



Magnum™

Smoothwall Bin Operator and Installation Manual

This manual applies to:

Magnum-F™ — 40° Bottom Cone

Magnum-F™ — 55° Bottom Cone

Magnum-G™ — 40° Bottom Cone

Magnum-G™ — 55° Bottom Cone

Twin Air Bin

Super Twin Air Bin



Read this manual before using product. Failure to follow instructions and safety precautions can result in serious injury, death, or property damage. Keep manual for future reference.

Part Number: 298837 R1

Revised: March 2019

Original Instructions

We strongly recommend that all personnel associated with this equipment be trained in the correct operational and safety procedures required for this product. This product has been designed and constructed according to general engineering standards, other local regulations may apply and must be followed by the operator. Use the sign-off sheet below to record initial and periodic reviews of this manual with all such personnel.

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1. Introduction

Thank you for your purchase. Follow the instructions in this manual for safe use of this Westeel Smoothwall Bin. With proper care, this smoothwall bin will provide you with many years of trouble-free operation.

Keep this manual handy for frequent reference and to review with new personnel. A sign-off form is provided on the inside front cover for your convenience. If any information in this manual is not understood or if you need additional information, please contact your local AGI representative for assistance.

This manual should be regarded as part of the equipment. Suppliers of both new and second-hand equipment are advised to retain documentary evidence that this manual was provided with the equipment.

1.1. Serial Number Location

The serial number location for your smoothwall bin can be seen in the figure below. Provide the serial number to Westeel or your representative when ordering parts or requesting service or other information. Please record this information in the table below for easy reference.

Model Number	
Serial Number	
Date Received	



1.2. Intended Use

The smoothwall bin is intended for use as listed below and described throughout this manual. Use in any other way is considered contrary to the intended use.

The smoothwall bin should be operated, maintained, serviced, and repaired only by persons who are familiar with its particular characteristics and understand the relevant safety procedures.

Accident prevention regulations and all other generally recognized regulations on occupational health and safety must be observed at all times.

Any modifications made to the smoothwall bin may relieve the manufacturer of liability for any resulting damage or injury.

Intended use for the smoothwall bin:

- Storage of free-flowing grains or other non-corrosive granular material up to 52 lb/ft³ (833 kg/m³)
- Storage of treated seed, when not corrosive or subject to poor flow; check with your local supplier.
- Storage of fertilizer up to 62 lb/ft³ (993 kg/m³) when the interior bin walls are originally painted by Westeel.

Use in any other way is considered contrary to the intended use and is not covered by the warranty.

1.2.1 Misuse

Do not install/use the smoothwall bin for/with:

- storage of fertilizer when the interior bin walls are not originally painted by Westeel).
- storage of liquids.

2. Safety

2.1. Safety Alert Symbol and Signal Words



This safety alert symbol indicates important safety messages in this manual. When you see this symbol, be alert to the possibility of injury or death, carefully read the message that follows, and inform others.

Signal Words: Note the use of the signal words **DANGER**, **WARNING**, **CAUTION**, and **NOTICE** with the safety messages. The appropriate signal word for each message has been selected using the definitions below as a guideline.



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



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



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



Indicates a potentially hazardous situation that, if not avoided, may result in property damage.

2.2. General Product Safety

Read and understand all safety instructions, safety decals, and manuals and follow them when operating or maintaining the equipment.

- Owners must give instructions and review the information initially and annually with all personnel before allowing them in the work area. Untrained users/operators expose themselves and bystanders to possible serious injury or death.
- Use for intended purposes only.
- Do not modify the smoothwall bin in any way without written permission from the manufacturer. Unauthorized modification may impair the function and/or safety. Any unauthorized modification will void the warranty.
- Follow a health and safety program for your worksite. Contact your local occupational health and safety organization for information.
- Always follow applicable local codes and regulations.



2.3. Overhead Power Lines

WARNING

- Keep smoothwall bins a horizontal distance of at least 150 ft (45.7 m) from power lines. Increase distance to meet electrical code requirements where required.
- Do not load or unload the smoothwall bin if there is a chance of any loading or unloading equipment contacting power lines.
- Do not locate smoothwall bins on both sides of a power line or under a power line.
- Electrocution can occur without direct contact.

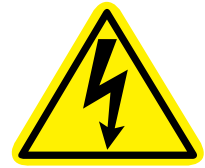
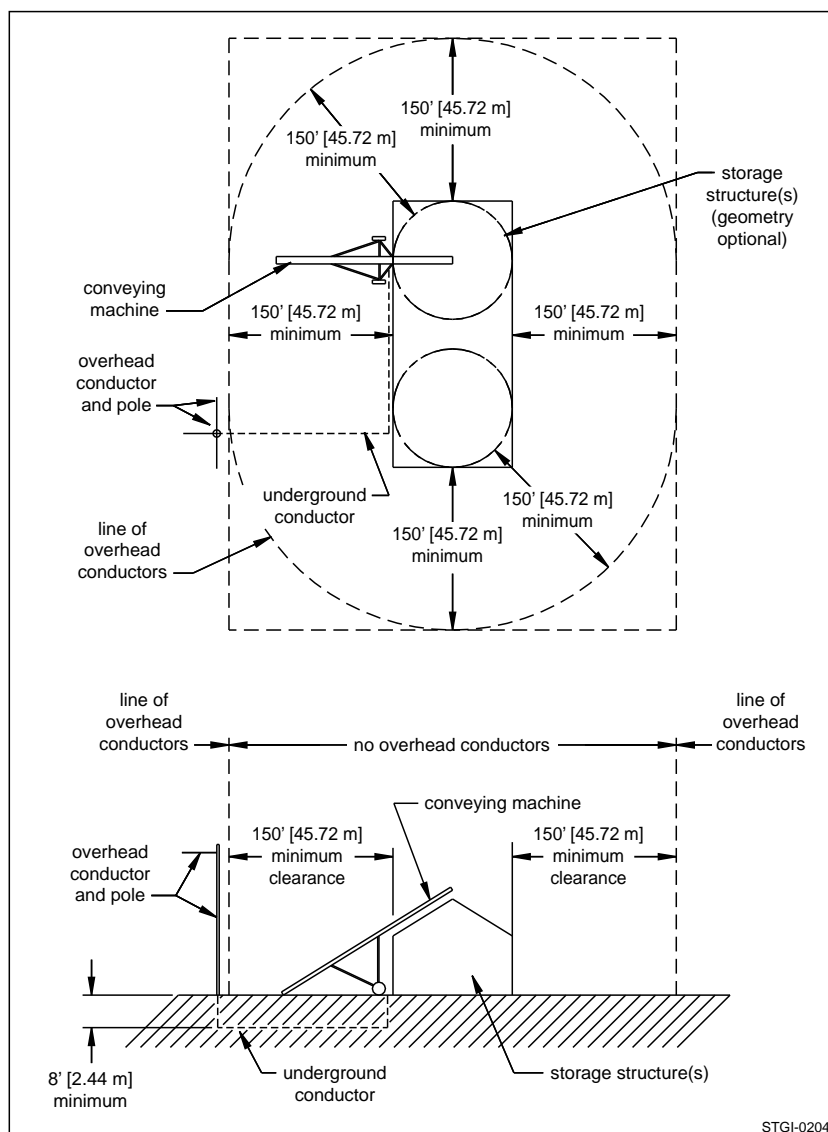


Figure 1. Power Lines and Conductor Clearance



2.4. Unloading Safety

**WARNING**

- Never enter a when loading or unloading.
- Unload only as described in the operation section of this manual.
- Lock the door (where equipped) and close/lock all other access doors when not in use.

2.5. Entry Safety

The information in this section applies to entry through any access point.

Always try to work and solve problems without entering a .

**WARNING**

If you must enter the , follow the safety information below to safely enter through the roof, door or any access point:

- Stop the unloading process if the is being unloaded and lockout/tagout power before entering the , refer to Lockout/Tagout Safety.
- Always wear a dust-filtering respirator when entering the . Grain dust and spores when inhaled into the lungs can cause severe reactions leading to hospitalization in some cases. Persistent exposure may cause “farmer’s lung,” which can eventually be fatal.
- Before working inside the , ventilate the area by opening the vent or by other equivalent means to force air into the to prevent oxygen-deficient atmosphere. Inadequate oxygen is very harmful to your health and can cause death. Exposure to carbon dioxide can cause drowsiness, headache and even death due to suffocation. Test the atmosphere. If the carbon dioxide hazard cannot be reduced or eliminated or you cannot test the atmosphere, use correctly fitted and appropriate respirator.
- Never walk on grain to make it flow.

If you ignore the safety precautions above and enter the , you could die from being submerged.

2.5.1 Roof Entry

The information in this section applies to entry through the roof only.

WARNING

- Never enter a from the roof if you don't know its unloading history. Bridges of stored material can form above a void space below, causing potential for entrapment.
- Have body harness tethered to a lifeline controlled by two others outside the . One worker should be able to see inside worker through the inspection hatch. If there is an accident, one worker can focus on the victim while the other goes/calls for help.

