

Multiple Animal Scale Mobile

MAS-M

Installation Manual



RICE LAKE[®]
WEIGHING SYSTEMS
To be the best by every measure[®]



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Contents

1.0	Introduction.....	1
1.1	Overview	1
1.2	Safety	2
1.3	Safety Decals.	3
1.4	Non-Safety Decals.	4
1.5	Unloading	5
1.5.1	Slings the scale.	5
1.5.2	Lift the Scale.	5
1.5.3	Remove Lifting Fixture.	5
1.6	Lifting Assembled Scale.	6
1.7	Package Removal	6
2.0	Assembly.....	7
2.1	Cage Wall Assembly	8
2.1.1	Apply the silicone bead.	8
2.1.2	Install walls	8
2.1.3	Install the Gate	9
2.1.4	Gate and Latch Adjustment Procedure.	10
2.2	Hitch Assembly	10
2.3	T-Belt	11
2.4	Optional 920i Weighcenter Mounting.	11
2.5	Wiring the Scale.	12
2.6	Load Cell Wiring Diagrams.	14
3.0	Towing Instructions	15
3.1	Switching Modes	16
3.1.1	Converting to Weigh Mode	16
3.1.2	Converting to Transport Mode	18
4.0	Repair Parts	20
5.0	Maintenance	32
5.1	Maintenance Schedule	32
5.2	Scale Maintenance Procedures	33
5.2.1	Cleaning Load Cell Stands	33
5.2.2	Disassembly and Greasing	33
5.3	Brake Maintenance	34
5.3.1	How to Use The Electric Brakes Properly	34
5.3.2	Synchronizing The Scale Brakes.	34
5.3.3	Brake Adjustment	34
5.4	Hubs, Drums and Bearings Maintenance.	35
5.4.1	Bearing Adjustment	35
5.4.2	Lubricate Hubs	35
5.5	Gathering Panel Attachment	36
5.6	Troubleshooting.	37
5.7	Specifications	38
5.8	Towing Checklist	39
	Mobile Group Limited Warranty.....	40

1.0 Introduction

Congratulations on your purchase of a *Multiple Animal Scale Mobile (MAS-M)* using On-Board technology. This system is manufactured with top quality components and is engineered using the latest technology to provide operating features and reliability unmatched for years to come.

Please take the time to read this manual completely through before attempting to use the system. Although the *MAS-M* has been designed for easy set up and use, a thorough understanding of this manual will ensure that the user will receive the maximum benefit from the system.

Please contact Rice Lake Weighing Systems at 800-472-6703 with any comments or questions.

1.1 Overview

The *MAS-M* is an agricultural implement consisting of a scale with air ride suspension and swing out hitch, sheeted animal cage suspended by four S-type load cells through a cam style On-Board scale system, and weigh center. In transport mode the scale system is locked down, protecting the load cells from damage during transport. To convert to weigh mode the entire scale is lowered to the ground, the hitch is split and swung outward and the scale is raised to the weigh mode using a lever and cam system. The weigh center contains the digital indicator and ticket printer. To convert back to transport mode the process is reversed, see Section 3.0 on page 15 for more details.

The *MAS-M* can be used on any firm surface up to 7% grade (4-degree slope) and has a low deck height (6") for easy step in.



Figure 1-1. Multiple Animal Scale Mobile

1.2 Safety

Safety Symbol Definitions:



Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.



Indicates a potentially hazardous situation that, if not avoided could result in serious injury or death, and includes hazards that are exposed when guards are removed.



Indicates a potentially hazardous situation that, if not avoided may result in minor or moderate injury.



Indicates information about procedures that, if not observed, could result in damage to equipment or corruption to and loss of data.

General Safety



Do not operate or work on this equipment unless you have read and understood the instructions and warnings in this manual. Failure to follow the instructions or heed the warnings could result in injury or death. Contact any Rice Lake Weighing System dealer for replacement manuals. Proper care is your responsibility.



Failure to heed may result in serious injury or death.

DO NOT allow minors (children) or inexperienced persons to operate this unit.

DO NOT operate without all shields and guards in place.

DO NOT use for purposes other than weighing.

DO NOT place fingers into slots or possible pinch points.

DO NOT place hands, feet or any body part underneath the scale at any time. The scale could be lowered, crushing body parts.

DO NOT use any load bearing component that is worn beyond 5% of the original dimension.

DO NOT use this product if any of the components are cracked.

DO NOT exceed the rated load limit of the unit.

DO NOT make alterations or modifications to the unit.

DO NOT remove or obscure warning labels.

Keep hands, feet and loose clothing away from moving parts.

Some procedures described in this manual require work inside the indicator enclosure. These procedures are to be performed by qualified service personnel only.

Always be certain when lowering the scale that everyone is clear of the scale and any moving parts.

Use two hands when gripping the lift handle to raise or lower the scale.

Be sure the gates are latched or tied inward before transporting the scale.

Ensure all three hitch lock pins are installed and the suspension stops are in the transport position before moving the scale.



This unit is not intended for the transportation of livestock or any other goods. Any addition of weight to the scale in transport mode may cause premature component failure and voids the Rice Lake warranty.

Animal Safety:

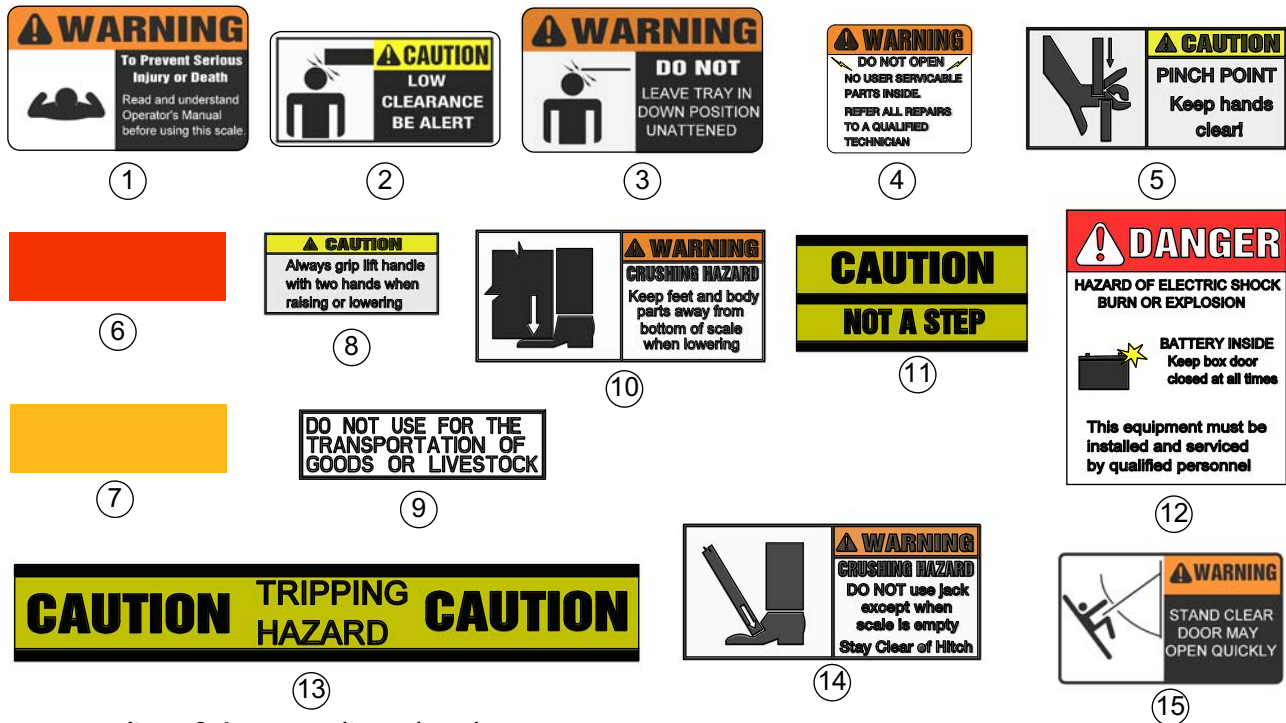
Animal safety is a very serious issue and must be observed when handling any type of animal.

The scale surface may become slippery during use; a build-up of manure on the scale may reduce traction. It is recommended that you take any necessary precautions to maintain an acceptable level of animal footing.

Calibration:

Do not calibrate this scale with a weight cart having a gross weight in excess of 25% of the total capacity of the scale (MAS-M 8 x 13 – 3750 lb or 1,700 kg max/ MAS-M 8 x 18 – 5000 lb or 2,268 kg max). This device is designed to be calibrated with single block weights spread evenly throughout the floor of the scale. Shift tests should not be done with more than 4,000 lb or 1,815 kg in a 4' x 4' area. Failure to comply with this warning will result in damage to the scale and void the warranty.

1.3 Safety Decals



Note Items 2-4 are on units equipped with the 920i Weighcenter only.

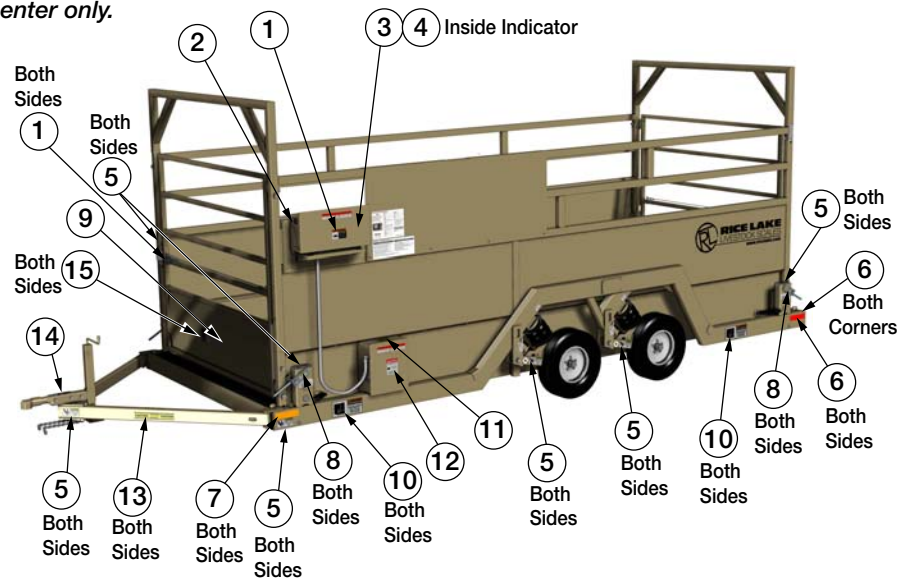


Figure 1-2. Safety Decals

Key	Part No.	Description	Qty
1	151908	Read Manual	3
2	151904	Caution, Low Clearance (Weighcenter)	1
3	151906	Warning, Do Not Open (Weighcenter)	1
4	151907	Warning, Do Not Leave Tray Down (Weighcenter)	2
5	151909	Caution, Pinch Point	14
6	127383	Tape, Red	4
7	131052	Tape, Yellow	2

Key	Part No.	Description	Qty
8	151910	Caution, Always Grip With Two Hands	4
9	128266	Do Not Use For Transportation of Goods	2
10	151898	Warning, Crushing Hazard	7
11	151901	Caution, Not A Step (Battery Box)	1
12	151900	Warning, Battery (Battery Box)	1
13	151897	Caution, Tripping Hazard	2
14	151905	Warning, Crushing Hazard, Jack	1
15	151902	Warning, Opens Quickly	2

1.4 Non-Safety Decals

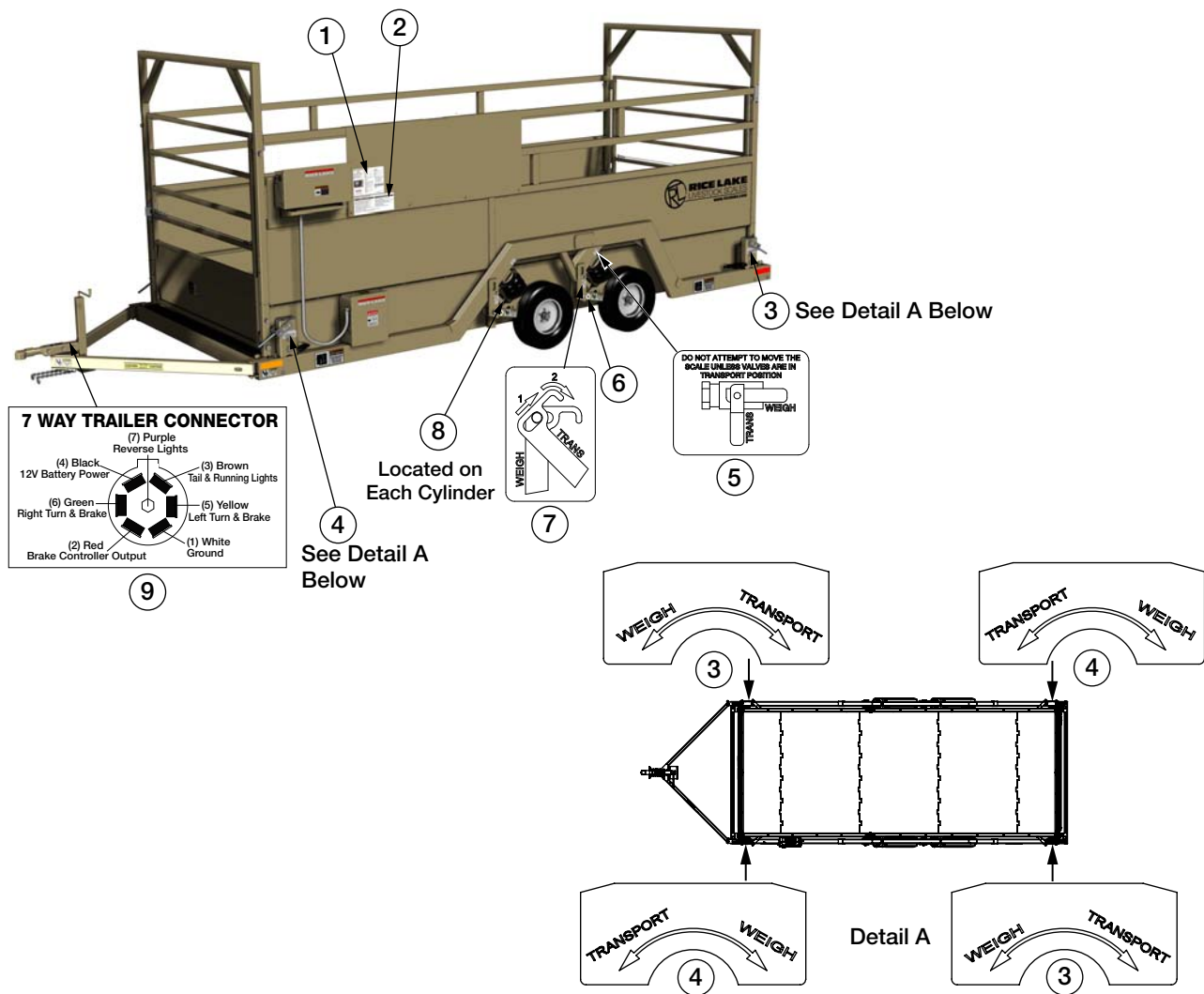


Figure 1-3. Decal Locations, Non-Safety

Item #	Part #	Description	Qty
1	164911	Label, 920i Weighcenter Operation	1
2	127090	Label, Basic Operation	1
3	132692	Label, Weigh/Transport	2
4	127094	Label, Weigh/Transport	2
5	127098	Air Valve Position, Each Axle	2/4
6	126866	Label, Grease Fitting, Each Axle	2/4
7	127099	Transport Position, Left, Each Left Axle	1/2
	127100	Transport Position, Right, Each Right Axle	1/2
8	127093	Label, Hitch Plug	1
9	127092	Label, Ride Height, Located on each cylinder	2/4

Table 1-2. Decals, Non-Safety, Parts List

1.5 Unloading

Follow instructions below to unload the scale.

