LinCan 15,30, & 60 User Guide V2.0

American Beer Equipment
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Lincoln, NE 68522
402-475-BEER

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Lincoln, NE 68522

Thank You!

And congratulations on purchasing your American Beer Equipment LinCan system. The LinCan is one of the most advanced medium-speed canning lines available. The employees of A.B.E. have worked very hard to bring you a machine which will provide many years of reliable operation with a minimum amount of maintenance.

Your LinCan system has undergone a comprehensive quality assurance and inspection process prior to final packaging and shipment to you. Any residues you see on the surfaces of the LinCan are a result of this testing process and are to be considered normal. Your beverage tubes may have CIP chemical residue in them from when they were cleaned before shipping.

Please read this entire manual prior to installing and operating your LinCan System to ensure you understand the functions of the system. If you have any questions, please do not hesitate to contact

American Beer Equipment

402-475-BEER (2337)

Thank you for your business! Now let's go can!

Contents

1. Safety Precautions 4
a) Uncrating the LinCan 4
b) System Placement 4
2. Initial Startup Procedures 5
3. CIP Procedures 5
4. Canning Procedures 6
a. Filling 6
b. Seaming 8
a. Double Seam Setup Procedures 9
d. Seaming Adjustment Guide 11
5. Cleaning 14
6. Tips 15
a. Filling 15
a. Too Much Foam 15
i. Too Little Foam 15
i. Seaming 16
7. Maintenance 17
a. Seamer 17
i. Roller bearing grease 17
ii. Cylinders 17
iii. Bearings 17
b. Filler 17
c. Other 18
8. Troubleshooting 18
a) Filler 18
i. Fill Times 18
ii. Beer Lines 19
iii. Nozzle Leaks 19
b) Seamer 20
i. Wrinkling 20

ii. Shuttle to Seamer 20
c) Lid-Escapement 21
d) Lid-Tap 23
e) Other 23
e). Parker Manifold Videos 23
9. Height Changeover 25
a. Probe Cylinder 25
b. Lid-Escapement Height 27
c. Lid-Tap Height 28
d. Lid-Skimmer Height 29
e. Seamer (s) 30
10. SAVED SETUP (RECIPES) 32
11. Appendix 35
a. Time Settings, Saving & Saved Recipes 35
b. Main Connections 36
c. Troubleshooting Double Seam Guide 37
d. Double Seam Specifications 38
d. Crown Double Seam Specifications 39
d. Crown LOE Seam Measurement Record 40
d. Crown Super End Seam Specifications 41
d. Crown Seam Measurement Record 42
d. Angelus 202 Mini Seam Specifications 43
d. Ball Seam Measurement Record 44
d. Rexam Seam Specifications 45
d. Rexam Seam Measurement Record 46
e. Screen Images 47
f. Checklists 57
g. Preventative Maintenance Schedules 59
h. Hourly check sheet 60

a. Please read the entire Operator's / Technical manual before starting the installation.
b. Improper installation, adjustment, alteration, service, maintenance or use can cause personal injury or property damage. Consult a qualified installer or service agency for information or assistance. The qualified installer or agency must use factory-authorized kits or accessories when servicing this product.
c. Follow all safety codes. Read these instructions thoroughly and follow all warnings. Consult local building codes and / or National Electrical Code (NEC) for special installation requirements.
d. This unit is equipped with an electrical panel. This panel should remain closed, except when being serviced by qualified individuals.
e. This unit is equipped with Polycarbonate guarding. Guarding should remain on the system when operated to prevent injury.
f. As there are high voltage connections inside the system, limit access to qualified personnel only.
g. This unit is under microprocessor control which can lead to unexpected movement of components. Always turn off the external power and disconnect air supply to the unit when servicing or inspecting the electrical controls, and other areas on the unit.
h. Do not place any part of your body inside of the LinCan filler or seamer while the machine is running. Doing so may be harmful.

Warning
Before installing or servicing system, always turn off main power to system. There may be more than one (1) disconnect switch. Electrical Shock can cause personal injury or death.

a) Uncrating the LinCan

a) Uncrate the LinCan and inspect the system for shipping damage. If damage is discovered, contact your shipping carrier prior to start up. The system was thoroughly inspected prior to packaging. If damage to the system is found, it is the carrier's responsibility to correct the damage.
b) Inspect the system for any loose or disconnected wires, tubing or fittings. Tighten as required. It is not unusual for some fittings to loosen due to the vibration that occurs during shipment. It is our practice not to overtighten the fittings during the manufacturing process. We have found it better for the life of the fittings to tighten moderately at the factory rather than to overtighten.

b) System Placement

a) The system should be located so there is unrestricted access to all sides.
b) The system should be installed in a location and manner that will prevent damage to personnel, merchandise and/or the surrounding area in the event of an overflow, leak or discharge from the machine or connecting lines. We recommend locating the system close to a floor drain.
c) The system should be secure from unauthorized or untrained personnel.
d) The system must not be exposed to freezing temperatures.
e) Good manufacturing practices and adherence to local regulations for food and beverage operations should be followed.

2. Initial Startup Procedures

a. It is up to the purchaser to have a licensed electrician properly connect the LinCan to power.
b. Once connected, the LinCan can be powered by turning the red on/off handle to "I" on the electrical box
    i. The HMI will power to the ABE home screen
    ii. You can now familiarize yourself with the various screens
c. The main air can be connected to the back of the machine with a male 1/2" quick connect.
d. The CO2 pressure regulator at the machine for CO2 Pulse should be set at 60 PSI. Main line air pressure regulator should be set at 100 PSI and operates at 100 psi +/- 10 psi. The machine will stop if the pressure falls out of either range, this is done for seam integrity.

3. CIP Procedures

a. The LinCan System has the ability for CIP. The tubing is rated for up to 170 degrees Fahrenheit. To start CIP, place cans below the nozzles, and hit "CIP" on the "Main" screen (Figure 1). The nozzle cylinder will extend, nozzles will open, and the conductivity probe cylinder will also extend. The CIP time duration can be altered as needed.
    i. **NOTE**: If your nozzles extend downward, and then come right back up, please check that your CIP time has not yet reached zero. If it has, please enter a new CIP time value.
b. It is up to the brewery to ensure proper CIP procedures. Not performing proper CIP procedures may lead to an unsafe consumable. A typical CIP process may look similar to the following:
    i. Powdered Brewer's Wash (requires around 140 to 180 degree Fahrenheit water)
    ii. Flush canning lines with water
    iii. Caustic Acid # 5
    iv. Flush canning line out with water
    v. Saniclean (temp not as important)
        1. Can soak machine in SaniClean

4. Canning Procedures

a. Filling

i. Please follow the attached “Beer Pre-Start” and “Operator Setup Sheet” before canning each time (page 55).

ii. A summarized version of the above is as follows. Connect:

a. ½” main air line at filler on backside
b. ¼” C02 line at filler on backside
c. ¾” standard garden hose at post-rinse on backside post-rinse
d. ¼” air line at post-rinse on backside post-rinse
e. 1-½” sanitary line (Beer)

iii. When you are ready to start canning, go to “Input & Outputs” on the HMI screen (Figure 36)

a. Click “Enable Testing” (Must always be depressed first for any action to take place)
b. Cycle “Can Push” and “Push to Seam” to make sure the cylinders are running smoothly. If they are not, see if beer has dried on the shafts. Hot water and FDA approved silicon spray will produce a smooth cylinder operation.
c. Cycle the Nozzles until beer exits (minimal foam: view the “Tips” section ,page 15, if foam exits)
d. Make sure sanitizer or other chemicals have exited the system

iv. Next, go to the “Main” Screen

Figure 1. Main Screen

Depress:

a. Conveyor
b. Seamer 1
c. Seamer 2 (if 60 CPM System)
d. Or, hit “On” under “ALL” to accomplish the same button presses as above
e. RUN-MODE
    i. When “Run Mode” is depressed, cans will begin the filling and seaming process.
    ii. A typical cycle occurs as follows:
        1. Inlet gate opens
        2. Can are counted in (displayed on Main Screen, Figure 1)
        3. Once “Cans Per Fill Cycle” equals “Cans In”, in-let gate closes
        4. Probes and fill nozzles come down into can
        5. The purge cycle turns on with a time duration equal to the time setting “Purge on Time”
        6. Once “Purge on Time” has completed, the fill cycle will start and finish filling once the probe debounce time has been exceeded.
            iii. **NOTE**: The air pressure must be above the minimum value specified to operate your machine. The air pressure monitor, on your front panel, Figure 1, displays this value. If your pressure drops below the minimum, your machine will stop filling and seaming. The integrity of your seams may be compromised if the pressure drops below the recommended. Your machine will wait for your compressor to catch up before canning may resume.
            iv. **Note**: The “PAUSE” button is on the main screen to prevent cans from entering the filler. You may press this button at any time to prevent more cans from entering the filler
            v. **Note**: You may also prevent can movement, at any time, by pressing the “CONVEYOR” button.
        7. Fill Time can be changed on the fly. You may increase, or decrease, fill levels by going to the Home Screen and hitting the “Quick Change Items” button. Then, enter a new “Fill Extend” value (Figure 2. Individual Nozzle Tunings). This will allow you to numerically increase or decrease the amount of product which enters the can.
        8. “Fill Nozzle Offsets” is only for changing individual nozzles. This is meant to compensate for a “slow” or “fast” fill time. Once the offsets are entered, all of the nozzles should be changed TOGETHER by increasing or decreasing the “Fill Extend” time.
        9. “Probe Debounce” controls how long the probe must sense beer before it shuts the nozzle off. If the time setting is too low, the nozzle will shut off before the can is full (a bubble could set the probe off). If the nozzle time is too long, the nozzle will remain open for longer than needed.
        10. $C0_2$ Pulse can be turned off or on via the Main Screen by clicking “Quick Change Settings”.

a. Typically, a small jet (around .020 seconds) provides the correct amount of extra CO_2, 3/4th of the way up the can to promote an extra layer of foam. This foam will allow lids to lie atop the foamy head and prevent dissolved oxygen pickup (DO_2).

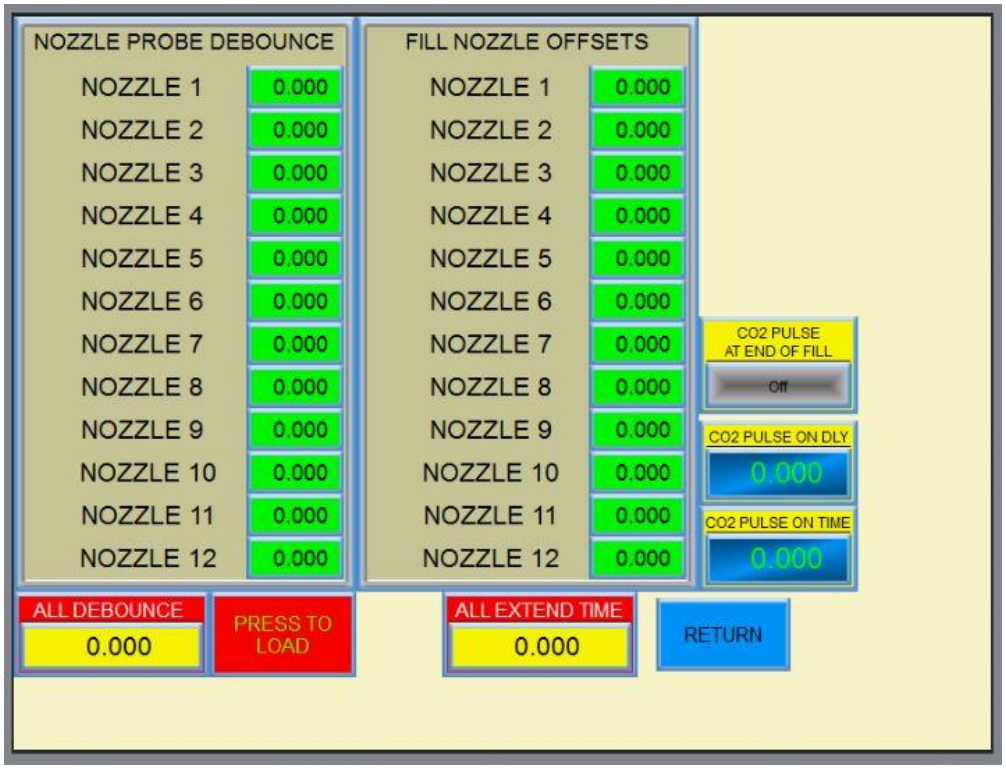


Figure 2. Individual Nozzle Tunings

b. Seaming

It is up to the brewery, and employees, to determine what a proper seam is and to maintain the seam on every can. Without proper seams cans may leak. Therefore, making sure can seams fall within the manufacturer's double seam specifications is of utmost importance. Follow the procedures below to make sure your can is in spec after installing a new roller operation die. If your seams were previously in spec, but are now on the outside range, please refer to the Double Seam Setup Procedures.

Proper maintenance of your rollers will prolong repeatable and accurate seaming. Please refer to the Maintenance Section for more information.

a. Double Seam Setup Procedures

1. **Ensure pin gauge height** (Figure 4)
    a. Distance between top of lift table puck when cylinder is extended and seaming chuck, corresponds to your double seam guide (from can end manufacturer)
    b. Adjust height using adjustment knob in Figure 5.
        i. Turning the knob clockwise limits the stroke of the cylinder (increases pin height).
        ii. Please have the cover on the back of the cylinder when running the line.
2. **Elevate roller lips**
    a. operation 1 & operation 2, clear above chuck lip (Figure 7) to avoid chuck from crashing into, and damaging, the roll
3. **Bring 1st Op Roller in to chuck** (Input/Output Screen-Figure 36)
    a. Adjust the stroke of the connected seaming cylinder (Figure 8. Chuck and) until it is 0.003”-0.005” away from the chuck (X_1 on Figure 7).
4. **Rotate 1st Op roller down**, manually with hand, until it touches chuck lip
    a. back off ¼ turn (aprx .003” on Y1, Figure 7)
5. **Bring 2nd Op roller in to chuck** (Input/Output Screen- Figure 36)
    a. Adjust the stroke of the connected seaming cylinder (Figure 8) until it is 0.003”-0.005” away from the chuck (X_1 onFigure 7).
6. **Rotate 2nd Op roller down**, manually with hand, until it touches chuck lip
    a. back off ½ turn (aprx .009” - .015”, Figure 7)
7. **Check 1st Op roller width**
    a. In Input/Output screen, select Roller 1, then select “test”
    b. Use your specific can double seam guide
    c. If width is too small, move roller away from seaming chuck (Figure 8).
8. **Check for deadhead on first operation**
    a. Did can stop spinning?
        i. Adjust flow control (decrease flow) closest to seamer cylinder rod
9. **Check 2nd Op width/height**
    a. In Input/Output screen, select both Roller 1 & 2, then select “test”
    b. Check for tightness/wrinkles
10. **Check for deadhead on 2nd Op**
    a. Adjust flow control (decrease flow) closest to seamer cylinder rod
11. **Check body/cover hook**
    a. 2nd Op Seam Thickness
    b. 2nd Op Seam Height
    c. Body Hook
    d. Cover Hook
12. **Check tightness rating**
    a. Needs to be 90% or greater (See figure below)

