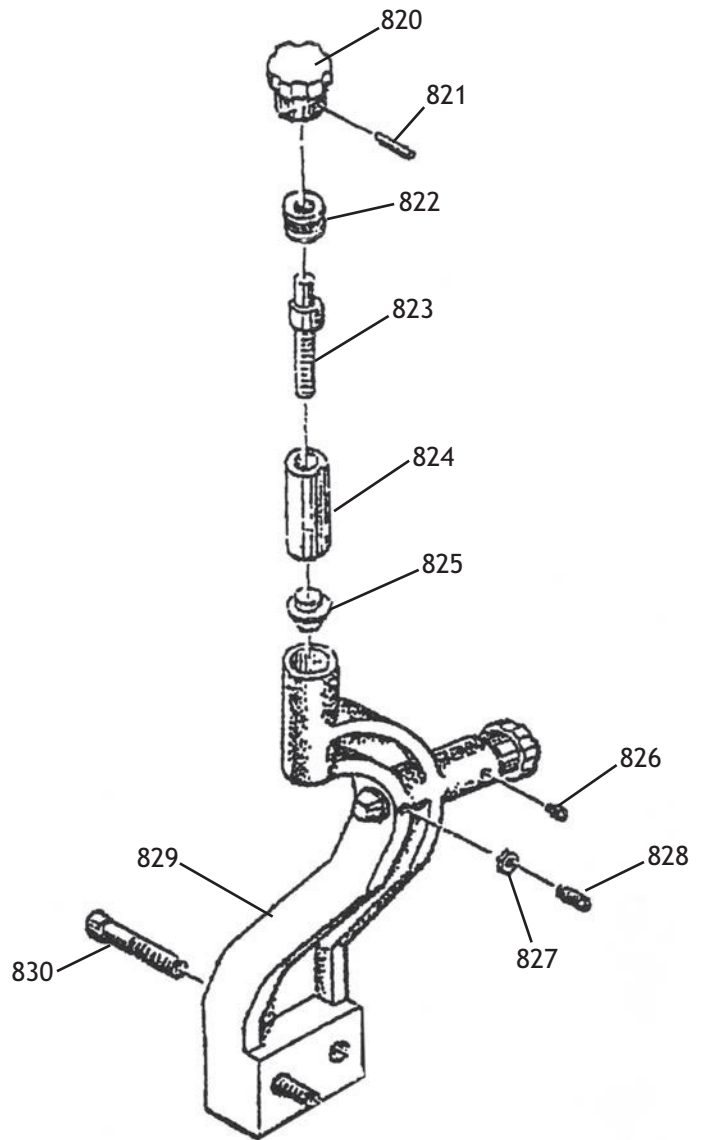
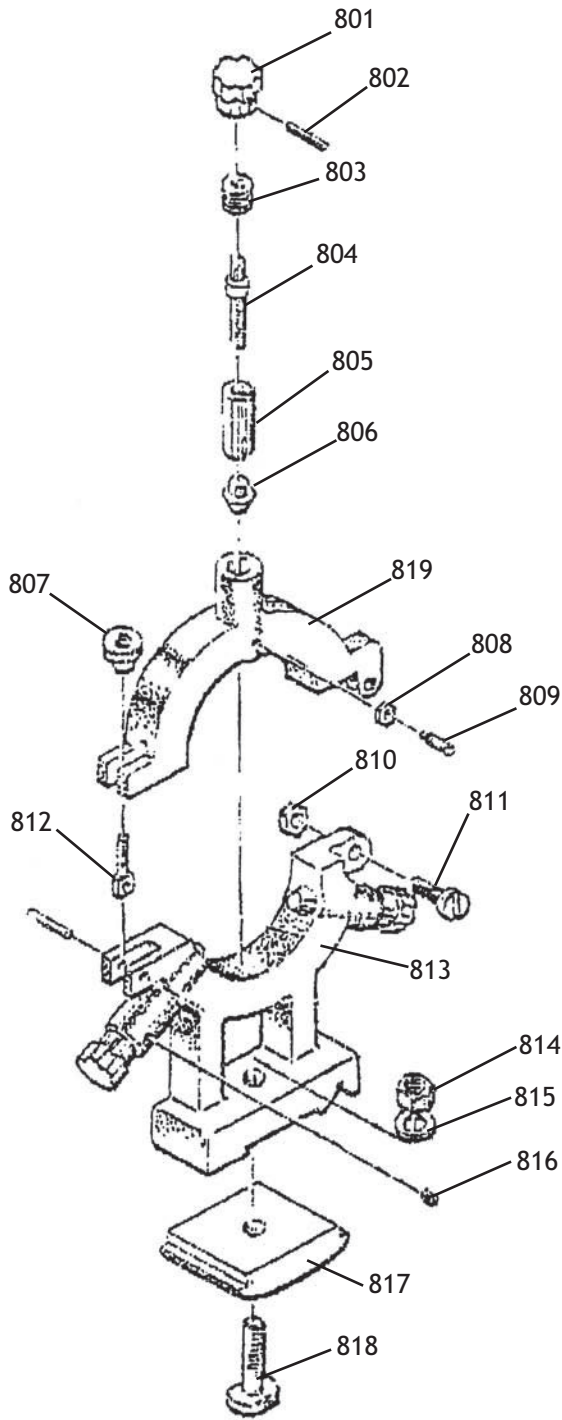


