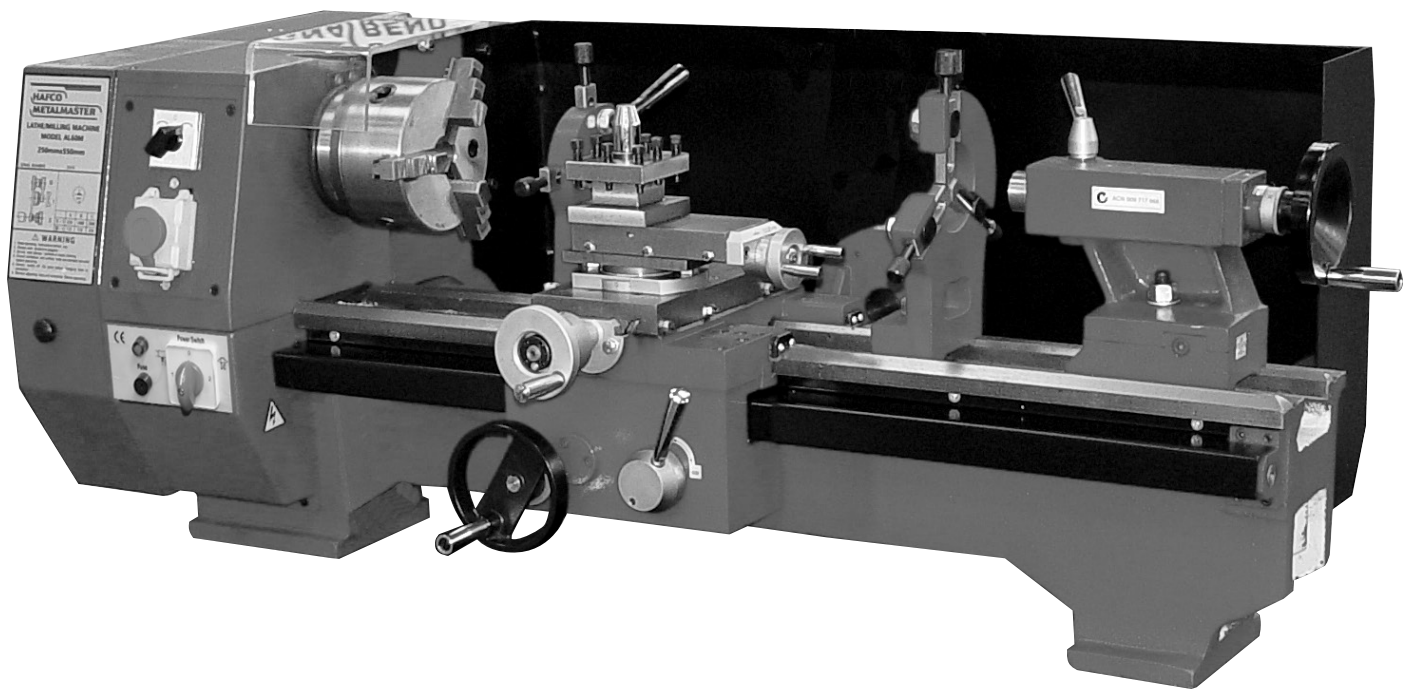


INSTRUCTION MANUAL

AL-60 (SIEG C6) Bench Lathe (240V) 250 x 550mm



Safety Instructions For Lathe

1. **MAKE SURE ALL GUARDS** are in place and that the lathe sits on a flat, stable surface.
2. **BEFORE STARTING THE LATHE** be certain the workpiece has been properly engaged in the chuck, tailstock, center, and that there is adequate clearance for full motion.
3. **ADJUST TOOL POST** to provide proper support for the turning tool you will be using. Test tool post clearance by rotating workpiece by hand before turning lathe on.
4. **SELECT THE TURNING SPEED** which is appropriate for the type of work, material, and tool bit. Allow the lathe to gain its full speed before beginning a cut.
5. **NEVER REVERSE MOTOR DIRECTION** while the lathe is in motion.
6. **DO NOT STOP LATHE USING YOUR HAND** against the workpiece or chuck.
7. **DO NOT LEAVE LATHE RUNNING UNATTENDED** for any reason.
8. **NEVER LEAVE A CHUCK KEY IN THE LATHE CHUCK.**
9. **NEVER OPERATE THE LATHE WITH DAMAGED OR WORN PARTS.** Maintain your lathe in proper working condition. Perform routine inspections and maintenance promptly when called for. Put away adjustment tools after use.
10. **MAKE SURE LATHE IS TURNED OFF**, disconnected from its power source and all moving parts have come to a complete stop before starting any inspection, adjustment, or maintenance procedure.
11. **KEEP LOOSE CLOTHING ARTICLES** such as sleeves, belts or jewelry items away from the lathe and drill spindles.
12. **ALWAYS USE THE PROPER CUTTING TOOLS** for the material you are turning, make certain they are sharp and that they are held firmly in the tool post.
13. **ALWAYS PLACE A BOARD OR PIECE OF PLYWOOD ACROSS THE BEDWAY** when removing or installing chucks to avoid the possibility of a finger pinch occurring between a loose chuck and the edges of the bedway.

CAUTION

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

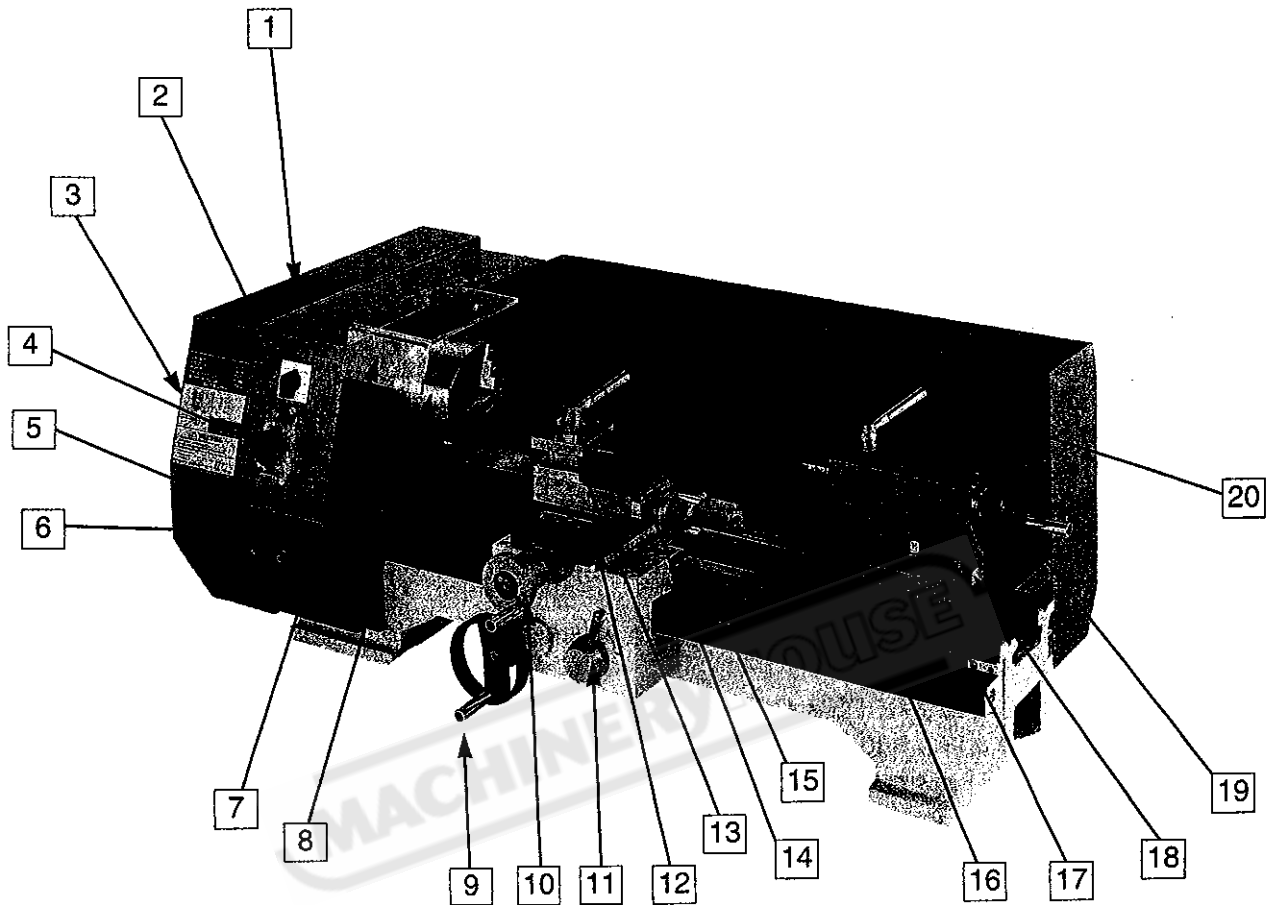
WARNING

Like all power tools, there is danger associated with the Lathe. Accidents are frequently caused by lack of familiarity or failure to pay attention. Use this tool with respect and caution to lessen the possibility of operator injury. If normal safety precautions are overlooked or ignored, serious personal injury may occur.

GROUNDING

In the event of an electrical short, grounding reduces the risk of electric shock by providing a path of least resistance to disperse electric current. The outlet must be properly installed and grounded in accordance with all local codes and ordinances.

IDENTIFICATION



The following is a list of controls and components on the Lathe. Please take time to become familiar with each term and its location. These terms will be used throughout the manual and knowing them is essential to understanding the instructions and terminology used in this manual.

- | | |
|--|--|
| 1. Thread Pitch Gearing & Speed Charts | 11. Automatic Carriage Feed Lever |
| 2. Lathe Forward/Reverse Switch | 12. Compound Slide |
| 3. Machine ID/Safety Label | 13. Tool Post |
| 4. Lathe ON/OFF, Emergency Stop Switch | 14. Tool Post Lock Handle |
| 5. Lathe Power Indicator Light | 15. Compound Slide Handwheel |
| 6. Selector Switch | 16. Tailstock Center |
| 7. Headstock Eyeshield | 17. Tailstock Clamp Bolt |
| 8. Lathe Chuck | 18. Tailstock Axis Alignment Indicator |
| 9. Carriage Feed Handwheel | 19. Tailstock Barrel Handwheel |
| 10. Cross Slide Handwheel | 20. Tailstock Center Lock |

SET-UP

Unpacking

This lathe is shipped from the manufacturer in a carefully packed crate. If you discover the machine is damaged after you've signed for delivery, and the truck and driver are gone, you will need to file a freight claim with the carrier. Save the containers and all packing materials for possible inspection by the carrier or its agent. Without the packing materials, filing a freight claim can be difficult. If you need assistance determining whether you need to file a freight claim, or with the procedure to file one, please contact your dealer.

When you are completely satisfied with the condition of your shipment, you should inventory its parts.

Clean Up

The unpainted surfaces are coated with a waxy oil to protect them from corrosion during shipment. Remove this protective coating with a solvent cleaner or citrus-based degreaser. To clean thoroughly, some parts may need to be removed. **For optimum performance from your machine, make sure you clean all moving parts or sliding contact surfaces that are coated.** Avoid chlorine-based solvents as they may damage painted surfaces should they come in contact. Always follow the manufacturer's instructions when using any type of cleaning product.

Piece Inventory

Inside the crate you will find:

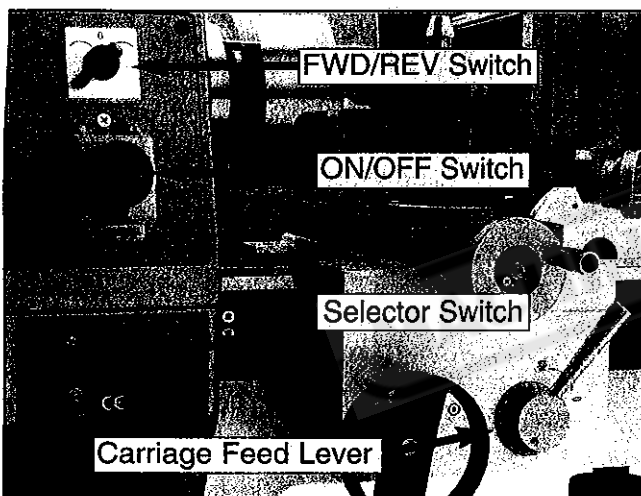
- Bench Lathe
- 3 Outside Jaws
- Lathe Chuck Key
- 30T Gear
- 40T Gear
- 42T Gear
- 50T Gear
- 52T Gear
- 60T Gear
- 66T Gear
- 70T Gear
- 75T Gear
- 80T Gear
- Square Head Wrench
- 3mm Allen Wrench
- 4mm Allen Wrench
- 5mm Allen Wrench
- 6mm Allen Wrench
- 5.5/7mm Combo Wrench
- 8/10mm Combo Wrench
- 12/14mm Combo Wrench
- 17/19mm Combo Wrench
- Dead Center MT#2
- Dead Center MT#3
- Fixed-Shaft Gear 40T
- 45-52 Round Nut Wrench
- Fuse

Test Run Lathe

Before continuing to Operate, test run the lathe to make sure it runs properly.

To test run the lathe:

1. Make sure that there is NOT a chuck key inserted in the chuck, and that the lathe eye-shield is in the down position over the lathe chuck. *Make this step a habit that you perform every time you start the lathe.*
2. Familiarize yourself with the lathe controls shown in Figure below. Make sure the STOP button is all the way down before continuing.



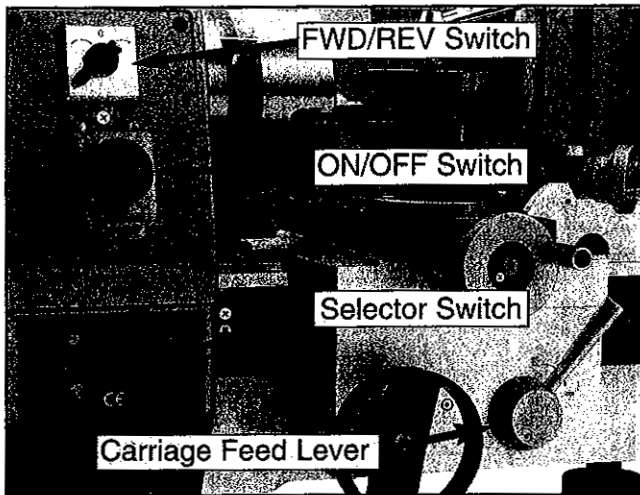
Lathe controls

6. Turn the FWD/REV switch clockwise. This should make the lathe chuck turn clockwise when you start the machine.
7. Flip up the emergency stop button to reveal the red and green ON/OFF buttons.
8. Stand to the side of the lathe chuck line of rotation, and press the green button to turn the lathe ON. If the carriage starts moving, immediately push the STOP button and disengage the carriage feed lever, then restart the lathe.
9. Allow the lathe to run for at least two full minutes to make sure it is running satisfactorily.
10. Press the lathe emergency stop button to turn the lathe OFF.
11. After the lathe chuck has come to a complete stop, turn the FWD/REV switch counter-clockwise.
12. Stand to the side of the lathe chuck line of rotation, and press the green button to turn the lathe ON.
13. Allow the lathe to run for at least two full minutes to make sure it is running satisfactorily.
14. Press the emergency stop button to turn the lathe OFF.
15. After the lathe has come to a complete stop, engage the carriage handwheel, rotate the handwheel to center the carriage on the bed, then disengage the handwheel.
16. Engage the automatic carriage feed lever.
17. Stand to the side of the lathe chuck line of rotation, and press the green button to turn the lathe ON.
18. Verify that the carriage moves along the bed, and press the emergency stop button to turn the lathe OFF.

