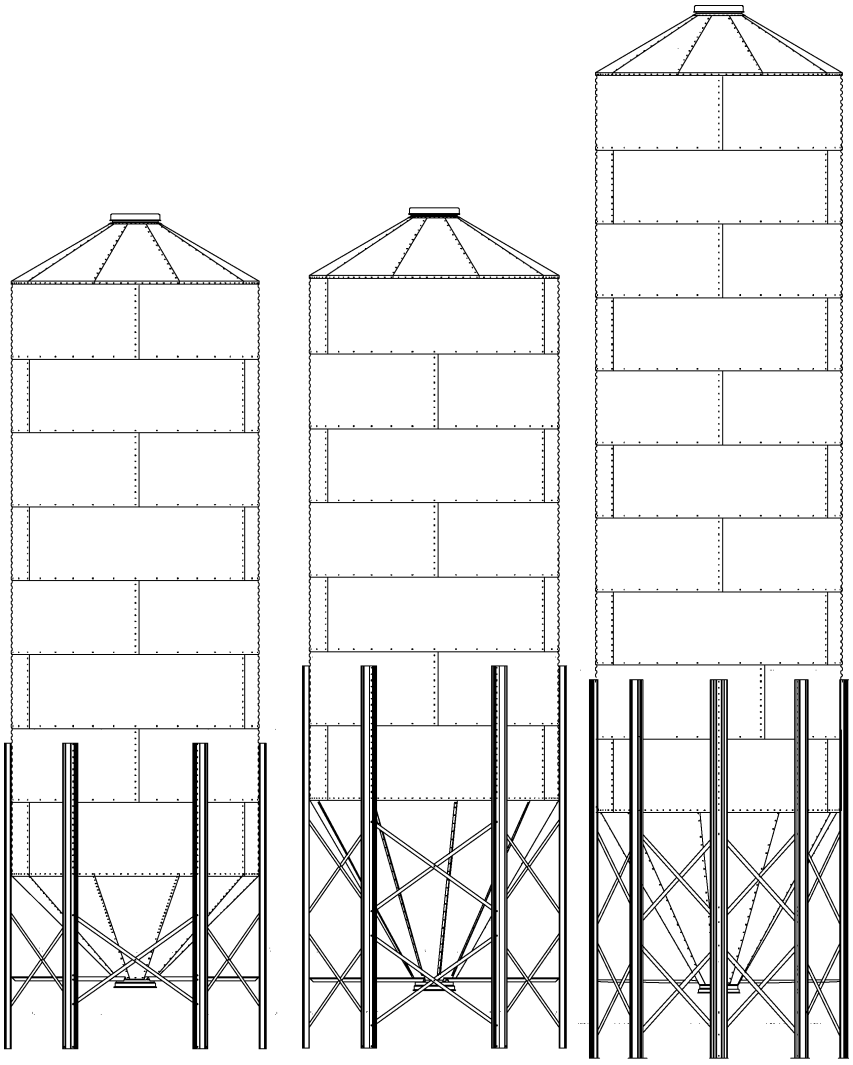

6', 7' and 9' Tall BFT Series and GHT Series

Assembly Manual

PNEG-1912

Date: 01-29-13

GSI GROUP

PNEG-1912

All information, illustrations, photos and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

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READ THIS MANUAL carefully to learn how to properly use and install equipment. Failure to do so could result in personal injury or equipment damage.

INSPECT the shipment immediately upon arrival. The customer is responsible for ensuring that all quantities are correct. The customer should report and note any damage or shortage on the bill of lading to justify their claim to the transport company.

THIS MANUAL SHOULD BE CONSIDERED a permanent part of your equipment and should be easily accessible when needed.

This warranty provides you the assurance that the company will back its products when defects appear within the warranty period. In some circumstances, the company also provides field improvements, often without charge to the customer, even if the product is out of warranty. Should the equipment be abused, or modified to change its performance beyond the factory specifications, the warranty will become void and field improvements may be denied.

Safety Guidelines

This manual contains information that is important for you, the owner/operator, to know and understand. This information relates to protecting ***personal safety*** and ***preventing equipment problems.*** It is the responsibility of the owner/operator to inform anyone operating or working in the area of this equipment of these safety guidelines. To help you recognize this information, we use the symbols that are defined below. Please read the manual and pay attention to these sections. Failure to read this manual and its safety instructions is a misuse of the equipment and may lead to serious injury or death.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE is used to address practices not related to personal injury.

General Safety Statement

Our foremost concern is your safety and the safety of others associated with grain handling equipment. This manual is to help you understand safe operating procedures and some problems that may be encountered by the operator and other personnel.

As owner and/or operator, you are responsible to know what requirements, hazards, and precautions exist and inform all personnel associated with the equipment or in the area. Safety precautions may be required from the personnel. Avoid any alterations to the equipment, which may produce a very dangerous situation, where SERIOUS INJURY or DEATH may occur.

You should consider the location of the bin site relative to power line locations or electrical transmission equipment. Contact your local power company to review your installation plan or for information concerning required equipment clearance. Clearance of portable equipment that may be taken to the bin site should also be reviewed and considered. Any electrical control equipment in contact with the bin should be properly grounded and installed in accordance with National Electric Code provisions and other local or national codes.

This product is intended for the use of grain storage only. Any other use is a misuse of the product.

This product has sharp edges, which may cause serious injury. To avoid injury, handle sharp edges with caution and always use proper protective clothing and equipment.

Sidewall bundles or sheets must be stored in a safe manner. The safest method of storing sidewall bundles is laying horizontally with the arch of the sheet upward, like a dome. Sidewall sheets stored on edge must be secured so that they cannot fall over and cause injury. Use care when handling and moving sidewall bundles.

Personnel operating or working around equipment should read this manual. This manual must be delivered with equipment to its owner. Failure to read this manual and its safety instructions is a misuse of the equipment.

Safety Instructions

Our foremost concern is your safety and the safety of others associated with this equipment. We want to keep you as a customer. This manual is to help you understand safe operating procedures and some problems that may be encountered by the operator and other personnel.

As owner and/or operator, it is your responsibility to know what requirements, hazards, and precautions exist, and to inform all personnel associated with the equipment or in the area. Safety precautions may be required from the personnel. Avoid any alterations to the equipment. Such alterations may produce a very dangerous situation where SERIOUS INJURY or DEATH may occur.

This equipment shall be installed in accordance with the current installation codes and applicable regulations, which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installations are made.

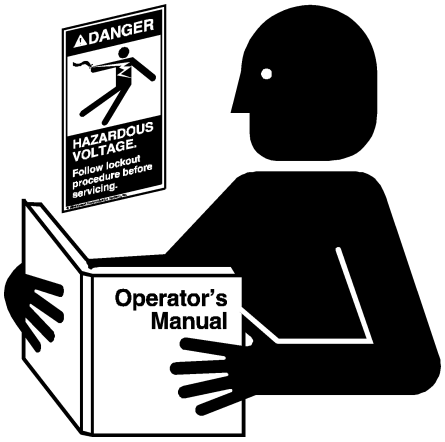
Follow Safety Instructions

Carefully read all safety messages in this manual and safety signs on your machine. Keep signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from the manufacturer.

Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction.

Keep your machinery in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.

If you do not understand any part of this manual or need assistance, contact your dealer.



Read and Understand Manual

Practice Safe Maintenance

Understand service procedures before doing work. Keep area clean and dry.

Never lubricate, service, or adjust machine while it is in operation. Keep hands, feet, and clothing away from rotating parts.

Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any built-up grease, oil, and debris.

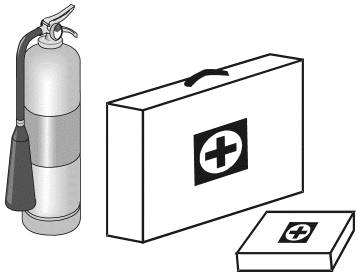
Maintain Equipment and Work Area

Prepare for Emergencies

Be prepared if fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



Keep Emergency Equipment Quickly Accessible

Wear Protective Clothing

Wear close-fitting clothing and safety equipment appropriate to the job.

Remove all jewelry.

Tie long hair up and back.

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

Wear gloves to protect your hands from sharp edges on plastic or steel parts.

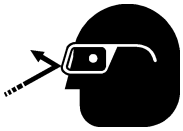
Wear steel toed-boots to help protect your feet from falling debris. Tuck in any loose or dangling shoestrings.

A respirator may be needed to prevent breathing potentially toxic fumes and dust.

Wear a hard hat to help protect your head.

Wear appropriate fall protection equipment when working at elevations greater than six feet (6').

Eye Protection



Gloves

Steel-Toed Boots

Respirator

Hard Hat

Fall Protection

Safety Sign-Off Sheet

As a requirement of O.S.H.A., it is necessary for the employer to train the employee in the safe operating and safety procedures for this equipment. This sign-off sheet is provided for your convenience and personal record keeping. All unqualified persons are to stay out of the work area at all times. It is strongly recommended that another qualified person who knows the shut down procedure be in the area in the event of an emergency.

Date	*Employee Name*	*Supervisor Name*

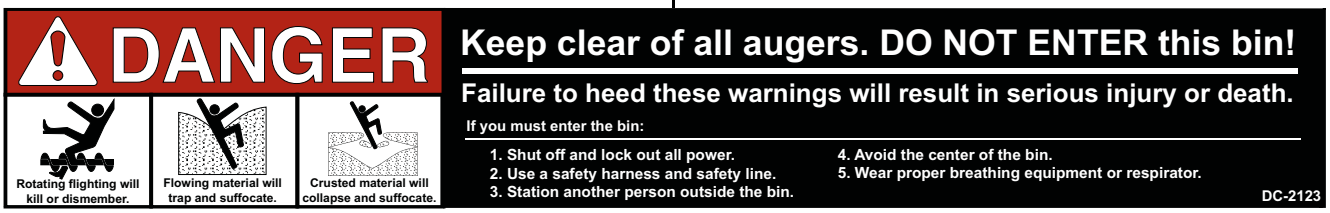
Proper Storage of Grain Bin/Silo Materials Prior to Construction

Wet storage stain (rust) will develop when closely packed bundles of galvanized material, such as sidewall and roof sheets, have moisture present. Inspect roof and sidewall bundles on arrival for any moisture. If moisture is present, it must not be allowed to remain between the sheets. Separate the sheets or panels immediately and wipe them down. Spray with a light oil or diesel fuel.

If possible, sidewall bundles, roof sheets and other closely packed galvanized materials should be stored in a dry, climate controlled building. If outdoor storage is unavoidable, the materials should be stored so that they are raised above the ground and vegetation. Any stacking and spacing materials should not be corrosive or wet. Be sure to protect materials from the weather, but permit air movement around the bundles if possible.

Storing roof bundles and sidewall sheets at a slight incline can also help minimize the presence of moisture. Storing the bundles with the center of the dome up (like an arch) is one option for minimizing moisture during storage. Sidewall bundles can also be stored on edge but must be secured so that they do not fall over and cause injury.

If “white rust” or “wet storage stain” occurs, contact the manufacturer immediately about ways to minimize the adverse effect upon the galvanized coating.



For replacement decals, contact:

GSI Decals
1004 E. Illinois St.
Assumption, IL. 62510
Phone: 1-217-226-4421

Bulk Feed Tank Assembly Manual General Instructions

First, read the Assembly Manual completely before starting to assemble your Bulk Feed Tank. Check your shipment with the packing list to be sure there are no shortages.

1. Decal protective mask must be removed when assembling tank. Mask may become difficult to remove if left exposed to sunlight.
2. Vertical seams **must be staggered** on all sidewall rings.
3. When legs extend up 2 rings, the leg holes must be in **alignment** in the bottom 2 rings.
4. All hopper seams and the hopper collar use truss head bolts. The heads of the bolts must be on the **inside** of the tank.
5. Hex head bin bolts are used on all sidewall and roof seams with the bolt heads on the **outside** of the bin.
6. Hex head bolts are to be used on all leg to sidewall connections with the bolt heads on the inside of the tank.
7. All bolts are to be tightened from the **nut side only. Do not allow bolt heads to spin.**
8. 7' Diameter sidewall sheets **must** be bolted together so there is 65-5/8" between leg holes. *(See Page 80.)*
9. Drift punches can be used to align holes.
10. All vertical sidewall sheet seams must be overlapped in the same direction.
11. A hole spacing of 3-1/8" is used at the top of all top sidewall sheets and at the bottom of all bottom sidewall sheets.

Selecting the Proper Site

The selected site should be level, firm and free from underlying debris. The tank can be installed satisfactorily on slopes, but as the slope increases, additional labor and materials are required for the foundation. The concrete foundation surfaces must be level. If some fill is required, it should be watered and tamped thoroughly to prevent uneven settling from the weight of the tank. Good water drainage should be provided to prevent water collecting under or around the tank. The site must allow convenient access for loading and unloading and provide additional space for future units. Also, consider the positioning of handling equipment, availability of electricity, etc.

Tools

Tools recommended for assembly of Bulk Feed Tanks.

1. Assorted sizes of combination wrenches
2. Hammer
3. 3-12" Long drift punches
4. 1 Large flathead screwdriver
5. 1 Pair of slip joint pliers
6. Two (2) adjustable wrenches
7. Ratchet and sockets
8. Impact wrenches and sockets (if available)

BFT/GHT Series Usage and Stored Product Considerations

6', 7' and 9' diameter tall tanks covered in this manual are designed for the storage of free flowing materials not weighing more than 40 lb/cubic ft.

Bulk feed materials that are not free flowing will require appropriate agitiation and possible tank modifications or may not be suitable for storage in these units. Consult with GSI technical services or engineering on the storage of such products.

Tanks Sizes Covered By this Manual

This manual is intended to cover the following:

1. 6' Diameter, 5-8 ring BFT/GHT tanks
2. 7' Diameter, 7-8 ring BFT/GHT tanks
3. 9' Diameter, 7-11 ring BFT/GHT tanks

For tanks shorter than the listed heights consult PNEG-1460.

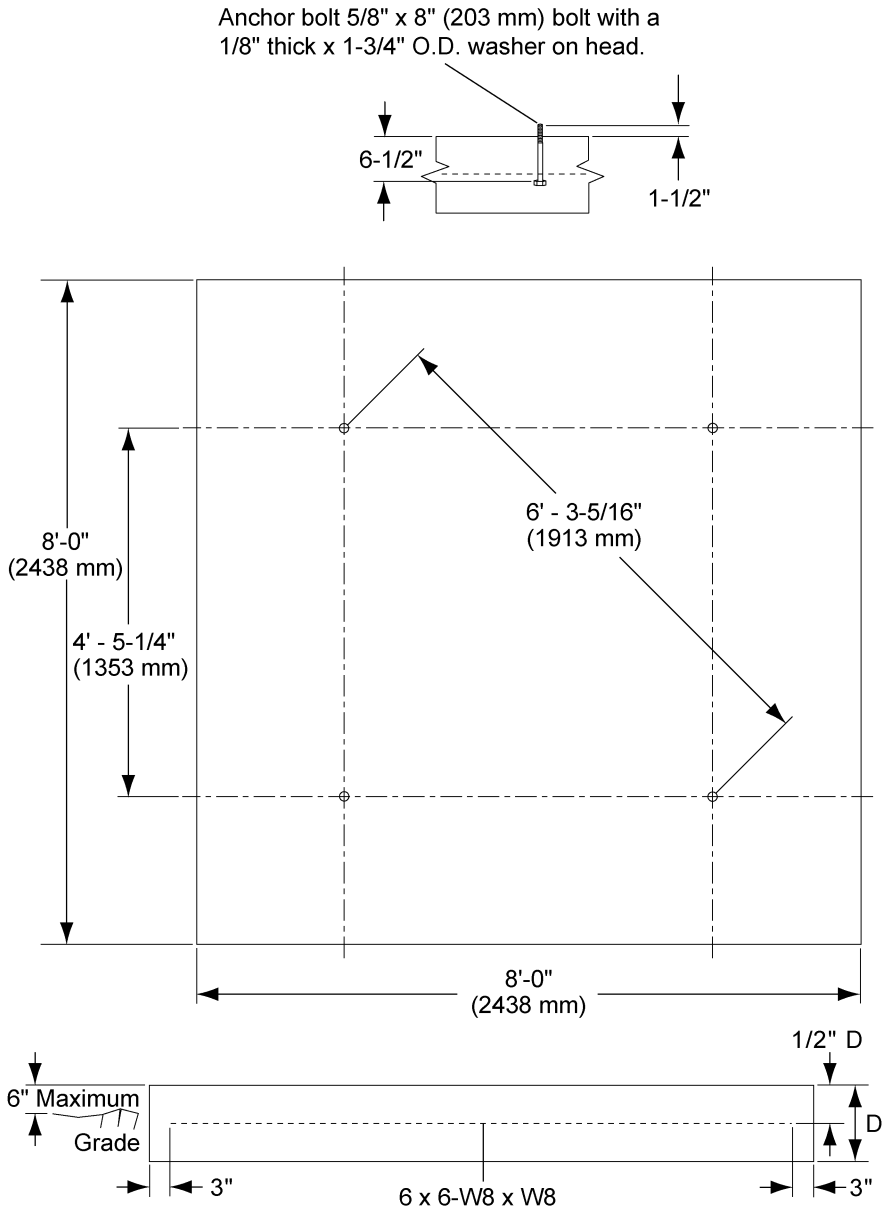


Figure 5A *6' 1-8 Rings Square Pad*

All instructions shall be construed as recommendations only. The actual installation may vary according to local conditions. The GSI Group assumes no liability for results arising from the use of such recommendations.

# of Rings	Slab Thickness (D)	Concrete Volume	Wire Mesh Area	# of Column Legs
1-5	11"	2.2 Cu. Yards	60 Sq. Ft.	4
6	13"	2.6 Cu. Yards	60 Sq. Ft.	4
7	15"	3.0 Cu. Yards	60 Sq. Ft.	4
8	18"	3.6 Cu. Yards	60 Sq. Ft.	4

# of Rings	Slab Thickness (D)	Concrete Volume	Wire Mesh Area	# of Column Legs
1-5	279 mm	1.68 Cu. Meters	5.57 Sq. Meters	4
6	330 mm	1.99 Cu. Meters	5.57 Sq. Meters	4
7	381 mm	2.29 Cu. Meters	5.57 Sq. Meters	4
8	457 mm	2.75 Cu. Meters	5.57 Sq. Meters	4

GENERAL NOTES:

1. *Foundation recommendations are based on 3500 lbs./ft.^2 allowable soil bearing capacity.*
2. *Foundation recommendations are based on a minimum compressive strength of 3000 PSI at 28 days.*
3. *The foundation site must be well drained and free of vegetation and debris or well drained.*
4. *The foundation should be level within 1/4" overall and within ± 1/8" in any 10' length along the anchor bolt circle.*
5. *Material estimates do not include allowance for shrinkage and waste.*
6. *These layouts are recommendations for GSI tanks only. Consult GSI engineering for special tank foundations.*

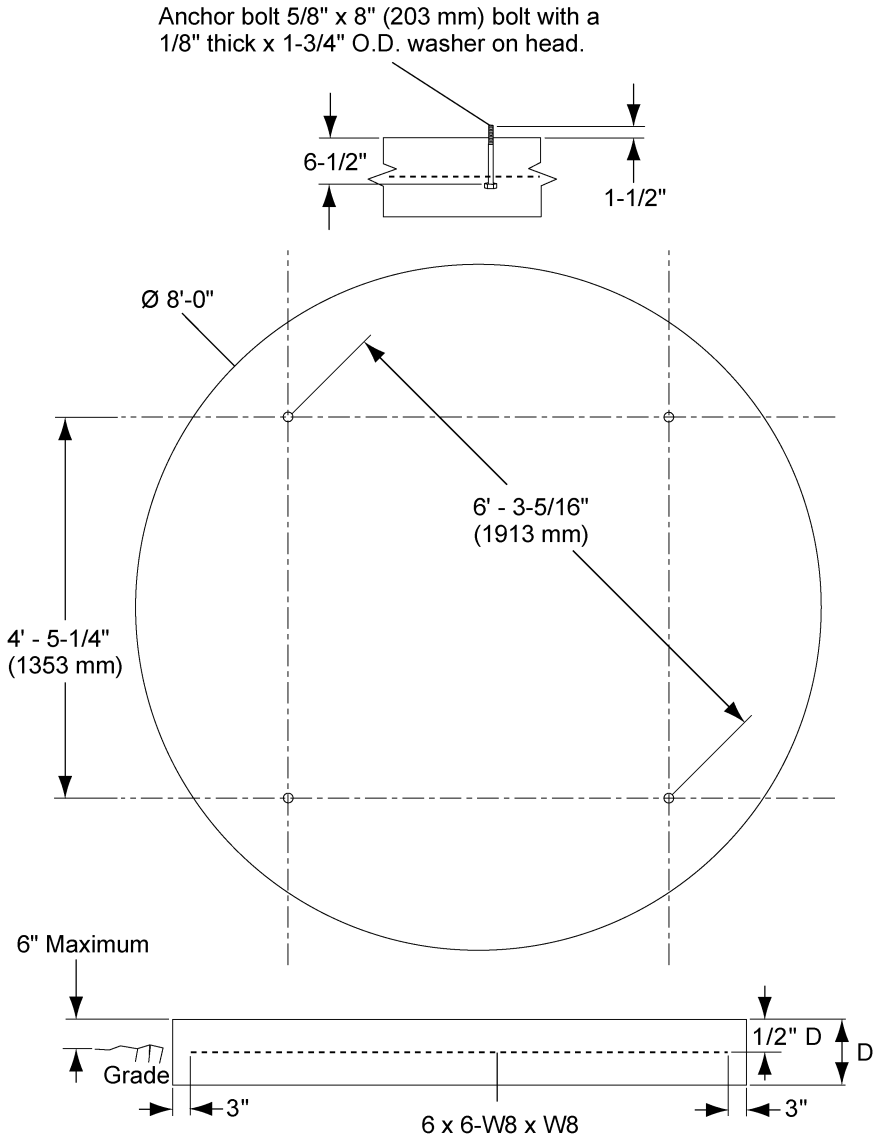


Figure 5B *6' 1-8 Rings BFT/ GHT Round Pad*

All instructions shall be construed as recommendations only. The actual installation may vary according to local conditions. The GSI Group assumes no liability for results arising from the use of such recommendations.

# of Rings	Slab Thickness (D)	Concrete Volume	Wire Mesh Area	# of Column Legs
1-5	11"	1.7 Cu. Yards	55 Sq. Ft.	4
6	13"	2.0 Cu. Yards	55 Sq. Ft.	4
7	15"	2.4 Cu. Yards	55 Sq. Ft.	4
8	18"	2.8 Cu. Yards	55 Sq. Ft.	4

# of Rings	Slab Thickness (D)	Concrete Volume	Wire Mesh Area	# of Column Legs
1-5	279 mm	1.31 Cu. Meters	5.11 Sq. Meters	4
6	330 mm	1.54 Cu. Meters	5.11 Sq. Meters	4
7	381 mm	1.78 Cu. Meters	5.11 Sq. Meters	4
8	457 mm	2.13 Cu. Meters	5.11 Sq. Meters	4

GENERAL NOTES:

1. *Foundation recommendations are based on 3500 lbs./ft.^2 allowable soil bearing capacity.*
2. *Foundation recommendations are based on a minimum compressive strength of 3000 PSI at 28 days.*
3. *The foundation site must be well drained and free of vegetation and debris and well drained.*
4. *The foundation should be level within 1/4" overall and within ± 1/8" in any 10' length along the anchor bolt circle.*
5. *Material estimates do not include allowance for shrinkage and waste.*
6. *These layouts are recommendations for GSI tanks only. Consult GSI engineering for special tank foundations.*

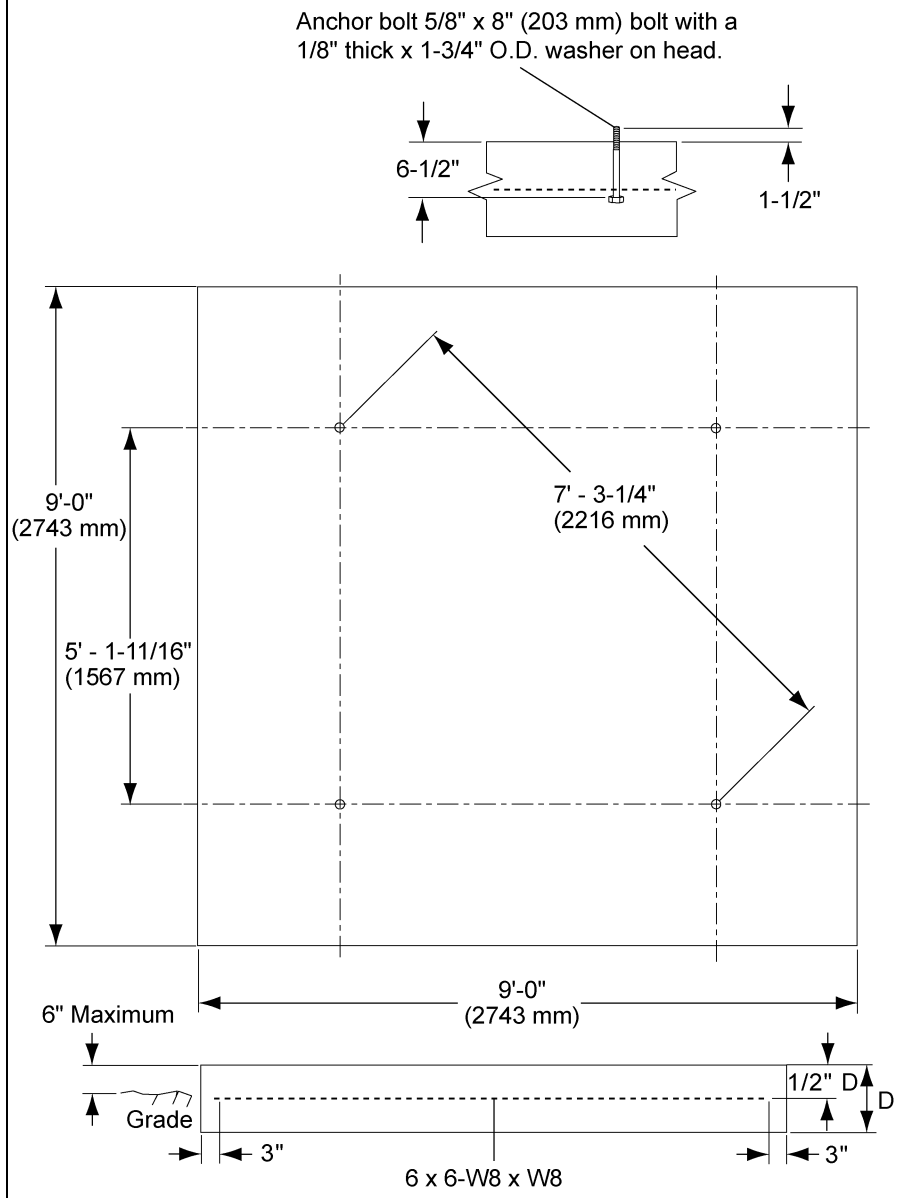


Figure 5C *7' 1-8 Rings BFT/ GHT 45° and 67° Square Pad*

All instructions shall be construed as recommendations only. The actual installation may vary according to local conditions. The GSI Group assumes no liability for results arising from the use of such recommendations.

# of Rings	Slab Thickness (D)	Concrete Volume	Wire Mesh Area	# of Column Legs
1-6	13"	3.3 Cu. Yards	80 Sq. Ft.	4
7	14"	3.5 Cu. Yards	80 Sq. Ft.	4
8	17"	4.3 Cu. Yards	80 Sq. Ft.	4

# of Rings	Slab Thickness (D)	Concrete Volume	Wire Mesh Area	# of Column Legs
1-6	330 mm	2.52 Cu. Meters	7.43 Sq. Meters	4
7	356 mm	2.68 Cu. Meters	7.43 Sq. Meters	4
8	432 mm	3.29 Cu. Meters	7.43 Sq. Meters	4

GENERAL NOTES:

1. *Foundation recommendations are based on 3500 lbs./ft.^2 allowable soil bearing capacity.*
2. *Foundation recommendations are based on a minimum compressive strength of 3000 PSI at 28 days.*
3. *The foundation site must be well drained and free of vegetation and debris and well drained.*
4. *The foundation should be level within 1/4" overall and within ± 1/8" in any 10' length along the anchor bolt circle.*
5. *Material estimates do not include allowance for shrinkage and waste.*
6. *These layouts are recommendations for GSI tanks only. Consult GSI engineering for special tank foundations.*

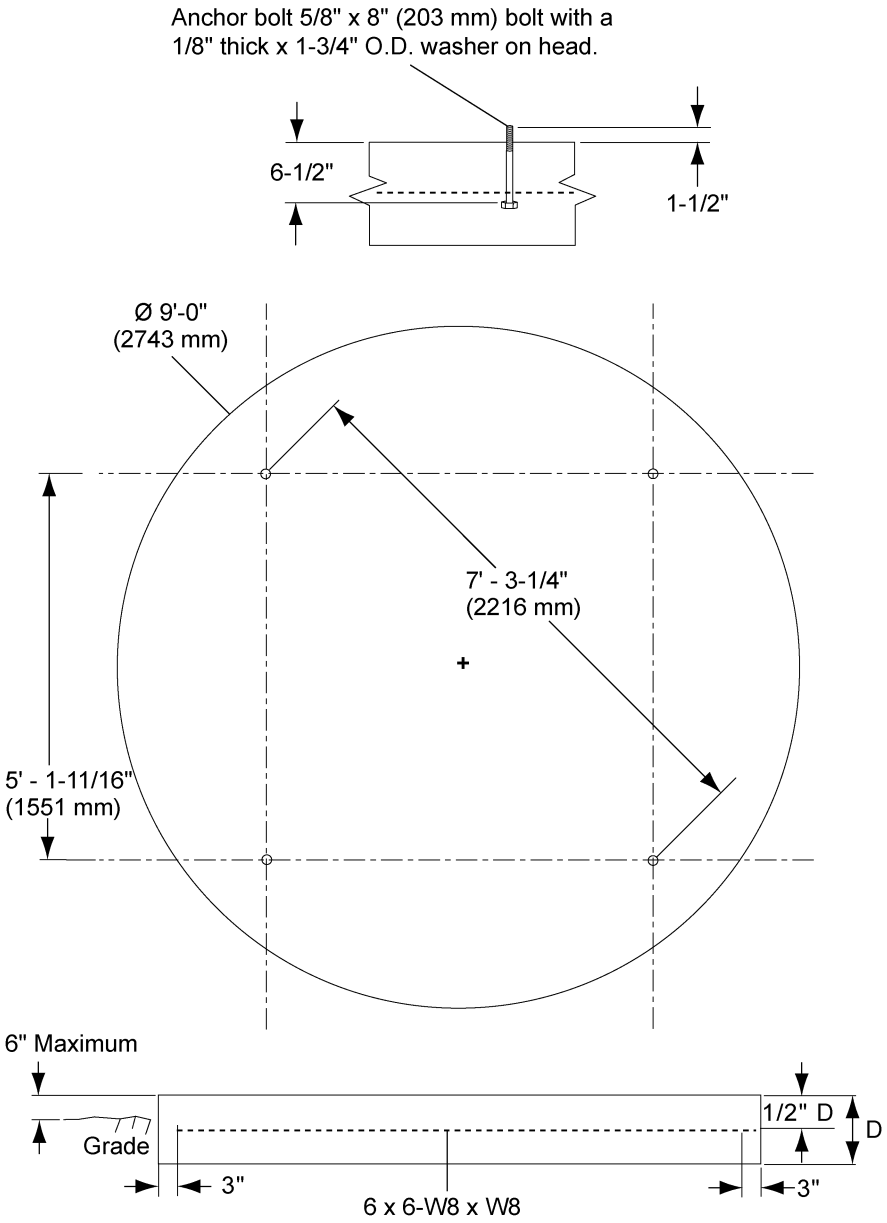


Figure 5D *7' 1-8 Rings BFT/ GHT 45° and 67° Round Pad*

All instructions shall be construed as recommendations only. The actual installation may vary according to local conditions. The GSI Group assumes no liability for results arising from the use of such recommendations.

# of Rings	Slab Thickness (D)	Concrete Volume	Wire Mesh Area	# of Column Legs
1-6	13"	2.6 Cu. Yards	65 Sq. Ft.	4
7	14"	2.8 Cu. Yards	65 Sq. Ft.	4
8	17"	3.4 Cu. Yards	65 Sq. Ft.	4

# of Rings	Slab Thickness (D)	Concrete Volume	Wire Mesh Area	# of Column Legs
1-6	330 mm	1.91 Cu. Meters	6.04 Sq. Meters	4
7	356 mm	2.10 Cu. Meters	6.04 Sq. Meters	4
8	432 mm	2.55 Cu. Meters	6.04 Sq. Meters	4

GENERAL NOTES:

1. *Foundation recommendations are based on 3500 lbs./ft.^2 allowable soil bearing capacity.*
2. *Foundation recommendations are based on a minimum compressive strength of 3000 PSI at 28 days.*
3. *The foundation site must be well drained and free of vegetation and debris.*
4. *The foundation should be level within 1/4" overall and within ± 1/8" in any 10' length along the anchor bolt circle.*
5. *Material estimates do not include allowance for shrinkage and waste.*
6. *These layouts are recommendations for GSI tanks only. Consult GSI engineering for special tank foundations.*

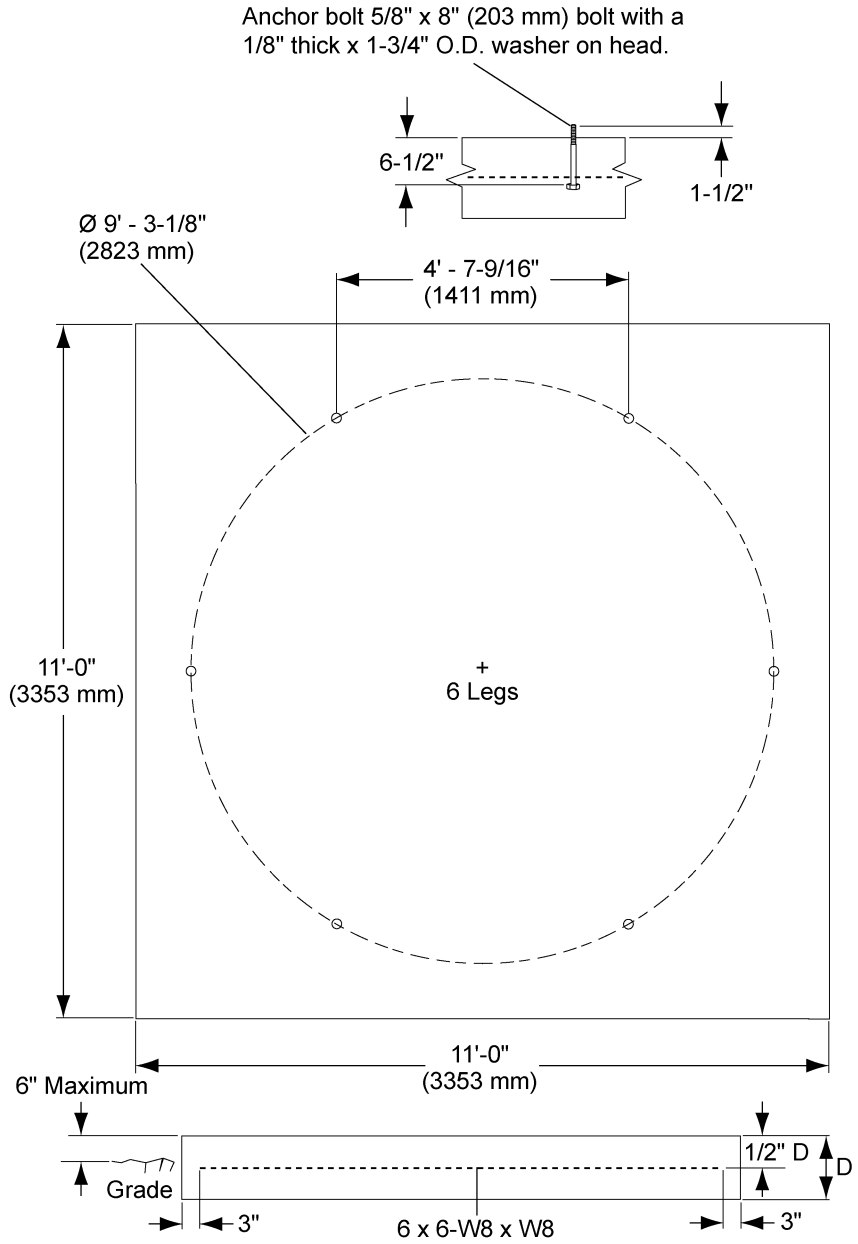


Figure 5E *9' 2-9 Rings BFT/ GHT 45° and 60° Square Pad*

All instructions shall be construed as recommendations only. The actual installation may vary according to local conditions. The GSI Group assumes no liability for results arising from the use of such recommendations.

