

Series II Sweep Hopper with Collector Ring

34,000 BPH Capacity & 30" Flange
60,000 BPH Capacity & 36" Opening

Installation & Operation Manual

PNEG-970-HC

Date: 03-02-10

GSI GROUP



PNEG-970-HC

Catalog No. Slip Ring

Serial No.

Date of Purchase

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 1st

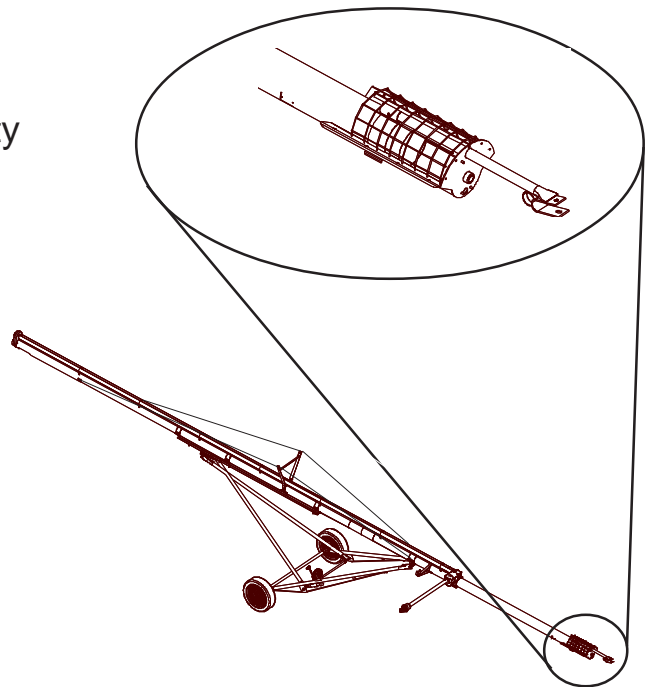
GSI equipment is built to provide many years of dependable service to our customers through durable craftsmanship.

One of the most important aspects of GSI engineering is **SAFETY 1st** design throughout all product lines. At GSI - safety is NO ACCIDENT!

That is why GSI is implementing its **SAFETY 1st** program. Should you ever need safety decals or owner/operator manuals, simply contact GSI, and we will supply you with them **FREE OF CHARGE!**

While it is our main goal for GSI to be the world leader in auger manufacturing, it is always our first priority to keep our customers safe.

If you need any of the above listed safety items or have safety questions, please contact GSI:



PO Box 20
Assumption, IL 62510
Ph: 217-226-4421

SAFETY GUIDELINES

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



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



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



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



CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION

CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

NOTE

NOTE indicates information about the equipment that you should pay special attention to.

Safety Instructions

GSI's principle concern is your safety and the safety of others associated with grain handling equipment. We want to keep you as a customer. This manual is to help you understand safe operating procedures and some problems which may be encountered by the operator and other personnel.

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

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

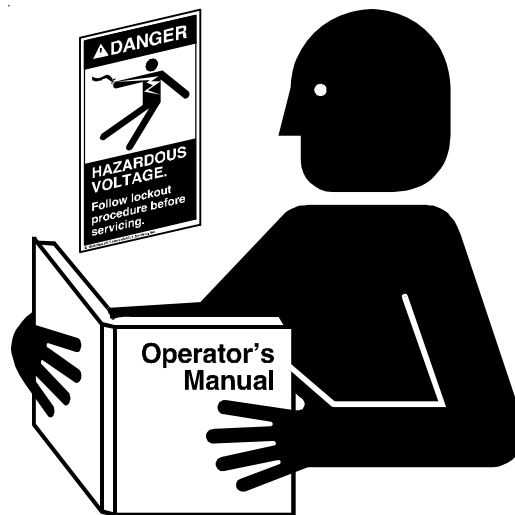
FOLLOW SAFETY INSTRUCTIONS

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

Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction. Keep children and other unqualified personnel out of the working area at ALL times

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

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



Read and Understand Manual.

ROTATING FLIGHT

Grain augers can kill or dismember.

Keep clear of all augers and never enter the bin unless all power is disconnected and locked out. Failure to do so will result in serious injury or death!

**DANGER!
Rotating Flight****OPERATE UNLOAD EQUIPMENT PROPERLY**

Make sure ALL equipment is locked in position before operating.

NEVER start equipment until ALL persons are clear of the work area.

Be sure all operators are adequately rested and prepared to perform all functions of operating this equipment.

NEVER allow any person intoxicated or under the influence of alcohol or drugs to operate the equipment.

NEVER work alone.

Make sure someone is nearby who is aware of the proper shutdown sequence in the event of an accident or emergency.

ALWAYS think before acting. NEVER act impulsively around the equipment.

NEVER allow anyone inside a bin, truck, or wagon which is being unloaded by an auger or conveyor. Flowing grain can trap and suffocate in seconds.

Use ample overhead lighting after sunset to light the work area.

NEVER drive, stand or walk under the equipment.

ALWAYS lockout ALL power to the equipment when finished unloading a bin.



**Operate
Unload
Equipment
Safely**

INSTALL & OPERATE ELECTRICAL EQUIPMENT PROPERLY

Electrical controls should be installed by a qualified electrician and must meet the standards set by the national electrical code and all local and state codes.

Disconnect and lock out all power sources before installing wires/cables or servicing equipment.

Electric Shock Hazard



ELECTRICAL WARNINGS

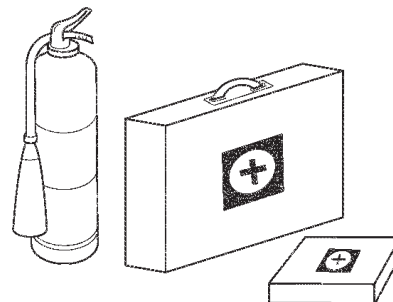
- A. Install and ground the slip ring and the entire unit in accordance with the National Electric Code and local codes and/or ordinances.
- B. **DANGER:** Hazard of electrical shock or burn. Always disconnect the power from the collector ring before attempting to perform any service function. Follow lock-out/tag-out procedures as outlined in OSHA section 1910.147 where appropriate.
- C. Do not use this slip ring with electrical loads greater than the rated current and voltage. (See page 32)
- D. Information regarding the current and voltage rating of each slip ring is recorded on a tag permanently fastened to the ring assembly.
- E. 1 R-Series Slip Rings withstand a maximum ambient temperature of 220° F.
- F. The model number of the slip ring assembly indicates the ampacity and voltage rating of each type of ring and brush included on the assembly . (See page 32) **Note: the actual ampacity may be affected by the type and size of the core lead wire (refer to NEC Table 310-16, 17,18, 19 and applicable notes).**

PREPARE FOR EMERGENCIES

Be prepared if fire starts.

Keep a first aid kit and fire extinguisher handy.

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



**Keep Emergency Equipment
Quickly Accessible.**

WEAR PROTECTIVE CLOTHING

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

Safety glasses should be worn at all times to protect eyes from debris.

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

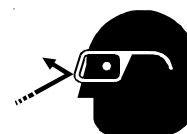
A respirator may be needed to prevent breathing potentially toxic fumes and dust.

Wear hard hat and steel toe boots to help protect your head and toes from falling debris.

Remove all jewelry.

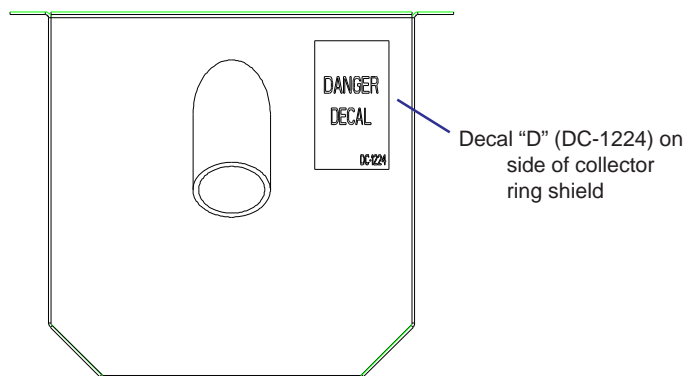
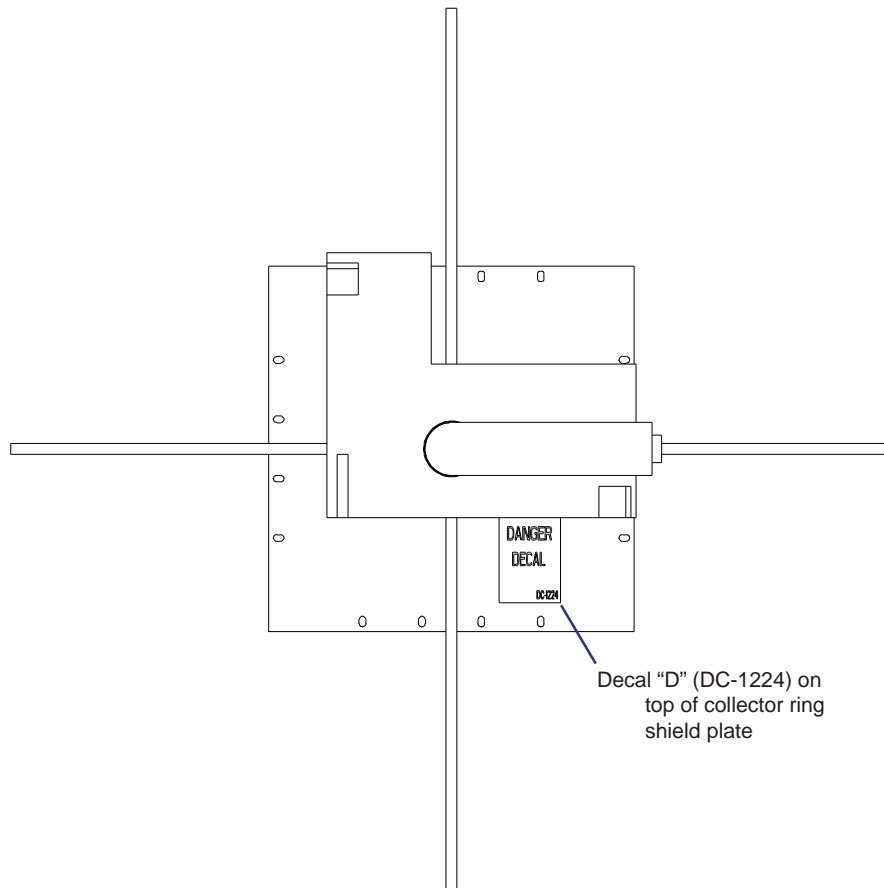
Tuck in any loose or dangling shoe strings.

