



# 6', 7' and 9' Bulk Feed Tank and Grain Hopper Tank Series

Assembly Manual

**PNEG-1460**

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**Date: 11-17-20**



PNEG-1460

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

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

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

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

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

### Safety Guidelines

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. Read and save these instructions.

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-0001-4**

## 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.**



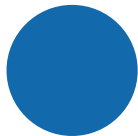
This symbol is used to address practices not related to personal injury.



This symbol indicates a general hazard.



This symbol indicates a prohibited activity.



This symbol indicates a mandatory action.

ST-0005-2

## 2. Safety

### 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-0058-2

### 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
Located on the BFT lid.	DC-2484		Warning, Do not enter center fill opening

## Bulk Feed Tank Assembly Manual General Instructions

First, read the assembly manual completely before starting to assemble your Bulk Feed Tank. Check the 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 82.)
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)

## 14



# 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

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

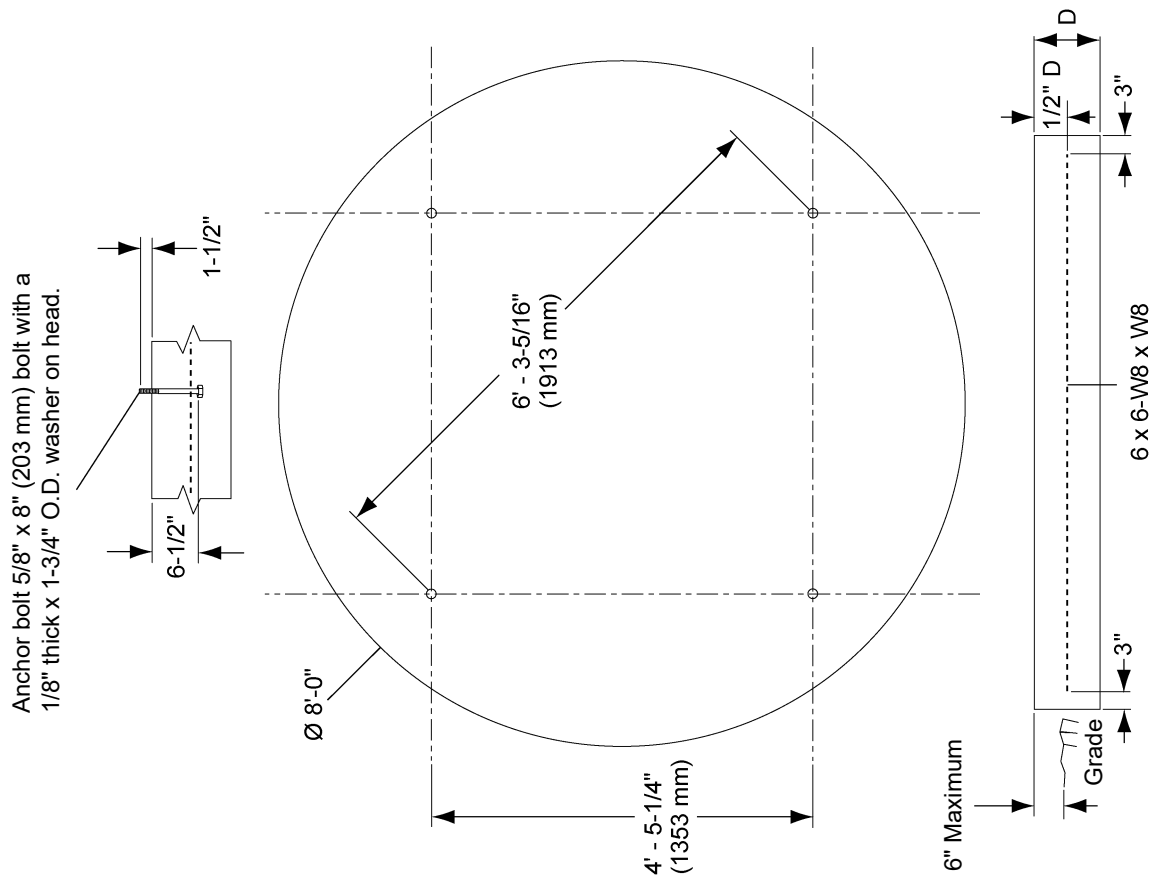
All instructions shall be construed as recommendations only. The actual installation may vary according to local conditions. The GSI Group assumes no liability for results arising from the use of such recommendations.

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

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

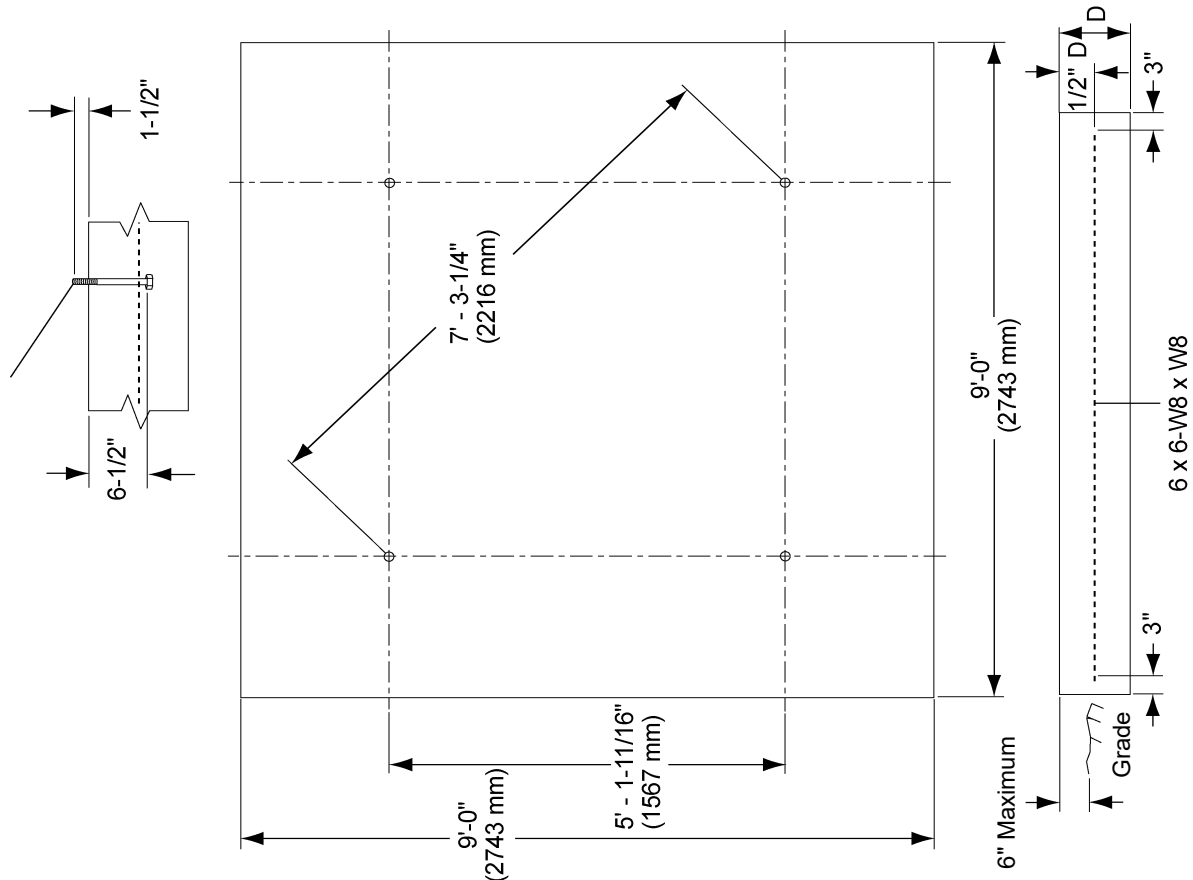
**GENERAL NOTES:**

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



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

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

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



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

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

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

GENERAL NOTES:

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

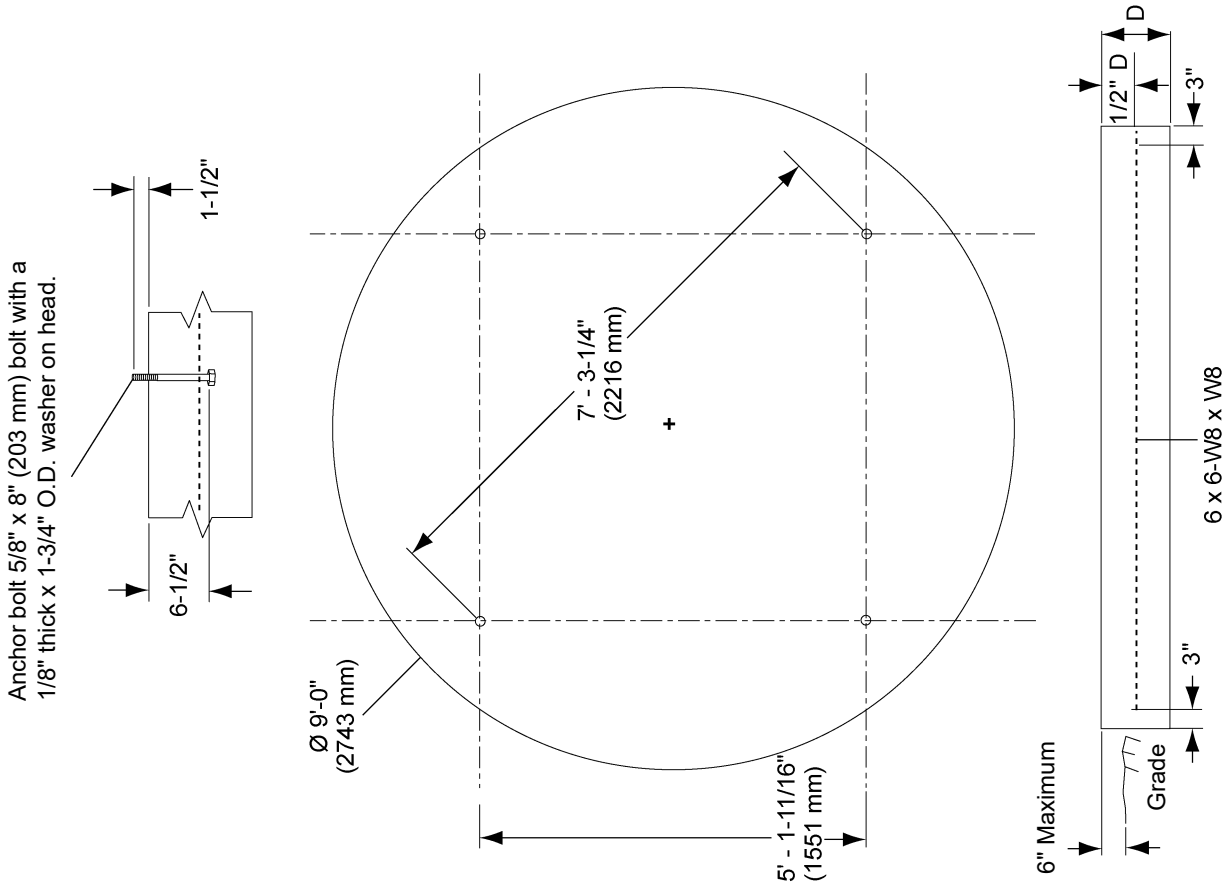


Figure 5D 7' 1-8 Rings BFT/ GHT 45° and 67° Round Pad

# 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"	4.9 Cu. Yards	125 Sq. Ft.	6
7	16"	6.0 Cu. Yards	125 Sq. Ft.	6
8	17"	6.4 Cu. Yards	125 Sq. Ft.	6
9	17"	6.4 Cu. Yards	125 Sq. Ft.	6

\*

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

\*

## GENERAL NOTES:

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

\* Applies to 45° hopper Tank only.

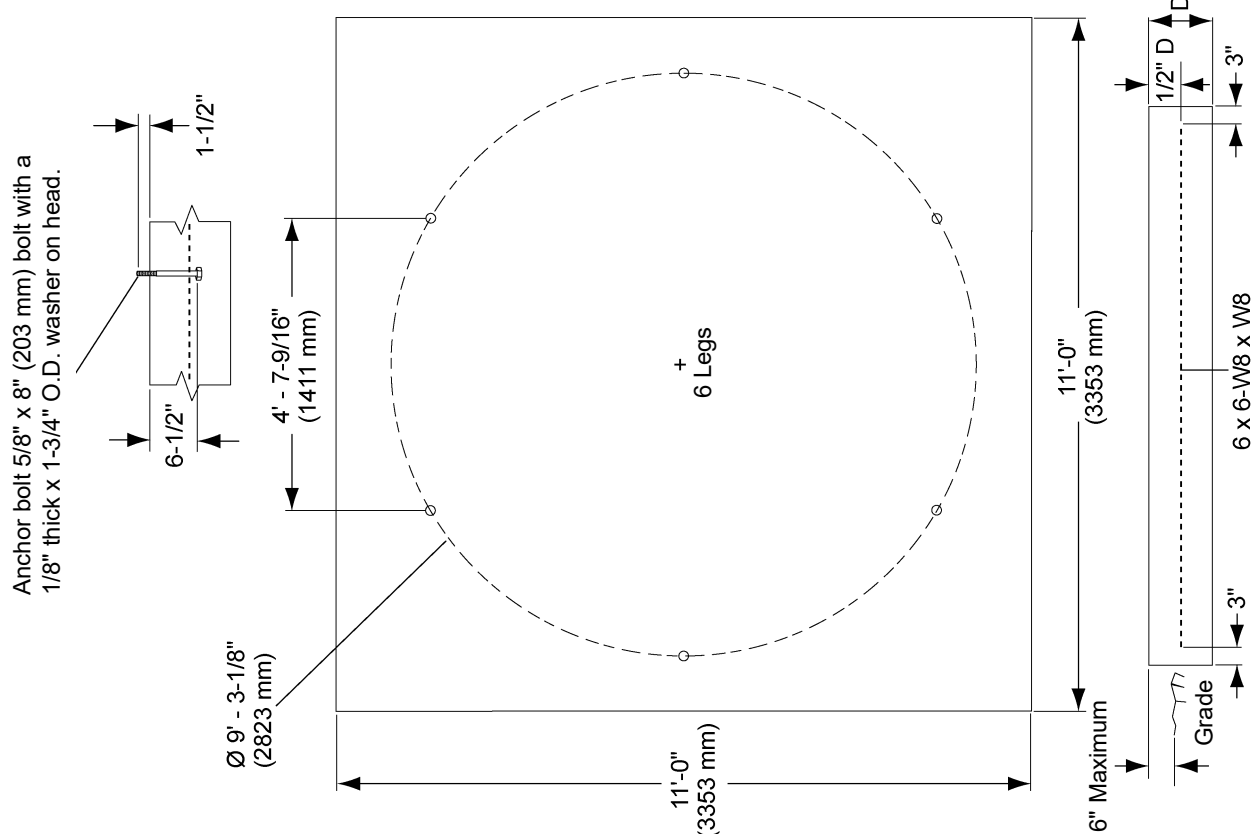


Figure 5E 9' 2-9 Rings BFT/ GHT 45° and 60° Square Pad

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

# of Rings	Slab Thickness (D)	Concrete Volume	Wire Mesh Area	# of Column Legs
2-6	13"	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.<sup>2</sup> allowable soil bearing capacity.
2. Foundation recommendations are based on a minimum compressive strength of 3000 PSI at 28 days.
3. The foundation site must be well drained and free of vegetation and debris.
4. The foundation should be level within 1/4" overall and within ± 1/8" in any 10' length along the anchor bolt circle.
5. Material estimates do not include allowance for shrinkage and waste.
6. These layouts are recommendations for GSI tanks only. Consult GSI engineering for special tank foundations.

\* Applies to 45° hopper tank only.

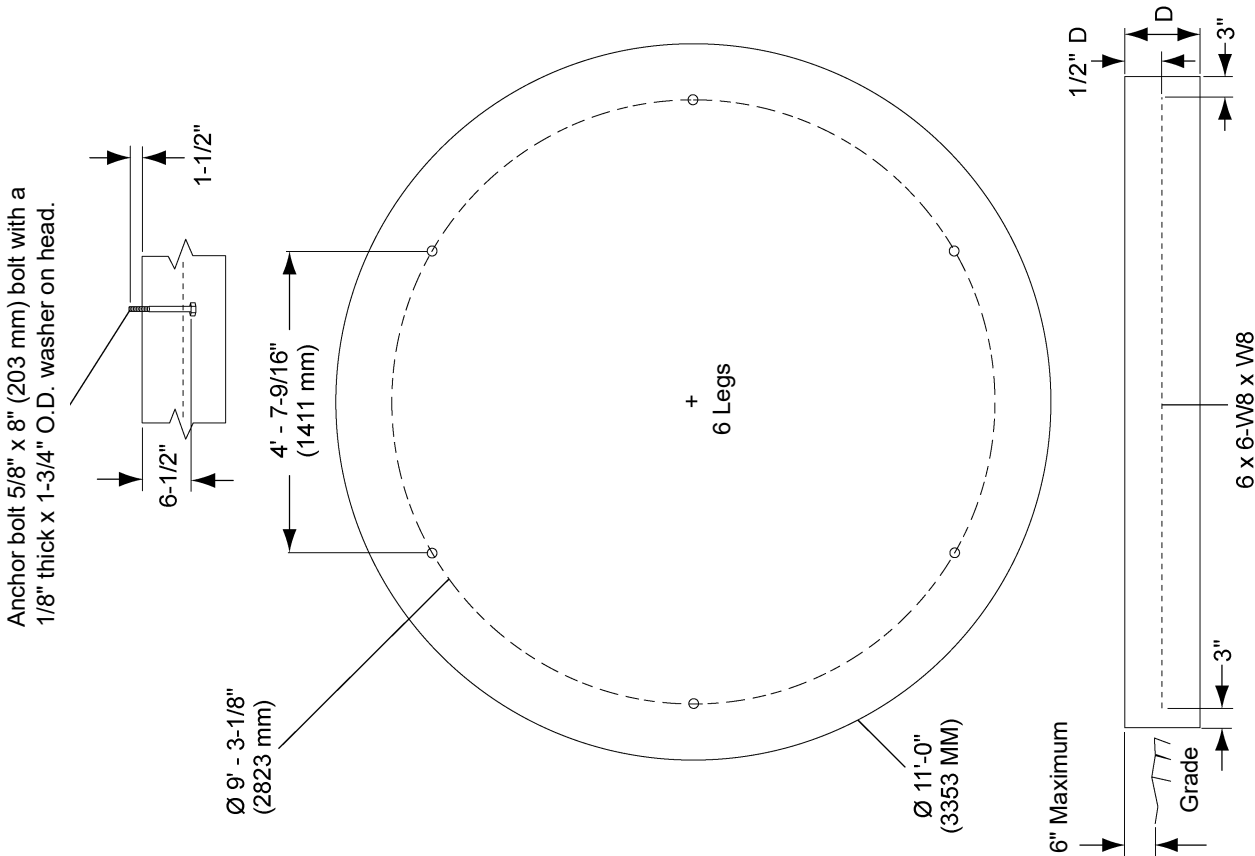


Figure 5F 9' 2-9 Rings BFT/ GHT 45° and 60° Round Pad

## Tank Sidewalls

**Sidewall Sheet Gauge Chart**

Model	Gauge
BFT 6'-1 Ring	20
BFT 6'-2 Ring	20-20
BFT 6'-3 Ring	18-20-20
BFT 6'-4 Ring	18-20-20-20
BFT 7'-1 Ring	20
BFT 7'-2 Ring	18-20
BFT 7'-3 Ring	18-20-20
BFT 7'-4 Ring	18-18-20-20
BFT 7'-5 Ring	17-17-18-20-20
BFT 7'-6 Ring	15-15-17-18-20-20
BFT 9'-1 Ring	20
BFT 9'-2 Ring	20-20
BFT 9'-3 Ring	20-20-20
BFT 9'-4 Ring	18-18-20-20
BFT 9'-5 Ring	17-17-18-20-20
BFT 9'-6 Ring	15-15-17-18-20-20

### How to use charts on this page:

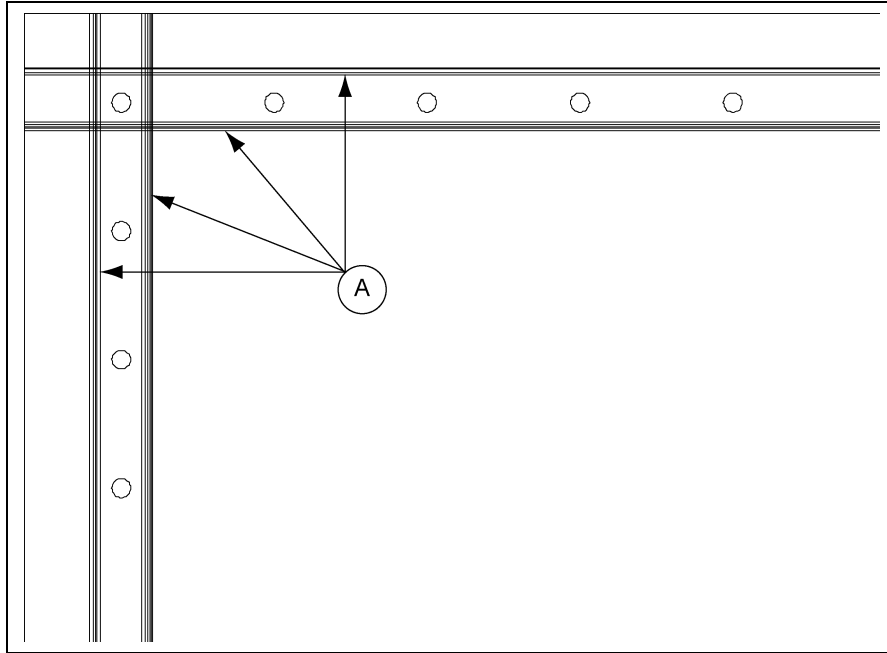
The chart labeled “Sidewall Sheet Gauge Chart” is for the reference when building the tank. This chart tells you what gauges your rings of the specific tank must have. To read the chart find the tank size you are build. For example, a 7' diameter tank with 4 rings is referred to as BFT 7'-4 ring. The 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
17	Pink/Light Blue
16	Blue
15	Brown/Red
14	Green
13	Yellow/Blue
12	Black
11	Pink
10	Light Blue

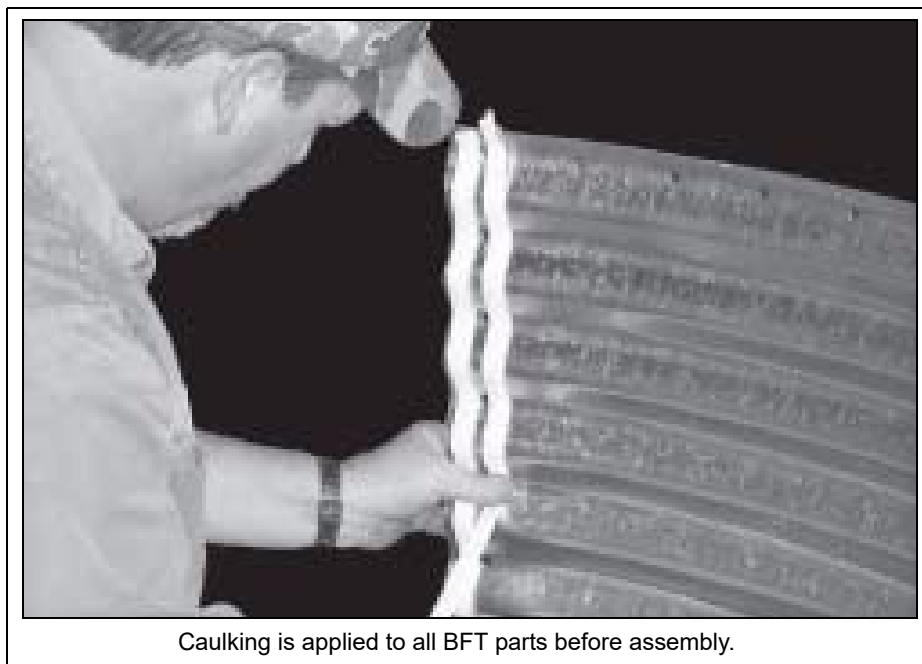
## Caulking Detail



**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.*

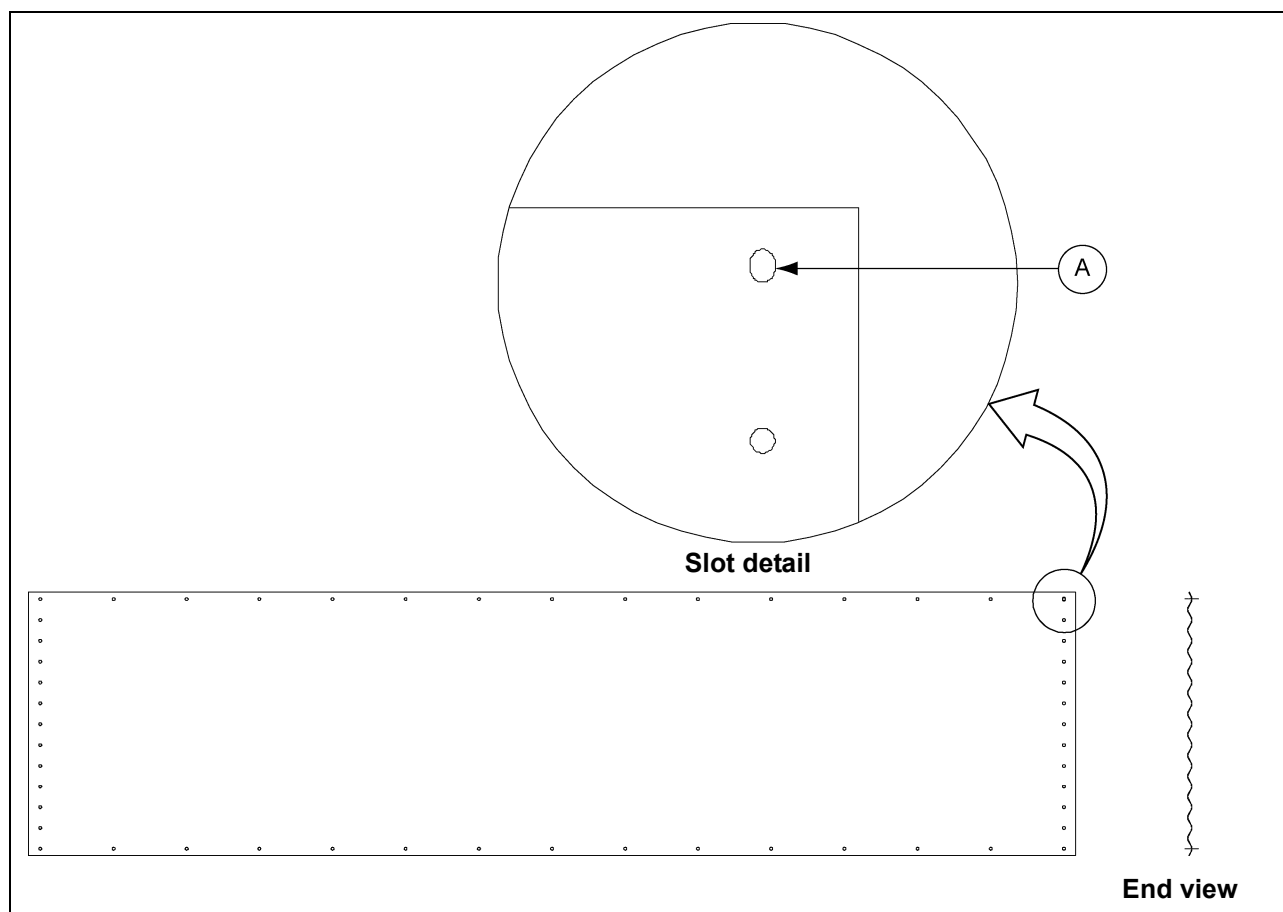


**Figure 6B**

## 6. Sidewall Assembly

### 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)

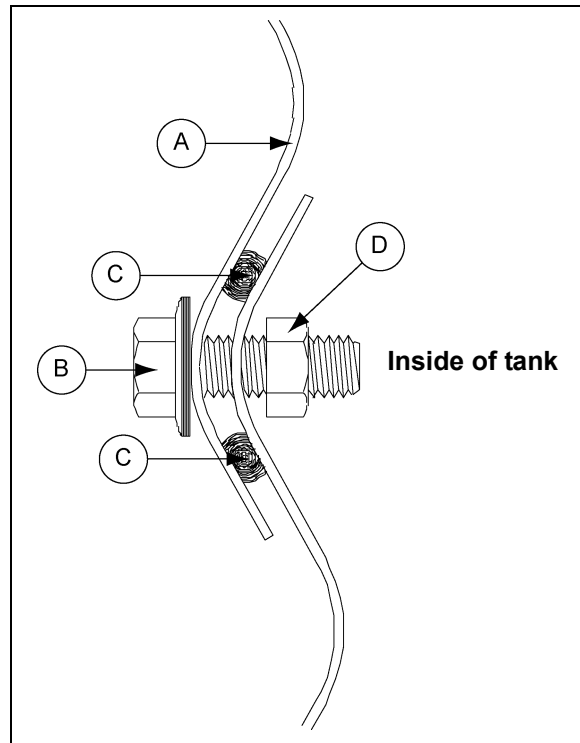
### Sidewall Assembly

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 steel for the top ring. The higher gauge number denotes thinner material. For example, 20 gauge material is thinner than 14 gauge. In assembling all Bulk Feed Tanks the thinnest material always go on top. The heaviest corrugated sidewall sheets will be located on the bottom of the tank. Check the various gauges of the tank with the "Sheet Gauge Color Code Chart" and "Sidewall Sheet Gauge Chart", [on Page 20](#). Begin by putting the rings together on the edge of the sheets. On 7'-1 ring tanks ensure vertical leg seams are spaced equally around tank. (See [Page 82](#).) After the first ring is complete, the roof must be assembled as described [on Pages 23-24](#). After the roof is assembled, the tank can be rolled on its side for easier sidewall assembly. (See [Figure 6F on Page 24](#).)

**Tighten all bolts from the nut side only.**

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

**Be sure to stagger all vertical seams between rows.**



**Figure 6D** Ring Overlap Detail

Ref #	Description
A	Upper Ring
B	5/16" x 1" Bolt

Ref #	Description
C	Caulking Two (2) Strips
D	5/16" Nut



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

**Figure 6E**

## 6. Sidewall Assembly

**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.



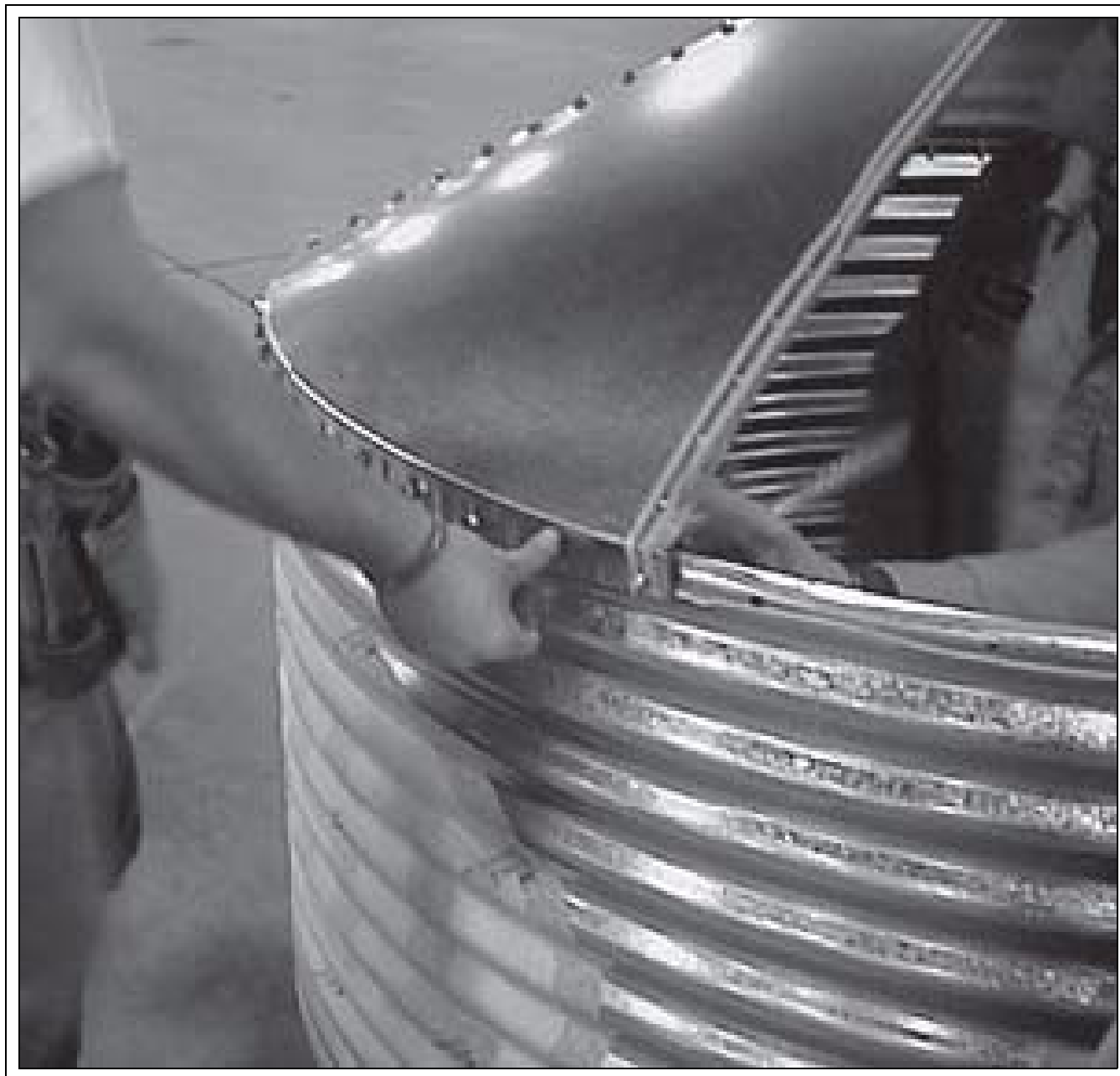
**Figure 6F** *Sidewall Assembly*

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.*



## Sealed Roof Panels Installation

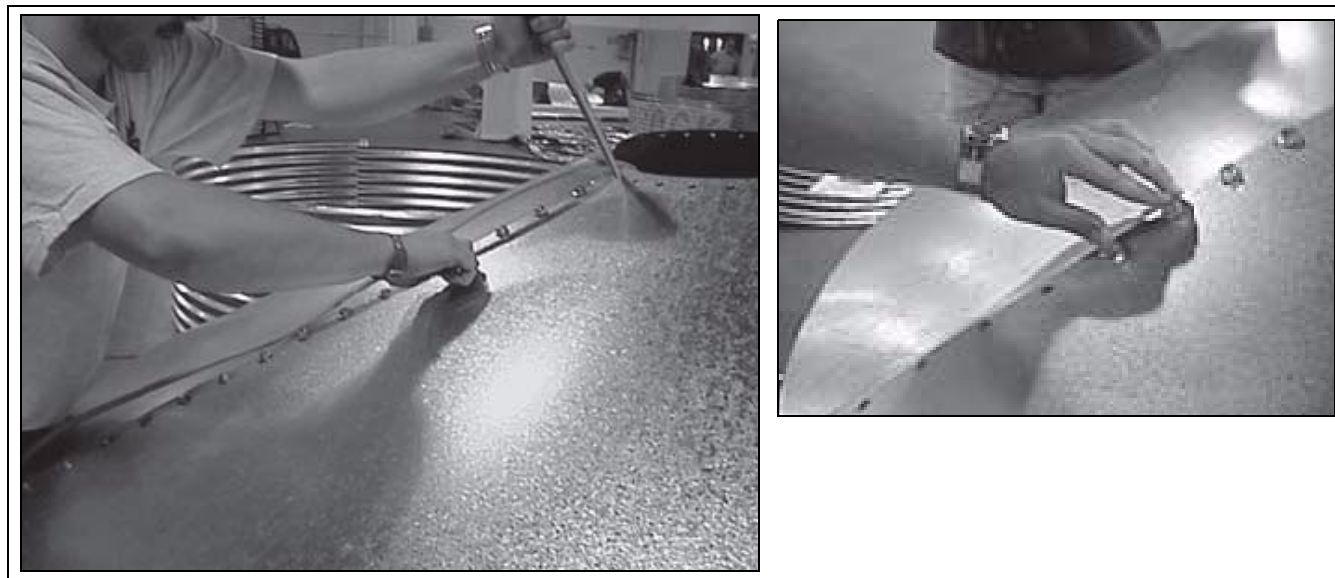
**NOTE:** *The roof and sidewall ladders are centered between seams. When placing the roof panel, the outside edge is bent down. This edge is to be placed on the outside of other roof panel to form a tight seal. (See Figure 7C on Page 26.)* Be sure to apply two (2) strips of caulking on all seams. Assemble roof panels in a counterclockwise manner.



