

OPERATOR'S MANUAL



Model 375ST SpeedTender™ Seed Delivery System

375 Unit Tank Capacity
8" Belt Conveyor or 8" Poly-Cup Plastic Auger Unloading System



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TO THE DEALER:

Read manual instructions and safety rules. Make sure all items on the Dealer's Pre-Delivery and Delivery Check Lists in the Operator's Manual are completed before releasing equipment to the owner.

The dealer must complete the Warranty Registration Card attached to the front inside cover of this manual and return to J. & M. Mfg. Co., Inc. at the address indicated on the card. Warranty claims will be denied if the Warranty Registration Card has not been completed and returned.

EXPRESS WARRANTY:

J. & M. Mfg. Co. Inc. warrants against defects in construction or materials for a period of ONE year. We reserve the right to inspect and decide whether material or construction was faulty or whether abuse or accident voids our guarantee.

Warranty service must be performed by a dealer or service center authorized by J. & M. Mfg. Co. Inc. to sell and/or service the type of product involved, which will use only new or remanufactured parts or components furnished by J. & M. Mfg. Co. Inc. Warranty service will be performed without charge to the purchaser for parts or labor based on the Warranty Labor Times schedule. Under no circumstance will allowable labor times extend beyond the maximum hours indicated in the Warranty Labor Times schedule for each warranty procedure. The purchaser will be responsible, however, for any service call and/or transportation of the product to and from the dealer or service center's place of business, for any premium charged for overtime labor requested by the purchaser, and for any service and/or maintenance not directly related to any defect covered under the warranty. Costs associated with equipment rental, product down time, or product disposal are not warrantable and will not be accepted under any circumstance.

Each warranty term begins on the date of product delivery to the purchaser. Under no circumstance will warranty be approved unless (i) the product warranty registration card (attached to the inside of the Operator's Manual) has been properly completed and submitted to the equipment manufacturer, and (ii) a warranty authorization number has been issued by the equipment manufacturer. This Warranty is effective only if the warranty registration card is returned within 30 days of purchase.

This warranty does not cover a component which fails, malfunctions or is damaged as a result of (i) improper modification or repair, (ii) accident, abuse or improper use, (iii) improper or insufficient maintenance, or (iv) normal wear or tear. This warranty does not cover products that are previously owned and extends solely to the original purchaser of the product. Should the original purchaser sell or otherwise transfer this product to a third party, this Warranty does not transfer to the third party purchaser in any way. J. & M. Mfg. Co. Inc. makes no warranty, express or implied, with respect to tires or other parts or accessories not manufactured by J. & M. Mfg. Co. Inc. Warranties for these items, if any, are provided separately by their respective manufacturers.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS, IMPLIED OR STATUTORY, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE.

In no event shall J. & M. Mfg. Co. Inc. be liable for special, direct, incidental or consequential damages of any kind. The exclusive remedy under this Warranty shall be repair or replacement of the defective component at J. & M. Mfg. Co. Inc.'s option. This is the entire agreement between J. & M. Mfg. Co. Inc. and the Owner about warranty and no J. & M. Mfg. Co. Inc. employee or dealer is authorized to make any additional warranty on behalf of J. & M. Mfg. Co. Inc.

General Information

The manufacturer reserves the right to make product design and material changes at any time without notice. They shall not incur any obligation or liability to incorporate such changes and improvements in products previously sold to any customer, nor shall they be obligated or liable for the replacement of previously sold products with products or parts incorporating such changes.

SERVICE:

The equipment you have purchased has been carefully manufactured to provide dependable and satisfactory use. Like all mechanical products, it will require cleaning and upkeep. Lubricate the unit as specified. Observe all safety information in this manual and safety signs on the equipment.

For service, your authorized J. & M. dealer has trained mechanics, genuine J. & M. service parts, and the necessary tools and equipment to handle all your needs.

Use only genuine J. & M. service parts. Substitute parts may void the warranty and may not meet standard required for safe and satisfactory operating. Record the model number and serial number of your equipment in the spaces provided:

Serial # _____ Purchase Date: _____ Purchased From: _____





Please provide this information to your dealer to obtain the correct parts:

TO THE OWNER:

The purpose of this manual is to assist you in operating and maintaining your Speed Tender in a safe manner. Read it carefully. It furnishes information and instructions that will help you achieve years of dependable performance and help maintain safe operating conditions. If this machine is used by an employee or is loaned or rented, make certain that the operator(s), prior to operating:

1. Is instructed in safe and proper use.
2. Review and understands the manual(s) pertaining to this machine.

Throughout this manual, the term **IMPORTANT** is used to indicate that failure to observe can cause damage to equipment. The terms **CAUTION**, **WARNING** and **DANGER** are used in conjunction with the Safety-Alert Symbol. When you see this symbol, carefully read the message that follows and be alert to the possibility of personal injury or death.

-  This Safety-Alert symbol indicates a hazard and means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**
-  **DANGER:** Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.
-  **WARNING:** Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed.
-  **CAUTION:** Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury.
- IMPORTANT:** Indicates that failure to observe can cause damage to equipment.
- NOTE:** Indicates helpful information.

SAFETY RULES:

 **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**

Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be erased by an operator's single careless act. In addition, hazard control and accident prevention are dependent upon the awareness, concern, judgment, and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.

Make certain that the operator(s), prior to operating is instructed in safe and proper use and reviews and understands the manual(s) pertaining to this machine. Also make certain that the operator(s) reviews and understands the operator's manual of the tow vehicle prior to hooking up or operating the Speed Tender.

Read this manual before you operate this machine. If you do not understand any part of this manual, or need more information, contact the manufacturer or your authorized dealer.

Safety Rules Next Page

General Information

1. Understand that your safety and the safety of other persons are measured by how you service and operate this machine. Know the positions and functions of all controls before you try to operate them. Make sure to check all controls in a safe area before starting your work.
2. The safety information given in this manual does not replace safety codes, federal, state, or local laws. Make certain your machine has the proper equipment as designated by local laws and regulations.
3. A frequent cause of personal injury or death is from persons falling off equipment and being run over. Do not permit persons to ride on this machine.
4. Secure Speed Tender safety chain to towing vehicle before transporting. Do not transport without safety chains being attached to tow vehicle.
5. Make sure that the conveyor/auger is fastened securely to the boom arm, and the boom arm is resting on the boom arm support with lynch pin in place before transport.
6. Use good judgment when transporting Speed Tender on a highway. Maintain complete control at all times. Regulate speed to road conditions. Do not transport unit with rear compartment full and front compartment empty. The unit may not be properly balanced, offsetting the tongue weight of the Speed Tender.
7. When transporting on public roads, the conveyor must be in the forward position to meet with lighting and visibility marking requirements.
8. Do not travel faster than 10 m/h. during off highway travel. Drive slowly over rough ground, hill sides, and around curves to avoid tipping. Use extreme care when operating close to ditches, fences, or on hill sides.
9. Use care when moving or operating Speed Tender near electric lines as serious injury or death can result from contact.
10. Never adjust, service, clean, or lubricate Speed Tender until all power is shut off and the battery is disconnected. Keep all safety shields in place.
11. Carbon monoxide can cause severe nausea, fainting, or death. Do not operate engine in closed or confined work area.
12. Explosive fuel can cause fires and severe burns. Stop engine before filling fuel tank.
13. Hot parts can cause severe burns. Do not touch engine while operating or just after stopping.
14. Hydraulic oil leaking under pressure can penetrate skin and cause infection or other injury.
15. To prevent personal injury when working with hydraulic power unit:
 - a. Relieve all pressure before disconnecting fluid lines.
 - b. Before applying pressure, make sure all connections are tight and components are in good condition.
 - c. Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose.
16. Make sure that everyone is clear of equipment before applying power or moving the Speed Tender.
17. Before filling the Speed Tender, make certain that no one is inside the grain tanks. Never allow children or anyone in, near, or on the Speed Tender during transport or during loading and unloading of grain. Be aware that moving grain is dangerous and can cause entrapment, resulting in severe injury or death by suffocation.
18. Before unhooking the Speed Tender from the transport vehicle, be sure to properly block the wheels to prevent the Speed Tender from moving.
19. When using the Conveyor Swing option be sure to stand clear of the swining boom arm at all times.

1.1 Preparing the Towing Vehicle

Before towing the Speed Tender, refer to towing vehicle's owner's manual for information concerning hitch capacities, hitch adjustments, and tire inflation.

Towing vehicle must be equipped with proper electric braking components.

NOTE: The Speed Tender is equipped with LED lights. The towing vehicle may require a flasher upgrade for lights to operate properly.

Do not exceed towing vehicles GVWR (Gross Vehicle Weight Rating) or GCWR (Gross Combination Weight Rating), or the maximum hitch load.

1.2 Preparing Speed Tender

Hydraulics: Check routing of all hydraulic hoses. Hoses should not be kinked, twisted or rubbing against sharp edges. Check all hoses and fittings for hydraulic leaks. Tighten and /or repair or replace as required.

Lubrication: Lubricate Speed Tender as outlined in Service section 2.1. Refer to engine manual for proper fluid levels in engine.

Tires/Wheels: Check tire pressures and maintain at recommended operating pressure. It is important to check wheel nut/bolts for proper torque as recommended. You can find proper tire pressure and wheel torque located in service manual section.

1.3 Connecting Speed Tender to the Towing Vehicle

 **WARNING:** Do not stand between the Speed Tender and tow vehicle when hooking up.

NOTE: The Speed Tender comes standard with a 2 5/16" ball coupler and has an optional 3" lunette eye. Also the Speed Tender can come with an optional Gooseneck Frame in place of the A-Frame. The Gooseneck Frame can feature either a 2 5/16" ball coupler or a 5th Wheel hook up.

1. Back tow vehicle up to Speed Tender.
2. Align the vehicle's ball or lunette eye with the coupler or ring on the Speed Tender.
3. Lift tongue latch lever.
4. Lower jack to set Speed Tender coupler down on ball or lunette eye hook.
5. Latch coupler and insert pin. Check to make sure that coupler is securely latched.
6. Pivot jack to transport position and pin in place.
7. Attach 7-way plug to tow vehicle. Check the length of the Speed Tender 7-way to make sure that it is long enough to turn, but not too long to touch the ground.

NOTE: Check to make sure that lights are in proper operating condition and repair or replace if necessary.

8. Connect the brake breakaway cable to towing vehicle.
9. Attach safety chains to tow vehicle by crossing chains (Figure 1.1). Allow enough slack in chains necessary for turning.
10. Test the breaks and all the lights on the Speed Tender

 **WARNING:** Check safety chains for broken, stretched or damaged link or end fittings. Replace chains if found to be damaged. Do not weld safety chains.

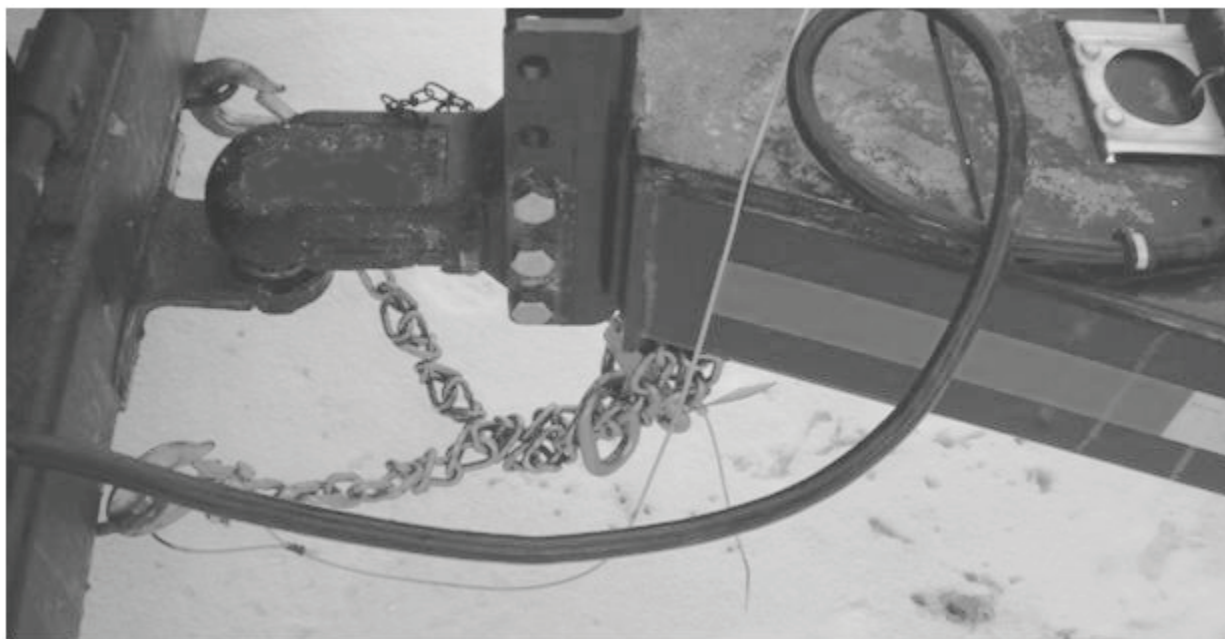


Figure 1.1

1.4 Transporting

NOTE: Make sure the jack is in the horizontal position before transporting.

NOTE: Check to make sure the boom arm is in the boom rest and the lynch pin is in place with the conveyor/auger ratchet strap securely fastened.

NOTE: Make sure that the collapsible hopper is in the up position.

When transporting the Speed Tender on public roads, it is recommended to have the boom in the forward facing position. The rearward facing position may not comply with state law for lighting and marking requirements.

⚠ WARNING: Travel at a safe speed that allows you to maintain complete control of towing vehicle and Speed Tender at all times.

1.5 Hydraulic Power Unit Operation

⚠ WARNING: Explosive fuel can cause fires and severe burns. Stop engine before filling fuel tank.

⚠ WARNING: Carbon monoxide can cause severe nausea, fainting or death. Do not operate engine in an enclosed or confined area.

⚠ WARNING: Hot parts can cause severe burns. Do not touch engine while operating or just after stopping.

⚠ WARNING: Acid from battery can cause fires and severe acid burns. Make sure to charge battery in well-ventilated area.

⚠ WARNING: Make sure to relieve hydraulic pressure before working on hydraulic system.



WARNING: Purge hydraulic system of air before operating Speed Tender to prevent serious injury or death.



WARNING: Wear proper hand and eye protection when searching for leaks. Use wood or cardboard instead of hands.

1. Check to make sure all fittings and hardware are in proper operating condition. Replace if worn or broken. Check engine fluid levels and sight gauge on reservoir for proper operating levels.
2. Slide the Fuel Shut-off Lever to the “ON” position (Figure 1.2).
3. Slide Choke Lever to the “ON” position (Figure 1.2).
4. Turn the key to the start position. Once engine starts, release key (Figure 1.2).
5. After starting, allow the engine to warm-up. Slide choke to the “OFF” position, and increase throttle speed (Figure 1.2).
6. To turn the engine off, slide the Fuel Shut-off to the “OFF” position (Figure 1.2).

NOTE: In extremely cold weather, it is best to allow engine and hydraulics to warm-up before increasing throttle speed.

NOTE: If a hydraulic leak appears, turn off immediately and take appropriate action.

NOTE: See Engine manual for more details on upkeep and service.

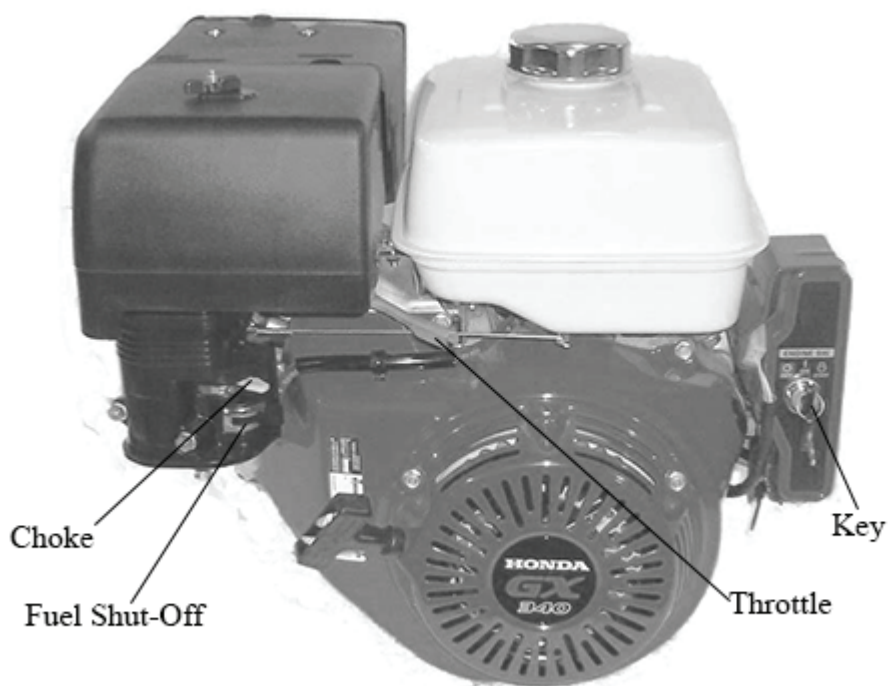


Figure 1.2

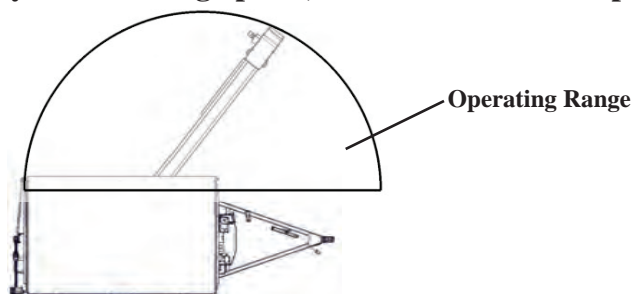
1.6 Field Operation

WARNING: The Speed Tender must be hooked to the towing vehicle during loading and unloading.

1. Position the Speed Tender next to the planter/drill so the conveyor/auger will reach the planter box.
 2. Remove lynch pin from Boom Arm. (Figure 1.3).
 3. Start the hydraulic power unit and increase throttle speed. (Allow hydraulic fluid to warm-up.) (Figure 1.2).
 4. Raise the boom out of the Boom Rest using the handheld control (Figure 1.4).
- NOTE: Wireless options feature a Wireless Remote (Figure 1.4).**
5. Move the Boom Lock Handle to the unlock position. This will allow the boom to swing side to side (Figure 1.3).

NOTE: Hydraulic swing for the Conveyor/Auger is available.

WARNING: When operating the hydraulic swing option, Do Not stand in the operating range of the Conveyor/Auger.



WARNING: If you are parked on an incline the boom arm may swing freely. (It is advised that you do not use the Speed Tender on uneven ground).

6. When conveyor/auger is located in desired position slide the boom lock handle to the lock position.
7. Check to make sure the hopper is in the up position (Figure 1.4)

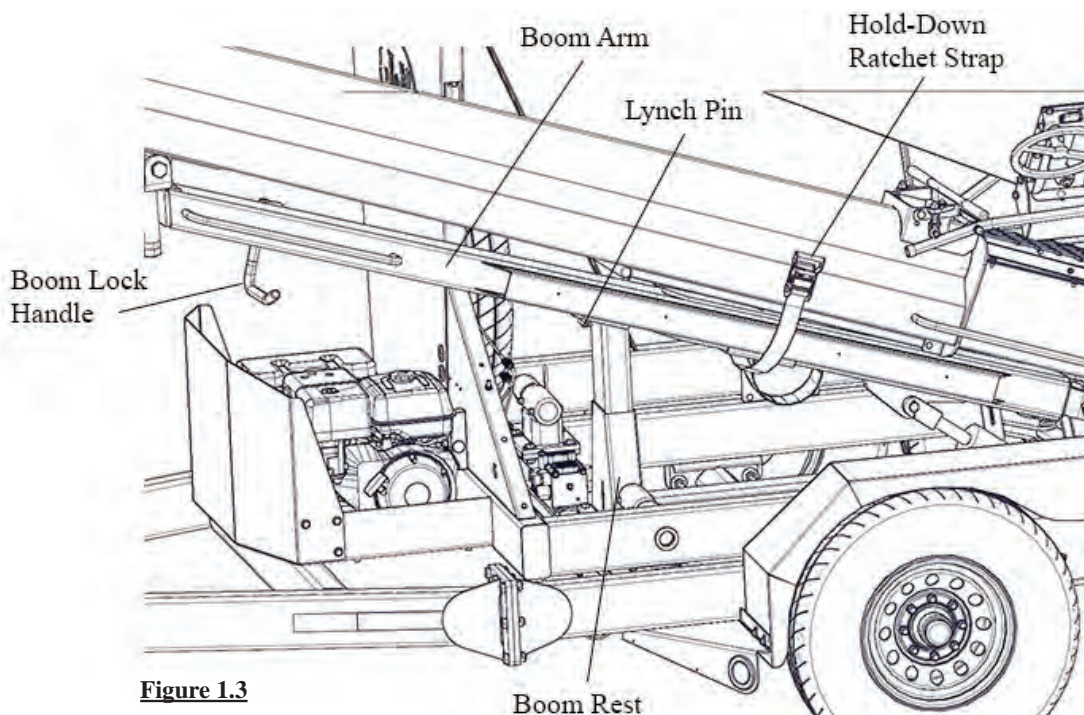


Figure 1.3



Figure 1.4
See Section 4.1 for Remote Options

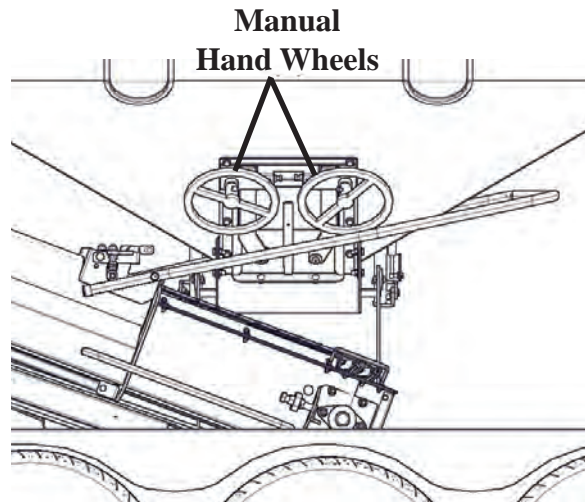


Figure 1.5

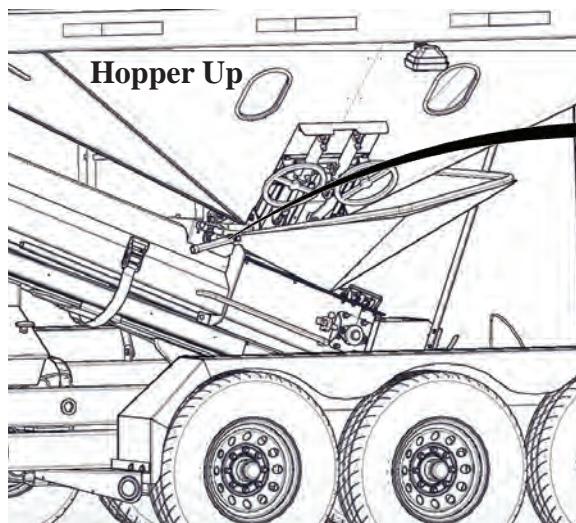
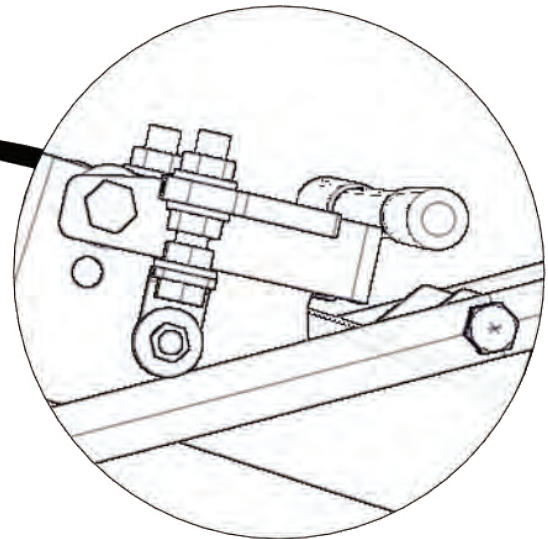


Figure 1.6



8. Open door on Speed Tender with manual hand wheel (Figure 1.5).
NOTE: The deluxe option handheld control and wireless remote operates the opening and closing of hydraulic doors (Figure 1.4).

⚠ WARNING: Empty-out the rear compartment first to help prevent the chance of flipping the Speed Tender.

9. Use the Handheld Control or Wireless Remote to start the conveyor/auger.
10. Fill the planter/drill to desired level then repeat.
NOTE: Adjusting engine throttle will regulate conveyor/auger speed.
11. Close door on Speed Tender before the last planter seed box is full so you can completely empty-out collapsible hopper and conveyor/auger.
12. Move the boom lock handle to the unlock position (Figure 1.3).

⚠ CAUTION: If you are parked on an incline the boom arm may swing freely. (It is advised that you do not use the Speed Tender on uneven ground).

13. Position boom above boom rest and lower to allow its full weight on the boom rest.
14. Replace lynch pin in Boom Arm.
15. Move the boom locking handle to lock position.
16. Make sure that the conveyor/auger hold down ratchet strap is tight enough that the conveyor auger will not move during transportation.
17. Make sure the collapsible hopper is in the up position for storage (Figure 1.6).
NOTE: If you are not using an optional hopper cover this will help the water drain out of the hopper.
18. Run the engine at 1/2 to full rpm for 20 minutes to recharge the battery.
19. Slide the fuel shut off lever to the “OFF” position. This will allow the engine to shutoff by running out of gas.
20. Turn the key to the “OFF” position.

1.7 Filling Speed Tender From Another Wagon or Bulk Container

⚠ WARNING: The Speed Tender must be hooked to the towing vehicle during loading and unloading.

1. Remove lynch pin from Boom Arm (Figure 1.3).
2. Start the hydraulic power unit and increase throttle speed. (Allow hydraulic fluid to warm up.)
NOTE: Make sure collapsible hopper is in the down position.
3. Raise the boom out of boom rest using the handheld control. (Figure 1.4).
NOTE: Wireless options feature a Wireless Remote (Figure 1.4).
4. Move the boom lock handle to the unlock position. This will allow the boom to swing (Figure 1.3).

⚠ CAUTION: If you are parked on an incline, the boom arm may swing freely. (It is advised that you do not use Speed Tender on uneven ground)

5. Rotate the conveyor/auger to 45 deg. (Figure 1.8)
6. Lower the boom so you can remove the telescoping spout from the discharge end of the conveyor/auger.
7. Undo the conveyor/auger hold down ratchet strap (Figure 1.3).
8. Swing the collapsible hopper end out from under the Speed Tender shell.
9. Position the discharge end over the Speed Tender.
NOTE: The conveyor/auger is equipped with a stand (Figure 1.7). (It is recommended for use whenever possible to maximize conveyor performance and for easier access to discharge point on bulk seed containers).
10. Lock the Boom Arm in place.

