Right Angle Transfer – Maintenance & Service

This section will describe service procedures for major mechanical elements of the Right Angle Transfer.

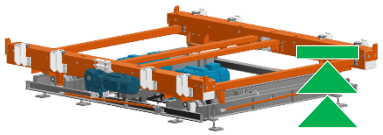
⚠ WARNING ⚠

- Only qualified and trained personnel should perform the disassembly and assembly of electrical and mechanical components.
- Before attempting any maintenance on this equipment all involved personnel should follow plant internal regulations along with any state, federal, or province regulations. Do not begin any repair procedure until the proper shutdown procedures and the appropriate power lockout procedures have been applied.

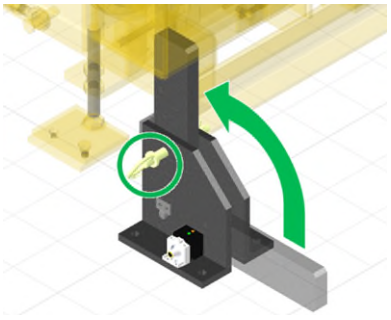
Placing the Lift into the Maintenance Position

1 Remove any payload from the eccentric lift.

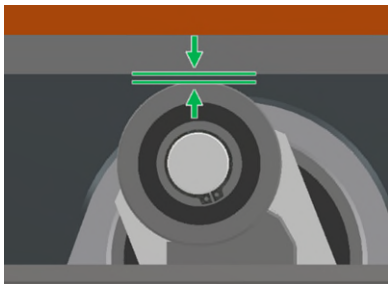
2 Move the lift to the full UP position.



3 Engage the four (4) safety locks on each corner of the assembly.



4 Slowly lower the lift onto the safety locks until the cam rollers are clear of the rail.



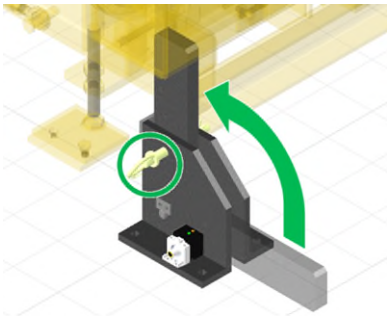
5 Cut and lock out power to the lift using your plant's safety procedures.

Eccentric Lift – How to Replace the Lift Motor

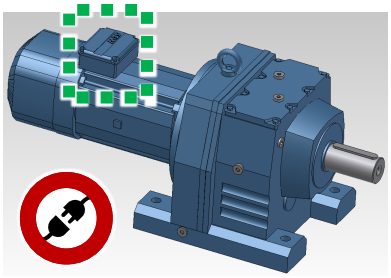
1 Place the lift into the maintenance position per the above section ***Placing the Lift into the Maintenance Position.***

Lock out power to the lift using your plant's safety procedures.

2 Verify that the four (4) safety locks on each corner of the assembly are engaged.

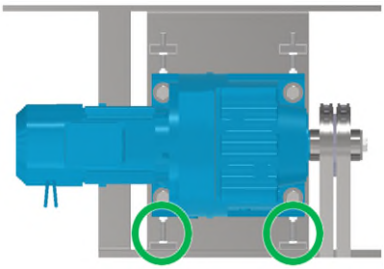


3 Disconnect the cables from the lift motor.

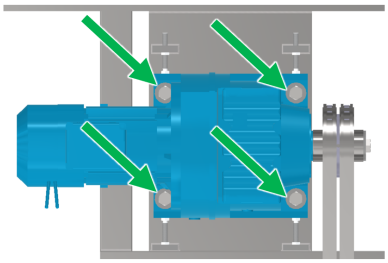


Loosen the inner jack screws on the gearmotor.

4 ***Note:*** *DO NOT make any adjustments to the outer jack screws at this time. They will be used as a reference when returning the gearmotor to its original position.*

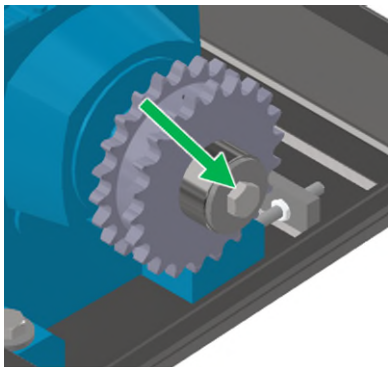


5 Loosen and remove the M24 bolts (4) securing the gearmotor to the base plate.

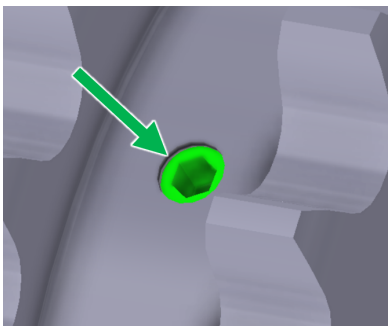


6 Locate and open the master links on the drive chains. Replace chain as necessary.

7 Loosen and remove the M20 bolt and washer from the drive shaft.

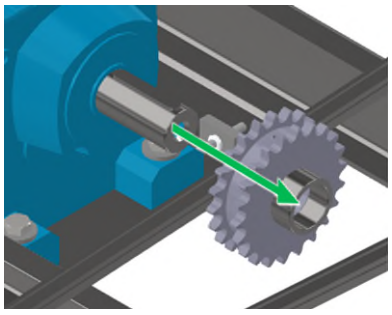


8 Loosen the M10 bolts (2) on the sprocket to release the sprocket from the shaft.



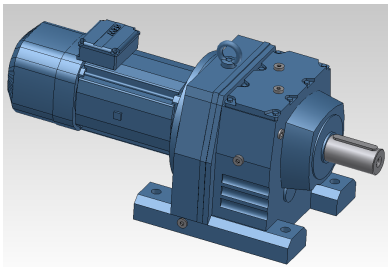
9 Pull the drive shaft assembly away from the gearmotor shaft.

***Note**: Retain the shaft key for reuse if in good condition.*

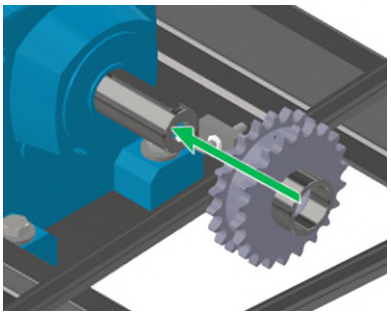


10 Inspect the drive sprocket and chains for wear and damage. Replace as necessary.

11 Remove the original gearmotor and replace with the new one. JIB CRANE

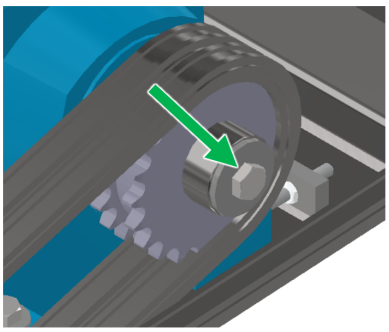


12 Re-install drive shaft assembly and tighten down the sprocket with the M10 bolts (2).

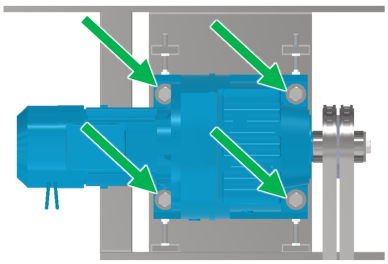


13 Re-install washer and M20 bolt to secure drive shaft assembly.

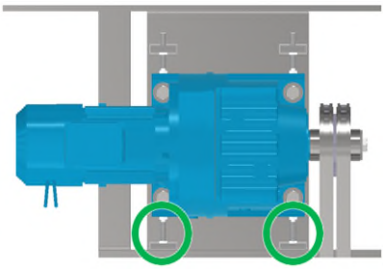
Re-install chain with the master link.



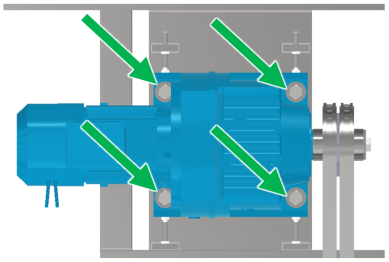
14 Hand-tighten the M24 bolts (4) at the gearmotor base.



