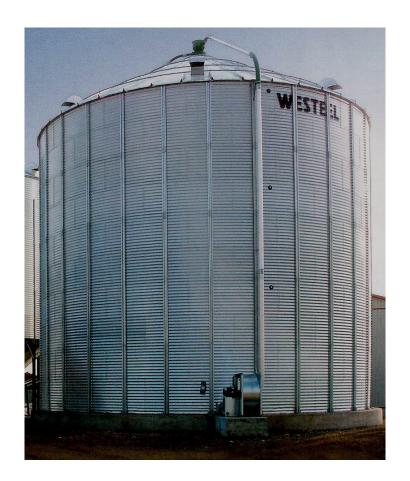


## 15'-54' Grain Bins, Up to 12 tiers

## Wide-Corr® Centurion® Grain Bin Installation and Storage Instructions





Part Number: 198890 R49

Revised: May, 2025

**Original Instructions** 

### **New in this Manual**

The following changes have been made in this revision of the manual:

Description	Section
New section	Section 5.11.1 – Base Assembly 233013 (WITHOUT Laminate Sections) on page 54
Updated	Section 5.2 – Anchor Bolt Plan on page 27
Updated	Section 6.1 – Centurion Grain Bin Specifications on page 69
Updated	Section 7.1 – CEN Common Parts Box Listing (4 – 9 Tier Bins) on page 112
Updated	Section 6.3 – Wall Sheet and Upright Layouts on page 77
Updated	Section 7.9 – Parts Identification (Bin) - Parts Box on page 126

## **CONTENTS**

1. Introduction	5
2. Safety	6
2.1 Safety Alert Symbol and Signal Words	6
2.2 General Safety Information	
2.3 Personal Protective Equipment	7
2.4 Safety Equipment	7
2.5 Auxiliary Equipment Safety	7
2.6 Working At Height Safety	8
2.7 Overhead Power Lines	9
2.8 Safety Decals	10
2.9 Decal Installation/Replacement	10
2.10 Safety Decal Locations and Details	11
3. Before You Begin	13
3.1 Bin Design and Capacity	13
3.2 Guidelines for Supporting Catwalks and other External Loads on AGI	
3.3 Foundation Design and Loads	
3.4 Lifting with Bin Jacks	
3.5 Lifting Wide-Corr® Bins with Cranes	
3.6 Site and Assembly	
3.7 Methods of Installation	
3.8 Cutting Openings in Wide-Corr® Grain Bins	
3.9 Critical Assembly Requirements	19
3.10 Product Storage	20
3.11 Grain Bin Use	21
3.12 Important Notes	22
4. Preparation	23
4.1 Check the Shipment	
4.2 List of Tools and Equipment	23
4.3 Order Optional Equipment	23
4.4 Pre-Plan Assembly	24
4.4.1 Pre-Planning: Side Draw Discharge, Aeration, and Unload Equipment	24
5. Assembly	26
5.1 Assembly Safety	
5.2 Anchor Bolt Plan	
5.3 Curb Footing — Floating Slab Foundation	
5.3.1 Curb Footing Specifications – 15' and 18' Bins	
5.3.2 Curb Footing Specifications – 21' and 24' Bins	
5.3.3 Curb Footing Specifications – 27' and 30' Bins	
5.3.4 Curb Footing Specifications – 33' and 36' Bins	
5.3.5 Curb Footing Specifications – 39' and 42' Bins	
5.3.6 Curb Footing Specifications – 45' and 48' Bins	
5.3.7 Curb Footing Specifications – 51' and 54' Bins	
5.3.8 Canadian Metric to European Conversion Table	
5.4 Stencil and Short Sheet Placement	
5.5 External Sign Sheet Installation (For Stiffened Bin)	
5.6 Grain Gauge Installation and Operation (Optional)	

	5.7 Bin Roundness	43
	5.8 Wall Sheet and Bottom Angle Assembly	44
	5.9 Centurion Wall Sheet Part Number Matrix	45
	5.10 Wall Sheet Caulking Detail	46
	5.11 Commercial Bin Upright Assembly	
	5.11.1 Base Assembly 233013 (WITHOUT Laminate Sections)	
	5.11.2 Base Assembly 233013 (Laminate Sections)	
	5.11.3 Base Assembly for Hopper Bins	. 56
	5.12 Wind Ring Assembly	
	5.13 One and Half Tier Door Installation	
	5.14 Two Tier Light Duty Door Installation	
	5.15 Door Cover Sidewall Latch Installation	64
	5.16 Auger Chute Installation	
	5.17 Auger Chute Block-Off Plate Installation	
	5.18 Door Conversion	67
6. Spe	cifications	69
	6.1 Centurion Grain Bin Specifications	
	6.2 Foundation Loads — Grain Bin Series CEN	
	6.3 Wall Sheet and Upright Layouts	. 77
7. Anr	pendix	112
, , , , , , ,	7.1 CEN Common Parts Box Listing (4 – 9 Tier Bins)	
	7.2 CEN Non-Common Pail & Parts Box Listing (4 – 9 Tier Bins)	
	7.3 CEN Common Parts Box Listing (10 – 12 Tier Bins)	
	7.4 CEN Non-Common Pail & Parts Box Listing (10 – 12 Tier Bins)	
	7.5 CEH Common Parts Box Listing	
	7.6 CEH Non-Common Parts Listing	
	7.7 TPH Common Parts Listing	123
	7.8 TPH Non-Common Parts Listing	
	7.9 Parts Identification (Bin) - Parts Box	126
	7.10 Bin Hardware	
	7.11 Recommended Bolt Assembly	128
2 \/\a	rranty	1 2 0

## 1. Introduction

Before assembling, please read this manual. Familiarize yourself with the process and the necessary precautions for efficient and safe assembly of this AGI 15'-54' Grain Bins, Up to 12 tiers.

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.

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 Information

Read and understand all safety instructions, safety decals, and manuals and follow them when assembling the equipment.

 Only experienced personnel who are familiar with this type of assembly and installation should perform this work. Untrained assemblers/installers expose themselves and bystanders to possible serious injury or death.



- Do not modify the grain bin in any way or deviate from the instructions in this manual without written
  permission from the manufacturer. Unauthorized modification or methods 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.
- Contact your local representative or AGI if you need assistance or additional information.
- Always follow applicable local codes and regulations.

## 2.3. Personal Protective Equipment

The following Personal Protective Equipment (PPE) should be worn when installing 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 Equipment

The following safety equipment should be kept on site.

#### First-Aid Kit



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

## 2.5. 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 grain bin is not designed for use with it. Refer to the specific information provided in this manual for auxiliary equipment or check with AGI 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 grain bin as applicable.
- Store auxiliary operations/maintenance manuals in a safe place available for future use.

## 2.6. Working At Height Safety

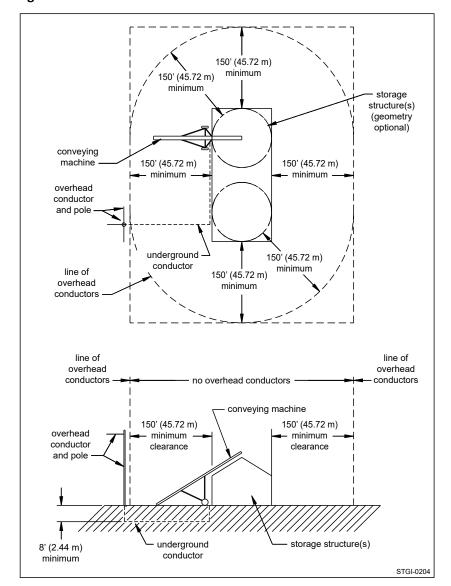
- Ensure that all work at height is properly planned, organized and carried out by a competent person.
- Use appropriate work equipment and make sure that they are inspected to ensure safety.
- Select collective measures to prevent falls (such as guard rails and working platforms) before other measures which may only reduce the distance and consequences of a fall (such as nets or air bags) or may only provide fall-arrest through personal protection equipment.
- Ensure that those persons working at height are trained in how to avoid falling and how to avoid or minimise any injuries should they fall.
- Check the weather condition. Postpone any work at height until there is no risk to the health and safety of any person working at height.
- Ensure that nothing is thrown or tipped from height if it is likely to injure a person.

### 2.7. Overhead Power Lines

#### **MARNING**

- Keep grain 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 grain bin if there is a chance of any loading or unloading equipment contacting power lines.
- Do not locate grain 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





## 2.8. 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.

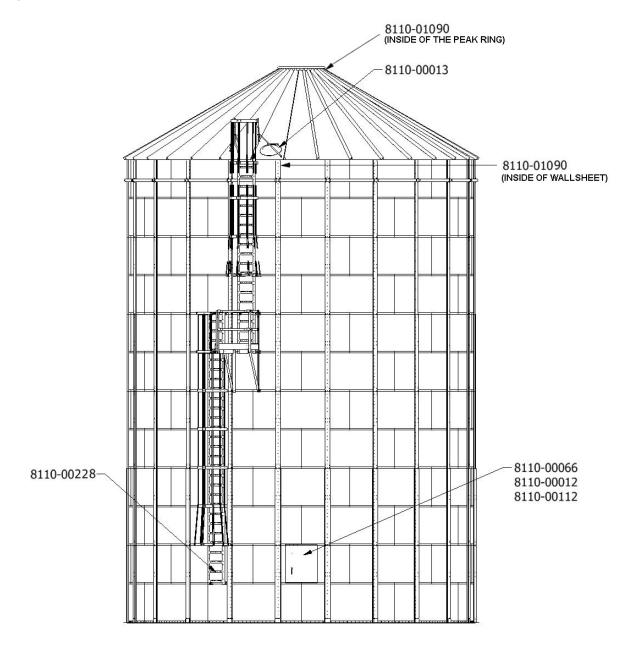
## 2.9. Decal Installation/Replacement

- 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.

## 2.10. Safety Decal Locations and Details

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

**Safety Decal Locations** 



#### Safety Decals and Part Numbers

#### 8110-00112

# **WARNING**

#### Keep clear of all augers. DO NOT ENTER this bin!

- If you must enter the bin:
- Shut off and lock out all power.
  Use a safety harness and safety line.
  Station another person outside the bin.
  Avoid the center of the bin.
  Wear proper breathing equipment or respirator.

- Failure to heed these warnings could result in serious injury or death

#### 8110-00013



#### **ENTRAPMENT HAZARD**

Never enter the bin when loading or unloading material.

If you must enter the bin:

- 1. Shut off and lock out all power.
- 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.

Failure to heed these warnings could result in serious injury or death.

#### 8110-01090



#### 8110-00228



#### **FALLING HAZARD**

To prevent serious injury or death:

- 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. Face the ladder while climbing.
- Safe working load is 350 lb (160 kg). Do not overload.
- · Do not carry items while climbing.

12 198890 R49

## 3. Before You Begin

## 3.1. Bin Design and Capacity

Standard AGI Grain Bins are designed for:

- 1. Non-corrosive free-flowing materials up to 52 lbs/ft³ (833 kg/m³) average compacted bulk density.
- 2. Maximum horizontal wind pressure based on 94 mph (151 km/h) as per NBCC 2015 and 105 mph (169 km/h) as per ASCE 7-16.
- 3. Zero seismic activity.

#### Note

Seismic resistance in grain bins varies with height and diameter. Many standard designs have significant seismic capabilities. Designs can be reviewed and/or modified to reflect local seismic requirements.

- 4. Roof loading capabilities vary with diameter, peak load and snow load.
  - a. Peak Loads standard peak loads follow. Upgrades are available.

Table 1. Peak Loads for Various Roofs

Size	Type of Roof	Load (lbs)	Load (kg)
15' to 24'	non-structural	4000 lbs	1814 kg
27' to 48'	non-structural	5000 lbs	2268 kg
51' to 60'	non-structural	8000 lbs	3629 kg
48' to 108'	structural	20,000 lbs	9072 kg
135'	structural	100,000 lbs	45359 kg

b. Roof Snow Loads (RSL) – at the above stated standard peak loads, standard RSLs vary with diameter and range from 16 psf (78 kg/m $^2$ ) to 45 psf (220 kg/m $^2$ ). *Upgrades are available*.

#### Note

The correlation between ground snow load (GSL) and roof snow load (RSL) for grain bin designs vary with jurisdictions. In the US GSL =  $2 \times RSL$ . In Europe GSL =  $1.25 \times RSL$ . In Canada the correlation between GSL and RSL varies and is site specific.

c. For maximum roof snow load capacities for various sizes and types of roofs, refer to the Roof Design Capacities sections that follow.

## 3.2. Guidelines for Supporting Catwalks and other External Loads on AGI

Frequently catwalk and related equipment loads are supported on grain bins. Such connections are commonly made into the grain bin stiffeners and across the peak. A grain bin is a thin shell structure primarily designed to withstand the internal uniformly distributed loads inherent with the stored bulk material inside of the bin. Special considerations must be given to the manner in which external loads are supported. AGI has developed products which are compatible with these requirements and considerations. If a third party solution is provided, the provider assumes full responsibility of the structure, its load distribution, and the manner in which it is connected to the grain bin. The following guidelines must form part of the third party design considerations.

#### **Connection to Stiffeners**

- 1. The available catwalk support stiffeners in AGI stiffened bins are for 10,000 lb incremental catwalk loads and 20,000 lb incremental catwalk loads per upgraded stiffener. The actual loads subjected to a single stiffener by the mating catwalk support shall not exceed these maximum capacities.
- 2. AGI recommends that the vertical load transfer between the catwalk supports and the stiffener occur over a minimum distance of 66" for 10,000 lb loads and 120" for 20,000 lb loads. Adequate connection strength must be provided.
- 3. The catwalk support stiffener in AGI bins are designed to provide vertical load support only. Any lateral loads subjected to the grain bin must be negligible.
- 4. There is a restriction of 2 upgraded catwalk support stiffeners per bin location. Therefore, the maximum supported load at the grain bin eave is 20,000 lbs (for two 10,000 lb upgrades) and 40,000 lbs (for two 20,000 lb upgrades). This can be repeated on the opposing side of the bin at a second location. Deviation from this must be approved by AGI Engineering.

#### **Connection to Peak Rings**

- 1. The allowable vertical peak load to any AGI bin roof is restricted to its published rated capacity. The load must be centered and evenly distributed into the peak ring. Any off-centre load and/or improper load distribution may cause roof failure.
- 2. A AGI structural roof requires the peak support loads to be transferred directly into the compression ring/roof rafter system. This is accomplished with peak load support brackets that are included with the structural roof. They must be installed as shown in the structural roof manual, connecting the peak support structure to the compression ring. They are required even if a non-AGI peak support structure is used. A non-AGI peak support structure needs to be designed to be able to connect with the brackets. The required bolt pattern is shown in the structured roof manual.
- 3. A AGI non-structural roof that is supporting a catwalk requires six clips to be installed in order to attach the flat cap to the peak ring. These clips are available from AGI.

## 3.3. Foundation Design and Loads

The foundations for the stiffened bin models are based on 3000 lbs. per sq. ft. (144 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. AGI 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  $\frac{1}{2}$ " 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.

## 3.4. Lifting with Bin Jacks

Use bin jacks to lift the bin safely during assembly and help prevent strength and functionality problems later, including alignment, tolerance, bin roundness, distortion, and twisting issues.

#### **⚠ WARNING**

To prevent risk of serious injury or damage to the equipment:

- Prior experience is required. Do not use bin jacks if you are not properly trained or have never used them.
- Do not use bin jacks in windy conditions.
- · Do not exceed lifting capacity of a bin jack.
- Powered bin jacks are recommended. If using manually operated chain jacks, lift carefully and evenly to prevent damage.

For important additional information, refer to:

- Specifications section in your manual, the sales order, or approval drawing of the bin's radius and total
  weight of the grain bin (including roof, fasteners, stiffeners, and all accessories).
- Bin jack manufacturer's instructions and bin jack lifting capacity.

#### **Tools and Equipment**

Use the following to lift the bin:

- bin jacks (internal or external)
- scaffolding/ladders
- lifting lugs
- · drift pin
- socket/impact set
- wrench set

Additional tools and equipment may be required.

#### **General Bin Jacking Instructions**

Refer to the bin jack manufacturer's instructions in addition to the following to safely lift the bin during assembly:

- Use one bin jack per wall sheet.
- Confirm that the number of bin jacks can support at least 5X the weight of the bin.
- Fabricate lifting lugs to match the hole spacing on the bin.
- Assemble the top 1-2 wall sheet rings directly on the foundation.
- Layout and space the bin jacks evenly at each stiffener/seam according to the bin's radius.
- Anchor the bin jacks securely to the concrete.

- Connect the bin jacks securely to the stiffeners/seams.
- Lift using the bin jacks at an even and slow pace.
- Align the stiffener/seam holes with the wall sheet holes using a drift pin.
- When not actively assembling, lower the bin fully and secure it to the foundation to protect against wind gusts and other conditions.

## 3.5. Lifting Wide-Corr® Bins with Cranes

The table below lists the maximum height and weight limits for each diameter of bin which AGI approves for lifting by the roof using a crane. These limits assume that the total lifted load is evenly distributed around the peak ring, through the use of a lifting tripod or similar device of adequate strength. Any bin exceeding EITHER the height or weight limit MUST be lifted using jacks or similar method which supports the wall sheets directly.

These limits are critical. Failure during lifting carries the risk of serious injury or death.

Table 2. Lifting Weights for Various Bin Sizes

Bin Diameter	Maximum Tier Height	Approximate Weight
15'	7	5,200 lbs
18'	7	3,200 108
21'	0	9,000 lbs
24'	0	9,000 108
27'	8	11,000 lbs
30'	8	13,000 lbs

#### **Important Safety Notes**

- <u>Limits above are based on safe lifting of the bin only. They are not based on design factors for lifting people or objects over people</u>. Adequate safety blocks or supports must be used when working under or near the bin wall.
- Extreme caution must be used when lifting bins more than a few inches, as occurs when mounting bins on hoppers. "Bouncing" of the load and/or wind gusts can add significantly to the loads on the roof and could cause overloading and/or failure.
- Please refer to any additional capacity information, lifting instructions, and safety information provided by the crane manufacturer.

## 3.6. Site and Assembly

Unless otherwise specifically provided in writing, AGI 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 (AGI recommends the use of qualified bin installers. Contact AGI for information on installers in your area.)
- Field modifications or equipment additions that affect the bin structure
- Interconnections with neighboring structures
- Have the builder make all non-bin equipment in excess of AGI's recommendations. All such equipment including: LEGS, WALKWAYS, SPOUTING, and CONVEYORS must be self supporting.
- Compliance with all applicable safety standards, including but not limited to fall restraint systems (ladders or other systems). Contact local safety authorities as the standards vary between jurisdictions.

### 3.7. Methods of Installation

The recommendations for assembling and installing AGI 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 52 lbs/ft<sup>3</sup> (833 kg/m<sup>3</sup>).

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

## 3.8. 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.
- 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 AGI 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".

## 3.9. 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 grain bin installation.
- 2. Design and build foundations with the necessary strength for the loads they must support, and for local soil conditions. AGI 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 grain bin 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.

## 3.10. Product Storage

If you won't be assembling the bin right away, store the bundles and boxes inside a building with good ventilation to prevent white or red rust from forming.

#### Note

White rust can be removed and does not cause permanent damage.



Red rust causes permanent structural damage.

Do not assemble any part containing red rust.

If you can't store the bundles and boxes inside, follow the instructions below for outdoor storage.

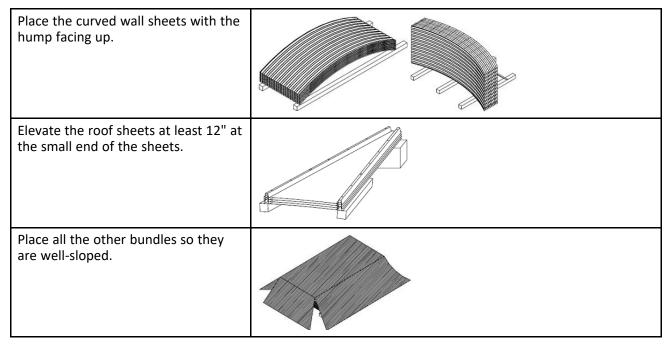
#### **Storing Bin Bundles and Boxes Outdoors**

**Required Materials:** 

- Wood blocks
- Waterproof tarp

Storage Procedure:

1. First, place the bundles and boxes on wood blocks about 6"-8" off the ground.



2. For the bin boxes, ladder boxes, and hardware boxes: build a simple framework to support, cover with a waterproof tarp, and secure.

#### Note

The boxes are not waterproof and will deteriorate in normal weather conditions, allowing moisture to contact the parts inside.

#### If Parts Become Wet

- 1. Open the bundles as soon as possible.
- 2. Separate and dry the bin sheets or parts. Keep the parts separated until assembly.

## **MARNING** Risk of injury or damage.

Brace parts securely to avoid damage or injury from material falling when in storage.

- 3. Dry any boxed parts that are wet and store them in a new, dry box.
- 4. After drying the wall sheets, apply a food-grade oil with a clean, lint-free cloth.

#### Note

Applying oil will help prevent moisture to contact with the dried wall sheets.

## MARNING Risk of slipping.

Do not use oil on roof sheets, ladders, or other parts where a person may walk or stand after the bin is assembled.

### 3.11. Grain Bin Use

- Fill the bin through the center roof opening only.
- Do not overfill the bin roof area! This may cause roof damage or failure.
- 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.

198890 R49 21

### 3.12. Important Notes

- AGI 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.
- 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 center.
- Contact local power officials for minimum power line clearance.
- See Section 3.9 Critical Assembly Requirements on page 19 for mandatory siting and assembly requirements.
- Store only non-corrosive, free-flowing materials up to 55 lbs/ft³ (880 kg/m³) average compacted density in AGI .
- 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 the 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 your dealer. Your dealer will order 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.

## 4.4. Pre-Plan Assembly

#### Before assembling:

- 1. Read and understand this manual.
- 2. Develop an assembly plan, with consideration given to the layout of accessories and auxiliary equipment.
- 3. Predetermine the locations for access doors, anchor bolts, ladders, manways, side draws, roof steps, roof vents, fans, and other auxiliary equipment.
- 4. Plan your construction in accordance with your assembly and layout plan.

#### **Important**

Installation of accessories or equipment on grain systems equipment/structures that overstresses the bin in any manner will void the warranties.

In cases where additional loading is involved, if you do not already have specific recommendations from AGI, contact AGI engineering department before installation begins.

Do not install 15'-54' Grain Bins, Up to 12 tiers controls or the like near anything having a strong electromagnetic field such as large power transmission lines or transformers.

### 4.4.1 Pre-Planning: Side Draw Discharge, Aeration, and Unload Equipment

Side draw discharge pre-planning: Make certain side draw discharge does not fall on a vertical sidewall seam.

Figure 2. Never Position a Side Draw Opening at a Sidewall Seam

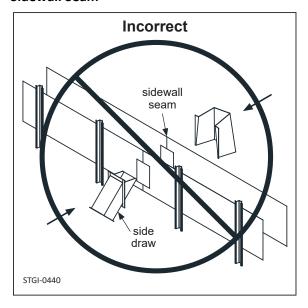
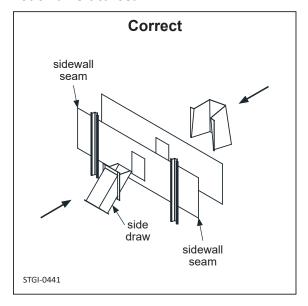
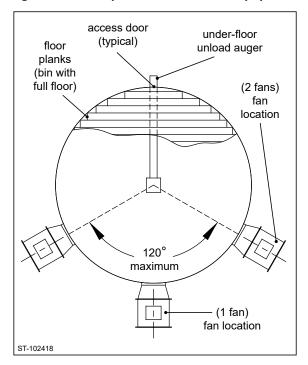


Figure 3. Position Midway Between Stiffeners and Not on a Vertical Seam



The following Figure 4 is one suggested guide for locating aeration fans and floor unload equipment.

Figure 4. Example Fan and Unload Equipment Layout



## 5. Assembly

## 5.1. Assembly Safety

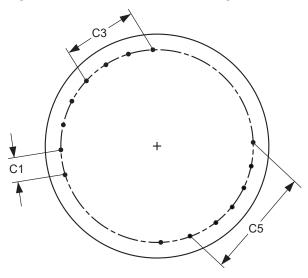
- Always use the proper tools, rated lifting equipment, and lifting points for the job.
  - Do not stand on, under, or near any component that is not secured.
  - Carry out assembly in a large open area with a level surface.
  - Always have two or more people assembling the grain bin.
  - Make sure you 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
  - · Stay away from overhead power lines and other obstructions during assembly. Contact with power lines can cause electrocution.
  - Do not work in high winds.
  - The equipment shall be installed in accordance with applicable local codes and regulations.

26 198890 R49

## 5.2. Anchor Bolt Plan

This section provides layouts and specifications for positioning anchor bolts.

Figure 5. Anchor Bolt Plan Drawing



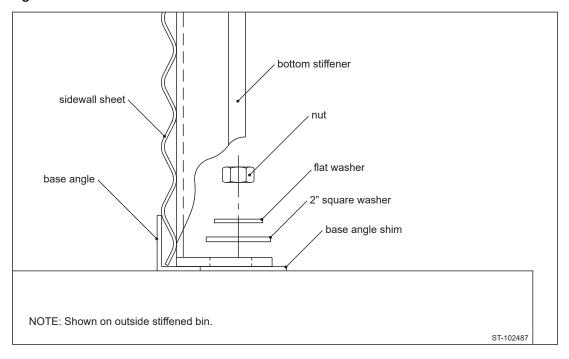
#### **Important**

If the anchor bolt diameter is greater than 1" (2.54 cm) contact AGI. The anchor bolt patterns in this manual will not apply in those situations.

Table 3. Anchor Bolt Locations - 15'-54' (4.57 m - 16.46 m) Diameters - 2 anchors per sidewall sheet

						-			•		
							A	nchor Bo	It Cord		
Bin	Number of	Dana Diata	Anchor Bolt Radius "R"		"C1"	"C1"		"C3"		"C5"	
Model	Tiers	Base Plate	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Bolts
15	5–12	233013	92-11/16"	2355	57-9/32"	1455	-	-	-	-	10
18	5–12	233013	110-5/8"	2809	57-1/4"	1454	156-7/16"	3973	-	-	12
21	5–12	233013	128-1/2"	3266	57-3/16"	1454	160-1/4"	4071	-	-	14
24	5–12	233013	146-7/16"	3721	57-1/8"	1452	162-11/16"	4132	-	-	16
27	5–12	233013	164-5/16"	4176	57-1/16"	1450	164-5/16"	4174	-	-	18
30	5–12	233013	182-1/4"	4630	57-0"	1449	165-15/32"	4203	257-23/32"	6546	20
33	5–12	233013	200-1/8"	5085	56-31/32"	1447	166-9/32"	4223	262-1/8"	6658	22
36	5–12	233013	218-1/16"	5540	56-29/32"	1446	166-7/8"	4239	265-15/32"	6743	24
39	5–12	233013	235-15/16"	5994	56-7/8"	1445	167-11/32"	4250	268-1/16"	6809	26
42	5–12	233013	253-7/8"	6449	56-27/32"	1444	167-11/16"	4259	270-1/8"	6861	28
45	5–12	233013	271-3/4"	6904	56-13/16"	1443	167-31/32"	4266	271-3/4"	6903	30
48	5–12	233013	289-11/16"	7358	56-25/32"	1442	168-5/32"	4271	273-3/32"	6936	32
51	5–12	233013	307-9/16"	7813	56-3/4"	1442	168-11/32"	4276	274-3/16"	6964	34
54	5–12	233013	325-1/2"	8268	56-23/32"	1441	168-15/32"	4279	275-3/32"	6988	36

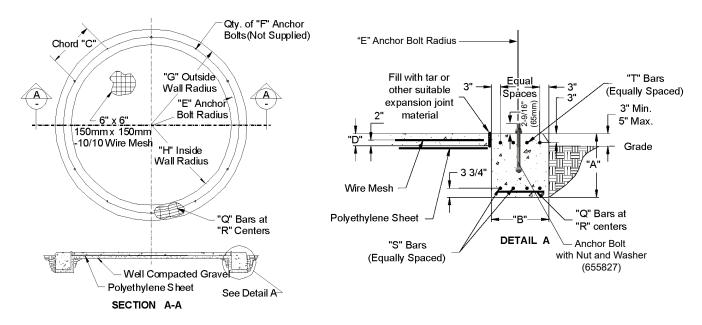
Figure 6. Stiffener to Anchor Bolt Connections — Detailed View



## 5.3. Curb Footing — Floating Slab Foundation

- 1. Choose a site that is well drained, and has a minimum soil-bearing capacity of 3000 lbs/ft² (21 MPa). If soil-bearing capacity is not known, consult a local engineering representative.
- 2. Use minimum 4" to 6" (100 mm to 150 mm) of well-compacted coarse granular material below slab and curb footing.
- 3. Concrete strength shall be minimum 3000 psi [21 MPa] compressive strength.

Figure 7. Curb Footing Foundation Layouts



#### Note

For dimensions for specific bin sizes, refer to the tables in the following sections.

- 4. The foundation must be level to within 1/4" over a span of 4 feet [6 mm over 1200 mm]. Any variance from level must be shimmed under an upright. (See Section 5.11 Commercial Bin Upright Assembly on page 48.)
- 5. Locate anchor bolts as shown in Figure 7, using the dimensions provided in the following Curb Specifications tables, to ensure bin roundness.
- 6. Re-bar end laps are not included. Add 15" [380mm] for each lap. To estimate weight of end lap: add 0.5 lbs. for #3 and 1.0 lbs. for #4, 0.3 kg for 10M and 0.6 kg for 15M.
- 7. Concrete slump for reinforced wall to be 5" (130 mm) maximum and 2" (50 mm) minimum.
- 8. Reinforcing bars for concrete reinforcement shall conform to Grade 40, 40000 psi (280 MPa) or Grade 60, 60000 psi (420 MPa) as called for in the following: ASTM<sup>2</sup> A615, A616, or A617.
- 9. Welded wire mesh for concrete reinforcement shall conform to ASTM2 A185, or A497.
- <sup>1</sup> American Concrete Institute
- <sup>2</sup> American Society for Testing Materials

Anchor bolts need to be properly located, based on the information provided, to keep the bin round, and to ensure structural integrity of the bin while guaranteeing effective transfer of wall forces down to the foundation.

