



4705 Shaper Owners Manual



Oliver Machinery
Seattle, WA
info@olivermachinery.net

M-4705 8/2010
© Copyright 2003
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 in place and in proper operating condition**
- 1. **If you are not properly trained** in the use of a shaper 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. **Electrical grounding:** 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. **Eye safety:** Wear an approved safety shield, goggles, or glasses to protect eyes. Common eyeglasses are only impact-resistant, they are not safety glasses.
- 5. **Personal protection:** 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. **Guards:** Keep the machine guards in place for every operation for which they can be used. If any guards are removed for maintenance, DO NOT OPERATE the machine until the guards are reinstalled.
- 7. **Work area:** 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 table is free of all scrap, foreign material and tools before starting to cut. 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. **Operator position:** Maintain a balanced stance and keep your body under control at all times.
- 9. **Before starting:** Before turning on machine, remove all extra equipment such as keys, wrenches, scraps, and cleaning rags away from the machine.
- 10. **Careless acts:** 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. **Disconnect all power sources:** Before performing any service, maintenance, adjustments or when changing cutters. A machine under repair should be RED TAGGED to show it should not be used until the maintenance is complete.
- 12. **Short stock:** Never shape stock less than 12 inches in length without special fixtures. When practical, shape longer stock and cut to size.
- 13. **12 inch rule:** When shaping, never allow your hands to come closer than 12 inches to the cutters.
- 14. **Collars:** When shaping with collars, the collar must have sufficient bearing surface. The work must also be fairly heavy in proportion to the cut being made. Do not use short, lightweight stock when shaping against collars.

15. **The opening** between the fence plates should only be enough space to clear the cutter.
16. **Edge shaping:** Always use the mitre gauge and clamping mechanism when edge shaping stock less than 6" wide.
17. **Feed stock** opposite to the direction of the cutter rotation. Never back stock out of the cutter once the cut has been started. Instead, pull the stock straight back away from cutter and begin the cut again.
18. **Make sure** the spindle and the draw bar are tightened on the arbor.
19. **Safety lock washer:** Never operate the shaper without the safety locking keyed washer located immediately under the spindle nut. This prevents the nut from coming loose when the spindle is running in a counterclockwise direction. Do not substitute any other type washer in place of the safety lock washer.
20. **If you are not** thoroughly familiar with the operation of spindle shapers, obtain advice from your supervisor, instructor or other qualified person.
21. **Maintain cutting tools in top condition:** Keep blades sharp and clean for safe and best performance. Dull tools increase noise levels and can cause kickbacks and glazed surfaces. Check the condition and adjustment of the tools before making any cuts. Never use a tool that is not balanced and rated for the selected RPM.
22. **Hand safety:** Do not clear chips and sawdust with hands; use a brush.
23. **Job completion:** If the operator leaves the machine area for any reason, the shaper should be turned "off" and the cutter should come to a complete stop before their departure. In addition, if the operation is complete, they should clean the shaper and the work area. NEVER clean the shaper with power "on" and never use hands to clear sawdust and debris; use a brush.
24. **Replacement parts:** Use only genuine Oliver Machinery factory authorized replacement parts and accessories; otherwise the warranty and guarantee is null and void.
25. **Misuse:** Do not use this Oliver shaper 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.
26. **Drugs, alcohol and medication:** Do not operate this machine while under the influence of drugs, alcohol, or any medication.
27. **Health hazards:** 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).

Table of Contents	Page Number
Warranty	2
Warnings	3-4
Table of Contents	5
Specifications	5
Contents of the Shipping Container	6
Uncrating the Machine	6
Machine Preparation and Setup	6
Fence Adjustments	7
Installing Spindles	8-9
Electrical Connections 3 Phase and 1 Phase	9
Controls	10
Speed Change and Belt Adjustment	10-11
Installing Cutters	11
Dust Collection	11
Straight Work	12
Position of Collars	13
Maintenance	14
Lubrication	14
Troubleshooting	15-16

Specifications

Model	4705
Stock No. 4705.001	5 HP, 1 Ph, 220V Only
Stock No. 4705.002	7.5 HP, 3 Ph, 220/440V Prewired 220V
Table Dimensions	39-3/8" x 31-1/2" x 3-1/2"
Table Height	36-1/2"
Spindle Speed (RPM)	5,000 / 7,000 / 10,000
Spindle Direction	Reversible
Maximum Tool Diameter Below Table	7"
Maximum Tool Diameter Above Table	10"
Vertical Spindle Travel	4"
Spindle Diameter	3/4", 1-1/4"
Dust Collector Port	4"
Minimum CFM Required	800
Shipping Dimensions	45"L x 38"W x 42"H
Net Weight	735lbs
Gross Weight	867lbs.

