



## TOTE / MINOR INGREDIENT SCALE HOPPER PARTS & INSTALLATION MANUAL

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**EAI**

**EASY  
AUTOMATION  
INC.**

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# *EAI*

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The purchase and use of Easy Automation products and services are subject to Easy Automation’s current Terms and Conditions which can be found at [www.easy-automation.com/terms](http://www.easy-automation.com/terms).



# INTRODUCTION

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## Section 1: Introduction

Easy Automation, Inc. (EAI) always strives to be the easy choice by providing top of the line industrial automation and process control. Creating innovative solutions from our customer's challenges allows us to create practical, quality products that are built upon years of experience. With a strong conviction of our values, our service-oriented approach ensures you and your company will always receive the best. With over 3,000 customer sites worldwide, our experienced staff has been using our industrial process automation equipment to automate feed mills and industrial processes since 1986, and we have extensive experience with retrofit projects as well as new ones. The success of our customers is our top priority, and our service after the sale is what sets us apart from the rest. Our industrial automation and process control services will provide the assistance you need.

EAI's automated batching equipment is practical, engineered to last, and customizable to fit your facility's individual needs. Having all of the production and engineering in-house makes it easy to order and get exactly what you want. Pairing EAI's equipment with EAI's controls makes for an extremely seamless integration. Each system can be configured differently as well as upgraded for increased capacity as your facility grows.

# CONTACT INFORMATION

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## Section 2: Contact Information

Email: [info@easy-automation.com](mailto:info@easy-automation.com)

