2018 Wood Lathe

Owner's Manual

Oliver Machinery
Seattle, WA
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M-2018 09/2009

www.olivermachinery.net

Warranty

Thank you for your purchase of a genuine Oliver woodworking machine. Oliver Machinery has made every attempt to provide a machine that is safe and durable.

All Oliver products are guaranteed, to the ORIGINAL RETAIL CUSTOMER, to be free from defects for TWO YEARS FROM THE DATE OF PURCHASE. Oliver Machinery will repair or replace, at its option, any component that fails under normal use. Please note that the customer is responsible for returning the failed component to Oliver Machinery prepaid for inspection.

This warranty does not cover damages caused by misuse, accident, unauthorized repair, alteration or improper maintenance.

Warning

Read this manual thoroughly before operating the machine. Oliver Machinery disclaims any liability for machines that have been altered or abused. Oliver Machinery reserves the right to effect at any time, without prior notice, those alterations to parts, fittings, and accessory equipment which they may deem necessary for any reason whatsoever.

For More Information

Oliver Machinery is always adding new Industrial Woodworking products to the line. For complete, up-to-date product information, check with your local Oliver Machinery distributor, or visit www.olivermachinery.net

WARNING

Read this manual completely and observe all warning labels on the machine. Oliver Machinery has made every attempt to provide a safe, reliable, easy-to-use piece of machinery. Safety, however, is ultimately the responsibility of the individual machine operator. As with any piece of machinery, the operator must exercise caution, patience, and common sense to safely run the machine. Before operating this product, become familiar with the safety rules in the following sections.

- **Always keep guards and covers in place and in proper operating condition.**

1. If you are not properly trained in the use of a lathe do not use until the proper training has been obtained.

2. Read, understand and follow the safety instructions found in this manual. Know the limitations and hazards associated with this machine.

3. Make certain that the machine frame is electrically grounded and that a ground lead is included in the incoming electrical service. In cases where a cord and plug are used, make certain that the grounding plug connects to a suitable ground. Follow the grounding procedure indicated in the National Electrical Code.

4. Wear an approved safety shield, goggles, or glasses to protect eyes. Common eyeglasses are only impact-resistant, they are not safety glasses.

5. Before operating the machine, remove tie, rings, watch and other jewelry and roll up sleeves above the elbows. Remove all loose outer clothing and confine long hair. Protective type footwear should be used. Where the noise exceeds the level of exposure allowed in Section 1910.95 of the OSHA Regulations, use hearing protective devices. Do not wear gloves.

6. Keep the machine guards and covers in place for every operation. If any guards and covers are removed for maintenance, DO NOT OPERATE the machine until the guards and covers are reinstalled.

7. Keep the floor around the machine clean and free of scrap material, saw dust, oil and other liquids to minimize the danger of tripping or slipping. Be sure the bed is free of all scrap, foreign material and tools before starting the lathe. Make certain the work area is well lighted and that a proper exhaust system is used to minimize dust. Use anti-skid floor strips on the floor area where the operator normally stands and mark off machine work area. Provide adequate work space around the machine.

8. Maintain a balanced stance and keep your body under control at all times.

9. Before turning on machine, remove all extra equipment such as keys, wrenches, scraps, and cleaning rags away from the machine.

10. Give the work you are doing your undivided attention. Looking around, carrying on a conversation, and “horseplay” are careless acts that can result in serious injury.

11. Before performing any service, maintenance, adjustments or when changing faceplates or chucks disconnect the machine from power source. A machine under repair should be RED TAGGED to show it should not be used until the maintenance is complete.

12. Do not turn stock with loose knots, nails or any foreign material in the work piece.

13. If the operator leaves the machine area for any reason, the lathe should be turned "off" and the head should come to a complete stop before their departure. In addition, if the operation is complete, both the lathe and work area should be cleaned. NEVER clean the lathe with power "on" and never use hands to clear sawdust and debris; use a brush or air hose.

14. Use only genuine Oliver Machinery factory authorized replacement parts and accessories; otherwise the warranty and guarantee is null and void.

15. Do not use this Oliver lathe for other than its intended use. If used for other purposes, Oliver disclaims any real or implied warranty and holds itself harmless for any injury or damage which may result from that use.

16. Do not operate this machine while under the influence of drugs, alcohol, or any medication.

17. This machine is deigned for turning wood products only. Do not use to turn any kind of substance other then wood.

18. Never start the lathe while the work piece is in contact with the chisel.

19. Some dust created by power sanding, sawing, grinding, drilling and other construction activities contains chemicals known to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:
    - Lead from lead-based paint.
    - Crystalline silica from bricks and 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 specifically designed to filter out microscopic particles.

