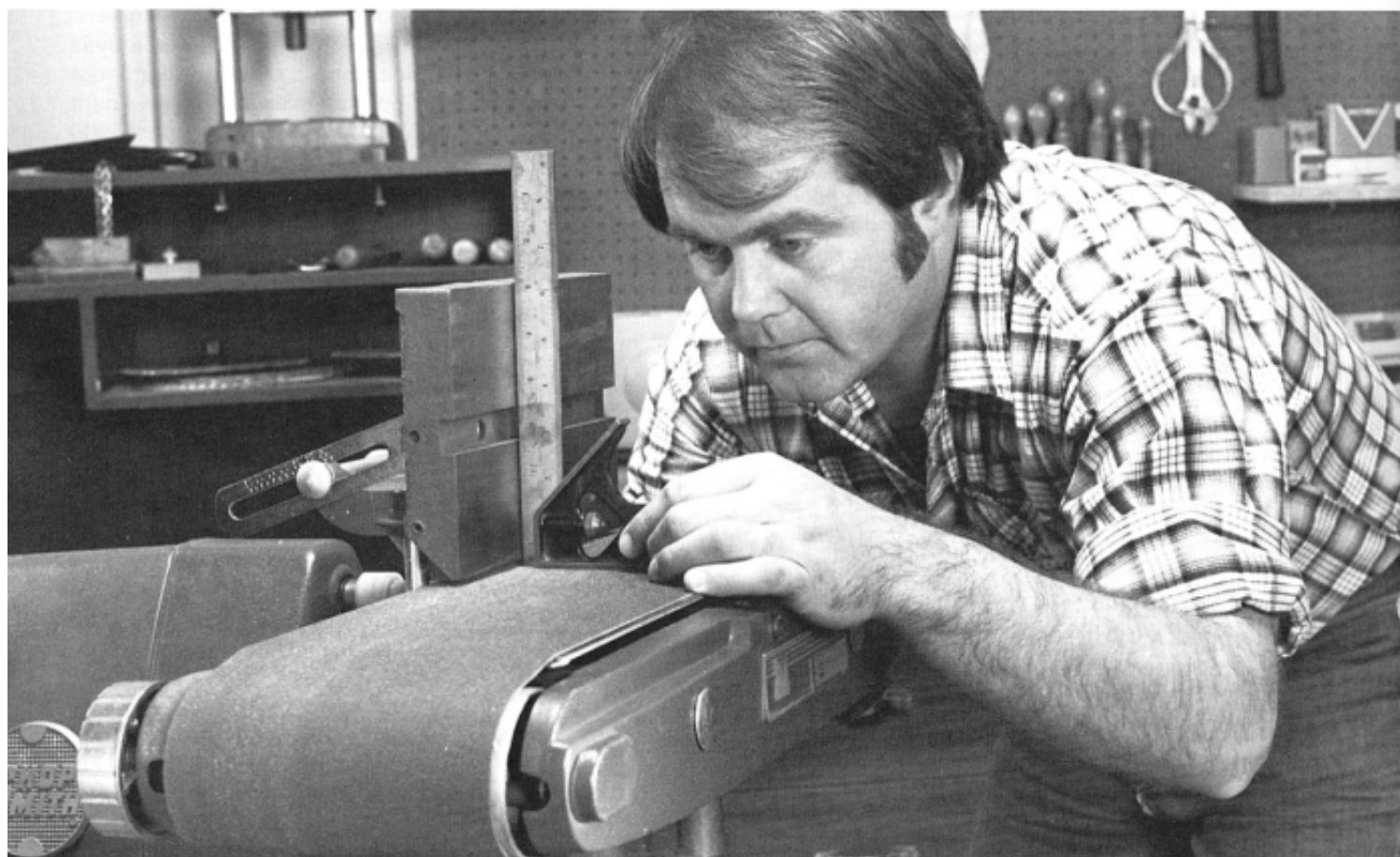


Alignment and Adjustment



Aligning and Adjusting Your Shopsmith Belt Sander

Your Shopsmith Belt Sander will remove stock quickly and accurately from your workpieces, leaving a smooth, clean surface. However, the ease and the quality of operation depend on your final adjustments. It's important to complete all of the designated procedures in sequence during the initial setup and then recheck the alignment of your belt sander periodically. Certain alignment

procedures must be repeated every time you change the abrasive belt or move the worktable.

WARNING: The belt sander **MUST** be unplugged from its power source before performing any adjustment, maintenance, or repair procedure, with the exception of belt tracking and crowning. **DO NOT** rely solely on the power switch.

Belt Drive System

The abrasive belt on your Shopsmith Belt Sander revolves on two drums—a drive drum and an

idler drum. The drive drum is covered by a nonslip rubber sleeve and drives the belt sander continuously in one direction.

