



CHISEL SHARPENER

555812

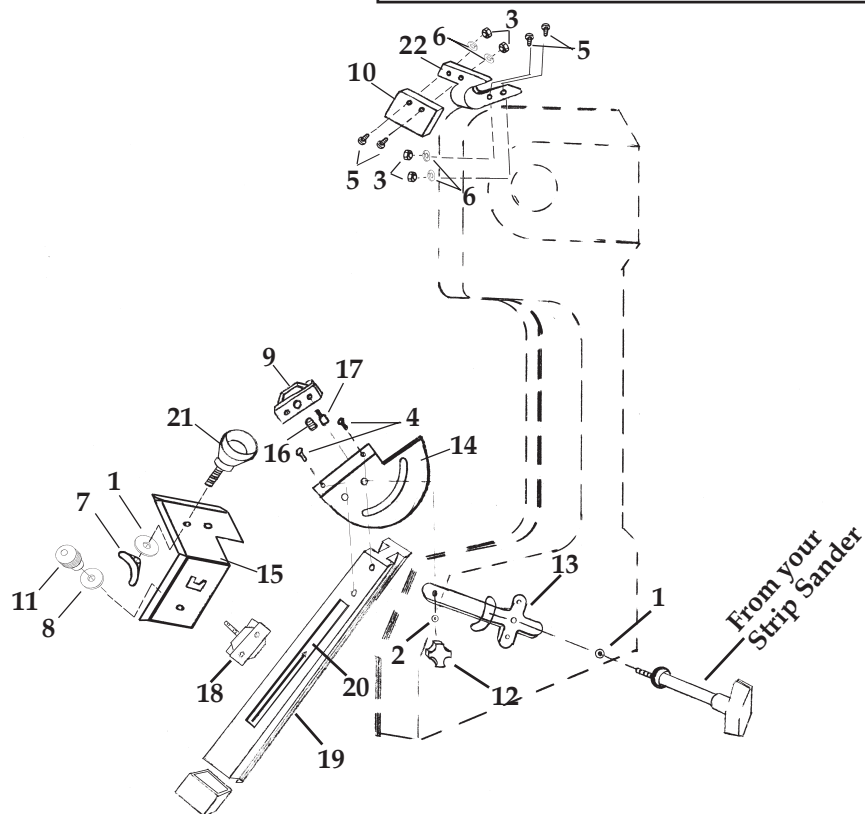
PARTS EXPLOSION

Parts List

Ref No.	Part No.	Item Description	Qty
—	555812	Mark V Chisel Sharpener	
1	120392	. Flat Washer	2
2	126315	. Carriage Bolt, 1/4-20x1	1
3	274737	. Nut, 10-24	4
4	436691	. Pan Head Machine Screw	2
5	436732	. Philips Screw, 10-24x1/2	4
6	502973	. Split Washer	4
7	513216	. Wing Nut	1
8	513739	. Flat Washer	1
9	514491	. T-Nut	1
10	515318	. Eye Shield	1
11	521662	. Knob	1
12	521768	. Knob	1

Ref No.	Part No.	Item Description	Qty
13	521846	. Chisel Bracket	1
14	521847	. Chisel Protractor	1
15	521849	. Support Angle	1
16	521853	. Set Screw	1
17	521854	. Chisel Stud	1
18	521855	. T-Nut Assembly	1
—	521903	. Arm & Label Assembly	1
19	521856*	. . Arm	1
20	521899	. . Warning Label, Rotation	1
21	521859	. Cup Assembly	1
22	521879	. Bracket, Eye Shield	1
23	521881	. Sharpening Plate (not shown) ...	1
24	521898	. Warning Label, Dust Collection	1

* Not available as a service part.



INTRODUCTION

The Chisel Sharpening Attachment allows you to sharpen various sizes and shapes of chisels. Straight -edged chisels, curved edge chisels, steep-angle lathe scraping tools, and low angle carving chisels can all be sharpened in a flash. It is as simple as replacing the Strip Sander table with the sharpening attachment, changing the platen, and placing the Strip Sander on your Mark V.

NOTE

To operate the Strip Sander Abrasive Belt in an upward direction, the Strip Sander must be mounted on the Quill End of the Mark V.

SAFETY

WARNING

Throughout this manual, we list **WARNINGS**, **CAUTIONS**, and **NOTES**. We advise that when you come to one of these listings, please read and understand it fully. Their meanings are:

WARNING

A **WARNING** is given when failure to follow the directions is likely to result in injury, loss of limb, or life.