Tel: 507-728-8214

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Main Office

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Mankato, MN 56001

Chanhassen Office

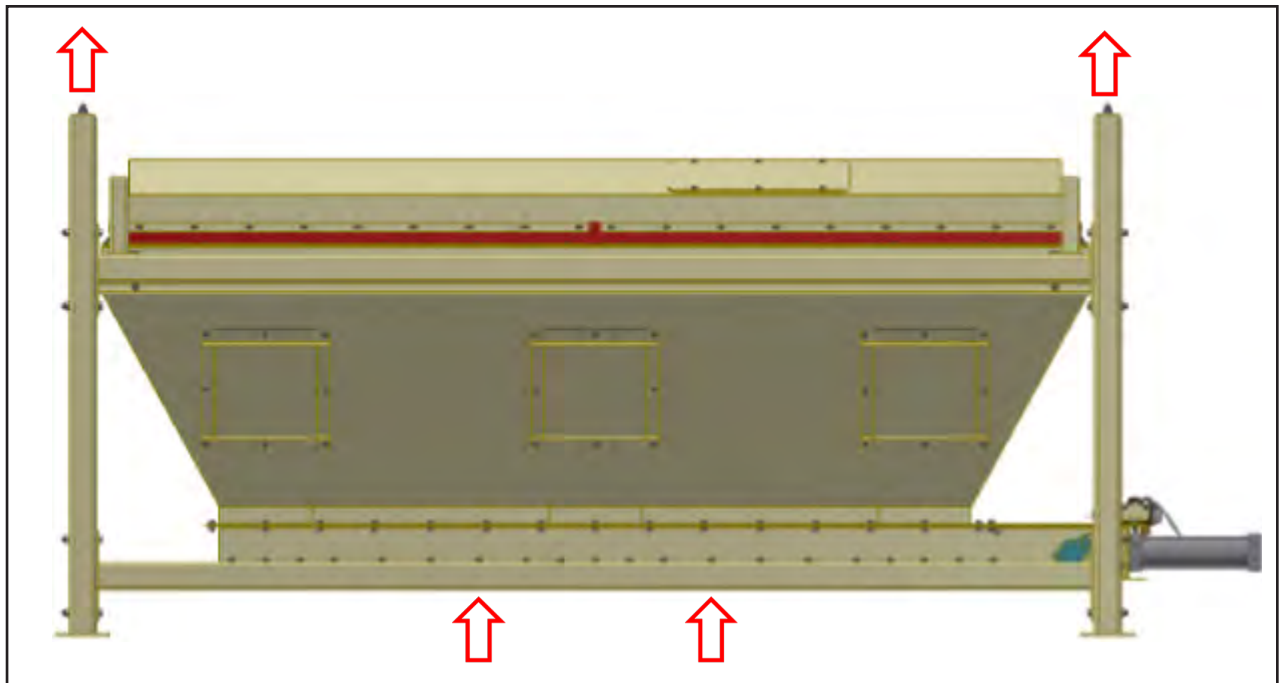
1715 Lake Drive West

Chanhassen, MN 55317

# INSTALLATION

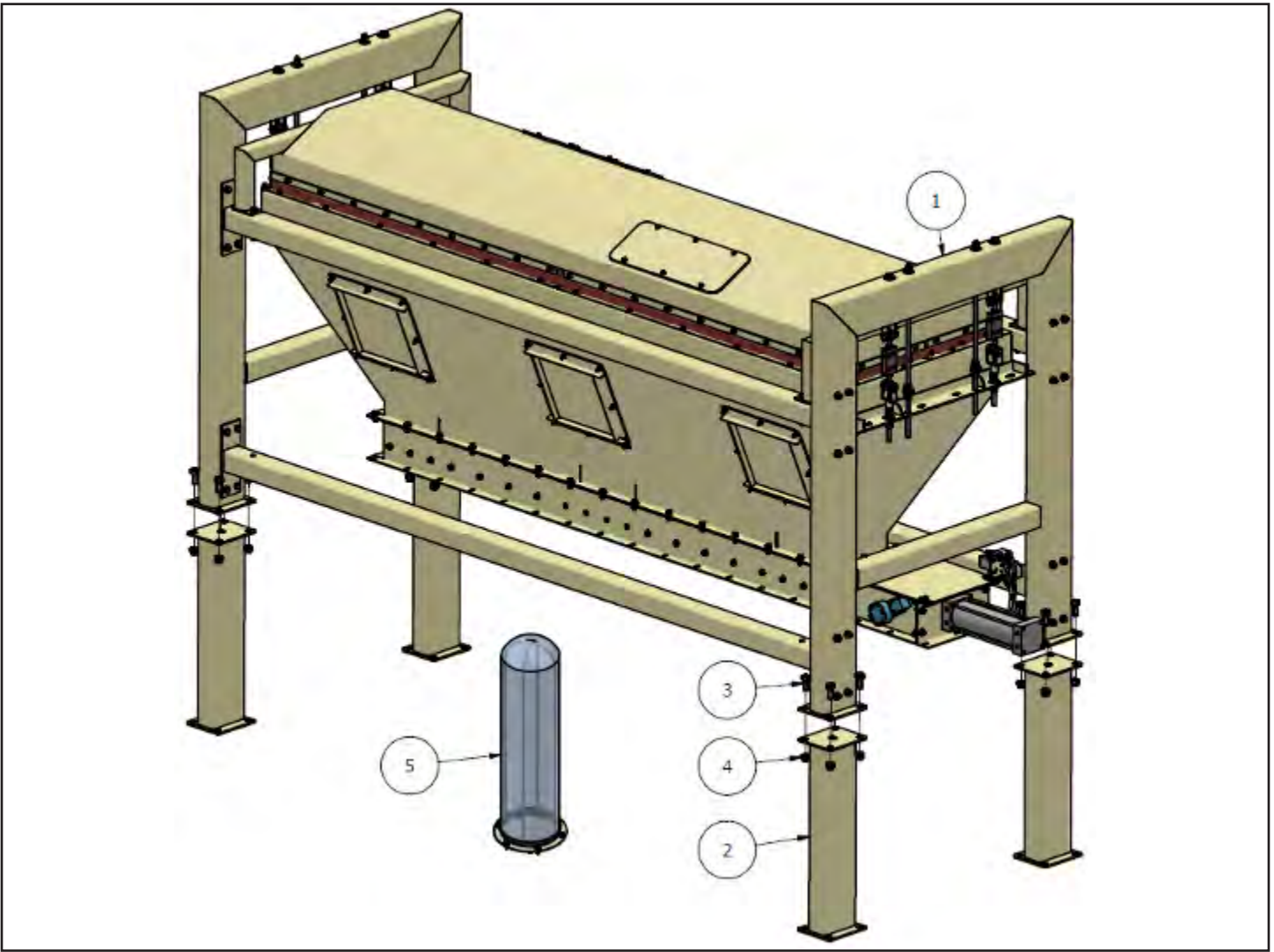
## Section 3: Installation

1. Inspect the Scale Hopper after receiving it for any damage that could have occurred during shipment. Report any damage immediately to EAI and the freight carrier.
2. Remove all packaging. This may include, but is not limited to: plastic wrapping, metal banding, and lumber.



**FIGURE 1: Appropriate Lifting Locations on the Scale Hopper Frame**

3. Use care when unloading and locating the machine in your facility. Lifting on the lower frame stiffeners near the bottom of the Scale Hopper frame is acceptable if care is taken to avoid hitting the slide gate (Figure 1). Lifting from the end frames in combination with spreader bars is also acceptable if a forklift or similar machinery is unavailable. Avoid putting any loads on the hopper or lid. Avoid sudden jarring or dropping. The approximate dry weight of various size Scale Hoppers is listed in the table in Appendix A for reference to assist in determining the appropriate machinery to use when unloading the Scale Hopper.