The idler drum is spring loaded to automatically tension the abrasive belt. The tension knob on the left side of this drum releases a torsion spring that presses the drum forward to tension the belt. The tracking knob (behind the tension knob on the left side of the belt sander) changes the angle of the idler drum in relation to the

Alignment and Adjustment

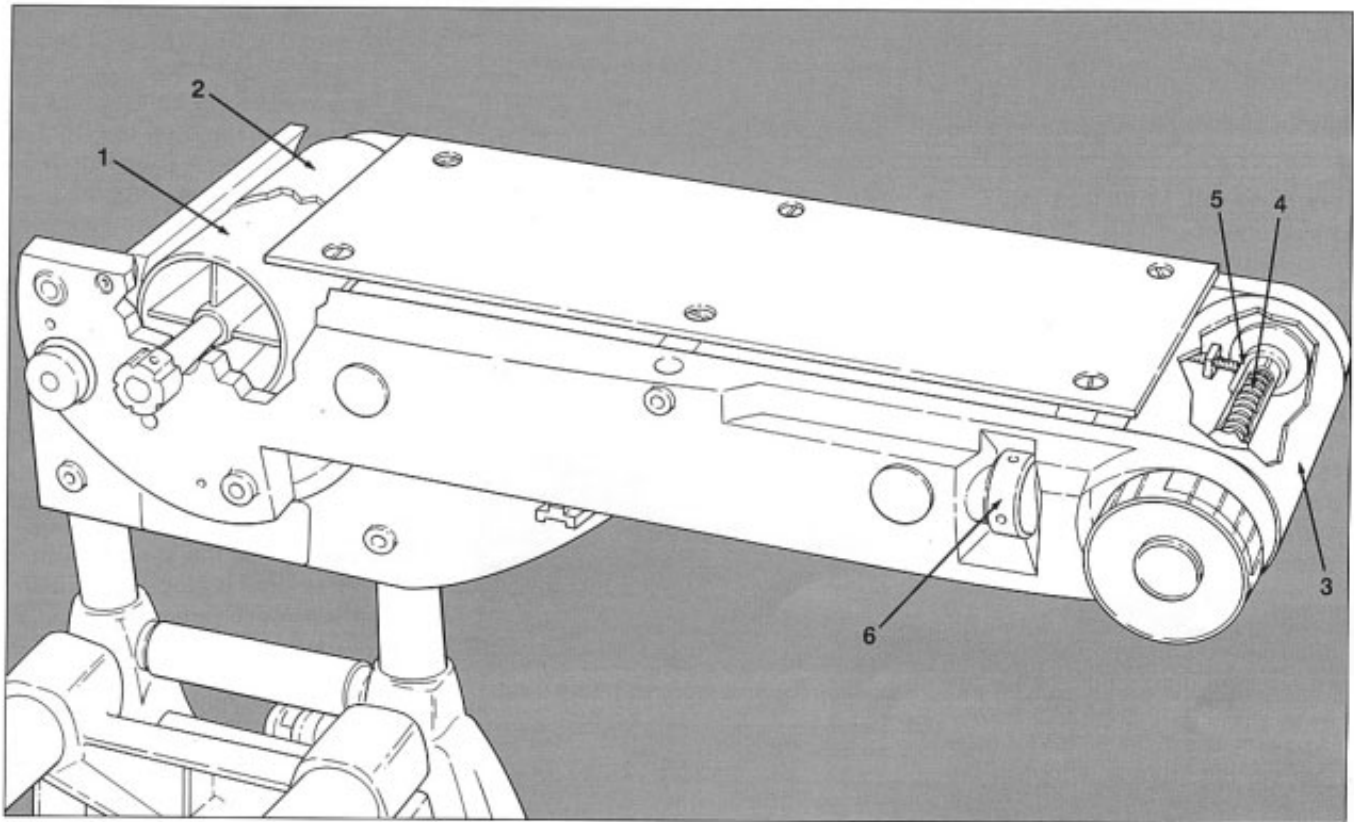


Figure 1. The drive drum (1), at the back of the belt sander, is covered with a rubber sleeve (2) and drives the abrasive belt. The idler drum (3), at the front of the machine, revolves on a hollow shaft. Inside this shaft is a torsion spring (4) that coils against a cam (5). This, in turn, presses the drum forward and tensions the belt. In addition, the tracking knob (6) adjusts the position of the idler drum to center the belt.

drive drum. This, in turn, centers the abrasive belt on the backup plate. (See Figure 1.)

This belt drive system accepts abrasive belts 6" wide by 48" long. Often, there are slight inconsistencies from belt to belt—some are slightly longer than 48", some shorter. The automatic belt tensioning feature compensates for these. There's no need for you to readjust the distance between the drums every time you change a

belt, **unless** you use a non-standard belt. To mount belts that are either too long or too short for the belt sander as it's presently adjusted, see "Repositioning the Idler Drum" in this section.

Removing, Installing and Adjusting an Abrasive Belt

Abrasive belts must be properly mounted and centered on the backup plate. This is **critical**—if the belt isn't centered, it will 'creep' to the right or left and cut into the frame castings. If it creeps, the edges of the belt will fray, threads from the belt will wind around the

drum shafts, and finally, the belt will tear. Worse, the belt will grind away parts of the belt sander, weakening and eventually ruining the frame.