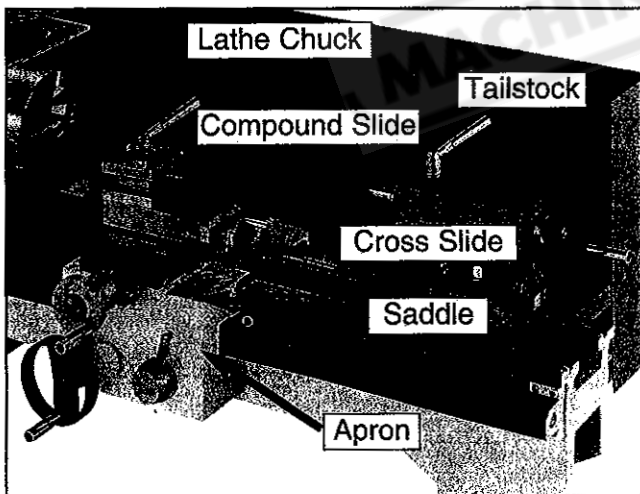
3. Plug the lathe into the power outlet!
4. Move the carriage feed lever up to the disengage mode. It is important that the carriage feed is NOT moving and is in the neutral position until later.
5. Turn the to left Selector switch to the "CUTTING" position. The lathe power indicator light should light up. Note—*If it does not light up, unplug the machine and check the fuse, your power source, and the connections on the machine before attempting to start the lathe. Call our service department if you cannot easily resolve the issue.*

OPERATIONS

To get the most out of your machine, please take the time to familiarize yourself with the various controls as shown in Figures below.



Lathe controls



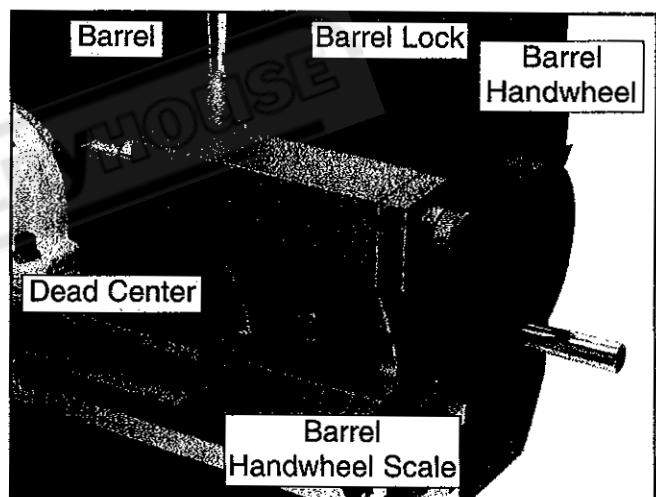
Lathe components

Installing Tailstock Dead Center

There are 2 dead centers included with the Lathe. The smaller dead center is a MT#2 (Morse Taper) and fits in the tailstock barrel.

To install the tailstock dead center:

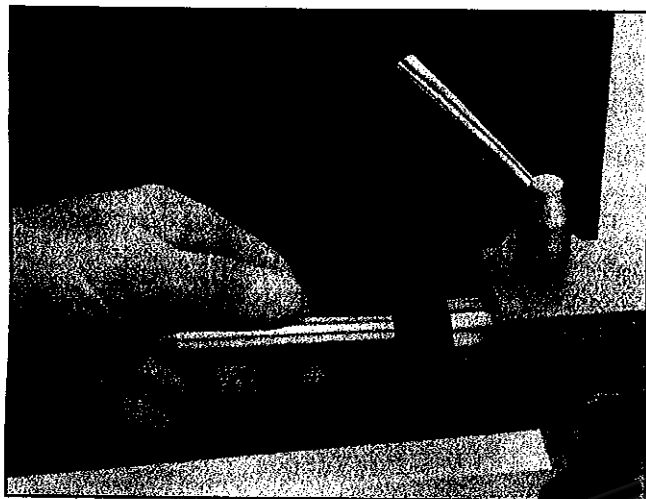
1. Familiarize yourself with the tailstock components shown below.



Tailstock components

2. Make sure that the MT#2 dead center and tailstock barrel are clean and free of any dirt, dust, grease or oil. These parts will last longer and remain accurate when properly cleaned before each assembly. Morse tapers will not interlock when dirt or oil are present on the mounting surfaces.

3. Insert the end of the dead center into the tailstock barrel, as shown below, until it seats tight enough that it will not rotate when turned by hand. *Note—do not worry about pushing the dead center into the barrel too far. The force of the center contacting a mounted workpiece will fully seat the taper when the handwheel is tightened.*
4. Tighten the barrel lock to prevent the tailstock barrel from moving during operation.



Inserting dead center into
tailstock barrel

Removing Tailstock Dead Center

To remove the tailstock dead center:

1. Use the barrel handwheel to move the tailstock barrel all the way back into the tailstock until the handwheel will no longer turn.
2. Pull the dead center out of the tailstock barrel.

Adjusting Tailstock Longitude Position

The tailstock on the Lathe clamps to the bed with the nut shown below. This nut allows the tailstock to be positioned longitudinally along the bed and then locked in place.



Tailstock clamp bolt

To adjust the tailstock longitude position:

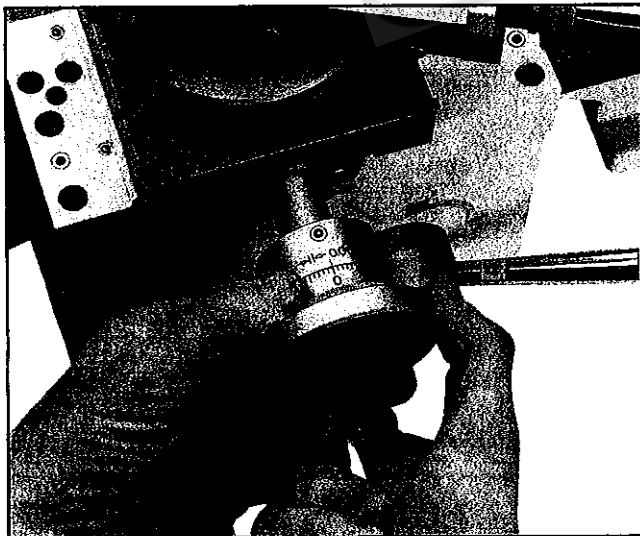
1. Use a 17mm wrench to loosen the tailstock clamp bolt.
2. With your hands, move the tailstock into position along the bed.
3. Tighten the tailstock clamp bolt to secure the tailstock into position.

Adjusting Cross Slide

The cross slide is only designed to move perpendicular to the longitudinal axis of the lathe, and it features a scale on the handwheel that displays graduations of one thousandths of 25mm (0.025mm).

To adjust the cross slide:

1. Using the handwheel, back the cross slide away from your starting point by at least 0.4mm, then move the cross slide forward to your starting point. *Note—this procedure will clear any free movement (or backlash) in the lead screw so your handwheel scale reading will be accurate.*
2. Hold the handwheel still and turn the scale so the "0" mark lines up with the ".000" mark on the cross slide, as shown in Figure below. As long as you avoid backlash by continuing to move the cross slide in the same direction, the scale on the handwheel will be accurate.



Adjusting handwheel scale

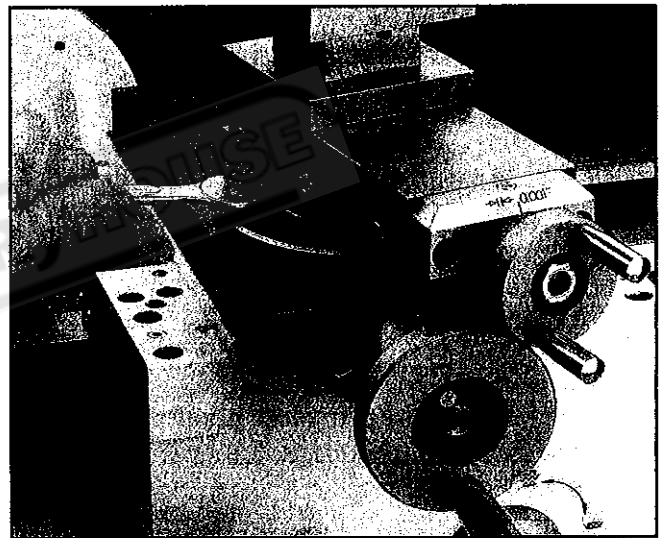
3. After moving the cross slide backward after your operation, remember to clear the backlash before moving the cross slide forward to the "0" mark for the next cut.

Adjusting Compound Slide

Similar to the cross slide, the compound slide features a scale that displays graduations of one thousandths of 25mm (0.025mm). Unlike the cross slide, the compound slide can be rotated to a set angle and then it can be moved back and forth along the axis of that angle.

To adjust the compound slide:

1. Loosen the compound slide bolts shown below to allow it to be rotated.

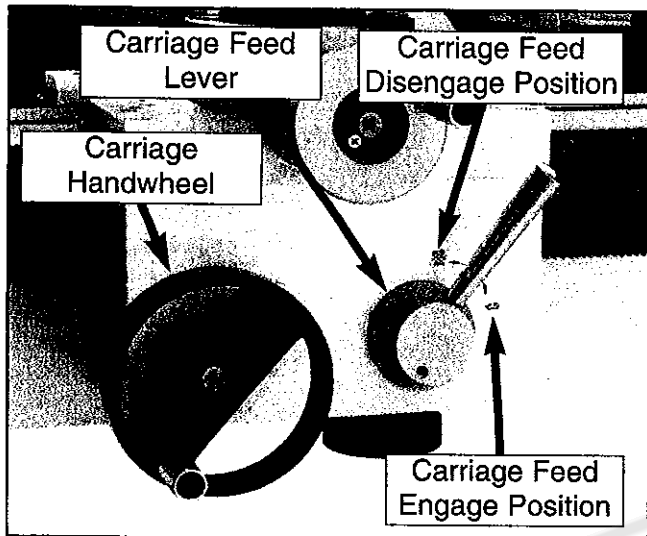


Compound slide bolts

2. Rotate the compound slide to the angle needed for your procedure.
3. Tighten the compound slide bolts, and check the angle again to make sure it did not move during tightening.
4. Use the compound slide handwheel to move the tool back and forth along the axis of the new angle. Similar to adjusting the cross slide handwheel, make sure the threads are engaging and all backlash has been cleared before you set the handwheel scale to "0", or it will not be accurate.

Adjusting Carriage

Like most lathes, the longitudinal movement of the carriage (carriage feed) on the Lathe can be controlled both manually and automatically. Before proceeding, take a closer look at the carriage controls shown below



Carriage controls

To use the automatic carriage feed:

1. Select the desired feed rate you need by looking at the charts on the lathe drive cover. When new, The Lathe is geared for a carriage feed rate of 0.1mm per revolution.

Use the manual feed handwheel to position the carriage to your desired starting point and set the scale on the handwheel to "0".

2. Move the carriage feed lever down to engage the half-nut; which in turn, makes the automatic carriage feed active.
3. Pull out the carriage manual feed handwheel to unlock it so it does not rotate when the automatic carriage feed is engaged.

The carriage feed will now move forward or backward, depending on which direction you have selected for lathe rotation.

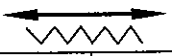
To move the carriage feed manually:

1. Push the carriage feed handwheel toward the carriage to engage the gear on the lead screw.
2. Rotate the handwheel clockwise to move the carriage right and rotate the handwheel counterclockwise to move the carriage left.
3. Set the handwheel scale in the same manner as described in the "Adjusting Cross Slide" instructions, and be sure to account for the backlash.

Understanding Gear Charts

The Lathe can be geared for a variety of different feed rates, so charts are placed on the drive cover of the lathe that explain how to set up the gear combinations for each type of carriage feed application. These applications are broken into two categories of charts—turning and threading.

Turning Chart—The speeds given on the turning chart represent standard speeds for most types of turning applications. See below.

mm / 〃		
	0.1	0.2
V D	33 80	50 80
F E	90 25	90 33
G L	G 90	G 90

Turning chart

Threading Charts—By arranging the gears as shown on the charts, you can set up the carriage feed to cut any of the thread pitches displayed. See below.

mm / 〃	0.4	0.5	0.6	0.7	0.8	1
G D	G 80	G 80	G 80	G 80	G 52	G 66
F E	30 80	30 60	30 50	42 60	60 80	60
L = G	75 G	80 G	80 G	80 G	75 G	G 80

mm / 〃	1.25	1.5	1.75	2	2.5	3
G D	G 52	G 66	G 80	G 70	G 80	G 80
F E	75 80	75 80	70 80	80	75 80	75 25
L = G	60 G	50 G	40 G	G 40	30 G	80 G

1"/n / 〃	10	11	14	19
G D	G 80	G 80	G 80	G 80
F E	66 40	60 40	75 50	50 40
L G	52 G	52 G	66 G	75 G

1"/n / 〃	20	22	40	44
G D	G 60	G 80	G 80	G 80
F E	66 80	60 80	33 52	30 52
L G	52 G	52 G	80 G	80 G

Threading charts

This is how to read the feed rate charts:

1. The box in the upper left-hand corner of each chart tells whether that chart represents carriage feed movement for standard or imperial threads. These boxes are shaded below.

		1.25		1.5	1.75
		G D	G 52	G 66	G 80
		F E	75 80	75 80	70 80
		L ⇒ G	60 G	50 G	40 G
		10		11	
		G D	G 80	G 80	
		F E	66 40	60 40	

The shaded box indicates whether the chart is for standard or imperial threads

2. The boxes in the top row of each chart (excluding the box in the left-hand corner) shows the thread pitches listed on that chart. These boxes are shaded below.