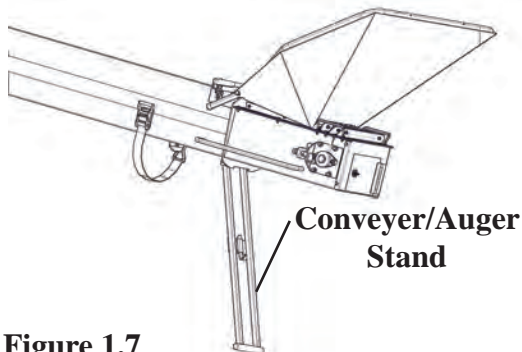


Figure 1.7

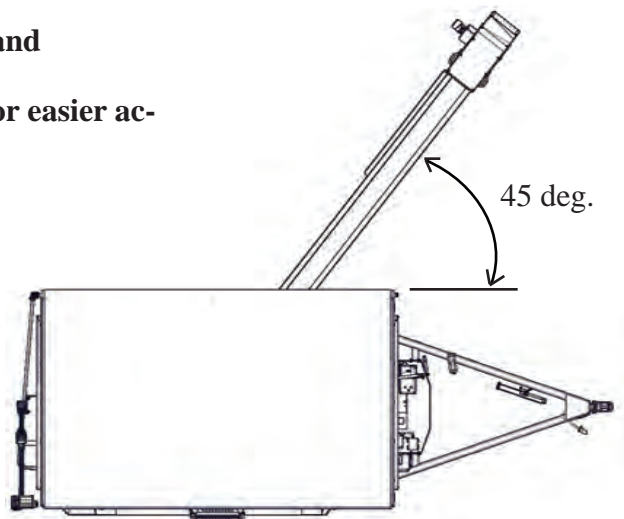


Figure 1.8

1.0 Operations

11. Lock collapsible hopper in the up position (Figure 1.6).
12. Position the wagon or bulk seed container over the collapsible hopper.
13. Use the handheld controller or wireless remote to start the conveyor/auger.
14. Fill the Speed Tender to desired level.



WARNING: Fill the front compartment first to help prevent the chance of flipping.

15. Run the conveyor/auger until the collapsible hopper is empty.
16. When finished loading seed into the Speed Tender, move the wagon or bulk seed container away from conveyor/auger.
17. Place collapsible hopper in the down position.
18. With the Boom Arm at a 45 deg. angle and locked, Swing the conveyor/auger back into the resting position on the boom arm (Figure 1.8).
19. Place the conveyor/auger hold down ratchet strap around the conveyor/auger and tighten the strap (Figure 1.3).
20. Move the boom locking handle to the unlock position (Figure 1.3).



CAUTION: If you are parked on an incline, the boom arm may swing freely. (It is advised that you do not use the Speed Tender on uneven ground.)

21. Position boom arm above the boom rest and lower to allow its full weight on the boom rest.
 22. Replace lynch pin in boom arm pin.
 23. Move the boom lock handle to the lock position.
 24. Make sure that the conveyor/auger hold down ratchet strap is tight enough that the conveyor/auger will not move during transport.
 25. Make sure the collapsible hopper is in the up position for storage (Figure 1.6).
- NOTE: This will help the water drain out of the hopper.**
26. Run the engine at 1/2 to full rpm for 20 minutes to recharge the battery.
 27. Slide the fuel shut off lever to the “OFF” position. This will allow the engine to shutoff by running out of gas.
 28. Turn the key to the “OFF” position.

1.8 Cleaning out Collapsible Hopper and Conveyor/Auger



WARNING: The Speed Tender must be hooked to the towing vehicle during loading and unloading.

1. Remove lynch pin from Boom Arm (Figure 1.3).
 2. Start the hydraulic power unit and increase throttle speed. (Allow hydraulic fluid to warm up if it is cold outside) (Figure 1.2).
- NOTE: Make sure collapsible hopper is in the down position.**
3. Raise the boom out of boom rest using the handheld control. (Figure 1.4).
- NOTE: Wireless options feature a Wireless Remote (Figure 1.4).**
4. Move the boom lock handle to the unlock position. This will allow the boom to swing (Figure 1.3).



CAUTION: If you are parked on an incline, the boom arm may swing freely. (It is advised that you do not use Speed Tender on uneven ground).

5. Rotate the conveyor/auger to 45 deg. (Figure 1.8).
6. Lower the boom so you can remove the telescoping spout from the discharge end of the conveyor/auger.

1.0 Operations

7. Undo the conveyor/auger hold down ratchet strap (Figure 1.3).
8. Swing the collapsible hopper end out from under the Speed Tender shell.
9. Move the boom lock handle to the “Lock” position.
10. Place the collapsible hopper in the up position (Figure 1.6)
11. With the discharge end lower than the collapsible hopper end, place the discharge end into a 5 Gal. bucket (Figure 1.9). Using the hand held controller, start the conveyor/auger and run until completely empty.
12. Lower the collapsible hopper end back down to the ground. This will allow you to open the clean-out door. (Figure 1.10)



Figure 1.9

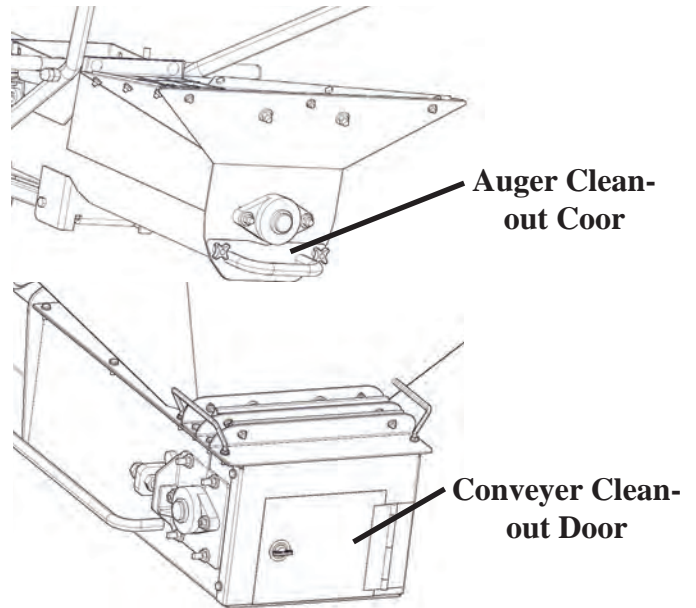


Figure 1.10

13. Place collapsible hopper in the down position.
14. Move the boom lock handle to the unlock position (Figure 1.3).



CAUTION: If you are parked on an incline, the boom arm may swing freely. (It is advised that you do not use Speed Tender on uneven ground).

15. With the boom arm at a 45 Deg. angle, Swing the conveyor/auger back into the resting position on the boom arm (Figure 1.8).
16. Place the conveyor/auger hold down ratchet strap around the conveyor/auger and tighten the strap (Figure 1.3).
17. Position boom arm above boom rest and lower to allow its full weight on the boom rest.
18. Replace lynch pin in boom pin.
19. Move the boom lock handle to the lock position.
20. Make sure that the conveyor/auger hold down ratchet strap is tight enough that the conveyor/auger will not move during transportation.
21. Make sure the collapsible hopper is in the up position for storage (Figure 1.6).
NOTE: This will help the water drain out of the hopper.
22. Slide the fuel shut off lever to the “OFF” position. This will allow the engine to shutoff by running out of gas.
23. Turn the key to the “OFF” position.

1.9 Adjusting the Tarp Tension in Hanger Bracket

1. Fully unroll the tarp as shown in Figure 1.11.
2. Remove the two bolts that hold the tarp U-Joint on the splined shaft.
3. Remove the u-joint from the spline shaft.
4. Rotate u-joint and handle three or four spline teeth.
NOTE: Clockwise to tighten the tarp or counter-clockwise to loosen it.
5. Slide the u-joint and handle back onto the spline shaft.
6. Replace and tighten the two bolts.



Figure 1.11

1.10 Basic Scale Operations

1. Turn the scale “ON” by pressing the on/off button. The display shows “Hello” then the current weight value is displayed.
2. Press G/N to access the gross mode. (Live scale weight is displayed in the G/N weighing mode.)
3. In the gross mode, press the ZERO/CLEAR key to zero the indicator when the Speed Tender is empty.
4. After initial amount is placed on the scale, press the TARE Key. (Weight is tarred off and goes into net mode, showing weight).
5. Load or unload material as needed (Shows + when loading and a – value when unloading).
6. When the display reaches the proper amount, stop loading or unloading.
7. Repeat steps 2 through 4 until complete.
NOTE: For more information, refer to the scale manual.

2.1 Grease Conveyor/Auger Bearings

Grease the conveyor/auger bearings every 10 hours of operation and before storage. Use only two pumps of grease per bearing (Figure 2.1).

NOTE: Over lubrication of these bearings will result in premature failure.

NOTE: The conveyor has four bearings that need grease (two at each end). The auger is equipped with one bearing (at hopper end).

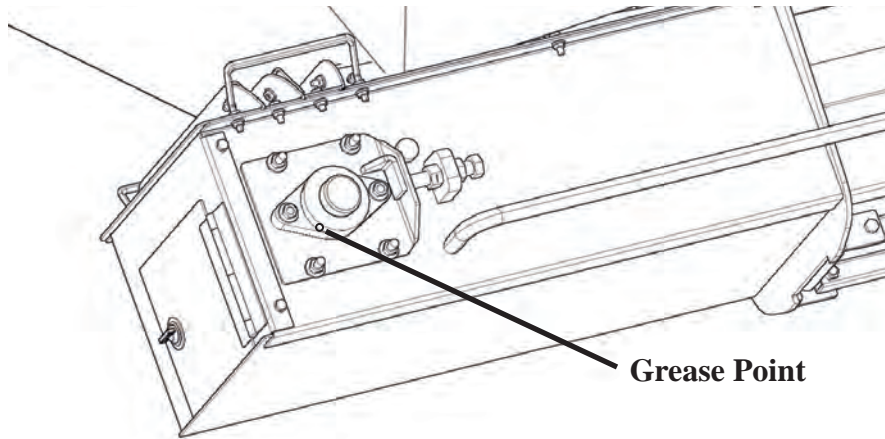


Figure 2.1

2.2 Grease Boom Arm

Grease pivot points on boom arm every 50 hours and before storage (Figure 2.2).

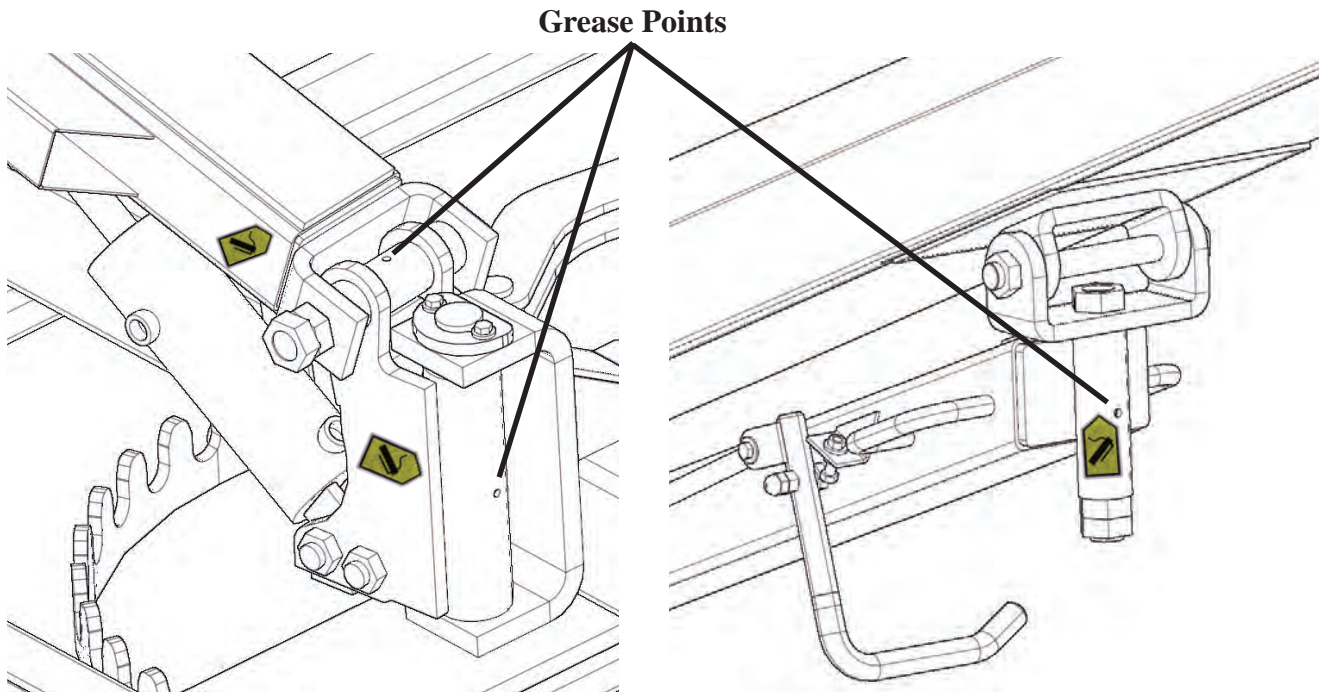


Figure 2.2

2.3 Tire Pressure

The following is to be used as a general guide for tire inflation. Figures can vary depending on specific brand of tire used. It is important that tires are inspected before and after unit is loaded. Start with the minimum pressure indicated. The tire should stand up with no side wall buckling or distress as tire rolls. Do not exceed maximum recommended tire pressure. 80 psi is the cold rating on the tire that is standard for the Speed Tender. J&M also recommends to rotate your tires front to back (not side to side) every 1,200 miles or 12 months (whichever comes first) for longer tire life. Figure 2.3 below is a troubleshooting chart used to ensure the tires wear evenly.







	Condition	Possible Cause	Remedy
	Even Center Wear	Over Inflation	Check & Adjust Pressure When Cold
	Inside & Outside Wear	Under Inflation	Check & Adjust Pressure When Cold
	Smooth, Side Wear - One Side	Loss of Camber or Overloading	Check & Unload As Necessary Have Alignment Checked
	"Feathering" Across The Face	Axle Not Square To Frame or Incorrect Toe In	Square Axles Have Alignment Checked
	Cupping	Loose Bearings or Wheel Balance	Check Bearing Adjustment and Wheel & Tire Balance
	Flat Spots	Wheel Lockup	Adjust Brakes

Figure 2.3

2.4 Tightening Lugnuts

Torque lug-nuts on new and removed wheels to 220 ft. lbs. after the first 10, 25, and 50 miles of driving, then recheck torque every 50 hours or every year, whichever comes first.

2.5 Wheel Bearings

The wheel bearings need to be cleaned, inspected, and repacked every 12 months or 12,000 miles. Use a number 2 wheel bearing grease to repack the bearings.

Bearing Inspection and Service:

1. Jack up Speed Tender.
2. Remove wheel lug-nuts.
3. Remove wheel from hub.
4. Remove grease cap.
NOTE: Be careful not to dent or cut a hole in grease cap.
5. Remove the cotter pin, nut, and washer.
6. Wiggle the hub to take the outer wheel bearing out.
7. Pull hub assembly straight off the axle. If you want to reuse the grease seal, (which is not recommended), be careful to support the weight of the hub so that the end of the axle does not ruin the rubber part of the grease seal.
8. To remove the inner bearing, you must remove the grease seal.
9. Remove inner bearing.
10. Wash all grease and oil from the bearing cone using a suitable solvent. Dry the bearing with a clean, lint-free cloth and inspect each roller completely. If any pitting, scalding, or corrosion is present, then the bearing must be replaced. The bearing cups inside the hub must be inspected.
NOTE: Bearings must always be replaced in sets of a cone and a cup (See bearing cup replacement on following page.)
11. Repack inner bearing with new grease.
 - A. Place a moderate amount of grease in the palm of one hand.
 - B. Hold the inner bearing, large side down, in your other hand
 - C. Using the edge of the bearing like an ice-cream scoop, work it in until you see fresh grease come out of the top side of the bearing.
 - D. Rotate 1/8 of a turn and repeat until the whole bearing is full of fresh grease.
12. Place the inner bearing in the back of the wheel hub and add a liberal dose of grease.
13. Position the new wheel seal in its recess and lightly set it with a hammer.
NOTE: Be careful to not deform the metal part of the seal.
14. Slide the hub assembly onto the spindle and push it back into position.
15. Grease the outer bearings by hand. (See step 11)
16. Slide it and the spindle washer onto the spindle and into the hub recess.
17. Install and bottom out the spindle nut, then back it off 1/4 turn.
18. Reinstall the spindle nut and replace the cotter pin with a new one.
NOTE: If the castle nut does not line up with the hole in the spindle, then loosen the nut slightly until it does.
19. Pack the bearing cap with fresh grease and lightly drive it into the hub recess with a hammer.
20. Reinstall the wheel onto the hub and torque the wheel lug-nuts.
NOTE: See wheel nut/bolt torque requirements located in section 2.4.

Bearing cup replacement:

1. Place the hub on a flat work surface with the cup to be replaced on the bottom side.
2. Using a brass drift punch, carefully tap around the small diameter end of the cup to drive it out.
3. After cleaning the hub bore area, replace the cup by tapping it with the brass drift punch. Be sure the cup is seated all the way up against the retaining shoulder in the hub.

2.6 Hydraulic Power Unit

Daily (every 5 hours of use):

1. Check oil level.
2. Inspect for oil leaks and repair as necessary.
3. Check all hoses, fittings, bolts and hardware to make sure that they are secure and properly tightened.
4. Check motor oil level. See Engine operator's manual for details on oil levels, oil types, and service intervals.

Once per season (every 20-25 hours of use):

Change hydraulic oil filter element with either a NAPA 1552 or a FRAM P1654A Filter.

Every two to three years (every 75-80 hours of use):

Drain oil reservoir and refill with clean, good quality hydraulic AW 32 oil. (It is not recommended to refill with tractor hydraulic oil).

Replacing hydraulic parts:

Check parts section for proper part description and part # for replacement.

Purge air from system as follows:

1. Disconnect the rod end clevis of all cylinders in a circuit and block up cylinders so the rod can completely extend and retract without contacting any other components.
2. Pressurize the system and maintain system at full pressure for at least 5 sec. after cylinder rods stop moving. Check that all cylinders have fully extended or retracted.
3. Check hydraulic reservoir and refill as needed.
4. Pressurize system again to reverse the motion of step 2. Maintain pressure on system for at least 5 sec. after cylinder rods stop moving. Check that cylinders have fully extended or retracted.
5. Check for hydraulic leaks using cardboard or wood. Tighten connections according to directions torque chart.
6. Repeat steps 2, 3, 4 and 5 (3 to 4 times).
7. Depressurize hydraulic system and connect cylinder rod clevises to their mating lugs.

2.7 Conveyor Belt Tracking

Conveyor belt must run in the center of the pulley at both the discharge end and the collapsible hopper end. Failure to do so will lead to unnecessary wear and shortening of belt life. We recommend that you check your belt for proper tracking every 10 hours of use and before every season.

Checking the belt tracking at collapsible hopper end:

1. Open clean out-door located under collapsible hopper (Figure 2.4). This will allow you to see if the belt is centered on the pulley.
2. If the tracking is ok, close the clean out-door. If tracking is off, see (Section 2.8).

Checking the belt tracking at discharge end:

1. Remove the 12 bolts located at the discharge end (Figure 2.3).
2. Remove the Discharge Pan and Rubber Discharge Pan. This will allow you to see if the belt is centered on the pulley.
3. If the belt tracking is good, reinstall the head pan. If tracking is off, see Section 2.8.

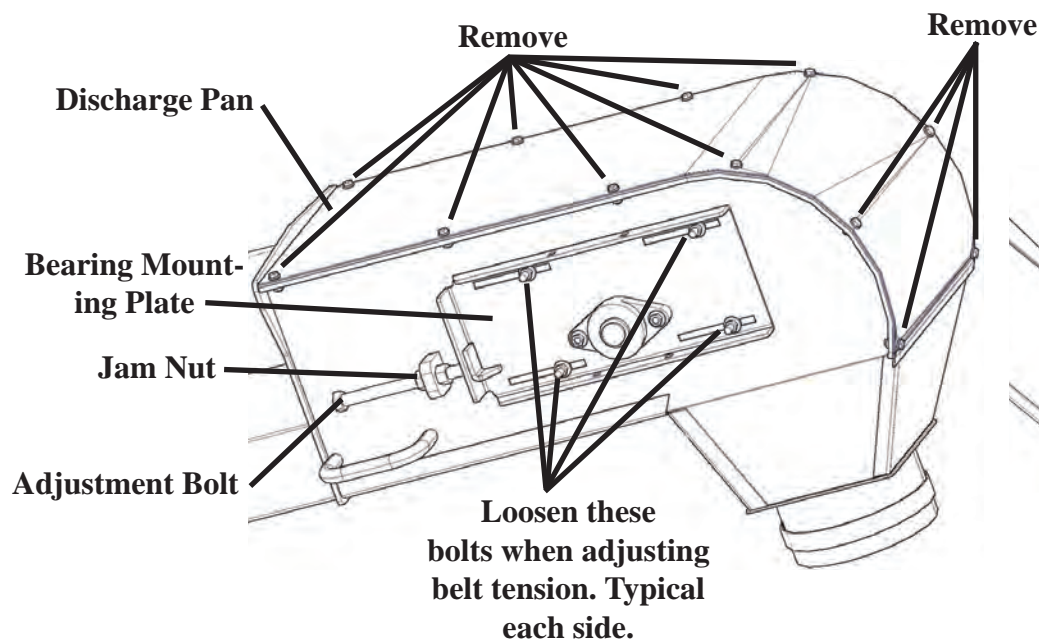


Figure 2.3

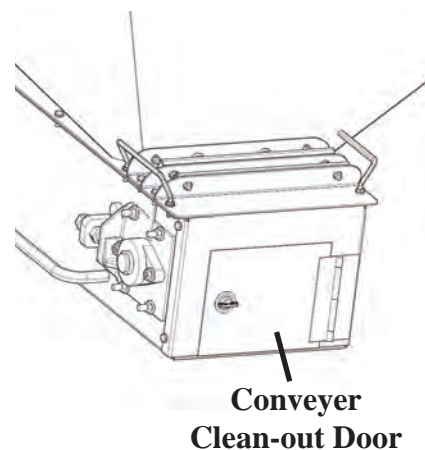


Figure 2.4

2.8 Adjusting Conveyor Belt Tracking

1. Loosen (Do Not Remove) the 4 bolts on the two bearing mounting plates located at the collapsible hopper end of the conveyor (Figure 2.5).
2. Operate the conveyor at a slow speed.

CAUTION: Keep hands and clothing away from moving parts.

3. Loosen jam nut on adjustment bolt (Figure 2.5).
4. Tighten the adjustment bolt slowly until belt is running in the center of the pulley.
NOTE: Do not loosen the Adjustment bolt.
5. Tighten all bolts on bearing mounting plate, and adjustment bolts jam nuts.
6. Repeat at discharge end.
7. When belt is running in center of the pulley on both ends of conveyor, allow the Speed Tender to run for 10 min, and recheck belt for proper tracking.

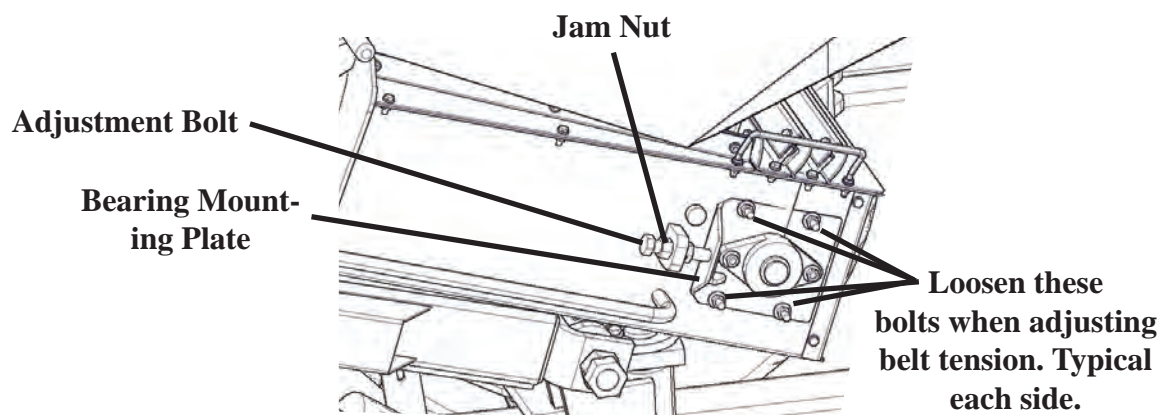


Figure 2.5

2.9 Belt Tensioning

NOTE: You need to adjust your belt tension at least once a year.

1. Remove the head pan and head pan gasket (Figure 2.3).
2. Loosen (Do Not Remove) the 4 bolts on the two bearing mounting plates located at the discharge end of the conveyor (Figure 2.3).
3. Loosen jam nut on adjustment bolt at discharge end (Figure 2.3).
4. Torque threaded adjustment bolt to 23 ft-lb.
5. Operate the conveyor at a slow speed.

 **CAUTION: Keep hands and clothing away from moving parts.**

6. If the belt is tracking properly go to step 7. If tracking is off, see Section 2.8.
7. Open the clean-out door located under collapsible hopper (Figure 2.4). This will allow you to see if the belt is centered on the pulley.
8. If the tracking is ok, close the clean-out door, tighten all hardware and go to step 9. If tracking is off, see Section 2.8.
9. Run the belt at medium speed for 10 min. and recheck the tracking at both the discharge and collapsible hopper end.
10. If tracking is off, see section 2.8.
11. If the belt is still tracking in the center of both pulleys, reinstall the head pan.

2.10 Electric Brakes

The Speed Tender is equipped with electric brakes. They need to be inspected and serviced immediately if a loss of performance is experienced. You need to service your Speed Tender brakes at least once a year with normal use.

How to use your electric brakes properly:

Your Speed Tender brakes are designed to work in synchronization with your tow vehicle brakes. Never use your tow vehicle or Speed Tender brakes alone to stop the combined load.

Your Speed Tender and tow vehicle will seldom have the correct amperage flow to the brake magnets to give you comfortable, safe braking unless you make proper brake system adjustments. Changing trailer load and driving conditions, as well as uneven alternator and battery output, can mean unstable current flow to your brake magnets. It is therefore imperative that you maintain and adjust your brakes as set forth in this manual, use a properly modulated brake controller, and perform the synchronization procedure noted below.

In addition to the synchronization adjustment detailed below, electric brake controllers provide a modulation function that varies the current to the electric brakes with the pressure on the brake pedal or amount of deceleration of the tow vehicle. It is important that your brake controller provide approximately 2 volts to the braking system when the brake pedal is first depressed and gradually increases the voltage to 12 volts as brake pedal pressure is increased. If the controller “jumps” immediately to a high voltage output, even during a gradual stop, then the electric brakes will always be fully energized and will result in harsh brakes and potential wheel lockup.

To synchronize:

To insure safe brake performance and synchronization, read the brake controller manufacturer’s instruction completely before performing the synchronization procedure.

Make several hard stops from 20 m/h on a dry paved road that is free of sand and gravel. If the Speed Tender brakes lock and slide, decrease the gain setting on the controller. If they do not slide, slightly increase the gain setting. Adjust the controller just to the point of impending brake lockup and wheel skid.