2.6. Fall Restraint and Arrest Safety

WARNING

To prevent serious injury or death:

- Use in accordance with manufacturer's recommendations and instructions.
- Confirm the fall restraint or fall arrest meets local and/or national codes.
- Ensure the fall restraint or fall arrest will support the maximum load including a person, any equipment, and other external forces.
- Connect the fall restraint or fall arrest only to a labeled anchor point on the equipment.
- Inspect components before each use for wear, damage and other deterioration.



2.7. Emergency Entry

In an emergency situation:

- Follow protocols set by your local occupational safety and health agency.
- If you need to rescue somebody inside the , call emergency responders and only attempt to rescue using non-entry rescue procedure/equipment. Do not enter the unless you are trained for rescue, equipped and relieved by another attendant.

2.8. Entrapment

In the event that you are trapped in the as it is unloading, move as quickly as possible toward the wall; keep yourself elevated above the material by walking on the flowing mass while staying as close as possible to the wall.

If you become covered in flowing grain, cup your hands over your mouth and take short breaths. This may keep you alive until help arrives. A person outside can ventilate the bin by turning on the fan (if equipped). Do not run heaters as this will fill the bin with carbon monoxide

It takes more than 1000 lb (4.5kN)4.5kN (1000 lb) of force to remove someone buried below the surface.

The following sections cover common ways a person gets submerged or trapped:

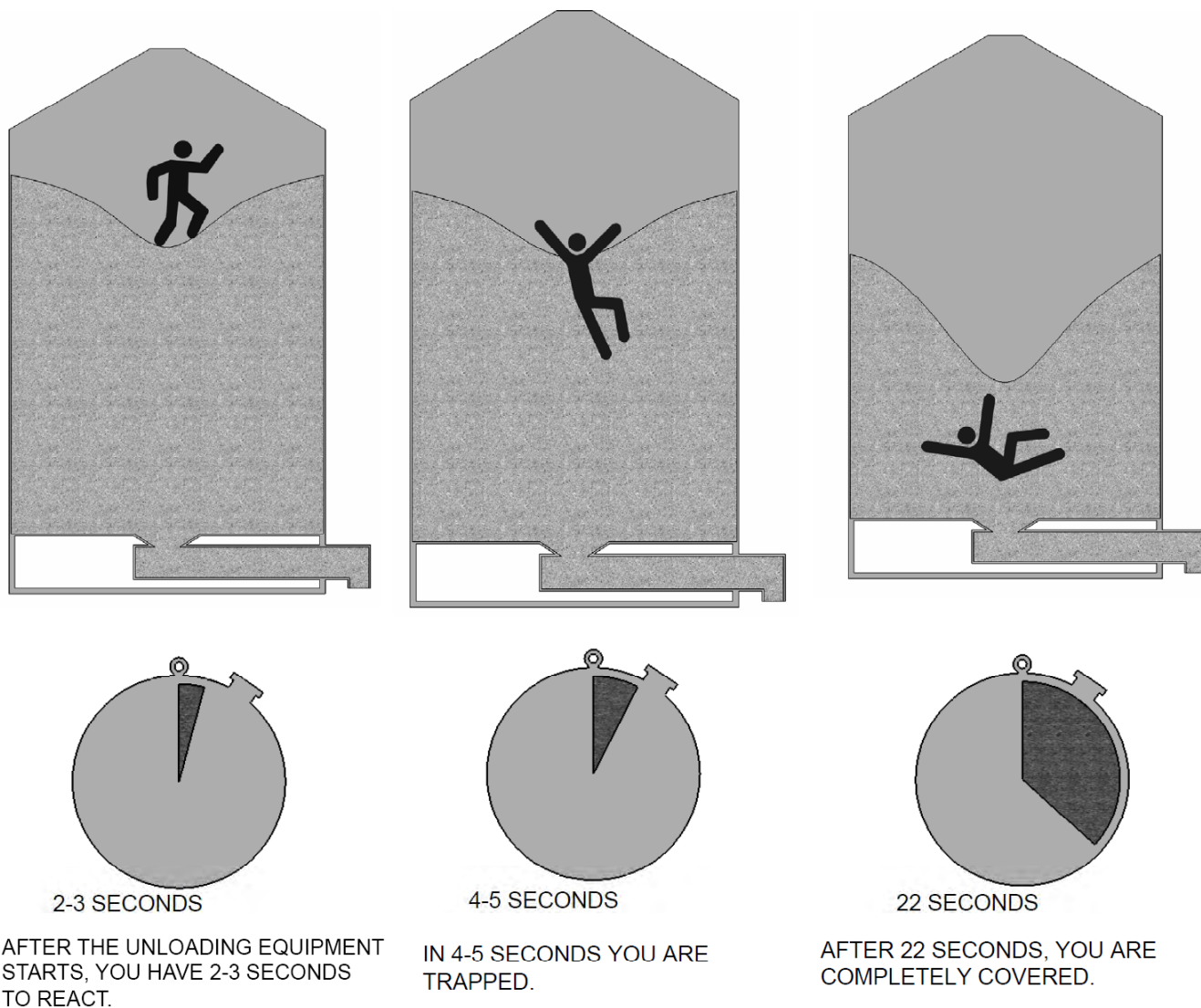
2.8.1 Flowing Grain

This procedure may also apply to fertilizer where the is intended for fertilizer storage.

WARNING

- Grain flows in a funnel-shaped path when unloading. This vortex of grain behaves very much like a water drain. Velocity increases as grain flows from the wall at the top of the grain mass into a small vertical column at the center of the .
- Flowing grain will not support the weight of a person. Submersion happens within seconds.

Figure 2. Suffocation Hazards in Flowing Grain



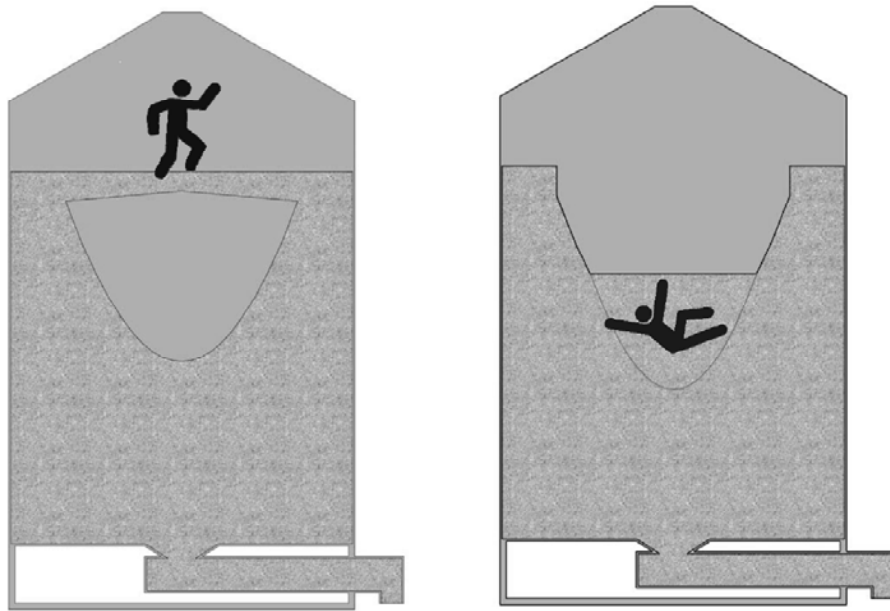
2.8.2 Collapse of Bridged Grain

This procedure may also apply to fertilizer where the is intended for fertilizer storage.

WARNING

- Grain can “bridge” across a , creating an empty air space below. A person can easily break through this bridge and become trapped, risking suffocation.
- To identify bridged grain, look for a funnel shape on the surface of the grain after having removed some of the grain. If surface is undisturbed, the grain has bridged and formed a crust.
- Never walk on the grain crust. The crust rarely becomes strong enough to support the weight of a person.
- To remove bridge, try breaking the bridge from the inspection hatch or peak. Use a pole to hit the surface, securing it with a rope in case it is dropped. Be aware that chunks of crusted grain can move down to the auger and limit flow.

Figure 3. Suffocation Hazards in Bridged Grain

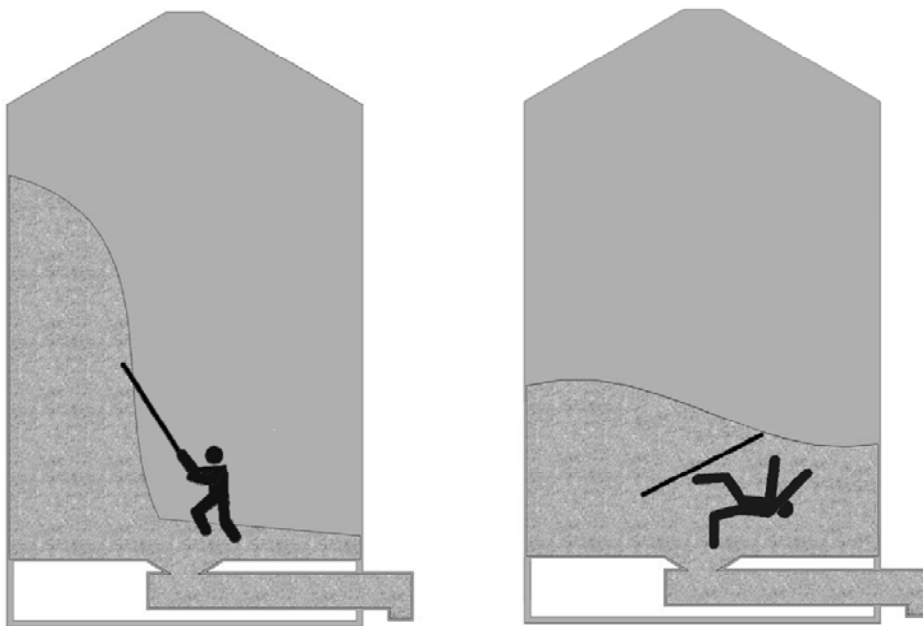


2.8.3 Collapse of a Vertical Wall of Grain

This procedure may also apply to fertilizer where the is intended for fertilizer storage.