To remove a belt from the belt sander and mount another, follow this procedure carefully:

1. **Disconnect the power** and remove the worktable from the belt sander.
2. **Release the belt tension.** Turn the tension knob counterclockwise until you hear a click and the catch

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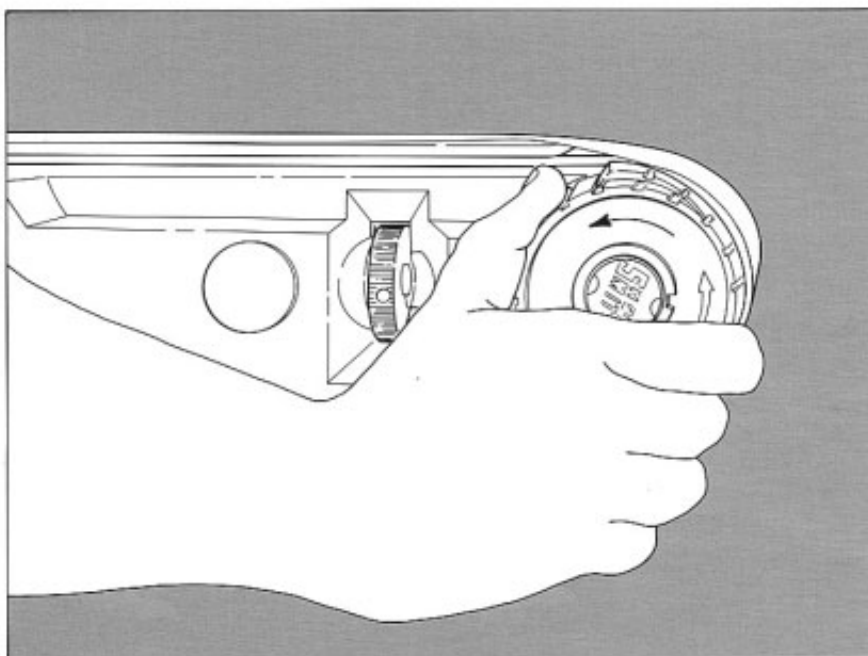


Figure 2. To release the belt tension, turn the tension knob counterclockwise until the catch in the side of the knob pops up.

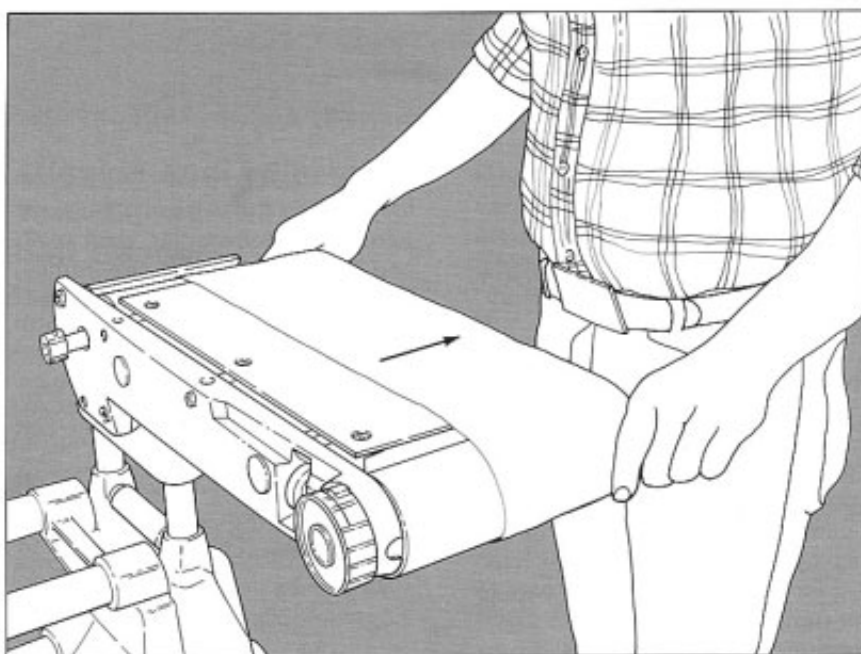


Figure 3. To remove a belt, slide it over the drums and off the right side of the belt sander.

in the side of the knob pops up. Push the idler drum back, and the belt will go slack. (See Figure 2.)