How to adjust electric brakes:

1. Park the Speed Tender on firm and level ground.
2. Block the trailer tires on the opposite side securely so that no forward or rearward movement is possible.
3. Jack up the Speed Tender.
4. Secure the trailer on jack stands of adequate capacity front and rear.
5. At the back of the wheel, on the brake backing plate, there is a small rubber plug near the bottom of the backing plate. Pry out this plug to give access to the star wheel adjuster.
6. Insert the brake adjuster tool and maneuver it so that the tool engages with the teeth in the star wheel. The star wheel looks like a gear with exposed teeth on the perimeter.
7. Turn the adjuster until the brake locks up (you can no longer rotate the wheel by hand). This centers the brake shoes on the brake drum so that they are in the correct position.
8. Now back off the star wheel 8 to 10 clicks or as specified by the manufacturer. The wheel should spin freely with no apparent drag to slow it down. A slight scraping noise is normal as the wheel turns.
9. Repeat this procedure for all the wheels

When to adjust brakes:

1. After the first 200 miles of operating when the brake shoes and drums have “seated.”
2. At 3,000 mile intervals or once a year, whichever comes first.

Brake Cleaning and Inspection:

Your Speed Tender brakes must be inspected and serviced at yearly intervals, (or more often as use and performance requires). Magnets and shoes must be changed when they become worn or scored thereby preventing adequate vehicle braking. Clean the backing plate, magnet arm, magnet, and brake shoes. Make certain that all the parts removed are replaced in the same brake and drum assembly. Inspect the magnet arm for any loose or worn parts. Check shoe return springs, hold down springs, and adjuster springs for stretch or deformation and replace if required.

Brake Shoe and Lining Inspection:

A simple visual inspection of your brake linings will tell if they are usable. Replacement is necessary if the lining is worn (to within 1/16” or less), contaminated with grease or oil, or abnormally scored or gouged. Hairline heat cracks are normal in bonded linings and should not be cause for concern (Figure 2.6). When replacement is necessary, it is important to replace both shoes on each brake and both brakes of the same axle. This will help retain the “balance” of your brakes.

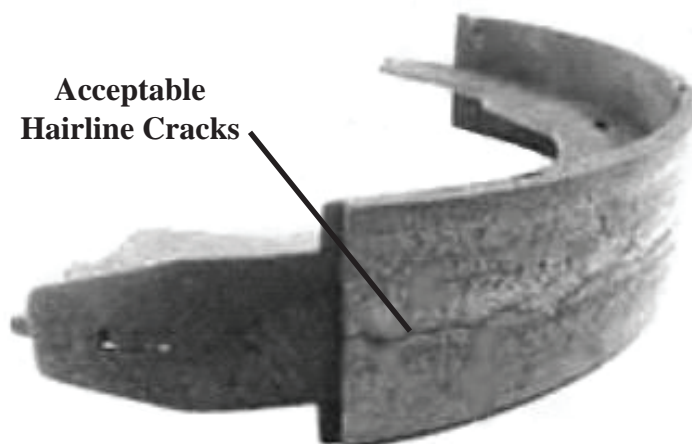


Figure 2.6

Replacing Brake Linings:

1. Remove the brake shoe retract spring.
2. Remove the shoe hold down assembly by holding the back of the pin with one hand and pushing against the spring and twisting with a hold down spring tool until the cup is released.
3. Remove both shoes together leaving the adjuster assembly and spring intact.
4. Clean the backing plate and lever arm.
5. Inspect magnet arm for any loose or worn parts.
6. Replace springs that are broken, bent, or weak.
7. Apply a light film of lubricant to the anchor pin and shoe rest pads & backing plate areas that are in contact with the lever arm.
8. Attach the adjuster screw and spring to the new brake shoes. The star wheel and adjuster must be positioned as before.
9. Install the new shoes on the backing plate and reinstall shoe retract spring.

After replacement of brake shoes and linings, the brake must be re-burnished to seat in the new components. This should be done by applying the brakes 20 to 30 times from an initial speed of 40 m/h, slowing the vehicle to 20 m/h. Allow ample time for brakes to cool between applications. This procedure allows the brake shoes to seat into the drum surface.

Brake Lubrication:

Before reassembling, apply a light film of lubrication or similar grease, or anti-seize compound on the brake anchor pin, the actuating arm bushing and pin, and the areas of the backing plate that are in contact with the brake shoes and magnet lever arm. Apply a light film of grease on the actuating block mounted on the actuating arm.

Troubleshooting:

Most electric brake malfunctions that cannot be corrected by either brake adjustments or synchronization adjustments can generally be traced to electrical system failure. Mechanical causes are ordinarily obvious, bent or broken parts, worn out linings or magnets, seized lever arms or shoes, scored drums, loose parts, etc. Voltmeter and ammeter are essential tools for proper troubleshooting of electric brakes.

How to Measure Voltage:

System voltage is measured at the magnets. Connect the voltmeter to the two magnet lead wires at any brake. This may be accomplished by using a pin probe inserted through the insulation of the wires dropping down from the chassis or by cutting the wires. The engine of the towing vehicle should be running when checking the voltage (so that a low battery will not affect the readings).

Brake Magnet Inspection:

Your electric brakes are equipped with high quality electromagnets that are designed to provide the proper force and friction. Your magnets should be inspected and replaced if worn unevenly or abnormally (Figure 2.7). Even if wear is normal as indicated by your straightedge, the magnets should be replaced if any part of the magnet coil has become visible through the friction material facing of magnet. It is also recommended that the drum armature surface be re-faced when replacing magnets. Magnets should also be replaced in pairs - both sides of an axle.

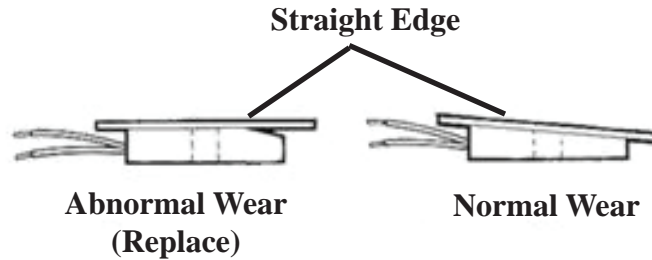


Figure 2.7

Voltage in the system should begin at 0 volts. As the controller bar is slowly actuated, the voltage should gradually increase to about 12 volts. This is referred to as modulation. No modulation means that when the controller begins to apply voltage to brakes it applies an immediate high voltage, which causes the brakes to apply instantaneous maximum power.

The threshold voltage of a controller is the voltage applied to the brakes when the controller first turns on. The lower the threshold voltage, the smoother the brakes will operate. Threshold voltage in excess of 2 volts (quite often found in heavy duty controllers) can cause grabbing, resulting in harsh braking.

How to Measure Amperage:

System amperage is the amperage being drawn by all brakes on the trailer. The engine of the towing vehicle should be running when checking amperage.

One place to measure system amperage is at the blue wire of the controller which is the output to the brakes. The blue wire must be disconnected and the amp meter put in series into the line. System amperage draw should be as noted in the table below. Make sure your ammeter has sufficient capacity and note polarity to prevent damaging your amp meter.

Brake Size	Amps/Magnet	Two Brakes	Four Brakes	Six Brakes	Magnet Ohms
12 X 2	3.0	6.0	12.0	18.0	3.2

Replacing brake magnet

1. Orient the magnet over the lever arm post such that the magnet leads are in the correct position for routing
2. Push the magnet over the lever arm post by compressing the magnet spring between the magnet and the lever arm.
3. Insert the magnet clip in the slot of the magnet. Be sure to orient the magnet clip so it will “snap” into place.
4. Press down on the magnet and install the magnet clip.
5. Be sure that the magnet moves up and down freely on the lever arm post.
6. Route the wiring in the same manner noted on removal. Be sure that wires cannot bind, pinch, or rub. Manually actuate lever arm to insure there is no interference.
7. Install strain relief bushing, allowing enough slack in the wiring to allow the lever arm to move without straining the wires. Be sure the wire cannot come in contact with the armature.
8. Connect the magnet leads to the trailer wiring harness and then reinstall hub and drum.

Brake Drum Inspection:

There are two areas of the brake drum that are subject to wear and require inspection. These two areas are the drum surface where the brake shoes make contact during stopping and the armature surface where the magnet contacts (only in electric brakes).

The drum surface should be inspected for excessive wear or heavy scoring. If worn more than .020" oversized, or if the drum has worn out of round by more than .015", then the drum surface should be turned. If scoring or other wear is greater than .090" on the diameter, the drum must be replaced. When turning the drum surface, the maximum re-bore diameter for a 12" brake drum is 12.090"

The machined inner surface of the brake drum that contacts the brake magnet is called the armature surface. If the armature surface is scored or worn unevenly, it should be refaced to a 120 micro inch finish by removing not more than .030" of material. To insure proper contact between the armature face and the magnet face, the magnets should be replaced whenever the armature surface is refaced and the armature surface should be refaced whenever the magnets are replaced.

2.11 Daily Service (5 -10 Hours of Use)

NOTE: J&M recommends the following service to be performed daily (every 5-10 hours of use)

1. Grease the conveyor/auger bearings every 10 hours. Use only two pumps of grease per bearing
NOTE: Over lubrication of these bearings will result in premature failure.
NOTE: The conveyor has 4 bearings that need greased (2 at each end). The auger is equipped with 1 bearing (at Hopper end) (See section 2.1).
2. Check your belt for proper tracking every 10 hours of use and before every season. For steps to properly track your belt see section 2.7.
NOTE: When checking the belt for tracking or when operating an auger you should empty out the clean-out door (Figure 2.4).
3. Check hydraulic oil level.
4. Inspect for oil leaks and repair as appropriate.
5. Check all hoses, fittings, bolts, and hardware to make sure that they are secure and properly tightened.
6. Check engine oil level. See Engine operator's manual for details on oil levels, oil types and service intervals.
7. Check Speed Tender breaks and lights before towing.
8. Check the Speed Tender periodically for cracks in welds and for other structural damage. Have cracked welds fixed immediately.
NOTE: Failure to have cracked welds fixed immediately could result in extensive damage to the Speed Tender and greatly reduce its life.
9. Make sure tires are properly inflated (See section 2.3).
10. Make sure wheel lug nuts are properly torqued (See section 2.4).
11. Make sure that the conveyor/auger hopper guard is in place. Do not remove.
12. Clean out the Conveyor/Auger at the end of every day of use (Section 1.8).

2.12 End of the Year Service

IMPORTANT: When the Speed Tender is not going to be used for a length of time, J & M recommends that you store the Speed Tender in a dry, protected place. Leaving your Speed Tender outside and open to the weather will shorten its life.

1. Grease the conveyor/auger bearings. Use only two pumps of grease per bearing.
NOTE: Over lubrication of these bearings will result in premature failure.
NOTE: The conveyor has four bearing that need greased (two at each end). The auger is equipped with two bearings (one at each end) (See section 2.1).
 2. Grease pivot points on boom arm before storage.
 3. The wheel bearings need to be cleaned, inspected, repacked, and adjusted. Use a number 2 wheel bearing grease to repack the bearings.
 4. Inspect and service the brakes (magnets and shoes). They must be changed when they become worn or scored, thereby preventing inadequate vehicle braking. Clean the backing plate, magnet arm, magnet, and brake shoes. Make certain that all the parts removed are replaced in the same brake and drum assembly. Inspect the magnet arm for any loose or worn parts. Check shoe return springs, hold down springs, and adjuster springs for stretch or deformation, replace as needed.
 5. Torque lug-nuts (Section 2.4).
 6. Make sure that the tires are properly inflated.
 7. Remove all grain from inside the grain tanks.
 8. Clean out the Conveyor/Auger at the end of every season (Section 1.8).
 9. Tension and track the conveyor belt. (Section 2.7).
 10. Check the Speed Tender periodically for cracks in welds and for other structural damage. Have cracked welds fixed immediately.
NOTE: Failure to have cracked welds fixed immediately could result in extensive damage to The Speed Tender and greatly reduce its life.
 11. Check hydraulic hoses for wear and replace if needed.
 12. Make sure that the conveyor/auger hopper guard is in place.
 13. Remove battery from the Speed Tender and place in a cool dry place.
NOTE: Attaching a trickle charger to the battery will help ensure a long life for your battery.
- IMPORTANT: Be sure to disconnect the scales from the battery before charging.**
14. Change hydraulic oil filter element with either a NAPA 1552 or a FRAM P1654A Filter.
 15. Top off hydraulic oil tank with good quality hydraulic AW 32 oil.
NOTE: If the Hydraulic Oil appears to be “Milky” in color it should be changed immediately. Otherwise, the Hydraulic Oil should be changed every 2-3 years. If the environment is extremely dusty or dirty the Hydraulic Oil should be changed more often.
 15. Check motor oil level. See Engine operator’s manual for details on oil levels, oil types, and service intervals.
 16. Retract all hydraulic cylinders to prevent the piston rods from rusting.
 17. Touch-up spots where paint has been worn away (use good quality primer paint - especially before applying graphite paint to the inside of the grain tank).

2.13 Removing From Storage

1. Grease the conveyor/auger bearings. Use only two pumps of grease per bearing
NOTE: Over lubrication of these bearings will result in premature failure.
NOTE: The conveyor has four bearings that need greased (two at each end). The auger is equipped with one bearing (at Hopper end) (See section 2.1).
2. Grease pivot points on boom arm.
3. Torque lug-nuts (Section 2.4).
4. Make sure that the tires are properly inflated.
5. Check your belt for proper tracking every 10 hours of use and before every season. For steps to properly track your belt (Section 2.7).
6. Check oil level.
7. Inspect for hydraulic oil leaks and repair as appropriate.
8. Check all hoses, fittings, bolts, and hardware to make sure that they are secure and properly tightened.

9. Check engine oil level. See Engine operator's manual for details on oil levels, oil types, and service intervals.
10. Check Speed Tender lights before each time you tow.
11. Make sure that the conveyor/auger hopper guard is in place.
12. Reattach battery and check to make sure that it is fully charged.

IMPORTANT: Be sure to disconnect the scales from the battery before charging.

2.14 Troubleshooting

Problems	Solutions
Unit sways during travel	
	a. Check tire pressure.
	b. Check tow vehicle for loosened hitch parts.
	c. Check tow vehicle's hitch height.
	d. Reduce towing speed.
	e. Check wheel lug-nuts.
	f. Check wheel bearings for adjustment (See section 2.5).
Tires show excessive wear	
	a. Check tire pressure.
	b. Rotate tires. (See section 2.3)
	c. Check wheel bearings for adjustment. (See section 2.5).
Wheel makes grinding or squeaking noise	
	a. Service wheel bearings. (See section 2.5).
Noisy when brakes are being applying	
	a. Properly adjust brakes.
	b. Replace any weak or broken springs in brakes.
	c. Replace the brake linings if excessively worn or contaminated
	d. Check wheel bearings for adjustment (See section 2.5).
No Brakes	
	a. Properly adjust brakes
	b. Check for short in electric circuit
	c. Replace any brake magnets that are worn or defective
Weak brakes	
	a. Properly adjust brakes
	b. Replace any excessively worn or contaminated linings.
	c. Check for short in electric circuit
	d. Replace bent backing plate
Dragging brakes	
	a. Properly adjust brakes
	b. Replace any weak or broken springs in brakes
	c. Clean and lubricate the brake assemblies

2.0 Service

Problems	Solutions
Locking brakes	
	a. Replace any weak or broken springs in brakes
	b. Replace any excessively worn or contaminated linings
Grabbing brakes	
	a. Replace any excessively worn or contaminated linings
Surging brakes	
	a. Trailer is not adequately grounded
Belt is not moving - Hydraulic pump is not producing sufficient pressure or volume to belt motor.	
	a. Check for pinched or leaking hydraulic line
	b. Allow hydraulic oil to warm up
	c. Increase engine R.P.M.
	d. Charge battery or plug in to tow vehicle
	e. Hydraulic fluid level low
	f. Hydraulic filter clogged
	g. Check for proper oil viscosity
	h. Check hydraulic output pressure.
Belt is not moving - Obstructed conveyer	
	a. Make sure conveyer is not clogged
Belt has insufficient output speed or R.P.M. - Hydraulic pump is not producing sufficient pressure or volume to belt motor.	
	a. Check for pinched or leaking hydraulic lines.
	b. Allow hydraulic oil to warm up
	c. Increase engine R.P.M.
	d. Hydraulic fluid level low
	e. Hydraulic filter clogged
	f. Check for proper oil viscosity
	g. Repair or replace worn out pump.
Belt has insufficient output speed or R.P.M. - Belt is slipping	
	a. Adjust belt tension and tracking (See section 2.8).
	b. Check telescoping spout and conveyor for a clog.
	c. Remove material from clean out door.
Belt has insufficient output speed or R.P.M. - Air in hydraulic system.	
	a. Bleed air out of hydraulic stem and fill reservoir (See section 2.6).
	b. Look for leaking or cracked fittings.
Belt has insufficient output speed or R.P.M. - Leak in motor, valve body, or bypass valves.	
	a. Replace or repair motor, valve body, or bypass valves.
	b. Check for proper oil viscosity.

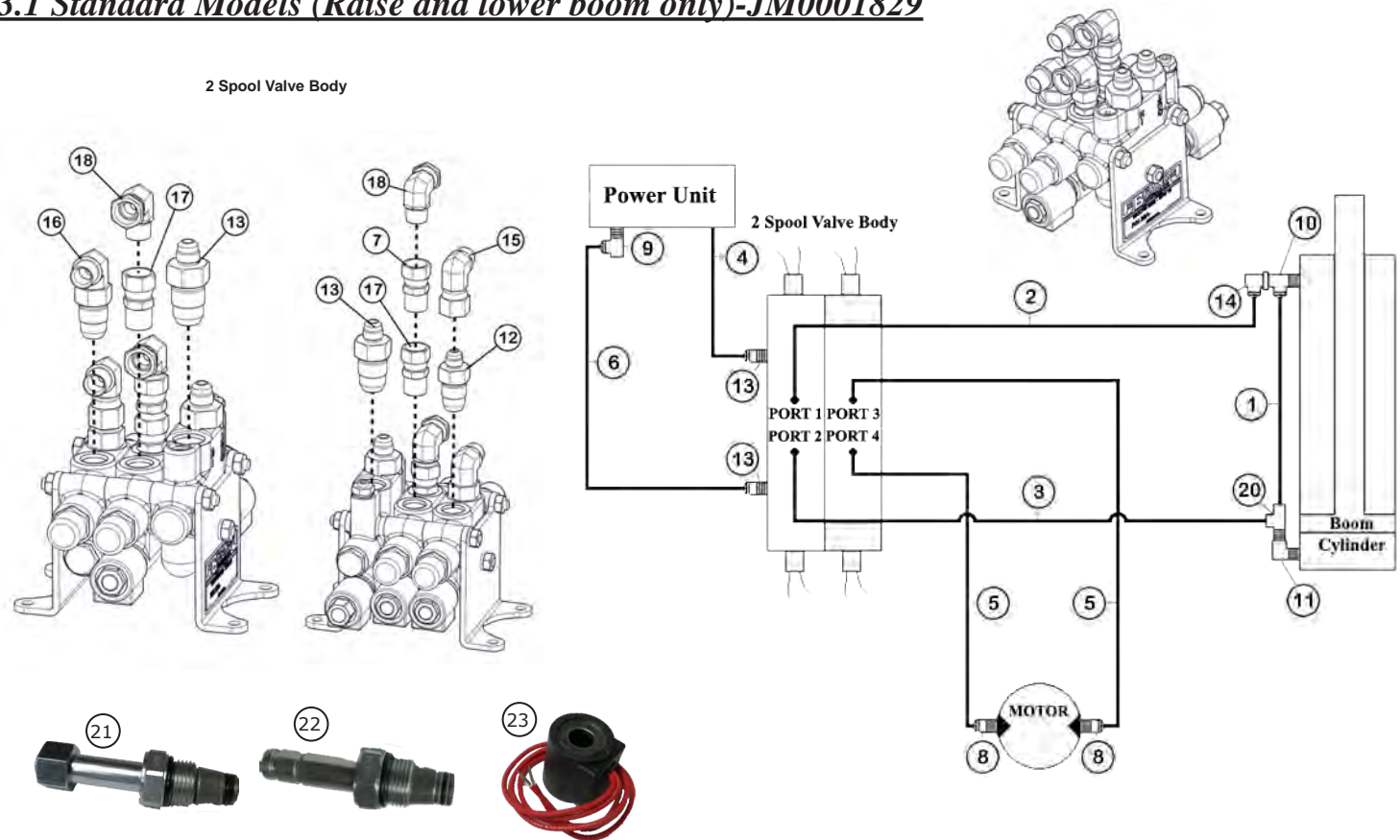
2.0 Service

Problems	Solutions
Excessive wear to belt edge - Tracking is off.	
	a. Adjust belt tension and tracking (See section 2.8).
Excessive wear to belt edge - Rubber skirting is worn or out of place.	
	a. Replace rubber skirting.
	b. Adjust rubber skirting.
Boom arm will not move up or down - Engine R.P.M. slow.	
	a. Increase engine R.P.M.
Boom arm will not move up or down - Hydraulic pump is not producing sufficient pressure or volume to hydraulic cylinder.	
	a. Check for pinched or leaking hydraulic lines.
	b. Allow hydraulic oil to warm up.
	c. Increase engine R.P.M.
	d. Hydraulic fluid level low.
	e. Hydraulic filter clogged.
	f. Check for proper oil viscosity.
	g. Check to see if hydraulic pump is worn out
	h. Make sure battery is fully charged.
	i. Check wiring to valve body and hydraulic pump
Hydraulic unit squeals	
	a. Check sight glass on hydraulic unit reservoir and fill if necessary.
	b. Run engine at reduced speed for 5-10 minutes to warm up oil.
	c. Clean/replace filler cap/breather.
	d. Clear obstruction in suction hose.
	e. Replace plugged/dirty oil filter element.
Hydraulic unit has poor performance at high R.P.M.	
	a. Clean pressure relief in control valve or replace
	b. Check sight glass on hydraulic unit reservoir and fill if necessary.
	c. Replace plugged/dirty oil filter element
	d. Charge Battery

2.15 Bolt Torque Specifications

Bolt Dia. (in.)	Pitch (threads/ inch)	Standard Dry Torque in Foot-Pounds					
		SAE Grade 0-1-2 74,000 psi Low Carbon Steel	SAE Grade 3 100,000 psi Med. Carbon Steel	SAE Grade 5 120,000 psi Med. Carbon Heat T. Steel	SAE Grade 6 133,000 psi Med. Carbon Temp. Steel	SAE Grade 7 133,000 psi Med. Carbon Alloy Steel	SAE Grade 8 150,000 psi Med. Carbon Alloy Steel
1/4	20	6	9	10	12.5	13	14
5/16	18	12	17	19	24	25	29
3/8	16	20	30	33	43	44	47
7/16	14	32	47	54	69	71	78
1/2	13	47	69	78	106	110	119
9/16	12	69	103	114	150	154	169
5/8	11	96	145	154	209	215	230
3/4	10	155	234	257	350	360	380
7/8	9	206	372	382	550	570	600
1	8	310	551	587	825	840	700
1-1/8	7	480	872	794	1304	1325	1430
1-1/4	7	375	1211	1105	1815	1825	1975
1-3/8	6	900	1624	1500	2434	2500	2650
1-1/2	6	1100	1943	1775	2913	3000	3200
1-5/8	5.5	1470	2660	2425	3985	4000	4400
1-3/4	5	1900	3463	3150	5189	5300	5650
1-7/8	5	2360	4695	4200	6980	7000	7600
2	4.5	2750	5427	4550	7491	7500	8200

3.1 Standard Models (Raise and lower boom only)-JM0001829

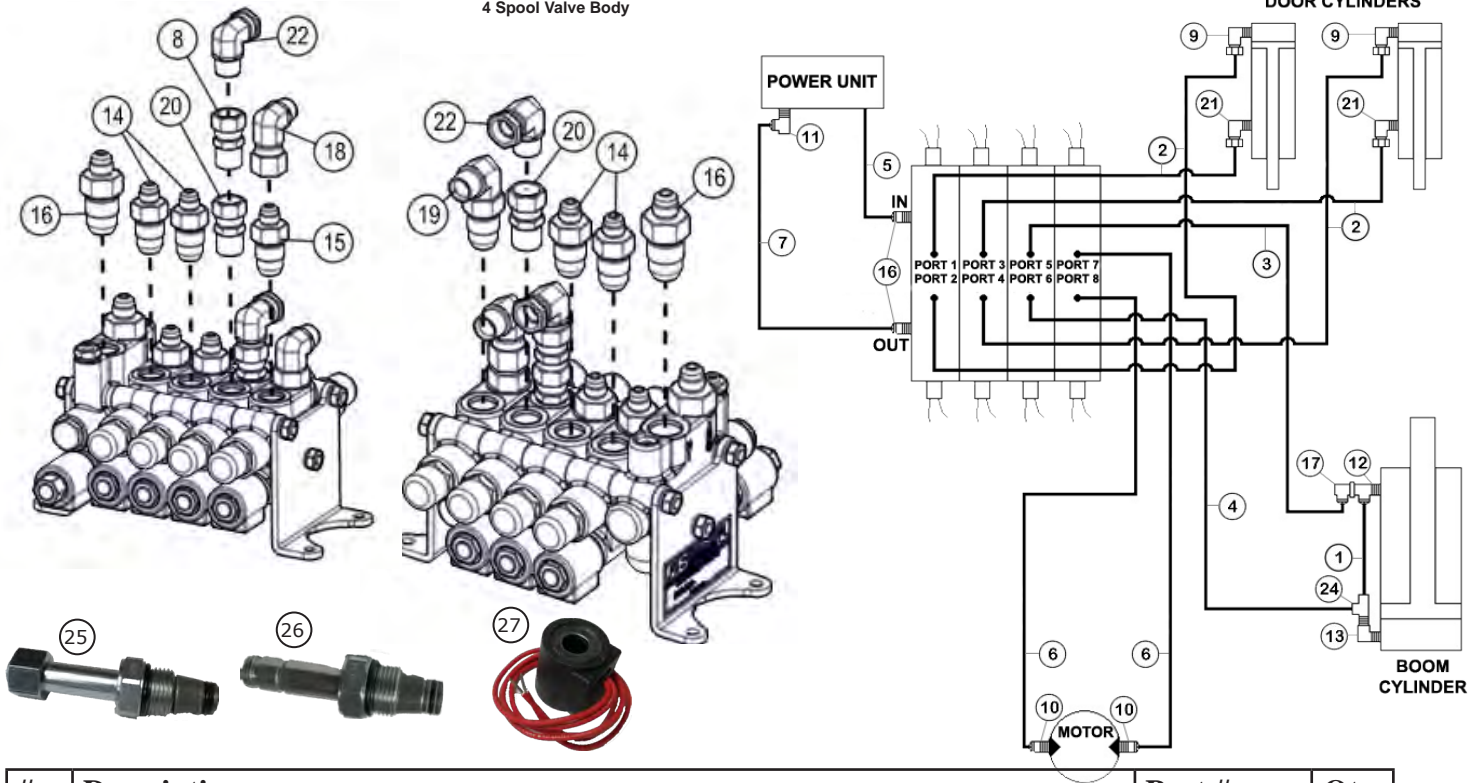


#	Description	Part #	Qty.
1	1/4" I.D. Hose; 1/4" male NPT rigid X #6 female JIC swivel; 12" OAL	JM0010282	1
2	1/4" I.D. Hose; 3/8" male NPT rigid X #6 female JIC swivel; 107" OAL	JM0010283	1
3	1/4" I.D. Hose; 3/8" male NPT rigid X 3/8" male NPT swivel; 99" OAL	JM0010284	1
4	1/2" I.D. Hose; 3/8" male NPT swivel X #8 female JIC swivel; 34" OAL	JM0010285	1
5	1/2" I.D. Hose; #8 female JIC swivel X #8 female JIC swivel; 326" OAL	JM0010286	2
6	1/2" I.D. Hose; #8 female JIC swivel X #8 female JIC swivel; 27" OAL	JM0010287	1
7	3/8" male NPT X 3/8" female NPT swivel; straight	JM0010288	1
8	#8 male JIC X 1/2" male NPT; straight	JM0010289	2
9	#8 male JIC X 3/4" male NPT; 90 degree elbow	JM0010290	1
10	#6 male JIC X 1/2" male NPT X #6 male JIC; tee	JM0010291	1
11	1/2" male NPT X 3/8" female NPT; 90 degree elbow	JM0010292	1
12	#8 male JIC X #8 male o-ring; straight	JM0010293	1
13	#8 male JIC X #10 male o-ring; straight	JM0010294	2
14	#6 male JIC X #6 female JIC swivel; 90 degree elbow	JM0010295	1
15	#8 male JIC X #8 female JIC swivel; 90 degree elbow	JM0010296	1
16	#8 male JIC X #8 male o-ring; 90 degree elbow	JM0010297	1
17	#8 male o-ring X 3/8" female NPT swivel; straight	JM0010298	2
18	3/8" male NPT X 3/8" female NPT swivel; 90 degree elbow; with .062" orifice	JM0010299	2
19	2 Spool Valve Body	JM0001829	1
20	Pilot Check Valve	JM0018233	1
21	Brand Valve Large Cartridge (SV08-1616) 3-1/4" Length	JM0020840	1
22	Brand Valve Small Cartridge (SV10-1512) 3" Length	JM0020841	1
23	SL-2 Solenoid	JM0037164	1

