

SeedStor - K STIFFENED SERIES INSTALLATION AND STORAGE INSTRUCTIONS



**READ THESE INSTRUCTIONS CAREFULLY AND COMPLETELY
BEFORE BEGINNING FOUNDATION OR ASSEMBLY
EFFECTIVE AS OF: June, 2011**

NEW IN THIS MANUAL

- Modified page 13 to show new base plate design

LIMITED WARRANTY

Westeel Division of Vicwest Operating Limited Partnership ("Westeel") warrants products that it has manufactured and/or that are branded with its name (the "goods") subject to the following terms and limitations, (the "warranty"):

1. **Duration of Warranty.** The duration of the warranty is limited as follows:

Galvanized Bins	12 months
EasyCheck	12 months
EasyFlow	24 months
EasyAer	12 months
Floors	12 months
SeedStor-K Cones	
Paint	12 months
Structural	30 months
SeedStor Cones	
Paint	30 months
Structural	10 years
Retro/Econo Cones	
Structural	12 months
Paint	no warranty
Smooth Wall Bins	
Paint	30 months
Structural	10 years

The duration of the warranty will run from the date of purchase from a dealer or distributor authorized by Westeel (the "warranty period").

2. **Limitation of Remedies Replacement.** Within the warranty period, Westeel will replace the goods and/or original manufactured components thereof which are found, to Westeel's satisfaction, to be defective. Westeel is not responsible for direct, indirect, special, consequential, or any other damages of any kind, including personal injury to any individual, howsoever caused, including caused by transportation of the goods for repair or replacement
3. **Procedure for Obtaining Service.** In the event of a warranty claim, the purchaser must complete any and all information required by Westeel in order to properly assess or investigate the claim. Westeel will not be responsible for the removal of any of the goods found to be defective, or transportation charges to and from Westeel's authorized dealer or distributor, or for installation of any replacement goods and/or parts furnished under the warranty.

Limitations as to Scope of Warranty. The warranty does not extend to defects or damage caused, in whole or in part, by:

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

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

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

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

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

7. **Exclusive Warranty.** This warranty is the only warranty provided by Westeel and all other warranties and/or commitments, whether express or implied and no matter by whom made, statutory or otherwise, are subsumed and replaced by it and are of no legal effect. If any provision of the warranty is held by a court of competent jurisdiction to be void or unenforceable, in whole or in part, such provision shall be deemed severable and will not affect or impair the legal validity of any other provision of the warranty.

DISCLAIMERS

Foundation Design

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



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

Method of Erection

The recommendations for erecting Westeel Grain Bins should be closely followed to achieve the full strength of the bin and to achieve adequate weather sealing. Warranty is void if the recommendations are not followed including but not limited to:

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

If using Bin Jacks: Always lift on an upright. Choose a hoist with a suitable capacity for the expected empty bin deadload. Make sure the rated capacity of the hoist is not exceeded.

Design

These Westeel Grain Bins are designed for:

1. Non-corrosive, free-flowing materials up to 55 lbs/ft³ (880 kg/m³) average compacted bulk density.
2. Maximum horizontal gusted wind speed of 94 mph (151 km/h).
3. Seismic zone 2a (U.B.C. 1997).
4. 15.0 lbs/ft² (.72 kPa) roof snow load.
24.0 lbs/ft² (1.15 kPa) roof snow load when the optional roof stiffening rings are installed.
5. 4000 lbs. (17.8 kN) evenly distributed on peak ring for 15' – 24' bins.
5000 lbs. (22.2 kN) evenly distributed on peak ring for 27' – 48' bins.

Site and Assembly

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

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

Critical Assembly Requirements

1. Local code and jurisdictional requirements that are applicable to the grain bin installation must be adhered to.
2. Foundations must be designed for the loads being imparted to them, and for local soil conditions. Westeel foundation guidelines are for a set of stated conditions and may not be applicable to local conditions.
3. A foundation must provide uniform and level support to the grain bin structure being supported. Surface imperfections causing gapping must be remedied. This may involve, but not be limited to - grouting under the bottom ring of a non-stiffened bin, and shimming under the uprights of a stiffened bin or under the legs of a hopper.
4. If extending an existing bin, ensure that the foundation is adequate for the increased loads that will be subjected to it.
5. If installing an existing bin on a hopper, ensure that 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, ensure that they are supported.
6. Ensure that the proper hardware is utilized for all bolted connections. Refer to the 'Hardware "Where Used" Chart' in the Installation Manual. If a shortage occurs do not substitute. Take the necessary steps to obtain the proper hardware. Ensure nuts are tightened to the required torque values as provided in the Installation Manual.
7. Refer to the appropriate Installation Manual to ensure a safe, proper structure, in particular but not exclusively for the wall sheet and upright layouts. **Do not deviate from the layouts provided.**
8. Ensure that an integral end-to-end connection exists between mating uprights. Successive uprights must not overlap.

9. 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 bin sheet holes.
10. When installing roof stiffening rings, and 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.
11. Before anchoring the bin to the foundation, ensure that the bin is round. The maximum variation from perfect roundness is 3/4" on the radius (see details in "wall sheet and bottom angle " section of manual). Locate anchor bolts towards the outside of the anchor bolt holes (away from bin) to permit the incremental expansion that can occur with the initial filling.

Grain Bin Use

1. 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.
2. 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.
3. 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.
4. Ensure that the inner door panels of grain bin doors are completely closed and latched before filling the grain bin.
5. Never enter a loaded grain bin for any reason. Grain can be a killer.

Product Storage

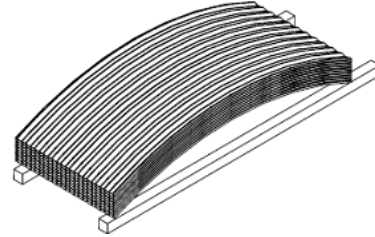
Rust on Galvanized Parts

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

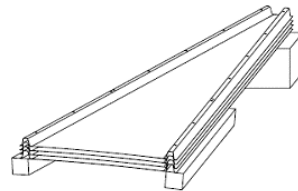
4. If moisture is left on parts, this white rust can become more aggressive and turn into red rust. Red rust can cause degradation in the material and become a structural concern. Any parts that have red rust should be replaced immediately.

Storage Guidelines

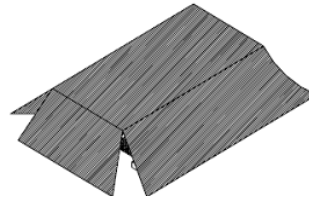
1. Keep all bundles dry before assembly of the bin. Start assembly as soon as possible. Do not lay bundles on the bare ground, raise all bundles 6" – 8" off the ground on wood blocks or timbers. Store curved wall sheets 'hump-up'. All other bundles material should be placed so that they are well sloped to promote good drainage.



2. Roof sheets must be elevated at least 12" at the small end of the sheets.



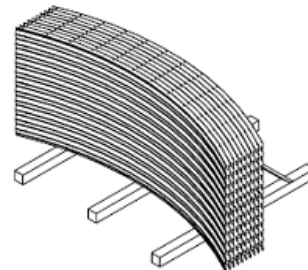
3. Temporary storage can be provided by erecting a simple framework supporting a waterproof tarp.



