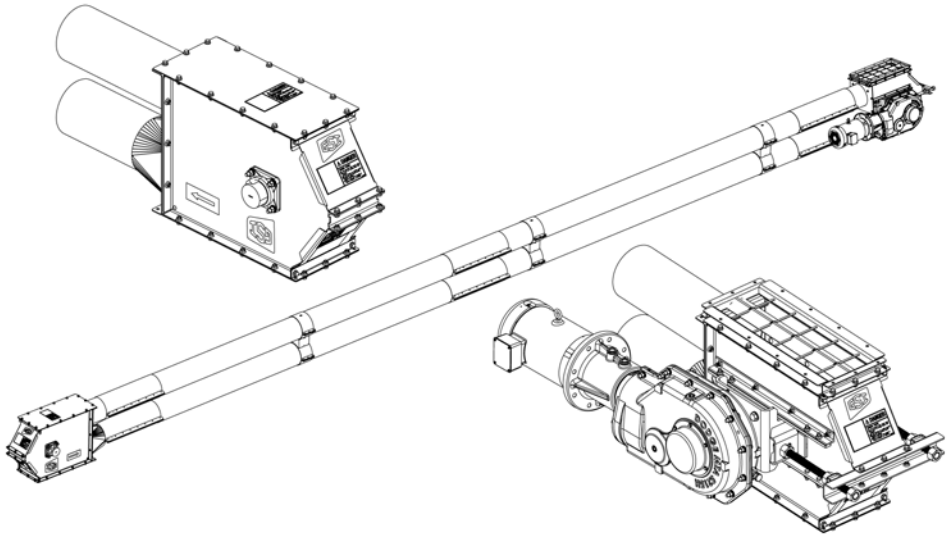


VersaLoop™

Models:
8", 10" AND 12"

Owner's Manual

PNEG-1966
Version 6.0

Date: 01-16-24

PNEG-1966

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

Contents

1 Safety Precautions

Topics Covered in this Chapter

- Safety Guidelines
- Correct Use
- Cautionary Symbol Definitions
- Safety Cautions
- Safety Decals
- Safety Sign-Off Sheet

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

Correct Use

Incorrect use can be extremely dangerous. Moving chain, paddles, pulleys and shafts can cause serious injury and kill.

- VersaLoop™ is for conveying whole agricultural seeds and grains only. Any other use is prohibited.
- VersaLoop™is only intended for fixed applications and not to be moved or transported.
- VersaLoop™is not designed for use in potentially explosive atmosphere and such use is prohibited.
- It may be equipped to receive grains from trucks, trailers, other mechanical grain handling equipment.
- Electrical control systems shall be designed to the requirements.
- The final installation shall be accordance with all the safety requirements outlined in this manual.
- Never use the VersaLoop™ with any guards removed.
- Never attempt to work on the VersaLoop™ unless the power supply to all other equipment associated with the VersaLoop™ is OFF, TAGGED and LOCKED.
- Be aware that when stopped, the drive, chain and paddles may move unexpectedly due to the weight of grain held in angled tubes. Wherever possible run the VersaLoop™ to empty before stopping it.
- Never leave the VersaLoop™ running un-attended.
- Always TURN OFF and LOCK the power supply to the VersaLoop™ before leaving it un-attended.
- Never allow an untrained person or one less than 18 years old to operate the VersaLoop™.
- Never allow someone under the influence of alcohol or drugs to operate the equipment.
- Never modify the VersaLoop™ from it’s original specification.
- Always interlock the bin doors to prevent any equipment operating when the door is open.
- Never work alone.
- Never start equipment until all personnel are clear of the grain bin.
- Keep hands and feet away from all moving parts.
- Always think before acting. Never act impulsively around the equipment.
- Never allow anyone inside a bin, truck or wagon which is being loaded or unloaded. Flowing grain can trap and suffocate in seconds.
- Manual feeding should be prohibited.

Cautionary Symbol 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.

Table 1-1 *Description of the different cautionary symbols*

Symbol	Description
DANGER	This symbol indicates an imminently hazardous situation which, if not avoided, **will result in serious injury or death.**
WARNING	This symbol indicates a potentially hazardous situation which, if not avoided, **can result in serious injury or death.**
CAUTION	This symbol indicates a potentially hazardous situation which, if not avoided, **can result in minor or moderate injury.**
NOTICE	This symbol is used to address practices not related to personal injury.
	This symbol indicates a general hazard.
	This symbol indicates a prohibited activity.
	This symbol indicates a mandatory action.

ST-0005–2

Safety Cautions

Use Personal Protective Equipment

- Use appropriate personal protective equipment:

Eye Protection

Respiratory Protection

Foot Protection

Hearing Protection

Head Protection

Fall Protection

Hand Protection

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

ST-0004–1

Follow Safety Instructions

- Carefully read all safety messages in this manual and safety signs on your machine. Keep signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from the manufacturer.
- Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction.
- If you do not understand any part of this manual or need assistance, contact your dealer.

ST-0002–1

Operate Motor Properly

- All electrical connections must be made in accordance with applicable local codes (National Electrical Code for the US, Canadian Electric Code, or EN60204 along with applicable European Directives for Europe). Make sure equipment and bins are properly grounded.
- Lock-out power before resetting motor overloads.
- Do not repetitively stop and start the drive in order to free a plugged condition. Jogging the drive in this manner can damage the equipment and drive components.

ST-0009–3

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

Stay Clear of Moving Parts

- Entanglement in rotating sprocket or moving chain will cause serious injury or death.
- Keep all guards and covers in place at all times.
- Lock-out power source before making adjustments, cleaning, or maintaining equipment.

ST-0017–1

Install and Operate Equipment Properly

- Be aware that when stopped, the drive, chain, and paddles can move unexpectedly due to the weight of grain held in angled tubes. Whenever possible, unload all material from the VersaLoop system before stopping.

ST-0053–1

Stay Clear of Hoisted Equipment

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

ST-0047–1

Install and Operate Equipment Properly

- Do not modify this equipment from its original specifications.
- This equipment is only intended for fixed applications and is not to be moved or transported.

ST-0052–1

Stay Clear of Slide Gate

- Keep hands away from slide gate opening. Slide gates can crush and dismember. Motor can start at any time.
- Lock-out power source before making adjustments, cleaning, or maintaining equipment.

ST-0049–1

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

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.

Location	Decal No.	Decal	Description
All access panels	8107001		Shear point danger decal
Drive end side plate, non-drive end side plate and bend section side plate	DC-2534		Decal, Chain Travel Direction Arrow
Non-drive end side plate	DC-2620		Decal, Logo GSI
Drive end side plate and non-drive end side plate	DC-2621		Decal, Logo GSI

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

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.

Date	Employee Name	Supervisor Name

ST-0007

2 General Information

Topics Covered in this Chapter

- VersaLoop™– Information
- Motor – Specifications
- Recommended Motor Overload Protection
- VersaLoop™ – Inspection

VersaLoop™– Information

The VersaLoop™ is a chain and paddle conveyor moving through two tube sections. It is used for loading and unloading a wide range of free flowing materials with a single drive. It can be used at angles, from horizontal position to an inclination of 60 degrees. The VersaLoop™is primarily intended for grain and grain products. They will move material into and out of grain storage structures, vehicles, dryers and other facilities with ease and gentleness.

The main components of a VersaLoop™ are motor, gearbox, upper and lower tube sections, and chain and paddles. The horsepower of the motor is determined by the angle of operation required. The VersaLoop™ is categorized as 8 in., 10 in. and 12 in. systems based on the tube section diameter.

Operating Capacity

All capacities, length, angle, and horsepower is based on dry, free flowing grain.

Refer to the following table for the maximum operating capacity.

NOTE: *Maximum capacity will likely reduce as operating angle increases.*

VersaLoop™	Maximum Capacity (bushels/hr)
8 in.	4000
10 in.	6000
12 in.	10000

A VersaLoop™ operating above 50 degrees will have a reduced capacity.

Over-feeding the VersaLoop™ will result in an increased power requirement, additional load on the drive line, and a possible plugging condition.

Maximum Span Length

Refer to the following table for the maximum span length based on the pipe diameter and pipe material.

Max Span (ft.)				
Pipe Diameter	Wall Thickness			
	14 ga	12 ga (Standard)	10 ga	7 ga
8 in.	44	48	51	53
10 in.	–	56	59	60
12 in.	–	64	67	70

Plug Weight

Plug Weight	Weight per foot (lb/ft)				
	Tube Diameter	Wall Thickness			
		14 ga	12 ga	10 ga	7 ga
(Both Tubes Completely Filled) ("Dry Grain" at 48 lbs/ft^3)	8 in.	42	47	52	59
	10 in.	–	62	67	77
	12 in.	–	77	83	95

Motor – Specifications

Always use the motor with required horsepower as suggested in the following charts.

Maximum 8 in. Lengths (Feet)					
Required HP	Degree of Incline				
	Horizontal	15	30	45	60
5	62	39	27	21	19
10	121	80	55	42	38
15	184	119	82	62	57
20	250	158	109	83	76
25	313	198	136	103	95

Maximum 10 in. Lengths (Feet)					
Required HP	Degree of Incline				
	Horizontal	15	30	45	60
10	82	54	36	28	25
15	125	83	55	42	39
20	168	108	74	56	52
25	210	136	92	70	65
30	255	162	112	85	78

Maximum 12 in. Lengths (Feet)					
Required HP	Degree of Incline				
	Horizontal	15	30	45	60
15	82	53	36	28	25
20	109	71	49	37	34
25	136	88	61	47	42
30	163	106	73	55	51
40	217	141	97	74	68
50	272	176	122	92	85
60	325	210	146	111	102

Recommended Motor Overload Protection

To protect the gearbox and motor from extreme overload situations, follow the below chart when sizing the electrical circuit for the VersaLoop™. The circuit breakers should be sized based on the below charts and appropriate electrical codes.

Required HP	Max Motor Amperage Rating					
	Three phase 60Hz				Single phase 60Hz	Three phase 50Hz
	208V	230V	460V	575V	230V	240V/380V – 415V
5	14A	14A	7A	6A	28A	8.7A
10	26A	24A	12A	11A	50A	14.4A
15	40A	37A	19A	17A	68A	21A
20	45A	50A	25A	22A	–	28.5A
25	55A	60A	30A	27A	–	34A
30	68A	74A	37A	32A	–	41A
40	88A	96A	48A	37A	–	54A
50	107A	116A	58A	46A	–	70A
60	126A	136A	68A	54.4A	–	84A

VersaLoop™ – Inspection

After the completion of the assembly and before each use, inspection of the VersaLoop™ is mandatory. Use the assembly instructions in this manual as a reference to determine that the VersaLoop™ is assembled properly.

This inspection should include, but not limited to:

1. Make sure all the covers listed in the assembly instructions are installed.
2. Check for all safety decals on the VersaLoop™ and replace if worn out, missing or illegible. The safety decals are listed in this manual.
3. Check all the fasteners are tightened.
4. Check for proper adjustment of the VersaLoop™ chains and paddles. (Refer to *VersaLoop™ Chain – Adjustment, page 53*.)
5. Check the oil level in the gearbox is to the specified limit for the specific inclination. (Refer the section above for required oil level).

NOTES

3 Operation

Topics Covered in this Chapter

- Start-up and Break-in Guidelines
- VersaLoop™ – Standard Operation
- VersaLoop™ – Shutdown

Start-up and Break-in Guidelines

It is essential to inspect the VersaLoop™ and drive components before adding power and to know how to shut down in an emergency. During the operation of the VersaLoop™, one person should be in a position to monitor the operation.

Any conveying equipment, when it is new or after it sits idle for a season, should go through a “break-in” period. It should be run at partial capacity at full speed until the inside of the housing becomes polished, before attempting full capacity. Failure will most likely occur when it is run at full capacity before it has a chance to get shined up.

During the initial start-up and break-in period, the operator should be aware of any unusual vibrations or noises.

VersaLoop™ – Standard Operation

During the regular operation of the VersaLoop™, one person shall be in position to monitor the operation. It is a good practice to inspect the unit periodically during the operation and be alert for unusual vibration, noise and loosening of any fasteners.

Check to make sure the gates are either open or closed to have grain delivered to desired location.

Start the VersaLoop™ motor before adding the grain to the VersaLoop™.

Begin adding grain to the unit slowly, and gradually increase the flow until the VersaLoop™ reaches the full capacity.

Monitor the grain entering and exiting the VersaLoop™ during operation until shutting down the unit. Before shutting down, make sure to shut off the grain flow, and then allow the VersaLoop™ to empty.

Make sure to lock out the power source before leaving the work area.

Grain must only be carried on bottom tube towards discharge.

VersaLoop™ – Shutdown

Normal shutdown

Make sure that the hopper is empty before stopping the unit. Before the operator leaves the work area, the power source should be locked out.

If the operator must leave the work area, or whenever servicing or adjusting, the VersaLoop™ must be stopped and the power source turned off. Precaution should be made to prevent anyone from operating the machine when the operator is away from the work area.
A main power disconnect switch capable of being locked only in the OFF position shall be provided. This shall be locked whenever work is being done on the VersaLoop™.

Emergency shutdown

If the VersaLoop™ should be immediately shut down under load, disconnect and lockout the power source.

Clear as much grain as possible and never attempt to restart the VersaLoop™ when full.

4 Assembly

Topics Covered in this Chapter

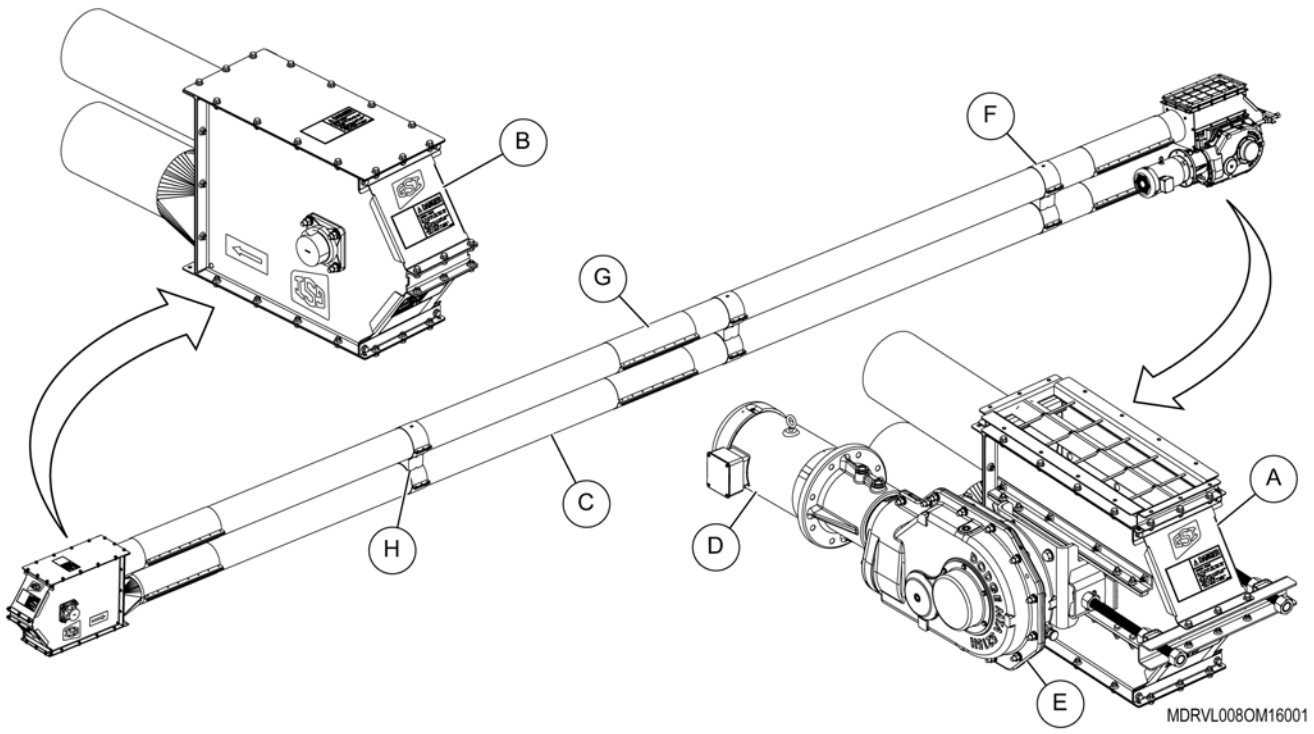
- VersaLoop™ – Typical Layout
- Tube Section – Assembly
- Gearbox and Motor – Installation
- Gearbox Mounting Positions
- Non-Drive End – Installation
- Drive End – Installation
- Chain and Paddles – Installation

VersaLoop™ – Typical Layout

The following steps should be followed when assembling a horizontal or inclined unit.

1. Layout tube sections (C) and determine the inlet and outlets. Refer to *Tube Section – Assembly, page 21*.
2. Install the gearbox (E) and motor (D) to the center shaft of the drive end section (A). Refer to *Gearbox and Motor – Installation, page 23*. The right hand/left hand orientation is determined by the layout.
3. Install the tube sections (C) and drive end (A) section into location. Refer to *Drive End – Installation, page 30*.
4. Install the other end of the tube sections (C) to the non-drive end (B). Refer to *Non-Drive End – Installation, page 29*.
5. Attach the bend sections (if equipped). Refer to *Bend Section – Installation, page 48*.
6. Install chains and paddles into the tube section (C) from the drive end section.
7. Tighten the VersaLoop™ chain.
8. Attach the inlet hopper (if equipped). Refer to *Hopper – Installation, page 35*.
9. Attach the discharge spout (if equipped). Refer to *Discharge Spout – Installation, page 38*.

Figure 4-1 *Typical layout*

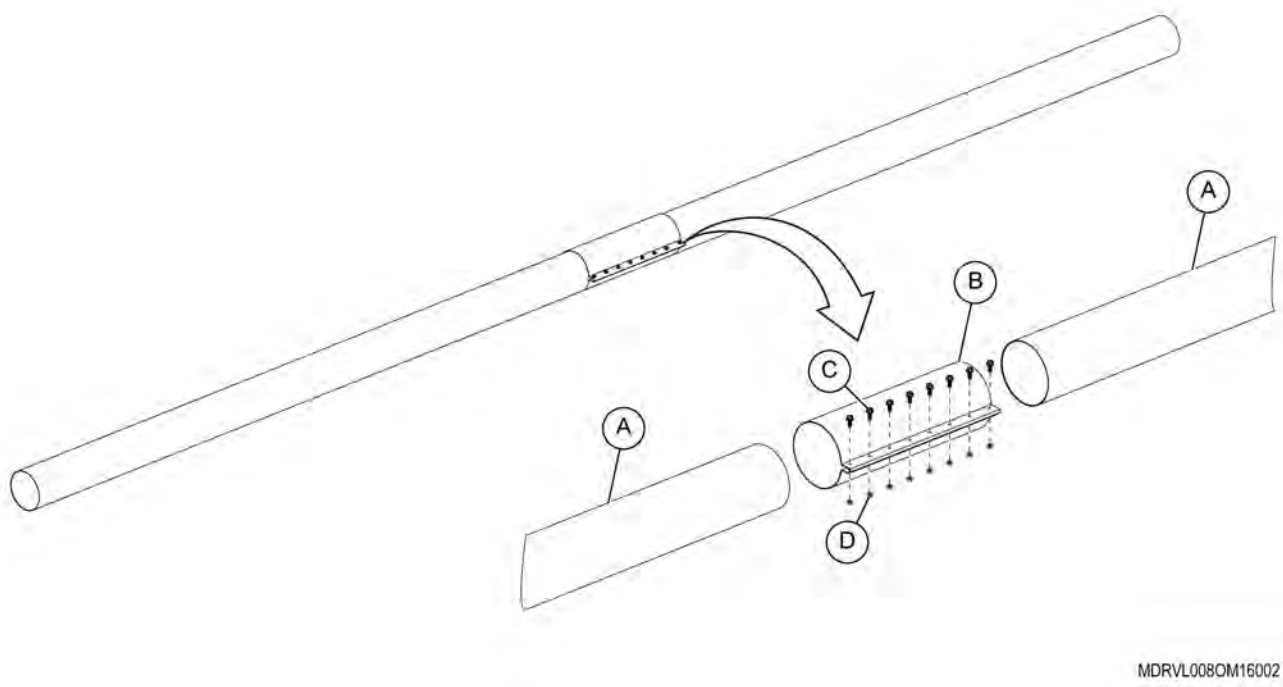


A	Drive end	E	Gearbox
B	Non-drive end	F	Tube clamp
C	Tube section	G	Connecting band
D	Motor	H	Tube support

Tube Section – Assembly

1. Center the connecting band (B) over the tube section (A) connections.
2. Position the connecting band (B) with the joint to the side of the tube (A).
3. Position the joint of the connecting band (B) so that the overhanging lip will shed water and not direct it to the tube (A).
4. Install 3/8 x 1-1/2 in. hex bolts (C) and 3/8 in. nuts (D) on each connecting band.

Figure 4-2 *Tube section assembly*

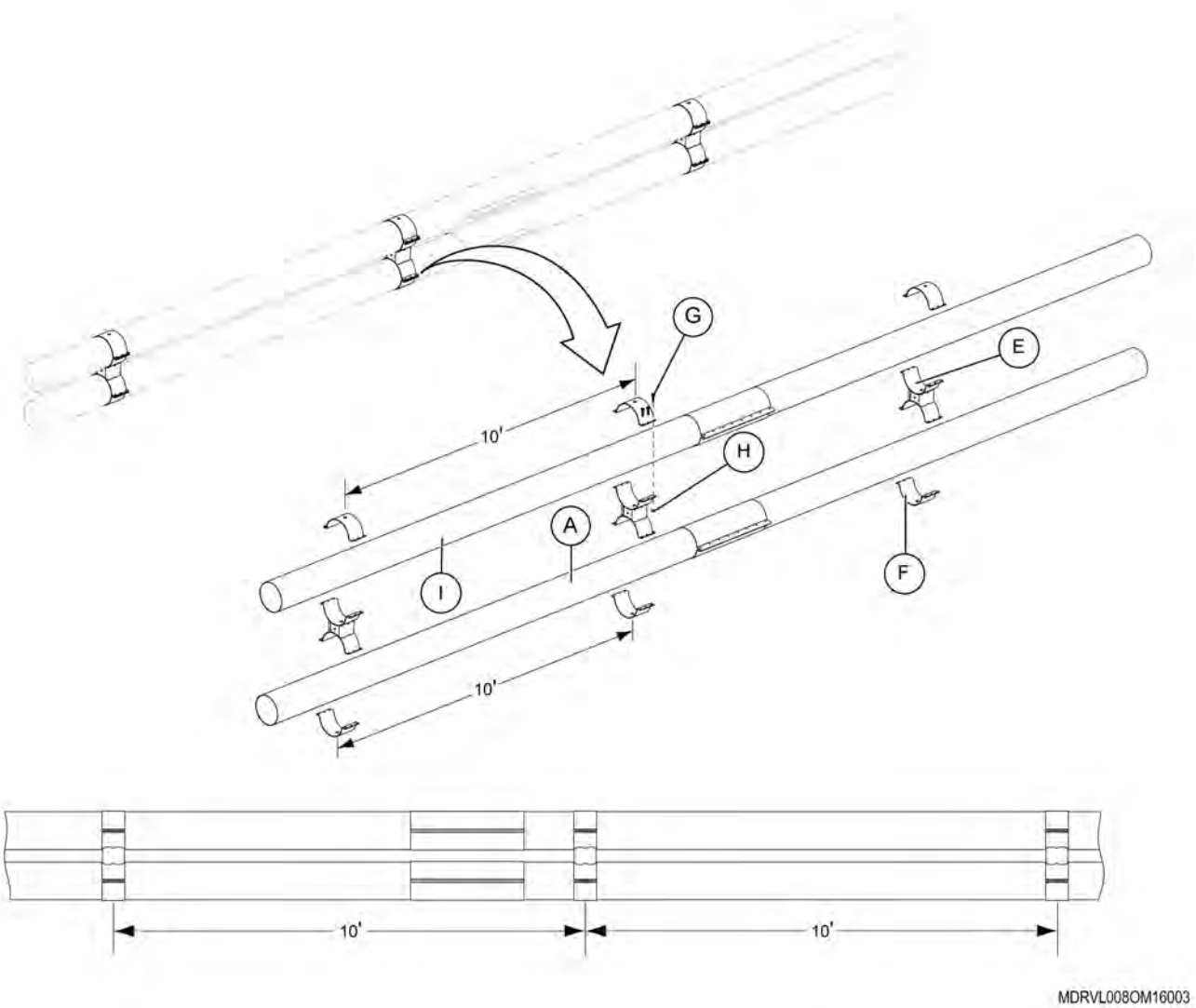


A	Tube section	C	3/8 x 1-1/2 in. hex bolt
B	Connecting band	D	3/8 in. nut

5. Repeat steps 1 to 4 for the other tube sections.

6. Locate an area on open level ground accessible to chain hoist or other lifting devices where the VersaLoop™ assembly can be laid out full length.
7. Position the tube supports (E) at regular intervals (no more than 10 ft. on center) on the open level ground.
8. Position the bottom tube section (A) onto the tube supports (E).
9. Position the clamps (F) to the bottom of the tube (A) and tube supports (E).
10. Install 3/8 x 1-1/2 in. hex bolts (G) and 3/8 in. nuts (H) per each tube support (E) and clamp (F).
11. Repeat this procedure for securing the upper tube (I) section.

Figure 4-3 *Upper and lower tube sections*



A	Lower tube section	G	3/8 x 1-1/2 in. hex bolt
E	Tube support	H	3/8 in. nut
F	Tube clamp	I	Upper tube section

Gearbox and Motor – Installation

Before You Begin

NOTE: *For detailed mounting instructions, refer to gearbox mounting positions.*

NOTE: *For more information, refer to Dodge manuals shipped with reducer.*

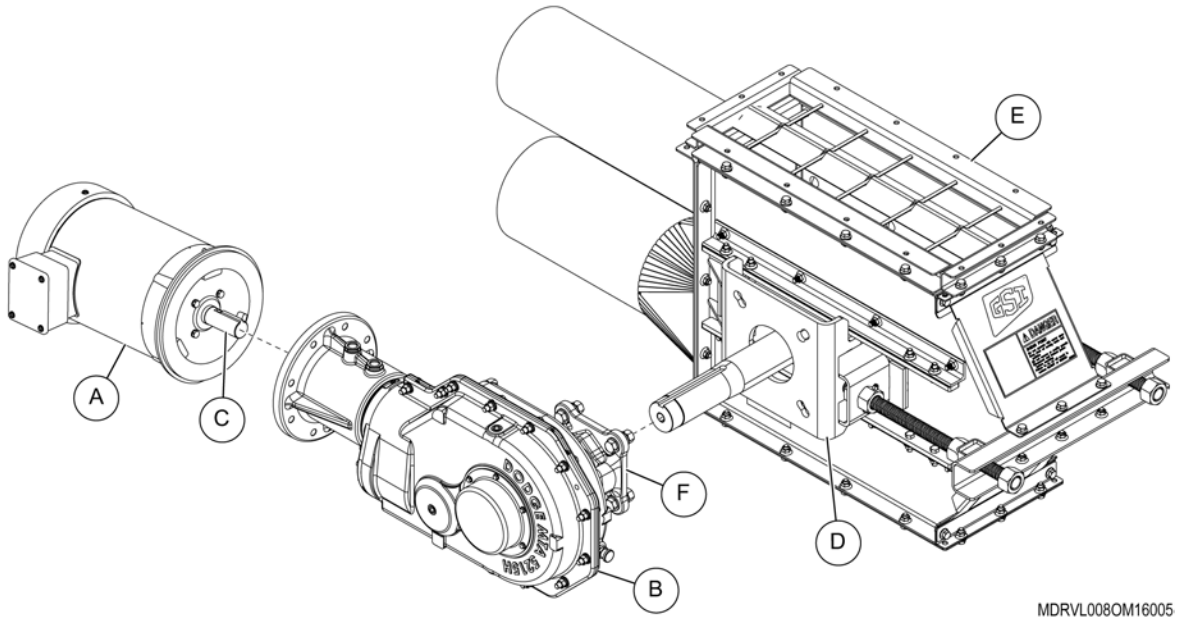
1. Locate the drive end (E) and position it on the ground or stand.
2. Locate the appropriate sized electric motor (A) with gearbox (B).

   NOTE: *Motor specification will vary depending on the VersaLoop™ angle of operation.*
3. Locate the shaft side in the drive end.
4. Slide the gearbox (B) onto the shaft.
5. Align the mounting plate (D) holes to the holes in the gearbox flange and secure them with bolts.

   IMPORTANT: *Make sure to install the shaft protective covers (F) inside the mounting bracket when installing the bolts and the nuts. Bend the covers at the top and the bottom to the inside of the mounting bracket to shield the shaft.*
6. Align the gearbox (B) and shaft keyways and insert the drive key.
7. Attach a key stop to the end of the shaft using a 1/2 in. bolt.
8. Attach the shaft dust cover to the end of the gearbox.
9. Mount the motor (A) to the gearbox (B) and ensure to align the key shaft (C) and coupler.

   NOTE: *Make sure to mount the motor (A) to the gearbox (B) with the lifting lug facing up.*

Figure 4-4 *Gearbox and motor assembly for 5-60 HP*



A	Motor	D	Mounting plate
B	Gearbox	E	Drive end
C	Key shaft	F	Bearing flange

Table 4-1 *Drive kits*

Motor Specification	Drive Kit	Hardware Kit
5 HP	DBR-000080	DBR-000094-HDW
10 HP	DBR-000081	DBR-000094-HDW
15 HP	DBR-000082	DBR-000094-HDW
20 HP	DBR-000083	DBR-000097-HDW
25 – 30 HP	DBR-000084	DBR-000098-HDW
40 – 50 HP	DBR-000089	DBR-000060-HDW
60 HP	DBR-000090	DBR-000060-HDW

Table 4-2 *Recommended bolt torque values*

Housing Bolt Recommended Torque Values		
Reducer Size	**Fastener Size**	**Torque in Ft.-Lbs. (N-m)**
MTA2115H	3/8-16	30 - 27 (41 - 37)
MTA3203H	3/8-16	30 - 27 (41 - 37)
MTA4207H	1-2/13	75 - 70 (102 - 95)
MTA5215H	1-2/13	75 - 70 (102 - 95)

Gearbox Mounting Positions

1. Use lifting bracket to lift reducer.
2. Determine the running positions of the reducer. Although the reducer may be operated in any position, the preferred mounting position is with the motor in the horizontal position (Position C) as shown. Note that the reducer is supplied with seven plugs; four around the sides for horizontal installations, two plugs on the front face and one plug on the back face for vertical installations. These plugs must be arranged relative to the running positions as follows:

   Horizontal Installations - Due to the many positions the MTA reducer may be oriented, the factory installed positions of the magnetic plug and breather may need to be relocated. The proper location for the magnetic plug is the hole closest to the bottom of the reducer. The filter breather is to be installed in the upper most hole. Of the two remaining plugs on the sides of the reducer, the highest plug is the minimum oil level plug as shown.