WARNING

- Vertical walls of grain are created when the is partially empty. Poking at the wall can make the grain avalanche and submerge a person.
- Do not enter the to break down grain that has set up. Break grain mass from top of the outside.

Figure 4. Suffocation Hazards from a Vertical Grain Wall

2.9. Combustible Dust



WARNING

The smoothwall bin has been designed for safe use in areas where hazards due to combustible dust may potentially occur. Minimize the risk of a dust explosion by following the preventive measures below.

Control the dust:

To control dust, consider the following as part of your work-site safety program:

- Clean grain to reduce fines.
- Use equipment to minimize breakage. For example, corn that is broken exposes starch, which is the most explosive element of the grain.
- Use a filtering system to capture dust.
- Use an air system to reduce dust.
- Spray edible mineral oil on the grain to reduce air-born dust when handling.
- Paint equipment that is in the interior of a facility with a coating that is slick, not allowing dust to accumulate.
- Clean up dust deposits after operation of the equipment.
- Enclose all equipment to keep dust from escaping.

Control the ignition source:

To prevent possible sources of ignition that could cause fires or dust explosions:

- Where applicable, use an electric motor rated for the dust classification area.
- Do not smoke in any potentially hazardous area.
- Use only explosion-proof lights.

- Do not use anything around or inside the equipment that may produce a flame, such as a match, a lighter, or anything that may produce a shower of sparks, such as a grinder or power saw, unless the air is free of dust and all dust deposits have been removed from the work area, or the work area is wet such that dust cannot be dispersed in the air and smoldering processes from sparks cannot develop. Use brush-less electrical tools and explosion proof flash lights, for example.
- Follow the maintenance schedule to keep equipment operating at normal conditions. This will further help to prevent the risk of components overheating or wearing out which may lead to explosion risks.
- Always purchase replacement parts from the manufacturer or authorized dealer/distributor. Original manufacturers parts are designed with explosion proof features where applicable.

2.10. Ladder Safety



WARNING

- Do not climb ladder if damaged, wet, icy, greasy, or slippery.
- Remove slippery materials on platforms, rungs and gripping surfaces.
- Maintain good balance by having at least three points of contact at all times.
- Use a fall restraint and arrest system when required. Consult your local health and safety organization.



2.11. Auxiliary Equipment Safety

Unapproved auxiliary equipment could cause performance issues or structural failure, and is not covered by warranty.

- Do not install auxiliary equipment if the smoothwall bin is not designed for use with it. Refer to the specific information provided in this manual for auxiliary equipment or check with Westeel or your dealer for written approval, if necessary.
- Obtain, read, and understand the instructions and safety warnings of the auxiliary equipment manufacturer.
- Attach auxiliary safety decals to the smoothwall bin as applicable.
- Store auxiliary operations/maintenance manuals in a safe place available for future use.

2.12. Personal Protective Equipment

The following Personal Protective Equipment (PPE) should be worn when operating or maintaining the equipment.

Safety Glasses

- Wear safety glasses at all times to protect eyes from debris.



Coveralls

- Wear coveralls to protect skin.



Hard Hat

- Wear a hard hat to help protect your head.



Steel-Toe Boots

- Wear steel-toe boots to protect feet from falling debris.



Work Gloves

- Wear work gloves to protect your hands from sharp and rough edges.



Respirator

- Wear a respirator with particulate cartridges to prevent breathing potentially harmful dust.



2.13. Safety Equipment

The following safety equipment should be kept on site:

Fire Extinguisher

- Provide a fire extinguisher for use in case of an accident. Store in a highly visible and accessible place.



First-Aid Kit

- Have a properly-stocked first-aid kit available for use should the need arise, and know how to use it.



2.14. Safety Decals

- Keep safety decals clean and legible at all times.
- Replace safety decals that are missing or have become illegible. See decal location figures that follow.
- Replaced parts must display the same decal(s) as the original part.
- Replacement safety decals are available **free of charge** from your distributor, dealer, or factory as applicable.

2.14.1 Decal Installation/Replacement

1. Decal area must be clean and dry, with a temperature above 50°F (10°C).
2. Decide on the exact position before you remove the backing paper.
3. Align the decal over the specified area and carefully press the small portion with the exposed sticky backing in place.
4. Slowly peel back the remaining paper and carefully smooth the remaining portion of the decal in place.
5. Small air pockets can be pierced with a pin and smoothed out using the decal backing paper.

2.14.2 Safety Decal Locations and Details

Replicas of the safety decals that are attached to the smoothwall bin and their messages are shown in the figure (s) that follow. Safe operation and use of the smoothwall bin requires that you familiarize yourself with the various safety decals and the areas or particular functions that the decals apply to, as well as the safety precautions that must be taken to avoid serious injury, death, or damage.

Figure 5. Safety Decal Locations

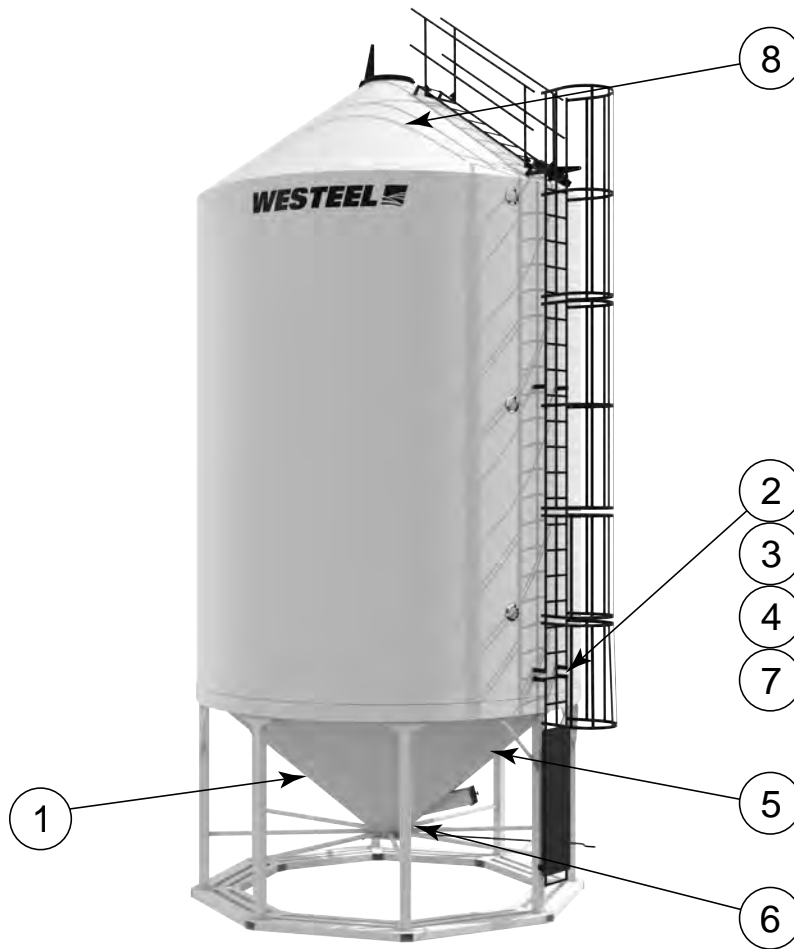


Table 1. Safety Decals

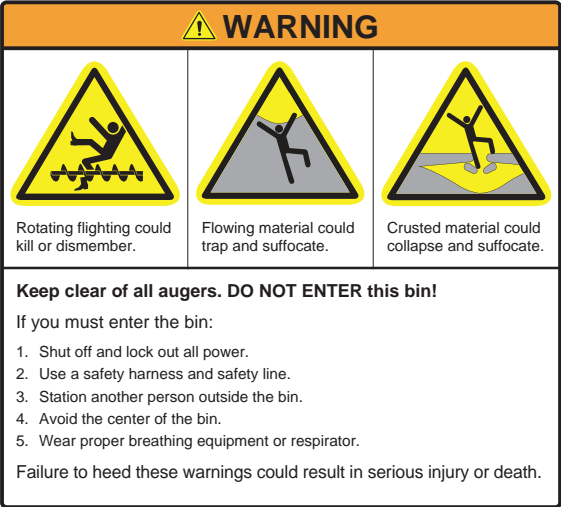
Item	Description	Part Number
1	<div data-bbox="313 268 870 772">  <p>WARNING</p> <p>Rotating flighting could kill or dismember.</p> <p>Flowing material could trap and suffocate.</p> <p>Crusted material could collapse and suffocate.</p> <p>Keep clear of all augers. DO NOT ENTER this bin!</p> <p>If you must enter the bin:</p> <ol style="list-style-type: none"> 1. Shut off and lock out all power. 2. Use a safety harness and safety line. 3. Station another person outside the bin. 4. Avoid the center of the bin. 5. Wear proper breathing equipment or respirator. <p>Failure to heed these warnings could result in serious injury or death.</p> </div>	8110-00122