# of Rings	Slab Thickness (D)	Concrete Volume	Wire Mesh Area	# of Column Legs
2-6	13"	4.9 Cu. Yards	125 Sq. Ft.	6
7	16"	6.0 Cu. Yards	125 Sq. Ft.	6
8	17"	6.4 Cu. Yards	125 Sq. Ft.	6
* 9	17"	6.4 Cu. Yards	125 Sq. Ft.	6

# of Rings	Slab Thickness (D)	Concrete Volume	Wire Mesh Area	# of Column Legs
2-6	330 mm	4.85 Cu. Meters	11.61 Sq. Meters	6
7	406 mm	4.85 Cu. Meters	11.61 Sq. Meters	6
8	432 mm	5.14 Cu. Meters	11.61 Sq. Meters	6
* 9	432 mm	5.14 Cu. Meters	11.61 Sq. Meters	6

GENERAL NOTES:

1. *Foundation recommendations are based on 3500 lbs./ft.^2 allowable soil bearing capacity.*
2. *Foundation recommendations are based on a minimum compressive strength of 3000 PSI at 28 days.*
3. *The foundation site must be well drained and free of vegetation and debris.*
4. *The foundation should be level within 1/4" overall and within ± 1/8" in any 10' length along the anchor bolt circle.*
5. *Material estimates do not include allowance for shrinkage and waste.*
6. *These layouts are recommendations for GSI tanks only. Consult GSI engineering for special tank foundations.*

** Applies to 45° hopper Tank only.*

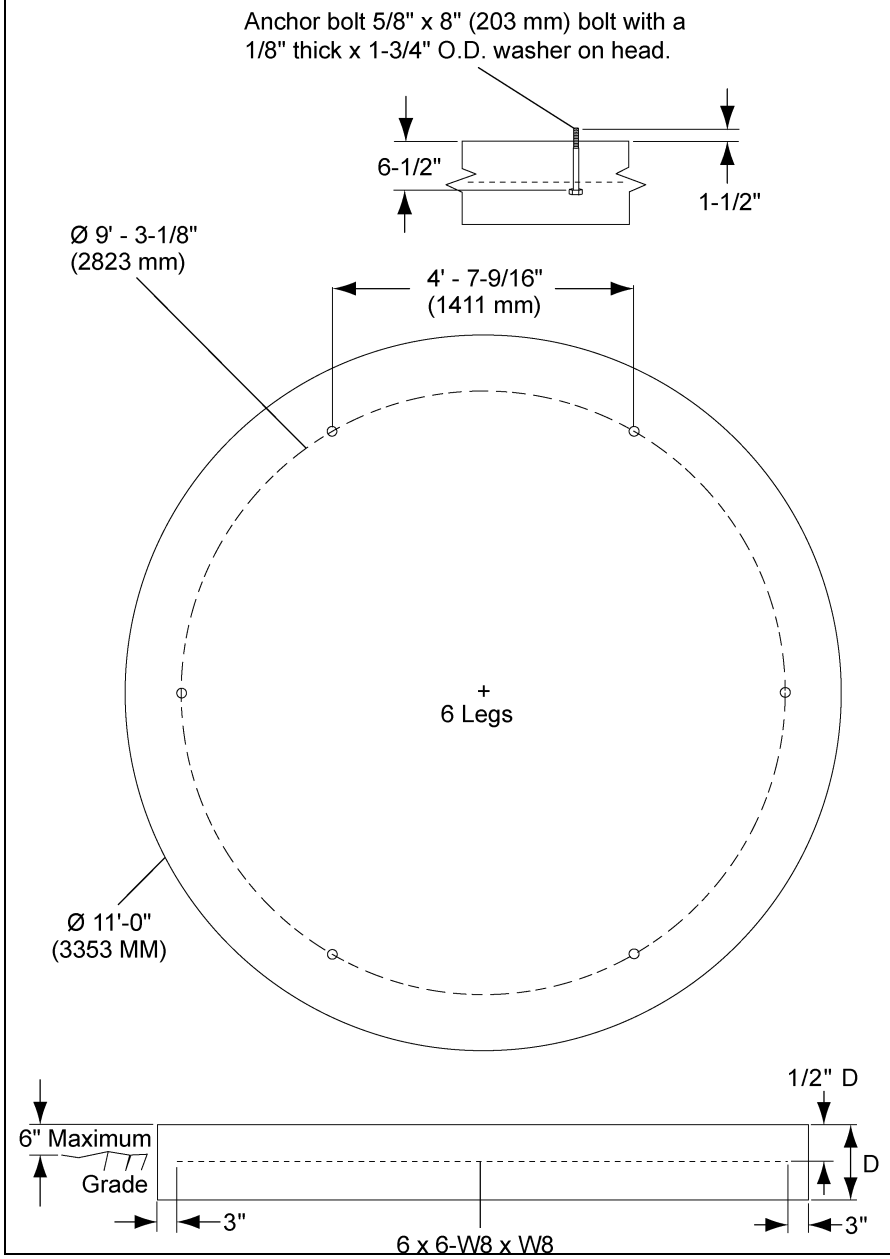


Figure 5F *9' 2-9 Rings BFT/ GHT 45° and 60° Round Pad*

All instructions shall be construed as recommendations only. The actual installation may vary according to local conditions. The GSI Group assumes no liability for results arising from the use of such recommendations.

# of Rings	Slab Thickness (D)	Concrete Volume	Wire Mesh Area	# of Column Legs
2-6	13"	3.8 Cu. Yards	100 Sq. Ft.	6
7	16"	4.7 Cu. Yards	100 Sq. Ft.	6
8	17"	5.0 Cu. Yards	100 Sq. Ft.	6
* 9	17"	5.0 Cu. Yards	100 Sq. Ft.	6

# of Rings	Slab Thickness (D)	Concrete Volume	Wire Mesh Area	# of Column Legs
2-6	330 mm	2.91 Cu. Meters	9.29 Sq. Meters	6
7	406 mm	3.59 Cu. Meters	9.29 Sq. Meters	6
8	432 mm	3.82 Cu. Meters	9.29 Sq. Meters	6
* 9	432 mm	3.82 Cu. Meters	9.29 Sq. Meters	6

GENERAL NOTES:

1. *Foundation recommendations are based on 3500 lbs./ft.^2 allowable soil bearing capacity.*
2. *Foundation recommendations are based on a minimum compressive strength of 3000 PSI at 28 days.*
3. *The foundation site must be well drained and free of vegetation and debris.*
4. *The foundation should be level within 1/4" overall and within ± 1/8" in any 10' length along the anchor bolt circle.*
5. *Material estimates do not include allowance for shrinkage and waste.*
6. *These layouts are recommendations for GSI tanks only. Consult GSI engineering for special tank foundations.*

** Applies to 45° hopper tank only.*

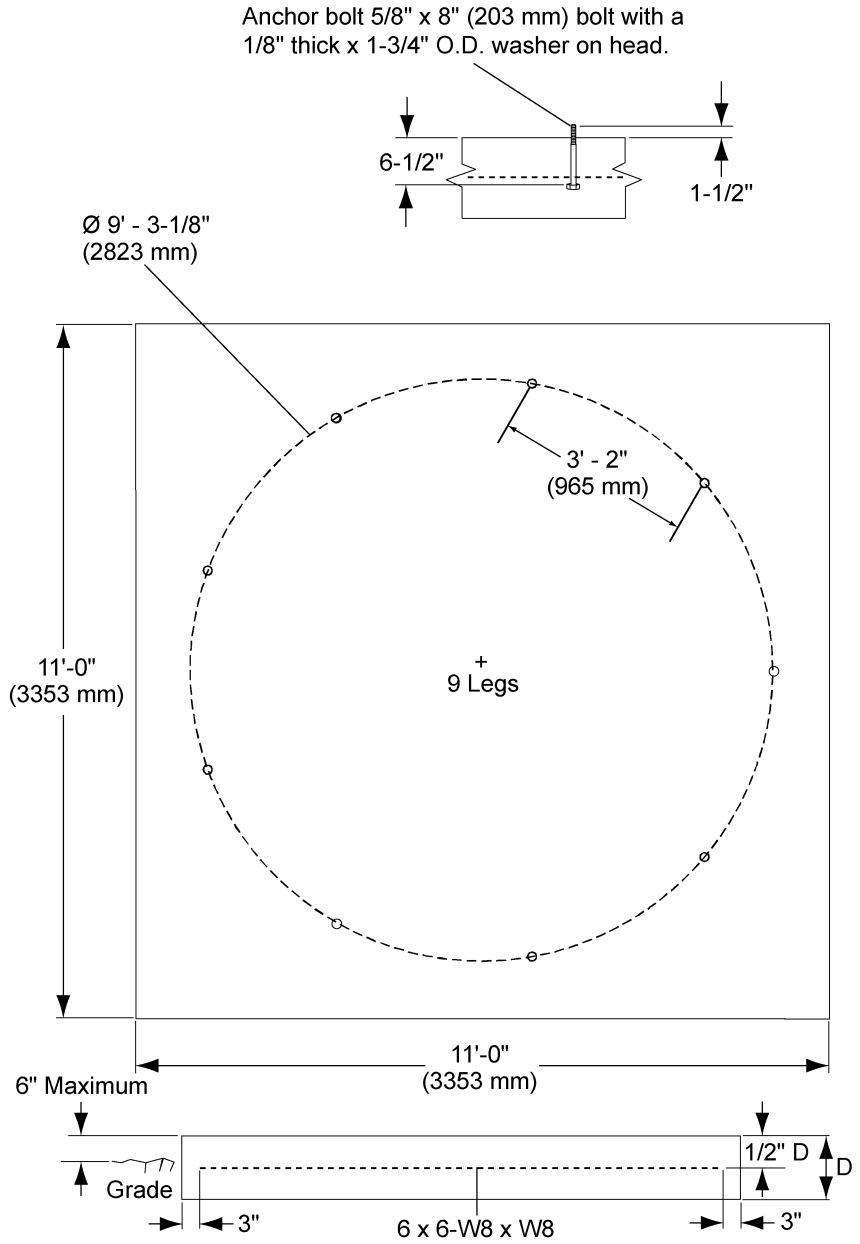


Figure 5G *9' 9-11 Rings BFT/ GHT 45° and 60° Square Pad*

All instructions shall be construed as recommendations only. The actual installation may vary according to local conditions. The GSI Group assumes no liability for results arising from the use of such recommendations.

# of Rings	Slab Thickness (D)	Concrete Volume	Wire Mesh Area	# of Column Legs
* 9	17"	6.4 Cu. Yards	120 Sq. Ft.	9
10	17"	6.4 Cu. Yards	120 Sq. Ft.	9
11	18"	6.7 Cu. Yards	120 Sq. Ft.	9

# of Rings	Slab Thickness (D)	Concrete Volume	Wire Mesh Area	# of Column Legs
* 9	432 mm	4.85 Cu. Meters	11.15 Sq. Meters	9
10	432 mm	4.85 Cu. Meters	11.15 Sq. Meters	9
11	457 mm	5.14 Cu. Meters	11.15 Sq. Meters	9

GENERAL NOTES:

1. *Foundation recommendations are based on 3500 lbs./ft.^2 allowable soil bearing capacity.*
2. *Foundation recommendations are based on a minimum compressive strength of 3000 PSI at 28 days.*
3. *The foundation site must be well drained and free of vegetation and debris.*
4. *The foundation should be level within 1/4" overall and within ± 1/8" in any 10' length along the anchor bolt circle.*
5. *Material estimates do not include allowance for shrinkage and waste.*
6. *These layouts are recommendations for GSI tanks only. Consult GSI engineering for special tank foundations.*

** Applies to 45° hopper tank only.*

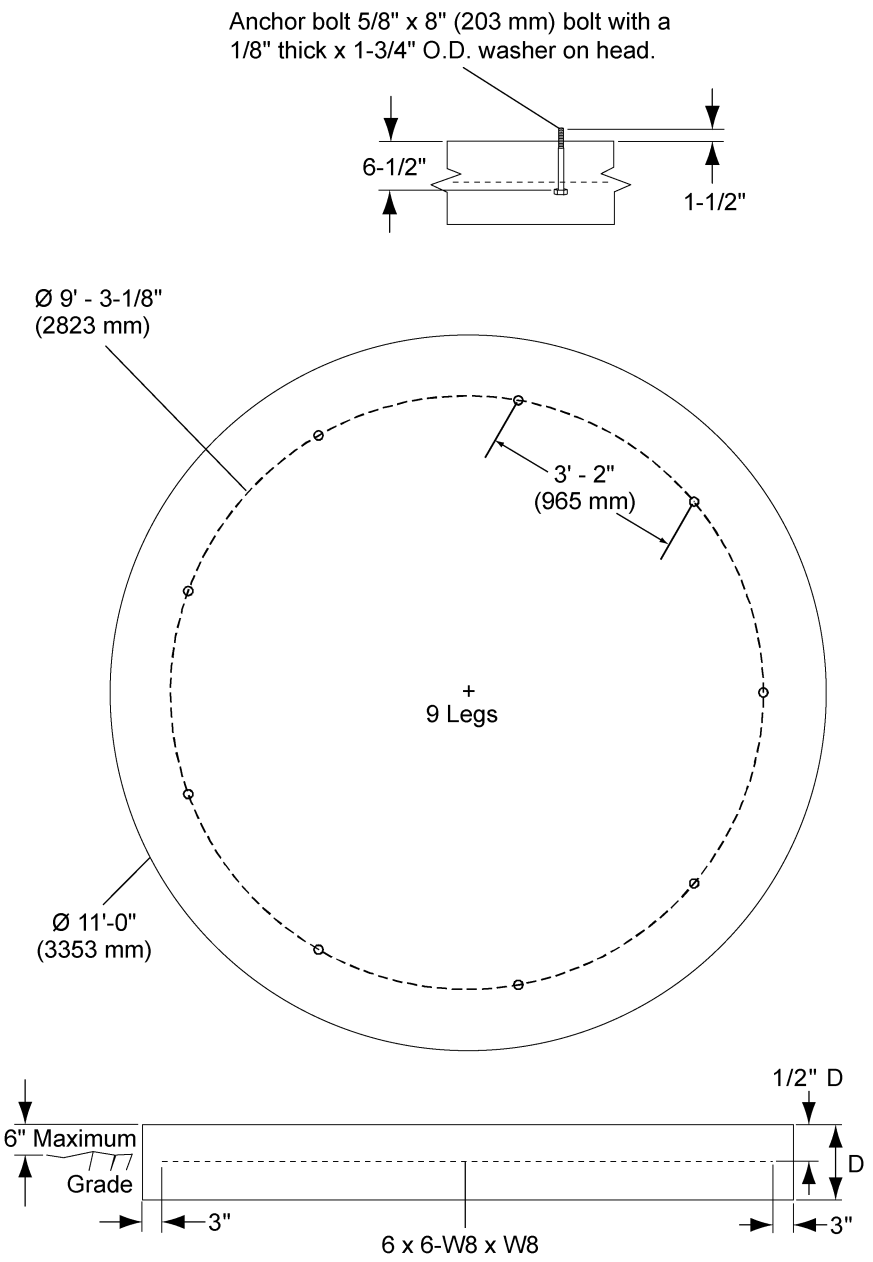


Figure 5H *9' 9-11 Rings BFT/ GHT 45° and 60° Round Pad*

All instructions shall be construed as recommendations only. The actual installation may vary according to local conditions. The GSI Group assumes no liability for results arising from the use of such recommendations.

# of Rings	Slab Thickness (D)	Concrete Volume	Wire Mesh Area	# of Column Legs
9 *	17"	5.0 Cu. Yards	100 Sq. Ft.	9
10	17"	5.0 Cu. Yards	100 Sq. Ft.	9
11	18"	5.3 Cu. Yards	100 Sq. Ft.	9

# of Rings	Slab Thickness (D)	Concrete Volume	Wire Mesh Area	# of Column Legs
9 *	432 mm	3.82 Cu. Meters	9.29 Sq. Meters	9
10	432 mm	3.82 Cu. Meters	9.29 Sq. Meters	9
11	457 mm	4.04 Cu. Meters	9.29 Sq. Meters	9

GENERAL NOTES:

1. *Foundation recommendations are based on 3500 lbs./ft.^2 allowable soil bearing capacity.*
2. *Foundation recommendations are based on a minimum compressive strength of 3000 PSI at 28 days.*
3. *The foundation site must be well drained and free of vegetation and debris.*
4. *The foundation should be level within 1/4" overall and within ± 1/8" in any 10' length along the anchor bolt circle.*
5. *Material estimates do not include allowance for shrinkage and waste.*
6. *These layouts are recommendations for GSI tanks only. Consult GSI engineering for special tank foundations.*

** Applies to 45° hopper tank only.*

Tank Sidewalls

Sidewall Sheet Gauge Chart

Model	Gauge
BFT 6'-5 Ring	17-17-18-20-20
BFT 6'-6 Ring	15-15-16-18-20-20
BFT 6'-7 Ring	13-13-15-16-18-20-20
BFT 6'-8 Ring	13-13-13-15-16-18-20-20
BFT 7'-7 Ring	13-13-14-16-18-20-20
BFT 7'-8 Ring	13-13-13-14-16-18-20-20
BFT 9'-7 Ring	13-13-15-16-18-20-20
BFT 9'-8 Ring	13-13-13-14-16-18-20-20
BFT 9'-9 Ring	12-12-13-13-14-16-18-20-20
BFT 9'-10 Ring	11-11-11-12-13-14-16-18-20-20
BFT 9'-11 Ring	10-10-11-11-12-13-14-16-18-20-20

How to use charts on this page:

The chart labeled “Sidewall Sheet Gauge Chart” is for the reference when building the tank. This chart tells you what gauges your rings of the specific tank must have. To read the chart find up the tank size you are building, for example, a 7' diameter tank with 7 rings is referred to as BFT 7'-7 ring. The side labeled “Gauge” will indicate which sidewall sheets to use. The sheets are color coded, simply match the gauge number with the color. (Use “Sheet Gauge Color Code Chart” *below*.)

NOTE: *Sidewall sheets are color coded on edges for gauge identification.*

Sheet Gauge Color Code Chart

Code #	Color Code
20	Red
18	Orange
16	Blue
15	Brown/Red
14	Green
13	Yellow/Blue
12	Black
11	Pink
10	Light Blue

Caulking Detail

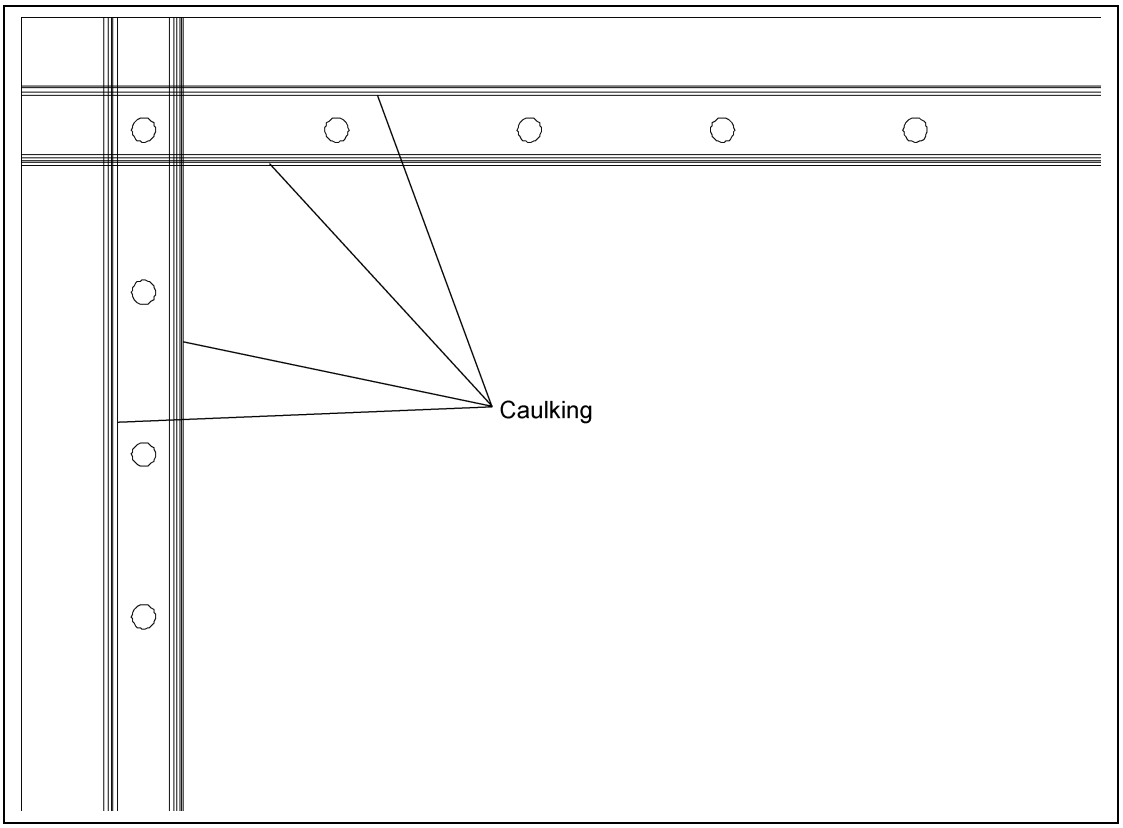


Figure 6A *Caulking Detail*

NOTE: *Rope caulking is applied before each sheet is assembled. Wipe sheet clean where it will be applied. Apply caulking on each side of the holes of the vertical seams and on each side of the horizontal row of holes.*

Caulking is applied to all BFT parts before assembly.

Figure 6B

Sidewall Sheet Orientation

IMPORTANT: *Please note sheet orientation when assembling the bin sidewall. The upper right corner will have a slot or identifying sticker. This corner should be on the inside of the tank when assembled. (See Figure 6C.)*

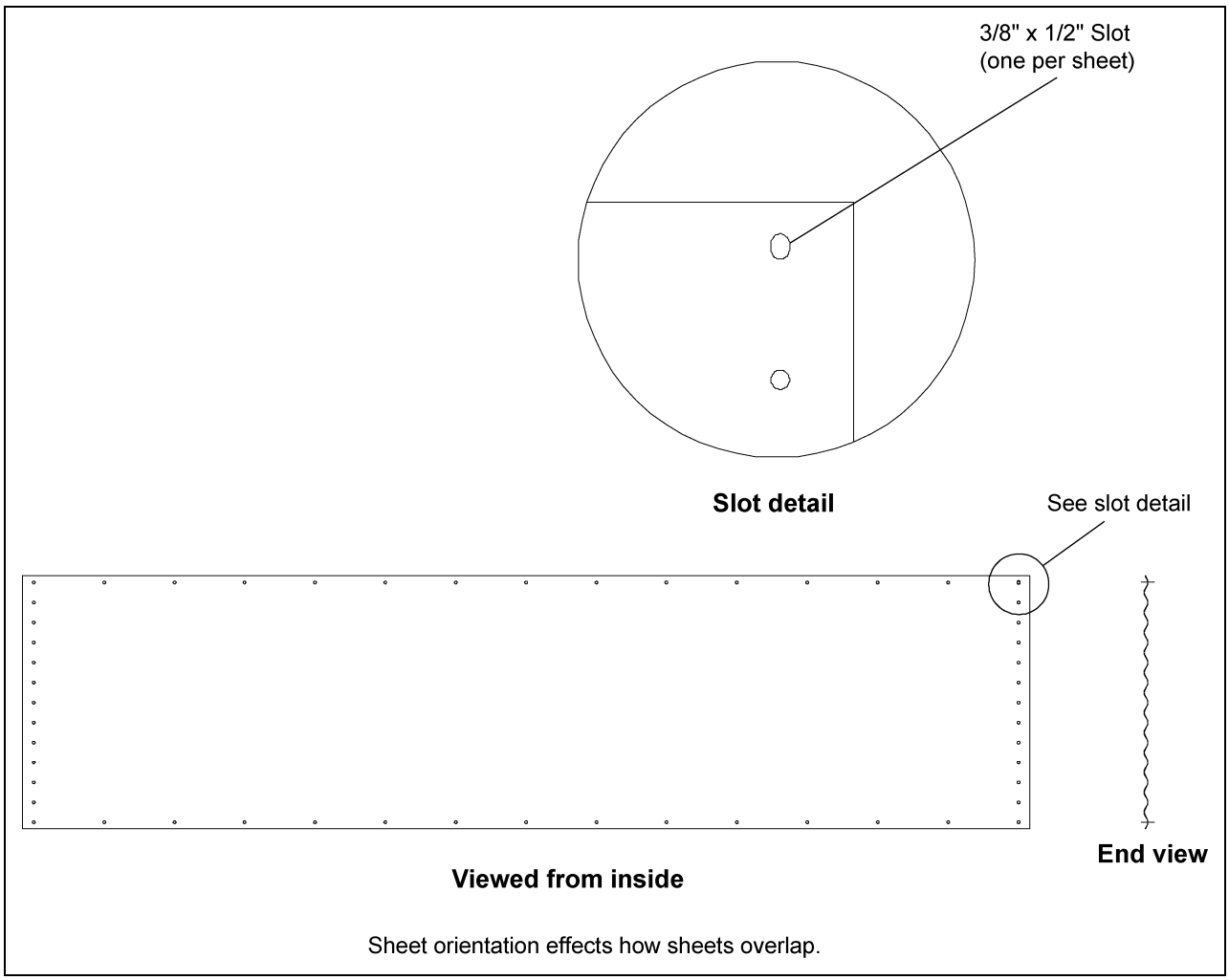


Figure 6C

Sidewall Assembly

Start by assembling the top ring of the Bulk Feed Tank. The top row of bolt holes has 3-1/8" spacing in the top ring. Before bolting the sidewall sheets together, check that you have the proper gauge steel for the top ring. The higher gauge number denotes thinner material. For example, 20 gauge material is thinner than 14 gauge. In assembling all Bulk Feed Tanks the thinnest material always go on top. The heaviest corrugated sidewall sheets will be located on the bottom of the tank. Check the various gauges of the tank with the “Sheet Gauge Color Code Chart” and “Sidewall Sheet Gauge Chart”, *on Page 23*. Begin by putting the rings together on the edge of the sheets. After the first ring is complete, the roof must be assembled as described *on Pages 26-27*. After the roof is assembled, the tank can be rolled on its side for easier sidewall assembly. *(See Figure 6F on Page 27.)*

Tighten all bolts from the nut side only.

Continue to add rings with lighter gauges first, then heavier gauges. Each subsequent row of sidewall sheets goes to the inside of the previous row of sidewall panels. Remember to place the caulking between every ring. *See Figure 6D* for illustration of proper sidewall overlap and caulking detail.

Be sure to stagger all vertical seams between rows.

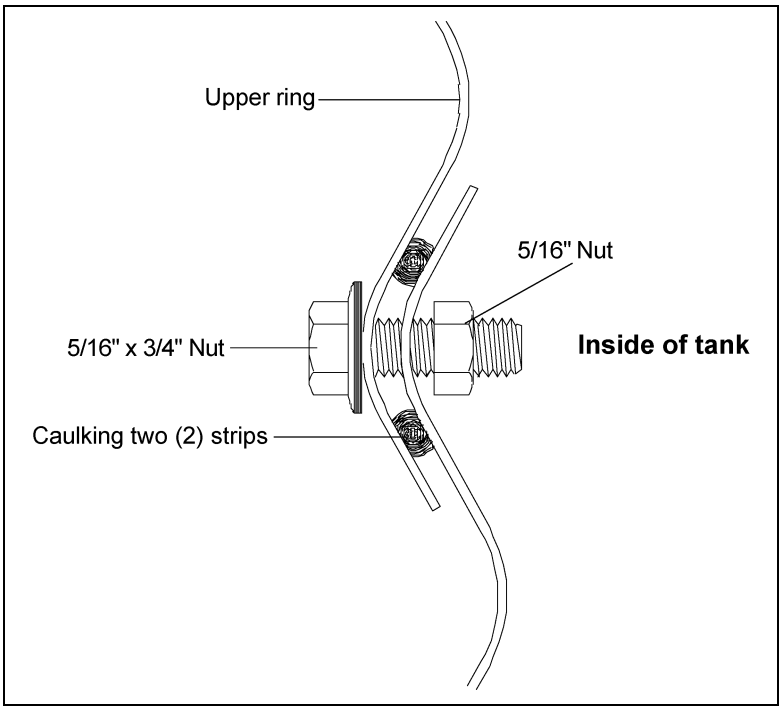


Figure 6D *Ring Overlap Detail*

First ring assembly. Tighten bolts from the nut side only.

Figure 6E

IMPORTANT: *Begin bolting in the center of sheets when connecting sidewall rings to one another.*

When bolting sidewall rings to one another, always begin bolting in the center of the sheet and work toward the outside edges (horizontal seams). This allows the sidewall to draw up evenly.

Figure 6F *Sidewall Assembly*

It is easier to add more sidewall sheets with the tank on its side. It can be rolled easily from side-to-side to allow the bolts and nuts to be put in the proper holes. **NOTE:** *The roof must be assembled on the first ring before rolling it over to its side.* This will not be practical on taller tanks where jacks should be used.

Sealed Roof Panels Installation

NOTE: *The roof and sidewall ladders are centered on a roof panel.* Be sure to apply two (2) strips of caulking on either side of bolt holes at the seams. Roof panel edges allow for the roof to be assembled in either the clockwise or counterclockwise manner. (See roof sheet overlap detail *on Page 29*.) Be sure to lap sheets in the same manner around the entire tank.

Figure 7A

On bins that will be equipped with a pneumatic fill system *(See Page 72)*, the two (2) roof panels with fill hole and exhaust hole must be located opposite each other on the Bulk Feed Tank. The peak ring may now be installed.

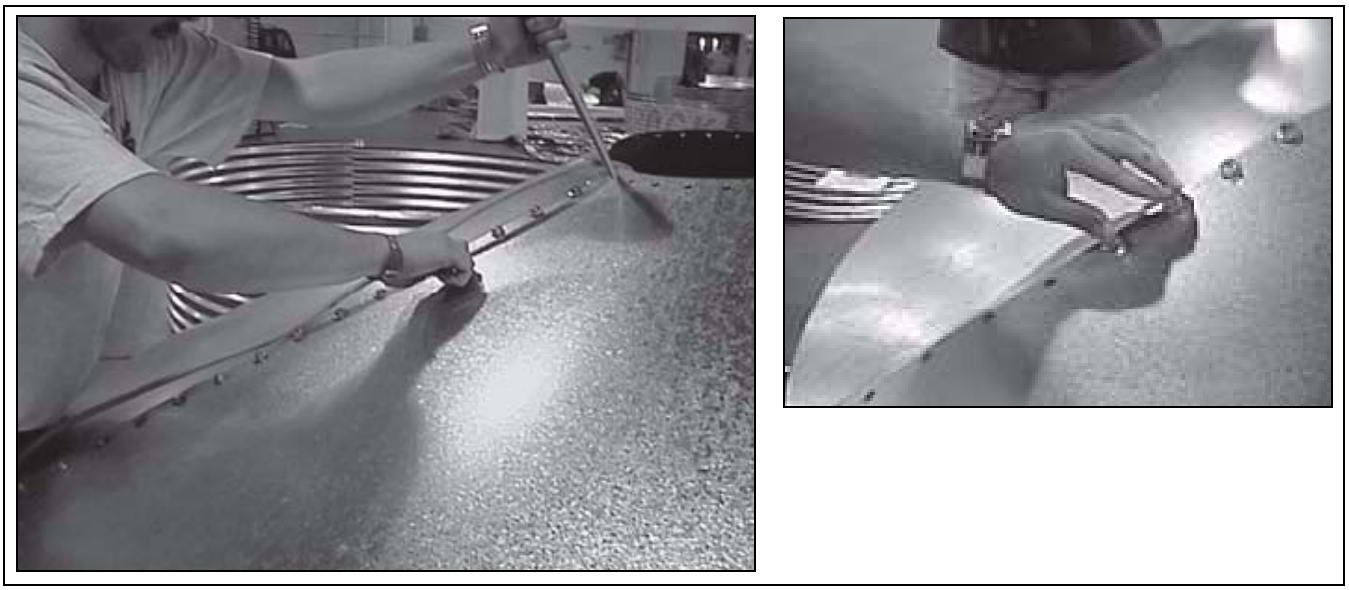


Figure 7B *Lining Up Holes and Placing Bolts*

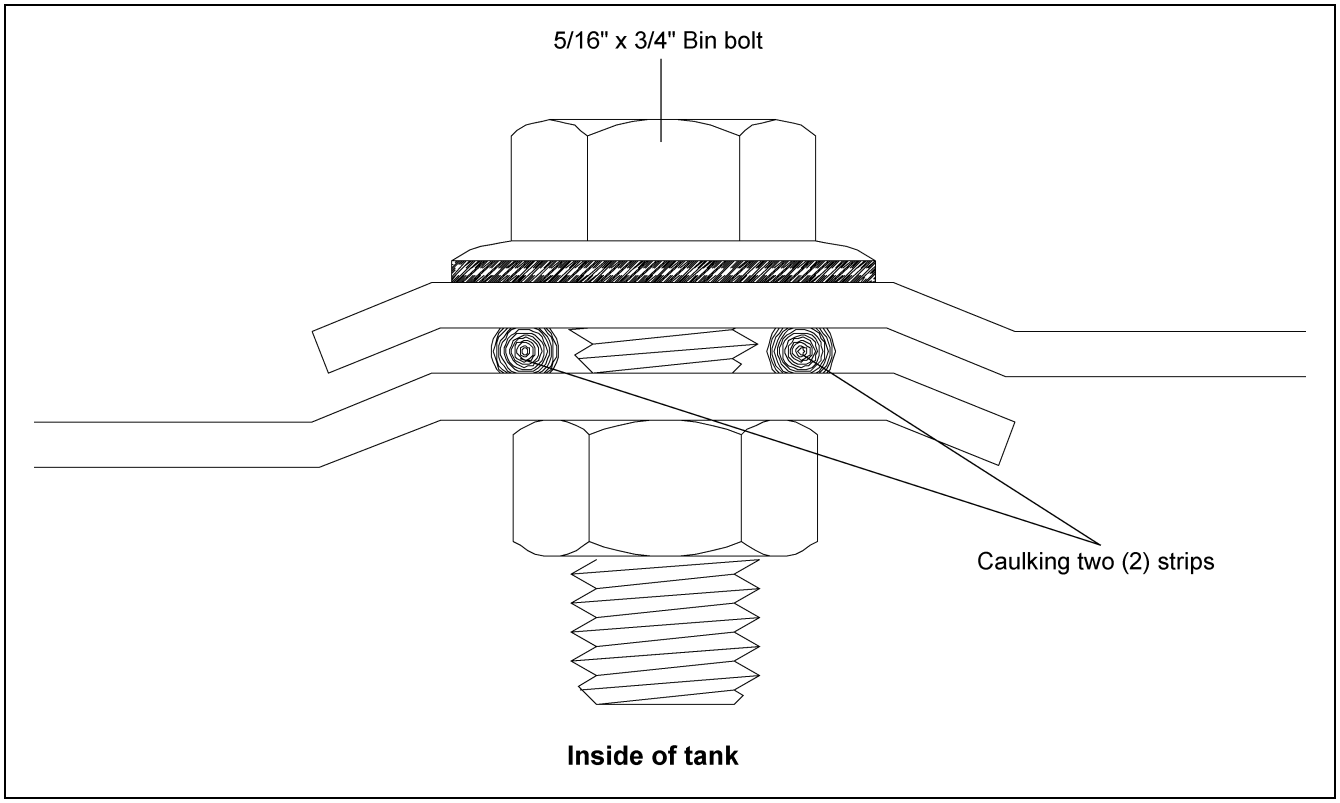


Figure 7C *Roof Sheet Overlap Detail*

Peak Ring Collar to Roof Panels

Apply two (2) strips of caulking between peak ring and roof panels, *See Figure 7D*. Note that the peak ring goes on the outside of the roof panels.

