MAGNUM SYSTEMS

Manual Bagging Scale
Model OM2

Operation and Maintenance Manual

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Machine Serial Number: _____

Sales Order Number: _____

Important Information

Conventions

Safety Alert Symbols

The ⚠ symbol indicates that important personal safety information follows. Carefully read this text for the warnings information it contains. The signal word next to each safety alert symbol is defined as:

WARNING *Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.*

CAUTION Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury, or damage to the equipment. This single word may also be used to identify unsafe practices.

Important/Notable Information

While all of the information in this manual is important, there are some pieces of information where special attention needs to be paid to avoid equipment damage, or specific information needs to be emphasized. This information will be handled as follows:

Important: *Indicates an operating procedure, practice, or condition that, if not strictly followed, may cause equipment damage.*

Note: *Indicates additional information or emphasizes a topic related to the subject being discussed.*

Personal Safety Instructions

Only qualified personnel should work on or around this equipment. To ensure the highest degree of personal safety, all who use this equipment are required to become thoroughly familiar with all safety instructions contained in this document. Successful and safe operation of this equipment depends upon proper handling, operation, maintenance, and application of associated equipment. Refer to Appendix A of this manual for all safety instructions. Safety instructions are also provided where they apply within the body of this manual.

WARNING *No information in this manual supersedes or replaces your employer's operating rules. If there is a difference in instructions between this manual and the employer's operating rules, follow the most restrictive instruction.*

Deliberate misuse or abuse of electronic components may cause personal injury or death.

Warranty Information

Seller warrants that the Products will operate substantially in conformance with Seller's published specifications, when subjected to normal, proper and intended usage by properly trained personnel, for a period of one (1) year from the date of shipment to Buyer (the "Warranty Period"). Seller agrees during the Warranty Period, provided it is promptly notified in writing upon the discovery of any defect and further provided that all costs of returning the defective Products to Seller are pre-paid by Buyer, to repair or replace, at Seller's option, defective Products so as to cause the same to operate in substantial conformance with said specifications. Replacement parts may be new or refurbished, at the election of Seller. All replaced parts shall become the property of Seller. Replacement Parts will be billed at list price, unless they are approved as warranty replacement item(s) by the service technician and the technical services manager.

Lamps, fuses, bulbs and other expendable items are expressly excluded from the warranty. Seller's sole liability with respect to equipment, materials, parts or software furnished to Seller by third party suppliers shall be limited to the assignment by Seller to Buyer of any such third party supplier's warranty, to the extent the same is assignable. In no event shall Seller have any obligation to make repairs, replacements or corrections required, in whole or in part, as the result of (i) normal wear and tear, (ii) accident, disaster or event of force majeure, (iii) misuse, fault or negligence of or by Buyer, (iv) use of the Products in a manner for which they were not designed, (v) causes external to the Products such as, but not limited to, power failure or electrical power surges, (vi) improper storage of the Products or (vii) use of the Products in combination with equipment or software not supplied by Seller. If Seller determines that Products for which Buyer has requested warranty services are not covered by the warranty hereunder, Buyer shall pay or reimburse Seller for all costs of investigating and responding to such request at Seller's then prevailing time and materials rates. If Seller provides repair services or replacement parts that are not covered by the warranty, the Buyer shall pay Seller therefore at Seller's then prevailing time and materials rates. ANY INSTALLATION, MAINTENANCE, REPAIR, SERVICE, RELOCATION OR ALTERATION TO OR OF, OR OTHER TAMPERING WITH, THE PRODUCTS PERFORMED BY ANY PERSON OR ENTITY OTHER THAN SELLER WITHOUT SELLER'S PRIOR WRITTEN APPROVAL, OR ANY USE OF REPLACEMENT PARTS NOT SUPPLIED BY SELLER, SHALL IMMEDIATELY VOID AND CANCEL ALL WARRANTIES WITH RESPECT TO THE AFFECTED PRODUCTS.

Field Service

Magnum Systems can provide field service for start-up assistance, training, and maintenance of on new and existing equipment. Contact Magnum Systems at (888) 882-9567.

OM2 Manual Bagging Scale
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Chapter 1
Product Description

1.1 General Description
This chapter will provide a high-level product description of the OM2 Manual Bagging Scale.

1.2 Introduction
The Magnum Systems Model OM2 is a manual bagging scale. The OM2 is configured to fill open mouth bags.

1.3 Manual Scope
This manual will provide information on installation, operation, preventive maintenance, troubleshooting, and repair of the Model OM2.

The appendices will include safety information, spare parts list, and mechanical drawings.

1.4 Major Systems and Components
When working with the Model OM2, it is important to understand the major systems and components of the unit. The major components of the system are:

- Scale cabinet assembly
  - Cabinet
  - Shut off gate
  - Gate trip shaft and bearings
  - Choke assembly
- Scale beam assembly
  - Scale beam
  - Scale beam weights
  - Scale beam bearings
  - Scale beam fine zero adjustment
- Spout assembly
  - Spout
  - Bag clamp assembly

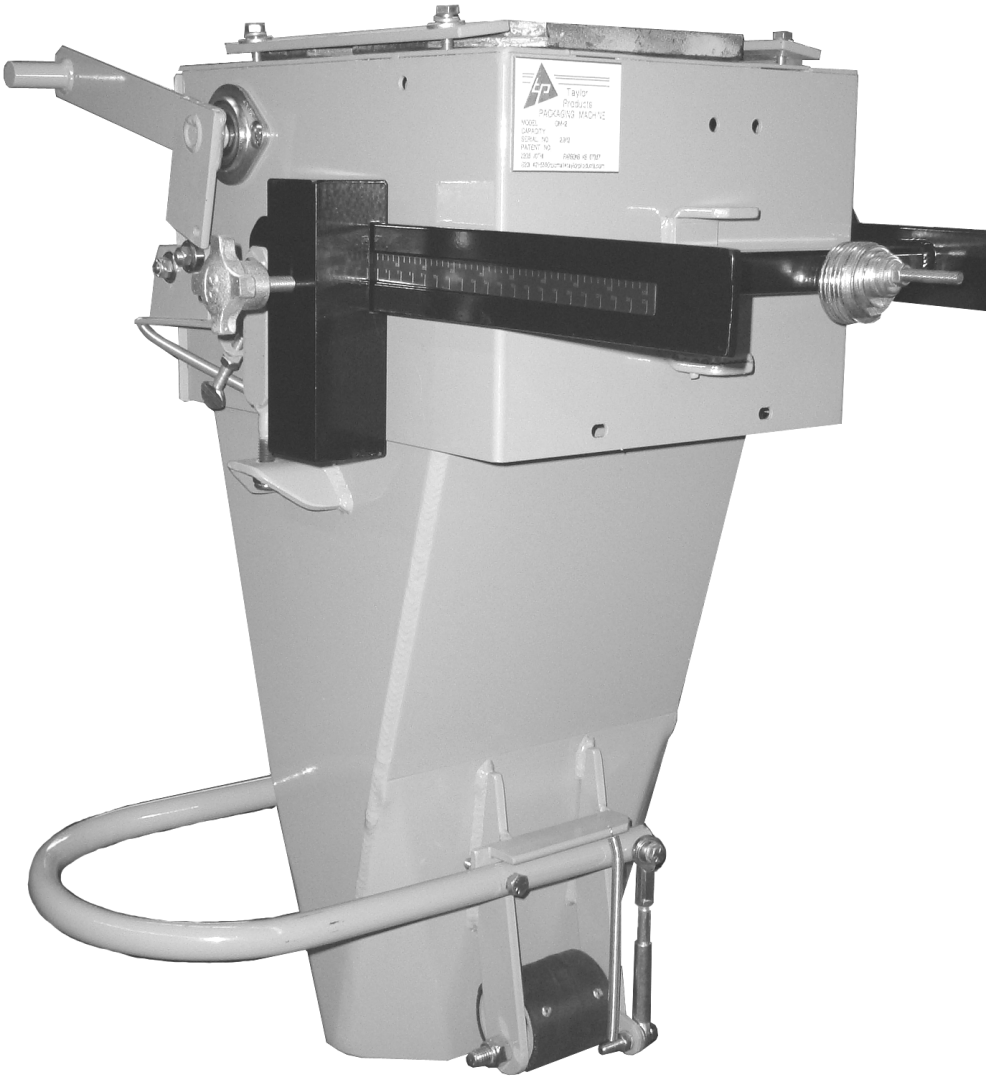

Figure 1-1. OM2

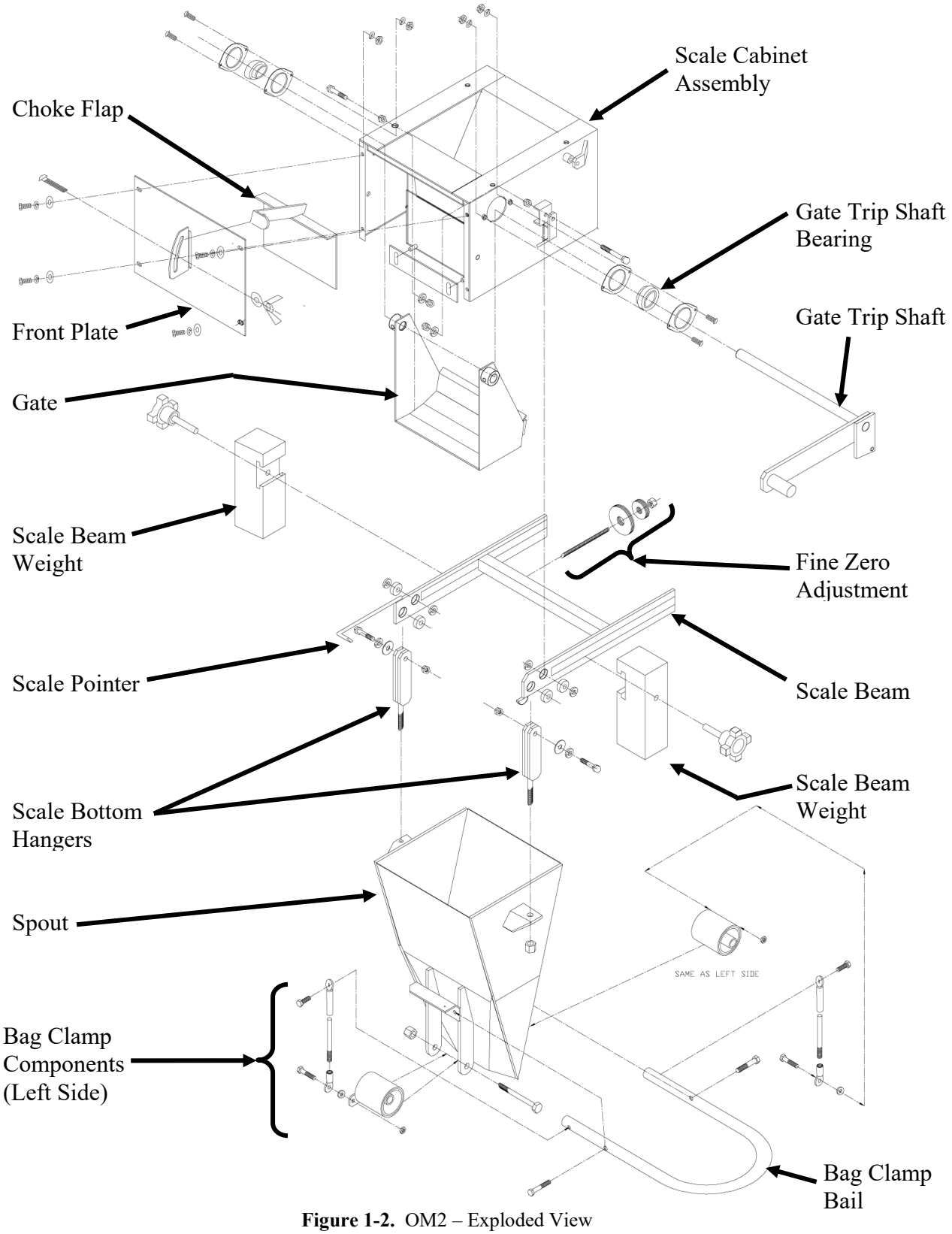

Figure 1-2. OM2 – Exploded View

1.6.1 Scale Cabinet Assembly

The scale assembly is comprised of several individual components. This assembly is the most delicate part of the OM2. The scale assembly should always be handled with care. The scale assembly includes the following items:

- Scale cabinet
- Shut off gate
- Flow gate
- Gate trip shaft and bearings
- Choke assembly

1.6.1.1 Scale Cabinet

The scale cabinet is the foundation for the weighing system. The cabinet is designed with mounting points for the gate trip mechanism, shut off gate, the scale beam, and the spout. The cabinet also has the mounting points for the scale beam and the choke assembly.