3. Remove the old belt, sliding it over the drums and off the right side of the machine. (See Figure 3.)

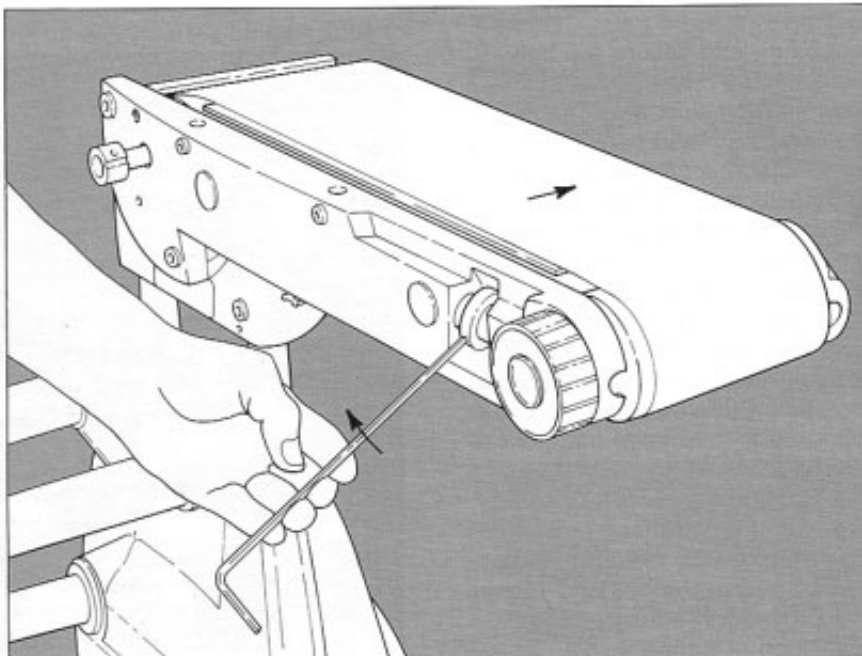
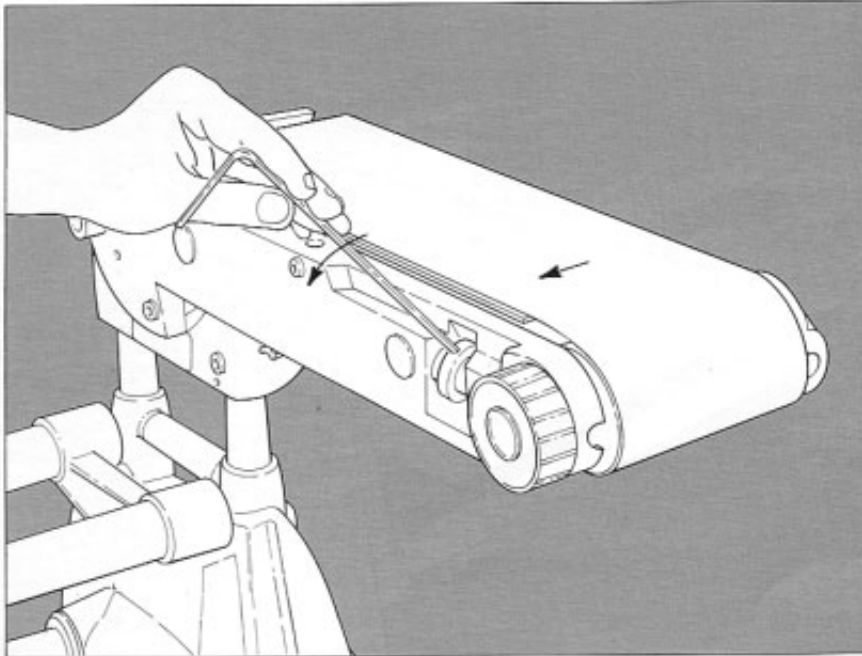
4. Install a new belt. Line up the printed arrow on the inside of the abrasive belt so that it points in the direction of rotation. Then slide the belt on the sander, working it back over the drums from the right side of the machine. Center the belt on the backup plate and the drums. **It must not touch or cover any part of the belt sander frame.**

5. Tension the belt. While grasping the tension knob, depress the catch and allow the knob to turn clockwise until it stops. The idler drum will move forward and take up the slack in the belt. Once the belt is tight, check that it doesn't contact any part of the belt sander frame.

6. Adjust the belt tracking. Rotate the belt by hand several times, pushing it along the backup plate with your hand. Watch the belt to see if it 'creeps' to one side or the other. If the belt creeps to the right, turn the tracking knob counterclockwise (down). This will bring the belt back to the left. If it creeps to the left, turn the tracking knob clockwise (up) and bring it back to the right. Continue to adjust the knob until the belt travels roughly on center and doesn't creep to either side. (See Figures 4 and 5.)

Plug the belt sander in. If you're using the Mark V to power the machine, **BE CERTAIN** that the speed dial is adjusted to speed setting "E". If you're using a power stand, the belt sander should be running no faster than 1400 RPM or 1100 SFPM.

Alignment and Adjustment



Figures 4 and 5. To reposition the belt to the right on the drums, turn the tracking knob clockwise. To reposition it to the left, turn the knob counterclockwise.

WARNING: Be sure the power switch is in the "Off" position **BEFORE** you plug in the motor that runs the belt sander.

Turn the belt sander on. If the belt 'creeps' quickly to one side or the other and rubs against the frame, turn off the belt sander immediately and unplug it. Loosen the belt tension, center the belt, and readjust the tracking knob.