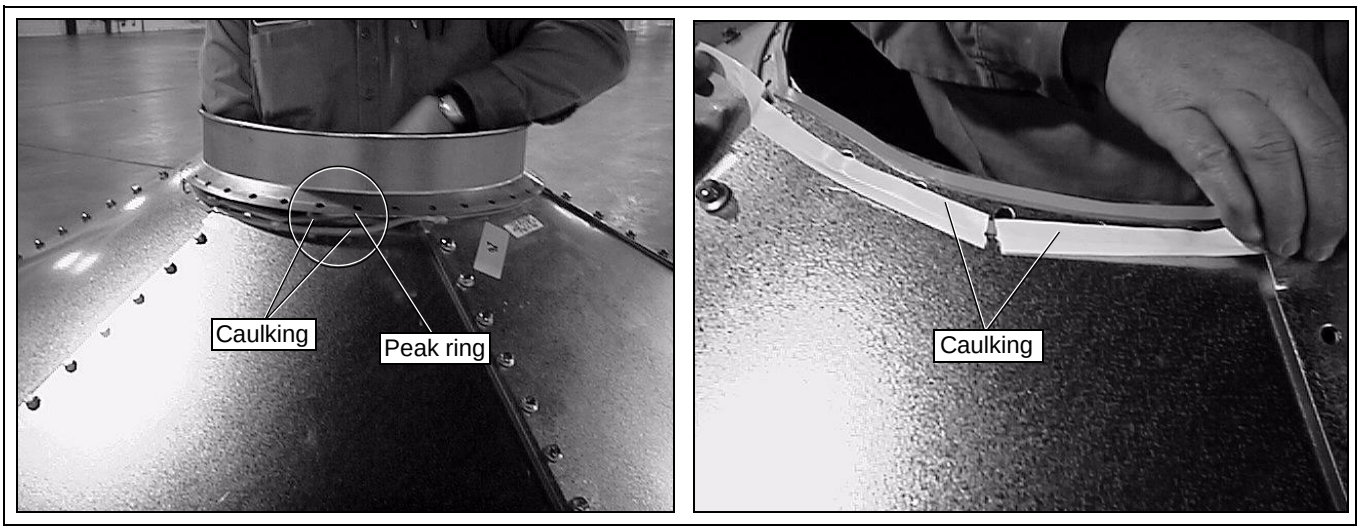


Figure 7D

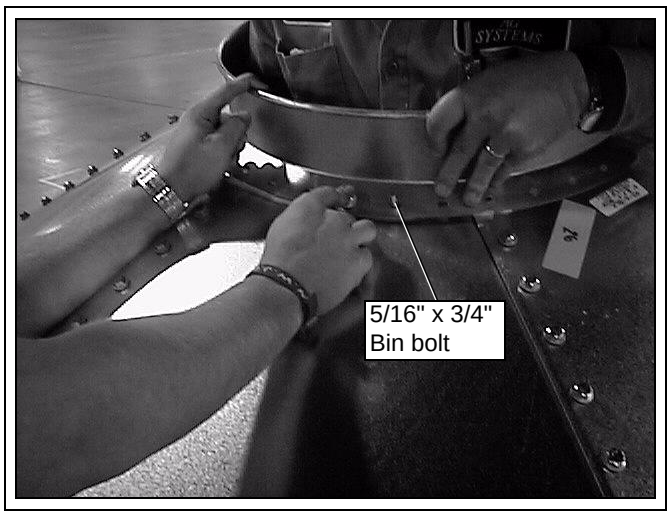


Figure 7E

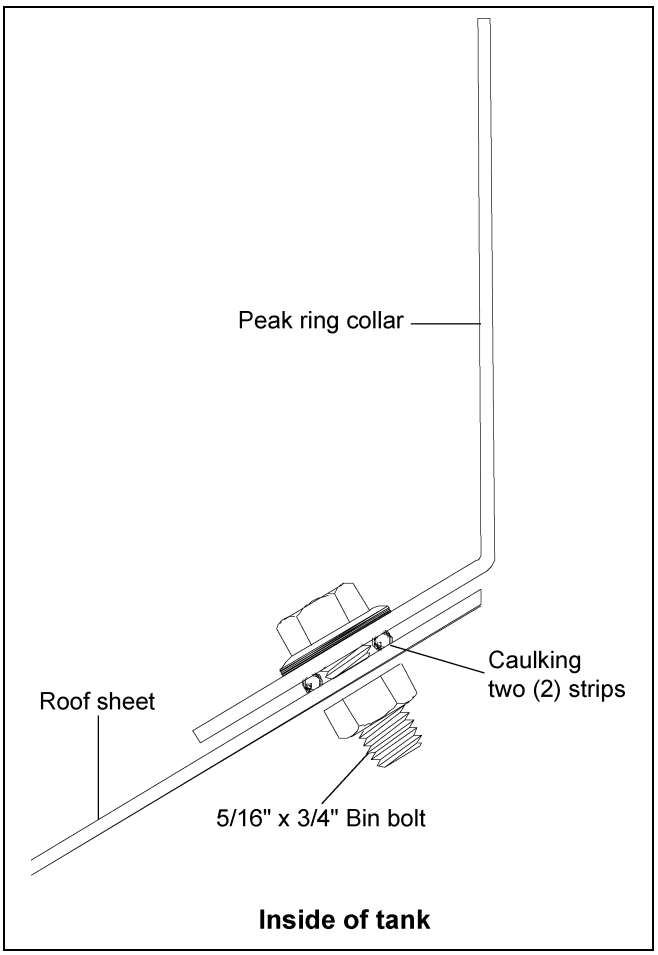


Figure 7F *Peak Ring Collar Detail*

Optional BFT Eave Ladder Assembly

The components needed to complete the eave ladder assembly are listed in the chart *below* and are numbered in the order of assembly. Review the installation instructions for each component before beginning. Failure to do so may complicate the installation and cause unnecessary field drilling. *(See Figure 8A.)*

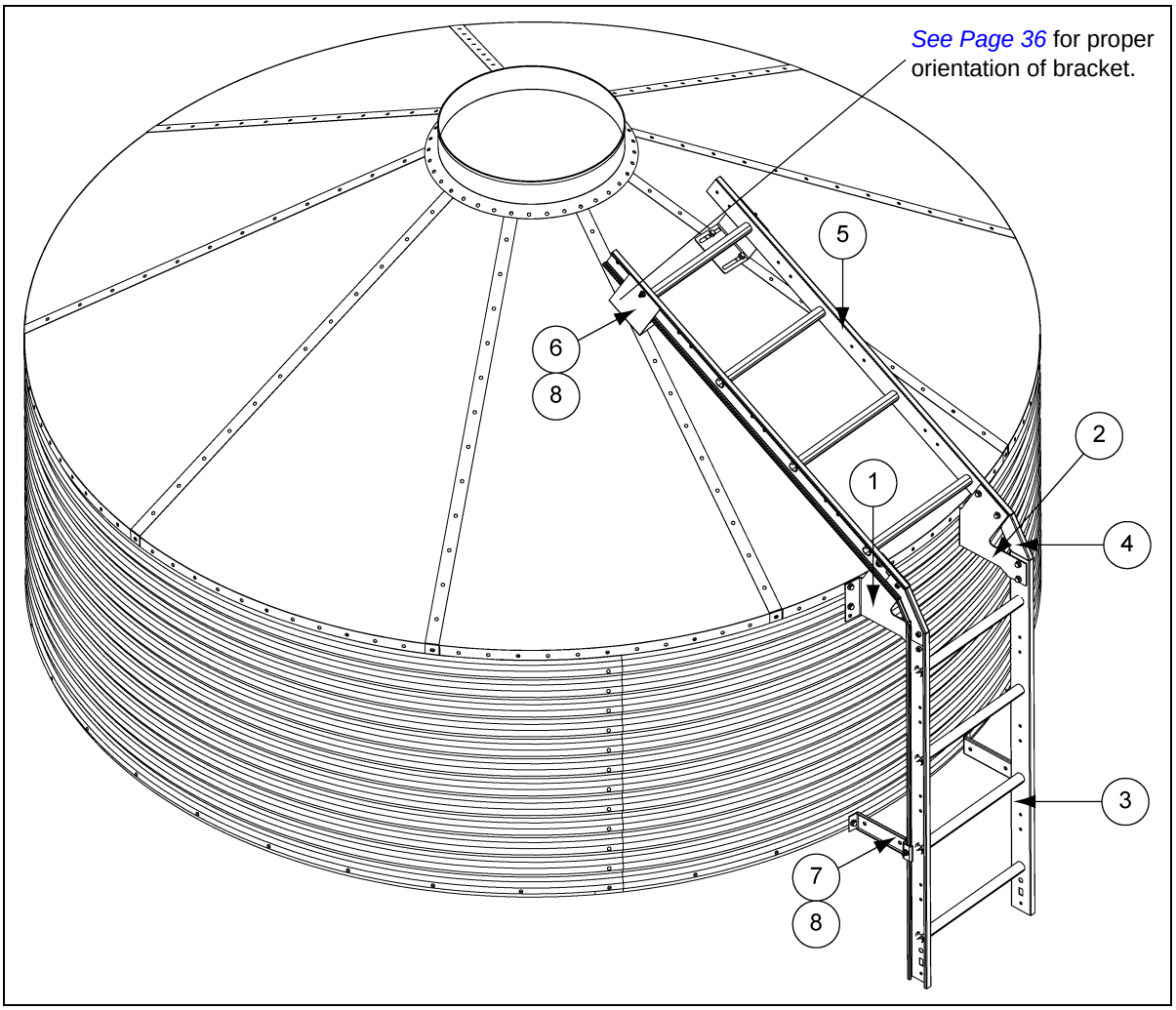


Figure 8A

Ref #	Description	Qty
1	L.H. Starter Bracket	1
2	R.H. Starter Bracket	1
3	Top 4' Ladder Section	1
4	Connector Bracket	2
5	Roof Ladder Section	1
6	Roof Ladder Support Bracket	2
7	Standoff Bracket	2
8	Wedge	4

Starter Bracket Installation

The starter brackets must be centered in the roof sheet to ensure proper installation of the roof ladder support brackets. Before the starter brackets can be installed, two (2) 3/8" holes must be drilled. The holes must be 2.66" below and directly in line with the top row of pre-punched horizontal holes 18-3/4" apart. Refer to *Figure 8B* for additional clarification of hole locations. Use 5/16" and 3/4" bin bolts for connections.

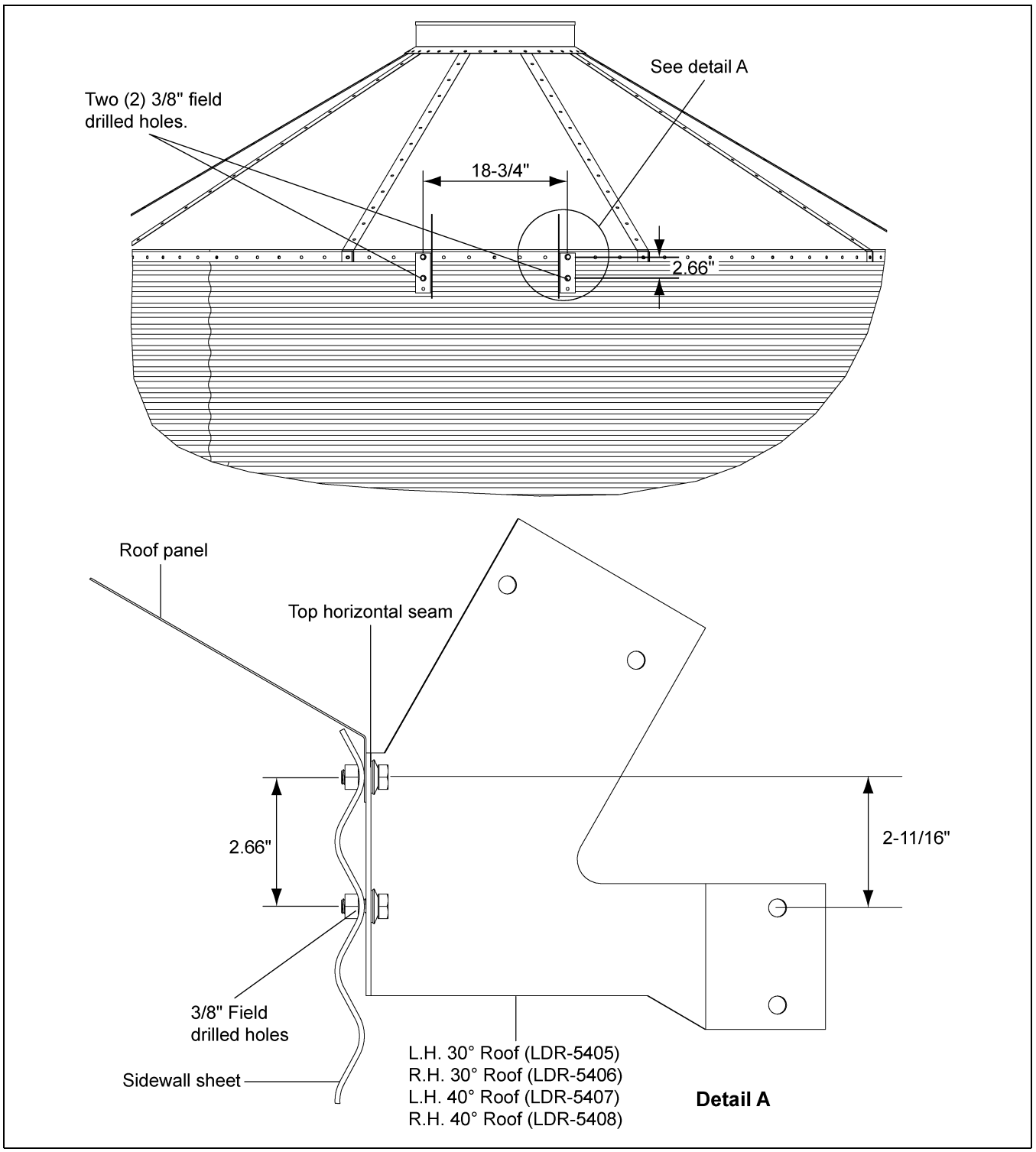


Figure 8B

Sidewall and Roof Ladder Installation

Check the sidewall ladder to make sure the ladder rung dimples face upward. Attach the ladder to the sidewall with the starter brackets to the inside of the ladder and the connector brackets to the outside as shown in *Figure 8C*. Once the sidewall ladder is installed, attach the roof ladder to the other end of the connector brackets. All bolts should be installed with the head of the bolt to the inside of the ladder. Use 5/16" x 3/4" bin bolts for all connections.

NOTE: *The roof ladder must be one continuous ladder section. The roof ladder cannot be assembled from two (2) or more smaller ladder sections spliced together. See chart below for required roof ladder lengths vs bin diameter and roof angle.*

WARNING

Failure to follow instructions may cause damage or failure of the equipment.

Bin Diameter	Roof Ladder Length	
	30° Roof	40° Roof
6'	3'	3'
7'	3'	3'
9'	4'	5'

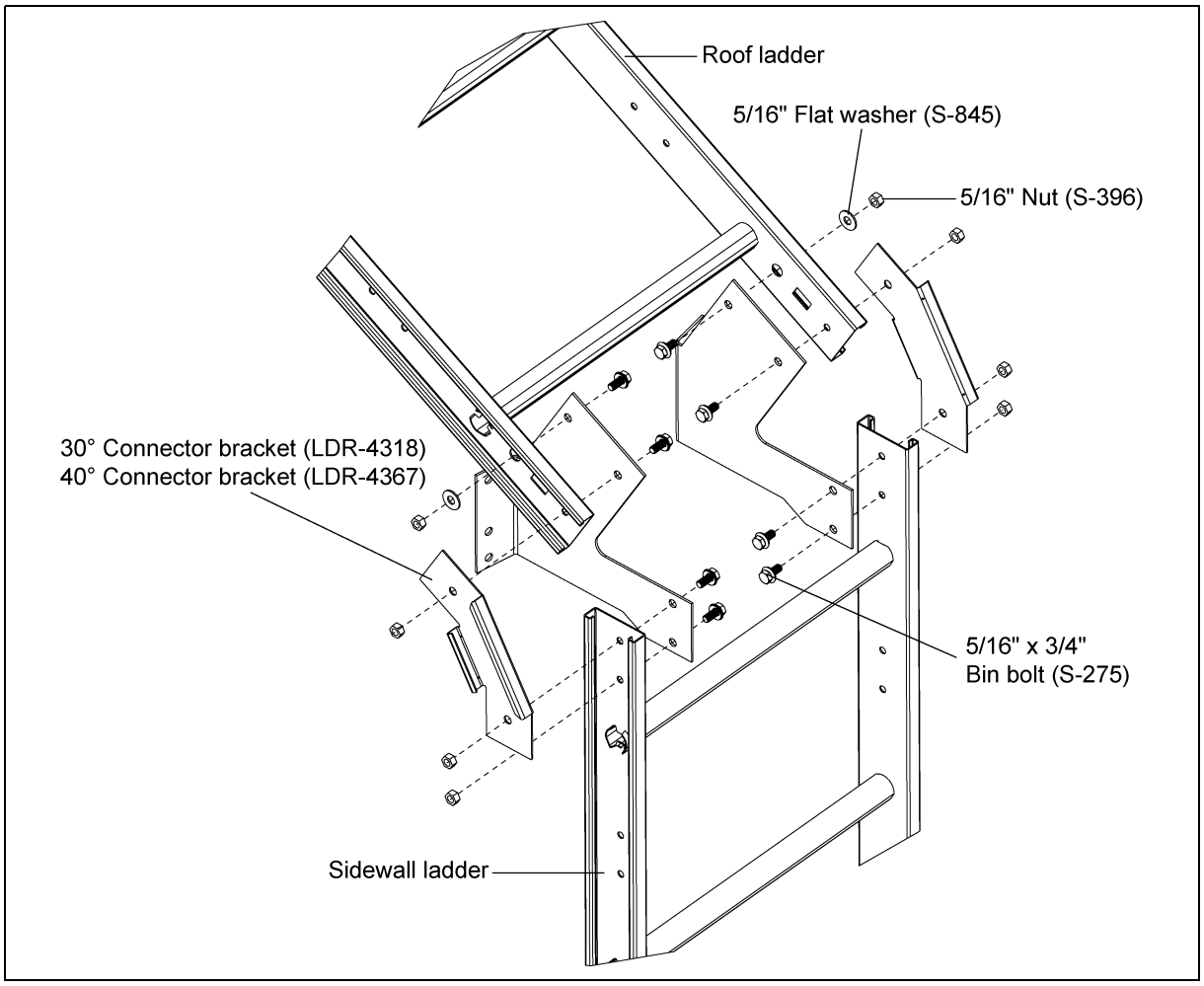


Figure 8C

Roof Ladder Support Bracket Installation

The roof ladder requires support brackets at the top of the ladder. These upper ladder support brackets either bend in towards the center of the ladder or bend out away from the ladder depending on the diameter and roof angle of the tank being assembled. *See Figure 8D below and Figure 8H on Page 36* that show brackets for the 6' 30°, 9'30° and 9'-40° roofs. *See Figure 8E on Page 35 and Figure 8I on Page 36* that show brackets for 6' 40°, 7' 30° and 7' 40° roofs. Assemble the wedge and support brackets to the ladder rail as shown in *Figure 8F on Page 35 and Figure 8G on Page 36*. Then, slide the support bracket assemblies along the ladder rails as shown in *Figure 8D below and Figure 8E on Page 35* until the slots match up with the pre-punched holes in the roof panel and attach using the existing bolts.

NOTE: *The roof ladder supports must be assembled so that the maximum distances are not exceeded. See Figure 8J on Page 37 and the "maximum distances chart" to determine maximum allowable spacing of support brackets.*

WARNING

Failure to follow instructions may cause damage or failure of the equipment.

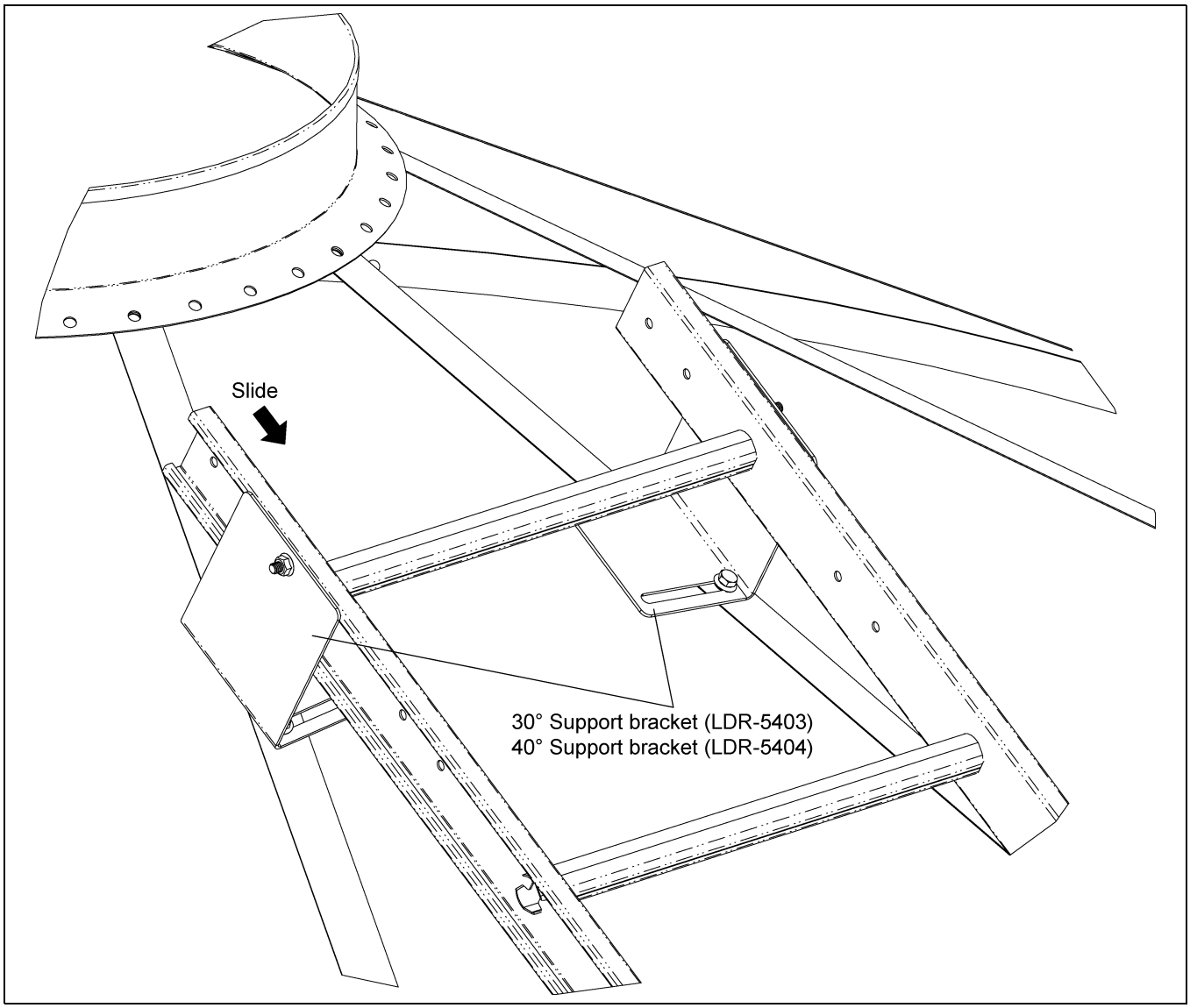


Figure 8D

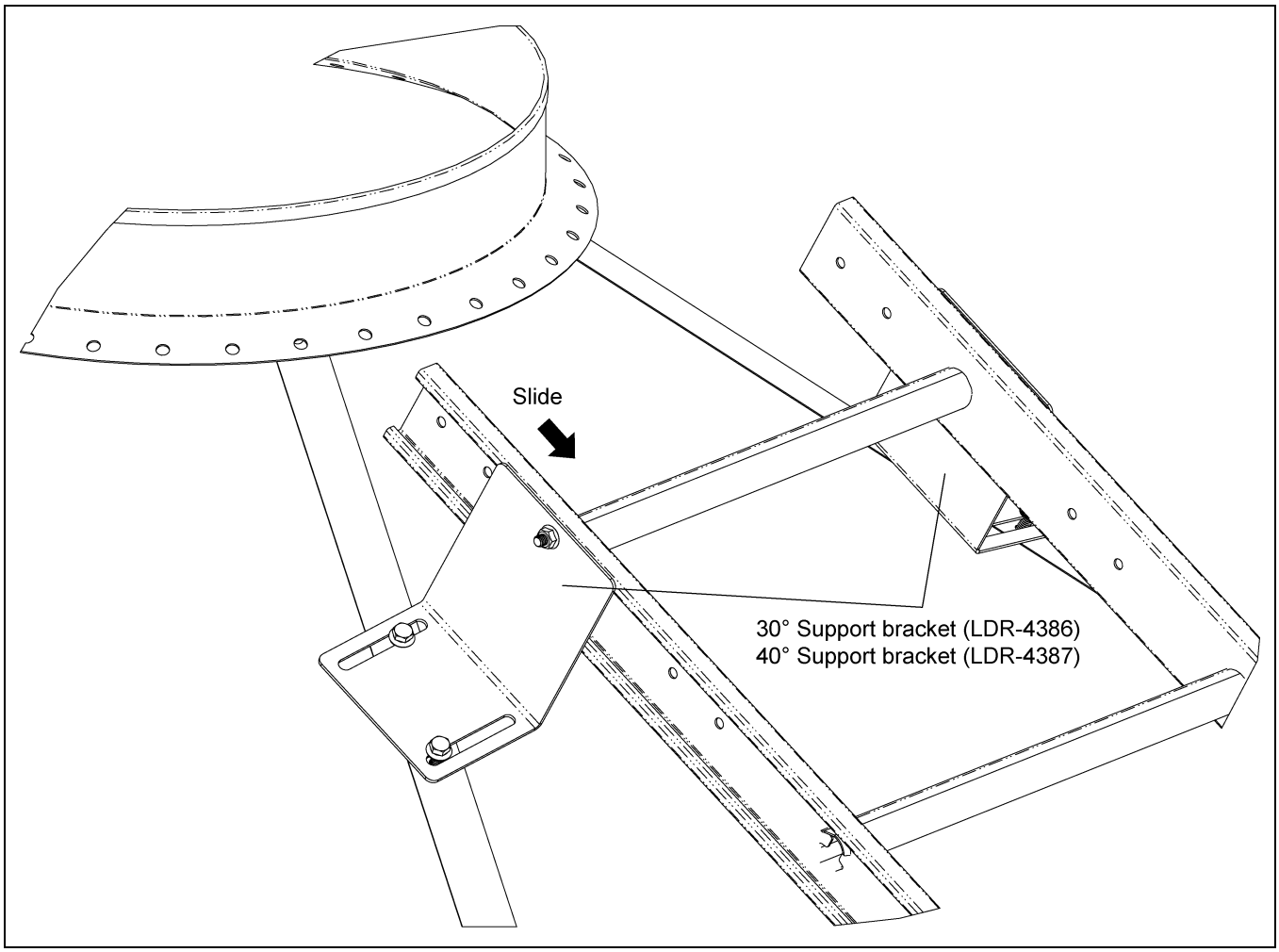


Figure 8E

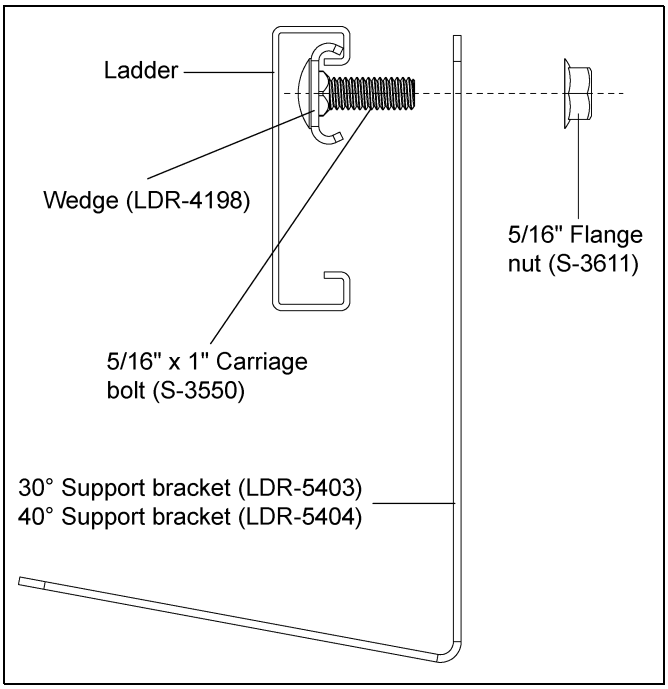


Figure 8F

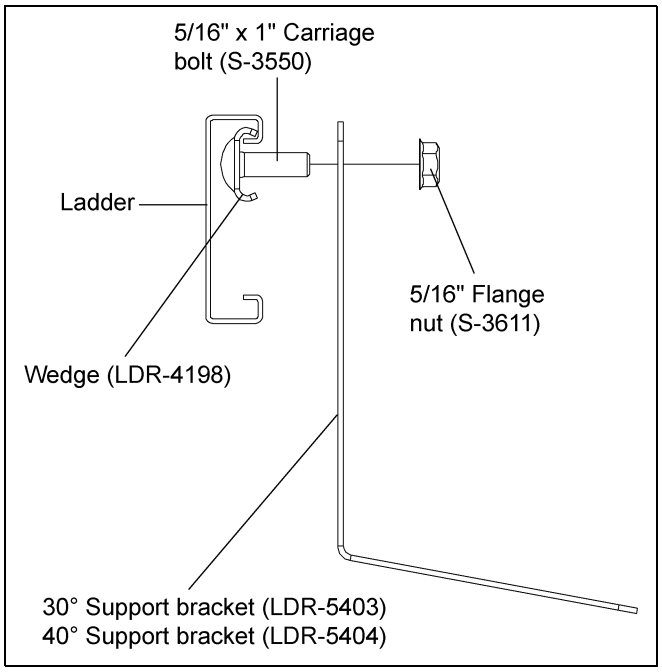


Figure 8G

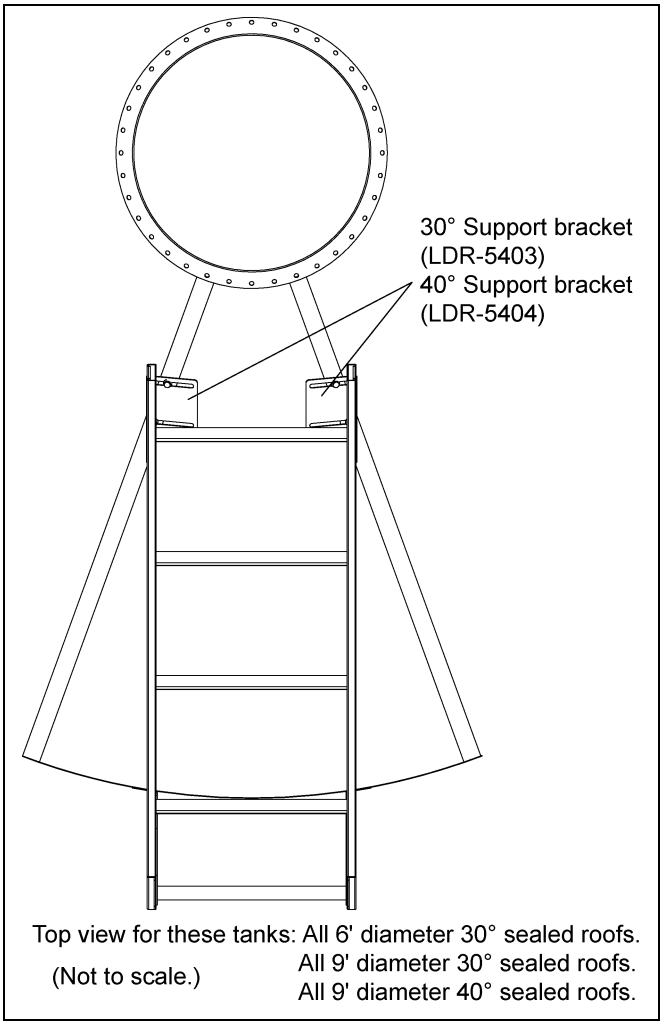


Figure 8H

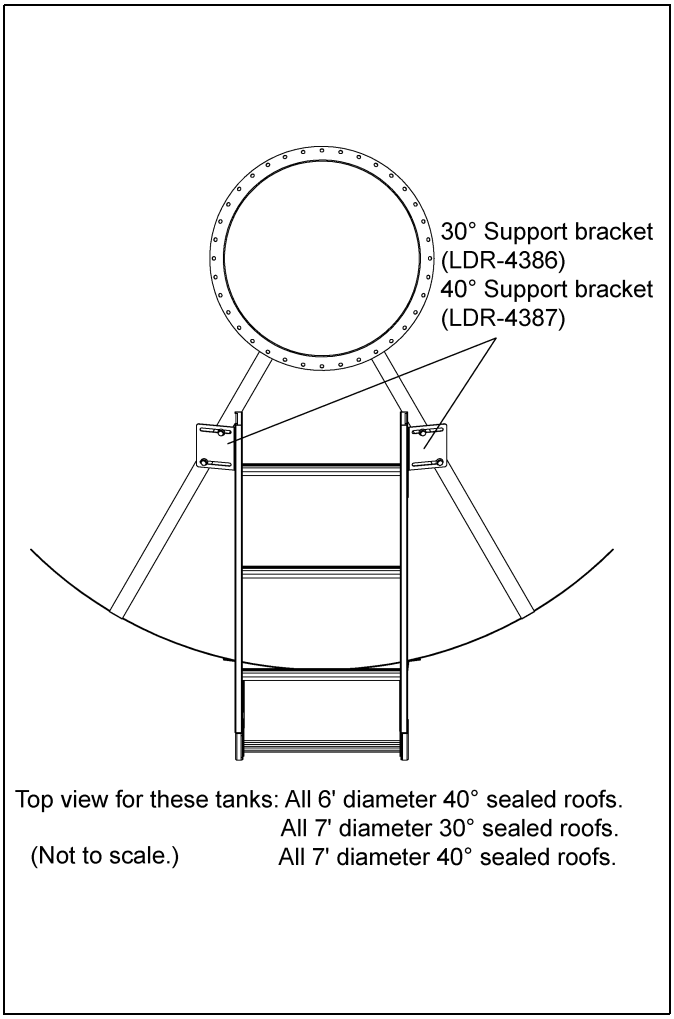


Figure 8I

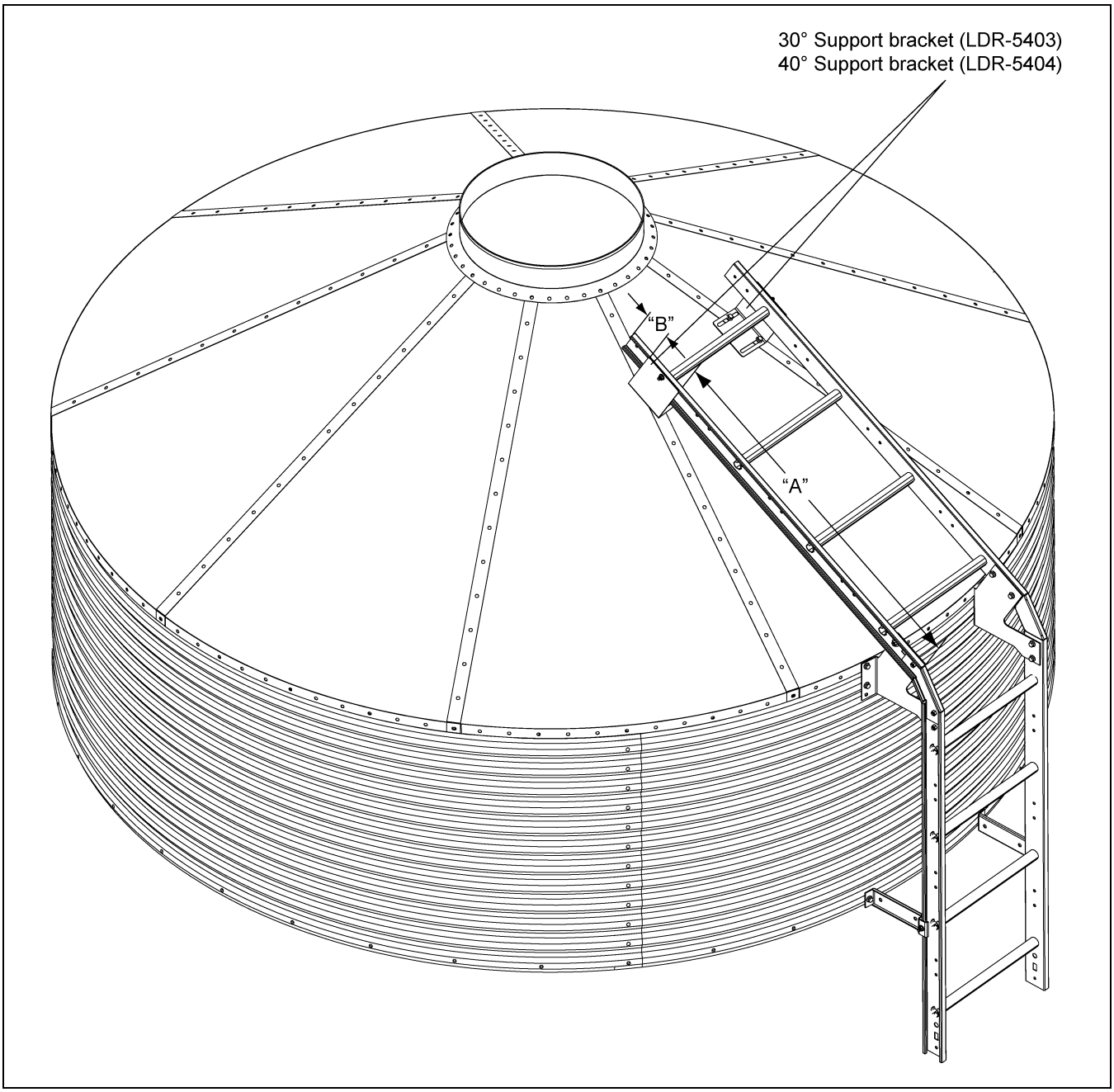


Figure 8J *Maximum Allowable Distance*

Maximum Distances Chart	"A"	"B"
Maximum allowable distance between ladder support bracket and the edge of the ladder at the eave	50 Inches	
Maximum allowable distance between ladder support bracket and edge of ladder at peak		10 Inches

Ladder Standoff Installation

With the sidewall ladder in place, standoff brackets must be installed on the ladder and attached to the sidewall at each horizontal seam (every 32"). Start by assembling the standoff bracket and wedge to the ladder rail as shown in *Figure 8K*. Then, slide the standoff assembly along the ladder rail until the standoff is in line with the pre-punched hole in the horizontal seam and attach to the sidewall using 5/16" x 3/4" bin bolts.

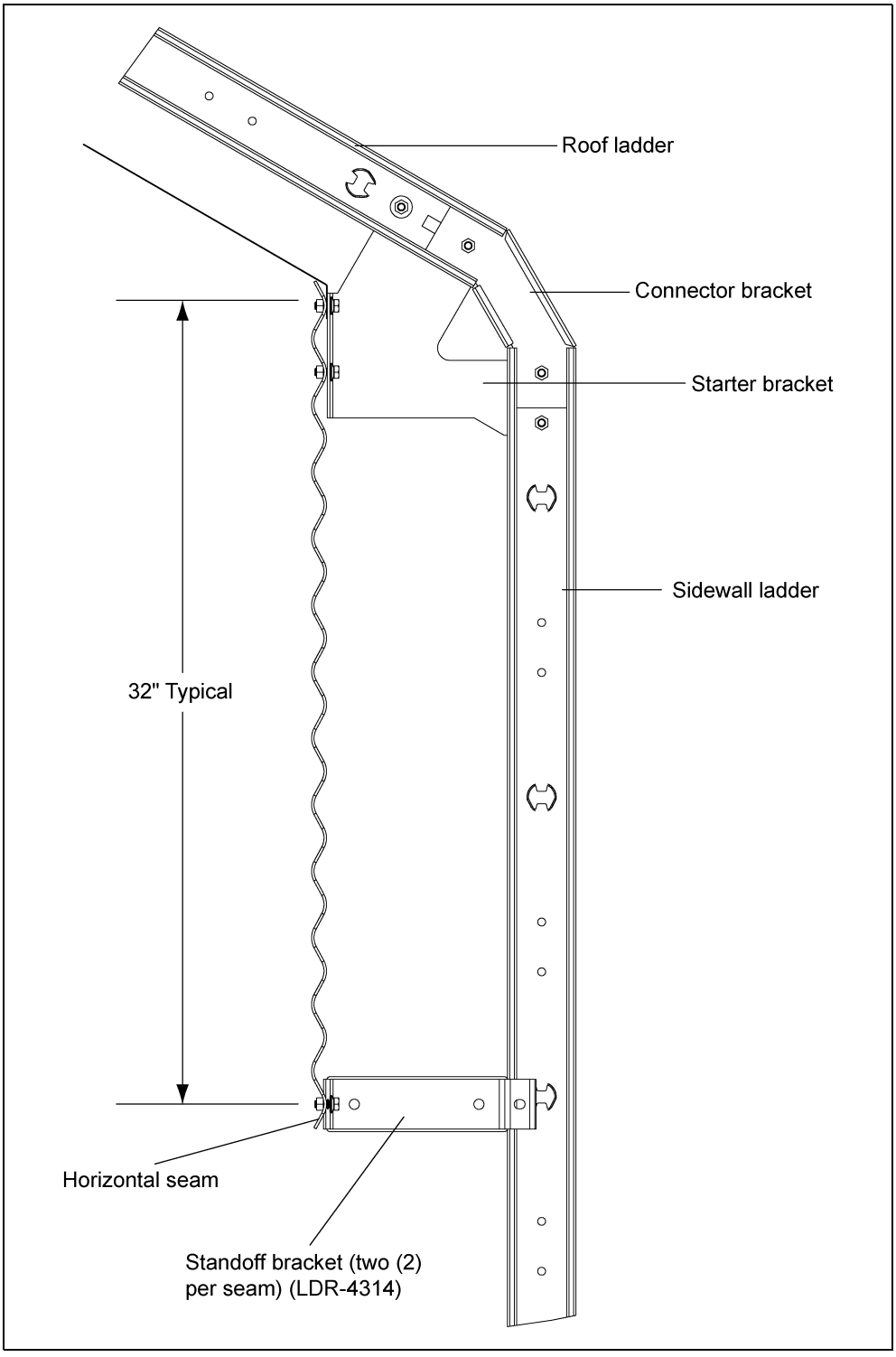


Figure 8K

Ladder Section Assembly

Two (2) splice plates are required to attach each additional ladder section. The head of the bolt should be to the inside of the ladder with the splice plate on the outside as shown in *Figure 8L*. Use 5/16" x 3/4" bolts for all connections.

