Instruction Manual & Parts List

WOOD SHAPER

MODEL: CWS220

CAUTION**: Read the instruction manual before using the appliance**

Contents

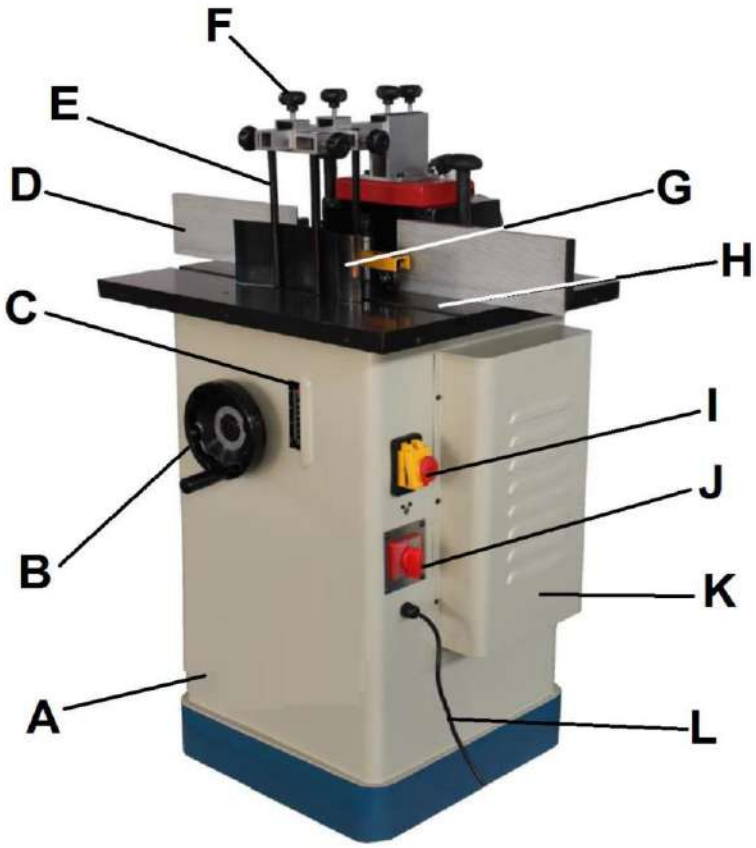
INTRODUCTION

Specifications

Motor Power .....2HP (1.5kW), 110V, 60Hz Single-Phase
Motor Speed.....3400RPM/60Hz
Spindle Sizes ..... 3/4" (Included)
Spindle Speeds.....6600 & 9900RPM/60Hz
Total Spindle Travel .....76mm (3")
Handwheel Rotation to Spindle Travel .....360º = 0.8mm
Table Size .....610x535x34mm (24" Wide x 21" Deep)
Stand ..... Cabinet Style, Powder Coated Paint
Fence Size 300x110mm
Dust Port ..... 76mm (3")
Power Transfer ..... V-Belt Drive
Bearings ..... Shielded and Permanently Lubricated Ball Bearings
Switch ..... Forward and Reverse
Net Weight 110kg
Shipping Weight 128kg

WOOD SHAPER PARTS

A. Stand
B. Spindle Height Handwheel
C. Spindle Height Scale
D. Fence
E. Guide Vertical Bar
F. Guide Adjustment Knobs
G. Guide
H. Table
I. On/Off Switch
J. Rotation Selector Switch
K. Motor Cover
L. Power Cord



SAFETY

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

Standard Safety Instructions

1. Thoroughly read the instruction manual before operating your machine. Learn the applications, limitations and potential hazards of this machine. Keep manual in a safe, convenient place for future reference.

2. Keep work area clean and well lit. Clutter and inadequate lighting invite potential hazards.

3. Ground all tools. If a machine is equipped with a three-prong plug, it must be plugged into a three-hole grounded electrical receptacle or grounded extension cord. If using an adapter to aid in accommodating a two-hole receptacle, ground using a screw to a known ground.

4. Wear eye protection at all times. Use safety glasses with side shields or safety goggles that meet the appropriate standards.

5. Avoid dangerous environments. DO NOT operate this machine in wet or open flame environments. Airborne dust particles could cause an explosion and severe fire hazard.

6. Ensure all guards are securely in place and in working condition.

7. Make sure the machine power switch is in the *OFF* position before connecting power to machine.

8. Keep the work area clean, free of clutter, grease, etc.

9. Keep children and visitors away. Visitors should be kept at a safe distance while operating unit.

10. Childproof your workshop with padlocks, master switches or by removing starter keys.

11. Stop and disconnect the machine when cleaning, adjusting or servicing.

12. DO NOT force tool. The machine will do a safer and better job at the rate for which it was designed.

13. Use correct tool. Do not force machine or attachment to do a job for which it was not designed.

14. Wear proper apparel. Do not wear loose clothing, neck ties, gloves, jewelry, keep long hair tied up, etc.

15. Remove adjusting keys and wrenches. Before turning the machine on, make it a habit to check that all adjusting keys and wrenches have been removed.

16. Use proper extension cord. Examine the extension cord to ensure it is in good condition. Use the chart below to determine the correct length and gauge of extension cord needed for your particular needs. The amp rating of the motor can be found on its nameplate. If the motor is dual voltage, be sure to use the amp rating for the voltage you will be using. If you use an extension cord with an undersized gauge or one that is too long, excessive heat will be generated within the circuit increasing the chance of a fire or damage to the circuit. Never use an extension cord that does not have a ground pin and connected ground wire. Immediately replace an extension cord if it shows any signs of damage.

17. Keep proper footing and balance at all times.

18. Do not leave machine unattended. Wait until it comes to a complete stop before leaving the area.

19. Perform machine maintenance and care. Follow lubrication and accessory attachment instructions in the manual.

20. Keep machine away from open flame. Operating machines near pilot lights and/or open flames creates a high risk if dust is dispersed in the area. Dust particles and an ignition source may cause an explosion. Do not operate the machine in highrisk areas, including but not limited to, those mentioned above.

21. If at any time you are experiencing difficulties performing the intended operation, stop using the machine! Then contact our service department or ask a qualified expert how the operation should be performed.

Additional Safety Instructions for Shapers

1. **Never place your hands within 12 inches** of the cutters. Never pass your hands directly over or in front of the cutter. As one hand approaches the 12-inch radius point, move it in an arc motion away from the cutter to the outfeed side and reposition that hand more than 12 inches beyond the cutter.

2. **DO NOT shape stock shorter than 12 inches** without special fixtures or jigs. Where practical, shape longer stock and cut to size.

3. **Keep the cutters on the** underside of the workpiece whenever possible. This provides a distance guard for the operator.

4. **UNPLUG THE SHAPER, and always rotate the spindle by hand** to test any new setup to ensure proper cutter clearance before starting the shaper.

5. **When shaping contoured work** and using a rub collar, **NEVER** start shaping at a corner. See the rub collar section further on in the manual. The danger of kick-back is increased when the stock has knots, holes, or foreign objects in it.

6. **Always run warped stock through a jointer** before you run it through the shaper.

7. **Keep any unused portion of the cutter below the table surface.**

8. **Never attempt to remove too much material in one pass.** Several light passes are safer and give a cleaner finish.