Familiarize yourself with the following safety notices used in this manual:

CAUTION: (This means that if precautions are not heeded, it may result in minor or moderate injury and/or possible machine damage)

WARNING: (This means that if precautions are not heeded, it could result in serious injury or possibly even death).

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Specifications

Stock No.	2018
Swing Over Bed, Inboard (in.)	18
Swing Over Bed, Outboard (in.)	35
Variable Speed Range 1 (RPM)	200-600
Variable Speed Range 2 (RPM)	600-2400
Spindle	1-1/4”, 8TPI, RH thread
Headstock Spindle Taper	#2 Morris
Tailstock Spindle Taper	#2 Morris
Inboard Face Plate Diameter (in.)	6
Outboard Face Plate Diameter (in.)	8
Distance From Floor to Spindle Centerline (in.)	43-1/2
Maximum Distance Between Centers (in.)	42
Maximum Distance Between Centers **with bed extension** (in.)	57
Tailstock Quill Travel (in.)	4-1/4
Footprint of Stand (in.)	69 x 19
Motor	2HP, 1Ph, 12 amp, 230V Only
Net Weight (lbs.)	715

Oliver 2018 – 18” Lathe

Contents

Figure 1
1. Comparator Centers (two)
2. Tool Rests (two)
3. Levelling Pads and Bolts
4. Knockout Rod
5. Motor Tension Rod
6. Comparator/Guard Support Bracket
7. Comparator/Guard Brackets

Figure 2
1. Outboard Tool Rest Holder
2. Bed Extension
3. Guard

Figure 3
1. Reversing Switch

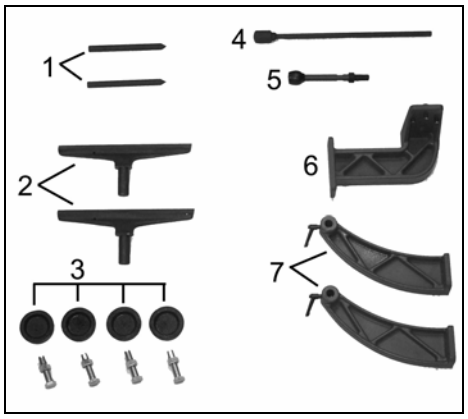


Figure 1

Uncrating the Machine

Retain all packaging materials in case it becomes necessary to ship the machine to another site.

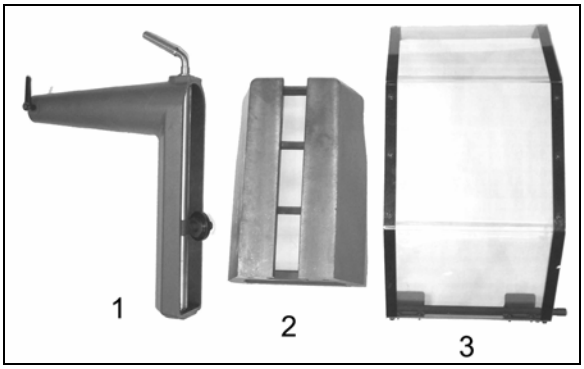


Figure 2

Machine Preparation and Setup

..WARNING!
The equipment used to lift this machine must have a rated capacity at, or above the weight of the lathe. Failure to comply may cause serious injury!

The lathe can be lifted off the skid from over head using slings ran under the lathe bed.

The lathe must be positioned on a smooth, level surface. Install the leveling bolts and pads (3, Figure 1) under the four corners of the lathe.

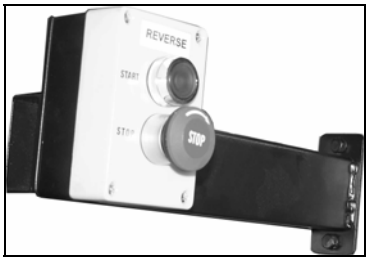


Figure 3

Clean all rust protected surfaces with a commercial solvent. Do not use acetone, gasoline, lacquer thinner or any type of flammable solvent, or a cleaner that may damage paint. Cover cleaned surfaces with WD-40 or a 20W machine oil.

Insert the leveling bolts as shown in Figure 4. Place a level on the bed of the lathe and adjust leveling bolts until the machine is resting level on the pads. Tighten the hex nuts against the base of the lathe to keep the leveling bolts from turning.