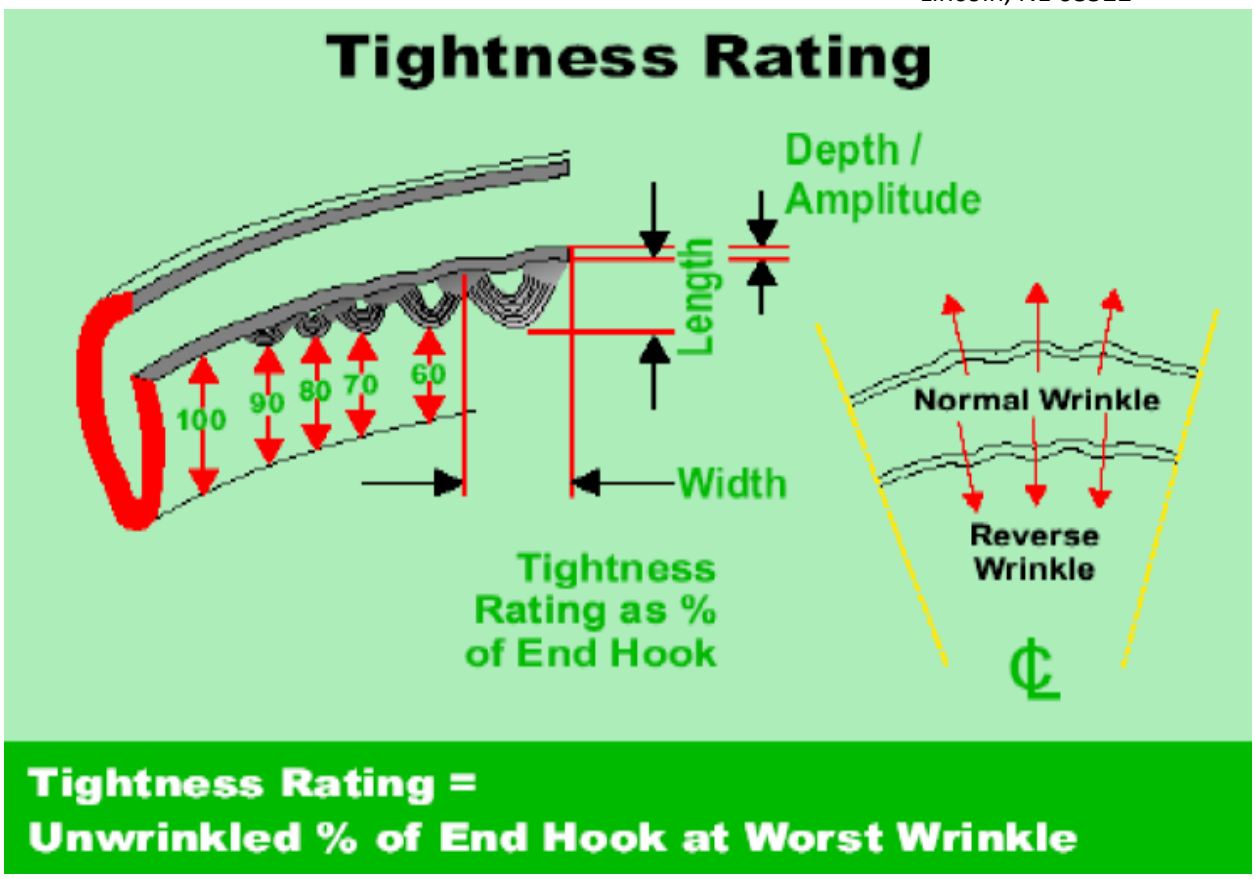


Figure 3. Tightness Rating (Provided by Crown Cork and Seal)

d. Seaming Adjustment Guide

Characteristic	Reason A	Reason B	Reason C
Long Seam Height	Die #1 set too far from chuck	Die #2 set too close to chuck	
Long Body Hook	Lift table high/Pressure high	Die #1 too far from chuck	
Long Cover Hook	Die #1 too close to chuck		
Short Body Hook	Lift table low/Pressure low	Die #1 too close to chuck	Die #2 too far from chuck
Short Cover Hook	Lift table too high	Die #1 too far from chuck	

A more comprehensive table, provided by Ball Beverage, can be found in Figure 32.

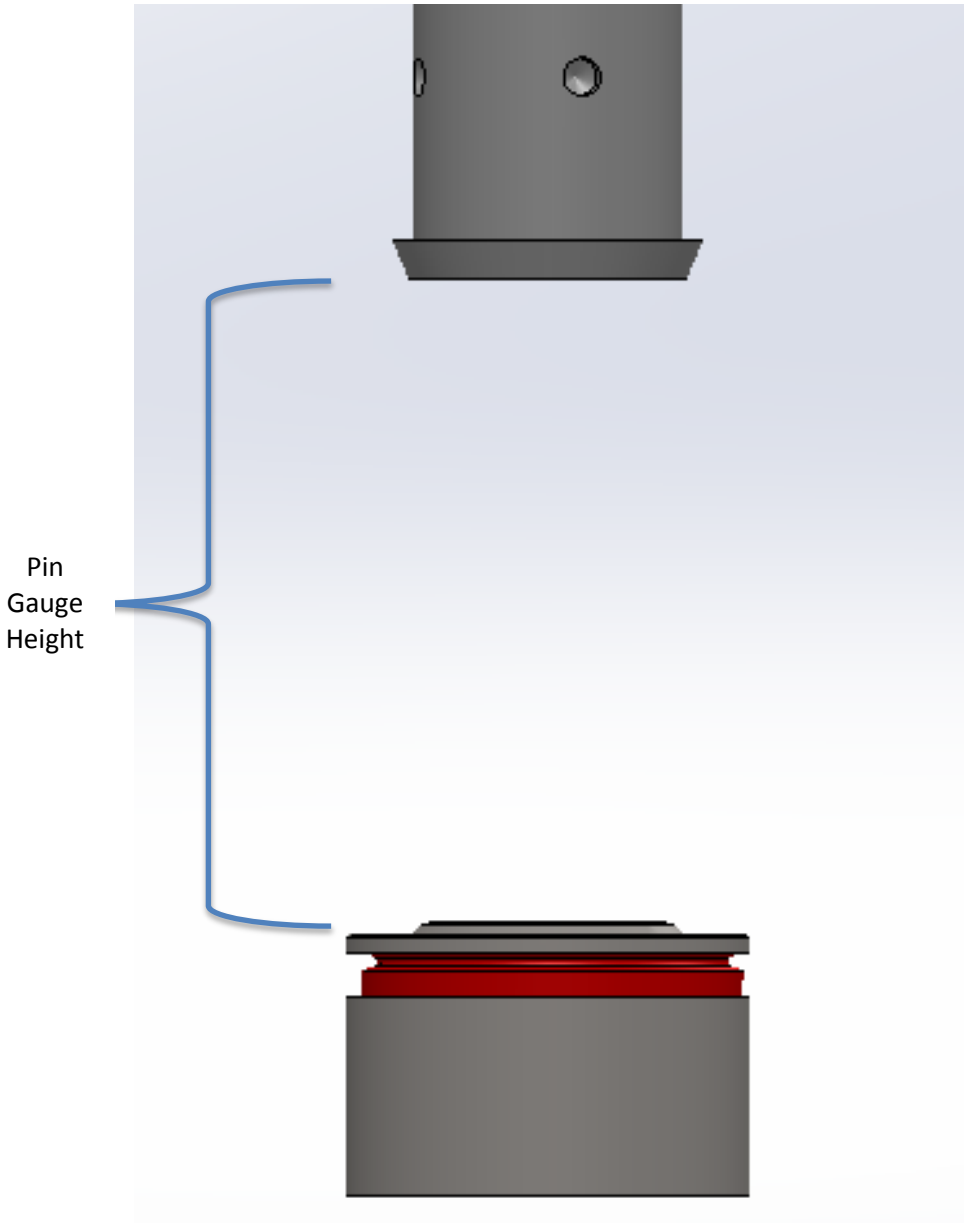


Figure 4. Pin Gauge Height

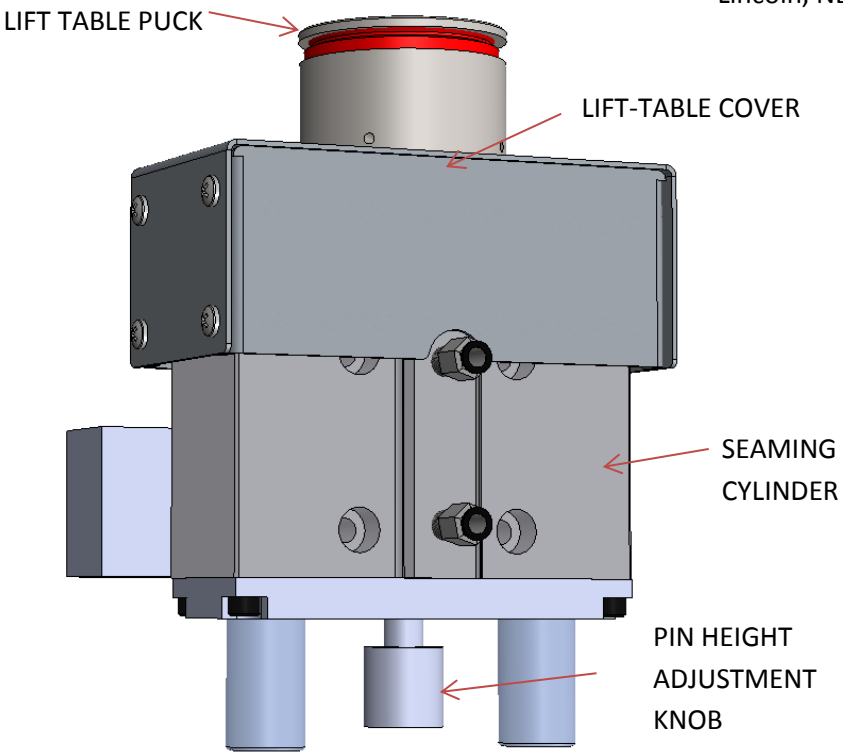


Figure 5- Lift Table Assembly. The lift-table puck height (pin gauge height) can be adjusted by loosening or tightening the adjustment knob.

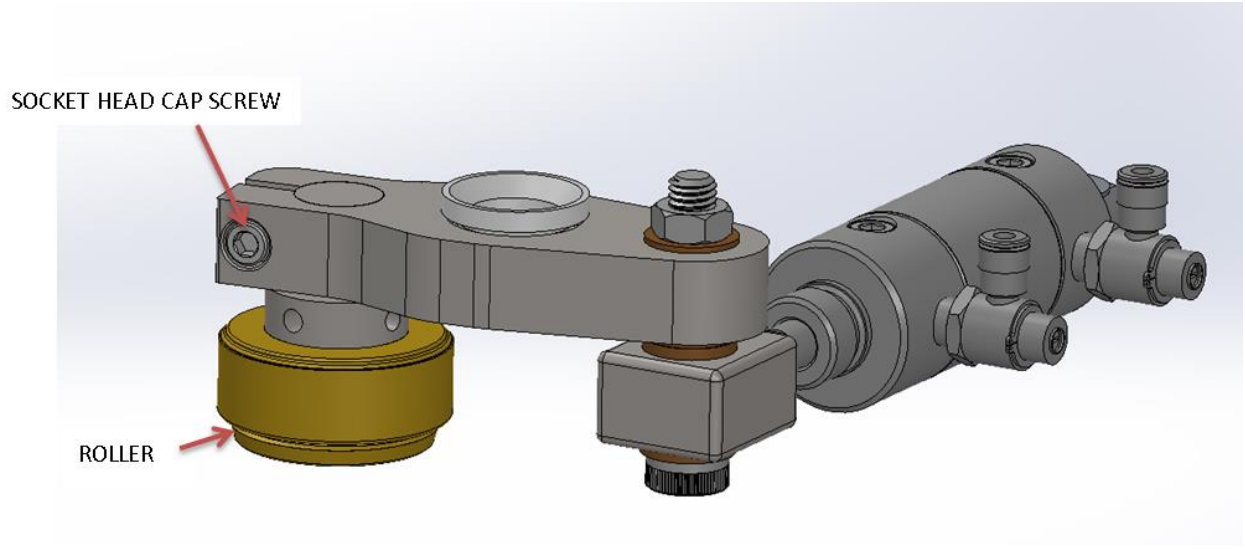


Figure 6- Roller Assembly. Roller height can be adjusted by loosening the socket head cap screw and turning the roller assembly in or out. The roller's position can be fixed by tightening the socket head cap screw to 70 inch/lbs.

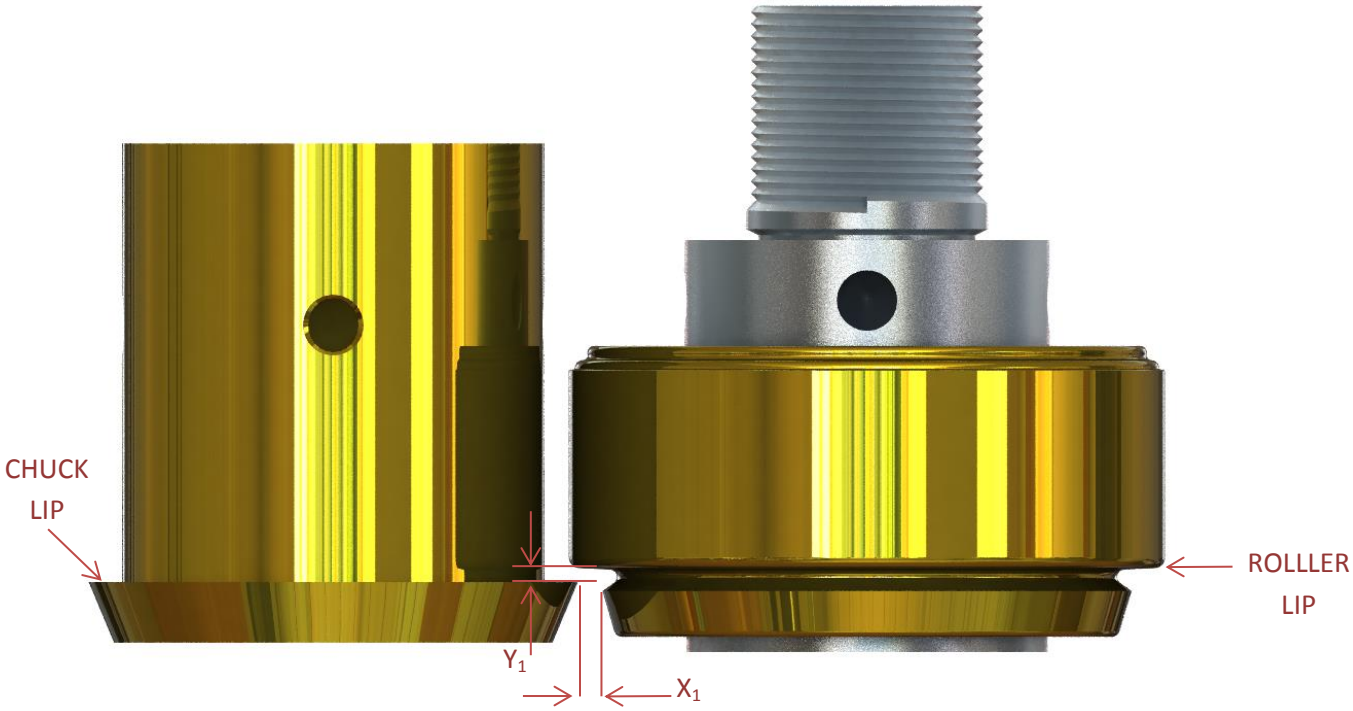


Figure 7. Roller & Chuck

Notes:

1. Pin height should be set to manage a proper body hook. Refer to your double seam guide for the proper height (provided by your can manufacturer).
2. Variance should not be more than .003”
3. Grooved lifer plate should be .010” lower than specification
4. Don’t overgrease rollers
    a. Overgreasing may lead to deadhead
    b. Use Kluber nh1 14-261 grease or similar “0” grade
5. Take 3 seam measurements 120 degrees apart
6. Adjustments not needed unless consistently at top of range specs

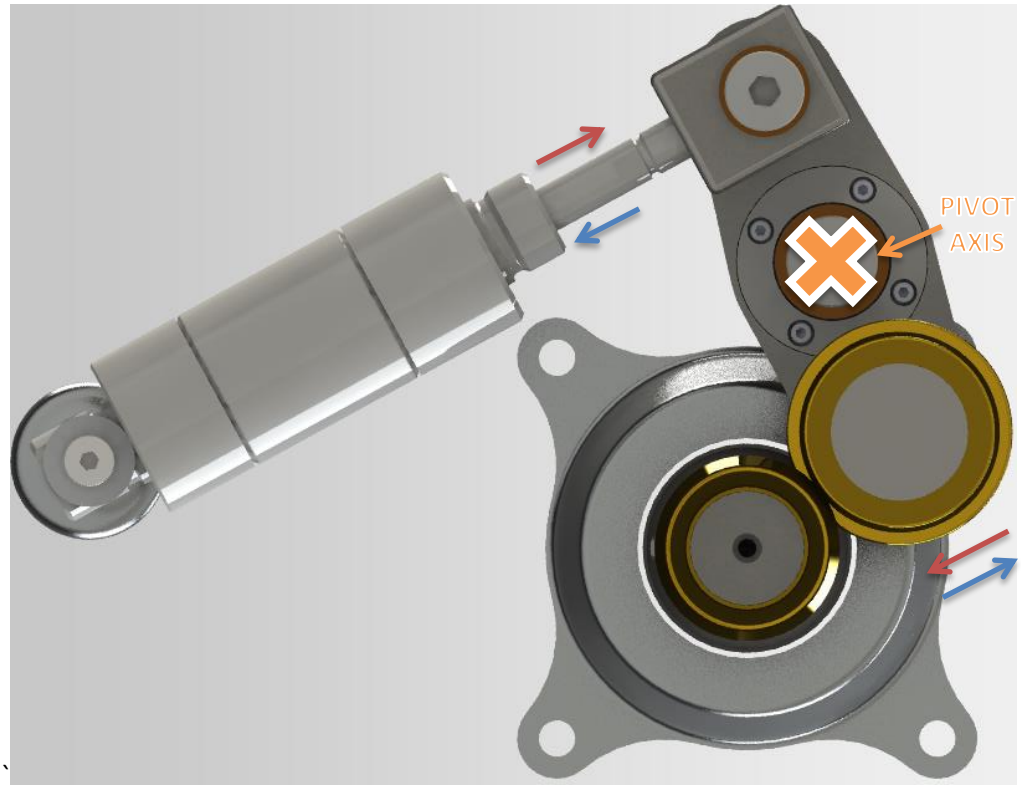


Figure 8. Chuck and roller assembly. Extending cylinder (red arrow) will extend the roller into the chuck. You may thread the cylinder shaft into the female block to get a shorter cylinder stroke and bigger gap between chuck and roller.