9. **In most applications it is advisable to use a push stick as a safety device**; in others it can be quite dangerous. If the push stick comes in contact with the cutter on the end grain, it can be violently propelled from your hand—potentially causing serious injury. We recommend using some type of fixture, jig, or hold-down device as a safer alternative. And **ALWAYS** use a guard or other type of protective device at all times.

10. **Always make sure cutter is turning the correct rotation before starting shaper,** and always feed against the rotation of the cutter.

11. **Use overhead guard when the fence is not in place.**

12. **Never operate the shaper without the second locking nut in place** over the spindle nut.

ASSEMBLY

Initial Cleaning

The exposed and unpainted shaper surfaces are coated with a waxy oil to prevent rust during storage and shipment. DO NOT use chlorine based solutions or solvents to remove the waxy oil, or you will damage the painted surfaces. Remove the waxy oil with a solvent based degreaser before you use the shaper. Always follow all use and safety instructions of the product that you are using.

Hold-Downs

The hold-downs are designed to hold the workpiece against the fence and the table. NOTE: Remove the hold-down assembly when not in use.

To install the hold-downs, do these steps:
1. Install two aluminum hold-down brackets onto each of the hold-down bars as shown in **Figure 1**.
2. Insert the long end of the hold-down bar through the hole in the fence mount as shown in **Figure 1**.
3. Adjust the hold-down fence mount to the desired position along the top edge of the fence casting.

4. Screw in, but do not tighten, the set screws into the aluminum hold-down brackets as shown in **Figure 1**.
5. Slide each hold-down into the slot between the aluminum hold-down bracket and holddown bar.
6. Position each of the hold-downs into place for your workpiece, and tighten the setscrews in the fence mounts and the aluminum holddown brackets as shown in **Figure 2**

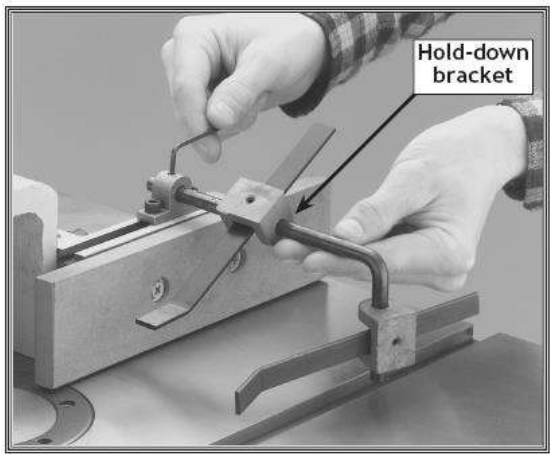


Figure 1.

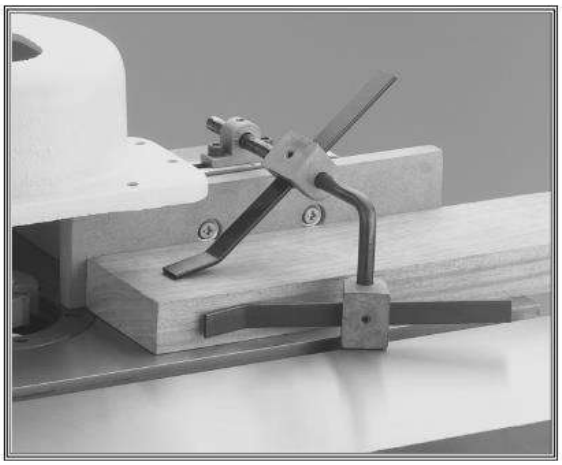


Figure 2

Handwheel

The cast iron handwheel comes installed from the factory; however, you will need to install the crank handle. and for each revolution of the handwheel, the spindle moves approximately 0.80mm.

To install the crank handle, do these steps:
1. Thread the crank handle into the hole on the face of the handwheel as shown in **Figure3**.
2. Using a 14mm open end wrench, tighten the crank handle securely, making sure the wheel rotates freely.

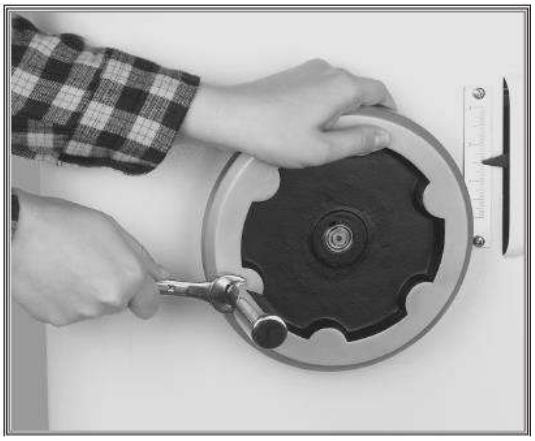


Figure3.

Figure4.

Spindle

To install the shaper spindle or router bit spindle, do these steps every time in this order:

1. UNPLUG THE SHAPER!

2. Thread one end of the drawbar into the bottom end of the desired spindle approximately 10-15 turns, shown in **Figure 4,** until tight.

3. Insert the spindle/drawbar assembly into the spindle cartridge from the top side of the table.

4. Observe and make sure the spindle keyway on the spindle lines up with the guide pin on the spindle cartridge as shown in **Figure 5**.

5. Lower the spindle/drawbar assembly until the guide pin splines with the spindle keyway and the spindle/drawbar assembly fully seats into the tapered bore of the spindle cartridge. When correctly installed, you will feel the spindle/drawbar assembly snugly seat with the spindle cartridge.

6. Thread the tapered drawbar nut onto the end of the drawbar under the table, and make sure that the taper side of the nut is facing upward as shown in **Figure 6.**

7. Tighten your selected spindle in the shaper as outlined below:

• **For shaper spindles:** place the spindle wrench on the top end of the spindle. Using a 14mm open end wrench, tighten the drawbar nut while holding the spindle wrench secure as shown in **Figure 7**. DO NOT over tighten the drawbar nut.

• **For router bit spindles:** hold the router bit spindle flat on the shank—NOT the collet nut. Using a 14mm open end wrench, tighten the drawbar nut while holding the router bit spindle in position with a wrench. DO NOT over tighten the drawbar nut.

Figure4.

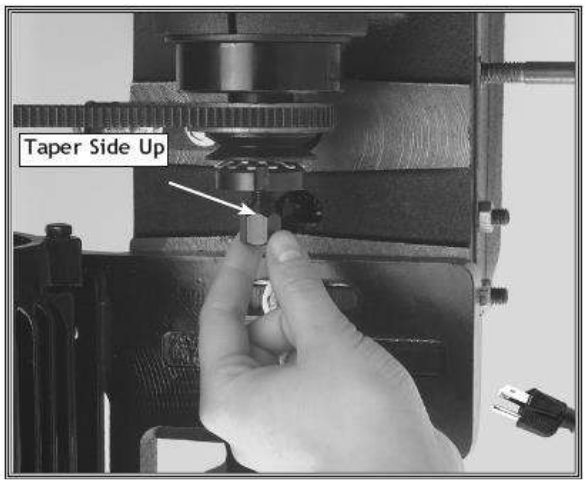


Figure5.