Contents of the Shipping Container

Oliver Shaper

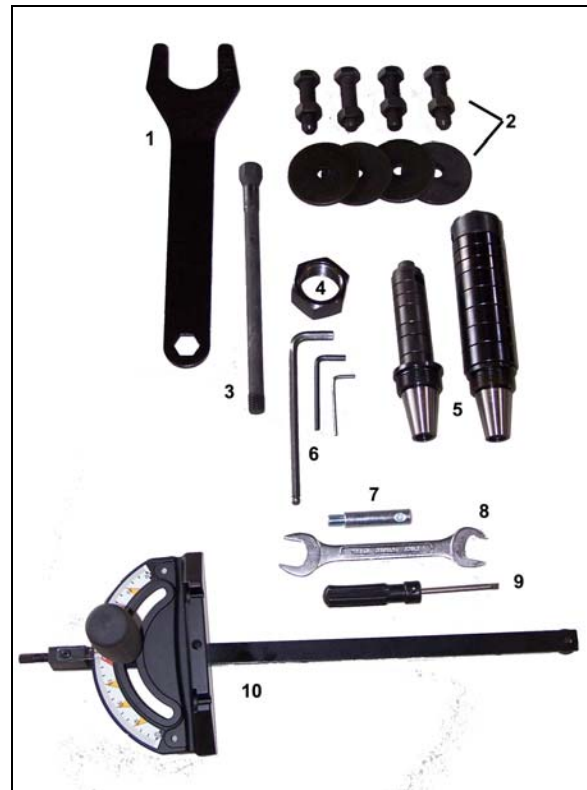
1. Wrench for special nut
2. Leveling bolts
3. Spindle draw bolt
4. Special nut
5. $\frac{3}{4}$ " and 1-1/4" spindles
6. Allen keys
7. Starting pin
8. Open end wrench
9. Slot/Phillips screwdriver
10. Miter guage

Uncrating the Machine

Uncrate the machine and inspect the unit for signs of shipping damage. If damage is found, contact your dealer immediately. For protection against shifting during transport, the base of the shaper was bolted to the shipping pallet. Remove these bolts. Retain all packaging materials in case it becomes necessary to ship the machine to another site.

Machine Preparation and Setup

Clean all rust protected surfaces with a good 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.



Fence Adjustments

1. The main fence housing can be positioned relative to the diameter of the cutter. Loosen hold down knobs (1, Figure 1) then turn the adjusting knob (3, Figure 1) to move the fence housing to the desired position.
2. The chip guard can be moved out of the way to gain access to the spindle by loosening the lock knobs (2, Figure 1)

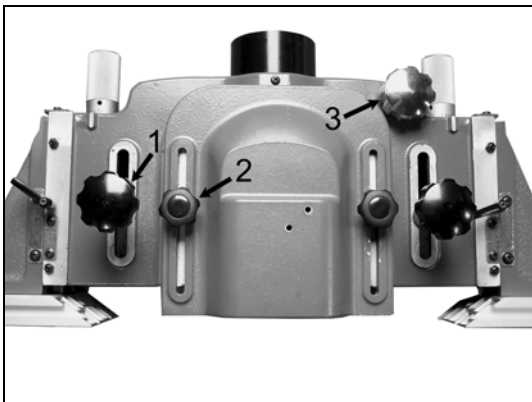


Figure 1

3. Both the right and left fences are micro-adjustable by turning the micro-adjust knobs (1, Figure 2). One revolution of the knob moves the fence 1/16". The definite position of the fence can be read off the scale (2, Figure 2) in increments as low as 1/128". Once the desired position is reached, Lock the fence into place using the locking levers (3, Figure 2).