1. Minimum recommended cast-in-place anchors for standard conditions shall be ASTM F1554 (Grade 55) 0.75" x 12" headed anchor bolt with nut and washer

- 2. Minimum recommended post-installed anchors for standard conditions shall be 0.75" x 8.5" wedge anchor with nut and washer.
- 3. A hex bolt with a flat washer, or an epoxy adhesive anchor of equivalent strength may be used. Check with anchor vendor or manufacturer for strength ratings and for proper installation instructions.

#### **Important**

The foundation details in this manual are to be considered general in nature and are intended only as a guide. The design is for standard external loading conditions described in the design section of this manual. The design is not for foundations and anchors that require consideration of seismic loads. It is the owner's responsibility to provide an appropriate site and foundation design for the adequate support of the grain bin. AGI assumes no responsibility for results arising from these suggestions.

### 5.3.1 Curb Footing Specifications – 15' and 18' Bins

Table 4. Curb Footing Specifications — 15' and 18' Bins

BIN M	IODEL	1505 1506 1507	1508 1509	1510 1511	1512	1805 1806 1807	1808 1809	1810 1811	1812
А		1'4"	1'6"	2'0"	2'0"	1'4"	1'6"	2'0"	2'0"
E	3	1'3"	1'8"	2'2"	2'8"	1'3"	1'8"	2'2"	2'8"
(	2	4'9-5/16"	4'9-5/16"	4'9-5/16"	4'9-5/16"	4'9-5/16"	4'9-5/16"	4'9-5/16"	4'9-5/16"
	)	4"	4"	6"	6"	4"	4"	6"	6"
E		7'8-5/8"	7'8-5/8"	7'8-5/8"	7'8-5/8"	9'2-9/16"	9'2-9/16"	9'2-9/16"	9'2-9/16"
F	=	10	10	10	10	12	12	12	12
(	à	8'4"	8'7"	8'10"	9'1"	9'10"	10'1"	10'4"	10'7"
ŀ	1	7'1"	6'11"	6'8"	6'5"	8'7"	8'5"	8'2"	7'11"
0	Metric <sup>1</sup>	17 - 10M	33 - 10M	33 - 10M	33 - 10M	20 - 10M	39 - 10M	39 - 10M	39 - 10M
Q	Imperial	17 - #3	33 - #3	33 - #3	35 - #3	20 - #3	39 - #3	39 - #3	41 - #3
	Metric (mm c/c)	914	457	457	432	914	457	457	432
R	Imperial (in. c/c)	36	18	18	17	36	18	18	17
	Metric <sup>1</sup>	3 - 10M	3 - 10M	4 - 10M	6 - 10M	3 - 10M	3 - 10M	4 - 10M	6 - 10M
S	Imperial	4 - #3	4 - #3	4 - #4	4 - #4	4 - #3	4 - #3	4 - #4	5 - #4
_	Metric <sup>1</sup>	3 - 10M	3 - 10M	4 - 10M	6 - 10M	3 - 10M	3 - 10M	4 - 10M	6 - 10M
Т	Imperial	4 - #3	4 - #3	4 - #4	4 - #4	4 - #3	4 - #3	3 - #4	4 - #4
Reinforcing	M (kgs.)	33	37	49	72	40	97	128	190
Rod	I (lbs.)	69	75	129	148	83	196	298	387
Wire Mes	sh (sq. ft.)	158	150	140	129	232	223	214	197
Concrete	Footing	3.0	3.6	7.8	9.6	3.6	5.4	9.4	11.5
(3000 psi) Cubic Yards	Slab	2.0	2.9	2.6	2.4	2.9	2.8	4.0	3.7

<sup>&</sup>lt;sup>1</sup>For Canadian Metric to European Standard EN 10080/BS 4449 conversion, see Section 5.3.8 – Canadian Metric to European Conversion Table on page 36.

## 5.3.2 Curb Footing Specifications – 21' and 24' Bins

Table 5. Curb Footing Specifications — 21' and 24' Bins

BIN MODEL		2105 2106 2107	2108 2109	2110 2111	2112	2405 2406 2407	2408 2409	2410 2411	2412
А		1'4"	1'6"	2'0"	2'0"	1'4"	1'6"	2'0"	2'0"
E	3	1'3"	1'8"	2'2"	2'10"	1'3"	1'10"	2'4"	3'0"
(	2	4'9-3/16"	4'9-3/16"	4'9-3/16"	4'9-3/16"	4'9-1/8"	4'9-1/8"	4'9-1/8"	4'9-1/8"
Γ	)	4"	4"	6"	6"	4"	4"	6"	6"
E		10'8-7/16"	10'8-7/16"	10'8-7/16"	10'8-7/16"	12'2-3/8"	12'2-3/8"	12'2-3/8"	12'2-3/8"
ı	=	14	14	14	14	16	16	16	16
(	3	11'4"	11'7"	11'10"	12'2"	12'10"	13'1"	13'4"	13'8"
ŀ	1	10'1"	9'11"	9'8"	9'4"	11'7"	11'3"	11'0"	10'8"
0	Metric <sup>1</sup>	23 - 10M	45 - 10M	45 - 10M	45 - 10M	26 - 10M	51 - 10M	51 - 10M	54 - 10M
Q	Imperial	23 - #3	45 - #3	45 - #3	58 - #3	26 - #3	51 - #3	51 - #3	77 - #3
	Metric (mm c/c)	914	457	457	356	914	457	457	305
R	Imperial (in. c/c)	36	18	18	14	36	18	18	12
	Metric <sup>1</sup>	3 - 10M	3 - 10M	5 - 10M	6 - 10M	3 - 10M	3 - 10M	5 - 10M	6 - 10M
S	Imperial	4 - #3	4 - #3	4 - #4	5 - #4	5 - #3	4 - #3	4 - #4	5 - #4
-	Metric <sup>1</sup>	3 - 10M	2 - 10M	4 - 10M	5 - 10M	4 - 10M	2 - 10M	4 - 10M	6 - 10M
Т	Imperial	4 - #3	3 - #3	3 - #4	4 - #4	4 - #3	3 - #3	3 - #4	4 - #4
Reinforcing	M (kgs.)	46	97	167	206	53	111	190	255
Rod	I (lbs.)	96	202	349	463	109	232	398	540
Wire Mes	sh (sq. ft.)	319	309	294	274	422	398	380	358
Concrete	Footing	4.1	6.3	10.9	14.2	4.7	7.8	13.3	17.0
(3000 psi) Cubic Yards	Slab	3.9	3.9	5.5	5.1	5.2	5.0	7.1	6.7

<sup>&</sup>lt;sup>1</sup>For Canadian Metric to European Standard EN 10080/BS 4449 conversion, see Section 5.3.8 – Canadian Metric to European Conversion Table on page 36.

## 5.3.3 Curb Footing Specifications – 27' and 30' Bins

Table 6. Curb Footing Specifications — 27' and 30' Bins

BIN MODEL		2705 2706 2707	2708 2709	2710 2711	2712	3005 3006 3007	3008 3009	3010 3011	3012
А		1'4"	1'6"	2'0"	2'0"	1'4"	1'6"	2'0"	2'0"
E	В	1'3"	1'10"	2'6"	3'2"	1'3"	2'0"	2'8"	3'4"
(	С	4'9-1/16"	4'9-1/16"	4'9-1/16"	4'9-1/16"	4'9"	4'9"	4'9"	4'9"
[	)	4"	4"	6"	6"	4"	4"	6"	6"
· ·	E	13'8-5/16"	13'8-5/16"	13'8-5/16"	13'8-5/16"	15'2-3/16"	15'2-3/16"	15'2-3/16"	15'2-3/16"
ı	F	18	18	18	18	20	20	20	20
(	G	14'4"	14'7"	14'11"	15'3"	15'10"	16'2"	16'6"	16'10"
ŀ	+	13'1"	12'9"	12'5"	12'1"	14'7"	14'2"	13'10"	13'6"
0	Metric <sup>1</sup>	29 - 10M	58 - 10M	58 - 10M	69 - 10M	32 - 10M	64 - 10M	64 - 10M	82 - 10M
Q	Imperial	29 - #3	58 - #3	58 - #3	94 - #3	32 - #3	64 - #3	68 - #3	115 - #3
	Metric (mm c/c)	914	457	457	279	914	457	432	254
R	Imperial (in. c/c)	36	18	18	11	36	18	17	10
	Metric <sup>1</sup>	3 - 10M	3 - 10M	5 - 10M	6 - 10M	3 - 10M	3 - 10M	5 - 10M	7 - 10M
S	Imperial	4 - #3	4 - #3	4 - #4	5 - #4	4 - #3	4 - #3	4 - #4	5 - #4
<b>-</b>	Metric <sup>1</sup>	3 - 10M	3 - 10M	4 - 10M	6 - 10M	3 - 10M	3 - 10M	5 - 10M	6 - 10M
Т	Imperial	4 - #3	4 - #3	4 - #4	5 - #4	4 - #3	4 - #3	4 - #4	5 - #4
Reinforcing	M (kgs.)	131	146	217	295	145	164	265	357
Rod	I (lbs.)	270	293	508	677	300	329	571	770
Wire Mes	sh (sq. ft.)	538	505	485	459	676	631	602	573
Concrete	Footing	5.3	8.8	16.0	20.2	5.9	10.6	18.9	23.6
(3000 psi) Cubic Yards	Slab	6.6	6.3	9.0	8.5	8.2	7.8	11.2	10.7

<sup>&</sup>lt;sup>1</sup>For Canadian Metric to European Standard EN 10080/BS 4449 conversion, see Section 5.3.8 – Canadian Metric to European Conversion Table on page 36.

## 5.3.4 Curb Footing Specifications – 33' and 36' Bins

Table 7. Curb Footing Specifications — 33' and 36' Bins

BIN M	10DEL	3305 3306 3307	3308 3309	3310 3311	3312	3604 3605 3606 3607	3608 3609	3610 3611	3612
,	4	1'4"	1'6"	2'0"	2'0"	1'4"	1'6"	2'0"	2'0"
Į.	В	1'3"	2'0"	2'8"	3'6"	1'4"	2'0"	2'10"	3'8"
(	С	4'8-15/16"	4'8-15/16"	4'8-15/16"	4'8-15/16"	4'8-15/16"	4'8-15/16"	4'8-15/16"	4'8-15/16"
[	)	4"	4"	6"	6"	4"	4"	6"	6"
I	Ē	16'8-1/8"	16'8-1/8"	16'8-1/8"	16'8-1/8"	18'2"	18'2"	18'2"	18'2"
!	F	22	22	22	22	24	24	24	24
(	G	17'4"	17'8"	18'0"	18'5"	18'10"	19'2"	19'7"	20'0"
ŀ	+	16'1"	15'8"	15'4"	14'11"	17'6"	17'2"	16'9"	16'4"
0	Metric <sup>1</sup>	35 - 10M	70 - 10M	70 - 10M	97 - 10M	38 - 10M	76 - 10M	76 - 10M	115 - 10M
Q	Imperial	35 - #3	70 - #3	74 - #3	140 - #3	38 - #3	76 - #3	92 - #3	153 - #3
	Metric (mm c/c)	914	457	432	229	914	457	381	229
R	Imperial (in. c/c)	36	18	17	9	36	18	15	9
-	Metric <sup>1</sup>	3 - 10M	3 - 10M	5 - 10M	7 - 10M	3 - 10M	3 - 10M	5 - 10M	7 - 10M
S	Imperial	4 - #3	4 - #3	4 - #4	5 - #4	4 - #3	4 - #3	4 - #4	6 - #4
_	Metric <sup>1</sup>	3 - 10M	3 - 10M	5 - 10M	6 - 10M	3 - 10M	3 - 10M	5 - 10M	6 - 10M
Т	Imperial	4 - #3	4 - #3	4 - #4	5 - #4	4 - #3	4 - #3	4 - #4	4 - #4
Reinforcing	M (kgs.)	160	180	291	402	174	196	321	449
Rod	I (lbs.)	329	362	627	871	359	384	700	1036
Wire Mesh (sq. ft.)		813	772	739	700	962	926	882	839
Concrete	Footing	6.5	11.7	20.7	27.2	7.6	12.7	24.0	31.0
(3000 psi) Cubic Yards	Slab	10.1	9.6	13.7	13.0	11.9	11.5	16.4	15.6

<sup>&</sup>lt;sup>1</sup>For Canadian Metric to European Standard EN 10080/BS 4449 conversion, see Section 5.3.8 – Canadian Metric to European Conversion Table on page 36.

## 5.3.5 Curb Footing Specifications – 39' and 42' Bins

Table 8. Curb Footing Specifications — 39' and 42' Bins

BIN M	10DEL	3905 3906 3907	3908 3909	3910 3911	3912	4205 4206 4207	4208 4209	4210 4211	4212
,	A					1'6"	1'6"	2'0"	2'0"
[	3					1'4"	2'0"	2'10"	3'10"
(	C					4'8-13/16"	4'8-13/16"	4'8-13/16"	4'8-13/16"
	D					4"	4"	6"	6"
ı	Ξ					21'1-13/16"	21'1-13/16"	21'1-13/16"	21'1-13/16"
ı	F					28	28	28	28
(	ĵ.					21'10"	22'2"	22'7"	23'1"
ŀ	+					20'6"	20'2"	19'9"	19'3"
0	Metric <sup>1</sup>					45 - 10M	89 - 10M	89 - 10M	145 - 10M
Q	Imperial	1				45 - #3	89 - #3	123 - #3	114 - #4
R	Metric (mm c/c)		To Be Determined			914	457	330	356
K	Imperial (in. c/c)			To be betermined			18	13	14
-	Metric <sup>1</sup>					3 - 10M	3 - 10M	6 - 10M	7 - 10M
S	Imperial					4 - #3	4 - #3	5 - #4	6 - #4
_	Metric <sup>1</sup>					3 - 10M	3 - 10M	5 - 10M	7 - 10M
Т	Imperial					4 - #3	4 - #3	4 - #4	6 - #4
Reinforcing	M (kgs.)					203	229	405	570
Rod	l (lbs.)					419	459	919	1339
Wire Mes	sh (sq. ft.)					1320	1278	1226	1165
Concrete				9.9	14.8	28.0	37.8		
(3000 psi) Cubic Yards	Slab					16.3	15.8	22.7	21.6

<sup>&</sup>lt;sup>1</sup>For Canadian Metric to European Standard EN 10080/BS 4449 conversion, see Section 5.3.8 – Canadian Metric to European Conversion Table on page 36.

## 5.3.6 Curb Footing Specifications – 45' and 48' Bins

Table 9. Curb Footing Specifications — 45' and 48' Bins

BIN M	IODEL	4505 4506 4507	4508 4509	4510 4511	4512	4805 4806 4807	4808 4809	4810 4811	4812
,	4					1'6"	1'6"	2'0"	2'0"
[	3					1'6"	2'2"	3'0"	4'0"
(	2					4'8-13/16"	4'8-13/16"	4'8-13/16"	4'8-13/16"
[	)					4"	4"	6"	6"
ı							24'1-5/8"	24'1-5/8"	24'1-5/8"
						32	32	32	32
(	ĵ					24'11"	25'3"	25'8"	26'2"
ŀ	1				23'5"	23'1"	22'8"	22'2"	
0	Metric <sup>1</sup>					51 - 10M	102 - 10M	108 - 10M	183 - 10M
Q	Imperial					51 - #3	102 - #3	152 - #3	141 - #4
R	Metric (mm c/c)		To Be De	termined		914	457	305	330
K	Imperial (in. c/c)			To be bettermined			18	12	13
	Metric <sup>1</sup>					3 - 10M	3 - 10M	6 - 10M	8 - 10M
S	Imperial					4 - #3	4 - #3	5 - #4	6 - #4
<b>-</b>	Metric <sup>1</sup>					4 - 10M	3 - 10M	5 - 10M	7 - 10M
Т	Imperial					4 - #3	4 - #3	4 - #4	6 - #4
Reinforcing	M (kgs.)					234	265	471	710
Rod	I (lbs.)					481	531	1070	1571
Wire Mesh (sq. ft.)						1723	1674	1615	1544
Concrete	Footing					12.7	18.3	33.8	45.0
(3000 psi) Cubic Yards	Slab					21.3	20.7	29.9	28.6

<sup>&</sup>lt;sup>1</sup>For Canadian Metric to European Standard EN 10080/BS 4449 conversion, see Section 5.3.8 – Canadian Metric to European Conversion Table on page 36.

## 5.3.7 Curb Footing Specifications – 51' and 54' Bins

Table 10. Curb Footing Specifications — 51' and 54' Bins

BIN MODEL		5105 5106 5107	5108 5109	5110	5405 5406 5407	5408 5409	
А							
В							
С							
D							
E							
F							
G							
Н							
Q	Metric <sup>1</sup>	To Be Determined					
	Imperial						
R	Metric (mm c/c)						
	Imperial (in. c/c)						
S	Metric <sup>1</sup>						
	Imperial						
Т	Metric <sup>1</sup>						
	Imperial						
Reinforcing Rod	M (kgs.)						
	I (lbs.)						
Wire Mesh (sq. ft.)							
Concrete	Footing						
(3000 psi) Cubic Yards	Slab						

<sup>&</sup>lt;sup>1</sup>For Canadian Metric to European Standard EN 10080/BS 4449 conversion, see Section 5.3.8 – Canadian Metric to European Conversion Table on page 36.

### 5.3.8 Canadian Metric to European Conversion Table

Table 11. Canadian Metric to European Standard EN 10080/BS 4449 Conversion

Canadian Metric	European Metric	Nominal Diameter (mm)
10 M	12,0	12 mm
15 M	16,0	16 mm
20 M	20,0	20 mm
25 M	25,0	25 mm

## 5.4. Stencil and Short Sheet Placement

For all bin diameters except 54', if a top-tier wind ring is required for a stiffened bin, it will pass through the "WESTEEL" Stencil. If the customer wishes, the stencil sheet(s) can be positioned in the 2nd tier from the top in order to keep it clear of the wind ring.

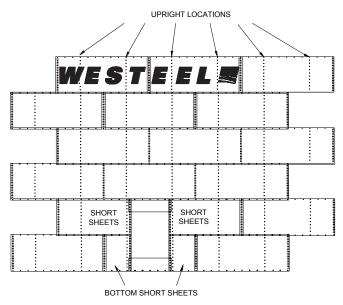
#### Note

For AGI sign sheet, the sign sheet always needs to be installed externally in stiffened bins.

#### **Even Tiered Bins:**

To align the stencil sheets above the walk-in door as shown, stagger the wall sheets normally as shown below.

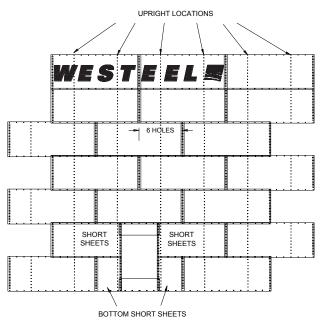
Figure 8. Stencil and Short Sheet Placement — Even Tiered Bins



#### **Odd Tiered Bins:**

To center the stencil above the walk-in door, stagger the wall sheets normally at the bottom and near the middle and coincide the seams in the top two tiers as shown below.

Figure 9. Stencil and Short Sheet Placement — Odd Tiered Bins



**Table 12. Short Sheet Part Numbers** 

Part Number	Used With
194780	194679 — 194681
194781	194682 — 194683
194782	194684 — 194685

**Table 13. Bottom Short Sheet Part Numbers** 

Part Number	Used With
194783	194679 — 194681
194784	194682 — 194684
194785	194685

## 5.5. External Sign Sheet Installation (For Stiffened Bin)

#### **Example Sign Sheet**

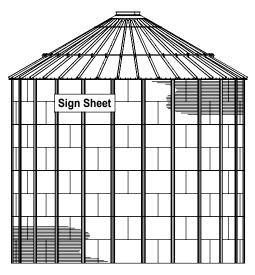


#### **Selecting the Sign Sheet Location**

#### Note

Choose a location to install the sign sheet somewhere in the top three rings.

Figure 10. Example Sign Sheet Location



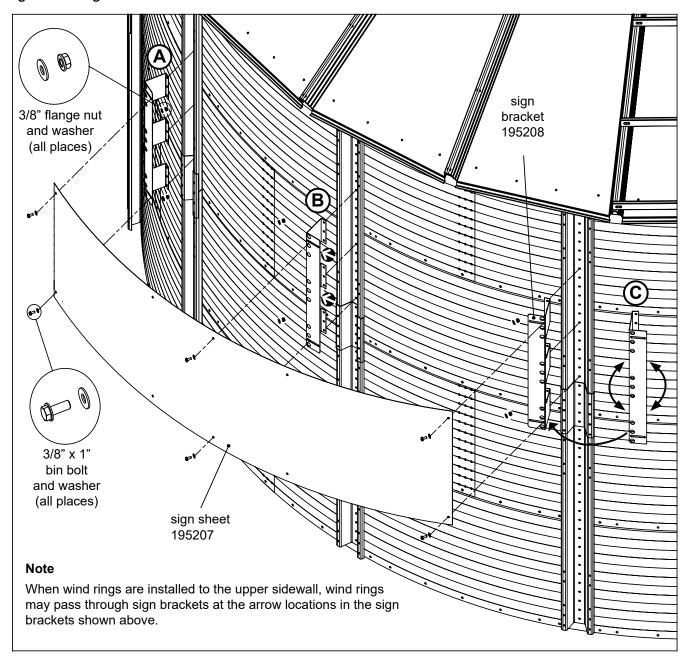
#### Note

It may not be possible to locate the sign sheet on this bin in the exact location shown in Figure 10. Possible sign sheet locations will vary based on available sign bracket mounting hole locations.

#### **Installing the Sign Sheet**

- 1. Install the sign brackets to the stiffeners.
- 2. Make certain to use the correct intermediate stiffener bolt pattern no matter which location is selected for sign brackets installation.
  - Each bracket is exactly the same. Brackets A and B flanges face right.
- 3. Install bracket C with the flanges facing either right or left depending on which orientation enables connection to the sign sheet.
- 4. Use the supplied stiffener bolts, nuts, and flat washers to make the connection.
- 5. Install the sign sheet to the sign brackets slotted holes.
- 6. Use the 3/8" x 1" bin bolts, 3/8" flat washers, and 3/8" flange nuts supplied with the sign sheet.
- 7. Install flat washers on the both the bolt and nut sides. Tighten all bolts.

Figure 11. Sign Sheet Installation



## 5.6. Grain Gauge Installation and Operation (Optional)

The Grain Gauge™ is a clear polycarbonate unit that shows when the grain level reaches the top of the sidewall. The highly reflective tape is visible at night when a light is directed at it. When you can no longer see this reflective tape - the Grain Gauge™ is full and the grain auger should be shut off. The Grain Gauge™ and reflective strip comes packaged in the parts box.

Figure 12. Grain Gauge



#### If the Grain Gauge Cutout IS Present

The cut-out for the Grain Gauge is located in a separate top tier wall sheet.

- 1. Position the sheet with the cutout for maximum benefit, either;
  - facing the direction of the auger that will be loading the bin, or
  - directly under the inspection hatch for easy clean out.

The Grain Gage wall sheet can also be rotated to position the Grain Gauge at two possible positions:

- an upper position for smaller augers and/or larger bins
- a lower position for larger augers and/or smaller bins
- 2. Install the reflective strip on the center web of the cut-out as shown.
- 3. Caulk around the outside of the bolt holes on the Grain Gauge™ flange with the 1/16" x 3/8" tape caulking supplied.
- 4. Fasten the Grain Gauge™ to the decal sheet using grain bin bolts with the indented upside down "V" at the bottom.

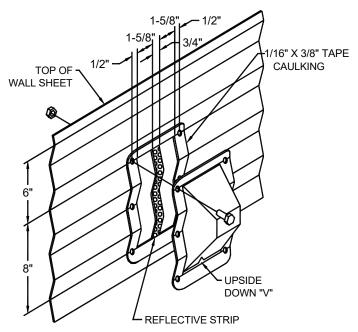
#### Note

Do not position the joint between two adjacent top ring angles directly over the Grain Gauge™ cutout. Insure that the top angle "bridges" the cutout and that the closest joint is at least 2 or 3 holes away.

#### If the Grain Gauge Cutout IS NOT Present

1. Using the grain gauge, position the grain gauge at a desirable location on the bin. The normal location is such that the top holes in the grain gauge are centered in the second corrugation valley below the top horizontal row of bin bolts at the eave (see Figure 13 on page 42).

Figure 13. Grain Gauge Detail



- 2. Mark and drill out holes using a 3/8" drill.
- 3. Mark and cut-out the two slots, using the holes as a reference, according to the diagram.
- 4. Install the reflective strip on the center web.
- 5. Install the grain gauge using bin bolts with the indented upside down "V" at the bottom.

### 5.7. 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.

#### Note

The longer you wait, the more it becomes difficult to correct the bin roundness.

- 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 14. Scribe Radius - 15' to 54' Bins

Nominal Bin Diameter (ft)	Scribe Radius (ft in)
15	7'4-3/4"
18	8'10-11/16"
21	10'4-9/16"
24	11'10-1/2"
27	13'4-3/8"
30	14'10-5/16"
33	16'4-3/16"

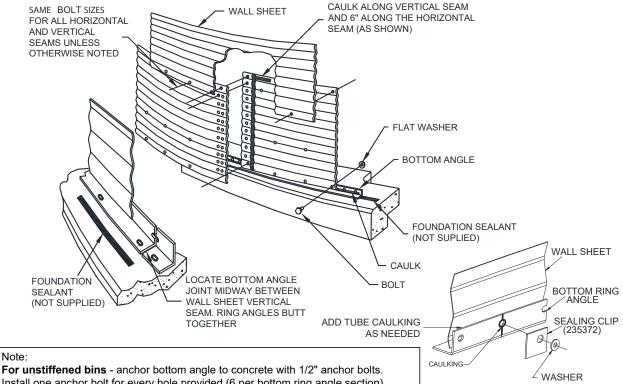
Nominal Bin Diameter (ft)	Scribe Radius (ft in)
36	17'10-1/8"
39	19'4"
42	20'9-15/16"
45	22'3-13/16"
48	23'9-3/4"
51	25'3-5/8"
54	26'9-9/16"

## 5.8. Wall Sheet and Bottom Angle Assembly

#### Note

For wall sheet hardware specification, refer to .

Figure 14. Wall Sheet and Bottom Angle Assembly Detail



Note:

Install one anchor bolt for every hole provided (6 per bottom ring angle section).

For stiffened bins - the bottom angle anchors are not required for stiffened bins as long as the stiffener base assembly anchors are making a good seal between the bottom angle and the foundation. If the seal is not good due to uneven concrete it is recommended to also anchor the bottom angle with as many 1/2" anchor bolts as are needed to achieve a good seal.

44 198890 R49

## 5.9. Centurion Wall Sheet Part Number Matrix

Table 15. Wall Sheet Part Number Table

		Corrugated	Wall Sheets			Punched Wall Sheets		
Thickness nom (min)	Gauge	Label Colour	Weight lbs	Length (overall)	Flat	Regular	Bottom	
					194654	194660 Stencil		
.040 (.036)	20	Yellow	58.3		194657	194663 Stencil		
					194679	194730		
					194655	194661 Stencil		
.050 (.045)	18	Orange	72.8		194658	194664 Stencil		
					194680	194731	194771	
.057 (.052)	17	Red	83.0	116.5"	194681	194732	194772	
.066 (.061)	15	Pink	97.7		194682	194733	194773	
	170) 14 Lime 112.2		194656	194662				
.076 (.070)		Lime	112.2		194659	194665		
					194683	194734	194774	
.096 (.088)	13	Green	141.1		194684	194735	194775	
.116 (.107)	12	Blue	171.4		194685	194736	194776	
.126 (.117)	11	Purple	189.0	447.0"	194606	194737	194777	
.139 (.130)	10	Black	209.4	117.0"	194607	194738	194778	
		S	hort Sheets Insta	alled Beside the Doo	r			
057 ( 052)	47	Dad	66.3	93.0"		194780		
.057 (.052)	17	Red	26.2	36.8"			194783	
.076 (.070)	14	Lime	89.6	93.0"		194781		
.096 (.088)	13	Green	44.6	36.8"			194784	
116 ( 107)	10	Dive	136.8	93.0"		194782		
.116 (.107)	12	Blue	54.1	36.8"			194785	

Bottom wall sheets are punched for full floor aeration flashing. Use bin bolts provided to plug unused holes if a full floor aeration system is not being used.