Figure6.

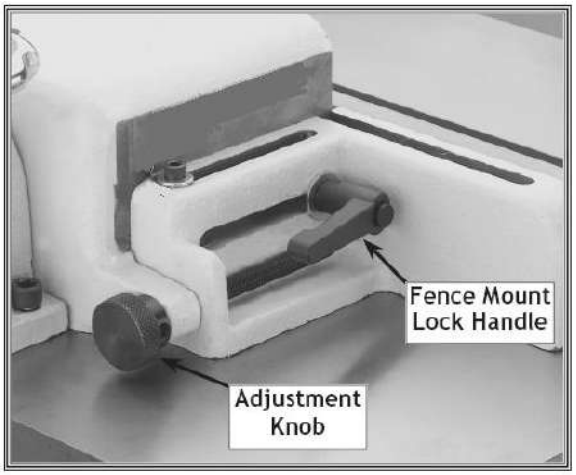


Figure7

Dust Collection

It is recommended that you use a dust collector (not included) when using this machine. The minimum air flow requirements for this machine are listed below. The machine comes with a 3" dust port located on the side of the machine.
The dust extraction equipment is to be switched on before commencing machining.
Air current speed is 20m/s for vacuum suction dust emission index.
When air current speed of dust collector device (in accordance with EN12779:2004) is not lower than 20m/s, ensure machine can be normal exhausted. User must wear dustproof mask.
1. Required air flow: 1500 m3/h.

2. Ensure pressure drop of each dust collector outlet carrying air current speed: 1100Pa.

3. Wind speed of dust collector tube m/s: Dry Chips: 20m/s, / Wet chips: 28m/s (water content is equal to18%)

ADJUSTMENTS

Fence Positioning

The two fence faces are independently adjustable to allow for different shaping tasks. The fence faces can be set at different positions to remove material from the entire edge of the wood stock, or the same position to allow the shaping of part of the edge.

To adjust the fence, do these steps:

1. Loosen the fence mount lock handle located on the side of the fence mount as shown in **Figure 8.**
2. Adjust the position of the fence by turning the adjustment knob located on the back of the fence mount as shown in **Figure 8.**
3. Once the fence is in the desired position, tighten down the fence mount lock handle.

Fence Alignment

Before shaping, it is important to check that the two fence faces are parallel.

To align the fences so they are parallel with each other, do these steps:

1. Get a quality straightedge that is long enough to span the entire length of the fence assembly.
2. Make sure that the screws holding the fence faces to the fence mounts are tight and secure.
3. Adjust the fence faces so they are in as close to the same parallel position as possible.
4. Hold the straightedge across both of the fence faces as shown in **Figure 9.**
5. If the fence faces are not parallel, place shims between the back of the fence piece and the face of the fence mount. With some trial and error shim adjusting, parallel fence faces can be achieved.

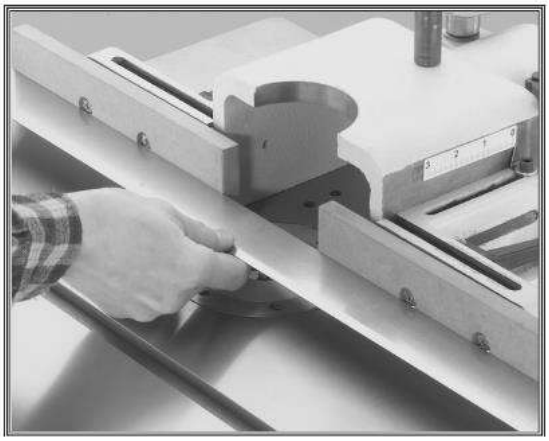


Figure8.

Figure9.

Table Inserts

The table inserts are necessary for the safe operation of the shaper. Two inserts are provided allowing for three different opening sizes to be achieved. Use the smallest-size opening for a cutter to reduce wood chips falling into the machine, which could cause flying debris. Using the smallest-size opening also covers any unused portion of the bit below the surface of the table, thus reducing the chance of operator injury.

To adjust the table inserts, do these steps:

1. UNPLUG THE SHAPER!
2. Using a screwdriver, remove the three head screws holding the cast iron insert in the table.
3. Using a straightedge as a guide, turn the barrel-head screws either way until the insert is flush with the top of the table as shown in **Figures9 and 10.**
4. Once the entire insert is flush with the table top, reinsert the three Phillips® head screws and tighten.

Figure11.

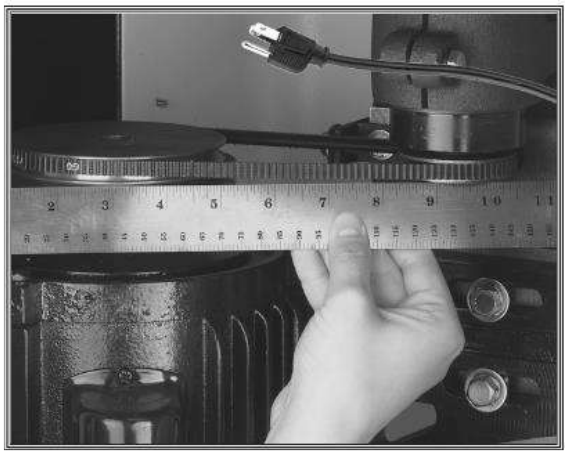


Figure12.

Pulley Alignment

Pulley alignment is important to the performance of your shaper. If the pulleys are just slightly out of alignment, the shaper may suffer from power loss as well as decreased V-belt life. The pulleys need to be both parallel with one another for optimum shaper performance.

To align the pulleys, do these steps:

1. UNPLUG THE SHAPER!

2. Remove the motor cover from the side of the shaper.

3. Hold a straightedge up to the pulleys to determine if they are both aligned and parallel as shown in **Figure 12.**

4. If the motor pulley is not parallel with the spindle pulley, loosen the four motor mount bolts as shown in **Figure13**.

5. Wiggle the motor until the pulley is parallel with the spindle pulley.

6. If the spindle pulley is not aligned with the motor pulley, loosen the shaft securing setscrew located on the motor pulley.

7. Raise or lower the motor pulley along the motor shaft to align it with the spindle pulley, then tighten the setscrew loosened in **step 6**.

Note: The spindle pulley can also be adjusted by loosening the spindle bolt (shown in **Figure 14**), moving the spindle up or down as necessary, then retightening the spindle bolt.

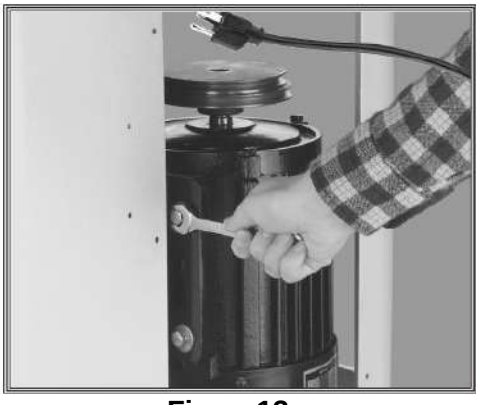


Figure13.

Figure14.