	0.4	0.5	0.6	0.7	0.8	
G D	G 80	G 80	G 80	G 80	G 52	G 66
F E	30 80	30 60	30 50	42 60	60 80	60
L ⇒ G	75 G	80 G	80 G	80 G	75 G	G 80

The shaded boxes show the thread pitches listed on this chart

3. The boxes on the left-hand column (excluding the box in the upper left-hand corner) represent the gear positions on each shaft. These boxes are shaded below and the shafts are called out with arrows.

	mm	0.4
Upper Adjustable Shaft	G 80	
Lower Adjustable Shaft	30 80	
Pivot Shaft	75 G	

The shaded boxes show the thread pitches listed on this chart

4. Each shaft has room for two positions to mount the gears—a forward position and a rear position. Figure below separates these positions into different shades for you to understand better.

mm	1.25	1.5	1.75
G 52	G 66	G 80	
75 80	75 80	70 80	
60 G	50 G	40 G	

↑ Rear
 ↑ Forward

The shaded boxes show the thread pitches listed on this chart

Both forward and rear positions must be filled on the shaft in order for the gears to work properly. A good example of this is the blank spot "G," as shown in the chart above. Although the chart shows this as a blank spot, there should actually be a spacer in this position on the machine. This spacer is only reflects ACTIVE gear positions.

NOTICE

On some setups, smaller gears must be used as spacers on the adjustable shafts.

5. The lines between gears "D" & "E" and gears "F" & "L" on the chart below indicate where the gears should be in mesh.

mm ⌘	0.4	0.5	0.6
G D	G 80	G 80	G 80
F E	30 80	30 60	30 50
L = G	75 G	80 G	80 G

The shaded boxes highlight the gear mesh lines

6. The boxes shaded below represent the actual gear combinations required to cut the thread pitches.

mm ⌘	1.25	1.5	1.75	2	2.5	3
G D	52 30	38 30	30 30	24 30	20 30	18 30
F E	30 30	25 30	20 30	18 30	15 30	12 30
L = G	60 30	50 30	40 30	30 30	20 30	15 30

The shaded boxes show specific gear setups

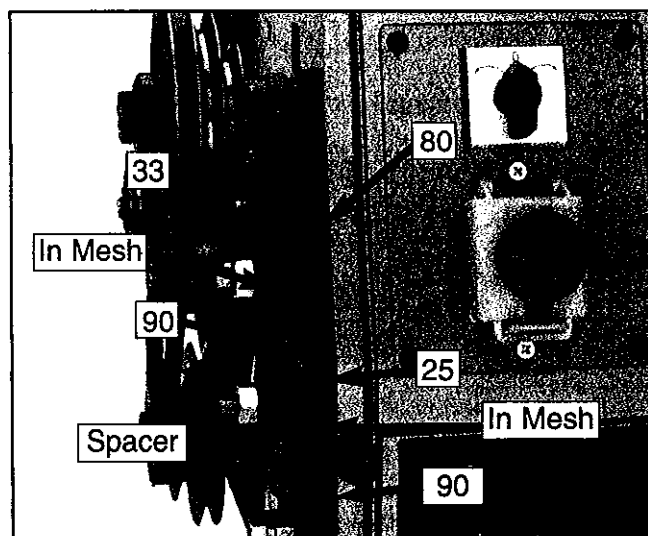
Here is a real-world example of a gear setup as shown on the chart:

When the lathe is shipped from the factory, it is geared for a carriage feed rate of 0.1mm per spindle revolution, or the gear combination shaded below.

mm ⌘		0.1	0.2
V D		33 80	50 80
F E		90 25	90 33
G L		90 90	G 90

Chart showing gear setup for 0.1mm

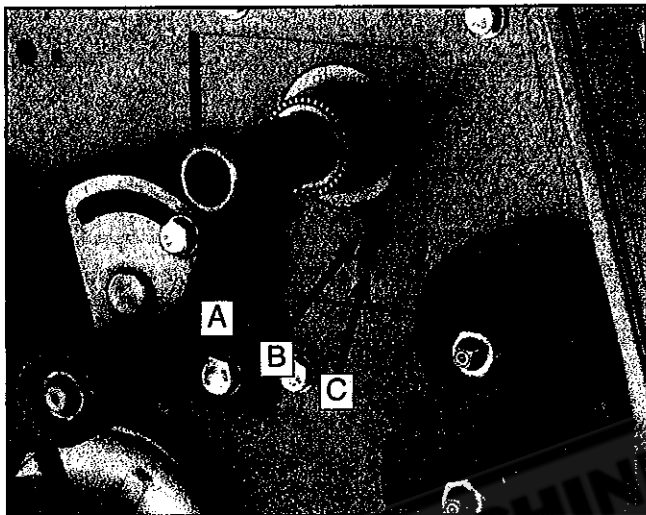
Figure below shows a profile of the 0.1mm feed rate actual gear setup on the machine. Notice how the gears mesh together in the locations displayed on the chart.



Actual gear setup for 0.1mm feed rate

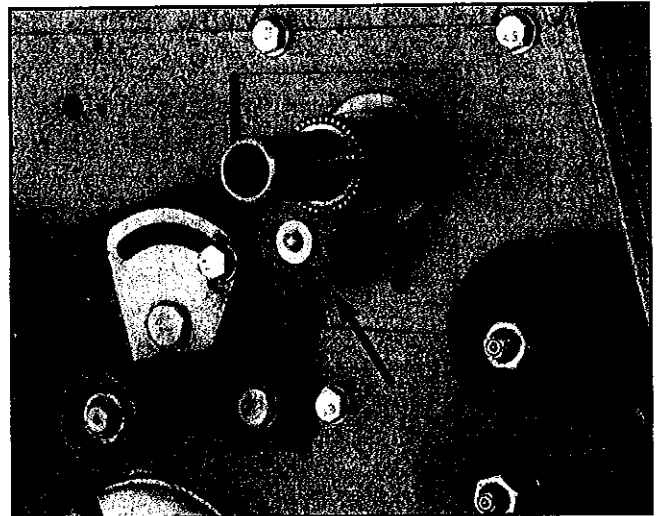
Reverse Threading

The Lathe can be setup to turn left-handed threads by adding another fixed-shaft gear and moving the original fixed-shaft gear to another mounting location. Figure below shows the three mounting locations for fixed-shaft gears (spindle drive pulley is removed for clarity). For illustration purposes, we label these mounting positions A, B & C.



Fixed-shaft gear mounting positions

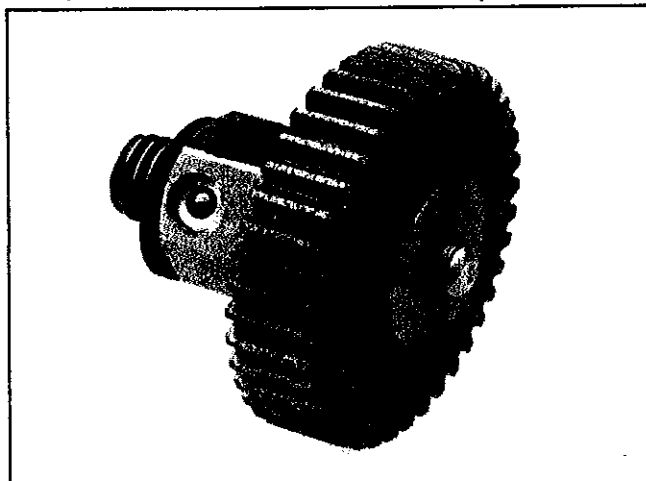
3. Thread the extra fixed-shaft gear into mounting location "A" as shown below.



Extra fixed-shaft gear mounted in position "A"

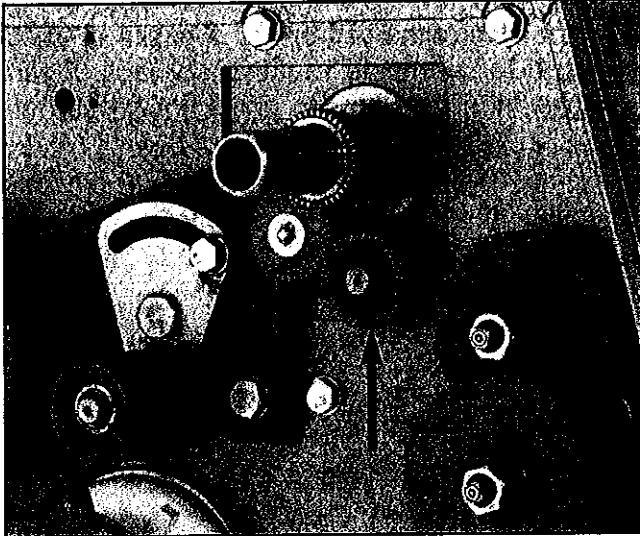
To set up the gears for reverse threading:

1. **Disconnect the lathe from the power source!**
2. Locate the extra fixed-shaft gear (shown in Figure below) in your inventory of loose parts.



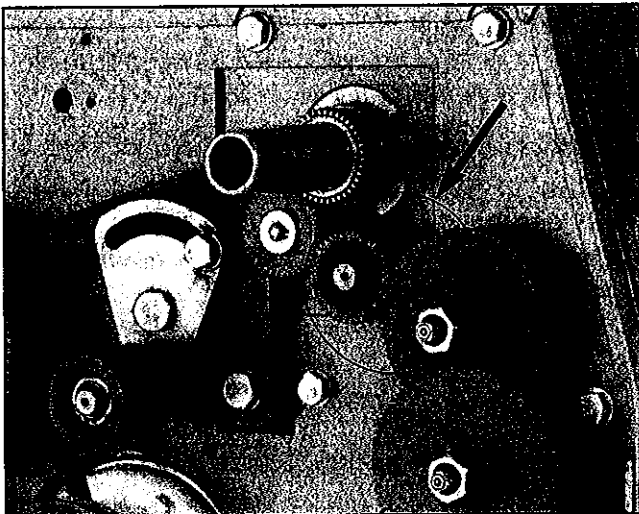
Extra fixed-shaft gear

4. When the machine is shipped, a fixed-shaft gear is in position "C." Remove that fixed-shaft gear from mounting location "C" and thread it into mounting location "B" as shown below.



Fixed-shaft gear mounted in position "B"

5. Loosen the cap screw on the gear bracket, and pivot the bracket so the top gear meshes with the fixed-shaft gear that is in position "B," as shown below.

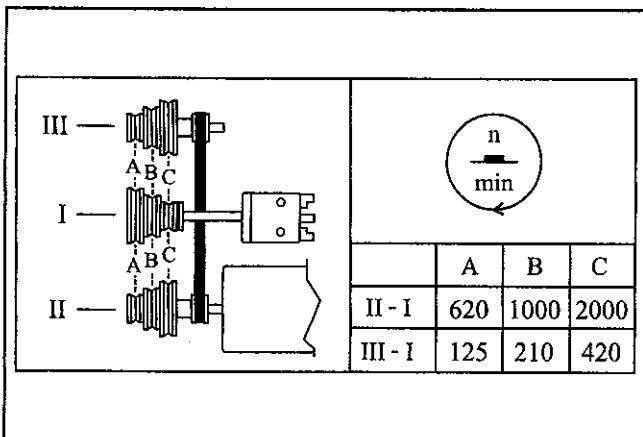


All gears in mesh for reverse threading operations

6. Tighten the cap screw in the gear bracket to keep it from pivoting.
7. Spin the lathe chuck by hand to ensure that the gears do not bind.
8. Replace the cover and test run the machine before proceeding with your specific operation.

Changing Speeds

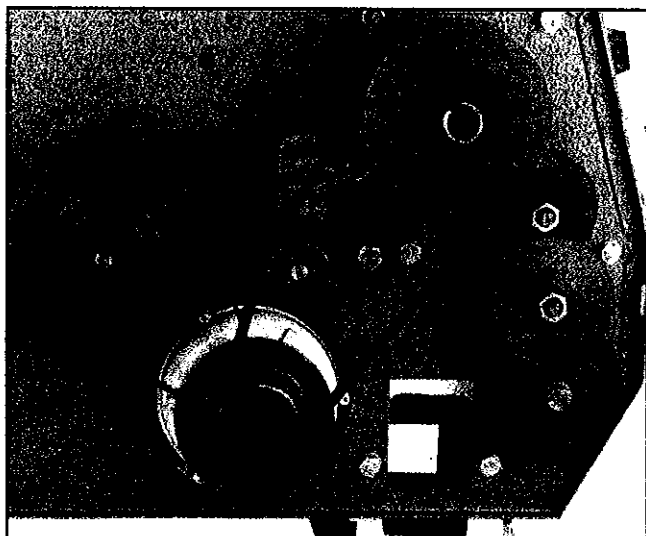
The Lathe features 6 speeds—125, 210, 420, 620, 1000 & 2000 RPM. (May have some small changes due to the power frequency.) These speeds can be changed by positioning the V-belt in different sheaves on the drive pulleys, as illustrated in the speed change chart on the machine label or in below.



Speed change chart

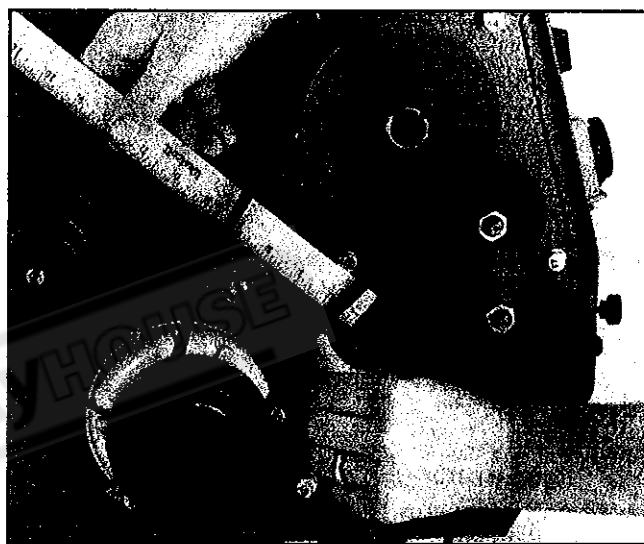
To change the belt position on the pulleys:

1. **Disconnect the lathe from the power source!**
2. Open the drive belt cover.
3. Loosen the bolt on the tensioner bracket (shown in Figure below) with a 19mm wrench.



Tensioner adjustment bolt

4. Move the pulley bracket away from the belt.
5. Position the belt into the pulley sheaves that dictate the speed required for your operation.
6. Move the pulley bracket into the belt and tension it until there is about 12mm deflection on the side of the belt that is opposite of where the tensioner is making contact. *Figure below shows how to check for proper tension by using a ruler and your thumb. Note—only moderate pressure is needed to check belt tension!*



Checking for proper V-belt tension

7. Replace the drive belt cover.

CAUTION

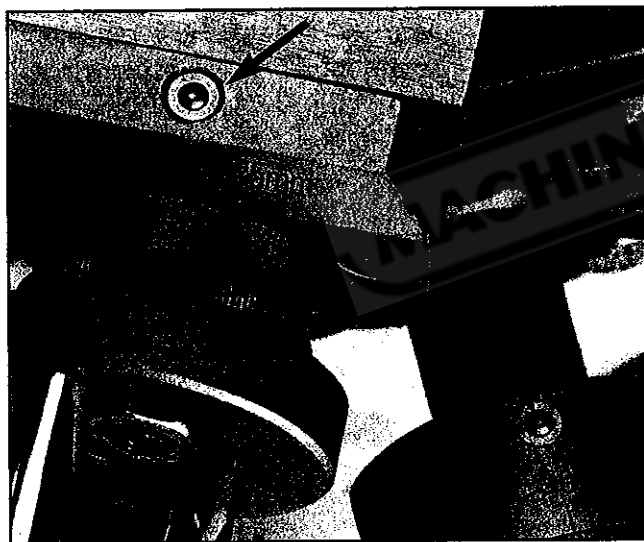
Some threading operations may damage the lead screw if performed at high speeds. Always use the slowest speed possible for your particular operation!

