12" and 16" X-Series Sweep

Installation and
Operation Manual

PNEG-1857

Version: 13.0

Date: 08-12-21

PNEG-1857

Model Number of My Sweep:

Date Delivered:

Date Installed:

NOTE: *The manufacturer reserves the right to improve its product whenever possible and practical to do so. We reserve the right to change, improve and modify products at any time without obligation to make changes, improvements and modifications on equipment sold previously.*

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

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Safety Guidelines

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

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

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

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

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

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

ST-0001-4

Cautionary Symbols Definitions

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

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

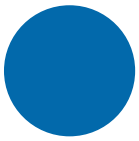
WARNING — This symbol indicates a potentially hazardous situation which, if not avoided, **can result in serious injury or death.**

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

Lifting Hazard

- Single person lift can cause injury.
- Use a mechanical lifting device to lift or move the equipment during installation.

ST-0021-2

Maintain Equipment and Work Area

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

ST-0003-1

Sharp Edge Hazard

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

ST-0036-2

Rotating Auger Hazard

- Keep clear of rotating augers and moving parts.
- Do not remove or modify guards or covers.
- Lock-out power source before making adjustments, cleaning, or maintaining equipment.
- Failure to follow these precautions will result in serious injury or death.

ST-0037-1

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-0063-1

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

Do Not Enter Bin

- Rotating flighting will kill or dismember.
- Flowing material will trap and suffocate.
- Crusted material will collapse and suffocate.

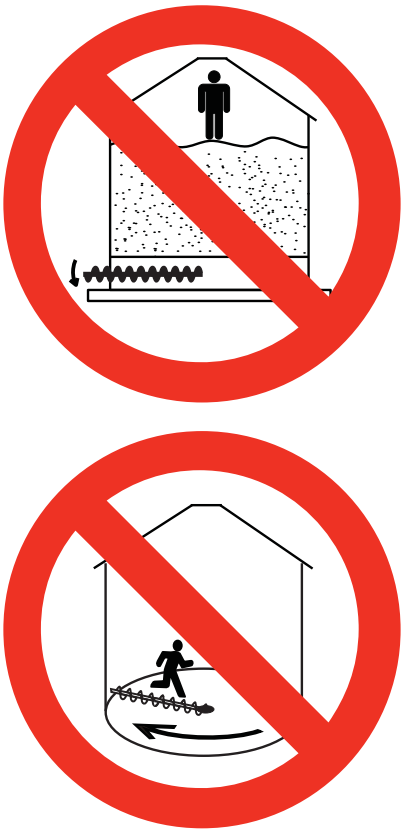
    - If you must enter the bin:

        1. Shut off and lock out all power sources.
        2. Use a safety harness and safety line.
        3. Station another person outside the bin.
        4. Avoid the center of the bin.
        5. Wear proper breathing equipment or respirator.

ST-0061-1

Use Unload Equipment Properly

- Do not operate this equipment alone. Make sure someone nearby is aware of the proper shut down sequence in the event of an emergency.
- Do not allow any person intoxicated or under the influence of drugs to operate this equipment. All operators must be adequately rested and prepared to perform all functions of operating the equipment.
- Do not start equipment until all persons are clear of the work area and safety guards are in place.
- Do not allow anyone inside a bin, truck, or wagon which is being unloaded by an auger. Flowing grain can trap and suffocate in seconds.
- Use ample overhead lighting after sunset to light the work area.
- Always use caution to not hit the auger when positioning the load.
- Do not leave equipment operating while unattended.
- Be aware of pinch points, which can trap or catch objects and cause injury.
- Be sure all equipment is locked in position before operating.
- Always lock out all power sources to the equipment when unloading is finished.



ST-0051-1

Safety Sign-Off Sheet

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

Date	*Employee Name*	*Supervisor Name*

ST-0007

The images below show the location of the decals and safety signs which should appear on the "X" Series Sweep. *(Refer to Page 11-14 for Decals.)*

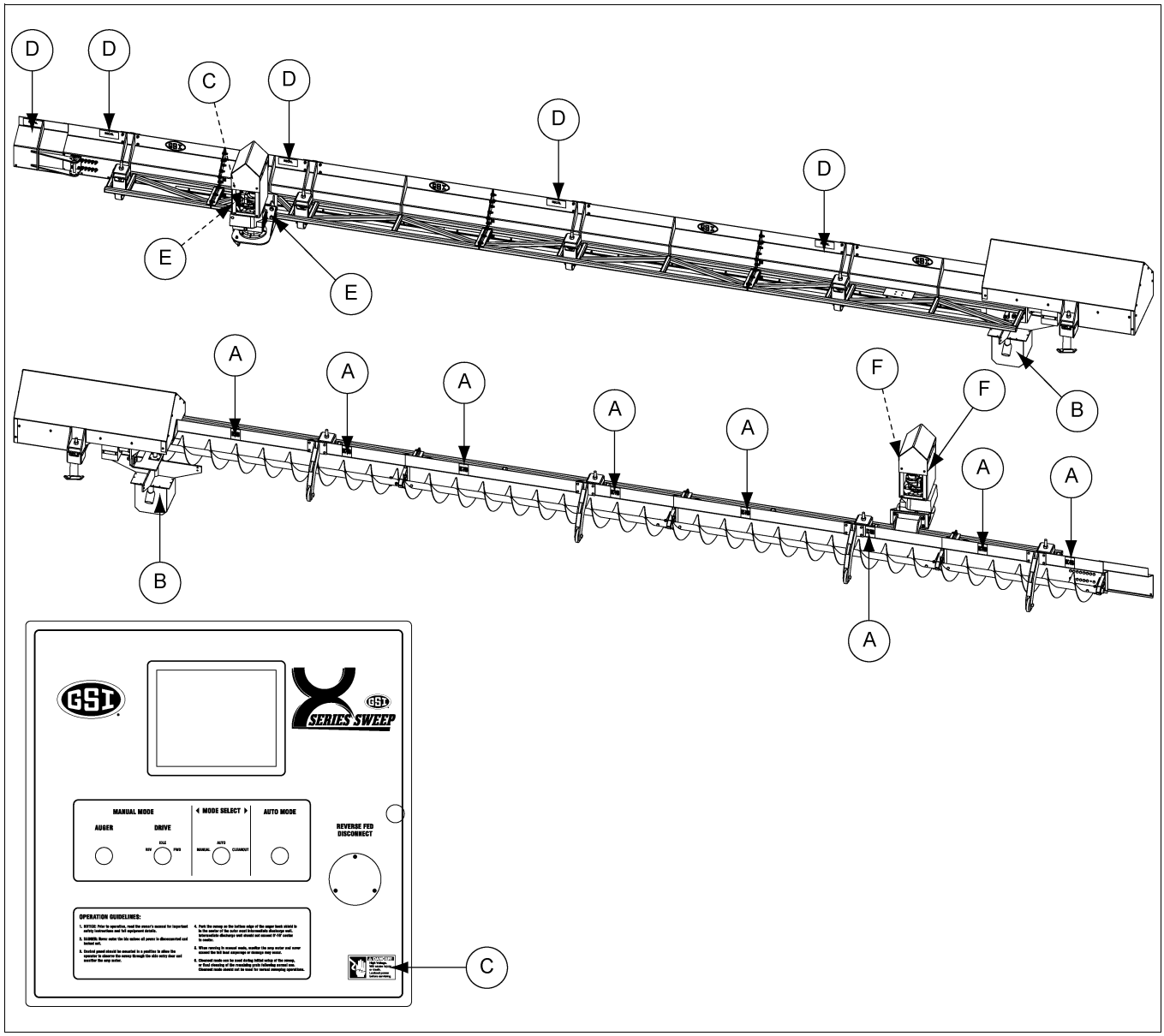


Figure 2A *Safety Decal General Location Placement*

Ref #	Description	Location
A	Rotating Auger	Front of top flange
B	High Voltage	Corner of auger motor mount and each side of center well
C	High Voltage	Corner of drive motor plate
D	Rotating Flighting	Back of top flange
E	Shear Point	Corner of drive motor plate
F	Trip Hazard	Each side of auger motor housing

NOTE: *Please remember safety signs provide important safety information for people working near bin unloading equipment that is in operation. Any safety signs that are worn, missing, illegible or painted over should be replaced immediately. Obtain FREE replacements by contacting GSI.*

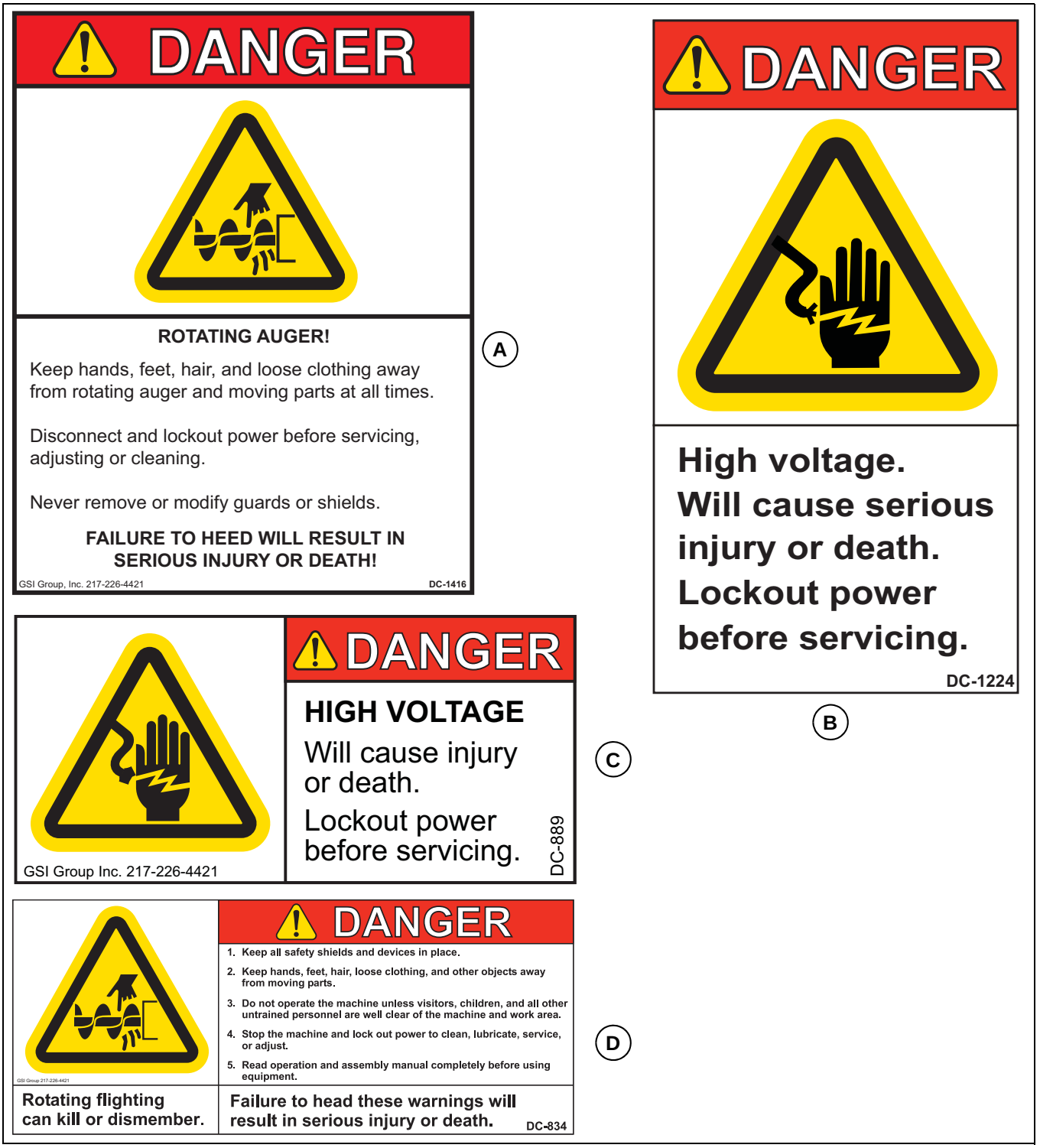
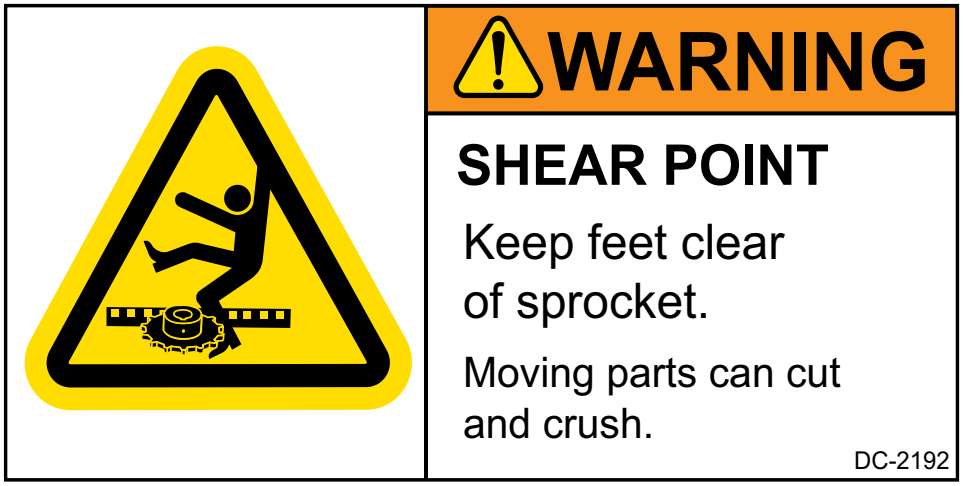


Figure 2B

Ref #	Part #	Description
A	DC-1416	Safety Decal, Rotating Auger
B	DC-1224	Safety Decal, High Voltage
C	DC-889	Safety Decal, High Voltage
D	DC-834	Safety Decal, Rotating Flighting



E

F

Figure 2C

Ref #	Part #	Description
E	DC-2192	Safety Decal, Shear Point
F	DC-2190	Safety Decal, Trip Hazard

2. Safety Decals

A. DANGER Signs No. DC-1395, DC-2191 and DC-2193 were supplied with your bin unloading equipment. The safety signs should be applied to the side of the bin near the bin opening, so they can be viewed by people entering into the bin storage building. Do not cover any safety signs or any other signs that are already there.

B. If the safety sign location suggested is not in full view because of equipment modifications, other equipment in the area or any reason, then locate the safety sign in a more suitable location.

C. Be certain the surface is clean, dry and free of dirt and oil. Peel paper backing from decals and stick into place. The adhesive backing will bond on contact.

NOTE: *Please remember, safety signs provide important safety information for people working near bin unloading equipment that is in operation.*
If the Safety Sign cannot be easily read for any reason or has been painted over, replace it immediately. Additional Safety Signs may be obtained free of charge from your dealer, distributor or ordered from the factory.

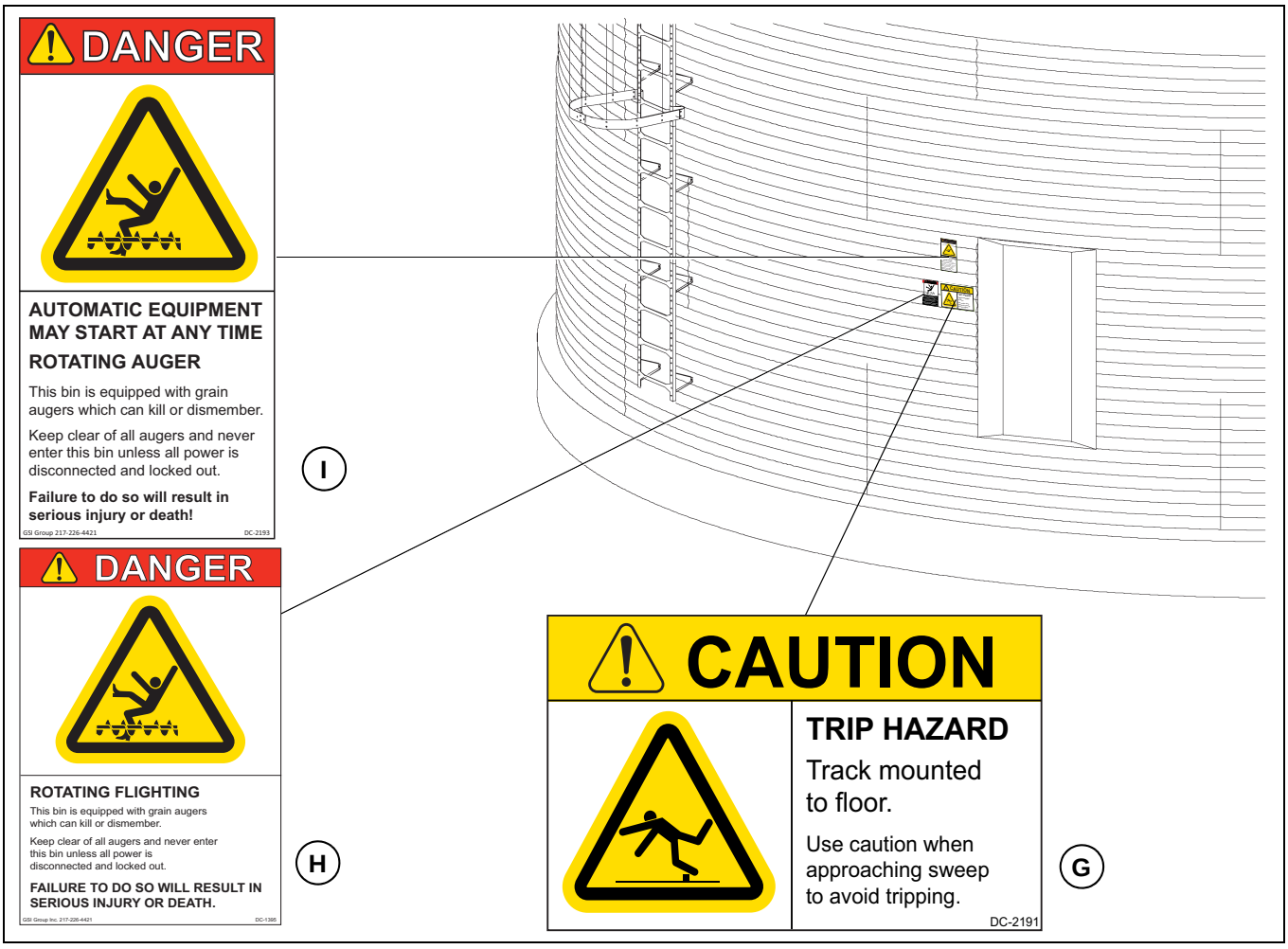


Figure 2D

Ref #	Part #	Description
G	DC-2191	Safety Decal, Trip Hazard
H	DC-1395	Safety Decal, Rotating Flighting
I	DC-2193	Safety Decal, Automatic Equipment

Sweep Criteria Recommendations

The main function of the X-Series Sweep is to cleanout the remaining grain, from the bin, after all gravity unloading has finished. The GSI X-Series Sweep is a single pass sweep only. The unit will only operate in a round grain bin equipped with a center sump in the bin floor.

NOTE: *The bin manufacturer should be contacted for their recommendations on the bin's structural integrity. The following are sweep criteria recommendations.*

Issues	Recommendations
Flooring	A track is required under each of the sweep wheels where they travel over the aeration (steel) floor. The track should be a minimum of 10 gauge thick and made from steel. The steel can be galvanized for the wheel paths. A *Table on Page 18* is included that shows radius dimensions locating the points of contact between the sweep and the bin floor. The dimensions may be used to figure the material quantities of track to support the sweep across the aeration flooring. **The track material is not supplied with the sweep and must be supplied by the installer.** The dimensions are approximate and the assembled sweep should be checked for exact points of contact. Drive and wheel tracks need to be shimmed equally spaced across the aeration tunnels.
Center Sump Size	When installing a 12" or 16" sweep, the minimum recommended opening is 42" x 42". The sump hopper supplied by GSI was designed with sufficient clearance around the collector ring housing to allow grain to gravity flow through the hopper and be carried away by the material handling equipment below. 42-3/4" is the maximum opening size to allow rolling clearance for the casters assembled to the head end jack. If made smaller, grain flow may be decreased to an unacceptable level. Flow of grain is limited when using this sump and collector ring housing assembly. The collector ring housing extends 23-1/2" down from the floor surface and is approximately 14-1/4" x 14-1/4" in size.
Number of Intermediate Sumps	Intermediate sumps must be installed on a maximum of 8' centers where the sweep will be parked during storage. The first intermediate sump should be placed at a maximum of 8' from the center sumps and the end sump should be no more than 4' from the bin wall. The extra sumps will help cleanout the grain in front of the sweep, reducing the start-up load. Doing this will save labor dollars and hours of work to dig out the sweep and will help the sweep during start-up. The sweep is not designed to start-up when submerged in material. The sweep should be parked behind the intermediate sumps with sumps on the auger side of the sweep.
Routing the Power Supply to the Sweep	The only option is to use the hopper sump with collector ring. This allows the power to be transferred through a mechanical device in the center sump and does not twist any cords.
Floor Level Tolerance	The top edge of the sump hopper and the top edge of the X-brace support must be level with the floor. The GSI X-Series sweep track should be installed level, within a tolerance of +/- 1/8" in a 10' distance. As an aid in installation, it is noted the track may be shimmed in a manner similar to that as shown in *Figure 5E on Page 26* to achieve the required levelness. The aeration system should be of a condition and strength to maintain a levelness tolerance of +/- 1/8" in a 10' span during sweep operation.

Issues	Recommendations
Bin Roundness Tolerance	Diameter tolerances are limited by foundation limits and sweep operation as well as structural issues. For 72' diameter and larger, the overall tolerance would be plus or minus 1-1/4" on the radius, plus or minus 1" on 42'-66' diameter bins and plus or minus 3/4" on 30'-39' bins.
Bin Opening Size Required for Installation	The head section is the largest piece of a standard X-Series Sweep. The dimensions for a 16" head section are 23-1/2" x 55-1/4". If the bin wall is not too thick, this unit should fit through a 23-1/2" x 47" opening. The dimensions for a 12" head section are 21-1/4" x 51-1/2". Again, if the bin wall is not too thick, the section should fit through an opening 21-1/2 x 45".
Voltage Specification	The X-Series Sweep is designed to operate using **460 Volt 3 Phase 60 Hz, 380V 50 Hz or 600V 60 Hz**. The voltage must be within **plus or minus 4%** for proper operation. Voltages outside of this range may cause excessive power draw or other operating problems. Please contact the factory for applications outside of these parameters.
Electrical Requirements	Electrical controls and wiring should be installed by a qualified electrician. The motor disconnect switches and conductor cables should comply with the National Electric Code and any local codes which may apply. A main power disconnect switch capable of being locked only in the OFF position should be used. This is integrated into the control panel for the X-Series Sweeps. Disconnect and lock out the power before servicing the equipment, entering the bin or resetting the motor overloads. The control panel **MUST** be mounted **OUTSIDE** the bin near the door. It must be located so the operator has a full view of the equipment and can see that all personnel are clear. It must **NEVER** be installed inside the bin. Motor thermal protection leads must also be wired into or plugged into the control panel before the sweep will operate.

Product Information

CAUTION

This X-Series Sweep is a single pass sweep. Consult the manufacturer of the storage tank regarding the requirements or restrictions of the sweeping process. The manufacturer may require a multiple pass sweep.

1. The X-Series Sweep includes the following components:

   Control Panel

   Two (2) Motors

   Motor Covers

   Motor Mount

   Auger Flighting

   Auger Back Shield Assembly

   Caster Wheels

   Track

   Shield Brush

2. The following components are NOT included with the X-Series Sweep:

   Track Anchors

   Electrical Components

   - Wire
   - Fittings
   - Conduit

3. The unit will operate only in a round grain bin equipped with a center sump in the bin floor.

WARNING

NEVER enter a grain bin unless ALL power driven equipment has been shut down. Disconnect and lock out power before entering the bin or servicing the equipment.

General Information

1. GSI reserves the right to improve its product whenever possible and practical to do so. We reserve the right to change, improve and modify products at any time without obligation to make changes, improvements and modifications on equipment sold previously.

2. This new bin sweep auger has been engineered and manufactured to give years of dependable service. The care and maintenance of this equipment will affect the satisfaction and service obtained. By following the instructions and recommendations, the owner should receive quality service for many years. If additional information or assistance is required, please contact GSI.

3. It is important to check both the quantity of parts and their descriptions with the packing list enclosed within each package. All claims for freight damage or shortage must be made by the consignee within ten (10) days of the date of the occurrence. The consignee should accept the shipment after noting the damage or loss on the bill of lading.

4. Table *below* shows radius dimensions locating the points of contact between the sweep and the bin floor. The dimensions may be used to figure material quantities of track to support the sweep across the aeration flooring. The track material is not supplied with the sweep and must be supplied by the installer. The dimensions are approximate and the assembled sweep should be checked for exact points of contact.

Track and Support Wheel Radius Dimensions

Bin Dia.	# of Sections	Radius Dimensions for Support Wheels and Track from Center Pivot (Support wheel locations are approximate and should be checked after sweep assembly is complete.)								
27'	2	6' - 2-1/2" (1.89 m)	8' (2.44 m) Track	8'-10" (2.71 m)						
30'	2	6' - 2-1/2" (1.89 m)	8' (2.44 m) Track	10'-10" (3.30 m)						
33'	2	6' - 2-1/2" (1.89 m)	8' (2.44 m) Track	12'-10" (3.91 m)						
34'	2	6' - 2-1/2" (1.89 m)	8' (2.44 m) Track	12'-10" (3.91 m)						
36'	2	6' - 2-1/2" (1.89 m)	8' (2.44 m) Track	13'-10" (4.22 m)						
37'	2	6' - 2-1/2" (1.89 m)	8' (2.44 m) Track	14'-10" (3.91 m)						
39'	2	6' - 2-1/2" (1.89 m)	8' (2.44 m) Track	15'-10" (4.83 m)						
40'	2	6' - 2-1/2" (1.89 m)	8' (2.44 m) Track	15'-10" (4.83 m)						
42'	2	6' - 2-1/2" (1.89 m)	8' (2.44 m) Track	16'-10" (5.13 m)						
43'	2	6' - 2-1/2" (1.89 m)	8' (2.44 m) Track	16'-10" (5.13 m)						
45'	2	6' - 2-1/2" (1.89 m)	8' (2.44 m) Track	17'-10" (5.44 m)						
48'	3	6' - 2-1/2" (1.89 m)	16' (4.88 m)	18' (5.49 m) Track	19'-10" (6.05 m)					
49'	3	6' - 2-1/2" (1.89 m)	16' (4.88 m)	18' (5.49 m) Track	19'-10" (6.05 m)					
51'	3	6' - 2-1/2" (1.89 m)	16' (4.88 m)	18' (5.49 m) Track	20'-10" (6.35 m)					
54'	3	6' - 2-1/2" (1.89 m)	16' (4.88 m)	18' (5.49 m) Track	22'-10" (6.96 m)					
55'	3	6' - 2-1/2" (1.89 m)	16' (4.88 m)	18' (5.49 m) Track	22'-10" (6.96 m)					
57'	3	6' - 2-1/2" (1.89 m)	16' (4.88 m)	18' (5.49 m) Track	23'-10" (7.27 m)					
59'	3	6' - 2-1/2" (1.89 m)	16' (4.88 m)	18' (5.49 m) Track	24'-10" (7.57 m)					
60'	3	6' - 2-1/2" (1.89 m)	16' (4.88 m)	18' (5.49 m) Track	25'-10" (7.88 m)					
62'	3	6' - 2-1/2" (1.89 m)	16' (4.88 m)	18' (5.49 m) Track	26'-10" (8.18 m)					
63'	3	6' - 2-1/2" (1.89 m)	16' (4.88 m)	18' (5.49 m) Track	26'-10" (8.18 m)					
66'	3	6' - 2-1/2" (1.89 m)	16' (4.88 m)	18' (5.49 m) Track	27'-10" (8.49 m)					
68'	4	6' - 2-1/2" (1.89 m)	16' (4.88 m)	18' (5.49 m) Track	26' (7.93 m)	29'-10" (9.10 m)				
69'	4	6' - 2-1/2" (1.89 m)	16' (4.88 m)	18' (5.49 m) Track	26' (7.93 m)	29'-10" (9.10 m)				
72'	4	6' - 2-1/2" (1.89 m)	16' (4.88 m)	26' (7.93 m)	28' (8.54 m) Track	31'-10" (9.71 m)				
75'	4	6' - 2-1/2" (1.89 m)	16' (4.88 m)	26' (7.93 m)	28' (8.54 m) Track	32'-10" (10.01 m)				
78'	4	6' - 2-1/2" (1.89 m)	16' (4.88 m)	26' (7.93 m)	28' (8.54 m) Track	34'-10" (10.32 m)				
80'	4	6' - 2-1/2" (1.89 m)	16' (4.88 m)	26' (7.93 m)	28' (8.54 m) Track	35'-10" (10.62 m)				
81'	4	6' - 2-1/2" (1.89 m)	16' (4.88 m)	26' (7.93 m)	28' (8.54 m) Track	35'-10" (10.62 m)				
84'	4	6' - 2-1/2" (1.89 m)	16' (4.88 m)	26' (7.93 m)	28' (8.54 m) Track	37'-10" (11.23 m)				
87'	5	6' - 2-1/2" (1.89 m)	16' (4.88 m)	26' (7.93 m)	28' (8.54 m) Track	37'-10" (11.23 m)				
88'	5	6' - 2-1/2" (1.89 m)	16' (4.88 m)	26' (7.93 m)	28' (8.54 m) Track	36' (10.98 m)	39'-10" (12.14 m)			
90'	5	6' - 2-1/2" (1.89 m)	16' (4.88 m)	26' (7.93 m)	36' (10.98 m)	38' (11.59 m) Track	40'-10" (12.45 m)			
91'	5	6' - 2-1/2" (1.89 m)	16' (4.88 m)	26' (7.93 m)	36' (10.98 m)	38' (11.59 m) Track	40'-10" (12.45 m)			
92'	5	6' - 2-1/2" (1.89 m)	16' (4.88 m)	26' (7.93 m)	36' (10.98 m)	38' (11.59 m) Track	41'-10" (12.75 m)			
95'	5	6' - 2-1/2" (1.89 m)	16' (4.88 m)	26' (7.93 m)	36' (10.98 m)	38' (11.59 m) Track	42'-10" (13.06 m)			
98'	5	6' - 2-1/2" (1.89 m)	16' (4.88 m)	26' (7.93 m)	36' (10.98 m)	38' (11.59 m) Track	44'-10" (13.67 m)			
99'	5	6' - 2-1/2" (1.89 m)	16' (4.88 m)	26' (7.93 m)	36' (10.98 m)	38' (11.59 m) Track	44'-10" (13.67 m)			
105'	5	6' - 2-1/2" (1.89 m)	16' (4.88 m)	26' (7.93 m)	36' (10.98 m)	38' (11.59 m) Track	47'-10" (14.58 m)			
113'	6	6' - 2-1/2" (1.89 m)	16' (4.88 m)	26' (7.93 m)	36' (10.98 m)	38' (11.59 m) Track	46' (14.02 m)	51'-10" (15.80 m)		
115'	6	6' - 2-1/2" (1.89 m)	16' (4.88 m)	26' (7.93 m)	36' (10.98 m)	38' (11.59 m) Track	46' (14.02 m)	52'-10" (16.11 m)		
118'	6	6' - 2-1/2" (1.89 m)	16' (4.88 m)	26' (7.93 m)	36' (10.98 m)	38' (11.59 m) Track	46' (14.02 m)	53'-10" (16.41 m)		
120'	6	6' - 2-1/2" (1.89 m)	16' (4.88 m)	26' (7.93 m)	36' (10.98 m)	46' (14.02 m)	48' (14.63 m) Track	55'-10" (17.02 m)		
131'	7	6' - 2-1/2" (1.89 m)	16' (4.88 m)	26' (7.93 m)	36' (10.98 m)	46' (14.02 m)	48' (14.63 m) Track	56' (17.07 m)	60'-10" (18.55 m)	
132'	7	6' - 2-1/2" (1.89 m)	16' (4.88 m)	26' (7.93 m)	36' (10.98 m)	46' (14.02 m)	48' (14.63 m) Track	56' (17.07 m)	61'-10" (18.85 m)	
135'	7	6' - 2-1/2" (1.89 m)	16' (4.88 m)	26' (7.93 m)	36' (10.98 m)	46' (14.02 m)	48' (14.63 m) Track	56' (17.07 m)	62'-10" (19.16 m)	
139'	7	6' - 2-1/2" (1.89 m)	16' (4.88 m)	26' (7.93 m)	36' (10.98 m)	46' (14.02 m)	48' (14.63 m) Track	56' (17.07 m)	64'-10" (19.77 m)	
156'	8	6' - 2-1/2" (1.89 m)	16' (4.88 m)	26' (7.93 m)	36' (10.98 m)	46' (14.02 m)	48' (14.63 m) Track	56' (17.07 m)	66' (20.12 m)	73'-10" (25.10 m)

Capacities and Specifications

WARNING

Electrical controls and wiring should be installed by a qualified electrician. The motor disconnect switches and conductor cables should comply with the National Electrical Code and any local codes.

1. Use below *Table* to determine the horsepower required.

NOTE: *Sweep is not designed to start under full load.*

Horsepower Requirements and Shield Lengths

Bin Diameter	Track Drive Horsepower	Bushel/MT per Hour Horsepower			Back Shield Length Pivot to End	Plow Length Pivot to End Minimum	Plow Length Pivot to End Maximum
		12" - 3000 (77.5)	12" - 5000 (125) to 7000 (180)	16" - 8000 (205) to 10000 (255)			
27'	1/2	15	15	15	12'-4" (3.78 m)	13' - 4-1/8" (4.09 m)	14'-1" (4.32 m)
30'	1/2	15	15	15	13'-4" (4.09 m)	14' - 2-3/4" (4.37 m)	14' - 11-3/4" (4.57 m)
33'	1/2	15	15	15	15'-4" (4.68 m)	16' - 4-3/8" (4.98 m)	16' - 11-7/8" (5.18 m)
34'	1/2	15	15	15	15'-4" (4.68 m)	16' - 4-3/8" (4.98 m)	16' - 11-7/8" (5.18 m)
36'	1/2	15	15	15	16'-4" (4.98 m)	17' - 4-3/8" (5.29 m)	17' - 11-7/8" (5.49 m)
37'	1/2	15	15	15	17'-4" (5.29 m)	18' - 2-7/8" (5.57 m)	18' - 11-7/8" (5.79 m)
39'	1/2	15	15	15	18'-4" (5.59 m)	19'-3" (5.87 m)	20'-0" (6.10 m)
40'	1/2	15	15	15	18'-4" (5.59 m)	19'-3" (5.87 m)	20'-0" (6.10 m)
42'	1/2	15	15	15	19'-4" (5.90 m)	20'-3" (6.18 m)	21'-0" (6.40 m)
43'	1/2	15	15	15	19'-4" (5.90 m)	20'-3" (6.18 m)	21'-0" (6.40 m)
45'	1/2	15	15	15	20'-4" (6.20 m)	21' - 2-7/8" (6.48 m)	22'-0" (6.72 m)
48'	1/2	15	15	15	22'-4" (6.81 m)	23' - 4-1/8" (7.12 m)	24'-1" (7.34 m)
49'	1/2	15	15	15	22'-4" (6.81 m)	23' - 4-1/8" (7.12 m)	24'-1" (7.34 m)
51'	1/2	15	15	15	23'-4" (7.12 m)	24' - 2-3/4" (7.37 m)	24' - 11-3/4" (7.60 m)
54'	1/2	15	15	15	25'-4" (7.73 m)	26' - 4-3/8" (8.04 m)	26' - 11-7/8" (8.23 m)
55'	1/2	15	15	15	25'-4" (7.73 m)	26' - 4-3/8" (8.04 m)	26' - 11-7/8" (8.23 m)
57'	1/2	15	15	15	26'-4" (8.03 m)	27' - 4- 3/8" (8.33 m)	27' - 11-7/8" (8.51 m)
59'	1/2	15	15	20	27'-4" (8.34 m)	28' - 2-7/8" (8.59 m)	28' - 11-7/8" (8.82 m)
60'	1/2	15	15	20	28'-4" (8.64 m)	29'-3" (8.92 m)	30'-0" (9.15 m)
62'	1/2	15	15	20	29'-4" (8.95 m)	30'-3" (9.22 m)	31'-0" (9.45 m)
63'	1/2	15	15	20	29'-4" (8.95 m)	30'-3" (9.22 m)	31'-0" (9.45 m)
66'	1/2	15	15	20	31'-4" (9.56 m)	32' - 2-7/8" (9.81 m)	33'-0" (10.06 m)
68'	1/2	15	15	20	32'-4" (9.86 m)	33' - 4-1/8" (10.16 m)	34'-1" (10.39 m)
69'	1/2	15	15	20	32'-4" (9.86 m)	33' - 4-1/8" (10.16 m)	34'-1" (10.39 m)
72'	1/2	15	15	20	34'-4" (10.47 m)	35'-3" (10.75 m)	36'-0" (10.98 m)
75'	1/2	15	15	20	35'-4" (10.78 m)	36' - 4-3/8" (11.09 m)	36' - 11-7/8" (11.28 m)
78'	1/2	15	15	20	37'-4" (11.39 m)	38' - 2-7/8" (11.64 m)	38' - 11-7/8" (11.86 m)
80'	1/2	15	20	20	38'-4" (11.69 m)	39'-3" (11.97 m)	40'-0" (12.20 m)
81'	1/2	15	20	20	38'-4" (11.69 m)	39'-3" (11.97 m)	40'-0" (12.20 m)
84'	1/2	15	20	25	40'-4" (12.30 m)	41' - 2-7/8" (12.55 m)	42'-0" (12.80 m)
87'	1/2	15	20	25	40'-4" (12.30 m)	41' - 2-7/8" (12.55 m)	42'-0" (12.80 m)
88'	1/2	15	20	25	42'-4" (12.91 m)	43' - 4-1/8" (13.19 m)	44'-1" (13.44 m)
90'	1/2	15	20	25	43'-4" (13.22 m)	44' - 2-3/4" (13.47 m)	44' - 11-3/4" (13.69 m)
91'	1/2	15	20	25	43'-4" (13.22 m)	44' - 2-3/4" (13.47 m)	44' - 11-3/4" (13.69 m)
92'	1/2	15	20	25	44'-4" (13.52 m)	45'-3" (13.80 m)	46'-0" (14.02 m)
95'	1/2	15	20	25	45'-4" (13.83 m)	46' - 4-3/8" (14.13 m)	46' - 11-7/8" (14.30 m)
98'	1/2	15	20	25	47'-4" (14.44 m)	48' - 2-7/8" (14.68 m)	48' - 11-7/8" (14.91 m)
99'	1/2	15	20	25	47'-4" (14.44 m)	48' - 2-7/8" (14.68 m)	48' - 11-7/8" (14.91 m)
105'	1/2	15	25	30	50'-4" (15.35 m)	51' - 2-7/8" (15.60 m)	52'-0" (15.85 m)
113'	1/2	15	25	30	50'-4" (15.35 m)	55'-3" (16.84 m)	56'-0" (17.07 m)
115'	1/2	15	25	30	55'-4" (16.86 m)	56' - 4-3/8" (17.16 m)	56' - 11-7/8" (17.38 m)
118'	1/2	15	25	30	57'-4" (17.49 m)	58' - 2-7/8" (17.73 m)	58' - 11-7/8" (17.96 m)
120'	1/2	15	25	30	58'-4" (17.79 m)	59'-3" (18.06 m)	60'-0" (18.29 m)
131'	1/2	15	25	30	63'-4" (19.31 m)	64' - 2-3/4" (19.56 m)	64' - 11-3/4" (19.79 m)
132'	1/2	15	25	30	64'-4" (19.62 m)	65'-3" (19.89 m)	66'-0" (20.12 m)
135'	1/2	15	25	30	65'-4" (19.92 m)	66' - 4-3/8" (20.23 m)	66' - 11-7/8" (20.42 m)
139'	1/2	15	25	30	67'-4" (20.53 m)	68'-2" 7/8" (20.81 m)	68'-11 7/8" (21.04 m)
156'	1/2	15	25	40	76'-4" (23.27 m)	77' - 4-3/8" (20.23 m)	77' - 11-7/8" (20.42 m)

Due to continual improvements, GSI designs and specifications are subject to change without notice.

NOTE: *The horsepower recommendations are for augering reasonably dry grain. High moisture grain (greater than 15%) will require greater power for maximum capacity.*

NOTE: *Sweep carrier wheels require plates or track over aeration flooring for travel. Carrier wheel track is not supplied with the sweep unit. Contact your installer or flooring provider for possible sources and details.*

2. The motor starting controls must be located outside the bin. They must NEVER be installed on the X-Series Sweep auger inside the bin.
3. Disconnect and lock out the power before re-setting motor overloads.
4. Disconnect and lock out the power before entering the bin.
5. Disconnect and lock out the power before servicing the equipment.
6. Position the reset and motor starting controls so that the operators have full view of the equipment.

There should ALWAYS be two (2) people in the work area.

7. Make sure electric motors are grounded.

A main power disconnect switch capable of being locked only in the OFF position should be used. It should be locked in the OFF position whenever work is being done on the X-Series Sweep.

Torque values to be used when tightening the bolts on the X-Series Sweep

It takes more force to tighten a 3/4"-10 bolt than to tighten a 1/2"-13 bolt because of its larger diameter. It also takes more force to tighten a grade 8 bolt than it does to tighten a grade 5 bolt because of the greater material strength. A bolt that is waxed or otherwise lubricated requires much less force to tighten. If the same amount of force is used with a lubricated bolt as with a non-lubricated bolt, the lubricated bolt often will break.

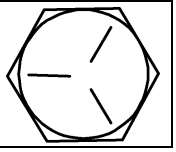
Suggested Initial Tightening Torque

Size	Grade #5 Assembly Torque		Grade #8 Assembly Torque	
	Dry	Lubricated	Dry	Lubricated
1/4"-20	8 ft. lbs.	75 in lbs.	12 ft. lbs.	9 ft. lbs.
1/4"-28	10 ft. lbs.	86 in lbs.	14 ft. lbs.	10 ft. lbs.
5/16"-18	17 ft. lbs.	13 ft. lbs.	25 ft. lbs.	18 ft. lbs.
5/16"-24	19 ft. lbs.	14 ft. lbs.	25 ft. lbs.	20 ft. lbs.
3/8"-16	30 ft. lbs.	23 ft. lbs.	45 ft. lbs.	35 ft. lbs.
3/8"-24	35 ft. lbs.	25 ft. lbs.	50 ft. lbs.	35 ft. lbs.
1/2"-13	75 ft. lbs.	55 ft. lbs.	110 ft. lbs.	80 ft. lbs.
1/2"-20	90 ft. lbs.	65 ft. lbs.	120 ft. lbs.	90 ft. lbs.
5/8"-11	150 ft. lbs.	110 ft. lbs.	220 ft. lbs.	170 ft. lbs.
5/8"-18	180 ft. lbs.	130 ft. lbs.	240 ft. lbs.	180 ft. lbs.
3/4"-10	260 ft. lbs.	200 ft. lbs.	380 ft. lbs.	280 ft. lbs.
3/4"-16	300 ft. lbs.	220 ft. lbs.	420 ft. lbs.	320 ft. lbs.
7/8"-9	320 ft. lbs.	320 ft. lbs.	600 ft. lbs.	460 ft. lbs.
1"-8	640 ft. lbs.	480 ft. lbs.	900 ft. lbs.	680 ft. lbs.
1-1/8" - 7	800 ft. lbs.	600 ft. lbs.	1280 ft. lbs.	960 ft. lbs.
1-1/4" - 7	1120 ft. lbs.	840 ft. lbs.	1820 ft. lbs.	1360 ft. lbs.
1-3/8" - 6	1460 ft. lbs.	1100 ft. lbs.	2380 ft. lbs.	1780 ft. lbs.
1-1/2" - 6	1910 ft. lbs.	1460 ft. lbs.	3160 ft. lbs.	2360 ft. lbs.

Diameter	Proof Load	Yield Strength	Tensile Strength	Proof Load	Yield Strength	Tensile Strength
1/4" to 3/4"	85000	92000	120000	120000	130000	150000
3/4" to 1-1/2"	74000	81000	105000			
Medium Carbon Stl, Quenched and Tempered				Carbon Alloy Stl, Quenched and Tempered		

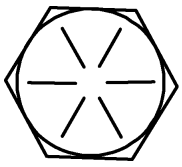
Grade 5 Bolts

Grade 5 bolts are designated by three (3) slash marks on the head.



Grade 8 Bolts

Grade 8 bolts are designated by six (6) slash marks evenly spaced on the head of the bolt.



CAUTION

Under no condition shall any other fasteners be substituted for those supplied by the manufacturer.

Installing X-Series Posi-Drive Track

NOTE: *This procedure is only a temporary assembly and installation of the cross brace and collector ring shield and is required to correctly install the track. It will be removed and disassembled after the track is installed.*

1. Install center well.
2. Temporarily install the collector ring shield (F) to the bottom of the cross brace (A) using eight (8) hex bolts (E), eight (8) flat washers (C) and eight (8) hex nuts (B). *(See Figure 5A.)*

   NOTE: *Do not fully tighten hex bolts; collector ring shield will be removed after track installation.*
3. Slide lower conduit tubes (D) into collector ring shield (F). Temporarily secure each conduit tube with adhesive tape or equivalent to help prevent them from sliding out during installation.

   NOTE: *Two (2) different tubes are shipped with the sweep. Use the tubes that best fit the center well.*
4. Install part # PDS-236 track pivot tool (G) to the top of the cross brace (A) using four (4) flange bolts (H) and nuts (I).

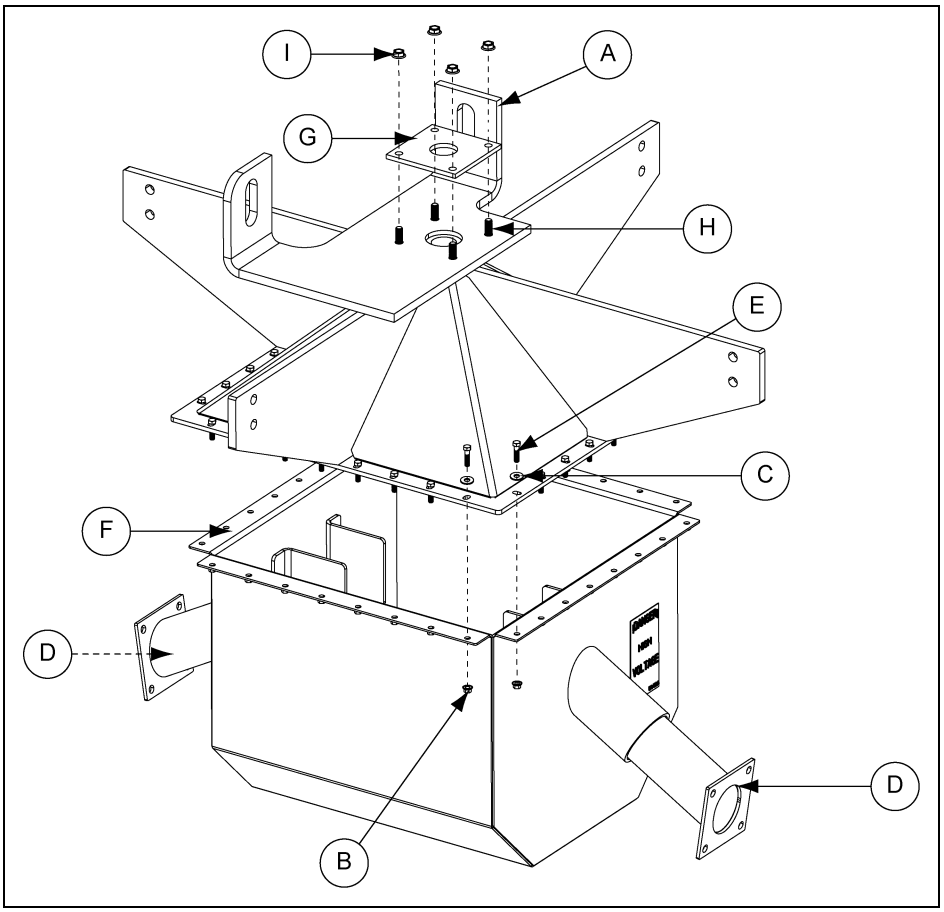


Figure 5A

Ref #	Description
A	Cross Brace
B	1/4"-20 Hex Nut
C	1/4" Flat Washer
D	Lower Conduit Tube
E	1/4"-20 x 1" Hex Bolt

Ref #	Description
F	Collector Ring Shield
G	Track Pivot Tool
H	3/8"-16 x 1-1/4" Flange Bolt
I	3/8"-16 Flange Nut

5. Install the cross brace assembly (J) into center well (K). Temporarily attach cross brace flanges to center well using hex bolts (L), flat washers (M) and flange nuts (N). *(See Figure 5B.)*

   NOTE: *Do not fully tighten hex bolts; cross brace assembly will be removed after track installation.*

6. Using a tape measure with an anchor loop, bolt the tape measure (I) to the track pivot tool (G).

   NOTE: *Locate where the absolute zero is on the tape measure and record any length that may need to be subtracted from the track radius.*

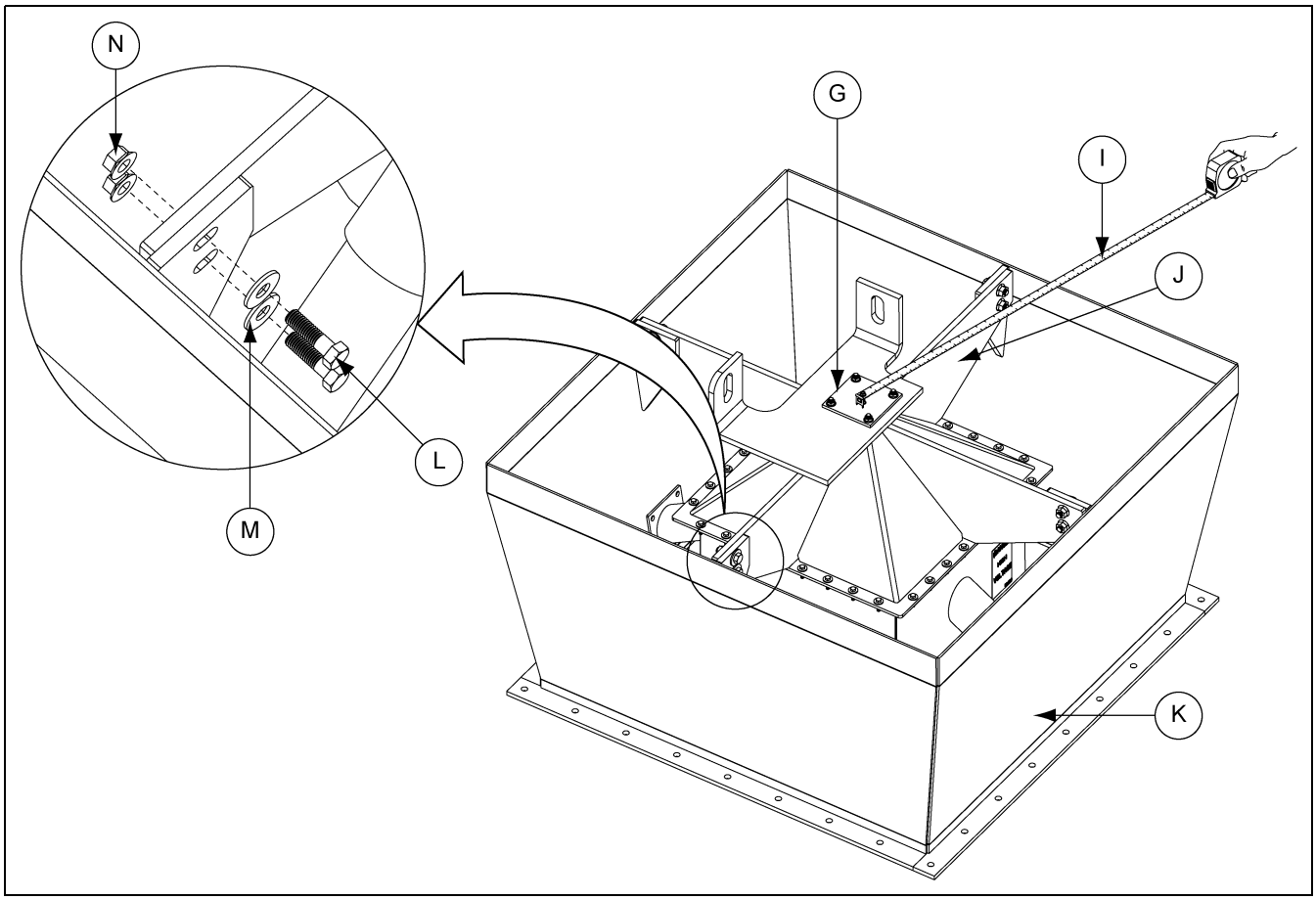


Figure 5B

Ref #	Description
G	Track Pivot Tool
I	Tape Measure
J	Cross Brace Assembly
K	Center Well

Ref #	Description
L	1/2"-13 x 1-3/4" Hex Bolt
M	1/2" Flat Washer
N	1/2"-13 Flange Nut

7. Determine the correct radius dimensions for the application. Measure the desired radius from center, marking the bin floor in 2' intervals. *(See Table on Page 18.)*

   NOTE: *When taking measurements, ensure the tape measure is pulled tight and in a straight line from the center with no interference before marking the bin floor.*

8. Place each section of track in position around the center well, aligning the inside track edges (P) with the marks in the bin floor. Using the tape measure, ensure each track section has the proper measurement. *(See Figure 5C.)*

   NOTE: *One section of track will overlap another and will need to be cut to the proper length before anchoring. This will be done near the end of the installation.*

9. Install the pitch tool (Q) at each track seam (O) to ensure proper track pitch.

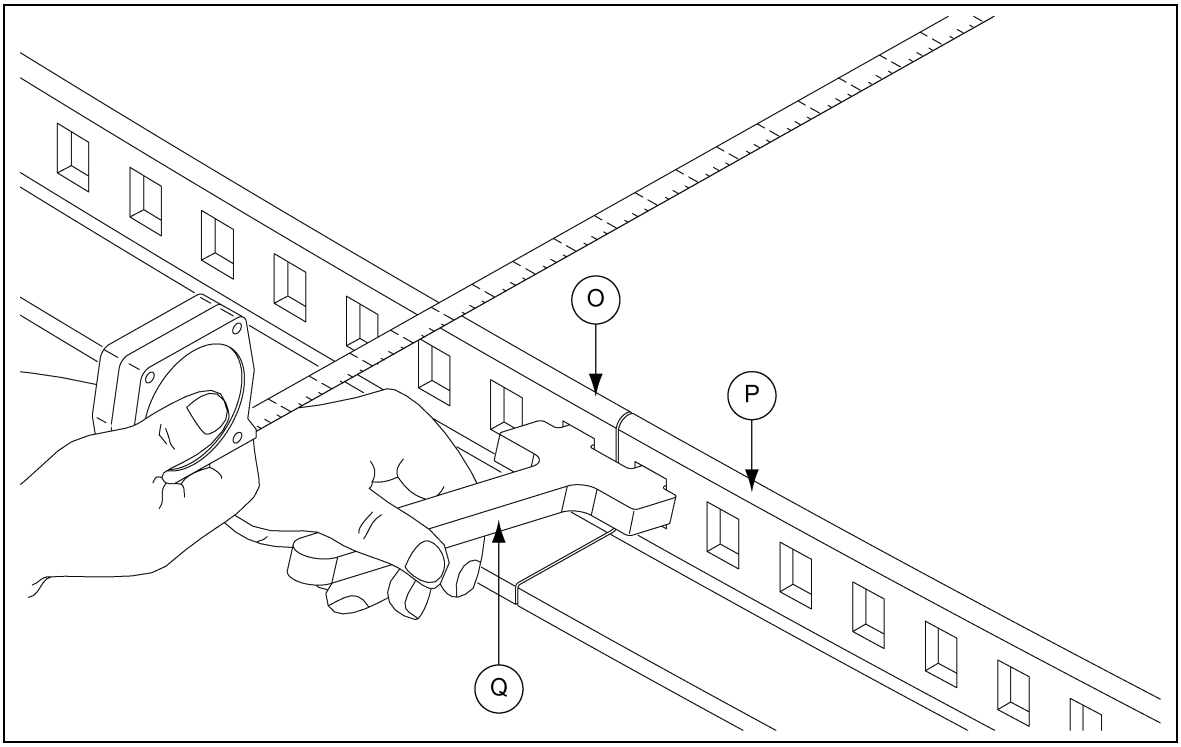


Figure 5C

Ref #	Description
O	Track Seam
P	Inside Track Edge
Q	Pitch Tool

10. Tack weld each track seam, excluding the overlapping track section.

    NOTE: *When bolting track in place, use measuring tape to ensure correct dimension of inside edge of track at each anchor location. Use pitch tool to ensure the correct spacing.*