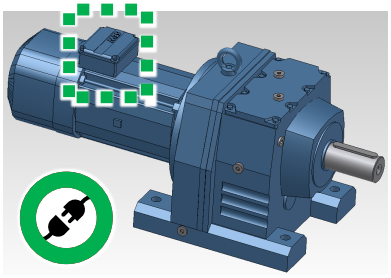
15 Tighten the inner jack screws evenly keeping the lift pulleys parallel with the jack shaft pulley until the drive chains are properly tensioned. If necessary, adjust the outer jack screws.



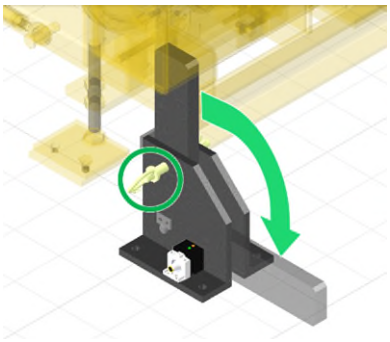
16 Torque the M24 bolts (4) securing the gearmotor to the base plate.



17 Reconnect the cables to the lift motor.



18 Restore power to the system and lift the table off the safety locks. Return the safety locks to their DOWN position.



19 Cycle the lift table and observe that the chains are tracking straight and that the table is even all around. Correct if necessary.

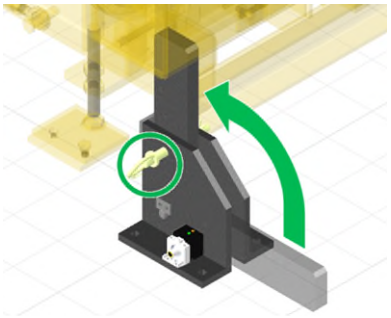
20 Remove all tools and equipment from the area and return the conveyor to service.

Eccentric Lift – How to Replace the Drive Sprocket

1 Place the lift into the maintenance position per the above section ***Placing the Lift into the Maintenance Position.***

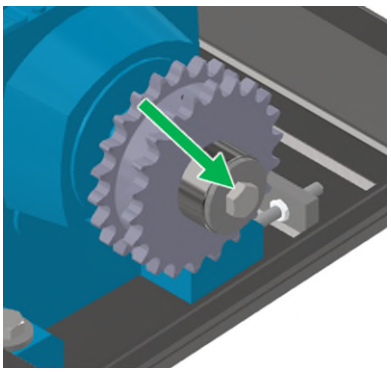
Lock out power to the lift using your plant's safety procedures.

2 Verify that the four (4) safety locks on each corner of the assembly are engaged.

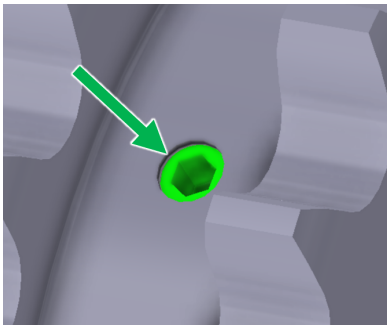


3 Locate and open the master links on the drive chains. Replace chain as necessary.

4 Loosen and remove the M20 bolt and washer from the drive shaft.

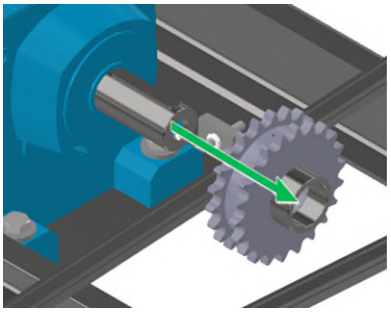


5 Loosen the M10 bolts (2) on the sprocket to release the sprocket from the shaft.

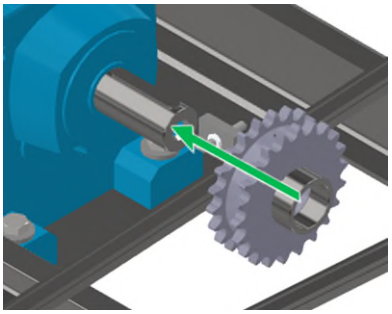


6 Pull the drive shaft assembly away from the gearmotor shaft.

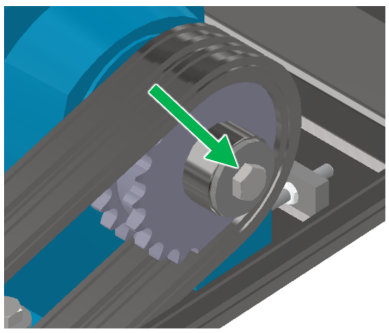
***Note**: Retain the shaft key for reuse if in good condition.*



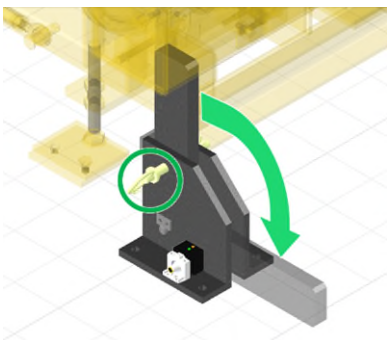
7 Re-install drive shaft with new sprocket and secure with the M10 bolts (2)



8 Re-install washer and M20 bolt to secure drive shaft assembly. Re-install chains with master links.



9 Restore power to the system and lift the table off the safety locks. Return the safety locks to their DOWN position.



10 Cycle the lift table and observe that the chains are tracking straight and that the table is even all around. Correct if necessary.

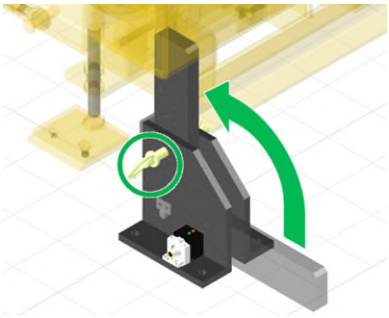
11 Remove all tools and equipment from the area and return the conveyor to service.

Eccentric Lift – How to Replace a Jack Shaft Sprocket

1 Place the lift into the maintenance position per the above section ***Placing the Lift into the Maintenance Position.***

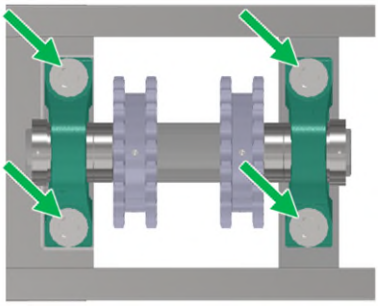
Lock out power to the lift using your plant's safety procedures.

2 Verify that the four (4) safety locks on each corner of the assembly are engaged.



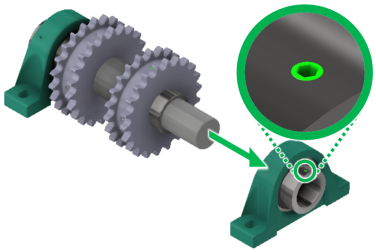
3 Locate and open the master links on the chains used by the jack shaft. Replace chain as necessary.

4 Loosen and remove the M16 bolts (4) and washers from the pillow blocks.

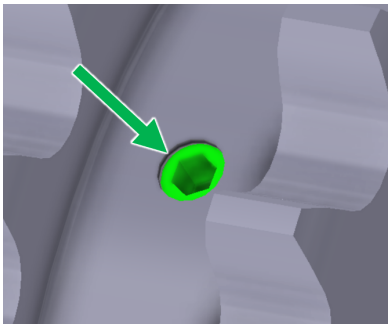


5 ***Note:*** The following steps (5-9) show the process of replacing only one sprocket. Repeat the steps as necessary on the second sprocket if replacing both.

