Ashbrook Simon-Hartley

ASHBROOK KLAMPRESS®

10.0 MAINTENANCE PROCEDURES

10.1 GENERAL: Maintenance instructions will be divided into the same functional groups as indicated in the General Mechanical Description of this manual. Drawings, cut sheets or schematics, if applicable, will be indicated in the appropriate section. The intervals indicated are based on a normal work or operating schedule of forty hours per week.

10.2 DAILY MAINTENANCE ITEMS:

10.2.1 Clean belts by running belt drive and wash system without sludge or polymer for a minimum period of 45 minutes.
10.2.2 Clean spray nozzles on wash boxes.
10.2.3 Check oil level in hydraulic unit. Fill as required.
10.2.4 Manually extend and retract the tension cylinders to clean and oil the rods. This will greatly extend the life of the seals.
10.2.5 Cycle the steering cylinder in both directions by holding the steering paddle first one way and then the other. This will clean and oil the rods and greatly extend the life of the seals.
10.2.6 Inspect alarm sensors.
10.2.7 Check emergency trip cord by manually tripping circuit and resetting.

10.3 WEEKLY MAINTENANCE ITEMS:

10.3.1 Inspect wear items specifically chicanes, scraper blade, gravity drainage grids, dewatering belts, rubber seals on the sludge restrainers and the wash stations. Replace as required.
10.3.2 Check the hydraulic reservoir level and the condition of the oil. Change the oil if it has darkened or turned cloudy.
10.3.3 Inspect the filter screen for visible contamination or debris.
10.3.4 Inspect frame and roller coatings for wear.
10.3.5 Inspect belt guides and wiper bars for cleanliness/wear. Clean as required.
10.3.6. Check for any loose bolts.

10.4 MONTHLY MAINTENANCE ITEMS:

10.4.1 Verify daily and weekly items have been completed

10.4.2 Clean belts with a soap/bleach mixture. To prepare the soap/bleach mixture, use 1-cup detergent and 3-cups bleach to mix with 5 gallons water. The soap can be any laundry type liquid detergent and the bleach can be any generic brand bleach containing 5.25% sodium hypochlorite. The water can be tap water. Use power wash system to spray the soap/bleach mixture on belt surface for cleaning. The spray pressure shall be about 1,000 psig and not to exceed 2,000 psig.

10.4.3 Check belt seam wires for breaks. Replace if broken.

10.5 SEMI-ANNUALLY MAINTENANCE ITEMS:

10.5.1 Verify monthly items have been completed.

10.5.2 Clean hydraulic filter screen.

10.5.3 Check oil level in drive unit gear box and lubricate bearings. See lubrication schedule in Section 13.

10.5.4 Inspect polymer mixer/injection ring assembly and clean as required. (See Section 10.17.2)

10.5.5 Replace belt seam wires.

10.6 FRAME:

10.6.1 Inspection Items:

SK000947 Frame Assembly Drawing

a. Inspect frame and anchor bolts and tighten as required.
b. Inspect frame coating and repair corrosion as required.

10.6.2 Coating Repair Procedures: (Galvanized Frame only)

Note: The frame may be under warranty. Contact Ashbrook before repairing the frame.

a. Clean corroded area with wire brush until base metal is exposed.
b. Coat area with spray or liquid galvanizing solution.

10.6.3 Hot Dip Galvanizing Process Description

All carbon steel surfaces shall be hot dipped galvanized in accordance with ASTM A123/A 123M-97a, with a minimum coating of Grade 100.

The general procedure is as follows:

1. The components to be galvanized are first dipped in a 180 degree F caustic bath to remove any lacquers, oils or other foreign material from the steel.
2. The components are pickled in a hydrochloric acid solution to remove any residual mill scale and aid in zinc adherence.
3. If corrosion exists on any of the parts after acid dipping, the parts are sandblasted to white metal where required.
4. The components are submerged in an 850 degree F zinc bath for not more than 5 minutes. The zinc bath uses a sal ammoniac surface froth for fluxing the components.
5. The components are removed from the zinc bath and checked for zinc thickness build-up. Acceptable zinc thickness is between 4 and 7 mils.
6. The galvanized surface shall be cleaned of all runs, sags, excessive deposits and other deformities.

10.7 ROLLERS:

SK00973 Standard Rollers Assembly Drawing

10.7.1 Inspection Items:

a. Inspect roller coating for damages.
b. Minor chips and scratches can be repaired using a touch up kit.
c. Contact Ashbrook for recoating worn out coatings.

10.8 BEARINGS:

10.8.1 Bearing Cut Sheets: See attached

10.8.2 Pillowblock Dimensional Data: See attached

a. Spherical Roller Bearing Dimensional Data
b. Cylindrical Roller Bearing Dimensional Data

10.8.2 Inspection Items:

a. Ensure grease is visible on bearing/shaft seal.
b. Check bolts.
c. Ensure roller flinger is in place.

10.8.3 Lubrication Procedures:

Note: Lubricate bearings every six months with 3 to 5 ounces of grease per bearing. Use only the lubricants contained in the lubrication cross reference in this manual. Failure to lubricate the bearings will invalidate the bearing warranty.

a. Attach grease gun to button grease fitting.
b. Inject three to five ounces of grease. Grease should be seen.
c. Disconnect grease gun and continue with remaining bearings.
d. Repeat until all bearings are lubricated.

10.9 STEERING ASSEMBLY:

10.9.1 Drawings:

a. SK000945 Steering Assembly Drawing
b. Hydraulic Steering Cylinder Data
   026520 Steering Cylinder Drawing

10.9.2 Inspection Items:

a. Ensure sensing paddle is moving with belt.
b. Ensure steering cylinder is responding to sensing paddle.
c. Ensure belt is tracking in approximately the center of the belt press.
d. Ensure belt misalignment limit switches are functioning.

10.9.3 Wear Strip Replacement:

a. Shut down belt press and lock out controls.
b. Unbolt wear strip from paddle.
c. Position new wear strip on paddle and replace bolts.

10.10 TENSIONING ASSEMBLY:

10.10.1 Drawings/Photos:

a. Upper and Lower Tensioning Assembly: SK000927
b. Hydraulic Tensioning Cylinder Data
c. Tension Cylinder Drawing: 026521

10.10.2 Inspection Items:

a. Inspect tension cylinders for leaks.

10.10.3 Tension Yoke Cylinder Replacement:

a. Shut down press and lock out controls.
b. Disconnect hydraulic lines from cylinder.
b. Remove trunnion clamps and detach cylinder rod from actuator rod.
c. Reverse process to install new cylinder.
d. Replace hydraulic lines.
e. Check for proper belt tensioning operation before starting belt drive.

10.10.4 Hydraulic Manifold Repair:
029868 Hydraulic Manifold Drawing

a. Tension valve replacement
   (1) Turn off pump.
   (2) Screw out defective valve.
   (3) Wash out port.
   (4) Screw in new valve.
b. Pressure reducing valve replacement.
   (1) Turn off pump
   (2) Screw out defective pressure reading valve.
   (3) Wash out port.
   (4) Screw in new pressure reducing valve.
c. Pressure gauge replacement.
   (1) Turn off pump.
   (2) Screw out defective pressure gauge while holding the gauge snubber with a wrench to prevent it from turning in the manifold block.
   (3) Wash out the port.
   (4) Screw in new pressure gauge while holding the gauge snubber with a wrench to prevent it from turning in the manifold block.

d. Pressure switch replacement.
   (1) Turn off pump.
   (2) Screw out defective pressure switch while holding the gauge snubber with a wrench to prevent it from turning in the manifold block.
   (3) Wash out the port.
   (4) Screw in new pressure switch while holding the gauge snubber with a wrench to prevent it from turning in the manifold block.