## Tailstock Parts

REF	PART #	DESCRIPTION
701	XM1019701	TAILSTOCK CASTING
702	XM1019702	FLANGE COVER
703	XM1019703	HANDWHEEL
704	XM1019704	CLAMP PLATE
705	XM1019705	BASE
707	XM1019707	QUILL
708	XM1019708	LEADSCREW
709	XPW03M	FLAT WASHER 6MM
710	XM1019710	BTN HD CAP SCR M8-1.25 X 28
711	XM1019711	SPECIAL SCREW M8-1.25 X 32
712	XM1019712	HANDLE SHAFT
713	XM1019713	LOCKING SHAFT
714	XM1019714	THREADED STOP PIN M8-1.25
715	XM1019715	COLLAR
716	XM1019716	CAMSHAFT
719	XM1019719	SHAFT
720	XM1019720	HANDLE SHAFT
721	XM1019721	LEADSCREW NUT
722	XM1019722	INDEX RING

REF	PART #	DESCRIPTION
723	XM1019723	PIVOT BLOCK
726	XM1019726	HANDLE
729	XM1019729	HANDLE M8-1.25
730	XM1019730	HANDLE M10-1.5
731	XPSB17M	CAP SCREW M4-.7 X 10
732	XPSB01M	CAP SCREW M6-1 X 16
733	XPSS57M	SET SCREW M5-.8 X 20
734	XPSS01M	SET SCREW M6-1 X 10
735	XM1019735	SET SCREW M10-1.5 X 45
736	XM1019736	SET SCREW M8-1.25 X 35
737	XPN03M	HEX NUT M8-1.25
738	XPN09M	HEX NUT M12-1.75
739	XPK47M	KEY 4 X 15
740	XPW06M	FLAT WASHER 12MM
741	XPRP06M	ROLL PIN 5 X 24
742	XP8102	THRUST BEARING 8102
746	XM1019468	OILER 8MM
747	XM1019747	COMPLETE TAILSTOCK ASSY