   The running position of the reducer in a horizontal application is not limited to the three positions shown. However, if running position is over 5° in position “C”, either way from sketches, the oil level plug cannot be used safely to check the oil level. Because of the many possible positions of the reducer, it may be necessary or desirable to make special adaptations using the lubrication filling holes furnished along with other standard pipe fittings, stand pipes and oil level gauges as required.

Figure 4-5 *Gearbox mounting positions*

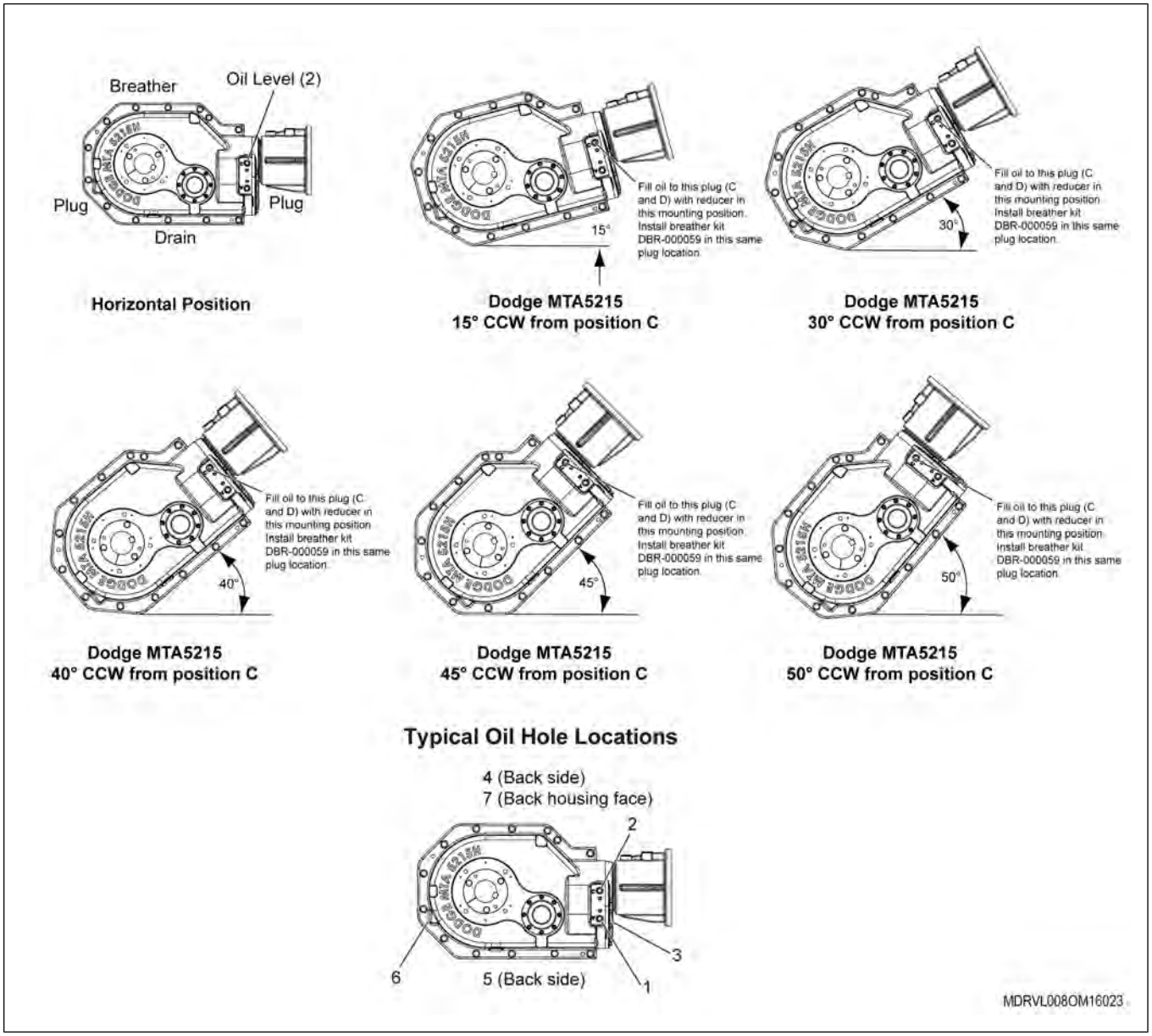


Table 4-3 *Approximate oil volumes in quarts*

Case Size	Horizontal
	C (qt.)
MTA2115H	7
MTA3203H	9-3/4
MTA4207H	13-1/8
MTA5215H	21
MTA6307H	30-1/8
MTA7315H	38-1/4
MTA8407H	52

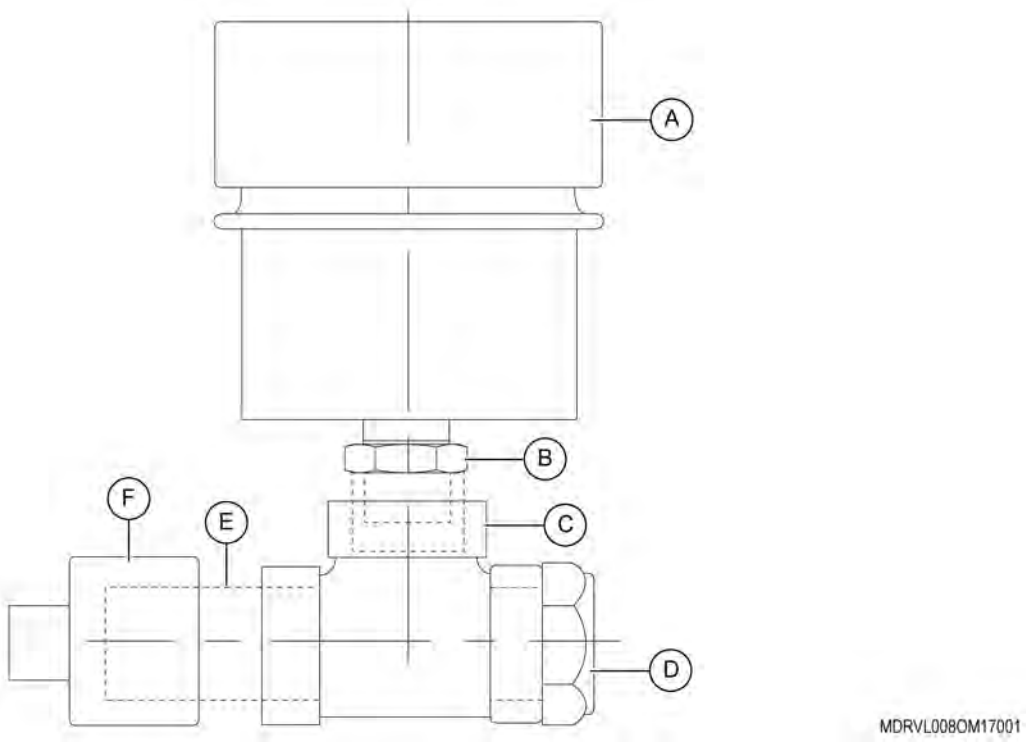
Table 4-4 *Approximate oil volumes in liters*

Case Size	Horizontal
	C (l)
MTA2115H	6-5/8
MTA3203H	9-1/4
MTA4207H	12-3/8
MTA5215H	20
MTA6307H	28-1/2
MTA7315H	36-1/2
MTA8407H	49-1/4

Vertical Breather Kit Installation

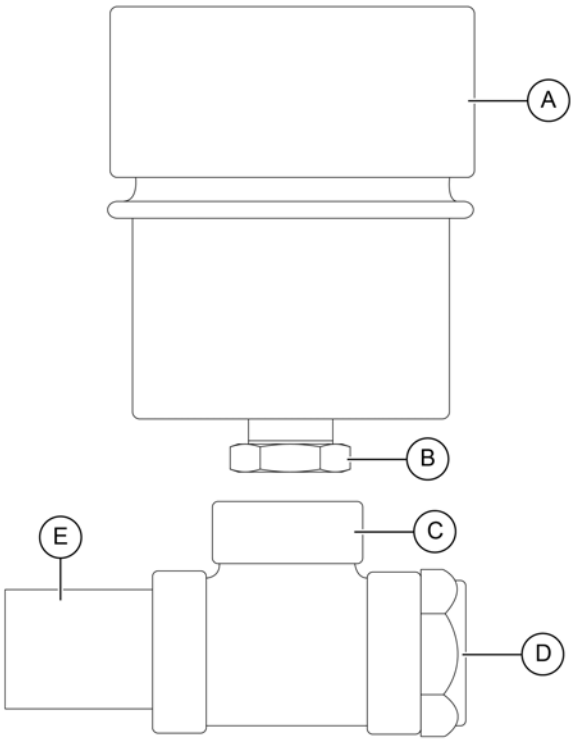
- Assemble vertical breather kits as shown.

Figure 4-6 *Vertical breather kit (MTA2-MTA3)*



A	Expansion chamber	D	Oil sight gauge
B	3/4 x 1/2 in. hex bushing	E	3/4 x 2-1/4 in. pipe nipple
C	3/4 in. pipe tee	F	3/4 M x 3/8 F in. adapter

Figure 4-7 *Vertical breather kit (MTA4-MTA8)*



A	Expansion chamber	D	Oil sight gauge
B	3/4 x 1/2 in. hex bushing	E	3/4 x 2-1/4 in. pipe nipple
C	3/4 in. pipe tee		

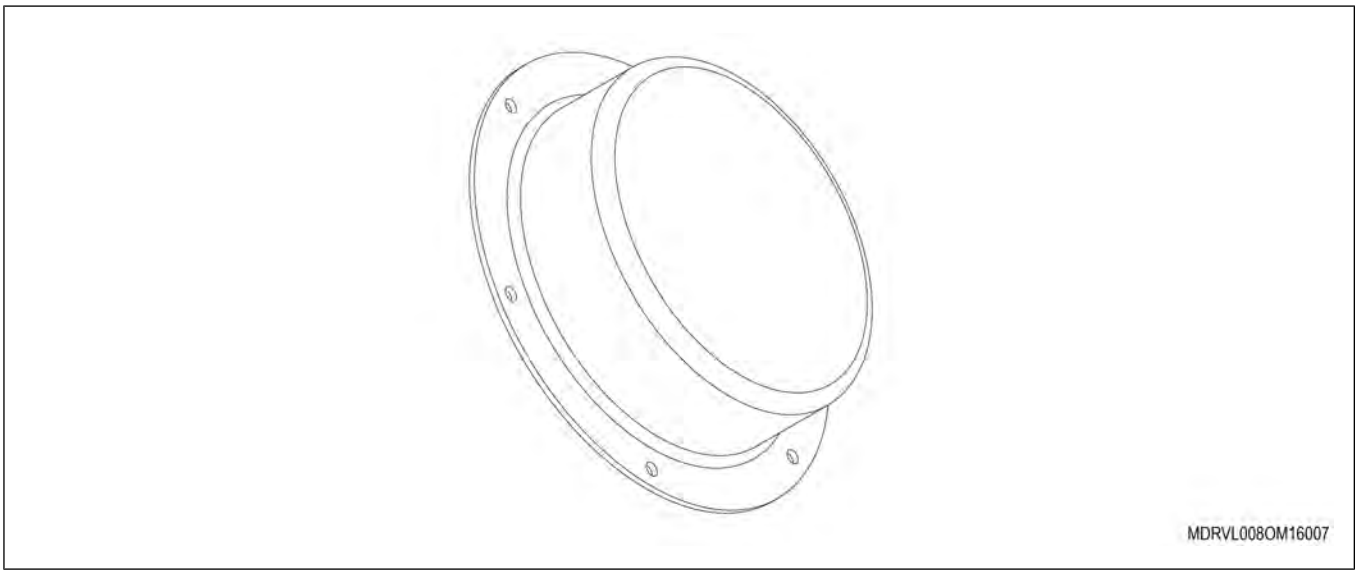
- Replace top oil plug on reducer with assembled vertical breather kit.
- Remove standard breather from reducer (if installed) and replace with solid oil plug.

NOTE: *For more information, refer to Dodge manuals shipped with product.*

Bushing Cover Installation

1. Insert bolts through washers.
2. Hold bushing cover up to reducer face and align holes in cover to threaded holes in reducer face.
3. Insert bolts through cover and thread into holes in reducer.
4. Tighten bolts with torque wrench to values in 30 in./lbs.

Figure 4-8 *Closed end cover*



NOTE: *For more information, refer to Dodge manuals shipped with product.*

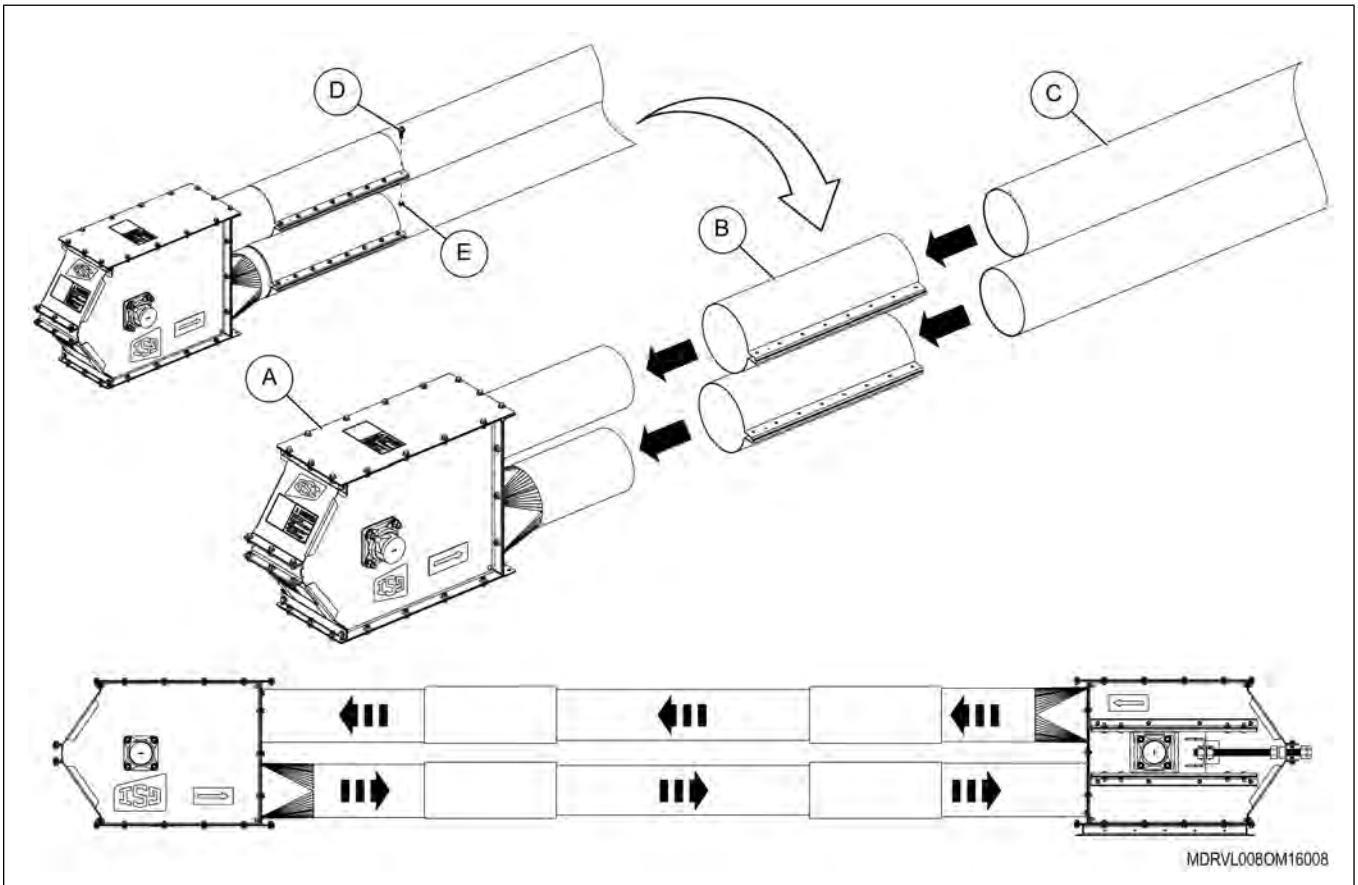
Non-Drive End – Installation

What You Should Know

IMPORTANT: *The orientation of the drive and non-drive ends will depend on the direction of the chain travel. The square openings will be opposite of each other. For example, if the square opening of the drive end is on the top, then the square opening of the non-drive end will be on the bottom.*

1. Locate the non-drive end (A) and position it on the ground or stand. The non-drive end (A) may function as either the inlet or the discharge.
2. Position the connecting band (B) either on the tubes in the non-drive end (A) or on the assembled tube section (C) (upper and lower tubes).
3. Join one end of the tube section (C) (upper and lower tubes) to the tube sections in the non-drive end (A).
4. Center the connecting band (B) over the tube section connections.
5. Position the joint of the connecting band (B) so that the overhanging lip will shed water and not direct it to the tube.
6. Install 3/8 x 1-1/2 in. bolts (D) and 3/8 in. nuts (E) per each connecting band (B).

Figure 4-9 *Installing the non-drive end*



A	Non-drive end	D	3/8 x 1-1/2 in. bolt
B	Connecting band	E	3/8 in. nut
C	Tube section		

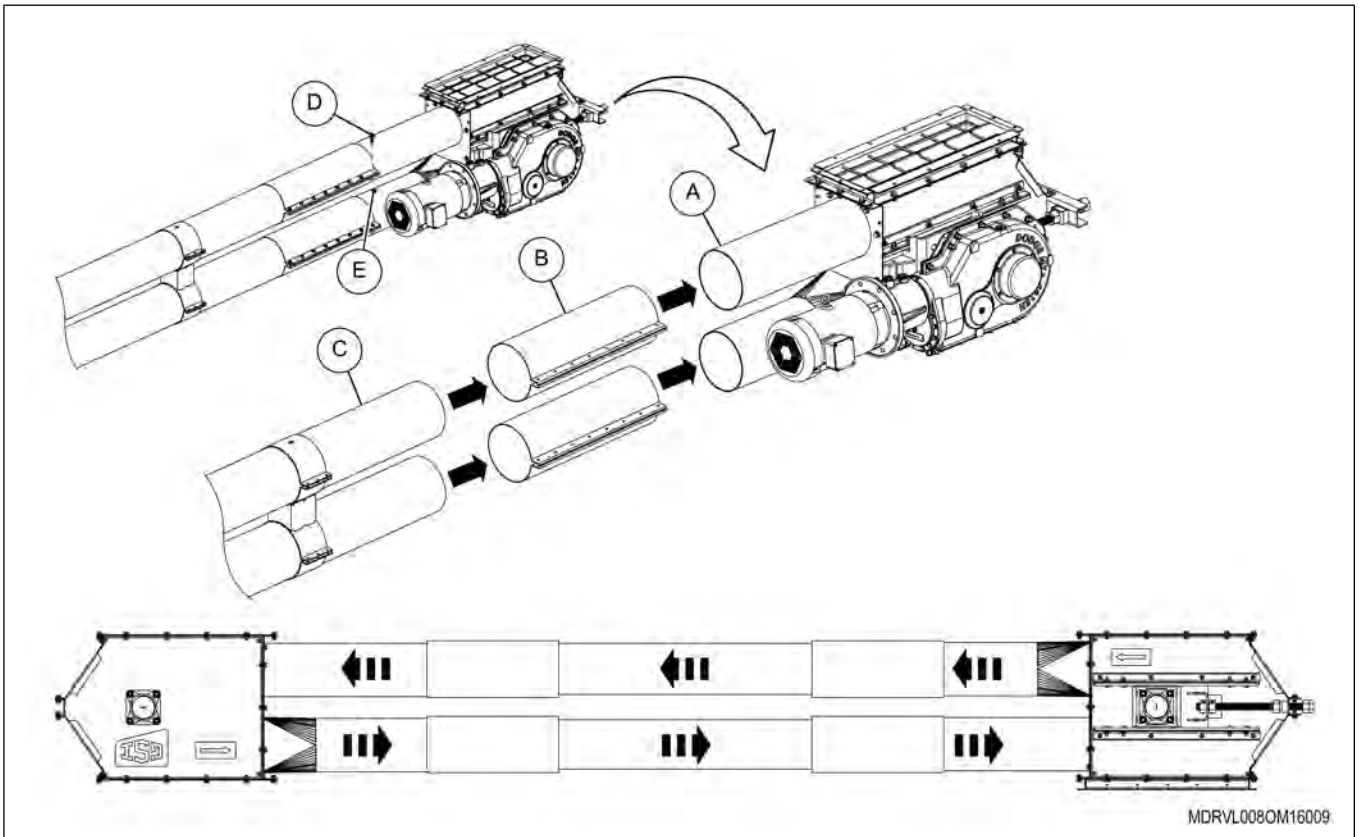
Drive End – Installation

What You Should Know

IMPORTANT: *The orientation of the drive and non-drive ends will depend on the direction of the chain travel. The square openings will be opposite of each other. For example, if the square opening of the drive end is on the top, then the square opening of the non-drive end will be on the bottom.*

1. Locate the drive end (A) and position it on the ground or stand. The drive end (A) may function as either the inlet or the discharge.
2. Position the connecting band (B) either on the tubes in the drive end (A) or the assembled tube section (C) (upper and lower tubes).
3. Join the open end of the tube section (C) (upper and lower tubes) to the tube sections in the drive end (A).
4. Center the connecting band (B) over the tube section connections.
5. Position the joint of the connecting band (B) so that the overhanging lip will shed water and not direct it to the tube.
6. Install 3/8 x 1-1/2 in. bolts (D) and 3/8 in. nuts (E) per each connecting band (B).

Figure 4-10 *Installing the drive end*



A	Drive end	D	3/8 x 1-1/2 in. bolt
B	Connecting band	E	3/8 in. nut
C	Tube section		

Chain and Paddles – Installation

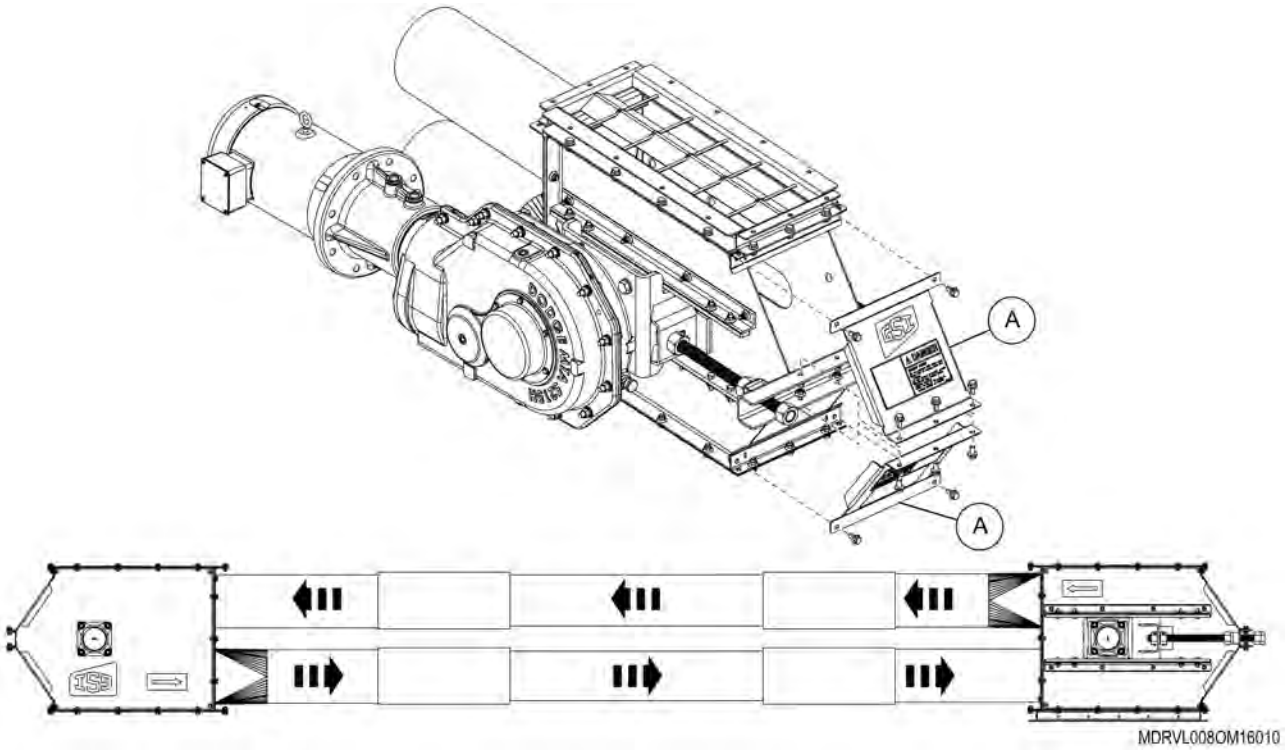
Before You Begin

The chain is shipped in 10 ft. lengths and needs to be spliced as required. The direction of the chain is dependent upon the setup of the VersaLoop™.

NOTE: *Make sure to bend the ends of the cotter pins as shown to prevent them from working loose and causing the chain to break.*

1. Remove the end covers (A) from the drive end.

Figure 4-11 *Removing the end covers*



A	End Covers

2. Insert the chain and paddle through the square tube and pull out of the round tube in the drive end. Route the chain and paddle to the non-drive end.

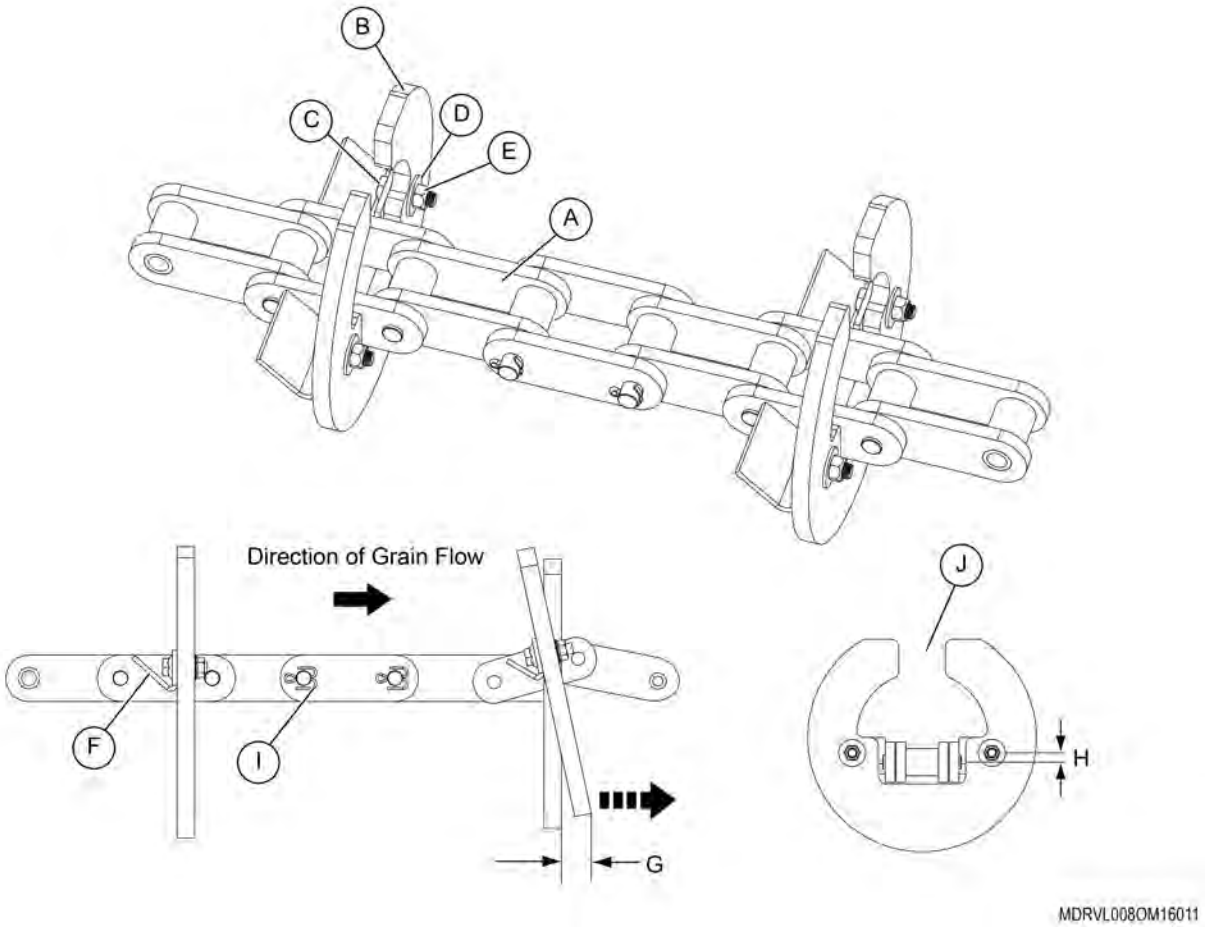
   IMPORTANT: *Chain direction must follow the direction of the arrow decal on the side of both ends. The chain must enter into the square opening and exit the round opening. Therefore, the square openings should be opposite, one on top and one on the bottom as shown.*

3. At the non-drive end, route the chain and paddles through the square tube, around the sprocket using an electrical fish tape or wire to pull the chain through the tube assembly.

   NOTE: *It is possible for the chain to twist a full 360° during this process. Visually check the chain through open covers at both the ends to make sure that this has not happened.*

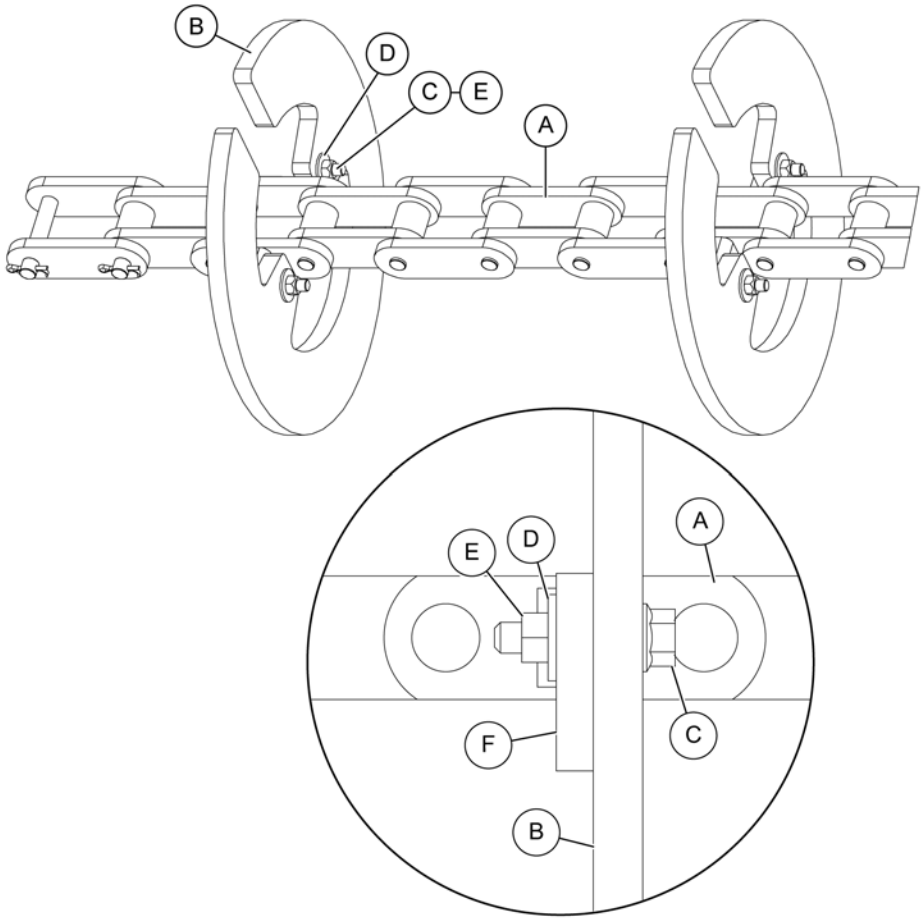
4. Loosen the adjusting screws in the drive end all the way (towards the tube) and connect the final chain link.
5. Tighten the chain by turning the adjusting screws clockwise; adjust each side equally to keep the sprocket shaft square with the housing.
6. Remove chain links if there is not enough travel in the adjusting screw to tighten the chain.
7. Make sure that the sprocket shaft is square to the housing by measuring the shaft position on both sides of the housing.
8. The chain should be tightened until the paddles are nearly rigid on the chain. The tips of the paddles should only move 3/4 in. when grabbed and pulled by hand.
9. Check and re-tension the chain as needed after the system has been trial run while empty. (Refer to *VersaLoop™ Chain – Adjustment, page 53*.)

