

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

Assembly Manual

PNEG-1912

Version: 3.2

Date: 12-12-16



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.

Contents

Chapter 1 Introduction	5
Chapter 2 Safety	6
Safety Guidelines	6
Cautionary Symbols Definitions	7
Safety Cautions	8
Safety Sign-Off Sheet	11
Chapter 3 Safety Decals	12
Chapter 4 General Information	13
Bulk Feed Tank Assembly Manual General Instructions	13
BFT/GHT Series Usage and Stored Product Considerations	14
Chapter 5 Foundation	15
Chapter 6 Sidewall Assembly	23
Tank Sidewalls	23
Caulking Detail	24
Sidewall Sheet Orientation	25
Chapter 7 Roof	28
Sealed Roof Panels Installation	28
Peak Ring Collar to Roof Panels	30
Chapter 8 Optional BFT Ladder Assembly	31
Starter Bracket Installation	32
Sidewall and Roof Ladder Installation	33
Roof Ladder Support Bracket Installation	34
Ladder Standoff Installation	39
Ladder Section Assembly	40
Ladder Support Detail	41
Ladder Decal Application	41
Chapter 9 Ladder Handrails	42
Handrail Installation for Ladder System without Safety Cage	42
Chapter 10 Safety Cage	50
Ladder System with Safety Cage	50
Safety Cage Hoop Assembly	52
Safety Cage Installation	54
Chapter 11 Roof Cap and Ground Control	57
Roof Cap and Ground Control Instructions	57
Roof Cap	64
Chapter 12 Hopper Assembly	66
Hopper Sheets	66
Reinforcement Angles	69
Hopper Collar	70
Chapter 13 Legs and Leg Bracing	72
Tank Legs and Leg Braces	72
Bracing Hole Layout	73
Hopper to Leg Horizontal Bracing	75
Leg Anchors	78

Table of Contents

Chapter 14 Raising Bin	80
Raising Bin to Set on Foundation	80
Lifting with Jacks	81
Lifting with Crane	82
Anchoring Tank	83
Tank Grounding Instructions	84
Chapter 15 Pneumatic Fill Kit	85
Pneumatic Fill Kit Assembly	85
Roof Panel	86
Chapter 16 Parts List	87
6' Diameter 60° Hopper Tank Specifications	88
6' Diameter 60° Hopper Tank Hardware Specifications	90
7' Diameter 67° Hopper Tank Specifications	92
7' Diameter 67° Hopper Tank Hardware Specifications	94
7' Diameter 45° Hopper Tank Specifications	96
7' Diameter 45° Hopper Tank Hardware Specifications	98
9' Diameter 60° Hopper Tank Specifications	100
9' Diameter 60° Hopper Tank Hardware Specifications	102
9' Diameter 45° Hopper Tank Specifications	104
9' Diameter 45° Hopper Tank Hardware Specifications	106
Chapter 17 Warranty	109

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

Safety guidelines are general-to-specific safety rules that must be followed at all times. This manual is written to help you understand safe operating procedures and problems that can be encountered by the operator and other personnel when using this equipment. Save these safety guidelines for future reference.

As owner or operator, you are responsible for understanding the requirements, hazards, and precautions that exist and to inform others as required. Unqualified persons must stay out of the work area at all times.

Alterations must not be made to the equipment. Alterations can produce dangerous situations resulting in **SERIOUS INJURY or DEATH**.

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

When necessary, you must consider the installation location relative to electrical, fuel and water utilities.

Personnel operating or working around equipment must 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.

ST-0001-3

Cautionary Symbols Definitions

Cautionary symbols appear in this manual and on product decals. The symbols alert the user of potential safety hazards, prohibited activities and mandatory actions. To help you recognize this information, we use the symbols that are defined below.



This symbol indicates an imminently hazardous situation which, if not avoided, **will result in serious injury or death.**



This symbol indicates a potentially hazardous situation which, if not avoided, **can result in serious injury or death.**



This symbol indicates a potentially hazardous situation which, if not avoided, **can result in minor or moderate injury.**



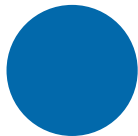
This symbol is used to address practices not related to personal injury.



This symbol indicates a general hazard.



This symbol indicates a prohibited activity.



This symbol indicates a mandatory action.

ST-0005-2

Safety Cautions

Use Personal Protective Equipment

- Use appropriate personal protective equipment:

Eye Protection



Respiratory Protection



Foot Protection



Hearing Protection



Head Protection



Fall Protection



Hand Protection



- Wear clothing appropriate to the job.
- Remove all jewelry.
- Tie long hair up and back.

ST-0004-1

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



ST-0002-1

Install and Operate Equipment Properly

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



ST-0057-1

Maintain Equipment and Work Area

- Understand service procedures before doing work. Keep area clean and dry.
- Never service equipment while it is operating. Keep hands, feet, and clothing away from moving parts.
- Keep your equipment in proper working condition. Replace worn or broken parts immediately.



ST-0003-1

Sharp Edge Hazard

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



ST-0036-2

Store Bin Sheets Properly

- Sidewall bundles or sheets must be stored in a safe manner. The safest method of storing sidewall bundles is by laying them 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.



ST-0058-1

Stay Clear of Hoisted Equipment

- Always use proper lifting or hoisting equipment when assembling or disassembling equipment.
- Do not walk or stand under hoisted equipment.
- Always use sturdy and stable supports when needed for installation. Not following these safety precautions creates the risk of falling equipment, which can crush personnel and cause serious injury or death.



ST-0047-1

2. Safety

Ladder Load Limit

- The ladder load limit is 300 LBS (1.34 kN). Do not exceed this weight.
- Excessive load will damage the ladder and severe injury or death will result.
- Ladders, stairways and platforms are for use by competent and trained personnel only. Do not allow children or other unauthorized persons to have access to the equipment.
- Access to the equipment must be restricted by the use of security fencing and lockable gates.
- Lower sections of ladders must be fitted with a lockable safety gate to prevent unauthorized access.
- Lock out and tag out power supplies to all equipment.
- Do not attach lifting equipment to ladders.
- Do not work at heights during high winds, rain, snow, or ice storms.



ST-0059-2

Do Not Enter Bin

- Rotating flighting will kill or dismember.
- Flowing material will trap and suffocate.
- Crusted material will collapse and suffocate.
 - If you must enter the bin:
 1. Shut off and lock out all power sources.
 2. Use a safety harness and safety line.
 3. Station another person outside the bin.
 4. Avoid the center of the bin.
 5. Wear proper breathing equipment or respirator.



ST-0061-1

Safety Sign-Off Sheet

Below is a sign-off sheet that can be used to verify that all personnel have read and understood the safety instructions. This sign-off sheet is provided for your convenience and personal record keeping.

[illegible]

ST-0007

3. Safety Decals

The safety decals on your equipment are safety indicators which must be carefully read and understood by all personnel involved in the installation, operation, service and maintenance of the equipment.

To replace a damaged or missing decal, contact us to receive a free replacement.

GSI Decals

1004 E. Illinois St.
Assumption, IL 62510
Tel: 1-217-226-4421

Location	Decal No.	Decals	Description
Located on inside of bin collar.	DC-2123		Danger, Keep Clear of Augers
Located on bin ladders.	DC-2307		Danger, Do not exceed load limit.

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. Use soapy water to soak the decal protective mask for 5 minutes to ease removal.
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 92.)
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 agitation 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.

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 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.

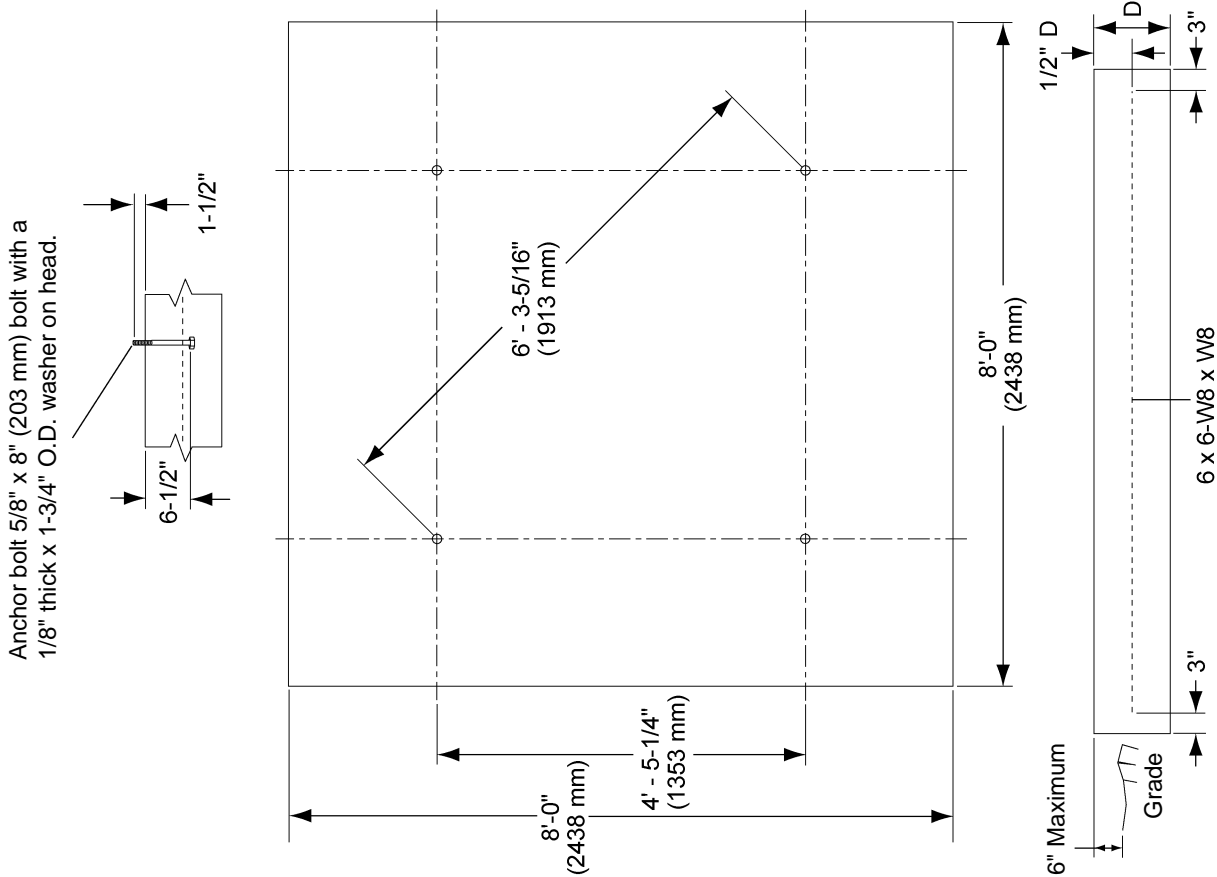
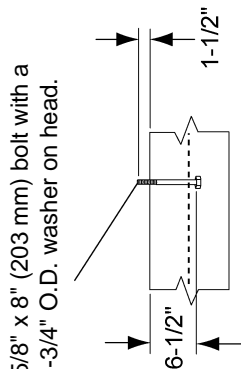


Figure 5A 6' 1-8 Rings Square Pad

16

Anchor bolt 5/8" x 8" (203 mm) bolt with a 1/8" thick x 1-3/4" O.D. washer on head.



# 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

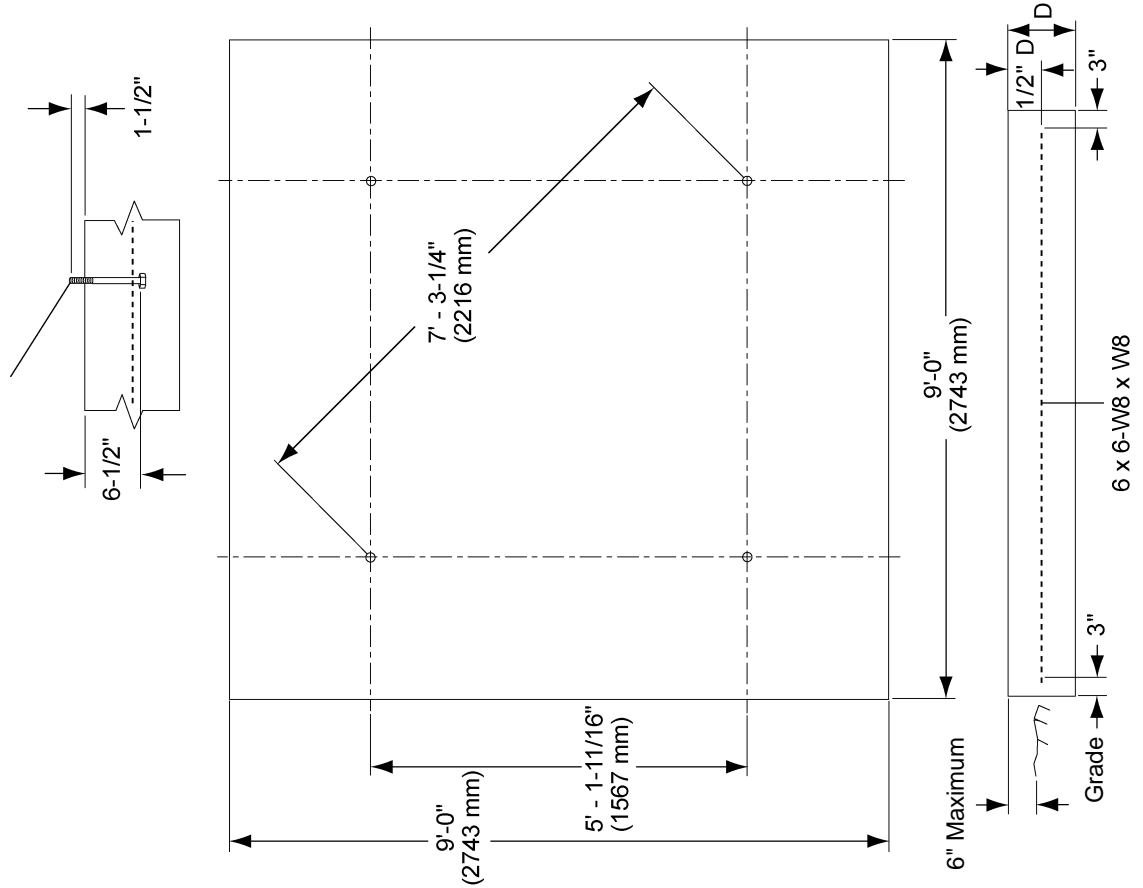
# of Rings	Slab Thickness (D)	Concrete Volume	Wire Mesh Area	# of Column Legs
1-5	279 mm	1.31 Cu. Meters	5.11 Sq. Meters	4
6	330 mm	1.54 Cu. Meters	5.11 Sq. Meters	4
7	381 mm	1.78 Cu. Meters	5.11 Sq. Meters	4
8	457 mm	2.13 Cu. Meters	5.11 Sq. Meters	4

GENERAL NOTES:

- 1.1. *Foundation recommendations are based on 3500 lbs./ft.² allowable soil bearing capacity.*
- 2.2. *Foundation recommendations are based on a minimum compressive strength of 3000 PSI at 28 days.*
- 3.3. *The foundation site must be well drained and free of vegetation and debris and well drained.*
- 4.4. *The foundation should be level within 1/4" overall and within ± 1/8" in any 10' length along the anchor bolt circle.*
- 5.5. *Material estimates do not include allowance for shrinkage and waste.*
- 6.6. *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

Anchor bolt 5/8" x 8" (203 mm) bolt with a 1/8" thick x 1-3/4" O.D. washer on head.



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

18

# 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

engineering for special tank foundations.

PNEG-1912 6', 7' and 9' Tall BFT Series and GHT Series

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 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.

* Applies to 45° hopper Tank only.

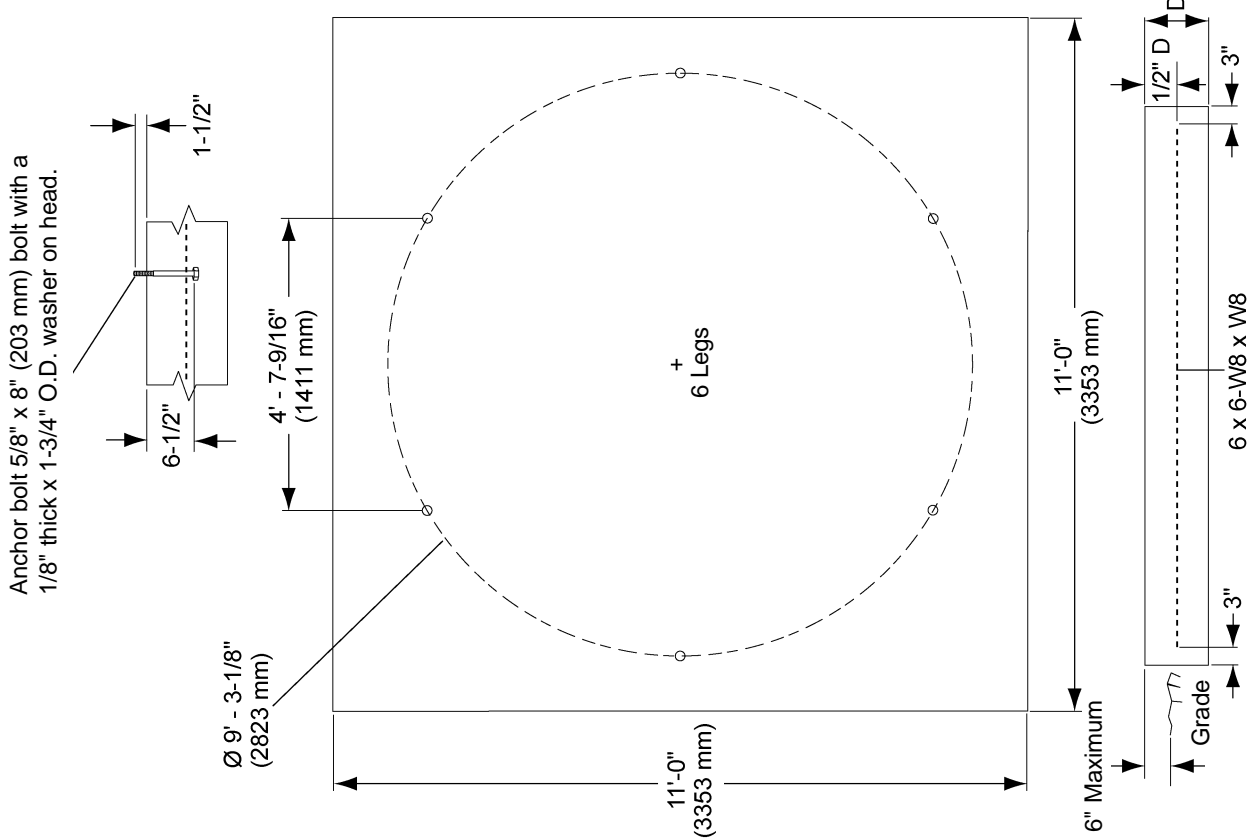


Figure 5E 9' 2-9 Rings BFT/ GHT 45° and 60° Square Pad

5. Foundation

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 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.

* Applies to 45° hopper tank only.

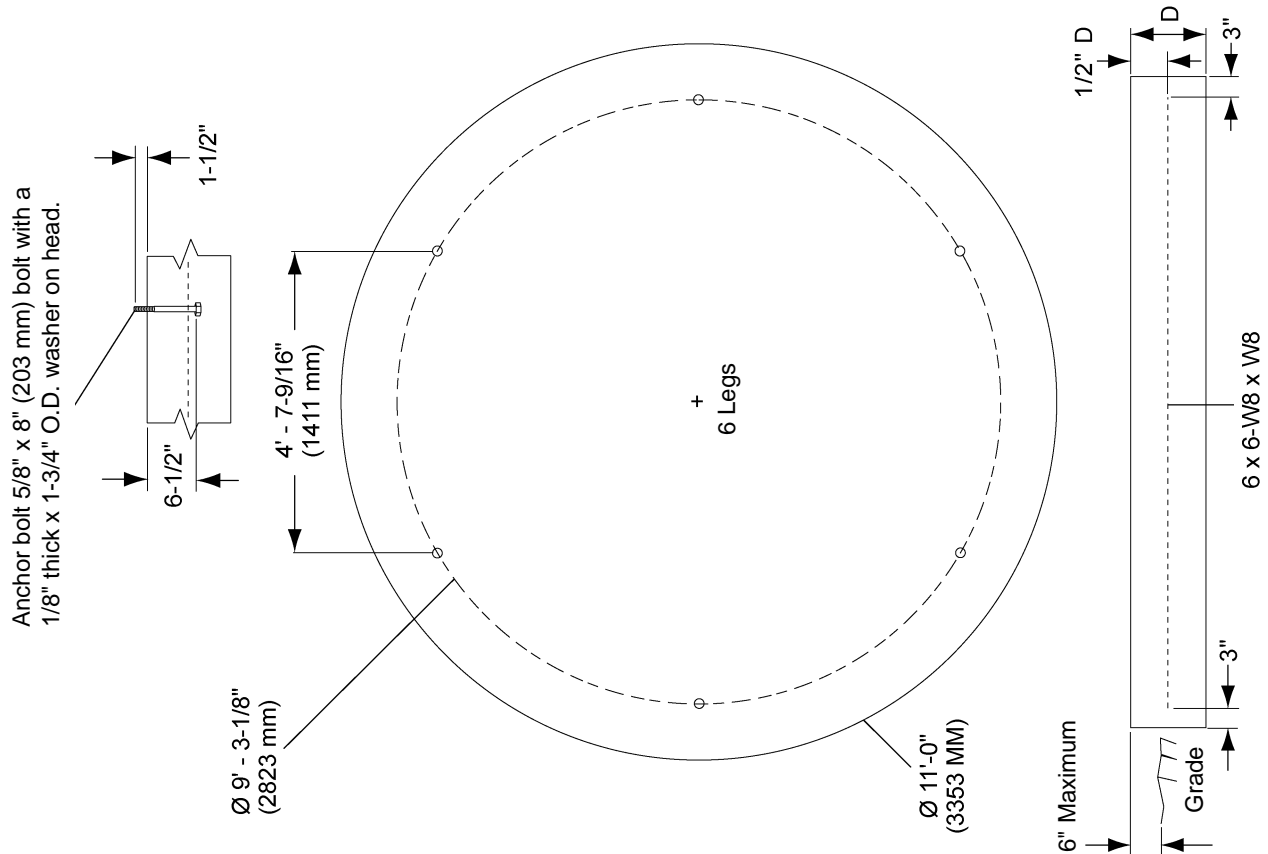


Figure 5F 9' 2-9 Rings BFT/ GHT 45° and 60° Round Pad

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
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 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.

* Applies to 45° hopper tank only.

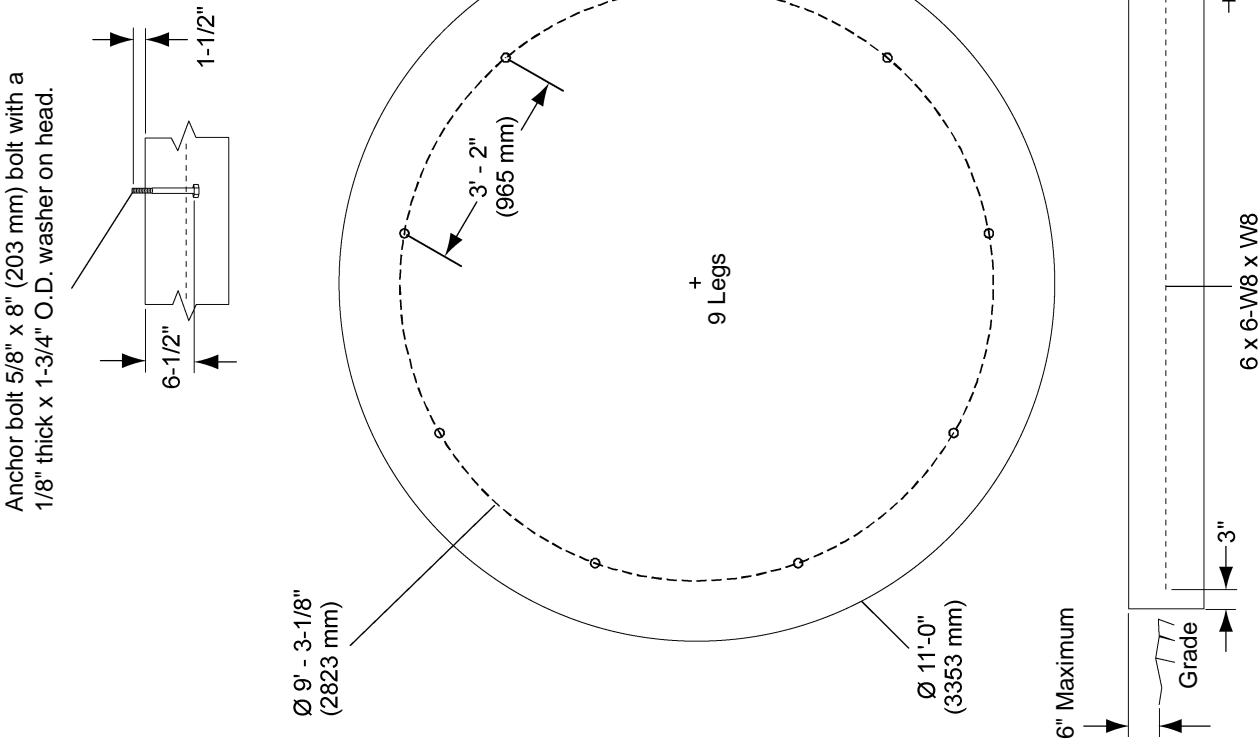


Figure 5H 9' 9-11 Rings BFT/ GHT 45° and 60° Round Pad

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

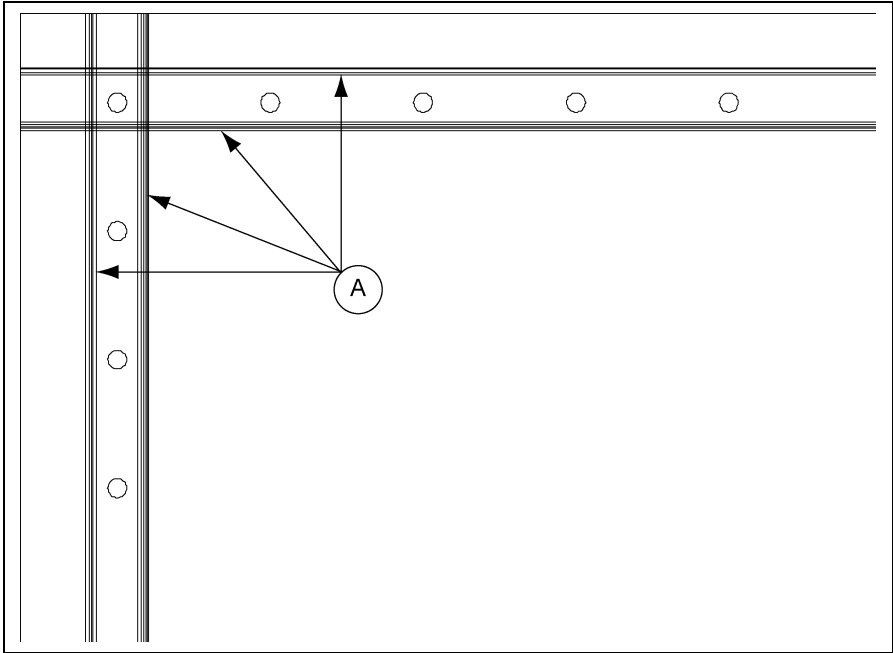


Figure 6A Caulking Detail

Ref #	Description
A	Caulking

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.)

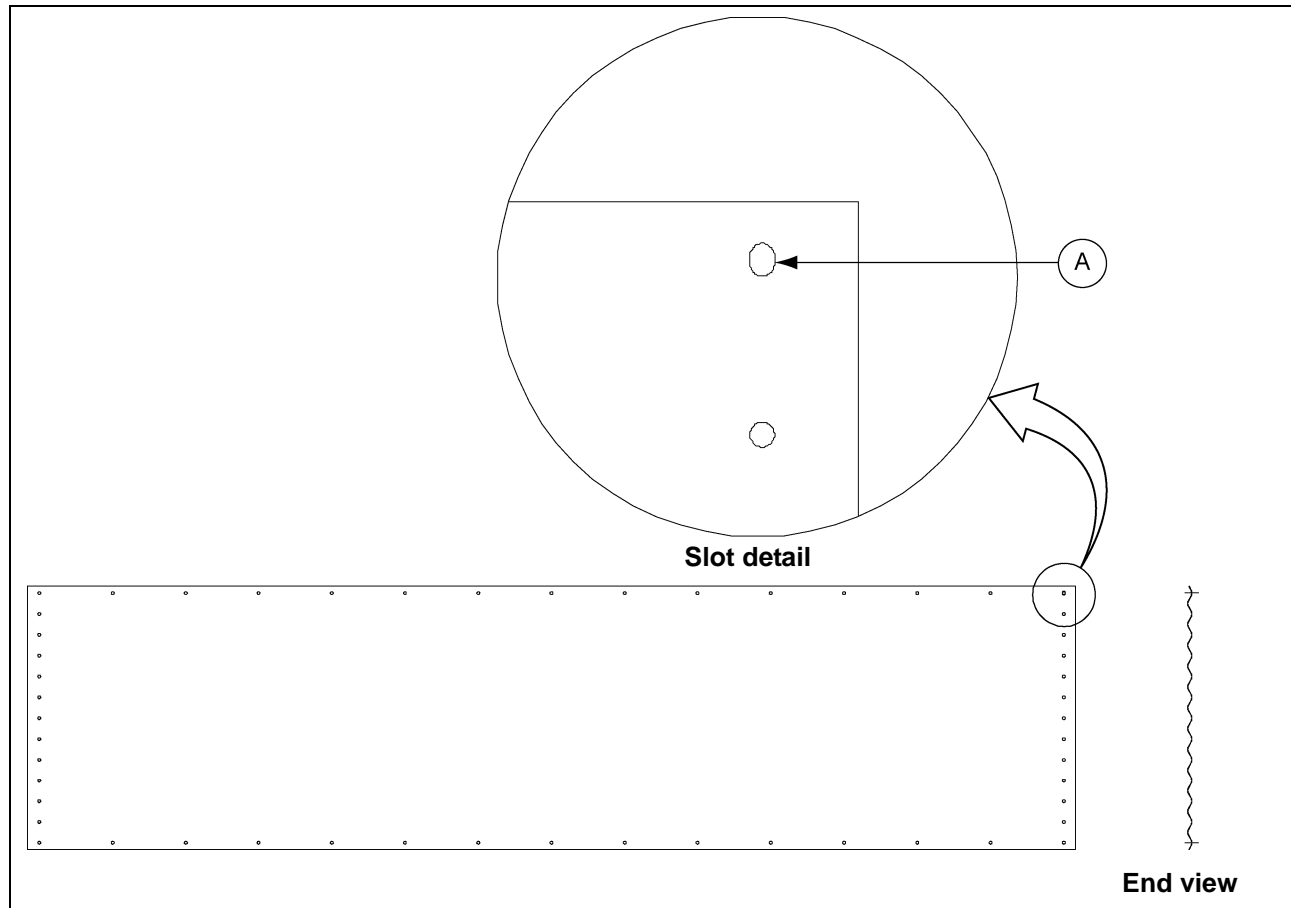


Figure 6C Viewed from Inside (Sheet orientation effects how sheet overlap.)

Ref #	Description
A	3/8" x 1/2" Slot (One per Sheet)

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 sheet 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.

6. Sidewall Assembly

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.

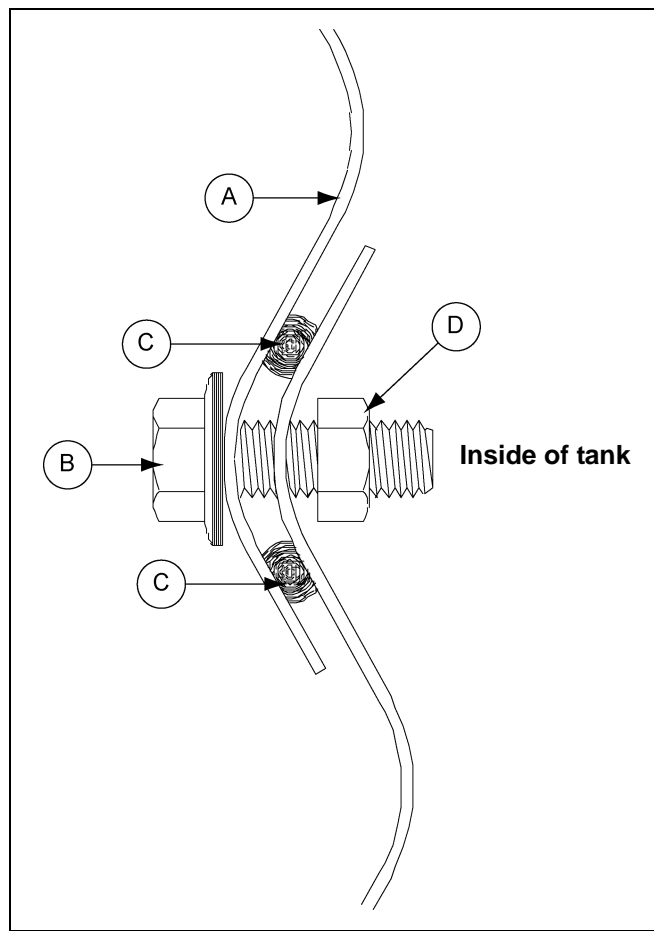


Figure 6D *Ring Overlap Detail*



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

Figure 6E

Ref #	Description
A	Upper Ring
B	5/16" x 1" Bolt
C	Caulking Two (2) Strips
D	5/16" Nut

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.

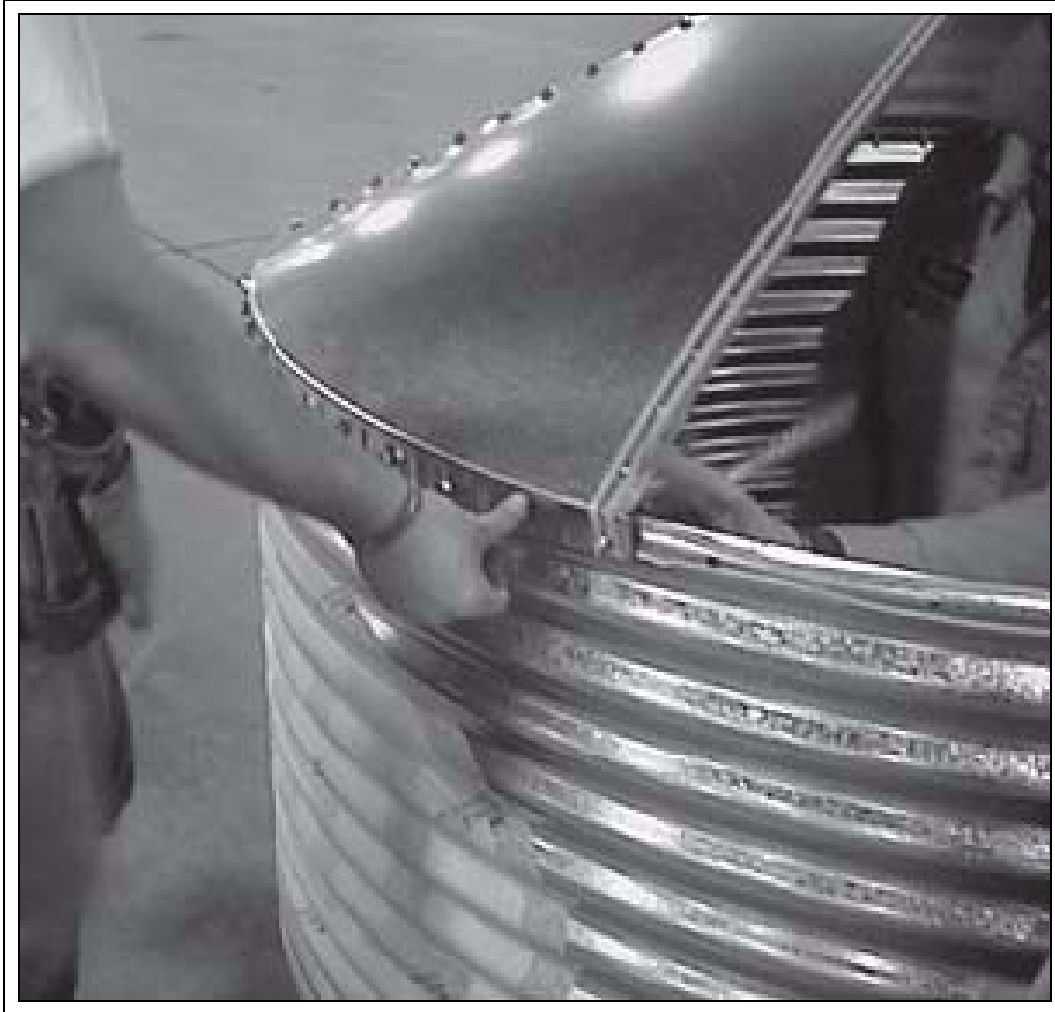


Figure 7A

On bins that will be equipped with a pneumatic fill system ([See Page 85](#)), 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.