3.0 Hydraulics

3.2 Deluxe Models (Raise and lower boom and open and close doors)-JM0001830

4 Spool Valve Body

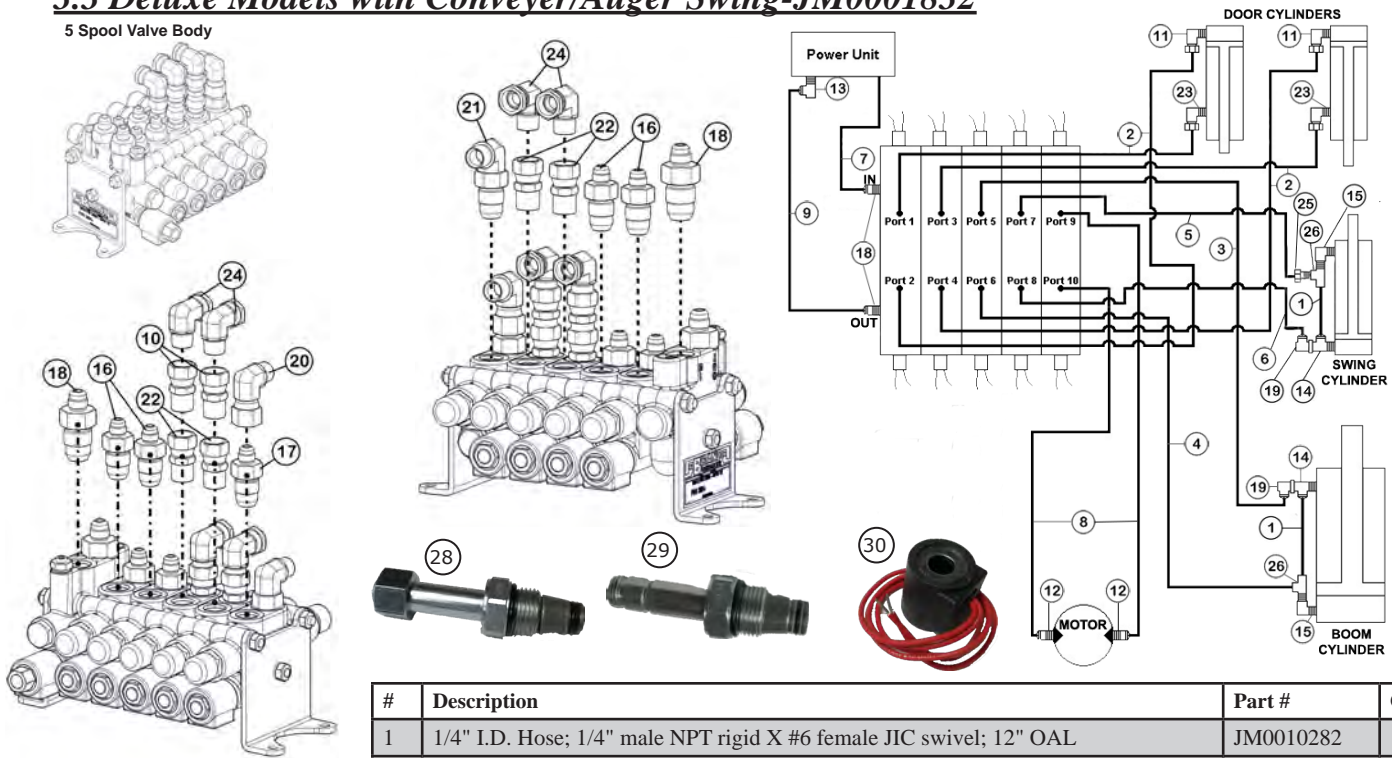


#	Description	Part #	Qty.
1	1/4" I.D. Hose; 1/4" male NPT rigid X #6 female JIC swivel; 12" OAL	JM0010282	1
2	1/4" I.D. Hose; 1/4" male NPT rigid X #6 female JIC swivel; 192" OAL	JM0010300	4
3	1/4" I.D. Hose; 3/8" male NPT rigid X #6 female JIC swivel; 107" OAL	JM0010283	1
4	1/4" I.D. Hose; 3/8" male NPT rigid X 3/8" male NPT swivel; 99" OAL	JM0010284	1
5	1/2" I.D. Hose; 3/8" male NPT swivel X #8 female JIC swivel; 34" OAL	JM0010285	1
6	1/2" I.D. Hose; #8 female JIC swivel X #8 female JIC swivel; 326" OAL	JM0010286	2
7	1/2" I.D. Hose; #8 female JIC swivel X #8 female JIC swivel; 27" OAL	JM0010287	1
8	3/8" male NPT X 3/8" female NPT swivel; straight	JM0010288	1
9	1/4" male NPT X 1/4" female NPT swivel; 90 degree elbow	JM0010301	2
10	#8 male JIC X 1/2" male NPT; straight	JM0010289	2
11	#8 male JIC X 3/4" male NPT; 90 degree elbow	JM0010290	1
12	#6 male JIC X 1/2" male NPT X #6 male JIC; tee	JM0010291	1
13	1/2" male NPT X 3/8" female NPT; 90 degree elbow	JM0010292	1
14	#6 male JIC X #8 male o-ring; straight	JM0010302	4
15	#8 male JIC X #8 male o-ring; straight	JM0010293	1
16	#8 male JIC X #10 male o-ring; straight	JM0010294	2
17	#6 male JIC X #6 female JIC swivel; 90 degree elbow	JM0010295	1
18	#8 male JIC X #8 female JIC swivel; 90 degree elbow	JM0010296	1
19	#8 male JIC X #8 male o-ring; 90 degree elbow	JM0010297	1
20	#8 male o-ring X 3/8" female NPT swivel; straight	JM0010298	2
21	1/4" male NPT X 1/4" female NPT swivel; 90 degree elbow; with .032" orifice	JM0010303	2
22	3/8" male NPT X 3/8" female NPT swivel; 90 degree elbow; with .062" orifice	JM0010299	2
23	4 Spool Valve Body	JM0001830	1
24	Pilot Check Valve	JM0018233	1
25	Brand Valve Large Cartridge (SV08-1616) 3-1/4" Length	JM0020840	1
26	Brand Valve Small Cartridge (SV10-1512) 3" Length	JM0020841	1
27	SL-2 Solenoid	JM0037164	1

3.0 Hydraulics

3.3 Deluxe Models with Conveyor/Auger Swing-JM0001832

5 Spool Valve Body



#	Description	Part #	Qty.
1	1/4" I.D. Hose; 1/4" male NPT rigid X #6 female JIC swivel; 12" OAL	JM0010282	2
2	1/4" I.D. Hose; 1/4" male NPT rigid X #6 female JIC swivel; 192" OAL	JM0010300	4
3	1/4" I.D. Hose; 3/8" male NPT rigid X #6 female JIC swivel; 107" OAL	JM0010283	1
4	1/4" I.D. Hose; 3/8" male NPT rigid X 3/8" male NPT swivel; 99" OAL	JM0010284	1
5	1/4" I.D. Hose; 3/8" male NPT rigid X 3/8" male NPT swivel; 82" OAL	JM0010304	1
6	1/4" I.D. Hose; 3/8" male NPT rigid X 3/8" male NPT swivel; 98" OAL	JM0010305	1
7	1/2" I.D. Hose; 3/8" male NPT swivel X #8 female JIC swivel; 34" OAL	JM0010285	1
8	1/2" I.D. Hose; #8 female JIC swivel X #8 female JIC swivel; 326" OAL	JM0010286	2
9	1/2" I.D. Hose; #8 female JIC swivel X #8 female JIC swivel; 27" OAL	JM0010287	1
10	3/8" male NPT X 3/8" female NPT swivel; straight	JM0010288	2
11	1/4" male NPT X 1/4" female NPT swivel; 90 degree elbow	JM0010301	2
12	#8 male JIC X 1/2" male NPT; straight	JM0010289	2
13	#8 male JIC X 3/4" male NPT; 90 degree elbow	JM0010290	1
14	#6 male JIC X 1/2" male NPT X #6 male JIC; tee	JM0010291	2
15	1/2" male NPT X 3/8" female NPT; 90 degree elbow	JM0010292	2
16	#6 male JIC X #8 male o-ring; straight	JM0010302	4
17	#8 male JIC X #8 male o-ring; straight	JM0010293	1
18	#8 male JIC X #10 male o-ring; straight	JM0010294	2
19	#6 male JIC X #6 female JIC swivel; 90 degree elbow	JM0010295	2
20	#8 male JIC X #8 female JIC swivel; 90 degree elbow	JM0010296	1
21	#8 male JIC X #8 male o-ring; 90 degree elbow	JM0010297	1
22	#8 male o-ring X 3/8" female NPT swivel; straight	JM0010298	4
23	1/4" male NPT X 1/4" female NPT swivel; 90 degree elbow; with .032" orifice	JM0010303	2
24	3/8" male NPT X 3/8" female NPT swivel; 90 degree elbow; with .062" orifice	JM0010299	4
25	3/8" male NPT X 3/8" female NPT swivel; straight; with .032" orifice	JM0019899	1
26	Pilot Check Valve	JM0018233	2
27	5 Spool Valve Body	JM0001832	1
28	Brand Valve Large Cartridge (SV08-1616) 3-1/4" Length	JM0020840	1
29	Brand Valve Small Cartridge (SV10-1512) 3" Length	JM0020841	1
30	SL-2 Solenoid	JM0037164	1

4.1 Hydraulic Wiring

Reference Figures 4.1-4.4	Function
C	Boom swing front (optional)
D	Boom swing rear (optional)
E	Boom Up
F	Boom Down
G	Rear door up (optional)
H	Front door down (optional)
J	Power
K	Front door up (optional)
L	Rear door down (optional)
M	Pump In
N	Conveyor Start

Wireless Receiver
or Handheld Controller
Connector



Figure 4.1

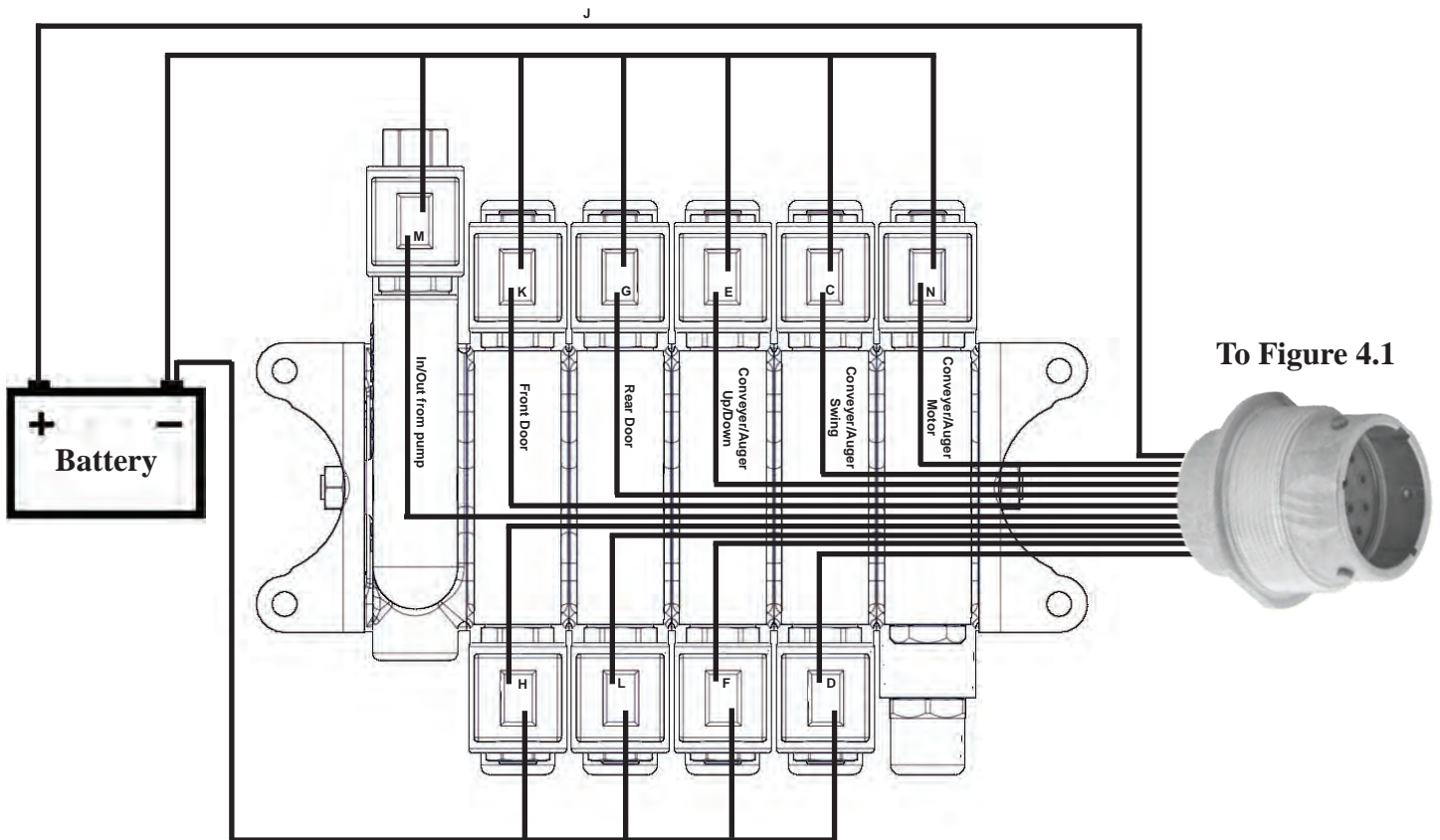


Figure 4.2

NOTE: Figure 4.2 is a 5 spool valve body. For the 4 spool valve body ignore the Conveyor/Auger swing bank. For the 2 spool valve body, ignore the Conveyor/Auger swing, and the front and rear door banks.
NOTE: The 2 spool valve body uses a 4 pin weather pack in place of the connectors above (Figure 4.1).

4.0 Wiring

Controllers/Remotes			
Item #	Description	Part #	Qty.
1	Handheld Controller 1	JM0010311	1
2	Handheld Controller 2	JM0010312	1
3	Wireless Remote 1 w/ Reciever	JM0010313	1
4	Wireless Remote 2 w/ Reciever	JM0010314	1

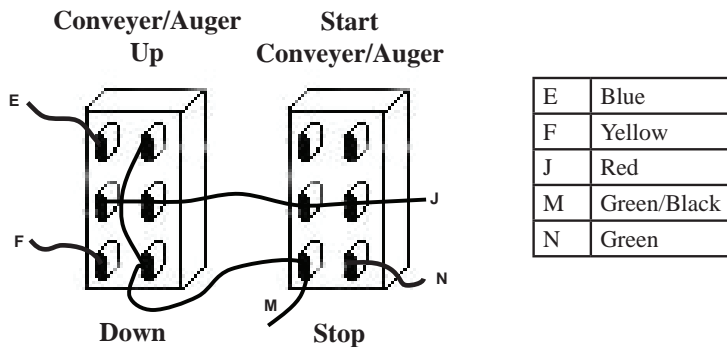


Figure 4.3

JM0014984
Handheld Controller 1 (standard)
 Starts/Stops Motor
 Raises/Lowers Conveyer



JM0014985
Handheld Controller 2 (optional)
 Starts/Stops Motor
 Raises/Lowers Conveyer
 Opens/Closes Tank Doors

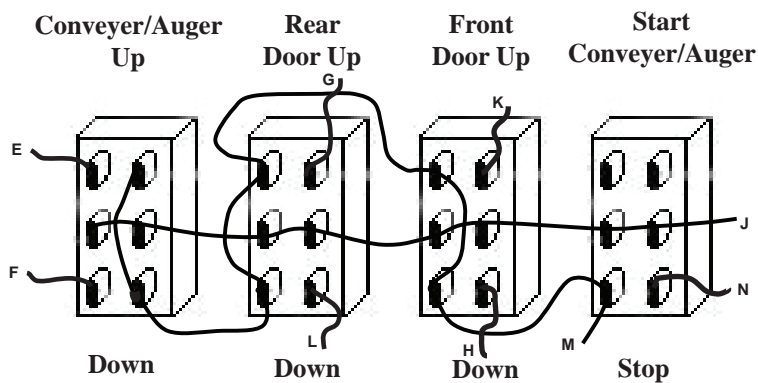
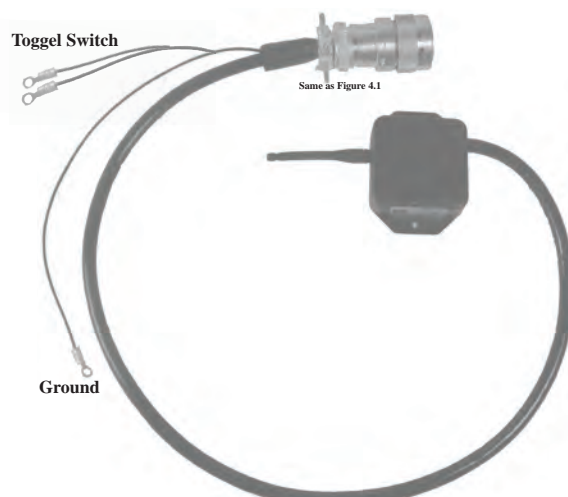


Figure 4.4

JM0014998
Wireless Remote 1 (optional)
 Starts/Stops Motor
 Raises/Lowers Conveyer
 Opens/Closes Tank Doors



JM0015004
Wireless Reciever 1



NOTE: Intersections of wires are not connected.

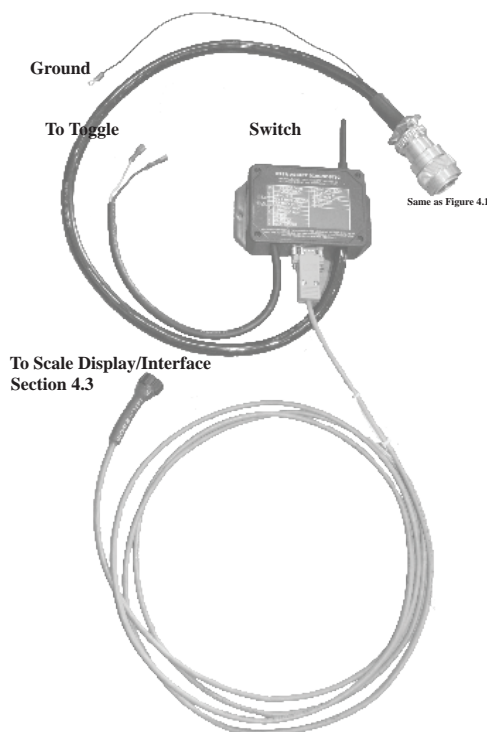
4.0 Wiring

JM0015005
Wireless Remote 2 (optional)
 Starts/Stops Motor
 Raises/Lowers Conveyor
 Opens/Closes Tank Doors
 Hydraulic Conveyor/Auger Swing
 Electronic Auto Scale Shutoff



4

JM0014999
Wireless Receiver 2



Auto Scale Shutoff Directions for Wireless Remote 2

1. Turn Scale Head, Wireless Remote and Wireless Toggle Switch on.
 -The main screen showing gross and tared weight will display
2. **Press and release Scroll on the Wireless Remote**
 -The setting for door weight and door selection (front or rear) will display
3. **Press and hold scroll until the weight value starts to flash**
 Using the up and down arrows just below the display in the center of the remote, adjust the desired dispense weight
5. Press and release Scroll
 -The door setting will flash
6. Using the up and down arrows just below the display in the center of the remote, select which door you wish to dispense from
7. **When settings are acceptable, press and hold scroll for 3 seconds**
 -The main screen will display again
8. **Press conveyor start to dispense the set amount of seed from the desired door**
 -The door will automatically shut when the set amount of seed is dispensed and the conveyor will turn off shortly after
9. To dispense the same amount of seed from the same door repeatedly, repeat steps 2, 3, 7, and 8



Main Screen



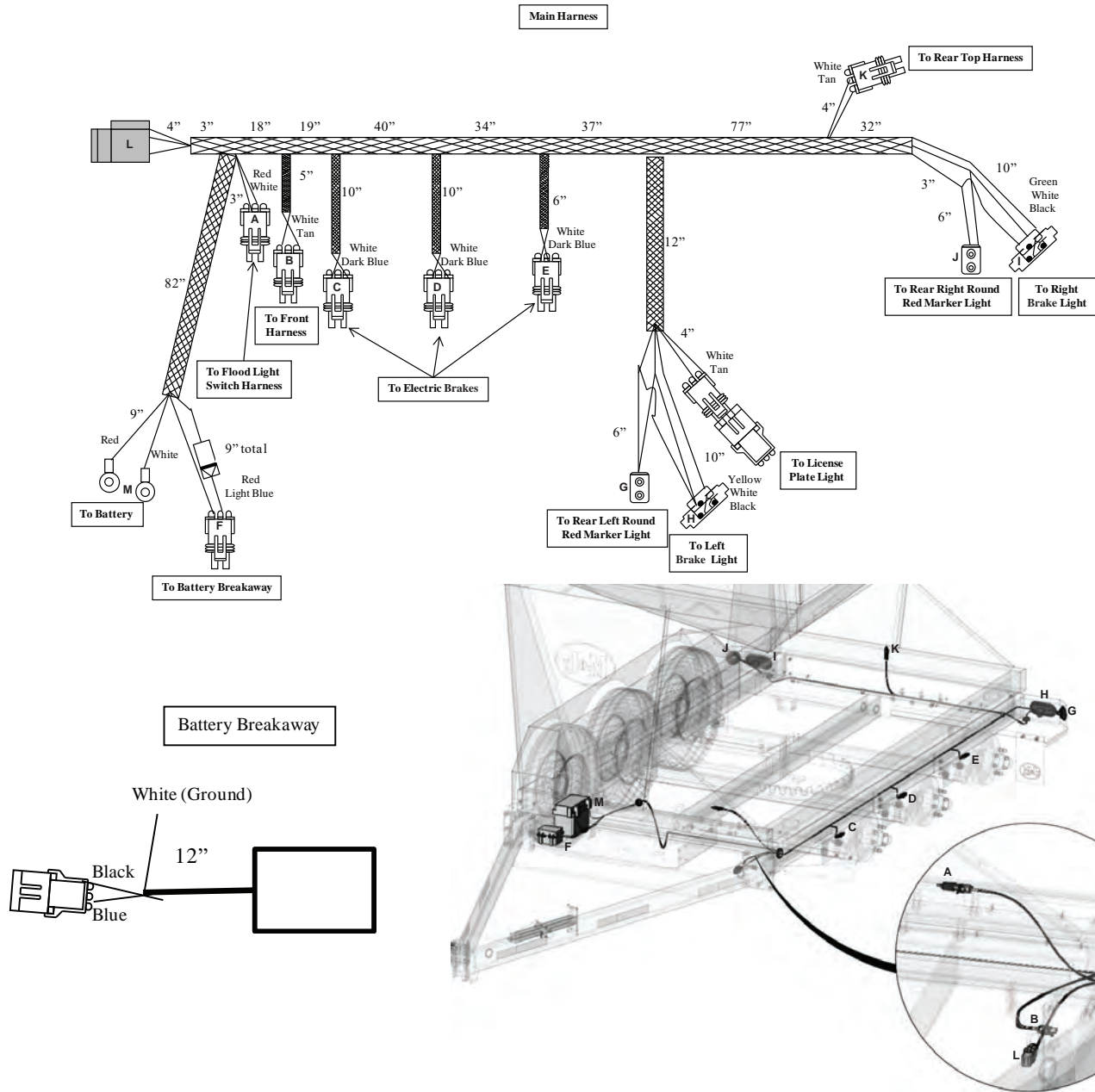
Auto Scale Shutoff Screen

Scroll

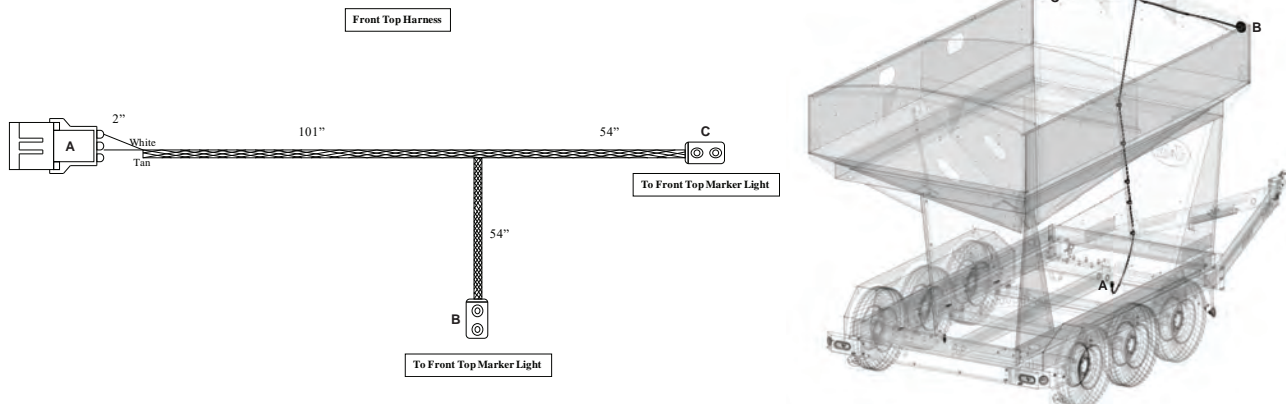
Use these buttons to adjust "Dispense Amount" and "Door To Dispense From" Settings

4.0 Wiring

4.2 Light Wiring Harnesses-JM0010319 (For Serial Numbers Less Than 150600 JM0033700 (For Serial Numbers Greater Than 150600