6 Loosen the lock bolt on the target pillow block to free pillow block from shaft.

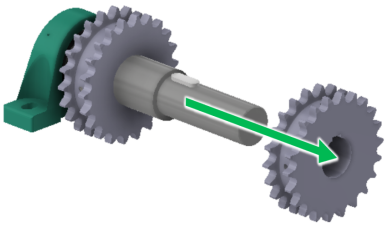


7 Loosen the M10 bolts (2) on target sprocket to release the sprocket from the shaft.

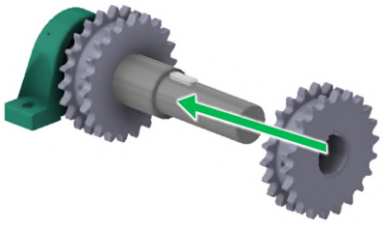


8 Remove the old sprocket and spacers away from the jack shaft.

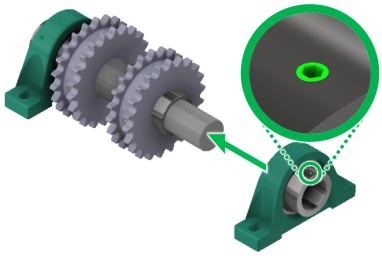
Note*: Retain the shaft key for reuse if in good condition.*



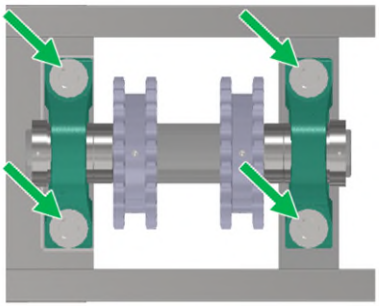
9 Re-install the spacers with the new sprocket and secure with the M10 bolts.



10 Re-install the pillow block and tighten down the lock bolt.

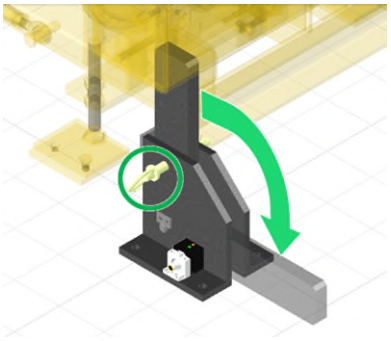


11 Re-install the M16 bolts (4) and washers onto the pillow blocks.



12 Reinstall the chains using the master links.

13 Restore power to the system and lift the table off the safety locks. Return the safety locks to their DOWN position.



14 Cycle the lift table and observe that the chains are tracking straight and that the table is even all around. Correct if necessary.

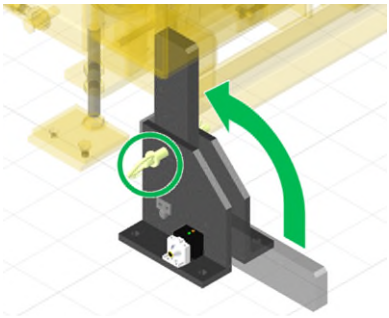
15 Remove all tools and equipment from the area and return the conveyor to service.

Eccentric Lift – How to Replace a Driven Sprocket

1 Place the lift into the maintenance position per the above section ***Placing the Lift into the Maintenance Position.***

Lock out power to the lift using your plant's safety procedures.

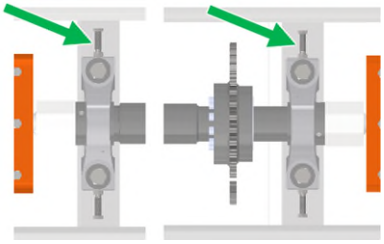
2 Verify that the four (4) safety locks on each corner of the assembly are engaged.



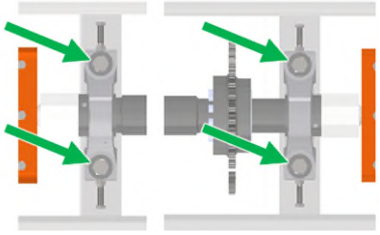
3 Locate and open the master links on the chains used by the eccentric shaft sprockets. Replace chain as necessary.

Loosen the inner jack screws for the pillow block bearings.

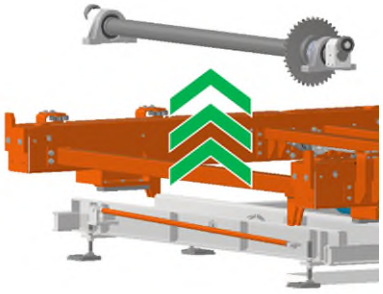
4 ***Note:*** *DO NOT make any adjustments to the outer jack screws at this time. They will be used as a reference when returning the pillow block bearings to their original positions.*



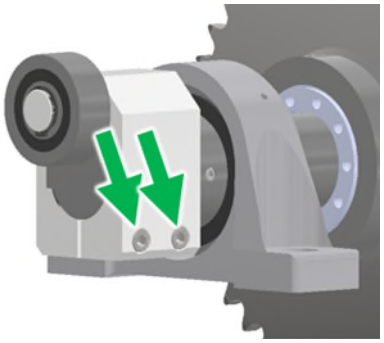
5 Loosen the bolts for both of the pillow block bearings.



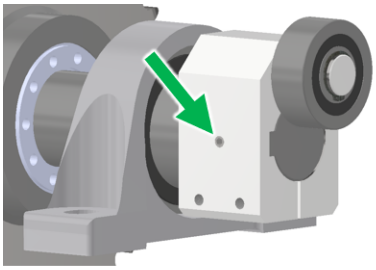
6 Carefully remove the eccentric shaft from the RAT assembly.



7 Loosen the two hex bolts on the cam roller assembly.

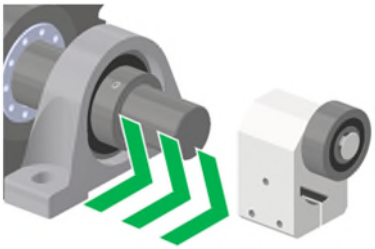


8 Loosen the set screw on the cam roller assembly.

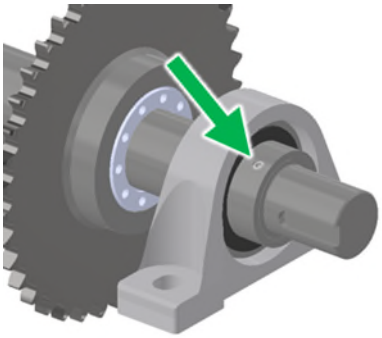


9 Remove the cam roller assembly and shaft key from the eccentric shaft.

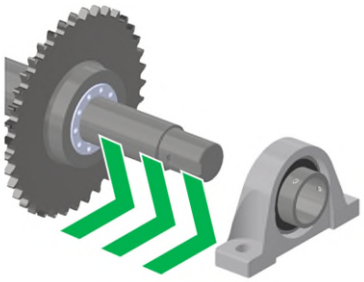
***Note**: Retain the shaft key for reuse if in good condition.*



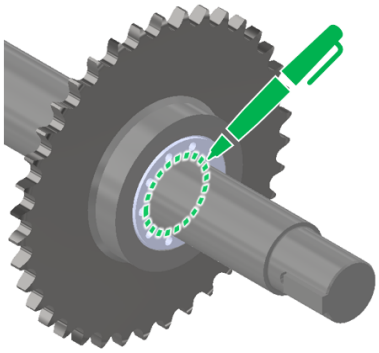
10 Loosen the set screw on the pillow block.



11 Remove the pillow block from the eccentric shaft.

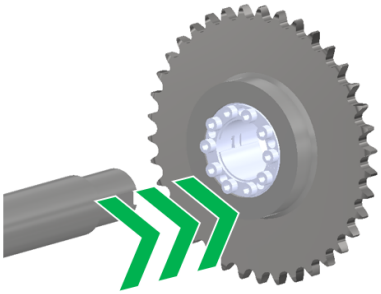


12 Before moving the old sprocket, mark its location on the shaft for reference.



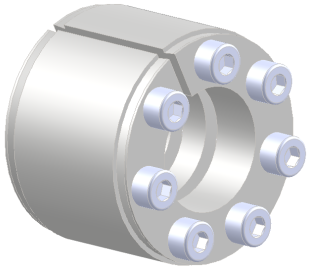
13 Loosen the screws in the clamping set that is inside the sprocket.