Table 1 Safety Decals (continued)


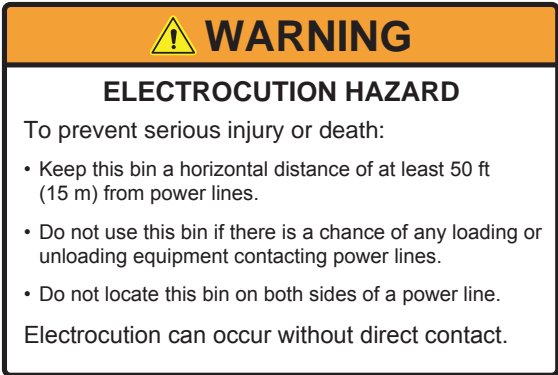
Item	Description	Part Number
2	<div data-bbox="321 279 764 1367">  <p>WARNING</p> <p>FALLING HAZARD</p> <p>To prevent serious injury or death:</p> <ul style="list-style-type: none"> • Do not climb ladder if damaged, wet, icy, greasy, or slippery. • Maintain good balance by having at least three points of contact at all times. </div>	8110-00136
3	<div data-bbox="313 1415 867 1787">  <p>WARNING</p> <p>ELECTROCUTION HAZARD</p> <p>To prevent serious injury or death:</p> <ul style="list-style-type: none"> • Keep this bin a horizontal distance of at least 50 ft (15 m) from power lines. • Do not use this bin if there is a chance of any loading or unloading equipment contacting power lines. • Do not locate this bin on both sides of a power line. <p>Electrocution can occur without direct contact.</p> </div>	8110-00110

Table 1 Safety Decals (continued)

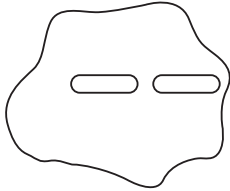
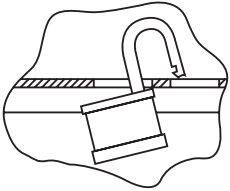




Item	Description	Part Number
4	<p>IMPORTANT</p> <p>Westeel will not accept liability for losses attributed in whole or in part to the placement of this bin or hopper bottom on any inadequate or inappropriate surface in a manner which does not comply with Foundation Specifications*.</p> <p>STEEL FOUNDATION MOUNTING SPECIFICATIONS</p> <p>It is recommended that your bin or hopper bottom be permanently mounted on a Westeel Steel Foundation. If you choose to do so, the following steps must be followed to ensure safe installation:</p> <ul style="list-style-type: none"> • Select a location with suitable drainage. • Remove ALL loose, black (organic), and wet soil from an area 2' larger in diameter than bin. (i.e. 16" for 14" bin) • Fill the WHOLE excavated area with 3/4" crushed gravel (See Foundation Specification* for minimum depth of gravel required for your foundation) to a level slightly higher than the surrounding soil to ensure drainage. Level and pack all gravel before placing steel foundation. DO NOT leave centre portion of gravel hollow. Steel foundation must contact gravel at ALL points. <p>CONCRETE MOUNTING SPECIFICATIONS</p> <p>Your Westeel bin or hopper bottom can alternatively be mounted on a concrete pad. Depending on the bin size, the pad thickness and diameter will vary. To ensure safe installation, follow the pad specifications as described in Foundation Specifications*. If you have any questions regarding the instructions, contact your nearest Westeel dealer or phone Westeel 1-800-667-1161.</p> <p><small>*For a copy of Westeel's Foundation Specification please visit www.westeel.com or contact your nearest dealer</small></p> <p>FAILURE TO FOLLOW INSTRUCTIONS WILL VOID WARRANTY!</p>	8110-20050
5	<p>NOTICE</p> <p>To prevent damage to the bin:</p> <ul style="list-style-type: none"> • Open top lid before unloading product. • Open gate slowly to avoid excessive stress on bin structure. 	8110-00114
6	<p>SHUT-OFF SECURITY</p> <p>Insert lock through slot latch to secure.</p> <div> <div> <p>SHUT-OFF MOUNT TOP VIEW</p>  </div> <div> <p>SHUT-OFF MOUNT SIDE VIEW</p>  </div> </div>	8110-20076

Table 1 Safety Decals (continued)

Item	Description	Part Number
7	<p>WESTEEL </p> <hr/> <p>WARRANTY</p> <p>The manufacturer warrants each new Smooth Wall Hopper Bin manufactured by it to be free from defects in material or workmanship from date of manufacture as follows:</p> <ul style="list-style-type: none"> • Structural - 10 years • Paint (Standard Farm Use) - 5 years • Paint (Commercial Use) - 1 year <p>If such a defect is found by the Manufacturer to exist within the warranty period, the Manufacturer will, at its option, repair or replace such product free of charge, F.O.B. the factory of manufacture.</p> <p>CONDITIONS AND LIMITATIONS</p> <ol style="list-style-type: none"> 1. The product must be installed, operated and maintained in accordance with instructions published by the Manufacturer. Failure to do so will void the warranty. <p>The Purchaser must inspect the product on a semi-annual basis. Paint nicks, scratches, etc are to be touched up with the paint kit provided with the cone. Additional touch up paint is available from your local Westeel dealer at a reasonable cost.</p> <ol style="list-style-type: none"> 2. Warranty is void if the customer combines structural components (storage bin, steel foundation) produced and incorporated into the system from another manufacturer. 3. Malfunctions or failure resulting from misuse, abuse, negligence, alteration, accident, lack of proper maintenance or vacuum collapse shall not be considered defects under this warranty. 4. The warranty will be voided if the structure is modified, has attachments to it not approved by Westeel, or has attachments approved by Westeel that have been improperly installed. In all cases Westeel shall determine what constitutes proper installation of approved accessories. <p>The Manufacturer shall not be liable for any consequential or special damage which any purchaser may suffer or claim to suffer as a result of any defect in the product. "Consequential" or "Special Damages" as used herein include, but are not limited to, lost or damaged products or goods, costs of transportation lost sales, lost orders, lost income, increased overhead, labor and incidental costs and operation inefficiencies.</p> <p>The warranty constitutes the manufacturer's entire and sole warranty and the manufacturer expressly disclaims any and all other warranties, including but not limited to express and implied warranties as to merchantability, fitness for particular purposes sold and description or quality of the product furnished hereunder.</p> <p>An officer of the company must authorize any exceptions to this warranty in writing. The manufacturer reserves the right to change models and specification at any time without notice or obligation to improve previous models.</p>	8110-20051
8	<div data-bbox="315 1035 867 1822"> <div data-bbox="315 1035 867 1108">  WARNING </div> <div data-bbox="315 1108 867 1346">   </div> <div data-bbox="315 1346 867 1822"> <p>ENTRAPMENT HAZARD</p> <p>Never enter the bin when loading or unloading grain.</p> <p>If you must enter the bin:</p> <ol style="list-style-type: none"> 1. Shut off and lock out all power. 2. Use a lifeline, safety harness, and have an observer outside before entering the bin. 3. Wear proper breathing equipment or a respirator. 4. Avoid the center of the bin. <p>Failure to heed these warnings could result in serious injury or death.</p> </div> </div>	8110-00013

3. Features

This section covers the main features of the smoothwall bin.