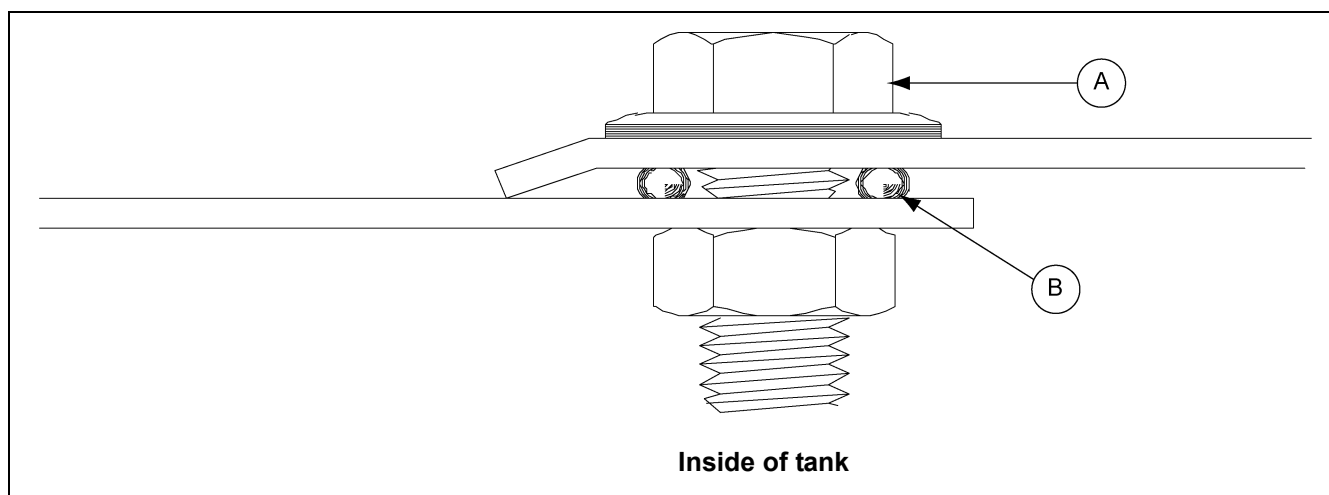
**Figure 7A**

On bins that will be equipped with a pneumatic fill system (See Page 74), the two (2) roof panels with fill hole and exhaust hole must be located opposite each other on the Bulk Feed Tank.

## 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.

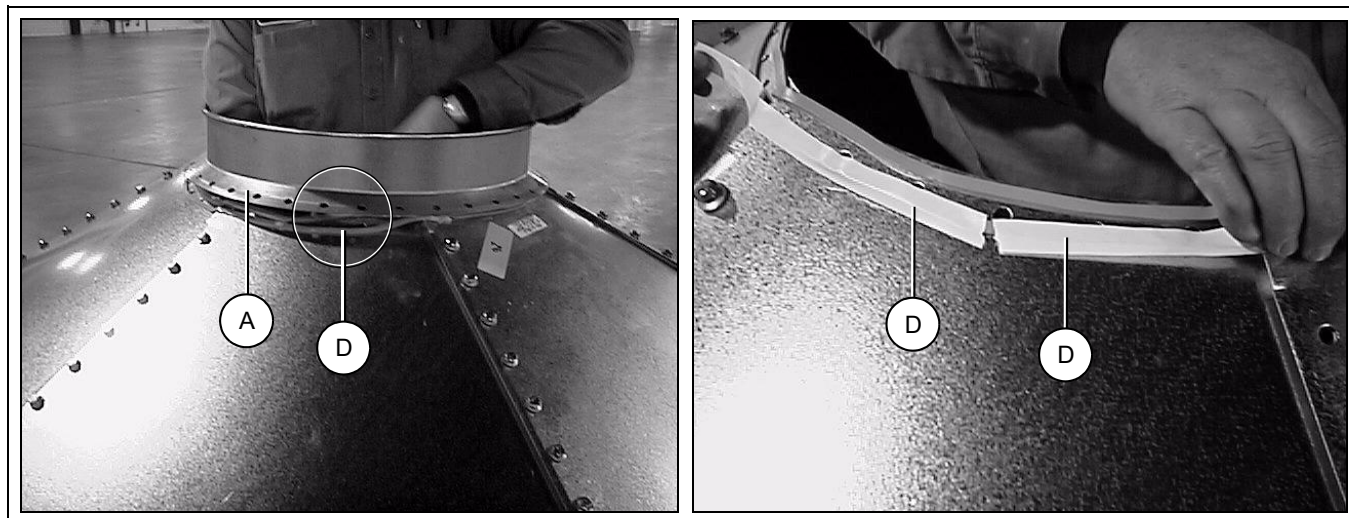


Figure 7D

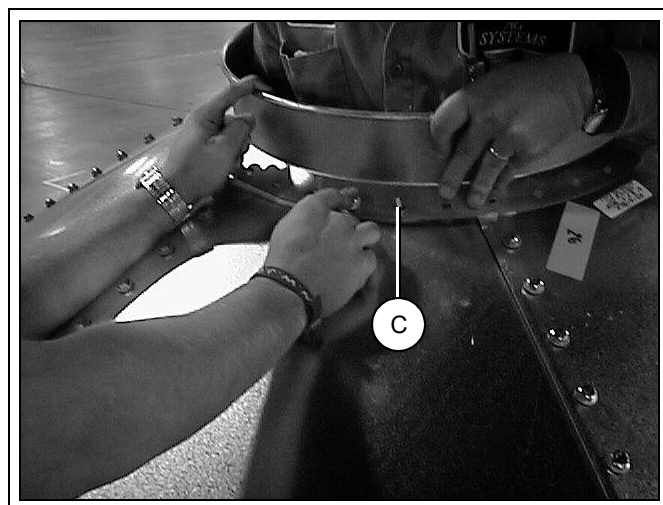


Figure 7E

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

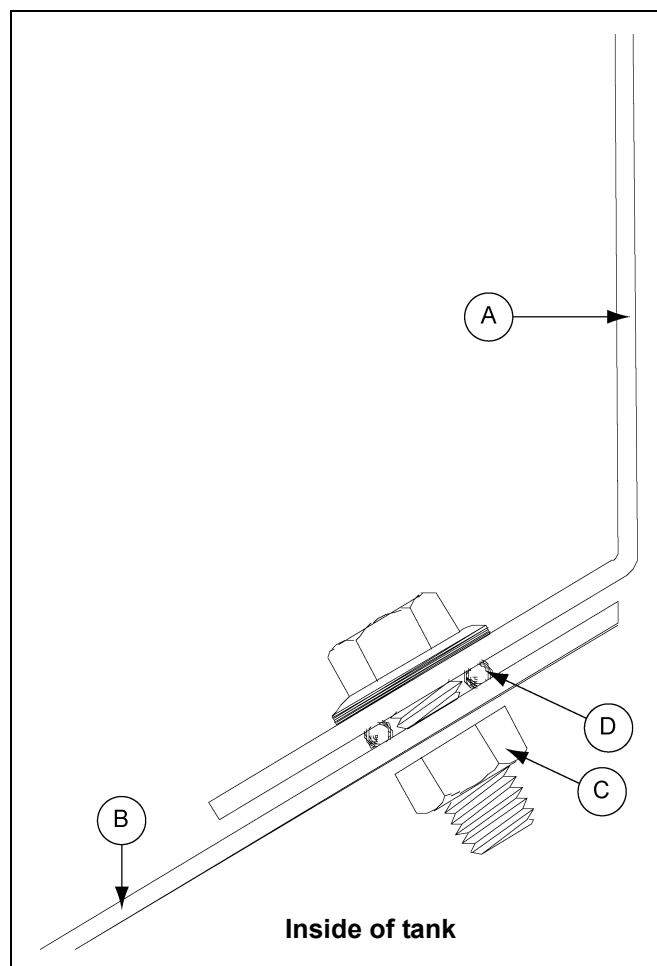


Figure 7F Peak Ring Collar Detail

## 8. Optional BFT Ladder Assembly

### Ladder Assembly Parts

1. The components needed to complete the eave ladder assembly are listed below and are numbered in the order of assembly.
2. Review the installation instructions for each component before beginning.
3. Failure to do so may complicate the installation and cause unnecessary field drilling.

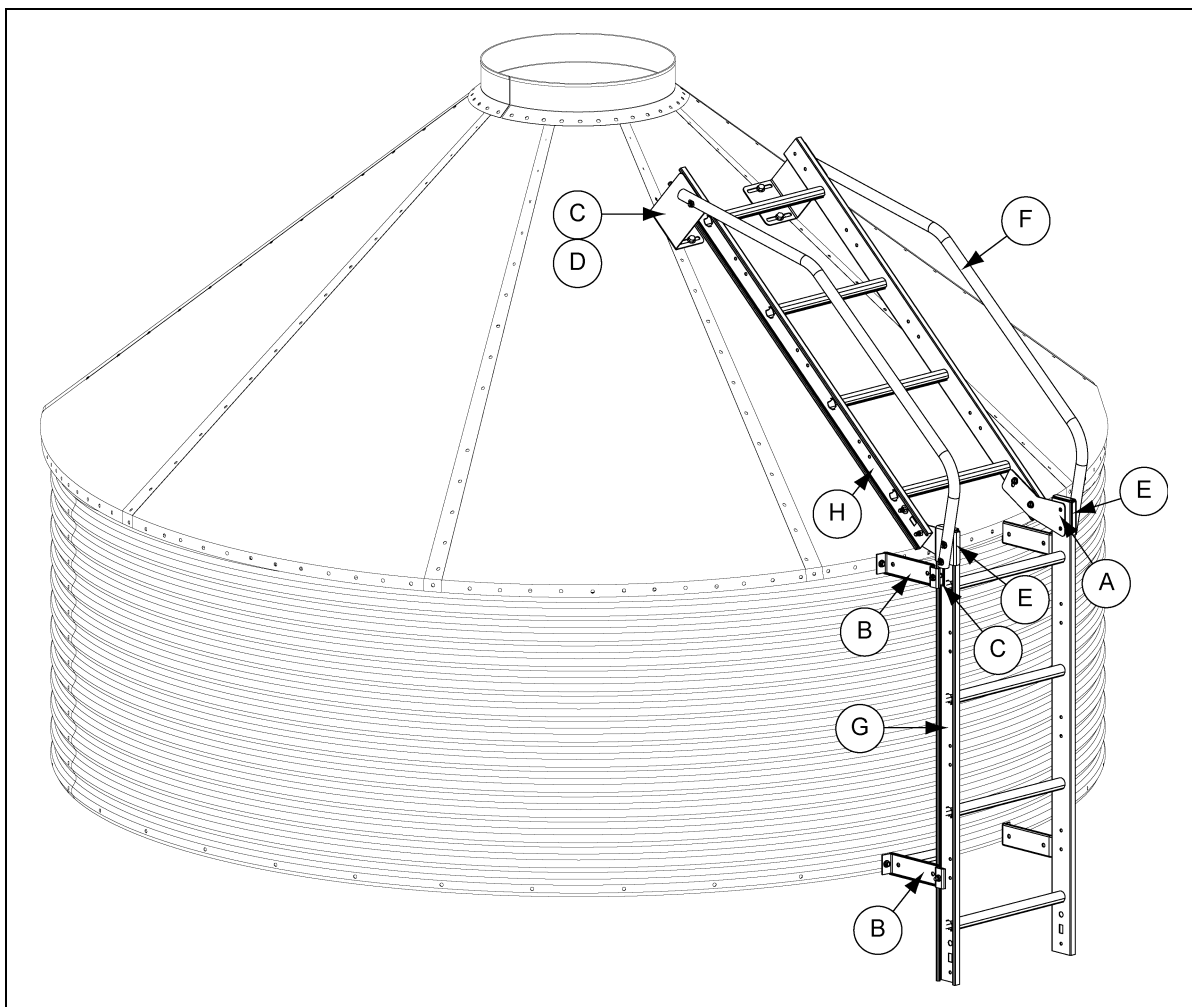


Figure 8A

Ref #	Part #	Description	Qty
A	LDR-5539	30°/40° Ladder Connection Plate	2
B	LDR-4314	Standoff Bracket	4
C	LDR-4198	Wedge	6
D	LDR-4387	Roof Ladder Support Bracket	2
E	LDR-5540	Handrail Mount	2
F		Handrail	2
G		Top 4' Ladder Section	1
H		Roof Ladder Section	1

## Sidewall and Roof Ladders Assembly

1. Check the sidewall ladder (I) to make sure the ladder rung dimples face upward.
2. Attach the 30°/40° ladder connector plate (A) to the inside of the sidewall ladder (I).
3. Add the spacer washers (B) between the sidewall ladder (I) and handrail mount (C).
4. Place the handrail mount (C) and handrail (K) to the outside of the sidewall ladder (I) and connect everything together with 5/16" bolts (D) and 5/16" nuts (F).
5. Once the sidewall ladder (I) is assembled, attach the roof ladder (J) to the other end of the connector brackets (A) using 5/16" flange bolts (G), 5/16" washers (E) and 5/16" hex nuts (H). (See Figure 8B.)

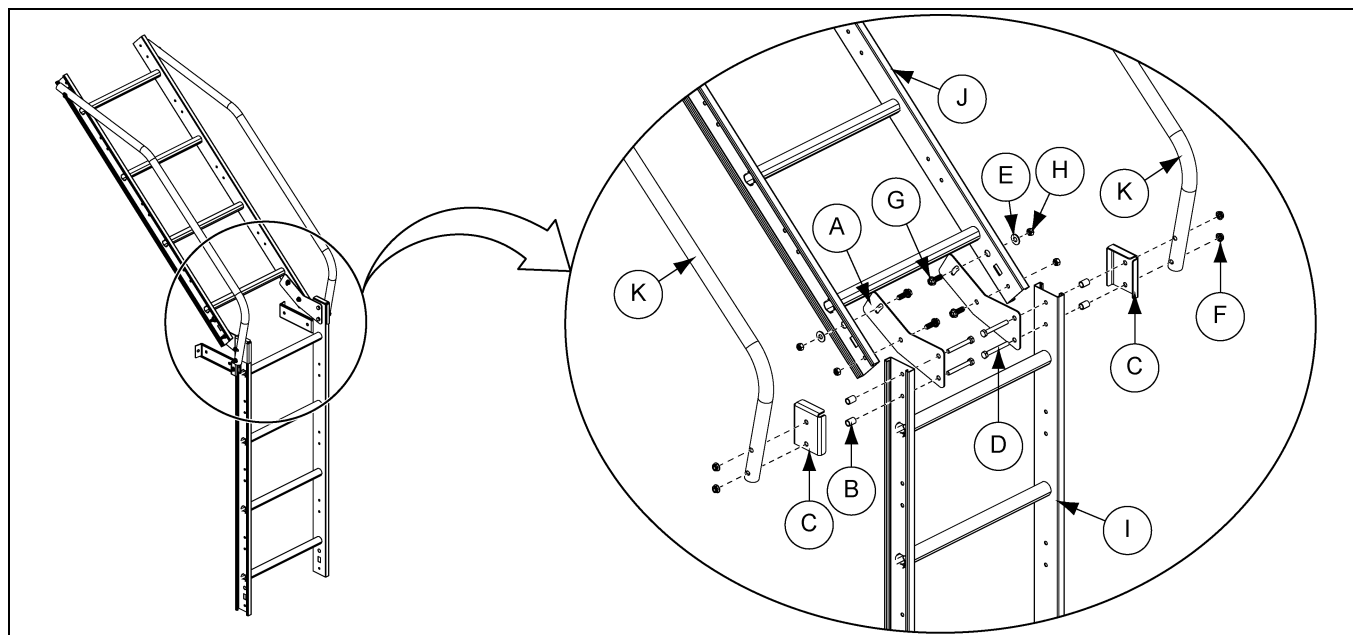
**NOTE:** All bolts should be installed with the head of the bolt to the inside of the ladder

**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'	5'	5'



**Figure 8B**

Ref #	Part #	Description
A	LDR-5539	30°/40° Ladder Connection Plate
B	S-8305	Spacer Washer
C	LDR-5540	Handrail Mount
D	S-7076	5/16"-18 x 2-1/2" Bolts
E	S-845	5/16" Flat Washer
F	S-10268	5/16"-18 Flange Nut JS Grade 5

Ref #	Part #	Description
G	S-10260	5/16"-18 x 1" Flange Bolt with Sealing Washer
H	S-7484	5/16"-18 Hex Nut JS Grade 5
I		Sidewall Ladder
J		Roof Ladder
K		Handrail

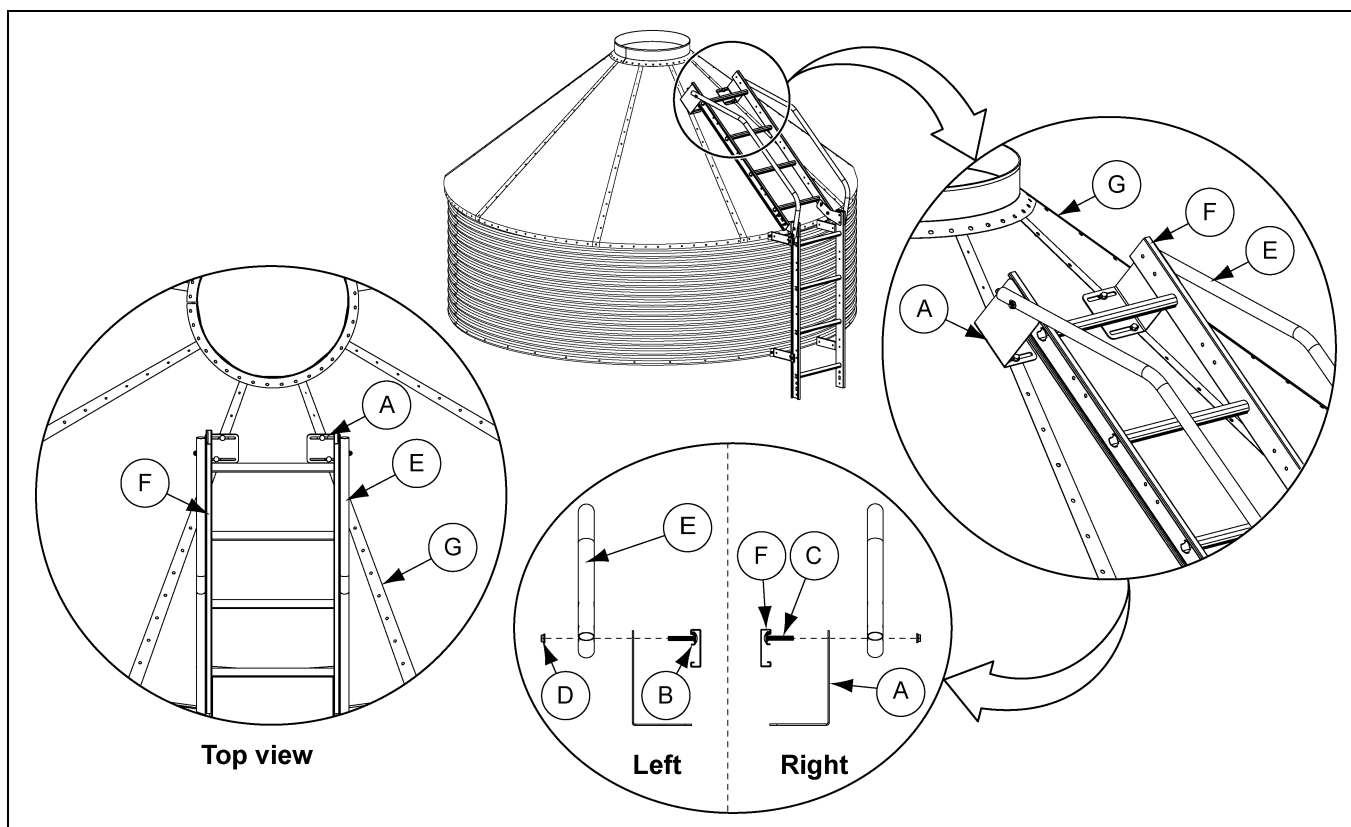
## 8. Optional BFT Ladder Assembly

### Roof Ladder Support Bracket Installation

1. The roof ladder (F) requires support brackets (A) at the top of the ladder.
2. **6'-30°, 9'-30° and 9'-40° Roofs:** The support brackets (A) are bend in towards the center of the roof ladder (F). (See Figure 8C.)
3. **6'-40°, 7'-30° and 7'-40° Roofs:** The support brackets (A) are bend out away from the center of the roof ladder (F). (See Figure 8D on Page 31.)
4. Slide the wedge (B) and the support brackets (A) along the roof ladder rail (F) until the slots in the support brackets (A) match with the pre-punched holes in the roof panel (G) and attach using the existing roof panel bolts.
5. Secure the roof ladder rail (F), support brackets (A), wedge (B) and the handrail (E) using 5/16" bolts (C) and 5/16" flange nuts (D).



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



**Figure 8C 6'-30°, 9'-30° and 9'-40° Roofs**

Ref #	Part #	Description
A	LDR-4387	30°/40° Ladder Support Bracket
B	LDR-4198	Wedge
C	2FH0650	5/16"-18 x 2" Carriage Bolt ZN Grade 2
D	S-10268	5/16"-18 Flange Nut JS Grade 5

Ref #	Description
E	Handrail
F	Roof Ladder
G	Roof Panel



## Roof Ladder Support Bracket Installation (Continued)

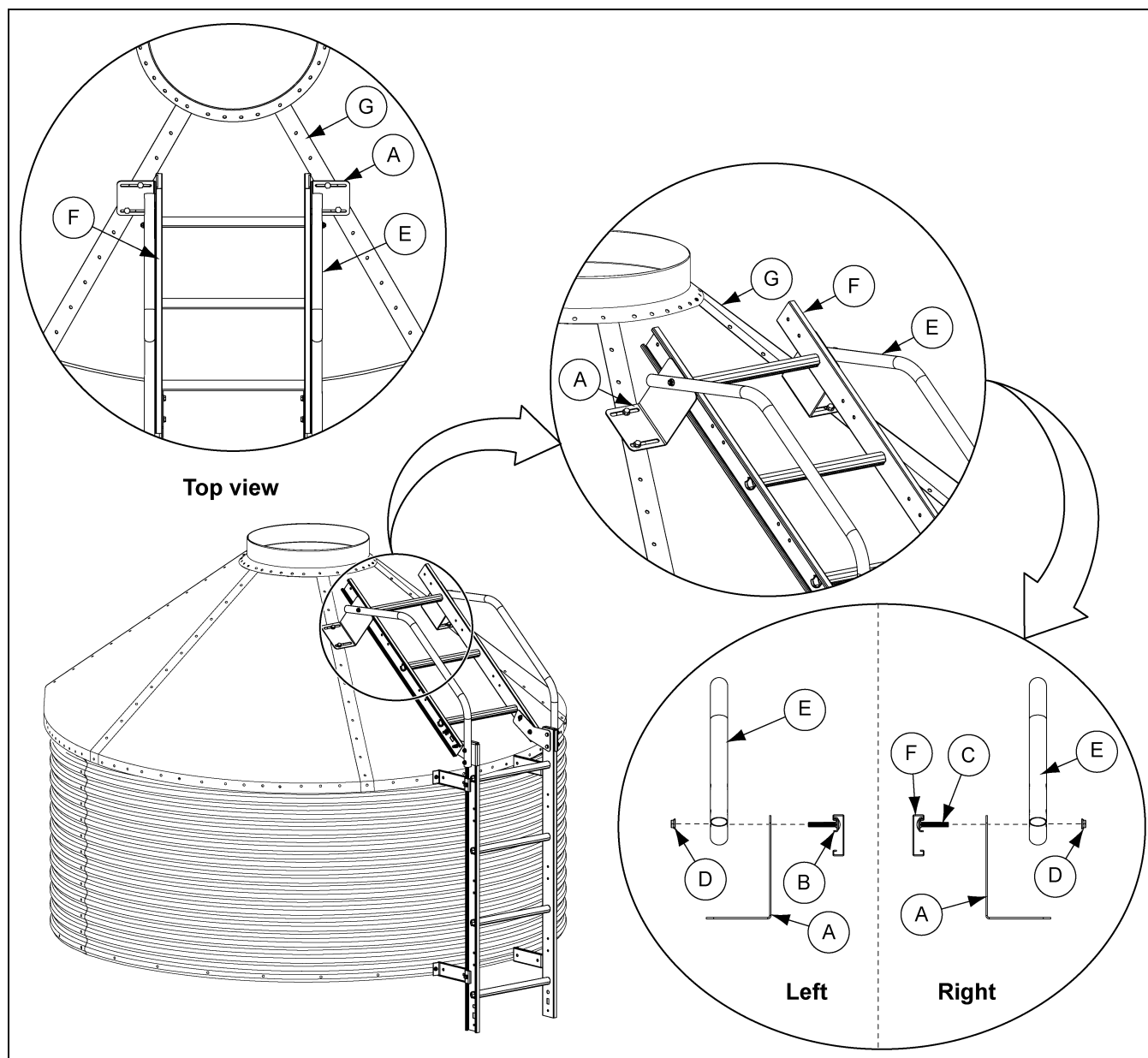


Figure 8D 6'-40°, 7'-30° and 7'-40° Roofs

Ref #	Part #	Description
A	LDR-4387	30°/40° Ladder Support Bracket
B	LDR-4198	Wedge
C	2FH0650	Carriage Bolt 5/16"-18 x 2" ZN Grade 2
D	S-10268	Flange Nut 5/16"-18 JS Grade 5
E		Handrail
F		Roof Ladder
G		Roof Panel

Roof Ladder Support Bracket Installation (Continued)

**NOTE:** The roof ladder supports must be assembled so that the maximum distances are not exceeded. See [Figure 8E](#) and the “maximum distances chart” to determine maximum allowable spacing of support brackets.

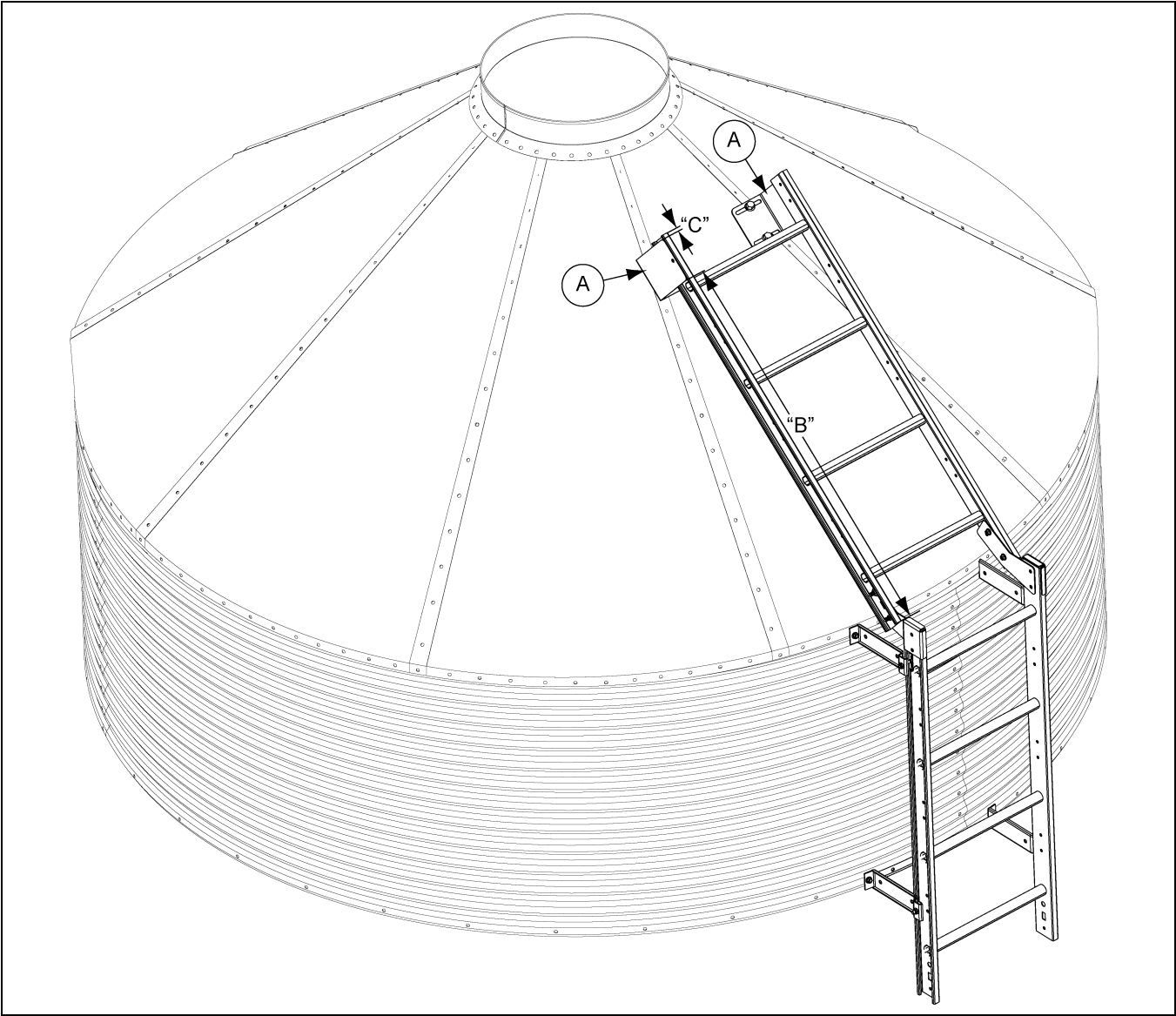


Figure 8E Maximum Allowable Distance

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

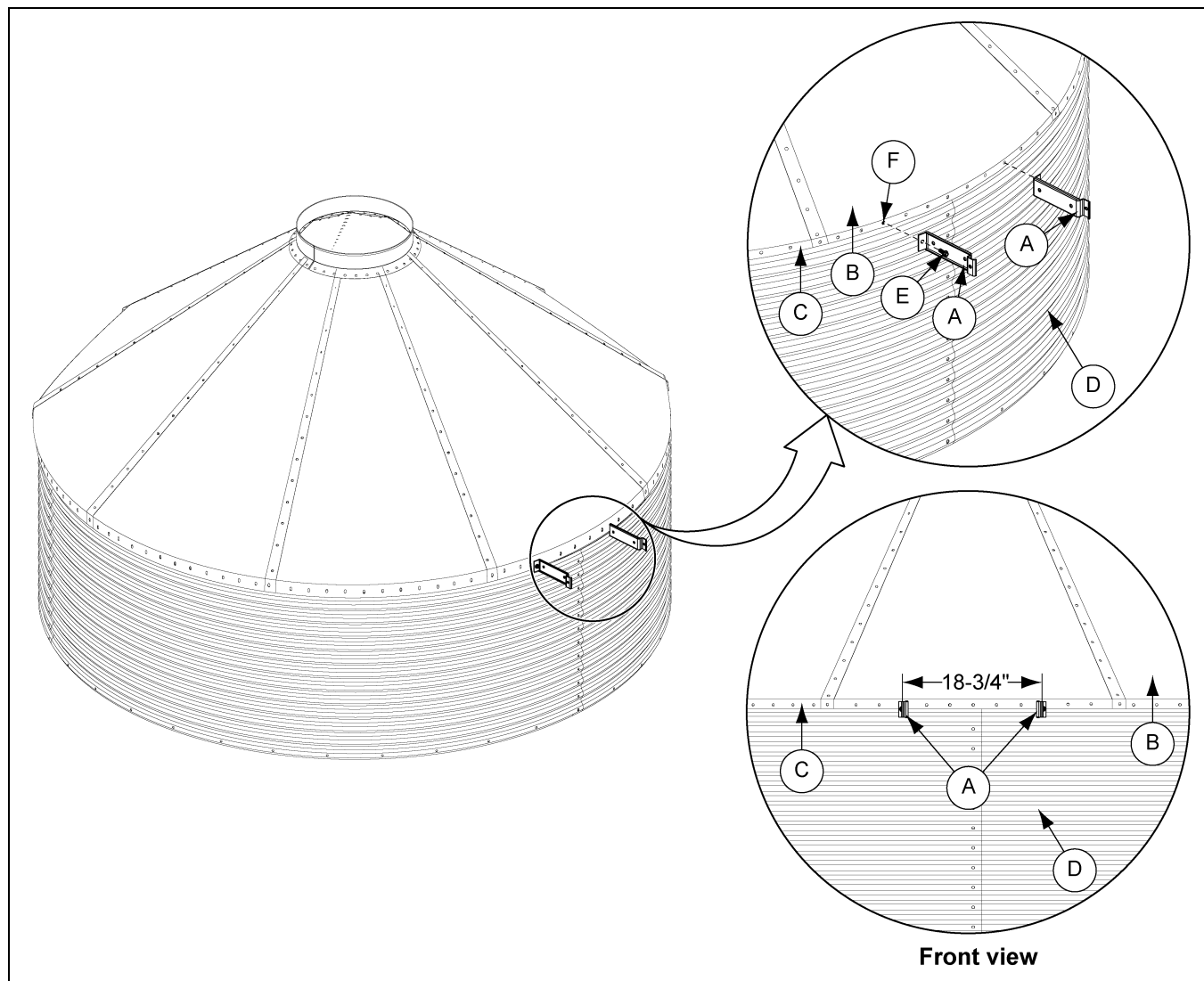
Maximum Distances Chart	“B”	“C”
Maximum allowable distance between ladder support bracket and the edge of the ladder at the eave.	50 Inches	
Maximum allowable distance between ladder support bracket and edge of ladder at peak.		10 Inches



## Standoff Bracket Installation

1. The standoff brackets (A) at the eave must be centered in the roof panel (B) to ensure proper installation of the roof ladder support brackets.
2. Install the standoff brackets (A) to the holes in the top horizontal seam (C) using 5/16" and 1" bin bolts. *(See Figure 8F.)*

**NOTE:** *There should be a minimum of 18-3/4" between the standoff brackets (A).*



**Figure 8F**

Ref #	Description
A	Standoff Bracket (LDR-4314)
B	Roof Panel
C	Top Horizontal Seam
D	Sidewall Sheet
E	5/16" Bolt
F	5/16" Nut

## 8. Optional BFT Ladder Assembly

### Ladder Standoff Installation

1. The standoff brackets (A) must be installed on the ladder (E) and attached to the sidewall at each horizontal seam (F) (every 32"). (See Figure 8G.)
2. Assemble the standoff bracket (A) and wedge (B) to the ladder rail (E) using 5/16" carriage bolts (C) and 5/16" flange nuts (D).
3. Slide the standoff assembly along the ladder rail (E) until the standoff (A) is in line with the pre-punched hole in the horizontal seam (F) and attach to the sidewall using 5/16" x 1" bin bolts (G).