1.5.1 Slings the scale.

The MAS-M can be slung using four straps connected from the lifting lugs to a single point in the center. To obtain a lifting point closer to the center of gravity, straps should be one to two feet longer on the rear of the scale. See Figure 1-4.

- Strap length 8 x 13 = 6 ft minimum
- Strap length 8 x 18 = 9 ft minimum

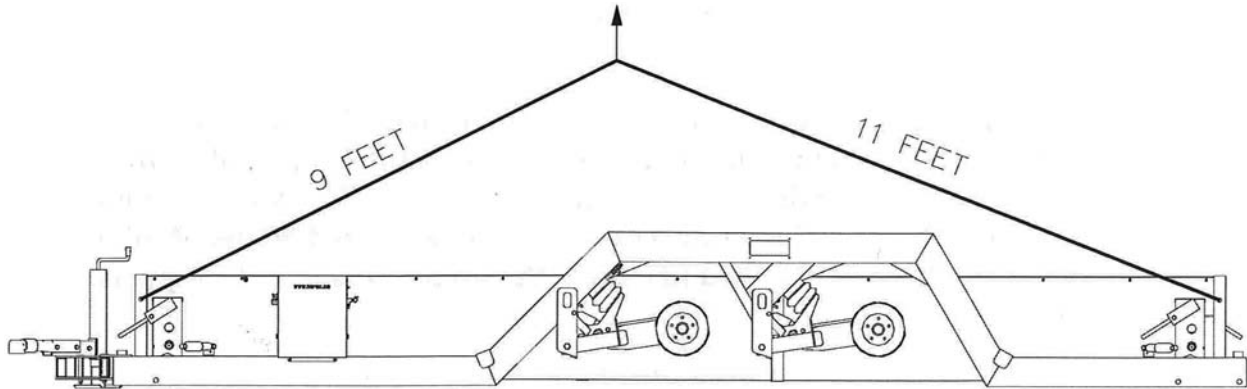


Figure 1-4. Slings the Scale

1.5.2 Lift the Scale.

1. If stacked, monitor the four corners directly below the lifting fixtures. Each corner has a shipping stub inserted; these stubs are not bolted in place. Ensure they remain with the lower scale.
2. Once the upper scale of the stack is removed, the stubs can be discarded.

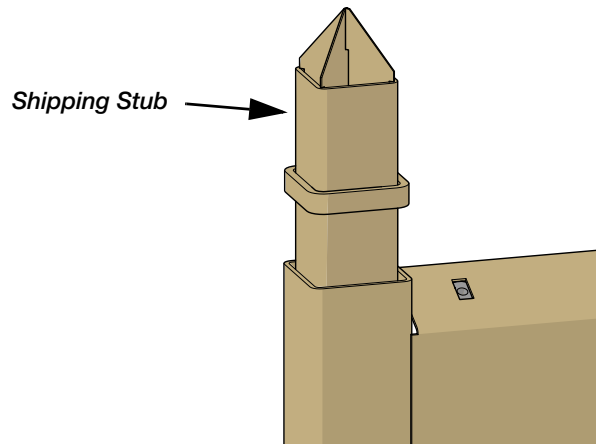


Figure 1-5. Shipping Stub

3. The scale can now be stored as is or placed on a relatively flat location to be assembled.

1.5.3 Remove Lifting Fixture

Remove the lifting fixture after scale has been placed in position.

1. Remove the nylon locknut from the bolt installed for shipping.
2. Remove the lifting fixture from the bolt.
3. Reinstall the nut, retain the lifting fixture for future moves.

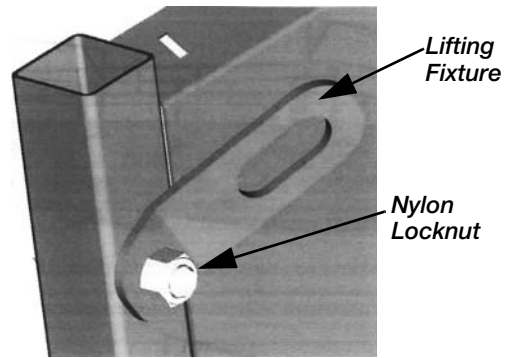


Figure 1-6. Lifting Fixture

1.6 Lifting Assembled Scale

Lift the scale only in designated locations (see Figure 1-7). The scale may be lifted by four straps and a crane or loader. **Ensure the scale is in the transport mode** (locked down – see Section 3.1.2 on page 18) when loading and transporting the scale.

Install lifting fixtures inside each corner, as shown in Section 1.5.1. Install cable hooks to each lifting fixture to lift.

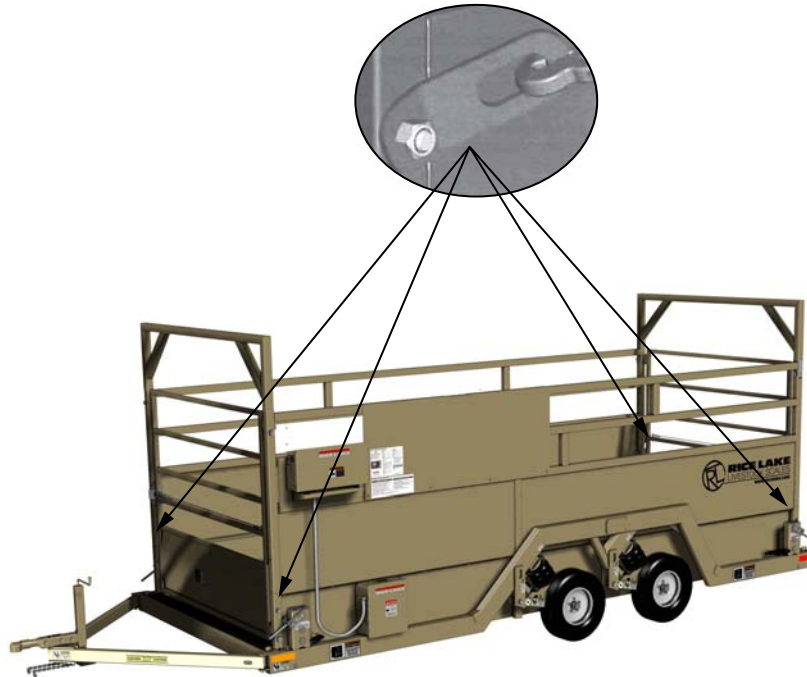


Figure 1-7. Lift Points

1.7 Package Removal

The indicator and tires are shrink wrapped for transportation. Be careful when removing to avoid damaging the indicator or tires when removing.

Remove the tires and indicator, then re-strap the walls if the scale is to be transported while packaged.

2.0 Installation

It is important to apply and maintain proper wheel mounting torque on the scale axle. Torque is a measure of the amount of tightening applied to a fastener (nut or bolt) and is expressed as length times force. Torque wrenches are the best method to assure the proper amount of torque is being applied.



Note *Wheel bolts/nuts must be tightened and maintained at the proper torque levels to prevent loose wheels, broken studs and possible dangerous separation of wheels from the axle. Be sure to use only the fasteners matched to the cone angle of the wheel (usually 60° or 90°).*

The procedure for attaching the wheels is as follows:

1. Start all bolts/nuts by hand to prevent cross threading.
2. Tighten bolts/nuts in the sequence shown in Figure 2-1.
3. Tighten fasteners per torque chart in Table 2-1.
4. Wheel bolts/nuts should be re-torqued after the first 10 miles, 25 miles and again at 50 miles.

Wheel Torque Sequence (ft-lb)		
1st Stage	2nd Stage	3rd Stage
20-25	50-60	90-120

Table 2-1. Wheel Torque

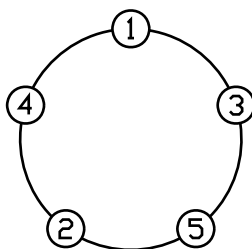


Figure 2-1. Wheel Torque Pattern

5. Once the wheel nuts have been torqued, use a white marker to mark the end of each stud to show they have been torqued.

2.1 Cage Wall Assembly

2.1.1 Apply the silicone bead

Before installing the walls, a silicone bead must be added.

1. Clean the upper flange of the floor and the lower wall flange with mineral spirits.
2. Apply an 1/8" bead of silicone along the upper edge of the floor panel along the entire length as shown in Figure 2-2.

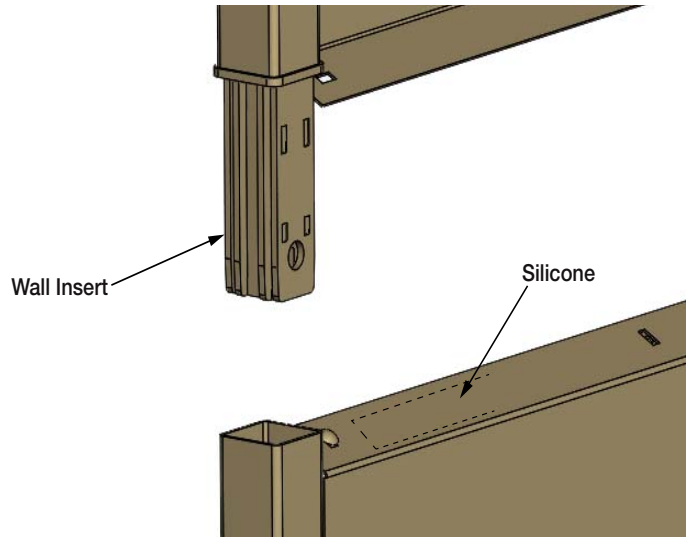


Figure 2-2. Silicon Bead

2.1.2 Install walls



WARNING Wall installation should be done with two people or an overhead crane.



Note The wall with the holes for the indicator is mounted on the left side.

1. Lift the first wall by using one sling in the center.
2. Stand the wall vertical and place the inserts from the wall into the tubes of the cage floor. The more vertical the wall, the easier assembly will be.
3. Repeat for the opposite wall.
4. Install the top cross members.
5. Insert the 3/4 x 3 1/2" bolts through the cage wall and inserts on the indicator side of the cage (head of bolt to the inside).



Note A come-along from the top of the cross member to bottom of the cage corner post may be required. A ratchet strap is provided in hardware kit.

When both walls are in place, ensure that they are perfectly square. Straps may need to be used to pull for squareness.

2.1.3 Install the Gate



Note

Install the gate with the hinge bolts on the opposite side of the scale.

Hinge bolts must be assembled with lock washer on the inside of gate and the jam nut on the outside.

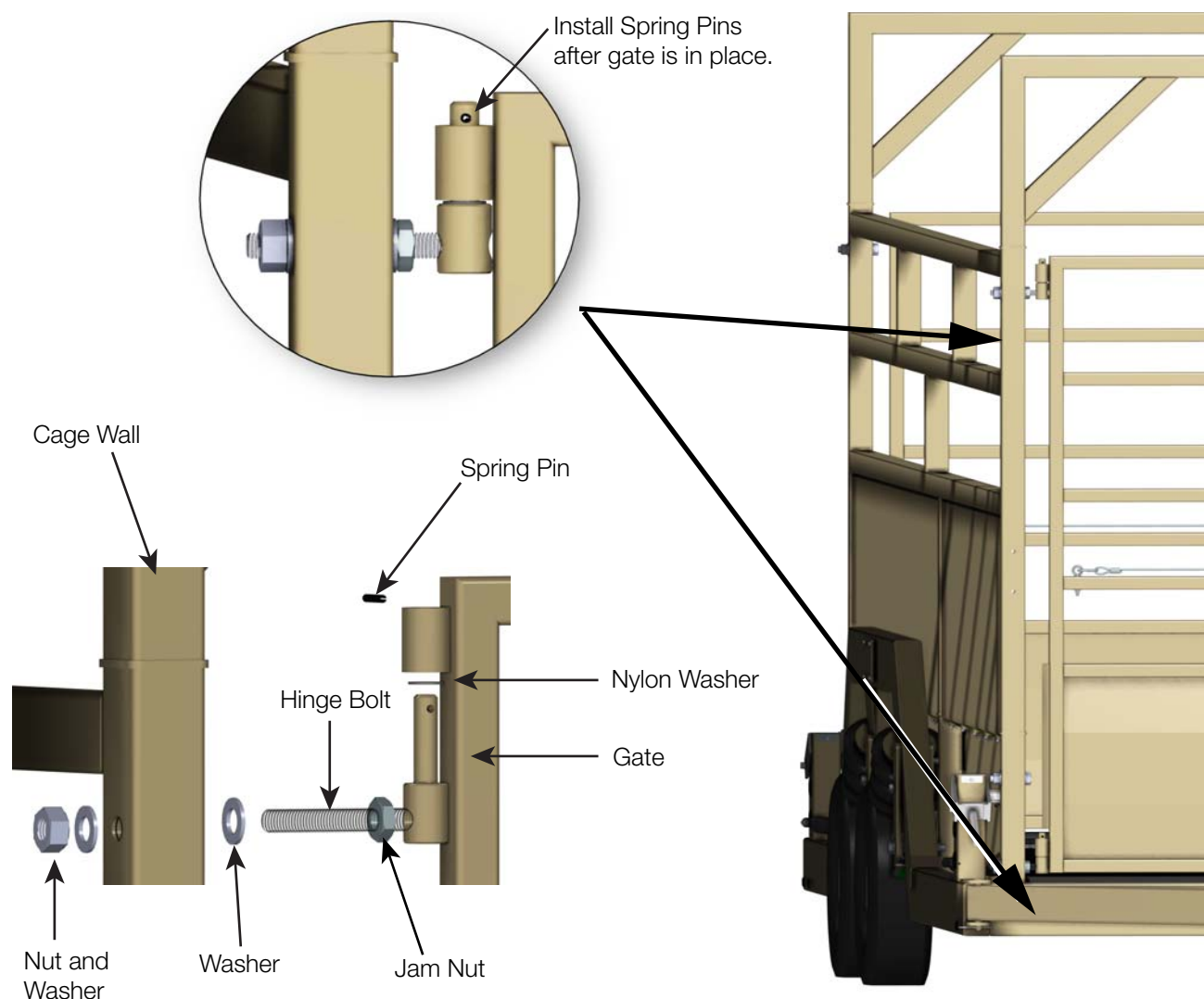


Figure 2-3. Assemble Gate to Scale

1. Install the jam nut and lock washer onto the hinge bolts. Screw the nut on about 2".
2. Insert one hinge bolt into the lower and upper holes of the cage wall with the hook portion pointing upward.
3. Install nut and washer onto the hinge bolts securing them to the cage wall.
4. Place a nylon washer onto the hook portion of the upper and lower hinge bolts and install the gate onto the hooks.
5. Insert the roll pin through the hinge bolts.
6. Repeat steps 2-4 for the second gate.
7. Adjust the hinge side gap between the gate and the cage wall until the strike plate is centered, about 3"; then tighten hinge bolts.

2.1.4 Gate and Latch Adjustment Procedure



Note The gates should be assembled following the listed criteria:

- **Hinge Bolts** - Assemble with lock washer on inside of gate and jam nut on the outside.
- **Hinge Side Gap** - Approximately 3" between the gate and the corner post.

Adjust gates as follows:

1. Adjust the hinge bolts to align the top of the gate on the latch side with the top of the cage wall.
2. Adjust the hinge bolts so the latch side gap is about 1 1/2".
3. Install and adjust the latch so the gate latch pin does not rub on the top or bottom of the latch. Adjust the hinge bolts only if necessary.