MAINTENANCE

Lubrication

For lubricating your machine, we recommend that you use a manual oiler (oil can) filled with ISO 68 or SAE 20W non-detergent oil or similar lubricant.

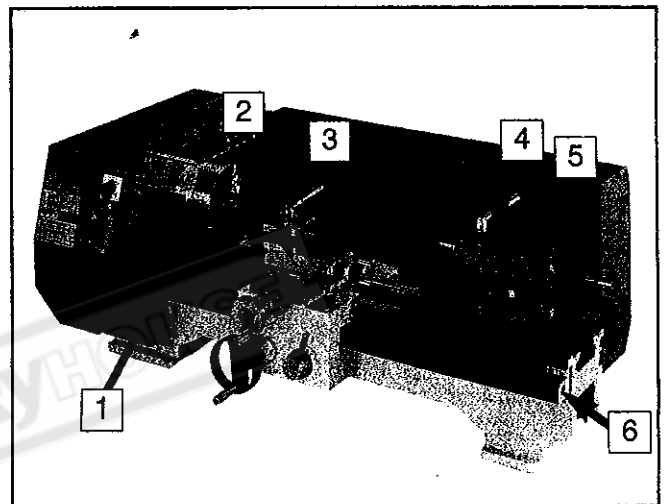
Ball fittings—Shown in Figure below, ball fittings are responsible for the majority of the machine lubrication. To lubricate ball fittings, depress the ball with the tip of the oil can nozzle and squirt a little oil inside the fitting. Make sure to clean the outside of the ball fitting before and after each use to keep out contaminants.



Lubrication ball fittings

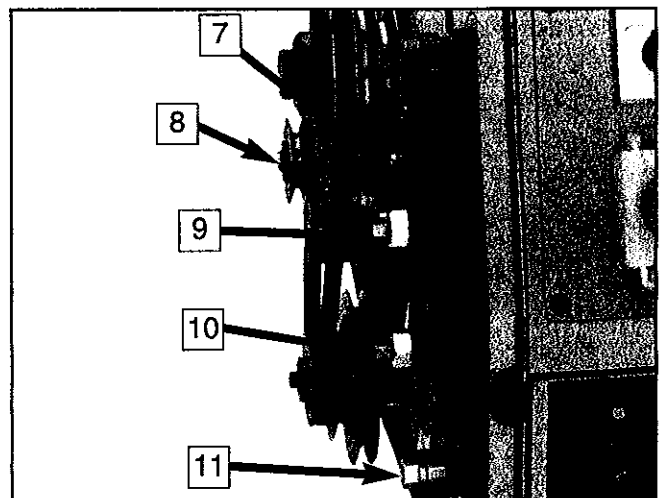
Ball Fitting Lubrication Points—Lubricate the following areas every 8 hours of actual use:

1. Left Leadscrew Support
2. Compound Slide
3. Compound Slide Leadscrew
4. Tailstock Barrel
5. Tailstock Leadscrew
6. Right Leadscrew Support



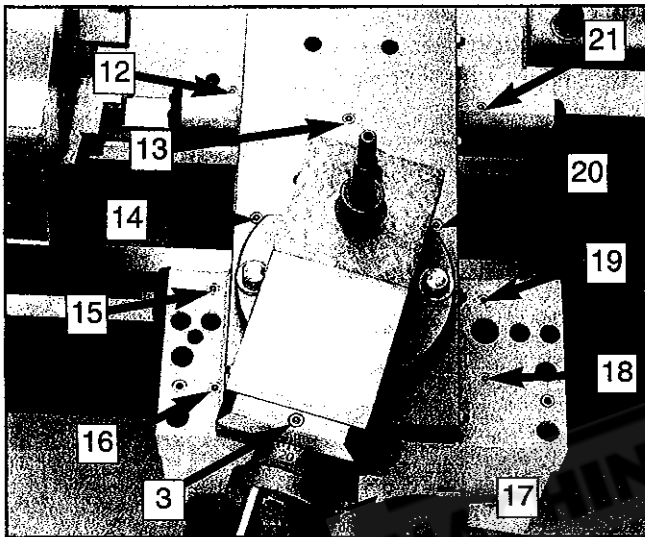
Ball fitting lubrication points

7. Fixed-Shaft Gear
8. Synchronized Counter Pulley
9. Upper Adjustable Shaft
10. Lower Adjustable Shaft
11. Pivot Shaft



Ball fitting lubrication points

- 12. Bed Guide
- 13. Cross Slide Leadscrew
- 14. Bed Guide
- 15. Bed Guide
- 16. Apron
- 17. Cross Slide Leadscrew Support
- 18. Apron
- 19. Bed Guide
- 20. Bed Guide
- 21. Bed Guide



Ball fitting lubrication points

Gears—Apply a minimal amount of oil to the teeth of the end gears after assembly and each 8 hours of actual use. Avoid getting oil on the belt or pulleys when lubricating. Also, regularly apply lubrication to all the ball fittings drive box.

Long Leadscrew—Apply a minimal amount directly on the rack every 8 hours of actual use.

Carriage Rack—Apply a minimal amount directly on the rack every 8 hours of actual use.

Checking V-Belt

To ensure optimum power transmission from the motor, the V-belts must be in good condition and must operate under proper tension. The belts should be checked for cracks, fraying, and wear at least every 3 months—more often if the machine is used daily.

The check the V-belt:

1. **Unplug the lathe from its power source!**
2. Open the drive cover.
3. Note the condition of the V-belt. If the V-belt is cracked, frayed, or glazed; it should be replaced.

SERVICE ADJUSTMENTS

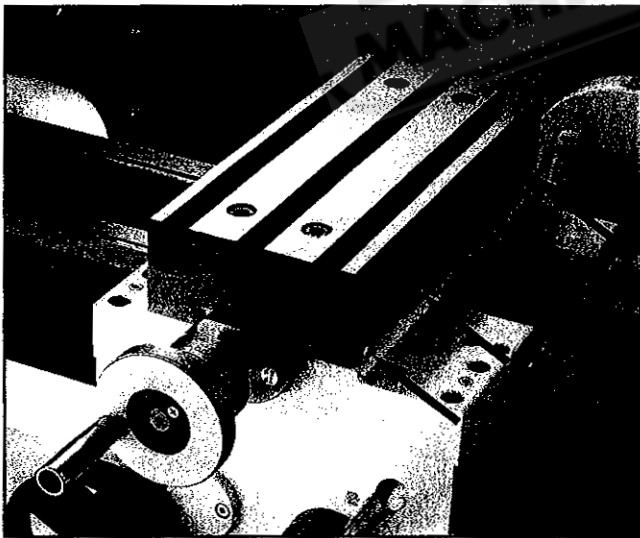
Gibs

There are three gib adjustments for the lathe—the cross-slide gib, the compound slide gib and the apron gib.

NOTICE

When adjusting gibs, keep in mind that the goal of gib adjustment is to remove unnecessary 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, leadscrew and nut.

Cross-slide Gib—The gib on the cross-slide is adjusted by tightening or loosening the 4 gib screws located on the right-hand side of the slide. See Figure below. Before adjusting the gib screws, loosen their jam nuts.



Cross slide gib screws

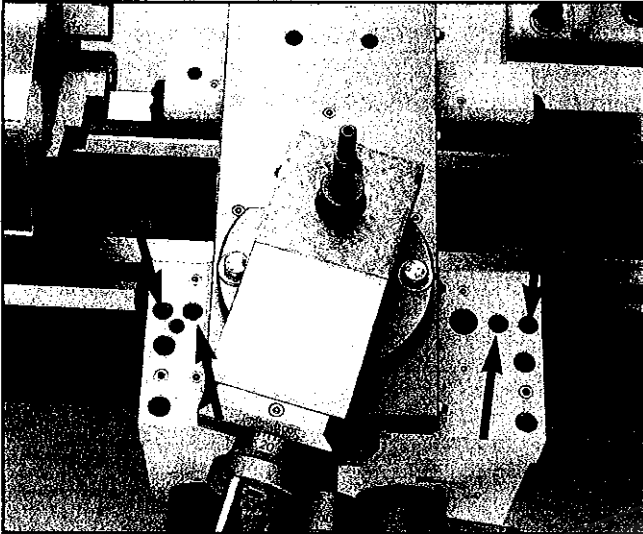
The gib is held in place by the setscrews. **DO NOT overtighten.** The gib is properly adjusted when a slight drag is detected while turning the hand crank. This drag should be evenly distributed among the 4 setscrews, so adjust each screw until a slight drag is detected while the hand crank is turned.

Compound Gib—The gib on the compound has 3 screws that maintain tension on the slide. These screws are held in place with retaining nuts. To adjust, loosen the retaining nuts and then tighten the screws as needed. When proper tension has been detected by turning the hand crank on the compound, tighten the retaining nuts while maintaining the position of the screw with an Allen® wrench as in Figure below.

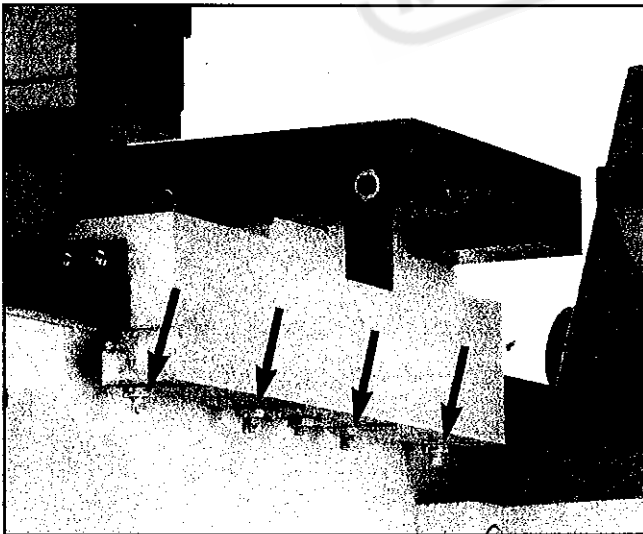


Compound slide gib screws

Saddle Gibs—There are 4 tensioning screws for both the front and rear saddle gibs. Before making adjustments to the saddle gib, ensure that the front lock lever is loose by turning it counter-clockwise. See Figures below. It is important the screws are tightened evenly. A slight drag should be detected while turning the hand crank at the end of the lathe.



Front saddle gib screws



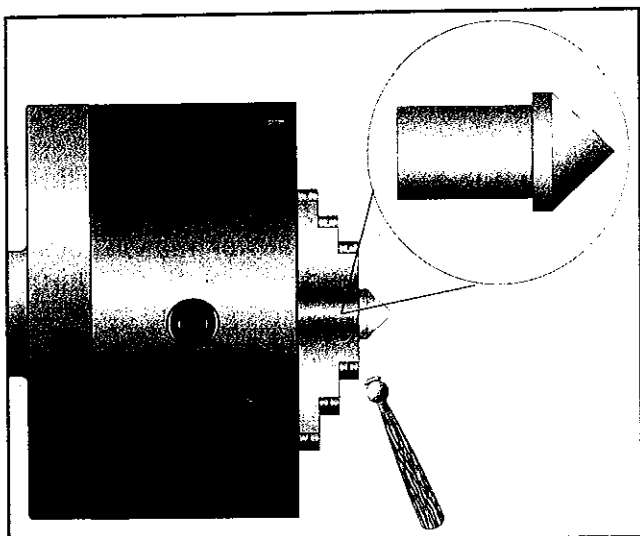
Rear saddle gib screws

Aligning Tailstock

The tailstock on the Lathe is aligned with the headstock at the factory. However, at times you may wish to misalign the tailstock for certain operations; then, realign it when you are finished.

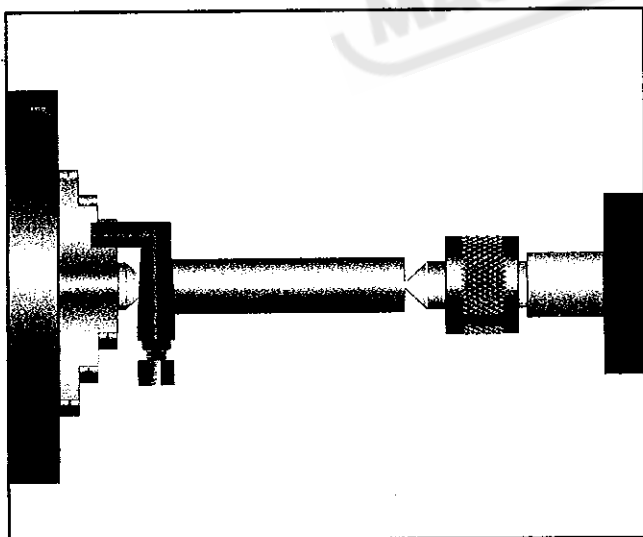
To align the tailstock:

1. Center drill a 150mm long piece of round cold rolled stock on both ends. Set it aside for use in **step 4**.
2. Make a dead center by turning a shoulder to make a shank, then flip the piece over in the chuck and turn a 60° point. See Figure below. *Note—As long as it remains in the chuck, the point of your center will be accurate to your spindle axis. Keep in mind that the point will have to be refinished whenever it is removed and returned to the chuck.*



Finished dead center

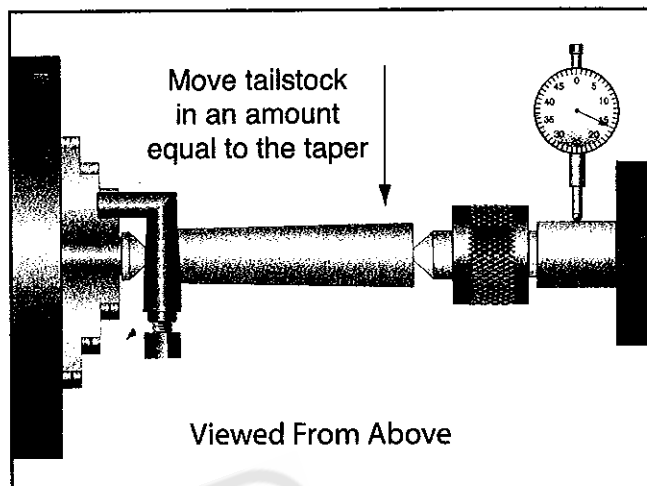
3. Place a center in your tailstock.
4. Attach a lathe dog to the bar stock and mount it between the centers. See Figure below.
5. Turn approximately 0.25mm off of the diameter.



