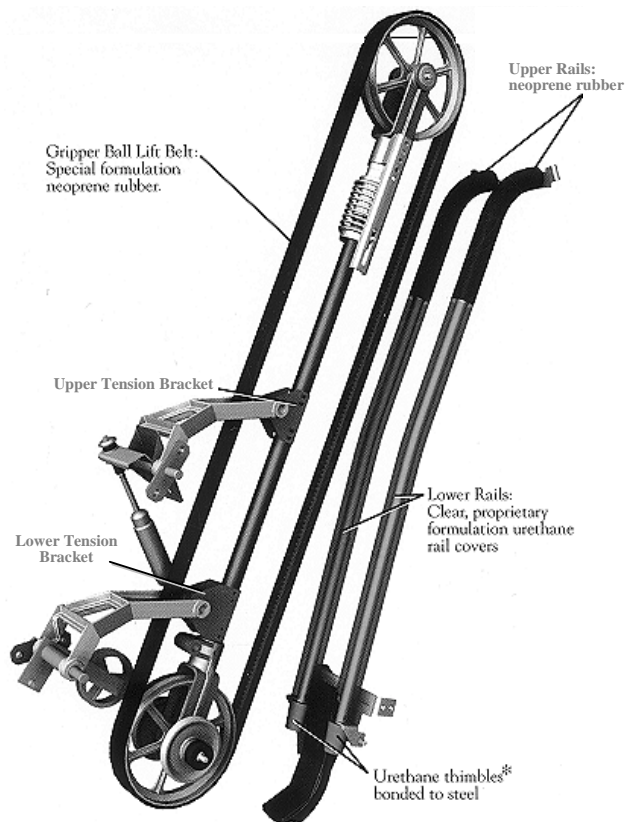




## GRIPPER BALL RETURN KIT INSTALLATION INSTRUCTIONS

The **Gripper Ball Return Kit** was designed to significantly improve the performance of the Positive Ball Lift (PBL) with today's heavily oiled lanes. The kit consists of a new ball lift belt, an adjustable tension bracket, upper and lower rail covers, thimbles, and mounting hardware. The materials in the rail covers, belt, and thimbles are specially formulated for long-lasting, reliable operation regardless of the amount of oil on the lanes.

Many bowling center mechanics have adjusted, shimmed, or otherwise modified their ball lifts in an effort to minimize "yo-yoing" and slippage problems created by today's heavy oil conditions. **It is very important that all such modifications be removed prior to installing the Gripper Ball Return Kit, and that the ball lift is adjusted in accordance with these instructions. Failure to do so can result in less than optimal performance.**



**Figure 1, PBL with Gripper Kit Installed**



**REMOVE POWER FROM THE PINSPOTTERS BEFORE STARTING THIS PROCEDURE.**

1. Remove the PBL assembly in accordance with the instructions in your Pinspotter Manual.
2. Remove the tension from the ball lift belt.
3. Remove the shafts from the upper and lower tensioner support brackets (if necessary, use a non-marring mallet), and then remove the belt.
4. Remove the upper support bracket by drilling out the rivets on each side of the bracket using a 1/4-inch drill bit. An alternate method is to use a chisel to knock off the rivets.
5. Install the new upper tensioner bracket using 1/4-20 x 2-1/4-inch screws, washers, and lock nuts. Use washers between the bracket and the head of the screw as well as between the bracket and the lock nut. Place the bracket in its lowest position (see Figure 2) making sure that the bracket is square and aligned with the other components on the PBL, and tighten the screws.

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**Note:** *In extreme oil conditions, it may be necessary to position the ball lift closer to the track rails in order to prevent slippage. The slots in the new upper tension bracket allow you to do this. Whenever the upper tensioner bracket is adjusted, the angle of the PBL changes. It is necessary to recheck the PBL for proper height and to adjust as needed.*

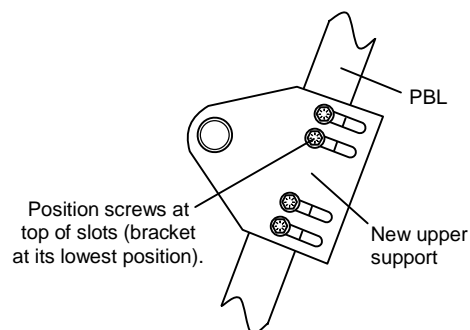
6. Install the new ball lift belt. Set the correct tension by adjusting the retainer at the top of the spring using a spanner wrench. The correct setting is achieved when the spring length (when measured between the lower retainer and upper washer) is 4-1/8 inches (see Figure 3).
7. Reinstall the upper and lower tensioners.
8. Remove both track rail assemblies. **REMOVE ANY WASHERS OR SHIMS FROM BEHIND THE TRACK RAIL ASSEMBLIES.** (See Figure 4.) Do NOT reinstall these later.
9. Remove the rail covers from the rails. Cleaning the rails will help the new covers slide on easier.



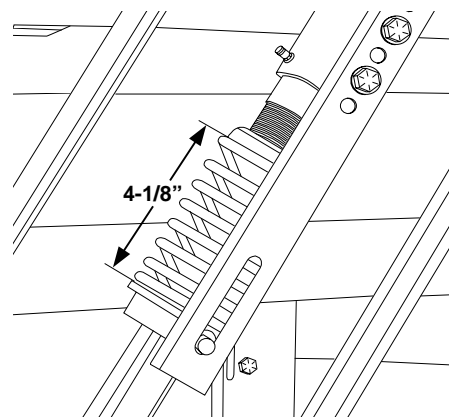
**HANDLE THE CLEAR RAIL COVERS WITH CARE TO AVOID TEARING.**

10. Remove the cellophane wrappers from the clear rail covers, and install the covers on the lower part of the rails. If using a knife, be careful to avoid cutting the rail covers.
11. Install the new black rail covers on the top section of the rails. **Do NOT cut these covers to length! (See exception.)** The clear rail covers will compress approximately one inch to allow the black upper covers to fit properly. This will prevent a gap from forming between the two during use.