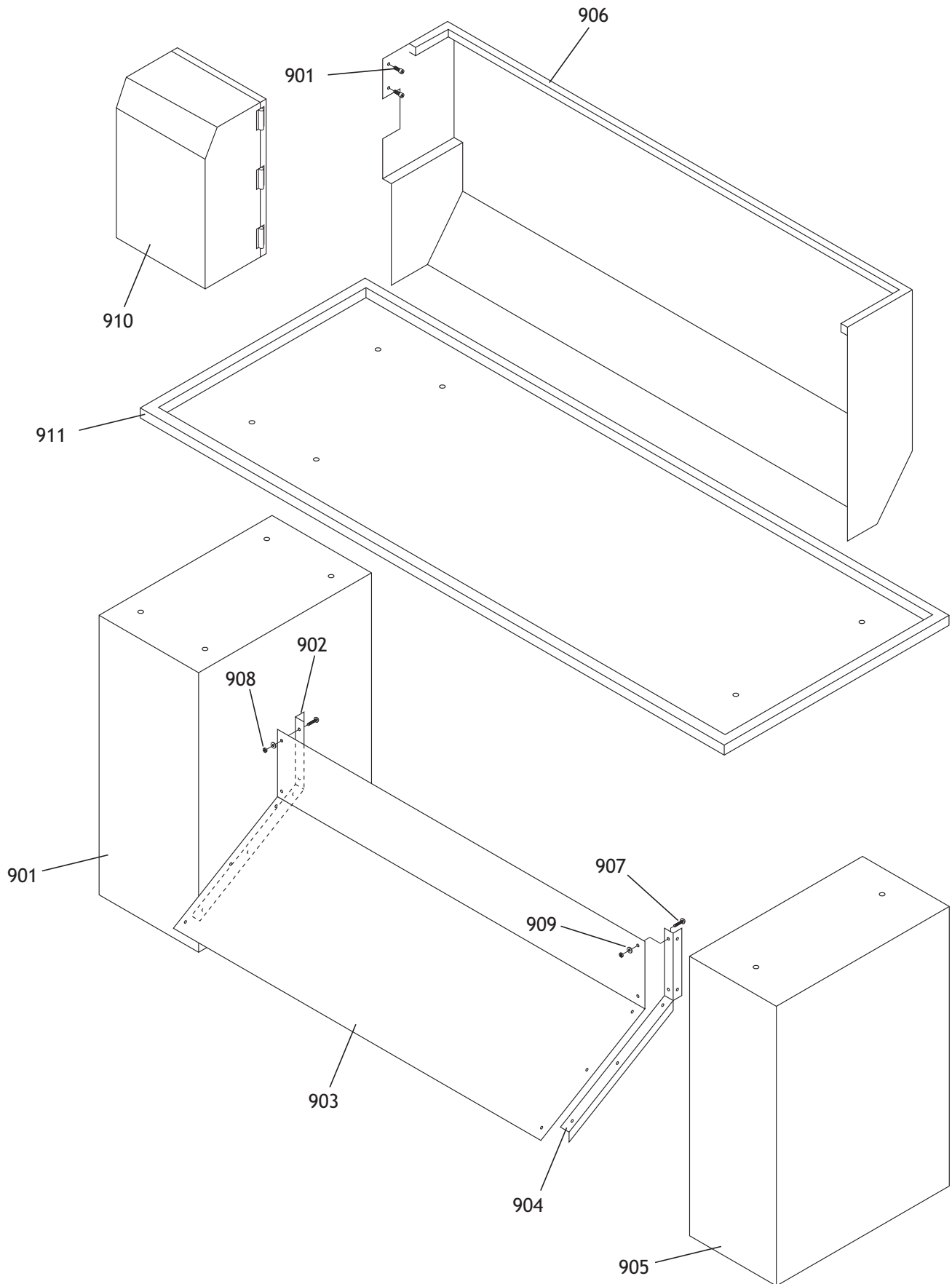
# Follow and