Bar stock mounted on centers

NOTICE

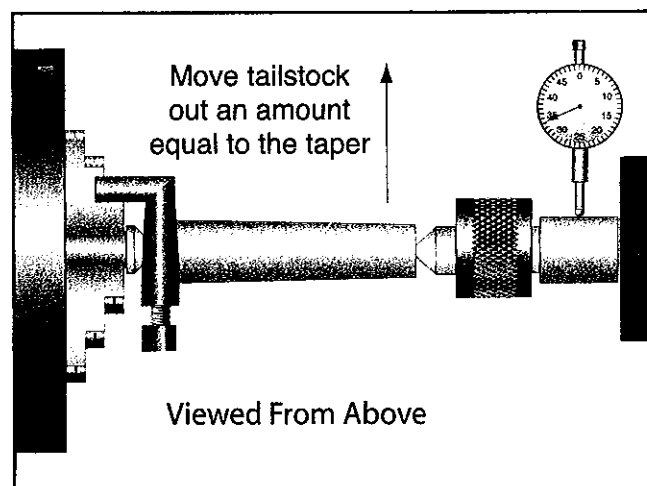
Before making adjustments to the tailstock, mount a dial indicator so that the dial plunger is on the tailstock barrel. See Figure below.



Viewed From Above

Adjusting for headstock end taper

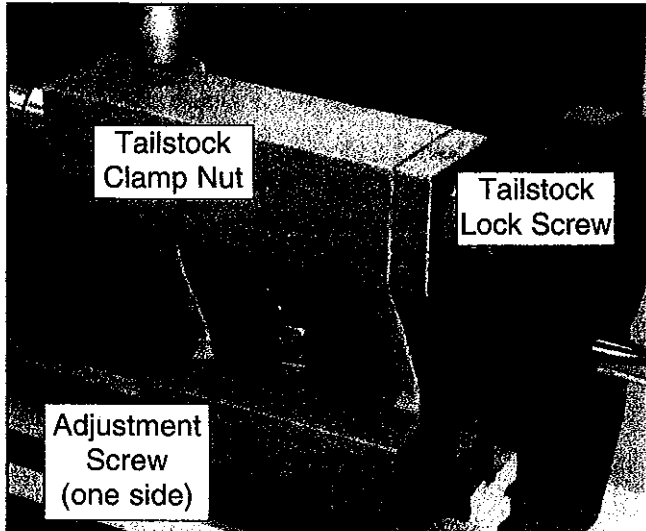
6. Measure the workpiece with a micrometer. If the stock is fat at the tailstock end, the tailstock needs to be moved toward you the amount of the taper. See **Figure above**. If the stock is thinner at the tailstock end, the tailstock needs to be moved away from the operator by at least the amount of the taper. See **Figure below**.



Viewed From Above

Adjusting for tailstock end taper

7. Loosen the tailstock clamp nut and the lock screw shown in Figure below.



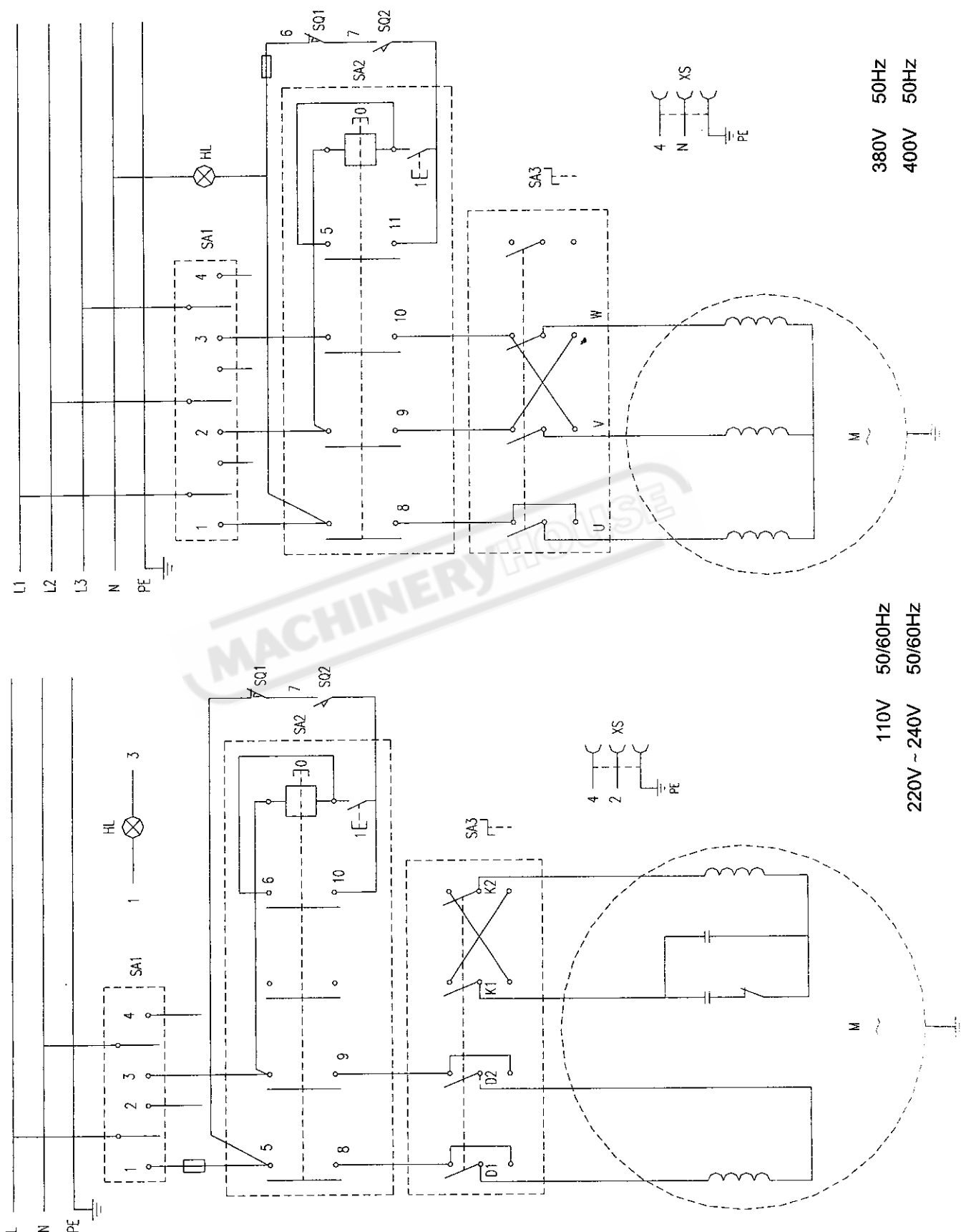
Tailstock offset adjustment screw

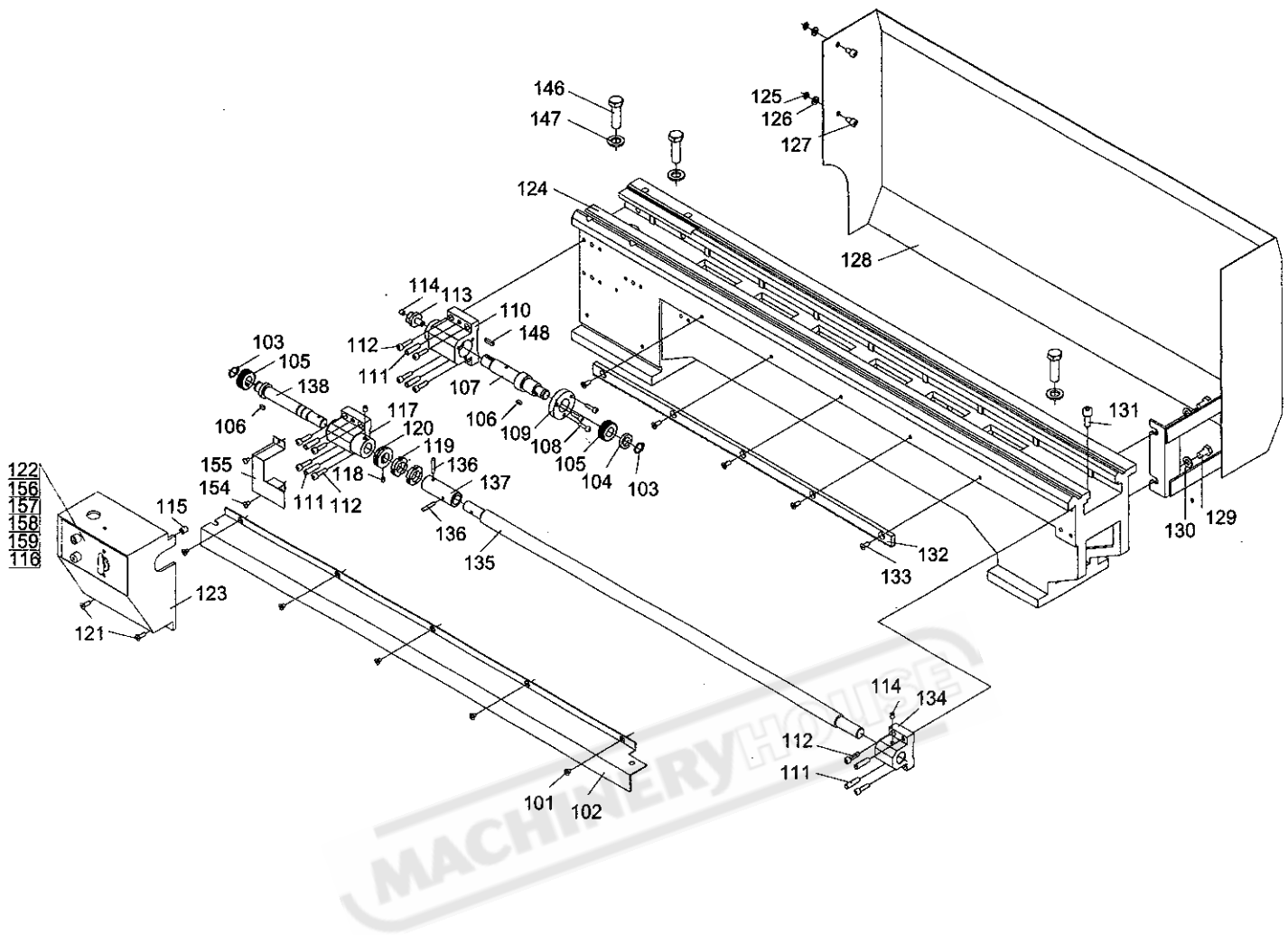
Bearing Preload

This lathe is shipped from the factory with the bearing preload already set. If the preload requires resetting for whatever reason, please contact our service department for further instructions.

8. Use the tailstock adjustment screws on both sides to adjust move the tailstock offset by the amount of the taper.
9. Tighten the clamp nut, lock screw and adjustment screws. Be careful not to move the tailstock out of position when tightening the adjustment screws.
10. Turn another 0.25mm off of the stock and check for taper. Repeat **steps 7-9** as necessary until the desired amount of accuracy is achieved.

Wiring Diagram



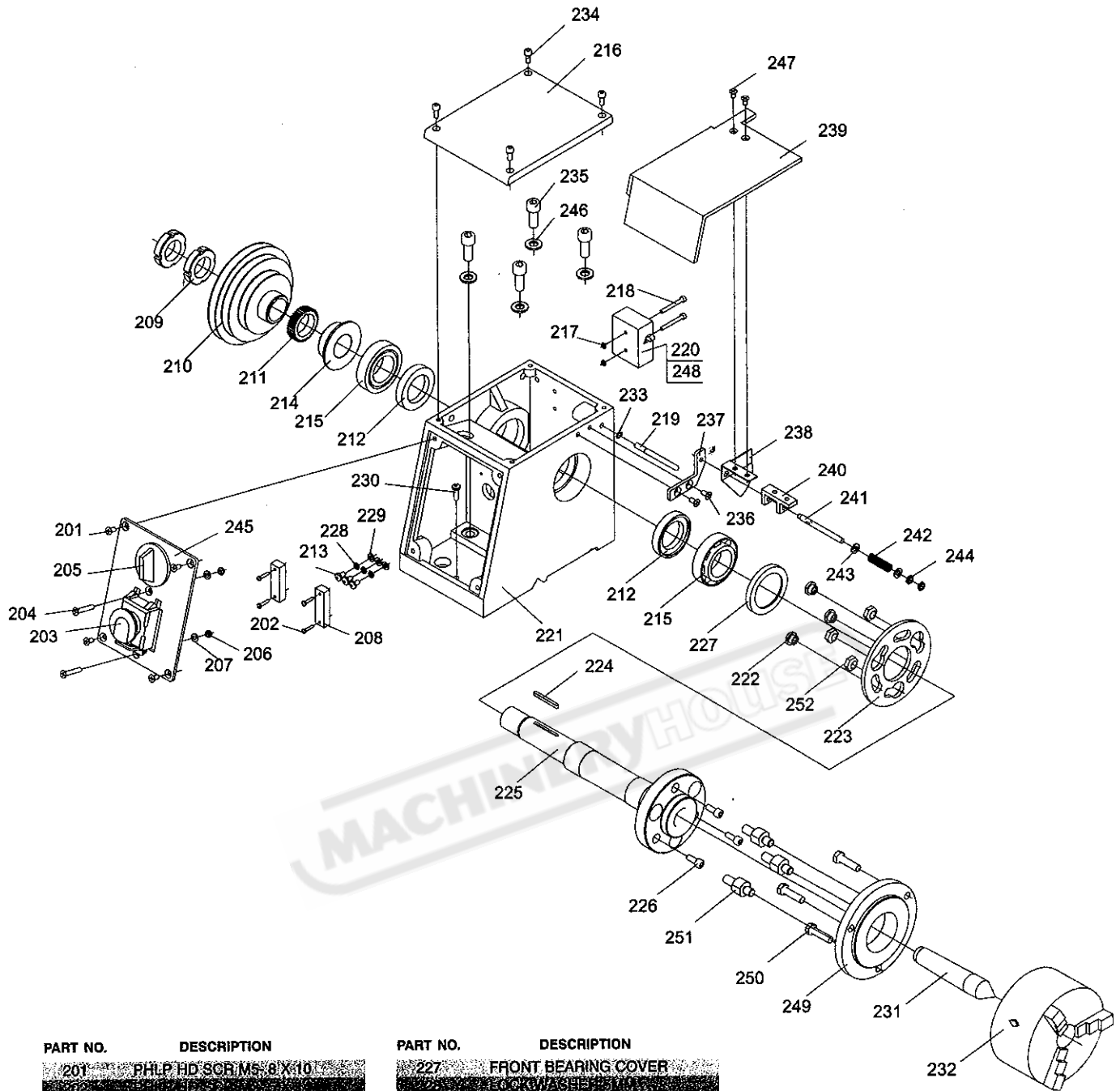


PART NO.	DESCRIPTION
101	PHLP HD SCR M5-8 X 8
102	LEADSCREW COVER
103	EXT RETAINING RING 14MM
104	CHANGE GEAR BRACE
105	SMALL GEAR
106	KEY 2 X 4 X 16
107	CHANGE GEAR SHAFT
108	PHLP HD SCR M5-8 X 16
109	ADJUSTING DISC
110	GEAR SUPPORT
111	TAPER PIN 6 X 26
112	BOLT (WITH SHOULDER)
113	DISC
114	PHLP HD SCR M5-8 X 10
115	BLOCK FOR SWITCH
116	PHLP HD SCR M5-8 X 10
117	LEADSCREW SUPPORT L
118	PHLP HD SCR M5-8 X 10
119	ROUND NUT
120	STEEL WASHER
121	PHLP HD SCR M5-8 X 14
122	SWITCH
123	SHAFT COVER
124	BRACKET
125	HEX NUT M6-1.0
126	FLAT WASHER 6MM
127	HEX BOLT M6-1 X 10
128	MAIN FRAME
129	PHLP SCR M8-1.25 X 15
130	FLAT WASHER 8MM
131	PHLP SCR M8-1.25 X 20
132	PHLP HD SCR M5-8 X 12
133	PHLP HD SCR M5-8 X 12
134	FLAT PIN 2 X 10
135	LONG LEADSCREW
136	FLAT PIN 2 X 10
137	SLEEVE JOINT
138	FLAT PIN 2 X 10
139	FLAT PIN 2 X 10
140	FLAT PIN 2 X 10
141	FLAT PIN 2 X 10
142	FLAT PIN 2 X 10
143	FLAT PIN 2 X 10
144	FLAT PIN 2 X 10
145	FLAT PIN 2 X 10
146	HEX BOLT M12-1.75 X 40
147	FLAT WASHER 12MM
148	KEY 4 X 4 X 16
149	PHLP HD SCR M5-8 X 10
150	PHLP HD SCR M5-8 X 10
151	PHLP HD SCR M5-8 X 10
152	PHLP HD SCR M5-8 X 10
153	PHLP HD SCR M5-8 X 10
154	PHLP HD SCR M5-8 X 10
155	SMALL GEAR PROTECT
156	GREEN TAPE
157	FUSE BOX
158	WIRE
159	SELECTOR SWITCH