Figure 4-12 *Chain and paddle assembly for 8 in. and 10 in.*



A	Chain	F	Paddle attachment bracket
B	Paddle	G	3/4 in.
C	5/16 x 1 in. flange bolt	H	0.313 in.
D	5/16 in. flat washer	I	Cotter pin
E	5/16 in. stover nut	J	Sprocket clearance slot in paddle

Figure 4-13 *Chain and paddle assembly for 12 in.*



A	Chain	D	5/16 in. flat washer
B	Paddle	E	5/16 in. stover nut
C	5/16 x 1-1/4 in. flange bolt	F	Paddle attachment bracket

NOTES

5 Accessories

Topics Covered in this Chapter

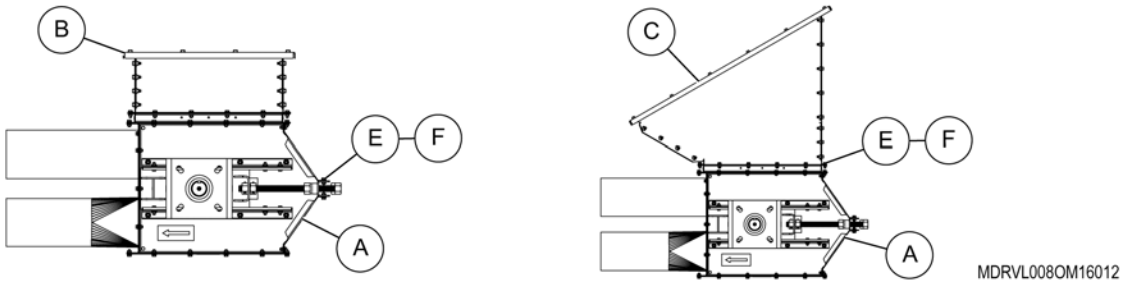
- Hopper – Installation
- Hopper Inlet – Installation
- Discharge Spout – Installation
- Discharge with Gate Assembly
- Side Inlet – Installation
- Bypass Inlet – Installation
- Bypass Dump Hopper – Installation
- Drop through Gate Assembly – Installation
- Chain Maintenance – Installation
- Mid Span Support – Installation
- Bend Section – Installation

Hopper – Installation

1. Install the inlet hopper assembly (B or C) to the inlet in drive end (A) or non-drive end in the correct orientation.
2. Install flange bolts (E) and flange nuts (F) to secure the inlet hopper.

   NOTE: *Install the inlet hopper depending on the application (drive end shown for reference).*

Figure 5-1 *Installing the inlet hopper to the drive end*



A		Drive end assembly
B	DBR-080048	8 in. standard hopper
	DBR-100045	10 in. standard hopper
	DBR-120038	12 in. standard hopper
C	DBR-080052	8 in. angled hopper (used for 15 degree and above)
	DBR-100049	10 in. angled hopper (used for 15 degree and above)
	DBR-120055	12 in. angled hopper (used for 15 degree and above)
E		Flange bolt
F		Flange nut

Hopper Inlet – Installation

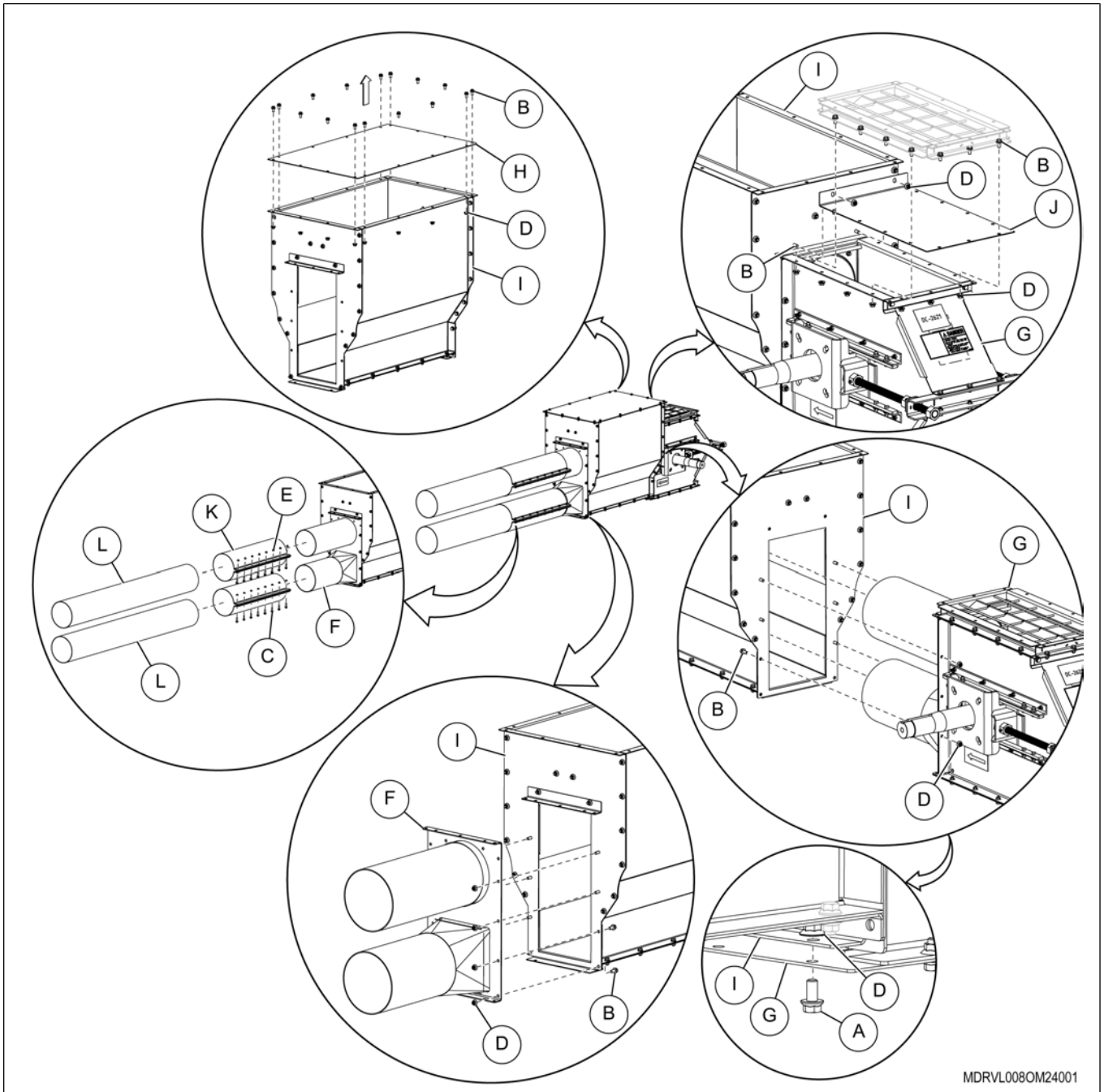
Hopper inlets are an alternative to the standard inlet hoppers, that are normally installed on the drive or non-drive end. They allow the VersaLoop™ to be in loaded in front of the drive or non-drive end so as not to load grain on the sprocket. They can also be used on inclined layouts and can help minimize potential capacity or performance issues on inclined installations.

What You Should Know

The hopper inlet will utilize the existing drive or non-drive end transition weldment. It will also ship with an additional cover that replaces the drive end grate cover. The hopper inlet can be installed on either the drive end or the non-drive end. The hopper inlet has a flat plate bolted to one end of the formed bottom. This end will point away from the drive or non-drive end when installed. The plate along with the bolted formed flange towards the top of the hopper allows the transition weldment to bolt-on.

1. Remove the transition weldment (F) and the inlet grate from drive end (G). If installing on the non-drive end, remove the standard cover.
2. Remove the cover (H) from the hopper inlet (I). Align the rectangular opening of the hopper inlet (I) with the end flange of the drive end (G). Use the installed 3/8 x 1 in. flange bolts (B) and 3/8 in. flange nuts (D) in the hopper inlet (I) to bolt to the corresponding holes in the drive end (G) vertical flanges. Use the 3/8 x 3/4 in. flange bolts (A) on the drive end (G) bottom cover to attach to the mating flange of the hopper inlet (I).
3. Using the existing cover grate hardware, bolt the flat cover (J) included with hopper to the top of the drive end (G). The flanged end of the cover (J) will bolt-on using the 3/8 x 1 in. flange bolts (B) and 3/8 in. flange nuts (D) that hold the internal hogback weldment to the hopper inlet (I).
4. Bolt the transition weldment (F) taken off of the drive end (G) to the opposite end of the hopper inlet (I) using the 3/8 x 1 in. flange bolts (B) and 3/8 in. flange nuts (D) installed in the hopper inlet (I).
5. Attach tube sections (L) to the transition weldment (F) with connecting bands (K) using 3/8 x 1-1/2 in. flange bolts (C) and 3/8 in. nylock nuts (E).

Figure 5-2 *Installing the hopper inlet to the drive end*



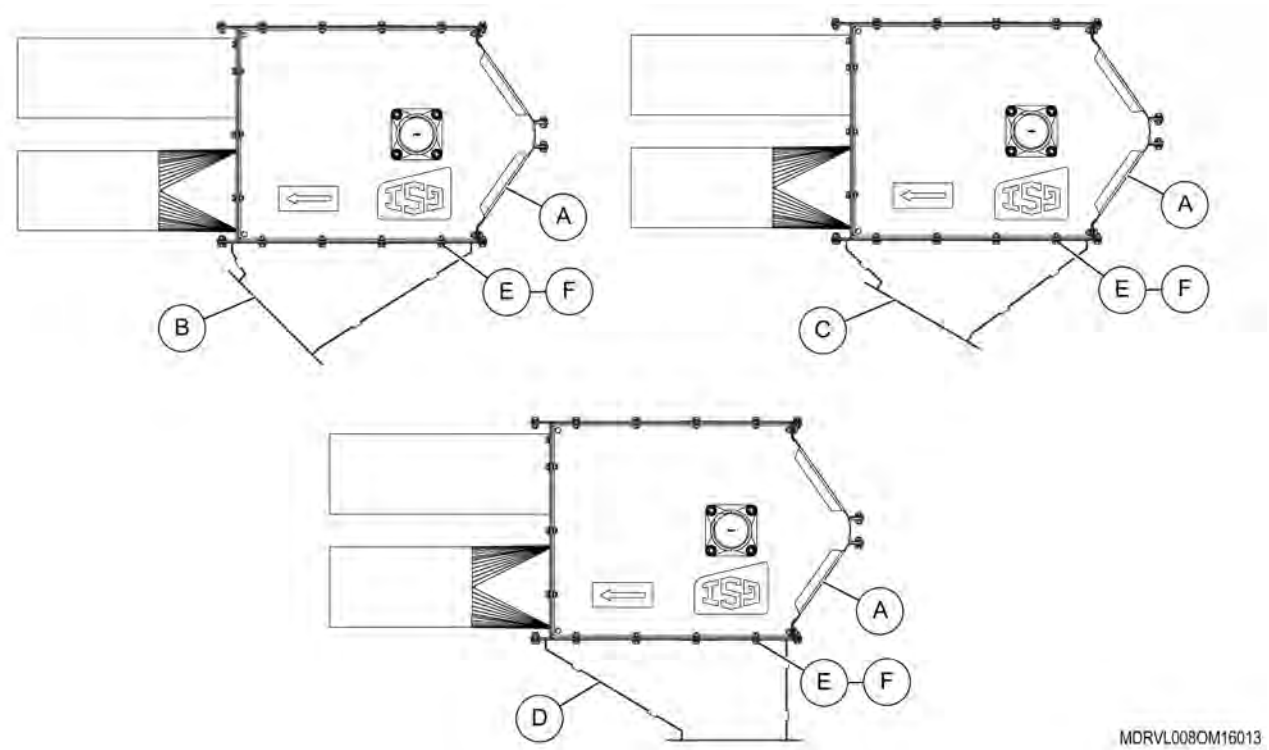
A	3/8 x 3/4 in. flange bolt	G	Drive end
B	3/8 x 1 in. flange bolt	H	Hopper inlet cover
C	3/8 x 1-1/2 in. flange bolt	I	Hopper inlet
D	3/8 in. flange nut	J	Drive end cover
E	3/8 in. nylock nut	K	Connecting band
F	Transition weldment	L	Tube section

Discharge Spout – Installation

1. Position the discharge spout (B or C or D) to the bottom of the non-drive or drive discharge end (A) in the correct orientation.
2. Install flange bolts (E) and flange nuts (F) to secure the discharge spout.

   NOTE: *Install the discharge spout depending on the application (non-drive end shown for reference).*

Figure 5-3 *Installing the discharge spout*



A	DBR-080012	8 in. non-drive end assembly
	DBR-100019	10 in. non-drive end assembly
	DBR-120033	12 in. non-drive end assembly
B	DBR-080040-BS	8 in. 45 degree discharge spout
	DBR-100037-BS	10 in. 45 degree discharge spout
	DBR-120044-BS	12 in. 45 degree discharge spout
C	DBR-080045-BS	8 in. 60 degree discharge spout
	DBR-100042-BS	10 in. 60 degree discharge spout
	DBR-120049-BS	12 in. 60 degree discharge spout
D	DBR-080034-BS	8 in. 90 degree discharge spout
	DBR-100031-BS	10 in. 90 degree discharge spout
	DBR-120060-BS	12 in. 90 degree discharge spout
E		Flange bolt
F		Flange nut

Discharge with Gate Assembly

What You Should Know

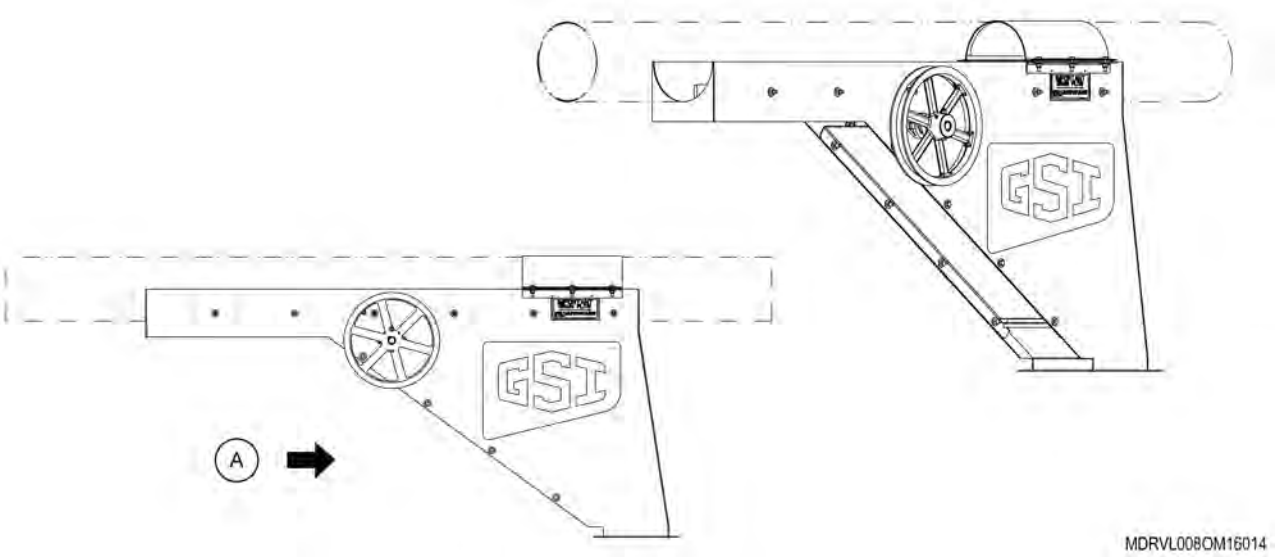
The discharge with gate is designed for chain travel in only one direction (A). Make sure it is oriented properly by referring the decal on the discharge end. Operating in the wrong direction can cause paddle damage.

1. Locate the outlet of the discharge in the desired location.
2. Cut exact lengths (if necessary) of other tube sections to locate the discharge unit in its proper place.

   NOTE: *When cutting tubes to exact length, the ends must be cut square and any burrs on the ends must be removed by chamfering the inside diameter.*

3. Join tube and discharge gate together with connecting bands.
4. Slide the tube sections tightly together and space the connecting band in equal amounts on both parts of the connection.

Figure 5-4 *Discharge with gate assembly*



A	Direction of chain travel

Side Inlet – Installation

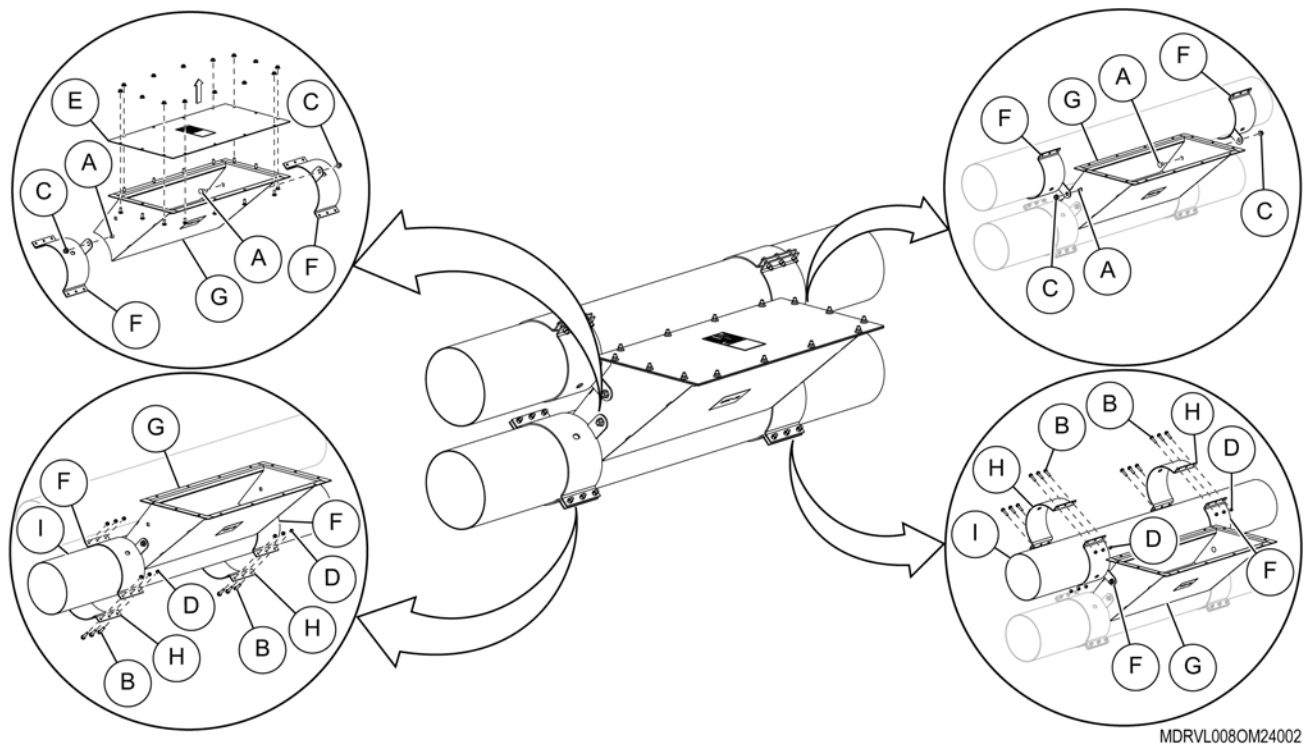
The side inlet is an alternative to loading the VersaLoop™ using the standard hopper installed on the drive or non-drive end of the VersaLoop™. The side inlet can be positioned where needed to allow for feeding of a VersaLoop™ from a spout, auger or other equipment. It must be installed on the bottom tube only. The inlet is not designed as a hopper, so care should be taken to introduce grain into the inlet at a volume that allows the VersaLoop™ to take it away without filling the inlet.

Before You Begin

The tube will need to be cut at the desired location to allow for installation of the side inlet. The inlet attaches to the tube with four band clamp assemblies. The band clamps and hardware are bagged and not pre-installed on the hopper.

1. Pick the desired location for the side inlet, along the run of the VersaLoop™. Remove the side inlet top cover (E).
2. Assemble the half band clamp weldment (F) to the side inlet hopper (G) using 1/2 x 1 in. carriage bolts (A) and 1/2 in. flange nuts (C). Attach the half bands (H) to the band clamp weldments (F) around the top and bottom tube sections (I) using 3/8 x 1-1/2 in. flange bolts (B) and 3/8 in. nylock nuts (D).

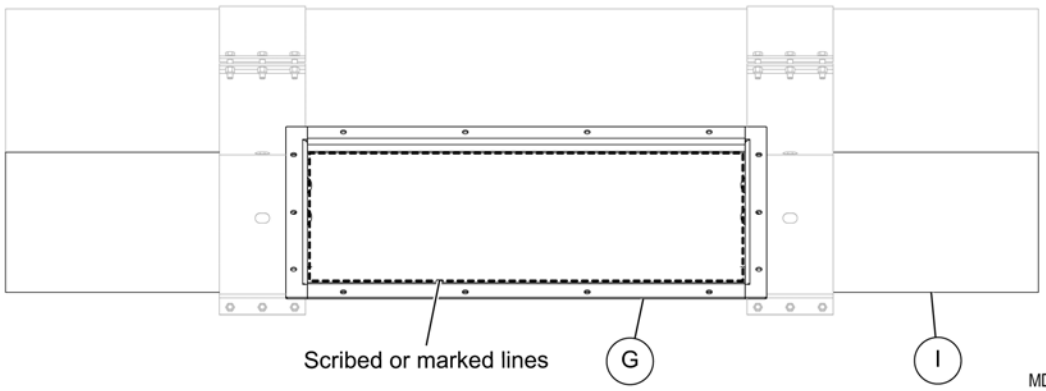
Figure 5-5 *Installing the side inlet to the tube section*



A	1/2 x 1 in. carriage bolt	F	Half band clamp weldment
B	3/8 x 1-1/2 in. flange bolt	G	Side inlet hopper
C	1/2 in. flange nut	H	Half band
D	3/8 in. nylock nut	I	Tube section
E	Side inlet top cover		

3. Using the side inlet hopper as a template, scribe or mark lines around the inside of side inlet hopper (G). Remove the side inlet from the tube sections (I).

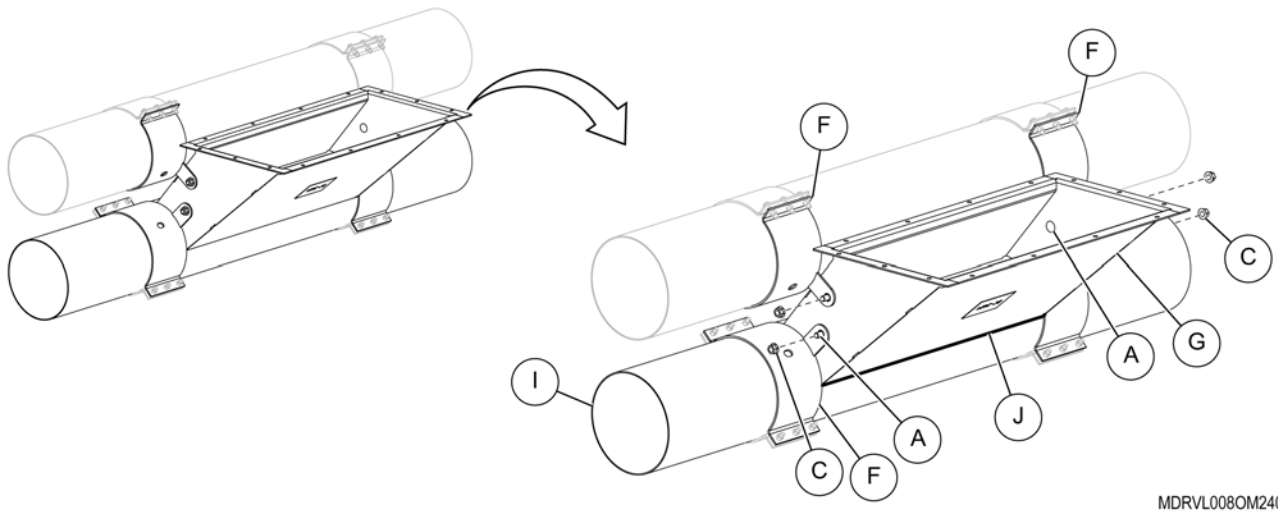
Figure 5-6 *Marking the tube section with side inlet hopper*



G	Side inlet hopper	I	Tube section

4. Cut out the bottom tube section (I) around the lines.
5. Re-assemble the side inlet hopper (G) to the clamp weldments (F) using 1/2 x 1 in. carriage bolts (A) and 1/2 in. flange nuts (C). Caulk (J) the seams between the side inlet hopper (G) and the tube section (I).

Figure 5-7 *Re-installing the side inlet to the tube section*



A	1/2 x 1 in. carriage bolt	G	Side inlet hopper
C	1/2 in. flange nut	I	Tube section
F	Half band clamp weldment	J	Caulk

Bypass Inlet – Installation

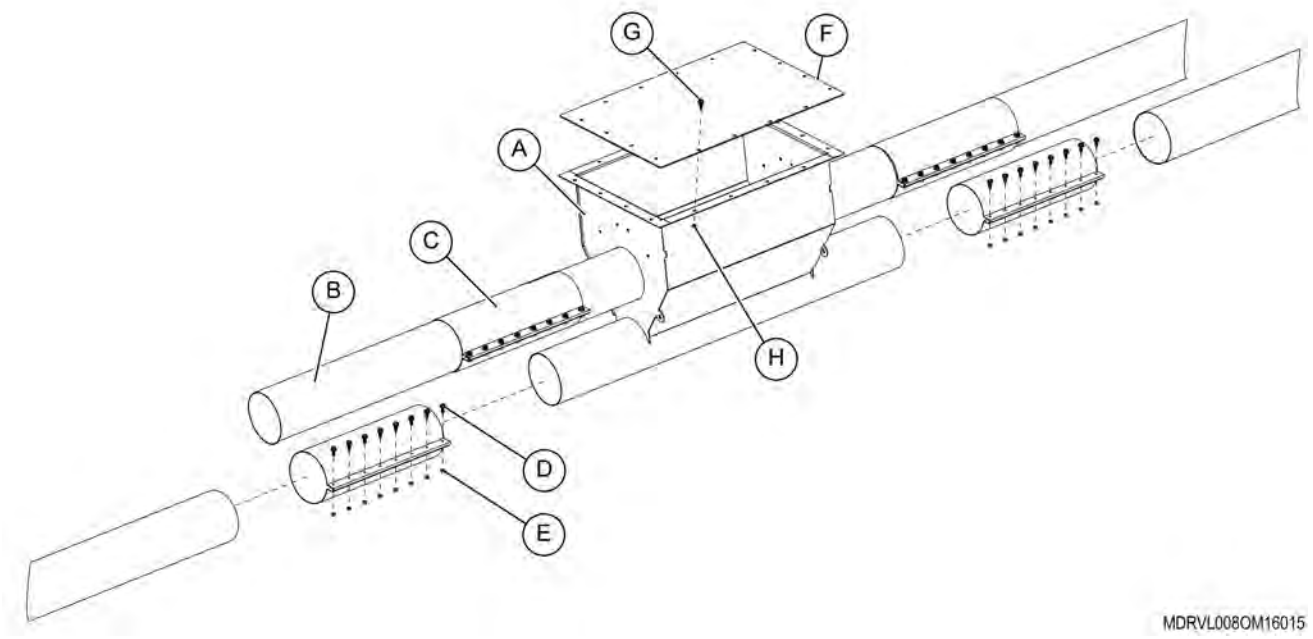
Before You Begin

Locate the desired location for the bypass inlet assembly. It may be necessary to cut exact lengths of the tube sections to install the bypass inlet assembly.

NOTE: *When cutting tubes to exact length, the ends must be cut square and any burrs on the ends must be removed by chamfering the inside diameter.*

1. Center the connecting band (C) over the tube section (B) and bypass inlet (A) upper tube.
2. Install 3/8 x 1-1/2 in. hex bolts (D) and 3/8 in. nuts (E) on the connecting bands (C).
3. Follow the same procedure to install the other tube sections to the bypass inlet.
4. Install the bypass inlet cover (F) on the bypass inlet (A) with 5/16 x 1 in. flange bolts (G) and 5/16 in. flange nuts (H).

Figure 5-8 *Bypass inlet*



A	Bypass inlet	E	3/8 in. nut
B	Tube section	F	Bypass inlet cover
C	Connecting band	G	5/16 x 1 in. flange bolt with sealing washer
D	3/8 x 1-1/2 in. hex bolt	H	5/16 in. flange nut

Bypass Dump Hopper – Installation

Before You Begin

Identify the desired location for the bypass dump hopper assembly. It may be necessary to cut exact lengths of the tube sections to install the dump hopper assembly.

NOTE: *When cutting tubes to exact length, the ends must be cut square and any burrs on the ends must be removed by chamfering the inside diameter.*

What You Should Know

Bypass dump hoppers are available in 5 ft. inlet and 10 ft. inlet openings, with the overall length of the 5 ft. hopper being 7.5 ft. and the overall length of the 10 ft. hopper being 12.6 ft. The inlet dump hopper includes baffles located along the top tube. These are adjustable using chains that are installed on either end of the baffles. 5 ft. hoppers have two baffles, while 10 ft. hoppers have four baffles.

The dump hopper is to receive grain into the VersaLoop™ and should be located at a point opposite to the discharge end. Dump hoppers should be installed horizontally and not on an incline. For drive over hoppers, the hopper must be supported by a concrete structure.