14 Remove the sprocket from the shaft.

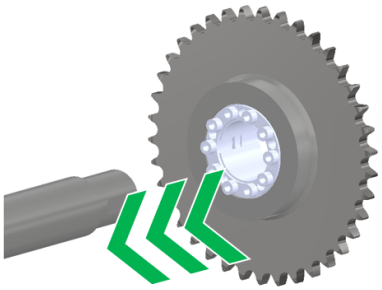


15 Remove the clamping set and inspect for damage.

Replace if necessary.



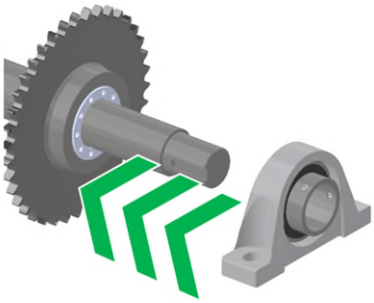
16 Insert the clamping set into the new sprocket, replace sprocket on shaft using the reference mark made in Step 11.



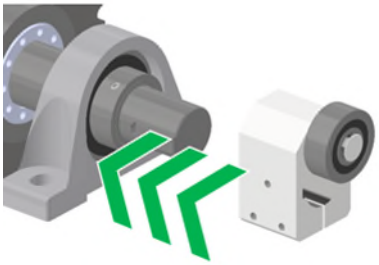
17 Tighten the screws in the clamping set using a crossing pattern to **83N.**

18 Place the pillow block back onto the shaft.

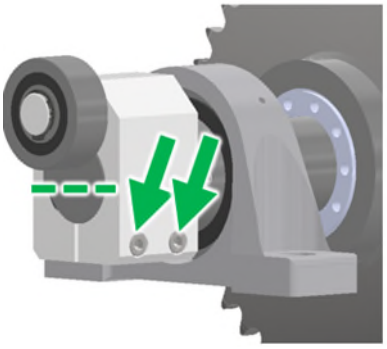
DO NOT tighten the set screw down yet.



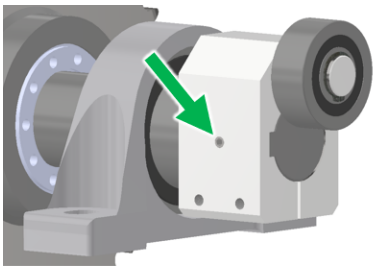
19 Place the cam roller assembly and shaft key back onto the shaft



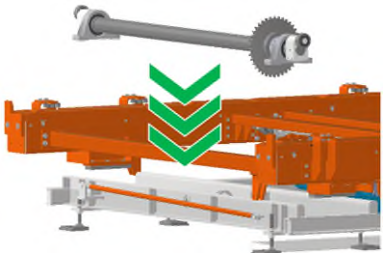
20 Alight the cam shaft assembly so that the housing sits flush to the end of the shaft. Tighten down the two hex bolts to secure it to the shaft.



21 Tighten the set screw on the cam roller assembly.

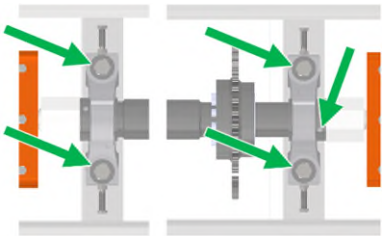


22 Carefully place the eccentric shaft back into the RAT assembly.

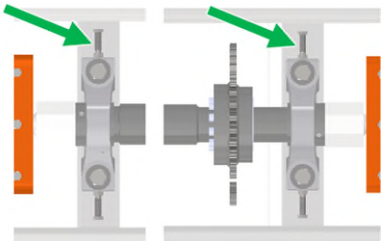


Realign the pillow block bearings to their original position.

23 Tighten down the bolts to the frame and the pillow block set screw to the shaft.

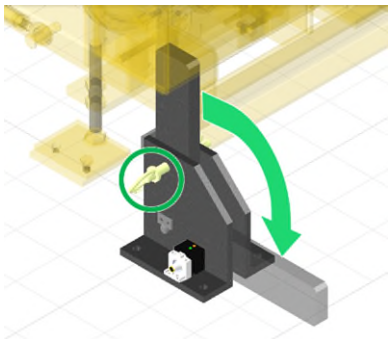


24 Tighten the inner jack screws for the pillow block bearings.



25 Reinstall the chains around the eccentric and jack shafts using the master links.

26 Restore power to the system and lift the table off the safety locks. Return the safety locks to their DOWN position.



27 Cycle the lift table and observe that the chains are tracking straight and that the table is even all around. Correct if necessary.

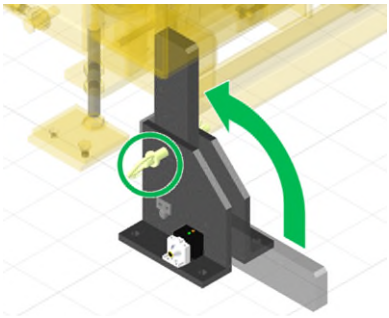
28 Remove all tools and equipment from the area and return the conveyor to service.

Eccentric Lift – How to Replace a Cam Roller

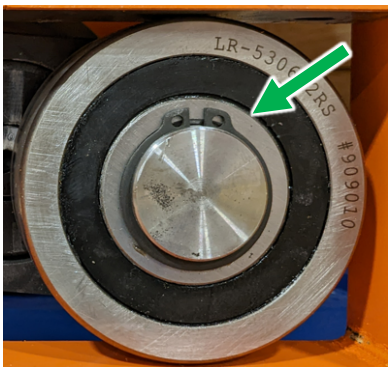
1 Place the lift into the maintenance position per the above section ***Placing the Lift into the Maintenance Position.***

Lock out power to the lift using your plant's safety procedures.

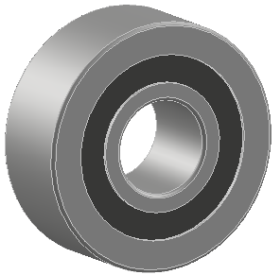
2 Verify that the four (4) safety locks on each corner of the assembly are engaged.



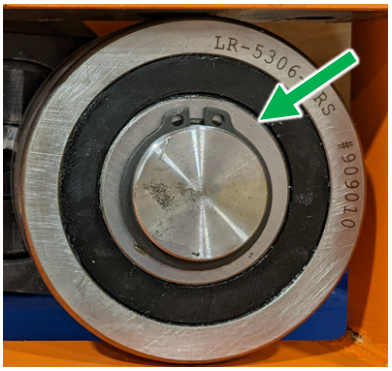
3 Remove the retainer ring from the original cam roller



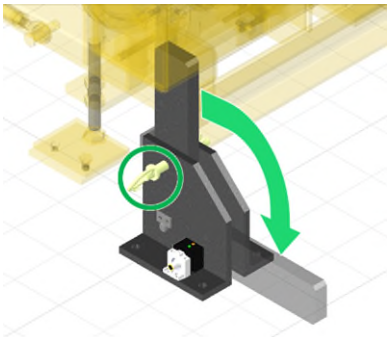
4 Remove old cam roller and replace with the new unit.



5 Install new retainer ring.



6 Restore power to the system and lift the table off the safety locks. Return the safety locks to their DOWN position.



7 Cycle the lift table and observe that the chains are tracking straight and that the table is even all around. Correct if necessary.

8 Remove all tools and equipment from the area and return the conveyor to service.

Skillet Power Roll Bed – Maintenance & Service

(Mounted on Lift Table)

This section describes the service procedures for major mechanical elements of a Skillet Power Roll Bed and apply to the PRB installed on the Right Angle Transfer..

⚠ WARNING ⚠

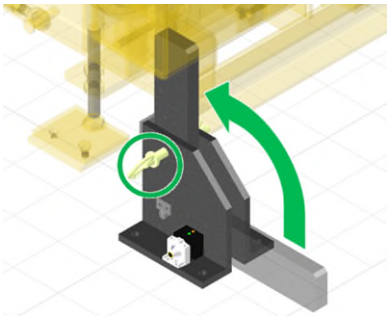
- Only qualified and trained personnel should perform the disassembly and assembly of electrical and mechanical components.
- Before attempting any maintenance on this equipment all involved personnel should follow plant internal regulations along with any state, federal, or province regulations. Do not begin any repair procedure until the proper shutdown procedures and the appropriate power lockout procedures have been applied.