4. All bin boxes, ladder boxes and hardware boxes should be stored inside. These are not waterproof, and will deteriorate in normal weather conditions, allowing moisture to contact the parts inside.

If Parts Become Wet

1. If goods become submerged or wet, the bundles should be opened as soon as possible, sheets or material separated and dried. Keep separated until assembly. Brace goods properly so as to avoid damage or injury from material falling when in storage.



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

IMPORTANT NOTES

1. 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.
2. To keep an even pressure on walls, the bin must always be unloaded from the centre.
3. Contact local power officials for minimum power line clearance.
4. See "Disclaimers - Design" for materials which can be stored.
5. Tighten all bolts to the recommended torque setting (see Recommended Bolt Torques table in Appendix).
6. Do not locate grain bin 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.

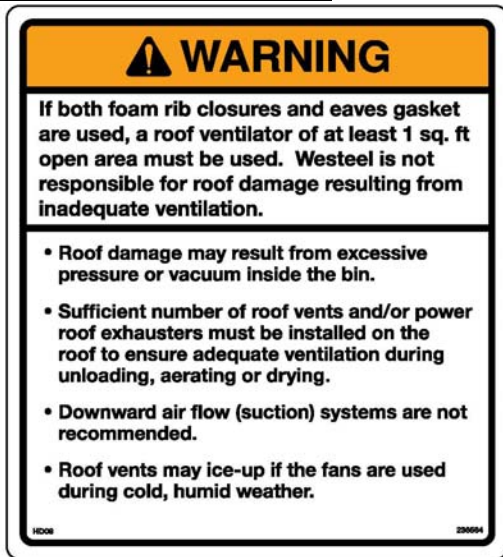
Shortages and Damaged Parts:

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

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 instructions supplied with optional equipment.

List of Warning Decals:



236564



236088

Consistent with Westeel Limited's policy of continued research and development of our products, we reserve the right to modify or change information contained in this publication without notice.

Instructions For cutting Openings in Westeel Wide Corr Grain Bins

A. General Rules for Cutting openings

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

B. 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.

C. 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;

D. Openings for Roof Vents in Roof Sheets

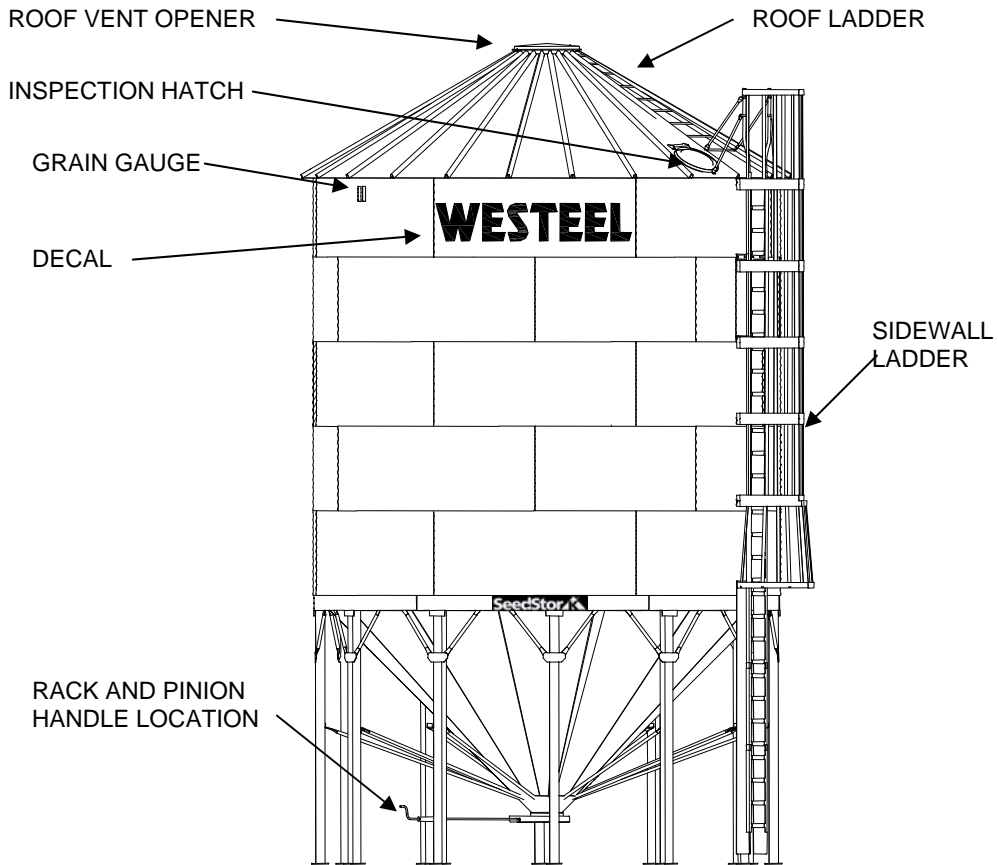
1. Openings shall be centered between roof ribs and have 2.5" minimum distance between edge of opening and base of a roof rib;
2. Openings can be square, rectangular, or round;
3. Openings shall be the same size as the inlet opening of a vent being installed;
4. Any side of a square/rectangular opening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

IMPORTANT NOTES

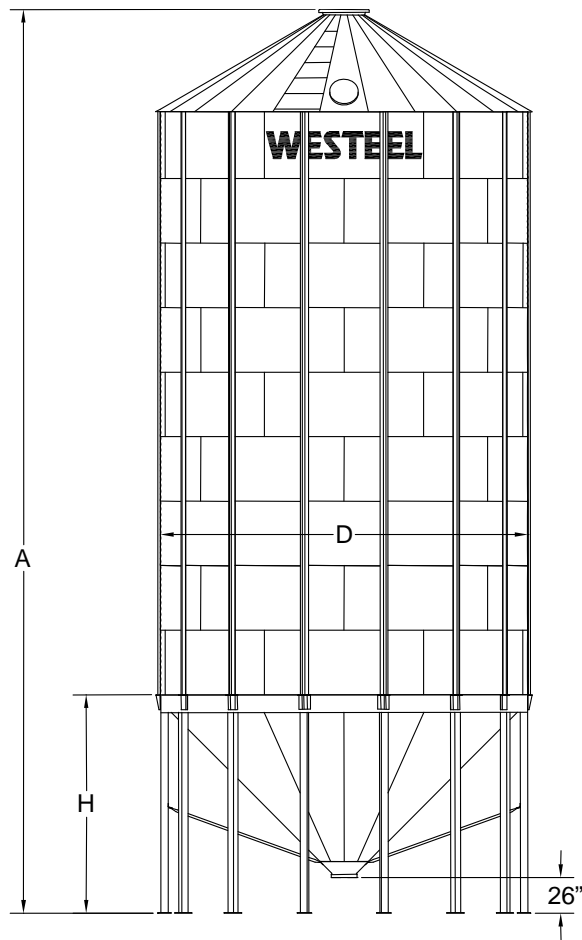
LAYOUT TIPS

Before beginning assembly, please review the following suggestions to help in locating and positioning your Seed-Stor K bin. For reference, the Westeel and Seed-Stor K logos should be the front face of the bin.

