



Models JML-12S and JML-16S

Material Lift

SERVICE MANUAL



Part Number: M-JT1-2597-SER
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WARNING

Read and understand the safety information in this manual and in *Section 2 SAFETY INFORMATION* of the material lift Operating Instructions and Parts Manual. Failure to follow the information provided may cause serious injury or death.

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1 Introduction

1.1 SERVICE MANUAL

This manual covers common service procedures that may be needed to keep the material lift in optimum, safe operating mode. This tool is designed and constructed to provide consistent, long-term operation if used, maintained, and serviced in accordance with instructions contained in the product's operating instructions manual and in this service manual.

If you have any questions or comments, please contact either your local supplier or JET Tools. JET Tools can also be reached at our web site: www.jettools.com.

Contact the Factory:

JET Tools
427 New Sanford Road
La Vergne, TN 37086
Phone: 800-274-6848
www.jettools.com

1.2 HOW TO GET TECHNICAL SUPPORT

Please contact Technical Service by calling 1-800-274-6846. Please note that you will be asked to provide proof of initial purchase when calling. If a product requires further inspection, the Technical Service representative will explain and assist with any additional action needed. JET has Authorized Service Centers located throughout the United States. For the name of an Authorized Service Center in your area, call 1-800-274-6846 or use the Service Center locator on the JET website: www.jettools.com.

2 Safety Information

BEFORE SERVICING

1. Thoroughly read and understand the safety information in this manual and in *Section 2 SAFETY INFORMATION* of the material lift Operating Instructions and Parts Manual. Failure to follow the information provided may cause serious injury or death.
2. This material lift is designed and intended for use by properly trained and experienced personnel only. Learn how to operate this lift properly and safely. If you are not familiar with the proper and safe operation of this lift, do not use it. Follow proper and safe lifting practices.
3. Do not use this material lift for purposes other than its intended use, as outlined in the material lift Operating Instructions and Parts Manual. If used for other purposes, JET disclaims any real or implied warranty and holds itself harmless from any resulting injury or property damage.
4. Always inspect the material lift and cable for damage prior to use. If lift is damaged, repair before use. Do not attempt to lengthen or repair cables. If cable is kinked, frayed, worn, or damaged, replace before use. Replace cables with factory replacement cables only. Do not use any other type of cable.
5. Perform non-load operation tests after servicing and before each use.
6. Only use replacement parts and accessories approved and provided by JET.

SERVICE AREA SAFETY

1. Keep bystanders a safe distance from the servicing area. Keep children away. Do not allow children to access or operate this material lift.
2. Service this material lift only on solid and level surfaces that can withstand the weight of the material lift. Do not service on inclines.
3. Keep service area clear of debris and clutter.
4. This lift is not insulated from electrical current. If it contacts energized power lines, severe injury or death can occur if you are touching the lift. Keep away from the lift if it contacts energized power lines. Shut off power lines immediately and safely move the lift away from the hazard.

PERSONAL SAFETY

1. Wear proper clothing and safety gear. When servicing this material lift, wear a hard hat, safety glasses, steel-toe shoes, and gloves.
2. Always maintain your balance and firm footing when servicing the material lift.

3. Give your work undivided attention. Looking around, carrying on a conversation and “horse-play” are careless acts that can result in serious injury.
4. The material lift is heavy. Use proper lifting practices and multiple people to lift or lower the mast assembly to-or-from the horizontal transport mode or when lifting and positioning into a truck or trailer.

SERVICING SAFETY

1. Check winch for proper operation after servicing and before each use. Do not use if damaged. Repair or replace immediately.
2. Make sure cable wind/loop is in the correct orientation. The cable should always enter and exit the spool on the side facing the mast (not away from the mast). See Figure 2-1.
3. When operating the winch, make sure the cable winds tightly and evenly on the drum (see Figure 2-1). Do not allow the cable to bunch on one side of the drum or become crisscrossed or tangled. If this happens, wind the affected cable off the drum and re-wrap correctly.
4. Avoid sideways cable slip. When winding the cable under load, make sure a minimum space of 2-times the cable diameter remains on the drum flange.
5. Always leave at least five wraps of the cable on the drum. Failure to do so may break the cable connection to drum and result in serious injury or property damage.
6. Be aware of and avoid pinch points, such as the folding legs, mast sections, winch, cable, and lifting forks. Keep hands away from all moving parts while operating lift.
7. When raising, lowering, or moving material lift, make sure there is adequate clearance to overhead wires and other objects and/or obstructions.
8. If welding near the material lift, do not contact any part of the lift by a live electrode. Do not use this lift as a ground for welding operations. Prevent weld splatter from contacting the lift.