PART NO.	DESCRIPTION
101	PHLP HD SCR M5-8 X 8
102	LEADSCREW COVER
103	EXT RETAINING RING 14MM
104	CHANGE GEAR BRACE
105	SMALL GEAR
106	KEY 2 X 4 X 16
107	CHANGE GEAR SHAFT
108	PHLP HD SCR M5-8 X 16
109	ADJUSTING DISC
110	GEAR SUPPORT
111	TAPER PIN 6 X 26
112	BOLT (WITH SHOULDER)
113	DISC
114	PHLP HD SCR M5-8 X 10
115	BLOCK FOR SWITCH
116	PHLP HD SCR M5-8 X 10
117	LEADSCREW SUPPORT L
118	PHLP HD SCR M5-8 X 10
119	ROUND NUT
120	STEEL WASHER
121	PHLP HD SCR M5-8 X 14
122	SWITCH
123	SHAFT COVER
124	BRACKET

PART NO.	DESCRIPTION
125	HEX NUT M6-1.0
126	FLAT WASHER 6MM
127	HEX BOLT M6-1 X 10
128	MAIN FRAME
129	PHLP SCR M8-1.25 X 15
130	FLAT WASHER 8MM
131	PHLP SCR M8-1.25 X 20
132	PHLP HD SCR M5-8 X 12
133	PHLP HD SCR M5-8 X 12
134	FLAT PIN 2 X 10
135	LONG LEADSCREW
136	FLAT PIN 2 X 10
137	SLEEVE JOINT
138	FLAT PIN 2 X 10
139	FLAT PIN 2 X 10
140	FLAT PIN 2 X 10
141	FLAT PIN 2 X 10
142	FLAT PIN 2 X 10
143	FLAT PIN 2 X 10
144	FLAT PIN 2 X 10
145	FLAT PIN 2 X 10
146	HEX BOLT M12-1.75 X 40
147	FLAT WASHER 12MM
148	KEY 4 X 4 X 16
149	PHLP HD SCR M5-8 X 10
150	PHLP HD SCR M5-8 X 10
151	PHLP HD SCR M5-8 X 10
152	PHLP HD SCR M5-8 X 10
153	PHLP HD SCR M5-8 X 10
154	PHLP HD SCR M5-8 X 10
155	SMALL GEAR PROTECT
156	GREEN TAPE
157	FUSE BOX
158	WIRE
159	SELECTOR SWITCH

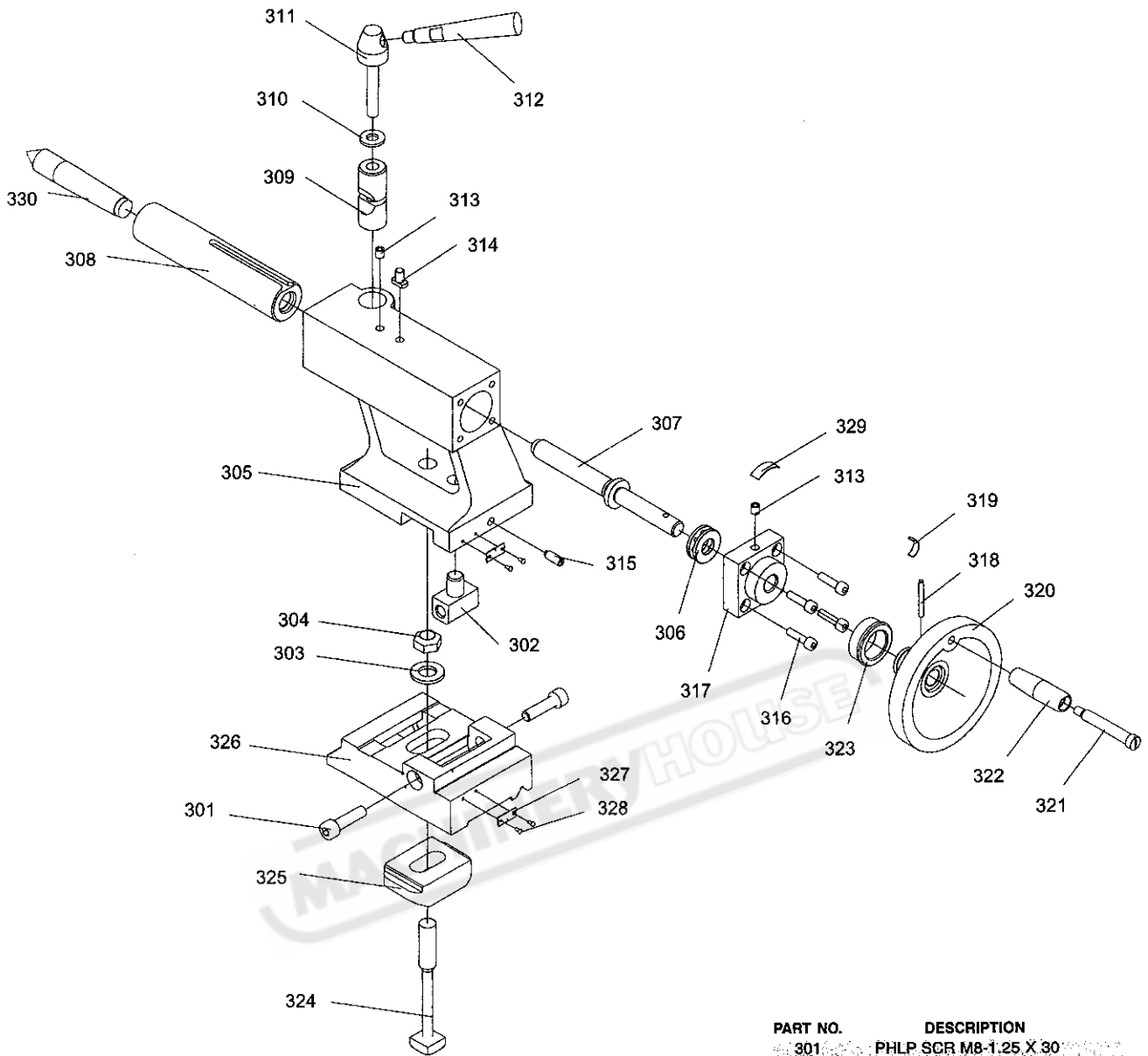
PART NO.	DESCRIPTION
125	HEX NUT M6-1.0
126	FLAT WASHER 6MM
127	HEX BOLT M6-1 X 10
128	MAIN FRAME
129	PHLP SCR M8-1.25 X 15
130	FLAT WASHER 8MM
131	PHLP SCR M8-1.25 X 20
132	PHLP HD SCR M5-8 X 12
133	PHLP HD SCR M5-8 X 12
134	FLAT PIN 2 X 10
135	LONG LEADSCREW
136	FLAT PIN 2 X 10
137	SLEEVE JOINT
138	FLAT PIN 2 X 10
139	FLAT PIN 2 X 10
140	FLAT PIN 2 X 10
141	FLAT PIN 2 X 10
142	FLAT PIN 2 X 10
143	FLAT PIN 2 X 10
144	FLAT PIN 2 X 10
145	FLAT PIN 2 X 10
146	HEX BOLT M12-1.75 X 40
147	FLAT WASHER 12MM
148	KEY 4 X 4 X 16
149	PHLP HD SCR M5-8 X 10
150	PHLP HD SCR M5-8 X 10
151	PHLP HD SCR M5-8 X 10
152	PHLP HD SCR M5-8 X 10
153	PHLP HD SCR M5-8 X 10
154	PHLP HD SCR M5-8 X 10
155	SMALL GEAR PROTECT
156	GREEN TAPE
157	FUSE BOX
158	WIRE
159	SELECTOR SWITCH


PART NO. DESCRIPTION

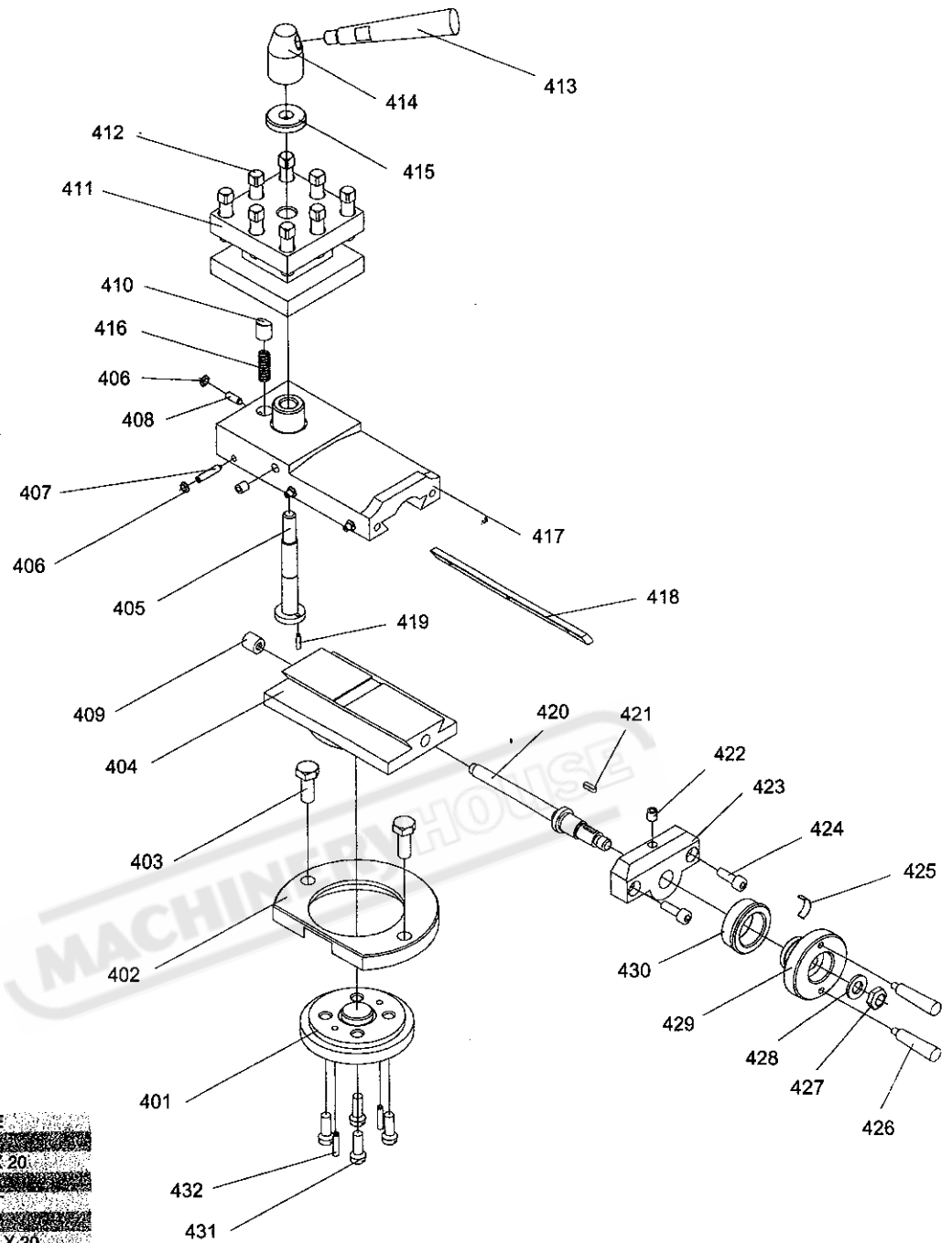
201	PHLP HD SCR M5-8 X 10
203	POWER SWITCH W/STOP
205	FWD/REV SWITCH
207	FLAT WASHER 5MM
209	ROUND NUT M27-1.5
211	SPINDLE GEAR
213	PHLP HD SCR M5-8 X 8
215	BEARING 32007
217	HEX NUT M40-7
219	SPIN SHAFT
221	HEAD STOCK BODY
223	ROTATABLE SPACER
225	SPINDLE