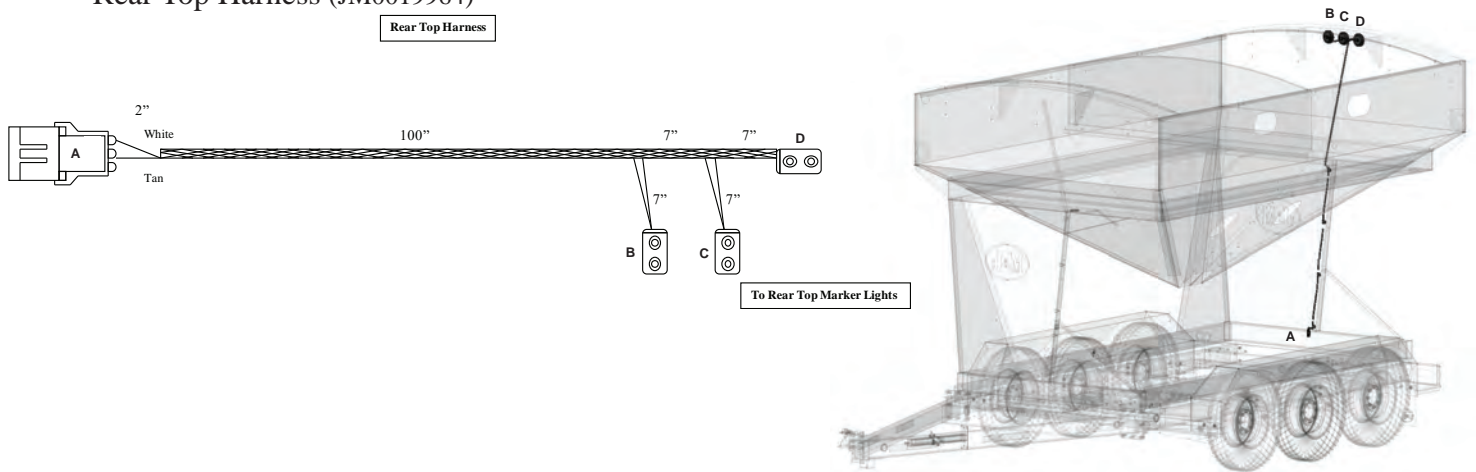


Front Top Harness (JM0020364)

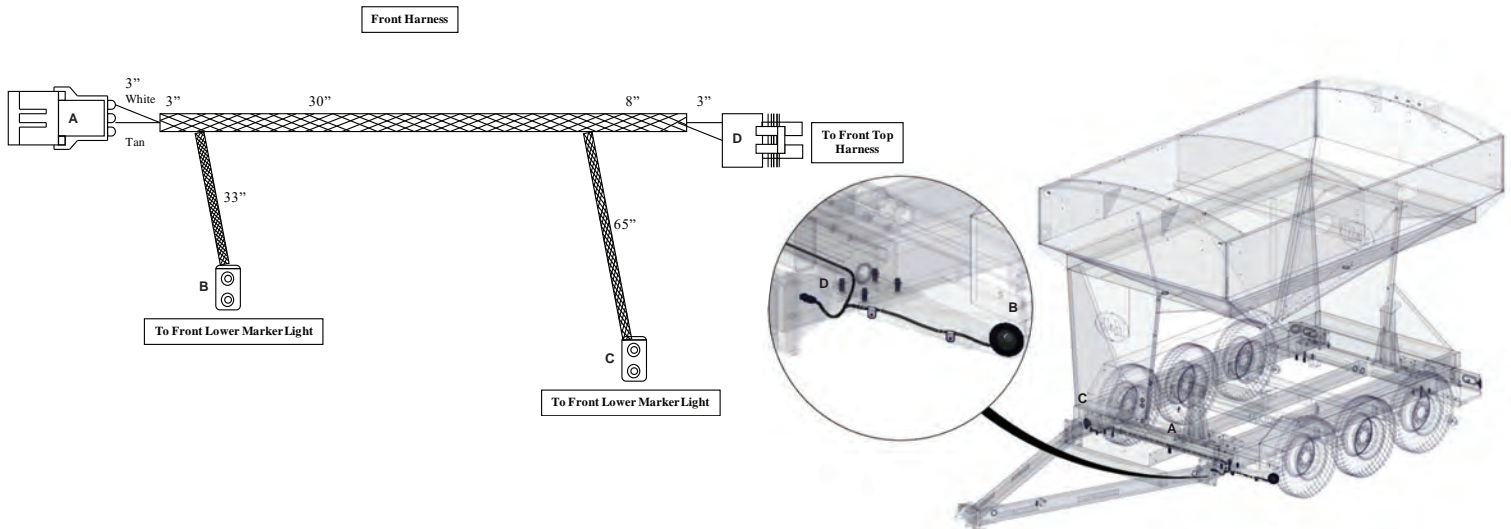


4.0 Wiring

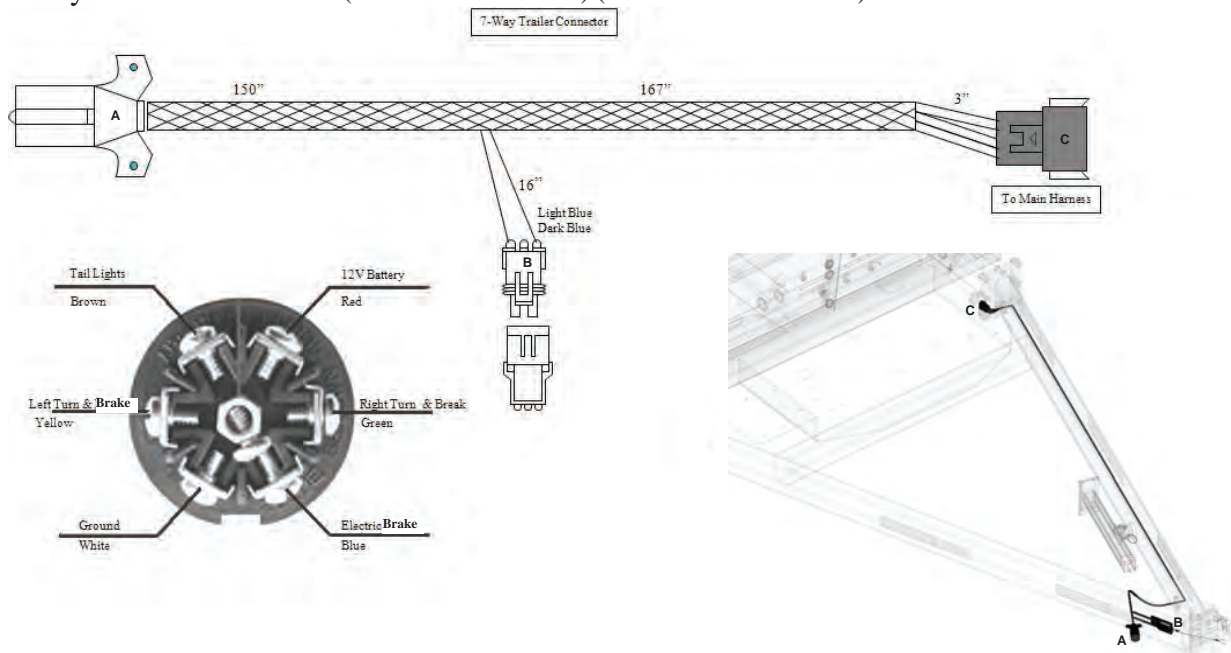
Rear Top Harness (JM0019964)



Front Harness (JM0019963)

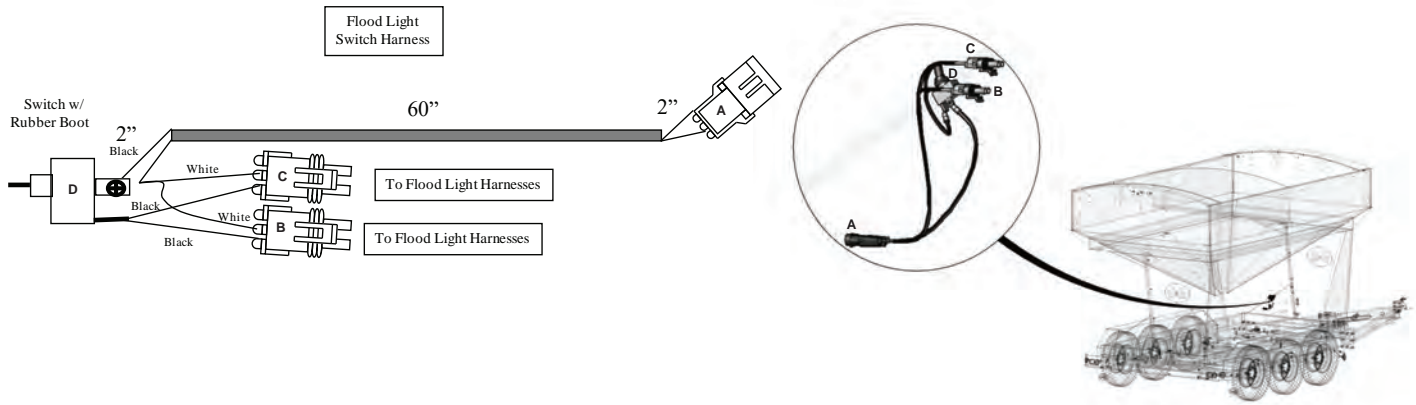


7-Way Trailer Connection (JM0019962 A-Frame) (JM0019961 Gooseneck)

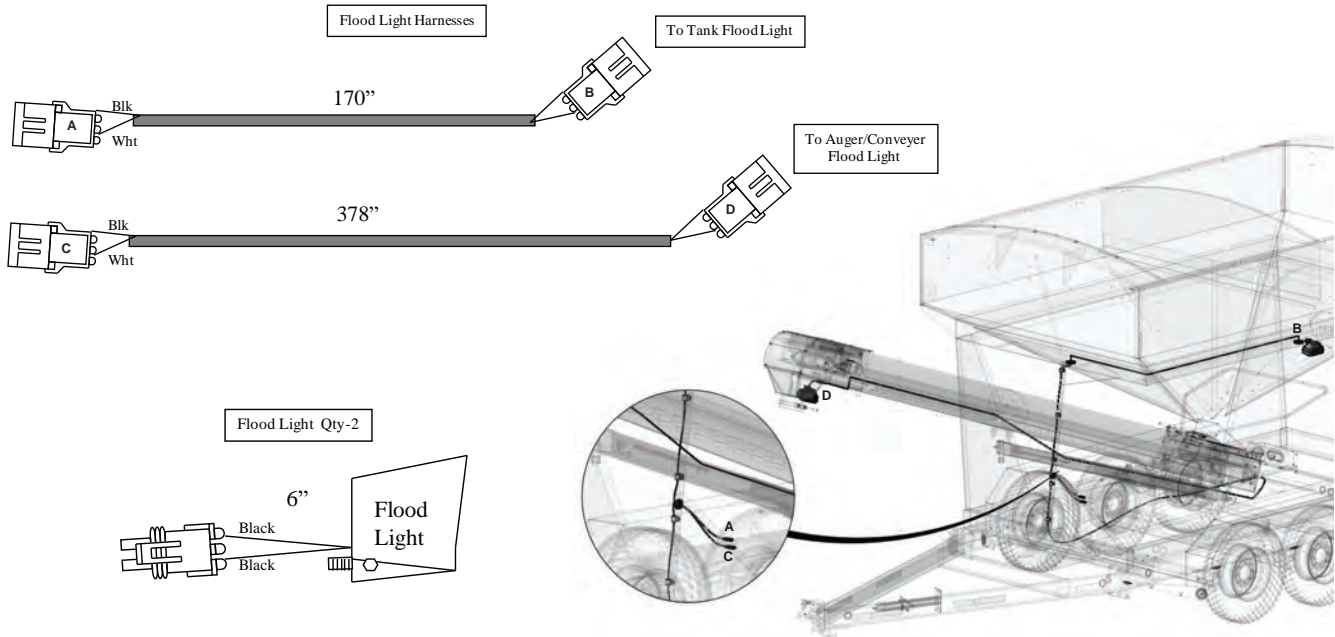


4.0 Wiring

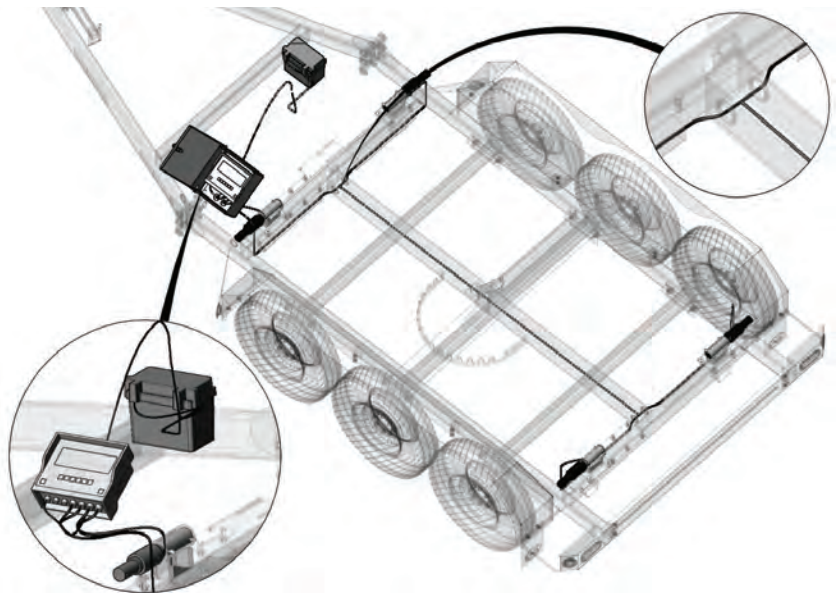
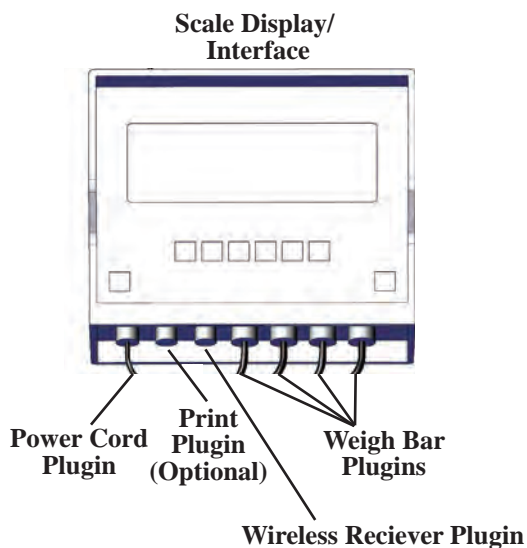
Flood Light Switch Harness (JM0034135)

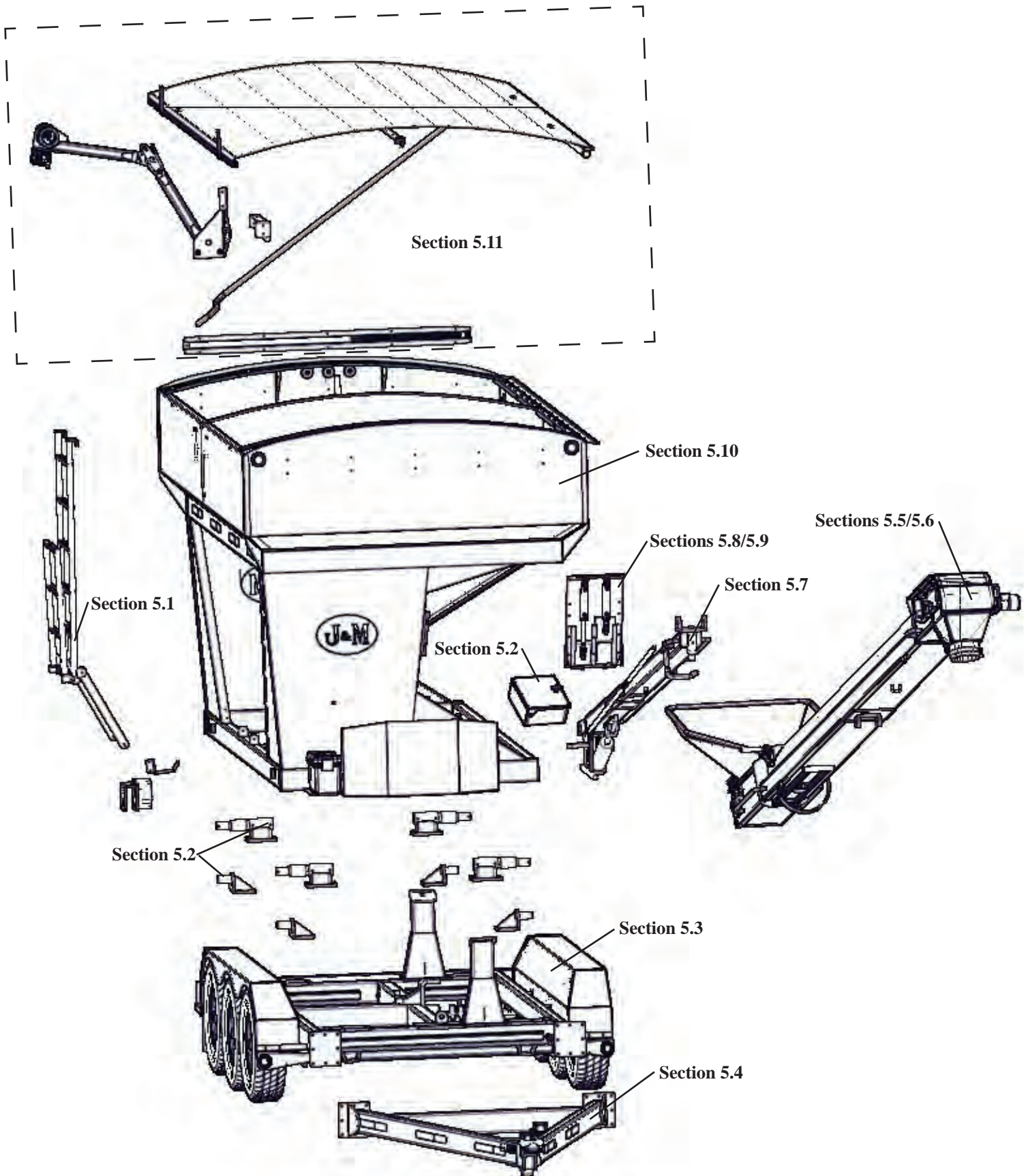


Flood Light Harness (JM0019965)

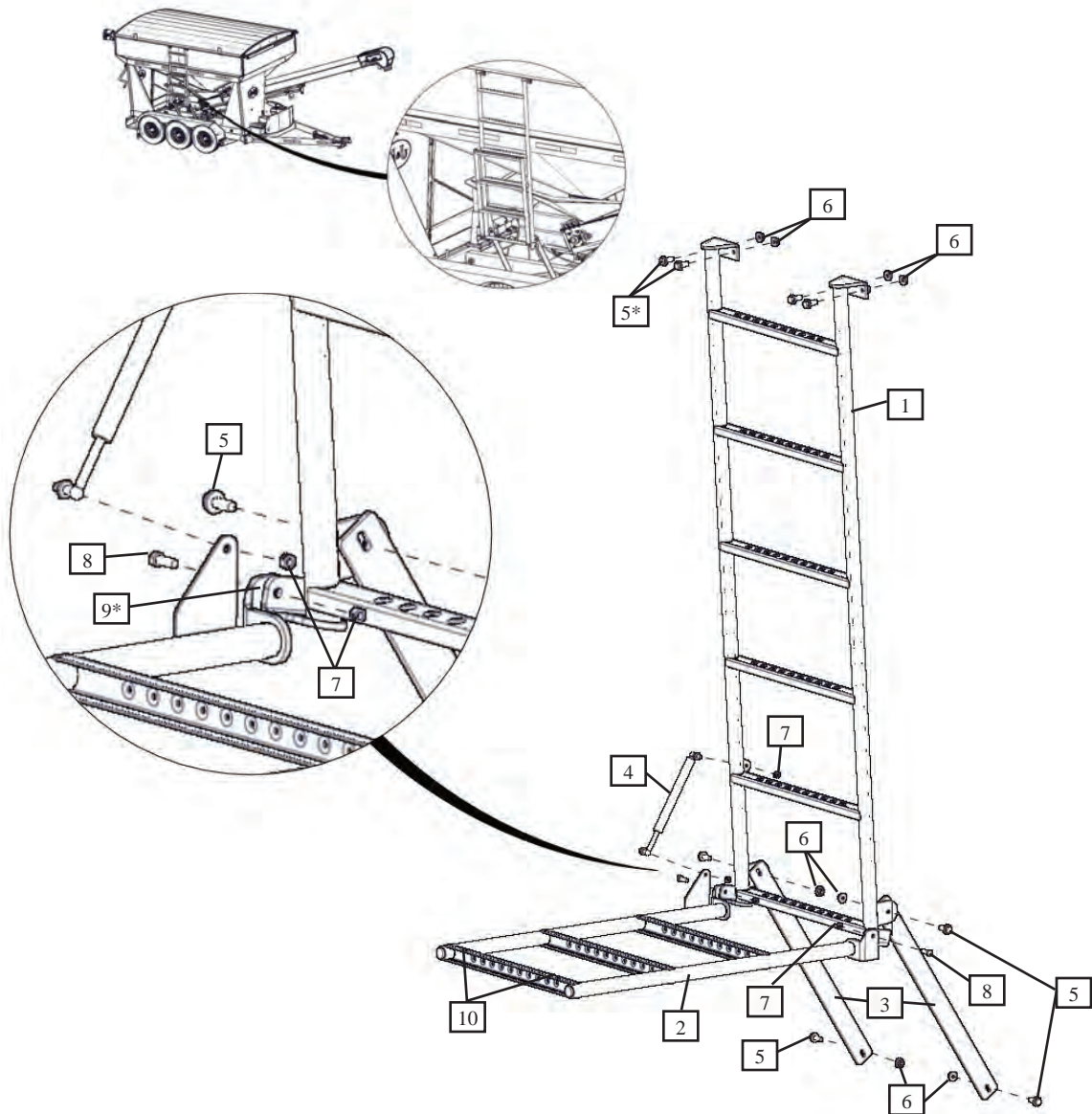


4.3 Scale Wiring



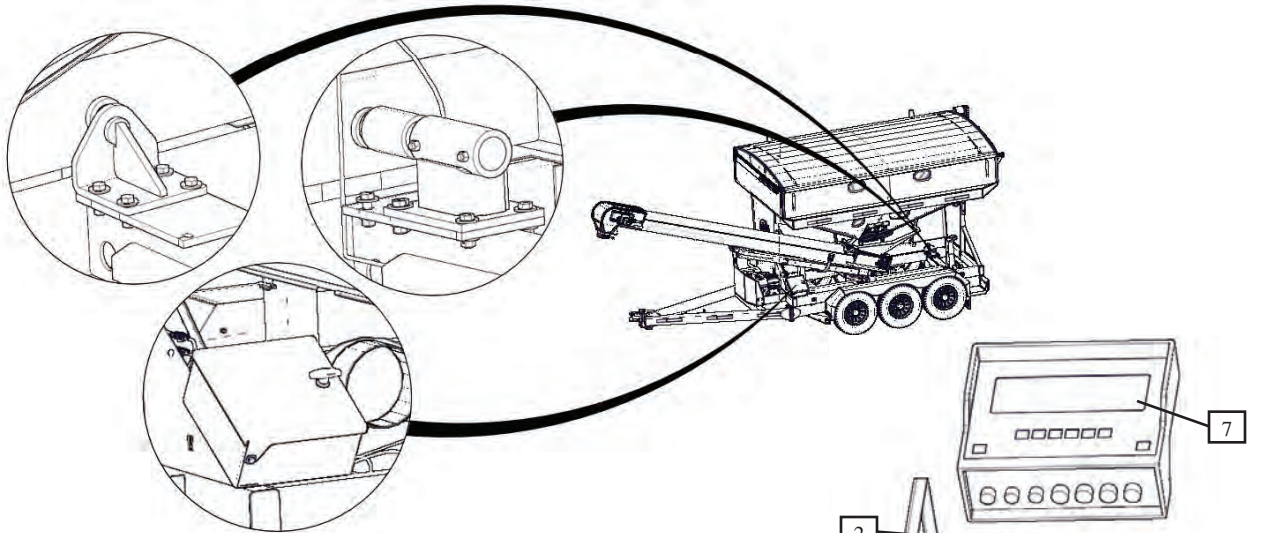


5.1 Ladder Parts



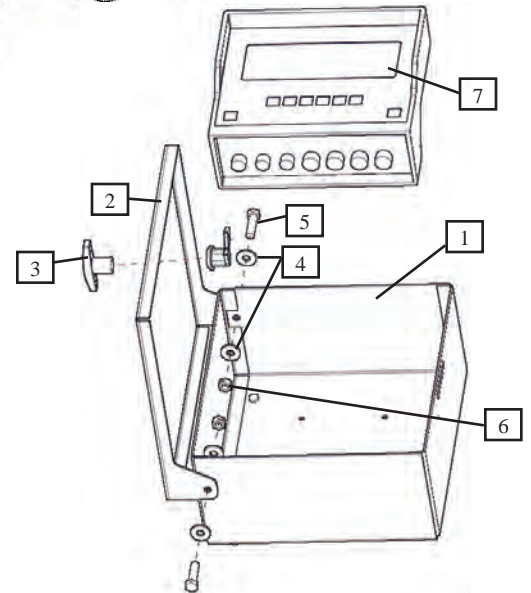
Ladder			
Item #	Description	Part #	Qty.
1	Top Ladder (Long)	JM0002950	1
2	Bottom Ladder (Short)	JM0002359	1
3	Bottom Ladder Support	JM0002369	2
4	Ladder Gas Spring (120lbs)	JM0001961	1
5	3/8-16 X 1.0 Grade 5 Zinc Serrated Flange Hex Bolt	JM0003150	8
6	3/8-16 Grade 5 Zinc Serrated Flange Hex Nut	JM0002152	8
7	5/16-18 Grade 5 Zinc Centerlock Hex Nut	JM0002143	4
8	5/16-18 X 1.0 Grade 5 Zinc Hex Bolt	JM0001743	2
9	5/16 USS Flat Washer	JM0001742	2
10	Round Rubber Bumpers	JM0002920	2

5.2 Scale Parts



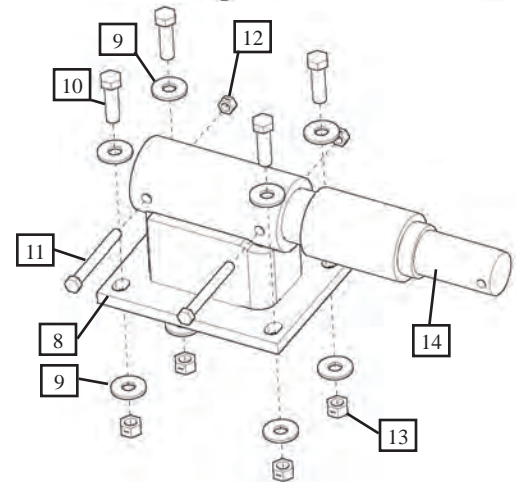
Scale Display Box-Qty. 1

Item #	Description	Part #	Qty.
1	Weigh Scale Box Weldment	JM0009961	1
2	Weigh Scale Box door	JM0002944	1
3	Chrome T-Handle Non-Locking	JM0001911	1
4	3/8 USS Flat Washer	JM0003061	6
5	3/8-16 X 1 1/2 Grade 5 Zinc Hex Bolt	JM0001659	2
6	3/8-16 Grade 5 Zinc Centerlock Hex Nut	JM0001512	2
7	Scale Display/Interface	JM0007293	1