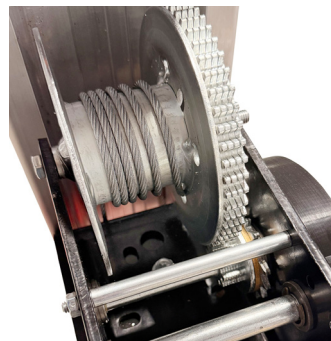
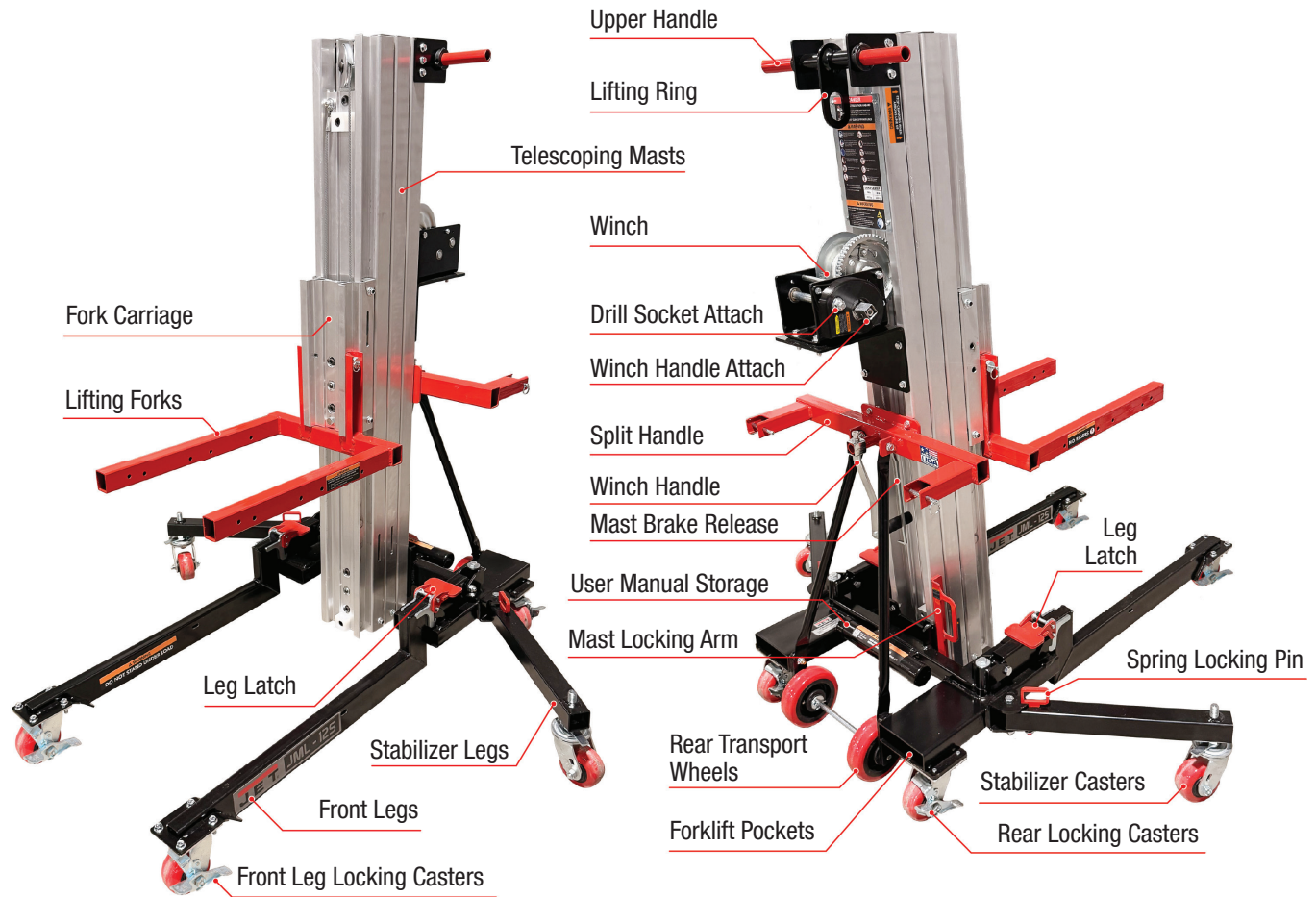


Figure 2-1: Cable Wrapped Tightly and Evenly

3 Product Identification

3.1 COMPONENTS



4 Service

4.1 CABLE REPLACEMENT

Cable replacement is required if the cable is worn or damaged, or if the cable breaks. The service process differs for each condition.

Replacing a worn or damaged cable is the easiest of the two procedures. Replacing the cable before a breakage occurs will result in less down-time and fewer service hours.

4.1.1 Replacing Worn, Damaged, or Broken Cable

If the cable is worn, damaged, or broken, follow the steps below.

Tools needed:

- 7/16 in. Wrench or Socket
- 3/8 in. Hex Wrench
- 3/4 in. Wrench or Socket
- Locking Pliers

Preparing the Material Lift

1. Remove the lifting fork from the fork carriage.
2. Position the fork carriage at the lowest position.
3. Engage the mast locking arm. To do so, pull arm outward from its position at the rear of the mast. Rotate the arm forward and seat the mast locking arm pin into the carriage mounting hole. For model JML-12S, seat in hole A. For model JML-16S, seat in hole B. See Figure 4-1. Use the winch to raise the fork carriage just enough to put slight pressure on mast locking arm pin.



Figure 4-1: Engaging Mast Locking Arm

4. Unwind the cable from the winch reel.
5. Using 7/16 in. wrench or socket, loosen and remove the winch rope clamp on the winch reel (see Figure 4-2). Remove the cable from the winch reel.
6. Tilt the material lift back and stabilize it in a safe working position, as shown in Figure 4-3. Support the mast assembly so it cannot fall, roll, slide, or pinch hands or fingers during cable routing.

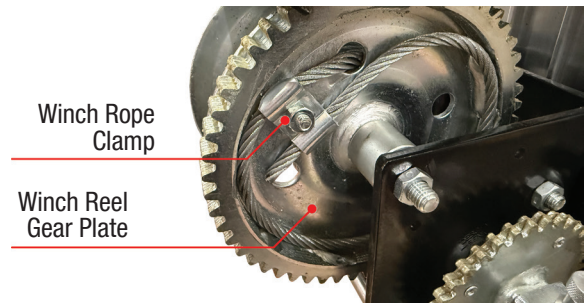


Figure 4-2: Winch Rope Clamp



Figure 4-3: Material Lift Tilted and Stabilized

Removing Worn, Damaged, or Broken Cable

7. Locate the cable end mounting point at the top of the front mast (see Figure 4-4). Using a 3/4 in. wrench or socket, remove the cable mounting nut and washer to disconnect the swaged cable end from the mast. Save the mounting nut and washer for re-installation.

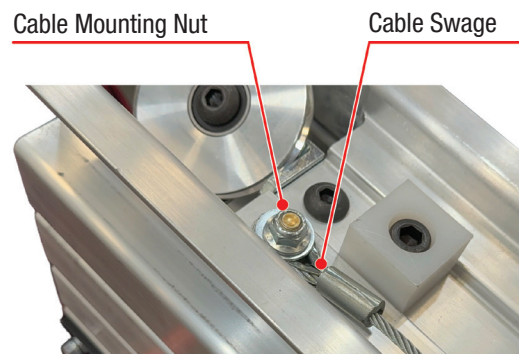


Figure 4-4: Cable Mounting Location

8. From the swaged cable end, pull the old or damaged cable through the pulley system of the lift until it is completely removed. If the cable has been broken, remove the cable sections by pulling the swaged-end section from the top of the front mast and the remaining section from the rear mast lower pulley.