Note Ratchet straps may be used diagonally to help square up gates to walls.

2.2 Hitch Assembly



Note If the hitch arms do not come mounted, assemble the hitch arm with the coupler to the right side of the frame using the bolt and nut installed in the hole. Assemble the remaining hitch arm to the left side of the frame.

1. Connect the two halves of the hitch (Figure 2-4) and install the hitch pin through both left and right hitch members.
2. Secure the hitch pin with a lynch pin.

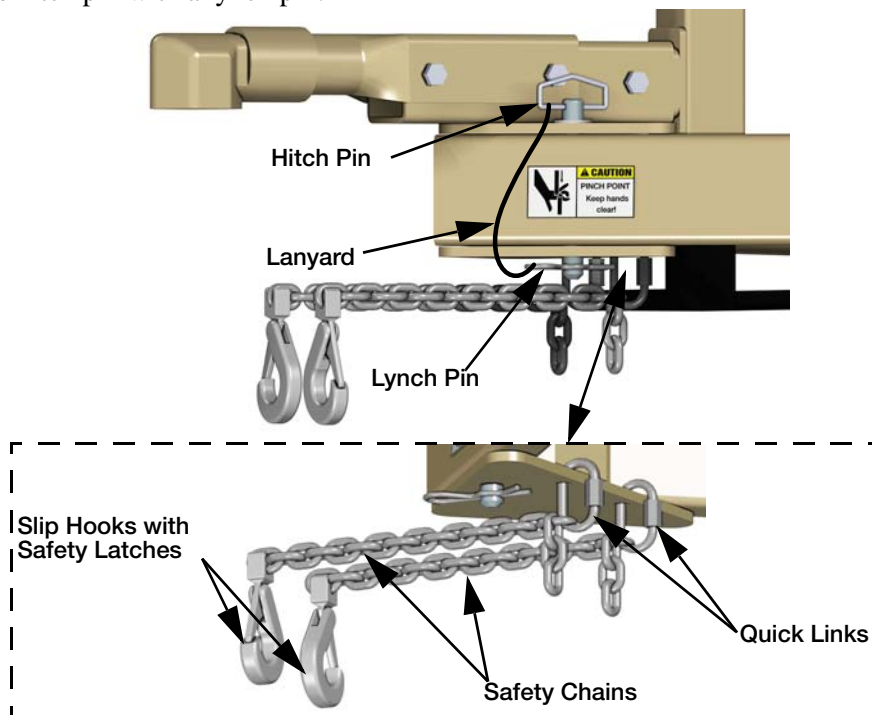


Figure 2-4. Safety Chain and Hitch Pin Locations

3. Connect the slip hook with the safety latch onto one end of each chain.
4. Install the quick link into the fourth link of the chain on the opposite end of the slip hook.
5. Insert the quick link into the bottom holes on the hitch mounting plate.
6. Assemble the jack and tighten bolts.
7. Install safety chains, power cable and connect breakaway switch. See Section 3.0 on page 15.

2.3 T-Belt

Ensure the T-Belt hold down loops are installed and hooked into the corner posts of the cage.

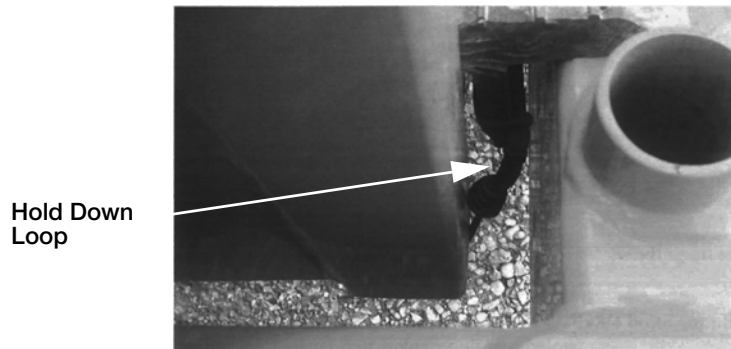


Figure 2-5. T-Belt

2.4 Optional 920i® Weighcenter Mounting



Note *NTEP approved only when purchased with 920i Weighcenter. When using other indicators, it must be re-calibrated each time it's moved.*

1. Before installing the bracket, a bead of silicone must be added. See Figure 2-6.
2. Clean the wall tubes where bracket will mount and the space between the holes on the mount bracket with mineral spirits.
3. Place the mounting bracket onto the cage wall by pressing the adhesive tightly to the cage.
4. Secure with four bolts.
5. Mount the weighcenter onto the mounting bracket and route the cable as shown in Figure 2-6.
6. Install the clamps to secure the conduit.
 - Mount the upper conduit clamp using the lower left mounting bracket bolt.
 - Secure the lower end of the conduit by drilling a hole through the cage sheeting and install the clamp with the bolt provided.

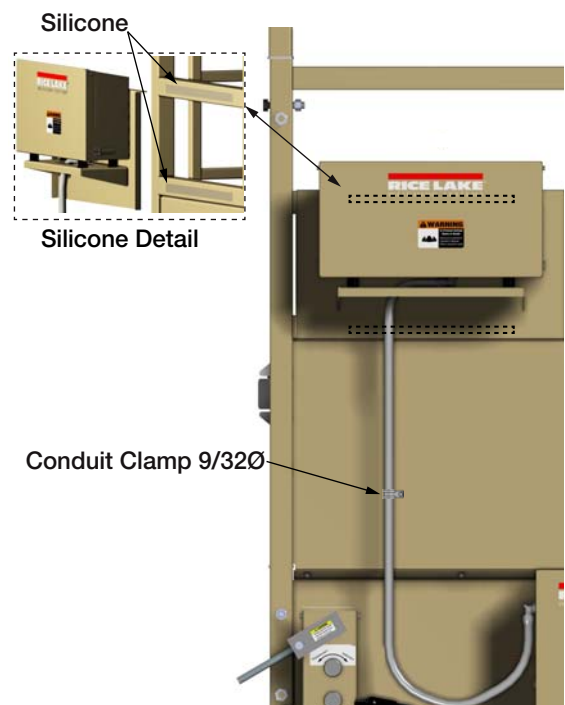


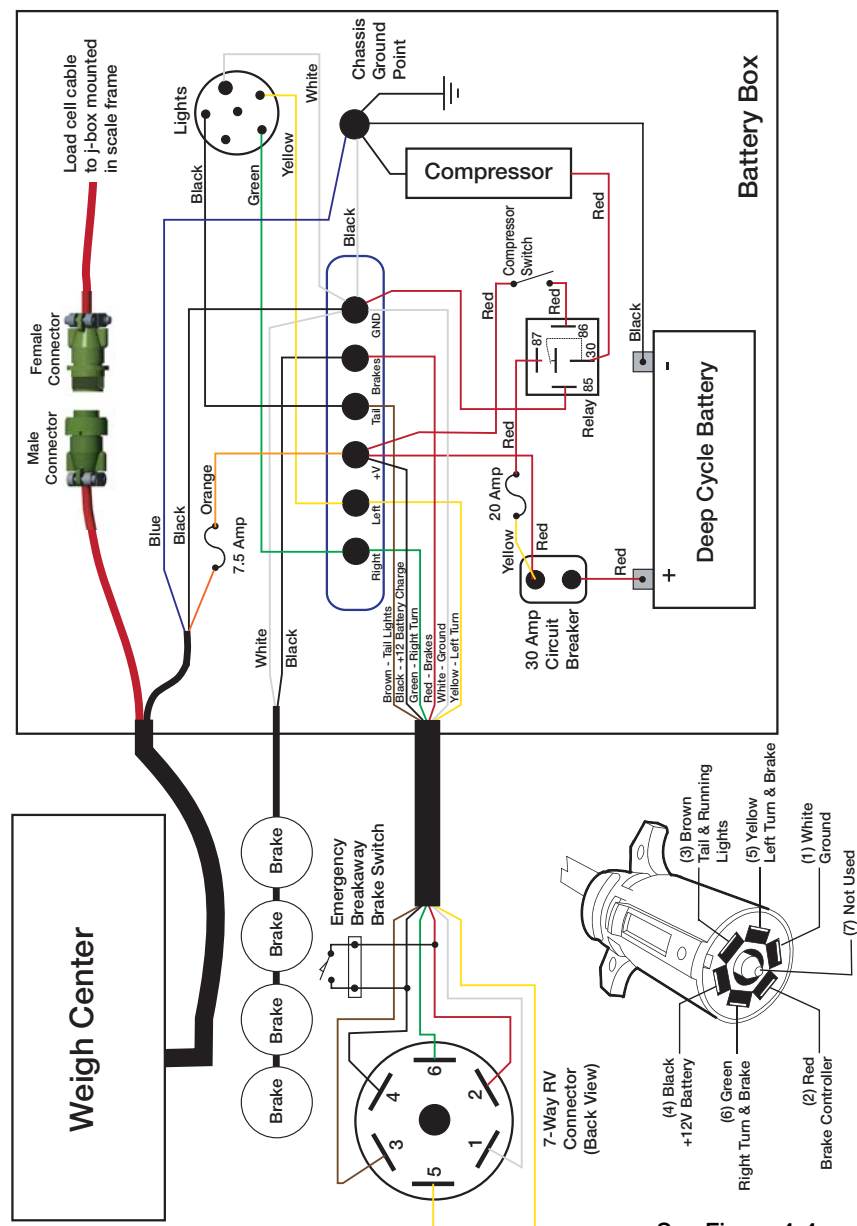
Figure 2-6. Weighcenter Mounting

2.5 Wiring the Scale

Battery Box Connections

1. Connect the scale cable and secure with a cable tie.
2. Connect the power wires as shown in Figure 2-7.
3. Replace the battery cover.

See Table 2-2 for connector and cap configurations



See Figure 4-4 on page 26 for connector and wire part numbers.

Figure 2-7. System Wiring Diagram

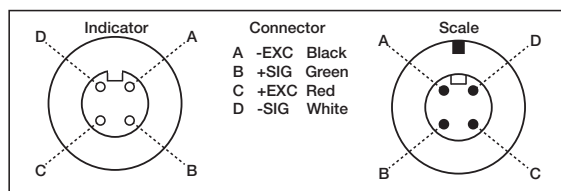


Figure 2-8. System Connections

Conn PN	Description	Used With	Cap PN	Cap Description
127259	Conn, MS, Male Complete Kit	127260 or 127261	15731	Dust Plug, MS External THD
127260	Conn, MS, Female Pins w/ clamp	127259	15730	Dust Cap, MS INTL THD

Table 2-2. Weighcenter Connector and Plug Configurations

Function	Color	Wire*	Where to Attach Vehicle Side	Where to Attach Scale Side
Right Turn	Green	16	Right turn of vehicle's wiring harness	Scale's right turn signal
Left Turn	Yellow	16	Left turn of vehicle's wiring harness	Scale's left turn signal
Ground	White	12	Vehicle ground point metal, uncoated, rustproof	Scale's ground point metal, uncoated, rustproof
Tail/Marker	Brown	16	Tail light of vehicle's wiring harness	Scale's tail lights
Brake	Blue	12	Electric brake control	Scale brakes
Battery	Red	12	Fuse block or fused battery lead	Break away kit
Back Up	Purple	16	Back up of vehicle's wiring harness	Back up lights (if available)

Table 2-3. 7-Way Connector Wiring

*Suggested minimum wire gauge for 7-way connector.



Note Identify the wires on your vehicle and scale by function only. Color coding is not standard among all manufacturers.

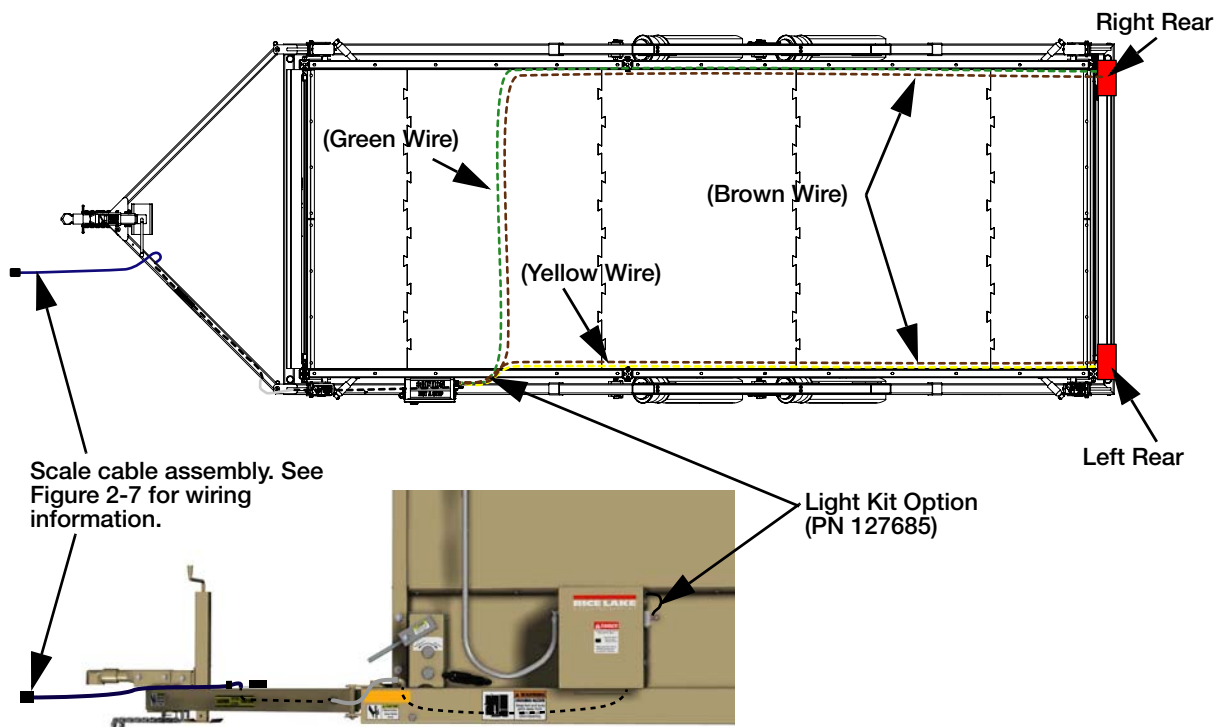


Figure 2-9. Scale Wiring Diagram

2.6 Load Cell Wiring Diagrams



Note Load cell wiring shown is effective for all models later than 09/17/2013, models built prior to that date should rewire the scale to the updated configuration. For information on rewire, download Technical Bulletin PN 159193 from www.ricelake.com.

