

Albany Bowl – 36 Lanes

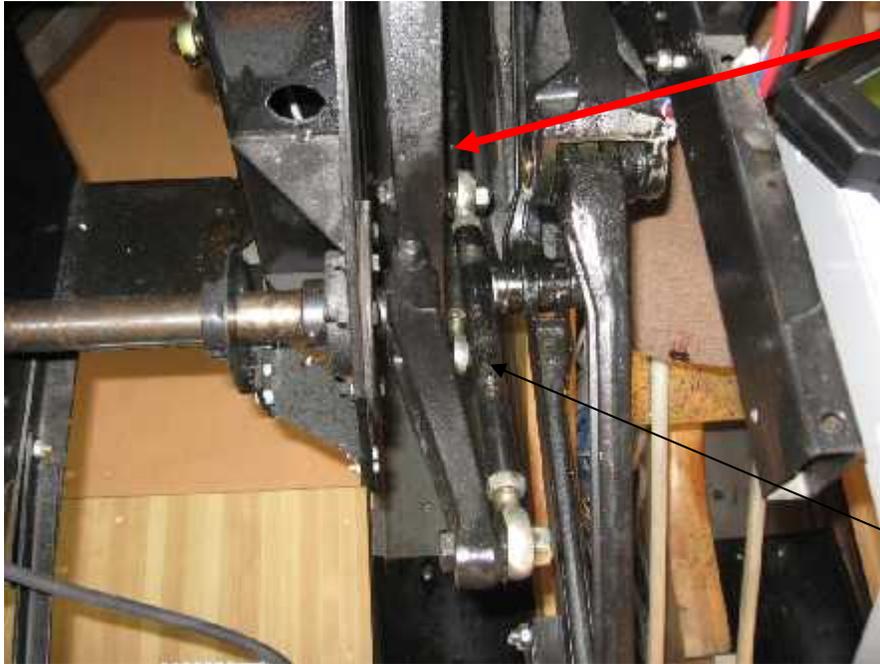
5 Day Pinspotter Training Class

Day 1 – Monday, July 25, 2016 – We taught the proper procedure for adjusting Sweeps. The four students then adjusted all the sweeps on the lanes we were given to work on for training today (10 lanes). We did the first two lanes together, then each man in the class adjusted two more lanes by themselves.

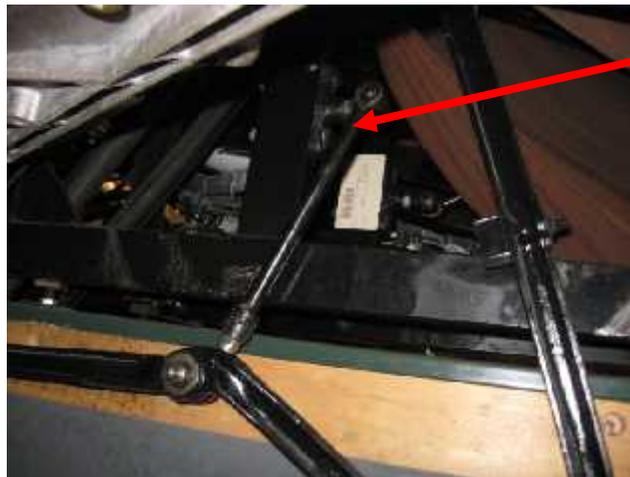
Below is the procedure:

Sweep (82-70 Style)

1. Loosen 4 long sweep rod jam nuts (2 on rod here and 2 on rod on the other side)



and the 2 short sweep rod jam nuts, (getting about 12-14 threads showing (total)- combining the threads showing on both sides of the long rods beyond the snug jam nuts, for equal "hang" position at zero degrees across the center) make sure that female half of telescoping tube is screwed-in tight against the



rod end or jam nut.



2. Adjust first guard height over the lane with threaded link (about 1.25" off lane),

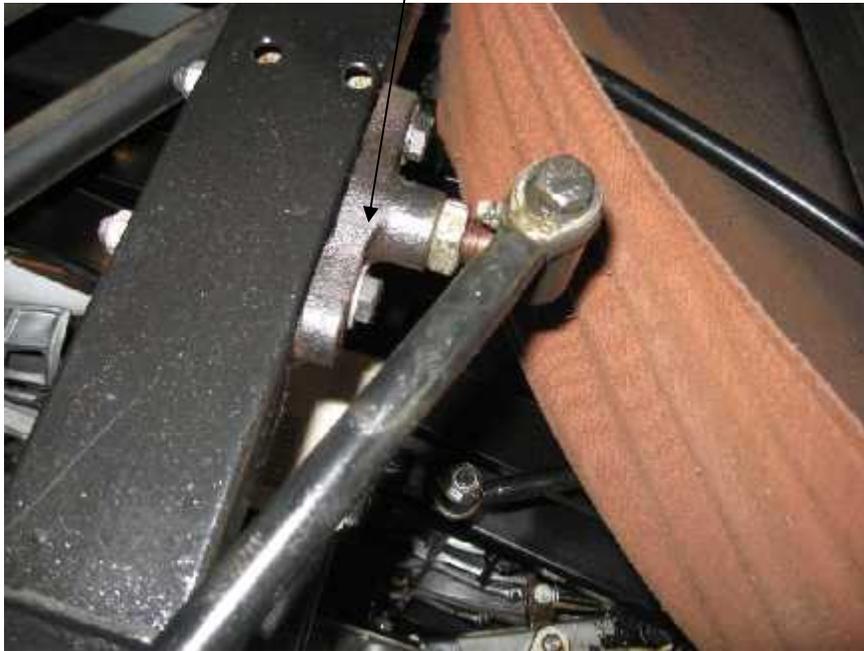


Turn the Threaded Link SHORTER to LOWER the guard position, and LONGER to raise the guard position. Make sure that the Threaded Link is parallel to the lane after retightening.



3. Adjust 4-5-6 row height to

1/4" or so, with threaded link bracket up or down,





4. At rearmost position, adjust travel squareness with long sweep rods and overall travel with short sweep rod,
5. Check/readjust travel under power, 6. Tighten 6 jam nuts.