A small hopper is located inside the scale cabinet assembly. As material flows in from the supply hopper, it enters the internal hopper of the OM2. The OM2 hopper is equipped with a shut off gate to stop the flow of material from flowing into the spout.

1.6.1.2 Shut Off Gate

The shut off gate is used to stop the flow of product into the package, once the target weight has been achieved.

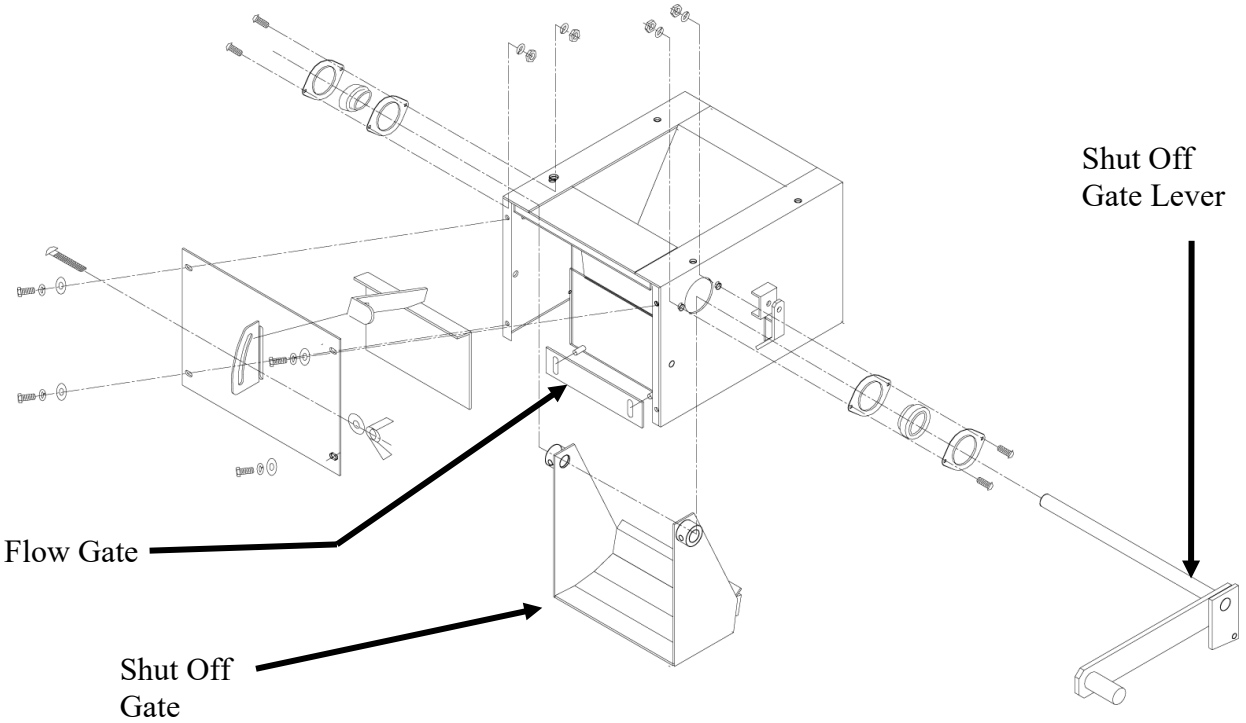

Figure 1-3. Shut Off Gate

1.6.1.3 Flow Gate

The flow gate is used to adjust the size of the gap between the shut off gate and the hopper when the gate is closed. This is done to prevent material from flowing when the shut off gate is closed.

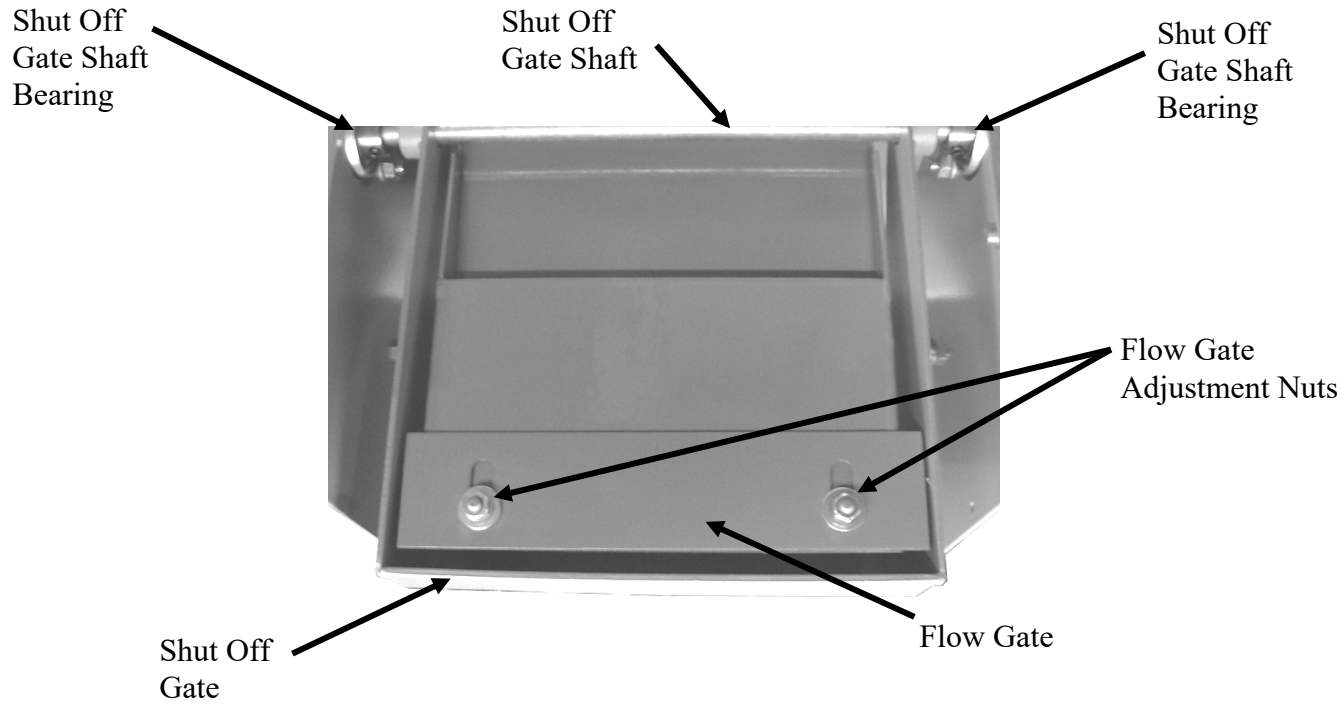

Figure 1-4. Flow Gate

1.6.1.4 Gate Trip Mechanism

The gate trip mechanism is located in the top of the scale cabinet assembly. It rides on two bearing assemblies, one on each side of the cabinet. The shut off gate rides on the gate trip mechanism shaft. The shut off gate is locked to the shaft by two setscrews, one on each side of the gate in the collar. The edge of the shut off gate lever rides on the bearing on the corner of the gate trip mechanism. The cam flange on the scale beam rides on the gate trip adjustment screw. The gate trip adjustment screw is adjusted so that just before the package reaches the target weight, the shut off gate lever trips and stops the flow of product into the package.

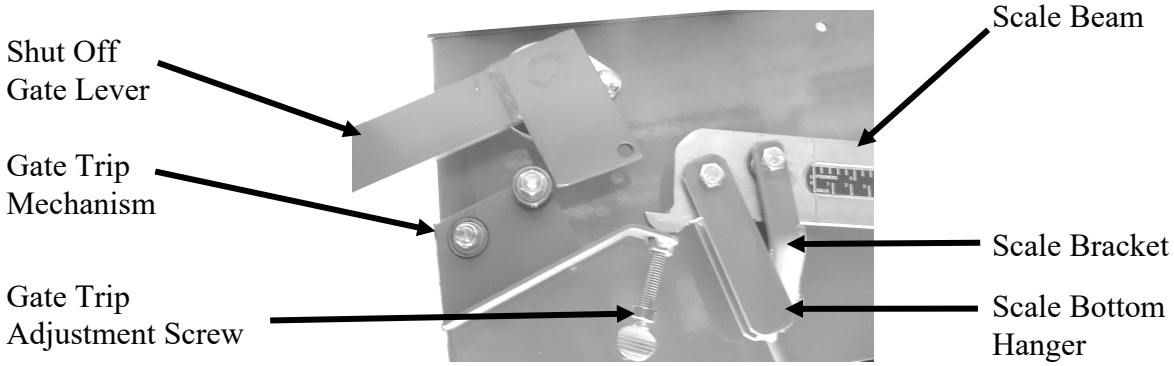

Figure 1-5. Gate Trip Mechanism

1.6.1.5 Choke Assembly

The choke assembly is used to control the speed of the product as it flows into the package. The choke assembly includes:

- Choke flap
- Front plate
- Choke flap adjustment bolt, washer, and wing nut

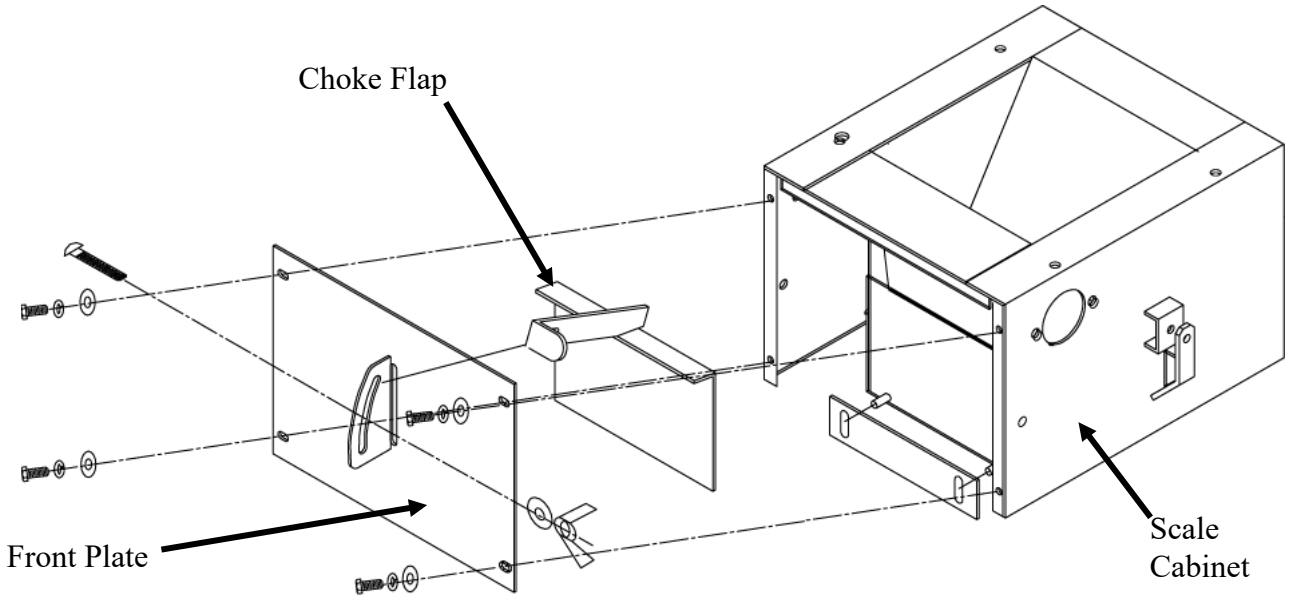

Figure 1-6. Choke Assembly – Exploded View

1.6.2 Scale Beam Assembly

The scale beam assembly is the device that will determine the target weight of the package. The scale beam assembly mounts on the scale cabinet. The scale beam assembly is made up of the following components:

