MAINTENANCE TECHNICAL SUPPORT CENTER
HEADQUARTERS MAINTENANCE OPERATIONS
UNITED STATES POSTAL SERVICE

Maintenance Management Order

SUBJECT: LCUS_BA Pusher Inspection

TO: All LCUS_BA Sites

DATE: June 27, 2024
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This Maintenance Management Order (MMO) provides instructions for the inspection and alignment of sliding blade style Pushers used in the Low-Cost Universal Sorter (LCUS) built by Automated Control Technologies. These Pushers are based on a simple crank and pushrod mechanism. Two separate companies manufactured the Pushers. Skarlupka Manufacturing Incorporated (SMI) manufactures the pusher blade for external bearings. North American Conveyor Incorporated (NACI) manufactures a pusher blade for internal bearings. The LCUS was built with both types however, they were not mixed on a single machine.

The Pushers slide on wooden bearings, which must not be lubricated or waxed. The two major causes of failures with this system are misalignment and improper lubrication. This bulletin addresses both issues by having sites apply a “Do Not Lubricate” warning label to the pusher blade and providing inspection. This bulletin applies to Acronym LCUS, Class Code BA.

Parts and procedures for the LCUS are found in Maintenance Series Handbook MS-308. See Section 7 for sorter component hardware descriptions or removal and replacement procedures.

This bulletin does not require the creation of a national work order.

This bulletin takes approximately 30 minutes per pusher for inspection. Open a local work order if pusher alignment is necessary.

For questions or comments concerning this bulletin contact the MTSC HelpDesk, either online at **MTSC>HELPDESK>Create/Update Tickets** or call (800) 366-4123.

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Attachment: Pusher Inspection

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ATTACHMENT

PUSHER INSPECTION

1.0 CHECK DIMENSIONS

WARNING

Before performing the following task, power down and lock out the equipment as prescribed by the local Energy Control Procedures (ECP) developed in accordance with the current Maintenance Management Order (MMO) providing lockout/restore procedures. Failure to comply may result in personal injury or death, and/or damage to equipment.

NOTE

This document was developed from multiple sources, some of which referred to the orange Pusher Frame and Bar Assembly as the “blade”. To save space, the term “blade” is used throughout.

Table 1. Tools Necessary

Size	Description
1/4-inch	Hex Key Wrench
5/16-inch	Hex Key Wrench
3/8-inch	Hex Key Wrench
3/8-inch	Open End Wrench
1/2-inch	Open End Wrench
9/16-inch	Box End Wrench or Socket and Ratchet
9/16-inch	Open End Wrench
15/16-inch	Open End Wrench
0.015-inch	Leaf Gauge
0.025-inch	Leaf Gauge
6 ea. 0.020-inch	Gauge (APPS Special Tool - NSN: 5220-18-000-1806)

1. Inspect the yellow safety cover for the presence of a CAUTION label (Figure 1). If the label is missing or damaged, apply a new label centered near the back edge (Figure 2). Labels are available in packages of 10 (PSN 7690-19-000-2478).

Figure 1. Do Not Lubricate Slides Label

Figure 2. Caution Label Application

2. Loosen four 9/16-inch hex head bolts on the yellow cover and lift the cover from pusher (Figure 3).

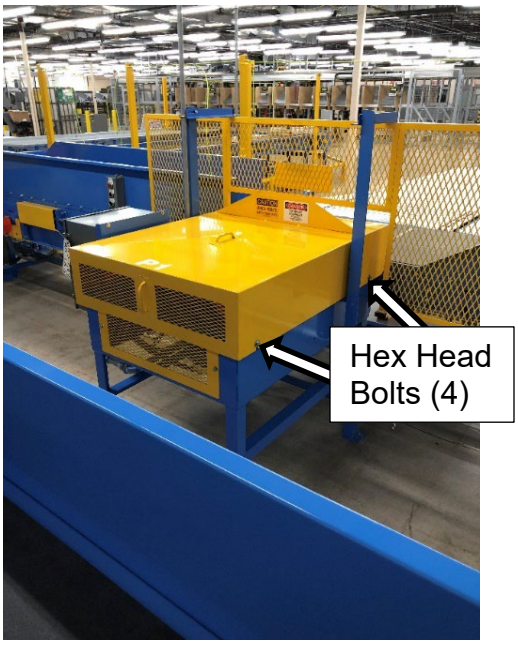

Figure 3. Yellow Safety Cover

3. Inspect the orange Pusher Blade for the presence of labels (Figure 4).
   a. If labels are missing or damaged, apply new labels.
   b. Center new labels (Figure 4) approximately one inch from the edge on each side (out of the path of the upper wheels).