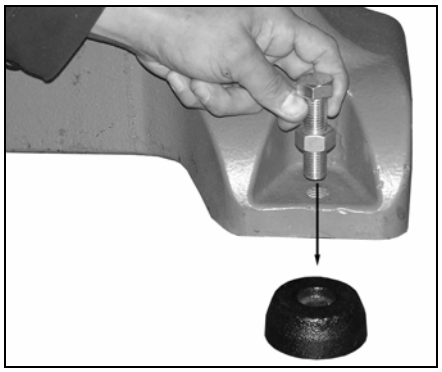


Figure 4

Electrical Connections

Grounding Instructions

Electrical connectins must be made by a qualified electrician in compliance with all relevant codes. This machine must be properly grounded to help prevent electrical shock and possible fatal injury.

This machine must be grounded. In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. Improper connection of the equipment grounding conductor can result in a risk of electric shock. The conductor, with insulation having an outer surface that is green with or without yellow stripes, is the equipment grounding conductor. If repair or replacement of the electric cord or plug is necessary, do not connect the equipment grounding conductor to a live terminal.

The Oliver lathe is supplied with an electrical pigtail cord. A 230 volt three prong plug capable of handling 12 amps must be purchased and installed on the cord. The black and white wires will attach to the line in terminals on the plug and the green ground wire will attach to the ground terminal on the plug.

Assembly

1. The bed extension can be used to facilitate outboard turning or it can be used to extend the main bed. Installation for either application is as shown in Figure 5. The mounting bolts are stored from the factory in their correct mounting holes on the side of the machine. Use a 8mm allen wrench to remove them and re-install with the extension in place.

Figure 5

2. Install the outboard tool rest holder onto it's bed by sliding it into the end of the bed as shown in Figure 6. Line up the pressure disc B with the T-slot of the bed. It may be necessary to push or pull locking lever A to adjust the pressure disc to the correct height. Once on, push lever A to lock the holder into place. If the holder will not lock into place it may be necessary to adjust the lock nut (C).

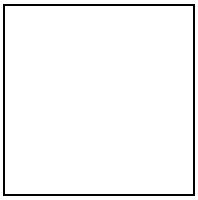


Figure 6

3. Insert the tool rest into it's holder as shown in Figure 7 and when the desired position is found, lock into place with handle A.

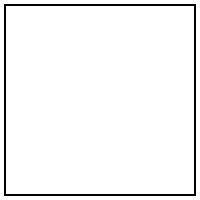


Figure 7

4. Mount the comparator/guard support bracket to the back of the machine as shown in Figure 8. Use the supplied 6mm allen head bolts to securely mount the bracket to the machine.

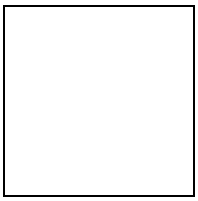


Figure 8

Assembly (cont.)

5. Installing the reversing switch is done in two steps as shown in Figure 9. **Step 1**: connect the molex cable A. **Step 2**: once connected, push the connectors through the hole into the machine while at the same time securing the switch to the machine using the supplied 12mm hex nuts.

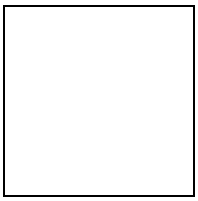


Figure 9

6. Mount the headstock side comparator/guard bracket on top of the support as shown in Figure 10. Use the supplied 6mm allen head bolts.

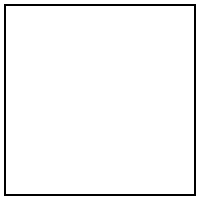


Figure 10

7. Mount the second comparator bracket to the tailstock as shown in Figure 11 using the supplied 6mm allen head bolts. As well, the comparator pin A has been installed. Notice the flat part of the pin faces the bolt of the lock handle.

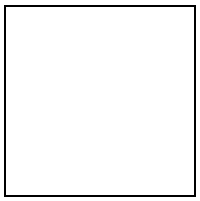


Figure 11

8. Your Oliver lathe is equipped with a safety shield. Install the mounting post of the shield, in the direction shown by the arrow in Figure 12, into the comparator/guard bracket and lock into place with the lock handle. Loosen the lock handle to adjust the guard position as necessary and then re-tighten.

   If desired, the safety shield can be removed in order to install the second comparator pin.

..CAUTION!
Eye protection must always be worn whether the safety shield is installed or not!