Replacing Cable: Front Mast and Fork Carriage

9. On the new cable, identify the two cable ends. One end is swaged and the other is cut.
10. Using the cable mounting nut and washer removed in step 7, attach the swaged end of the new cable to the cable anchor point at the top of the front mast (see Figure 4-4).
11. Move the fork carriage up from the bottom of the mast to expose the front mast's bottom slide block. Use locking pliers to lock and hold the fork carriage in place (see Figure 4-5).
12. Remove the front mast's bottom slide block using a **3/8 in. hex wrench** (see Figure 4-6).



Figure 4-5: Locking Pliers on Fork Carriage

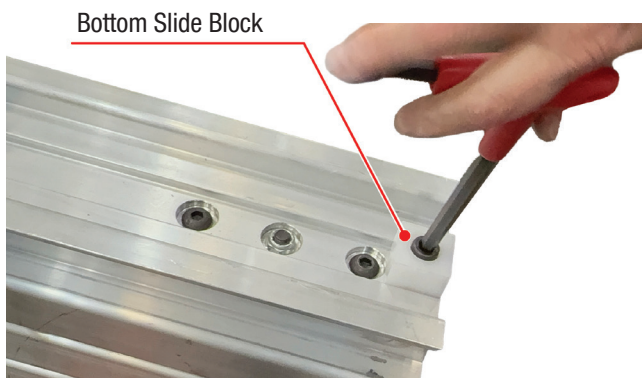


Figure 4-6: Removing Bottom Slide Block

13. Remove the locking pliers from the fork carriage and remove the carriage from the bottom of the front mast.

14. Take the cut end of the replacement cable and feed it into and around the pulley of the fork carriage. Make sure you start the cable feed on the right side of the pulley (as viewed from the back of the fork carriage, see Figure 4-7). The cable will exit the pulley on the left side. This will ensure that the cable, from the anchor point to the fork carriage, remains on the left side of the front mast.

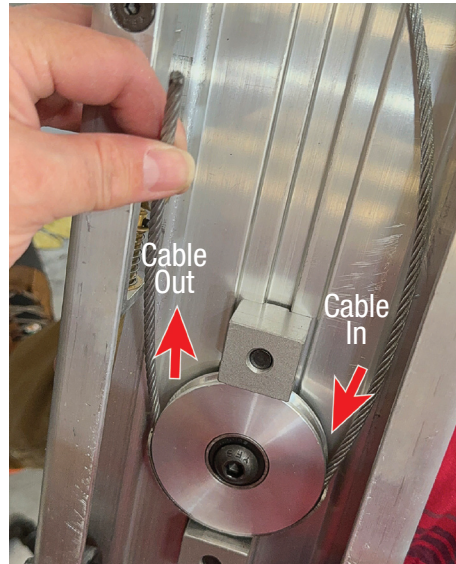


Figure 4-7: Loading Cable to Fork Carriage Pulley

15. Replace the fork carriage on the front mast and replace the front mast's bottom slide block using a **3/8 in. hex wrench**.
16. Route the cut end of the cable up to the front mast's top pulley. NOTE: The cable will run up the right side of the front mast and be visible from the top of the fork carriage to the front mast's top pulley.
17. Feed the cut end of the cable into and around the front mast's top pulley (see Figure 4-8).

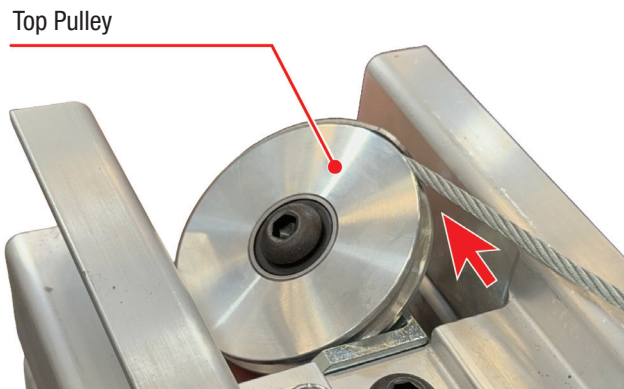


Figure 4-8: Loading Cable to Front Mast Top Pulley

18. Route the cable from the front mast's top pulley and into the area between the back side of the front mast and the front side of the second mast (see Figure 4-9). NOTE: The end of the cable will point to this area between the masts as it exits the top pulley. Move the cable down between the mast sections until it exits the bottom of the mast assembly. Continue pulling the cable until all slack is removed and the fork carriage is pulled up the front mast.

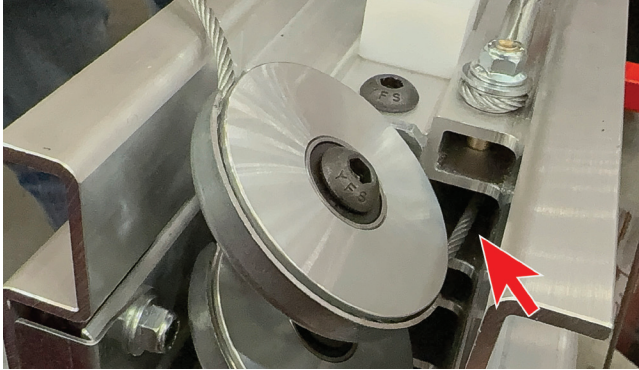


Figure 4-9: Routing Cable from Top Pulley and Down Between Masts

Replacing Cable: Second Mast

19. Pull the top of mast up to expose the bottom slide block on the second mast section. Use locking pliers to lock and hold the front mast in place (see Figure 4-10).
20. Remove the second mast's bottom slide block using a **3/8 in. hex wrench** (see Figure 4-10).

