

Knife Installation/Changing

CAUTION

Changing knives can be very dangerous unless safety precautions are observed and extreme care is taken when handling knives.

- Make sure knife lifters are used properly, see instructions following.
- Keep handling of unprotected knives to an absolute minimum.
- Clear off cutter table before removing knife.
- Have scabbard nearby and insert knife immediately.
- Warn people of any unprotected knife.
- Knife changing is a **ONE PERSON OPERATION**. Having more than one person trying to change knives invites accidents.

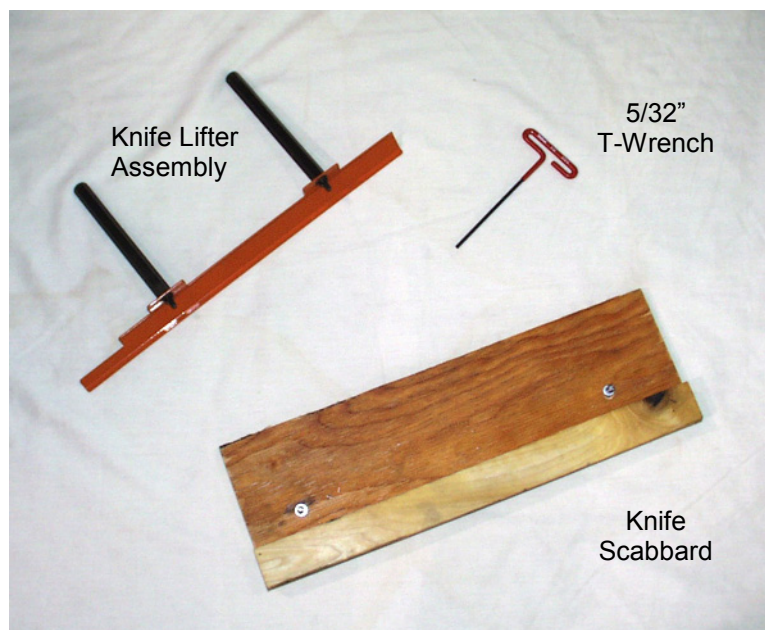


Figure 13 – Spartan 150 Knife Change Accessories

The knife changing equipment shown in Figure 13 is included with the machine. The following instructions show how to remove and install a new or re-sharpened knife. Read through these instructions **AT LEAST ONCE** before attempting to actually change or install any blades.

Knife Removal

1. Make sure the knife and clamp are in the “up” position. Turn the main power switch off and disconnect the machine power cord to prevent accidental power-up while servicing the cutter.
2. Raise the knife depth of cut all the way up by turning the knife adjusting screw located on the right side of the machine counterclockwise until it starts to unscrew out of the machine (see Section 6.6 , p. 14). This will ensure the new knife will not cut too deep since a new knife will cut deeper than one that has been ground several times. Failure to raise the depth could damage the new knife and/or the cutting stick.

3. Remove the two knife bolts from the slotted knife bar holes ONLY and replace with the knife lifter assembly (Figure 14). Tighten the lifters to hold the knife in place, and then remove the remaining four knife bolts.

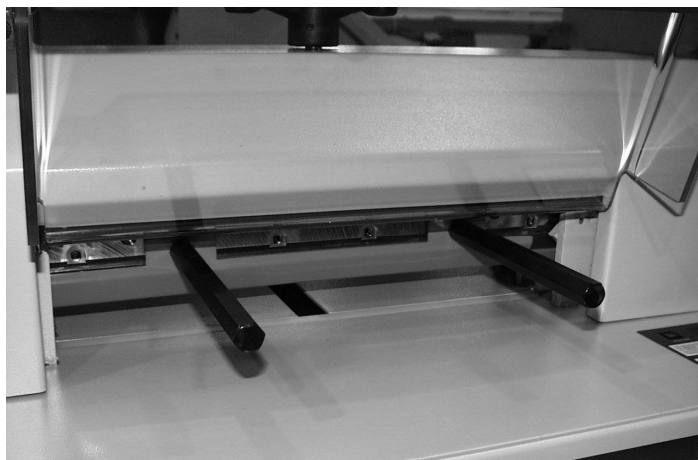


Figure 14

4. Clear the table surface and place the empty knife scabbard on a flat surface nearby. Remove the scabbard's knife retaining screws.
5. Grasp the knife lifters firmly and, at the same time, turn them counterclockwise to release the knife from the knife bar. Lower the entire assembly down, then move the knife to the left slightly then bring the knife out of the cutter, right end first. Put the blade in the scabbard immediately and secure the knife with the knife retainer screws.
6. Send dull knives to a knife grinder – do not attempt to sharpen your own knives! Knives that do not have a minimum height of 1-1/2" (3.8 cm) will not function properly and should be carefully discarded. See the Knife Care Tips Section below for additional information.

Knife Installation



CAUTION Knives are heavy and always very sharp! Be sure to keep the edge away from your body and keep other people out of the area while handling the blade. Severe lacerations or dismemberment could result from careless handling procedures.

1. Make sure the knife and clamp are in the "up" position. Turn the main power switch off and disconnect the machine power cord to prevent accidental power-up while servicing the cutter.
2. Pull out the cut stick and turn it to a new surface or replace with a new one.
3. Remove the retainer screws from the new blade and screw the knife lifters into the new blade. Screw the lifters about half way into the knife.
4. Insert the knife assembly into position under the knife bar, left end first. Raise the knife into the knife bar slot as high as it will go. Check both view holes to make sure knife is all the way up (Figure 15, page 18). Then tighten the lifters.

NOTE: If the blade will not go in, make sure the lifters are not screwed into the blade too far.