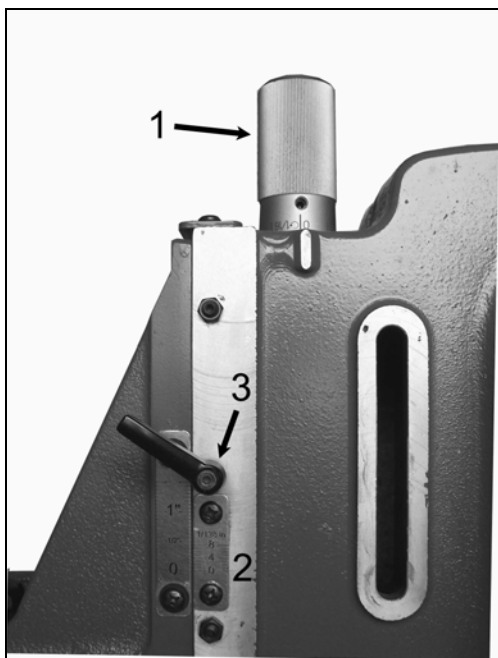


Figure 2

4. Both the left and right aluminum guides (1, Figure 3) can also be positioned by loosening the lock bolt (2, Figure 3) and sliding the guide to the desired location.

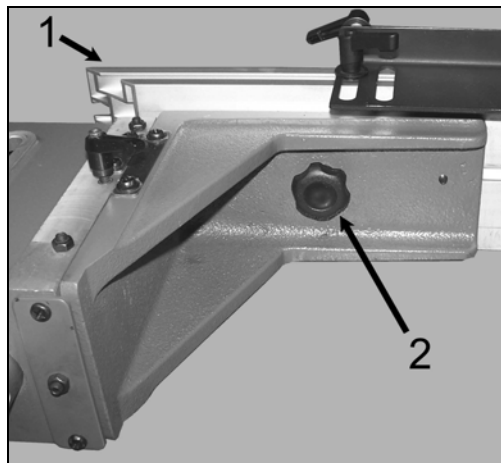


Figure 3

4. It is recommended to use the safety feather boards whenever possible. The boards are adjustable along the fence by loosening the two levers (1, Figure 4) and sliding the assembly to the desired location. The height of the feather board itself can be adjusted by loosening the two levers (2, Figure 4). If at the position shown the board is not low enough, the bracket (3, Figure 4) can be flipped over so that the vertical face is pointing downward. Of course levers 1 & 2 will have to be removed in order to flip the bracket and the feather board itself.

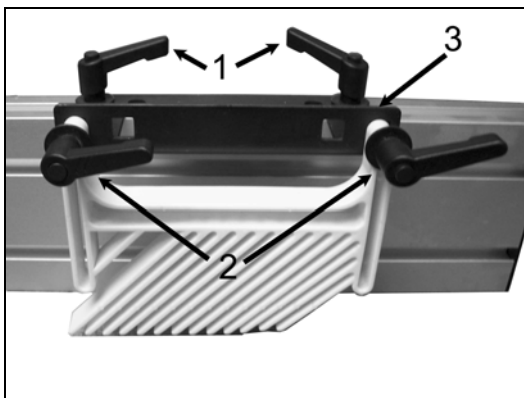


Figure 4

Installing Spindles

! WARNING

Disconnect machine from the power source before any maintenance, service or assembly is performed. Failure to comply may cause serious injury!

1. Remove the table inserts as necessary.
2. Raise the spindle shaft by turning the handwheel (A, Figure 5) until the quill assembly is at its maximum height.

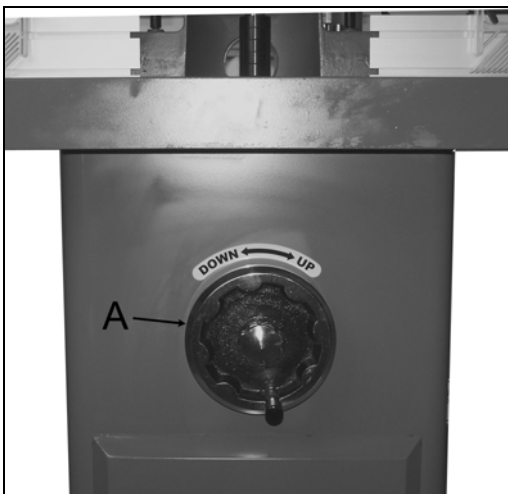


Figure 5

3. Thoroughly clean the taper of the spindle (A, Figure 6) and the internal taper of the quill assembly using a soft cloth moistened with kerosene or mineral spirits.