Long hair should be tied up and back.

Eye Protection**Gloves****Steel Toe Boots****Respirator****Hard Hat**

Decals

- A. The images below show the location of the decals and safety signs which should appear on the Series II Sweep hopper with collector ring.



Decal "A"

Location: Top of shield plate and side of shield.
Size: 2 7/8" x 5"
Part No.: DC-1224



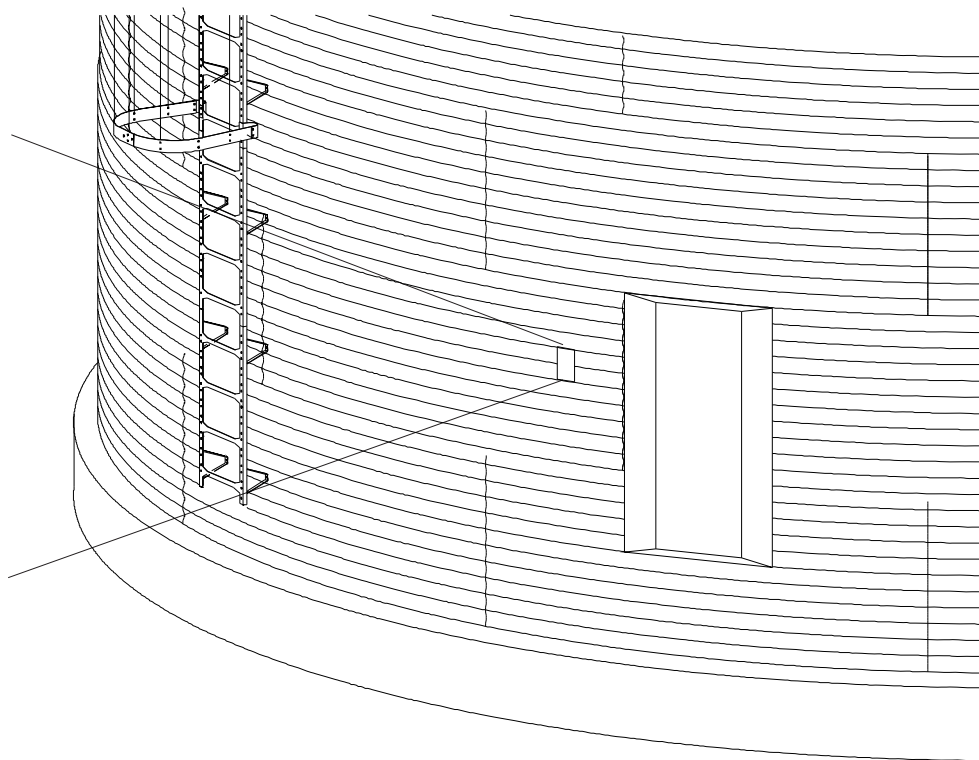
Please remember safety signs provide important safety information for people working near bin unloading equipment that is in operation. Any safety signs that are worn, missing, illegible or painted over should be replaced immediately. Obtain **FREE** replacements by contacting GSI.

Decals (cont.)

- A. DANGER Sign No. DC-1395 was supplied with your bin unloading equipment. This safety sign should be applied to the side of the bin near the bin opening, so it will 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.



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.

Order SAFETY SIGN NO. DC-1395

7. Operator Qualifications.

- A. The User/Operator must be competent and experienced to operate auger equipment. Anyone who works with or around augers must have good common sense in order to be qualified. These persons must also know and meet all other qualifications, such as:
1. Any person who has not read and/or does not understand all operation and safety instructions is not qualified to operate any auger systems.
 2. Certain regulations apply to personnel operating power machinery. Personnel under the age of 18 years may not operate power machinery, including augers. It is your responsibility, as owner and/or supervisor, to know what these regulations are in your area or situation.
 3. Unqualified or incompetent persons are to remain out of work area.
 4. O.S.H.A. (Occupational Safety & Health Administration) regulations state:
“At the time of initial assignment and at least annually thereafter, the employer shall instruct every employee in the safe operation and servicing of all equipment with which the employee is, or will be involved.” (Federal Occupational Safety & Health Standards for Agriculture. Sub part D, Section 19287.57 (a) (6).
- B. As a requirement of OSHA, it is necessary for the employer to train the employee in the safe operating and safety procedures for this auger. We included this sign-off sheet for your convenience and personal record keeping. All unqualified people are to stay out of the work area at all times. It is strongly recommended that another qualified person who knows the shutdown procedure is in the area in the event of an emergency. A person who has not read this manual and understands all operating and safety instructions, is not qualified to operate the machine.

<i>Date</i>	<i>Employees Name (printed)</i>	<i>Employees Signature</i>
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1. Product Information

- A. The Series II Sweep Hopper with Collector Ring includes the following components:
- hopper
 - collector ring
 - center brace support
 - collector ring shield



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

2. General information.

- A. 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.
- B. This new hopper with collector ring 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 suggestions recommended, the owner should receive quality service for many years. If additional information or assistance should be required, please contact GSI.
- C. 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 from the date of the occurrence of freight damage. The consignee should accept the shipment after noting the damage or loss.

3. Capacities and Specifications



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 which apply. Reset and motor starting stations should be located so that the operator can see that all personnel are clear of the equipment.

- A. Disconnect and lockout the power before entering the bin.
- B. Disconnect and lockout the power before servicing the equipment.



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

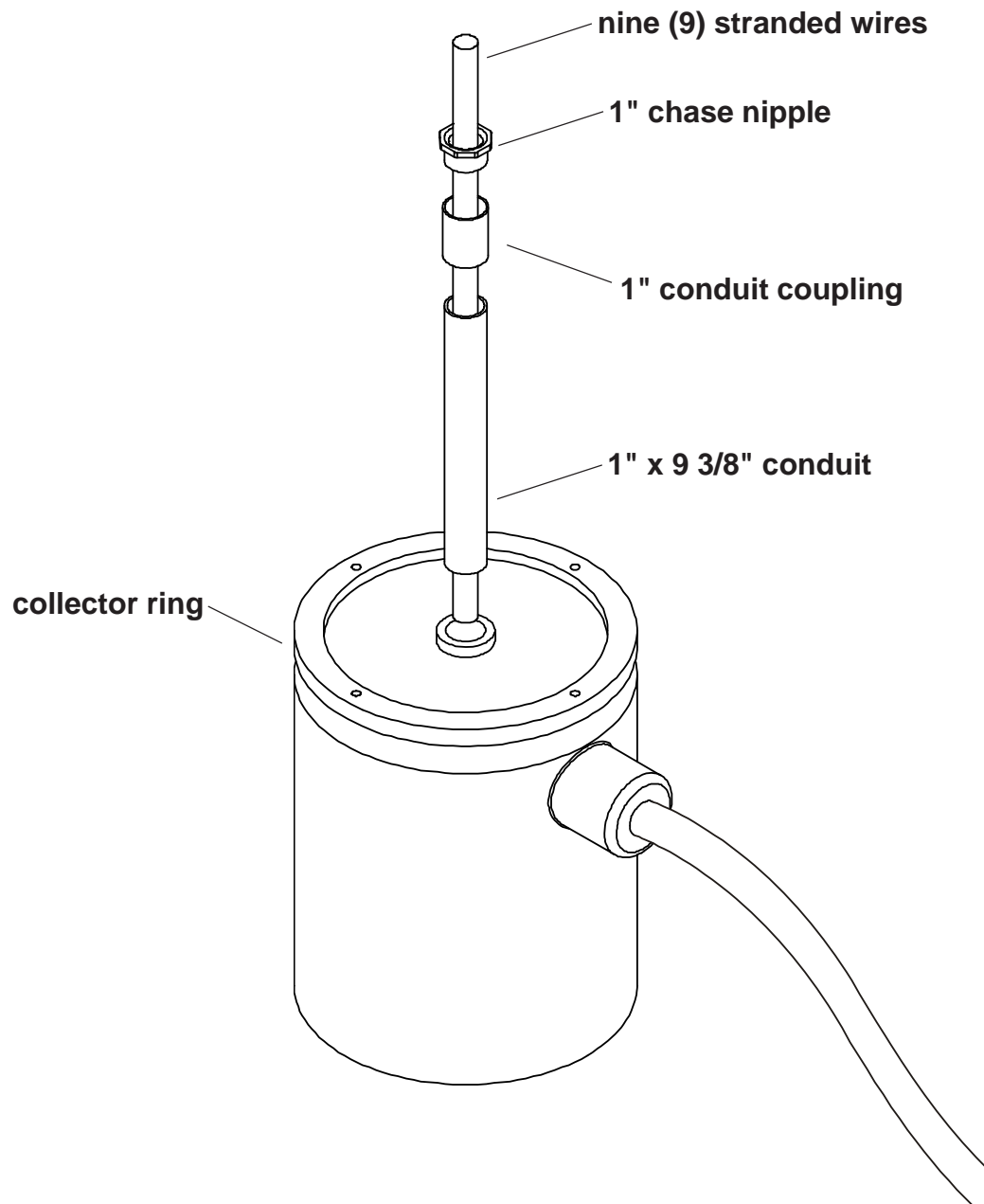


A main power disconnect switch capable of being locked only in the OFF position should be used. It should be locked whenever work is being done on the hopper.