Figure 4. Additional Caution Labels

4. Pushrod Wear Check.
   a. With Crank arm near the home position, attempt to move Pusher Assembly.
   b. If Pusher can be moved more than 1/16-inch, check Pushrod rod ends for wear.
   c. If Pushrod rod-ends are worn, see MS-308, Section 7.5.1.6.2, Pusher Rod Removal and Replacement for instructions.
5. Home Position Check
   a. Release the pusher motor brake.
      1) Pull the bale from the detent.
      2) Move bale to the DOWN position (Figure 5).

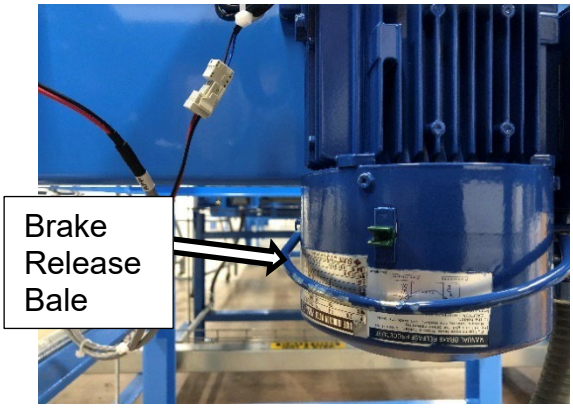

Figure 5. Brake Bale DOWN

   b. Move the Pusher Blade to the fully retracted position (Figure 6). The rod end bolt should be visible in the inspection hole on the orange blade.

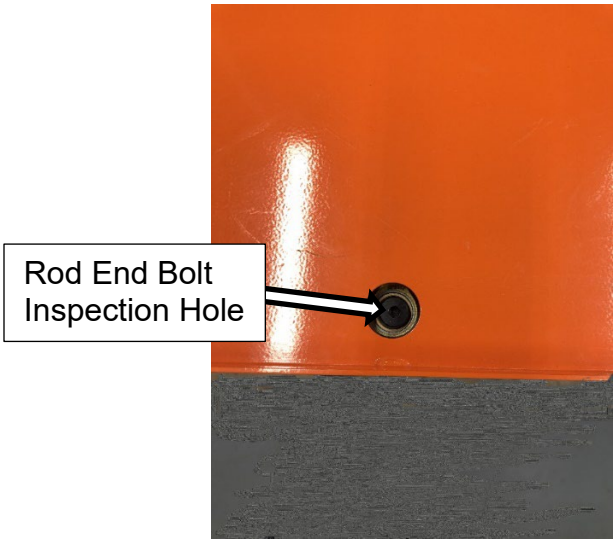

Figure 6. Fully Retracted (Rod End Visible)

c. Verify the pushrod length is adjusted correctly by sighting down the length of the pusher bar. Verify it is evenly aligned to the edge of the conveyor frame. (Figure 7). If the pusher bar is aligned to the conveyor frame (+/-1/4-inch both sides), the pusher rod length is correct.

