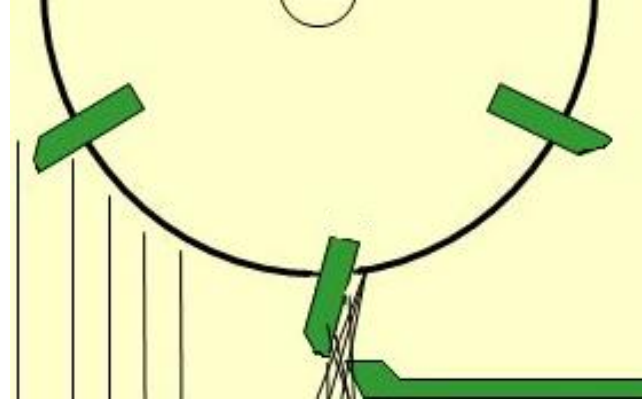




REEL BLADE / BED KNIFE ADJUSTING & SHARPENING

Reel Mower Cutting Fundamentals

The reel mower's cutting ability is the result of the corner edges of the reel blade and bed knife crossing each other in a precise manner (proximity and speed) to achieve the scissor action. These edges are sharp, but not in the same way as a knife or even a rotary mower blade. They are squared, with the width of the blade material ground at specific angles to reduce the amount of surface area that contacts the bed-knife. The bed knife's top and front surfaces are also ground at precise angles to provide the proper contact with the blades' leading edges as it rotates.



All our blades are manufactured using a computerized grinding and balancing process and the cutting action (the rotational contact between the blade and bed knife) is pre-adjusted during assembly. We also use a relief grind to reduce friction and extend the life of the blade. We back-lap every unit to ensure the components are "seated" (conforming to each other) for consistent engagement and light contact. However, since it's a motorized, mechanical machine with chain driven functions, normal wear and use of the unit will make it necessary to periodically perform maintenance and adjustments. If there's

indication that it's not cutting properly – such as uneven cut heights, you can check the cutting action to see if it's engaging across the entire width and that the reel blade/bed knife contact is light. You also need to check the condition of the blade and bed knife surfaces and edges.

Reel Mower "Sharpening"

Many people first think of sharpening as having to re-grind the blade and bed knife. If the surface or edges are damaged (pits, gouges, or rounded), then grinding will likely be necessary. However, if they are in good condition, there are 2 other steps that can be taken which contribute to an effective scissor cutting action... **adjustment and back-lapping**. To make this determination – and to adjust the blade / bed knife contact or back-lap them, you need to prepare the unit (and yourself) so that the reel blade, bed knife and the overall cutting action can be effectively accessed and inspected.

Preparation - Overview



WARNING: ALWAYS STOP THE ENGINE AND WEAR GLOVES WHEN DOING ANY MAINTENANCE OR INSPECTION OF THE REEL BLADE AND BED KNIFE. A BENT, CRACKED OR BROKEN REEL BLADE AND/OR BED KNIFE MUST BE REPLACED ENTIRELY.

IMPORTANT! Please review the information on the following pages to familiarize yourself completely with all the instructions and gather all the necessary tools and recommended supplies before beginning any adjustments or maintenance, as it will help make all the steps go more smoothly.



REEL BLADE / BED KNIFE ADJUSTING & SHARPENING

Preparation – Tools & Supplies

Following are tools and supplies that are required and recommended (all models) ...

- 3/8" or 1/2" reversible drill or drill-driver
- 1/2" square drive socket adapter
- Ratchet with short extension and 1/2" socket
- 1/2" open-end wrench
- Small or medium adjustable open-end wrench
- Small flat blade screwdriver
- Needle nose pliers
- Automotive jack stands (10")
- Back-Lapping Kit (H0907)
- Plain printer paper cut into strips (4" x 1/2")
- Shop towels or rags
- Snug fitting work gloves

Additional for commercial models...

- 1 x 7/16" open-end wrench
- 1 x 7/16" socket
- Long punch or large flat blade screwdriver
- Small hammer or mallet



Preparation – Unit



The best option is to place the entire unit on a sturdy work bench with a large surface area. If that's not possible, it's recommended that it be elevated as much as possible off the ground to provide a better view of the reel blade / bed knife point of contact and perform adjustment or back-lapping. A sturdy base (full width of the frame and 5-6" in height) that the rear wheels can be placed on will make it easier to see the blade / bed knife contact point when the unit is tipped backwards.



CAUTION:

- **Do not brace or support the unit with any pressure underneath on the bed knife**
- **Do not exceed a 45-degree tip angle and secure it in place at the front and back.**
- **Make sure fuel level in tank is below ½ to prevent leakage from the cap.**
- **Always remove the reel drive chain before checking the reel and bed knife contact.**



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Preparation – Disassembly / Inspection (RL20H Series)

- Remove the reel chain guard, then find the master link, identify the open end of the outer clip, and use a small flat blade screw driver to push it off. Remove the link and chain and place them inside the reel chain guard. **TIP:** hold a rag around the area to help prevent the clip from getting lost. It's also helpful to use tarp, large towel or cardboard underneath the unit.

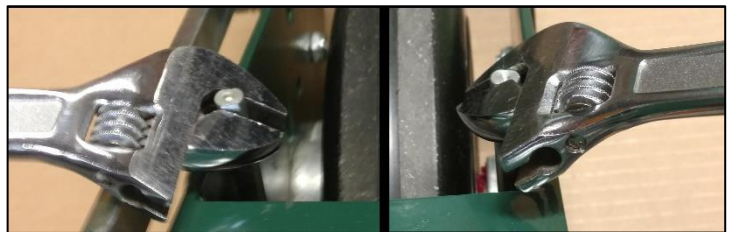


- Once the chain is off, you can rotate the reel blade by hand to see, hear and feel it's contact with the bed knife. It should move freely with light or no contact with the bed knife.



