MiTek®
SERVICE BULLETIN

Document ID:
SB279

Title:
Replacing the Hydraulic Cylinder Rod End

Affected machinery: Horizontal Stacker

Distribution: Customers upon order

CAUTION:
MiTek recommends printing this document in high resolution using color ink. Many of the graphics may be unclear and may create an unsafe condition if this recommendation is not followed.

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Purpose and Scope

This service bulletin instructs how to replace the hydraulic cylinder rod end used in the horizontal stacker. The current hydraulic cylinder rod end is a fixed position and bore rod end. To change to a male threaded spherical bearing rod end, the cylinder rod stud needs to be removed in order to thread in the new spherical bearing rod end.

Overview

Parts Included

The parts included in this kit are shown in Table 1. Please make sure all parts and supplies are present before starting the procedure.

Table 1: Parts in SB279 KIT

Quantity	Description	Part #
2	NUT,JAM,1-14,FINISHED	361670
2	CYLINDER PIN UPPER	70363
2	ROD EYE, MALE, BALLJOINT	799079
1	Service bulletin document	SB279

If you have any questions, call MiTek Automation Support at 1-800-523-3380.

Supplies Needed

- Two 1-1/2” wrench
- 1-1/8” wrench
- Large adjustable wrench
- Propane torch
- Two 1”-14 nuts
- 1”-14 tap
- Tapping fluid
- Anti-seize
- Brake cleaner or similar solvent
- 1” diameter wire brush
- IR thermometer or probe
- Grease gun
- Safety glasses
- Welding gloves

Lockout/Tagout Instructions

Electrical Lockout/Tagout Procedure

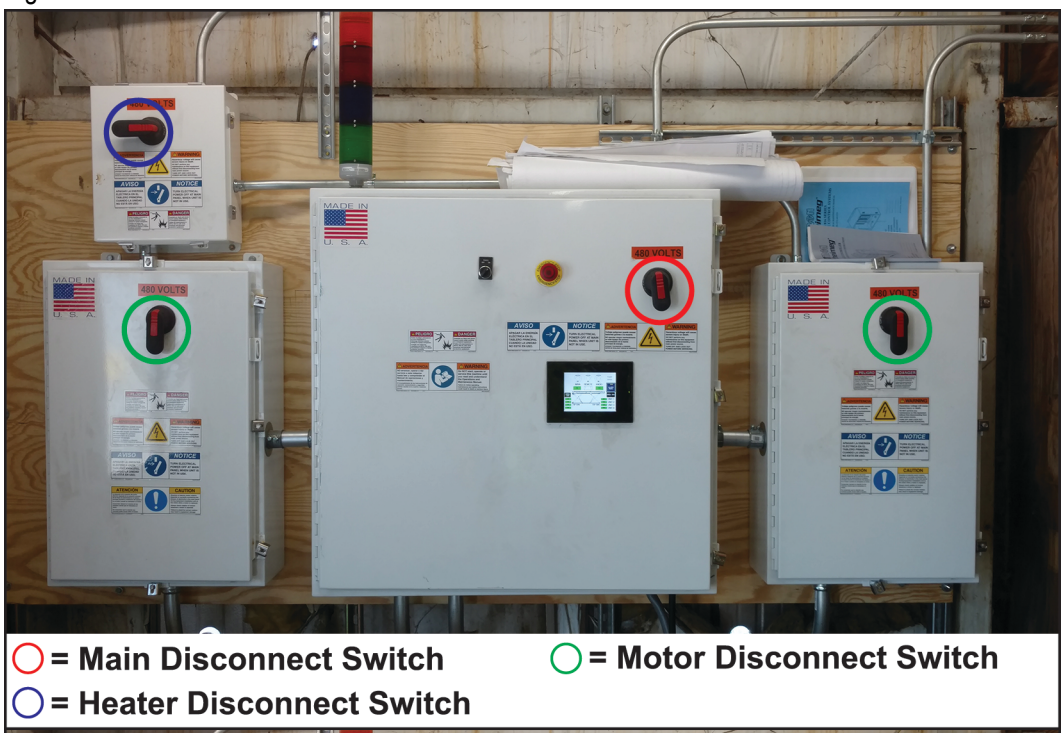
The lockout/tagout instructions for the electrical systems will be referenced as necessary in this document. Service Bulletin instructions start on page 5.