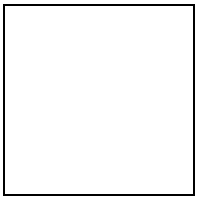


Figure 12

Assembly (cont.)

9. Install the motor tension rod as shown in Figure 13. Once threaded in, lock into place with the jam nut A.

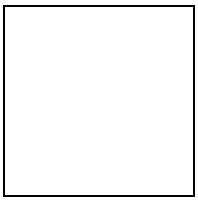


Figure 13

10. The inboard tool rest can now be installed in it's holder as shown in Figure 14. Once set in place lock it using the handle A.

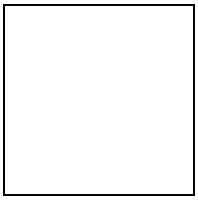


Figure 14

Adjustments

Tailstock

Depending on the length of your work piece, the tailstock can be moved accordingly. Simply push or pull handle A of Figure 15 to loosen and allow the tailstock to slide to the correct position. Once in position lock it into place with handle A. Fine adjustment can be achieved by turning the handwheel to lengthen or shorten the tailstock spindle.

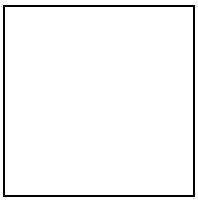


Figure 15

Cam Adjustments

If the tool rests or tailstock do not tighten to the bed lathe when the locking handle is engaged, it may be necessary to tighten the locknut as seen in Figure 16. The adjustment is the same for all three.

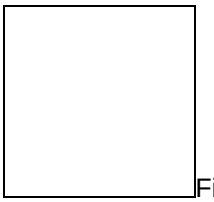


Figure 16

Tool Supports

Your Oliver lathe comes with both an inboard and outboard tool rest as seen in Figure 17. Each tool rest can be adjusted for height, position on the bed, and angle to the work piece.

Loosen the lock handle A to slide the rest forward or back as well as to angle it with respect to the bed. Once set to the desired position use handle A again to lock it into place before using the lathe.

Loose handle B to adjust the height and angle of the tool rest itself. Once set, lock it into place before using the lathe. Note that the small handle B is a ratchet type handle and can be positioned so that it is out of the way when working.

Although not seen in the picture, there is another hole on the opposite side in which the small handle can be inserted if desired.

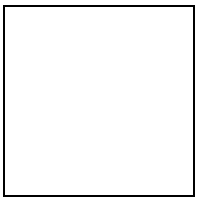


Figure 17

Centers – Installing and Removing

Headstock

1. To install a spur center in the headstock the center should first be mounted to your workpiece (see under "Operation" for more details) and both should be inserted into the headstock at the same time. Make sure both the spur center shaft and the headstock spindle mating surfaces are clean and free of debris.

Warning: Do not drive the workpiece into the spur center while it is in the headstock or bearing failure will occur.

2. To remove the spur center, first remove the workpiece from the lathe, insert the knockout rod through the hole in the outboard spindle then firmly tap the end of the spur center shaft. See Figure 18a.

Note: Make sure to hold onto the spur center while knocking it out so as to prevent it from falling on the floor and damaging it.

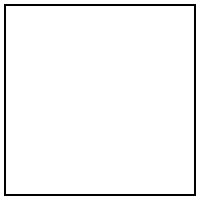


Figure 18a

Tailstock

To remove the live center from the tailstock simply turn the handwheel in order to retract the tailstock spindle into the body as shown by the arrow in Figure 18b.

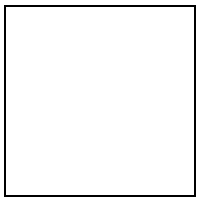


Figure 18b

Face Plates – Removal and Installation

Inboard

1. To remove the face plate first loosen the two set screws 'A' of Figure 19. Insert the indexing pin 'B' into one of the three holes and screw it in until it fully engages one of the indexing holes in the spindle. You may have to turn the face plate by hand until you can feel the pin engage the hole. The spindle should now be locked. The face plate can now be unscrewed counterclockwise off the spindle. If more leverage is needed insert the knock out rod into hole 'C'.

2. Use the reverse procedure to install the face plate back onto the spindle.

Note: Do not use the knock out rod to tighten the face plate or thread damage can occur. Hand tighten only.

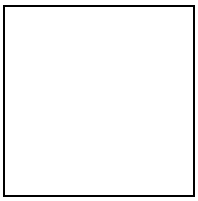


Figure 19

Face Plates – Removal and Installation (cont.)