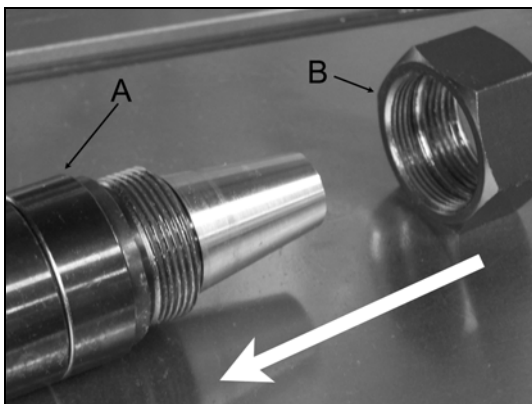


Figure 6

4. Thread the special nut (B, Figure 6) onto the spindle (A, Figure 6). It is only necessary to hand tighten the nut.

Note there are two types of threads in the special nut and care must be taken to use the correct end to avoid cross threading. The end with less threads screws onto the spindle.

5. Lower the spindle into the quill as show in Figure 7. Carefully screw the spindle onto the threads taking extra care not to cross thread.

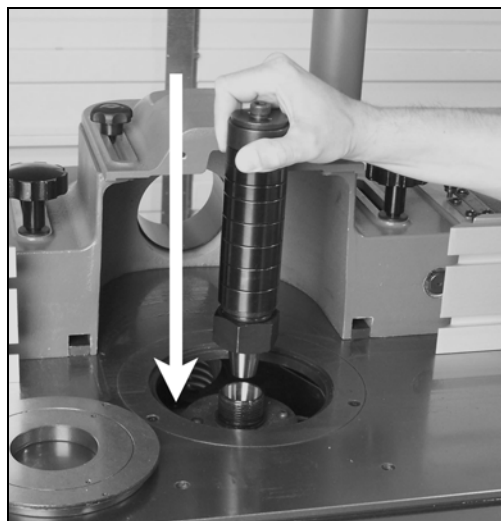


Figure 7

6. Open the cabinet door and find the spindle lock (A, Figure 8). Pull and rotate the spring loaded handle until the pins engage into the notches (B, Figure 8).

Note: you may need to rotate the spindle by hand until the lock engages.

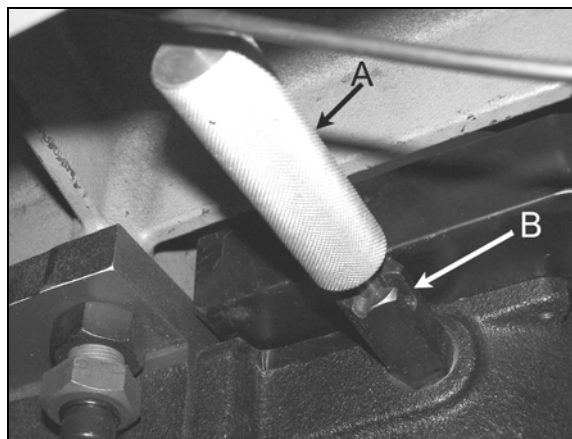


Figure 8

Installing Spindles (cont.)

7. Use the supplied spanner wrench (G, Figure 9), to tighten the special nut (H, Figure 9).

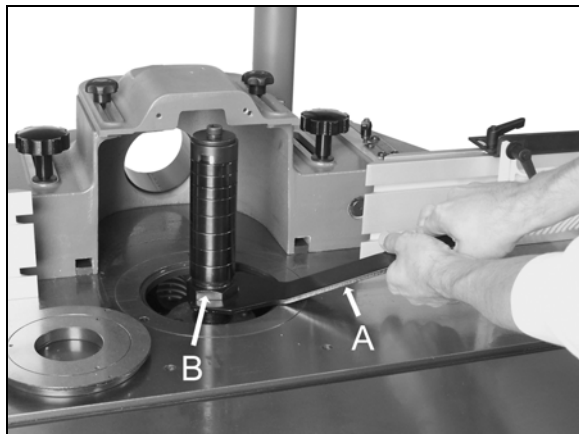


Figure 9

8. Insert the safety draw bolt (A, Figure 10) up into the hole in the bottom of the quill pulley (B, Figure 10). Feed it up into the bottom of the spindle then thread and tighten with the supplied wrench.

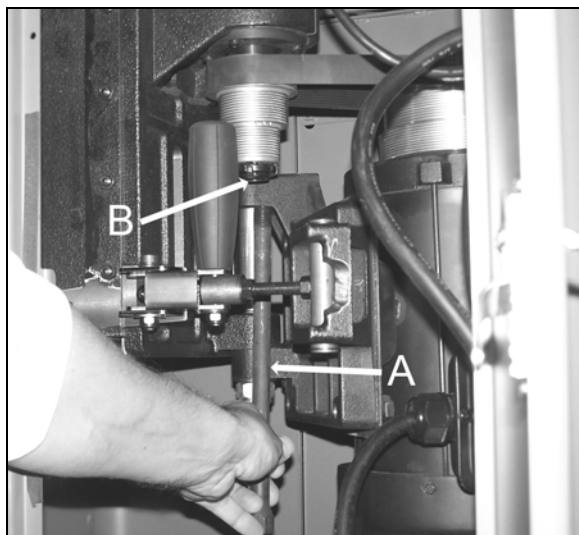


Figure 10

9. **Important!** Disengage the spindle lock before starting machine.

