

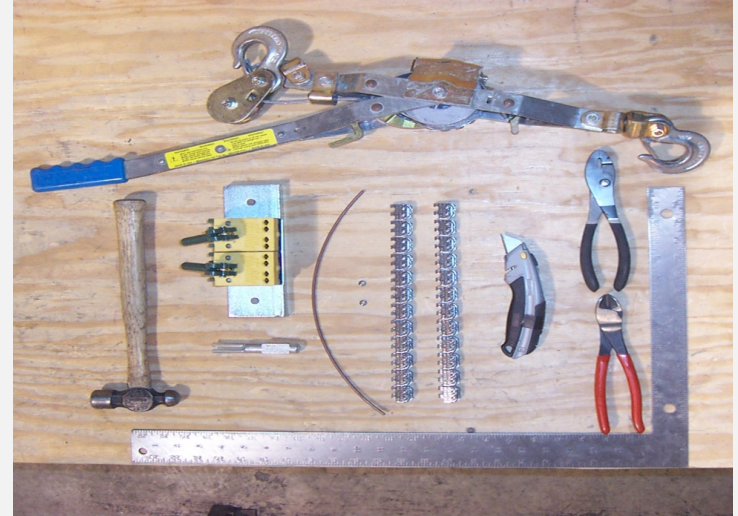
A row of KSI conveyor systems, each with a hopper and a long metal frame, is shown in a field of green crops under a cloudy sky. The conveyors are arranged in a line, receding into the distance.

Conveyor Maintenance and Troubleshooting

February 20, 2015

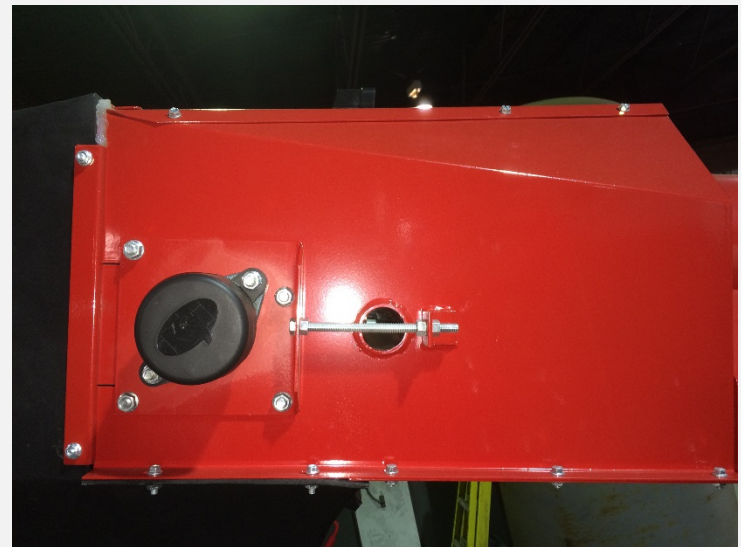
BELT MAINTENANCE + REPAIR

- **Belt Tension/Tracking – Inspect Daily when cleaning out seed/fertilizer**
 - Adjust tension of 2" cleated belt in conveyor tube to 20-23 ft-lbs torque on **idler roller adjustment bolts**. Adjust both sides evenly.
 - Adjust tension of crescent belt in hopper to 50 inch-lbs torque on **idler roller adjustment bolts** or until center of belt rises off the support underneath it. Adjust both sides evenly.
 - Check/adjust belt tracking alignment on **idler rollers**.
 - Recommended tools for belt splicing, tension and tracking adjustment.