WARNING: USE CAUTION WHEN ROTATING THE BLADE, KEEPING HANDS OUTSIDE ITS PERIMETER AND ALWAYS MOVING IT SLOWLY.

- If the blade is too tight or there are any unusual sounds when rotating, use the adjustment posts on each side of the frame (evenly turning each counter-clockwise) to move the bed knife and loosen the contact.



- **NOTE:** do not loosen the bolts that mount the bed knife to the frame.
- Rotate and inspect the entire blade and bed knife surfaces for any major damage such as gouges or edge roundness that would require grinding or replacement. If the blade and bed knife surfaces are in good condition, you can begin the adjustment process.
- The optimum setting for our mowers is light AND consistent contact (between the blade and the bed knife) across the entire cutting width. The term "light" can be subjective and there can be varying degrees of how much the blade touches the bed-knife. However, the ultimate objective is to cut paper across the entire width with a minimal amount of contact.

- Take a strip and hold it below but in the path of the blade, then rotate it slowly (with your other hand) while moving the paper across the span shearing a small portion at a time to check the scissor cutting action. Repeat a few times to check all the blade edges.





REEL BLADE / BED KNIFE ADJUSTING & SHARPENING

Adjustment (RL20H Series)

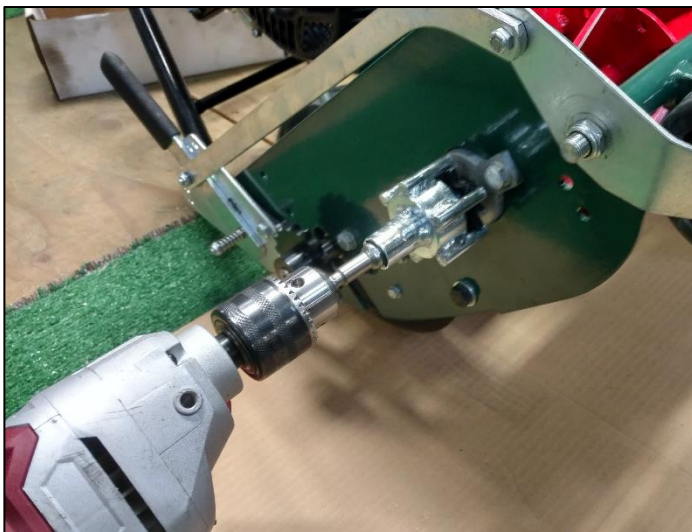
- If the cutting action does not shear the paper strip consistently across the width or if the rotation of the blade is excessively tight, use the adjustment posts on each side of the frame to move the bed knife's position against the reel blade.
- NOTE: The best approach to make the adjustment as evenly as possible, is to turn the posts on both sides in small increments, one after the other, then rotating the blade to feel the resistance and hear the blade passing over the bed knife.
- Continue the adjustment until the paper strip is cut consistently across the entire width, with the least amount of contact as possible. Even if the contact seems overly tight with resistance while rotating the blade, as long as it's cutting the paper, the back-lapping process will quickly help seat the surfaces and allow the blade to rotate more freely.

Back-Lapping

Back-Lapping helps improve the cutting action by removing nicks and high spots from the surfaces to create a more consistent contact between the blade and bed knife for an effective scissor cut. Many grounds care specialists back-lap their reel mowers frequently to maintain the sharpest cut.



WARNING: USE EXTREME CAUTION WHEN ROTATING THE BLADE WITH A DRILL. KEEP HANDS AND TOOLS OUTSIDE ITS PERIMETER AND ALWAYS MOVE IT SLOWLY. ALSO, SECURE THE UNIT IN PLACE AND TO ANY LIFT APPARATUS BEING USED.



- Using a reversible drill with a 1/2" socket adapter placed and tightened in the chuck, attach the sprocket adapter and place onto the sprocket NOTE: The sprocket in the back-lapping kit is provided as replacement if is too worn to accommodate the drill adapter.
- Set the drill's direction to reverse (counterclockwise) and if equipped, use its lowest RPM setting.
- NOTE: The optimum blade rotation speed for back-lapping is very slow at about 100-150 rpm, and for most drills, this is a fraction of the maximum capability. Maintaining a slow drill speed will also help reduce the amount of grinding compound that may be strewn.



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Back-Lapping (continued)

- Place a small amount of grinding compound on the brush tip and begin spreading it on the cutting edge of the reel blade and across the entire width as it's rotating (slowly).
- Repeat this a few times to ensure enough compound is applied to all the cutting edges of the blade.



- Continue rotating the blade for 3-5 minutes or until the compound texture become smooth and lighter in appearance. Also note that the sound of the reel rotating against the bed knife will change as the compound texture changes.



- Remove the drill from the sprocket and rotate the reel by hand to feel the contact level with the bed knife. You can also use the paper strip to verify the cut.

- If it doesn't cut consistently across the entire width, tighten the contact (with the adjustment posts) and continue back-lapping.

- If the contact is too tight, loosen the posts slightly and re-check the cut. The goal is for it to cut paper across the entire width with a minimal

amount of contact. Leaving it too tight will cause excessive friction, heat, noise and premature wear of the blade and bed-knife edges.

- Clean the compound from the all reel blade edges and re-check the contact and cutting action.
- This would also be a good time to grease the reel bearing using the zerk fittings located on each side of the reel shaft. Mini grease guns and lithium-based grease are available at most auto-parts or hardware stores.



The adjustment / back-lapping as well as the contact / cut checking process will become quicker and easier with repetition. For more information, check out our website at caltrimmer.com or contact us at 253-333-3345.