We then trained on the correct way to clean and lubricate front ends, bins, shuttles, frames, and tables. These are all a part of the regular Preventive Maintenance Procedure, which has not been practiced here. After learning the procedure, we COMPLETELY cleaned and lubricated the front ends, bins, shuttles, frames, and tables, on the 10 lanes we were allocated.

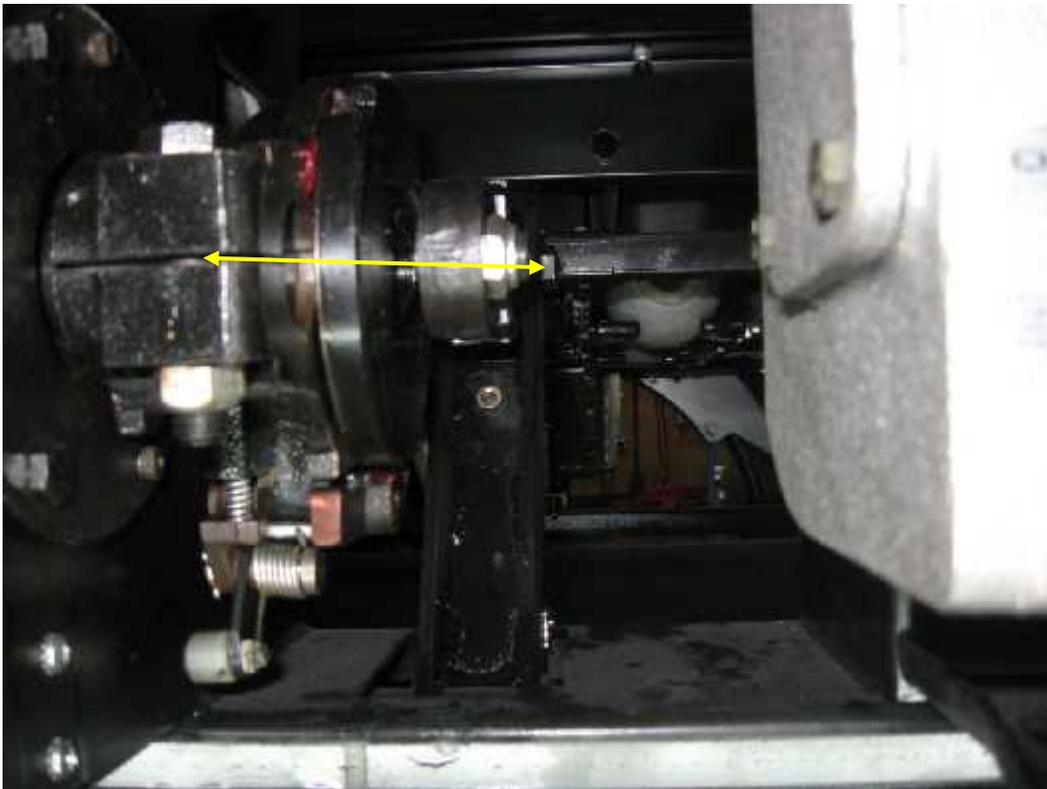
Day 2 – Tuesday, July 26, 2016 – We trained on the proper procedure for adjusting, lubing, and checking Tables. We took a great deal of time on this procedure. The tables here are so bad, that much extra attention is necessary. EVERY table was not flagged properly. EVERY table was not parallel to the pindeck. EVERY table was at the wrong height (5/16") over the pindeck. EVERY table had MULTIPLE respot cell issues. EVERY table had spot rod and respot rod length issues. We will need to continue on table training tomorrow at this center, since there is so much wrong here with the Tables. The mechanics have no chance of getting these Pinspotters to run properly, until we rectify all of these table issues. There is NO LUBRICATION. It must have been at least 20 YEARS since the last time that the Tables have been properly cleaned or lubed. The situation is dire and sad. Rod ends are simply disintegrating from lack of lubrication. Many tables are over 1/2" too far left, or right, or front, or back – when the tolerance is 1/16". It is a miracle that the machines run at all. The neglect has been for so long, and so complete, that it will be very difficult for the new mechanic staff to get "caught-up" within the next 6 months. They have replaced dozens of Yoke Frames in the past year. NO WONDER!! You should NEVER need to replace a Yoke Frame, if the table is properly adjusted. There are so many issues that would cause "pin-in-the-table" calls, which in turn, break things, that it is NO

WONDER, that these major table repairs have been necessary lately. I can't overstate the issue... the tables here are horrendously out of adjustment completely absent of lubrication.

Here is the Table procedure:

Table (82-70 Style)

1. Position table to lowest spotting point, with these 3 points in a straight, uphill line.



2. ACHIEVE - Parallel-5/16" (stabilizer rods/clevis) and flag.

Use the two Table Stabilizer Rods to get the front of the table, the 7-pin corner, and the 10-pin corner THE SAME DISTANCE off of the pindeck. THEN, adjust the Clevis (longer or shorter) to have all three corners 5/16" over the pindeck. A bit too high is better than a bit too low.



Once you have achieved 5/16"-parallel, then check the table centering with table flags. Center the table over the Pindeck Spots, both front-to-back and right-to-left – within 1/16" in each direction.

3. Check respot cell situation – carburetor link lengths, and strike cam rod length. Be sure that Respot cells are fully open in this spotting position, yet not "stressed" open.

4. Reverse crank table to 6" off deck and adjust combination square adjustment to gain the proper length of the 3/8" square-head bolt, as we discussed. Generally, there should be three threads showing, below the jam nut.



5. Crank table forward/down, until pin bottoms are hovering over pin spots, and adjust cup sizes for even hang. Adjust spot rod for proper "toe," (slight clearance between the square head stop bolt and the stop – so that ANY downward pressure on the table causes this gap to widen):



6. Adjust individual cups on spot via spotting cup U-Bolts:



7. Run the table under power back to zero (355 degrees). Adjust respot rod for proper respot cell action (about 1/16" Pawl gap).

8. Pick up standing pins in respot cells and adjust respot cells (tiny screw in cell using ¼" thin wrench) for proper pin "hang" (at the top of the upper red stripe) in a closed cell.

9. Set several racks of pins and fine-tune cups for perfect on-spot spotting under power.

Day 3 – Wednesday, July 28, 2016 – We continues with Tables. The table are so bad, that we need to put special emphasis on them. The wiring to the motors is old and brittle. It is a disaster waiting to happen. We did all tables on lanes 21-36. The tables were very dirty, totally out of adjustment, totally devoid of lubrication, and had many homemade rigs.