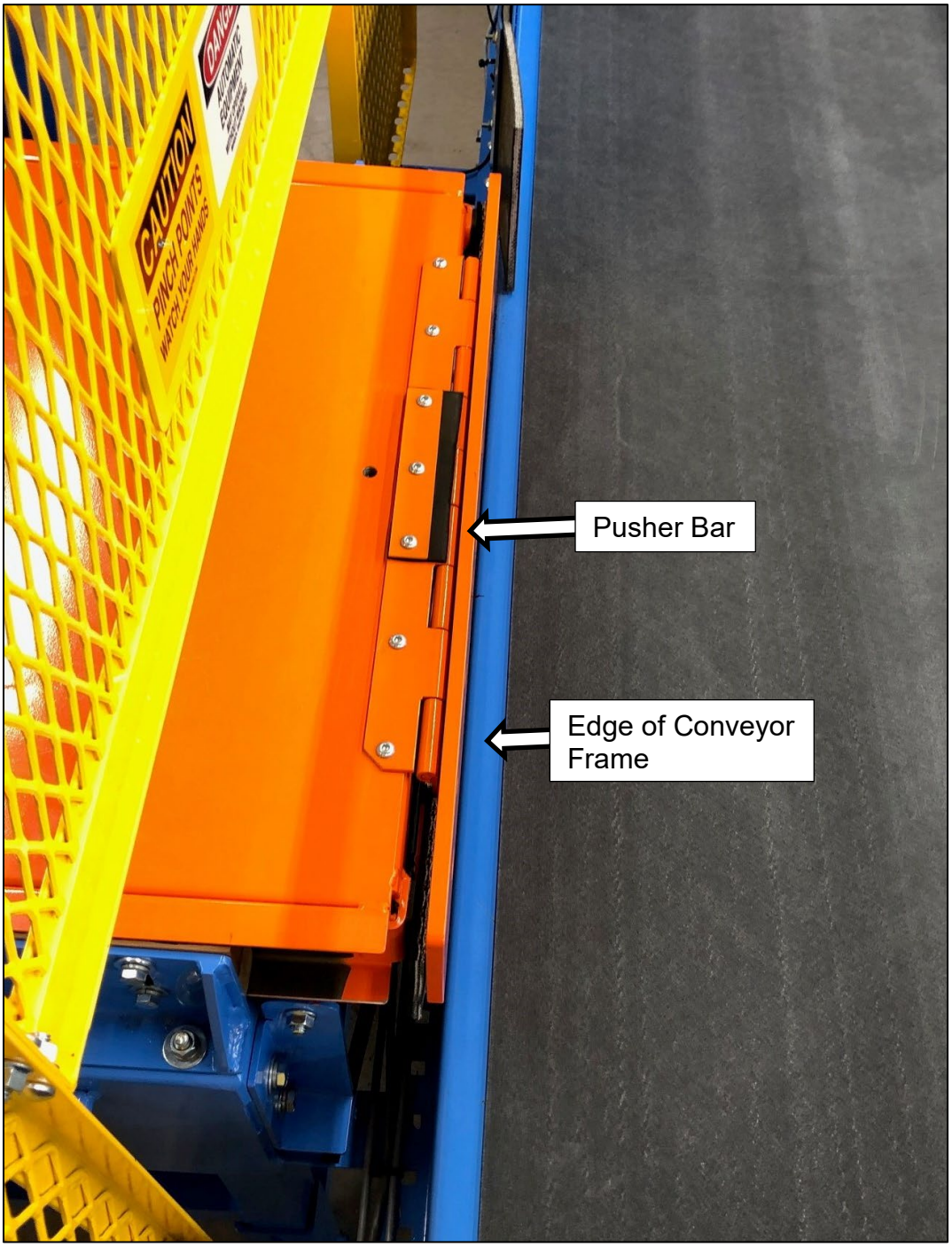

Figure 7. Sight Line of Pusher Bar – Edge of Conveyor Frame

NOTE

If the pusher bar is more than 1/4-inch beyond or behind the conveyor frame, the pushrod length needs to be adjusted, open a local work order.

6. Verify the vertical and horizontal clearances at the wood bearings (PSN 3915-19-000-0159) (Figure 8).

NOTE

There are four wood bearings and two wheels on each side of the pusher assembly (Figure 8).

Nominal vertical and horizontal clearance between wooden slides and pusher channels is 0.020 +/- 0.005 inches.

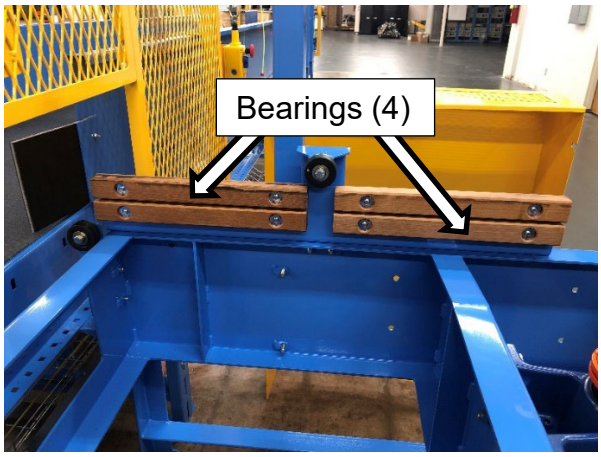

Figure 8. Pusher Frame Assembly Wood Bearings Example – Blade Removed

7. Check clearances at points indicated at the front and rear bearing (Figure 9).
   - (SMI Pusher Blade, PSN 3910-19-000-0073)
   - (NACI Pusher Blade, PSN 3910-19-000-2602)

Figure 9. Left Front Bottom Slide and Wheel Example – Blade Installed

a. Vertical clearance

1) Ensure a 0.025-inch leaf gauge cannot be inserted at the bottom front and bottom rear of the bearings on both sides.