This manual outlines the step-by-step method of installation of the hopper for the wall sheet layouts please refer to the Centurion - W & H manual and other assembly instructions.



BIN SPECIFICATIONS



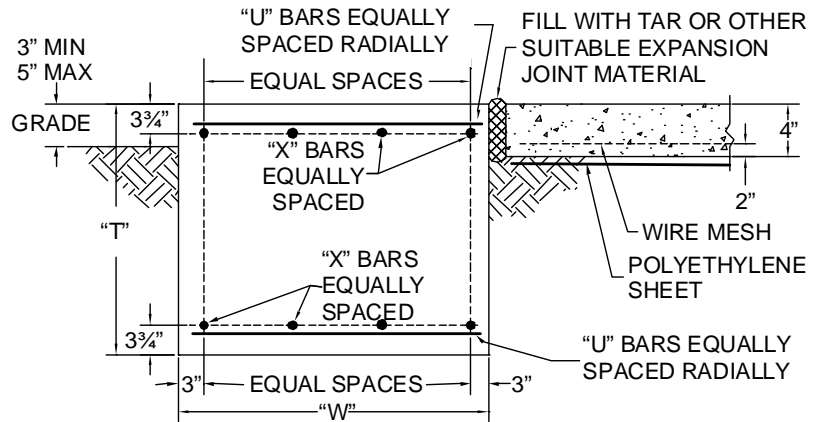
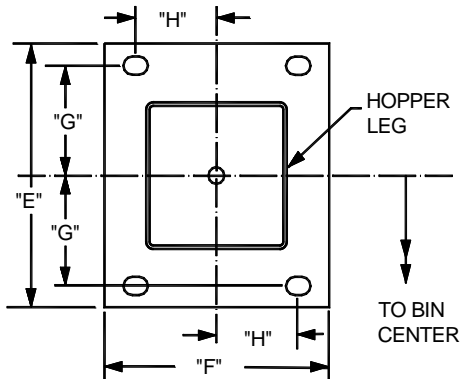
BIN MODEL	NUMBER OF TIERS	CAPACITY			DIMENSION						BIN AND HOPPER WEIGHT	
					A		H		D			
		⁽²⁾ bu	ft ³	⁽³⁾ tonne	ft-in	m	ft-in	m	ft-in	lb	kg	
1507	7	4370	5192	118.6	38' 10"	11.87	9' 3"	2.81	14' 11"	6450	2930	
1508	8	4911	5833	133.3	42' 6"	12.96	9' 3"	2.81	14' 11"	6840	3110	
1509	9	5452	6474	147.9	46' 2"	14.07	9' 3"	2.81	14' 11"	7430	3380	
1510	10	5993	7115	162.6	49' 10"	15.19	9' 3"	2.81	14' 11"	7960	3620	
1807	7	6458	7674	175.2	41' 5"	12.55	10' 8"	3.26	17' 11"	8180	3720	
1808	8	7237	8597	196.4	44' 10"	13.66	10' 8"	3.26	17' 11"	8850	4020	
1809	9	8016	9521	217.5	48' 6"	14.78	10' 8"	3.26	17' 11"	9350	4250	
1810	10	8795	10444	238.6	52' 2"	15.90	10' 8"	3.26	17' 11"	9990	4540	
2107	7	9013	10715	244.6	43' 6"	13.26	12' 2"	3.71	20' 11"	11350	5160	
2108	8	10073	11972	273.3	47' 2"	14.38	12' 2"	3.71	20' 11"	12130	5510	
2109	9	11134	13228	302.1	50' 10"	15.50	12' 2"	3.71	20' 11"	12820	5830	
2110	10	12194	14485	330.9	54' 6"	16.62	12' 2"	3.71	20' 11"	13670	6210	
2407	7	11822	14060	320.8	44' 2"	13.46	12' 0"	3.65	23' 11"	13430	6100	
2408	8	13207	15702	358.4	47' 10"	14.58	12' 0"	3.65	23' 11"	14440	6560	
2409	9	14592	17343	395.9	51' 6"	15.70	12' 0"	3.65	23' 11"	15410	7000	
2410	10	15977	18984	433.5	55' 2"	16.82	12' 0"	3.65	23' 11"	16470	7490	
2706	6	13540	16117	367.4	42' 7"	12.99	13' 3"	4.03	26' 11"	15930	7240	
2707	7	15293	18195	415.0	46' 3"	14.11	13' 3"	4.03	26' 11"	16940	7700	
2708	8	17046	20272	462.5	49' 11"	15.23	13' 3"	4.03	26' 11"	17640	8020	
2709	9	18798	22349	510.1	53' 7"	16.34	13' 3"	4.03	26' 11"	19000	8640	

1. Capacities shown include 30° roof slope
2. Based on 1.244 cu. ft. per bushel and 5% compaction in cylinder and cone
3. Based on 770 kg/m³ and 5% compaction in cylinder and cone
4. Cones slopes are 45° for the 15', 18' & 21' and 40° for the 24' & 27'

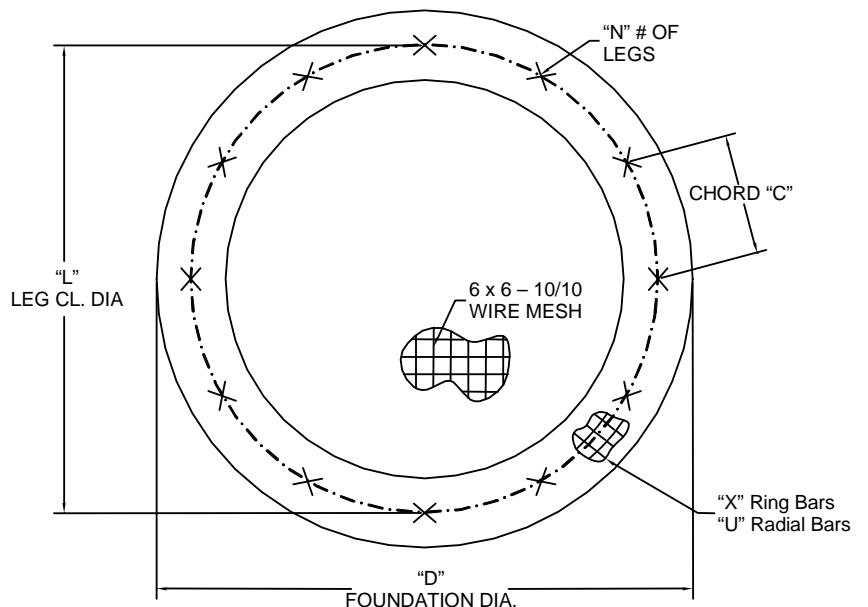
SEEDSTOR K FOUNDATION SPECIFICATIONS

To ensure safe installation, your SEEDSTOR K **must** be permanently mounted on a properly prepared concrete foundation. These instructions are dependent on minimum soil properties and a properly prepared base (as identified below).