Make fine tracking adjustments with the belt sander running. Insert the 5/32" Allen wrench into one of the holes in the tracking knob. The wrench acts as a lever, helping you make accurate adjustments. More important, it keeps your fingers out of the danger zone while the belt is moving. Continue turning the tracking knob until the belt travels precisely on center. Remember, when the belt is tracking properly, it **must not contact the belt sander frame**.

WARNING: When the belt is tracking properly, remove the Allen wrench from the tracking knob. **DO NOT** use the belt sander until you have removed all adjusting wrenches.

7. Crown the belt. If the abrasive belt is brand new or if it hasn't been used for some time, 'crown' it by following this procedure:

While the belt sander is running, turn the tension knob 1/8-1/4 revolution **clockwise** and hold it there for a moment. (If the belt slows and the motor seems to labor, don't worry; this is normal. However, don't turn the knob so far that you stop the motor!) Then quickly turn the tension knob

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counterclockwise until the belt sander is running smoothly again, release the knob, and let the automatic tensioning take over. Check that the belt is still tracking properly. If not, readjust the tracking knob.

Crowning stretches the belt fabric so that it conforms to the contour of the drums. Once crowned, a belt tracks easier, runs smoother, and wears longer. (See Figure 6.)

Tip: Cloth-backed belts should be crowned when they are new and **occasionally** during their useful lifetime. However, **DO NOT** crown paper-backed belts. Paper does not stretch as easily as cloth, and the belt may tear or split.

WARNING: Turn off the belt sander and let it come to a complete stop before you install the worktable. If you need to perform any other alignment or adjustment procedure, unplug the machine.

Repositioning the Idler Drum

The distance between the idler drum and the drive drum are set at the factory to accept Shopsmith Abrasive Belts. As mentioned before, slight inconsistencies in belt length are compensated for by the automatic belt tensioning feature. However, should you wish to use a 6" x 48" abrasive belt that isn't manufactured to the same specifications as Shopsmith belts, you may have to reposition the idler drum.

To mount an overlong belt, you must increase the distance between the drums. Remove the abrasive belt (if one is presently

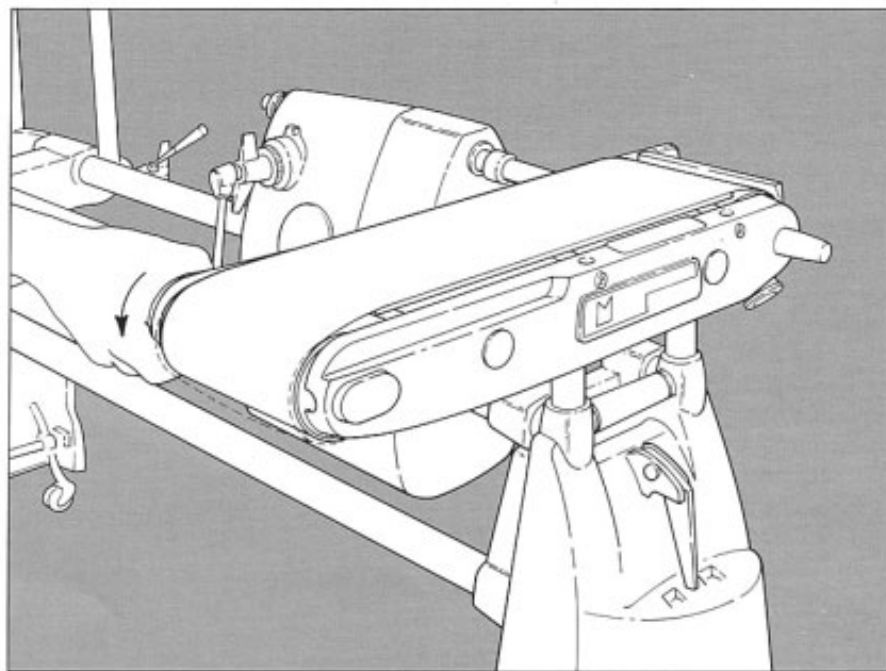


Figure 6. To crown a belt, turn the tension knob clockwise while the belt sander is running. This stretches the belt fabric so that it conforms to the contour of the drums.

mounted), and secure the belt sander in the vertical position. From the soft side, reach in behind the idler drum and push up on the tracking screw on the right side of the machine. (See Figure 7.)

Turn the nut on the tracking screw two full revolutions clockwise, then let it fall back into place. You must also turn the tracking knob (on the left side of the sander) two full revolutions in the same direction. Put a mark on the tracking knob to help keep track of the revolutions.

Install the overlong belt and check that it's properly tensioned when you release the tension knob. If not, remove the belt and repeat this procedure, advancing one revolution at a time.