Sealed Roof Panels Installation (Continued)



Figure 7B *Lining Up Holes and Placing Bolts*

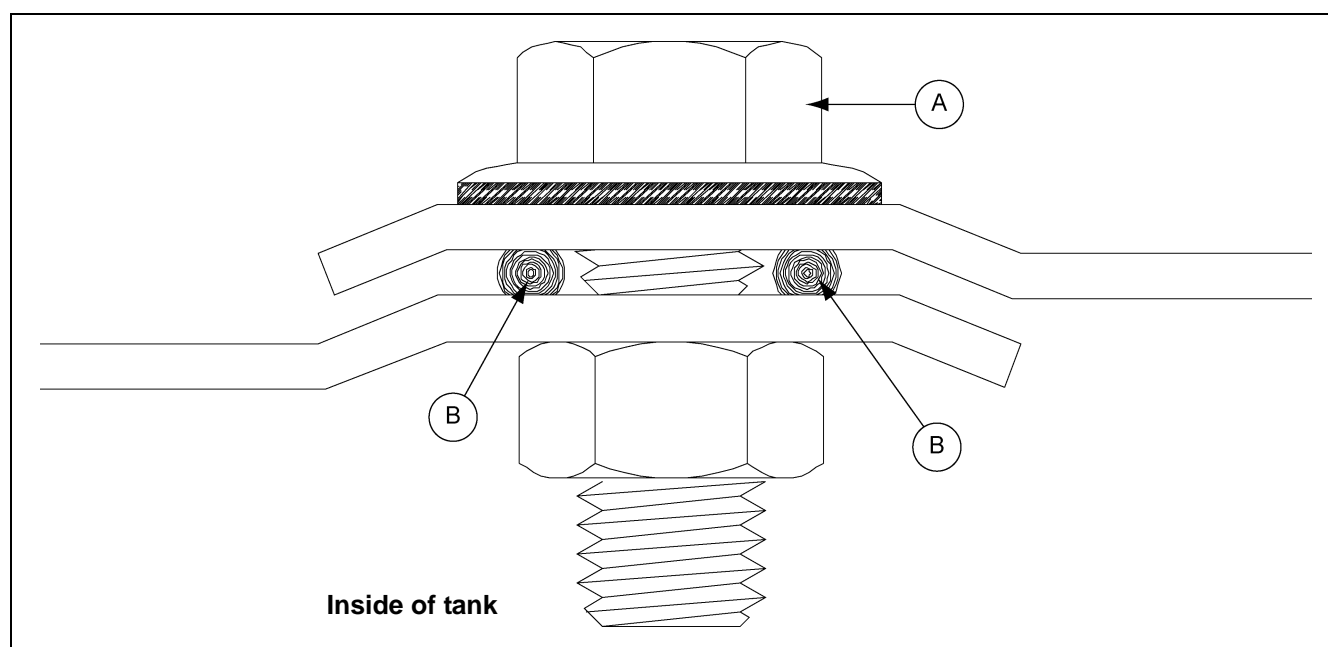


Figure 7C *Roof Sheet Overlap Detail*

Ref #	Description
A	5/16" x 1" Bin Bolt
B	Caulking Two (2) Strips

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.

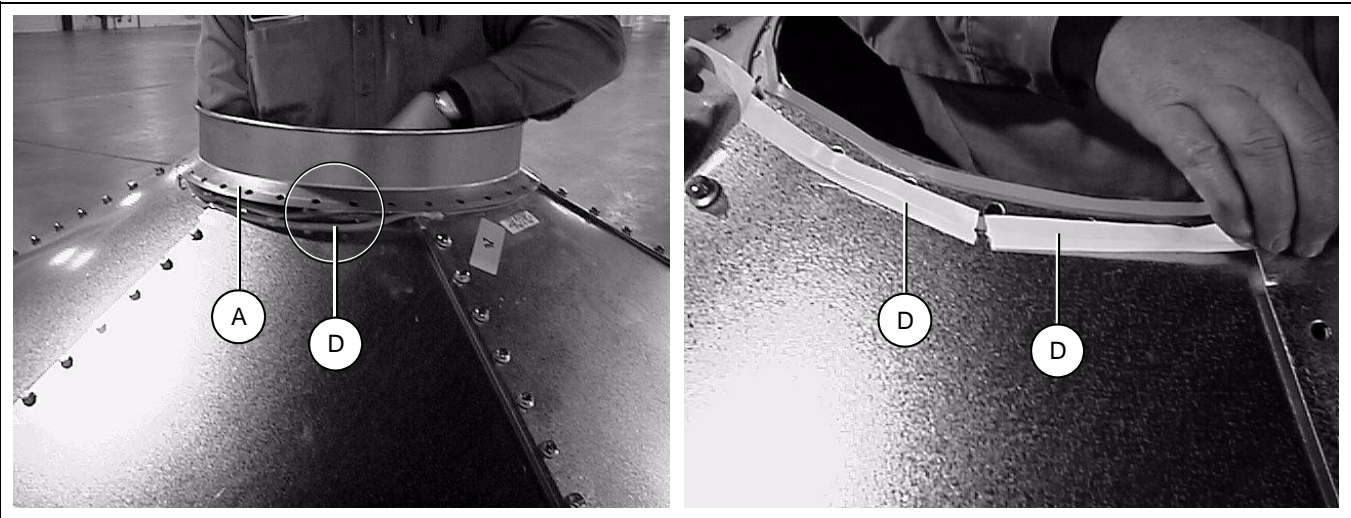


Figure 7D

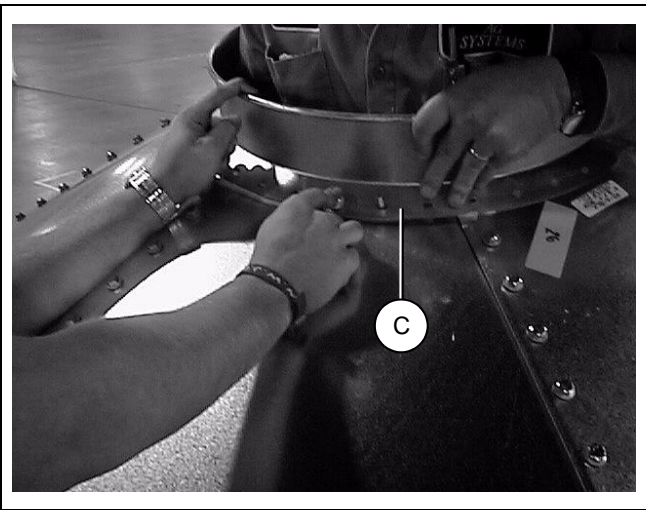


Figure 7E

Ref #	Description
A	Peak Ring Collar
B	Roof Sheet
C	5/16" x 1" Bin Bolt
D	Caulking Two (2) Strips

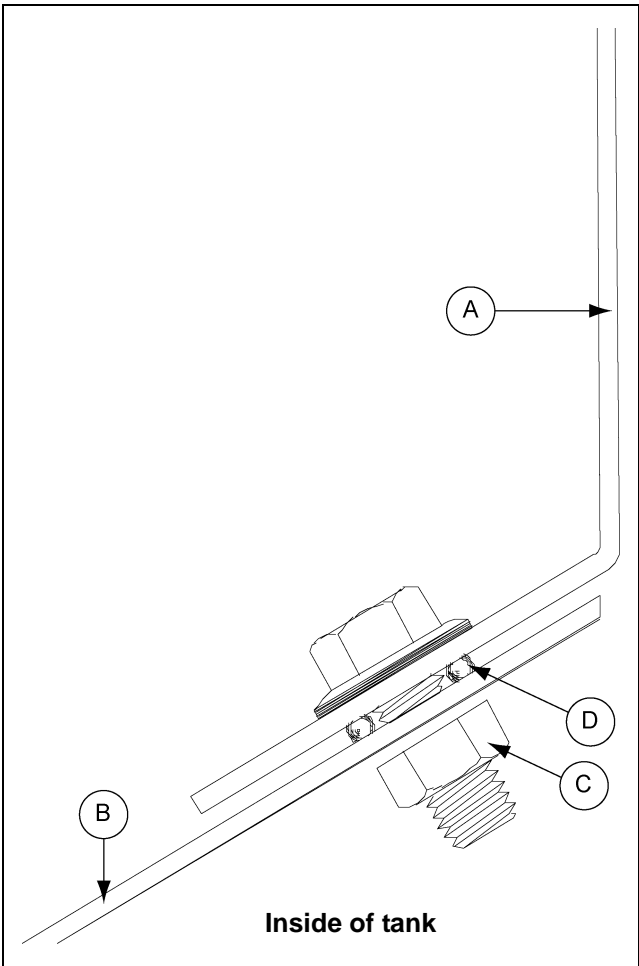


Figure 7F Peak Ring Collar Detail

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.](#))

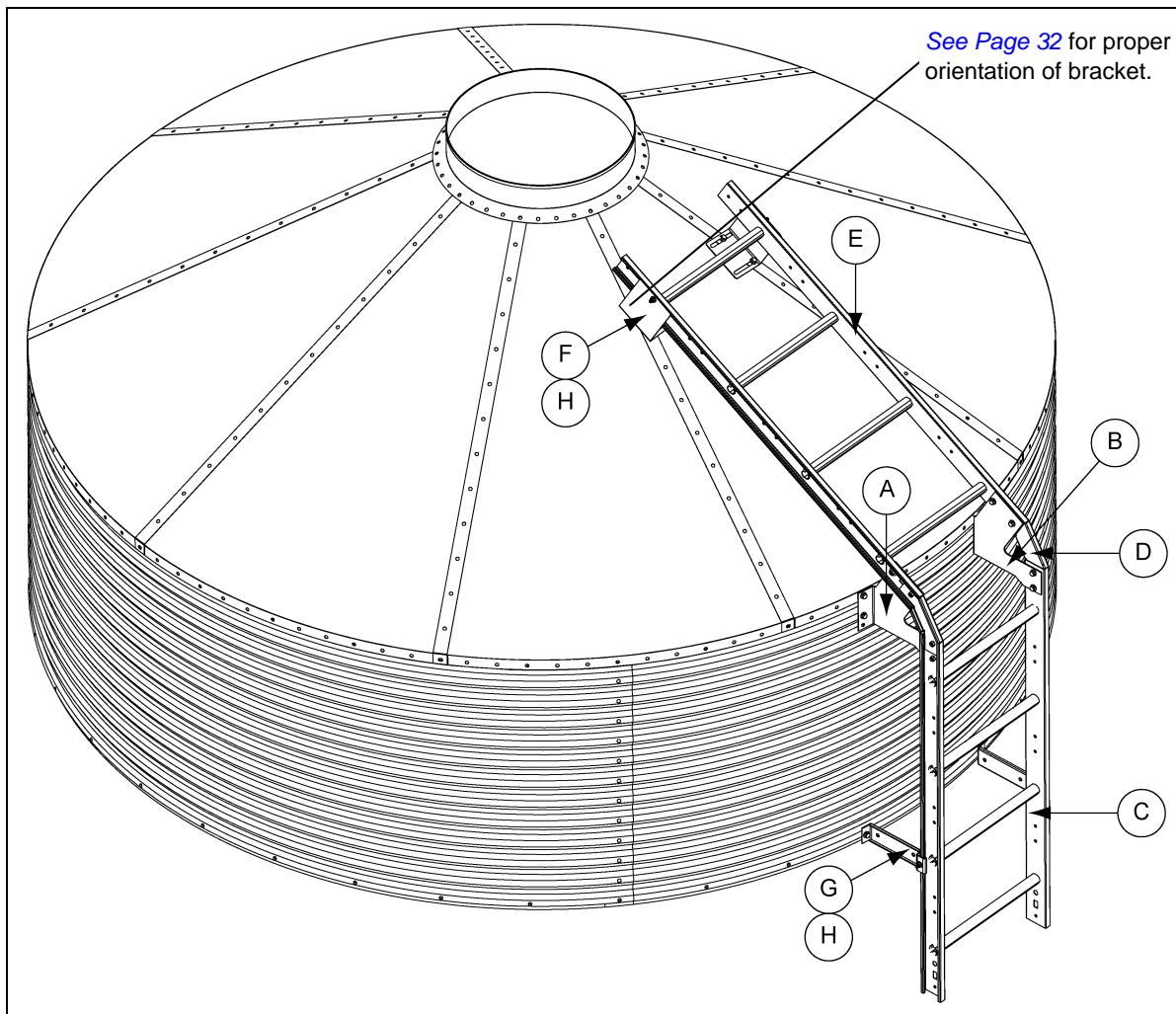


Figure 8A

Ref #	Description	Qty
A	L.H. Starter Bracket	1
B	R.H. Starter Bracket	1
C	Top 4' Ladder Section	1
D	Connector Bracket	2
E	Roof Ladder Section	1
F	Roof Ladder Support Bracket	2
G	Standoff Bracket	2
H	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.

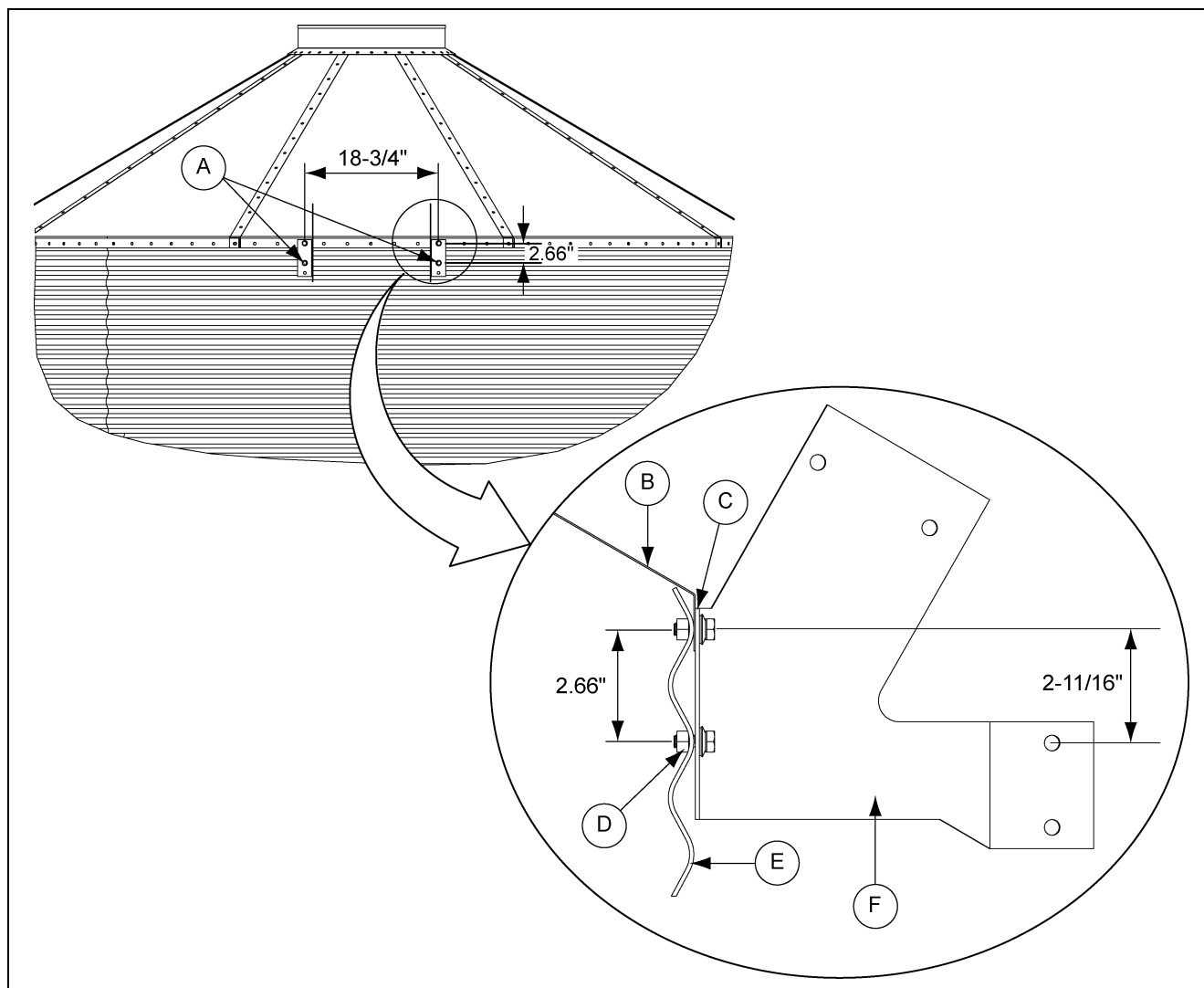


Figure 8B

Ref #	Description
A	Two (2) 3/8" Field Drilled Holes
B	Roof Panel
C	Top Horizontal Seam
D	3/8" Field Drilled Holes
E	Sidewall Sheet
F	L.H. 30° Roof (LDR-5405) and R.H. 30° Roof (LDR-5406)
	L.H. 40° Roof (LDR-5407) and R.H. 40° Roof (LDR-5408)

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.



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'

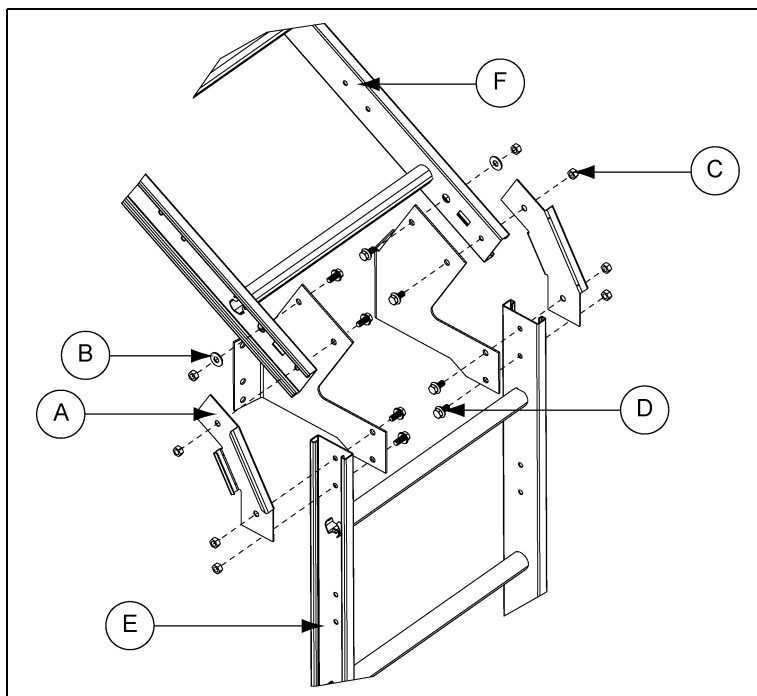


Figure 8C

Ref #	Part #	Description
A	LDR-4318	30° Connector Bracket
	LDR-4367	40° Connector Bracket
B	S-845	5/16" Flat Washer
C	S-7484	5/16" Nut

Ref #	Part #	Description
D	S-10260	5/16" x 1" Bin Bolt
E		Sidewall Ladder
F		Roof Ladder

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 37](#) that show brackets for the 6' 30°, 9' 30° and 9' 40° roofs. See [Figure 8E on Page 35](#) and [Figure 8I on Page 37](#) 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 36](#) 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 38](#) and the “maximum distances chart” to determine maximum allowable spacing of support brackets.



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

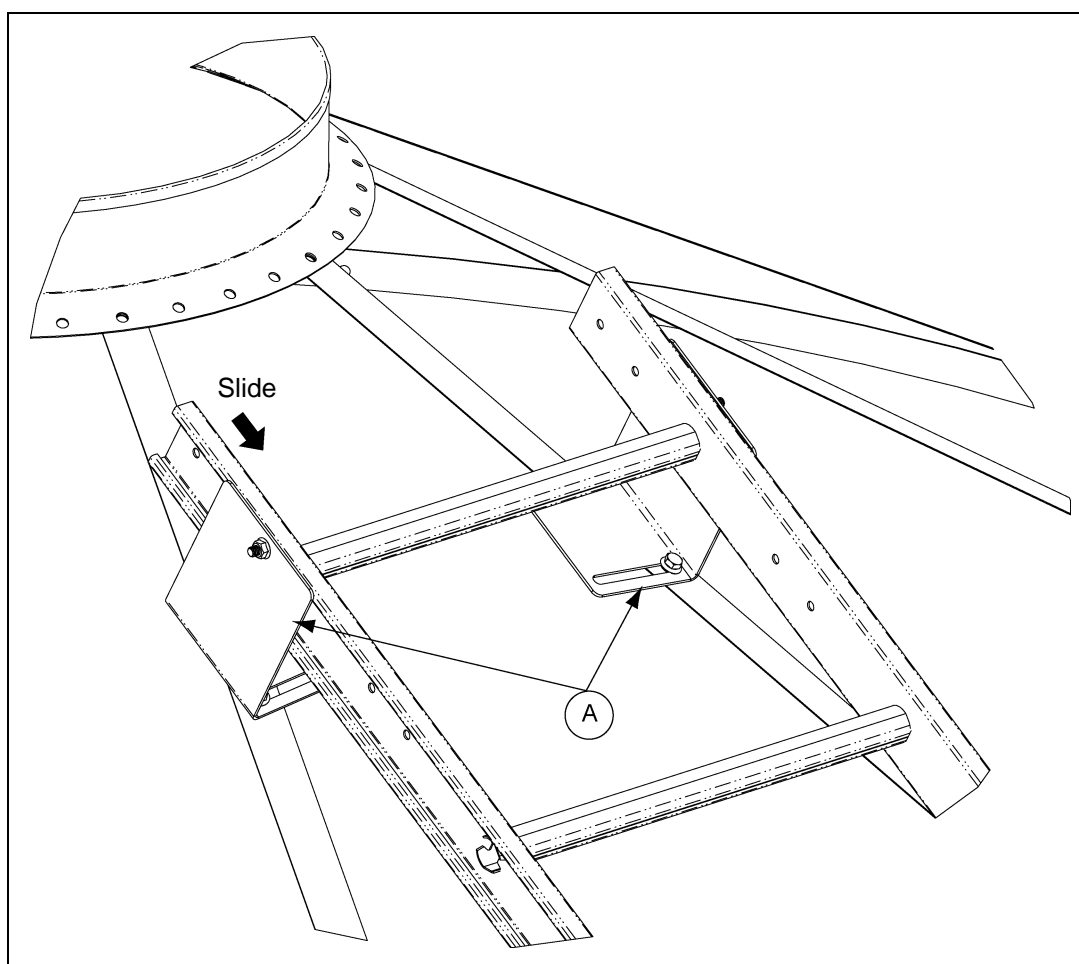


Figure 8D

Ref #	Part #	Description
A	LDR-5403	30° Support Bracket
	LDR-5404	40° Support Bracket

Roof Ladder Support Bracket Installation (Continued)

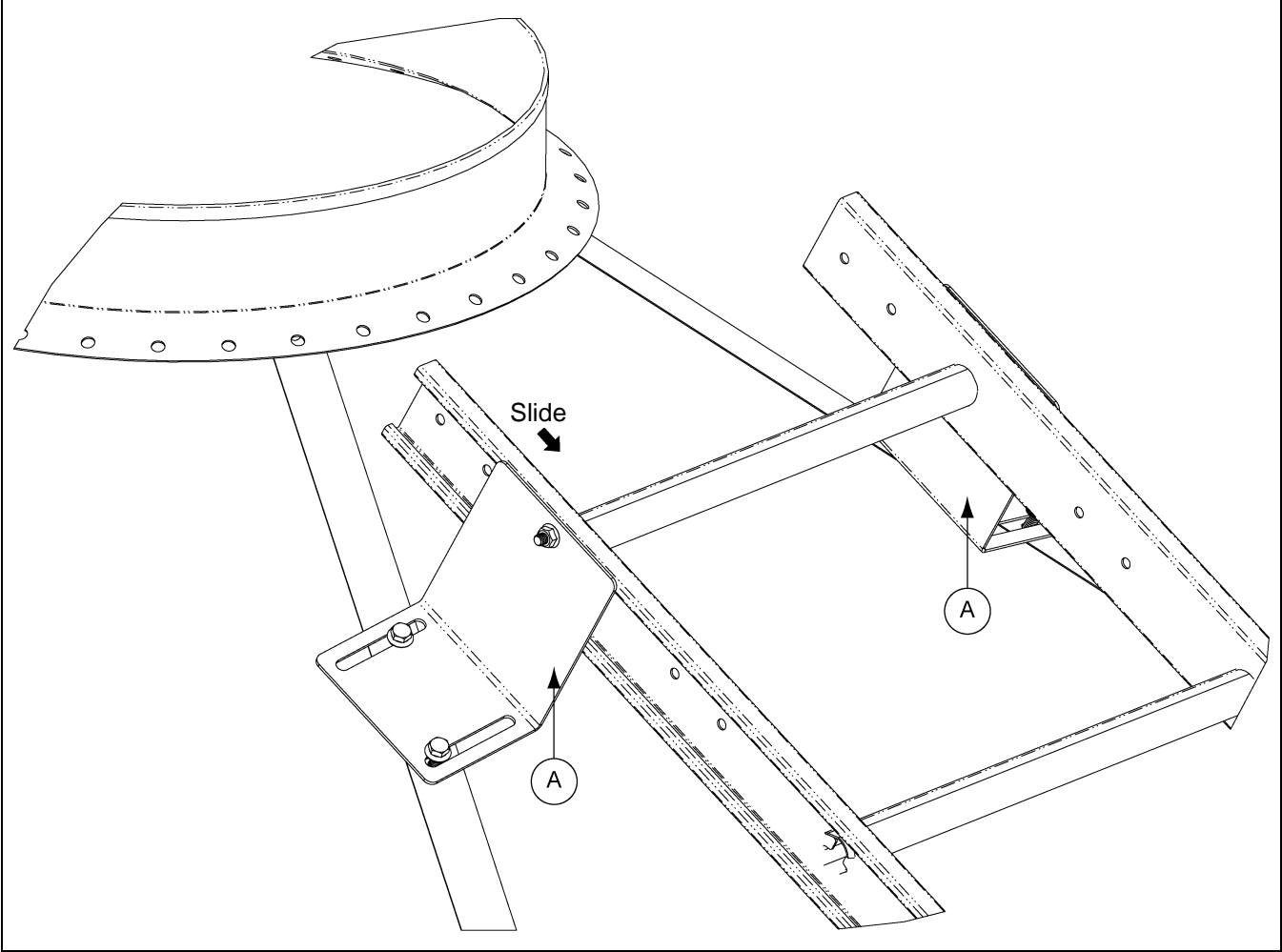


Figure 8E

Ref #	Part #	Description
A	LDR-4386	30° Support Bracket
	LDR-4387	40° Support Bracket

Roof Ladder Support Bracket Installation (Continued)

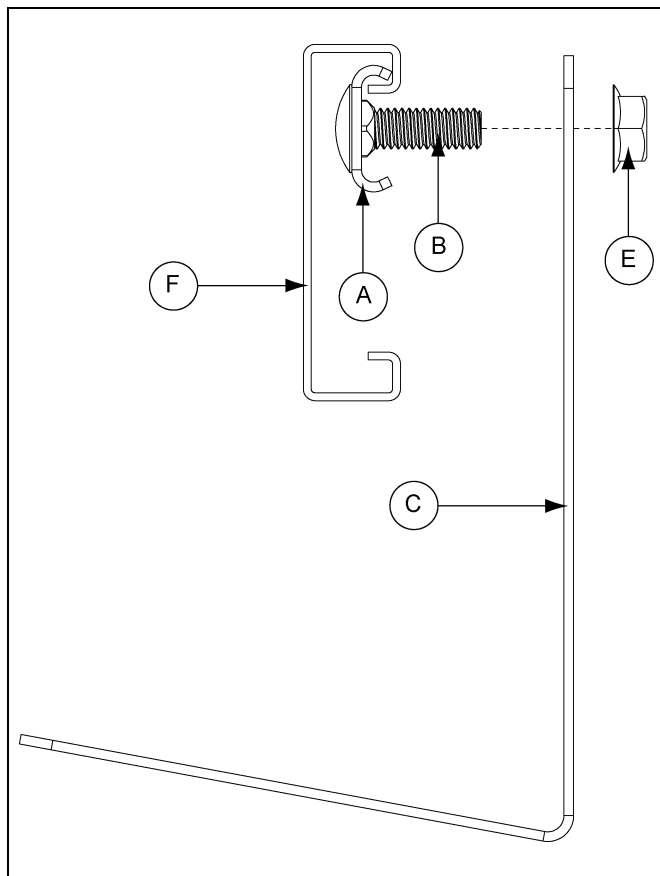


Figure 8F

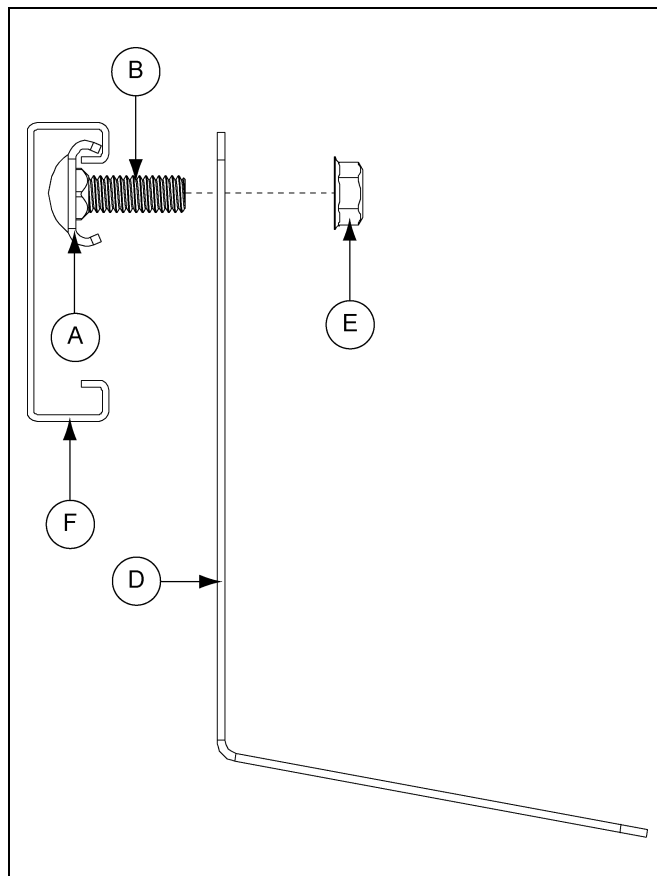


Figure 8G

Ref #	Part #	Description
A	LDR-4198	Wedge
B	S-3550	5/16" x 1" Carriage Bolt
C	LDR-5403	30° Support Bracket
	LDR-5404	40° Support Bracket
D	LDR-4386	30° Support Bracket
	LDR-4387	40° Support Bracket
E	S-10268	Flange Nut 5/16"-18 JS Grade 5
F		Ladder

Roof Ladder Support Bracket Installation (Continued)

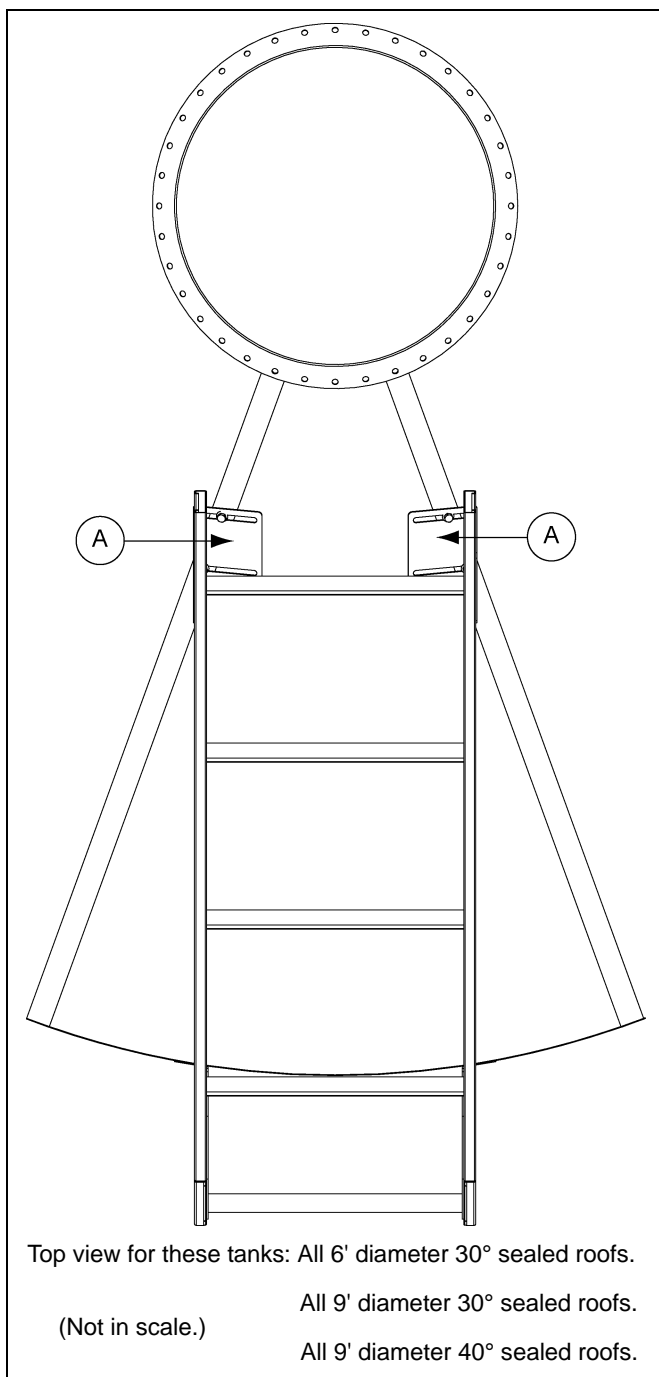


Figure 8H

Ref #	Part #	Description
A	LDR-5403	30° Support Bracket
	LDR-5404	40° Support Bracket