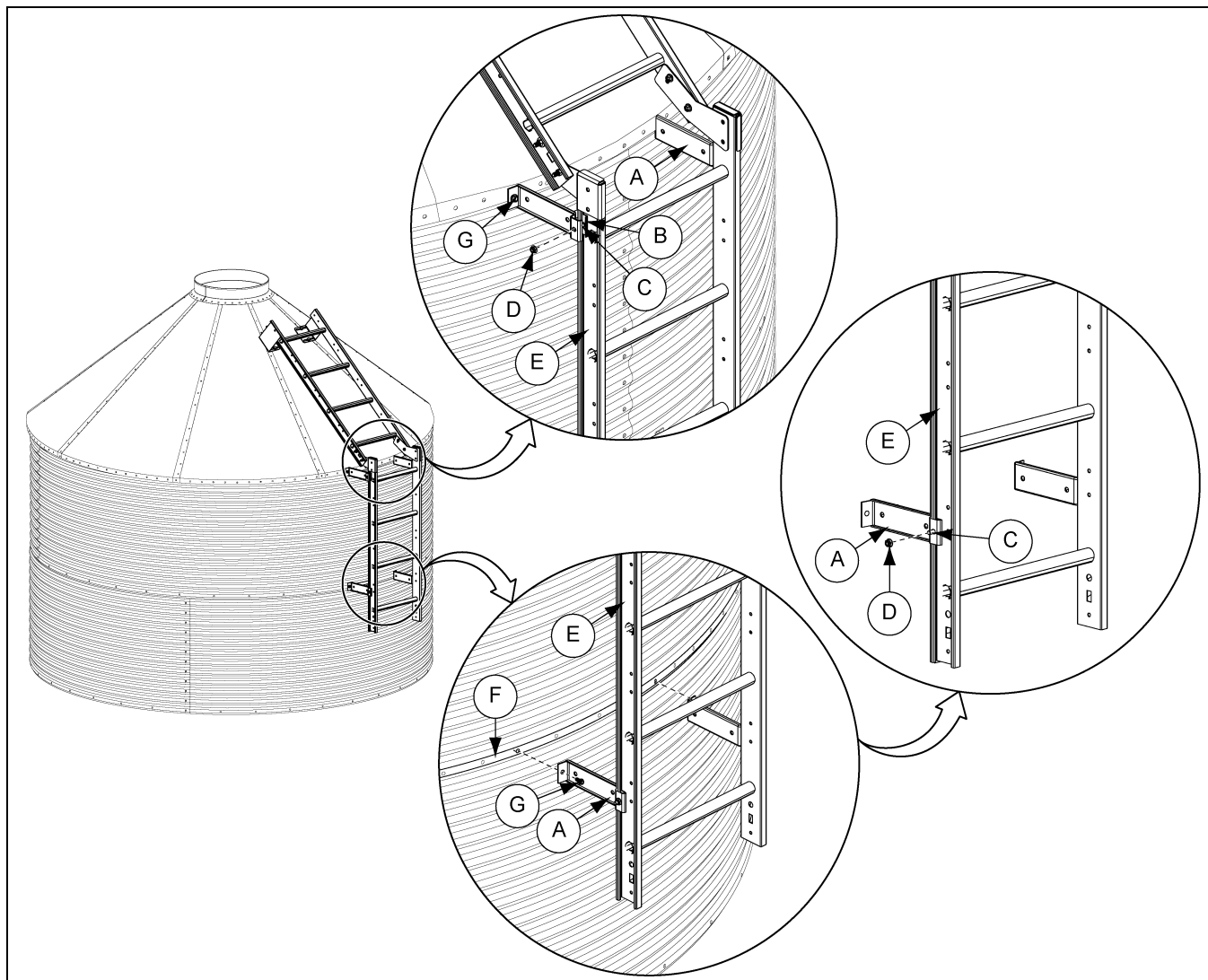


Figure 8G

Ref #	Part #	Description
A	LDR-4314	Standoff Bracket
B	LDR-4198	Wedge
C	S-3550	5/16" x 1" Carriage Bolt
D	S-10268	5/16"-18 Flange Nut JS Grade 5
E		Sidewall Ladder
F		Horizontal Sidewall Seam
G		5/16" x 1" Bin Bolt

## Ladder Section Assembly

1. Attach each ladder section (G) to the previously installed ladder section with two (2) splice plates (A) using 5/16" x 1" bolts (F) and 5/16" nuts (C).

**NOTE:** Install bolts (F) with bolt head to the inside of the ladder sections (G).

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

2. Slide the ladder wedge (E) along the ladder sections (G) and install it to the standoff bracket (B) using 5/16" x 1" carriage bolts (D) and 5/16" flange nuts (C).

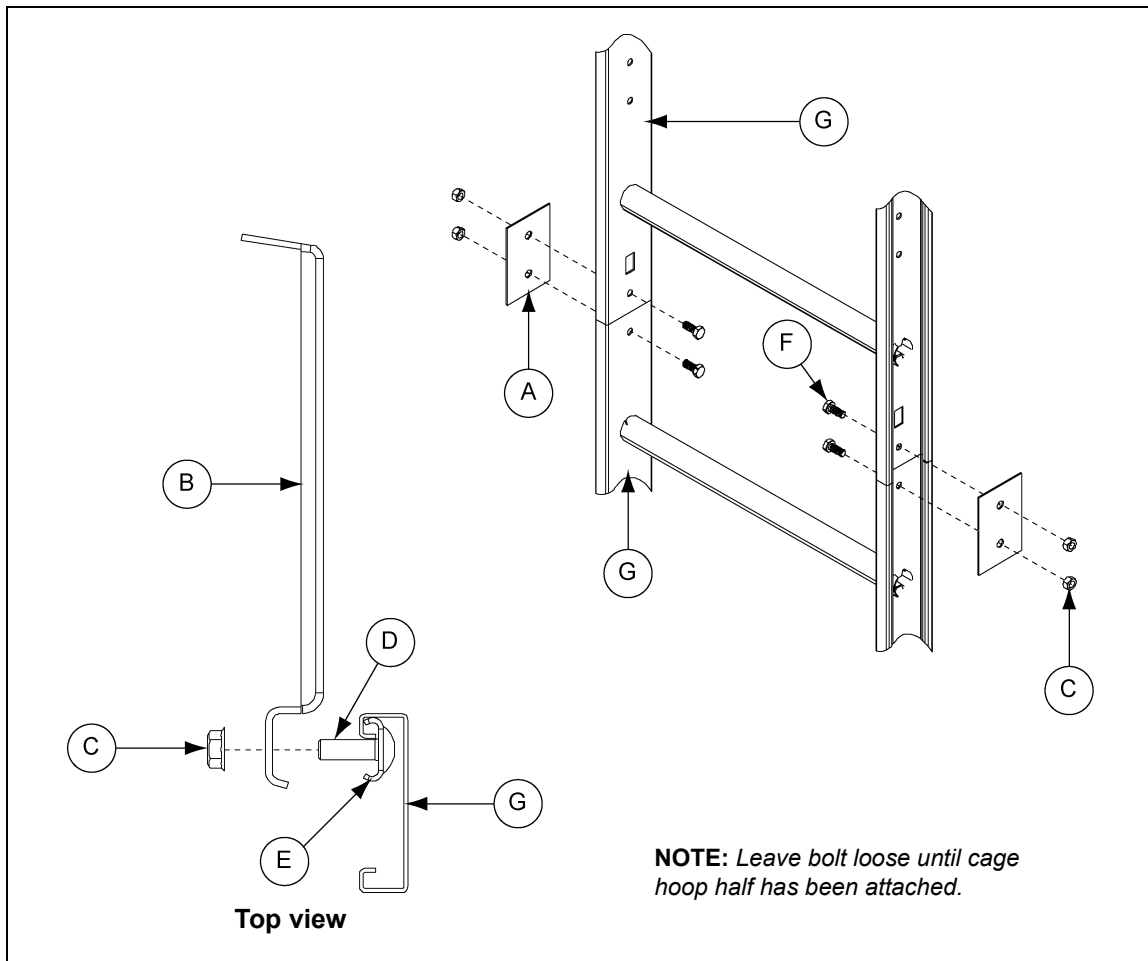


Figure 8H

Ref #	Part #	Description
A	LDR-4317	Splice Plate (Two (2) Per Connection)
B	LDR-4314	Standoff Bracket
C	S-10268	5/16"-18 Flange Nut JS Grade 5
D	S-3550	5/16" x 1" Carriage Bolt
E	LDR-4198	Wedge
F	S-10260	5/16" x 1" Flange Bolt with Sealing Washer
G		Ladder Sections

## 8. Optional BFT Ladder Assembly

### Ladder Support Detail

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

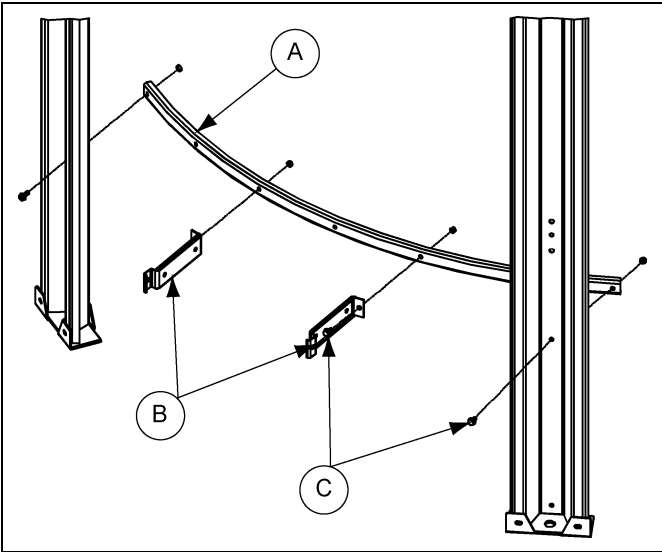


Figure 8I

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

1. 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 8J.](#))



Figure 8J

## Ladder System with Safety Cage

### Extension Rail Installation

Before the safety cage can be installed, the ladder extension rails must be attached. Start by bolting the spacer brackets through the top and bottom set of holes in the top ladder section. Then, attach the extension rail to the spacer brackets as shown in [Figure 9A](#). When installed correctly, the bottom of the extension rail should be flush with the bottom of the top ladder section. Use 5/16" x 1" bin bolts for all connections.

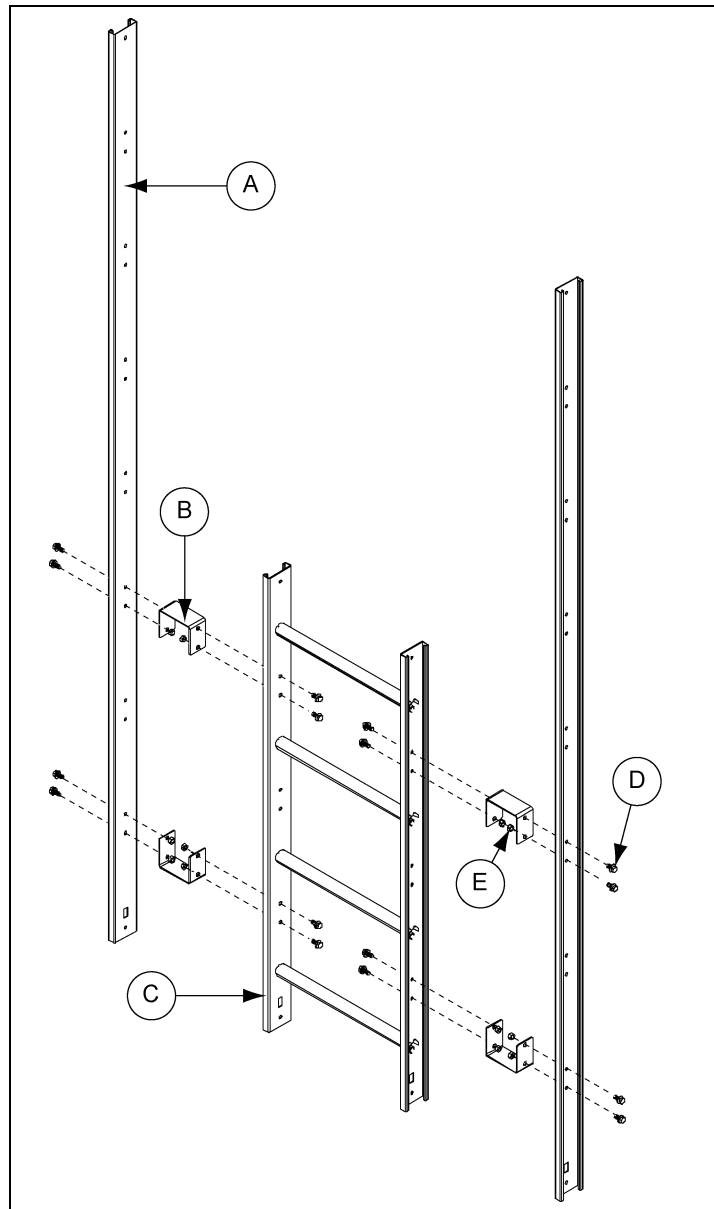


Figure 9A

Ref #	Description	Ref #	Description
A	8' RFB Extension Rail	D	5/16" x 1" Bin Bolt
B	Spacer Bracket (LDR-4403)	E	5/16" Flange Nut
C	Top Ladder Section		

## 9. Safety Cage

### Eave Adjustable Braces

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

(See Figure 9B.)

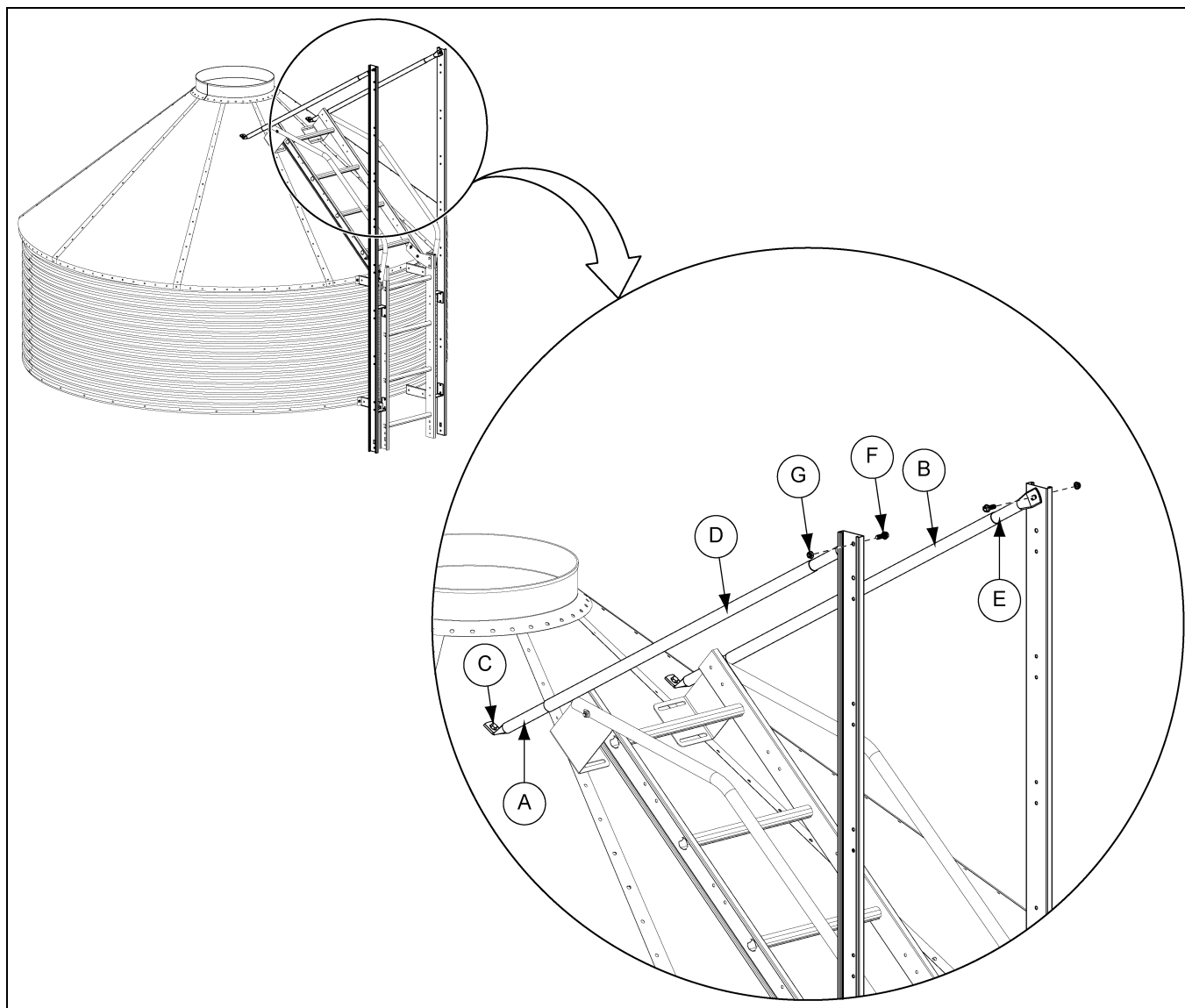
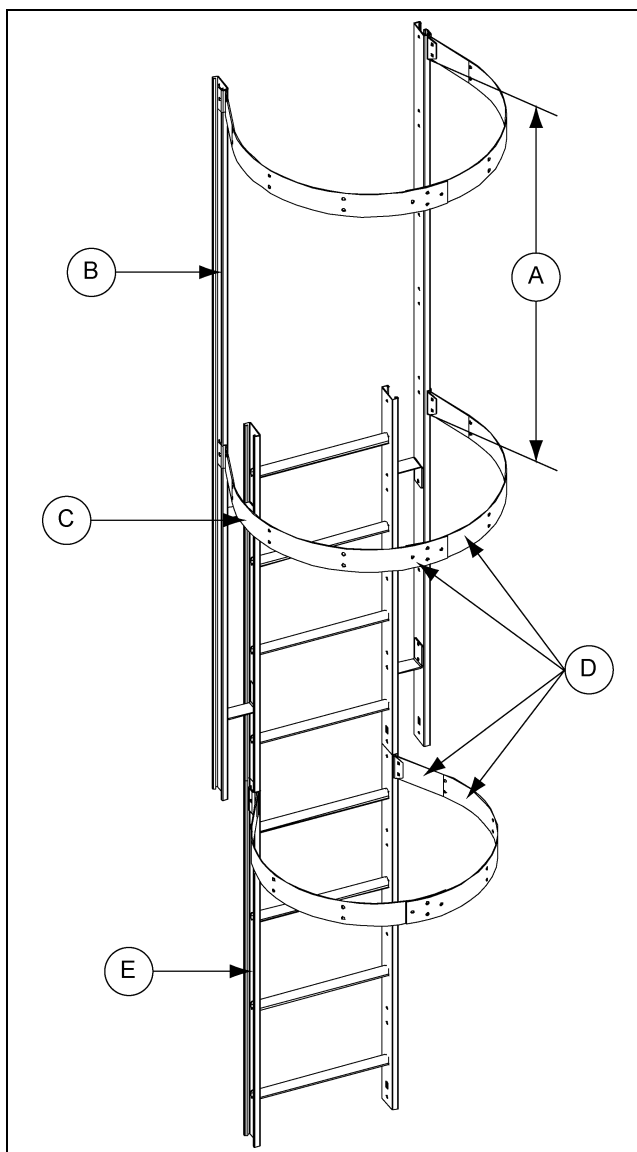


Figure 9B

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)
E	Top End Tube (LS-7031)
F	1/4" x 1-1/2" Bolt
G	1/4" Nut

## Safety Cage Hoop Assembly

To complete the safety cage hoop installation, some pre-assembly is required. Attach four (4) safety cage brackets to the extension rails and two (2) safety cage brackets to the second 4' ladder section as shown in [Figure 9C](#). See cage hoop bracket detail [on Page 40](#) for proper installation. Next, bolt each set of safety cage hoop halves together using 5/16" x 1" bolts with the head of the bolt to the inside of the safety cage. You may now bolt these assemblies to the safety cage brackets. Tighten bolts as you go.



**Figure 9C**

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

9. Safety Cage

Cage Hoop Bracket Detail

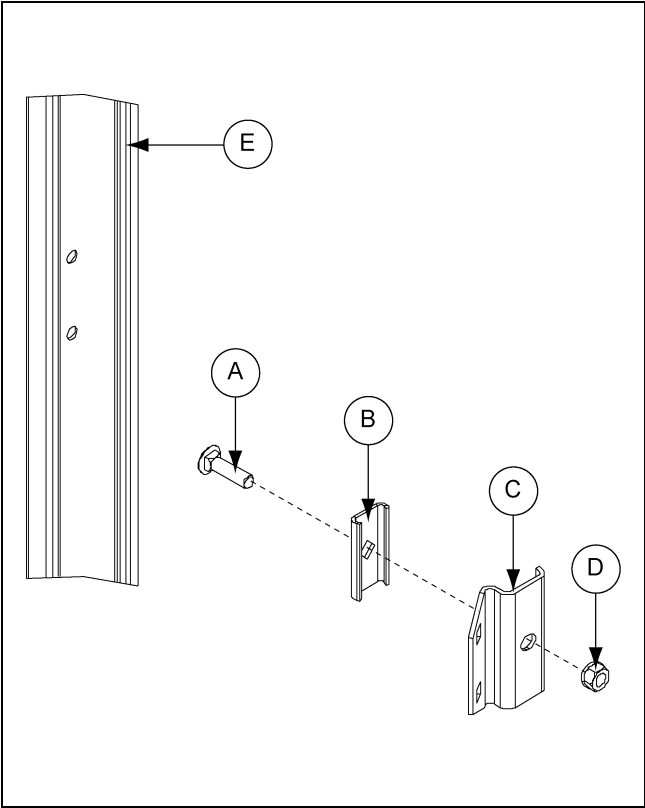
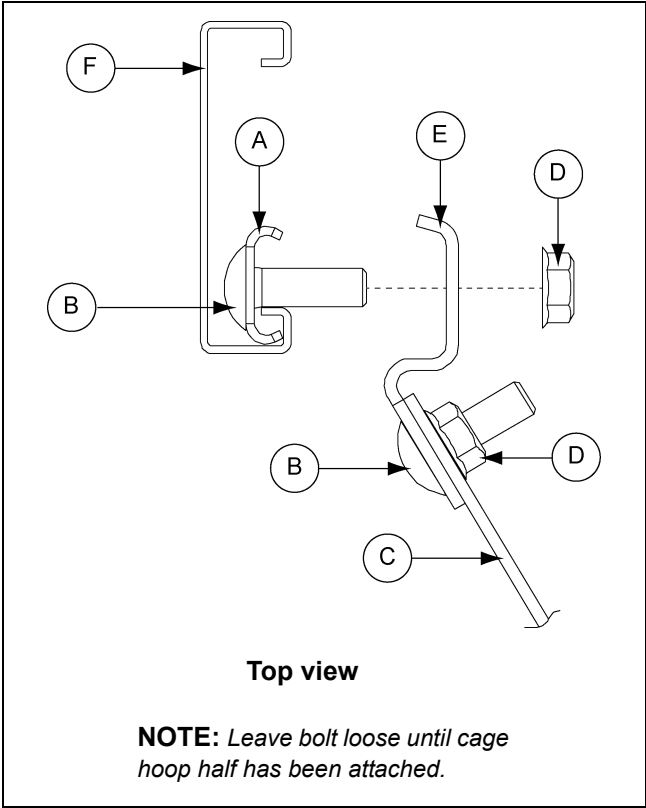


Figure 9D



Top view

**NOTE:** Leave bolt loose until cage hoop half has been attached.

Figure 9E

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

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	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 9F](#). This requires fourteen (14) supports, seven (7) between each set of hoops. The second set of vertical supports must be bent at the flat area to allow for the tapering of the bottom hoop assembly. Use 5/16" x 1" bolts with the head of the bolt to the inside of the safety cage.

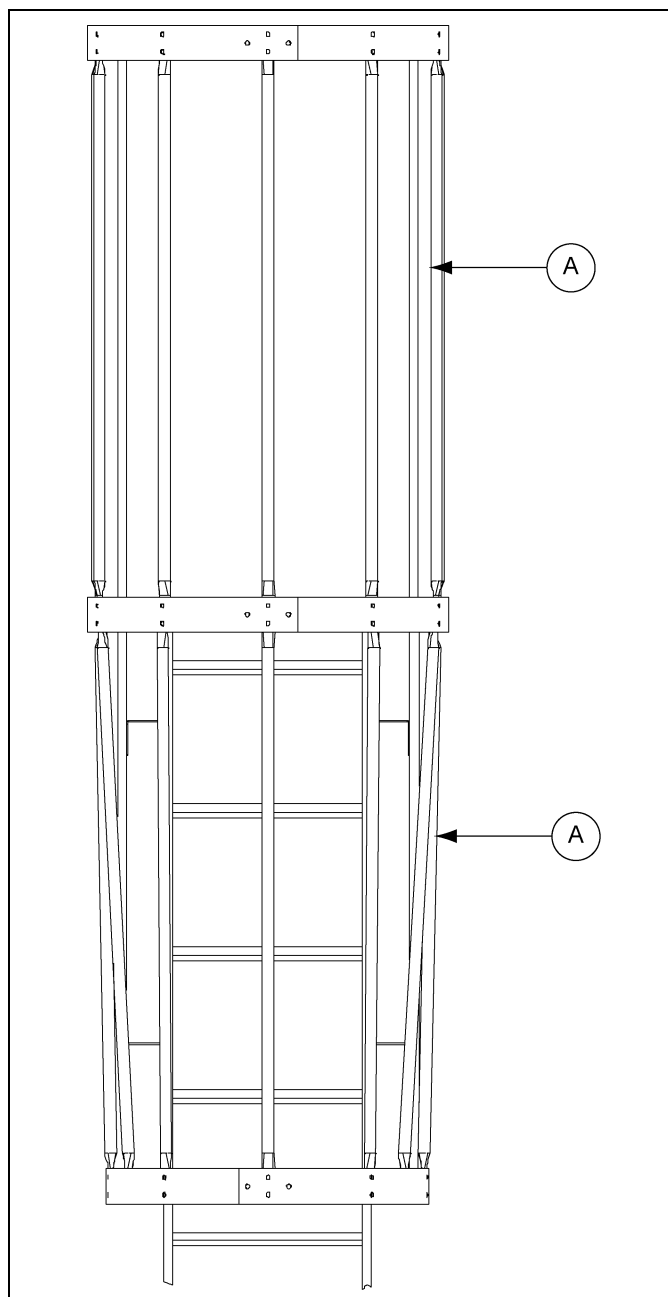


Figure 9F

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

## 9. Safety Cage

### 48" Safety Cage

Attach the vertical support pieces to the existing hoop halves above using 5/16" x 1" 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 40](#). Once cage hoop brackets are installed, attach cage hoop halves and tighten bolts. Repeat installation for each safety cage required.

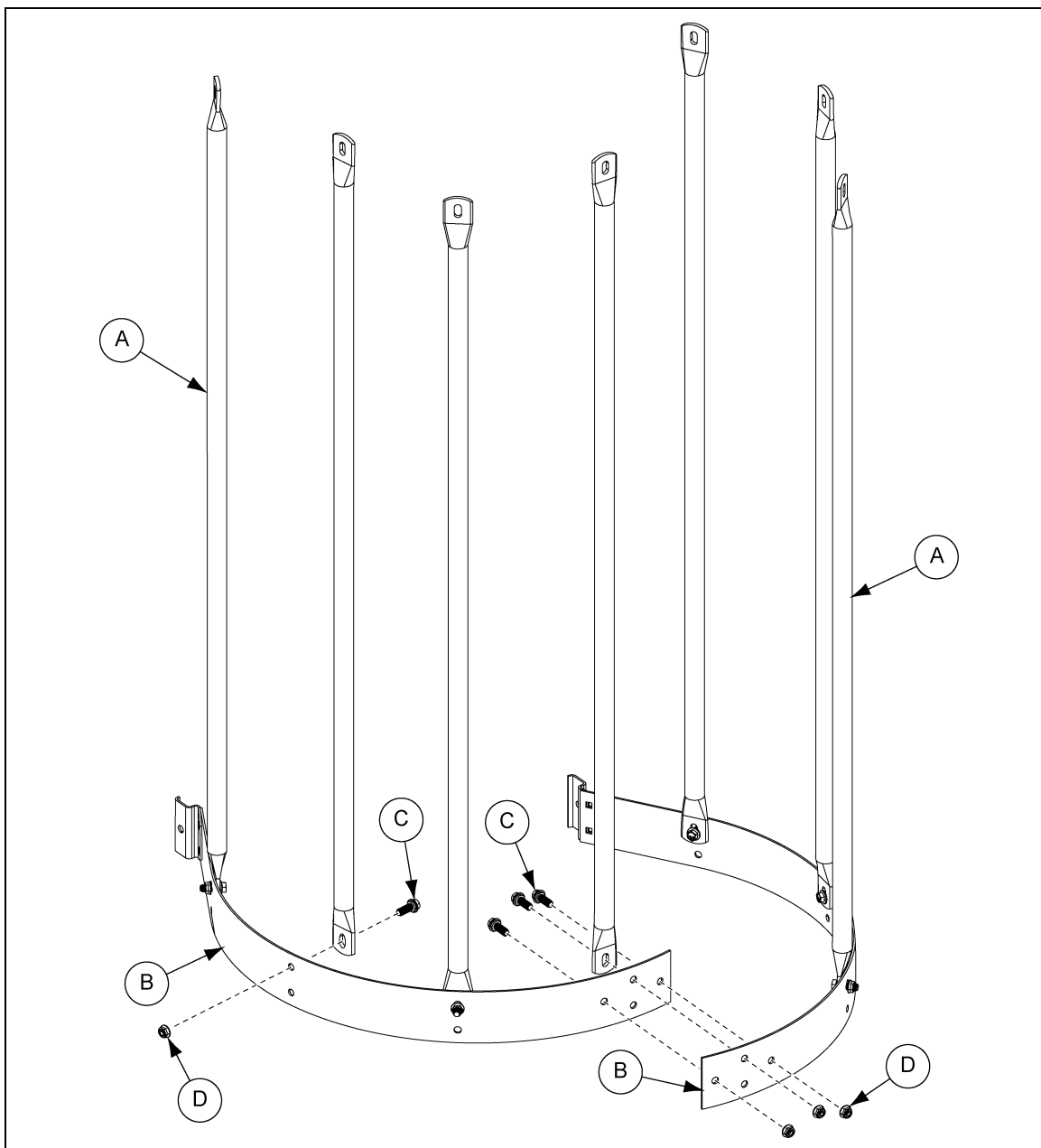


Figure 9G

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

Ref #	Part #	Description
C	S-10260	5/16" x 1" Flange Bolt with Sealing Washer
D	S-10268	5/16" Flange Nut

## 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 1" bolts and nuts with the head of the bolt to the inside of the safety cage. Assemble the special bell hoop halves and attach to the other end of the vertical supports. The vertical supports must be bent at the flat area to allow for the angle of the bell section. Attach the safety cage brackets to the ladder as shown in [Figure 10A on Page 44](#). Once the safety cage brackets are installed, attach the bell safety cage hoop half assembly to the safety cage brackets. Tighten bolts as you go.