Electrical Connections

! WARNING

Electrical connections and wiring must be done by a qualified electrician. The machine must be properly grounded. Failure to comply may cause serious injury!

This shaper is available in both 1-Phase and 3-Phase versions.

• Electrical Connections for a 3-Phase Unit

This shaper is 3-Phase, 220V/440V **pre-wired 220V**. If you need to switch the shaper from 220V to 440V have a qualified electrician make the changes.

Make sure the voltage of your power supply matches the specifications on the motor plate of the machine.

1. **Disconnect machine from power source!**
2. Remove the screws that secure the cover to the connection box.
3. Insert the power cable through strain relief, and attach the wires to the terminals.
4. Re-install the connection box cover. With 3Ph power verify the motor is turning in the proper direction. Turn the machine on and make sure the direction of the shaft rotation is correct. Looking down on the top of the spindle, the spindle should be turning counterclockwise when the rotation switch is in the forward position. If it is not, disconnect the machine from the power source and reverse any two incoming power leads.
5. When wiring is completed, tape all power box joints to keep out dust.

• Electrical Connections for a 1-Phase Unit

This shaper is 1-Phase, 220V only. Oliver Machinery recommends using a dedicated circuit.

Make sure the voltage of your power supply matches the specifications on the motor plate of the machine.

1. **Disconnect machine from power source!**
2. Remove the screws that secure the cover to the connection box.
3. Insert the power cable through strain relief, and attach the wires to the terminals.
4. Re-install the connection box cover.
5. When wiring is completed, tape all power box joints to keep out dust.

Electrical Controls

(See Figure 11)

1. **Spindle Rotation Switch:** Changes the spindle rotation from “Forward”, to “Stop” to “Reverse”. **Caution!** only change the spindle rotation after the spindle has come to a complete stop, or damage to the machine may occur.
2. **Power Switch:** Stops and starts the spindle. Will not work when “Emergency Stop” is engaged, or if the spindle rotation switch is in the “Off” position. **Caution!** make sure the spindle lock is disengaged, or damage to the machine may occur.
3. **Emergency Stop:** Stops all electrical functions of machine, but the saw still has power. To reset rotate switch clockwise until the button pops out.
4. **Digital Display:** Displays spindle height. Programmable reference point by simply pressing the “0° SET” button. Display can read in inches or millimeters.



Figure 11

Spindle Height Control

(See Figure 12)

1. **Spindle Height Lock:** Turning the hand knob clockwise locks the spindle in place once the desired height is found.
2. **Speed Handle:** By using the speed handle, the spindle height can be adjusted quickly.

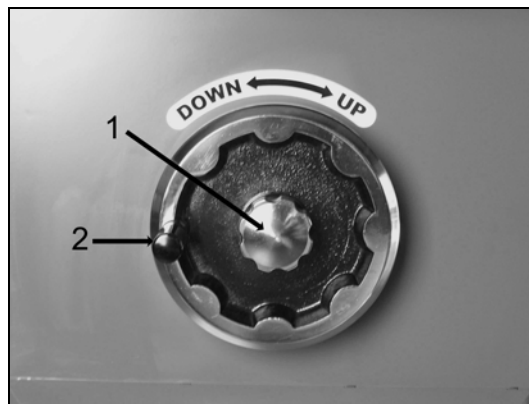


Figure 12

Speed Change and Belt Adjustment

Your machine is supplied with a 3-step pulley system that provide spindle speeds of 5000, 7000 and 10000 RPM.

A speed chart, shown in Figure 13, is located on the inside of the front cabinet door for easy reference of the belt position on the pulleys for the three speeds available.

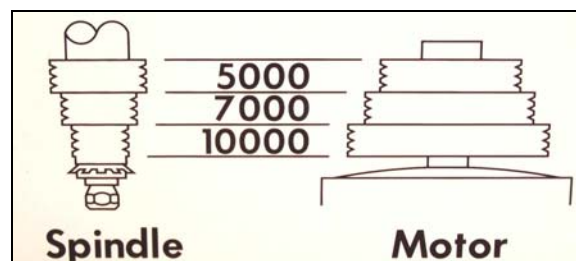


Figure 13

Check machine speed setting before operating. Make sure cutter meets or exceeds speed rating of tool.