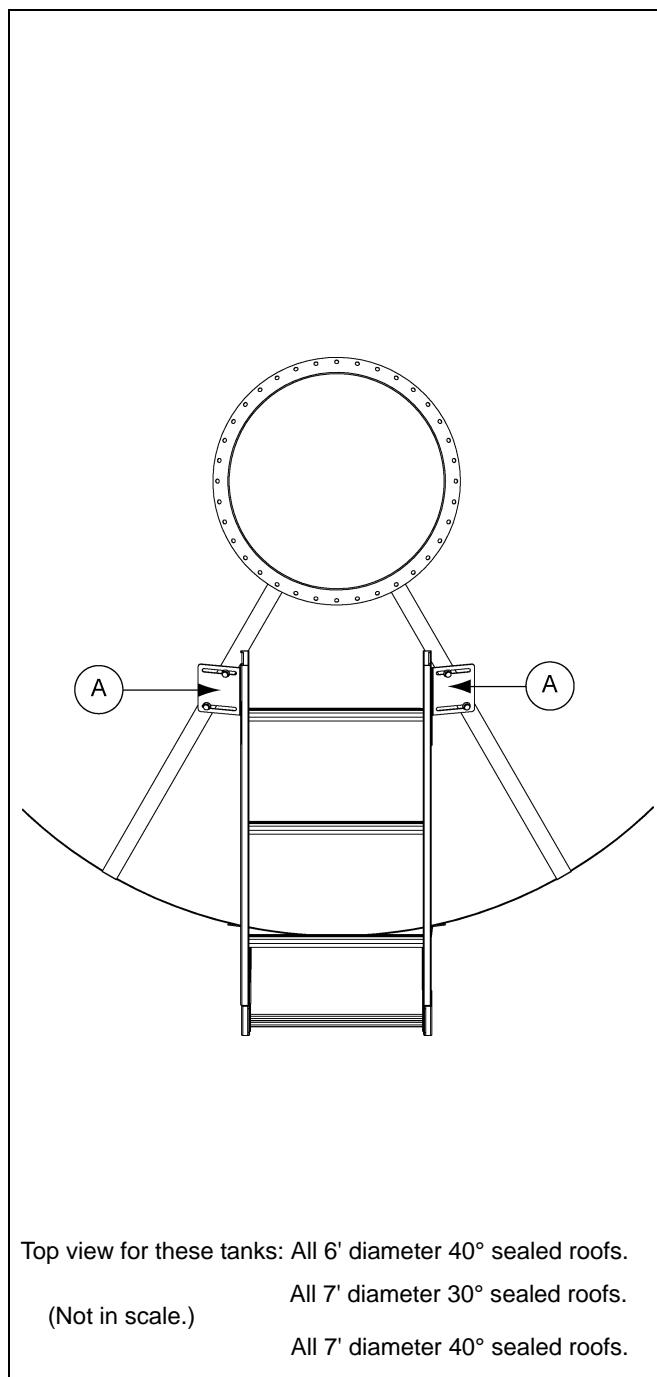


Figure 8I

Ref #	Part #	Description
A	LDR-4386	30° Support Bracket
	LDR-4387	40° Support Bracket

Roof Ladder Support Bracket Installation (Continued)

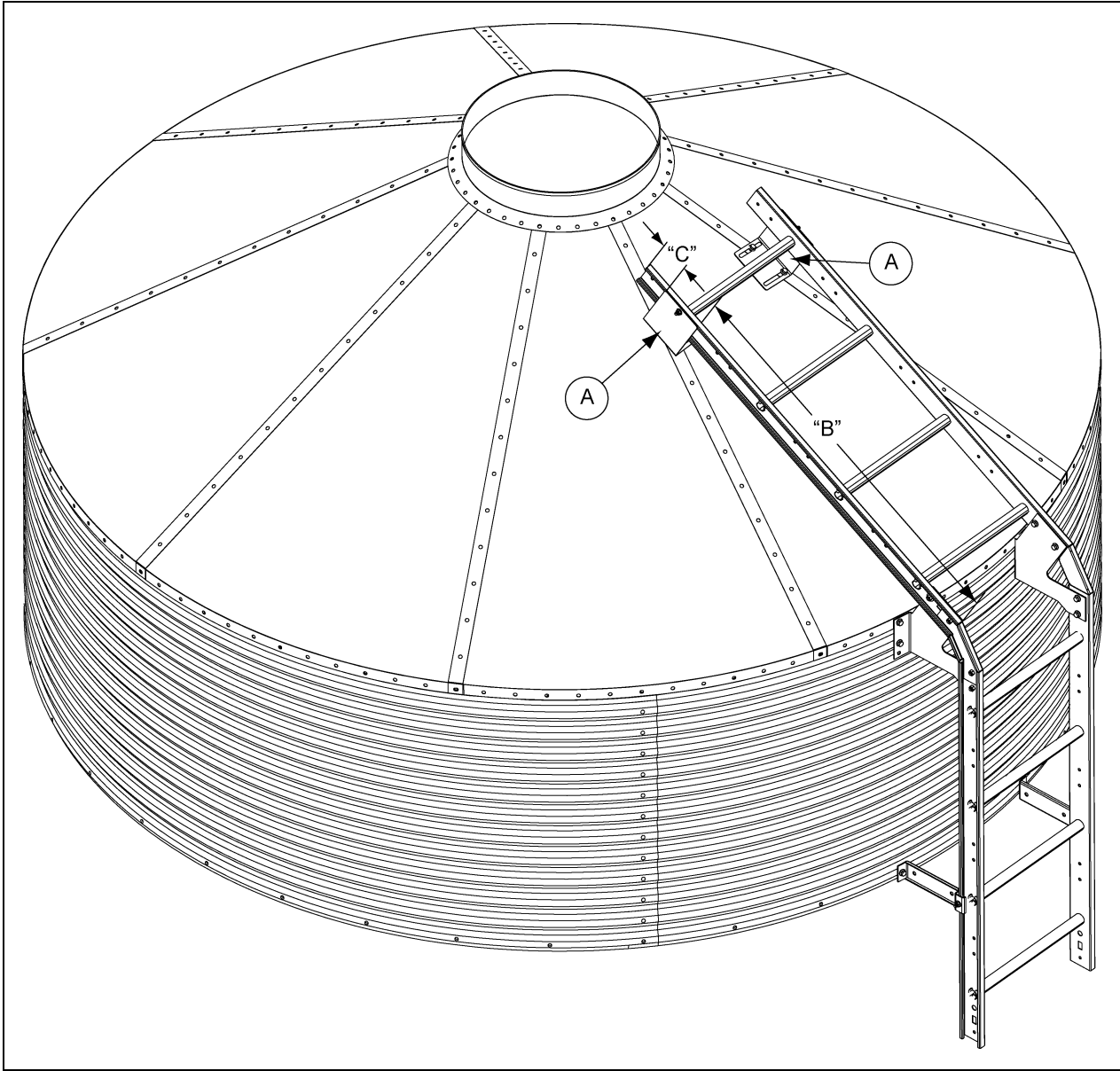


Figure 8J Maximum Allowable Distance

Ref #	Part #	Description
A	LDR-5403	30° Support Bracket
	LDR-5404	40° Support Bracket

Maximum Distances Chart	"B"	"C"
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.

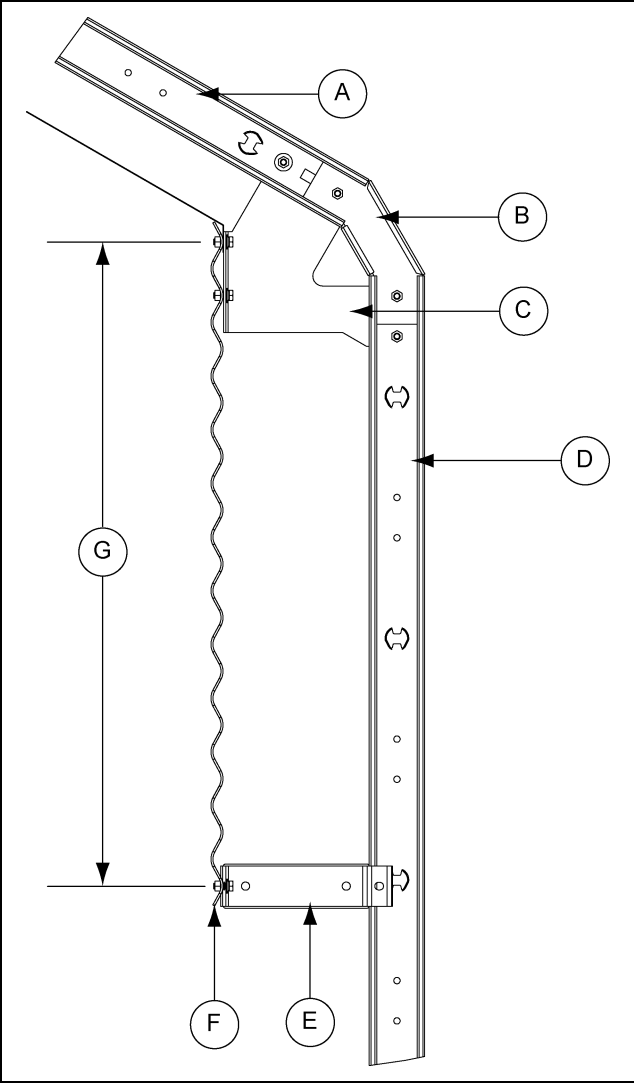


Figure 8K

Ref #	Description
A	Roof Ladder
B	Connector Bracket
C	Starter Bracket
D	Sidewall Ladder
E	Standoff Bracket (Two (2) per Seam) (LDR-4314)
F	Horizontal Seam
G	32" Typical

8. Optional BFT Ladder Assembly

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.

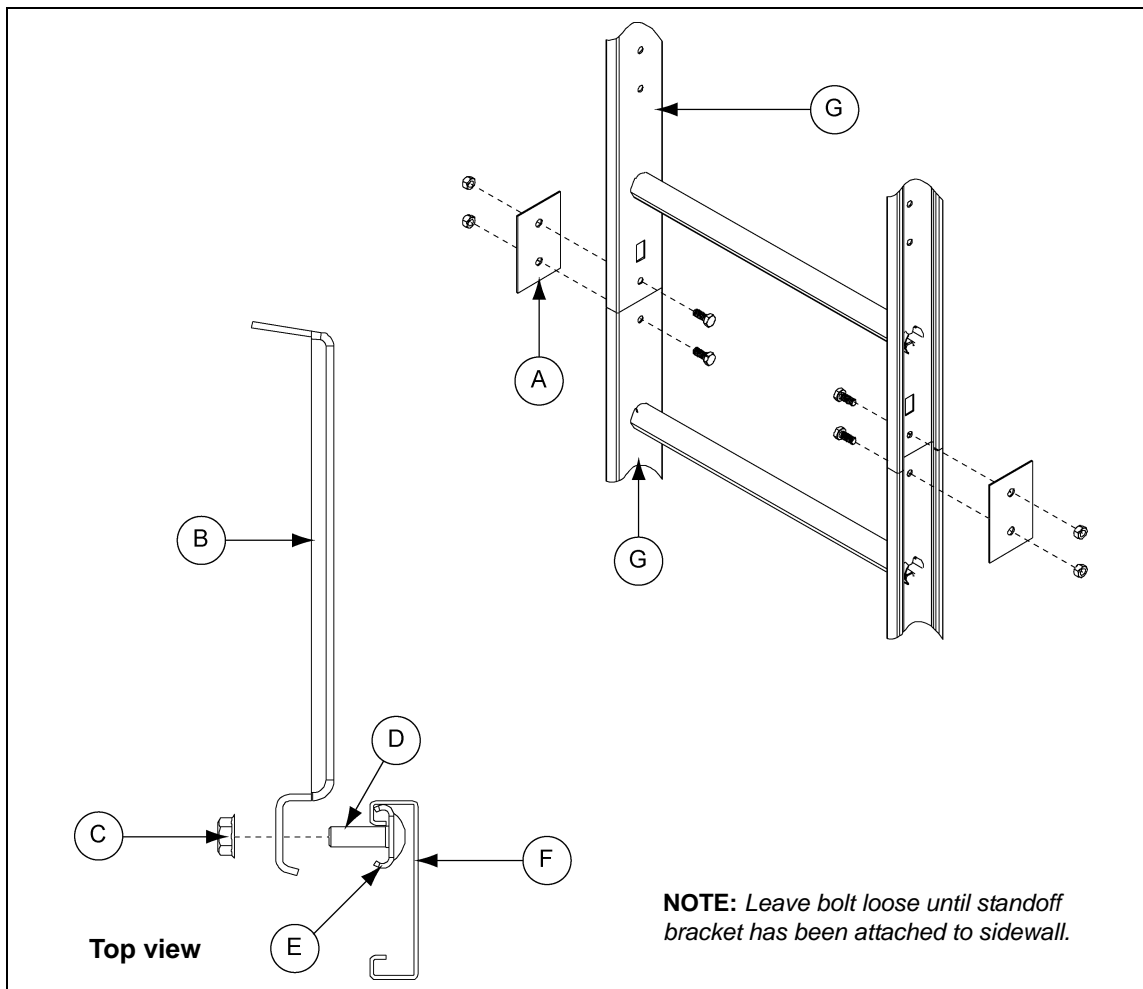


Figure 8L

Ref #	Part #	Description
A	LDR-4317	Splice Plate (Two (2) Per Connection)
B	LDR-4314	Standoff Bracket
C	S-10268	Flange Nut 5/16"-18 JS Grade 5
D	S-3550	5/16" x 1" Carriage Bolt
E	LDR-4198	Wedge
F		Ladder
G		Ladder Sections

Ladder Support Detail

The ladder must be secured to the leg assembly with standoff brackets using support channels as shown in [Figure 8M](#).

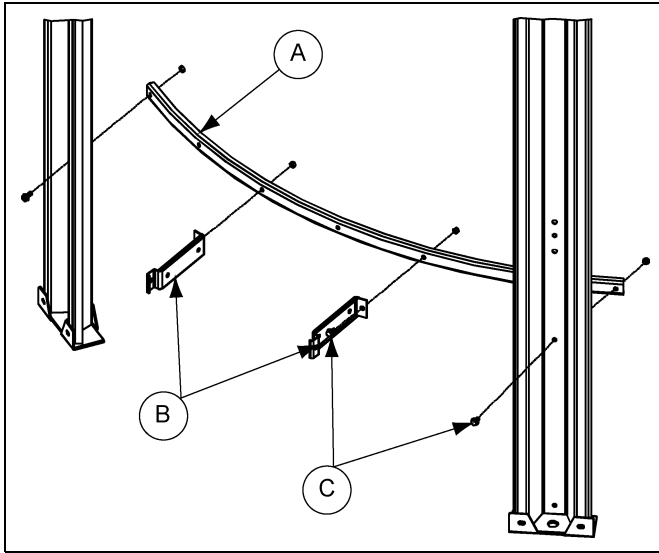


Figure 8M

Ref #	Description
A	Support Channel
B	Ladder Standoff Bracket (LDR-4314)
C	5/16" x 1" Hardware

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

Ladder Decal Application

Apply the ladder load limit decal (DC-2307) at eye level on the inside of the ladder rail. Make sure the ladder surface is clean and dry before application. ([See Figure 8N.](#))



Figure 8N

Handrail Installation for Ladder System without Safety Cage

Handrail Gusset and Handrail Installation

For ladder systems without safety cages, handrails are required. Begin installation by sliding a handrail bar assembly through the top rung of the sidewall ladder and another handrail bar assembly through the second rung of the roof ladder as shown in [Figure 9A](#). All four (4) pieces of LDR-5421, LDR-5414 (2) and LDR-5422 must be assembled as shown in [Figure 9B on Page 43](#) and [Figure 9C on Page 44](#) and installed through the ladder rungs. The handrail bar assembly pieces will be bolted together when the handrail gussets and handrails are installed. Position the left hand bottom handrail gusset so that outer most hole lines up with the outer most hole of the handrail bar assembly. Clamp in place using the wedges, 5/16" x 1" carriage bolt and 5/16" flange nuts as shown in [Figure 9D on Page 45](#). Bolt the handrail gusset to the handrail bar assembly as shown. Position the left hand top handrail gusset so that the outer most hole lines up with the outer most hole of the handrail bar assembly. Clamp in place using the wedges and hardware as shown in [Figure 9E on Page 46](#). It will be necessary to loosen the wedge hardware slightly to allow proper installation of the handrail tubes. Repeat handrail gusset and wedge installation for the opposite side of the ladder. Install the handrail tubes using the 5/16" hardware as shown in [Figure 9F on Page 47](#) loosening the wedge hardware when necessary to obtain the proper fit of the handrail tubes. Tighten all hardware to complete the assembly. [See Figure 9G on Page 48](#) and [Figure 9H on Page 49](#) for detail.



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

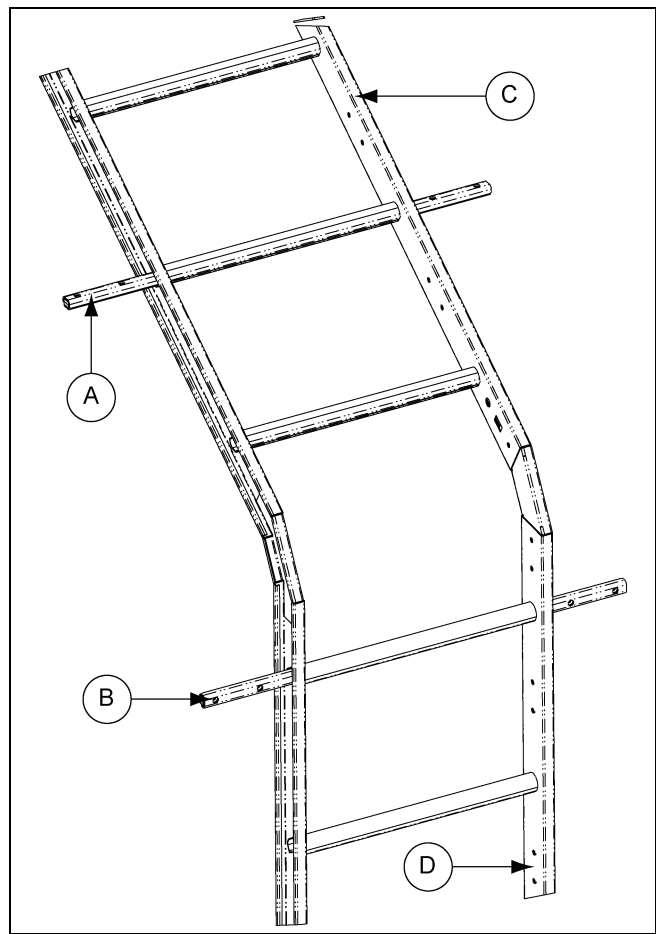


Figure 9A

Ref #	Part #	Description	Qty
A	LDR-5421	Handrail Bar Assembly (See Figure 9B on Page 43.)	1
	LDR-5414		2
	LDR-5422		1
B	LDR-5421	Handrail Bar Assembly (See Figure 9C on Page 44.)	1
	LDR-5414		2
	LDR-5422		1
C		Roof Ladder	
D		Sidewall ladder	

Handrail Installation for Ladder System without Safety Cage (Continued)

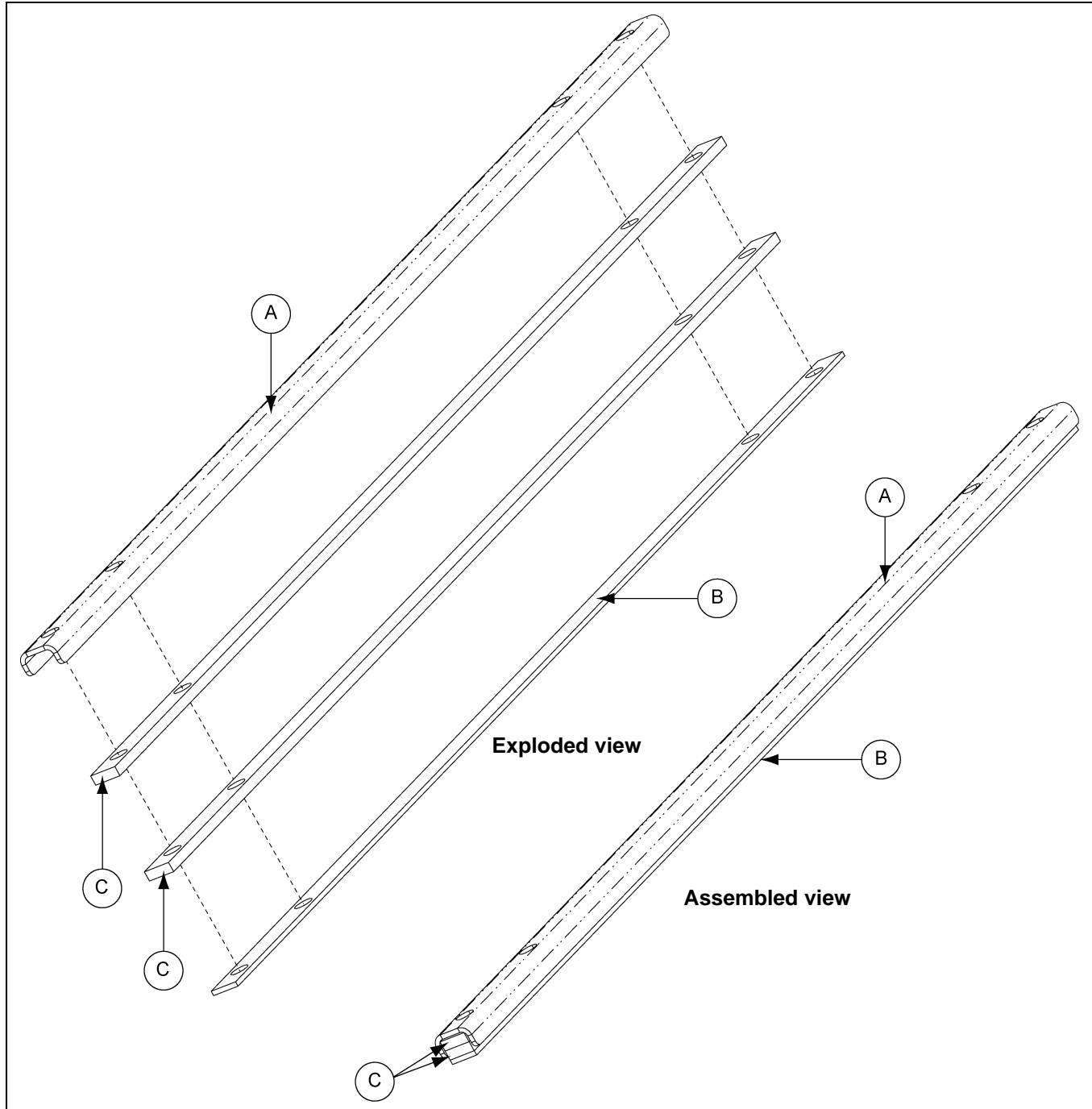


Figure 9B

Ref #	Part #	Description
A	LDR-5421	BFT Handrail Support Channel
B	LDR-5422	BFT Handrail Support Channel Reinforcement 12 Gauge
C	LDR-5414	BFT Handrail Support Channel Reinforcement

9. Ladder Handrails

Handrail Installation for Ladder System without Safety Cage (Continued)

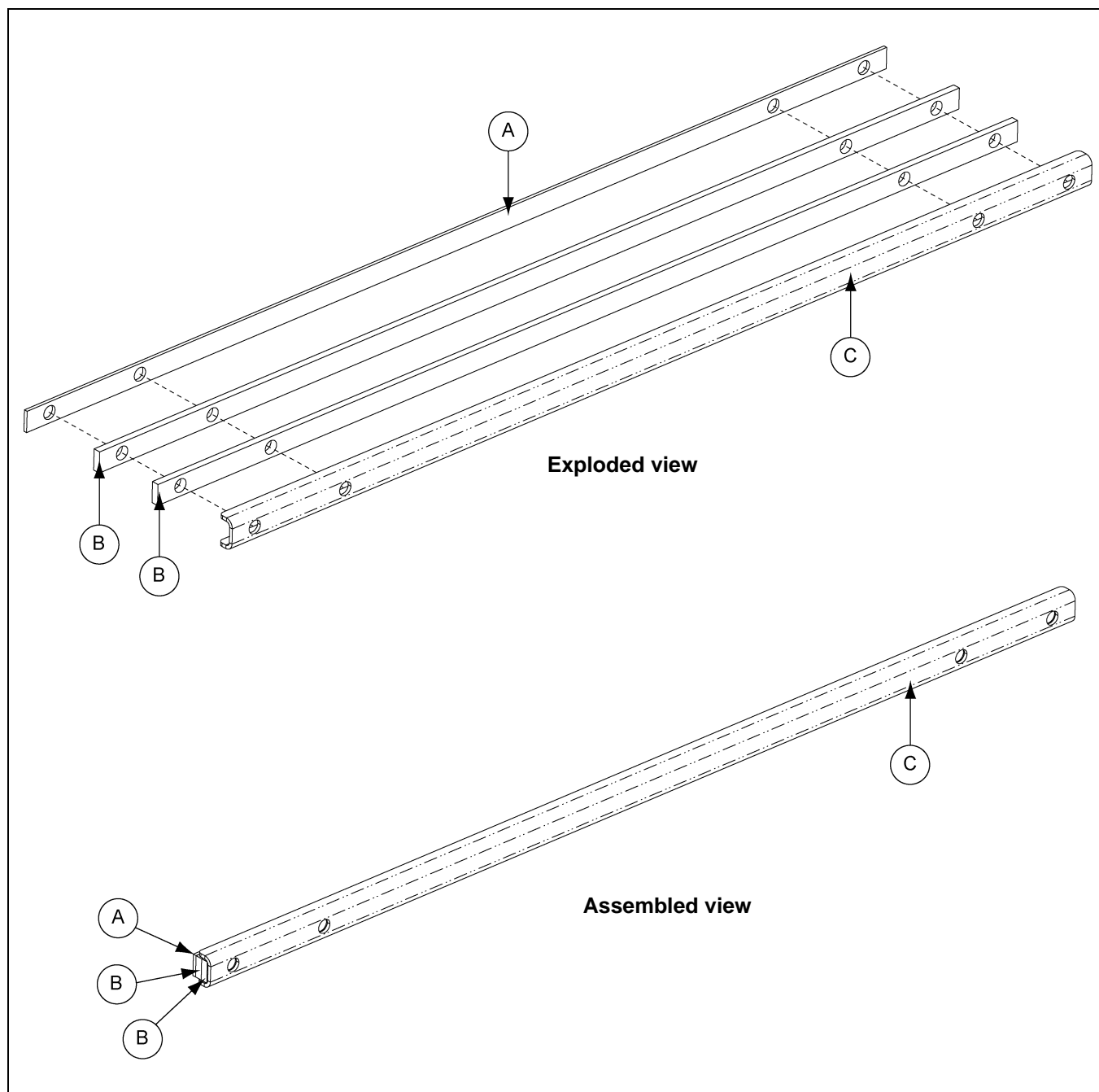


Figure 9C

Ref #	Part #	Description
A	LDR-5422	BFT Handrail Support Channel Reinforcement 12 Gauge
B	LDR-5414	BFT Handrail Support Channel Reinforcement
C	LDR-5421	BFT Handrail Support Channel

Handrail Installation for Ladder System without Safety Cage (Continued)

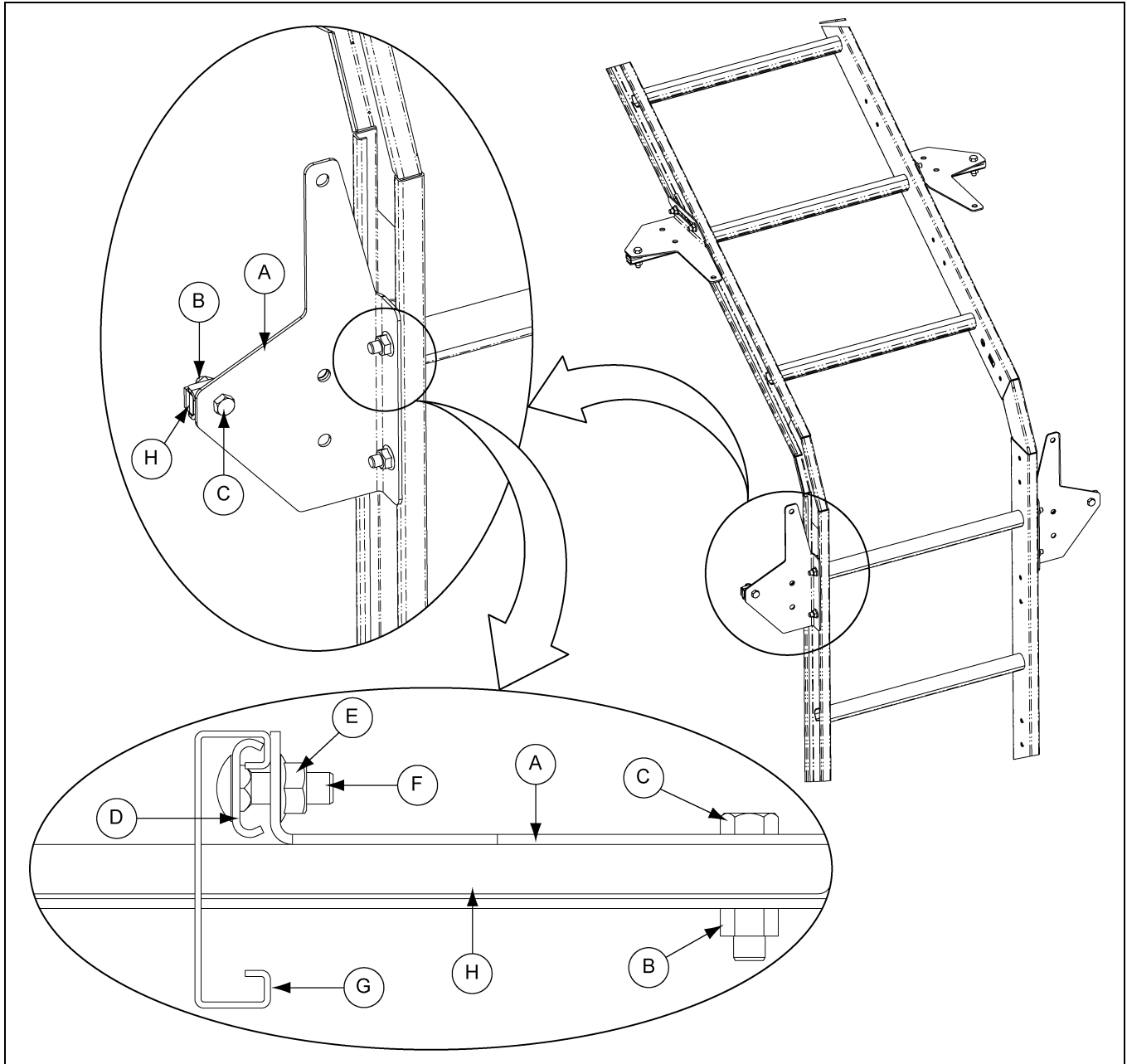


Figure 9D

Ref #	Part #	Description
A	LDR-5417	Bottom Handrail Gusset L.H.
	LDR-5418	Bottom Handrail Gusset R.H.
B	S-7484	5/16" Nut
C	S-4276	5/16" x 1-1/4" Hex Head Bolt
D	LDR-4198	Ladder Standoff Wedge

Ref #	Part #	Description
E	S-10268	Flange Nut 5/16"-18 JS Grade 5
F	S-3550	5/16" x 1" Carriage Bolt
G		Ladder
H		Handrail Bar Assembly

9. Ladder Handrails

Handrail Installation for Ladder System without Safety Cage (Continued)

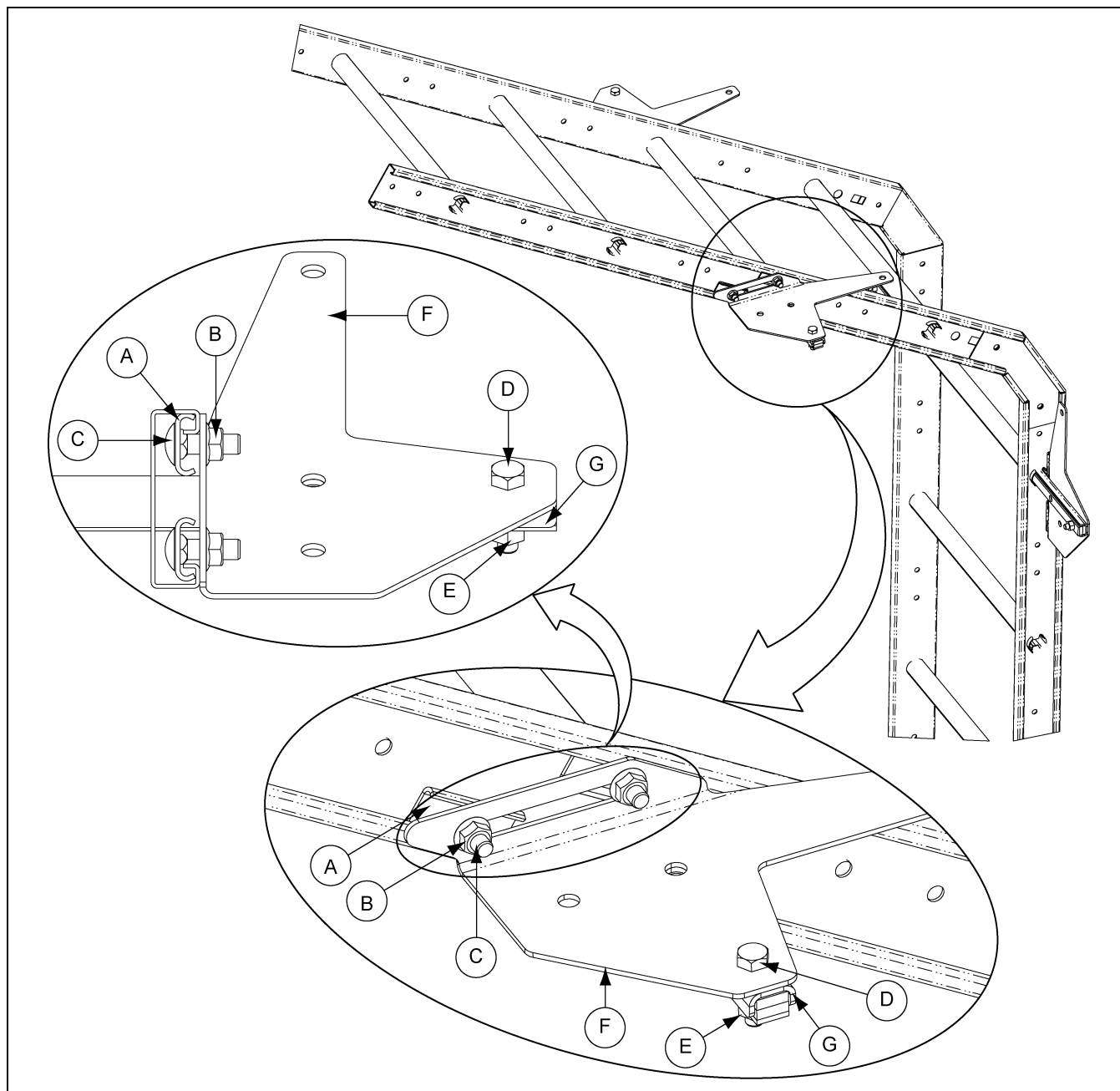


Figure 9E

Ref #	Part #	Description
A	LDR-4198	Wedge (Two (2) per Side)
B	S-10268	5/16" Flange Nut (Two (2) per Side)
C	S-3550	5/16" x 1" Carriage Bolt (Two (2) per Side)
D	S-4276	5/16" x 1-1/4" Hex Head Bolt (One per Side)

Ref #	Part #	Description
E	S-7484	5/16" Nut (One Per Side)
F	LDR-5415	Top Handrail Gusset L.H.
	LDR-5416	Top Handrail Gusset R.H.
G		Handrail Bar Assembly

Handrail Installation for Ladder System without Safety Cage (Continued)