5. Cleaning

a. If the canning line will not be run for longer than 5 minutes, low pressure hot water must be used to rinse off all beer from the machine. Failure to rinse off any beer will result in poor machine performance and ultimately a poor finished product. Beer is very sticky and will keep the cylinders from smoothly operating. Keeping cylinders clean will prolong the life of the machine
b. Your machine is rated to be washed down with water except for the electrical box in back. However, beer should not reach areas around the electrical box. Please do not spray any liquids in the electrical box vents or near any of the valve manifolds. Doing so will likely negatively affect your LinCan system.
c. **Without continuous cleaning, your system will stop functioning properly**. Please continue to clean all areas where beer rests. You can use a low pressure hot water in all areas except for the electrical cabinet on the backside of the machine and the 3 air manifolds.
d. Clicking "Seamer Clean and Lube" in Inputs and Outputs will cycle seamer cylinders so you can wash the shafts off. "Seamer Clean and Lube" will periodically extend and retract the seamer cylinders so they can be washed off.
e. After the cylinders have been cleaned with warm water and air dried, test the cylinders to see if they operated smoothly. If they do not, spray an FDA approved silicon grease on the shafts.
f. Rinse off the conveyor belt with warm water.
    ii. Tip: You may choose to leave the post-rinse and conveyors running for cleaning the conveyor belt and lower frame.
g. Clean bottom lid pick area of lid chute. Make sure it is free of sticky beer. Lube when done.

6. Tips

a. Filling

a. Too Much Foam

a. Initially your beer may be foamy at the start of the run. This is typically due to the system being warmer than the recommended 32^{O}-34^{O} temperatures. Periodically cycling the nozzles, to cool them down, will help rid the system of foam (Inputs/Outputs).
b. It may be beneficial to run cold liquid through the system to promote cooling of the system before your product is put through the filler for canning. This will allow for less of your product to be wasted.

h. In extreme cases, it may be beneficial to rotate your beer manifold, Figure 10, so beer is evenly distributed and air pockets don't "hide" in the manifold.
i. If your brite hose, between the brite tank and canning line, is relatively long, "burping" the line by walking foam out of the line from the brite to the canning line may also help to remove any foam pockets.
j. After the LinCan has reached a stable temperature, and is no longer warm, the fill times should remain consistent. If inconsistent fill levels are seen, please check the brite tank head pressure. If the brite pressure fluctuates, so too will your fill levels. (Please contact ABE if you would like to get information on the Watch Dog unit which monitors your brite pressure and adjusts accordingly to provide a consistent brite pressure.)
k. During startup, you may benefit from increasing your fill times until beer exits the can. After you are sure the can is getting filled with beer, and not foam, you can decrease your fill times.
l. You may also increase the nozzle down delay, on the Time Settings Screen, to allow for your nozzles to dispense beer below the layer of foam in the can.
m. Also, an ideal brite tank pressure is between 14-16 psi. This typically produces beer with reduced foam levels.

iii. Too Little Foam

a. Turn on CO_2 Pulse (Section 7, Heading 10)
b. Increase CO_2 pulse flow control (turn counterclockwise)
c. Increase brite tank pressure
d. Increase beer temperature
e. Decrease how quickly the beer nozzle closes (flow control)

n. Seaming

iv. Make sure the roller heights are correct before checking the first operation seam specification. Without a correct "foundation", the rest of the seam will likely not be correct.

v. Just because the second operation dimensions are correct, does not mean the cover hook and body hook are correct. **It is the responsibility of the customer to ensure proper seams as specified by the lid manufacturer.**

vi. Please view a very thorough video on seaming from Crown: *DBL Seamer Training* (https://www.youtube.com/watch?v=WGyb-wknUSY)

7. If you watch the above, you will have a very high understanding of the entire seaming process.
8. Seaming is not a scary process if a few minutes are taken to learn how it works.

7. Maintenance

See the "Preventative Maintenance Worksheet" in the appendix for a printable checkoff version.

a. Seamer

i. Roller bearing grease

Your roller operation (Figure 6) bearings come greased with between 5 to 8 grams. Grade 0 or grade 1 FDA approved grease should be applied to the roller bearings periodically thereafter. The interval depends on usage, of your machine. Your rollers may require grease after as little as 144 hours. However, excessive lubrication may lead to dead heads or grease being thrown onto cans. Therefore, do not grease unless it is necessary as this can also decrease the life of your rolls. When done properly, grease should just exit the roller.

ii. Cylinders

Make sure to keep all cylinders free of sticky beer residue. Cylinders are already lubricated and will not require further lubrication unless they have gotten beer or cleaning solution on them. If the cylinders no longer run smoothly, clean the cylinders (shafts), and lubricate with an FDA approved silicon grease.

1. Check shuttle cylinder
    a. 60 CPM- cylinder which provides cans into seamer. Replace after 4 million cans. Change out requires approximately 45 minutes.
    b. 15/30 CPM- cylinder which provides cans into seamer. Replace after 10 million cans per seamer if needed. Change out requires approximately 15 minutes.
2. Check 1-3/4" bore seamer cylinders for smooth operation. Cylinder needs to extend and retract 0.5" fully and smoothly. Replace after 20 million cans per seamer if needed (40 million cans per two seamers). Changeout time takes approximately 5 minutes per seamer. Double seem will need to be reinspected after changeout.
3. Check filler cylinder.
    a. 60 CPM - Replace after 44 million cans if needed. Changeout takes approximately 30 minutes.
    b. 30 CPM filler cylinder- Replace after 28 million cans if needed. Changeout takes approximately 30 minutes.
4. Check lower seamer cylinder. Replace after 10 million cans if needed. Changeout takes approximately 45 minutes.

iii. Bearings

1. Check lower seamer bearings- Replace after 800,000 cans per seamer if needed. Approximately 10 minutes or less to changeout.
2. Check upper seamer bearings. Replace after 77.5 million cans per seamer if needed. Approximately 30 minutes to changeout.
3. Check 60 CPM filler cylinder. Replace after 44 million cans if needed. Changeout takes approximately 30 minutes.

b. Filler

1. Make sure probes are not bent
2. Probes are cleaned while CIP mode runs.
3. Make sure CO2 tubes are not bent.

c. Other

1. Check conveyor sprocket and teeth for wear and tear monthly.
2. Check filler nozzle cylinder and coupling weekly

8. Troubleshooting

a) Filler

i. Fill Times

The fill times and probes should be close together numerically. If they are not, check for a bent probe out of the can. Figure 9 shows a cross-section view with the fill nozzle and probes in the can. The beer will gradually rise to the top of the can and eventually close the circuit between the two probes. If a fill time is drastically different than the rest of the nozzles, this is likely the cause.

A very rare solution would be the probe wires inside of the probe box are loose. You can first go to the Inputs and Outputs screen and short the probes out. When the probes are shorted on the specific nozzle (nozzle one is on the exit side of the filler), the nozzle will change from red to green. If you are shorting the probes, but the corresponding probe does not short on the screw, you are able to remove the bolts in the assembly and make sure the connections are tight.

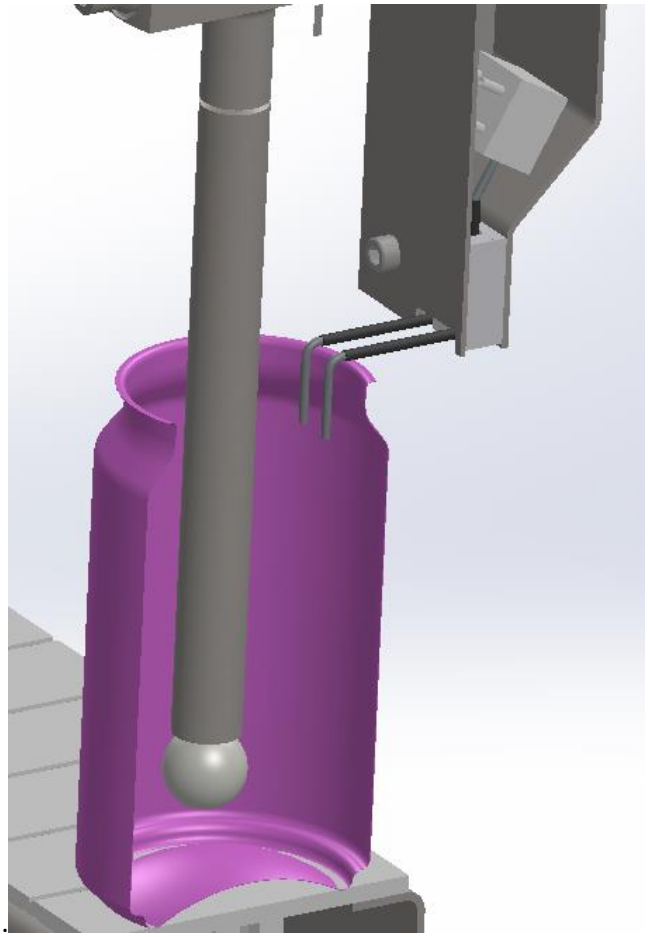


Figure 9. Filler Nozzle and Probe Assembly Cross-Section

ii. Beer Lines

Figure 10 Beer Manifold

If your lines are leaking beer, cut them back on to two inches. You must cut squarely. The lines may change size, in the push-to-connect fittings due to the repeated thermal expansion and retraction from cold beer and hot cleaning cycles. The lines are rated up to 170 degrees Fahrenheit.

Note: It is recommended to leave the beer lines pointing up on the welded frame bracket behind the HMI. This allows for the manifold to evenly distribute beer as well, prevents the manifold from getting kicked, and keeps it off the ground.

iii. Nozzle Leaks

Filler nozzles should not leak. Areas for leaking could be near the packing plug nut, filler ball, or tube connections. All areas of leaking are able to be adjusted and fixed.

If the packing plug nut leaks, you may gently tighten it (refer to figure Figure 11). Usually a ¼ turn will fix any leaking.

If the ball is leaking, several areas can be checked. Is something obstructing the ball from closing? Is the ball getting retracted while in the center of the nozzle tube? The most probable cause may be the ball has worn itself into the stainless tube a bit and the cylinder needs to retract the ball up into the nozzle body a bit more. This will ensure a tighter seal between the nozzle body and ball. There are two threaded areas, Figure 11, which have adjustment in the form of threads- coupling and rod. Either section can provide a tighter seal. In short, what needs to happen is the distance between the ball and cylinder must become shorter. To do this, the rod can be threaded into the coupling, or the coupling can be threaded into the cylinder. For example, to decrease the rod thread, the rod jam nut would be loosened. Then, the rod would be threaded into the coupling. Typically, an allen wrench is inserted into the ball and tightened while keeping the coupling stationary. After the rod thread is threaded into the coupling, the rod thread jam nut must

be tightened. Loctite must be used on the threads to ensure the threads do not loosen and thus the need for the process to happen again.

Tightening the coupling to cylinder interface is much the same as the previous example. The accompanying jam nut thread would be loosened, the coupling would be threaded into the cylinder, and then the locktighted jam nut would be tightened.

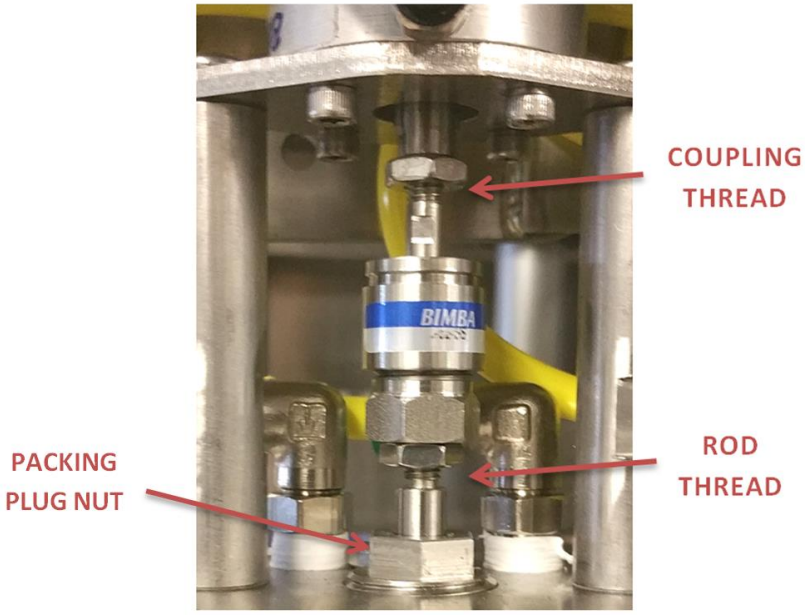


Figure 11 Seamer Nozzle Close-up

If any fitting is leaking, the likely fix is to cut the tubing back an inch or two. Over time, the tubing may change its shape (decrease in size).

b) Seamer

i. Wrinkling

If wrinkling of the can body is occurring while in the seamer, check the pin gauge height (Figure 4). The can-lift supply pressure can also be adjusted. If wrinkling occurs, the pressure is likely too high or the pin gauge height is too short (the pin gauge distance needs to be increased by moving the puck down).

ii. Shuttle to Seamer

If your seamer shuttle cylinder is not responding correctly, make sure a lid is not interfering with the sensor. A lid can false trigger the sensor.

Also make sure water or beer is not on the lens. The sensor will light up, and display a value higher than 120, when it is activated (when a lid is present).

c) Lid-Escapement

If too many lids come out of the chute, check the stainless rod beneath the spring steel clips. Make sure the rod sits in the channel. The rod should not be riding out of the channel (Figure 12).