10.11 HYDRAULIC POWER UNIT: The hydraulic pump and motor do not have parts that are maintainable in the field. If maintenance on these items is required, please call Alfa Laval.

10.11.1 Drawings/Data Sheets:

a. Hydraulic Pump/Motor Assembly Drawing: 035011
b. Hydraulic Reservoir Drawing: p/n 029837
c. Hydraulic Filter Drawing SK003740
d. Hydraulic Filter Data Sheets: p/n 038272
e. Pressure Gauge Data Sheet: p/n 029482
f. Pressure Switch Data Sheet: p/n 029872
g. Hydraulic Pump Data Sheet: p/n 029866
f. Motor Data Sheet and Drawing
g. Hydraulic Assembly Drawing: SK000951

10.11.2 Filter Screen Cleaning or Replacement:

Note: Replace spin-on filter semi annually (every six months). Retract the tension cylinders to return most of the oil to the reservoir. This will help purge most of the old oil and prevent over filling the reservoir.

a. Unscrew the spin-on filter from filter body, catch the oil in a bucket.
b. Install new spin-on filter in the filter bowl. Do not operate without a filter installed.
c. Screw the spin-on filter onto the filter body.
d. Refill the hydraulic reservoir to the high level mark.

10.11.3 Hydraulic Oil:

Note: Change the hydraulic oil after the first 500 hours of use and anytime the oil appears discolored, darkened or cloudy. The hydraulic oil can absorb moisture from the atmosphere.

a. Check oil level when tension cylinders are retracted. If oil is too low, add sufficient oil to restore proper level. Find and repair any leaks which caused oil level to decrease.
b. Inspect the level of the oil and its color. If oil is discolored, drain and replace.
c. Hydraulic oil is drained by removing the spin-on filter and catching the oil in a bucket.
d. Properly dispose of any waste oil and install new spin-on filter.
e. Start hydraulic unit and allow belts to tension.
f. Retract the cylinders and check the level of the hydraulic oil in the reservoir and add oil as required.

10.16 DEWATERING BELTS

10.16.1 Belt Data Sheet: Attached

10.16.2 Belt Use Record Sheet: Attached

10.16.3 Belt Cleaning Instructions:

a. Run wash water and belt drive (no sludge or polymer) for a minimum of 45 minutes per day of dewatering.
b. If additional cleaning is desired, Apply mild soap directly onto the belts or inject into the spray wash system for one hour.

Note: Do NOT steam clean the belts. Steam cleaning will damage the belts. Use a maximum of 1,500 psi water at a maximum of 130 degrees F. Do not wash belts with hot water while they are under tension as this will cause stretching.

10.16.4 Belt Repair Procedures:

a. Belt Puncture:

(1) Clean around the puncture and allow belt to dry.
(2) Using scrap belt material, cut a patch to size.
(3) Coat area with marine epoxy and apply patch.
(4) Allow epoxy to dry before operating press.

Note: When using marine epoxy, ensure belt is clean and dry before applying epoxy. Apply epoxy to both belt and patch as evenly as possible. Let epoxy thoroughly dry before operating. Dewatering will not occur in an area coated with marine epoxy.

b. Belt Edge Fraying:

(1) Clean belt edge and allow belt to dry.
(2) Cut off excess strands.
(3) Apply marine epoxy and allow epoxy to dry.

10.16.5. Belt Installation: See Section 7.6.3 for belt installation and safety.

a. For belt installation when there are no belts on the machine see Section 7.6.3 for belt installation and safety.
b. Follow these instructions for replacing existing belts on the machine.

WARNING: Do not disable any alarms on the machine by disconnecting wires at the control panel or the junction box. The alarms exist to protect yourself and the equipment

1. See Section 7.6.3 for belt installation safety.
2. Energize the belt drive and run the belts until the clipper seam is at the tensioin yoke.
3. Stop the belt drive and retract the tension cylinders to remove tension from the belts.
4. Remove the belt seam wire and then connect the new belt onto the trailing edge of the old belt. Ensure the seams are properly meshed together and reinstall the belt seam wire.
5. Loosen the broken belt sensor proximity switches and move them back away from their original position by about ¼ to ½ inch.

WARNING: The belt drive will not operate unless the hydraulic pump is running and the belts are tensioned. The tension yoke will move to its fully extended position when the tension valve is placed in the tension position. Ensure no personnel or equipment is in the path of the tension yoke as it extends.

6. Place the tension control valve in the belt tension position and allow the tension cylinders to extend to their full stroke.
7. Energize the belt drive and allow the old belt to pull the new belt into the machine.
8. Roll up the old belt as it comes out of the machine.
9. Retract the tension cylinders and seam the ends of the new belt together with a new seam wire.
10. Repeat with the second belt.
11. Replace the broken belt sensor proximity switches and adjust to their original positions.

10.16.6 **Possible Causes for Belt Tracking Problems**

Occasionally a problem will arise where one or both belts of a belt filter press will not track properly. When this happens look for these possible causes.

When both belts wander off track:

Uneven sludge distribution across the width of the machine will make the belts steer away from the heavy side because the higher sludge load between the belts makes the belt on the outside behave as though it were on a steering roller turned away from the heavy side. This occurs to both belts alternately as they go around the rollers. When the belt is on the inside against the roller it does not see the uneven sludge thickness, but when it is on the outside it will be steered "down hill" away from the heavy side. Correct the sludge distribution at the inlet spreader. In extreme cases of off center sludge loading the steering system will not be able to compensate and the belt will go into the over travel limit switches. Also, serious cases will cause diagonal creasing and destruction of the belts. If the belt seam is not straight across the machine this is evidence that the sludge loading has not been correct in the recent past. The seam will lag behind on the heavier loaded side and, if run this way long enough, will not recover even if the sludge distribution is corrected.

A pressure roller bearing that has come loose from its mounting to the frame will allow the roller to get out of alignment and it will act like a steering roller and cause both belts to track toward one side. This may be detected by observing that the steering cylinders are staying off center or are hunting for their balance point. If the bearing housing has moved enough to cause this problem you should see the mark on the frame showing it has moved from its original place. Put the bearing back where it was and check all the bearing mounting bolts for tightness. Observe for correct tracking without hunting.

Check for bearings that have been moved in an attempt to "realign" the rollers. Sometimes this is done in the field by persons attempting to make a damaged or irregular belt track straight. When the belt wears or is later replaced, then tracking problems will begin. Put all the rollers back in their original places so they are parallel. Be sure to check that all the bearing bolts are tight.

When one belt wanders off track:

Uneven sludge distribution across the width of the machine will make the belts steer away from the heavy side because the higher sludge load between the belts makes the belt on the outside behave as though it were on a steering roller turned away from the heavy side. Uneven sludge distribution usually affects both belts, but in mild cases or if the belts have been stretched only one belt may be affected. Look for creases in the belts or belt seams that have been pulled in a diagonal. See the paragraph above.

An idler roller bearing that has come loose from its mounting to the frame will allow the roller to get out of alignment and it will act like a steering roller and cause one belt to track toward one side. This may be detected by observing that its steering cylinder is staying off center or is hunting for its balance point. If the bearing housing has moved enough to cause this problem you should see the mark on the frame showing it has moved from its original place. Put the bearing back where it was and check all the bearing mounting bolts for tightness. Observe for correct tracking without hunting.

Check for bearings that have been moved in an attempt to "realign" the rollers. Sometimes this is done in the field by persons attempting to make a damaged or irregular belt track straight. When the belt wears or is later replaced, then tracking problems will begin. Put all the rollers back in their original places so they are parallel. Be sure to check that all the bearing bolts are tight.