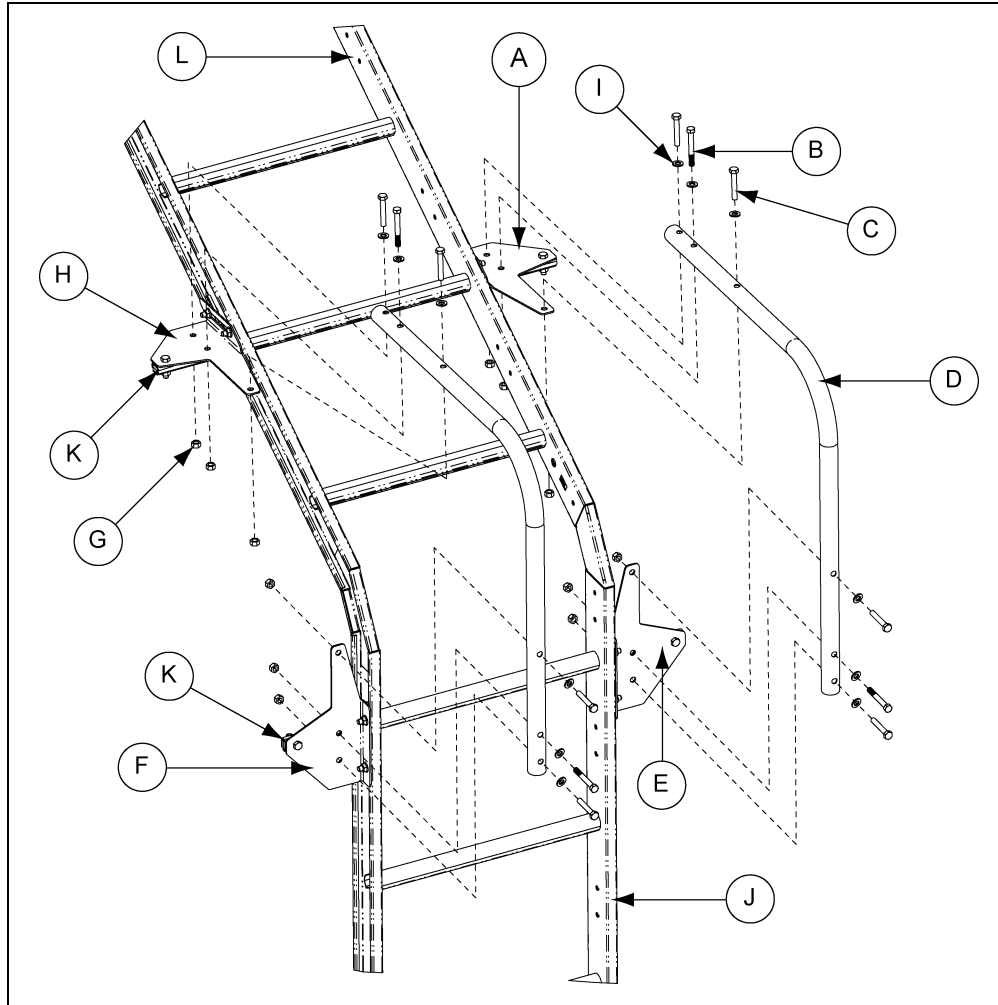


Figure 9F

Ref #	Part #	Description
A	LDR-5416	Top Handrail Gusset R.H.
B	S-7076	5/16" x 2-1/2" Hex Head Bolt (4)
C	S-7877	5/16" x 2" Hex Head Bolt (8)
D	LDR-5423	30° Handrail
	LDR-5424	40° Handrail
E	LDR-5418	Bottom Handrail Gusset R.H.
F	LDR-5417	Bottom Handrail Gusset L.H.
G	S-7484	Hex Nut 5/16"-18 JS Grade 5 (12)
H	LDR-5415	Top Handrail Gusset L.H.
I	S-1937	Flat Washer 5/16" ZN SAE Grade 2 (12)
J		Sidewall Ladder
K		Handrail Bar Assembly
L		Roof Ladder

Handrail Installation for Ladder System without Safety Cage (Continued)

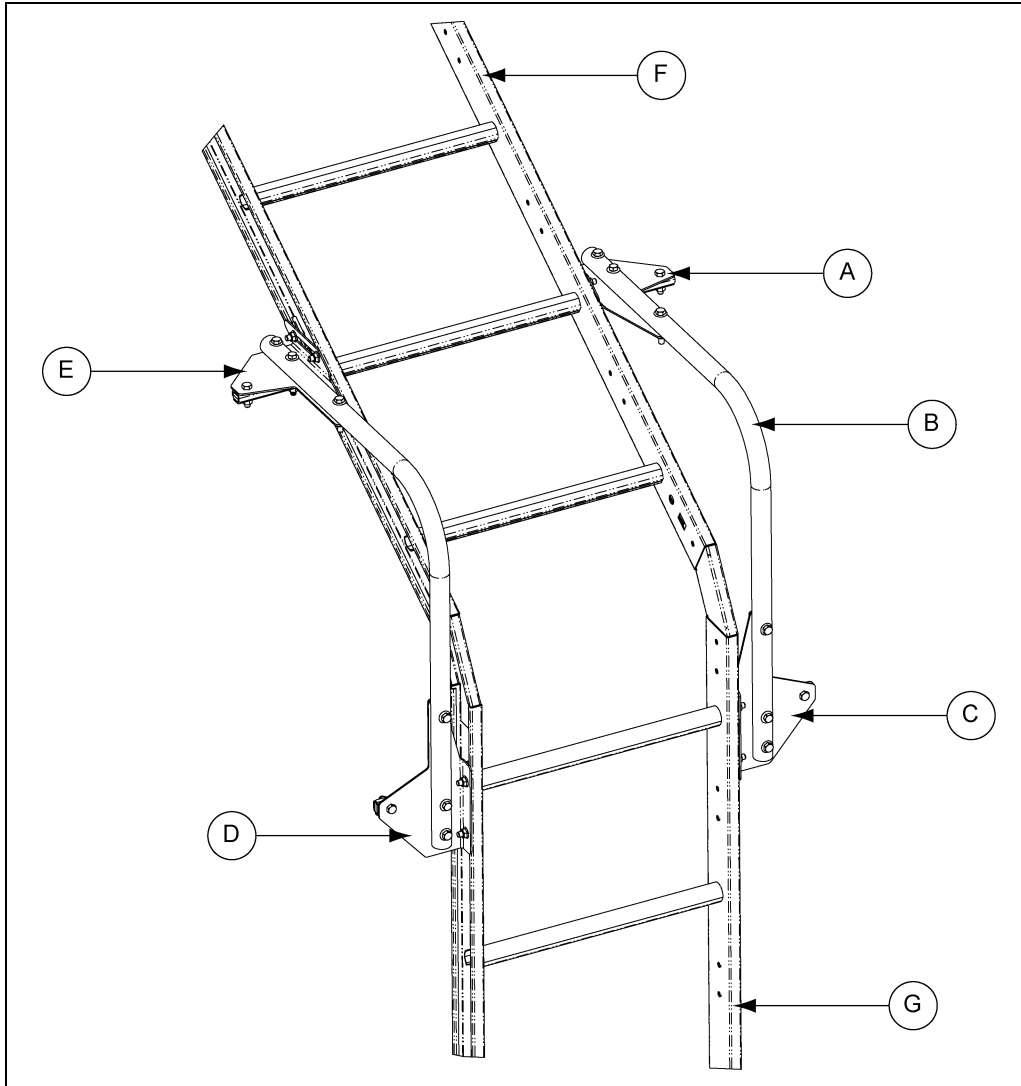


Figure 9G Handrails Fully Assembled

Ref #	Part #	Description
A	LDR-5416	Top Handrail Gusset R.H.
B	LDR-5423	30° Handrail
	LDR-5424	40° Handrail
C	LDR-5418	Bottom Handrail Gusset R.H.
D	LDR-5417	Bottom Handrail Gusset L.H.
E	LDR-5415	Top Handrail Gusset L.H.
F		Roof Ladder
G		Sidewall Ladder

Handrail Installation for Ladder System without Safety Cage (Continued)

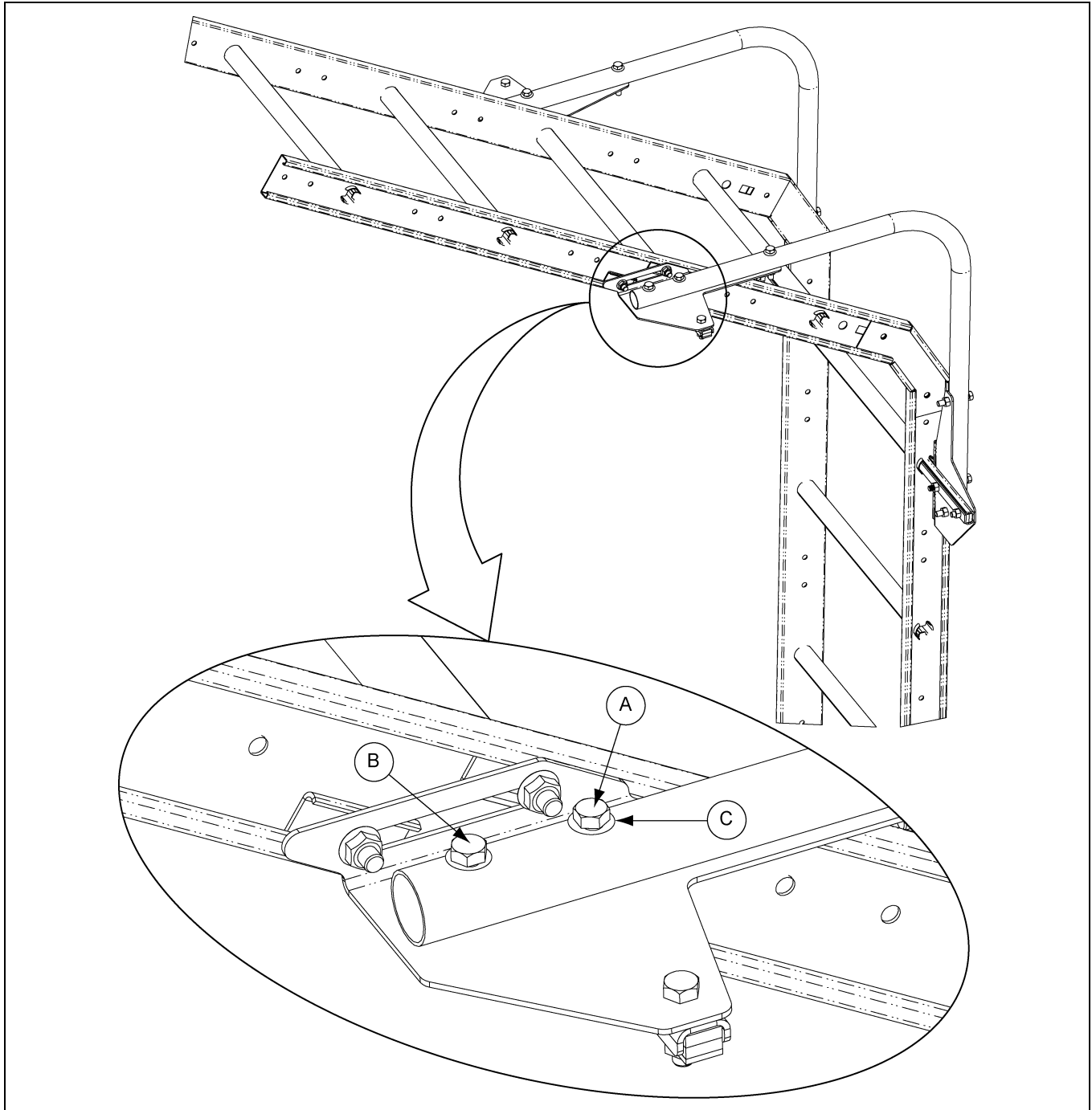


Figure 9H

Ref #	Part #	Description
A	S-7076	5/16" x 2-1/2" Hex Head Bolt
B	S-7877	5/16" x 2" Hex Head Bolt
C	S-1937	Flat Washer 5/16" ZN SAE Grade 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 10A](#). 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.

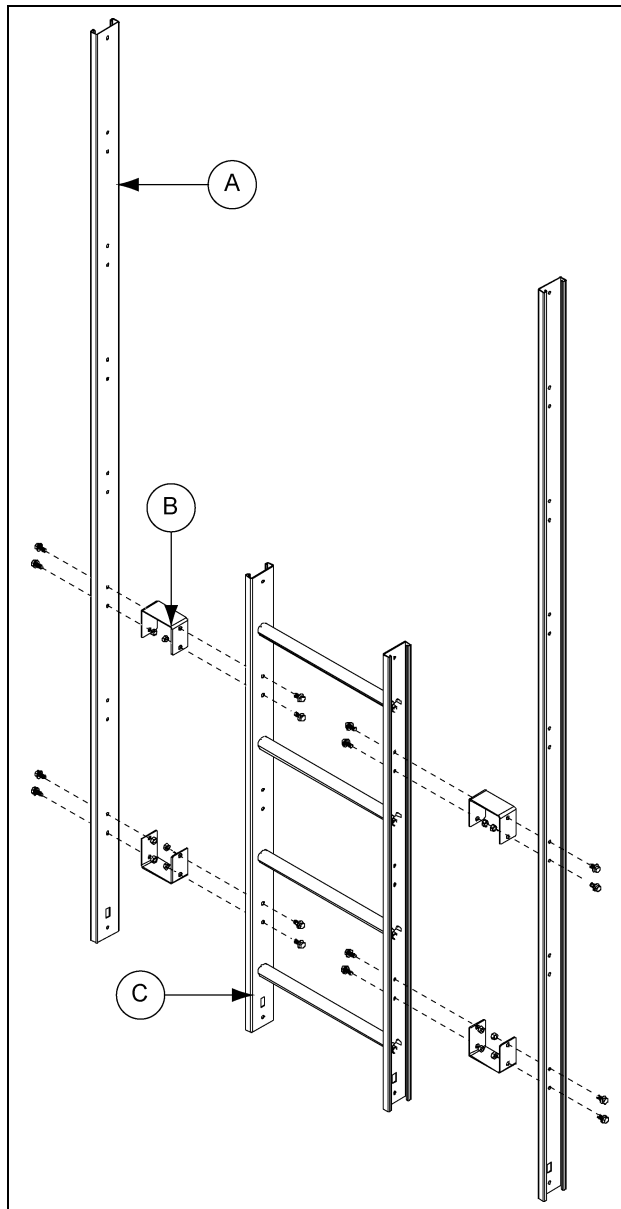


Figure 10A

Ref #	Description
A	8' RFB Extension Rail
B	Spacer Bracket (LDR-4403)
C	Top Ladder Section

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 10B.)

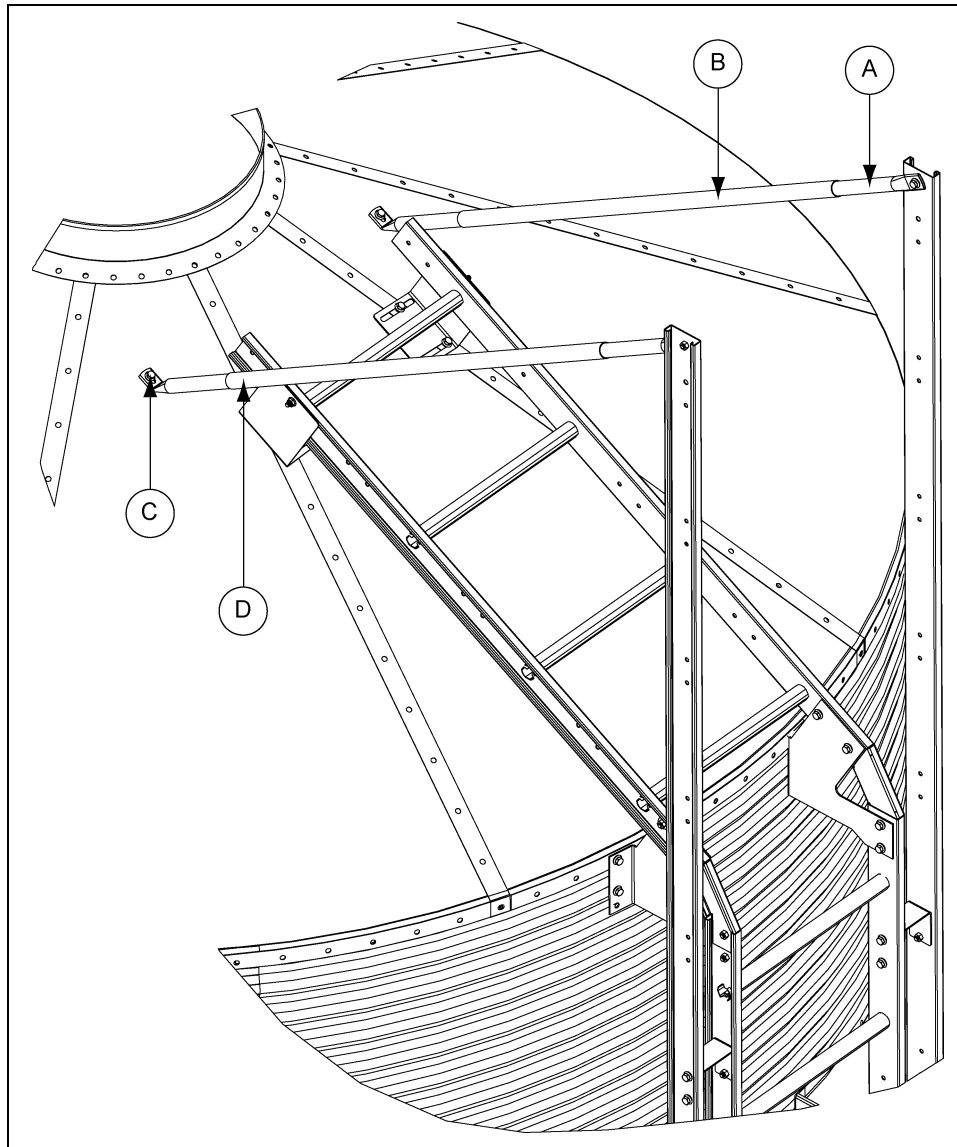


Figure 10B

Ref #	Description
A	End Tube (LS-6616)
B	Field Drill 5/16" Holes Four (4) per Brace
C	3/8" Field Drilled Hole. One per Brace
D	Center Tube (LS-6615)

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 10C](#). See cage hoop bracket detail [on Page 53](#) 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.

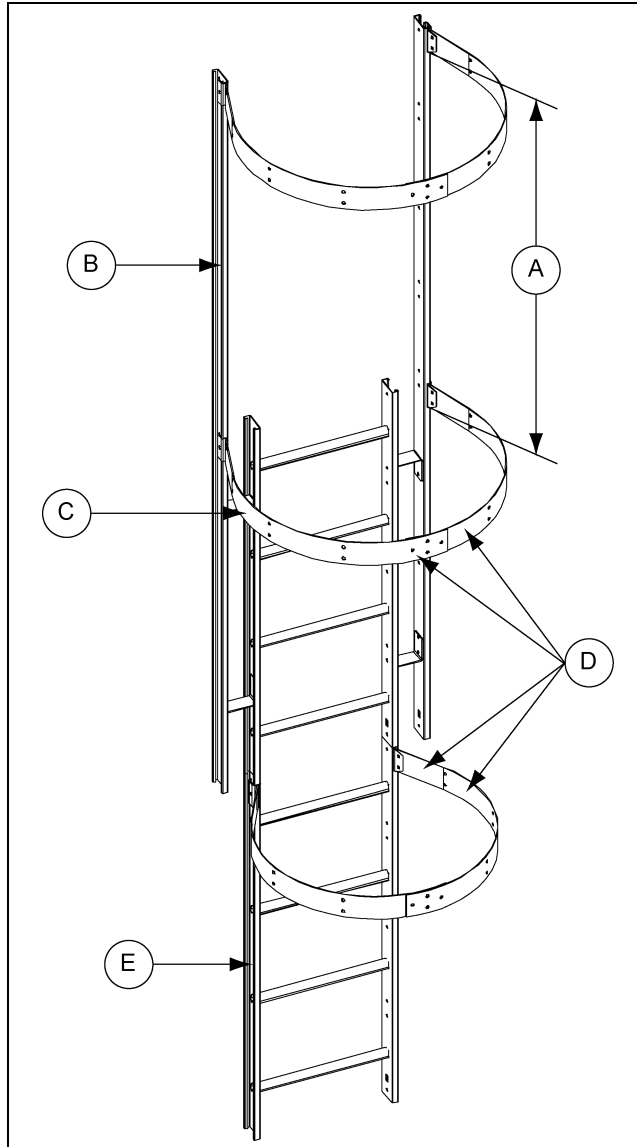


Figure 10C

Ref #	Description
A	48" Typical Bottom to Bottom
B	Extension Rail
C	Safety Cage Hoop Bracket
D	Safety Cage Hoop Halves (LDR-4201)
E	Ladder Section

Cage Hoop Bracket Detail

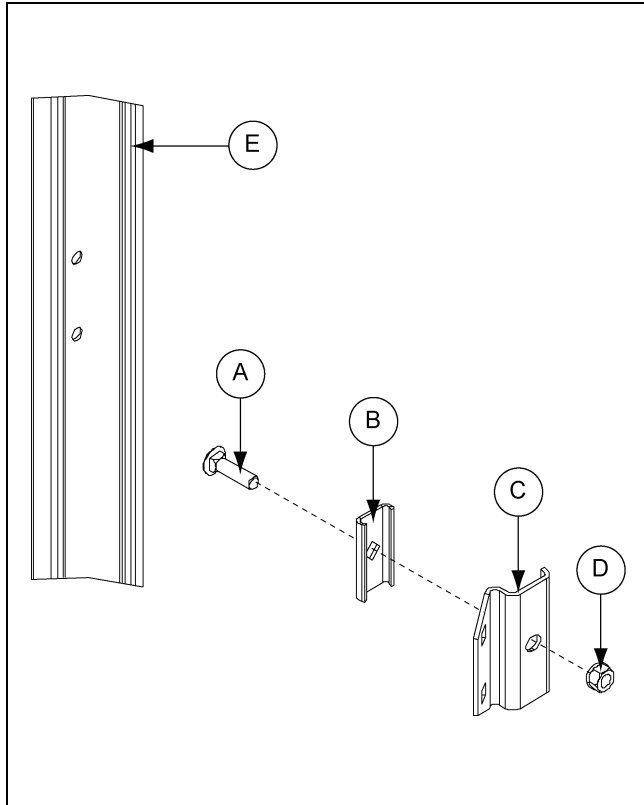


Figure 10D

Ref #	Part #	Description
A	S-3550	5/16" x 1" Carriage Bolt
B	LDR-4198	Wedge
C	LDR-4199	Cage Hoop Bracket
D	S-10268	Flange Nut 5/16"-18 JS Grade 5
E		Extension Rail/Ladder

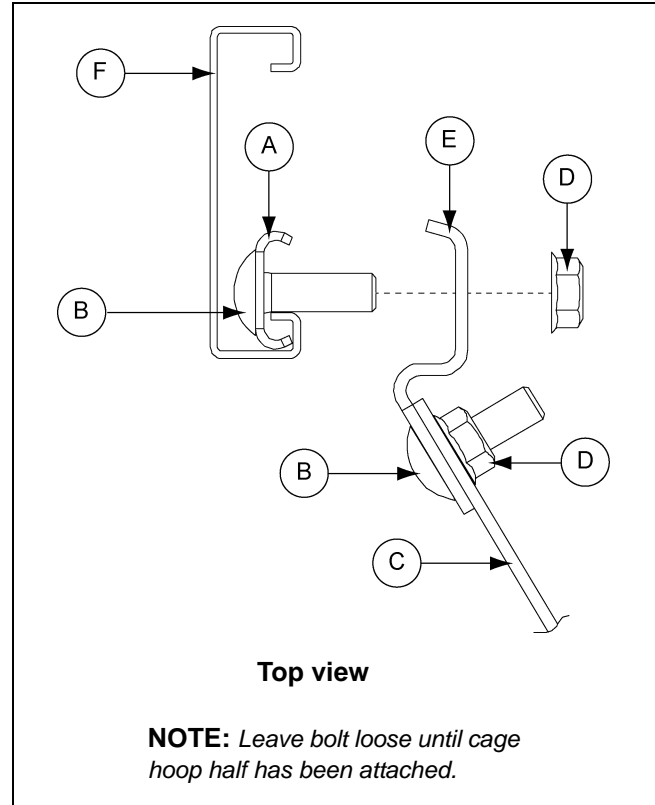


Figure 10E

Ref #	Part #	Description
A	LDR-4198	Wedge
B	S-3550	5/16" x 1" Carriage Bolts
C	LDR-4201	Safety Cage Hoop Half
D	S-10268	Flange Nut 5/16"-18 JS Grade 5
E	LDR-4199	Safety Cage Hoop Bracket
F		Extension Rail/Ladder

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 10F](#). 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.

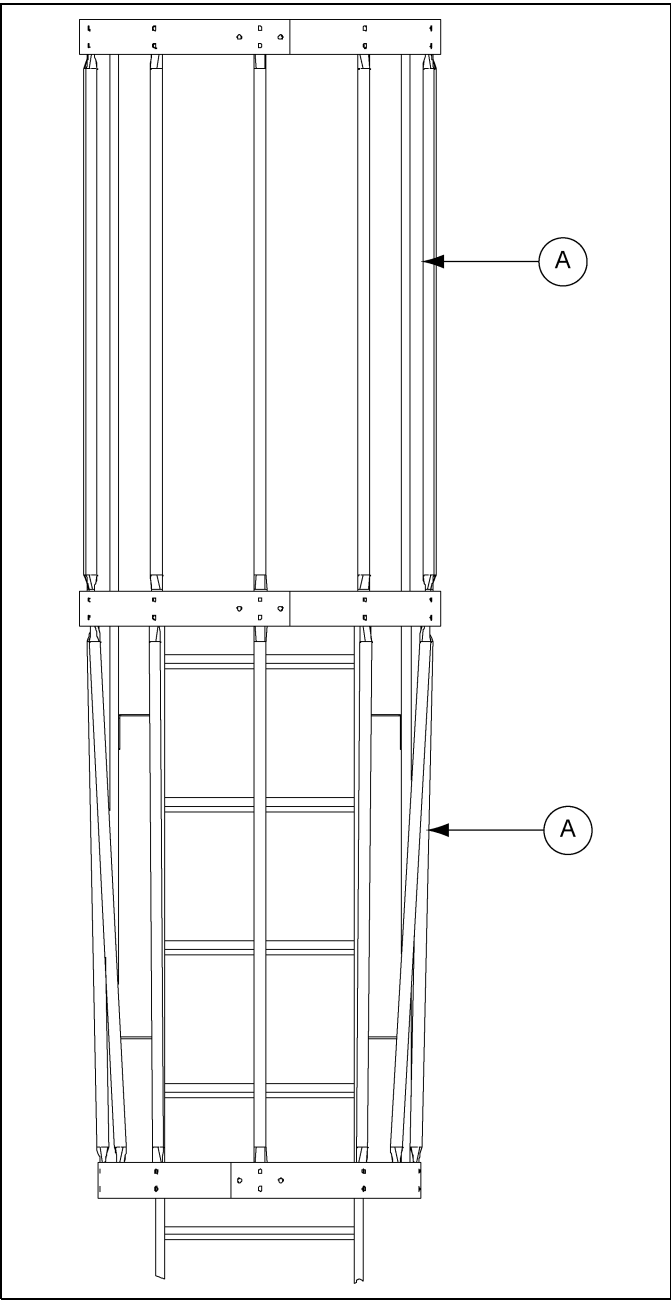


Figure 10F

Ref #	Part #	Description
A	LS-6713	Safety Cage 48" Vertical Supports

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 53](#). Once cage hoop brackets are installed, attach cage hoop halves and tighten bolts. Repeat installation for each safety cage required.

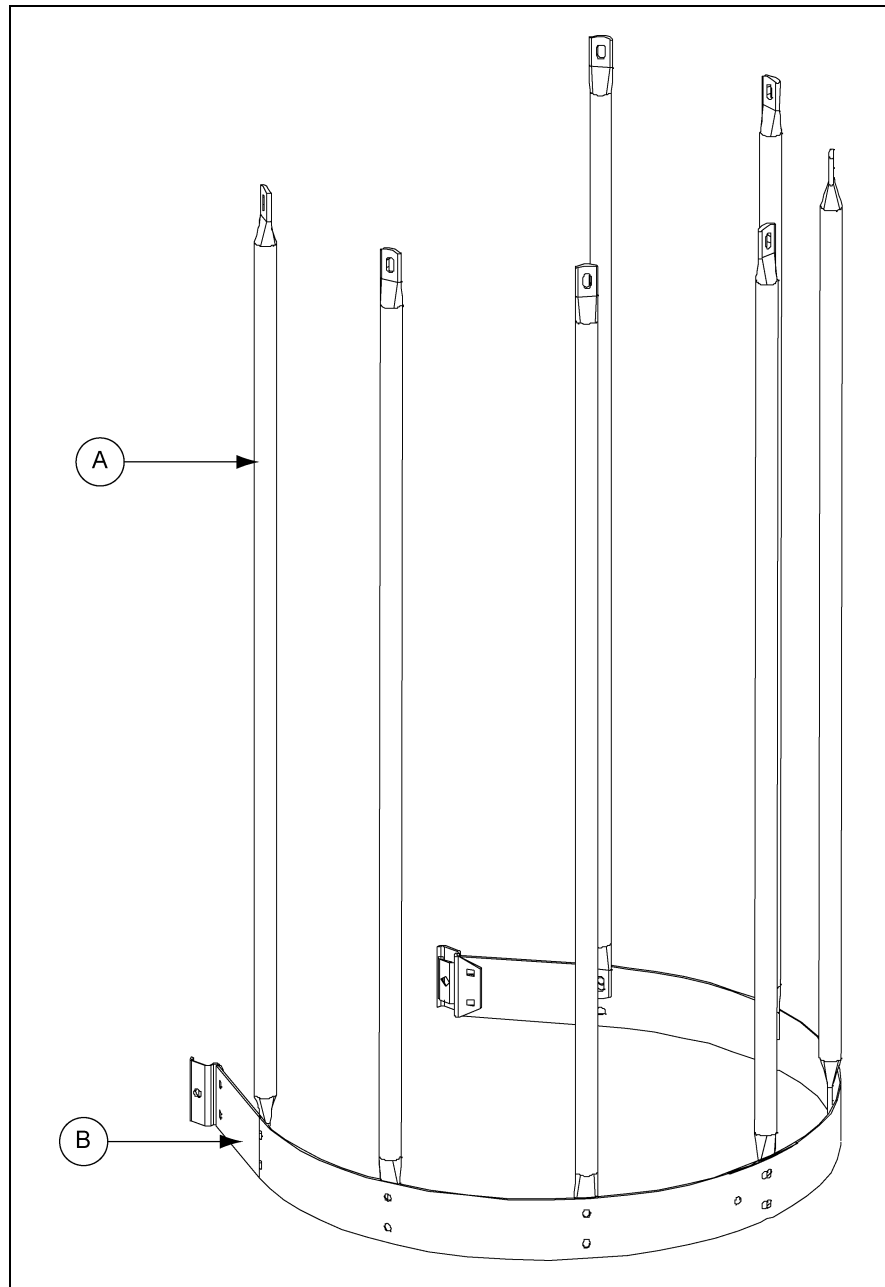


Figure 10G

Ref #	Part #	Description
A	LS-6713	Safety Cage 48" Vertical Support
B	LDR-4201	Safety Cage Hoop Half

10. Safety Cage

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 11A on Page 57*. 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.

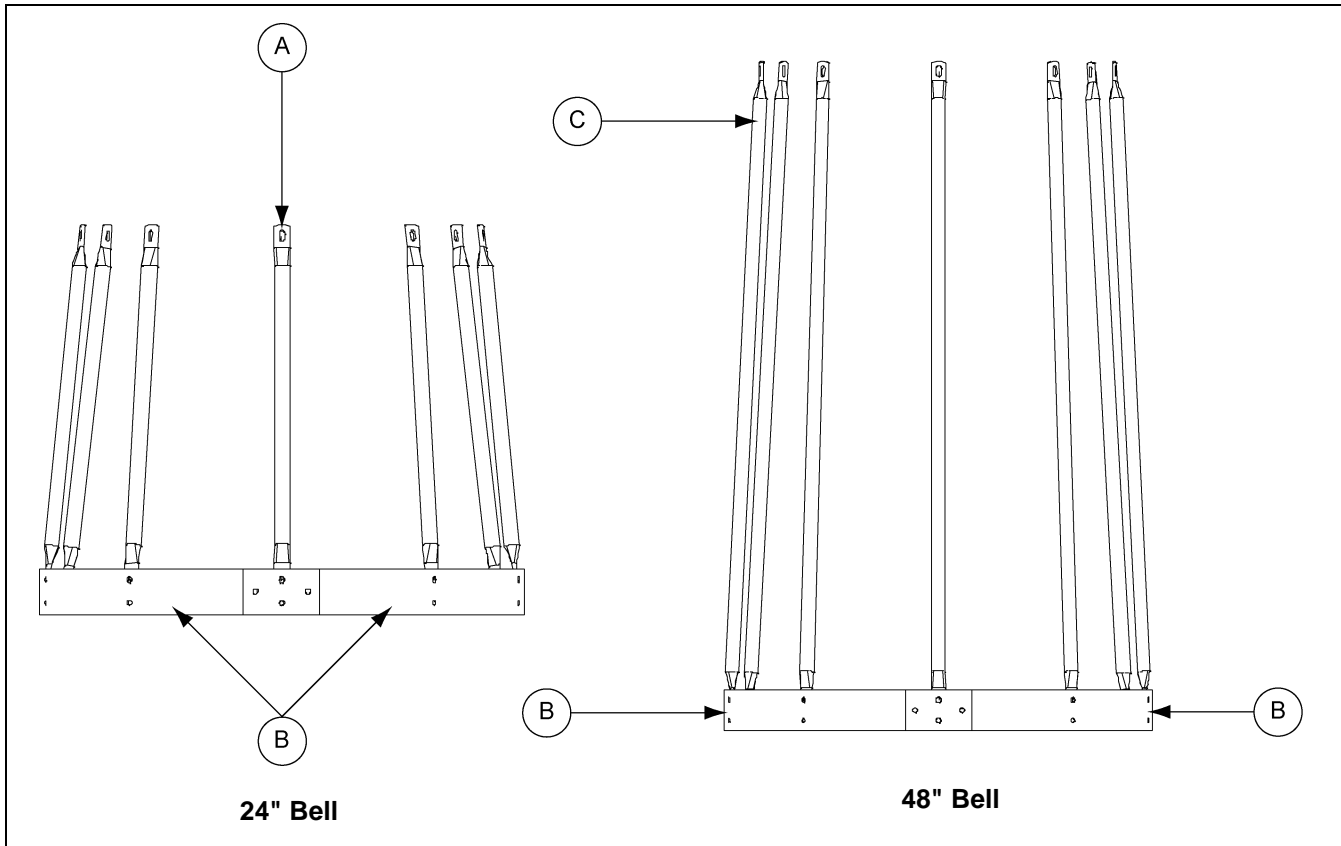


Figure 10H

Ref #	Part #	Description
A	LS-6714	24" Vertical Support
B	LS-4202	Safety Cage Bell Hoop Halfs
C	LS-6713	48" Vertical Support

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 11A.)