2) Ensure a 0.015-inch leaf gauge can be inserted at the bottom front and bottom rear of the bearings on both sides.

b. Horizontal clearance

1) Push the orange Pusher Blade tightly to one side.

2) Using the 0.025-inch and 0.015-inch leaf gauges; perform the same tests for lateral clearance on the “loose” side top and bottom bearings, front and rear.

8. Check the top and bottom wheels on each side by manually rotating each wheel (Figure 10). There are two wheels (PSN 5340-09-000-8999) on each side of the pusher frame assembly.

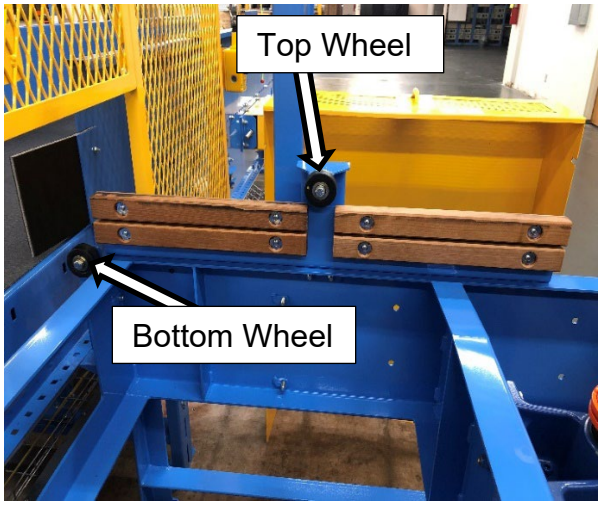

Figure 10. Pusher Frame Assembly Wheels – Blade Removed

NOTE

Wheels should rotate with light friction when Blade is fully retracted. Wheels should be difficult to rotate by hand with blade extended.

9. Move the Blade to the fully retracted position (Figure 11).
10. Ensure the top and bottom wheels cannot be rotated by hand with Blade fully extended.

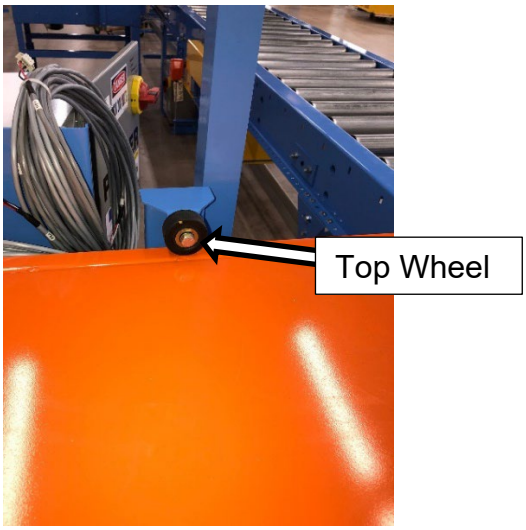

Figure 11. Top Wheel with Blade Retracted

11. Move orange Blade to the fully extended position (Figure 12).
12. Ensure the top and bottom wheels cannot be rotated by hand with Blade fully extended.