- Scale beam
- Scale beam weights
- Scale beam weight lock knobs
- Scale pointer
- Scale beam bearings
- Scale beam fine zero adjustment

1.6.2.1 Scale Beam

The scale beam mounts to the outside of the scale cabinet. The scale beam pivots on the cabinet mount using a bearing on each side of the scale beam. A second set of bearings is installed toward the rear of the scale beam. This set of bearings provides the pivot action for the scale bottom hangers.

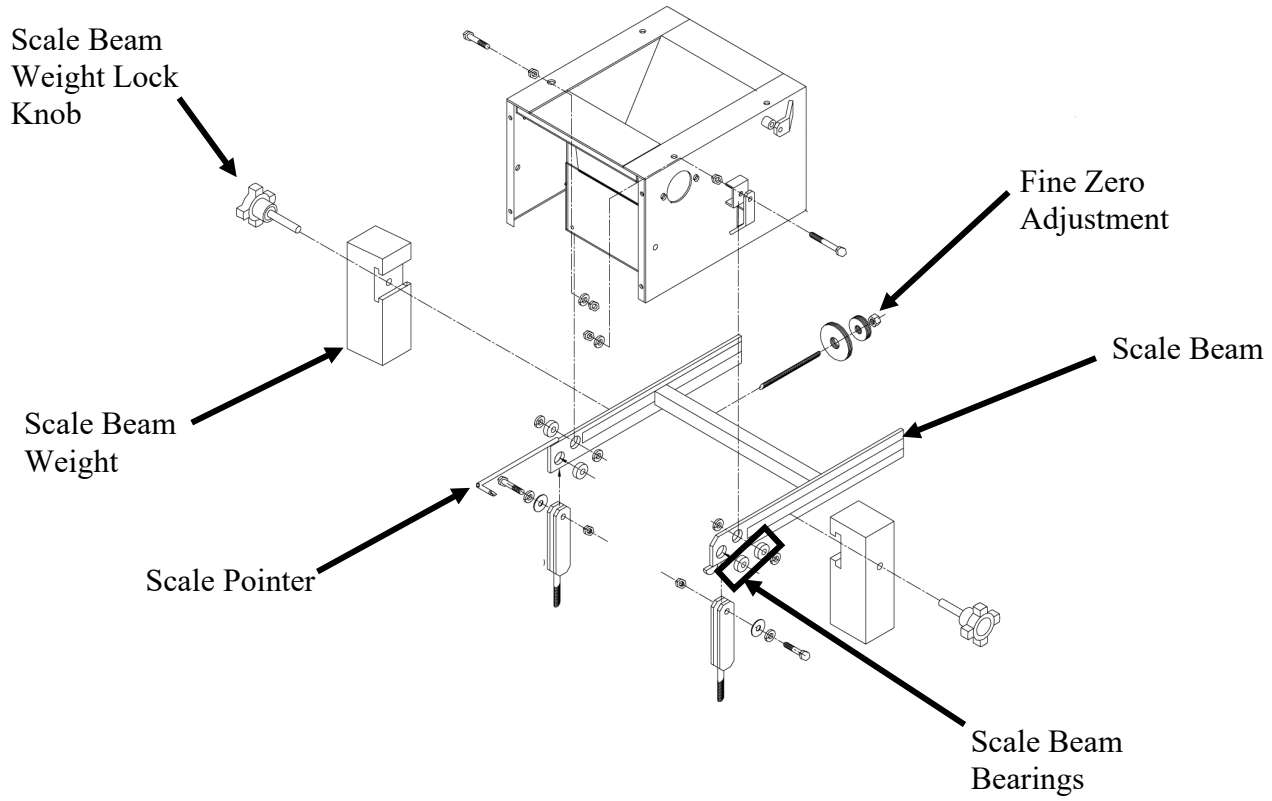

Figure 1-7. Scale Beam Mounting

1.6.2.2 Scale Beam Weights

The OM2 uses two or more scale beam weights. The scale beam weights have a machined slot in the back side of the weight that allows them to slide along the beam.

1.6.2.3 Scale Beam Weight Lock Knobs

Each scale beam weight that is used must be secured in position to keep it from moving as the angle of the scale beam changes. The scale beam weights are locked into position using a lock knob assembly that is threaded through the weight. As the knob is turned clockwise, the screw is tightened and makes contact with the scale beam. This locks the weight in position. If the knob is turned counter-clockwise, the screw is loosened and the weight will be able to slide.

1.6.2.4 Scale Pointer

On the front end of the scale beam is the scale pointer. The scale pointer is used, in conjunction with the scale display sticker, to display the current weight of the package.

1.6.2.5 Scale Beam Bearings

The scale beam utilizes four bearing assemblies. The bearings function as two sets. One set is used to allow the scale beam to pivot, while the second set is used to allow the scale bottom hangers to pivot on the scale beam. LOCTITE® 680 retaining compound is used to hold the scale beam bearings in the bearing bores in the scale beam.

1.6.2.6 Scale Beam Fine Zero Adjustment

On the rear of the scale beam is a fine zero adjustment. This adjustment mechanism is a piece of all-thread that is about four inches long. It is threaded into the scale beam. To help zero the scale, multiple washers are installed on the all-thread and a lock washer and nylon lock nut. There will be several different sizes of washer and there will be several washers of each size.

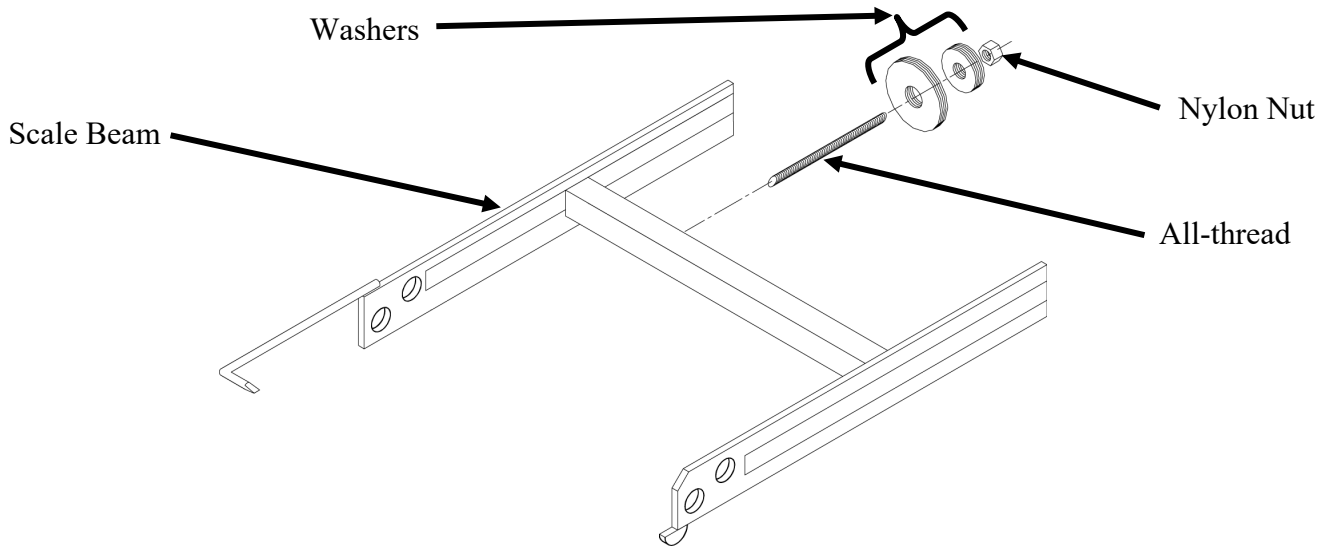

Figure 1-8. Scale Beam and Fine Zero Adjustment

1.6.3 Spout Assembly

The spout assembly hangs from the scale beam assembly by two scale bottom hangers.

1.6.3.1 Spout

The spout assembly directs the product from the scale cabinet assembly to the package. The spout assembly also serves as the mounting point for the bag clamp assembly.

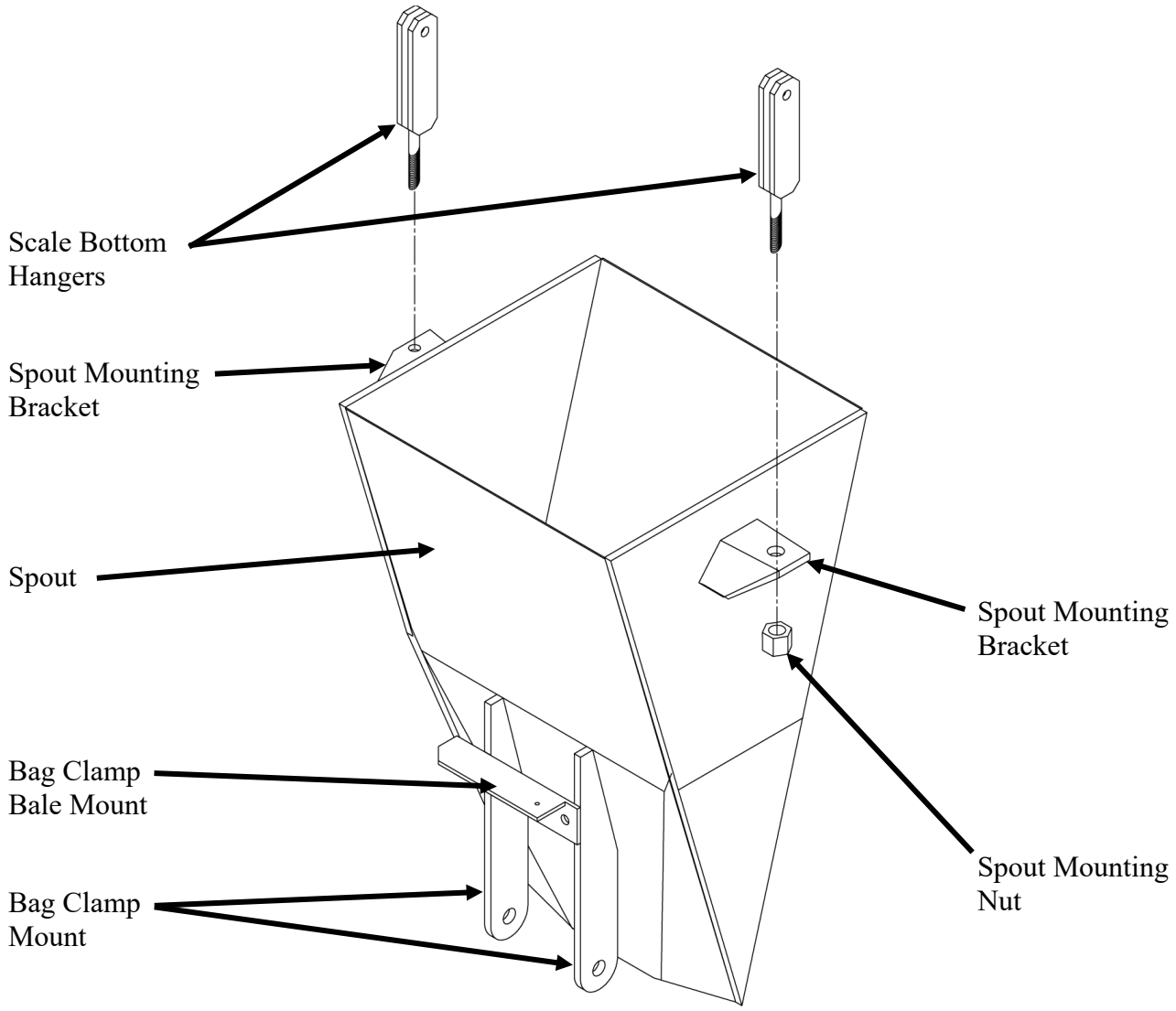

Figure 7-9. Spout

1.6.3.2 Bag Clamp Assembly

The bag clamp assembly includes the following components:

- Bag clamp roller
- Bag clamp roller mount
- Bag clamp actuator rod and rod-end bearings
- Bag clamp bale
- Bag clamp bale mount

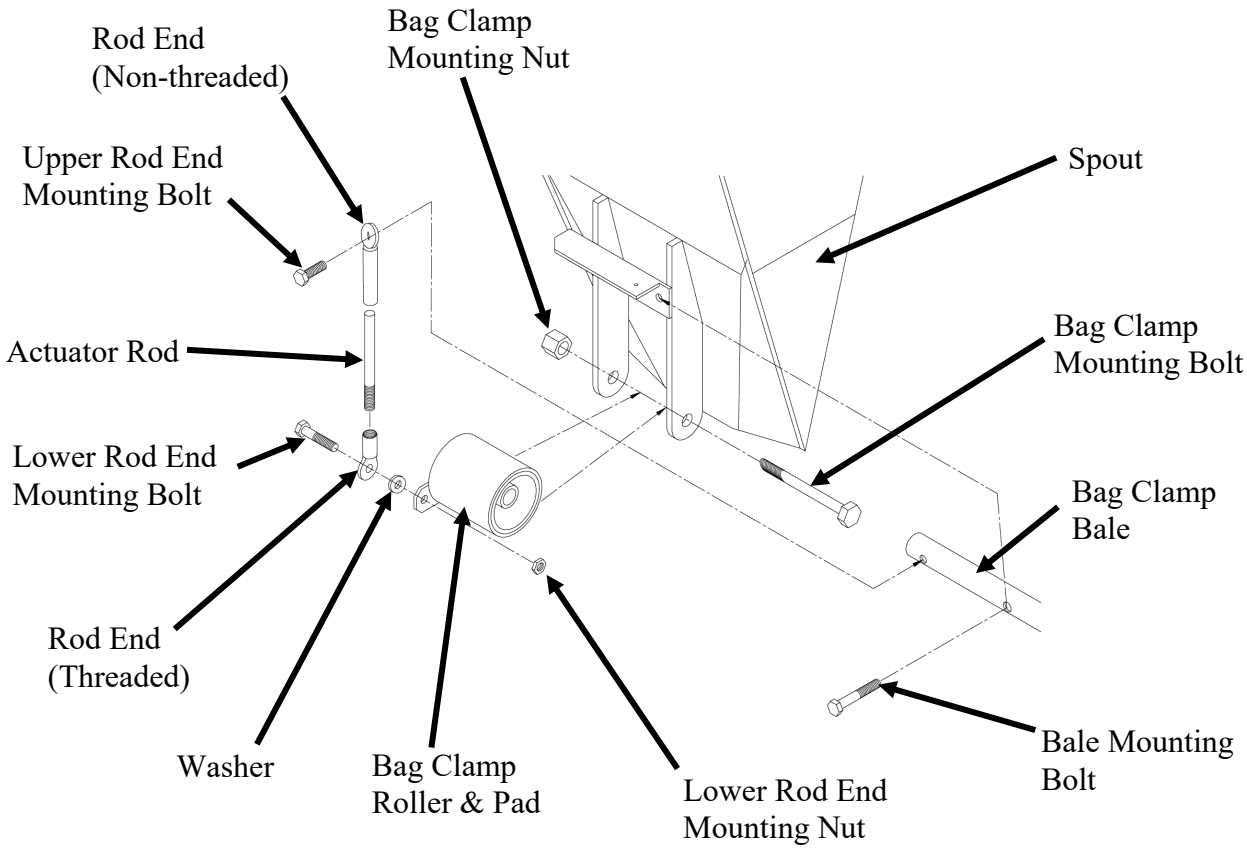

Figure 1-10. Bag Clamp Assembly – Exploded View

Chapter 2
Receiving Equipment

2.1 General Description

The OM2 and all of its components are thoroughly inspected before shipment. Upon receipt of the equipment, it is important that the machine be carefully inspected for shipping damage. In the event that damage is found, contact the shipping company and follow their process for reporting shipping damage.

2.2 Uncrating the Equipment

Follow the procedure below to unpack the equipment and prepare it for installation.

1. The OM2 hangs from a hopper. Make sure the hopper is in its final position and ready for the OM2 to be installed.
2. Before opening the box and removing OM2 from the shipping pallet, inspect the box, and pallet for visible damage.
3. Remove the box. Use care when unpacking the OM2 to avoid damaging the unit.

Figure 2-1. Typical Shipping Box (2 Boxes Shown)

4. Check the components for damaged or missing parts. If there is damage, notify the shipper and Magnum Systems immediately. If the unit is not damaged, proceed to the next step.
5. Remove the beam weights from the inside of the cabinet assembly and set them aside.
6. Remove the cabinet assembly and set it aside.
7. Remove the spout assembly and set it aside.
8. The OM2 is now ready for assembly. Refer to 3.2 Mechanical Assembly.

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Chapter 3
Setup/Installation

3.1 General Description

Only persons who have been properly trained and hold the appropriate qualifications should attempt to install, operate, or maintain this equipment.

3.2 Mechanical Assembly

Once the OM2 has been moved into the position where it will operate, follow the steps below to setup the mechanical components for operation.

1. Lift the scale cabinet assembly by its bottom edge and slide the scale cabinet onto the mounting flange. This may require two people.

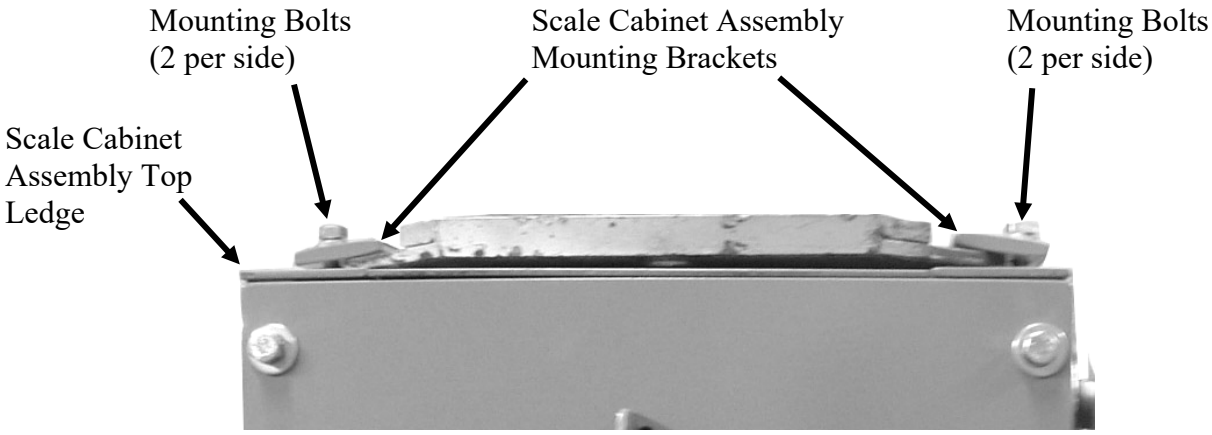

Figure 3-1. Hanging the Cabinet Assembly on the Hopper Flange

2. With the mounting clamps over the flange, center the cabinet under the bin or transition.
3. Tighten the mounting bolts.
4. Use a torpedo level on the top ledge of the cabinet assembly. The cabinet assembly must be level. Adjust the mounting bolts as needed to get the cabinet assembly level.
5. Remove the nut off of both of the scale bottom hangers and set them aside.
6. Lift the spout assembly into position under the cabinet assembly and slip the rear scale bottom hanger through the hole in the rear spout mounting bracket.
7. Install the nut on the scale bottom hanger. Turn the nut a couple of turns so it won't come off.

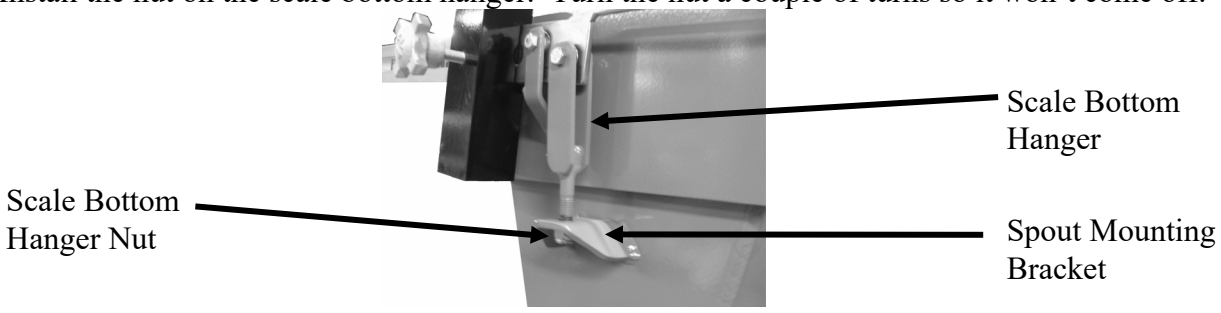

Figure 3-2. Spout Mounting Bracket

8. Lift the front of the spout and slip the front scale bottom hanger through the hole in the front spout mounting bracket.
9. Install the nut on the scale bottom hanger. Turn the nut a couple of turns so it won't come off.
10. Pull the scale beam down against the scale beam stop and clamp it in position.

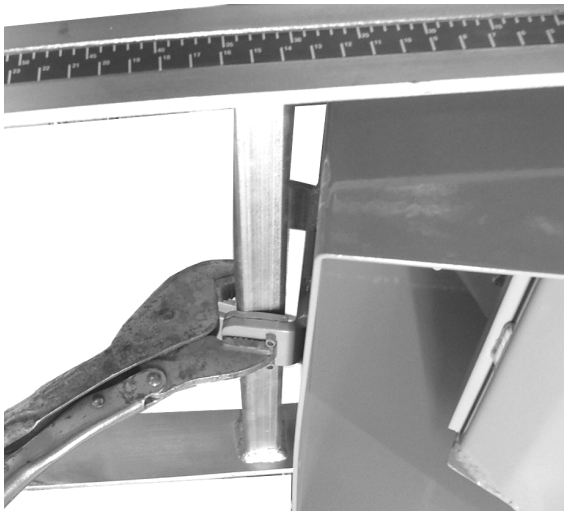

Figure 3-3. Clamping the Scale Beam Down

11. Tighten each nut a little at a time until each of the spout hanger ears is just touching the bottom of the scale cabinet.
12. Unwrap the scale beam weights.
13. Install the scale beam weights by sliding one onto each side of the scale beam. Slide them all the way in until the edge of the weight is lined up with the "0" on the scale beam label.