Steady Rest Assemblies

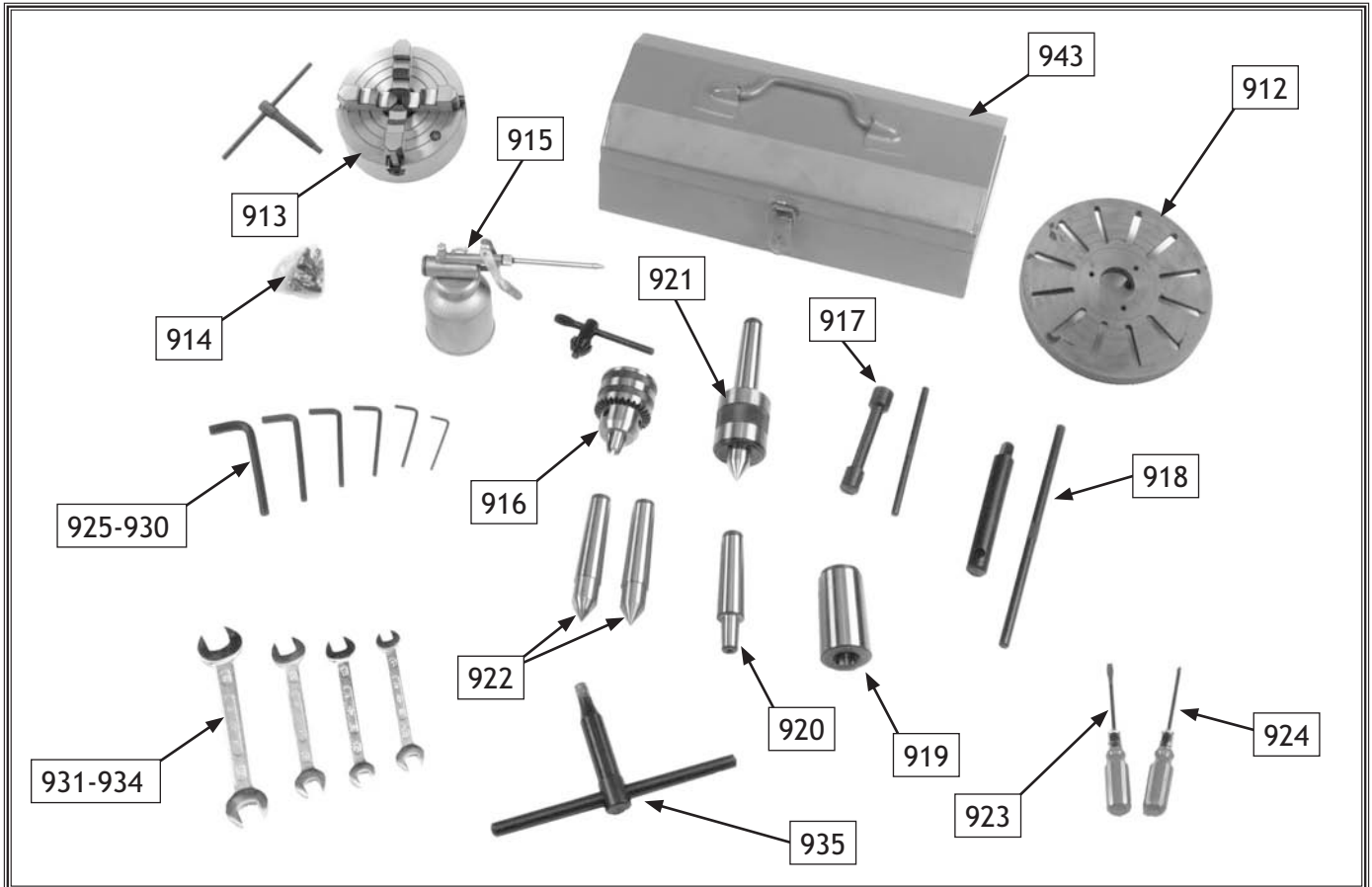