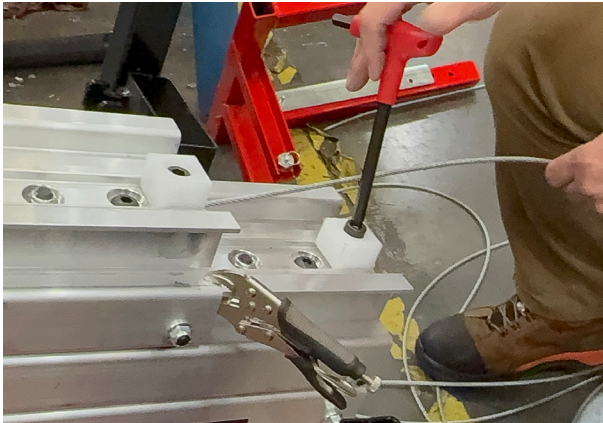


Figure 4-10: Clamping Mast Section and Removing Bottom Slide Block

21. Loosen the front mast's top pulley mounting screw using a **3/8 in. hex wrench** (see Figure 4-11). NOTE: Do not remove this bolt. Only loosen it enough to allow the front mast to slide down below the top of the second mast.

Top Pulley Mounting Screw

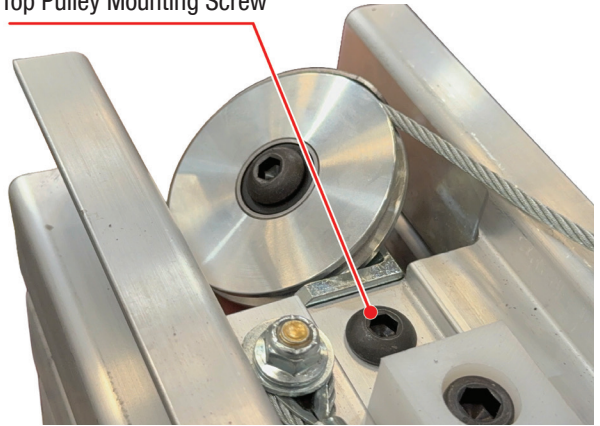


Figure 4-11: Loosening Top Pulley Mount Screw

22. Remove the locking pliers holding the front mast and slide the mast downward. You will need to slightly raise the top of the front mast to clear the upper slide block attached to the mast beneath (see Figure 4-12). Slide the front mast down just enough to expose the lower pulley assembly on the underside of the front mast.

Slightly Raise Mast

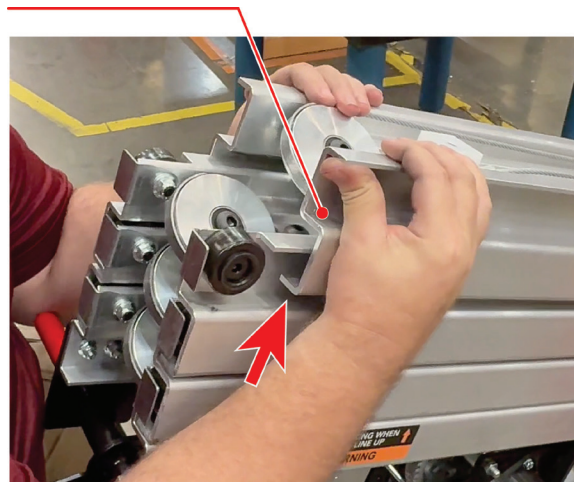


Figure 4-12: Slightly Raising Mast While Lowering

23. Use locking pliers to lock and hold the front mast in place (see Figure 4-13). You will keep the locking pliers in place until instructed to remove later in the cable replacement procedure.
24. Working from the underside of the front mast, feed the cut end of the cable into and around the front mast's bottom pulley (see Figure 4-14). Be sure to insert the cable into the pulley at position 1 and exit the pulley at position 2.
25. Route the cable from the front mast's bottom pulley and into the area between the back side of the front mast and the front side of the second mast (see Figure 4-14, position 3). NOTE: The end of the cable will point to this area between the masts as it exits the bottom pulley. Move the cable up between the mast sections until it exits the top of the mast assembly.



Figure 4-13: Clamping Mast Section

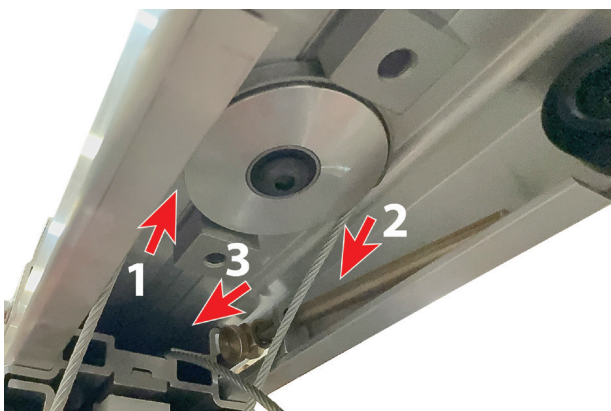


Figure 4-14: Loading Cable to Bottom Pulley

26. Feed the cut end of the cable into and around the second mast's top pulley (see Figure 4-15).

Top Pulley

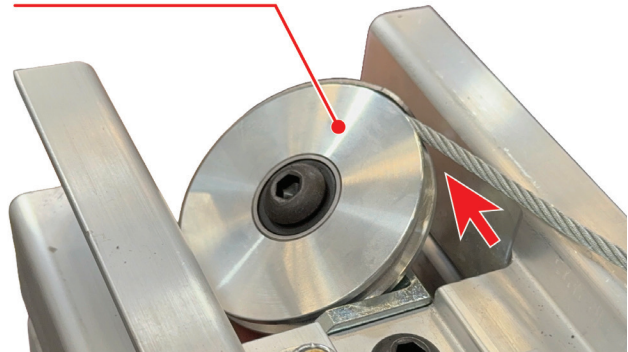


Figure 4-15: Loading Cable to Top Pulley

27. Route the cable from the second mast's top pulley and into the area between the back side of the second mast and the front side of the third mast (see Figure 4-16). NOTE: The end of the cable will point to this area between the masts as it exits the top pulley. Move the cable down between the mast sections until it exits the bottom of the mast assembly. Continue pulling the cable until all slack is removed.