It is possible for the tension equalizing rack and pinion to get out of time. If the rack is clogged with dried sludge or there is any looseness in the assembly the pinion can jump a tooth and make the tension roller be out of line. Uneven sludge distribution can provide the force to cause this to happen. Observe when you fully retract the tension cylinders if one side hits bottom first; or you can measure the distance between rollers or count the teeth. Clean the rack and reset the timing.

Intermittent steering problems, those that return after you have "fixed" the problem and watched the machine run fine for hours, can be the result of trash in the hydraulic lines. Take off the steering valves and flush the lines. Try swapping the steering valves between the upper and lower belts to see if the problem goes with the valve. If the filters in the fittings on the valve are clogged with dirt it may not be obvious and you may not be able to clean them. Replace the fittings or the entire valve.

A dirty or damaged steering valve will not respond to the movement of the belt and the steering cylinder may stay at one end of its travel for too long and then switch completely to the other end. Clean or replace the steering valve. Also, look for a broken spring on the paddle arm. If the arm is damaged or loose on its shaft the same effect may be observed.

The early steering cylinders had chrome plated steel rods that can rust where there are microscopic pores in the plating. After a long time in service the rod can become so rough that it will stick in the rod seal or bushing and the cylinder action will be erratic, not responding immediately to movement of the steering paddle. Look for leaking seals and rough spots on the cylinder rod. Replace the cylinder. The new steering cylinders have solid stainless steel rods that will not rust and there is no plating to flake off.

Wear or damage to the steering bearing pivot assemblies can cause irregular tracking action. Make sure the pivots are in good condition and there is no looseness.

Sometimes a new belt gets stretched on one side by uneven sludge loading. When the belt tension is applied the belt will be tight like a drum head on one side of the machine and slightly slack on the other. A stretched belt will not track straight. Sometimes the belt can be straightened

by running it for a while at maximum belt tension with only the wash water on. Apply hot water if it is available and the straightening will happen faster, but don't over do it.

The basic steps in recovering from a belt tracking accident

1. turn off the power and disconnect the belt misalignment switches
2. turn on the power and start the hydraulic unit
3. retract the tension cylinders to loosen the belts.
4. turn off the power
5. manually pull the belts back to center
6. start the press and allow it to run without sludge until clean
7. observe the belt tracking
8. watch for proper operation of the belt steering
9. if belt tracks OK and steering is working, shut down the press
10. turn off the power and reconnect the misalignment switches
11. place the press back in service
12. watch for tracking problem to reappear
13. determine and correct the cause

10.12 FEED ASSEMBLY:

10.12.1 Drawings: Feed Assembly: SK000934

a. Inspect the feed chute to see that the lower edge is level.
b. The lower edge of the feed chute must be equidistant above the belt across its width.
c. If the feed chute is not level the sludge will not be evenly distributed on the belt.
d. Uneven sludge distribution will cause belt problems such as poor tracking and wrinkling and subsequent damage to the seams and belt fabric.
e. If you continue to have problems with your belts after leveling the feed chute contact your Ashbrook Service department.

10.13 GRAVITY DRAINAGE SECTION:

10.13.1 Drawings:

a. SK000906 Upper Grid Assembly
b. SK000907 Lower Grid Assembly
c. SK000913 Drain Tray Assembly
d. SK000929 Chicane Group Assembly
e. SK000935 Upper Sludge Restrainer Assembly
f. SK000952 Lower Sludge Restrainer Assembly
g. SK000936 Wedge Plate Assembly
h. SK000960 Drain Piping Assembly

10.13.2 Wear Strip Replacement:

Note: Replace grid strips before belt contacts metal support grid.

a. Shut down belt press drive.
b. De-tension belts and shut down all belt functions.
c. Lock out machine controls.
d. Raise sludge side restrainers.
e. Pull out and dispose of worn wear strip.
f. Insert new wear strip and tap into place with rubber mallet.
g. Unlock controls and start hydraulic unit, tension belts.
h. Lower sludge restrainers into place.

10.13.3 Sludge Restrainer Adjustment:

a. Loosen side bolts in supporting brackets.
b. Raise or lower restrainers until seals are touching the belt.
c. Tighten bolts.

10.13.4 Seal Replacement:

a. Raise side restrainers.
b. Remove old seals and discard.
c. Install new seals on restrainers.
d. Lower side restrainers and tighten bolts.

10.13.5 Wedge Plate Adjustment: This is an optional machine attachment and may not be present.

a. Remove locking pin and lower/raise plate.
b. Replace locking pins.
c. If sludge is pressing out between the belts, the plate is too low.

10.13.6 Chicane Adjustment:

a. Horizontal Adjustment:

(1) Loosen bolt.
(2) Slide chicane to desired position.
(3) Tighten bolt.

b. Vertical Adjustment:

(1) Loosen bolt.
(2) Rotate retaining ring until chicane is resting on belt.
(3) Tighten bolt.

10.13.7 Chicane Replacement:

a. Stop belt press and lock out controls.
b. Rotate chicanes off belt.
c. Knock out roll pin.
d. Remove old blade.
e. Insert new blade.
f. Install roll pin.
g. Rotate chicanes onto belt.
h. Resume operations

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10.13.2 Wear Strip Replacement:

Note: Replace grid strips before belt contacts metal support grid.

a. Shut down belt press drive.
b. De-tension belts and shut down all belt functions.
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d. Raise sludge side restrainers.
e. Pull out and dispose of worn wear strip.
f. Insert new wear strip and tap into place with rubber mallet.
g. Unlock controls and start hydraulic unit, tension belts.
h. Lower sludge restrainers into place.

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a. Raise side restrainers.
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10.13.5 Wedge Plate Adjustment: This is an optional machine attachment and may not be present.

10.15 DRIVE TRAIN:

10.15.1 Drawings:

SK000905 Drive Assembly Drawing
SK000910 Drive Roller Assembly Drawing

a. Motor Technical Data
b. Motor Data
c. Electrical Motor Data
d. Electrical Motor Dimensional Data
e. Manufacturer's Instructional Data

10.15.2 Lubrication:

Note: Lubrication frequency - Primary Gear Box 10,000 hours.

a. Primary Gear Box:

(1) Check oil level every 6 months.
(2) Replace oil every 10,000 hours or annually.
(3) Should oil be observed leaking from the gear reducer the seals must be replaced immediately to prevent serious damage to the gearing.

c. Secondary Gearing

(1) Check for unusual wear patterns on gear tooth faces. Adjust alignment of pinion and bull gear as needed.
(2) Relubricate with open gear lube monthly.

10.16 DEWATERING BELTS

10.16.1 Belt Data Sheet: Attached

10.16.2 Belt Use Record Sheet: Attached

10.16.3 Belt Cleaning Instructions:

a. Run wash water and belt drive (no sludge or polymer) for a minimum of 45 minutes per day of dewatering.
b. If additional cleaning is desired, Apply mild soap directly onto the belts or inject into the spray wash system for one hour.

Note: Do NOT steam clean the belts. Steam cleaning will damage the belts. Use a maximum of 1,500 psi water at a maximum of 130 degrees F. Do not wash belts with hot water while they are under tension as this will cause stretching.

10.16.4 Belt Repair Procedures:

a. Belt Puncture:

(1) Clean around the puncture and allow belt to dry.
(2) Using scrap belt material, cut a patch to size.
(3) Coat area with marine epoxy and apply patch.
(4) Allow epoxy to dry before operating press.