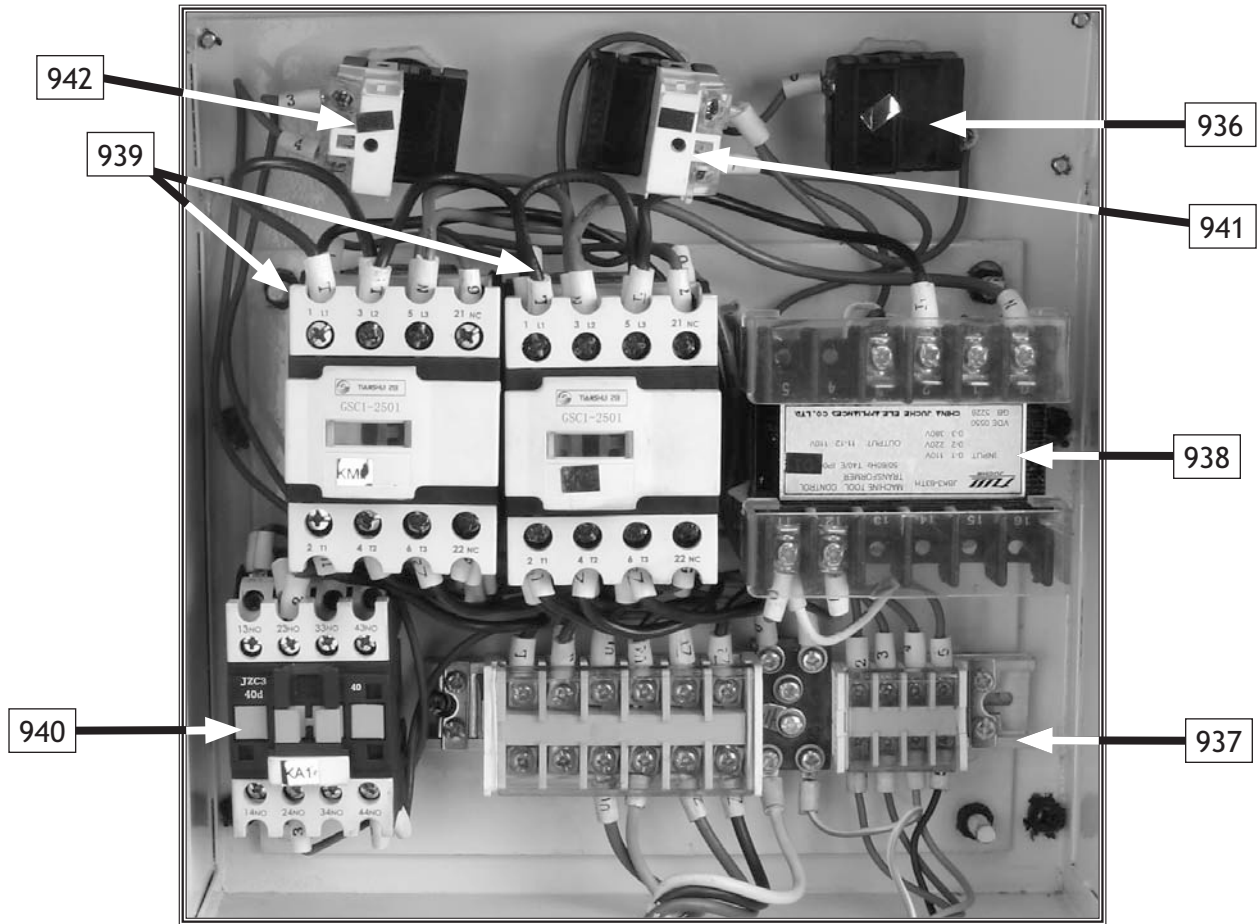