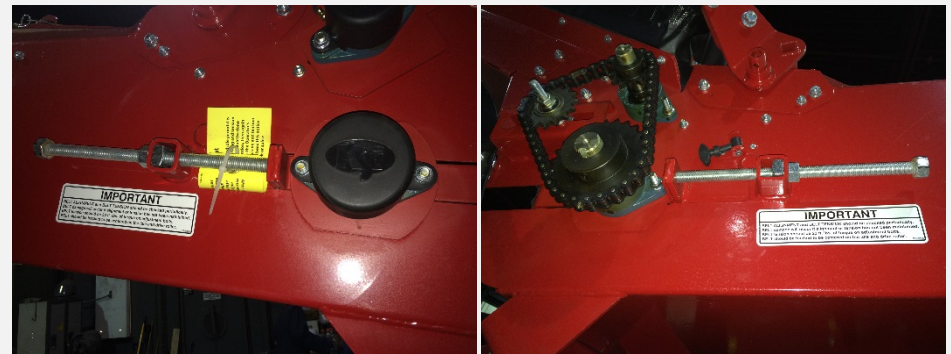
Tracking the Cleated Belt

- 1. **Rollers must be square with the housing and parallel to each other to insure proper belt tracking.**
- 2. Belt Tension must be great enough to prevent slippage. Check tension of the belts before running the conveyor. See Slide 2.
- 3. Run the conveyor. Check to see that the belt runs centered on the drive roller. Turn off the conveyor. Adjust drive roller to be square with the housing if necessary. **Normally, once the drive roller is tracked at the factory it rarely needs adjustment.**
- 4. To adjust drive roller, loosen the four nuts on the bearing holder plate, and the jam nut on the threaded adjuster. Retighten after adjusting is complete.



Tracking the Cleated Belt

- 5. Run the conveyor for two minutes.
- 6. Turn the conveyor off and open the Tail End Cleanout Door to view the idler roller. Check to see that the belt is running centered on the idler roller. **There should be approximately 1/2" gap between the housing and the belt on both sides.** Rubbing on the side of the housing can cause severe damage to the belt and/or affect filling capacity.
- 7. If adjustment is necessary, **TIGHTEN the roller on the side of the housing that the belt is closest to, or rubbing on.** Adjust bolt in 2-3 turn increments. Run the conveyor after each adjustment to see the result.



Tracking the Cleated Belt

- 8. Once the belt is centered, run the conveyor for at least two more minutes to insure the belt remains in position.
- 9. Lock adjustment bolt jam-nuts and reinstall the clean out door.
- **NOTE: Adjust the tracking on the hopper crescent belt in a similar fashion.**



Crowned Pulley/Flat Belt System Basics

- Before V-Belts were invented, machinery was powered through flat canvas belts running on crowned pulleys.
- These belts stayed centered on the pulleys without any guides or flanges.
- The key to understanding flat belt tracking on a crowned pulley is to look at how a belt moves when pulled on one edge or the other by the roller. In Fig 1, if the roller is tightened on the side of the **RED** arrow. The belt moves in the direction of the **GREEN** arrow.
- With the subtle crowning on a typical conveyor belt pulley, the self-centering of the belt happens very slowly. Make small adjustments. **If the pulleys are misaligned, it may never center itself.** Flat belt systems require much more precise alignment than V-Belts.