PART NO. DESCRIPTION

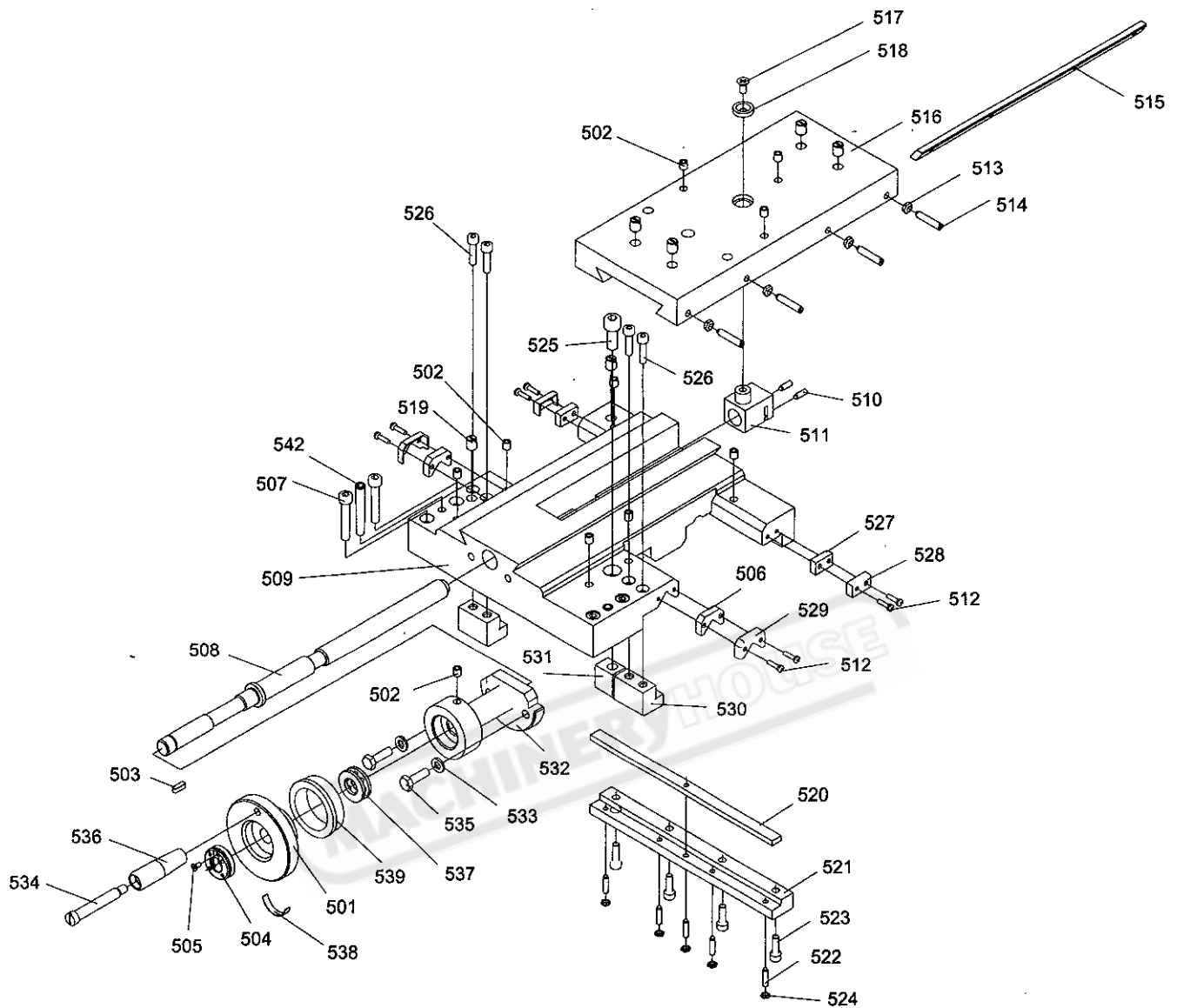
227	FRONT BEARING COVER
229	EXT TOOTH WASHER M5
231	SPINDLE CENTER MT3
233	EXT RETAINING RING 6MM
235	PHLP SCR M10-1.5 X 25
237	SUPPORT
239	CHUCK GUARD
241	SMALL SHAFT
243	FLAT WASHER 6MM
245	PLATE FOR SWITCHES
247	PHLP HD SCR M5-8 X 8
249	3-JAW CHUCK FLANGE
251	PLUG BOLT



PART NO.	DESCRIPTION
301	PHLP SCR M8-1.25 X 30
302	TAILSTOCK T NUT
303	FLAT WASHER 12MM
304	HEX NUT M12 X 1.75
305	TAILSTOCK BODY
306	BEARING END
307	TAILSTOCK LEADSCREW
308	TAILSTOCK CLAMP
309	TUBULAR CLAMP
310	FLAT WASHER 8MM
311	CLAMP BOLT
312	HANDWHEEL
313	OIL CUP
314	HEX NUT M12 X 1.75
315	PHLP HD SCR M6-1 X 16
316	PHLP HD SCR M6-1 X 20
317	TAILSTOCK END COVER
318	CYLINDER PIN 1.30
319	SPRING BOW
320	HAND WHEEL
321	HANDLE BOLT
322	TAILSTOCK BOLT
323	INDEX RING
324	SCREW BOLT M12 X 100
325	TAILSTOCK CLAMP PLATE
326	BASE
327	ZERO POSITION LABEL
328	INDEX RING
329	INDICATE LABEL
330	TAILSTOCK CENTERING



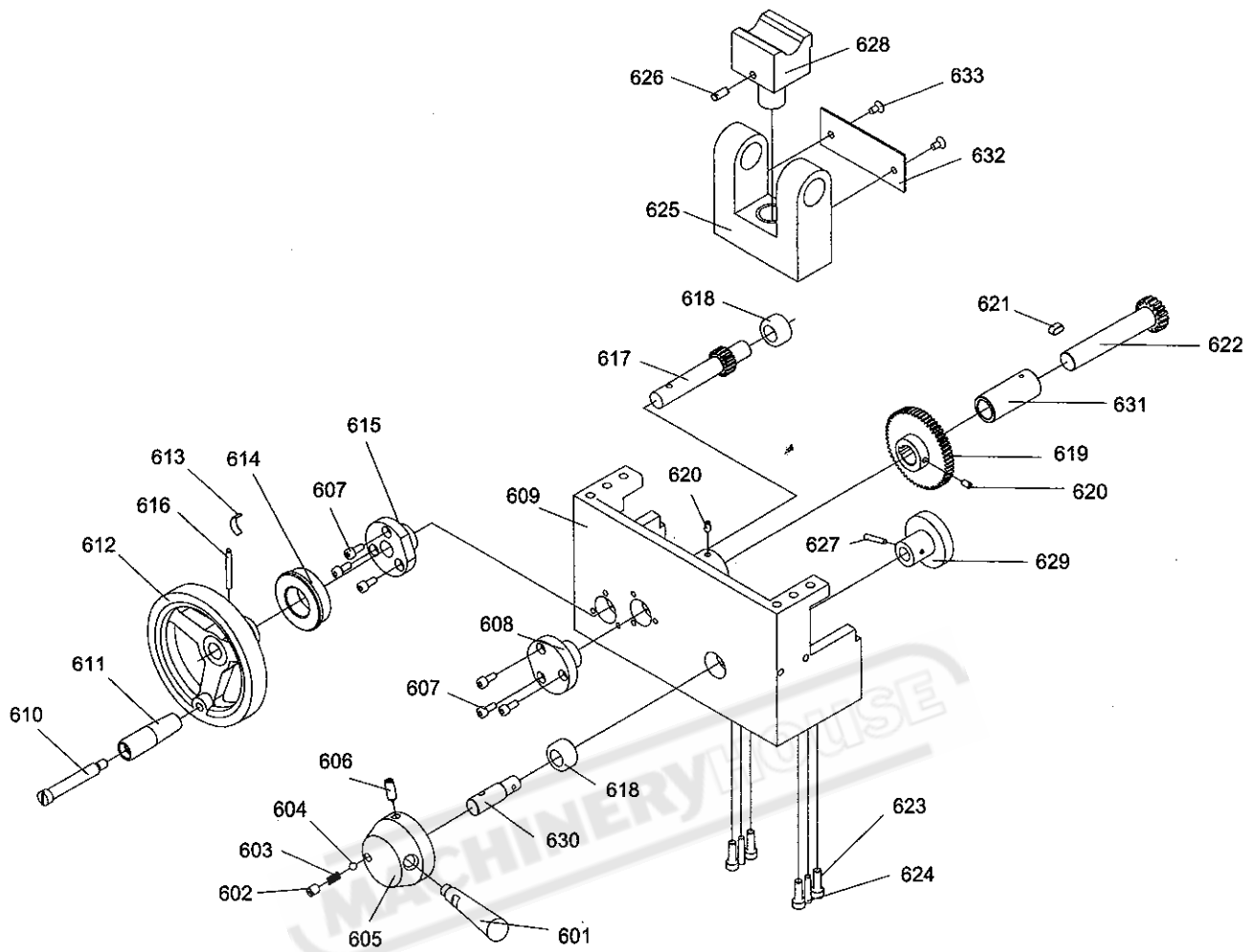
PART NO.	DESCRIPTION
401	CUTTER REST BASE
402	CLAMP DISC
403	HEX BOLT M8-1.25 X 20
404	CUTTER REST DISC
405	CUTTER REST BOLT
406	HEX NUT M8-1.25
407	PHLP HD SCR M4-7 X 20
408	PHLP HD SCR M4-7 X 20
409	OIL CUP 10
410	FIXING RING
411	SQUARE CUTTER REST
412	PHLP HD SCR M8-1.25 X 30
413	HANDLE
414	HANDLE BASE
415	HANDLE SPACER
416	SPRING WASHER
417	CUTTER REST CARRIAGE
418	BRASS RING
419	CYLINDER PIN 3 X 10
420	CARRIAGE LEAD SCREW
421	KEY 3 X 3 X 10
422	OIL CUP 6
423	LEADSCREW SUPPORT
424	PHLP HD SCR M6-1 X 20
425	SPRING PLATE
426	WASHER
427	HEX NUT M8-1.25
428	BRASS WASHER 2MM
429	CARRIAGE HANDWHEEL
430	INDEX RING
431	PHLP HD SCR M6-1 X 16
432	CYLINDER PIN 3 X 10


PART NO. DESCRIPTION

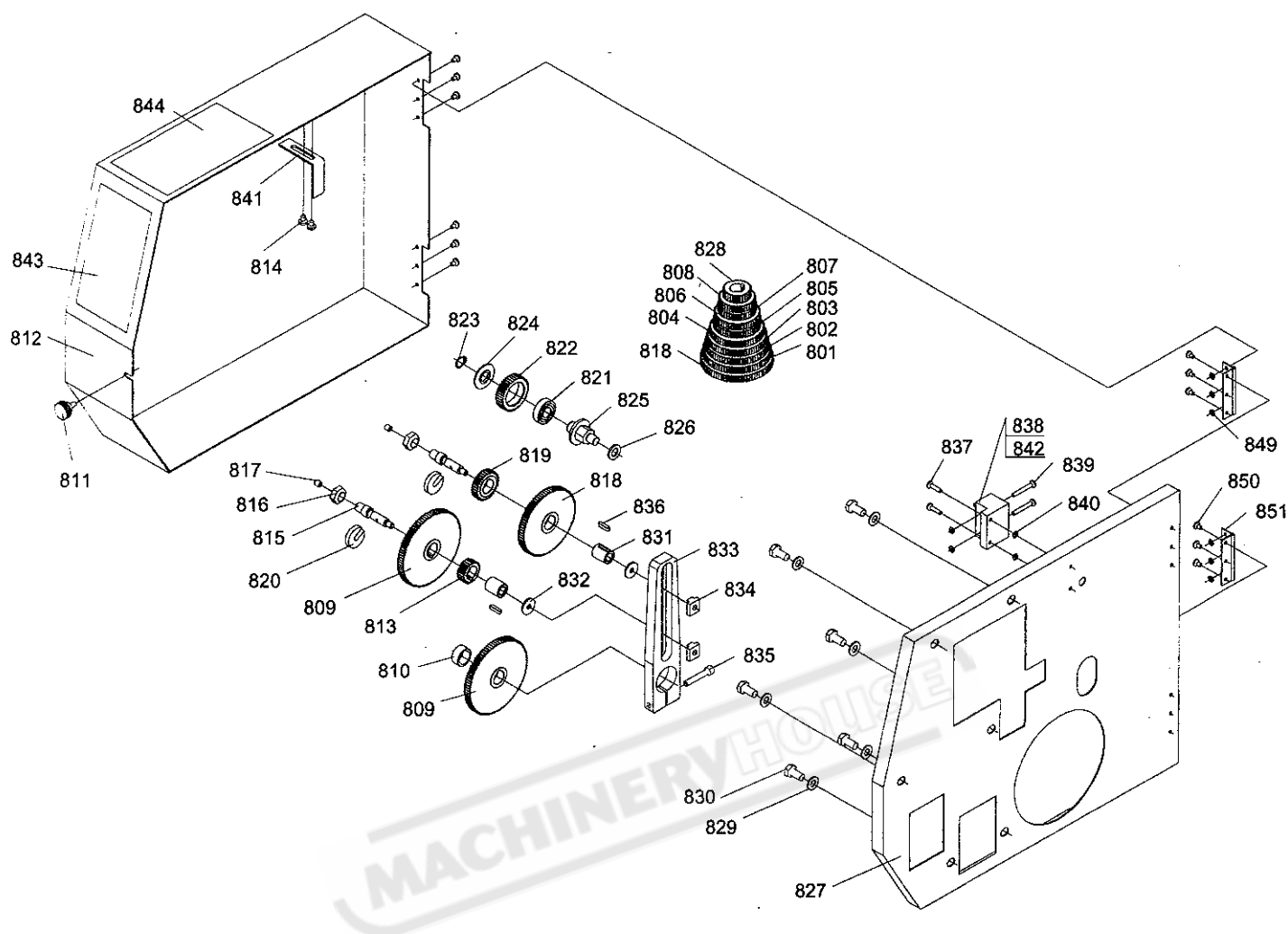
501	HAND WHEEL
502	PHLP HD SCR M5-8X10
503	KEY 4 X 4 X 12
504	ROUND NUT
505	PHLP HD SCR M3-5X6
506	AL-519 SPRING FELT
507	PHLP HD SCR M6-1.0 X 35
508	SADDLE HEAD SCREW
509	SADDLE
510	PHLP HD SCR M5-8X12
511	CLEARANCE NUT
512	PHLP HD SCR M3-5X12
513	HEX NUT M5-0.8
514	PHLP HD SCR M5-8X25
515	PAD IRON GIB
516	IRON GIB
517	PHLP HD SCR M5-8X10
518	PHLP HD SCR M5-8X10
519	PHLP SCR M8-1.25 X 10
520	GIB STYLE

PART NO. DESCRIPTION

521	REAR-CLAMP PLATE
522	PHLP HD SCR M5-8X16
523	PHLP HD SCR M5-8X16
524	HEX NUT M5-0.8
525	PHLP SCR M8-1.25 X 20
526	PHLP HD SCR M5-8X10
527	OIL-STOPPING FELT
528	PROTECTING PANEL
529	PROTECTING PANEL
530	FRONT CLAMP PLATE
531	BRACKING PLATE
532	PAD SCREW 3/16" DIA
533	FLAT WASHER 6MM
534	WASHER 6MM
535	HEX BOLT M6-1 X 20
536	HEX BOLT M6-1 X 20
537	BEARING 8101
538	SPRING RING
539	INDEX RING
540	SPRING RING