This is the situation here. The sweeps and tables are in the very bad shape.

Day 4 – Thursday, July 28, 2016 – There was a problem from yesterday that couldn't be fixed by the mechanic. The entire center has a big wiring problem. The wiring is so old and brittle, that on lane 23, the wiring shorted out, and blew the start capacitor. They couldn't figure it out, so I showed them the process of tracing the problem. First, the wiring insulation is disintegrating. We removed this bad wire on 23 and replaced with new wire.

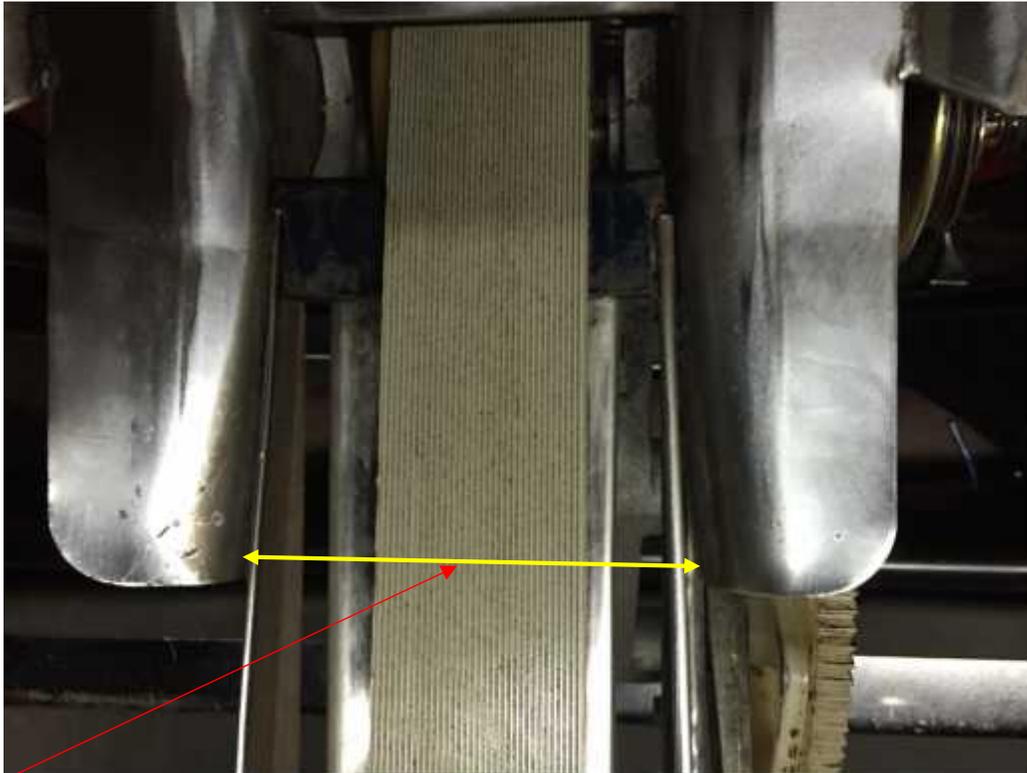




The C1 and C2A plugs are broken, exposing hot wires to shorting-out possibilities.



When we fixed the wiring and broken Molex connector block, the table motor still didn't work. We tested the capacitor and it was bad. We replaced capacitor and all worked just fine. We began working on distributors. The distributors are also very bad. Two of the "critical measurements" are very wrong on almost ALL distributors in the center. First, Orienter Pan openings at the front of the Orienter Pan should be $5\frac{1}{2}$ ". NONE are $5\frac{1}{2}$ " here. Over time the opening widens, and these have never been returned to the correct dimension.



This is supposed to be $5\frac{1}{2}$ " to allow the pin guide to be adjusted high enough to allow for proper orientation. All are close to 6". This makes proper orientation impossible. They are badly bent outward from normal play.



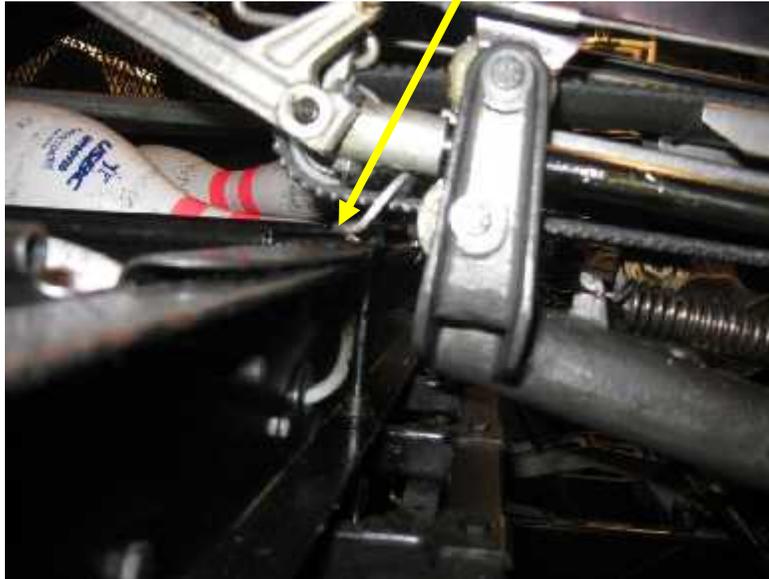
As we were correcting this issue, we noticed that the plow on the 10-side of this lane was SO LOW, that it was wearing-out the carpet and causing the back end motor to quit working. We adjusted the plow to the correct height.