11. Bolt each section of track in place with mechanical concrete anchors, except for the last six (6) sections of track (three (3) sections on each side of the cut seam) to allow movement for adjusting the cut track. *(See Table below.)*

Part #	Description	Qty. per Assembly	Concrete Anchors per Assembly
PDS-601	X-Series Track Section - 8' Radius	6	24
PDS-273	X-Series Track Section - 18' Radius	12	48
PDS-272	X-Series Track Section - 28' Radius	19	76
PDS-270	X-Series Track Section - 38' Radius	25	100
PDS-271	X-Series Track Section - 48' Radius	32	128

NOTE: *Reference mark should be centered between two (2) square openings to maintain the proper track alignment.*

12. Install the track pitch tool into the squares of the overlapping track sections. Place a reference mark (S) where tracks overlap and cut the last section of track (R). *(See Figure 5D.)*

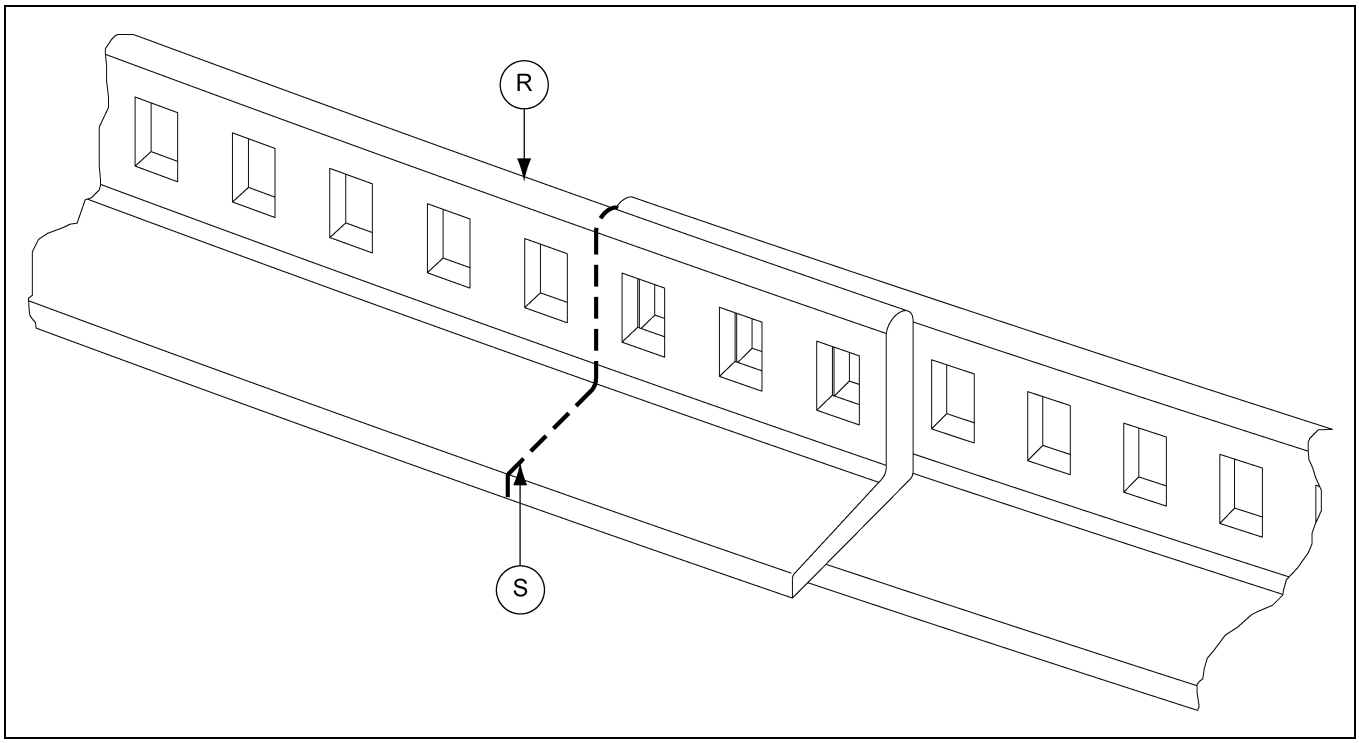


Figure 5D

Ref #	Description
R	Last Section of Track
S	Reference Mark

NOTICE ***Before fastening track sections in place, always use the tape measure to ensure correct dimension with the inside edge track sections at each anchor location.***

13. Align the remaining track sections with each mark and anchor the track sections in place.

14. The track should be installed level. Add shims (X) as needed between the track (T) and the aeration tunnel (W) locations to achieve the required levelness. *(See Figure 5E.)*

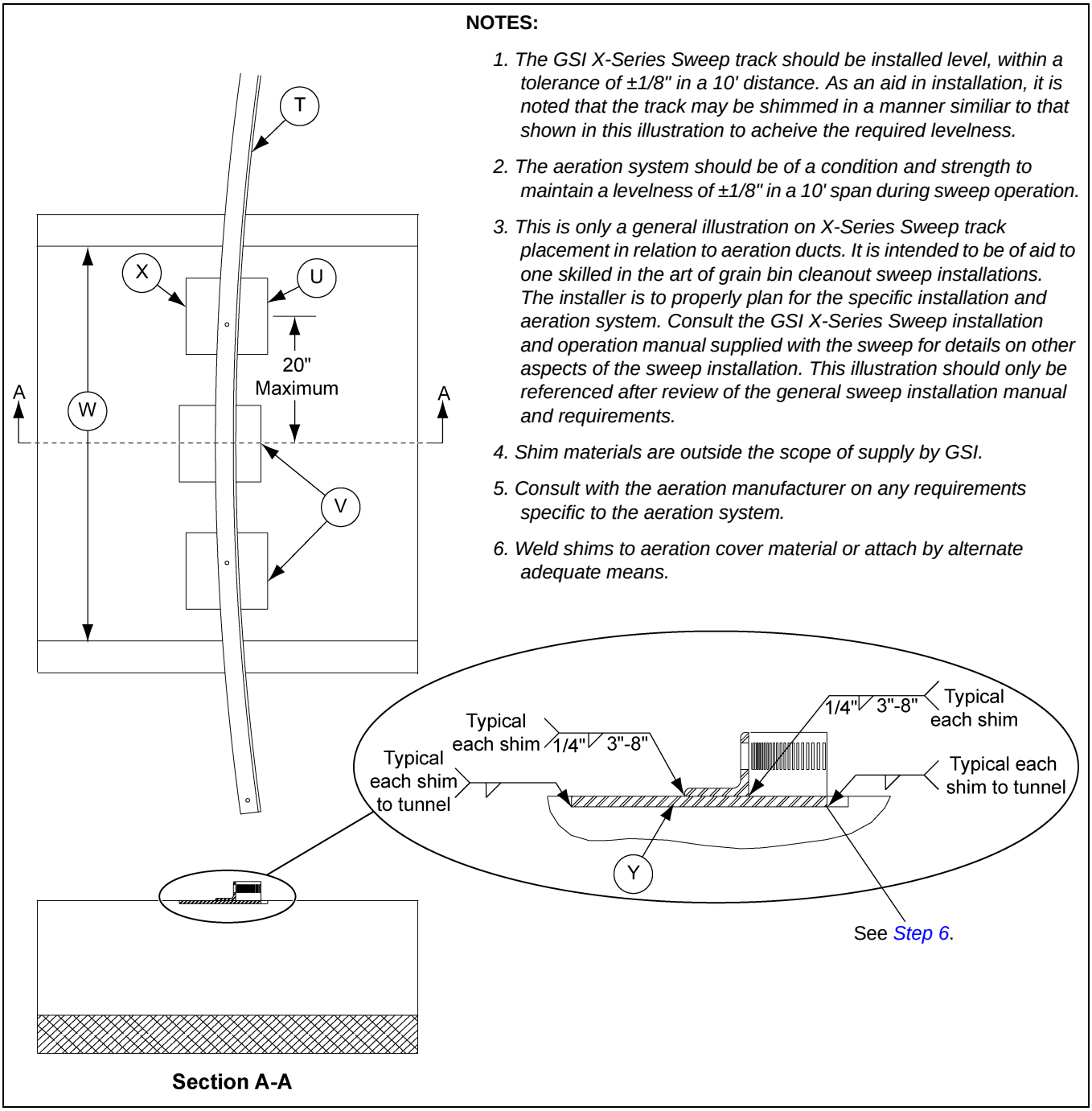


Figure 5E *Aeration Tunnel Track Support Information*

Ref #	Description
T	Track Section
U	Shim thickness as needed
V	Equal Spacing

Ref #	Description
W	Aeration Tunnel Span
X	12" x 12" Shim
Y	Weld multiple shims together as needed

15. Cut off any bolt ends that protrude above the nuts on the anchor bolts.
16. Remove track pivot tool from cross brace assembly.
17. Remove tape from lower conduit tubes and let them slide against the center well sides.
18. To assist with the permanent assembly, trace or scribe an outline around the square plate of the lower conduit tubes.
19. Remove the cross brace and collector ring shield assembly from the center well.

Installing the Collector Ring

CAUTION

ALWAYS follow local and national codes, using a certified electrician when working with electrical components.

1. Guide electrical wires (H) from top of cross brace assembly (A), through the cross brace pivot shaft (G) and secure cross brace assembly (A) onto the collector ring (F) with hex bolts (D) and hex nuts (B). Tighten to specification. *(See Figure 6A.)*
2. Continue to guide the electrical wires (H) from the collector ring (F) through each conduit elbow (C) and attach the conduit elbow (C) to the collector ring (F).
3. Guide the electrical wires (H) through the lower flex conduit (E) and attach to the conduit elbows (C).

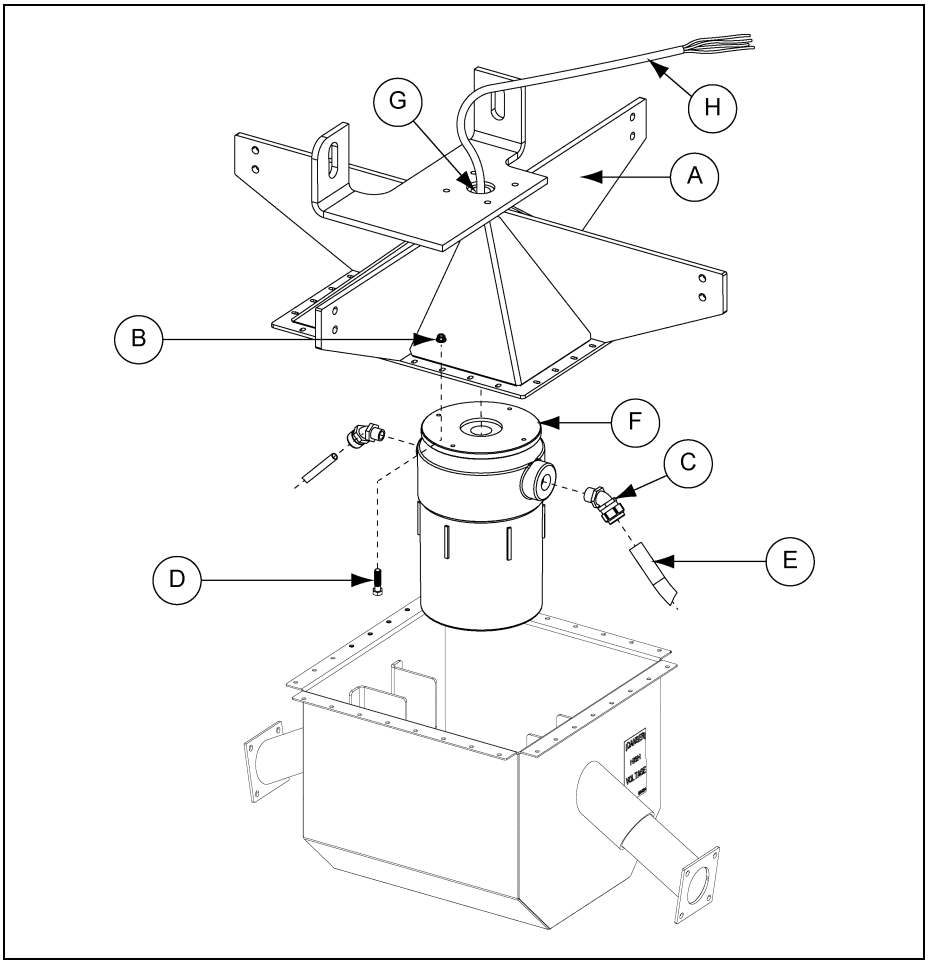


Figure 6A

Ref #	Description
A	Cross Brace Assembly
B	1/4"-20 Hex Nut
C	Conduit Elbow
D	1/4"-20 x 1" Hex Bolt

Ref #	Description
E	Lower Flex Conduit
F	Collector Ring
G	Cross Brace Pivot Shaft
H	Electrical Wires

Installing the Collector Ring Shield

1. Guide the lower flex conduit (C) through the collector ring shield (D). *(See Figure 6B.)*
2. Install the cross brace and collector ring assembly (F) to the collector ring shield (D) and secure with hex bolts (E), flat washers (B) and hex nuts (A). Tighten to specifications. *(See Table on Page 21.)*
3. Install the pivot tube (H) to the top of the cross brace and collector ring assembly (F) and secure with hex bolts (G) and nuts (I). Tighten to specifications. *(See Table on Page 21.)*

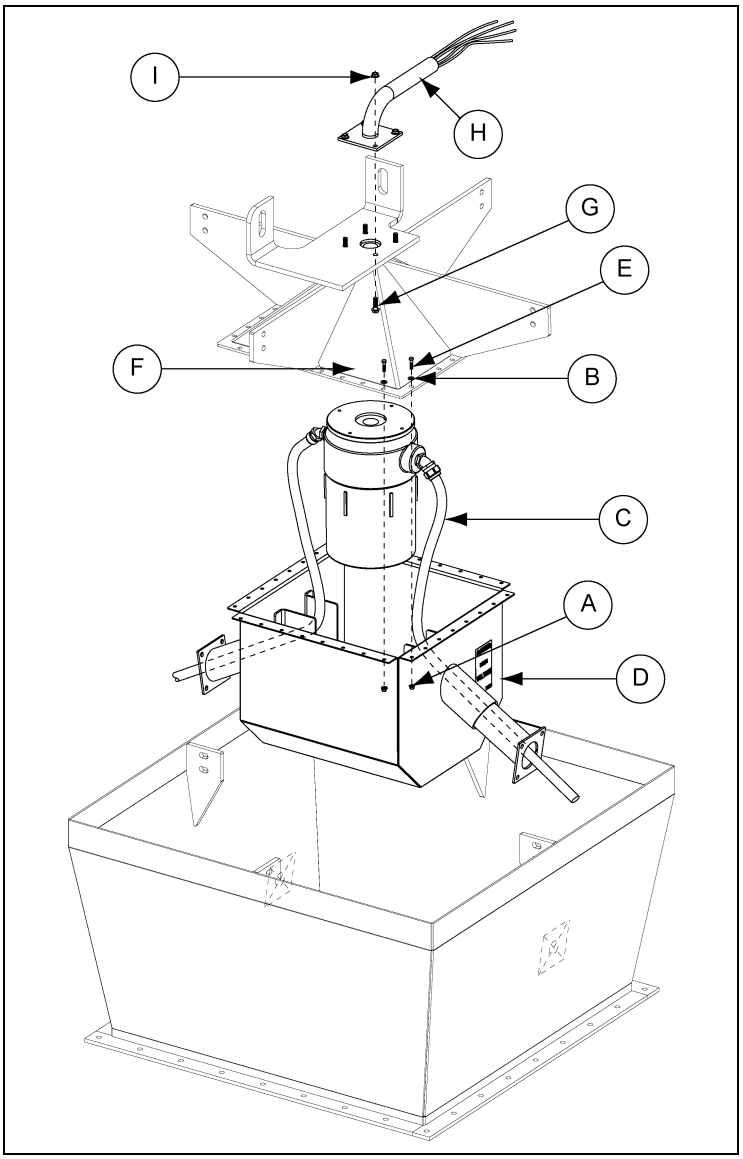


Figure 6B

Ref #	Description
A	1/4"-20 Hex Nut
B	1/4" Flat Washer
C	Lower Flex Conduit
D	Collector Ring Shield
E	1/4"-20 x 1" Hex Bolt

Ref #	Description
F	Cross Brace and Collector Ring Assembly
G	3/8"-16 x 1-1/4" Hex Bolt
H	Pivot Tube
I	3/8"-16 Flange Nut

Installing the Center Well

1. Locate the traced outlines (A) that were created on the inside wall of the center well (B) during the track installation. *(See Figure 6C.)*

   NOTE: *The traced outlines were made during the temporary assembly of the cross brace and collector ring shield of the track installation procedure.*

2. Connect the corners of the traced outline (A), creating an “X”. This will represent the center of the traced outline that will need to be drilled.

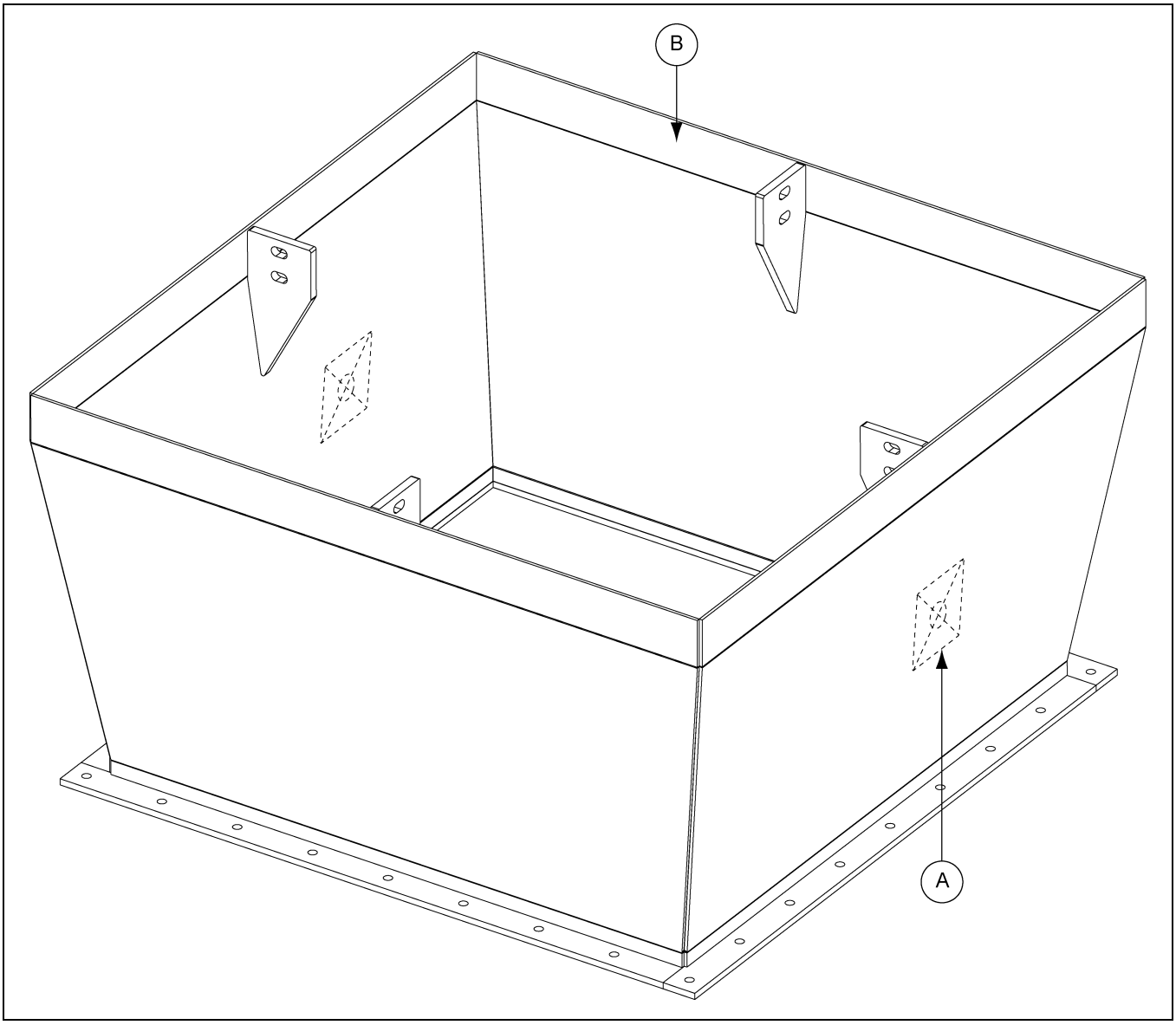


Figure 6C

Ref #	Description
A	Traced Outline
B	Center Well

3. Determine the correct hole size needed for each lower flex conduit (D) and drill hole (C) from the center of the traced outline (A). *(See Figure 6D.)*

   NOTE: *Outside diameter of each lower flex conduit tube will determine the correct size of hole needed.*

4. Apply some adhesive tape (F) to the lower flex conduit tubes (E) to keep them from sliding out of place.
5. Guide the lower flex conduit (D) through the drilled hole (C) of the center well (B).
6. Slide the lower flex conduit tubes (E) into the collector ring shield and secure with adhesive tape (F).
7. Install the cross brace and collector ring shield assembly (G) into the center well (B) and secure with hex bolts (J), flat washers (I) and flange nuts (H). *(See Table on Page 21.)*

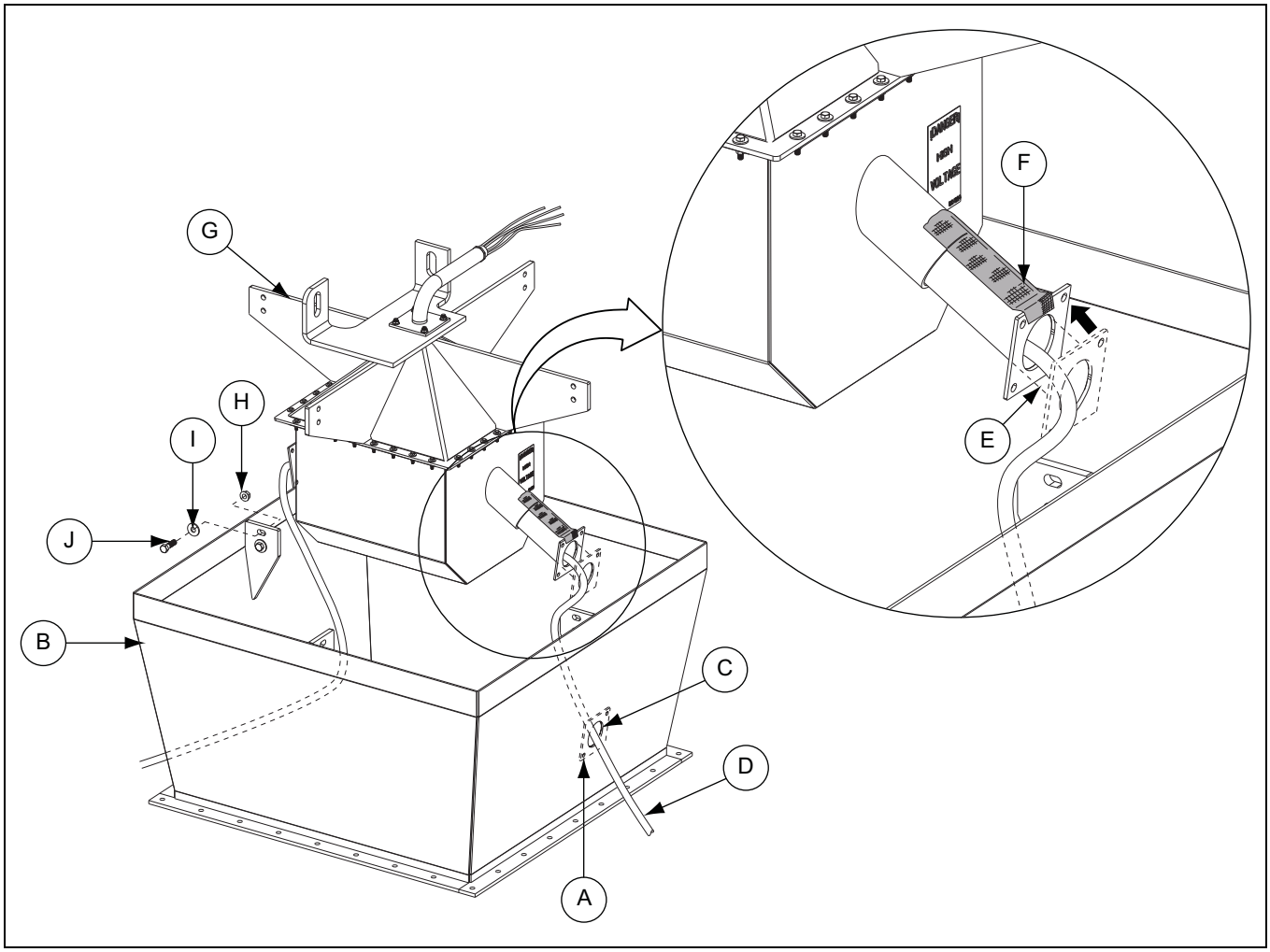


Figure 6D

Ref #	Description
A	Traced Outline
B	Center Well
C	Drilled Hole
D	Lower Flex Conduit
E	Lower Flex Conduit Tube

Ref #	Description
F	Adhesive Tape
G	Cross Brace and Collector Ring Shield Assembly
H	1/2"-13 Flange Nut
I	1/2" Flat Washer
J	1/2"-13 x 1-3/4" Hex Bolt

8. Remove all adhesive tape, allowing the lower flex conduit tubes (E) to slide and rest against the walls of the center well (B). *(See Figure 6E.)*

9. Weld each lower flex conduit tubes (E) to the sides of the center well (B).

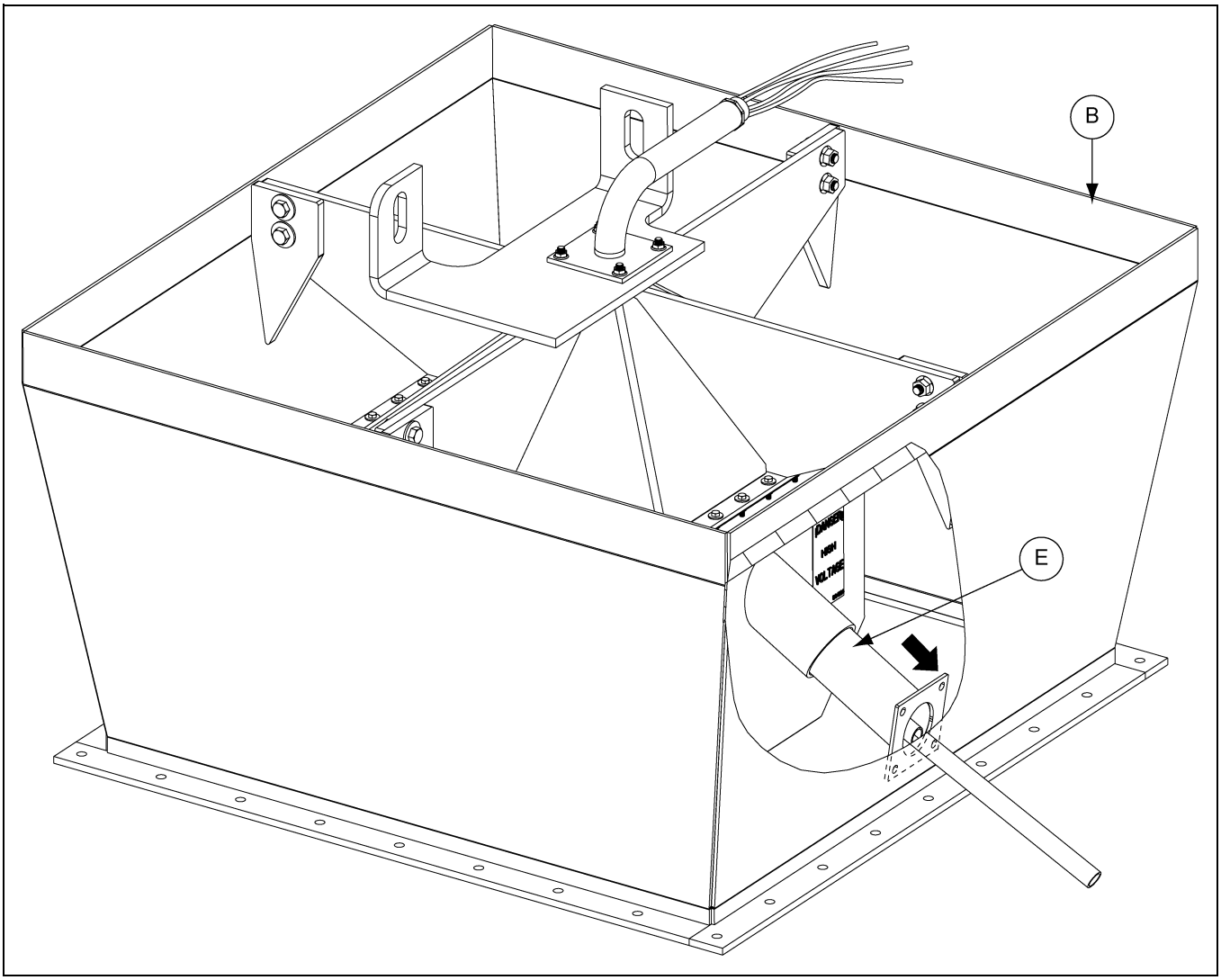


Figure 6E

Ref #	Description
B	Center Well
E	Lower Flex Conduit Tube

Sweep Shield Sections Reference Chart

The sweep shield has been broken down into four (4) different section types: the head, intermediate, tail and extension sections.

NOTE: *Use below table, to determine the correct order and back shield/auger combination. Then follow tables on Page 34 to identify the correct part number for each individual sweep section.*

Bin Diameter	# of Sections	Back Shield and Auger Combinations							
27'	2	M/1	D/3						
30'	2	M/1	E/4						
33'	2	M/1	G/6						
34'	2	M/1	G/6						
36'	2	M/1	H/7						
37'	2	M/1	I/8						
39'	2	M/1	J/9						
40'	2	M/1	J/9						
42'	2	M/1	K/2						
43'	2	M/1	K/2						
45'	3	M/1	L/10						
48'	3	A/1	C/2	D/3					
49'	3	A/1	C/2	D/3					
51'	3	A/1	C/2	E/4					
54'	3	A/1	C/2	G/6					
55'	3	A/1	C/2	G/6					
57'	3	A/1	C/2	H/7					
59'	3	A/1	C/2	I/8					
60'	3	A/1	C/2	J/9					
62'	3	A/1	C/2	K/2					
63'	3	A/1	C/2	K/2					
66'	4	A/1	C/2	L/10					
68'	4	A/1	C/2	B/2	D/3				
69'	4	A/1	C/2	B/2	D/3				
72'	4	A/1	B/2	C/2	F/5				
75'	4	A/1	B/2	C/2	G/6				
78'	4	A/1	B/2	C/2	I/8				
80'	4	A/1	B/2	C/2	J/9				
81'	4	A/1	B/2	C/2	J/9				
84'	4	A/1	B/2	C/2	L/10				
87'	5	A/1	B/2	C/2	L/10				
88'	5	A/1	B/2	C/2	B/2	D/3			
90'	5	A/1	B/2	B/2	C/2	E/4			
91'	5	A/1	B/2	B/2	C/2	E/4			
92'	5	A/1	B/2	B/2	C/2	F/5			
95'	5	A/1	B/2	B/2	C/2	G/6			
98'	5	A/1	B/2	B/2	C/2	I/8			
99'	5	A/1	B/2	B/2	C/2	I/8			
105'	5	A/1	B/2	B/2	C/2	L/10			
113'	6	A/1	B/2	B/2	C/2	B/2	F/5		
115'	6	A/1	B/2	B/2	C/2	B/2	G/6		
118'	6	A/1	B/2	B/2	C/2	B/2	I/8		
120'	6	A/1	B/2	B/2	B/2	C/2	J/9		
131'	7	A/1	B/2	B/2	B/2	C/2	B/2	E/4	
132'	7	A/1	B/2	B/2	B/2	C/2	B/2	F/5	
135'	7	A/1	B/2	B/2	B/2	C/2	B/2	G/6	
139'	7	A/1	B/2	B/2	B/2	C/2	B/2	I/8	
156'	8	A/1	B/2	B/2	B/2	C/2	B/2	B/2	H/7

NOTE: *When the correct back shield and auger combination has been determined from table on Page 33, use below tables to identify the correct size and part number for each individual sweep section.*

Back Shield Part Numbers			
Reference	Length	Part #	
		12" Back Shield	16" Back Shield
A	10'	PDS-333G	PDS-336G
B	10'	PDS-334G	PDS-337G
C	10'	PDS-335G	PDS-338G
D	3'	PDS-442G	PDS-435G
E	4'	PDS-447G	PDS-440G
F	5'	PDS-445G	PDS-438G
G	6'	PDS-443G	PDS-436G
H	7'	PDS-509G	PDS-510G
I	8'	PDS-446G	PDS-439G
J	9'	PDS-444G	PDS-437G
K	10'	PDS-621G	PDS-605G
L	11'	PDS-351G	PDS-441G
M	10'	PDS-617G	PDS-603G

Auger Part Numbers				
Reference	Length		Part #	
	12" Auger	16" Auger	12" Auger	16" Auger
1	116-3/4"	115-5/8"	GC06613	GC06761
2	118"	117"	GC06627	GC06766
3	34"	33"	PDS-331	PDS-332
4	46"	45"	GC06468	GC06767
5	58"	57"	GC06622	GC06762
6	70"	69"	GC06623	GC06764
7	82"	81"	GC06624	GC06768
8	94"	93"	GC06582	GC06638
9	106"	105"	GC06626	GC06763
10	130"	129"	GC06467	GC06644

Assemble Caster Wheel to Caster Wheel Mount

1. Assemble caster wheel (C) to caster wheel mount (B) using hex bolts (E) and flange nuts (D). *(See Figure 7A.)*
2. Install hex nut (A) to caster wheel mount (B).

   NOTE: *16" Sweep - Install hex nut (A) so that there is approximately 1" of threads between the nut and the caster wheel mount base.*

   12" Sweep - Install hex nut (A) so that there is approximately 1-1/2" of threads between the nut and the caster wheel mount base.

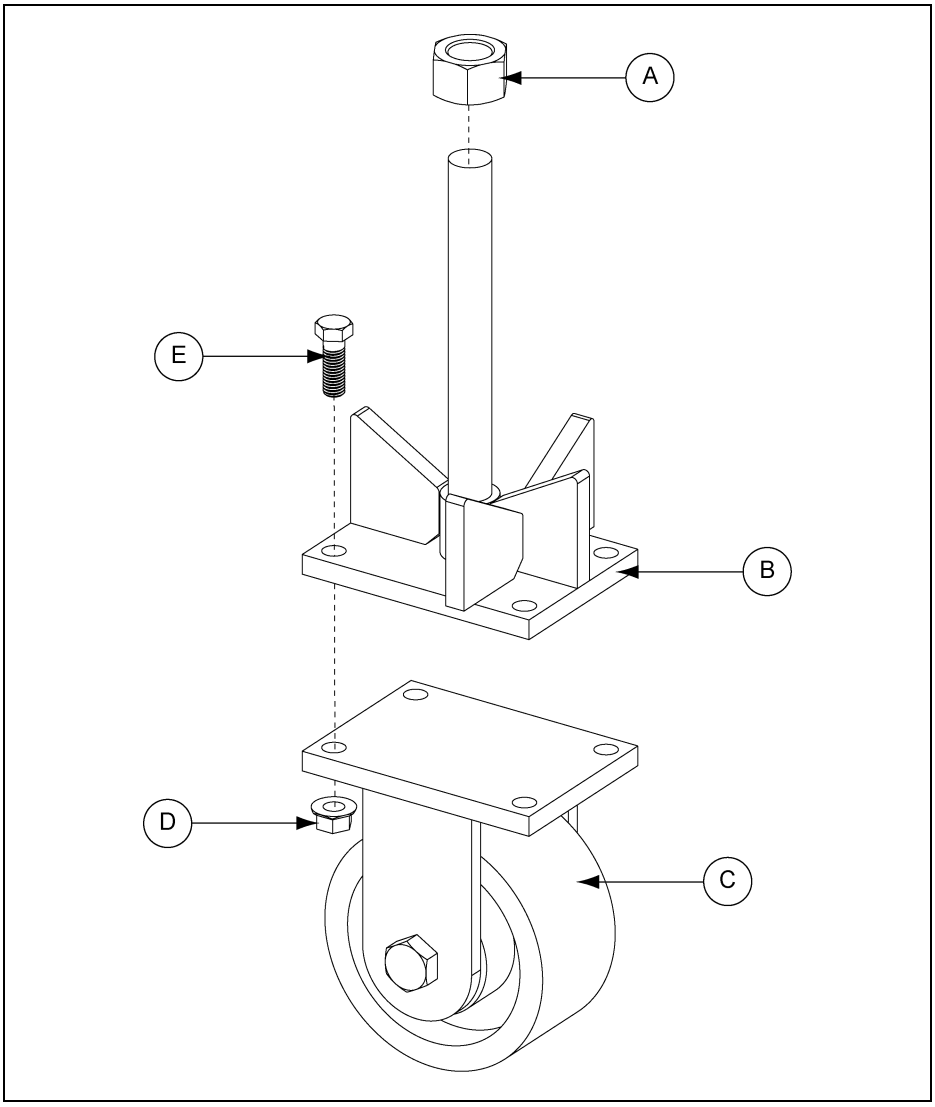


Figure 7A

Ref #	Description
A	1"-5 Hex Nut
B	Caster Wheel Mount
C	Caster Wheel

Ref #	Description
D	1/2"-13 Flange Nut
E	1/2"-13 x 1-1/2" Hex Bolt

Installing the Caster Wheel to Sweep Shield

1. Install all caster wheel assemblies (C) to all sweep shields (B). *(See Figure 7B.)*
2. Install hex nut (A) to caster wheel assembly (C).

NOTE: *Tighten hex nut (A) finger tight. After the sweep is fully assembled it is necessary to adjust and level the sweep before operating.*

NOTE: *All wheels need wheel tracks to be shimmed level with the floor across the aeration tunnels. Wheel tracks not provided.*

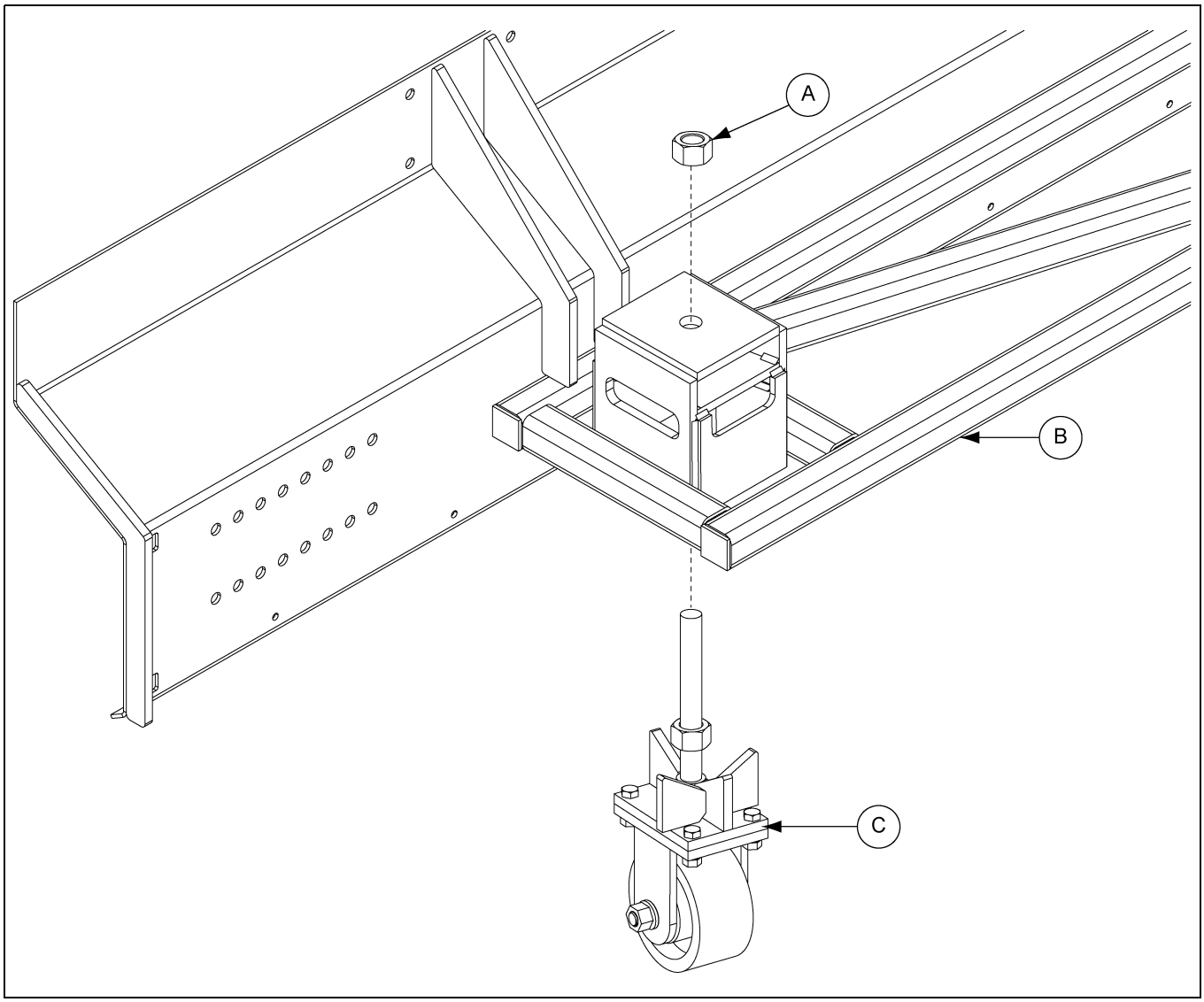


Figure 7B

Ref #	Description
A	1"-5 Hex Nut
B	Sweep Shield
C	Caster Wheel Assembly

Installing the Sweep Head Section

1. Install sweep shield head section (J) to pivot plate (I) using hex bolts (G and H), flat washer (F), bracket (E), spacer (D), lock washer (A), lock nut (C) and hex nut (B). *(See Figure 7C.)*

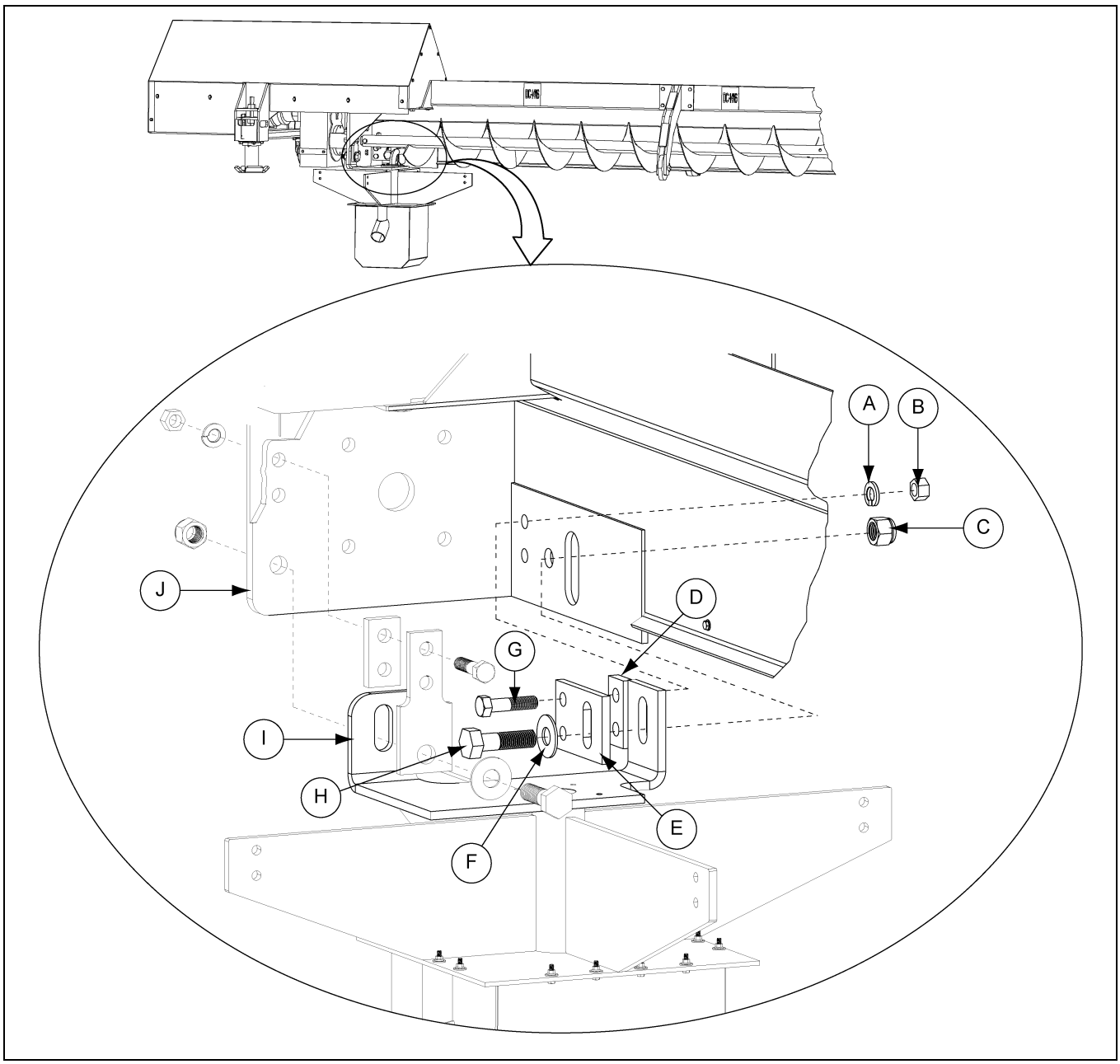


Figure 7C

Ref #	Description
A	3/4" Lock Washer
B	3/4"-10 Hex Nut
C	1"-8 Lock Nut
D	Spacer
E	Bracket

Ref #	Description
F	1" Flat Washer
G	3/4"-10 x 3-1/2" Hex Bolt
H	1"-8 x 3-1/2" Hex Bolt
I	Pivot Plate
J	Sweep Shield Head Section

2. Install hex bolts (K and M), flat washer (L), bracket (N), spacer (O), lock washer (Q), lock nut (P) and hex nut (R). *(See Figure 7D.)*

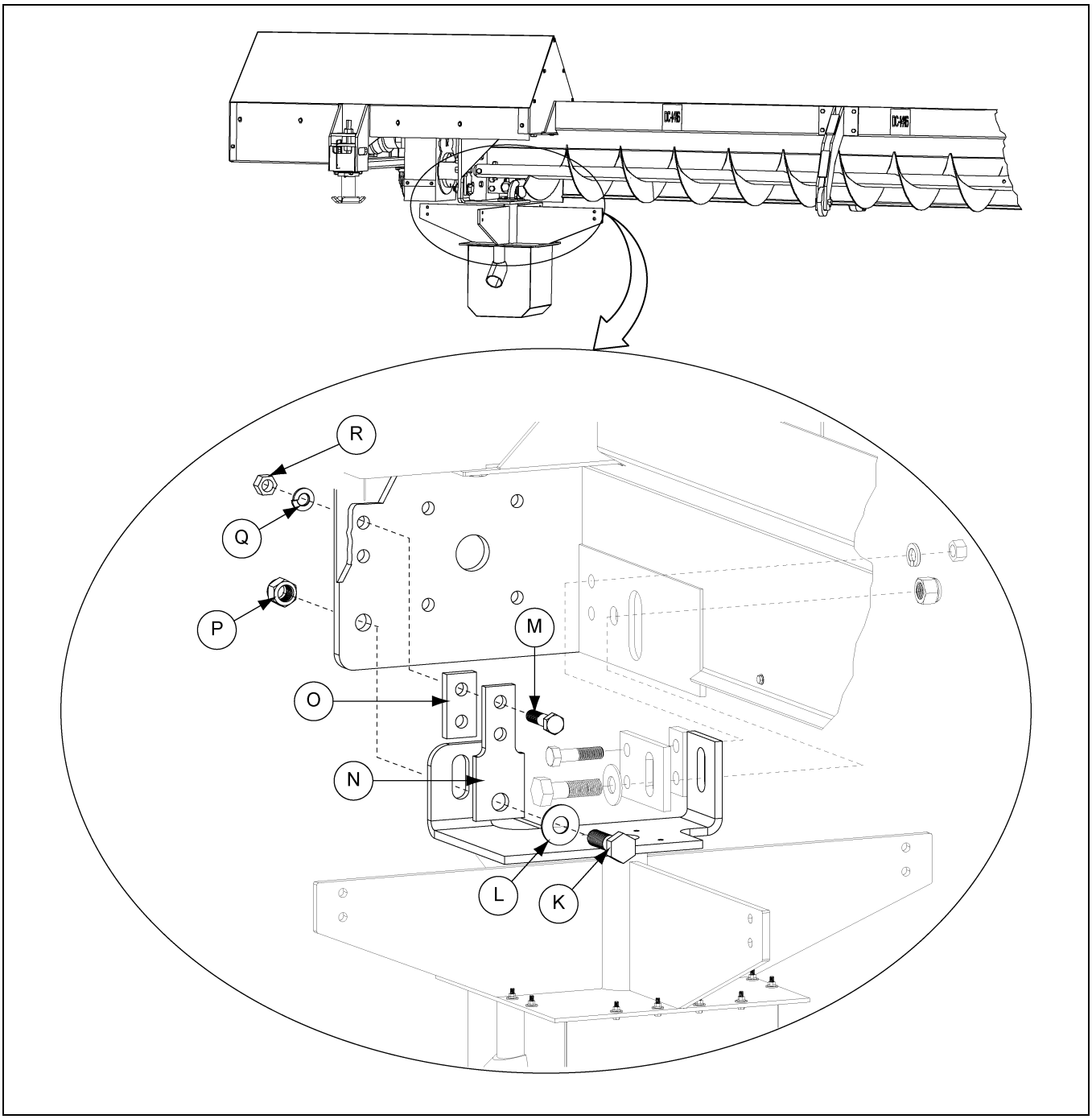


Figure 7D

Ref #	Description
K	1"-8 x 3-1/2" Hex Bolt
L	1" Flat Washer
M	3/4"-10 x 3-1/2" Hex Bolt
N	Bracket

Ref #	Description
O	Spacer
P	1"-8 Lock Nut
Q	3/4" Lock Washer
R	3/4"-10 Hex Nut

Assembling the Intermediate Sweep Shields

1. Attach sweep shields (B) together using hex bolts (A) and flange nuts (C). *(See Figure 7E.)*

   NOTE: *12" Shield connection shown. 16" Shield will have two (2) additional bolt locations.*

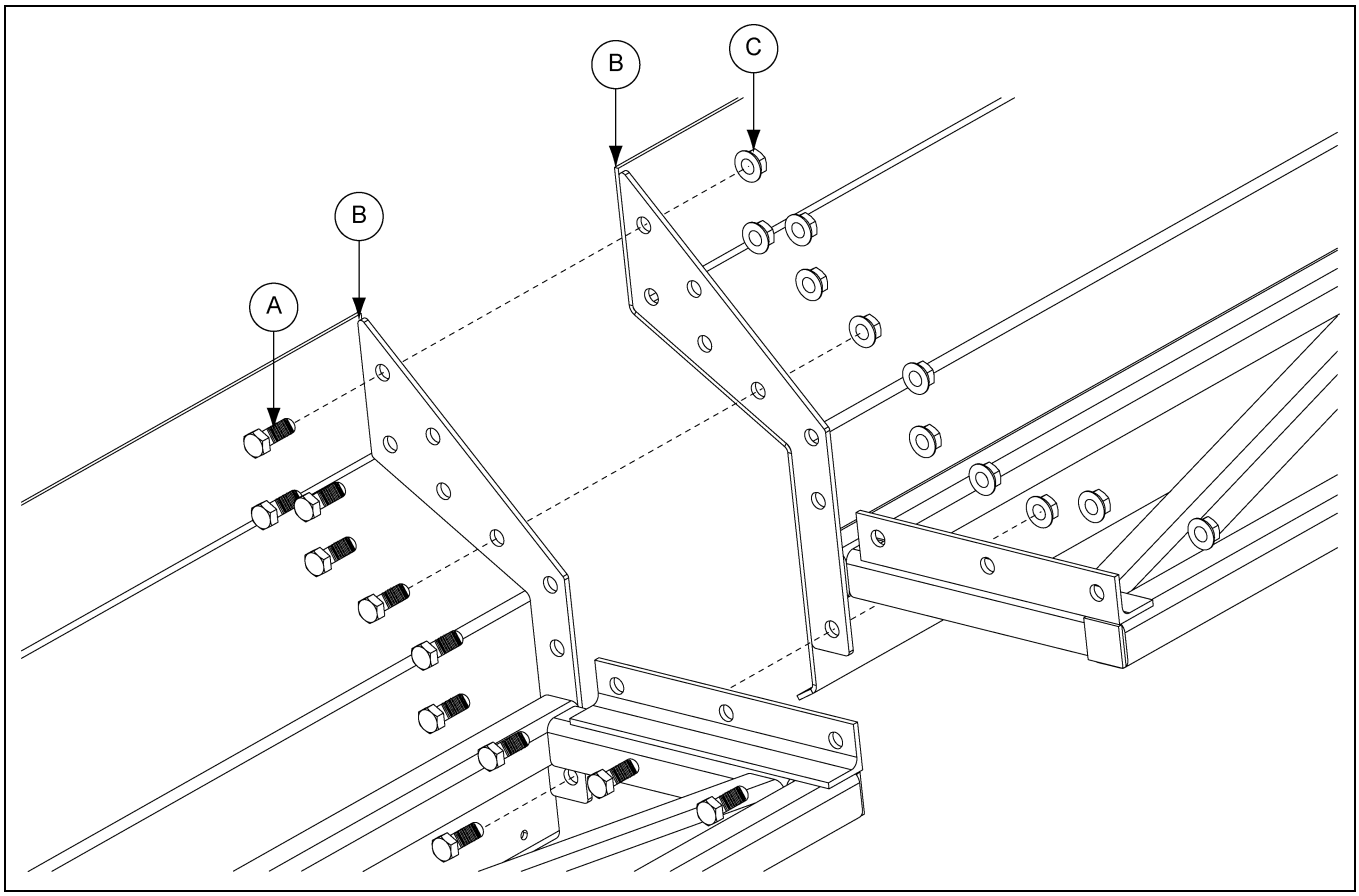


Figure 7E *12" Sweep Shield Connection*

Ref #	Description
A	5/8"-11 x 1-3/4" Hex Bolt
B	Sweep Shield
C	5/8"-11 Flange Nut

Installing the Plow

1. Install plow mount (E) to sweep shield (B) using four (4) bolts (A) and flange nuts (F). *(See Figure 7F.)*

   NOTE: *Plow mount location is adjustable and must be installed using four (4) bolts. Location of plow mount is determined by the desired length of sweep.*

2. Install plow (K) to plow mount (E) using pivot pin (D), roll pin (I), hex bolts (C and G) and lock nuts (H and J).

   NOTE: *Hex bolts (C and G) locations will determine if plow is extended or not extended.*