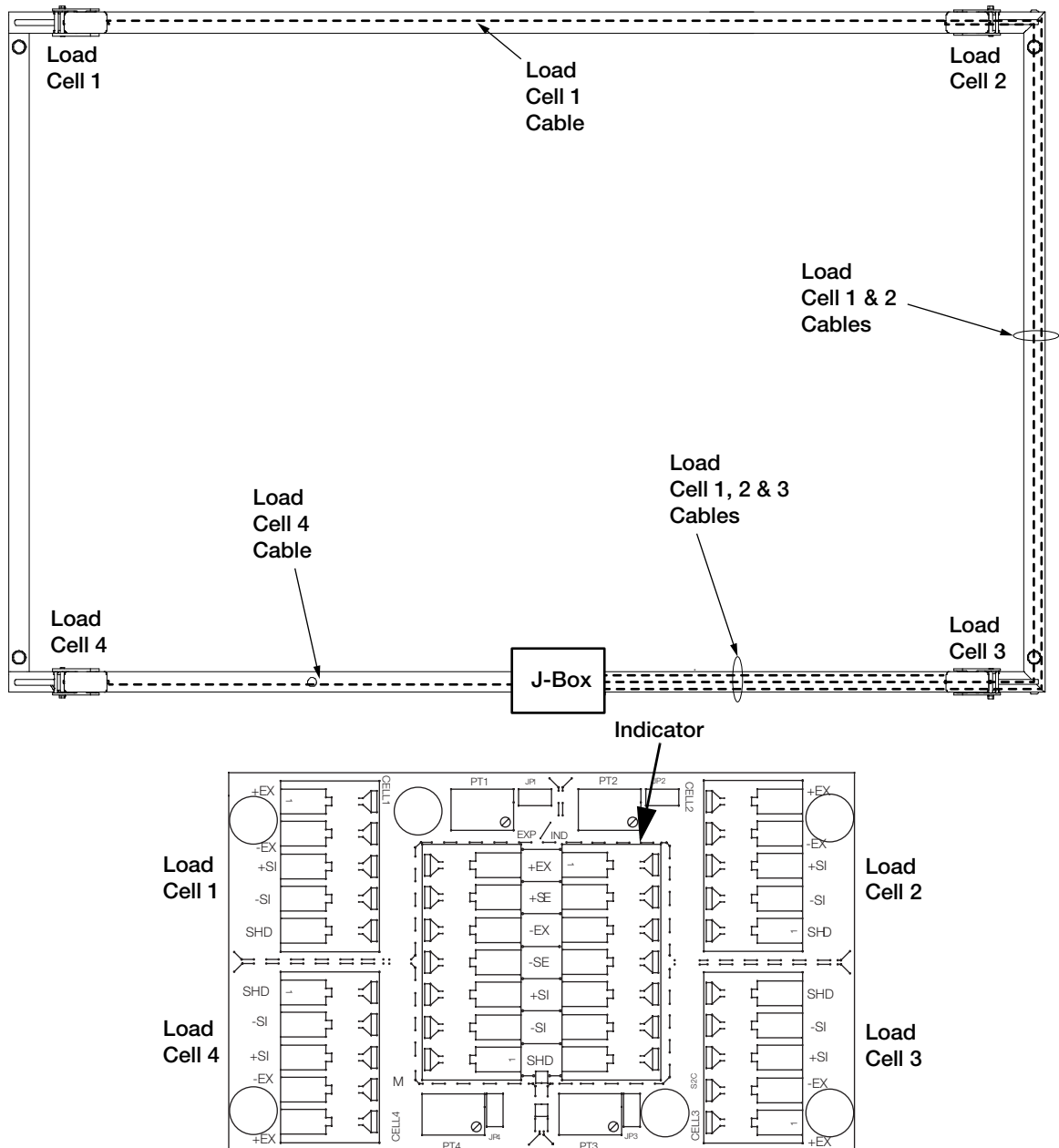


Figure 2-10. Load Cell Wiring Diagram

3.0 Towing Instructions



This unit is not intended for the transportation of livestock or any other goods. Any addition of weight to the scale in transport mode may cause premature component failure and voids the Rice Lake warranty.

Read these instructions before towing.

The scale must be in *Transport Mode* to be towed. See Section 3.1.2 on page 18 for converting to transport mode.

The scale is designed to be towed level (frame parallel to the ground) using a 2" ball. To achieve the level towing condition, the required hitch height of the towing vehicle must be approximately 16". If the hitch of the towing vehicle is not in this range, use an adapter to achieve a height in this range. The hitch weight of the scale is approximately 500lb. An equalizer hitch may be used for towing if desired (such as the EAZ-LIFT Adjustable Weight Distributing Hitch #1009).

Safety chains must be connected during towing (see Figure 3-1). Cross the chains under the hitch for proper protection. Safety chain length is adjustable by inserting the quick link through any link of the chain.

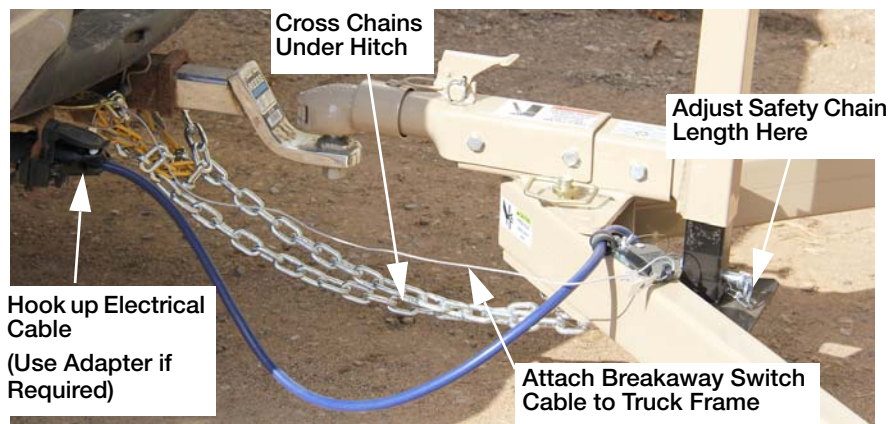


Figure 3-1. Hitch Connection

The scale must be connected electrically to the tow vehicle. Ensure that the wiring of the towing vehicle is compatible with the scale wiring before hooking up. The label on the hitch illustrates the wiring. See Figure 2-9 on page 13 for wiring diagram. The scale is supplied with a 7-pin connector.



Important

Ensure the wiring is correct so the battery (which supplies power to the control box) is charged during transport.



Improper wiring can cause brake failure.

If the scale is to be towed at night, or if the lights on the tow vehicle are obstructed by the scale, add on lights are available. These lights plug into a 6-pin receptacle located on the rear of the battery box and attach magnetically to the scale frame. Contact Rice Lake Weighing Systems for more information.

The scale is equipped with electric brakes. **The brakes** must be synchronized with the tow vehicle brakes **before towing**. See Section 5.3.2 on page 34 for procedures.

The breakaway switch for the electric brakes must be connected during towing. This switch activates the scale brakes in the unlikely event of scale separation from the tow vehicle. The metal cable must be attached to a point on the tow vehicle other than the primary connection point.

The scale is designed to be towed at a ride height of approximately eight inches. A ride height label is attached to every shock absorber to visually confirm the ride height. After the scale is hooked up to the tow vehicle, check all the ride height labels to ensure proper air bag inflation. Add or remove air as necessary.

Suspension stops (one on each axle of the scale) are supplied to prevent the scale from dropping to the ground in the event of an air system failure. These stops must be in the transport position during towing.

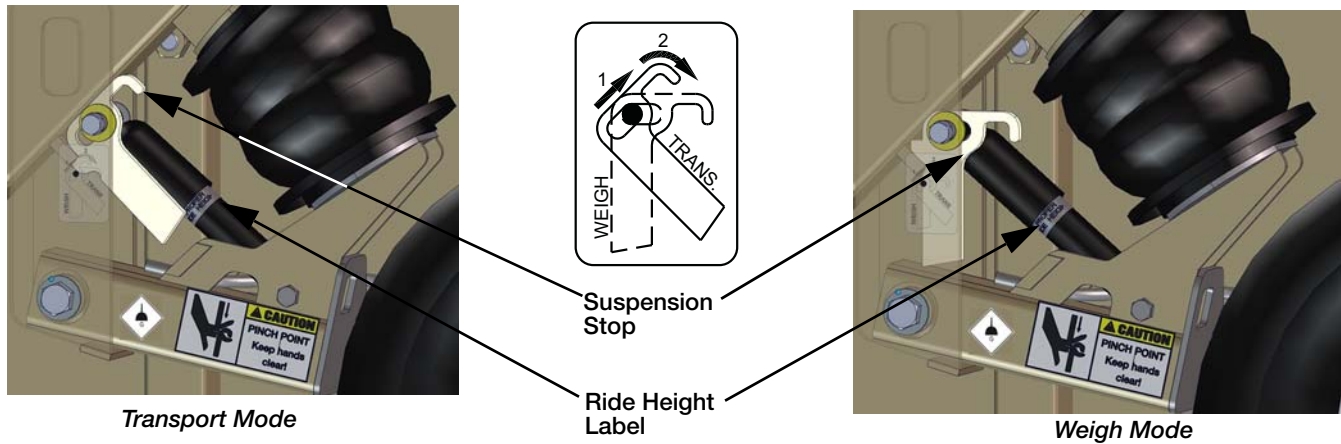


Figure 3-2. Suspension Stop and Ride Height



WARNING The Suspension Stops are not to be used as a means of transporting the scale. It is only to be used as a safety device, allowing removal of the scale from the roadway in the event of an air system failure.

3.1 Switching Modes

Use the following instructions to convert the scale into *Weigh* or *Transport* mode.

3.1.1 Converting to Weigh Mode

1. Park the scale in as level a location as possible. Ensure there are no obstructions under the deck that would affect weighing accuracy.



Note The scale will weigh properly on a slope up to 7% (approximately four degree slope).

2. Turn the power switch, located in the weighcenter, to the ON position.
3. If the scale is not level, the indicator will display **Out Of Level** with the pitch and roll angle below, allowing the scale to be leveled.
4. With the drop leg retracted, extend the jack until it begins lifting up on the scale hitch.
5. Disconnect the scale from the truck hitch and unplug all wiring. Move the truck clear of the scale.
6. Using the hitch jack, lower the scale hitch to the ground.
7. Flip the suspension stops (on each axle of the scale) into the weigh mode (see Figure 3-2). Scale will not fully lower to ground with stops in transport position.
8. Ensure the dump valve located on the battery box is closed and open all valves located directly above the air bags.
9. Slowly open the dump valve to empty the air from the scale suspension. The scale will lower to the ground.
10. Inspect all four corners of the scale. Although the scale will weigh properly up to four degrees off level, individual corners of the scale should not be allowed to teeter. If any of the corners are not contacting the ground, either move the scale to a more level location or complete steps 11-13.
11. Close the dump valve and turn on the air pump to slightly raise the scale. Once the scale frame has lifted sufficiently, turn off the pump.



Note If the air pump is not functioning, the scale can be raised using the auxiliary fill directly below the dump valve.



Figure 3-3. Shimming Locations

12. Place shims directly under the base frame; under the load cell stands, to prevent teetering (see Figure 3-3).
13. Open the dump valves to lower the scale onto the ground and shims.
14. Unpin the hitch and swing both hitch halves clear.



Note The hitch sections can be removed. To remove the hitch, remove the pins from the scale end of the hitch arms, and pull all wiring through the driver's hitch tube.

15. Using both hands, raise the platform (rotate cam handle in direction indicated by decal) to enable the scale (see Figure 3-4).

Rotate Cam to raise
scale into weigh
position (see decal)

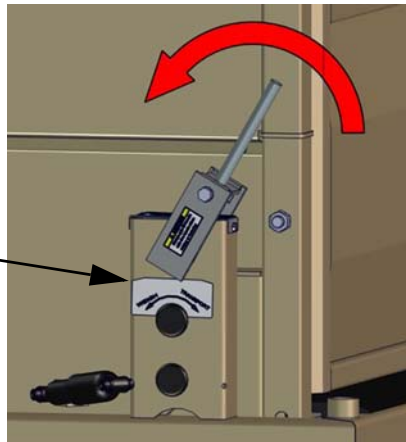


Figure 3-4. Scale Lift



WARNING

The lift mechanism is an over center cam style lift and lock. If not disturbed, the scale will remain "locked" in the up (weigh) position. Always grip lift handle with two hands when raising and lowering the scale.



Note Cam levers point toward each other in weigh mode and away from each other in transport mode. See decals for direction of levers in each mode.

16. Ensure the weigh center power switch is in the ON position. Verify the indicator does not show *out of level*. If it does, shim the scale as necessary (see steps 11-13).
17. The weigh indicator should be powered up. The readout of GROSS weight on the indicator should be near zero (within four percent of the scale capacity). If it is not, ensure the scale is fully lifted and that there is no debris on or under the scale.



Figure 3-5. Scale in Weigh Mode

3.1.2 Converting to Transport Mode

1. Turn off the power switch located in the weigh center. Close and latch the weigh center cover.
2. Using both hands, lower the platform (rotate the cam handles in the direction indicated by decal) to disengage the scale. Ensure the handles are in the fully locked position.

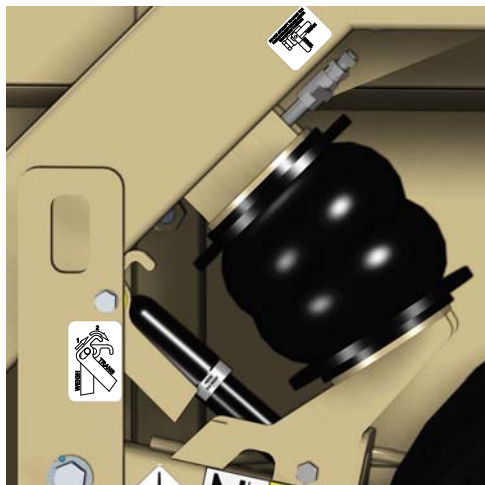


WARNING The lift mechanism is an over center cam style lift and lock. If not disturbed, the scale will remain “locked” in the up (weigh) position. Always grip lift handle with two hands when raising and lowering the scale.

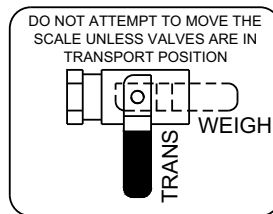


Note Cam levers point toward each other in weigh mode and away from each other in transport. See decals for direction of levers in each mode.

3. Swing the hitch halves together, secure with the hitch pin and install the lynch pin.
4. Ensure the dump valve is closed.
5. Add air to the scale suspension so that the frame rises evenly off the ground to the correct ride height of approximately 8” (as indicated by the ride height labels on the shock absorbers). Use either compressor on the scale or a remote compressor connected to the auxiliary air fill.



Proper Ride Height



Over Inflated

Figure 3-6. Scale Suspension

6. Close all the air valves. During scale towing, all valves MUST be closed.



Note After connecting to the tow vehicle you must operate the valves again.

7. Flip the suspension stops into the transport position.
8. Extend the jack so the scale hitch rises off the ground.

9. Position the truck near the scale hitch.
10. Connect the scale to the truck and connect all wiring.
11. Connect safety chains.
12. Connect equalizer hitch if desired.
13. Retract the jack.
14. Recheck the ride height of the scale and adjust as indicated on the ride height labels on the shock absorbers. (See step 4 on page 18)



Note

For Tandem Axle Scales:

Once the scale is connected to the tow vehicle and the ride height has been set, with the dump valve closed, open the valves on the front and rear axle to allow the pressure to equalize. Repeat for each side of the scale. Close the valves before transporting the scale.



Do not move the vehicle until the scale is in the locked transport position, all air valves are closed, the jack is retracted and the drop leg pin is installed, the suspension stops are in transport position, and the safety chains are attached.