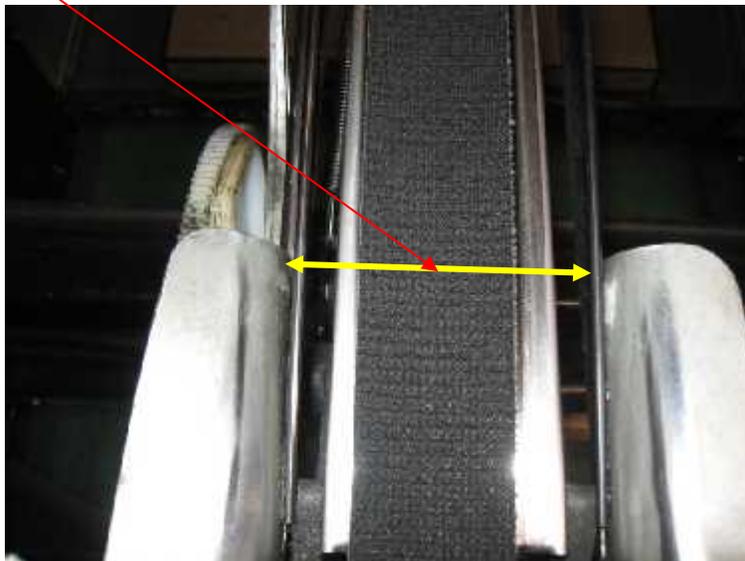
This has been the normal situation with everything we have done here. We find big problems while doing something else. The prior mechanics have obviously been just Pinchasers here. Fixing things when they break and not doing any preventive maintenance. When you do preventive maintenance, you get close enough to see other problems. This situation has stopped here now. The PM schedule will be followed and the issues discovered in the process will be rectified BEFORE the break-down the lane. The distributor training was as follows:

Distributors (Non-Edge)

First- check for proper post shimming to provide about 3/16" clearance between front underside belt guide and Bin Frame/Durabin at 8-9 position and check for proper "balance" by removing the two rear springs and checking that distributor doesn't swing toward 7 or 10 side. Distributor should be balanced and Orientor pan should be level.



Squeeze to obtain a 5 1/2" pan opening...



and ¼" or so clearance from **level O-pan** to pin wheel. **THEN:**

1. Center distributor via safety link.
2. Make sure big spring front hanger bracket is straight and not bent rearward and that the jam nut trapping this spring hanger bracket is tight.



3. Make sure that pin seating rods are inward to within 1/8" of passing pinwheel cleats (7).



4. Adjust REAR kidney up-down adjustment. Lower/raise **lower rear** adjusting nut to be adjusted so that a head-first pin is flush with kidney while a butt-first pin is a bit loose when contacting kidney, and **upper rear** kidney adjusting nut is adjusted for a 3/4"-7/8" PIN DROP from kidney to Orientor Pan. 5. Adjust INNER kidney nuts so that the belly of a BUTT-FIRST strikes O-Pan just PAST center of pan, and belly of a HEAD-FIRST pin strikes O-Pan just SHORT OF the center of the O-Pan. 6. Check clutch spring for proper tension. "Feel" clutch tension by rotating inner clutch facing rearward. 3/4 to 7/8 of a turn on the clutch spring should yield proper clutch tension, but feel this tension, as contamination may require more than the recommended tension until such time that the clutch can be cleaned. 7. Index distributor to 7-pin corner. Test butt-first orientation the head-first orientation on ALL 7 CLEATS of the pin wheel. Look for NO hesitation as a pin proceeds down distributor belt. Repeat for 10-pin corner. If pins hesitate, pry upward slightly on the support under the distributor belt just beyond the O-Pan, as it may be too concave to allow distributor belt to "grab" the pin and convey it forward. 8. Be sure that the stop bracket lines-up exactly with the tab on the inner (gold) clutch plate at ALL pin positions. 9. Put machine on continuous cycle and observe/double-check for smooth orientation and progression from position-to-position.

Day 5 – Friday, July 29, 2016 – We worked on ALL Distributors today, and trained on Chassis, Pits, Sweep and Table Cam adjusting, PBL, and Bowland Scoring interface.

We worked on all 36 Distributors and scoped-in all Scoring Camera images of the pins on the lanes that we have completed final Pinspotting on. It is especially troublesome that we found wiring that has become brittle and the insulation is actually flaking off of. The raw wire is becoming exposed and is a hazard to Pinspotter components and to general safety in this center. Here again, is the picture that defines the issue:



This is a severe problem for the future.

My "boys" were among the finest and most enthusiastic and smart, that I have ever trained in my 30 years of doing this. It was a pleasure to work with them. This center is among THE BUSIEST bowling centers that I have ever seen. It was great to see my friend John Tierney. The students did VERY well on the Final Exam (below). Joel and Sean got A++ score and Eduardo got an "A" despite some language issues with a test in English. Here is the test they all "aced."