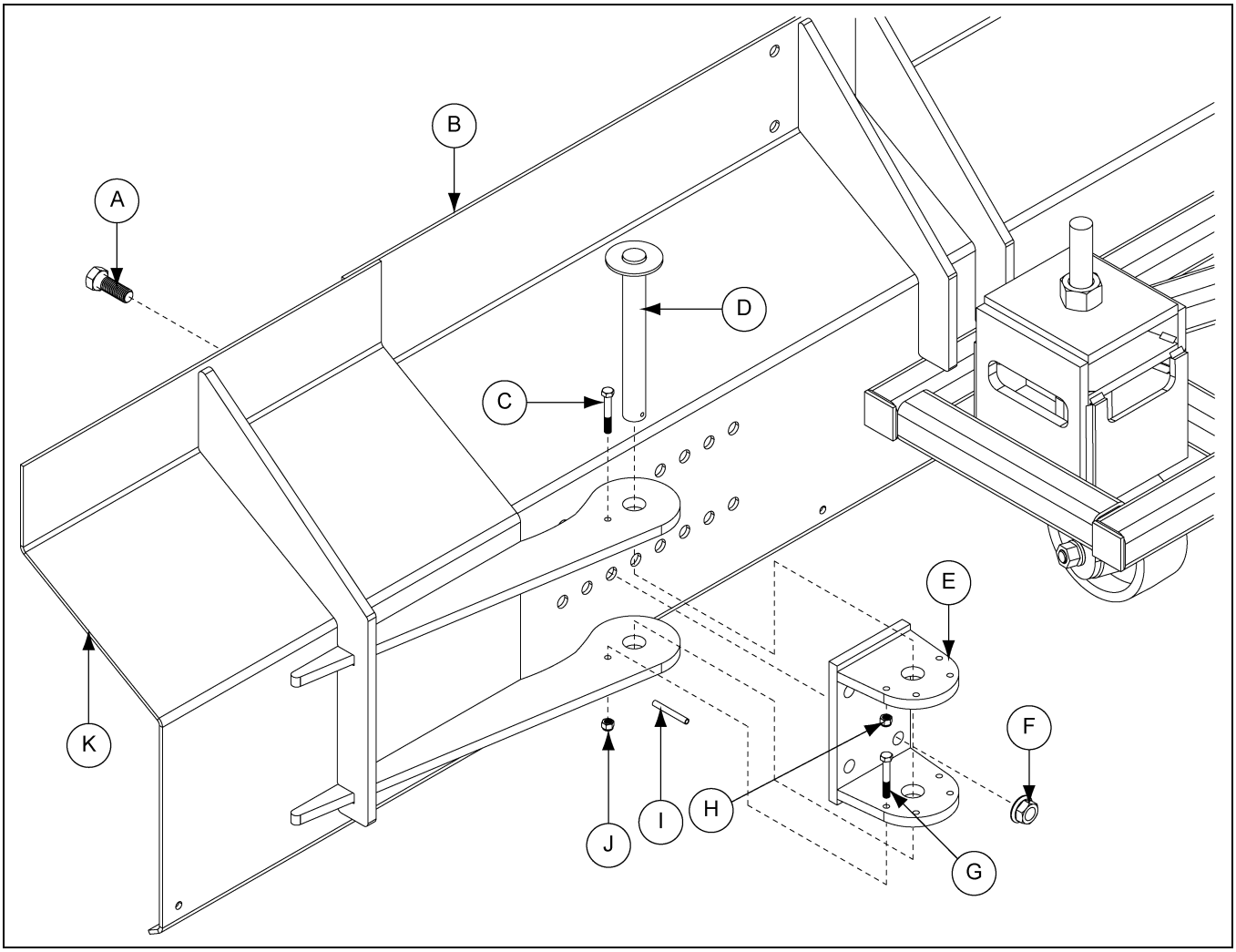


Figure 7F

Ref #	Description
A	5/8"-11 x 1-3/4" Hex Bolt
B	Sweep Shield
C	5/16"-18 x 2" Hex Bolt
D	Pivot Pin
E	Plow Mount
F	5/8"-11 Flange Nut

Ref #	Description
G	5/16"-18 x 2" Hex Bolt
H	5/16"-18 Lock Nut
I	Roll Pin
J	5/16"-18 Lock Nut
K	Plow

3. Install hex bolts (L) and flange nuts (M) to sweep shield (B), to fill in all of the remaining bolt holes. *(See Figure 7G.)*

   NOTE: *Hex bolts (A) must be installed from auger side of sweep shield as shown. (See Figure 7G.)*

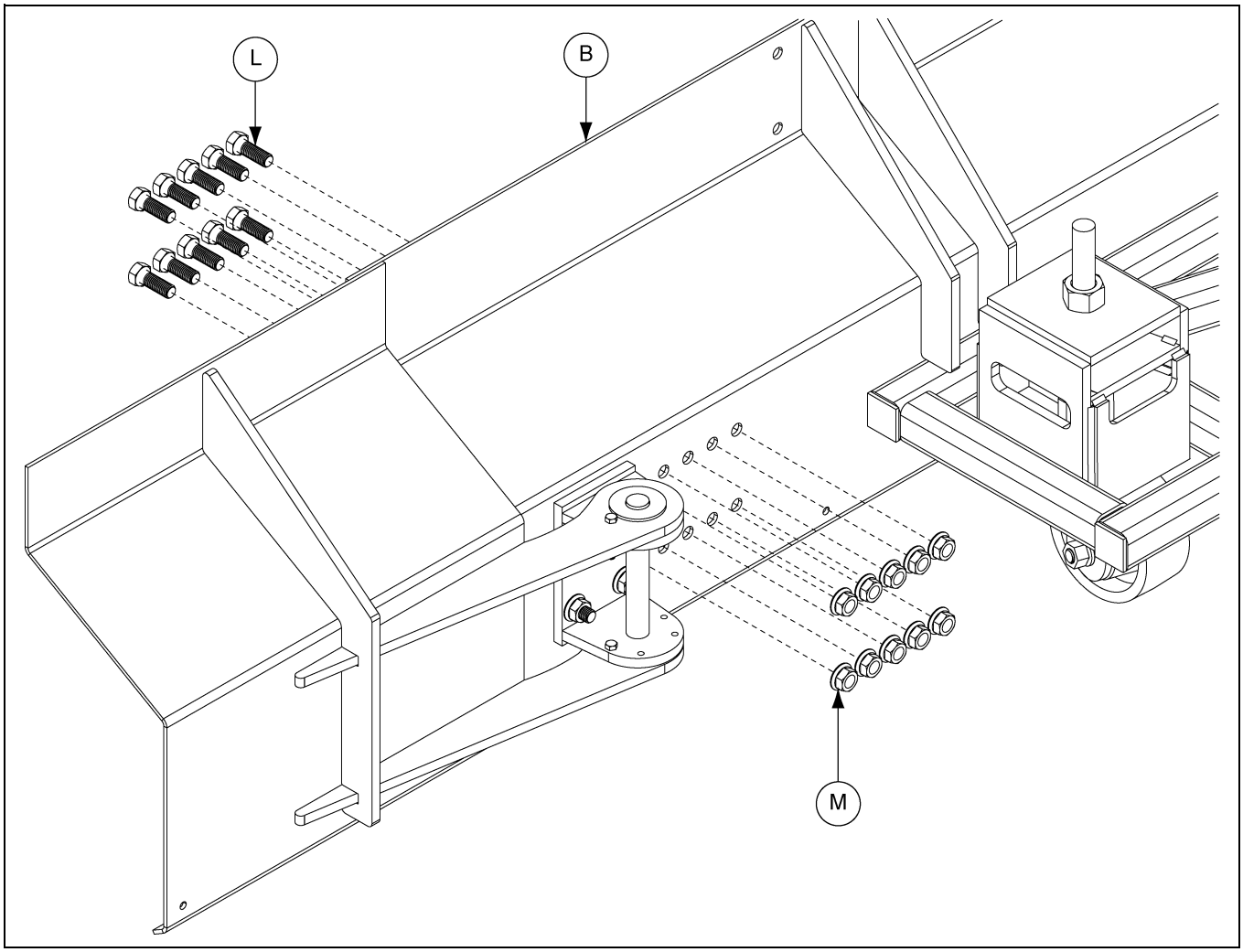


Figure 7G

Ref #	Description
B	Sweep Shield
L	5/8"-11 x 1-3/4" Hex Bolt
M	5/8"-11 Flange Nut

Assembling the Brush Holder

1. Measure and record the brush length needed from the sweeper head (B) to the track wiper (C) and from the track wiper (C) to the end of the sweeper (A). *(See Figure 7H.)*

   NOTE: *Installing the brush to the plow will be covered later in this manual.*

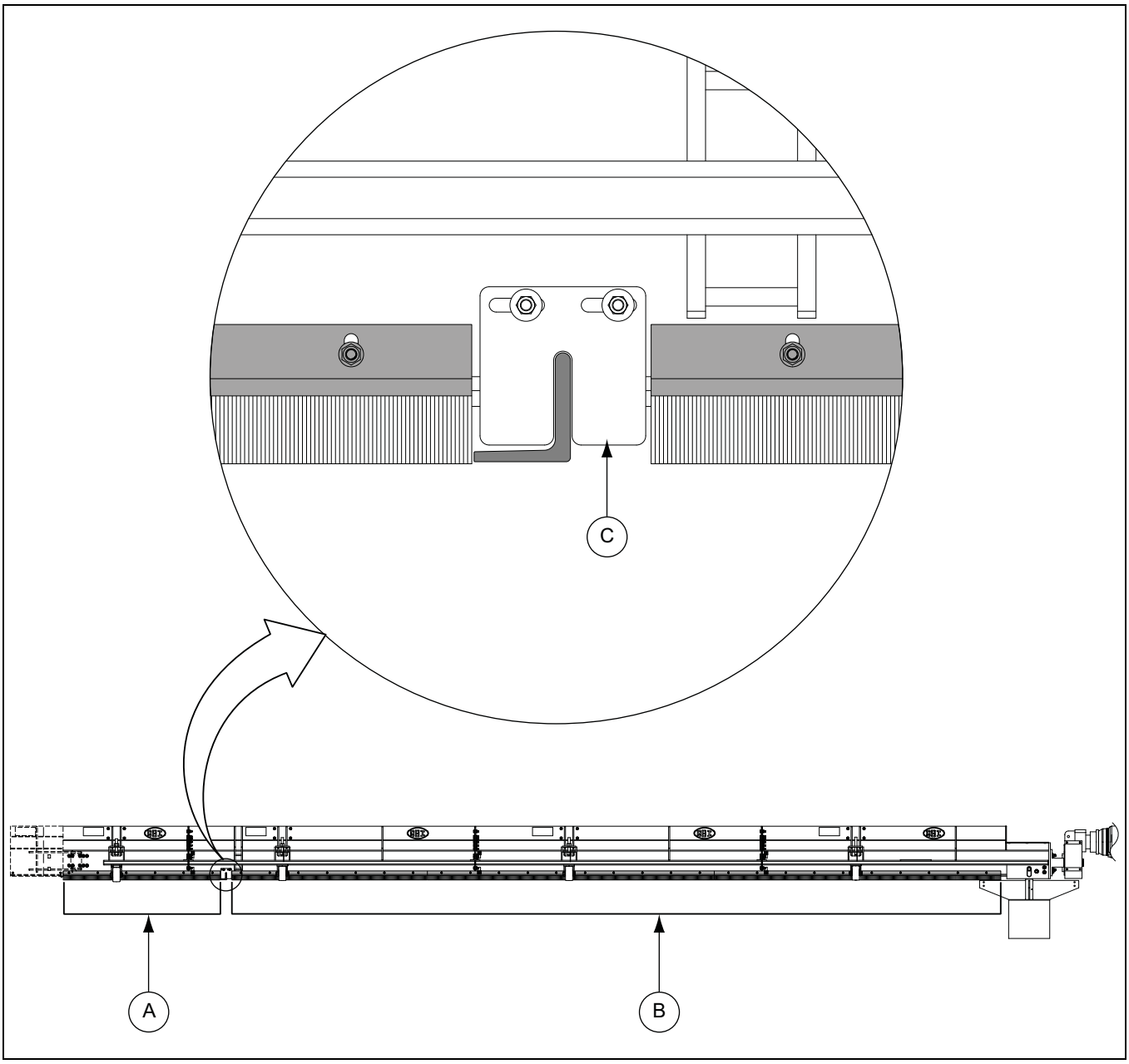


Figure 7H

Ref #	Description
A	Track Wiper to End of Sweeper Length
B	Sweeper Head to Track Wiper Length
C	Track Wiper

2. Install one end of the brush (D) to the end of the brush holder (E) and guide the brush along the slotted groove (F). *(See Figure 7I.)*

   NOTE: *Tap the end of the brush holder with a mallet. If the brush does not guide along the slotted groove in the brush holder.*

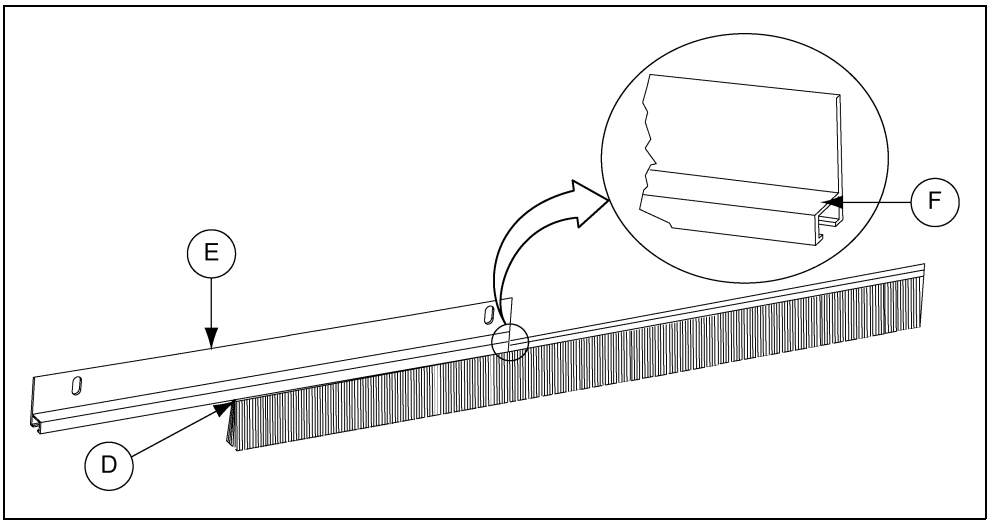


Figure 7I

Ref #	Description
D	Brush
E	Brush Holder
F	Slotted Groove

   NOTE: *When assembling the brush to the brush holder, always alternate the seams of brush and brush holder.*

3. Assemble brush (D) to brush holder (E) to the desired length and cut brush holder (E) with a suitable device. Crimp the two (2) ends of the brush holder, locking the brush in place. *(See Figure 7J.)*

   NOTE: *Crimp brush ends after cutting to length to secure the bristles.*

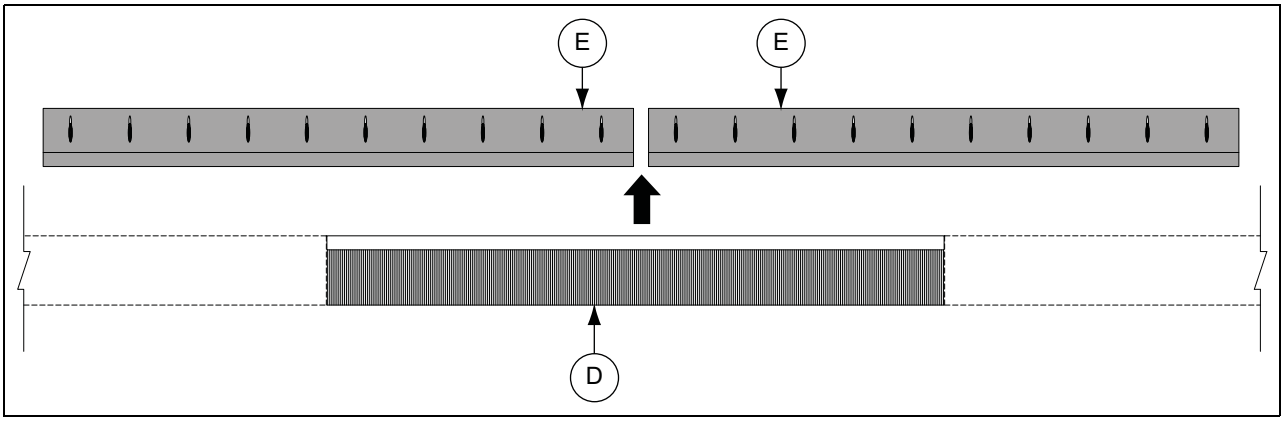


Figure 7J

Ref #	Description
D	Brush
E	Brush Holder

Installing the Brush Assembly to the Sweep Shield

1. Slide brush assemblies (C) along back of sweep shield (B). Align holes in brush assembly with holes in shield using a drift punch. *(See Figure 7K.)*

   NOTE: *This procedure requires two (2) people, one person in front of the sweep shield installing hex bolts and one behind the sweep shield installing the flange nuts.*

2. Install all brush assembles (C) to sweep shield (B) using hex bolts (A) and flange nuts (D).

   NOTE: *On 12" sweeps, the brush holder will need to be notched out around the lower hanger bearing hardware.*

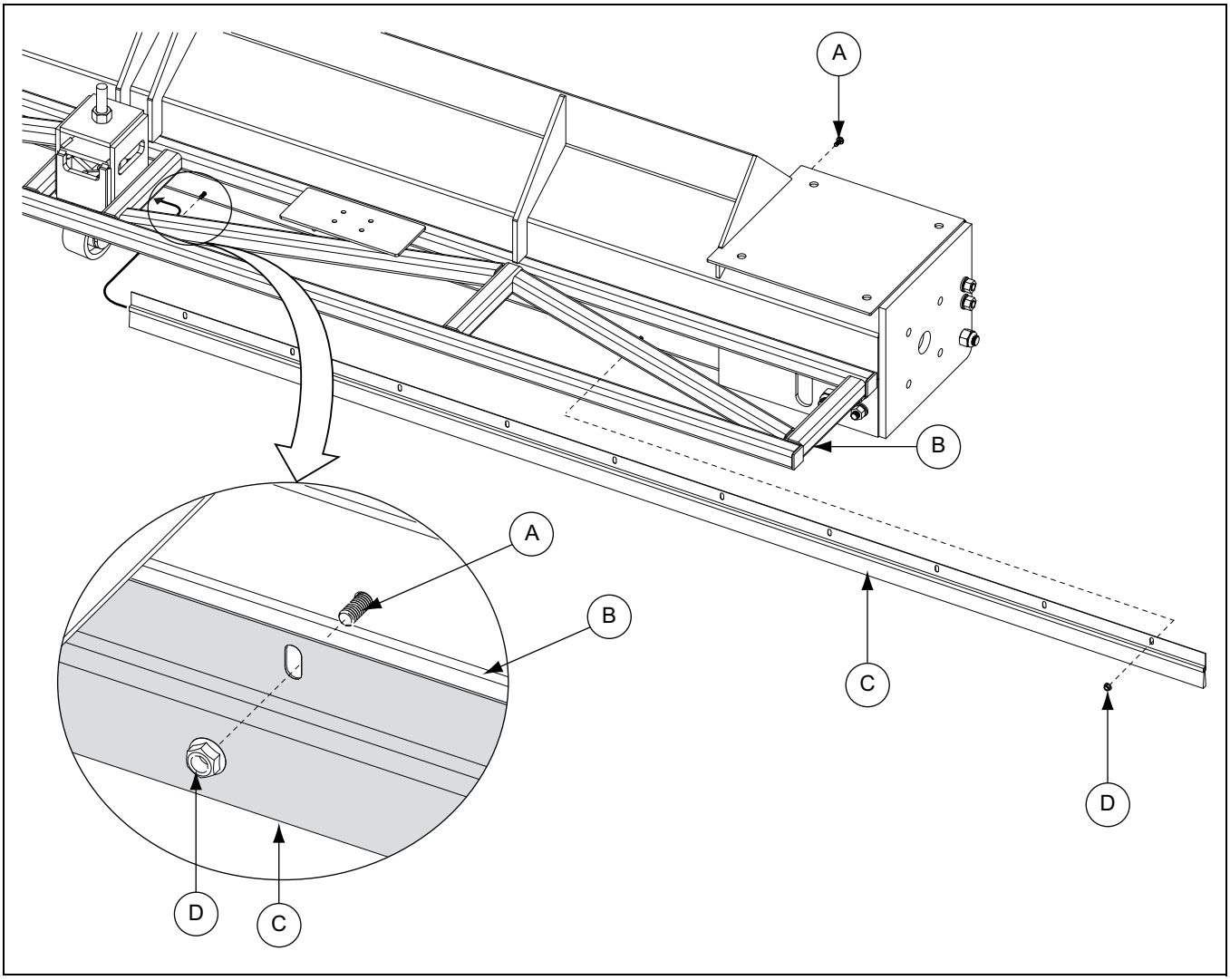


Figure 7K

Ref #	Description
A	5/16"-18 x 3/4" Hex Bolt
B	Sweep Shield
C	Brush Assembly
D	5/16"-18 Flange Nut

Installing the Brush Assembly to the Plow

1. Place a brush holder (A) to the frame of the plow (I). *(See Figure 7L.)*
2. Align brush holder hole (E) with plow frame hole (G) and scribe or mark each outer edge (B and F) of the plow frame. Transfer these marks to the brush holder (A).
3. Cut the excess material from the brush holder at marks (B and F).
4. Cut a notch (D) in brush holder to fit around plow brace (H) on the plow.
5. Line brush holder up with edges of plow and the notch.
6. Using a scribe or marker, place a reference mark (C) from the front side of plow through hole onto brush holder. Drill out this reference mark (C) on brush holder (A).

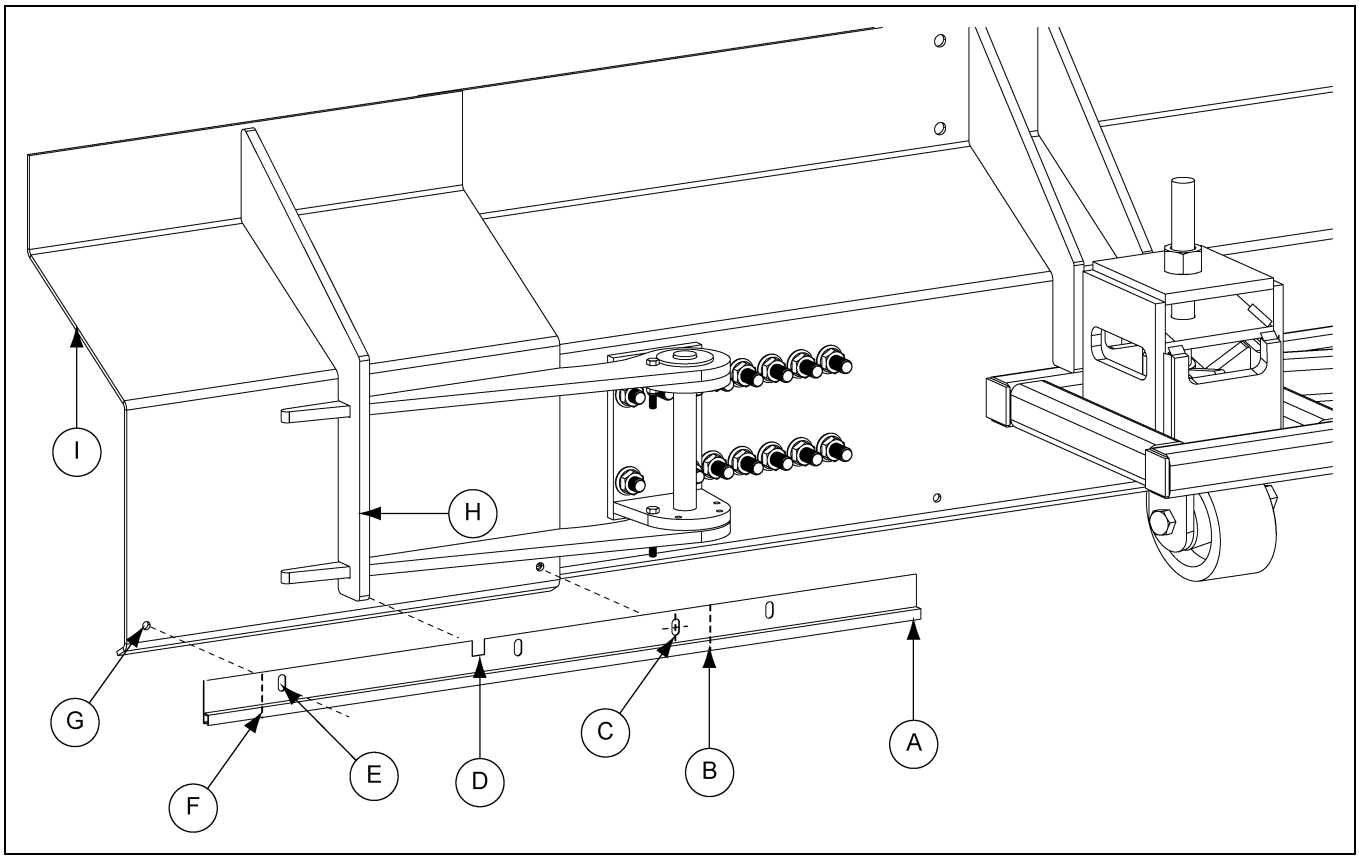


Figure 7L

Ref #	Description
A	Brush Holder
B	Outer Edge Mark
C	Reference Mark
D	Notch
E	Brush Holder Hole

Ref #	Description
F	Outer Edge Mark
G	Plow Frame Hole
H	Plow Brace
I	Plow

7. Install brush (J) to brush holder (A). *(See Figure 7M.)*

   NOTE: *The brush should be cut 1/8" shorter than brush holder on each end to allow correct crimping.*

8. Cut brush (J) to length and ensure that the brush is installed 1/8" shorter than brush holder on each end.

   NOTE: *Crimp brush ends after cutting to length to secure the bristles.*

9. Crimp the ends of the brush holder to secure the brush.

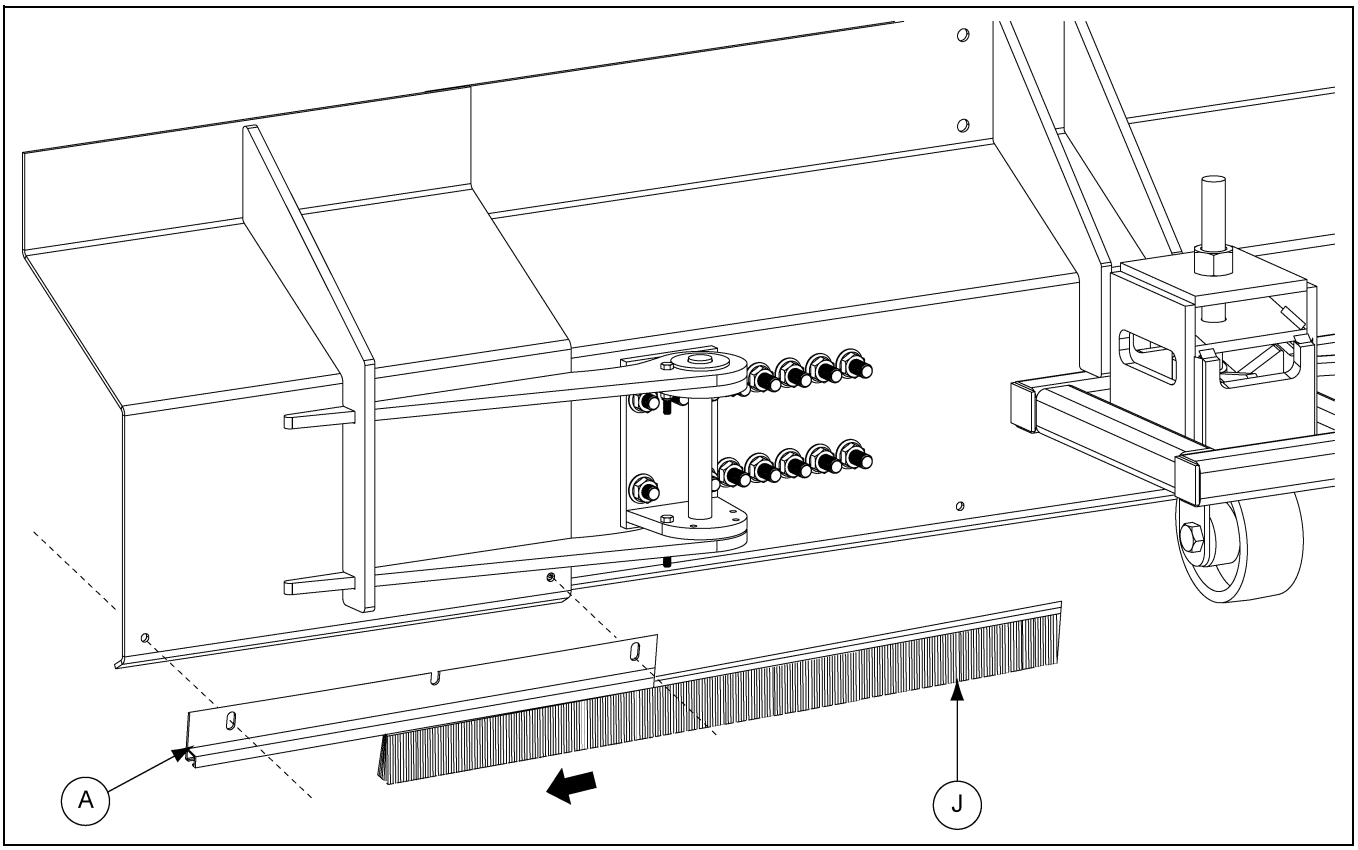


Figure 7M

Ref #	Description
A	Brush Holder
J	Brush

10. Install brush assembly (A and J) to plow (I) using hex bolts (L) and flange nuts (K). *(See Figure 7N.)*

11. Tighten hex bolts and flange nuts specifications. *(See Table on Page 21.)*

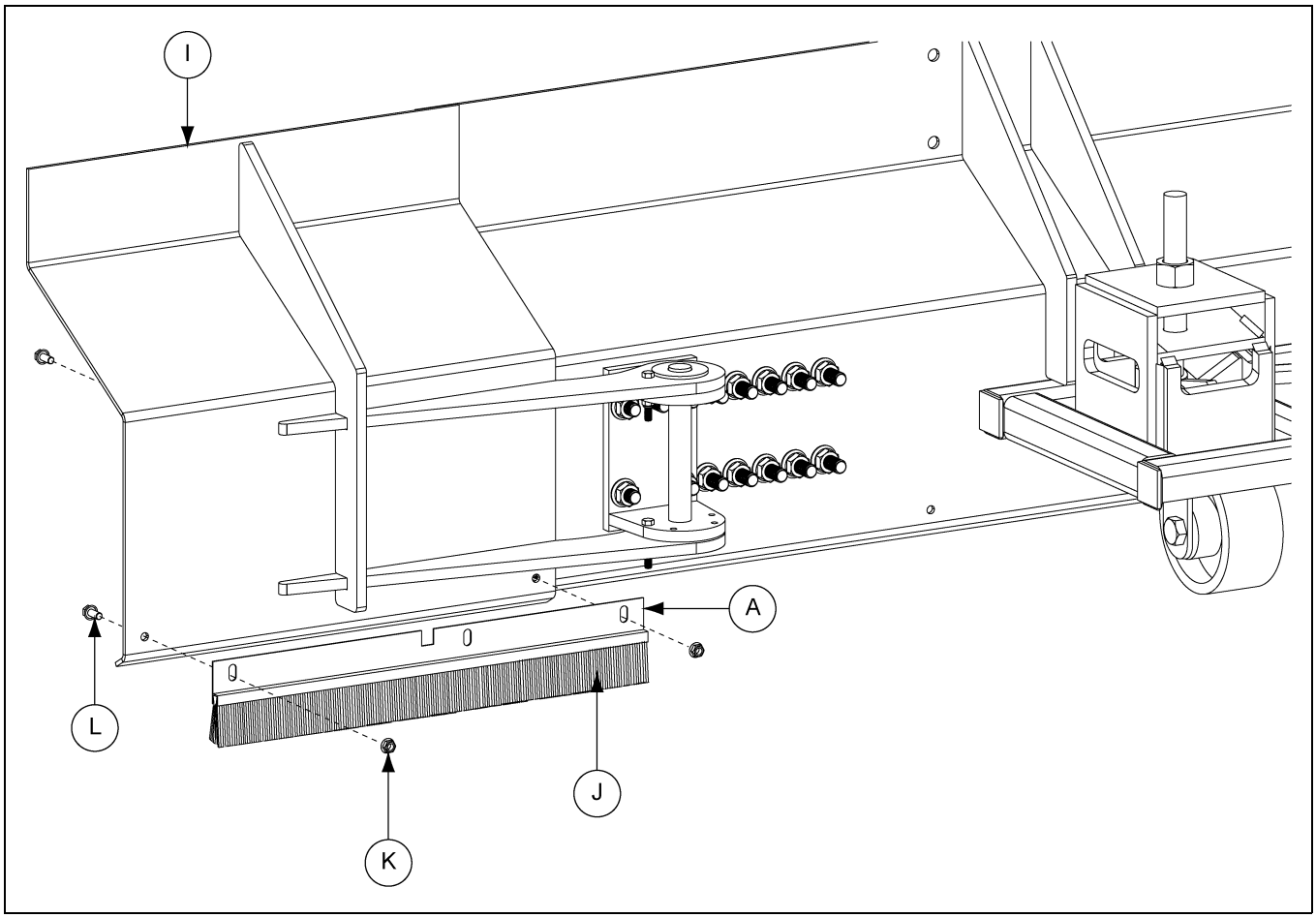


Figure 7N

Ref #	Description
A	Brush Holder
I	Plow
J	Brush Assembly
K	5/16"-18 Flange Nut
L	5/16"-18 x 3/4" Hex Bolt

Installing the Sweep Track Wiper

1. Install flange bolts (A) though the front of the sweep shield. *(See Figure 7O.)*

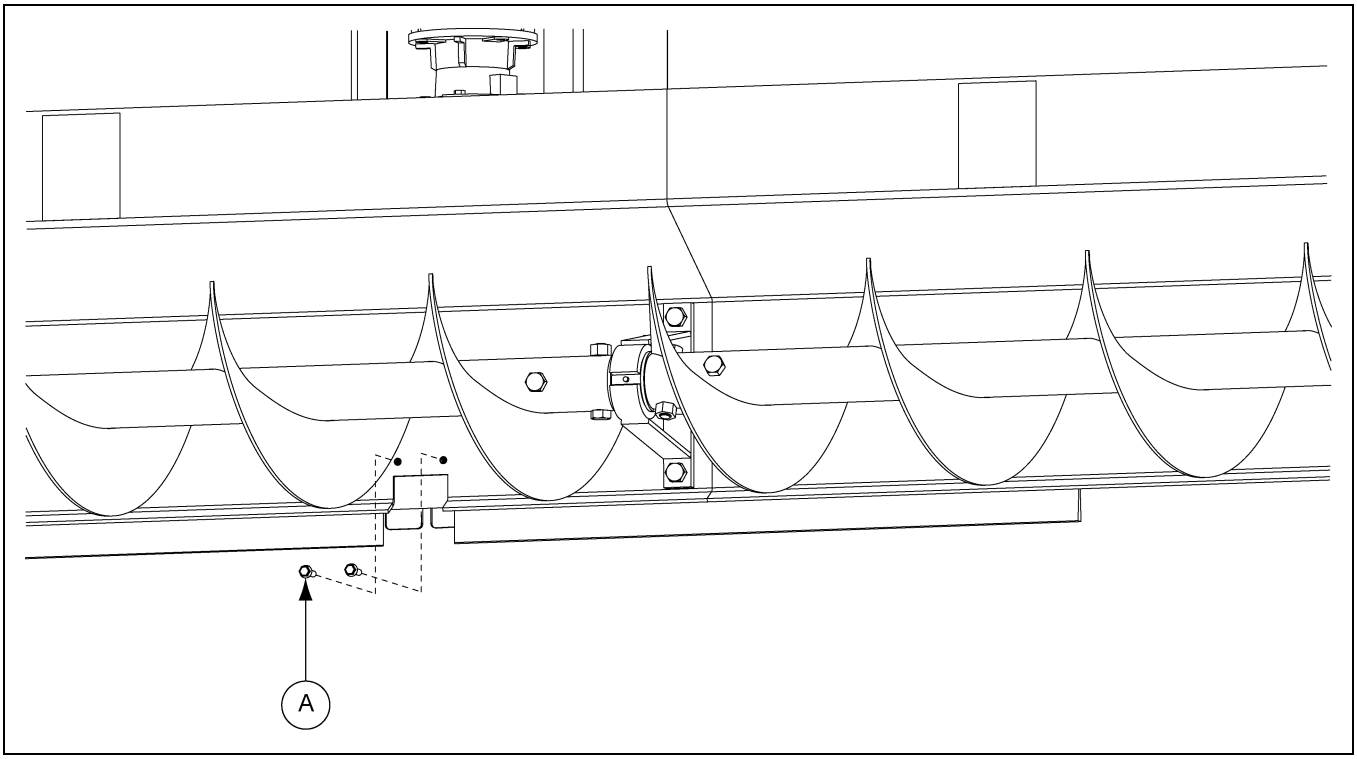


Figure 7O

Ref #	Description
A	5/16"-18 Flange Bolt

2. Install the sweep track wiper (B) to the rear side of the sweep shield and secure with flat washers (D) and lock nuts (C). *(See Figure 7P.)*

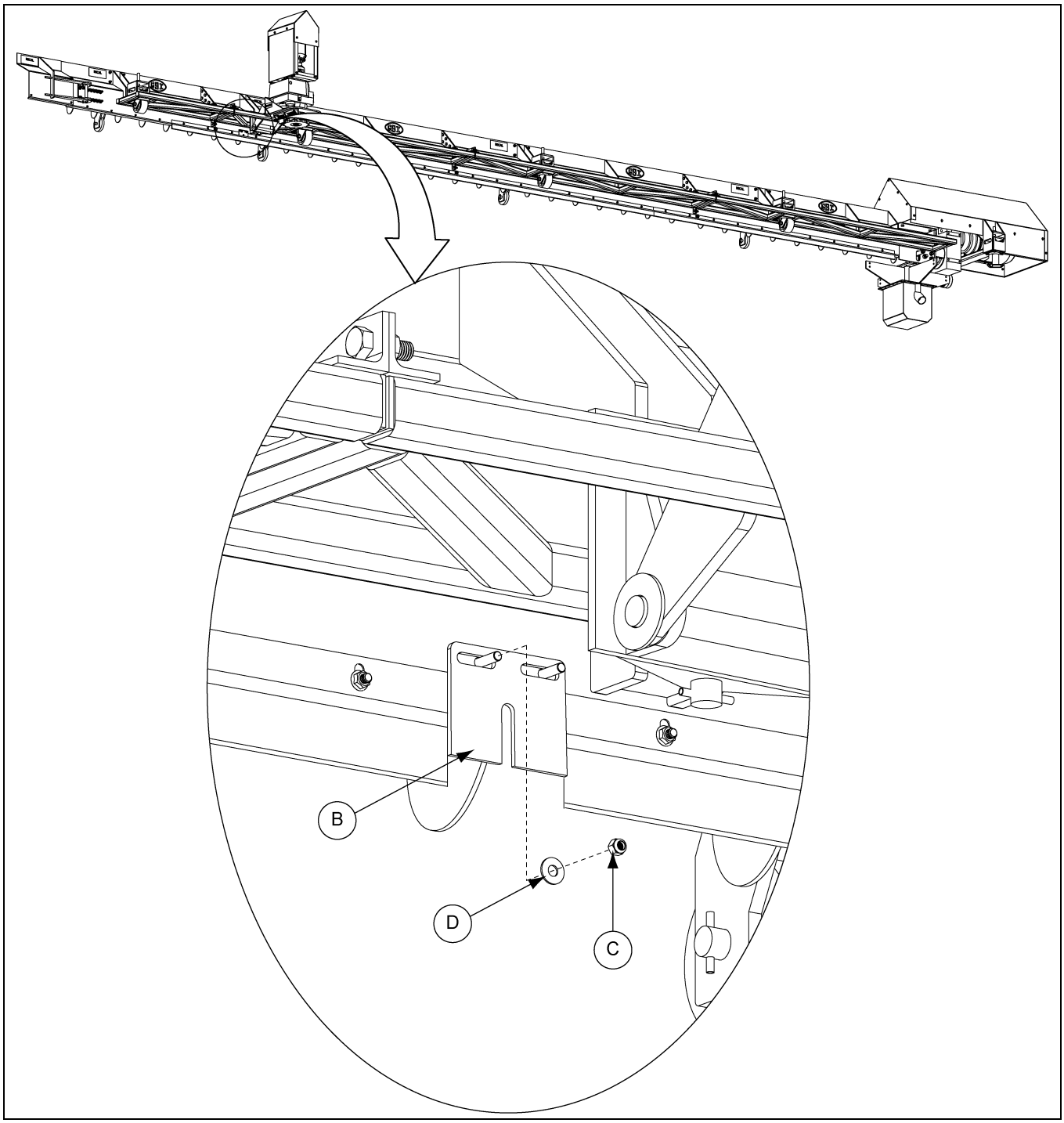


Figure 7P

Ref #	Description
B	Sweep Track Wiper
C	5/16"-18 Lock Nut
D	5/16" Flat Washer

Assembling the Hanger Bearings

1. Bolt the bronze bearings (C) and hanger brackets (B) together using hex bolts (A) and flange lock nuts (D) as shown. *(See Figure 7Q.)*

   NOTE: *For ease of installation, do not tighten bracket bolts at this time. Install bronze bearings as shown, locating the detents to the front and rear of the hanger bracket.*

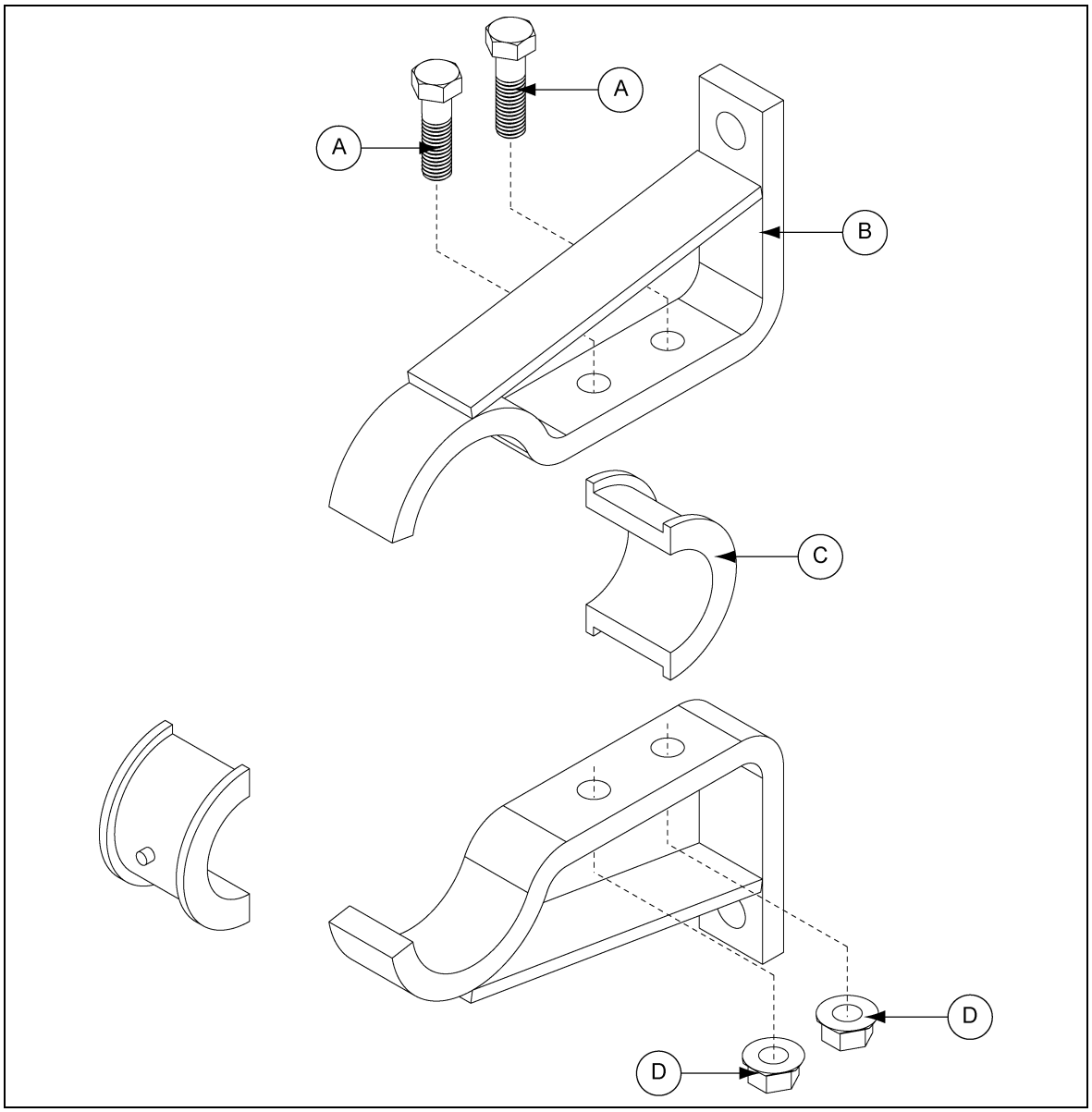


Figure 7Q

Ref #	Description
A	1/2"-13 x 1-3/4" Hex Bolt
B	Hanger Bracket
C	Bronze Bearing
D	1/2"-13 Flange Nut

Assembling the Auger Flighting

1. Place the flight sections in order of assembly, starting with the head flight working toward the extension flight.
2. Install connecting shaft (B) to head flight (D), secure with hex bolts (A) and lock nuts (C). *(See Figure 7R.)*

   NOTE: *For more information regarding flight section and shield layout, see "Sweep Shield Sections Reference Chart" on Page 33.*

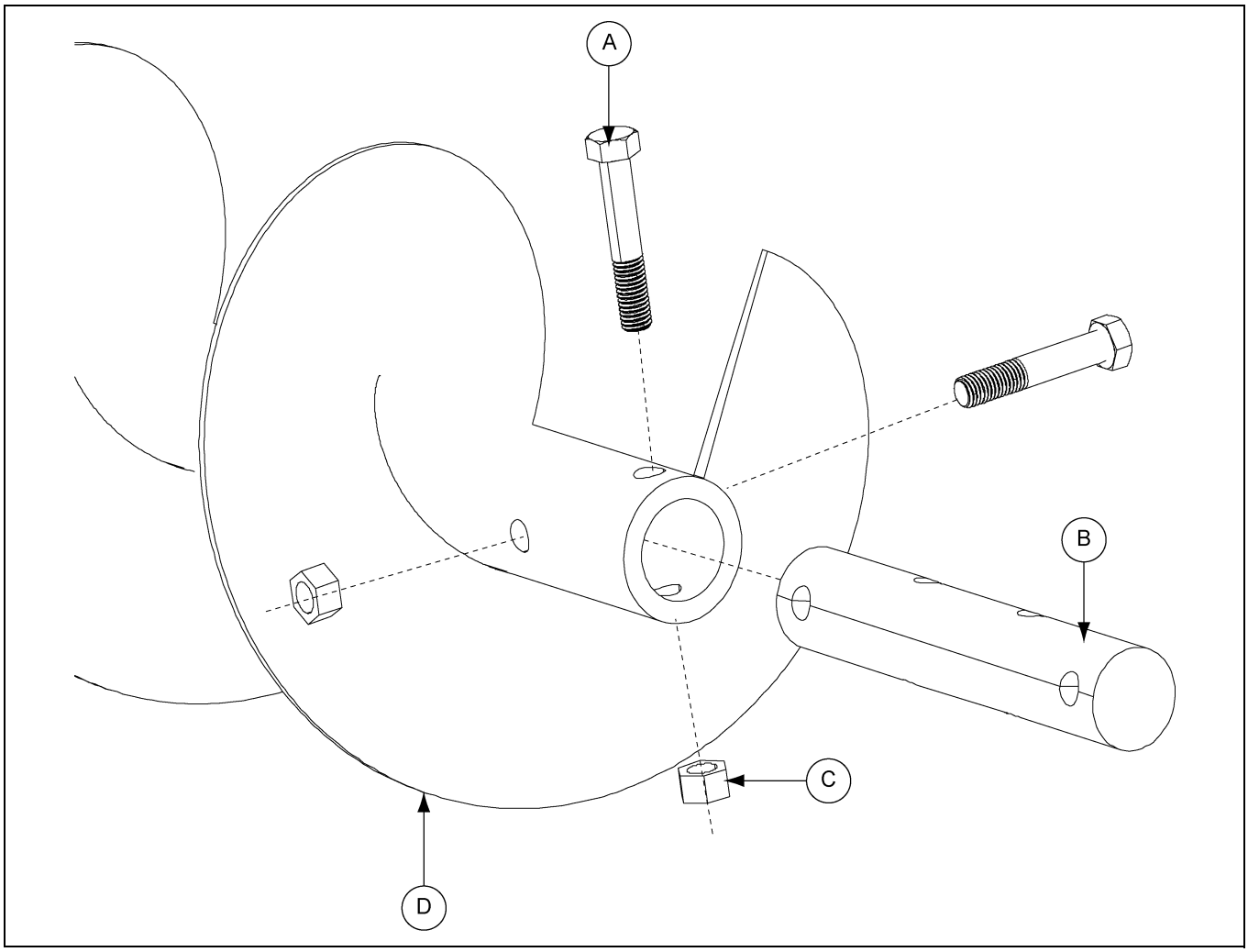


Figure 7R

Ref #	Description
A	12" Sweep: 5/8"-11 x 3-1/2" Hex Bolt
	16" Sweep: 3/4"-10 x 5-1/2" Hex Bolt
B	Connecting Shaft
C	12" Sweep: 5/8"-11 Lock Nut
	16" Sweep: 3/4"-10 Lock Nut
D	Head Flight

3. Slide the hanger bearing (E) onto the connecting shaft (B) and tighten the hanger bracket bolts. *(See Figure 7S.)*

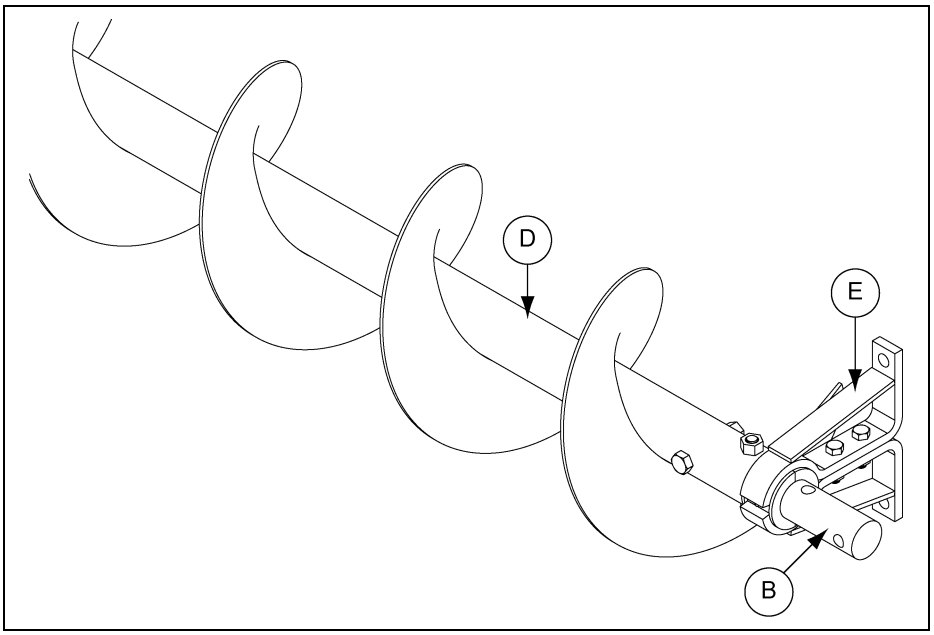


Figure 7S

Ref #	Description
B	Connecting Shaft
D	Head Flight
E	Hanger Bearing

4. Slide the next flight section (G) onto the connecting shaft and attach using the hex bolts (A) and lock nuts (C). *(See Figure 7T.)*

NOTE: *Align flight sections until the flighting flows into the next section and does not overlap. Use a drift punch to align the flight for bolt installation.*

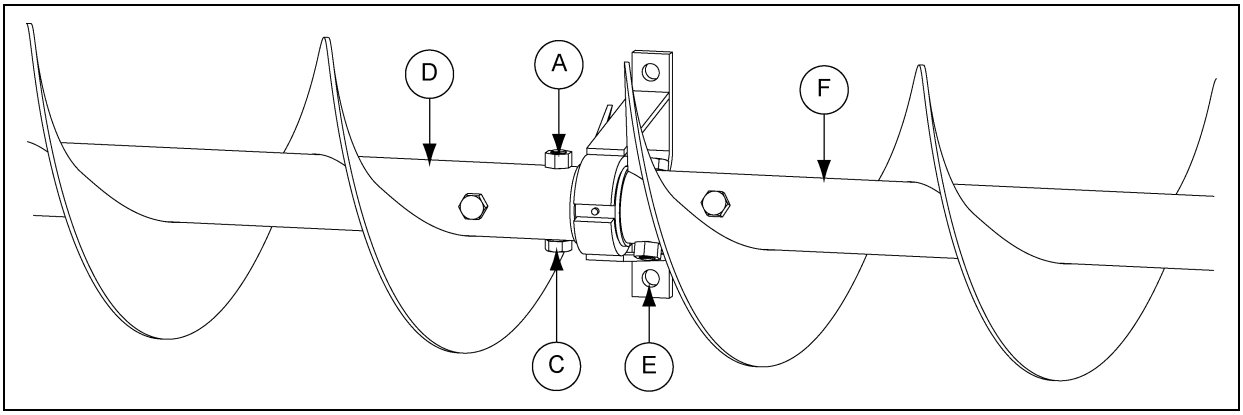


Figure 7T

Ref #	Description
A	12" Sweep: 5/8"-11 x 3-1/2" Hex Bolt
	16" Sweep: 3/4"-10 x 5-1/2" Hex Bolt
C	12" Sweep: 5/8"-11 Lock Nut
	16" Sweep: 3/4"-10 Lock Nut

Ref #	Description
D	Head Flight
E	Hanger Bearing
F	Flight Section

Assembling the Auger Flighting to the Sweep Shield

1. Roll flight assembly to sweep shield and align hanger bearing mounting holes. *(See Figure 7U.)*

   NOTE: *Use a wooden lever to lift the auger into position for bolt installation. This is a two (2) person operation - one person in front of the auger installing bolts and one behind the auger shield installing the washers and nuts.*

2. Attach hanger bearing (D) to sweep shield using hex bolts (C), flange lock nuts (A) and rectangle washers (B). Repeat procedure for each hanger bearing. It is helpful to install the top bolt of the hanger bracket first.