1. Select a location with good drainage. Remove all loose, black (organic), or wet soil. The soil bearing capacity must be minimum 3500 psf (170 kPa). If the soil bearing capacity is not known, consult a local engineering representative familiar with local soil conditions.
2. Excavate 8" to 12" under the slab and footing, and replace with well compacted granular fill.
3. Reinforce and pour foundation as per the tables and diagrams below. Ensure that foundation is level. Camber the outside edge for drainage. Use high-strength Sulphate-Resistant concrete - 3000 psi (21 MPA) minimum. Allow concrete to cure well before filling your bin - a minimum of 21 days is recommended to allow concrete to reach at least 75% strength.
4. Reinforcing bar shall conform to Grade 60 as called for in the following ASTM A615, A616, and A617.
5. Rebar laps should be 40 bar diameters. Bottom rebar should be lapped under midspan between bin legs. Top rebar should be lapped under bin legs.
6. Concrete to be level within 1/4" (6mm) in 4' (1220mm).
7. Place hopper on foundation and mount using 4 - 1/2" **anchor bolts per leg**. Ensure anchor bolts are rated for a load capacity of 7280 lbs. with a 4" (100 mm) minimum imbedment. Legs **must** be shimmed so that all legs are supported by the pad.



FOOTPLATE DIMENSIONS				
Bin Diam	"E"	"F"	"G"	"H"
15'	9.0"	8.0"	3.5"	3.0"
18'	9.0"	8.0"	3.5"	3.0"
21'	10.0"	9.5"	4.0"	3.5"
24'	10.0"	9.5"	4.0"	3.5"
27'	10.0"	9.5"	4.0"	3.5"



Model	# of Legs	Fdn Dia "D" (inches)	Leg Ctr Diam "L" (inches)	Chord "C" (inches)	Concrete Depth "T" (inches)	Width "W" (inches)	Ring Rebar "X" ***	Radial Rebar "U" ***
1507	10	200	172.8	53.4	24	28	4 - #5	50 - #5
1508	10	202	172.8	53.4	24	30	5 - #5	50 - #5
1509	10	206	172.8	53.4	24	34	5 - #5	50 - #5
1510	10	212	172.8	53.4	24	40	6 - #5	50 - #5
1807	12	244	208.5	54.0	24	36	6 - #5	60 - #5
1808	12	246	208.5	54.0	24	38	6 - #5	60 - #5
1809	12	250	208.5	54.0	24	42	6 - #5	60 - #5
1810	12	254	208.5	54.0	24	46	7 - #5	60 - #5
2107	14	291	243.0	54.1	18	48	6 - #5	69 - #5
2108	14	291	243.0	54.1	18	48	6 - #5	69 - #5
2109	14	295	243.0	54.1	18	52	6 - #5	69 - #5
2110	14	299	243.0	54.1	18	56	6 - #5	69 - #5
2407	16	330	278.6	54.3	18	52	6 - #5	79 - #5
2408	16	334	278.6	54.3	18	56	6 - #5	79 - #5
2409	16	338	278.6	54.3	18	60	7 - #5	79 - #5
2410	16	344	278.6	54.3	18	66	7 - #5	79 - #5
2707	18	370	314.3	54.6	18	56	6 - #5	89 - #5
2708	18	376	314.3	54.6	18	62	7 - #5	89 - #5
2709	18	382	314.3	54.6	18	68	8 - #5	89 - #5

*** quantities indicated must be doubled for top and bottom installation

The following table shows the concrete volume requirements of the foundations provided.

Model	Concrete in Footing (cu yds)	Concrete in slab (cu yds)	Total Concrete (cu yds)
1507	7.8	1.4	9.2
1508	8.3	1.4	9.7
1509	9.5	1.3	10.7
1510	11.1	1.2	12.3
1807	12.1	2.0	14.1
1808	12.8	1.9	14.7
1809	14.1	1.9	16.0
1810	15.5	1.8	17.2
2107	14.1	2.5	16.6
2108	14.1	2.5	16.6
2109	15.3	2.4	17.7
2110	16.4	2.3	18.8
2407	17.5	3.4	21.0
2408	18.9	3.3	22.2
2409	20.2	3.2	23.4
2410	22.2	3.0	25.3
2707	21.3	4.5	25.8
2708	23.6	4.3	27.9
2709	25.9	4.1	30.0

If consulting an engineer for foundation design, use the following table for load information.

IMPERIAL												
non factored loads in kips ('000 pounds) per leg												
Bin Model	1507	1508	1509	1510	1807	1808	1809	1810	2107	2108	2109	2110
Number of legs	10	10	10	10	12	12	12	12	14	14	14	14
Vertical dead load	0.6	0.7	0.7	0.8	0.7	0.7	0.8	0.8	0.8	0.9	0.9	1.0
Vertical grain load	28.4	32.0	35.5	39.0	35.1	39.3	43.5	47.7	42.0	46.9	51.9	56.8
Peak load	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3
Qty of anchor bolts required	40	40	40	40	48	48	48	48	56	56	56	56

Bin Model	2407	2408	2409	2410	2706	2707	2708	2709
Number of legs	16	16	16	16	18	18	18	18
Vertical dead load	0.8	0.9	1.0	1.0	0.9	0.9	1.0	1.1
Vertical grain load	49.2	54.8	60.5	66.1	49.2	55.5	61.9	68.2
Peak load	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Qty of anchor bolts required	64	64	64	64	72	72	72	72

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 Westeel suggests the use of 3/8" x 3" embedment anchor bolts through the bottom ring angle to insure bin roundness, for sealing purposes, and for additional localized lateral stability.

HOPPER PARTS LIST

Before assembly of the hopper cone ensure all parts are present and assembly instructions are followed as outlined in this manual. Failure to follow these instructions will compromise the strength of your hopper and may void the warranty.

HOPPER CONE PARTS LIST

DESCRIPTION	QUANTITY FOR SSK HOPPER CONE BY DIAMETER									
	15'	Part No	18'	Part No	21'	Part No	24'	Part No	27'	Part No
Ring Beam Assembly	5	237131	6	237141	7	237151	8	237161	9	237171
Leg Assembly	10	237104	12	237114	14	237154	16	237164	18	237174
Hopper Sheet (14g)*	10	237136	12	237146	14	237156	16	237166	18	237176
Hopper Sheet (14g)*									18	237177
Hopper Sheet (12g)*					14	237157	16	237167	18	237178
Hopper Sheet (12g)*									18	237179
Hopper to Leg Brace	10	237107	12	237117	14	237127	16	237127	18	237127
Cone Adapter	1	236394	1	236395	1	236396	1	237168	1	236409
Hardware Box	1	237233	1	237234	1	237235	1	237236	1	237237

* either 14g hopper sheets or 12g hopper sheets are provided depending on the style of bin/hopper combination ordered