Figure 5-9 *Recommended concrete dimensions*

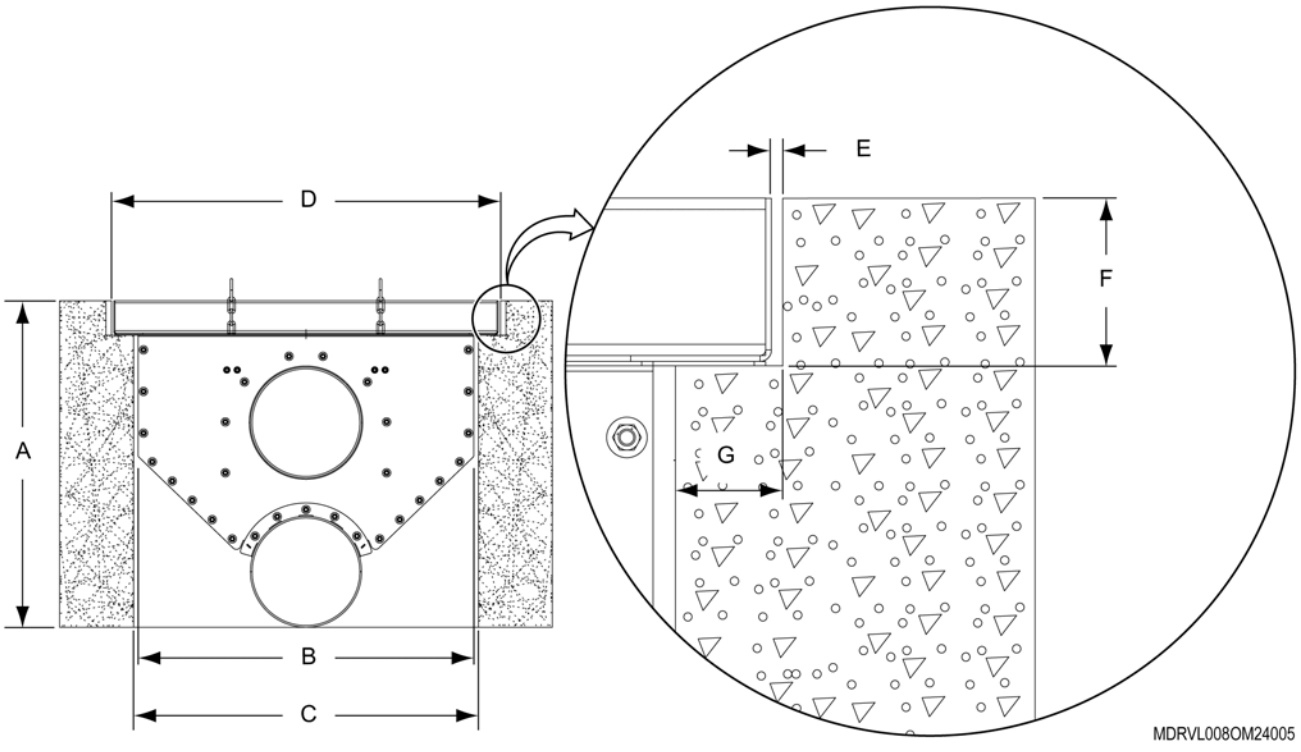
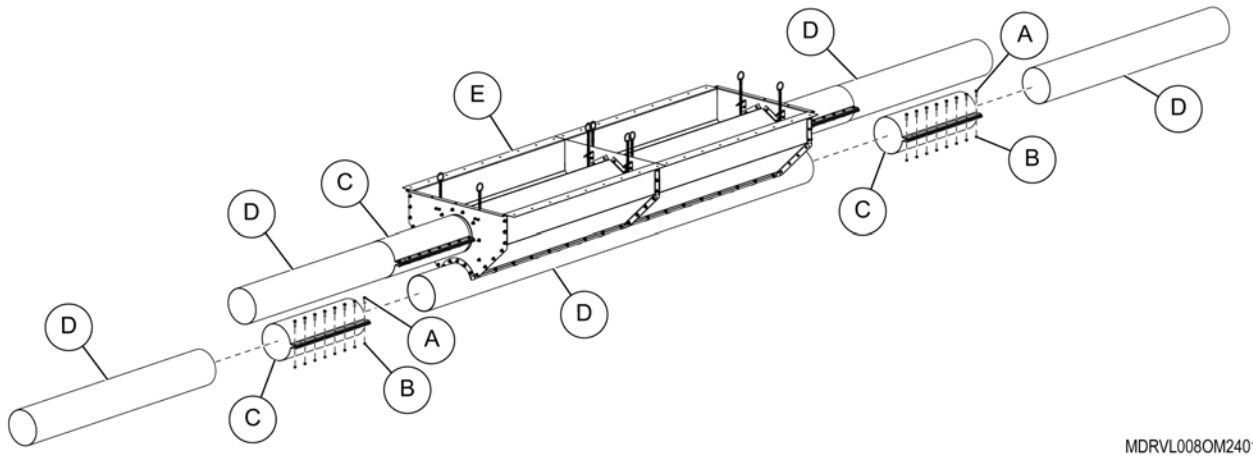


Figure 5-1 *Concrete dimension details*

Dimensions	"A"	"B"	"C"	"D"	"E"	"F"	"G"
8 in.	2' – 2-1/2"	3' – 0-1/4"	3' – 1-1/4"	3' – 6"	1/4"	3-3/4"	2-3/8"
10 in.	2' – 6-1/2"	2' – 11-1/16"	3' – 0-1/16"	3' – 6"	1/4"	3-3/4"	3"
12 in.	2' – 11-5/16"	3' – 0-1/4"	3' – 1-1/4"	3' – 6"	1/4"	3-3/4"	2-3/8"

1. Center the connecting band (C) over the tube section (D) and inlet dump hopper (E) upper tube.
2. Install 3/8 x 1-1/2 in. flange bolts (A) and 3/8 in. flange nuts (B) on the connecting bands (C).
3. Follow the same procedure to install the other tube sections to the inlet dump hopper (E).
4. Place an appropriate bar grate over the opening.

Figure 5-10 *Installing the inlet dump hopper*

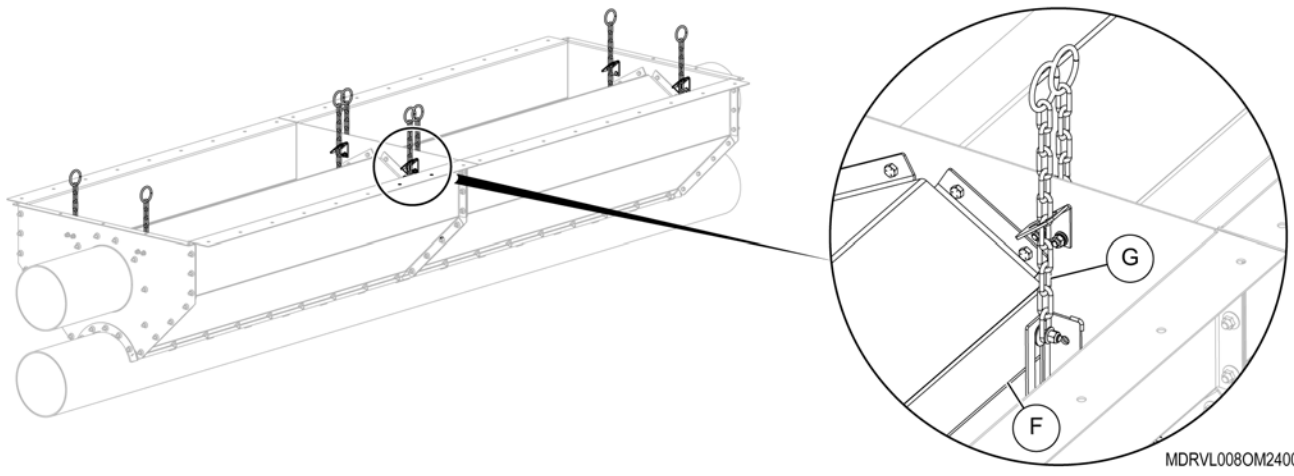


A	3/8 x 1-1/2 in. flange bolt	D	Tube section
B	3/8 in. flange nut	E	Inlet dump hopper
C	Connecting band		

Adjusting the Baffles

Raise or lower the baffles (F) using the chains (G) attached to each end of the baffle (F). Slide the chain link into the chain bracket once the desired height of the baffles (F) have been reached.

Figure 5-11 *Adjusting the baffles*



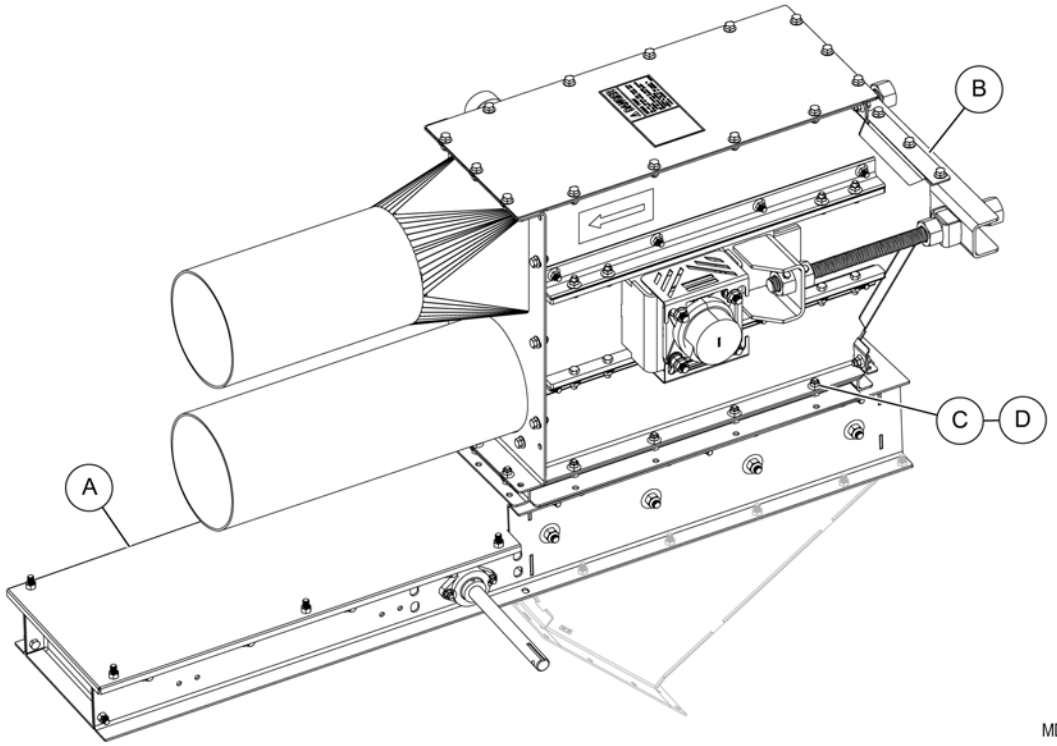
F	Baffle	G	Chain

Drop through Gate Assembly – Installation

1. Position the drop through gate assembly (A) to the bottom of the non-drive or drive discharge end (B) in the correct orientation.
2. Install flange bolts (C) and flange nuts (D) to secure the drop through gate assembly (A) to the discharge end (B) spout.

   NOTE: *Install the drop through gate assembly (A) depending on the application (non-drive end shown for reference).*

Figure 5-12 *Installing the drop through gate assembly*

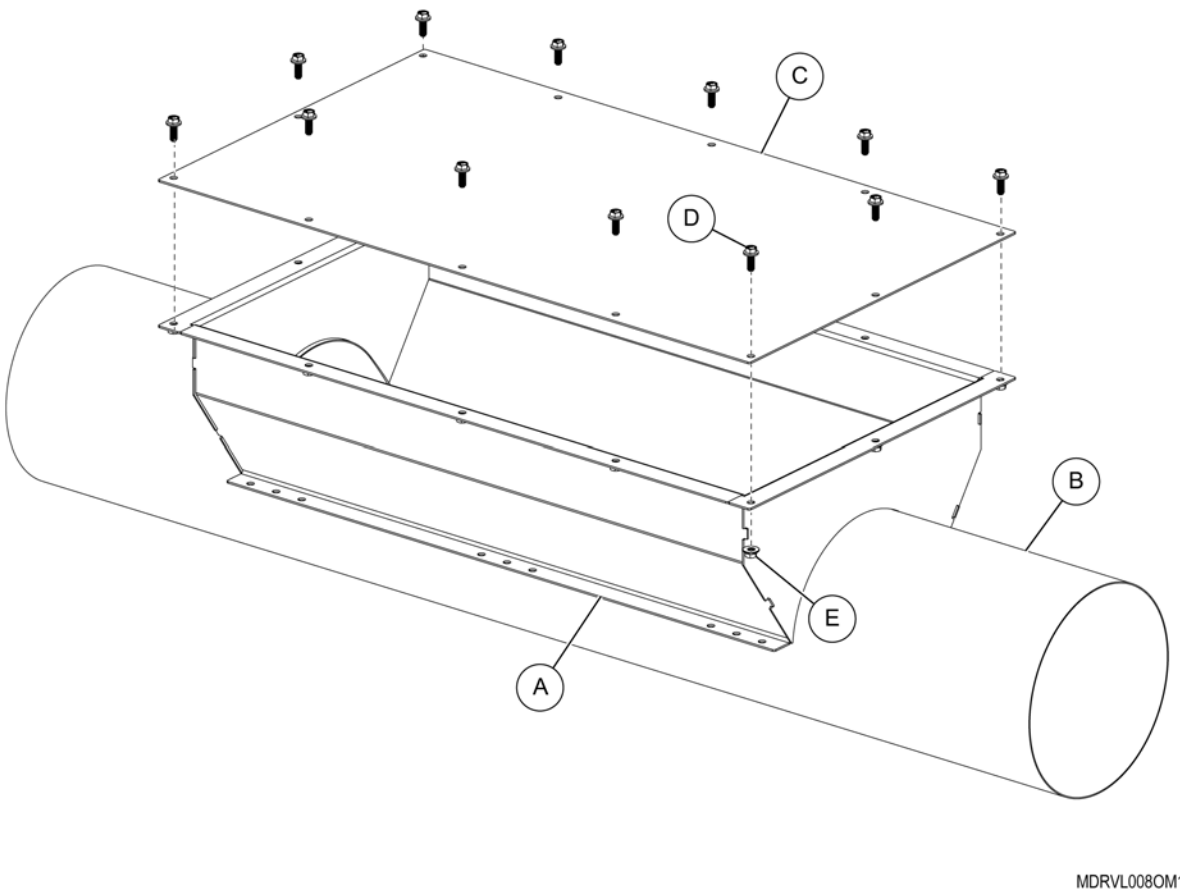


A	RSG0912GHILR	8 in. drop through gate assembly
	RSG1212GHILR	10 in. drop through gate assembly
	DBR-120077R	12 in. drop through gate assembly
B	DBR-080012	8 in. non-drive end assembly
	DBR-100019	10 in. non-drive end assembly
	DBR-120033	12 in. non-drive end assembly
C		Flange bolt
D		Flange nut

Chain Maintenance – Installation

1. Center the chain maintenance (A) over the tube section (B).
2. Install the chain maintenance cover (C) on the chain maintenance (A) with 3/8 x 1 in. flange bolts (D) and 3/8 in. flange nuts (E).
3. Follow the same procedure to install the other tube sections to the chain maintenance.

Figure 5-13 *Chain maintenance*

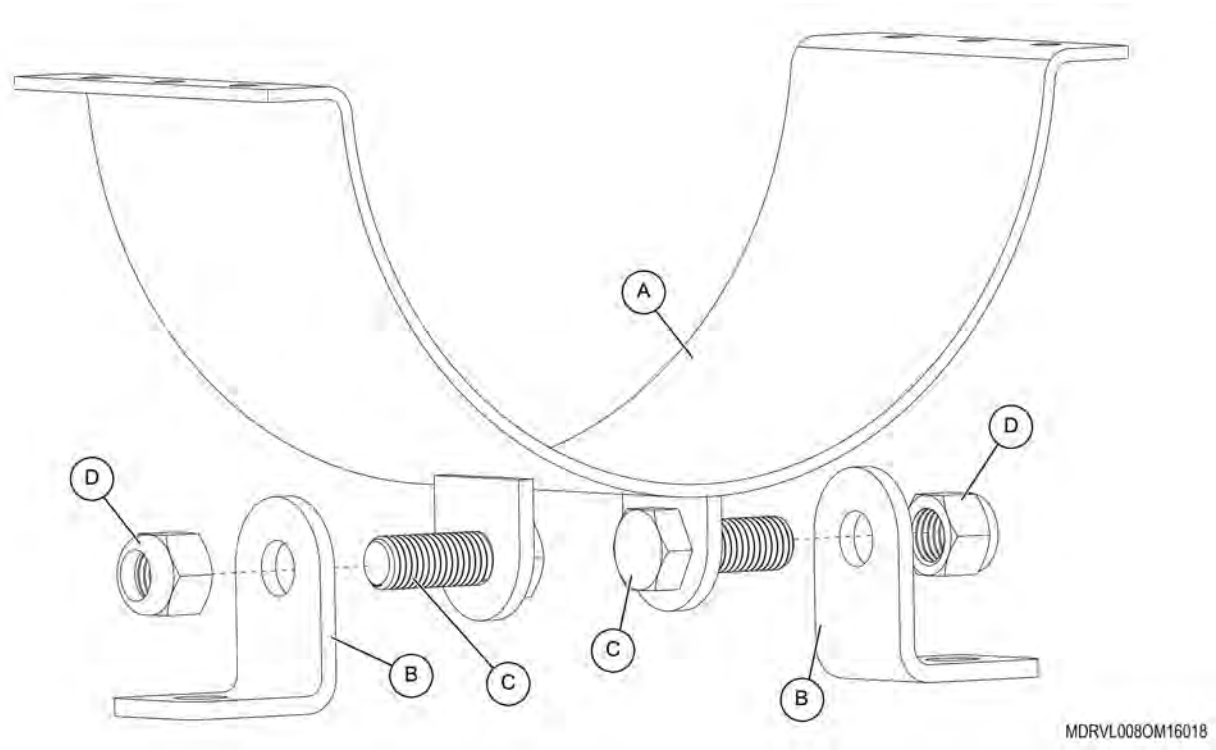


A	Chain maintenance	D	3/8 x 1 in. flange bolt
B	Tube section	E	3/8 in. flange nut
C	Chain maintenance cover		

Mid Span Support – Installation

1. Align the mid span support (A) to the mounting foot bracket (B).
2. Install 3/4 x 2 in. bolts (C) to the mid span support (A) and tighten the 3/4 in. nylock nuts (D) with the mounting foot bracket (B)

Figure 5-14 *Mid span support*



A	Mid span support assembly	C	3/4 x 2 in. bolt
B	Mounting foot bracket	D	3/4 in. nylock nut

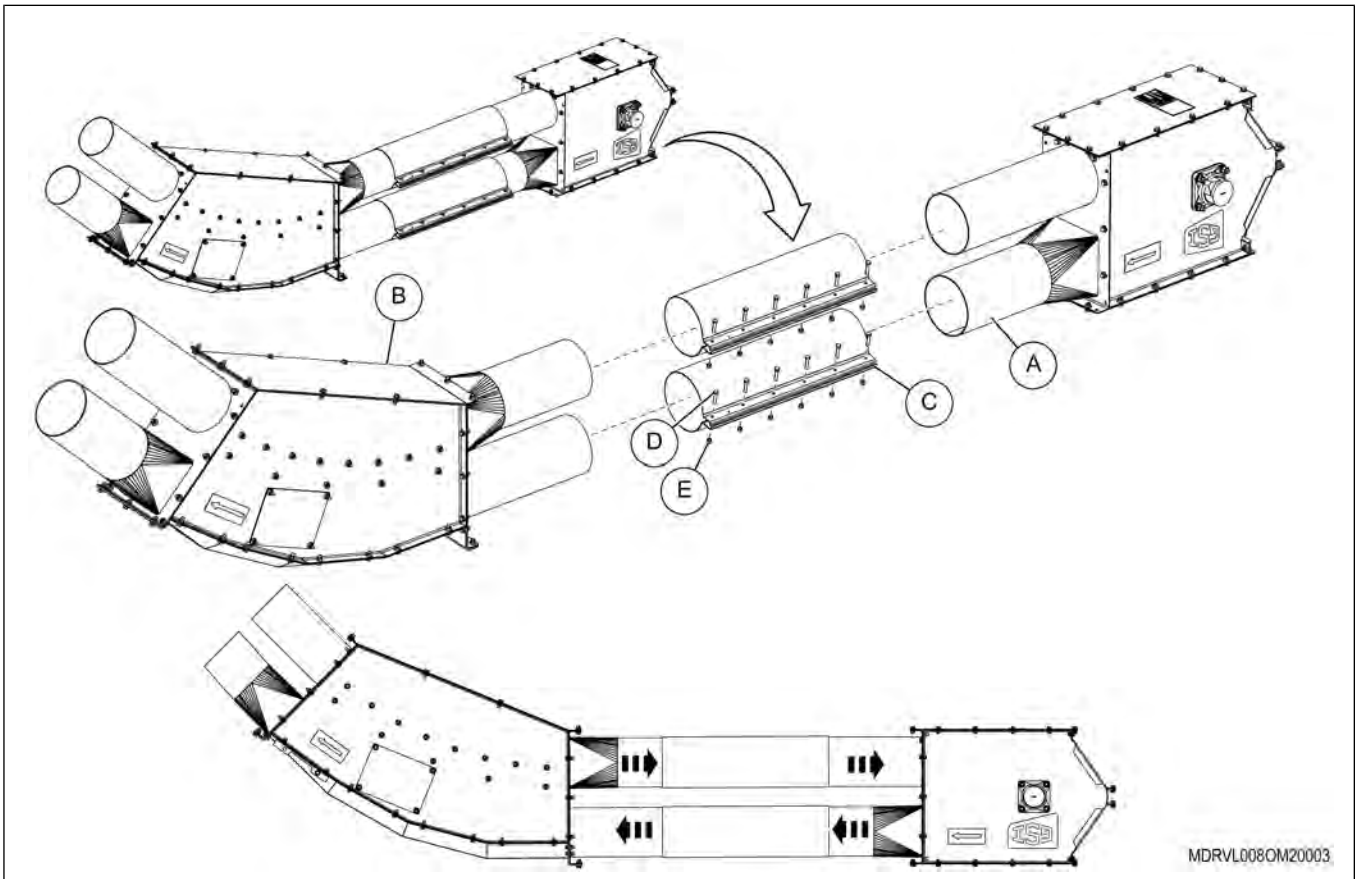
Bend Section – Installation

What You Should Know

IMPORTANT: *A system with a bend section must be driven from the discharge end. The orientation of the drive end, non-drive end and the bend section will depend on the direction of the chain travel. The square openings will be opposite of each other. For example, since the square opening of the non-drive end (inlet) is on the bottom, then the square opening of the bend section connected to it will be on the top.*

1. Place the bend section (B) on the ground or stand and align the tubes with the non-drive end (A) tubes. Make sure that the chain direction arrows are correctly oriented as shown in *Figure 5-15, page 48*.
2. Position the connecting band (C) on the tubes in the non-drive end (A) (upper and lower tubes).
3. Join the bend section (B) tubes to the tube sections in the non-drive end (A) (upper and lower tubes).
4. Center the connecting band (C) over the tube section connections.
5. Install 3/8 x 1-1/2 in. bolts (D) and 3/8 in. nuts (E) per each connecting band (C).

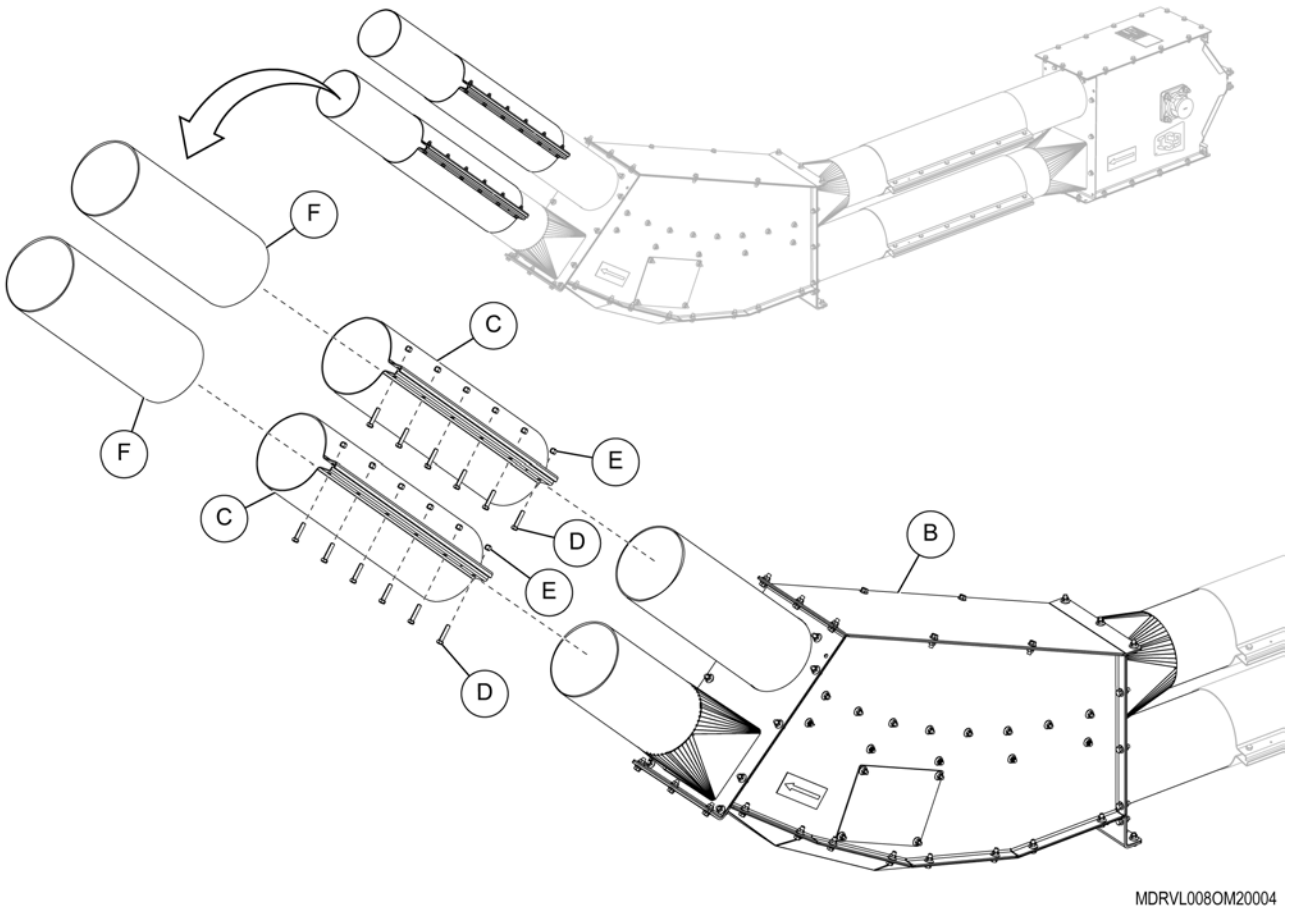
Figure 5-15 *Installing the bend section to the non-drive end*



A	Non-drive end	D	3/8 x 1-1/2 in. bolt
B	Bend section	E	3/8 in. nut
C	Connecting band		

6. Position the connecting band (C) on the tubes in the bend section (B) (upper and lower tubes).
7. Join the tube section assembly (F) tubes to the tube sections in the bend section (B) (upper and lower tubes).
8. Center the connecting band (C) over the tube section connections.
9. Install 3/8 x 1-1/2 in. bolts (D) and 3/8 in. nuts (E) per each connecting band (C).

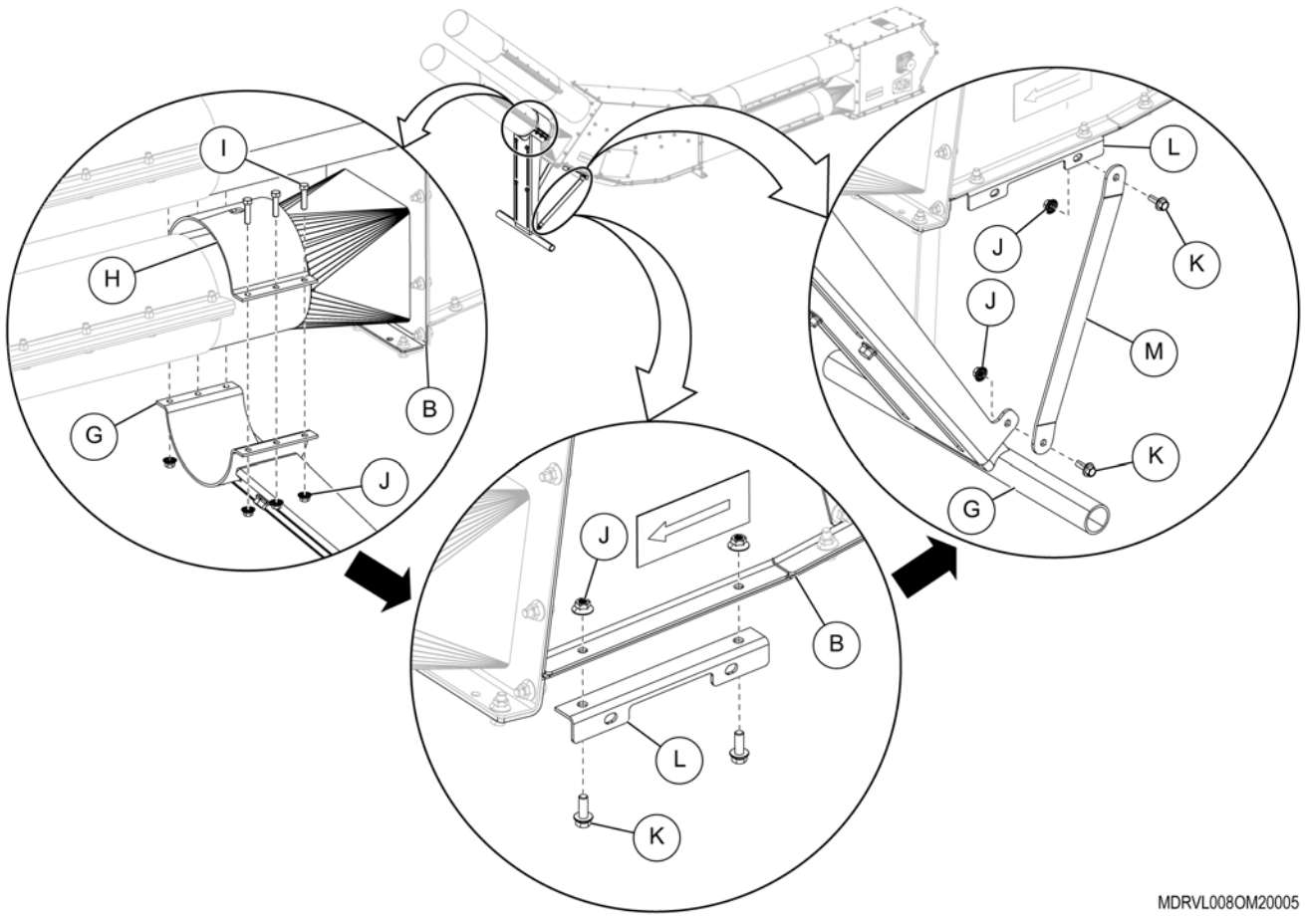
Figure 5-16 *Installing the tube section assembly to the bend section*



B	Bend section	E	3/8 in. nut
C	Connecting band	F	Tube section assembly
D	3/8 x 1-1/2 in. bolt		

10. Install one bracket (L) to each side at the bottom of the bend section (B) using 3/8 x 1 in. flange bolts (K) and 3/8 in. flange nuts (J).
11. Position the support stand (G) and the half band (H) around the lower tube of the bend section (B) and secure using 3/8 x 1-1/2 in. flange bolts (I) and 3/8 in. flange nuts (J).
12. Install one end of the strap (M) to the support stand (G) and other end to the bracket (L) under the bend section (B) using 3/8 x 1 in. flange bolts (K) and 3/8 in. flange nuts (J).
13. Similarly install another strap (M) to the other side of the support stand (G) and the bend section (B) using 3/8 x 1 in. flange bolts (K) and 3/8 in. flange nuts (J).