NOTE: *With most installations, the last ladder section to reach the concrete will need to be cut to fit.*

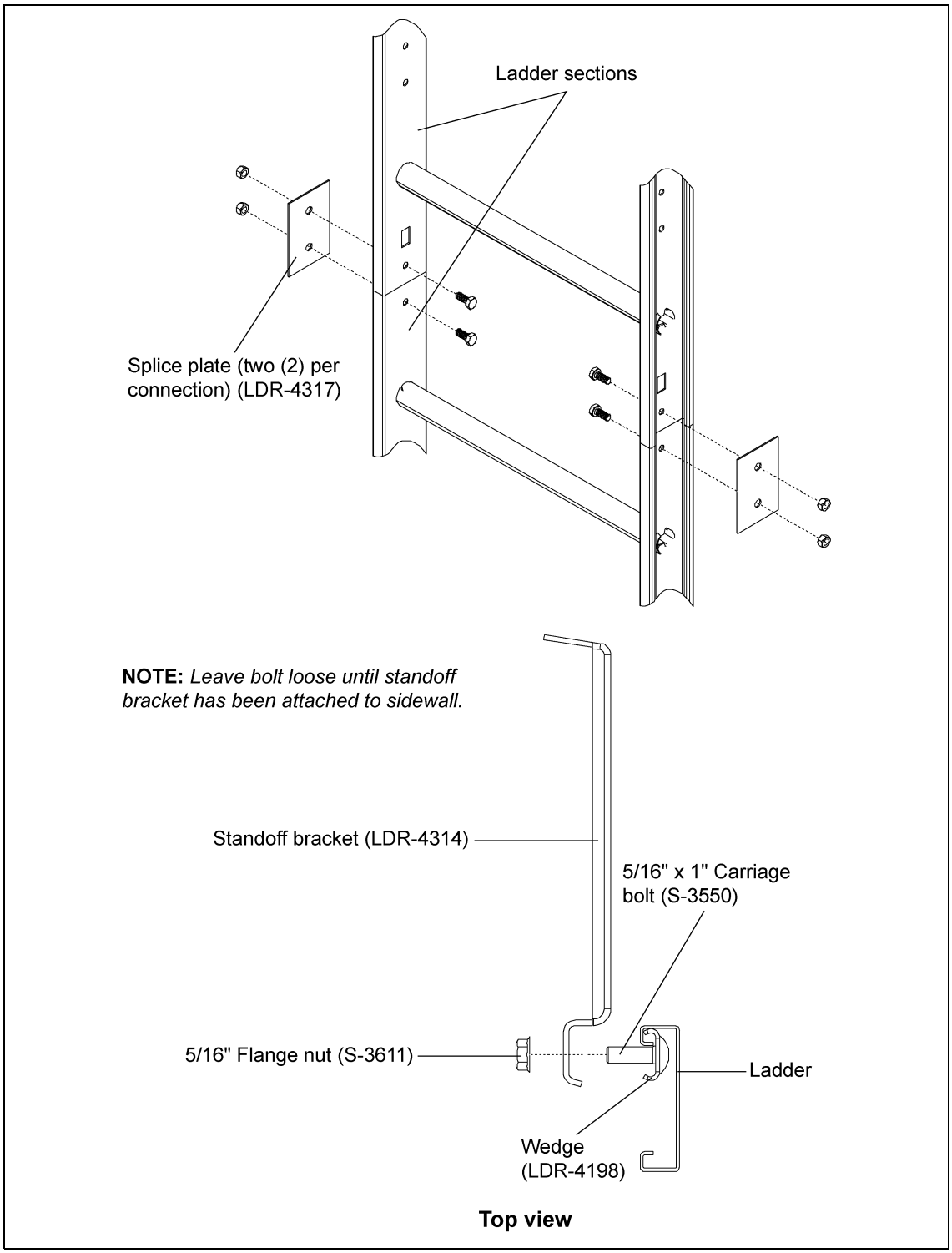


Figure 8L

Ladder Support Detail

The ladder must be secured to the leg assembly with standoff brackets using support channels as shown in *Figure 8M*.

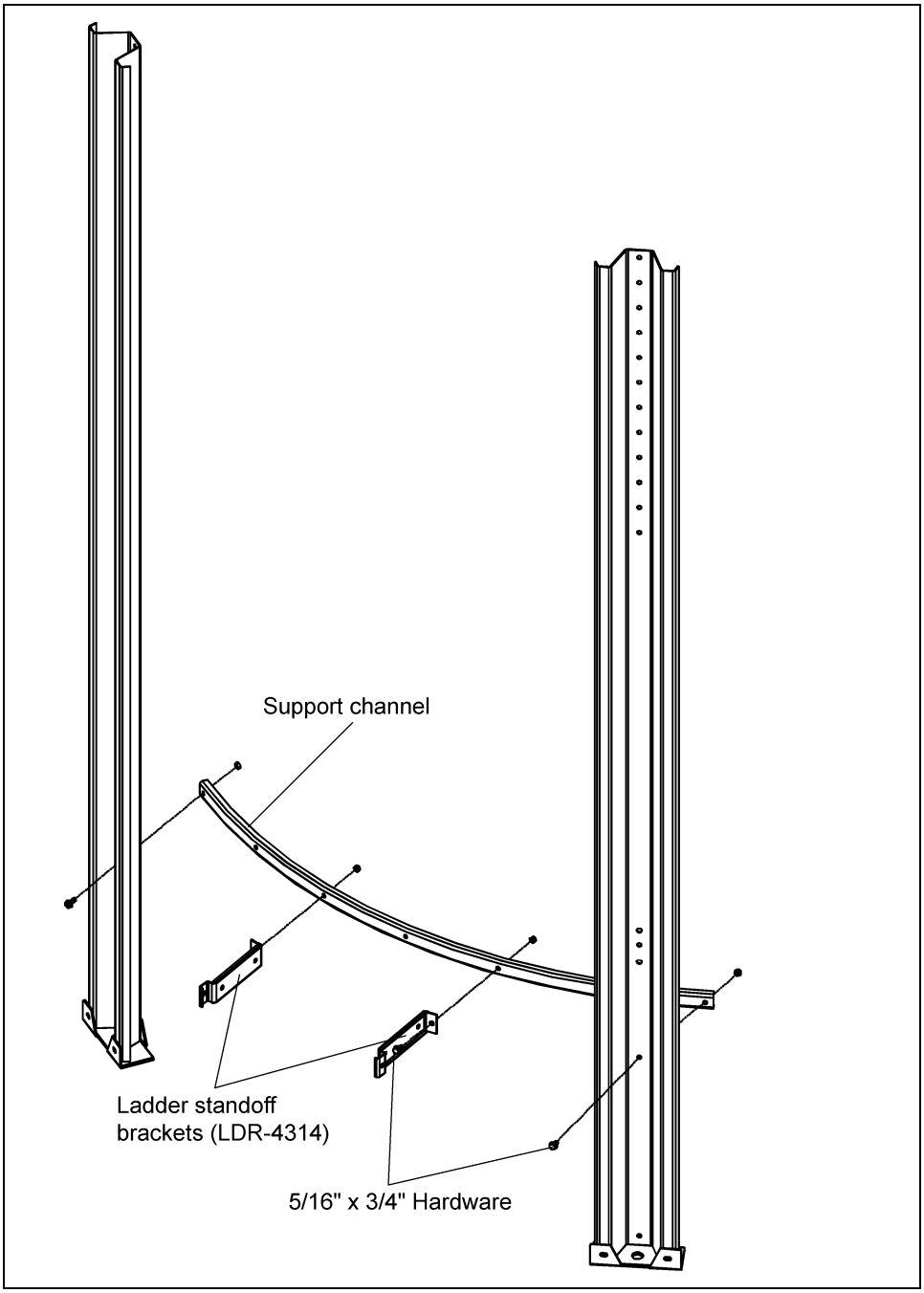


Figure 8M

Diameter	Support Channel	Qty
6'	BLK-10147	1
7'	BLK-10148	2
9'	BLK-10149	2

Ladder System With Safety Cage

Extension Rail Installation

Before the safety cage can be installed, the ladder extension rails must be attached. Start by bolting the spacer brackets through the top and bottom set of holes in the top ladder section. Then, attach the extension rail to the spacer brackets as shown in *Figure 9A*. When installed correctly, the bottom of the extension rail should be flush with the bottom of the top ladder section. Use 5/16" x 3/4" bin bolts for all connections.

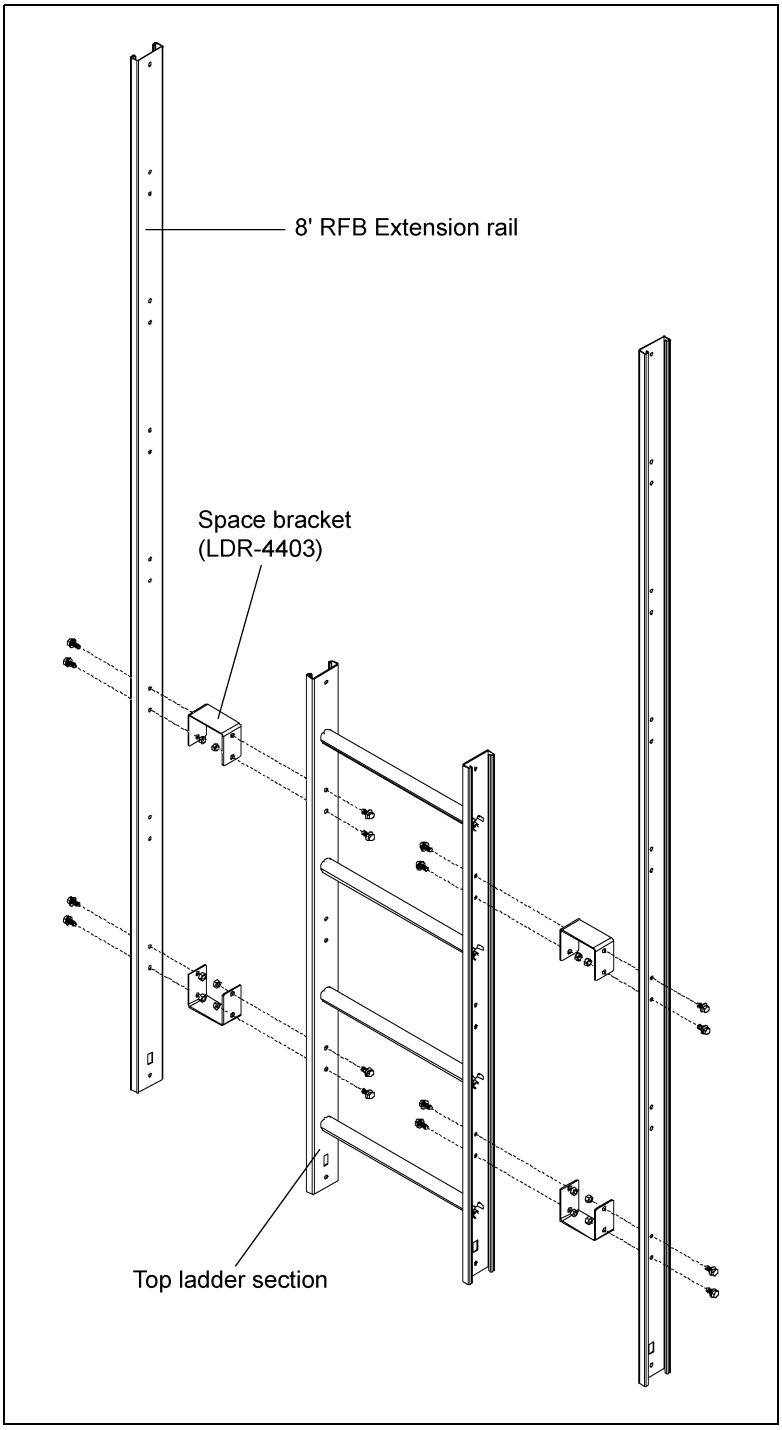


Figure 9A

Eave Adjustable Braces

The adjustable braces must be attached at this time. A large diameter tube and two (2) smaller tubes are used to make up one adjustable brace. Slip the smaller tubes inside the larger tubes and attach one smaller tube to the top of the ladder extension rail. Adjust the other smaller tube so the bottom of the flattened tube reaches the roof panel. Field drill four (4) 5/16" holes through both large and small tubes and bolt together using 1/4" x 1-1/2" bolts and nuts. This prevents the adjustable braces from slipping. *(See Figure 9B.)*

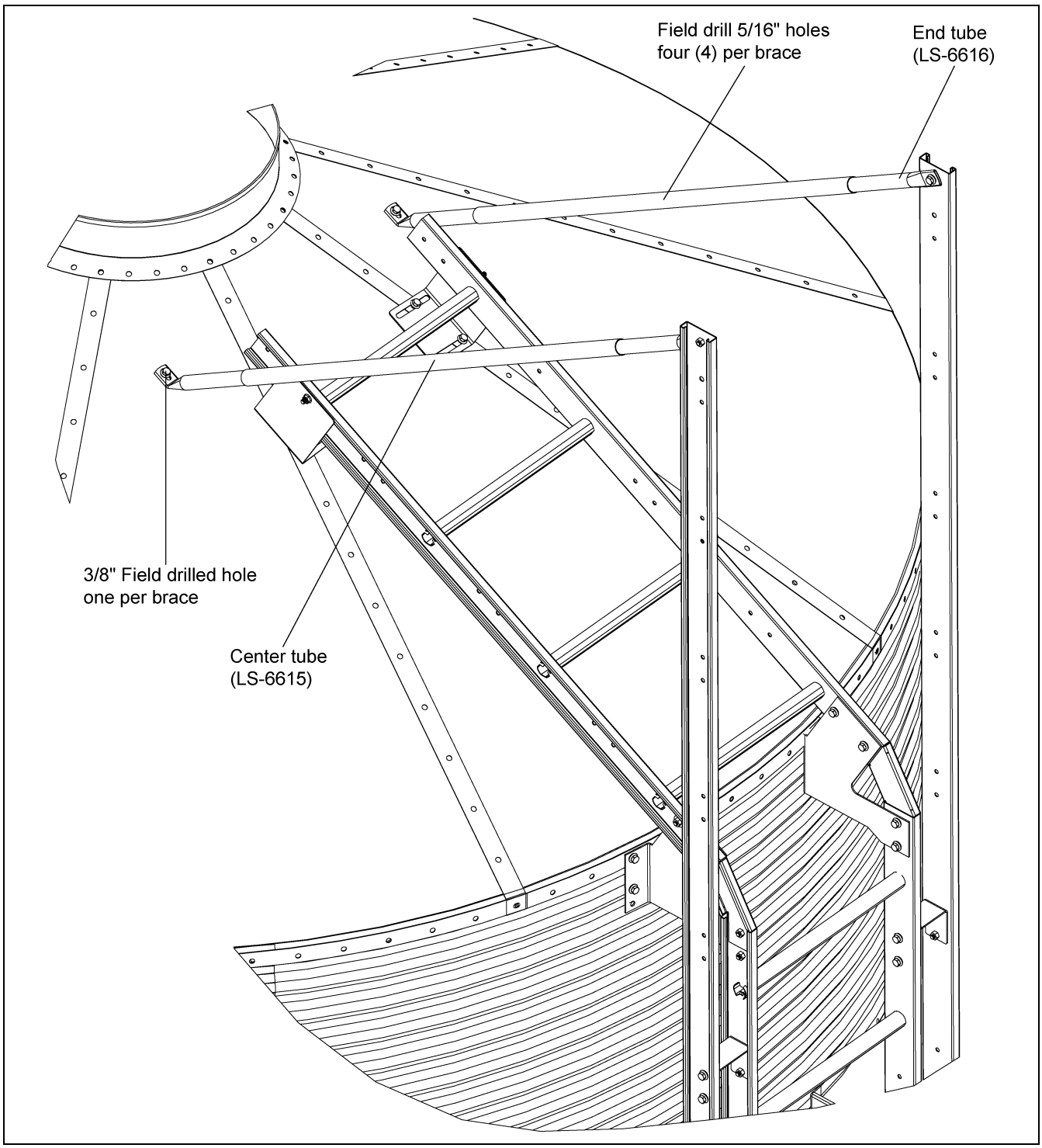


Figure 9B

Safety Cage Hoop Assembly

To complete the safety cage hoop installation, some pre-assembly is required. Attach four (4) safety cage brackets to the extension rails and two (2) safety cage brackets to the second 4' ladder section as shown in *Figure 9C*. See cage hoop bracket detail *on Page 44* for proper installation. Next, bolt each set of safety cage hoop halves together using 5/16" x 3/4" bolts with the head of the bolt to the inside of the safety cage. You may now bolt these assemblies to the safety cage brackets. Tighten bolts as you go.

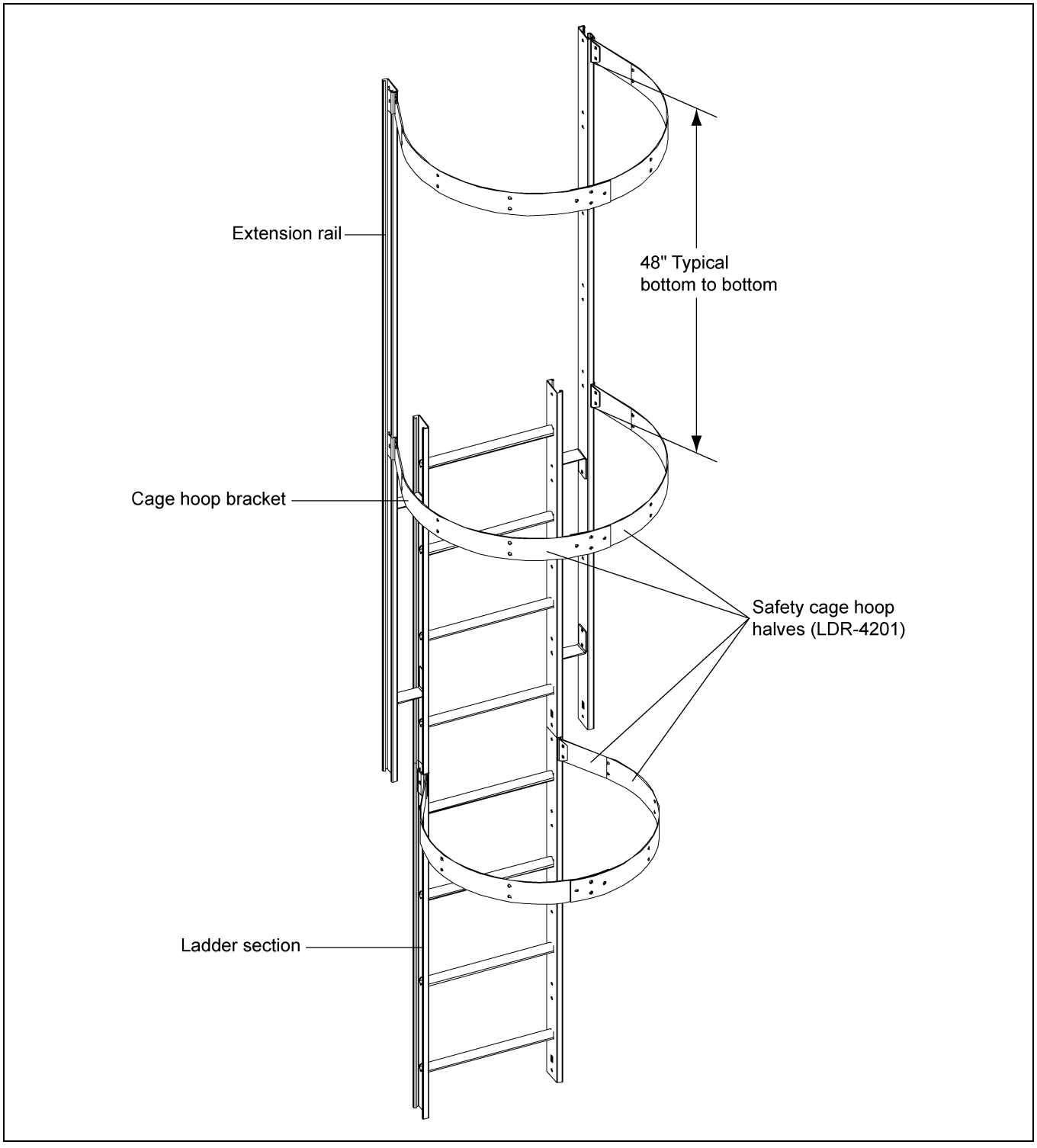


Figure 9C

Cage Hoop Bracket Detail

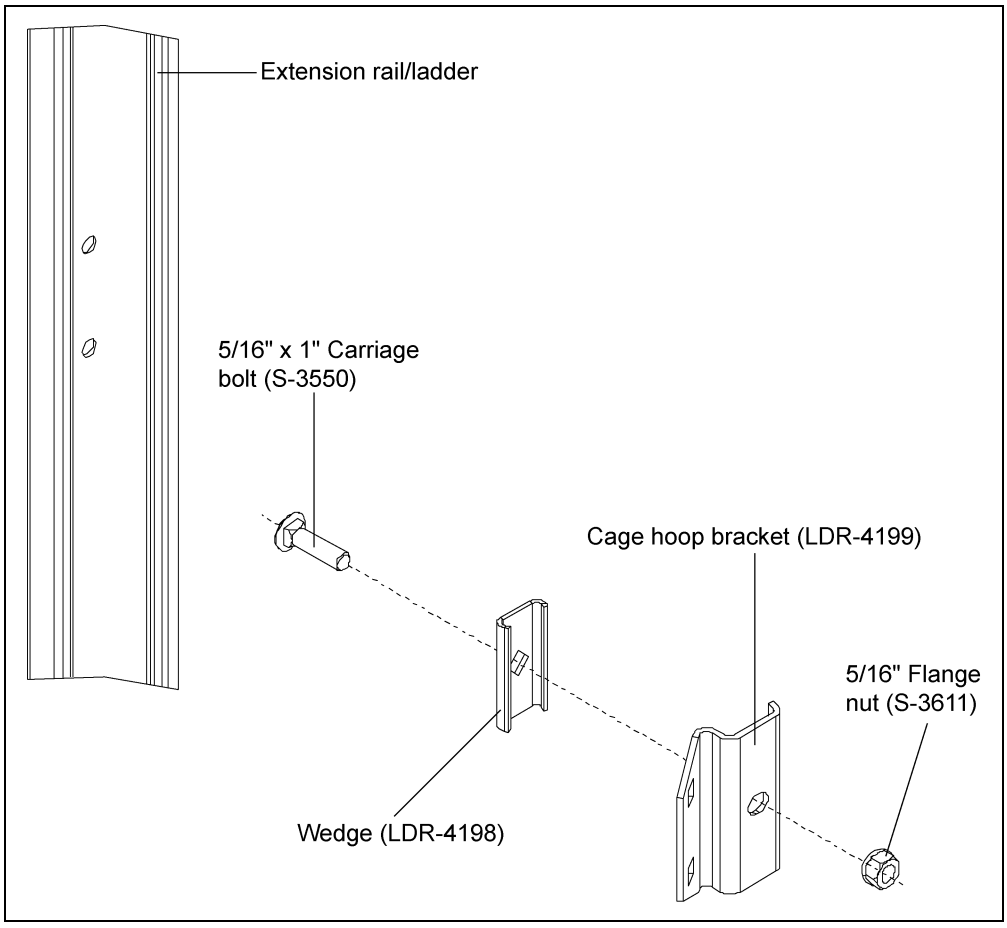


Figure 9D

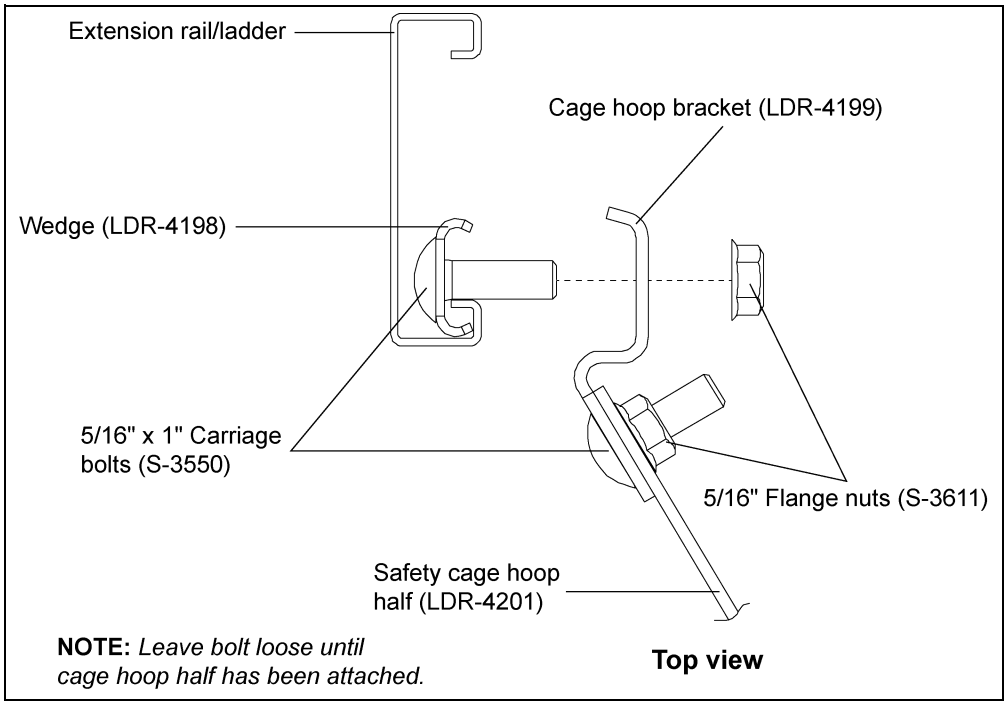


Figure 9E

Safety Cage Installation

Vertical Supports

After all three (3) hoop assemblies are in place, attach the 48" vertical supports from hoop assembly to hoop assembly as shown in *Figure 9F*. This requires fourteen (14) supports, seven (7) between each set of hoops. The second set of vertical supports must be bent at the flat area to allow for the tapering of the bottom hoop assembly. Use 5/16" x 3/4" bolts with the head of the bolt to the inside of the safety cage.

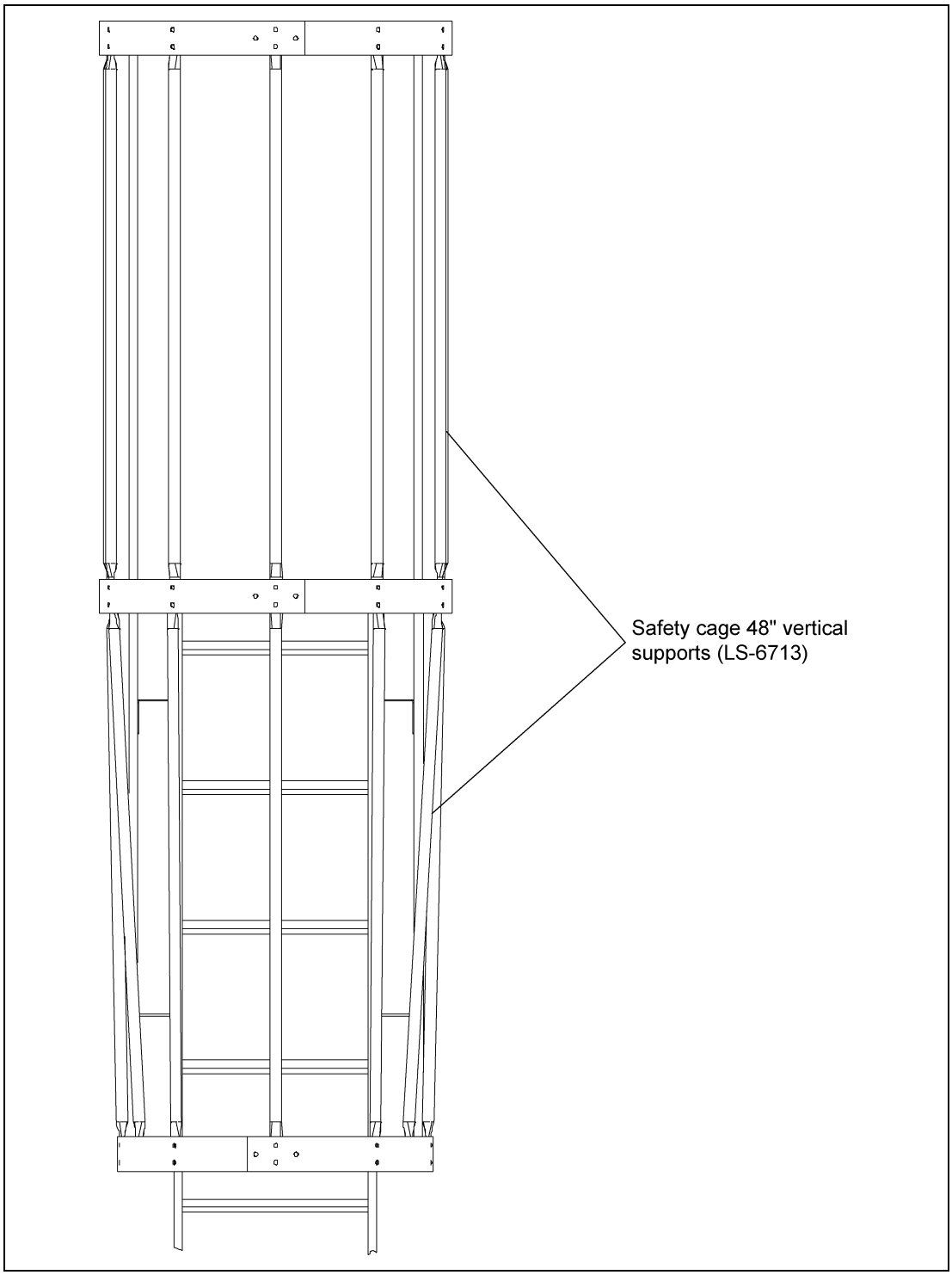


Figure 9F

48" Safety Cage

Attach the vertical support pieces to the existing hoop halves above using 5/16" x 3/4" bolts and nuts with the head of the bolt to the inside of the safety cage. Fasten two (2) hoop halves together and bolt to other end of vertical supports. Attach cage hoop bracket to ladder. See cage hoop bracket detail *on Page 44*. Once cage hoop brackets are installed, attach cage hoop halves and tighten bolts. Repeat installation for each safety cage required.

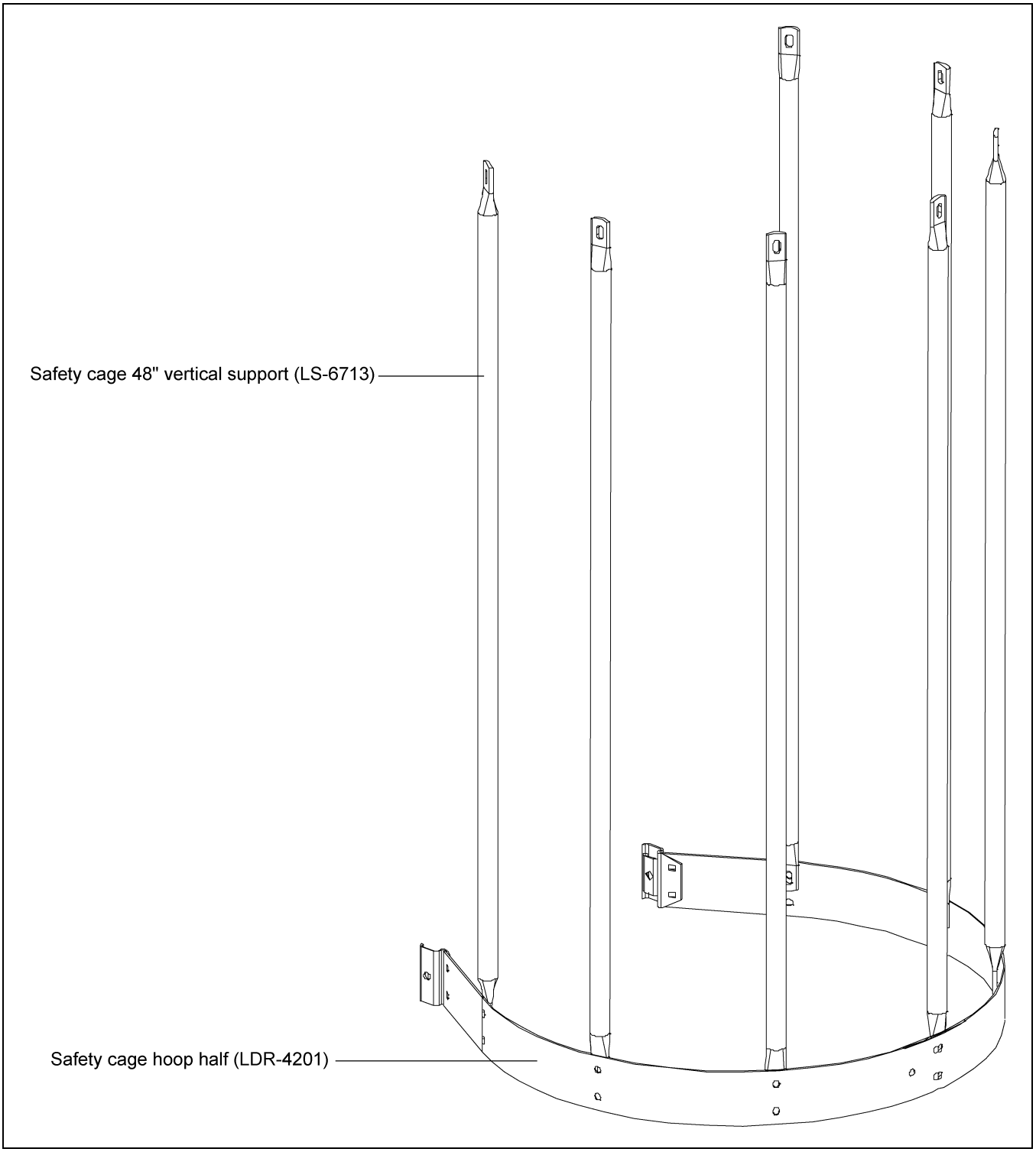


Figure 9G

24"-48" Safety Cage Bell Section

Attach the vertical supports to the hoop half assembly from the final safety cage installation using 5/16" x 3/4" bolts and nuts with the head of the bolt to the inside of the safety cage. Assemble the special bell hoop halves and attach to the other end of the vertical supports. The vertical supports must be bent at the flat area to allow for the angle of the bell section. Attach the safety cage brackets to the ladder as shown *in Figure 10A on Page 48*. Once the safety cage brackets are installed, attach the bell safety cage hoop half assembly to the safety cage brackets. Tighten bolts as you go.