	**⚠ WARNING** **ELECTROCUTION HAZARD.** **All electrical work must be performed by a qualified electrician.** **Verify that all power to the machine has been turned off and follow approved lockout/tagout safety procedures before performing any maintenance.** **If it is absolutely necessary to troubleshoot an energized machine, follow NFPA 70E for proper procedures and personal protective equipment.**

1. Engage an E-stop on the machine.
2. Turn all of the disconnect switch handles on the electrical enclosures to the Off position. Disconnect switches are shown in Figure 1.

If installed correctly, the heater electrical enclosure is on a separate circuit from the main electrical enclosure.

Figure 1: Disconnect Switches on Electrical Enclosures



	⚠ WARNING
	**Even when the main electrical enclosure disconnect switch is turned to the Off position, there is still live power to the enclosure. This live power may cause severe electric shock.** **Always turn off power at the upstream power source before opening an electrical enclosure.**

3. Attach locks and tags that meet OSHA requirements for lockout/tagout to both the heater electrical enclosure and the main electrical enclosure.

Figure 2: Sample of a Lockout/Tagout Mechanism on an Electrical Enclosure

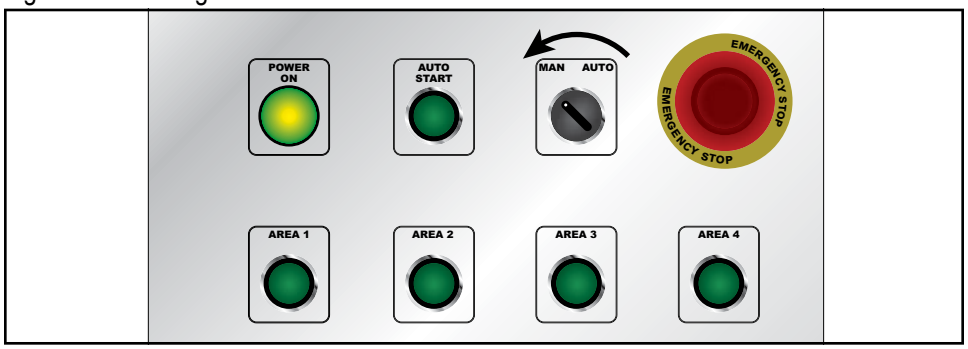
Procedure

Bracing Transporters

Brace the transporters to keep them from lowering while performing maintenance.

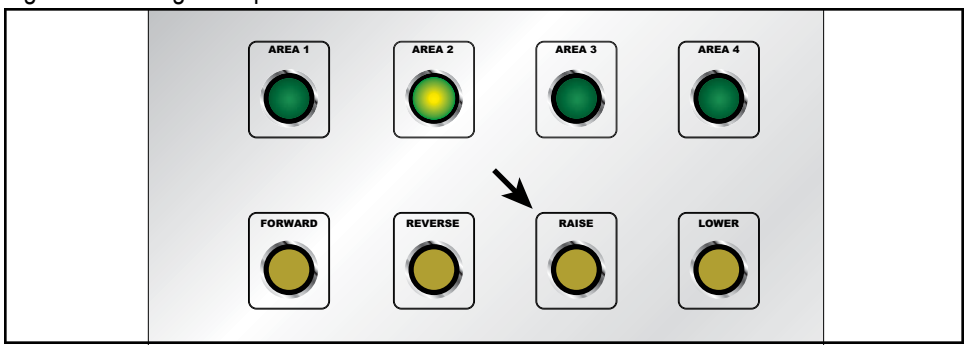
1. Using Manual mode, press and hold the **Raise** button until the transporters fully extend upward to approximately 4’ 6”.
   a) Turn the selector switch on the pushbutton enclosure to Manual mode (Figure 3).

Figure 3: Switching to Manual Mode



   b) Press and hold the **Raise** button until the transporters fully extend upward (Figure 4).