Spindle RPM

This shaper spindle can be run at 5,800 or 8,300 RPM. The speed is changed by the placement of the V-belt as shown in **Figure 15.**

To change the spindle RPM, do these steps:

1. UNPLUG THE SHAPER!
2. Loosen the two spindle slide bolts holding the motor mount plate to the spindle slide as shown in **Figure 16.** DO NOT remove the bolts completely.
3. Position the V-belt on the pulleys according to the desired spindle speed.
4. Slide the motor and motor mount plate assembly until the V-belt is snug and tighten the bolts. The amount of V-belt deflection should be ¼" when pressed with your thumb.
5. Tighten all fasteners securely.
6. Make sure the V-belt is correctly aligned on both pulleys.

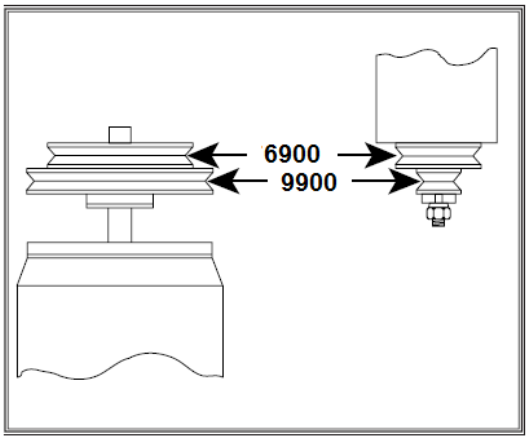


Figure 15

Figure 16.

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Spindle Slide and Gib

The spindle slide-to-gib clearance may need adjusting so there is no play when pressure is applied to the spindle. Gib adjustments are made by loosening or tightening some or all of the four setscrews on the side of the elevation housing as shown in **Figure 17.**

To check the spindle slide-to-gib clearance, do these steps:

1. UNPLUG THE SHAPER!
2. Turn the handwheel until the spindle is in the highest position.
3. Lock the spindle in place by tightening the spindle lock handle on the side of the shaper.
4. Grasp and wiggle the top of the spindle to see if there is side-to-side movement. If there is movement, adjust the gib to remove this play.

To adjust the spindle slide-to-gib clearance, do these steps:

1. UNPLUG THE SHAPER!
2. Loosen the setscrew jam nuts.
3. Slowly turn the four setscrews. Alternate between the top and bottom so the pressure will be uniform.
4. Tighten the hex nuts while holding the setscrews in position.
5. Recheck the spindle slide up and down movement. No play should exist and the spindle should move up-and-down smoothly. It may take several attempts to adjust the spindle slide-to-gib clearance to get the spindle to move up and down smoothly.

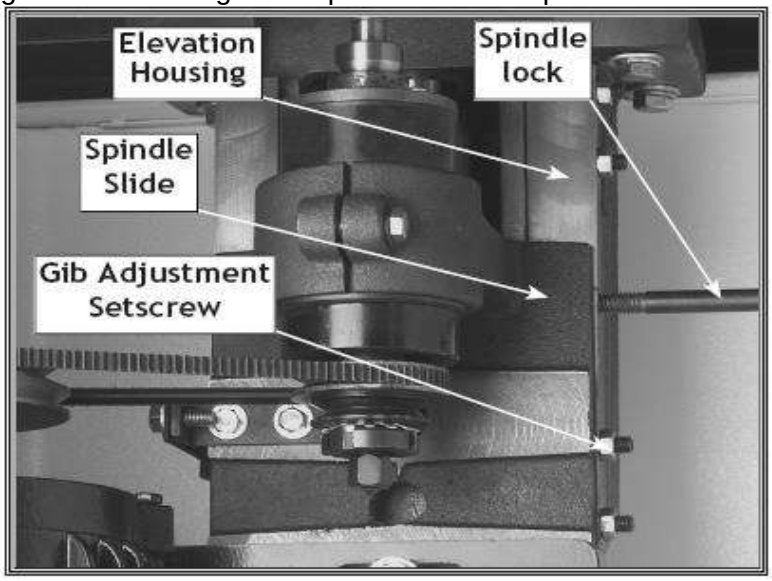

Figure17.

OPERATIONS

Start Up

Once assembly is complete and adjustments have been made, the shaper is ready for startup. Always pay attention for any unusual noises and vibrations on every start up, as well as make sure the shaper operates as intended.

1. MAKE SURE THAT THE FENCE, ANY ACCESSORIES, JIGS, SPINDLE, CUTTER, OR ROUTER BIT ADAPTER
BEING USED IS TIGHT AND NO LOOSE ITEMS ARE ON THE TABLE.
2. Put your safety glasses on, and turn on the shaper by turning the switch to the forward position. Be sure to have your finger poised to turn off the machine if there is a problem.
3. Once the machine is running, listen and observe for any unusual noises coming from the shaper. The shaper should run smoothly with little or no vibrations.
• If there is an unusual noise or vibration, shut the machine off immediately. DO NOT run the shaper any further until the problems are corrected.
• If the problem continues and cannot be easily identified, contact our customer service department.

Cutter Installation

Always follow cutter manufacturer recommendations; however, if not available use the table below with your particular cutting needs in mind to help select the correct cutter, spindle, and RPM. Then install your cutter as outlined.

To install a cutter, do these steps:

1. UNPLUG THE SHAPER!
2. Place the bushing (if needed) onto the spindle for cutter support as shown in **Figure 18.**
3. Slide the cutter onto the spindle, making sure the rotation is correct for the specific application as shown in **Figure 19.**
4. Place the spindle washer onto the spindle as shown in **Figure 20**

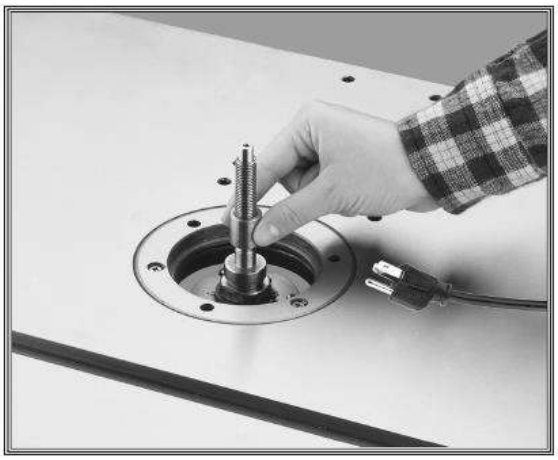

Figure18

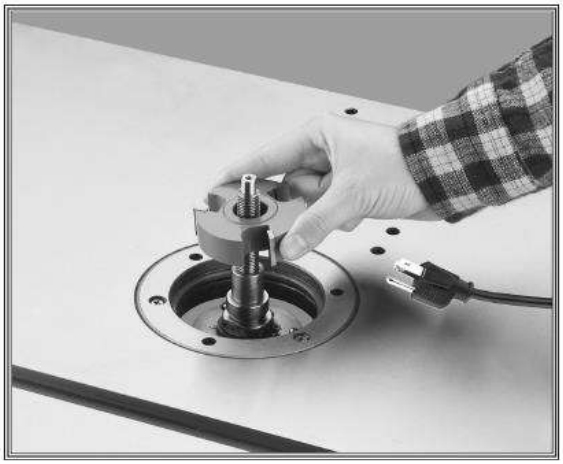

Figure19.