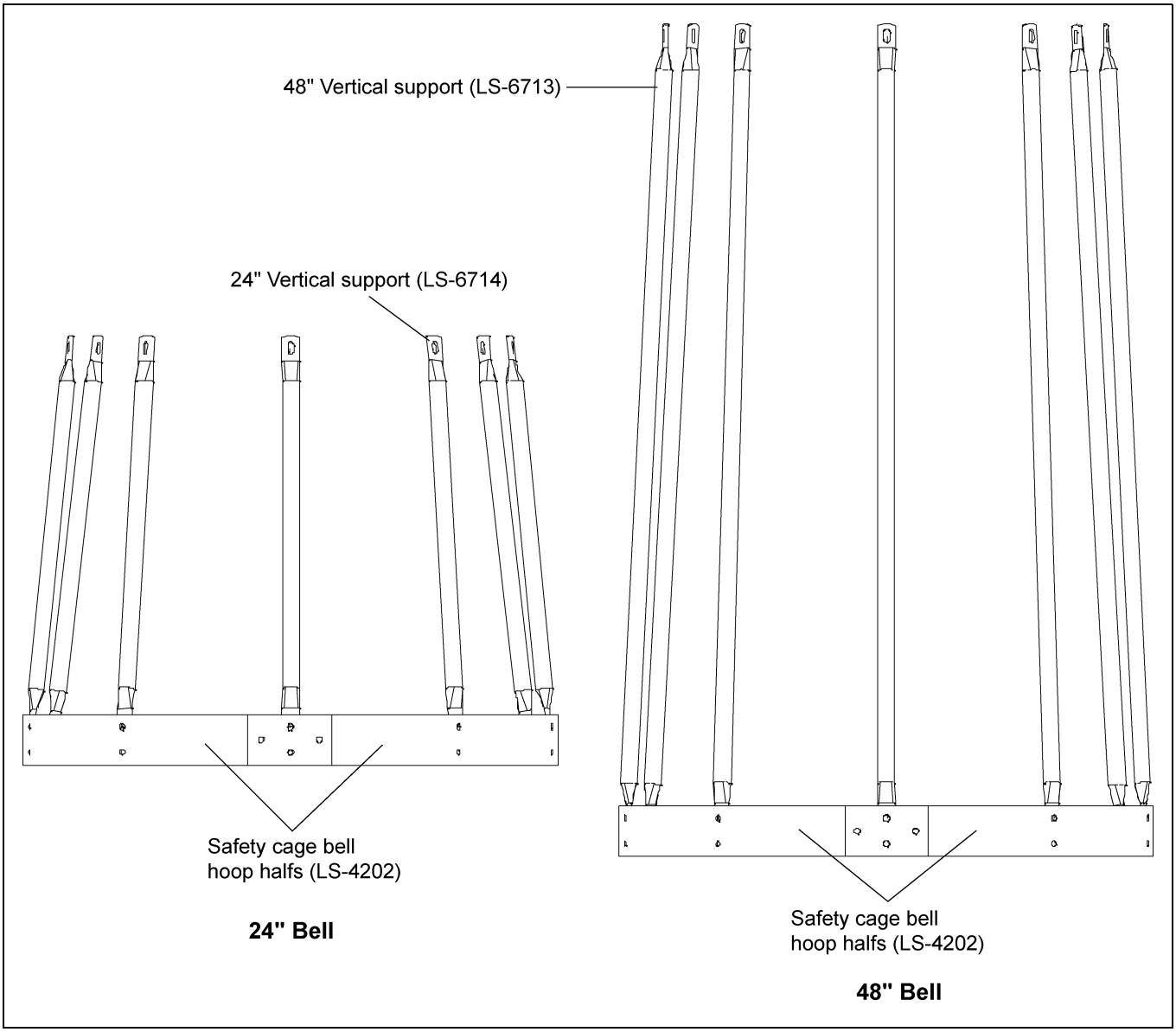


Figure 9H

Roof Cap and Ground Control Instructions

Additional Tools and Materials Needed:

- Clamp
- Assorted Wrench Set
- Ratchet and Socket Set

NOTE: *Roof cap ground control comes standard on 6'-60°, 7'-67° and 9'-60° Bulk Feed Tanks. Roof cap ground control is optional on all 45° Bulk Feed Tanks. (See Figure 10A.)*

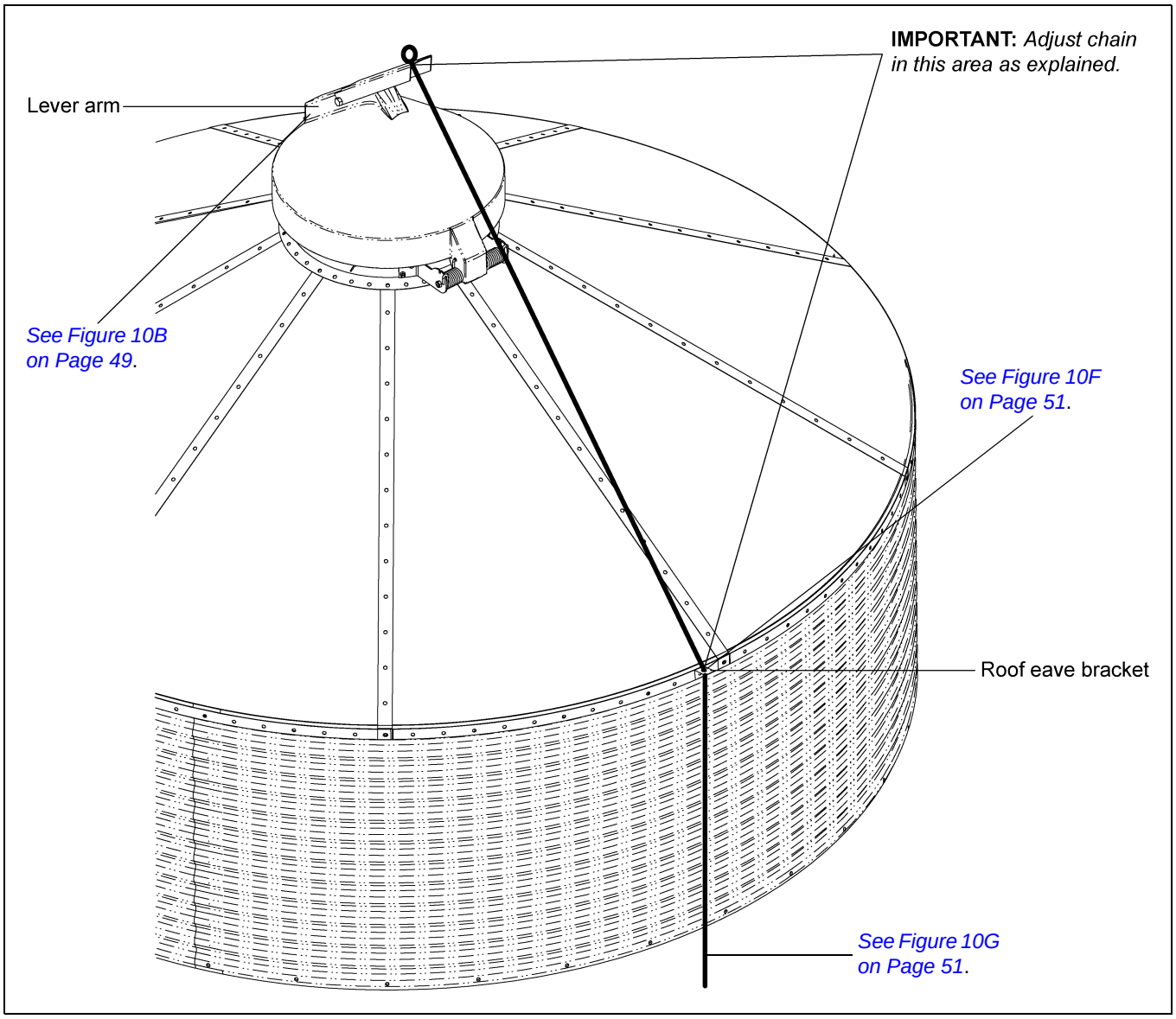


Figure 10A

1. **With the lid closed**, align the hole in the lever arm with the hole in the bin lid. Insert 1/2" bolt through the hole and fasten with the nylock nut using 3/4" wrench and ratchet. **NOTE:** *DO NOT over tighten. This is a pivot bolt and the lever arm must be able to pivot freely.*

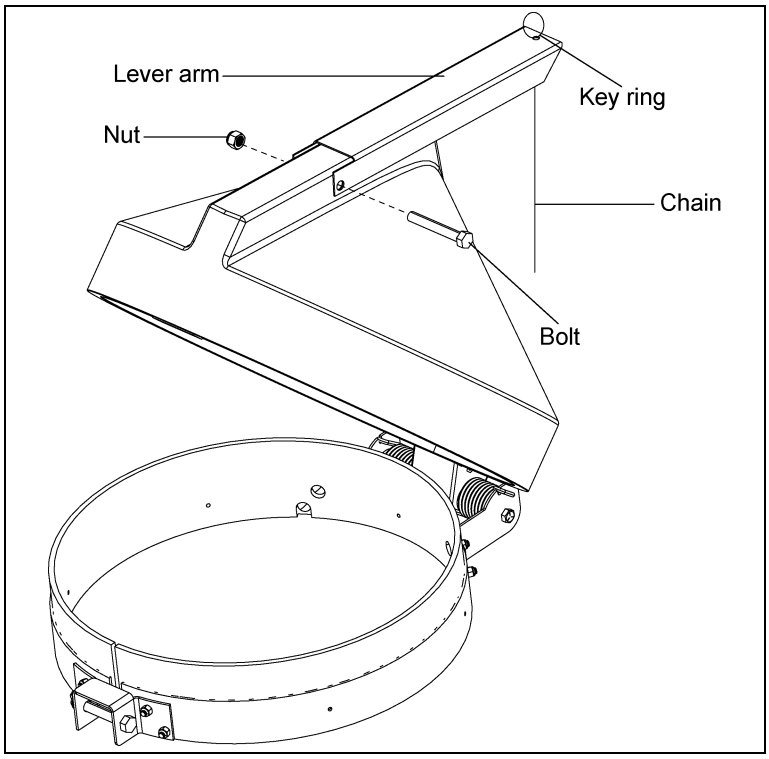


Figure 10B *Install Lever Arm and Chain*

2. Place the lid assembly over the existing peak ring collar and rotate lid assembly such that the lever arm and spring hinge line up with the roof eave bracket, *See Figure 10A on Page 48*. Use a clamp to pull the mounting brackets together. Slide the 3/8" carriage bolt supplied through the mounting bracket and loosely fasten with nut, *See Figure 10C*. Remove clamp and tighten the bolt with 9/16" ratchet, ensuring that the vertical flange tightens past the left edge of the top, horizontal flange, *See Figure 10E on Page 50*.

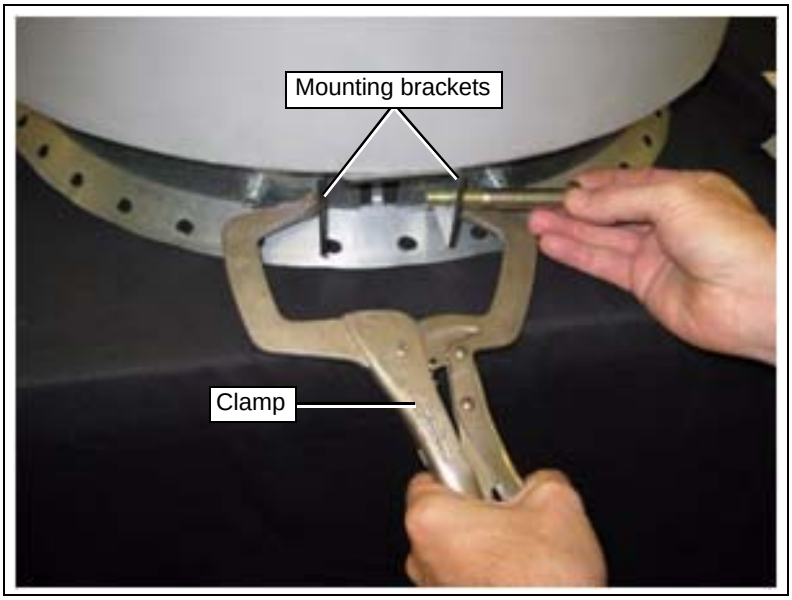


Figure 10C *Mount Lid to Peak Ring*

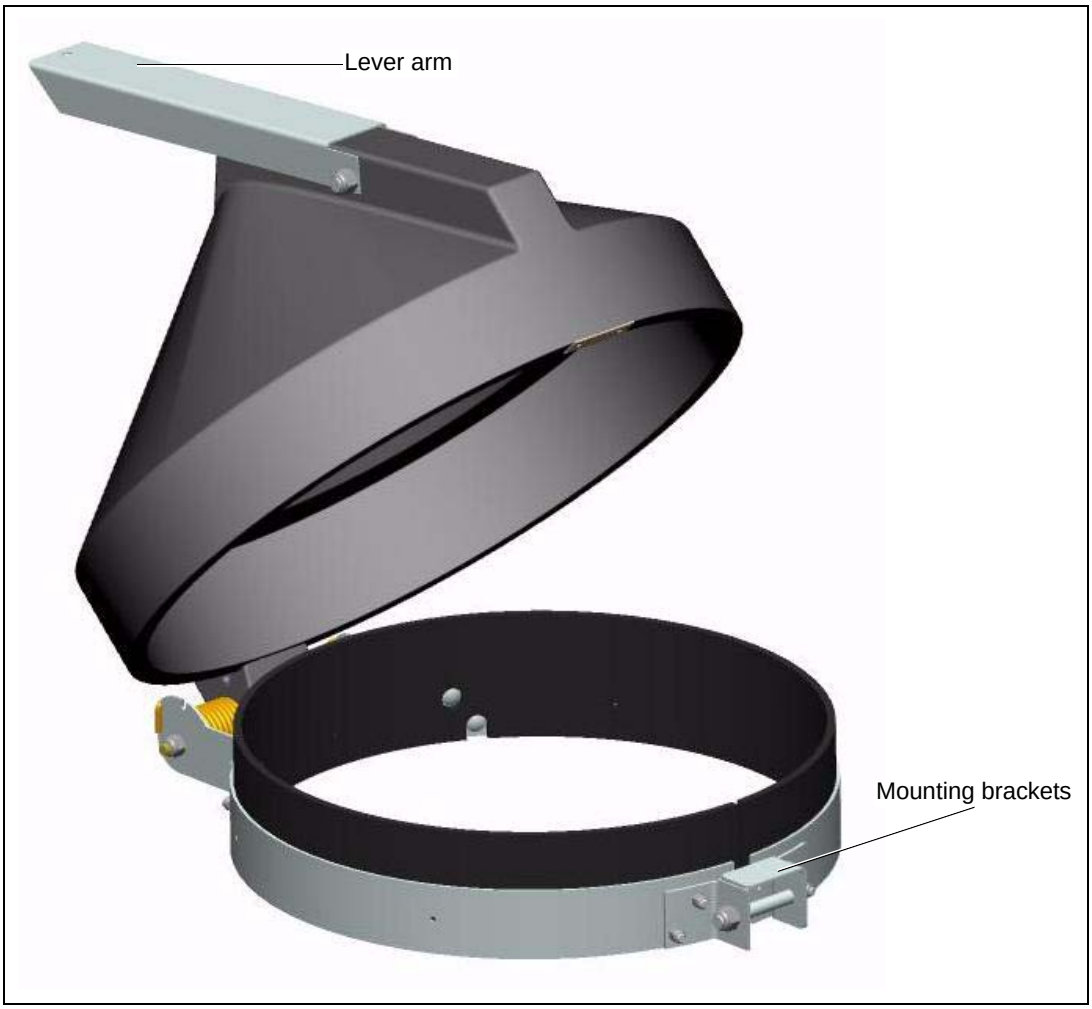


Figure 10D

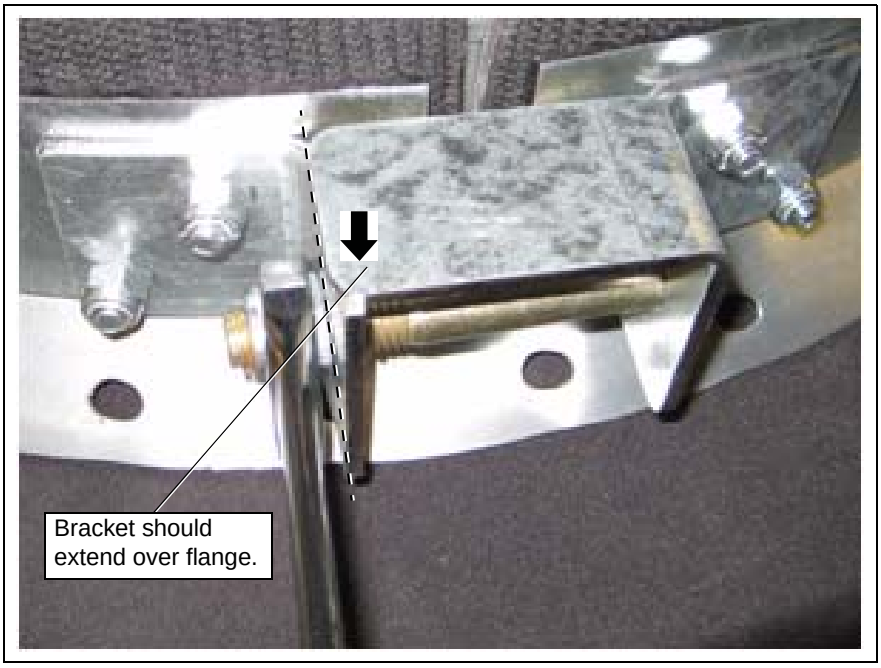


Figure 10E *Tighten Bolts Until Flush with Bracket*

3. Thread the existing chain through the hole on the end of the lever arm and fasten it to the provided key ring. *(See Figure 10B on Page 49.)* Ensure that the ground control chain is freely looped through the roof eave bracket and chain holder. After removing the slack in the chain while the lid is fully closed and in latched position, re-position the key ring 2" below the roof eave bracket. *(See Figure 10F.)* Re-adjust the existing handle and key ring so the handle is positioned for easy access from ground. *(See Figure 10G.)* Check to make sure that the key rings allow the cap to fully close, but will not allow the chain enough slack on top of the cap to become wrapped around the lever arm in a high wind condition.

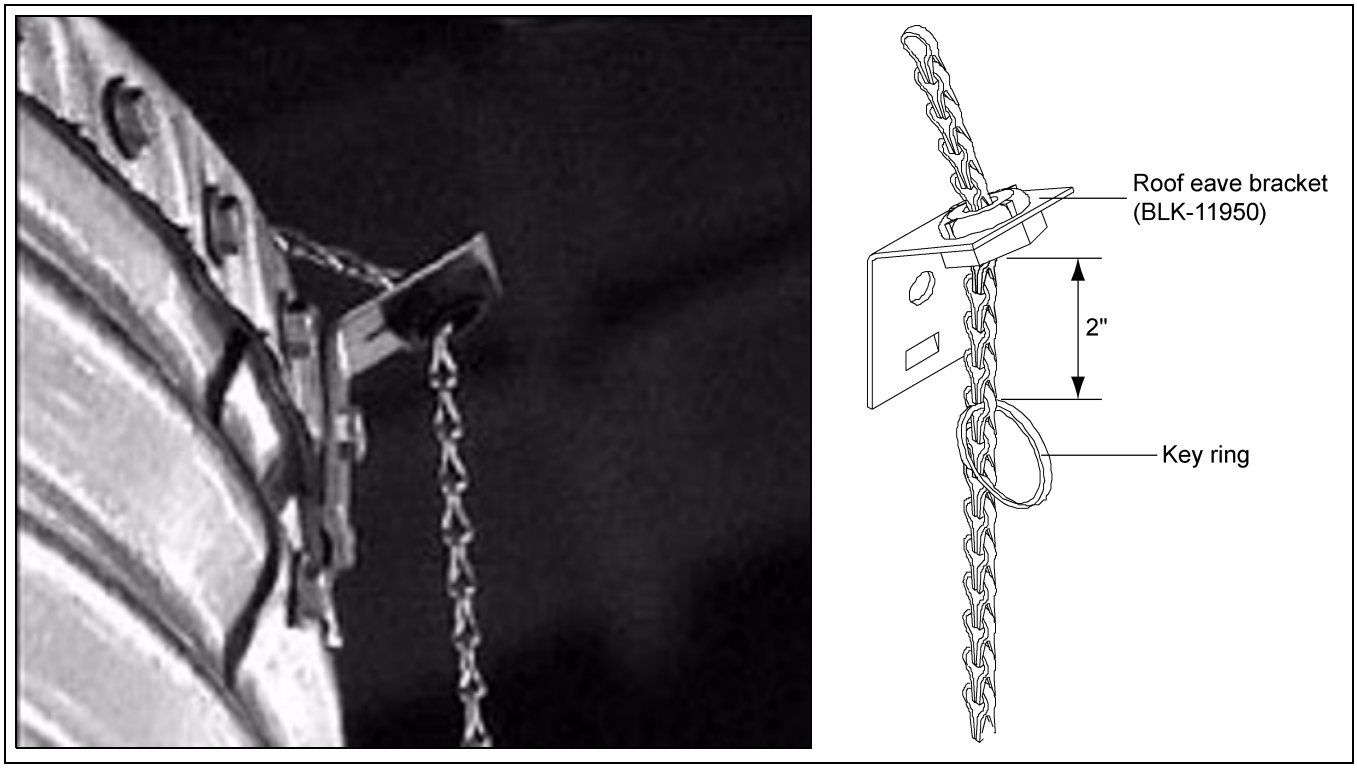


Figure 10F

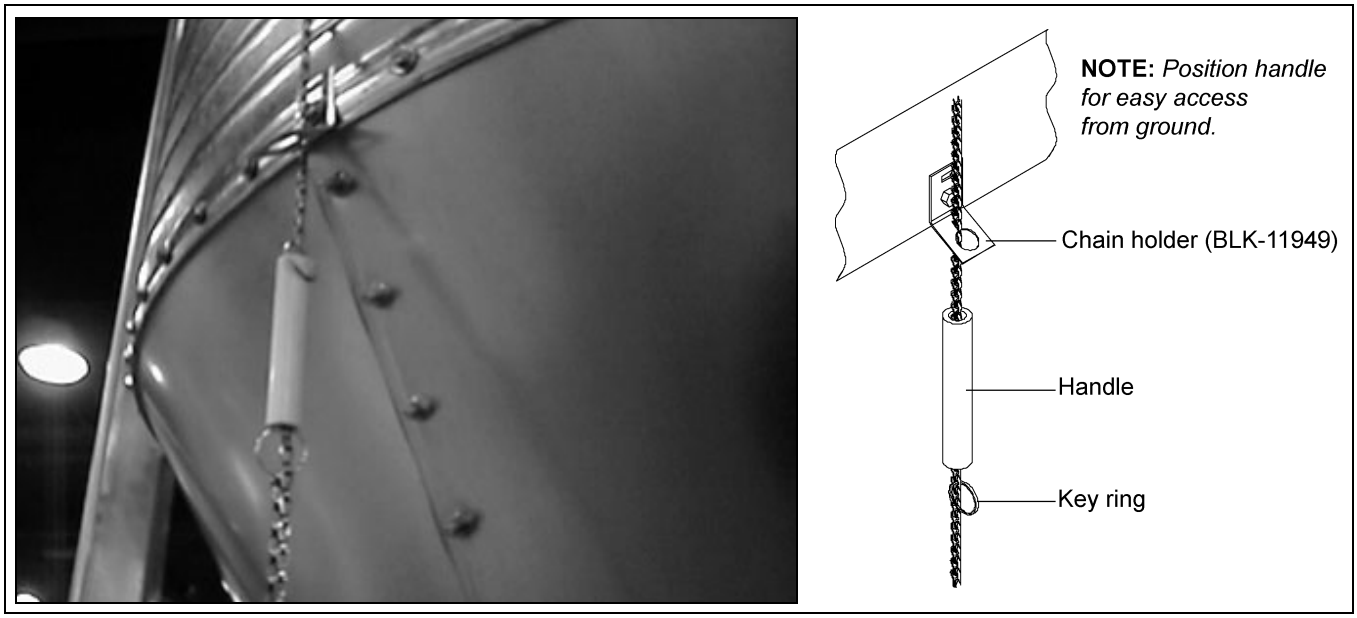


Figure 10G

4. Install the decal DC-2123 to the inside of peak ring on the hinge side of the lid as shown in *Figure 10H*. Decal should be clearly visible when lid is open.

Figure 10H

BFT Collar Assembly (BLK-13062)

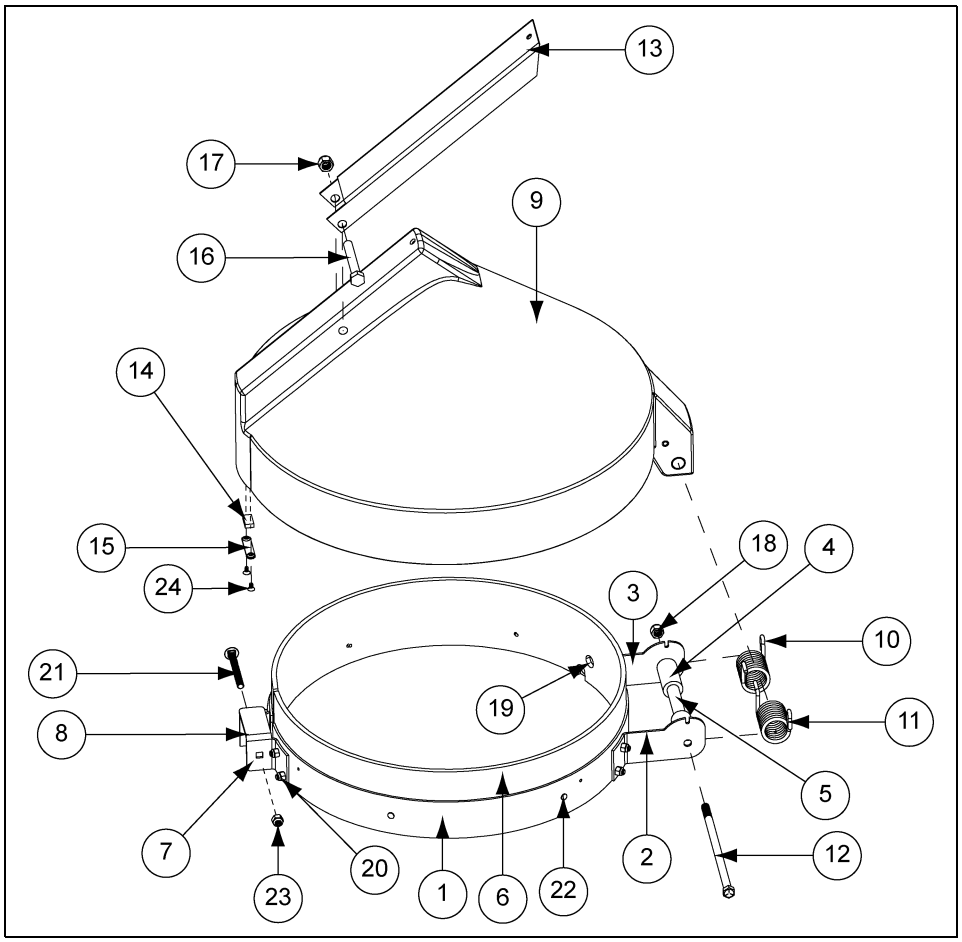


Figure 10I

BFT Collar Assembly (BLK-13062) Parts List

Ref #	Part #	Description	Qty
1	BLK-13059	BFT, Lid Clamp Band	1
2	BLK-13061	BFT, Lid Clamp Band Bracket - Right	1
3	BLK-13065	BFT, Lid Clamp Band Bracket - Left	1
4	BLK-13038	Support, Spring BFT	2
5	BLK-13064	BFT, Lid Pivot Tube	1
6	BLK-13053	Bumper, Reinforced Rubber Belting	1
7	BLK-13066	BFT, Lid Clamp Band Bracket - Right	1
8	BLK-13067	BFT, Lid Clamp Band Bracket - Left	1
9	BLK-13070	BFT, Lid	1
10	BLK-13027	Spring, L.H. Rear	1
11	BLK-13028	Spring, R.H. Rear	1
12	S-10121	Bolt, HHCS 7/16"-14 x 9" ZN Grade 5	1

Ref #	Part #	Description	Qty
13	BLK-13048	Leverage Arm - BFT Lid	1
14	BLK-13068	BFT, Lid Magnet	1
15	BLK-13058	Retainer, Magnet, BFT Lid	1
16	S-8314	Bolt, HHCS 1/2"-13 x 3-1/2" YDP Grade 8	1
17	S-8260	Nylock Nut 1/2"-13 ZN Grade 5	1
18	S-8234	Nylock Nut 7/16"-14 ZN Grade 2	1
19	S-7645	Carriage Bolt 5/16"-18 x 3/4" ZN Grade 5	8
20	S-7382	Nylock Nut 5/16"-18 ZN Grade 5	8
21	S-9085	Carriage Bolt 3/8"-16 x 3-1/2" ZN Grade 5	1
22	S-7236	Rivet, POE 3/16" Diameter x 0.565" Long ARSM	7
23	S-7383	Nylock Nut 3/8"-16 ZN Grade 5	1
24	S-10138	Bolt, FHSCS #10-32 x 3/8" ZN	2

Hopper Sheets

When starting to attach hopper sheets to sidewall it is recommend that the first hopper sheet seam be positioned halfway between leg positions. Lap the hopper sheets as shown in *Figure 11B on Page 55*. Apply two (2) strips of caulking on all seams at sidewall to hopper and hopper sheet to hopper sheet. Be sure to place the head of the truss bolt on the **inside** of hopper. Leave one hopper sheet out to allow room to install hopper collar. Be sure to use two (2) strips of caulking between hopper collar and hopper sheets, then put last hopper sheet in place.

WARNING

All 9' diameter 60° 3-11 ring and 7' diameter 67° 5-8 ring tanks require hopper reinforcement angles. Angle covers entire seam (including hopper collar).

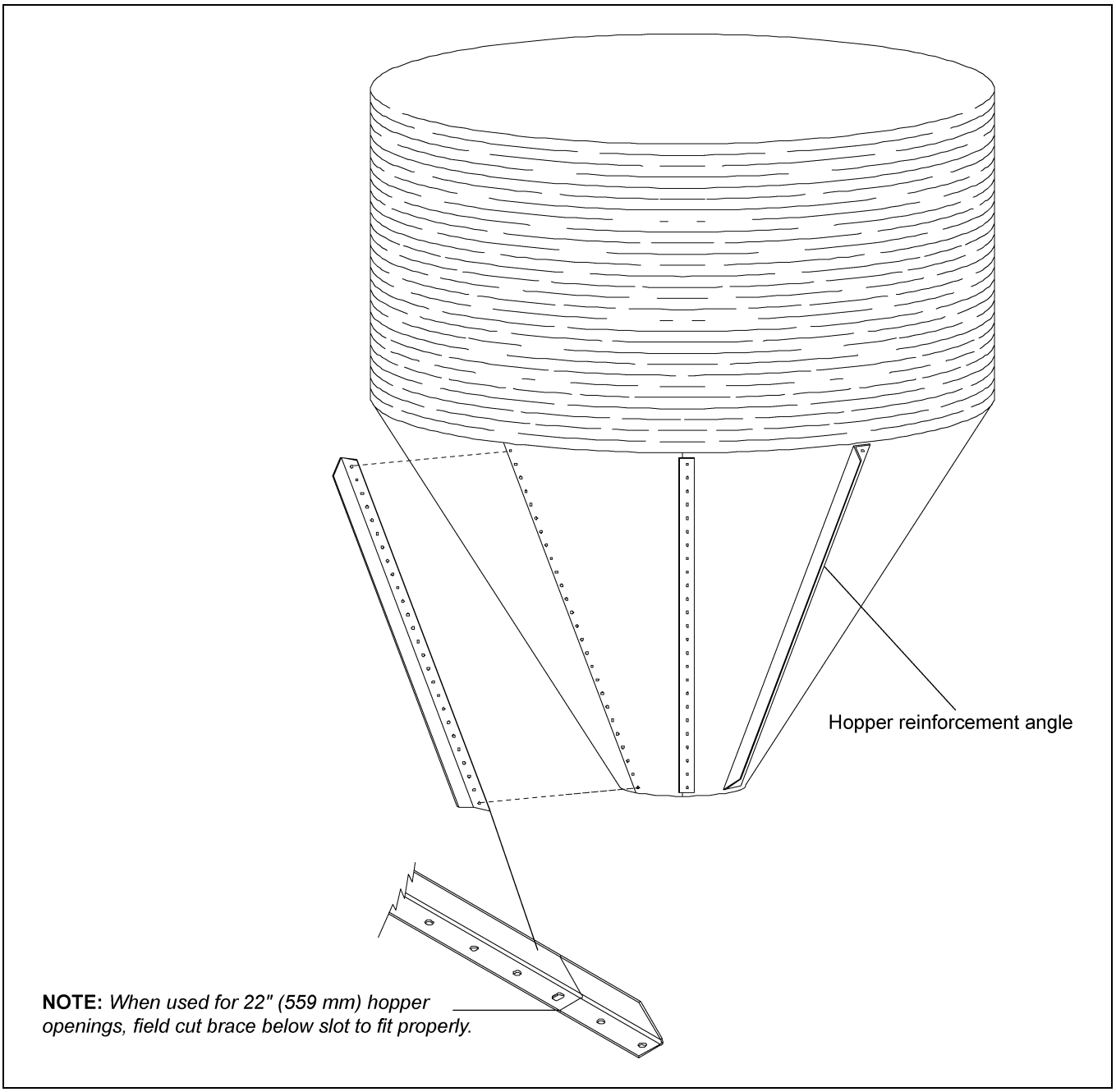
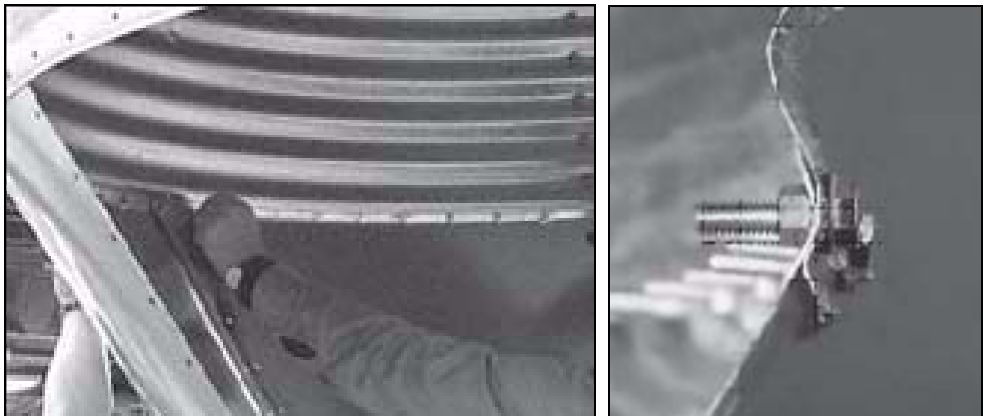


Figure 11A



Hopper sheet to sidewall sheet

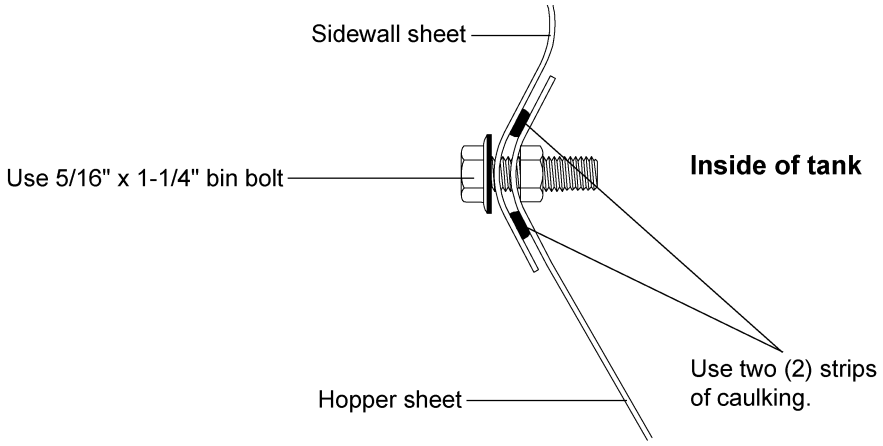


Figure 11B

9' 60° Leg Attachment (for 9' 60° Tanks Only)

Curved washers are supplied in the hardware packages. These washers must be installed at the bottom leg to sidewall bolt connection, to the inside of the hopper panel as shown in *Figure 11C*.

Apply caulking between the hopper panel and the sidewall sheet.

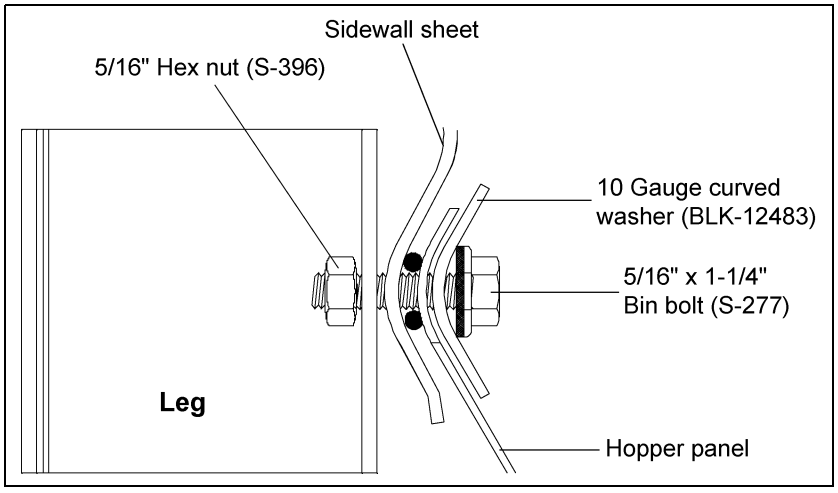


Figure 11C

Reinforcement Angles

NOTE: *Every hole in the hopper sheet will be utilized. Use 5/16" x 3/4" truss head bolt on hopper seams. (Truss head goes on inside of hopper.)*

NOTE: *Last (bottom) bolt in reinforcement angle goes through hopper collar also.*

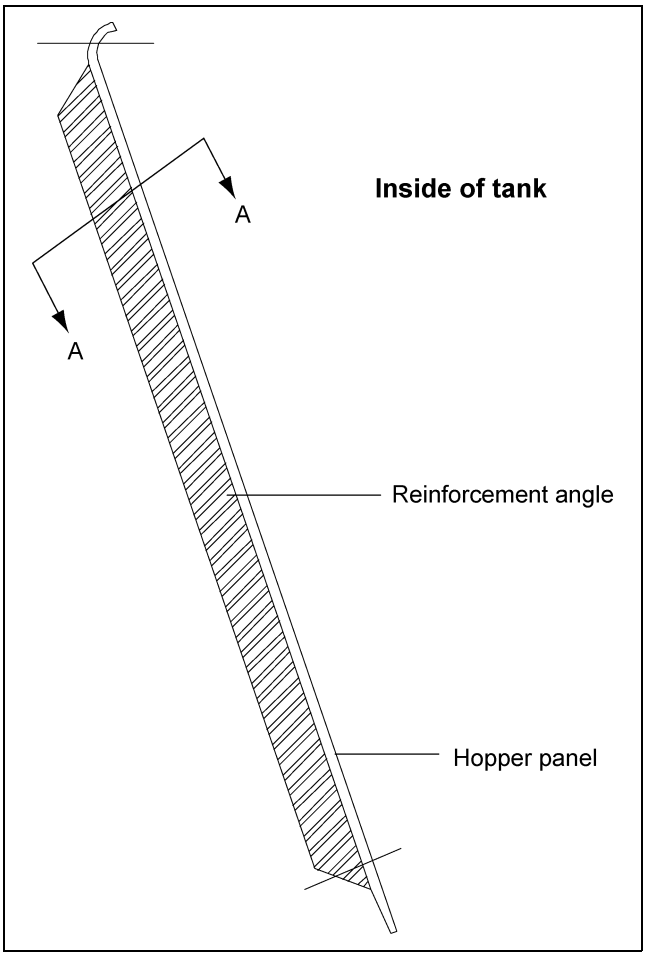


Figure 11D

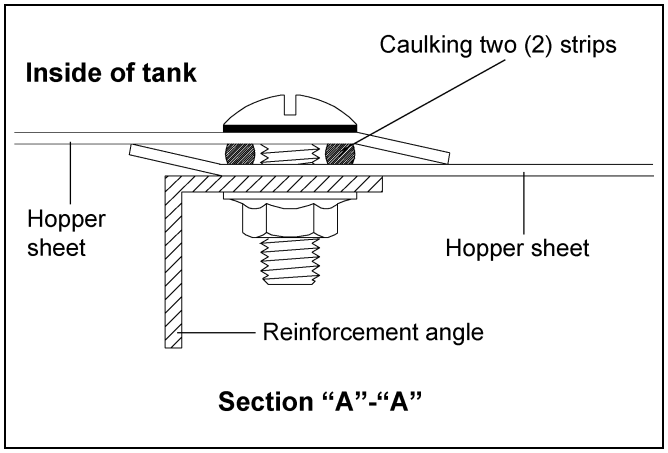


Figure 11E *Hopper Overlap and Bolt Detail with Reinforcement Angle*

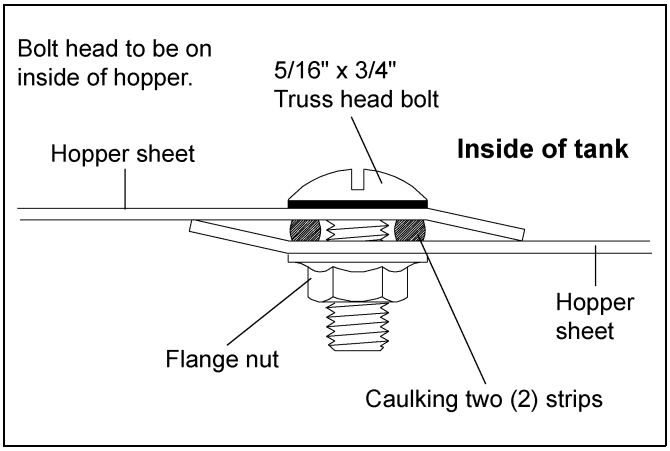


Figure 11F *Hopper Overlap and Bolt Detail for Tanks without Reinforcement Angle*

Hopper Collar

Before last hopper panel is attached, partially fasten on the hopper collar. Use 5/16" truss head bolts and caulk all joints on the assembly, attach to the hopper panels, using 5/16" truss head bolts. Be sure to caulk between hopper collar and hopper panels. *(See Figure 11G and Figure 11H.)*

Figure 11G

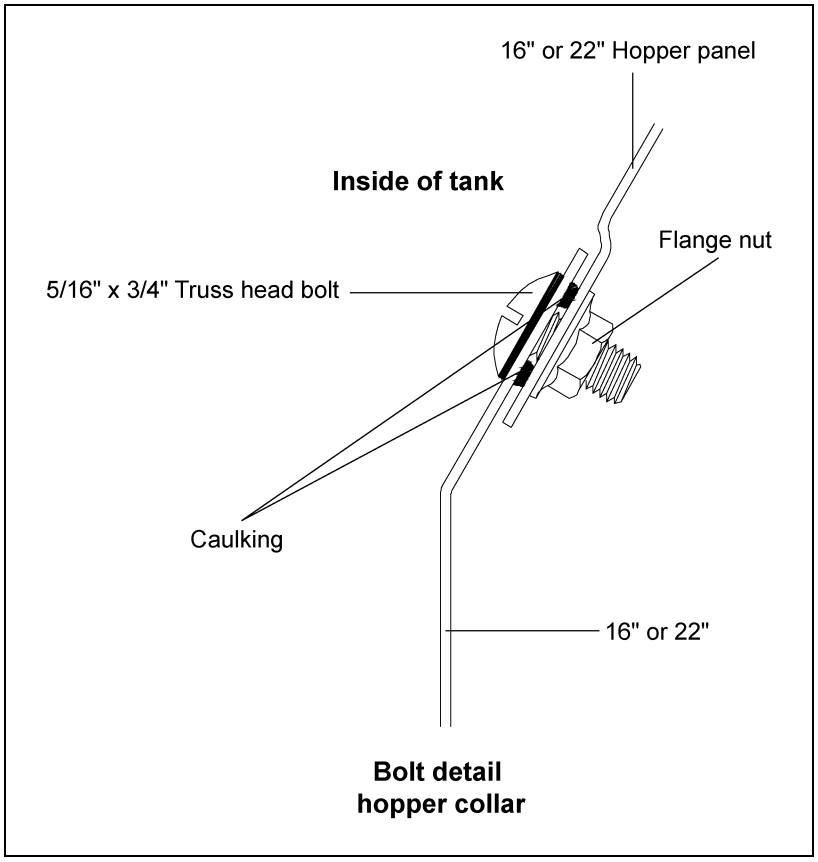


Figure 11H

22" Hopper Collar

45° 22" Hopper Collar (BLK-10854)

60° 22" Hopper Collar (BLK-10342)

67° 22" Hopper Collar (BLK-10341)

Install hopper collar before all hopper panels are assembled. Use 5/16" truss head bolts on all hopper seams as shown in *Figure 11I*. Be sure to caulk between the hopper collar and hopper panels. *(See Figure 11I.)*

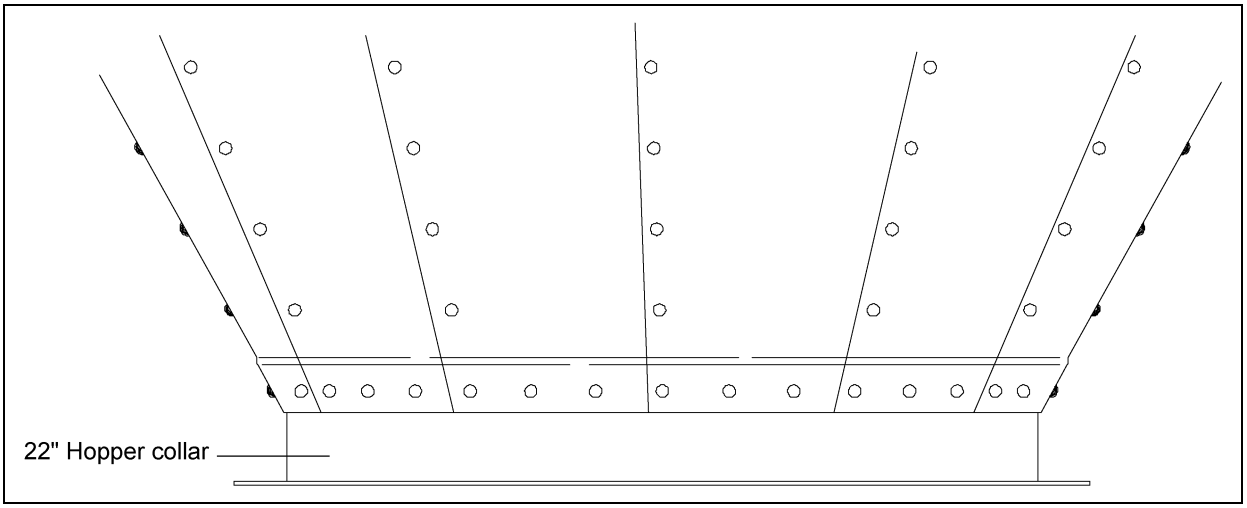


Figure 11I

16" Hopper Collar

16" 45° (BLK-12341) (18 Holes)

16" 60° BLK-12342 (18 Holes)

7'-16" 67° BLK-12343 (18 Holes)

Figure 11J

Tank Legs and Leg Braces

Leg Size Chart

Tank Size	Hopper	# of Rings	Length	Leg Coverage
6' Diameter Tank	60°	5-8 Rings	133"	1-3/4 Rings (56")
7' Diameter Tank	67°	7-8 Rings	165-1/2"	1-3/4 Rings (56")
7' Diameter Tank	45°	7-8 Rings	120-3/4"	1-3/4 Rings (56")
9' Diameter Tank	60°	7-11 Rings	165-1/2"	1-3/4 Rings (56")
9' Diameter Tank	45°	7-11 Rings	132-3/4"	1-3/4 Rings (56")

WARNING

Failure to follow instructions may cause damage or failure of the equipment.