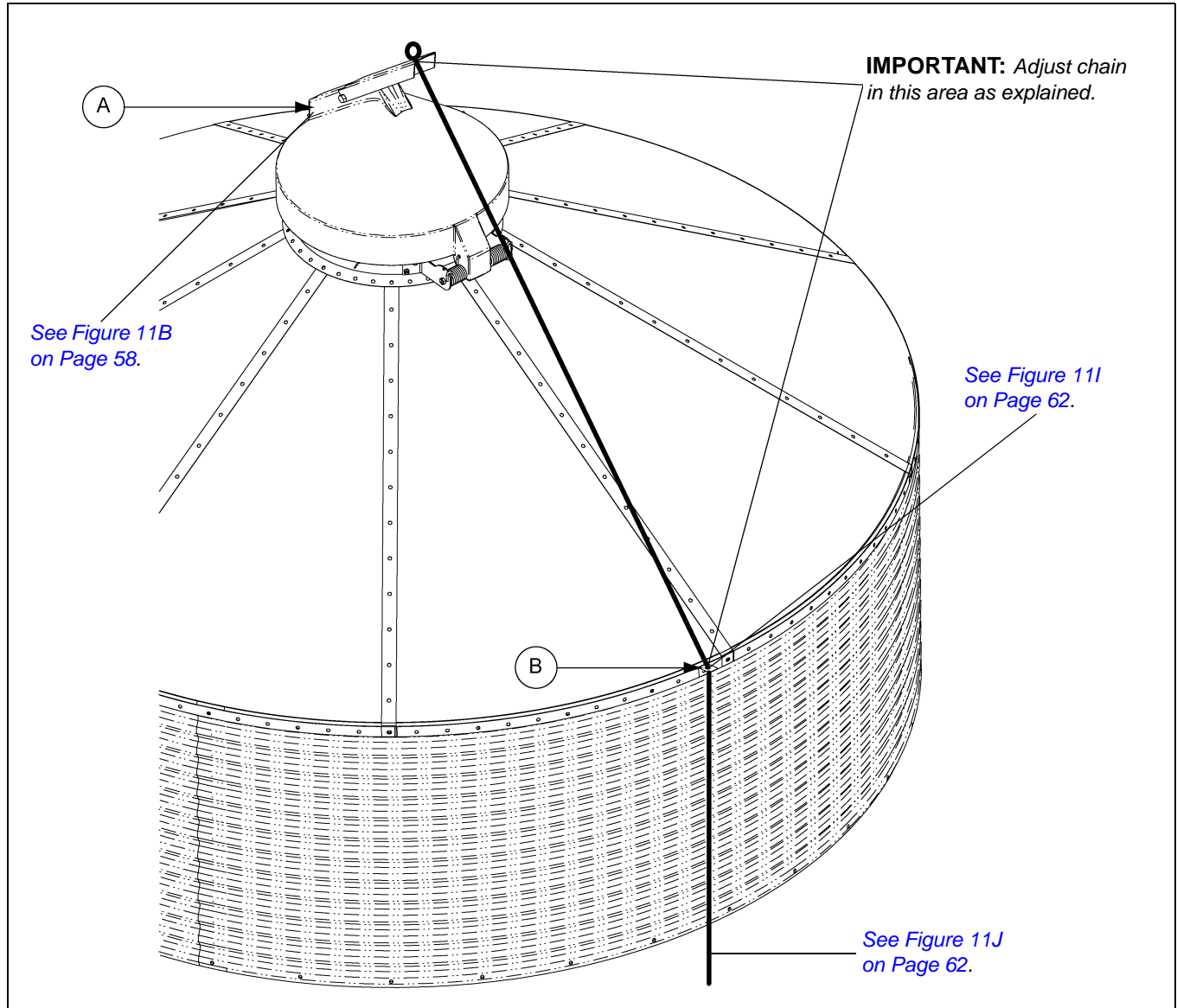
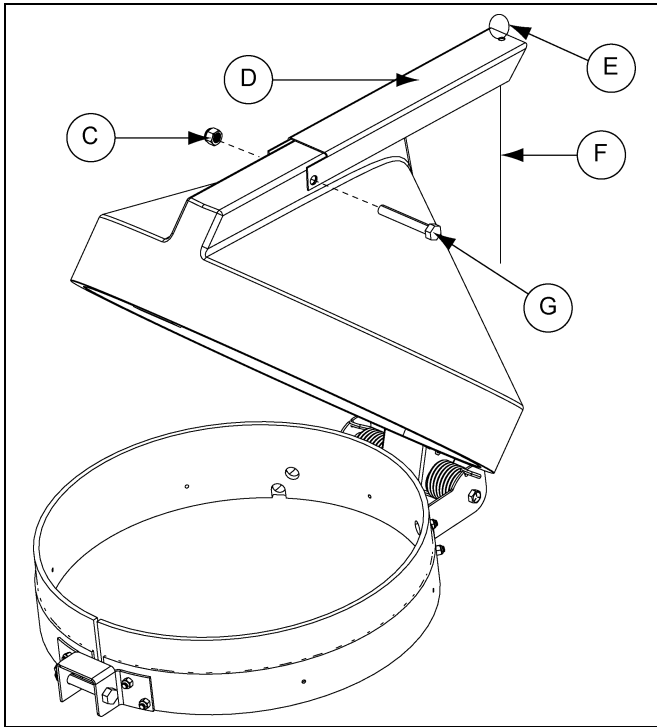


Figure 11A

Ref #	Description
A	Leaver Arm
B	Roof Eave Bracket

11. Roof Cap and Ground Control

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.*



Ref #	Description
C	Nut
D	Lever Arm
E	Key Ring
F	Chain
G	Bolt
H	Mounting Brackets
I	Clamp
J	Bracket should extend over flange.

Figure 11B 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 11A on Page 57](#). 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 11C](#). 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 11E on Page 59](#).

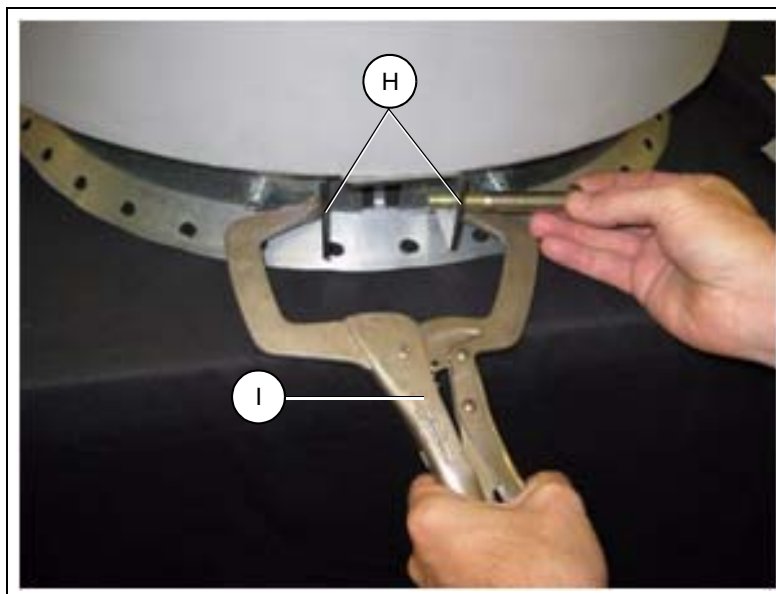


Figure 11C Mount Lid to Peak Ring

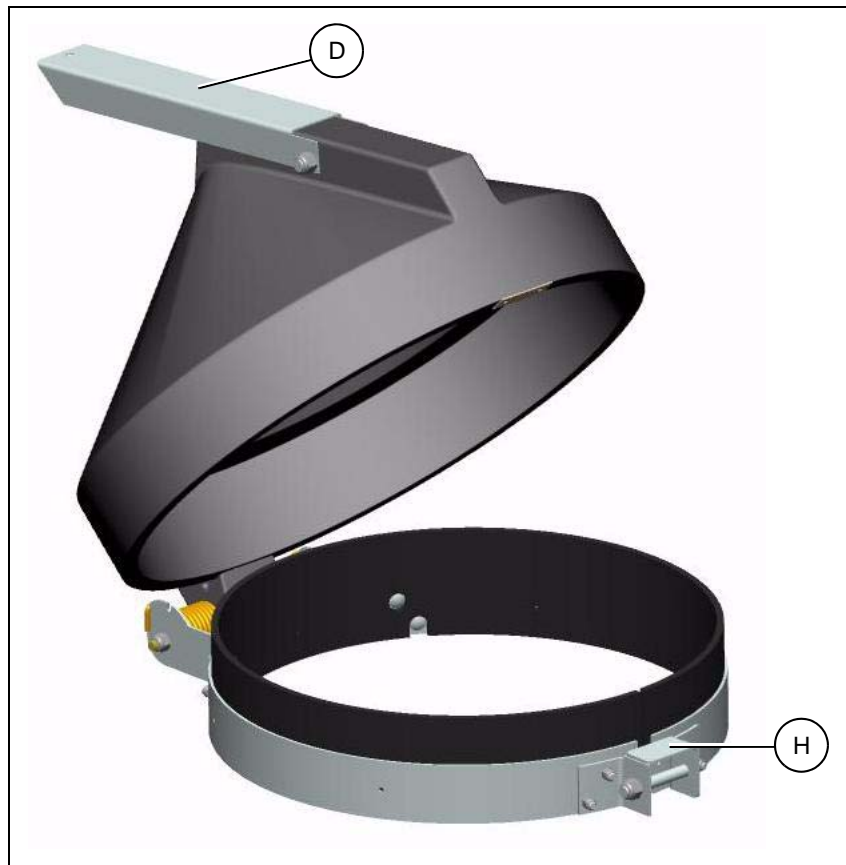


Figure 11D

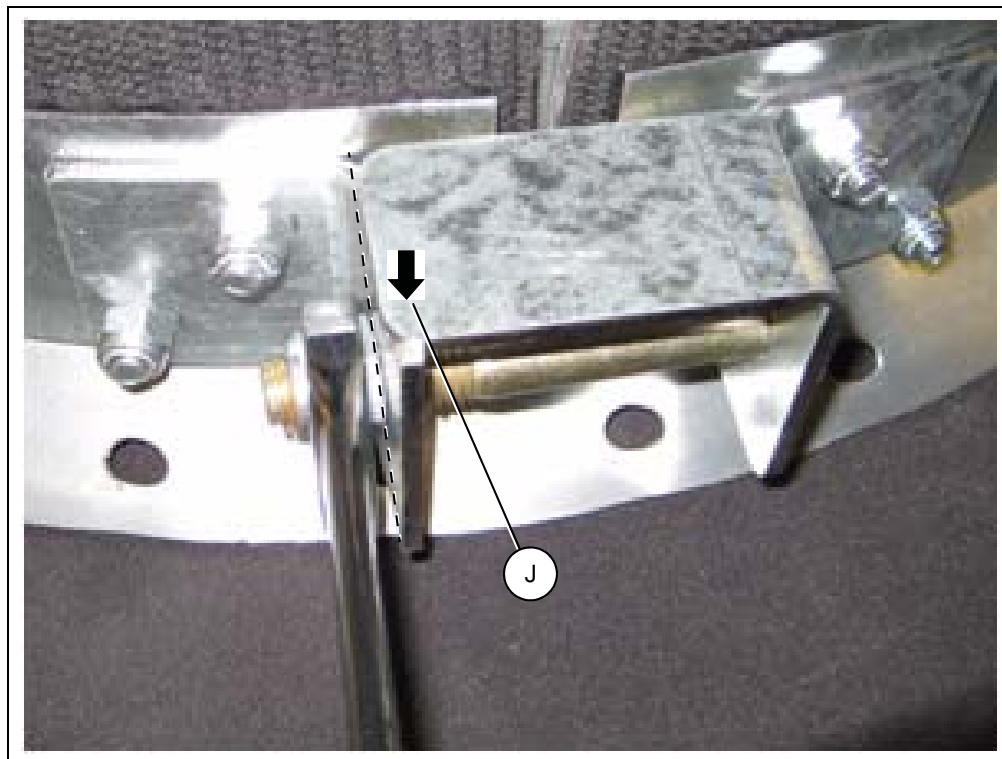


Figure 11E *Tighten Bolts Until Flush with Bracket*

11. Roof Cap and Ground Control

NOTE: The steel roof cap is used on GHT series bins.

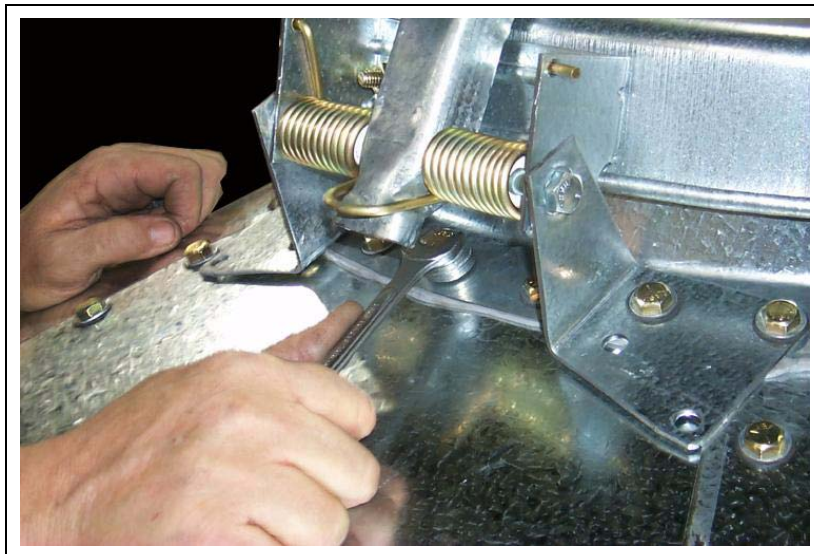


Figure 11F

IMPORTANT: Make sure the loop of the main cap spring (BLK-12808) is held securely in the pre-loaded position by the head of the 5/16" bolt beneath. (See Figure 11F.)

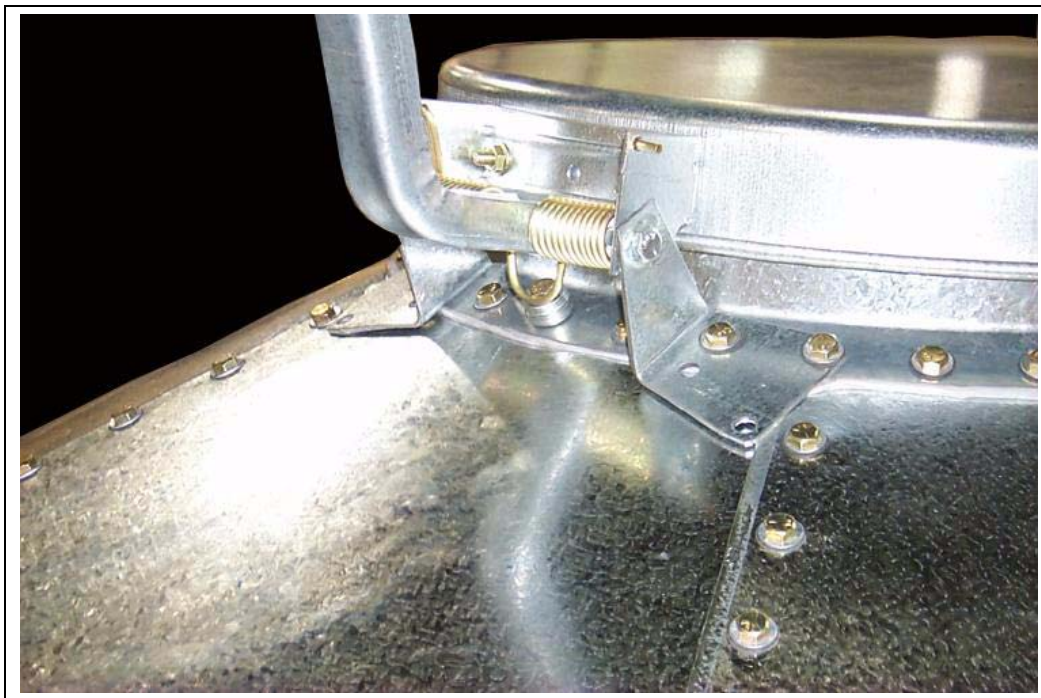


Figure 11G

IMPORTANT: If necessary, place one or more 5/16" flat washers under the bolt head to ensure that the bolt catches the loop. (See Figure 11G.)



The control arm is spring loaded. It must be released while on the ground and before attaching it to the peak ring. Failure to do so will result in serious injury.

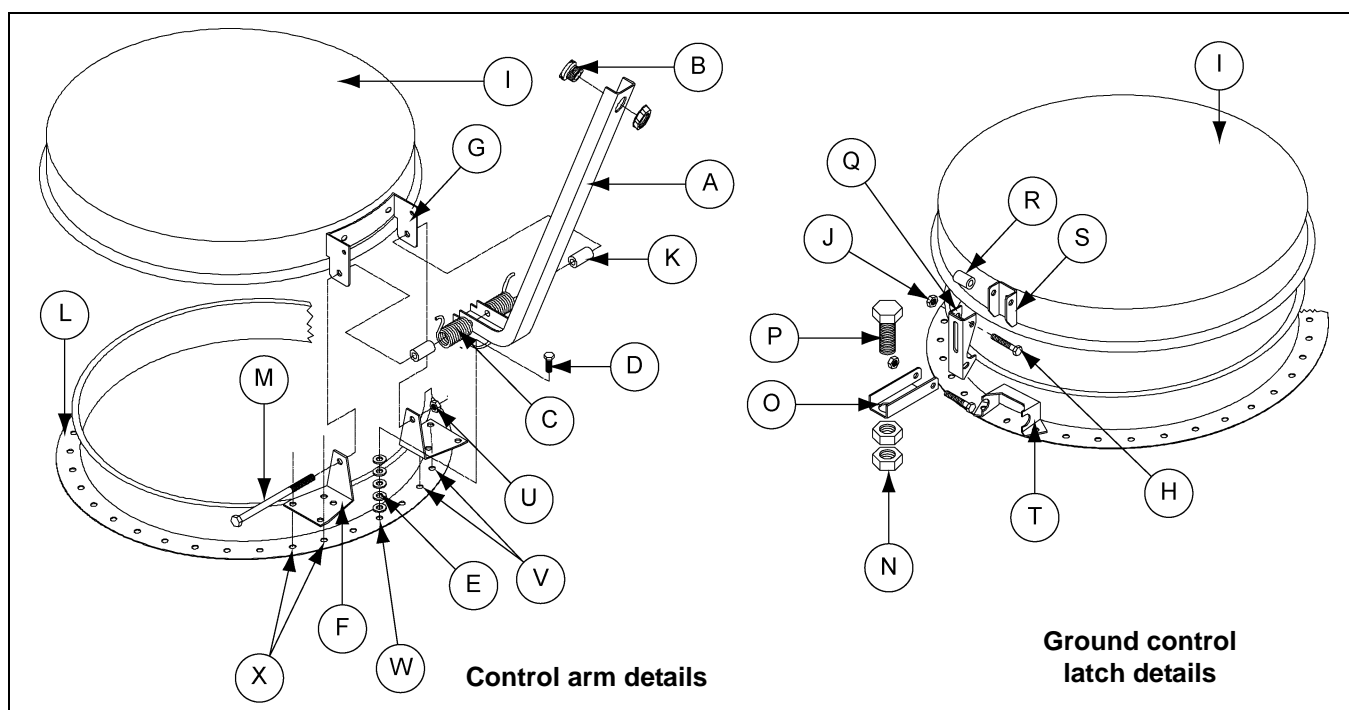


Figure 11H

Control Arm and Ground Control Parts List

Ref #	Part #	Description
A	BLK-11735	Control Arm
B	BLK-11876	Nylon Grommet with Nut
C	BLK-12808	Spring, Flush BFT Cap Heavy
D	S-10260	Flange Bolt 5/16"-18 x 1" JS with Sealing Washer
E	S-845	Flat Washer 5/16" USS SAE YDP Grade 2
F	BLK-11842	Lower Cap Hinge
G	BLK-11734	Upper Cap Hinge
H	S-7329	5/16"-18 x 2" Hex Head Bolt
I	BLK-10015D	BFT Roof Cap for Ground Control
J	S-5220	5/16"-18 Hex Lock Nut (Grade 2)
K	BLK-12809	Spring, 1-3/8" O.D. PVC Center 0.438" Center Bore
L	BLK-11730	1 Piece Bulk Tank Peak Ring
M	S-7171	3/8"-16 x 6-1/2" Hex Head Bolt (Grade 5)
N	S-3214	7/8"-9 Hex Nut (Grade 2)
O	BLK-11845	Latch Counterweight
P	S-7281	7/8"-9 x 1-1/2" Hex Head Bolt
Q	BLK-11844	Peak Cap Latch
R	BLK-11795	15/16" x 3/4" Diameter Plastic Spacer
S	BLK-11843	Pivot Bracket
T	BLK-11846	Cap Hold-Down Bracket
U	S-4663	3/8"-16 Hex Head Lock Nut
V		Right Hinge Attachment Holes
W		Spring Stop Attachment Holes
X		Left Hinge Attachment Holes

NOTE: Use the [above](#) chart for control arm and ground control details.

11. Roof Cap and Ground Control

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 11B on Page 58.) 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 11I.) Re-adjust the existing handle and key ring so the handle is positioned for easy access from ground. (See Figure 11J.) 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.

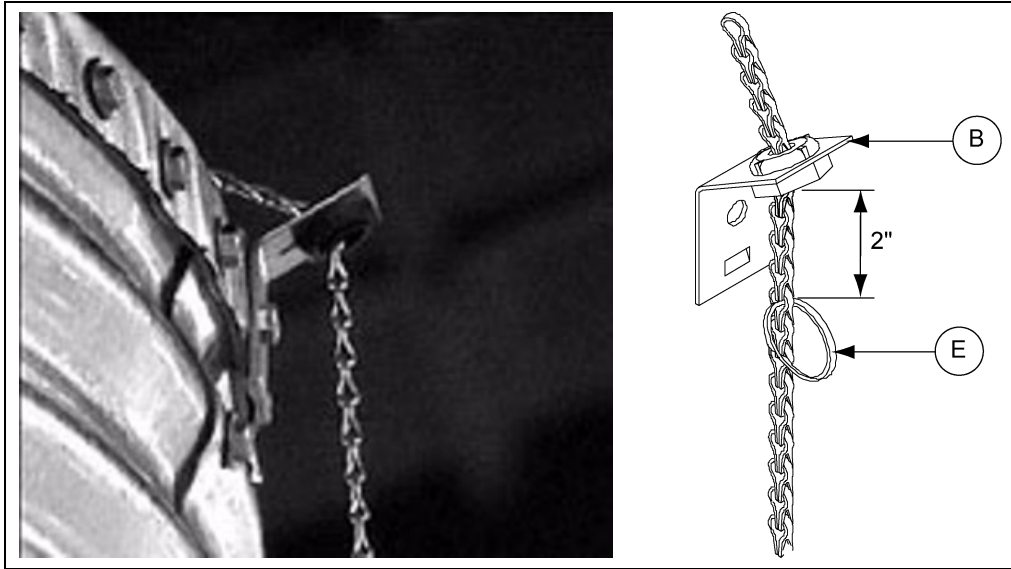


Figure 11I

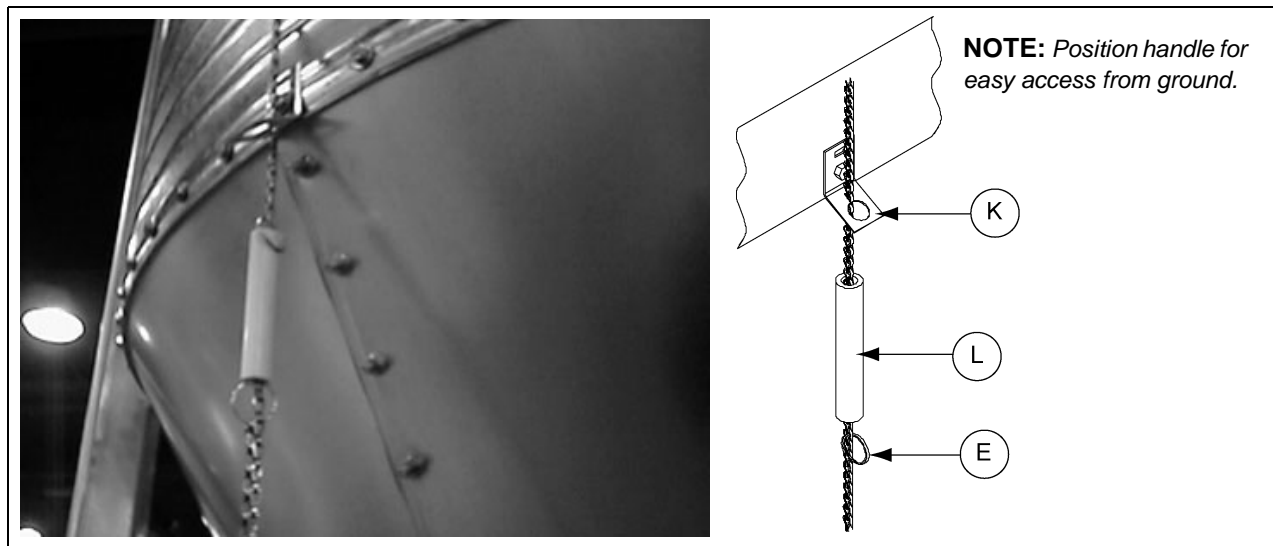


Figure 11J

Ref #	Description
B	Roof Eave Bracket (BLK-11950)
E	Key Ring

Ref #	Description
K	Chain Holder (BLK-11949)
L	Handle

4. Install the decal DC-2123 to the inside of peak ring on the hinge side of the lid as shown in [Figure 11K](#). Decal should be clearly visible when lid is open.



Figure 11K

Roof Cap

Bulb Seal Kit (Optional)

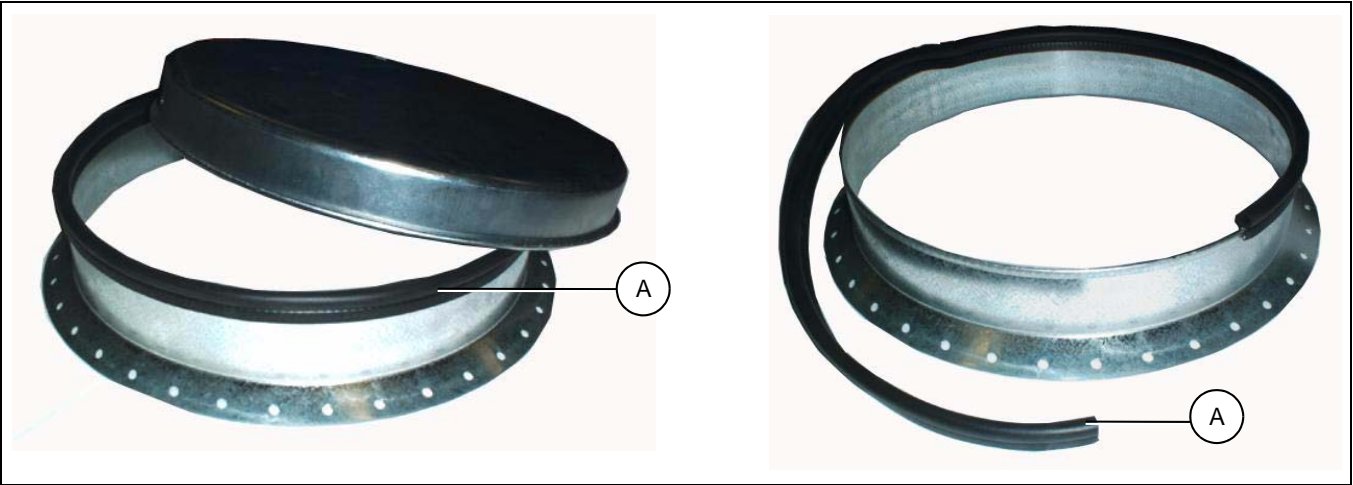


Figure 11L

Cap Hold-Down Package

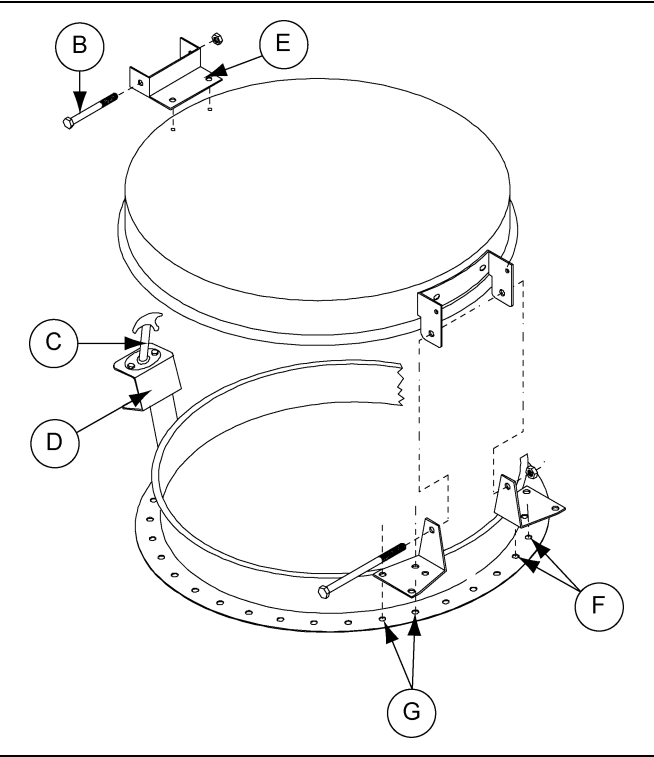


Figure 11M

Ref #	Part #	Description
A	BLK-10472	Bulb Seal
B	S-7120	5/16" x 3-1/2" Bolt
C	CRP-4654	Cap Hold-Down
D	CRP-4639	Cap Hold-Down Bracket
E	BLK-10022	Cap Latch
F		Right Hinge Attachment Holes
G		Left Hinge Attachment Holes

Bulb seal is pressed into place around the lip of the peak ring.

NOTE: Bulb seal kit is included with all pneumatic fill kits. When ordered as a separate option, specify part# BLK-10472.

Cap hold-down package comes standard on all 45° hopper bulk tanks. Optional on all 60° hopper bulk tanks.

BFT Collar Assembly (BLK-13062)

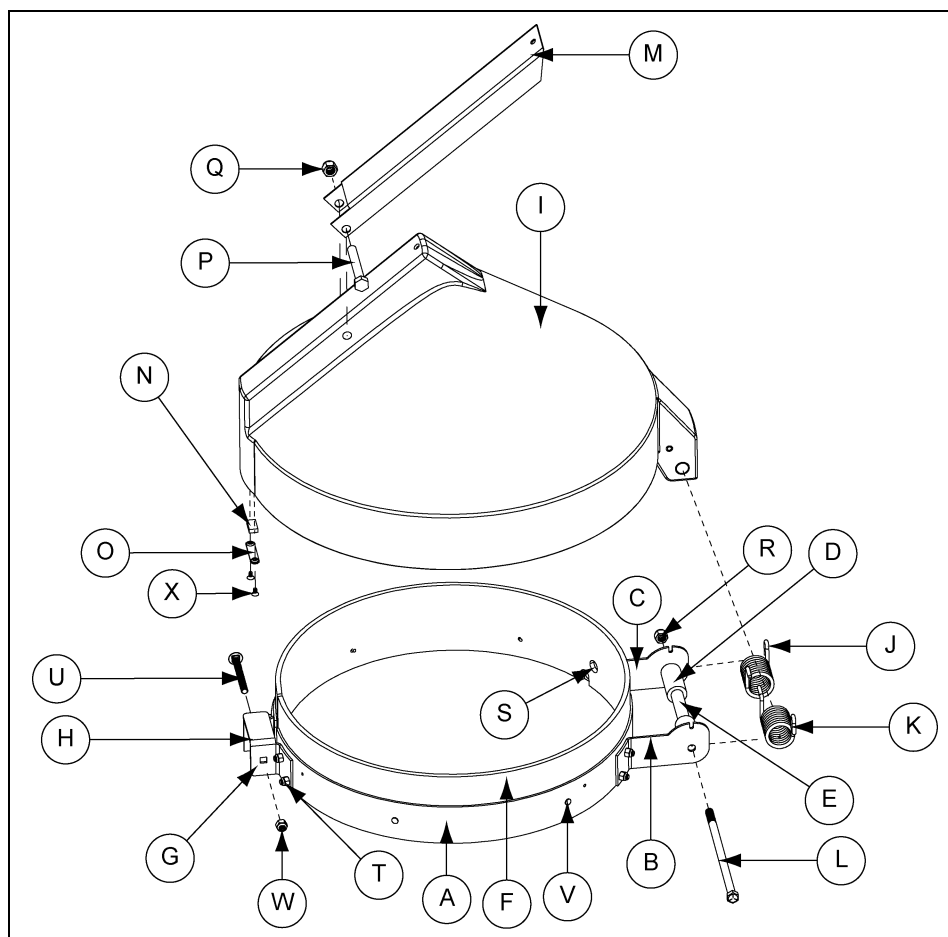


Figure 11N

BFT Collar Assembly (BLK-13062) Parts List

Ref #	Part #	Description	Qty
A	BLK-13059	BFT, Lid Clamp Band	1
B	BLK-13061	BFT, Lid Clamp Band Bracket - Right	1
C	BLK-13065	BFT, Lid Clamp Band Bracket - Left	1
D	BLK-13038	Support, Spring BFT	2
E	BLK-13064	BFT, Lid Pivot Tube	1
F	BLK-13053	Bumper, Reinforced Rubber Belting	1
G	BLK-13066	BFT, Lid Clamp Band Bracket - Right	1
H	BLK-13067	BFT, Lid Clamp Band Bracket - Left	1
I	BLK-13070	BFT, Lid	1
J	BLK-13027	Spring, L.H. Rear	1
K	BLK-13028	Spring, R.H. Rear	1
L	S-10121	Bolt, HHCS 7/16"-14 x 9" ZN Grade 5	1

Ref #	Part #	Description	Qty
M	BLK-13048	Leverage Arm - BFT Lid	1
N	BLK-13068	BFT, Lid Magnet	1
O	BLK-13058	Retainer, Magnet, BFT Lid	1
P	S-8314	Bolt, HHCS 1/2"-13 x 3-1/2" YDP Grade 8	1
Q	S-8260	Nylock Nut 1/2"-13 ZN Grade 5	1
R	S-8234	Nylock Nut 7/16"-14 ZN Grade 2	1
S	S-7645	Carriage Bolt 5/16"-18 x 3/4" ZN Grade 5	8
T	S-7382	Nylock Nut 5/16"-18 ZN Grade 5	8
U	S-9085	Carriage Bolt 3/8"-16 x 3-1/2" ZN Grade 5	1
V	S-7236	Rivet, POE 3/16" Diameter x 0.565" Long ARSM	7
W	S-7383	Nylock Nut 3/8"-16 ZN Grade 5	1
X	S-10138	Bolt, FHSCS #10-32 x 3/8" ZN	2

12. Hopper Assembly

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 12B on Page 67](#). 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.



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).