To mount a belt that's too short, use this same procedure, but turn the tracking nut (on the right) and the tracking knob (on the left)

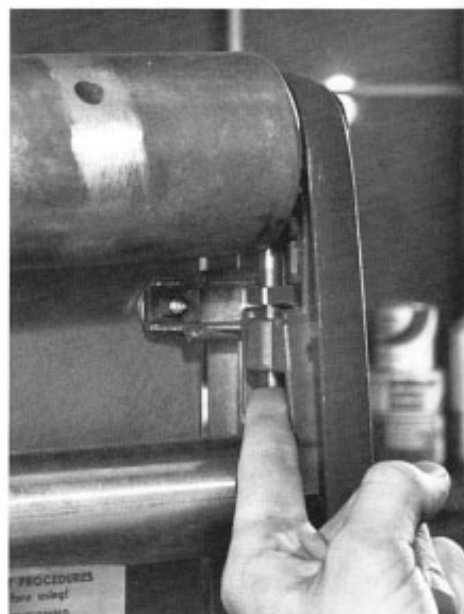


Figure 7. To adjust the position of the idler drum, push up on the tracking screw on the right side of the belt sander and turn the nut on that screw. Then turn the tracking knob on the left side in the same direction.

Alignment and Adjustment

counterclockwise. This will decrease the distance between the drums.

Tip: Make a note of how many revolutions you turn the tracking nut so that you can return the idler drum to its original position when you reinstall a standard Shopsmith Abrasive Belt.

Tensioning the Idler Drum

Under normal circumstances, it shouldn't be necessary to re-tension the idler drum. However, if the drum should lose tension for any reason, follow this procedure:

1. **Disconnect the power**, remove the worktable and the abrasive belt from the belt sander.
2. **Release the remaining tension** in the torsion spring. Hold the idler drum with one hand and depress the catch in the tension knob with the other. Allow the tension knob to turn clockwise until the catch stops it. Repeat until the tension knob will no longer turn on its own.
3. **Turn the tension knob counterclockwise** four full revolutions, while still holding the idler drum. On each revolution the catch in the knob will engage, preventing the torsion spring from unwinding. When the catch engages for the fourth time, stop. This will reestablish normal tension. (See Figure 8.)

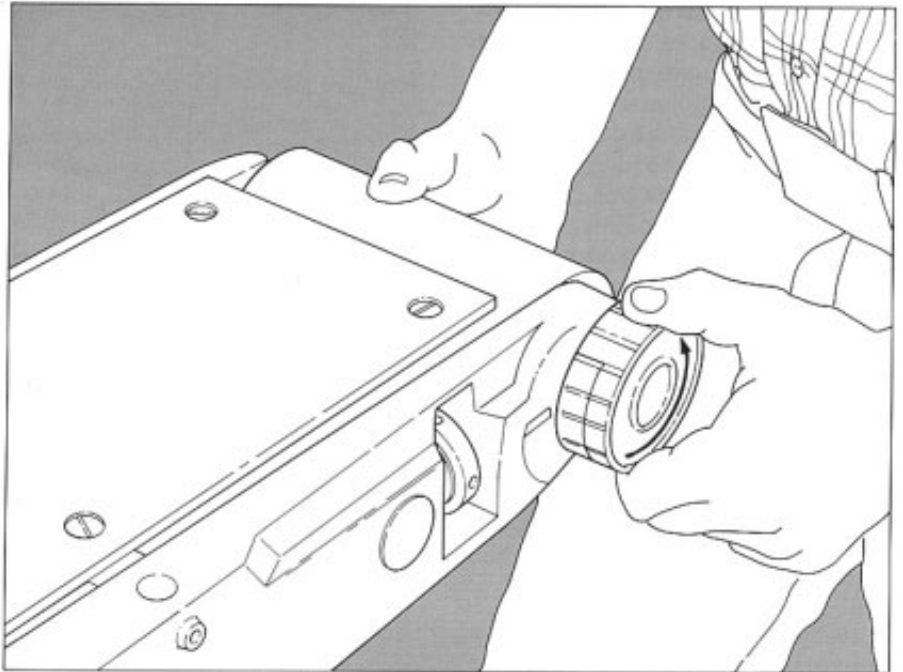


Figure 8. To re-tension the idler drum, first release all remaining tension. Then turn the tension knob four full revolutions counterclockwise. The catch in the knob will prevent the torsion spring from unwinding.