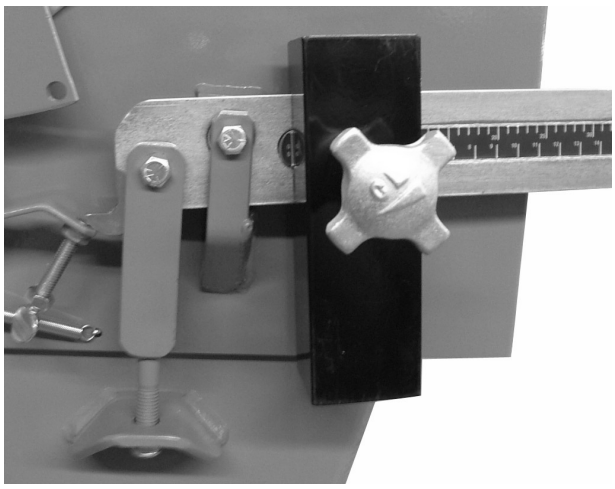

Figure 3-4. Scale Beam Weight on Scale Beam

14. Tighten the scale beam weight locking knobs.

3.3 Calibration

The scale is calibrated prior to leaving the factory. However, Magnum Systems recommends that the balance should be checked again before operation.

With both scale beam weights set at zero, the pointer on the rear of the scale beam should line up with the zero line on the cabinet. If it does not, follow the procedure below to zero the unit:

1. Remove the nut, lock washer, and first flat washer off of the piece of allthread on the front of the scale beam.
2. Place the nut, lockwasher, and flat washer on top of the crossbeam portion of the scale beam.
3. The all-thread has several sizes of washers hanging on it. There will be several of each size. Add or remove washers as needed to bring the scale beam into balance.

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Chapter 4
Operation

4.1 General Description

This chapter will provide detailed descriptions of the operational controls of the OM2.

4.2 Operational Controls

The standard OM2 is a gravity fed packaging machine. It does not use any electronic controls. The OM2 utilizes a spring loaded trip mechanism to control the starting point and stopping point of the fill cycle. A mechanical scale beam, in conjunction with weights, is used to set the package weight setting. The weights are moved closer to the scale beam pivot point for a lighter package, or moved away from the scale beam pivot point for a heavier package.

The gate trip mechanism is used to control when the gate mechanism will close. The mechanism pivots on a bearing that the mounting bolt passes through. At the opposite end of the mechanism is a thumbscrew. The tip of the thumbscrew rides on a cam on the end of the scale beam. As the weight in the package increases, it pulls the cam end of the scale beam downward. This thumbscrew is where the gate trip adjustment is made. Turning the screw clockwise will make the gate trip sooner. Turning the thumbscrew counter-clockwise will cause the gate to trip later. A second bearing is installed on the gate trip mechanism. The arm of the gate trip lever rides on this bearing. As the scale beam is pulled downward by the increasing package weight, the thumbscrew is pushed downward, which causes the gate trip mechanism to slowly rotate in a clockwise direction. As the bearing rides along the edge of the arm of the gate trip lever, it approaches the corner of the arm. When the bearing clears the apex of the corner, the weight of the gate and lever mechanism will cause the gate to close and shut off the flow of product.

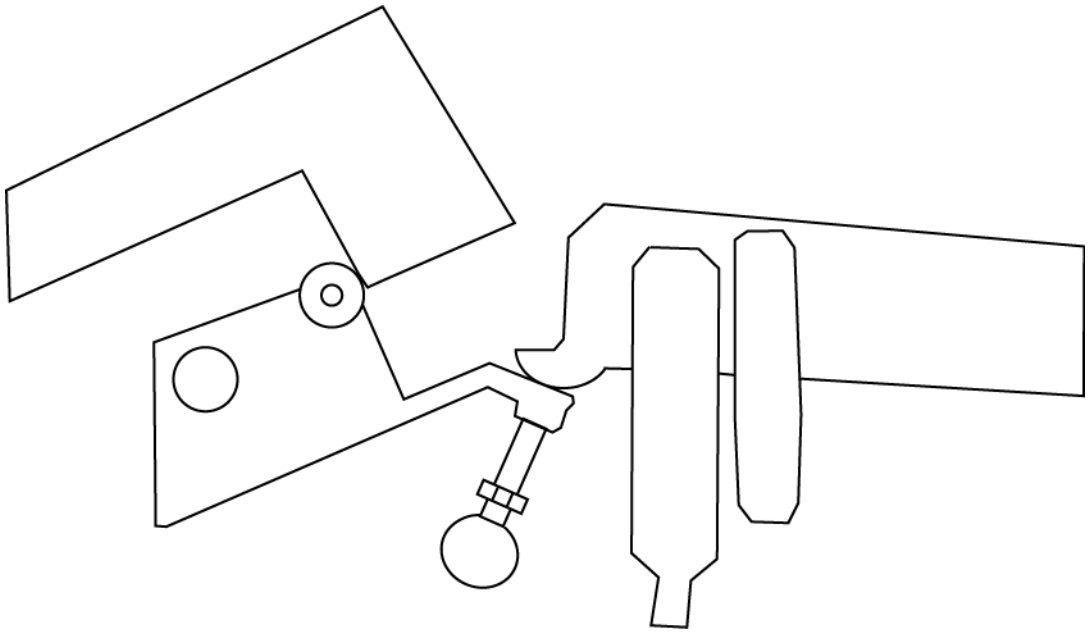

Figure 4-1. Gate Trip Mechanism – Gate Open

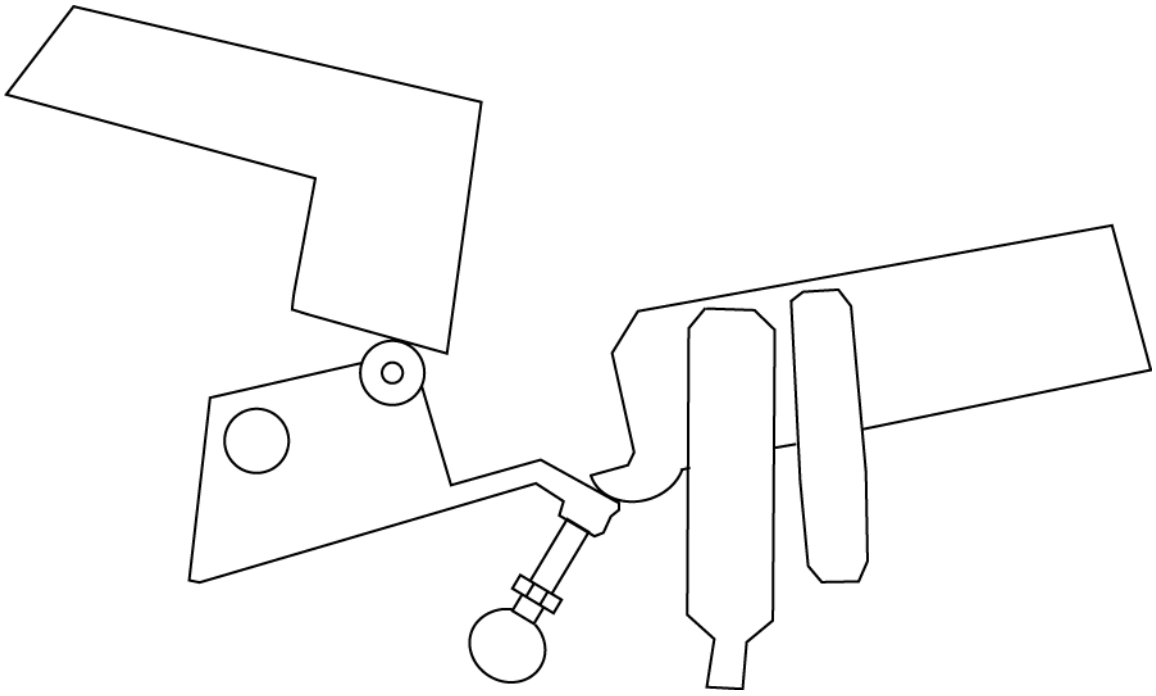

Figure 4-2. Gate Trip Mechanism – Gate Closed

4.3 The Filling Process

Once the unit has been installed and calibrated, the fill process can be initiated.

1. Lift the bag clamp bale to release the bag clamp.
2. Hold the bale in the up position and place a bag on the spout.
3. Release the bale.
4. Lift the gate lever until the gate trip mechanism resets. This opens the gate to start the product flowing into the package.
5. The package will fill. When the target weight has been reached, the gate trip mechanism trip and will close the gate.
6. Lift the bale to release the filled package.

Chapter 5
Preventive Maintenance

5.1 General Description

To minimize downtime, preventive maintenance should be made a priority. Proper preventive maintenance practices will also extend the life of the equipment. Developing a preventive maintenance schedule will ensure that critical maintenance procedures are not missed.

5.2 Daily Maintenance Procedures

At the start of each working day, the following maintenance tasks should be performed before starting the machine:

1. Thoroughly clean the machine.
2. Check the calibration, using a known weight.

5.2.1 Cleaning

Keeping the OM2 clean is an important part of the daily maintenance tasks. Remove any dust and/or dirt that has accumulated on a daily basis. Keeping the unit clean will keep debris from entering the control mechanisms, which could cause the performance of the OM2 to suffer. Also, by taking the time to clean the OM2 on a daily basis, the operator will be able to give the OM2 a thorough inspection. Take the time to inspect all components for possible damage.

5.2.2 Check Calibration

On a daily basis, check the calibration of the machine using a known weight. If calibration is required, refer to 3.3 Calibration.

5.3 Monthly Maintenance

On a monthly basis, the operator should check all fasteners on the OM2 on a monthly basis. Loose fasteners can cause unwanted vibration and wear.

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Chapter 6
Troubleshooting

6.1 General Description

When a problem occurs, proper troubleshooting techniques will allow maintenance personnel to quickly identify the problem.

6.2 The Troubleshooting Process

The actual troubleshooting process is just as important as the repair process. Use the following troubleshooting keys to assist with the troubleshooting process:

- Identify the trouble symptom
  - What is the problem?
  - What were the circumstances when the problem occurred?
  - Could weather be a factor?
  - Are there any other contributing factors?
- Sectionalize the problem
  - Look at the problem.
  - What area of the machine is the problem occurring in?
  - Has anything changed recently?
- Isolate the problem
  - Try simple things first.
  - Observe indication and trouble codes.
  - Check test points.
  - Avoid complicating the problem.

6.3 Trouble Symptoms

Use the following information to assist in troubleshooting.

6.3.1 Scale is Not Accurate

If the scale is providing inaccurate readings, check the following:

1. Check the calibration of the OM2. Refer to Chapter 3.3 Calibration.
2. Check scale beam mounting bolts. If they are too tight, it will cause the scale beam to bind and impede the natural motion of the scale beam.
3. Check the scale bottom hanger to scale beam bolts. If they are too tight, it will cause them to bind and impede the natural motion of the spout.
4. Check the hopper to make sure an adequate supply of material is available in the product hopper to ensure a consistent head pressure.
5. Check to make sure there is nothing restricting material flow from the hopper.
6. Check that hoses or other components are not coming into contact with the spout.

