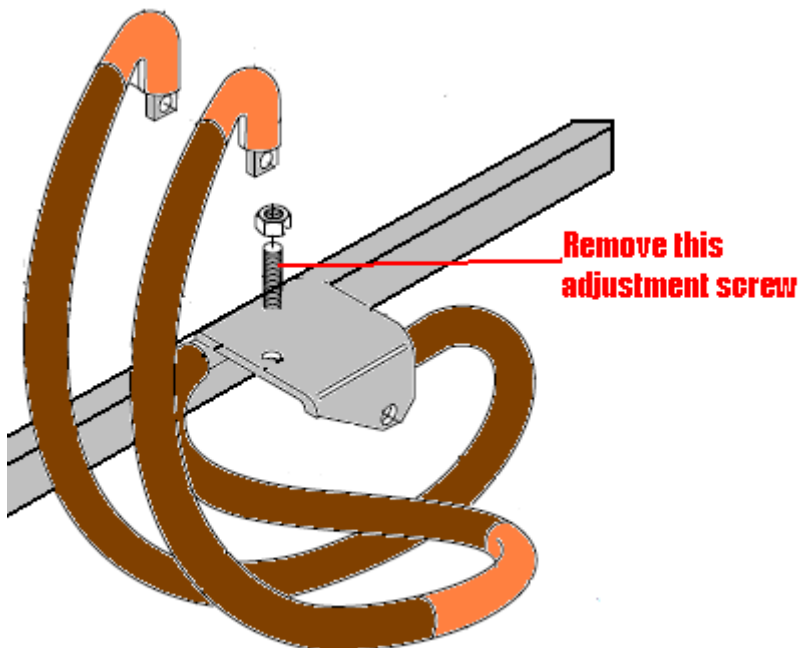


# BRUNSWICK BALL LIFT ROD ADJUSTMENT

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**\*\*\*WARNING\*\*\* THIS ADJUSTMENT SHOULD NOT BE ATTEMPTED BY ANYONE WITH LESS THAN A "B" MECHANIC STATUS. THIS IS A VERY DELICATE PROCESS AND SHOULD ONLY BE PERFORMED BY EXPERIENCED MECHANICS\*\*\***

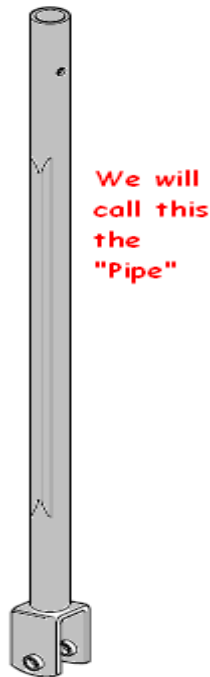
1. Turn off and unplug the pinsetter
2. Completely remove the adjusting bolt from the Clapper Block of the lift rod assembly as in figure "A". (In my honest opinion, this adjusting bolt creates a pivot point and allows the clapper block to rest uneven. This in turn will damage the bronze bearings in the clapper arms) The bolt should not need to be reinstalled.



**FIGURE "A"**

3. Seat a 15 or 16lb ball on the ball wheel at the bottom of the lift rods.
4. Manually turn the motor to elevator belt so as the shaker board is forward as far as possible away from the ball wheel.

5. Find a broken off rake arm (a perfect length) or a cut-away vibrator shaft about 3-1/2 feet in length or something of similar length and strength. (See figure "B"). We will refer to this as the "Pipe".



**FIGURE "B"**

6. Check the ball position. The bottom of the ball should rest center of the ball wheel. (Could be slightly forward from center up to 1/8 inch however there is no tolerance rearward)
7. Use the pipe, if needed, to slightly reform the rear lift rod forward or rearward to obtain the dimension in step 6.
8. To bring the rear rod forward, place the pipe behind the lower portion of the lift rod. Rest the pipe rearward against the elevator frame and pull. Through leverage, you will be reforming the lower lift rod forward. You will have to pull hard but be easy, not to bend it too far. It won't take much. Refer to figure "C".