A **CAUTION** is given when failure to follow the directions is likely to result in damage to the equipment.

NOTE

A **NOTE** is used to highlight an important procedure, practice or condition.

WARNING

General Safety

- **Wear proper eye and ear protection. Also, wear a dust mask.**
- **Keep guards in place. Always keep guards in working order and in proper alignment and adjustment. Most injuries occur on unguarded power tools.**
- **Remove adjusting keys and wrenches.**
- **Wear proper apparel. Do not wear loose clothing, ties, gloves, rings or other jewelry. Roll sleeves up above your elbows, wear nonslip footwear, and tuck long hair under a hat.**
- **Do not operate power tools if you are tired, taking medication, or under the influence of alcohol or drugs.**
- **Avoid dangerous environments. Don't use power tools in damp, wet or explosive atmospheres.**
- **Keep work areas well-lit, clean, and free from clutter.**
- **Do not force the tool. It will do the job better and safer at the rate for which it was designed.**
- **Use the right tool. Don't force a tool or accessory to do a job for which it was not designed.**
- **Check damaged parts. A damaged guard or part should be properly repaired or replaced before further use. If a strange noise or vibration develops, immediately turn off the power, unplug the machine and correct the problem. Never**

operate a power tool that is not functioning properly.

- Do not overreach. Keep proper footing and balance at all times.
- Do not leave the tool running unattended. Turn off the power. Don't leave the tool until it comes to a complete stop.
- Avoid unintentional starting. Make sure the switch is in the "off" position before plugging in or unplugging the tool.
- Disconnect tools. Turn off and unplug tools before changing accessories and setups, making adjustment, and performing maintenance and repair.
- Do not stand or lean on the tool. You could fall onto the tool or it could tip over injuring you and/or damaging the tool.
- Maintain tools. Keep parts and tools sharp, clean and maintained according to the instruction manual.
- Make your workshop childproof. Use padlocks, master switches or remove starter keys.
- Keep children away. All visitors should stay a safe distance from power tools, and wear eye and ear protection.
- Do not permit anyone who is inexperienced to use your power tools without supervision.

To protect yourself from injury:

- **READ, UNDERSTAND and FOLLOW ALL** the information in this Owner's Manual.
- **ALSO READ, UNDERSTAND and FOLLOW ALL** the information in the instruc-

tion manuals, which came with your MARK V and Strip Sander.

- Read the Safety section and complete the Assembly and Setup procedures before operating your Mark V Chisel Sharpener.
- **DO NOT USE** the Mark V Chisel Sharpener to sharpen knives.
- Rotation of the belt must be up against the platen and away from the cutting edge.
- **DO NOT USE** Dust Collection while grinding metal.
- Clean Sawdust from Strip Sander prior to grinding metal. Sparks from grinding will ignite sawdust deposits.

TOOLS REQUIRED

- 5/32" Allen wrench
- 3/8" Wrench
- #2 Phillips Screwdriver

For Strip Sanders Purchased before January 1, 2001.

- 3/16" Drill bit
- Electric Hand Drill
- Center Punch
- Hammer

ASSEMBLY

NOTE

The arm comes with the trunnion, t-nut, pivot, end cap, and warning label assembled. Set this aside.



Figure 1

1. Pick up bracket (15), with bent tab down slide stud of t-nut asm. (18) up through the round hole. With t-nut asm. parallel, add washer (8) and knob (11), as shown in Figure 1. Do not tighten completely.



Figure 2

2. Turn bracket assembly so bottom of t-nut is vertical and surface with the two holes is down. Slide cup assembly (21) up through center hole. Add washer (1) and wing nut (7) on threads, as shown in Figure 2. Finger tighten, this is your support assembly.
3. Place arm assembly on bench with trunion scale facing up. Slide t-nut of support assembly into t-rail arm asm. (19), as shown in Figure 3. Tighten knob when support assembly is half way down arm.



Figure 3

4. Assemble guard to bracket with 2 screws



Figure 4

- (5), as shown in Figure 4.

NOTE

For Strip Sanders made after December 2000, skip steps 5-7 and continue on with step 8.

For Strip Sander prior to 2001.

NOTE

There is a drilling template included with this Owner's Manual, you will need to locate and cut out.