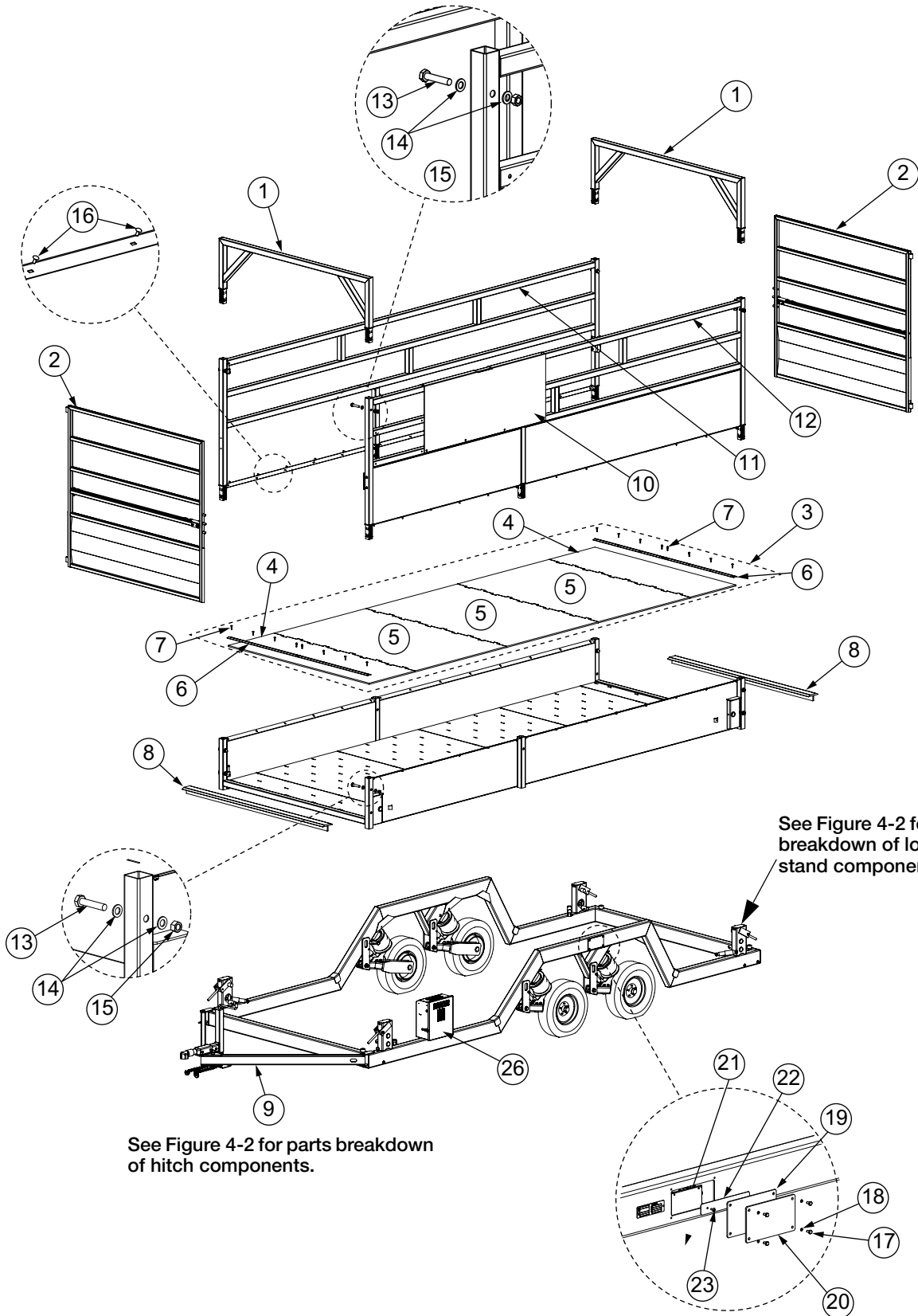


Figure 3-7. Scale in Transport Mode

4.0 Repair Parts



Note An optional Weighcenter (PN 131436) is available, contact a local dealer or RLWS for more information.



Item No.	Part No.	Description
1	130931	Cage Crossmember
2	131782	Gate, MAS, see Figure 4-3
3	131992	Mat Installation Kit - 13' (Includes sealant, adhesive and Items 4-7)
	131993	Mat Installation Kit - 18' (Includes sealant, adhesive and Items 4-7)
	126775	Sealant, Silicone II Black 13' (Qty 2) / 18' (Qty 3)
	128280	Adhesive, Insta-Cure + 13' (Qty 1) / 18' (Qty 2)
4	127234	Matting, MAS End Section 13' (Qty 2)
	127236	Matting, MAS End Section 18' (Qty 2)
5	127235	Matting, MAS Center 13' (Qty 1) / 18' (Qty 3)
6	131855	Mounting Strip, Rubber (Qty 4)
7	127053	Bolt, Carriage 5/16-18
	21939	Washer, Plain 5/16 Type A
	35170	Nut, Lock 5/16-18NC Hex
8	126787	Scale T-Belting (83" width)
	127271	Hold Down Loops
9		Hitch Assembly, see Figure 4-2.
10	130022	Operator Shield, Livestock
11	131708	Cage Wall 13'
	131946	Cage Wall 18' Right
12	131708	Cage Wall 13'
	131947	Cage Wall 18' Left
13	15099	Cap Screw, 3/4-10NC x 3-3/4
	15097	Cap Screw, 3/4-10NC x 3-1/2 (18' Only - center bolts for walls)
14	15179	Washer, Plain 3/4 Type A
15	14697	Nut, Lock 3/4-10NC Hex
16	72083	Bolt Carriage 5/16 x 1/2 Round Head Grade A Zinc
	14646	Nut 5/16 Flanged Serrated
	21939	Washer, Plain 5/16 Type A
17	127007	Screw, Cap 1/4-20 x 1/2
18	15147	Washer, Lock 1/4 Regular
19	126819	Foam Gasket J-box
20	127740	Cover Plate Scale Frame/J-box
21	88956	Scale Junction Box 4 Cell SS
22	131885	Mount Plate for J-Box
23	121129	Screw 10-32 x 0.5
	14633	Nut, 10-32
26	127721	Battery Box w/ compressor and wiring, see Figure 4-4
NS	131374	Paint, Touchup

Table 4-1. MAS-M Scale Parts List



Note

Scale is only Legal for Trade with the optional 920i Weighcenter (PN 131436) installed. Contact a local scale dealer or Rice Lake Weighing Systems for more information.

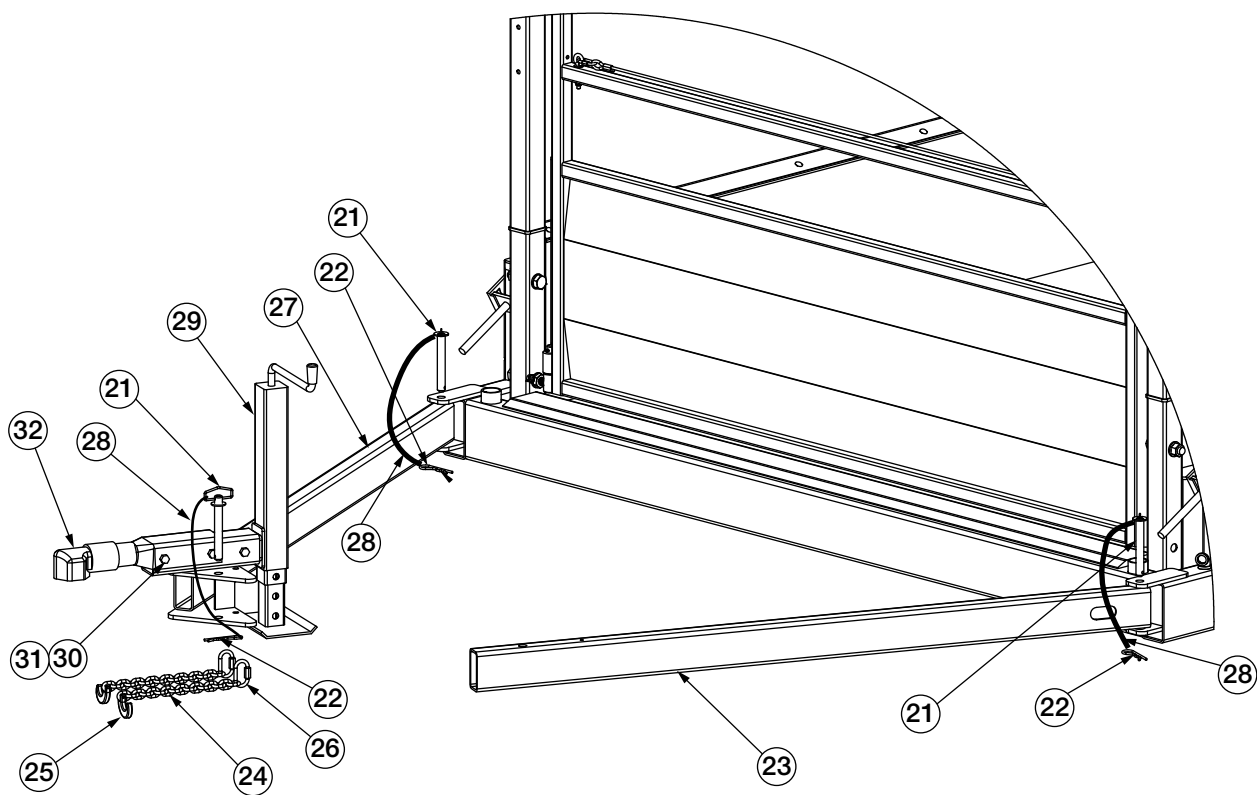
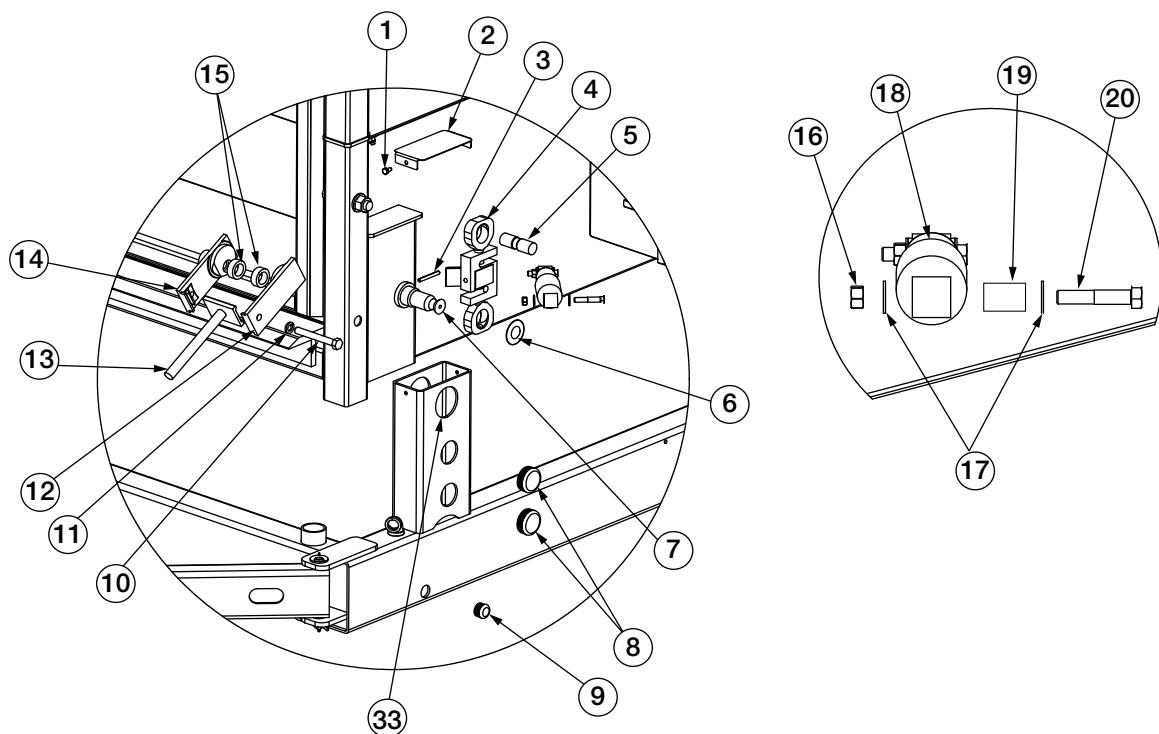


Figure 4-2. Hitch and Load Cell Stand Component Details

Item No.	Part No.	Description
1	127007	Cap Screw, 1/4-20 x 1/2
2	127200	Cover, Load Cell Cam Stand SS
3	126926	Pin Spring Slotted 1/4 x 2-1/4
4	127673	Load Cell Assembly S-Type 10K w/ Eyebolts Installed w/ 20' Cable Includes Load Cells #2 through #4.
	167452	Load Cell Assembly w/ Extended 40' Cable Load Cell #1 using 13' and 18' Cable
5	128184	Pin, Upper Notched Load Cell
6	127668	Retainer, Lower Load Cell
7	127177	Pin, Lower Notched Load Cell
8	126789	Plug Plastic Round 2"
9	126788	Plug Plastic Round 1-1/8"
10	14765	Bolt 1/2-13NC x 4
11	15167	Lockwasher 1/2
12	131785	Cam Lever Without Lockdown - Right Rear
	127676	Cam Lever with Lockdown - Left Rear
13	127732	Cam Handle Mask
14	131787	Cam Lever with Lockdown - Left Front
	127675	Cam Lever Without Lockdown - Right Front
15	127165	Spacer Upper Notched Pin
16	14656	Nut 3/8 HEX SS
17	15161	Flat washer 3/8 SS SAE
18	128626	Scale Damper Assembly w/ Rubber Bushings
19	126815	Bushing, Rubber 7/8 OD x 3/8 ID x 1.25 long
20	22093	Cap Screw, 3/8-16NC x 2 Hex
21	160257	Hitch Pin, 3/4 in x 5-1/4 (Includes item 22)
22	160258	Lynch Pin, 3/16 x 1-1/4 (Replacement sold separately)
23	131900	Hitch Tube Wldt, Left
24	131955	Chain Assembly, Grade 30 5/16 in (Includes items 25 & 26)
25	126917	Clevis Hook, 1/4 in Chain
26	126967	Link, Quick, 5/16
27	131896	Hitch Tube, Right
28	166326	Lanyard, 1/16 Dia x 12
29	127716	Jack w/ Drop Leg and Mount
30	14765	Bolt, 1/2-13NC x 4 Hex Head
31	14660	Nut, Lock 1/2-13NC Hex
32	127715	Hitch Coupler Mobile MAS, 5000 lb
33	127668	Retainer, Blk Nylon Plug for Lower Load Cell