82-70 Training School

Distributor Examination Circle correct answers

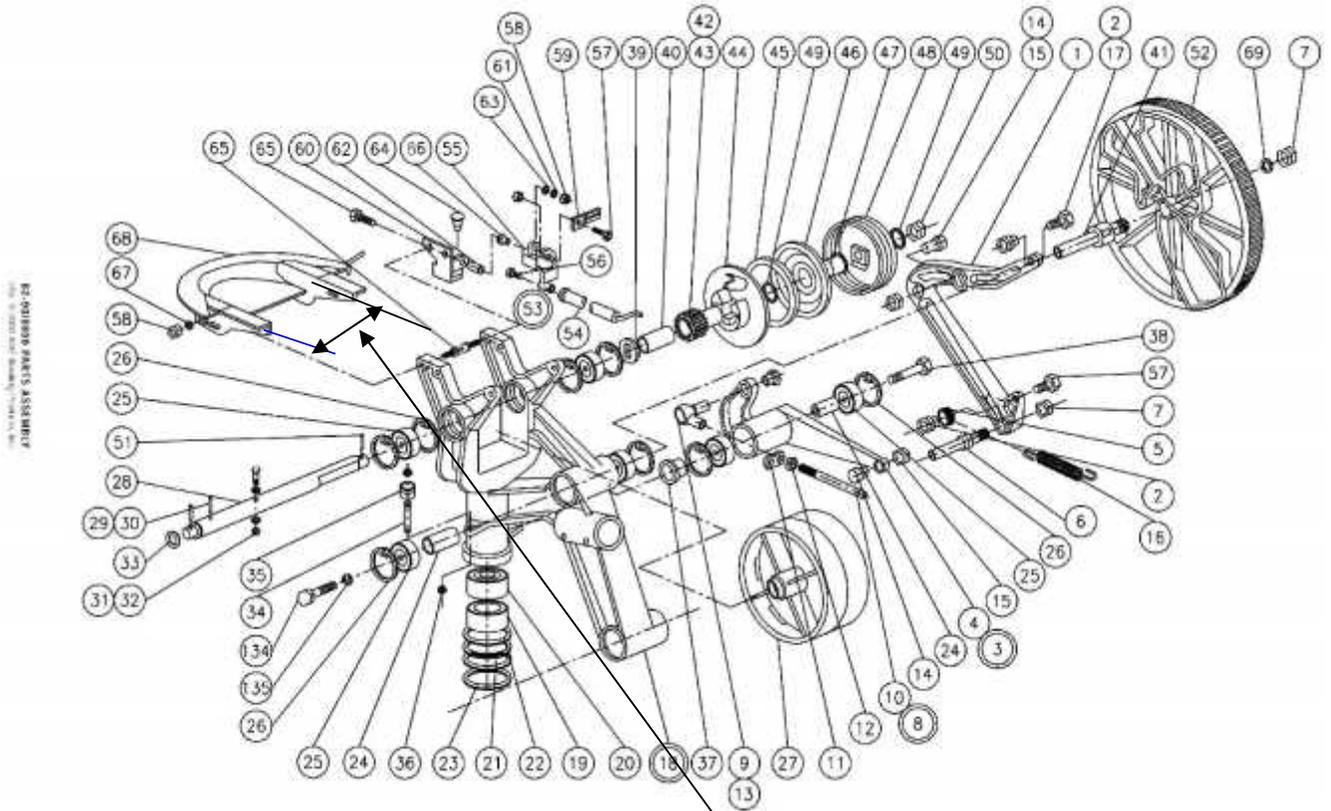


Figure 1

1. Item 68 is called what?
 - A. Orientor pan
 - B. Drip pan
 - C. Oil pan
2. On item 68, the critical opening measurement is what?
 - A. 5"
 - B. 5 1/2"
 - C. 6"
 - D. 6 1/2"
3. Items 44,45, and 46 should be:
 - A. Oiled regularly
 - B. Kept clean

4. The proper starting point for tension on spring (item 48) is:
 - A. $\frac{1}{2}$ of a turn
 - B. $\frac{7}{8}$ of a turn
 - C. 1 turn
 - D. $1 \frac{1}{2}$ turns

5. The timing mark on the large white nylon gear (item 52) and the Timing mark on the pinion gear (item 43) should be aligned with each other when the distributor is at which bin location?
 - A. #1 pin position
 - B. #5 pin position
 - C. #9 pin position

6. The male half of the safety link is shown as item 10. Along with the female half, this link adjusts what?
 - A. distributor's distance from pin elevator
 - B. distributor's position from right-to-left
 - C. distributor's height over Durabins

7. Items 39 through 50 combine to make what assembly?
 - A. distributor drive
 - B. distributor post
 - C. distributor clutch

8. The stop blade (item 59) engages the stop on item 44. These engaged metal surfaces should be:
 - A. clean and dry
 - B. greased regularly

9. Item 43 is called what?
 - A. friction disk
 - B. pinion
 - C. worm

10. Item 45 is called what?
 - A. friction disk
 - B. pinion
 - C. worm

11. Item 47 is called what?
 - A. friction disk
 - B. pinion
 - C. worm

12. Which pin is the first pin to be fed into the bins by the distributor?
 - A. head pin
 - B. #5 pin
 - C. #9 pin

13. Which pin is the last to be fed into the bins by the distributor?
 - A. head pin
 - B. #5 pin
 - C. #9 pin

14. Which pin is fed next after the #6 pin?
 - A. #7 pin
 - B. #9 pin
 - C. #10 pin

15. The bin switch which tells the chassis that the bins are full is at which bin location?
 - A. head pin
 - B. #5 pin
 - C. #9 pin

16. A double-fed 6 or 10 pin is often an indication of what?
 - A. too much clutch spring tension
 - B. not enough clutch spring tension

17. Distributor jams can be caused by:
 - A. poor clutch tension
 - B. bad pin orientation
 - C. dirt
 - D. poor centering
 - E. All of the above

18. The proper drop-off of a pin from the “kidney” shaped pin guide onto the Orientor Pan is:
- A. about 1/8”
 - B. about 1/2”
 - C. about 7/8”
19. When a head-first pin coming up the elevator, engages the bottom of the “kidney” shaped pin guide, the pin belly should be:
- A. Flush with the Kidney
 - B. 1/8” above the Kidney and drop onto it shortly after
 - C. 1/2” above the Kidney and drop onto it shortly after
20. When a butt-first pin coming up the elevator, engages the bottom of the “kidney” shaped pin guide, the pin belly should be:
- A. Flush with the Kidney
 - B. 1/8” above the Kidney and drop onto it shortly after
 - C. 1/2” above the Kidney and drop onto it shortly after
21. The proper clearance between the front distributor belt guide (under the indexing trip arms) and the Durabin or Bin Assembly when the distributor is in the 8-9 area is:
- A. 1/4”
 - B. 1/2”
 - C. 1”

82-70 Training School

Table and Front End Circle correct answers

1. Table “flags” are used to do what?
 - A. Set table height
 - B. Spot pins
 - C. Center table over pindeck

2. At it’s lowest spotting position, table should be parallel to pindeck and how far above the pindeck?
 - A. 1”
 - B. 5/16”
 - C. 1/8”

3. The solenoid fires right before the table is about to:
 - A. pick up standing pins
 - B. set a new rack of pins.

4. When the solenoid fires, it does three things. Which below is NOT one of those three things:
 - A. Unblock the shuttle
 - B. Induce a long table stroke
 - C. Cause cups to turn downward
 - D. Open respot cells