5. Bottom Flange Dimensions (For 30" discharge opening sump only.)

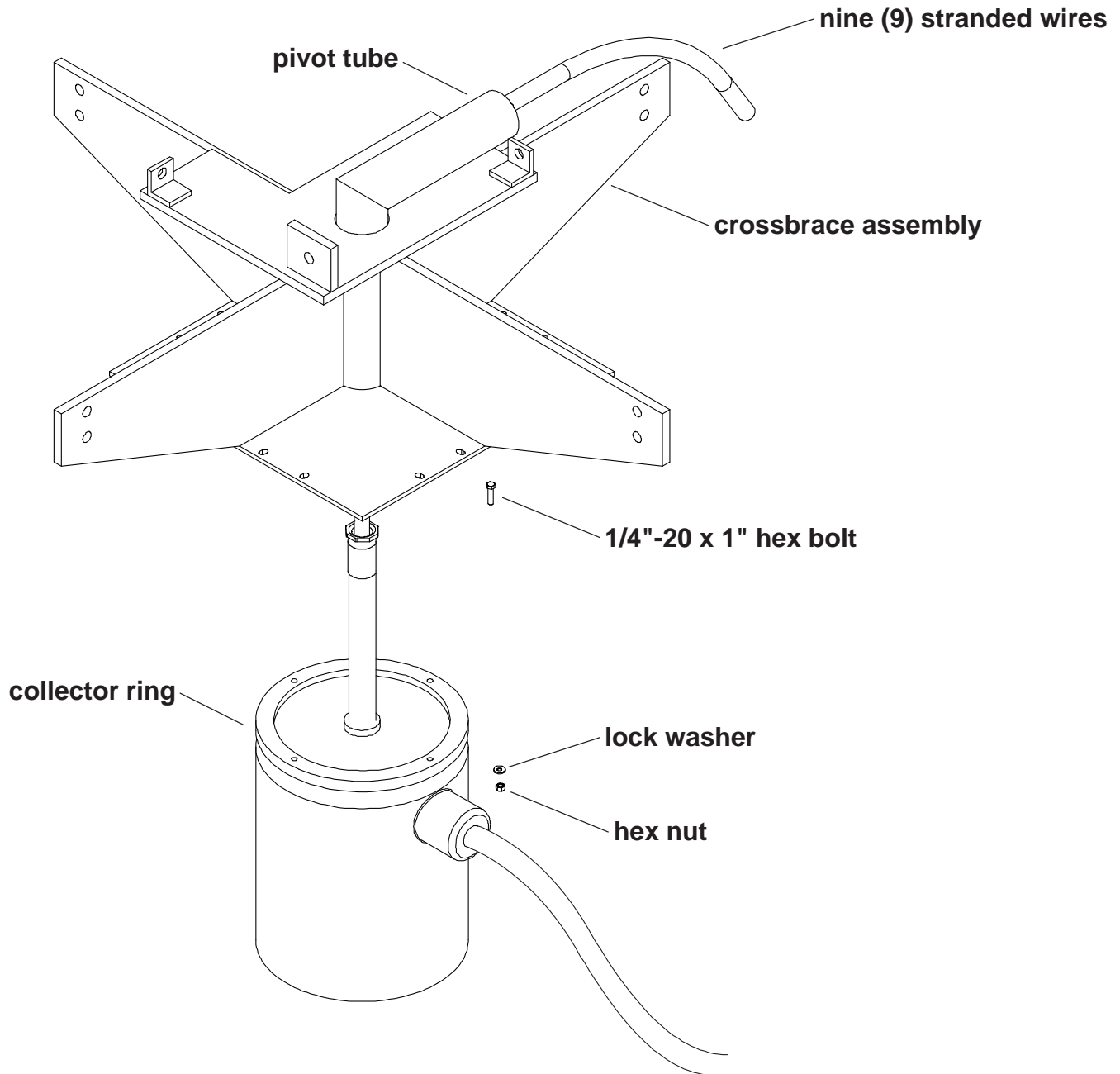
1. ASSEMBLE THE CROSSBRACE

- A. Assemble the 1" x 9 3/8" conduit to the 1" chase nipple using one (1) 1" conduit coupling.
- B. Feed the nine (9) stranded wires from the collector ring through the conduit assembly and fasten it to the collector ring.



1. ASSEMBLE THE CROSSBRACE (cont.)

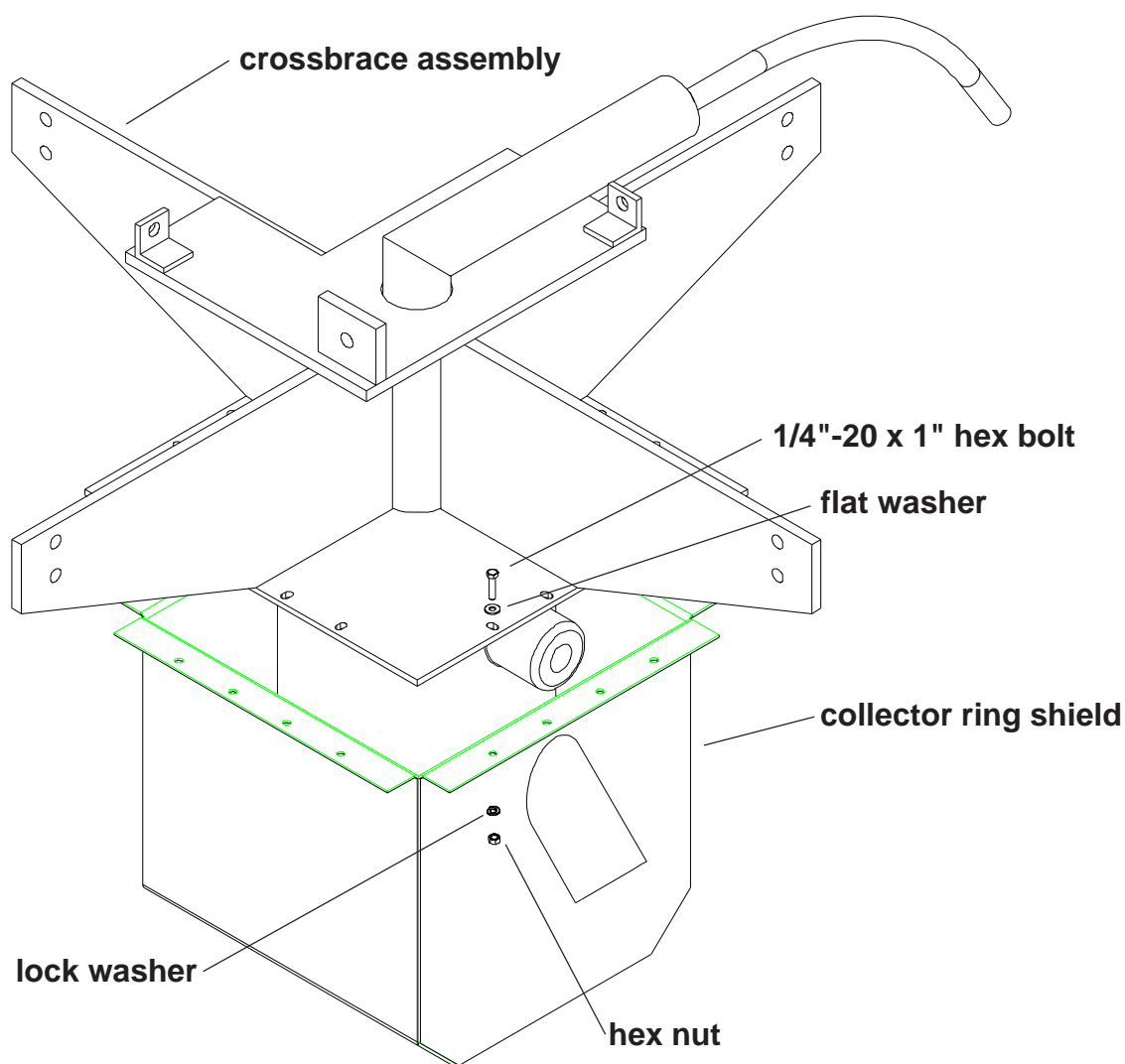
- C. Feed the nine (9) stranded wires from the collector ring through the pivot tube and bolt the collector ring to the crossbrace assembly using four (4) 1/4"-20 x 1" hex bolts, lock washers, and hex nuts.



 Do not completely assemble the remaining hopper parts until wiring is complete!