When installing legs to sidewall, reverse the normal insertion procedure for bolts. Place hex head and neoprene washer to inside of sidewall, leaving threaded portion of bolt protruding outward. This provides for a weather-tight seal at the leg attachment location. *See Pages 59-61* for leg attachment to sidewall sheet details.

Put all legs on, but DO NOT TIGHTEN until all braces are in place. Be sure to put leg braces on properly. *(See Pages 60-61.)*

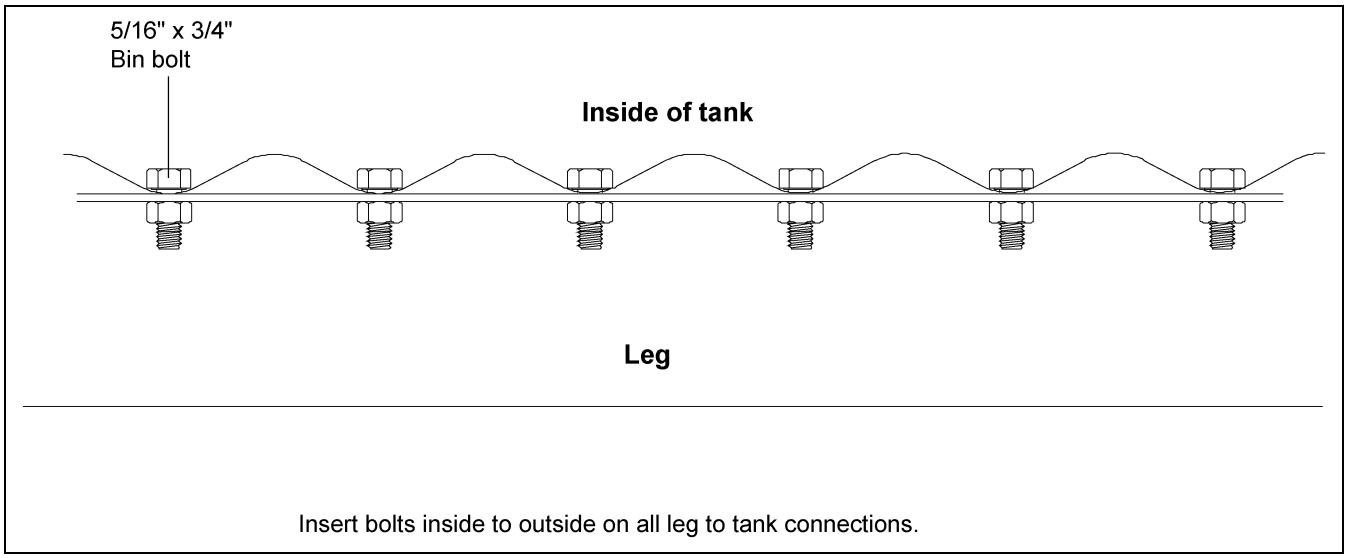


Figure 12A

Bracing Hole Layout

See bracing notes *on Page 64*.

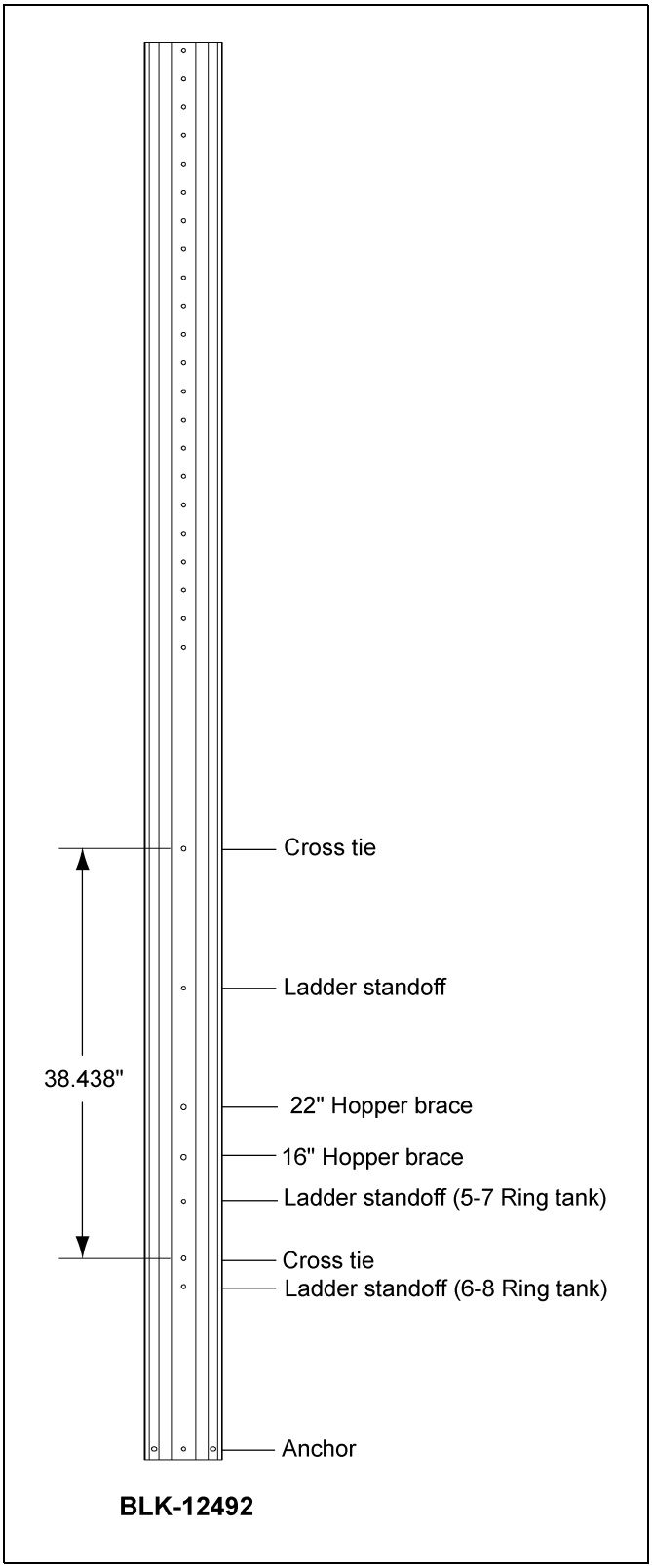


Figure 12B *6' Leg 60° - 5-8 Rings*

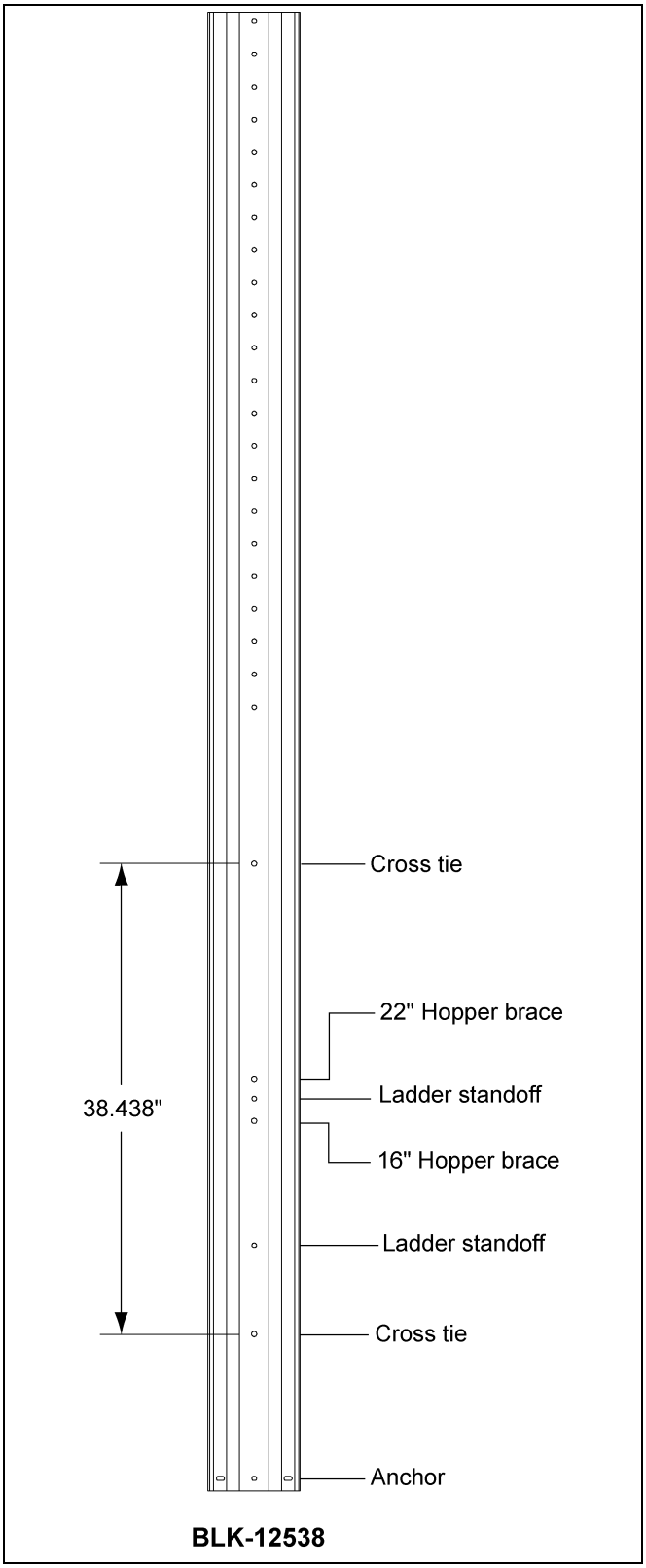


Figure 12C *7' Leg 45° - 7-8 Rings*

Bracing Hole Layout (Continued)

See bracing notes *on Page 64*.

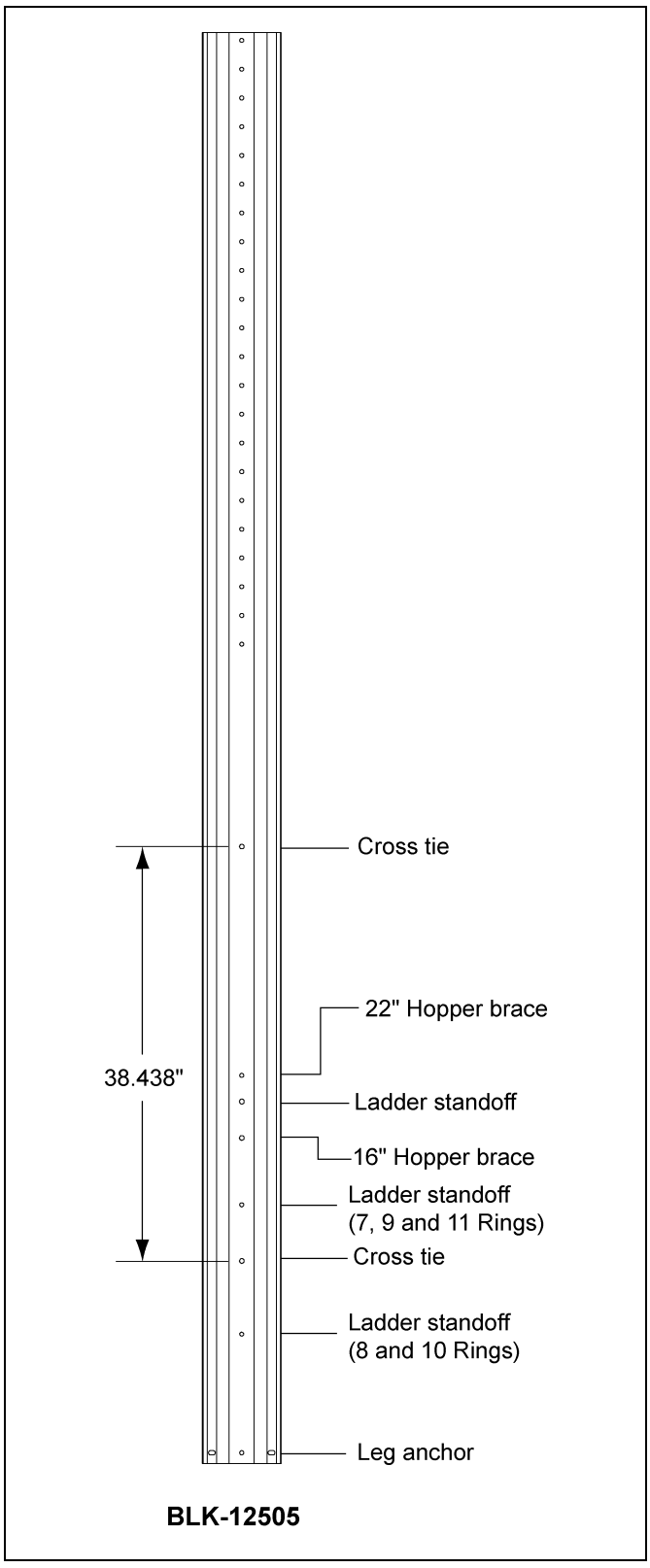


Figure 12D *9' Leg 45° - 7-11 Rings*

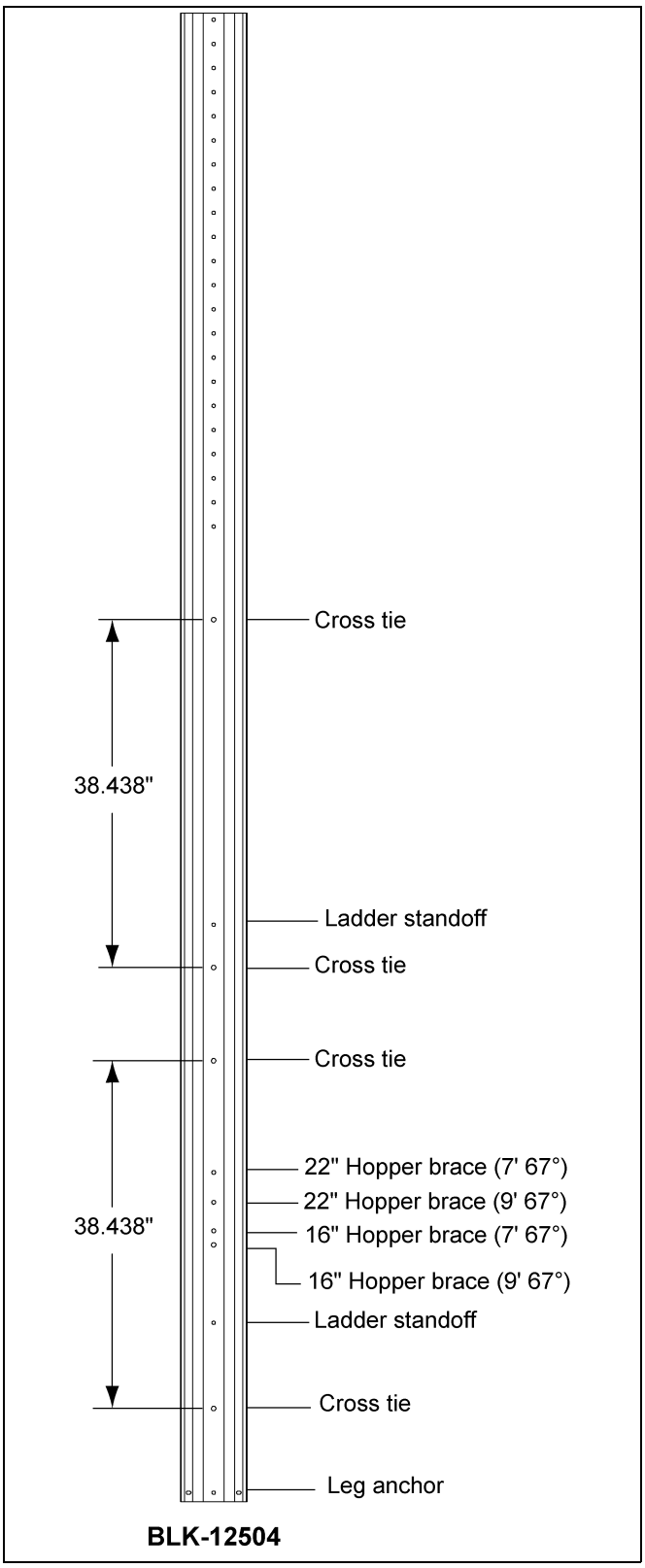


Figure 12E *7' Leg 67° - 7-8 Rings and 9' Leg 60° - 7-11 Rings*

Hopper to Leg Horizontal Bracing

BFT Brace Quantity

Tank Description	# of Rings	Hopper Braces	Inside Cross Tie Brace	Outside Cross Tie Brace
6' Diameter 60° Hopper	5	4	0 **	0 **
	6	4	4	4
	7	4	4	4
	8	4	4	4
7' Diameter 67° Hopper	7	4	8	8
	8	4	8	8
7' Diameter 45° Hopper	7	4	4	4
	8	4	4	4
9' Diameter 60° Hopper	7	6	12	12
	8	6	12	12
	9	9	18	18
	10	9	18	18
	11	9	18	18
9' Diameter 45° Hopper	7	6	6	6
	8	6	6	6
	9	6	6	6
	10	9	9	9
	11	9	9	9

Figure 12F *1 Set of Cross Tie Braces*

Figure 12G *Cross Tie to Cross Tie Connection*

Figure 12H *Brace to Leg Connection*

Braces attach horizontally to the legs with 3/8" hardware and to the hopper with 5/16" hardware.

Hopper braces are to be spaced equally around tank. Hopper braces are required on all hopper tanks. Refer to chart *on Page 65* for the quantities required.

NOTE: *Hopper braces attach between the legs and the collar/hopper horizontal seam. Never bolt the braces directly to the hopper seam above the collar. Use 16" braces with 16" collar and 22" braces with 22" collars.*

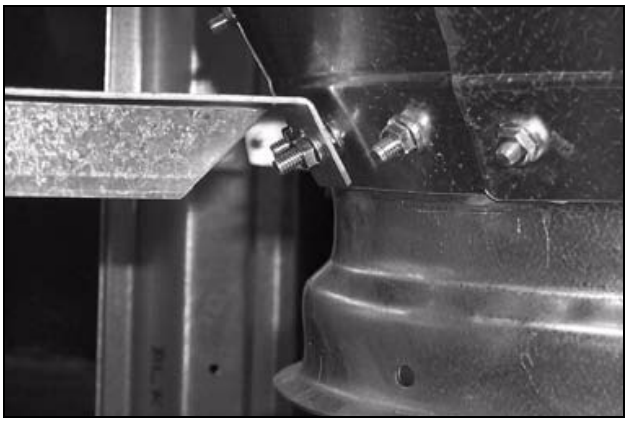


Figure 12I

Figure 12J

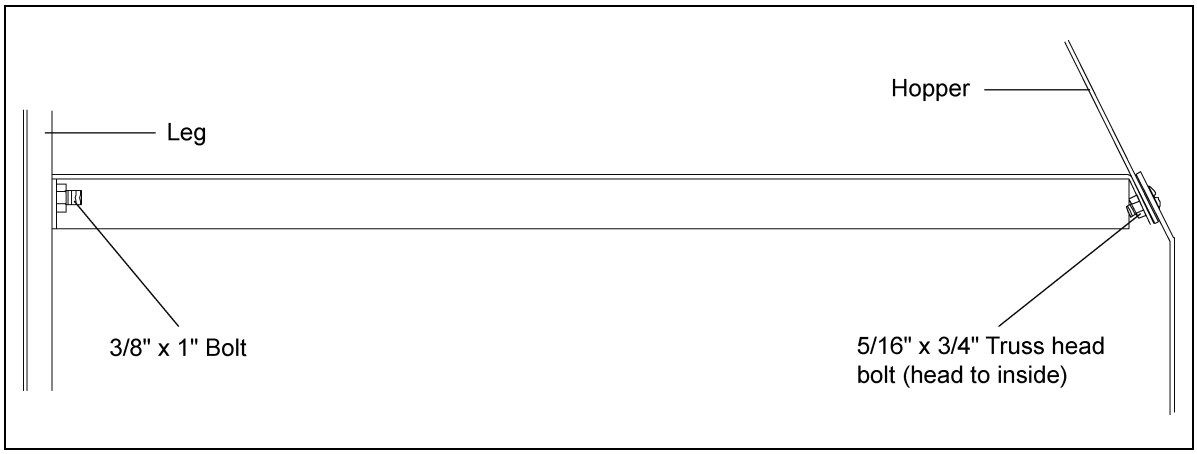


Figure 12K

Tank Description	Brace Part # 16" Hopper	Qty	Brace Part # 22" Hopper	Qty
6' Diameter 60°	BLK-12146	4	BLK-12147	4
7' Diameter 67°	BLK-12107	4	BLK-12108	4
7' Diameter 45°	BLK-12105	4	BLK-12106	4
9' Diameter 60°	BLK-12109	6 or 9	BLK-12110	6 or 9
9' Diameter 45°	BLK-12111	6 or 9	BLK-12112	6 or 9

Leg Anchors

NOTE: *A number of tanks will utilize a leg with a welded base plate.*

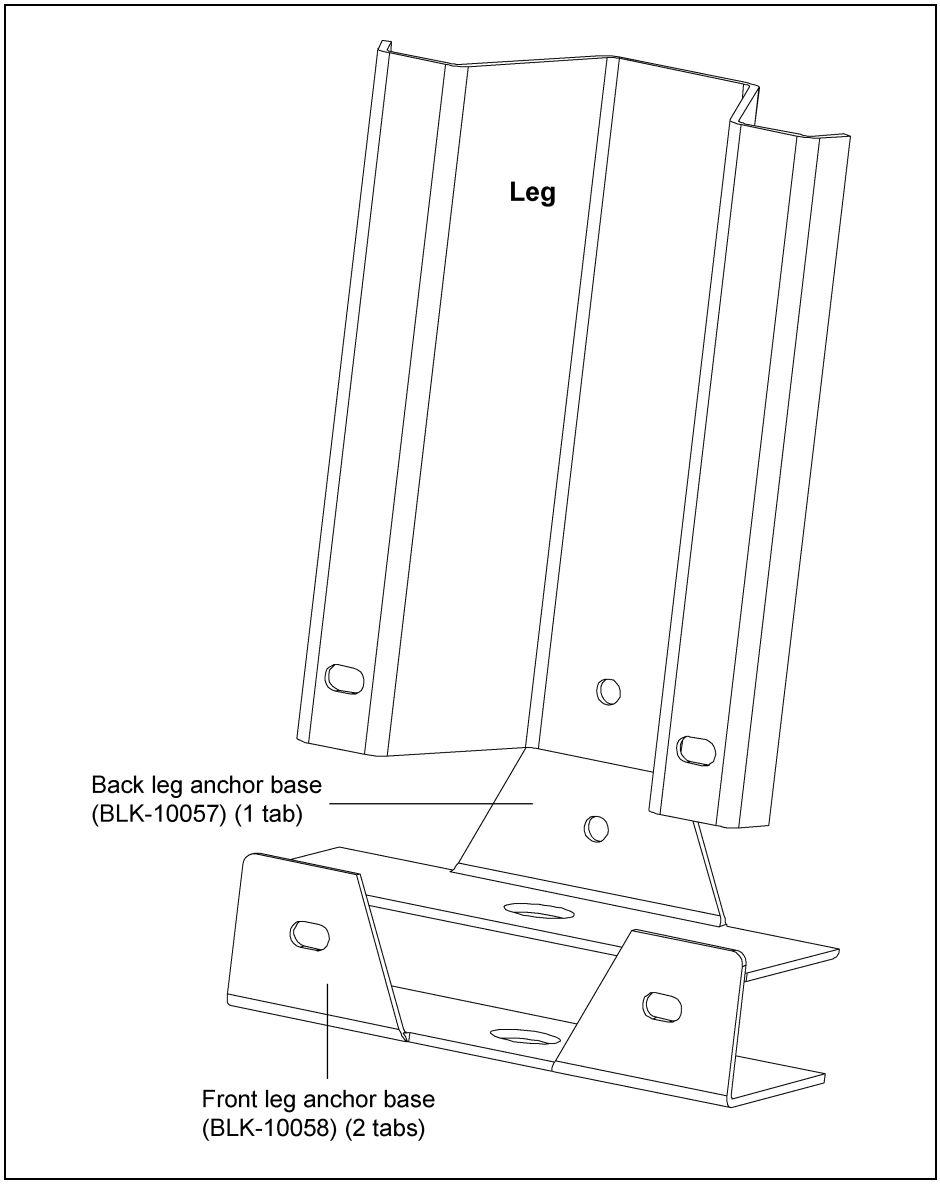


Figure 12L

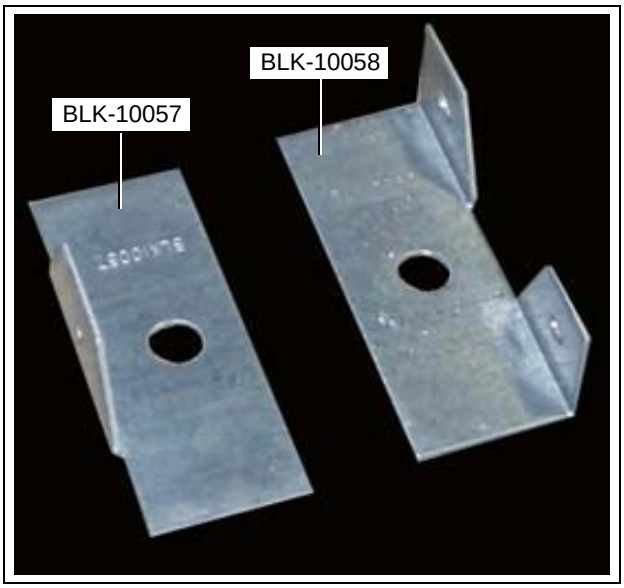


Figure 12M

Figure 12N

Some tanks including, 9' 60° (7-11 ring) and 7' 67° (7-8 ring) tanks will have legs with welded base plates.

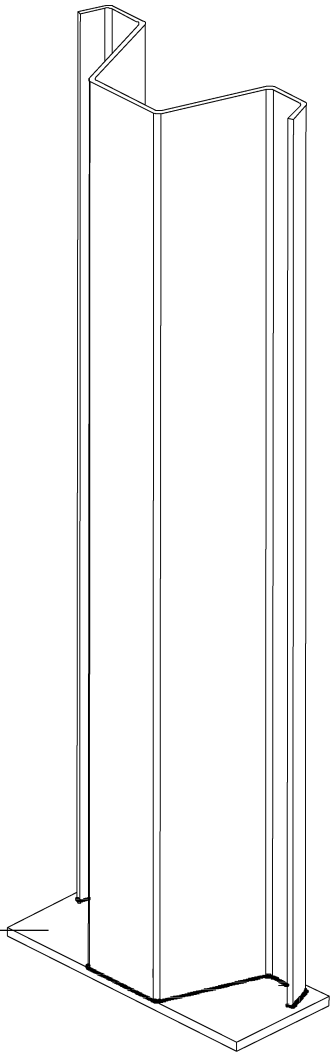


Figure 12O

Raising Bin to Set on Foundation

Preparing Tank for Lifting Upright

Just before standing the tank upright, peel protective mask off the decal while it is easy to reach. Mask may become difficult to remove if left exposed to sunlight.

Check for all possible overhead obstructions, power line, etc., BEFORE standing the tank on the foundation.

To prevent damage to Legs when raising tank, brace them with 2" x 4 " (50mm x 100mm) pieces of wood as shown in the illustruction. See the chart for the correct length.

Bin Size	2" x 4" Length
6' Diameter (1829 mm)	51-3/8" (1305 mm)
7' Diameter (2134 mm)	59-7/8" (1521 mm)
9' Diameter (2743 mm)	52-1/8" (1324 mm)

Some tanks may be built on the side and raised upward. For some taller tanks (9 rings and taller) it is recommended the sidewalls be assembled using bin jacks and the final lifting be done with a crane. *(See Pages 68-69.)*

In any case, proper precautions with rigging, lifting, or raising procudures should be followed to ensure that personal safety is not compromised and the tank is not damaged.

WARNING

Do not raise tank near power lines. Electrocution could occur if the tank came into contact with live power lines.

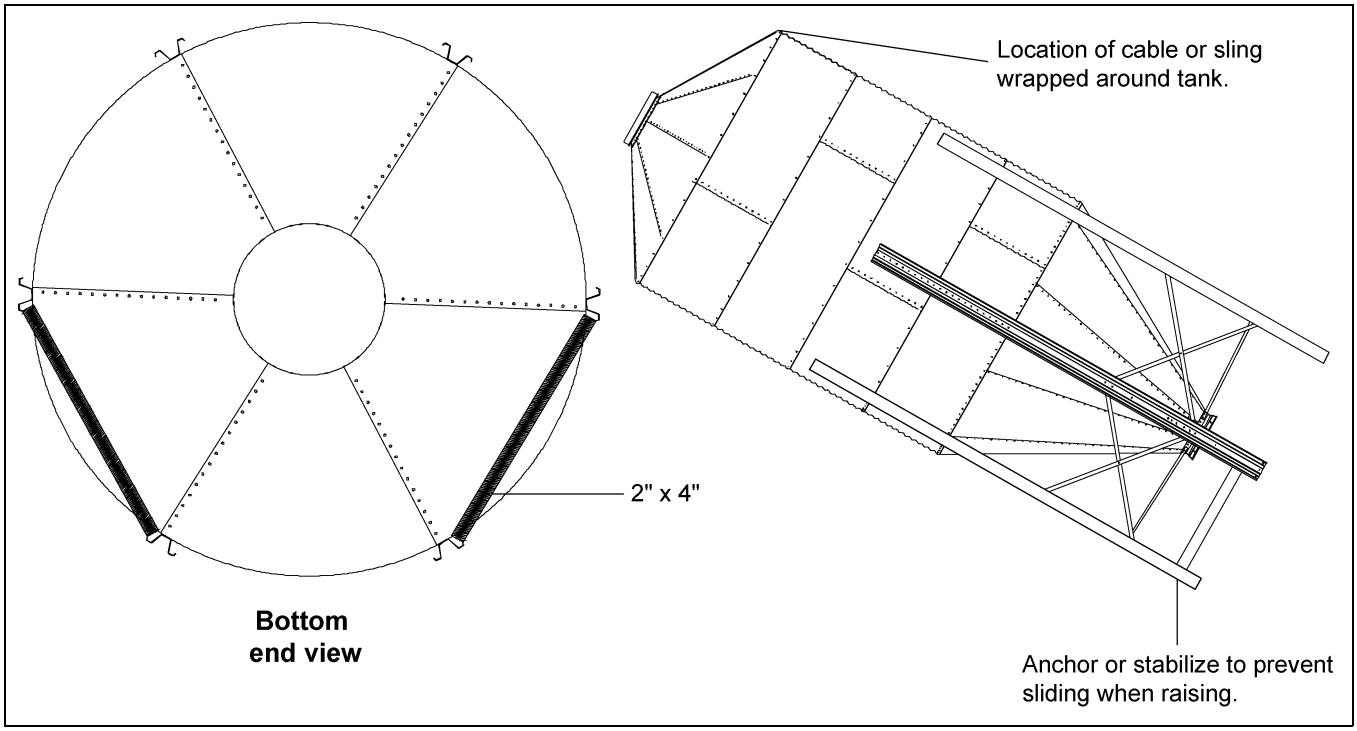


Figure 13A

Lifting with Jacks

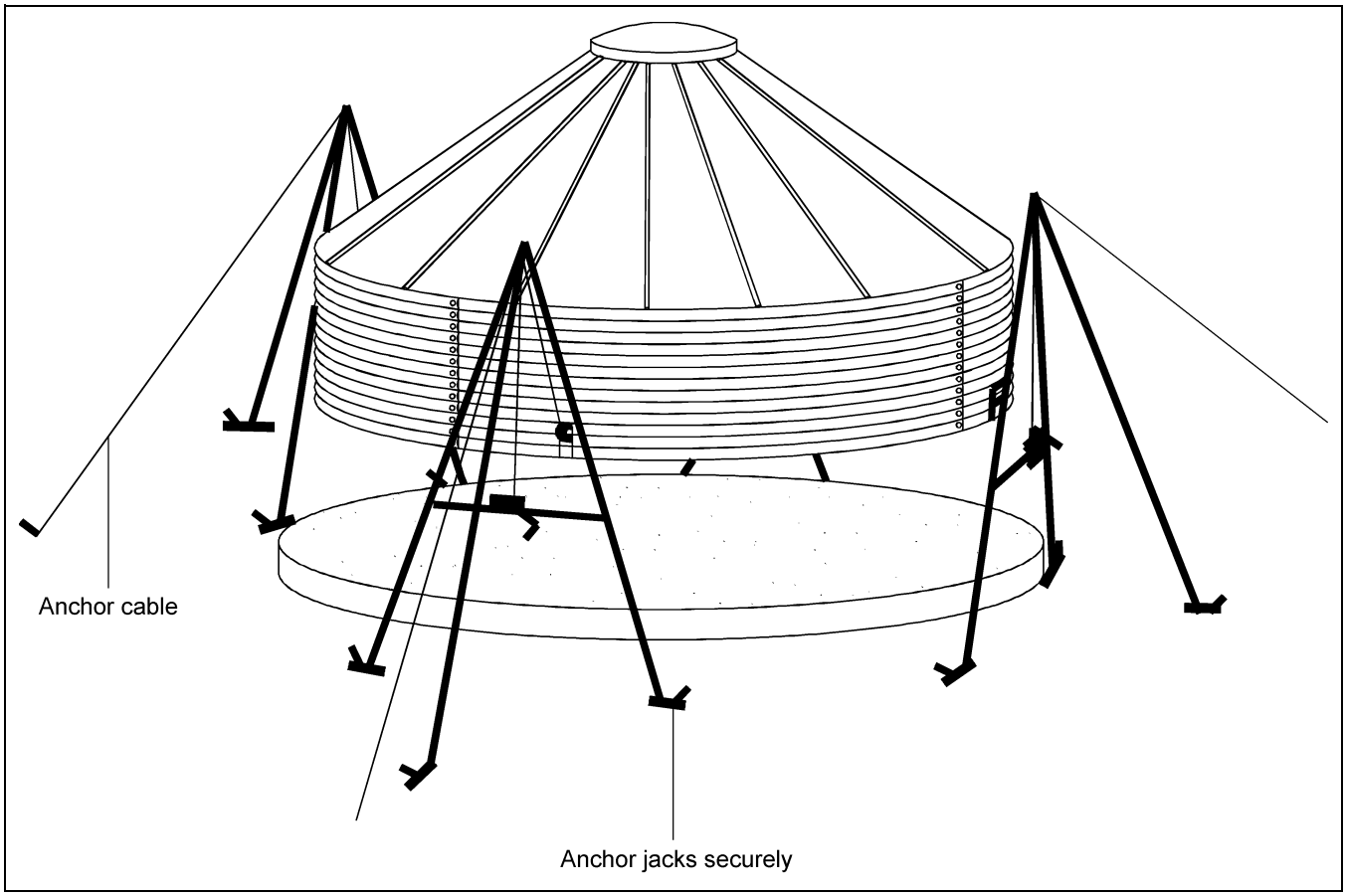


Figure 13B

Anchor Tank Before Second Ring Assembly

Anchor all jacks securely with metal stakes and cables (use one jack per sidewall sheet). Now raise the tank just enough to assemble the next ring. When lifting your tank crank all jacks at an equal rate. This will prevent bowing previously assembled rings and make for easier hole alignment. To the inside of the first ring bolt the next ring. Be sure to stagger the sheets and select the proper gauge material. Lower the tank on the foundation after assembling and tightening bolts on each new ring. Now re-bolt lifting straps to the lowest ring in place thus far.