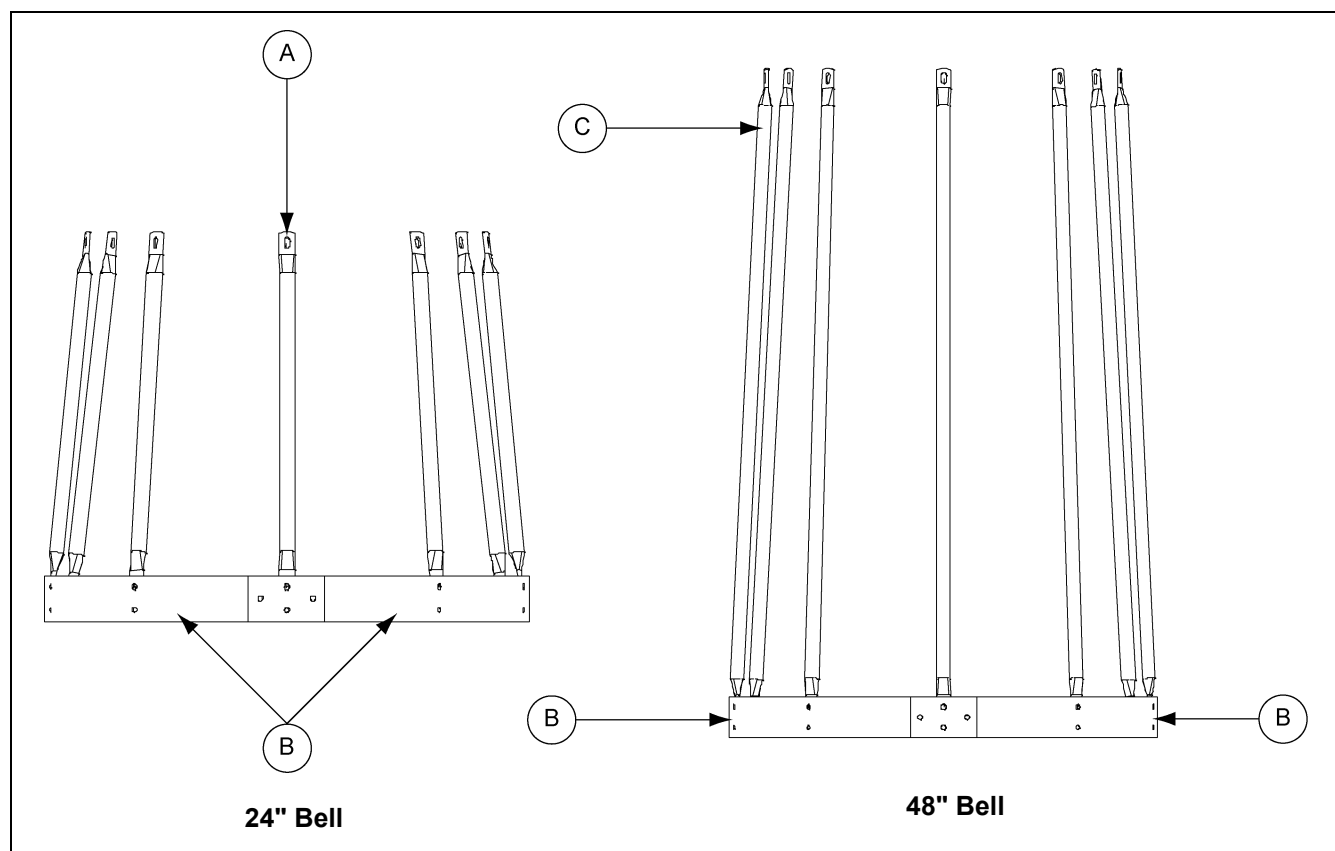


Figure 9H

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

10. Roof Cap and Ground Control

Roof Cap and Ground Control Instructions

Additional Tools and Materials Needed:

- Clamp
- Assorted Wrench Set
- Ratchet and Socket Set

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

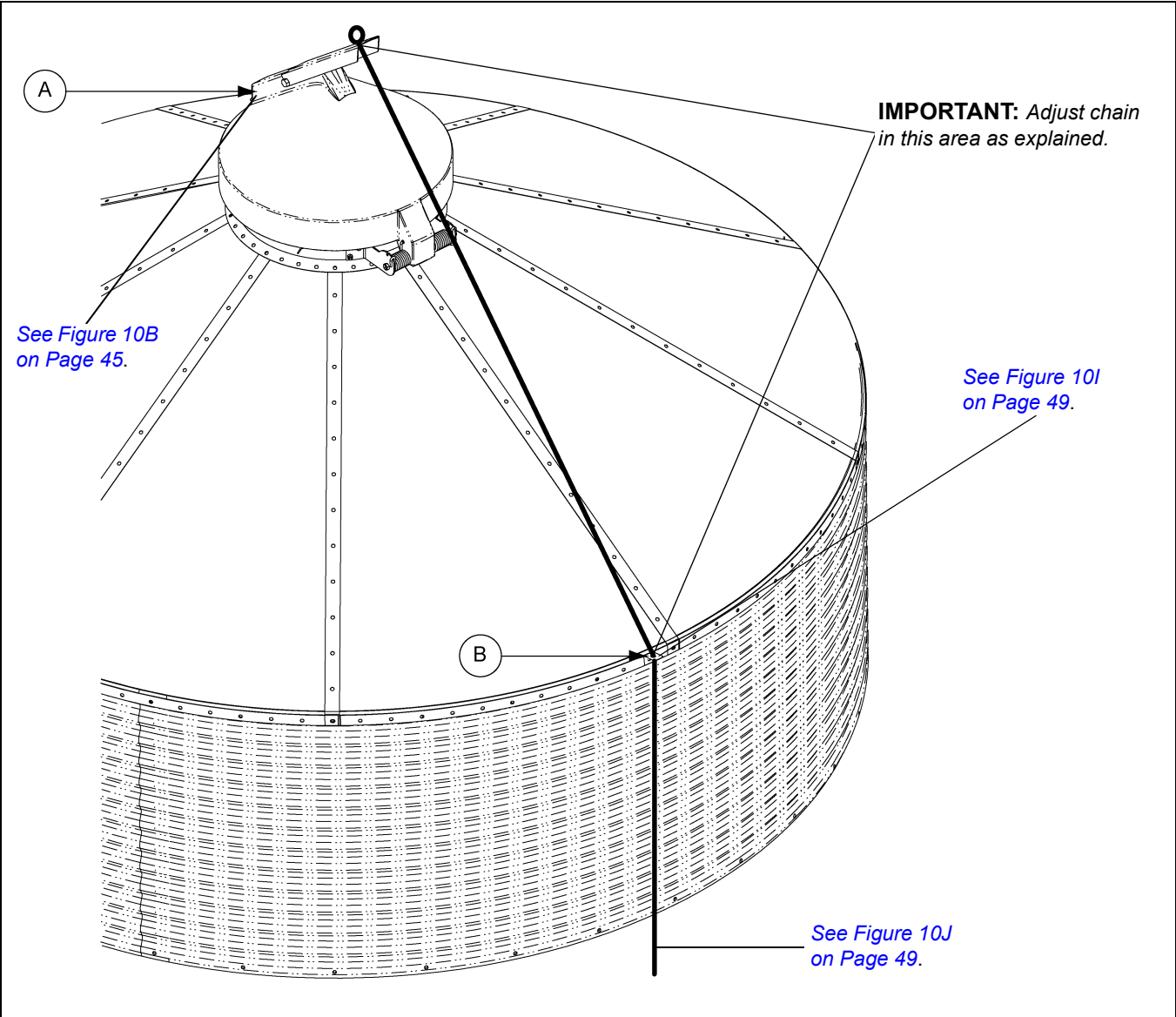
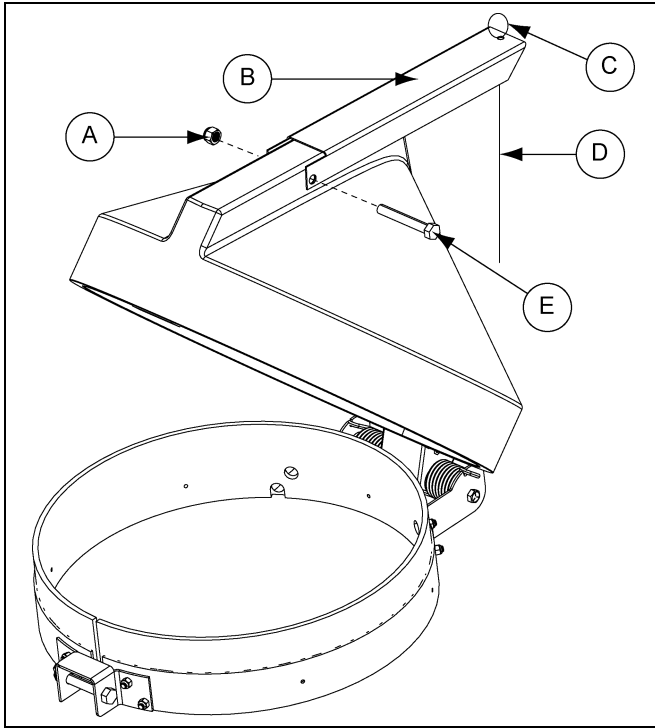


Figure 10A

Ref #	Description
A	Lever Arm
B	Roof Eave Bracket

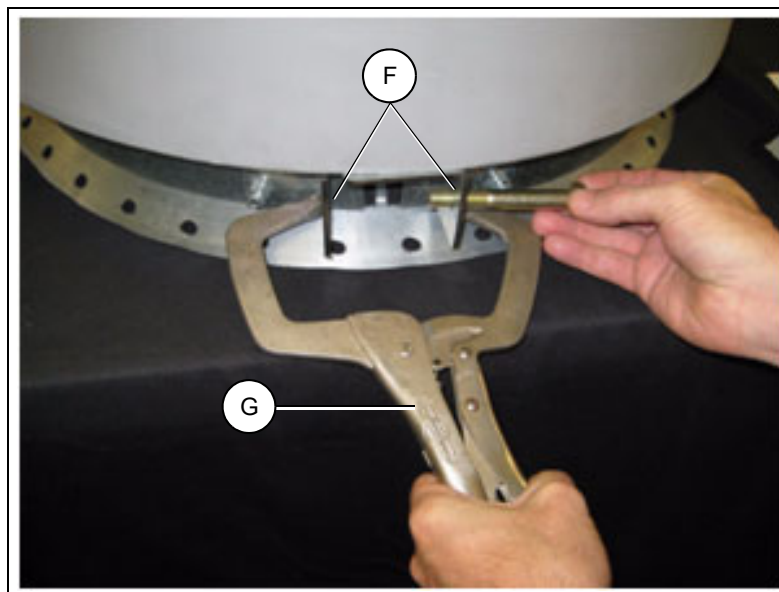
1. **With the lid closed**, align the hole in the lever arm with the hole in the bin lid. Insert 1/2" bolt through the hole and fasten with the nylock nut using 3/4" wrench and ratchet. **NOTE: DO NOT over tighten.** *This is a pivot bolt and the lever arm must be able to pivot freely.*



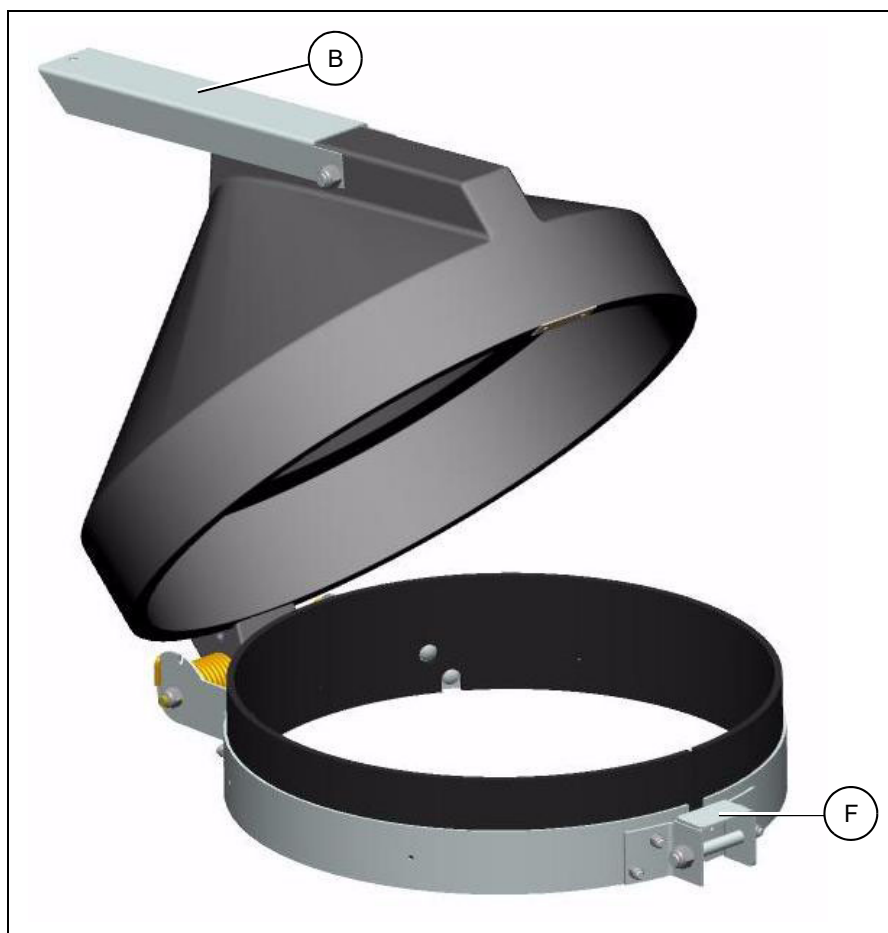
Ref #	Description
A	Nut
B	Lever Arm
C	Key Ring
D	Chain
E	Bolt
F	Mounting Brackets
G	Clamp
H	Bracket should extend over flange.

**Figure 10B** Install Lever Arm and Chain

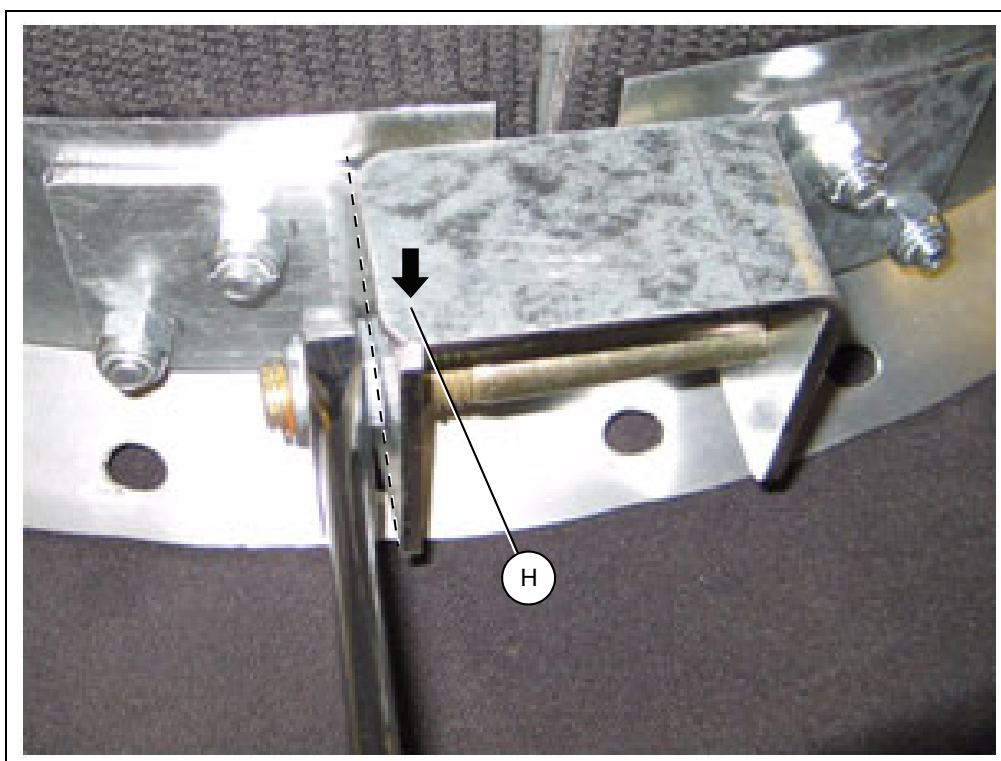
2. Place the lid assembly over the existing peak ring collar and rotate lid assembly such that the lever arm and spring hinge line up with the roof eave bracket, [See Figure 10A on Page 44](#). Use a clamp to pull the mounting brackets together. Slide the 3/8" carriage bolt supplied through the mounting bracket and loosely fasten with nut, [See Figure 10C](#). Remove clamp and tighten the bolt with 9/16" ratchet, ensuring that the vertical flange tightens past the left edge of the top, horizontal flange, [See Figure 10E on Page 46](#).



**Figure 10C** Mount Lid to Peak Ring

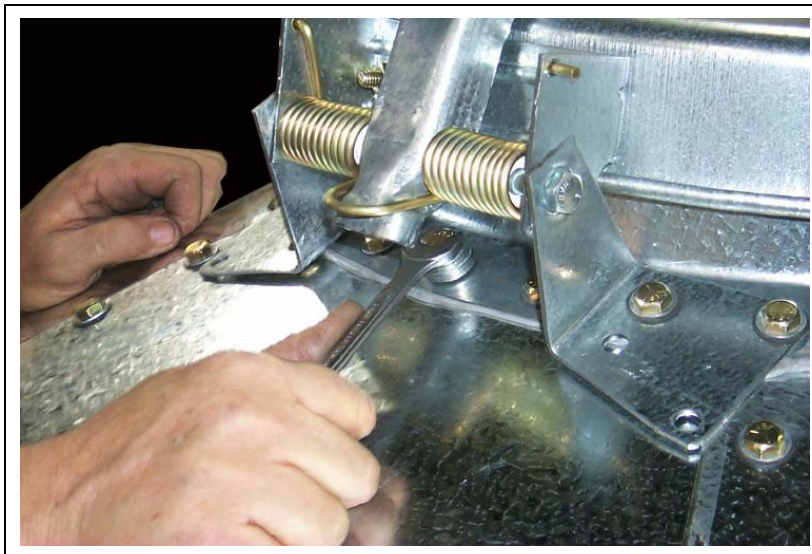


**Figure 10D**



**Figure 10E** *Tighten Bolts Until Flush with Bracket*

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



**Figure 10F**

**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 10F.)



**Figure 10G**

**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 10G.)



**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.**



## 10. Roof Cap and Ground Control

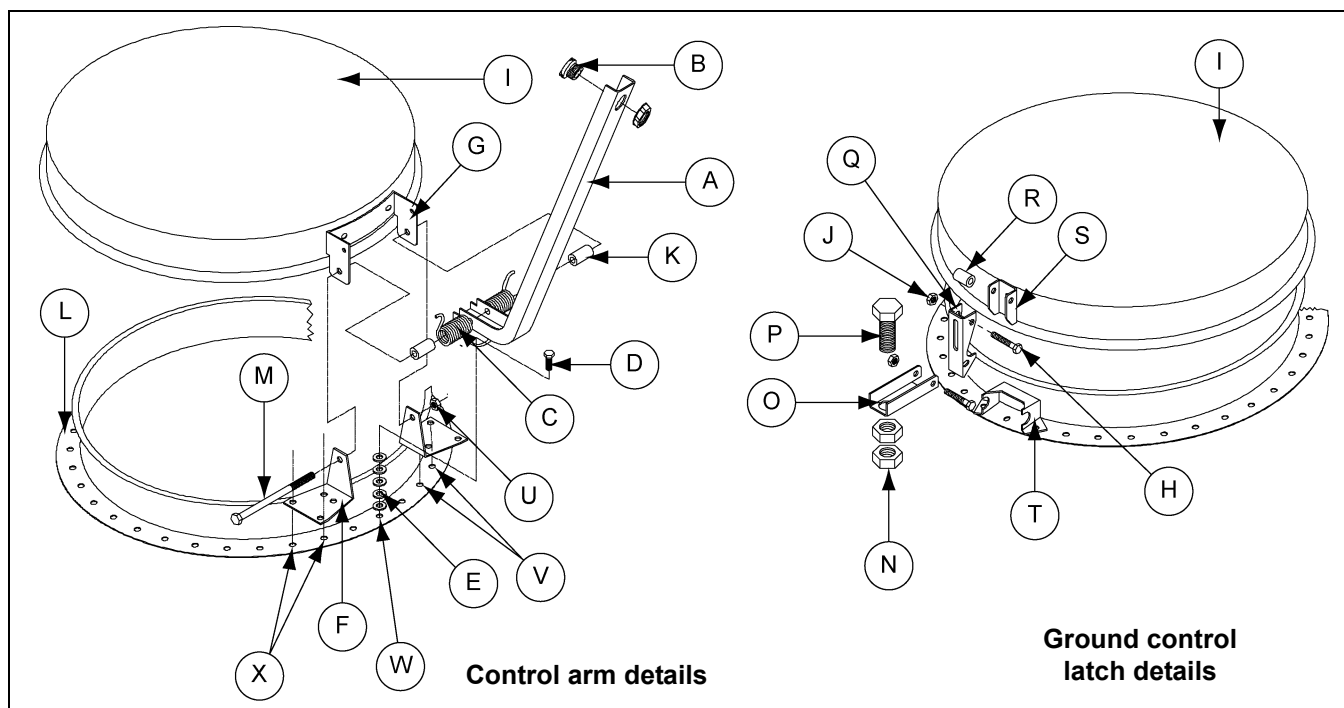


Figure 10H

### 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.



- Thread the existing chain through the hole on the end of the lever arm and fasten it to the provided key ring. (See Figure 10B on Page 45.) 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 10I.) Re-adjust the existing handle and key ring so the handle is positioned for easy access from ground. (See Figure 10J.) 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.

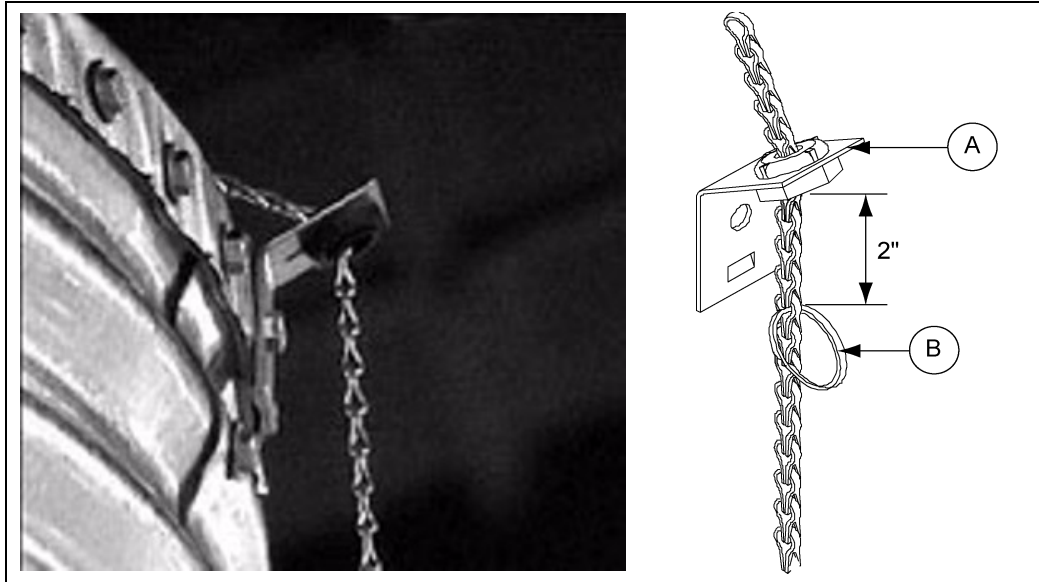


Figure 10I

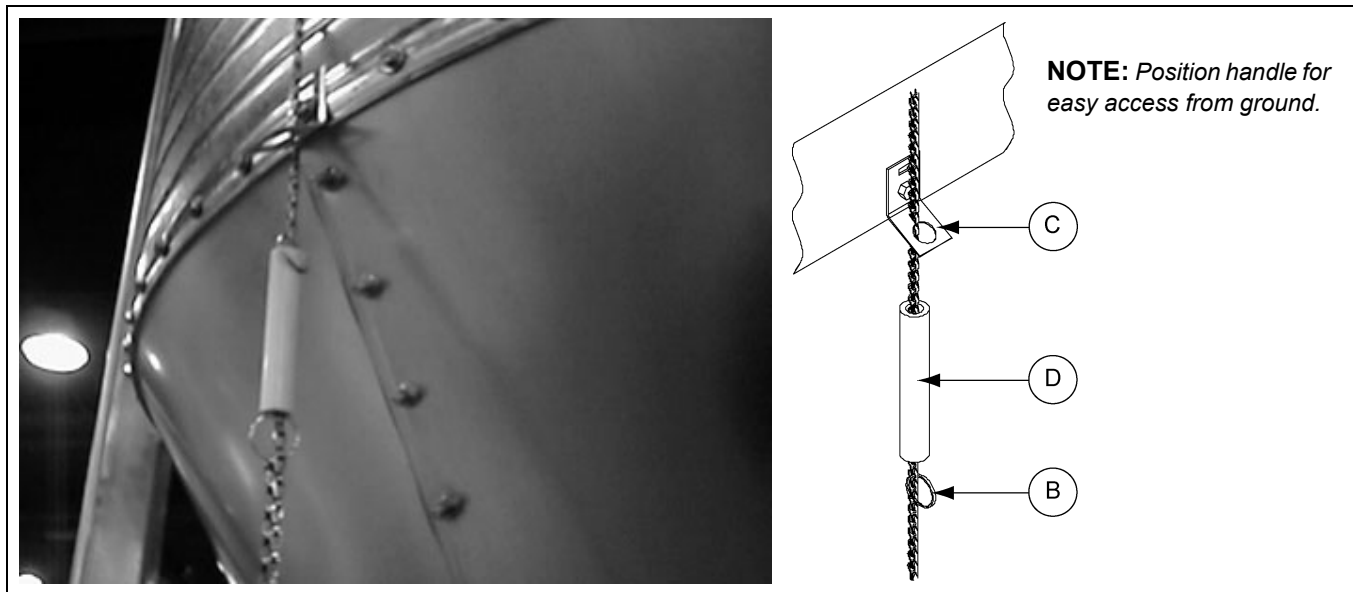


Figure 10J

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

Ref #	Description
C	Chain Holder (BLK-11949)
D	Handle

## 10. Roof Cap and Ground Control

4. Install the decal DC-2123 to the inside of peak ring on the hinge side of the lid as shown in [Figure 10K](#). Decal should be clearly visible when lid is open.



Figure 10K

5. Install the decal DC-2484 to the side of the BFT lid (above the mounting brackets) as shown in [Figure 10L](#).



Figure 10L

## Roof Cap

### Bulb Seal Kit (Optional)

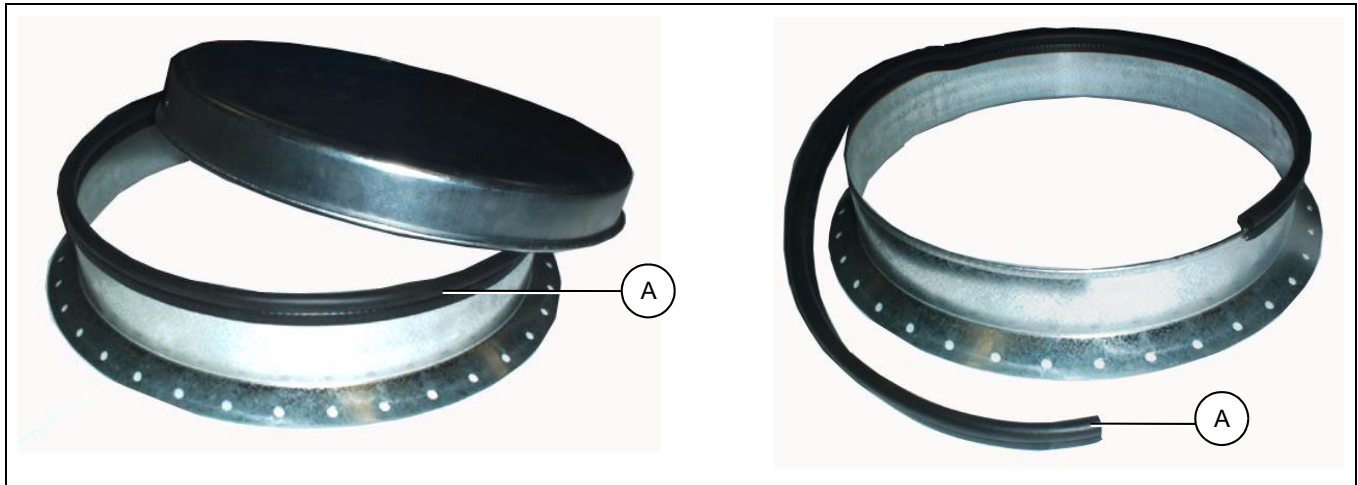


Figure 10M

### Cap Hold-Down Package

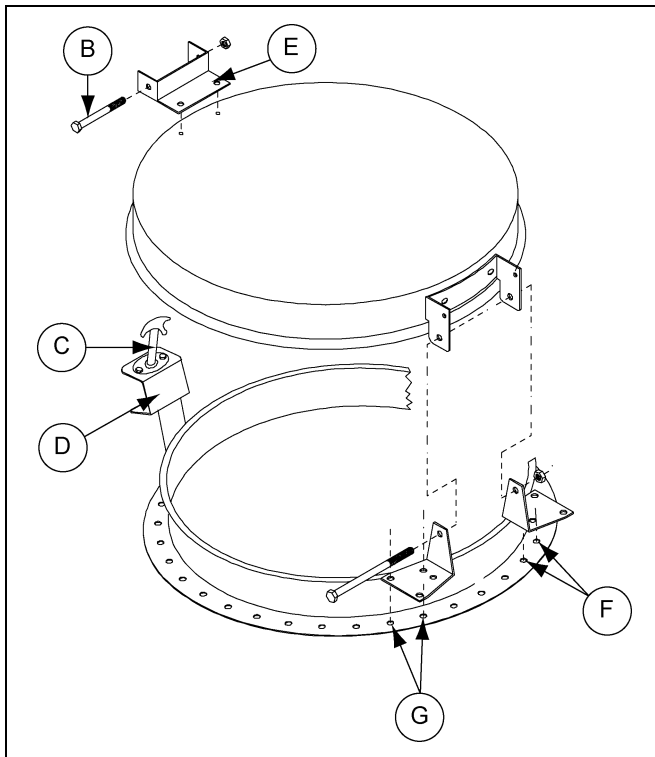


Figure 10N

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.

## 10. Roof Cap and Ground Control

### BFT Collar Assembly (BLK-13062)

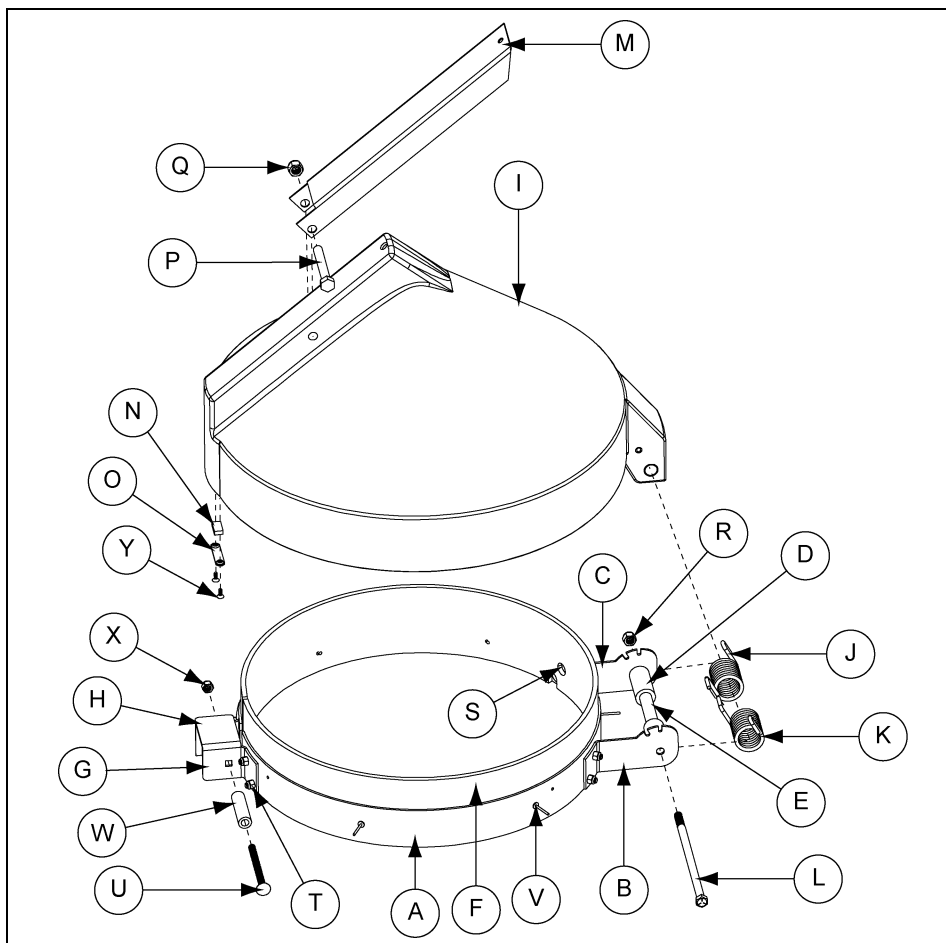


Figure 100

#### 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
M	BLK-13048	Leverage Arm - BFT Lid	1

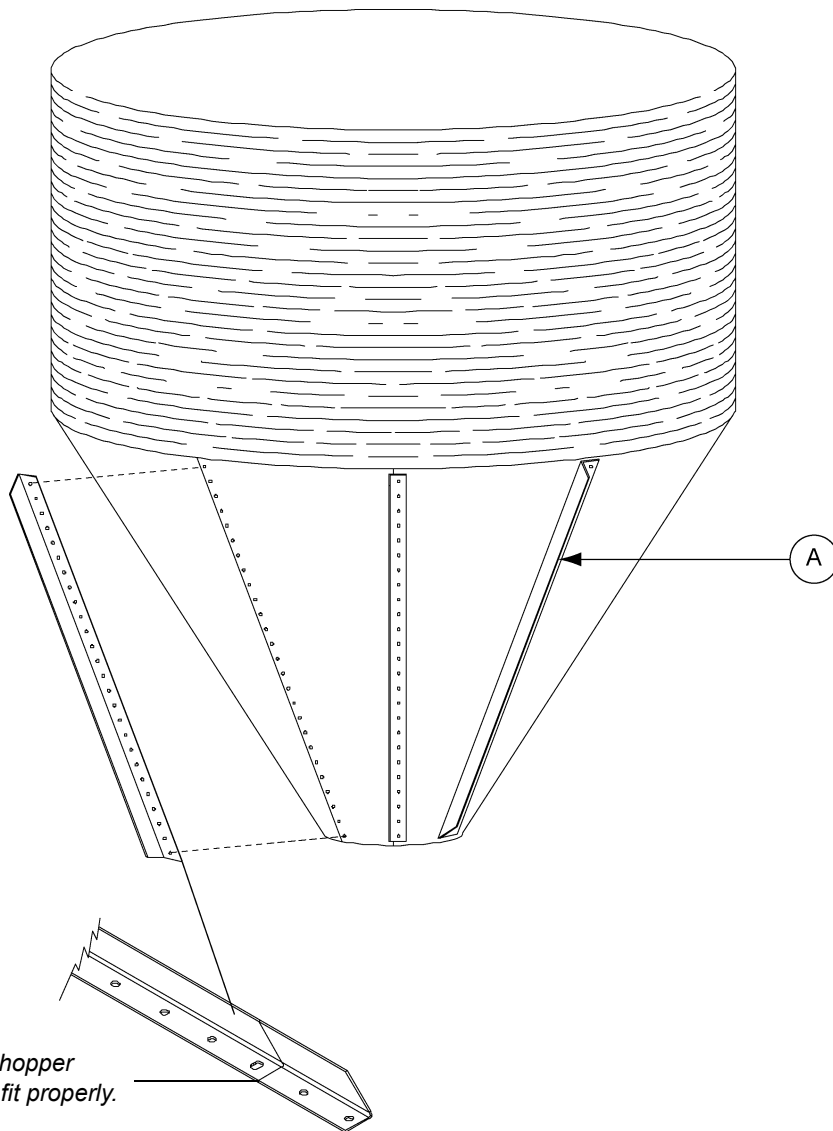
Ref #	Part #	Description	Qty
N	BLK-13068	BFT, Lid Magnet	1
O	BLK-13058	Retainer, Magnet, BFT Lid	1
P	S-8314	Bolt, HHCS 1/2"-13 x 3-1/2" YDP Grade 8	1
Q	S-8260	Nylock Nut 1/2"-13 ZN Grade 5	1
R	S-8234	Nylock Nut 7/16"-14 ZN Grade 2	1
S	S-7645	Carriage Bolt 5/16"-18 x 3/4" ZN Grade 5	8
T	S-7382	Nylock Nut 5/16"-18 ZN Grade 5	8
U	S-10621	Carriage Bolt 3/8"-16 x 4-1/2" ZN Grade 5	1
V	S-7236	Rivet, POE 3/16" Diameter x 0.565" Long ARSM	7
W	BLK-13480	Spacer, 2-3/4" PVC	1
X	S-7383	Nylock Nut 3/8"-16 ZN Grade 5	1
Y	S-10138	Bolt, FHSCS #10-32 x 3/8" ZN	2