5. Tape template on top of Strip Sander, align line "A" with edge of cover perpendicular to the Upper wheel and line "B" with the side edge of cover. Hold in place with masking tape.
6. Place tip of center punch on the center lines of the holes and strike it with a hammer to mark the Strip Sander.
7. Remove template. Use 3/16" Drill bit in an Electric Drill to drill 2 holes through the casting where marked.



Figure 5

8. Open the Strip Sander cover, hold bracket and guard assembly against the top of the frame. Slip screw through the hole in the bracket and through the casting. See Figure 5. Add lock washer and nut to screw and tighten with Phillips screwdriver and 3/8" wrench. Repeat this step for other screw.



Figure 6

Mount Chisel Sharpening Attachment on Strip Sander

9. Pick up Dust Collection Warning label (24), remove backing and place on the top of the dust collection outlet on your Strip Sander.

WARNING

Read and Follow information on the warning label. Failure to follow label warning will result in fire damage to you strip sander, dust collector, and other personal property.

10. Remove abrasive belt from Strip Sander, by pressing the idler wheel down and slipping the belt off sideways.
11. Remove table from Strip Sander by removing knob and bolt from slot in table, then unscrew and remove tilt knob from Strip Sander.
12. Remove platen from Strip Sander, by loosening the three socket head cap screws with 5/32" Allen wrench.
13. Slip trunnion support bracket over trunnion support and hold in place with washer and knob assembly that was used to hold table in place, as shown in Figure 6. Tighten by hand. Mount the chisel sharpening platen and install the desired abrasive belt.

14. Place arm assembly with angle degrees to left against left side of trunnion support bracket, so pivot screw protrudes through pivot hole in end of trunnion support bracket. Insert carriage bolt through trunnion and trunnion support bracket from left. Add washer and knob, as shown in Figure 7.



Figure 7

SETUP

WARNING

Make sure the Mark V is set to slow speed, turned off, and unplugged before beginning setup or operations.

1. Mount the Mark V in similar manner as shown in Strip Sander Owners manual for wood sanding, except that in this case the Strip Sander is mounted in the base arm of the Mark V and coupled to the quill in headstock. DO NOT mount the Strip Sander in the headrest or coupled to the upper auxillary spindle.

WARNING

Failure to mount Strip Sander (as described in Step 1) will cause the abrasive belt to run in the wrong direction, and will cause the tool to gouge into the belt, damaging both and throwing the tool.

2. Be sure that you have mounted the hub with 5/8" diameter hole and four (4) spline grooves on quill. Position the headstock as far to the right as possible and lock.
3. Slide the coupler on the Strip Sander hub and extend the quill until the quill hub engages in coupler. Lock quill.

OPERATIONS*Basic Operations*

Tool temperature is very important to the life of your cutting tools. Cool the tool frequently in water during the sharpening process.

1. The recommended speed is "I" (1750 RPM) on your Mark V Speed Dial.
2. In order to keep the hardness and toughness properties of the steel in your cutting tool, you must overheat the tool while grinding, sharpening, or honing it. If you can not touch the tool without burning your finger, it is too hot. Cool the tool frequently in water during the sharpening process.

NOTE

The finer the abrasive you use and/or the more pressure you exert on the tool the more heat will be generated. If your cutting tool gets hot very quickly, you are either using

too much pressure or the belt has become dull and needs replaced. Finer belts will wear quickest and will need to be replaced most often.

Grinding, Sharpening & Honing

1. **Grinding** - Use coarser grits 60, 80, 100 to reshape the tools bevel or remove large nicks in the cutting edge.
2. **Sharpening** - Use medium grits 100, 150, 220 to remove burrs, small nicks and sharpen very dull tools.
3. **Honing** - Use finest grits 320, 400, 600 to dress and improve the cutting edge of tools that do not have any nicks or burrs and only require a light touch-up to keep them razor sharp.

Tool Care

Most new cutting tools will require at least sharpening with medium grits and final honing with finest grit sanding belts. Lathe chisels intended for scraping only need grinding with coarse grits. The burr left on the cutting edge will help cut. Other lathe, carving, and bench chisels must be used razor sharp and are easiest to use when kept that way.

Setting the Tool Angle

The tool angle is a function of both the arm angle and the cup position. The trunnion scale is an approximate guide and is only accurate when the metal shank of the tool being sharpened is exactly parallel to the arm.