PARTS BOX LIST

DESCRIPTION	PART NO	15'	18'	21'	24'	27'
		237233	237234	237235	237236	237237
Hex Bolt - 3/4" x 2"	150038	42	50	59	67	76
Hex Nut - 3/4"	150041	42	50	59	67	76
Hex Bolt – 1/2" x 1 1/2"	193782	33	38	44	67	76
Hex Bolt – 1/2" x 1 3/4"	150530	126	151	176		
Hex Bolt – 1/2" x 2"	150531				201	227
Hex Flange Nut – 1/2"	154201	159	189	220	268	303
Caulking – 40' Roll	193814	4	5	7	8	11
Manual – Seed Stor -K Stiffened Series	198937	1	1	1	1	1
Rnd Head Fin Neck Bolt 3/8" x 1" (Bag of 300)	235938	2	2	3	5	6
Rnd Head Fin Neck Bolt 3/8" x 1" (Bag of 200)	235939		1	1		2
Hex Flange Nut – 3/8" (Bag of 300)	235954	2	2	3	5	7
Hex Flange Nut – 3/8" (Bag of 50)	235955		4	4		2
Seam Cover (45 degree)	237185	5	6	7		
Seam Cover (40 degree)	237205				8	9
Leg to Beam Brace	236604	20	24	28	32	36
Inner Fish Plate	237186	5	6	7	8	9
Outer Fish Plate	237187	5	6	7	8	9
Upright Support Assembly – 5" Leg	237197	10	12			
Upright Support Assembly – 6" Leg	237207			14	16	18

UNLOAD OPTIONS

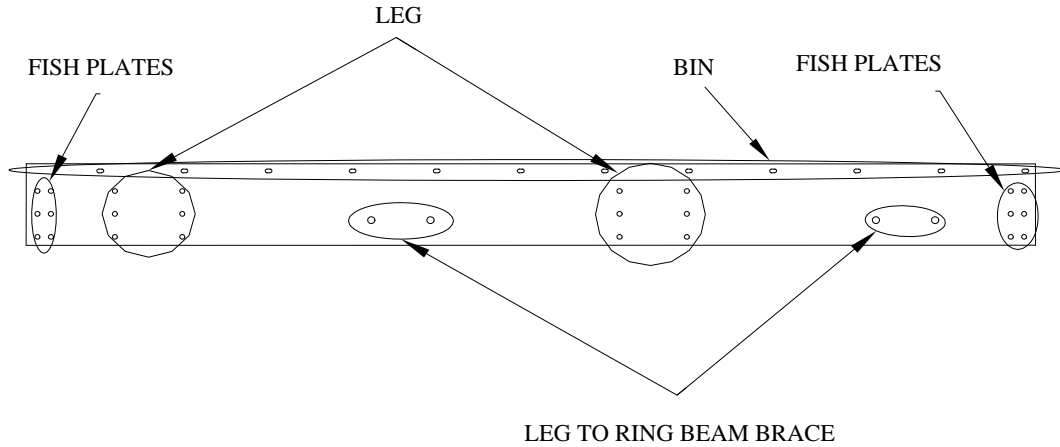
	15'	18'	21'	24'	27'
Rack & Pinion Slide Gate Packages	236302	236303	236304	236307	236308
Auger Boot Assembly	236454 (used with above rack and pinion packages)				
Commercial Slide Gate Adapter	236431				
Flex Auger Systems (by others)	No adapter required				

SeedStor K Stiffened Series Assembly Instructions

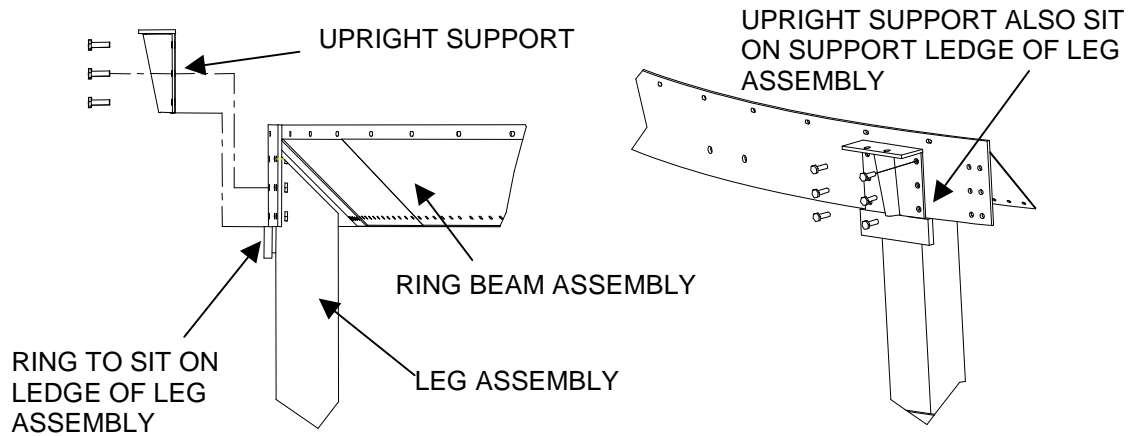
For best results do not tighten the nuts and bolts until the assembly is complete. See “Hardware Usage” chart for explanation of hardware sizes and where used.

The following is one assembly method. Other methods are equally acceptable depending on equipment and manpower availability. It is recommended that some form of overhead lifting capability be used when assembling the various hopper components.

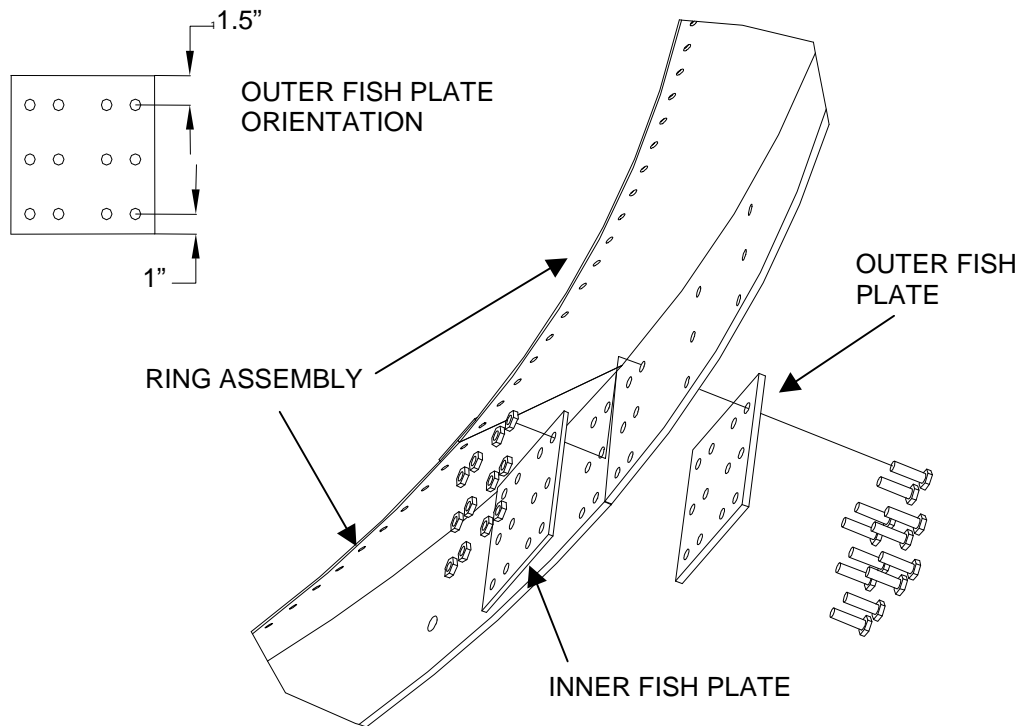
- 1. Connection of Legs to Ring Beam:** The ring beam segments have holes punched for the attachment of legs, braces, the interconnection of ring beams using fish plates and for the connection of the hopper to the bin. The following illustrates these hole locations.