How to Replace the Cardan Shaft

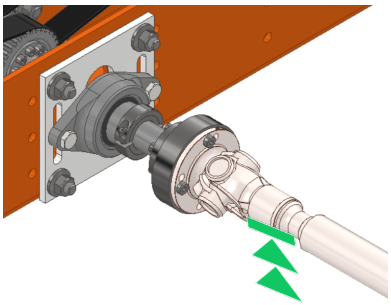
1 Place the lift into the maintenance position per the above section ***Placing the Lift into the Maintenance Position.***

Lock out power to the lift using your plant's safety procedures.

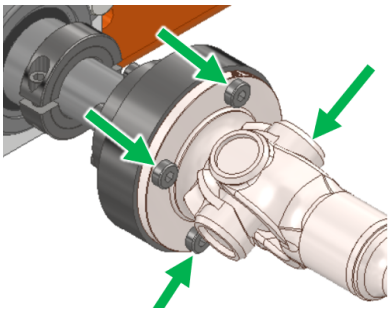
2 Verify that the four (4) safety locks on each corner of the assembly are engaged.



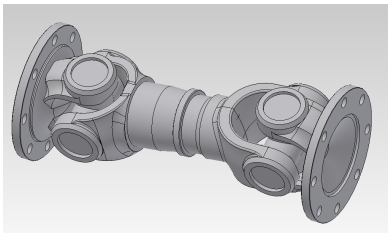
3 Support the cardan shaft.



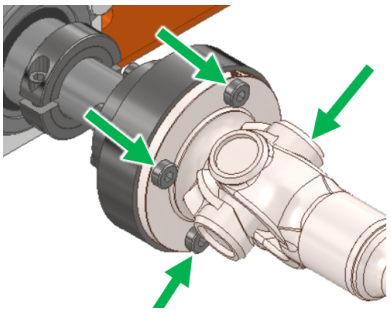
4 Remove the bolts on the companion flanges on both ends of the cardan shaft



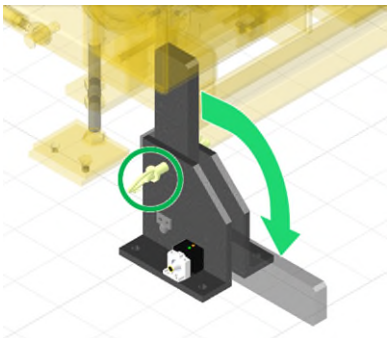
5 Replace the cardan shaft.



6 Apply Locktight before returning and tightening the M8 bolts on both companion flanges.



7 Restore power to the system and lift the table off the safety locks. Return the safety locks to their DOWN position.



8 Run the Power Roll Bed and observe for proper function. Correct if necessary.

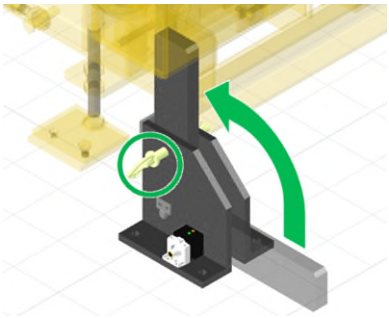
9 Remove all tools and equipment from the area and return the conveyor to service.

How to Replace the Drive Motor

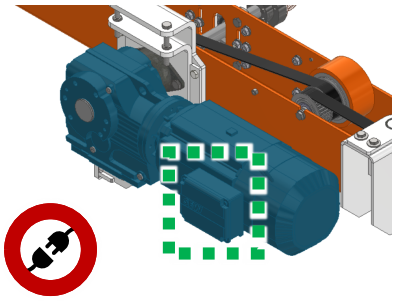
1 Place the lift into the maintenance position per the above section ***Placing the Lift into the Maintenance Position.***

Lock out power to the lift using your plant's safety procedures.

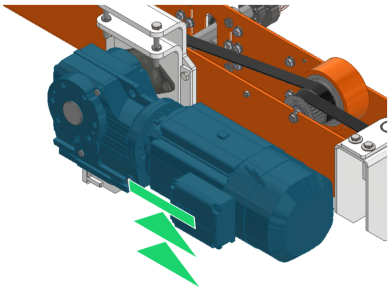
2 Verify that the four (4) safety locks on each corner of the assembly are engaged.



3 Disconnect the cables from the drive motor.

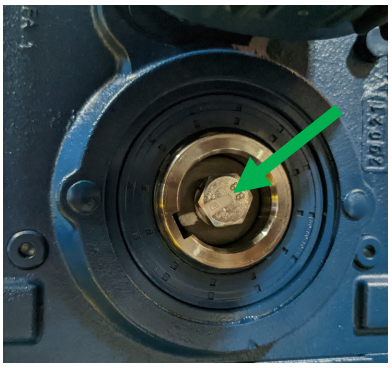


4 Support the gearmotor's weight.

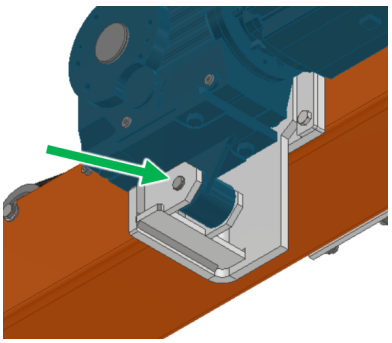


5 Remove the gearmotor's shaft cover.

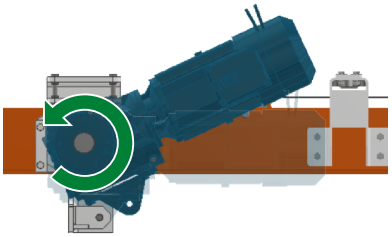
6 Loosen and remove the screw that connects the gearmotor to the drive shaft.



7 Remove the pin on the underside of the motor mount.

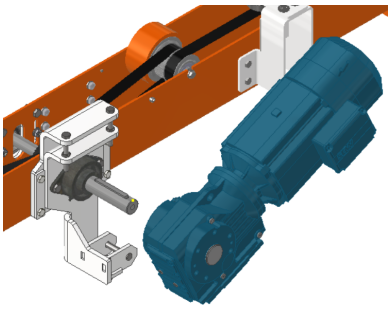


8 Rotate the gearmotor around the drive shaft until it is clear of the mounting plate.



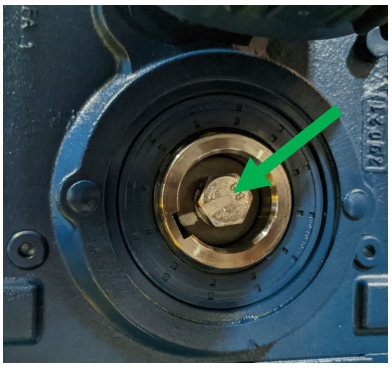
9 Remove and replace the old gearmotor with new unit.

***Note**: Retain the shaft key for reuse if in good condition.*



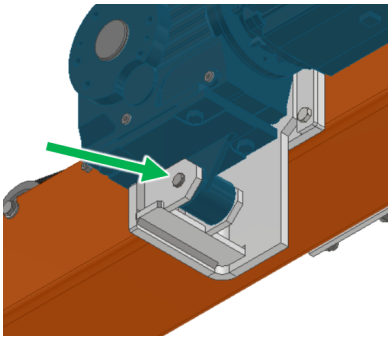
10 Rotate the gearmotor around the driveshaft until it is back into position

11 Insert and tighten the screw that connects the gearmotor to the drive shaft.

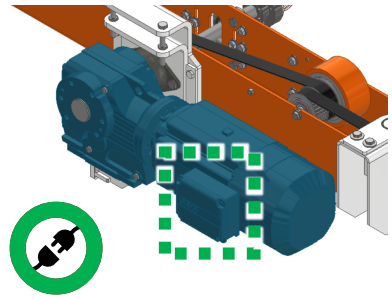


12 Replace the gearmotor's shaft cover.

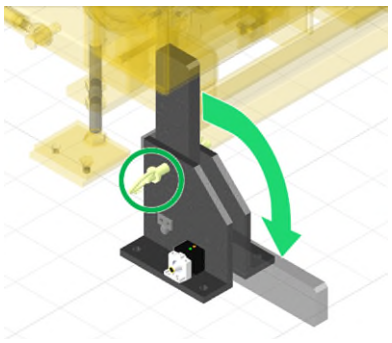
13 Replace the mount pin.