NOTE

To set the proper angle, you must first decide whether you are going to copy the tool's bevel angle or change it.

To Copy the Tool's Bevel

1. Place a 100, 150, or 220 grit abrasive belt on the Strip Sander. Refer to Strip Sander Owner's Manual for belt installation instructions.



Figure 8

2. Set the chisel handle in the cup, loosen the support lock knob. Slide the support until the tool's bevel rests against the belt and tighten the support lock knob, as shown in Figure 8.

Figure

3. Loosen the trunnion lock knob and tilt arm until the cutting tool's bevel lays flat against the abrasive belt and the tool's steel shank is parallel to the arm. Lock the trunnion lock knob.
4. Final minor adjustments to align the tool shank parallel to the arm should be made by moving the support on the arm.
5. Remove the chisel from the cup, turn the headstock on at "slow" speed setting, check the belt tracking and adjust if necessary. Set speed to "I" (1750 rpm) on the Mark V speed dial.

Figure 8

6. Place the tool handle in the cup and gently touch the bevel against the moving belt and remove. Look for flat, consistent scratches along the bevel.

7. If the scratches are only at the tool's tip, then turn speed on speed dial to "slow" and turn off the headstock. Loosen the trunnion lock knob, lower the arm slightly, lock trunnion lock knob and repeat until scratches follow full bevel length.
8. Repeat with the next finer grits.

To Change the Bevel Angle

1. Place a 60, 80, or 100 grit abrasive belt in the Strip Sander, refer to the Strip Sander Owner's Manual for belt installation instructions.
2. Set the chisel handle in the cup, loosen the support lock knob. Slide the support until the tool's bevel rests against the belt and tighten the support lock knob.
3. Loosen the trunnion lock knob and tilt arm until the cutting tool's bevel is at the new angle against the abrasive, as shown in Figure 9. Lock the trunnion lock knob.



Figure 9

4. Final minor adjustments to align the tool shank parallel to the arm should be made by moving the support on the arm.
5. Remove the chisel from the cup, turn the headstock on at "slow" speed setting, check the belt tracking and adjust if necessary. Set speed to "I" (1750 rpm) on the Mark V speed dial.

6. Place the tool handle in the cup and grind the new bevel against the moving belt.
7. After the initial bevel grind is completed, turn down and turn off the Mark V. Open the Strip Sander, remove the belt and install the next finer grit.

NOTE

Each progressively finer grit belt will remove scratches and burrs from previous grits.

8. After changing each belt to a finer grit, repeat steps 4-6, until you achieve the sharpness desired.

NOTE

A final honing will be required on the inside of gouges with a slip stone.

Sharpening a Bench Chisel

NOTE

This is probably the easiest tool to sharpen and a good tool to use to learn this accessory.

1. Select appropriate abrasive belt and install on Strip Sander.
2. Set angle as described previously. Turn on the machine to Speed "I" (1750 rpm) on your Mark V speed dial.
3. Set the chisel handle in the cup and hold the chisel against the moving belt with light, even pressure.
4. Check your progress often and check chisel temperature. Cool in water as needed.
5. Use a square to make sure the new cutting edge is perpendicular to the side, as shown



Figure 10

in Figure 10. If it is not square, grind more from the high side by applying more pressure against that side.

6. Repeat steps 3-5 with progressively finer abrasives. As you progress to finer and finer abrasive belts the burr will become smaller and eventually be removed.

Sharpening a Skew

NOTE

This is very similar to sharpening the bench chisel, except that you must evenly grind a bevel on both sides of the tool.

1. Select appropriate abrasive belt and install on Strip Sander.
2. Set angle as described previously. Turn on the machine to Speed "I" (1750 rpm) on your Mark V speed dial.
3. Set the chisel handle in the cup and hold the chisel against the moving abrasive belt with light, even pressure. See Figure 11. This time the chisel is rotated slightly at a skew angle.



Figure 11

4. Check your progress often and check chisel temperature. Cool in water as needed.
5. Turn the skew chisel over and grind the opposite side, checking that the bevel is a constant width on both sides. If it is not consistent, grind more from the narrowest part of the bevel by applying more pressure against that area.
6. Check that the angles at the heel and toe of the chisel are equal, see Figure 12.