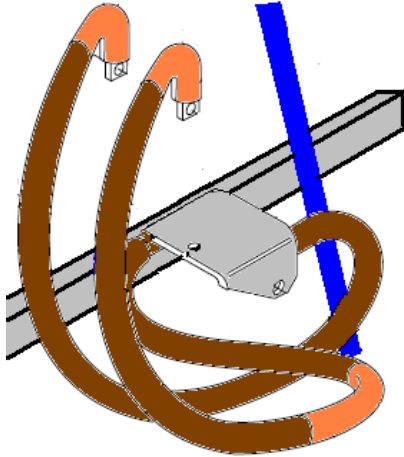


FIGURE "C"

9. To bring the lift rod rearward, place the pipe through the opening of the lift rods and rest the lower end of the pipe on the lower lift rod and push forward against the upper end of the same lift rod near the clapper block as in figure "D".

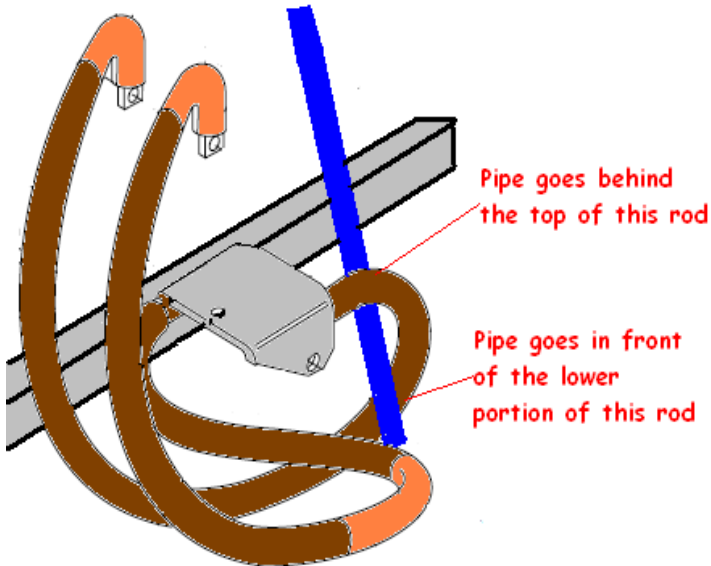
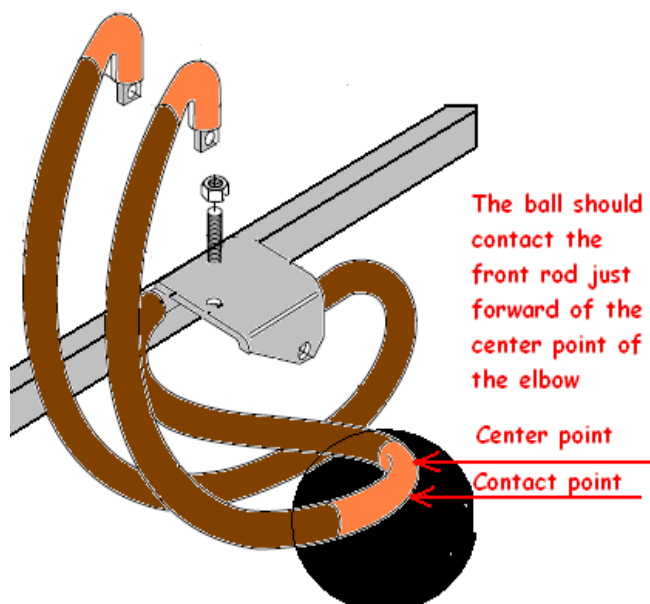


FIGURE "D"