To change the speed and adjust the proper belt tension, proceed as follows:

5. **Disconnect machine from power source.**
6. Open cabinet door and pull belt tension lever (1, Figure 14) towards you to relieve the belt tension.
7. Move the belt to the desired position on the pulleys.
8. When the belt is positioned properly, push the tension lever back to its original position.

Speed Change and Belt Adjustment (cont.)

9. Proper belt tension is achieved when the belt midway between the pulleys can be deflected using moderate finger pressure. To adjust, loosen the two jam nuts (2, Figure 14) then turn the adjusting bolt (3, Figure 14) to achieve the correct tension. Once set, lock into place once again using the jam nuts. If the belt tension lever is too difficult to move, slack off on the belt tension.



Figure 14



Figure 15

Installing Cutters

! WARNING

Always place the "keyed" washer on the spindle before threading the nut! Failure to comply may cause serious injury!

1. Disconnect machine from power source.
2. Engage the spindle lock.
3. The spindle assembly is as shown in Figure 15. Position the cutter in the desired position using the spacers (4). Install the special lock washer (3), pinned washer (2), and bolt (1).
4. Disengage spindle lock.

Dust Collection

There are two 4" dust ports located at the back of the fence assembly. Make sure the dust collection system has sufficient capacity and suction for your shaper. Always use dust collection.



Figure 16

Straight Work

! WARNING

Keep guards in place and in working order. Always use fence assembly when the work permits. Failure to comply may cause serious injury!

Using the fence is the safest and most satisfactory method of shaping, and it should always be used when the work permits. Almost all straight work can be done with the fence.

1. For normal work, where a portion of the original edge of the stock is not touched by the cutter, both the infeed and outfeed fences are in a straight line, as shown in Figure 17.
2. When the shaping operation removes the entire edge of the stock, e.g. in jointing or making a full bead, the shaped edge will not be supported by the outfeed fence when both fences are in line, as shown in Figure 18. In this case, the stock should be advanced to the position shown in Figure 18 and stopped. The outfeed fence should then be moved forward to contact the work, as shown in Figure 19. The outfeed fence will then be in line with the cutting circle, and the operation can continue.

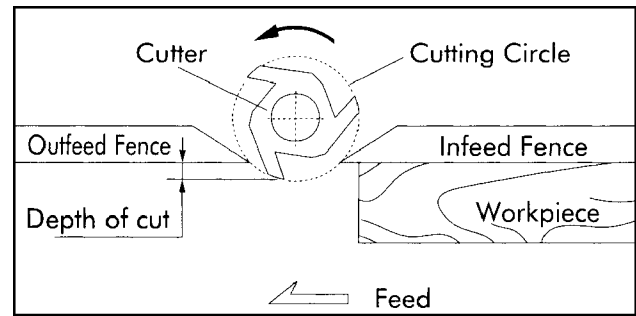


Figure 17

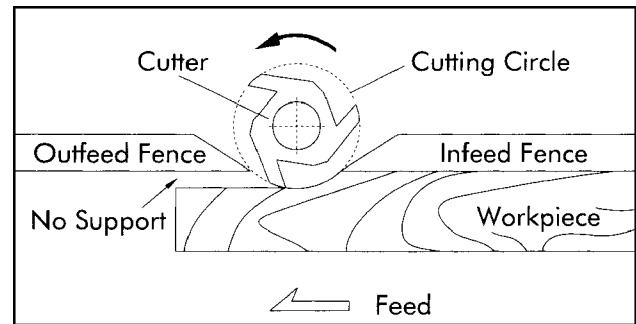


Figure 18

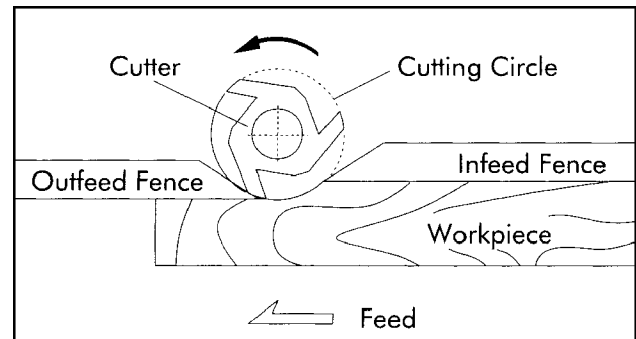


Figure 19

Position of Collars

When shaping with collars, the collar must have sufficient bearing surface, as shown in Figure 20. Also the work must be fairly heavy relative to the cut being made. Under no circumstances should a short, light workpiece be shaped against the collars, as shown in Figure 21.