Outboard

1. The outboard face plate removes in the same fashion as the inboard. Figure 20 shows the face plate already removed from the spindle. Before removing, loosen the two set screws 'A' then lock the spindle using the indexing pin as described in the inboard face plate removal instructions. The face plate diameter should be large enough to give sufficient torque to unscrew by hand. This is done in a counterclockwise rotation. If the faceplate does not budge, insert two metal dowels into two of the mounting holes on the face of the plate. Then use a leverage bar between the two dowels to loosen the face plate.

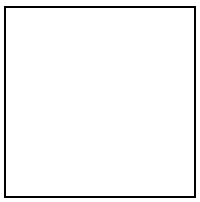


Figure 20

2. Use the reverse procedure to install the face plate back onto the spindle. **Hand tighten only.**

Hi/Lo Range Belt change

Moving the position of the poly-v belt to the other step on the motor sheave and the idler sheave changes the Hi or Low speed range on your Oliver lathe.

1. Remove the access panel located under the outboard face plate a shown in Figure 21. Loosen the three screws just enough so that the panel can slide free.

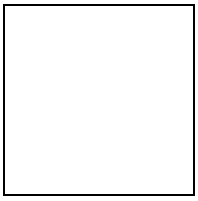


Figure 21

2. See Figure 22 and loosen the lock handle 'A' and lift up the motor using the handle 'B. Once it is up all the way, tighten into place with handle 'A'.

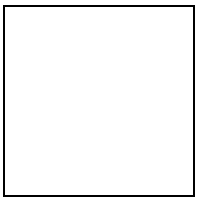


Figure 22

Hi/Lo Range Belt change (cont.)

3. Figure 23 shows the motor pulley and Figure 24 shows the idler pulley once the headstock door is opened. At this point simply move the poly-v belt to the desired step on each pulley.

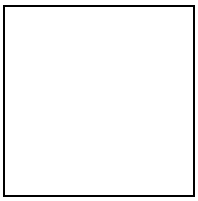


Figure 23

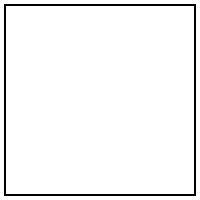


Figure 24

4. Re-tension the belt making sure that the grooves up the belts are seated properly and aligned with the corresponding grooves of both pulleys. Use only light pressure on the motor tension rod and then lock into place with handle ‘A’ of Figure 22.

Controls

Figure 25 shows the control functions of the lathe.

1. **Speed Lever Control**: Spinde RPM's are controlled with this lever. To change the speed, push the lever in the desired direction. **Note: Only change the speed when the motor is running or damage may occur.**

2. **RPM Indicator**: Displays the current spindle speed

3. **Start Button**: Push to start the lathe.

4. **Stop Button**: Push to stop the lathe. This button must be reset in order to start the lathe. Reset by turning the outer ring on the button in the direction of the arrow.

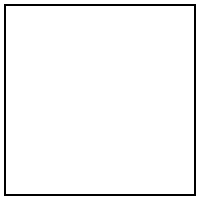


Figure 25

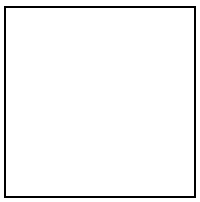


Figure 26

5. **Reversing Switch**: Located on the back of the machine, the reversing switch (Figure 26) can be used to change the spindle rotation. This feature is useful when turning on the outboard side of the lathe. It allows the user to work a piece in his/her familiar method. **Note: Allow the motor to come to a complete stop before reversing direction or damage may occur.**

Indexing

The indexer makes it possible to cut evenly spaced features in a workpiece while keeping the lathe headstock spindle locked; for example, when cutting flutes on a spindle blank with a router, while the spindle blank is secured within the lathe centers.

There are 12 holes in the spindle collar spaced 30° apart, and 4 holes in the headstock casting which accept the index pin (see Figures 27 & 28). The combination of these holes will allow you to mark your workpiece for evenly spaced features.

1. To use the indexer, thread the index pin (Figure 27) into one of the four holes until the index pin engages the spindle and prevents it from turning. This will be your first indexing position.
2. Unscrew and remove the index pin, and look down the hole, carefully counting the number of holes as you rotate the spindle. Continue to rotate the spindle until you reach the hold needed for your second flute cutting, then re-insert the index pin.
3. Refer to the chart on page 15 to determine which holes to place the index in relative to the number of flutes desired in your workpiece.