5. Install spacers or collars if necessary for the specific application, followed by the nut and locknut as shown in **Figure 21.**
6. Tighten down the nut and locknut with an open-end wrench while holding the top of the spindle with the spindle wrench provided as shown in **Figures 22 and 23.**
7. Make sure the cutter will rotate in the correct direction.
8. Go to the **Spindle RPM** section and set the spindle RPM as outlined.
9. Install applicable safety guard(s).

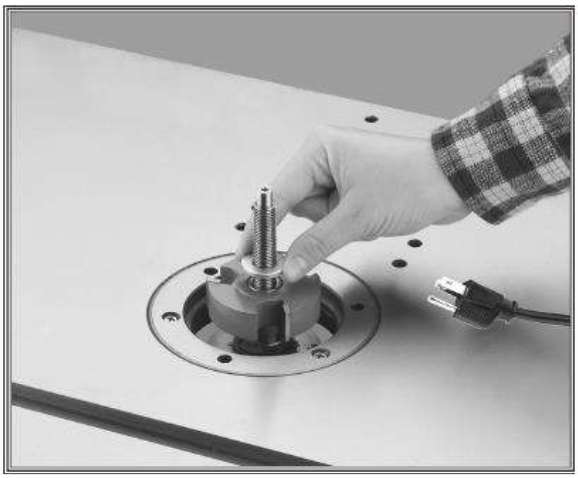

Figure20

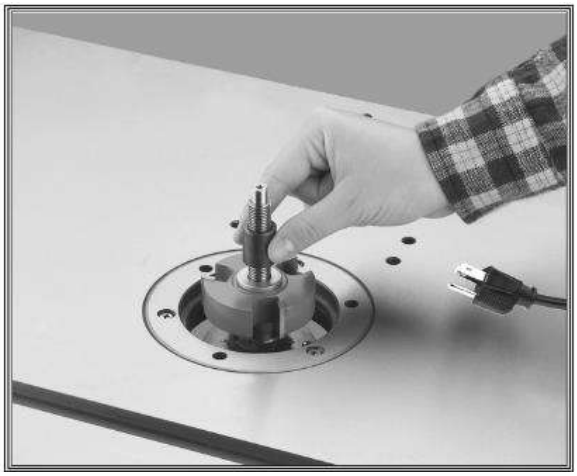

Figure21.

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Figure22

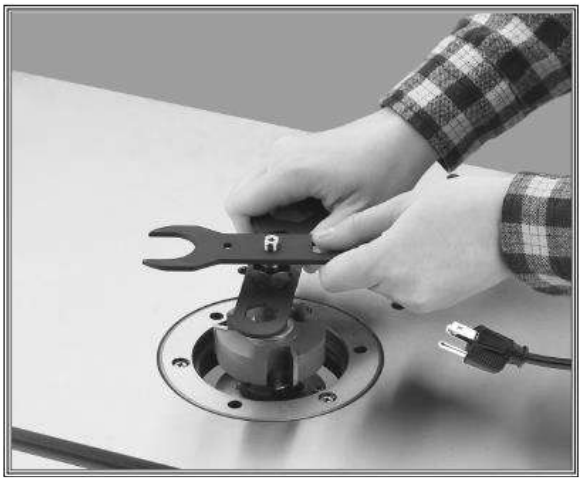

Figure23.

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Setting Spindle Height

Correct spindle height is crucial to most shaping applications. Use a piece of test wood to confirm correct spindle height before cutting expensive lumber.

To set the spindle height, do these steps:

1. Loosen the spindle lock knob located on the side of the shaper as shown in **Figure 24.**
2. Rotate the handwheel on the front of the shaper to raise or lower the spindle as shown in **Figure 25.**
3. Retighten the spindle lock handle on the side of the shaper. DO NOT over tighten the handle. Only a small amount of tension is needed to keep the spindle from moving during operation.

Figure24.

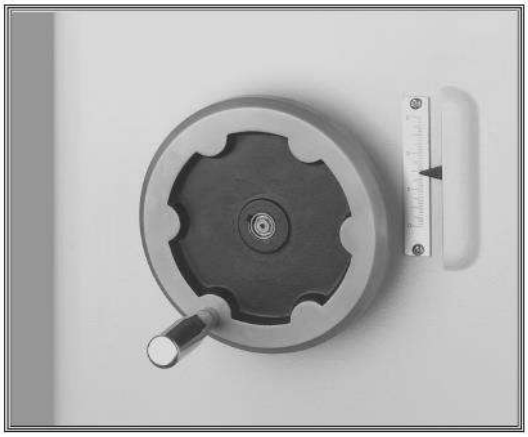

Figure25.

Straight Shaping

Because the shaper fence is independently adjustable, you can set up the shaper to make cuts of part or all of the workpiece edge.

To set the fence up for cutting material from the whole edge of the workpiece, do

these steps:
1. Loosen the locking handles(A) on the sides of the fence mount as shown in **Figure 26.**
2. Turn the adjustment knob(B) located on the back of the fence mount and adjust the infeed fence until the workpiece contacts the cutter at the desired location.
3. Tighten the lock handle located on the side of the fence mount to lock the fence into position.
4. Adjust the outfeed fence so that it is located as far back from the front of the table as possible.
5. Turn the shaper on.
6. Using a piece of scrap wood, advance the workpiece 8" into the cutters, and turn the machine off. DO NOT remove the workpiece from the infeed fence face.
7. Once the cutter has come to a complete stop, adjust the outfeed fence so that it just touches the newly cut edge as shown in **Figure 27.**
8. Make sure all fence lock handles are tight.

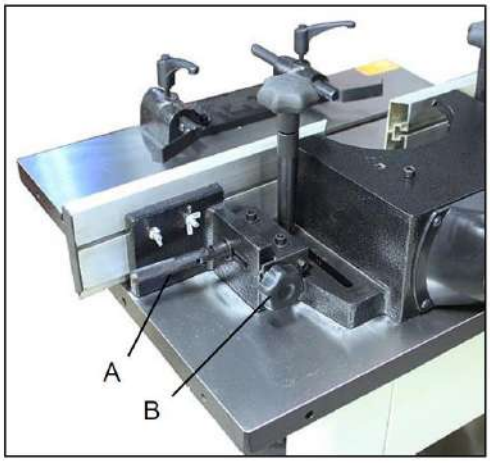

Figure26

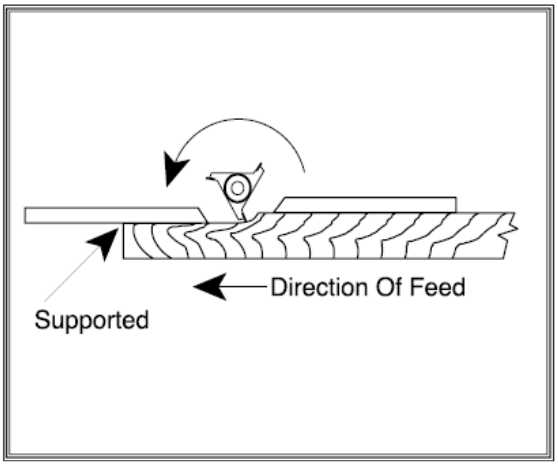

Figure27.

