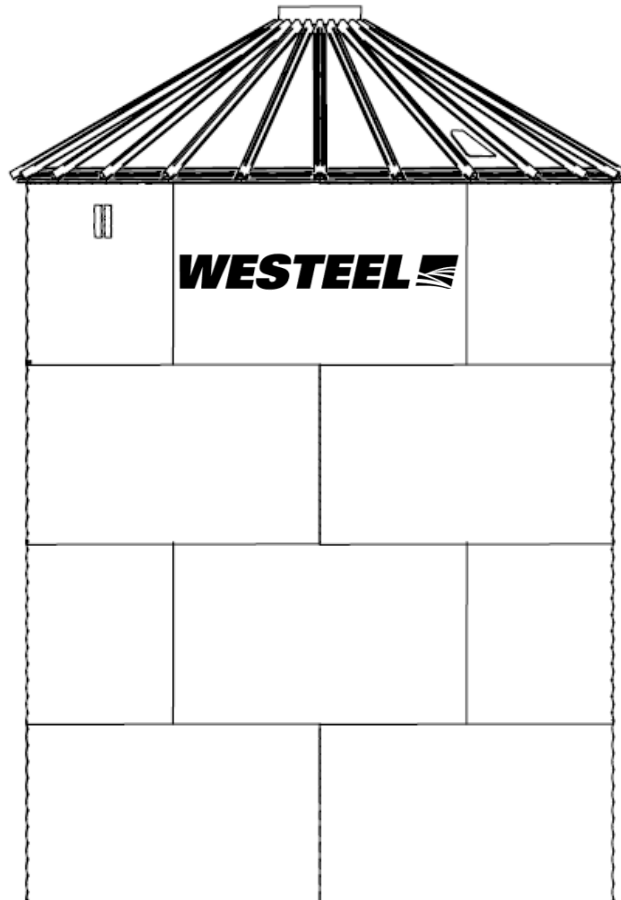




WC Farm Series 12' Bin for Hopper

Installation and Storage Instructions



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: 198938 R4

Revised: December 2016



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1. Introduction

This manual describes how to assemble a Westeel 12' Bin for Hopper.

Before assembling the bin for hopper, please read this manual. Familiarize yourself with the process and the necessary precautions for efficient and safe assembly.

Everyone present at the assembly site is required to be familiar with all safety precautions.

Keep this manual available for frequent reference and review it with new personnel. Call your local distributor or dealer if you need assistance or additional information.





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.


-  **DANGER** Indicates an imminently hazardous situation that, if not avoided, will result in serious injury or death.
-  **WARNING** Indicates a hazardous situation that, if not avoided, could result in serious injury or death.
-  **CAUTION** Indicates a hazardous situation that, if not avoided, may result in minor or moderate injury.
-  **NOTICE** Indicates a potentially hazardous situation that, if not avoided, may result in property damage.

2.2. General Safety

The safety information in the safety section of this manual applies to all safety practices. Specific safety information (such as Operation Safety), can be found in the appropriate section.

YOU are responsible for the **SAFE** use and maintenance of your bin for hopper. **YOU** must ensure that you and anyone else who is going to work around the bin for hopper understands all procedures and related **SAFETY** information contained in this manual.

Remember, **YOU** are the key to safety. Good safety practices not only protect you, but also the people around you. Make these practices a working part of your safety program. All accidents can be avoided.

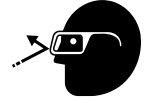
- It is the bin for hopper owner, operator, and maintenance personnel's responsibility to read and understand **ALL** safety instructions, safety decals, and manuals and follow them when assembling, operating, or maintaining the equipment. 
- Owners must give instructions and review the information initially and annually with all personnel before allowing them to operate the bin for hopper. Untrained users/operators expose themselves and bystanders to possible serious injury or death.
- The bin for hopper is not intended to be used by children.
- Use the bin for hopper for its intended purposes only.
- Do not modify the bin for hopper in any way without written permission from the manufacturer. Unauthorized modification may impair the function and/or safety, and could affect the life of the bin for hopper. Any unauthorized modification of the bin for hopper will void the warranty.

2.3. Personal Protective Equipment

The following Personal Protective Equipment (PPE) should be worn at all times when assembling 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.



2.4. 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.