## Hopper Sheets

When starting to attach hopper sheets to sidewall it is recommend that the first hopper sheet seam be positioned halfway between leg positions. Lap the hopper sheets as shown in [Figure 11B on Page 54](#). 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° 3-6 ring and 7' diameter 67° 5 and 6 ring tanks require hopper reinforcement angles. Angle covers entire seam (including hopper collar).**



**NOTE:** When used for 22" (559 mm) hopper openings, field cut brace below slot to fit properly.

Figure 11A

Ref #	Description
A	Hopper Reinforcement Angle

Hopper Sheets (Continued)

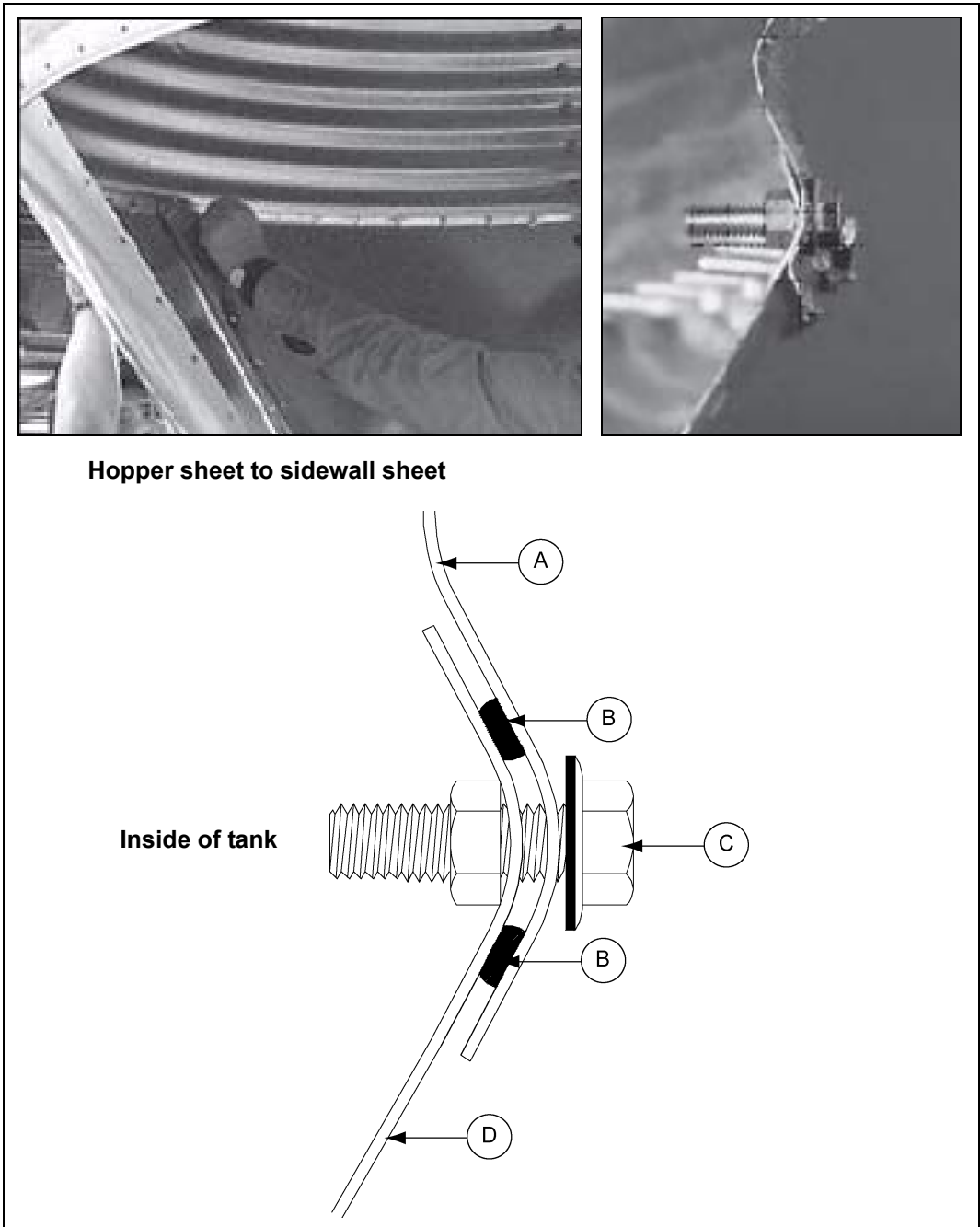


Figure 11B

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

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

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

Apply caulking between the hopper panel and the sidewall sheet.

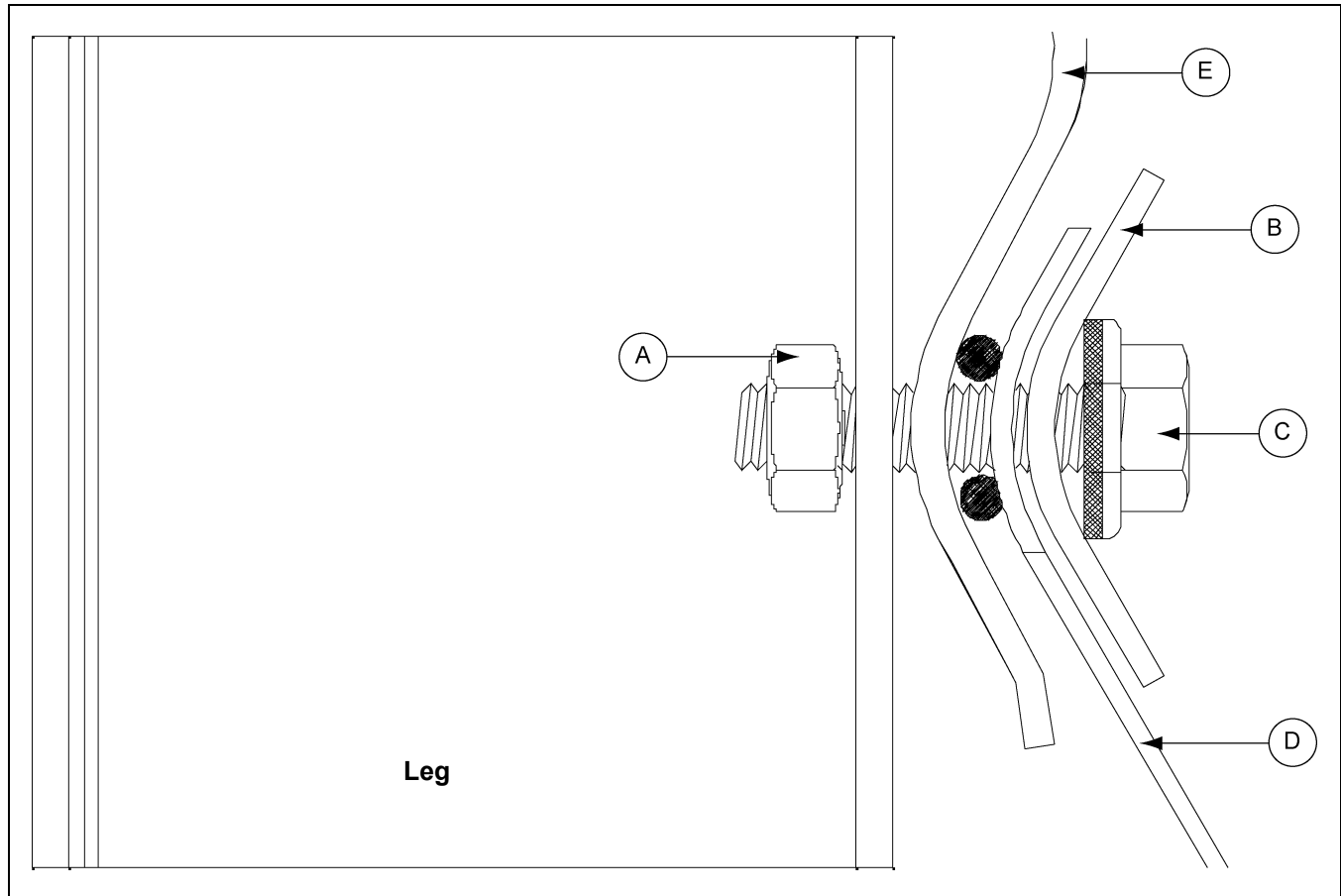


Figure 11C

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"-18 x 1" Flange Bolt with Sealing Washer
D		Hopper Panel
E		Sidewall Sheet



## 11. Hopper Assembly

### 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.)

Only the 9' 3-6 ring, 60° and 7' 5-6 ring, 67° ring tanks use reinforcement angles.

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

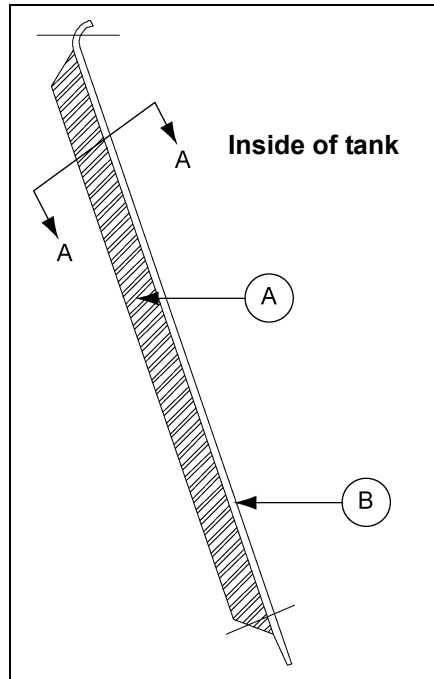


Figure 11D

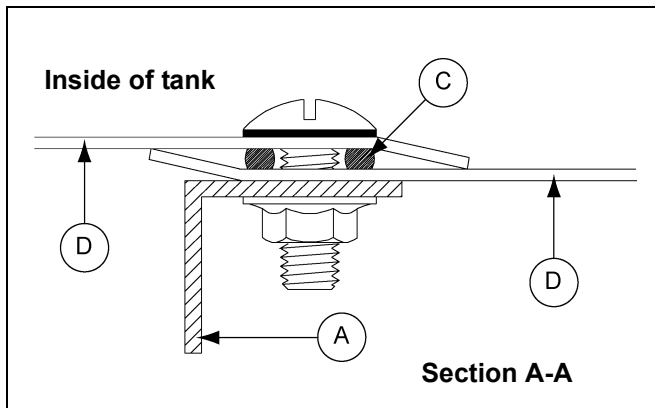


Figure 11E Hopper Overlap and Bolt Detail with Reinforcement Angle

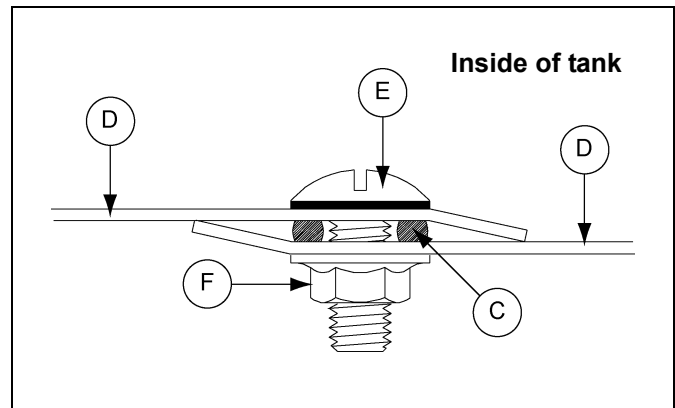


Figure 11F Hopper Overlap and Bolt Detail for Tanks without Reinforcement Angle

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	Flange Nut



## Hopper Collar

Prior to attaching the final hopper panel, assemble the hopper extensions (if utilized) 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 extensions and hopper panels. (See [Figure 11G](#) and [Figure 11H.](#))



Figure 11G

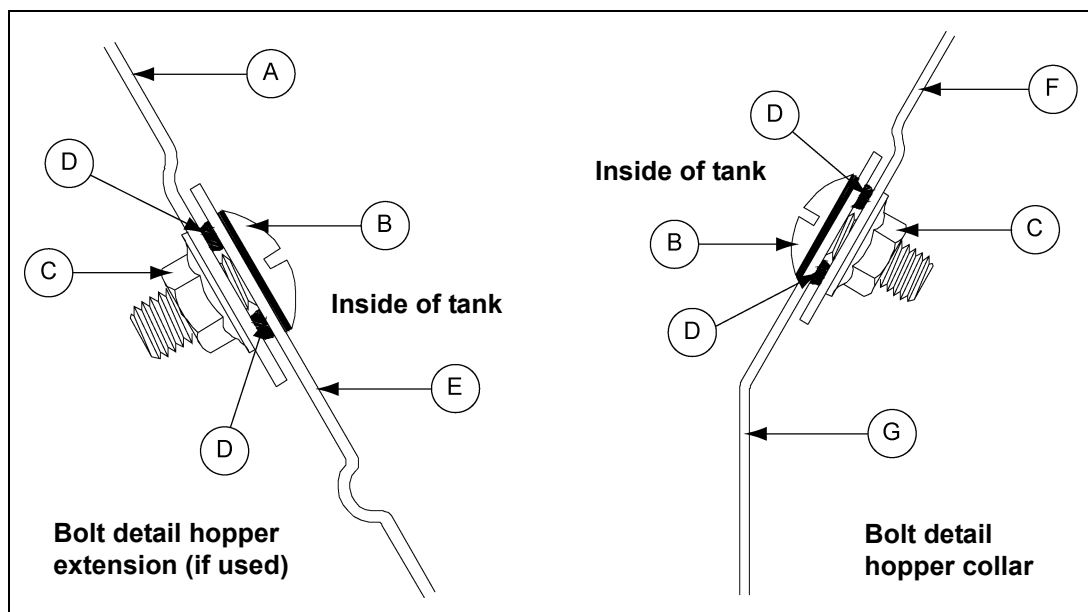


Figure 11H

Ref #	Description
A	Hopper Panel
B	5/16" x 1" Truss Head Bolt
C	Flange Nut
D	Caulking

Ref #	Description
E	Hopper Extension
F	16" or 22" Hopper or Hopper Extension (if Used)
G	16" or 22" Hopper Collar

11. Hopper Assembly

22" Hopper Collar

- 45° 22" Hopper Collar (BLK-10854)
- 60° 22" Hopper Collar (BLK-10342)
- 67° 22" Hopper Collar (BLK-10341)

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

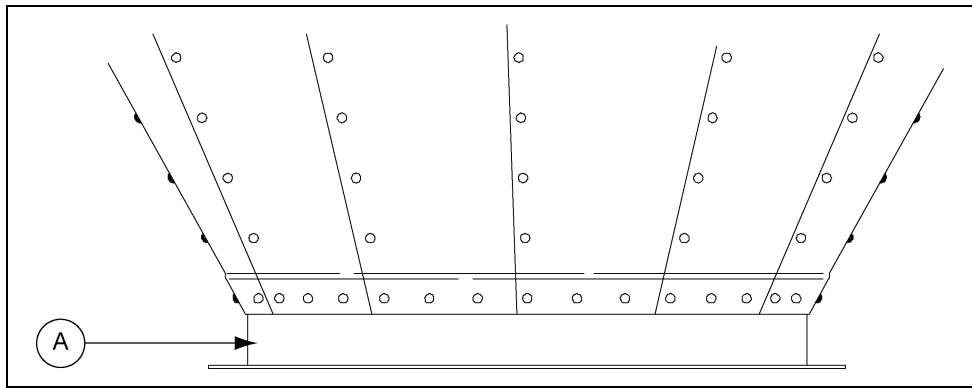


Figure 11I

Ref #	Description
A	22" Hopper Collar

16" Hopper Collar

- 6'-16" Hopper Collar 60° (BLK-10489) (24 Holes)
- 7'-16" Hopper Collar 67°(BLK-10488) (24 Holes)
- \* 9'-16" Hopper Collar 60° (BLK-12342) (18 Holes)
- \* **NOTE:** 9'-16" 60° Hopper collar (BLK-12342) is used with a 9'-16" 60° tank only. (18 Holes.)

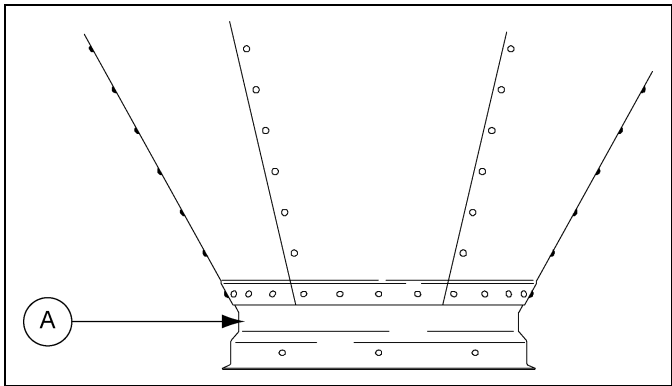


Figure 11J

Ref #	Description
A	16" Hopper Collar

## Hopper Extension Kits

16" 45° Hopper Extension and Collar (BLK-10847) (Standard on 7' and 9' 45°)

16" 60° Hopper Extension and Collar (BLK-10587) (Optional)

16" 67° Hopper Extension and Collar (BLK-10591) (Optional)

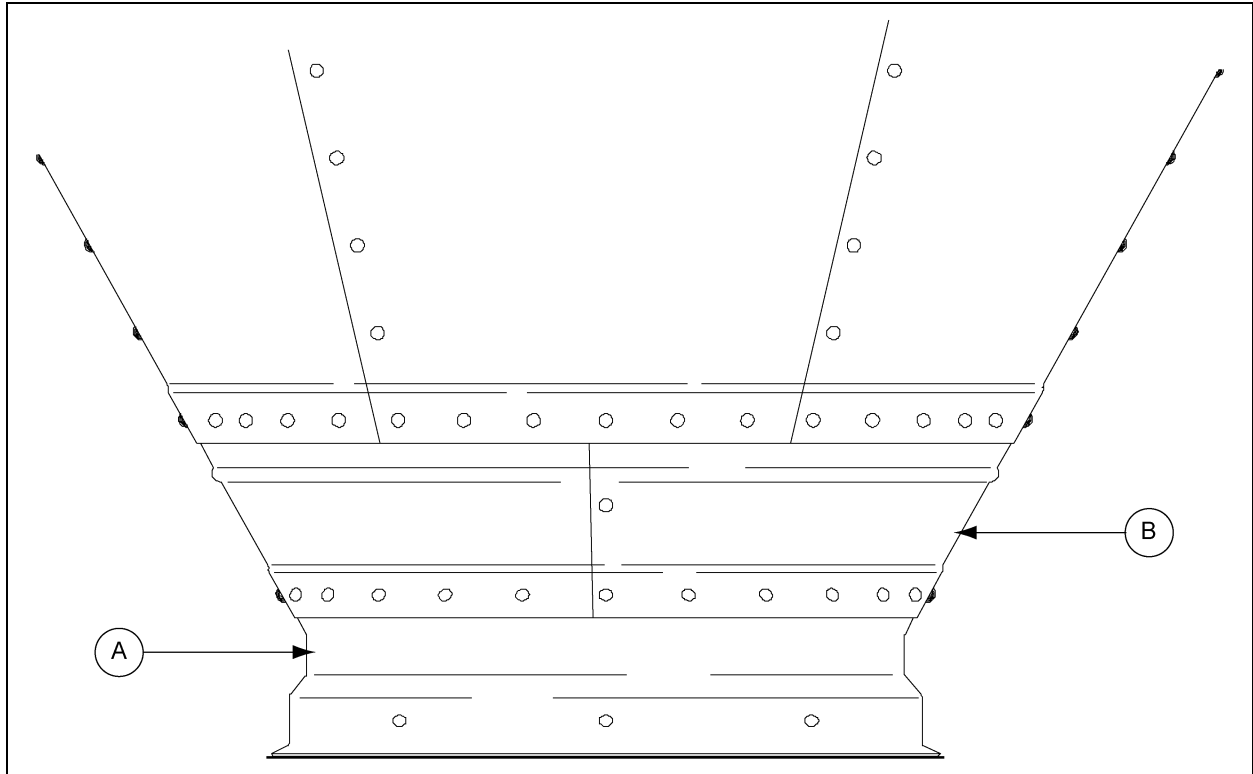


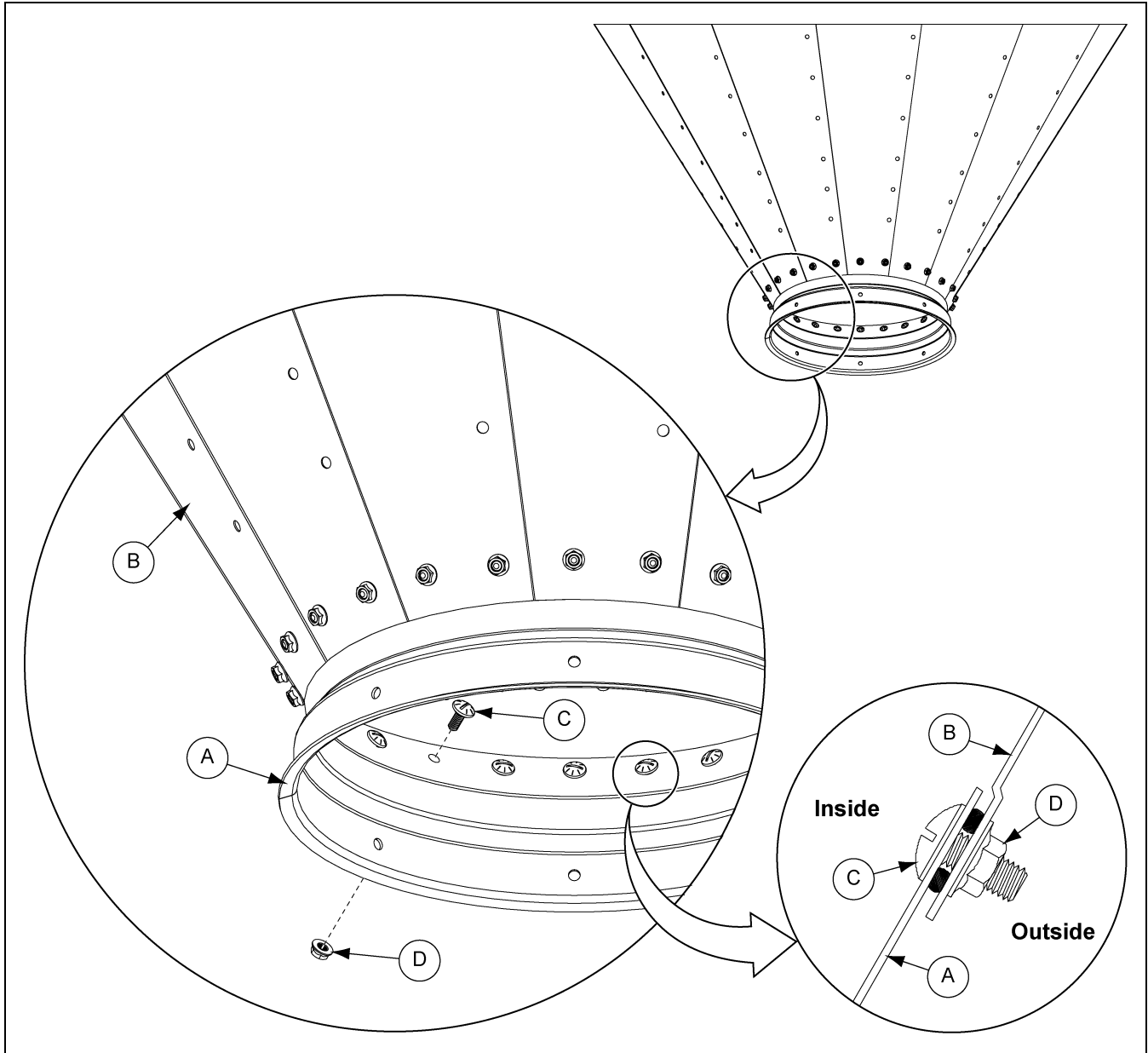
Figure 11K

Ref #	Description
A	16" Hopper Collar
B	22"-16" Hopper Extension

### Attaching the Collar to the Hopper Panel

1. Install the top of the collar (A) to the hopper panels (B) using 5/16" x 1" truss head bolts (C) and 5/16" flange nuts (D). *(See Figure 11L.)*

**NOTE:** Use 5/16" x 1" truss head bolts (C) at the top of the collar (A).



**Figure 11L** Attaching the Collar to the Hopper Panel

Ref #	Description
A	Hopper Collar
B	Hopper Panels
C	5/16" x 1" Truss Head Bolt with Sealing Washer (S-10633)
D	5/16" Flange Nut (S-10268)

## Tank Legs and Leg Braces

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 61-65](#) for leg attachment to sidewall sheet details.

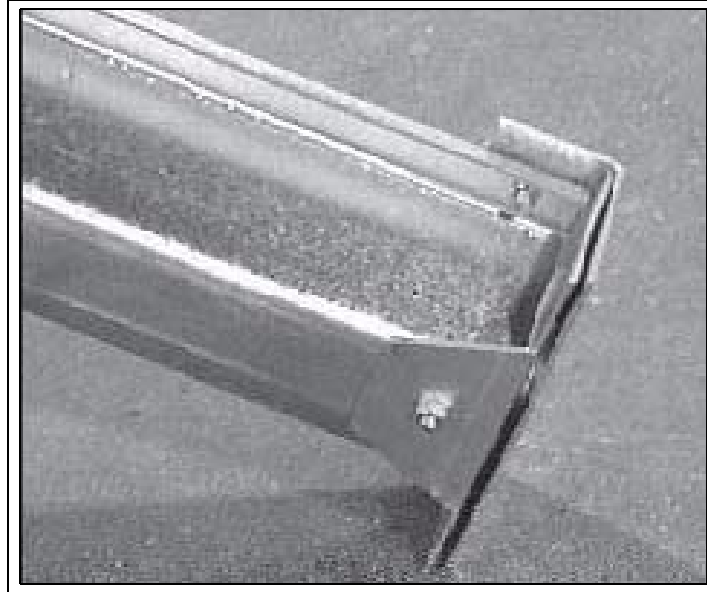


Figure 12A

Use 5/16" x 1" bin bolts and nuts when attaching the leg to base. Make sure the washer is used on the slot side of the leg.

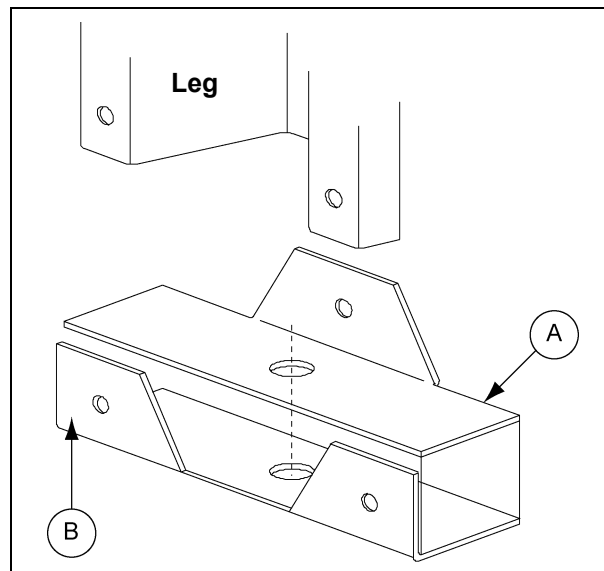


Figure 12B

Ref #	Part #	Description
A	BLK-10057	Back Leg Anchor Plate (One Tab)
B	BLK-10058	Front Leg Anchor Plate (Two (2) Tabs)

Tank Legs and Leg Braces (Continued)

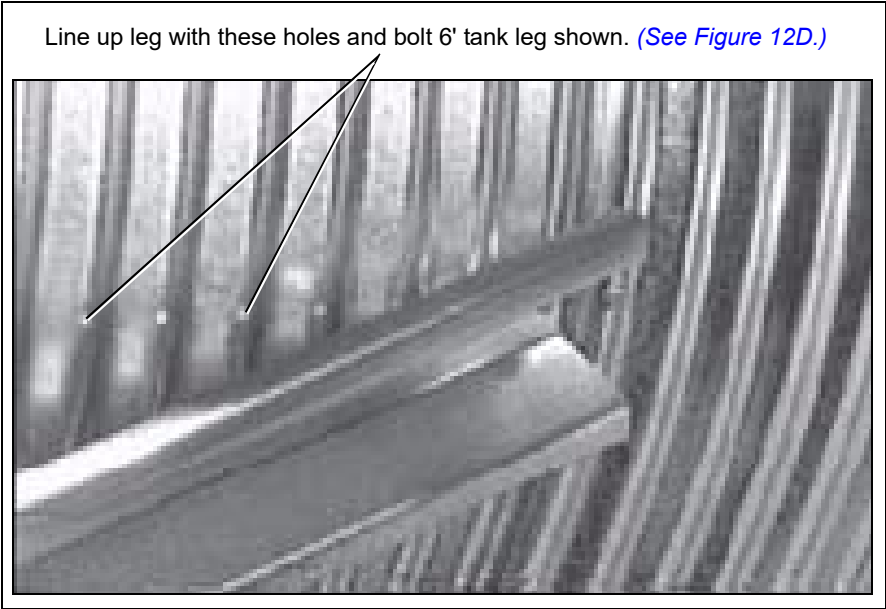


Figure 12C

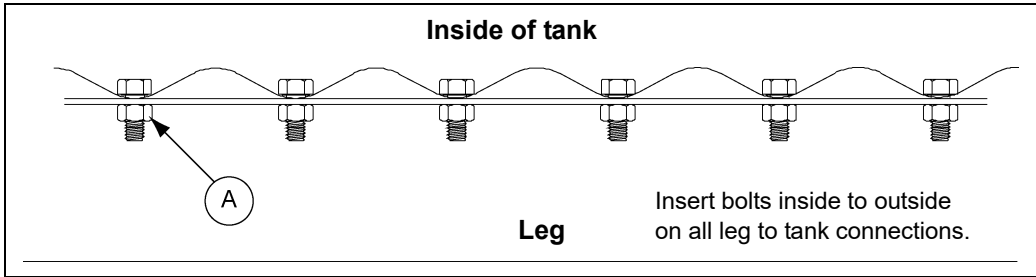


Figure 12D

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

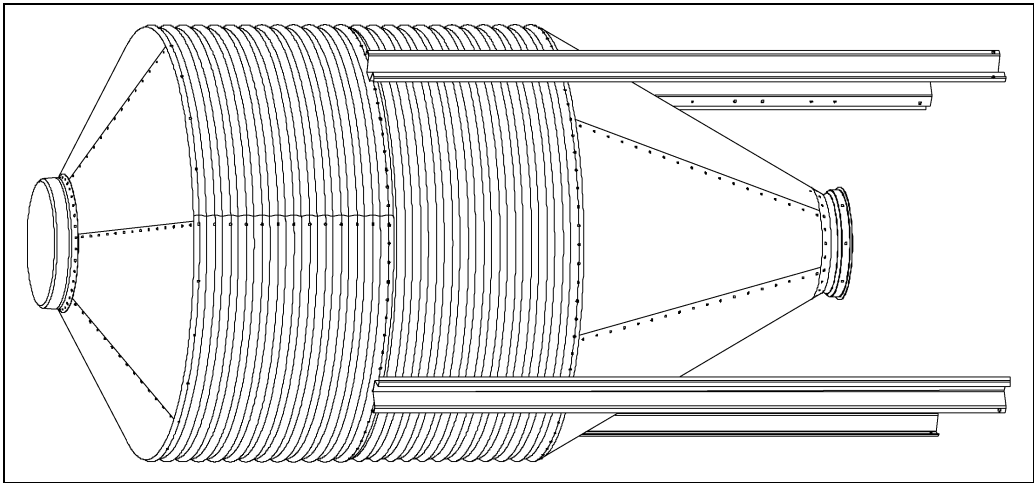


Figure 12E

## Leg Size Chart

Tank Size	Hopper	# of Rings	Length	Leg Coverage
6' Diameter	60°	1-4 Rings	106-3/8"	1 Ring
7' Diameter	67°	1-4 Rings	140-1/2"	1 Ring
7' Diameter	67°	5-6 Rings	164-1/2"	1-3/4 Rings (56")
7' Diameter	45°	1-4 Rings	94-1/8"	1 Ring
7' Diameter	45°	5-6 Rings	120-3/4"	1-3/4 Rings (56")
9' Diameter	60°	1-5 Rings	140-1/2"	1 Ring
9' Diameter	60°	6 Rings	164-1/2"	1-3/4 Rings (56")
9' Diameter	45°	1-5 Rings	106-1/8"	1 Ring
9' Diameter	45°	6 Rings	132-3/4"	1-3/4 Rings (56")

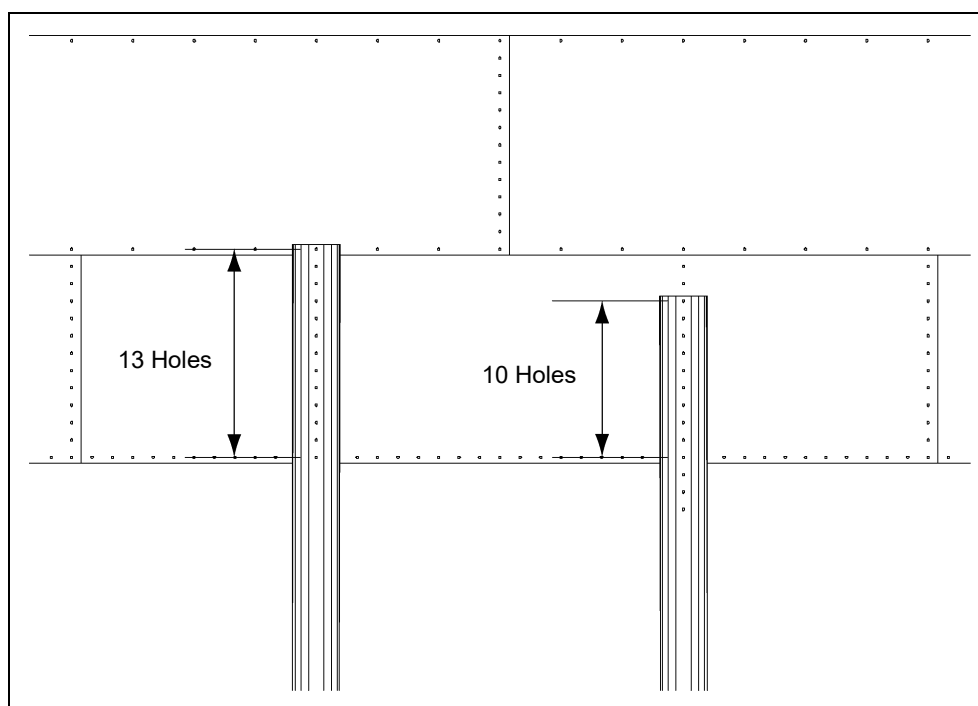
\* **NOTE:** 9' 5 Ring tanks must utilize 2 ring coverage legs if raising 8" (203.2 mm).