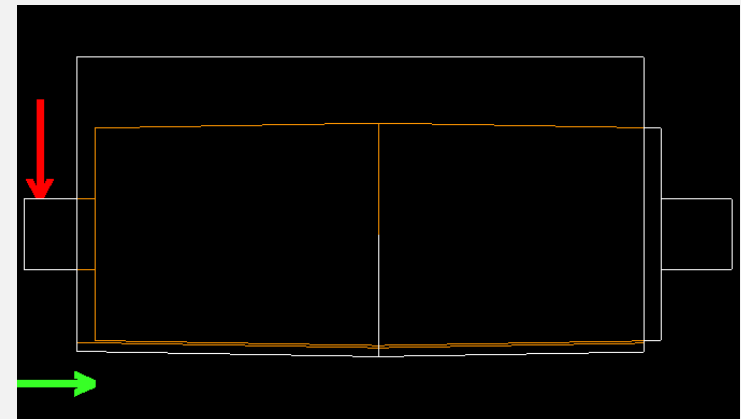
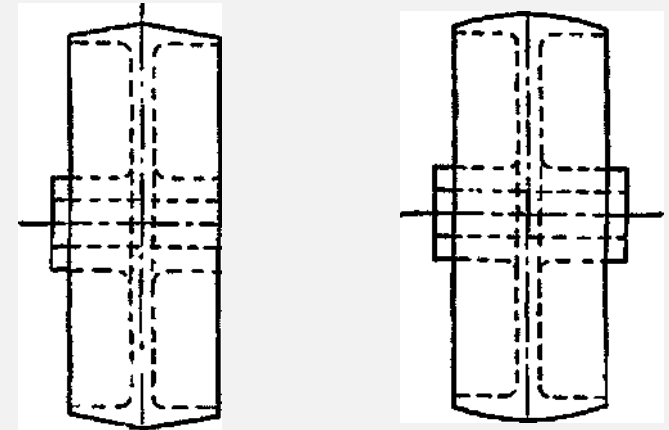


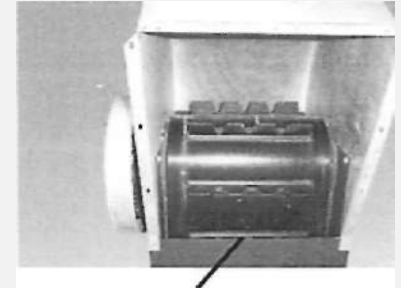
Fig 1

Cleaning/Inspecting the Conveyor – 8 hrs or daily

- **The conveyor tail areas must be inspected and cleaned out before use each day or preferably at the end of the day.** This will help prevent material residue from building up, freezing and causing belt damage and/or difficulty driving the belt.
- **The conveyor drive end should be inspected and cleaned every 40 hours or weekly for the same reasons.**



Access cover and door for hopper clean-out



Access cover for drive head cleanout



Access cover for incline conveyor cleanout

Seasonal Maintenance

- **Conveyor Belt/Tail End Care**

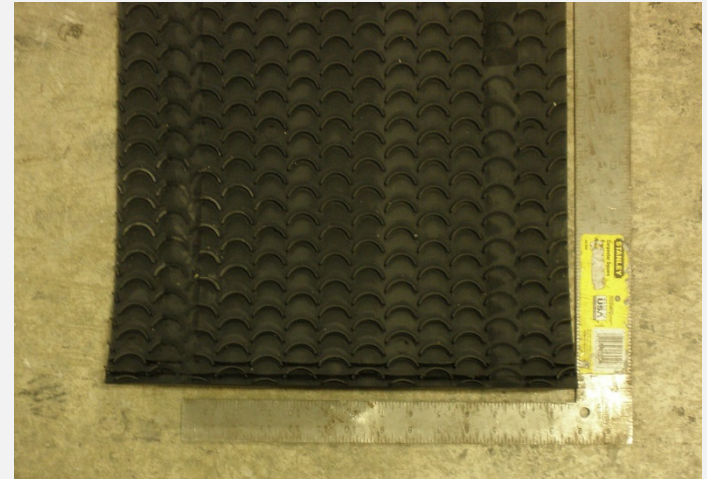
- It is **highly recommended** that both conveyor belts be washed off and the entire tail end be cleaned out at the end of the season.
- This will help prevent material residue from building up and causing rust/paint and/or belt damage.
- In order for water to drain from the lower crescent belt, position the splice on the top side by running and then stopping the conveyor when the splice appears in the hopper.
- **WHEN CLEANING, INSURE ALL HARDENED OR STUCK-ON MATERIAL IS REMOVED.**