2.5. Decal Installation/Replacement

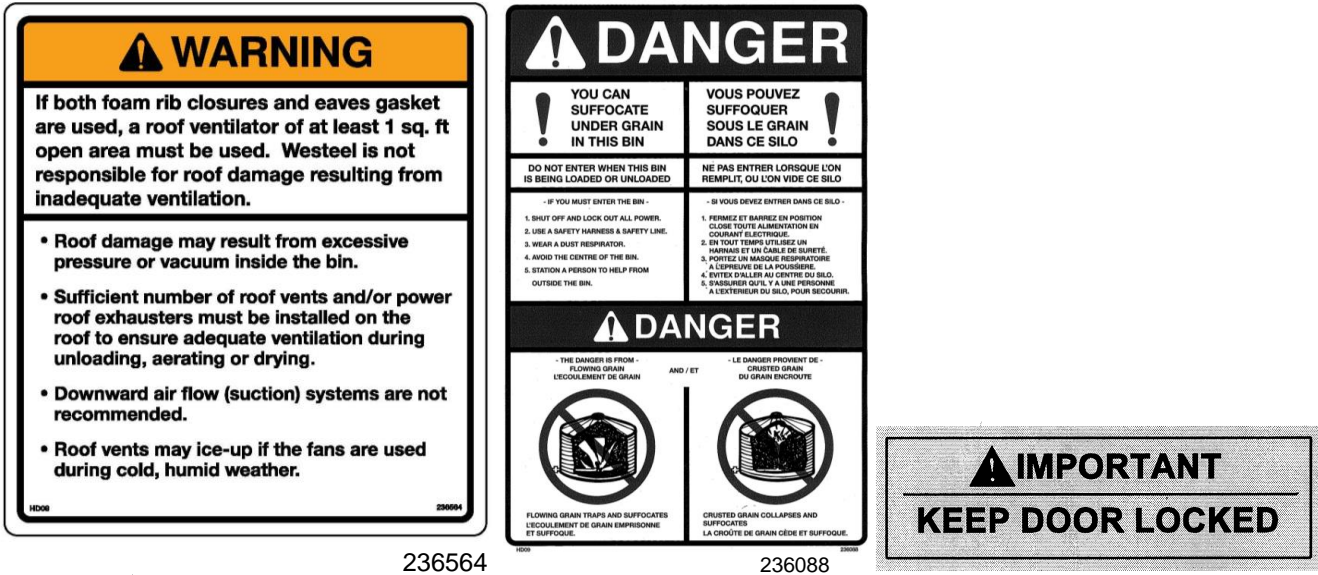
1. Decal area must be clean and dry, with a temperature above 50°F (10°C).
2. Decide on the exact position before you remove the backing paper.
3. Align the decal over the specified area and carefully press the small portion with the exposed sticky backing in place.
4. Slowly peel back the remaining 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 sign backing paper.

2.6. Safety Decal Locations and Details

Replicas of the safety decals that are attached to the bin for hopper and their messages are shown in the figure (s) that follow. Safe operation and use of the bin for hopper 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 1. Safety Decals



236564

236088

3. Before You Begin

3.1. Bin Design and Capacity

These Westeel Grain Bins are designed for:

1. Non-corrosive free-flowing materials up to 55 lbs/ft³ (880 kg/m³) average compacted bulk density.
2. Maximum horizontal gusted wind speed of 94 mph (151 km/h)
3. Zero seismic activity
4. Roof Snow Load of 24.0 lbs/ft² (1.15 kPa)

3.2. Foundation Design and Loads

The foundations for the stiffened bin models are based on 4000 lbs. per sq. ft. (192 kPa) soil bearing capacity. All foundation designs use 3000 lbs. per sq. in. (21 MPa) ultimate compressive strength (after 28 days) for concrete and 43,500 lbs. per sq. in. (300 MPa) re-bar. The foundation designs included in this manual are suggestions only, and will vary according to local soil conditions. Westeel will not assume any liability for results arising from their use.

Important

Foundation should be uniform and level. Level should not vary by more than ¼" over a span of four feet under the bottom ring angle. Any variance from level must be shimmed under upright base assembly. If being utilized to support a full floor aeration system, this levelness requirement should extend across the complete floor area.

3.3. Site and Assembly

Unless otherwise specifically provided in writing, Westeel does not take responsibility for any defects or damages to any property, or injury to any persons, arising from or related to any site or assembly considerations, including but not limited to:

- Bin location and bin siting
- Soil conditions and corresponding foundation requirements (note that the examples provided in manuals are for specifically stated soil conditions)
- Bin assembly (Westeel recommends the use of qualified bin installers; contact Westeel for information on installers in your area)
- Field modifications or equipment additions that affect the bin structure
- Interconnections with neighboring structures
- Compliance with all applicable safety standards, including but not limited to fall restraint systems (ladders or other systems). Local safety authorities should be contacted as standards vary between jurisdictions.

3.4. Methods of Installation

The recommendations for assembling and installing Westeel grain bins must be closely followed to achieve the full strength of the bin and to achieve adequate weather sealing. The product warranty is void if:

1. Wall sheets and/or uprights not specified for a given tier are used.
2. Foundations are found to be inadequate or out-of-level.
3. Anchor bolts (cast-in-place, drill-in, chemical type or other) are found to be inadequate.
4. Off-center loading or unloading is used. (This does not apply to the use of approved side unloading systems.)
5. Materials stored are not free-flowing or have a compacted bulk density greater than 55 lbs/ft³ (880 kg/m³).

If using bin jacks during assembly, always lift on an upright. Choose a hoist with a adequate capacity for the expected empty bin deadload. Make sure the rated capacity of the hoist is not exceeded.

3.5. Cutting Openings in Wide Corr Grain Bins

This section provides instructions for cutting openings to accommodate fan transitions, unloading augers and roof vents.

General Rules for Cutting openings

1. Never cut any uprights, roof ribs, or wall sheet bolted vertical seams to create an opening.
2. Openings shall be located so equipment being installed won't interfere with any bin components/ accessories.
3. Openings shall be minimized as much as possible for structural integrity of grain bins.
4. Corners in openings shall be cut with minimum radius of 1/8" to reduce stress concentration.
5. Openings shall be sealed all the way around for all weather conditions.
6. Instructions shall be followed closely to avoid damage to bin structure.
7. Except cutting openings described below, any other modification to Westeel bins shall be approved by a professional engineer.

