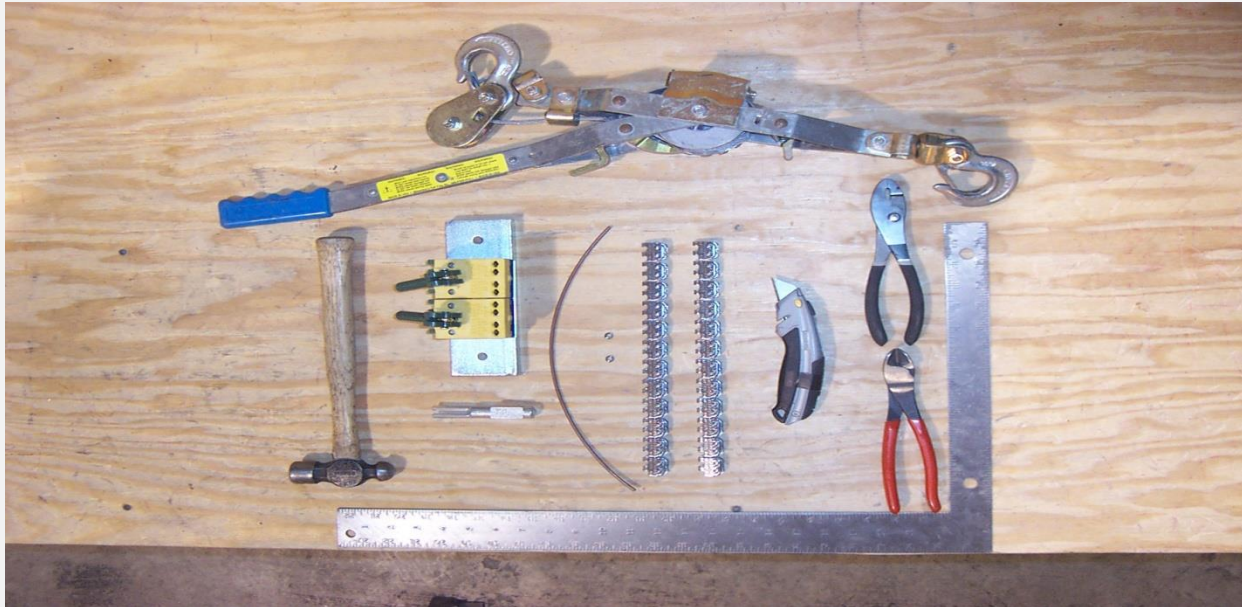


# Conveyor Maintenance and Troubleshooting

February 20, 2015

# Belt Maintenance and Repair

- **Belt Adjustment – Check daily when cleaning out seed/fertilizer**
  - Tension 2" tall cleated belt in conveyor tube to 20-23 ft-lbs torque on adjustment bolts
  - Tension crescent belt in hopper to 80 inch-lbs torque on adjustment bolts or until center of belt rises off the support underneath it.
  - Check belts alignment for proper tracking on tail rollers



# Belt Maintenance and Repair

- **Conveyor Belt Care**

- It is suggested that the conveyor belt be washed off and the tail end be cleaned out at the end of the season
  - This will help prevent material residue from building up and causing rust/paint damage
- In order for water to drain from the conveyor belt, the splice must be on the top side of the circuit
  - To obtain this condition run the conveyor belt until the splice appears in the hopper
  - Turn off the conveyor immediately and the splice will now be on the top side

# Tracking the Belt

- 1. **Basic rule:** *the belt moves toward the end of the roller that it contacts first*
- 2. Rollers must be square with the housing and parallel to each other
- 3. Belt Tension must be great enough to prevent slippage. Tension before running the conveyor
- 4. Run the conveyor. Check to see that the belt runs centered on the drive roller. Turn off the machine. Adjust drive roller if necessary.
- 5. 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. Normally, once the drive roller is tracked at the factory is rarely needs adjustment