## Follow and Steady Rest Parts

REF	PART #	DESCRIPTION
801	XPSW03-1	KNOB
802	XPRP64M	ROLL PIN 3 X 18
803	XM1019803	BUSHING
804	XM1019804	SPECIAL SCREW
805	XM1019805	SLEEVE
806	XM1019806	BRASS FINGER
807	XM1019807	LOCK KNOB M8-1.25
808	XPN01M	HEX NUT M6-1
809	XPSS25M	SET SCREW M6-1 X 20
810	XPN01M	HEX NUT M6-1
811	XPS62M	PHLP HD SCR M6-1 X 30
812	XM1019812	PIVOT BOLT
813	XM1019813	BASE CASTING
814	XPN09M	HEX NUT M12-1.75
815	XPW06M	FLAT WASHER 12MM
816	XPSS02M	SET SCREW M6-1 X 6

REF	PART #	DESCRIPTION
817	XM1019817	CLAMP PAD
818	XM1019818	CLAMP SCREW
819	XM1019819	TOP CASTING
820	XM1019820	KNOB
821	XPRP64M	ROLL PIN 3 X 18
822	XM1019822	BUSHING
823	XM1019823	SPECIAL SCREW
824	XM1019824	SLEEVE
825	XM1019825	BRASS FINGER
826	XPSS02M	SET SCREW M6-1 X 6
827	XPN01M	HEX NUT M6-1
828	XPSS25M	SET SCREW M6-1 X 20
829	XM1019829	BASE CASTING
830	XPSB45M	CAP SCREW M8-1.25 X 45
831	XM1019831	COMPLETE FOLLOW REST
832	XM1019832	COMPLETE STEADY REST





**PARTS**

## Stand Parts, Electrical, and Accessories

REF	PART #	DESCRIPTION
901	XM1019901	LEFT STAND
902	XM1019902	LEFT BRACE
903	XM1019903	CENTER PANEL
904	XM1019904	RIGHT BRACE
905	XM1019905	RIGHT STAND
906	XM1019906	BACKSPLASH
907	XPS68M	PHLP HD SCR M6-1 X 10
908	XPN01M	HEX NUT M6-1
909	XPLW03M	LOCK WASHER 6MM
910	XM1019910	ELECTRICAL BOX
911	XM1019911	CHIP TRAY
912	XM1019912	12" FACEPLATE
913	XM1019913	8" FOUR-JAW CHUCK W/KEY
914	XM1019914	CAMLOCK STUDS W/SET SCR
915	XM1019915	OILER
916	XM1019916	DRILL CHUCK WITH KEY B16
917	XM1019917	TOOL POST WRENCH & HANDLE
918	XM1019918	LARGE CHUCK KEY & HANDLE
919	XM1019919	SPINDLE SLEEVE ADAPTER
920	XM1019920	DRILL CHUCK ARBOR B16 X MT3
921	XM1019921	LIVE CENTER MT-3

REF	PART #	DESCRIPTION
922	XM1019922	#3 MORSE TAPER DEAD CENTER
923	XM1019923	FLAT HEAD SCREWDRIVER
924	XM1019924	PHILLIPS SCREWDRIVER
925	XM1019925	HEX WRENCH 2.5MM
926	XM1019926	HEX WRENCH 3MM
927	XM1019927	HEX WRENCH 4MM
928	XM1019928	HEX WRENCH 5MM
929	XM1019929	HEX WRENCH 6MM
930	XM1019930	HEX WRENCH 8MM
931	XM1019931	OPEN-END WRENCH 9/11MM
932	XM1019932	OPEN-END WRENCH 10/12MM
933	XM1019933	OPEN-END WRENCH 12/14MM
934	XM1019934	OPEN-END WRENCH 17/19MM
935	XM1019935	CHUCK KEY (3-JAW & SPINDLE)
936	XM1019936	POWER ON BUTTON
937	XM1019937	TERMINAL BAR
938	XM1019938	TRANSFORMER JBK3-63
939	XM1019939	CONTACTOR CJX2501D
940	XM1019940	CONTACTOR JZC340D
941	XM1019941	EMERGENCY STOP BUTTON
942	XM1019942	JOG BUTTON

# Warranty

Woodstock International, Inc. warrants all **SHOP FOX**® machinery to be free of defects from workmanship and materials for a period of two years from the date of original purchase by the original owner. This warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence or accidents, lack of maintenance, or reimbursement of third party expenses incurred.

Woodstock International, Inc. will repair or replace, at its expense and at its option, the **SHOP FOX**® machine or machine part which in normal use has proven to be defective, provided that the original owner returns the product prepaid to the **SHOP FOX**® factory service center or authorized repair facility designated by our Bellingham, WA office, with proof of their purchase of the product within two years, and provides Woodstock International, Inc. reasonable opportunity to verify the alleged defect through inspection. If it is determined there is no defect, or that the defect resulted from causes not within the scope of Woodstock International Inc.'s warranty, then the original owner must bear the cost of storing and returning the product.