The collars may be used in any of the following positions: above, below, or between the cutters.

1. When the collar is used below the cutter, as shown in Figure 22, the progress of the cut can be seen throughout the operation. However, any accidental lifting of the work will gouge the wood and ruin the workpiece.
2. When the collar is used above the cutter, as shown in Figure 23, the cut can not be seen, but this method offers an advantage in that the cut is not affected by slight variations in the thickness of the stock. Also, accidental lifting of the workpiece will not gouge the workpiece; simply repeat the operation to correct the mistake.
3. Using the collar between two cutters has the advantages and disadvantages of the first two procedures, and is frequently used where both edges of the work are to be molded.

Note: It is advisable to place the cutter as low as possible on the spindle to reduce spindle deflection and ensure the best possible finish. Also, make sure that the contacting surfaces of the cutter are smooth, sharp, clean and without dents.

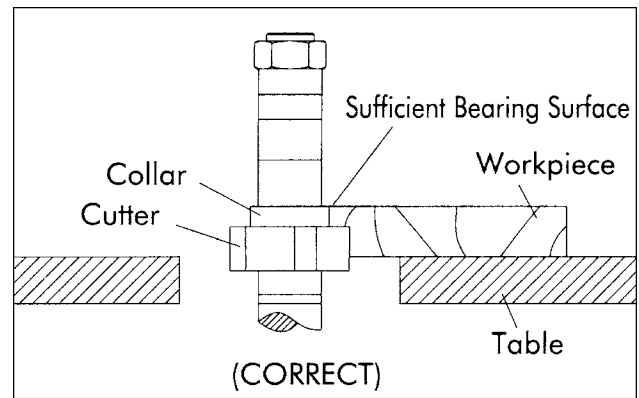


Figure 20

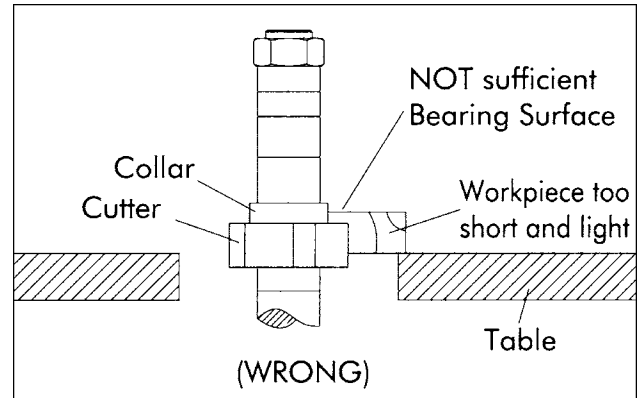


Figure 21

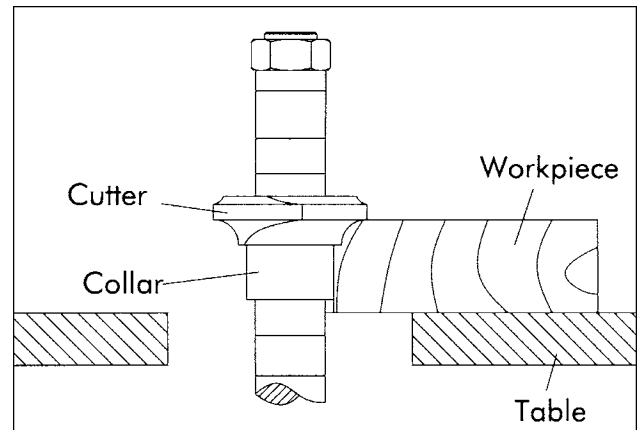


Figure 22

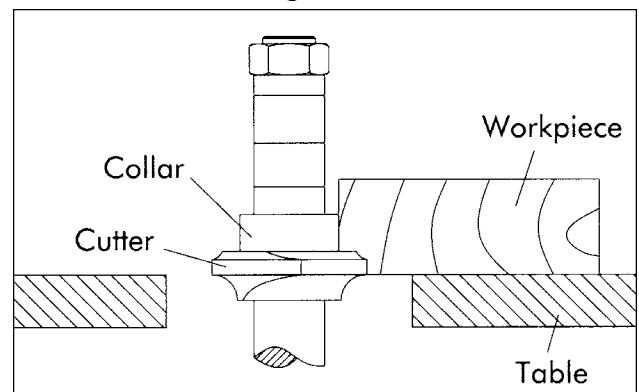


Figure 23

Maintenance

Periodically clean the inside of the machine of shavings and dust. This will increase machine performance and extend its life.