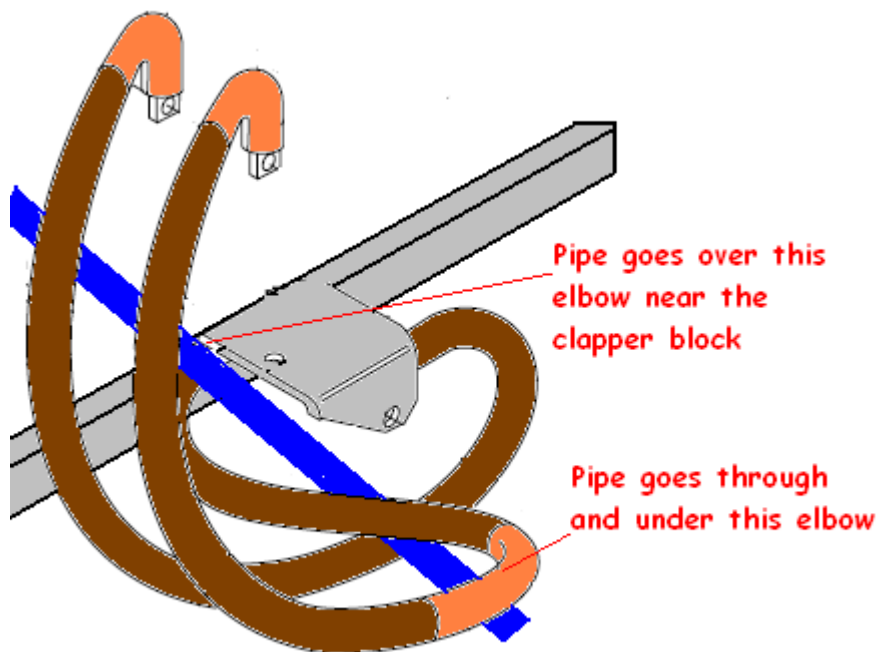
10. Because of this position and the length of the pipe, you may need to seek passage for the upper end of the pipe. Line it up to your left of the Cross Conveyor pulley and to the right of the pin guide (wiper). This will give you room to push forward on the pipe. This will also, through leverage, be reforming the lower lift rod rearward. Once the dimension in step 6 is obtained, continue to step 11.
11. This next adjustment is rather tricky and sensitive. With your hand, push the ball toward the elbow of the front lift rod. The ball should not touch the elbow until at least 3/4 out of the bend. This should actually grab the ball from you and not allow it to roll back to the bottom. See figure "E".



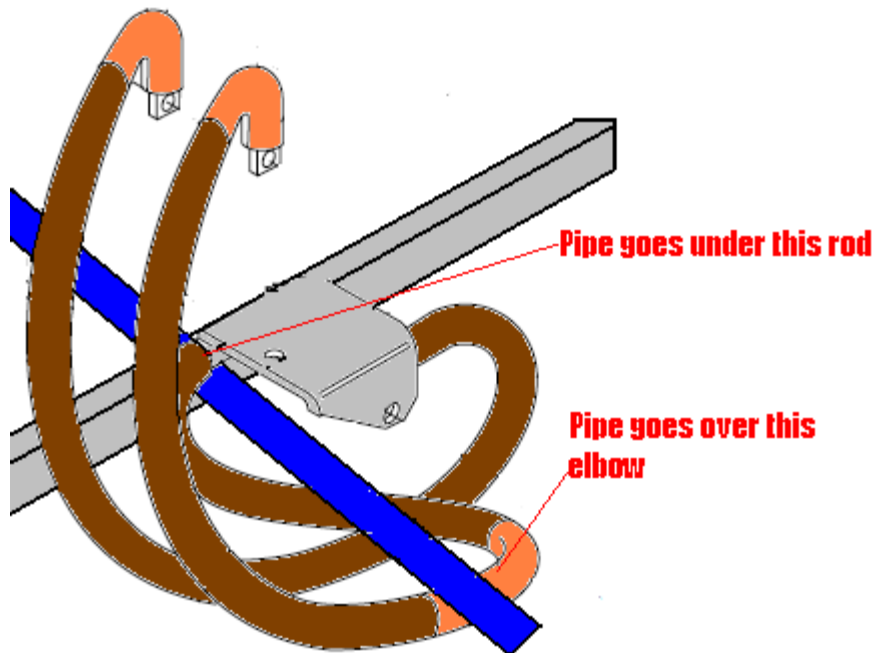
**FIGURE "E"**

12. This is where we make the adjustment to lift the clapper block between 1/4 and 3/8 inch. Place the pipe inside the upper loop of the front lift rod where it connects to the clapper block and down to just under the elbow of the lift rod. (See figure "F") Pulling rearward will reform the elbow forward. Again, do this carefully as we don't want to break the weldment of the lift rod at the clapper block.

13. To bring the elbow down, you must first remove the pin deflector and bracket assembly. (You may or may not have this on your machines. It is used to help keep pins from flying out of the machine) Place the pipe under the upper elbow at the clapper block. You will be raising the block as the pipe needs to also be placed over the top of the lower elbow. This will be a rather tight fit. Once the pipe is in place, pull up to slightly reform the lower elbow down. (See figure "G")
14. Remove the pipe and place the ball back on the ball wheel. When checking this adjustment, when the ball grabs under the elbow, turn the elevator by hand and note the height the clapper block raises. Repeat this step of adjusting the elbow until the block rises between 1/4 and 3/8 inch. No more, no less. Once this is achieved, proceed to step 15.