   NOTE: *Leaving the hanger fasteners loose at this point will allow for adjustment and make gearbox installation easier. Do not torque hanger fasteners until after the gearbox has been installed. Hanger bearings should be centered between the flight assemblies.*

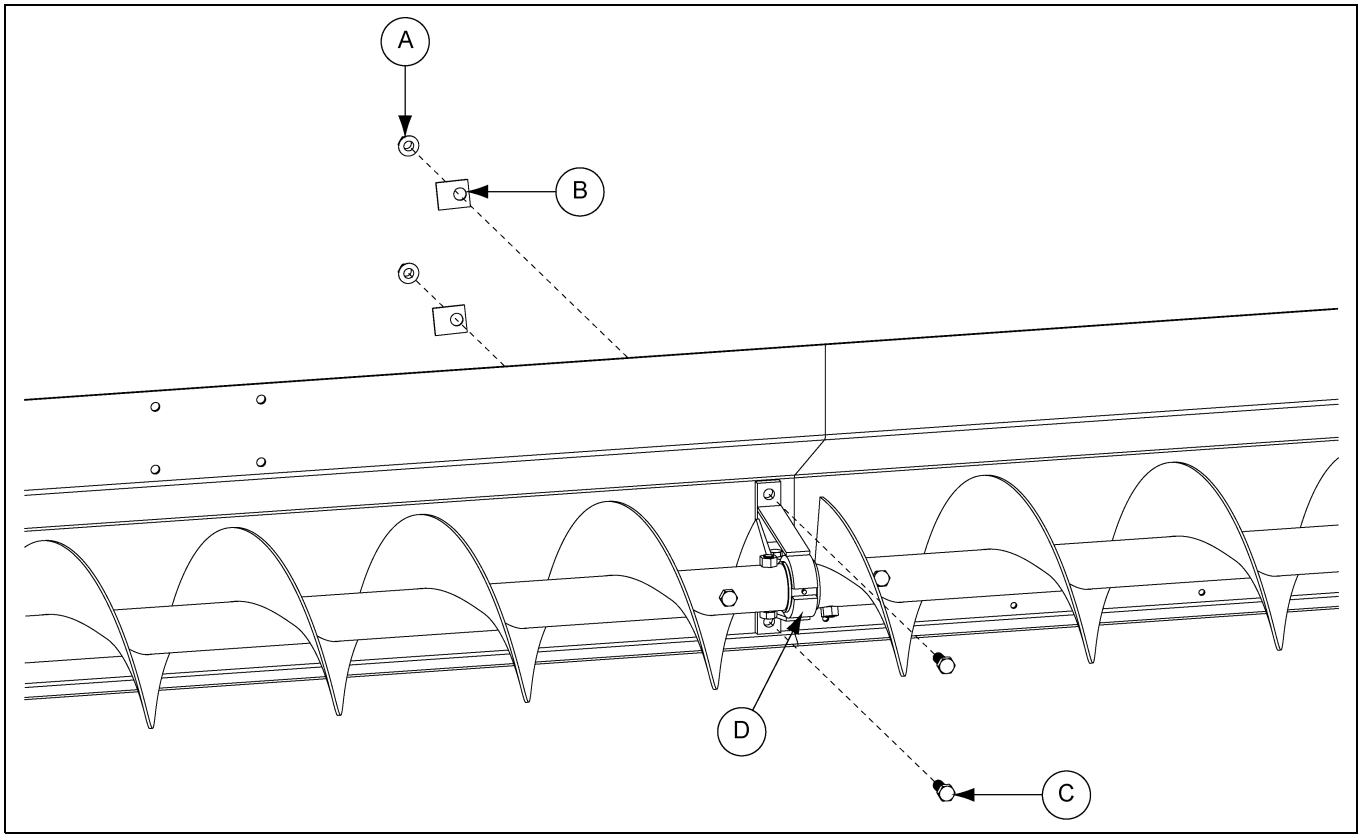


Figure 7U

Ref #	Description
A	1/2"-13 Flange Lock Nut
B	11/16" Rectangle Washer
C	1/2"-13 x 1-3/4" Hex Bolt
D	Hanger Bearing

Installing the Gearbox to the Auger Flighting

1. Slide the output shaft of the gearbox (A) through the end plate of the head section (B) and into the end of the head flight section (I).
2. Bolt the gearbox to the end plate of the head section using hex bolts (F), flat washers (E), lock washers (D) and hex nuts (C). *(See Figure 7V.)*
3. Secure the gearbox output shaft to the head flight section (I) with hex bolts (G) and lock nuts (H). *(See Figure 7V.)*

NOTICE ***The gearbox is filled with oil from the factory. For gearbox specifications and oil fill recommendations, refer to lubrication section of the operator's manual (PNEG-1858).***

NOTE: *The input of the gearbox MUST be to the top of the gearbox. Refer to the owner's manual supplied with the gearbox for proper vent plug, fill plug and drain plug locations.*

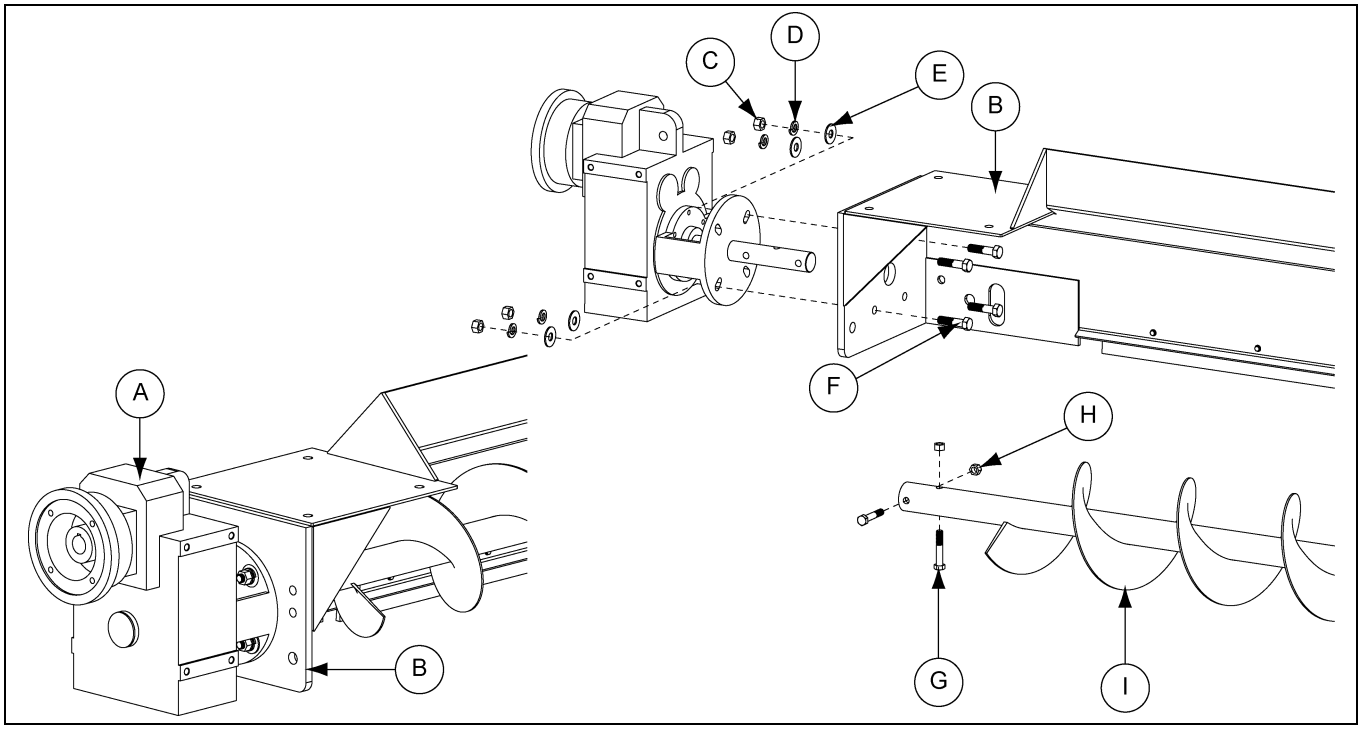


Figure 7V

Ref #	Description
A	Gearbox
B	Head Section
C	3/4"-10 Hex Nut
D	3/4" Lock Washer
E	3/4" Flat Washer

Ref #	Description
F	3/4"-10 x 3-1/2" Hex Bolt
G	12" Sweep: 5/8"-11 x 3-1/2" Hex Bolt
	16" Sweep: 3/4"-10 x 5-1/2" Hex Bolt
H	12" Sweep: 5/8"-11 Lock Nut
	16" Sweep: 3/4"-10 Lock Nut
I	Flight Section

Installing the Skids to the Motor Mount Assembly

1. Install hex nut (B) to mount (A). *(See Figure 7W.)*

NOTE: *16" Sweep - Install hex nut (B) so that there is approximately 1" of threads between the nut and the mount base.*

12" Sweep - Install hex nut (B) so that there is approximately 1-1/2" of threads between the nut and the mount base.

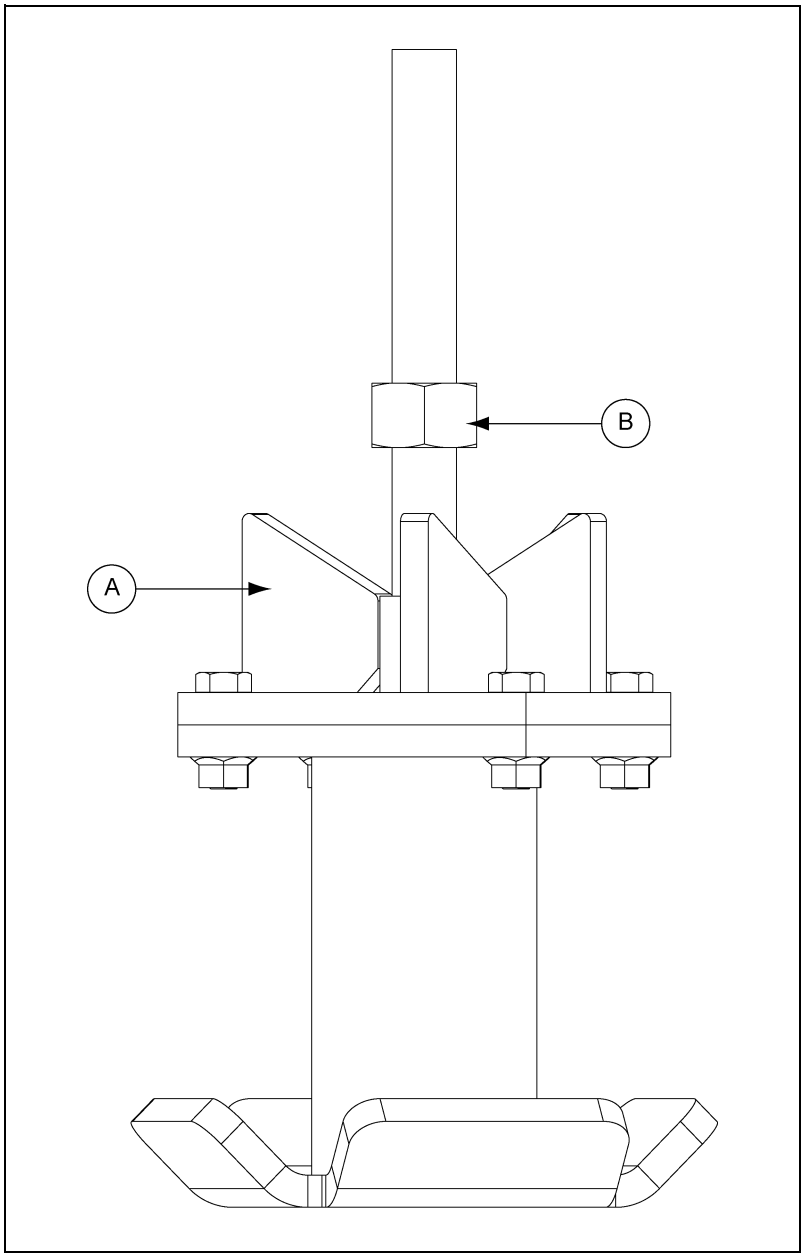


Figure 7W

Ref #	Description
A	Mount
B	1"-5 Hex Nut

2. Install skid to motor mount assembly (D) and install hex nut (C). *(See Figure 7X.)*

NOTE: *Adjustment and tightening will be done when adjustment of sweep height is performed.* *(See Page 69.)*

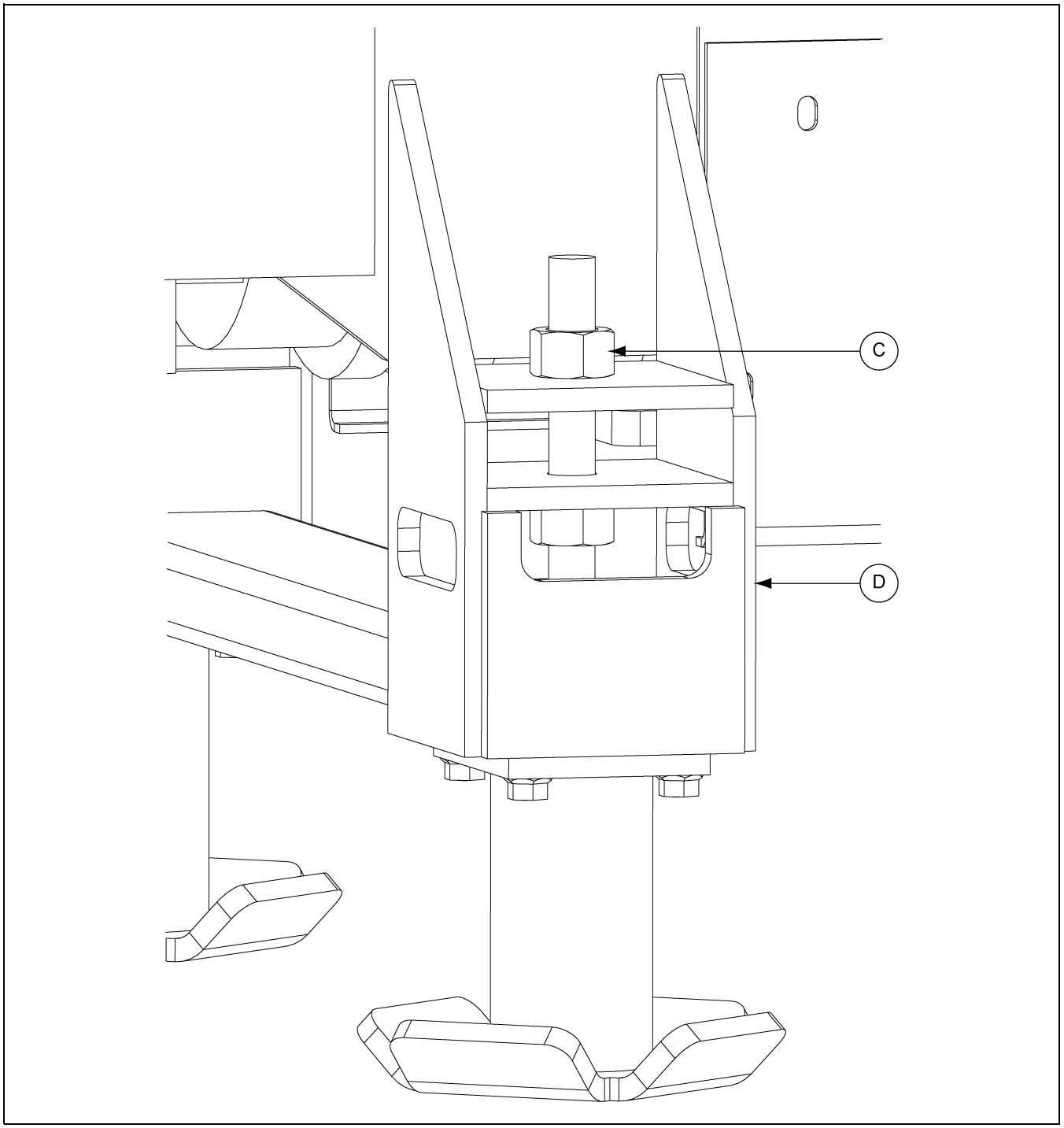


Figure 7X

Ref #	Description
C	1"-5 Hex Nut
D	Motor Mount Assembly

Installing the Motor Mount Assembly

CAUTION

Use proper lifting procedures and equipment when lifting motor mount frame.

1. Attach suitable lifting device and lift the motor mount frame (B) onto the shield (A).
2. Fasten motor mount frame to shield using hex bolts (E), lock washers (D) and hex nuts (C). *(See Figure 7Y.)*

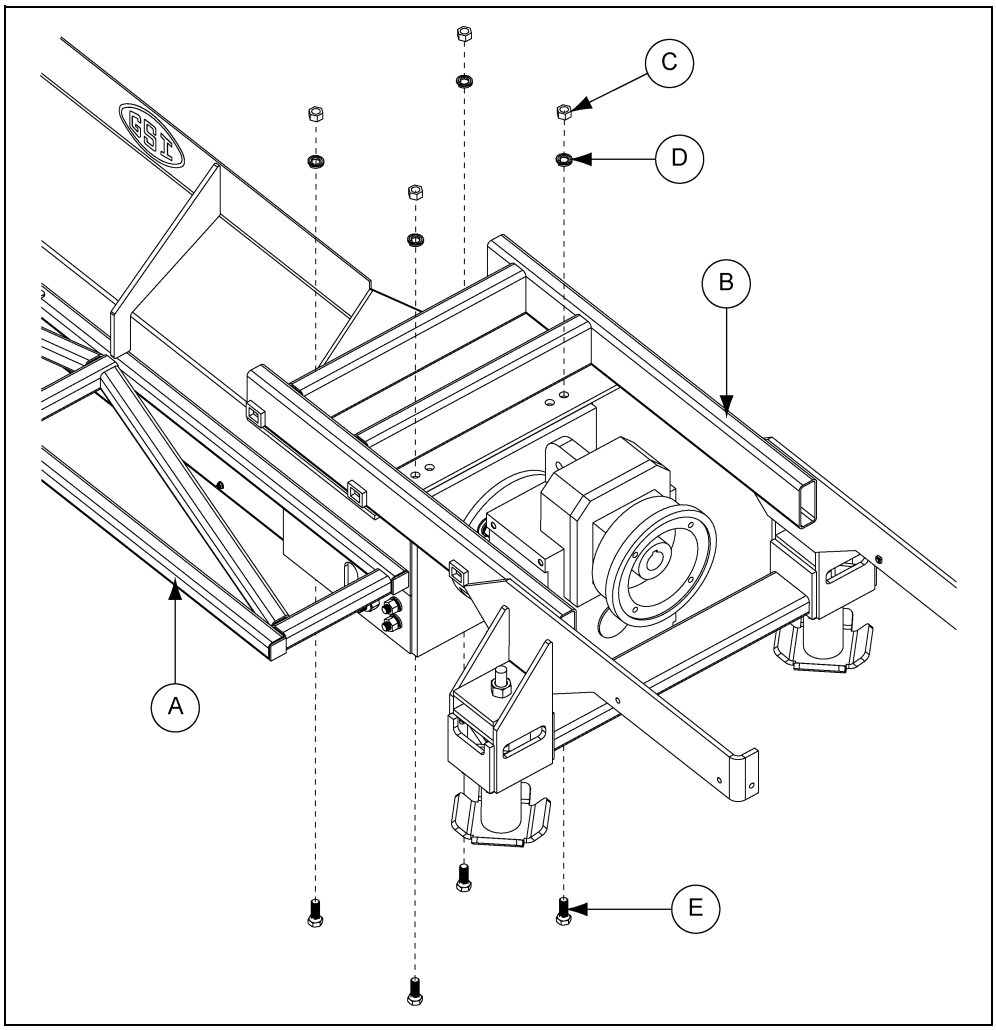


Figure 7Y

Ref #	Description
A	Shield
B	Motor Mount Frame
C	3/4"-10 Hex Nut
D	3/4" Lock Washer
E	3/4"-10 x 2" Hex Bolt

Installing the Auger Motor

CAUTION

Use proper procedures and equipment when lifting motor.

1. Remove set screw plugs (A) from gearbox, allowing access to set screws (B). *(See Figure 7Z.)*

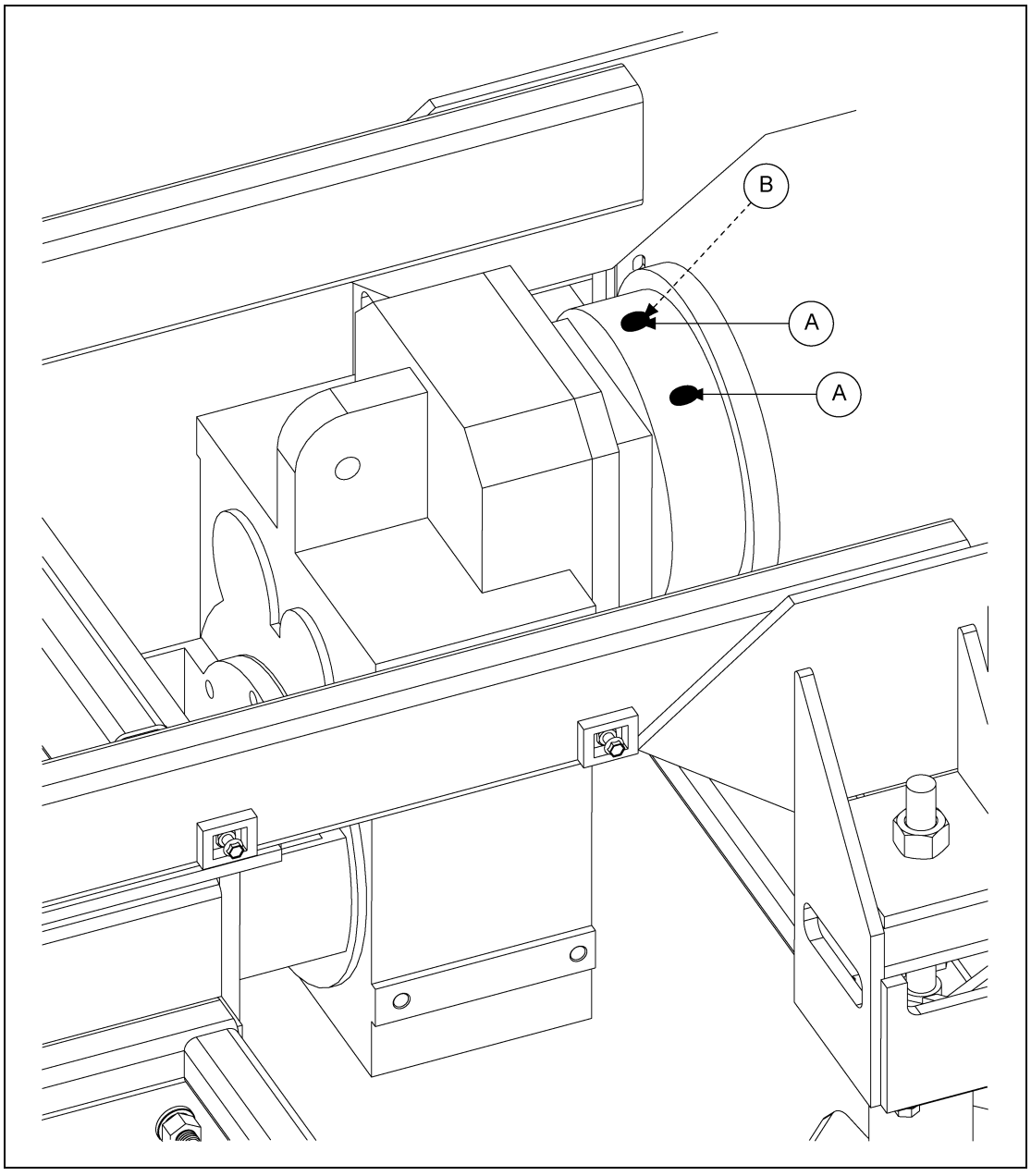


Figure 7Z

Ref #	Description
A	Set Screw Plugs
B	3 mm Set Screw

2. Using a 3 mm allen wrench, loosen the 3 mm set screw (B) from motor shaft collar (C). *(See Figure 7AA.)*

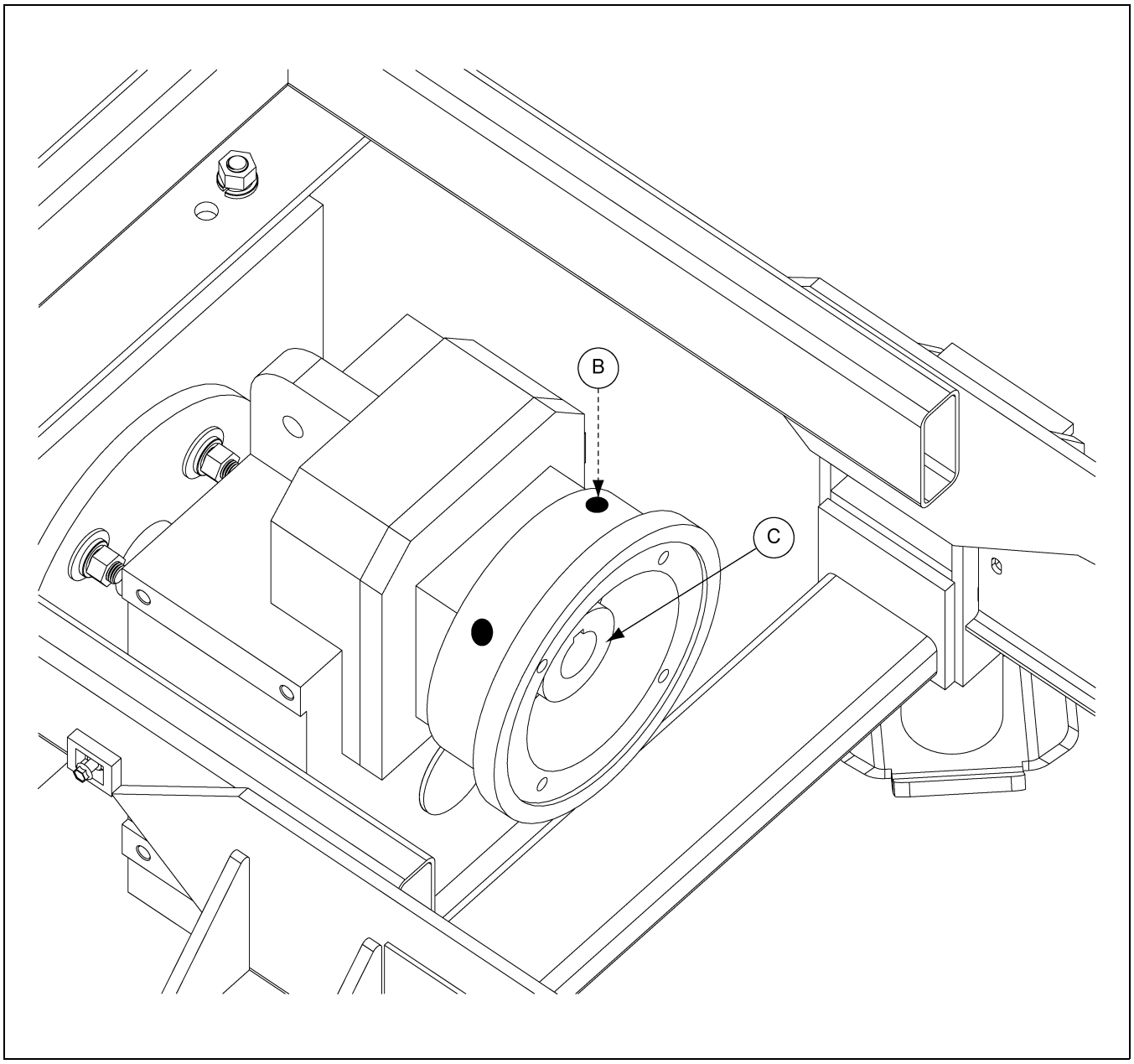


Figure 7AA

Ref #	Description
B	3 mm Set Screw
C	Motor Shaft Collar

3. Using a 6 mm allen wench, loosen the 6 mm clamping set screw (D) from the motor shaft collar (C). *(See Figure 7AB.)*

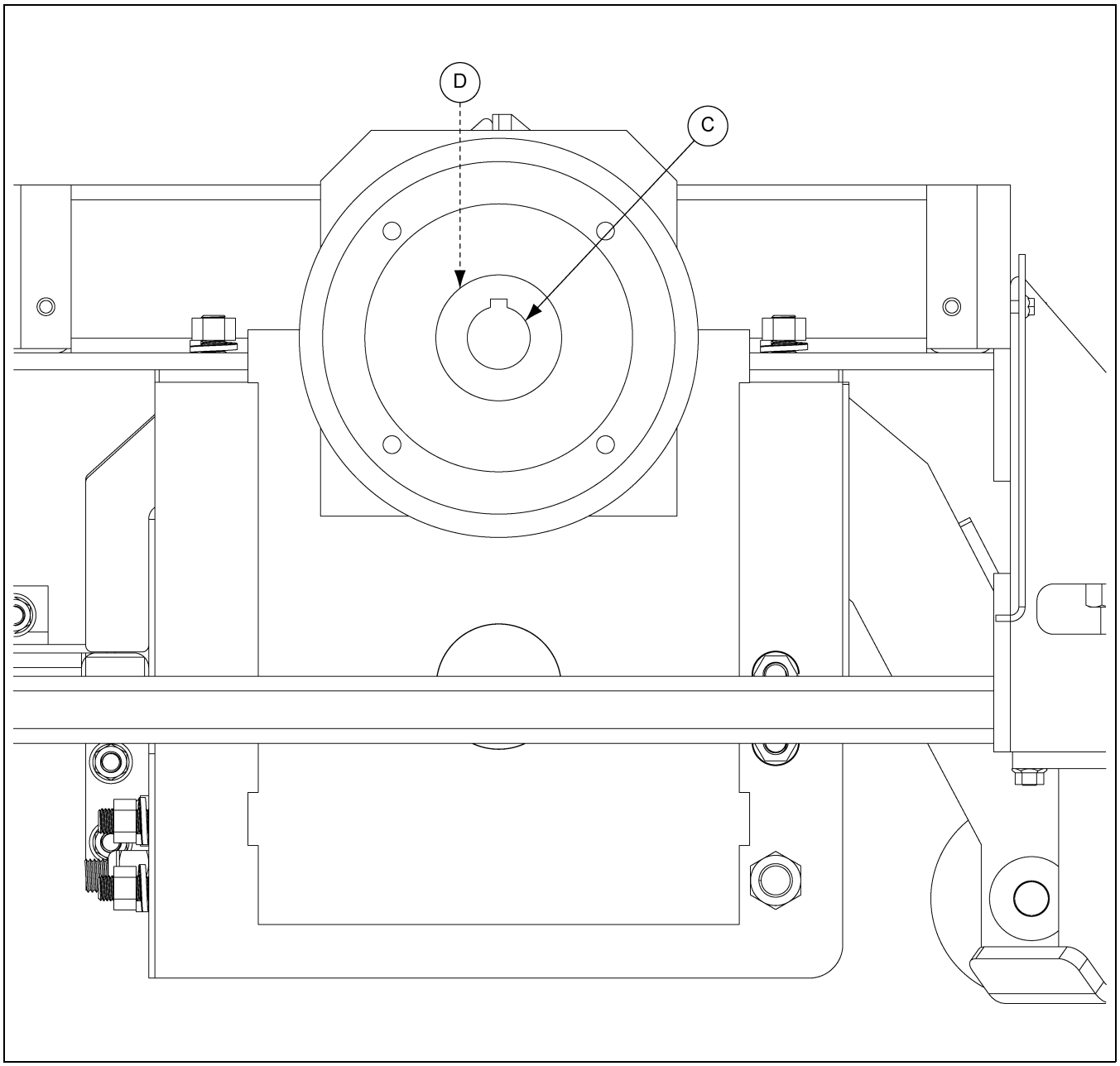


Figure 7AB

Ref #	Description
C	Motor Shaft Collar
D	6 mm Clamping Set Screw

4. Using a suitable lifting device, lift and guide the auger motor (E) into position. Align key and install motor to gearbox. *(See Figure 7AC.)*

   NOTE: *DO NOT use the motor key. Use the key provided with the gearbox.*

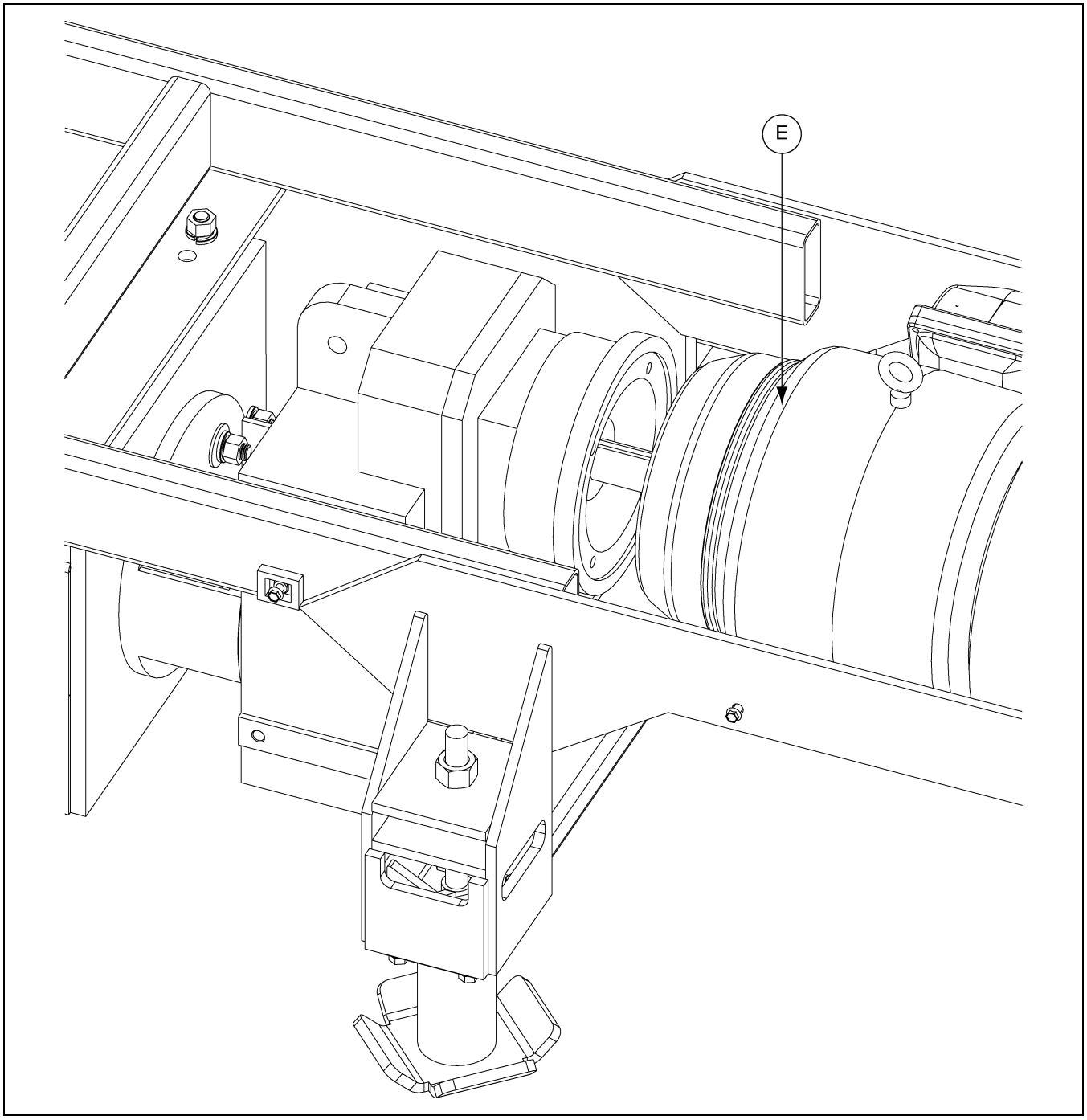


Figure 7AC

Ref #	Description
E	Auger Motor

5. Attach auger motor to gearbox using four (4) lock washers (G) and hex bolts (F). *(See Figure 7AD.)*

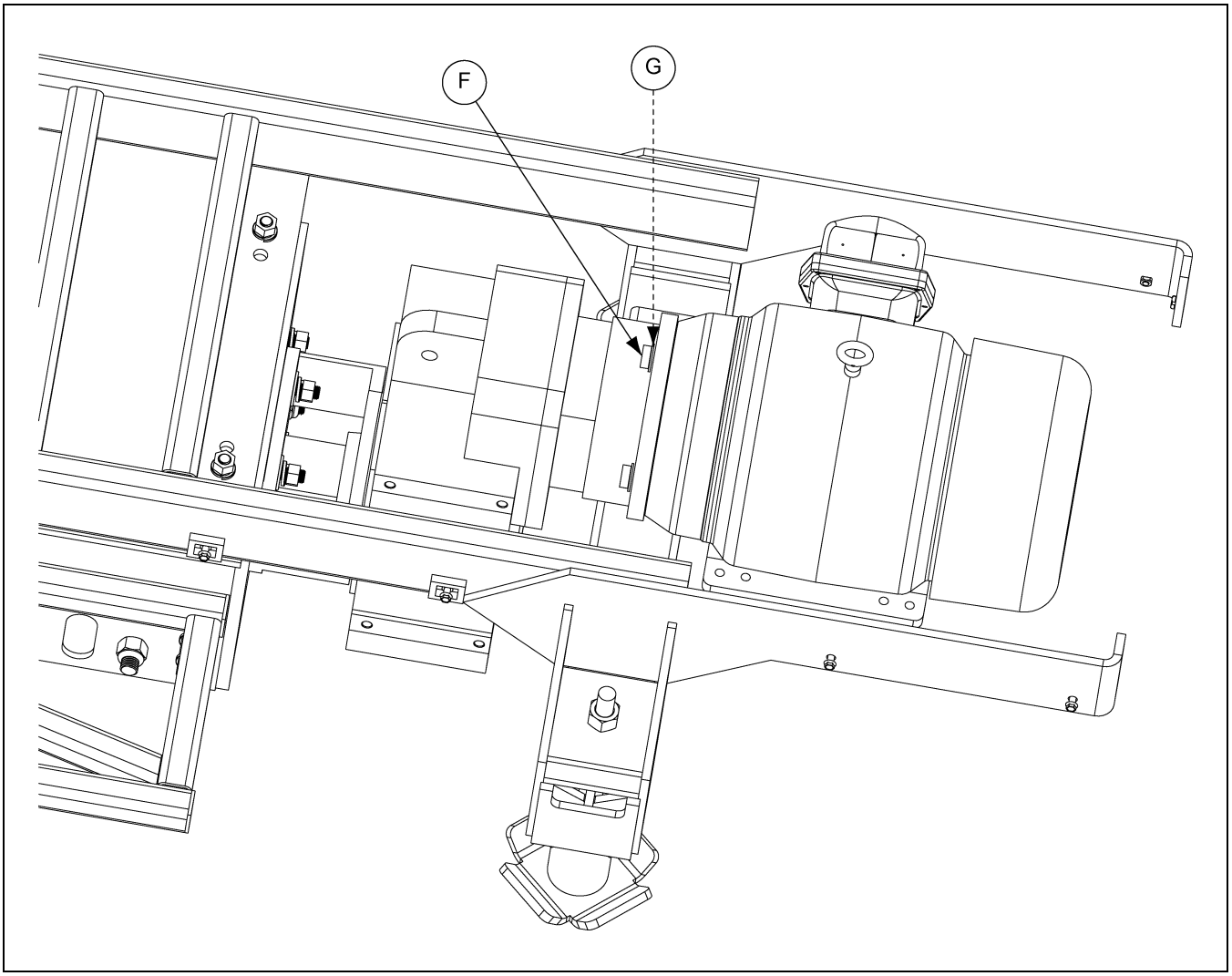


Figure 7AD

Ref #	Description
F	Hex Bolt (Use hex bolts supplied with gearbox.)
G	Lock Washer (Use washers supplied with gearbox.)

NOTE: *Mounting hardware may change depending on gearbox model.*

6. Tighten the 3 mm set screw, 6 mm clamping set screw and install the set screw plugs into the gearbox.

Installing the Auger Motor Hood

CAUTION

Use proper procedures and equipment when lifting auger motor hood.

1. Attach a suitable lifting device to hood. Carefully lift auger motor hood (A) over the motor frame assembly (B). *(See Figure 7AE.)*
2. Carefully lower the hood, aligning the fastening holes in the hood with the threaded holes in the frame.

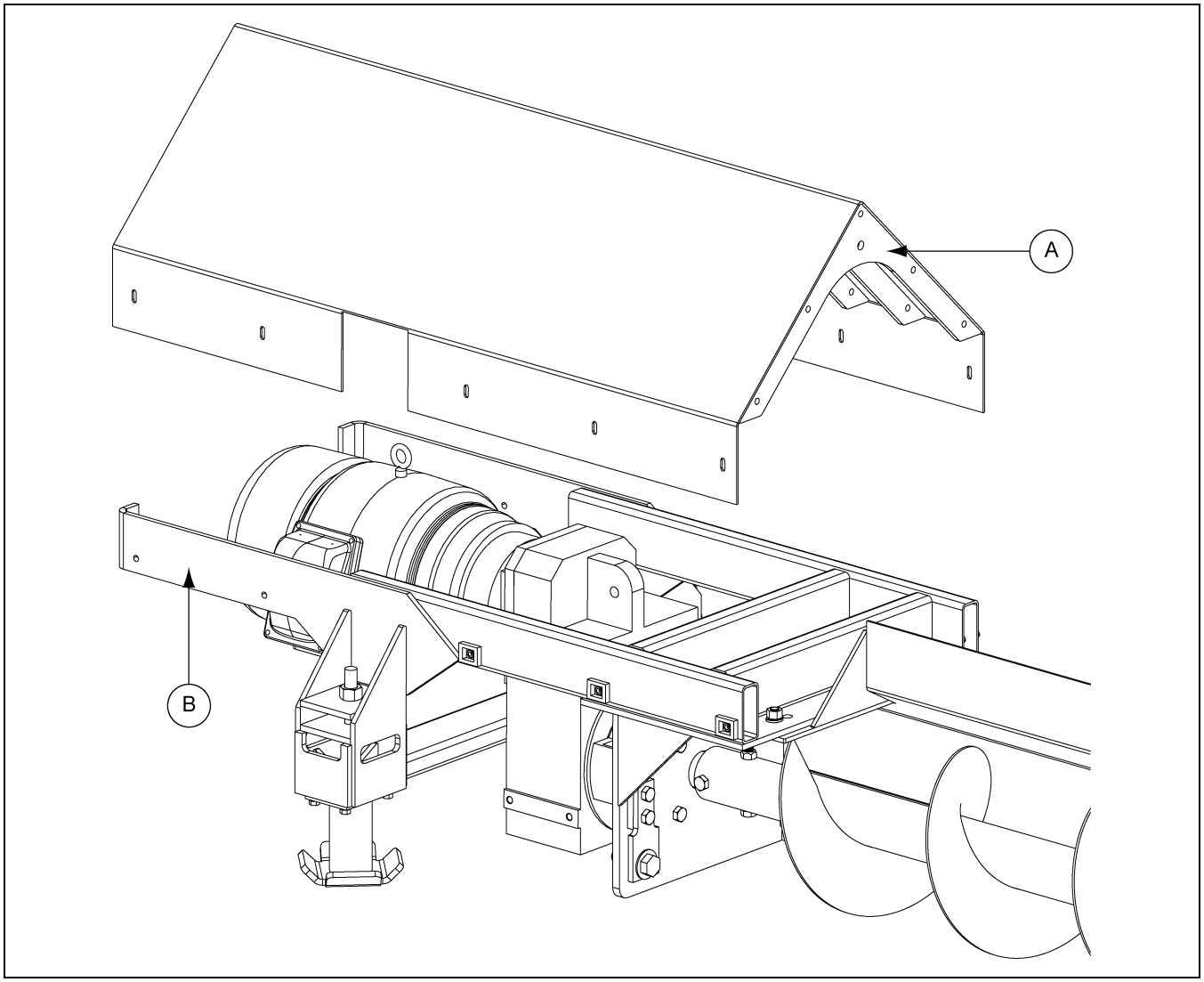


Figure 7AE

Ref #	Description
A	Auger Motor Hood
B	Motor Frame Assembly

3. Install ONLY five (5) hex bolts for 12" sweep, seven (7) hex bolts for 16" sweep (C) to each side of the auger motor hood and side covers (D) as shown, leaving the first threaded hole empty until the auger motor front cover is installed. *(See Figure 7AF.)*

   NOTE: *DO NOT tighten at this time. Leaving the hex bolts loose will ensure proper alignment of the front and rear covers.*

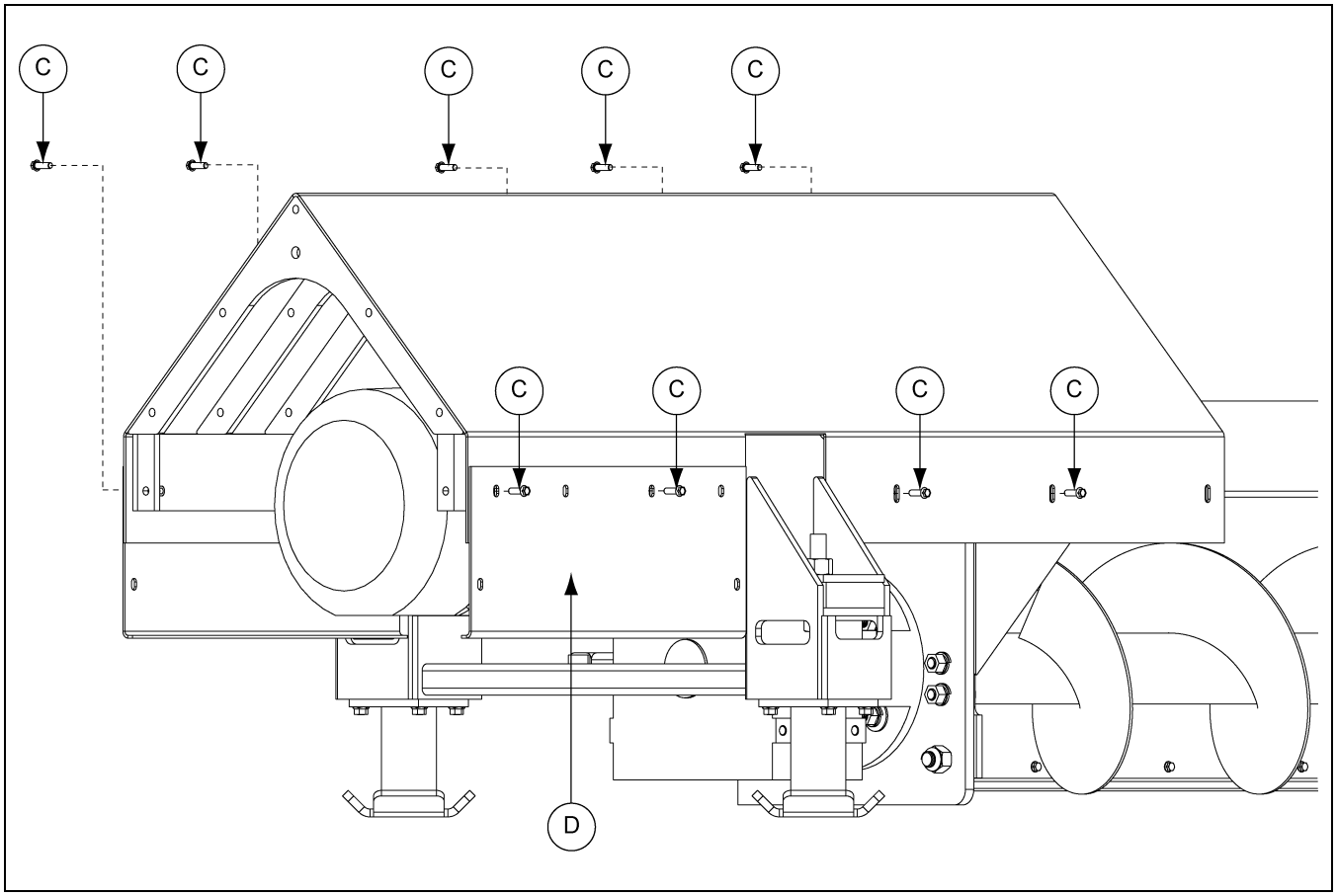


Figure 7AF

Ref #	Description
C	3/8"-16 Hex Bolt
D	Side Cover

Installing the Auger Motor Front Cover

1. Attach auger motor front cover (A) to the auger motor hood (D) and install with hex bolts (B).
2. Install hex bolts (C) and nuts to each side of the auger motor hood (D). *(See Figure 7AG.)*

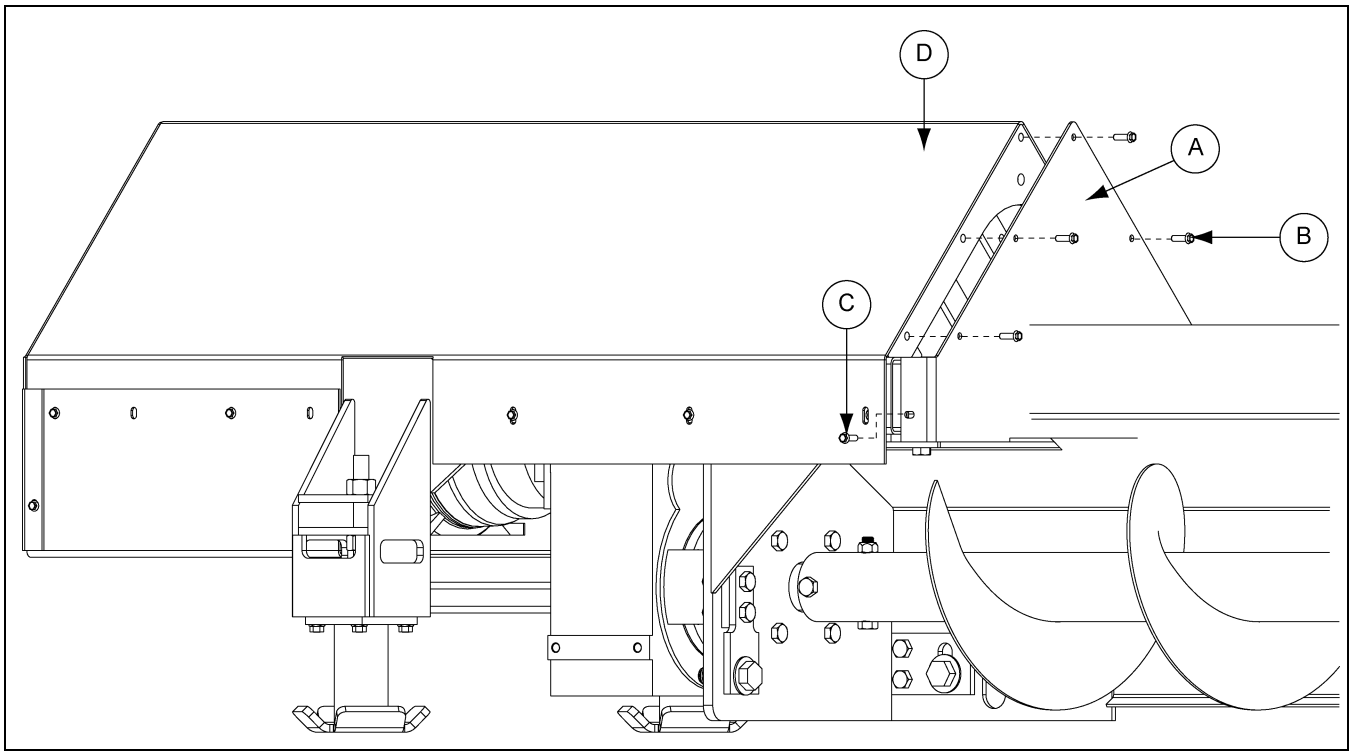


Figure 7AG

Ref #	Description
A	Auger Motor Front Cover
B	3/8"-16 Hex Bolt
C	3/8"-16 Hex Bolt
D	Auger Motor Hood

Installing the Auger Motor Rear Cover

1. Attach auger motor rear cover (A) to the auger motor hood (C) and install hex bolts (B).
2. Install hex bolts (D) and hex nuts (E) to each side of the auger motor hood (C). *(See Figure 7AH.)*
3. Tighten all hex bolts and hex nuts to specifications. *(See Table on Page 21.)*

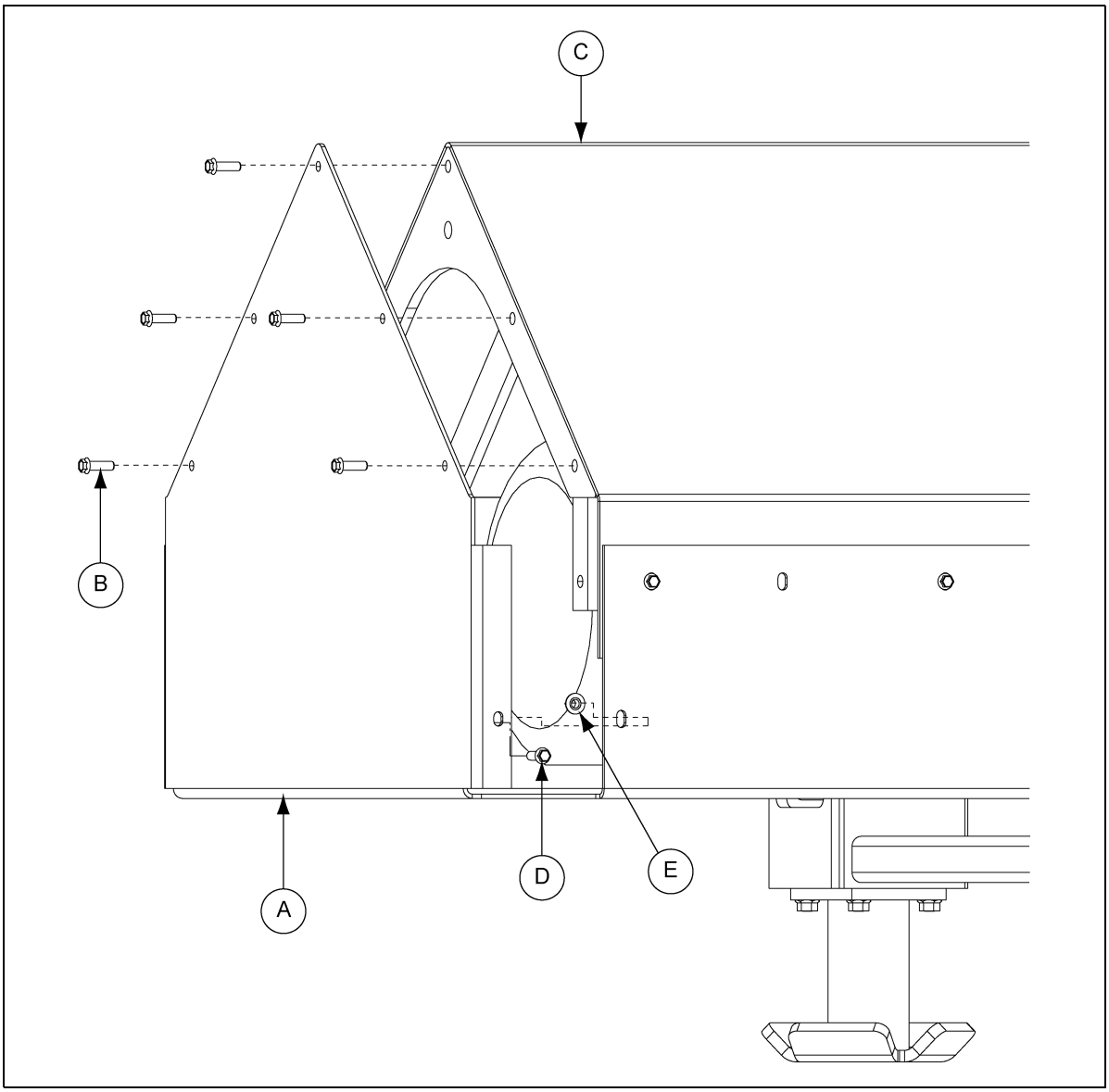


Figure 7AH

Ref #	Description
A	Auger Motor Rear Cover
B	3/8"-16 Hex Bolt
C	Auger Motor Hood
D	3/8"-16 Hex Bolt
E	3/8"-16 Hex Nut

Installing the Front Wheel Struts

1. Assemble front wheel (C) to strut (A) using pin (D) and roll pin (B). *(See Figure 7AI.)*

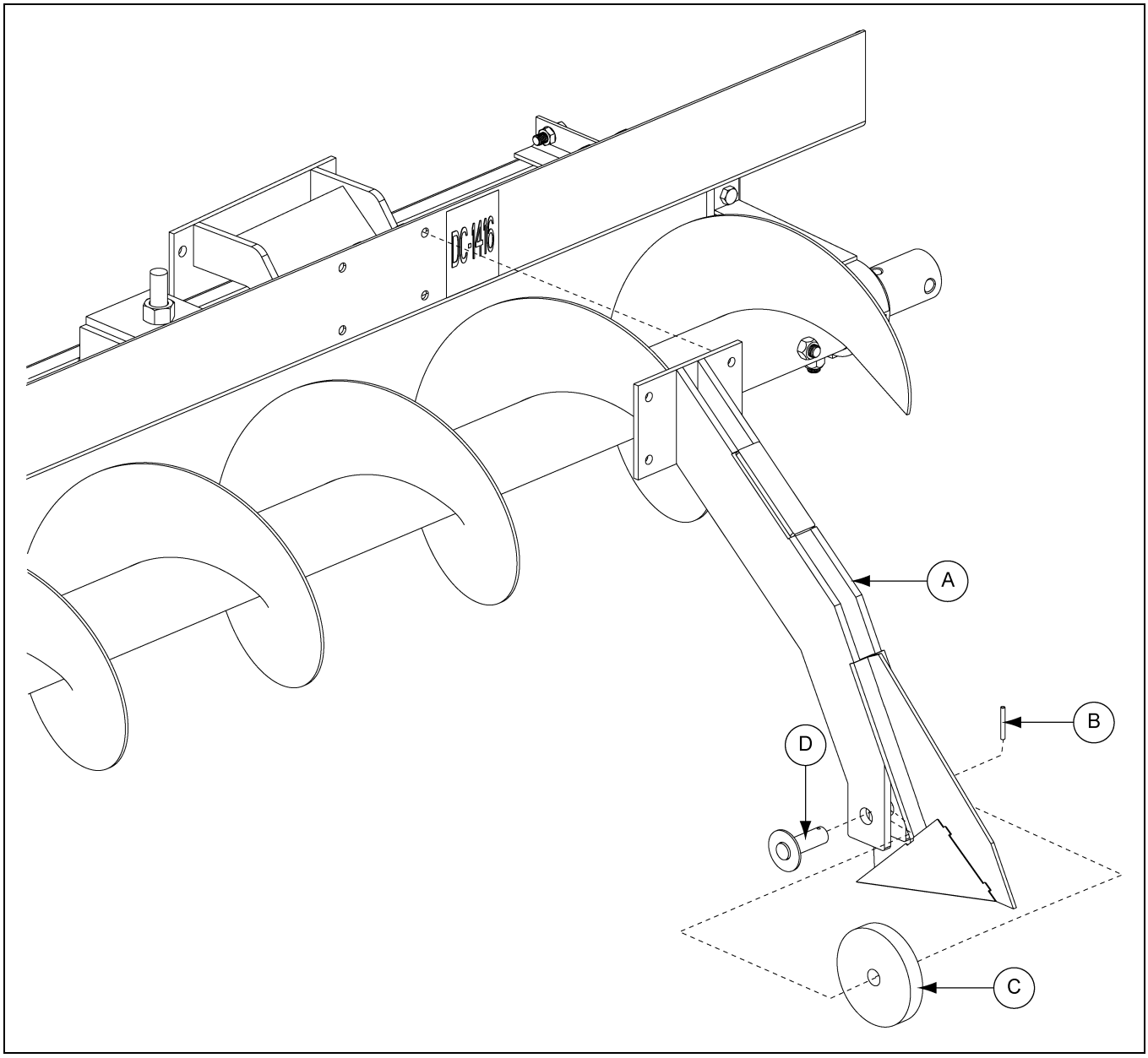


Figure 7AI

Ref #	Description
A	Strut
B	Roll Pin
C	Front Wheel
D	Pin

2. Install all front wheel struts (G) using hex bolts (F) and flange nuts (E). *(See Figure 7AJ.)*

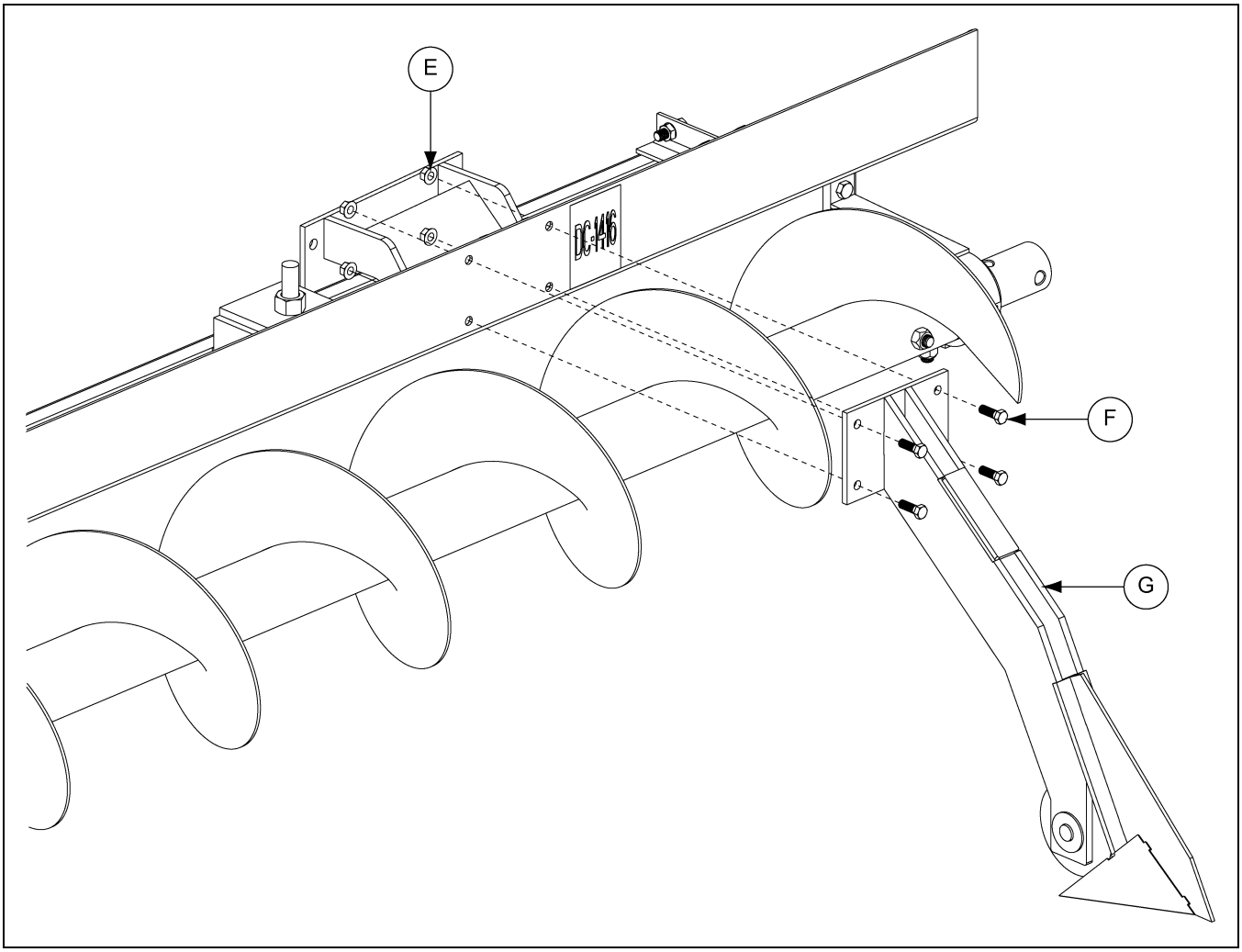


Figure 7AJ

Ref #	Description
E	1/2"-13 Flange Nut
F	1/2"-13 x 1-1/2" Hex Bolt
G	Front Wheel Strut

Adjusting the Sweep Height

1. Loosen brush assembly (C) and slide to the lowest setting possible. *(See Figure 7AK.)*
2. Rotate hex nut (A) counterclockwise to travel upwards on the threaded shaft so it does not interfere with height adjustment.