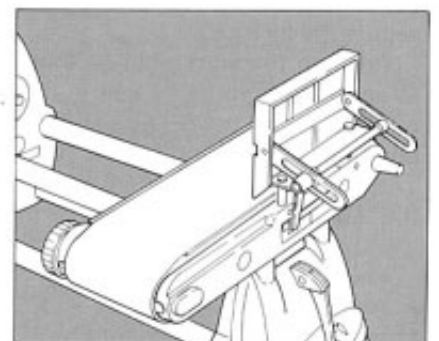
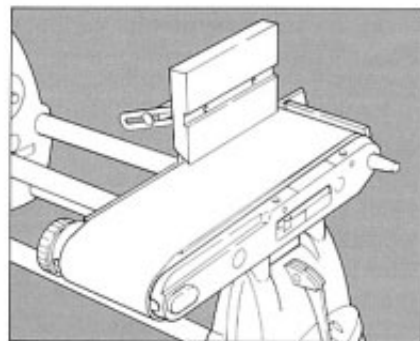
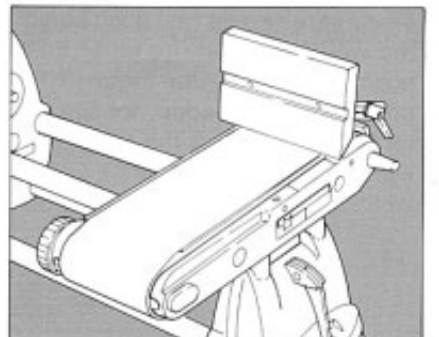
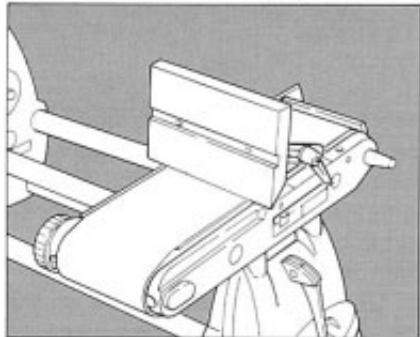


Figure 9. The worktable can be installed in one of four possible positions: two parallel to the belt on either side of the belt, and two perpendicular to the belt.



Aligning the Worktable

Worktable Positions—The worktable can be installed in one of four positions on the hard side of the belt sander: parallel to the belt on either side of the machine, or perpendicular to the belt in the center and at the back of the machine. (See Figure 9.)

To attach the worktable to the belt sander in one of these positions, partially back out the table

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locking screws so they won't interfere with the mounting rods. Insert the table mounting rods into the table mounting holes and lower the worktable until the bottom edge is no farther than 1/16" above belt, but not touching the belt. Secure both table locking screws, locking the worktable securely in position.

Tip: To set the worktable height quickly and accurately, put a dime on the abrasive belt directly beneath the worktable. Lower the worktable until it almost touches the dime, then lock the worktable in position. **Remember to remove the dime before you operate the belt sander.**

Squaring the Worktable to the Belt—For most sanding operations, the worktable must be set square to the abrasive belt. Begin with the worktable removed from the belt sander. Push the table lock handle in and loosen the tilt lock. Set the tilt indicator to "0" and secure the tilt lock.

Position the worktable so that it straddles the abrasive belt in the rear mounting holes. Adjust its height so that it's no farther than 1/16" above the belt, then tighten the table locking screws to lock the worktable in place.

Place a square or a drafting triangle on the belt sander and check the angle between the worktable and the abrasive belt. It should be exactly 90°—one arm of the square should rest flush against the worktable and the other flush against the belt. (See Figure 10.) If adjustment is needed, loosen the tilt lock and adjust the tilt of the worktable.

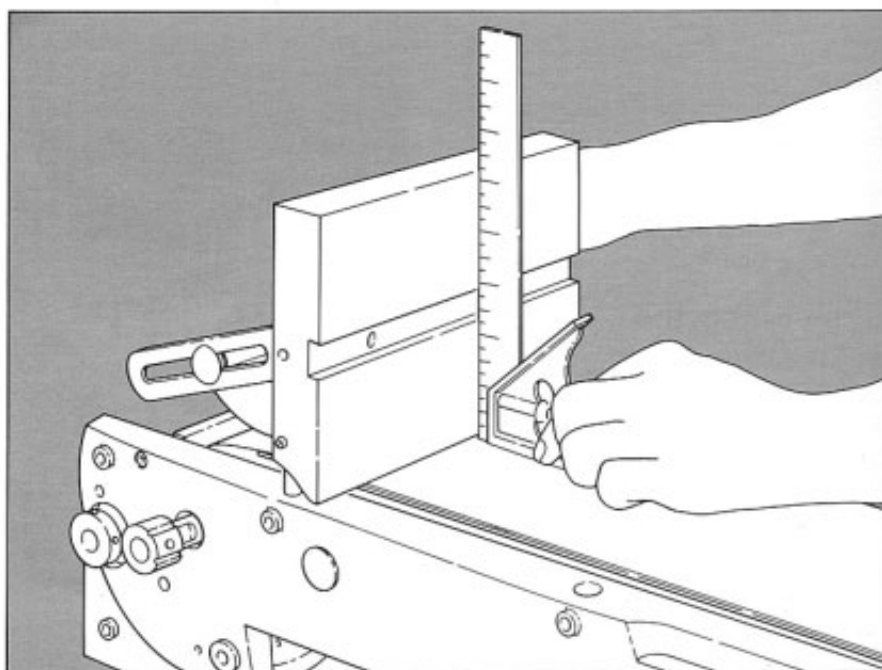


Figure 10. Use a square or a drafting triangle to set the worktable at 90° to the abrasive belt.

With a screwdriver, loosen the tilt indicator and set the pointer exactly on "0". Hold the pointer so that it doesn't move and tighten it in place.