Figure 6. Typical Smoothwall Bin

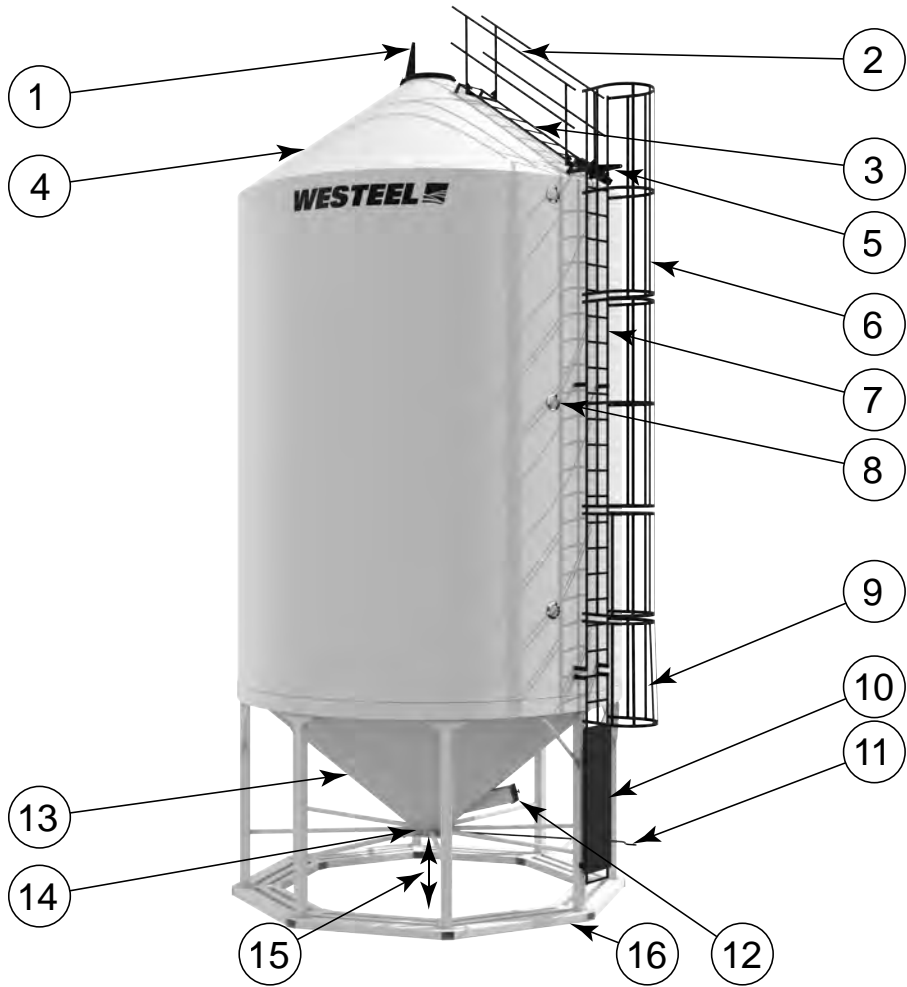


Table 2. Smoothwall Bin Features

Item	Feature
1	24" Top Opening with Lid
2	Roof Ladder Hand Rail (Optional)
3	Roof Ladder
4	Top Cone (30°/35°)
5	Top Inspection Hatch with Lid (Optional)
6	Sidewall Ladder Cages (Optional)
7	Sidewall Ladder

Table 2 Smoothwall Bin Features (continued)

Item	Feature
8	6" View Glass
9	Entrance Ladder Cage (Optional)
10	Lockable Ladder Gate (Optional)
11	Crank Handle
12	Poke Hole with Lid (Optional for Grain Bin)
13	Bottom Cone - 40°/55°
14	Shut off mount - SS plate (Fertilizer Bin), MS plate (Grain Bin)
15	Clearance - Standard 26"
16	Foundation (Optional)

4. Installation



Before continuing, ensure you have completely read and understood this manual's Safety section, in addition to the safety information in the section(s) below.

4.1. Installation Safety

WARNING

- Do not take chances with safety. The components can be large, heavy, and hard to handle. Always use the proper tools, rated lifting equipment, and lifting points for the job.
- Always have two or more people installing the smoothwall bin.
- Make sure you have sufficient lighting for the work area.
- Tighten all fasteners according to their specifications. Do not replace or substitute bolts, nuts, or other hardware that is of lesser quality than the hardware supplied by the manufacturer.

4.2. Site Selection

Selection of an appropriate site is a very important step prior to assembling or setting up a . The following must be adhered to when choosing a site:

- Choose a firm, level, well-drained site, preferably at the top of a small hill or incline so that snow/water cannot collect near the .
- The soil needs a bearing capacity of at least 2,500 lb/ft² (120 kPa) when using a Westeel designed foundation. Check bearing capacity if there is any doubt about its adequacy. If building a hopper bottom , refer to that manual for further information on concrete foundation requirements.
- Top soil is not adequate for the support of a and must be removed prior to assembly and replaced with packed gravel fill.
- The foundation may be subject to frost movement. If in doubt about the site, hire a professional engineer who is familiar with local conditions.
- Some materials that seem adequate at one time of year may become unstable later. Dry clay, for example, may lose practically all its strength if it becomes saturated with water.
- s should never be located near high buildings that may cause uneven snow build up on the roof or uneven wind pressure on the structure; both may result in damage.
- s should be positioned a safe distance from power lines or electrical transmission equipment. Contact your local power company to obtain recommended equipment clearance information.
- Electrical control equipment in contact with the must be grounded and installed in accordance with local codes.
- Determine your electrical needs for assembly and ensure that there is the correct type and a sufficient amount of power to operate tools, air compressors, lighting, etc.
- Ensure that there is sufficient power to operate any aeration or unload equipment that is to be installed.
- Orientation: Consider door (if equipped) and vent placement, loading auger direction, and unloading auger direction when choosing a site.

4.3. Site Conditions

Access routes to the site and within the site should be given on a site plan showing dimensions and level of access routes, level of the prepared working area for site traffic and plant, and areas available for storage.

Construction of the shall not start until the following site conditions have planned for and evaluated for safety:

- provision and maintenance of hard standing surfaces for cranes and access equipment;
- access routes to and within the site should be included on the site plan;
- soil conditions affecting the safe operation of the structure;
- possible settlement of erection supports for the structure;
- details of underground services, overhead cables or site obstructions;
- limitations on dimensions or weights of components that can be delivered onto the site;
- special environmental and climatic conditions on and around the site;
- particulars of adjacent structures affecting or affected by the works.

4.4. Site Expansion

Future potential site expansion should be considered and planned for prior to siting and construction.

4.5. Foundation Specifications

Your smoothwall bin must be installed on a Westeel steel foundation or a concrete foundation.

Steel Foundation

When installing a steel foundation:

1. Select a location with good drainage.
2. Remove loose soil in an area 2' larger than your bin.
3. Fill excavated area with 3/4" crushed gravel to the depth indicated in [Table 3 on page 26](#).
4. Level and pack the gravel before placing the steel foundation.

Note

Do not leave the center of the gravel hollow. The foundation must contact gravel at all points.

Concrete Foundation

When installing a concrete foundation:

1. Select a location with good drainage.
2. Remove loose soil from the area indicated in the Fdn Dia "D" column of [Table 3 on page 26](#)

Note

A minimum soil bearing capacity of 2500 psf is recommended.

3. Excavate the area 8" to 12" below bottom of pad.
4. Fill excavated area with 3/4" crushed gravel.

5. Compact gravel.
6. Reinforce and pour curb-type or single-pour foundation according to [Figure 7 on page 26](#) and [Table 3 on page 26](#).

Note

Use high-strength sulphate-resistant concrete (3000 psi, 21 MPa minimum).

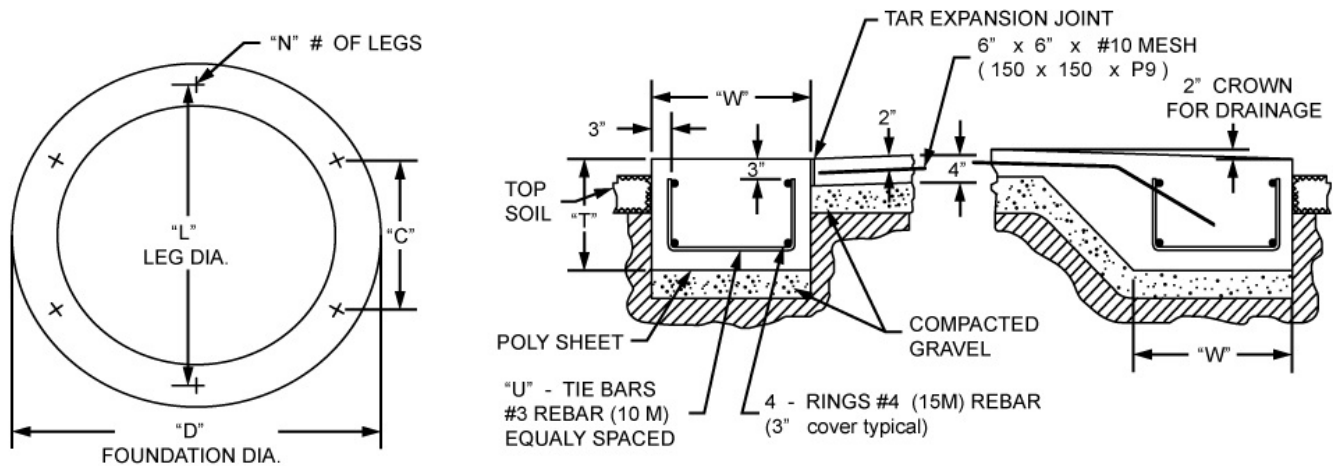
7. Place hopper on foundation using 1/2" anchor bolts.

Note

Use shims to ensure all legs contact the pad. Allow the concrete to cure for a minimum of 21 days (recommended) before filling the bin. This period of time ensures the concrete reaches at least 75% strength.

Note

A steel foundation is not recommended when using a concrete foundation.