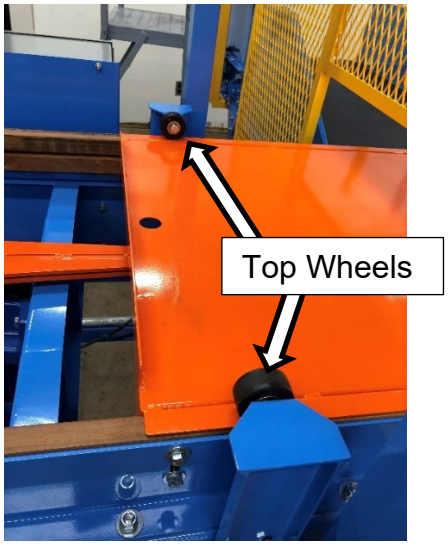

Figure 12. Pusher Blade Fully Extended

13. Return Pusher to retracted position.
14. Center the bale and push it into the detent (Figure 13).

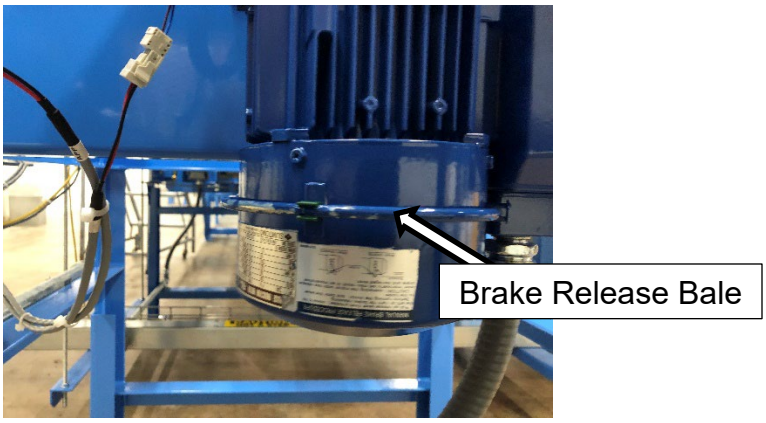

Figure 13. Brake Bale Centered in Detent

15. Check Position of Home Sensor.
    a. Position the Crank Arm at approximately 15 degrees before the home position (Figure 14).

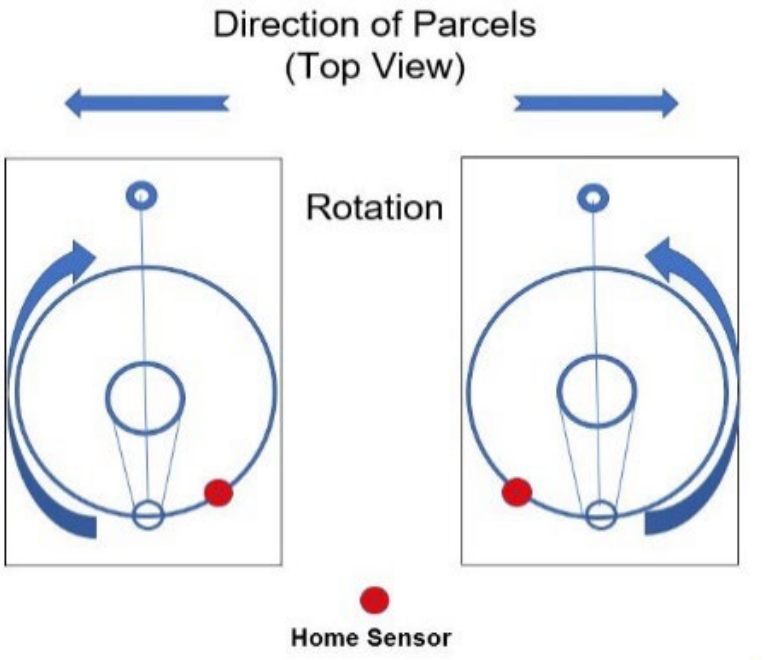

Figure 14. Direction of Rotation

b. Loosen the screws of the Home Sensor Bracket.

c. Position the Home Sensor directly beneath the center of the Crank Arm (Figure 15).

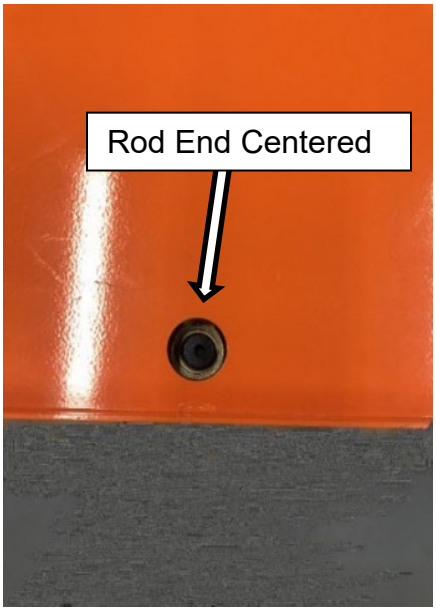

Figure 15. Socket Head Bolt Centered

d. Secure the bracket with two screws.

e. Using a 5/16-inch hex key wrench as a gauge, adjust the jam nuts on the body of the Home Sensor to establish a 5/16-inch gap between the face of the sensor and the bottom surface of Crank Arm.

f. Lubricate both rod-ends by placing two or three drops of 30 weight mineral oil on each rod-end of operating rod.

g. Connect operating rod by installing retaining bolts through rod ends of push rod and tighten using 1/4-inch hex key wrench.

h. Return the brake release bale to its detent.

i. Install and secure yellow safety cover using 4 x 9/16-inch bolts with rubberized fender washers.

j. Restore power to system. Start Sort Controller and FMPCS Application.

16. Restore power to the system and cycle the Pusher with the test button.

a. Listen for unusual noises and look for any binding indications. Correct any deficiencies.

b. Crank Arm should stop within +/- 15 degrees of the centered position and bar should not extend beyond package side of rail.

c. Restore power to system and place into maintenance mode.

d. Release machine to operations.