Openings for Fan Transitions of Aeration Floors

1. Consult aeration floor installation instructions for information on Planning floor layout.
2. Openings shall be centered to a wall sheet in horizontal direction.
3. Opening shall be cut as tight as it can be for the transition to go through and shall have no more than 1/4" gap on any side to the section of a fan transition going through a bin wall.
4. Opening height for fan transition shall be limited to 12.5" inches from bottom edge of a bottom wall sheet.
5. Opening width shall not exceed 46.5" for stiffened bins and 72.5" for unstiffened bins.
6. Vertical support shall be required to support load above opening.
7. Bottom angles may be cut flush to the sides of an opening to form part of opening.

Openings for Unloading Augers of Wide Corr Bins with Full Floor Aeration

1. Consult aeration floor installation instructions for information on Planning floor layout.
2. Openings shall be centered to a wall sheet in horizontal direction.
3. Openings shall be cut as tight as it can be for unloading auger to go through and shall have no more than 1/4" gap to auger flange section on any side.
4. Opening height for any auger shall be limited to 12.5" from the bottom edge of a bottom wall sheet.
5. Vertical flange of a bottom angle may be cut flush to sides of an opening to form part of opening.



Openings for Roof Vents in Roof Sheets

1. Openings shall be centered between roof ribs and have 2.5" minimum distance between edge of opening and base of a roof rib.
2. Openings can be square, rectangular, or round.
3. Openings shall be the same size as the inlet opening of a vent being installed.
4. Any side of a square/rectangular opening shall have a maximum length of 18" and a circular opening shall have a maximum diameter of 24".

3.6. Critical Assembly Requirements

To ensure a successful, safe and reliable outcome you must comply with the following assembly techniques and practices:

1. Comply with all local code and jurisdictional requirements applicable to your bin for hopper installation.
2. Design and build foundations with the necessary strength for the loads they must support, and for local soil conditions. Westeel foundation guidelines are based on specific stated conditions and may not be applicable to local conditions.
3. Your foundation must provide uniform and level support to the structure being supported. Surface imperfections causing gapping must be remedied. This may involve, but not be limited to a) grouting under the bottom ring of a non-stiffened bin or tank, and b) shimming under the uprights of a stiffened bin or tank, or under the legs of a hopper.
4. Make sure that the proper hardware is utilized for all bolted connections. If a shortage occurs, do not substitute. Take the necessary steps to obtain the proper hardware. Make sure nuts are tightened to the required torque values as specified in the appropriate assembly manual.
5. Comply with all assembly instructions provided in the appropriate assembly manual to make sure your whole bin for hopper is constructed safely. **Important: Do not deviate from the wall sheet and upright layouts provided.**
6. Before anchoring your structure to its foundation, make sure the structure is round. The maximum variation from perfect roundness is 3/4" on the radius. Locate anchor bolts toward the outside of the anchor bolt holes (away from the circle) to permit the incremental expansion that can occur with the initial filling.
7. When installing roof stiffening rings, if it is necessary to shorten the stiffening ring tubes, shorten them as little as possible. Initially the nuts on the expanders should be centered and as close together as possible. When tightening, share the amount of take-up between expanders such that the nuts remain centered, and the amount of engagement between all expanders on the same ring is equalized.
8. If extending an existing bin or tank, ensure that the foundation is adequate for the increased loads it must support.
9. If installing an existing bin on a hopper, make sure the bin is designed for a hopper application, and that the foundation is capable of withstanding the substantial point loads that the hopper legs apply. If uprights are present, make sure that they are supported.
10. Make sure that an integral end-to-end connection exists between all mating uprights. Successive uprights must not overlap.
11. Vertical tolerances between uprights and wall sheets are tight. This can be affected by "jacking" techniques, which can allow the tolerance to grow or shrink depending on the technique used. The gapping between successive uprights must be monitored to ensure that upright holes align with wall sheet holes.
12. If catwalks are being installed on the structure, upright catwalk upgrades are likely required. The upgraded stiffeners must be installed in the correct locations to support the intended catwalk loads. Also, the

structure must be properly oriented to ensure the eventual correct alignment between the catwalks and the supporting uprights. Finally, the connectors that tie into the uprights and support the catwalks are best installed during assembly of the structure. See the catwalk assembly manual for additional details.

3.7. Product Storage

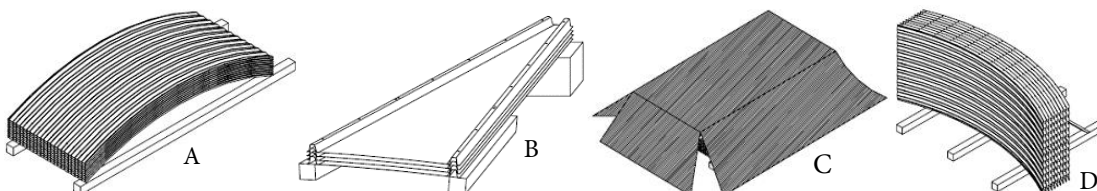
Rust on Galvanized Parts

1. White rust forms when moisture is allowed to collect on galvanized surfaces that have yet to develop the durable zinc oxide layer. This zinc oxide layer naturally occurs as the surface interacts with carbon dioxide, and is characterized over time by the dull grey appearance that weathered galvanized surfaces get.
2. Parts that are not well ventilated or well drained can collect water between surfaces and develop white rust.
3. White rust is not a structural concern if its development is stopped in the early stages. A light film or powdery residue can occur after a period of heavy rainfall or a short time of improper storage. If white rust has started to develop, separate parts and wipe off any moisture. Next, using a clean cloth, apply a thin layer of petroleum jelly or food-grade oil to the entire part.
4. If moisture is left on parts, this white rust can become more aggressive and turn into red rust. Red rust can cause degradation in the material and become a structural concern. Any parts that have red rust should be replaced immediately.