Figure 7. Concrete Foundation**Table 3. Steel and Concrete Foundation Specifications**

Bin Diameter	Capacity (Tons)	Number of Legs	Foundation Diameter "D"	Leg Center Diameter "L"	Chord "C"	Depth "T" Concrete or Gravel	Width "W"	Tie Qty "U"
8'	18	4	107"	89"	67-1/2"	8" to 10"	18"	n/a
12'	27 to 57	6	167"	147"	74"	10" to 12"	20"	12
12'	73	6	171"	147"	74"	14" to 16"	24"	12
14'	34 to 54	6	182"	161-3/4"	80-3/4"	10" to 12"	20"	12
14'	73 to 92	6	186"	162-3/4"	80-3/4"	14" to 16"	24"	12
16'	75 to 123	8	209"	185"	70-3/4"	14" to 16"	24"	16
16'	147 to 170	8	209"	185"	70-3/4"	22" to 24"	24"	16

Table 3 Steel and Concrete Foundation Specifications (continued)

Bin Diameter	Capacity (Tons)	Number of Legs	Foundation Diameter "D"	Leg Center Diameter "L"	Chord "C"	Depth "T" Concrete or Gravel	Width "W"	Tie Qty "U"
16'	198 to 223	8	215"	185"	70–3/4"	24" to 28"	30"	24
18'	190 to 270	8	240"	209–1/2"	70–3/4" 89–1/2"*	24" to 34"	36"	28

* For 18' bins, Chord "C" is 70 ¾" between two legs and 89 ½" between all other legs.

Approximate Concrete Required (Curb Type)

- **Ring:** Leg Ctr dia (in.) x actual Width (W-in.) x Actual Depth (T-in.) / 14,850 = cubic yards.
- **Center Pad:** Actual Ring inside dia (in.) x Actual Ring inside dia (in.) x Actual depth (in.) / 59,404 = cubic yards.
- **Total approximate concrete yardage required:** add ring and center pad requirements. To convert cubic yards to cubic meters, multiply total yardage by 0.7645.

5. Operation



Before continuing, ensure you have completely read and understood this manual's Safety section, in addition to the safety information in the section(s) below.

5.1. Operation Safety

WARNING

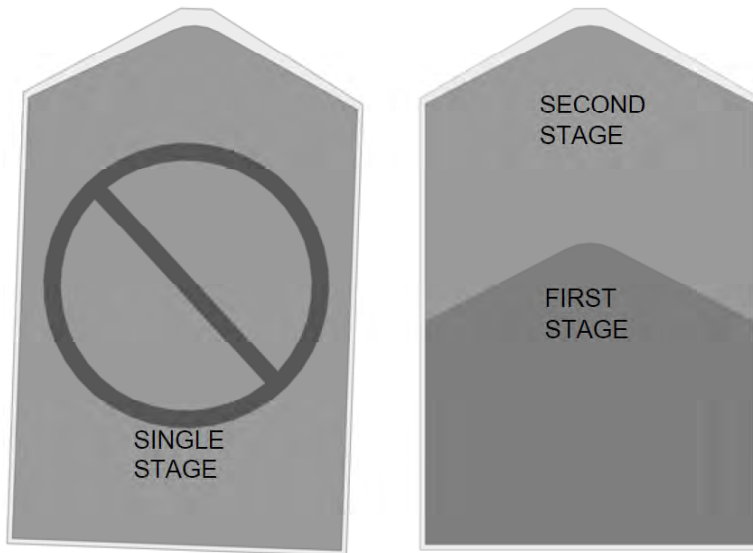
- Unload the smoothwall bin only as described in this manual.
- Always try to solve problems without entering a smoothwall bin from the inspection hatch or filler cap.
- Never enter a smoothwall bin when loading or unloading.
- Never enter a smoothwall bin if you don't know its unloading history. Bridged material may form above a void space below, causing potential for entrapment.
- Lock the smoothwall bin access points (where equipped) and close all other access doors when not in use.
- When filling, use top filler cap and direct product to the center of the smoothwall bin. Do not fill from the inspection hatch; this will cause uneven loading and could cause the smoothwall bin to collapse.
- Never overfill a smoothwall bin. Material should never come into contact with or place pressure on the roof.
- Have another trained person nearby who can shut down any powered loading, unloading, or internal equipment in case of accident.
- Keep the work area clean and free of debris.

5.2. Filling the

- 1.
2. Close and secure all access points.
3. Make sure all access points are closed.
4. **Initial Fill:** If the height is not greater than its diameter, the initial fill can be completed as desired. s that are taller than their diameter should be filled in two stages. The first stage should be filled to the height of the 's diameter, see [Figure 8 on page 29](#). Allow 10 days for settling to occur and then complete filling the . Refer to [Section 7. – Specifications on page 35](#) for your height and diameter.

Important

Complete this step unless otherwise advised of an alternative procedure by Westeel or a soils engineer. For example, in cases where the soil may not have a load bearing capacity adequate for the grain .

Figure 8. Initial Fill

5. Confirm maximum uneven settlement is not more than 1" (25 mm) 25 mm (1") from level after initial fill. Contact Westeel or your representative for assistance if required.

6. Fill the from the roof peak and direct material toward the center of the .

NOTICE

Filling from a location other than the filler cap (such as an inspection point) can cause structural damage to the .

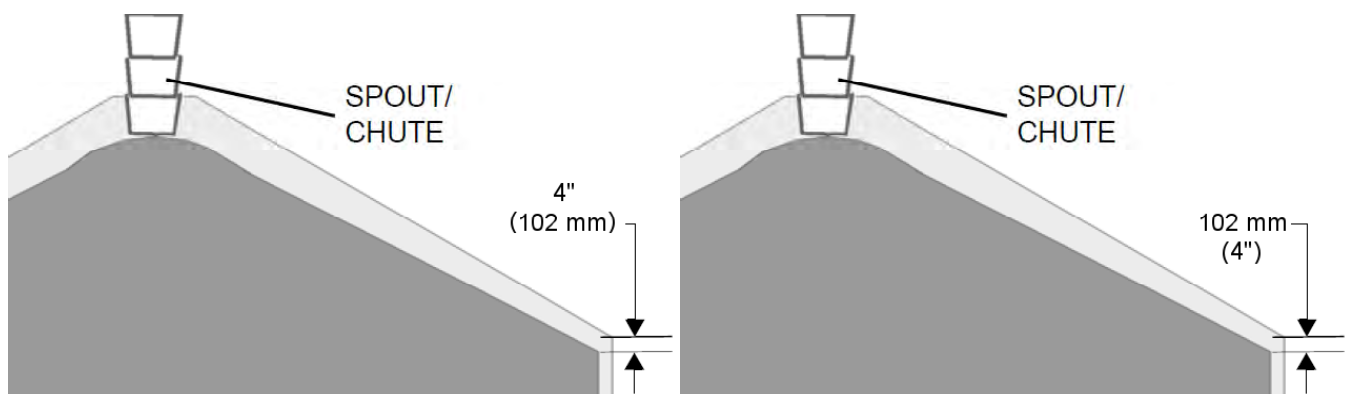
7. Use of a spout or chute will help prevent overfilling of the and obtain the most amount of storage from the , see [Figure 9 on page 29](#).

Important

The grain is full when filled to no more than 4" (102 mm) 102 mm (4") below the eave.

**WARNING**

Opening the inspection hatch on an overfilled can cause grain to spill out, creating a potential falling hazard.

Figure 9. Filling Process

8. Close access and fill points after filling (where applicable).



9. Attach a padlock to the access points (as applicable) for security and to prevent unauthorized entry.



10. **When equipped:** Lock out the ladder to prevent unauthorized entry.

5.3. Grain and Fertilizer Storage

The smoothwall bin may be used to store grain or fertilizer, depending on the model, refer to [Section 7. – Specifications on page 35](#).

Grain Storage

The smoothwall bin may be used to store dry, free flowing grains. Grain with higher moisture content levels can be safely stored with proper conditioning and monitoring. Ensure that you have the proper training and knowledge when storing grain that may not be in ideal condition. Grain stored in poor condition can cause problems in your smoothwall bin such as crusting, spoilage, or heating. Inspect grain quality regularly. Information on proper storage is available from local agricultural offices.

NOTICE

Storage of spoiled grain can damage the smoothwall bin interior.

Fertilizer Storage

The smoothwall bin may be used to store fertilizer. Ensure that you have the proper training and knowledge when storing fertilizer. Fertilizer stored in poor condition can cause problems in your smoothwall bin such as crusting, spoilage, or heating. Inspect fertilizer quality regularly. Information on proper storage is available from local agricultural offices.

5.4. Conditioning Grain

➡ When equipped with a conditioning system:

1. Start aeration fans after a 2' – 3' (610 mm — 914 mm) depth has been obtained.
2. The grain smoothwall bin must be filled with grain below the eave to allow proper aeration or drying.
3. Grain should not contact the roof vents or conditioning systems may not operate properly.
4. Keep grain smoothwall bin roof vents clear of ice.
5. Make sure that roof vents and fan are open and appropriately sized for your smoothwall bin. Consult your local dealer if you are unsure.

NOTICE

To prevent roof and/or smoothwall bin damage ensure all roof vents are open and unobstructed when conditioning grain.

5.5. Unloading Hopper s

1. Open the top lid or roof vents (as equipped) for ventilation when unloading the smoothwall bin.
2. Center unloading equipment under the slide gate.
3. Start the unloading equipment.
4. Open the slide gate slowly to avoid smoothwall bin wall stress.