Table 4-2. Hitch and Load Cell Stand Components Parts List

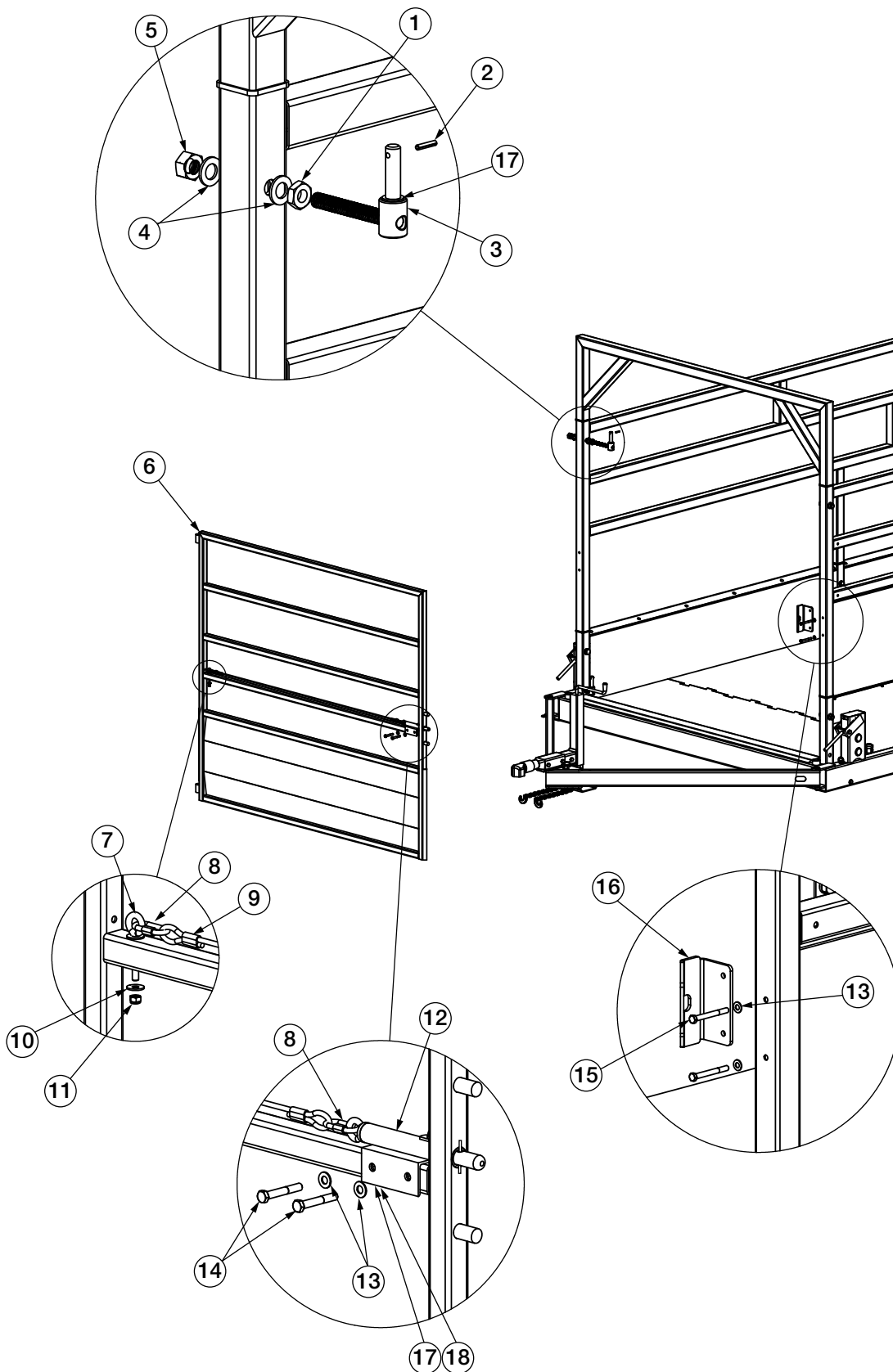
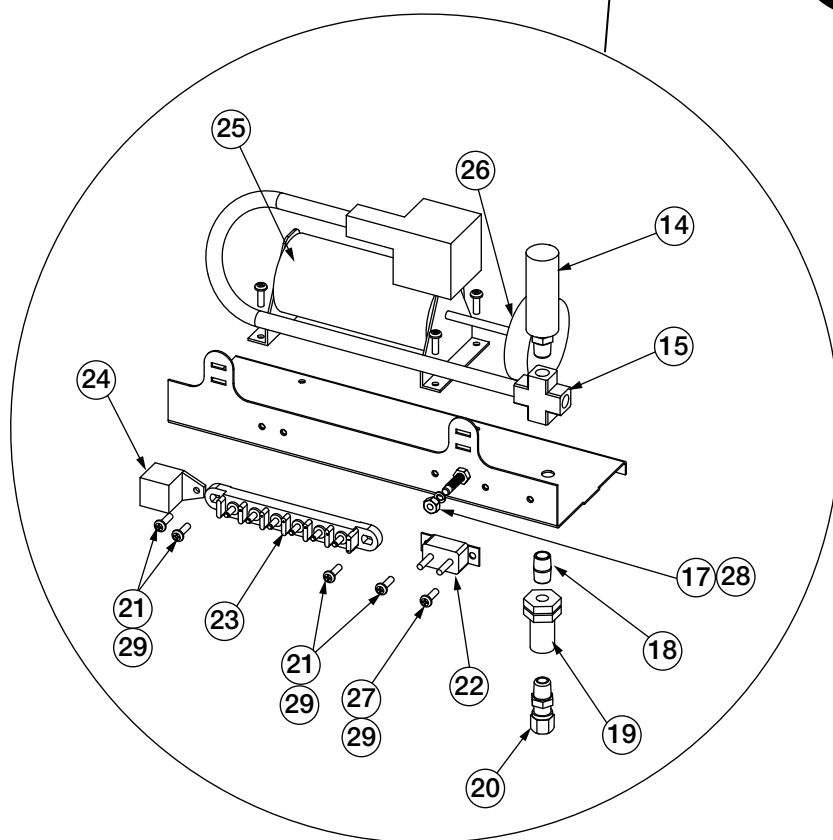
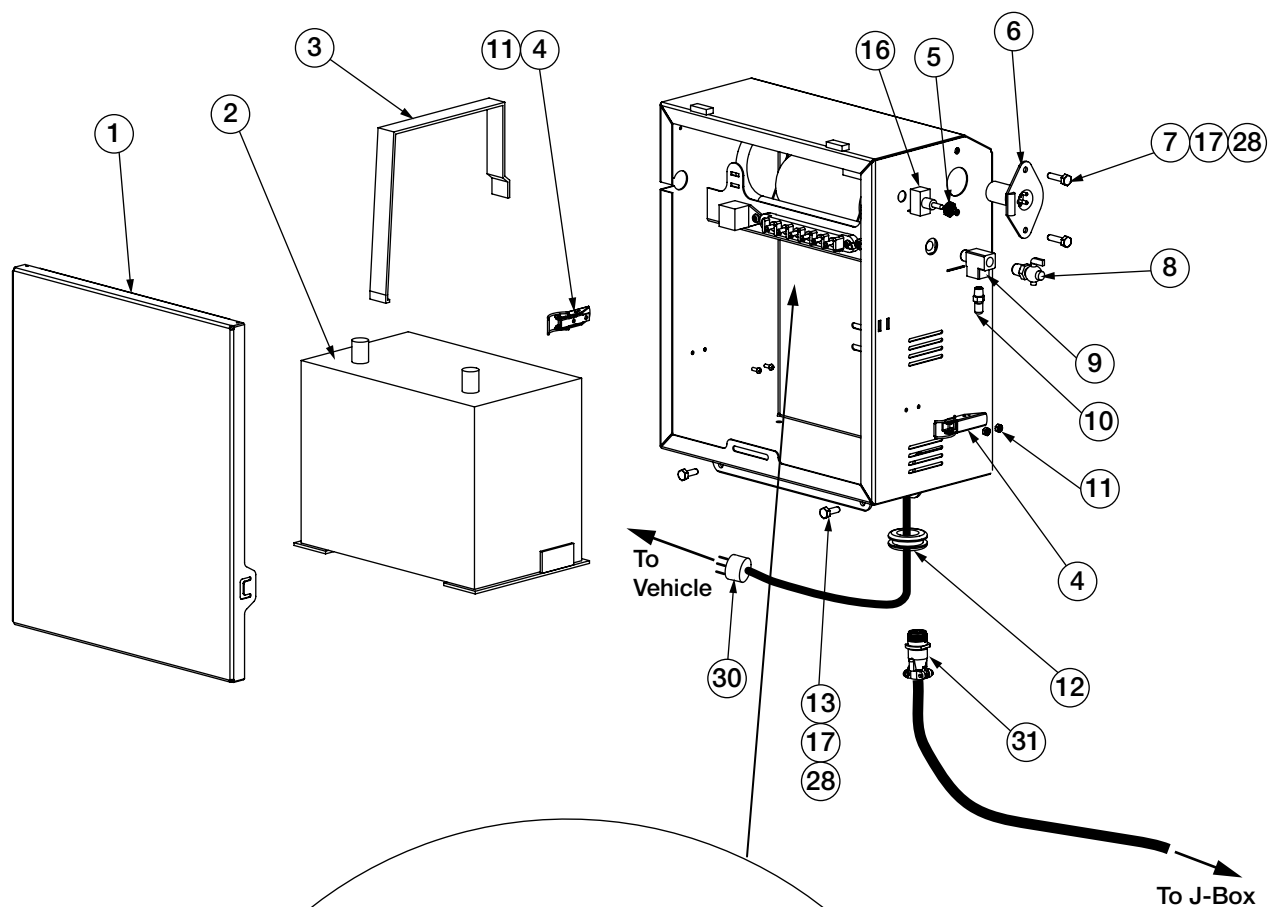


Figure 4-3. Gate Component Details

Item No.	Part No.	Description
1	132217	Jam Nut, 3/4-10NC
2	110950	Pin, Spring 1/4 x 1 1/4
3	165944	Hinge Bolt
4	15179	Washer, 3/4 Type A Steel
5	111074	Nut, 3/4-10NC
6	131782	Gate, MAS
7	131701	Eye Bolt, 5/16-18 x 2 1/2
8	131887	Quick Link 1/4 in
9	131886	Cable, 1/4" OD x 6 ft
10	21939	Washer, 5/16
11	14646	Nut, Lock 5/16-18NC
12	131784	Gate Latch Assembly
	131702	Spring, Compression #44
	160302	Hairpin, 0.08 x 1 9/16
13	21938	Washer, 3/8 Lock
14	151559	Cap Screw, 3/8-16NC x 2 1/2 Hex Head
15	151560	Cap Screw, 3/8-16 x 3 1/2 Hex Head
16	155916	Strike Plate, Gate Latch
17	151807	Washer, Plain 3/4in Nylon
18	132684	Nut, HEX 3/8-16NC GR5
19	22072	Nut, 3/8-16 Grade5

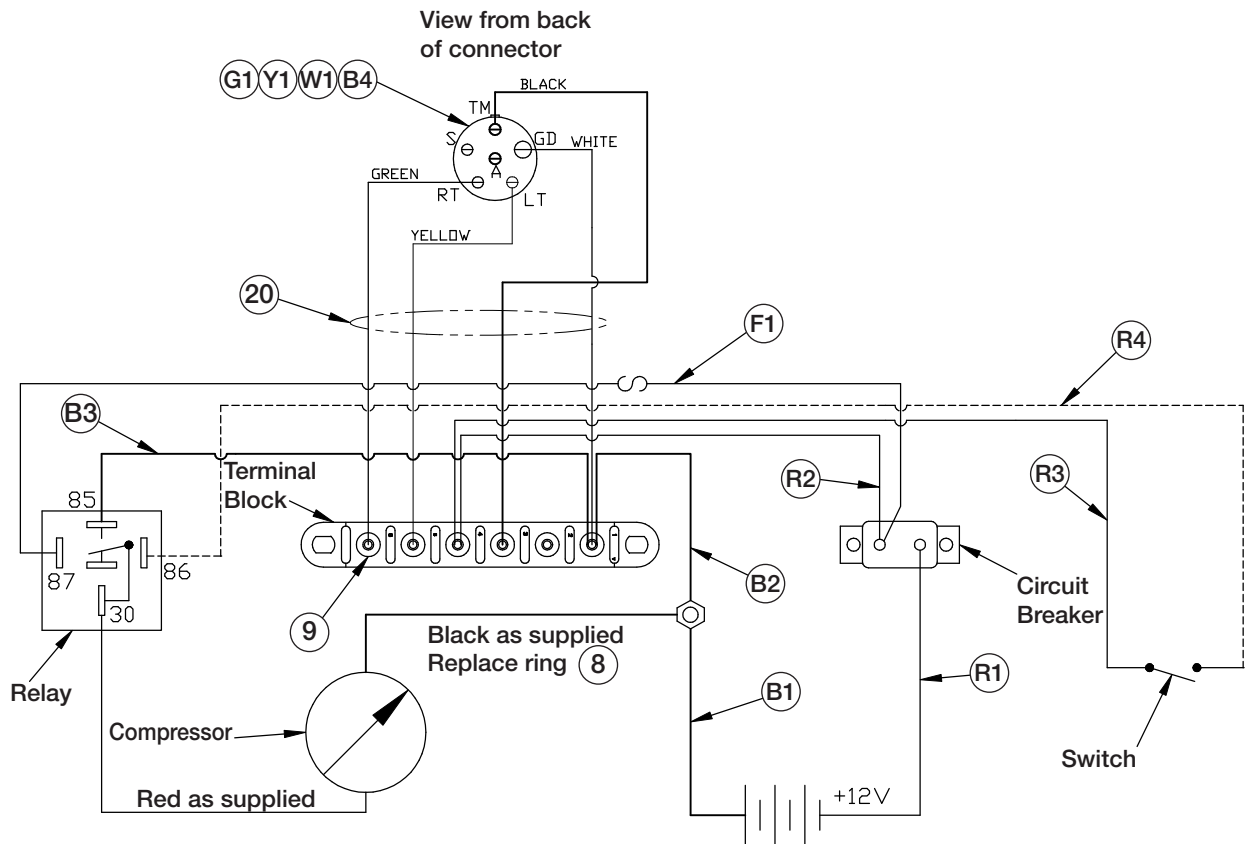
Table 4-3. Gate Component Details



Components Inside Box

Item No	Part No.	Description
1	127720	Door Assembly Battery Box
2	127106	Battery Deep Cycle Marine
3	127073	Strap 1" with Clasp
4	127289	Latch SS Pull Up
	160302	Hair Pin, 0.080 x 1 9/16
5	128108	Switch, Hex Seal Toggle
6	127393	Connector, Brake 6 Way
7	127007	Screw,Cap 1/4-20 x 1 Hex
8	126891	Valve Brass Drain Cock
9	126909	Fitting,Street Tee 1/4NPT
10	126899	Fitting, Brass, Air Brake, Synflex to 1/4 MP
	127399	Valve, Air Tank, 1/8NPT
11	128074	Screw, Machine 6-32 x 3/8
	153887	Washer, M4 Flat Zinc
	14625	Nut, Lock 6-32NC Hex Nylon
12	126944	Grommet 1-3/8 x 1/4
13	133012	Screw,Cap 1/4-20 x 3 3/4
14	127406	Relief Valve Air 150 PSI
15	126900	4FP Brass Cross
16	127398	Switch ON/OFF
17	14641	Nut, Hex 1/4-20NC Steel
18	45370	Nipple, Close Pipe Brass
19	126901	Fitting Brass 4FP Terminal Bolt
20	126902	Fitting Brass 4MP to 1/4 Synflex
21	127020	Screw, Machine 10-32 x 5/8
22	127076	Circuit Breaker 12V 30 Amp
23	127402	Terminal Block, 6 Steel
24	127397	Headlight Relay, 12V 30A
25	127414	Air Compressor 12V, 1 CFM
26	151681	Air Filter, 12V Compressor
27	59937	Screw, Mach Pan Head
28	15147	Washer, Lock 1/4 Regular
29	126956	Nut, Lock 10-32NC Grade 2
30	127727	Cable Assy, Scale to Vehicle
31	127562	Cable Assembly, 4 Pin Female

Table 4-4. Battery Box Parts



Drawing Label	Wire Assemblies	Item No. for Parts Required
(R1)	#10 RED 14" 3/8	3 2 16
(B1)	1/4 BLACK 14" 3/8	3 8 15
(F1)	#10 RED 10" SPADE	2 5 6 7 16 19
(R2)	#10 RED 7" #10	2 16
(B2)	#10 BLACK 5" 1/4	2 8 15
(R3)	#10 RED 10" #6	1 2 13
(R4)	#6 RED 16" SPADE	1 7 13
(B3)	#10 BLACK 12" SPADE	2 7 11
(B4)	#10 BLACK 16"	2 12
(G1)	#10 GREEN 18"	2 14
(W1)	#10 WHITE 15"	2 18
(Y1)	#10 YELLOW 17"	2 17