Note: When using marine epoxy, ensure belt is clean and dry before applying epoxy. Apply epoxy to both belt and patch as evenly as possible. Let epoxy thoroughly dry before operating. Dewatering will not occur in an area coated with marine epoxy.

b. Belt Edge Fraying:

(1) Clean belt edge and allow belt to dry.
(2) Cut off excess strands.
(3) Apply marine epoxy and allow epoxy to dry.

10.16.5. Belt Installation: See Section 7.6.3 for belt installation and safety.

a. For belt installation when there are no belts on the machine see Section 7.6.3 for belt installation and safety.
b. Follow these instructions for replacing existing belts on the machine.

WARNING: Do not disable any alarms on the machine by disconnecting wires at the control panel or the junction box. The alarms exist to protect yourself and the equipment

1. See Section 7.6.3 for belt installation safety.
2. Energize the belt drive and run the belts until the clipper seam is at the tensioin yoke.
3. Stop the belt drive and retract the tension cylinders to remove tension from the belts.
4. Remove the belt seam wire and then connect the new belt onto the trailing edge of the old belt. Ensure the seams are properly meshed together and reinstall the belt seam wire.
5. Loosen the broken belt sensor proximity switches and move them back away from their original position by about ¼ to ½ inch.

WARNING: The belt drive will not operate unless the hydraulic pump is running and the belts are tensioned. The tension yoke will move to its fully extended position when the tension valve is placed in the tension position. Ensure no personnel or equipment is in the path of the tension yoke as it extends.

6. Place the tension control valve in the belt tension position and allow the tension cylinders to extend to their full stroke.
7. Energize the belt drive and allow the old belt to pull the new belt into the machine.
8. Roll up the old belt as it comes out of the machine.
9. Retract the tension cylinders and seam the ends of the new belt together with a new seam wire.
10. Repeat with the second belt.
11. Replace the broken belt sensor proximity switches and adjust to their original positions.

10.16.6 Possible Causes for Belt Tracking Problems

Occasionally a problem will arise where one or both belts of a belt filter press will not track properly. When this happens look for these possible causes.

When both belts wander off track:

Uneven sludge distribution across the width of the machine will make the belts steer away from the heavy side because the higher sludge load between the belts makes the belt on the outside behave as though it were on a steering roller turned away from the heavy side. This occurs to both belts alternately as they go around the rollers. When the belt is on the inside against the roller it does not see the uneven sludge thickness, but when it is on the outside it will be steered "down hill" away from the heavy side. Correct the sludge distribution at the inlet spreader. In extreme cases of off center sludge loading the steering system will not be able to compensate and the belt will go into the over travel limit switches. Also, serious cases will cause diagonal creasing and destruction of the belts. If the belt seam is not straight across the machine this is evidence that the sludge loading has not been correct in the recent past. The seam will lag behind on the heavier loaded side and, if run this way long enough, will not recover even if the sludge distribution is corrected.

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Check for bearings that have been moved in an attempt to "realign" the rollers. Sometimes this is done in the field by persons attempting to make a damaged or irregular belt track straight. When the belt wears or is later replaced, then tracking problems will begin. Put all the rollers back in their original places so they are parallel. Be sure to check that all the bearing bolts are tight.

When one belt wanders off track:

Uneven sludge distribution across the width of the machine will make the belts steer away from the heavy side because the higher sludge load between the belts makes the belt on the outside behave as though it were on a steering roller turned away from the heavy side. Uneven sludge distribution usually affects both belts, but in mild cases or if the belts have been stretched only one belt may be affected. Look for creases in the belts or belt seams that have been pulled in a diagonal. See the paragraph above.

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It is possible for the tension equalizing rack and pinion to get out of time. If the rack is clogged with dried sludge or there is any looseness in the assembly the pinion can jump a tooth and make the tension roller be out of line. Uneven sludge distribution can provide the force to cause this to happen. Observe when you fully retract the tension cylinders if one side hits bottom first; or you can measure the distance between rollers or count the teeth. Clean the rack and reset the timing.

Intermittent steering problems, those that return after you have "fixed" the problem and watched the machine run fine for hours, can be the result of trash in the hydraulic lines. Take off the steering valves and flush the lines. Try swapping the steering valves between the upper and lower belts to see if the problem goes with the valve. If the filters in the fittings on the valve are clogged with dirt it may not be obvious and you may not be able to clean them. Replace the fittings or the entire valve.

A dirty or damaged steering valve will not respond to the movement of the belt and the steering cylinder may stay at one end of its travel for too long and then switch completely to the other end. Clean or replace the steering valve. Also, look for a broken spring on the paddle arm. If the arm is damaged or loose on its shaft the same effect may be observed.

The early steering cylinders had chrome plated steel rods that can rust where there are microscopic pores in the plating. After a long time in service the rod can become so rough that it will stick in the rod seal or bushing and the cylinder action will be erratic, not responding immediately to movement of the steering paddle. Look for leaking seals and rough spots on the cylinder rod. Replace the cylinder. The new steering cylinders have solid stainless steel rods that will not rust and there is no plating to flake off.

Wear or damage to the steering bearing pivot assemblies can cause irregular tracking action. Make sure the pivots are in good condition and there is no looseness.

Sometimes a new belt gets stretched on one side by uneven sludge loading. When the belt tension is applied the belt will be tight like a drum head on one side of the machine and slightly slack on the other. A stretched belt will not track straight. Sometimes the belt can be straightened

by running it for a while at maximum belt tension with only the wash water on. Apply hot water if it is available and the straightening will happen faster, but don't over do it.

The basic steps in recovering from a belt tracking accident

1. turn off the power and disconnect the belt misalignment switches
2. turn on the power and start the hydraulic unit
3. retract the tension cylinders to loosen the belts.
4. turn off the power
5. manually pull the belts back to center
6. start the press and allow it to run without sludge until clean
7. observe the belt tracking
8. watch for proper operation of the belt steering
9. if belt tracks OK and steering is working, shut down the press
10. turn off the power and reconnect the misalignment switches
11. place the press back in service
12. watch for tracking problem to reappear
13. determine and correct the cause

10.17 IN-LINE VENTURI MIXER & POLYMER INJECTION RING

10.17.1 Drawing No. SK000377 Polymer Mixer.
In-Line Mixer with manifold and Injection Ring

Drawing No. SK002081 Polymer Back Flow Preventer
PVC Swing Check Valve to prevent sludge backing up into the polymer system.

10.17.2 Mixer Cleaning Procedures:

a. Remove side plate.
b. Clean internals.
c. Replace side plate and tighten bolts.

Ashbrook Simon-Hartley®

ASHBROOK KLAMPRESS®

11.0 WASHWATER SYSTEM

11.1 GENERAL: Each Klampress® is equipped with two individual belt wash stations for both the upper and lower belt. Each station consists of a spray tube, fitted with spray nozzles, contained within a fabricated housing which encapsulates a section of each belt. The housing and nozzle assembly can be readily removed.

The nozzle spacing and spray pattern are such that the sprays from adjacent nozzles overlap at the belt surface. The individual nozzle is replaceable. The housing is sealed against the belt with adjustable rubber seals.

Each belt wash station is furnished with an external hand wheel that is mounted to a stainless steel cleansing brush located inside the spray pipe. One full turn the hand wheel shall cause the brush bristles to enter each spray nozzle, and dislodge any solid particles, which have accumulated, open a valve and allow the solid particles to be flushed into the drainage system.

11.2 NOZZLE REPLACEMENT INSTRUCTIONS:

a. Shut down belt press and de-tension belts.
b. Lock out control panel.
c. Loosen thumbscrew and remove or lower the adjustable seal panel.
d. Remove old seals and discard.
e. Press new seals onto wash box edge. Cut seal so that the edge of seal flares out from the box edge at a 45 degree angle to the belt. This flare helps reduce the over-spray.
f. Reposition or replace the adjustable seal panel and tighten screws.