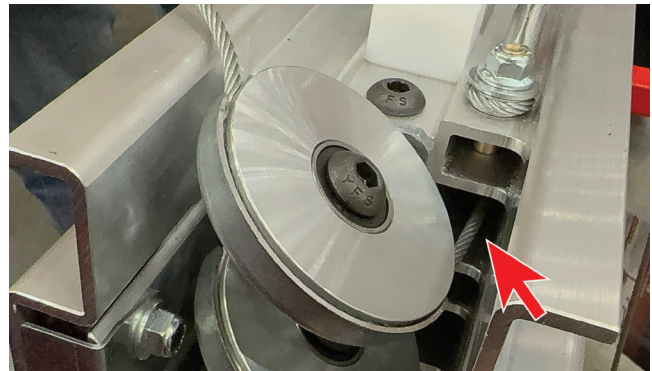


Figure 4-16: Routing Cable from Top Pulley and Down Between Masts

NOTE: For model JML-12S, go to step 37 under Replacing Cable: Rear Mast. For model JML-16S, continue to step 28.

Replacing Cable: Third Mast (Model JML-16S Only)

NOTE: Refer to the figure references under Replacing Cable: Second Mast.

28. Pull the top of the second mast up to expose the bottom slide block on the third mast section. Use locking pliers to lock and hold the second mast in place (see Figure 4-10).
29. Remove the third mast's bottom slide block using a **3/8 in. hex wrench** (see Figure 4-10).

30. Loosen the second mast's top pulley mounting screw using a **3/8 in. hex wrench** (see Figure 4-11). NOTE: Do not remove this bolt. Only loosen it enough to allow the second mast to slide down below the top of the third mast.
31. Remove the locking pliers holding the second mast and slide the mast downward. You will need to slightly raise the top of the second mast to clear the upper slide block attached to the mast beneath (see Figure 4-12). Slide the second mast down just enough to expose the lower pulley assembly on the underside of the second mast.
32. Use locking pliers to lock and hold the second mast in place (see Figure 4-13). You will keep the locking pliers in place until instructed to remove later in the cable replacement procedure.
33. Working from the underside of the second mast, feed the cut end of the cable into and around the second mast's bottom pulley (see Figure 4-14). Be sure to insert the cable into the pulley at position 1 and exit the pulley at position 2.
34. Route the cable from the second mast's bottom pulley and into the area between the back side of the second mast and the front side of the third mast (see Figure 4-14, position 3). NOTE: The end of the cable will point to this area between the masts as it exits the bottom pulley. Move the cable up between the mast sections until it exits the top of the mast assembly.
35. Feed the cut end of the cable into and around the third mast's top pulley (see Figure 4-15).
36. Route the cable from the third mast's top pulley and into the area between the back side of the third mast and the front side of the rear mast (see Figure 4-16). NOTE: The end of the cable will point to this area between the masts as it exits the top pulley. Move the cable down between the mast sections until it exits the bottom of the mast assembly. Continue pulling the cable until all slack is removed.
- not remove this bolt. Only loosen it enough to allow the second mast (JML-12S) or third mast (JML-16S) to slide down below the top of the rear mast.
40. Remove the locking pliers holding the second mast (JML-12S) or third mast (JML-16S) and slide the mast downward. You will need to slightly raise the top of the mast to clear the upper slide block attached to the mast beneath (see Figure 4-12). Slide the mast down just enough to expose the lower pulley assembly on the underside of the mast.
41. Use locking pliers to lock and hold the second mast (JML-12S) or third mast (JML-16S) in place (see Figure 4-13). You will keep the locking pliers in place until instructed to remove later in the cable replacement procedure.
42. Working from the underside of the second mast (JML-12S) or third mast (JML-16S), feed the cut end of the cable into and around the mast's bottom pulley (see Figure 4-14). Be sure to insert the cable into the pulley at position 1 and exit the pulley at position 2.
43. Route the cable from the mast's bottom pulley and into the area between the back side of the mast and the front side of the rear mast (see Figure 4-14, position 3). NOTE: The end of the cable will point to this area between the masts as it exits the bottom pulley. Move the cable up between the mast sections until it exits the top of the mast assembly.
44. Feed the cut end of the cable into and around the rear mast's top pulley (see Figure 4-15). Pull the slack from the cable.

Putting Masts Back Into Operating Positions

45. Starting with the front mast, remove the locking pliers holding it in place. Align the mast rollers at the bottom of the mast with the roller channels in the mast beneath. Slide the front mast up to expose the second mast's bottom slide block mounting location. NOTE: Make sure the faces of the mast brake wheel are parallel with the vertical side of the mast extrusion. The mast brake assembly is located on the lower right side of the mast (see Figure 4-17).

Replacing Cable: Rear Mast

NOTE: Refer to the figure references under Replacing Cable: Second Mast.

37. Pull the top of the second mast up (model JML-12S only) or the third mast up (model JML-16S only) to expose the bottom slide block on the rear mast section. Use locking pliers to lock and hold the mast in place (see Figure 4-10).
38. Remove the rear mast's bottom slide block using a **3/8 in. hex wrench** (see Figure 4-10).
39. Loosen the second mast's (model JML-12S only) or third mast's (model JML-16S only) upper pulley mounting screw using a **3/8 in. hex wrench** (see Figure 4-11). NOTE: Do

Mast Brake



Figure 4-17: Mast Brake

46. Install the bottom slide block on the second mast (see Figure 4-18). Do not overtighten the slide block bolt as this may deform the slide block and cause unnecessary friction. Torque to 10-13 ft-lbs.
47. Firmly tighten the upper pulley mounting screw using a **3/8 in. hex wrench**.
48. Repeat steps 45 through 47 with the remaining mast sections.