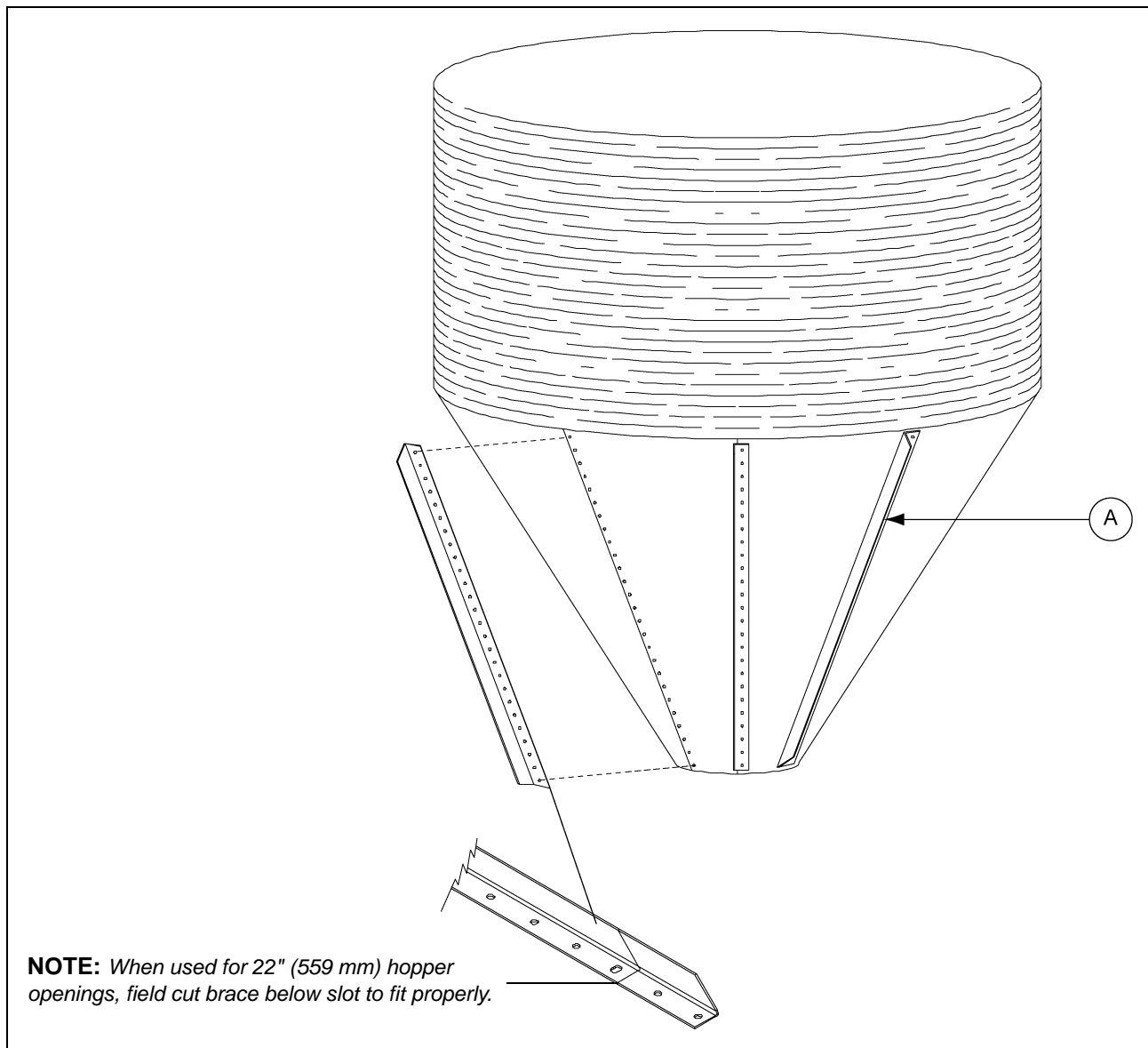


Figure 12A

Ref #	Description
A	Hopper Reinforcement Angle

Hopper Sheets (Continued)

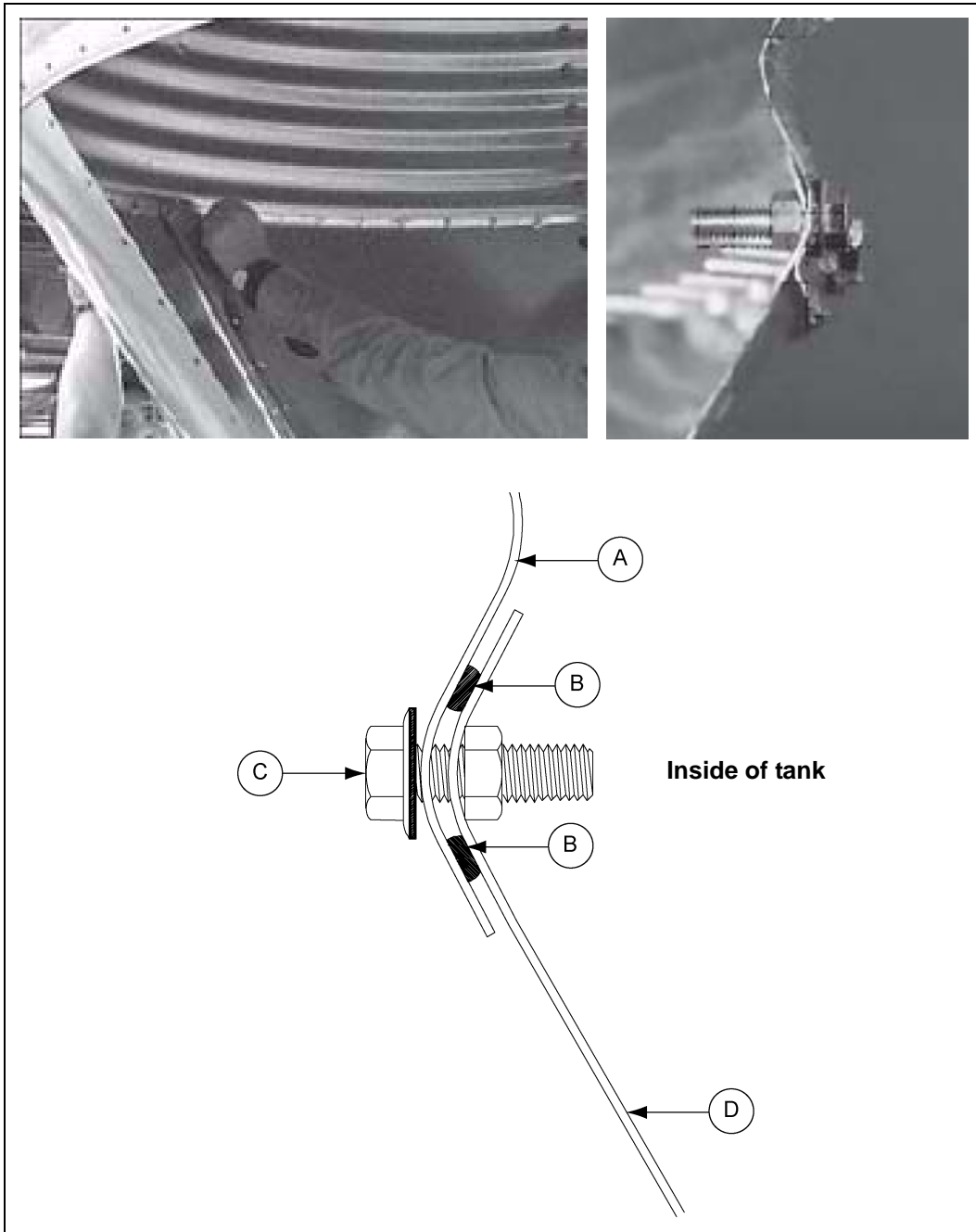


Figure 12B *Hopper Sheet to Sidewall Sheet*

Ref #	Description
A	Sidewall Sheet
B	Use Two (2) Strips of Caulking
C	Use 5/16" x 1" Bin Bolt
D	Hopper Sheet

12. Hopper Assembly

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 12C](#).

Apply caulking between the hopper panel and the sidewall sheet.

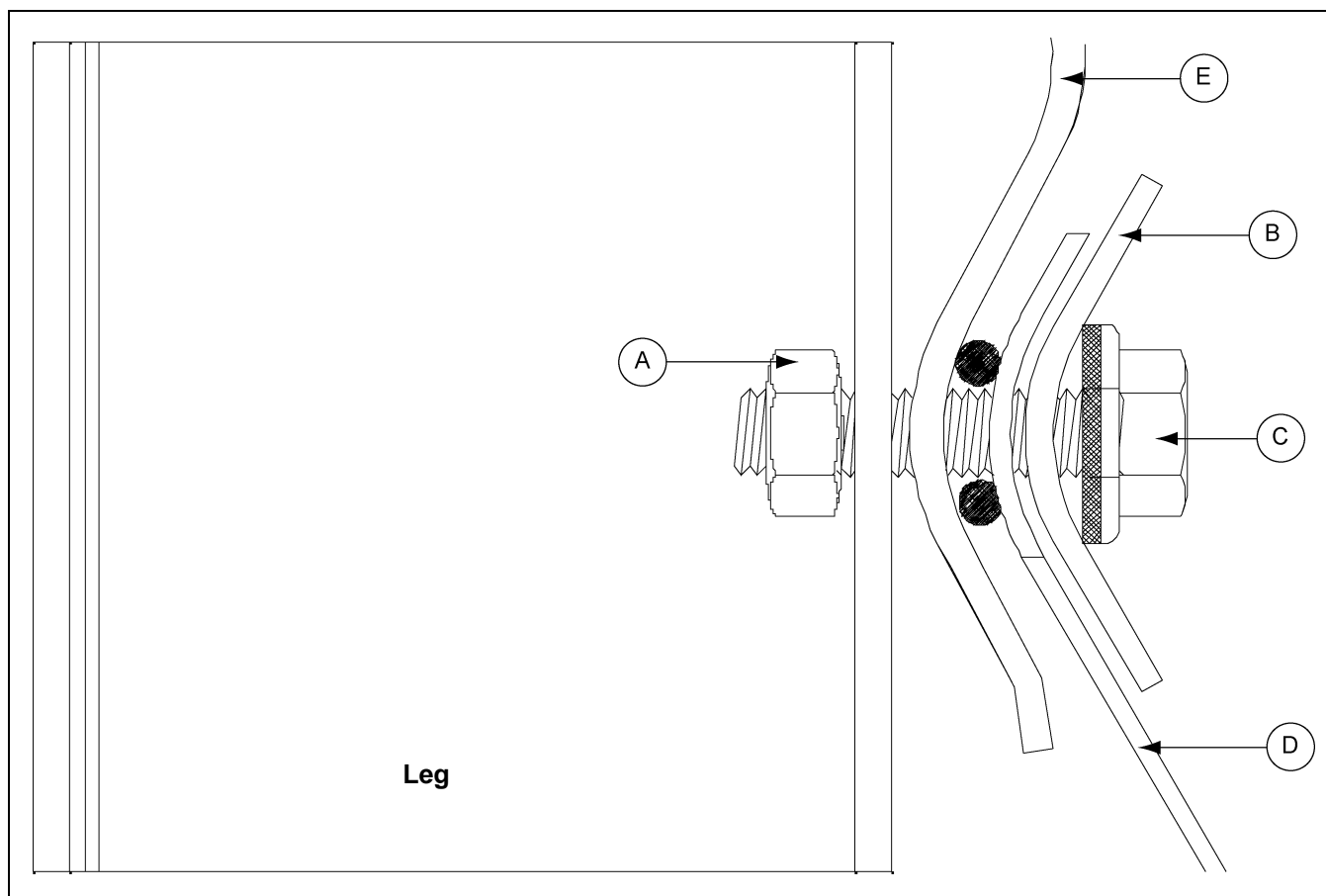


Figure 12C

Ref #	Part #	Description
A	S-7484	Hex Nut 5/16"-18 JS Grade 5
B	BLK-12483	10 Gauge Curved Washer
C	S-10260	5/16" x 1" Bin Bolt
D		Hopper Panel
E		Sidewall Sheet

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.

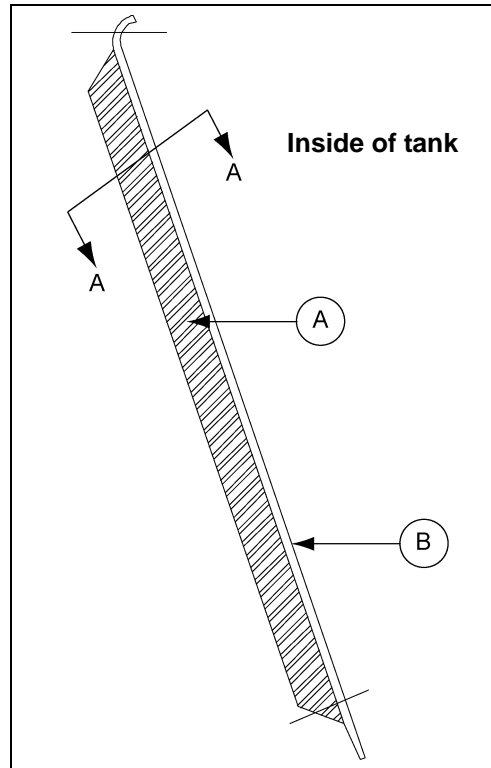


Figure 12D

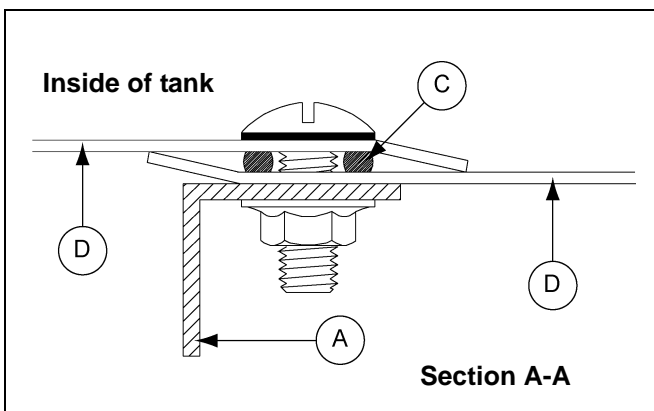


Figure 12E Hopper Overlap and Bolt Detail with Reinforcement Angle

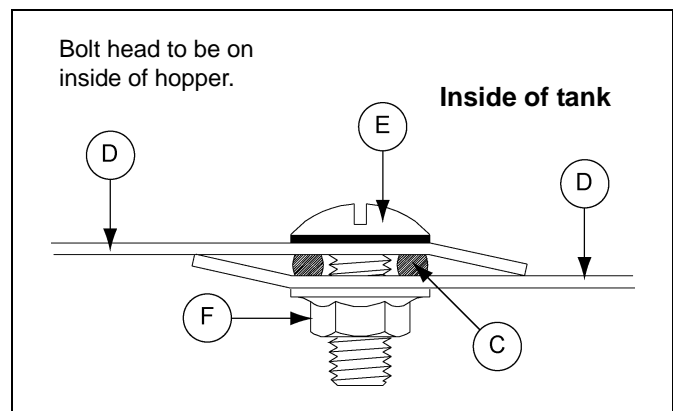


Figure 12F Hopper Overlap and Bolt Detail for Tanks without Reinforcement Angle

Ref #	Description
A	Reinforcement Angle
B	Hopper Panel
C	Caulking Two (2) Strips

Ref #	Description
D	Hopper Sheet
E	5/16" x 3/4" Truss Head Bolt
F	5/16" Flange Nut

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 12G](#) and [Figure 12H.](#))



Figure 12G

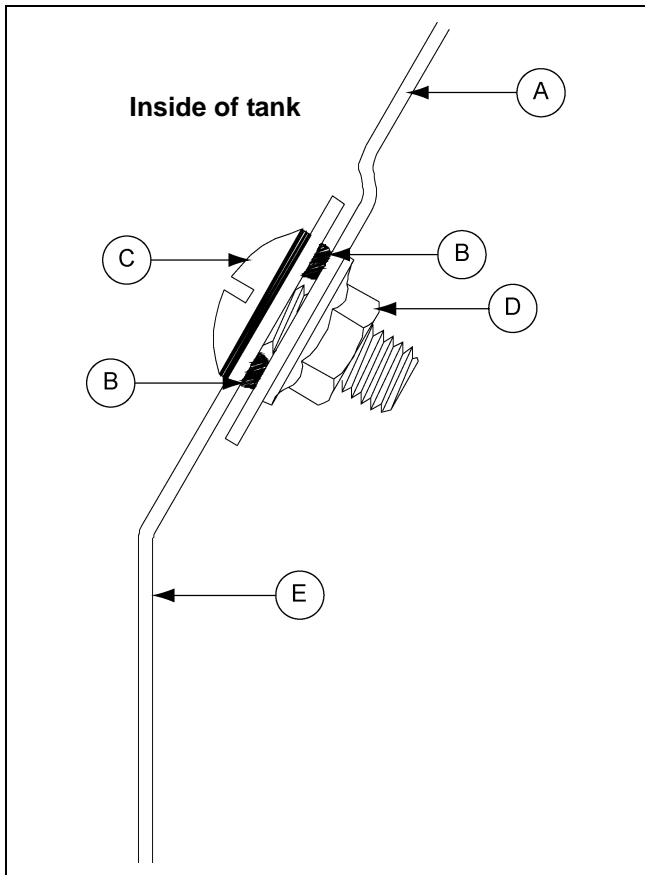


Figure 12H Bolt Detail Hopper Collar

Ref #	Description
A	16" or 22" Hopper Panel
B	Use Two (2) Strips of Caulking
C	5/16" x 3/4" Truss Head Bolt
D	5/16" Flange Nut
E	16" or 22" Hopper Collar

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 12I](#). Be sure to caulk between the hopper collar and hopper panels. (See [Figure 12I](#).)

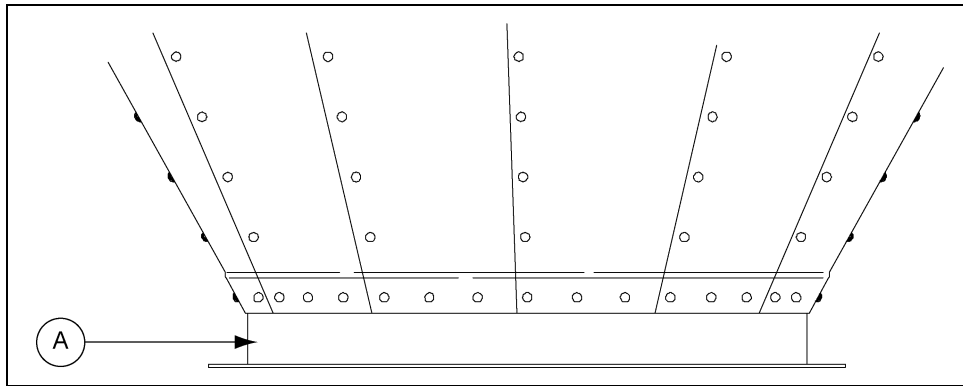


Figure 12I

Ref #	Description
A	22" Hopper Collar

16" Hopper Collar

16" 45° (BLK-12341) (18 Holes)

16" 60° (BLK-12342) (18 Holes)

7'-16" 67° (BLK-12343) (18 Holes)



Figure 12J

Ref #	Description
A	16" Hopper Collar

13. Legs and Leg Bracing

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")



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 72-74](#) 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 73-74.](#))

Insert bolts inside to outside on all leg to tank connections. ([See Figure 13A.](#))

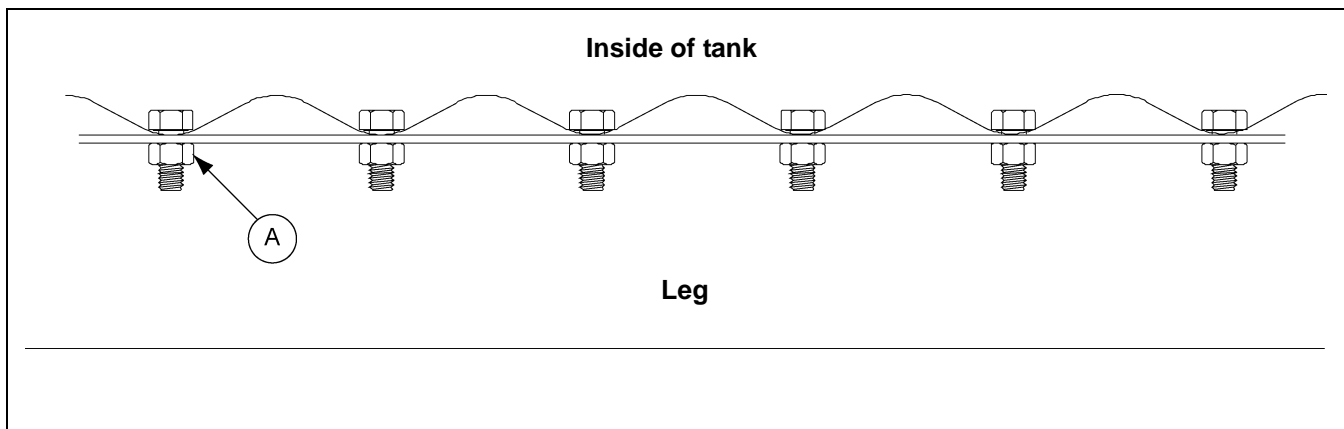


Figure 13A

Ref #	Description
A	5/16" x 1" Bin Bolt

Bracing Hole Layout

See bracing notes [on Page 77](#).

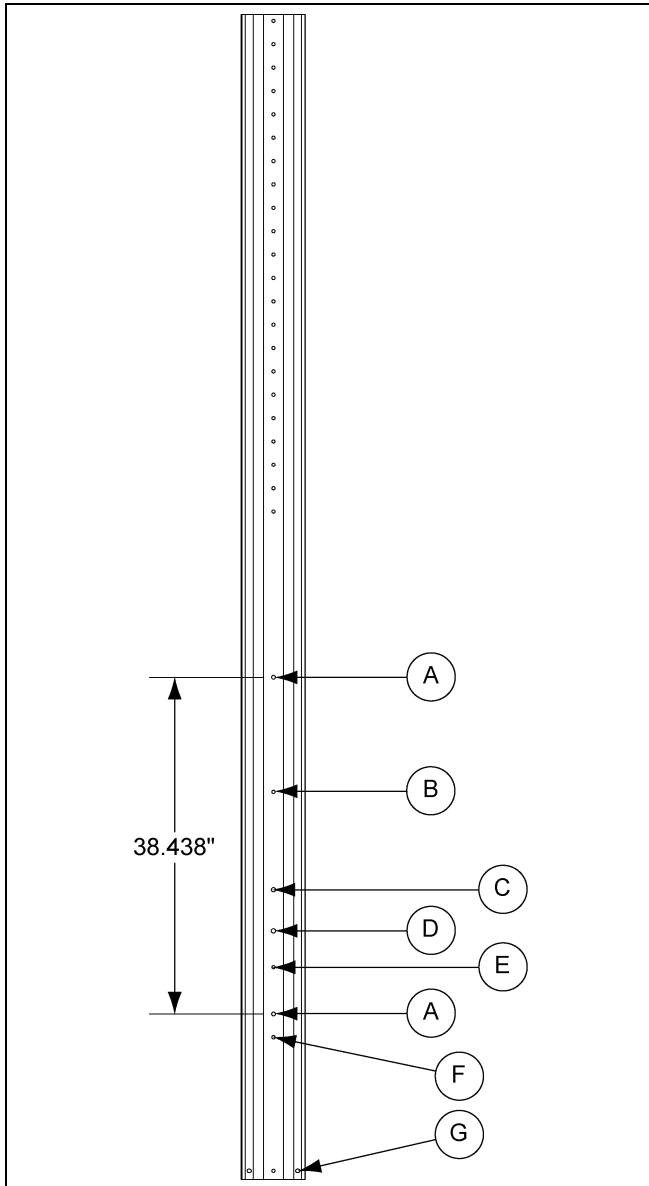


Figure 13B 6' Leg 60° - 5-8 Rings (BLK-12492)

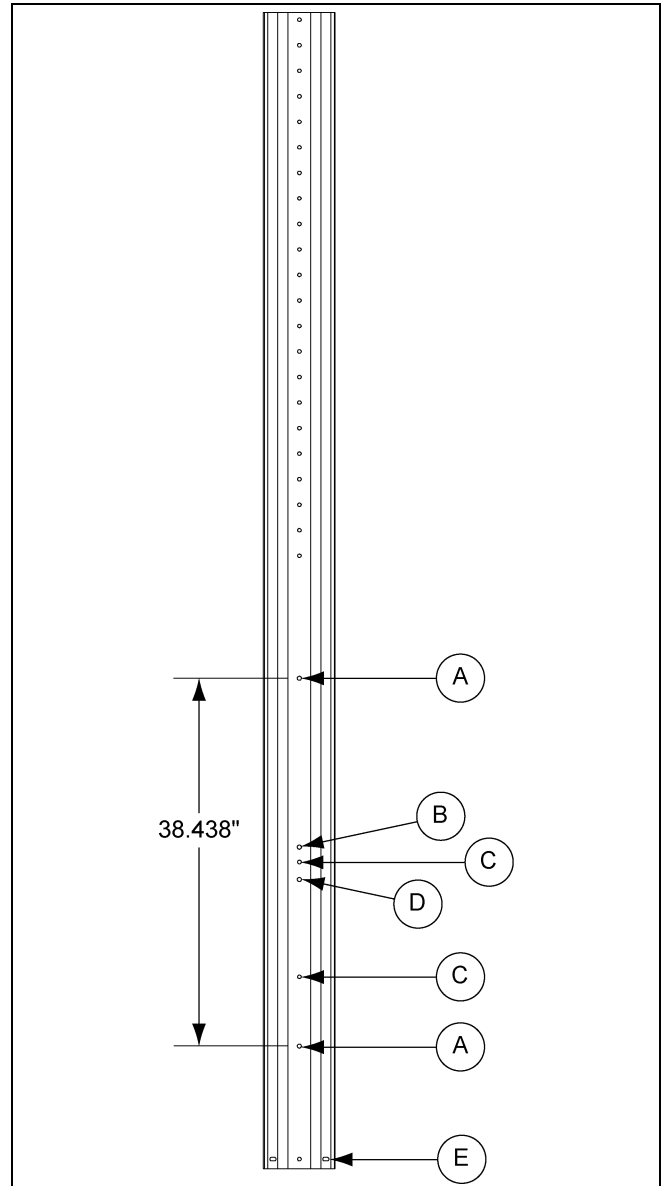


Figure 13C 7' Leg 45° - 7-8 Rings (BLK-12538)

Ref #	Description
A	Cross Tie
B	Ladder Standoff
C	22" Hopper Brace
D	16" Hopper Brace
E	Ladder Standoff (5-7 Ring Tank)
F	Ladder Standoff (6-8 Ring Tank)
G	Leg Anchor

Ref #	Description
A	Cross Tie
B	22" Hopper Brace
C	Ladder Standoff
D	16" Hopper Brace
E	Leg Anchor

13. Legs and Leg Bracing

Bracing Hole Layout (Continued)

See bracing notes [on Page 77](#).

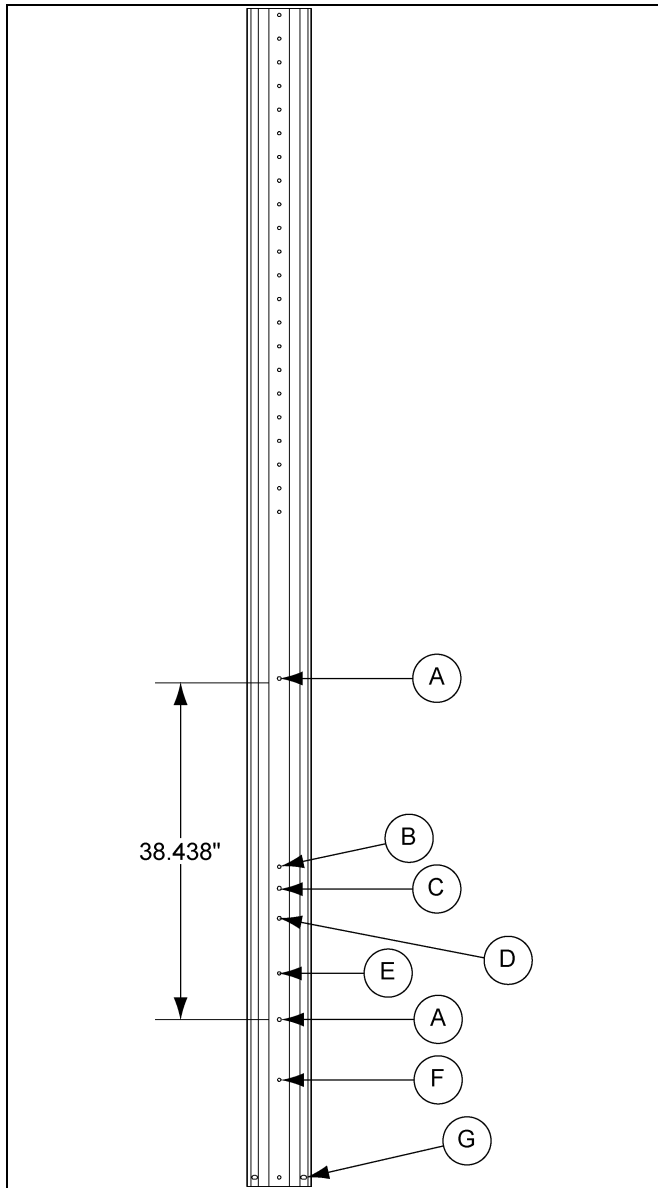


Figure 13D 9' Leg 45° - 7-11 Rings (BLK-12505)

Ref #	Description
A	Cross Tie
B	22" Hopper Brace
C	Ladder Standoff
D	16" Hopper Brace
E	Ladder Standoff (7, 9 and 11 Rings)
F	Ladder Standoff (8 and 10 Rings)
G	Leg Anchor

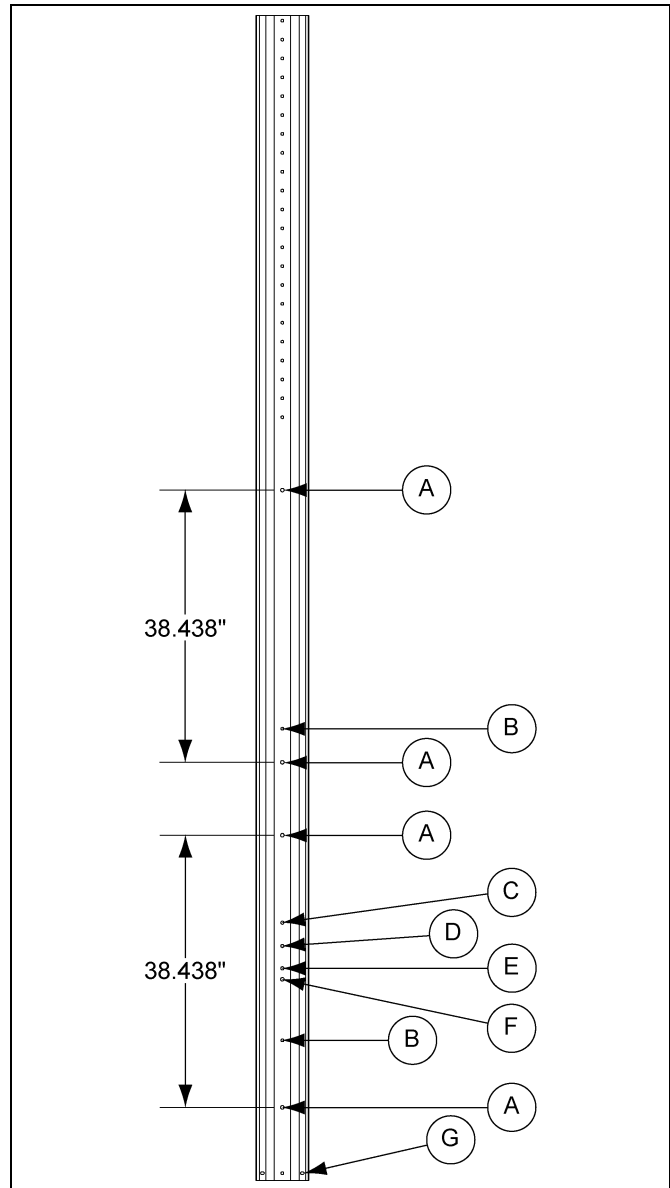


Figure 13E 7' Leg 67° - 7-8 Rings and
9' Leg 60° - 7-11 Rings (BLK-12504)

Ref #	Description
A	Cross Tie
B	Ladder Standoff
C	22" Hopper Brace (7' 67°)
D	22" Hopper Brace (9' 67°)
E	16" Hopper Brace (7' 67°)
F	16" Hopper Brace (9' 67°)
G	Leg Anchor

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

13. Legs and Leg Bracing



Figure 13F 1 Set of Cross Tie Braces



Figure 13G Cross Tie to Cross Tie Connection



Figure 13H 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 78](#) 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.*

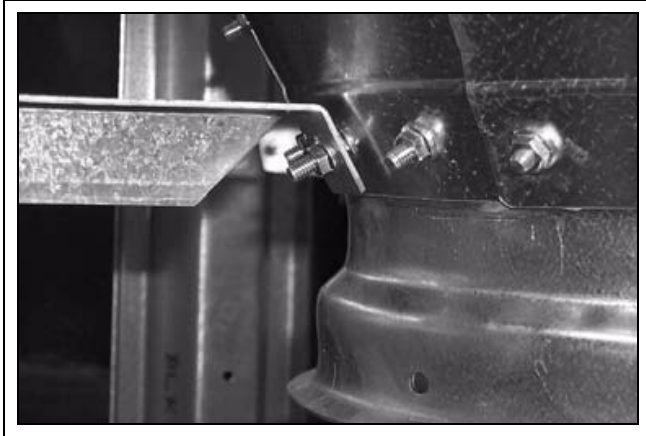


Figure 13I



Figure 13J

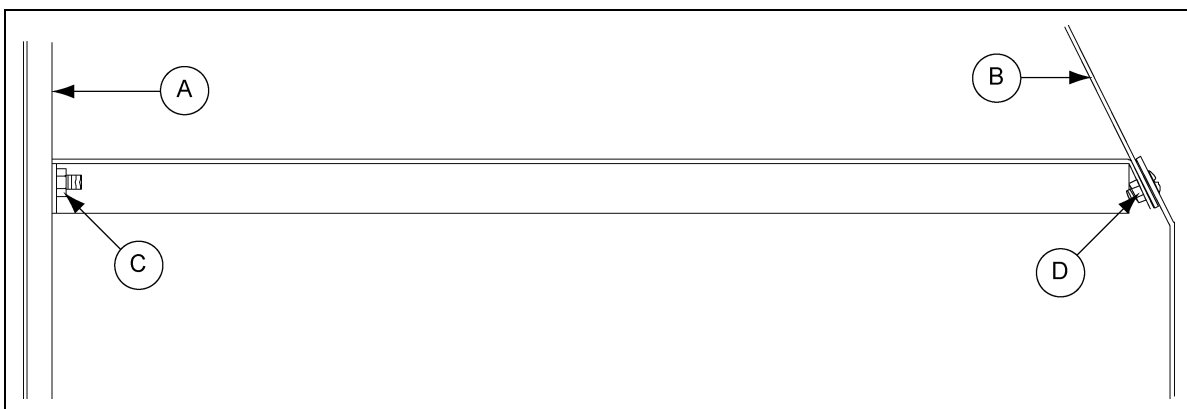


Figure 13K

Ref #	Description
A	Leg
B	Hopper

Ref #	Description
C	3/8" x 1" Bolt
D	5/16" x 3/4" Truss Head Bolt (Head to Inside)

13. Legs and Leg Bracing

Tank Description	Brace Part #	Qty	Brace Part #	Qty
	16" Hopper		22" Hopper	
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.