11.3 DRAWINGS AND CUT SHEETS:

a. Washbox Assembly Drawing: SK000938
b. 1.0M Spray Shower Drawing: 119836
c. 1.5M Spray Shower Drawing: 119835
d. 2.0M Spray Shower Drawing: 119834
e. Spray Angle Setting Drawing: 119844
f. Spraypipe Brush Service Drawing: 119840
g. Valve Gasket Service Drawing: 119843
h. Nozzle Replacement Instructions
j. Adjustable Shower Service Instructions

11.4 SPAN PRESSURE GAUGE DATA

11.5 PRESSURE SWITCH DATA (LOW-WATER PRESSURE)

11.6 OPTIONAL EQUIPMENT DATA (When Furnished)

A. Wash Water Booster Pump
B. Motorized Water Valve
C. Rotometer
D. Strainer
E. Globe and Gate Valves
F. Misc.

ASHBROOK KLAMPRESS®

15.0 REFERENCE

15.1 TROUBLESHOOTING CHARTS

Also see Section 8.10 Process Diagnostic Chart.

HYDRAULIC SYSTEM TROUBLE SHOOTING GUIDE

PROBLEM	PROBABLE CAUSE	REMEDY
Hydraulic power unit fails to energize when control pushbutton is depressed.	1. Control panel feeder circuit in "off " or "tripped position.	1. Set breaker to "on" position.
	2. Motor starter overload protectors in tripped position	2. Depress overload reset button on motor starter.
Belt steering erratically, requiring constant automatic correction.	Improper roller alignment, valve alignment, valve sensitivity or belt defects.	Carry out check and adjustment procedures which are appropriate.

HYDRAULIC SYSTEM TROUBLE SHOOTING GUIDE

PROBLEM	PROBABLE CAUSE	REMEDY
Hydraulic unit operational but fails to build pressure.	1. Incorrect motor rotation direction.	1. Insure that rotation is correct. If not have a qualified electrician revise motor wiring at motor starter.
	2. Pressure regulator, located on hydraulic pump, is not properly adjusted.	2. Correct adjustment.
	3. Pressure regulator clogged by foreign material causing fluid bypass back to reservoir.	3. Disassemble & clean valve. Check for worn or broken parts. If particles are found in valve, drain and clean reservoir, refill as recommended in lubrication schedule.
	4. Belt steering valve bypassing fluid directly back to power unit reservoir.	4. Remove and clean belt steering valve of any foreign material. If cleaning does not improve operation, contact a qualified hydraulic repair center or contact Ashbrook Corporation.
	5. Hydraulic pump worn or damaged.	5. Have pump serviced by a qualified hydraulic repair center. Contact Ashbrook if a replacement pump or part is required.

DRIVE SYSTEM TROUBLE SHOOTING GUIDE

PROBLEM	PROBABLE CAUSE	REMEDY
Main drive fails to start and drive the belt when energized.	1. Control panel interlocks prohibit belt drive energizing until appropriate ancillary equipment is operational.	1. See sequence of operations and control diagrams for design interlocks. Energize appropriate equipment.
	2. Belt drive speed potentiometer set at zero.	2. Increase pot setting to desired speed.
	3. VFD (Variable Frequency electronic drive controller) tripping chassis mounted overload protector or feeder voltage fuses burnt out.	3. Reset overload and check fuses for continuity, renew or reset as required. Check for dried sludge or other obstructions on the belt which would put unusual starting load on belt drive.
	4. If condition #3 is found to exist.	4. Turn off control panel main breaker. Release belt tension. Remove cover from reducer. Rotate motor/reducer by hand. If movement is not possible, remove gear guard and check for missing or broken teeth on pinion or bull gears. Replace gears as required.
	5. If check out fails to show problem and incoming voltage to VFD is proper. The VFD has failed.	5. Take VFD controller to repair center for reconditioning or replacement. Contact Ashbrook for service.

Process Trouble Shooting

Problem	Probable Cause	Remedy
Sludge does not Flocculate	Polymer is not flowing	Verify polymer system is on.
		Verify polymer is flowing through plastic hoses at mixer.
	Insufficient amount of polymer	Increase polymer dosage
	Wrong polymer type	Contact Ashbrook or polymer representative
	Insufficient polymer mixing	Increase polymer mixing energy
		Increase retention time in piping
Sludge does not dewater in gravity section	Belt is blinded	Clean belts
	Poor flocculation	Increase polymer
		Increase mixing energy
	Wrong polymer type	Contact Ashbrook or polymer representative
	Loading rate too high	Decrease sludge feed rate
Capture is poor	Seals are worn on restrainers	Replace seals
	Insufficient polymer	Increase polymer dosage
Low Cake Solids	Insufficient polymer	Increase polymer dosage
	Too much polymer	Decrease polymer dosage
	Wrong polymer type	Contact Ashbrook or polymer representative
	Low belt tension	Increase hydraulic pressure on belts
	Loading rate is too high	Decrease sludge feed rate.
	Belt speed is too fast	Decrease belt speed.
Cake adheres to belt	Belt tension is too high	Decrease belt tension
	Polymer dosage is too high	Decrease polymer dosage
	Insufficient mixing	Increase mixing energy
Sludge build up in pans	Upset process	Clean pans and optimize process

Belt Wash Water System Trouble Shooting guide

Problem	Probable Cause	Remedy
Water Pump Does Not Run	Pump Motor Not Running	Verify Switch is On
		Verify Power is On
		Motor is Burned Out or Needs Repaired
Low pump pressure	By Pass Valve at Press is Open	Close Handwheel Valve at Wash Box
	Impeller is Worn	Replace Impeller
	Suction pressure too low	Correct suction pressure problem
	Pressure Switch Fault	Restart System and verify pressure is above 50 psi
		Verify pressure switch is functioning by bypassing switch and restarting system
Low Pressure at Wash Box	Line is Blocked	Check piping and remove obstruction
	By Pass Valve at Press is Open	Close Handwheel Valve at Wash Box
	Nozzle is Missing	Replace Nozzle in Wash Tube
No Water at Wash Box	Valve is Closed	Open Valves
Water bypassing shower	Valve is open	Close handwheel valve
	Seals on washtube are worn	Replace seals