Storage Guidelines

- Keep all bundles dry before assembly of the bin.
- Start assembly as soon as possible.
- Do not lay bundles on the bare ground. Raise all bundles 6" to 8" off the ground on wood blocks or timbers. (See Detail A in [Figure 2 on page 11.](#))
- Store curved wall sheets 'hump-up'. (See Detail A in [Figure 2 on page 11.](#))
- All other bundles material should be placed so that they are well sloped to promote good drainage. (See Detail B in [Figure 2 on page 11.](#))
- Roof sheets must be elevated at least 12" at the small end of the sheets. (See Detail B in [Figure 2 on page 11.](#))
- Temporary storage can be provided by erecting a simple framework supporting a waterproof tarp. (See Detail C in [Figure 2 on page 11.](#))
- All bin boxes, ladder boxes and hardware boxes should be stored inside. These are not waterproof, and will deteriorate in normal weather conditions, allowing moisture to contact the parts inside.

Figure 2. Product Storage



If Parts Become Wet

1. If parts become submerged or wet, the bundles should be opened as soon as possible, sheets or material separated and dried. Keep separated until assembly.



Brace parts properly so as to avoid damage or injury from material falling when in storage. (See Detail D in [Figure 2 on page 11.](#))

- Any boxed parts that become wet should be dried and stored in a new box that is free of moisture.
- In addition to wiping down wall sheets, a food-grade oil can also be applied with a clean, lint-free cloth. This will assist in preventing any further moisture from contacting the galvanizing on the steel. Due to safety concerns with installation and use, Westeel does not recommend the use of oil on other parts such as roof sheets and safety ladders.

3.8. Grain Bin Use

- Do not off-center unload a grain bin. It is imperative to unload from the center of the bin first, until as much grain as possible has been removed, and only then proceed to unload from the next closest unload gate to the center. Continue utilizing the unload gates in succession from the center towards the outside. Gate control mechanisms should be clearly marked and interconnected to prevent an external gate from being opened first.
- The only exception to center unloading is when a properly designed and installed side draw system is utilized. However, as bins tend to go out of round when employing side draws, the bin must be completely emptied before refilling.
- When unloading a bin with a mobile auger through a properly designed auger chute, the entry end of the auger should be pushed into the center of the bin before the auger is engaged. Slower rates of flow are preferable and should not exceed the capacity of an 8" auger.
- Ensure that the inner door panels of grain bin doors are completely closed and latched before filling the grain bin.
- Never enter a loaded grain bin for any reason. Grain can be a killer.

3.9. Important Notes

- Westeel does not provide a foundation design for this product, and is not liable for any damages or injuries related to inadequately designed or constructed foundations. Customers must contract professional services for all foundation design and construction work. For information on foundation design requirements, refer to [Section 3.2. – Foundation Design and Loads on page 8.](#)
- In order to maintain your wall sheets in good condition separate sheets and allow air circulation between them. Store sheets in a dry place. Do not store sheets with sheet ends pointing upwards.
- To keep an even pressure on walls, the bin must always be unloaded from the centre.
- Contact local power officials for minimum power line clearance.
- See [Section 3.6. – Critical Assembly Requirements on page 10](#) for mandatory siting and assembly requirements.
- Store only non-corrosive, free-flowing materials up to 55 lbs/ft³ (800 kg/m³) average compacted density in Westeel bins.
- Tighten all bolts to the recommended torque settings.
- Do not locate grain bins close to high buildings, which might cause snow to fall onto or build up on the roof of the grain bin. Consider future expansion and allow space for loading and unloading of the bin. Your dealer and local government agricultural consultants can help you plan your storage system for maximum efficiency.



4. Preparation

4.1. Check Shipment

Unload the parts at the assembly site and compare the packing slip to the shipment. Ensure that all items have arrived and that none are damaged.

Report damaged parts or shortages immediately to the delivering carrier, followed by a confirming letter requesting inspection by the carrier, if required. Order any replacement parts immediately to ensure that assembly will not be held up by missing parts. All parts will be charged for and credit will be issued by party at fault. No credit will be issued if freight bills are signed as received in good condition.

4.2. List of Tools and Equipment

Use quality tools and equipment. Use them safely, and correctly, for their intended use. Tools for this application should include:

Tools

- Electric or pneumatic (air) impact tools
- Power drill and drill bits
- Sockets (multiple 9/16" and 1/2" sockets recommended)
- Large-pocket carpenter pouch
- 8" (20 cm) metal punches (for aligning bolt holes)
- Step and extension ladders, construction grade
- 6-point wrenches (Imperial, box end)
- Metal-cutting saw suitable for cutting roof rings and wind rings
- Scaffolding
- Centre-post bin stand
- Crane and/or bin jacks

Minimum Recommended Safety Equipment

- A properly-stocked first-aid kit
- Eye, foot, head, and hand protection (safety glasses, steel-toed boots, hard hat, work gloves)
- Cable, chain, or rope to tie-off bin or jacks in case of wind
- Body harness and lifeline (for use where falling hazard exists)
- Ground fault interrupt protected electrical hook-ups

4.3. Order Optional Equipment

Optional equipment such as unloading augers, aeration equipment, anchor bolts, foundation sealant, external ladders, safety cage and platforms, etc., should all be on site and checked before assembly starts. Plan your installation in advance. For details, see assembly instruction supplied with optional equipment.