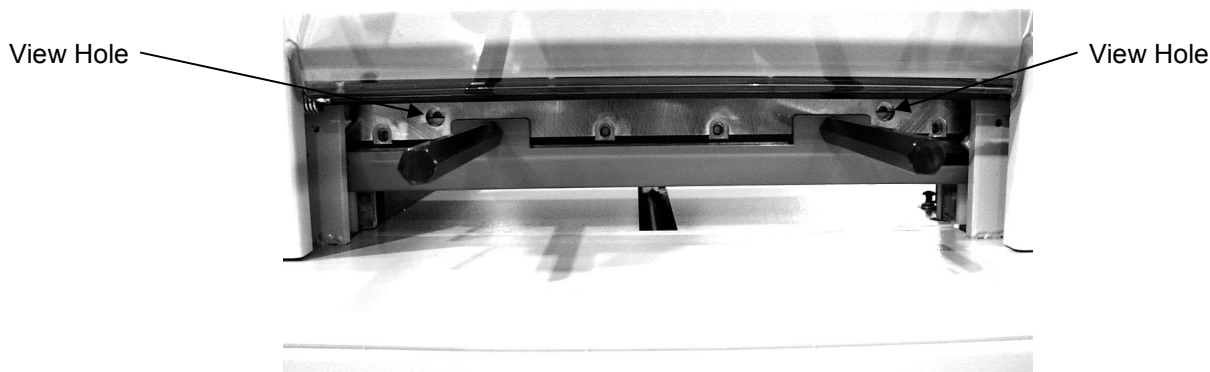


Figure 15

5. Insert and tighten four knife bolts.
6. Remove the knife lifter assembly and replace with the remaining two knife bolts.
7. Place a few sheets of paper over the cut stick, covering the stick end-to-end.
8. Clamp the paper.
9. Double check to make sure the knife depth adjusting screw has been adjusted up (step #2, Knife Removal). Plug in the power cord, turn the power on, close the shield, and press the cut buttons to perform a cut cycle.
10. If the knife does not cut all the way through (and it shouldn't on the first try), adjust the knife depth of cut by turning the adjusting screw on the right side of the machine, about one complete turn at a time to start. Continue to make cuts and adjustments until the knife cuts through all sheets. Remove paper and cut through a few larger lifts of paper to make sure the knife depth is set correctly. Adjust again if necessary.
11. Send dull knives to a knife grinder – do not attempt to sharpen your own knives! Knives that do not have a minimum height of 1-1/2" (3.8 cm) will not function properly and should be carefully discarded. See the Knife Care Tips Section below for additional information.

Knife Care Tips

CAUTION

! KNIFE SAFETY ! Knives are **DANGEROUS!!!** Knives are very sharp, even after use. Keep the edge away from your body and keep the area clear of others when handling knives. Never touch the cutting edge! To prevent personal injury and damage to the knife, always keep knives in their holders with screws tightened. Even if you are aware of the dangers, others may not be. Never attempt to hone, polish, or service the knife in any way. Failure to follow safety procedures may result in severe lacerations or dismemberment.

7.3.1 Knife Blade Life

Knife blade life, or the time between sharpening, can be affected by many factors. One important factor is the type of paper being cut. Abrasive paper, such as recycled paper, soft paper such as newsprint paper, and bound books can all significantly shorten knife blade life. Also, if the knife depth is set too deep, the knife will cut too deep into the cutting stick and can quickly dull the knife blade.

A knife can last between 2,000 and 5,000 cuts before it needs to be sharpened. Cutting soft paper (such as newsprint paper) or paper with high post-consumer recycled content can cause the knife to need sharpening after only 2,000 to 3,000 cuts. Cutting pure paper, such as bond paper with no recycled content, or hard paper can allow the knife to be used for as many as 5,000 cuts before it needs to be sharpened. In all cases, the operator should continually check the quality of the cut to determine when the knife blade needs to be sharpened. Some characteristics that indicate a blade needs sharpening are:

- The knife hesitates or stalls while making a cut.
- The sheets are not all cut to the same length (usually the top few sheets are longer than the rest of the sheets - this is sometimes called “draw”).
- Cut marks appear on the cut face of the paper.
- The profile of the cut (side view) is not perpendicular to the table.
- The cut does not appear straight when viewed from the top.
- The knife makes a “rough” sound as it passes through paper.
- Nicks are visible on the cutting edge of the knife.

Cutting Stick

A worn cutting stick can affect the cut quality of the bottom sheets. When this happens, the cut stick can be rotated. Usually, the stick should be rotated one or two times between knife sharpening. Cut sticks have a “wavy” shape to them and when rotated must be rotated a full 180° to keep a flat side up. Each stick has 2 flat sides that can be used, after which it can be turned end to end, allowing the 2 flat sides to be used again, for a total of 4 positions per cut stick.

Bevel Angle

Challenge recommends that bevel angles for the Spartan 150 knives be 21°.

Helpful Suggestions

- It may be helpful to own a “set” of knives. A set consists of 3 knives: one in the machine, one as back up, and one at the grinder.
- If the machine seems to strain but the cut quality is still good, reduce the pile height. You may also carefully apply glycerin to the bevel when cutting hard, coated paper. Tie a cloth to the end of a stick; dip the stick in glycerin, and apply. Never apply by hand! In lieu of glycerin you may lightly rub white bar soap along the bevel. Lubrication will prolong the life of your machine and reduce maintenance.

Knife Care

- To prevent corrosion, knives are coated with light oil. It should be REMOVED WITH CARE.
- While removing or installing a knife, be careful not to allow the edge to bump against the machine. Nicks will result.

Knife Installation/Changing

- If a knife bolt is damaged, replace it.
- Always keep knife bolts securely tightened.
- Store knives in a dry environment to prevent corrosion.
- Never attempt to service a knife in any way.

NOTES