NOTE: *Add outside ladders and other accessories to tank walls as you continue to raise the tank.*

After body sheets are assembled and bolts are tightened, raise the tank and attach the legs. Do not put a bolt in the bottom sidewall hole yet, because the hopper must be attached here. When the legs are in place and tightened, release the jack enough to rest the tank on the legs.

Lifting with Crane

Figure 13C

A crane of adequate capacity attached to a spider assembly with cables connecting at each vertical sidewall seam just above the legs can also be used to lift the tank. Make sure the tank is being lifted smoothly and evenly. Raise it enough to assemble the next ring and/or to attach the legs. Reference a qualified rigger.

WARNING

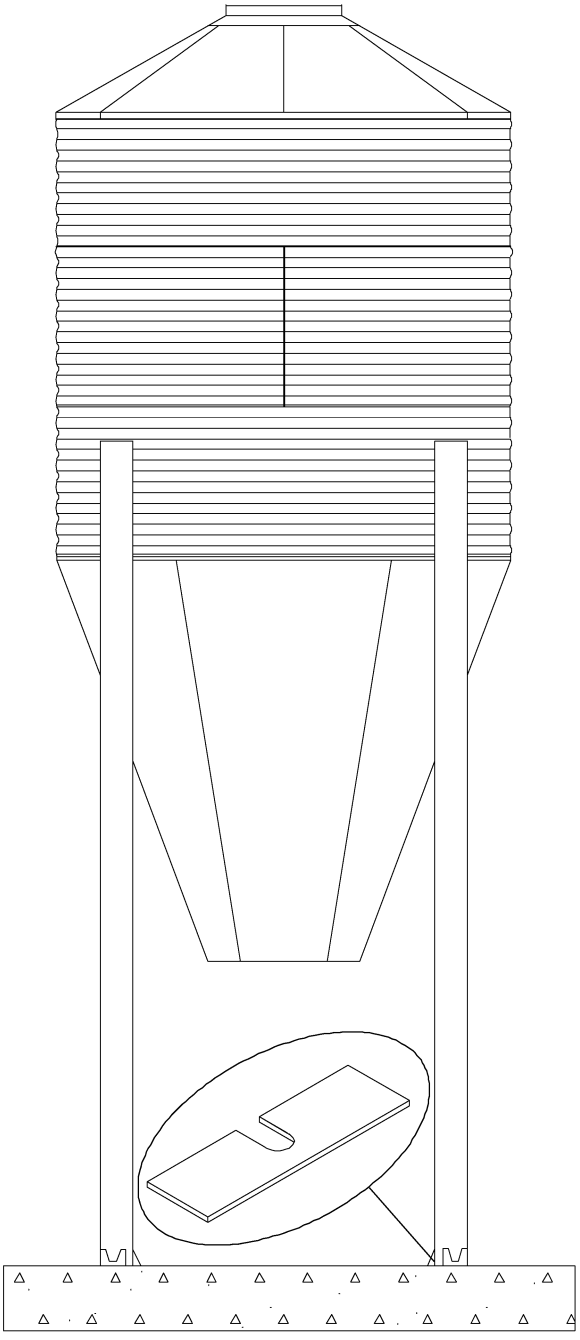
Watch for power lines. The crane and anything associated with building the bin (due to height) can get in the way of power lines.

Anchoring Tank

Check all legs to see if shims are necessary to level the tank properly. After bulk feed tank is level and shimmed properly, anchor the tank down with 5/8" washers and nuts. *(See Figure 13D.)*

Standard Hopper Tank Anchoring

Measure between opposite legs to be sure they are an equal distance apart before securing the tank with anchor bolts.



NOTE: *Leg shims are not standard equipment and must be obtained locally.*

Figure 13D

Tank Grounding Instructions

NOTE: *Parts are not supplied by manufacturer. They should be purchased locally.*

All tank shall have two (2) ground connections. Ground clamps must be placed at equal distances around the tank.

Alternate Installation: Cables may be placed in the foundation or through PVC sleeve inserted in the slab during construction.

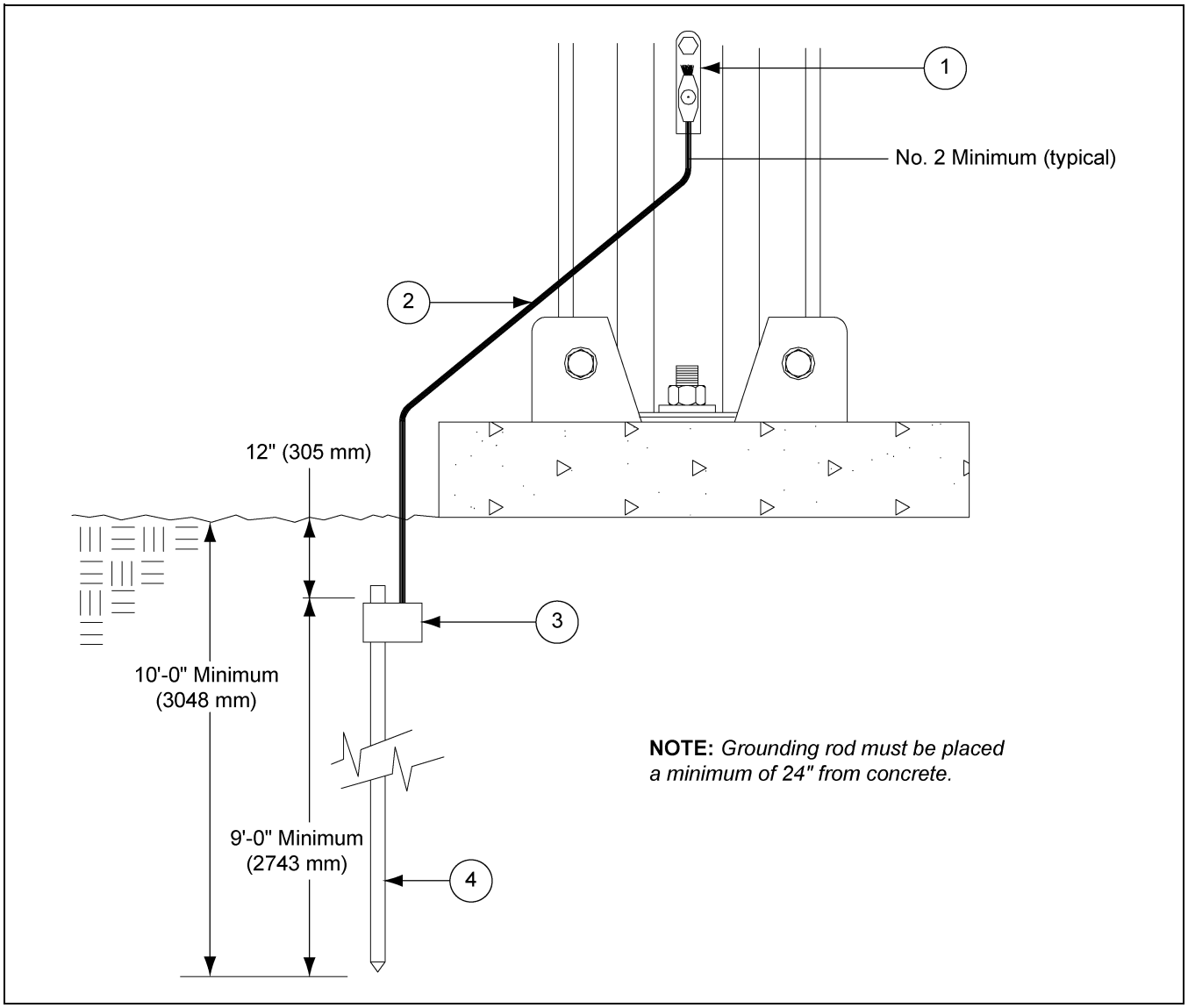


Figure 13E

Ref #	Description
1	Cable Clamp
2	5' (1524 mm) Copper Cable (Plain or Jacketed)
3	Ground Rod Clamp
4	Ground Rod 1/2" x 10' (3048 mm)

Pneumatic Fill Kit Assembly

NOTE: *Inlet and exhaust parts from roof eave upward supplied with kit.*

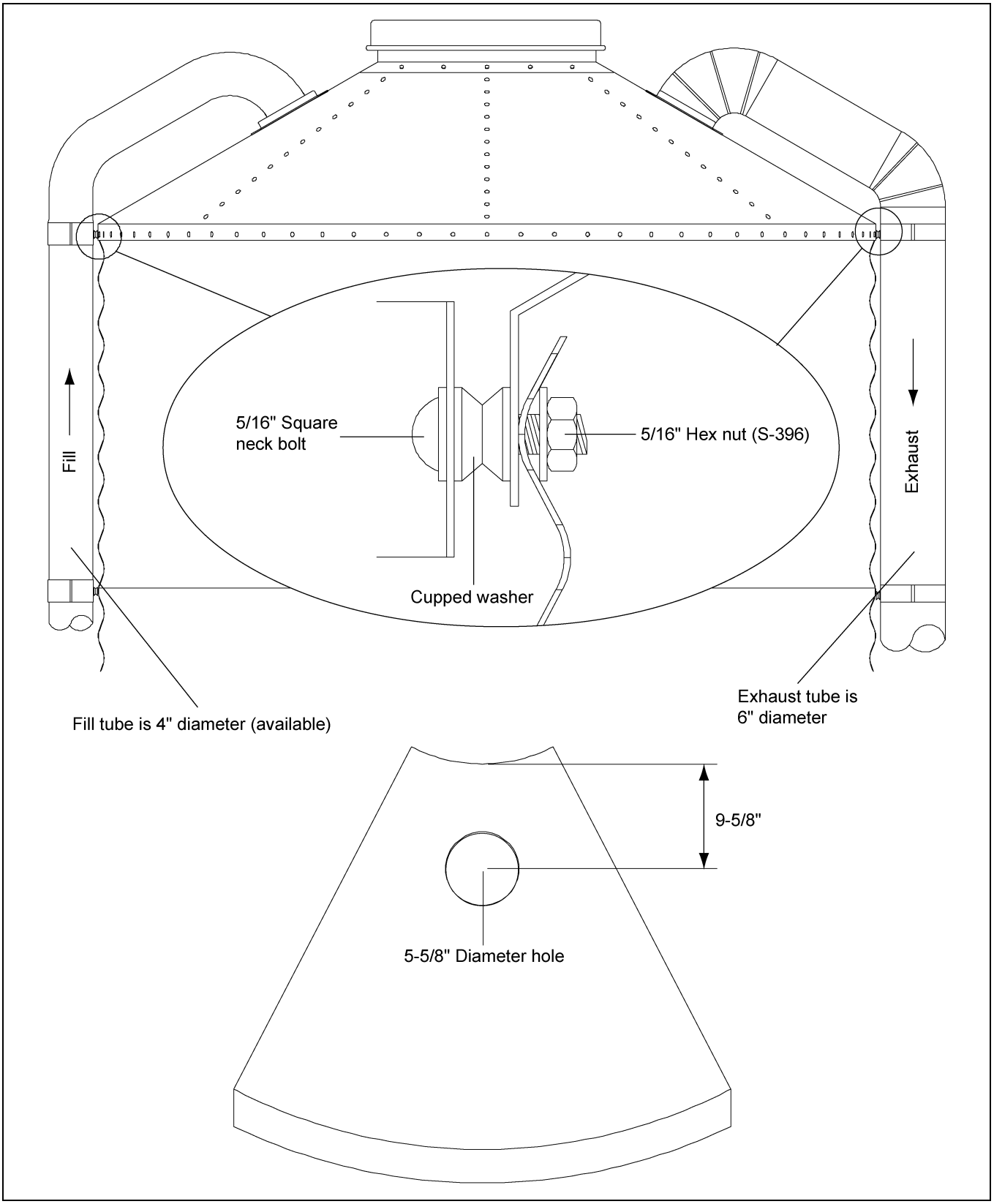


Figure 14A

Roof Panel

Identical pre-punched roof panels are available from the manufacturer for inlet and outlet sections of pneumatic fill systems. Extruded lip of the panels provide for weather-tight installation. Caulking placed between angle rings virtually eliminates all leakage problems. Rubber seal must be utilized at roof cap area to prevent material “blow by” from pressurized systems.

To install fill kits in roof panels not pre-punched, cut 5-5/8" (143 mm) diameter holes in opposing roof panels as shown. Caulk sufficiently to provide weather-tight seal.

Refer to PNEG-1904, that is included in the pneumatic fill kits for information on installation of the cap latch and lid sealing components.

Figure 14B

NOTES

1. **6' Diameter 60° Hopper Tank Specifications -** *(See Pages 76-77.)*

2. **6' Diameter 60° Hopper Tank Hardware Specifications** - *(See Pages 78-79.)*

3. **7' Diameter 67° Hopper Tank Specifications -** *(See Pages 80-81.)*

4. **7' Diameter 67° Hopper Tank Hardware Specifications -** *(See Pages 82-83.)*

5. **7' Diameter 45° Hopper Tank Specifications -** *(See Pages 84-85.)*

6. **7' Diameter 45° Hopper Tank Hardware Specifications -** *(See Pages 86-87.)*

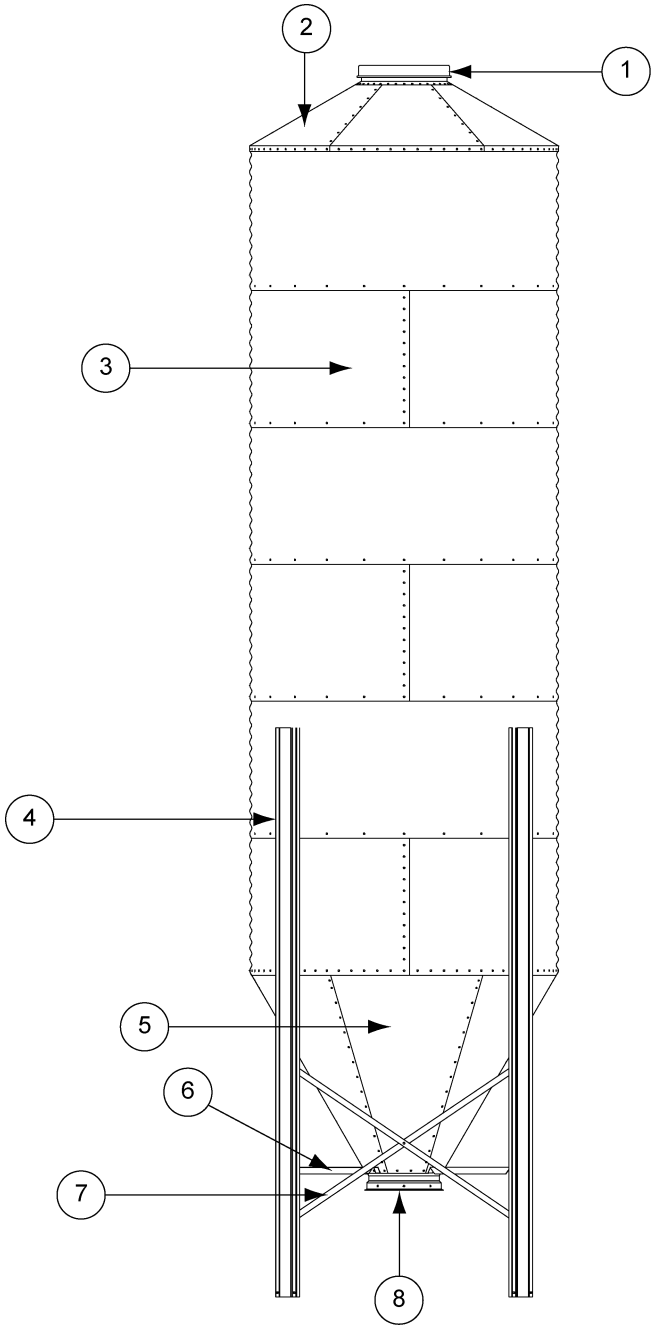
7. **9' Diameter 60° Hopper Tank Specifications -** *(See Pages 88-89.)*

8. **9' Diameter 60° Hopper Tank Hardware Specifications -** *(See Pages 90-91.)*

9. **9' Diameter 45° Hopper Tank Specifications -** *(See Pages 90-93.)*

10. **9' Diameter 45° Hopper Tank Hardware Specifications -** *(See Pages 94-95.)*

6' Diameter 60° Hopper Tank Specifications



Model	Sidewall Gauge
BFT 6'-5 Ring	17-17-18-20-20
BFT 6'-6 Ring	15-15-16-18-20-20
BFT 6'-7 Ring	13-13-15-16-18-20-20
BFT 6'-8 Ring	13-13-13-15-16-18-20-20

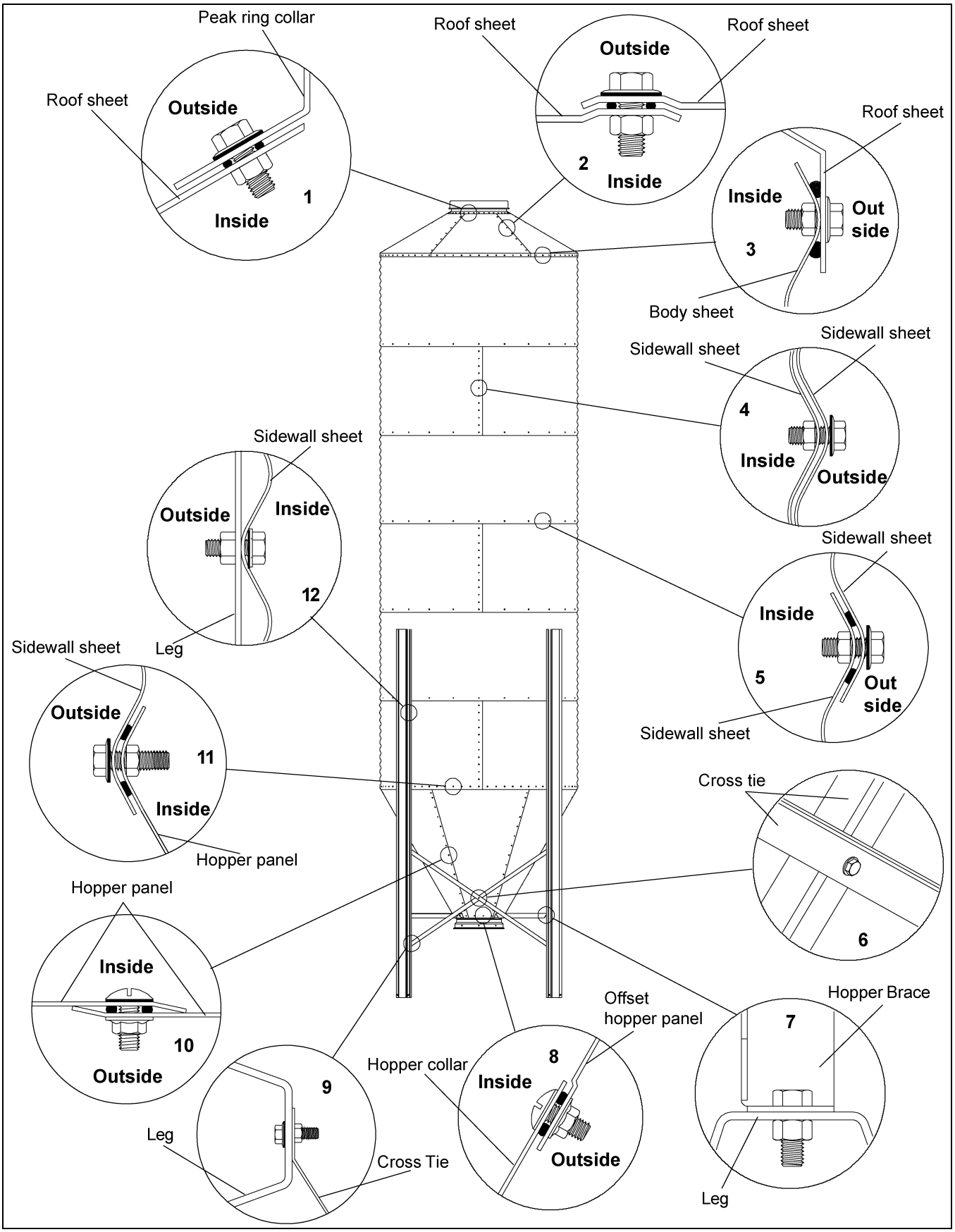
Under Collar Clearance	
16" Collar	28-5/16" (719 mm)
22" Collar	32-7/8" (837 mm)

IMPORTANT: *Bolt heads are inside of bin at the leg to body attachment and on all vertical seams on hopper panels. All bolts to be tightened from the nut side only. Refer to detail* *on Page 24* *for location of caulking. No cross tie bracing required.*

6' Diameter 60° Hopper Tank Specifications Parts List

Ref #	Part #	Description	Qty
1	BLK-11730	Bulk Tank Peak Ring	1
2	BLK-12254	6' 30° Roof Panel (20 Gauge)	6
3		**6' Sidewall Sheet**	**2 Per Ring**
3	SS40682006	20 Gauge (Top Punched Sidewall Sheet)	
3	SS41632006	20 Gauge (Top Punched Decal Sidewall Sheet)	
3	SS40691906	19 Gauge (Middle Punched Sidewall Sheet)	
3	SS40691806	18 Gauge (Middle Punched Sidewall Sheet)	
3	SS40691706	17 Gauge (Middle Punched Sidewall Sheet)	
3	SS40691606	16 Gauge (Middle Punched Sidewall Sheet)	
3	SS40691506	15 Gauge (Middle Punched Sidewall Sheet)	
3	SS40691306	13 Gauge (Middle Punched Sidewall Sheet)	
3	SS40701706	17 Gauge (Middle Leg Sidewall Sheet)	
3	SS40701506	15 Gauge (Middle Leg Sidewall Sheet)	
3	SS40701306	13 Gauge (Middle Leg Sidewall Sheet)	
3	SS40712006	20 Gauge (Bottom Leg Sidewall Sheet)	
3	SS40711706	17 Gauge (Bottom Leg Sidewall Sheet)	
3	SS40711506	15 Gauge (Bottom Leg Sidewall Sheet)	
3	SS40711306	13 Gauge (Bottom Leg Sidewall Sheet)	
4	BLK-12291	6' 60° Offset Hopper Panel 16" Opening (20 Ga.) (Shown)	6
4	BLK-12293	6' 60° Hopper Panel 22" Opening (20 Gauge)	6
5	BLK-12492	6' 60° (5-8 Ring) Leg 106-1/16" (10 Gauge)	4
6	BLK-12146	Hopper Brace for 16" Collar (Shown)	4
6	BLK-12147	Hopper Brace for 22" Collar	4
7	BLK-12530	6' Inside Cross tie Brace (12 Gauge)	4
7	BLK-12532	6' Outside Cross tie Brace (12 Gauge)	4
8	BLK-10489	16" 60° Hopper Collar (24 Holes) (Shown)	1
8	BLK-10342	22" 60° Hopper Collar (36 Holes)	1
NS	BLK-12516	6' 60° Hopper Reinforcement Angle (12 Gauge)	6

6' Diameter 60° Hopper Tank Hardware Specifications



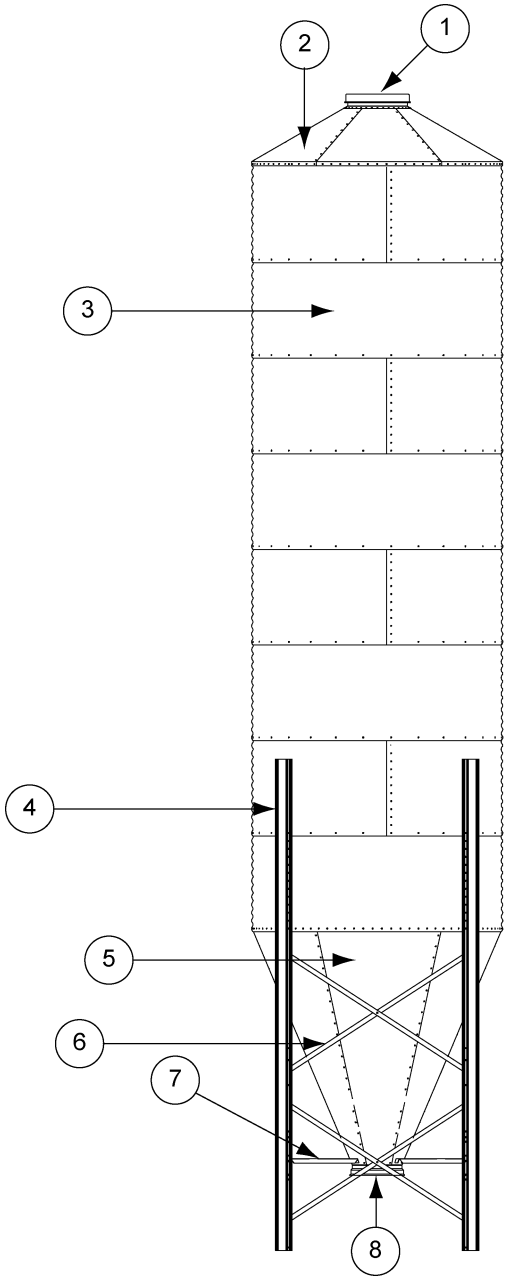
*** NOTE:** *Bolt listed first and nut second for each usage.*

Hardware usage: Heads of bolts are on the outside of tank unless otherwise noted.

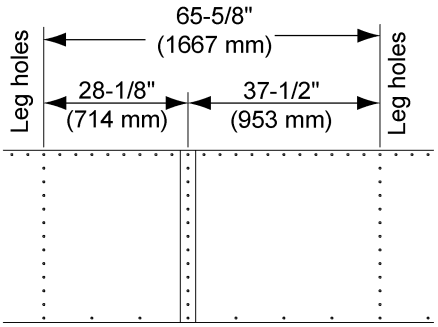
6' Diameter 60° Hopper Tank Hardware Specifications Parts List

Ref #	Part #	Description	Qty
1	S-275	Bulk Tank Peak Ring to Roof Panels (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.)	36
1	S-396		36
2	S-275	Roof Panel to Roof Panel (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.)	48
2	S-396		48
3	S-275	Roof Panels to Top Sidewall Sheets (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.)	72
3	S-396		72
4	S-275	Vertical Sidewall Sheet Seams (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.)	Varies
4	S-396		Varies
5	S-275	Horizontal Sidewall Sheet Seams (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.)	Varies
5	S-396		Varies
6	S-7927	Cross Tie BracetoCross Tie Brace (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	4
6	S-456		4
7	S-7927	Hopper Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	4
7	S-456		4
8	S-4303	Hopper Collar to Hopper Panel (Use 5/16" x 3/4" Truss Head Bin Bolts and 5/16" Flanged Whiz Nuts.) **(Bolt Heads to Inside of Tank.)** (16" Shown.)	24 or 36
8	S-3611		24 or 36
9	S-7927	Cross Tie Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	8
9	S-456		8
10	S-4303	Vertical Hopper Seams (Use 5/16" x 3/4" Truss Head Bin Bolts and 5/16" Flanged Whiz Nuts.) **(Bolt Heads to Inside of Tank.)**	90
10	S-3611		90
11	S-277	Hopper Panels to Sidewall Sheet (Use 5/16" x 1-1/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) **(Bolt Head to Inside at Leg to Hopper to Sidewall Connection Only.)**	72
11	S-396		72
12	S-275	Leg to Sidewall Sheet (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) **(Bolt Heads to Inside of Tank.)**	88
12	S-396		88

7' Diameter 67° Hopper Tank Specifications



Model	Sidewall Gauge
BFT 7'-7 Ring	13-13-14-16-18-20-20
BFT 7'-8 Ring	13-13-13-14-16-18-20-20



Under Collar Clearance	
16" Collar	30.3/8" (771 mm)
22" Collar	36.1/2" (927 mm)

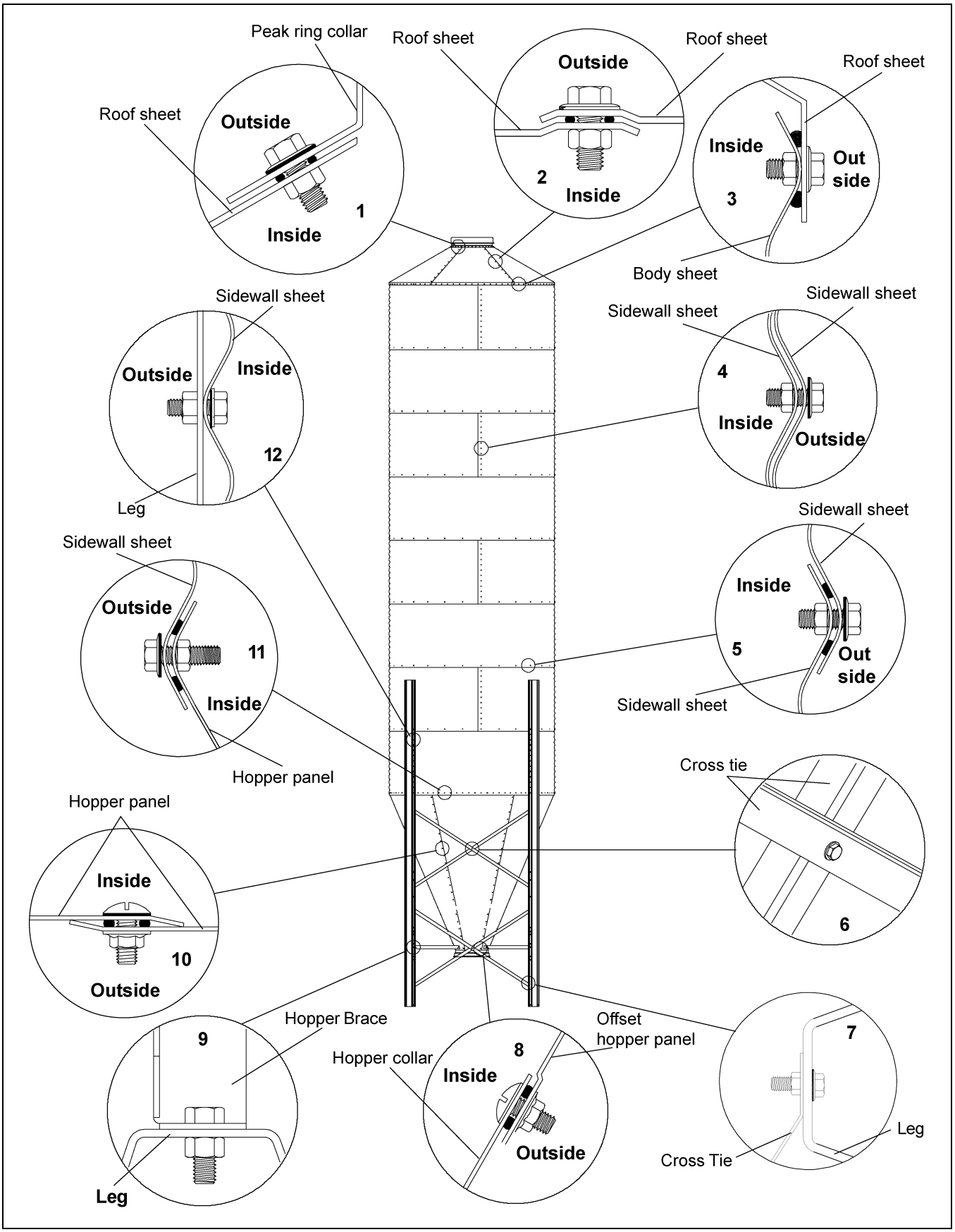
IMPORTANT: *Vertical seams of body sheets with leg holes MUST be bolted together to provide 65-5/8" (1667 mm) between leg holes.*

IMPORTANT: *Bolt heads are inside of bin at the leg to body attachment and on all vertical seams on hopper panels. All bolts to be tightened from the nut side only. Refer to detail* *on Page 24* *for location of caulking. No cross tie bracing required.*

7' Diameter 67° Hopper Tank Specifications Parts List

Ref #	Part #	Description	Qty
1	BLK-11730	Bulk Tank Peak Ring	1
2	BLK-12260	7' 30° Roof Panel	6
3		**7' Sidewall Sheet**	**2 Per Ring**
3	SS40612007	20 Gauge (Top Punched Sidewall Sheet)	
3	SS41652007	20 Gauge (Top Punched Decal Sidewall Sheet)	
3	SS40462007	20 Gauge (Middle Punched Sidewall Sheet)	
3	SS40461807	18 Gauge (Middle Punched Sidewall Sheet)	
3	SS40461607	16 Gauge (Middle Punched Sidewall Sheet)	
3	SS40461407	14 Gauge (Middle Punched Sidewall Sheet)	
3	SS40461307	13 Gauge (Middle Punched Sidewall Sheet)	
3	SS40641807	18 Gauge (Middle Leg Punched Sidewall Sheet)	
3	SS40641307	13 Gauge (Middle Leg Punched Sidewall Sheet)	
3	SS40661807	118 Gauge (Bottom Leg Punched Sidewall Sheet)	
3	SS40661307	13 Gauge (Bottom Leg Punched Sidewall Sheet)	
4	BLK-12489	7' Leg 164-1/2" (10 Gauge) (7-8 Rings) (Shown)	4
5	BLK-12301	7' 67° Offs et Hopper Panel 16" Opening (18 Ga.) (Shown)	6
5	BLK-12303	7' 67° Hopper Panel 22" Opening (18 Gauge)	6
6	BLK-12107	Hopper Brace for 16" Collar (Shown)	4
6	BLK-12108	Hopper Brace for 22" Collar	4
7	BLK-10488	16" 67° Hopper Collar (18 Holes) (Shown)	1
7	BLK-10341	22" 67° Hopper Collar (36 Holes)	1
8	BLK-12056	7' Ins ide Cros s Tie Brace (72.49") (12 Gauge)	8
8	BLK-12057	7' Outs ide Cros s Tie Brace (72.49") (12 Gauge)	8
9	BLK-12518	7' 67° Hopper Reinforcement Angle	6

7' Diameter 67° Hopper Tank Hardware Specifications



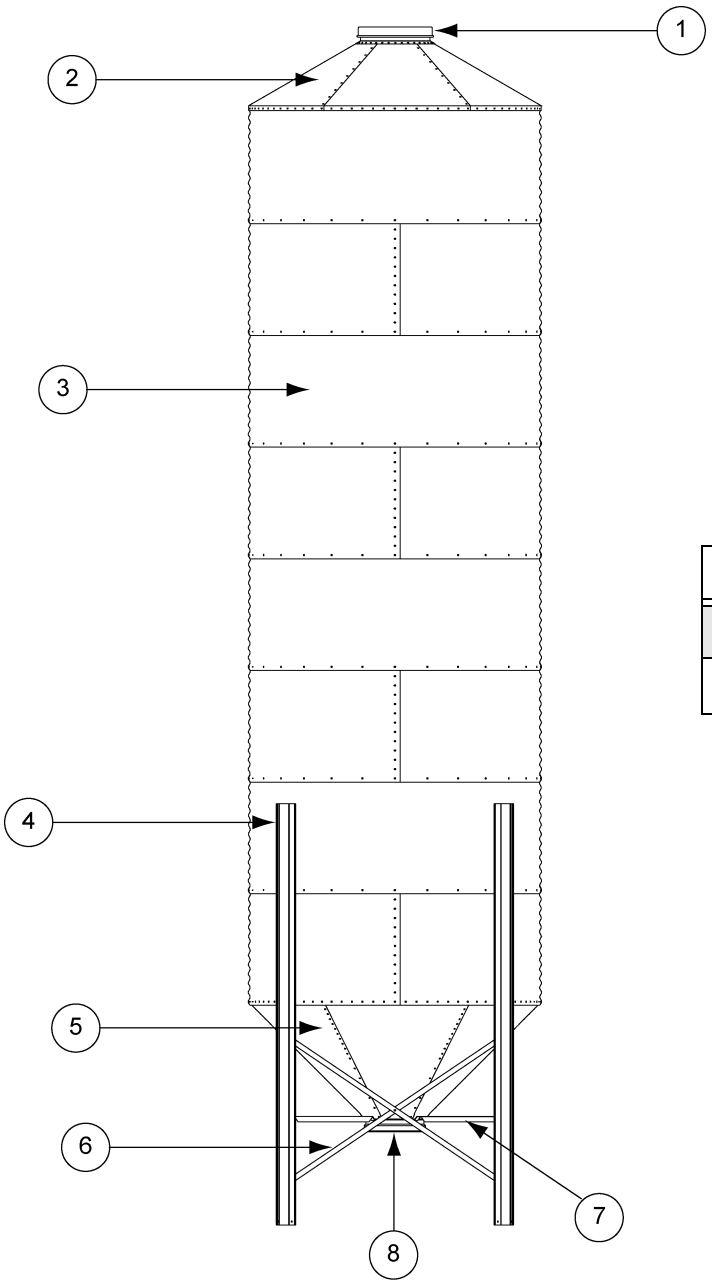
*** NOTE:** *Bolt listed first and nut second for each usage.*

Hardware usage: Heads of bolts are on the outside of tank unless otherwise noted.