5.6. Cleanout

Important

The smoothwall bin should be cleaned thoroughly to lessen the risk of fire, insect infestation, and mold growth.


1. Use a stiff brush to clean smoothwall bin sidewalls of thin layers of crusted material.

NOTICE


Do not use a wire brush to clean the inside of fertilizer smoothwall bins as they will damage the paint.

2. Remove all of the old grain (or fertilizer if applicable) and fines/dust.
3. Clean the smoothwall bin using a grain vac or similar means.

6. Maintenance

 Before continuing, ensure you have completely read and understood this manual’s Safety section, in addition to the safety information in the section(s) below.

6.1. Maintenance Safety

-  **WARNING**
- Keep components in good condition. Follow the maintenance procedures.
 - Ensure the service area is clean, dry, and has sufficient lighting.
 - Do not modify any components without written authorization from the manufacturer. Modification can be dangerous and result in serious injuries.
 - Use only genuine Westeel replacement parts or equivalent. Use of unauthorized parts will void warranty. If in doubt, contact Westeel or your local dealer.

6.2. Maintenance Schedule

Semi-Annually:
Section 6.3 – Repair Damaged Painted Surfaces on page 32
As Required:
Section 6.4 – Adjust the Rack and Pinion Plate on page 33

6.3. Repair Damaged Painted Surfaces

This procedure describes how to touch up paint nicks, scratches, etc with the paint kit that was provided with the bin. Additional touch up paint is available from your local Westeel dealer.

Refer to [Figure 10](#) – [Figure 12](#).

Figure 10. Scratches in Painted Surface



Figure 11. Nicks in Painted Surface

1. Clean the damaged area with a clean cloth.
2. Depending on the depth of the damage, sand the surface with a medium-grit abrasive pad or 180-grit sandpaper slightly larger than the affected area until the damage is smooth to the touch.
3. Blow off debris and clean the area thoroughly.
4. Shake Westeel-approved touch-up paint can thoroughly for one minute, see [Figure 12](#).

Figure 12. Westeel-approved Smoothwall White Touch-up Paint

5. Spray paint over the damaged area horizontally with a medium wet coat, working your way outward from the damage. It will be necessary to coat the damaged area multiple times with a flash off/dry time in between coats. Ensure at least 3-4 coats are applied to cover the damaged area. The length of time between coats will depend on the temperature. Refer to spray directions on the paint can.

Note

Avoid spraying on windy days as debris may stick to the paint.

NOTICE

Do not apply paint when temperature is below 10°C (50°F) as the coating may have undesired effects such as sags, lack of cure, or lack of adhesion.

6.4. Adjust the Rack and Pinion Plate

This procedure describes how to adjust the rack and pinion plate so that the maximum gap is 1/32".

1. Empty the bin.
2. Remove the shutoff plate and sprocket assembly.
3. Thoroughly clean the shutoff plate and mount.
4. Inspect the shutoff plate for damage and straighten if required.
5. Loosen all rollers just enough until they move in their slots.
6. Slide the shutoff plate into the fully closed position above the rollers. Ensure the chain stops are at the leading end of the plate and the plate is exactly centered from side-to-side.
7. Using a bottle jack under the shutoff plate, directly below the center of the opening, apply only enough pressure for the plate to contact the mount.

NOTICE

Excessive pressure will deform the plate and make movement difficult.

8. Bring each roller up until they just contact the plate and tighten the bolts. All rollers should turn easily by hand after tightening, but still contact the plate. Check and re-adjust if necessary.

Note

The two end rollers not covered by the shutoff plate are adjusted later in the procedure.

9. Remove the bottle jack and pull the plate out until it covers the two remaining end rollers.
10. Adjust the rollers as stated previously. No upward pressure should be applied to the plate during this part of the adjustment procedure. Check that the plate moves easily.
11. Re-install the sprocket assembly and handle.

7. Specifications

7.1. Magnum-F™

Magnum-F Hopper Epoxy Lined Fertilizer Storage Bins (40 Degree Bottom Cone)

Bin Includes Sidewall & Roof Ladders, 24" Top Opening, Bottom Inspection Hatch, 19" Discharge Stainless Steel R&P Slide Gate, Sight Glass(es) & 8" Pokehole.

Model Number	Fertilizer		Capacity		Diameter	Height	Auger Length
	Tonnes	Tons	(Cu. Ft.)	(Bu.)			
MAG 1204F	25	28	884	752	12' 6"	15' 1"	36'
MAG 1208F	39	43	1375	1169	12' 6"	19' 1"	36'
MAG 1212F	53	58	1866	1587	12' 6"	23' 1"	41'
MAG 1216F	67	74	2357	2004	12' 6"	27' 1"	46'
MAG 1404F	33	36	1141	970	14' 1"	15' 7"	36'
MAG 1408F	50	55	1764	1500	14' 1"	19' 7"	36'
MAG 1410F	59	65	2076	1765	14' 1"	21' 7"	41'
MAG 1412F	68	74	2387	2029	14' 1"	23' 7"	41'
MAG 1415F	81	89	2855	2427	14' 1"	26' 7"	46'
MAG 1416F	85	94	3010	2559	14' 1"	27' 7"	46'
MAG 1420F	103	113	3633	3089	14' 1"	31' 7"	51'
MAG 1608F	69	76	2434	2069	16' 0"	21' 10"	41'
MAG 1612F	92	101	3238	2753	16' 0"	25' 10"	46'
MAG 1615F	109	120	3841	3265	16' 0"	28' 10"	51'
MAG 1616F	114	126	4042	3436	16' 0"	29' 10"	51'
MAG 1620F	137	151	4847	4120	16' 0"	33' 10"	61'
MAG 1624F	159	176	5651	4804	16' 0"	37' 10"	61'
MAG 1625F	165	182	5852	4975	16' 0"	38' 10"	71'
MAG 1628F	180	199	6389	5431	16' 0"	40' 11"	71'

Model Number	Fertilizer		Capacity		Diameter	Height	Auger Length
	Tonnes	Tons	(Cu. Ft.)	(Bu.)			
MAG 1630F	191	211	6791	5773	16' 0"	42' 11"	71'
MAG 1632F	203	223	7193	6115	16' 0"	44' 11"	79'

Magnum-F Hopper Epoxy Lined Fertilizer Storage Bins (55 Degree Bottom Cone)

Bin Includes Sidewall & Roof Ladders, 24" Top Opening, Bottom Inspection Hatch, 19" Discharge Stainless Steel R&P Slide Gate, Sight Glass(es).

Model Number	Fertilizer		Capacity		Diameter	Height	Auger Length
	Tonnes	Tons	(Cu. Ft.)	(Bu.)			
MAG 120455F	30	33	1035	880	12' 6"	18' 5"	36'
MAG 120855F	43	48	1526	1298	12' 6"	22' 5"	41'
MAG 121255F	57	63	2017	1715	12' 6"	26' 5"	46'
MAG 121655F	71	78	2508	2132	12' 6"	30' 5"	51'
MAG 141055F	65	72	2291	1948	14' 1"	25' 7"	46'
MAG 141255F	74	81	2603	2213	14' 1"	27' 7"	46'
MAG 141555F	87	96	3070	2610	14' 1"	30' 7"	51'
MAG 141655F	91	101	3226	2743	14' 1"	31' 7"	61'
MAG 142055F	109	120	3849	3272	14' 1"	35' 7"	61'
MAG 161255F	100	111	3554	3021	16' 0"	30' 1"	51'
MAG 161555F	117	129	4157	3534	16' 0"	33' 1"	61'
MAG 161655F	123	136	4358	3705	16' 0"	34' 1"	61'
MAG 162055F	146	161	5162	4388	16' 0"	38' 1"	71'
MAG 162455F	168	185	5967	5072	16' 0"	42' 1"	71'
MAG 162555F	174	192	6168	5243	16' 0"	43' 1"	71'

Twin Air Hopper Epoxy Lined Fertilizer Storage Bins (40 Degree Bottom Cone)

Bin Includes Sidewall & Roof Ladders, 24" Top Opening, 19" Top Manway, 19" Discharge Stainless Steel R&P Slide Gate, Sight Glass(es).