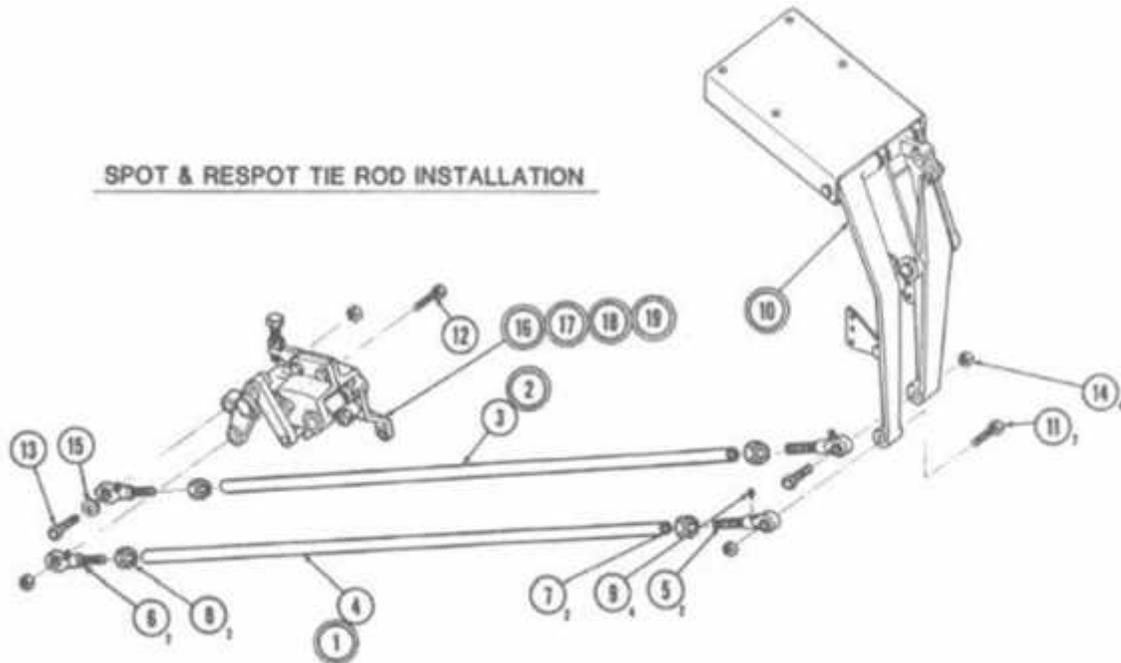


Figure 2

5. In figure #2, item 1/4 is the respot rod. What is it's function?
- A. Used to raise or lower table
 - B. Used to open and close respot cells
 - C. Used to level table
6. In figure #2, item 2/3 is called what?
- A. Table leveling tie rod
 - B. Sweep travel rod
 - C. Spot rod

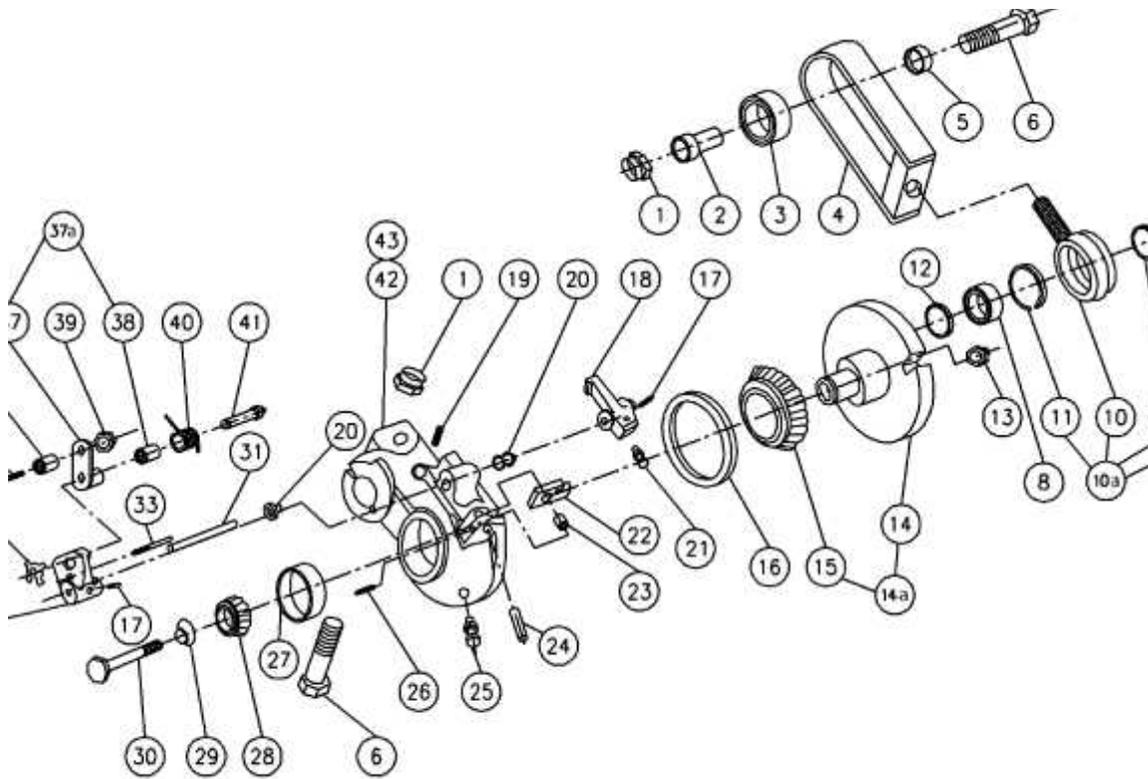


Figure 3

7. Figure 3 is of what component?

- A. Table drive assembly
- B. Table motor assembly
- C. Table torque tube assembly

8. In Figure #3, item 4 is called the clevis. What is it's function.

- A. Used to raise or lower table
- B. Used to open and close respot cells
- C. Used to level table

9. Table adjustments can be done in any order.

- A. True
- B. False

10. When spotting, the pin bottoms should strike the pindeck:

- A. Slightly toe-first
- B. Flat
- C. Slightly heel-first

11. The length of which rod determines when the spotting cups shift rearward, releasing pins in the spotting motion:
- A. Spot rod
 - B. Respot rod
 - C. Table tie-rod
12. The length of which rod determines when the respot cells open and close:
- A. Spot rod
 - B. Respot rod
 - C. Table tie-rod
13. The length of which rods determines the levelness of the table:
- A. Spot rod
 - B. Respot rod
 - C. Table tie-rod
14. The spotting cups are all individually adjustable.
- A. True
 - B. False
15. When changing a spotting cup, the table should be positioned:
- A. As high as it will go
 - B. As low as it will go
 - C. Pin bottoms hovered over spots
16. How many respot cells are on a pinspotter?
- A. 2
 - B. 6
 - C. 10
17. How many respot cells on a pinspotter have carburetor links attached to them?
- A. 2
 - B. 6
 - C. 9
18. Respot cells should hold a pin just above the top red stripe on the pin.
- A. True