7' Diameter 67° Hopper Tank Hardware Specifications Parts List

Ref #	Part #	Description	Qty
1	S-275	Bulk Tank Peak Ring to Roof Panels (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.)	36
1	S-396		36
2	S-275	Roof Panel to Roof Panel (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.)	60
2	S-396		60
3	S-275	Roof Panels to Top Sidewall Sheets (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.)	84
3	S-396		84
4	S-275	Vertical Sidewall Sheet Seams (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.)	Varies
4	S-396		Varies
5	S-275	Horizontal Sidewall Sheet Seams (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.)	Varies
5	S-396		Varies
6	S-7927	Cross Tie Brace to Cross Tie Brace (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	8
6	S-456		8
7	S-7927	Cross Tie Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	16
7	S-456		16
8	S-4303	Hopper Collar to Hopper Panel (Use 5/16" x 3/4" Truss Head Bin Bolts and **5/16" Flanged Whiz Nuts.) (Bolt Heads to Inside of Tank.)** (16" Shown)	24 or 36
8	S-3611		24 or 36
9	S-7927	Hopper Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	4
9	S-456		4
10	S-4303	Vertical Hopper Seams (Use 5/16" x 3/4" Truss Head Bin Bolts and 5/16" Flanged Whiz Nuts.) (**Bolt Heads to Inside of Tank.)**	162
10	S-3611		162
11	S-277	Hopper Panels to Sidewall Sheet (Use 5/16" x 1-1/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) **(Bolt Head to Inside at Leg to Hopper to Sidewall Connection Only.)**	84
11	S-396		84
12	S-275	Leg to Sidewall Sheet (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) **(Bolt Heads to Inside of Tank.)**	52 or 88
12	S-396		52 or 88

7' Diameter 45° Hopper Tank Specifications



Model	Sidewall Gauge
BFT 7'-7 Ring	13-13-14-16-18-20-20
BFT 7'-8 Ring	13-13-13-14-16-18-20-20

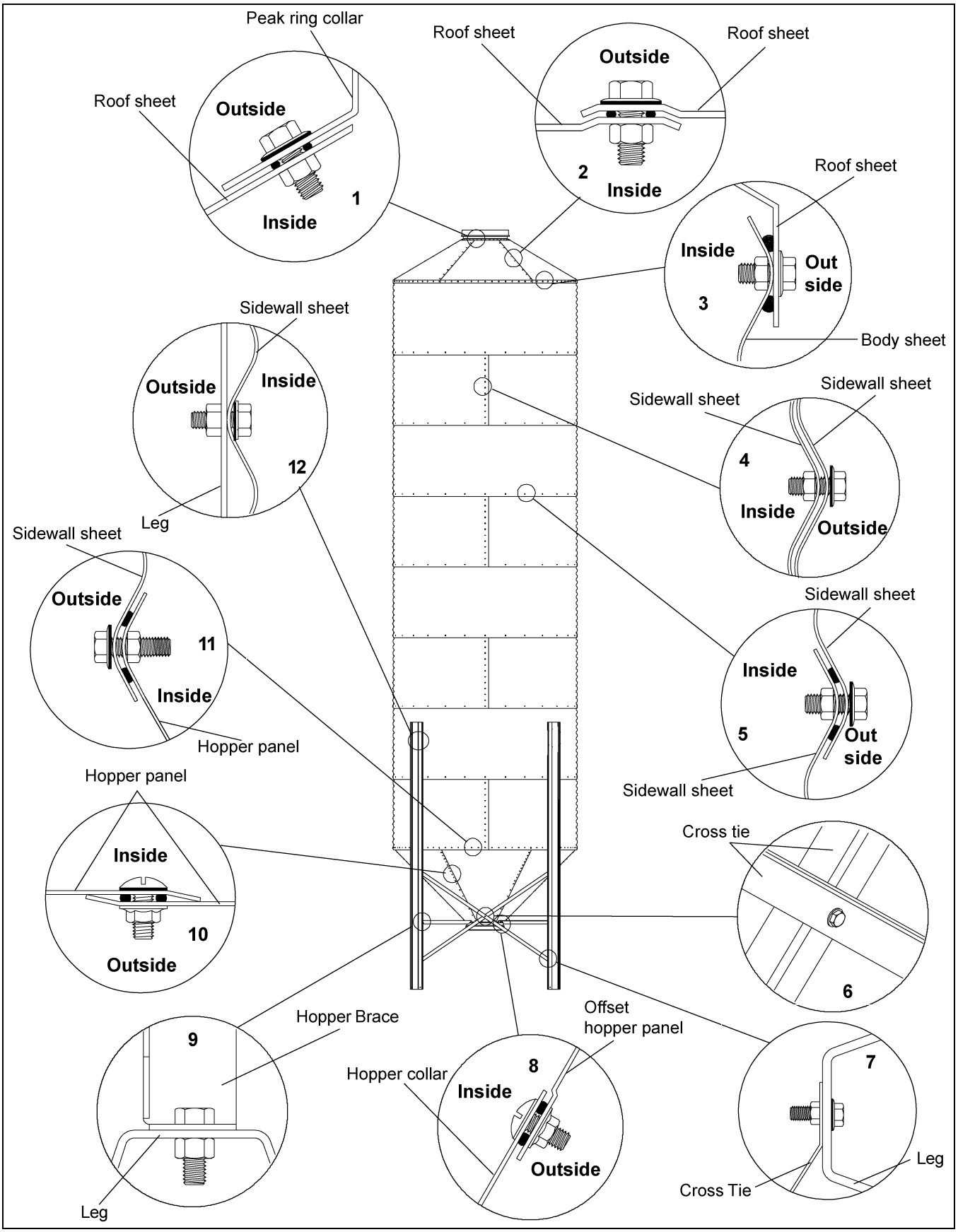
Under Collar Clearance	
16" Collar	29-3/4" (756 mm)
22" Collar	32-5/16" (821 mm)

IMPORTANT: *Bolt heads are inside of bin at the leg to body attachment and on all vertical seams on hopper panels. All bolts to be tightened from the nut side only. Refer to detail* *on Page 24* *for location of caulking. No cross tie bracing required.*

7' Diameter 45° Hopper Tank Specifications Parts List

Ref #	Part #	Description	Qty
1	BLK-11730	Bulk Tank Peak Ring	1
2	BLK-12260	7' 30° Roof Panel (20 Gauge)	6
3		**7' Sidewall Sheet**	**2 Per Ring**
3	SS40612007	20 Gauge (Top Punched Sidewall Sheet)	
3	SS41652007	20 Gauge (Top Punched Decal Sidewall Sheet)	
3	SS40462007	20 Gauge (Middle Punched Sidewall Sheet)	
3	SS40461807	18 Gauge (Middle Punched Sidewall Sheet)	
3	SS40461607	16 Gauge (Middle Punched Sidewall Sheet)	
3	SS40461407	14 Gauge (Middle Punched Sidewall Sheet)	
3	SS40461307	13 Gauge (Middle Punched Sidewall Sheet)	
3	SS40641807	18 Gauge (Middle Leg Punched Sidewall Sheet)	
3	SS40641307	13 Gauge (Middle Leg Punched Sidewall Sheet)	
3	SS40661807	18 Gauge (Bottom Leg Punched Sidewall Sheet)	
3	SS40661307	13 Gauge (Bottom Leg Punched Sidewall Sheet)	
4	BLK-12538	7' Leg 120-3/4" (10 Gauge) (7--8 Rings) (Shown)	4
5	BLK-12296	7' 45° Offset Hopper Panel 16" Opening (18 Ga.) (Shown)	6
5	BLK-12298	7' 45° Hopper Panel 22" Opening (18 Gauge)	6
6	BLK-12056	7' Inside Cross Tie Brace (72.49") (12 Gauge)	4
6	BLK-12057	7' Outside Cross Tie Brace (72.49") (12 Gauge)	4
7	BLK-12105	Hopper Brace for 16" Collar (Shown)	4
7	BLK-12106	Hopper Brace for 22" Collar	4
8	BLK-12341	16" 45° Hopper Collar (18 Holes) (Shown)	1
8	BLK-10854	22" 45° Hopper Collar (36 Holes)	1

7' Diameter 45° Hopper Tank Hardware Specifications



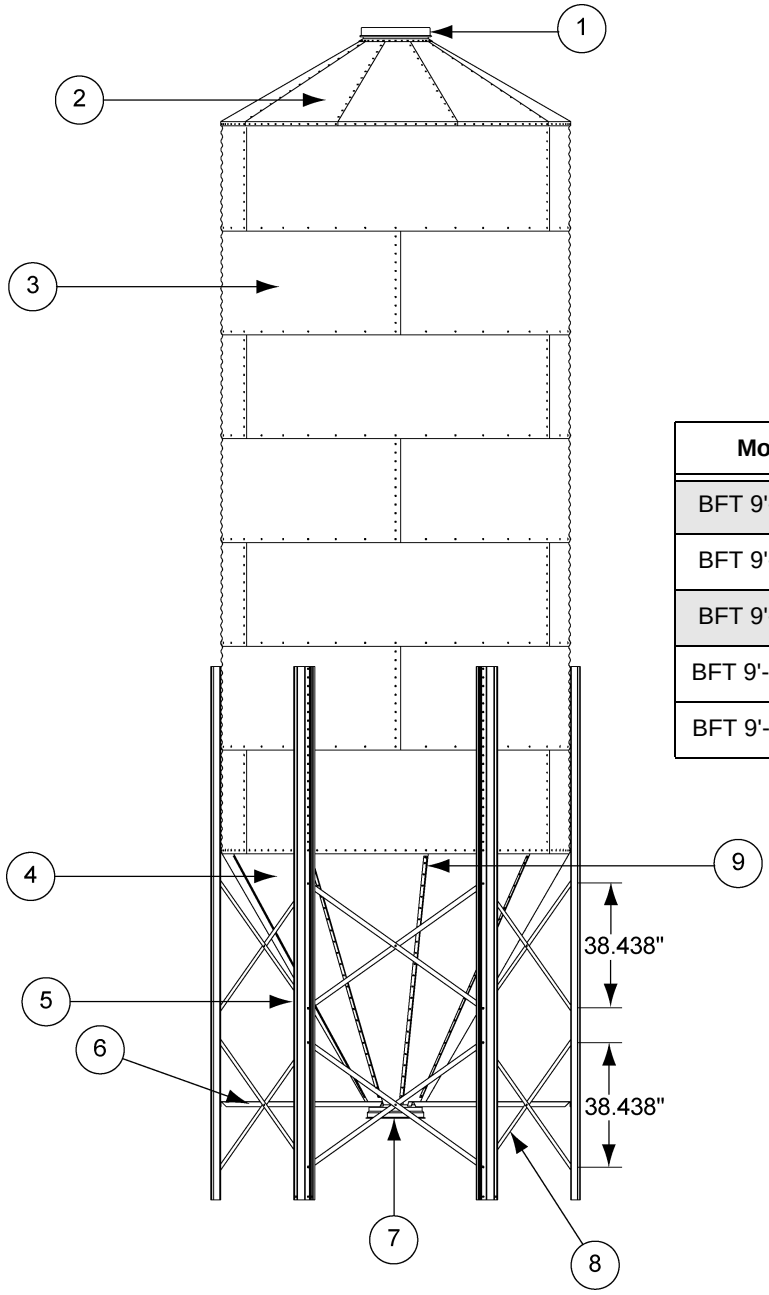
*** NOTE:** *Bolt listed first and nut second for each usage.*

Hardware usage: Heads of bolts are on the outside of tank unless otherwise noted.

7' Diameter 45° Hopper Tank Hardware Specifications Parts List

Ref #	Part #	Description	Qty
1	S-275	Bulk Tank Peak Ring to Roof Panels (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.)	36
1	S-396		36
2	S-275	Roof Panel to Roof Panel (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.)	60
2	S-396		60
3	S-275	Roof Panels to Top Sidewall Sheets (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.)	84
3	S-396		84
4	S-275	Vertical Sidewall Sheet Seams (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.)	Varies
4	S-396		Varies
5	S-275	Horizontal Sidewall Sheet Seams (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.)	Varies
5	S-396		Varies
6	S-7927	Cross Tie Brace to Cross Tie Brace (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	8
6	S-456		8
7	S-7927	Cross Tie Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	16
7	S-456		16
8	S-4303	Hopper Collar to Hopper Panel (Use 5/16" x 3/4" Truss Head Bin Bolts and 5/16" Flanged Whiz Nuts.) **(Bolt Heads to Inside of Tank.)** (16" Shown)	18 or 36
8	S-3611		18 or 36
9	S-7927	Hopper Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	4
9	S-456		4
10	S-4303	Vertical Hopper Seams (Use 5/16" x 3/4" Truss Head Bin Bolts and 5/16" Flanged Whiz Nuts.) **(Bolt Heads to Inside of Tank.)**	102
10	S-3611		102
11	S-277	Hopper Panels to Sidewall Sheet (Use 5/16" x 1-1/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) **(Bolt Head to Inside at Leg to Hopper to Sidewall Connection Only.)**	84
11	S-396		84
12	S-275	Leg to Sidewall Sheet (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) **(Bolt Heads to Inside of Tank.)**	88
12	S-396		88

9' Diameter 60° Hopper Tank Specifications



Model	Sidewall Gauge
BFT 9'-7 Ring	13-13-15-16-18-20-20
BFT 9'-8 Ring	13-13-13-14-16-18-20-20
BFT 9'-9 Ring	12-12-13-13-14-16-18-20-20
BFT 9'-10 Ring	11-11-11-12-13-14-16-18-20-20
BFT 9'-11 Ring	10-10-11-11-12-13-14-16-18-20-20

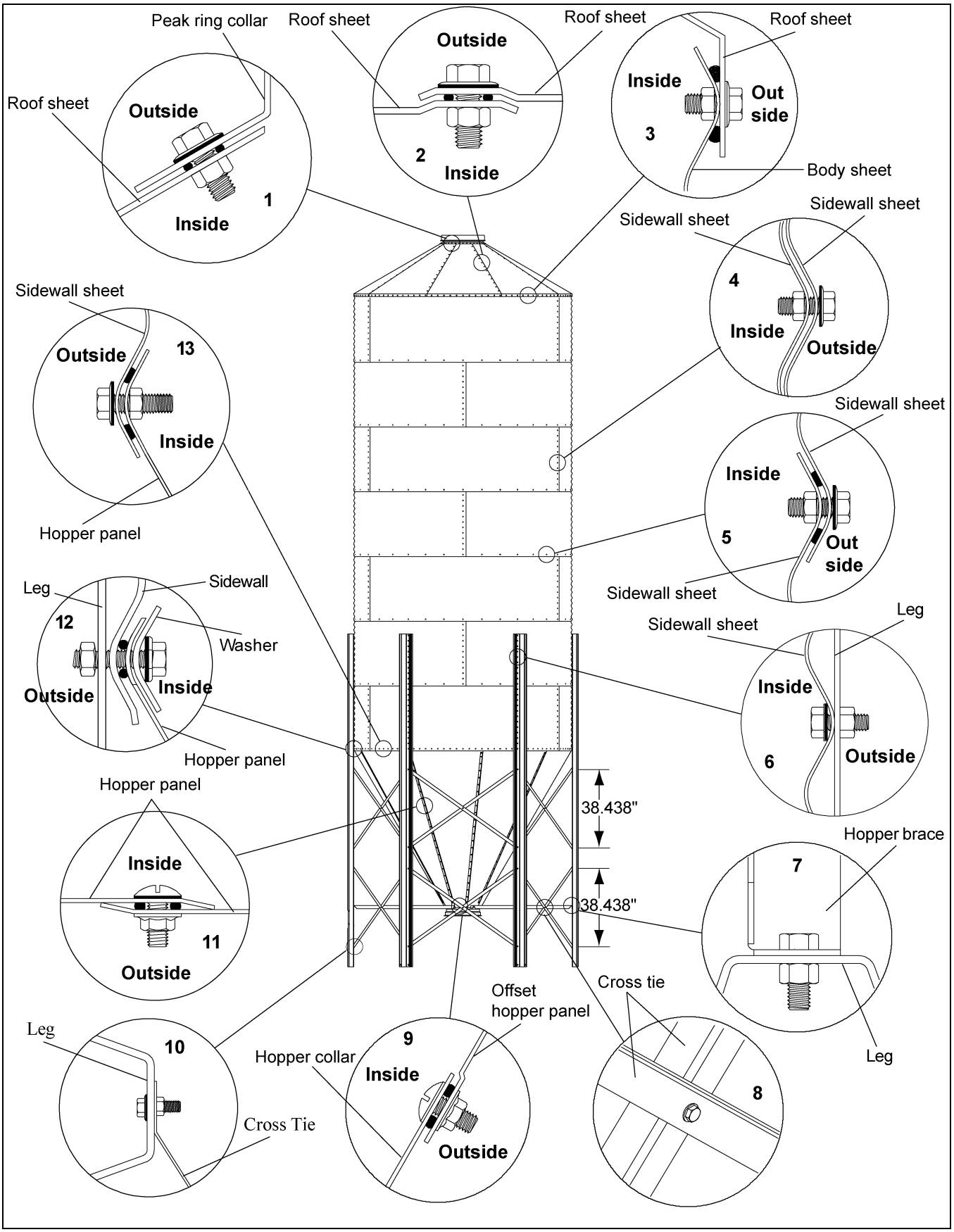
Under Collar Clearance	
16" Collar	28-1/16" (713 mm)
22" Collar	32-5/8" (829 mm)

IMPORTANT: *Bolt heads are inside of bin at the Leg to Body attachment and on all vertical seams on hopper panels. All bolts to be tightened from the nut side only. Refer to detail* *on Page 24* *for location of caulking.*

9' Diameter 60° Hopper Tank Specifications Parts List

Ref #	Part #	Description	Qty
1	BLK-11730	Bulk Tank Peak Ring	1
2	BLK-12266	9' 30° Roof Panel (20 Gauge)	9
3		**9' Sidewall Sheet**	**3 Per Ring**
3	SS40682009	20 Gauge (Top Punched Sidewall Sheet)	
3	SS41662009	20 Gauge (Top Punched Decal Sidewall Sheet)	
3	SS40692009	20 Gauge (Middle Punched Sidewall Sheet)	
3	SS40691809	18 Gauge (Middle Punched Sidewall Sheet)	
3	SS40691609	16 Gauge (Middle Punched Sidewall Sheet)	
3	SS40701509	15 Gauge (Middle Punched Sidewall Sheet)	
3	SS40691409	14 Gauge (Middle Punched Sidewall Sheet)	
3	SS40691309	13 Gauge (Middle Punched Sidewall Sheet)	
3	SS40691209	12 Gauge (Middle Punched Sidewall Sheet)	
3	SS40691109	11 Gauge (Middle Punched Sidewall Sheet)	
3	SS40701309	13 Gauge (Middle Leg Punched Sidewall Sheet)	
3	SS4070B1209	12 Gauge (Middle 3-Leg Punched Sidewall Sheet)	
3	SS4070B1109	11 Gauge (Middle 3-Leg Punched Sidewall Sheet)	
3	SS4070B1009	10 Gauge (Middle 3-Leg Punched Sidewall Sheet)	
3	SS40711309	13 Gauge (Bottom Leg Punched Sidewall Sheet)	
3	SS4071A1209	12 Gauge (Bottom 3-Leg Punched Sidewall Sheet)	
3	SS4071A1109	11 Gauge (Bottom 3-Leg Punched Sidewall Sheet)	
3	SS4071A1009	10 Gauge (Bottom 3-Leg Punched Sidewall Sheet)	
4	BLK-12726	9' 60° Offset Hopper Panel 16" Opening -18 Ga. Shown (1-7 rings only)	9
4	BLK-12728	9' 60° Hopper Panel 22" Opening - 18 Gauge (1-7 rings only)	9
4	BLK-12367	9' 60° Offset Hopper Panel 16" Opening -16 Ga. Shown (8-9 rings only)	9
4	BLK-12369	9' 60° Offset Hopper Panel 16" Opening -16 Ga. Shown (8-9 rings only)	9
4	BLK-12372	9' 60° Offset Hopper Panel 16" Opening -14 Ga. Shown (10-11 rings only)	9
4	BLK-12374	9' 60° Offset Hopper Panel 16" Opening -14 Ga. Shown (10-11 rings only)	9
5	BLK-12489	9' Leg 164-1/2" (10 Gauge) (7-8 Rings)	6
5	BLK-12489	9' Leg 164-1/2" (10 Gauge) (9-11 Rings)	9
6	BLK-12109	Hopper Brace for 16" Collar (Shown)	6 or 9
6	BLK-12110	Hopper Brace for 22" Collar	6 or 9
7	BLK-12342	16" 60° Hopper Collar (18 Holes) (Shown)	1
7	BLK-10342	22" 60° Hopper Collar (36 Holes)	1
8	BLK-12058	9' Ins ide Cros s Tie Brace (67.8") (12 Gauge) (7-8 rings)	12
8	BLK-12059	9' Outs ide Cros s Tie Brace (67.8") (12 Gauge) (7-8 rings)	12
8	BLK-120581K	9' Ins ide Cros s Tie Brace (54.4") (12 Gauge) (9-11 rings)	18
8	BLK-120591K	9' Outs ide Cros s Tie Brace (54.4") (12 Gauge) (9-11 rings)	18
9	BLK-12484	9' 60° Hopper Reinforcement Angle	9

9' Diameter 60° Hopper Tank Hardware Specifications



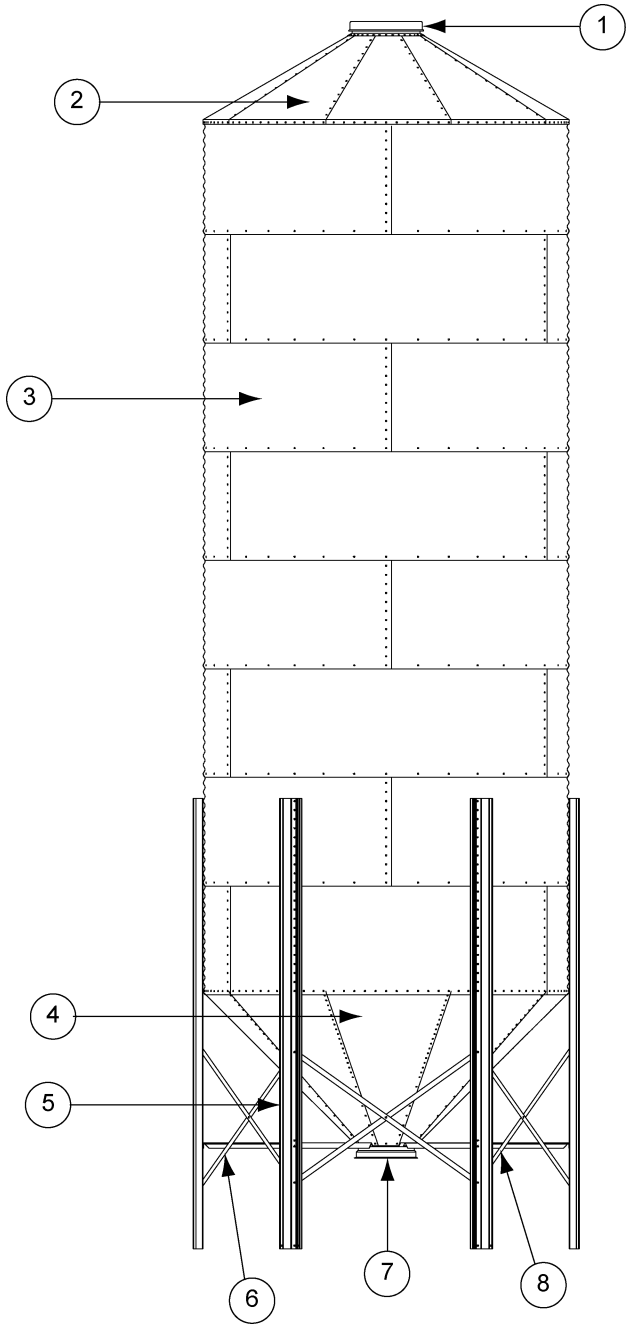
*** NOTE:** *Bolt listed first and nut second for each usage.*

Hardware usage: Heads of bolts are on the outside of tank unless otherwise noted.

9' Diameter 60° Hopper Tank Hardware Specifications Parts List

Ref #	Part #	Description	Qty
1	S-275	Bulk Tank Peak Ring to Roof Panels (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.)	36
1	S-396		36
2	S-275	Roof Panel to Roof Panel (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.)	117
2	S-396		117
3	S-275	Roof Panels to Top Sidewall Sheets (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.)	108
3	S-396		108
4	S-275	Vertical Sidewall Sheet Seams (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.)	Varies
4	S-396		Varies
5	S-275	Horizontal Sidewall Sheet Seams (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.)	Varies
5	S-396		Varies
6	S-275	Leg to Sidewall Sheet (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) **(Bolt Heads to Inside of Tank.)**	126 or 189
6	S-396		126 or 189
7	S-7927	Hopper Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	6 or 9
7	S-456		6 or 9
8	S-7927	Cross Tie Brace to Cross Tie Brace (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	12 or 18
8	S-456		12 or 18
9	S-4303	Hopper Collar to Hopper Panel (Use 5/16" x 3/4" Truss Head Bin Bolts and 5/16" Flanged Whiz Nuts.) **(Bolt Heads to Inside of Tank.)** (16" Shown)	18 or 36
9	S-3611		18 or 36
10	S-7927	Cross Tie Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	24 or 36
10	S-456		24 or 36
11	S-4303	Vertical Hopper Seams (Use 5/16" x 3/4" Truss Head Bin Bolts and 5/16" Flanged Whiz Nuts.) **(Bolt Heads to Inside of Tank.)**	216
11	S-3611		216
12	S-277	Leg to Body Sheet to Hopper Connection (Use 10 Gauge Washer under 5/16" x 1-1/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) (**Bolt Head to Inside at Leg to Hopper to Sidewall Connection Only.)**	6 or 9
12	S-396		6 or 9
12	BLK-12483		6 or 9
13	S-277	Hopper Panels to Sidewall Sheet (Use 5/16" x 1-1/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) (**Bolt Head to Inside at Leg to Hopper to Sidewall Connection Only.)**	108
13	S-396		108

9' Diameter 45° Hopper Tank Specifications



Model	Sidewall Gauge
BFT 9'-7 Ring	13-13-15-16-18-20-20
BFT 9'-8 Ring	13-13-13-14-16-18-20-20
BFT 9'-9 Ring	12-12-13-13-14-16-18-20-20
BFT 9'-10 Ring	11-11-11-12-13-14-16-18-20-20
BFT 9'-11 Ring	10-10-11-11-12-13-14-16-18-20-20

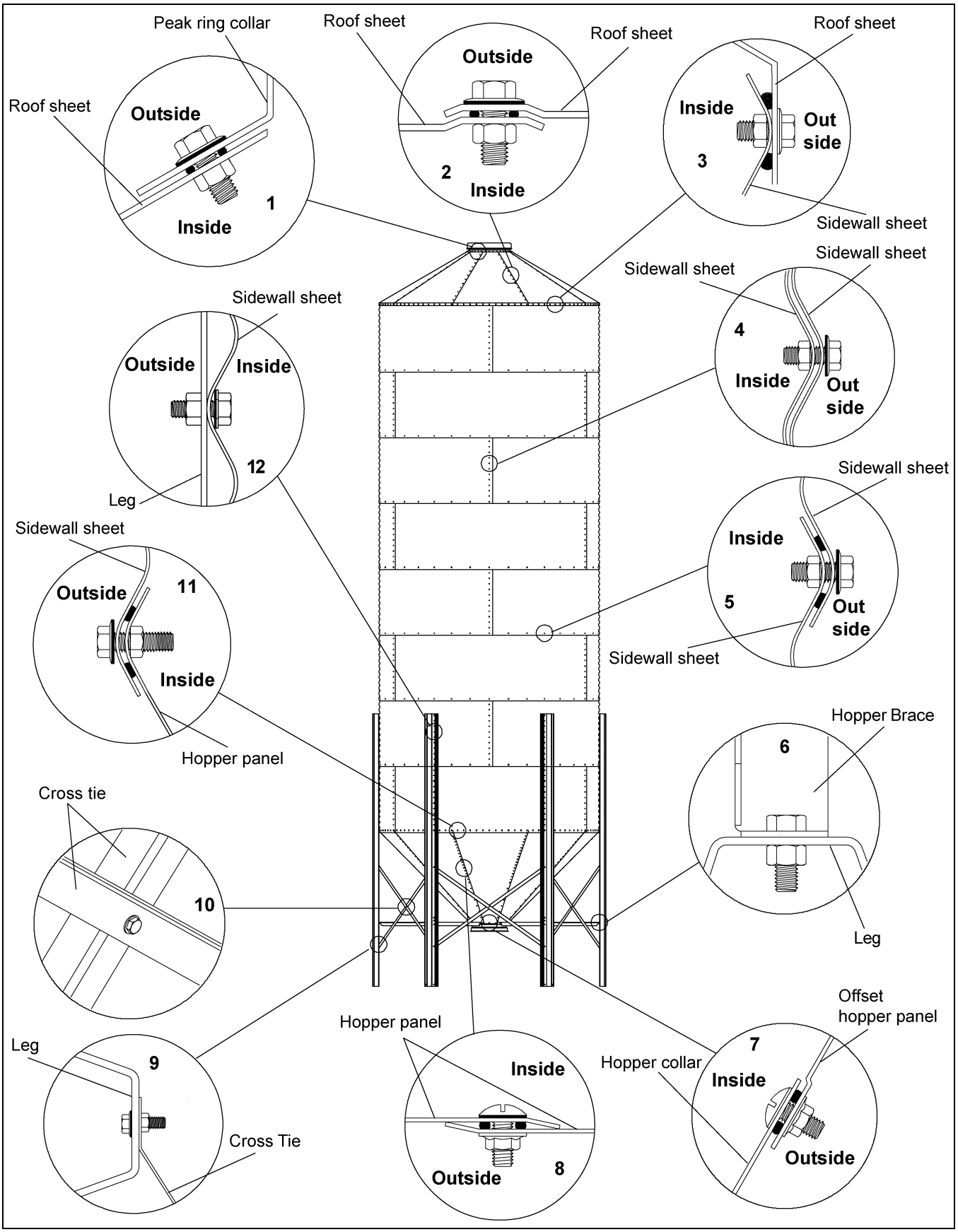
Under Collar Clearance	
16" Collar	30-11/16" (779 mm)
22" Collar	33-1/4" (844 mm)

IMPORTANT: *Bolt heads are inside of bin at the leg to body attachment and on all vertical seams on hopper panels. All bolts to be tightened from the nut side only. Refer to detail* *on Page 24* *for location of caulking. No cross tie bracing required.*

9' Diameter 45° Hopper Tank Specifications Parts List

Ref #	Part #	Description	Qty
1	BLK-11730	Bulk Tank Peak Ring	1
2	BLK-12266	9' 30° Roof Panel (20 Gauge)	9
3		**9' Sidewall Sheet**	**3 Per Ring**
3	SS40682009	20 Gauge (Top Punched Sidewall Sheet)	
3	SS41662009	20 Gauge (Top Punched Decal Sidewall Sheet)	
3	SS40692009	20 Gauge (Middle Punched Sidewall Sheet)	
3	SS40691809	18 Gauge (Middle Punched Sidewall Sheet)	
3	SS40691609	16 Gauge (Middle Punched Sidewall Sheet)	
3	SS40691509	15 Gauge (Middle Punched Sidewall Sheet)	
3	SS40691409	14 Gauge (Middle Punched Sidewall Sheet)	
3	SS40691309	13 Gauge (Middle Punched Sidewall Sheet)	
3	SS40691209	12 Gauge (Middle Punched Sidewall Sheet)	
3	SS40691109	11 Gauge (Middle Punched Sidewall Sheet)	
3	SS40701309	13 Gauge (Middle Leg Punched Sidewall Sheet)	
3	SS40701209	12 Gauge (Middle Leg Punched Sidewall Sheet)	
3	SS4070B1109	11 Gauge (Middle 3-Leg Punched Sidewall Sheet)	
3	SS4070B1009	10 Gauge (Middle 3-Leg Punched Sidewall Sheet)	
3	SS40711309	13 Gauge (Bottom Leg Punched Sidewall Sheet)	
3	SS40711209	12 Gauge (Bottom Leg Punched Sidewall Sheet)	
3	SS4071A1109	11 Gauge (Bottom 3-Leg Punched Sidewall Sheet)	
3	SS4071A1009	10 Gauge (Bottom 3-Leg Punched Sidewall Sheet)	
4	BLK-12306	9' 45° Offset Hopper Panel 16" Opening -16 Ga. Shown (7-9 rings only)	9
4	BLK-12362	9' 45° Offset Hopper Panel 16" Opening -14 Ga. (10-11 rings only)	9
4	BLK-12308	9' 45° Hopper Panel 22" Opening-16 Gauge (7-9 rings only)	9
4	BLK-12364	9' 45° Hopper Panel 22" Opening-14 Gauge (10-11 rings only)	9
5	BLK-12505	9' Leg 132-3/8" (10 Gauge) (7-9 Rings)	6
5	BLK-12505	9' Leg 132-3/8" (10 Gauge) (10-11 Rings)	9
6	BLK-12111	Hopper Brace for 16" Collar (Shown)	6 or 9
6	BLK-12112	Hopper Brace for 22" Collar	6 or 9
7	BLK-12341	16" 45° Hopper Collar (18 Holes) (Shown)	1
7	BLK-10854	22" 45° Hopper Collar (36 Holes)	1
8	BLK-12058	9' Ins ide Cros s Tie Brace (67.788") (12 Gauge) (7-9 rings)	6 or 9
8	BLK-12059	9' Outs ide Cros s Tie Brace (67.788") (12 Gauge) (7-9 rings)	6 or 9
8	BLK-120581K	9' Ins ide Cros s Tie Brace (54.4") (12 Gauge) (10-11 rings)	9
8	BLK-120591K	9' Outs ide Cros s Tie Brace (54.4") (12 Gauge) (10-11 rings)	9

9' Diameter 45° Hopper Tank Hardware Specifications



NOTE: *Bolt listed first and nut second for each usage.*

Hardware usage: Heads of bolts are on the outside of tank unless otherwise noted.

9' Diameter 45° Hopper Tank Hardware Specifications Parts List

Ref #	Part #	Description	Qty
1	S-275	Bulk Tank Peak Ring to Roof Panels (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.)	36
1	S-396		36
2	S-275	Roof Panel to Roof Panel (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.)	117
2	S-396		117
3	S-275	Roof Panels to Top Sidewall Sheets (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.)	108
3	S-396		108
4	S-275	Vertical Sidewall Sheet Seams (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.)	Varies
4	S-396		Varies
5	S-275	Horizontal Sidewall Sheet Seams (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.)	Varies
5	S-396		Varies
6	S-7927	Hopper Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	6 or 9
6	S-456		6 or 9
7	S-4303	Hopper Collar to Hopper Panel (Use 5/16" x 3/4" Truss Head Bin Bolts and 5/16" Flanged Whiz Nuts.) **(Bolt Heads to Inside of Tank.)** (16" Shown)	18 or 36
7	S-3611		18 or 36
8	S-4303	Vertical Hopper Seams (Use 5/16" x 3/4" Truss Head Bin Bolts and 5/16" Flanged Whiz Nuts.) **(Bolt Heads to Inside of Tank.)**	225
8	S-3611		225
9	S-7927	Cross Tie Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	12 or 18
9	S-456		12 or 18
10	S-7927	Cross Tie Brace to Cross Tie Brace (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	6 or 9
10	S-456		6 or 9
11	S-277	Hopper Panels to Sidewall Sheet (Use 5/16" x 1-1/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) **(Bolt Head to Inside at Leg to Hopper to Sidewall Connection Only.)**	108
11	S-396		108
12	S-275	Leg to Sidewall Sheet (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) **(Bolt Heads to Inside of Tank.)**	126 or 189
12	S-396		126 or 189

NOTES

GSI Group, LLC Limited Warranty

The GSI Group, LLC ("GSI") warrants products which it manufactures to be free of defects in materials and workmanship under normal usage and conditions for a period of 12 months after sale to the original end-user or if a foreign sale, 14 months from arrival at port of discharge, whichever is earlier. The end-user's sole remedy (and GSI's only obligation) is to repair or replace, at GSI's option and expense, products that in GSI's judgment, contain a material defect in materials or workmanship. Expenses incurred by or on behalf of the end-user without prior written authorization from the GSI Warranty Group shall be the sole responsibility of the end-user.

Warranty Extensions:

The Limited Warranty period is extended for the following products:

	Product	Warranty Period
AP Fans and Flooring	Performer Series Direct Drive Fan Motor	3 Years
	All Fiberglass Housings	Lifetime
	All Fiberglass Propellers	Lifetime
Cumberland Feeding/Watering Systems	Feeder System Pan Assemblies	5 Years **
	Feed Tubes (1-3/4" and 2.00")	10 Years *
	Centerless Augers	10 Years *
	Watering Nipples	10 Years *
Grain Systems	Grain Bin Structural Design	5 Years
Grain Systems Farm Fans Zimmerman	Portable and Tower Dryers	2 Years
	Portable and Tower Dryer Frames and Internal Infrastructure †	5 Years

* Warranty prorated from list price:
0 to 3 years - no cost to end-user
3 to 5 years - end-user pays 25%
5 to 7 years - end-user pays 50%
7 to 10 years - end-user pays 75%

** Warranty prorated from list price:
0 to 3 years - no cost to end-user
3 to 5 years - end-user pays 50%

† Motors, burner components and moving parts not included. Portable dryer screens included. Tower dryer screens not included.

GSI further warrants that the portable and tower dryer frame and basket, excluding all auger and auger drive components, shall be free from defects in materials for a period of time beginning on the twelfth (12^{th}) month from the date of purchase and continuing until the sixtieth (60^{th}) month from the date of purchase (extended warranty period). During the extended warranty period, GSI will replace the frame or basket components that prove to be defective under normal conditions of use without charge, excluding the labor, transportation, and/or shipping costs incurred in the performance of this extended warranty.

Conditions and Limitations:

THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE LIMITED WARRANTY DESCRIPTION SET FORTH ABOVE. SPECIFICALLY, GSI MAKES NO FURTHER WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE IN CONNECTION WITH: (I) PRODUCT MANUFACTURED OR SOLD BY GSI OR (II) ANY ADVICE, INSTRUCTION, RECOMMENDATION OR SUGGESTION PROVIDED BY AN AGENT, REPRESENTATIVE OR EMPLOYEE OF GSI REGARDING OR RELATED TO THE CONFIGURATION, INSTALLATION, LAYOUT, SUITABILITY FOR A PARTICULAR PURPOSE, OR DESIGN OF SUCH PRODUCTS.

GSI shall not be liable for any direct, indirect, incidental or consequential damages, including, without limitation, loss of anticipated profits or benefits. The sole and exclusive remedy is set forth in the Limited Warranty, which shall not exceed the amount paid for the product purchased. This warranty is not transferable and applies only to the original end-user. GSI shall have no obligation or responsibility for any representations or warranties made by or on behalf of any dealer, agent or distributor.

GSI assumes no responsibility for claims resulting from construction defects or unauthorized modifications to products which it manufactured. Modifications to products not specifically delineated in the manual accompanying the equipment at initial sale will void the Limited Warranty.

This Limited Warranty shall not extend to products or parts which have been damaged by negligent use, misuse, alteration, accident or which have been improperly/inadequately maintained. This Limited Warranty extends solely to products manufactured by GSI.

Prior to installation, the end-user has the responsibility to comply with federal, state and local codes which apply to the location and installation of products manufactured or sold by GSI.

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This equipment shall be installed in accordance with the current installation codes and applicable regulations, which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installations are made.

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