## 5.10. Wall Sheet Caulking Detail

Figure 15. Wall Sheet Caulking Detail (inside view) — Imperial

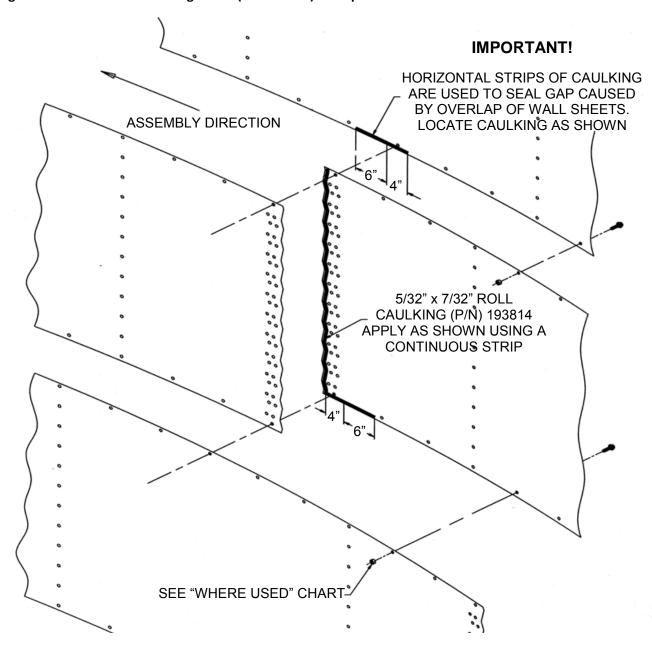
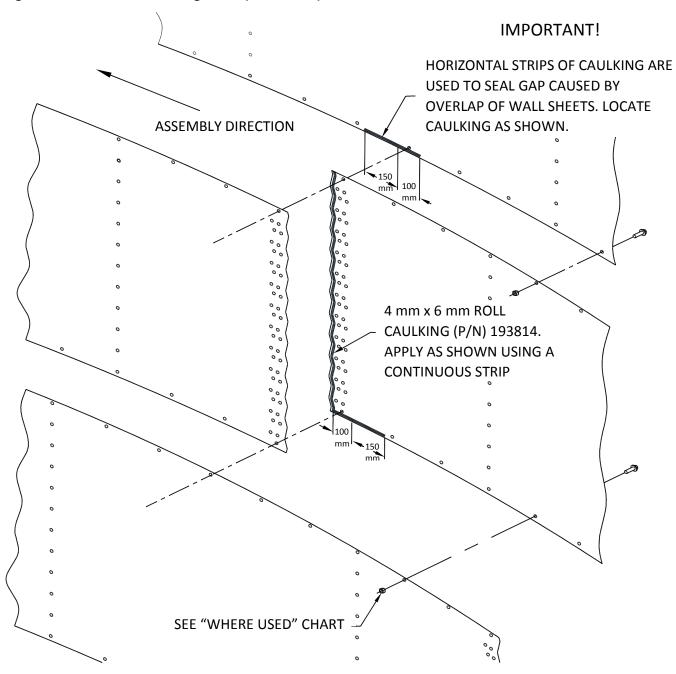


Figure 16. Wall Sheet Caulking Detail (inside view) — Metric



## 5.11. Commercial Bin Upright Assembly

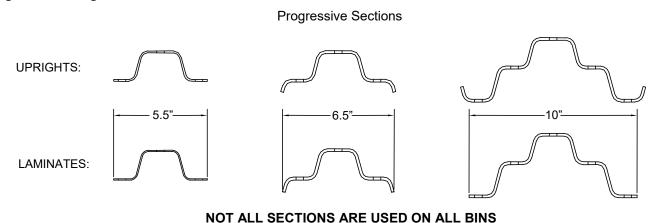
This section provides information needed to assemble uprights for commercial bins.

#### Introduction

The AGI Commercial upright system consists of uprights and laminates. Single uprights, joined by splice plates, are used at the top of bins. Laminate sections are introduced when vertical load requirements dictate. Once introduced the laminates continue to be utilized for the balance of the assembly.

A unique feature of the AGI upright system is the progressive section. Not only do the uprights and laminates increase in gauge from the top to the bottom of the bin, they also increase in section.

Figure 17. Progressive Sections



Both upright and laminate sections measure 88" long. In the center of each there are vertical holes spaced at 4" centers. This permits use on externally stiffened bins. There are two locations on each wall sheet for attachment of the uprights. The wall sheet holes that mate with the uprights are spaced at 4" centers. All center upright holes must be filled with bolts.

#### **Upright/Laminate Identification**

In order to properly erect the bin it is necessary to distinguish uprights from laminates, it is necessary to determine the gauge of the part, and it is necessary to determine the width of the section. The various combinations are provided in the upright/ laminate table. It is also necessary to determine the orientation of the parts as there is a distinct top and bottom. All the information that is required for assembly is contained on the label.

The label, is the easiest means of identification. It contains all of the necessary information. For assembly purposes, the label is placed on the bottom of both uprights and laminates.

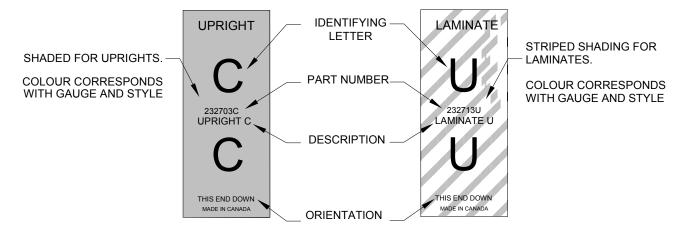
Upright labels have solid colours and laminate labels are striped. For both uprights and laminates, the colour corresponds with gauge and style.

Each upright and laminate has a unique identifying letter. This is prominently displayed on the label, and corresponds with the respective assembly charts provided (see Figure 18).

#### Tip

For error free installation, make sure that the identifying letter on the label coincides with the wall sheet/upright layout for the bin being assembled, and that the labels on both uprights and laminates remain on the bottom. There is a definite top and bottom orientation for uprights and laminates. It is imperative that they are oriented correctly.

Figure 18. Upright and Laminate Labels



#### **Short Upright**

There is one short upright measuring 44" long for use in odd tier bins. The alpha character for this part is "S". There is no corresponding laminate as it is used at the top of the bin before the laminates are introduced. The short upright always goes in the top tier.

#### Tip

The short "S" upright is located in the top tier of odd-tiered bins.

#### **Upright/Laminate Assembly**

Use the wall sheet/upright layout provided for the bin in question, to determine the proper order of the various upright and laminate components. The identifying letter on the label is the easiest means of identification. In addition to the identifying letter, every upright and laminate is also identified by gauge and width. If for some reason the label is missing from a part, the following table contains information that will aid in the identification of the various parts.

#### Tip

In all cases laminates nest inside uprights. The uprights are placed against the bin wall sheets and the laminates are away from the wall sheets.

It is important to get the first uprights started correctly. The top hole in the top upright bolts into the top horizontal wall sheet seam (see Figure 19).

#### Tip

For proper upright orientation align the bottom of the first upright with the bottom edge of a wall sheet.

Figure 19. Upright Orientation Detail

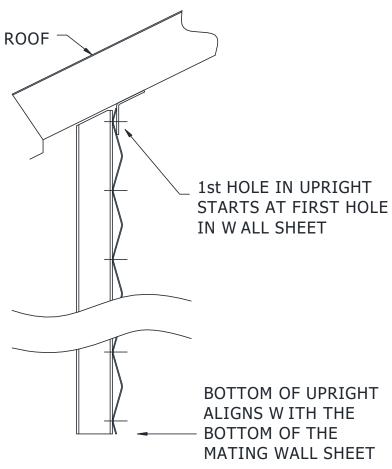


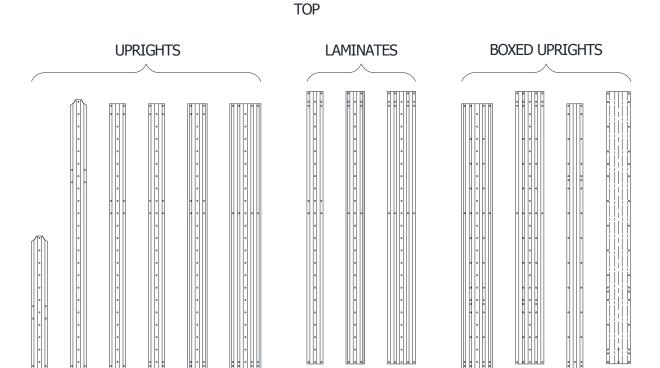
Table 16. Upright/Laminate Identification Table

	Identifying Letter	Part Number	Description	Gauge	Label Colour	Width of Section (in)
	S	232700S	Upright S .076" Short	14	Light green	5.5"
	Α	232701A	Upright A .076" x 5.5"	14	Yellow	5.5"
	В	232702B	Upright B .076" x 5.5"	14	Light green	5.5"
Uprights	С	232703C	Upright C .116" x 5.5"	12	Blue	5.5"
	Е	232705E	Upright E .168" x 5.5"	8	Brown	5.5"
	F	232706F	Upright F .168" x 6.5"	8	Silver	6.5"
	G	232707G	Upright G .168" x 10"	8	Gold	10"
	U	232713U	Laminate U .116" x 5.5"	12	Blue striped	5.5"
	W	232715W	Laminate W .168" x 5.5"	8	Brown striped	5.5"
Laminates	Х	232716X	Laminate X .168" x 6.5"	8	Silver Striped	6.5"
	Υ	232717Y	Laminate Y .168" x 10"	8	Gold striped	10"
	J	232709J	Upright Boxed J .168" x 10"	8	Red	10"
Boxed	K	232710K	Laminate Boxed K .168" x 10"	8	Red Striped	10"
	L	232711L	Laminate Boxed L .168" x 5.5"	8	Red Striped	5.5"

#### Note

Not all sections are used on all bins.

Figure 20. Upright and Laminate Components



#### **Catwalk Support Uprights**

В

C,E

The upright/laminate requirements under catwalk support locations are likely different from the normal upright/laminate order. Consult your AGI representative for specifications.

U,W

**BOTTOM** 

Χ

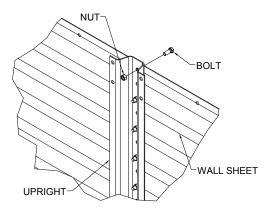
#### **Bolt/Nut Orientation**

To allow for a good seal install the bolts from the inside of the bin as shown for externally stiffened bins.

#### **Upright/Splice Pre-Assemblies**

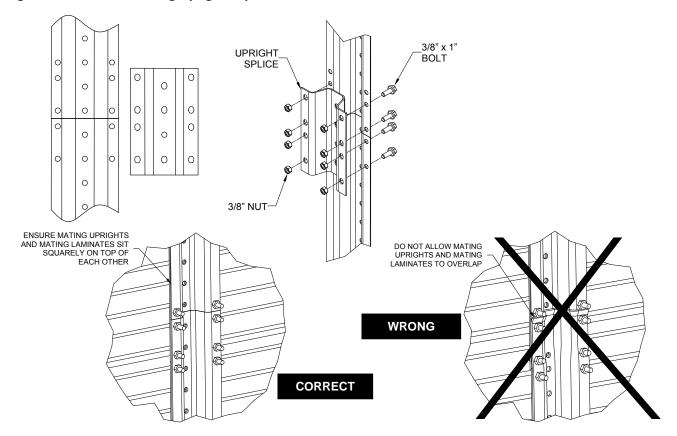
At the top of a bin, laminates are not utilized and a splice is required to make the connection between mating uprights. The splice nests inside the upright similar to a laminate. When pre-assembling uprights to splices, insure that the splice goes on the top end of the upright, such that the label on the bottom of the upright remains visible. Keeping the label visible will help prevent subsequent errors. This practice will also prevent ground interference when adjusting jack locations.

Figure 21. Upright / Wall Sheet Bolt and Nut Orientation



**Tip**It may be advantageous to conduct pre-assemblies during the installation process. This can be a real time saver.

Figure 22. Pre-Assembling Uprights/Splices



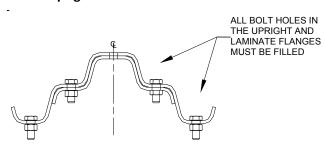
#### **Upright and Laminate Assembly**

Uprights and laminates are designed to transfer vertical loads through an end to end, butt connection. Ensure that mating uprights sit squarely on top of each other and do not overlap. Ensure that mating laminates sit squarely on top of each other and do not overlap. Secure the joints with the nuts and bolts provided. Failure to do so can result in structural failure.

#### **Upright/Laminate Pre-assemblies**

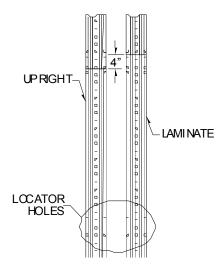
Laminates nest inside of uprights and are offset 4" above the uprights.

Figure 23. Nesting Laminates and Uprights



For proper orientation, ensure that the labels on the upright and laminate are both towards the bottom and that the locator holes in the middle portion of the upright and laminate line up. Bolts can be placed in these locator holes to create a pre-assembly. All locator holes, located in the middle of the upright and laminate flanges, need to be filled with bolts. These include holes in flanges that may only have one thickness of material.

Figure 24. Upright/Laminate Orientation



When properly assembled, both the upright label and the laminate label will remain visible during the preassembly phase. Once assembled on the bin the upright label will be covered.

In the assembly layouts, the combination of an upright and a laminate is called an assembly. For example, the combination of a "C" upright and a "U" laminate would be called a "CU Assembly". Both the "C" on the upright label and the "U" on the laminate label, would remain visible, and would therefore remain distinguishable from other pre-assemblies.

#### Tip

When creating pre-assemblies, ensure that the labels on both the upright and the laminate are on the same end, and that the locator holes align with each other in the middle of the parts. Once pre-assembled, both labels should remain visible.

#### Note

Once completely assembled onto the bin, all visible holes in the upright and laminate flanges must be filled. All mating wall sheet/upright holes must be filled.

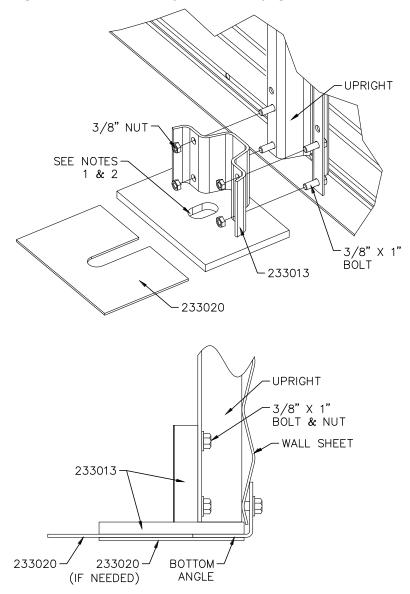
### 5.11.1 Base Assembly 233013 (WITHOUT Laminate Sections)

On smaller bins without laminates, use the combination of base assemblies and shims to secure the bin to the foundation, as shown below.

#### Tip

Depending on the assembly procedure, it may be convenient to bolt on the anchor brackets when creating the upright/laminate pre-assemblies.

Figure 25. Base Assembly 233013 for Uprights WITHOUT Laminate Sections



#### **Important**

- 1) When positioning anchor bolts, locate them as far forward (away from the bin) within the slot as possible.
- 2) The anchor bolts at the upright locations should be chosen so that they can handle the loads imposed on them and that the head, either alone or with large diameter heavy washers, is large enough to sufficiently cover the 1.20" x 1.90" anchoring slot provided in the base plate. The base plate should not be able to pull up over the nut.

### 5.11.2 Base Assembly 233013 (Laminate Sections)

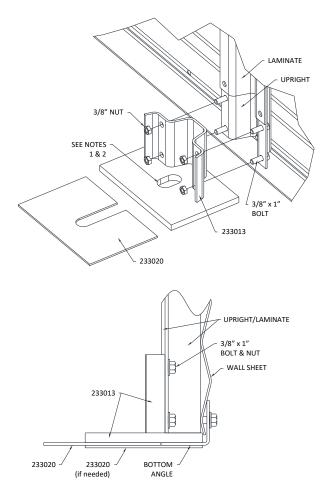
#### 233013 — Base Assembly for Uprights with Laminate Sections

At the bottom of an assembled bin that has laminates, there will be a 4" gap between the bottom laminate and the base plate. It is imperative that this area is filled with the 4" laminate section that protrudes from the base assembly. Use the combination of base assemblies and shims to secure the bin to the foundation, as shown below.

#### Tip

Depending on the assembly procedure, it may be convenient to bolt on the base assemblies when creating the upright/laminate pre-assemblies.

Figure 26. Base Assembly 233013 for Uprights with Laminate Sections



#### **Important**

- 1) When positioning anchor bolts, locate them as far forward (away from the bin) within the slot as possible.
- 2) The anchor bolts at the upright locations should be chosen so that they can handle the loads imposed on them and that the head, either alone or with large diameter heavy washers, is large enough to sufficiently cover the  $1.20" \times 1.90"$  anchoring slot provided in the base plate. The base plate should not be able to pull up over the nut.

### 5.11.3 Base Assembly for Hopper Bins

#### For AGI Hoppers

At the bin to hopper connection use anchor bracket 232735 provided in the parts box. The diagrams below represents the wall sheet to upright to anchor bracket configuration. All Centurion Hoppers (CEH) are externally stiffened only. The hopper must mate to this configuration. The distance from the wall sheet and upright interface to the anchor bracket holes is 2.63". Make the upright connection to hopper using two  $\frac{1}{2}$ " Grade 8 bolts per upright (hardware not supplied).

#### **Important**

AGI's warranty only covers the bins that are installed on AGI Hopper cones.

#### For Non-AGI Hoppers

The following should be taken into consideration. The bottom wall sheet horizontal hole spacing for the CEH bin line is a constant 9-3/8". The position of the uprights to the bin remains consistent at two evenly spaced per wall sheet or an upright every 6 horizontal holes. The relative dimensions between the bin wall sheets and the uprights, and the preferred method of attaching the uprights to the hopper structure are provided on the diagrams below. It is the responsibility of the hopper installer to insure that the bin is properly supported and anchored. The anchor bracket is supplied with the CEH parts box as are the shims. Shim if necessary.

Figure 27. Relative Dimensions Between the Bin Wall Sheets and the Uprights (232735)

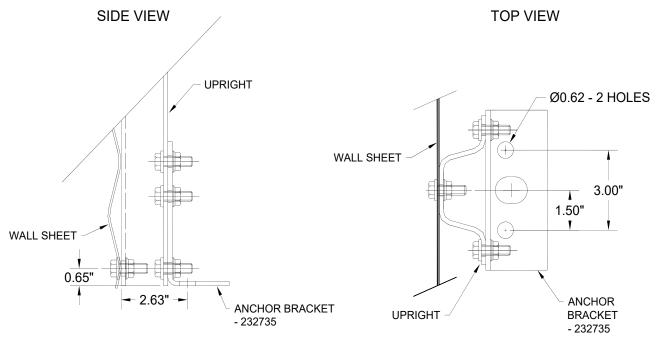


Figure 28. Upright, Wall Sheet and Anchor Bracket (232735)

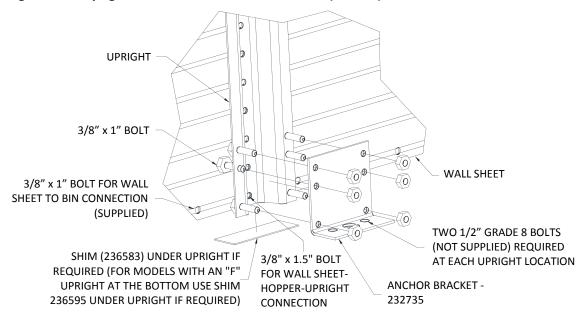


Figure 29. Relative Dimensions Between the Bin Wall Sheets and the Uprights (232777)

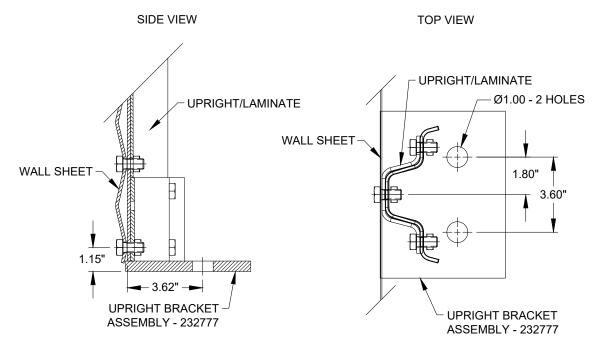
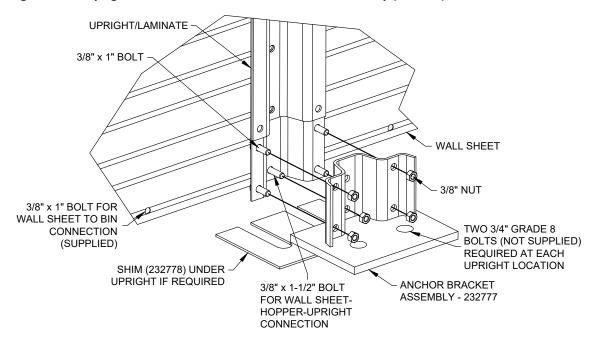


Figure 30. Upright, Wall Sheet and Anchor Bracket Assembly (232777)

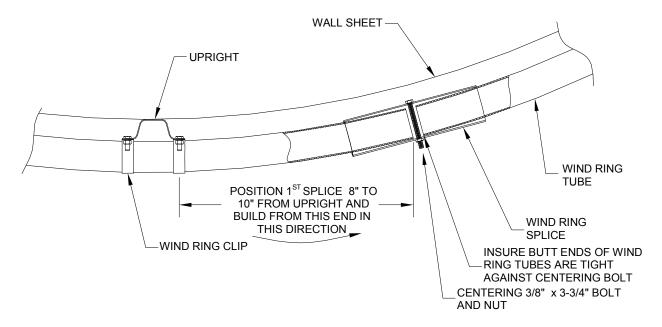


## 5.12. Wind Ring Assembly

Wind rings fulfill their function when the bin is empty or partially filled. In high winds, the wind rings provide extra stiffness and help keep the bin round. Not all bins require wind rings. Bin diameter and height determine the location and the quantity of wind rings required.

Wind ring locations are identified by an O placed beside the relevant uprights within the wall sheet and upright layouts for the bin in question. At these locations wind ring tubes are secured to the upright flanges with a series of clips that bolt into the upright locator holes that are located in the flanges of the 5.5" wide upright and upright/laminate combinations. Adjacent tubes are aligned and secured to each other with wind ring splices. A 3/8" x 3-3/4" bolt through the splice keeps it centered on the connection.

Figure 31. Wind Ring Assembly

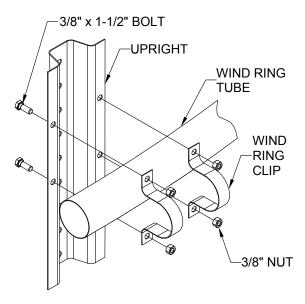


#### **Externally Stiffened Bins**

Once the uprights have been secured to the bin walls, position the first wind ring tube and secure it to the upright using the wind ring clips provided. Two clips are required per upright, one on each flange. Position the wind ring such that a wind ring splice (with bolt inserted) can be slipped onto the end of the tube without interfering with the upright or the wind ring clips. The splice should be orientated such that the bolt is horizontal.

Insert the end of the next wind ring tube into the open end of the wind ring splice. Insure that the ends of both tubes are tight against the centering bolt. Secure the wind ring tube to the uprights with the wind ring clips. Continue around the bin.

Figure 32. Wind Ring Mounting Detail (externally stiffened bins)



All wind ring splice connections should be made in the space between uprights, and should not encroach into the area where the wind ring clips are securing the wind ring tube to the uprights. To avoid interference with uprights and the need to make multiple cuts, position an end of the first tube relatively close to an upright, such that the space between the end of the tube and the next upright is maximized, and build from that end. Insure that both ends of the tube are far enough away from the closest uprights to avoid interference with the splice. When progressing around the bin, this space between the end of the tube and the next uprights may shrink with each additional tube that is installed. On large diameter bins, if this space shrinks to the point where the wind ring splice interferes with the upright, then the tube will need to be cut. Make the cut such that the space that is created between the end of the tube and the next upright is similar to the identical space on the first tube that was installed. In this manner, there will not be a shortage of tube.

#### Note

Assembly Tip: When putting the first wind ring tube in place, locate one end close to an upright with a 8" to 10" overhang, and continue building from that end. This will reduce the need for multiple cuts.

The final wind ring tube in a circle will need to be cut to length. Secure one end of the last tube in the previously installed wind ring splice as described above. Hold the tube in place and mark the cut-line relative to the previously installed tube at the other end. Insure that allowance is made for the 3/8" diameter bolt. Once the tube has been cut, install one end of the tube as described above. On the other end slide the wind ring splice completely onto the free end. Position this end relative to the previously installed tube, and slide the splice onto the second tube until it is centered. Insert the centering bolt. Install all wind ring clips. Tighten all bolts.

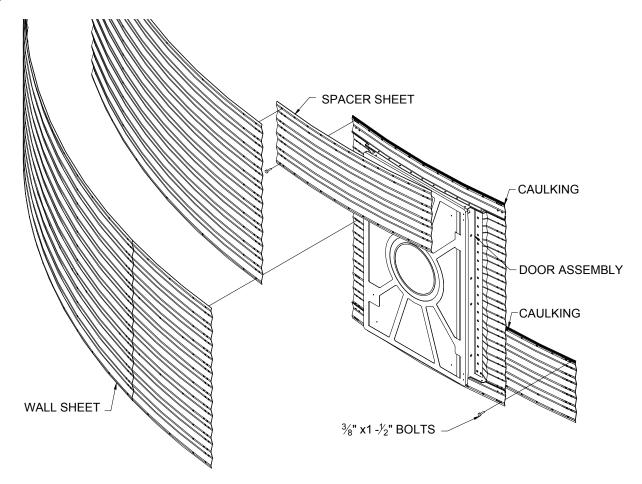
#### Note

Assembly Tip: When tightening wind ring clips, always tighten in sequence starting at the spliced end of the tube, which has already been secured, and work towards the free, and as yet unspliced, end.

### 5.13. One and Half Tier Door Installation

Install the door from the inside of the bin using 3/8" x 1-%" bolts. The door should overlap the top spacer sheet as shown below. Place caulking on the top spacer sheet above and below the row of holes where it will meet with the door frame. The bottom spacer sheet overlaps the door from the inside as shown. Place caulking above and below the row of holes where it will meet the door frame. Both spacer sheets must be installed below the door if auger chute and full floor aeration are used. Locate door tie-back to secure door in open position.

Figure 33. Door Installation Detail



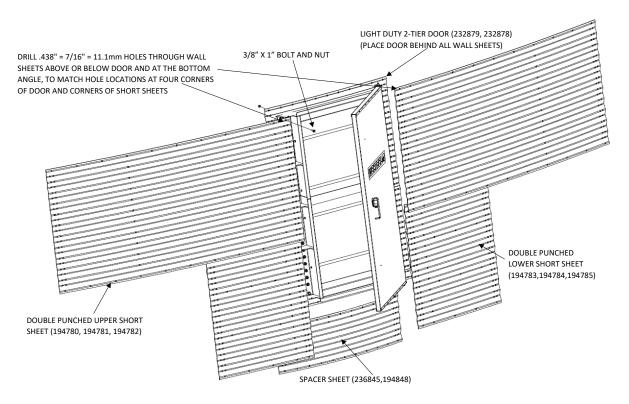
**Table 17. Door Types** 

		Stan	Standard		er Chute – 840*	236830 +						
	1505	1506	1507	1508	1509	1510	1511	1512	1505	1506	1507	
	1805	1806	1807	1808	1809	1810	1811	1812	1805	1806	1807	
	2105	2106	2107	2108	2109	2110	2111	2112	2105	2106	2107	2108
	2405	2406	2407	2408	2409	2410	2411	2412	2405	2406	2407	
	2705	2706	2707	2708	2709	2710	2711	2712	2705			
	3005	3006	3007	3008	3009	3010	3011	3012				
	3305	3306	3307	3308	3309	3310	3311	3312				
3604	3605	3606	3607	3608	3609	3610	3611	3612				
	3905	3906	3907	3908	3909	3910	3911	3912				
	4205	4206	4207	4208	4209	4210	4211	4212				
	4505	4506	4507	4508	4509	4510	4511	4512				
	4805	4806	4807	4808	4809	4810	4811	4812				
	5105	5106	5107	5108	5109	5110						
	5405	5406	5407	5408	5409							

<sup>\*</sup>For the standard door with Auger Chute both 236830 and 236840 need to be ordered

<sup>-</sup> Entries that are bordered must use 236869 Support Kit if using Auger Chute. For all others it is optional. -

## 5.14. Two Tier Light Duty Door Installation



#### Note

- Spacer sheet (236845,194848) can be placed below the light duty 2-tier door (232879) to accommodate AGI floors.
- Spacer sheet (236845,194848) can be placed above the light duty 2-tier door (232879) to accommodate no floor application.

#### **Important**

Inner door board must be closed and latches completely engaged before filling. Failure and collapse of the bin could result if bin is filled without properly closing inner door board.

Door P/N	Applicable Bin Size
232879	15' to 54'
232878	60' to 78'

SPECIAL SHEET	BIN RANGES WHERE USED
194780 (0.057)	1505-2716, 3005-3014, 3305-3314, 3605-3613, 3905-3910, 4205-4209, 4505-4508, 4805-4807, 5105-5106, 5405-5406
194781 (0.076)	2717-2718, 3015-3020, 3315-3319, 3614-3617, 3911-3917, 4210-4217, 4509-4514, 4808-4812, 5107-5111, 5407-5409, 6008
194782 (0.116)	3320-3323, 3618-3623, 3918-3923, 4218-4223, 4515-4521, 4813-4821, 5112-5121, 5410-5419, 6009-6014, 6608-6612, 7208-7210, 7508-7509, 7808
194783 (0.057)	1505-2716, 3005-3014, 3305-3314, 3605-3612, 3905-3909, 4205-4208, 4505-4507, 4805-4806, 5105, 5405
194784 (0.096)	2717-2718, 3015-3020, 3315-3323, 3613-3623, 3910-3919, 4209-4219, 4508-4519, 4807-4818, 5106-5115, 5406-5413, 6008-6010, 6608- 6609
194785 (0.116)	3920-3923, 4220-4223, 4520-4521, 4819-4821, 5116-5121, 5414-5419, 6011-6014, 6610-6612, 7208-7210, 7508-7509, 7808
236845 (0.116)	1505-4223,4505-4521, 4805-4821, 5105-5121, 5405-5419
194848 (0.116)	6008-6014, 6608-6014, 7208-7210, 7508-7509, 7808

### 5.15. Door Cover Sidewall Latch Installation

Install the door cover sidewall latch (236783) on the swing side of the door cover.

- When possible, re-use the bin bolt on the horizontal wall sheet seam that lines up with the door cover.
- If existing bin bolt cannot be used, drill a 7/16" hole on top of a wall sheet corrugation approximately halfway up the door cover and install latch with a 3/8" bin bolt and nut. Use the door cover swing to help position the field drill hole.

#### **Important**

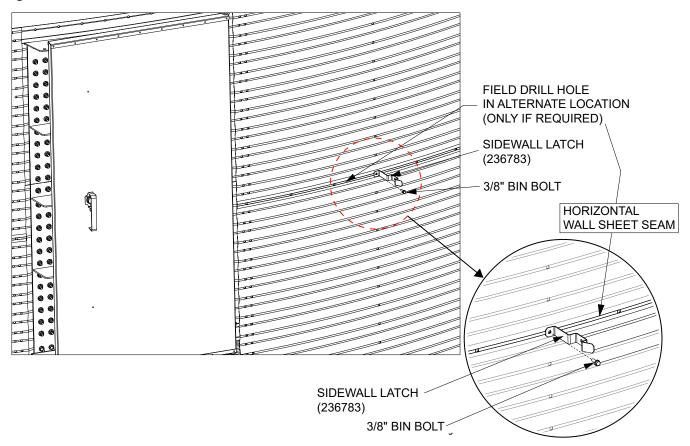
The door cover should snap shut and sit within the channel on the latch once installation is complete.