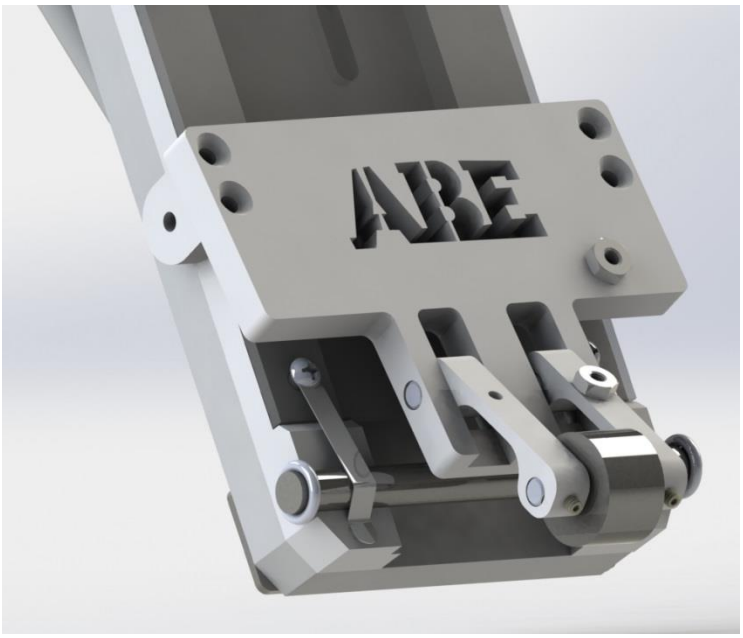


Figure 12. Lid-Escapement Close-up

If lids are not being picked properly, make sure the lid-chute is centered above the can. Also make sure the lid is positioned properly above the can- the can needs to be centered between the lid's "pocket" as shown in Figure 13. Precise adjustments can be made by adjusting the swedge rod in Figure 14. Clean and lube before each run. Precise adjustments can be made by adjusting the wedge rod in Figure 14.

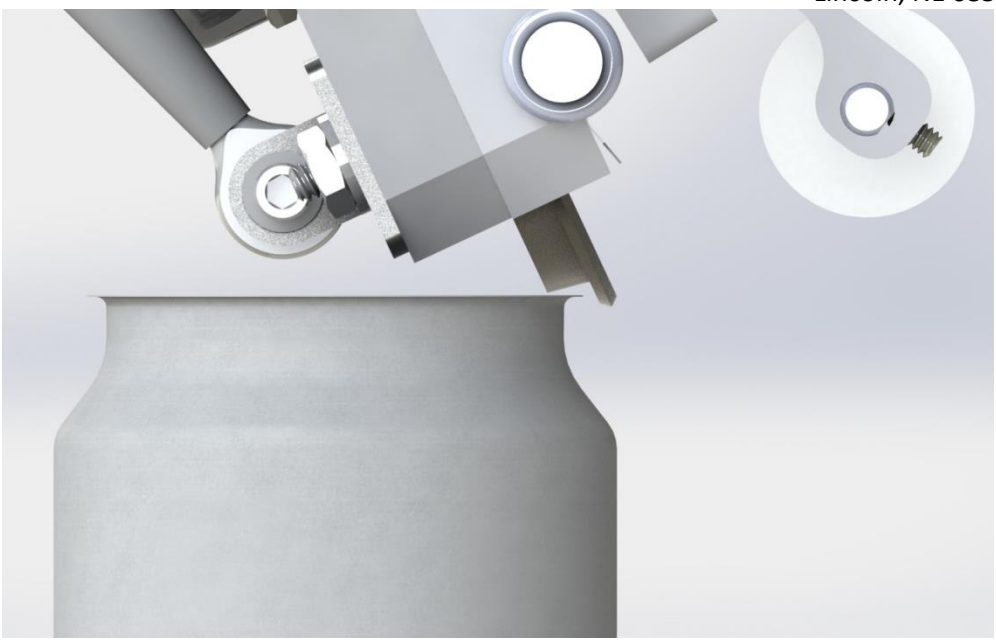


Figure 13. Proper Can and Lid Alignment

Figure 14. Lid-Escapement Adjustment

d) Lid-Tap

If the cylinder touches the lid during your manual testing, but not during a canning run, make sure your flow controls are not slowing down the cylinder and thus preventing it from quickly tapping the can. However, if you open them up too much, you may dent the lid or alter the can's top edge.

e) Other

a. Exahusting flow controls are used on many cylinders.
    a. Increasing flow (turning counterclockwise) will increase the flow exiting from the cylinder port.
    b. Decreasing flow (turning clockwise) will decrease the amount of flow exiting the cylinder.

e). Parker Manifold Videos

b. Troubleshooting a valve can be confusing, but made easier by knowing:
    a. Depressing the yellow button on the valve will manually activate the valve.
    b. When the valve is activated, an LED on the valve, will also light up
    c. The PLC has a corresponding LED
        i. When the valve is activated, the LED on the PLC will also actuate.
c. Here is a link for replacing valves from Parker: http://divapps.parker.com/divapps/pdn/static/moduflexVideo.html

f). E-Stop

a. If nothing turns on or "works", please check the E-Stop button has not been depressed. Go to the motor setup screen and clear any errors if present. The E-Stop must be reset by twisting it out of its depressed state many times.

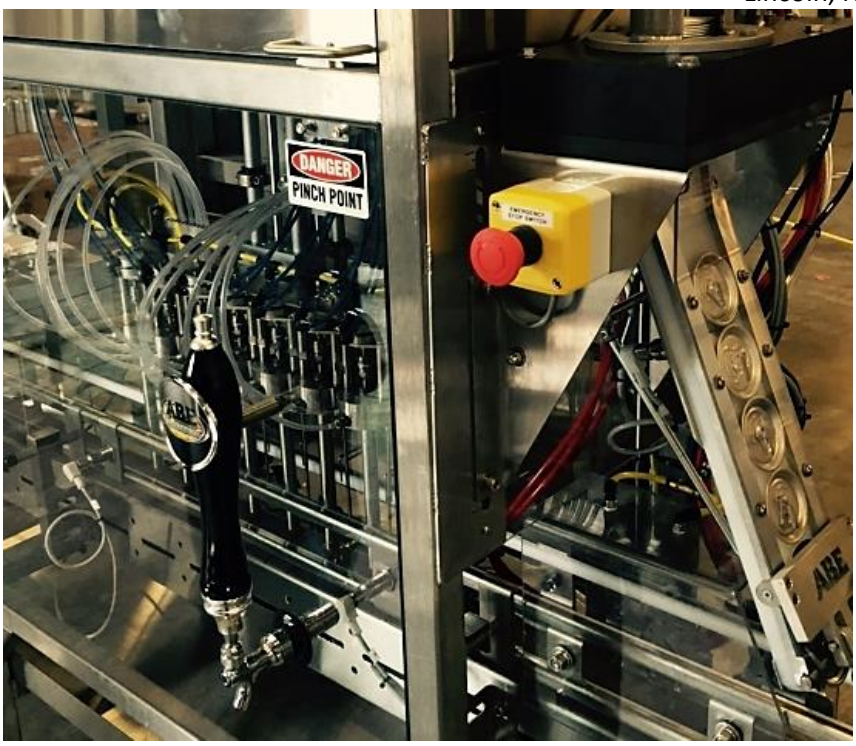


Figure 15. Emergency Stop

9. Height Changeover

Your machine already comes with the ability to change from 12 oz cans to 16 oz cans and vice-versa. The main changes required include adjusting the height of the:

1. probe cylinder height
2. lid-escapement height
3. lid-tap height
4. lid-skimmer height
5. seamer (s)
6. post-rinse.

All of these changes are height based as long as the can diameter, 202/211, remains the same. If you change to a larger or smaller diameter, other changes may be required. Your machine can also fill and seam 24 oz cans. Several other modifications may be required. Please contact ABE for more information.

a. Probe Cylinder

The probe cylinder height must be adjusted so the probes are approximately 1/8” above the empty can (Figure 16). This is accomplished by move the set-collars on the cylinder rods (“Y” in Figure 17).

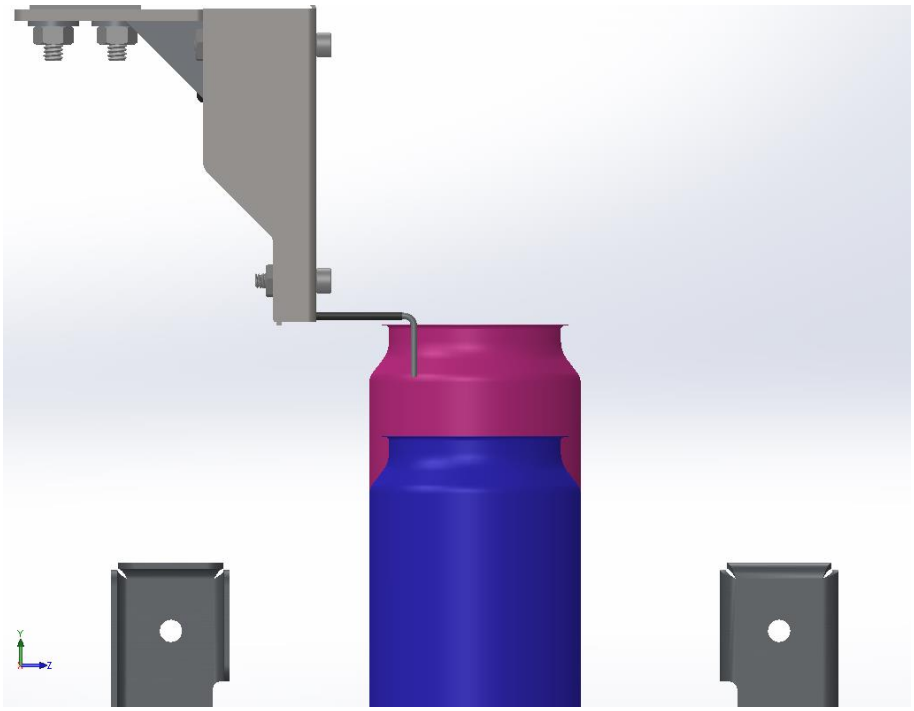


Figure 16. Probe height relative to can height.

Set collars are adjusted by loosening the set-screws in the collars, sliding the collars up or down the shaft, and then re-tightening.

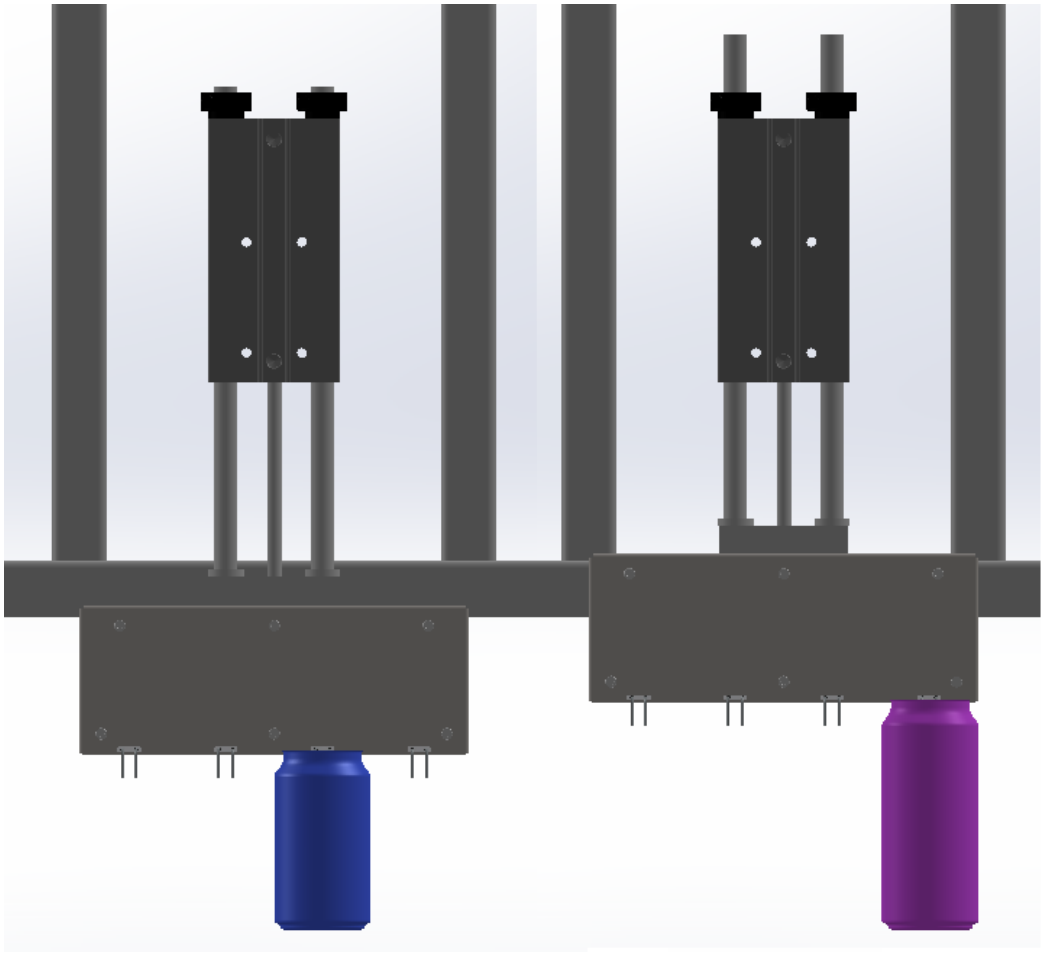


Figure 17 Probe assembly height difference

Lastly, if the probe cylinder height is adjusted, the corresponding sensor must also be adjusted accordingly. The sensor has a red LED that lights up when the cylinder's piston is near it.

There is a sensor at the top of the cylinder's stroke, as well as the bottom. When adjusting for different height cans, typically only the bottom sensor is adjusted. Therefore, the bottom sensor needs to light up at the end of the cylinder's stroke. The sensor uses an allen head to loosen and fasten in the cylinder's translating slot. The sensors are shown below.

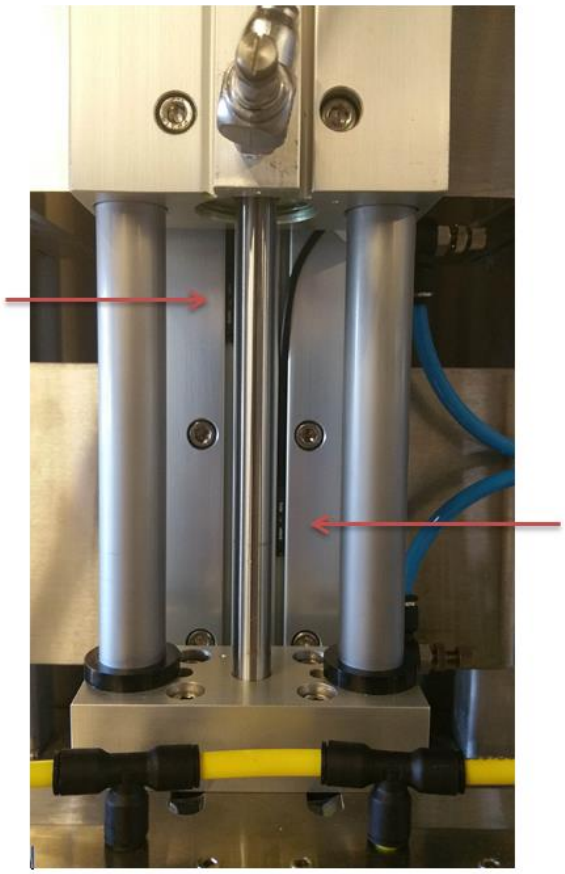


Figure 18 Probe sensors on probe cylinder

b. Lid-Escapement Height

Four bolts adjust the height of the lid escapement. Fine tuning of the height can be done with the swedge-rod in Figure 14. The swedge must be adjusted so the can fits perfectly in the pocket of the lid as shown. The swedge makes the adjustment process very convenient. Just loosen the jam nut at the top, twist the swedge, then tighten back down the nut. If the lids are too low, the cans will likely run into the lids and too many lids will fall out at a time. If the lid-chute is too high, no lids will be picks.