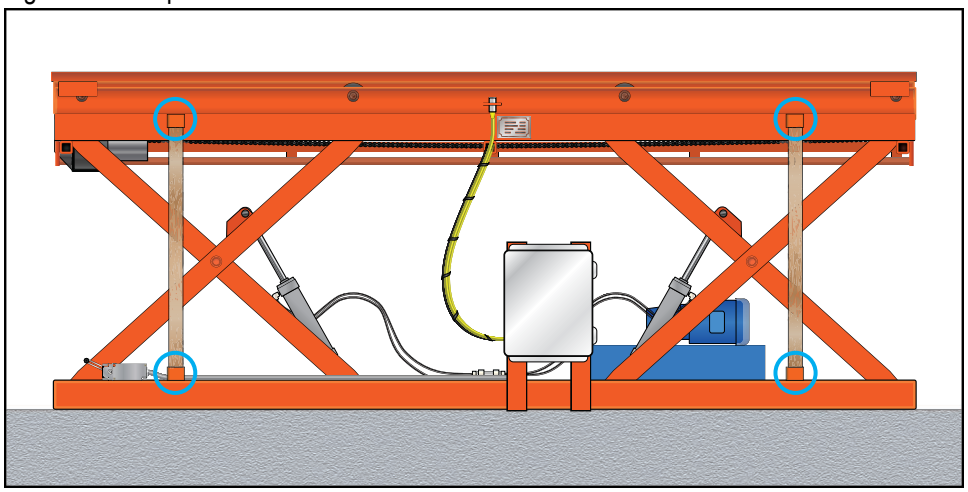
Figure 4: Raising Transporters



2. Lockout/tagout the electrical systems of the machine using the Lockout/Tagout Instructions on page 3.

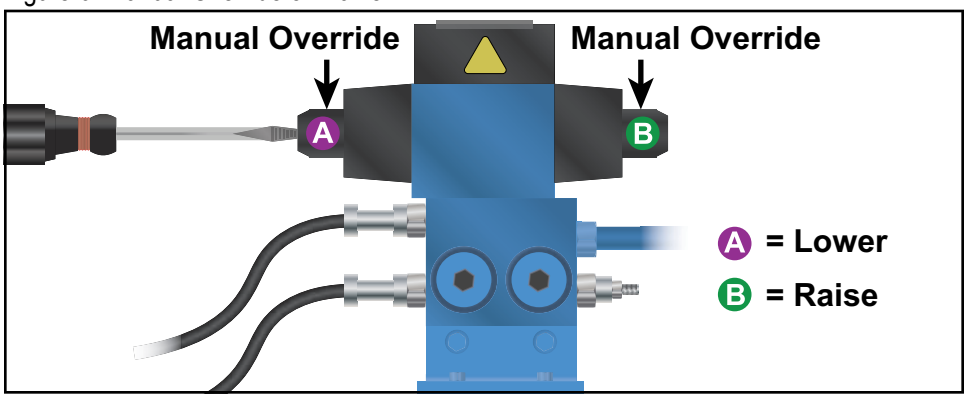
3. Insert a pair of 2x4 boards into the brace pockets near the corners of the transporter. Brace pockets are circled in blue in Figure 5.

Figure 5: Transporter Braced with Boards



4. Locate the valve on the hydraulic pressure unit pictured in Figure 6. Use the valve's manual override to lower the transporter onto the boards.

Figure 6: Manual Override on Valve



5. Press and hold the other side of the manual override for a few seconds to bleed residual pressure.

Replacing the Rod End

With the machine locked and tagged out as previously described, you can now begin the process of replacing the rod end for the hydraulic cylinder.

1. Remove the upper hydraulics cylinder pin (Figure 7).

   Figure 7: Upper Hydraulic Cylinder Pin

2. Remove the rod end.
   a) Use a 1-1/8” wrench to hold the cylinder rod in place.
   b) Thread an adjustable wrench through the rod end eyelet to turn the rod end (Figure 8).
   c) Attach an adjustable wrench to the sides of the rod end and turn counterclockwise to remove it.
      - Alternatively, use a piece of bar stock or pipe that is less than 3/4” and feed it through the eyelet to turn the rod end.