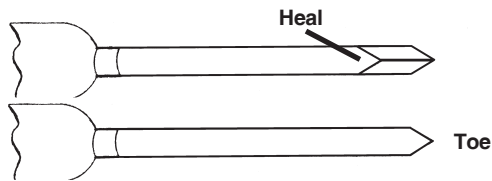


Figure 12

7. Repeat steps 3-6 with progressively finer abrasives. As you progress to finer and finer abrasive belts the burr will become smaller and eventually be removed.

Sharpening a Parting Tool

1. Select appropriate abrasive belt and install on Strip Sander.
2. Set angle as described previously. Turn on the machine to Speed "I" (1750 rpm) on your Mark V speed dial.
3. Set the chisel handle in the cup and hold the chisel against the moving abrasive belt with light, even pressure, as shown in Figure 13.
4. Grind both edges of the parting tool so the bevels are the same length and the point is exactly centered at the widest part of the sides.
5. Check your progress often, check chisel temperature, and cool in water as needed.



Figure 13

6. Use a square to make sure the new cutting edge is perpendicular to the side. If it is not square, grind more from the high side by applying more pressure against that side.
7. You may proceed to finer grits if you desire, but many woodturners who use the scraping technique prefer to leave the burr on the chisel. They believe the burr cuts smoother than a burr-free edge.

Sharpening a Gouge

1. Select appropriate abrasive belt and install on Strip Sander.
2. Set angle as described previously. Turn on the machine to Speed "I" (1750 rpm) on your Mark V speed dial.
3. Hold the chisel against the moving abrasive belt with light, even pressure. Rotate the chisel in the cup to grind the curved bevel, as shown in Figure 14.



Figure 14

4. Check your progress often to check chisel temperature. Cool in water as needed.
5. To grind a pointed gouge for spindle turning, more grinding is done on either side, see Figure 15.

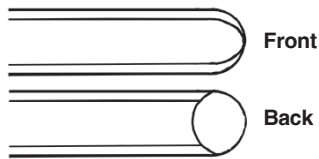


Figure 15

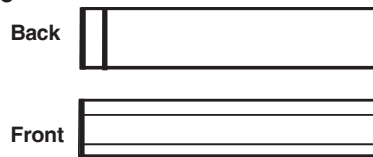


Figure 16

6. To grind a square gouge for roughing, less grinding is done on either side, as shown in Figure 16.
7. Repeat steps 3-5 with progressively finer abrasives. As you progress to finer and finer abrasive belts the burr will become smaller and eventually be removed.

Sharpening a Long Angle Carving Gouge, Skew, or Paring Chisel

NOTE

To grind angles less than 10° on carving chisels the cup that supports the chisel handle must be moved to the inner position.

1. Remove the wing nut and washer, reposition the threads on the cup in the hole closest to the machine.
2. The new cup position will now allow you to grind the very long bevels required on some carving chisels. See Figure 17.



Figure 17

NOTE

The angle scale is no longer accurate with the cup set in the inner hole. You must estimate your bevel angle.

3. Sharpen your chisel as described previously, refer to the appropriate section.

Sharpening Low Angle Curved or Straight Scarping Chisels

NOTE

To sharpen scarping chisels you must make some changes to the sharpening guide setup.

1. Remove the cup and loosen the support bracket lock knob several turns.
2. Rotate the support bracket 90° clockwise looking at the knob, so it's two holes are approximately parallel to the arm. As shown in Figure 18, the tab that was previously in the arm is now above the arm.



Figure 18

3. Slide the support bracket up the arm until its edge is even with the top end of the arm and tighten the support bracket knob.
4. Loosen the trunnion lock knob and rotate the arm to the 90° position.
5. Loosen the support bracket lock knob. Slide and pivot the support bracket toward the abrasive belt. Set your desired angle, as shown in Figure 19.
7. Check your progress often to check chisel temperature. Cool in water as needed.
8. You may proceed to finer grits if you desire, but many woodturners who use the scraping technique prefer to leave the burr on the chisel. They believe the burr cuts nicer than a burr-free edge.



Figure 19



Position the support bracket no further than 1/4" away from the abrasive belt.

6. Turn on the Strip Sander, hold the chisel flat on support bracket with light even pressure and slide it toward the belt. For curved scraping chisels pivot the chisel from left to right to create the desired profile on the end of the chisel, as shown in Figure 20. For straight tools hold the



Right Left

Figure 20

NOTE

If you have further questions or need help, call our Customer Service Department: Toll Free 1-800-762-7555 or visit our website at www.shopsmith.com.

NOTES