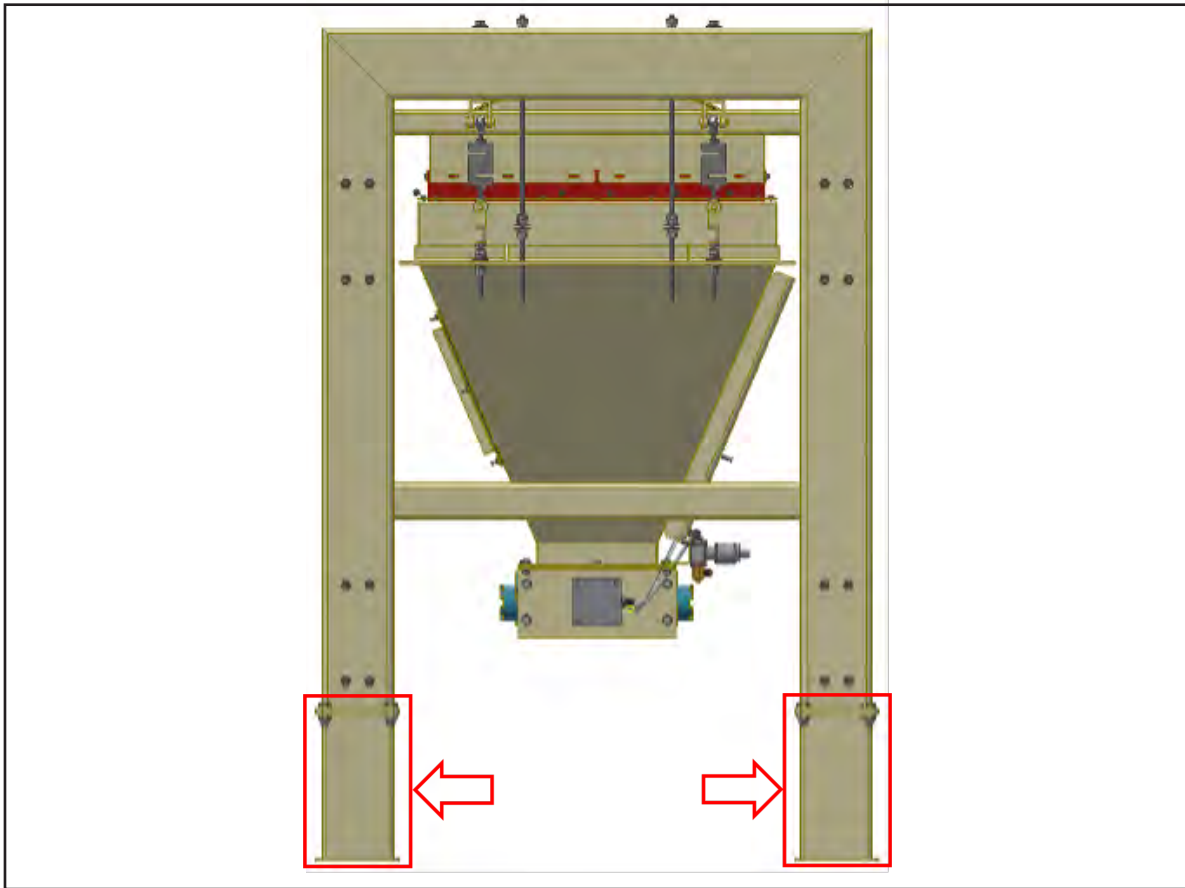


**FIGURE 2: SHIPPED COMPONENTS**

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	EZ216987	TOTE SCALE ASSEMBLY, TRIPLE, 30 CU FT, RAISED LID
2	4	EZ213516	LEG EXTENSION, SS MICRO V2 (SPECIFY LENGTH)
3	16	EZ207662	BOLT, HEX HEAD GR 8 ZINC PLATED 5/8-11 UNC X 1 1/2
4	16	EZ207908	NUT, NYLOCK 5/8-11 UNC ZINC
5	1	EZ209730	VENTING SOCK 7" ID



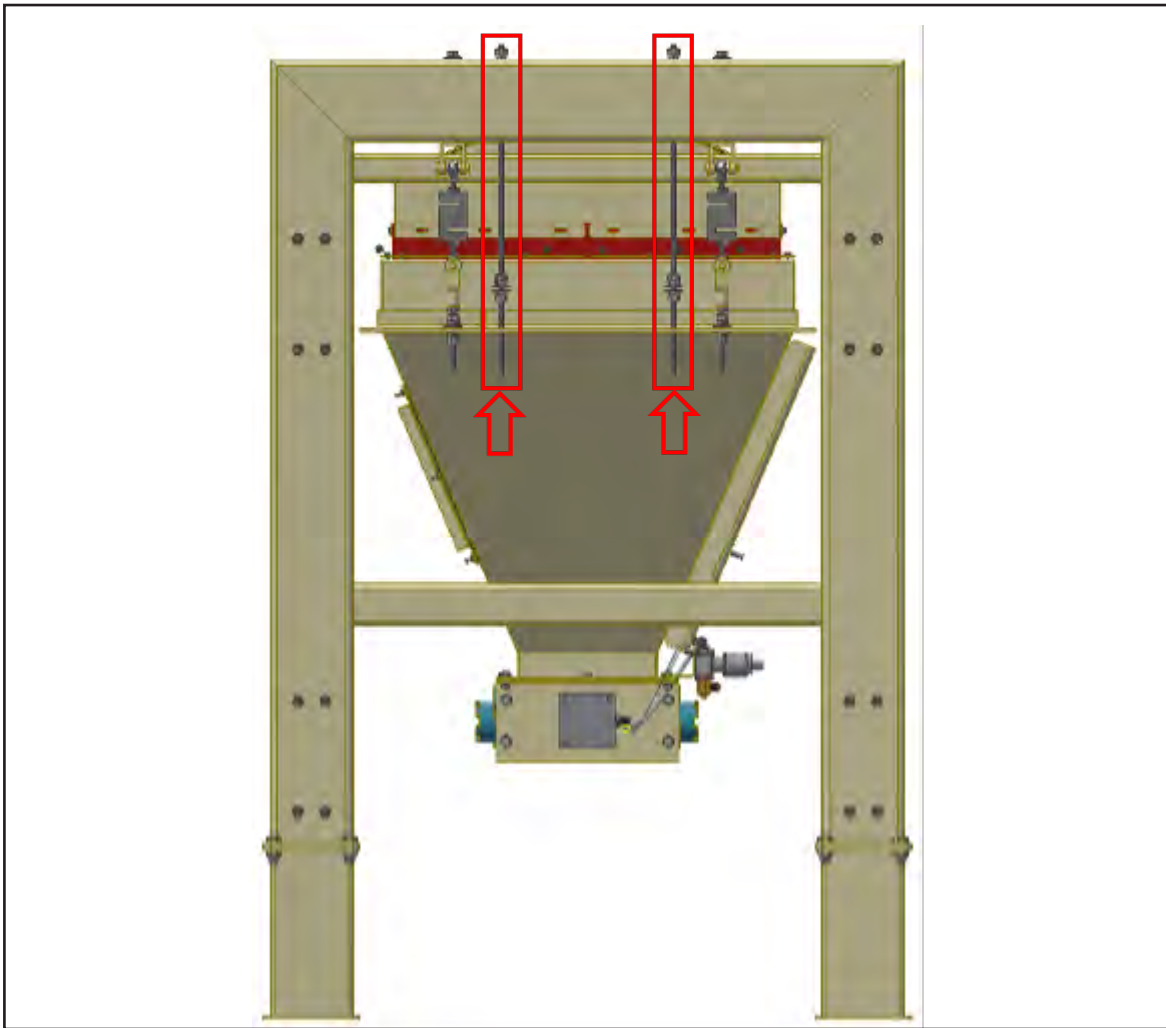
# INSTALLATION



**FIGURE 3: Example of the Pedestals that Need to be Attached to the Scale Hopper Frame**

4. If shipped with additional leg pedestals, attach the pedestals to the Scale Hopper frame legs (Figure 3).
5. The Scale Hopper should be anchored on solid footings. Consult a local licensed professional to determine the requirements if you're not certain.
6. Parts may have come loose during shipping. Make sure all parts of the Scale Hopper are tightened and in working order.
7. Flexible transitions must be installed between the Scale Hopper and auxiliary equipment. If shipped with a transition, install this now. Fasteners or clamps are provided to attach the transition to the Scale Hopper.
8. Loosen the nuts on the threaded rod assembly near the load cells so that the load cells carry the weight of the hopper without binding or impacting free movement of the hopper (Figure 4). The threaded rod and nuts should remain in place to catch the hopper in case a load cell or the load cell mounting hardware fails. The threaded rod assemblies also come in handy if a load cell needs to be replaced.