Attach two leg assemblies and two upright supports to a ring beam segment as shown. Both the ring beam and the upright support sit on the supporting ledge of the leg assembly. Secure using $\frac{1}{2}$ " x $1 \frac{3}{4}$ " bolts for 15', 18' & 21' hoppers ($\frac{1}{2}$ " x 2" bolts for 24' and 27' hoppers) and $\frac{1}{2}$ " flanged nuts. Repeat with the remaining upright supports, leg and ring beam segments.

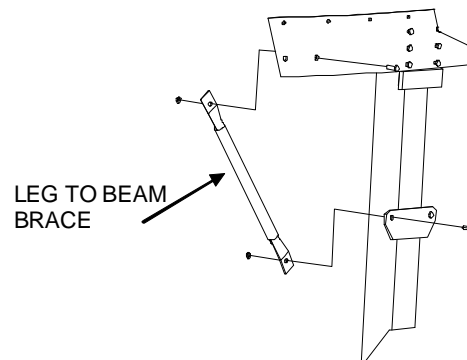


- 2. Connection of Mating Ring Beams:** The leg/ring beam assemblies are joined together using fish plates. An inner and an outer fish plate are required at each connection. The orientation for the outer fish plate is shown. The extended lip on the top of the outer fish plate serves as a bin stop when lowering the bin onto the hopper.



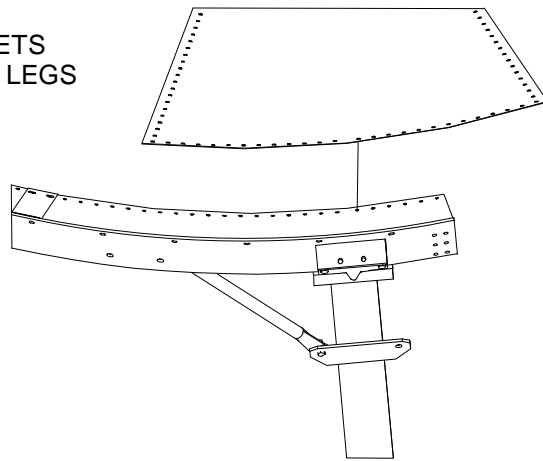
Rotate one of the leg/ring beam assemblies into position and support it so that it does not fall down. Rotate a second leg/ring beam assembly into position and position next to the first. Secure using the fish plates and $\frac{1}{2}$ " x $1\frac{3}{4}$ " bolts for 15', 18' & 21' hoppers ($\frac{1}{2}$ " x 2" bolts for 24' and 27' hoppers) and $\frac{1}{2}$ " flanged nuts. Repeat at the other locations until the circle is completed. Endeavor to keep the circle as round and uniform as possible.

- 3. Leg to Ring Beam Braces:** Secure the shorter braces, running from the leg to the ring beam, using $\frac{3}{4}$ " x 2" bolts and nuts as shown. There are two braces per leg. The braces are placed on the inside of the ring beam and the leg mounting bracket. Most braces can be attached when assembling the leg/ring beam assemblies.

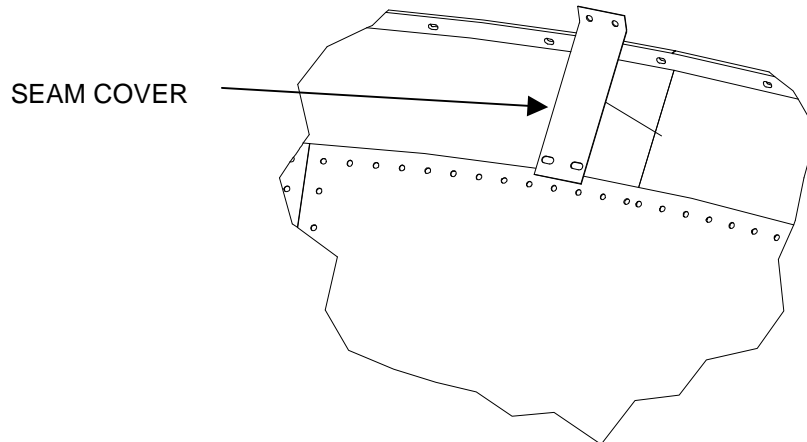


- 4. Hopper Sheets:** The upper portion of the hopper sheets are designed to rest on top of the angled skirts on the ring beam segments. The hole orientation is such that the vertical hopper seams line up at the mid-point between two legs. The holes are punched such that there is only one correct position possible. Attach the hopper sheets using the round headed 3/8" x 1" bolts provided. The round heads go on the inside of the hopper for improved clean out. Do not fill the bottom holes of the respective hopper seams at this time. Sufficient caulking is provided to caulk all sides of the hopper sheets. At the location where two ring beam segments meet, bolt on seam covers (see Step 5). The 27' diameter hopper has upper and lower hopper segments. Bolt on the upper hopper sheets first and then bolt on the lower ring. The lower sheets bolt on the outside of the upper sheets.

CENTER OF
HOPPER SHEETS
LINE UP WITH LEGS

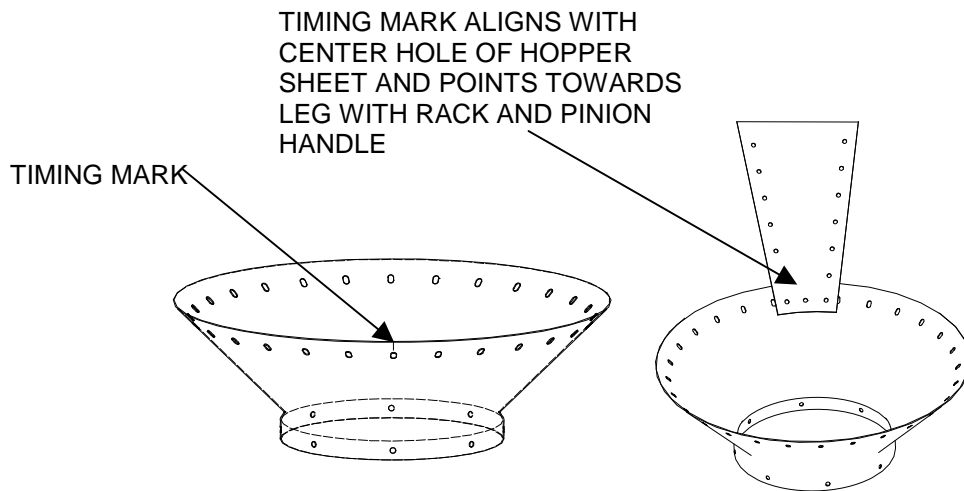


- 5. Seam Covers:** The seam covers are bolted over the gap between mating ring beam segments. They go on top of the hopper sheets. Caulk underneath the seam covers.