5. Assembly



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. Assembly Safety

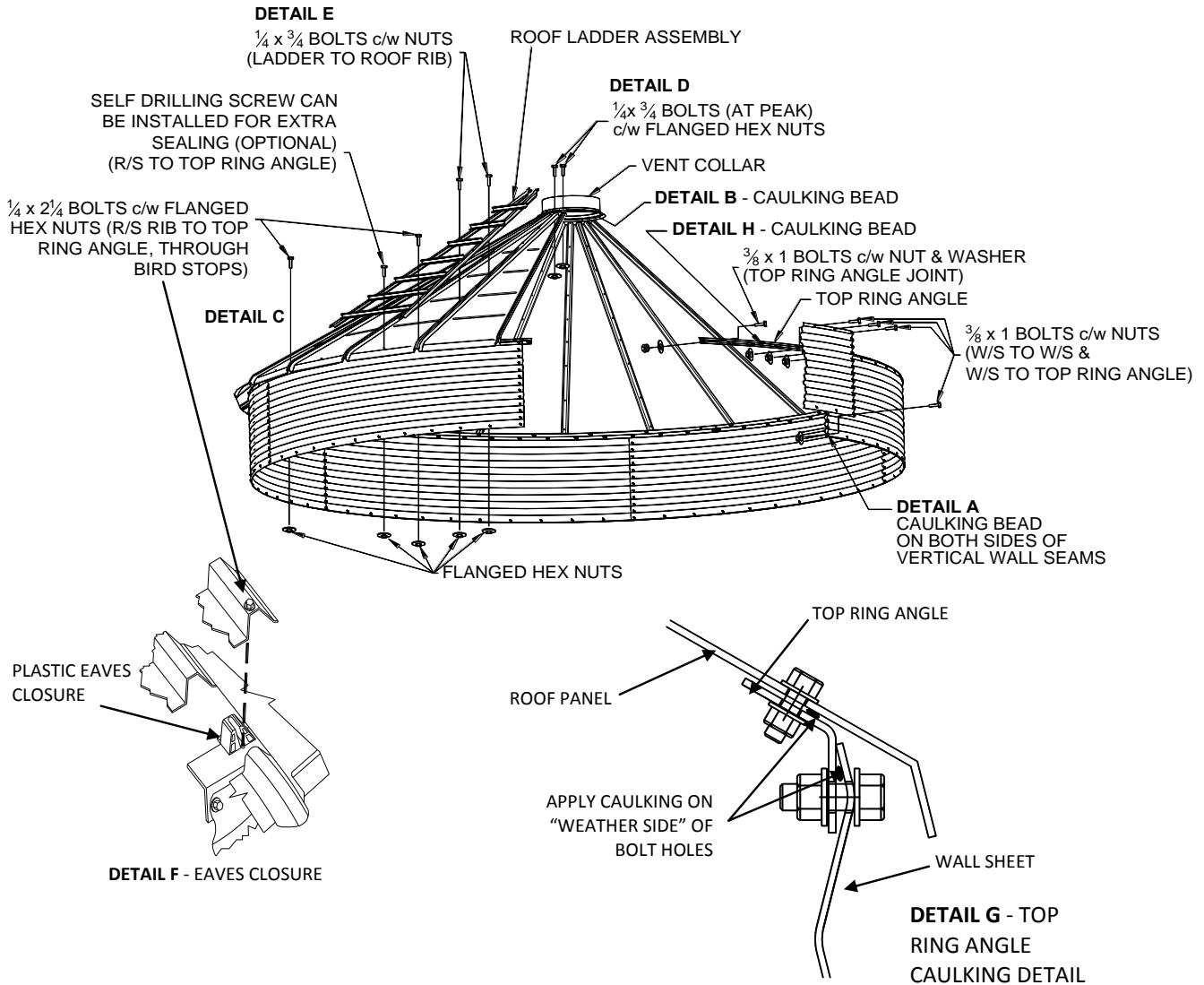
WARNING

- 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.
- Carry out assembly in a large open area with a level surface.
- Always have two or more people assembling the bin for hopper.
- 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.
- Stay away from overhead power lines and other obstructions during assembly. Contact with power lines can cause electrocution.
- Do not work in high winds.

5.2. Roof Assembly

1. Assemble the top tier of wall sheets as per [Section 5.4. – Wall Sheet Assembly on page 19](#) and [Figure 3 on page 15](#).
 - a. Use 3/8" x 1" bolts and 3/8" nuts.

Figure 3. 12' Roof Assembly Detail



2. Caulk the vertical seams. (See Detail A in [Figure 3 on page 15](#).)

Note

Careful use of drift pins will ease assembly.

Note

Do not tighten any nuts throughout the entire roof assembly until [Step 14 on page 16](#) (unless otherwise specified).

3. Attach the top ring angles to the top corrugation of the top tier of wall sheets with the seams coinciding.

- a. Apply caulking as shown in Details G and H in [Figure 3 on page 15](#).
- b. Make the bin as round as possible.
- 4. Caulk the underside of the vent collar. (See Detail B in [Figure 3 on page 15](#).)
- 5. Place the roof sheets on the top ring angle and under the vent assembly, to shed water.
Roof sheets have a large rib and a small rib for nesting.
- 6. Place the large rib on top. (See [Figure 4 on page 16](#).)