Figure 34. Door Sidewall Latch (236783)

(Supplied with the door frame and not included in the parts box.)



Figure 35. Install the Sidewall Latch



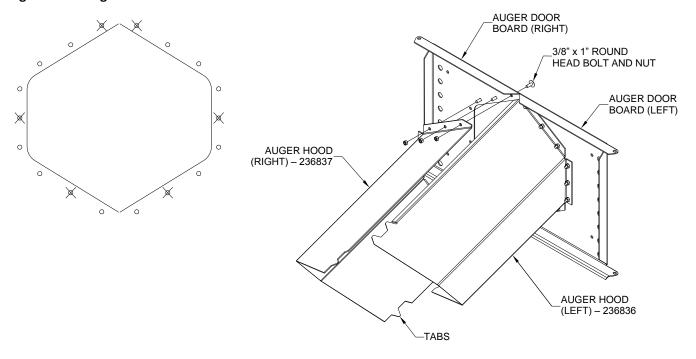
## 5.16. Auger Chute Installation

Bolt the auger chute hood to the auger door board, as shown below using the 3/8" x 1" round head bolts (150594) provided with the door. Install the auger hood pieces with the door board closed. Before tightening the nuts, position the two auger hoods such that the tabs near the back of the auger hoods fit snugly together and such that the top seam where the left and right chutes come together is sealed tight. Tighten nuts.

#### Note

If planning to use an auger hood block-off plate, use 3/8" x 1-½" bolts as illustrated below at the six locations marked with an "X".

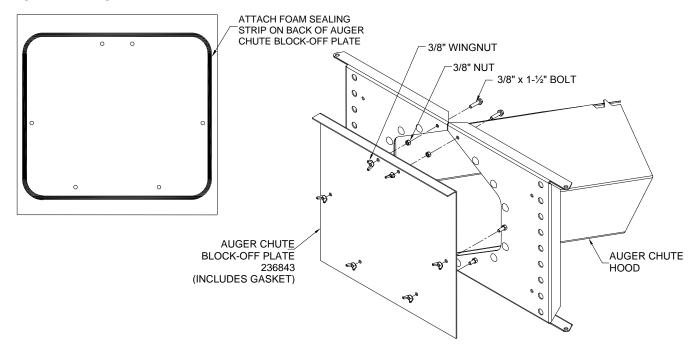
Figure 36. Auger Chute Detail



## 5.17. Auger Chute Block-Off Plate Installation

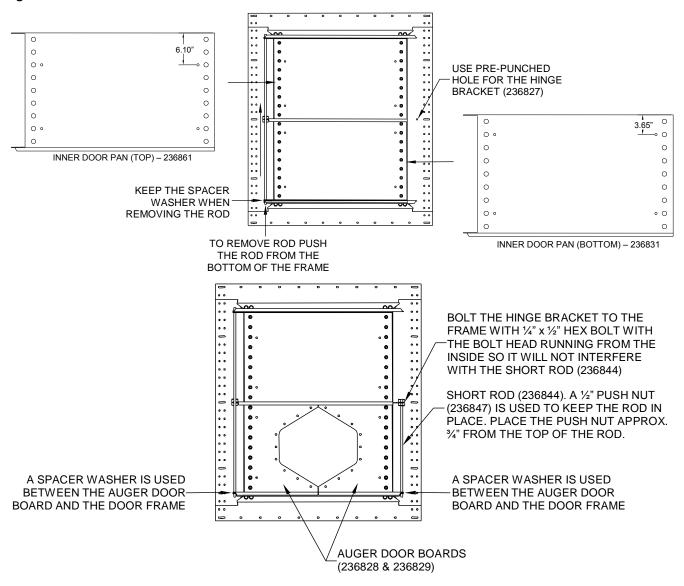
Bolt the auger chute block-off plate to the auger door boards using 3/8" x  $1-\frac{1}{2}$ " bolts, 3/8" nut and 3/8" wing nut as shown below and remove the corresponding round head bolts. To remove the plate, remove the wing nuts.

Figure 37. Auger chute Block-Off Plate Detail



## 5.18. Door Conversion

Figure 38. Door Conversion Detail



To convert a standard door configuration to an auger hood version:

- 1. Remove the lower door board by pushing up the long hinge rod sufficiently to clear the door board. Save the spacer washer at the bottom of the door board.
- 2. Insert the proper auger door board as shown. Reinsert the long rod and spacer washer.
- 3. Bolt the hinge bracket to the frame using ¼" x ¾" hex bolts. Put the head of the bolt on the inside of the door. Orient the hinge bracket similar to the other hinge bracket on the other side.
- 4. Put the ½" push nut on one end of the short hinge rod. Push it down about ¾".
- 5. Position the second auger door board and insert the short rod through the hinge bracket, through the auger door board and through the door frame at the bottom. Remember to insert the spacer washer as shown.
- 6. Bolt on the auger chutes as provided elsewhere.

To convert an auger hood door version to a standard door configuration:

- 1. Remove the two auger door boards by pulling the hinge rods sufficiently to clear them. The short rod can be removed completely. Save the spacer washer.
- 2. Insert the lower door board and reinsert the long hinge rod. Remember to insert the spacer washer.
- 3. Be sure that the top and bottom door boards are positioned properly with respect to each other. This can be determined by the handle location on the door as shown above (6.1" from the top on the top door board and 3.65" from the top on the bottom door board). Another check is to insure that the handles align with the mating studs on the door frame.

# 6. Specifications

## **6.1. Centurion Grain Bin Specifications**

	BIN		CADACITY		HEIGHT						
MODEL	BIN Diameter	CAPACITY				EAVES		OVERALL			
	DIAMETER	bu	m³	Tonnes	ft	ft - in	m	ft	ft - in	m	
1505		2940	98	80	18.5	18'6"	5.64	22.6	22'7"	6.89	
1506		3490	116	95	22.2	22'2"	6.76	26.3	26'3"	8.01	
1507		4040	134	109	25.8	25'10"	7.87	30.0	29'11"	9.13	
1508	14'11"	4580	153	124	29.5	29'6"	8.99	33.6	33'7"	10.25	
1509	4.55 m	5130	171	139	33.2	33'2"	10.11	37.3	37'3"	11.36	
1510*		5670	189	154	36.8	36'10"	11.23	40.8	40'10"	12.45	
1511*		6220	207	169	40.5	40'6"	12.35	44.5	44'6"	13.57	
1512*		6770	225	184	44.2	44'2"	13.46	48.2	48'2"	14.68	
1805		4290	143	116	18.5	18'6"	5.64	23.5	23'6"	7.16	
1806		5080	169	138	22.2	22'2"	6.76	27.1	27'2"	8.27	
1807		5860	196	159	25.8	25'10"	7.87	30.8	30'10"	9.39	
1808	17'11"	6650	222	180	29.5	29'6"	8.99	34.5	34'6"	10.51	
1809	5.46 m	7440	248	202	33.2	33'2"	10.11	38.1	38'2"	11.63	
1810*		8220	274	223	36.8	36'10"	11.23	41.7	41'8"	12.71	
1811*		9010	300	244	40.5	40'6"	12.35	45.4	45'4"	13.83	
1812*		9800	326	266	44.2	44'2"	13.46	49.0	49'0"	14.95	
2105		5910	198	160	18.5	18'6"	5.64	24.3	24'4"	7.42	
2106		6980	233	189	22.2	22'2"	6.76	28.0	28'0"	8.54	
2107		8050	269	218	25.8	25'10"	7.87	31.7	31'8"	9.65	
2108	20'11"	9130	304	248	29.5	29'6"	8.99	35.3	35'4"	10.77	
2109	6.37 m	10200	340	277	33.2	33'2"	10.11	39.0	39'0"	11.89	
2110*		11270	375	306	36.8	36'10"	11.23	42.6	42'7"	12.97	
2111*		12340	411	335	40.5	40'6"	12.35	46.2	46'3"	14.09	
2112*		13410	447	364	44.2	44'2"	13.46	49.9	49'11"	15.21	
2405		7820	261	212	18.5	18'6"	5.64	25.2	25'2"	7.68	
2406		9220	308	250	22.2	22'2"	6.76	28.9	28'10"	8.80	
2407		10620	354	288	25.8	25'10"	7.87	32.5	32'6"	9.92	
2408	23'10"	12010	401	326	29.5	29'6"	8.99	36.2	36'2"	11.03	
2409	7.28 m	13410	447	364	33.2	33'2"	10.11	39.9	39'10"	12.15	
2410*		14810	494	402	36.8	36'10"	11.23	43.4	43'5"	13.24	
2411*		16210	540	440	40.5	40'6"	12.35	47.1	47'1"	14.35	
2412*		17610	587	478	44.2	44'2"	13.46	50.8	50'9"	15.47	
2705		10020	335	272	18.5	18'6"	5.64	26.1	26'1"	7.94	
2706		11790	394	320	22.2	22'2"	6.76	29.7	29'9"	9.06	
2707		13560	453	368	25.8	25'10"	7.87	33.4	33'5"	10.18	
2708	26'10" 8.19 m	15330	511	416	29.5	29'6"	8.99	37.1	37'1"	11.30	
2709		17100	570	464	33.2	33'2"	10.11	40.7	40'9"	12.41	
2710*		18870	629	512	36.8	36'10"	11.23	44.3	44'3"	13.50	
2711*		20640	688	560	40.5	40'6"	12.35	48.0	47'11"	14.62	
2712*	] [	22410	747	608	44.2	44'2"	13.46	51.6	51'7"	15.73	
3005	29'10"	12510	419	339	18.5	18'6"	5.64	26.5	26'6"	8.09	
3006	9.10 m	14700	491	399	22.2	22'2"	6.76	30.2	30'2"	9.20	

	DIM	CAPACITY			HEIGHT						
MODEL	BIN DIAMETER	CAPACITY			EAVES OVERALL						
	DIAMETER	bu	m³	Tonnes	ft	ft - in	m	ft	ft - in	m	
3007		16880	564	458	25.8	25'10"	7.87	33.9	33'10"	10.32	
3008		19070	637	517	29.5	29'6"	8.99	37.5	37'6"	11.44	
3009		21250	709	577	33.2	33'2"	10.11	41.2	41'2"	12.56	
3010*		23440	782	636	36.8	36'10"	11.23	44.7	44'8"	13.62	
3011*		25620	855	695	40.5	40'6"	12.35	48.4	48'4"	14.74	
3012*		27810	927	754	44.2	44'2"	13.46	52.0	52'0"	15.86	
3305		15320	513	416	18.5	18'6"	5.64	27.4	27'5"	8.35	
3306		17970	601	487	22.2	22'2"	6.76	31.1	31'1"	9.47	
3307		20610	689	559	25.8	25'10"	7.87	34.7	34'9"	10.58	
3308	32'10"	23250	777	631	29.5	29'6"	8.99	38.4	38'5"	11.70	
3309	10.01 m	25900	865	702	33.2	33'2"	10.11	42.1	42'1"	12.82	
3310*		28540	952	774	36.8	36'10"	11.23	45.6	45'7"	13.89	
3311*		31190	1040	846	40.5	40'6"	12.35	49.2	49'3"	15.00	
3312*		33830	1128	918	44.2	44'2"	13.46	52.9	52'11"	16.12	
3604		15300	514	415	14.8	14'10"	4.52	24.6	24'7"	7.49	
3605		18450	618	500	18.5	18'6"	5.64	28.3	28'3"	8.61	
3606		21590	723	586	22.2	22'2"	6.76	31.9	31'11"	9.73	
3607	0514011	24740	827	671	25.8	25'10"	7.87	35.6	35'7"	10.85	
3608	35'10" 10.91 m	27890	932	756	29.5	29'6"	8.99	39.3	39'3"	11.96	
3609	10.91 111	31030	1036	842	33.2	33'2"	10.11	42.9	42'11"	13.08	
3610*	]	34180	1141	927	36.8	36'10"	11.23	46.4	46'5"	14.15	
3611*		37330	1246	1012	40.5	40'6"	12.35	50.1	50'1"	15.27	
3612*		40470	1350	1098	44.2	44'2"	13.46	53.7	53'9"	16.38	
3905		21900	734	594	18.5	18'6"	5.64	29.1	29'1"	8.87	
3906	1	25600	857	694	22.2	22'2"	6.76	32.8	32'9"	9.99	
3907		29290	980	794	25.8	25'10"	7.87	36.5	36'5"	11.11	
3908	38'10"	32980	1103	895	29.5	29'6"	8.99	40.1	40'1"	12.23	
3909	11.82 m	36670	1225	995	33.2	33'2"	10.11	43.8	43'9"	13.35	
3910*	1	40370	1348	1095	36.8	36'10"	11.23	47.3	47'3"	14.41	
3911*	1	44060	1471	1195	40.5	40'6"	12.35	50.9	50'11"	15.53	
3912*	1	47750	1593	1295	44.2	44'2"	13.46	54.6	54'7"	16.65	
4205		25690	862	697	18.5	18'6"	5.64	30.0	30'0"	9.14	
4206		29980	1004	813	22.2	22'2"	6.76	33.6	33'8"	10.25	
4207		34260	1147	929	25.8	25'10"	7.87	37.3	37'4"	11.37	
4208	41'9"	38540	1289	1045	29.5	29'6"	8.99	41.0	41'0"	12.49	
4209	12.73 m	42820	1431	1162	33.2	33'2"	10.11	44.6	44'8"	13.61	
4210*	1	47110	1574	1278	36.8	36'10"	11.23	48.1	48'2"	14.67	
4211*	1	51390	1716	1394	40.5	40'6"	12.35	51.8	51'10"	15.79	
4212*		55670	1858	1510	44.2	44'2"	13.46	55.5	55'6"	16.91	
4505		29830	1001	809	18.5	18'6"	5.64	30.8	30'10"	9.40	
4506	1	34750	1165	942	22.2	22'2"	6.76	34.5	34'6"	10.52	
4507		39660	1328	1076	25.8	25'10"	7.87	38.2	38'2"	11.64	
4508	44'9" 13.64 m	44580	1491	1209	29.5	29'6"	8.99	41.8	41'10"	12.75	
4509		49500	1655	1343	33.2	33'2"	10.11	45.5	45'6"	13.87	
4510*	1	54410	1818	1476	36.8	36'10"	11.23	49.0	49'0"	14.94	
4511*		59330	1982	1609	40.5	40'6"	12.35	52.7	52'8"	16.05	
4512*		64250	2145	1743	44.2	44'2"	13.46	56.3	56'4"	17.17	

			OADAOITY		HEIGHT						
MODEL	BIN Diameter	CAPACITY				EAVES		OVERALL			
	DIAWETER	bu	m³	Tonnes	ft	ft - in	m	ft	ft - in	m	
4805		34320	1153	931	18.5	18'6"	5.64	31.7	31'8"	9.66	
4806		39910	1339	1083	22.2	22'2"	6.76	35.4	35'4"	10.78	
4807		45510	1524	1234	25.8	25'10"	7.87	39.0	39'0"	11.90	
4808	47'9"	51100	1710	1386	29.5	29'6"	8.99	42.7	42'8"	13.02	
4809	14.55 m	56700	1896	1538	33.2	33'2"	10.11	46.4	46'4"	14.13	
4810*		62290	2082	1690	36.8	36'10"	11.23	49.9	49'10"	15.20	
4811*		67880	2268	1841	40.5	40'6"	12.35	53.5	53'6"	16.32	
4812*		73480	2454	1993	44.2	44'2"	13.46	57.2	57'2"	17.43	
5105*		39170	1316	1063	18.5	18'6"	5.64	32.2	32'2"	9.81	
5106*		45490	1526	1234	22.2	22'2"	6.76	35.9	35'10"	10.93	
5107*	50'9"	51800	1736	1405	25.8	25'10"	7.87	39.5	39'6"	12.05	
5108*	15.46 m	58120	1946	1576	29.5	29'6"	8.99	43.2	43'2"	13.17	
5109*		64430	2156	1748	33.2	33'2"	10.11	46.9	46'10"	14.28	
5110*		70750	2366	1919	36.8	36'10"	11.23	50.5	50'6"	15.40	
5405*		44400	1493	1204	18.5	18'6"	5.64	33.1	33'1"	10.08	
5406*	5310"	51480	1728	1396	22.2	22'2"	6.76	36.7	36'9"	11.19	
5407*	53'9" 16.37 m	58560	1963	1588	25.8	25'10"	7.87	40.4	40'5"	12.31	
5408*	10.37 111	65640	2199	1780	29.5	29'6"	8.99	44.1	44'1"	13.43	
5409*		72720	2434	1972	33.2	33'2"	10.11	47.7	47'9"	14.55	

<sup>1.</sup> Based on 1.244 cu. ft. per bushel and 6% compaction in cylinder

Capacities shown include 28° roof cone.

NOTE: Upgraded stir or cir bins should be used with stirring or recirculating devices.

<sup>2.</sup> Based on 770 kg/m³ and 6% compaction in cylinder (below eaves line)

<sup>\*.</sup> noted models supplied with bolted flat cap; all others supplied with domed cap and remote cap opener

## 6.2. Foundation Loads — Grain Bin Series CEN

#### **Important**

- Grain Bin Anchoring: Adequate anchoring is critical to a successful bin installation. The anchoring of the bin is dependent on local wind loading conditions and forms part of the site specific design requirements. The anchor bolt details must form part of the site specific foundation design.
- For stiffened bins the primary anchor bolt locations are through the base plates at each and every
  upright location. The anchor bolt design, plus connection details to the base plate, must
  accommodate the total shear and uplift loads that can occur due to wind loading at the site in
  question.
- In addition AGI suggests the use of 1/2" x 3" embedment anchor bolts through the bottom ring angle to insure bin roundness, for sealing purposes, and for additional localized lateral stability.

Table 18. Foundation Loads — CEN Series 15' Bins (Imperial-Unfactored)

Model (CEN)		1505	1506	1507	1508	1509	1510	1511	1512
Vertical dead load	kips/upr	0.32	0.36	0.41	0.46	0.51	0.56	0.62	0.70
Vertical grain load	kips/upr	7.00	9.32	14.54	20.36	24.32	28.45	33.57	40.22
Vertical roof snow load *	kips/upr	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Vertical roof peak load	kips/upr	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Bin floor pressure	kips/ft <sup>2</sup>	0.70	0.77	0.82	0.87	0.91	0.94	0.97	0.99
Number of anchor bolts for uprights		10	10	10	10	10	10	10	10
Number of anchor bolts for bottom angle ring (optional)		30	30	30	30	30	30	30	30
* Based on maximum snow load of 45 psf									

Table 19. Foundation Loads — CEN Series 18' Bins (Imperial-Unfactored)

Model (CEN)		1805	1806	1807	1808	1809	1810	1811	1812
Vertical dead load	kips/upr	0.32	0.36	0.41	0.45	0.51	0.57	0.64	0.69
Vertical grain load	kips/upr	7.52	10.05	12.82	18.06	25.55	31.15	35.95	40.92
Vertical roof snow load *	kips/upr	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Vertical roof peak load	kips/upr	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Bin floor pressure	kips/ft <sup>2</sup>	0.75	0.84	0.91	0.97	1.02	1.06	1.10	1.13
Number of anchor bolts for uprights		12	12	12	12	12	12	12	12
Number of anchor bolts for bottom angle ring (optional)		36	36	36	36	36	36	36	36
* Based on maximum snow load of 45 psf									

Table 20. Foundation Loads — CEN Series 21' Bins (Imperial-Unfactored)

Model (CEN)		2105	2106	2107	2108	2109	2110	2111	2112	
Vertical dead load	kips/upr	0.33	0.37	0.42	0.46	0.52	0.57	0.65	0.71	
Vertical grain load	kips/upr	7.99	10.68	13.66	16.87	21.99	30.09	38.72	44.20	
Vertical roof snow load *	kips/upr	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	
Vertical roof peak load	kips/upr	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	
Bin floor pressure	kips/ft <sup>2</sup>	0.80	0.89	0.97	1.04	1.11	1.16	1.21	1.25	
Number of anchor bolts for uprights		14	14	14	14	14	14	14	14	
Number of anchor bolts for bottom angle ring (optional)		42	42	42	42	42	42	42	42	
* Based on maximum snow load of 46 psf										

Table 21. Foundation Loads — CEN Series 24' Bins (Imperial-Unfactored)

Model (CEN)		2405	2406	2407	2408	2409	2410	2411	2412		
Vertical dead load	kips/upr	0.34	0.38	0.43	0.47	0.52	0.57	0.65	0.73		
Vertical grain load	kips/upr	8.41	11.26	14.40	17.81	21.46	26.32	35.05	45.25		
Vertical roof snow load *	kips/upr	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09		
Vertical roof peak load	kips/upr	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25		
Bin floor pressure	kips/ft <sup>2</sup>	0.84	0.94	1.03	1.11	1.18	1.25	1.30	1.35		
Number of anchor bolts for uprights		16	16	16	16	16	16	16	16		
Number of anchor bolts for bottom angle ring (optional)		48	48	48	48	48	48	48	48		
* Based on maximum snow load of 39 psf											

Table 22. Foundation Loads — CEN Series 27' Bins (Imperial-Unfactored)

Model (CEN)		2705	2706	2707	2708	2709	2710	2711	2712		
Vertical dead load	kips/upr	0.35	0.39	0.44	0.48	0.54	0.58	0.64	0.74		
Vertical grain load	kips/upr	8.82	11.79	15.08	18.67	22.52	26.61	31.05	40.41		
Vertical roof snow load *	kips/upr	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23		
Vertical roof peak load	kips/upr	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28		
Bin floor pressure	kips/ft <sup>2</sup>	0.88	0.99	1.08	1.17	1.25	1.32	1.39	1.45		
Number of anchor bolts for uprights		18	18	18	18	18	18	18	18		
Number of anchor bolts for bottom angle ring (optional)		54	54	54	54	54	54	54	54		
* Based on maximum snow load of 39 psf											

Table 23. Foundation Loads — CEN Series 30' Bins (Imperial-Unfactored)

Model (CEN)		3005	3006	3007	3008	3009	3010	3011	3012	
Vertical dead load	kips/upr	0.39	0.43	0.48	0.52	0.59	0.64	0.73	0.80	
Vertical grain load	kips/upr	9.20	12.28	15.71	19.46	23.49	27.78	32.32	37.07	
Vertical roof snow load *	kips/upr	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	
Vertical roof peak load	kips/upr	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	
Bin floor pressure	kips/ft <sup>2</sup>	0.91	1.03	1.13	1.22	1.31	1.39	1.46	1.53	
Number of anchor bolts for uprights		20	20	20	20	20	20	20	20	
Number of anchor bolts for bottom angle ring (optional)		60	60	60	60	60	60	60	60	
* Based on maximum snow load of 40 psf										

Table 24. Foundation Loads — CEN Series 33' Bins (Imperial-Unfactored)

Model (CEN)		3305	3306	3307	3308	3309	3310	3311	3312	
Vertical dead load	kips/upr	0.41	0.46	0.51	0.56	0.63	0.69	0.77	0.85	
Vertical grain load	kips/upr	9.57	12.76	16.31	20.19	24.38	28.86	33.59	38.57	
Vertical roof snow load *	kips/upr	1.69	1.69	1.69	1.69	1.69	1.69	1.69	1.69	
Vertical roof peak load	kips/upr	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	
Bin floor pressure	kips/ft <sup>2</sup>	0.94	1.06	1.17	1.27	1.36	1.45	1.53	1.60	
Number of anchor bolts for uprights		22	22	22	22	22	22	22	22	
Number of anchor bolts for bottom angle ring (optional)		66	66	66	66	66	66	66	66	
* Based on maximum snow load of 44 psf										

Table 25. Foundation Loads — CEN Series 36' Bins (Imperial-Unfactored)

Model (CEN)		3604	3605	3606	3607	3608	3609	3610	3611	3612	
Vertical dead load	kips/upr	0.38	0.42	0.47	0.52	0.59	0.65	0.73	0.81	0.88	
Vertical grain load	kips/upr	7.05	9.93	13.21	16.88	20.89	25.23	29.86	34.78	39.96	
Vertical roof snow load *	kips/upr	1.28	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	
Vertical roof peak load	kips/upr	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	
Bin floor pressure	kips/ft <sup>2</sup>	0.84	0.97	1.09	1.21	1.31	1.41	1.50	1.59	1.67	
Number of anchor bolts for uprights		24	24	24	24	24	24	24	24	24	
Number of anchor bolts for bottom angle ring (optional)		72	72	72	72	72	72	72	72	72	
Based on maximum snow load of 38 psf											

Table 26. Foundation Loads — CEN Series 39' Bins (Imperial-Unfactored)

Model (CEN)		3905	3906	3907	3908	3909	3910	3911	3912	
Vertical dead load	kips/upr	0.47	0.53	0.58	0.64	0.85	0.79	0.88	0.95	
Vertical grain load	kips/upr	10.28	13.66	17.42	21.55	26.02	30.81	35.9	41.26	
Vertical roof snow load *	kips/upr	1.64	1.64	1.64	1.64	1.64	1.64	1.64	1.64	
Vertical roof peak load	kips/upr	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	
Bin floor pressure	kips/ft <sup>2</sup>	1.00	1.12	1.24	1.35	1.46	1.55	1.64	1.73	
Number of anchor bolts for uprights		26	26	26	26	26	26	26	26	
Number of anchor bolts for bottom angle ring (optional)		78	78	78	78	78	78	78	78	
* Based on maximum snow load of 36 psf										

Table 27. Foundation Loads — CEN Series 42' Bins (Imperial-Unfactored)

Model (CEN)		4205	4206	4207	4208	4209	4210	4211	4212		
Vertical dead load	kips/upr	0.48	0.54	0.59	0.66	0.73	0.82	0.91	0.99		
Vertical grain load	kips/upr	10.63	14.09	17.95	22.19	26.79	31.71	36.95	42.48		
Vertical roof snow load *	kips/upr	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66		
Vertical roof peak load	kips/upr	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18		
Bin floor pressure	kips/ft <sup>2</sup>	1.02	1.15	1.28	1.39	1.50	1.60	1.69	1.78		
Number of anchor bolts for uprights		28	28	28	28	28	28	28	28		
Number of anchor bolts for bottom angle ring (optional)		84	84	84	84	84	84	84	84		
* Based on maximum snow load of 34 psf											

Table 28. Foundation Loads — CEN Series 45' Bins (Imperial-Unfactored)

Model (CEN)		4505	4506	4507	4508	4509	4510	4511	4512	
Vertical dead load	kips/upr	0.50	0.56	0.61	0.69	0.77	0.85	0.95	1.03	
Vertical grain load	kips/upr	10.98	14.52	18.47	22.82	27.52	32.58	37.96	43.64	
Vertical roof snow load *	kips/upr	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	
Vertical roof peak load	kips/upr	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	
Bin floor pressure	kips/ft <sup>2</sup>	1.05	1.18	1.31	1.42	1.54	1.64	1.74	1.83	
Number of anchor bolts for uprights		30	30	30	30	30	30	30	30	
Number of anchor bolts for bottom angle ring (optional)		90	90	90	90	90	90	90	90	
* Based on maximum snow load of 32 psf										

Table 29. Foundation Loads — CEN Series 48' Bins (Imperial-Unfactored)

Model (CEN)		4805	4806	4807	4808	4809	4810	4811	4812	
Vertical dead load	kips/upr	0.60	0.65	0.72	0.80	0.88	0.98	1.06	1.17	
Vertical grain load	kips/upr	11.33	14.94	18.98	23.42	28.24	33.41	38.92	44.75	
Vertical roof snow load *	kips/upr	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	
Vertical roof peak load	kips/upr	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	
Bin floor pressure	kips/ft <sup>2</sup>	1.07	1.21	1.33	1.46	1.57	1.68	1.79	1.88	
Number of anchor bolts for uprights		32	32	32	32	32	32	32	32	
Number of anchor bolts for bottom angle ring (optional)		96	96	96	96	96	96	96	96	
* Based on maximum snow load of 39 psf										

Table 30. Foundation Loads — CEN Series 51' Bins (Imperial-Unfactored)

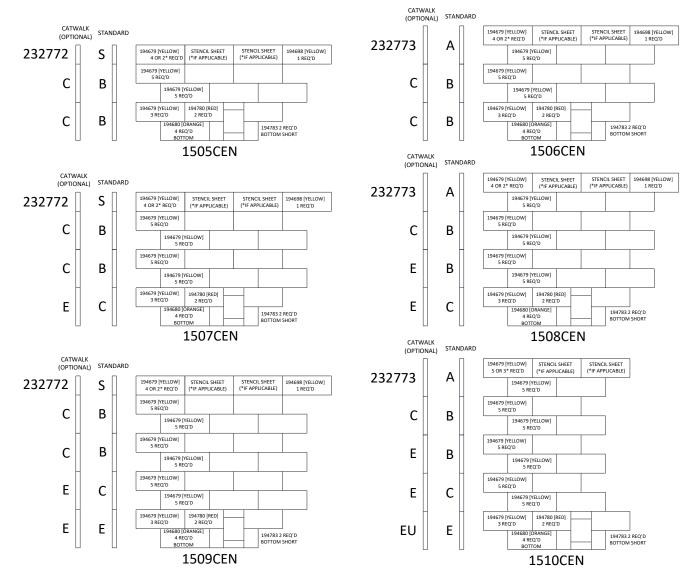
Model (CEN)		5105	5106	5107	5108	5109	5110			
Vertical dead load	kips/upr	0.61	0.67	0.74	0.84	0.90	1.00			
Vertical grain load	kips/upr	11.31	14.95	19.03	23.52	28.40	33.65			
Vertical roof snow load *	kips/upr	2.32	2.32	2.32	2.32	2.32	2.32			
Vertical roof peak load	kips/upr	0.59	0.59	0.59	0.59	0.59	0.59			
Bin floor pressure	kips/ft <sup>2</sup>	1.07	1.22	1.35	1.47	1.59	1.71			
Number of anchor bolts for uprights		34	34	34	34	34	34			
Number of anchor bolts for bottom angle ring (optional)		102	102	102	102	102	102			
* Based on maximum snow load of 39 psf										

Table 31. Foundation Loads — CEN Series 54' Bins (Imperial-Unfactored)

Model (CEN)		5405	5406	5407	5408	5409				
Vertical dead load	kips/upr	0.95	1.02	1.09	1.18	1.27				
Vertical grain load	kips/upr	11.63	15.34	19.49	24.06	29.03				
Vertical roof snow load *	kips/upr	2.45	2.45	2.45	2.45	2.45				
Vertical roof peak load	kips/upr	0.56	0.56	0.56	0.56	0.56				
Bin floor pressure	kips/ft <sup>2</sup>	1.10	1.24	1.37	1.50	1.63				
Number of anchor bolts for uprights		36	36	36	36	36				
Number of anchor bolts for bottom angle ring (optional)		108	108	108	108	108				
* Based on maximum snow load of 39 psf										

# 6.3. Wall Sheet and Upright Layouts

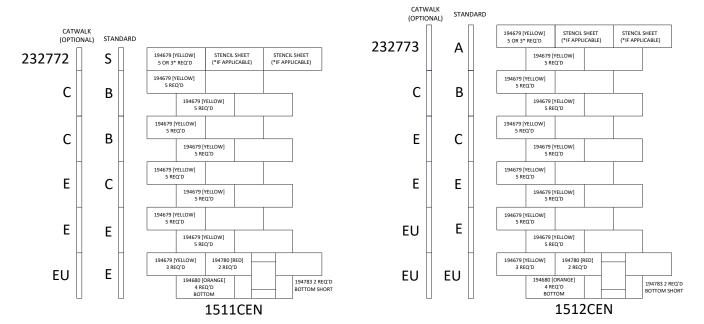
Figure 39. Model 1505CEN to 1512CEN



#### Notes:

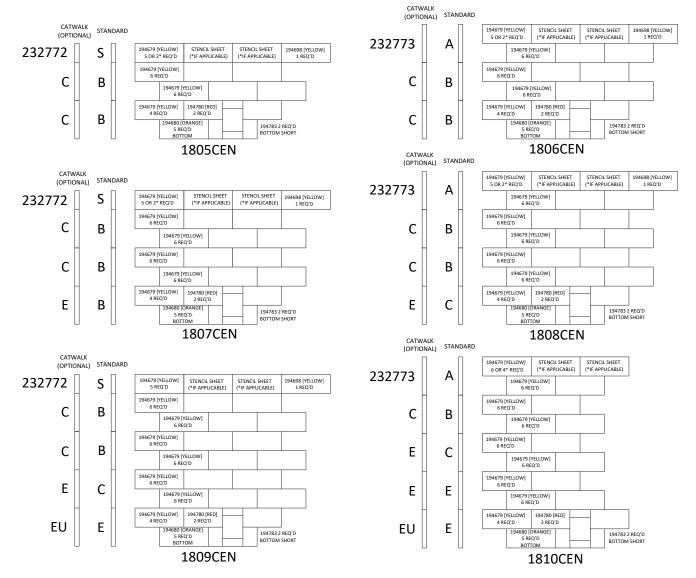
- 1. **Colors** match part number label and indicate wall sheet thickness.
- 2. (If applicable) Stencil sheets are 194654(WEST) and 194657(EEL) [YELLOW].
- 3. Walk-in door 236810 (supplied with 2 door boards); 236830 (for use with auger chute) + 236840 Auger Chute optional for 1505CEN 1508CEN only.
- 4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
- 5. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk option.