B. False

19. During which cycle are respot cells called upon to operate?

A. Strike cycle

B. 1st ball cycle

C. Foul cycle

82-70 Training School

Sweep, Back End, and PBL/LBS Circle correct answers

1. The sweeps lowest point in the sweeping motion is:
 - A. At guard position
 - B. Over the 4-5-6 row of pin spots
 - C. All the way at the back of the pindeck

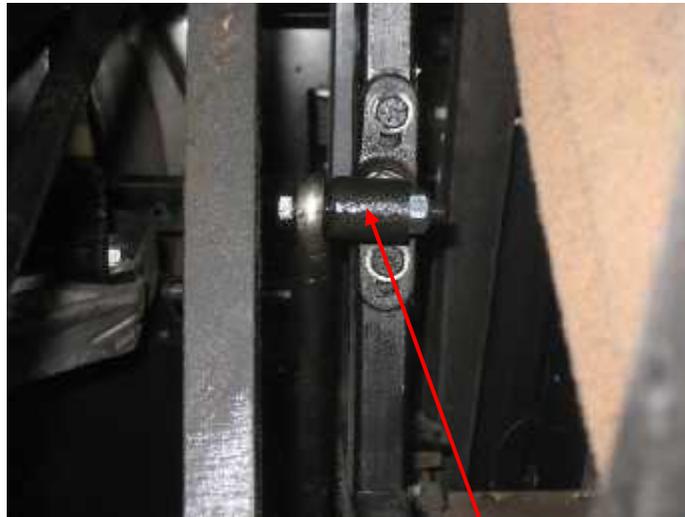


Figure 4

2. In Figure 4, the position (inward or outward) of Threaded Link determines the sweep's height where?
 - A. At guard position
 - B. Over the 4-5-6 row of pin spots
 - C. All the way at the back of the pindeck



Figure 5

3. In figure 5. The bracket shown is bolted to the side-frame and it adjusts up or down to change the sweep height during the sweeping motion. Where do you position the sweep to make this adjustment?

- A. At guard position
- B. Over the 4-5-6 row of pin spots
- C. All the way at the back of the pindeck

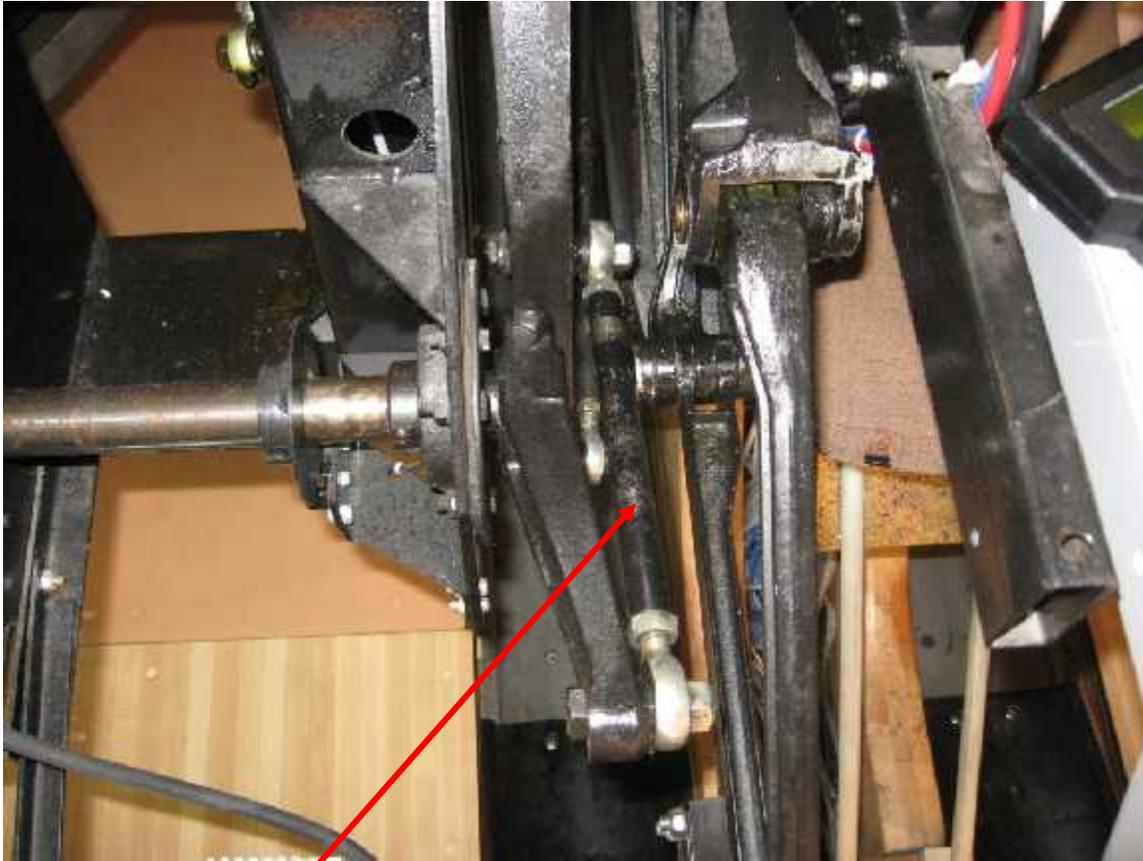


Figure 6

4. In figure 6, this is the sweep overall travel rod. This rod's length determines how far the sweep travels rearward. Where do you position the sweep to make this adjustment?