Model Number	Fertilizer		Capacity		Diameter	Height	Auger Length
	Tonnes	Tons	(Cu. Ft.)	(Bu.)			
1408T	53	58	1870	1582	14' 1"	21' 6"	41'
1412T	71	78	2493	2120	14' 1"	25' 6"	46'
1416T	88	97	3116	2660	14' 1"	29' 6"	51'
1612T	95	104	3343	2821	16' 0"	27' 10"	46'
1616T	117	129	4148	3500	16' 0"	31' 10"	61'

Steel Foundations

Model Number	Suggested Bin Models
294105	Foundation Assembly (1 Ring) 1204F, 120455F
294108	Foundation Assembly (2 Rings) 1208F, 120855F, 1212F
294109	Foundation Assembly (3 Rings) 121255F, 1216F, 121655F
294102	Foundation Assembly (2 Rings) 1404F, 1408F, 1408T, 1410F, 141055F, 1412F, 141255F, 1412T
294103	Foundation Assembly (3 Rings) 1415F, 141555F, 1416F, 141655F, 1416T, 1420F, 142055F
294040	Foundation Assembly (2 Rings) 1608F, 1612F, 161255F, 1612T, 1615F, 161555F, 1616F, 161655F, 1616T
294041	Foundation Assembly (3 Rings) 1620F, 162055F
294042	Foundation Assembly (3 Rings HD) 1624F, 162455F, 1625F, 162555F
294043	Foundation Assembly (3 Rings HHD) 1628F, 1630F, 1632F

NOTE: Bulk density of fertilizer will vary from 55 to 65 lb/cu.ft. depending upon the blend and manufacturer. Westeel calculates the capacity by using 62 lb/cu. ft. If you purchase fertilizer and want to be sure that it can be stored in the bin, please ask the manufacturer of the fertilizer to provide you its bulk density. Take this number and multiply by the cu. ft. capacity of the bin for an exact tonnage rating.

*Please see Program for information on the Smoothwall Freight.

*Check with Westeel Customer Service for details.

7.2. Magnum-G™

Magnum-G Hopper Grain Storage Bins — Non-Epoxy Lined (40 Degree Bottom Cone)

Bin Includes Sidewall & Roof Ladders, 24" Top Opening, Bottom Inspection Hatch, 19" Discharge R&P Slide Gate & Sight Glass(es).

Model Number	Grain Tons	Feed Tons	Capacity		Diameter	Height	Auger Length
			(Cu. Ft.)	(Bu.)			
MAG 1204G	23	18	884	752	12' 6"	15' 1"	36'
MAG 1208G	36	28	1375	1169	12' 6"	19' 1"	36'
MAG 1212G	49	38	1866	1587	12' 6"	23' 1"	41'
MAG 1216G	62	48	2357	2004	12' 6"	27' 1"	46'
MAG 1404G	30	23	1141	970	14' 1"	15' 7"	36'
MAG 1408G	46	36	1764	1500	14' 1"	19' 7"	36'
MAG 1410G	54	42	2076	1765	14' 1"	21' 7"	41'
MAG 1412G	63	48	2387	2029	14' 1"	23' 7"	41'
MAG 1415G	75	58	2855	2427	14' 1"	26' 7"	46'
MAG 1416G	79	61	3010	2559	14' 1"	27' 7"	46'
MAG 1420G	95	73	3633	3089	14' 1"	31' 7"	51'
MAG 1608G	64	49	2434	2069	16' 0"	21' 10"	41'
MAG 1612G	85	65	3238	2753	16' 0"	25' 10"	46'
MAG 1615G	100	77	3841	3265	16' 0"	28' 10"	51'
MAG 1616G	106	81	4042	3436	16' 0"	29' 10"	51'
MAG 1620G	127	97	4847	4120	16' 0"	33' 10"	61'
MAG 1624G	147	114	5651	4804	16' 0"	37' 10"	61'
MAG 1625G	153	118	5852	4975	16' 0"	38' 10"	71'
MAG 1628G	167	128	6389	5431	16' 0"	40' 11"	71'
MAG 1630G	177	136	6791	5773	16' 0"	42' 11"	71'
MAG 1632G	188	144	7193	6115	16' 0"	44' 11"	79'

Magnum-G Hopper Grain Storage Bins — Non-Epoxy Lined (55 Degree Bottom Cone)

Bin Includes Sidewall & Roof Ladders, 24" Top Opening, Bottom Inspection Hatch, 19" Discharge R&P Slide Gate & Sight Glass(es).

Model Number	Grain Tons	Feed Tons	Capacity		Diameter	Height	Auger Length
			(Cu. Ft.)	(Bu.)			
MAG 120455G	27	21	1035	880	12' 6"	18' 5"	36'
MAG 120855G	40	31	1526	1298	12' 6"	22' 5"	41'
MAG 121255G	53	41	2017	1715	12' 6"	26' 5"	46'
MAG 121655G	66	51	2508	2132	12' 6"	30' 5"	51'
MAG 141055G	60	46	2291	1948	14' 1"	25' 7"	46'
MAG 141255G	68	53	2603	2213	14' 1"	27' 7"	46'
MAG 141555G	80	62	3070	2610	14' 1"	30' 7"	51'
MAG 141655G	84	65	3226	2743	14' 1"	31' 7"	61'
MAG 142055G	101	77	3849	3272	14' 1"	35' 7"	61'
MAG 161255G	93	72	3554	3021	16' 0"	30' 1"	51'
MAG 161555G	109	84	4157	3534	16' 0"	33' 1"	61'
MAG 161655G	114	88	4358	3705	16' 0"	34' 1"	61'
MAG 162055G	135	104	5162	4388	16' 0"	38' 1"	71'
MAG 162455G	156	120	5967	5072	16' 0"	42' 1"	71'
MAG 162555G	161	124	6168	5243	16' 0"	43' 1"	71'

Twin Air Hopper Grain Storage Bins - Non-Epoxy Lined (40 Degree Bottom Cone)

Bin Includes Sidewall & Roof Ladders, 24" Top Opening, 19" Top Manway, 19" Discharge R&P Slide Gate & Sight Glass(es).

Model Number	Grain Tons	Feed Tons	Capacity		Diameter	Height	Auger Length
			(Cu. Ft.)	(Bu.)			
1412TG	65	50	2493	2120	14' 1"	25' 6"	46'

Super Twin Air Hopper Grain Storage Bins — Non-Epoxy Lined (40 Degree Bottom Cone)

Bin Includes Sidewall & Roof Ladders, 24" Top Opening, 19" Top Manway, 19" Discharge R&P Slide Gate & Sight Glass(es).

Model Number	Grain Tons	Feed Tons	Capacity		Diameter	Height	Auger Length
			(Cu. Ft.)	(Bu.)			
1612TG	95	104	3343	2821	16' 0"	27' 10"	46'
1616TG	117	129	4148	3500	16' 0"	31' 10"	61'

Steel Foundations

Model Number	Suggested Bin Models
294105	Foundation Assembly (1 Ring) 1204G, 120455G
294108	Foundation Assembly (2 Rings) 1208G, 120855G, 1212G
294109	Foundation Assembly (3 Rings) 121255G, 1216G, 121655G
294102	Foundation Assembly (2 Rings) 1404G, 1408G, 1410G, 141055G, 1412G, 141255G, 1412TG
294103	Foundation Assembly (3 Rings) 1415G, 141555G, 1416G, 141655G, 1420G, 142055G
294040	Foundation Assembly (2 Rings) 1608G, 1612G, 161255G, 1612TG, 1615G, 161555G, 1616G, 161655G, 1616TG
294041	Foundation Assembly (3 Rings) 1620G, 162055G
294042	Foundation Assembly (3 Rings HD) 1624G, 162455G, 1625G, 162555G
294043	Foundation Assembly (3 Rings HHD) 1628G, 1630G, 1632G

NOTE: Grain bin capacities are based on 52 lb/cu.ft.

Feed bin capacity are based on 40 lb/cu.ft.

*Please see Program for information on the Smoothwall Freight.

*Check with Westeel Customer Service for details.

8. Westeel Warranty: Smoothwall Bins

The manufacturer warrants each new Smoothwall Hopper Bin manufactured by it to be free from defects in material or workmanship from date of manufacture as follows:

- Structural: 10 years
- Paint (standard farm use): 5 years
- Paint (commercial use): 1 year

If such a defect is found by the Manufacturer to exist within the warranty period, the Manufacturer will, at its option, repair or replace such product free of charge, F.O.B. the factory of manufacture.

CONDITIONS AND LIMITATIONS

1. The product must be installed, operated and maintained in accordance with instructions published by the Manufacturer. Failure to do so will void the warranty.

The purchaser must inspect the product on a semi-annual basis. Paint nicks, scratches, etc are be touched up with the paint kit provided with the bin. Additional touch up paint is available from your local Westeel dealer at a reasonable cost.

2. Warranty is void if the customer combines structural components (storage bin, steel foundation) produced and incorporated into the system from another manufacturer.
3. Malfunctions or failure resulting from misuse, abuse, negligence, alteration, accident, lack of proper maintenance or vacuum collapse shall not be considered defects under this warranty.
4. The warranty will be voided if the structure is modified, has attachments to it not approved by Westeel, or has attachments approved by Westeel that have been improperly installed. In all cases Westeel shall determine what constitutes proper Installation of approved accessories.

The Manufacturer shall not be liable for any consequential or special damage which any purchaser may suffer or claim to suffer as a result of any defect in the product. "Consequential" or "Special Damages" as used herein include, but are not limited to, lost or damaged products or goods, costs of transportation, lost sales, lost orders, lost income, increased overhead, labor and incidental costs and operational inefficiencies.

This warranty constitutes the manufacturer's entire and sole Warranty and the manufacturer expressly disclaims any and all other warranties, including but not limited to express and implied warranties as to merchantability, fitness for particular purposes sold and description or quality of the product furnished hereunder.

An officer of the company must authorize any exceptions to this warranty in writing, The manufacturer reserves the right to change models and specifications at any time without notice or obligation to improve previous models.



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