Figure 4. Roof Sheet Laps



Description	Roof Sheet	Top Angle	Vent Assembly	Ladder	Eaves Closure
P/N for 12' Bin	235600	236120	236070	235615	235651

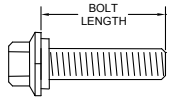
- 7. Position the vent assembly with the latch at ninety degrees to the roof sheet on which the roof ladder will be located.
- 8. Install a 1/4" x 2 1/4" bolt through the common hole of the roof sheets, the roof ladder and the top ring angle at the eaves. (See Detail C in [Figure 3 on page 15](#).)
 - a. Use 1/4" x 2 1/4" bolts for all roof rib / top ring angle connections.
 - b. Use a 1/4" flange nut on the inside of the top ring angle
- 9. Install one 1/4" x 3/4" bolt at the vent cap using a 1/4" flanged hex nut. (See Detail D in [Figure 3 on page 15](#).)
- 10. Install 1/4" x 3/4" bolts using regular 1/4" hex nuts along the roof ribs. (See Detail E in [Figure 3 on page 15](#).)
- 11. Proceed with installing the remaining roof sheets in a similar fashion.

Note

It may be necessary to slide the ring of wall sheets in or out, or to raise or lower the vent assembly to get the vent to sit horizontally and in the best location for the erection of the remainder of the roof sheets. If the weight of the roof tips the vent assembly too much, a sheet or two on the opposite side can be installed to balance the load.

- 12. After all roof sheets are in place, tighten the nuts around the vent collar.
If ventilation is not required at the eaves, they may be sealed off by inserting eaves closures from the inside of the bin between the top ring angle and the roof rib. (See Detail F - Eaves Closure in [Figure 3 on page 15](#).)
- 13. Tighten the nuts at the eaves after inserting closures.
- 14. Tighten the remaining nuts along roof ribs and in wall sheets.

Table 1. Roof Hardware Usage

	152398	152402	154168	154156
	1/4 x 3/4 bolt c/w washer	1/4 x 2 1/4 bolt c/w washer	1/4 hex nut	1/4 flange nut
Roof sheet to vent collar	•			•
Center of roof sheet to top ring angle	•		•	
Roof sheet to top ring angle		•		•
Roof sheet to roof sheet	•		•	



5.3. Bin Roundness

It is imperative that the bin be as round as possible. The following steps describe how to ensure the bin is round.

1. Verify that the foundation meets all the requirements of the installation.
2. Scribe the bin circumference onto the foundation as follows:
 - a. Anchor a string to the exact center of the concrete foundation.
 - b. Consult the following table to find the scribe radius for the size of the bin being assembled.
 - c. Using the required string length, scribe the bin circumference onto the foundation.

The radius values given in the chart are 3/4-inch smaller than the wall sheet radius at the bottom. This ensures that the scribed circle can be seen during assembly. A perfectly placed ring of sheets should be 3/4 inch on the outside of this scribed circle.
3. After the first ring of wall sheets has been assembled, check the position and roundness of the ring:
 - a. Verify that the maximum amount that the bin is out of round is no more than 0.75 " on the radius, when measured from the center of the bin.
 - b. Verify that the wall sheets form a smooth circle with no flat spots or cauliflower shaped curves.
 - c. Before anchoring the bin to the foundation, re-check to ensure that the bin is round and within tolerance.

Correcting for roundness becomes much more difficult the longer you wait.
4. Locate anchor bolts towards the outside of the anchor bolt slots (away from bin) to permit the incremental expansion that can occur with the initial filling of the bin.
5. When setting jacks, make sure they are also set round and that they are anchored to the concrete.

Table 2. Scribe Radius – 12' Bins

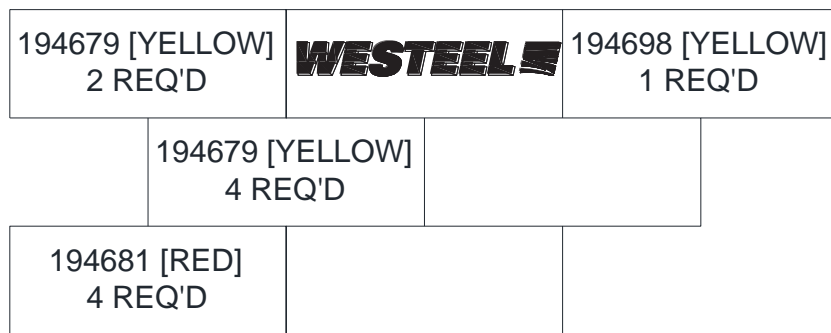
Nominal Bin Dia. in feet	Scribe Radius
12	5ft 10.87 in.



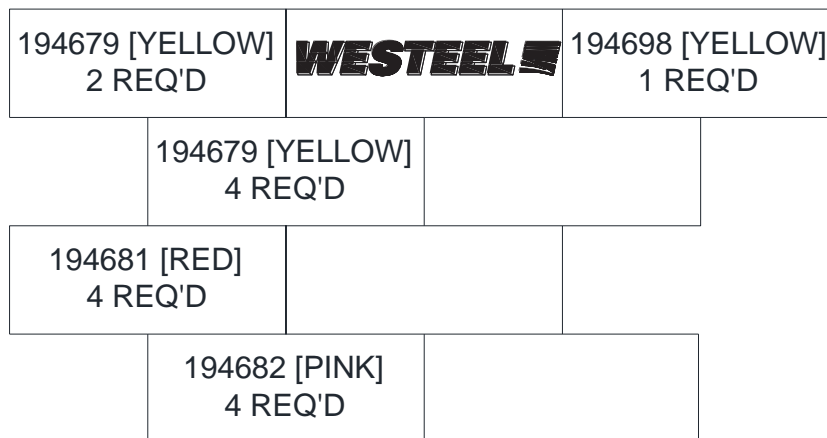
5.4. Wall Sheet Assembly

1. Assemble wall sheets as shown in [Figure 5 on page 19](#).
2. To shed water on the outside of the bin, overlap the sheets to the outside, so that the bottom edge of the upper wall sheet is always on the outside of the wall sheet immediately below it.
3. Caulk all vertical seams.
4. Do not tighten bolts on the wall sheet vertical seams of the last tier (ring).
This will ease the installation on the hopper.
The following diagram shows the sheet numbers as required for each progressive tier.
5. Attach bin to hopper using 3/8" x 1 1/4" bolts.