Conveyor Belt Splicing – Belt Lacing Installation

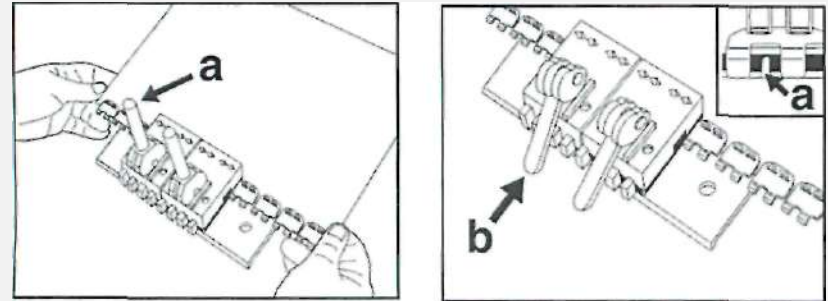
- **Crescent Belt Splicing**

- 1. Lay a framing square along a straight edge of the belt and make a cut line on the back side of the belt. Cut belt along this line using a utility knife. If the belt has uneven edges, create an average centerline, and square off this line. A clean, square cut is required for the belt to run true on the pulleys. For the crescent hopper belt shave the belt crescent pattern back 3/4" from edge using Flexco skiving tool or utility knife.
- 2. Place belt on solid surface for support, center fastener strip, and equal distance from the belt end. Staples should be facing up.



Conveyor Belt Splicing – Belt Lacing Installation

- 3. Center fastener strip in installation tool. Cam lever should be up (a). Belt end should be tight against the fastener strip. Belt stops and fastener strip should be tight against the tool. Depress cam lever (b).
- 4. Starting with the center fastener plates, strike staples with the staple driver and a 1LB hammer. **Do not overdrive staples.** Staples will be partially clinched.
- 5. Release the cam levers. Reposition the tool and repeat step 4 to drive all remaining fastener plates.



Conveyor Belt Splicing – Belt Lacing Installation

- 6. Set fastener strip on a solid flat surface. Strike top-side of fasteners and staples with firm hammer blows. Move back and forth across fastener strip until all staples are clinched.
- 7. Repeat steps 3-6 for other end of belt.



Conveyor Belt Installation

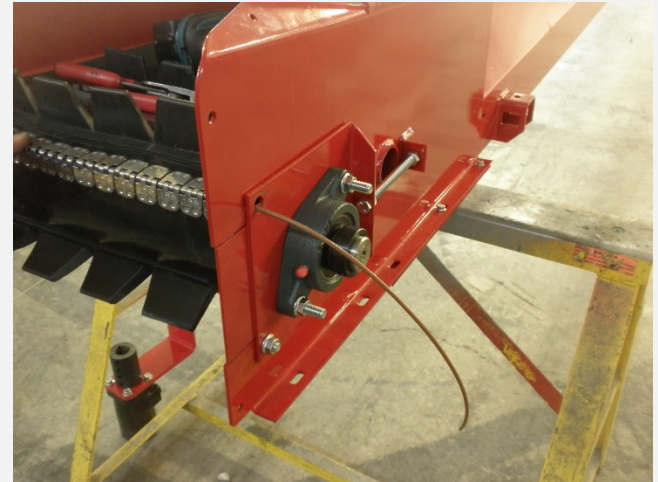
- **Installing Belt into the Conveyor**

- 1. Remove Discharge Spout, Tail End Panel and Door. Remove the old belt.
- 2. Slide a fish tape from the discharge end to the tail end of the conveyor. Pull a rope with a belt splice back through the conveyor. Fasten the conveyor belt to the rope splice as per previous instructions, and pull the belt into the top of the conveyor with the rope.
- 3. Using the fish tape, pull the bottom side of the belt through the conveyor. Make sure the belt is free of extra twists before pulling it in.
- 4. Check to see that the idler pulley is all the way forward.