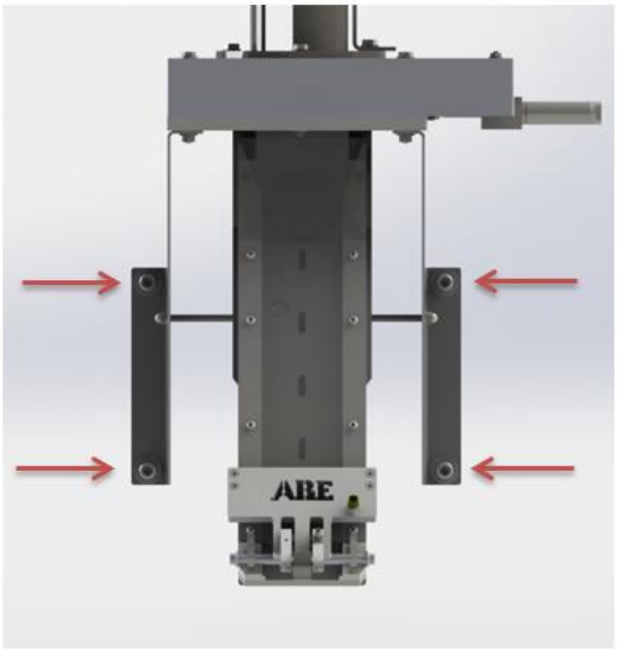


Figure 19 Lid-Escapement showing 4 bolts for adjustment

c. Lid-Tap Height

The lid tap cylinder can be adjusted by loosening two sets of bolts on either side of the cylinder. Loosen, move up or down, and then tighten back down. Loctite is suggested to be used.

Ideally, when the cylinder is fully extended, it will just barely touch the lid top when there is a lid on an empty can.

Tip: Extend the cylinder (Inputs/Outputs screen). Drop the cylinder onto the lid. Remove the can. Drop the cylinder about an 1/8” further down. Tighten the screws.

Tip 2: If the cylinder touches the lid during your manual testing, but not during a canning run, make sure your flow controls are not slowing down the cylinder and thus preventing it from quickly tapping the can. However, if you open them up too much, you may dent the lid or alter the can’s top edge.

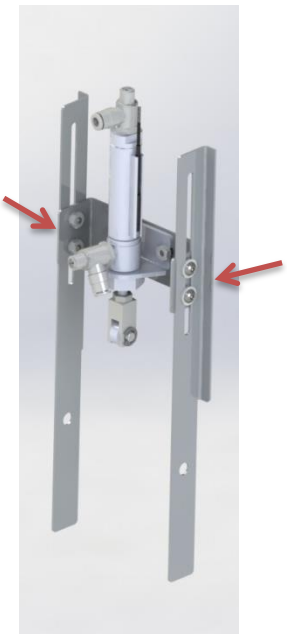


Figure 20 Lid Tap Assembly

d. Lid-Skimmer Height

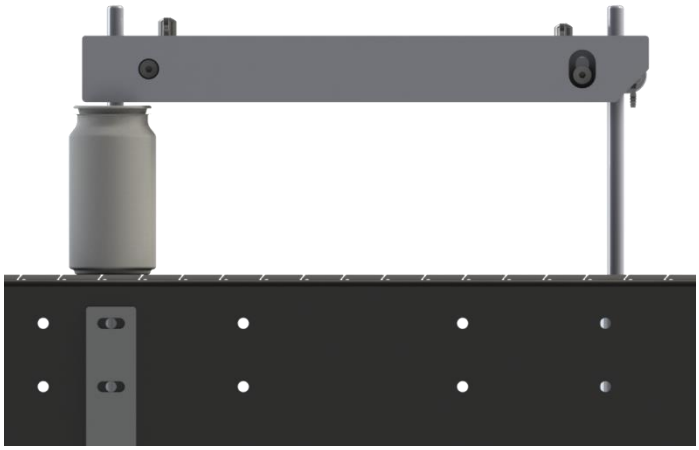


Figure 21 Lid Skimmer Assembly

The lid skimmer needs to sit just above the height of a full can. If foam is present, the front of the skimmer needs to just sit above the foamy lid.

The end of the skimmer should remain lower than the front of the skimmer. The end translates up and down while the front of the skimmer pivots. The end should be slightly lower than the height of a seamed can.

Adjustments for the height can be made using the adjustment knobs behind the black UHMW skimmer (Figure 22).

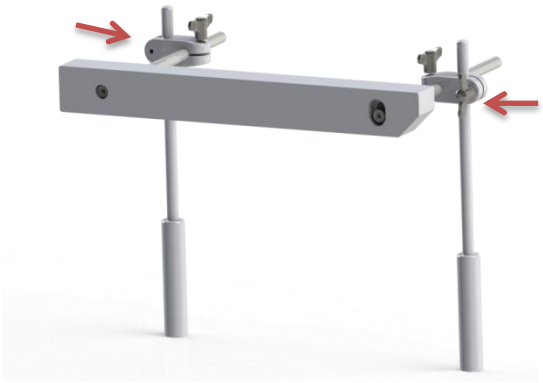


Figure 22 Skimmer adjustment knobs

e. Seamer (s)

Seamer height adjustment is done by inserting, or taking out an adapter, machined to the correct difference between the can sizes (Figure 23).

After the heights are changed, you must ensure, using your specific double seam guide, the cans are in spec. Refer to Double Seam Setup Procedures for more information.

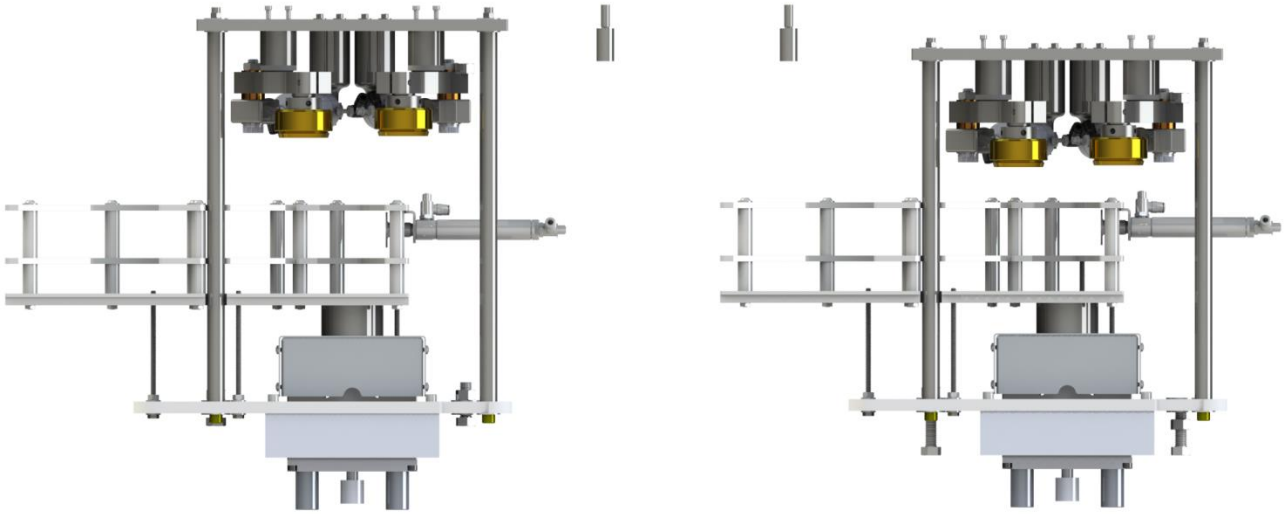


Figure 23 Seamer height difference between a 12 oz can (right) and 16 oz can (left) with the adapters shown in the middle.

f. Post-Rinse

The post rinse height is easily changed by loosening two allen head bolts and moving them up or down. Then, tighten the bolts. When the bolts are moved up or down, the corresponding air manifolds will also move accordingly above the cans (Figure 24).

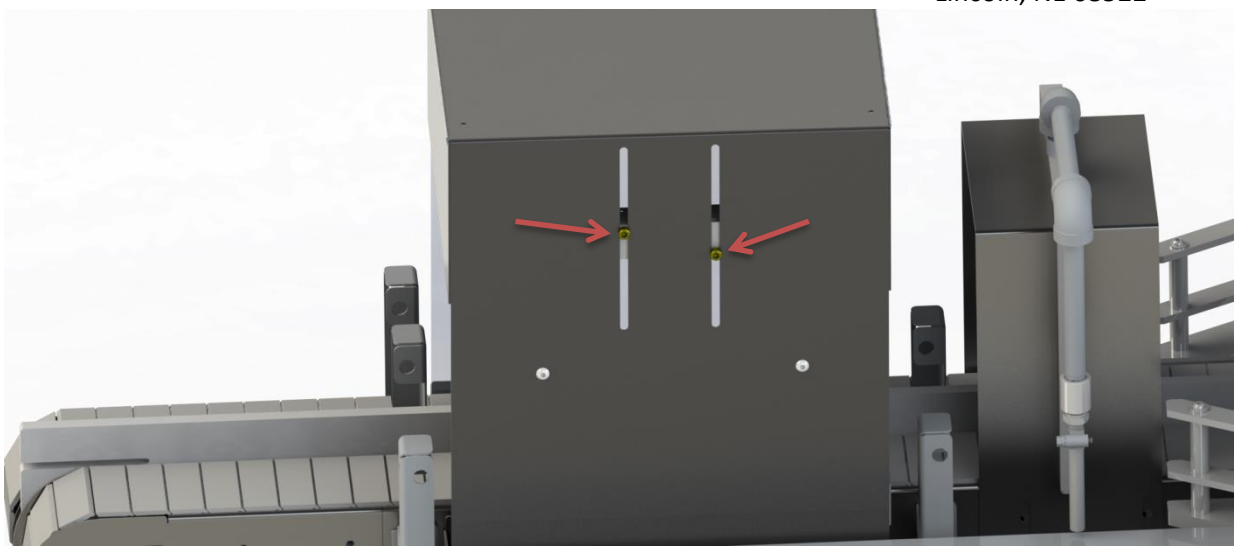


Figure 24 Post-Rinse height adjustment bolts

10. SAVED SETUP (RECIPES)

Different time setting profiles, or recipes, can be saved on the LinCan systems. This is valuable for different beers or can types. Once you like a specific profile, you can go back to it.

Figure 25 Saved Setup Screen

	RECIPE	NAME	POST WASH BLOW ...	SP FOR GATE CLOS...	SP FOR PURGE ON ...	FILL TIME LIMIT
1	READ CURRENT	START UP	40	500	1800	12000
2	SETTINGS 2	XXXX	0	0	0	0
3	SETTINGS 3	XXXX	0	0	0	0
4	SETTINGS 4	XXXX	0	0	0	0
5	SETTINGS 5	XXXX	0	0	0	0
6	SETTINGS 6	XXXX	0	0	0	0
7	SETTINGS 7	XXXX	0	0	0	0
8	SETTINGS 8	XXXX	0	0	0	0
9	SETTINGS 9	XXXX	0	0	0	0
10	SETTINGS 10	XXXX	0	0	0	0
11	SETTINGS 11	XXXX	0	0	0	0
12	SETTINGS 12	XXXX	0	0	0	0
13	SETTINGS 13	XXXX	0	0	0	0
14	SETTINGS 14	XXXX	0	0	0	0
15	SETTINGS 15	XXXX	0	0	0	0

Close START UP

Figure 26 Main Timing Saves Screen

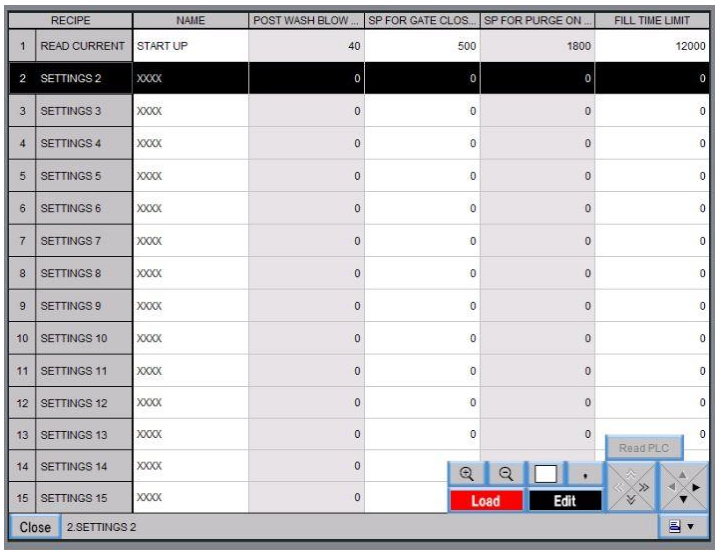


Figure 27 Main Timing Saves Screen with Second Row Selected

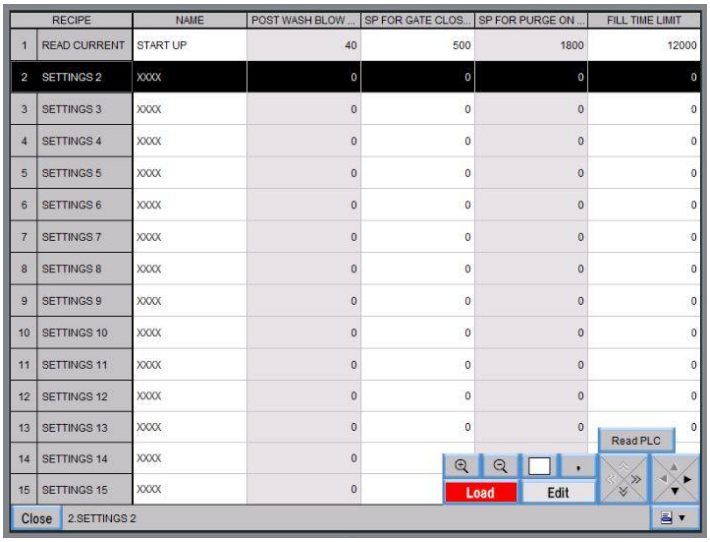


Figure 28 Main Timing Screen with Read PLC Button Live

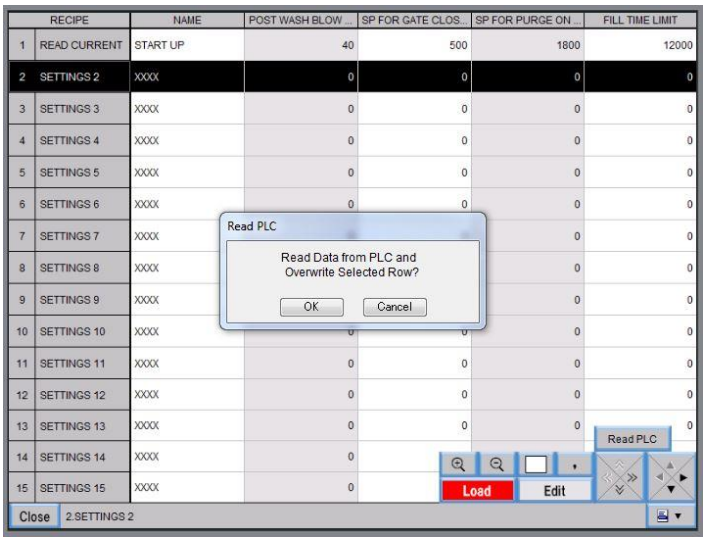


Figure 29 Main Time Saving Screen Asking to Read from PLC

New recipes can be saved by Saved setup screen

Pressing “Main Timing Saves” button brings up spreadsheet screen.

Select left column number to highlight entire row

Edit button will be black. Select edit button and it turns white and “read PLC” Button becomes live.

Select read PLC button and you will be asked “Read Data from PLC and Overwrite Selected Row?”

Choose “OK” to proceed.

All current data is sagved in the selected row.

On closing, you can choose to save.