   Figure 8: Rod End Eyelet

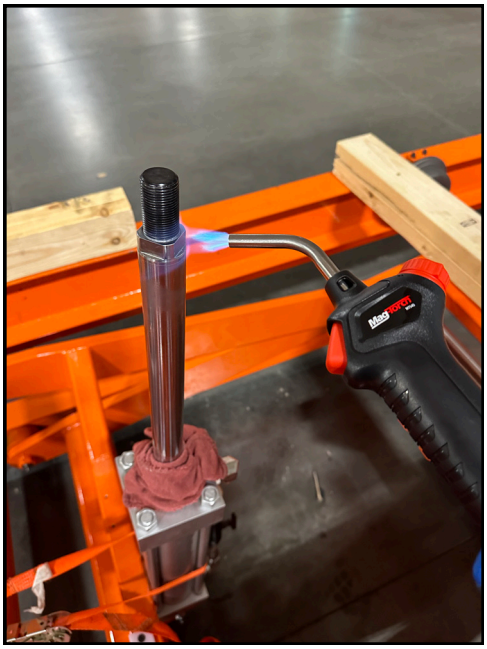
   

3. Remove any grease or contaminants from the cylinder stud.

	DANGER
	**CYLINDER ROD, STUD, AND NUTS WILL BE HOT!** **Serious injury may occur.** **Use caution when performing the following steps.** **Wear welding gloves.**

4. Heat the base of the cylinder stud with a propane torch until the base gets between 400°F and 450°F (Figure 9).
   - Use an IR or probe thermometer to monitor temperature. The cylinder end should be a light straw color.

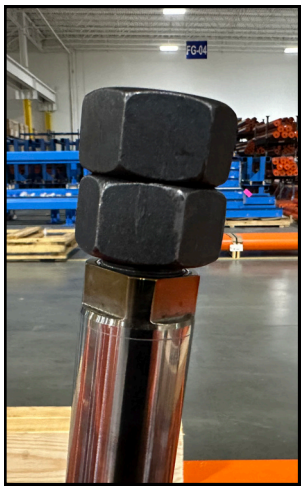
   Figure 9: Heating the Cylinder Stud

5. Screw on the two 1”-14 nuts onto the cylinder stud, making sure you leave enough room to get a 1-1/8” wrench on the cylinder rod flats.

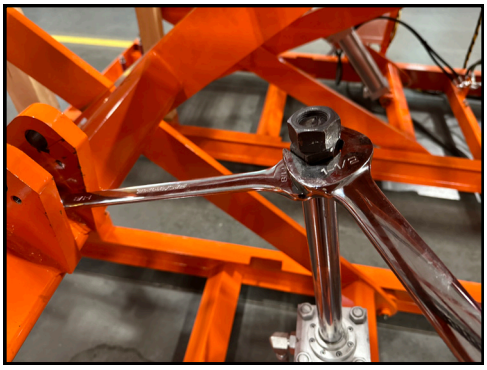
6. Tighten the two nuts together by using two 1-1/2” wrenches (Figure 10).

   Figure 10: Nuts Locked Together

7. Use a 1-1/8” wrench or a large adjustable wrench to hold the cylinder rod in place. Then use a 1-1/2” wrench on the bottom nut to loosen the cylinder stud out of the cylinder rod (Figure 11).

   Figure 11: Loosening Cylinder Stud

8. Once the stud is removed, let the cylinder rod cool. Once cooled, use brake cleaner or a similar solvent to soak the threads inside the cylinder rod.
   - This helps break down the thread locker that was used during the initial manufacturing of the machine.
9. Use a 1” diameter wire brush to clean out the thread locker and debris.
10. Use compressed air to clean out the internal thread on the cylinder rod.
11. Use a 1”-14 tap with tapping or cutting fluid to chase the thread inside the cylinder rod.
12. Once the thread has been chased, use compressed air to clean the rod cavity.

13. Install the new spherical rod end with a 1”-14 jam nut (Figure 12).
    a) Cover the threads in anti-seize.
    b) Add grease through the grease fitting on the rod end.

Figure 12: New Rod End Installed

14. Lock the rod end in place by tightening the jam nut.
15. Install the hydraulic cylinder back into the horizontal stacker using the cylinder pin.
16. Unbrace the transporters and remove the lockout/tagout devices.
    - Remove the lock and tag from the main electrical enclosure.
    - Use manual mode to raise the transporter enough to remove the boards.
    - Lockout/tagout the main electrical enclosure.
    - Remove the boards.
    - Remove the lock and tag. Restore power.
17. Test the length of the rod end and adjust as needed.
    - The stacker should go all the way down without binding.
18. Position the grease fitting up for ease of service.

END OF SERVICE BULLETIN