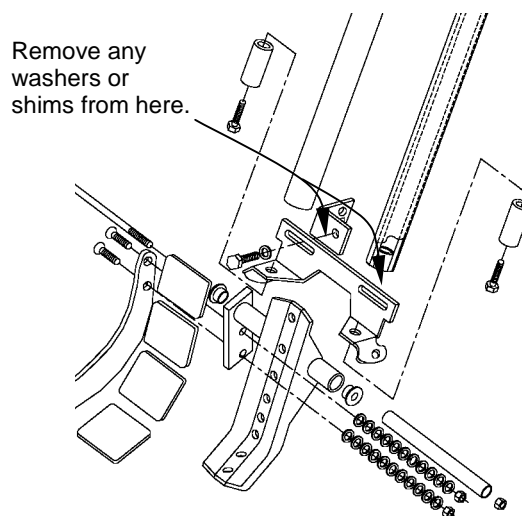
**Exception!** On pinspotters with export ball exit systems (kicker ball exits with rails that are straight at the top instead of curved), cut the **BLACK** rail covers to a length of 11.75 inches. Do not alter the clear rail covers in any way.



**Figure 2**



**Figure 3**



**Figure 4**

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12. Verify that there is room for the rails to fit between the wooden kickbacks. If necessary, increase the size of the V-notches as shown in Figure 5. **Do not bend the rails to get them to fit.**
13. Reinstall the track rails. (Do not use any shims.) Use the new thimbles (narrow end down) in place of the existing ball guides.
14. Adjust the lift arm so that it is no more than 1/8 inch above the door ring weldment (see Figure 6).
15. Reinstall the PBL assembly.
16. Check the PBL for the correct height. **There should be from 3/8-inch to 1/2-inch clearance between a ball on the lift arm and the belt.** (See Figure 7.) This added clearance is needed because of the fatter rail covers.
17. If the PBL has a Lift Pressure Kit installed, adjust the turnbuckle to apply only a minimum of pressure.
18. Check the Light Ball Sensor adjustments to ensure that the side-to-side travel is equal and sufficient to allow the ball to enter the door completely before the lift arm engages the ratchet.
19. On PBL Lite units, set the adjustable-speed rudder drive (Figure 8) to give a one-second dwell time on each side.
20. Verify that the remaining PBL and LBS adjustments are in accordance with the settings outlined in the Pinspotter Manual. Adjust as necessary.
21. Test ball lift operation with light and heavy bowling balls.

**Periodically clean the belt and rail covers with diluted (4:1) lane cleaner.**

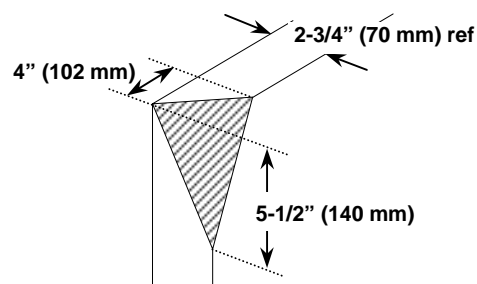


Figure 5

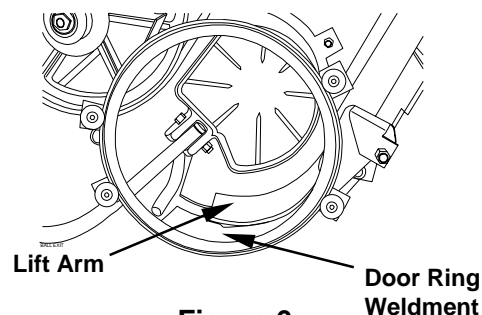


Figure 6

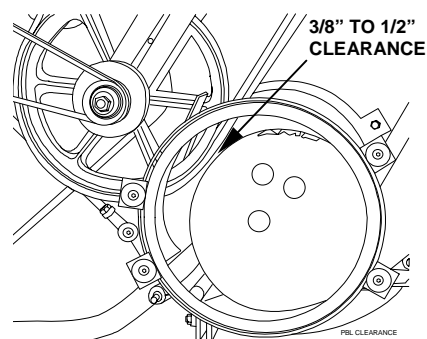


Figure 7

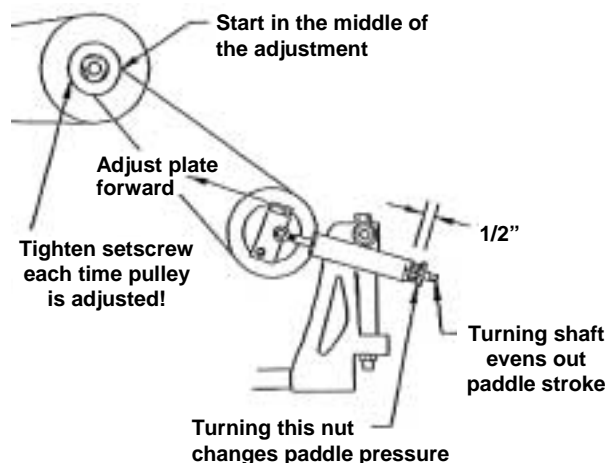


Figure 8