Figure 5-17 *Installing the bend section supports*



B	Bend section	J	3/8 in. flange nut
G	Support stand	K	3/8 x 1 in. flange bolt
H	Half band	L	Bracket
I	3/8 x 1-1/2 in. flange bolt	M	Strap

6 Maintenance and Troubleshooting

Topics Covered in this Chapter

- Maintenance
- VersaLoop™ – Cleanout Process
- VersaLoop™ Chain – Adjustment
- Screw Conveyor Adapter and Drive Shaft Assembly
- Lubrication
- Troubleshooting

Maintenance

For economical and efficient operation of the VersaLoop™, proper maintenance with lubrication has to be done periodically. Poor maintenance leads to reduced efficiency, excessive wear and increase in downtime.

Important

- Keep all safety covers and devices in place during maintenance.
- Replace any parts that are damaged or missing.
- Shut off the power and lockout the drive for adjustments, servicing or cleaning.
- Never clean, adjust or lubricate a machine that is in operation.

Covers

- Check the covers to see if they are properly adjusted and fastened securely.
- Covers should be clear of the chains and paddles or sprockets.
- If any covers are damaged or worn out, replace them immediately.

Bearings

- The bearings should be lubricated at regular intervals, approximately once annually.
- Check bearings for wear and that the locking collars are secure.

Sprockets

- Inspect the condition of VersaLoop™ chain sprockets for teeth wear.
- Make sure the sprockets are aligned at the shaft center.
- Replace worn or damaged sprockets.
- It is recommended to replace the chain when replacing the damaged sprockets.

Gearbox

- Inspect regularly for any external damage.
- Inspect annually for any oil leakage.
- Refer to Dodge specifications.

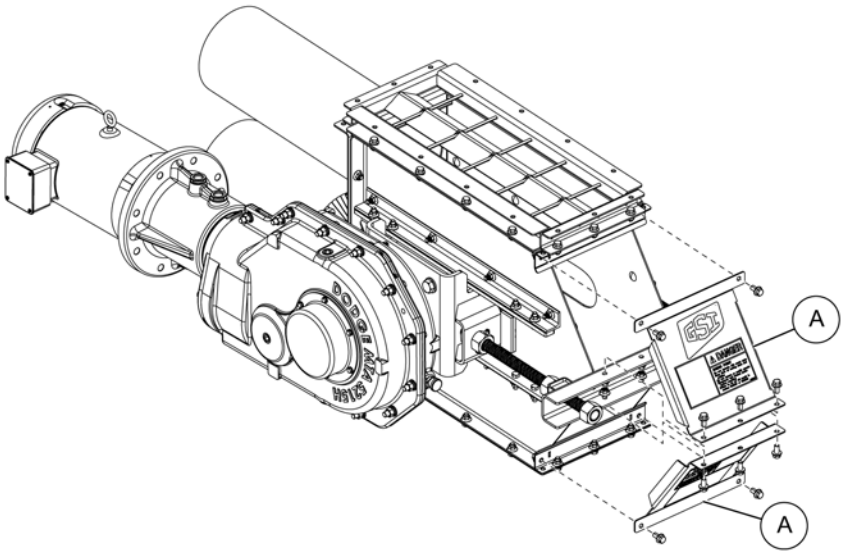
Chain and Paddles

- Check for proper chain tension.
- The chain has connecting links spaced every 10 ft. Make sure that they are securely fastened and the cotter pins are bent back correctly.
- Check the locknuts used to fasten the paddles to the chain brackets. They should be tightened to a torque of 20 ft. lbs. (26 N-m).
- Spray a light coating of oil on the chain after a season of use.

VersaLoop™ – Cleanout Process

1. To clean the dust in the drive and non-drive ends, shut down the VersaLoop™ system.
2. Remove the covers from the drive end and non-drive end.
3. Clean the dust from the drive and the non-drive ends.
4. Re-install the end covers.

Figure 6-1 *Removing the end covers*

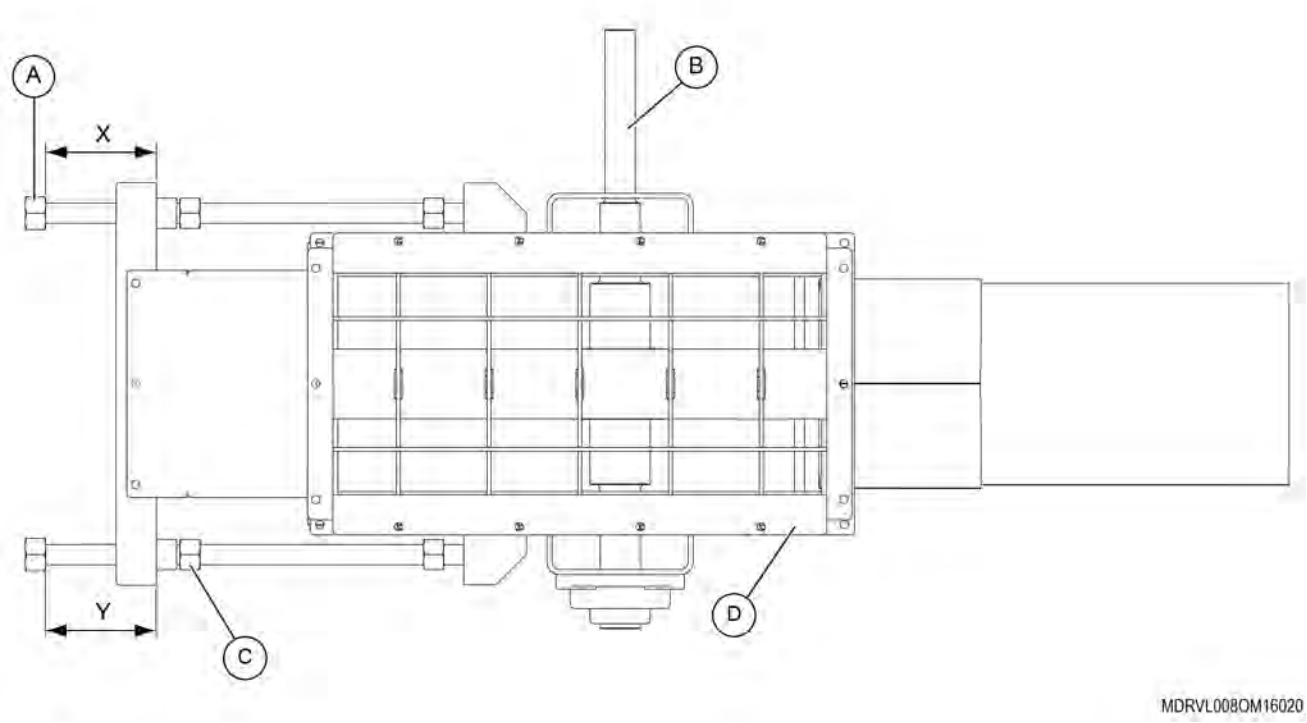


A	End Covers

VersaLoop™ Chain – Adjustment

1. To check VersaLoop™ chain tension, open the drive end covers and grasp one of the paddles at the intake end to rotate it up towards the chain. Proper chain tension should allow only a minimum rotation of 3/4 in. (refer to *Chain and Paddles – Installation, page 31*).
2. For chain adjustment, loosen the two jam nuts (C) on the VersaLoop™ chain adjusting screws (A).
3. Jam nuts (C) should be moved equally on both the sides, so that the head shaft (B) remains straight.

Figure 6-2 *Chain adjustment*



A	Adjusting screw	C	Jam nut
B	Drive head shaft	D	Drive end

Screw Conveyor Adapter and Drive Shaft Assembly

1. Position screw conveyor adapter (A) on the reducer output hub so that the small end (end with four drilled holes) rests on reducer. The approximate 1/8 in. (3 mm) piloting projection should locate in the output seal bore next to the auxiliary seal. Adapter projection should not touch the face of the gear case casting.
2. Place four adapter screws (H) and lock washers (I) through the adapter and thread into the reducer. Tighten the four cap screws (D) to the torque specified in below.
3. Line up the keyway in the drive shaft with the keyway in the reducer hub bore. Slide reducer onto shaft and attach with four bolts to the VersaLoop™ mount. Slide or gently tap key into reducer through the input shaft side of the output hub.
4. Install the retaining ring (J) into the screw conveyor wedge (C). Making sure the drive shaft is fully seated into the reducer, slide the wedge onto drive shaft.
5. Install keeper plate (B), drive shaft cap screw (D), and lock washer (E). Torque to specifications in below.

Drive Shaft Removal

To remove the drive shaft from the reducer the following steps are required.

1. Remove the drive shaft retaining bolt (D) and lock washer (E), the keeper plate (B), and the retaining ring (J).
2. Position the keeper plate (B) flush against the end of the drive shaft and with the small end facing out. Next install the retaining ring (J). When properly installed, the retaining ring holds the keeper plate (B) in place.
3. Screw removal bolt(s) into the keeper plate (B) and tighten until the drive shaft wedge (C) is dislodged. Once the drive shaft wedge (C) is dislodged, pull the assembly free from the reducer.

Table 6-1 *Removal hardware*

Reducer Size	Removal Bolt	Hex Head Set Screw
MTA2115H	3/4-10 x 2 in.	5/8-11 x 3/4 in.
MTA3203H	7/8-9 x 2 in.	3/4-10 x 3/4 in.
MTA4207H	7/8-9 x 2 in.	3/4-10 x 3/4 in.
MTA5215H	7/8-9 x 2 in.	3/4-10 x 3/4 in.

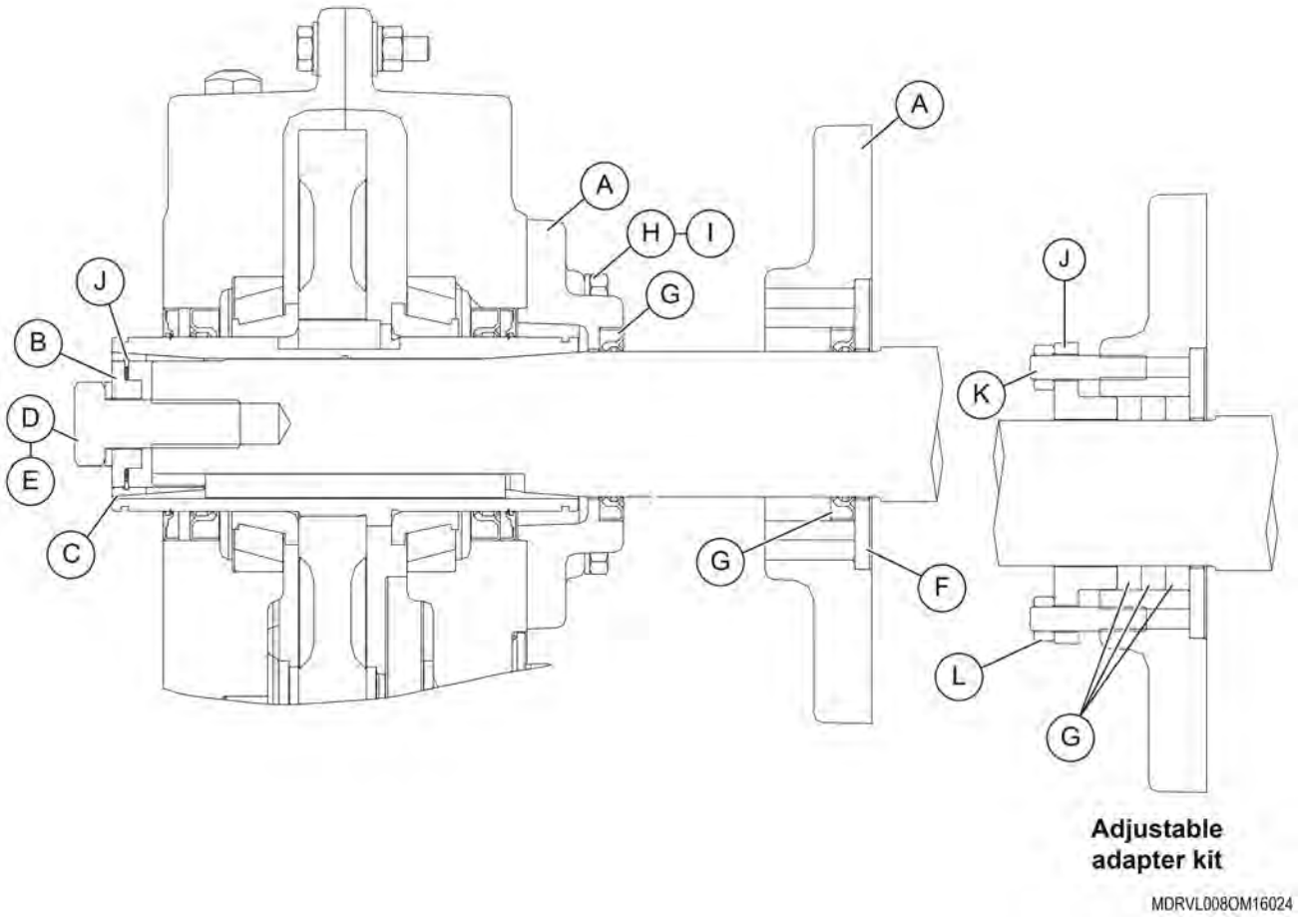
Table 6-2 *Screw conveyor adapter bolt recommended torque values*

Housing Bolt Recommended Torque Values		
Reducer Size	**Fastener Size**	**Torque in Ft.-Lbs. (N-m)**
MTA2115H	7/16-14 in.	50 - 45 (68 - 61)
MTA3203H	1/2-13 in.	75 - 70 (102 - 95)
MTA4207H	1/2-13 in.	75 - 70 (102 - 95)
MTA5215H	5/8-11 in.	115 - 110 (156 - 149)

Table 6-3 *Screw conveyor drive shaft retainer bolt recommended torque values*

Housing Bolt Recommended Torque Values		
Reducer Size	**Fastener Size**	**Torque in Ft.-Lbs. (N-m)**
MTA2115H	5/8-11 in.	115 - 110 (156 - 149)
MTA3203H	3/4-10 in.	205 - 200 (278 - 271)
MTA4207H	3/4-10 in.	205 - 200 (278 - 271)
MTA5215H	3/4-10 in.	205 - 200 (278 - 271)

Figure 6-3 *Adapter assembly mounting shaft*



A	Screw conveyor adapter	G	Seal
B	Keeper plate	H	Adapter screw
C	Screw conveyor wedge	I	Lock washer
D	Cap screw	J	Retaining ring
E	Lock washer	K	Stud
F	Large washer	L	Nut

Lubrication

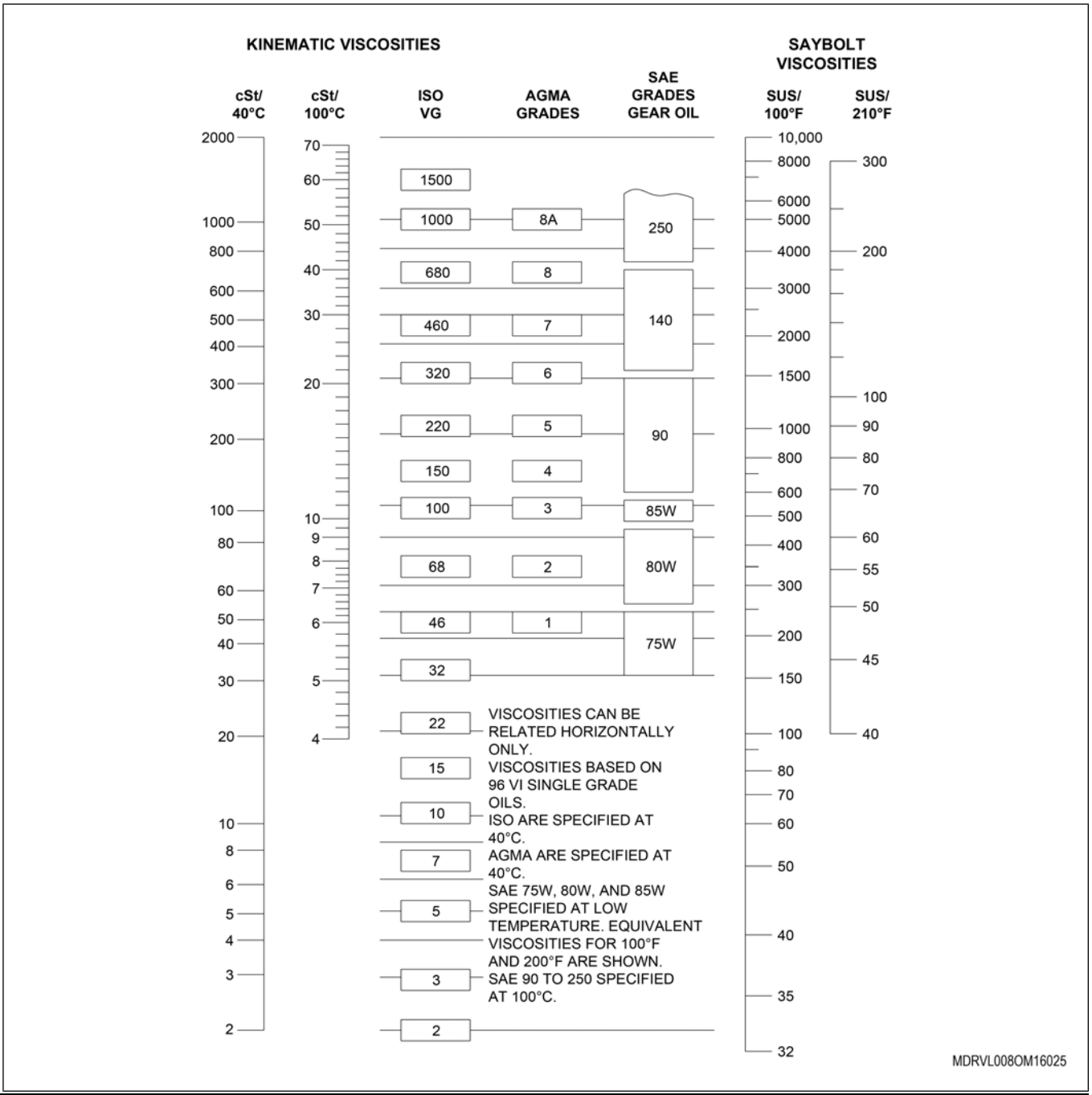
NOTE: *Because reducer is shipped without oil, it is necessary to add the proper amount of oil before operating reducer. Use a high-grade petroleum base rust and oxidation inhibited (R and O) gear oil. Follow instructions on reducer warning tags, and in the installation manual.*

Under average industrial operating conditions, the lubricant should be changed every 2500 hours of operation or every 6 months, whichever occurs first. Drain reducer and flush with kerosene, clean magnetic drain plug and refill to proper level with new lubricant.

CAUTION

Too much oil will cause overheating and too little will result in gear failure. Check oil level regularly. Failure to observe this precaution could result in damage to the reducer.

Figure 6-4 *Oil viscosity equivalency chart*



Troubleshooting

Noise from the VersaLoop™

- Chain may be loose. Check chain tension and adjust if necessary.
- Sprockets at the drive and non-drive end may not be in line or not properly tightened. Check for alignment and center if misaligned and tighten the sprockets.
- Check for the proper assembly of the drive end or the non-drive end. Disassemble the parts that are worn and grind them to reuse or replace them with new parts.

Grain recycling back to the fill point

- Check to make sure that the discharge gate is open.
- Check and clean out the slide gate in the discharge gate.
- Check the downstream equipment for potential plugging.

Unit not delivering full capacity

- Make sure that grain is not over running the discharge gate and returning to the fill-point.
- High moisture grain will move at a lower capacity than dry grain.
- Check for obstructions in the inlet.
- Check to make sure that the chain has not been installed with a twist.

Paddles breaking or bending

- Check to make sure that the sprockets are centered in the drive and non-drive units.
- Check to make sure that the paddles are fastened securely to the chain brackets.
- Let the system “break-in” and the tubing become polished before loading to full capacity.
- If you hear paddles “clicking” at a joint, check for gaps in the tubing. This will require loosening the bolts in the connecting band to be able to see the tube joint.

Chain failure

- Check to make sure that the master connecting links have been installed correctly.
- Check for obstructions in the system.

NOTES

7 Parts List

Topics Covered in this Chapter

- Non-Drive End Assembly
- Drive End Assembly
- 30 Degree Bend Section Assembly
- 45 Degree Bend Section Assembly
- Chain and Paddle Assembly
- Hopper Inlet Assembly
- Bypass Inlet Assembly
- Side Inlet Assembly
- 5' Bypass Dump Hopper Assembly
- 10' Bypass Dump Hopper Assembly
- Intermediate Supports
- Drive Kits – Parts
- Chain Maintenance Assembly
- Mid Span Support Assembly

Non-Drive End Assembly

Figure 7-1 *Non-drive end assembly parts*

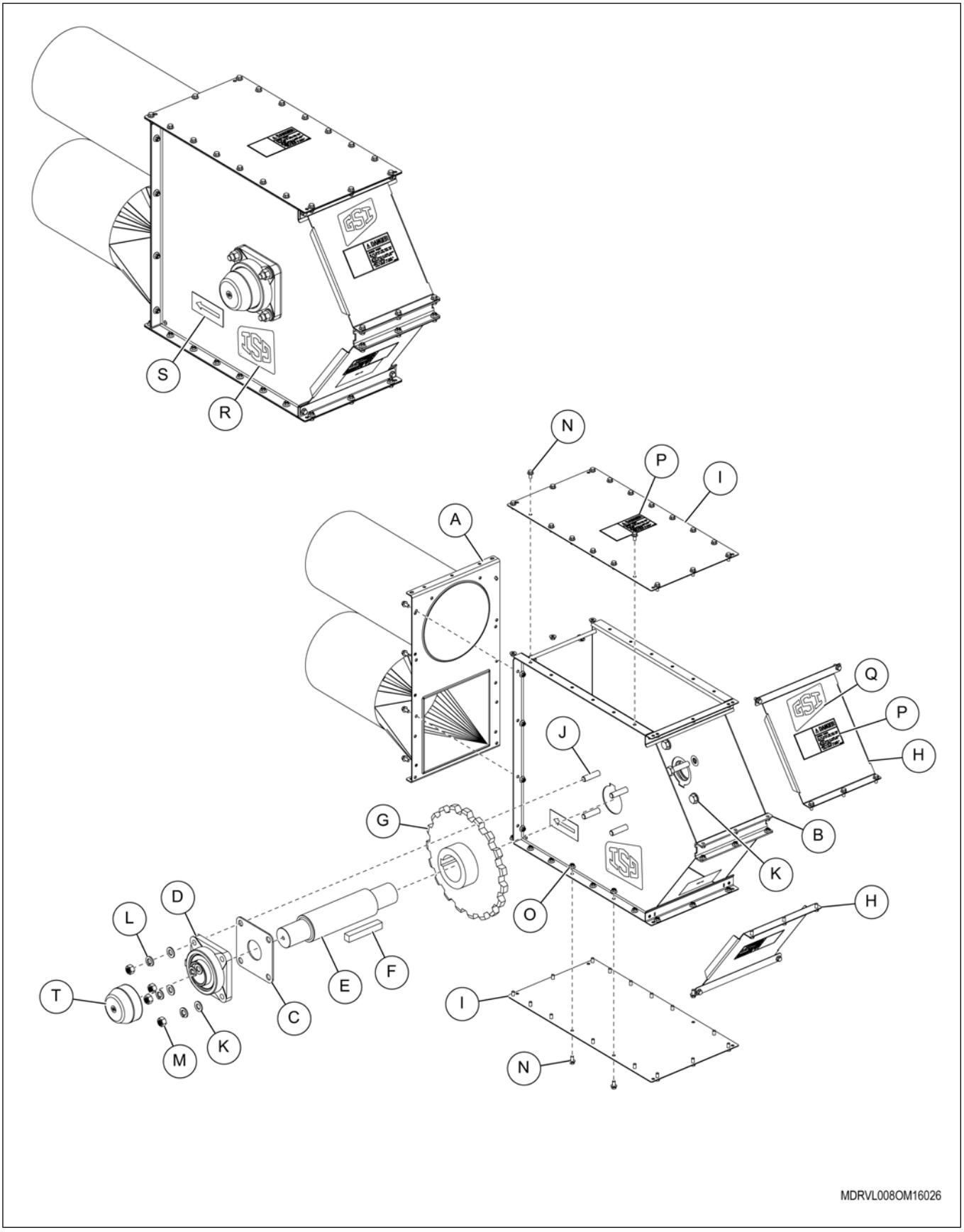


Table 7-1 *Non-drive end assembly parts list*

Ref #	Part Number	Description
A	DBR-080147-BS	Weldment, 8" Tube Transition - Bin Silver
	DBR-100104-BS	Weldment, 10" Square-Round/Tube Transition - Bin Silver
	DBR-120156-BS	Weldment, 12" Tube Transition - Bin Silver
B	DBR-080001-BS	Weldment, 8" Non-Drive End Body - Bin Silver
	DBR-100004-BS	Weldment, 10" Non-Drive End Body - Bin Silver
	DBR-120030-BS	Weldment, 12" Non Drive End Body - Bin Silver
C	8101305	UHMW Bearing Seal - 8"
	8101306	UHMW Bearing Seal - 10"
	8120239	UHMW Bearing Seal 2-15/16" Bore - 12"
D	KD-PBA0003	Bearing, 1-1/2" Dodge 4B SC Flange - 8"
	DBR-100072	Bearing, 2" 4 Bolt SCM Dodge 162192 - 10"
	CE-00528	Bearing, Dodge# F4B-SC-215 - 12"
E	DBR-080021	Shaft, 8" Non-Drive End
	8101029	Shaft, 10" Standard/Inspection Corner Sprocket
	DBR-120063	Shaft 12" Non-Drive End
F	S-9177	Key, Square 3/4" x 3-15/16" - 8" and 10"
	CE-00971	Key, 1" x 1" x 6" - 12"
G	PT1086	Sprocket, (Hub Type) 3" ID Heat Treated Teeth Only 45-55 RC - 8" and 10"
	DBR-120114	Sprocket, 81X Solid 19T 3-15/16" 'C' Hub Bored and Keyed - 12"
H	DBR-080008A-BS	Panel, 8" Access - Bin Silver
	DBR-100014A-BS	Panel, 10" Access - Bin Silver
	DBR-120002-BS	Panel, 12" Access - Bin Silver
I	DBR-080065-BS	Plate, 8" Cover - Bin Silver
	DBR-100016A-BS	Plate, 10" Cover - Bin Silver
	DBR-120003-BS	Plate, 12" Cover - Bin Silver
J	S-8268	Bolt, HHCS 1/2"-13 x 2" ZN Plated Grade 8 - 8"
	S-8429	Bolt, HHCS 5/8"-11 x 2-1/2" ZN Grade 8 - 10"
	S-8127	Bolt, HHCS 3/4"-10 x 3" ZN Grade 8 - 12"
K	S-2120	Washer, Flat 1/2" SAE ZN - 8"
	S-7400	Washer, Flat 5/8" SAE ZN Grade 2 - 10"
	S-7624	Washer, Flat 3/4" ZN SAE Grade 2 - 12"
L	S-236	Washer, Lock Split, 1/2" REG Zinc Plated - 8"
	S-3208	Washer, Lock Split, 5/8" MED Zinc Plated - 10"
	S-233	Washer, Lock Split 3/4" MED Zinc Grade 2 - 12'
M	S-3729	Nut, Hex 1/2"-13 YDP Grade 5 - 8"
	S-4110	Nut, Hex 5/8"-11 ZN Grade 5 - 10"
	S-234	Nut, Hex 3/4"-10 ZN Grade 5 - 12"
N	S-9067	Bolt, Flange 3/8"-16 x 3/4" ZN Grade 5
O	S-968	Nut, Flange 3/8"-16 ZN Grade 5 Wide Flange
P	8107001	Decal, Danger Shearpoint
Q	DC-2621	Decal, Logo GSI
R	DC-2620	Decal, Logo GSI
S	DC-2534	Decal, Chain Travel Direction Arrow
T	DBR-080079	Cover, Dodge 208 Series Bearing - 8"
	DBR-100068	Cover, Dodge 211 Series Bearing - 10"
	DBR-120122	Cover, Dodge 215 Series Bearing - 12"