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

Depending on the size of the Bulk Feed Tank you are assembling, the leg will cover either the bottom ring or 1-3/4 rings (56"). Refer to this chart to find the correct number of rings the legs will cover. **Put all legs on, but do not tighten bolts until all braces are in place.** Be sure to put leg braces on properly. (See Pages 65-68.)

### 1 Ring Leg 140-1/2" (3569 mm)



**Figure 12F Leg Adjustment (7' (1-4 Ring) 67° and 9' (1-5 ring) 60° Only)**

## 12. Legs and Leg Bracing

### Extra Clearance Leg Adjustment

In cases where extra clearance is required (on 7' 67° and 9' 60° tanks only), you may raise the tank up to 8" when installing the legs. [See Figure 12G](#) for proper positioning. Call company's engineering for any other special requirements.

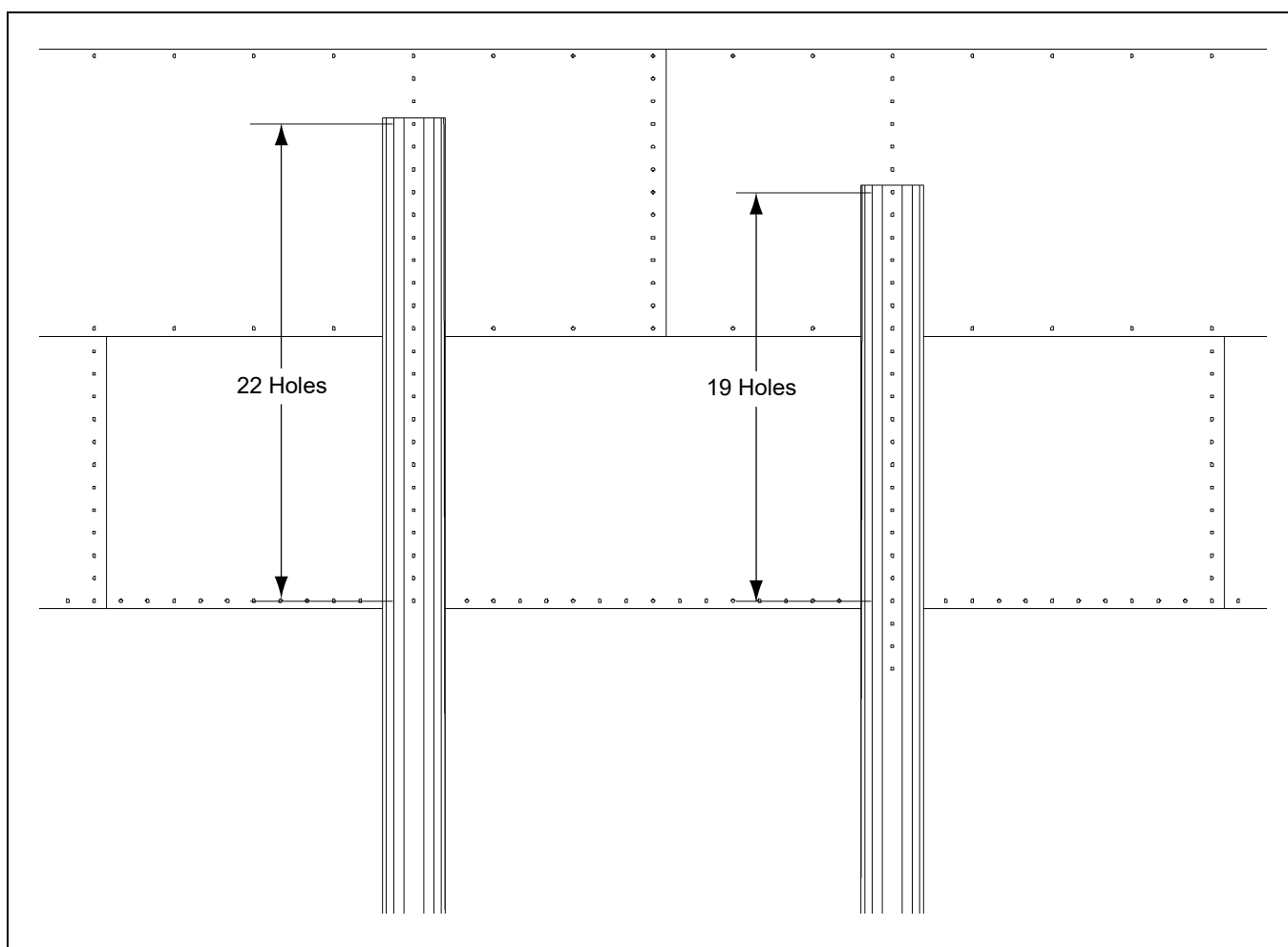
\* **NOTE:** If 7'-4 ring and 9'-4 ring 60° tanks are raised, they will require a safety cage ladder package.

### 2 Ring Leg 164-1/2" (4178 mm)

\* **NOTE:** 9'-5 Ring tanks must utilize 2 ring coverage legs if raising 8" (203.2 mm).



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



**Figure 12G** Leg Adjustment (7' (5-6 Ring) 67° and 9' (6 Ring) 60° Only)



## Bracing Hole Layout

For 7' 67° and 9' 60° feed tank bracing layout, [See Pages 66-67](#).

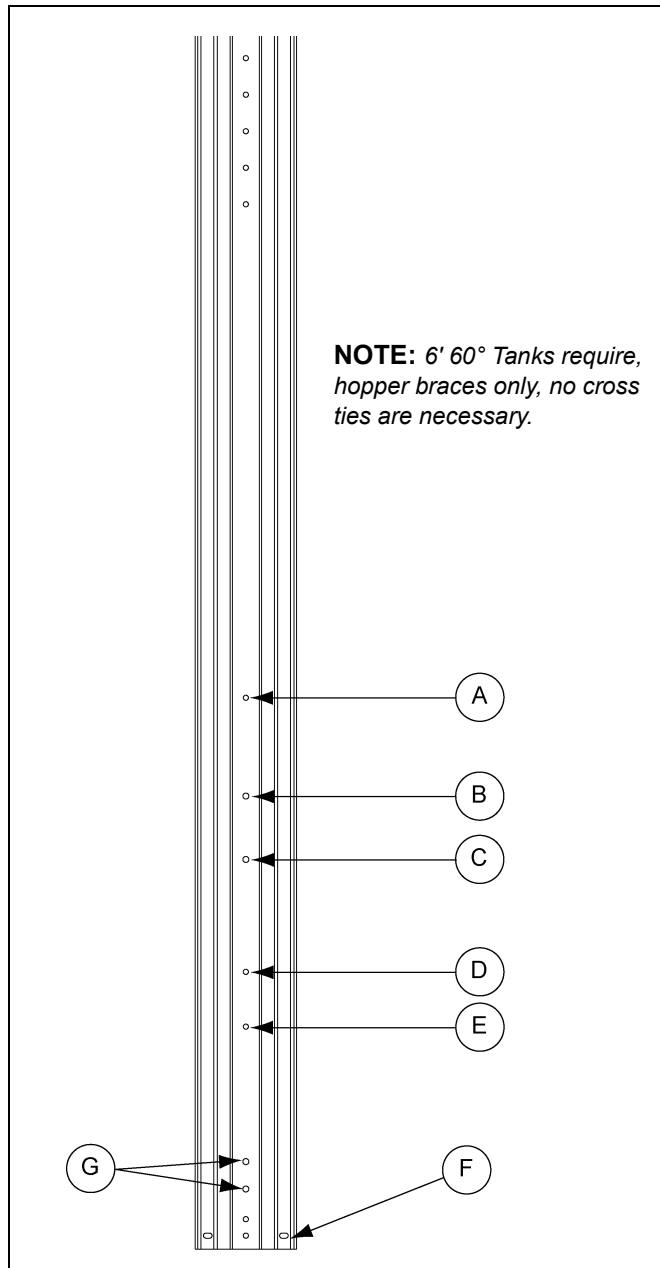


Figure 12H 6' Leg 60°

Ref #	Description
A	Ladder Standoff 3 Ring Tank
B	22" Hopper Brace
C	16" Hopper Brace
D	Ladder Standoff 4 Ring Tank
E	Ladder Standoff 1-2 Ring Tank
F	Anchor
G	Load Cell (Optional)

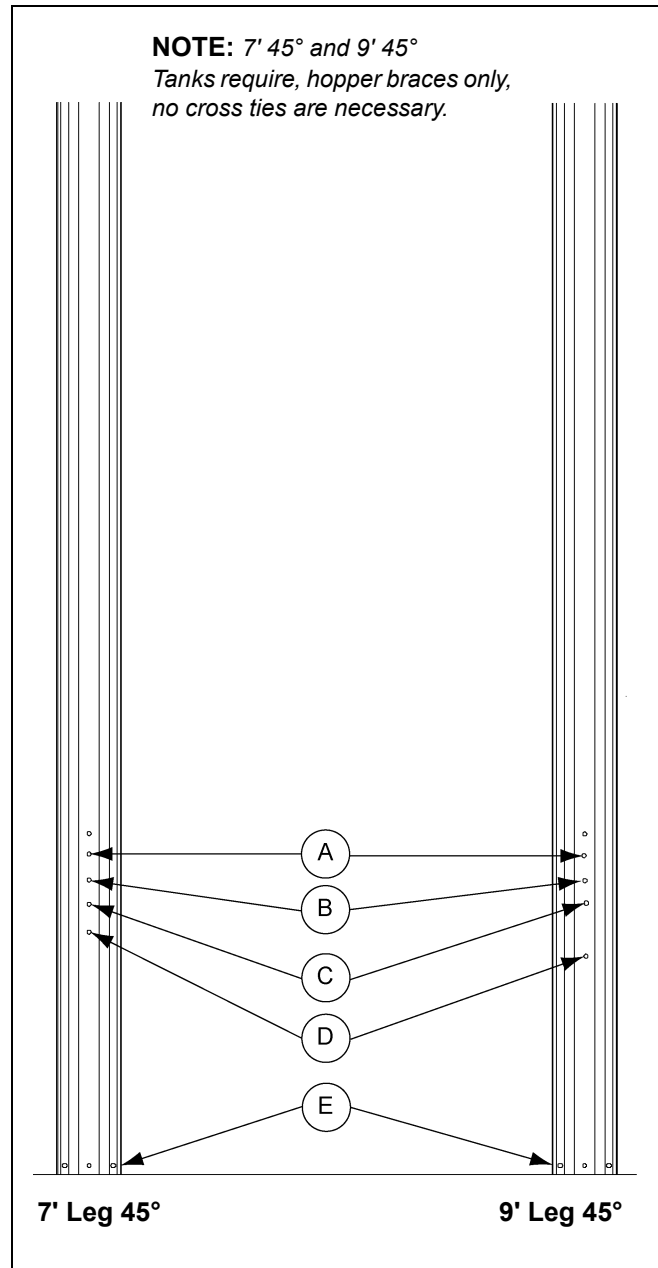


Figure 12I 7' and 9' 45° Legs

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

## 12. Legs and Leg Bracing

### 7' 67° 1-6 Ring

Figure 12J has been modified for clarity (not to scale). For 7' and 9' bracing notes, [See Page 65](#).

Dimensions shown are measured from center of attachment holes in legs to bottom of leg. Use 3/8" nuts and bolts to attach cross ties to each other and to leg. Hopper braces are attached to legs with 3/8" nuts and bolts and to hopper collar with 5/16" hardware. Ladder standoffs are attached to legs with 5/16" nuts and bolts. Do not tighten hardware until all bracing is in place.

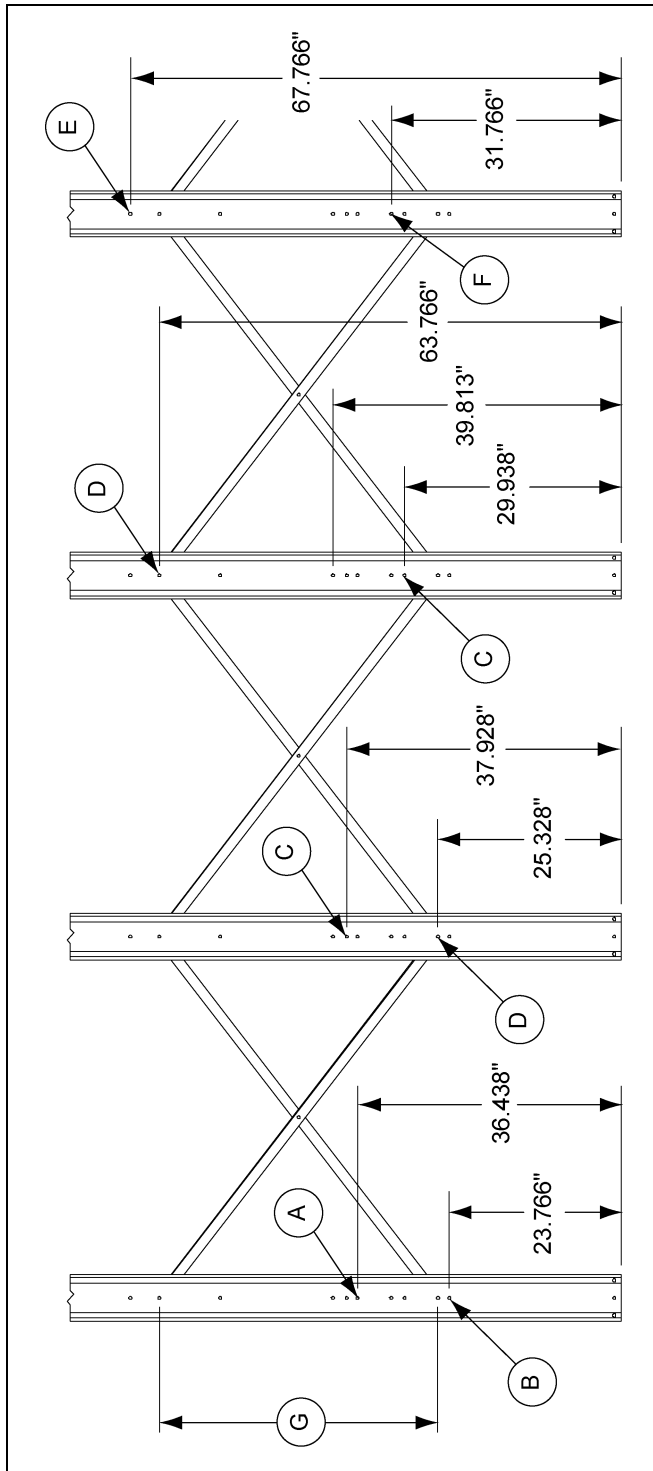


Figure 12J

Ref #	Description
A	22" Hopper Brace 7/16" Diameter Hole
B	Ladder Standoff 1-3-5 Rings 3/8" Diameter Hole
C	16" Hopper Brace (Raising Tank 8") 7/16" Diameter Hole
D	Cross Tie Brace 7/16" Diameter Hole
E	Ladder Standoff (All) 3/8" Diameter Hole
F	Ladder Standoff 2-4-6 Rings 3/8" Diameter Hole
G	38.483" Between Hopper Braces

## 9' 60° 2 Through 6 Ring Tank

Figure 12K has been modified for clarity (not to scale). For 7' and 9' bracing notes, [See Page 65](#).

**NOTE:** 9' 5 Ring tanks must use 6 ring legs when raising 8" (203.2 mm).

Dimensions shown are measured from center of attachment holes in legs to bottom of leg. Use 3/8" nuts and bolts to attach cross ties to each other and to leg. Hopper braces are attached to legs with 3/8" nuts and bolts and to hopper collar with 5/16" hardware. Ladder standoffs are attached to legs with 5/16" nuts and bolts. Do not tighten hardware until all bracing is in place.

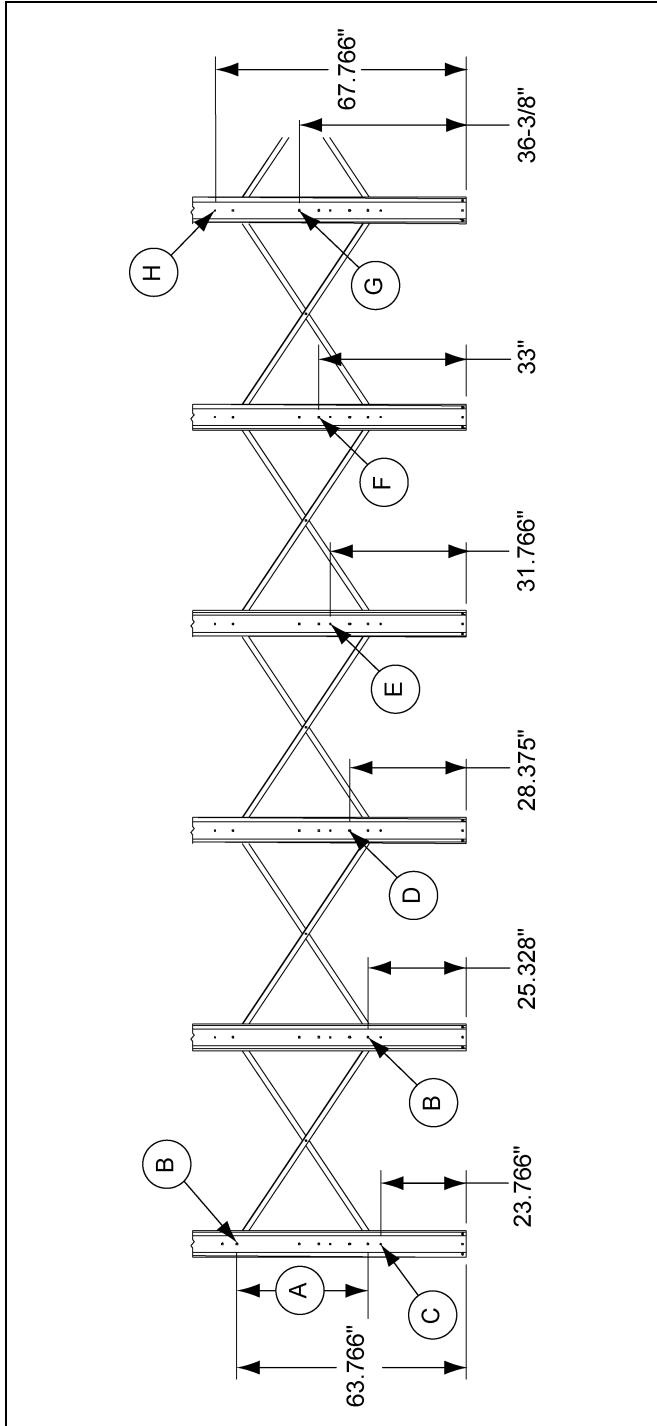


Figure 12K

Ref #	Description
A	38-7/16" Between Hopper Braces
B	Cross Tie Brace 7/16" Diameter Hole
C	Ladder Standoff 1-3-5 Rings 3/8" Diameter Hole
D	16" Hopper Brace 3/8" Diameter Hole
E	Ladder Standoff 2-4-6 Rings 3/8" Diameter Hole
F	22" Hopper Brace 7/16" Diameter Hole
G	16" Hopper Brace (Raising Tank 8") 7/16" Diameter Hole
H	Ladder Standoff (All) 3/8" Diameter Hole

### Hopper to Leg Horizontal Bracing

#### BFT Brace Quantity

Tank	Hopper	Inside Cross	Outside Cross
Description	Brace	Tie Brace	Tie Brace
6' Diameter 60° Hopper	4	0 **	0 **
7' Diameter 67° Hopper	4	4	4
7' Diameter 45° Hopper	4	0 **	0 **
9' Diameter 60° Hopper	6	6	6
9' Diameter 45° Hopper	6	0 **	0 **

**\*\* NOTE:** 6' 60°, 7' 45° and 9' 45° Tanks do not require cross tie braces.

All 6' 60°, all 7' 67° and all 9' 60° tanks utilize hopper bracing. Braces attach horizontally to the legs with 3/8" hardware and to the hopper with 5/16" hardware. (See Figure 12L and Figure 12M.)

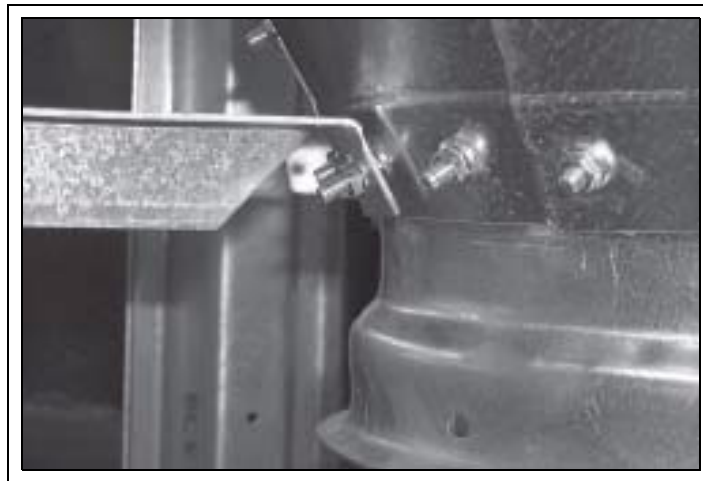


Figure 12L

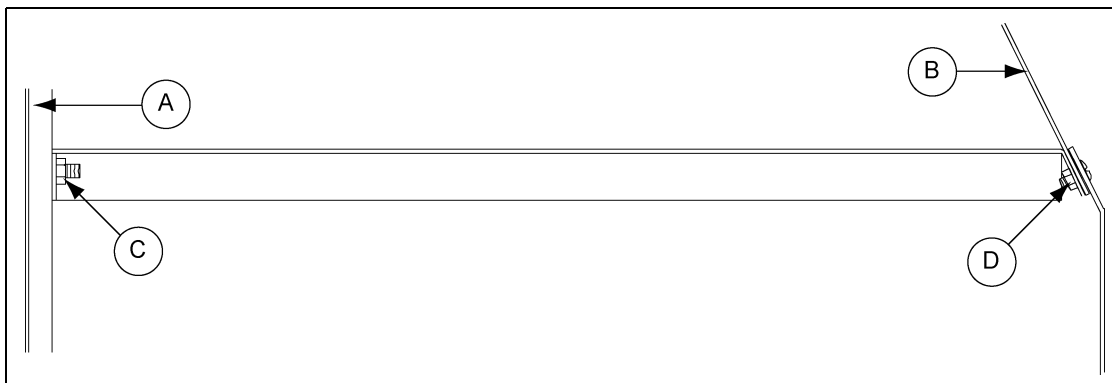


Figure 12M

Ref #	Description
A	Leg
B	Hopper

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

## Tank Legs and Leg Braces (Continued)



Figure 12N

Hopper braces are required on all hopper tanks and should be spaced equally around the tank. Refer to chart [below](#) for the quantities required the tank.

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

**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.


# Raising Bin to Set on Foundation

## Preparing Bin

Just before standing the bin 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 bin on the foundation.**

To prevent damage to legs when raising bin, brace them with 2" x 4" (50 mm x 100 mm) pieces of wood as shown in [Figure 13A](#). See the chart [below](#) for the correct length.



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

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)

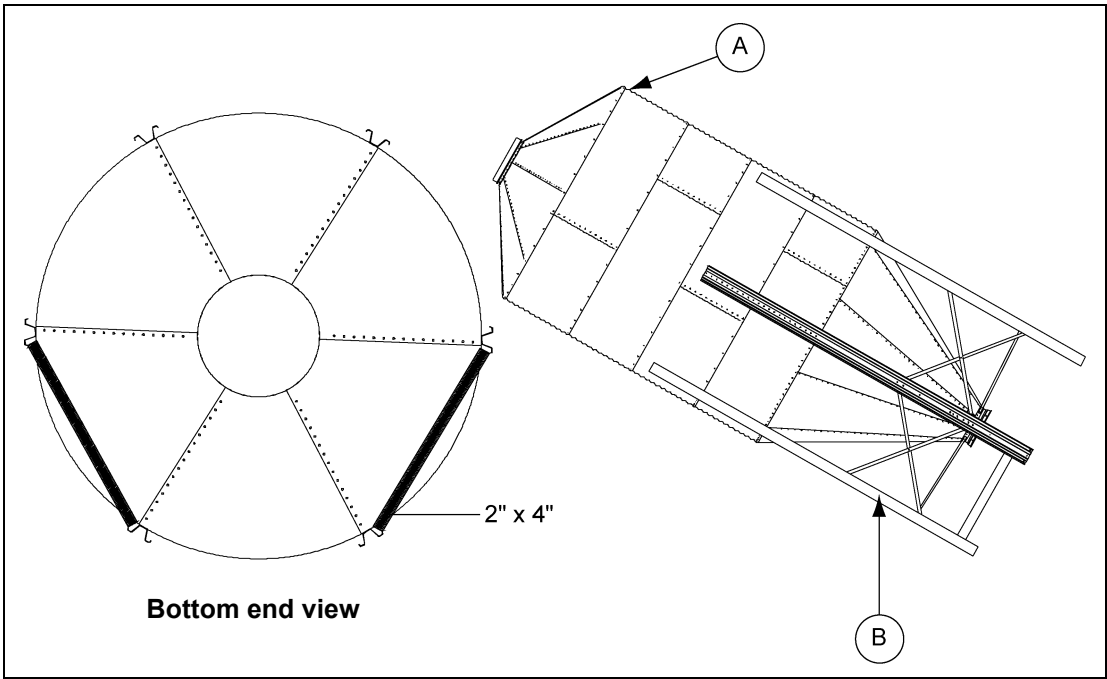


Figure 13A

Ref #	Description
A	Location of Cable or Sling Wrapped Around Tank
B	Anchor or Stabilize to Prevent Sliding when Raising

## Raising Bin to Set on Foundation (Continued)

Be sure that all bolts are tightened properly. Bulk Feed Tank can now be set up on foundation. Small Bulk Feed Tanks may be set up with manpower. As the tanks get taller and heavier, other means must be used to raise the Bulk Feed Tank. A small crane of adequate capacity attached to a cable or sling secured around the Bulk Feed Tank just above the legs will usually do the job. Refer any questions to a qualified rigger.

### Standard Hopper Bin Anchoring

Measure between opposite legs to be sure they are an equal distance apart before securing the bin with anchor bolts. Follow the chart shown *below*. Failure to do so may cause damage to the bin.

Bin Size	Distance Between Opposite Legs
6' Diameter (1829 mm)	72-1/4" (1835 mm)
7' Diameter (2134 mm)	84-1/4" (2140 mm)
9' Diameter (2743 mm)	108-1/8" (2746 mm)

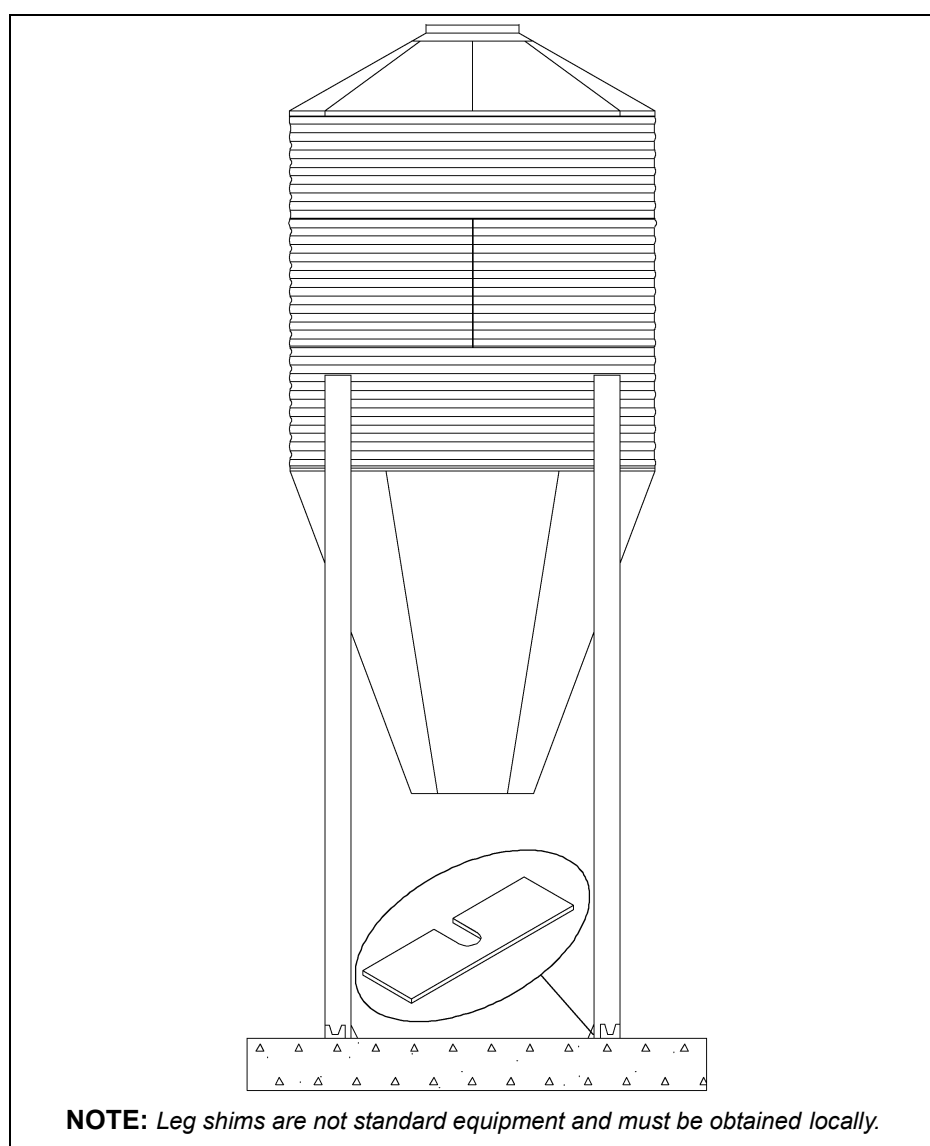


Figure 13B

### Raising Bin to Set on Foundation (Continued)

#### 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 13C.](#))

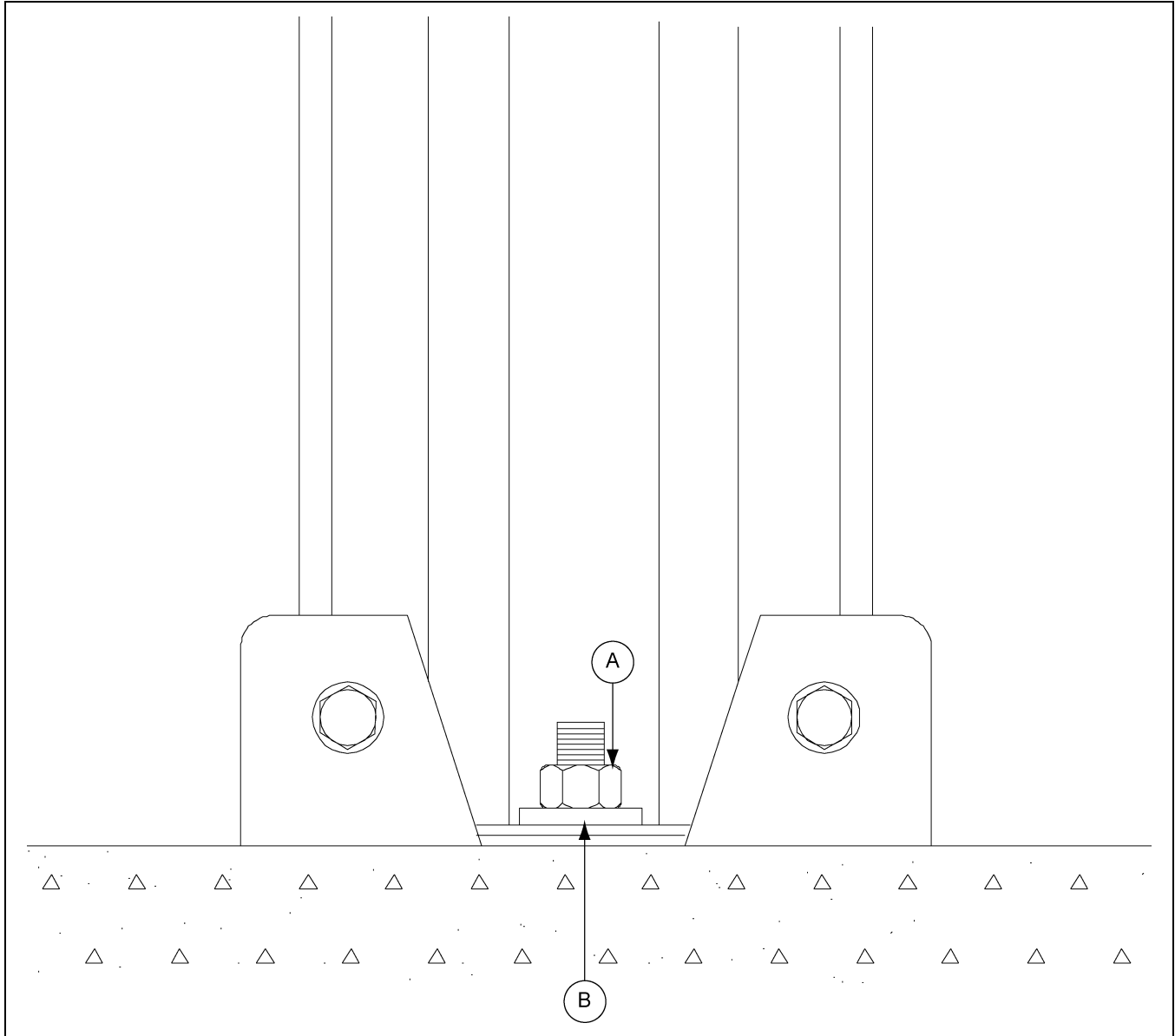


Figure 13C

Ref #	Part #	Description
A	S-4110	5/8" Nut (Not Supplied)
B	S-858	5/8" Washer (Not Supplied)



## Bin Grounding Instructions

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

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

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

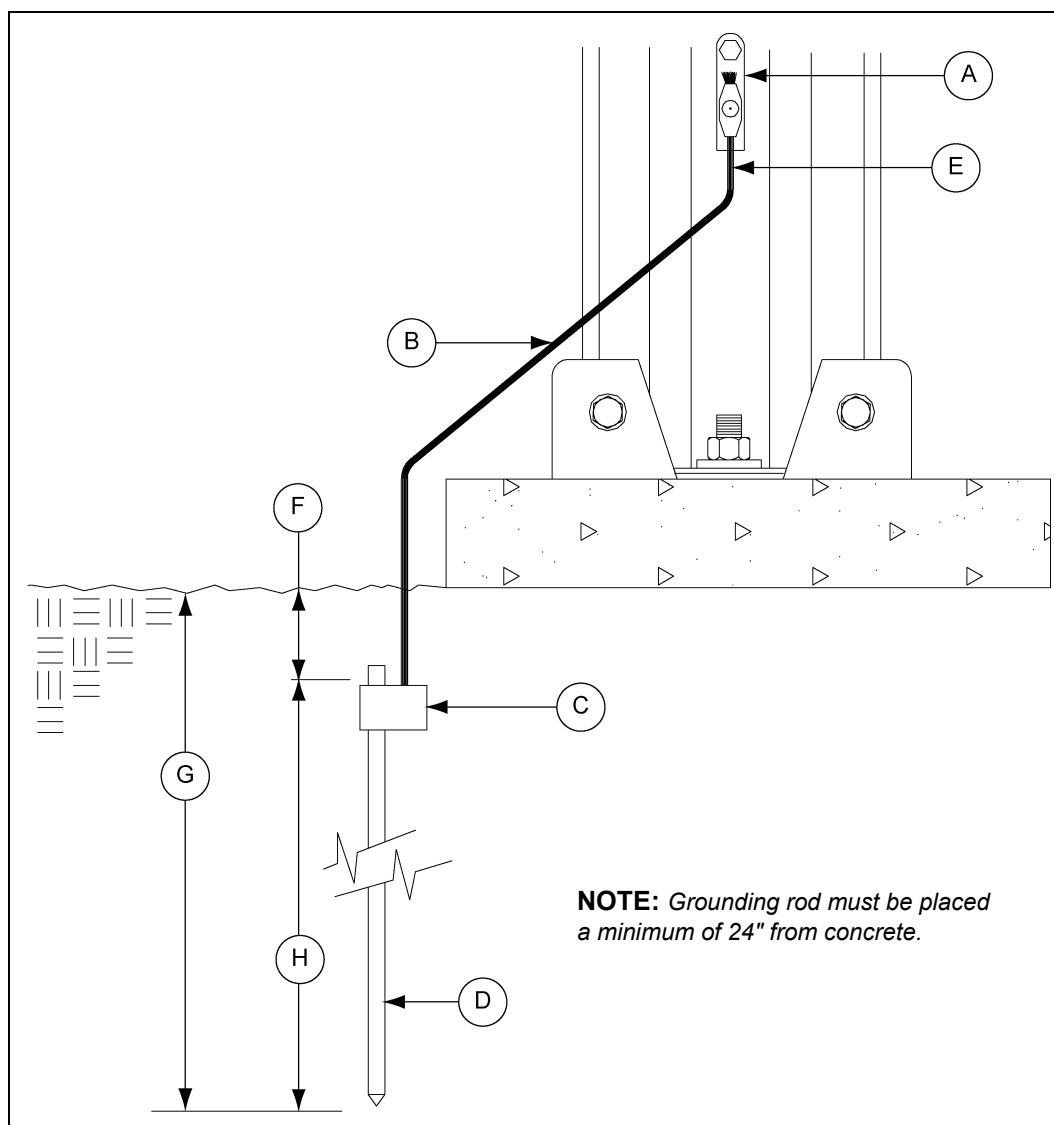


Figure 13D

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.