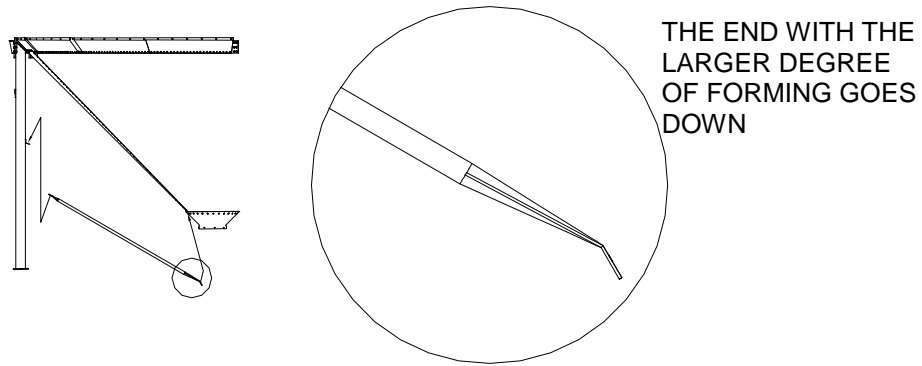


- 6. Transition Cone:** Bolt on the transition cone using the 3/8" x 1" round headed bolts. If utilizing the rack and pinion shut off, the timing of the transition cone to the rest of the hopper must be considered at this time. There is a timing mark on the outside top edge of the transition cone. The slotted hole beneath this mark must be lined up with the hole at the bottom of the hopper cone that is between the vertical seams, and that points toward the leg that the rack and pinion will be mounted to.

(Note: If a 16" auger boot kit (236454) is being attached to the rack and pinion shut-off, the auger opening will point directly towards a leg for the 18' and 24' diameter sizes. Interference of the auger with the leg can be avoided by spinning the rack and pinion shut-off within the transition cone such that the rack and pinion handle attaches to the other side of the leg. Once the correct position is obtained, eight new holes will need to be drilled through the bottom flange on the transition cone to support the rack and pinion shut-off.)

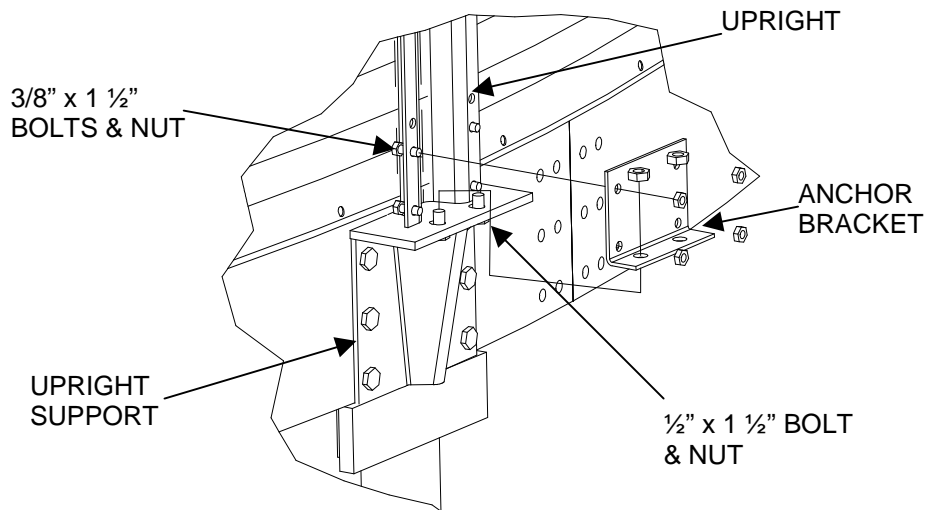


- 7. Leg to Hopper Braces:** The leg to hopper braces run from the tabs on the inside of the leg down to the hopper. On the 15', 18' and 21' diameters, the lower end of the brace is bolted at the transition cone seam, at the hole midway between the hopper seams. On the 24' and 27' diameters, the brace terminates at a hole farther up on the hopper sheets. The end of the brace that is formed to a greater angle goes towards the transition cone. On the 15', 18' and 21' diameters use a 1/2" x 1 1/2" bolt and nut at the leg end of the brace, and a 3/8" x 1" round headed bolt at the cone end. On the 24' and 27' diameters use a 1/2" x 1 1/2" bolt and nut at both ends of the brace. It may be necessary to move the legs in or out slightly to make this connection.



8. Secure Hopper to Foundation: If the bolted hopper connections have not been tightened, do so at this time. Also secure the hopper to the foundation as instructed in the Foundation Specifications.