**FIGURE 4: Location of the Threaded Rod Assemblies**

9. Wire the Scale Hopper.

- All wiring must be performed by a qualified electrician. If problems develop with electrical components, please contact the EAI service department.
- Ensure the appropriate electrical components (wire, contactors, etc.) are being used for the volt and amp ratings of the equipment.
- Wire the limit switch/slide gate and power them before adding product to ensure proper operation. The slide gate open/closed positions are set at the factory. These positions can be adjusted by rotating the lock collar that actuates the limit switch.
- Wire the four (4) load cells to a summing junction box and use shielded cable to wire the summing junction box to the scale indicator. EAI ships every Scale Hopper with shielded cable (6-conductor 20 AWG). A table of the load cell wire color codes for various manufacturers can be found in Appendix B.

# INSTALLATION

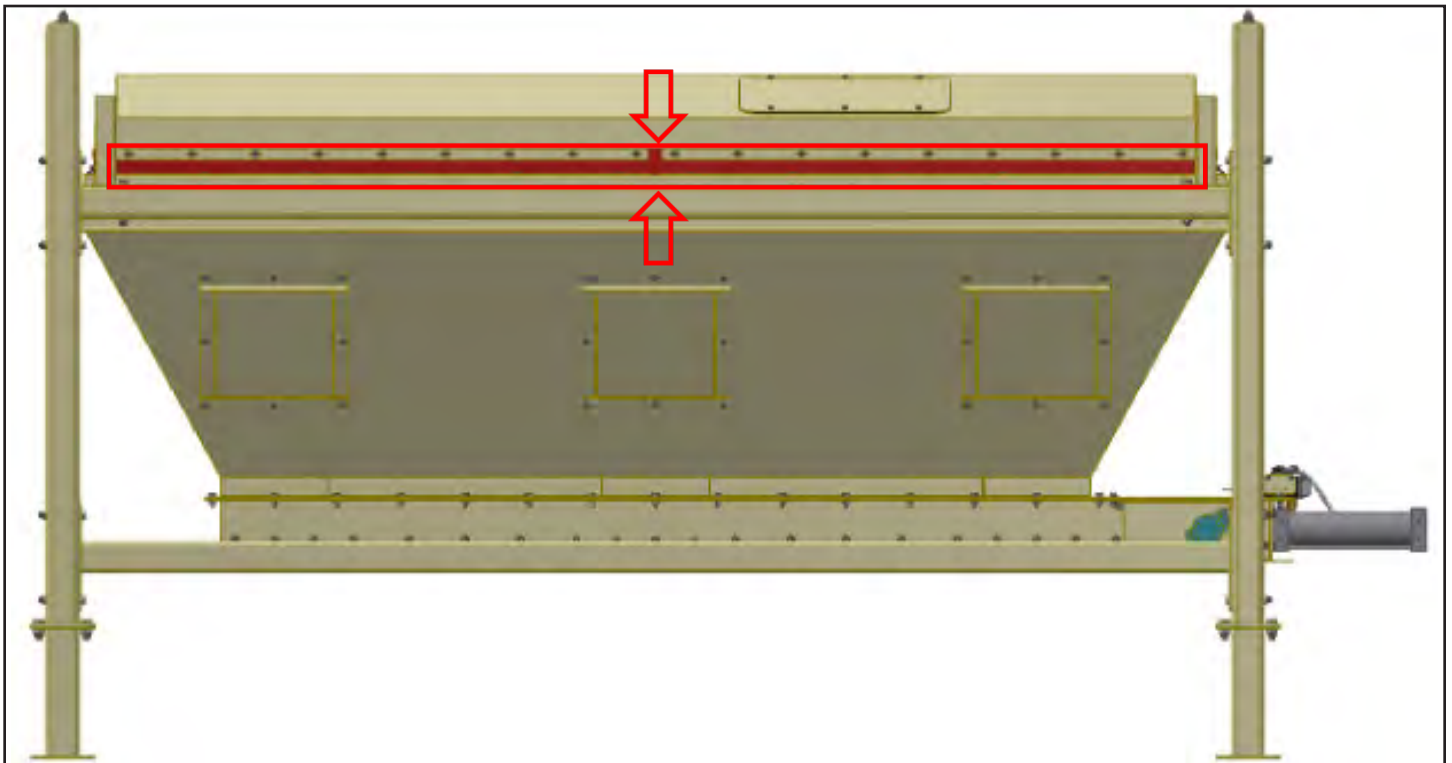
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10. Install the provided dust sock to allow airflow through the scale and prevent measurement errors due to air pressure fluctuations.
11. Run a small amount of inexpensive product (corn for example) through each hopper to clear any debris left behind from the factory (metal shavings, screws, nuts, silicone, etc.)
12. Contact a scale calibration company to calibrate the Scale Hopper. Test weights can be placed on the brackets hanging from the load cells.
13. Run test batches through the system while closely monitoring to ensure it is operating properly.

# START UP CHECKLIST

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## Section 4: Start Up Checklist



**FIGURE 5: Scale Hopper / Lid Possible Contact Point**

- Has a scale calibration company calibrated the scale hopper?
- Have you run a test batch to ensure everything is working properly?

# OPERATION

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## Section 5: Operation

Be aware each hopper has a limited capacity. Typically, two augers can discharge into each hopper. To ensure maximum use of the scale's capacity, do not put multiple high inclusion ingredients in the same hopper, if possible.

# MAINTENANCE

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## Section 6: Maintenance

**Daily** - Ensure load cells are functioning properly by hanging test weights.

**Weekly** - Inspect the interior of the hopper for material buildup by removing the inspection panels on the side of the system. Product may accumulate on the hopper and lid and should be removed to prevent excessive buildup.

**Monthly** -

- Verify smooth operation of the discharge gate and clean slides if necessary.
- Verify proper air pressure on discharge gates.
- Clean dust socks.
- Ensure flexible connections are not leaking and do not interfere with the scale weight
- Inspect flexible transitions for holes/tears.