   NOTE: *Hex nut (A) will lock the sweep height when the correct sweep height is achieved.*
3. Rotate hex nut (B) as needed to adjust the height of the shield until the brush is touching the floor.
4. Rotate hex nut (A) clockwise until it is tight against the plate, locking the height position.

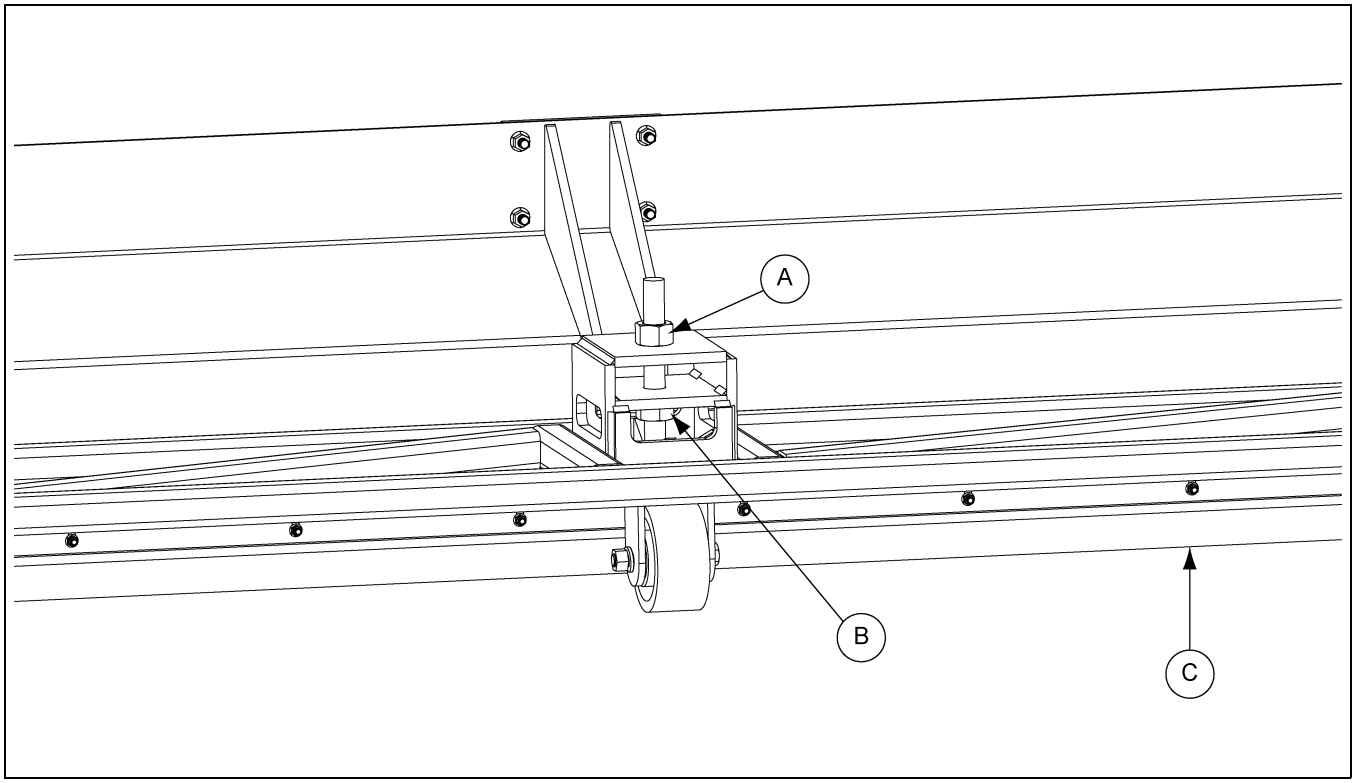


Figure 7AK

Ref #	Description
A	1"-5 Hex Nut
B	1"-5 Hex Nut
C	Brush Assembly

Leveling the Sweep Frame

1. Adjust sweep height. (See “Adjust Sweep Height” *on Page 69*.)

   NOTE: *The brush assembly should be loose at this time.*

2. Set a level (D) on the sweep frame (C). *(See Figure 7AL.)*

3. Turn nuts (A and B) as needed to level the sweep frame front to back.

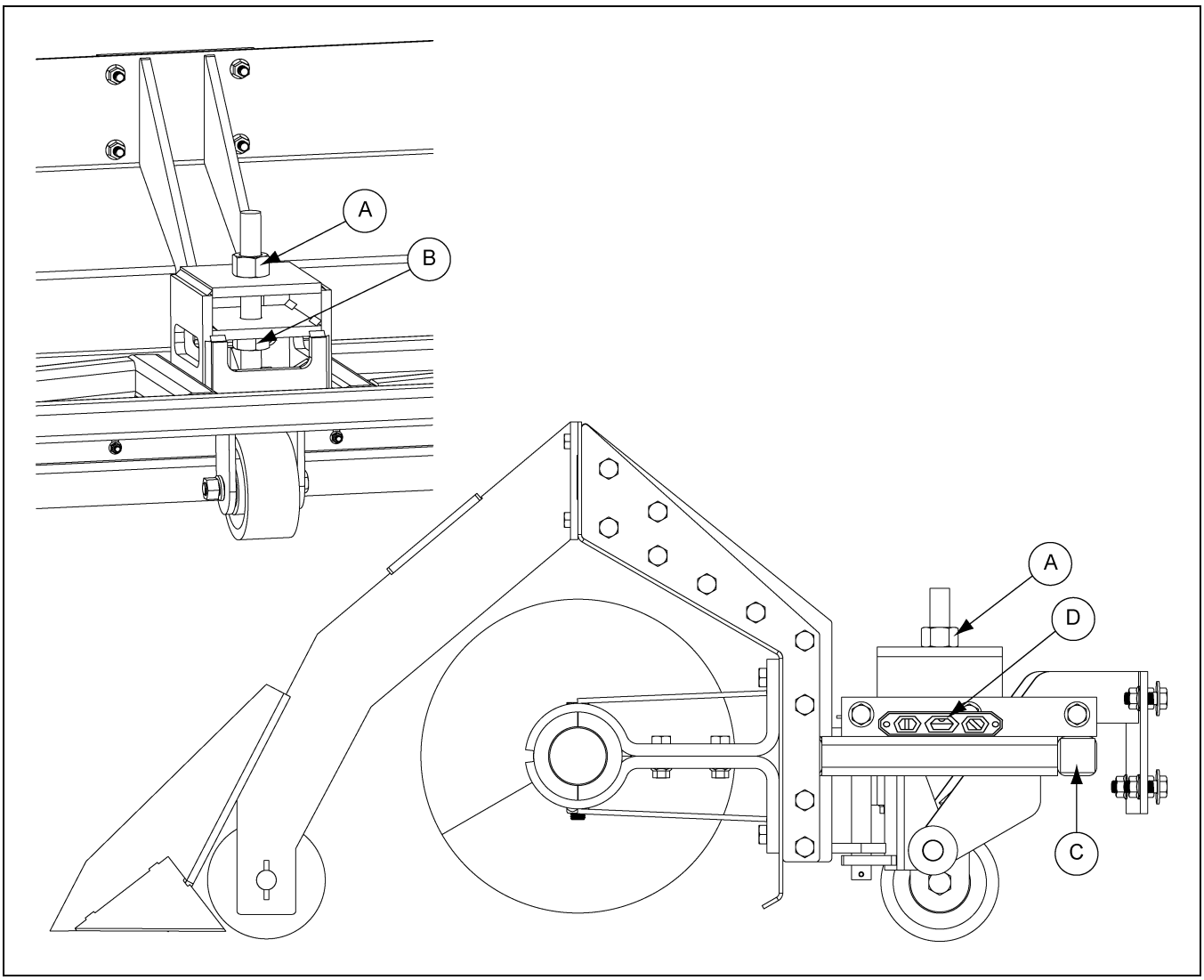


Figure 7AL

Ref #	Description
A	1"-5 Hex Nut
B	1"-5 Hex Nut
C	Sweep Frame
D	Level

4. Adjust sweep brushes. (See “Adjust Sweep Brushes” *on Page 81*.)

Installing the Pivot Plate to the Sweep Shield

1. Position the vertical/horizontal pivot plate (A) onto the sweep shield (D) as shown. *(See Figure 8A.)*
2. Align the holes on the vertical/horizontal pivot plate (A) with the sweep shield (D) and install the vertical pivot pin (B).
3. Locate the hole near the bottom of the vertical pivot pin (B) and install the slotted roll pin (C), securing the vertical/horizontal pivot plate (A) to the sweep shield (D).

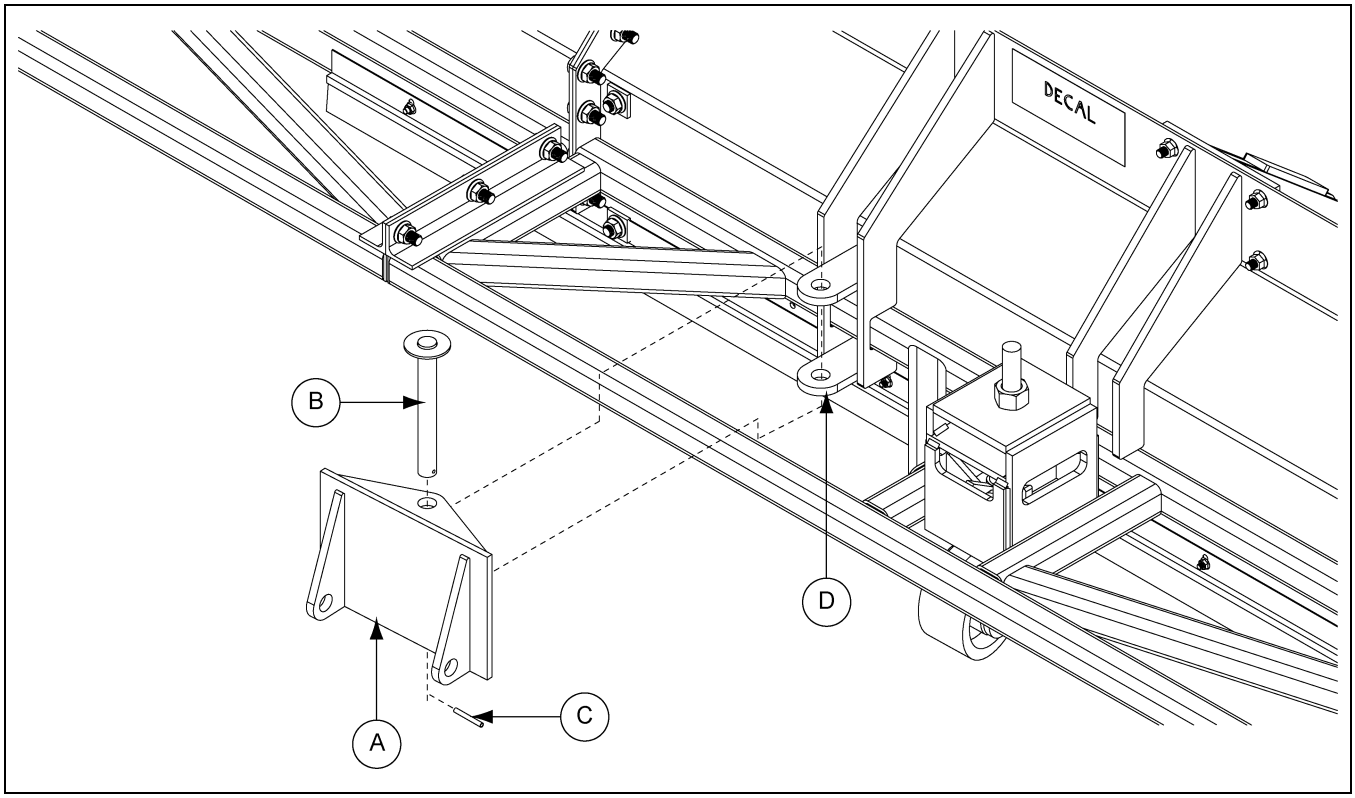


Figure 8A

Ref #	Description
A	Vertical/Horizontal Pivot Plate
B	Vertical Pivot Pin
C	3/16" x 2" Slotted Roll Pin
D	Sweep Shield

Installing the Horizontal Mount to the Pivot Plate

1. Position the horizontal mount (A) onto the vertical/horizontal pivot plate (C) as shown. *(See Figure 8B.)*
2. Align the holes on the horizontal mount (A) with the vertical/horizontal pivot plate (C) and install the horizontal pivot pin (B).
3. Locate the hole near the end of the horizontal pivot pin (B) and install the slotted roll pin (D), securing the horizontal mount (A) to the vertical/horizontal pivot plate (C).

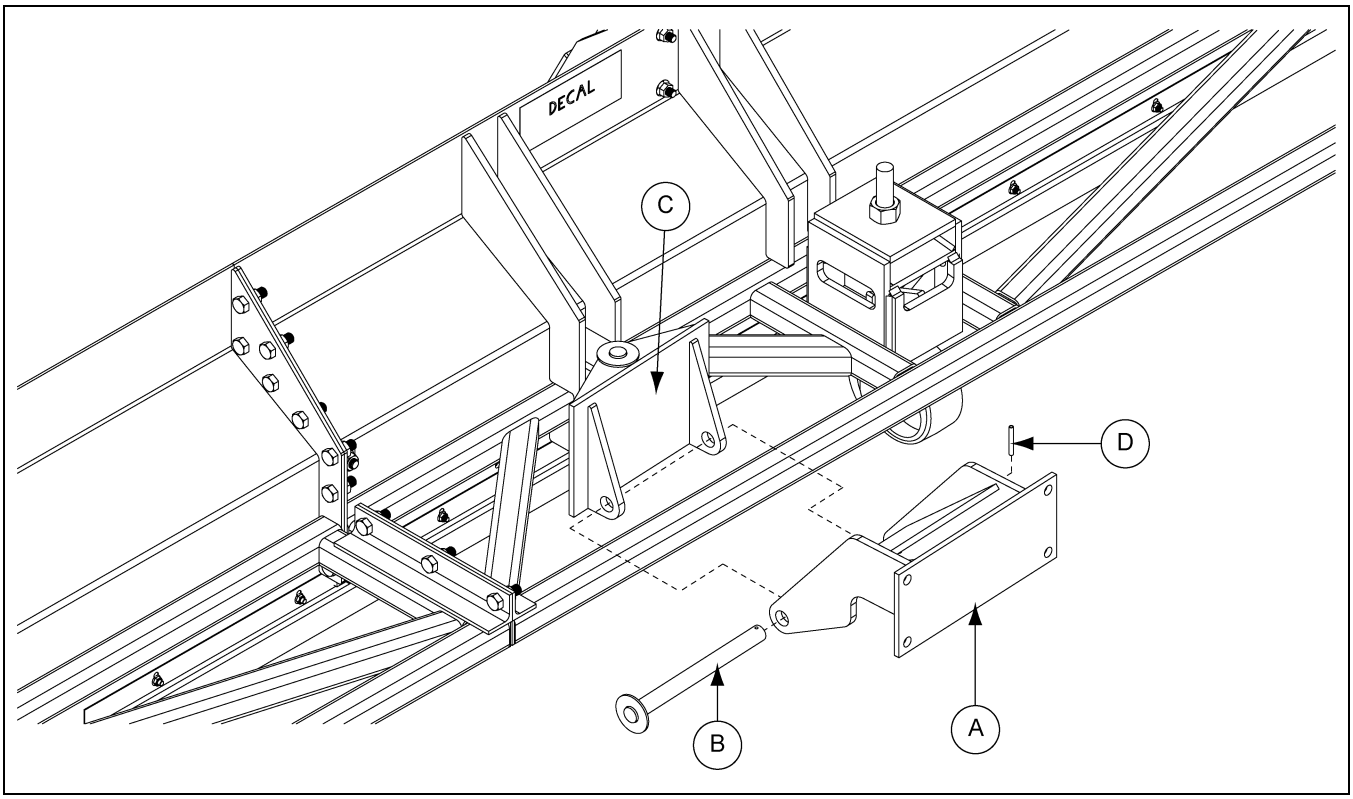


Figure 8B

Ref #	Description
A	Horizontal Mount
B	Horizontal Pivot Pin
C	Vertical/Horizontal Pivot Plate
D	3/16" x 2" Slotted Roll Pin

Installing the Gearbox to the Track Drive Plate

CAUTION

Use proper procedures and equipment when lifting gearbox.

1. Using the appropriate lifting device, carefully lift and place the gearbox on its side, using blocks to stabilize each end as shown. *(See Figure 8C.)*

   NOTE: *Gearbox will only assemble in one direction. Note the orientation of gearbox oil level sight glass (B).*

2. Position the track drive plate (A) and the drive spacer plate (E) onto the gearbox (C), carefully guiding the gearbox shaft though the track drive plate.

3. Align each hole and install hex bolts (D) to securing the track drive plate (A) onto the gearbox (C). Tighten to specifications. *(See Table on Page 21.)*

   NOTE: *Metric bolts supplied with the gearbox must be used. DO NOT use imperial hardware here.*

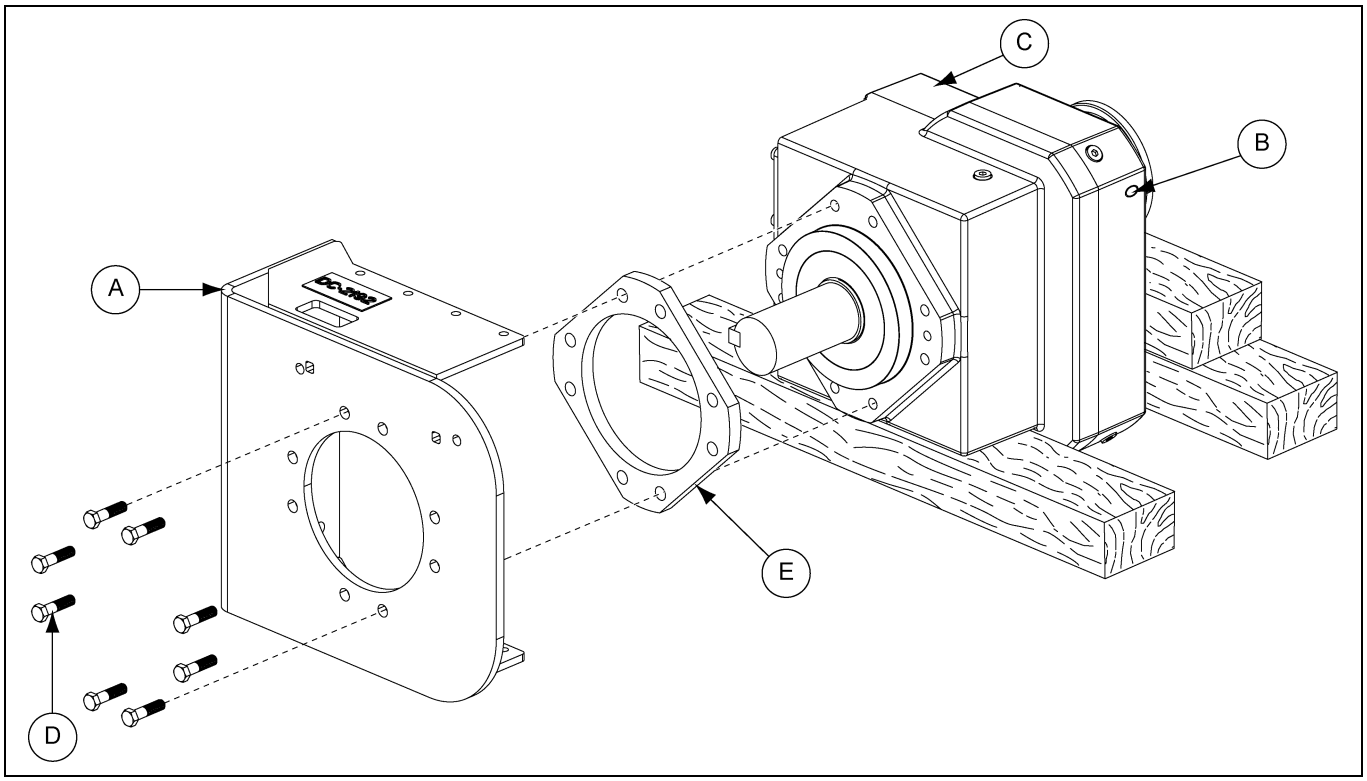


Figure 8C

Ref #	Description
A	Track Drive Plate
B	Gearbox Oil Level Sight Glass
C	Gearbox Assembly
D	M16 x 60 LHCS Din 6912 8.8 Hex Bolt
E	Drive Spacer Plate

Installing the Gear Drive Sprocket to the Gearbox Shaft

1. Install the key (D) to the gearbox shaft (B). *(See Figure 8D.)*
2. Attach gear drive sprocket (A) to gearbox shaft (B).
3. Tap gear drive sprocket (A) flush to end of gearbox shaft (B).

   NOTE: *It may be necessary to use a rubber mallet to tap the sprocket flush to end of gearbox shaft.*
4. Install and tighten set screws (C).

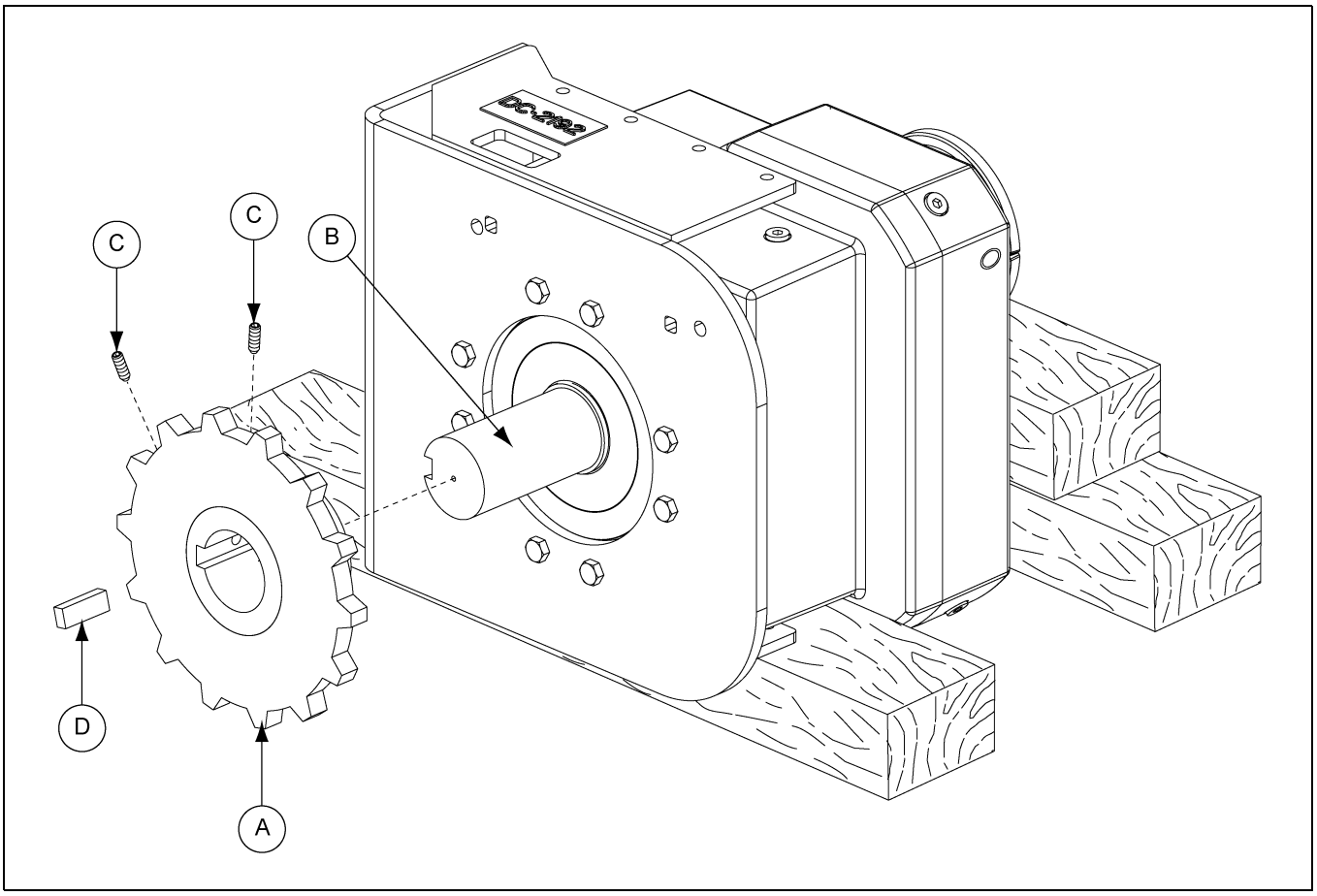


Figure 8D

Ref #	Description
A	Gear
B	Gearbox Shaft
C	Set Screw
D	Key

Installing the Drive Keeper Mount Plate

1. Install the drive keeper mount plate assembly (C) to the track drive plate (B) using hex bolts (D) and flange nuts (A). *(See Figure 8E.)* **NOTE:** *The square holes (E) are used for 8' track radius only and the round holes (F) are used for 18' through 48' track radius.*
2. Tighten to specifications. *(See Table on Page 21.)*

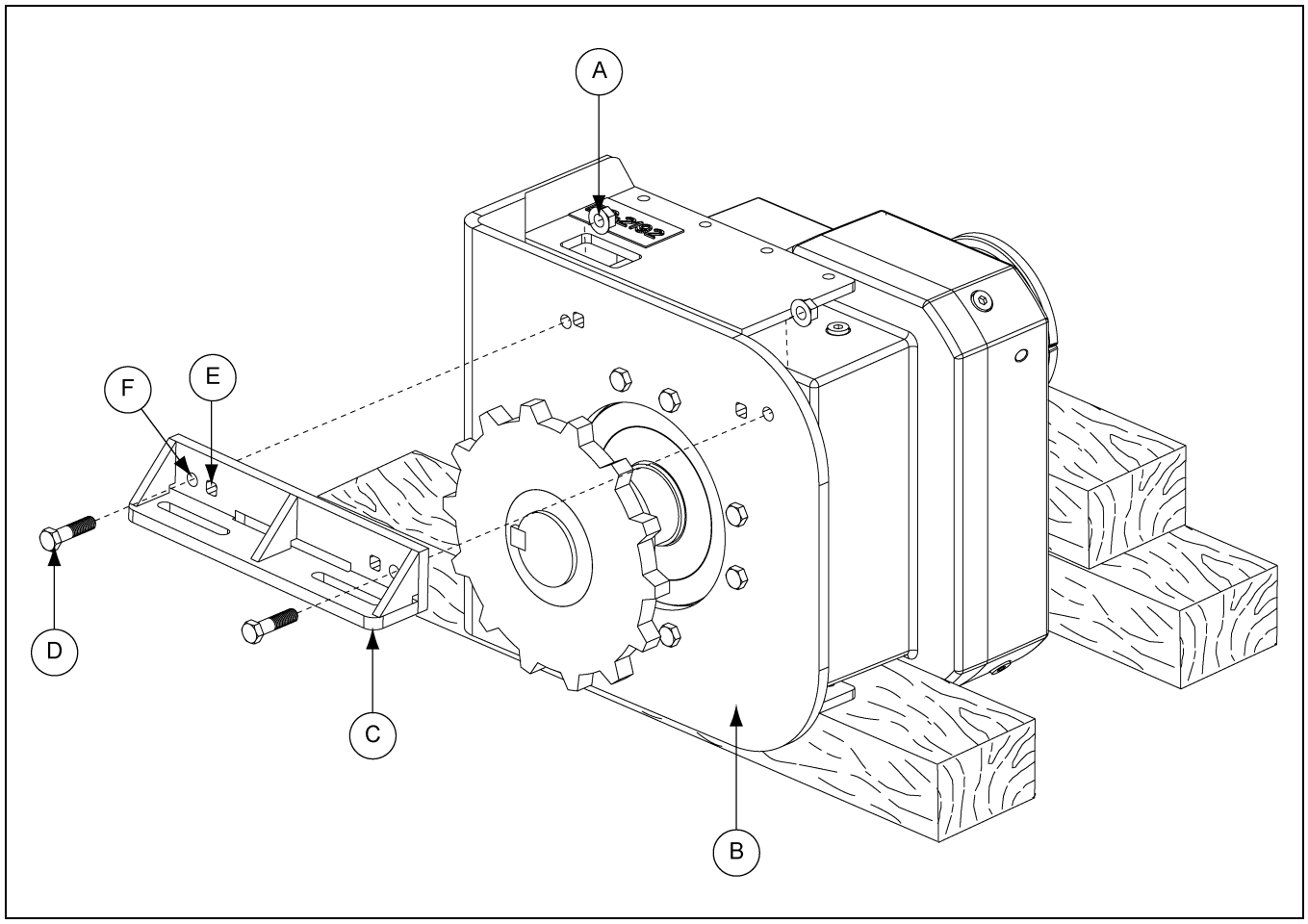


Figure 8E

Ref #	Description
A	1/2"-13 Flange Nut
B	Track Drive Plate
C	Drive Keeper Mount Plate
D	1/2"-13 x 2" Hex Bolt
E	Square Holes
F	Round Holes

Installing the Gearbox to the Pivot Mount

CAUTION

Use proper procedures and equipment when lifting gearbox.

1. Carefully place the gearbox assembly (A) in the upright position and support the assembly with blocks. *(See Figure 8F.)*
2. Position the gearbox assembly (A) so the drive keeper mounting plate (F) rests on top of the track and align the gear wheel teeth to the bottom of the track slots (G).

   NOTE: *Make sure the weight of the gearbox assembly is not supported by the gear wheel. The weight must be supported by the drive keeper mounting plate on top of the track.*
3. Install the gearbox assembly (A) to the pivot mount assembly (D) using hex bolts (C), flat washers (B) and flange nuts (E).
4. Tighten to specifications. *(See Table on Page 21.)*

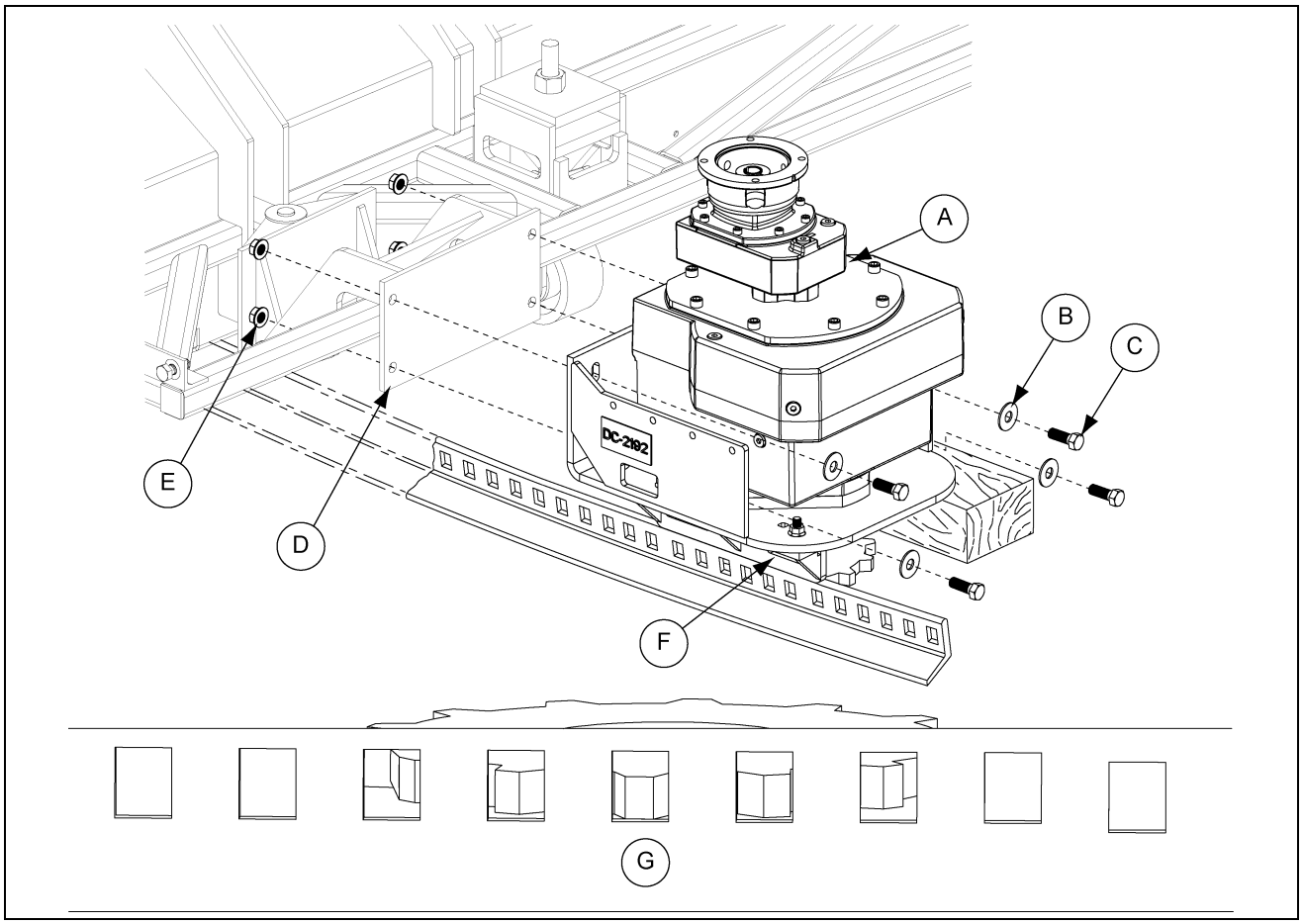


Figure 8F

Ref #	Description
A	Gearbox Assembly
B	5/8" Flat Washer
C	5/8"-11 x 1-3/4" Hex Bolt
D	Pivot Mount Assembly

Ref #	Description
E	5/8"-11 Flange Nut
F	Drive Keeper Mounting Plate
G	Align gear wheel teeth to the bottom of the opening.

Installing the Drive Keepers

1. Install the drive keepers (D) to the drive keeper mount plate (C) using hex bolts (A), flat washers (B) and flange nuts (E). *(See Figure 8G.)*

   NOTE: *The drive keepers are beveled on both edges so they can be installed in either direction.*

2. Tighten to specifications. *(See Table on Page 21.)*

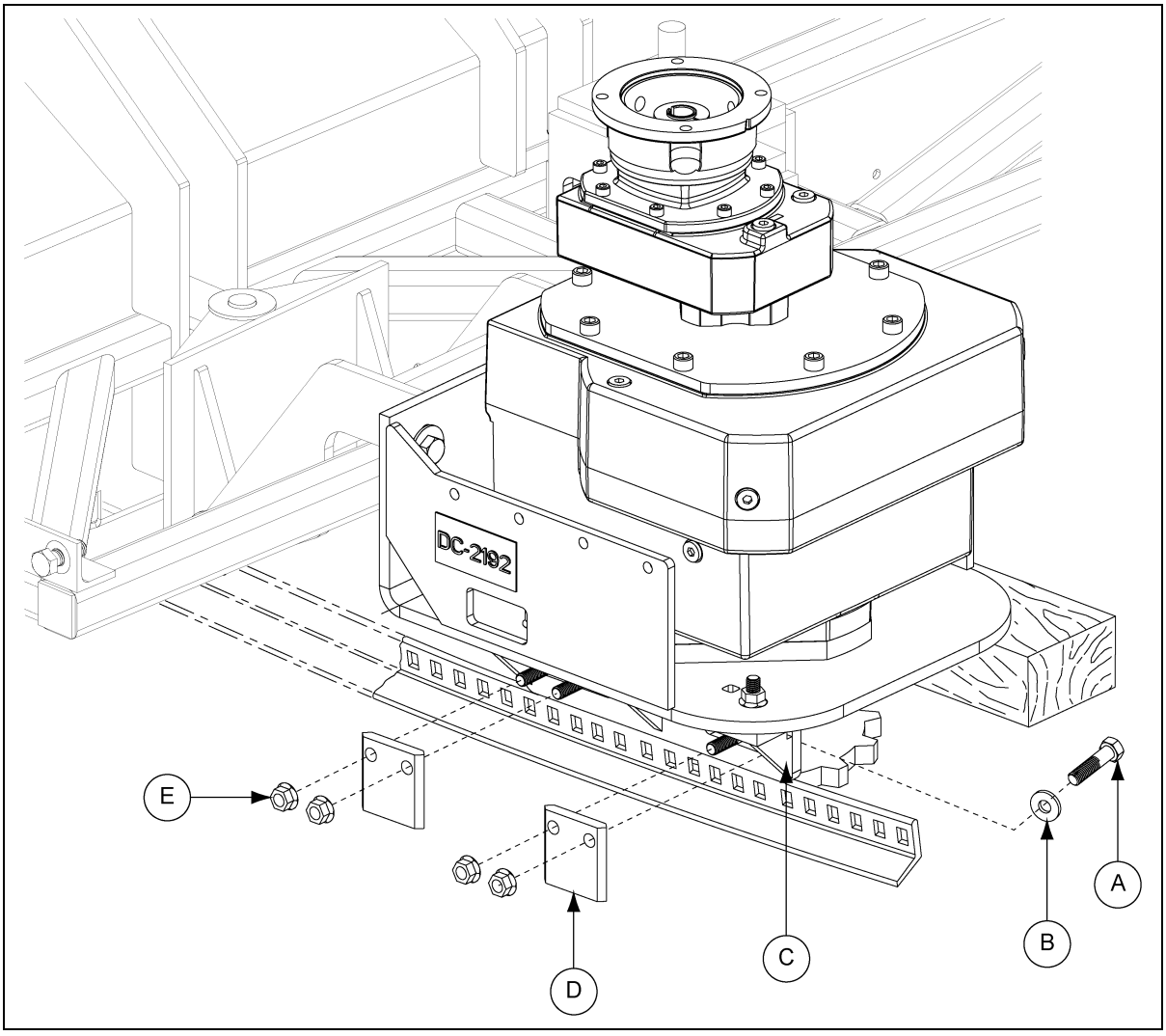


Figure 8G

Ref #	Description
A	1/2"-13 x 2" Hex Bolt
B	1/2" Flat Washer
C	Drive Keeper Mount Plate
D	Drive Keeper
E	1/2"-13 Flange Nut

Installing the Track Drive Motor

> **CAUTION** ***Use proper procedures and equipment when lifting gearbox.***

1. Using the appropriate lifting device, carefully lift and install track drive motor (A) to gearbox (C) using hex bolts (B). *(See Figure 8H.)*
2. Tighten to specifications. *(See Table on Page 21.)*

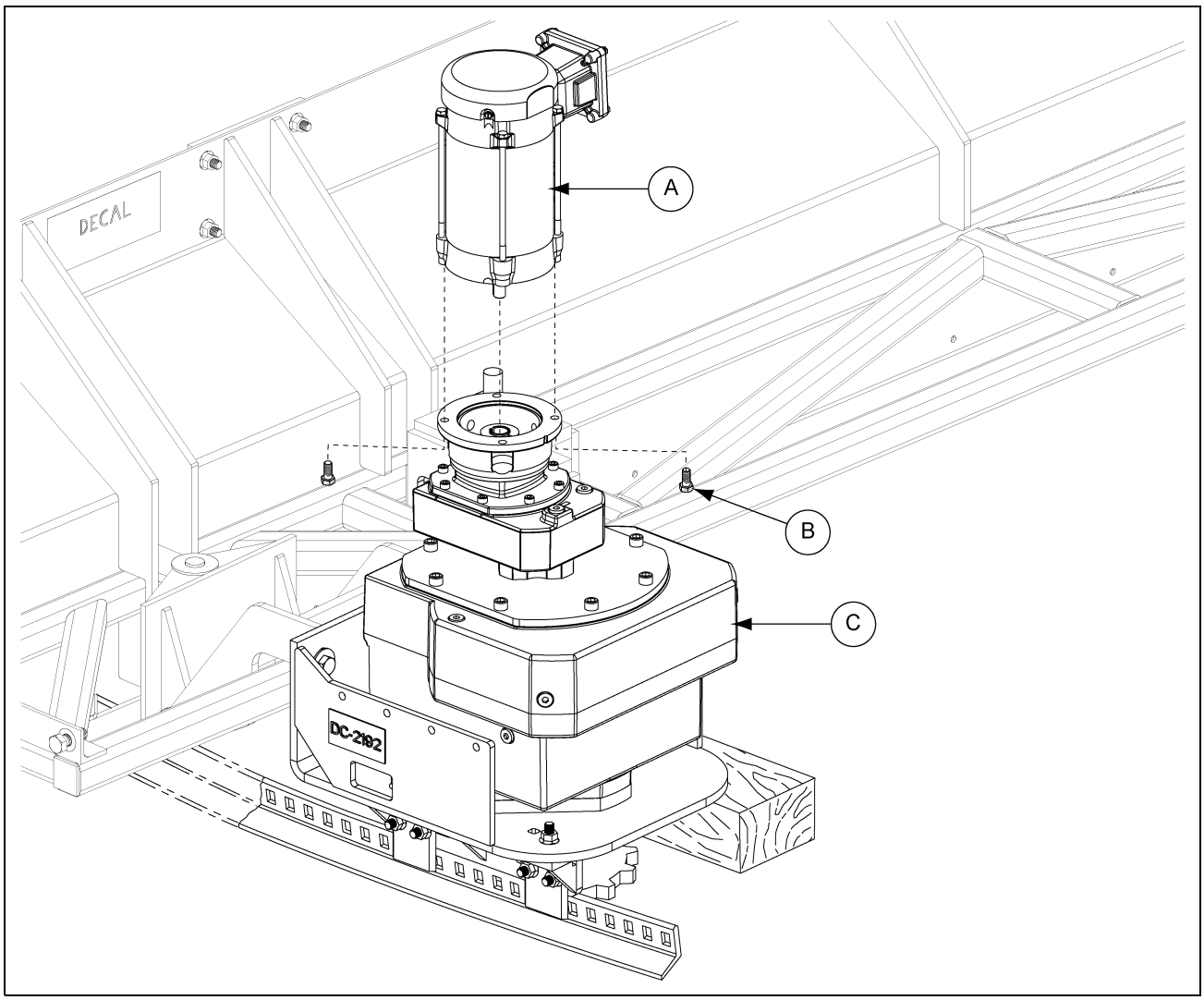


Figure 8H

Ref #	Description
A	Track Drive Motor
B	Hex Bolt
C	Gearbox Assembly

Installing the Drive Motor Side Covers

1. Install the drive motor sides (A) to the gearbox assembly (B) using four (4) bolts (D) and nuts (E) along the bottom edge. *(See Figure 8I.)*
2. Install the cross brace (C) to the side covers (A) using the bottom hole on the opposite sides with bolts (D) and nuts (E).

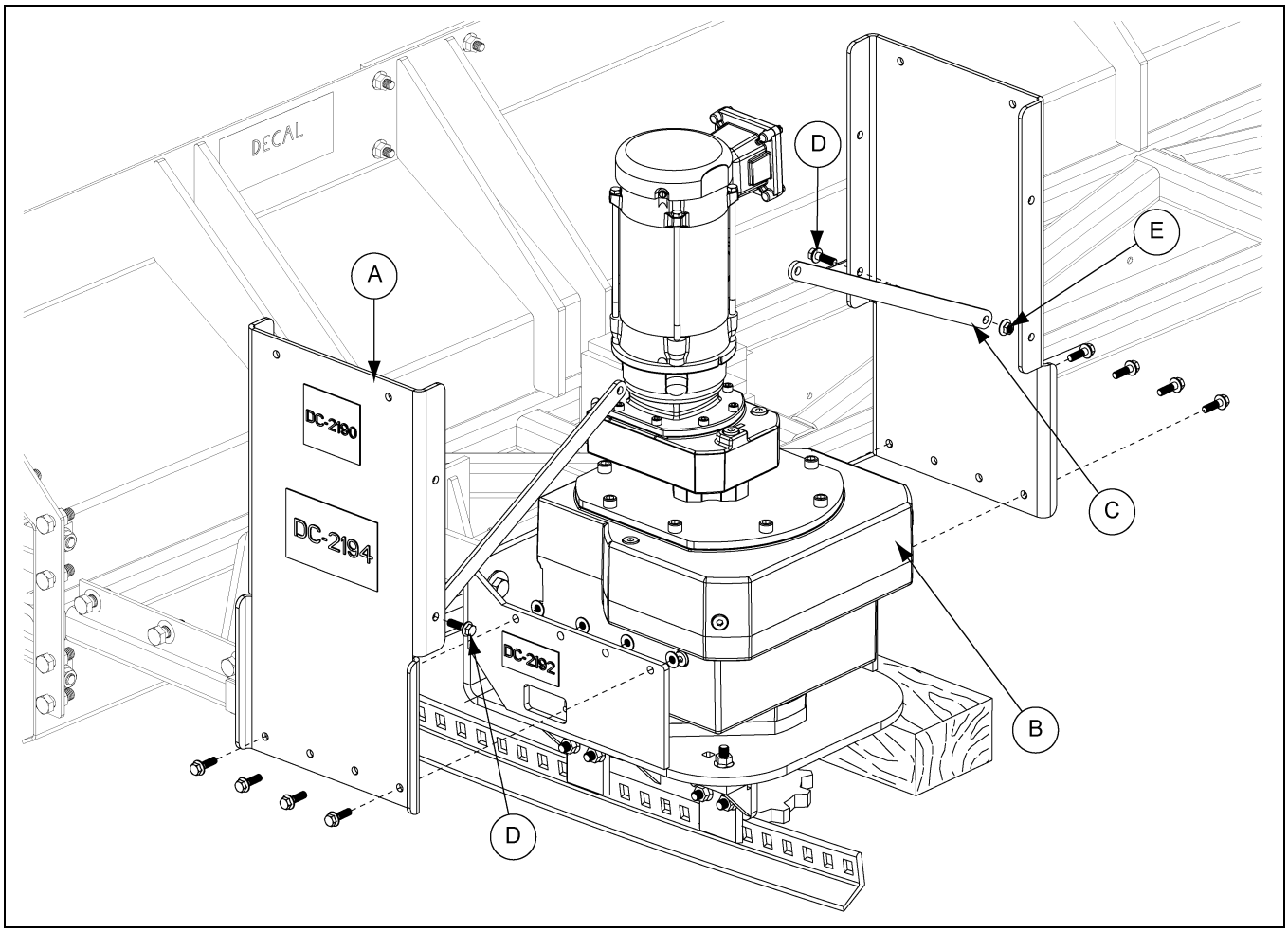


Figure 8I

Ref #	Description
A	Drive Motor Side Cover
B	Gearbox Assembly
C	Cross Brace
D	3/8"-16 x 1-1/4" Flange Bolt
E	3/8"-16 Flange Nut

Installing the Drive Motor Hood

1. Attach the drive motor hood (A) to the drive motor side covers (C) using flange bolts (B) and flange nuts (D). *(See Figure 8J.)*

   NOTE: *The top end of the cross brace (E) will be installed at the same time as the motor hood (A).*

2. Tighten to specifications. *(See Table on Page 21.)*
3. Install the vent plug supplied with the gearbox at the location indicated below.

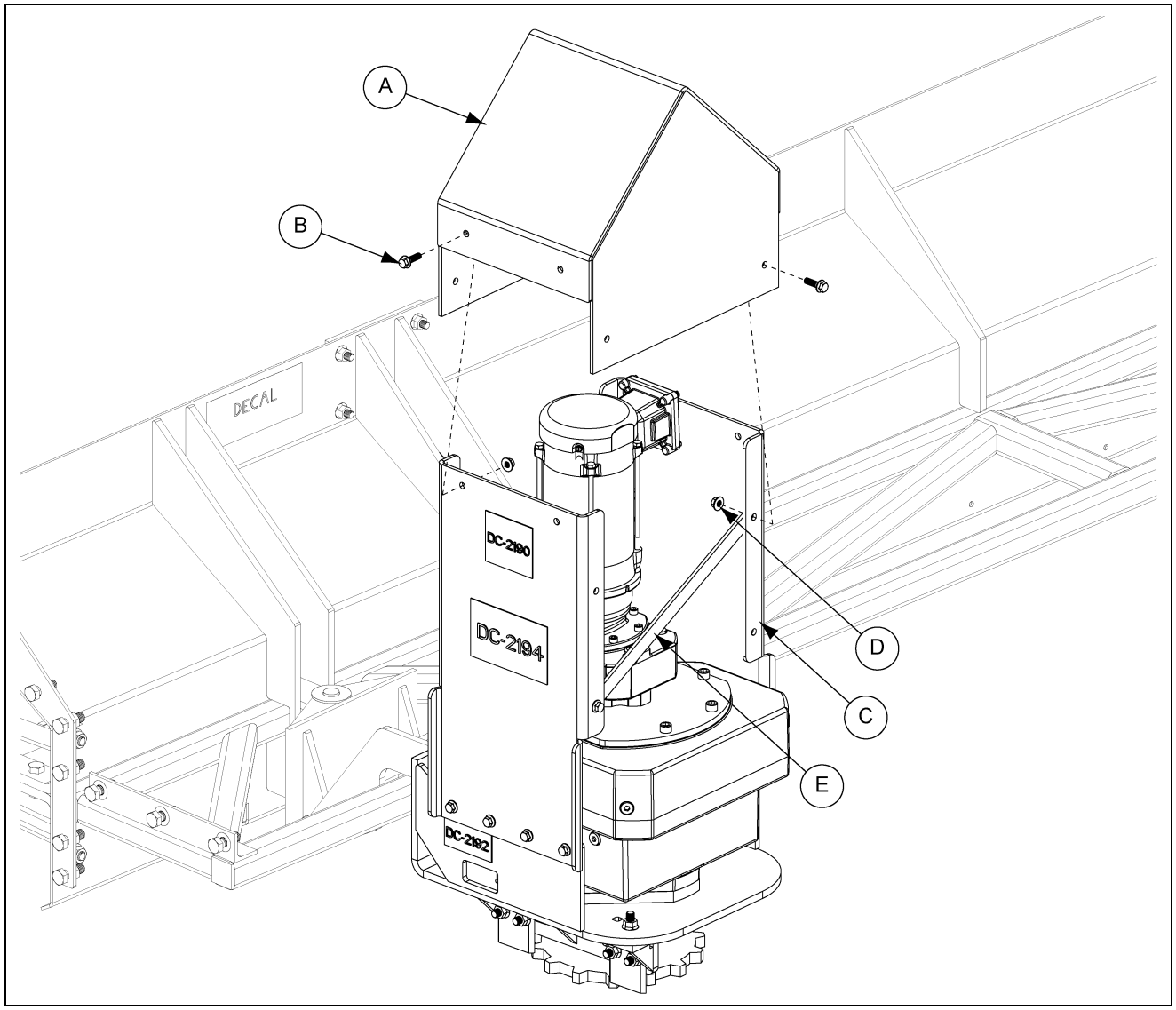


Figure 8J

Ref #	Description
A	Drive Motor Hood
B	3/8"-16 x 1-1/4" Flange Bolt
C	Drive Motor Side Cover
D	3/8"-16 Flange Nut
E	Cross Brace

Adjusting the Sweep Brushes

1. Loosen flange nuts (B). *(See Figure 8K.)*
2. Slide sweep brush (A) up or down as needed to follow the contour of the floor.
3. Install flange nuts (B). Tighten to specifications. *(See Table on Page 21.)*

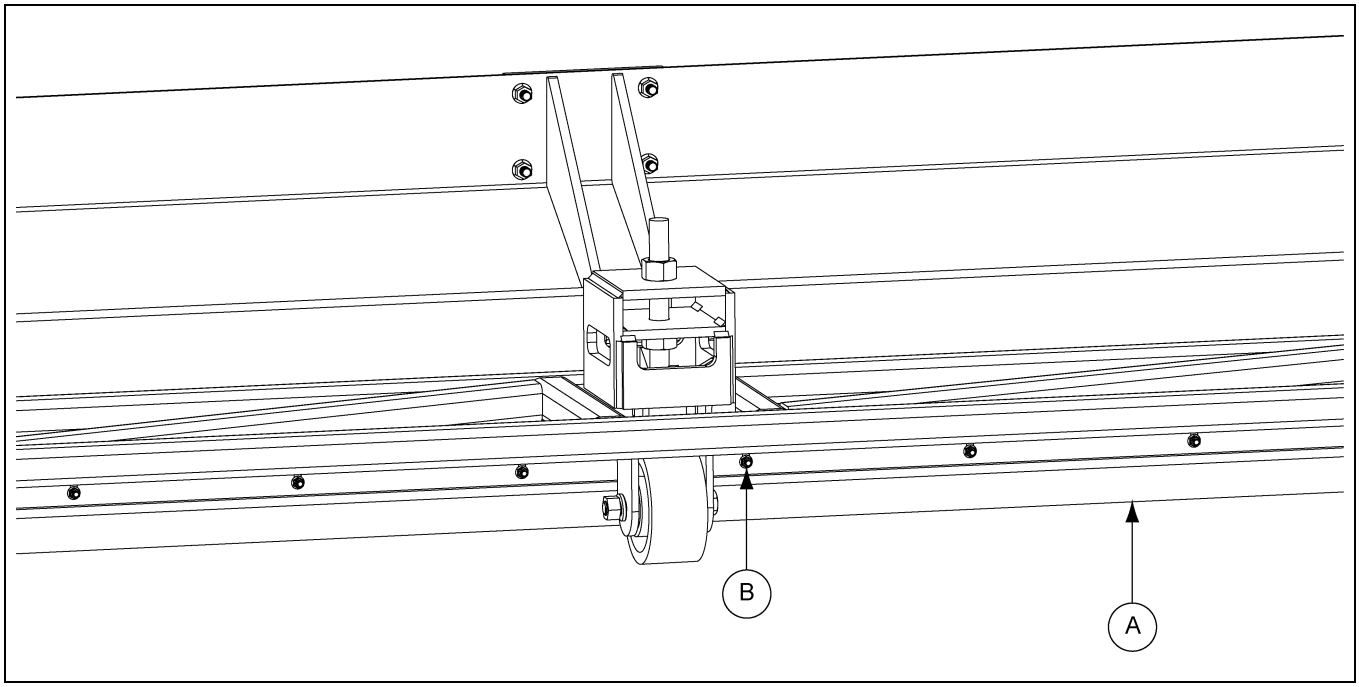


Figure 8K

Ref #	Description
A	Sweep Brush
B	5/16"-18 Flange Nut

Cutting the Auger Flighting

The auger flighting must be cut to allow the auger to rotate without interfering with the Posi-Drive Track. *(See Figure 8L.)*

To Cut the Auger Flighting:

1. Install the auger.
2. Use the flight cutting templates for cutting area. *(See Figure 8M on Page 83 and Figure 8N on Page 84.)*

   NOTE: *Templates should be printed at 100%; therefore all dimensions should be at a one to one scale.*

3. Center the template length above the track. This will give you the area that will interfere with the track as the flight is rotated.