PART NO.	DESCRIPTION
601	HANDLE
602	PHLP HD SCR M6-1 X 8
603	COMPRESS SPRING
604	STEEL BALL 5
605	HANDLE SEAT
606	PHLP HD SCR M6-1 X 16
607	PHLP HD SCR M4-7 X 10
608	SHAFT SLEEVE
609	APRON BODY
610	HANDLE BOLT
611	HANDLE SLEEVE
612	HAND WHEEL
613	SPRING PLATE
614	INDEX RING
615	SMALL SHAFT SLEEVE
616	SPRING PIN 4 X 90
617	SMALL GEAR SHAFT
618	SHAFT SLEEVE
619	GEAR
620	PHLP HD SCR M4-7 X 8
621	KEY 5 X 5 X 10
622	GEAR SHAFT
623	PHLP HD SCR M5-8 X 16
624	ROLL PIN 4 X 20
625	HALF NUT BASE
626	ROLL PIN 4 X 12
627	ROLL PIN 3 X 20
628	HALF NUT
629	SLOTTED DISC
630	ROTATING SHAFT
631	SHAFT SLEEVE
632	MOVING PLATE
633	PHLP HD SCR M4-7 X 8

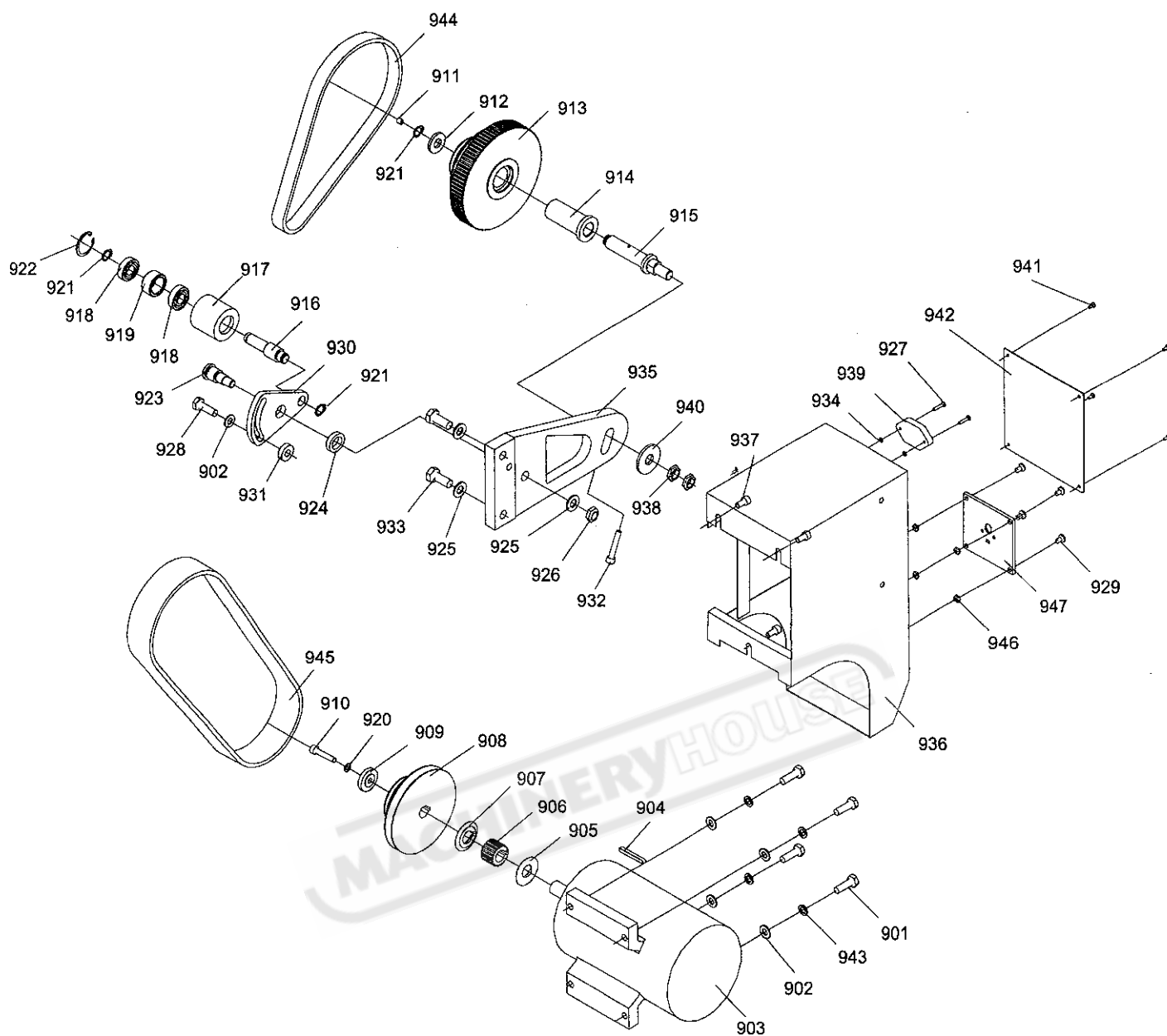


PART NO.	DESCRIPTION
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801	GEAR Z72
802	GEAR Z70
803	GEAR Z68
804	GEAR Z66
805	GEAR Z60
806	GEAR Z50
807	GEAR Z48
808	GEAR Z36
809	GEAR Z30
810	WASHER
811	KNURLING BOLT
812	GEAR BOX COVER
813	GEAR Z25
814	SCREW M4 X16
815	BOLT
816	WASHER
817	OIL CUP 6
818	GEAR Z40
819	GEAR Z33
820	GEAR WASHER
821	BEARING 6001
822	INTERMEDIATE GEAR Z11
823	CHECK RING 12
824	WASHER

PART NO.	DESCRIPTION
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825	FIXED SHAFT BOLT
826	WASHER
827	GEAR BOX SUPPORT PLATE
828	GEAR Z30
829	WASHER 8
830	SCREW M6 X35
831	SLIDING BEARING
832	WASHER
833	GEAR REST
834	SCREW NUT
835	SCREW M6 X35
836	GEAR Z18
837	SCREW M4 X16
838	MICRO SWITCH
839	SCREW M4 X30
840	WASHER
841	LIMITED PLATE
842	MICRO SWITCH BOX
843	MAIN LABEL
844	GEAR BOX GEAR LABEL
849	HEX NUT M4-7
850	SCREW M4 X16
851	HINGE


PART NO. DESCRIPTION

901	HEX BOLT M8-1.25 X 30
902	FLAT WASHER 8MM
903	AC MOTOR
904	KEYS X 5 X 20
905	MOTOR SHAFT SPACER
906	DRIVER PULLEY
907	KEYWAY SHAFT SPACER
908	MOTOR PULLEY
909	CHECK RING
910	PHLP HD SCR M6-1.0 X 30
911	OIL CUP 6
912	GREASE WASHER
913	COUNTER PULLEY
914	SLIDE BEARING
915	ARM SHAFT
916	BEARING CARBOR
917	TENSION PULLEY
918	BEARING 6001
919	SPACER
920	LOCK WASHER 6MM
921	EXT RETAINING RING 12MM
922	EXT RETAINING RING 28MM
923	PIVOT
924	PIVOT SPACER

PART NO. DESCRIPTION

925	FLAT WASHER 10MM
926	HEX NUT M10-1.5
927	PHLP HD SCR M3-5 X 14
928	HEX BOLT M6-1.25 X 25
929	PHLP HD SCR M5-8 X 8
930	FAN SUPPORT
931	ADJ SLOT SPACER
932	PHLP HD SCR M6-1.0 X 35
933	HEX BOLT M10-1.5 X 25
934	HEX NUT M6-0.8
935	PULLEY SUPPORT
936	MOTOR COVER
937	PHLP HD SCR M6-1 X 12
938	ARM SHAFT NUT
939	SOCKET OUTLET
940	SUPPORT SPACER
941	PHLP HD SCR M3-5 X 6
942	ELECTRIC TOP COVER
943	LOCK WASHER 8MM
944	TIMING BELT 130 X 124 X 15.2
945	V-BELT M-30 3L300
946	HEX NUT M5-0.8
947	MAIN POWER SOCKET



WARNING

General Machinery Safety Instructions

Machinery House
requires you to read this entire Manual before using this machine.

1. **Read the entire Manual before starting machinery.** Machinery may cause serious injury if not correctly used.
2. **Always use correct hearing protection when operating machinery.** Machinery noise may cause permanent hearing damage.
3. **Machinery must never be used when tired, or under the influence of drugs or alcohol.** When running machinery you must be alert at all times.
4. **Wear correct Clothing.** At all times remove all loose clothing, necklaces, rings, jewelry, etc. Long hair must be contained in a hair net. Non-slip protective footwear must be worn.
5. **Always wear correct respirators around fumes or dust when operating machinery.** Machinery fumes & dust can cause serious respiratory illness. Dust extractors must be used where applicable.
6. **Always wear correct safety glasses.** When machining you must use the correct eye protection to prevent injuring your eyes.
7. **Keep work clean and make sure you have good lighting.** Cluttered and dark shadows may cause accidents.
8. **Personnel must be properly trained or well supervised when operating machinery.** Make sure you have clear and safe understanding of the machine you are operating.
9. **Keep children and visitors away.** Make sure children and visitors are at a safe distance for your work area.
10. **Keep your workshop childproof.** Use padlocks, Turn off master power switches and remove start switch keys.
11. **Never leave machine unattended.** Turn power off and wait till machine has come to a complete stop before leaving the machine unattended.
12. **Make a safe working environment.** Do not use machine in a damp, wet area, or where flammable or noxious fumes may exist.
13. **Disconnect main power before service machine.** Make sure power switch is in the off position before re-connecting.
14. **Use correct amperage extension cords.** Undersized extension cords overheat and lose power. Replace extension cords if they become damaged.
15. **Keep machine well maintained.** Keep blades sharp and clean for best and safest performance. Follow instructions when lubricating and changing accessories.
16. **Keep machine well guarded.** Make sure guards on machine are in place and are all working correctly.
17. **Do not overreach.** Keep proper footing and balance at all times.
18. **Secure workpiece.** Use clamps or a vice to hold the workpiece where practical. Keeping the workpiece secure will free up your hand to operate the machine and will protect hand from injury.
19. **Check machine over before operating.** Check machine for damaged parts, loose bolts, Keys and wrenches left on machine and any other conditions that may effect the machines operation. Repair and replace damaged parts.
20. **Use recommended accessories.** Refer to instruction manual or ask correct service officer when using accessories. The use of improper accessories may cause the risk of injury.
21. **Do not force machinery.** Work at the speed and capacity at which the machine or accessory was designed.
22. **Use correct lifting practice.** Always use the correct lifting methods when using machinery. Incorrect lifting methods can cause serious injury.
23. **Lock mobile bases.** Make sure any mobile bases are locked before using machine.
24. **Allergic reactions.** Certain metal shavings and cutting fluids may cause an allergic reaction in people and animals, especially when cutting as the 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.
25. **Call for help.** If at any time you experience difficulties, stop the machine and call your nearest branch service department for help.

WARNING

Metal Lathe Safety Instructions

Machinery House
requires you to read this entire Manual before using this machine.

- 1. Maintenance.** Make sure the lathe is turned off and disconnect from the main power supply and make sure all moving parts have come to a complete stop before any inspection, adjustment or maintenance is carried out.
- 2. Lathe Condition.** Lathe must be maintained for a proper working condition. Never operate a lathe that has damaged or worn parts. Scheduled routine maintenance should be performed on a scheduled basis.
- 3. Leaving a Lathe Unattended.** Always shut the lathe off and make sure all moving parts have come to a complete stop before leaving the lathe. An unsupervised running lathe can cause serious injury.
- 4. Avoiding Entanglement.** Remove loose clothing, belts, or jewelry items. Tie up long hair and use the correct hair nets to avoid any entanglement with moving parts.
- 5. Chuck key safety.** Never let go of a chuck key while still in the chuck to prevent leaving the chuck key in the chuck. Chuck keys left in the chuck can cause serious injury.
- 6. Changing Chucks.** When changing large heavy chucks they become awkward to hold. Always get assistance when installing large chucks. Use a board or piece of plywood across the bedway when any install or removal of chucks to avoid any possible finger pinching between a loose chuck and edge of a bedway.
- 7. Tooling selection.** Always use the correct cutting tool for the job you are turning. Make sure it is sharp and held firmly in the tool post. Adjust the toolpost to provide proper support for the tool you will be using.
- 8. Mounting the workpiece.** Make sure the workpiece is properly mounted and secure before turning on the lathe. A loose workpiece can be thrown across the room and cause serious injury to you or a bystander.
- 9. Workpiece clearance.** Rotate the workpiece by hand to check for clearance with the tool post, compound slide and carriage before turning the lathe on.
- 10. Changing speeds and Reversing.** Turn the lathe off and make sure the lathe has come to a complete stop before changing speeds or reversing the spindle. Do not slow or stop the lathe chuck by using your hand.
- 11. Speed selection.** Select the appropriate speed for the type of work, material, and tool bit. Allow the lathe to reach full speed before beginning a cut.
- 12. Clearing chips.** Always use a brush to clear chips. Never clear chips when the lathe is running.
- 13. Power outage.** In the event of a power failure during use of the lathe, turn off all switches to avoid possible sudden start up once power is restored.
- 14. Clean work area.** Keep the area around the lathe clean from oil, tools and chips.
- 15. Call for help.** If at any time you experience difficulties, stop the machine and call your nearest branch service department for help.

PLANT SAFETY PROGRAM

NEW MACHINERY HAZARD IDENTIFICATION, ASSESSMENT & CONTROL

Metal Lathe

Developed in Co-operation Between A.W.I.S.A and Australia Chamber of Manufactures
This program is based upon the Australian Worksafe Standard for Plant(NOHSC:1010-1994)

Item No.	Hazard Identification	Hazard Assessment	Risk Control Strategies (Recommended for Purchase / Buyer / User)
A	ENTANGLEMENT	HIGH	Eliminate, avoid loose clothing / Long hair etc.
C	CUTTING, STABBING, PUNCTURING	MEDIUM	Isolate power to machine prior to any checks or maintenance. Do not open or clean inside until the machine has completely stopped.
D	SHEARING	MEDIUM	Make sure all guards are secured shut when machine is on. Isolate power to machine prior to any checks or maintenance.
F	STRIKING	MEDIUM	Ensure workpiece is secured in chuck and tooling is locked tight in toolpost. Always wear safety glasses. Do not leave chuck key in chuck.
H	ELECTRICAL	MEDIUM	Remove all loose objects around moving parts. All electrical enclosures should only be opened with a tool that is not to be kept with the machine.
N	HIGH - TEMPERATURE	LOW	Machine should be installed & checked by a Licensed Electrician.
O	OTHER HAZARDS, NOISE.	LOW	Wear appropriate protective clothing to prevent hot swarf. Wear hearing protection as required.
Plant Safety Program to be read in conjunction with manufactures instructions			

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Authorised and signed by:
Safety officer:

Manager:

Revised Date: Aug-08