Periodically walk around the Scale Hopper and make note of any odd noises or excessive dust accumulation. Product accumulation may occur with sticky materials, during periods of higher humidity, and at other times.

The Scale Hopper should be calibrated periodically by a properly licensed or accredited scale company.

The limit switch on the slide gate should be positioned in a fashion to properly read the orientation of the gate. Ensure the gate is in the correct position when filling and that the limit switch is reading properly.

# SAFETY

## Section 7: Safety

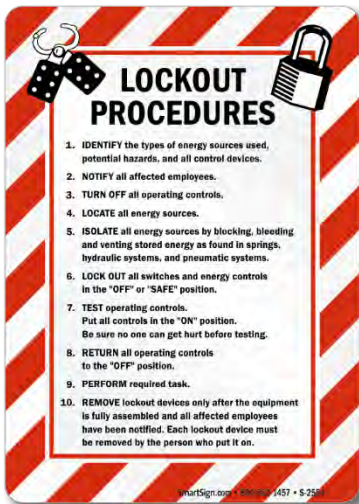
- Do not apply more load to the Scale Hopper than the combined rating of the hopper's load cells.
- Moving parts of the system automatically start/stop. Be sure to always disconnect and lockout the power before inspecting or working on the Scale Hopper system. Do not place your hands inside the hopper before performing the lockout/tagout procedure.

### **CAUTION**

There is no safety grating inside the Scale Hopper. Use caution when adding product to the hoppers and disconnect and lockout the power to the system before attempting to remove any foreign object that falls in (pieces of packaging, utility knives, etc.).

### **WARNING**

The Scale Hopper should only be operated or serviced by trained personnel.



EZ215651



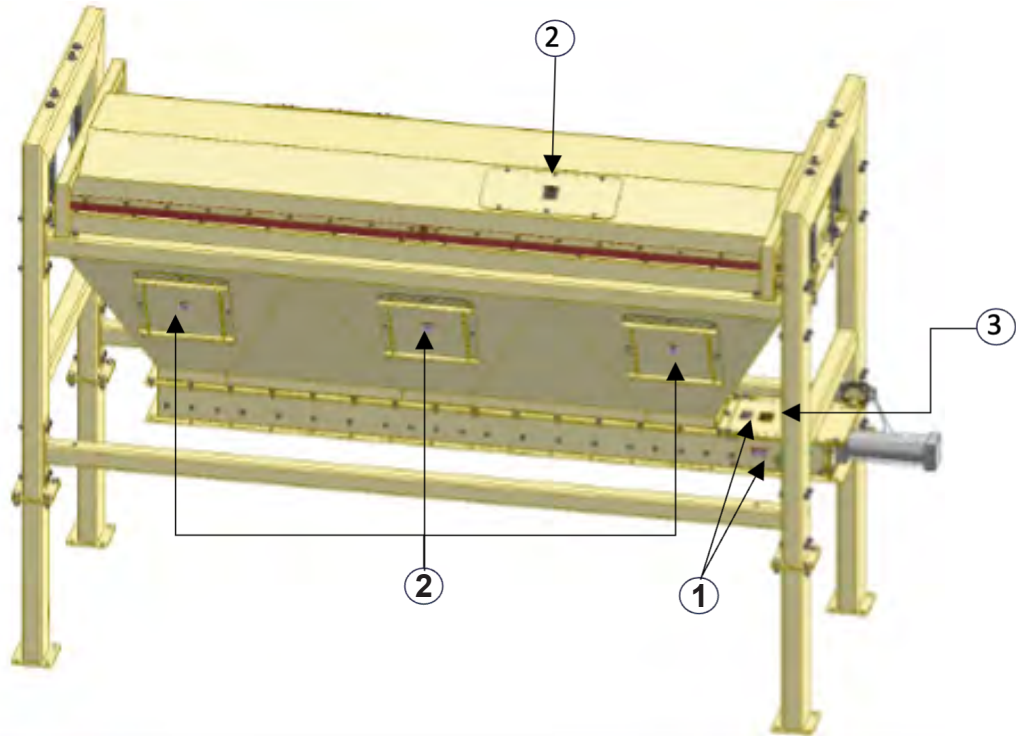
EZ100777



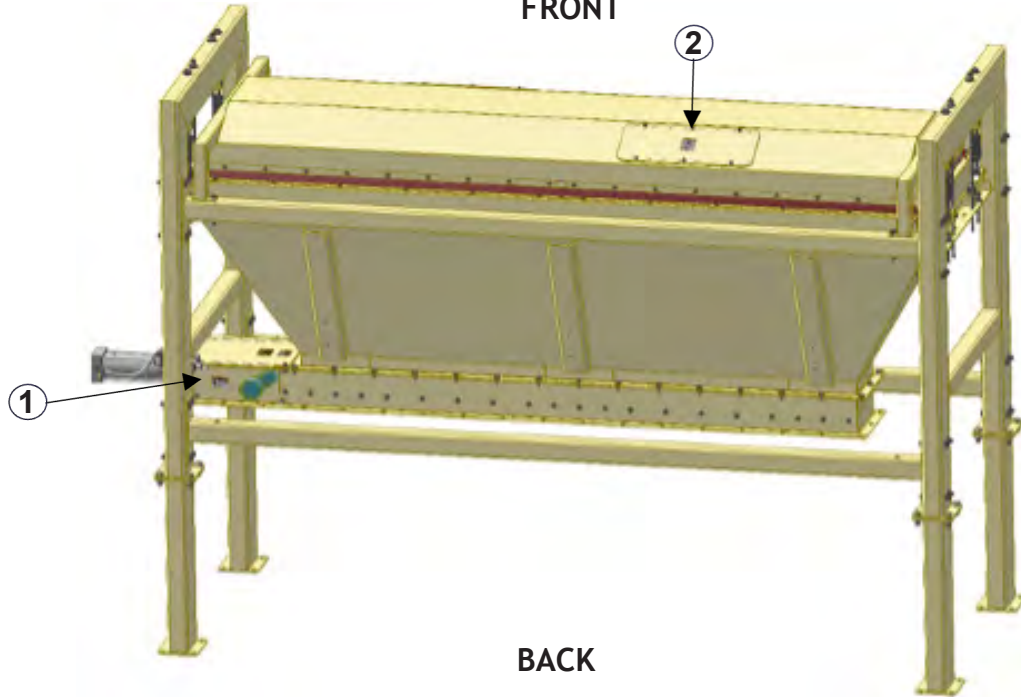
EZ100390



EZ100391



FRONT



BACK

ITEM	QTY	PART NUMBER	DESCRIPTION
1	3	EZ100390	WARNING, MOVING PARTS
2	5	EZ100391	WARNING, CONFINED SPACE
3	1	EZ10777	CAUTION, KEEP GUARD IN PLACE