11. Appendix

a. Time Settings

Figure 30 Time Setup HMI Screen

i. CCS ON DELAY
    i. Conveyor Clearance Sensor Delay (for feedtable)
ii. WASH ON TIME
    i. Post-Rinse on-time
iii. FILL TIME LIMIT
    i. Maximum allowable fill time
iv. NOZZLE RISE DELAY
    i. How long until nozzles retract from their extended filling position
v. GATE CLOSE DELAY
    1. Timing before inlet gate closes on the last incoming can
vi. PURGE ON TIME
    1. Amount of time for CO2 on in the filler area
vii. LID TAP ON DELAY
    1. How long before the initial lid tap extends
    ii. LID TAP ON TIME

1. How long to have the lid tap cylinder extended

iii. LINE FULL DELAY
   1. How long the line full sensor, near seamers, must have a can in front of it before it stops the filler.

iv. STACKUP DELAY
   1. Allowed time for incoming cans into filler (on inlet conveyor)

v. LID DROP ON TIME
   1. Lid drop cylinder extended time

vi. LID DROP DELAY
   1. Time until lid drop cylinder is retracted

vii. LID TAP SEAMER 1 ON TIME
   1. How long to have the lid tap at seamer one extended
   2. CAN LIFT1 ON DELAY
   3. Time until can lift extends into rotating chuck

viii. S1 ROLLER 1 ON TIME
   1. Time roller one, seamer one, is extended into the spinning can

ix. S1 ROLLER 2 ON TIME
   1. Time roller two, seamer one, is extended into the spinning can

x. CAN LIFT 1 OFF DELAY
   1. Amount of time before can is dropped after roller two is released from the spinning can

xi. POST-SEAMER CAN PUSHER ON TIME
   1. Amount of time the can push cylinder, after being seamed, is extended

b. Main Connections

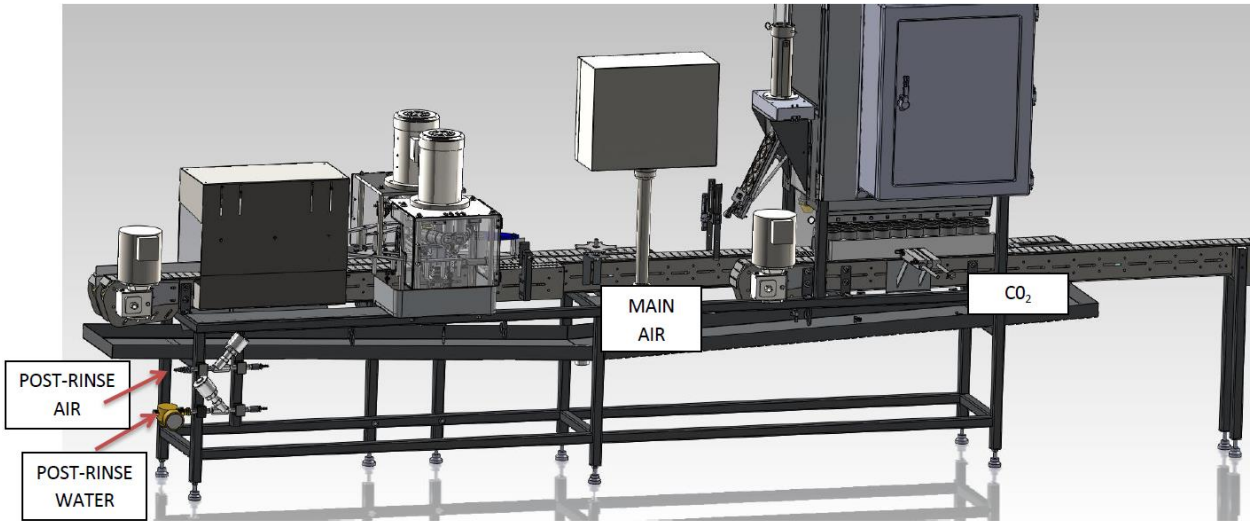


Figure 31 Main Connections

c. Troubleshooting Double Seam Guide

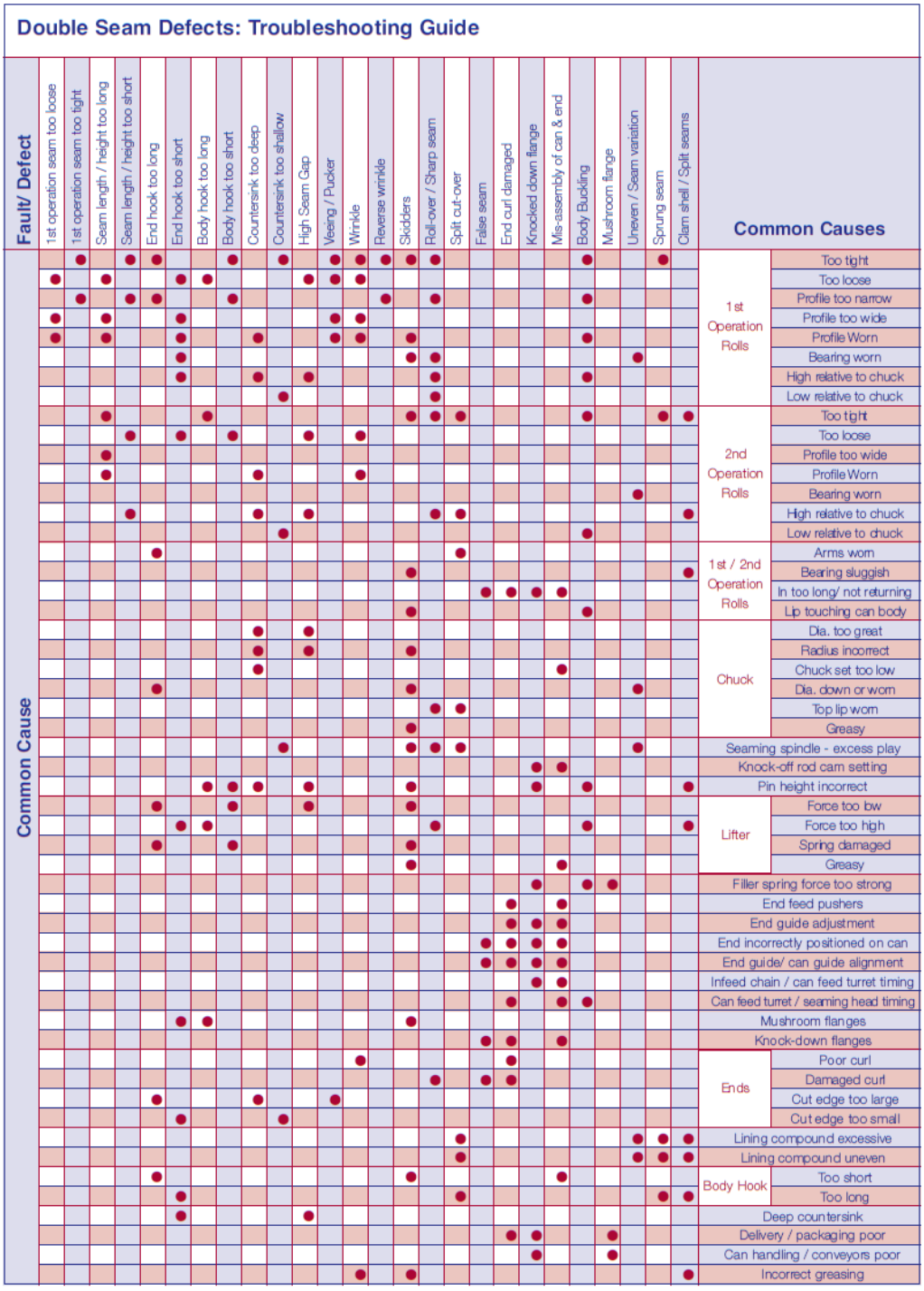
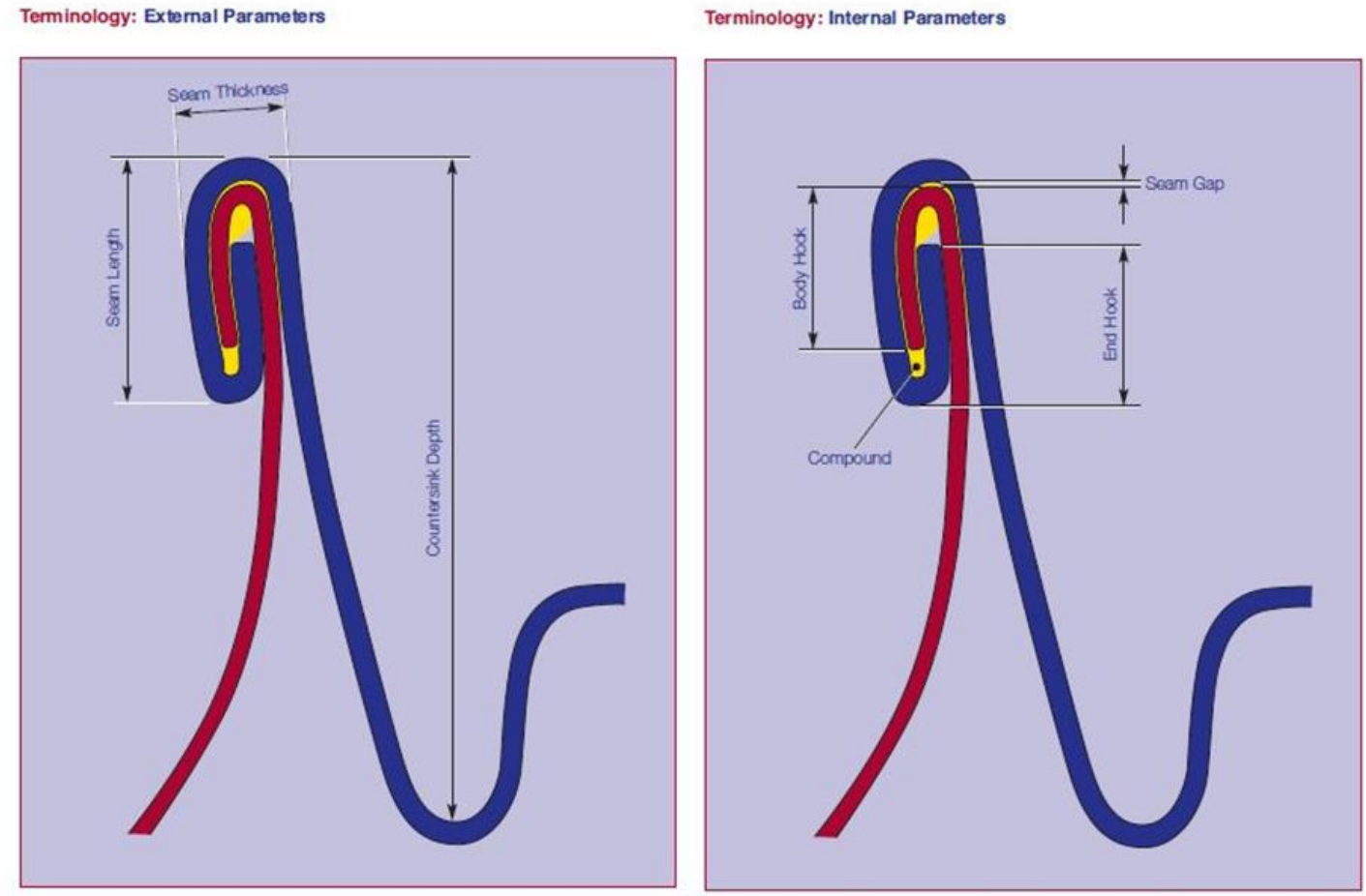


Figure 32 Seam Troubleshooting, Provided by Ball Corporation

d. Double Seam Specifications

The following are examples of common double seam guides. It is up to the individual brewery and can/end provider to ensure the correct double seam guide is being used and adhered to. It is also the responsibility of the brewery to ensure maintenance of the seamer, as outlined in the Preventative Maintenance Section.



Double Seam Parameters provided by Beverage Can Makers Europe

SPECIFICATION NO.	202 LOE
DATE ISSUED:	7/5/2005

CROWN CORK & SEAL CO. INC.

CUSTOMER DOUBLE SEAM SPECIFICATION

TYPE OF CAN:	D&I ALUMINUM	*CAN SIZE:*	202/211 X 413
TYPE OF CAN:		*END PLATE WT.*	
BODY PLATE WT:	NOMINAL	*END PLATE WT.*	.0086-84 ALUMINUM
ANGELUS SEAMER MODEL NO.	60L - 61H - 120L - 120LG - 121L - 140S - 180S		
C.C.C. SEAMER MODEL NO.	449 - 649 - 751 - 2100 - 2150 - 2200		

	Angelus Part #	C.C.C. Part #	CMB Part#
CHUCK NUMBER	718L636JCB7	1362503	82020204C71SAT
1ST OP. ROLL	297L641-R90	SRG121 / SRG134	13154
	N/A	N/A	13121
2ND OP. ROLL	298L641-S141	N/A	13155
	298L641-S147	SRG218	13190
	N/A	N/A	13185

PIN GAUGE HEIGHT AT END OF 1ST OPERATION	4.499 +0.010/-0.005 Read Note 5
BASE PLATE SPRING PRESSURE AT .030 DEFLECTION	110 LBS. +/- 10 LBS.

SEAM SPECIFICATIONS	**SET-UP & OPERATING**	**OPERATING**
1ST OPERATION SEAM THICKNESS	0.078 +/- 0.002	Check weekly
1ST OPERATION SEAM WIDTH	0.080 Max	Check weekly
1ST OPERATION COUNTERSINK DEPTH	0.273 Max.	Read note 1
2ND OPERATION SEAM THICKNESS-ALUMINUM	0.043 +/- 0.002	Read note 1
2ND OPERATION SEAM THICKNESS-STEEL	N/A	
2ND OPERATION SEAM WIDTH	S147=0.100 +/- 0.003	Read note 3
2ND OPERATION SEAM WIDTH (DIFF ROLL)	S141=0.098 +/- 0.003	Read note 3
COUNTERSINK DEPTH	0.270 +/- 0.005	Read note 3
BODY HOOK LENGTH	0.065 +/- 0.010	0.053 Min, Read note 2
COVER HOOK LENGTH	0.053 Min.	0.053 Min, Read note 2
COVER HOOK WRINKLE RATING - STEEL	N/A	
COVER HOOK WRINKLE RATING - ALUM.	95-100%	90-100%
OVERLAP - ACTUAL	0.035 Min.	0.025 Min.
PRESSURE RIDGE	Visible & Continuous	Read note 5

NOTE 1: TO MAINTAIN AN ADEQUATELY TIGHT SEAM, THE 2ND OPERATION SEAM THICKNESS SHOULD NOT BE OVER THIS MAXIMUM WITH THE WRINKLE RATING AT 100% AND A VISIBLE & CONTINOUS PRESSURE RIDGE INSIDE THE CAN.

NOTE 2: BODY HOOKS AND COVER HOOKS WITHIN THESE LIMITS ARE ACCEPTABLE; BUT ONLY IF MINIMUM OVERLAP IS OBTAINED.

NOTE 3: TO MAINTAIN AN ADEQUATE OVERLAP THE BOBY HOOK, COVER HOOK, 2ND OPERATION SEAM WIDTH AND THE COUNTERSINK DEPTH MUST BE HELD WITHIN SPECIFICATIONS.

NOTE 4: OVERLAP DIMENSIONS MUST BE MEASURED WITH A SEAM PROJECTOR. THREE READINGS PER CAN SHOULD BE TAKEN AT 120 DEGRESS APART.

NOTE 5: THE QUALITY OF THE DOUBLE SEAM IS THE RESPONSIBILITY OF THE FILLING CUSTOMER.