Figure 4-5. Battery Box Wiring Parts Illustration

Item No	Part No.	Description
1	126918	Terminal Ring, No. 6 Stud
2	127038	Terminal Ring, Insulated
3	127039	Terminal Ring, 3/8 in
5	127074	Fuse Holder, 20 AMP
6	127395	Fuse, 20 AMP for Battery
7	128102	Terminal, 1/4 in Female
8	128128	Terminal Ring, 1/4 in stud
9	128778	Washer, Locktooth No 10
11	15431	Wire, 18AWG Black Stranded
12	15432	Wire, 18AWG Brown Stranded
13	15433	Wire, 18AWG Red Stranded
14	15434	Wire, 18AWG Green Stranded
15	15443	Wire, 14AWG Copper Strand
16	15444	Wire, 14AWG Copper Strand
17	15451	Wire, 18AWG Yellow
18	15454	Wire, 18AWG White Stranded
19	15643	Tubing, Heat Shrink 1/4"
20	16141	Cable Tie, 8 in Nylon
NS	153887	Washer, M4 Flat Zinc

Table 4-5. Battery Box Wiring Parts List

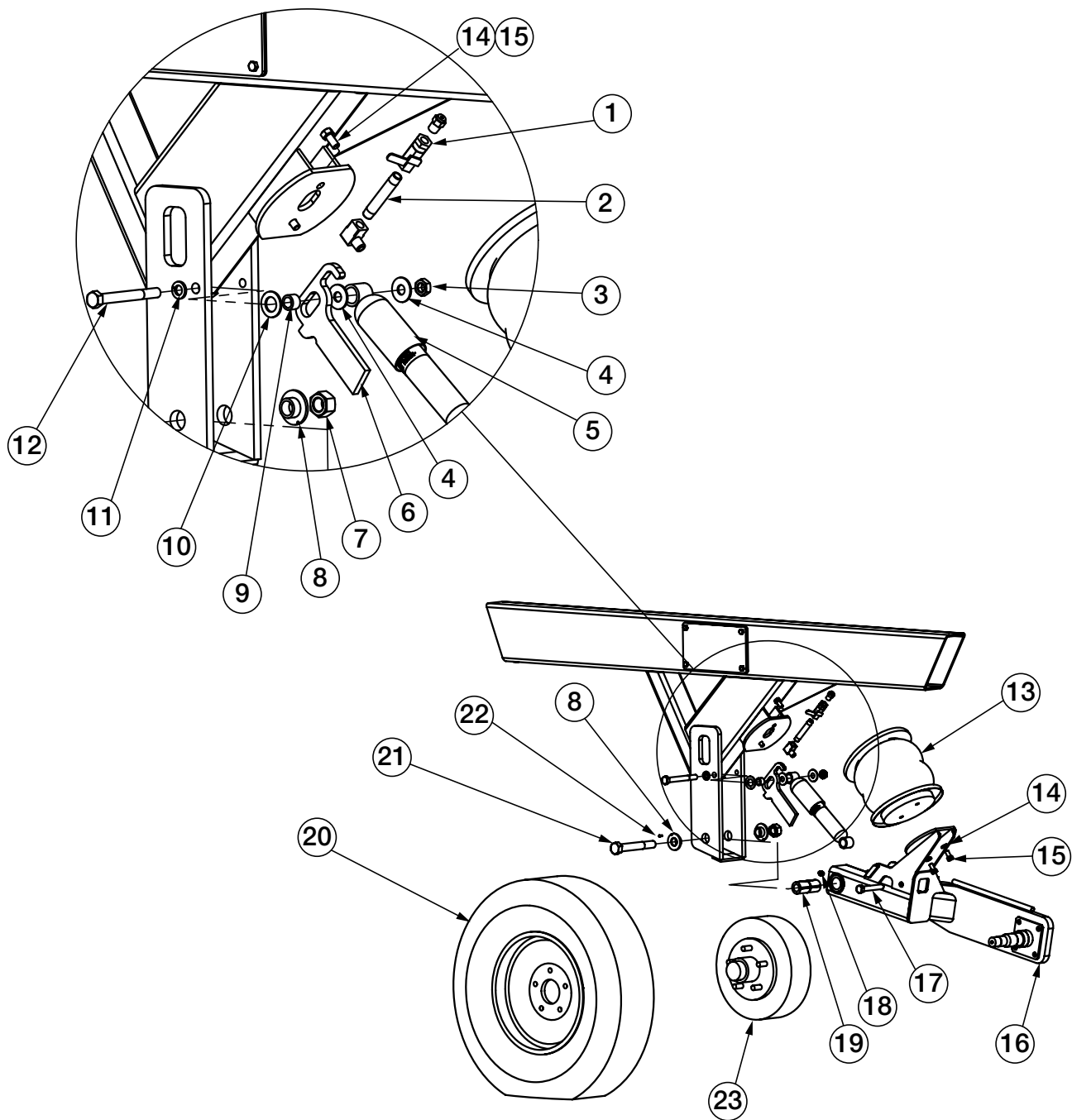


Figure 4-6. Tire/Wheel Parts

Key	Part No.	Description
1	127069	Ball Valve, Miniature
2	82133	Nipple, Pipe 1/4NTP x 3
3	126936	Nut Jam 1/2-13NC HEX
4	127046	Washer 7/16 USS
5	127745	Suspension Shock Absorber
6	127334	Suspension Stop Arm
7	14697	Nut Lock Nylon 3/4
8	131903	Bushing, Alignment MAST SS 131903-2 131904-2 131905-2 131906-2 131907-2 131908-2 14697-2 160767-1 76832-1 14906-1
9	127178	Bushing Suspension Stop
10	151422	Washer 3/4 SAE
11	15167	Lock washer 1/2
12	14768	Bolt 1/2 x 4-1/2
13	164910	Airbag Suspension Type 2B8-550
14	15159	Washer, Lock 3/8 Regular
15	114028	Screw, Cap 3/8-16 NC x 3/4
16	127718	Axle Arm Left
	127719	Axle Arm Right
17	127035	Bolt 1/2-13 x 3-1/4 HEX Head
	126991	Nut 1/2-13NC Grade 5 HEX Head
18	126812	Nipple, Grease 1/8 Inch
19	160676	Bushing Pivot Axle
20	161359	Tire and Rim ST175/80R13
21	76832	Bolt 3/4 x 5
22	14906	Screw, Drive NO 4x3/8
23	132389	Hub and Drum, 3500# Axle w/ 10 x 2.25 Brakes
NS	127728	Kit, Brake Wiring Cable, Single Tandem
NS	127729	Kit, Brake Wiring Cable, Dual Tandem

Table 4-6. Tire/Wheel Parts

5.0 Maintenance

5.1 Maintenance Schedule

Before Each Use

Grease axle pivot locations, using the provided grease zerks (see Figure 5-1), using a “Black Moly” type grease.

First Week

Check torque on all wheel nuts (see Table 2-1 on page 7).

Weekly

1. Check entire scale for buildup of debris. Remove any debris found on, under or around the scale. Rubber T-belting at both ends of the scale are removable to make clean out easier. To remove T-belting, unhook the stretch cord that hooks into the corner tube of the cage.
2. Check for dirt and debris in the load cell stands and clean accordingly.
3. Check all external cables and conduit for damage.

First Month (in addition to weekly maintenance)

1. Check torque on all wheel nuts (see Table 2-1 on page 7).
2. Adjust scale brakes.

Monthly (in addition to weekly maintenance)

1. Charge scale battery if necessary.
2. Tire Pressure. 45 psi./40psi. - Single /Tandem Axle
3. Grease gate latch zerks (see Figure 5-1) using a “Black Moly” type grease.

Yearly (in addition to weekly and monthly maintenance)

1. Check and grease wheel bearings (see Section 5.4.1 on page 35).
2. Disassemble each load cell location and grease all pins and eye bolts (see Section 5.2.2 on page 33).
3. Adjust scale brakes (see Section 5.3.3 on page 34).

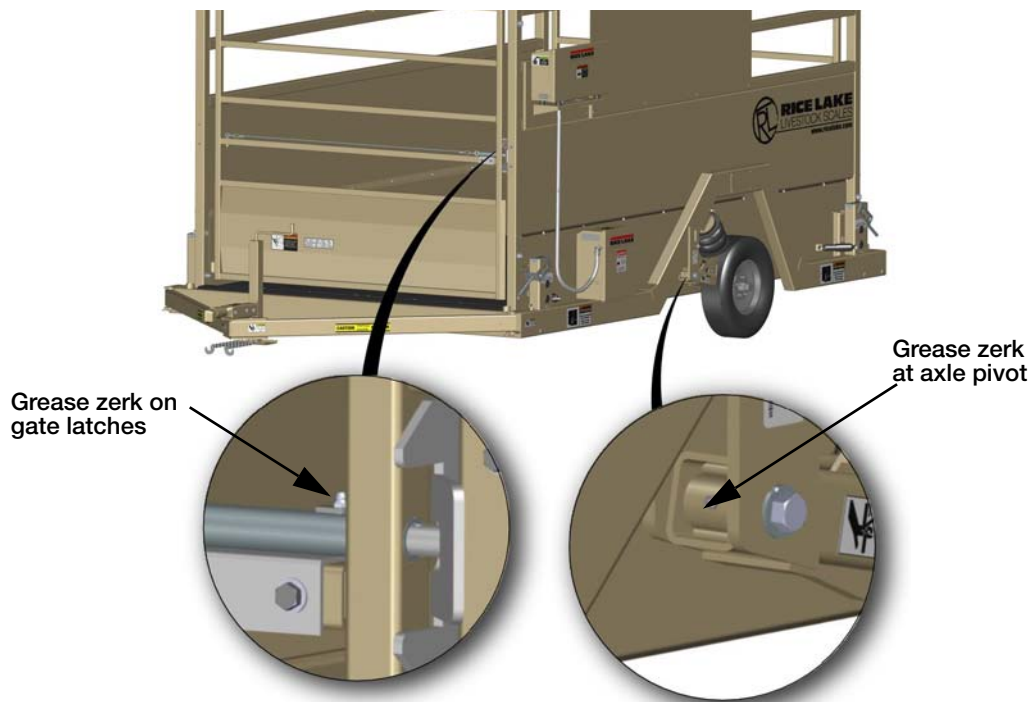


Figure 5-1. Grease Zerk Locations

5.2 Scale Maintenance Procedures

5.2.1 Cleaning Load Cell Stands

It is very important to keep any excess debris from building up in the load cell stand. Lift scale and block it up, clean any dirt out of the load cell stands through the drain holes located at the bottom of the stand.

5.2.2 Disassembly and Greasing

Greasing the scale is very important to ensure the long life of the unit. Use the parts list drawings for item numbers.



Note Use quality high-pressure grease.
Avoid bending or twisting the load cell wires.

1. Remove the cell stand cover.
2. Remove the plug covers.
3. Remove the bolt which holds together the outercam, load cell pin and inner cam.
4. While holding the cam handle, remove the outer cam.
5. Remove the load cell pin and spacers. The load cell assembly will be free on top and rest against the inside of the cell stand.
6. Remove the inner cam.
7. Remove the lower retainer.
8. Grease all bearing surfaces except where the eyebolt contacts the pin (upper and lower pins, cams, upper and lower eyebolts).
9. Reassemble in reverse order as described above.

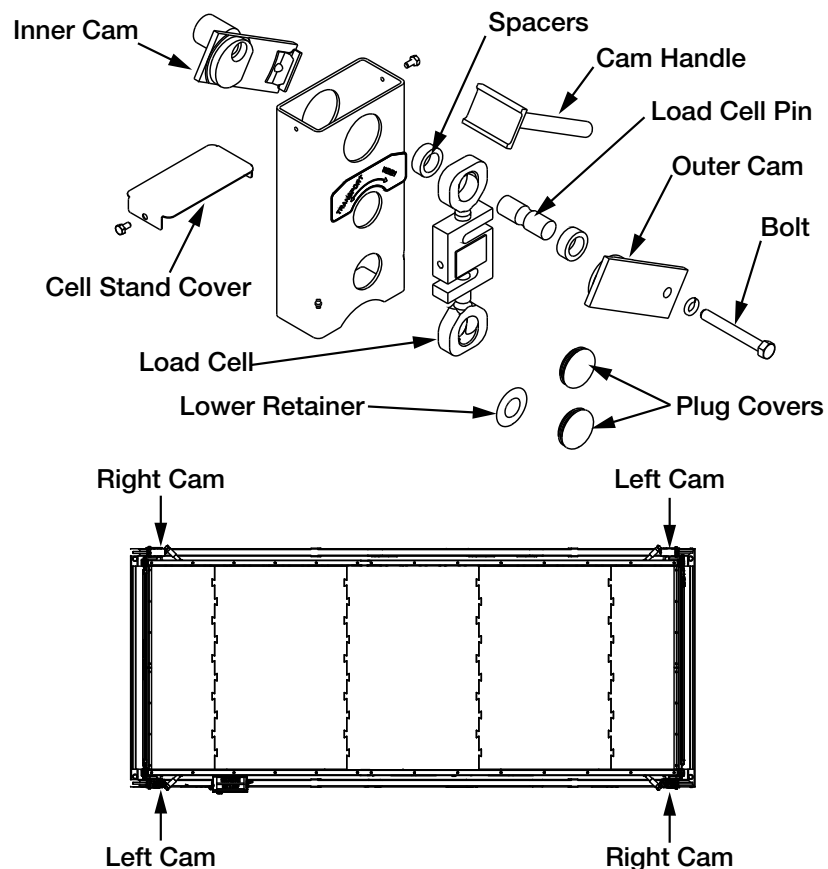


Figure 5-2. Disassembly and Greasing

5.3 Brake Maintenance

5.3.1 How to Use The Electric Brakes Properly

The scale brakes are designed to work in synchronization with the tow vehicle brakes. Never use the tow vehicle or scale brakes alone to stop the combined load.

The brake controller must be set up according to the manufacturer's recommendations to ensure proper synchronization between the tow vehicle and the scale. Additionally, small adjustments may need to be made to accommodate changing loads and driving conditions.

Proper synchronization of tow vehicle to scale braking can only be accomplished by road testing. Brake lockup, grabbing, or harshness is quite often due to the lack of synchronization between the tow vehicle and the scale being towed, too high of a threshold voltage (over 2 volts), or under adjusted brakes.



WARNING *The following should only be performed in a safe environment such as an unpopulated road free of traffic or under controlled conditions.*

Before any synchronization adjustments are made, the scale brakes should be burnished-in by applying the brakes 20-30 times with approximately a 20 m.p.h. decrease in speed, e.g. 40 m.p.h. to 20 m.p.h. Allow ample time for brakes to cool between application. This allows the brake shoes and magnets to slightly "wear-in" to the drum surfaces.

5.3.2 Synchronizing The Scale Brakes

To ensure safe brake performance and synchronization, read the brake controller manufacturer's instructions completely before attempting any synchronization procedure.

Make several hard stops from 20 m.p.h. on a dry paved road free of sand and gravel. If the scale 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.



Note *Not all scale brakes are capable of wheel lockup. Loading conditions, brake type and wheel and tire size can all affect whether a brake can lock. It is not considered desirable to lock up the brakes and slide the tires. This can cause unwanted flat spotting of the tires and could also result in a loss of control.*

If the controller is applying the scale brakes before the tow vehicle brakes, then the controller adjustments should be made so the scale brakes come on in synchronization with the tow vehicle brakes. For proper braking performance, it is recommended that the controller be adjusted to allow the scale brakes to come on just slightly ahead of the tow vehicle brakes. When proper synchronization is achieved there will be no sensation of the scale "jerking" or "pushing" the tow vehicle during braking.