# TROUBLESHOOTING

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## Section 8: Troubleshooting

1. Product can be seen flowing out of the hopper when the slide gate is closed:
  - Check that the slide gate still functions as intended. A damaged piston/motor or compromised wiring connection may have caused decreased/loss of slide gate functionality.
  - Check for gaps in the interface between the slide gate plate and rollers. Certain extremely free-flowing products could flow through the hopper when not in operation.
2. Product remains stuck to the hopper walls when the slide gate is opened:
  - Scale Hoppers are shipped with vibrator mounts to enhance hopper clean out when weighing material that is sticky or does not flow well.
  - The recommended vibrator is EZ201894 - VIBCO VS-130 (PNEUMATIC, 40 PSI SEALED, 10 MM BALL)
3. The system scale is not reading accurately, or inventories are incorrect:
  - The scale should be calibrated or checked by an accredited scale company periodically. This is recommended on a yearly basis.
  - Check the entire hopper scale as well as the load cells to be sure no components are binding or touching.
  - Check to ensure that all airlines and conduit are loose and not rigid enough to restrict the free motion of any components of the scale.
  - A scale company should check the tightness of scale wires in the junction box.
  - Load cells should be properly trimmed, and the entire scale calibrated.
  - Load cell yokes should be positioned correctly as indicated in this manual.
  - Air may be flowing up the discharge drag and creating pressure within the scale that can cause improper readings. Ensure that the supplied dust sock is properly installed and cleaned periodically to allow air to flow out of the scale.
  - If a scale is ever physically damaged by a forklift, electrical surge, or other external force, it should be immediately examined by a scale company for accuracy.

# WARRANTY

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## Section 9: Warranty

### EAI One-Year Limited Warranty

Easy Automation warrants that this Scale Hopper and all its mechanical and electrical components will be free from defects in materials and workmanship for a period of one (1) year from the date of shipment. If the product proves defective during the warranty period, Easy Automation Inc., at its option, will:

- Replace the damaged or broken component with a comparable new component or,
- Repair the component.

Easy Automation must be notified prior to the expiration of the warranty period regarding the broken component. The component will only be replaced or repaired if it is determined that the product was not broken due to misuse, improper use, or inadequate maintenance and care.

This warranty covers the component(s) only. Easy Automation is not responsible for any costs associated with replacement of the component(s). Easy Automation may require that the damaged or broken components be returned to Easy Automation.

Easy Automation will cover any shipping and handling costs of the replacement component(s) as well as any return shipping costs for items that need to be sent back to Easy Automation.

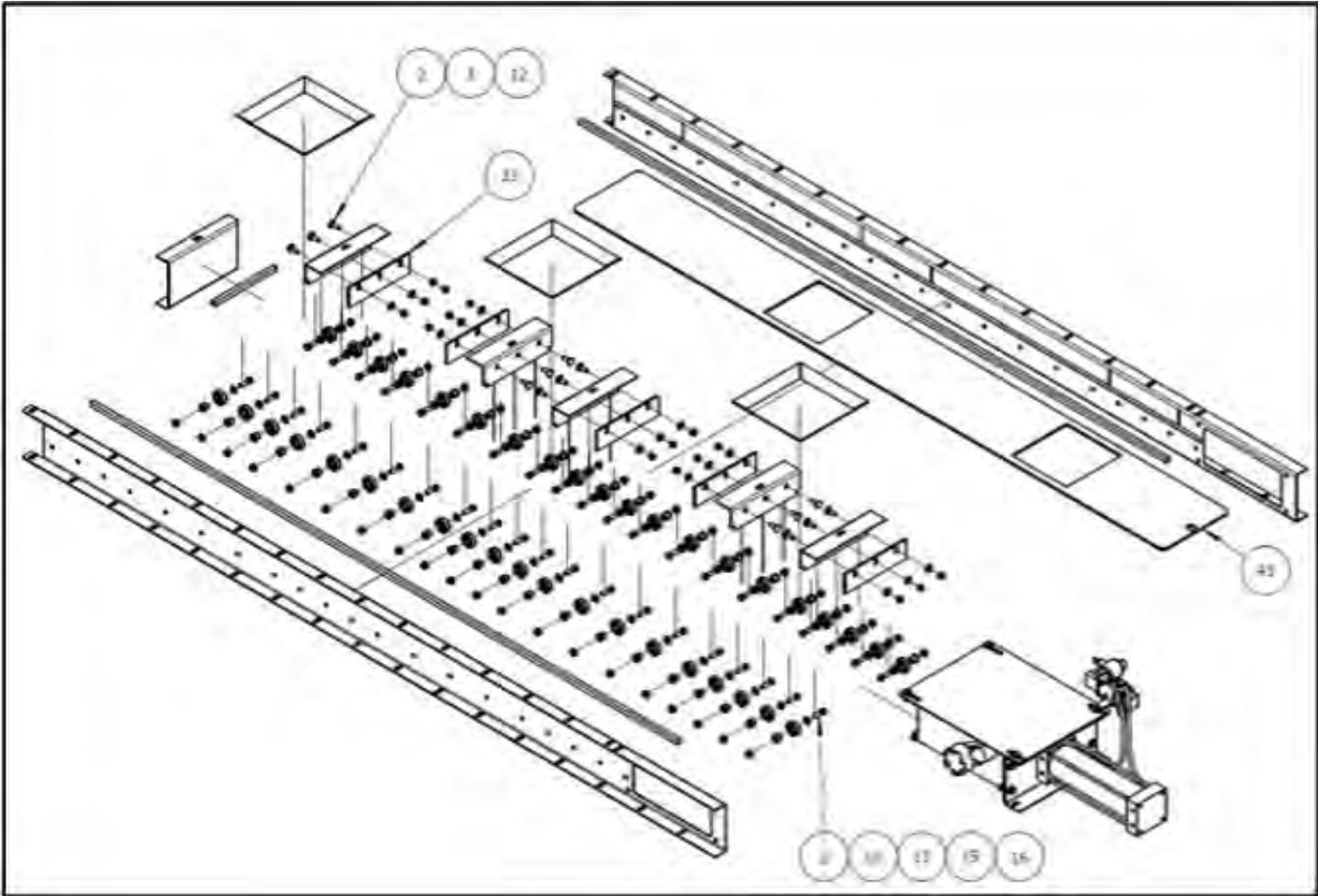
Easy Automation will not reimburse any on-site repair costs without prior approval in writing by the Easy Automation Service Department.