Check this adjustment periodically for accuracy. Many woodworkers prefer to use a square each time they reset the tilt of the worktable. This helps keep the worktable at the correct angle to the belt.

Changing Worktable Angles

To change the tilt of the worktable, first raise the table so that it's about 1" above the belt. Tilting the worktable moves its forward edge toward or away from the abrasive belt—depending on which way it is tilted. If you don't raise the worktable before you change the tilt, the belt may interfere.

Use the graduated scale on the tilt indicator to set standard angles.

To set odd angles, use a sliding T-bevel. (See "Sanding Miters, Bevels and Chamfers" in the **Operations** section.) To insure accuracy, always check critical setups with a square or triangle. When you've set the worktable at the desired angle, reset the table height so that the bottom edge is no farther than 1/16" above the belt.

WARNING: Always set the bottom edge on the worktable no farther than 1/16" above the abrasive belt before you use the belt sander. This keeps workpieces from sliding beneath the worktable and jamming. More important, it helps keep the machine from pinching your fingers between the belt and the worktable.

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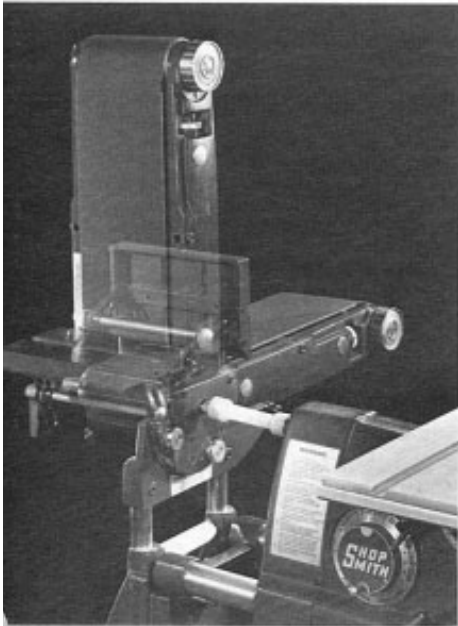


Figure 11. The Shopsmith Belt Sander works well in either the horizontal or vertical position. Avoid using the belt sander at odd angles.

Changing Belt Sander Positions

The Shopsmith Belt Sander can be used either horizontally with the backup plate parallel to the floor, or vertically with the backup plate perpendicular to the floor. (See Figure 11.)

However, avoid setting the belt sander at any angle in between. The base casting is designed so that it can brace the sander when it's in a horizontal or vertical position. If you use the belt sander at an odd angle, use the extra bolt for additional support. Without this bolt, there is a possibility that the belt sander will slip while you're using it, ruining the workpiece and injuring you.

As mentioned in the **Setup** section, the trunnion lock can be used to secure the belt sander in position or it can be adjusted so

that you can easily change positions without loosening and tightening the lock. If you use the belt sander primarily in one position, we recommend you lock it in place with the trunnion lock. If you change frequently between the horizontal and vertical positions, you may want to adjust the lock so that it's tight enough to hold the belt sander steady, but not so tight as to prevent you from changing positions.

To adjust the trunnion lock, start with the lock tightened down all the way. Insert the 5/32" Allen wrench in one of the holes in the side of the lock and rotate it 1/4 turn counterclockwise. The belt sander should now be loose on the base, free to pivot to any position. Slowly tighten the trunnion lock with the Allen wrench until the lock is 'snug', but the belt sander will still pivot smoothly. Be sure there is no side-to-side wobble.

If you adjust the trunnion lock so that you can quickly change positions, use the extra bolt that came with your machine to help stabilize the belt sander on its base. (You may want to invest in a wing nut for this bolt, making it easier to install and remove.) If you use the trunnion lock to lock the sander in position, this bolt is optional.

Drive Hub Alignment

If you use the Shopsmith Mark V to power your belt sander, the drive shaft of the belt sander and the upper auxiliary spindle of the Mark V must be aligned horizontally and vertically. This alignment procedure is described in steps 8 and 9 of the **Setup** section.

Alignment and Adjustment Safety Checklist

When you've finished aligning and adjusting the various parts of your belt sander, take a minute to review your work, just as you did after the initial setup. Here's a checklist:

- Is the abrasive belt tensioned properly and tracking on center so that it doesn't rub against the belt sander frame?
- Is the worktable properly aligned and the tilt lock handle secure?
- Is the worktable locked in position with the bottom edge no farther than 1/16" above the abrasive belt?
- Is the belt sander secured in either the horizontal or vertical position?
- If you're not using the auxiliary spindle, is the spindle cap mounted properly?
- Are the drive hubs properly aligned?
- If you're using the Mark V to power the belt sander, is the power coupler installed correctly? Are both the accessory mount lock and the headrest lock tightened?
- If you've mounted the belt sander on a power stand, is the V-belt properly tensioned and the pulley guard in place?

WARNING: Before you plug in the Mark V or the motor that powers your belt sander, **BE SURE** the power switch is in the "Off" position.