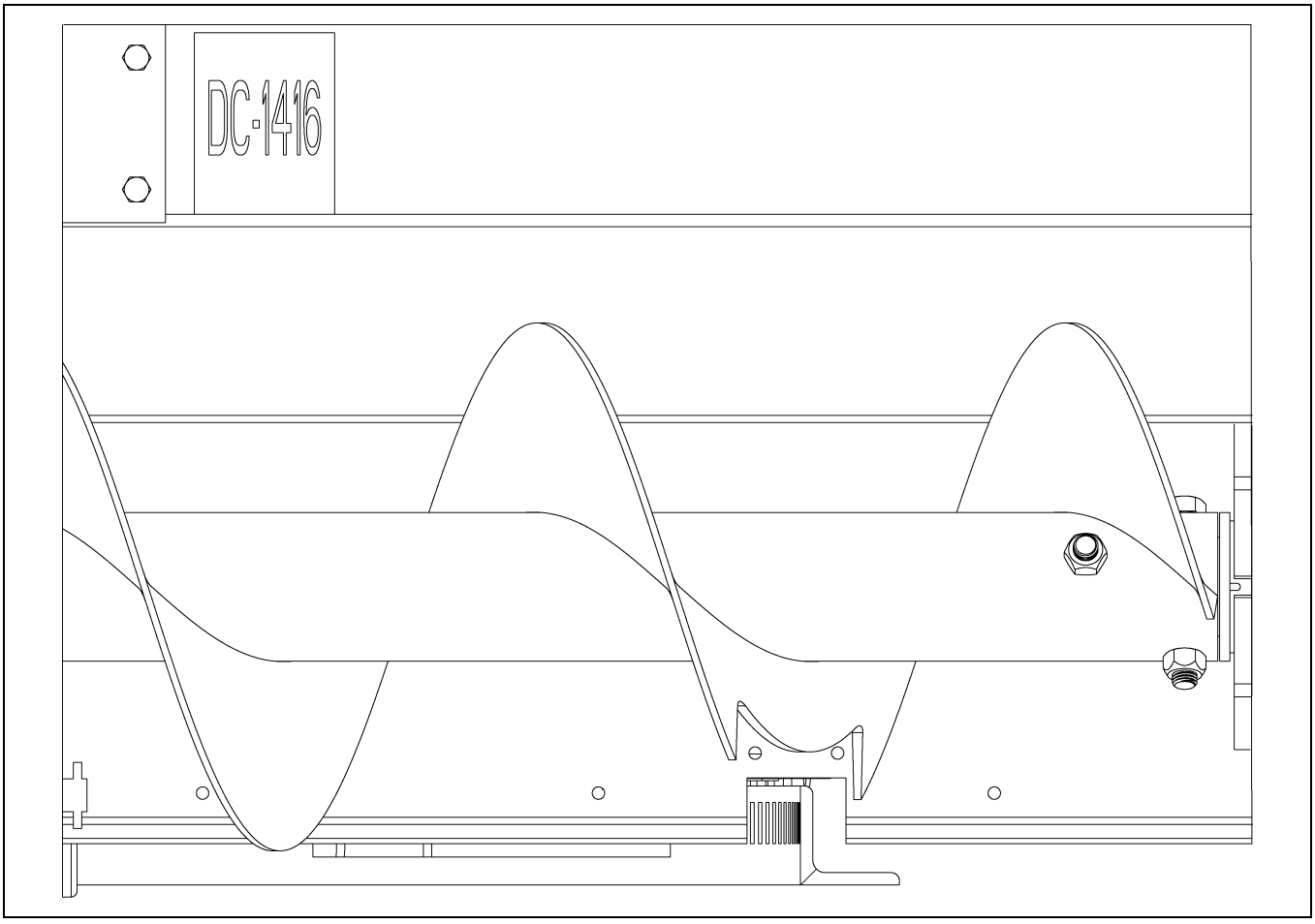


Figure 8L

12" Flight Cut Template

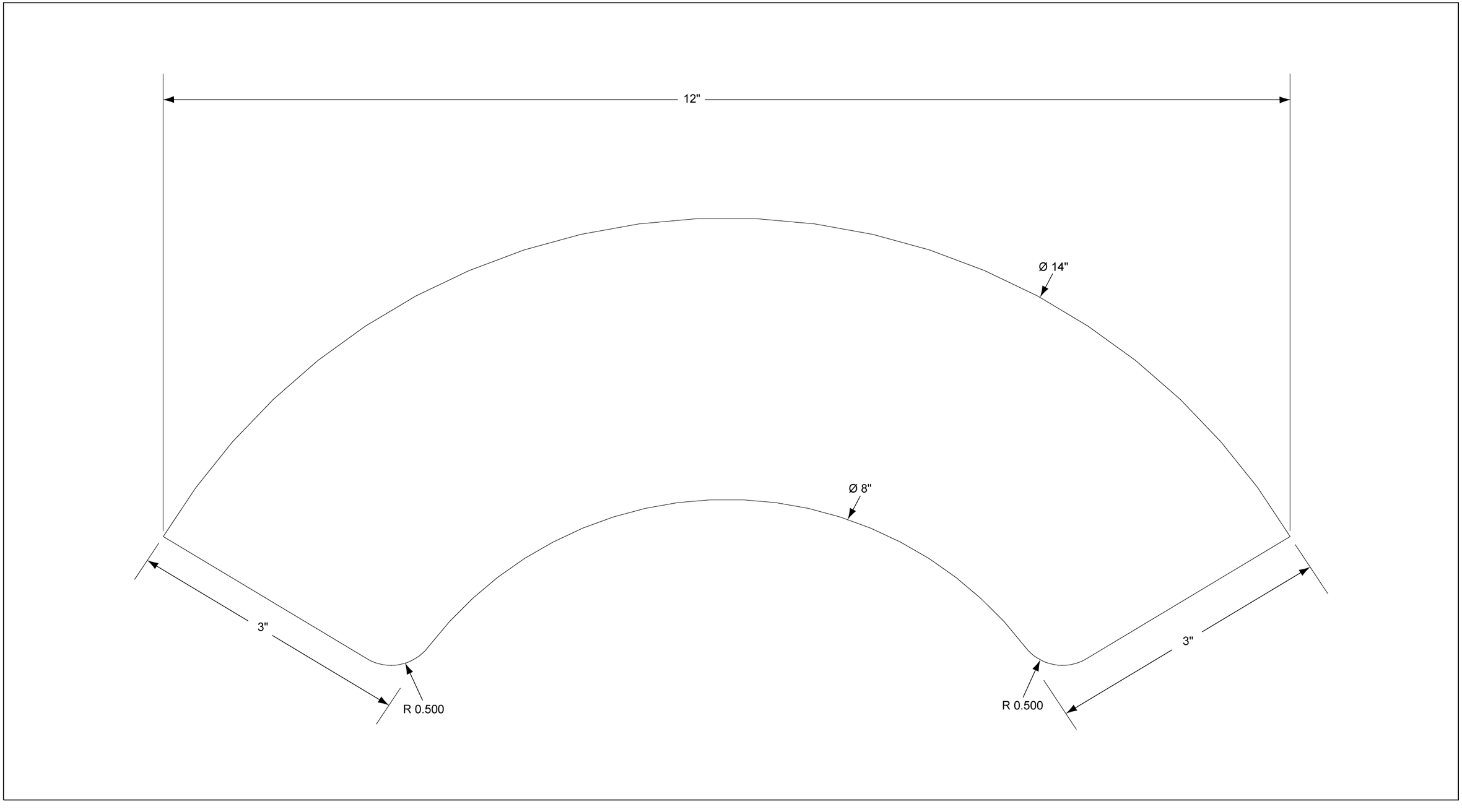


Figure 8M

16" Flight Cut Template

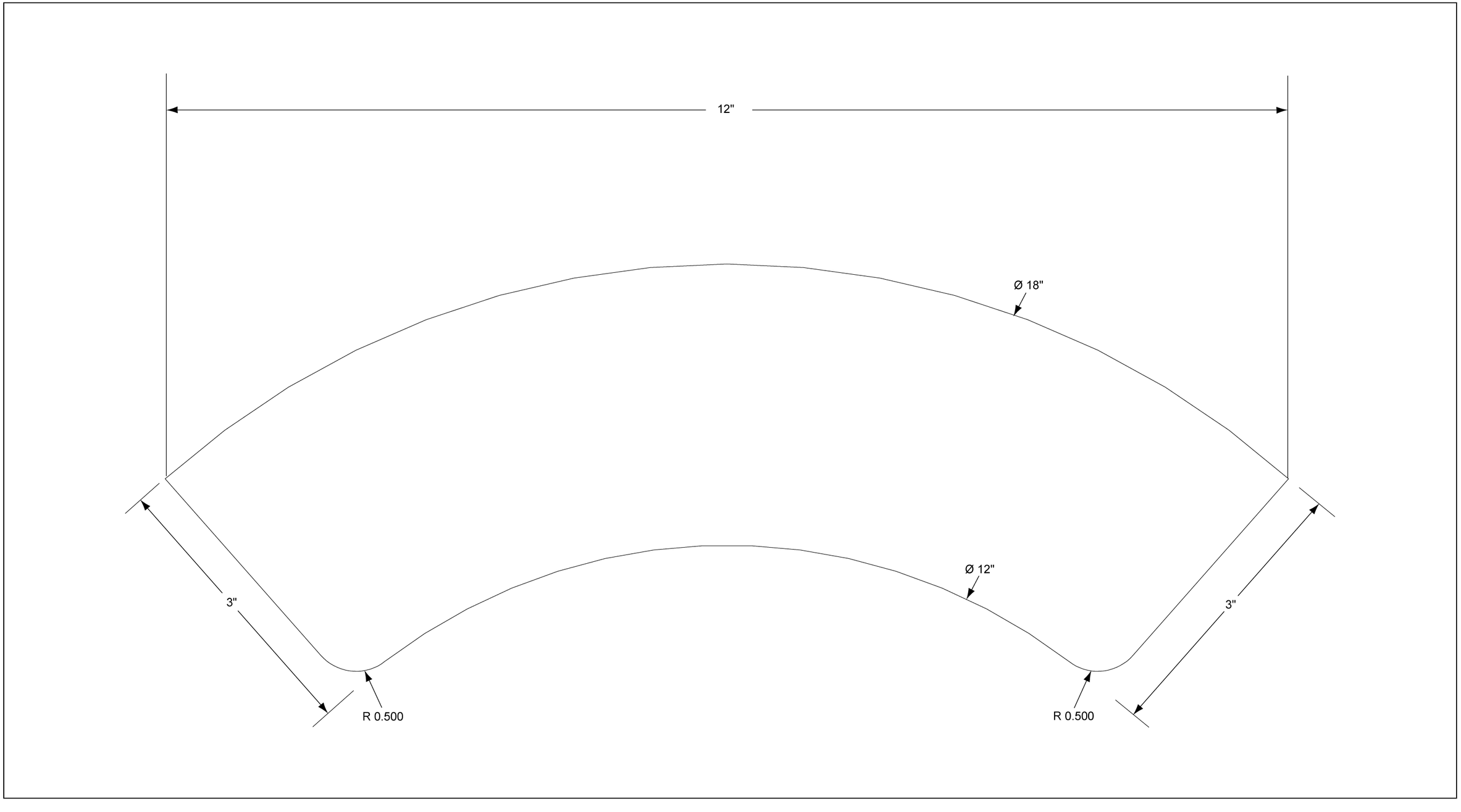


Figure 8N

Installing the Junction Box

1. Install junction boxes (B) to sweep shield (D) using conduit nipple (E), U-bolts (C) and flange nuts (F). *(See Figure 8O.)*
2. Connect conduit to junction boxes (B) using couplings (A).

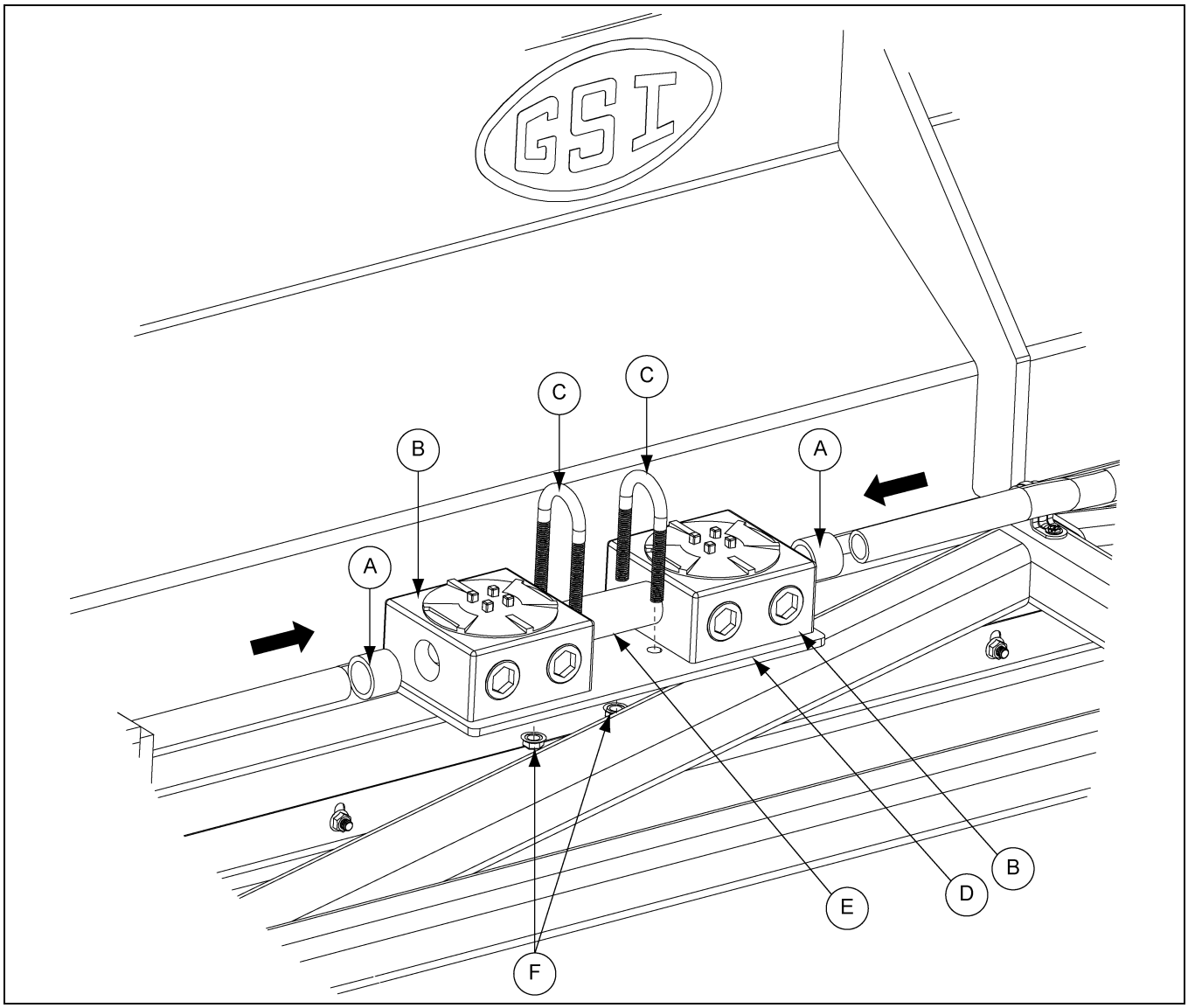


Figure 8O

Ref #	Description
A	Coupling
B	Junction Box
C	3/8" x 1-3/8" U-Bolt
D	Sweep Shield
E	Conduit Nipple
F	3/8" Flange Nut

Installing the Conduit

1. Install conduit (C) to sweep shield (B) using clamps (D) and screws (A). *(See Figure 8P.)*

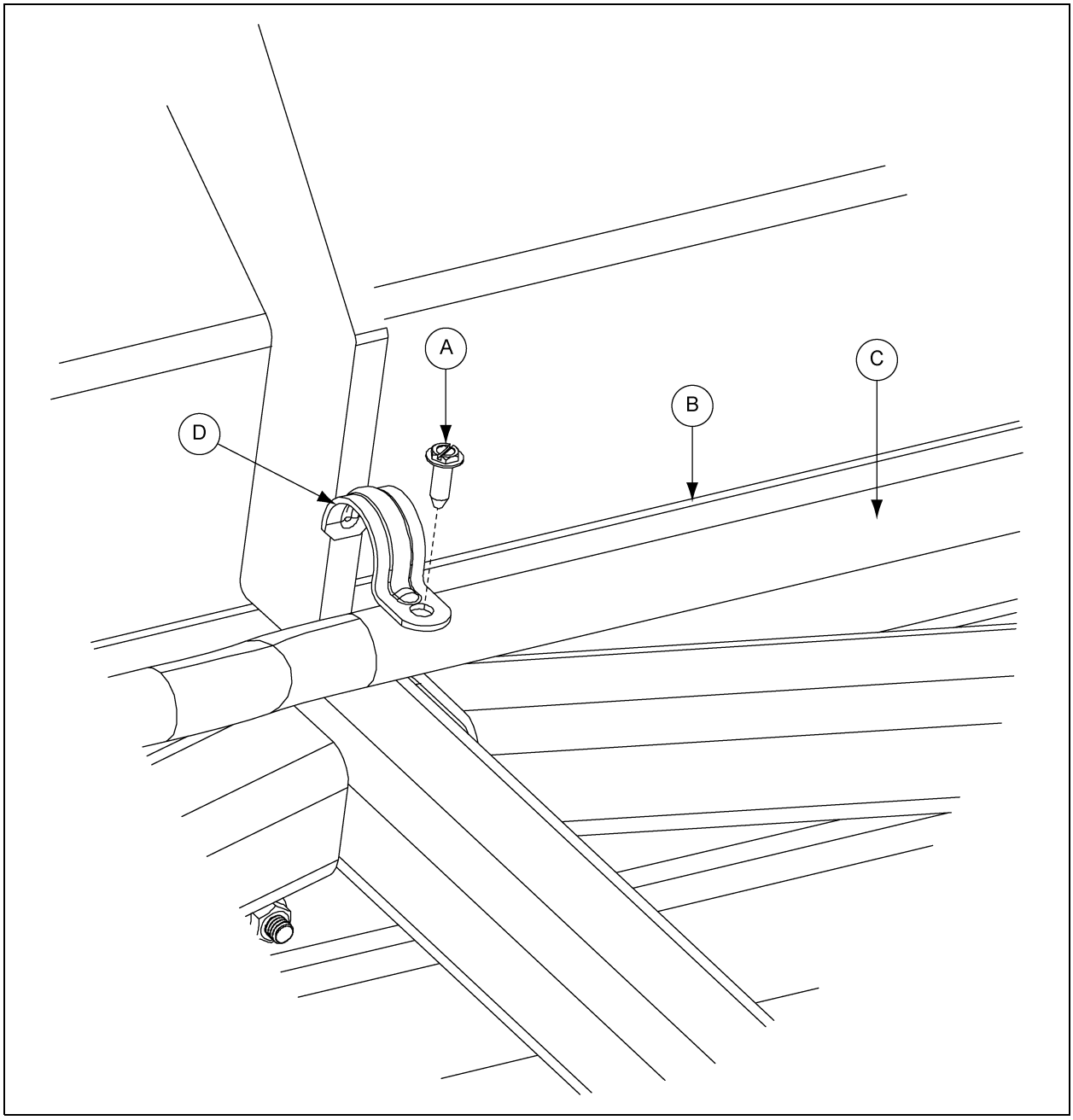


Figure 8P

Ref #	Description
A	Screw
B	Sweep Shield
C	Conduit
D	Clamp

Wiring the Collector Ring to the Motors

> **WARNING** ***Installation must be done by a certified electrician and adhere to all national and local codes.***

Wire the slip ring to the motors using the sweep junction boxes as stated below:

1. Wires 1-2: Motor Thermal Protection Leads (wired in series)
2. Wires 3-5: Track Drive Motor Line Leads
3. Wires 6-8: Auger Motor Line Leads
4. Wire 9: Ground Lead

NOTE: *Current/Voltage:*

- *Rings 1-5: Signal to 30 amps/up to 600 volts.*
- *Rings 6-8: 60 Amps/up to 600 volts.*
- *Ring 9: 60 Amps/up to 600 volts (to be grounded).*

NOTE: *Termination Type:*

- *1-5: #10 AWG BLK Lead wires.*
- *6-8: #8 AWG BLK Lead wires.*
- *9: #8 AWG GRN Lead wire.*

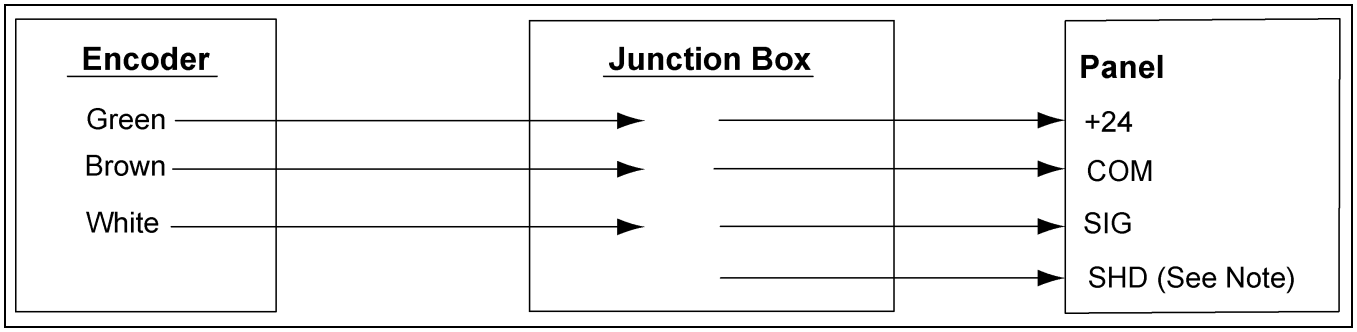


Figure 8Q

NOTE: *Use shielded wire from junction box to panel. Wire from junction box to panel could be any color.*

> **NOTICE** ***The encoder wires MUST be ran in conduit separate from the supply wires on the opposite side of the tunnel.***

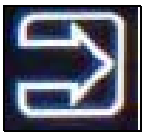
Setting up the Parameters for Operation

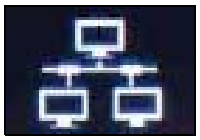
After the sweep is installed into the bin, you must setup the operating parameters for your sweep before filling the bin with grain.

Figure 9A

Ref #	Description
A	Touch Screen
B	Auger ON/OFF
C	Auger Drive Switch
D	Auger Mode Select Switch
E	Main Power Disconnect
F	Auto Mode ON/OFF

Software Icon Legend

Sl. #	Icons	Description
1		Previous
2		Next
3		Home
4		Amp Trend

Sl. #	Icons	Description
5		Help
6		Network
7		Alarm

Initial Start-Up

The control panel should be mounted in a position to allow the operator to observe the sweep through the side entry door and monitor the control panel display screen.

Ensure all personnel are clear of the working area and equipment. There should always be a clear view of the equipment.

1. Turn the main power disconnect to the **"ON"** position. *(See Figure 9B.)*
2. Upon initial start-up, a program will load and display a set up screen. Press the **"SETUP"** icon. *(See Figure 9B.)*

   NOTE: *Sweep will not start until all parameters have been set. At any time you can press the question mark for help information about the current screen.*

Figure 9B *Initial Start-Up Screen*

Setting the Bin Parameters

1. Press the **"BIN DIAMETER"** icon from the first setup screen. *(See Figure 9C.)*
2. From the **"BIN DIAMETER"** screen, press the diameter of the bin. Bin diameter options range from 27' to 156'. If the exact size is not displayed, select the next closest size. *(See Figure 9D.)*

   NOTE: *If the bin diameter is exactly the same difference from the next larger or smaller bin, we suggest selecting the larger diameter. This is will give you a longer unload time than what it will actually take the system to unload.*

Figure 9C

Figure 9D

Setting the Grain Type

1. Press the **"GRAIN TYPE"** icon from the setup screen. *(See Figure 9E.)*
2. From the **"GRAIN TYPE"** screen, press the grain type that will be stored in the bin being unloaded. Choices include corn, soybeans, wheat, rice and milo. *(See Figure 9F.)*

   NOTE: *If the specific grain type is not present, select the most similar option.*

Figure 9E

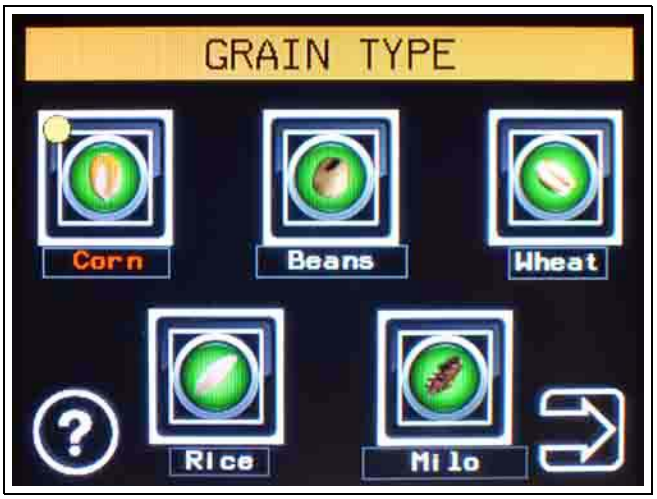


Figure 9F

Setting the Sump Length

1. Press the **“SUMPS”** icon from the setup screen. *(See Figure 9G.)*
2. From the **“SUMP CONFIGURATION”** screen, press the type of sump configuration in the bin. *(See Figure 9H.)*

   NOTE: *Determine if the intermediate sumps are located on one side of the center sump or both sides of the center sump.*

Figure 9G

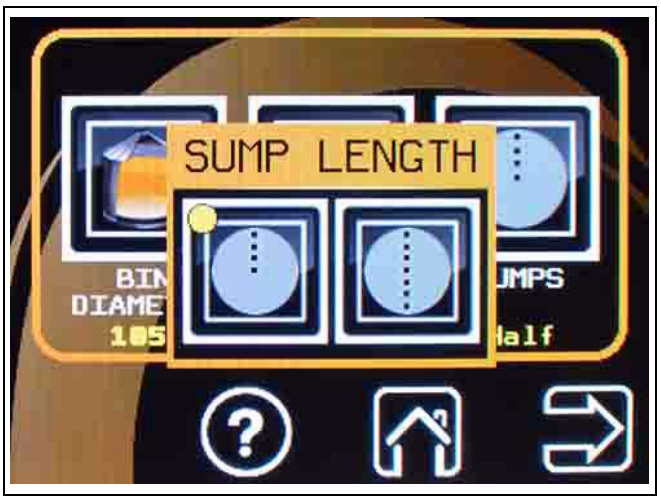


Figure 9H

3. Press the **“NEXT”** icon to go to the next setup screen. *(See Figure 9I.)*

Figure 9I

Auger Capacity Setup

1. Press the **"AUGER CAPACITY"** from the setup screen 2. *(See Figure 9J.)*
2. From the **"AUGER SIZE"** screen, press the sweep auger size installed in the bin, either 12" or 16". *(See Figure 9K.)*

Figure 9J *Setup Screen 2*

Figure 9K

3. From the **"SELECT AUGER CAPACITY"** screen, press the unload capacity of the unload system installed in the bin. *(See Figure 9L.)*
4. Adjust the capacity within the selected range using the plus or minus arrows to the right of the screen. *(See Figure 9M.)*

NOTE: *The trim can be increased or decreased in 250 BPH increments with a maximum of 500 BPH above or below the starting BPH. Trim is only available on certain sizes.*

Figure 9L

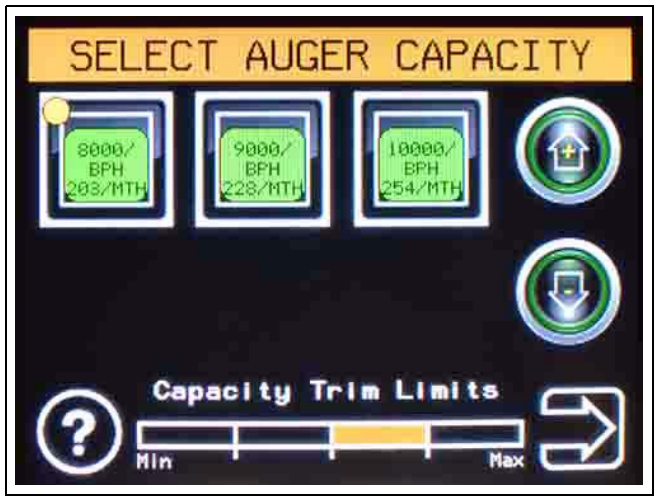


Figure 9M

Homing and Obstacle Setup

This setup marks the home position of the sweep and up to three (3) obstacles in the bin. Home position should locate the sweep behind the intermediate sumps with the sumps on the auger side of the sweep.

Homing Position

1. Press **"POSITION HOMING"** from setup screen 2. *(See Figure 9N.)*
2. If the sweep is not positioned in the bin directly behind the intermediate sumps, reposition the sweep by turning the mode select switch to **"MANUAL"** and turning the momentary drive switch to **"FWD"** to move the sweep forward or **"REV"** to move the sweep backwards.

   NOTE: *Once you release the switch, it will automatically toggle to the idle position.*
3. Press **"SET HOME"** to set the current location of the sweep as the home position (0°). *(See Figure 9O.)*

   NOTE: *You may press reset at any time to reset the home position. Be aware that this may affect the obstacle locations and they may need to be reset.*

Figure 9N *Setup Screen 2*

Figure 9O *Home/Obstacle Setup Screen*

Obstacles

Obstacles are items that can interfere with the sweep, such as a door or ladder. Setting these locations will let the sweep warn you or stop the sweep before it gets to the obstacle.

1. Move the auger to the first obstacle location by turning the mode select switch to **"MANUAL"** and turning the momentary drive switch to **"FWD"** to move the sweep forward to the first obstacle location.

2. Press the obstacle triangle #1. This will set the current location of the sweep as obstacle number one. The sweep position in degrees will display. (Example: 75°) *(See Figure 9P.)*

Figure 9P

3. Repeat *Steps 1 and 2* for obstacles 2 and 3 and select the **"NEXT"** icon to setup the obstacle presence behavior. *(See Figure 9Q.)*

   NOTE: *It is not required to set any or all three (3) obstacles. If you only have one obstacle, then you only need to set one obstacle and they can also be set in any order.*

Figure 9Q

Setting Obstacle Presence Behavior

4. Press the **"OBSTACLE PRESENCE"** icon to choose how the sweep should react when it encounters an obstacle.

   a. Selecting **"STOP"** will display a warning on the screen and stop the sweep before it gets to the obstacle. *(See Figure 9R.)*

   b. Selecting **"WARN ONLY"** will only display a warning on the screen and the sweep will continue to proceed around the bin. *(See Figure 9S.)*

   NOTE: ***"Warn Only"*** *is the default setting.*

Figure 9R

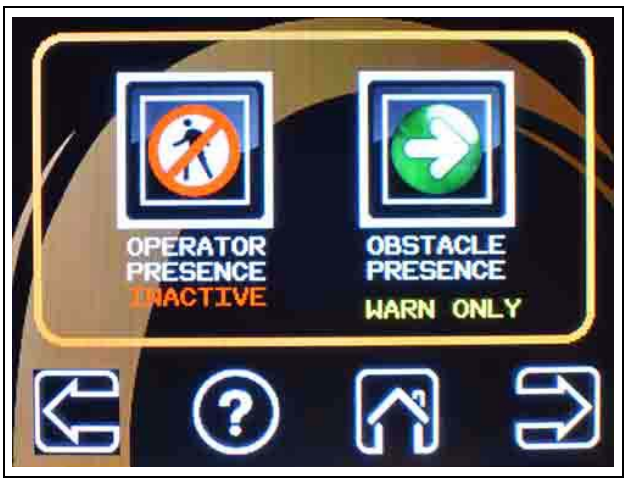


Figure 9S

Setting Operator Presence

An operator presence device may include a foot switch, contact on bin door, or any normally closed contact used as a safety or non-entry device to prevent activation of the system.

1. Pressing **"OPERATOR PRESENCE"** allows the operator to toggle between **"ACTIVE"** or **"INACTIVE"** if an operator presence sensor is installed. *(See Figure 9T and Figure 9U.)*

   NOTE: *These are not supplied by GSI. Contact local authorities to verify if these are required in your area.*

Figure 9T

Figure 9U

Setting the Equipment Interlock

Setting this option to ENABLED will shut down the sweep when subsequent equipment stops.

To enable or disable the equipment interlock:

1. From the interlock screen, press the **"Equipment Interlock"** icon to enable or disable. *(See Figure 9V.)*

Figure 9V

Setting the Communication Interlock

Setting the communication interlock allows the remote monitoring and shut down of the sweep.

To enable or disable the communication interlock:

1. From the interlock screen, press the **"Comm Interlock"** icon to enable or disable. *(See Figure 9W.)*

Figure 9W

Setting the Network Communication Parameters

1. Press the **“Network”** Icon to set the network communication parameters. *(See Figure 9X.)*
2. Press on the **“Offline”** tab.

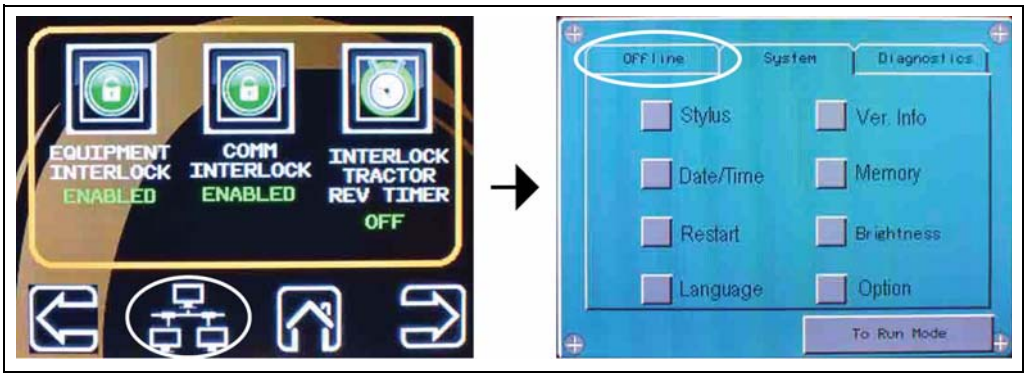


Figure 9X

3. Check the **“Network”** box.
4. Press **“OK”** to the working offline settings pop-up screen. *(See Figure 9Y.)*

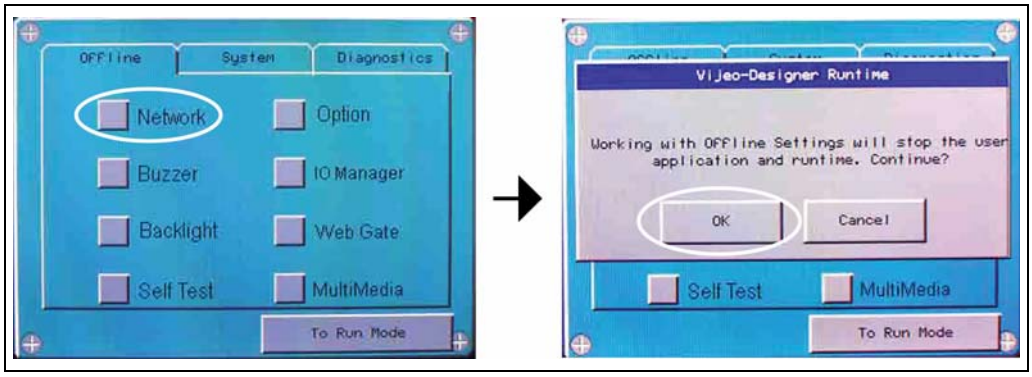


Figure 9Y

5. Enter your systems IP address, subnet mask and default gateway.
6. Press **“OK”**.
7. Press **“OK”** to shut down and restart to enable settings. *(See Figure 9Z.)*

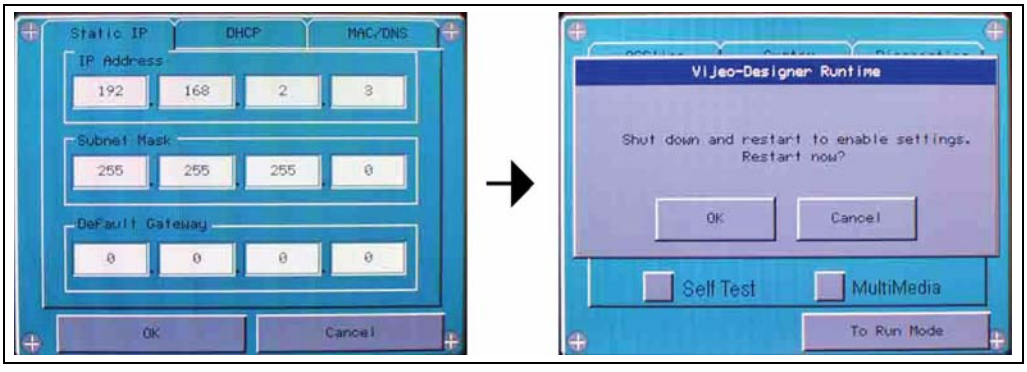


Figure 9Z

Setting the Reverse Time

The **“Interlock Tractor Rev Timer”** allows you to set a time for the tractor to reverse in the event of a shut down to prevent an avalanche from covering the sweep.

1. Press the **“Interlock Tractor Rev Timer”** icon. *(See Figure 9AA.)*
2. Select the reverse time that you want, 15, 30 or 45 seconds. *(See Figure 9AB.)*

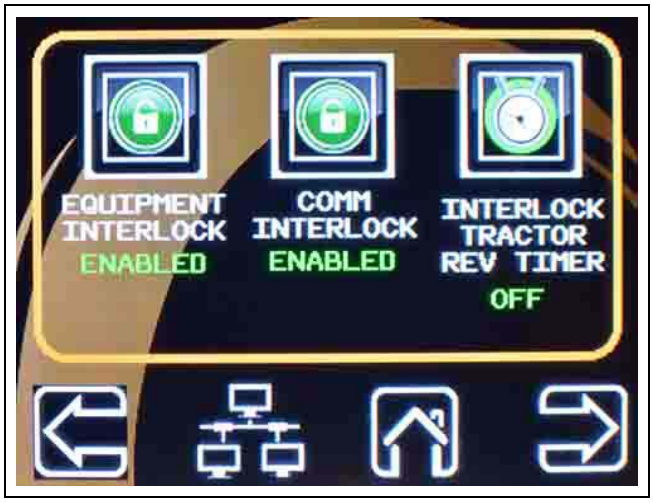


Figure 9AA

Figure 9AB

Clearing an Interlock Error

To clear an interlock error:

1. Go to the interlock screen and disable the **comm interlock**. *(See Figure 9AC.)*

   NOTE: *This will stop any communication between the sweep control and the system control.*

Figure 9AC

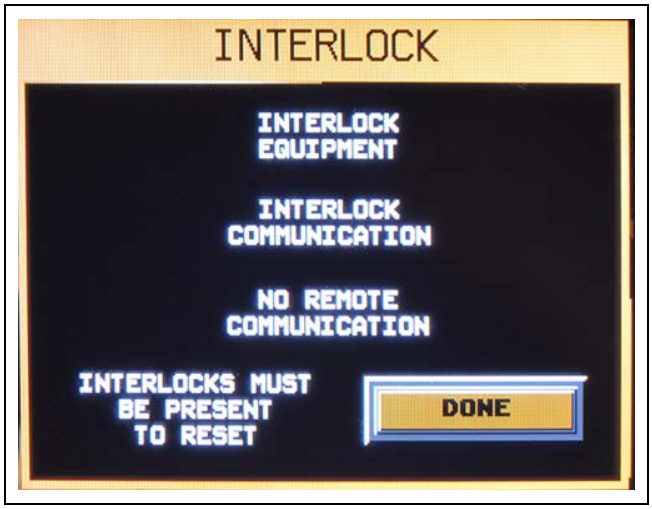


Figure 9AD

Setting Sweep and VFD Alarm History

The sweep and VFD histories can be set to record all faults or errors that occur with the PLC and VFD. You can review these logs for troubleshooting.

To setup the alarm histories:

1. From the run menu, press the **Alarm** icon. *(See Figure 9AE.)*
2. Press the **Sweep** or **VFD Alarm History**, depending on which one you want to setup. *(See Figure 9AF.)*
3. Press the **Set Date/Time** button. *(See Figure 9AG.)*
4. Press the box next to Date/Time.
5. Press in the white areas to set the year, month, day, hour, minute and seconds. *(See Figure 9AH.)*
6. Press **Run Mode** to set.
7. Press the arrow icon to return to the run screen.

Figure 9AE

Figure 9AF

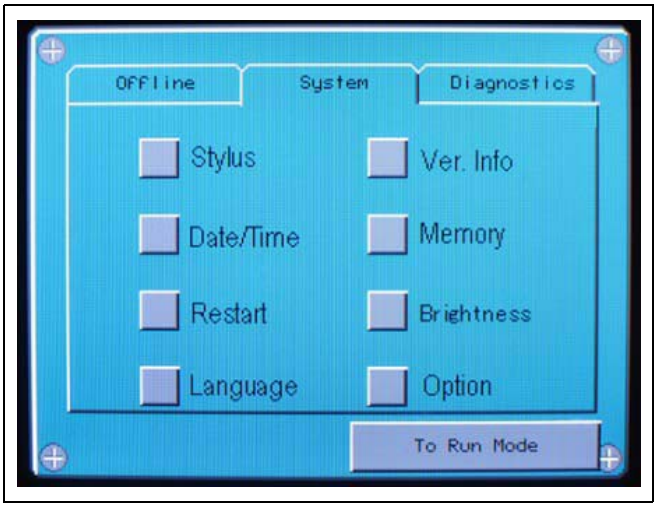


Figure 9AG

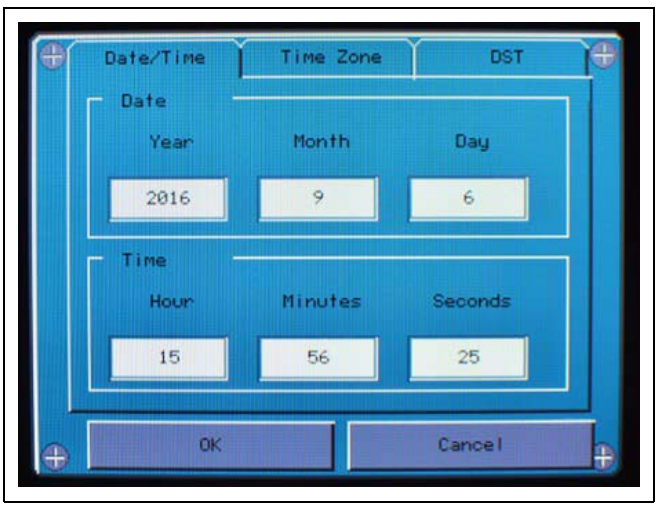


Figure 9AH

Calibrating the No Load Amps for Cleanout Mode

Make sure everyone is clear of the equipment and you can see that no one is in the bin.

NOTE: *The auger **CANNOT** have any grain load on it while calibrating and the current transducer must be selected to **60 AMPS** for proper calibration.*

To calibrate the cleanout mode:

1. Change the **Mode Select** switch to **Manual**.
2. Press **Auger start** button under **Manual Mode**.

   After 5 seconds, the auger running amps and the auger calibration icon will appear.
3. Press the auger calibration icon.
4. When calibration is complete, press the **Auger stop** button under **Manual Mode**.
5. Press the **Home** icon to return to the **Home** screen.

Updating the Controller Software

When performing updates, all current setup options will be erased and will need to be reset. For more details on software updates, refer to PNEG-1967.

Initial Operation

Once the majority of the grain has been unloaded from bin using the center and intermediate wells, the sweep can be used to cleanout the remainder of the grain

Before you begin:

- Review all safety procedures before operating the sweep.
- Make sure the center and intermediate wells are open.
- Make sure the sweep is parked in the home position.
- Make sure the unload equipment is running before attempting to start the sweep auger.
- Make sure you have a clear view of the sweep while it is in operation.

What you should know:

As you select the different modes, the run screen will change to match your selections. *(See Figure 10A.)*

Figure 10A

1. **Mode Select Switch** - Allows you to select the mode of operation, Manual, Auto, or Cleanout.
2. **Auto Mode** - Operates the sweep automatically by monitoring the auger motor amps.
3. **Manual Mode** - Allows you to manual operate the sweep using the drive switch. Usually, only used during initial start-up.
4. **Cleanout Mode** - Only used for initial setup and final pass after the first cleanout pass.
5. **Auger ON/OFF Button** - Turns the sweep auger ON or OFF.
6. **Auger Drive** - When in Manual mode, allows you to move the sweep forward (**FWD**) or in reverse (**REV**).
7. **Auto Mode** - ON/OFF Button - Turns the sweep and auger ON and OFF when operating in Auto mode.
8. **Disconnect** - Turns power OFF to the control panel.

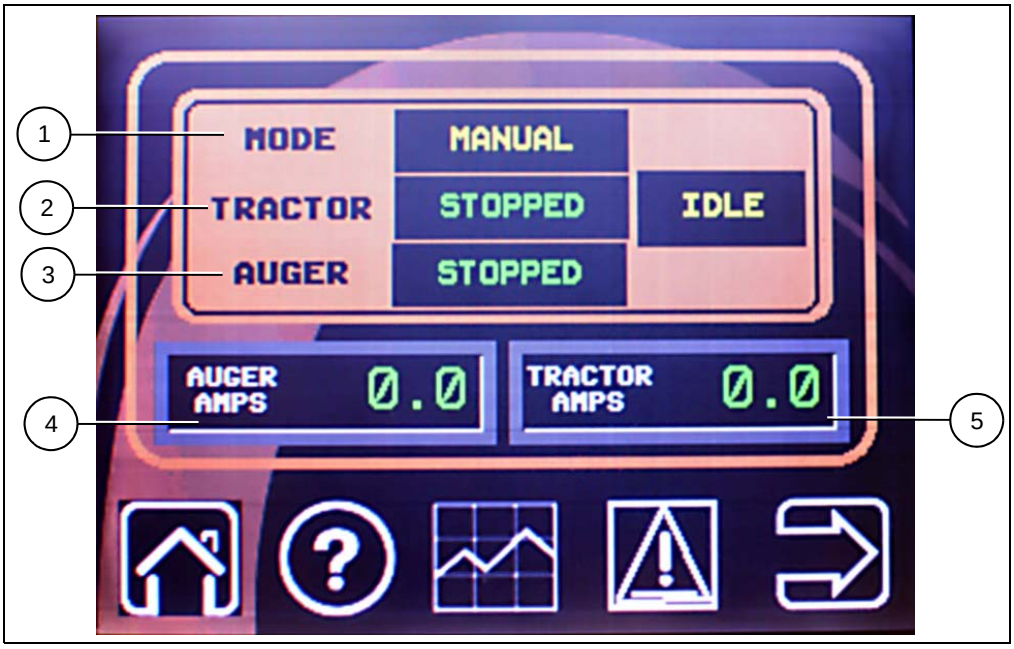


Figure 10B

1. **Mode** - Displays the mode of operation, Manual or Auto.
2. **Tractor** - Displays if the sweep tractor is stopped or running and in which direction it is moving. (IDLE, FWD, or REV)
3. **Auger** - Displays if the sweep auger is stopped or running.
4. **Auger Amps** - Displays how many amps the sweep auger is currently using.
5. **Tractor Amps** - Displays how many amps the sweep tractor is currently using.

To initially start the sweep auger:

1. Change the **Mode Select** switch to **Manual Mode.**

   IMPORTANT: *The sweep must be operated in **Manual Mode** for the first 30' from the home position. This will allow room for the sweep to auto reverse when operating in **Auto Mode**.*

2. Press the **Manual Mode Auger Start** button.

3. Use the **Drive** selector switch to move the sweep forward (**FWD**) into the grain pile or reverse (**REV**) to move away from the pile.

   IMPORTANT: *DO NOT run the sweep too far forward and cause the grain to avalanche over the sweep, burying the sweep. Allowing this to happen will result in a sweep shut down and the sweep will have to be manually dug out.*

4. Once the sweep has traveled 30' from the home position, use the **Drive** selector switch to reverse (**REV**) the sweep away from the grain pile to provide room for falling grain while switching to **Auto Mode.**

5. Press the **Manual Mode Auger Stop** button.

6. Change the **Mode Select** switch to **Auto Mode** and press the **Auto Mode Auger Start** button. After a 30 seconds delay, the sweep will travel forward to engage the grain. The sweep will continue to travel forward or reverse automatically based on the auger motor amps.

Viewing the Sweep Location

The sweep location in the bin is continuously tracked and you can view this from the **Location** screen.

To view the sweep location:

1. From the **Run Menu,** press the green run icon. *(See Figure 10C.)*

2. Press **Location** from the drop down menu.

   A graphic of the sweep position will appear and show the following information: *(See Figure 10D.)*

   - Time remaining
   - Nominal capacity
   - Remaining bushels
   - Sweep position
   - Next obstacle
   - Trim capacity

3. If needed, you can press the **Adjust Capacity** icon in the lower left corner to adjust the trim capacity.

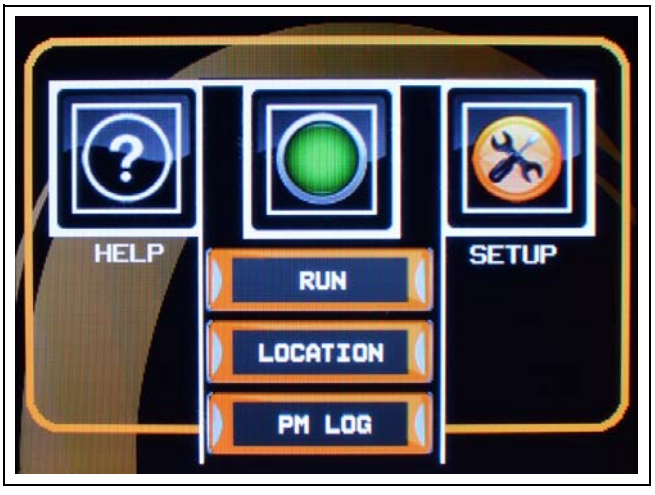


Figure 10C

Figure 10D

Viewing the Preventive Maintenance (PM) Log

The preventative maintenance log will tell you how many starts and hours the sweep has run to help you determine when it needs to be serviced.

To view the PM log:

1. From the **Run Menu,** press the green run icon. *(See Figure 10E.)*
2. Press **PM** from the drop down menu.

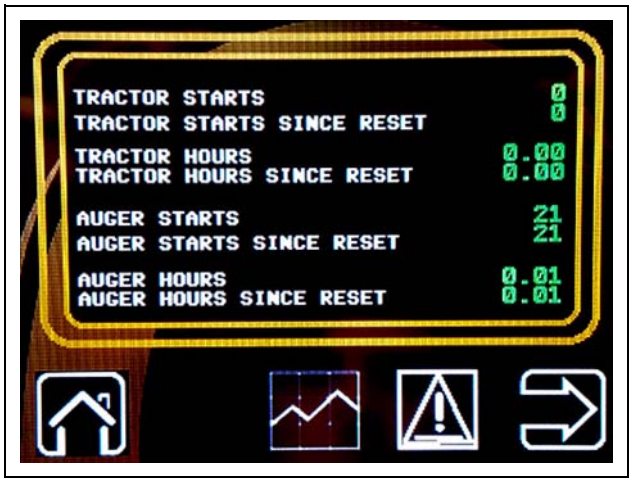


Figure 10E

Viewing the Amp Trend

The amp trend will continuously graph the auger motor operating amps. This will show the track drive movement in relationship to the auger motor amps.

To view the Amp Trend:

1. Press the **Amp Trend** icon. *(See Figure 10F.)*
2. Press the arrow icon to return to the run screen.

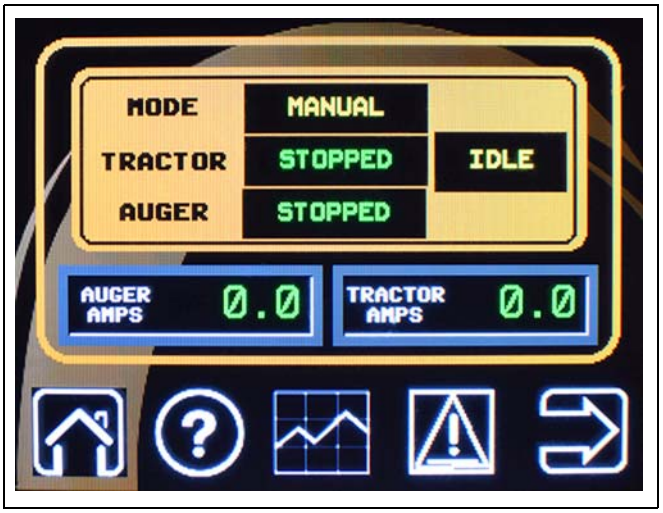


Figure 10F

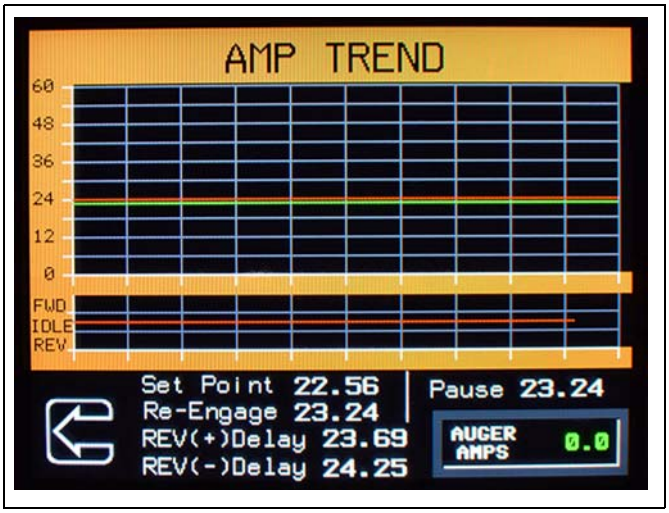


Figure 10G

Cleanout Mode

Cleanout mode increases the sweep speed and must only be used during initial setup of the sweep or during the second pass to sweep the small amount of grain remaining after the first cleanout pass.

> **CAUTION** ***Cleanout Mode must not be used for normal sweeping operations. Damage to equipment will occur.***

To use Cleanout Mode:

1. Turn ON the bin unload system before starting the sweep auger.
2. Under **Mode Select,** turn the switch to **Cleanout**.
3. Under **Auto Mode,** push the green button to start the sweep auger.
4. Under **Auto Mode,** push the red button to stop the sweep auger.

   NOTE: ***Cleanout Mode*** *has a maximum auger amperage threshold. If the amp threshold is reached, the control program will automatically take the sweep out of* ***Cleanout Mode.***

Emergency Shut Down

1. Push the E-stop plunger on the side of the control box.
2. Disconnect and lock out the power source.

Normal Shut Down

1. Allow sumps and unload equipment to empty.
2. Push the red button under the mode you are operating in (Manual or Auto) to stop the sweep auger.

> **CAUTION** ***Never stop the equipment under full load. Damage to the equipment can result and will void warranty.***

Preparing the Sweep for Storage

1. Make sure all sumps and unload equipment are empty.
2. Close the sump control gates.
3. Park the sweep so the centerline of the sweep auger is in line with the back edge of the outer most intermediate discharge well. Intermediate discharge wells should not exceed 8' center to center.