To the extent allowed by local law, except for the obligations specifically set forth in this warranty, in no event shall Easy Automation Inc. be liable for any indirect, special, incidental, or consequential damages (including loss of revenue or profits).



# SPARE PARTS

## Section 10: Spare Parts

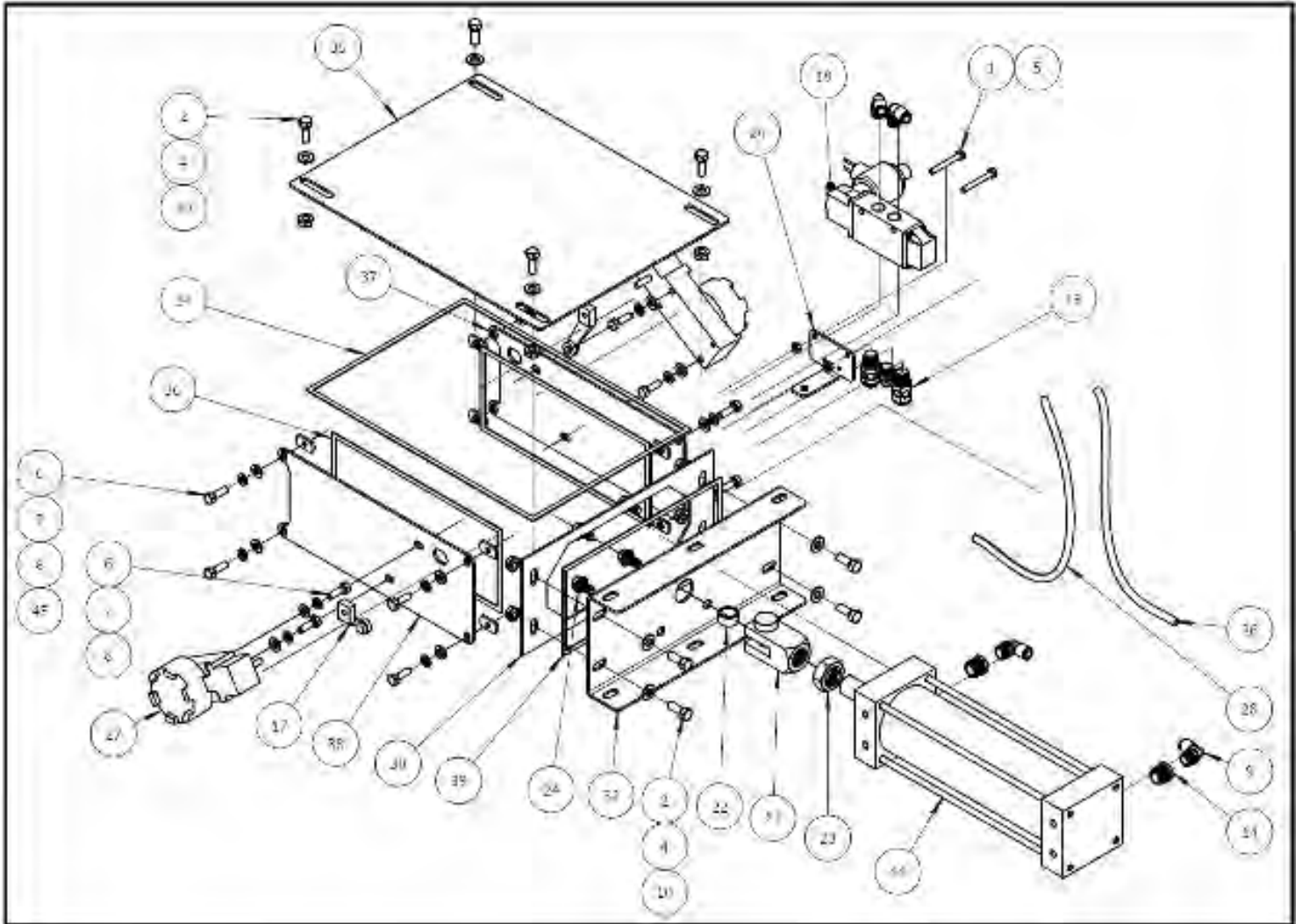


**FIGURE 6: Pneumatic Slide Gate Body**

ITEM	PART NUMBER	DESCRIPTION	SINGLE DISCHARGE QTY	DOUBLE DISCHARGE QTY	TRIPLE DISCHARGE QTY
2	EZ101314	WASHER, FLAT 3/8" ZINC	21	41	63
3	EZ101315	NUT, NYLOCK 3/8-16	3	9	15
10	EZ102328	NUT, FLANGE, SERRATED EDGE 3/8-16 UNC ZINC	18	32	48
11	EZ102963	BOLT, HEX HEAD GR 5 ZINC PLATED 3/8-16 UNC X 1 1/4	10	24	40
12	EZ200978	BOLT, CARRIAGE, 3/8-16 UNC X 1	3	9	15
15	EZ212979	BEARING, BALL, 17 MM ID 40 MM OD 12 MM WIDTH DOUBLE SEAL	10	24	40
16	EZ213013	BUSHING, 17 MM OD X 3/8 BORE (SB0013)	10	24	40
33	EZ216006-0012	WIPER, 1/4" UHMW PE, 10" GATE	1	3	5
	EZ213011-0013	WIPER, 1/4" UHMW PE, 12" GATE			
43	MODEL DEPENDENT	SLIDE WELDMENT, 10" GATE	1X EZ216005-0001	1X EZ216006-0001	1X EZ216007-0005
		SLIDE WELDMENT, 12" GATE	1X EZ216004-0001	1X EZ215987-0001	1X EZ216003-0001