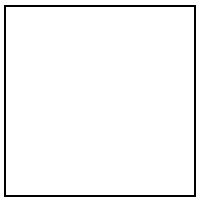


Figure 27

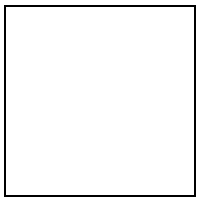
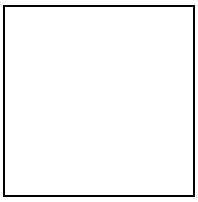


Figure 28

Using the Indexer

Using the chart

The indexer is shown as viewed from the tailstock end of the lathe. Points, A, B, C, and D are the holes in the head casting. The holes in the spindle collar may be considered as numbered 1 through 12.



Example: You wish to rout 3 flutes on your spindle blank. Locate the "3" in the "No. of Flutes' column; each flute angle will be 135°. The index pin should first be inserted into hole combination "A-1". Make your first flute at this position. Remove the index pin and rotate the spindle so the number 5 hole is aligned with the 'D' and re-insert the pin. Finally back off the index pin and rotate the spindle until the index pin can be inserted into hole combination "D-8".

No. of Flutes 360° divided by …	Angle	Letter #	Letter #
1	360	A 1	
2	180	A 1,7	
3	135	A 1	D 5,8
4	120	A 1,5,9	
5	90	A 1,4,7,10	
6	60	A 1,3,5,7,9,11	
7	45	A 1	D 2,11
8	40	A 1	C 1
9	30	A 1 To 12	
10	20	A 1	B 1
11	15	A 1	D 1,12
12	10	A 1	B 2 or C 2

Recommended Lathe Speeds

Diameter of Work	Roughing RPM	General Cutting RPM	Finishing RPM
Under 2"	1520	3000	3000
2" to 4"	760	1600	2480
6" to 8"	510	1080	1650
8" to 10"	380	810	1240
10" to 12"	300	650	1000
12" to 14"	255	540	830
14" to 16"	220	460	710
16" to 20"	190	400	620

Maintenance

WARNING!
Before doing maintenance on the lathe, disconnect the lathe from its power source. Failure to do so could result in serious injury!

Maintenance on your Oliver lathe should be done at periodic intervals to ensure that the machine is in good working order. Inspection and maintenance should be performed at least twice a year but more often if the lathe receives constant use.

1. Check all fasteners to make sure they are tight and check all adjustments that they are in order.

2. Clean and oil the late beds so that the headstock, tailstock and tool support base will slide easily. Clean any rust spots that may develop on the bed with a commercial rust remover.

3. Use compressed air to blow out the interior of the headstock in order to keep chips and sawdust from accumulating on the belts and pulleys.

4. Clean out the morse tapers on both the headstock and tailstock. Commercially available cleaners may be acquired form tool stores.

5. Check the drive belt for tightness. It should be snug but not overly tight.

6. Use a mill file to remove any nicks or dings from the tool rests.

7. Clean and lubricate the tailstock ram and locking mechanism.

Troubleshooting

Trouble	Probable Cause	Remedy
Motor fails to develop full power	Power line overload	Correct overload condition
	Undersize wires in power supply	Increase supply wire size
	Worn motor	Replace motor
Motor or spindle stalls or will not start	Excessive cut	Reduce depth of cut
	Improper belt adjustment, or worn or broken belt	Adjust or replace belt as needed
	Improper cooling of motor	Blow out sawdust from motor cooling fan
	Worn spindle bearings	Replace bearings
	Worn motor	Replace motor
Excessive vibration	Workpiece warped, out of round, has major flaw, or was improperly prepared for turning	Correct by planning or sawing workpiece, or discard entirely and use new workpiece
	Worn spindle bearings	Replace spindle bearings
	Worn drive belt	Replace motor
	Motor mount lock handle is loose	Tighten lock handle
	Lathe on uneven surface	Adjust levelers
Tools tend to grab or dig in	Dull tools	Keep tools sharp
	Tool support set too far from workpiece	Reposition tool support height
	Improper tool being used	Use correct tool for operation being performed
Tailstock moves when applying pressure	Cam lock needs adjusting	Tighten cam lock nut
	Lathe bed and tailstock mating surfaces are greasy or oily	Remove tailstock and clean surfaces with a cleaner/degreaser. Re-apply light coat of oil to lathe bed surface