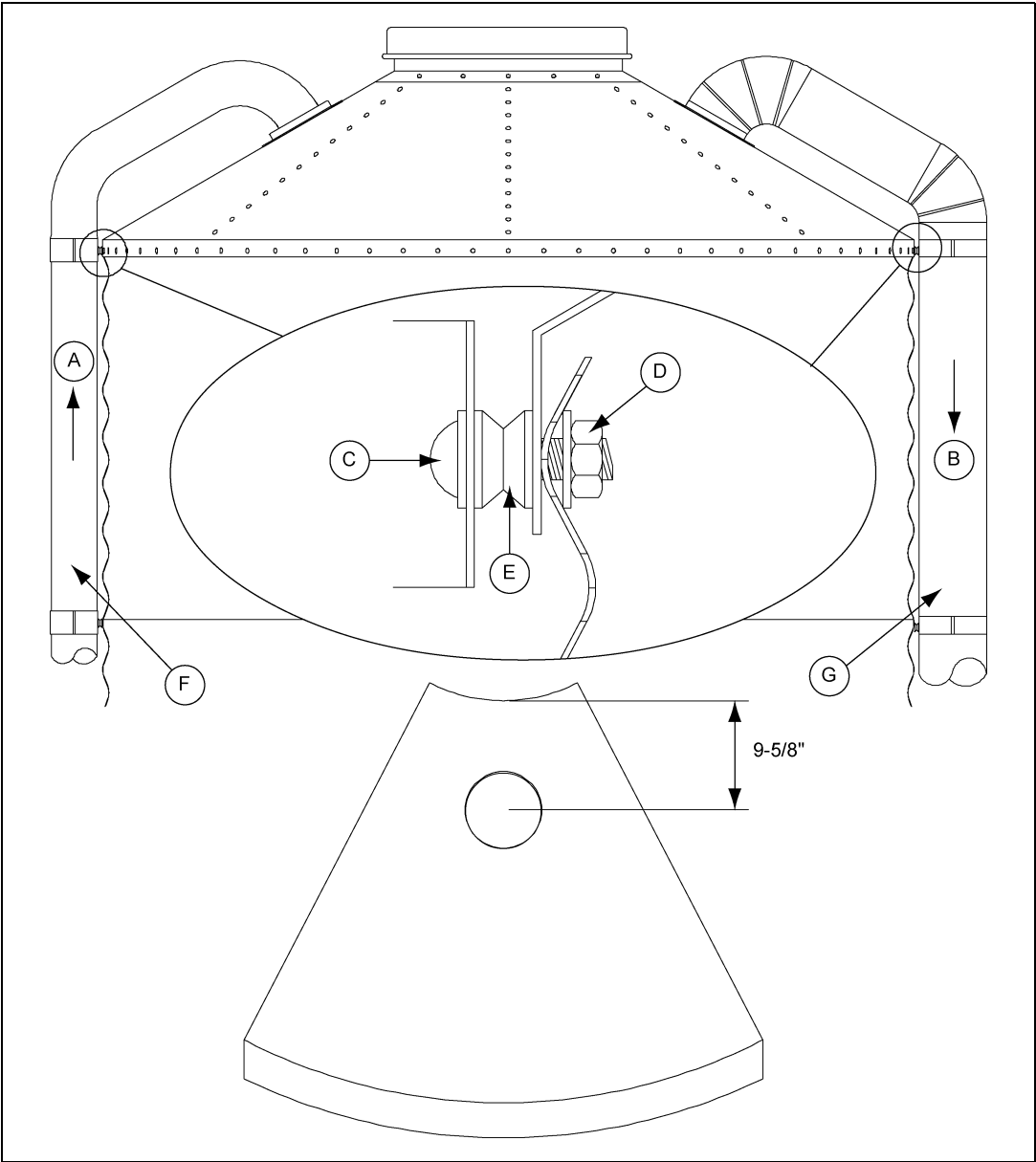


Figure 14A

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

## Roof Panel

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

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

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

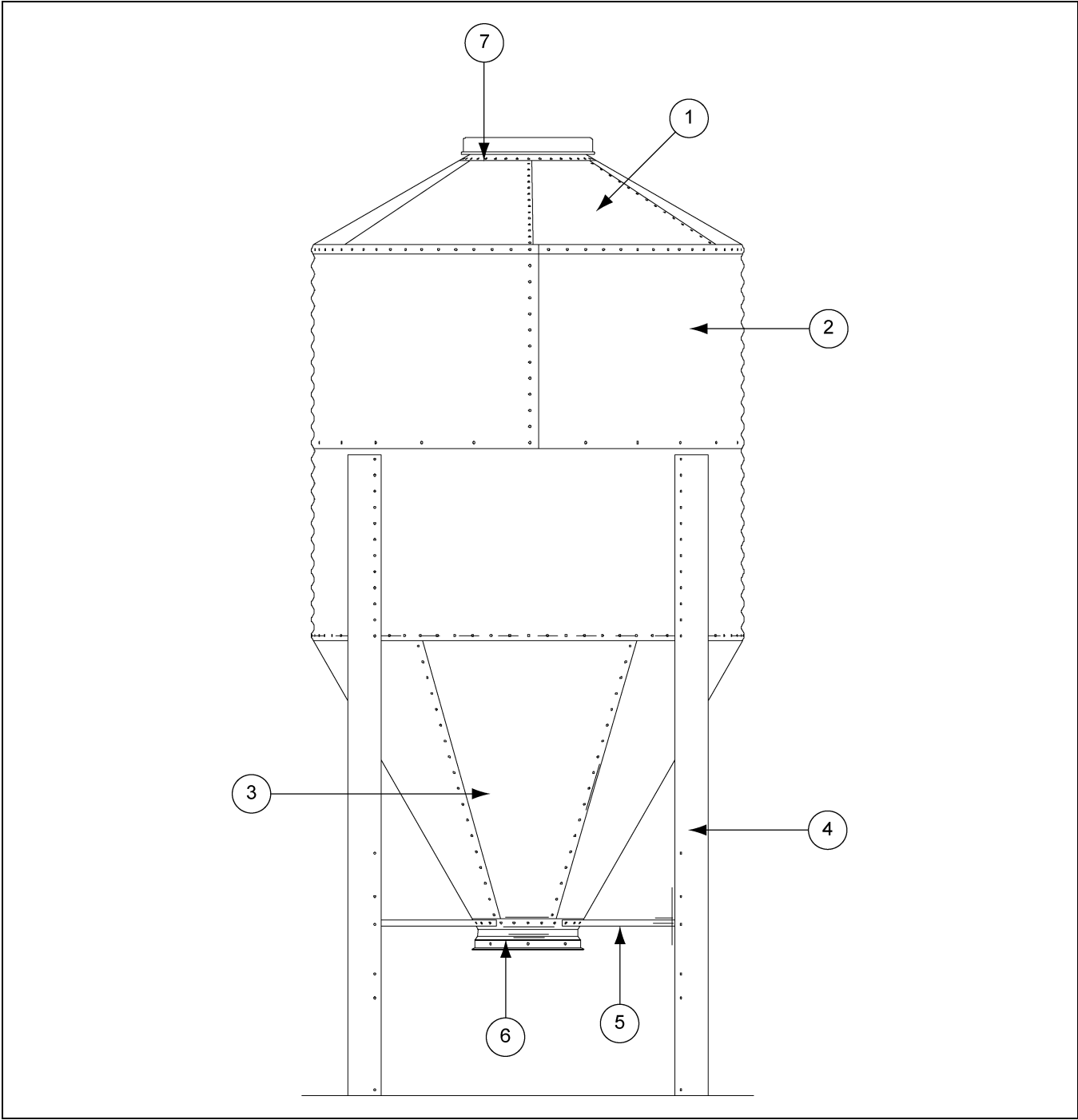


Figure 14B

# NOTES

1. 6' Diameter 60° Hopper Bin Specifications - [\(See Pages 78-79.\)](#)
2. 6' Diameter 60° Hopper Bin Hardware Specifications - [\(See Pages 80-81.\)](#)
3. 7' Diameter 67° Hopper Bin Specifications - [\(See Pages 82-83.\)](#)
4. 7' Diameter 67° Hopper Bin Hardware Specifications - [\(See Pages 84-85.\)](#)
5. 7' Diameter 45° Hopper Bin Specifications - [\(See Pages 86-87.\)](#)
6. 7' Diameter 45° Hopper Bin Hardware Specifications - [\(See Pages 88-89.\)](#)
7. 9' Diameter 60° Hopper Bin Specifications - [\(See Pages 90-91.\)](#)
8. 9' Diameter 60° Hopper Bin Hardware Specifications - [\(See Pages 92-93.\)](#)
9. 9' Diameter 45° Hopper Bin Specifications - [\(See Pages 94-95.\)](#)
10. 9' Diameter 45° Hopper Bin Hardware Specifications - [\(See Pages 96-97.\)](#)

6' Diameter 60° Hopper Bin Specifications



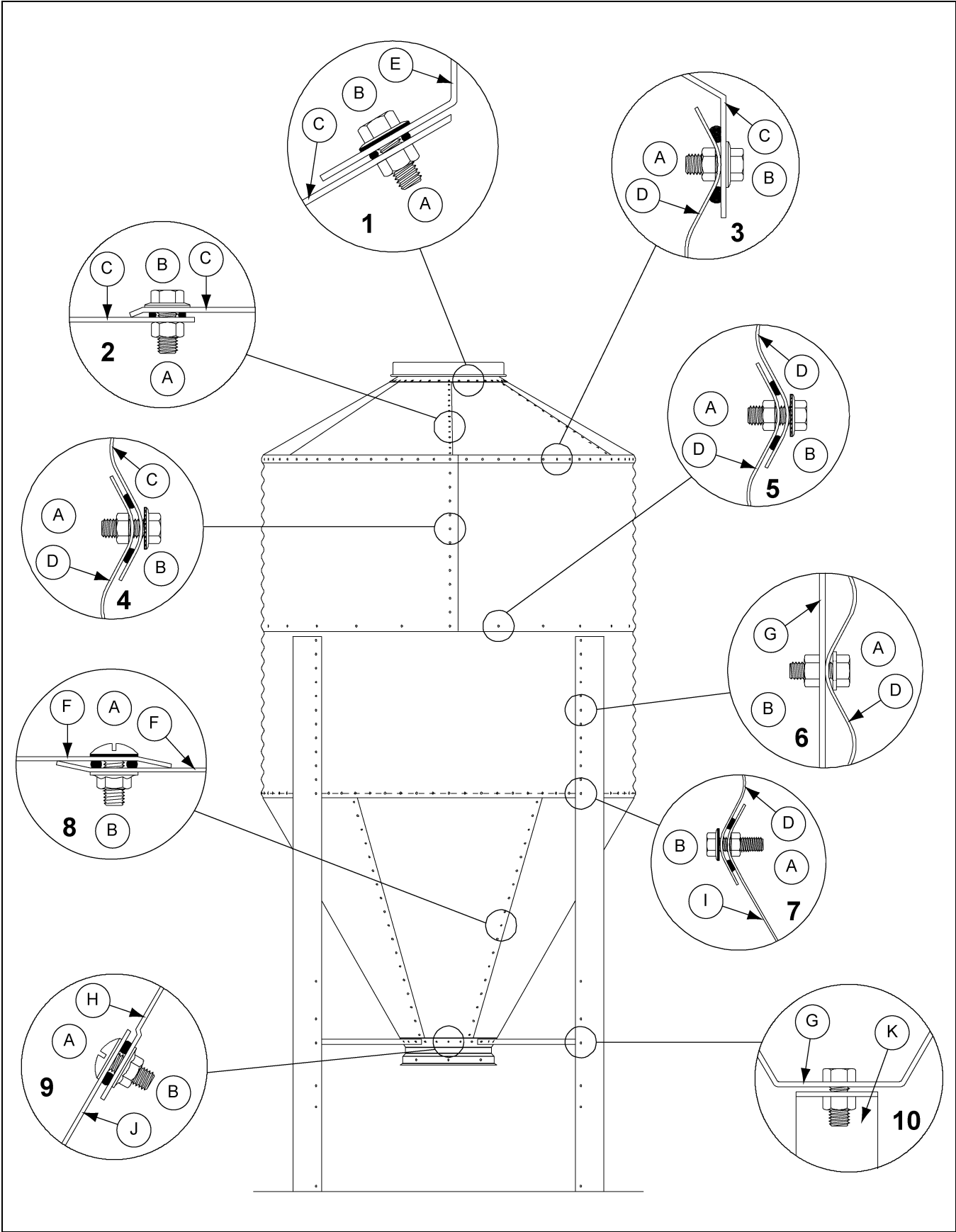
Under Collar Clearance	
16" Collar	28-5/16" (719 mm)
22" Collar	32-7/8" (837 mm)

**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 21](#) for location of caulking. No cross tie bracing required.

## 6' Diameter 60° Hopper Bin Specifications Parts List

Ref #	Part #	Description	Qty
1	BLK-12254	6' 30° Roof Panel (20 Gauge) (Shown)	6
1	BLK-12257	6' 40° Roof Panel (20 Gauge)	6
2		<b>6' Sidewall Sheet</b>	<b>2 Per Ring</b>
2	SS40682006	20 Gauge (Top Punched Sidewall Sheet)	
2	SS41632006	20 Gauge (Top Punched Decal Sidewall Sheet)	
2	SS40672006	20 Gauge (Bottom/Top Leg Sidewall Sheet)	
2	SS40692006	20 Gauge (Middle Punched Sidewall Sheet)	
2	SS41622006	20 Gauge (Bottom/Top Leg Decal Sidewall Sheet)	
2	SS40712006	20 Gauge (Bottom Leg Sidewall Sheet)	
2	SS40691806	18 Gauge (Middle Punched Sidewall Sheet)	
2	SS40711806	18 Gauge (Bottom Leg Sidewall Sheet)	
2	SS40701706	17 Gauge (Middle Leg Sidewall Sheet)	
2	SS40711706	17 Gauge (Bottom Leg Sidewall Sheet)	
2	SS40691606	16 Gauge (Middle Punched Sidewall Sheet)	
2	SS40701506	15 Gauge (Middle Leg Sidewall Sheet)	
2	SS40711506	15 Gauge (Bottom Leg Sidewall Sheet)	
2	SS40691506	15 Gauge (Middle Punched Sidewall Sheet)	
2	SS40701306	13 Gauge (Middle Leg Sidewall Sheet)	
2	SS40711306	13 Gauge (Bottom Leg Sidewall Sheet)	
2	SS40691306	13 Gauge (Bottom Leg Sidewall Sheet)	
3	BLK-12291	6' 60° Formed Hopper Panel 16" Opening 4" Hole Spacing (Shown)	6
3	BLK-12293	6' 60° Hopper Panel 22" Opening (20 Gauge)	6
4	BLK-12222	6' 60° Leg 106-1/16" (12 Gauge) (1-4 Ring)	4
5	BLK-12146	Hopper Brace for 16" Collar (Shown)	4
5	BLK-12147	Hopper Brace for 22" Collar	4
6	BLK-10489	16" 60° Hopper Collar (24 Holes) (Shown)	1
6	BLK-10342	22" 60° Hopper Collar (36 Holes)	1
7	BLK-11730D	30° Bulk Tank Peak Ring (Shown)	1
7	BLK-12534D	40° Bulk Tank Peak Ring	1

6' Diameter 60° Hopper Bin 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.

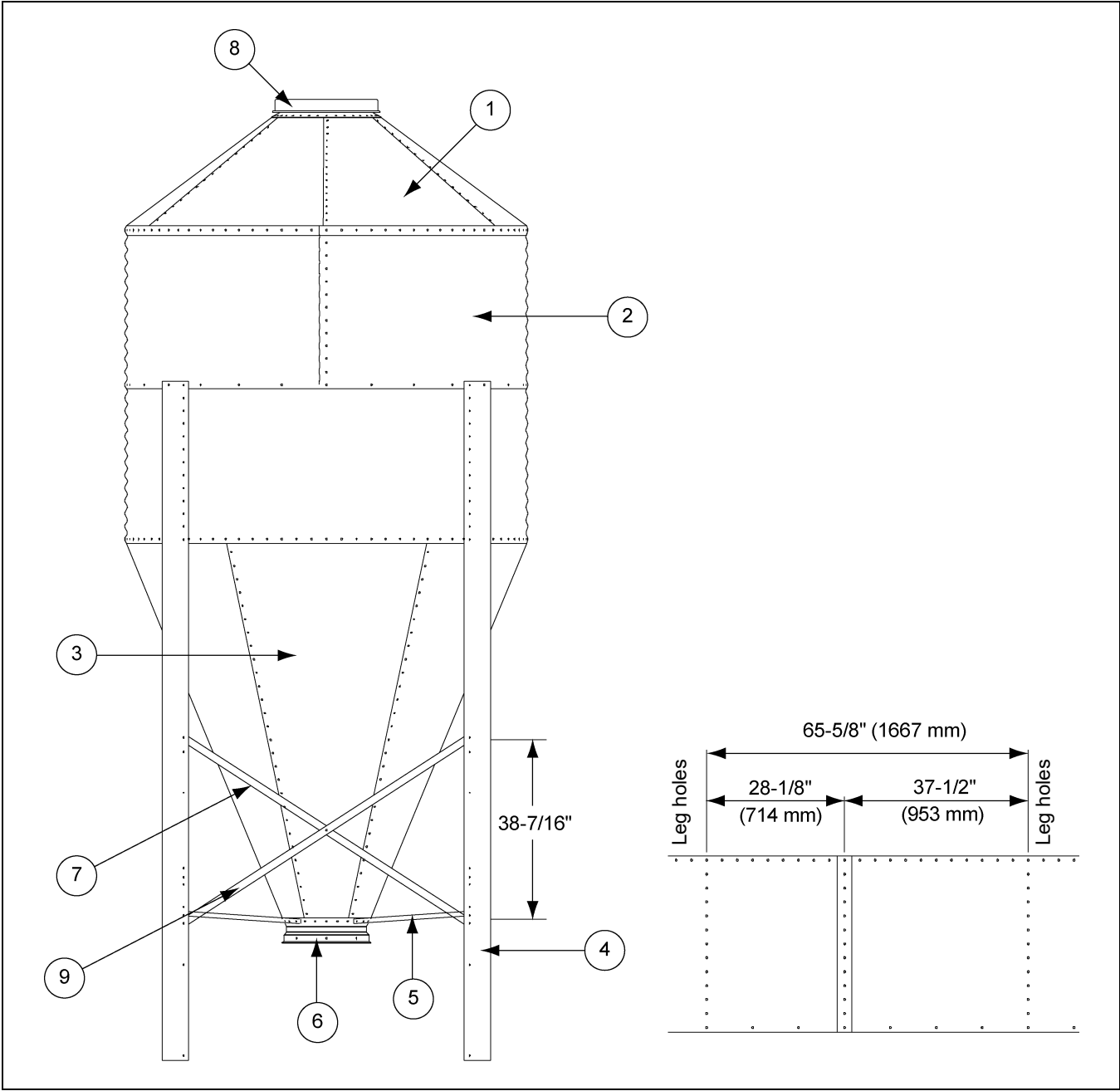
### 6' Diameter 60° Hopper Bin Hardware Specifications Parts List

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-10260	Leg to Sidewall Sheet (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.) <b>(Bolt Heads to Inside of Tank.)</b>	48
6	S-7484		48
7	S-10260	Hopper Panels to Sidewall Sheet (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.) <b>(Bolt Head to Inside at Leg to Hopper to Sidewall Connection Only.)</b>	72
7	S-7484		72
8	S-10267	Vertical Hopper Seams (Use 5/16" x 3/4" Truss Head Bin Bolts and 5/16" Flanged Whiz Nuts.) <b>(Bolt Heads to Inside of Tank.)</b>	108
8	S-10268		108
9	S-10633	Hopper Collar to Hopper Panel (Use 5/16" x 1" Truss Head Bin Bolts and 5/16" Flanged Whiz Nuts.) <b>(Bolt Heads to Inside of Tank.)</b> (16" Shown.)	24 or 36
9	S-10268		24 or 36
10	S-7485	Hopper Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	4
10	S-7489		4

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

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

7' Diameter 67° Hopper Bin Specifications



Under Collar Clearance	
16" Collar	30-3/8" (771 mm)
22" Collar	36-1/2" (927 mm)

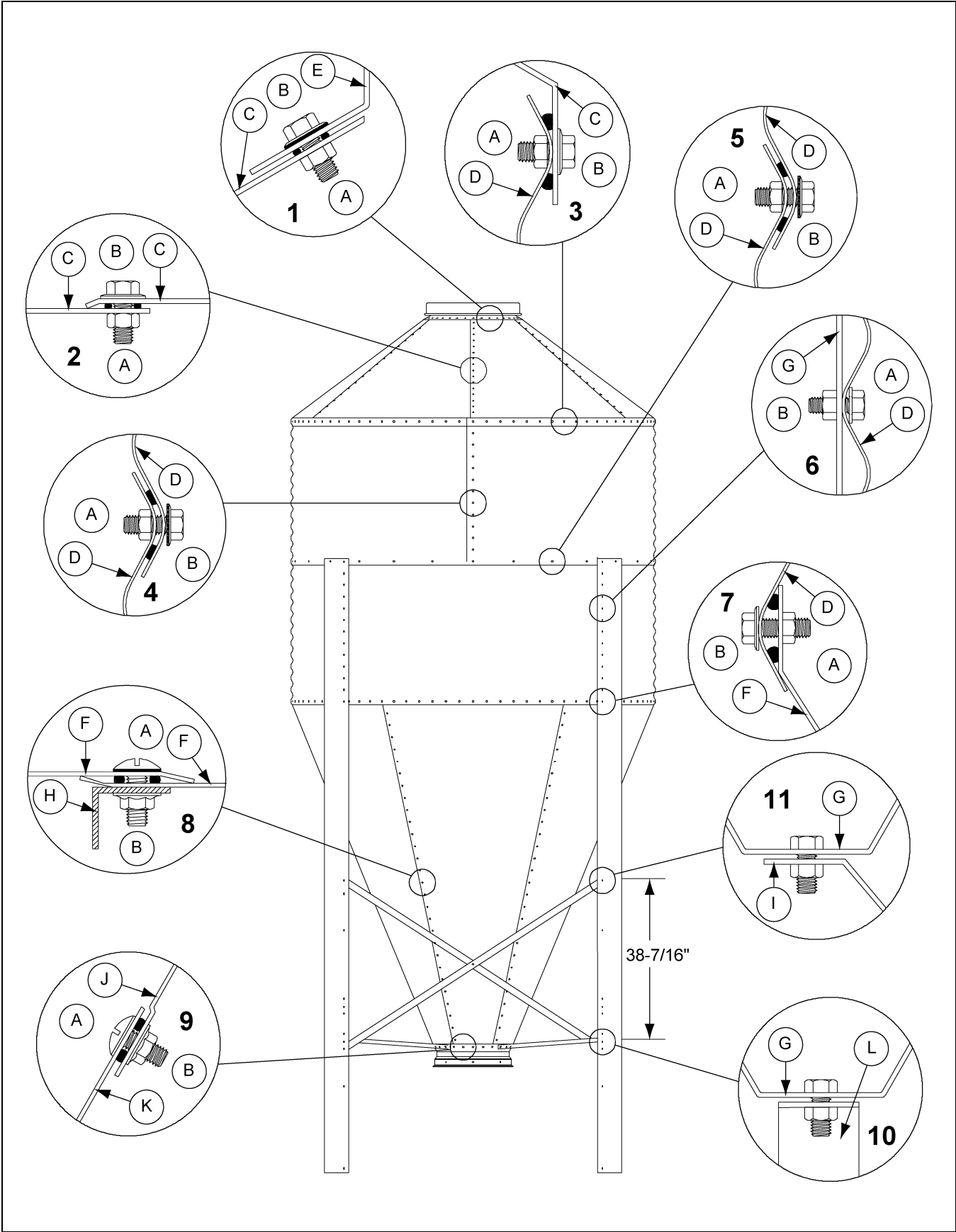
**IMPORTANT:** Vertical seams of body sheets with leg holes *MUST* be bolted together to provide 65-5/8" (1667 mm) between leg holes.

**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 21](#) for location of caulking. No cross tie bracing required.

## 7' Diameter 67° Hopper Bin Specifications Parts List

Ref #	Part #	Description	Qty
1	BLK-12260	7' 30° Roof Panel (20 Gauge) (Shown)	6
1	BLK-12263	7' 40° Roof Panel (20 Gauge)	6
2		<b>7' Sidewall Sheet</b>	<b>2 Per Ring</b>
2	SS40602007	20 Gauge (Bottom/Top Leg Punched Sidewall Sheet)	
2	SS40612007	20 Gauge (Top Punched Sidewall Sheet)	
2	SS41652007	20 Gauge (Top Punched Decal Sidewall Sheet)	
2	SS40462007	20 Gauge (Middle Punched Sidewall Sheet)	
2	SS40461807	18 Gauge (Middle Punched Sidewall Sheet)	
2	SS40661807	18 Gauge (Bottom Leg Punched Sidewall Sheet)	
2	SS40461707	17 Gauge (Middle Punched Sidewall Sheet)	
2	SS40641707	17 Gauge (Middle Leg Punched Sidewall Sheet)	
2	SS40661707	17 Gauge (Bottom Leg Punched Sidewall Sheet)	
2	SS40641507	15 Gauge (Middle Leg Punched Sidewall Sheet)	
2	SS40661507	15 Gauge (Bottom Leg Punched Sidewall Sheet)	
3	BLK-12301	7' 67° Formed Hopper Panel 16" Opening (18 Gauge) (Shown)	6
3	BLK-12303	7' 67° Hopper Panel 22" Opening (18 Gauge)	6
4	BLK-12039	7' Leg 140-1/2" (12 Gauge) (1-4 Rings) (Shown)	4
4	BLK-12040	7' Leg 164-1/2" (10 Gauge) (5-6 Rings)	4
5	BLK-12107	Hopper Brace for 16" Collar (Shown)	4
5	BLK-12108	Hopper Brace for 22" Collar	4
6	BLK-10488	16" 67° Hopper Collar (Shown)	1
6	BLK-10341	22" 67° Hopper Collar (36 Holes)	1
7	BLK-12056	7' Inside Cross Tie Brace (72.49") (12 Gauge)	4
7	BLK-12057	7' Outside Cross Tie Brace (72.49") (12 Gauge)	4
8	BLK-11730D	30° Bulk Tank Peak Ring (Shown)	1
8	BLK-12534D	40° Bulk Tank Peak Ring	1
9	BLK-12518	7' 67° Hopper Reinforcement Angle (5-6 Ring Tanks Only)	6

7' Diameter 67° Hopper Bin 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.