Maintain the Auger

WARNING

ALWAYS shut down and disconnect the power supply before adjusting, servicing or cleaning the equipment.

1. Use caution when repairing or replacing equipment parts.
2. Make sure ALL decals are legible and securely attached to the auger. If necessary, replace them **FREE OF CHARGE** by contacting GSI at:

   GSI
   P.O. Box 20
   1004 E. Illinois St.
   Assumption, IL 62510
   Phone: 1-217-226-4421

3. Ensure that ALL electric motors are operating at the proper speed.
4. Make sure ALL electrical wiring is not damaged and that it meets proper wiring codes.
5. Make sure ALL components are in good working condition before use.

NOTICE

Do not mix non-synthetic and synthetic oil in the unit.

Lubrication

A. Lubrication - Electric Motors

Electric motors supplied for use on X-Series Sweeps are properly lubricated at the time of manufacture. It is not necessary to lubricate them at the time of installation unless the motor has been in storage for one year or longer. Some motors may be factory lubricated and sealed for the life of the bearings. Overgreasing the bearings can cause premature failure of the motor. The amount of grease added must be carefully controlled.

B. Procedure for Lubrication of Electric Motors

1. Stop motor. Disconnect and lock out all power sources.
2. Follow all safe bin entry procedures and wear all required personal protective equipment.
3. Remove contaminants from grease inlet area.
4. Remove filler and drain plugs.
5. Check filler and drain holes for blockage and clean as necessary.
6. Add proper type and amount of grease. According to manufacturers recommendations. Too much grease or injecting grease too quickly can cause premature bearing failure. Use approximately one minute to slowly inject the recommended amount of grease.
7. Wipe off excess grease and replace filler and drain plugs. Do not run motor without the grease and drain plugs installed.

   NOTE: *It is very important to keep the grease clean. Mixing dissimilar grease is not recommended.*

C. Type of Lubrication

A polyurea mineral oil NGLI grade 2 type grease is to be used for lubrication of the electric motors. Grease meeting this specification include:

1.) Chevron	SRI #2
2.) Exxon-Mobile	Polyrex EM
3.) Texaco	Polystar RB

D. Frequency of Lubrication

Motors should be lubricated after storage of one year or more or at the beginning of each season. Refer to manufacturer recommendations for amount of lubricant to use.

E. Lubrication - Reducers (Gearboxes)

Reducers supplied for use on X-Series Sweeps are shipped with lubricant (dry). Double check to make sure correct amount of lubricant is present and reducer has not leaked. Over lubrication may cause premature failure of the reducer. The amount of lubricant must be carefully controlled.

F. Procedure for Initial Filling of Reducers

1. Disconnect and lock motor out of service. Do not run gear box without lubricant.
2. Follow all safe bin entry procedures and wear all required personal protective equipment.
3. Remove contaminants from inlet area.
4. Remove filler and oil level fill plugs.
5. Check filler holes for blockage and clean as necessary.
6. Clean the magnetic drain plug if one was supplied.
7. Add proper type of lubricant to fill level or until oil runs out of oil level fill hole. *See the Lubrication Chart on Page 109* for amounts and types of lubricant.
8. Wipe off excess lubricant and replace filler and oil level fill plugs.

NOTE: *It is very important to keep the lubricant clean. Mixing dissimilar lubricants is not recommended.*

G. Procedure for Changing of Lubricant

1. Stop motor. Disconnect and lock out all power sources.
2. Follow all safe bin entry procedures and wear all required personal protective equipment.
3. Remove contaminants from inlet and drain area.
4. Remove filler, oil level fill and drain plugs. Drain old lubricant from reducer.
5. Flush reducer with a nonflammable solvent such as Lubriplate Pure Flush or Whitmore's Flushing Oil.
6. Clean the magnetic drain plug if installed.
7. Carefully replace drain plug.
8. Add proper type of lubricant to fill level or until oil runs out of oil level fill hole. *See the Lubrication Chart on Page 109* for amounts and types of lubricant.
9. Wipe off excess lubricant and replace filler and oil level fill plugs.

NOTE: *It is very important to keep the lubricant clean. Mixing dissimilar lubricants is not recommended.*

H. Frequency of Lubrication

Lubricant should be changed after storage of one year or more or at the beginning of each season.

I. Type of Lubrication

The type and quantity of lubrication required for each type and size of reducer is listed in *below* tables.

Lubrication - Gearboxes Quantity and Type of Lubricant per Box Size

Dodge Quantis MSM and ILH Reducers

Box Size	Volume	
	Quarts	Liters
MW88 (Auger Drive)	9.2	8.7
MW108 (Auger Drive)	15.2	14.4
MW128 (Auger Drive)	29.25	27.7
HF38 (Track Drive)	0.53	0.5
HF108 (Track Drive)	16.5	15.6

Lubrication Specification		
Ambient Temp	25°F to 75°F	45°F to 105°F
	(-4°C to 29°C)	(7°C to 41°C)
Chevron Oil Company	FM 220	* FM 460
	Food Grade H1 Mineral Oil	
* Factory Filled by Dodge		

J. Lubrication - Casters

The casters supplied for use on X-Series Sweeps are shipped from the factory lubricated. From time to time a small amount of the proper lubricant must be added. Over lubrication may cause premature failure of the components.

K. Procedure for Lubricating Casters

1. Disconnect and lock motors out of service.
2. Follow all safe bin entry procedures and wear all required personal protective equipment.
3. Remove contaminants from the grease zerk and surrounding area.
4. Add proper type of lubricant. See *Table on Page 110* for types of lubricant.
5. Wipe off excess lubricant.

NOTE: *It is very important to keep the lubricant clean.*

L. Frequency of Lubrication

The casters should be lubricated after each use of the X-Series Sweep. If possible, lubricate all the components at the beginning of each season or after long term storage.

M. Type of Lubrication

The type of lubrication required, for each component, is listed. *(See Chart Below.)*

Lubrication - Casters and Misc. Equipment

Type of Lubricant		
Equipment	**Lubrication Specification**	
Bronze Flight Bearings	**None Required**	**None Required**
Casters	Shell Oil Company	Alvania #2 (or equivalent)

NOTICE ***Too much oil will cause overheating and too little will result in gear failure. Check oil level regularly.***

NOTICE ***Extreme pressure (EP) lubricants are not recommended for average operating conditions. Failure to observe these precautions could result in damage to or destruction of the equipment.***

NOTICE ***Under Extreme operating conditions, such as rapid rise and fall of temperatures, dust, dirt, chemical particles, chemical fumes or oil sump temperature above 200°F, the oil should be changed every one to three months, depending on severity of conditions.***

CAUTION ***If the unit is used in the food or drug industry (including animal food) consult the petroleum supplier for recommendations on lubricants which meet the specifications of the FDA, USDA and/or other authoritative bodies having jurisdiction. Standard lubricants are not suitable for these applications or these industries.***

WARNING ***Oil, housings and other components can reach high temperatures during operation and can cause severe burns. Use extreme care when removing lubrication plugs and vents while servicing the unit.***

NOTE: *The pour point of the lubricant selected should be at least 10°F lower than the expected minimum ambient starting temperature. Extreme pressure (EP) lubricants are not recommended for average operating conditions.*

Warning Messages

The following are possible pop-up warnings and should NOT be ignored. Correct any pop-up warning before operation continues. *(See Figures 12A-12H.)*

Figure 12A *Auger Over Current*

Figure 12E *Disable*

Figure 12B *Auger Starter Fault*

Figure 12F *Obstacle*

Figure 12C *Auger Thermal*

Figure 12G *VFD Fault*

Figure 12D *Cleanout Overamps*

Figure 12H *Process Complete*

Problem	Possible Cause	Solution
1. Sweep does not run	1. Overloads may be tripped.	1. Reset the overloads.
	2. Adjustable overloads not set correctly.	2. Set overload to 10% over the value listed on motor nameplate for full load amps.
	3. Motor thermal protection leads are not wired to control panel.	3. Wire motor thermal protection leads to control panel.
2. Low capacity	1. The auger may not be fully loaded.	1. Make sure the grain is flowing into the auger, making it fully loaded.
	2. The auger is moving too slowly.	2. Check the auger speed. Low capacity results from speeds slower than recommended.
	3. The control panel is not set to the correct capacity.	4. Select the correct capacity in the control panel.
3. Sweep does not move around the bin	1. The control panel may not be in “Automatic Mode”.	1. Turn the switch to “Automatic Mode”.
4. The sweep is vibrating	1. The auger may have foreign materials in it.	1. Remove the foreign material.
	2. The hanger bearings may be worn.	2. Replace the hanger bearings.
	3. The flight connections may be loose.	3. Tighten all of the flight connecting bolts.
	4. The flighting may be worn.	4. Replace all the flighting sections that are worn.

FAQs

Who do I contact for parts or service?

Contact your dealer. If your unit was purchased direct from GSI, contact your inside sales person.

What is/where do I find the model number of my sweep?

The model number of your sweep can be found on your quote or invoice.

How complete is the X-Series Sweep?

With the exception of a few electrical connectors, all components required to assemble your sweep are included.

How level does my floor need to be for the sweep to operate properly?

The top edge of the sump hopper and the top edge of the X-brace support must be level with the floor. The floor must be level within 3/4" plus or minus, preferably less. Any high or low points must be gradually sloped. The change in elevation should be no more than 3/4" over 60".

Where should the center pivot pipe be located?

The center pivot pipe **must** be in the center of the bin. If it is not, the sweep could hit the bin wall. There should be between 2" and 14" of clearance between the end of the sweep and the closest obstruction (bin wall, stiffeners, etc.).

How round must my bin be for the sweep to operate properly?

Diameter tolerances are limited by foundation limits and sweep operation as well as structural issues. For 72' diameter and larger bins, the overall tolerance would be plus or minus 1-1/4" on the radius, plus or minus 1" on 42'-66' diameter bins and plus or minus 3/4" on 30'-39' bins.

How large of an opening do I need for a standard flow (15000 BPH) center sump?

The minimum recommended sump opening is 42" x 42".

If installing a GSI supplied sump shell with collector ring, the opening must be 42-1/2" x 42-1/2" x 30" deep for either the 12" or 16" sweep.

The sump hopper supplied by GSI was designed with sufficient clearance around the collector ring housing to allow grain to gravity flow through the hopper and be carried away by the material handling equipment below it. 42-3/4" is the maximum opening size to allow rolling clearance for the casters assembled to the head end jack. If the sump is made smaller, grain flow may decrease to an unacceptable level.

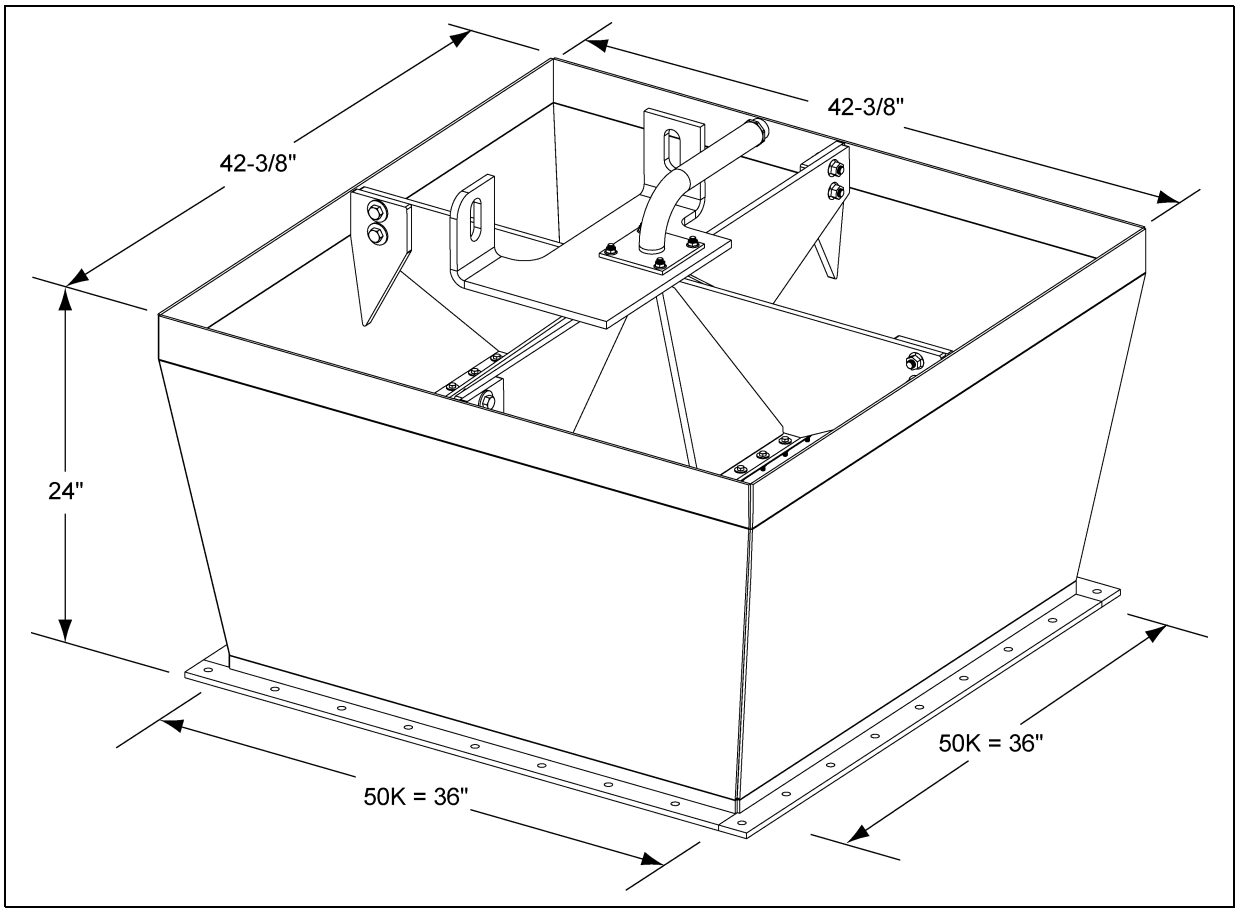


Figure 12I

The open area of this sump is misleading. The collector ring housing sticks down into the sump, blocking off a portion of the flow. Also, the sweep covers about one quarter of the opening at the top. We use 75% of the theoretical flow around the housing for the actual flow.

What intermediate sump spacing do I need? Why?

It is required to install the intermediate sumps on a maximum of 6' to 8' centers depending on the grain used and where the sweep will be parked during storage. The first intermediate sump should be placed a maximum of 8' on center from the center sump and the end sump should be no farther than 4' from the bin wall. The extra sumps will help cleanout the grain in front of the sweep, reducing the start-up load. Doing this will save labor dollars and hours of work to dig out the sweep and will help the sweep during start-up. The sweep is not designed to start-up when submerged in material. The sweep should be parked behind the intermediate sumps with the sumps on the auger side of the sweep.

Do I need to cleanout around the track drive prior to starting it up?

No, enough material should have been removed during gravity unload.

Where do I park the sweep before I fill the bin with grain?

There is a section in the manual called *Storage Preparation on Page 105*. The section says to “Park the sweep behind the intermediate sumps, so that the sumps are on the auger side of the sweep”. The sweep should not completely cover the inside sump hole (the one closest to the center sump).

Where do I find the wheel path track dimensions?

The wheel path dimensions are listed *on Page 18*.

What do I need to hook electrical power to the X-Series Sweep?

The X-Series Sweep is designed to operate using **460 Volt 3 Phase 60 Hz, 380V 50 Hz or 600V 60 Hz**. The voltage must be within **plus or minus 4%** for proper operation. Voltages outside of this range may cause excessive power draw or other operating problems. Please contact the factory for applications outside of these parameters.

A fused main power disconnect switch capable of being locked only in the OFF position should be used. This switch must be sized for the screw and tractor drive motors. The power must be locked out before servicing the equipment, entering the bin or resetting the motor overloads.

Electrical controls and wiring should be installed by a qualified electrician. The conductor cables should comply with the National Electrical Code and any state or local codes which may apply.

How does the X-Series Sweep operate?

The X-Series Sweep is designed with a small controller in the control panel door to monitor the load on the screw motor. It automatically shuts the track drive OFF when the screw motor reaches a percentage of the motor nameplate full load amperage. As the material clears the screw, the amperage lowers until it reaches a set value and the track drive turns back on and moves the screw into the material. The customer must program the discharge sweep capacity into the controller and this setup is fully explained in the Owner’s Manual.

Why does the controller need to be located at the bin door?

The control panel MUST be mounted OUTSIDE the bin near the door for safety reasons. It must be located so the operator has a full view of the equipment. It must NEVER be installed inside the bin.

Can I just run my sweep in the manual mode?

The X-Series Sweep is designed to run in the automatic mode. If the sweep is run in the manual mode, either of the motors may overheat and/or become damaged. Also, excessive amounts of material may spill over the back board of the sweep.

How do I set my overloads?

The overload for the auger motor is adjustable and is **not** set at the factory. The overload inside the control panel has a small, dial with numbers on it. Record the full load running amp value listed on the nameplate attached to the auger motor. Increase the full load amp value by 10% and set this number on the overload dial. If the adjustable overload is set too low, the motors will shut down as soon as a load is put on them. Disconnect and lock out the power before resetting the motor overloads. *(See Figure 12J.)*

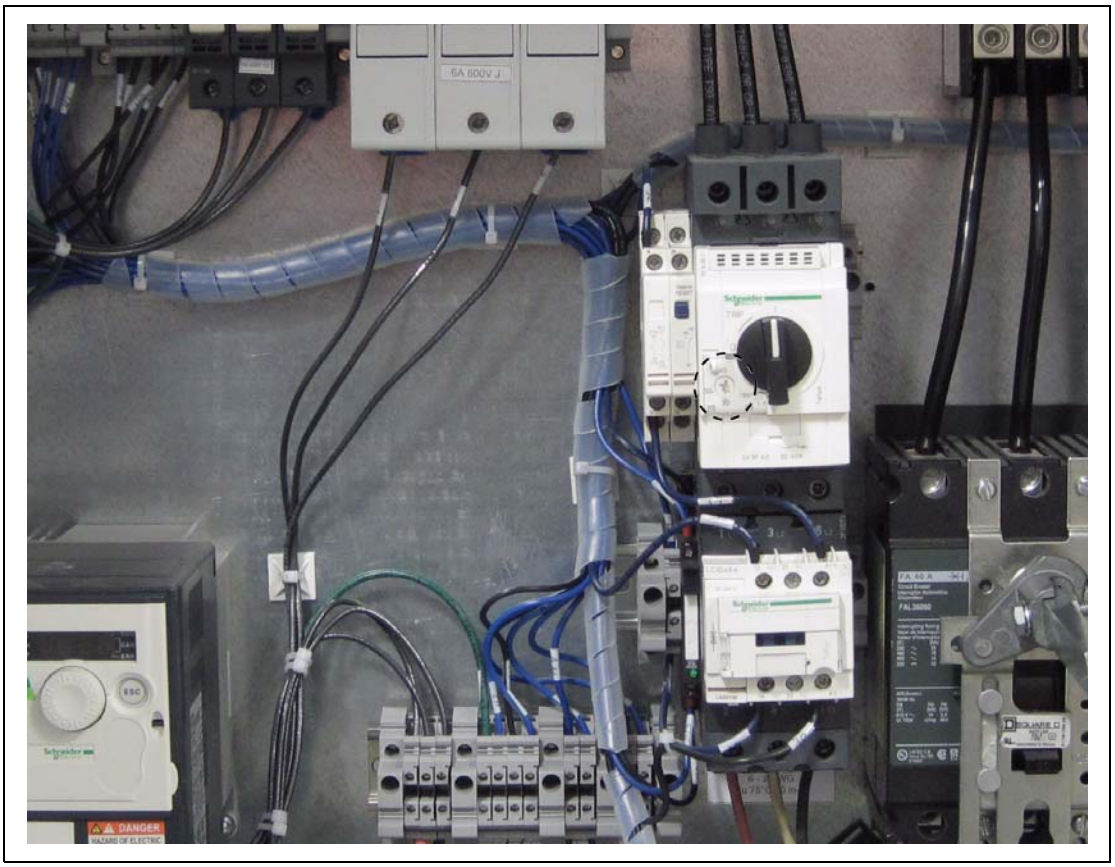


Figure 12J

When do I program my controller?

Initially the sweep should be tested in the manual mode. If it operates properly, then move on to try the automatic mode.

How do I program my controller for automatic mode?

The Owner's Manual has a detailed set of instructions describing the setup of automatic mode.

Can I get the unit to reverse while in automatic?

Yes, switch it to manual mode to reverse sweep auger direction.

What do I do if I encounter any operational problems?

Disconnect and lock out the power before servicing the equipment, entering the bin or resetting the motor overloads. Look through the troubleshooting section to identify any problems.

There does not seem to be any power to my sweep. What do I do?

The thermal protection lead must be connected before the sweep will operate.

Your electrician should check to make sure there are no loose or shorted connections or wires. It is possible that one of the components failed after it was tested in our plant and needs to be replaced. A jobsite electrician can isolate any malfunctioning components. Each fuse should also be checked and replaced if necessary.

The sweep must be wired according to the Owner/Installation Manuals.

The overload for the screw drive keeps tripping. What do I do?

The overload for the auger motor is adjustable. The auger is **not** set at the factory prior to delivery and installation. The overload inside the control panel has a small, dial with numbers on it. Record the full load running amp value listed on the nameplate attached to each motor. Increase the full load amp value by 10% and set this number on the overload dial. If the adjustable overload is set too low, the motors will shut down as soon as a load is put on them. Disconnect and lock out the power before resetting the motor overloads.

Check the incoming power at the control box. The “X” Series Sweep is designed to operate using **460 Volt 3 Phase 60 Hz Cycle Power, 380V 50 Hz or 600V 60 Hz**. The voltage must be within **plus or minus 4%** for proper operation. Voltages outside of this range may cause excessive power draw or other operating problems. Please contact the factory for applications outside of these parameters.

Check the incoming power at the motor. Check for balanced phases. If the loads are not properly balanced between leads, disconnect the motor and check the power leads. By using this method, we can tell if the imbalance is caused by the motor or is from the incoming power.

The sweep must be wired according to the Owner/Installation Manuals.

My controller quits operating. What do I do?

Check to make sure the controller has power. Each of the fuses should be checked and replaced if required.

If the controller is functioning, it may need to be reprogrammed. Programming instructions are included in the manual that shipped with the sweep. The controller can be damaged by large power fluctuations or lightning strikes.

My sweep is not operating as well as it did the last time I used it. What do I do?

If the type of material or the density (moisture) of the material changes, the controller set points may need to be adjusted for maximum output.

Is there any maintenance I need to perform on the electrical system?

None of the electrical components require maintenance. Be sure to disconnect and lock out the power before servicing the equipment, entering the bin or resetting the auger motor overloads.

Does any part of the X-Series Sweep need lubrication?

The fluid level of each of the gear reducers must be checked before operation. These reducers may have been shipped dry and require oil before operation.

A complete lubrication section is provided in the Owner's Manual, which shows the type and amount of lubricant to be used and which components need to be lubricated.

What maintenance should I perform and how often?

Follow the lubrication instructions in the Owner's Manual. Also visually inspect the sweep before operation.

What should I visually inspect?

Starting from the auger drive end of the sweep.

Inspect all casters, wheels and motor mount frame. Look for any bent or damaged components.

Inspect the motor covers. They should be in good shape and should be used properly. If the covers are not used, the material will work its way into the motor cooling slots and when the sweep is started, the motor fan and housing will be destroyed.

Inspect the front wheel struts for damaged components.

Inspect each of the screw flight bearings and hangers for damage. Check to see if the bearings need to be replaced. All hardware should be tight.

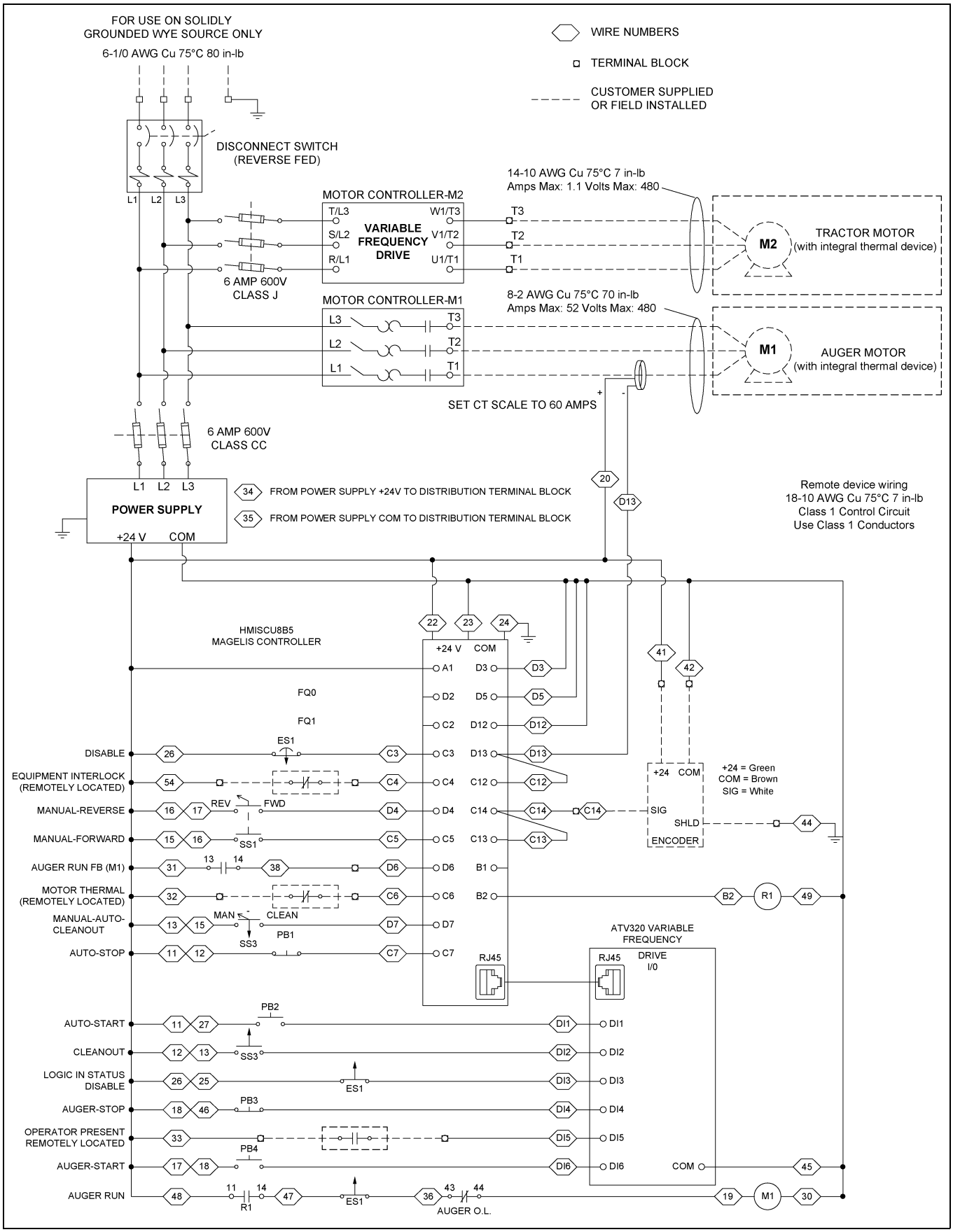
Inspect the screw flights for damage or excessive wear. Check to see if the screws are rusted or pitted.

Inspect track drive sprocket and components for any damage.

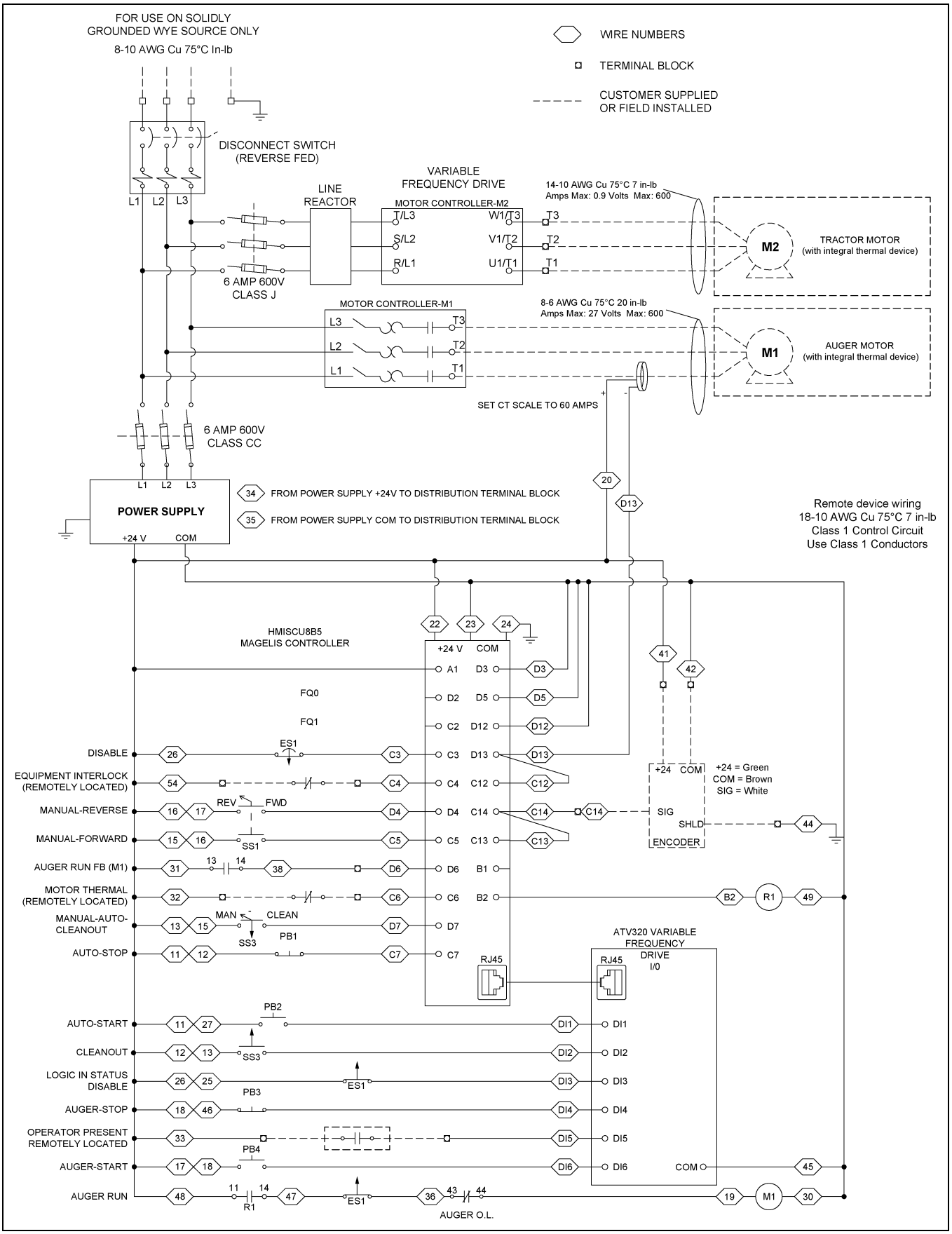
Make sure all hardware is tight.

Inspect the sweep structure for damaged or bent components.

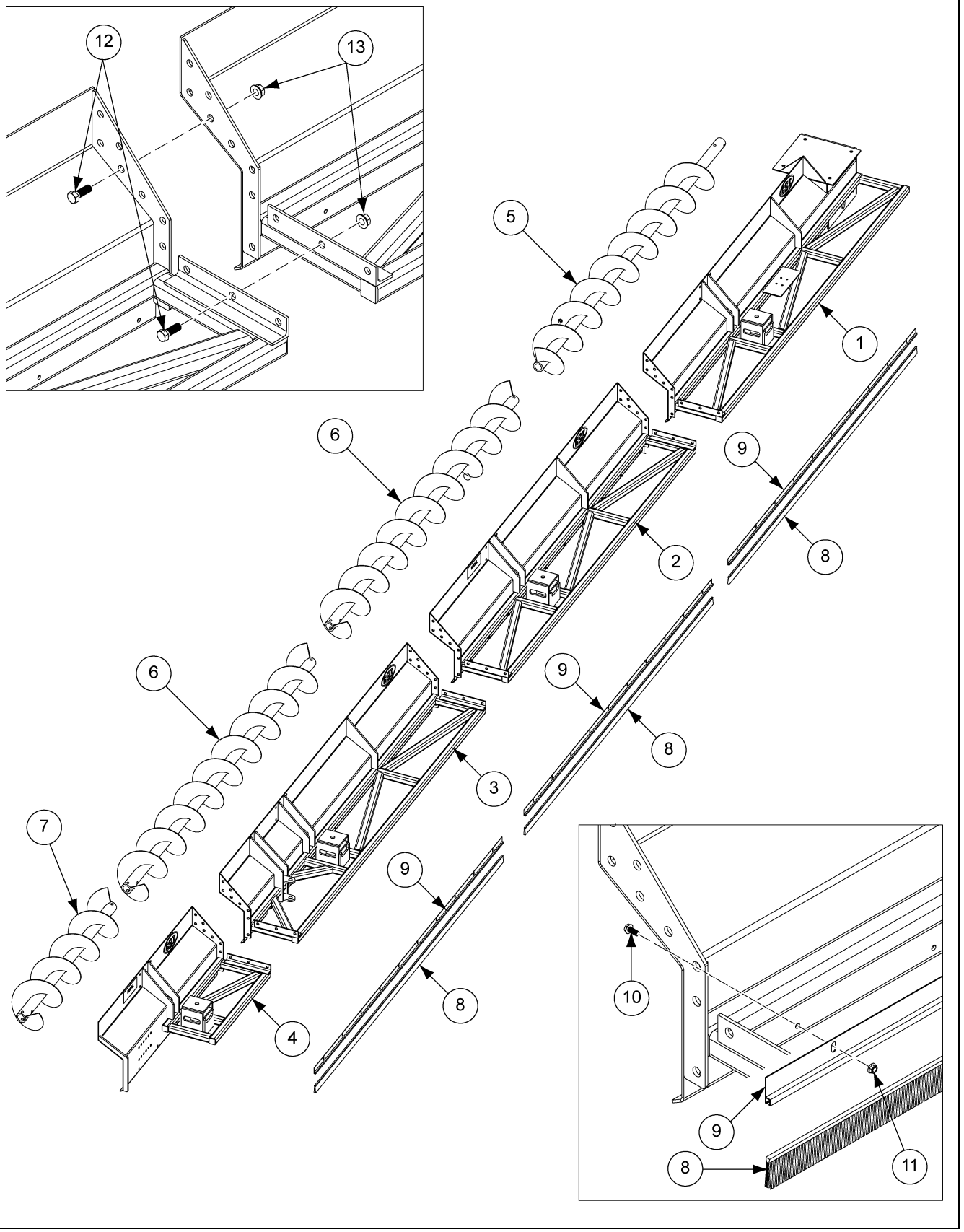
Control Panel Schematic 380V and 480V



Control Panel Schematic 600V



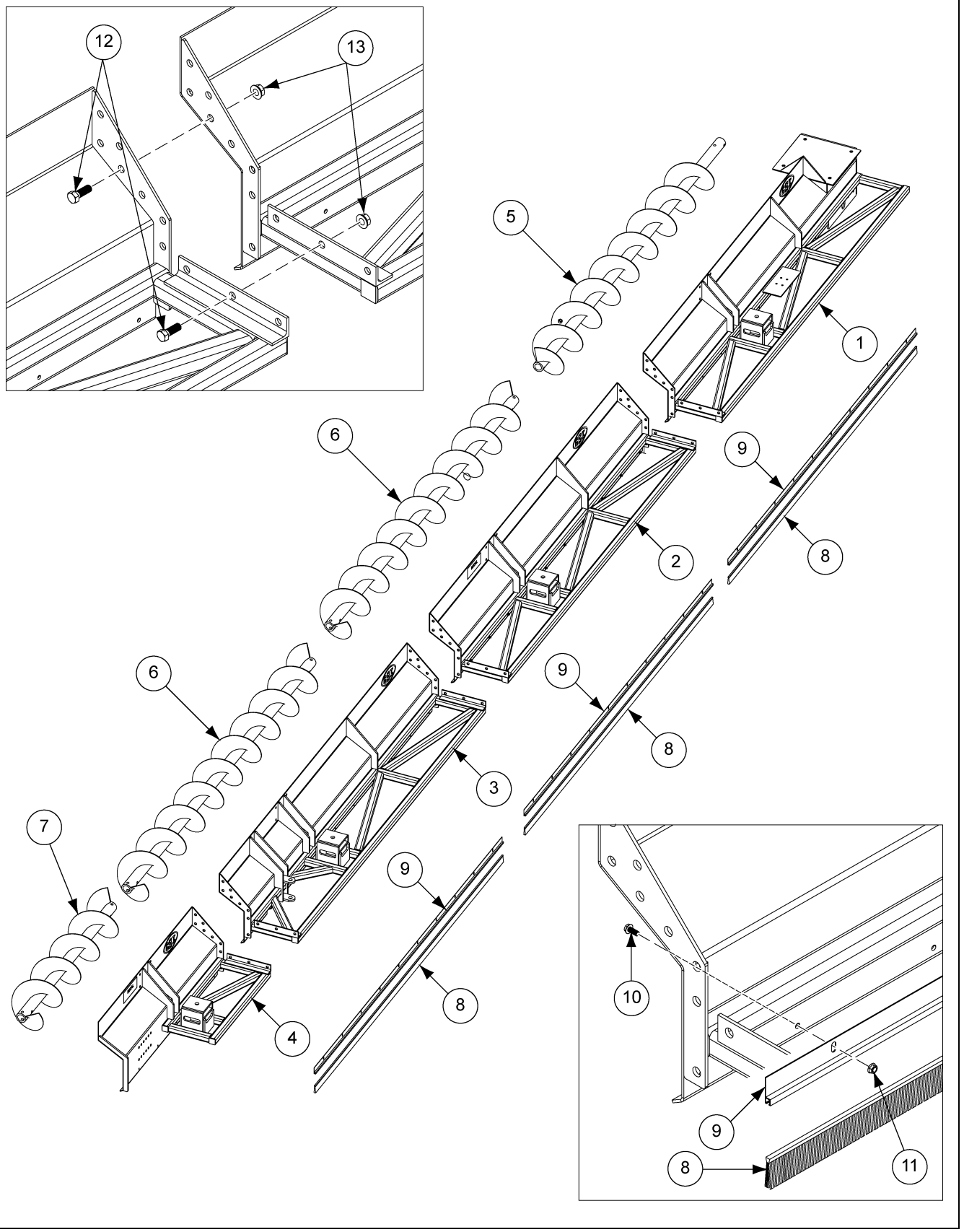
Main Auger Components



Main Auger Components Parts List

Ref #	Part #	Description
1	PDS-333G	X-Series Sweep Head Section Assembly - 12"
1	PDS-336G	X-Series Sweep Head Section Assembly - 16"
1	PDS-617G	X-Series Sweep Head/Tail Section Assembly - 12"
1	PDS-603G	X-Series Sweep Head/Tail Section Assembly - 16"
2	PDS-334G	X-Series Sweep Intermediate Section Assembly - 12"
2	PDS-337G	X-Series Sweep Intermediate Section Assembly - 16"
3	PDS-335G	X-Series Sweep Tail Section Assembly - 12"
3	PDS-338G	X-Series Sweep Tail Section Assembly - 16"
4	PDS-442G	X-Series Sweep - Extension Section Assembly - 12" x 3'
4	PDS-447G	X-Series Sweep - Extension Section Assembly - 12" x 4'
4	PDS-445G	X-Series Sweep - Extension Section Assembly - 12" x 5'
4	PDS-443G	X-Series Sweep - Extension Section Assembly - 12" x 6'
4	PDS-509G	X-Series Sweep - Extension Section Assembly - 12" x 7'
4	PDS-446G	X-Series Sweep - Extension Section Assembly - 12" x 8'
4	PDS-444G	X-Series Sweep - Extension Section Assembly - 12" x 9'
4	PDS-511G	X-Series Sweep - Extension Section Assembly - 12" x 10'
4	PDS-351G	X-Series Sweep - Extension Section Assembly - 12" x 11'
4	PDS-435G	X-Series Sweep - Extension Section Assembly - 16" x 3'
4	PDS-440G	X-Series Sweep - Extension Section Assembly - 16" x 4'
4	PDS-438G	X-Series Sweep - Extension Section Assembly - 16" x 5'
4	PDS-436G	X-Series Sweep - Extension Section Assembly - 16" x 6'
4	PDS-510G	X-Series Sweep - Extension Section Assembly - 16" x 7'
4	PDS-439G	X-Series Sweep - Extension Section Assembly - 16" x 8'
4	PDS-437G	X-Series Sweep - Extension Section Assembly - 16" x 9'
4	PDS-512G	X-Series Sweep - Extension Section Assembly - 16" x 10'
4	PDS-441G	X-Series Sweep - Extension Section Assembly - 16" x 11'
5	GC06613	S2 Sweep Head Flight 12" x 116-3/4"
5	GC06761	S2 Sweep Head Flight 16" x 115.63"
6	GC06627	S2 Sweep Intermediate Flight 12" x 118"
6	GC06766	S2 Sweep Intermediate Flight 16" x 117"

Main Auger Components (Continued)

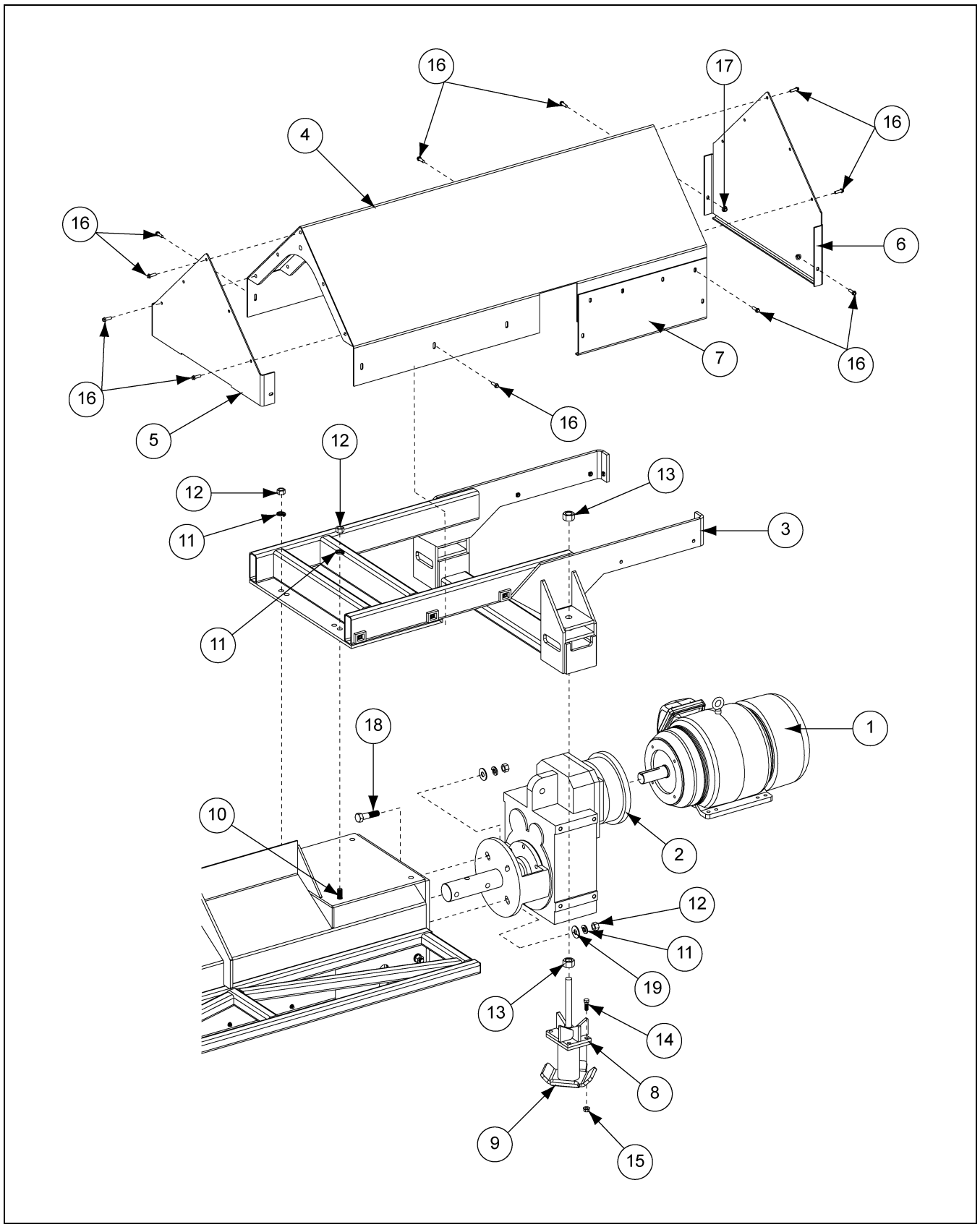


Main Auger Components Parts List (Continued)

Ref #	Part #	Description
7	PDS-331	S2 Sweep Extension Flight 12" x 34"
7	GC06468	S2 Sweep Extension Flight 12" x 46"
7	GC06622	S2 Sweep Extension Flight 12" x 58"
7	GC06623	S2 Sweep Extension Flight 12" x 70"
7	GC06624	S2 Sweep Extension Flight 12" x 82"
7	GC06582	S2 Sweep Extension Flight 12" x 94"
7	GC06626	S2 Sweep Extension Flight 12" x 106"
7	GC06627	S2 Sweep Extension Flight 12" x 118"
7	GC06467	S2 Sweep Extension Flight 12" x 130"
7	PDS-332	S2 Sweep Extension Flight 16" x 33"
7	GC06767	S2 Sweep Extension Flight 16" x 45"
7	GC06762	S2 Sweep Extension Flight 16" x 57"
7	GC06764	S2 Sweep Extension Flight 16" x 69"
7	GC06768	S2 Sweep Extension Flight 16" x 81"
7	GC06638	S2 Sweep Extension Flight 16" x 93"
7	GC06763	S2 Sweep Extension Flight 16" x 105"
7	GC06766	S2 Sweep Extension Flight 16" x 117"
7	GC06644	S2 Sweep Extension Flight 16" x 129"
8	PDS-065	Brush - Bristle, 120" Long
9	PDS-066	Brush Holder - 120" Long
10	S-6606	Flange Bolt 5/16"-18 x 3/4" ZN Grade 5
11	S-3611	Flange Nut 5/16"-18 YDP Grade 2
12	S-7886	Bolt, HHCS 5/8"-11 x 1-3/4" YDP Grade 8
13	S-9259	Flange Nut 5/8"-11 ZN

Auger Drive Components

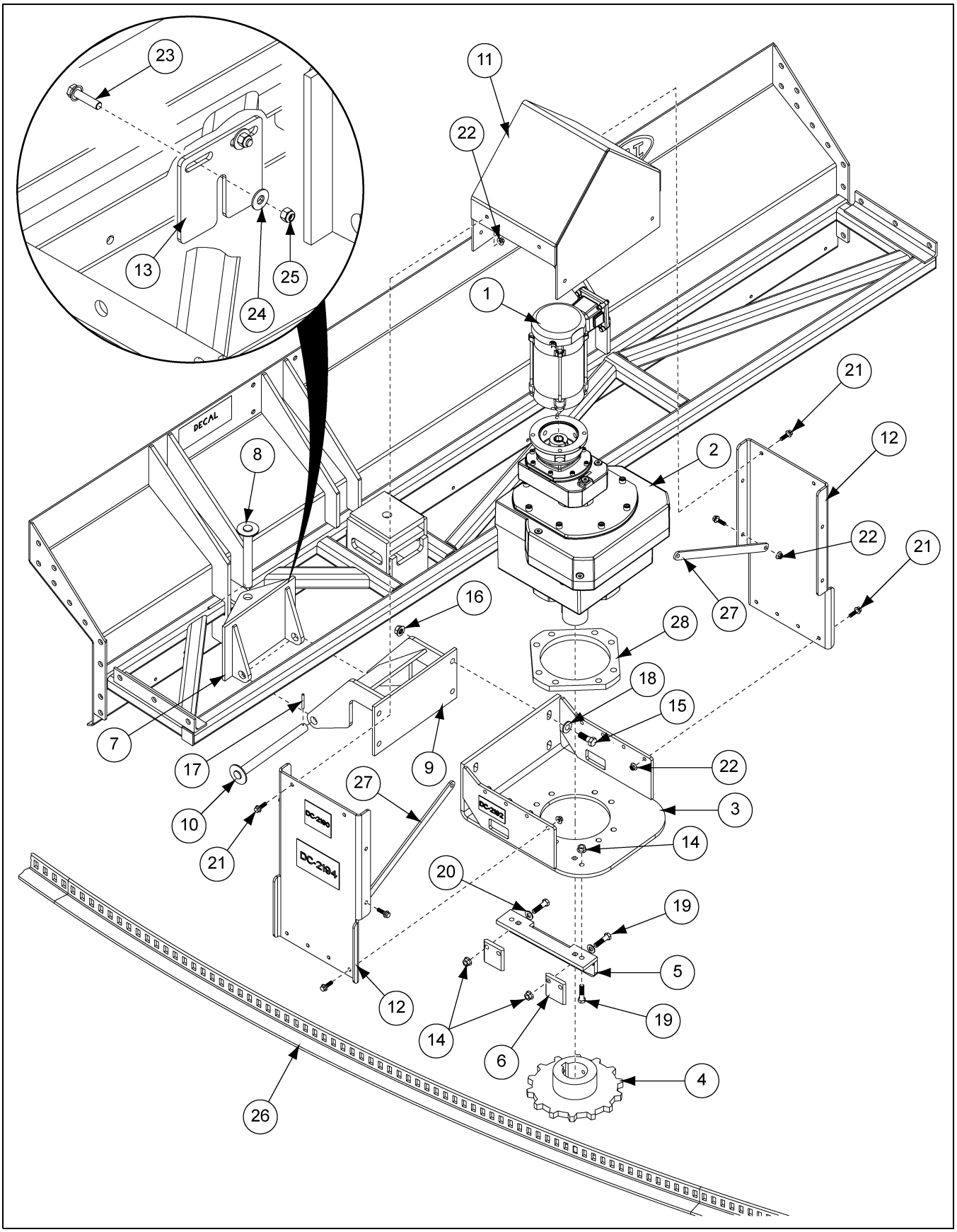
Wheel and Caster Components



Auger Drive Components Parts List

Ref #	Part #	Description	Qty per Assembly
1	MTR-0127	Motor HE, 10/15 HP 1470/1765R 190/380/230/460V 3 PH 50/60 Hz XPFC	1
1	MTR-0128	Motor HE, 15/20 HP 1465/1765R 190/380/230/460V 3 PH 50/60 Hz XPFC	1
1	MTR-0129	Motor HE, 20/25 HP 1470/1780R 190/380/230/460V 3 PH 50/60 Hz XPFC	1
1	MTR-0130	Motor HE, 25/30 HP 1470/1770R 190/380/230/460V 3 PH 50/60 Hz XPFC	1
1	MTR-0161	Motor, 30/40 HP 1480/1775R 190/380/230/460V 3 PH 50/60 Hz XPFC	1
1	MTR-0157	Motor, 15 HP 1760R 575V 3 PH 60 Hz 254TC XPFC	1
1	MTR-0158	Motor, 20 HP 1765R 575V 3 PH 60 Hz 256TC XPFC	1
1	MTR-0159	Motor, 25 HP 1775R 575V 3 PH 60 Hz 284TC XPFC	1
1	MTR-0160	Motor, 30 HP 1780R 575V 3 PH 60 Hz 286TC XPFC	1
1	MTR-0162	Motor, 40 HP 1775R 575V 3 PH 60 Hz 324TC XPFC	1
2	PDS-303	Gearbox, Quantis 882, 17:1, 250TC, 2" Shaft	1
2	PDS-296	Gearbox, Quantis 882, 8:1, 250TC, 2" Shaft	1
2	PDS-293	Gearbox, Quantis 1082, 8:1, 280TC, 2" Shaft	1
2	PDS-295	Gearbox, Quantis 882, 13:1, 250TC, 3" Shaft	1
2	PDS-141	Gearbox, Quantis 1082, 13:1, 280TC, 3" Shaft	1
2	PDS-294	Gearbox, Quantis 1282, 13:1, 320TC, 3" Shaft	1
3	PDS-255-BS	X-Series Motor Mount Weldment - 12" - Bin Silver	1
3	PDS-675-BS	X-Series Motor Mount Weldment - 16" - Bin Silver	1
4	PDS-666-BS	X-Series Sweep Auger Motor Heavy Cover, 12" - Bin Silver	1
4	PDS-694-BS	X-Series Sweep Auger 40 HP Motor Heavy Cover, 16" - Bin Silver	1
5	PDS-670-BS	X-Series Sweep Auger Motor Front Cover - Bin Silver	1
6	PDS-671-BS	X-Series Sweep Auger Motor Back Cover - Bin Silver	1
7	PDS-672-BS	X-Series Sweep Auger Motor Side Cover, 12" - Bin Silver	2
7	PDS-678-BS	X-Series Sweep Auger Motor Side Cover, 16" - Bin Silver	2
8	PDS-289-BS	X-Series Caster Mount Bin Silver - Bin Silver	2
9	GC20247-BS	X-Series Sweep Skid Weld - Bin Silver	2
10	S-869	Bolt, HHCS 3/4"-10 x 2" YDP Grade 8	4
11	S-233	Split Lock Washer 3/4" MED ZN Grade 2	12
12	S-234	Hex Nut 3/4"-10 ZN Grade 5, ZN	12
13	S-8905	Nut, ACME 1-5 ZN	4
14	S-8760	Bolt, HHCS 1/2"-13 x 1-1/2" ZN Grade 5	8
15	S-8506	Flange Nut 1/2"-13 ZN	8
16	S-9065	Flange Bolt 3/8"-16 x 1" ZN Grade 5	24
17	S-968	Flange Nut 3/8"-16 ZN Grade 5	2
18	S-4515	Bolt, HHCS 3/4"-10 x 3-1/2" ZN Grade 8	8
19	S-866	Flat Washer 3/4" USS ZN Flat Grade 2	4