This is Woodstock International, Inc.'s sole written warranty and any and all warranties that may be implied by law, including any merchantability or fitness, for any particular purpose, are hereby limited to the duration of this written warranty. We do not warrant that **SHOP FOX**® machinery complies with the provisions of any law or acts. In no event shall Woodstock International, Inc.'s liability under this warranty exceed the purchase price paid for the product, and any legal actions brought against Woodstock International, Inc. shall be tried in the State of Washington, County of Whatcom. We shall in no event be liable for death, injuries to persons or property or for incidental, contingent, special or consequential damages arising from the use of our products.

Every effort has been made to ensure that all **SHOP FOX**® machinery meets high quality and durability standards. We reserve the right to change specifications at any time because of our commitment to continuously improve the quality of our products.



# Warranty Registration

Name \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
Phone # \_\_\_\_\_ Email \_\_\_\_\_ Invoice # \_\_\_\_\_  
Model # \_\_\_\_\_ Serial # \_\_\_\_\_ Dealer Name \_\_\_\_\_ Purchase Date \_\_\_\_\_

*The following information is given on a voluntary basis. It will be used for marketing purposes to help us develop better products and services. Of course, all information is strictly confidential.*

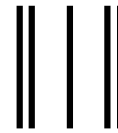
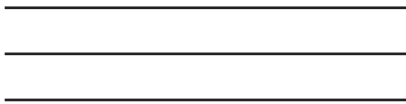
1. How did you learn about us?  
 Advertisement       Friend       Local Store  
 Mail Order Catalog       Website       Other:
2. How long have you been a woodworker/metalworker?  
 0-2 Years       2-8 Years       8-20 Years       20+ Years
3. How many of your machines or tools are Shop Fox®?  
 0-2       3-5       6-9       10+
4. Do you think your machine represents a good value?       Yes       No
5. Would you recommend Shop Fox® products to a friend?       Yes       No
6. What is your age group?  
 20-29       30-39       40-49  
 50-59       60-69       70+
7. What is your annual household income?  
 \$20,000-\$29,000       \$30,000-\$39,000       \$40,000-\$49,000  
 \$50,000-\$59,000       \$60,000-\$69,000       \$70,000+
8. Which of the following magazines do you subscribe to?  

<input type="checkbox"/> Cabinet Maker	<input type="checkbox"/> Popular Mechanics	<input type="checkbox"/> Today's Homeowner
<input type="checkbox"/> Family Handyman	<input type="checkbox"/> Popular Science	<input type="checkbox"/> Wood
<input type="checkbox"/> Hand Loader	<input type="checkbox"/> Popular Woodworking	<input type="checkbox"/> Wooden Boat
<input type="checkbox"/> Handy	<input type="checkbox"/> Practical Homeowner	<input type="checkbox"/> Woodshop News
<input type="checkbox"/> Home Shop Machinist	<input type="checkbox"/> Precision Shooter	<input type="checkbox"/> Woodsmith
<input type="checkbox"/> Journal of Light Cont.	<input type="checkbox"/> Projects in Metal	<input type="checkbox"/> Woodwork
<input type="checkbox"/> Live Steam	<input type="checkbox"/> RC Modeler	<input type="checkbox"/> Woodworker West
<input type="checkbox"/> Model Airplane News	<input type="checkbox"/> Rifle	<input type="checkbox"/> Woodworker's Journal
<input type="checkbox"/> Modeltec	<input type="checkbox"/> Shop Notes	<input type="checkbox"/> Other:
<input type="checkbox"/> Old House Journal	<input type="checkbox"/> Shotgun News	

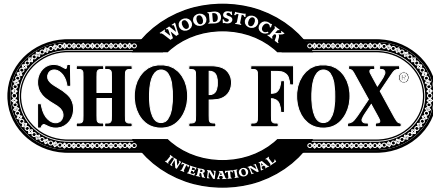
9. Comments: \_\_\_\_\_  
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