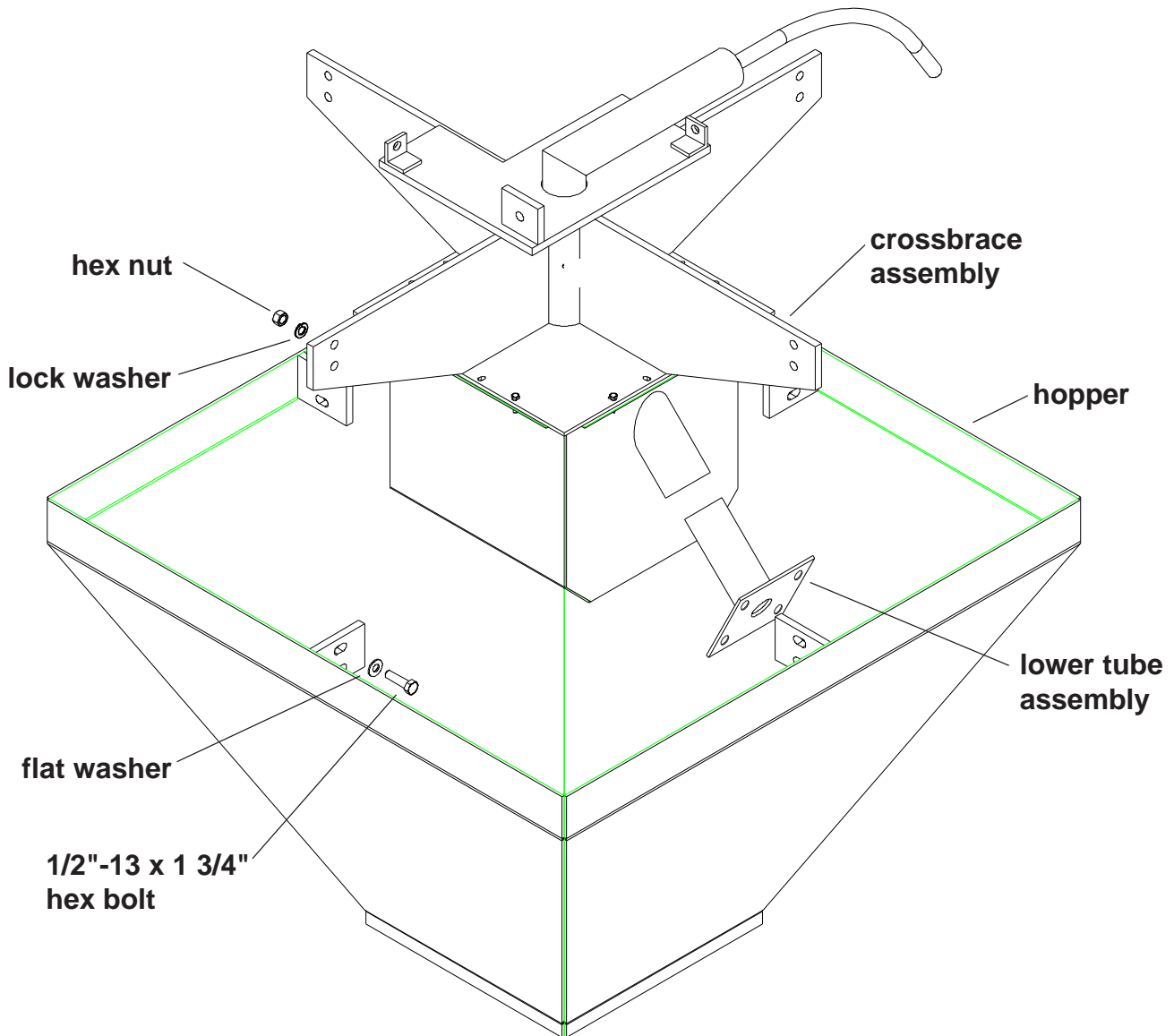
1. ASSEMBLE THE CROSSBRACE (cont.)

- D. Bolt the collector ring shield to the crossbrace assembly using four (4) 1/4"-20 x 1" hex bolts, flat washers, lock washers, and hex nuts. Do not use the remaining bolts.



1. ASSEMBLE THE CROSSBRACE (cont.)

- E. Slide the lower tube assembly into the shield assembly. Bolt the crossbrace to the hopper using four (4) 1/2"-13 x 1 3/4" hex bolts, flat washers, lock washers, and hex nuts (One on each side.).



- F. Slide the lower tube assembly against the hopper, mark the center, and the lower tube assembly mounting holes.
- G. Unbolt the crossbrace from the hopper and remove the shield assembly from the crossbrace.
- H. Drill a 7/8" hole at the marked location on the hopper for conduit couplings and (4) 7/16" dia. holes for the lower tube assembly mounting.

2. WIRE THE COLLECTOR RING

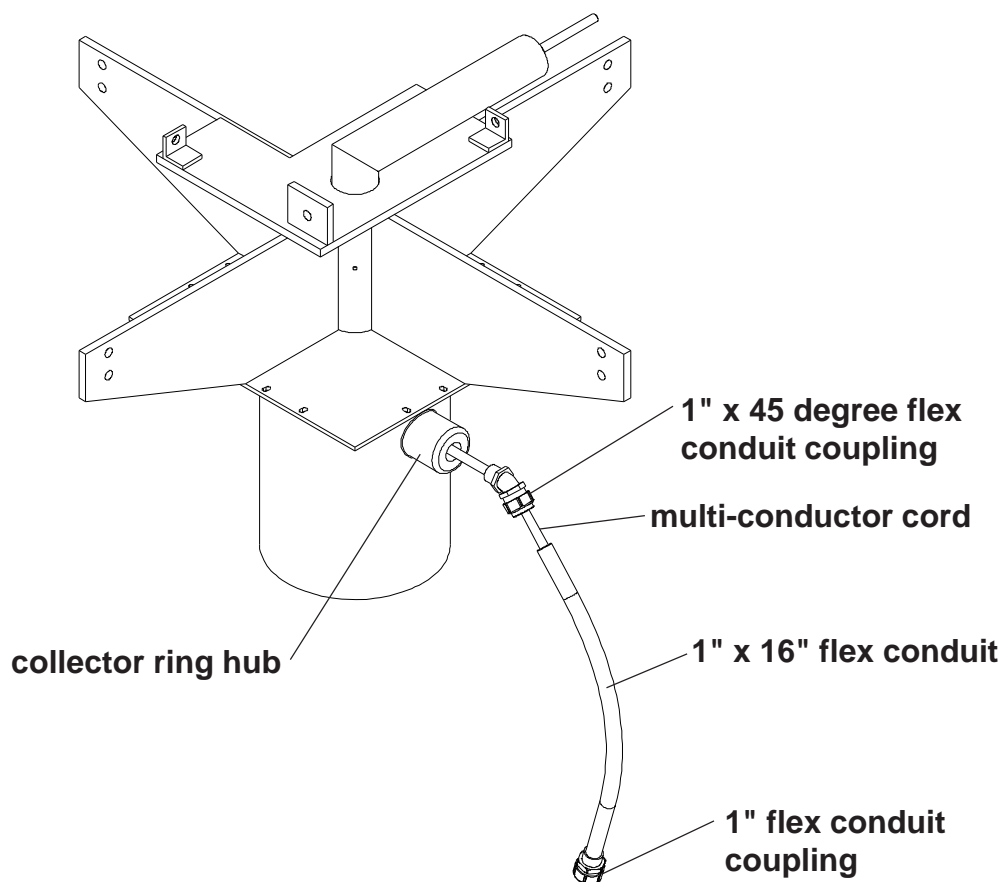


Electrical controls and wiring should be installed by a qualified electrician. The motor disconnect switches and conductor cables should comply with the National Electrical code and any local codes which apply. Reset and motor starting stations should be located so that the operator can see that all personnel are clear of the equipment.



Note: The liquid-tight flex conduit may need to be trimmed to length.

- A. Attach the 1" liquid-tight flex conduit coupling to one end of the 1" x 16" liquid-tight flex conduit.
- B. Attach the 1" x 45 degree liquid-tight flex conduit coupling to the other end of the 1" x 16" liquid tight flex conduit.
- C. Feed the multi-conductor cord through the conduit assembly.
- D. Attach the 1" x 45 degree liquid-tight flex conduit coupling to the 1" conduit hub on the collector ring. Be sure to turn the conduit assembly down .



2. WIRE THE COLLECTOR RING (cont.)

F. The collector ring comes pre-wired from the factory. It is wired per the following:

1. Thermal Protection Leads

- a. Wire the "P1" lead from the control panel to ring "1".
- b. Wire the "P2" lead from the control panel to ring "2".