CUSTOMER:	LOCATION:

	CROWN LOE	0.098 +/- 0.003	0.043 +/- 0.002	0.053 MIN	0.065 +/- 0.010	
	DATE	SEAM HEIGHT	SEAM WIDTH	COVER HOOK	BODY HOOK	COMMENT
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
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SuperEnd Seam Specifications

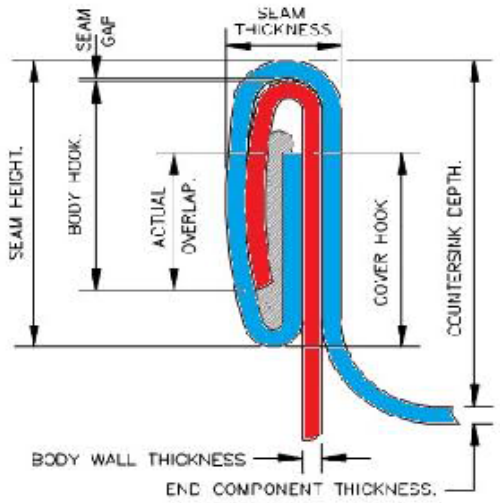
Issue Date 10/3/2013

CROWN
Brand-Building Packaging™

Type of Can	**Aluminum Beverage Can with SuperEnd**
PSAngelus Seamer Models	61H, 62H, 120L, 121L, 140S, 180S
CCC Seamer Models	450, 2100, 2150, 2200
Ferrum Seamer Models	F400-500-700 Series, F412, F512, F812, F918
Chuck Number	CMB 82020 23
1st Op Roll	CMB 13175
2nd Op Roll	CMB 13181
K. O. Pad	Contact CMB

Pin Height Target Settings	8OZ 202/211 x 307	3.125" +0.010" -0.005"
READ NOTE 1	10OZ 202/204.5 x 503	4.914" +0.010" -0.005"
	12OZ 202/211 x 413	4.500" +0.010" -0.005"
	16OZ 202/211 x 603	5.885" +0.010" -0.005"

Spring Pressure	115LBS ± 10lbs **Read Note 2**
Knockout Pad Setting	0.325" ± 0.002
Seaming Roll Grease	Grade 0 **Read Note 3**



ITEM	SET UP RANGE	OPERATING RANGE
1st Op Seam Thickness	0.078" ±0.003"	N/A
1st Op Seam Height	0.069" ±0.003"	N/A
1st Op Seam Countersink	0.270" ±0.006"	N/A
2nd Op Seam Thickness	0.043" ±0.002"	Guide only **see Note 4**
2nd Op Seam Height	0.095" ±0.003"	0.095" ±0.005"
2nd Op Seam Countersink	0.270" ±0.006"	0.272" ±0.008" **See Note 5**
Bodyhook	0.060" ±0.005"	0.061" ±0.009" **See Note 6**
Coverhook	0.060" ±0.005"	0.060" ±0.008"
Tightness Rating	100%	90-100%
Overlap (measured)	0.035" min	0.030" min **See Note 7**
Seam Gap	0.002" ±0.001"	0.004" Max
Bodyhook Butting	80-100%	70-100%
Pressure Ridge	Visible & Continuous	Visible & Continuous

All dimensions in inches unless otherwise noted

1 **Pin height should be set to manage a proper bodyhook. Variance between stations should not be than 0.003" If you have grooved lifter plates start 0.010" lower than specification.**
2 **No more than 20lb difference between stations should be observed**
3 **Avoid over greasing of rolls. Over lubricated seaming rolls can become tight and harder to turn and may lead to deadheads or skidders. Use "O" grade grease or Kluber Food NH1 14-261 for Eco-Seal Bearing KluberFood NH1 64-422 for Ultra-seal Bearing.**
4 **Use in combination with seam height, tightness and pressure ridge to assess the quality of the seams. Thickness variation around the seam should not exceed 0.003"**
5 **Measure countersinks either side of the tab with can depressurized Adjustments not necessary unless consistently at top of specification range.**
6 **Occasional Bodyhook lengths of 0.072" may be observed. Adjustment only necessary if consistently above 0.070"**
7 **Infrequent readings as low as 0.025" may be observed. Re-sample readings below 0.030" by cutting and evaluating at 90 degrees to the original cut.**

The most reliable method for assuring the quality of the double seam is persistent inspections, frequent physical testing and equipment maintenance. Crown is not continuously in the customer's facility, has limited ability to perform testing at customer's facility and does not continuously maintain customers equipment. The quality of the double seam is the responsibility of the filling customer. The seam should be assessed by trained personnel using a combination of optical and teardown methods. Seams should be judged in their entirety and not by dimensions alone.

Signiture **Title**

	CROWN SuperEnd	0.095 +/- 0.003	0.043 +/- 0.002	0.060 +/- 0.005	0.060 +/- 0.005	
	DATE	SEAM HEIGHT	SEAM WIDTH	COVER HOOK	BODY HOOK	COMMENT
1						
2						
3						
4						
5						
6						
7						
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9						
10						
11						
12						
13						
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202 MINI SEAM
RECOMMENDED DOUBLE SEAM SPECIFICATIONS

ANGELUS

SEAMING CHUCK	718L636 (or equiv.)
FIRST OPERATION ROLL	297L641-R-90 (or equiv.)
SECOND OPERATION	298L641-S-141 (or their equiv)

MACHINE SET UP SPECIFICATIONS (NOTE 1)

PIN HEIGHT

CAN SIZE	DESCRIPTION	INCHES	METRIC
202/211 X 307	8 oz SQUAT	3.125 ± .003	79,38 ± 0,08
202/211 X 310	8 oz SUPER SQUAT	3.305 ± .003	83,95 ± 0,08
202/211 X 409	333ml	4.250 ± .003	107,95 ± 0,08
202/211 X 413	12 oz	4.500 ± .003	114,30 ± 0,08
202/211 X 603	16 oz	5.880 ± .003	149,35 ± 0,08
202/204 X 402	7.5 oz (204) SLEEK	3.775 ± .003	98,89 ± 0,08
202/207.7 X 400	8 oz (207.5) SLEEK	3.675 ± .003	93,35 ± 0,08
202/207.5 X 403	8 oz (207.5) SUPER SLEEK RETORT	3.875 ± .003	98,43 ± 0,08
202 X 207.5 X 413	10 oz (207.5) SLEEK	4.500 ± .003	114,30 ± 0,08
202/207.5 X 510	12 oz (207.5) SLEEK	5.315 ± .003	135,00 ± 0,08
202/211 X 707	568ml (550ml BRE END)	7.091 ± .003	180,11 ± 0,08

BASE PLATE LOAD (LBS)	COLD FILL	100 lbs ± 5 lbs	45.36 ± 2.27
	HOT FILL	130 lbs ± 20 lbs	58.97 ± 9.07

PRODUCT SPECIFICATIONS DIMENSIONS AND PARAMETERS		SET UP SPECIFICATION (IN)	SET UP SPECIFICATION (METRIC)	OPERATING SPECIFICATION (IN)	OPERATING SPECIFICATION (METRIC)
FIRST OPERATION SEAM THICKNESS		.076 ± .002	1,93 ± 0,05		
FIRST OPERATION COUNTERSINK DEPTH		.270 ± .003	6,86 ± 0,08		
SECOND OPERATION SEAM THICKNESS	.0086 GAUGE	.044 ± .001	1,118 ± 0,025	.042 - .046	1,07 - 1,17
	.0088 GAUGE	.045 ± .001	1,143 ± 0,025	.043 - .047	1,09 - 1,19
SECOND OPERATION COUNTERSINK DEPTH		.270 ± .003	6,86 ± 0,08	.270 ± .005	6,86 ± 0,13
SEAM HEIGHT		.096 - .100	2,438 – 2,540	.095 - .101	2,413 – 2,565
BODY HOOK LENGTH		.065 ± .005	1,65 ± 0,13	.065 ± .010	1,65 ± 0.25
COVER HOOK LENGTH		.060 ± ..005	1,52 ± 0,13	.053 min	1,35 min
TIGHTNESS RATING		100%	100%	90% min	90% min
ACTUAL OVERLAP		.035 min	0,89 min	.025 min	0,64 min

NOTE 1: Machine set up specifications are for initial setting only. Adjustments from these settings should be made as needed to achieve product specification requirements

NOTE 2 Double seam quality is the responsibility of the customer.

Date 10/19/09	Approved Traphagen	PRODUCT STANDARD 202 B-64 END .0086" & .0088" GAUGE	
Drawn N Zanetell	Approved	ANGELUS S-141 SECOND OPERATION	
Checked R McCauley	Approved	DOUBLE SEAM ALUMINUM CAN	
Approved R McCauley	Approved		

METAL BEVERAGE CONTAINER OPERATIONS
9300 W. 108TH CIRCLE
WESTMINSTER, CO 80021-3682
P.O. BOX 589, BROOMFIELD, CO 80038-0589

PRODUCT STANDARD	REV
SEAM - 231	E

	BALL- 86 GA	0.096 -0.100	0.044 +/- 0.001	0.060 +/- .005	0.065 +/- 0.010	
	DATE	SEAM HEIGHT	SEAM WIDTH	COVER HOOK	BODY HOOK	COMMENT
1						
2						
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7						
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9						
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REXAM

Beverage Customer Equipment Services

CUSTOMER EQUIPMENT SERVICE
RECOMMENDED DOUBLE SEAM GUIDELINES
FOR BEER AND BEVERAGE CUSTOMERS

CAN 2 PIECE ALUMINUM END: ALUMINUM .0083			CAN SIZE: 12 OZ. 202/211 X 413
CLOSING MACHINE: SEAMING CHUCK # 1ST OPER. ROLL#	ANGELUS 120L & 121L 7181636 ANKB9 2971641ALWH8 R90E	LIP THICKNESS: 2ND OPER. ROLL #	.270" 2981641ASOH0 S141
PIN GAUGE HEIGHT AT END OF 1ST. OPERATION: BASE PLATE SPRING PRESSURE:	4.500" + .010" - .005" 110 LBS +10 -5# AT .030" DEF.		

SEAM DIMENSIONS	SET-UP	OPERATING
1ST OPER. SEAM THICKNESS	.076" ± .002"	.076" ± .002"
1ST OPER. SEAM WIDTH	.080" MAX	
1ST OPER. COUNTERSINK DEPTH	.270" MAX	.270" +.002" -.005"
2ND OPER. SEAM THICKNESS	.044" + .001" - .002	.044" +.001" -.002"
2ND OPER. SEAM HEIGHT	.099" -.001 + .002"	.099" ± .002"
2ND. OPER. COUNTERSINK DEPTH	.270" ± .002"	.270" ± .005"
BODY HOOK LENGTH	.065" ± .010"	.065" ± .010"
COVER HOOK LENGTH	.060" ± .005"	.055" MIN
COVER HOOK TIGHTNESS RATING	100%	95% - 100%
OVERLAP, ACTUAL OPTICAL ONLY	.035" MIN	.030" MIN
PRESSURE RIDGE	VISIBLE AND CONTINUOUS	

THE QUALITY OF THE DOUBLE SEAM IS THE RESPONSIBILITY OF THE CUSTOMER.

NOTE 1. A good first operation seam must be made to obtain a satisfactory finished seam. A first operation seam check should be made every 80 operating hours.

NOTE 2. Final appraisal of a seam should be based on visual examination of the "torn down" seam of three (3) samples per station before making any adjustments on the seamer.

NOTE 3. Seams are to be tightened when cover hook tightens falls below minimum operating limits.

NOTE 4. Caution – Close inspection of body wall impression should be made during seam evaluation. Regardless of 2nd. Operation dimensions, if extreme deep body impression is noted, body wall fractures could result.

NOTE 5. RBC does not recommend chuck anvil modifications for station identification as seam integrity may be compromised.

NOTE 6. External dimensions should be taken with the internal can pressure released.

NOTE 7. It is recommended that a complete double seam tear down be done every 4 hours of operation and a visual examination be done every 2 hours.

NOTE 8. Double seam measurements taken with a seam computer should be rechecked with a hand seam micrometer before any double seam adjustments are made.

The revision date 12/9/09 supersedes all other previously issued guidelines.

CUSTOMER:	LOCATION:

File Name: 12OZS141.doc

	Rexam	0.099, -.002 +.001	0.044, +.001-.002	0.060 +/- .005	0.065 +/- 0.010	
	DATE	SEAM HEIGHT	SEAM WIDTH	COVER HOOK	BODY HOOK	COMMENT
1						
2						
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e. Screen Images

Figure 33 Main Screen (HOME)

Figure 34 Timing Setup

Figure 35 Motor Drive Setup Screen

Figure 36 Inputs and Outputs Screen

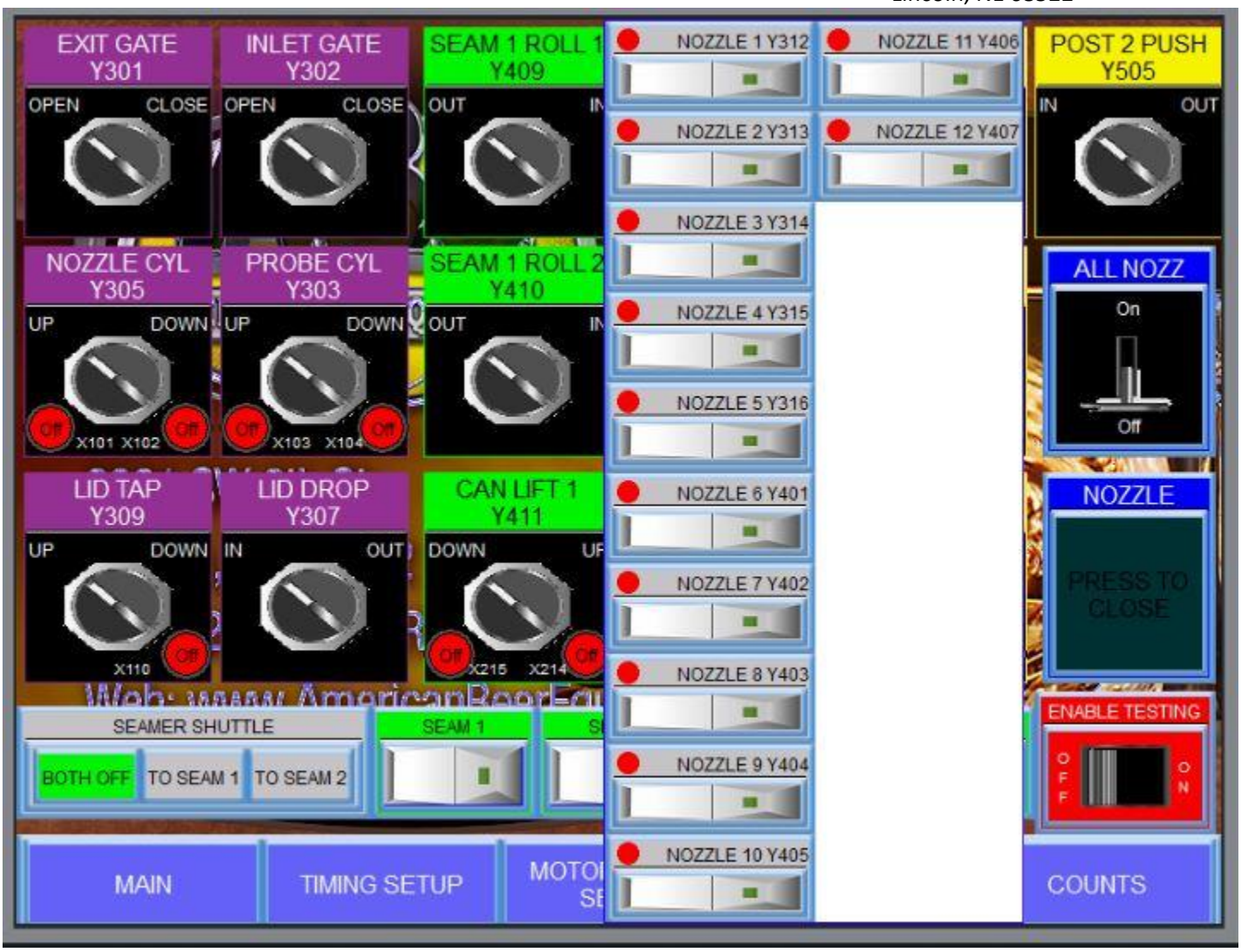

Figure 37 Inputs and Outputs with Individual Nozzles

Figure 38 Diagnostics Screen

Figure 39 Can Count

Figure 40 Saved Setups for Custom Recipes

f. Checklists

Item	Description
Beer Pre-Start	Ensure beer is cleared for canning, every day before starting
Production Startup	Ensure canning line is ready to go every day before starting
Hourly Check	Perform hourly during runs. If something happens, you have a log for how far back to look for the problem.
Crown Checklist	Record Seam Height and Width every 15 minutes. Perform tear-down hourly. Target dims must be taken from YOUR double seam guide.
Ball Checklist	Record Seam Height and Width every 15 minutes. Perform tear-down hourly. Target dims must be taken from YOUR double seam guide.
Rexam Checklist	Record Seam Height and Width every 15 minutes. Perform tear-down hourly. Target dims must be taken from YOUR double seam guide.