Figure 5. Wall Sheet Layout



1203 EFS



1204 EFS

Note

- Colors match part number label and indicate wall sheet thickness
- Stencil sheet is 194651 [yellow]



5.5. Hopper Cone to Bin Installation

New Bin Application

Use only Westeel Hopper Cones which are specifically designed to suit Westeel Wide-Corr Bins. When installing a hopper cone to a new bin installation refer to the following instructions:

1. Pour the foundation as per instructions provided with your hopper.
 - Ensure the foundation has fully cured before continuing the assembly of your bin.
 - If a Westeel skid base is used, a compacted gravel base can be used instead of a concrete foundation.
2. Assemble the bin as per the instructions in [Section 5. – Assembly on page 14](#).
3. Position hopper cone on foundation and align hopper with bin as shown in [Figure 6 on page 21](#).
 - Ensure all bottom holes on the bottom wall sheets are clear of bolts.
4. Use of a bin crane to lift your bin is recommended.
 - Ensure the crane and all other lifting devices have adequate capacity to handle the maximum bin weight safely.
 - Lift the bin by placing a round support or 'tripod' inside the bin, directly under the vent collar.
5. Leave the vertical seam bolts loose on the bottom tier only for easy assembly.
6. Align the bin with the cone as shown in [Figure 6 on page 21](#).
7. Fasten the bin to hopper cone with 3/8" x 1¼" bolts, nuts and washers.
8. Insert one bolt on one side, the next bolt on the opposite side of bin, then the next two bolts at right angles to the first two.

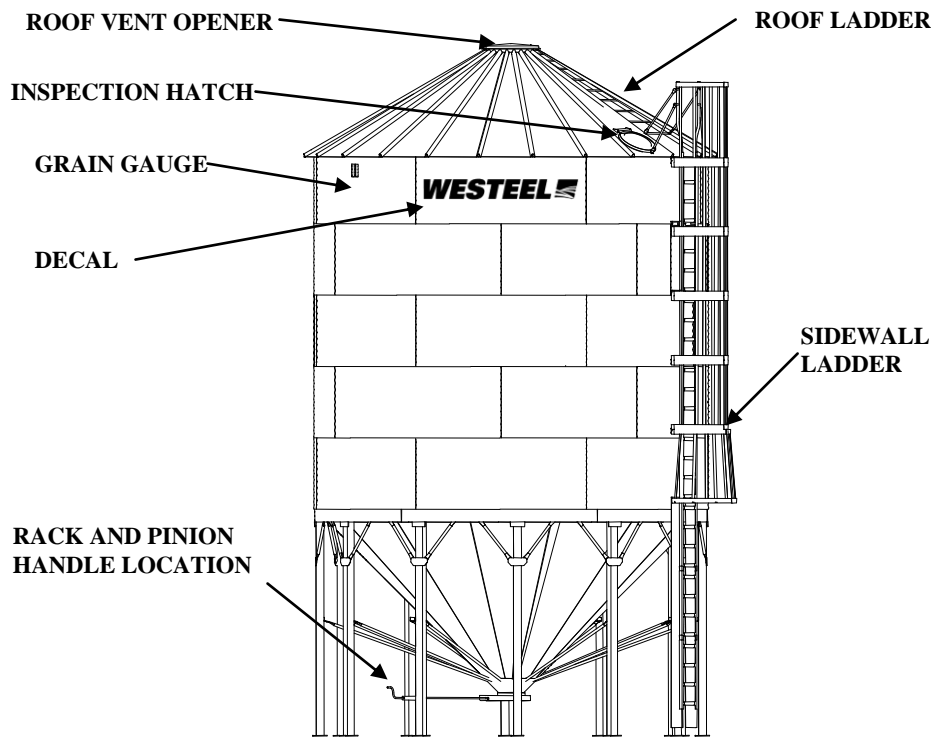
This will position the bin on the hopper properly.

9. Once the bin is in place, insert all other bolts and tighten the loose bolts.

Important

- Use only lifting devices of adequate rated capacity.
- Make sure the hopper cone is level and all load points contact the foundation.
- Make sure all fasteners are tightened as per torque instructions in [Section 6.1. – Recommended Bolt Assembly on page 22](#).

Figure 6. Hopper Cone to Bin Installation



6. Appendix

6.1. Recommended Bolt Assembly

IMPORTANT

When tightening bolts, tighten the nut on the bolt until a “snug-tightened condition” has been achieved. A “snug-tightened condition” is defined in *Specification for Structural Joints Using ASTM A325 or A490 Bolts* (Research Council on Structural Connections: June 2004), which states:








*“The snug-tightened condition is the tightness that is attained with a few impacts of an impact wrench or the full effort of an ironworker using an ordinary spud wrench to bring the connected plies into **firm contact.**”*

A properly tightened bolt will compress the sealing washer noticeably. All assembly crew members must be made aware of this requirement, and must know how to achieve a snug-tightened condition using common bin-building tools.