2. Drive Motor Leads

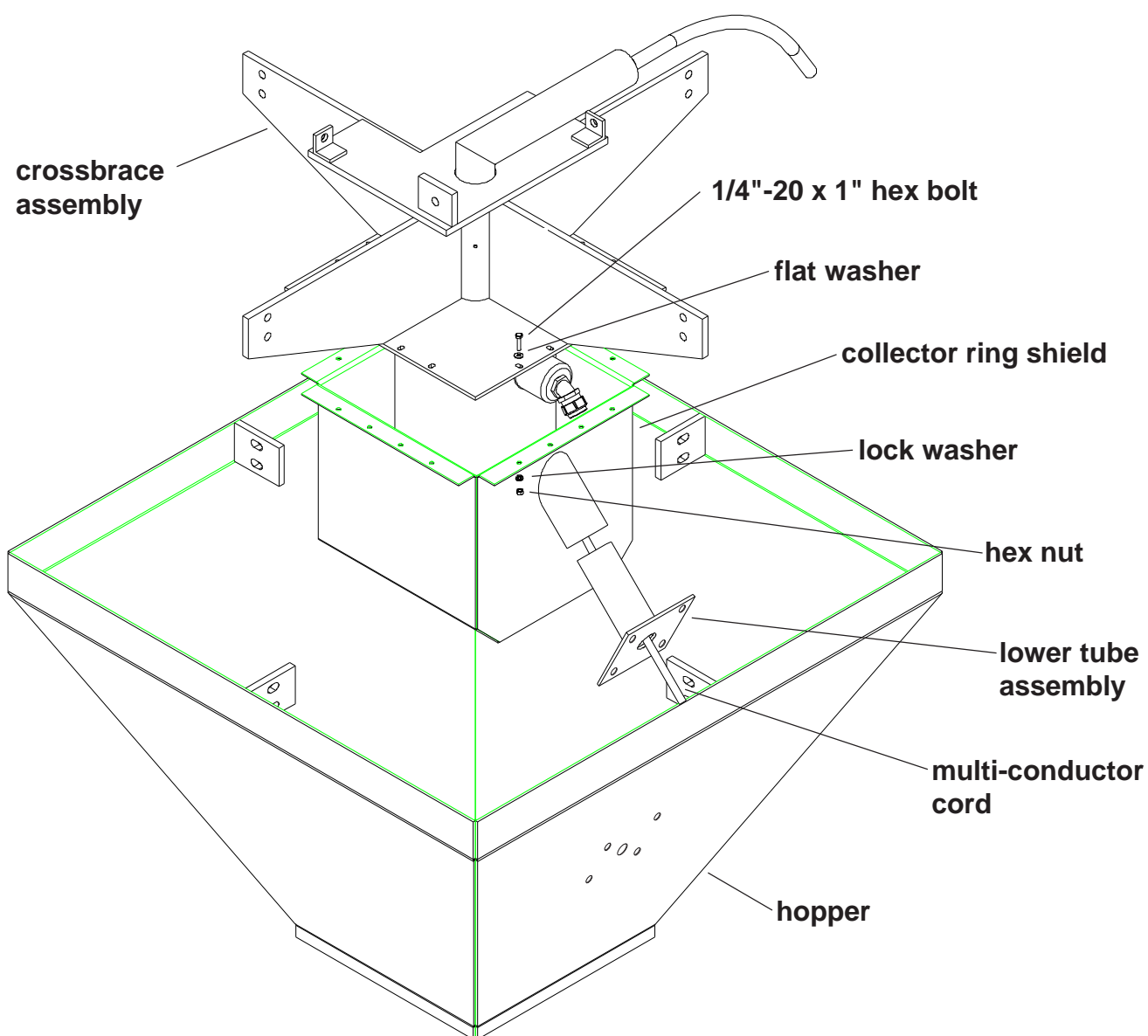
- a. Wire the three (3) power leads to rings "3", "4", and "5".
- b. Wire the ground lead to ring "9".

3. Auger Motor Leads

- a. Wire the three (3) power leads to rings "6", "7", and "8".
- b. Wire the ground lead to ring "9".

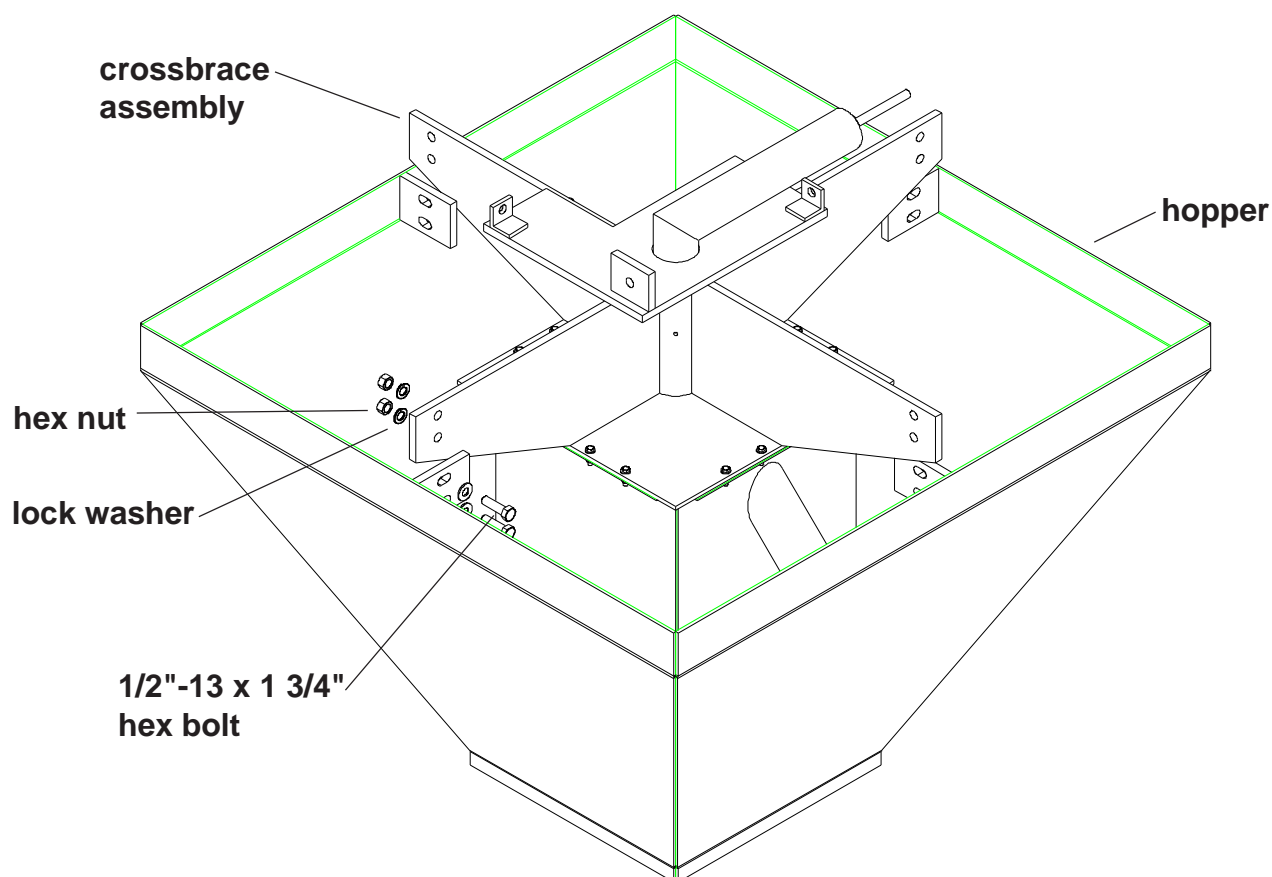
3. ASSEMBLE THE CROSSBRACE TO THE HOPPER

- A. Feed the multi-conductor cord through the collector ring shield, lower tube assembly, and drilled hole in hopper side.
- B. Bolt the collector ring shield to the crossbrace assembly using sixteen (16) 1/4"-20 x 1" hex bolts, flat washers, lock washers, and hex nuts.



3. ASSEMBLE THE CROSSBRACE TO THE HOPPER (cont.)

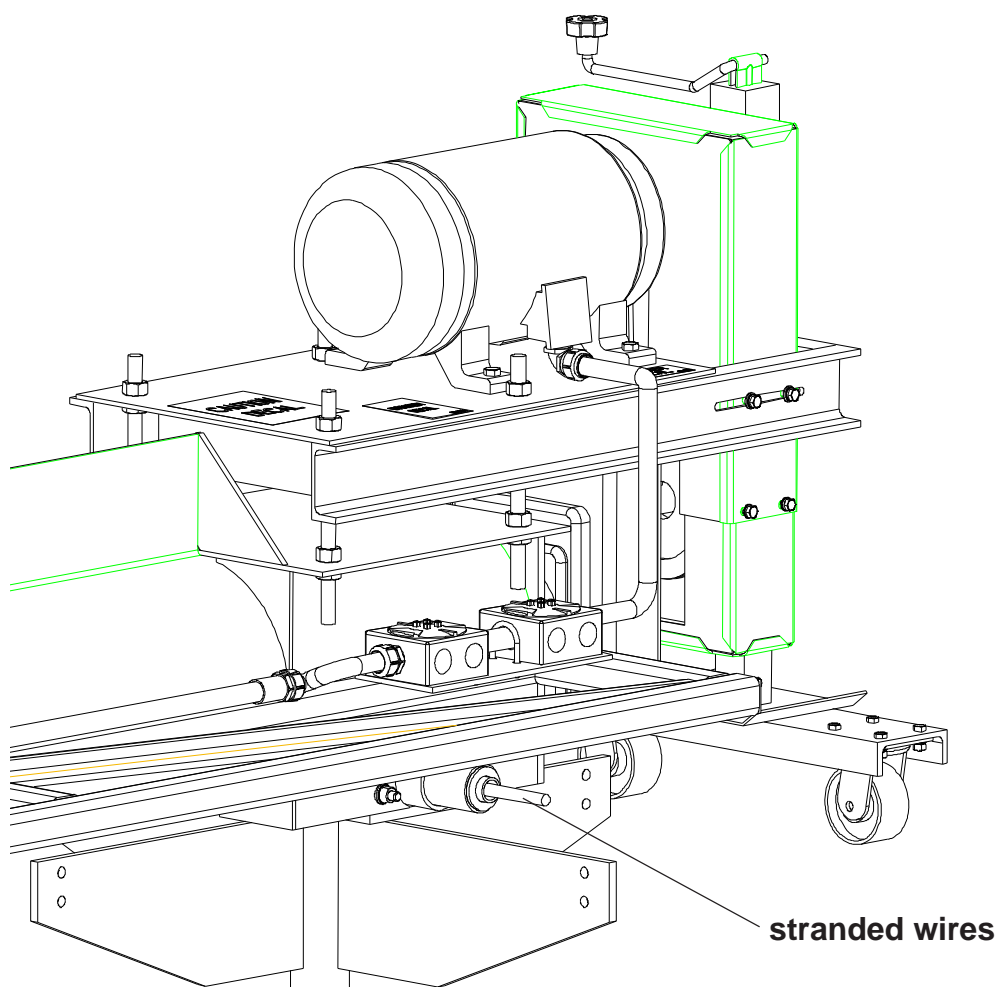
- D. Making sure the lower tube assembly and drilled hole are aligned, bolt the crossbrace to the hopper using eight (8) 1/2"-13 x 1 3/4" hex bolts, flat washers, lock washers, and hex nuts.