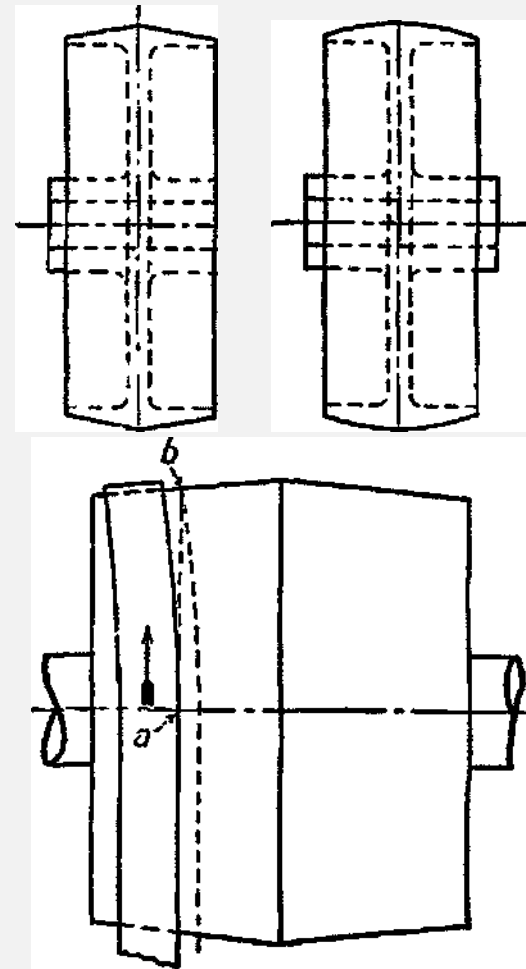
# Tracking the Belt

- 6. Run the machine for two minutes.
- 7. Open the Tail End Doors to view the idler rollers.
- 8. Run the machine. Check to see that the belts are running centered on the idler rollers. Turn the machine off.
- 9. If adjustment is necessary, adjust the tensioning bolts on the idler housing to recommended torque (reference slide 2)
- 10. Check adjustment by running the machine. Make sure belt runs centered on idler pulleys. The clearance between the belt and the housing should be the same on both sides.



# How Crowned Pulleys Keep A Flat Belt Tracking

- 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.
- With the much more subtle crowning on a typical pulley, the self-centering of the belt happens more slowly. If the pulleys are misaligned, it may never center itself. Flat belt transmissions require much more precise alignment than V-Belts



Fig

# 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

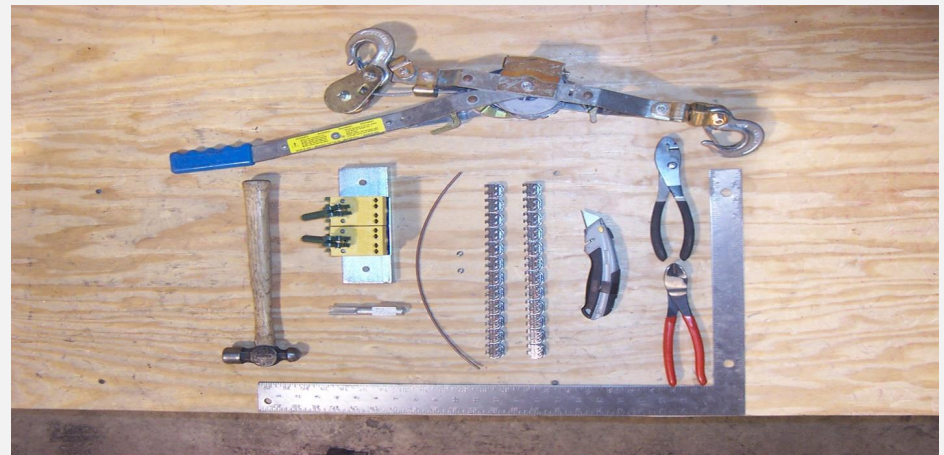
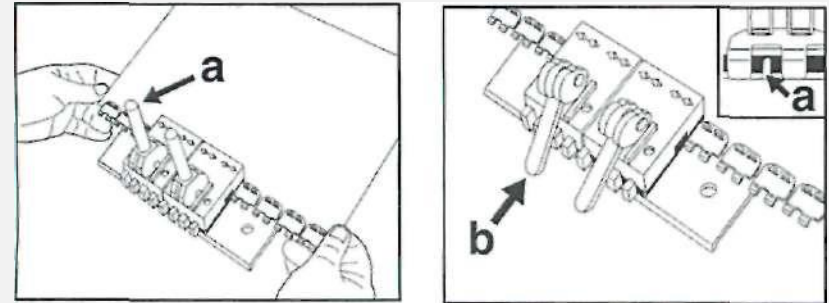
# Conveyor Belt Lacing