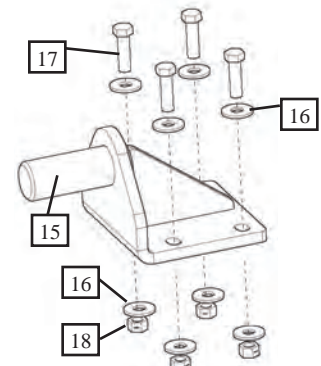
Weigh Bar Mount-Qty. 4

Item #	Description	Part #	Qty.
8	Weigh Bar Weldment	JM0009966	1
9	1/2 USS Flat Washer	JM0003082	8
10	1/2-13 X 1 3/4 Grade 5 Zinc Hex Bolt	JM0002101	4
11	3/8-16 X 3 1/2 Grade 5 Zinc Hex Bolt	JM0001986	2
12	3/8-16 Grade 5 Zinc Centerlock Hex Nut	JM0001512	2
13	1/2-13 Grade 5 Zinc Centerlock Hex Nut	JM0001511	4
14	2.125 Dia. Weigh Bar with Cord	JM0002797	1

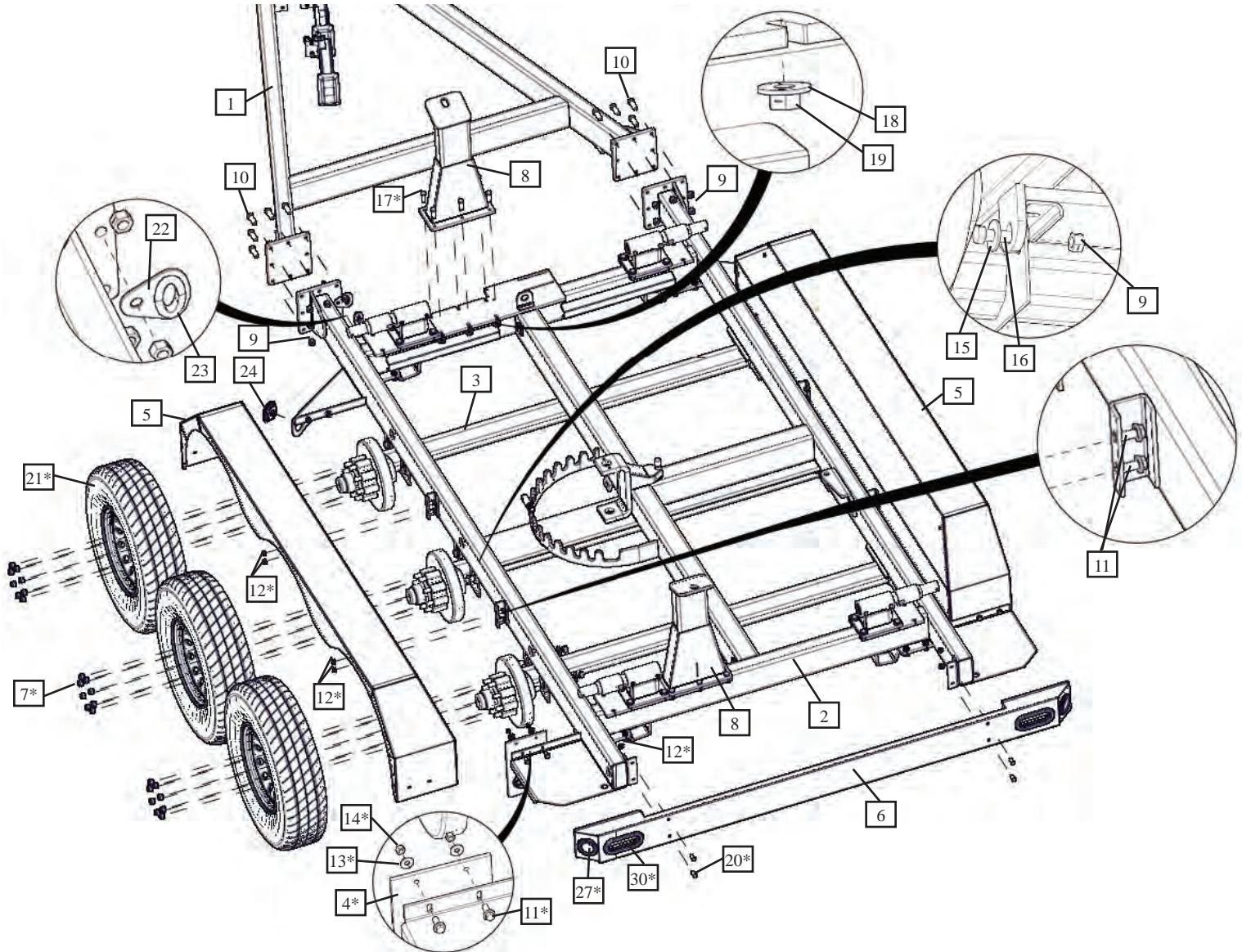


Dummy Scale Mount (Non-Scale Option)-Qty. 4

Item #	Description	Part #	Qty.
15	Dummy Scale Weldment	JM0002514	1
16	1/2 USS Flat Washer	JM0003082	8
17	1/2-13 X 1 3/4 Grade 5 Zinc Hex Bolt	JM0002101	4
18	1/2-13 Grade 5 Zinc Centerlock Hex Nut	JM0001511	4



5.3 Chassis Parts



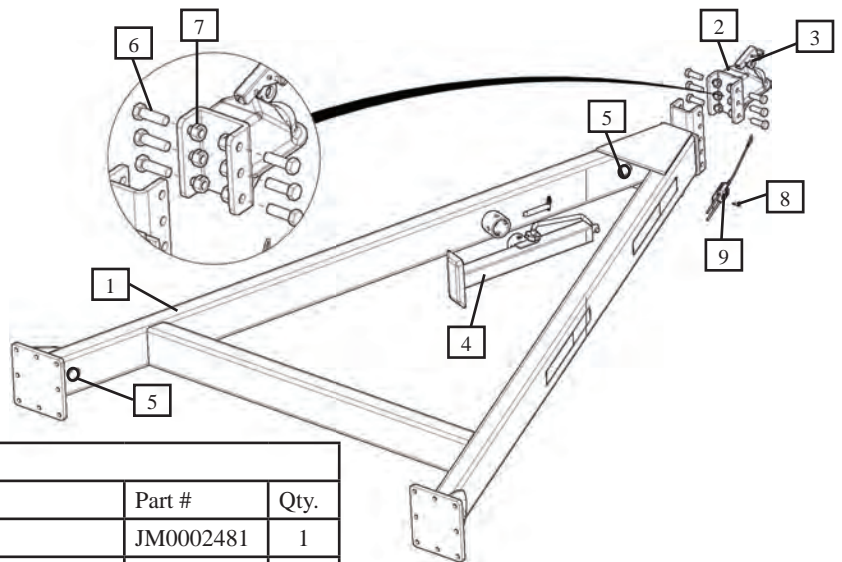
Chassis			
Item #	Description	Part #	Qty.
1	A-Frame Weldment (parts in section 5.4)	JM0002481	1
2	Chassis Frame Weldment	JM0002489	1
3	7000lb Axle with Electric Brakes	JM0001957	3
4	J&M Mud Flap	JM0001910	2
5	Fender Weldment	JM0002495	2
6	Bumper Weldment	JM0002500	1
7	9/16-18 Lugnut	JM0008525	48
8	Boom Rest Weldment	JM0002503	2
9	5/8-11 Grade 5 Zinc Centerlock Hex Nut	JM0002146	28
10	5/8-11 X 2.0 Grade 8 Zinc Hex Bolt	JM0001771	16
11	3/8-16 x 1.0 Grade 8 Zinc Serrated Flange Hex Bolt	JM0001509	16
12	3/8-16 Grade 5 Zinc Flange Hex Nut	JM0001508	16
13	3/8 USS Flat Washer	JM0003061	4

Continued Next Page

5.0 Parts

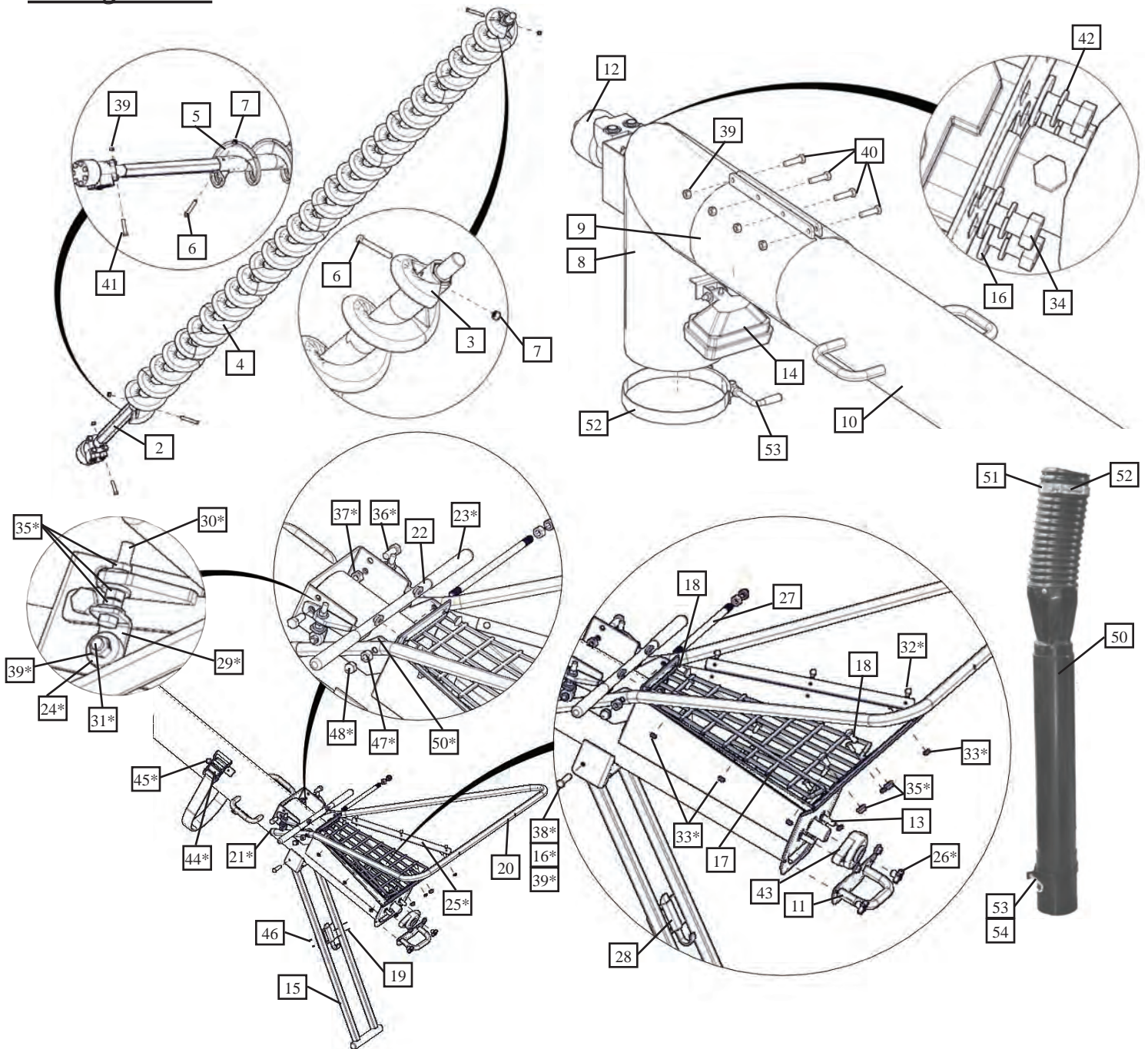
Chassis (Continued)			
Item #	Description	Part #	Qty.
14	3/8-16 Grade 5 Zinc Centerlock Hex Nut	JM0001512	4
15	5/8 USS Flat Washer	JM0003073	24
16	5/8-11 X 2 1/4 Grade 5 Zinc Hex Bolt	JM0001493	12
17	1/2-13 X 1 3/4 Grade 5 Zinc Hex Bolt	JM0002101	12
18	1/2 USS Flat Washer	JM0003082	12
19	1/2-13 Grade 5 Zinc Centerlock Hex Nut	JM0001511	12
20	3/8-16 X 1.0 Grade 8 Zinc Hex Bolt	JM0001485	4
21	235-85-R16, 8 Bolt Wheel and Tire	JM0009977	6
22	Wiring Bracket	JM0002346	1
23	1.75ID X .25 Width X 2.0 OD Rubber Grommet	JM0001477	7
24	Amber Round Light Assembly	JM0001908	2
25	Amber Round Light	JM0001895	2
26	Round Light Grommet	JM0001902	2
27	Red Round Light Assembly	JM0001905	2
28	Red Round Light	JM0001901	2
29	Round Light Grommet	JM0001902	2
30	Red Oval Brake Light Assembly	JM0001903	2
31	Red Oval Brake Light	JM0007114	2
32	Red Oval Brake Light Grommet	JM0001897	2
33	Liscense Plate Holder-Not Shown (Optional)	JM0010305	1
34	Brake Assembly (not shown)	JM0016108	1

5.4 A-Frame Parts



A-Frame			
Item #	Description	Part #	Qty.
1	A-Frame Weldment	JM0002481	1
2	21,000lb Ball Coupling, 2 5/16 Dia. Ball	JM0001893	1
3	1/4 X 1 3/4 Lynch Pin	JM0001478	1
4	5000 Series, 5000 lb Max Lift Jack Capacity Jack with Lynch Pin	JM0001480	1
5	1.75ID X 1/4 GW X 2.0 GD	JM0001477	2
6	5/8-11 X 2.0 Grade 8 Zinc Hex Bolt	JM0002146	6
7	5/8-11 Grade 5 Zinc Centerlock Hex Nut	JM0001771	6
8	1/4 X 3/4 Self Tapping Screw	JM0001570	1
9	Breakaway Switch	JM0001843	1
10	3" Lunette Eye-Not Shown (Optional)	JM0009978	1
11	Safety Chains-Not Shown	JM0015061	2

5.5 Auger Parts



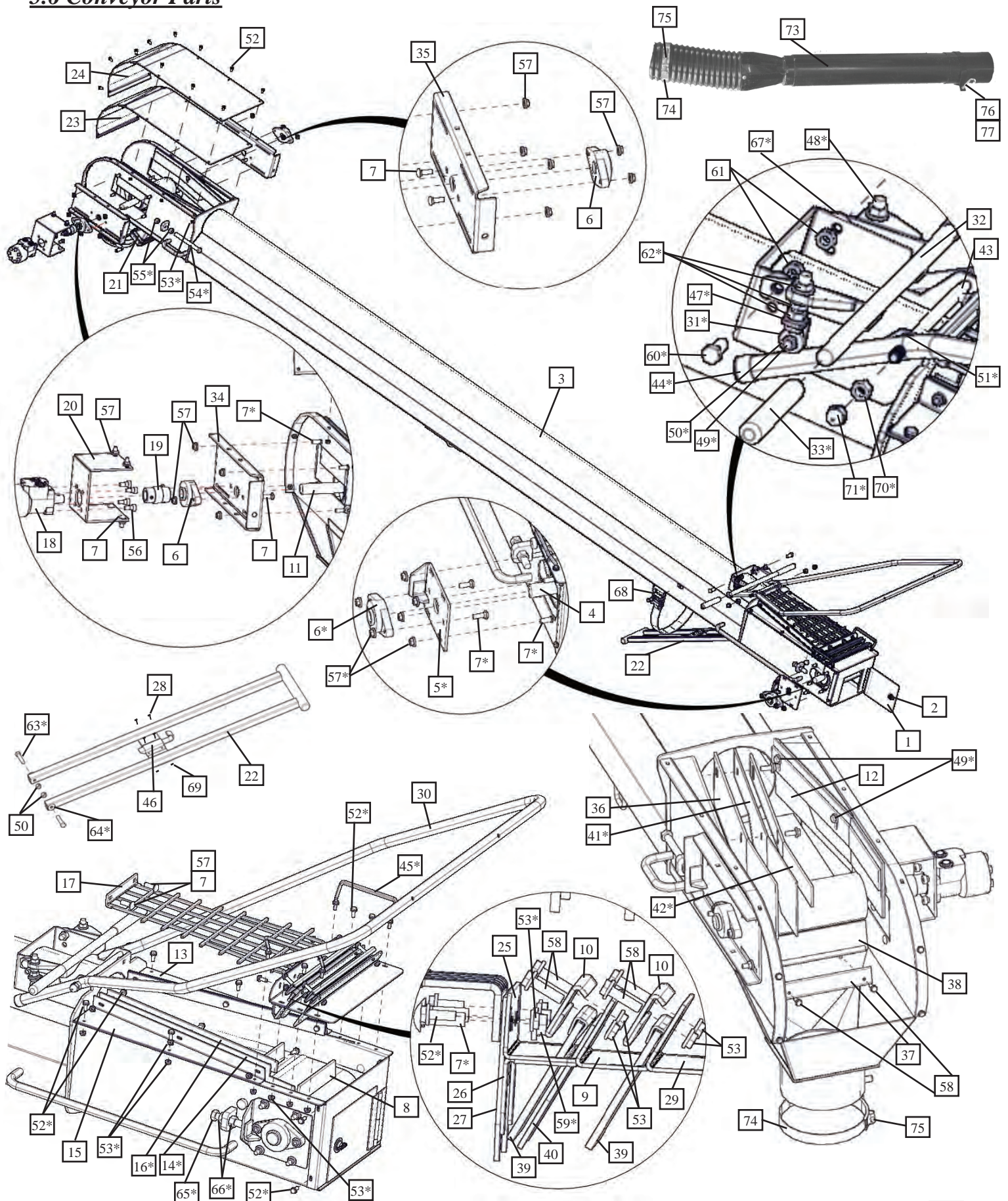
Auger			
Item #	Description	Part #	Qty.
1	Flighting Assembly	JM0002993	1
2	1.83 X 226.63 Galvanized Hex Tube	JM0009981	1
3	7" Dia. HDPE Polycup (Idler end Cap)	JM0002997	1
4	7" Dia. HDPE Polycup (Standard Flighting)	JM0002998	35
5	7" Dia. HDPE Polycup (Drive end Cap)	JM0002999	1
6	3/8-16 X 3.0 Grade 5 Zinc Hex Bolt	JM0001666	2
7	3/8-16 Grade 5 Zinc Nylon Locking Hex Nut	JM0001664	2
8	Top Tube Weldment	JM0002986	1
9	Splice Weldment	JM0002987	1

Continued Next Page

5.0 Parts

Auger (Continued)			
Item #	Description	Part #	Qty.
10	Lower Tube Weldment	JM0003001	1
11	Cleanout Door Weldment	JM0003016	1
12	Hydraulic Motor w/ Pinhole in Shaft (No Key)	JM0001983	1
13	3/8-16 X 1 1/2 Grade 5 Zinc Carriage Bolt	JM0001638	2
14	Field Light ASM	JM0001881	1
15	Support Stand Weldment	JM0002212	1
16	3/8 USS Flat Washer	JM0003061	6
17	Hopper Safety Grate	JM0002990	1
18	3/8-16 X 1.0 Grade 5 Zinc Carriage Bolt	JM0001632	4
19	M6-1 X 20 Grade 8.8 Hex Bolt	JM0002120	4
20	Hopper Tarp Support Tube	JM0003019	1
21	Rubber Pipe Caps 1.0 ID	JM0002785	2
22	Hopper Lock Weldment	JM0002967	1
23	Rubber Handle Cap	JM0002784	2
24	0.375 Shaft Dia 1.125 OD Steel Ball Bearing	JM0001828	2
25	Hopper Tarp Side Clamp	JM0003020	2
26	Cleanout Door Threaded Knob	JM0001984	2
27	Hopper Pivot Bar	JM0002786	1
28	Support Stand Spring Plunger	JM0002789	1
29	Hopper Handle Bearing Mount	JM0002220	2
30	3/8-16 X 2 1/2 Grade 5 Zinc Hex Bolt	JM0001647	2
31	3/8-16 X 1.0 Grade 5 Zinc Hex Bolt	JM0001592	2
32	1/4-20 X 3/4 Grade 5 Zinc Hex Bolt	JM0001507	9
33	1/4-20 Grade 5 Zinc Serrated Flange Hex Nut	JM0001630	9
34	3/8-16 X 3/4 Grade 5 Zinc Hex Bolt	JM0001663	4
35	3/8-16 Grade 5 Zinc Serrated Flange Hex Nut	JM0002152	12
36	1/2-13 X 1 1/4 Grade 5 Zinc Hex Bolt	JM0001513	2
37	1/2-13 Grade 5 Zinc Centerlock Hex Nut	JM0001511	2
38	3/8-16 X 1 3/4 Grade 5 Zinc Hex Bolt	JM0002097	2
39	3/8-16 Grade 5 Zinc Centerlock Hex Nut	JM0001512	9
40	3/8-16 X 1 1/2 Grade 5 Zinc Hex Bolt	JM0001659	4
41	3/8-16 X 2 1/4 Grade 5 Zinc Hex Bolt	JM0001660	1
42	3/8 Zinc Lock Washer	JM0001661	4
43	Bolt Flange Bearing	JM0001811	1
44	2" Wide Auger Hold Down Ratchet	JM0003084	1
45	3/8-16 X 1.0 Grade 5 Zinc Serrated Flange Hex Bolt	JM0002092	1
46	M6-1 Grade 8.8 Nylon Locking Hex Nut	JM0002167	4
47	1/2-13 Grade 5 Zinc Hex Nut	JM0002124	2
48	1/2-13 Acorn Nut	JM0001772	2
49	1.0 OD 0.515 ID X 0.35 Long Black UV Nylon Spacer	JM0001962	2
50	Telescoping Spout	JM0010306	1
51	8" Dia. Clamp	JM0002870	1
52	M10 X 1 1/2 L Bolt with Plastic Cap	JM0001966	1
53	3/8-16 Zinc J-Bolt	JM0001519	1
54	3/8-16 Grade 5 Zinc Hex Nut	JM0001707	2

5.6 Conveyor Parts



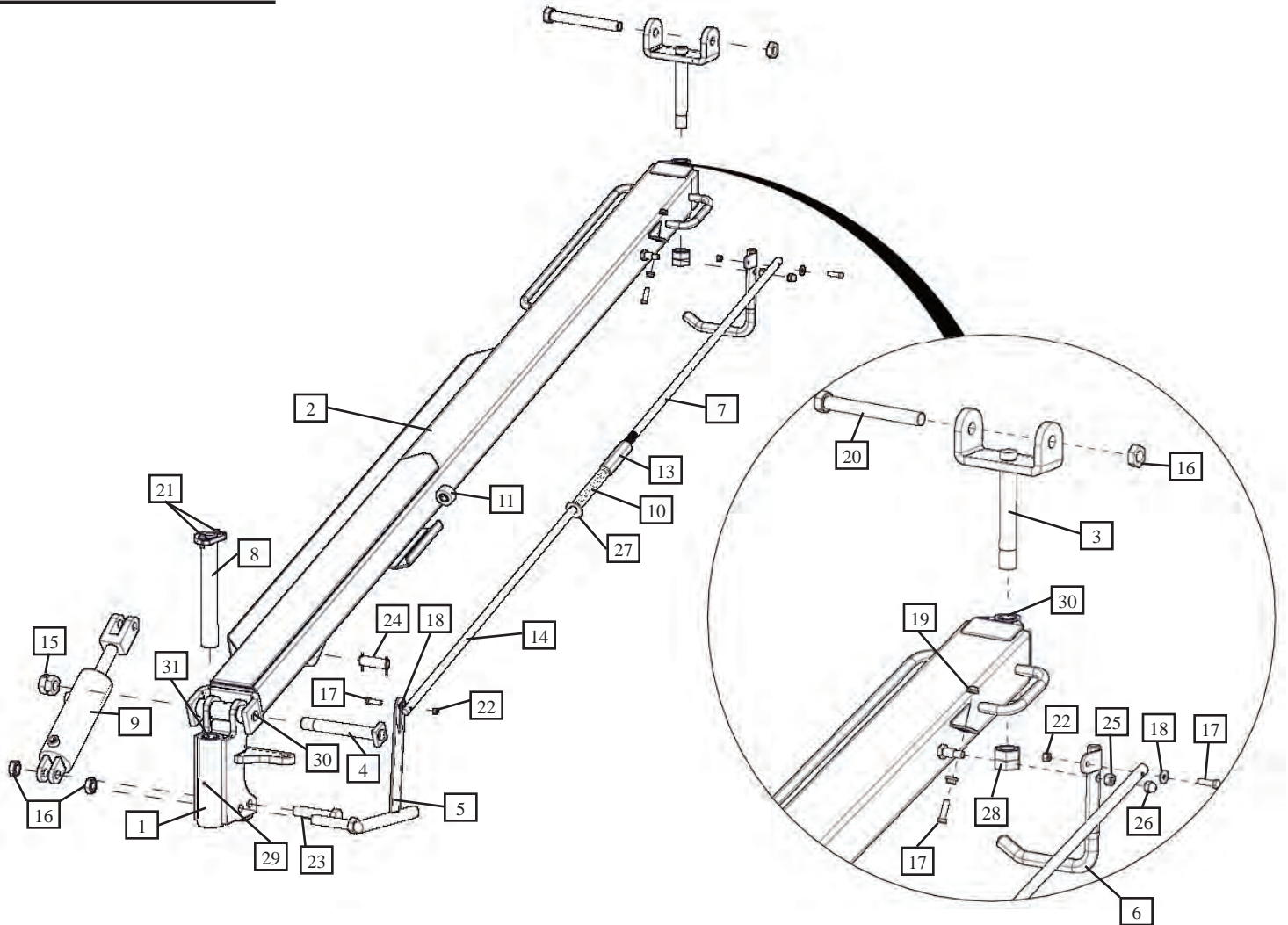
*Typical Other Side

5.0 Parts

Conveyor			
Item #	Description	Part #	Qty.
1	Rear Door Weldment	JM0009993	1
2	Wing Handle Latch 0.75 dia Hole	JM0001949	1
3	Tube Weldment	JM0002612	1
4	Idler Shaft	JM0002740	1
5	Bearing Mount Hopper End	JM0002199	2
6	Two Bolt Flange Bearing	JM0001811	4
7	3/8-16 X 1.25 Grade 5 Zinc Carriage Bolt	JM0001639	36
8	12" Wide 5 Tab Belt	JM0009992	1
9	Front Nylon Brush Holder-Hopper End	JM0002738	1
10	Nylon Brush Clamp-Hopper End	JM0002741	2
11	Drive Shaft	JM0002744	1
12	Inner Brace-Motor Side, Discharge End	JM0002745	1
13	Hopper End Clamp-Off Motor Side	JM0002755	1
14	Inner Rubber Guard-Hopper End	JM0002766	2
15	Hopper End Clamp-Motor Side	JM0002761	1
16	Inner Rubber Clamp-Hopper End	JM0002767	2
17	Hopper Safety Grate	JM0002769	1
18	Hydraulic Motor w/ Keyed Shaft & Pinhole	JM0010469	1
19	Drive Coupling	JM0009994	1
20	Hydraulic Motor Mount Weldment	JM0002225	1
21	Field Light	JM0001881	1
22	Conveyor Support Stand Weldment	JM0002212	1
23	Rubber Discharge Pan	JM0002771	1
24	Discharge Pan	JM0002772	1
25	Hopper Tarp Rear Clamp	JM0002773	1
26	Back Rubber Guard Support Plate	JM0002774	1
27	Back Rubber Guard	JM0002775	1
28	M6-1 X 20 Grade 8.8 Hex Bolt	JM0002120	4
29	Rear Nylon Brush Holder-Hopper End	JM0002779	1
30	Hopper Tarp Support Tube	JM0002780	1
31	3/8 Shaft Dia 1 1/8 OD Steel Ball Bearing	JM0001828	2
32	Hopper Lock Weldment	JM0002967	1
33	Rubber Handle Cap	JM0002784	2
34	Bearing Mount Bracket Weldment-Motor Side	JM0002235	1
35	Bearing Mount Bracket Weldment-Off Motor Side	JM0002234	1
36	Inner Brace-Off Motor Side, Discharge End	JM0002746	1
37	Nylon Brush Clamp-Discharge End	JM0009995	1