# SPARE PARTS

## Section 10: Spare Parts



**FIGURE 7: Pneumatic Slide Gate Cylinder End**

ITEM	PART NUMBER	DESCRIPTION	SINGLE DISCHARGE QTY	DOUBLE DISCHARGE QTY	TRIPLE DISCHARGE QTY
1	EZ101224	BOLT, HEX, 1/4-20 X 2 GR 5 ZINC PLATED PARTIAL THREAD		2	
2	EZ101314	WASHER, FLAT 3/8" ZINC	21	41	63
4	EZ101317	BOLT, HEX HEAD GR 5 ZINC PLATED 3/8-16 UNC X 1		8	
5	EZ101329	WASHER, LOCK 5/16" [ZINC]		2	
6	EZ101361	WASHER, LOCK 5/16" [ZINC]		12	
7	EZ101363	WASHER, FLAT 5/16"		12	
8	EZ101385	BOLT, HEX HEAD GR 5 ZINC PLATED 5/16-18 UNC X 1		12	

ITEM	PART NUMBER	DESCRIPTION	SINGLE DISCHARGE QTY	DOUBLE DISCHARGE QTY	TRIPLE DISCHARGE QTY
9	EZ101922	FITTING, ELBOW 90 DEGREE 3/8 FEMALE PUSH-IN 3/8 MALE THREAD	5		
10	EZ102328	NUT, FLANGE, SERRATED EDGE 3/8-16 UNC ZINC	18	32	48
13	EZ202177	MUFFLER, AIR, 3/8 NPT, ADJUSTABLE	2		
14	EZ208268	FITTING, BUSHING, 1/2 NPT X 3/8 NPT, ZINC PLATED STEEL	2		
17	EZ213015	LEVER, OFFSET, FRONT NYLON ROLLER (HONEYWELL SWITCH)	2		
18	EZ213224	SOLENOID, NORGREN, 120 VAC, NEMA 9, 3/8 IN PORTS, (K71EA00-KS6-KX1)	1		
20	EZ215987-0020	PLATE, AIR SOLENOID MOUNTING BRACKET	1		
21	EZ215993	YOKE END, FITS B960 AIR CYLINDER	1		
22	EZ215994	BUSHING, 1" O.D X 3/4" I.D X 1/2" THICK	1		
23	EZ215997	NUT, JAM, 1"-8 GRADE 5	1		
24	EZ216001	BOLT, HEX FLANGE, 3/8-24 X 3/4 GR 5, FULL THREAD, ZINC PLATED	4		
26	EZ216006-0002	TUBING, AIR LINE, 3/8 OD X 1/4 ID, POLYETHYLENE - 15 IN	1		
27	EZ216006-0003	LIMIT SWITCH, EXPLOSION PROOF	2		
28	EZ216006-0004	TUBING, AIR LINE, 3/8 OD X 1/4 ID, POLYETHYLENE - 15 IN	1		
30	EZ216006-0007	SLIDE GATE FRAME END (A1011 CS, 10 GA)	1		
32	EZ216006-0010	SLIDE GATE FRAME, EXT CYL MNT	1		
34	EZ216006-0019	GASKET, FOAM, 1/4 X 1/8, BLACK - 54 IN	1		
35	EZ216006-0020	DUST COVER, 10X10 SLIDE GATE (A1011 CS, 10 GA)	2		
36	EZ216006-0022	GASKET, FOAM, 1/4 X 1/8, BLACK - 34 IN	1		
37	EZ216006-0023	SWITCH MOUNT PLATE, CLOSE (A1011 CS, 10 GA)	1		
38	EZ216006-0024	SWITCH MOUNT PLATE, OPEN (A1011 CS, 10 GA)	1		
39	EZ216006-0026	GASKET, FOAM, 1/4 X 1/8, BLACK - 33 IN	1		
44	EZ216010	AIR CYLINDER, 3.5" BORE, 10" STROKE	1		
	EZ215992	AIR CYLINDER, 3.5" BORE, 12" STROKE			
45	WT17953-0084	NUT, WELD 5/16-18 UNC, 1006-1010 CARBON STEEL	8		

# SPARE PARTS

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## Section 10: Spare Parts

### Replacement Load Cells

- 500-lb S-Type: EZ100823
- 750-lb S-Type: EZ202203
- 1000-lb S-Type: EZ202110

### Replacement Nylon Skirting:

- Single Discharge: EZ213759
- Double Discharge: EZ213236
- Triple Discharge: EZ213493
- Quad Discharge: EZ216177

### Replacement Summing Junction Box

- Standard: WT41428-0016
- Intrinsically Safe: EZ214060

Shielded Scale Cable (6 conductor, 20 AWG) - EZ200593

Paint, Spray Can, Off-White - EZ100889

# APPENDIX A - APPROXIMATE DRY WEIGHT OF SCALE HOPPERS

## Section 11: Appendix A

Scale Hopper Size	Estimated Dry Weight (lbs.)
Single Discharge - 10 cu ft	1,100
Single Discharge - 17 ½ cu ft	1,200
Double Discharge - 20 cu ft	1,300
Double Discharge - 35 cu ft	1,500
Triple Discharge - 30 cu ft	1,500
Triple Discharge - 50 cu ft	1,800
Quad Discharge - 40 cu ft	2,000

# APPENDIX B

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## Section 12: Appendix B

Load Cell	Wire Color
Excitation +	● Red
Excitation -	● Black
Signal +	● Green
Signal -	○ White
Shield	● Bare



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