Clean the spindle with compressed air.

Do not get oil on the pulleys and belts. If they are dirty, use a soft rag to clean and dry them. Never place the v-belt under excessive strain, as this can overload the motor and damage the bearings, spindle or belt.

The table surface must be kept clean and free of rust for best results.

Lubrication

Apply a drop of light machine oil occasionally on the ledge and wall of the table opening to facilitate the changing of table inserts.

The bearings in the motor are sealed for life and do not require lubrication.

Troubleshooting

Description of Symptoms	Possible Cause	Corrective Action
Machine will not start	<ol style="list-style-type: none"> 1. Fuse blown or circuit breaker tripped 2. Cord Damaged 3. Faulty switch 4. Not connected to power source 5. Connected to wrong voltage 	<ol style="list-style-type: none"> 1. Replace fuse or reset circuit breaker 2. Have cord replaced 3. Replace switch 4. Check connection 5. Check voltage
Overload kicks out frequently	<ol style="list-style-type: none"> 1. Extension cord too light or too long 2. Feeding stock too fast 3. Cutter is dull or dirty 	<ol style="list-style-type: none"> 1. Replace with adequate size cord 2. Feed stock more slowly 3. Clean or replace cutter
Tool does not come up to speed	<ol style="list-style-type: none"> 1. Extension cord too light or too long 2. Low current 3. Motor not wired for correct voltage 4. Spindle is locked 	<ol style="list-style-type: none"> 1. Replace with adequate size cord 2. Contact local electric company 3. Refer to motor nameplate for correct voltage 4. Release spindle lock
Machine makes unsatisfactory cuts	<ol style="list-style-type: none"> 1. Dull cutter 2. Gum or pitch on cutter 3. Gum or pitch on table causing erratic feed 4. Feeding work in wrong direction 	<ol style="list-style-type: none"> 1. Replace cutter 2. Remove cutter and clean with turpentine and steel wool 3. Clean table with turpentine and steel wool 4. Feed work against cutter rotation
Stock burns	<ol style="list-style-type: none"> 1. Dull cutter 2. Cutter too deep 3. Forcing work 	<ol style="list-style-type: none"> 1. Sharpen by honing on flat side 2. On hardwoods take light cuts; attain full depth of cut with several passes 3. Feed slowly and steadily
Machine vibrates excessively	<ol style="list-style-type: none"> 1. Damaged cutter 2. Stand on uneven floor 3. Bad v-belt 4. V-belt not tensioned correctly 5. Bent pulley 6. Improper motor mounting 	<ol style="list-style-type: none"> 1. Replace cutter 2. Reposition on flat, level surface 3. Replace v-belt 4. Adjust belt tension 5. Replace pulley 6. Check and adjust motor mounting
Edge splits off on cross-grain cut	<ol style="list-style-type: none"> 1. Characteristic of cut 	<ol style="list-style-type: none"> 1. Make cross-grain cuts first then finish with grain 2. Use scrap block to support at end of cut

Raised areas on shaped edge	1. Variation in pressure which holds work against cutter	1. Keep work firmly against fence or collars throughout pass 2. Use hold-downs
Work pulled from hand	1. No support	1. Use mitre gauge with clamp or hold down to start cut when shaping freehand; hold work firmly against fence 2. Adjust the spring plate
Depth of cut not uniform	1. Misalignment 2. Side pressure not uniform	1. Adjust outfeed fence 2. Use hold-downs or feeder; keep pressure against fence or collars consistent.
Variation in height of cut	1. Variation in pressure which holds work down on table	1. Keep pressure firm throughout pass, use hold-downs; make pass slowly and steadily. Whenever possible, keep cutter under stock.
Cuts not smooth	1. Wrong R.P.M. 2. Feeding too fast 3. Working against grain 4. Cutting too deep	1. Use faster speed 2. Pass stock more slowly 3. Work with grain whenever possible 4. On deep cuts make several passes
Spindle does not raise freely	1. Sawdust and dirt in raising mechanisms	1. Brush or blow out loose dust and dirt