American Beer Equipment

2001 SW 6th St.
Lincoln, NE 68522

Acceptable Beer Pre-Startup Checklist, American Beer Equipment	

Date		Process Department	Quality Assurance
Product Item#/Sku Being Produced		Vessel #	
Process Leader		Operator	
Individual Taking Pre-Canning Check		Operator	

Specific Beer Pre-Start Checklist			
Task Number	Leader Initials	Operator Initials	Pre-Run/Set-UpTask Description with Specific Detail Relative to Task, Measurements, Settings, outcomes critical to quality, safety, etc.
1			Is the bacteria level on, and inside, the filler nozzle acceptable?
2			Is the carbonation level of the beer acceptable?
3			Is the dissolved oxygen of the beer acceptable?
4			Is the brite tank pressure correct?
5			Is the entire CIP chemical out of the beer line?
9			Has foam been bled out of the lines?

American Beer Equipment

2001 SW 6th St.
Lincoln, NE 68522

Production Start Up Sheet- American Beer Equipment			
Department		Date	
Product Being Produced		Raw Material #1	
Raw Material #2		Raw Material #3	
Can Component Number		Lid Component Number	
Case Component Number		Finished Product/SKU Number	
Total Number To Be Produced (cans, bottles, cases, etc.)		Verbal Description of Product Produced	
Process Leader's Name (please Print)		Lead Operator's Name (please print)	

Specific Start Up Check List			
Task Number	Leader Initials	Operator Initials	Pre-Run/Set-UpTask Description with Specific Detail Relative to Task, Measurements, Settings, outcomes critical to quality, safety, etc.
1			Ensure seamer cap screw for roller operation # 1 and roller operation #2 is tight - (Figure 6)
2			Ensure operation #1 and operation #2 seamer set screw, on canning line # 1 and canning line #2, is tight - (Spare Parts, Figure 1, #3)
3			Ensure seaming chuck set, including screw, is tight (Figure 6)
4			Ensure the complete seamer cylinder, and lower bearing assembly, bolts are tight (130 Nm). (Spare Parts, Part Number 100-121800)
5			Ensure lower seamer puck is not loose or wobbly (Figure 5)
6			Ensure flow control jam nuts are not loose across canning line.
7			Warm water wash any cylinder that has been exposed to beer. Special attention must be directed to the shuttle cylinder that moves cans into the seamers.
8			Lubricate (food grade lubricant) all cylinders following warm water wash.
9			Check for smooth cylinder operation (shuttle into steamer, filler nozzle, lid taps, seaming cylinders, etc.) and seaming rollers. If not traveling smoothly, repeated warm water wash and lubrication process.
10			Following warm water wash/lubrication, observe cylinder speed and adjust flow control. Travel rate of cylinder should be controlled and fast enough to achieve desired throughput rate, while also working to avoid erratic or overly aggressive rate that "throws" cans.

11			Ensure lid stack sleeve is full. (Spare Parts, Figure 6, # 24)
12			Ensure supply cans are ready to exit the de-palletizer or feed table and enter the canning line.
13			Perform Seam Check on three cans per seamer. Remove cans and conduct tear-down. Measure to ensure seam is in spec. Record data on can checklist (12. Double Seam Specs).
14			Ensure cans are present on the seamer pucks. (Spare Parts, Figure 2, #16)
15			Ensure beer lines and nozzles have properly been cleaned (Section 3)
16			Ensure lid picking area on end of lid chute contains no sticky beer and moves freely.

Task Number	
*	Detailed explanation/comments required for any task not completed or partially completed
	If a fastener is loose, the threads must be cleaned (with a cleaner/degreaser- Loctite Cleaner and Degreaser is recommended) and Blue Loctite (242,243, or similar) must be applied.

Preventative Maintenance Worksheet

#	Task Description	Completed
1	Grease Seamer Rollers every 144 hours of use. Do not overgrease. Refer to Lincan Manual: Maintenance for more information. Changeout takes approximately 5 minutes plus seamer back into spec time.	
2	Check conveyor sprocket and teeth- Monthly. Inspection takes 10 minutes. Replacement takes 15 minutes or less.	
3	Check lower seamer bearings- (EXHIBIT 1, LINCAN, ABE: Figure 2, #13) Replace after 800,000 cans per seamer if needed. Approximatley 10 minutes or less to	
4	Check upper seamer bearings. Replace after 77.5 million cans per seamer if needed. Approximately 30 minutes to changeout.	
5	Check shuttle cylinder (EXHIBIT 1, LINCAN, ABE: Figure 4 ,#21). Replace after 2 million cans per seamer if needed. (4 million cans for two seamers). Change out	
6	Check seamer cylinder (EXHIBIT 1, LINCAN, ABE: Figure 1 ,#8). Replace after 20 million cans per seamer if needed (40 million cans per two seamers). Changeout	
7	Check 60 CPM filler cylinder (EXHIBIT 1, LINCAN, ABE: Figure 5 ,#24). Replace after 44 million cans if needed. Changeout takes approximately 30 minutes.	
8	Check lower seamer cylinder (EXHIBIT 1, LINCAN, ABE: Figure 2 ,#14). Replace after 10 million cans if needed. Changeout take approximately 45 minutes.	
9	Check Seamer cylinder "joints" near seamer arms to see if there is any play. Wear parts such as the bearings and washers (Spare Parts, Figure 1, #5)	
10	Fully scrub clean and sanitize fill head interior and exterior every year or 500,000 cans- whichever comes first.	
11	Replace 6mm beer tubing every three years or every 1,00,000 cans- whichever comes first. (Spare Parts, Figure 4, #23). Replace 6mm beer hose if any section has become kinked, deaply scrathed, or damaged.	

#	Detailed explanation/comments required for any PM task not completed or partially completed
1	
2	
3	

Hourly Check Sheet- American Beer Equipment

Department		Process Area		Date	
SKU/Item # Being Produced		Product Description			

Audit #	Task Description	End of Hour One		End of Hour Two		End of Hour Three		End of Hour Four		End of Hour Five		End of Hour Six		End of Hour Seven		End of Hour Eight	
		Leader's Initials	Operators Initials	Leader's Initials	Operators Initials	Leader's Initials	Operators Initials	Leader's Initials	Operators Initials	Leader's Initials	Operators Initials	Leader's Initials	Operators Initials	Leader's Initials	Operators Initials	Leader's Initials	Operators Initials
1	Seam Inspection: seam height and width with caliper/micrometer																
2	Seam Teardown: complete teardown and measurement of seam																
3	Capping on foam?																

Total Units Produced	

Supervisor Signature/Date

Operator Signature/Date

Quality Assurance Review/Date

American Beer Equipment

2001 SW 6th St.
Lincoln, NE 68522

Predictive Maintenance Schedule

Lincan 15 Pneumatic

Option Numbers

1= 1-2 Years (by 2nd year end)

2= 3-4 Years (4th year end, everything in years 1-4)

3= 5-7 Years (7th year end, everything in years 1-7.)

4= 8-9 Years (by 9th year end)

5= 10 Years (Everything in years 1-10 if not recently completed)

Description	Item #	# Rqrd.	Life cycle	Units	Option Order
Grease seamer rollers (Consult manual! Do not over, or under grease. Fully greased roll assembly weight approximately 732 grams.)	Varies	2	144	Hours	1
Coin Battery, 3 volt, 560mAH, 23mm Dia x 4.5mm tall	783-202081	1	1	Year	1
Filter for cabinet fan (Clean weekly)	100-124306	1	2	Years	1
Tubing, 6mm OD 4mm ID	100-121515	120 FT	1M	Cans	2
Lid Tap Cylinder	100-122925	2	1M	Cans	2
Pivot Bearings in Seamer arm	100-120145	4	2M	Cans	2
Bushing for seamer linkage pivot	100-120210	4	2M	Cans	2
Thrust Washer for Seamer Arm	100-120127	4	2M	Cans	2
Slicer Plate Cylinder	100-122571	1	2M	Cans	2
Seamer Cyl, American - Silver Bullet	100-120092	2	2M	Cans	2
Packing, filler nozzle	100-125002	5	3M	Cycles	2
Adapter, packing, filler nozzle	100-125003	2	3M	Cycles	2
Post-Push Cylinder	100-120322	1	3M	Cans	3
Air Cylinder, Conveyor Gate Assembly, Single-Acting, Spring Return	649-206027	2	5M	Cans	3
Ball, Filler Nozzle	100-120009	4	5M	Cycles	3
Can Lift Cylinder	100-120355	1	5M	Cans	3
Seamer Chuck (1 year @ 100% duty cycle), 202 B64 End	100-120077	1	2.5M	Cans	3
First Operation Roller (1 year @ 100% duty cycle), 202 B64 End	100-120070	1	5M	Cans	3
Second Operation Roller (1 year @ 100% duty cycle), 202 B64 End	100-120071	1	5M	Cans	3
Shuttle Cylinder (Lincan 15)	100-126353	1	5M	Cans	3
Manifold, filler, 15 CPM	100-124600	1	5M	Cycles	4
Manifold, filler/seamer, 15/30/60 CPM	100-124610	1	5M	Cycles	4
Fan, Panel, Exhaust, 230VAC, 50/60HZ, 16/14W	100-124307	1	5	Years	3
Air Cylinder, fill nozzles, square body, phd	100-125080	3	10M	Cans	3
CB, 3P, 10A, D-CURVE, DIN MNT	100-129600	3	10M	Cycles	4
Cabinet cooling Fan	100-124307	1	3	Years	4
Sensor, photo, m12 x 4 pint, m18 thread	100-124340	2	2.5	Years	4
Sensor, induct prox, 18mm NPN 12mm ring, 4 wire, DC w/NO & NC, m12 QD, shield	100-124162	7	10	Years	4

Predictive Maintenance Schedule

Lincan 30 Pneumatic Line

Option Numbers

1= 1-2 Years (by 2nd year end)

2= 3-4 Years (4th year end, everything in years 1-4)

3= 5-7 Years (7th year end, everything in years 1-7.)

4= 8-9 Years (by 9th year end)

5= 10 Years (Everything in years 1-10 if not recently completed)

Description	Item #	# Rqrd.	Life Cycle	Life Cycle	Option Order
Grease seamer rollers (Consult manual! Do not over, or under grease. Fully greased roll assembly weight approximately 732 grams.)	Varies	4	144	Hours	1
Coin Battery, 3 volt, 560mAH, 23mm Dia x 4.5mm tall	783-202081	1	1	Year	1
Filter for cabinet fan (Clean weekly)	100-124306	1	2	Years	1
Tubing, 6mm OD 4mm ID	100-121515	210	1M	Cans	2
Lid Tap Cylinder	100-122925	2	1M	Cans	2
Air Cylinder, Slicer Plate	100-122571	1	2M	Cans	2
Bushing for seamer linkage pivot	100-120210	4	2M	Cans	2
Thrust Washer for Seamer Arm	100-120127	4	2M	Cans	2
Seamer Cyl, American - Silver Bullet	100-120092	2	2M	Cans	2
Sensor, Photo, m12 4 pin, m18 thread	100-124340	2	2.5	Years	2
Cabinet cooling Fan	100-124307	1	3	Years	2
Post-Push Cylinder	100-120322	2	3M	Cans	3
Packing, Filler Nozzle	100-125002	10	3M	Cycles	3
Adapter, packing, filler nozzle	100-125003	6	3M	Cycles	3
Conveyor Gate Cylinder	649-206027	2	5M	Cans	3
Slicer Plate Cylinder	100-122570	1	5M	Cans	3
Seamer Chuck (1 year @ 100% duty cycle), 202 B64 End	100-120077	1	2.5M	Cycles	3
First Operation Roller (1 year @ 100% duty cycle), 202 B64 End	100-120070	1	5M	Cycles	3
Second Operation Roller (1 year @ 100% duty cycle), 202 B64 End	100-120071	1	5M	Cycles	3
Push-to-Seam Air Cylinder, updated LinCan30	100-126353	1	5M	Cans	3
Ball, Filler Nozzle	100-120009	7	5M	Cycles	3
Manifold, filler/seamer, 15/30/60 CPM	100-124610	1	5M	Cycles	3
Manifold, filler nozzle, 30 cpm	100-124630	1	5M	Cycles	3
Manifold, P-Rinse, 30 CPM	100-124640	1	5M	Cycles	3
Fan, Panel, Exhaust, 230VAC, 50/60HZ, 16/14W, ACF	100-124307	1	5	Years	3
Air Cylinder, fill nozzles, square body, phd	100-125080	7	10M	Cans	3
Can Lift Cylinder	100-120355	2	10M	Cycles	4
Filler Nozzle Lift Cylinder	100-125050	1	10M	Cycles	4
E-stop SW	100-124400	1	300K	Cycles	4
Sensor, inductive prox, 18mm NPN, 12mm Ring, 4 wire, DC W/ NO & NC, M12 QD, Shield	100-124162	7	10	Years	4

Predictive Maintenance Schedule

Lincan 60 Pneumatic Line

Option Numbers

1= 1-2 Years (by 2nd year end)

2= 3-4 Years (4th year end, everything in years 1-4)

3= 5-7 Years (7th year end, everything in years 1-7.)

4= 8-9 Years (by 9th year end)

5= 10 Years (Everything in years 1-10 if not recently completed)

Description	Item #	# Rqrd.	Life Cycle	Life Cycle	Option Order
Grease seamer rollers (Consult manual! Do not over, or under grease. Fully greased roll assembly weight approximately 732 grams.)	Varies	4	144	Hours	1
Coin Battery, 3 volt, 560mAH, 23mm Dia x 4.5mm tall	783-202081	1	1	Years	1
Filter for cabinet fan (Clean weekly)	100-124306	1	2	Years	1
Tubing, 6mm OD 4mm ID	100-121515	330'	1M	Cans	2
Lid Tap Cylinder	100-122925	3	1M	Cans	2
Bushing for seamer linkage pivot	100-120210	8	2M	Cans	2
Thrust Washer for Seamer Arm	100-120127	8	2M	Cans	2
Seamer Cyl, American - Silver Bullet	100-120092	4	2M	Cans	2
Slicer Plate Cylinder	100-122571	1	2M	Cans	2
Cabinet cooling Fan	100-124307	1	3	Years	2
Sensor, Photo, m12 4 pin, m18 thread	100-124340	2	2.5	Years	2
Seamer Chuck (1 year @ 100% duty cycle), 202 B64 End	100-120077	2	2.5	Cycles	3
First Operation Roller (1 year @ 100% duty cycle), 202 B64 End	100-120070	2	5M	Cycles	3
Second Operation Roller (1 year @ 100% duty cycle), 202 B64 End	100-120071	2	5M	Cycles	3
Packing, Filler Nozzle	100-125002	15	3M	Cycles	3
Adapter, packing, filler nozzle	100-125003	6	3M	Cycles	3
Conveyor Gate Cylinder	649-206027	2	5M	Cans	3
Post-Push Cylinder	100-120285	2	5M	Cans	3
Shuttle Cylinder (Lincan 60)	100-120685	1	5M	Cans	3
Ball, Filler Nozzle	100-120009	12	5M	Cycles	3
Air Cylinder, Slicer Plate	100-122570	1	7M	Cans	3
Fan, Panel, Exhaust, 230VAC, 50/60HZ, 16/14W, ACF	100-124307	1	5	Years	3
Air Cylinder, fill nozzles, square body, phd	100-125080	11	10M	Cans	3
Can Lift Cylinder	100-120355	2	10M	Cycles	4
Filler Nozzle Lift Cylinder	100-125050	1	10M	Cycles	4
E-stop SW	100-124400	1	300K	Cycles	4
Sensor, inductive prox, 18mm NPN, 12mm Ring, 4 wire, DC W/ NO & NC, M12 QD, Shield	100-124162	8	10	Years	4
Manifold, filler/seamer, 15/30/60 CPM	100-124610	1	10M	Cycles	4
Manifold, filler nozzle, 60 cpm	100-124650	1	10M	Cycles	4

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