To set up the fence for partial edge removal, do these steps:

1. Loosen the lock handles on the side of the fence mount.
2. Turn the adjustment knob located on the back of the fence mount and adjust the infeed fence until the workpiece contacts the cutter at the desired location.
3. Tighten the lock handle located on the side of the fence mount to lock the fence into position.
4. Adjust the outfeed fence so that it comes into alignment with the infeed fence as shown in **Figure 28.**
5. Now place a straightedge against both faces of the fence to check alignment. Once they are both in alignment, make sure both lock handles are tightened.

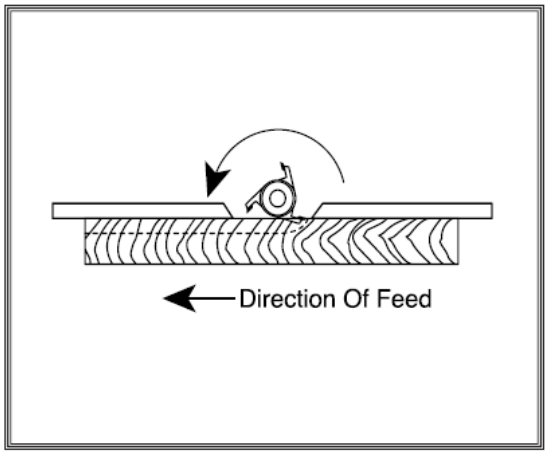

Figure28

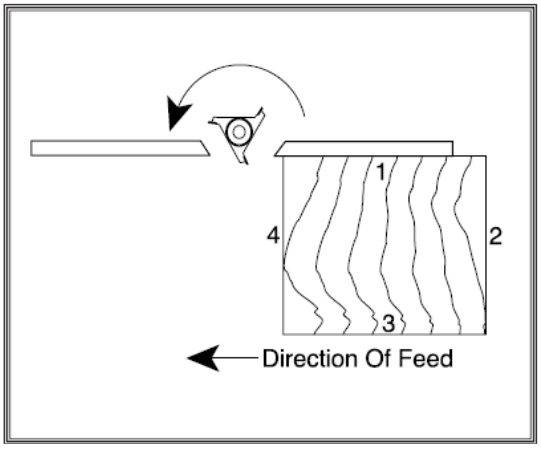

Figure29.

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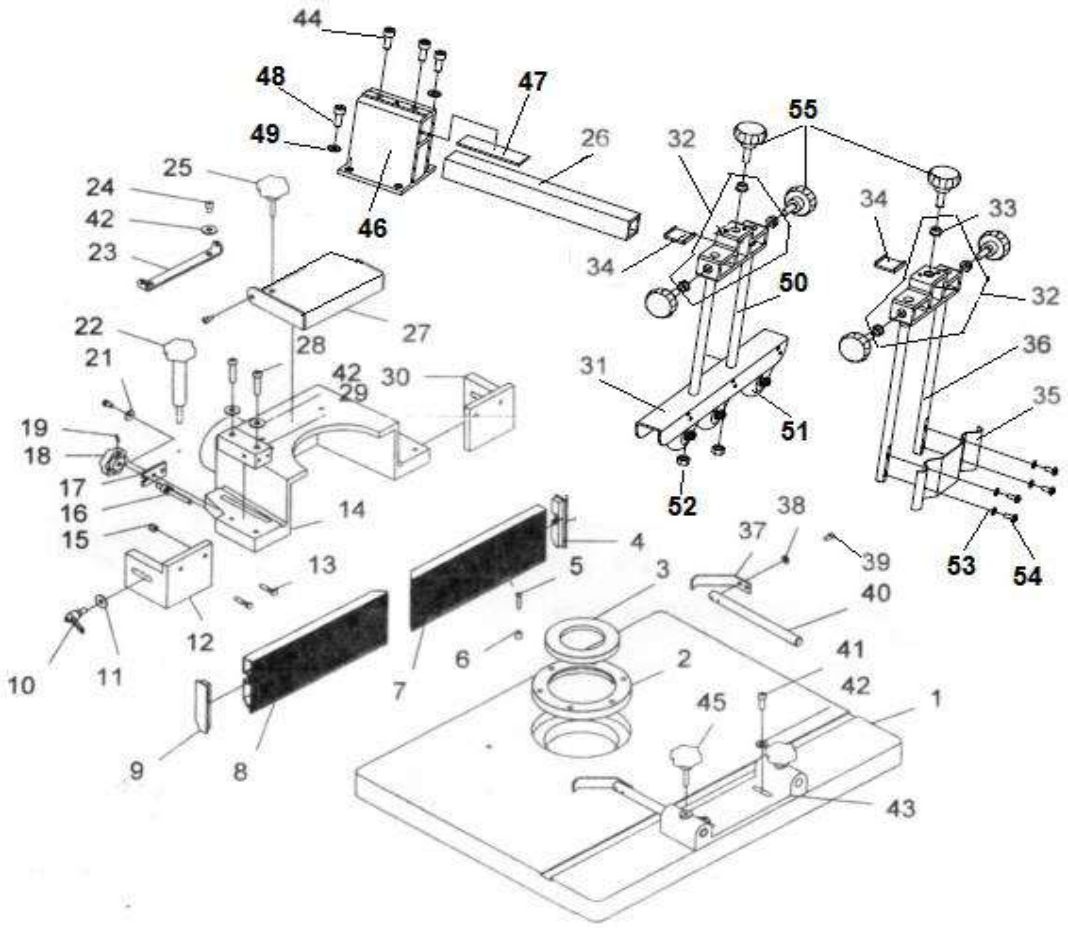
Always feed the wood against the rotation of the cutter as shown in **Figure 29.** Another way to conceptualize this is to always feed the wood into the cutter so that the cutter is pushing against the direction of feed. Never feed wood in the same direction as the cutter rotation. This is called a “climb cut” and is extremely dangerous.

MAINTENANCE

Regular periodic maintenance on your Model will ensure its optimum performance. Make a habit of inspecting your shaper each time you use it. Check for the following conditions and repair or replace parts when necessary.

1. Loose mounting bolts.
2. Worn switch.
3. Worn or damaged cords and plugs.
4. Damaged drive belt.
5. Any other condition that could hamper the safe operation of this machine.