Belt Tracking Trouble Shooting guide

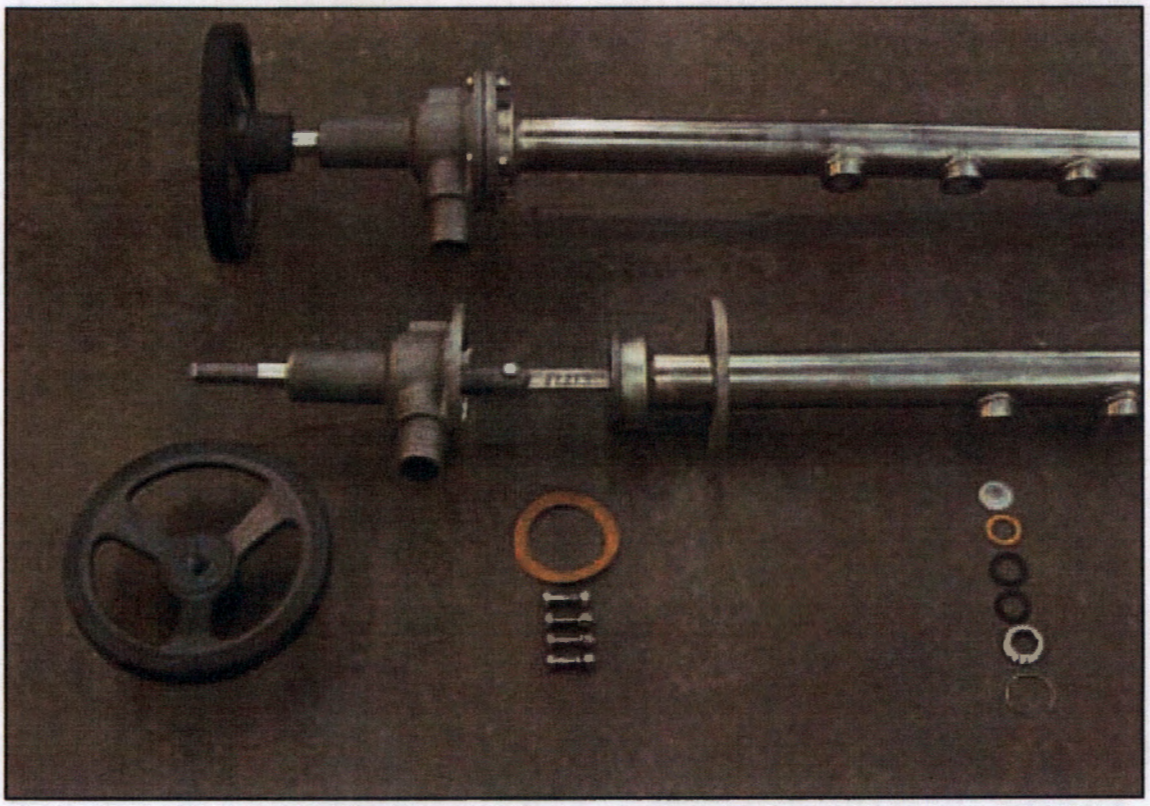
Problem	Probable Cause	Remedy
Belt Will Not Track	Poor distribution of sludge	Correct distribution on gravity section
	Wedge section opening is not even	Adjust top and bottom of wedge so that the opening is the same on both sides of the machine
	Sludge is built up on rollers	Clean rollers
	Steering Paddle not following belt	Spring on valve is worn or broken, replace spring
		Valve is sticking or frozen, repair or replace valve
		Paddle is out of adjustment, Adjust paddle.
	Belt is stretched out of square due to poor distribution	Run the machine without sludge for two hours at 700 psi pressure to correct uneven stretch. Correct distribution problem. If belts will not restretch to square, replace belts.
	Belt is cut out of square	Remove the belt from the machine. Rotate it 180 degrees and reinstall. If the belt is bad, it will go off on the opposite side. If it steers off the same side, the belt is not at fault.
	Roller has been knocked out of alignment	Check all rollers for parallel. Run a 100 foot flat tape along the belt path on both sides near the end of the roller. Each side should be the same (1/2" tolerance). If not, call Ashbrook
	Hydraulic pressure is low	Increase pressure
	Cylinder is stuck	Manually move steering paddle to see if cylinder responds. If not, repair/replace cylinder.

Klampress Trouble Shooting

Problem	Probable Cause	Remedy
Belt Press Does Not Run	Sludge Pump Not Operating	Check Sludge Pump
	Polymer System Not Operating	Check Polymer System
	Belt Drive Not Operating	See Drive System Trouble Shooting Guide
	Hydraulic Unit Not Operating	See Hydraulic System Trouble Shooting Guide
	Water Pump Not Operating	See Belt Wash Water System Trouble Shooting Guide
	Control System Problem	See Control System Trouble Shooting Guide
Belt tension slacks when sludge is applied	Hydraulic cylinder is by passing oil internally	Repair or replace cylinder
Scraper blade not cleaning belt	Blade is out of adjustment or requires replacement	Adjust or replace blades
	Build up of fibrous material, such as hair, at the knife edge of the blade	Open blade and clean
Scraper blade wears quickly	Blade tension too tight	Reduce blade tension. Optimize process for good belt release
	Belt speed too fast	Reduce belt speed
Roller sticking	Bearing is worn	Replace bearing
Bearing losing excessive grease	Bearing seals are blown	Replace seals
Machine runs in a jerky motion at roller bearings	Gear train is damaged	Inspect gear reducer and replace as required.

ADJUSTABLE ANGLE SHOWER INSTRUCTIONS FOR 1-1/2" AND 2"

The Appleton Adjustable Angle Shower provides variable spray angle and brush position. This manual includes the information necessary to service the 1-1/2" and 2" showers.



Appleton adjustable angle shower

Disconnect the water source to the shower before disassembly. High pressure water can cause personal injury.

The following procedure will ensure that the shower is safe to disassemble:

1- Turn off and lock out the pump that supplies the shower.

2- Turn off and lock out the oscillator (if present).

3- Open the shower valve to discharge any water that may be present in the shower.

SECTION 1: SETTING SPRAY ANGLE

1- The shower is assembled with the spray angle and discharge hose adapter set at 0 degrees.

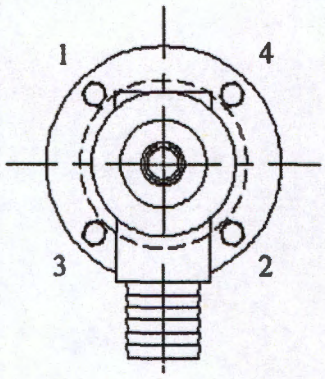
2- The spray angle can be changed by loosening four 1/4" screws (B), permitting pipe rotation. The lock ring (A) is marked in degrees to aid in determining the shower angle. The hose connection on the valve body should be oriented vertically downward to drain the valve.

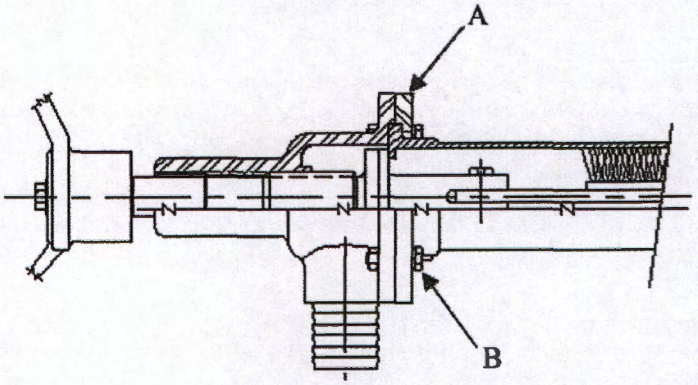
3- When the proper angle is reached, tighten the four screws (B) to lock the valve assembly in the new position. See the drawing below for the tightening pattern.

Do not apply a torsion force in excess of 78 in-lbs to the four screws (D). Excessive force will break the screws.

4- Check the location of the brush to ensure that it is not blocking the spray nozzles. If the nozzles are blocked adjust the brush position using the procedure outlined in section 2.

Bolt tightening sequence



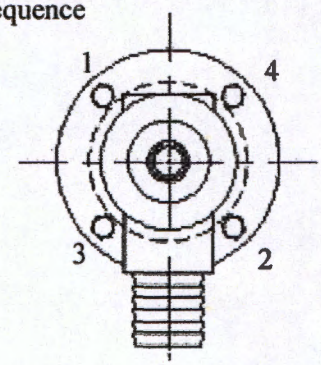


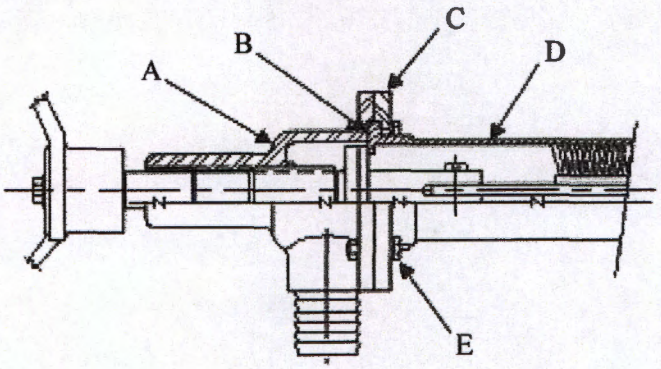
SECTION 2: SETTING BRUSH LOCATION

1- Close the valve completely.