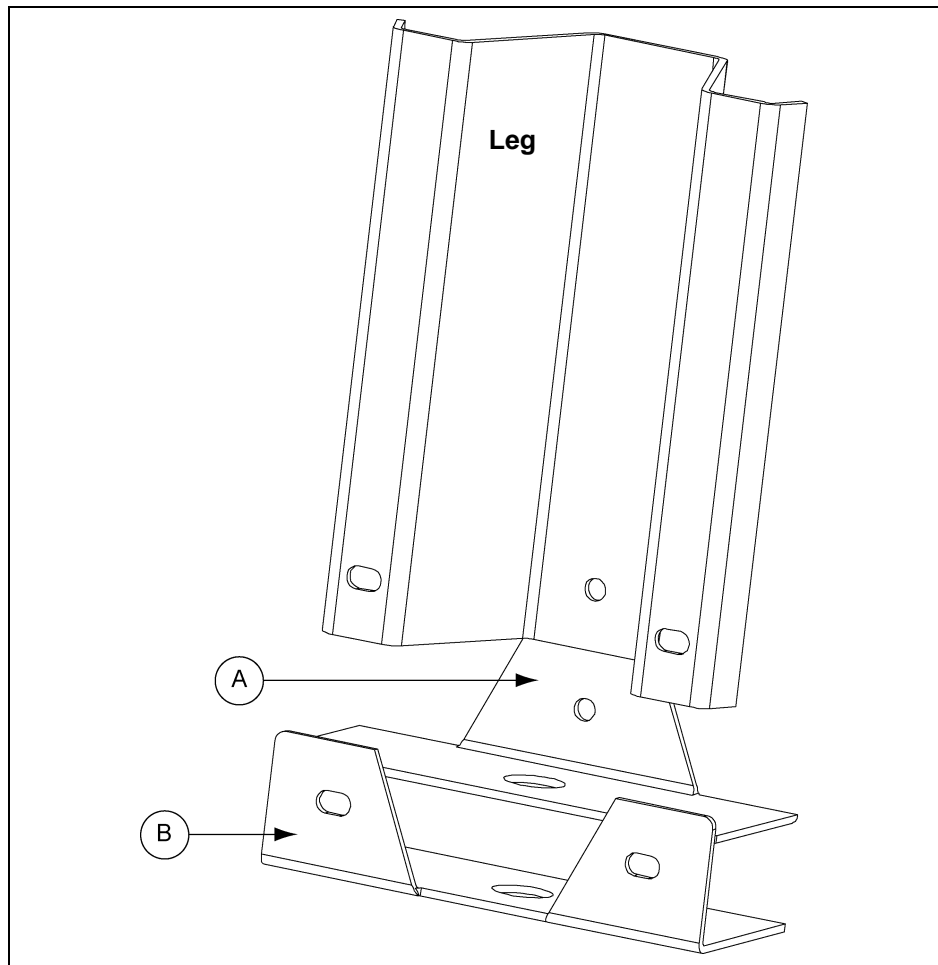


Figure 13L

Ref #	Part #	Description
A	BLK-10057	Back Leg Anchor Base (1 Tab)
B	BLK-10058	Front Leg Anchor Base (2 Tabs)

Leg Anchors (Continued)

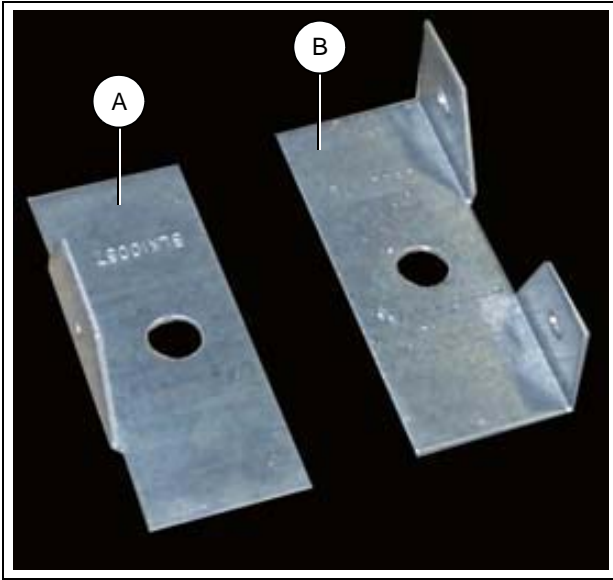


Figure 13M

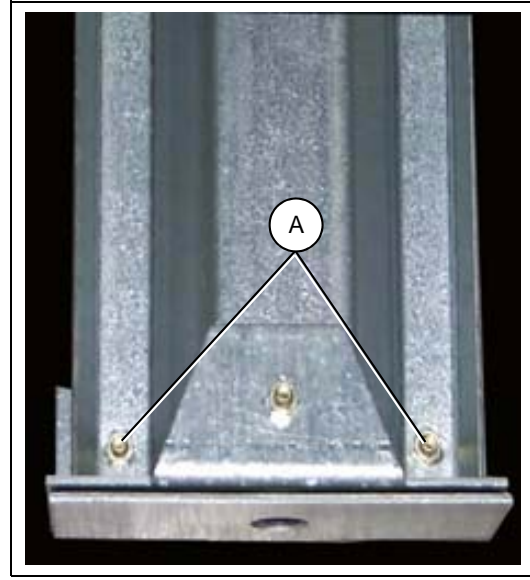


Figure 13N

Ref #	Part #	Description
A	BLK-10057	Back Leg Anchor Base
B	BLK-10058	Front Leg Anchor Base

Ref #	Description
A	Use 5/16" x 1" bin bolts and nuts when attaching the leg to base. Make sure a washer is used with the slots.

NOTE: Some tanks including, 9' 60° (7-11 ring) and 7' 67° (7-8 ring) tanks will have legs with welded base plates. (See Figure 130.)

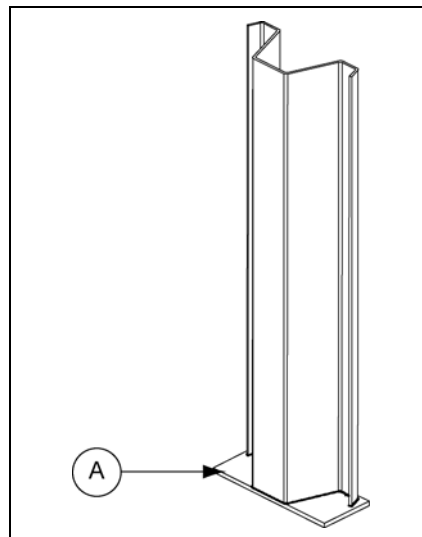


Figure 130

Ref #	Part #	Description
A	BLK-12503	Base Plate

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 illustration. 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 81-82.)

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.



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

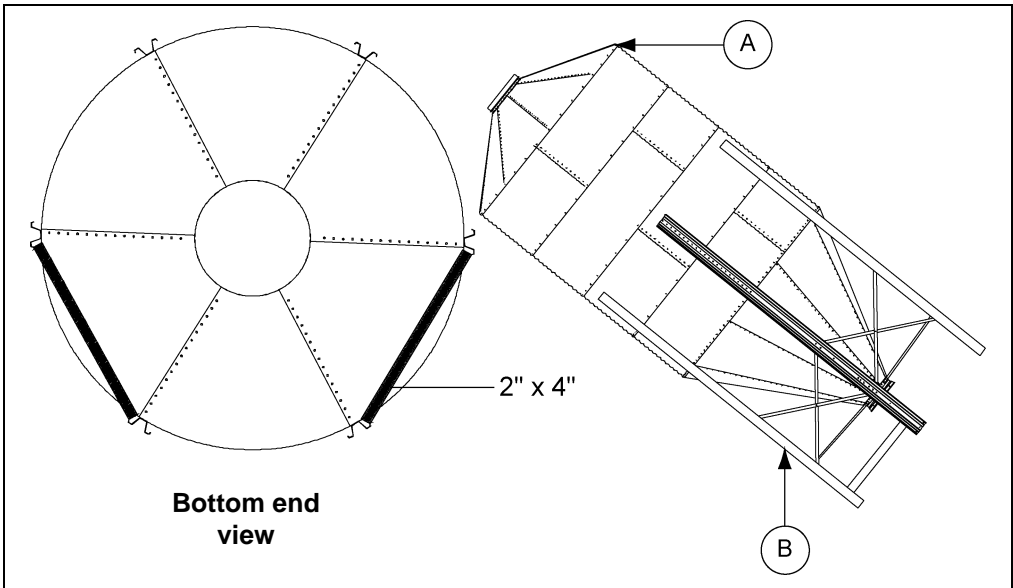


Figure 14A

Ref #	Description
A	Location of cable or sling wrapped around tank
B	Anchor or stabilize to prevent sliding when raising

Lifting with Jacks

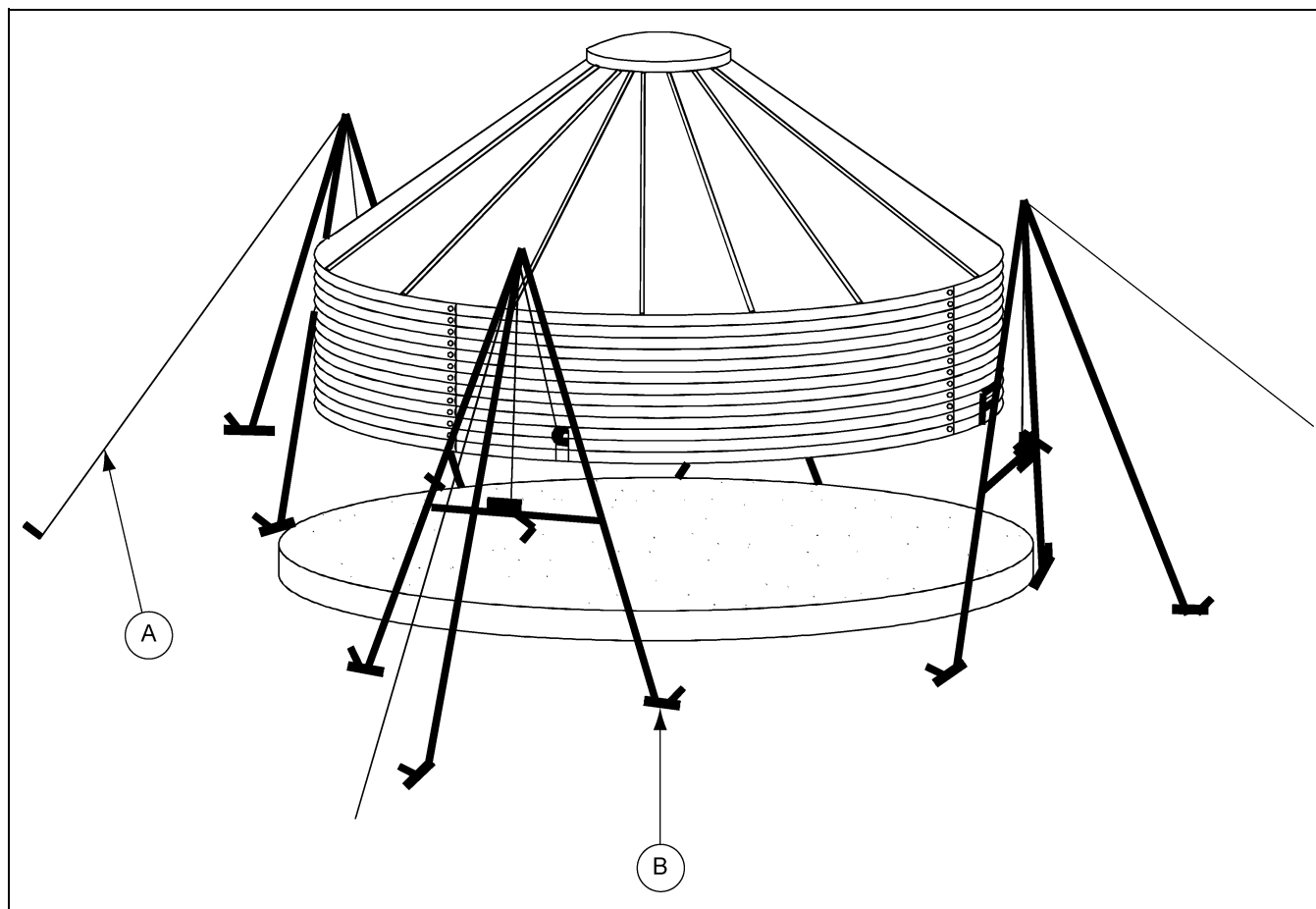


Figure 14B

Ref #	Description
A	Anchor Cable
B	Anchor Jacks Securely

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 14C

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.



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 14D.)*

Standard Hopper Tank Anchoring

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

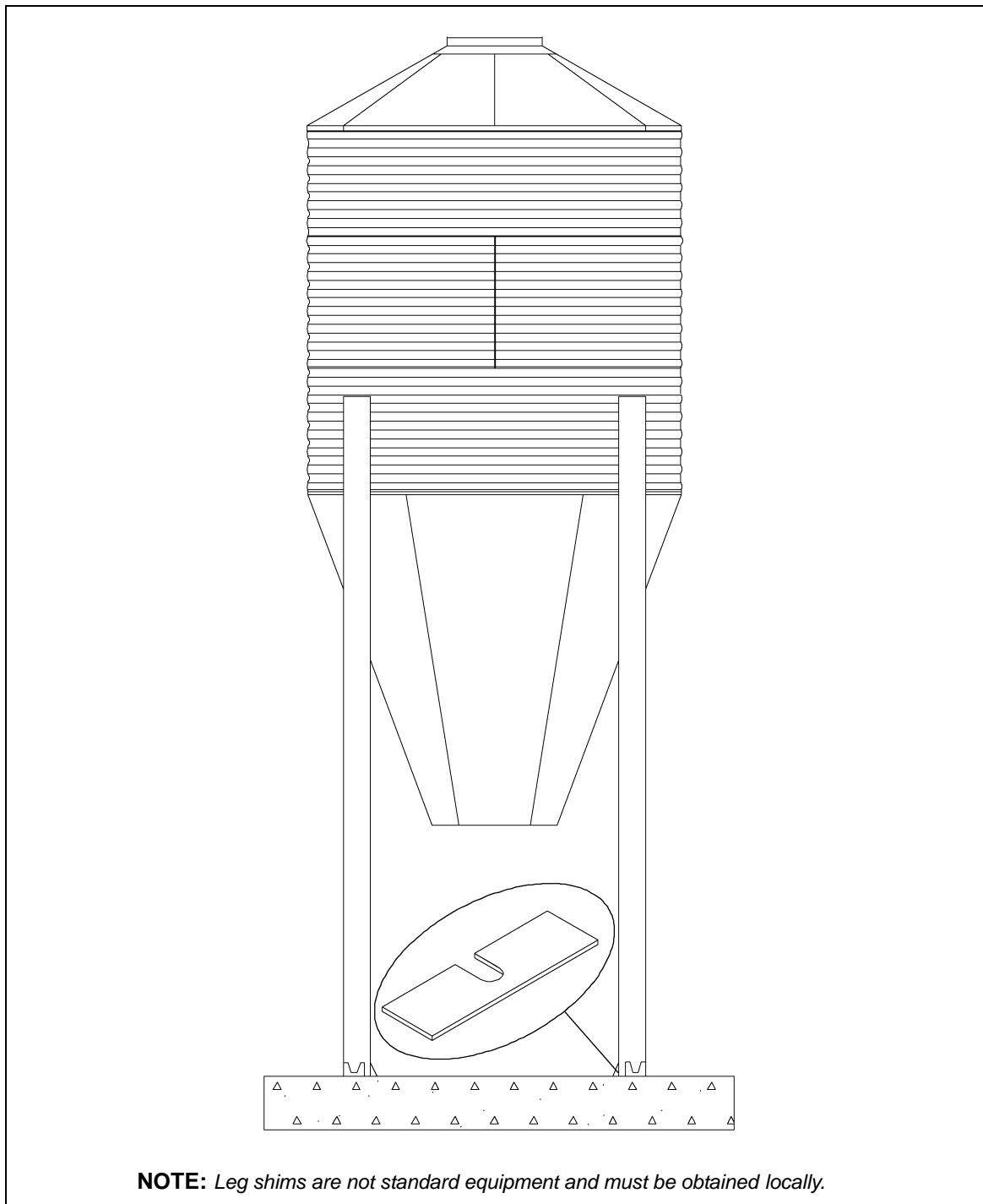


Figure 14D

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.

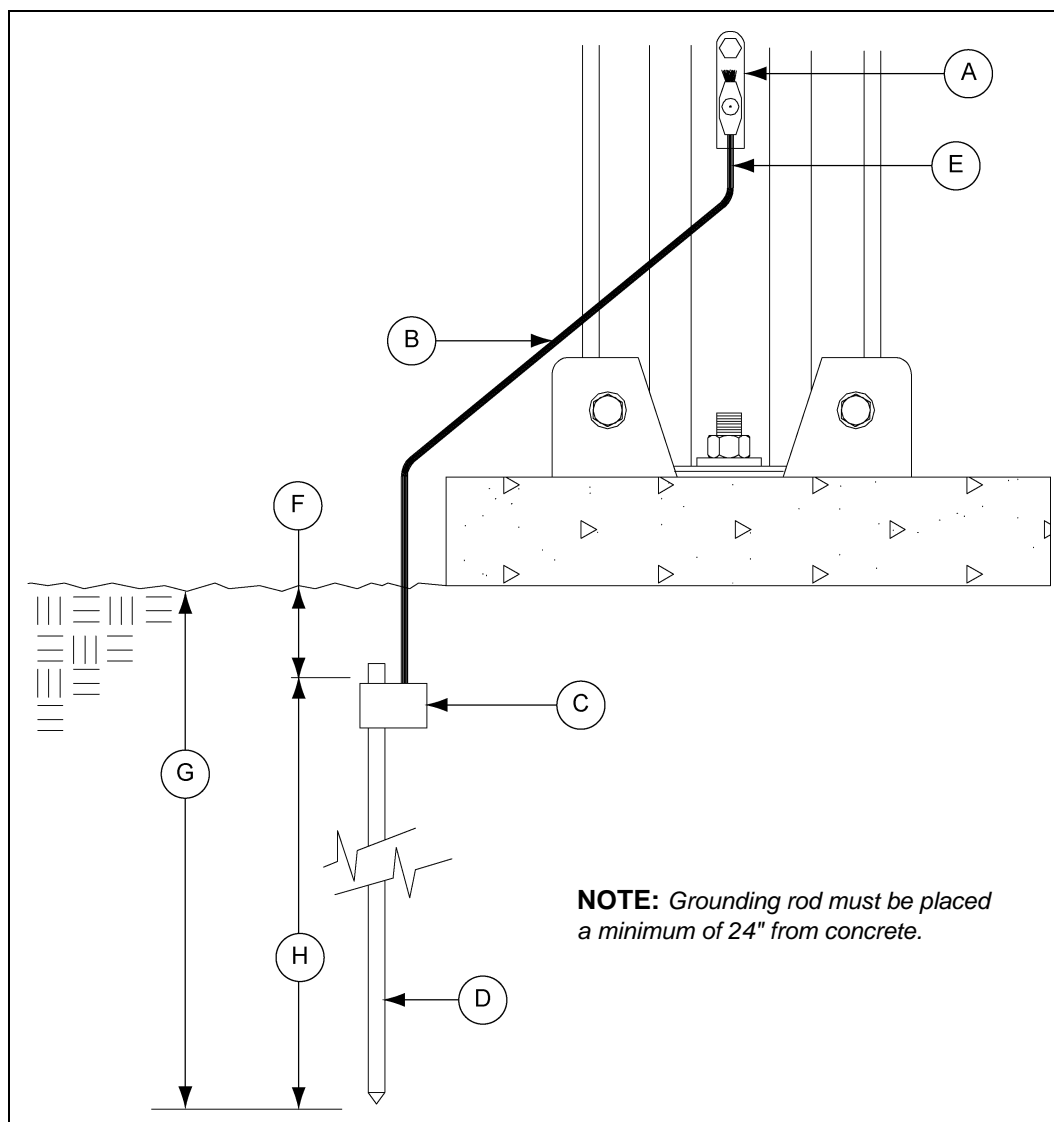


Figure 14E

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

Ref #	Description
E	Number 2 Minimum (Typical)
F	12" (305 mm)
G	10'-0" Minimum (3048 mm)
H	9'-0" Minimum (2743 mm)

Pneumatic Fill Kit Assembly

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

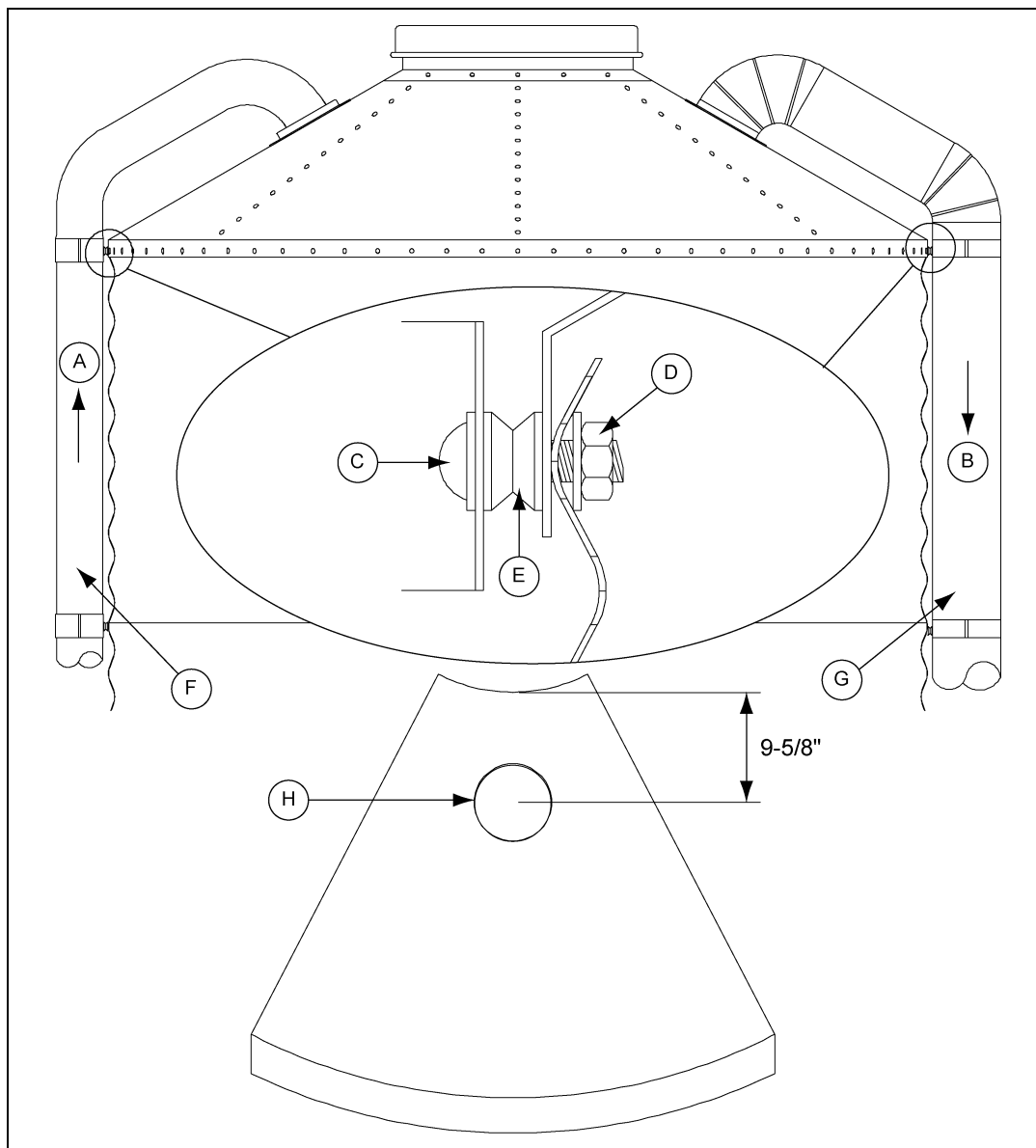


Figure 15A

Ref #	Description
A	Fill
B	Exhaust
C	5/16" Square Neck Bolt
D	Hex Nut 5/16"-18 JS Grade 5 (S-7484)
E	Cupped Washer
F	Fill Tube is 4" Diameter (Available)
G	Exhaust Tube is 6" Diameter
H	5-5/8" Diameter Hole

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.

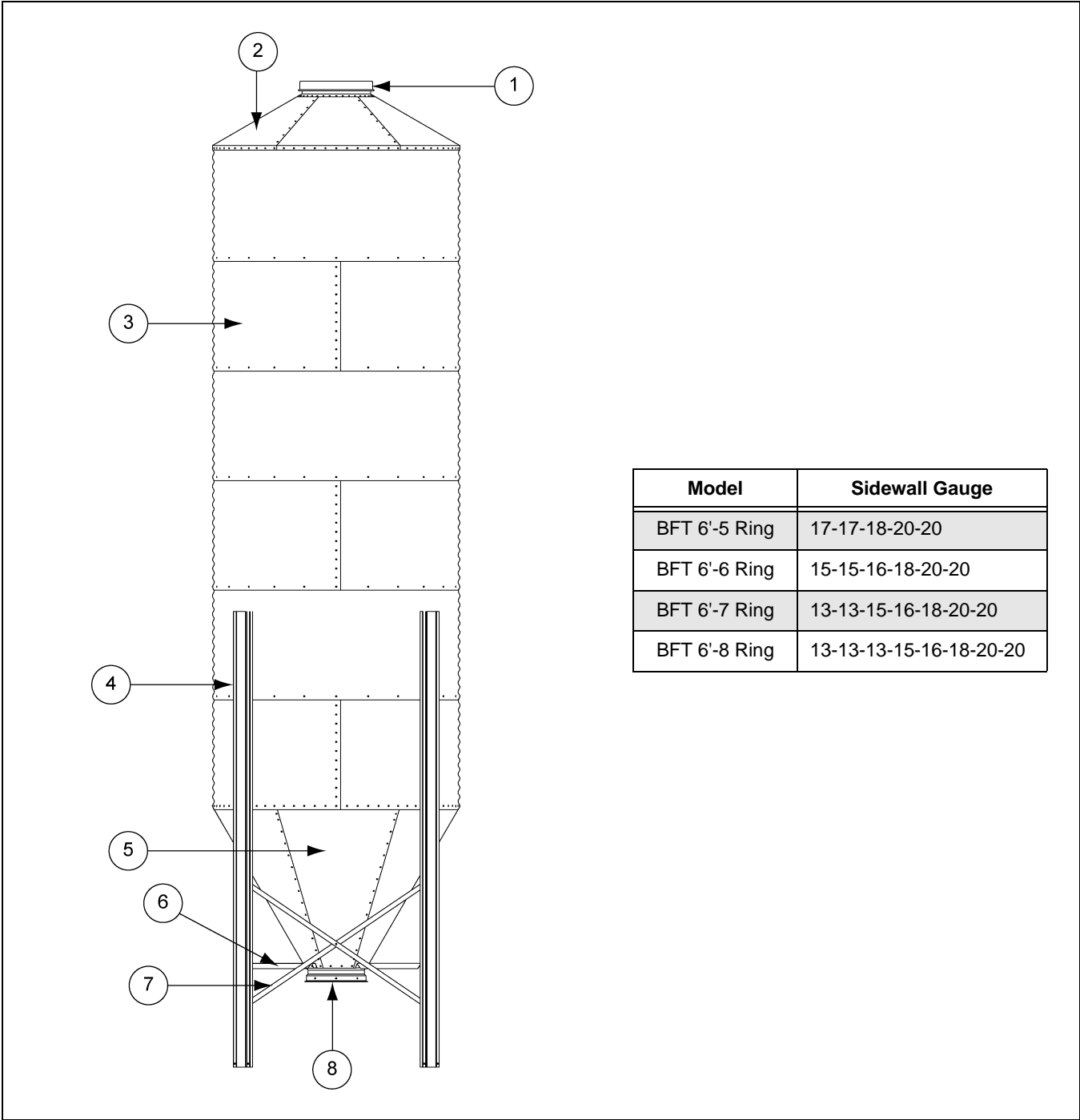
Refer to PNEG-1904, that is included in the pneumatic fill kits for information on installation of the cap latch and lid sealing components.



Figure 15B

1. 6' Diameter 60° Hopper Tank Specifications - ([See Pages 88-89.](#))
2. 6' Diameter 60° Hopper Tank Hardware Specifications - ([See Pages 90-91.](#))
3. 7' Diameter 67° Hopper Tank Specifications - ([See Pages 92-93.](#))
4. 7' Diameter 67° Hopper Tank Hardware Specifications - ([See Pages 94-95.](#))
5. 7' Diameter 45° Hopper Tank Specifications - ([See Pages 96-97.](#))
6. 7' Diameter 45° Hopper Tank Hardware Specifications - ([See Pages 98-99.](#))
7. 9' Diameter 60° Hopper Tank Specifications - ([See Pages 100-101.](#))
8. 9' Diameter 60° Hopper Tank Hardware Specifications - ([See Pages 102-103.](#))
9. 9' Diameter 45° Hopper Tank Specifications - ([See Pages 104-105.](#))
10. 9' Diameter 45° Hopper Tank Hardware Specifications - ([See Pages 106-107.](#))

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

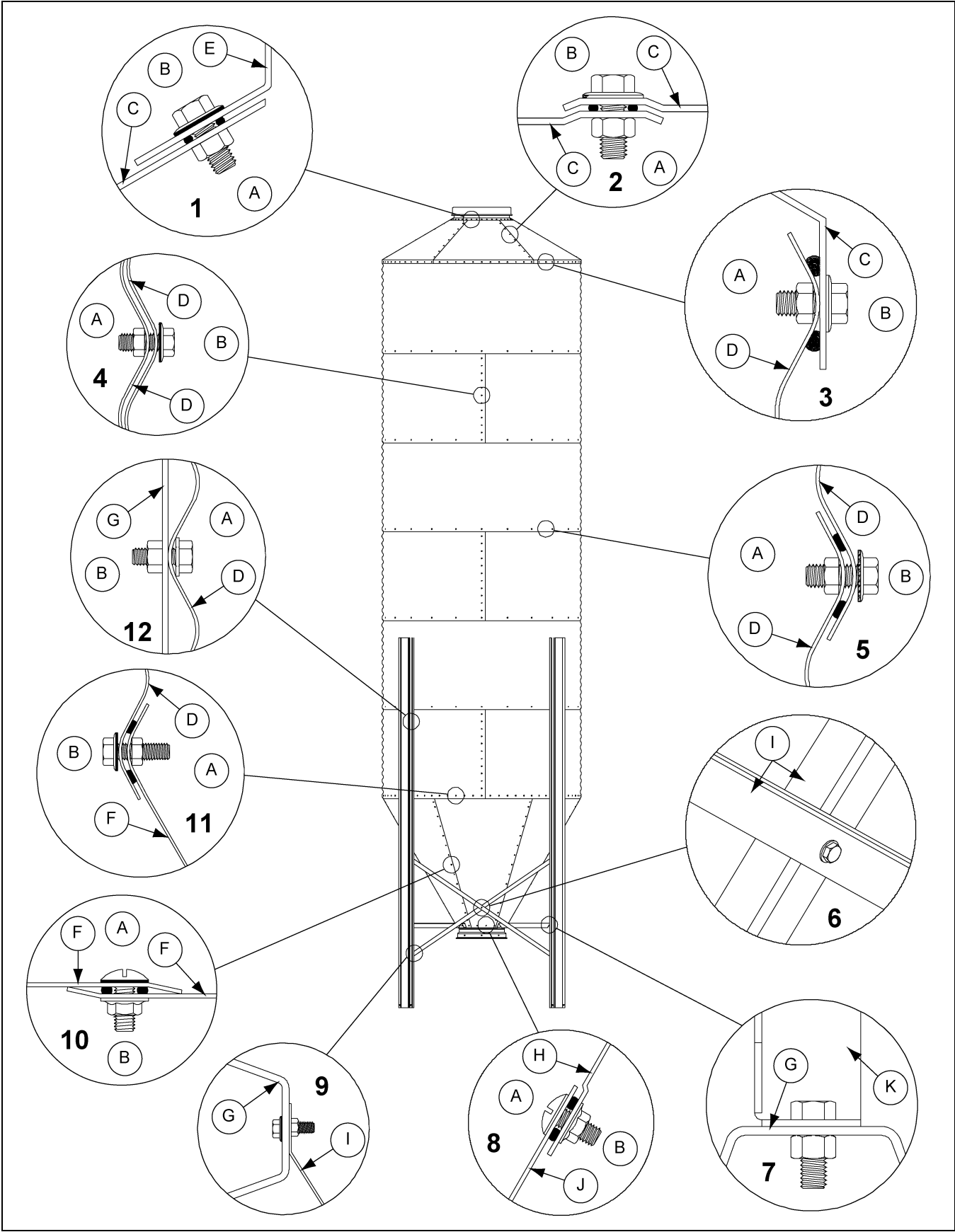
Under Collar Clearance	
16" Collar	28-5/16" (719 mm)
22" Collar	32-7/8" (837 mm)

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 Gauge) (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
N/S	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.

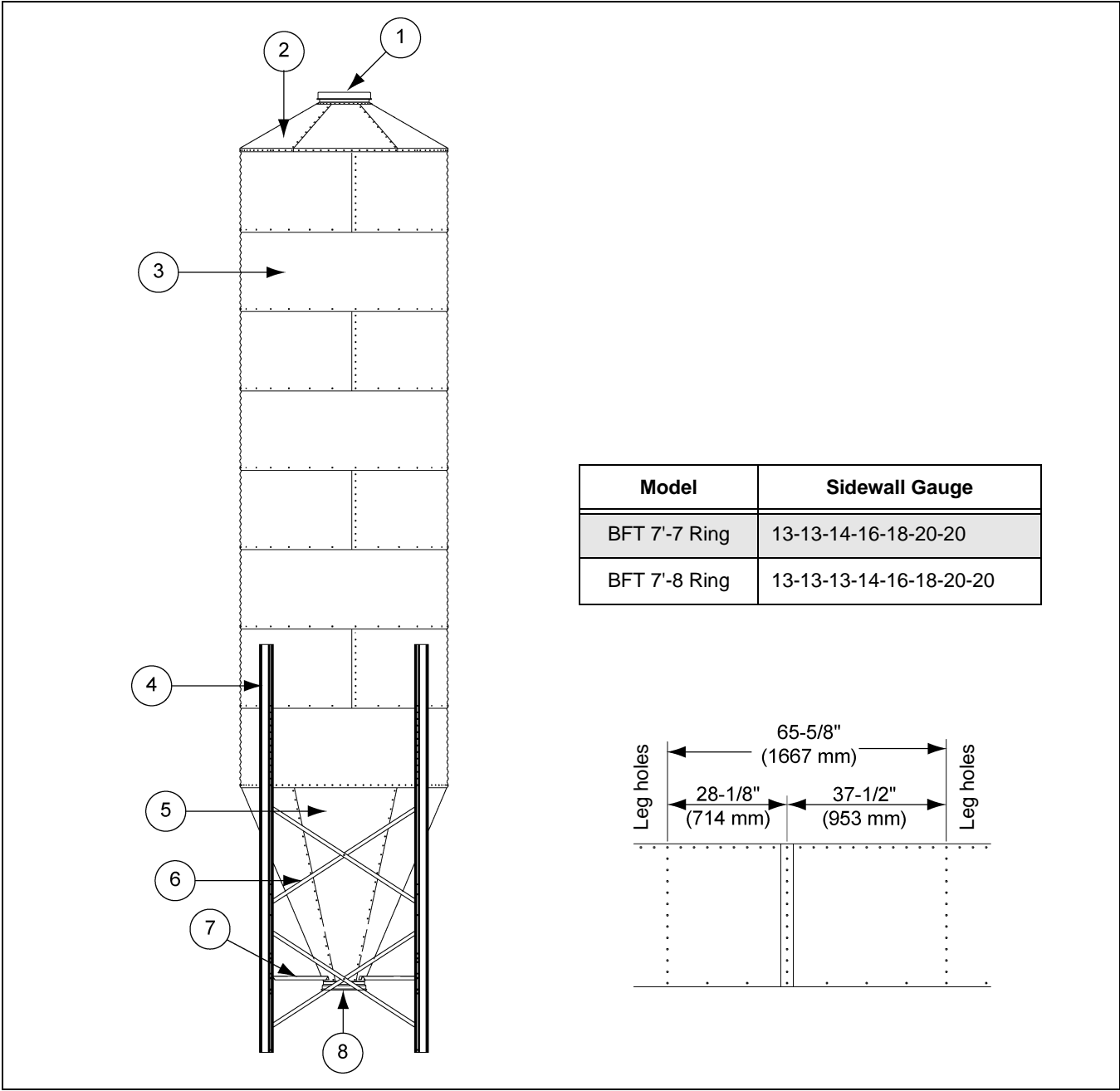
6' Diameter 60° Hopper Tank Hardware Specifications Parts List

Ref #	Part #	Description	Qty
1	S-10260	Bulk Tank Peak Ring to Roof Panels (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.)	36
1	S-7484		36
2	S-10260	Roof Panel to Roof Panel (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.)	48
2	S-7484		48
3	S-10260	Roof Panels to Top Sidewall Sheets (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.)	72
3	S-7484		72
4	S-10260	Vertical Sidewall Sheet Seams (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.)	Varies
4	S-7484		Varies
5	S-10260	Horizontal Sidewall Sheet Seams (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.)	Varies
5	S-7484		Varies
6	S-7485	Cross Tie Brace to Cross Tie Brace (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	4
6	S-7489		4
7	S-7485	Hopper Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	4
7	S-7489		4
8	S-10267	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-10268		24 or 36
9	S-7485	Cross Tie Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	8
9	S-7489		8
10	S-10267	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-10268		90
11	S-10260	Hopper Panels to Sidewall Sheet (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.) (Bolt Head to Inside at Leg to Hopper to Sidewall Connection Only.)	72
11	S-7484		72
12	S-10260	Leg to Sidewall Sheet (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.) (Bolt Heads to Inside of Tank.)	88
12	S-7484		88

Ref #	Description
A	Inside
B	Outside
C	Roof Sheet
D	Sidewall Sheet
E	Peak Ring Collar
F	Hopper Panel

Ref #	Description
G	Leg
H	Offset Hopper Panel
I	Cross Tie
J	Hopper Collar
K	Hopper Brace

7' Diameter 67° Hopper Tank Specifications



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

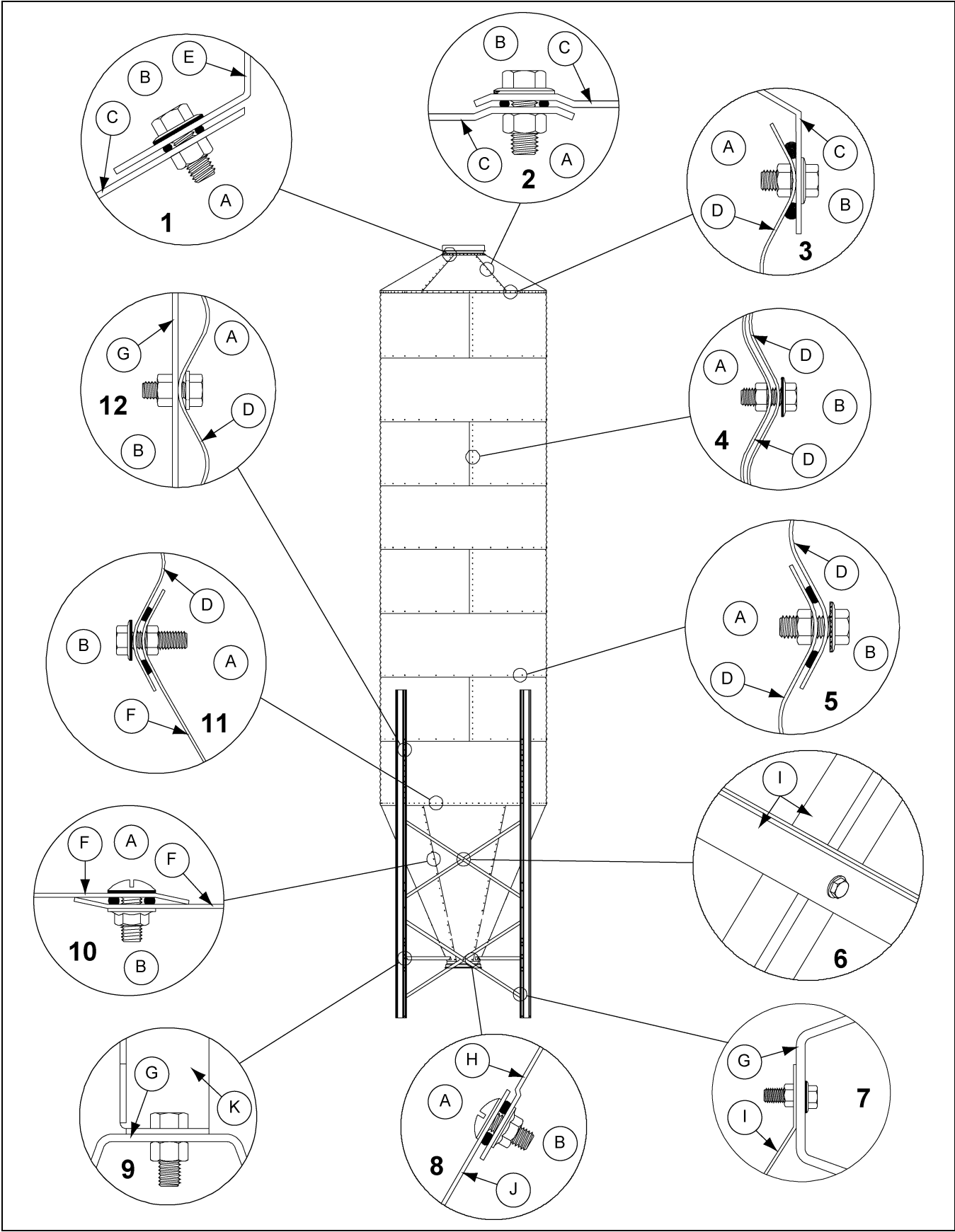
IMPORTANT: Vertical seams of body sheets with leg holes *MUST* be bolted together to provide 65-5/8" (1667 mm) between leg holes.