14 Reconnect the cables to the drive motor



15 Restore power to the system and lift the table off the safety locks. Return the safety locks to their DOWN position.



16 Run the Power Roll Bed and observe for proper function. Correct if necessary.

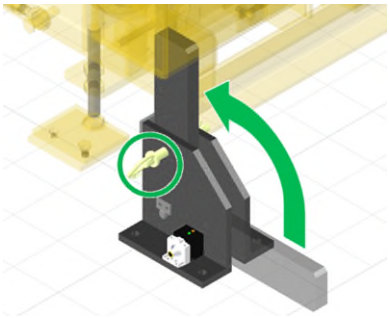
17 Remove all tools and equipment from the area and return the conveyor to service.

How to Replace a Drive Belt - Motor Side

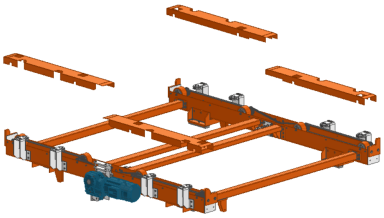
1 Place the lift into the maintenance position per the above section ***Placing the Lift into the Maintenance Position.***

Lock out power to the lift using your plant's safety procedures.

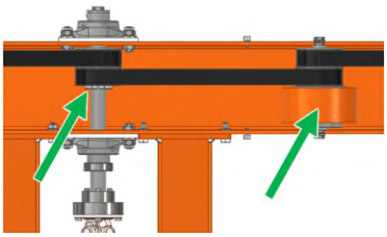
2 Verify that the four (4) safety locks on each corner of the assembly are engaged.



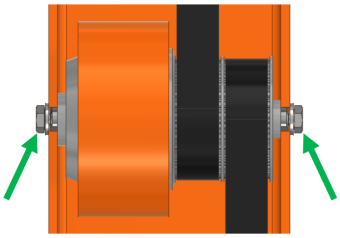
3 Remove safety covers.



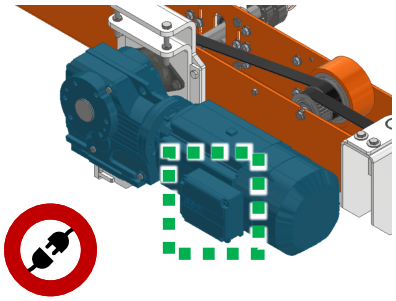
4 Both the drive shaft and the roller of the damaged belt will need to be loosened from the frame to release the belt.



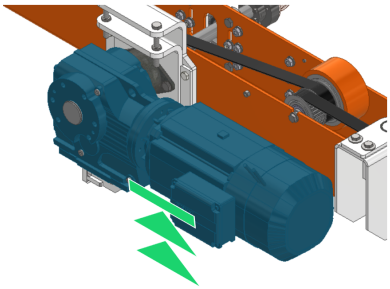
5 Loosen the bolts holding the belt-sharing roller shaft on both ends of the roller.



6 Disconnect the cables from the drive motor.

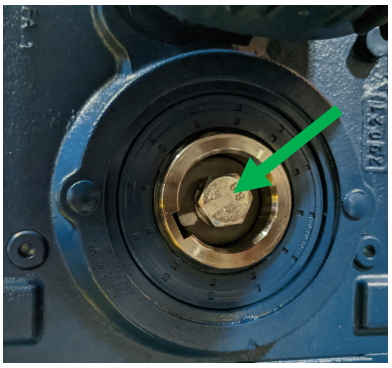


7 Support the gearmotor's weight.

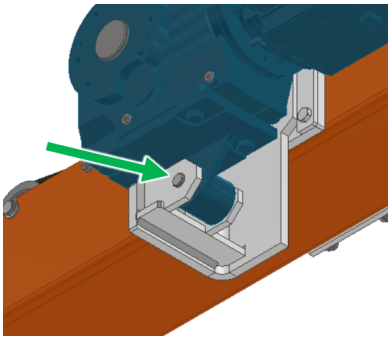


8 Remove the gearmotor's shaft cover.

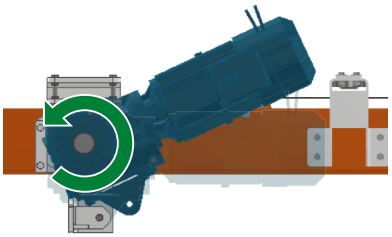
9 Loosen and remove the screw that connects the gearmotor to the drive shaft.



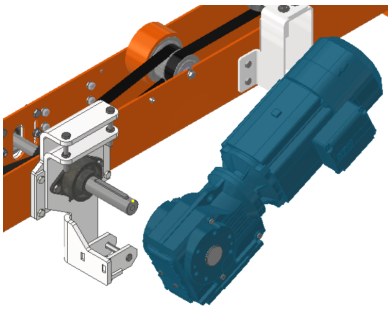
10 Remove the pin on the underside of the motor mount.



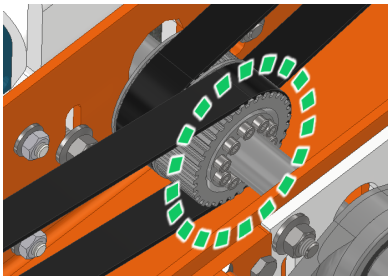
11 Rotate the gearmotor around the drive shaft until it is clear of the mounting plate.



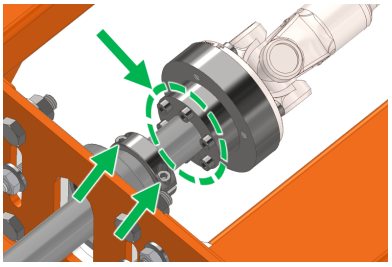
12 Remove the gearmotor from drive shaft.



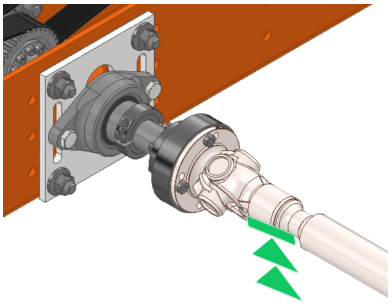
13 Loosen the coupling on the drive sprocket using a crossing pattern.



14 Loosen the hex bolts on the coupling and the shaft collar using a crossing pattern.

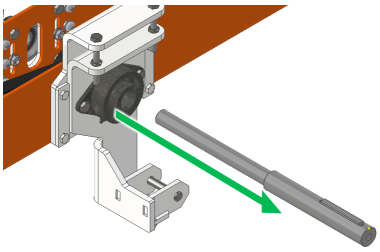


15 Support the cardan shaft.

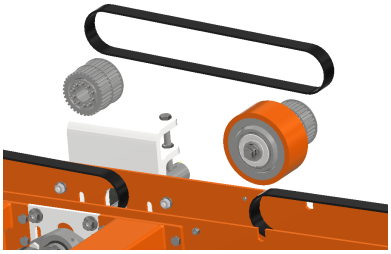


16 Slide the drive shaft out of the bearings from the outside edge.

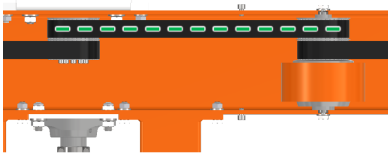
Note: Retain the shaft key for reuse if in good condition.



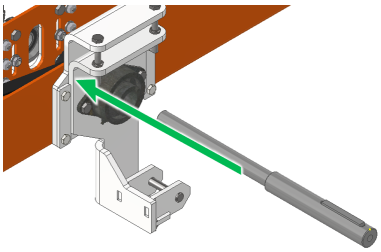
17 Remove the roller and drive sprocket from the frame and remove the belt.