It is important that the bolts in the vertical wall sheet seams are tightened enough to squeeze the caulking and bring the wall sheet surfaces into firm contact with each other. This is especially important to monitor when installing bolts in temperatures approaching -10°C (14°F).

The following table shows the minimum impact gun torque capacity necessary to achieve a snug-tightened condition for bolts used in the assembly process.

Table 3. Recommended Impact Gun Torque Values Capacity to Achieve Snug-Tightened Bolts

Bolt Diameter	Bolt Grade	Grade Mark	Recommended Torque Capacity		
			in-lb	ft-lb	N-m
1/4"	Grade 8.2		75	6	8
5/16"	Grade 8.2		215	18	24
3/8"	Grade 8.2		370	31	42
7/16"	Grade 8.2		600	50	68
1/2"	Grade 8.2		960	80	108
5/8"	Grade 8.2		1800	150	203
3/4"	Grade 5		3230	269	365

For proper sealing, do not overtighten the wall seam connections. Sealing is not critical on upright splice connections; these connections should be tightened securely to prevent loosening.

Hold the bolt head securely when tightening the nut to prevent damage to the sealing washer.

Important

ALWAYS TIGHTEN THE NUT, NOT THE BOLT!

Avoid bin assembly at temperatures below -10°C (14°F) if possible. Erection in low temperatures does not ensure strong, well sealed connections. Do not substitute bolts in place of those supplied by Westeel.

7. Limited Warranty: Westeel Grain Bin Products

Westeel – Ag Growth International ("Westeel") warrants products that it has manufactured and/or that are branded with its name (the "goods") subject to the following terms and limitations, (the "warranty"):

Duration of Warranty

This warranty will run from the date of purchase from the dealer or distributor, authorized by Westeel. The duration of the warranty is limited as follows:

Galvanized Bins	5 years
EasyFlow2	24 months
Floors	12 months
Catwalk	12 months
Bulk Feed Tanks	24 months
SeedStor-K Cones	
Paint	12 months
Structural	30 months
Elite Cones	
Paint	30 months
Structural	10 years
WESTEEL cones	
Paint	No Warranty
Structural	12 months
Smooth Wall Bins	
Paint	60 months
Structural	10 years
Commercial Smooth Wall Bins	
Paint	12 months
Structural	10 years

Limitation of Remedies Replacement

Within the warranty period, Westeel will replace the goods and/or original manufactured components thereof which are found, to Westeel's satisfaction, to be defective. Westeel is not responsible for direct, indirect, special, consequential, or any other damages of any kind, including personal injury to any individual, howsoever caused, including caused by transportation of the goods for repair or replacement.



Procedure for Obtaining Service

In the event of a warranty claim, the purchaser must complete any and all information required by Westeel in order to properly assess or investigate the claim. Westeel will not be responsible for the removal of any of the goods found to be defective, or transportation charges to and from Westeel's authorized dealer or distributor, or for installation of any replacement goods and/or parts furnished under the warranty.

Limitations as to Scope of Warranty

The warranty does not extend to defects or damage caused, in whole or in part, by:

1. use of a kind and/or to a degree not reasonably expected to be made of the goods;
2. improper storage of the goods both prior to and after purchase;
3. damage caused by, or in the course of, installation or assembly;
4. any use of the goods which is not an intended use as specified in Westeel's published product literature, or otherwise specified by Westeel in writing;
5. any equipment attached to or used in conjunction with the goods;
6. any field modifications or substitutions to original bin components;
7. inadequate ventilation or any other circumstance not in keeping with proper maintenance and/or use of the goods;
8. Acts of God, accident, neglect or abuse of the goods by the purchaser and/or any other individual or entity; or
9. Any use or installation inconsistent with Westeel's Standard Disclaimers.

Limitations as to Manufacturer

The warranty does not cover products sold by Westeel that are not manufactured by Westeel. In those circumstances, the purchaser is referred to the manufacturer of those products.

Limitation of Implied Warranties and Other Remedies

To the extent allowed by law, neither Westeel nor its dealers, nor any company affiliated with Westeel makes any warranties, representations, or promises as to the quality, performance, or freedom from defect of any Product covered by this Warranty.

WESTEEL HEREBY DISCLAIMS, TO THE EXTENT APPLICABLE, ANY AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. A PURCHASER'S ONLY REMEDIES IN CONNECTION WITH THIS WARRANTY ARE THOSE SET FORTH IN THIS WARRANTY. IN NO EVENT WILL WESTEEL, ITS DEALERS, OR ANY COMPANY AFFILIATED WITH WESTEEL BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES.

Some jurisdictions do not allow waivers of certain warranties, so the above waivers may not apply to you. In that event, any implied warranties are limited in duration to ninety (90) days from delivery of the products. You may also have other rights which vary from jurisdiction to jurisdiction.

Exclusive Warranty

This warranty is the only warranty provided by Westeel and all other warranties and/or commitments, whether express or implied and no matter by whom made, statutory or otherwise, are subsumed and replaced by it and are of no legal effect. If any provision of the warranty is held by a court of

competent jurisdiction to be void or unenforceable, in whole or in part, such provision shall be deemed severable and will not affect or impair the legal validity of any other provision of the warranty.



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