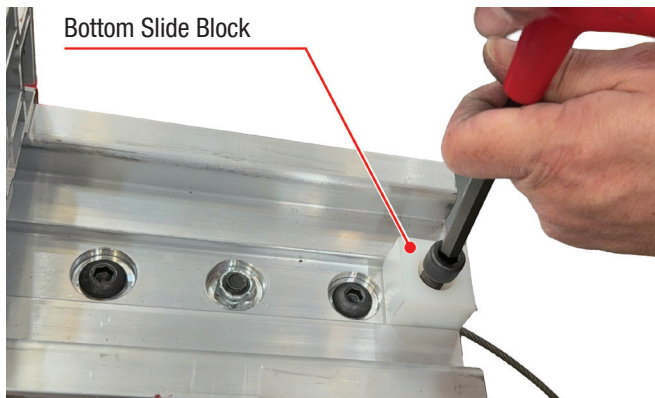


Figure 4-18: Installing Bottom Slide Block

Finishing

49. Move all mast sections and the fork carriage to the bottom of the mast assembly.
50. Engage the mast locking arm. To do so, pull the arm outward from its position at the rear of the mast. Rotate the arm forward and seat the mast locking arm pin into the carriage mounting hole. For model JML-12S, seat in hole A. For model JML-16S, seat in hole B. See Figure 4-19.



Figure 4-19: Engaging Mast Locking Arm

51. Raise the material lift to the vertical storage position. See Section 7.1 Placing Lift In Vertical Storage Mode of the material lift's Operating Instructions and Parts Manual.
52. Confirm the fork carriage is still at the lowest position and the mast locking arm is still engaged.

53. Feed the cut end of the cable into and around the rear mast's bottom pulley. Make sure the cable enters the pulley on the right side and exits on the left.
54. Route the cable end up to the winch assembly. Thread the new cable onto the winch reel.
55. Route the cable end through the winch reel gear plate. Make sure the cable is nested within the recess of the gear plate as shown in Figure 4-20. Using a 7/16 in. wrench or socket, attach the winch rope clamp over the cable and tighten.
56. Turn the winch handle and wrap the cable onto the reel. The cable must be wrapped a minimum of five full wraps around the reel while the fork carriage is at the lowest position. Make sure the cable winds tightly and evenly on the drum. Make sure to wrap the cable to the outside of the reel as shown in Figure 4-21.
57. Reinstall the lifting fork on the fork carriage.
58. Perform non-load tests before placing the lift back into service.

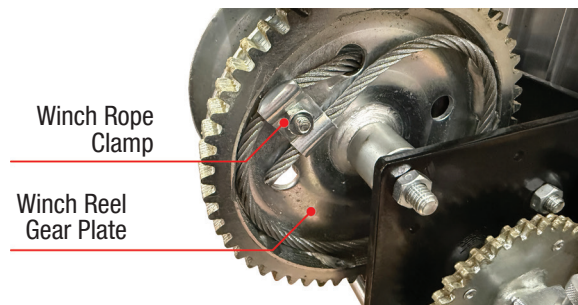


Figure 4-20: Winch Rope Clamp

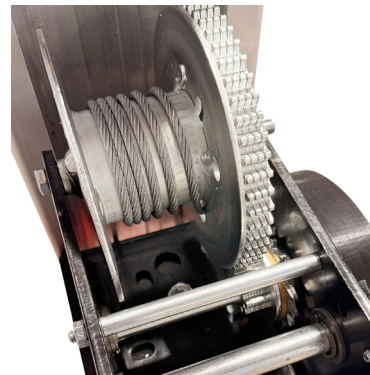


Figure 4-21: Cable Wrapped Tightly and Evenly

4.2 CABLE PULLEY REPLACEMENT

Cable pulley assemblies are found on each mast section and on the fork carriage. Each mast has a pulley assembly at the top and at the bottom. The fork carriage has one pulley assembly.

If a pulley assembly is damaged, follow the instructions below to replace. The replacement procedure is the same for pulley assemblies located at the top or bottom of the mast segment.

Tools needed:

- 5/16 in. Hex Wrench
- 3/4 in. Socket Wrench
- Blue Loctite®

1. You will need to have the mast assembly in a near horizontal position to access the mast section that contains the damaged pulley assembly. Follow the information in *Section 4.1.1 Replacing Worn, Damaged, or Broken Cable* on how to position the mast assembly, remove slide blocks, and slide the mast sections to gain access to a particular pulley assembly.

Top pulley assemblies are located on the front of a mast sections. Bottom pulley assemblies are located on the back of a mast sections. While the pulley mounts differ, both top and bottom pulley assemblies mount the same way.

You will need to feed out some of the cable from the winch in order to allow the mast segments to slide and move as needed.

2. Using a 5/16 in. hex wrench and 3/4 in. socket, remove the pulley bolt and nut (see Figures 4-22 and 4-23).
3. Lift the pulley up and remove the cable, then remove and discard the pulley, washers, and pulley shield. **IMPORTANT:** Be sure and note the placement of the washers. Re-install washers in the same location (see Figure 4-24).
4. For the new pulley assembly, apply a dab of blue Loctite to the pulley bolt threads and loosely attach the new pulley assembly in place.

Make sure the pulley shield and pulley are very loose. Route the cable around the pulley. Press the pulley assembly together so that the pulley shield holds the cable in place on the pulley. Firmly tighten the pulley bolt and nut. Make sure the pulley shield is rigid and tight and the pulley rotates freely.

5. Re-install any slide blocks removed to gain access to the pulley assembly. Do not overtighten the slide block bolt as this may deform the slide block and cause unnecessary friction. Torque to 10-13 ft-lbs.