- E. Attach the 1" liquid-tight flex conduit coupling on the conduit assembly to the hopper.
- F. Slide the lower tube weldment against the hopper and bolt into position.

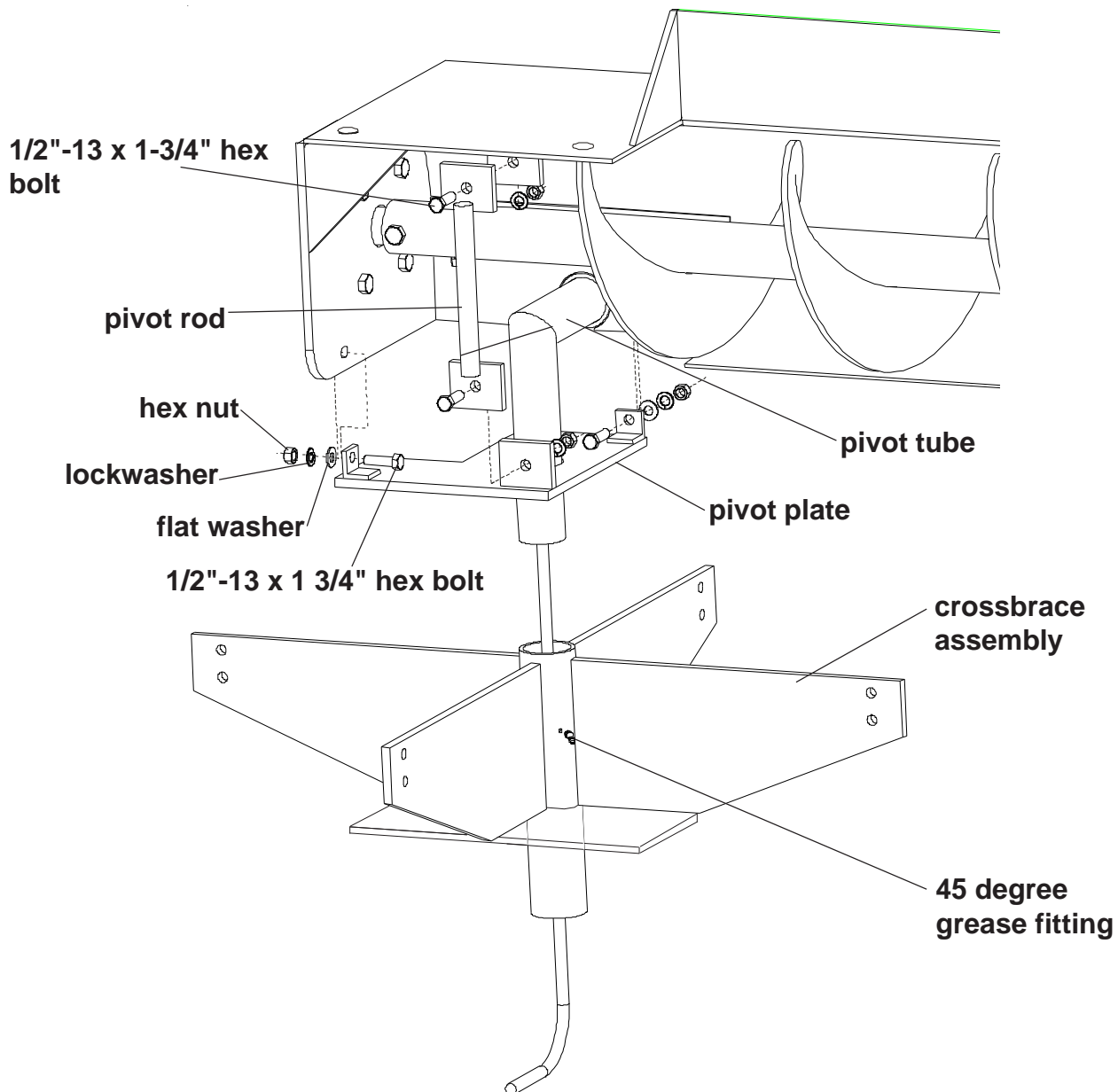
4. ASSEMBLE THE CROSSBRACE TO THE SWEEP

- A. Feed the nine (9) stranded wires from the collector ring through the pivot tube and hole in the back of the sweep head section.
- B. Align the hole in the backshield with the pivot tube and push the sweep onto the pivot tube.



4. ASSEMBLE THE CROSSBRACE TO THE SWEEP (cont.)

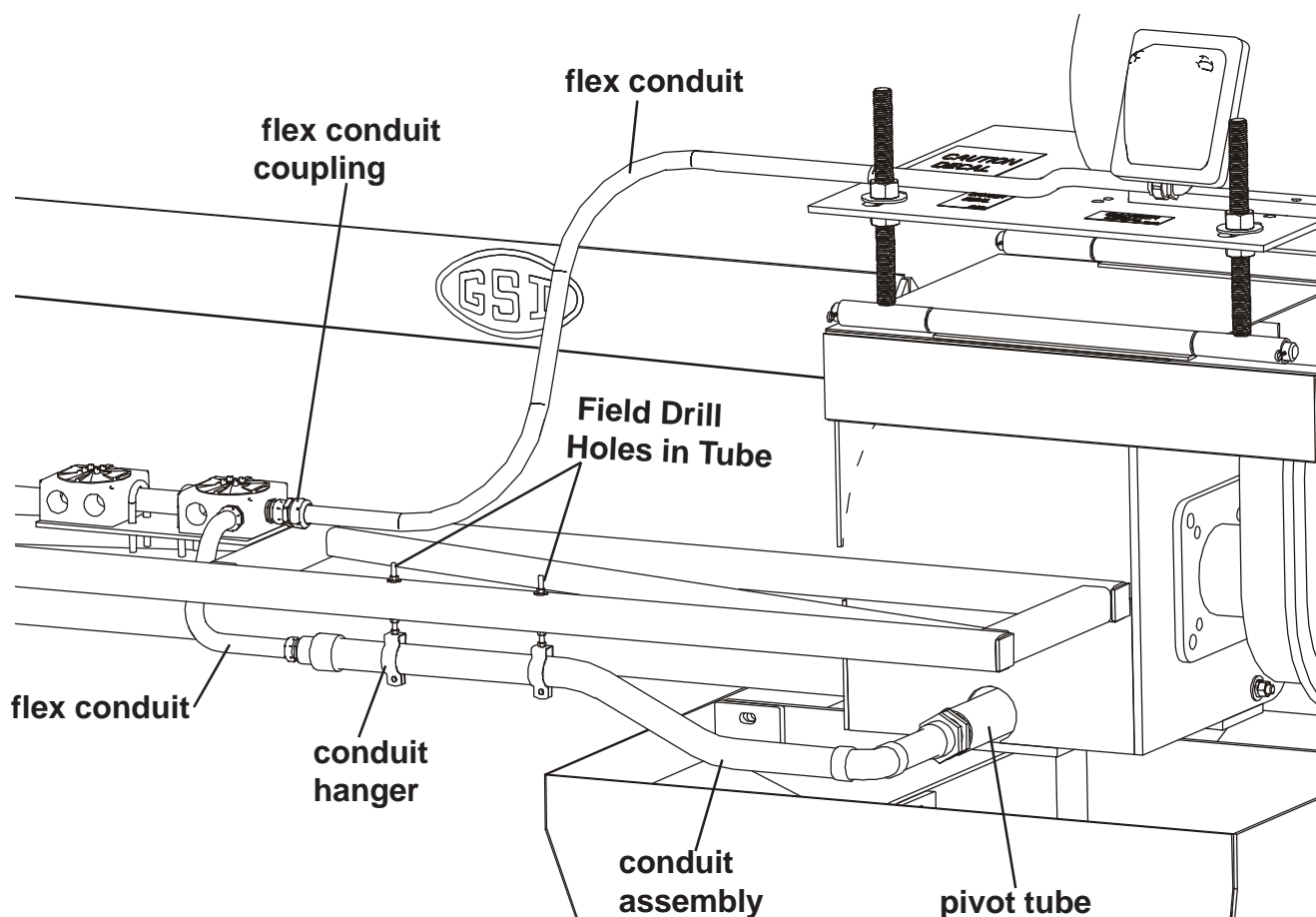
- C. Connect the pivot plate to the backshield using two (2) 1/2"-13 x 1 3/4" hex bolts, flat washers, lockwashers, and hex nuts.
- D. Fasten the pivot rod to the backshield and pivot plate using two (2) 1/2"-13x1-3/4" hex bolts, lockwashers, and hex nuts.
- E. Screw the 45 degree grease fitting into the crossbrace assembly.



5. WIRE THE COLLECTOR RING TO THE SWEEP

NOTE: The liquid tight flex conduit may need to be trimmed to length.

- A. Attach one(1) 1" liquid-tight flex conduit coupling to each end of the trimmed 1" x 48" liquid-tight flex conduit.
- B. Feed the nine (9) stranded wires from the collector ring through the 1" conduit assembly coupling and trimmed 1" x 48" liquid-tight flex conduit assembly.
- C. Attach the 1" x 48" liquid-tight flex conduit assembly to the pivot tube using the 1" conduit coupling.