Figure 39 Model 1505CEN to 1512CEN (continued)



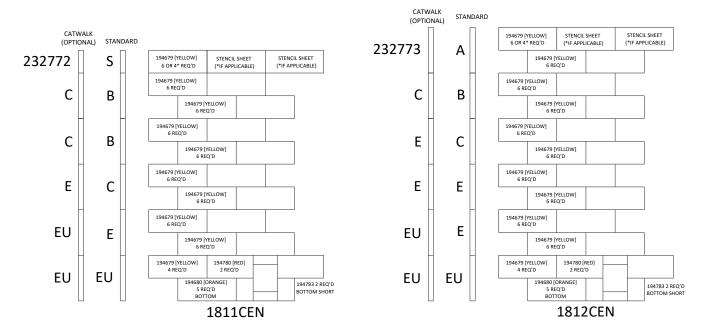
- 1. **Colors** match part number label and indicate wall sheet thickness.
- 2. (If applicable) Stencil sheets are 194654(WEST) and 194657(EEL) [YELLOW].
- 3. Walk-in door 236810 (supplied with 2 door boards).
- 4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
- 5. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk option.

Figure 40. Model 1805CEN to 1812CEN



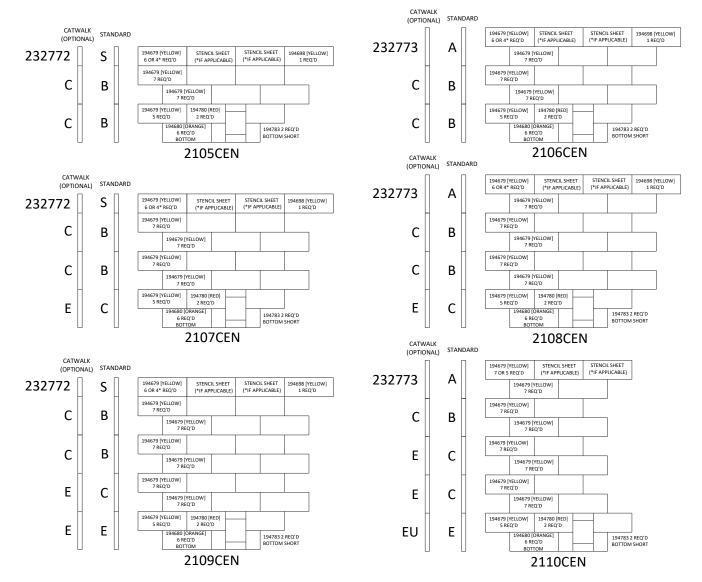
- 1. **Colors** match part number label and indicate wall sheet thickness.
- 2. (If applicable) Stencil sheets are 194654(WEST) and 194657(EEL) [YELLOW].
- 3. Walk-in door 236810 (supplied with 2 door boards); 236830 (for use with auger chute) + 236840 Auger Chute optional for 1805CEN 1808CEN only.
- 4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
- 5. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk option.

Figure 40 Model 1805CEN to 1812CEN (continued)



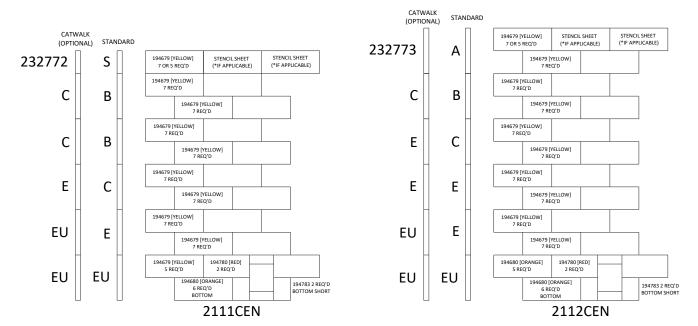
- 1. **Colors** match part number label and indicate wall sheet thickness.
- 2. (If applicable) Stencil sheets are 194654(WEST) and 194657(EEL) [YELLOW].
- 3. Walk-in door 236810 (supplied with 2 door boards).
- 4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
- 5. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk option.

Figure 41. Model 2105CEN to 2112CEN



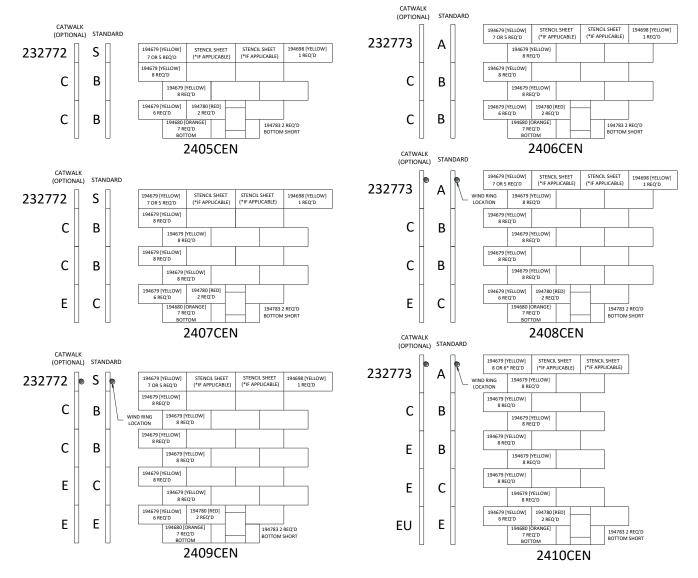
- 1. Colors match part number label and indicate wall sheet thickness.
- 2. (If applicable) Stencil sheets are 194654(WEST) and 194657(EEL) [YELLOW].
- 3. Walk-in door 236810 (supplied with 2 door boards); 236830 (for use with auger chute) + 236840 Auger Chute optional for 2105CEN 2108CEN only.
- 4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
- 5. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk option.

Figure 41 Model 2105CEN to 2112CEN (continued)



- 1. **Colors** match part number label and indicate wall sheet thickness.
- 2. (If applicable) Stencil sheets are 194654(WEST) and 194657(EEL) [YELLOW].
- 3. Walk-in door 236810 (supplied with 2 door boards).
- 4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
- 5. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk option.

Figure 42. Model 2405CEN to 2412CEN

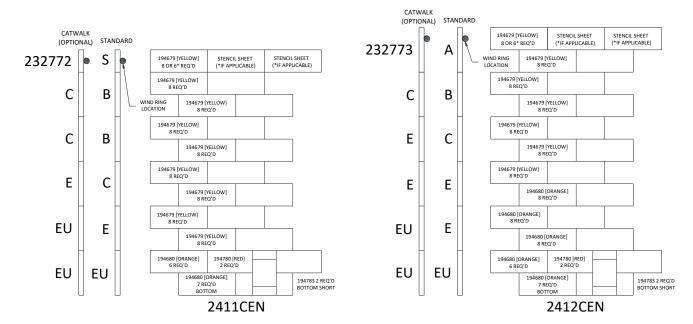


- 1. Colors match part number label and indicate wall sheet thickness.
- (If applicable) Stencil sheets are 194654(WEST) and 194657(EEL) [YELLOW]. They can be positioned in the 2nd tier from the top in order to keep them clear of 2. the wind ring if desired.

  Walk-in door 236810 (supplied with 2 door boards); 236830 (for use with auger chute) + 236840 Auger Chute optional for 2405CEN - 2408CEN only.
- 3.
- 4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
- 5. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk option.

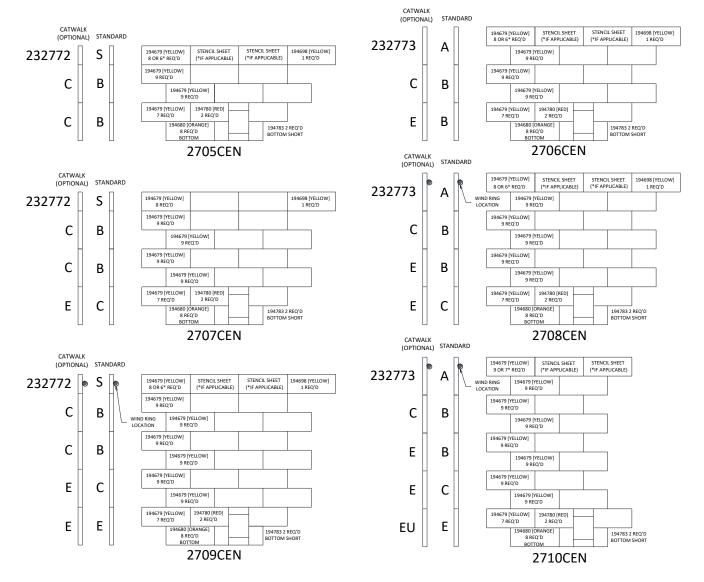
  • — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).
- 6.

Figure 42 Model 2405CEN to 2412CEN (continued)



- Colors match part number label and indicate wall sheet thickness. 1.
- (If applicable) Stencil sheets are 194654(WEST) and 194657(EEL) [YELLOW]. They can be positioned in the 2<sup>nd</sup> tier from the top in order to keep them clear of 2. the wind ring if desired.
  Walk-in door 236810 (supplied with 2 door boards).
- 3.
- 4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
- 5. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk
- 6. Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

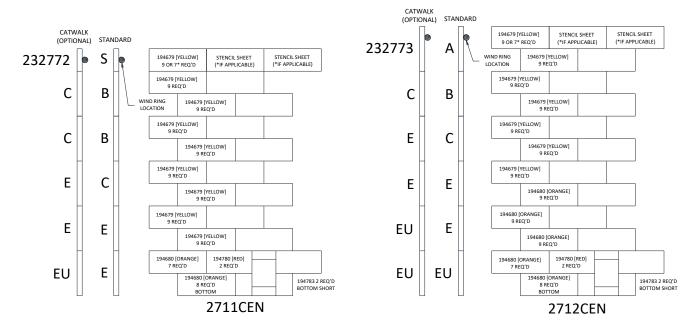
Figure 43. Model 2705CEN to 2712CEN



- Colors match part number label and indicate wall sheet thickness. 1.
- (If applicable) Stencil sheets are 194654(WEST) and 194657(EEL) [YELLOW]. They can be positioned in the 2nd tier from the top in order to keep them clear of 2. the wind ring if desired.

  Walk-in door 236810 (supplied with 2 door boards); 236830 (for use with auger chute) + 236840 Auger Chute optional for 2705CEN - 2708CEN only.
- 3.
- 4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
- 5. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk
- 6. Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

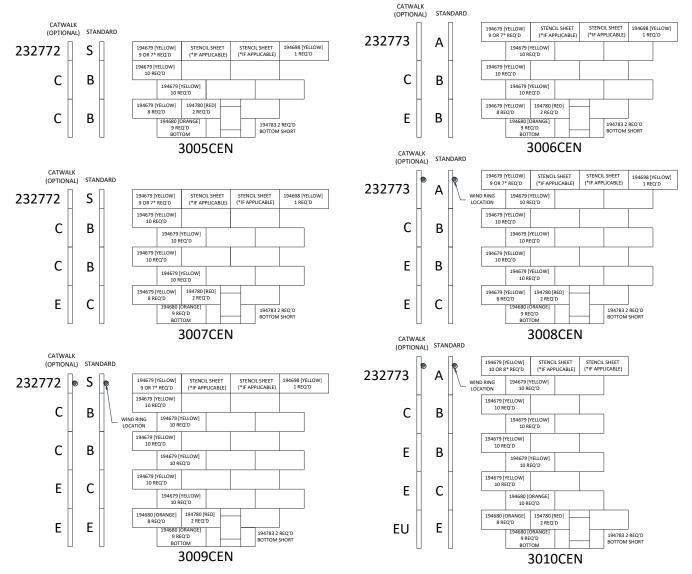
Figure 43 Model 2705CEN to 2712CEN (continued)



- Colors match part number label and indicate wall sheet thickness. 1.
- (If applicable) Stencil sheets are 194654(WEST) and 194657(EEL) [YELLOW]. They can be positioned in the 2nd tier from the top in order to keep them clear of 2. the wind ring if desired.
  Walk-in door 236810 (supplied with 2 door boards).
- 3.
- 4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
- 5. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk option.

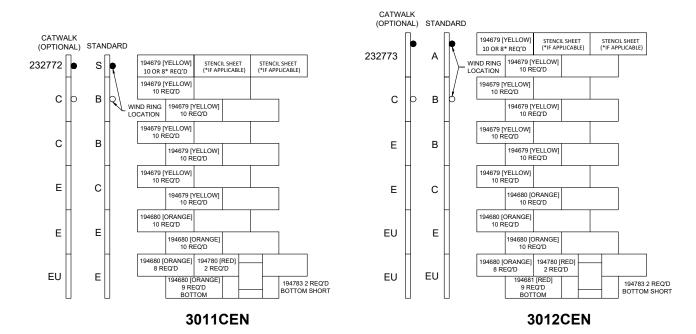
  • — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).
- 6.

Model 3005CEN to 3012CEN Figure 44.



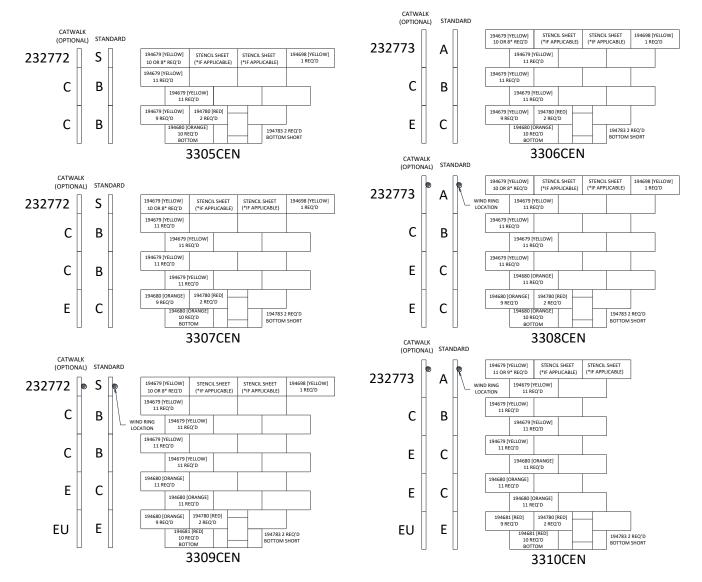
- Colors match part number label and indicate wall sheet thickness. 1.
- (If applicable) Stencil sheets are 194654(WEST) and 194657(EEL) [YELLOW]. They can be positioned in the 2nd tier from the top in order to keep them clear of 2. the wind ring if desired.
  Walk-in door 236810 (supplied with 2 door boards).
- 3.
- 4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
- 5. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk
- 6. Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

Figure 44 Model 3005CEN to 3012CEN (continued)



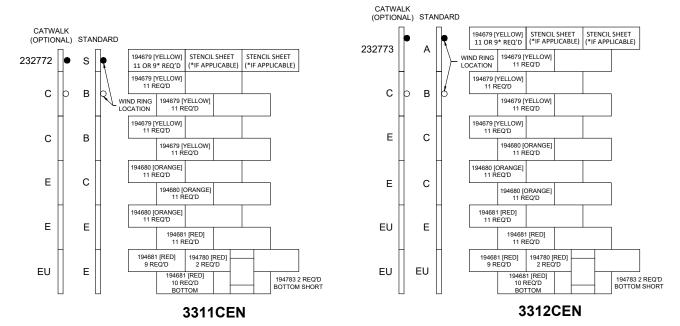
- Colors match part number label and indicate wall sheet thickness. 1.
- 2. (If applicable) Stencil sheets are 194654(WEST) and 194657(EEL) [YELLOW]. They can be positioned in the 2nd tier from the top in order to keep them clear of the wind ring if desired.
  Walk-in door 236810 (supplied with 2 door boards).
- 3.
- 4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
- 5. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk
- 6. Indicates standard wind ring placement.
  - Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

Figure 45. Model 3305CEN to 3312CEN



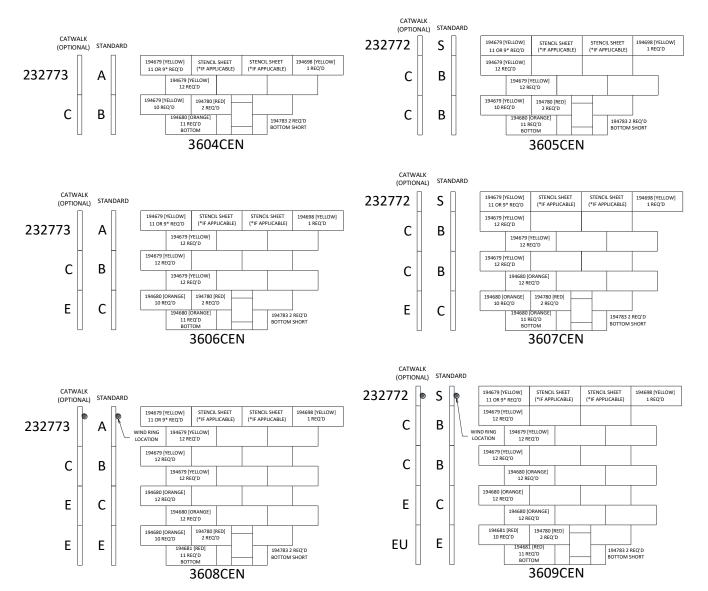
- Colors match part number label and indicate wall sheet thickness. 1.
- (If applicable) Stencil sheets are 194654(WEST) and 194657(EEL) [YELLOW]. They can be positioned in the 2nd tier from the top in order to keep them clear of 2. the wind ring if desired.
  Walk-in door 236810 (supplied with 2 door boards).
- 3.
- 4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
- 5. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk
- 6. Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

Figure 45 Model 3305CEN to 3312CEN (continued)



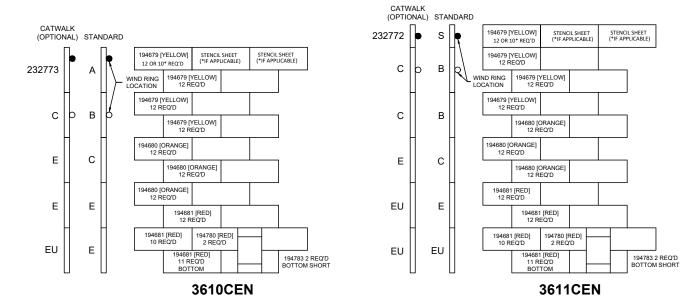
- Colors match part number label and indicate wall sheet thickness. 1
- (If applicable) Stencil sheets are 194654(WEST) and 194657(EEL) [YELLOW]. They can be positioned in the 2nd tier from the top in order to keep them clear of 2. the wind ring if desired. Walk-in door 236810 (supplied with 2 door boards).
- 3.
- All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long. 4.
- The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk 5.
- 6. Indicates standard wind ring placement.
  - — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

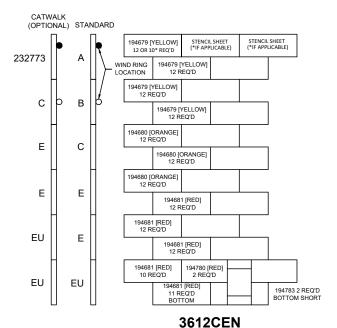
Model 3604CEN to 3612CEN Figure 46.



- 1. Colors match part number label and indicate wall sheet thickness.
- 2. (If applicable) Stencil sheets are 194654(WEST) and 194657(EEL) [YELLOW]. They can be positioned in the 2<sup>nd</sup> tier from the top in order to keep them clear of the wind ring if desired.
  Walk-in door 236810 (supplied with 2 door boards).
- 3.
- All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long. 4.
- 5. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk
- 6. Indicates standard wind ring placement.
  - — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

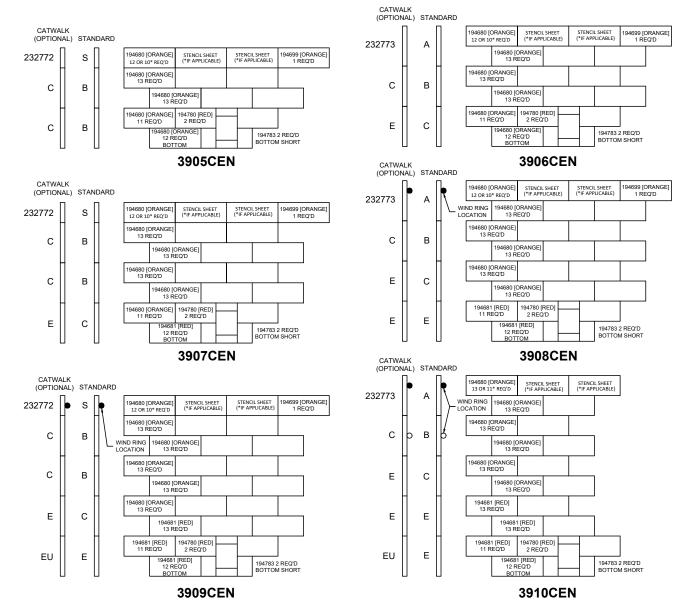
Figure 46 Model 3604CEN to 3612CEN (continued)





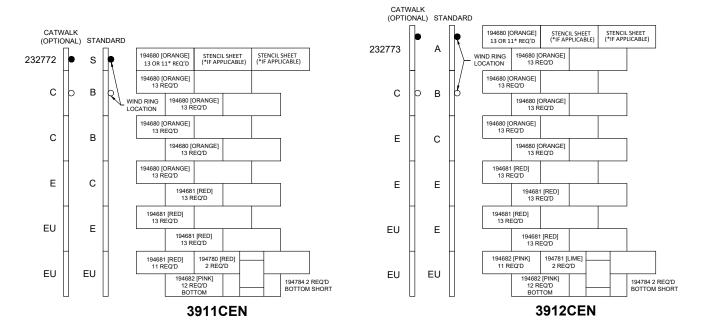
- Colors match part number label and indicate wall sheet thickness.
- (If applicable) Stencil sheets are 194654(WEST) and 194657(EEL) [YELLOW]. They can be positioned in the 2nd tier from the top in order to keep them clear of 2. the wind ring if desired.
  Walk-in door 236810 (supplied with 2 door boards).
- 3.
- All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long. 4.
- 5. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk
- Indicates standard wind ring placement. 6.
  - — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

Figure 47. Model 3905CEN to 3912CEN



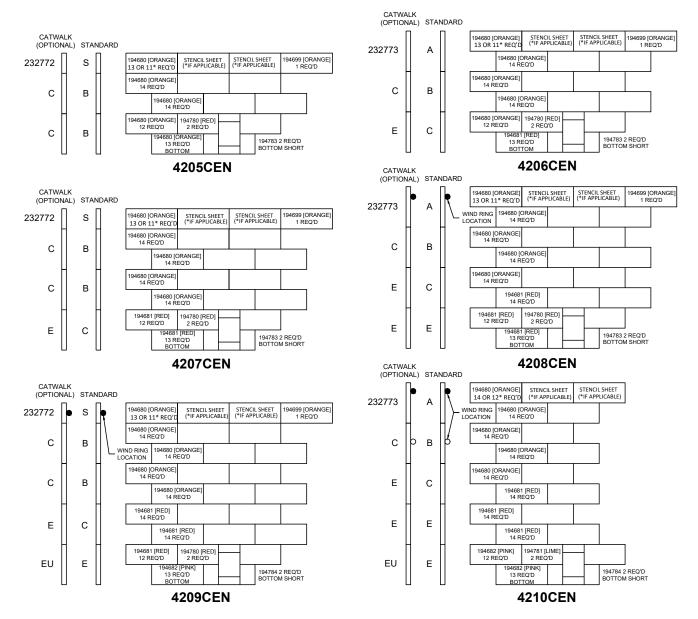
- 1. Colors match part number label and indicate wall sheet thickness.
- 2. (If applicable) Stencil sheets are 194655(WEST) and 194658(EEL) [ORANGE]. They can be positioned in the 2<sup>nd</sup> tier from the top in order to keep them clear of the wind ring if desired.
  Walk-in door 236810 (supplied with 2 door boards).
- 3.
- 4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
- 5. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk option.
- Indicates standard wind ring placement. 6.
  - — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

Figure 47 Model 3905CEN to 3912CEN (continued)



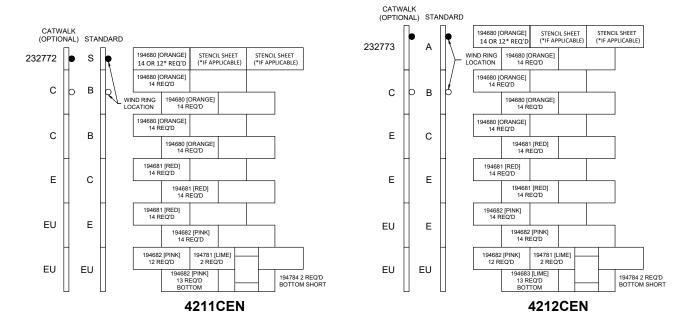
- 1 Colors match part number label and indicate wall sheet thickness.
- (If applicable) Stencil sheets are 194655(WEST) and 194658(EEL) [ORANGE]. They can be positioned in the 2<sup>nd</sup> tier from the top in order to keep them clear of 2. the wind ring if desired.
  Walk-in door 236810 (supplied with 2 door boards).
- 3.
- All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long. 4.
- 5. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk option.
- 6. Indicates standard wind ring placement.
  - Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

Figure 48. Model 4205CEN to 4212CEN



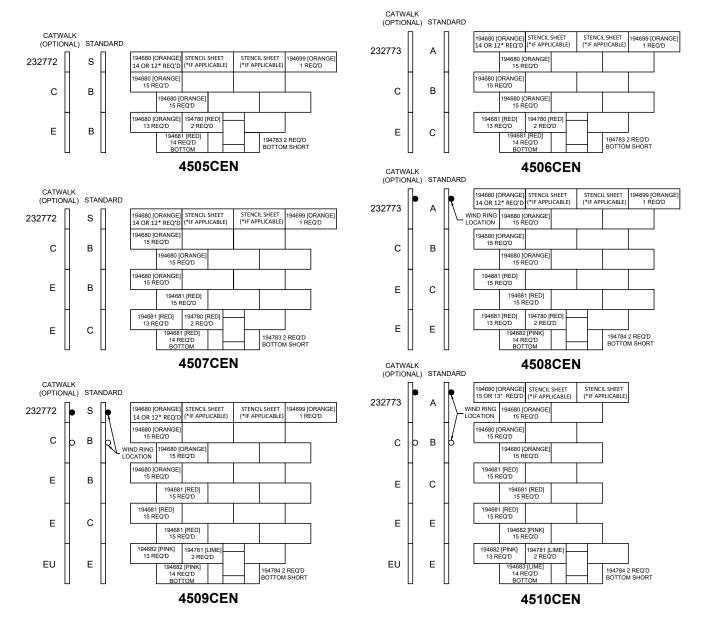
- Colors match part number label and indicate wall sheet thickness. 1.
- (If applicable) Stencil sheets are 194655(WEST) and 194658(EEL) [ORANGE]. They can be positioned in the 2nd tier from the top in order to keep them clear of 2. the wind ring if desired. Walk-in door 236810 (supplied with 2 door boards).
- 3.
- All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long. 4.
- 5. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk option.
- 6. Indicates standard wind ring placement.
  - — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

Figure 48 Model 4205CEN to 4212CEN (continued)



- Colors match part number label and indicate wall sheet thickness. 1.
- (If applicable) Stencil sheets are 194655(WEST) and 194658(EEL) [ORANGE]. They can be positioned in the 2nd tier from the top in order to keep them clear of 2. the wind ring if desired.
  Walk-in door 236810 (supplied with 2 door boards).
- 3.
- 4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
- 5. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk
- Indicates standard wind ring placement. 6.
  - — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

Figure 49. Model 4505CEN to 4512CEN



- 1. Colors match part number label and indicate wall sheet thickness.
- 2. (If applicable) Stencil sheets are 194655(WEST) and 194658(EEL) [ORANGE]. They can be positioned in the 2<sup>nd</sup> tier from the top in order to keep them clear of the wind ring if desired.
  Walk-in door 236810 (supplied with 2 door boards).
- 3.
- All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long. 4.
- 5. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk option.