- A. At guard position
- B. Over the 4-5-6 row of pin spots
- C. All the way at the back of the pindeck

5. When the sweep is at guard position, it should be:

- A. $1 \frac{1}{8}'' - 1 \frac{3}{16}''$ above the lane surface
- B. About $\frac{3}{16}''$ above the pindeck
- C. Just beyond the rear tailplank reference marks

6. When the sweep is over the 4-5-6 row of pin spots, it should be:

- A. $1 \frac{1}{8}'' - 1 \frac{3}{16}''$ above the lane surface
- B. About $\frac{3}{16}''$ above the pindeck
- C. Just beyond the rear tailplank reference marks

7. When the sweep is running under power, it's rear-most position should be:
- A. 1 1/8" – 1 3/16" above the lane surface
 - B. About 3/16" above the pindeck
 - C. Just beyond the rear tailplank reference marks
8. It is possible to adjust the travel of the 7-pin side of the sweep and the 10-pin side of the sweep independently.
- A. True
 - B. False
9. If a sweep-table interlock occurs because a pin gets trapped between the sweep and the flat-gutter, this usually is an indication of what?
- A. Sweep is traveling too far rearward
 - B. Sweep is not traveling far enough rearward
10. The assembly that stops the ball as the ball leaves the pindeck is called:
- A. The carpet
 - B. The bounce plate
 - C. The cushion
11. The item which conveys the pins back to the pin elevator is called:
- A. The carpet
 - B. The bounce plate
 - C. The cushion
12. The "hidden" assembly which funnels the ball toward the ball exit is called:
- A. The carpet
 - B. The bounce plate
 - C. The cushion
13. The back end motor drives three pinspotter components. They are the PBL system, the pin elevator, and what?
- A. The sweep
 - B. The table
 - C. The distributor

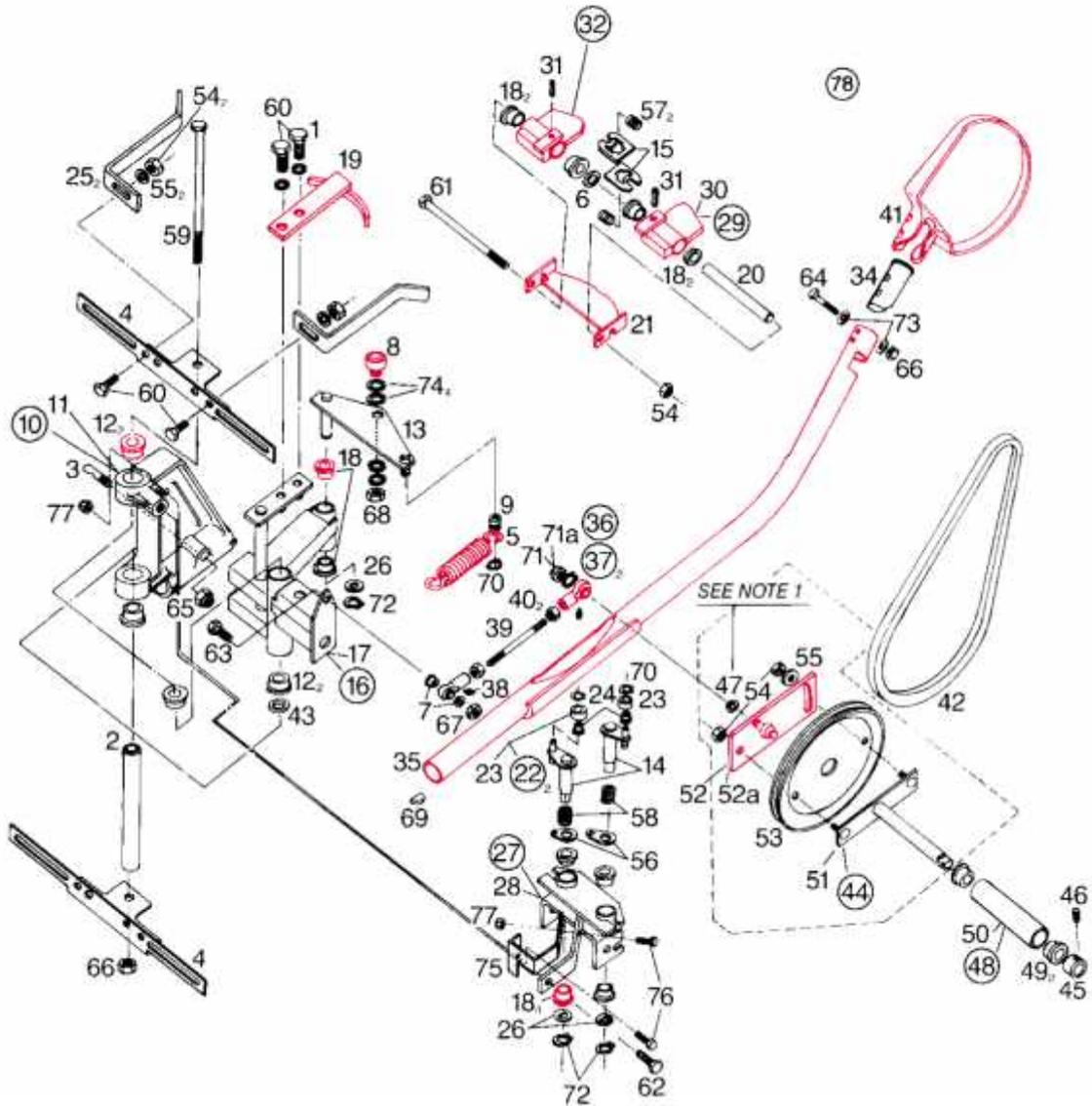


Figure 7

Figure 7 is the light ball sensor assembly. Locate items 19, 25, 39, and 52. Each item does one of the four choices below.

15. Item 19 does what?

- A. Centers the rudder/paddle travel
- B. Induces a “power stroke”
- C. Resets the power stroke cam follower to “normal stroke”
- D. Narrows or widens the rudder/paddle travel

16. Item 25 does what?

- A. Centers the rudder/paddle travel
- B. Induces a “power stroke”
- C. Resets the power stroke cam follower to “normal stroke”
- D. Narrows or widens the rudder/paddle travel

17. Item 39 does what?

- A. Centers the rudder/paddle travel
- B. Induces a “power stroke”
- C. Resets the power stroke cam follower to “normal stroke”
- D. Narrows or widens the rudder/paddle travel

18. Item 52 does what?

- A. Centers the rudder/paddle travel
- B. Induces a “power stroke”
- C. Resets the power stroke cam follower to “normal stroke”
- D. Narrows or widens the rudder/paddle travel

19. The same belt which drives the carpet, drives the PBL system.

- A. True
- B. False