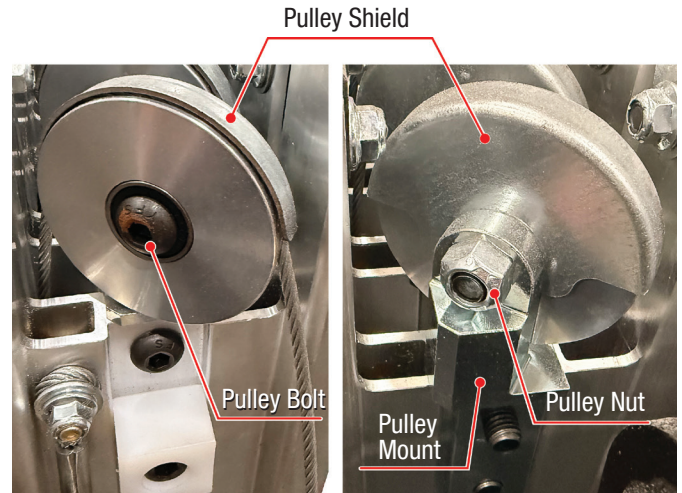


Figure 4-22: Replacing Top Pulley Assembly

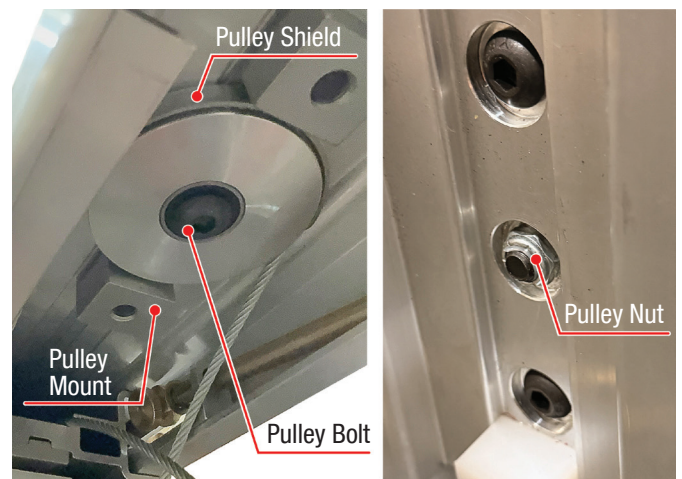


Figure 4-23: Replacing Bottom Pulley Assembly

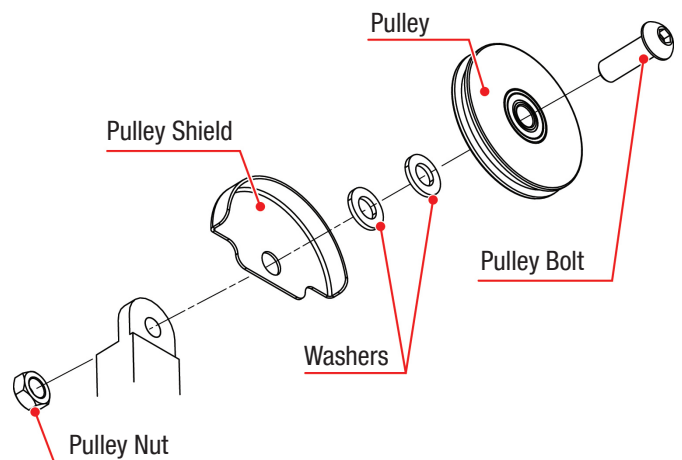


Figure 4-24: Pulley Assembly Parts and Installation Order

4.3 WINCH

4.3.1 Input Shaft and Outer Drive Gear Replacement

Tools needed:

- Flathead Screwdriver
- Needle-Nose Pliers
- 5/8" Thin-Wall Spark Plug Socket and Ratchet
- Locking Pliers
- Blue Loctite®

Refer to Figures 4-25 through 4-28.

1. Remove any cable tension by winding out a portion of cable.
2. Using a flathead screwdriver and needle-nose pliers, remove and discard e-clips from input shaft. The e-clips are located against the input shaft bushings on the inside of the winch housing.
3. Remove and discard the input shaft and the input shaft bushings from the winch housing.
4. Replace new input shaft bushings, input shaft, and secure with e-clips. NOTE: Install bushings from the inside of the winch housing. The bushing flange must be on the inside of the winch housing.
5. Using locking pliers, clamp the winch reel to keep it from turning (see Figure 4-25).
6. Using 5/8" thin-wall spark plug socket and ratchet, remove the reel/hub nut and spring.
7. Remove and discard the outer drive gear and replace with new gear.
8. Apply a dab of blue Loctite to the nut threads and secure outer drive gear with reel/hub nut and spring. Torque to 30 ft-lbs.
9. Remove locking pliers and confirm winch operates properly.
10. Apply a consistent layer of PC Peerless OG2 grease to the gear teeth of the winch reel gear, outer drive gear, and input shaft gear (see Figure 4-27).
11. Apply a light, even coat of mineral oil (3-in-1 oil or equivalent) to the winch reel shaft, outer drive gear shaft, and input shaft to ensure smooth rotation and prevent corrosion (see Figure 4-28).