Drive End Assembly

Figure 7-2 *Drive end assembly parts*

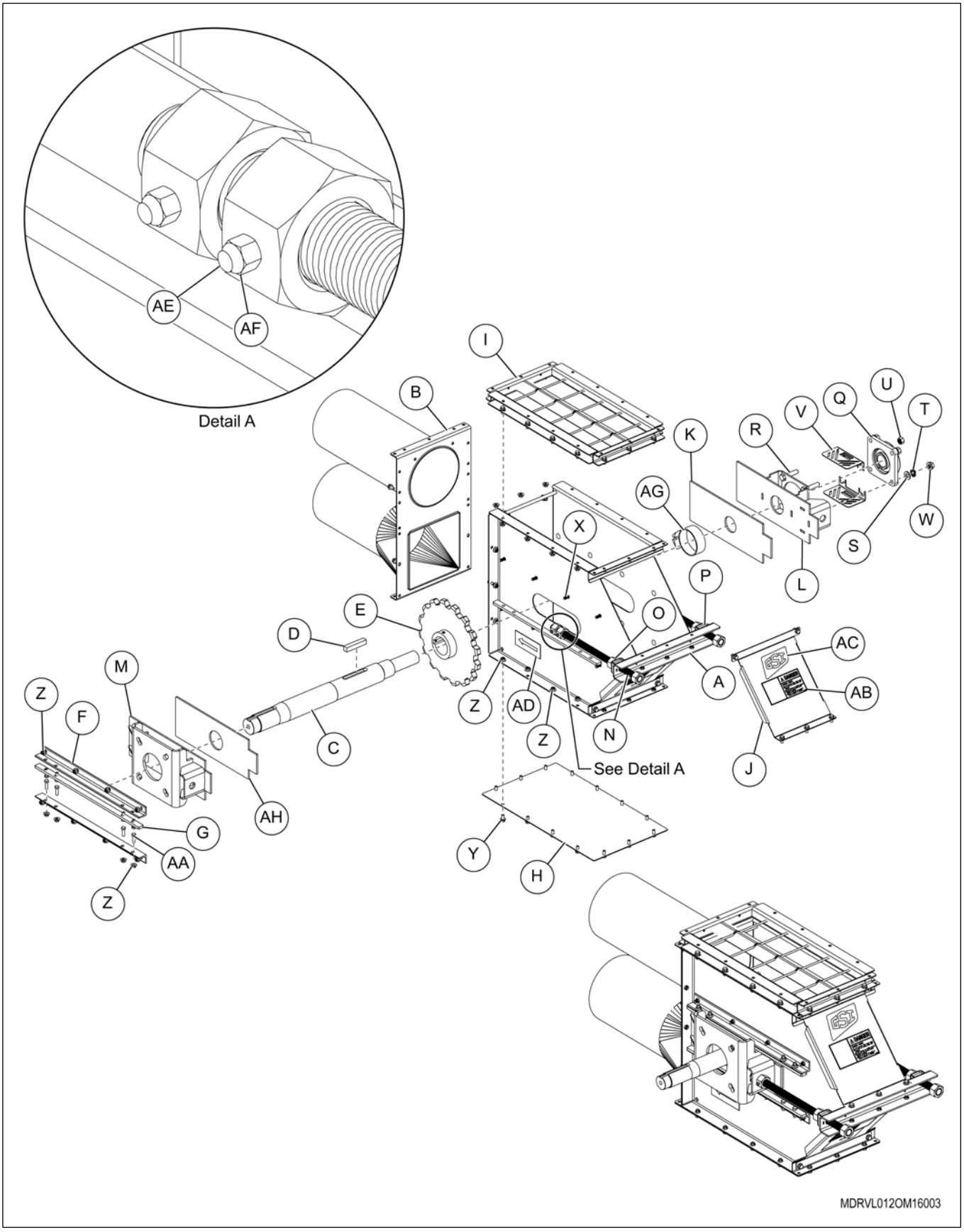


Table 7-2 *8" drive end assembly parts list*

Ref #	Part Number	Description
A	DBR-080002-BS	Weldment, 8" Drive End Body - Bin Silver
B	DBR-080147-BS	Weldment, 8" Tube Transition - Bin Silver
C	DBR-080080	Shaft, 8" MTA2 Drive
	DBR-080081	Shaft, 8" MTA3 Drive
	DBR-080082	Shaft, 8" MTA4 Drive
D	S-9177	Key, Square 3/4" x 3-15/16"
E	PT1086	Sprocket, (Hub Type) 3" ID Heat Treated Teeth Only 45-55 RC
F	DBR-000043-BS	Angle, Takeup Slide Rail - Bin Silver
G	DBR-000004-BS	Plate, Takeup Slide Rail - Bin Silver
H	DBR-080065-BS	Plate, 8" Cover - Bin Silver
I	DBR-080029-BS	Weldment, 8" Grate - Bin Silver
J	DBR-080008A-BS	Panel, 8" Access - Bin Silver
K	DBR-000087	Seal, 2-5/8" Shaft
L	DBR-080004-BS	Weldment, 8" Takeup 5-10 HP - Bin Silver
M	DBR-000076-BS	Weldment, MTA Drive 20-30 HP - Bin Silver
N	DBR-080076	Weldment, 8" ACME Takeup Rod
O	S-8905	Nut, 1"-5 ACME Threaded Hex Zinc
P	S-8906	Nut, 1"-5 ACME Threaded Square Zinc
Q	KD-PBA0003	Bearing, 1-1/2" Dodge 4B SC Flange
R	S-7894	Bolt, HHCS 1/2"-13 x 2-1/4" Grade 8
S	S-2120	Washer, Flat 1/2" SAE ZN
T	S-236	Washer, Lock Split, 1/2" REG Zinc Plated
U	S-3729	Nut, Hex 1/2"-13 YDP Grade 5
V	DBR-000036	Cover, Protective Shaft
W	S-8506	Nut, Flange 1/2"-13 ZN Grade 5
X	S-3585	Bolt, Carriage 3/8"-16 x 1" ZN Grade 5
Y	S-9067	Bolt, Flange 3/8"-16 x 3/4" ZN Grade 5
Z	S-968	Nut, Flange 3/8"-16 ZN Grade 5 Wide Flange
AA	S-2071	Bolt, HHCS 3/8"-16 x 1-1/4" ZN Grade 5
AB	8107001	Decal, Danger Shearpoint
AC	DC-2621	Decal, Logo GSI
AD	DC-2534	Decal, Chain Travel Direction Arrow
AE	S-9377	Bolt, HHCS 1/4"-20 x 2" YDP Grade 8
AF	S-7025	Nut, Nylock 1/4"-20 ZN Grade 5
AG	DBR-080079	Cover, Dodge 208 Series Bearing
AH	DBR-000088	Seal, 3-1/8" Shaft

NOTE: *The 3-1/8" shaft seal (AH) is applicable only for drive end assembly with MTA4 drive shaft.*

Table 7-3 *10" drive end assembly parts list*

Ref #	Part Number	Description
A	DBR-100005-BS	Weldment, 10" Drive End Body
B	DBR-100104-BS	Weldment, 10" Square-Round/Tube Transition - Bin Silver
C	DBR-100073	Shaft, 10" MTA2 Drive
	DBR-100074	Shaft, 10" MTA3 Drive
	DBR-100075	Shaft, 10" MTA4 Drive
D	S-9177	Key, Square 3/4" x 3-15/16"
E	PT1086	Sprocket, (Hub Type) 3" ID Heat Treated Teeth Only 45-55 RC
F	DBR-000043-BS	Angle, Takeup Slide Rail - Bin Silver
G	DBR-000004-BS	Plate, Takeup Slide Rail - Bin Silver
H	DBR-100016A-BS	Plate, 10" Cover - Bin Silver
I	DBR-100025-BS	Weldment, 10" Grate - Bin Silver
J	DBR-100014A-BS	Panel, 10" Access - Bin Silver
K	DBR-000087	Seal, 2-5/8" Shaft
L	DBR-100009-BS	Weldment, 10" Takeup 5-10 HP - Bin Silver
M	DBR-000076-BS	Weldment, MTA Drive 20-30 HP - Bin Silver
N	DBR-000017	Weldment, ACME Takeup Rod
O	S-8905	Nut, 1"-5 ACME Threaded Hex Zinc
P	S-8906	Nut, 1"-5 ACME Threaded Square Zinc
Q	DBR-100072	Bearing, 2" 4 Bolt SCM Dodge 162192
R	S-4108	Bolt, HHCS 5/8"-11 x 2-3/4 YDP Grade 8
S	S-7400	Washer, Flat 5/8" SAE ZN Grade 2
T	S-3208	Washer, Lock Split, 5/8" MED Zinc Plated
U	S-4110	Nut, Hex 5/8"-11 ZN Grade 5
V	DBR-000036	Cover, Protective Shaft
W	S-9259	Nut, Flange 5/8"-11 ZN
X	S-3585	Bolt, Carriage 3/8"-16 x 1" ZN Grade 5
Y	S-9067	Bolt, Flange 3/8"-16 x 3/4" ZN Grade 5
Z	S-968	Nut, Flange 3/8"-16 ZN Grade 5 Wide Flange
AA	S-2071	Bolt, HHCS 3/8"-16 x 1-1/4" ZN Grade 5
AB	8107001	Decal, Danger Shearpoint
AC	DC-2621	Decal, Logo GSI
AD	DC-2534	Decal, Chain Travel Direction Arrow
AE	S-9377	Bolt, HHCS 1/4"-20 x 2" YDP Grade 8
AF	S-7025	Nut, Nylock 1/4"-20 ZN Grade 5
AG	DBR-100068	Cover, Dodge 211 Series Bearing
AH	DBR-000088	Seal, 3-1/8" Shaft

NOTE: *The 3-1/8" shaft seal (AH) is applicable only for drive end assembly with MTA4 drive shaft.*

Table 7-4 *12" drive end assembly parts list*

Ref #	Part Number	Description
A	DBR-120123-BS	Weldment, 12" 40-60 HP Drive End Body - Bin Silver
	DBR-120005-BS	Weldment, 12" Drive End Body - Bin silver
B	DBR-120156-BS	Weldment, 12" Tube Transition - Bin Silver
C	DBR-120100	Shaft, 12" Drive 40-60 HP
	DBR-120131	Shaft, 12" MTA2 Drive
	DBR-120132	Shaft, 12" MTA3 Drive
	DBR-120133	Shaft, 12" MTA4 Drive
D	CE-00971	Key, 1" x 1" x 6"
E	DBR-120114	Sprocket, 81X Solid 19T 3-15/16" 'C' Hub Bored and Keyed
F	DBR-000044-BS	Angle, Takeup Slide Rail - Bin Silver
G	DBR-000045-BS	Plate, Takeup Slide Rail - Bin Silver
H	DBR-120003-BS	Plate, 12" Cover - Bin Silver
I	DBR-120011-BS	Weldment, 12" Grate - Bin Silver
J	DBR-120002-BS	Panel, 12" Access - Bin Silver
K	DBR-120025	Seal, 12" 3.5" Shaft
L	DBR-120118-BS	Weldment, 12" Takeup 40-60 HP - Bin Silver
M	DBR-120015-BS	Weldment, 12" Bearing Takeup - Bin Silver
N	DBR-000017	Weldment, ACME Takeup Rod
O	S-8905	Nut, 1"-5 ACME Threaded Hex Zinc
P	S-8906	Nut, 1"-5 ACME Threaded Square Zinc
Q	CE-00528	Bearing, Dodge# F4B-SC-215
R	S-8127	Bolt, HHCS 3/4"-10 x 3" ZN Grade 8
S	S-7624	Washer, Flat 3/4" ZN SAE Grade 2
T	S-233	Washer, Lock Split 3/4" MED ZN Grade 2
U	S-234	Nut, Hex 3/4"-10 ZN Grade 5
V	DBR-000051	Cover, 12" Protective Shaft
W	S-10687	Nut, Flange 3/4"-10 ZN
X	S-3585	Bolt, Carriage 3/8"-16 x 1" ZN Grade 5
Y	S-9067	Bolt, Flange 3/8"-16 x 3/4" ZN Grade 5
Z	S-968	Nut, Flange 3/8"-16 ZN Grade 5 Wide Flange
AA	S-2071	Bolt, HHCS 3/8"-16 x 1-1/4" ZN Grade 5
AB	8107001	Decal, Danger Shearpoint
AC	DC-2621	Decal, Logo GSI
AD	DC-2534	Decal, Chain Travel Direction Arrow
AE	S-9377	Bolt, HHCS 1/4"-20 x 2" YDP Grade 8
AF	S-7025	Nut, Nylock 1/4"-20 ZN Grade 5
AG	DBR-120122	Cover, Dodge 215 Series Bearing

30 Degree Bend Section Assembly

Figure 7-3 *30 degree bend section assembly parts*

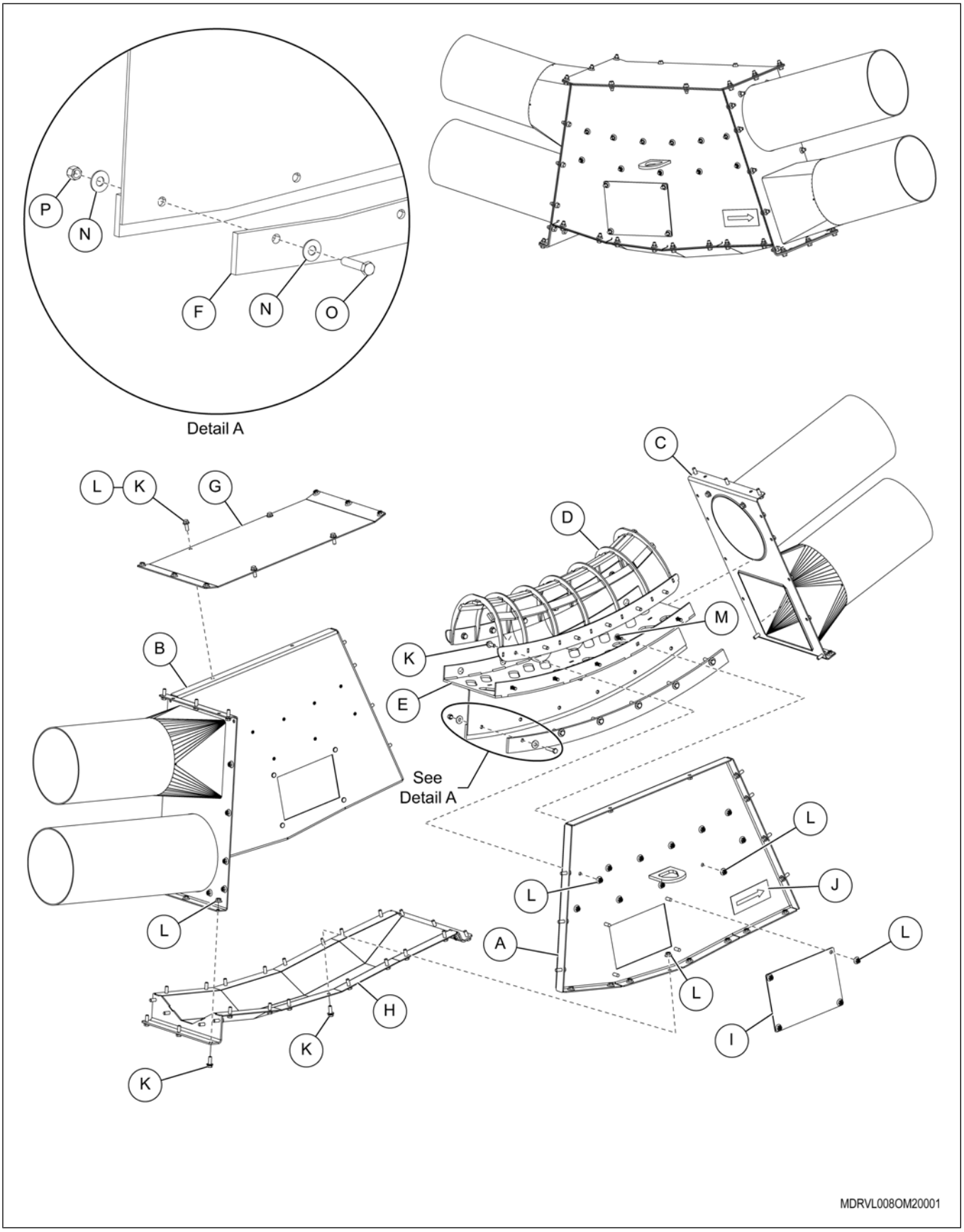


Table 7-5 *30 degree bend section assembly parts list*

Ref #	Part Number	Description
A	DBR-080128-BS	Weldment, Front Side, Painted, 8" 30 Degree - Bin Silver
	DBR-100150-BS	Weldment, Front Side, Painted, 10" 30 Degree - Bin Silver
	DBR-120178-BS	Weldment, Front Side, Painted, 12" 30 Degree - Bin Silver
B	DBR-080130-BS	Weldment, Rear Side, Painted, 8" 30 Degree - Bin Silver
	DBR-100151-BS	Weldment, Rear Side, Painted, 10" 30 Degree - Bin Silver
	DBR-120180-BS	Weldment, Rear Side, Painted, 12" 30 Degree - Bin Silver
C	DBR-080147-BS	Weldment, 8" Tube Transition - Bin Silver
	DBR-100104-BS	Weldment, Painted, 10" Square-Round/Tube Transition - Bin Silver
	DBR-120156-BS	Weldment, 12" Tube Transition - Bin Silver
D	DBR-080132-BS	Weldment, Half Band, Painted, 8" 30 Degree - Bin Silver
	DBR-100120-BS	Weldment, Half Band, Painted, 10" 30 Degree - Bin Silver
	DBR-120182-BS	Weldment, Half Band, Painted, 12" 30 Degree - Bin Silver
E	DBR-080135-BS	Weldment, Center Pan, Painted, 8" 30 Degree - Bin Silver
	DBR-100125-BS	Weldment, Center Pan, Painted, 10" 30 Degree - Bin Silver
	DBR-120187-BS	Weldment, Center Pan, Painted, 12" 30 Degree - Bin Silver
F	DBR-080139	Skid, UHMW, 8" 30 Degree
	DBR-100124	Skid, UHMW, 10" 30 Degree
	DBR-120191	Skid, UHMW, 12" 30 Degree
G	DBR-080140-BS	Plate, Top Cover, Painted, 8" 30 Degree - Bin Silver
	DBR-100123-BS	Plate, Top Cover, Painted, 10" 30 Degree - Bin Silver
	DBR-120192-BS	Plate, Top Cover, Painted, 12" 30 Degree - Bin Silver
H	DBR-080141-BS	Weldment, Bottom Trough, Painted, 8" 30 Degree - Bin Silver
	DBR-100112-BS	Weldment, Bottom Trough, Painted, 10" 30 Degree - Bin Silver
	DBR-120193-BS	Weldment, Bottom Trough, Painted, 12" 30 Degree - Bin Silver
I	DBR-100131-BS	Panel, Clean Out, Painted, Bend Section - Bin Silver
J	DC-2534	Decal, Chain Travel Direction Arrow
K	S-9065	Bolt, Flange 3/8"-16 x 1" ZN Grade 5
L	S-968	Nut, Flange 3/8"-16 ZN Grade 5 Wide Flange
M	S-3585	Bolt, Carriage 3/8"-16 x 1" ZN Grade 5
N	S-248	Washer, Flat 3/8" x 7/16" ID x 1" OD YDP
O	S-8322	Bolt, HHCS 3/8"-16 x 1-3/4" ZN Grade 5
P	S-7383	Nut, Nylock 3/8"-16 ZN Clear Grade 5

45 Degree Bend Section Assembly

Figure 7-4 *45 degree bend section assembly parts*

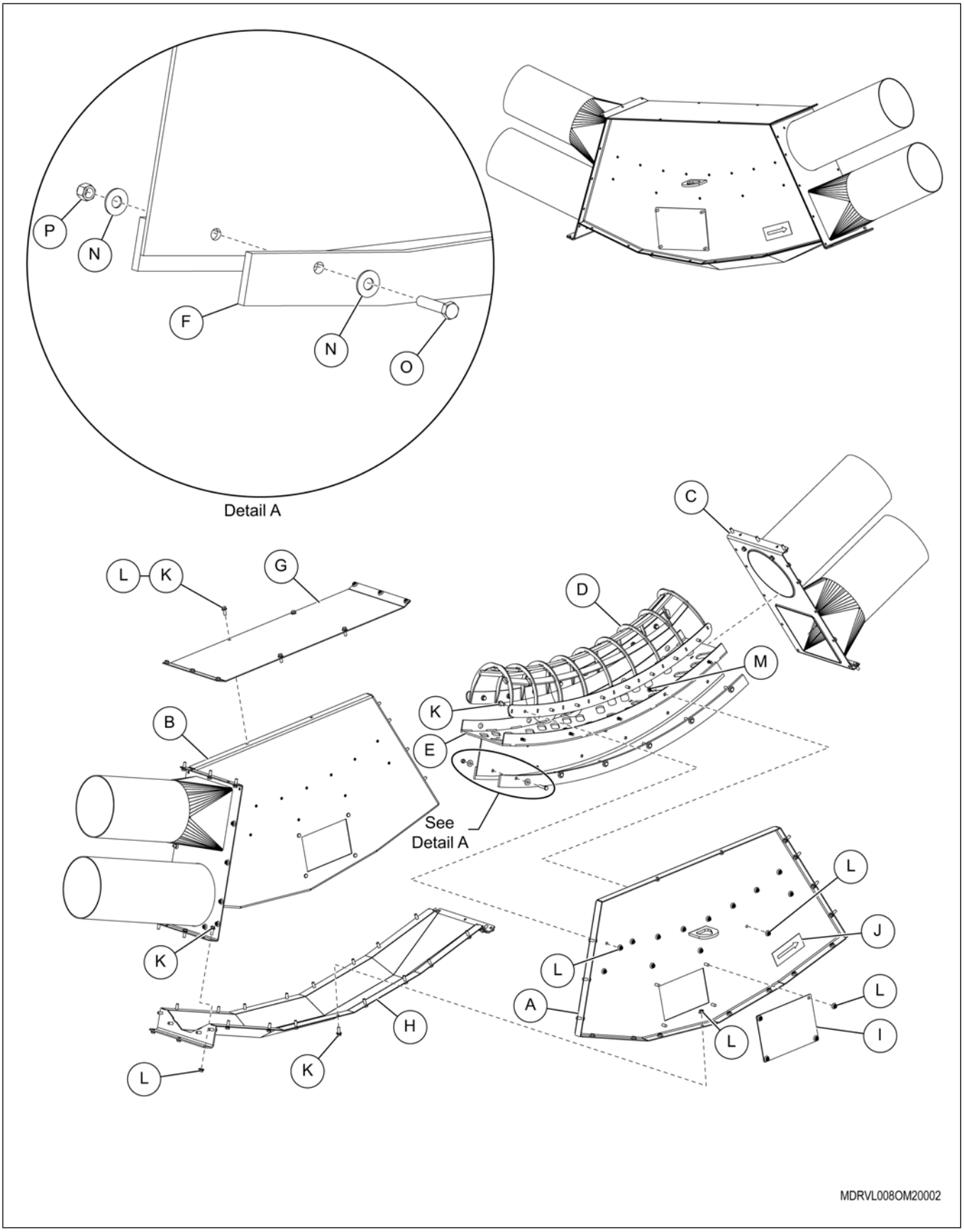


Table 7-6 *45 degree bend section assembly parts list*

Ref #	Part Number	Description
A	DBR-080153-BS	Weldment, Front Side, Painted, 8" 45 Degree - Bin Silver
	DBR-100152-BS	Weldment, Front Side, Painted, 10" 45 Degree - Bin Silver
	DBR-120152-BS	Weldment, Front Side, Painted, 12" 45 Degree - Bin Silver
B	DBR-080155-BS	Weldment, Rear Side, Painted, 8" 45 Degree - Bin Silver
	DBR-100153-BS	Weldment, Rear Side, Painted, 10" 45 Degree - Bin Silver
	DBR-120154-BS	Weldment, Rear Side, Painted, 12" 45 Degree - Bin Silver
C	DBR-080147-BS	Weldment, 8" Tube Transition - Bin Silver
	DBR-100104-BS	Weldment, Painted, 10" Square-Round/Tube Transition - Bin Silver
	DBR-120156-BS	Weldment, 12" Tube Transition - Bin Silver
D	DBR-080157-BS	Weldment, Half Band, Painted, 8" 45 Degree - Bin Silver
	DBR-100134-BS	Weldment, Half Band, Painted, 10" 45 Degree - Bin Silver
	DBR-120158-BS	Weldment, Half Band, Painted, 12" 45 Degree - Bin Silver
E	DBR-080161-BS	Weldment, Center Pan, Painted, 8" 45 Degree - Bin Silver
	DBR-100139-BS	Weldment, Center Pan, Painted, 10" 45 Degree - Bin Silver
	DBR-120165-BS	Weldment, Center Pan, Painted, 12" 45 Degree - Bin Silver
F	DBR-080165	Skid, UHMW, 8" 45 Degree
	DBR-100143	Skid, UHMW, 10" 45 Degree
	DBR-120169	Skid, UHMW, 12" 45 Degree
G	DBR-080166-BS	Plate, Top Cover, Painted, 8" 45 Degree - Bin Silver
	DBR-100144-BS	Plate, Top Cover, Painted, 10" 45 Degree - Bin Silver
	DBR-120170-BS	Plate, Top Cover, Painted, 12" 45 Degree - Bin Silver
H	DBR-080167-BS	Weldment, Bottom Trough, Painted, 8" 45 Degree - Bin Silver
	DBR-100145-BS	Weldment, Bottom Trough, Painted, 10" 45 Degree - Bin Silver
	DBR-120171-BS	Weldment, Bottom Trough, Painted, 12" 45 Degree - Bin Silver
I	DBR-100131-BS	Panel, Clean Out, Painted, Bend Section - Bin Silver
J	DC-2534	Decal, Chain Travel Direction Arrow
K	S-9065	Bolt, Flange 3/8"-16 x 1" ZN Grade 5
L	S-968	Nut, Flange 3/8"-16 ZN Grade 5 Wide Flange
M	S-3585	Bolt, Carriage 3/8"-16 x 1" ZN Grade 5
N	S-248	Washer, Flat 3/8" x 7/16" ID x 1" OD YDP
O	S-8322	Bolt, HHCS 3/8"-16 x 1-3/4" ZN Grade 5
P	S-7383	Nut, Nylock 3/8"-16 ZN Clear Grade 5

Chain and Paddle Assembly

Figure 7-5 *8" and 10" chain and paddle assembly parts*

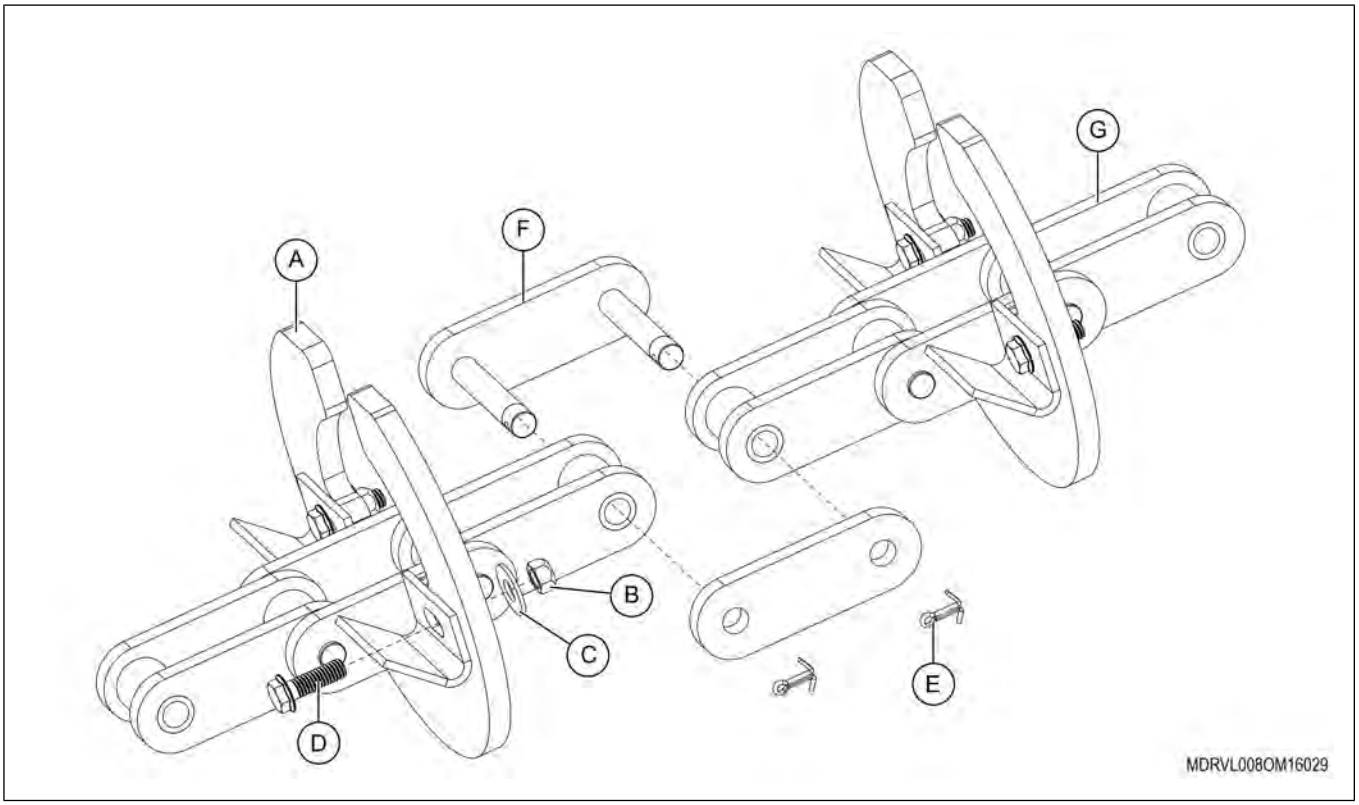


Table 7-7 *8" and 10" chain and paddle assembly parts list*

Ref #	Part Number	Description
A	8081145	Paddle, 8" Chain Loop, UHMW
	8101145	Paddle, 10" Chain Loop UHMW
B	S-8324	Nut, Stover 5/16"-18 ZN Grade C
C	S-845	Washer, Flat 5/16" USS ZN Grade 2
D	S-7470	Bolt, Flange 5/16"-18 x 1" ZN Grade 5
E	S-9159	Pin, Cotter 1/8" x 3/4" ZN
F	CE-00766	Link, Connecting with Pin D81 x HH
G	8081496	Weld, Chain V-Cup, 81 X HH 08 4th Pitch
	8102031	Weld, Chain V-Cup, 81 X HH 10 4th Pitch

Figure 7-6 *12" chain and paddle assembly parts*

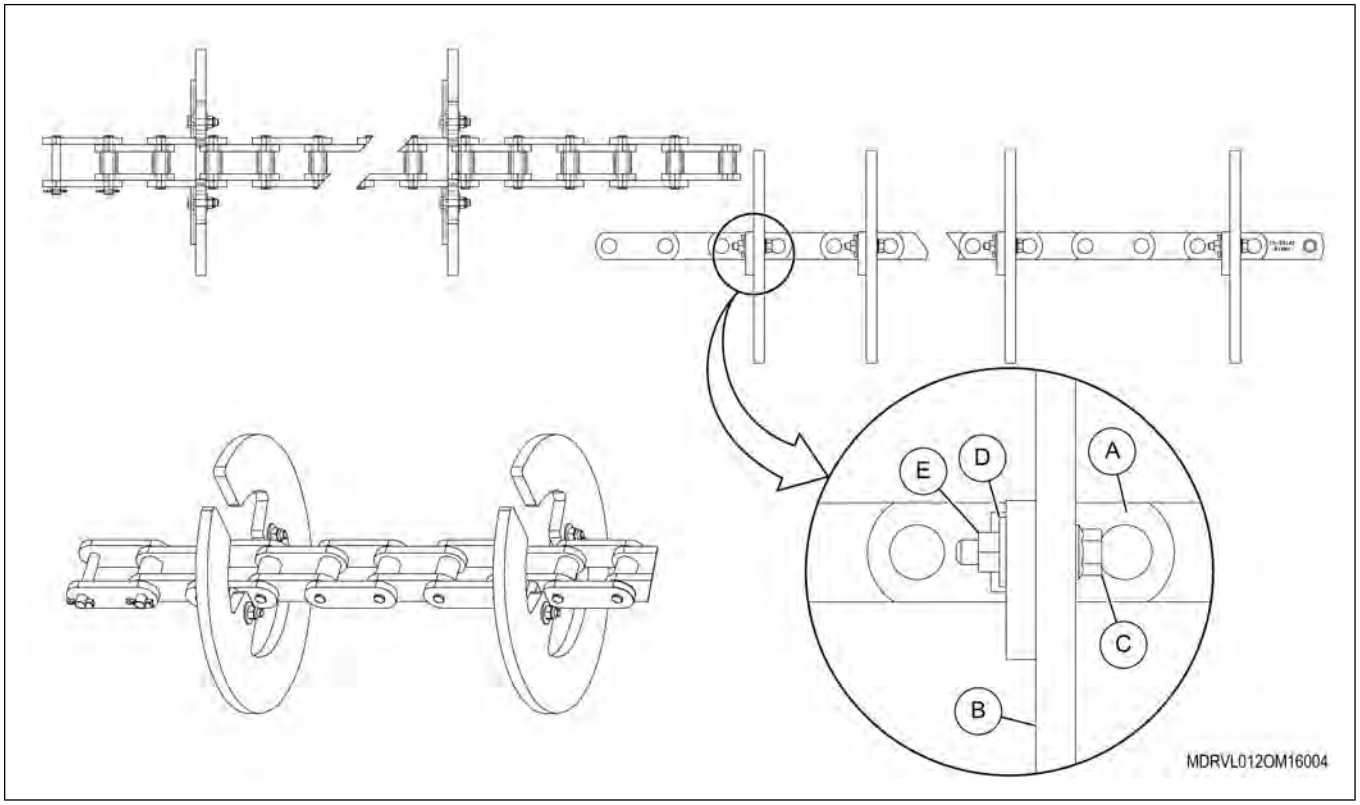


Table 7-8 *12" chain and paddle assembly parts list*

Ref #	Part Number	Description
A	8120536	Weld, Chain Flat Bar, 81 X HH 12 4th Pitch
B	8120139	Paddle, 12" Chain Loop UHMW
C	S-8135	Bolt, Flange 5/16"-18 x 1-1/4" ZN Grade 5
D	S-845	Washer, Flat 5/16" USS ZN Grade 2
E	S-7382	Nut, Nylock 5/16"-18 ZN Grade 5