38	12.5 Long Nylon Strip Brush-Discharge End	JM0009999	1
39	12.75 Long Nylon Strip Brush-Hopper End	JM0001917	2
40	Front Nylon Brush Rubber Backing-Hopper End	JM0002791	1
41	Inner Rubber Skirt-Discharge End	JM0002749	2
42	Inner Rubber Skirt Clamp-Discharge End	JM0002752	2
43	Hopper Pivot Bar	JM0002786	1
44	Rubber Pipe Cap 1.0 ID	JM0002785	2
45	Hopper Tarp Protection Bar	JM0002223	2
46	Support Stand Spring Plunger	JM0002789	1
47	Hopper Handle Bearing Mount	JM0002220	2
48	1/2-13 X 2 1/2 Grade 5 Zinc Hex Bolt	JM0001648	2
49	3/8-16 X 1.0 Grade 5 Zinc Hex Bolt	JM0001592	6
50	3/8-16 Grade 5 Zinc Centerlock Hex Nut	JM0001512	4
51	1.0 OD 0.515 ID X 0.35 L Black UV Nylon Spacer	JM0001962	2
52	1/4-20 X 3/4 Grade 5 Zinc Serrated Flange Hex Bolt	JM0001642	34
53	1/4-20 Grade 5 Zinc Serrated Flange Hex Nut	JM0001630	46
54	5/8-11 X 7 1/2 Grade 5 Zinc Hex Bolt	JM0001631	2
55	5/8-11 Grade 5 Zinc Hex Nut	JM0001522	4
56	1/2 Dia. X .38 Long Shoulder Bolt	JM0009998	4
57	3/8-16 Grade 5 Zinc Flange Hex Nut	JM0001508	30
58	1/4-20 X 1.0 Grade 5 Zinc Serrated Flange Hex Bolt	JM0001643	6
59	3/8-16 Grade 5 Zinc Serrated Flange Hex Nut	JM0002152	2
60	1/2-13 X 1 1/4 Grade 5 Zinc Hex Bolt	JM0001513	2
61	1/2-13 Grade 5 Zinc Centerlock Hex Nut	JM0001511	2
62	1/2-13 Grade 5 Zinc Serrated Flange Hex Nut	JM0002153	6
63	3/8-16 X 1 3/4 Grade 5 Zinc Hex Bolt	JM0002097	2
64	3/8 USS Flat Washer	JM0003061	2
65	5/8-11 X 3 1/2 Grade 5 Zinc Hex Bolt	JM0001650	2
66	5/8-11 Grade 5 Zinc Centerlock Hex Nut	JM0002146	4
67	1/2 USS Flat Washer	JM0003082	2
68	2" Wide Conveyer Hold Down Ratchet	JM0003084	1
69	M6-1 Grade 8.8 Nylon Locking Hex Nut	JM0002167	4
70	1/2-13 Grade 5 Zinc Hex Nut	JM0002124	2
71	1/2-13 Acorn Nut	JM0001772	2
72	Hopper Chute Tarp (Not shown)	JM0008383	1
73	Telescoping Spout	JM0010306	1
74	8in Dia Clamp	JM0002870	1
75	M10 X 1.5 L Bolt with Plastic Cap	JM0001966	1
76	3/8-16 Zinc J-Bolt	JM0001519	1
77	3/8-16 Grade 5 Zinc Hex Nut	JM0001707	2

5.7 Boom Arm Parts



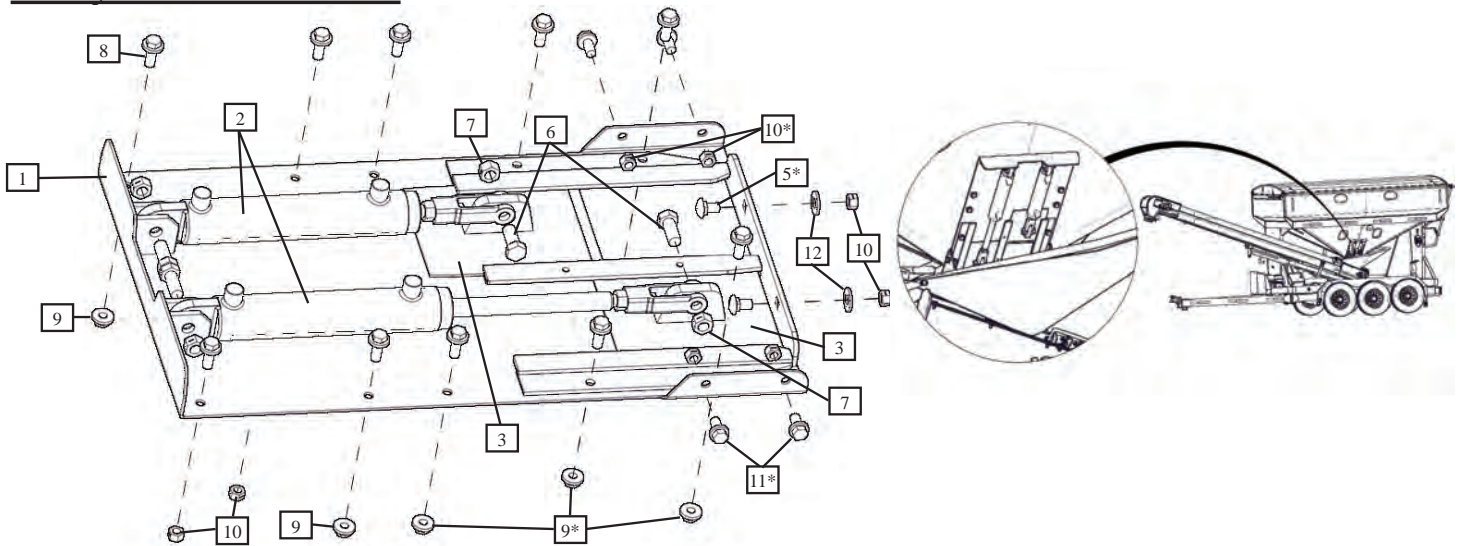
Boom Arm			
Item #	Description	Part #	Qty.
1	Vertical Axis Boom Pivot Weldment	JM0002241	1
2	Boom Arm Weldment	JM0002963	1
3	Upper Boom Pivot Weldment	JM0001605	1
4	Horizontal Axis Boom Pivot Pin Weldment	JM0002456	1
5	Timing Wheel Pin Weldment	JM0001560	1
6	Timing Wheel J-Handle Weldment	JM0005812	1
7	Upper Linkage Timing Lock Rod	JM0002922	1
8	Vertical Axis Boom Pin Weldment	JM0002238	1
9	Boom Vertical Hydraulic Cylinder	JM0003045	1
10	Timing Pin Shaft Spring	JM0001826	1
11	Timing Pin Spool Bushing	JM0010004	1
12	1/4 Dia. Snap Ring Lynch Pin (See Figure 1.3)	JM0001870	1
13	Timing Pin Shaft Coupling, 3/4" Threads	JM0002923	1
14	Lower Linkage Timing Lock Rod	JM0002921	1
15	1 1/4-7 Grade 5 Zinc Hex Nut	JM0001700	2
16	1.0-8 Z Grade 5 Hex Jam Nut	JM0001705	3

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5.0 Parts

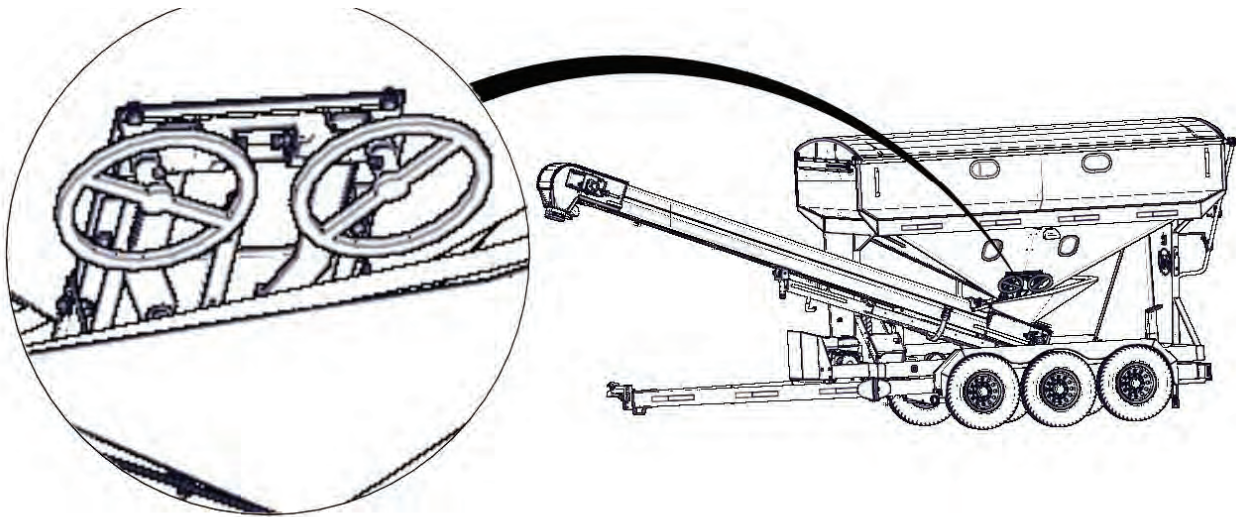
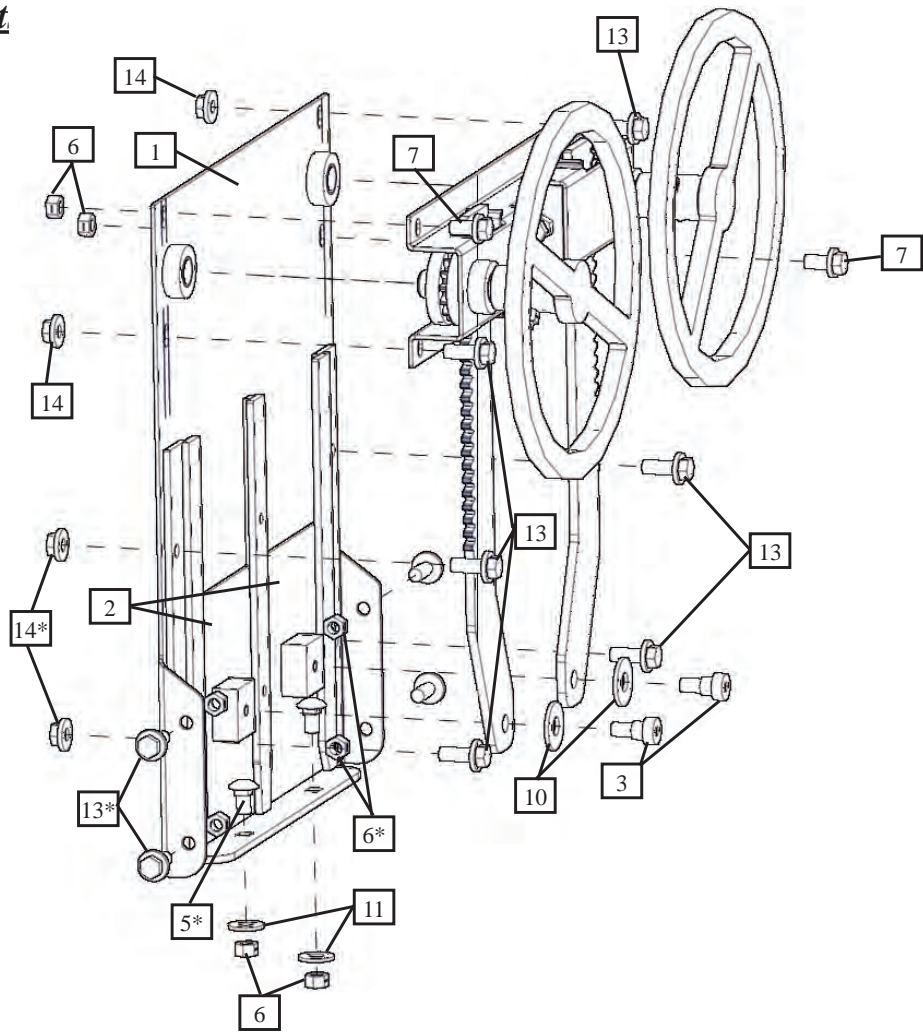
Boom Arm			
Item #	Description	Part #	Qty.
17	3/8-16 X 1.5 Grade 5 Zinc Hex Bolt	JM0001659	3
18	3/8 USS Flat Washer	JM0003061	3
19	3/8-16 Grade 5 Zinc Serrated Flange Hex Nut	JM0002152	2
20	1.0-8 X 9.0 Grade 8 Zinc Hex Bolt	JM0001708	1
21	3/8-16 X 1.0 Grade 8 Zinc Serrated Flange Hex Bolt	JM0001509	2
22	3/8-16 Grade 5 Zinc Centerlock Hex Nut	JM0001512	2
23	1.0-8 X 5.0 Grade 8 Plain Hex Bolt	JM0001774	1
24	1 X 3.4 Clevis Pin w/ Cotter Pins	JM0001817	1
25	1/2-13 Grade 5 Zinc Hex Nut	JM0002124	1
26	1/2-13 Acorn Nut	JM0001772	1
27	3/4 USS Flat Washer	JM0010006	1
28	1 1/4-12 Grade 5 Plain Hex Jam Nut	JM0001606	2
29	1/8 NPT Grease Zerk (See Figure 2.2)	JM0009756	3
30	1.260ID X 1.513OD X 1 Long Bushing	JM0002248	4
31	1.760ID X 1.996OD X 1 Long Bushing	JM0002244	2

5.8 Hydraulic Door Parts



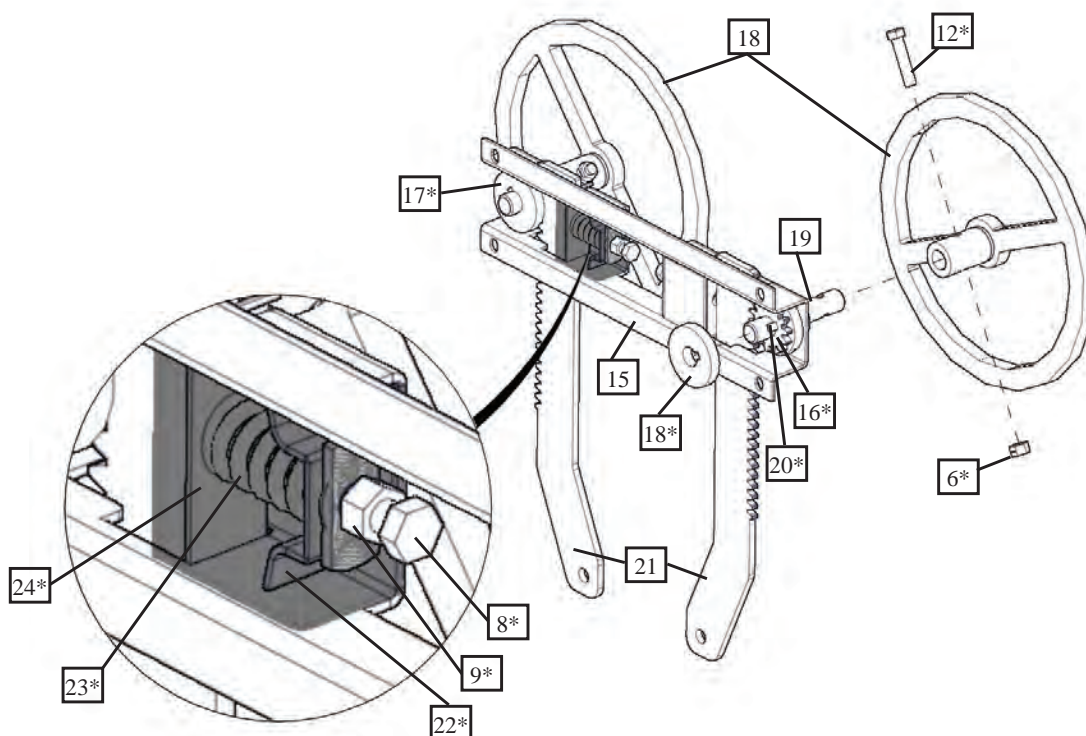
Hydraulic Door			
Item #	Description	Part #	Qty.
1	Hydraulic Door Frame Weldment	JM0002872	1
2	Door Hydraulic Cylinder	JM0002882	2
3	Hydraulic Door Weldment	JM0002883	2
4	Rubber Chute (Not shown)	JM0002855	1
5	3/8-16 X 3/4 Grade 5 Zinc Carriage Bolt	JM0002172	2
6	1/2-13 X 1 1/4 Grade 5 Zinc Hex Bolt	JM0001513	4
7	1/2-13 Grade 5 Zinc Centerlock Hex Nut	JM0001511	4
8	3/8-16 X 1.0 Grade 5 Z Serrated Flange Hex Bolt	JM0002092	10
9	3/8-16 Grade 5 Zinc Serrated Flange Hex Nut	JM0002152	8
10	3/8-16 Grade 5 Zinc Centerlock Hex Nut	JM0001512	8
11	3/8-16 X 3/4 Grade 5 Zinc Serrated Flange Hex Bolt	JM0001750	4
12	3/8 USS Flat Washer	JM0003061	2

5.9 Manual Door Part

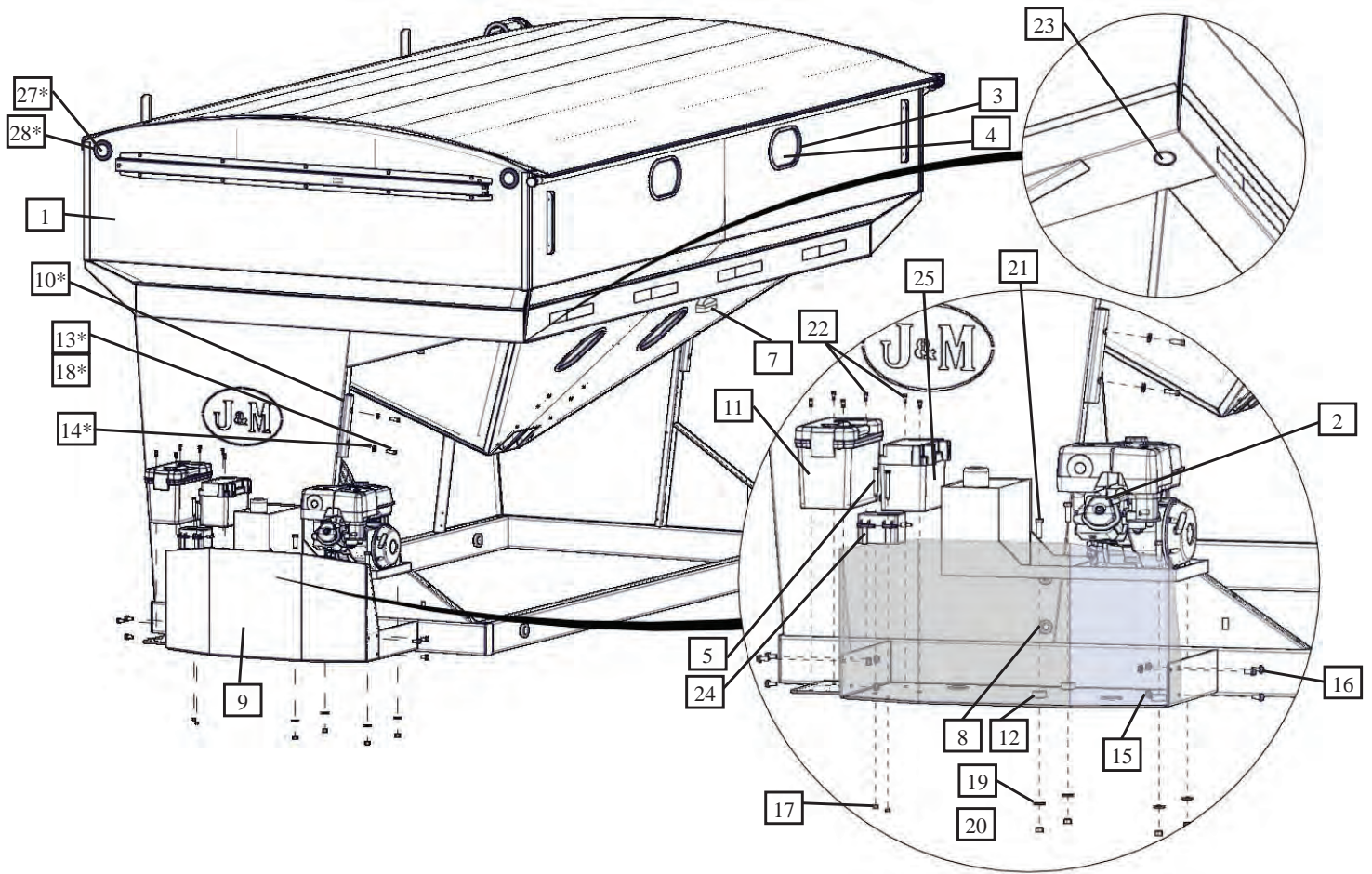


5.0 Parts

Manual Door			
Item #	Description	Part #	Qty.
1	Manual Door Frame Weldment	JM0002832	1
2	Manual Door Weldment	JM0002841	2
3	1/2 Dia. X 1/2 Long Shoulder Bolt	JM0009998	2
4	Rubber Chute (Not Shown)	JM0002855	1
5	3/8-16 X 3/4 Grade 5 Zinc Carriage Bolt	JM0002172	2
6	3/8-16 Grade 5 Zinc Centerlock Hex Nut	JM0001512	10
7	3/8-16 X 3/4 Grade 5 Zinc Serrated Flange Hex Bolt	JM0001750	2
8	3/8-16 X 1.0 Grade 5 Zinc Hex Bolt	JM0001592	2
9	3/8-16 Grade 5 Zinc Hex Nut	JM0001707	2
10	1/2 USS Flat Washer	JM0003082	2
11	3/8 USS Flat Washer	JM0003061	2
12	3/8-16 X 1 3/4 Grade 5 Zinc Hex Bolt	JM0002097	2
13	3/8-16 X 1.0 Grade 5 Zinc Serrated Flange Hex Bolt	JM0002092	10
14	3/8-16 Grade 5 Zinc Serrated Flange Hex Nut	JM0002152	6
15	Door Rack Assembly	JM0002852	1
16	Manual Door Gear	JM0002844	2
17	Keyway Washer	JM0002849	4
18	Manual Door Wheel	JM0002845	2
19	Manual Door Stub Shaft	JM0002856	2
20	1/4" Key	JM0002857	2
21	Door Track Rack	JM0002848	2
22	Spring Holder	JM0002850	2
23	Door Rack Spring	JM0001688	2
24	Scrubber Spring Plate	JM0002851	2