6.3.2 Scale Does Not Return to Zero

If the scale reading does not return to zero after package has been removed from the spout, check the following items:

1. Check the calibration of the OM2. Refer to Chapter 3.3 Calibration.
2. Check for anything that might interfere with the natural motion of the scale beam and spout. Any items, such as cords, hoses, etc., that would impede or change the movement of the weigh mast must be removed.
7. Check scale beam mounting bolts. If they are too tight, it will cause the scale beam to bind and impede the natural motion of the scale beam.
3. Check the scale bottom hanger to scale beam bolts. If they are too tight, it will cause them to bind and impede the natural motion of the spout.
4. Check to see if product is building up and sticking inside the spout.

6.3.3 The Weighments are Always Too Light

Troubleshooting for weighments that are consistently coming up too light varies depending on the amount of time required to fill the package.

1. Adjust the gate trip mechanism so that cutoff occurs a little later.

6.3.4 The Weighments are Always Too Heavy

If the OM2 is consistently filling the package and stopping above the target weight, follow the steps below:

1. Adjust the gate trip mechanism so that cutoff occurs a little earlier.

6.3.5 The Weighments Fluctuate Between Too Light and Too Heavy

If the OM2 is inconsistent in delivering package weights, and the weights are always either too heavy, or too light, follow the steps below:

1. Verify that the product flow is consistent and stable.
2. Check for consistent head pressure of product above the machine. Head pressure is the amount of product that is always in the hopper immediately above the OM2. It is very important to keep the OM2 from running out of material. As the OM2 runs out of product the weighment accuracy will vary widely. A good rule of thumb is to have enough product in the hopper to fill approximately 20 packages at all times. This amount may vary slightly depending upon product characteristics.
3. Check the calibration of the OM2. Refer to Chapter 3.3 Calibration.

Chapter 7
Repair and Adjustment

7.1 General Description

When troubleshooting procedures have indicated that a component needs to be repaired, replaced, or adjusted, following the repair procedures contained in this chapter will assist maintenance personnel return the machine to operation in a timely manner.

7.2 System Adjustment Procedures

Depending on how the OM2 is configured, there are several adjustments that may be required from time to time. They are:

- Flow gate adjustment
- Choke plate adjustment
- Spout to scale cabinet clearance adjustment
- Bag clamp rod adjustment
- Gate trip adjustment

7.2.1 Flow Gate Adjustment

If the product continues to flow out of the hopper when the shut off gate is closed, or if the shut off gate is dragging on the flow gate, the flow gate needs to be adjusted. Follow these steps to adjust the flow gate.

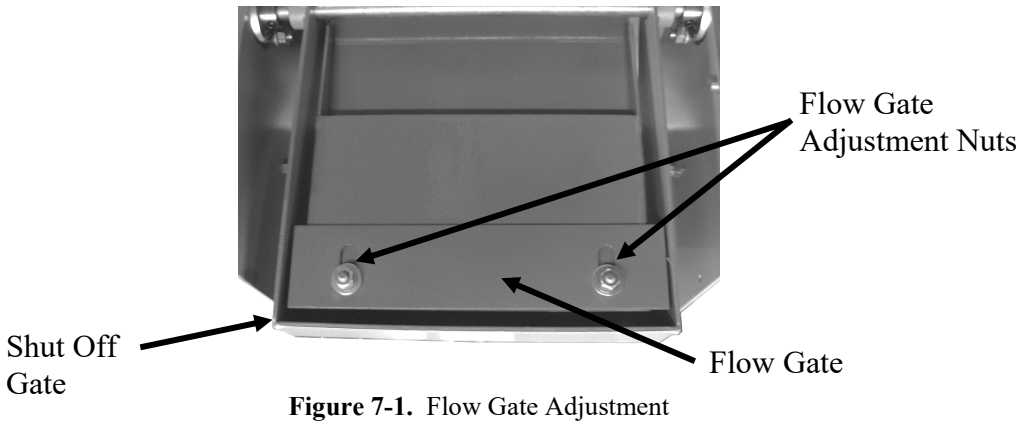

Figure 7-1. Flow Gate Adjustment

1. Loosen the choke flap adjustment nut.
2. Remove the front plate and choke flap together.
3. Loosen the two flow gate adjustment nuts.
4. Adjust the flow gate so that the opening does not touch the shut off gate, yet does not allow product to flow out.
5. Tighten the flow gate adjustment nuts.
6. Install the front plate and choke flap.
7. Adjust the choke plate. Refer to 7.2.2 Choke Plate Adjustment.

7.2.2 Choke Plate Adjustment

If product is flowing into the spout too fast or too slow, adjust the choke flap. Use the following steps to adjust the choke flap.

1. Loosen the choke flap adjustment nut.
2. To increase product flow rate, move the choke flap adjustment lever upward. To decrease product flow rate, move the choke flap downward.
3. Tighten the choke flap adjustment nut.

7.2.3 Spout to Scale Cabinet Clearance Adjustment

If there is too much or too little clearance between the spout and the scale cabinet, use the following steps to adjust the clearance.

1. With the scale beam set to the desired package weight, pull the scale beam down until it touches the scale beam stop.
2. Clamp the scale beam to the scale beam stop.
3. Loosen or tighten the scale bottom hanger to spout nuts so that the top edge of the spout is just touching the bottom edge of the scale cabinet.
4. Remove the clamp.

7.2.4 Bag Clamp Rod Adjustment

If bag clamp mechanism should be adjusted so that the bale does not apply pressure on the bag clamp rods when pressure is not being applied to the bale. Also, the adjustment should be made so that excessive slack is not present in the bag clamp release mechanism. Follow the procedure below to adjust the rods. Turning the bag clamp rod clockwise will increase the amount of slack in the mechanism. Turn the bag clamp rod counter-clockwise will decrease the amount of slack in the mechanism.

> ***Note:*** *The adjustment must be made on both bag clamp rods. There is one on either side of the spout.*

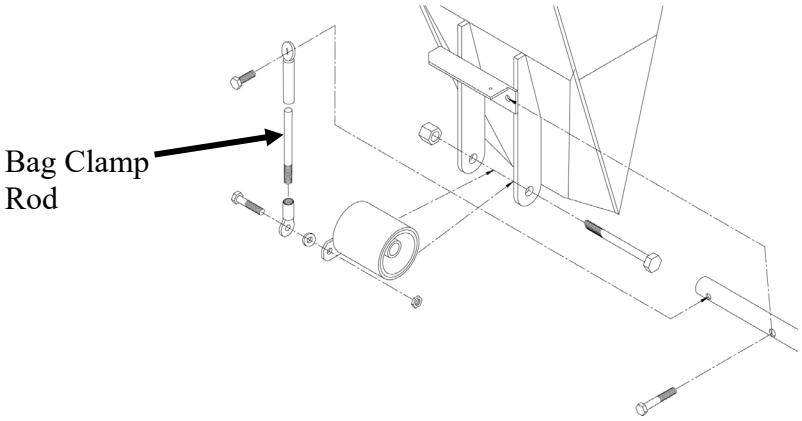

Figure 7-2. Bag Clamp Components

7.2.5 Gate Trip Adjustment

The gate trip adjustment mechanism controls the point where the shut off gate will close. Turning the thumbscrew clockwise will cause the gate trip mechanism to close sooner. Turning the thumbscrew counter-clockwise will cause the gate trip mechanism to close later.

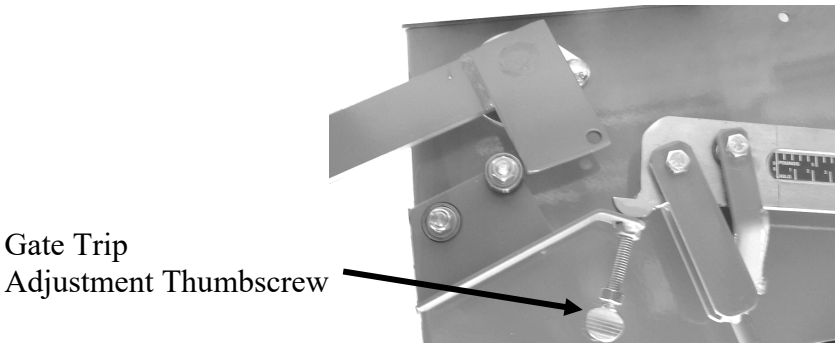

Figure 7-3. Gate Trip Adjustment Thumbscrew

7.3 Component Replacement Procedures

Over time, components on the OM2 may become worn or damaged. If this occurs, follow the procedures in this section to repair or replace individual components.

WARNING *When replacing parts, it is critical that only parts approved by Magnum Systems are used.*

7.3.1 Scale Beam Replacement

In the event that the scale beam becomes damaged, use the procedure below to replace it.

7.3.1.1 Scale Beam Removal

1. Remove the spout assembly. Refer to 7.3.4 Spout Replacement.
2. Remove the scale beam weights. Refer to 7.3.3 Scale Beam Weight Replacement.
3. Remove the choke plate.
4. From the front of the OM2, pull the scale beam to the down position and clamp it in place.

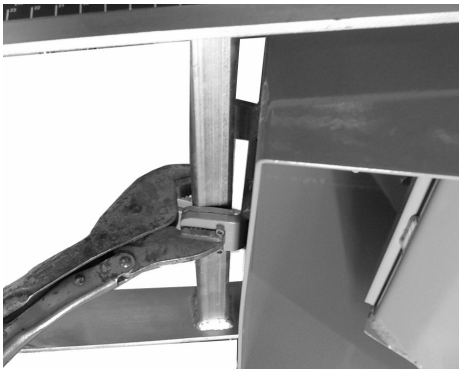

Figure 7-4. Clamping the Scale Beam in the Down Position

5. Remove the scale bottom hangers. Refer to 7.3.5 Scale Bottom Hanger Replacement.

6. Remove the scale beam mounting nuts and the lock washers that are located inside the scale cabinet and set them aside.
7. Use a wrench to hold the nut inside the outer mounting bracket, while using a wrench to slowly back the mounting bolt out.

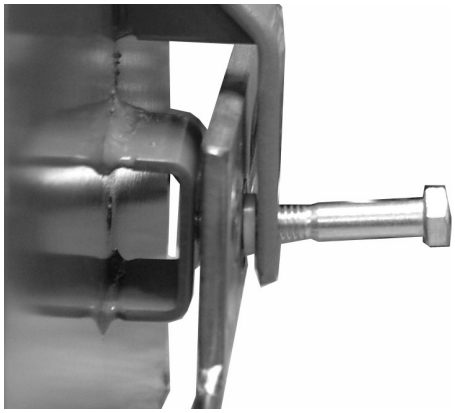

Figure 7-5. Scale Beam Mount

8. Remove the nut and set it aside.
9. Back the bolt out until the inner plastic spacer drops out. Set the spacer aside.
10. Continue backing the bolt out, making sure to catch the second plastic spacer.
11. Use a wrench to hold the nut inside the outer mounting bracket and begin backing the second scale beam mounting bolt out.
12. Remove the nut and set it aside.
13. Continue backing the bolt out until the inner plastic spacer drops out. Set the spacer aside.
14. Continue backing the bolt out, making sure to catch the second plastic spacer.
15. Remove the bolt.
16. Hold the scale beam with one hand and remove the clamp.
17. Remove the scale beam.