**FIGURE "F"**



**FIGURE "G"**

15. Remove the ball from the machine for now.
16. Remove the two jam nuts from the spring rod and allow the lift rods to rest against the elevator assembly. Be careful not to lose any of the parts associated with the spring rod.
17. Loosen the collars on the spring rod stud and move them to the ends.
18. Inspect the lift rod position. The ball wheel should be evenly centered between the two lift rods. If it is not, then grab the upper end of the lift rods and bring it up near the ball track. There is limited space between the ball track and the elevator assembly. In this space, you must push or pull on the lift rods together as a whole, to reform in the direction needed to set the lift rod alignment. Rest the rods again against the elevator and check the position of the ball wheel. Repeat this alignment until the lift rods straddle the ball wheel evenly.
19. After step 18 is achieved, bring the lift rods back up, re-align the spring rod on the stud and reassemble. (Do not adjust the collars just yet)

20. After replacing the spring, flanged washer, rubber bumper and washer, use only one of the jam nuts (the larger one) for now.
21. At this point, check the position of the spring rod on the stud that it should slide easily and not be in a bind.
22. Manually compress the spring by pulling the lift rods into the ball track and check for clearance. You may need to adjust the ball track. Before securing the collars, the spring rod should almost seek center on the stud and should be able to be moved slightly by hand. There should be no bind.
23. Place the ball on the ball wheel and manually turn the elevator so the ball will rise up parallel with the spring rod.
24. Once the ball is even with the spring rod, push the rubber bumper and washer all the way against the support bracket and adjust the first nut 1/4 to 1/2 inch from the washer. Add the second jam nut and tighten the two together leaving the clearance.
25. The adjustment is now almost complete.
26. Take the ball out, turn on the machine and check the operation.
27. Turn the machine off and place two bowling balls on the ball wheel at the bottom of the lift rods. Turn the machine on and if you did this adjustment correctly, the second ball will wait until the first ball goes up the lift rods without falling into the pin wheel, then it too, will go up the rods.
28. As with all adjustments, they will require some fine tuning. Observe the operation for a couple of leagues and fine tune as needed and only if necessary.
29. Adjustment Complete!
30. Please keep in mind, there are some worse case scenarios that are kind of difficult to explain that were excluded from this. I was hoping to get the video done as it would show another vital adjustment that I call the "Watch Spring Effect".  
I'll try to explain a little here but don't try it unless you fully 100% comprehend what I am saying.

The lift rods are shaped similar to that of a coiled watch spring. Through time, this coil gets smaller and the outer end shrinks in closer to the center and in the case of the lift rods, away from the ball wheel.

It would need to be expanded out toward the ball wheel in order to make better contact but it is not going to be easy.

After using my adjustment, I check the level of the clapper block. If it is level or slightly tilted toward the RH (10-pin) side, then you are good. If it is tilted beyond level toward the LH (7-pin) side, then it must be expanded.

This can get very touchy and usually requires a second person to help.

31. Remove the spring rod from the track support and refer to Figure "G". The pipe will be placed as in figure "G" but rather than it resting on the front rod elbow, you will need to get it up over the top of the pit cushion. Now the tops of the lift rods will be pretty well jammed against the ball track. This is ok for now. One person will need to sit on the large RH curved end of the rear lift rod while the other gets up between the machines and somehow positions himself where he can get one leg between the gearbox and the triangle plates (or hockey stick on model "A"s) down to the top of the lift rods and push down hard just to where you feel it give a little. Remove the pipe and reassemble the spring rod per my instruction and observe the clapper. You may have to repeat this step until the clapper block is level or slightly tilted toward the 10-pin side.

Be careful not to bend this too far. If you DO go too far, after reassembling, just place the pipe under the top of the large RH curved end of the rear rod and push down on the pipe against the rear elevator frame. This will reverse the previous adjustment.

All this is very touchy and can result in a broken weldment of one or both of the rods, so be careful.

*As you read this, I am not to be held responsible for any damage or injury that may occur as a result of this adjustment. Only a properly trained Head Mechanic and/or Facility Manager should attempt to make this adjustment. Pinchasers and others should not try this.*

If there are any questions or concerns about this procedure, I can be contacted at 214-505-7663 any time 24/7.

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