18 Replace the damaged belt with the new unit. Thread the roller and drive sprocket through the toothed belt so that it is on the appropriate track.

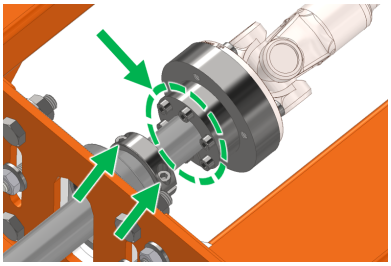


19 Re-position the drive sprocket, clamp, and coupler/cardan shaft, then re-install the drive shaft.



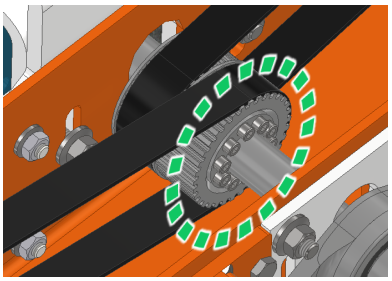
20 Tighten the bolts on the coupling and clamp.

Coupling should be torqued in stops in crossing pattern to **17 Nm.**

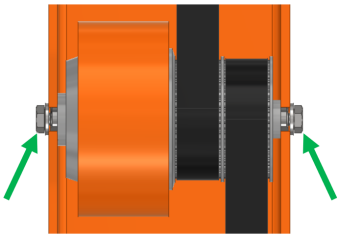


21 Tighten the coupling on the drive sprocket.

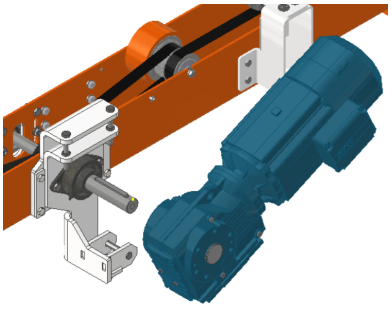
Coupling should be torqued in stops in crossing pattern to **17 Nm.**



22 Tighten the bolts holding the roller shafts on both ends of the roller.

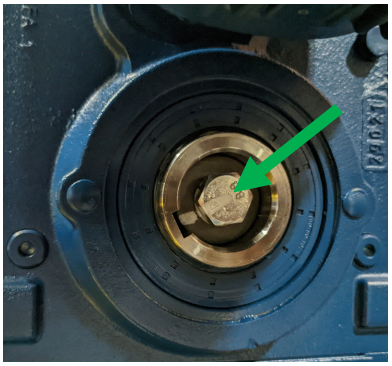


23 Place the gearmotor back onto drive shaft.



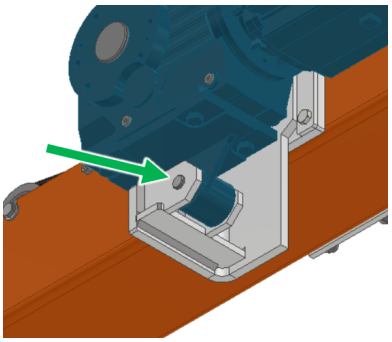
24 Rotate the gearmotor around the driveshaft until it is back into position

25 Insert and tighten the screw that connects the gearmotor to the drive shaft.

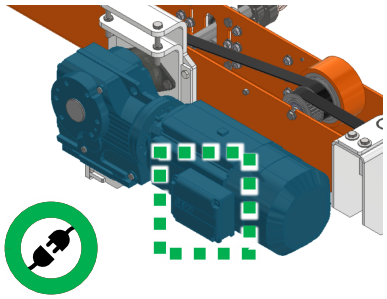


26 Replace the gearmotor's shaft cover.

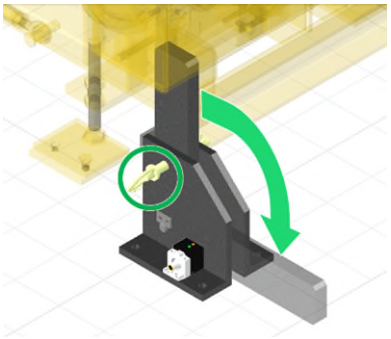
27 Replace the mount pin.



28 Reconnect the cables to the drive motor



29 Restore power to the system and lift the table off the safety locks. Return the safety locks to their DOWN position.



30 Run the Power Roll Bed and observe that the belts are tracking straight and that the table is even all around. Correct if necessary.

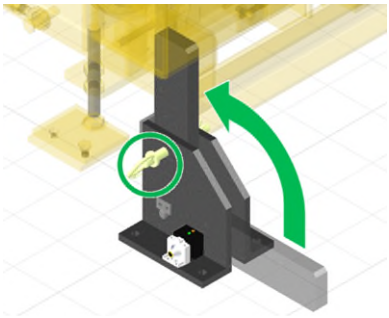
31 Lock Out the system again to return safety covers then operate as normal.

How to Replace a Drive Belt - Non-Motor Side

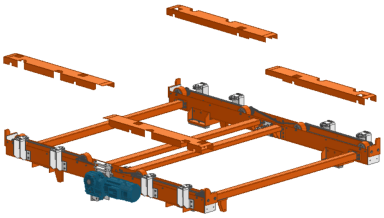
1 Place the lift into the maintenance position per the above section ***Placing the Lift into the Maintenance Position.***

Lock out power to the lift using your plant's safety procedures.

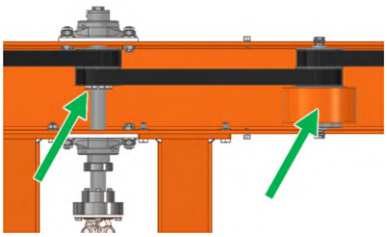
2 Verify that the four (4) safety locks on each corner of the assembly are engaged.



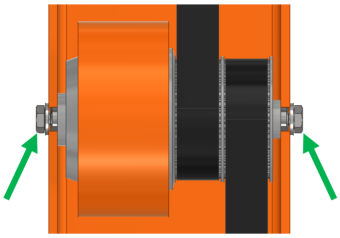
3 Remove safety covers.



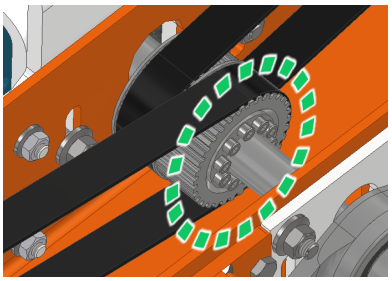
4 Both the drive shaft and the roller of the damaged belt will need to be loosened from the frame to release the belt.



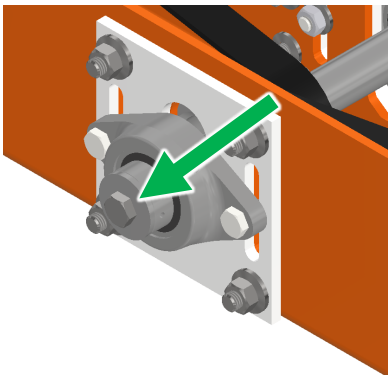
5 Loosen the bolts holding the belt-sharing roller shaft on both ends of the roller.



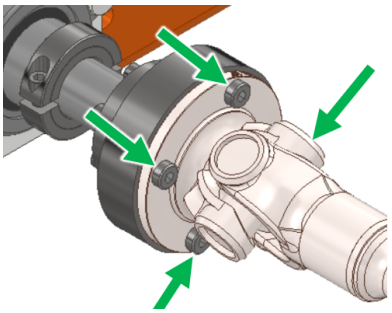
6 Loosen the coupling on the drive sprocket using a crossing pattern.



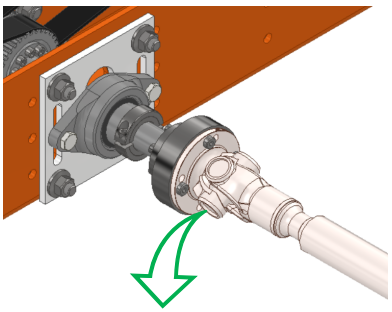
7 Remove bolt and washer from outside end of the shaft



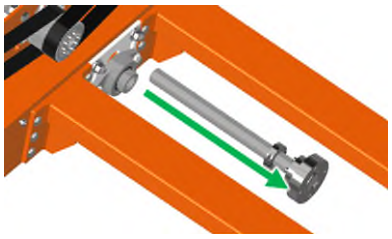
8 Remove the bolts on the companion flange on target end of the cardan shaft.