7.3.1.2 Scale Beam Installation

1. Install the scale beam bearings. Refer to 7.3.2 Scale Beam Bearing Replacement.
2. Position the scale beam so the pivot bolts can be installed.
3. Insert a pivot bolt so that it just barely protrudes through the outer portion of the mounting bracket.
4. Install a plastic spacer on the end of the bolt.
5. Lift the scale beam so that the hole in the scale beam pivot bearing is lined up with the end of the pivot bolt.
6. Gently slide the bolt through the pivot bearing so that it just clears the pivot bearing.

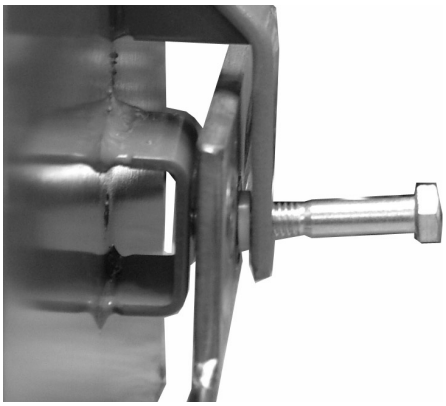

Figure 7-6. Mounting the Scale Beam

7. Use a small wire or tool to insert a plastic spacer in between the scale beam and the inner mounting bracket.
8. Slide the bolt through the inner bracket so that it protrudes into the gap between the inner bracket and the scale cabinet.
9. Use needle nose pliers to grasp a nut and position it so that it can be threaded onto the bolt in the gap between the inner bracket and the scale cabinet.
10. Push the pivot bolt through the hole and into the scale cabinet.
11. Install a lock washer and loosely install a nut.
12. Gently slide the second pivot bolt through the pivot bearing so that it just clears the pivot bearing.
13. Use a small wire or tool to insert a plastic spacer in between the scale beam and the inner mounting bracket.
14. Slide the bolt through the inner bracket so that it protrudes into the gap between the inner bracket and the scale cabinet.
15. Use needle nose pliers to grasp a nut and position it so that it can be threaded onto the bolt in the gap between the inner bracket and the scale cabinet.
16. Push the pivot bolt through the hole and into the scale cabinet.
17. Install a lock washer and loosely install a nut.
18. Tighten each of the pivot bolt nuts so that the scale beam is secure, but the scale beam is still able to pivot freely.
19. Install the scale bottom hangers. Refer to 7.3.5 Scale Bottom Hanger Replacement.
20. Install the spout assembly. Refer to 7.3.4 Spout Replacement.
21. Install the scale beam weights. Refer to 7.3.3 Scale Beam Weight Replacement.

7.3.2 Scale Beam Bearing Replacement

In the event that one of the four bearings mounted in the scale beam becomes worn so that it no longer allows free movement, follow the procedures below to replace it.

7.3.2.1 Scale Beam Bearing Removal

1. Remove the scale beam from the scale cabinet assembly. Refer to 7.3.1 Scale Beam Replacement.
2. Stand the scale beam on end so that the bearings are located at the top.

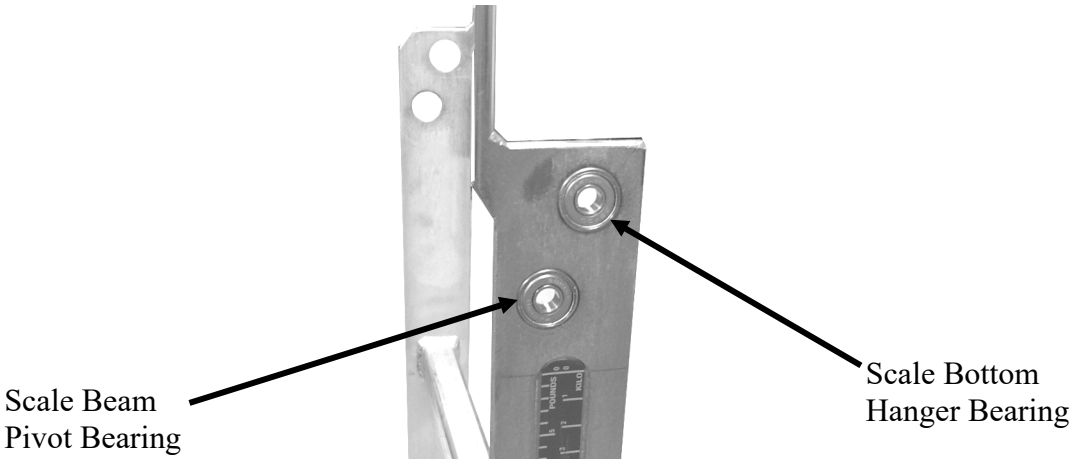

Figure 7-7. Scale Beam Bearings

3. Heat the area immediately surrounding the bearing being replaced to approximately 480°F (250°C).
4. Place a clean metal container against the scale beam, just below the bearing being replaced.
5. Use a screwdriver or punch to push the bearing out of the hole into the metal catch container.
6. Repeat Steps 3, 4, and 5 for all bearings that need replaced.

7.3.2.2 Scale Beam Bearing Installation

1. Apply a small bead of LOCTITE® 680 Retaining compound around the outer surface of the bearing.

CAUTION Do not allow any of the LOCTITE® 680 to penetrate into the actual bearing. This would likely cause the bearing to seize, or at the very least would adversely affect the operation of the bearing.

2. Take a bearing and insert it into the bearing hole in the scale beam.
3. The bearing is slightly thicker than the scale beam itself. Center the bearing in the hole.
4. Repeat Steps 1, 2, and 3 until all of the bearings have been installed.
5. Set the scale beam aside for a couple of minutes to allow the LOCTITE® 680 to setup.

7.3.3 Scale Beam Weight Replacement

If a scale beam weight becomes damaged, or if weight needs to be added or removed from the scale beam, use the following procedures.

The OM2 may have multiple weights installed on both sides of the scale beam. If the weight that needs to be removed/replaced is located behind another weight, or multiple weights, then repeat the procedure for removal until the weight that needs to be removed has been removed.

CAUTION Do not exceed 50 lbs. (100 lbs. total package weight) per side. Exceeding this limit will result in damage to the OM2. If a package weight greater than 100 lbs. is required, contact Taylor Product for available solutions.

7.3.3.1 Scale Beam Weight Removal

1. Loosen the scale beam weight lock knob on the weight that is being removed.
2. Slide the weight to the open end of the scale beam and remove it. Be careful to not drop the weight.

7.3.3.1 Scale Beam Weight Installation

1. Make sure that the lock knob bolt does not protrude out of the bolt hole on the in the scale beam slot on the rear of the weight. If it does, loosen the lock knob to back it back into the bolt hole.
2. Position the scale beam weight at the end of the scale beam on the side that the weight is going to be added to.
3. Line the scale beam up with the scale beam slot on the rear of the weight.

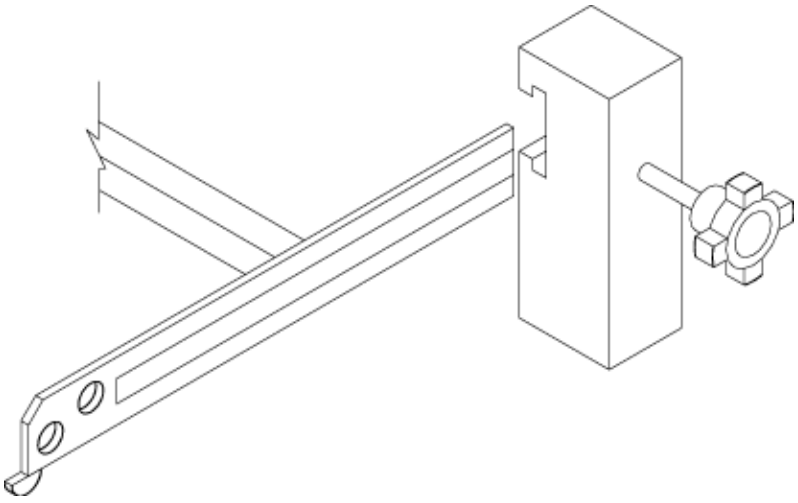

Figure 7-8. Lining Up the Scale Beam with the Scale Beam Weight Slot

4. Slide the scale beam weight onto the scale beam all the way.
5. Tighten the lock knob.
6. Once all of the weights have been added to the scale beam, calibrate the scale beam. Refer to 3.3 Calibration.

7.3.4 Spout Replacement

Due to the abrasiveness of some products, the spout may require periodic replacement. Use the procedures below to replace the spout.

7.3.4.1 Spout Removal

1. Loosen the nut on the scale bottom hangers almost all the way.
2. Support the spout with one arm, and remove the nut from the scale bottom hanger at the front spout mounting bracket.
3. Remove the nut from the scale bottom hanger at the rear spout mounting bracket.
4. Remove the spout by lowering it away from the scale bottom hangers.

7.3.4.2 Spout Installation

1. Position the spout so that the rear scale bottom hanger bolt goes through the rear spout bracket.
2. Install the nylon nut a couple of turns so that the nut will not slip off of the hanger.
3. Lift the front of the spout so the front scale bottom hanger bolt goes through the front spout bracket.
4. Install the nylon nut a couple of turns so that the nut will not slip off of the hanger.
5. Adjust the spout to scale cabinet clearance. Refer to 7.2.3 Spout to Scale Cabinet Clearance Adjustment.

7.3.5 Scale Bottom Hanger Replacement

If the scale bottom hanger becomes worn or damaged, or needs to be removed during the replacement of another component, use the following procedures.

7.3.5.1 Scale Bottom Hanger Removal

1. Remove the spout assembly. Refer to 7.3.4 Spout Replacement.
2. Use a wrench to hold the scale bottom hanger retaining nut.
3. Use another wrench to loosen the scale bottom hanger retaining bolt.
4. Back the bolt out until the nut is completely off.
5. Grasp the scale bottom hanger by the shank.
6. Remove the retaining bolt, while being careful not to drop the two washers.
7. Once the bolt has been removed, the scale bottom hanger is free to be removed.

7.3.5.2 Scale Bottom Hanger Installation

1. Grasp the scale bottom hanger by the shank and lift it into position so that the scale bottom hanger pivot bearing in the scale beam is in between the two scale bottom hanger tabs and so that the holes in the tab and bearing are lined up.
2. Place the lock washer on the bolt.
3. Place the flat washer on the bolt.
4. Insert the bolt through the scale bottom hanger and bearing from the outside.
5. Place a nut on the end of the bolt.
6. Use a wrench to tighten the nut. Be careful that the nut is not over tightened. The nut needs to be secure, but the scale bottom hanger must be able to pivot freely on the bearing.
7. Install the Spout. Refer to 7.3.4 Spout Replacement.

7.3.6 Bag Clamp Replacement

Use the following procedures to remove and install the bag clamp.