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° Offset Hopper Panel 16" Opening (18 Gauge) (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' Inside Cross Tie Brace (72.49") (12 Gauge)	8
8	BLK-12057	7' Outside Cross 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.

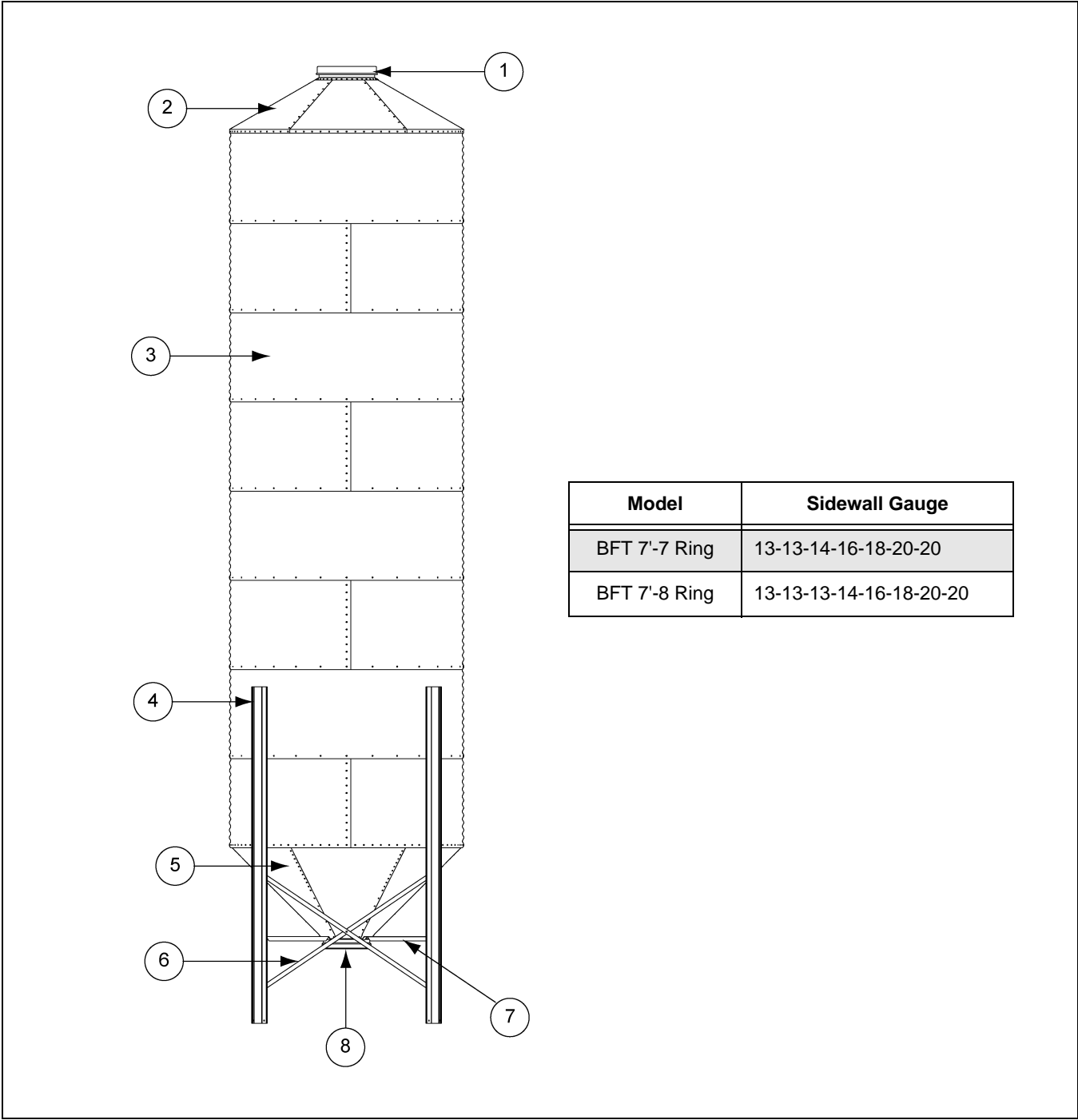
7' Diameter 67° Hopper Tank Hardware Specifications Parts List

Ref #	Part #	Description	Qty
1	S-10260	Bulk Tank Peak Ring to Roof Panels (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.)	36
1	S-7484		36
2	S-10260	Roof Panel to Roof Panel (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.)	60
2	S-7484		60
3	S-10260	Roof Panels to Top Sidewall Sheets (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.)	84
3	S-7484		84
4	S-10260	Vertical Sidewall Sheet Seams (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.)	Varies
4	S-7484		Varies
5	S-10260	Horizontal Sidewall Sheet Seams (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.)	Varies
5	S-7484		Varies
6	S-7485	Cross Tie Brace to Cross Tie Brace (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	8
6	S-7489		8
7	S-7485	Cross Tie Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	16
7	S-7489		16
8	S-10267	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-10268		24 or 36
9	S-7485	Hopper Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	4
9	S-7489		4
10	S-10267	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-10268		162
11	S-10260	Hopper Panels to Sidewall Sheet (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.) (Bolt Head to Inside at Leg to Hopper to Sidewall Connection Only.)	84
11	S-7484		84
12	S-10260	Leg to Sidewall Sheet (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.) (Bolt Heads to Inside of Tank.)	52 or 88
12	S-7484		52 or 88

Ref #	Description
A	Inside
B	Outside
C	Roof Sheet
D	Sidewall Sheet
E	Peak Ring Collar
F	Hopper Panel

Ref #	Description
G	Leg
H	Offset Hopper Panel
I	Cross Tie
J	Hopper Collar
K	Hopper Brace

7' Diameter 45° Hopper Tank Specifications



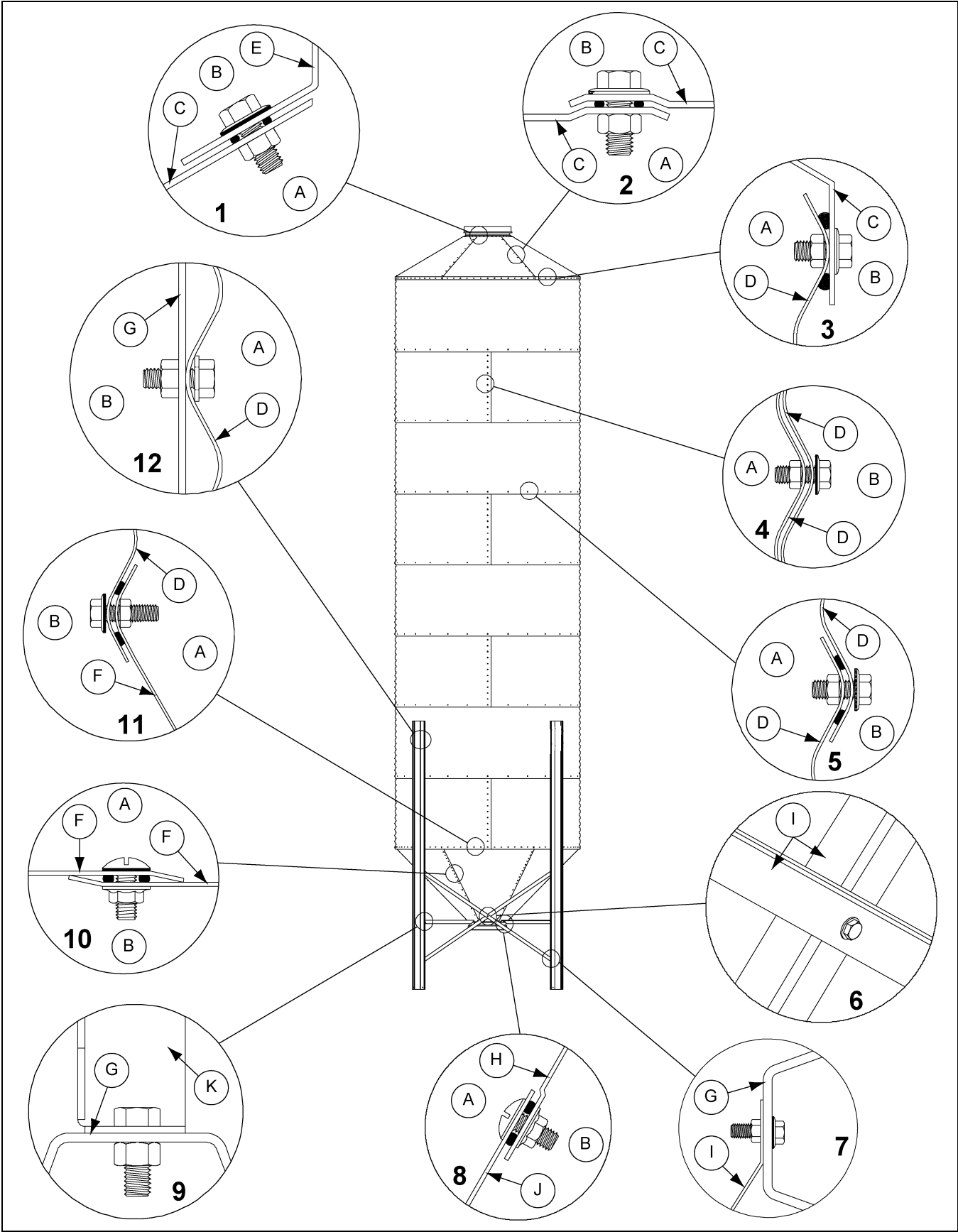
Under Collar Clearance	
16" Collar	29-3/4" (756 mm)
22" Collar	32-5/16" (821 mm)

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 Gauge) (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.

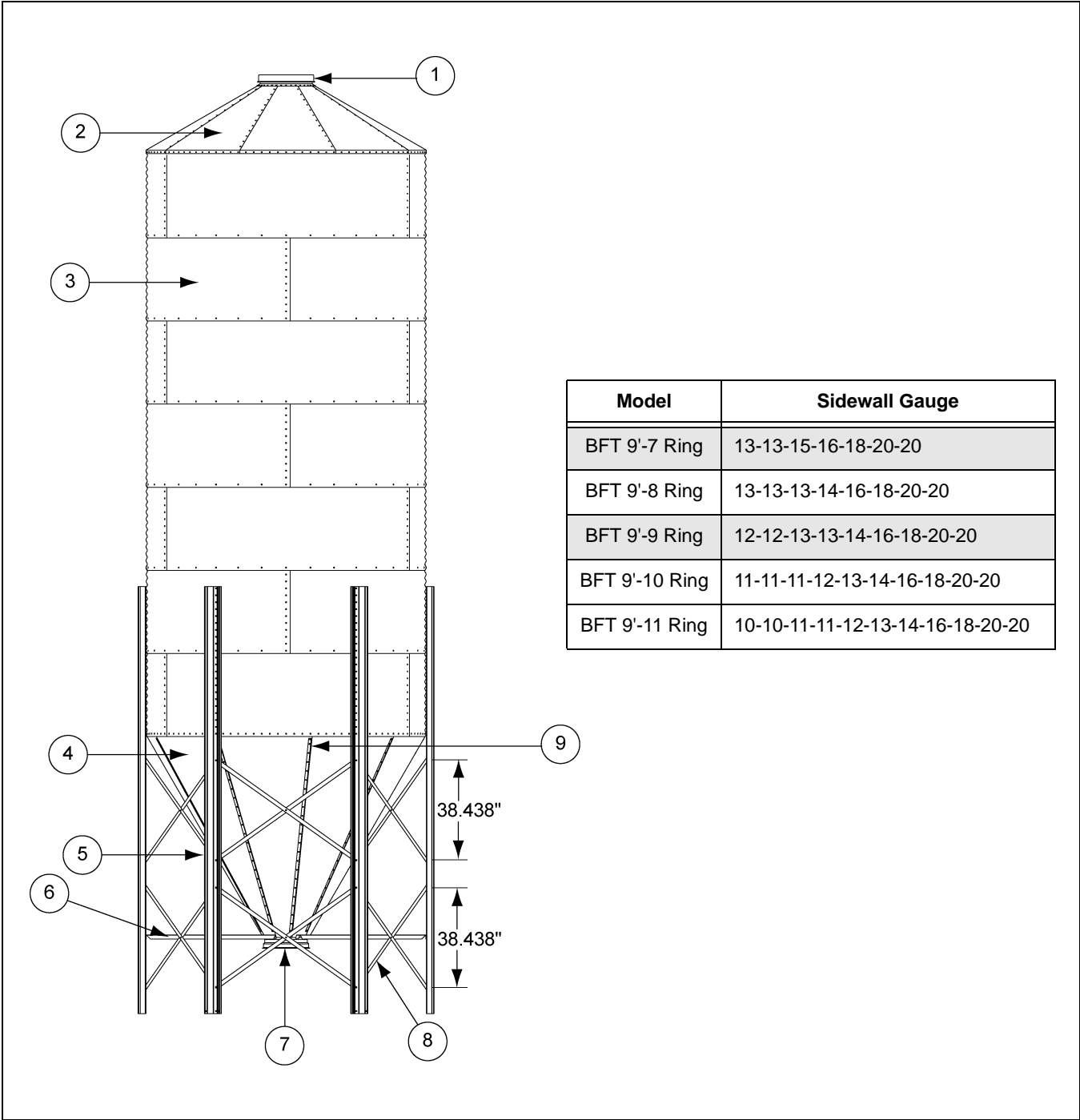
7' Diameter 45° Hopper Tank Hardware Specifications Parts List

Ref #	Part #	Description	Qty
1	S-10260	Bulk Tank Peak Ring to Roof Panels (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.)	36
1	S-7484		36
2	S-10260	Roof Panel to Roof Panel (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.)	60
2	S-7484		60
3	S-10260	Roof Panels to Top Sidewall Sheets (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.)	84
3	S-7484		84
4	S-10260	Vertical Sidewall Sheet Seams (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.)	Varies
4	S-7484		Varies
5	S-10260	Horizontal Sidewall Sheet Seams (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.)	Varies
5	S-7484		Varies
6	S-7485	Cross Tie Brace to Cross Tie Brace (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	8
6	S-7489		8
7	S-7485	Cross Tie Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	16
7	S-7489		16
8	S-10267	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-10268		18 or 36
9	S-7485	Hopper Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	4
9	S-7489		4
10	S-10267	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-10268		102
11	S-10260	Hopper Panels to Sidewall Sheet (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.) (Bolt Head to Inside at Leg to Hopper to Sidewall Connection Only.)	84
11	S-7484		84
12	S-10260	Leg to Sidewall Sheet (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.) (Bolt Heads to Inside of Tank.)	88
12	S-7484		88

Ref #	Description
A	Inside
B	Outside
C	Roof Sheet
D	Sidewall Sheet
E	Peak Ring Collar
F	Hopper Panel

Ref #	Description
G	Leg
H	Offset Hopper Panel
I	Cross Tie
J	Hopper Collar
K	Hopper Brace

9' Diameter 60° Hopper Tank Specifications



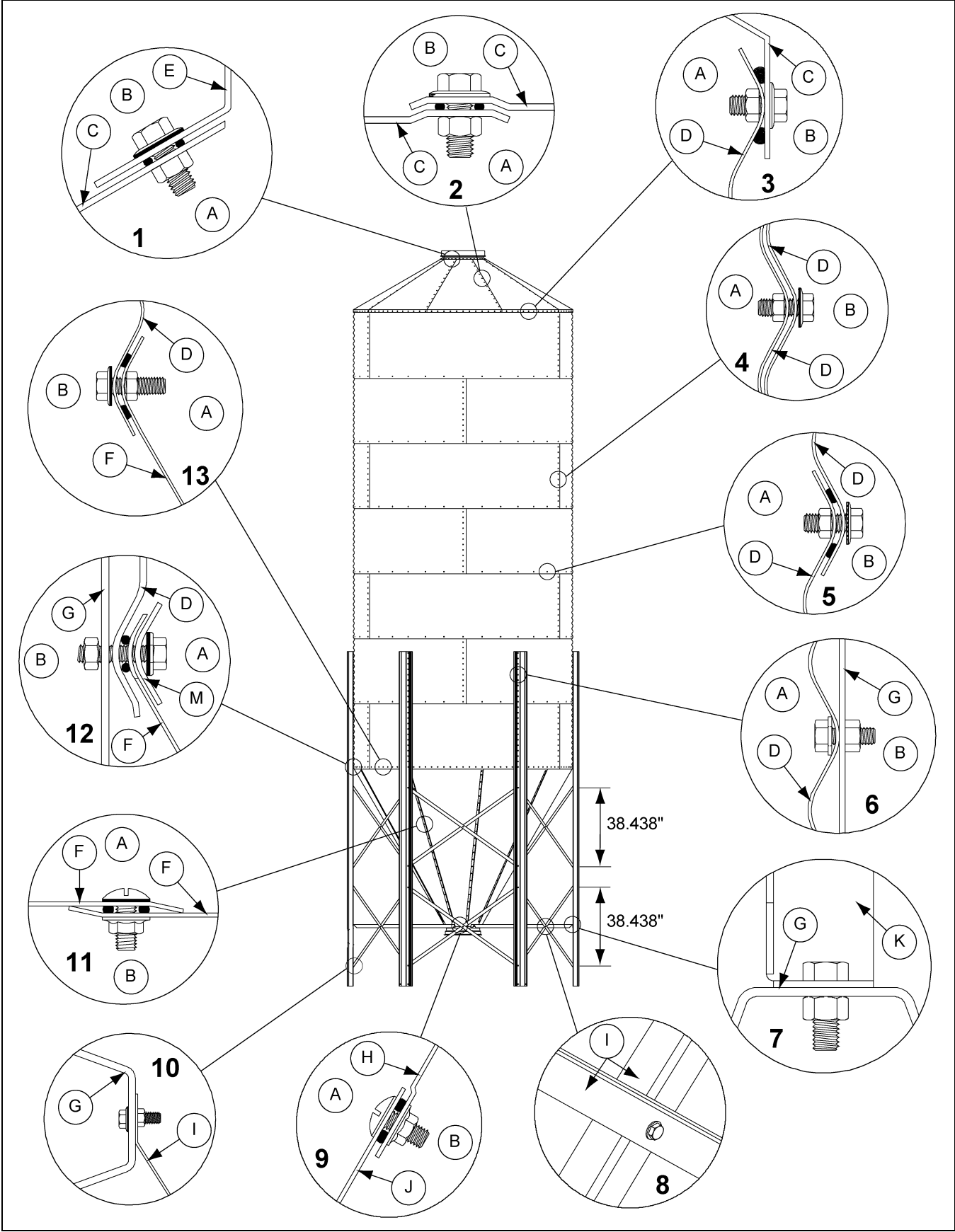
Under Collar Clearance	
16" Collar	28-1/16" (713 mm)
22" Collar	32-5/8" (829 mm)

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 Gauge 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 Gauge Shown (8-9 Rings Only)	9
4	BLK-12369	9' 60° Offset Hopper Panel 16" Opening - 16 Gauge Shown (8-9 Rings Only)	9
4	BLK-12372	9' 60° Offset Hopper Panel 16" Opening - 14 Gauge Shown (10-11 Rings Only)	9
4	BLK-12374	9' 60° Offset Hopper Panel 16" Opening - 14 Gauge 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' Inside Cross Tie Brace (67.8") (12 Gauge) (7-8 Rings)	12
8	BLK-12059	9' Outside Cross Tie Brace (67.8") (12 Gauge) (7-8 Rings)	12
8	BLK-120581K	9' Inside Cross Tie Brace (54.4") (12 Gauge) (9-11 Rings)	18
8	BLK-120591K	9' Outside Cross 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.

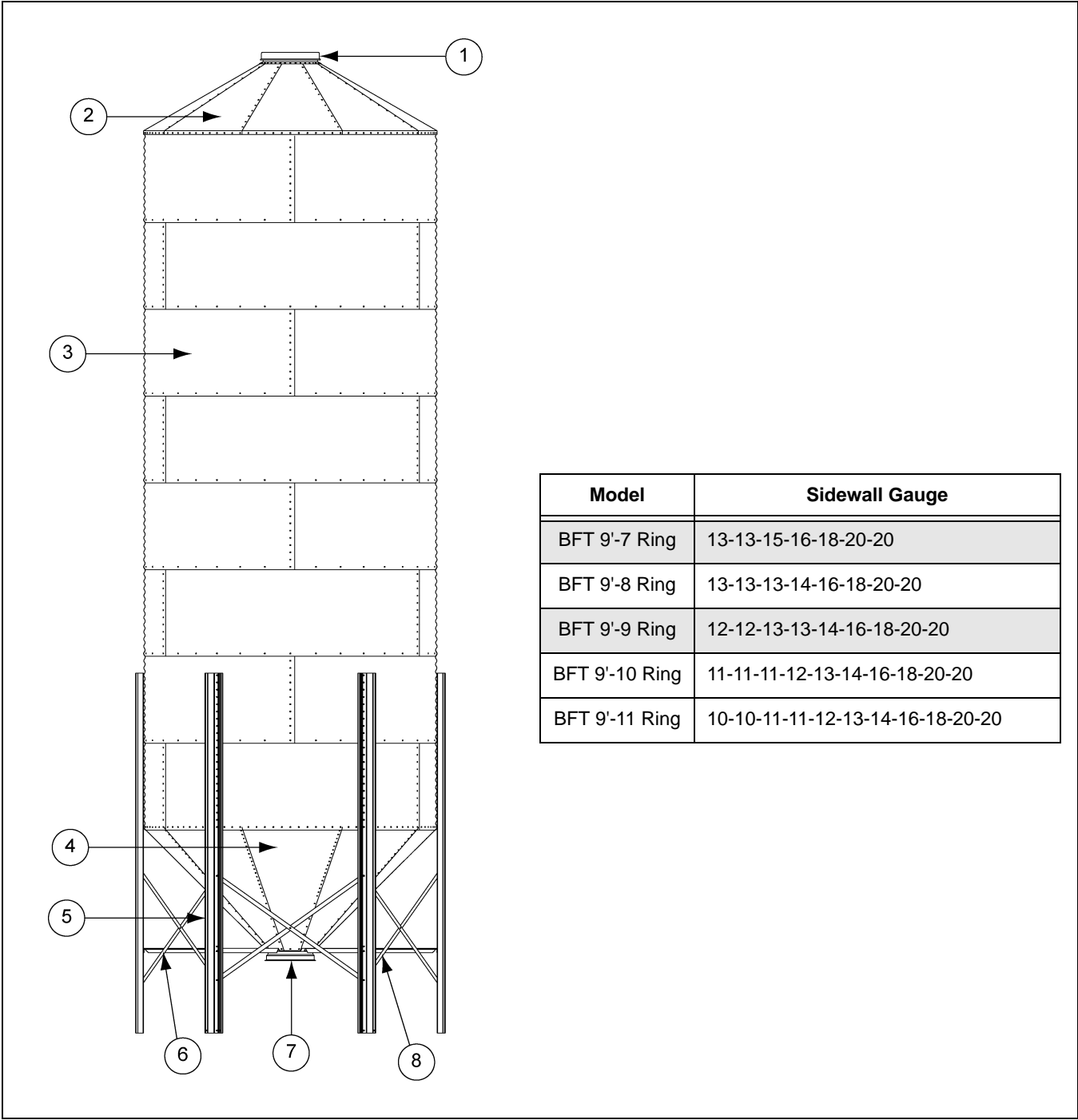
9' Diameter 60° Hopper Tank Hardware Specifications Parts List

Ref #	Part #	Description	Qty
1	S-10260	Bulk Tank Peak Ring to Roof Panels (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.)	36
1	S-7484		36
2	S-10260	Roof Panel to Roof Panel (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.)	117
2	S-7484		117
3	S-10260	Roof Panels to Top Sidewall Sheets (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.)	108
3	S-7484		108
4	S-10260	Vertical Sidewall Sheet Seams (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.)	Varies
4	S-7484		Varies
5	S-10260	Horizontal Sidewall Sheet Seams (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.)	Varies
5	S-7484		Varies
6	S-10260	Leg to Sidewall Sheet (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.) (Bolt Heads to Inside of Tank.)	126 or 189
6	S-7484		126 or 189
7	S-7485	Hopper Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	6 or 9
7	S-7489		6 or 9
8	S-7485	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-7489		12 or 18
9	S-10267	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-10268		18 or 36
10	S-7485	Cross Tie Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	24 or 36
10	S-7489		24 or 36
11	S-10267	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-10268		216
12	S-10260	Leg to Body Sheet to Hopper Connection (Use 10 Gauge Washer under 5/16" x 1" 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-7484		6 or 9
12	BLK-12483		6 or 9
13	S-10260	Hopper Panels to Sidewall Sheet (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.) (Bolt Head to Inside at Leg to Hopper to Sidewall Connection Only.)	108
13	S-7484		108

Ref #	Description
A	Inside
B	Outside
C	Roof Sheet
D	Sidewall Sheet
E	Peak Ring Collar
F	Hopper Panel

Ref #	Description
G	Leg
H	Offset Hopper Panel
I	Cross Tie
J	Hopper Collar
K	Hopper Brace
M	Washer

9' Diameter 45° Hopper Tank Specifications



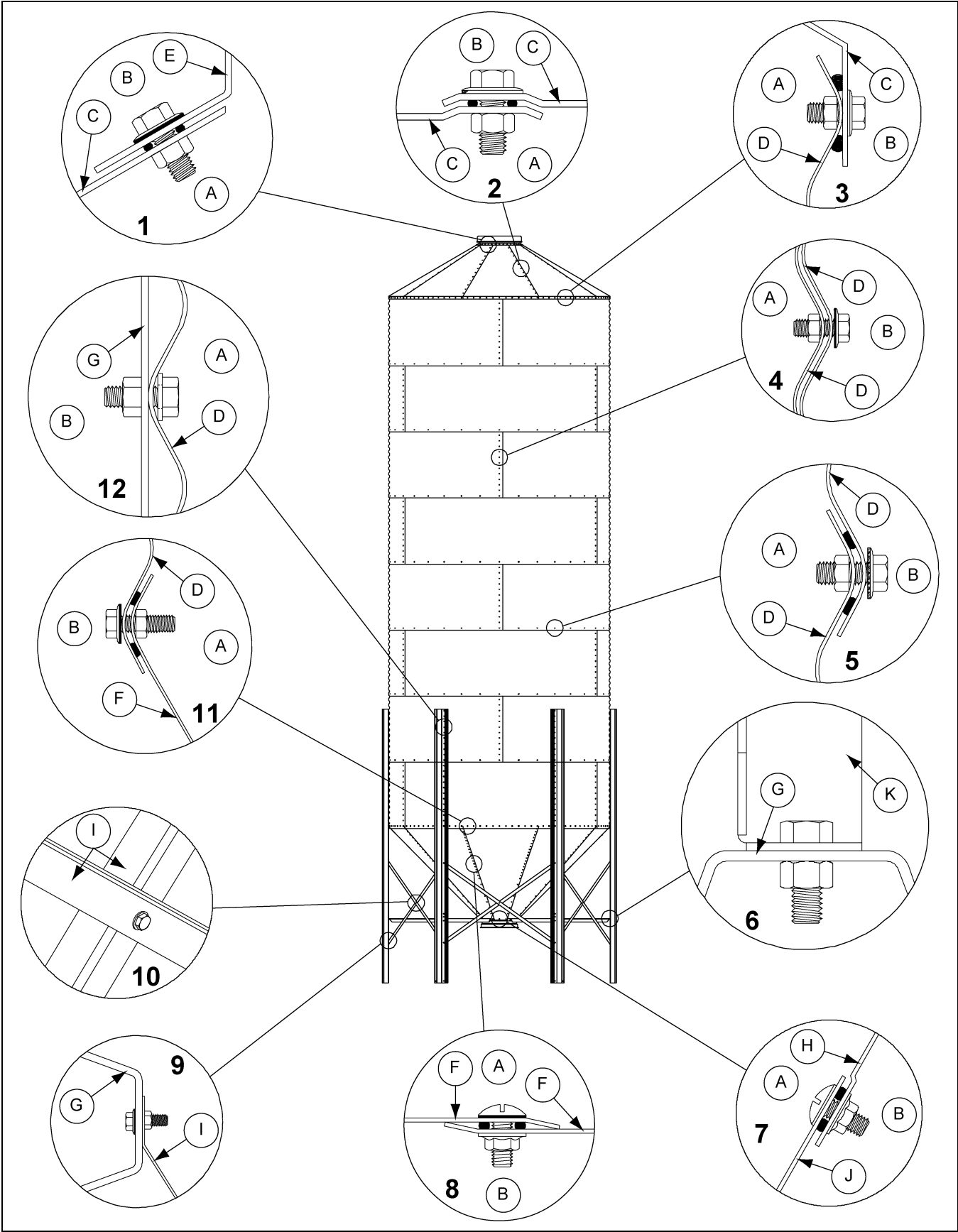
Under Collar Clearance	
16" Collar	30-11/16" (779 mm)
22" Collar	33-1/4" (844 mm)

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 Gauge Shown (7-9 Rings Only)	9
4	BLK-12362	9' 45° Offset Hopper Panel 16" Opening - 14 Gauge (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' Inside Cross Tie Brace (67.788") (12 Gauge) (7-9 Rings)	6 or 9
8	BLK-12059	9' Outside Cross Tie Brace (67.788") (12 Gauge) (7-9 Rings)	6 or 9
8	BLK-120581K	9' Inside Cross Tie Brace (54.4") (12 Gauge) (10-11 Rings)	9
8	BLK-120591K	9' Outside Cross 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-10260	Bulk Tank Peak Ring to Roof Panels (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.)	36
1	S-7484		36
2	S-10260	Roof Panel to Roof Panel (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.)	117
2	S-7484		117
3	S-10260	Roof Panels to Top Sidewall Sheets (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.)	108
3	S-7484		108
4	S-10260	Vertical Sidewall Sheet Seams (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.)	Varies
4	S-7484		Varies
5	S-10260	Horizontal Sidewall Sheet Seams (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.)	Varies
5	S-7484		Varies
6	S-7485	Hopper Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	6 or 9
6	S-7489		6 or 9
7	S-10267	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-10268		18 or 36
8	S-10267	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-10268		225
9	S-7485	Cross Tie Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	12 or 18
9	S-7489		12 or 18
10	S-7485	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-7489		6 or 9
11	S-10260	Hopper Panels to Sidewall Sheet (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.) (Bolt Head to Inside at Leg to Hopper to Sidewall Connection Only.)	108
11	S-7484		108
12	S-10260	Leg to Sidewall Sheet (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.) (Bolt Heads to Inside of Tank.)	126 or 189
12	S-7484		126 or 189

Ref #	Description
A	Inside
B	Outside
C	Roof Sheet
D	Sidewall Sheet
E	Peak Ring Collar
F	Hopper Panel

Ref #	Description
G	Leg
H	Offset Hopper Panel
I	Cross Tie
J	Hopper Collar
K	Hopper Brace

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	* 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%
	All Fiberglass Housings	Lifetime	
	All Fiberglass Propellers	Lifetime	
AP and Cumberland	Flex-Flo/Pan Feeding System Motors	2 Years	** Warranty prorated from list price: 0 to 3 years - no cost to end-user 3 to 5 years - end-user pays 50%
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	† Motors, burner components and moving parts not included. Portable dryer screens included. Tower dryer screens not included.
Grain Systems Farm Fans Zimmerman	Portable and Tower Dryers	2 Years	
	Portable and Tower Dryer Frames and Internal Infrastructure †	5 Years	

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 (12th) month from the date of purchase and continuing until the sixtieth (60th) 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.

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.



**1004 E. Illinois St.
Assumption, IL 62510-0020
Phone: 1-217-226-4421
Fax: 1-217-226-4420
www.gsiag.com**



GSI is a worldwide brand of AGCO Corporation.