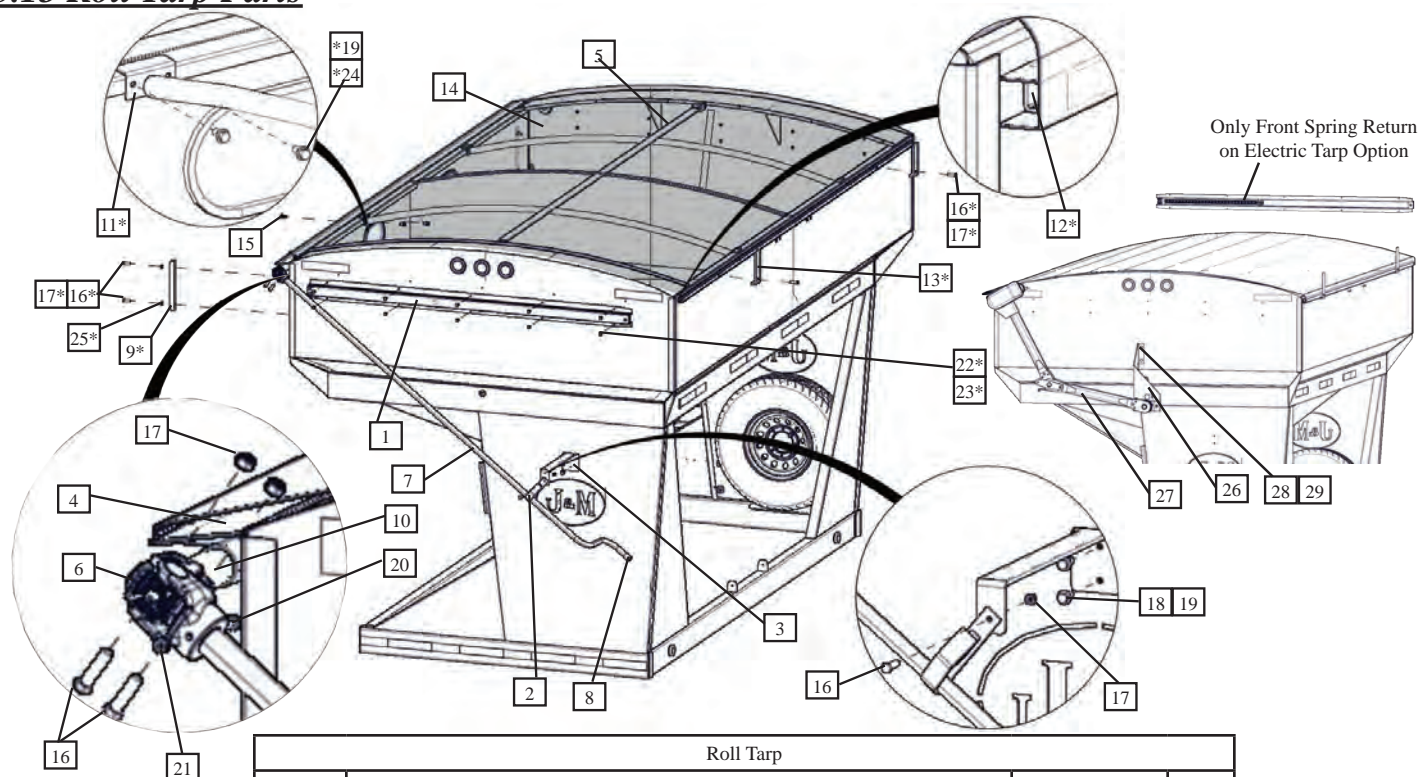
5.12 Shell Parts



5.0 Parts

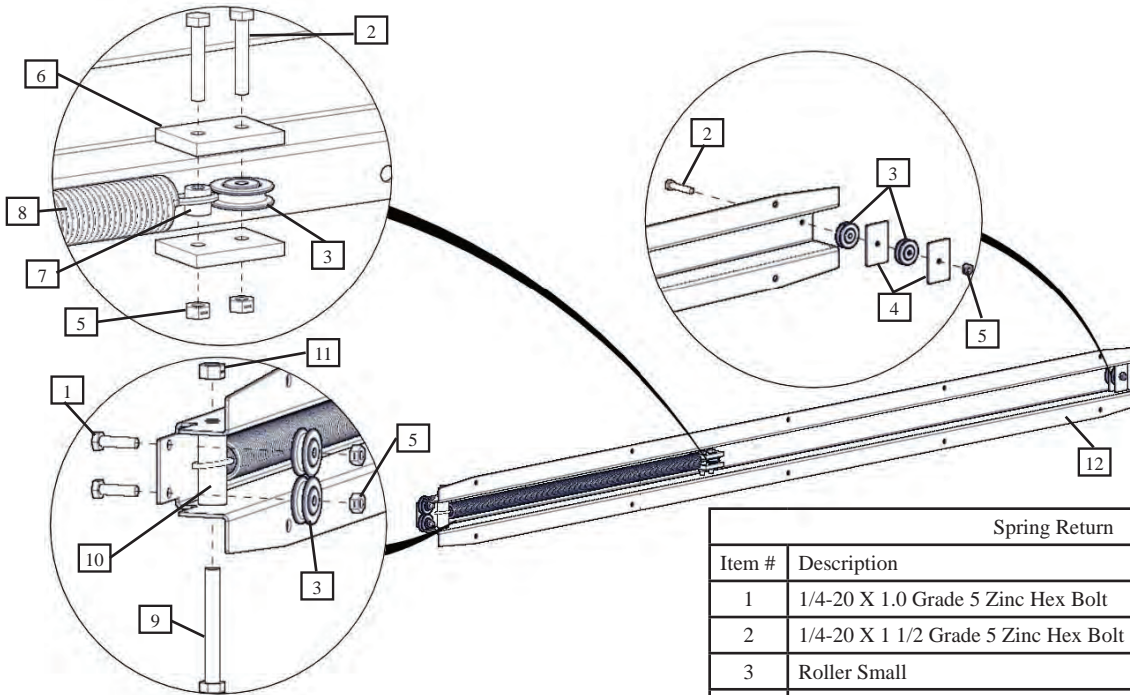
Shell			
Item #	Description	Part #	Qty.
1	Tank and Legs Weldment	JM0002539	1
2	Hydraulic Power Unit	JM0003027	1
3	Oval Window Grommet	JM0002454	4
4	Oval Window	JM0002455	4
5	5/16-18 X 3 1/4 Grade 2 Countersunk Socket Torx Bolt	JM0009761	2
6	2 1/8 ID X 2 1/2 OD Grommet	JM0007489	2
7	Field Light Assembly	JM0001881	1
8	1 ID X 1 3/8 OD Rubber Grommet	JM0010079	4
9	Hydraulic Power Unit Panel	JM0000327	1
10	12.0 X 2.0 Dock Bumper	JM0001890	2
11	Black Plastic Toolbox	JM0001812	1
12	Neoprene Vibration Damping Mount	JM0001869	4
13	3/8-16 X 1 1/2 Grade 5 Zinc Hex Bolt	JM0001659	4
14	3/8 USS Flat Washer	JM0003061	4
15	3/8-16 Grade 5 Zinc Serrated Flange Hex Nut	JM0002152	6
16	3/8-16 X 1.0 Grade 8 Zinc Serrated Flange Hex Bolt	JM0001509	6
17	5/16-18 Grade 5 Zinc Centerlock Hex Nut	JM0002143	2
18	3/8-16 Grade 5 Zinc Centerlock Hex Nut	JM0001512	4
19	1/2 USS Flat Washer	JM0003082	4
20	1/2-13 Grade 5 Zinc Centerlock Hex Nut	JM0001511	4
21	1/2-13 X 2.0 Grade 8 Zinc Hex Bolt	JM0001620	4
22	1/4 X 3/4 Self Tapping Screw	JM0001570	6
23	2 1/2 Dia. Hole Plug	JM0007487	2
24	Breakaway Battery Box Assembly	JM0001833	1
25	Battery Box	JM0001846	1
26	Amber Round Light Assembly	JM0001908	2
27	Amber Round Light	JM0001895	2
28	Round Light Grommet	JM0001902	2
29	Red Round Light Assembly (Not Shown-On Back)	JM0001905	3
30	Red Round Light (Not Shown-On Back)	JM0001901	3
31	Round Light Grommet (Not Shown-On Back)	JM0001902	3



5.13 Roll Tarp Parts

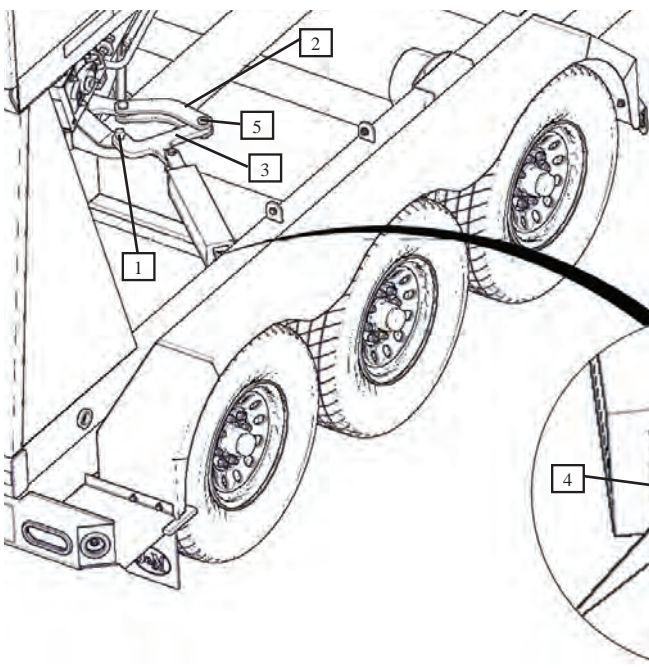
Roll Tarp			
Item #	Description	Part #	Qty.
1	Spring Return (Detail Section 5.13)	JM0002437	2
2	Tarp Handle Holder	JM0002976	1
3	Tarp Handle Hanger	JM0002903	1
4	Lip Lock	JM0002887	1
5	Rigid Cable Assembly	JM0010074	1
6	Tarp Handle Universal Joint	JM0001517	1
7	Tarp Handle	JM0002907	1
8	Tarp Handle Rubber Cap	JM0010047	1
9	Tarp Standoffs	JM0001889	2
10	Roll Pipe Weldment	JM0002912	1
11	Tarp Bow	JM0010073	2
12	Tarp Tube	JM0002915	1
13	Tarp Stop	JM0002448	2
14	Canvas Tarp	JM0002957	1
15	3/8-16 X 1.0 Grade 5 Zinc Flat Pan Head Bolt	JM0002892	5
16	3/8-16 X 1 1/2 Grade 5 Zinc Hex Bolt	JM0001659	7
17	3/8-16 Grade 5 Zinc Centerlock Hex Nut	JM0001512	6
18	3/8-16 X 1.0 Grade 8 Zinc Serrated Flange Hex Bolt	JM0001509	2
19	3/8-16 Grade 5 Zinc Serrated Flange Hex Nut	JM0002152	10
20	1/4-20 X 2 1/2 Grade 5 Zinc Hex Bolt	JM0001506	1
21	1/4-20 Grade 5 Zinc Centerlock Hex Nut	JM0001505	1
22	1/4-20 X 3/4 Grade 5 Zinc Serrated Flange Hex Bolt	JM0001642	20
23	1/4-20 Grade 5 Zinc Serrated Flange Hex Nut	JM0001630	20
24	3/8-16 X 3/4 Grade 5 Zinc Serrated Flange Hex Bolt	JM0001750	8
25	5/16 USS Flat Washer	JM0001742	4
26	Electric Tarp Mounting Brace	JM0007122	1
27	Electric Tarp Arm	JM0010197	1
28	1/2-13 X 1 1/4 Grade 5 Zinc Hex Bolt	JM0001513	3
29	1/2-13 Grade 5 Zinc Centerlock Hex Nut	JM0009858	3

5.14 Spring Return Parts



Spring Return			
Item #	Description	Part #	Qty.
1	1/4-20 X 1.0 Grade 5 Zinc Hex Bolt	JM0002095	2
2	1/4-20 X 1 1/2 Grade 5 Zinc Hex Bolt	JM0002447	1
3	Roller Small	JM0002439	5
4	Aluminum Spacer Rectangle	JM0013484	2
5	1/4-20 Grade 5 Zinc Centerlock Nut	JM0001505	5
6	Rectangular Plastic Spacer	JM0002443	2
7	Short Plastic Spacer	JM0002442	1
8	Spring Return Spring	JM0000207	1
9	3/8-16 X 3.0 Grade 5 Zinc Hex Bolt	JM0001666	1
10	Tall Plastic Spacer	JM0002444	1
11	3/8-16 Grade 5 Zinc Centerlock Nut	JM0001512	1
12	Spring Return Housing	JM0002446	1
13	Cable with Cable Crimps (Not Shown)	JM0010307	1

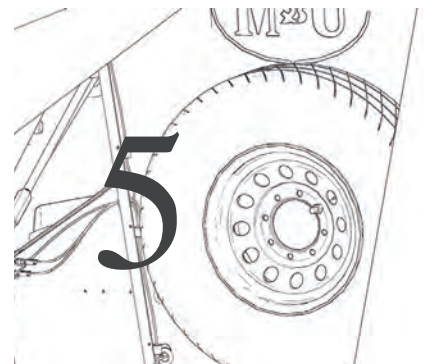
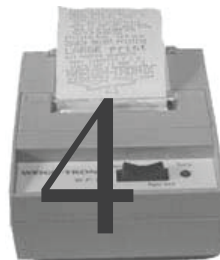
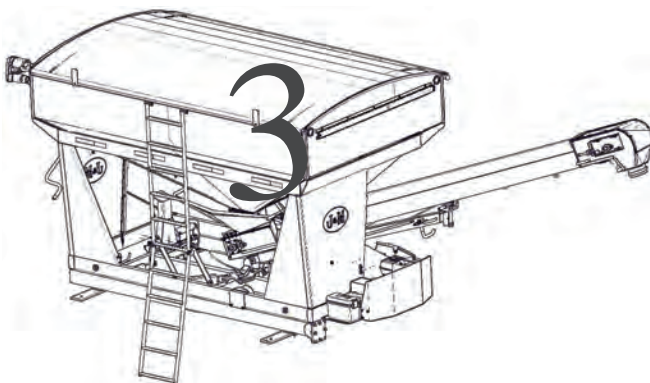
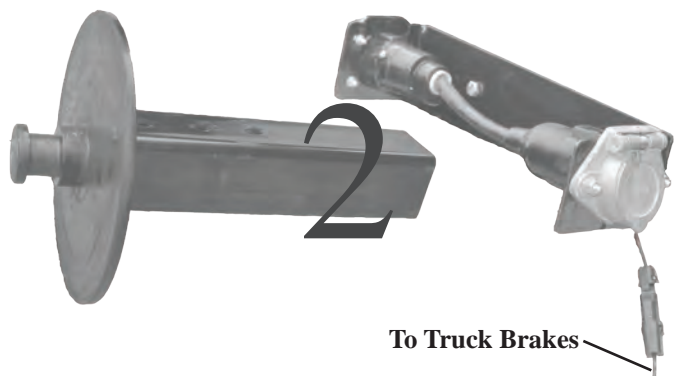
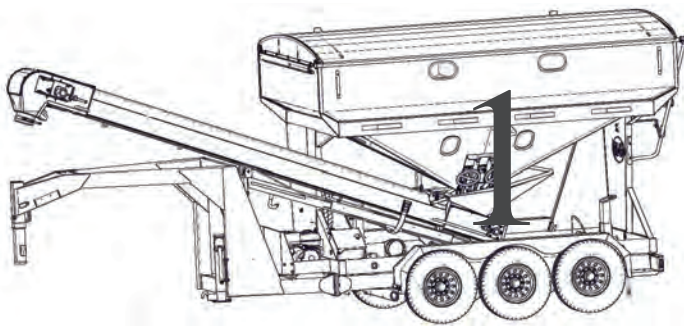
5.15 Boom Arm Hydraulic Swing Parts (optional)



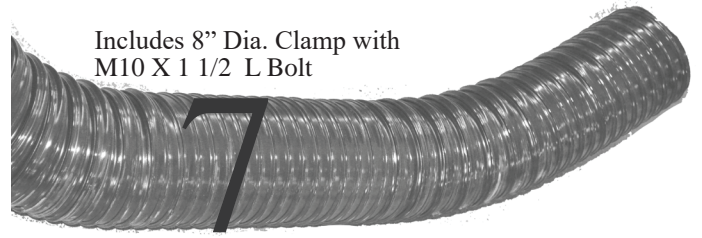
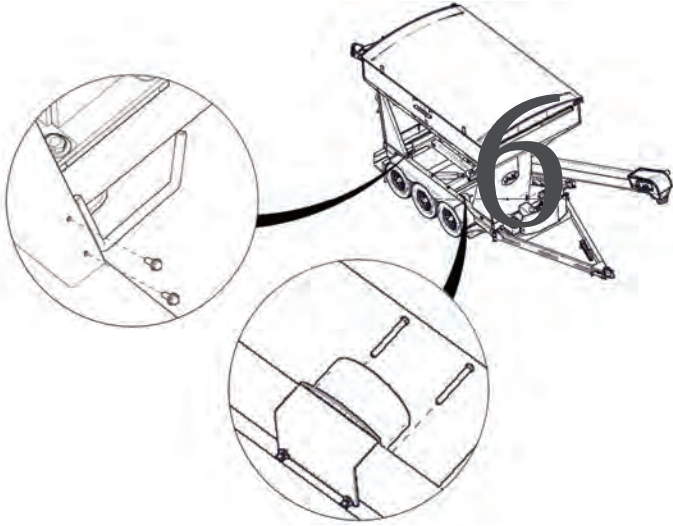
Hydraulic Swing			
Item #	Description	Part #	Qty.
1	1.0-8 Nylon Lock Hex Nut	JM0002161	1
2	Dual Swing Link	JM0002260	2
3	Single Swing Link	JM0002252	1
4	1 X 3.4 Clevis Pin w/ Cotter Pins	JM0001816	2
5	1 X 2 1/4 Pin w/ Cotter Pin	JM0010201	2
6	Hydraulic Swing Cylinder	JM0002261	1

5.16 Available Options

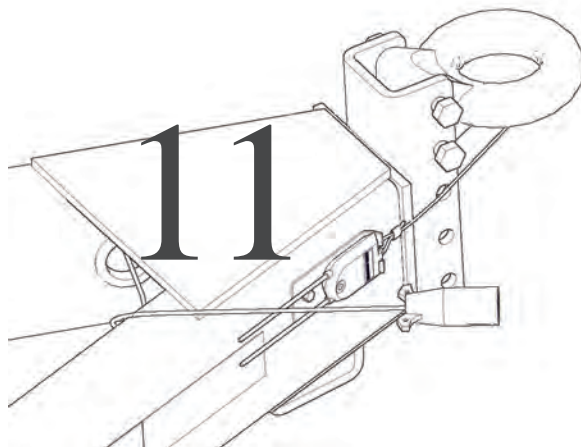
Item #	Description	Product #
1	Gooseneck Frame and Hitch Assembly in place of standard A-Frame	375ST-GNO
2	5th Wheel Hitch on Gooseneck Frame Assembly in place of standard Truck Hitch. Includes 7-way Flat to 7-Way Round Adapter	375ST-5WH
3	Trailer Mount Kit in place of Standard Chassis (Deluxe All-Function Wireless Remote Control Option Recommended)	375ST-TM
See Section 4.3	Factory Installed Electronic Scale Package	375STWS
4	Roll Printer for Scale System	WTPR-1
5	New 235/85R16 Spare Tire and Wheel with Mounting Hardware (mounted to inside leg of tank)	ST235-16TW
6	Telescoping Spout Storage Mount Bracket with Mounting Hardware	TSSB-8
7	36" Long Flexible Hose for End of Telescoping Spout	ST375FH-36
8	Vinyl Sock for End of Telescoping Spout	ST375SK
9	Collapsible Vinyl Hopper Cover (for Poly Cup Auger System)	ST375CHC-A
10	Collapsible Vinyl Hopper Cover (for Belt Conveyor System)	ST375CHC-B
11	3" Pintle Eye Hitch (in place of standard 2 5/16" ball hitch)	ST3PH
See Section 4.1	Deluxe All-Function Remote Control (with cord) in place of standard control. Features include handheld remote to hydraulically open/close tank doors, raise/lower boom and start/stop the auger or conveyor.	SPT-AF1
See Section 4.1	New Wireless Remote Control in place of standard control. Features include handheld remote to hydraulically open/close tank doors, raise/lower boom and start/stop the auger or conveyor.	SPT-WC1
See Section 4.1	Deluxe Wireless Remote Control in place of standard control. Features include handheld remote to hydraulically open/close tank doors, raise/lower boom, start/stop the auger or conveyor, hydraulically rotate auger or conveyor, and automatic electronic scale shut-off for precise unloading.	SPT-WC1-D



5.0 Parts



Includes 8" Dia. Clamp with
M10 X 1 1/2 L Bolt



6.1 Scales Installation

Note: For Scale parts see Section 5.3

1. Slide the weigh bar into the scale mount. Making sure that the Weigh bar sticker is facing up (Figure 6.1).
2. Insert two 3/8"-16 X 3 1/2" Grade 5 Zinc Hex Bolt (#1) into scale mount and tighten using 3/8"-16 Centerlock Hex Nut (#2) (Figure 6.1).

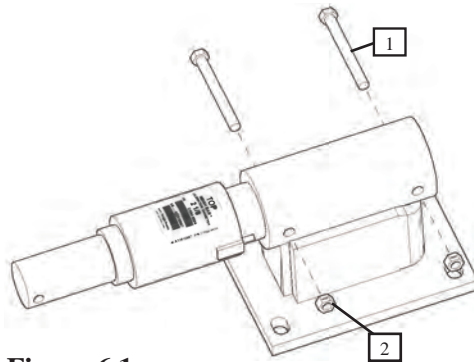


Figure 6.1

3. Insert 4 Spacer Blocks in between the Shell/Leg Weldment and the Chassis Frame. Be sure the 4 Spacer Blocks are identical in width and fit snug between the Shell/Leg Weldment and the Chassis Frame (Figure 6.2).
4. Remove the 4 bolts from each of the Dummy Scale Mounts and remove it from the unit.

WARNING: With the 4 bolts removed from each of the Dummy Scale Mounts. The Chassis and Shell are not attached and can slide apart.

5. Lift the shell approximately 2-3". This will allow enough clearance to slide the weigh bars into the Shell/Leg Weldment Spools. (Figure 6.2).

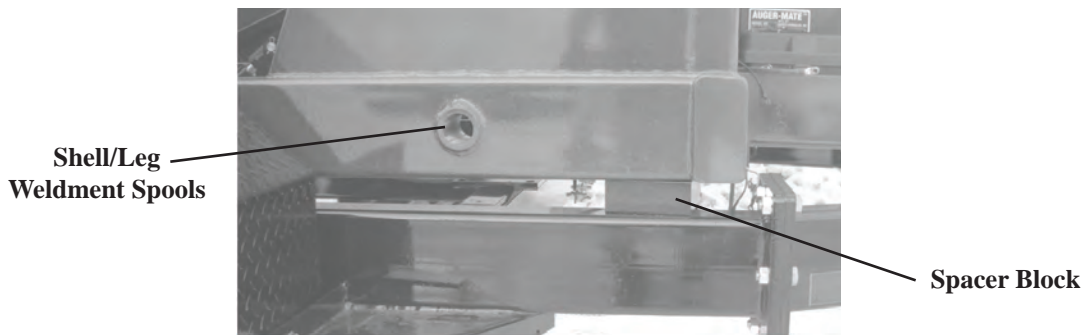


Figure 6.2

6. Slide Weigh Bars into the Shell/Leg Weldment Spools and lower the Shell/Leg Weldment down so the Weigh Bar Mounts set on the Scale Mounting Plates.
7. Use a punch to align the Weigh Bar Mount holes with the Scale Mounting Plate holes.
8. Insert 1/2"-13 X 1 3/4" Grade 5 Hex Head Bolt (#3) with two 1/2" Zinc USS Washers (#4) and 1/2"-13 Grade 5 Zinc Centerlock Hex Nut (#5) (Figure 6.3)

IMPORTANT: Be careful not to pinch wires between the Speed Tender chassis and the Scale Mounting Plates.

9. Torque each bolt down to 85 ft-lbs on all 4 Scale Mounting plates (Figure 6.3).

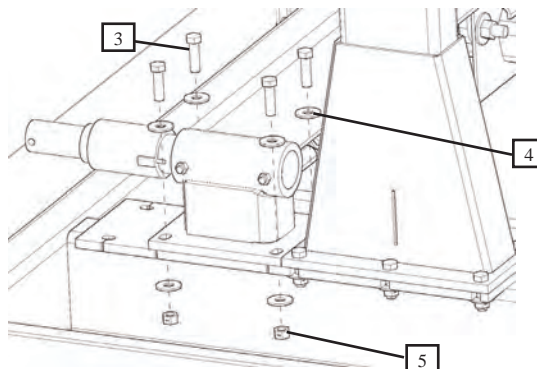


Figure 6.3

6.0 Aftermarket Installation Instructions

10. Remove Spacer Blocks (Figure 6.2)
11. Remove the four 1 3/8" grommets located in the four chassis holes (Figure 6.4)
12. Slide one grommet on to each of the weigh bar wires of B,C, and D. (Figure 6.4)
- NOTE: Spray grommets with a lubricant spray for ease of installation.**
13. Route each wire from B,C and D so they exit chassis hole (#6) (Figure 6.4).
14. Slide the grommet from chassis hole (#6) over the wires from B, C, and D. (Figure 6.4).
15. Reinstall the grommets back into the chassis holes. (Figure 6.4).
16. Push excess wires into chassis hole (#6) (Figure 6.4).

NOTE: Spray the grommet with a lubricant spray for ease of installation.

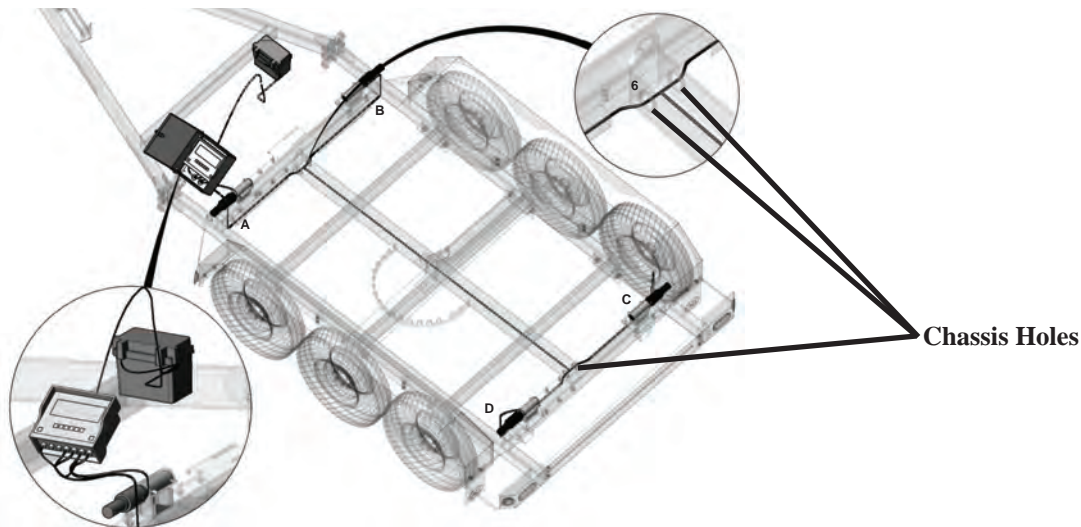


Figure 6.4

17. Attach Scale Display Box (#7) onto the Shell/Leg Weldment (Figure 6.6) with 1/4"-20 X 1" Grade 5 Zinc Hex Bolt (#8) and 1/4"-20 Grade 5 Zinc Serrated Flange Hex Nut (#9) (Figure 6.5).

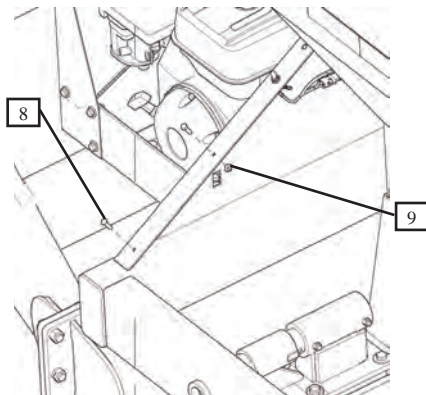


Figure 6.5

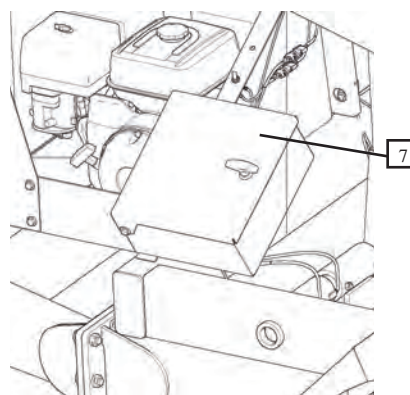


Figure 6.6

18. Insert the four wires from the weigh bars into the back of the scale indicator box. Insert weight bar wires through each grommet.
19. Remove the Back Plate from the 640XL Display Interface (Figure 6.7). Save the nuts and lock washers from the 640XL Display Interface.
20. Insert the 640XL Display Power Cord into grommet hole closest to the door hinge of the scale indicator box.
21. Attach all 5 wires to the bottom of the 640XL Display Interface. (Figure 6.8)
22. Use the nuts and lock washers from step 19 to attach the indicator to the scale indicator box.
23. Connect the indicator box power wire to the battery. The white wire is positive and the black wire is negative.
24. Push extra wire back into chassis holes (#6). (Figure 6.4)
25. Secure Weigh Bar Wires running from the chassis holes with the 4 large wire ties provided.
26. Secure the Weigh Bar Wires running from the indicator box to chassis hole (#6) with a wire tie.
27. Power up unit to confirm function. Use scale manual to calibrate the scale system.



Figure 6.7

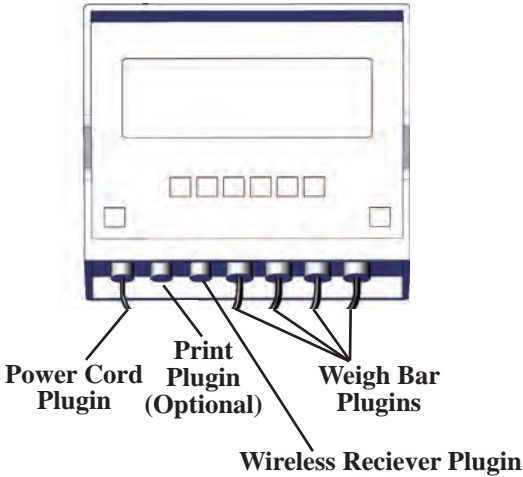


Figure 6.8

NOTES

This image shows a full page of blank, lined paper. It features approximately 20 evenly spaced horizontal grey lines across its entire width, providing a guide for handwriting or typing. The paper itself is a clean, off-white color.