Figure 4-25: Removing Outer Drive Gear

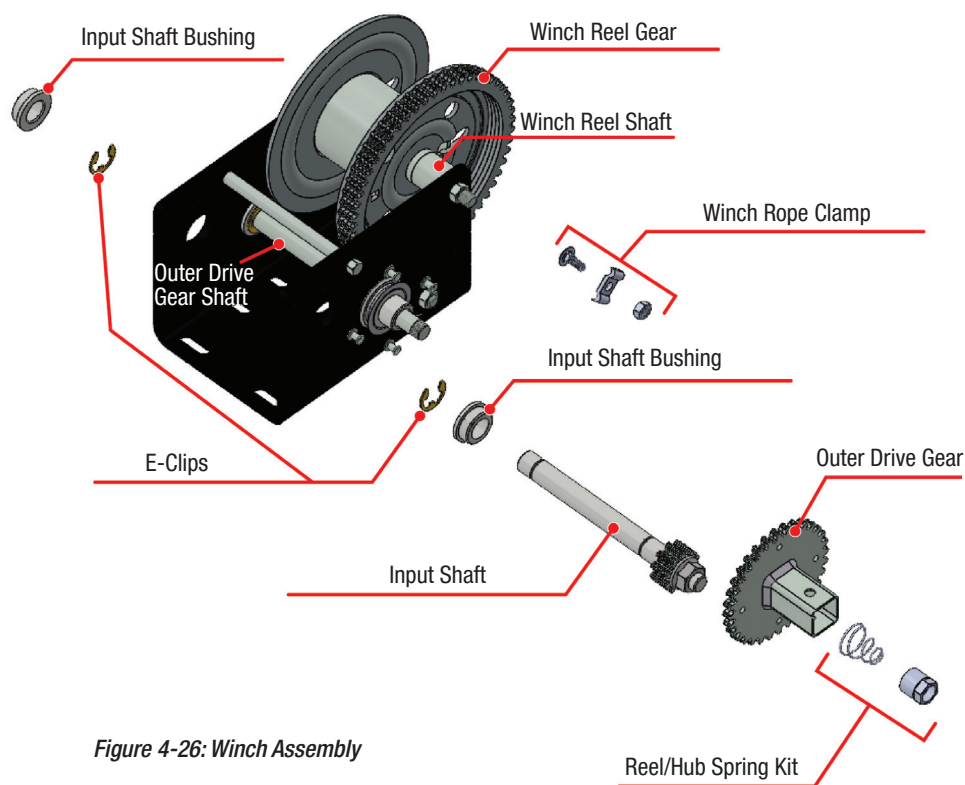


Figure 4-26: Winch Assembly

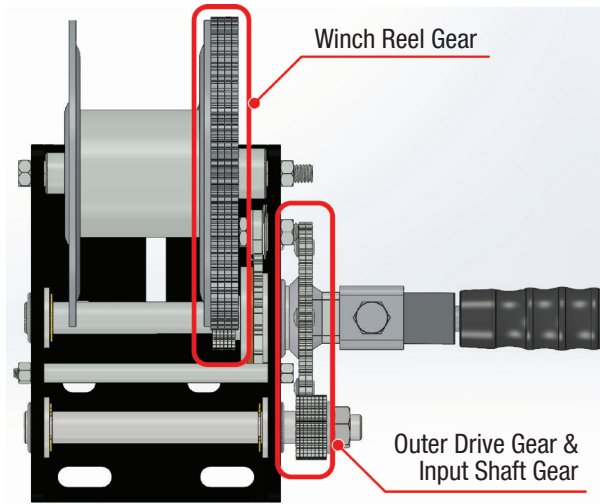


Figure 4-27: Grease Application

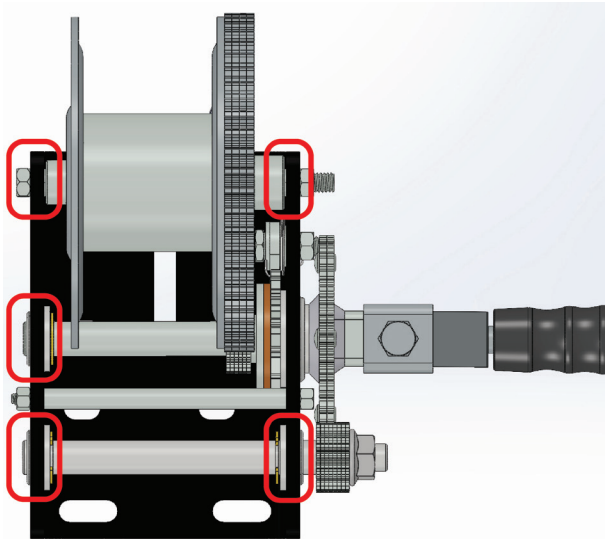


Figure 4-28: Mineral Oil Application Points

4.4 SLIDE BLOCK REPLACEMENT

The slide blocks prevent the mast sections from displacing from below or above the mast assembly. They also are guides for the mast sections to run upon.

If one or more slide blocks are damaged, follow the instructions below to replace.

Tools needed:

- 3/8 in. Hex Wrench

1. You will need to have the mast assembly in a near horizontal position to access the mast section that contains the damaged slide blocks. Follow the information in *Section*

4.1.1 Replacing Worn, Damaged, or Broken Cable on how to position the mast assembly, remove slide blocks, and slide the mast sections to gain access to a particular area.

The slide blocks are located at the top and bottom of the front side of each mast. There are no slide blocks on the fork carriage.

You will need to feed out some of the cable from the winch in order to allow the mast segments to slide and move as needed.

2. Move each mast section up or down to reveal the affected slide block (see Figures 4-29 and 4-30). Using 3/8 in. hex wrench, remove the damaged white plastic slide block and discard.
3. Using 3/8 in. hex wrench, install the new slide block. Do not over-tighten the slide block bolt as this may deform the slide block and cause unnecessary friction. Torque to 10-13 ft-lbs.
4. Re-install any components removed to gain access to the damaged parts.

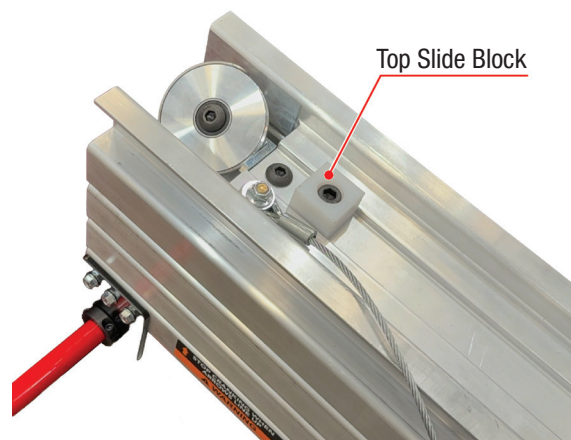


Figure 4-29: Top Slide Block

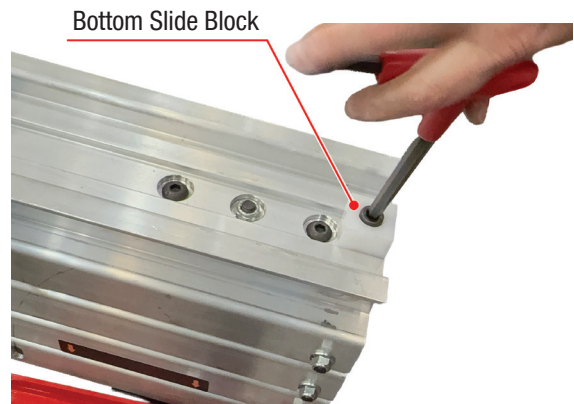


Figure 4-30: Bottom Slide Block



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