5.3.3 Brake Adjustment

Brakes should be adjusted (1) after the first 200 miles (first month) of operation when the brake shoes and drums have "seated," (2) at 3,000 mile intervals (or yearly), (3) or as use and performance requires. The brakes should be adjusted in the following manner:

1. Jack or block the axle arm to allow free rotation of the wheel.
2. Remove the adjusting hole cover from the adjusting slot on the bottom of the brake backing plate.
3. Rotate the star wheel of the adjuster assembly with a screwdriver or standard adjusting tool to expand the brake shoes. Adjust the brake shoes out until the pressure of the linings against the drum makes the wheel very difficult to turn.
4. Then rotate the star wheel in the opposite direction until the wheel turns freely with a slight lining drag.
5. Replace the adjusting hole cover and lower the wheel to the ground.
6. Repeat the above procedure on all brakes. For best results the brakes should all be set at the same clearance.

5.4 Hubs, Drums and Bearings Maintenance



WARNING To prevent damage to important structural components, all maintenance procedures must be followed. Damage to structural components can cause the wheel end to come off the axle, which can lead to loss of control accident.

5.4.1 Bearing Adjustment

1. After placing the hub, bearings, washers, and spindle nut on the axle spindle, rotate the hub assembly slowly while tightening the spindle nut to approximately 50 ft-lb.
2. Then loosen the spindle nut to remove the torque. Do not rotate the hub.
3. Finger tighten the spindle nut until just snug.
4. Align the retainer to the machined flat on the spindle and press the retainer onto the nut until it snaps into place. The retainer/nut should be free to move slightly.



Note If retainer /nut assembly does not move slightly, remove the retainer and loosen the nut about one twelfth of a turn. Reinstall the retainer. The assembly should now move slightly.

5. Install the dust cover and rotate the wheel to ensure the cotter key does not contact the dust cover.

5.4.2 Lubricate Hubs

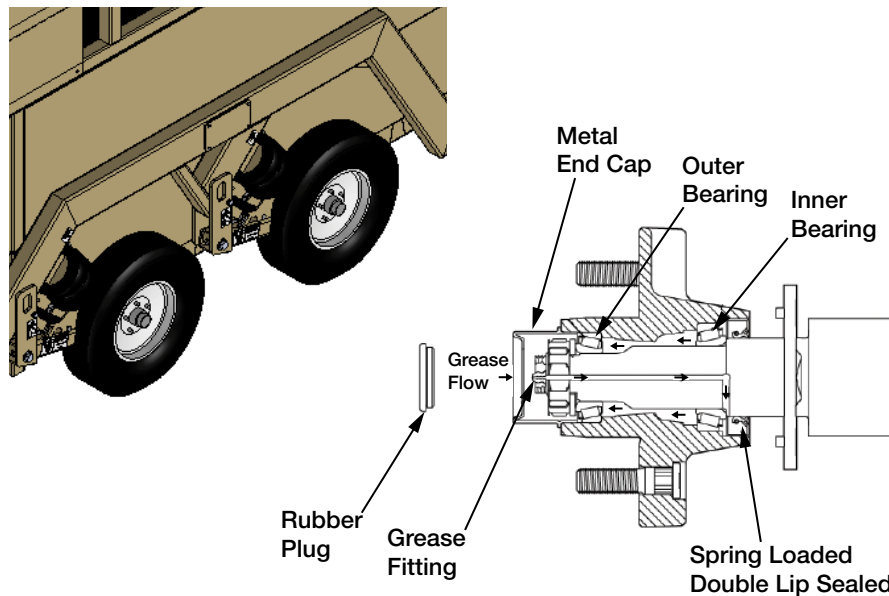


Figure 5-3. Hub Lubrication

1. Remove the rubber plug from the end of the grease cap.
2. Using a standard manual grease gun, place it on the grease zerk in the end of the spindle.



Important A high temperature, wheel bearing grease is required. Do not use a pneumatic powered grease gun (it injects grease too fast and forces grease past the seal) or dislodges the seal.

3. Pump grease slowly into the fitting while rotating the hub. The old grease will flow out of the cap around the grease gun nozzle.
4. Once the grease coming out is the new clean grease, remove the grease gun.
5. Wipe off excess grease and replace the rubber plug.



Important If hubs are removed from an axle, seals must be replaced prior to bearing lubrication. If not replaced, grease may get on the brake linings.

5.5 Gathering Panel Attachment

Suggested Construction

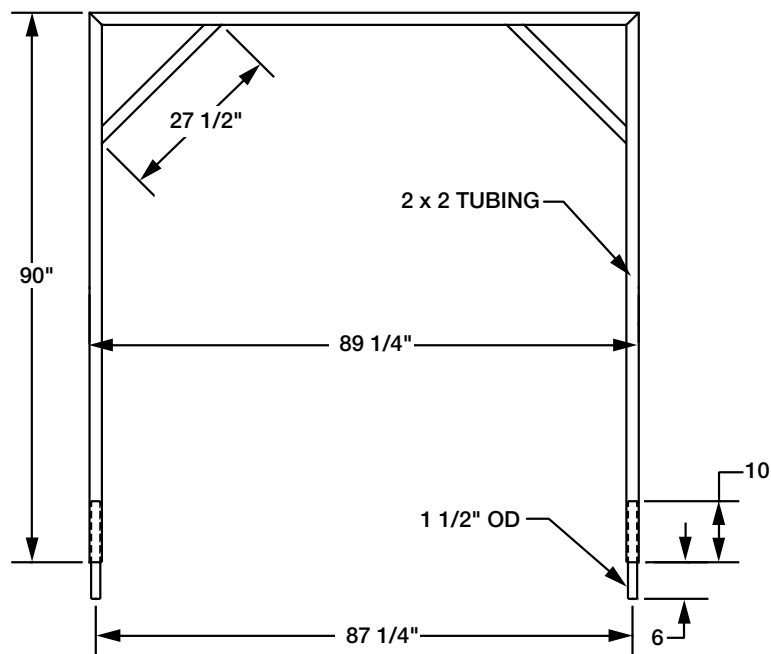


Figure 5-4. Gathering Panel Frame

Building a simple framework that can be set into the provided scale posts can accommodate mounting of most any panel. In some cases, extra support of the mounting frame may be required.

Figure 5-4 shows the suggested construction of a framework that can be built to support the type of gathering panels available. Some gathering panels can be set directly into the corner posts, or located on the corners of the scale. The drawing above that can be set into the top of the panels serves as an example. With the wide variety of panels and configurations available, we cannot provide a mounting means for all of them.

However the scale is mounted, make sure the panels or framework are not attached to the scale cage. There must be a clearance of 1" from any live portion of the scale. Any contact between the panels or framework and the scale can cause the weight reading to be inaccurate.

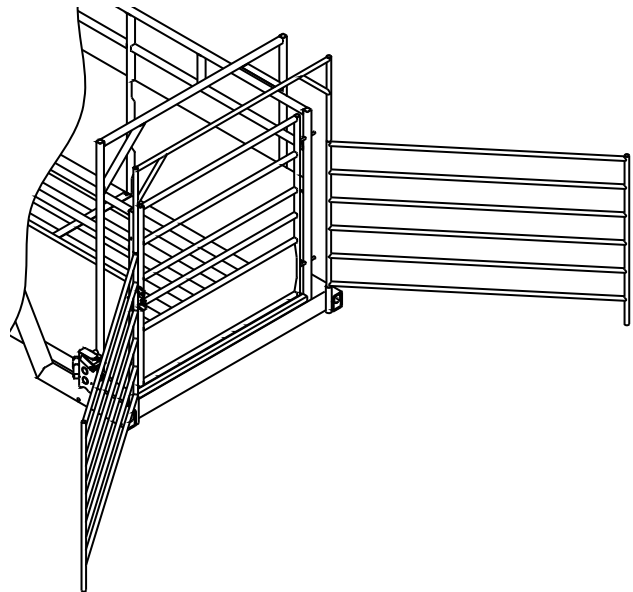


Figure 5-5. Gather Panel Attachment



Gathering panels or handling attachments

must be removed from the scale during transport. The scale is not intended for the transportation of goods or livestock.

5.6 Troubleshooting

Symptom	Probable Cause	Action
The scale indicator will not power up.	Blown in-line fuse	Replace in-line fuse, the fuse holder is located near the battery or the indicator.
	Voltage is less than 11 volts.	Repair faulty electrical system. The RLWS panel requires at least 11 volts to operate properly.
Indicator turns off or resets in the middle of a transaction.	Low voltage to control panel.	Check other electrical equipment that may be operating. Check for corrosion or damaged wiring. Measure voltage.
The weight reading on the indicator is unstable.	The circuit board in the control panel may be wet or the junction box for the load cells may have moisture.	Dry any areas that are contaminated with moisture. Check for leaks and reseal.
	A load cell cable may be pinched or damaged.	Contact RLWS or a qualified dealer for support. Cutting the load cell cable will void the warranty. Special repair techniques are required.
The scale has a positive error when loading or a negative error when unloading.	Mechanical binding problem on scale	Check for debris around or under the scale. Check each load cell location for foreign material. Check all items that run from on the scale to off the scale. Check all gates or gathering panels for contact.
The scale has a negative error when loading or a positive error when unloading.	Moisture is present somewhere in the electrical system.	Dry any areas that are contaminated with moisture. Check for leaks and reseal.
Printer is not functioning – nothing is being printed at all.	Is the release light on the printer flashing? This could indicate a low voltage to the printer	The RLWS system requires at least 11 volts to operate properly. Is the truck running? Your truck may need to be running to supply enough power – OR – the truck may have a faulty electrical system.
	The print head may be jammed with paper	Remove the print head cover and ribbon. Check for bits of paper stuck in the paper feed mechanism.
	The print head may be packed with dirt from operating in dusty conditions	Remove the print head cover and ribbon. Blow out with air. If the printer is very dirty it may require service by a qualified technician.
The printer is printing unrecognizable characters.	The power supply is excessively noisy.	Contact RLWS, an in-line power filter may be necessary.
	Incorrect dip switch settings	Settings are 1,7,8 ON rest OFF
The printing on the ticket is faint or hard to read.	The printer's ink ribbon may need to be replaced.	Replace ribbon.
	The printer head may be damaged.	Requires service by a qualified technician.
Scale will not ZERO.	Weight on scale larger than the allowable ZERO window.	Clean the scale deck of debris, then Zero the scale.
Compressor runs continuously and air flow is lower than normal.	Loose connections.	Check all connections with soap and water solution, tighten loose connections.
	Worn piston ring or inlet valve.	Replace compressor.
	Clogged air filter element.	Replace air filter element.



Important *If a problem with the scale is suspected, contact Rice Lake Weighing Systems or a qualified local scale dealer.*


5.7 Specifications

Size / Model # _____

Serial # _____

Date Purchased _____

Unit ID # _____

	MAS-M 8-13	MAS-M 8-18
Length Overall	18 ft - 8 in	24 ft - 5 in
Length Deck	12 ft - 9 in	18 ft - 6 in
Width Overall	8 ft - 6 in	8 ft - 6 in
Width Deck	6 ft - 11 1/2 in	6 ft - 11 1/2 in
Deck Height	6 in	6 in
Height	109 in	109 in
Deck Covering	5/8 in Recycled Rubber Flooring System	
Weight	3480 lb	4710 lb
Capacity	15000 lb	20000 lb
Section Cap	10000 lb	20000 lb
Approval Class	IIIL (IIHHD)	IIIL (IIHHD)
Approvals	 99-091	Measurement Canada Approved AM4847
Grad Size	5 lb (2 kg)	5 lb (2 kg)
**Paint	Powder Coated Galvanized Steel	
Tire Pressure	50 PSI	45 PSI
Wheel size	13 ft 5 on 4.5 in	13 ft 5 on 4.5 in
Tire Size	ST175/80D13	ST175/80D13
Lug Torque	90-120 ft-lb	90-120 ft-lb
Battery	12V Deep Cycle	12V Deep Cycle
**Structural Steel is not galvanized.		

5.8 Towing Checklist

Review each item of the checklist at delivery; checklist should be signed by both the dealer and the customer.

- ☐ Operator Safety section of manual has been reviewed.
- ☐ Scale is not intended for the transport of livestock or any other goods or materials.
- ☐ Ball on towing vehicle must be 2"
- ☐ Hitch height of towing vehicle must be between approximately 16" above the ground such that the scale is in towing level.
- ☐ Safety chains must always be connected during towing.
- ☐ Towing vehicle must be wired correctly (see label on hitch)
- ☐ Magnetic lighting package must be on the scale during towing.
- ☐ Scale is equipped with electric brakes and must be synchronized. See synchronization procedure in manual.
- ☐ Scale is designed to be towed at a ride height indicated by labels on the suspension shock absorbers. Towing at ride heights outside of the indicated range may result in suspension damage.
- ☐ Suspension stops must be in the transport position during towing.
- ☐ Converting the scale from weigh mode to transport mode and back to weigh mode has been reviewed.
- ☐ Safety pins are installed in all the hitch pins.
- ☐ RLWS recommends to re-torque wheel lug nuts at 10, 25 and 50 miles.

Customer _____ Date _____

Dealer _____

Copy to be retained by dealer



Mobile Group Limited Warranty

Rice Lake Weighing Systems (RLWS) warrants that all RLWS equipment and systems properly installed by a Distributor or Original Equipment Manufacturer (OEM) will operate per written specifications as confirmed by the Distributor/OEM and accepted by RLWS. All systems and components are warranted against defects in materials and workmanship for two years.

RLWS warrants that the equipment sold hereunder will conform to the current written specifications authorized by RLWS. RLWS warrants the equipment against faulty workmanship and defective materials. If any equipment fails to conform to these warranties, RLWS will, at its option, repair or replace such goods returned within the warranty period subject to the following conditions:

- Upon discovery by Buyer of such nonconformity, RLWS will be given prompt written notice with a detailed explanation of the alleged deficiencies.
- Individual electronic components returned to RLWS for warranty purposes must be packaged to prevent electrostatic discharge (ESD) damage in shipment. Packaging requirements are listed in a publication, *Protecting Your Components From Static Damage in Shipment*, available from RLWS Equipment Return Department.
- Examination of such equipment by RLWS confirms that the nonconformity actually exists, and was not caused by accident, misuse, neglect, alteration, improper installation, improper repair or improper testing; RLWS shall be the sole judge of all alleged non-conformities.
- Such equipment has not been modified, altered, or changed by any person other than RLWS or its duly authorized repair agents.
- RLWS will have a reasonable time to repair or replace the defective equipment. Buyer is responsible for shipping charges both ways.
- In no event will RLWS be responsible for travel time or on-location repairs, including assembly or disassembly of equipment, nor will RLWS be liable for the cost of any repairs made by others.

THESE WARRANTIES EXCLUDE ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NEITHER RLWS NOR DISTRIBUTOR WILL, IN ANY EVENT, BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

RLWS AND BUYER AGREE THAT RLWS' SOLE AND EXCLUSIVE LIABILITY HEREUNDER IS LIMITED TO REPAIR OR REPLACEMENT OF SUCH GOODS. IN ACCEPTING THIS WARRANTY, THE BUYER WAIVES ANY AND ALL OTHER CLAIMS TO WARRANTY.

SHOULD THE SELLER BE OTHER THAN RLWS, THE BUYER AGREES TO LOOK ONLY TO THE SELLER FOR WARRANTY CLAIMS.

NO TERMS, CONDITIONS, UNDERSTANDING, OR AGREEMENTS PURPORTING TO MODIFY THE TERMS OF THIS WARRANTY SHALL HAVE ANY LEGAL EFFECT UNLESS MADE IN WRITING AND SIGNED BY A CORPORATE OFFICER OF RLWS AND THE BUYER.

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