2- Check the brush location to make sure that the brush does not interfere with nozzle discharge.

Bolt tightening sequence





Disconnect the water source to the shower before disassembly. High pressure water can cause personal injury.

3- If the brush blocks the nozzles, loosen the four screws (E) and pull the valve body (A) away from the pipe (D) providing access to the valve gaskets (B).

4- Remove a gasket (B) by tearing it in half and pulling it out of the gap, or add a gasket. Each gasket will rotate the brush about 45 degrees.

5- Re-assemble the valve by aligning the pipe pointer with the desired angle mark on the lock ring (C) and tightening the four screws (E). Tighten the screws as shown on bolt sequence above.

Do not apply a torsion force in excess of 78 in-lbs to the four screws (D). Excessive force will break the screws.

SECTION 3: INSTALLING NEW VALVE GASKET

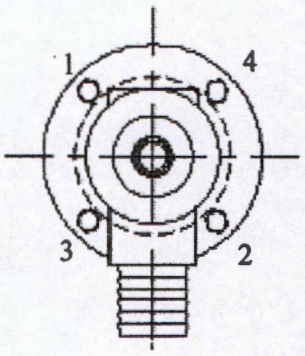
Disconnect the water source to the shower before disassembly. High pressure water can cause personal injury.

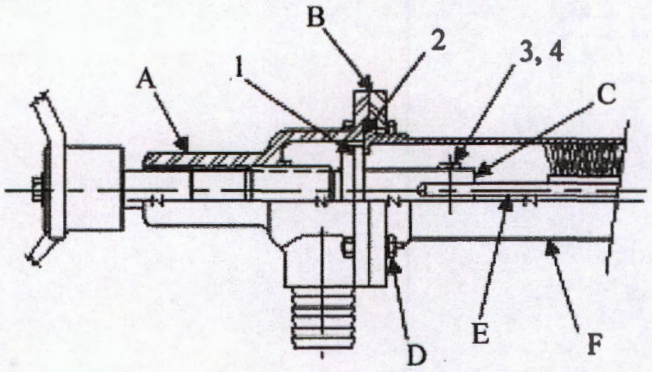
3.1. Service Parts Required

Valve repair kit 119843 includes:

Item	Part No.	Descriptio	Req'd
1	119745	Gasket, Pipe, Fibre, 1-1/2 & 2 Adj Shr	3
2	102397	Gasket, Valve, UHPE, 1-1/2 & 2 Shr	1
3	104481	Scr, Mach, Hex, HD, 316, 1/4-20 x 1-1/4	1
4	104484	Nut, Hex Jam, 316, 1/4-20	1

Bolt tightening sequence





3.2 Disassemble the Shower

3.2.1.Remove four screws (D) and pull the Valve Bonnet (A) away from the Pipe (F) and Lock Ring (B) until the Screw (3) that connects the Valve Shaft (C) to the Brush (E) is accessible.

3.2.2. Remove the Nut (3) from the Screw (4), disconnecting the Valve Shaft and Brush. The nut and screw are staked and may have to be separated by grinding. The Valve Bonnet is now detached from the Pipe.

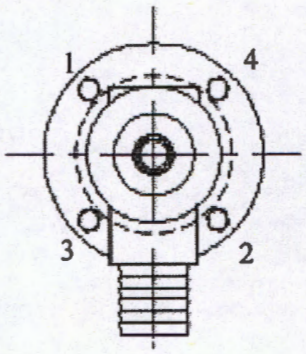
3.2.3. Remove the old valve gasket (2) by sliding it off the valve shaft.

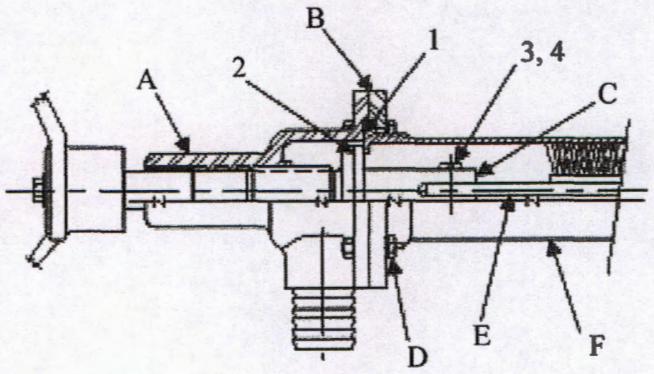
3.2.4. Remove the old pipe gasket (1) from the end of the pipe (F) and valve body (A). Take care not to scratch the cast gasket seats on the pipe weldment and valve body.

3.3. Assembly

3.3.1. Slide the new valve gasket(s) onto the valve shaft (C) until it is against the flange.

Bolt tightening sequence





3.3.2. Place three new pipe gaskets (1) into valve body recess (A).

3.3.3. Attach valve shaft (C) to brush (E) with a new screw (3) and nut (4). The nut should not be tightened more than finger tight. Stake the nut and screw in two places.

3.3.4. Lubricate the valve shaft threads (C) with an anti-seize compound.

3.3.5. Push the valve body, valve shaft and brush into the pipe weldment. Make sure the valve body contacts pipe weldment before valve gasket (2) to ensure proper seal. If the valve gasket contact first, screw the valve shaft out until the valve body contacts the pipe weldment.

3.3.6. Rotate the hose connection on the valve body to the desired angle.

3.3.7. Align the holes for the four screws (D) and install the four screws.

Do not apply a torsion force in excess of 78 in-lbs to the four screws (D). Excessive force will break the screws.

3.2.8. Close the valve completely.

3.2.9. Check the brush location to ensure that the nozzles are not blocked. Adjust per instructions 2.0 above, setting brush location.

SECTION 4: BRUSH MAINTENANCE

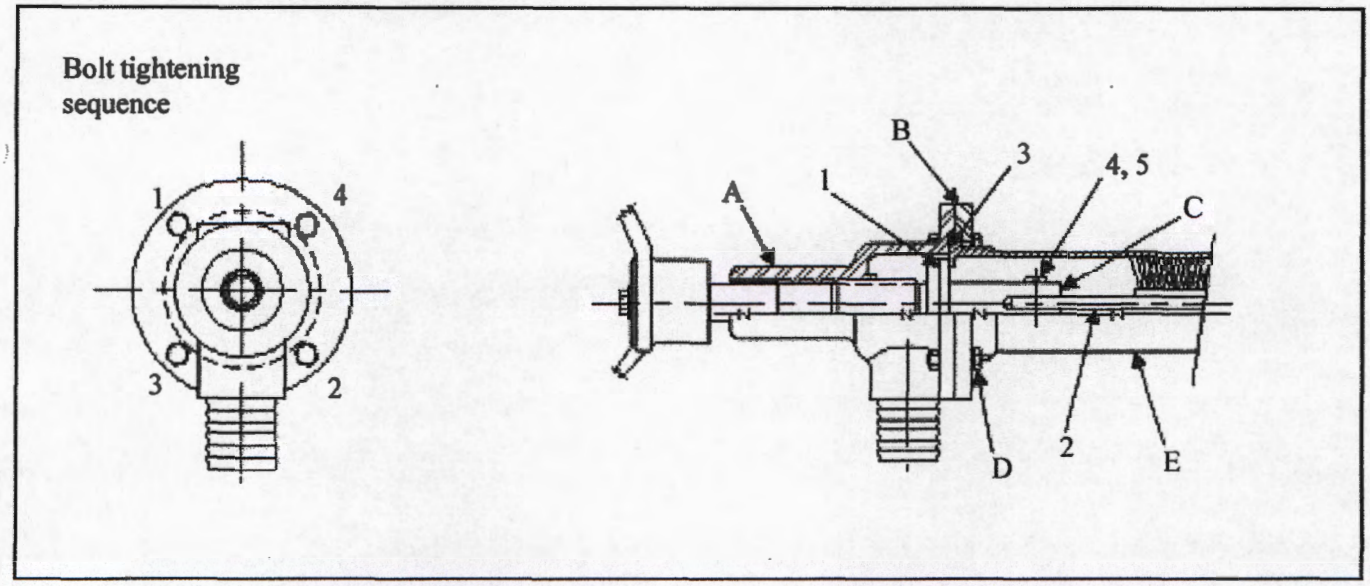
Disconnect the water source to the shower before disassembly. High pressure water can cause personal injury.