- D. Feed the nine (9) stranded wires from the collector ring through one of the holes in the right junction box as shown.
- E. Connect the 1" x 48" liquid-tight flex conduit assembly to the junction box using the 1" liquid-tight flex conduit coupling.

5. WIRE THE COLLECTOR RING TO THE SWEEP (cont.)

F. Wire the nine (9) stranded wires to the junction boxes in the following manner.

1. Thermal Protection Leads

- a. Wire the "P1" lead from both motors to "1".
- b. Wire the "P2" lead from both motors to "2".

2. Drive Motor Leads

- a. Wire the three (3) power leads to "3", "4", and "5".
- b. Wire the ground lead to "9".

3. Auger Motor Leads

- a. Wire the three (3) power leads to "6", "7", and "8".
- b. Wire the ground lead to "9".

6. Wire the Upper Conduit Assembly to the Sweep and Motor

- D. Attach the 3/4" x 12" liquid-tight flex conduit to the other end of the rigid conduit using one (1) 3/4" conduit coupling and one (1) 3/4" liquid-tight flex conduit coupling.
- E. Connect the two (2) junction boxes together using the 1" x 4 3/4" conduit nipple.
- F. Connect the 3/4" x 12" liquid-tight flex conduit to the left junction box using one (1) 3/4" liquid-tight flex conduit coupling and one (1) 1" to 3/4" reducer bushing.

NOTE: The liquid tight flex conduit may need to be trimmed to length.

- G. Attach the 3/4" x 100" liquid-tight flex conduit to the right junction box using one (1) 3/4" liquid-tight flex conduit coupling and one (1) 1" to 3/4" reducer bushing.

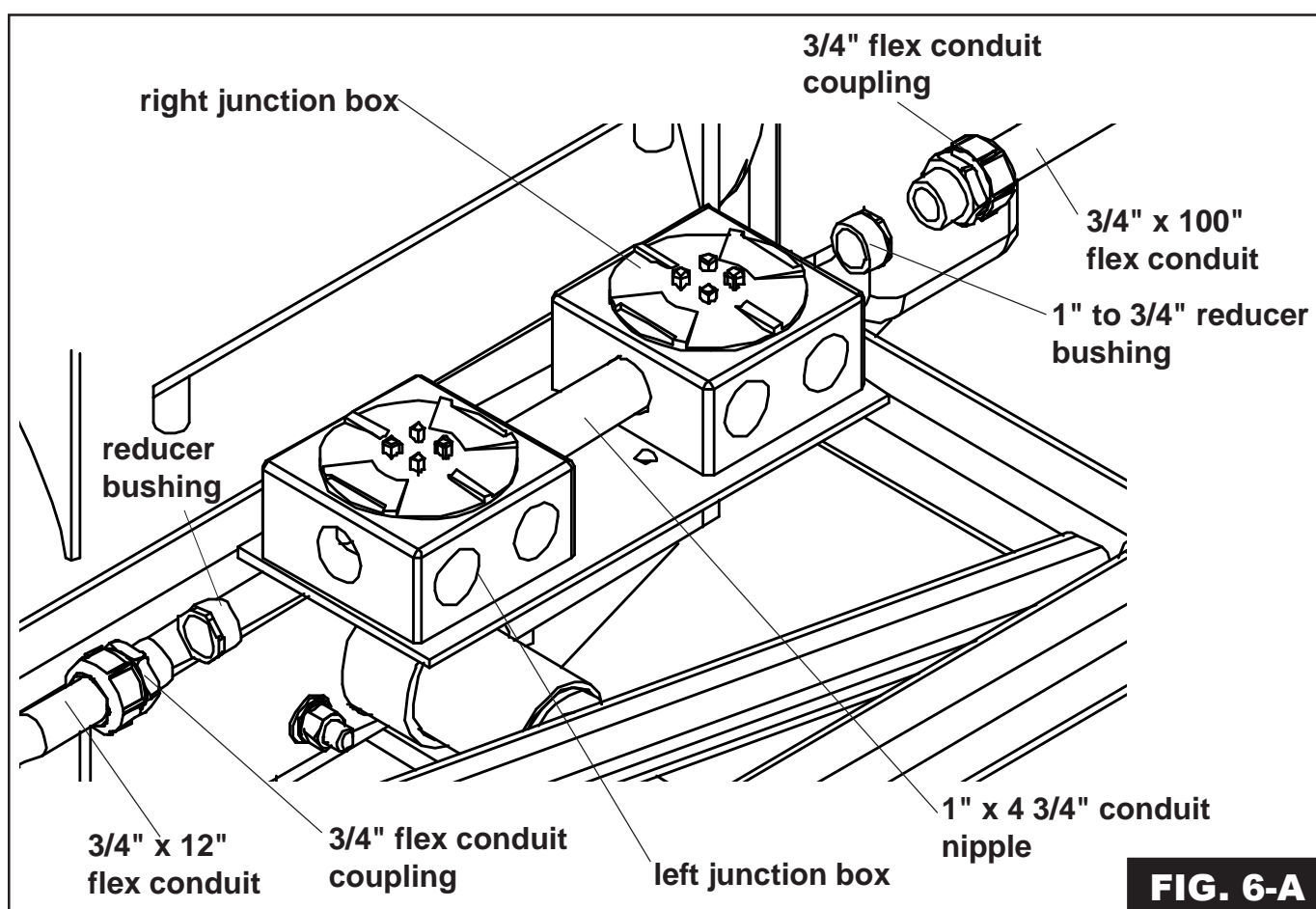
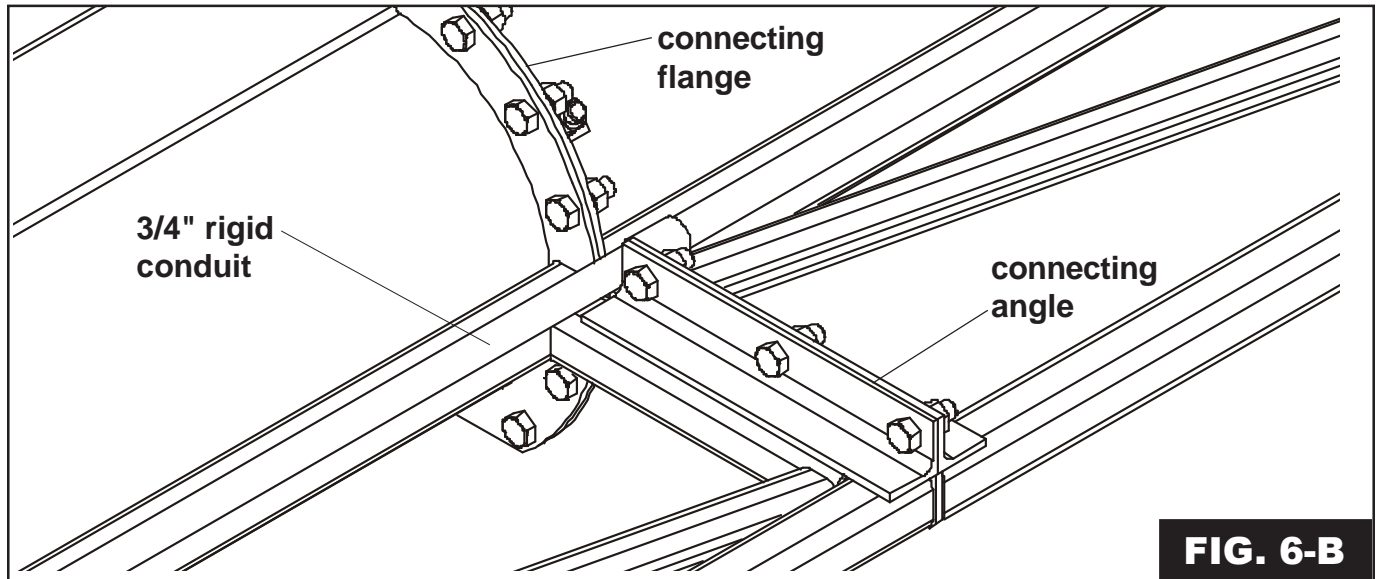