Track Drive Components

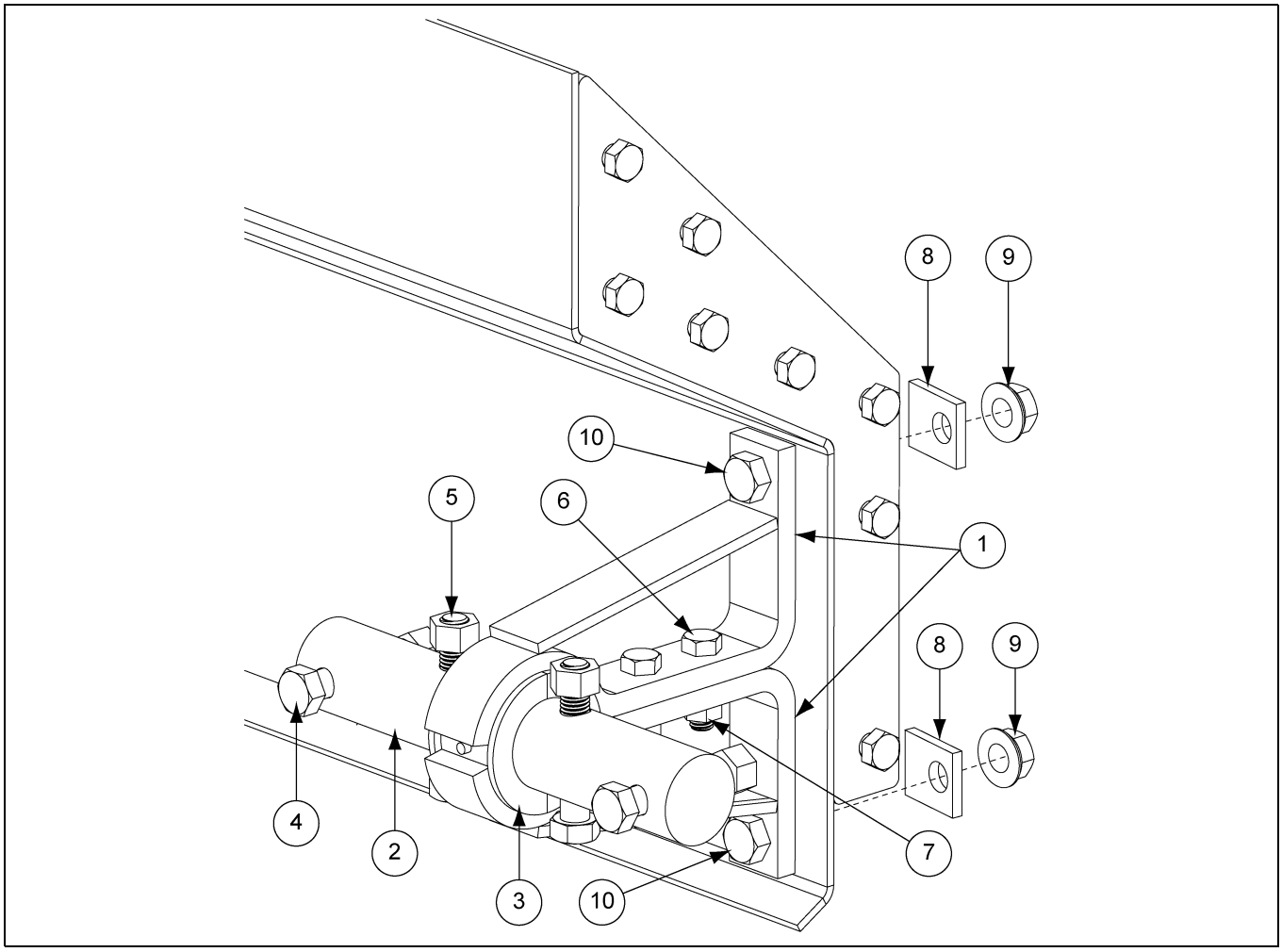


Track Drive Components Parts List

Ref #	Part #	Description	Qty per Assembly
1	MTR-0156	Motor, 1/2 HP 1735R 230/460V 3 PH 60 Hz 56C XPFC	1
1	MTR-0163	Motor, 1/2 HP 1735R 575V 3 PH 60 Hz 56C XPFC	1
2	PDS-890	Gearbox, 1579:1, 56C, 2-3/8" Shaft	1
3	PDS-859	X-Series Sweep TD Plate Assembly	1
4	PDS-864	Position Track Sprocket	1
5	PDS-860G	X-Series Drive Keeper Mount	1
6	PDS-200-BS	X-Series Drive Keeper - Bin Silver	2
7	PDS-217-BS	X-Series Vertical/Horizontal Pivot Mount - Bin Silver	1
8	PDS-233	X-Series Vertical Pivot Pin	1
9	PDS-611-BS	X-Series TD Horizontal Mount Weldment - 12"/16" x 30'-45' - Bin Silver	1
9	PDS-479-BS	X-Series TD Horizontal Mount Weldment - 12"/16" x 48'-156' - Bin Silver	1
10	PDS-235	X-Series Horizontal Pivot Pin	1
11	PDS-851-BS	X-Series Drive Motor Cover - Bin Silver	1
12	PDS-855	X-Series Sweep Drive Motor Side Plate Assembly	2
13	PDS-431	X-Series Sweep Track Wiper	1
14	S-8506	Flange Nut 1/2"-13 ZN	11
15	S-7886	Bolt, HHCS 5/8"-11 x 1-3/4" YDP Grade 8	4
16	S-9259	Flange Nut 5/8"-11 ZN	4
17	S-1341	Spring Pin 3/16" x 2" Slotted Rolled	2
18	S-858	Flat Washer 5/8" USS ZN Grade 2	4
19	S-7811	Bolt, HHCS 1/2"-13 x 2" ZN Grade 5	6
20	S-2120	Flat Washer 1/2" SAE ZN	4
21	S-9066	Flange Bolt 3/8"-16 x 1-1/4" ZN Grade 5	12
22	S-968	Flange Nut 3/8"-16 ZN Grade 5	12
23	S-8135	Flange Bolt 5/16"-18 x 1-1/4" ZN Grade 5	2
24	S-845	Flat Washer 5/16" USS SAE YDP Grade 2	2
25	S-7382	Nylock Nut 5/16"-18 ZN Grade 5	2
26	PDS-601	X-Series Track Section - 8' Radius	6
26	PDS-273	X-Series Track Section - 18' Radius	12
26	PDS-272	X-Series Track Section - 28' Radius	19
26	PDS-270	X-Series Track Section - 38' Radius	25
26	PDS-271	X-Series Track Section - 48' Radius	32
27	PDS-874	X-Series Sweep Motor Cover Cross Brace - Dodge	2
28	PDS-863-BS	X-Series Drive Motor Spacer Plate - Bin Silver	1

Flight Components

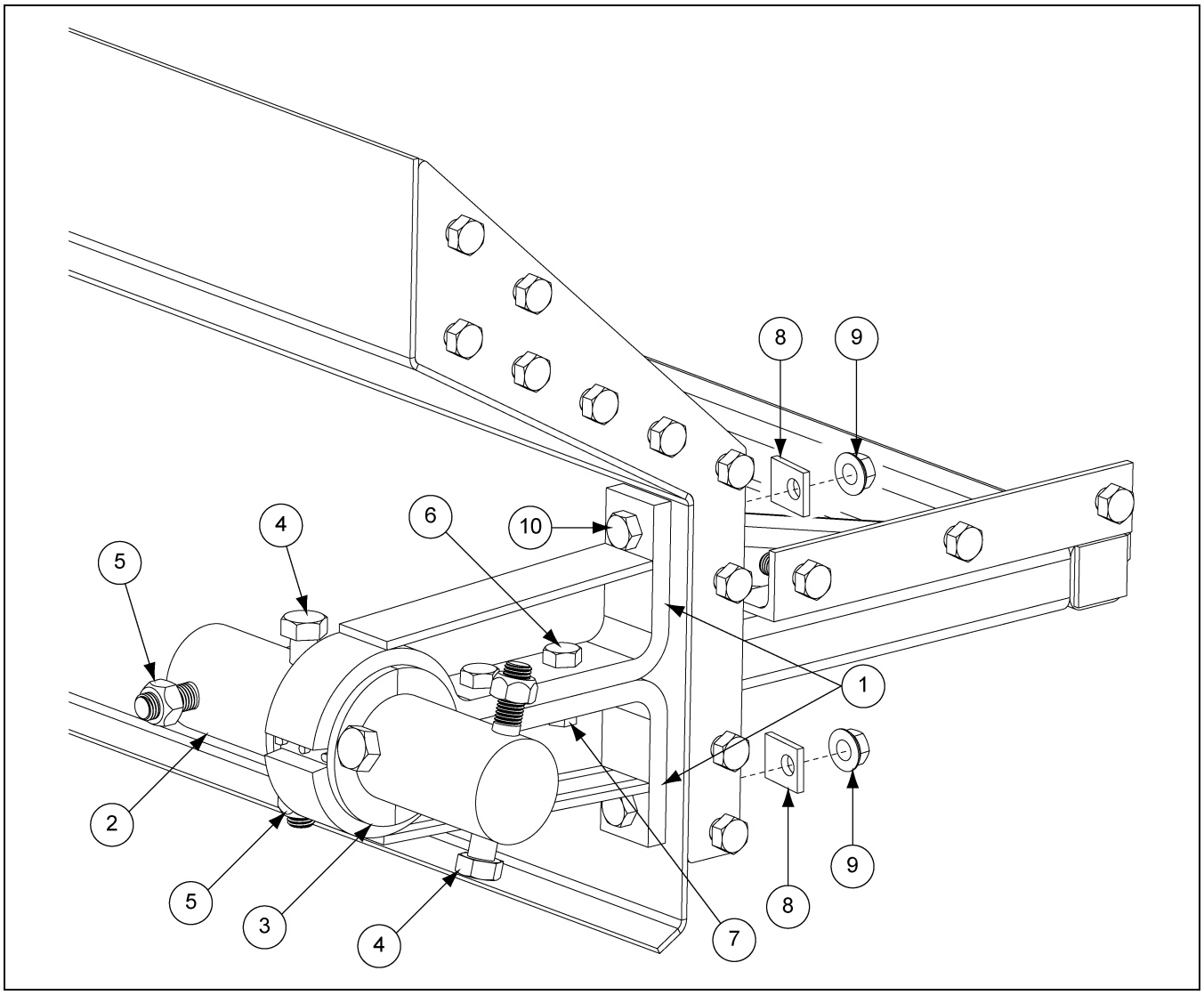
12" Flight Connection Components



12" Flight Connection Components Parts List

Ref #	Part #	Description	Qty per Connection
1	PDS-306	X-Series Sweep Hanger Weldment - 12"	2
2	GC03956	Shaft Coupling 2" O.D. x 11-1/2"	1
2	PDS-329	X-Series Sweep End Shaft - 12"	1
3	PDS-711	Bearing, Bronze Oil IMP 2" Bore Style 220	1
4	S-7011	Bolt, HHCS 5/8"-11 x 3-1/2" ZN Grade 8 ZN	4
5	S-6638	Bolt, HHCS 3/4"-10 x 5-1/2" YDP Grade 8	4
6	S-7876	Bolt, HHCS 1/2"-13 x 1-3/4" ZN Grade 5	2
7	S-8506	Flange Nut 1/2"-13 ZN	2
8	PDS-665-BS	Flat Washer 11/16" ZN Rectangle - Bin Silver	2
9	S-9259	Flange Nut 5/8"-11 ZN	2
10	S-7886	Bolt, HHCS 5/8"-11 x 1-3/4" YDP Grade 8	2

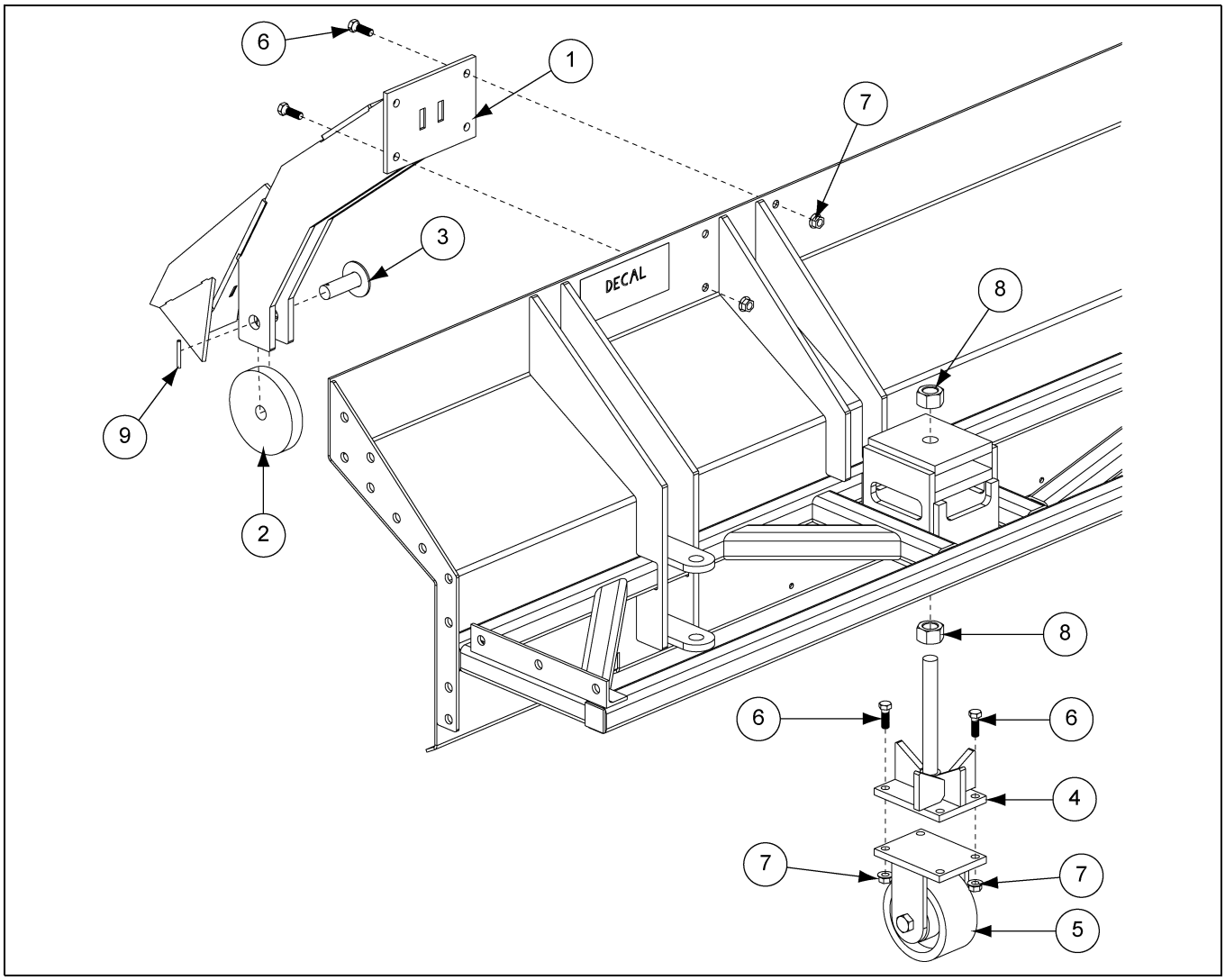
16" Flight Connection Components



16" Flight Connection Components Parts List

Ref #	Part #	Description	Qty per Connection
1	PDS-307	X-Series Sweep Hanger Weldment - 16"	2
2	GC03559	Shaft, Coupling 3" Diameter x 13"	1
2	PDS-330	X-Series Sweep End Shaft - 16"	1
3	PDS-710	Bearing, Bronze Oil IMP 3" Bore Style 220	1
4	S-6638	Bolt, HHCS 3/4"-10 x 5-1/2" YDP Grade 8	4
5	S-6639	Lock Nut 3/4"-10 ZN Deformed Nut Grade 5	4
6	S-7876	Bolt, HHCS 1/2"-13 x 1-3/4" ZN Grade 5	2
7	S-8506	Flange Nut 1/2"-13 ZN	2
8	PDS-665-BS	Flat Washer 11/16" ZN Rectangle - Bin Silver	2
9	S-9259	Flange Nut 5/8"-11 ZN	2
10	S-7886	Bolt, HHCS 5/8"-11 x 1-3/4" YDP Grade 8	2

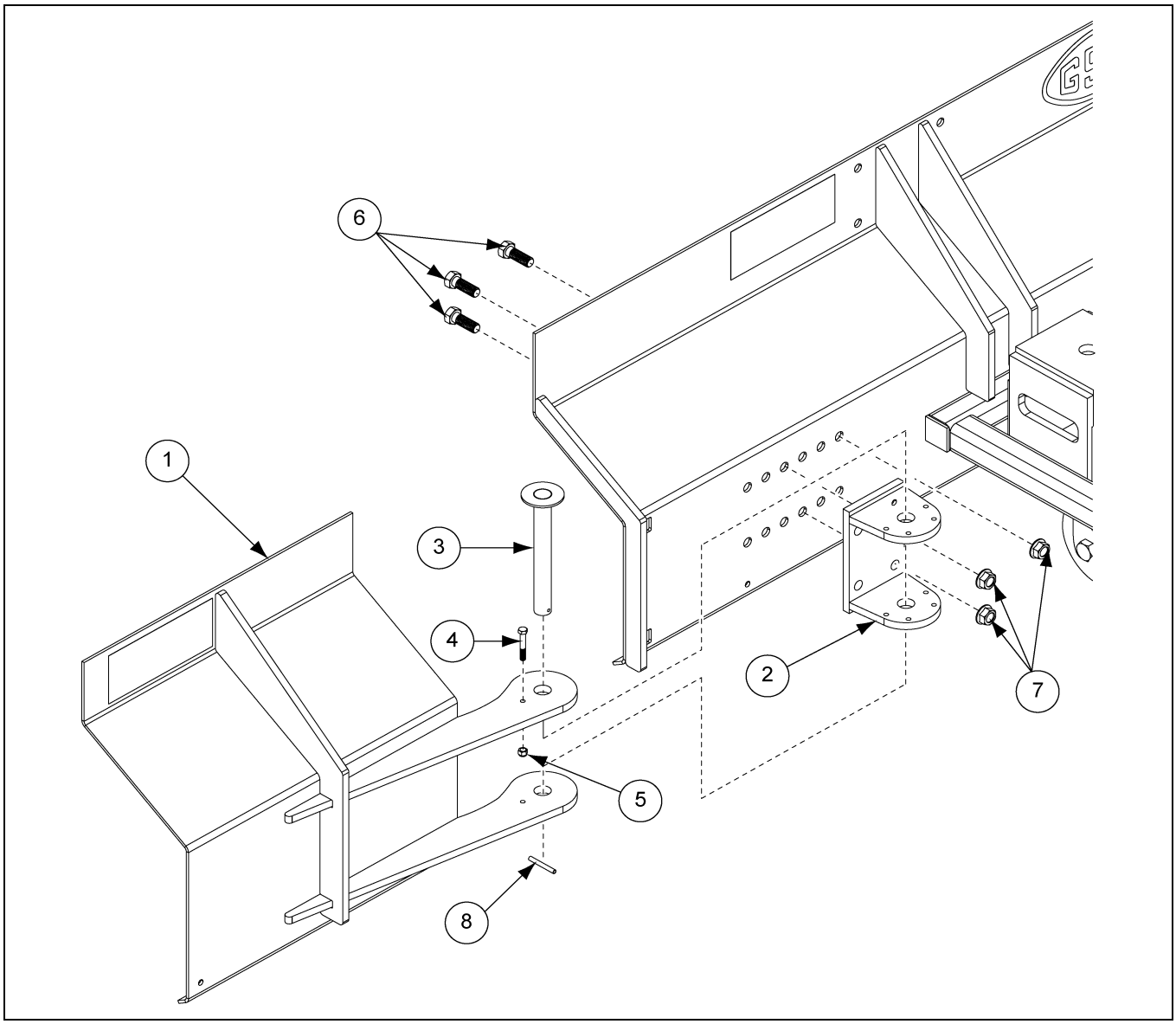
Wheel and Caster Components



Wheel and Caster Components Parts List

Ref #	Part #	Description	Qty per Assembly
1	PDS-869-BS	X-Series Front Wheel Strut Weldment - 12" - Bin Silver	1
1	PDS-867-BS	X-Series Front Wheel Strut Weldment - 16" - Bin Silver	1
2	PDS-054	Front Support Wheel	1
3	PDS-341	X-Series Front Wheel Pin	1
4	PDS-289-BS	X-Series Caster Mount - Bin Silver	1
5	PDS-661G	X-Series Sweep Wheel Assembly	1
6	S-8760	Bolt, HHCS 1/2"-13 x 1-1/2" ZN Grade 5	8
7	S-8506	Flange Nut 1/2"-13 ZN	8
8	S-8905	Nut, ACME 1-5 ZN	2
9	S-1341	Spring Pin 3/16" x 2" Slotted Rolled	1

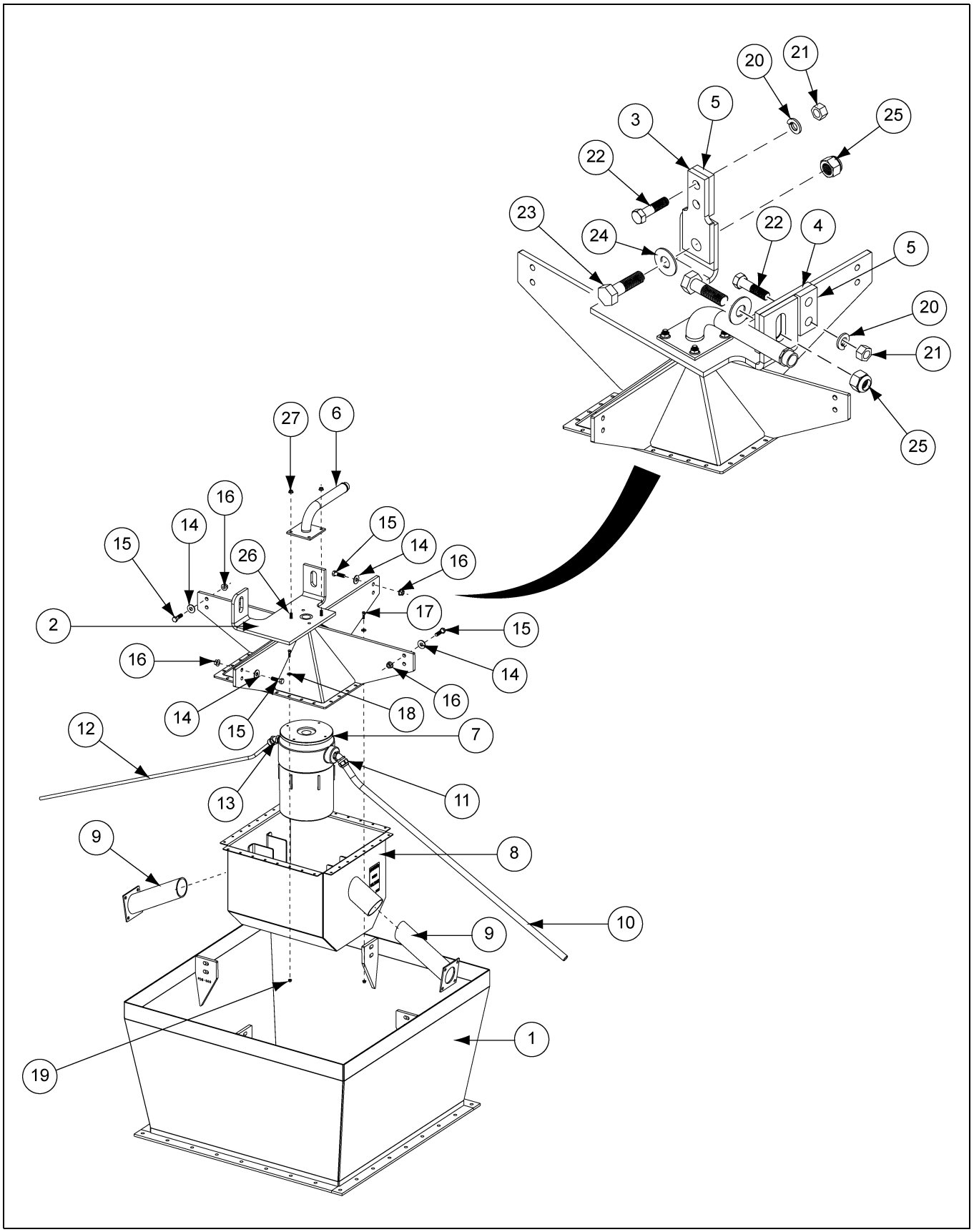
12" and 16" Plow Components



12" and 16" Plow Components Parts List

Ref #	Part #	Description	Qty per Assembly
1	PDS-449G	X-Series Sweep Plow Assembly - 12"	1
1	PDS-450G	X-Series Sweep Plow Assembly - 16"	1
2	PDS-356-BS	X-Series Sweep Plow Mount - Bin Silver	1
3	PDS-233	X-Series Vertical Pivot Pin	1
4	S-7329	Bolt, HHCS 5/16"-18 x 2" ZN Grade 2	2
5	S-7382	Nylock Nut 5/16"-18 ZN Grade 5	12
6	S-7886	Bolt, HHCS 5/8"-11 x 1-3/4" YDP Grade 8	16
7	S-9259	Flange Nut 5/8"-11 ZN	16
8	S-1341	Spring Pin 3/16" x 2" Slotted Rolled	1

Center Pivot and Collector Ring Components

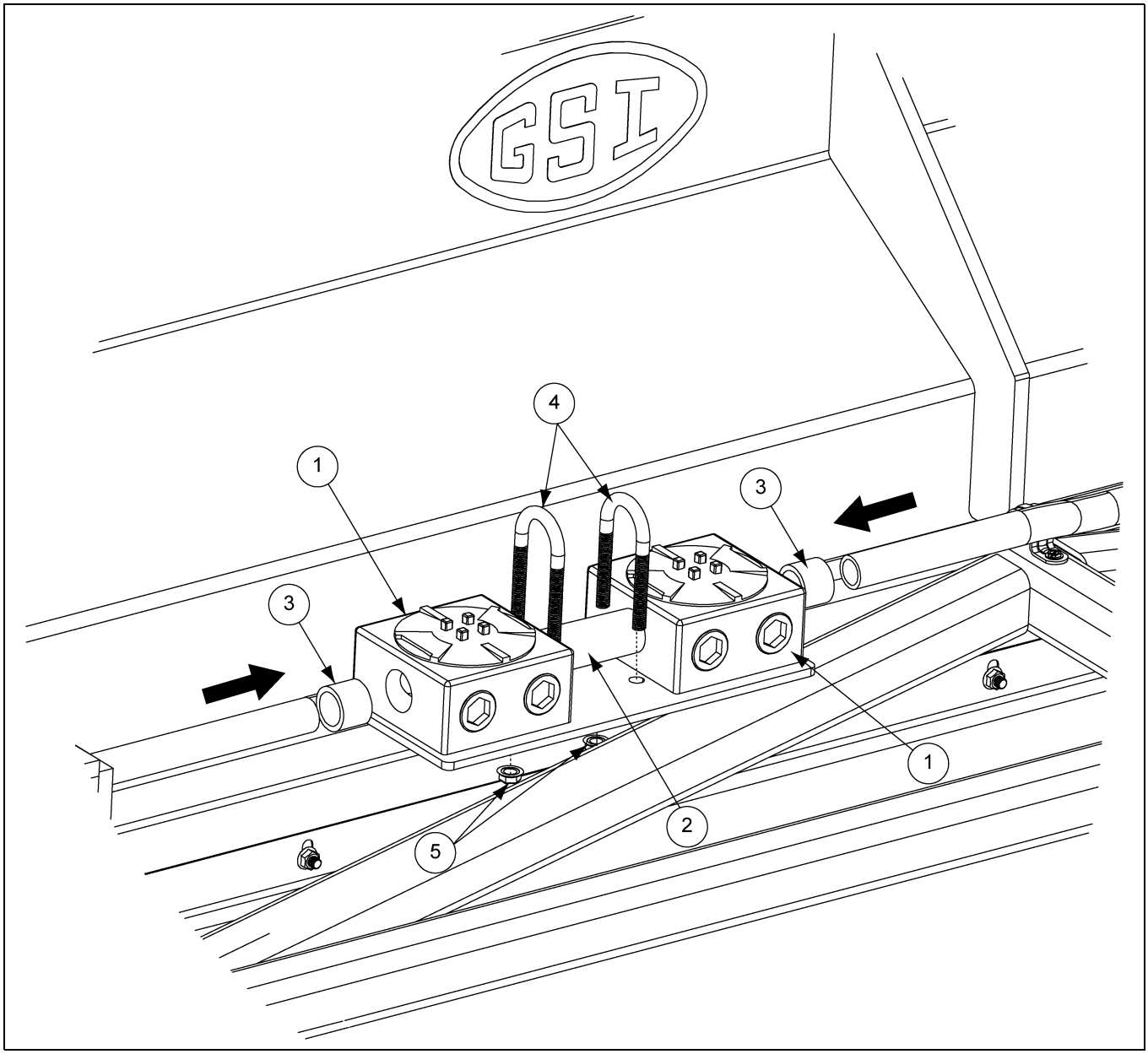


Center Pivot and Collector Ring Components Parts List

Ref #	Part #	Description	Qty per Assembly
1	PDS-578-BS	X-Series Sump Weldment Assembly 50K - Bin Silver	1
2	PDS-580G	X-Series Sweep Cross Brace - 12" 50K	1
2	PDS-632G	X-Series Sweep Cross Brace - 16" 50K	1
3	PDS-359-BS	X-Series Sweep Head Pivot Plate - Bin Silver	1
4	PDS-078-BS	Plate - Pivot Slot - Bin Silver	1
5	PDS-079-BS	Plate - Slot Spacer - Bin Silver	2
6	PDS-077-BS	Pivot Plate Tube - Bin Silver	1
7	PDS-472	Ring, Slip, XPFC, 9 Ring, with Encoder	1
8	PDS-589G	X-Series Sweep - Collector Ring Shield 50K	1
9	PDS-596-BS	Lower Conduit Tube Weldment Assembly 50K - Bin Silver	2
10	GC07575	Conduit 1" Flex x 48"	1
11	GC04654	Elbow, Connector, Sealtite 45° 1"	1
12	PDS-513	Conduit 1/2" Flex x 48"	1
13	GT3-0707	Elbow, Connector, Sealtite 45° 1/2"	1
14	S-2121	Flat Washer 1/2"	8
15	S-3883	Bolt, HHCS 1/2"-13 x 1-3/4" YDP Grade 8	8
16	S-8506	Flange Nut 1/2"-13 ZN	8
17	S-6998	Bolt, HHCS 1/4"-20 x 1" ZN Grade 5	20
18	S-1430	Flat Washer 1/4" ZN Grade 2 USS	16
19	S-7215	Flange Nut 1/4"-20 ZN	20
20	S-233	Lock Split Washer 3/4" MED ZN Grade 2	4
21	S-234	Hex Nut 3/4"-10 ZN Grade 5	4
22	S-4515	Bolt, HHCS 3/4"-10 x 3-1/2" ZN Grade 8	4
23	S-7622	Bolt, HHCS 1"-8" x 3-1/2" YDP Grade 8	2
24	S-7835	Flat Washer 1" I.D. USS	2
25	S-8418	Nylock Nut 1-8 ZN Grade 5	2
26	S-9066	Flange Bolt 3/8"-16 x 1-1/4" ZN Grade 5	4
27	S-968	Flange Nut 3/8"-16 ZN Grade 5 Wide Flange	4

Electrical Connection Components

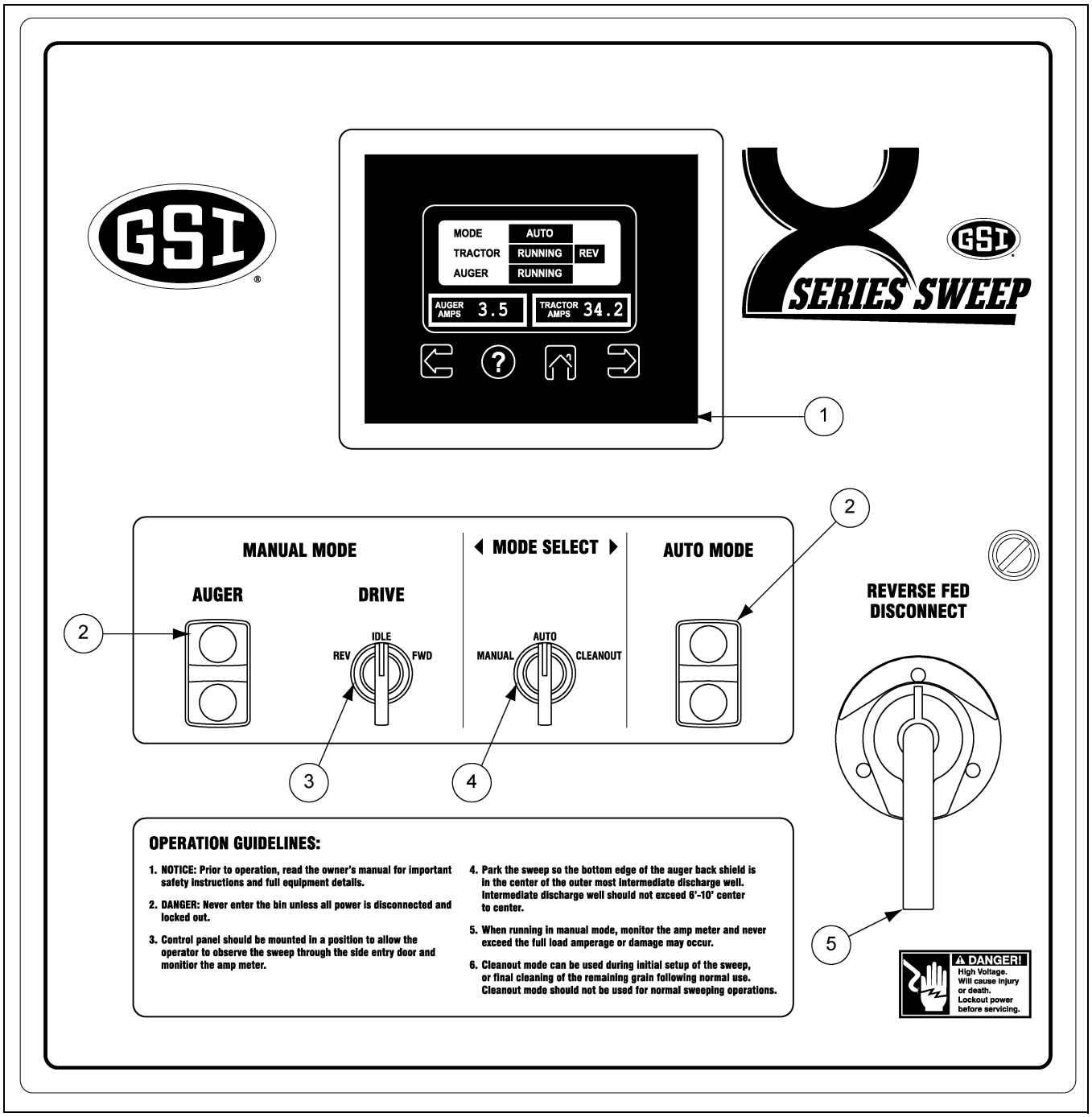
Junction Box Components



Junction Box Components Parts List

Ref #	Part #	Description	Qty per Assembly
1	GC07521	Box, Junction Explosion Proof	2
2	GC07744	Nipple, Conduit 1" x 4-3/4"	1
3	S-8513	Bushing, Conduit Reducer 1-3/4"	2
4	S-8568	Bolt, U-Bolt 3/8"-16 x 1-3/8" IW x 3-7/16" IL x 2-3/8" TL	2
5	S-968	Flange Nut 3/8"-16 ZN Grade 5	4

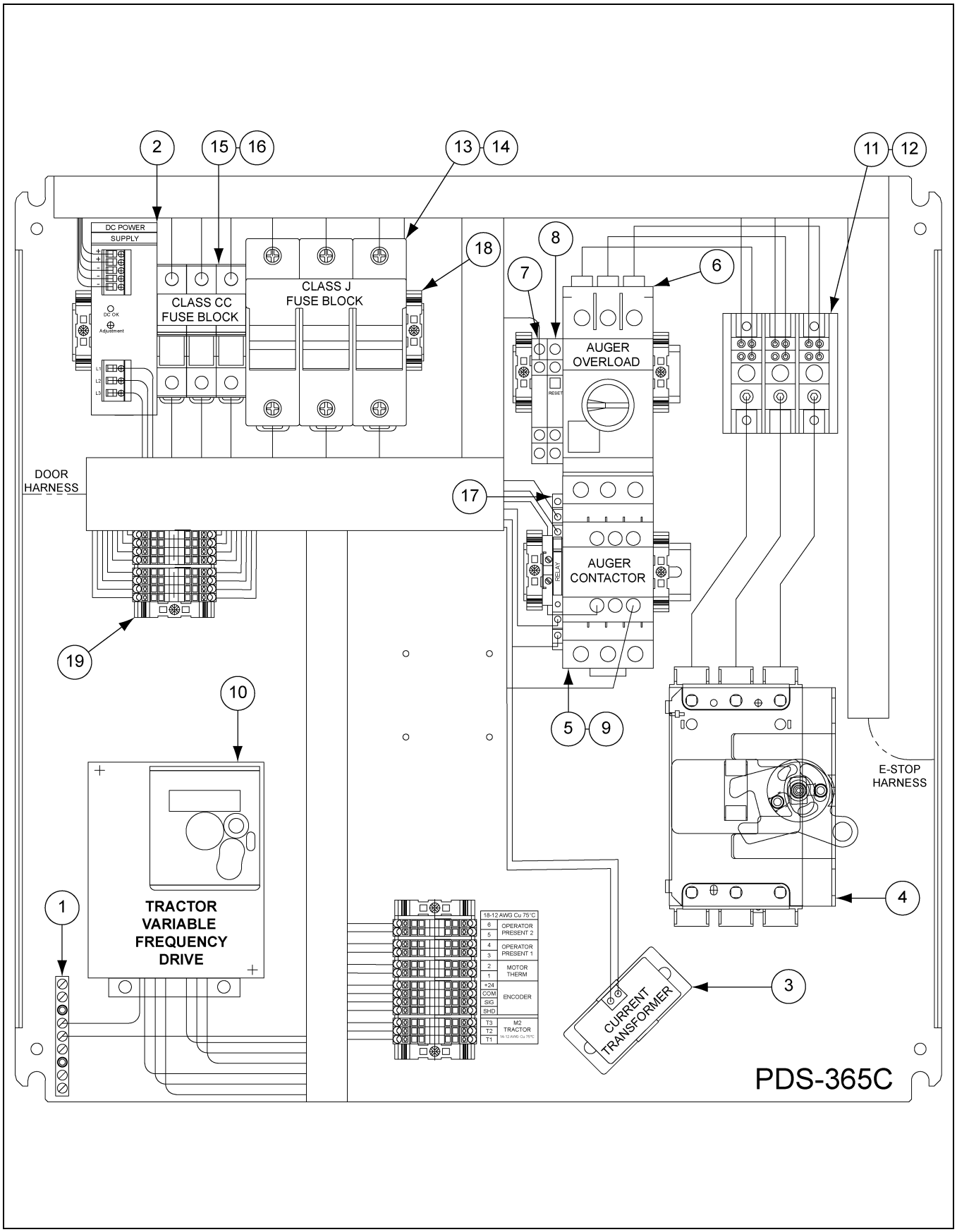
Control Panel Components



Control Panel Components Parts List

Ref #	Part #	Description	Qty
1	PDS-950	HMI Controller, Color 5.7", Mixed I/O	1
2	C-8716	Switch, Green/Red	2
3	GC20182	Switch, 3 Position Momentary	1
4	PDS-660	Switch, 3 Position Maintain	1
5	PDS-953	Handle, Mechanism SQD B Frame Breaker 942LB3	1
N/A	PDS-542	40 mm Emergency Stop Mushroom N.O./N.C.	1

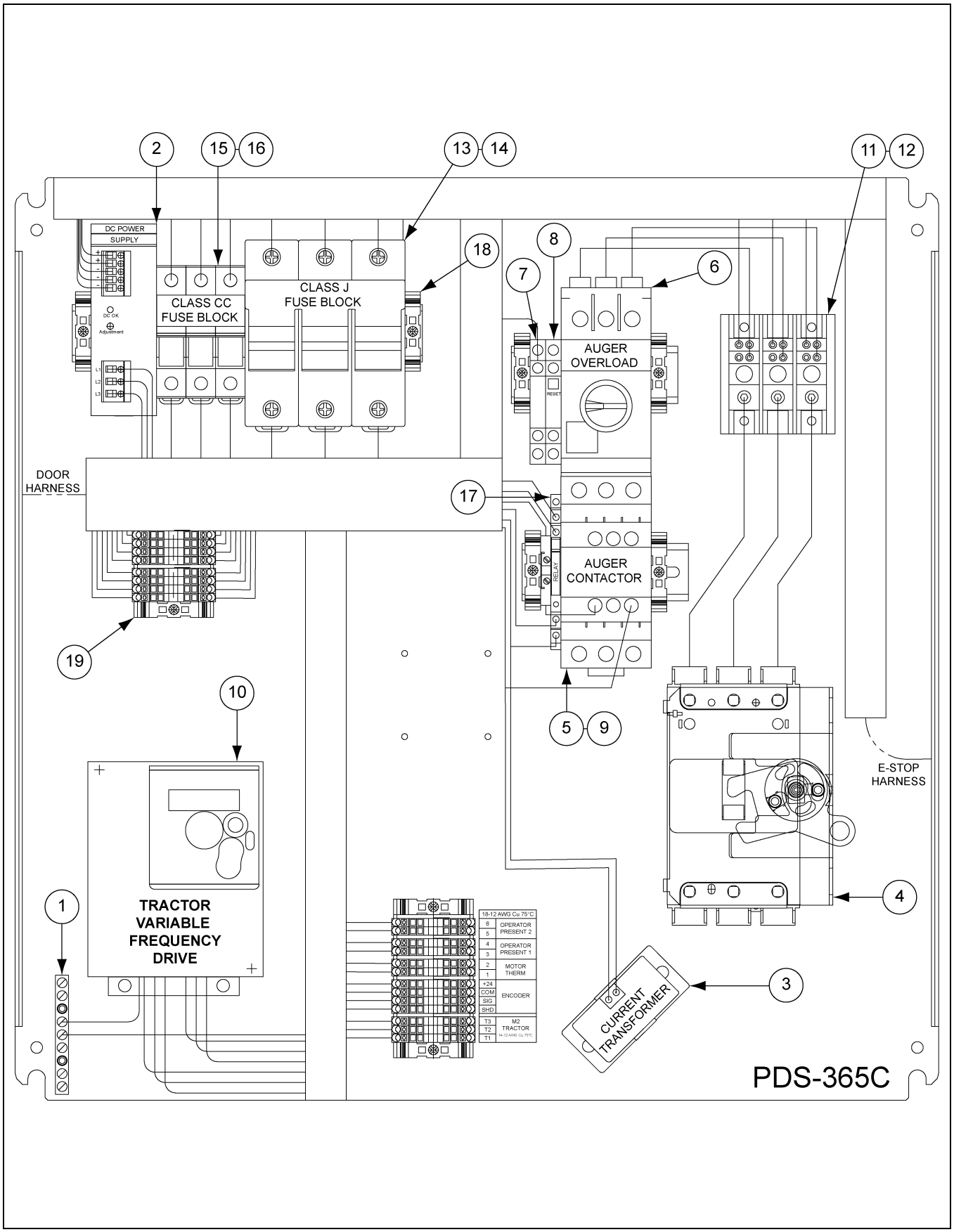
Control Panel Assembly - 380V 3 Phase



Control Panel Assembly - 380V 3 Phase Parts List

Ref #	Part #	Description	Qty				
			PDS-478A-P	PDS-478B-P	PDS-478C-P	PDS-478D-P	PDS-489A-P
			15 HP	20 HP	25 HP	30 HP	3K BPH 15 HP
1	AS-0730	Ground Bar Kit	1	1	1	1	1
2	PDS-536	Power Supply, 24V DC 5A, 575V 3 PH	1	1	1	1	1
3	AS-0736	Current Transducer	1	1	1	1	1
4	GC20231	3P 480V 50A Circuit Breaker	1	-	-	-	1
4	GK5962	3P 480V 60A Circuit Breaker	-	1	-	-	-
4	AS-0751	3P 480V 80A Circuit Breaker	-	-	1	1	-
5	PDS-527	32A 600V Contactor	1	-	-	-	1
5	GC20214	40A 600V Contactor	-	1	-	-	-
5	PDS-528	65A 600V Contactor	-	-	1	1	-
6	PDS-520	Motor Starter and Protector 20A-25A	1	-	-	-	1
6	PDS-521	Motor Starter and Protector 23A-32A	-	1	-	-	-
6	PDS-522	Motor Starter and Protector 37A-50A	-	-	1	1	-
7	PDS-526	Starter Aux. Contact 575 VAC 5 Amp	1	1	1	1	1
8	GC20213	Starter Short Circuit Contact 575 VAC	1	1	1	1	1
9	PDS-540	Starter Combo Block 600 VAC 38A	1	-	-	-	1
10	PDS-951	AC Drive, 1 HP, 480 VAC, 3 PH, Compact	1	1	1	1	1
11	1EL0911	Power Distribution Block 175A 600V 3 Pole	1	1	1	1	1
12	AS-0742	Clear Dist. Block Cover	1	1	1	1	1
13	PDS-660	Switch, 3 Position Maintain	1	1	1	1	1
14	PDS-533	Fuse 600V 6A Fast Acting Class J	3	3	3	3	3
15	PDS-534	Holder 30A 3P CC Fuse	1	1	1	1	1
16	PDS-535	Fuse 600V 6A Fast Acting Class CC	3	3	3	3	3
17	PDS-537	Relay	1	1	1	1	1
18	AS-0758	End Clamp	13	13	13	13	13
19	AS-0759	Terminal Block	21	21	21	21	21
N/A	PDS-538	Modbus Cable	1	1	1	1	1

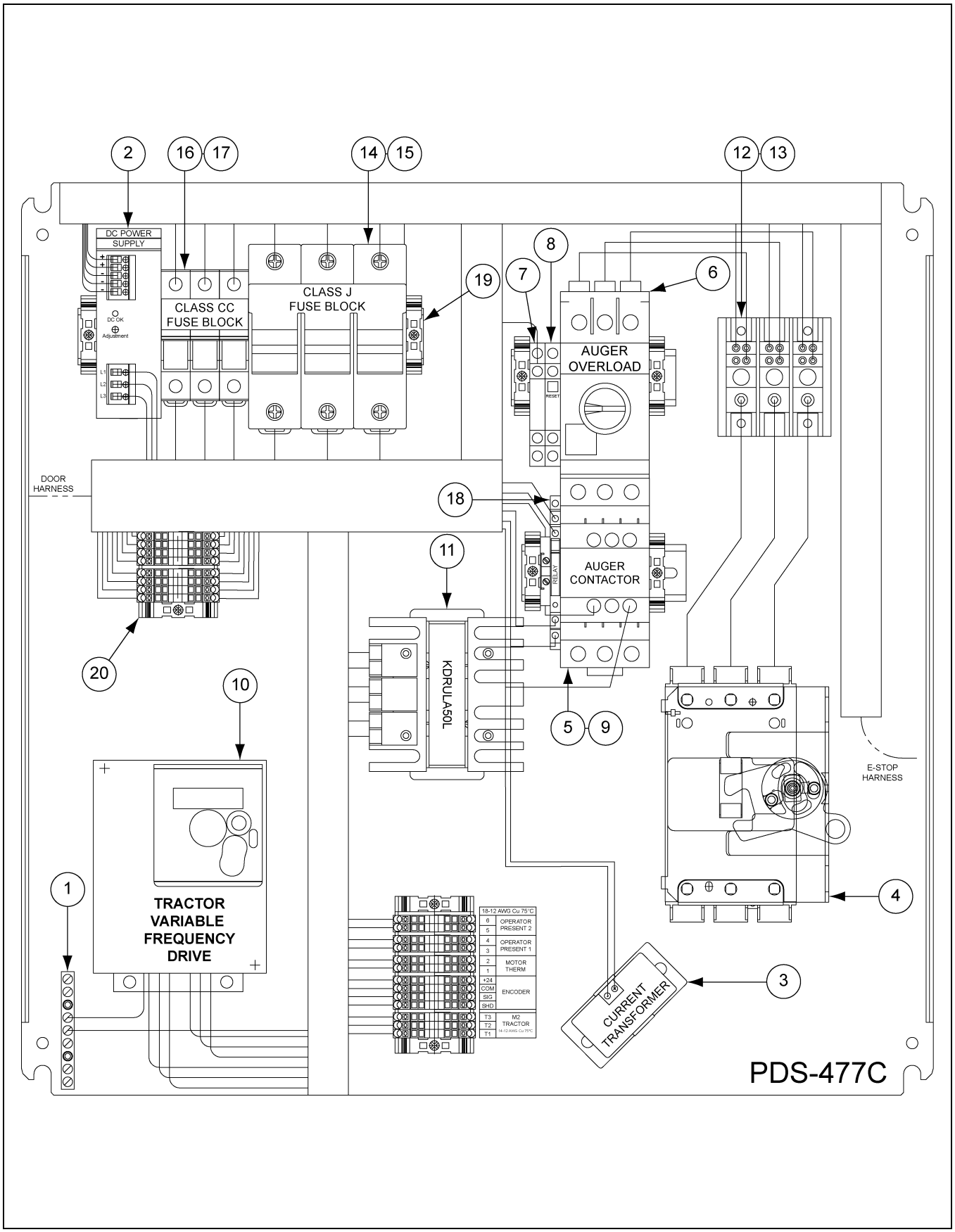
Control Panel Assembly - 480V 3 Phase



Control Panel Assembly - 480V 3 Phase Parts List

Ref #	Part #	Description	Qty					
			PDS-365A-P	PDS-365B-P	PDS-365C-P	PDS-365D-P	PDS-365E-P	PDS-487A-P
			15 HP	20 HP	25 HP	30 HP	40 HP	3K BPH 15 HP
1	AS-0730	Ground Bar Kit	1	1	1	1	1	1
2	PDS-536	Power Supply, 24V DC 5A, 575V 3 PH	1	1	1	1	1	1
3	AS-0736	Current Transducer	1	1	1	1	1	1
4	GC20231	3P 480V 50A Circuit Breaker	1	-	-	-	-	1
4	GK5962	3P 480V 60A Circuit Breaker	-	1	1	-	-	-
4	AS-0751	3P 480V 80A Circuit Breaker	-	-	-	1	1	-
5	PDS-527	32A 600V Contactor	1	-	-	-	-	1
5	GC20214	40A 600V Contactor	-	1	1	-	-	-
5	PDS-528	65A 600V Contactor	-	-	-	1	1	-
6	PDS-520	Motor Starter and Protector 20A-25A	1	-	-	-	-	1
6	PDS-521	Motor Starter and Protector 23A-32A	-	1	-	-	-	-
6	GC20212	Motor Starter and Protector 30A-40A	-	-	1	-	-	-
6	PDS-522	Motor Starter and Protector 37A-50A	-	-	-	1	-	-
6	PDS-523	Motor Starter and Protector 48A-65A	-	-	-	-	1	-
7	PDS-526	Starter Aux. Contact 575 VAC 5 Amp	1	1	1	1	1	1
8	GC20213	Starter Short Circuit Contact 575 VAC	1	1	1	1	1	1
9	PDS-540	Starter Combo Block 600 VAC 38A	1	-	-	-	-	1
10	PDS-951	AC Drive, 1 HP, 480 VAC, 3 PH, Compact	1	1	1	1	1	1
11	1EL0911	Power Distribution Block 175A 600V 3 Pole	1	1	1	1	1	1
12	AS-0742	Clear Dist. Block Cover	1	1	1	1	1	1
13	PDS-660	Switch, 3 Position Maintain	1	1	1	1	1	1
14	PDS-533	Fuse 600V 6A Fast Acting Class J	3	3	3	3	3	3
15	PDS-534	Holder 30A 3P CC Fuse	1	1	1	1	1	1
16	PDS-535	Fuse 600V 6A Fast Acting Class CC	3	3	3	3	3	3
17	PDS-537	Relay	1	1	1	1	1	1
18	AS-0758	End Clamp	13	13	13	13	13	13
19	AS-0759	Terminal Block	21	21	21	21	21	21
N/A	PDS-538	Modbus Cable	1	1	1	1	1	1

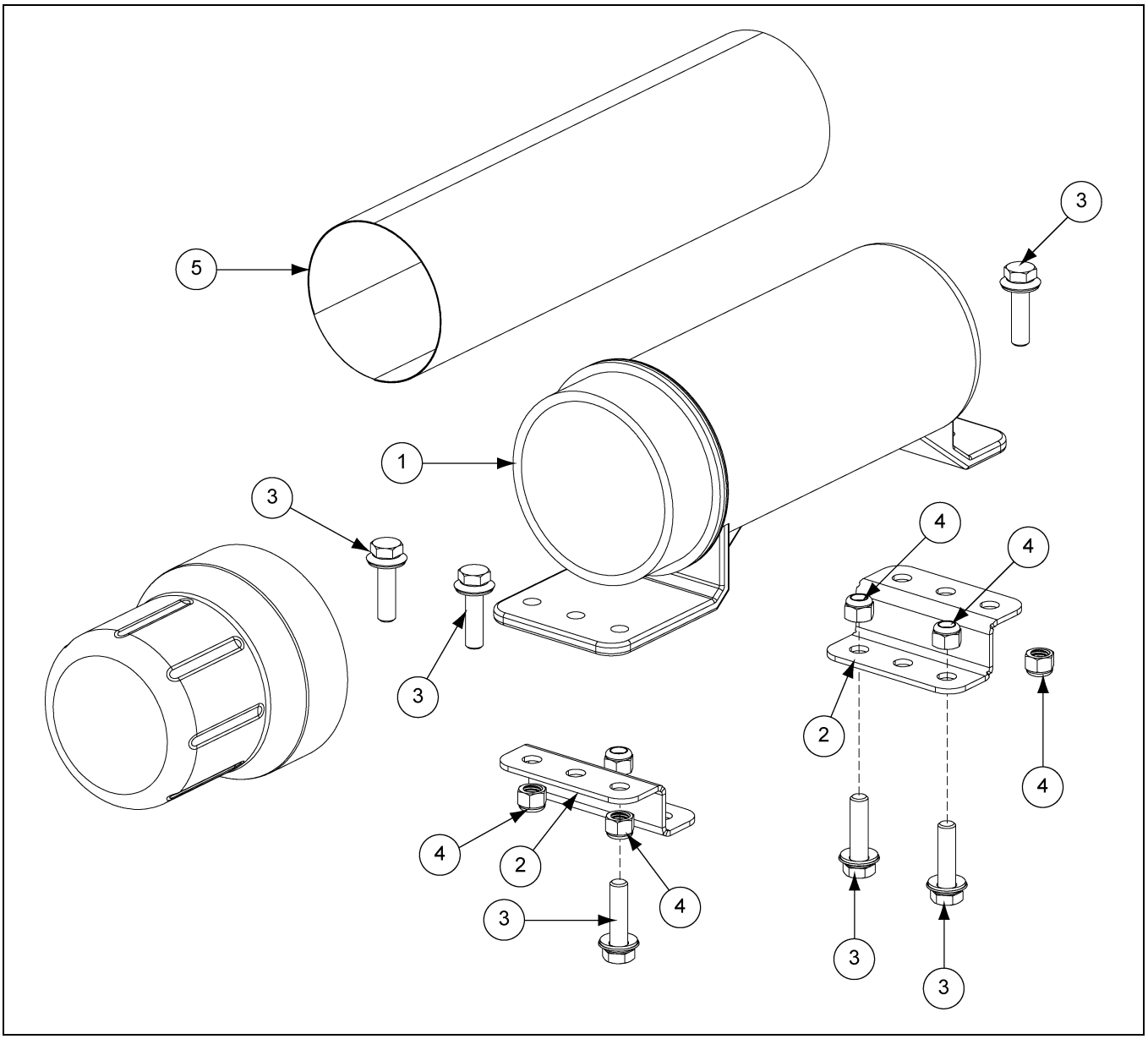
Control Panel Assembly - 600V 3 Phase



Control Panel Assembly - 600V 3 Phase Parts List

Ref #	Part #	Description	Qty					
			PDS-477A-P	PDS-477B-P	PDS-477C-P	PDS-477D-P	PDS-477E-P	PDS-488A-P
			15 HP	20 HP	25 HP	30 HP	40 HP	3K BPH 15 HP
1	AS-0730	Ground Bar Kit	1	1	1	1	1	1
2	PDS-536	Power Supply, 24V DC 5A, 575V 3 PH	1	1	1	1	1	1
3	AS-0736	Current Transducer	1	1	1	1	1	1
4	GC20230	3P 600V 50A Circuit Breaker	1	1	1	-	-	1
4	AS-0782	3P 600V 60A Circuit Breaker	-	-	-	1	-	-
4	GC20232	3P 600V 70A Circuit Breaker	-	-	-	-	1	-
5	PDS-529	18A 600V Contactor	1	-	-	-	-	1
5	PDS-530	25A 600V Contactor	-	1	-	-	-	-
5	PDS-527	32A 600V Contactor	-	-	1	-	-	-
5	GC20214	40A 600V Contactor	-	-	-	1	-	-
5	PDS-531	50A 600V Contactor	-	-	-	-	1	-
6	PDS-524	Motor Starter and Protector 17A-23A	1	-	-	-	-	1
6	PDS-520	Motor Starter and Protector 20A-25A	-	1	-	-	-	-
6	PDS-525	Motor Starter and Protector 24A-32A	-	-	1	-	-	-
6	GC20212	Motor Starter and Protector 30A-40A	-	-	-	1	-	-
6	PDS-522	Motor Starter and Protector 37A-50A	-	-	-	-	1	-
7	PDS-526	Starter Aux. Contact 575 VAC 5 Amp	1	1	1	1	1	1
8	GC20213	Starter Short Circuit Contact 575 VAC	1	1	1	1	1	1
9	PDS-540	Starter Combo Block 600 VAC 38A	1	1	1	1	1	1
10	PDS-952	AC Drive, 1 HP, 600 VAC, 3 PH, Compact	1	1	1	1	1	1
11	PDS-541	Input Line Reactor, Low Z, 575/600V 1.7A	1	1	1	1	1	1
12	1EL0911	Power Distribution Block 175A 600V 3 Pole	1	1	1	1	1	1
13	AS-0742	Clear Dist. Block Cover	1	1	1	1	1	1
14	PDS-660	Switch, 3 Position Maintain	1	1	1	1	1	1
15	PDS-533	Fuse 600V 6A Fast Acting Class J	3	3	3	3	3	3
16	PDS-534	Holder 30A 3P CC Fuse	1	1	1	1	1	1
17	PDS-535	Fuse 600V 6A Fast Acting Class CC	3	3	3	3	3	3
18	PDS-537	Relay	1	1	1	1	1	1
19	AS-0758	End Clamp	13	13	13	13	13	13
20	AS-0759	Terminal Block	21	21	21	21	21	21
N/A	PDS-538	Modbus Cable	1	1	1	1	1	1

Components



Components Parts List

Ref #	Part #	Description	Qty
N/S	GK80047	Quick Start Guide Complete Assembly	N/A
1	GK80046	Manual Canister Assembly	1
2	GK80045-BS	Canister Bracket - Bin Silver	1
3	S-277	5/16"-18 x 1-1/4" HH Bin Bolt with Washer YDP Grade 5	6
4	S-7382	Nylock Nut 5/16"-18 ZN Grade 5	6
5	PNEG-1858	X-Series Sweep Operation Manual	1

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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Printed in the USA

CN-365019