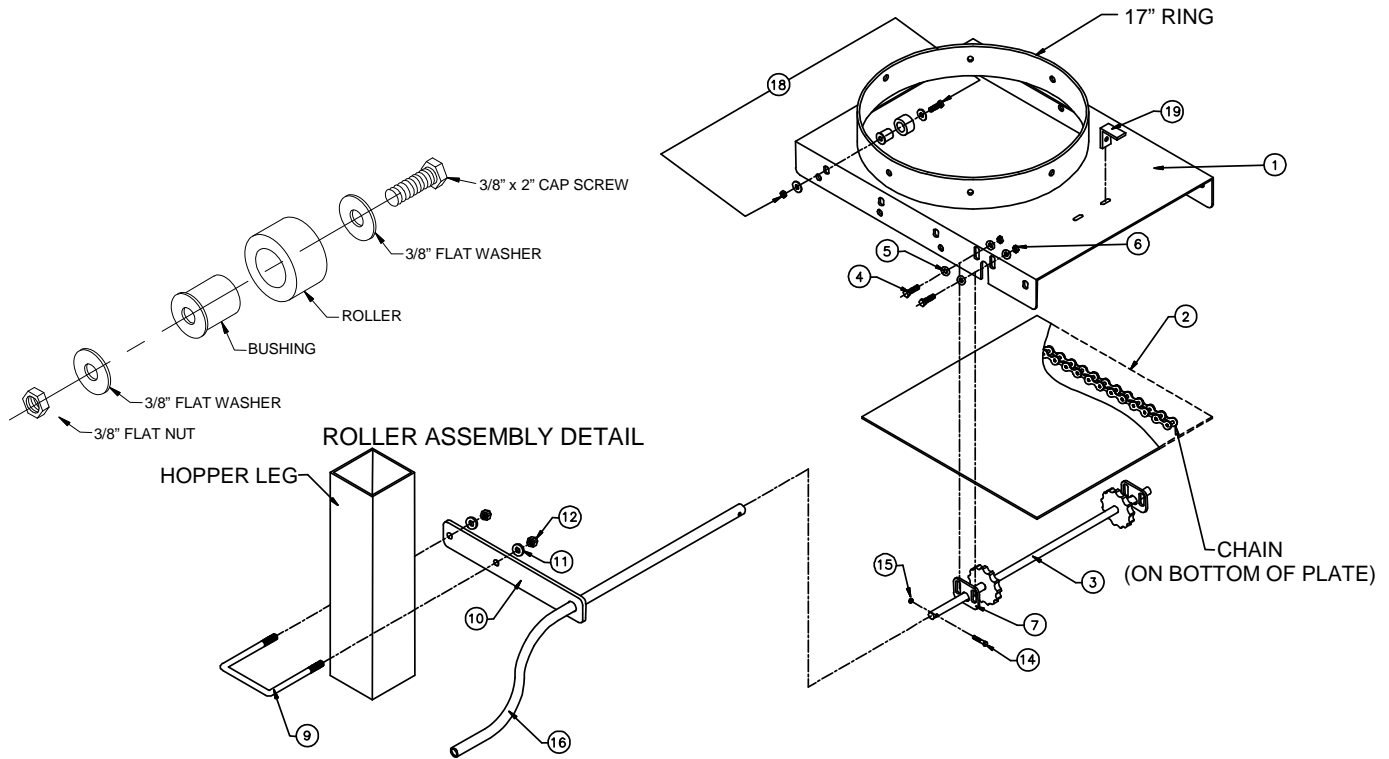
9. Bin Installation: Position the bin on the hopper such that the uprights are located squarely over the upright supports on the hopper. If necessary to fill a gap underneath the uprights use the shims (236583) provided with the bin. The wall sheets of the bin are bolted to the ring beam using 3/8" x 1 1/2" bolts, 3/8" flat washers and 3/8" nuts provided with the bin. The anchor brackets (236584) provided with the bin are secured to the uprights using bin hardware, and to the upright supports using 1/2" x 1 1/2" bolts and nuts provided.



RACK & PINION SLIDE GATE ASSEMBLY

The rack & pinion gate requires field installation. The following procedure is recommended. Refer to the rack & pinion assembly diagram for clarification as to proper orientation of parts.

1. Turn the shut-off mount (1) upside down and rest it on a flat surface. Place the sliding plate (2) inside the shut-off mount, chain side up and all the way to the flanged end, so that it completely covers the 17" opening.
2. Fasten the roller assemblies (18) to the shut-off mount (1) in the 7/16" x 3/4" slots as shown (8 places). When installing the two roller assemblies near the open end of the shut-off mount, slide the plate underneath the slots to correctly set the roller height. Adjust the roller assemblies so that when the assembly is turned right side up (as shown in diagram) the sliding plate is flush to the shut-off mount yet slides back and forth freely.
3. Position the gear assembly (3) so that it engages the sprocket teeth into the chain. When positioning the gear assembly, ensure that it remains square to the chains and that the two gear teeth are straddling a chain roller. Once the gear assembly is positioned tighten the mounting tabs (7). Check that the slide plate moves freely and is not binding on the gear assembly. If the slide plate is sticking, back the gear assembly slightly away from the chain and retighten.

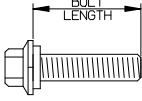


4. In order for the handle to line up with the hopper leg the slide gate assembly must be correctly positioned when being attached to the hopper cone adapter. Find the hole on the 17" ring that points in the same direction as the gear shaft. Line up this hole with the marked hole on the hopper cone adapter. Attach with 3/8" x 1" bolts and washers. Attach the U-bolt (9) to the hopper leg that the gear shaft points to. Position the U-bolt around the leg and through the handle support (10) such that the handle hole lines up with the gear shaft. Snug up the U-bolt nuts to hold handle support in place.
5. Slide the handle (16) through the hole on the support bracket and mate to the gear shaft. Secure with a 5/16 x 1 1/2" bolt (14).
6. Make any necessary height adjustments of the handle support on the leg to ensure the handle is horizontal. Ensure all bolts have been tightened.

Note:

There are two slots on the top surface of the shut-off mount (1), which accept the locking tab (19). When the rack and pinion gate is closed, drop the locking tab through either of the holes as shown. A standard padlock (not supplied) can be inserted through the hole in the locking tab.

HARDWARE USAGE

SEED-STOR K (stiffened) 	150038	150041	150531	150530	193782	154201	150594	154193	193797	154977	193805
	¾" x 2" bolt	¾" hex nut	½" x 2" bolt	½" x 1¾" bolt	½" x 1½" bolt	½" hex flange nut	3/8" x 1" round head bolt	3/8" hex flange nut	3/8" X 1 ½ " bolt c/w washer	3/8" flat washer	3/8" hex nut
LEG TO RING BEAM (15', 18', 21')				•		•					
LEG TO RING BEAM (24', 27')			•			•					
LEG TO RING BEAM BRACE	•	•									
HOPPER TO LEG BRACE (leg end) (15', 18', 21')					•	•					
HOPPER TO LEG BRACE (hopper end) (15', 18', 21")							•	•			
HOPPER TO LEG BRACE (both ends) (24', 27')					•	•					
INNER & OUTER FISH PLATES (15', 18', 21')				•		•					
INNER & OUTER FISH PLATES (24', 27')			•			•					
HOPPER SHEET TO RING BEAM							•	•			
HOPPER SHEET CONNECTIONS							•	•			
HOPPER TO TRANSITION CONE							•	•			
BIN TO HOPPER									*	*	*
UPRIGHT SUPPORT TO ANCHOR BRACKET					•	•					
ANCHOR BRACKET TO UPRIGHT									*		*

* supplied with bin hardware



IMPORTANT




CHECK TO MAKE SURE THAT YOU OR YOUR ERECTOR HAVE APPLIED PROPER TORQUE TO THE BIN BOLTS AND USED THE RECOMMENDED ASSEMBLY PROCEDURE.



IMPORTANT

Avoid bin erection at temperatures below –10°C (14°F) if possible. Erection at low temperatures does not ensure strong and well-sealed connections.

RECOMMENDED BOLT TORQUE

BOLT DIAMETER	BOLT GRADE	GRADE MARK	RECOMMENDED TORQUE		
			in-lb	ft-lb	N-m
3/8"	Grade 8.2		200	16.7	23.1
½"	Grade 8.2		900	75.1	102.0
¾"	Grade 5		1080	90	122.0

Periodically check bolt assembly with an accurate torque wrench to ensure that the torque specifications shown above are being maintained. A properly tightened bolt will compress the sealing washer noticeably. Hold bolt head securely when tightening the nut to prevent damage to the sealing washer. ***Always tighten the nut, not the bolt.*** Do not substitute bolts in place of those supplied by Westeel. Improper tightening can damage the wall sheets and result in sealing or structural problems.

WESTEEL

450 Desautels, P.O. Box 792
Winnipeg, Manitoba CANADA R3C 2N5
Phone: 204-233-7133 Fax: 204-235-0796
www.westeel.com