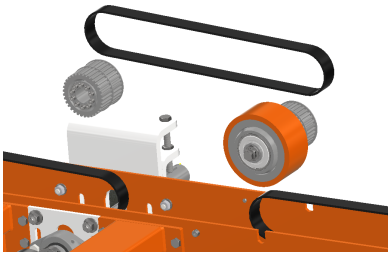
9 Swing the loose cardan shaft out of the way of the drive shaft.



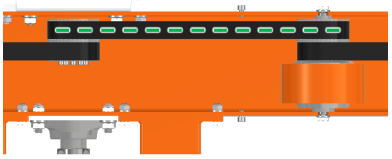
10 Slide the drive shaft assembly out of the bearings from the inside edge.



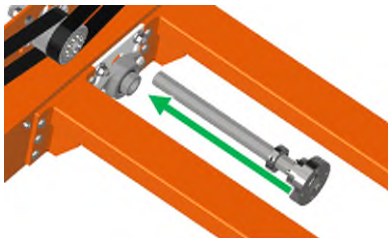
11 Remove the roller and drive sprocket from the frame and remove the belt.



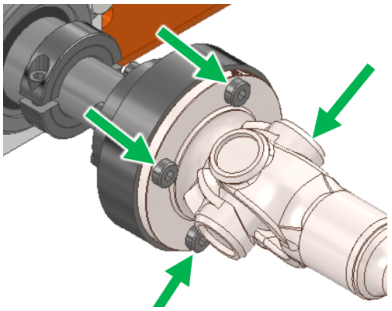
12 Replace the damaged belt with the new unit. Thread the roller and drive sprocket through the toothed belt so that it is on the appropriate track.



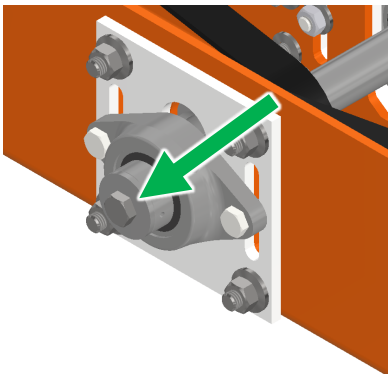
13 Re-position the drive sprocket then re-install the drive shaft.



14 Apply Locktight before returning and tightening the M8 bolts on both companion flanges.

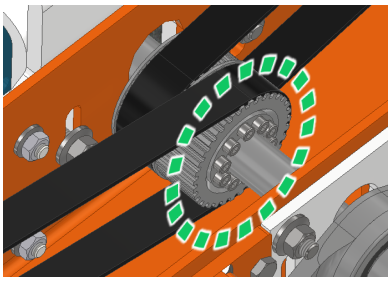


15 Re-install the bolt and washer on the outside end of the shaft.

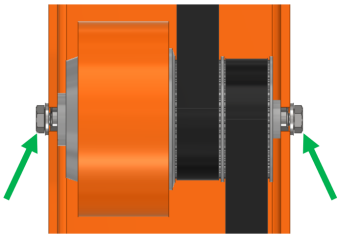


16 Tighten the coupling on the drive sprocket.

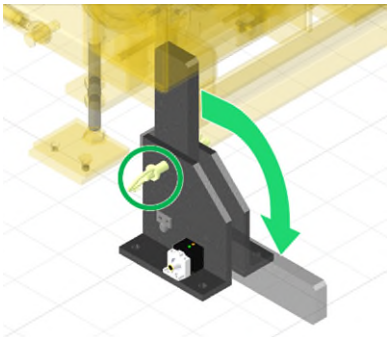
Coupling should be torqued in stops in crossing pattern to **17 Nm.**



17 Tighten the bolts holding the roller shafts on both ends of the roller.



18 Restore power to the system and lift the table off the safety locks. Return the safety locks to their DOWN position.



19 Run the Power Roll Bed and observe that the belts are tracking straight and that the table is even all around. Correct if necessary.

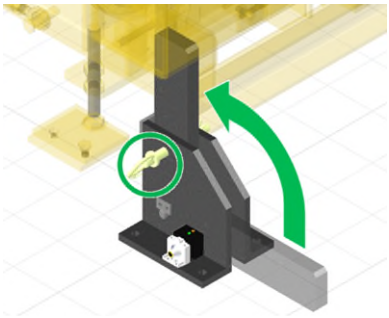
20 Lock Out the system again to return safety covers then operate as normal.

How to Replace a Driven Belt

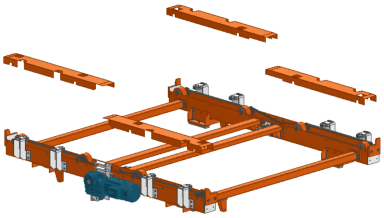
1 Place the lift into the maintenance position per the above section ***Placing the Lift into the Maintenance Position.***

Lock out power to the lift using your plant's safety procedures.

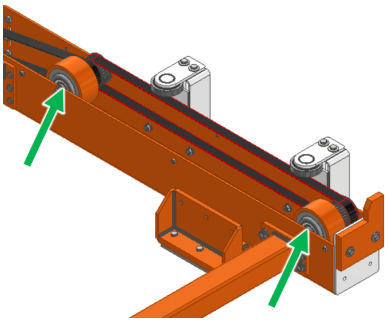
2 Verify that the four (4) safety locks on each corner of the assembly are engaged.



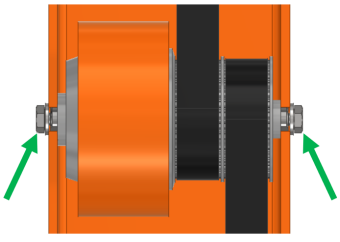
3 Remove safety covers.



4 Both belt sharing rollers of the damaged belt will need to be loosened from the frame to release the belt.

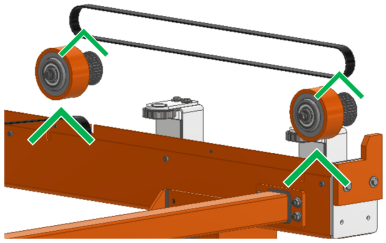


5 Loosen the bolts holding the roller shafts on both ends of the target rollers.



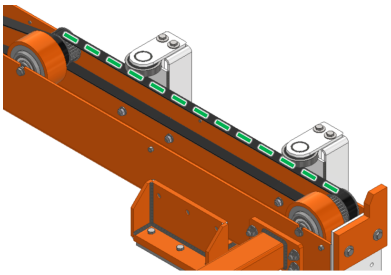
6 Remove the roller from the frame and remove the belt.

Repeat this with the belt-sharing roller.

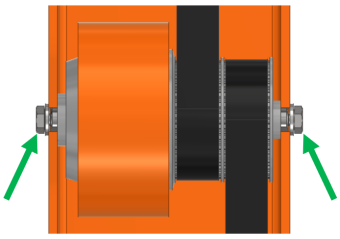


7 Replace damaged belt with the new unit.

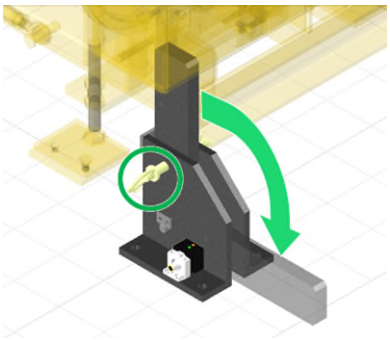
Thread each roller through the toothed belt so that they are on the appropriate pulleys and rollers.



8 Tighten the bolts holding the roller shafts on both ends of the rollers.



9 Restore power to the system and lift the table off the safety locks. Return the safety locks to their DOWN position.



10 Run the Power Roll Bed and observe that the belts are tracking straight and that the table is even all around. Correct if necessary.

11 Lock Out the system again to return safety covers then operate as normal.