Hopper Inlet Assembly

Figure 7-7 *Hopper inlet assembly parts*

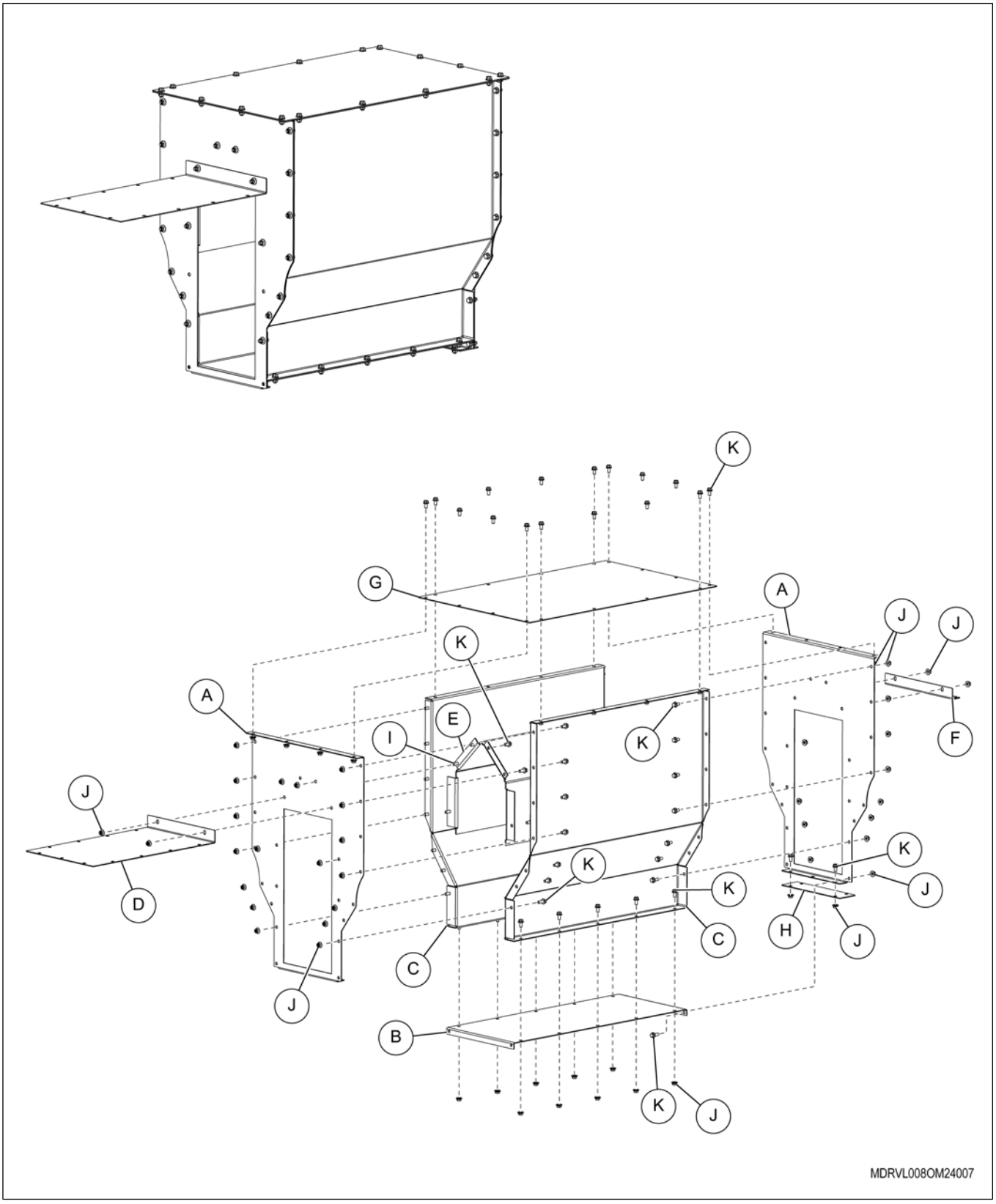


Table 7-9 *Hopper inlet assembly parts list*

Ref #	Part Number	Description
A	DBR-080113	End, 8" Inlet
	DBR-100191	End, 10" Inlet
	DBR-120240	End, 12" Inlet
B	DBR-080114	Bottom, 8" Inlet
	DBR-100192	Bottom, 10" Inlet
	DBR-120241	Bottom, 12" Inlet
C	DBR-080115	Side, 8" Inlet
	DBR-100193	Side, 10" Inlet
	DBR-120242	Side, 12" Inlet
D	DBR-080116	Cover, 8" End
	DBR-100194	Cover, 10" End
	DBR-120243	Cover, 12" End
E	DBR-080117	Hogback, 8" Inlet
	DBR-100195	Hogback, 10" Inlet
	DBR-120244	Hogback, 12" Inlet
F	DBR-080118	Angle, 8" Inlet Connection
	DBR-100196	Angle, 10" Inlet Connection
	DBR-120245	Angle, 12" Inlet Connection
G	DBR-080119	Cover, 8" Inlet
	DBR-100197	Cover, 10" Inlet
	DBR-120246	Cover, 12" Inlet
H	DBR-080120	Splice, 8" Inlet
	DBR-100198	Splice, 10" Inlet
	DBR-120247	Splice, 12" Inlet
I	S-9065	Bolt, Flange 3/8"-16 x 1" ZN Grade 5
J	S-968	Nut, Flange Large 3/8"-16 ZN Grade 5
K	S-9067	Bolt, Flange 3/8"-16 x 3/4" ZN Grade 5

Bypass Inlet Assembly

Figure 7-8 *Bypass inlet assembly parts*

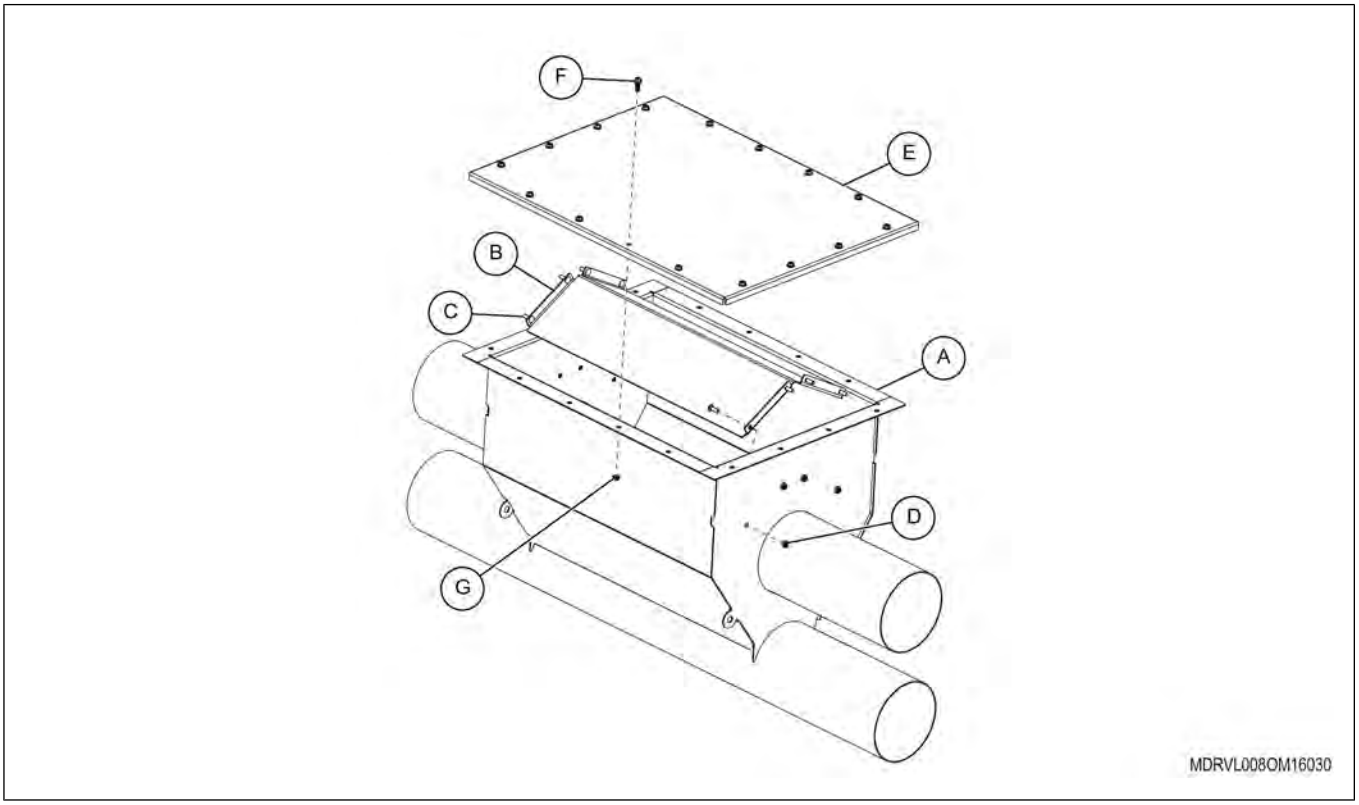


Table 7-10 *Bypass inlet assembly parts list*

Ref #	Part Number	Description
A	DBR-080059-BS	Weldment, 8" Bypass Inlet
	DBR-100056-BS	Weldment, 10" Bypass Inlet
	DBR-120099-BS	Weldment, 12" Bypass Inlet
B	DBR-000033-BS	Hogback, 8"/10" Bypass Inlet
C	S-3550	Bolt, Carriage 5/16"-18 x 1" ZN Clear Grade 5
D	S-10268	Nut, Flange 5/16"-18 JS500 Grade 5
E	DBR-080063-BS	Cover, 8" Bypass Inlet
	DBR-100060-BS	Cover, 10" Bypass Inlet
	DBR-120076-BS	Cover, 12" Bypass Inlet
F	S-10260	Bolt, Flange 5/16"-18 x 1" Full Thread with Sealing Washer - 8" and 10"
	S-9067	Bolt, Flange 3/8"-16 x 3/4" ZN Grade 5 - 12"
G	S-10268	Nut, Flange 5/16"-18 JS500 Grade 5 - 8" and 10"
	S-968	Nut, Flange 3/8"-16 ZN Grade 5 Wide Flange - 12"

Side Inlet Assembly

Figure 7-9 *Side inlet assembly parts*

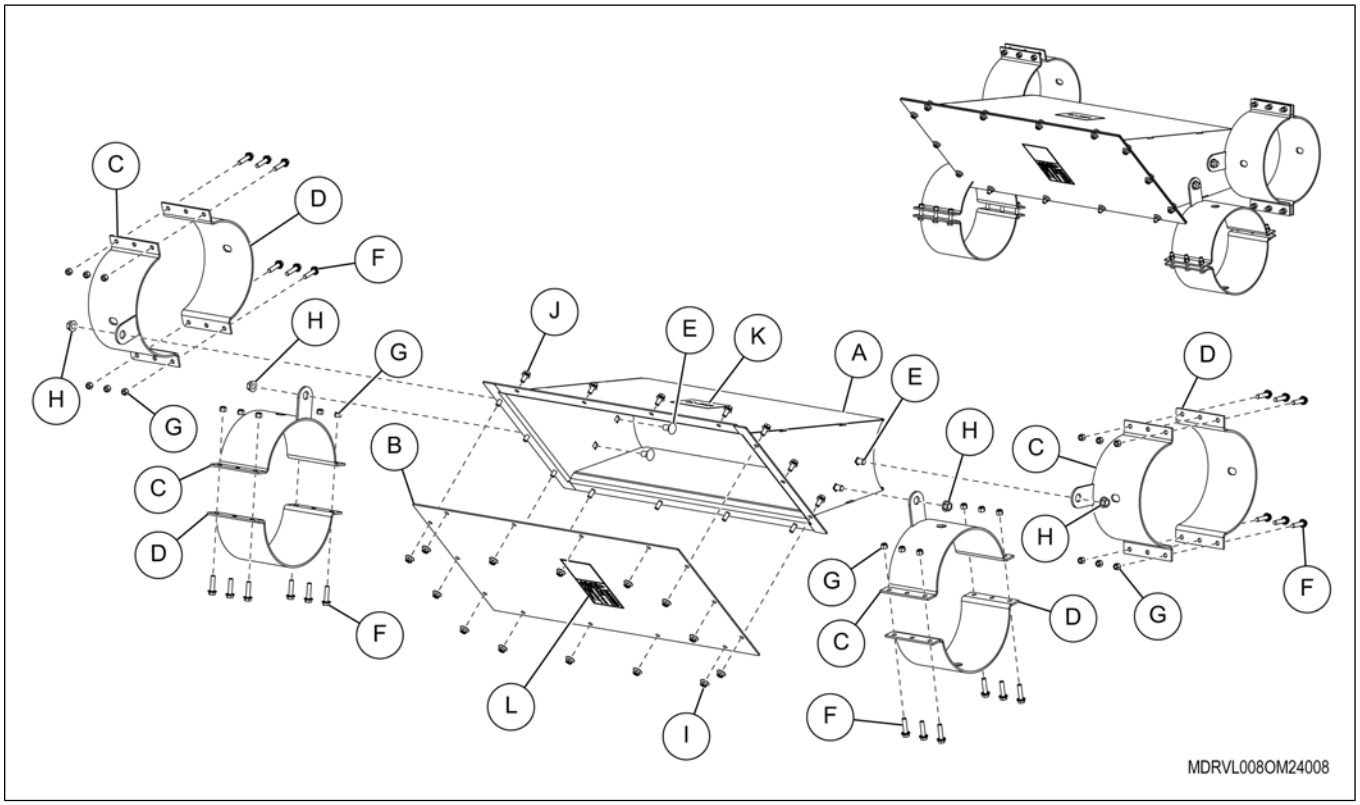


Table 7-11 *Side inlet assembly parts list*

Ref #	Part Number	Description
A	DBR-080109-BS	Assembly, 8" Side Inlet - Bin Silver
	DBR-100188-BS	Weldment, 10" Side Inlet - Bin Silver
	DBR-120237-BS	Weldment, 12" Side Inlet - Bin Silver
B	DBR-080107-BS	Plate, Cover, 8" Side Inlet - Bin Silver
	DBR-100186-BS	Plate, Cover, 10" Side Inlet - Bin Silver
	DBR-120235-BS	Plate, Cover, 12" Side Inlet - Bin Silver
C	DBR-080108-BS	Weldment, Half Band with Tab, 8" - Bin Silver
	DBR-100187-BS	Weldment, Half Band with Tab, 10" Side Inlet - Bin Silver
	DBR-120236-BS	Weldment, Half Band with Tab, 12" Side Inlet - Bin Silver
D	DBR-080064-BS	Band, Half 8" x 6" 7 Gauge - Bin Silver
	DBR-100062-BS	Band, Half 10" x 6" 7 Gauge - Bin Silver
	DBR-120115-BS	Band, Half 12" x 6" 7 Gauge - Bin Silver
E	S-7609	Bolt, Carriage 1/2"-13 x 1" ZN Grade 5
F	S-7486	Bolt, Flange 3/8"-16 x 1-1/2", Grade 8 or 8.2, JS500 or JS1000 Full Thread
G	S-7383	Nut, Nylock 3/8"-16 ZN Clear Grade 5
H	S-8506	Nut, Flange 1/2"-13 ZN Grade 5
I	S-968	Nut, Flange 3/8"-16 ZN Grade 5 Wide Flange
J	S-9067	Bolt, Flange 3/8"-16 x 3/4" ZN Grade 5
K	DC-2621	Decal, GSI Logo
L	8107001	Decal, Danger, Shearpoint

5' Bypass Dump Hopper Assembly

Figure 7-10 *5' bypass dump hopper assembly parts*

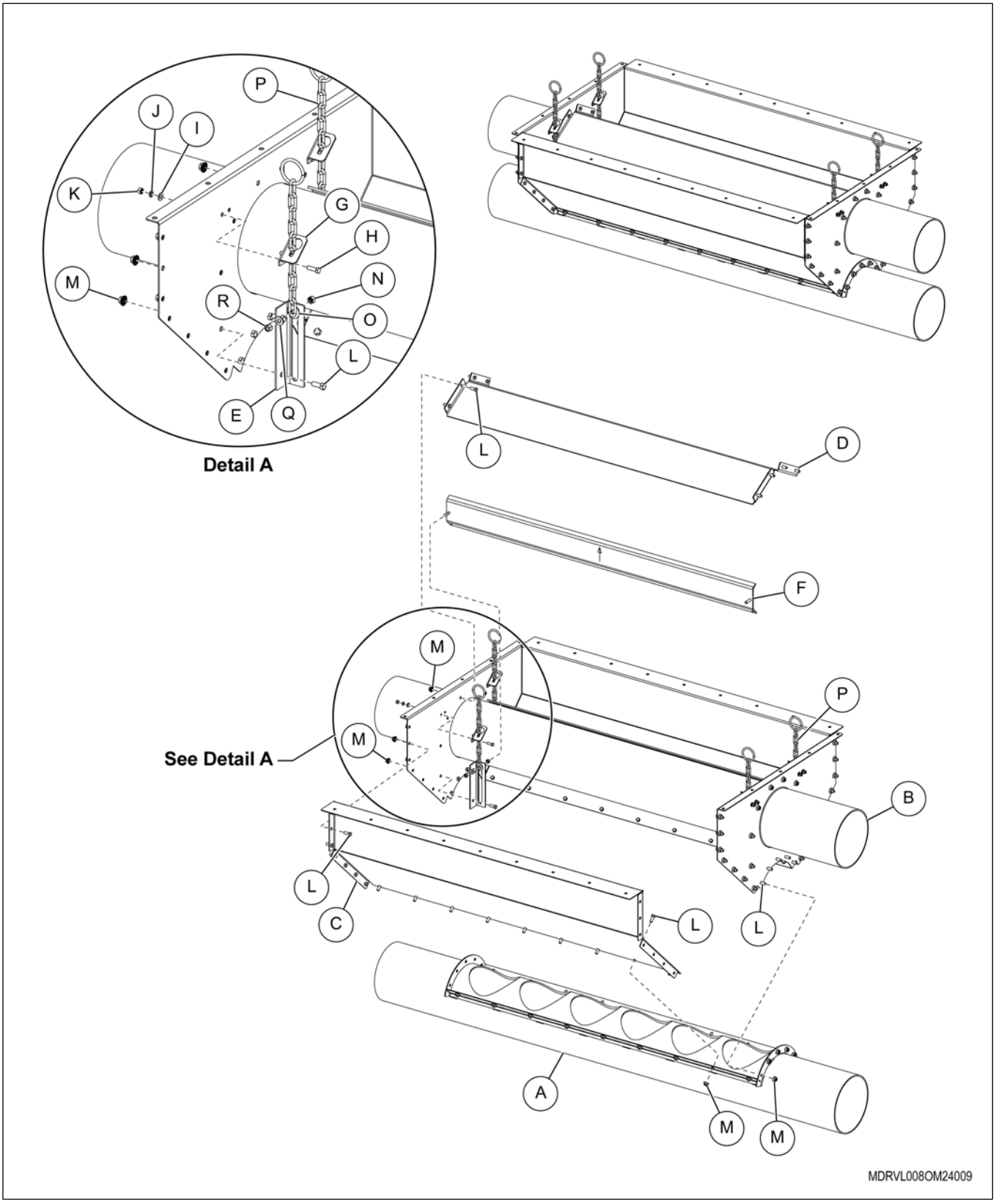


Table 7-12 *5' bypass dump hopper assembly parts list*

Ref #	Part Number	Description
A	DBR-080185-BS	Weldment, 8" x 5' Lower Tube Assembly - Bin Silver
	DBR-100179-BS	Weldment, 10" x 5' Lower Tube Assembly - Bin Silver
	DBR-120225-BS	Weldment, 12" x 5' Lower Tube Assembly - Bin Silver
B	DBR-080187-BS	Weldment, 8" x 5' Upper Tube Assembly - Bin Silver
	DBR-100181-BS	Weldment, 10" x 5' Upper Tube Assembly - Bin Silver
	DBR-120228-BS	Weldment, 12" x 5' Upper Tube Assembly - Bin Silver
C	DBR-080182-BS	Panel, Side, 8" - Bin Silver
	DBR-100164-BS	Panel, Side, 10" - Bin Silver
	DBR-120218-BS	Panel, Side, 12" - Bin Silver
D	DBR-080183-BS	Hogback, 61.071", 8" - Bin Silver
	DBR-100165-BS	Hogback, 61.071", 10" - Bin Silver
	DBR-120223-BS	Hogback, 61.071", 12" - Bin Silver
E	DBR-080181-BS	Angle, Formed, Baffle Adjustment, 8" - Bin Silver
	DBR-100168-BS	Angle, Formed, Baffle Adjustment, 10" and 12" - Bin Silver
F	DBR-100158-BS	Weldment, Adjustment Baffle - Bin Silver
G	8101137-BS	Bracket, Inlet Dump Hopper Chain Support - Bin Silver
H	S-1196	Bolt, HHCS 5/16"-18 x 1" ZN Grade 5
I	S-1937	Washer, Flat 5/16" SAE ZN Grade 2
J	S-1147	Washer, Lock Split 5/16" ZN
K	S-396	Nut, Hex 5/16"-18 YDP Grade 2
L	S-7469	Bolt, HHCS 3/8"-16 x 1" ZN Grade 5
M	S-968	Nut, Flange 3/8"-16 ZN Grade 5 Wide Flange
N	S-7525	Nut, Hex 3/8"-16 ZN Grade 2
O	S-10327	Washer, Flat, Fender, 3/8" x 1-1/4" O.D. x 0.063" Zinc
P	8101138	Chain, Center Shield Support Weldment, Inlet Dump Hopper
Q	S-7409	Washer, Flat 3/8" SAE ZN Grade 2
R	S-7383	Nut, Nylock 3/8"-16 ZN Clear Grade 5

10' Bypass Dump Hopper Assembly

Figure 7-11 *10' bypass dump hopper assembly parts*

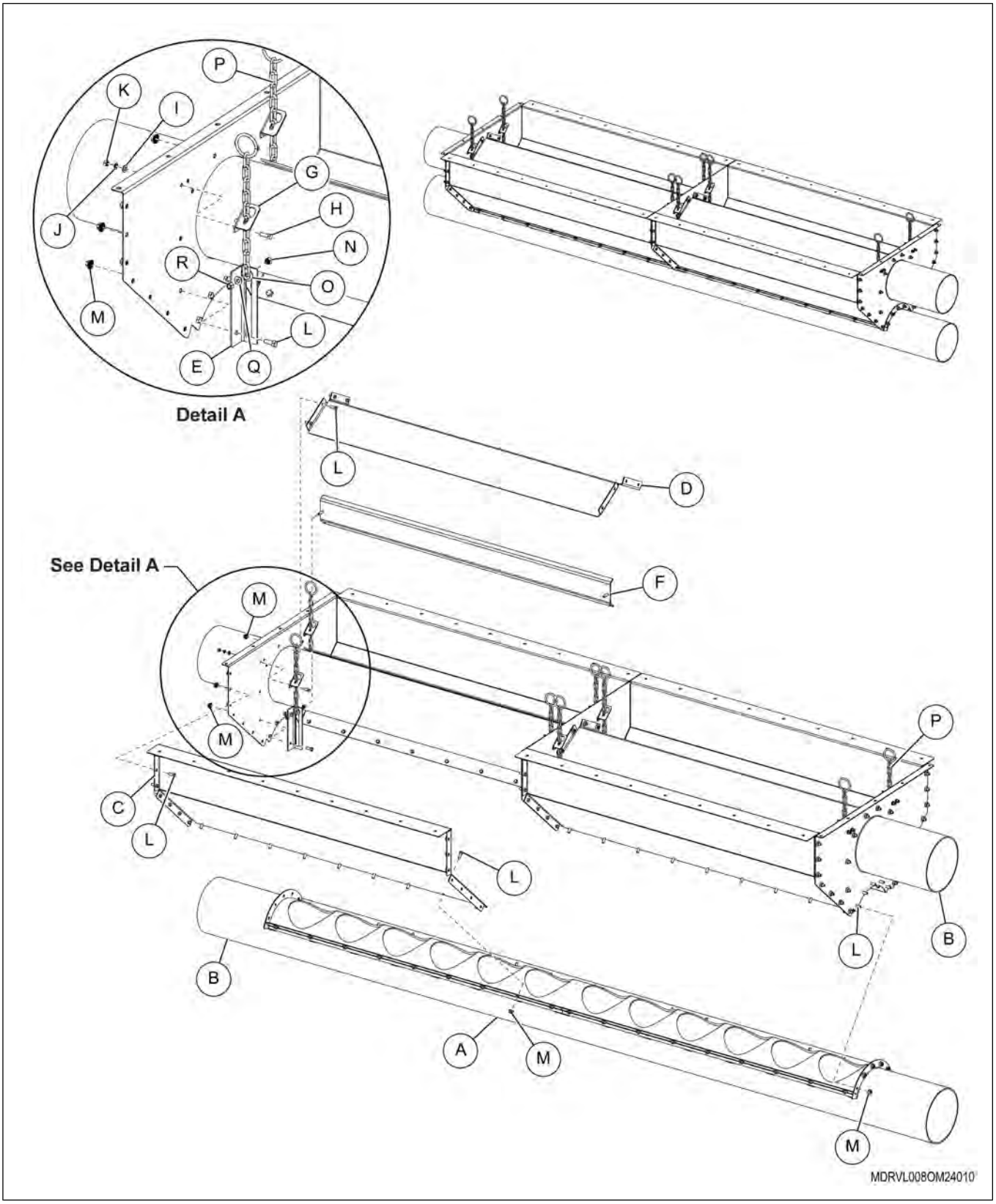


Table 7-13 *10' bypass dump hopper assembly parts list*

Ref #	Part Number	Description
A	DBR-080174-BS	Weldment, 8" x 10' Lower Tube Assembly - Bin Silver
	DBR-100157-BS	Weldment, 10" x 10' Lower Tube Assembly - Bin Silver
	DBR-120215-BS	Weldment, 12" x 10' Lower Tube Assembly - Bin Silver
B	DBR-080177-BS	Weldment, 8" x 10' Upper Tube Assembly - Bin Silver
	DBR-100156-BS	Weldment, 10" x 10' Upper Tube Assembly - Bin Silver
	DBR-120219-BS	Weldment, 12" x 10' Upper Tube Assembly - Bin Silver
C	DBR-080182-BS	Panel, Side, 8" - Bin Silver
	DBR-100164-BS	Panel, Side, 10" - Bin Silver
	DBR-120218-BS	Panel, Side, 12" - Bin Silver
D	DBR-080183-BS	Hogback, 61.071", 8" - Bin Silver
	DBR-100165-BS	Hogback, 61.071", 10" - Bin Silver
	DBR-120223-BS	Hogback, 61.071", 12" - Bin Silver
E	DBR-080181-BS	Angle, Formed, Baffle Adjustment, 8" - Bin Silver
	DBR-100168-BS	Angle, Formed, Baffle Adjustment, 10" and 12" - Bin Silver
F	DBR-100158-BS	Weldment, Adjustment Baffle - Bin Silver
G	8101137-BS	Bracket, Inlet Dump Hopper Chain Support - Bin Silver
H	S-1196	Bolt, HHCS 5/16"-18 x 1" ZN Grade 5
I	S-1937	Washer, Flat 5/16" SAE ZN Grade 2
J	S-1147	Washer, Lock Split 5/16" ZN
K	S-396	Nut, Hex 5/16"-18 YDP Grade 2
L	S-7469	Bolt, HHCS 3/8"-16 x 1" ZN Grade 5
M	S-968	Nut, Flange 3/8"-16 ZN Grade 5 Wide Flange
N	S-7525	Nut, Hex 3/8"-16 ZN Grade 2
O	S-10327	Washer, Flat, Fender, 3/8" x 1-1/4" O.D. x 0.063" Zinc
P	8101138	Chain, Center Shield Support Weldment, Inlet Dump Hopper
Q	S-7409	Washer, Flat 3/8" SAE ZN Grade 2
R	S-7383	Nut, Nylock 3/8"-16 ZN Clear Grade 5