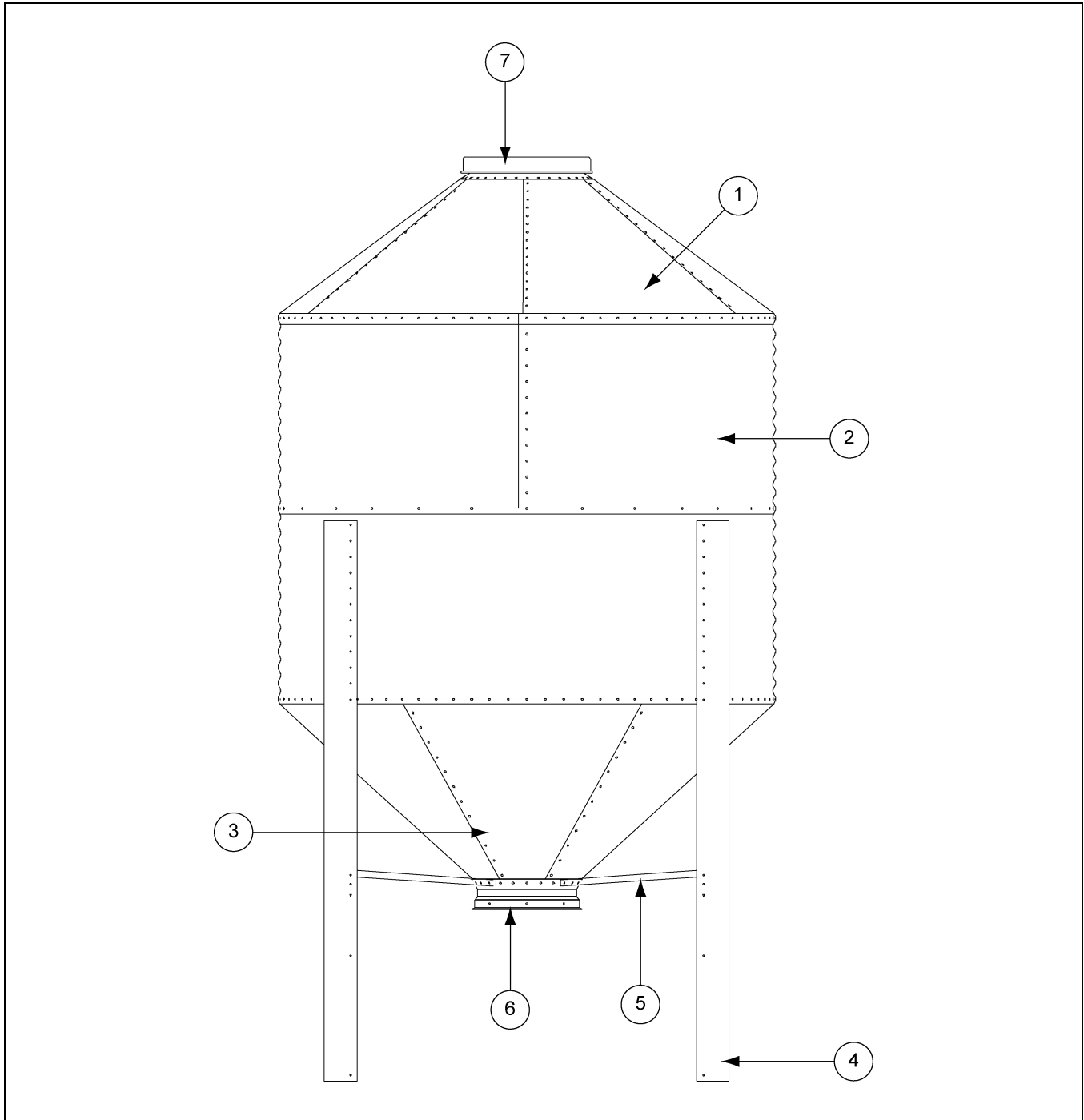
### 7' Diameter 67° Hopper Bin Hardware Specifications Parts List

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-10260	Leg to Sidewall Sheet (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.) <b>(Bolt Heads to Inside of Tank.)</b>	52 or 88
6	S-7484		52 or 88
7	S-10260	Hopper Panels to Sidewall Sheet (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.) <b>(Bolt Head to Inside at Leg to Hopper to Sidewall Connection Only.)</b>	84
7	S-7484		84
8	S-10267	Vertical Hopper Seams (Use 5/16" x 3/4" Truss Head Bin Bolts and 5/16" Flanged Whiz Nuts.) <b>(Bolt Heads to Inside of Tank.)</b>	162
8	S-10268		162
9	S-10633	Hopper Collar to Hopper Panel (Use 5/16" x 1" Truss Head Bin Bolts and 5/16" Flanged Whiz Nuts.) <b>(Bolt Heads to Inside of Tank.)</b> (16" Shown.)	24 or 36
9	S-10268		24 or 36
10	S-7485	Hopper Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	4
10	S-7489		4
11	S-7485	Cross Tie Brace (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	12
11	S-7489		12

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

Ref #	Description
G	Leg
H	Hopper Reinforcement Angle (5-6 Rings Only)
I	Leg Cross Tie
J	Offset Hopper Panel
K	Hopper Collar
L	Hopper Brace

## 7' Diameter 45° Hopper Bin Specifications



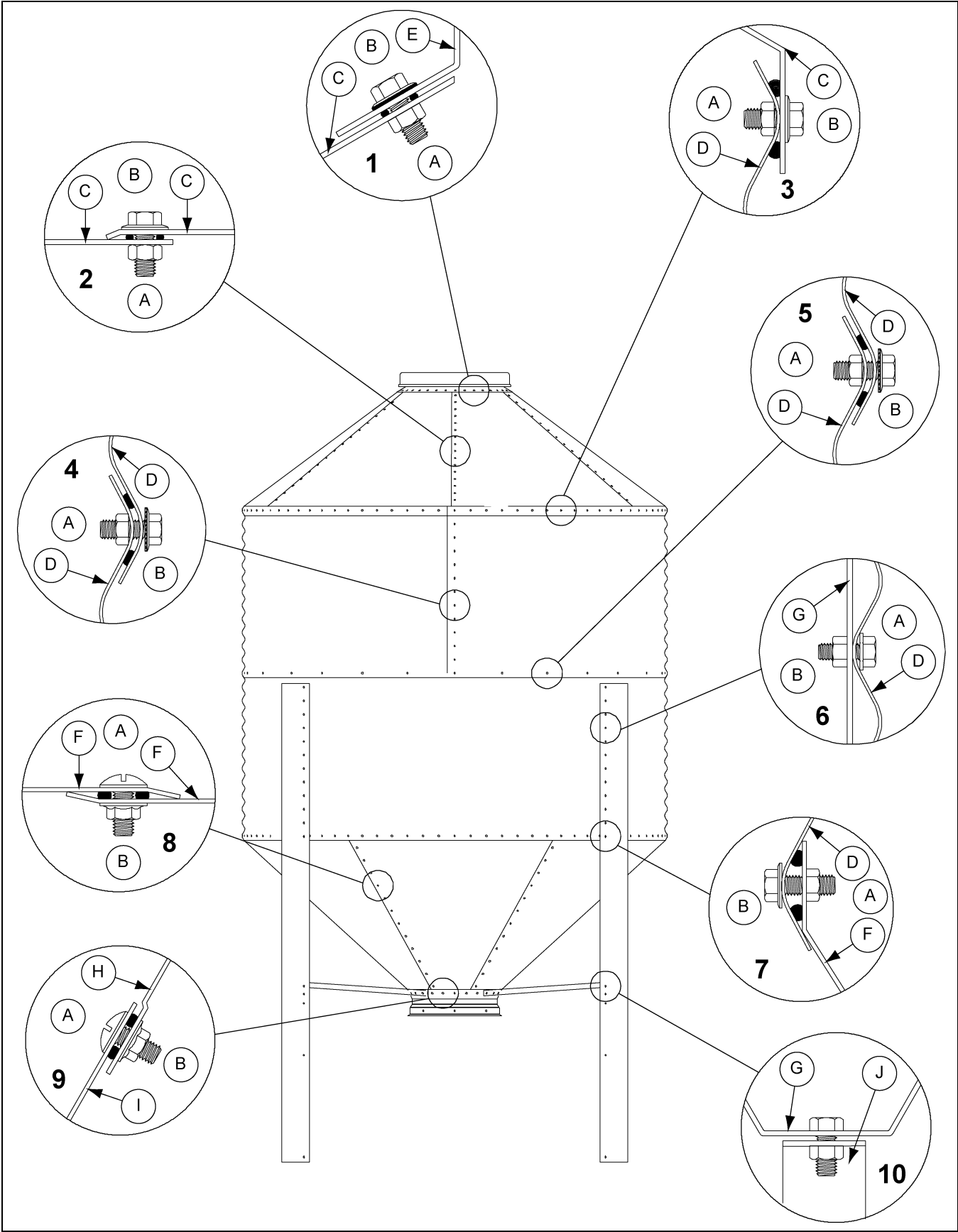
Under Collar Clearance	
16" Collar	29-3/4" (756 mm)
22" Collar	32-5/16" (821 mm)

**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 21](#) for location of caulking. No cross tie bracing required.

## 7' Diameter 45° Hopper Bin Specifications Parts List

Ref #	Part #	Description	Qty
1	BLK-12260	7' 30° Roof Panel (20 Gauge) (Shown)	6
1	BLK-12263	7' 40° Roof Panel (20 Gauge)	6
2		<b>7' Sidewall Sheet</b>	<b>2 Per Ring</b>
2	SS40602007	20 Gauge (Bottom/Top Leg Punched Sidewall Sheet)	
2	SS41642007	20 Gauge (Bottom/Top Leg Punched Decal Sidewall Sheet)	
2	SS40612007	20 Gauge (Top Punched Sidewall Sheet)	
2	SS41652007	20 Gauge (Top Punched Decal Sidewall Sheet)	
2	SS40462007	20 Gauge (Middle Punched Sidewall Sheet)	
2	SS40461807	18 Gauge (Middle Punched Sidewall Sheet)	
2	SS40661807	18 Gauge (Bottom Leg Punched Sidewall Sheet)	
2	SS40461707	17 Gauge (Middle Punched Sidewall Sheet)	
2	SS40641707	17 Gauge (Middle Leg Punched Sidewall Sheet)	
2	SS40661707	17 Gauge (Bottom Leg Punched Sidewall Sheet)	
2	SS40641507	15 Gauge (Middle Leg Punched Sidewall Sheet)	
2	SS40661507	15 Gauge (Bottom Leg Punched Sidewall Sheet)	
3	BLK-10693	7' 45° Offset Hopper Panel 22" Opening (18 Gauge) (Shown)	6
4	BLK-12041	7' Leg 94-1/8" (12 Gauge) (1-4 Rings) (Shown)	4
4	BLK-12042	7' Leg 120-3/4" (10 Gauge) (5-6 Rings)	4
5	BLK-12105	Hopper Brace for 16" Collar (Shown)	4
5	BLK-12106	Hopper Brace for 22" Collar	4
6	BLK-10696	16" 45° Hopper Collar (24 Holes) (Shown)	1
6	BLK-10854	22" 45° Hopper Collar (36 Holes)	1
7	BLK-11730	30° Bulk Tank Peak Ring (Shown)	1
7	BLK-12534	40° Bulk Tank Peak Ring	1

7' Diameter 45° Hopper Bin 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.

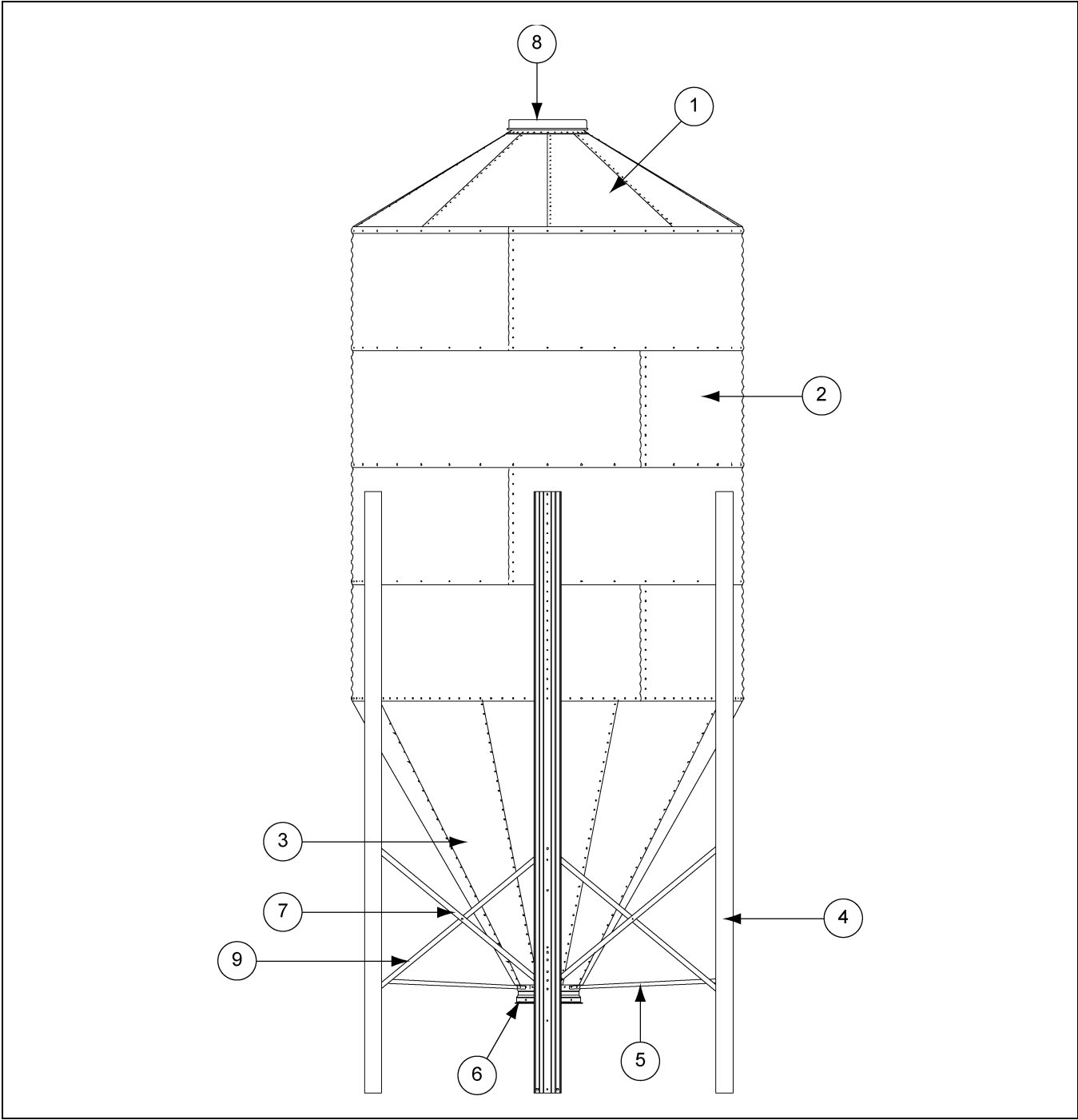
### 7' Diameter 45° Hopper Bin Hardware Specifications Parts List

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-10260	Leg to Sidewall Sheet (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.) <b>(Bolt Heads to Inside of Tank.)</b>	48 or 88
6	S-7484		48 or 88
7	S-10260	Hopper Panels to Sidewall Sheet (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.) <b>(Bolt Head to Inside at Leg to Hopper to Sidewall Connection Only.)</b>	84
7	S-7484		84
8	S-10267	Vertical Hopper Seams (Use 5/16" x 3/4" Truss Head Bin Bolts and 5/16" Flanged Whiz Nuts.) <b>(Bolt Heads to Inside of Tank.)</b>	102
8	S-10268		102
9	S-10633	Hopper Collar to Hopper Panel (Use 5/16" x 1" Truss Head Bin Bolts and 5/16" Flanged Whiz Nuts.) <b>(Bolt Heads to Inside of Tank.)</b> (16" Shown.)	24 or 36
9	S-10268		24 or 36
10	S-7485	Hopper Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	4
10	S-7489		4

Ref #	Description
A	Inside
B	Outside
C	Roof Sheet
D	Body Sheet
E	Peak Ring Collar

Ref #	Description
F	Hopper Panel
G	Leg
H	Offset Hopper Panel
I	Hopper Collar
J	Hopper Brace

9' Diameter 60° Hopper Bin Specifications



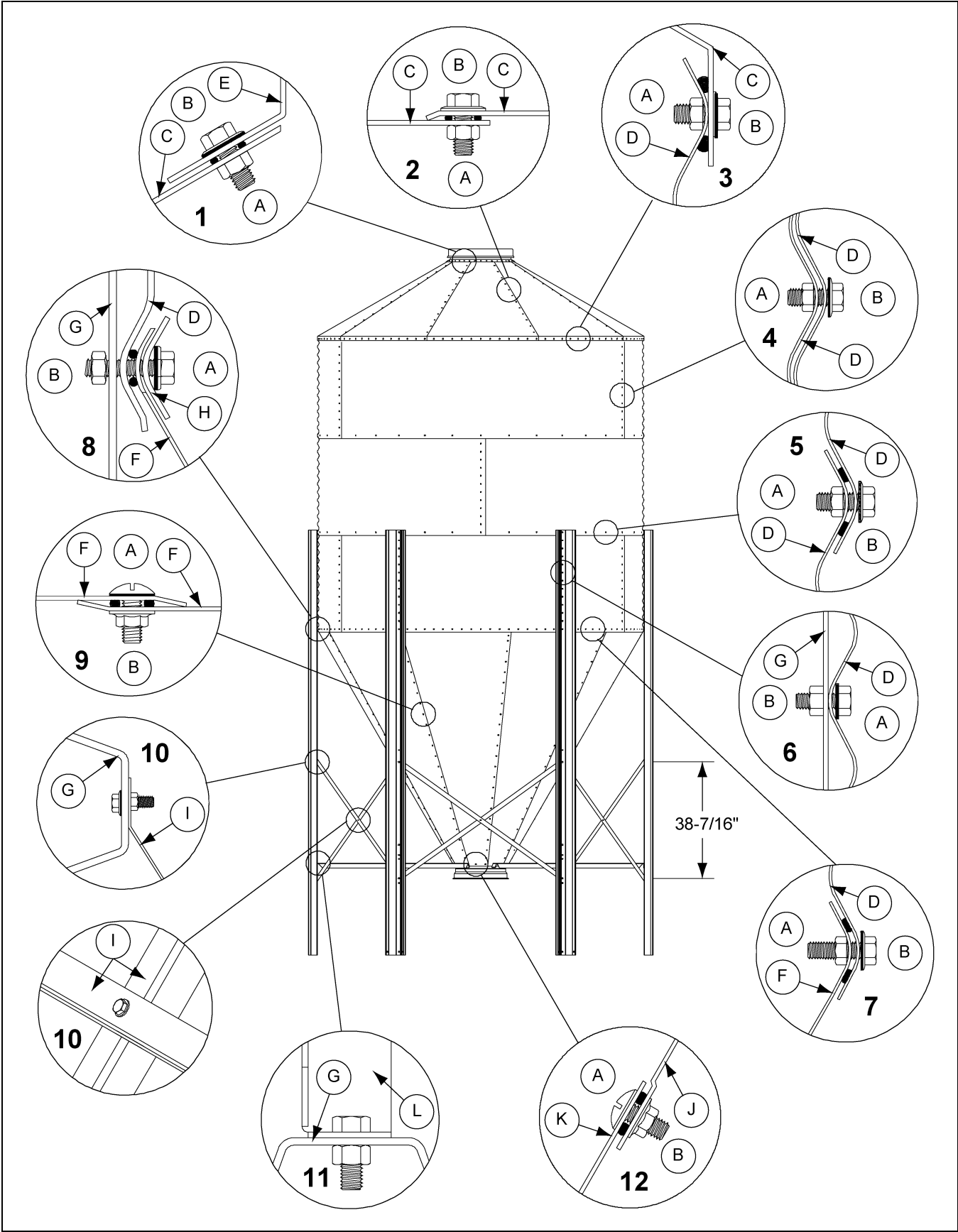
Under Collar Clearance	
16" Collar	28-1/16" (713 mm)
22" Collar	32-5/8" (829 mm)

**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 21](#) for location of caulking.

## 9' Diameter 60° Hopper Bin Specifications Parts List

Ref #	Part #	Description	Qty
1	BLK-12266	9' 30° Roof Panel (20 Gauge) (Shown)	9
1	BLK-12269	9' 40° Roof Panel (20 Gauge)	9
2		<b>9' Sidewall Sheet</b>	<b>3 Per Ring</b>
2	SS40682009	20 Gauge (Top Punched Sidewall Sheet)	
2	SS41662009	20 Gauge (Top Punched Decal Sidewall Sheet)	
2	SS40692009	20 Gauge (Middle Punched Sidewall Sheet)	
2	SS40672009	20 Gauge (Bottom/Top Leg Punched Sidewall Sheet)	
2	SS40712009	20 Gauge (Bottom Leg Punched Sidewall Sheet)	
2	SS40691809	18 Gauge (Middle Punched Sidewall Sheet)	
2	SS40711809	18 Gauge (Bottom Leg Punched Sidewall Sheet)	
2	SS40691709	17 Gauge (Middle Punched Sidewall Sheet)	
2	SS40711709	17 Gauge (Bottom Leg Punched Sidewall Sheet)	
2	SS40691609	16 Gauge (Middle Leg Punched Sidewall Sheet)	
2	SS40701509	15 Gauge (Middle Leg Punched Sidewall Sheet)	
2	SS40691509	15 Gauge (Middle Leg Punched Sidewall Sheet)	
2	SS40711509	15 Gauge (Bottom Leg Punched Sidewall Sheet)	
2	SS40691409	14 Gauge (Middle Leg Punched Sidewall Sheet)	
2	SS40701309	13 Gauge (Middle Leg Punched Sidewall Sheet)	
2	SS40711309	13 Gauge (Bottom Leg Punched Sidewall Sheet)	
2	SS40691309	13 Gauge (Middle Leg Punched Sidewall Sheet)	
3	BLK-12726	9' 60° Offset Hopper Panel 16" Opening (18 Gauge) (Shown)	9
3	BLK-12728	9' 60° Hopper Panel 22" Opening (18 Gauge)	9
4	BLK-12036	9' Leg 140-1/2" (12 Gauge) (2-5 Rings) (Shown)	6
4	BLK-12037	9' Leg 164-1/2" (10 Gauge) (6 Rings)	6
5	BLK-12109	Hopper Brace for 16" Collar (Shown)	6
5	BLK-12110	Hopper Brace for 22" Collar	6
6	BLK-12342	16" 60° Hopper Collar (18 Holes) (Shown)	1
6	BLK-10342	22" 60° Hopper Collar (36 Holes)	1
7	BLK-12058	9' Inside Cross Tie Brace (67.788") (12 Gauge)	6
7	BLK-12059	9' Outside Cross Tie Brace (67.788") (12 Gauge)	6
8	BLK-11730D	30° Bulk Tank Peak Ring (Shown)	1
8	BLK-12534D	40° Bulk Tank Peak Ring	1
9	BLK-12730	9' 60° Hopper Reinforcement Angle (3-6 Ring Tanks Only)	9

9' Diameter 60° Hopper Bin 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.

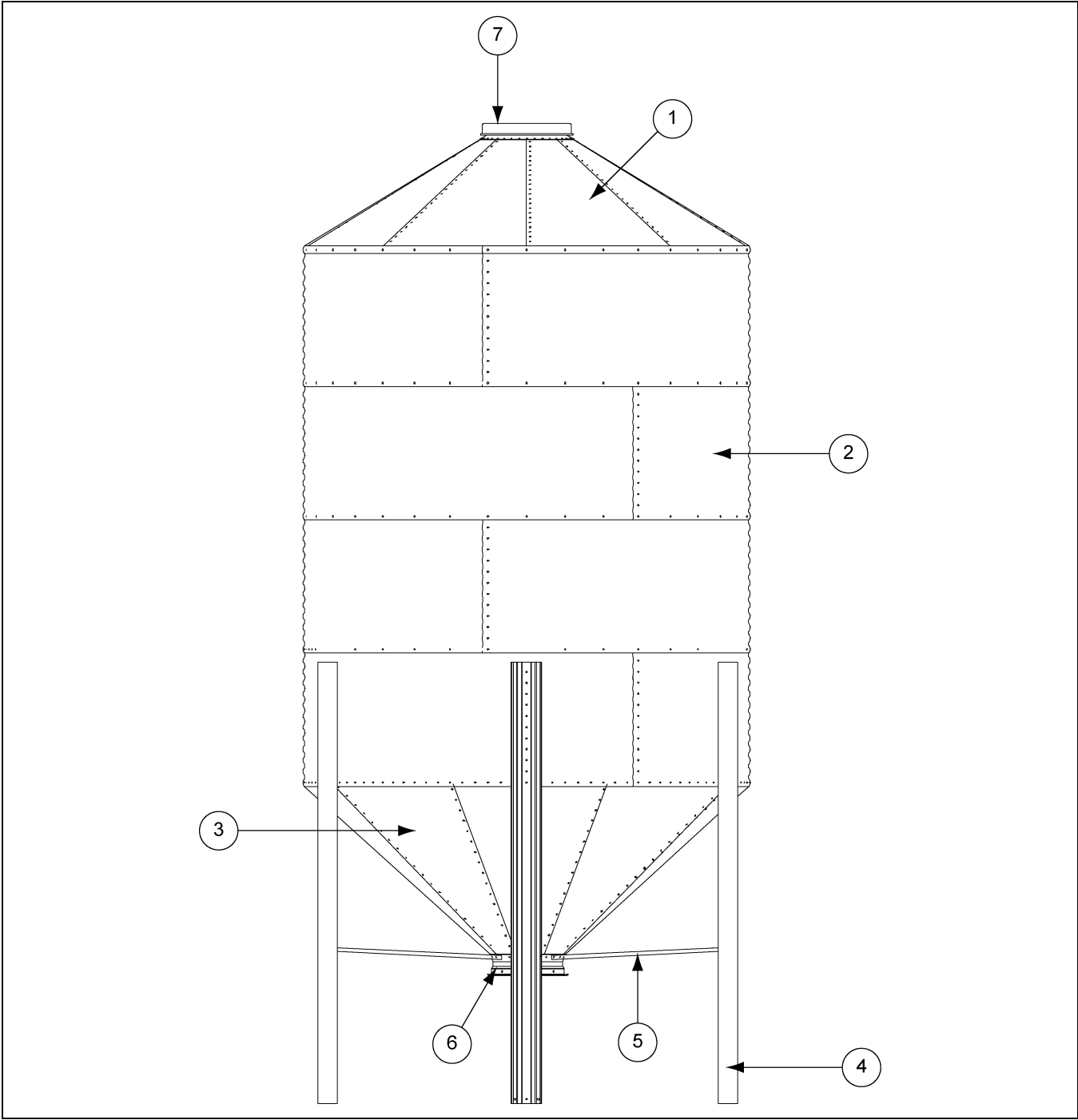
### 9' Diameter 60° Hopper Bin Hardware Specifications Parts List

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.)	108
2	S-7484		108
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.) <b>(Bolt Heads to Inside of Tank.)</b>	78 or 132
6	S-7484		78 or 132
7	S-10260	Hopper Panels to Sidewall Sheet (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.) <b>(Bolt Head to Inside at Leg to Hopper to Sidewall Connection Only.)</b>	108
7	S-7484		108
8	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.) <b>(Bolt Head to Inside at Leg to Hopper to Sidewall Connection Only.)</b>	6
8	S-7484		6
8	BLK-12483		6
9	S-10267	Vertical Hopper Seams (Use 5/16" x 3/4" Truss Head Bin Bolts and 5/16" Flanged Whiz Nuts.) <b>(Bolt Heads to Inside of Tank.)</b>	216
9	S-10268		216
10	S-7485	Cross Tie Brace (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	18
10	S-7489		18
11	S-7485	Hopper Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	6
11	S-7489		6
12	S-10633	Hopper Collar to Hopper Panel (Use 5/16" x 1" Truss Head Bin Bolts and 5/16" Flanged Whiz Nuts.) <b>(Bolt Heads to Inside of Tank.)</b> (16" Shown.)	27 or 36
12	S-10268		27 or 36

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

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

9' Diameter 45° Hopper Bin Specifications



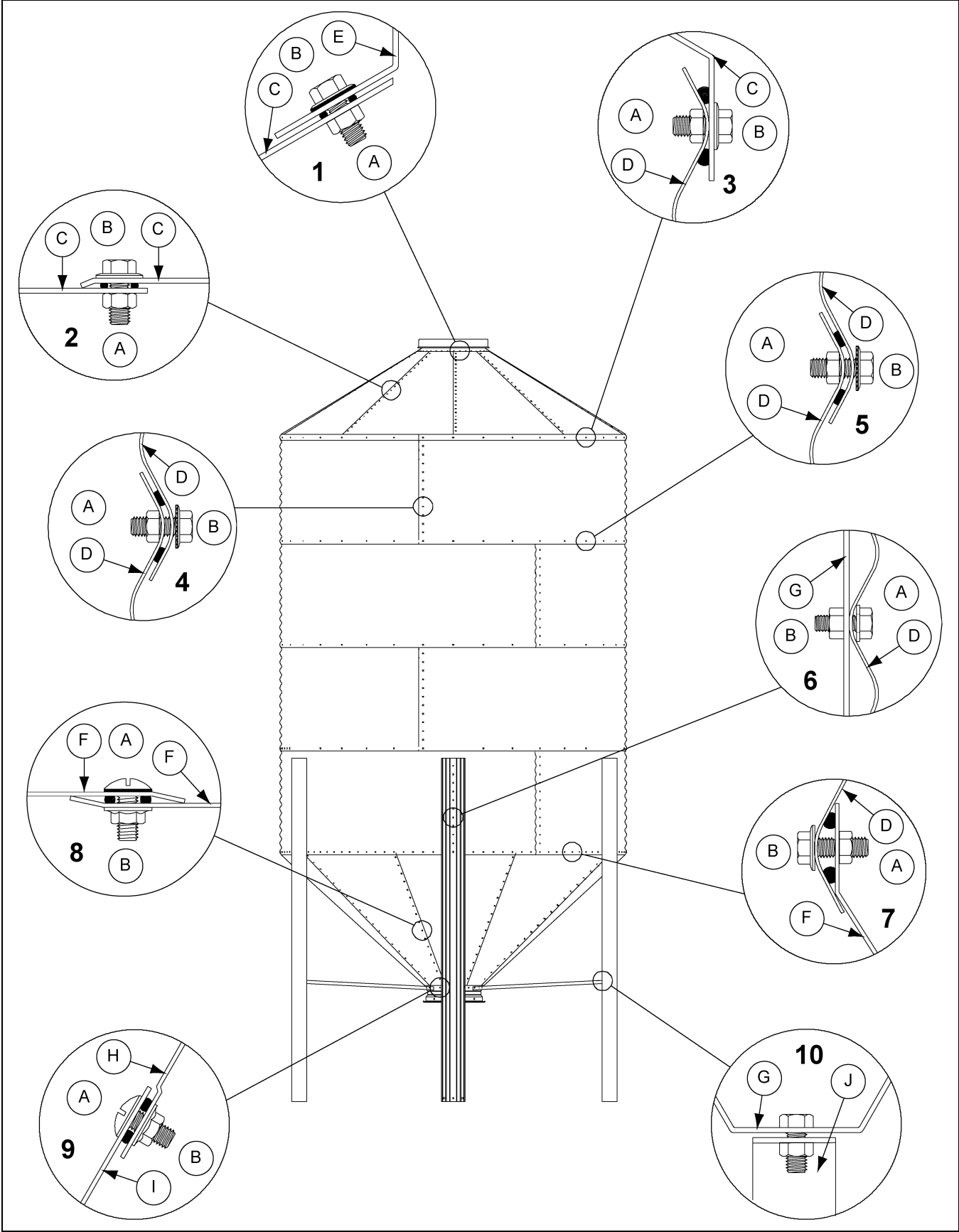
Under Collar Clearance	
16" Collar	30-11/16" (779 mm)
22" Collar	33-1/4" (844 mm)

**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 21](#) for location of caulking. No cross tie bracing required.

## 9' Diameter 45° Hopper Bin Specifications Parts List

Ref #	Part #	Description	Qty
1	BLK-12266	9' 30° Roof Panel (20 Gauge) (Shown)	9
1	BLK-12269	9' 40° Roof Panel (20 Gauge)	9
2		<b>9' Sidewall Sheet</b>	<b>3 Per Ring</b>
2	SS40682009	20 Gauge (Top Punched Sidewall Sheet)	
2	SS41662009	20 Gauge (Top Punched Decal Sidewall Sheet)	
2	SS40692009	20 Gauge (Middle Punched Sidewall Sheet)	
2	SS40691809	18 Gauge (Middle Punched Sidewall Sheet)	
2	SS40691709	17 Gauge (Middle Punched Sidewall Sheet)	
2	SS40701509	15 Gauge (Middle Leg Punched Sidewall Sheet)	
2	SS40712009	20 Gauge (Bottom Leg Punched Sidewall Sheet)	
2	SS40711809	18 Gauge (Bottom Leg Punched Sidewall Sheet)	
2	SS40711709	17 Gauge (Bottom Leg Punched Sidewall Sheet)	
2	SS40711509	15 Gauge (Bottom Leg Punched Sidewall Sheet)	
3	BLK-10694	9' 45° Offset Hopper Panel 22" Opening (16 Gauge) (Shown)	9
4	BLK-12043	9' 45° Leg 106-1/8" (12 Gauge) (2-5 Rings) (Shown)	6
4	BLK-12044	9' 45° Leg 132-3/8" (10 Gauge) (6 Rings)	6
5	BLK-12111	Hopper Brace for 16" Collar (Shown)	6
5	BLK-12112	Hopper Brace for 22" Collar	6
6	BLK-10696	16" 45° Hopper Collar Bundle (Shown)	1
6	BLK-10854	22" 45° Hopper Collar (36 Holes)	1
7	BLK-11730	30° Bulk Tank Peak Ring (Shown)	1
7	BLK-12534	40° Bulk Tank Peak Ring	1

9' Diameter 45° Hopper Bin 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 Bin 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.)	126
2	S-7484		126
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.) <b>(Bolt Heads to Inside of Tank.)</b>	28 or 132
6	S-7484		28 or 132
7	S-10260	Hopper Panels to Sidewall Sheet (Use 5/16" x 1" Hex Head Bin Bolts and 5/16" Hex Nuts.) <b>(Bolt Head to Inside at Leg to Hopper to Sidewall Connection Only.)</b>	108
7	S-7484		108
8	S-10267	Vertical Hopper Seams (Use 5/16" x 3/4" Truss Head Bin Bolts and 5/16" Flanged Whiz Nuts.) <b>(Bolt Heads to Inside of Tank.)</b>	171
8	S-10268		171
9	S-10633	Hopper Collar to Hopper Panel (Use 5/16" x 1" Truss Head Bin Bolts and 5/16" Flanged Whiz Nuts.) <b>(Bolt Heads to Inside of Tank.)</b> (16" Shown.)	27 or 36
9	S-10268		27 or 36
10	S-7485	Hopper Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.)	6
10	S-7489		6

Ref #	Description
A	Inside
B	Outside
C	Roof Sheet
D	Body Sheet
E	Peak Ring Collar

Ref #	Description
F	Hopper Panel
G	Leg
H	Offset Hopper Panel
I	Hopper Collar
J	Hopper Brace

# NOTES

## Limited Warranty — N.A. Grain Products

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 from the date of shipment (or, if shipped by vessel, 14 months from the date of arrival at the port of discharge). If, in GSI's sole judgment, a product is found to have a defect in materials and/or workmanship, GSI will, at its own option and expense, repair or replace the product or refund the purchase price. This Limited Warranty is subject to extension and other terms as set forth below.

**Warranty Enhancements:** The warranty period for the following products is enhanced as shown below and is in lieu of (and not in addition to) the above stated warranty period. (Warranty Period is from date of shipment.)

	Product	Warranty Period
Storage	Grain Bin Structural Design	5 Years
	• Sidewall, roof, doors, platforms and walkarounds • Flooring (when installed using GSI specified floor support system for that floor) • Hopper tanks (BFT, GHT, NCHT, and FCHT)	
Conditioning	Dryer Structural Design – (Tower, Portable and TopDry) • Includes (frame, portable dryer screens, ladders, access doors and platforms)	5 Years
	All other Dryer parts including: • Electrical (controls, sensors, switches and internal wiring)	2 Years
	All Non-PTO Driven Centrifugal and Axial Fans	3 Years
	Bullseye Controllers	2 Years
Material Handling	Bucket Elevators Structural Design	5 Years
	Towers Structural Design	5 Years
	Catwalks Structural Design	5 Years
	Accessories (stairs, ladders and platforms) Structural Design	5 Years

## Conditions and Limitations:

THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE LIMITED WARRANTY DESCRIPTION SET FORTH HEREIN; SPECIFICALLY, GSI DISCLAIMS ANY AND ALL OTHER WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE IN CONNECTION WITH: (I) ANY 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.

The sole and exclusive remedy for any claimant is set forth in this Limited Warranty and shall not exceed the amount paid for the product purchased. This Warranty only covers the value of the warranted parts and equipment, and does not cover labor charges for removing or installing defective parts, shipping charges with respect to such parts, any applicable sales or other taxes, or any other charges or expenses not specified in this Warranty. GSI shall not be liable for any other direct, indirect, incidental or consequential damages, including, without limitation, loss of anticipated profits or benefits. Expenses incurred by or on behalf of a claimant without prior written authorization from the GSI warranty department shall not be reimbursed. 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. Prior to installation, the end-user bears all responsibility to comply with federal, state and local codes which apply to the location and installation of the products.

This Limited Warranty extends solely to products sold by GSI and does not cover any parts, components or materials used in conjunction with the product, that are not sold by GSI. GSI assumes no responsibility for claims resulting from construction defects, unauthorized modifications, corrosion or other cosmetic issues caused by storage, application or environmental conditions. Modifications to products not specifically delineated in the manual accompanying the product at initial sale will void all warranties. 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.

### Notice Procedure:

In order to make a valid warranty claim a written notice of the claim must be submitted, using the RMA form, within 60 days of discovery of a warrantable nonconformance. The RMA form is found on the OneGSI portal.

### Service Parts:

GSI warrants, subject to all other conditions described in this Warranty, Service Parts which it manufactures for a period of 12 months from the date of purchase unless specified in Enhancements above.

(Limited Warranty - N.A. Grain Products\_ revised 01 October 2020)

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



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