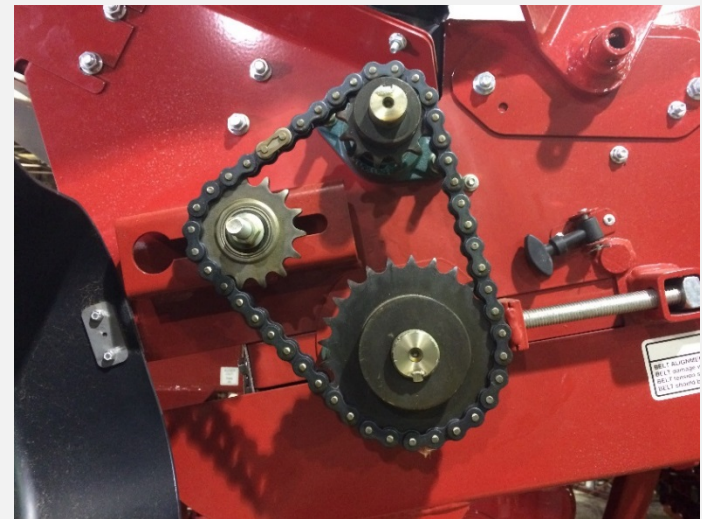
Conveyor Belt Installation

- 5. Pull the belt up tight at the discharge end and cut off the excess length so that there is 1" of overlap after the end is squared.
- Install the second belt splice as per the previous instructions.
- Join the two splices and insert the plastic coated splice cable. Crimp the pin washers on the ends of the pin using pliers. Trim leading edge of the belt corners back at 45 deg.
- Tighten the belt tensioning bolts and torque and track the belt as required.
- Re-assemble the Discharge Spout, Tail End Panel and Door.



Bearings + Chain Lubrication

- **Bearing Lubrication - 25 hour**
 - Lubricate bearings on the belt drive/idler rollers using a good quality lithium soap base E.P. grease meeting the N.L.G.I. #2 specifications and containing no more than 1% molybdenum disulfide.
- **Chain Lubrication – 40 hours or weekly**
 - Lubricate the drive chain between the cleated belt and the hopper crescent belt using SAE 30 oil or similar.



Troubleshooting

Problem	Possible Cause	Solution
1. The conveyor is vibrating	A. Damage can occur to the belting, causing a noise. Damage usually is caused from foreign material being run through the conveyor	A1. It may be necessary to remove the belting for inspection
	B. The belt is not tracking in the center of the conveyor	B1. Track the belt
2. Capacity is too low	A. There may not be enough grain reaching the conveyor	A1. Make sure the intake has not bridged over, restricting flow. The belt needs to be covered to achieve maximum capacity
	B. Conveyor belt is moving too slow	B1. Check the belt speed. Low capacity will result from speeds slower than recommended B2. Belt needs tightening

Troubleshooting

Problem	Possible Cause	Solution
3. The conveyor plugs	A. The conveyor may be “jamming” because too much grain is reaching the conveyor	A1. Lower the amount of grain the conveyor is gathering
	B. The grain may be wet	B1. If wet grain is being conveyed, reduce the amount of grain being fed into hopper
	C. The conveyor may be jammed with foreign material	C1. Remove any foreign material in the conveyor
	D. The discharge end may be plugged	D1. Unplug any plugs at the discharge end of the conveyor
	E. Pulley has spun out and burned the belt in two	E1. Cut and re-splice the belt. Additional piece of belting may be required
		E2. Tighten and re-track the belt

Troubleshooting

Problem	Possible Cause	Solution
4. Cleated belt is slipping or loose.	A. Belt tension too low	A1. Tension cleated belt to 23 ft-lbs on the adjustment bolts. Tension hopper belt to 80 in-lbs or until center of the belt rises off the support pan underneath.
	B. Belt is extremely dirty	B1. Clean traction side of belt
5. Cleated belt is rubbing side of housing or cleats are coming loose or wearing	A. Belt misaligned	A1. Align belt so its tracks center of idle and drive rollers. Tighten the side of the belt that is tracked off the roller