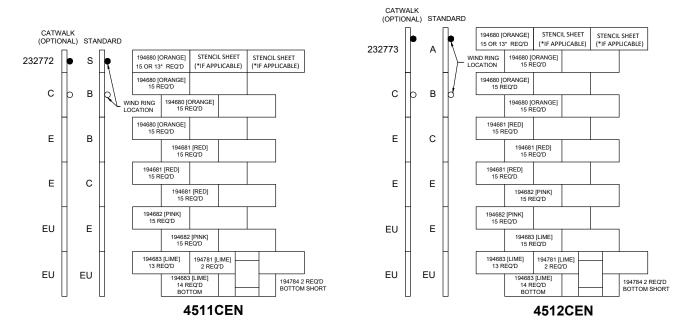
  Output

  Description:

  Output

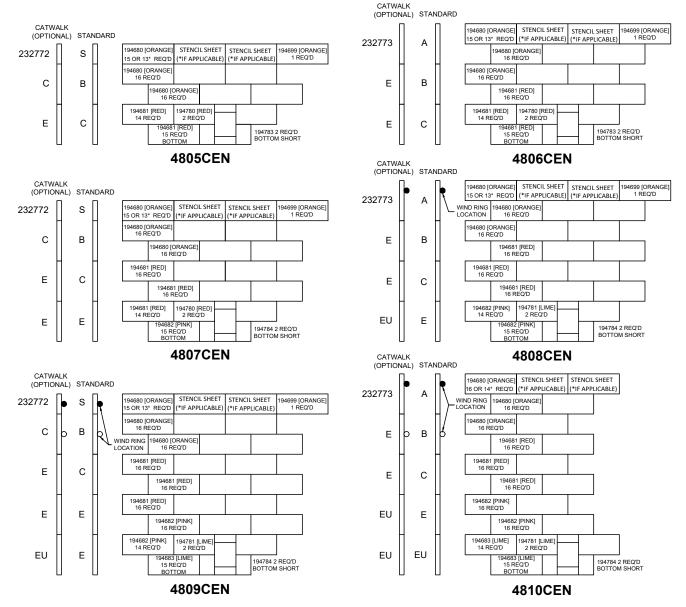
  Descr
- 6.
  - — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

Figure 49 Model 4505CEN to 4512CEN (continued)



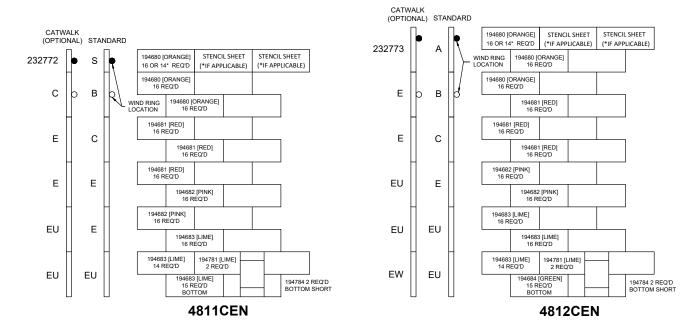
- Colors match part number label and indicate wall sheet thickness. 1.
- (If applicable) Stencil sheets are 194655(WEST) and 194658(EEL) [ORANGE]. They can be positioned in the 2<sup>nd</sup> tier from the top in order to keep them clear of 2. the wind ring if desired.
  Walk-in door 236810 (supplied with 2 door boards).
- 3.
- All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long. 4.
- The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk 5.
- Indicates standard wind ring placement. 6.
  - Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

Figure 50. Model 4805CEN to 4812CEN



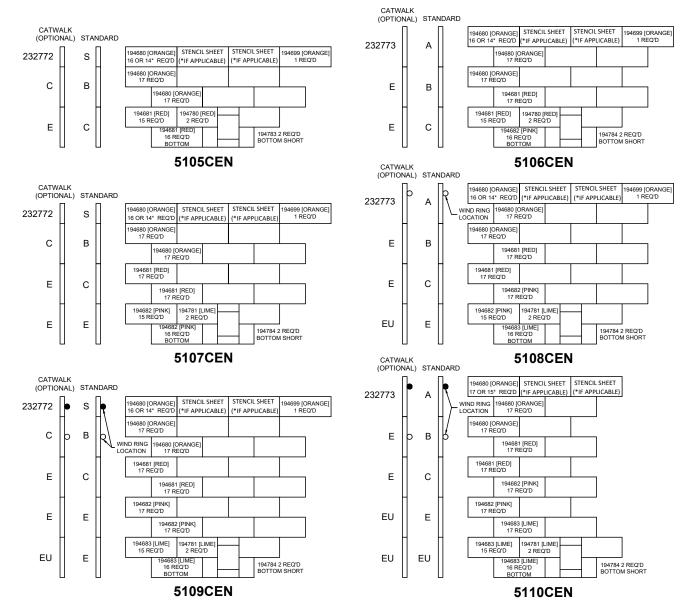
- Colors match part number label and indicate wall sheet thickness. 1.
- 2. (If applicable) Stencil sheets are 194655(WEST) and 194658(EEL) [ORANGE]. They can be positioned in the 2<sup>nd</sup> tier from the top in order to keep them clear of the wind ring if desired.
  Walk-in door 236810 (supplied with 2 door boards).
- 3.
- All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long. 4
- 5. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk
- Indicates standard wind ring placement. 6.
  - — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

Figure 50 Model 4805CEN to 4812CEN (continued)



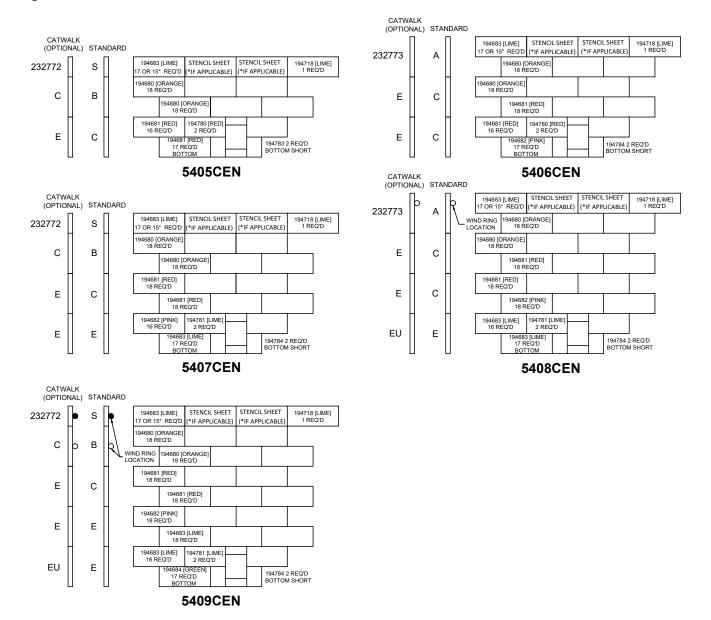
- Colors match part number label and indicate wall sheet thickness. 1.
- (If applicable) Stencil sheets are 194655(WEST) and 194658(EEL) [ORANGE]. They can be positioned in the 2nd tier from the top in order to keep them clear of 2. the wind ring if desired.
  Walk-in door 236810 (supplied with 2 door boards).
- 3.
- 4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
- 5. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk
- Indicates standard wind ring placement. 6.
  - — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

Figure 51. Model 5105CEN to 5110CEN



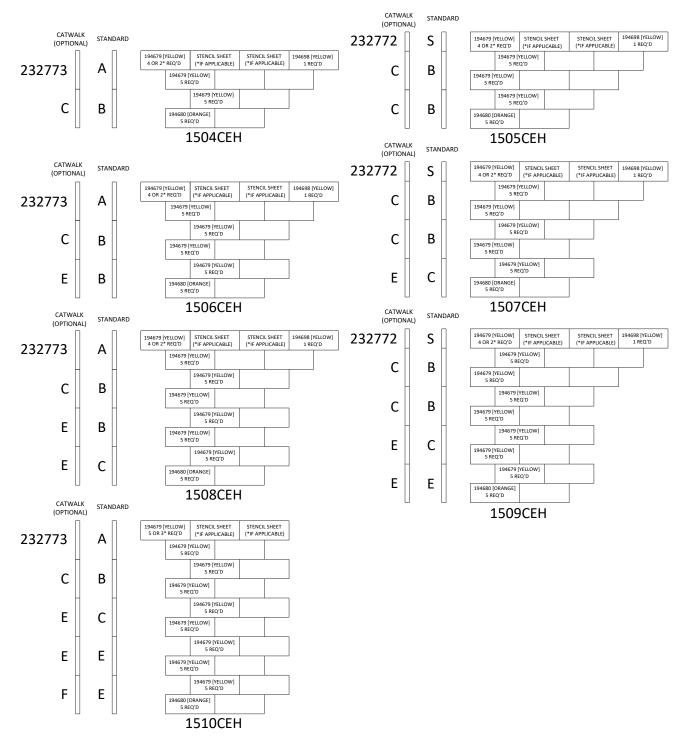
- 1. Colors match part number label and indicate wall sheet thickness.
- 2. (If applicable) Stencil sheets are 194655(WEST) and 194658(EEL) [ORANGE]. They can be positioned in the 2nd tier from the top in order to keep them clear of the wind ring if desired.
  Walk-in door 236810 (supplied with 2 door boards).
- 3.
- 4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
- 5. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk
- Indicates standard wind ring placement. 6.
  - — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

Figure 52. Model 5405CEN to 5409CEN



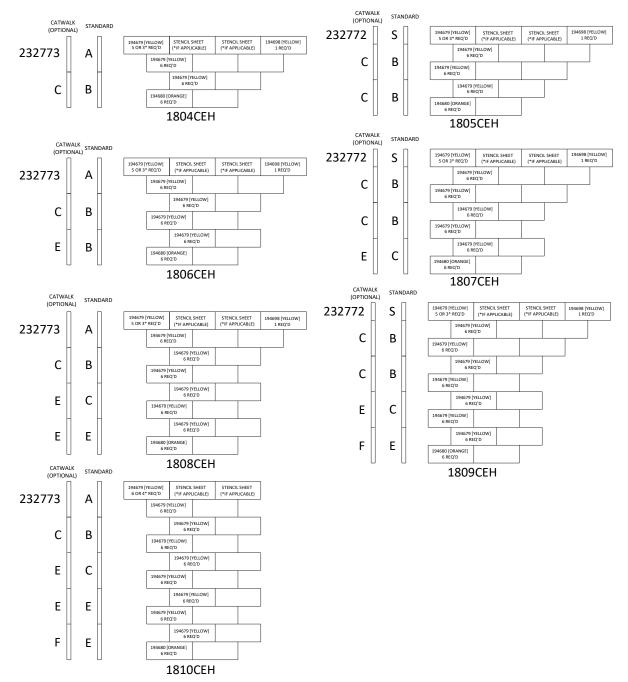
- 1. **Colors** match part number label and indicate wall sheet thickness.
- 2. (If applicable) Stencil sheets are 194655(WEST) and 194658(EEL) [ORANGE].
- 3. Walk-in door 236810 (supplied with 2 door boards).
- 4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
- 5. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk option
- 6. o Indicates standard wind ring placement.
  - — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

Figure 53. Model 1504CEH to 1510CEH



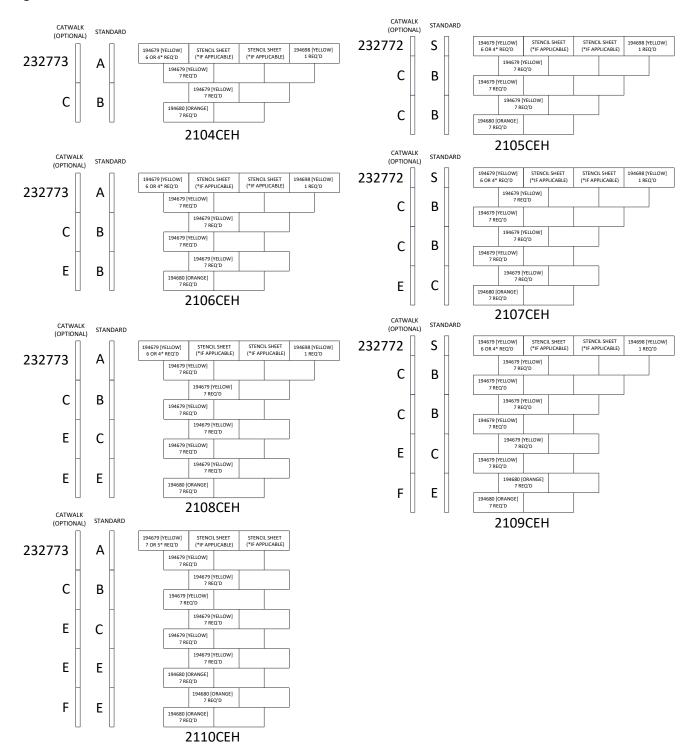
- 1. **Colors** match part number label and indicate wall sheet thickness.
- 2. (If applicable) Stencil sheets are 194654(WEST) and 194657(EEL) [YELLOW].
- 3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
- 4. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk option.

Figure 54. Model 1804CEH to 1810CEH



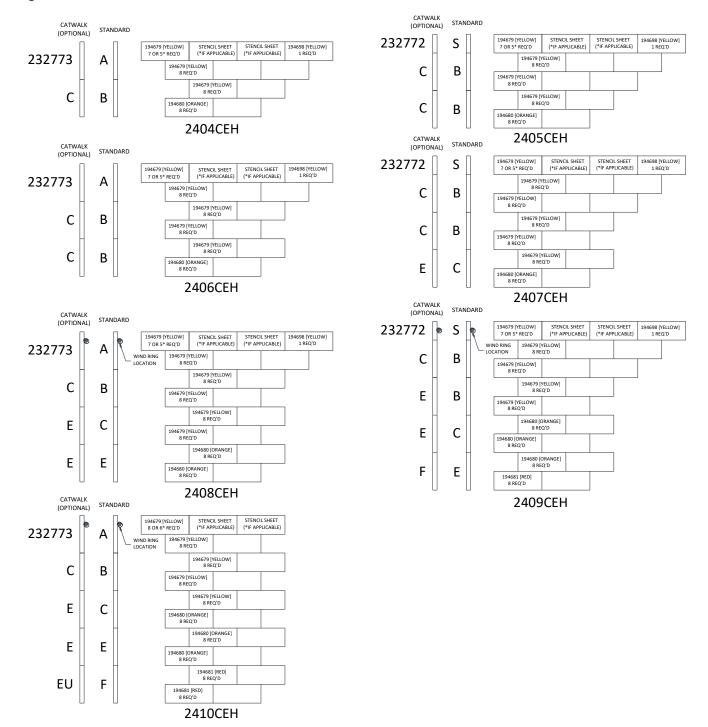
- 1. **Colors** match part number label and indicate wall sheet thickness.
- 2. (If applicable) Stencil sheets are 194654(WEST) and 194657(EEL) [YELLOW].
- 3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
- 4. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk option.

Figure 55. Model 2104CEH to 2110CEH



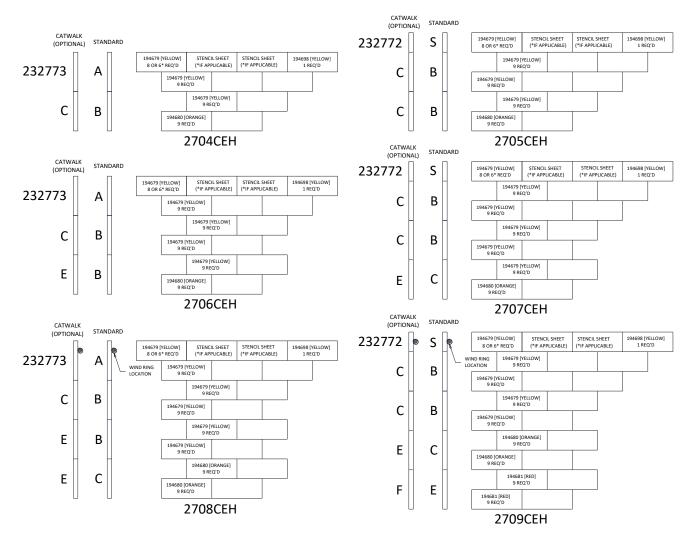
- 1. Colors match part number label and indicate wall sheet thickness.
- 2. (If applicable) Stencil sheets are 194654(WEST) and 194657(EEL) [YELLOW].
- 3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
- 4. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk option.

Figure 56. Model 2404CEH to 2410CEH



- Colors match part number label and indicate wall sheet thickness.
- 2. (If applicable) Stencil sheets are 194654(WEST) and 194657(EEL) [YELLOW].
- 3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
- 4. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk option.
- Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

Figure 57. Model 2704CEH to 2709CEH



- 1. **Colors** match part number label and indicate wall sheet thickness.
- 2. (If applicable) Stencil sheets are 194654(WEST) and 194657(EEL) [YELLOW].
- 3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
- 4. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk option.
- 5. Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

CATWALK CATWALK STANDARD STANDARD 194679 [YELLOW] 9 OR 7\* REQ'D STENCIL SHEET (\*IF APPLICABLE) STENCIL SHEET (\*IF APPLICABLE) 194698 [YELLOW] 194679 [YELLOW] 9 OR 7\* REQ'D STENCIL SHEET (\*IF APPLICABLE) STENCIL SHEET (\*IF APPLICABLE) 194698 [YELLOW] 232772 S 232773 Α 194679 [YELLOW] 10 REQ'D 194679 [YELLOW] 10 REQ'D В C 194679 [YELLOW] 10 REQ'D 194679 [YELLOW] 10 REQ'D C В 194679 [YELLOW] C В 3004CEH 194680 [ORANGE] 10 REQ'D CATWALK STANDARD 3005CEH (OPTIONAL) CATWALK STANDARD 194679 [YELLOW] 9 OR 7\* REQ'D STENCIL SHEET (\*IF APPLICABLE) STENCIL SHEET (\*IF APPLICABLE) (OPTIONAL) 232773 Α 194679 [YELLOW] 232772 S STENCIL SHEET (\*IF APPLICABLE) STENCIL SHEET (\*IF APPLICABLE) 194698 [YELLOW] 194679 [YELLOW] 10 REQ'D 194679 [YELLOW] 10 REQ'D 194679 [YELLOW] 10 REQ'D C В C В 194679 [YELLOW] 10 REQ'D 194679 [YELLOW] 10 REQ'D 194679 [YELLOW] 10 REQ'D C В Ε В 194679 [YELLOW] 10 REQ'D 194680 [ORANGE] 10 REQ'D 3006CEH Ε C CATWALK STANDARD (OPTIONAL) 3007CEH 194679 [YELLOW] 9 OR 7\* REQ'D STENCIL SHEET (\*IF APPLICABLE) STENCIL SHEET (\*IF APPLICABLE) 194698 [YELLOW] 1 REQ'D CATWALK STANDARD 232773 (OPTIONAL) 194679 [YELLOW] 10 REQ'D WIND RING LOCATION STENCIL SHEET (\*IF APPLICABLE) 232772 194679 [YELLOW] 9 OR 7\* REQ'D STENCIL SHEET (\*IF APPLICABLE) 194698 [YELLOW] 1 REQ'D S 194679 [YELLOW] 10 REQ'D WIND RING LOCATION C В C В 194679 [YELLOW] 10 REQ'D 194679 [YELLOW] 10 REO'D 194679 [YELLOW] 10 REQ'D 194679 [YELLOW] 10 REQ'D Ε В C В 194680 [ORANGE] 10 REQ'D Ε C Ε C 194680 [ORANGE] 10 REQ'D 194680 [ORANGE] 10 REQ'D 3008CEH 194681 [RED] 10 REQ'D CATWALK F Ε STANDARD 194681 [RED] 10 REO'D 194679 [YELLOW] 10 OR 8\* REQ'D STENCIL SHEET (\*IF APPLICABLE) STENCIL SHEET (\*IF APPLICABLE) 232773 3009CEH Α WIND RING 194679 [YELLOW] 10 REQ'D C В 194679 [YELLOW] 10 REQ'D 194680 [ORANGE] 10 REQ'D Ε C 194680 [ORANGE] 10 REQ'D 194681 [RED] 10 REQ'D Ε Ε 194681 [RED]

## Figure 58. Model 3004CEH to 3010CEH

#### Notes:

F

Ε

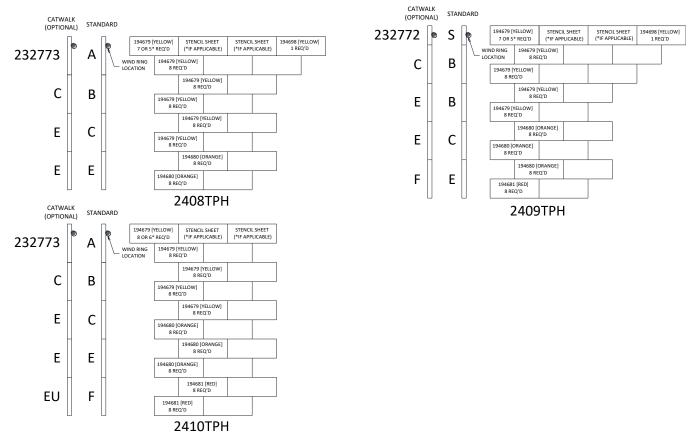
- 1. Colors match part number label and indicate wall sheet thickness.
- 2. (If applicable) Stencil sheets are 194654(WEST) and 194657(EEL) [YELLOW].

194681 [RED] 10 REQ'D

3010CEH

- 3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
- 4. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk
- Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

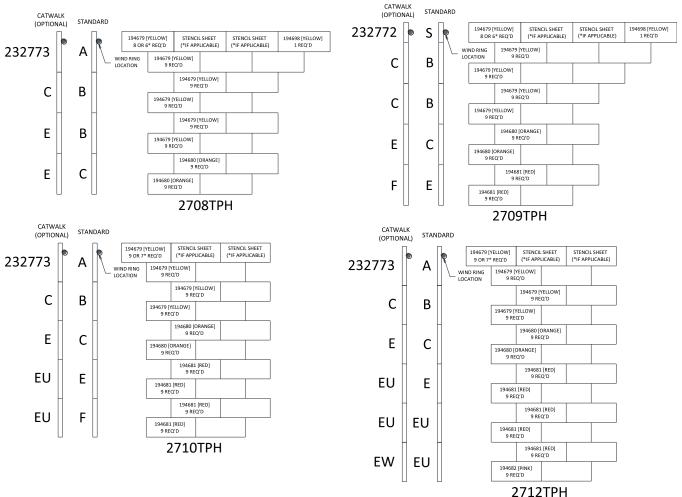
Figure 59. Model 2408TPH to 2410TPH



#### Notes:

- 1. **Colors** match part number label and indicate wall sheet thickness.
- 2. (If applicable) Stencil sheets are 194654(WEST) and 194657(EEL) [YELLOW].
- 3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
- 4. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk
- 5. Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

Figure 60. Model 2708TPH to 2712TPH



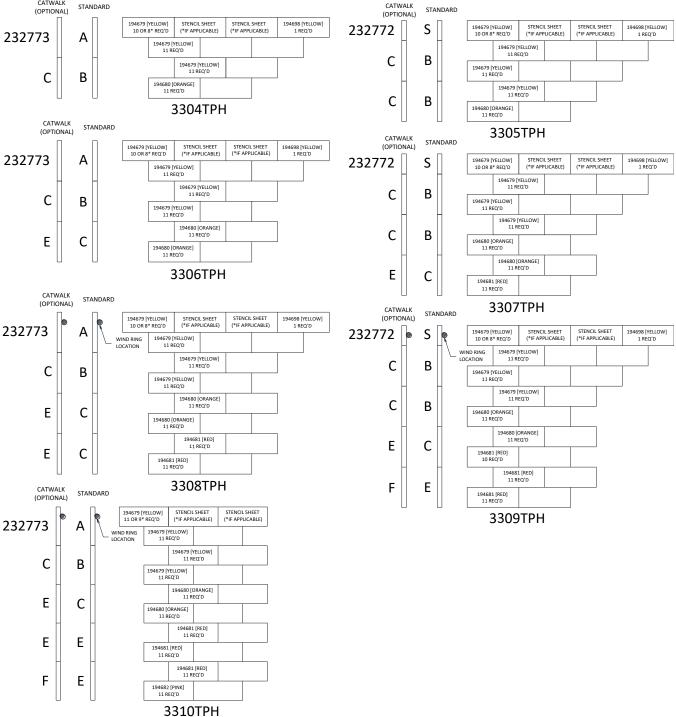
#### Notes:

- 1. Colors match part number label and indicate wall sheet thickness.
- 2. (If applicable) Stencil sheets are 194654(WEST) and 194657(EEL) [YELLOW].
- 3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
- 4. The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk option.

  • — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).
- 5.