Parts Breakdown for CWS220 Wood Shaper -- Table Assembly

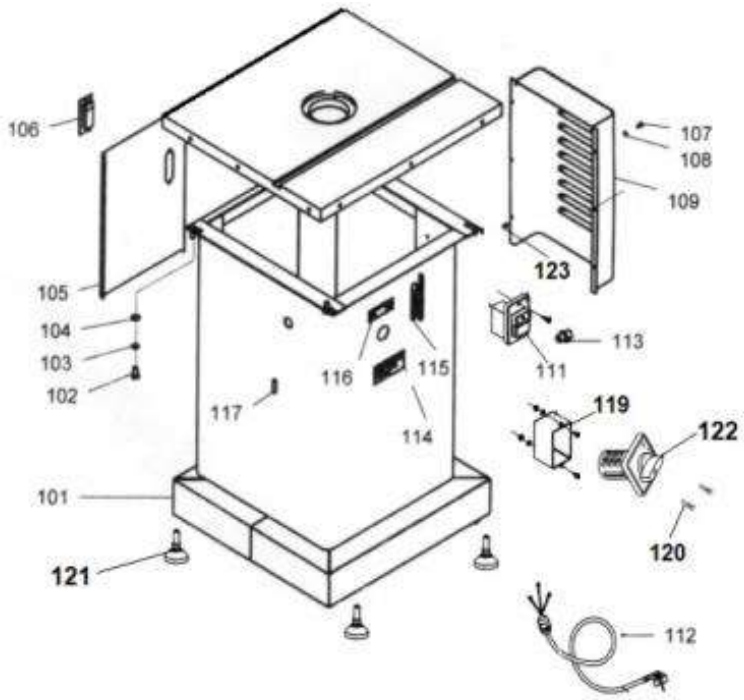


Parts List for CWS220 Wood Shaper —Table Assembly

Index No.	Part No.	Description	Size	Qty.
1	CWS220-001	Table		1
2	CWS220-002	Table Insert		1
3	CWS220-003	Table Insert for 30mm Spindle		1
4	CWS220-004	Right Fence Lid		1
5	CWS220-005	Screw	M5x30	3
6	CWS220-006	Hex Nut	M12	3
7	CWS220-007	Right Fence		1
8	CWS220-008	Left Fence		1
9	CWS220-009	Left Fence Lid		1
10	CWS220-010	Handle		3
11	CWS220-011	Flat Washer	8	4
12	CWS220-012	Fence Mount (Left)		1
13	CWS220-013	Screw	M6x30	4
14	CWS220-014	Main Fence Housing		1

Index No.	Part No.	Description	Size	Qty.
15	CWS220-015	Hex Nut	M6	4
16	CWS220-016	Fence Adjust Screw		2
17	CWS220-017	Plate		2
18	CWS220-018	Adjusting Knob		2
	CWS220-019.0	Adjusting Handle (#16,#18,#19)		2
19	CWS220-019	Pin	3x20	2
20	CWS220-020	Head Screw	M6x12	4
21	CWS220-021	Flat Washer	6	4
22	CWS220-022	Lock Knob		2
23	CWS220-023	Plate		1
24	CWS220-024	Head Screw	M8x12	2
25	CWS220-025	Lock Knob		1
26	CWS220-026	Post		1
27	CWS220-027	Bracket Base		1
28	CWS220-028	Bolt	M8x40	4
29	CWS220-029	Block		2
30	CWS220-030	Right Fence Mount		1
31	CWS220-031	Control Plate		1
32	CWS220-032	Bracket (Include #33)		2
33	CWS220-033	Special Nut (build in #32)		6
34	CWS220-034	Post LID		2
35	CWS220-035	Protective Guard		1
36	CWS220-036	Post 1		2
37	CWS220-037	Block II		2
38	CWS220-038	Flat Washer	6	4
39	CWS220-039	Screw	M6x12	4
40	CWS220-040	Pole		2
41	CWS220-041	Screw	M8x25	2
42	CWS220-042	Flat Washer	8	8
43	CWS220-043	Block		1
44	CWS220-044	Screw		2
45	CWS220-045	Handle		2
46	CWS220-046	Block M		1
47	CWS220-047	Plate		1
48	CWS220-048	Screw M		4
49	CWS220-049	Washer		4
50	CWS220-050	Post 2		2
51	CWS220-051	Wheel		3
52	CWS220-052	Nut		3
53	CWS220-053	Washer		4
54	CWS220-054	Screw		4
55	CWS220-055	Knob		6

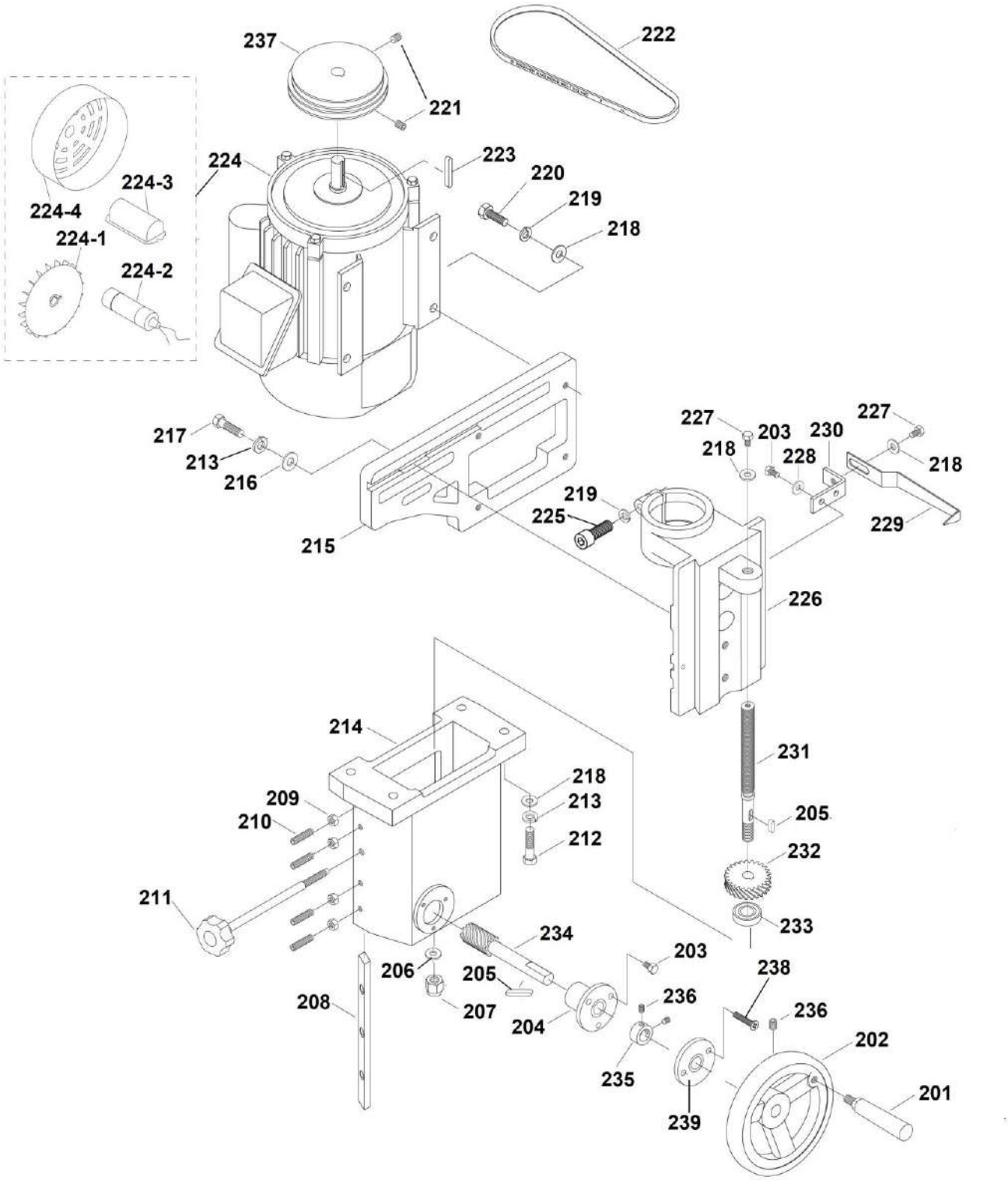
Parts Breakdown for CWS220 Wood Shaper -- Stand Assembly