Intermediate Supports

Figure 7-12 *Intermediate supports parts*

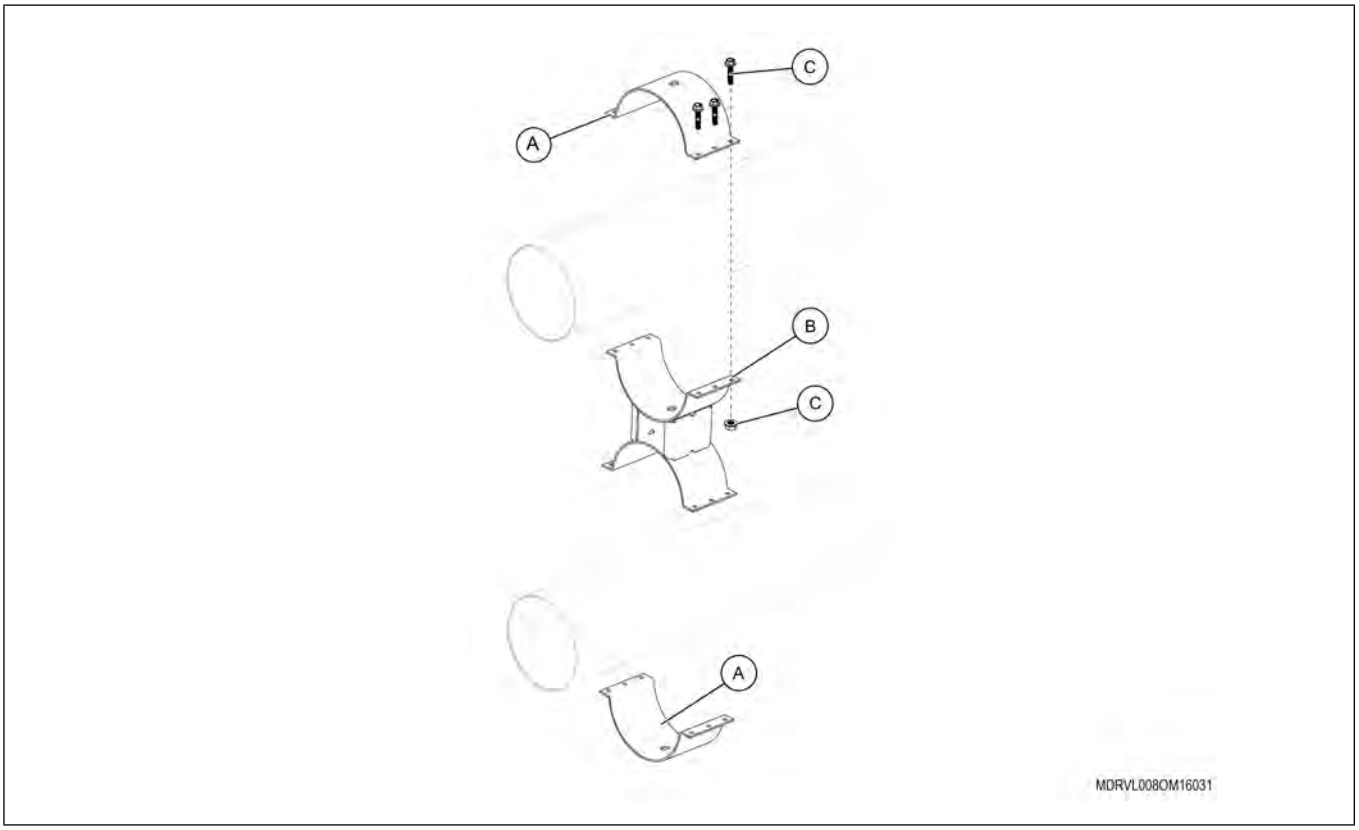


Table 7-14 *Intermediate supports parts list*

Ref #	Description	8 in. (DBR-08SPPT)	10 in. (DBR-10SPPT)	12 in. (DBR-12SPPT)
A	Half Band	DBR-080064-Y	DBR-100062-Y	DBR-120115-Y
B	Tube Support Weldment	DBR-080015-Y	DBR-100022-Y	DBR-120070-Y
C	Hardware Kit	DBR-SPPT-HDW	DBR-SPPT-HDW	DBR-SPPT-HDW

Drive Kits – Parts

Figure 7-13 *Drive Kits – Parts for 40–50 HP and 60 HP*

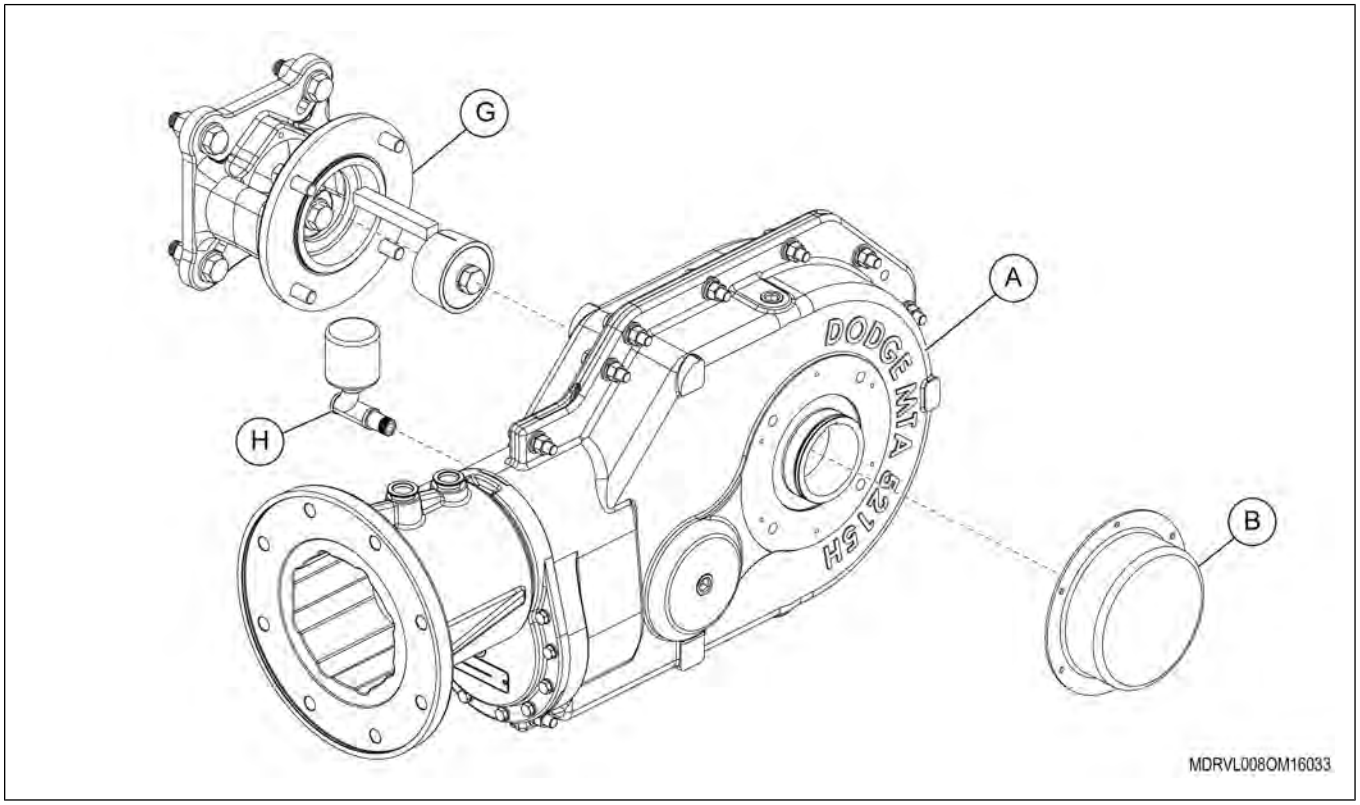


Table 7-15 *Drive Kits – Parts*

Ref #	Descrip-tion	Drive Kits			
		DBR-000080 (5 HP)	**DBR-000081 (10 HP)**	**DBR-000082 (15 HP)**	**DBR-000083 (20 HP)**
A	Gearbox	DBR-000065	DBR-000066	DBR-000079	DBR-000067
B	End cover	MHC02293	MHC02293	MHC02293	MHC02186
C*	Hardware Kit	DBR-000094-HDW	DBR-000094-HDW	DBR-000094-HDW	DBR-000097-HDW
G	Adapter Flange	DBR-000069	DBR-000069	DBR-000069	DBR-000070
H**	Breather	DBR-000059	DBR-000059	DBR-000059	DBR-000059

Table 7-16 *Drive Kits – Parts*

Ref #	Description	Drive Kits		
		DBR-000084 (25-30 HP)	**DBR-000089 (40-50 HP)**	**DBR-000090 (60 HP)**
A	Gearbox	DBR-000068	DBR-000056	DBR-000057
B	End cover	MHC02035	MHC002271	MHC002271
C*	Hardware Kit	DBR-000098-HDW	DBR-000060-HDW	DBR-000060-HDW
G	Adapter Flange	DBR-000071	DBR-000058	DBR-000058
H**	Breather	DBR-000059	DBR-000059	DBR-000059

* Parts are not shown.

** Refer to *Figure 4-5, page 25* for location of breather.

Chain Maintenance Assembly

Figure 7-14 *Chain maintenance assembly parts*

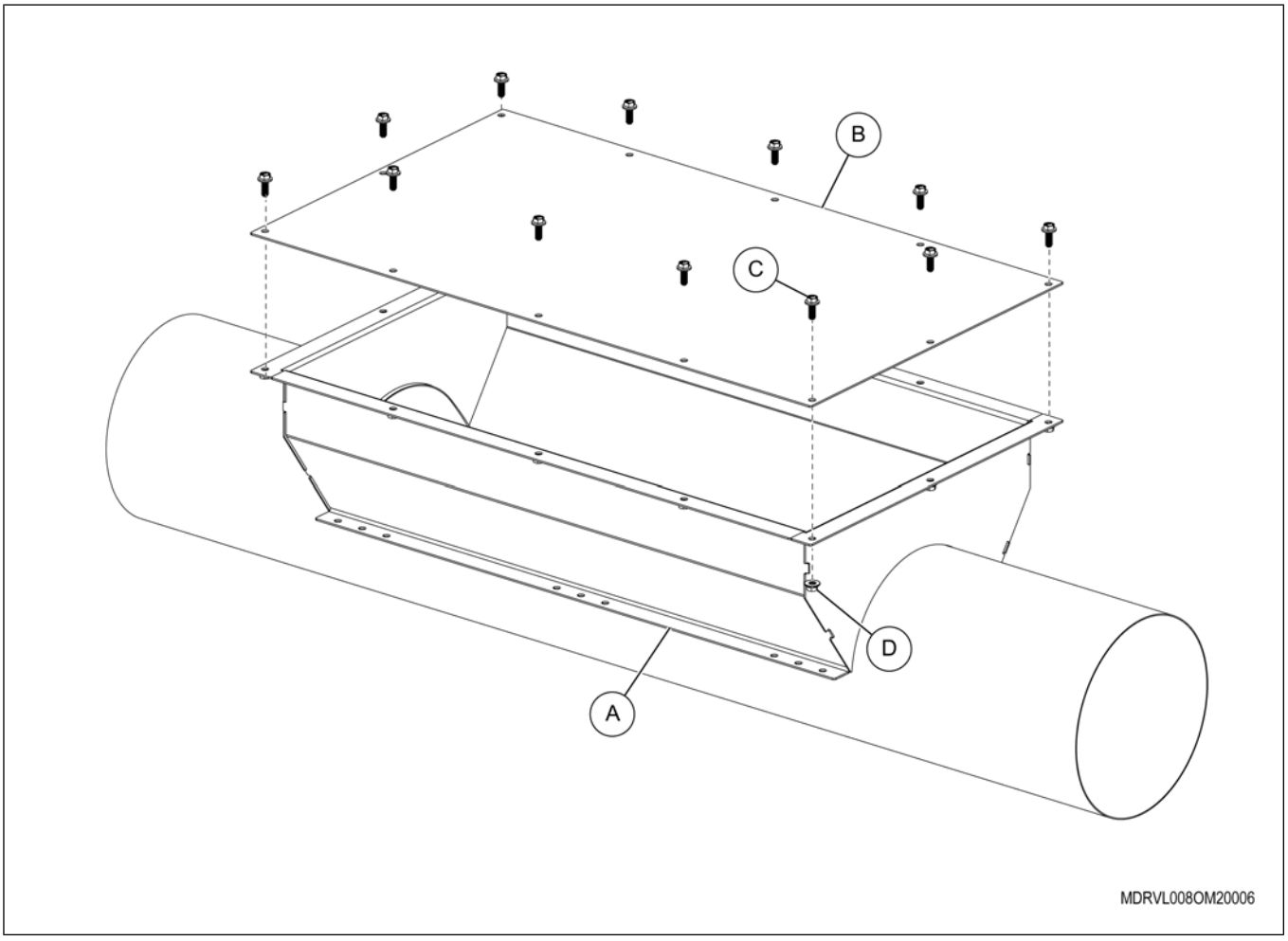


Table 7-17 *Chain maintenance assembly parts list*

Callout	Part Number	Description
A	DBR-080073-BS	Weldment, 8" Chain Maintenance
	DBR-100065-BS	Weldment, 10" Chain Maintenance
	DBR-120098-BS	Weldment, 12" Chain Maintenance
B	DBR-080075-BS	Cover, 8" Chain Maintenance
	DBR-100066-BS	Cover, 10" Chain Maintenance
	DBR-120097-BS	Cover, 12" Chain Maintenance
C	S-9067	Bolt, Flange 3/8"-16 x 3/4" ZN Grade 5
D	S-968	Nut, Flange 3/8"-16 ZN Grade 5 Wide Flange

Mid Span Support Assembly

Figure 7-15 *Mid span support assembly parts*

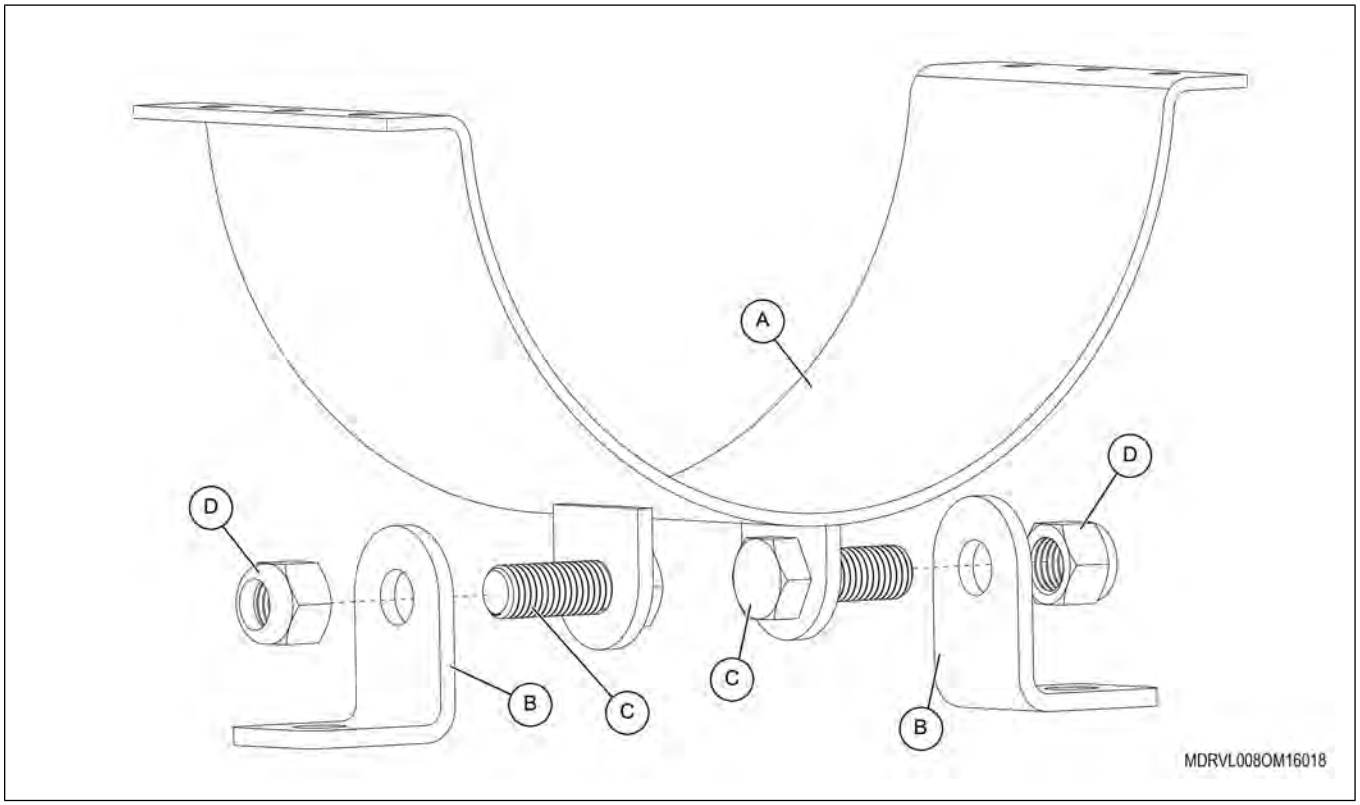


Table 7-18 *Mid span support assembly parts list*

Ref #	Part Number	Description
A	DBR-080068-BS	Weldment, 8" Mid-Span Support
	DBR-100063-BS	Weldment, 10" Mid-Span Support
	DBR-120109-BS	Weldment, 12" Mid-Span Support
B	DBR-120110-BS	Bracket, 8"-12" Mounting Foot
C	S-869	Bolt, HHCS 3/4"-10 x 2" YDP Grade 8
D	S-7217	Nut, Nylock 3/4"-10 ZN Grade 5 Cadmium Plated

NOTES

8 Appendix

Refer below for information of VersaLoop™, that is used prior to April 2016.

Gearbox Specifications

Recommended Oil for Gearbox (5-30 HP)

Mineral oil (ISO/SAE) equivalent to the list in the chart, should be used.

Temperature (°C) ISO/SAE	ENI	SHELL	ESSO	MOBIL	CASTROL	BP
23°F (-5°C) - 104°F (+40°C) ISO VG220	BLASIA 220	OMALA OIL220	SPAR-TRAN EP220	MOBIL-GEAR 600 XP220	ALPHA MAX 220	ENER-GOL GR-XP 220
5°F (-15°C) - 77°F (+25°C) ISO VG150	BLASIA 150	OMALA OIL150	SPAR-TRAN EP150	MOBIL-GEAR 600 XP150	ALPHA MAX 150	ENER-GOL GR-XP 150

Required Oil level for Gearbox (5-30 HP)

The gearbox will come filled with the horizontal fill level directly from the manufacturer. The oil level for the inclined operation is to be increased in addition to the horizontal level in the gearbox.

Application	DBR–000022 (5 HP)	DBR–000023 (10 HP)	DBR–000024 (15-20 HP)	DBR–000025 (25-30 HP)
Filled to Horizontal	1.3 qrt (1.2 L)	2.7 qrt (2.5 L)	3.9 qrt (3.7 L)	6.0 qrt (5.7 L)
0-14°	+0.1 qrt (0.1 L)	+0.1 qrt (0.1 L)	+0.5 qrt (0.4 L)	+0.53 qrt (0.5 L)
15-34°	+0.6 qrt (0.5 L)	+0.7 qrt (0.6 L)	+1.2 qrt (1.1 L)	2.2 qrt (2.1 L)
35-54°	+0.9 qrt (0.8 L)	+1.0 qrt (0.9 L)	+2.1 qrt (2.0 L)	+3.5 qrt (3.3 L)
55-60°	+1.1 qrt (1.0 L)	+1.3 qrt (1.2 L)	+3.5 qrt (3.3 L)	+4.4 qrt (4.2 L)

Table 8-1 *Oil recommendations*

Output RPM	MTA5215H (40–60 HP)	
	Torque-Arm II Reducer Size	ISO Grades For Ambient Temperatures of 15˚F to 60˚F (-9ºC to 16ºC)
101–125	220	150
81–100	220	150

Gearbox and Motor - Installation

NOTE: *If opposite drive side is required, refer Gearbox Mounting Process.*

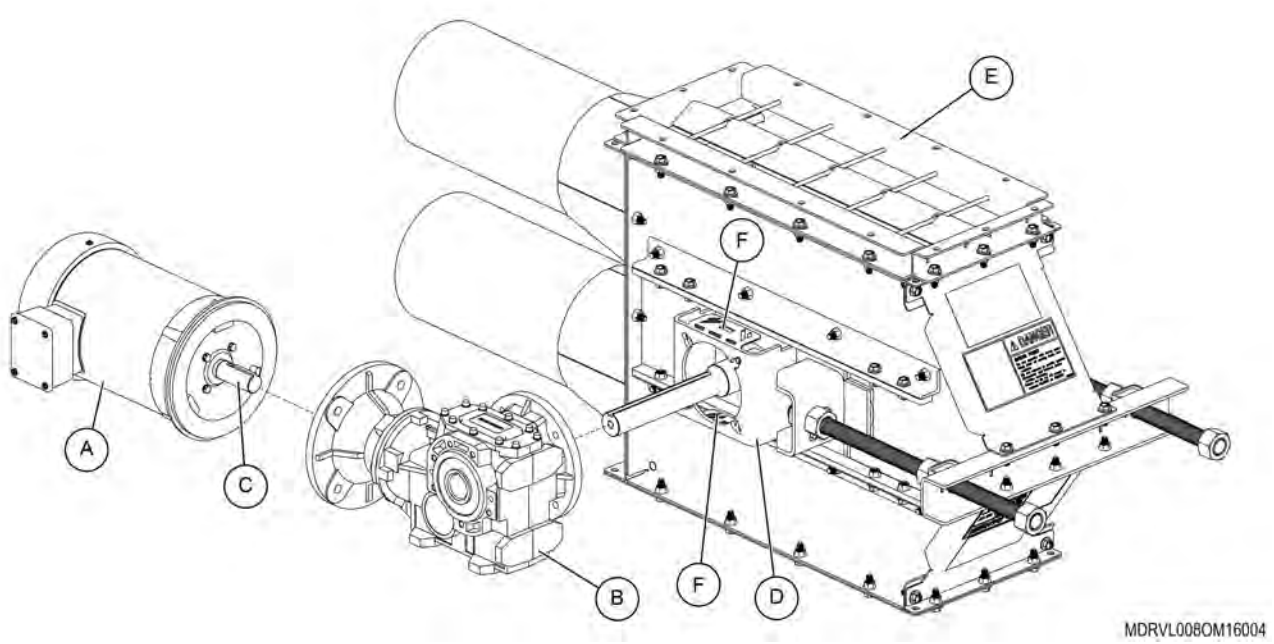
1. Locate the drive end (E) and position it on the ground or stand.
2. Locate the appropriate sized electric motor (A) with gearbox (B).

   NOTE: *Motor specification will vary depending on the VersaLoop™ angle of operation.*
3. Locate the shaft side in the drive end.
4. Slide the gearbox (B) onto the shaft.
5. Align the mounting plate (D) holes to the holes in the gearbox flange and secure them with bolts.

   IMPORTANT: *Make sure to install the shaft protective covers (F) inside the mounting bracket when installing the bolts and the nuts. Bend the covers at the top and the bottom to the inside of the mounting bracket to shield the shaft.*
6. Align the gearbox (B) and shaft keyways and insert the drive key.
7. Attach a key stop to the end of the shaft using a 1/2 in. bolt.
8. Attach the shaft dust cover to the end of the gearbox.
9. Mount the motor (A) to the gearbox (B) and ensure to align the key shaft (C) and coupler.

   NOTE: *Make sure to mount the motor (A) to the gearbox (B) with the lifting lug facing up.*

Figure 8-1 *Gearbox and motor assembly for 5-30 HP*



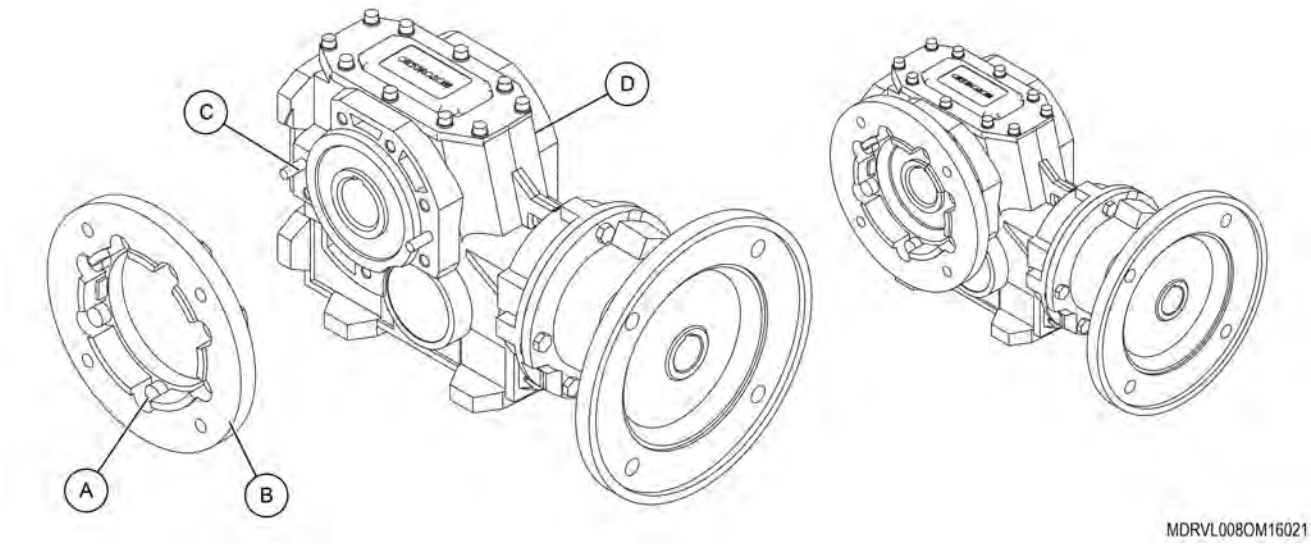
A	Motor	D	Mounting plate
B	Gearbox	E	Drive end
C	Key shaft	F	Shaft cover

VersaLoop™ - Gearbox Mounting Process

The following steps should be followed when assembling the gearbox on the opposite side to the drive end.

1. Remove socket cap screws attaching the gearbox flange to the gearbox and set aside (needed for opposite side mounting).
2. Remove the gearbox flange from the gearbox.
3. If spring pins remain in the gearbox, grind them level to the gearbox housing. This must be done in order to fit shaft cover to gearbox housing.

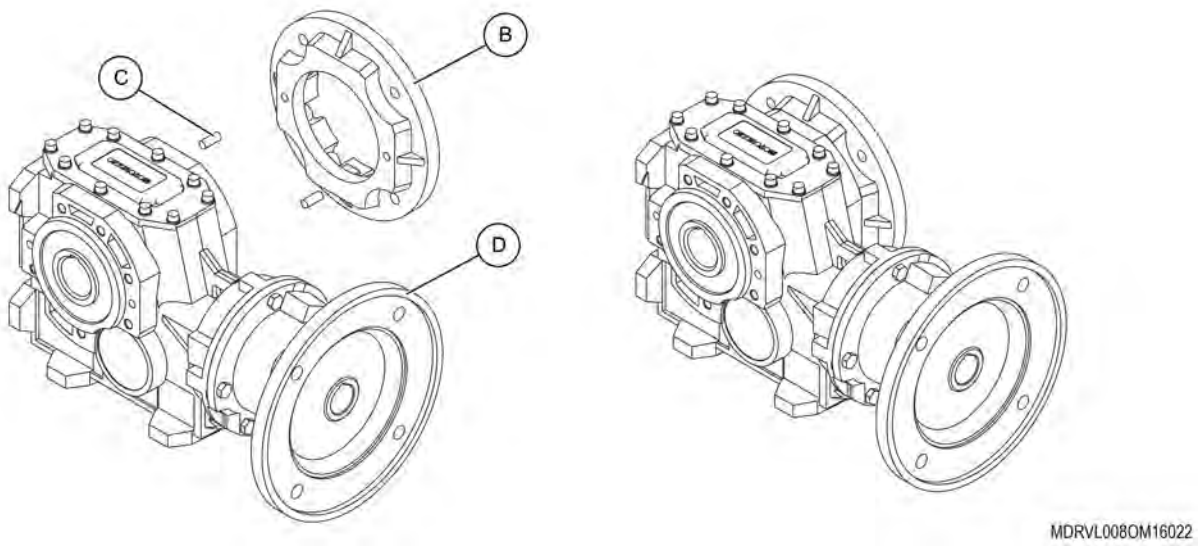
Figure 8-2 *Gearbox flange removal*



A	Socket cap screw	C	Spring pin
B	Gearbox flange	D	Gearbox

4. Locate new spring pins from the drive hardware kit and position them in the opposite side of the gearbox.
5. Align flange with spring pins and mounting holes.
6. If needed press the flange down onto spring pins.
7. Insert socket cap screws in flange holes and tighten
8. For instructions to mount the gearbox onto the drive end assembly, see *Gearbox and Motor – Installation, page 23*

Figure 8-3 *Gearbox flange assembly on the opposite side*



B	Gearbox flange	D	Gearbox
C	Spring pin		

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Drive Kits - Parts

Figure 8-4 *Drive kits - parts for 5 HP, 10 HP, 15-20 HP and 25-30 HP*

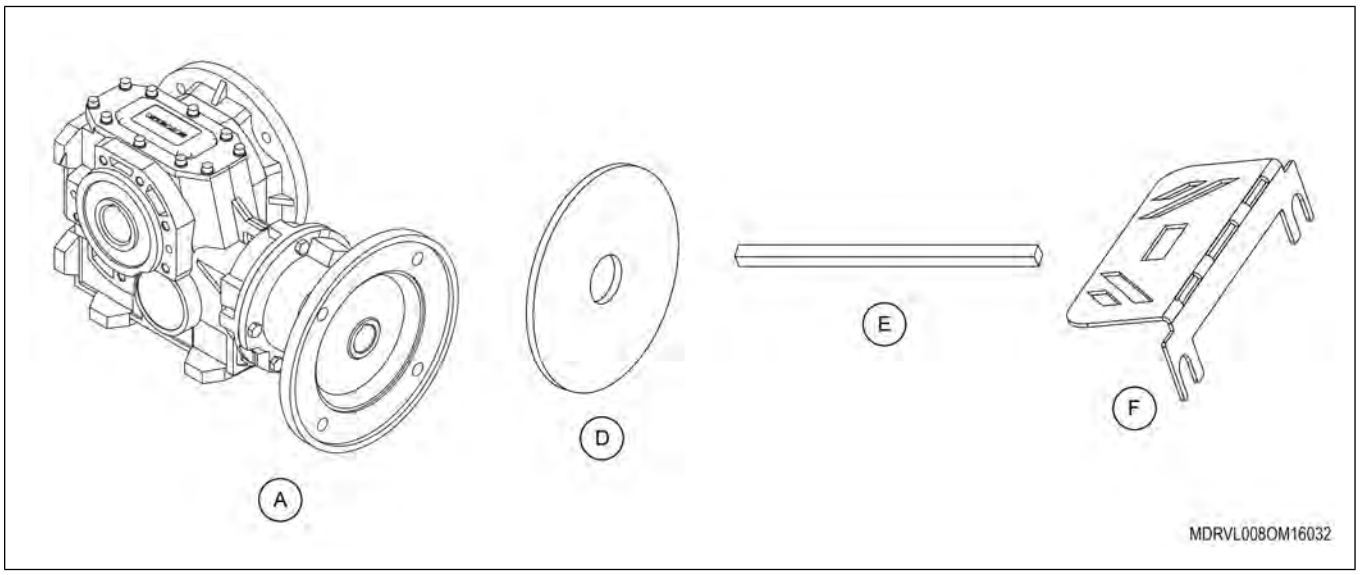

Table 8-2 *Drive kits - parts for 5 HP, 10 HP, 15-20 HP and 25-30 HP*

Callout	Description	Drive Kits			
		DBR-000029 (5 HP)	**DBR-000034 (10 HP)**	**DBR-000030 (15-20 HP)**	**DBR-000031 (25-30 HP)**
A	Gearbox	DBR-000022	DBR-000023	DBR-000024	DBR-000025
B*	Shaft Cover	DBR-000026	DBR-000026	DBR-000027	DBR-000028
C*	Hardware Kit	DBR-000029	DBR-000029	DBR-000030	DBR-000031
D	Shaft Key stop plate	DBR-000035	DBR-000035	DBR-000035	DBR-000035
E	Key	DBR-000037	DBR-000037	DBR-000038	DBR-000039
F	Protective shaft cover	DBR-080040	DBR-080040	DBR-080041	DBR-080042

* Parts not shown.

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 ▪ 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)	5 Years
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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