110 198890 R49

Figure 61. Model 3304TPH to 3310TPH



#### Notes:

- 1. Colors match part number label and indicate wall sheet thickness.
- 2. (If applicable) Stencil sheets are 194654(WEST) and 194657(EEL) [YELLOW].
- 3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
- The catwalk uprights shown are an optional upgrade and can take 10,000 lbs. of catwalk load per upright. Typically 4 uprights are ordered with the catwalk option.
- 5. Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

# 7. Appendix

### 7.1. CEN Common Parts Box Listing (4 – 9 Tier Bins)

Table 32. CEN Common Parts Box Listing (4 – 9 Tier Bins)

Part Number	Description	Unit Weight (lbs)	15'	18'	21'	24'	27'	30'	33'	36'	39'	42'	45'	48'	51'	54'
185010	CARTON 37x37x9 for BIN PARTS 15-27	9.4	1	1	1	1	1	-	-	-	-	-	-	-	-	-
234808	ROOF CAP 15-27	21.5	1	1	1	1	1	-	-	-	-	-	-	-	-	-
212201	PEAK RING 15	30.7	1	-	-	-	-	-	-	-	-	-	-	-	-	-
195149	PEAK RING BULB GASKET 105"	0.9	1	1	1	1	1	-	-	-	-	-	-	-	2	2
212228	PEAK RING FOAM for 15-27, 51-54	0.4	1	1	1	1	1	-	-	-	-	-	-	-	2	2
212740	FALL RESTRAINT BRACKET	0.3	2	2	2	2	2	2	2	2	2	2	2	2	2	2
234810	RCO PIVOT ARM 15-27	3.01	1	1	1	1	1	-	-	-	-	-	-	-	-	-
234814	RCO PIVOT ARM BRACKET 15-27	0.85	2	2	2	2	2	-	-	-	-	-	-	-	-	-
234812	RCO ROPE ARM 15-60	4.12	1	1	1	1	1	2	2	2	2	2	2	2	-	-
235219	RCO ROPE ARM SUPPORT 15-27	0.26	1	1	1	1	1	-	-	-	-	-	-	-	-	-
212404	RCO CABLE GUIDE	3.5	1	1	1	1	1	-	-	-	-	-	-	-	-	-
235798	RCO CABLE 9/32 x 45' GALV	0.75	1	1	1	1	1	-	-	-	-	-	-	-	-	-
212400	RCO SLIDE ROD 15-27	2.45	1	1	1	1	1	-	-	-	-	-	-	-	-	-
212402	RCO SLIDE ROD ANGLE	2.15	1	1	1	1	1	1	1	1	1	1	1	1	-	-
234804	RCO HARDWARE PACKAGE 15- 27	4.70	1	1	1	1	1	-	-	-	-	-	-	-	-	-
193077	LADDER RUNG 38.5 (36.0 CTR)	4.6	1	1	1	1	1	1	1	1	1	1	-	-	-	-
193073	LADDER RUNG 30.5 (28.0 CTR)	3.6	1	1	-	1	1	-	-	1	1	1	-	1	-	1
193070	LADDER RUNG 24.5 (22.0 CTR)	1.7	1	1	-	1	-	1	-	1	-	-	1	1	1	-
193066	LADDER RUNG 16.5 (14.0 CTR)	1.1	1	-	-	1	-	1	1	-	1	-	1	1	-	1
235890	INSPECTION HATCH LID	7.48	1	1	1	1	1	1	1	1	1	1	1	1	1	1
235891	INSPECTION HATCH LATCH	0.81	1	1	1	1	1	1	1	1	1	1	1	1	1	1
235882	INSPECTION HATCH BULB GASKET 76"	0.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1
212230	BIRD STOP	0.127	15	18	21	24	27	30	33	36	39	42	45	48	51	54
212231	FOAM ROOF RIB CLOSURE (12)	0.06	2	2	2	2	3	3	3	3	4	4	4	4	5	5
194120	GRAIN GAUGE	0.3	1	1	1	1	1	1	1	1	1	1	1	1	1	1*
194125	REFLECTIVE STRIP .75 x 8.2	0.001	1	1	1	1	1	1	1	1	1	1	1	1	1	1*
212789	RUBBER PAD	0.06	2	2	2	2	2	2	2	2	2	2	2	2	2	2
232720	UPRIGHT SPLICE	2.14	1	1	1	1	1	1	1	1	1	1	1	1	1	1
212731	LOAD SPREADER TUBE 15	8.6	1	-	-	-	-	-	-	-	-	-	-	-	-	-
195695	DOOR TIE BACK CHAIN 17.75" LONG	0.52	1	1	1	1	1	1	1	1	1	1	1	1	1	1*
235372	SEALING CLIP for BOTTOM ANGLE	0.12	5	6	7	8	9	10	11	12	13	14	15	16	17	18*
235914	BOLT HFS .313 x 1.00 GR8.2 - BAG 250	8.5	1	1	1	2	2	2	3	3	3	4	5	5	6	7
235916	BOLT HFS .313 x 1.25 GR8.2 - BAG 80	3.04	1	-	-	1	1	2	2	1	2	2	3	3	3	2
235923	HEX FLANGE NUT .313 - BAG 250	3.5	1	2	2	2	3	3	4	4	5	6	6	7	9	9
235925	HEX FLANGE NUT .313 - BAG 50	0.7	3	-	1	3	-	1	-	3	-	-	3	3	-	3
235973	WSHR SEAL .313 STL/NEO - BAG 25	0.1	1	1	1	1	1	1	1	1	2	2	2	2	2	2
235955	HEX FLANGE NUT .375 GR5 - Bag 50	0.95	2	2	2	2	3	3	3	3	-	-	-	-	-	-
212203	PEAK RING 18	30.7	-	1	-	-	-	-	-	-	-	-	-	-	-	-

Table 32 CEN Common Parts Box Listing (4 – 9 Tier Bins) (continued)

Part		Unit														
Number	Description	Weight (lbs)	15'	18'	21'	24'	27'	30'	33'	36'	39'	42'	45'	48'	51'	54'
193074	LADDER RUNG 32.5 (30.0 CTR)	3.9	-	1	-	-	-	1	1	1	-	-	1	1	1	1
193071	LADDER RUNG 26.5 (24.0 CTR)	3.2	1	1	-	-	1	-	1	-	-	1	1	-	-	1
193068	LADDER RUNG 20.5 (18.0 CTR)	1.4	-	1	-	1	-	1	-	1	-	1	1	-	-	1
193065	LADDER RUNG 14.5 (12.0 CTR)	1	-	1	-	-	1	-	-	1	1	1	1	1	1	1
212732	LOAD SPREADER TUBE 18	8.6	-	1	-	-	-	-	-	-	-	-	-	-	-	-
235917	BOLT HFS .313 x 1.25 GR8.2 - BAG 50	1.9	-	2	2	1	1	-	-	2	1	1	-	-	-	2
212204	PEAK RING 21	30.7	-	-	1	-	-	-	-	-	-	-	-	-	-	-
193075	LADDER RUNG 34.5 (32.0 CTR)	4.1	-	-	1	1	1	-	-	-	1	1	1	1	1	1
193072	LADDER RUNG 28.5 (26.0 CTR)	3.4	-	-	1	-	-	1	1	-	1	1	1	-	1	-
193069	LADDER RUNG 22.5 (20.0 CTR)	1.5	-	-	1	-	1	-	1	-	1	-	-	1	1	1
193067	LADDER RUNG 18.5 (16.0 CTR)	1.3		-	1	-	1	-	-	1	1	1	-	1	1	-
193064	LADDER RUNG 14.5 (10.0 CTR)	1	1	-	1	-	-	1	1	-	-	1	1	-	1	1
212733	LOAD SPREADER TUBE 21	8.6	-	-	1	-	-	-	-	-	-	-	-	-	-	-
235915	BOLT HFS .313 x 1.00 GR8.2 - BAG 50	1.7	-	1	3	-	-	2	-	2	4	2	-	3	2	-
212205	PEAK RING 24	30.7	-	-	-	1	-	-	-	-	-	-	-	-	-	-
193063	LADDER RUNG 14.5 (8.0 CTR)	1	-	-	-	1	1	-	-	1	1	1	1	1	1	1
212734	LOAD SPREADER TUBE 24	8.6	-	-	-	1	-	-	-	-	-	-	-	-	-	-
212206	PEAK RING 27	30.7	-	-	-	-	1	-	-	-	-	-	-	-	-	-
212735	LOAD SPREADER TUBE 27	8.6	-	-	-	-	1	-	-	-	-	-	-	-	-	-
185011	CARTON 53x27x7 for BIN PARTS 30-54	8.3	-	-	-	-	-	1	1	1	1	1	1	1	1	1
195150	PEAK RING BULB GASKET 168"	1.44	-	-	-	-	-	1	1	1	1	1	1	1	-	-
212229	PEAK RING FOAM for 30-48	0.5	-	-	-	-	-	1	1	1	1	1	1	1	-	-
234811	RCO PIVOT ARM 30-60	7.12	-	-	-	-	-	1	1	1	1	1	1	1	-	-
235337	RCO PIVOT ARM BRACKET 30-48	1.37	-	-	-	-	-	2	2	2	2	2	2	2	-	-
235220	RCO ROPE ARM SUPPORT 30-48	0.42	-	-	-	-	-	1	1	1	1	1	1	1	-	-
235279	RCO ROOF EAVE PLATE	3.02	-	-	-	-	-	1	1	1	1	1	1	1	-	-
235817	RCO WINCH ASSEMBLY	5.0	-	-	-	-	-	1	1	1	1	1	1	1	-	-
234813	RCO WINCH BRACKET	2.40		-	-	-	-	1	1	1	1	1	1	1	-	-
212401	RCO SLIDE ROD 30-48	3.06	-	-	-	-	-	1	1	1	1	1	1	1	-	-
234815	RCO GUIDE RAIL 30-60	0.80	-	-	-	-	-	2	2	2	2	2	2	2	-	-
234805	RCO HARDWARE PACKAGE 30-60	7.60	-	-	-	-	-	1	1	1	1	1	1	1	-	-
193076	LADDER RUNG 36.5 (34.0 CTR)	4.4	-	-	-	-	-	1	1	1	1	1	1	1	1	1
212736	LOAD SPREADER TUBE 30	8.6	-	-	-	-	-	1	-	-	-	-	-	-	-	-
235799	RCO CABLE 9/32 x 70' GALV	1.14	-	-	-	-	-	1	1	1	1	1	1	1	-	-
212737	LOAD SPREADER TUBE 33-36	8.6	-	-	-	-	-	-	1	1	-	-	-	-	-	-
195063	STIFFENING RING BRACKET	0.31	-	-	-	-	-	-	33	36	39	42	45	96	153	162
195080	STIFFENING RING GASKET - BAG 50	0.05	-	-	-	-	-	-	1	1	1	1	1	2	4	4
195074	STIFFENING RING SPLICE 1.375	1.35	-	-	-	-	-	-	3	3	3	3	3	6	9	9
195085	STIFFENING RING EXPANDER 1.375	4.66	-	-	-	-	-	-	2	2	2	2	2	5	9	9
232798	STIFFENING RING EXPANDER CLIP	0.125	-	-	-	-	-	-	2	2	2	2	2	5	9	9
235151	SELFDRILL SCREW .25 x 1.0 - BAG 7	0.13	-	-	-	-	-	-	1	1	1	1	1	2	3	3
234157	U-BOLT, ROUND .312 x 1.75W x 2.8L	0.12	-	-	-	-	-	-	33	36	39	42	45	96	153	162
212738	LOAD SPREADER TUBE 39-45	8.6	-	-	-	-	-	-	-	-	1	1	1	-	-	-
235954	HEX FLANGE NUT .375 GR5 - Bag 300	5.7	-	-	-	-	-	-	-	-	1	1	1	1	1	1*
	<b>3</b>	1		L				L	L			<u> </u>				

Table 32 CEN Common Parts Box Listing (4 – 9 Tier Bins) (continued)

Part Number	Description	Unit Weight (lbs)	15'	18'	21'	24'	27'	30'	33'	36'	39'	42'	45'	48'	51'	54'
193078	LADDER RUNG 40.5 (38.0 CTR)	4.8	-	-	-	-	-	-	-	-	-	-	1	1	1	1
193061	LADDER RUNG 14.5 (4.0 C/C)	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-
193062	LADDER RUNG 14.5 (6.0 CTR)	1	-	-	-	-	-	-	-	1 1						1
212739	LOAD SPREADER TUBE 48-54	8.6	-	-	-	-	-	-	-	1 1 1						1
235974	WSHR SEAL .375 STL/NEO - BAG 25	0.16	1	1	1	1	1	1	1	1	1	1	1	1	1	1
VARIES	PEAK RING (30' - 51')		-	-	-	-	-	Т	OO LAF	GE FO	R PART	S BOX,	SHIPPE	D INDI\	/IDUALI	_Y
198890	MANUAL - CENTURION-W	0.3	1	1	1	1	1	1	1	1	1	1	1	1	1	1*
212454	MANUAL - ROOF NON-STRUCTURAL	0.3	1	1	1	1	1	1	1	1						
* Shipped in	n a separate case	1		ı	1	1	ı	1	1	1	ı			ı		

### Note

For structural roof parts box listing, please refer to Structural Roof Manual (212453).

## 7.2. CEN Non-Common Pail & Parts Box Listing (4 – 9 Tier Bins)

Table 33. CEN Non-Common Pail & Parts Box Listing (4 – 9 Tier Bins)

	HARDWA	ARE PAIL					;	SHIPPED IN	PARTS BOX	(				
	232850	232852	232767	235941	235943	235949	235950	235951	235956	235957	193814	235955	235954	170445
MODEL	3/8" x 1" Bolt & Nut Pail 700	3/8" x 1½" Bolt & Nut Pail 500	WIND RING CLIP	BOLT HFS .375 x 1.0 GR8.2 - BAG 325	BOLT HFS .375 x 1.0 GR8.2 - BAG 50	BOLT HEX .375 x 3.75 GR5 - BAG 10	HEX NUT .375 - BAG 300	HEX NUT .375 - BAG 100	FLAT WASHER .375 - BAG 200	FLAT WASHER .375 - BAG 75	CAULKING - 40' ROLL	HEX FLANGE NUT .375 GR5 - Bag 50	HEX FLANGE NUT .375 GR5 - Bag 300	CAULKING - 300 ml TUBE
1505	2	1	2	2	-	-	2	1	-	1	5	2	-	2
1506	3	1	2	1	-	-	1	-	-	1	6	2	-	2
1507	4	1	2	-	3	-	-	2	-	1	7	2	-	2
1508	4	1	2	1	4	-	1	2	-	1	7	2	-	2
1509	5	1	2	1	1	-	1	1	-	1	8	2	-	2
1805	3	1	2	1	2	-	1	1	-	2	6	2	-	2
1806	4	1	2	-	3	-	-	2	-	2	7	2	-	2
1807	5	1	2	-	1	-	-	1	-	2	8	2	-	2
1808	5	1	2	1	5	-	2	-	-	2	9	2	-	2
1809	6	1	2	1	3	-	1	2	-	2	10	2	-	2
2105	4	1	2	-	3	-	-	2	-	2	7	2	-	2
2106	5	1	2	-	-	-	-	-	-	2	8	2	-	2
2107	6	1	2	-	1	-	-	1	-	2	9	2	-	2
2108	6	1	2	1	5	-	2	-	-	2	10	2	-	2
2109	7	1	2	2	-	-	2	-	-	2	11	2	-	2
2405	4	1	2	2	ı	-	2	1	-	2	8	2	-	2
2406	5	1	2	1	5	-	2	-	-	2	9	2	-	2
2407	7	1	2	-	-	-	-	-	-	2	11	2	-	2
2408	7	1	2	2	-	-	2	-	-	2	12	2	-	2
2409	9	1	2	1	1	-	•	1	-	2	13	2	-	2
2705	5	1	2	1	2	-	1	1	-	2	9	3	-	2
2706	6	1	2	1	1	-	1	1	-	2	11	3	-	2
2707	7	1	2	2	-	-	2	1	-	2	12	3	-	2
2708	8	1	2	2	-	-	2	1	-	2	13	3	-	2
2709	10	1	2	-	4	-	-	2	-	2	14	3	-	2
3005	6	1	2	-	4	-	-	2	-	2	10	3	-	2
3006	7	1	2	-	5	-	1	-	-	2	12	3	-	2
3007	8	1	2	2	-	-	2	-	-	2	13	3	-	2
3008	9	1	2	2	-	-	2	1	-	2	14	3	-	2
3009	11	1	2	1	-	-	1	-	-	2	16	3	-	2
3305	6	1	2	2	-	-	2	1	-	2	11	3	-	2
3306	8	1	2	-	3	-	-	2	-	2	13	3	-	2
3307	9	1	2	1	5	-	2	-	-	2	14	3	-	2
3308	11	1	2	-	1	-	-	1	-	2	16	3	-	2
3309	12	1	2	1	3	-	1	2	-	2	17	3	-	2
3604	6	1	2	-	-	-	-	-	-	2	10	3	-	2
3605	7	1	2	1	2	-	1	1	-	2	12	3	-	2
3606	8	1	2	-	-	-	-	-	-	2	14	3	-	2

Table 33 CEN Non-Common Pail & Parts Box Listing (4 – 9 Tier Bins) (continued)

	HARDWA	ARE PAIL					;	SHIPPED IN	PARTS BOX	(				
	232850	232852	232767	235941	235943	235949	235950	235951	235956	235957	193814	235955	235954	170445
MODEL	3/8" x 1" Bolt & Nut Pail 700	3/8" x 1½" Bolt & Nut Pail 500	WIND RING CLIP	BOLT HFS .375 x 1.0 GR8.2 - BAG 325	BOLT HFS .375 x 1.0 GR8.2 - BAG 50	BOLT HEX .375 x 3.75 GR5 - BAG 10	HEX NUT .375 - BAG 300	HEX NUT .375 - BAG 100	FLAT WASHER .375 - BAG 200	FLAT WASHER .375 - BAG 75	CAULKING - 40' ROLL	HEX FLANGE NUT .375 GR5 - Bag 50	HEX FLANGE NUT .375 GR5 - Bag 300	CAULKING - 300 ml TUBE
3607	10	1	2	1	4	-	1	2	-	2	16	3	-	2
3608	12	1	2	-	1	-	-	1	-	2	17	3	-	2
3609	13	1	2	1	5	-	2	-	-	2	19	3	-	2
3905	8	1	2	-	4	-	-	2	1	-	13	-	1	2
3906	9	1	2	1	4	-	2	-	1	-	15	-	1	2
3907	11	1	2	1	3	-	1	2	1	-	17	-	1	2
3908	13	1	2	-	2	-	-	1	1	-	19	-	1	2
3909	15	1	2	-	1	-	-	1	1	-	21	-	1	2
4205	8	1	2	2	-	-	2	1	1	-	14	-	1	2
4206	10	1	2	1	1	-	1	1	1	-	16	-	1	2
4207	12	1	2	1	2	-	1	1	1	-	18	-	1	2
4208	14	1	2	-	3	-	-	2	1	-	20	-	1	2
4209	16	1	2	-	3	-	-	2	1	-	22	-	1	2
4505	10	1	2	1	2	-	1	2	1	-	15	-	1	2
4506	12	1	2	-	5	-	1	-	1	-	17	-	1	2
4507	13	1	2	1	1	-	1	1	1	-	19	-	1	2
4508	15	1	2	-	3	-	-	2	1	-	21	-	1	2
4509	17	1	65	1	3	1	1	2	1	-	24	-	1	2
4805	10	1	2	-	5	-	1	-	1	-	16	-	1	2
4806	12	1	2	-	2	-	-	1	1	-	18	-	1	2
4807	14	1	2	1	1	-	1	1	1	-	21	-	1	2
4808	16	1	2	-	4	-	-	2	1	-	23	-	1	2
4809	17	2	70	-	-	1	-	-	1	-	26*	-	1	2
5105	10	1	2	2	-	-	2	1	1	1	17	-	1	2
5106	12	1	2	2	-	-	2	1	1	1	19	-	1	2
5107	15	1	2	-	5	-	1	-	1	1	22	-	1	2
5108	16	2	73	1	2	1	1	2	1	1	24	-	1	2
5109	19	2	73	-	1	1	-	1	1	1	1+26*	-	1	2
5405	11	1	2	1*	4*	-	1*	2*	2*	1*	18*	-	1*	2*
5406	13	1	2	1*	5*	-	2*	-	2*	1*	21*	-	1*	2*
5407	16	1	2	1*	-	-	1*	-	2*	1*	23*	-	1*	2*
5408	17	2	2+76*	1*	4*	1*	2*	-	2*	1*	26*	-	1*	2*
5409	20	2	2+76*	-	5*	1*	1*	-	2*	1*	28*	-	1*	2*
	a separate c	ase.												

### Note

For structural roof parts box listing, please refer to Structural Roof Manual (212453).

## 7.3. CEN Common Parts Box Listing (10 – 12 Tier Bins)

Table 34. CEN Common Parts Box Listing (10 – 12 Tier Bins)

Part Number	Description	Unit Weight (lbs)	15'	18'	21'	24'	27'	30'	33'	36'	39'	42'	45'	48'	51'
185010	CARTON 37x37x9 for BIN PARTS 15-	9.4	1	1	1	1	1	-	-	-	-	-	-	-	-
212201	PEAK RING 15	30.7	1	-	-	-	-	-	-	-	-	-	-	-	-
195149	PEAK RING BULB GASKET 105"	0.9	1	1	1	1	1	-	-	-	-	-	-	-	2
212228	PEAK RING FOAM for 15-27, 51-54	0.4	1	1	1	1	1	-	-	-	-	-	-	-	2
212740	FALL RESTRAINT BRACKET	0.3	2	2	2	2	2	2	2	2	2	2	2	2	2
193077	LADDER RUNG 38.5 (36.0 CTR)	4.6	1	1	1	1	1	1	1	1	1	1	-	-	-
193073	LADDER RUNG 30.5 (28.0 CTR)	3.6	1	1	-	1	1	-	-	1	1	1	-	1	-
193070	LADDER RUNG 24.5 (22.0 CTR)	1.7	1		-	1	-	1	-	1	-	-	1	1	1
193066	LADDER RUNG 16.5 (14.0 CTR)	1.1	1	1	-	1	-	1	1	-	1	-	1	1	-
235890	INSPECTION HATCH LID	7.48	1	1	1	1	1	1	1	1	1	1	1	1	1
235891	INSPECTION HATCH LATCH	0.81	1	1	1	1	1	1	1	1	1	1	1	1	1
235882	INSPECTION HATCH BULB GASKET 76"	0.5	1	1	1	1	1	1	1	1	1	1	1	1	1
212230	BIRD STOP	0.127	15	18	21	24	27	30	33	36	39	42	45	48	51
212231	FOAM ROOF RIB CLOSURE (12)	0.06	2	2	2	2	3	3	3	3	4	4	4	4	5
212789	RUBBER PAD	0.06	2	2	2	2	2	2	2	2	2	2	2	2	2
232720	UPRIGHT SPLICE	2.14	1	1	1	1	1	1	1	1	1	1	1	1	1
212731	LOAD SPREADER TUBE 15	8.6	1	-	-	-	-	-	-	-	-	-	-	-	-
195695	DOOR TIE BACK CHAIN 17.75" LONG	0.52	1	1	1	1	1	1	1	1	1	1	1	1	1
235372	SEALING CLIP for BOTTOM ANGLE	0.12	5	6	7	8	9	10	11	12	13	14	15	16	17
235914	BOLT HFS .313 x 1.00 GR8.2 - BAG 250	8.5	1	1	1	2	2	2	3	3	3	4	5	5	6
235916	BOLT HFS .313 x 1.25 GR8.2 - BAG 80	3.04	1	-	-	1	1	2	2	1	2	2	3	3	3
235923	HEX FLANGE NUT .313 - BAG 250	3.5	1	2	2	2	3	3	4	4	5	6	6	7	9
235925	HEX FLANGE NUT .313 - BAG 50	0.7	3	-	1	3	-	1	-	3	-	-	3	3	-
235973	WSHR SEAL .313 STL/NEO - BAG 25	0.1	1	1	1	1	1	1	1	1	2	2	2	2	2
235955	HEX FLANGE NUT .375 GR5 - Bag 50	0.95	2	2	2	2	3	3	3	3	-	-	-	-	-
212203	PEAK RING 18	30.7	-	1	-	-	-	-	-	-	-	-	-	-	-
193074	LADDER RUNG 32.5 (30.0 CTR)	3.9	-	1	-	-	-	1	1	1	-	-	1	1	1
193071	LADDER RUNG 26.5 (24.0 CTR)	3.2	-	1	-	-	1	-	1	-	-	1	1	-	-
193068	LADDER RUNG 20.5 (18.0 CTR)	1.4	-	1	-	1	-	1	-	1	-	1	1	-	-
193065	LADDER RUNG 14.5 (12.0 CTR)	1	-	1	-	-	1	-	-	1	1	1	1	1	1
212732	LOAD SPREADER TUBE 18	8.6	-	1	-	-	-	-	-	-	-	-	-	-	-
235917	BOLT HFS .313 x 1.25 GR8.2 - BAG 50	1.9	-	2	2	1	1	-	-	2	1	1	-	-	-
212204	PEAK RING 21	30.7	-		1	-	-	-	-	-	-	-	-	-	-
193075	LADDER RUNG 34.5 (32.0 CTR)	4.1	-	1	1	1	1	-	-	-	1	1	1	1	1
193072	LADDER RUNG 28.5 (26.0 CTR)	3.4	-	-	1	-	-	1	1	-	1	1	1	-	1
193069	LADDER RUNG 22.5 (20.0 CTR)	1.5	-	-	1	-	1	-	1	-	1	-	-	1	1
193067	LADDER RUNG 18.5 (16.0 CTR)	1.3	-	-	1	-	1	-	-	1	1	1	-	1	1
193064	LADDER RUNG 14.5 (10.0 CTR)	1	-	-	1	-	-	1	1	-	-	1	1	-	1
212733	LOAD SPREADER TUBE 21	8.6	-	-	1	-	-	-	-	-	-	-	-	-	-
235915	BOLT HFS .313 x 1.00 GR8.2 - BAG 50	1.7	-	1	3	-	-	2	-	2	4	2	-	3	2
212205	PEAK RING 24	30.7	-		-	1	-	-	-	-	-	-	-	-	-

Table 34 CEN Common Parts Box Listing (10 – 12 Tier Bins) (continued)

Part Number	Description	Unit Weight (lbs)	15'	18'	21'	24'	27'	30'	33'	36'	39'	42'	45'	48'	51'	
193063	LADDER RUNG 14.5 (8.0 CTR)	1	-	-	-	1	1	-	-	1	1	1	1	1	1	
212734	LOAD SPREADER TUBE 24	8.6	-	-	-	1	-	-	-	-	-	1	-	-	-	
212206	PEAK RING 27	30.7	-	-	-	-	1	-	-	-	-	ı	-	-	-	
212735	LOAD SPREADER TUBE 27	8.6	-	-	-	-	1	-	-	-	-	-	-	-	-	
185011	CARTON 53x27x7 for BIN PARTS 30- 54	8.3	-	-	-	-	-	1	1	1	1	1	1	1	1	
195150	PEAK RING BULB GASKET 168"	1.44	-	-	-	-	-	1	1	1	1	1	1	1	-	
212229	PEAK RING FOAM for 30-48	0.5	-	-	-	-	-	1	1	1	1	1	1	1	-	
193076	LADDER RUNG 36.5 (34.0 CTR)	4.4	-	-	-	-	-	1	1	1	1	1	1	1	1	
212736	LOAD SPREADER TUBE 30	8.6	-	-	-	-	-	1	-	-	-	-	-	-	-	
212737	LOAD SPREADER TUBE 33-36	8.6	-	-	-	-	-	-	1	1	-	-	-	-	-	
195063	STIFFENING RING BRACKET	0.31	-	-	-	-	-	-	33	36	39	42	45	96	153	
195080	STIFFENING RING GASKET - BAG 50	0.05	-	-	-	-	-	-	1	1	1	1	1	2	4	
195074	STIFFENING RING SPLICE 1.375	1.35	-	-	-	-	-	-	3	3	3	3	3	6	9	
195085	STIFFENING RING EXPANDER 1.375	4.66	-	-	-	-	-	-	2	2	2	2	2	5	9	
232798	STIFFENING RING EXPANDER CLIP	0.125	-	-	-	-	-	-	2	2	2	2	2	5	9	
235151	SELFDRILL SCREW .25 x 1.0 - BAG 7	0.13	-	-	-	-	-	-	1	1	1	1	1	2	3	
234157	U-BOLT, ROUND .312 x 1.75W x 2.8L	0.12	-	-	-	-	-	-	33	36	39	42	45	96	153	
212738	LOAD SPREADER TUBE 39-45	8.6	-	-	-	-	-	-	-	-	1	1	1	-	-	
235954	HEX FLANGE NUT .375 GR5 - Bag 300	5.7	-	-	-	-	-	-	-	-	1	1	1	1	1	
193078	LADDER RUNG 40.5 (38.0 CTR)	4.8	-	-	-	-	-	-	-	-	-	-	1	1	1	
193061	LADDER RUNG 14.5 (4.0 C/C)	1	-	-	-	-	-	-	-	-	-	ı	1	-	-	
193062	LADDER RUNG 14.5 (6.0 CTR)	1	-	-	-	-	-	-	-	-	-	ı	-	1	1	
212739	LOAD SPREADER TUBE 48-54	8.6	-	-	-	-	-	-	-	1 1					1	
235974	WSHR SEAL .375 STL/NEO - BAG 25	0.16	1	1	1	1	1	1	1							
VARIES	PEAK RING (30' - 51')		-	-	-	-	-	TO	O LARG	1 1 1 1 1 1 1 FOR PARTS BOX, SHIPPED INDIVIDUALLY						
198890	MANUAL - CENTURION-W	0.3	1	1	1	1	1	1	1	1	1	1	1	1	1	

#### Note

For structural roof parts box listing, please refer to **Structural Roof Manual (212453).** 

## 7.4. CEN Non-Common Pail & Parts Box Listing (10 – 12 Tier Bins)

Table 35. CEN Non-Common Pail & Parts Box Listing (10 – 12 Tier Bins)

	НА	RDWARE P	AIL				S	HIPPED IN	PARTS BO	х			
	232850	232852	193814	232767	235941	235943	235949	235950	235951	235956	235957	235955	170445
MODEL	3/8" x 1" Bolt/Nut Pail 700	3/8" x 1.5" Bolt/Nut Pail 500	CAULKING 40' ROLL	WIND RING CLIP	BOLT HFS .375 x 1.0 GR8.2 - BAG 325	BOLT HFS .375 x 1.0 GR8.2 - BAG 50	BOLT HEX .375 x 3.75 GR5 - BAG 10	HEX NUT .375 - BAG 300	HEX NUT .375 - BAG 100	FLAT WASHER .375 - BAG 200	FLAT WASHER .375 - BAG 75	HEX FLANGE NUT .375 GR5 - Bag 50	CAULK- ING - 300 ml TUBE
1510	6	1	9	2	-	1	-	-	1	-	1	2	2
1511	6	1	10	2	1	5	-	2	-	-	1	2	2
1512	7	1	10	2	1	5	-	1	-	-	1	2	2
1810	7	1	11	2	-	5	-	1	-	-	2	2	2
1811	8	1	11	2	-	3	-	-	2	-	2	2	2
1812	8	1	12	2	2	-	-	2	1	-	2	2	2
2110	8	1	12	2	1	3	-	1	2	-	2	2	2
2111	9	1	13	2	1	3	-	1	2	-	2	2	2
2112	10	1	14	2	1	-	-	1	1	-	2	2	2
2410	9	1	14	2	2	-	-	2	1	-	2	2	2
2411	11	1	15	2	-	2	-	-	1	-	2	2	2
2412	12	1	16	2	-	-	-	-	-	-	2	2	2
2710	11	1	16	2	-	4	-	-	2	-	2	3	2
2711	12	1	17	2	1	2	-	1	2	-	2	3	2
2712	13	1	18	2	1	2	-	1	1	-	2	3	2
3010	12	1	17	2	1	1	-	1	1	-	2	3	2
3011	14	1	19	44	-	1	1	-	1	-	2	3	2
3012	15	1	20	44	-	1	1	-	1	-	2	3	2
3310	13	1	19	2	2	-	-	2	1	-	2	3	2
3311	15	1	21	49	1	1	1	1	1	-	2	3	2
3312	15	2	22	49	-	-	1	-	-	-	2	3	2
3610	14	2	21	53	1	1	1	1	1	-	2	3	2
3611	16	2	22	53	-	3	1	-	2	-	2	3	2
3612	17	2	24	53	1	1	1	1	1	-	2	3	2
3910	15	2	22	57	1	5	1	2	-	1	-	1	2
3911	17	2	26*	57	1	2	1	1	2	1	-	1	2
3912	19	2	26*	57	-	2	1	-	1	1	-	1	2
4210	17	2	26*	61	-	2	1	-	1	1	-	1	2
4211	19	2	26*	61	-	1	1	-	1	1	-	1	2
4212	20	2	2+26*	61	1	3	1	1	2	1	-	1	2
4510	19	2	26*	65	1	-	1	1	-	1	-	1	2
4511	21	2	2+26*	65	1	1	1	1	1	1	-	1	2
4512	22	2	4+26*	65	-	4	1	-	2	1	-	1	2
4810	19	2	1+26*	70	1	3	1	1	2	1	-	1	2
4811	22	2	4+26*	70	-	1	1	-	1	1	-	1	2
4812	23	2	6+26*	70	1	4	1	1	2	1	-	1	2
5110	21	2	3+26*	73	2	-	1	2	1	1	1	1	2
*Shipped i	n a separate	e case.											

#### Note

For structural roof parts box listing, please refer to Structural Roof Manual (212453).