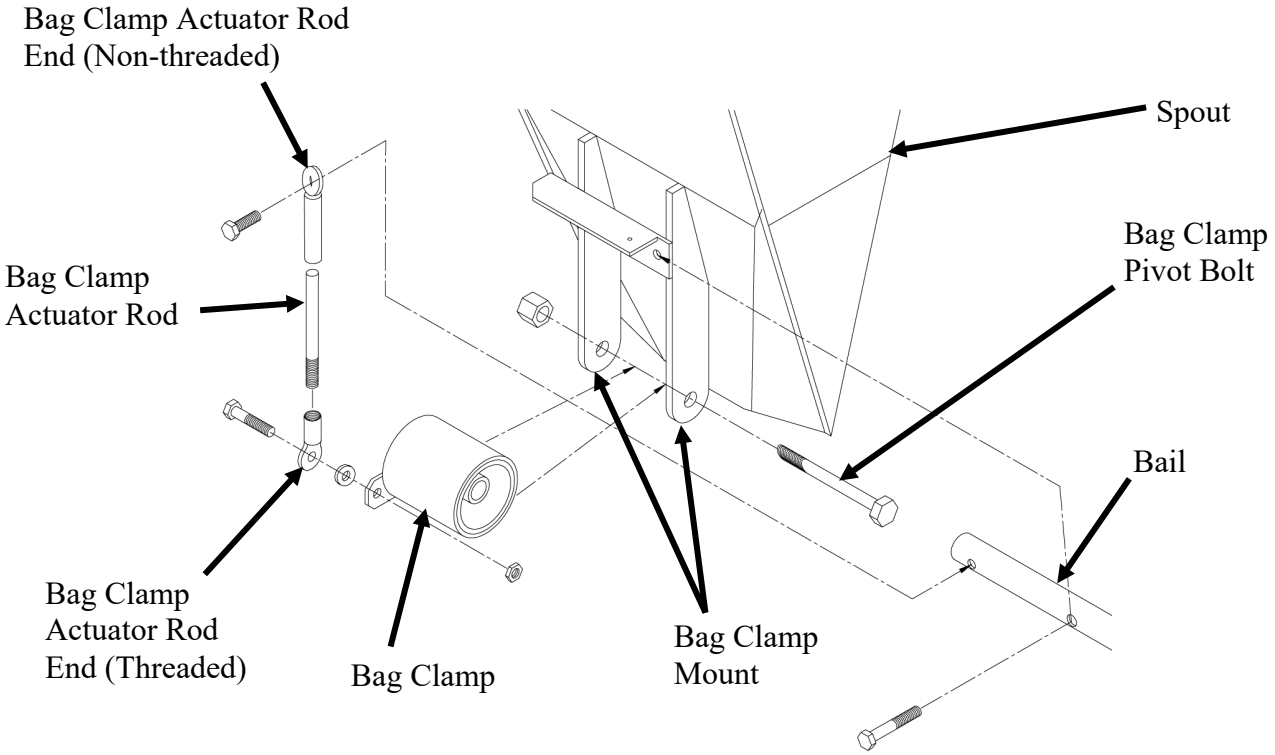

Figure 7-9. Bag Clamp Components (Left Side Only Shown)

7.3.6.1 Bag Clamp Removal

1. Loosen and remove the bolt that attaches the threaded bag clamp actuator rod end to the bag clamp. Once disconnected, the threaded end and the rod will slide out of the non-threaded rod end. Set them aside.
2. Loosen and remove the nut on the bag clamp pivot bolt.
3. While supporting the bag clamp with one hand, remove the bag clamp pivot bolt.
4. Remove the bag clamp.

7.3.6.2 Bag Clamp Installation

1. Position the bag clamp in the mount, with the actuator rod tab toward the rear.
2. Insert the pivot bolt from the front, through the front bracket tab, the bag clamp, and the rear bracket tab.
3. Install and tighten the nut for the pivot bolt. Do not overtighten, as the bag clamp needs to be able to pivot freely.
4. Insert the end of the actuator rod into the non-threaded rod end.
5. Slide the actuator rod to bag clamp bolt through the actuator rod end.
6. Install the washer on the actuator rod to bag clamp bolt.
7. Slide the bolt through the actuator rod tab on the bag clamp.
8. Install and tighten the nut. Do not overtighten, as the rod end needs to be able to pivot freely.
9. Adjust the Bag Clamp Actuator Rod. Refer to 7.2.4 Bag Clamp Rod Adjustment.

7.3.7 Bag Clamp Pad Replacement

The bag clamp is equipped with a bag clamp pad to provide some gripping force when clamping the bag. Over time, this pad may become worn or damaged and may require replacement. Use the following procedures to remove and install the bag clamp pad.

7.3.7.1 Bag Clamp Pad Removal

1. Remove the bag clamp. Refer to 7.3.6 Bag Clamp Replacement.
2. Use a drill to drill out the two rivets that secure the bag clamp pad to the bag clamp.

Figure 7-10. Bag Clamp Pad

3. Remove the rivets.
4. Slide the bag clamp pad off of the bag clamp. If the pad won't slide, use a knife and carefully cut the bag clamp pad.

7.3.7.2 Bag Clamp Pad Installation

1. Stand the bag clamp on end, with the actuator tab down.
2. Slide the new bag clamp pad over the bag clamp. Slide it all the way down until it is touching the actuator tab.
3. Trim any excess pad material off of the end of the pad. The end of the new pad should be flush with the end of the clamp.
4. Locate the position of the holes in the bag clamp where the rivets were installed. Use a drill to create rivet holes in the pad in the same location.
5. Use a rivet gun to install a rivet in each of the holes.
6. Install the bag clamp. Refer to 7.3.6 Bag Clamp Replacement.

7.3.8 Bag Clamp Actuator Rod Assembly Replacement

If one of the bag clamp actuator rods becomes damaged or worn, use the following procedures to replace it.

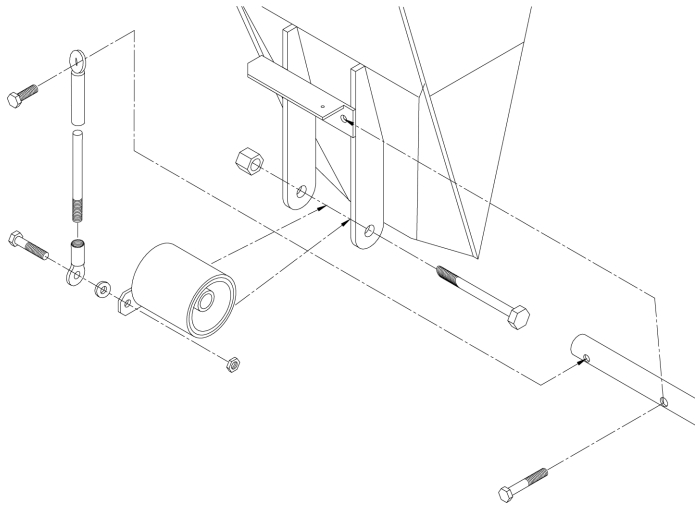

Figure 7-11. Bag Clamp Actuator Rod Mounting

7.3.8.1 Bag Clamp Actuator Rod Assembly Removal

1. Use a pair of small pliers or a small wrench to hold the nut inside the end of the bale while removing the upper rod end mounting bolt.
2. Remove the upper rod end.
3. Remove the lower rod end mounting nut and bolt.
4. Remove the lower rod end.
5. Unscrew the rod from the lower rod end.

7.3.8.2 Bag Clamp Actuator Rod Assembly Installation

1. Screw the rod into the lower rod end.
2. Position the lower rod end at the mounting tab on the bag clamp and insert the bolt.
3. Install and tighten the lower rod end mounting nut. Do not over tighten the nut. The rod end needs to be able to pivot freely.
4. Install the upper rod end on the rod.
5. Position the upper rod end so at the mounting hole on the bale.
6. Use a pair of small pliers or a small wrench to position the upper rod end mounting nut inside the end of the bale. Insert the bolt and tighten the bolt. Do not over tighten the bolt. The rod end needs to be able to pivot freely.
7. Adjust the slack in the rod assembly. Refer to 7.2.4 Bag Clamp Rod Adjustment.

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Glossary

TERM	DEFINITION
&	And
@	At
°	Degree (angle or temperature)
°C	Degree Celsius
°F	Degree Fahrenheit
AC	Alternating Current
Audible Alarm	The sounding of a bell, buzzer, beeper, or other acoustic device to draw the attention of the operator to a system fault.
Component	An item of hardware as commonly supplied complete by manufacturers.
Counter	A device that counts the occurrence of some event.
DC	Direct Current
Display	A device that gives information in visual form.
Equipment	A general term including material, fittings, devices, appliances, fixtures, or apparatus used in the performance of a specific function or functions.
ESD	Electrostatic Discharge
Failure	The event, or inoperable state, in which any item or part of an item does not, or would not, perform as specified.
Fault	Violation of an operating system rule. Faults are minor or major; many major faults are not usually recoverable, even with fault routines.
GND	Ground (Electrical)
Ground	A conducting connection, whether intentional or accidental, between an electrical circuit or equipment and the earth, or some other conducting body at a reference potential.
I/O	Input/Output
IN, in.	Inch, Inches
IP	Internet Protocol
kg	Kilogram
lb	Pound
lbs	Pounds
LCD	Liquid Crystal Display
mm	Millimeter
NA	Not Applicable
OPC	OLE for Process Control
PC	Personal Computer
PLC	Programmable Logic Controller

TERM	DEFINITION
Power supply	A device that converts available power to a form that a system can use — usually converts AC power to DC power.
Product	Refers to the material that is being packaged by the machine.
Relay	An electromagnetic device that is operated by a variation in the conditions of one electric circuit, to effect the operation of other devices in the same or another electric circuit.
Reliability	The probability of performing a specified function, without failure and within design parameters, for the period of time intended under actual operating conditions.
REV	Revision
RS–232	An EIA standard that specifies electrical, mechanical, and functional characteristics for serial binary communication circuits. A single–ended serial communication interface.
Safety-Critical	Any condition, event, operation, process, component, assembly, subsystem, or system, the failure or malfunction of which can result in severe injury, severe occupational illness, or major damage.
Shunt	A low-value impedance that, when placed across two conductors of different electrical potential, diverts a majority of the current through the conductors and causes the potential between the conductors to be near zero.
State	1) The condition of a circuit or system. 2) The condition at the output of a circuit that represents logic 0 or 1.
Subsystem	Comprised of elements within a system, which are interconnected to perform a specific function.
Surge	A sudden rise of current or voltage.
Surge Hopper	A reservoir where product is stored for packaging.
SVC	Service
SW	Switch
TCP/IP	Transmission Control Protocol / Internet Protocol
THRU	Through
V	Volt
VAC	Volt, alternating current
VDC	Volt, direct current
Verification	The act of reviewing, inspecting, testing, checking, auditing, or otherwise establishing and documenting whether items, processes, services, or documents conform to specified requirements.
Verification (checks of field devices)	Process of comparing the reported state of a device to its commanded state. When the two states agree, the device is verified.
VOM	Volt-Ohm Meter

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Appendix A
Safety Procedures, Cautions, Warnings, and Notices

- General safety precautions must be observed during all phases of operation, service and repair of the OM2. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture and intended use of the OM2.
- The manufacturer assumes no liability for customer's failure to comply with the following requirements:
- Qualified technicians and maintenance personnel should service the equipment described in this manual.
- Do not attempt internal service or adjustments unless another person, capable of rendering first aid and resuscitation, is available.
- Do not substitute parts or modify equipment. This practice could, in some cases, introduce the danger of additional hazards
- The OM2 contains some electrostatic-sensitive components. Therefore, technicians should always ground themself with a proper wrist strap before handling any modules or printed circuit boards so that static charges are removed from the person. Use static suppressive packaging to protect electronic assemblies removed from the OM2.
- Observe all procedural cautions and warnings located on the equipment and throughout this manual.
- Read and follow all instructions
- Follow all warnings and instructions marked on the units and listed in manuals.

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Appendix B
Spare Parts

Table B-1. OM2 Spare Parts List

	Part Description	**Part Number**
1		
2		
3		
4		

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Appendix C
Mechanical Drawings

Table C-1. OM2 Mechanical Drawing List

	Drawing Title	**Drawing Number**
1		
2		
3		
4		

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