Parts List for CWS220 Wood Shaper —Stand Assembly

Index No.	Part No.	Description	Size	Qty.
101	CWS220-101	Stand		1
102	CWS220-102	Bolt	M10x20	4
103	CWS220-103	Lock washer	10	4
104	CWS220-104	Washer	10	4
105	CWS220-105	Cover		1
106	CWS220-106	Lock		6
107	CWS220-107	Screw	M5x10	6
108	CWS220-108	Washer	5	6
109	CWS220-109	Motor Cover		1
111	CWS220-111	ON/OFF Switch for		1
112	CWS220-112	Power cord		1
113	CWS220-113	Strain relief		1
114	CWS220-114	Safety Glasses Warning		1
115	CWS220-115	Scale		1
116	CWS220-116	Lifting Label		1
117	CWS220-117	Screw	M8x16	4
118	CWS220-118	Rubber Foot		4
119	CWS220-119	Reverse Switch Box		1
120	CWS220-120	Screw		2
121	CWS220-121	Bolt With Leveling Pad		4
122	CWS220-122	Reverse Switch		1
123	CWS220-123	Screw	M4x16	1

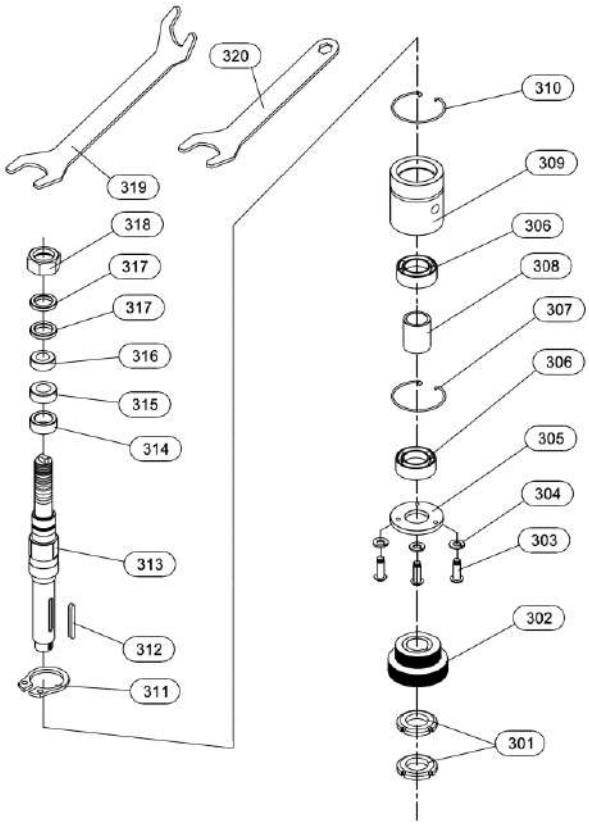
Parts Breakdown for CWS220 Wood Shaper—Motor Assembly



Parts List for CWS220 Wood Shaper—Motor Assembly

Index No.	Part No.	Description	Size	Qty.
201	CWS220-201	Handle		1
202	CWS220-202	Handle Wheel		1
203	CWS220-203	Hex Cap Screw	M6x15	5
204	CWS220-204	Shaft Mount		1
205	CWS220-205	Key	5x5x15	2
206	CWS220-206	Washer	12	1
207	CWS220-207	Nut	M12	1
208	CWS220-208	Gib		1
209	CWS220-209	Hex Nut	M8	4
210	CWS220-210	Set Screw	M8x35	4
211	CWS220-211	Hand Knob		1
212	CWS220-212	Hex Cap Screw	M10x40	4
213	CWS220-213	Lock Washer		6
214	CWS220-214	Elevation Housing		1
215	CWS220-215	Motor Mount Plate		1
216	CWS220-216	Flat Washer	10	4
217	CWS220-217	Hex Cap Screw	M10x35	2
218	CWS220-218	Flat Washer		6
219	CWS220-219	Lock Washer	8	2
220	CWS220-220	Hex Bolt	M8x25	4
221	CWS220-221	Set Screw	M8x10	1
222	CWS220-222	Ribbed Belt	6PJ240	1
223	CWS220-223	Key	8x7x35	1
224	CWS220-224	Motor 2HP (1.5kW)		1
224-1	CWS220-224MF	Motor Fan		1
224-2	CWS220-224SCE	Starting Capacitor		1
224-3	CWS220-224CC	Capacitor Cover		1
224-4	CWS220-224MFC	Motor Fan Cover		1
225	CWS220-225	Socket Head Cap Screw	M8x30	1
226	CWS220-226	Spindle Slid		1
227	CWS220-227	Bolt	M8x12	4
228	CWS220-228	Flat Washer	6	2
229	CWS220-229	Pointer		1
230	CWS220-230	“L” Bracket		1
231	CWS220-231	Lead Screw		1
232	CWS220-232	Gear		1
233	CWS220-233	Bearing	51101	1
234	CWS220-234	Worm Shaft		1
235	CWS220-235	Set Screw	M6x10	3
236	CWS220-236	Collar		1
237	CWS220-237	Pulley		1
238	CWS220-238	Pan Head Screw	M4x16	2
239	CWS220-239	Nylon Plate		1
241	CWS220-241	ID Label (not Shown)		1
242	CWS220-242	Motor Label (Not Shown)		1
243	CWS220-243	Warning Label		1

Parts Breakdown for CWS220 Wood Shaper —Spindle Assembly



Parts List for CWS220 Wood Shaper—Spindle Assembly

Index No.	Part No.	Description	Size	Qty.
301	CWS220-301	Spanner Nut		2
302	CWS220-302	Pulley		1
303	CWS220-303	Screw	M6x16	3
304	CWS220-304	Washer	6	3
305	CWS220-305	Housing Cap		1
306	CWS220-306	Bearing	6205	2
307	CWS220-307	Snap Ring	52	1
308	CWS220-308	Space Long		1
309	CWS220-309	Bearing House		1
310	CWS220-310	Snap Ring	65	1
311	CWS220-311	Snap Ring	25	1
312	CWS220-312	Key	5x5x15	1
313	CWS220-313	Spindle	3/4"	1
314	CWS220-314	Rub Collar	Ø50xØ30x30mm	1
315	CWS220-315	Rub Collar	Ø50xØ30x20mm	1
316	CWS220-316	Rub Collar	Ø50xØ30x10mm	1
317	CWS220-317	Rub Collar	Ø50xØ30x5mm	2
318	CWS220-318	Nut Set	Tr28x2	1
319	CWS220-319	Wrench	S=12-14	1
320	CWS220-320	Wrench	S=41	1

Wiring Diagram for CWS220 Wood Shaper

…….. ~ 110V, 60Hz