## 7.5. CEH Common Parts Box Listing

Table 36. CEH Common Parts Box Listing

Part Number	Description	Unit Weight (lbs)	15'	18'	21'	24'	27'	30'
185010	CARTON 37x37x9 for BIN PARTS 15-27	9.4	1	1	1	1	1	-
185011	CARTON 53x27x7 for BIN PARTS 30-54	8.3	-	-	-	-	-	1
234808	ROOF CAP 15-27	21.5	1	1	1	1	1	-
212201	PEAK RING 15	30.7	1	-	-	-	-	-
195149	PEAK RING BULB GASKET 105"	0.9	1	1	1	1	1	-
195150	PEAK RING BULB GASKET 168"	1.44	-	-	-	-	-	1
212740	FALL RESTRAINT BRACKET	0.3	2	2	2	2	2	2
212228	PEAK RING FOAM for 15-27, 51-54	0.4	1	1	1	1	1	-
212229	PEAK RING FOAM for 30-48	0.5	-	-	-	-	-	1
234810	RCO PIVOT ARM 15-27	3.01	1	1	1	1	1	-
234811	RCO PIVOT ARM 30-60	7.12	-	-	-	-	-	1
234814	RCO PIVOT ARM BRACKET 15-27	0.85	2	2	2	2	2	-
235337	RCO PIVOT ARM BRACKET 30-48	1.37	-	-	-	-	-	2
234812	RCO ROPE ARM 15-60	4.12	1	1	1	1	1	2
235219	RCO ROPE ARM SUPPORT 15-27	0.26	1	1	1	1	1	-
235220	RCO ROPE ARM SUPPORT 30-48	0.42	-	-	-	-	-	1
235279	RCO ROOF EAVE PLATE	3.02	-	-	-	-	-	1
235818	RCO WINCH ASSEMBLY	5.0	-	-	-	-	-	1
234813	RCO WINCH BRACKET	2.4	-	-	-	-	-	1
212404	RCO CABLE GUIDE	3.5	1	1	1	1	1	-
235798	RCO CABLE 9/32 x 45' GALV	0.75	1	-	-	-	-	-
235799	RCO CABLE 9/32 x 70' GALV	1.14	-	1	1	1	1	1
212400	RCO SLIDE ROD 15-27	2.45	1	1	1	1	1	-
212401	RCO SLIDE ROD 30-48	3.06	-	-	-	-	-	1
212402	RCO SLIDE ROD ANGLE	2.15	1	1	1	1	1	1
234815	RCO GUARD RAIL 30-60	0.80	-	-	-	-	-	2
234804	RCO HARDWARE PACKAGE 15-27	4.70	1	1	1	1	1	-
234805	RCO HARDWARE PACKAGE 30-60	7.60	-	-	-	-	-	1
193077	LADDER RUNG 38.5 (36.0 CTR)	4.6	1	1	1	1	1	1
193076	LADDER RUNG 36.5 (34.0 CTR)	4.4	-	-	-	-	-	1
193074	LADDER RUNG 32.5 (30.0 CTR)	3.9	-	-	-	-	-	1
193073	LADDER RUNG 30.5 (28.0 CTR)	3.6	1	-	-	1	1	-
193072	LADDER RUNG 28.5 (26.0 CTR)	3.4	-	-	-	-	-	1
193070	LADDER RUNG 24.5 (22.0 CTR)	1.7	1	-	-	1	-	1
193068	LADDER RUNG 20.5 (18.0 CTR)	1.4	-	-	-	-	-	1
193066	LADDER RUNG 16.5 (14.0 CTR)	1.1	1	-	-	1	-	1
193064	LADDER RUNG 14.5 (10.0 CTR)	1.0	-	-	-	-	-	1
235890	INSPECTION HATCH LID	7.48	1	1	1	1	1	1
235891	INSPECTION HATCH LATCH	0.81	1	1	1	1	1	1
235882	INSPECTION HATCH BULB GASKET 76"	0.5	1	1	1	1	1	1
212230	BIRD STOP	0.127	15	18	21	24	27	30
212231	FOAM ROOF RIB CLOSURE (12)	0.06	2	2	2	2	3	3

Table 36 CEH Common Parts Box Listing (continued)

Part Number	Description	Unit Weight (lbs)	15'	18'	21'	24'	27'	30'
194120	GRAIN GAUGE	0.3	1	1	1	1	1	1
194125	REFLECTIVE STRIP .75 x 8.2	0.001	1	1	1	1	1	1
232767	WIND RING CLIP	0.44	2	2	2	2	2	2
212789	RUBBER PAD	0.06	2	2	2	2	2	2
232720	UPRIGHT SPLICE	2.14	1	1	1	1	1	1
212731	LOAD SPREADER TUBE 15	8.6	1	-	-	-	-	-
212736	LOAD SPREADER TUBE 30	8.5	-	-	-	-	-	1
232735	ANCHOR BRACKET - CEN / CEH / SSK	1.9	10	12	14	16	18	20
236583	SHIM 6 x 2.0	0.25	20	24	28	32	36	40
236595	SHIM 7.5 x 3.4 for "F" PROFILE	0.54	-	-	-	32*	-	-
235914	BOLT HFS .313 x 1.00 GR8.2 - BAG 250	8.5	1	1	1	2	2	2
235915	BOLT HFS .313 x 1.00 GR8.2 - BAG 50	1.7	-	1	3	-	-	2
235916	BOLT HFS .313 x 1.25 GR8.2 - BAG 80	3.04	1	-	-	1	1	2
235923	HEX FLANGE NUT .313 - BAG 250	3.5	1	2	2	2	3	3
235925	HEX FLANGE NUT .313 - BAG 50	0.7	3	-	1	3	-	1
235973	WSHR SEAL .313 STL/NEO - BAG 25	0.1	1	1	1	1	1	1
212203	PEAK RING 18	30.7	-	1	-	-	-	-
193074	LADDER RUNG 32.5 (30.0 CTR)	3.9	-	1	-	-	-	-
193071	LADDER RUNG 26.5 (24.0 CTR)	3.2	-	1	-	-	1	-
193068	LADDER RUNG 20.5 (18.0 CTR)	1.4	-	1	-	1	-	-
193065	LADDER RUNG 14.5 (12.0 CTR)	1	-	1	-	-	1	-
212732	LOAD SPREADER TUBE 18	8.6	-	1	-	-	-	-
235917	BOLT HFS .313 x 1.25 GR8.2 - BAG 50	1.9	-	2	2	1	1	-
212204	PEAK RING 21	30.7	-	-	1	-	-	-
193075	LADDER RUNG 34.5 (32.0 CTR)	4.1	-	-	1	1	1	-
193072	LADDER RUNG 28.5 (26.0 CTR)	3.4	-	-	1	-	-	-
193069	LADDER RUNG 22.5 (20.0 CTR)	1.5	-	-	1	-	1	-
193067	LADDER RUNG 18.5 (16.0 CTR)	1.3	-	-	1	-	1	-
193064	LADDER RUNG 14.5 (10.0 CTR)	1	-	-	1	-	-	-
212733	LOAD SPREADER TUBE 21	8.6	-	-	1	-	-	-
235915	BOLT HFS .313 x 1.00 GR8.2 - BAG 50	1.7	-	-	2	4	-	-
212205	PEAK RING 24	30.7	-	-	-	1	-	-
193063	LADDER RUNG 14.5 (8.0 CTR)	1	-	-	-	1	1	-
212734	LOAD SPREADER TUBE 24	8.6	-	-	-	1	-	-
212206	PEAK RING 27	30.7	-	-	-	-	1	-
212735	LOAD SPREADER TUBE 27	8.60	-	-	-	-	1	-
235977	BOLT HFS .375 x 2.00 GR8 - BAG 125	3.13	-	-	-	1	1	1
235974	WSHR SEAL .375 STL/NEO - BAG 25	0.16	1	1	1	1	1	1
198890	MANUAL - CENTURION-W	0.3	1	1	1	1	1	1
	SHADED ITEMS ARE NOT PROVIDED IN 10	TIERS		1	1	1	1	
*	ITEM ONLY FOUND IN 2410CEH PARTS BO							

### 7.6. CEH Non-Common Parts Listing

Table 37. CEH Non-Common Parts Listing

	HARDWA	RE PAILS				SHIPPED IN	PARTS BOX			
	232850	232852	235941	235943	235950	235951	235956	235957	193814	170445
MODEL	3/8" x 1" bolt	3/8" x 1½" bolt & nut pail 500	BOLT HFS .375 x 1.0	BOLT HFS .375 x 1.0 GR8.2 - BAG 50		HEX NUT .375 - BAG 100	FLAT	FLAT WASHER .375 - BAG 75		CAULKING - 300 ml TUBE
1504	1	1	2	-	2	-	-	1	5	5
1505	2	1	1	2	1	1	-	1	5	5
1506	3	1	-	2	-	1	-	1	6	5
1507	3	1	2	-	2	-	-	1	7	5
1508	4	1	1	-	1	-	-	1	7	5
1509	5	1	-	3	-	2	-	1	8	5
1510	5	1	1	4	2	-	-	1	9	5
1804	2	1	-	5	1	-	-	2	5	6
1805	3	1	-	3	-	2	-	2	6	6
1806	3	1	2	-	2	1	-	2	7	6
1807	4	1	1	5	2	-	-	2	8	6
1808	5	1	1	-	1	1	-	2	9	6
1809	6	1	-	5	1	-	-	2	10	6
1810	7	1	-	1	-	1	-	2	11	6
2104	2	1	2	-	2	-	-	2	6	7
2105	3	1	2	-	2	1	-	2	7	7
2106	4	1	1	3	1	2	-	2	8	7
2107	5	1	1	4	1	2	-	2	9	7
2108	6	1	1	1	1	1	-	2	10	7
2109	7	1	1	1	1	1	-	2	11	7
2110	8	1	-	5	1	-	-	2	12	7
2404	3	1	-	3	1	-	-	2	7	8
2405	4	1	-	5	1	1	-	2	8	8
2406	5	1	-	3	1	-	-	2	9	8
2407	6	1	1	-	1	2	-	2	11	8
2408	7	1	-	5	1	1	-	2	12	8
2409	8	1	1	1	1	2	-	2	13	8
2410	9	1	1	-	1	1	-	2	14	8
2704	4	1	-	-	-	-	-	2	8	9
2705	5	1	-	-	-	2	-	2	9	9
2706	6	1	-	1	-	2	-	2	11	9
2707	7	1	-	5	1	1	-	2	12	9
2708	8	1	1	-	1	1	-	2	13	9
2709	9	1	1	3	2	-	-	2	14	9
3004	4	1	-	3	1	-	-	2	9	10
3005	6	1	-	-	-	-	-	2	10	10
3006	7	1	-	-	-	-	-	2	12	10

Table 37 CEH Non-Common Parts Listing (continued)

	HARDWA	RE PAILS				SHIPPED IN	PARTS BOX			
	232850	232852	235941	235943	235950	235951	235956	235957	193814	170445
MODEL	3/8" x 1" bolt & nut pail 700	3/8" x 1½" bolt & nut pail 500		BOLT HFS .375 x 1.0 GR8.2 - BAG 50	HEX NUT .375 - BAG 300	HEX NUT .375 - BAG 100	FLAT WASHER .375 - BAG 200	FLAT WASHER .375 - BAG 75	CAULKING - 40' ROLL	CAULKING - 300 ml TUBE
3007	8	1	-	4	1	-	-	2	13	10
3008	9	1	-	5	1	1	-	2	14	10
3009	11	1	-	-	-	1	-	2	16	10

### 7.7. TPH Common Parts Listing

Table 38. TPH Common Parts Box Listing

Part Number	Description	Unit Weight (lbs)	24'	27'	33'
185010	CARTON 37 x 37 x 9 for BIN PARTS 15-27	9.40	1	1	-
185011	CARTON 53 x 27 x 7 for BIN PARTS 30-54	8.30	-	-	1
234808	ROOF CAP 15-27	21.47	1	1	-
212205	PEAK RING 24	30.70	1	-	-
212206	PEAK RING 27	30.70	-	1	-
195149	PEAK RING BULB GASKET 105"	0.90	1	1	-
195150	PEAK RING BULB GASKET 168"	1.44	-	-	1
212740	FALL RESTRAINT BRACKET	0.30	2	2	2
212228	PEAK RING FOAM 15-27, 51-54	0.40	1	1	-
212229	PEAK RING FOAM 30-48	0.50	-	-	1
234810	RCO PIVOT ARM 15-27	3.01	1	1	-
234811	RCO PIVOT ARM 30-60	7.12	-	-	1
234814	RCO PIVOT ARM BRACKET 15-27	0.85	2	2	-
235337	RCO PIVOT ARM BRACKET 30-48	1.37	-	-	2
234812	RCO ROPE ARM	4.12	1	1	2
235219	RCO ROPE ARM SUPPORT 15-27	0.26	1	1	-
235220	RCO ROPE ARM SUPPORT 30-48	0.42	-	-	1
235279	RCO ROOF EAVE PLATE	3.02	-	-	1
235817	RCO LID WINCH	5.00	-	-	1
234813	RCO WINCH BRACKET 30-60	2.40	-	-	1
212404	RCO CABLE GUIDE	3.50	1	1	-
235798	RCO CABLE 9/32 x 45' GALV	0.75	-	-	-
235799	RCO CABLE 9/32 x 70' GALV	1.14	1	1	1
212400	RCO SLIDE ROD 15-27	2.45	1	1	-
212401	RCO SLIDE ROD 30-48	3.06	-	-	1
212402	RCO SLIDE ROD ANGLE	2.15	1	1	1
234815	RCO GUIDE RAIL 30-60	0.80	-	-	2

Table 38 TPH Common Parts Box Listing (continued)

234804	RCO HARDWARE PACKAGE 15-27	4.70	1	1	-
234805	RCO HARDWARE PACKAGE 30-60	7.60	-	-	1
193077	LADDER RUNG 38.5 (36.0 CTR)	4.60	1	1	1
193076	LADDER RUNG 36.5 (34.0 CTR)	4.40	-	-	1
193075	LADDER RUNG 34.5 (32.0 CTR)	4.10	1	1	-
193074	LADDER RUNG 32.5 (30.0 CTR)	3.90	-	-	1
193073	LADDER RUNG 30.5 (28.0 CTR)	3.60	1	1	-
193072	LADDER RUNG 28.5 (26.0 CTR)	3.40	-	-	1
193071	LADDER RUNG 26.5 (24.0 CTR)	3.20	-	1	1
193070	LADDER RUNG 24.5 (22.0 CTR)	1.70	1	-	-
193069	LADDER RUNG 22.5 (20.0 CTR)	1.50	-	1	1
193068	LADDER RUNG 20.5 (18.0 CTR)	1.40	1	_	-
193067	LADDER RUNG 18.5 (16.0 CTR)	1.30	-	1	-
193066	LADDER RUNG 16.5 (14.0 CTR)	1.10	1	-	1
193065	LADDER RUNG 14.5 (12.0 CTR)	1.00		1	'
193063	LADDER RUNG 14.5 (10.0 CTR)	1.00	-	I	1
	LADDER RUNG 14.5 (8.0 CTR)		-	-	1
193063	` ,	1.00	1	1	-
235890 235891	INSPECTION HATCH LID INSPECTION HATCH LATCH	7.48 0.81	1	1	1
235882	INSPECTION HATCH BULB GASKET 76"	0.50	1	1	1
212230	BIRD STOP	0.30	24	27	33
212231	FOAM ROOF RIB CLOSURE (12)	0.06	2	3	3
194120	GRAIN GAUGE	0.00	1	1	1
194125	REFLECTIVE STRIP .75 x 8.2	0.001	1	1	1
195063	ROOF RING BRACKET	0.31	-	-	33
195080	ROOF RING BRACKET GASKET - BAG 50	0.05	-	-	1
195074	ROOF RING SPLICE 1.375"	1.35	-	-	3
195085	ROOF RING RING EXPANDER ASSY 1.375"	4.66	-	-	2
232798	ROOF RING EXPANDER CLIP	0.13	-	-	2
234157	U-BOLT, ROUND .312 x 1.75W x 2.8L	0.12	-	-	33
235151	SELFDRILL SCREW .25 x 1.0 - BAG 7	0.13	-	-	1
232767	WIND RING CLIP	0.44	2	2	2
212789	RUBBER PAD	0.06	2	2	2
232720	UPRIGHT SPLICE	2.14	1	1	1
212734	LOAD SPREADER TUBE 24	8.50	1	-	-
212735	LOAD SPREADER TUBE 27	8.50	-	1	-
212737	LOAD SPREADER TUBE 33 - 36	8.50	-	-	1
232735	ANCHOR BRACKET - CEN / CEH / SSK	1.90	-	-	22

Table 38 TPH Common Parts Box Listing (continued)

236583	SHIM 6 x 2.0	0.25	-	-	44			
235914	BOLT HFS .313 x 1.00 GR8.2 - BAG 250	8.50	1	2	2			
235915	BOLT HFS .313 x 1.00 GR8.2 - BAG 50	1.70	4	-	4			
235916	BOLT HFS .313 x 1.25 GR8.2 - BAG 80	3.04	1	1	2			
235917	BOLT HFS .313 x 1.25 GR8.2 - BAG 50	1.90	1	1	-			
235923	HEX FLANGE NUT .313 - BAG 250	3.50	2	3	4			
235925	HEX FLANGE NUT .313 - BAG 50	0.70	2	-	-			
235973	WSHR SEAL .313 STL/NEO - BAG 25	0.12	1	1	1			
235977	BOLT HFS .375 x 2 GR8 - BAG 125	3.13	1	1	2			
235974	WSHR SEAL .375 STL/NEO - BAG 25	0.16	1	1	1			
198890	MANUAL - CENTURION-W 0.30 1 1 1							
	SHADED ITEMS ARE NOT PROVIDED IN 10 TIERS							

### 7.8. TPH Non-Common Parts Listing

HARDWARE PAILS			SHIPPED IN PARTS BOX							
	232850	232852	235941	235943	235950	235951	235956	235957	193814	170445
MODEL	3/8" x 1" bolt & nut pail (700)	3/8" x 1-1/ 2" bolt & nut pail (500)	BOLT HFS .375 x 1.0 GR8.2 - BAG 325	BOLT HFS .375 x 1.0 GR8.2 - BAG 50	HEX NUT .375 - BAG 300	HEX NUT .375 - BAG 100	FLAT WASHER .375 - BAG 200	FLAT WASHER .375 - BAG 200	CAULKING - 40' ROLL	CAULKING - 300 ml TUBE
2408	7	1	-	5	1	1	-	2	12	8
2409	8	1	1	1	1	2	-	2	13	8
2410	9	1	1	-	1	1	-	2	14	8
2708	8	1	1	-	1	1	-	2	13	9
2709	9	1	1	3	2	-	-	2	14	9
2710	11	1	-	-	-	-	-	2	16	9
2712	13	1	-	-	-	1	-	2	18	9
3304	4	1	1	1	2	1	-	2	10	11
3305	6	1	-	2	1	1	-	2	11	11
3306	7	1	1	-	2	-	-	2	13	11
3307	9	1	-	-	1	-	-	2	14	11
3308	10	1	-	4	1	2	-	2	16	11
3309	12	1	-	-	-	2	-	2	17	11
3310	13	1	-	2	1	1	-	2	19	11

## 7.9. Parts Identification (Bin) - Parts Box



232735 - Anchor Bracket



235372 – Bottom Angle Sealing Clip



236583 - SSK Shim (6" x 2")



194120 - Grain Gauge



236595 – Shim 7.5 x 3.4 for "F" Profile

### 7.10. Bin Hardware

	3/8" x 1" Flanged Hex Bolt (Washer)	Round	3/8" x 1-1/2" Flanged Hex Bolt (Washer)	3/8" x 2" Flanged Hex Bolt (Washer)	3/8" x 3-3/4" Hex Bolt	3/8" Flanged Lock Nut	3/8" Hex Nut	3/8" Wing Nut	3/8" Flat Washer	3/8" STL/ NEO Sealing Washer	7/16" x 1-1/2" Flanged Hex Bolt (Washer)	7/16" x 1-3/4" Flanged Hex Bolt (Washer)	7/16" Hex Nut	1/2" Flat Washer
BOLT	232850 (700) 235941 (325) 235943 (50)	150594	232852 (500) 235946 (100)	235977 (125)	235949 (10)	235954 (300) 235955 (50)	232850 (700) 232852 (500) 235950 (300) 235951 (100)	154208	235956 (200) 235957 (75)	235975 (100)	232855 (400)	232856 (300)	232855 (400) 232856 (300)	154981
INSIDE ROOF CONNECTOR UPRIGHT to WALL SHEET to OUTSIDE UPRIGHT (DOUBLE NUT)			•			•	•			•				
WALL SHEETS 194679 to 194685, and 194606 to 194607 (0.040" to 0.139")	•						•		• ☆					
WALL SHEET 194608 (0.168")			•				•		•*					
UPRIGHT to WALL SHEETS 194679 to 194685 (0.040" to 0.116")	•						•							
UPRIGHT to WALL SHEETS 194606 to 194608, and 194604 to 194618 (0.126" to 0.168", AND 0.096" LAM to 0.139" LAM)			•				•							
WALL SHEETS 194604 to 194605, and 194616 to 194617 (0.096" LAM to 0.139" LAM)											•		•	••
WALL SHEET 194618 (0.168" LAM) UPRIGHT to WALL SHEET												•	•	••
AT HORIZONTAL SEAMS UPRIGHT TO LAMINATE TO CAP PLATE TO WALL SHEET (FOR BINS WITH BOXED UPRIGHTS ONLY)			•				•							
UPRIGHT to UPRIGHT SPLICE	•						•							
UPRIGHT to LAMINATE	•						•							
UPRIGHT to LAMINATE to BOXED UPRIGHT			•				•							
WALL SHEET to UPRIGHT to LAMINATE to CAP PLATE (FOR BINS WITH BOXED UPRIGHTS)			•				•							
WIND RING CLIP to UPRIGHT			•				•							
WIND RING SPLICE					•		•							
WALL SHEET tO BOTTOM RING ANGLE	•					•	•		•					
DRYING FLOOR FLASHING HOLES in BOTTOM WALL SHEET	•						•							
WALL SHEET to DOOR			•				•		•*					
DOOR TIE-BACK to WALL SHEET	•						•							
AUGER CHUTE HOOD to AUGER DOOR BOARD AUGER CHUTE BLOCK-OFF		•					•							
PLATE to AUGER DOOR BOARD			•				•	•						
BIN WALL to HOPPER ASSEMBLY (15' - 21') BIN WALL to HOPPER			•				•		•					
ASSEMBLY (24' - 33')				•			•		•					

#### Note

Use washers only at wall sheet to bottom ring angle, non-laminated to laminated wall sheet horizontal seam and wall sheet vertical seams to door (non-laminated sheets only; 3/8" bolts).

• Use washers only at wall sheet to bottom ring angle.

### 7.11. Recommended Bolt Assembly

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

Dalt Diameter	Dalt Crade	Bolt Grade Grade Mark		Recommended Torque Capacity					
Bolt Diameter	Boil Grade	Grade Wark	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	<b>₹</b>	1800	150	203				
3/4"	Grade 5	$\Longleftrightarrow$	3230	269	365				

For proper sealing, do not overtighten the wall seam connections. Sealing is not critical on stiffener 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 AGI.

#### **Important**

Do not substitute any other bolts/fasteners for those supplied by the AGI factory.

# 8. Warranty

#### **AGI Grain Bin Products**

Ag Growth International, Inc. ("AGI") warrants that the goods and/or services being supplied (the "Goods") will be free from defects in materials and workmanship under normal conditions, use, service, and maintenance, for a period of twelve (12) months from the date of first operation of the Goods, but in no event more than eighteen (18) months from the date of delivery of the Goods to the end-user (or as otherwise set out in the chart below) (the "Warranty Term"). If the Goods are being used for rental purposes, the Warranty Term for the subject Goods shall be limited to 90 days.

Galvanized Bins	5 Years							
SureTrack	2 Years							
Easyflow2	2 Years							
Fans	3 Years							
Heaters	1 Year							
Side Draw	5 Year							
Transitions	3 Years							
Roof Exhauster	1 Year							
Floors	5 Years							
Catwalk	1 Year							
Bulk Feed Tanks	2 Years							
Hopper Tanks	5 Year							
SeedStor	-K Cones							
Paint	1 Year							
Structural	10 Year							
Commercial	HBB Hopper							
Paint	1 Year							
Structural	10 Year							
Welded Cone(s)								
Paint	1 Year							
Structural	10 Year							
Farm Smoo	thwall Bins							
Paint	1 Year							
Structural	10 Year							
Commercial Sn	noothwall Bins							
Paint	1 Year							
Structural	10 Year							
SMARTStir								
Trolley	1 Year							
Down Auger	1 Year							
Disconnected Box	1 Year							
Grain Spreader	1 Year							
EasyDry A	ccessories							
Plenum	5 Year							
Controls	1 Year							
Blower Heater	1 Year							

Subject to AGI's sole discretion, if the Goods, or a component thereof, are found to have a default in materials and/or workmanship within the Warranty Term, AGI will, at its own option and expense, repair or replace the subject Goods or refund the purchase price for the applicable Goods. Any warranty related expenses incurred on behalf of or by the end-user without the prior written consent of AGI shall be the sole responsibility of the end-user. Expenses relating to travel, customs or import duties and tariffs, equipment rental, and any costs associated with accessing the Goods are the sole responsibility of the customer. Warranty shall be void in the event that the Goods are returned or disposed of without the written consent of AGI.

The customer shall not assert a claim that the Goods are defective unless the customer gives written notice to AGI of such defect within forty-eight (48) hours of discovering such defect. In the event of a warranty claim, the customer must complete any and all information

required by AGI in order to properly assess or investigate the claim. AGI shall be given a reasonable opportunity to inspect and test the Goods in question. Failure by the customer to notify AGI of such claim within 48 hours shall operate as a waiver of any and all such claims by the customer.

THIS IS THE SOLE AND EXCLUSIVE WARRANTY GIVEN BY AGI WITH RESPECT TO THE GOODS AND IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, ARISING BY OPERATION OF LAW OR OTHERWISE, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WHETHER OR NOT THE PURPOSE OR USE HAS BEEN DISCLOSED TO SELLER IN SPECIFICATIONS, DRAWINGS, OR OTHERWISE, AND WHETHER OR NOT AGI'S GOODS ARE SPECIFICALLY DESIGNED AND/OR MANUFACTURED BY AGI FOR BUYER'S USE OR PURPOSE.

This limited warranty extends solely to Goods manufactured by AGI and does not cover any third-party parts, components, or materials. To the extent permitted by the manufacturer, AGI will pass on applicable warranties on third-party parts, components or materials to the end-user. This warranty does not extend to any losses or damages due to misuse, use of a kind and/or to a degree not reasonably expected to be made of the Goods, any use of the Goods which is not an intended use as specified in AGI's published product literature or otherwise specified by AGI in writing, accident, acts of God, abuse, neglect, normal wear and tear (including corrosion and cosmetic issues), any equipment attached to or used in conjunction with the Goods, any field modifications or substitutions to original Goods, component damage incurred during shipping and handling, modification or alteration, used beyond rated capacity, or improper installation, maintenance or application.

THE SOLE AND EXCLUSIVE REMEDY FOR ANY CLAIM HEREUNDER SHALL BE LIMITED TO REPAIR, REPLACEMENT, OR REFUND OF THE PURCHASE PRICE. AGI SHALL NOT BE LIABLE FOR DAMAGES CAUSED BY DELAY IN PERFORMANCE AND IN NOT EVENT, REGARDLESS OF THE FORM OF THE CLAIM OR CAUSE OF ACTION (WHETHER BASED IN CONTRACT, INFRINGEMENT, NEGLIGENCE, STRICT LIABILITY, OTHER TORT OR OTHERWISE), SHALL AGI'S LIABILITY TO BUYER AND/OR ITS CUSTOMERS EXCEED THE PURCHASE PRICE OF THE GOODS. BUYER AGREED THAT IN NO EVENT SHALL AGI'S LIABILITY TO BUYER AND/OR ITS CUSTOMERS EXTEND TO INCLUDE INCIDENTAL, CONSEQUENTIAL, OR PUNITIVE DAMAGES. THE TERM "CONSEQUENTIAL DAMAGES" SHALL INCLUDE, BUT NOT BE LIMITED TO, LOSS OF ANTICIPATED PROFITS, LOSS OF USE, LOSS OF REVENUE, FAILURE TO MEET GOVERNMENT AND/OR ADMINISTRATIVE REQUIREMENTS, CLEAN UP COSTS, COST OF CAPITAL AND DAMAGE OR LOSS TO OTHER GOODS, PROPERTY OR EQUIPMENT.

To the fullest extent permitted by law, Buyer, on behalf of itself, its suppliers, their agents, employees or any entity or person for which Buyer is or may be responsible ("Indemnitors") shall fully indemnify, save and hold AGI, its agents, employees, officers, directors, partners and related entities harmless from and against all liability, damage, loss, claims, demands, actions and expenses of any nature whatsoever, including, but not limited to reasonable attorney's fees which arise out of or are connected with: (a) any negligent act, error or omission by any Indemnitor in the performance of this agreement; (b) the failure of the Indemnitor to comply with the laws, statutes, ordinances or regulations of any governmental or quasi-governmental authority; or (c) the material breach of any term or condition of this agreement by any of the Indemnitors. Without limiting the generality of the foregoing, the indemnity hereinabove set forth shall include all liability, damage, loss, claims, demands, and actions on account of personal injury, death or property loss to any third party, any Indemnitee, any of Indemnitee's employees, agents, licensees or invitees. The indemnity set forth herein shall survive any termination of this agreement.

THIS WARRANTY IS NON-TRANSFERABLE AND APPLIES ONLY TO THE ORIGINAL END-USER AND SHALL BE CONSIDERED VOID IF NOT REGISTERED WITHIN 30 DAYS OF RECEIPT OF THE GOODS BY THE ORIGINAL END USER.

AGI is a leading provider of equipment solutions for agriculture bulk commodities including seed, fertilizer, grain, and feed systems with a growing platform in providing equipment and solutions for food processing facilities. AGI has manufacturing facilities in Canada, the United States, the United Kingdom, Brazil, South Africa, India and Italy and distributes its products globally.



AGI – St. Boniface, 450 Rue Desautels, Winnipeg, MB, R2H 3E6 P 888.937.8335 or 204.233.7133 | E csr.storagewpg@aggrowth.com

AGGROWTH.COM aggrowthintl □ ¥ in f □

©Ag Growth International Inc. 2025 | Printed in Canada

If you have any comments or questions on this manual, or find an error, email us at <a href="mailto:comments@aggrowth.com">comments@aggrowth.com</a>. Please include the part number listed on the cover page in your message.