4.1. Service Parts Required

Brush replacement kit 119840 includes:

Item	Part No.	Description	Req'd
1	119745	Gasket, Pipe, Fibre, 1-1/2 & 2 Adj Shr	3
2		Ass'y, Brush, 1-1/2 & 2 Adj Shr	Ref
3	102397	Gasket, Valve, UHPE, 1-1/2 & 2 Shr	Ref
4	104481	Scr, Mach, Hex, HD, 316, 1/4-20 x 1-1/4	1
5	104484	Nut, Hex Jam, 316, 1/4-20	1

4.2. Brush Removal



4.2.1. Disassemble the shower per 3.1 above.

4.2.2. Slide the old brush out of the shower.

4.3. Installation

4.3.1. Slide the new brush into the pipe weldment (E) leaving enough bush exposed to attach the valve shaft.

4.3.2. Place three new pipe gaskets (1) into valve body recess (A).

4.3.3. Attach valve shaft (C) to brush (2) with a new screw (4) and nut (5). The nut should not be tightened more than finger tight. Stake the nut and screw in two places.

4.3.4. Lubricate the valve shaft threads (C) with an anti-seize compound.

4.3.5. Push the valve body, valve shaft and brush into the pipe weldment. Make sure the valve body contacts pipe weldment before valve gasket (3) to ensure proper seal. If the valve gasket contact first, screw the valve shaft out until the valve body contacts the pipe weldment.

4.3.6. Rotate the hose connection on the valve body to the desired angle.

4.3.7. Align the holes for the four screws (D) and install the four screws. Tighten the screws a shown on the bolt tightening sequence.

Do not apply a torsion force in excess of 78 in-lbs to the four screws (D). Excessive force will break the screws.

4.3.8. Close the valve completely.

4.3.9. Check the brush location to ensure that the nozzles are not blocked. If they are, adjust per instructions 2.0 above, setting the brush location.

5.0 Nozzles - Ring Retained

5.1. Appleton belt press showers utilize a stainless steel ring to hold the nozzle assembly in place. This section contains instructions on removing and replacing these nozzles.

5.2. Tools required:

- Soft Head Hammer
- 1-1/16" Punch (Appleton PN 105448)
- 1/8" Punch
- Tapered Collar (Appleton PN 105449)
- Small Needle Nose Pliers
- Small Awl

5.3. Nozzle Removal

Wear safety glasses while assemblying or disassembling nozzles. Metal chips or flying retaining rings could result in eye injury.

5.3.1. Use an awl or pointed tool to pry one end of the retaining ring out of the slot.

5.3.2. Grip the retaining ring with a needle nose pliers and pull the ring out with a twisting motion.

5.3.3. Remove the nozzle and itsgasket.

5.4. Nozzle Replacement

5.4.1. Clean the nozzle seat and the groove for retaining the ring.

5.4.2. Lay one nozzle gasket into the nozzle seat (ref. figure 1).

5.4.3. Place one nozzle on the gasket with the fan opening at 85 degrees to the pipe centerline (ref. figure 2). The nozzle should be placed so it protrudes into the pipe.

5.4.4. Set the tapered collar tool on the nozzle saddle with the recessed end over the saddle. (ref. figure 3).

5.4.5. Insert one retaining ring into the top of the tapered collar tool (ref. figure 4).

5.4.6. Drive the retaining ring into the recessed groove with the 1-1/16 diameter punch (ref. figure 4).

5.4.7. Remove the collar tool and seat the ring with the 1/8" diameter punch (ref. figure 5).

Fig. 1, place the gasket

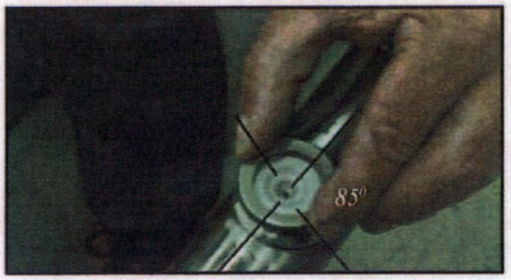


Fig. 2, place the nozzle

Fig. 3, place tapered collar

Fig. 4, drive ring in place

Fig. 5, set the retaining ring

6.0 Nozzles - Nut Retained

Paper machine showers utilize a retaining ring and a nut to hold the nozzle in place. These nozzles can be serviced as follows.

Wear safety glasses while assemblying or disassembling nozzles. Metal chips or flying retaining rings could result in eye injury.

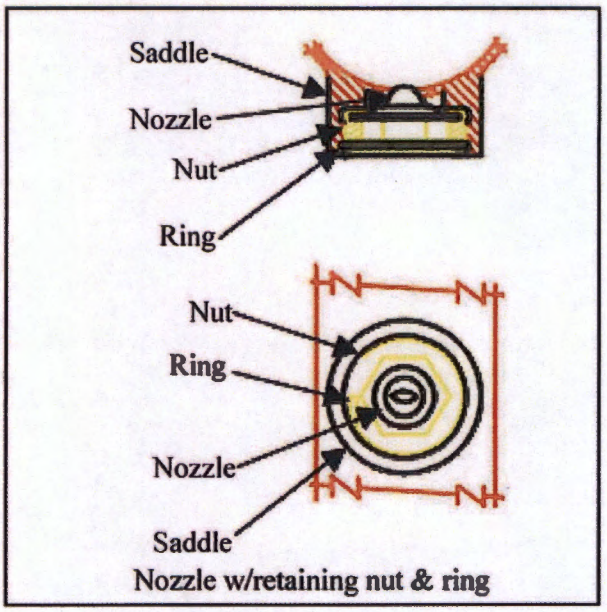
6.1. Nozzle Removal

6.1.1. Remove the retaining ring from the nozzle saddle.

6.1.2. Thread the retaining nut out of the nozzle saddle.

6.1.3. Remove the nozzle.

6.1.4. Remove the gasket taking care not to scratch the seat in the nozzle saddle.



Nozzle w/retaining nut & ring

6.2. Nozzle Replacement

6.2.1. Clean the nozzle seat, threads, and retaining slot.

6.2.2. Lay one nozzle gasket into the nozzle saddle.

6.2.3. Lay one nozzle on the gasket with the fan openning 85 degrees to the centerline of the shower pipe (ref. figure 6). The nozzle should be placed so that it protrudes into the pipe.

6.2.4. Thread the retaining nut into the saddle taking care not to rotate the nozzle.

6.2.5. Install the retaining ring.