- **Squaring and Skiving Ends of the Belt**

- Lay a framing square along a straight edge of the belt to 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 crescent hopper belt shave the belt crescent pattern back  $\frac{3}{4}$ " from edge using Flexco skiving tool or utility knife.
- Place belt on solid surface for support, center fastener strip, and equal distance from the belt end. Staples should be facing up

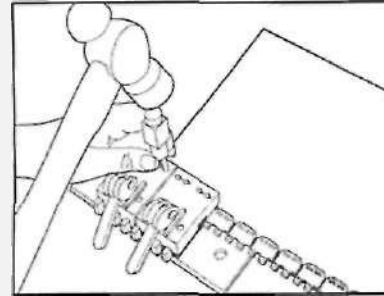
# Conveyor Belt Lacing

- Center fastener strip in installation tool
  - Cam lever should be up
- Belt end should be tight against the fastener
  - Belt stops and fastener strip should be tight against the tool
  - Depress cam lever
- Starting with the center fastener plates strike
  - Staple driver with a 1 lb hammer
    - Do not overdrive staples



# Conveyor Belt Lacing

- Drive belt ends next
  - Raise cam lever
  - Reposition tool, repeating step 5
    - Strike staple driver with a hammer
- Follow the sequence shown above to drive all remaining fasteners
  - Staples will be partially clinched
- Set fastener strip flat on a setting plate
  - Strike top-side of fasteners and staples with firm hammer blows
  - Move back and forth across fastener strip until staples clinched



# Installation of Conveyor Belt

- **Installing Belt into the Conveyor**

- Remove the Tail End Cover and Door As
- 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, and pull the belt into the top of the conveyor with the rope
- 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
- Check to see that the idler pulley is all the way forward
- 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
- Follow the procedure above for installing this second belt splice
- 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 tail end Door As and Cover

# Bearings and other Lubrication

- Bearings (25 hour)
  - Lubricate bearings on belt drive/idler rollers
- Use 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 to lubricate all fittings
- Chain Lubrication – 40 hours or weekly
  - Lubricate the drive chain at the transition between the cleated belt incline and the hopper conveyor using SAE 30 oil or similar



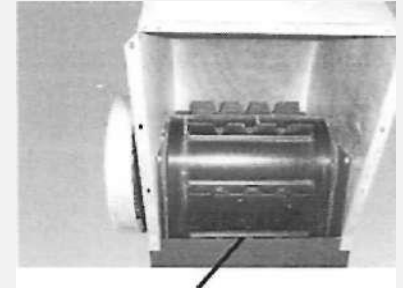


# Cleaning/Inspecting the Conveyor – 8 hrs or daily

- 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 damage to the belt and difficulty driving the belt
- The conveyor drive end should be inspected and cleaned every 40 hours or weekly for same reasons



**Access cover and door for hopper clean-out**



**Access cover for drive head cleanout**



**Access cover for incline conveyor cleanout**