FIG. 6-A

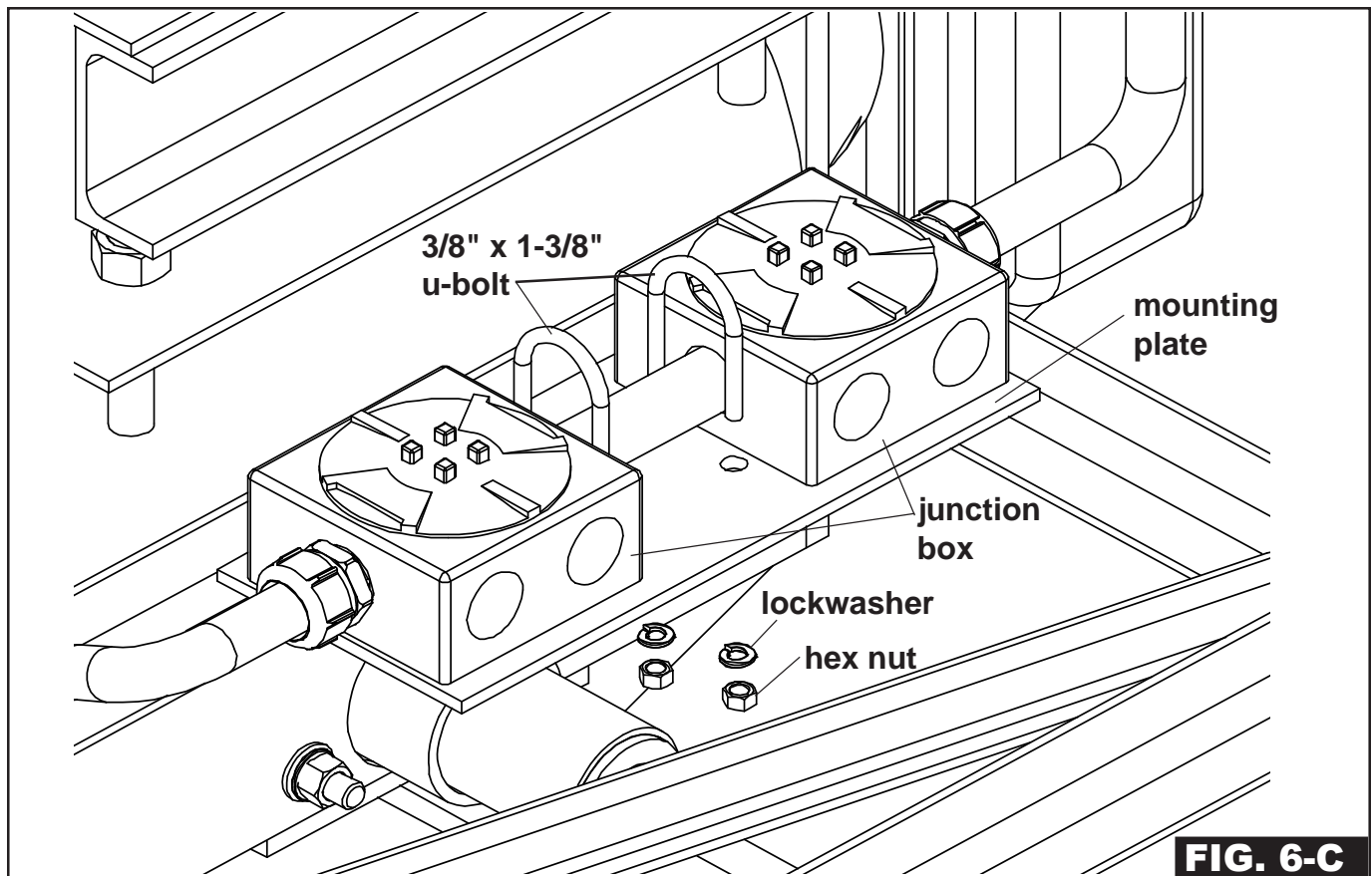
- H. Feed each of the six (6) 14 AWG stranded wires through the 3/4" rigid conduit assembly and cut them off, leaving six inches (6") at both the left junction box and tractor drive motor.
- I. Feed each of the six (6) 10 AWG stranded wires cord through the 3/4" x 100" liquid tight flex conduit and cut four (4) of them off, leaving six inches (6") at both the right junction box and auger motor. Cut the 10 AWG blue and yellow wires longer so they can be connected to the 14 AWG blue and yellow wires in the left junction box.

6. Wire the Upper Conduit Assembly to the Sweep and Motor (cont.)

- J. Place the 3/4" rigid conduit assembly onto the back frame of the sweep between the connecting angle and connecting flange.



- K. Fasten the junction boxes to the mounting plate using two (2) 3/8"-16 x 1 3/8" u-bolts, four (4) lockwashers, and hex nuts.

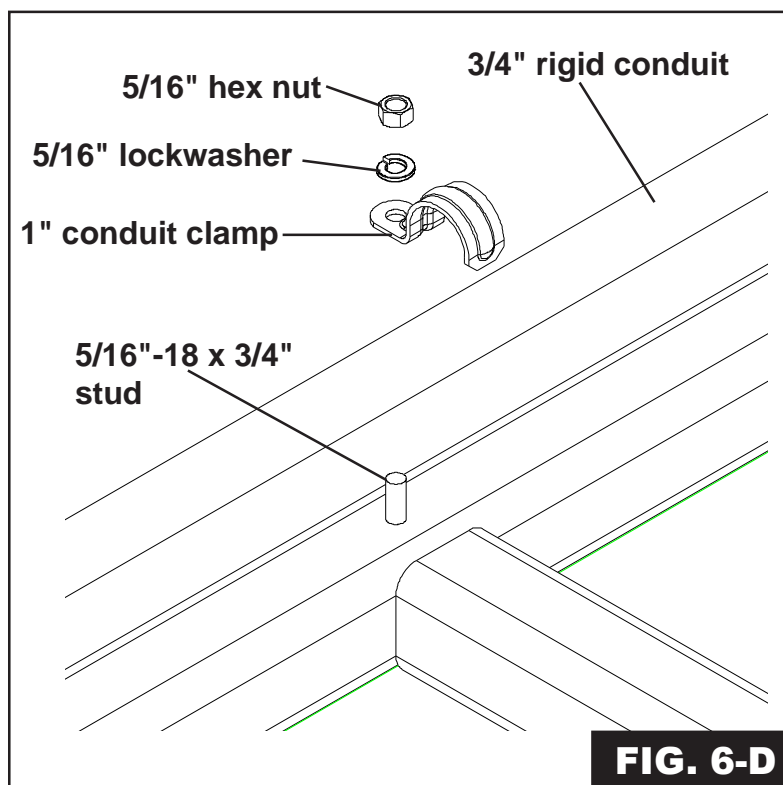


6. Wire the Upper Conduit Assembly to the Sweep and Motor (cont.)

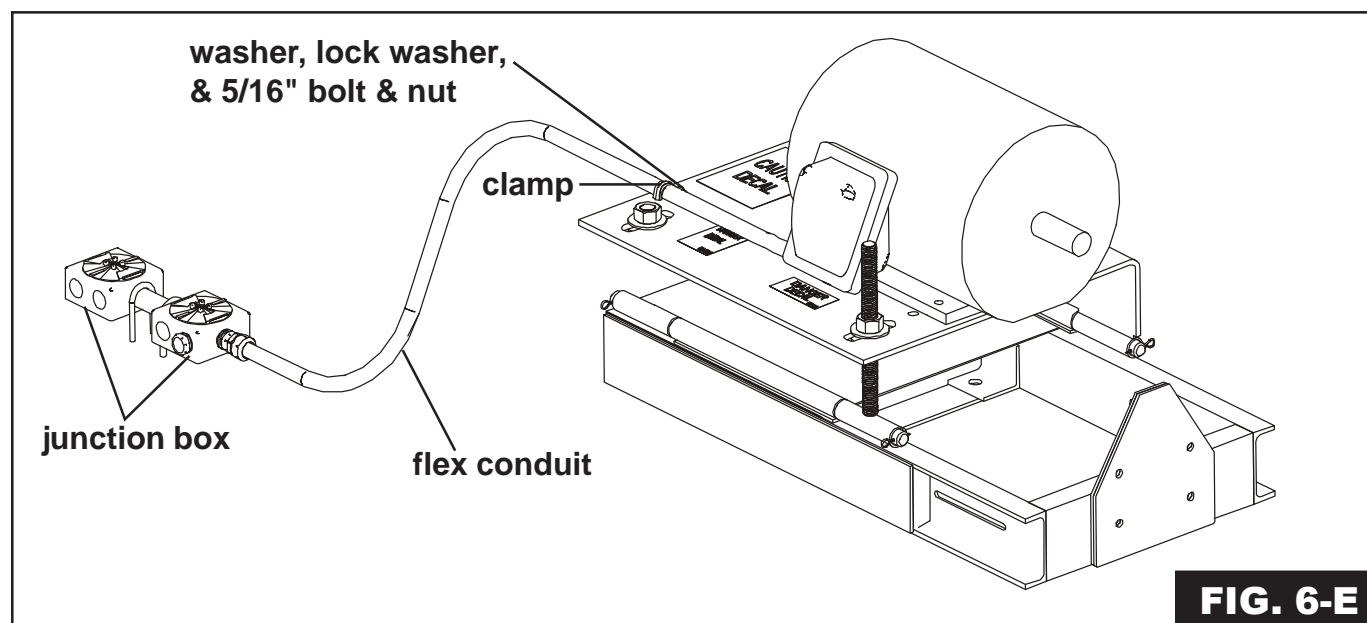
L. Attach the 3/4" rigid conduit assembly to the sweep using the 5/16"-18 x 3/4" studs welded to the sweep using 1" conduit clamps, lockwashers, and hex nuts.

M. Run the 14 AWG stranded wires into the drive motor and fasten the 3/4" x 100" liquid-tight flex conduit to the motor using one (1) 3/4" liquid-tight flex conduit coupling. Some motors may require a reducer bushing not supplied with the sweep. Connect the leads as required.

N. Run the 10 AWG stranded wires into the auger motor and fasten the 3/4" x 100" liquid-tight flex conduit to the motor using one (1) 3/4" liquid-tight flex conduit coupling. Some motors may require a reducer bushing not supplied with the sweep. Connect the leads as required.



O. Attach the liquid-tight flex conduit to the motor mount plate using the 1" conduit clamp, 5/16" -18 x -1/4" hex bolt, 5/16" lock washer, 5/16" flat washer, and 5/16-18 hex nut.



1. Preform Pre-Start Checks



Warning! To ensure that the drive is not unexpectedly started, turn off and lock out or tag out the power source before proceeding. Failure to observe these precautions could result in bodily injury.



Danger! Failure to perform any or all of these pre-start checks may cause damage to the equipment and/or cause **SERIOUS INJURY** or **DEATH** to those in the work area.

Failure to perform any or all of these pre-start checks may also be a misuse of the equipment. Any misuse of the equipment may void the warranty.

A. Make sure ALL shields are in place.



ALWAYS keep ALL guards and shields in place, until all the power is disconnected and locked out.

B. Inspect the collector ring for any problems or potential problems.

C. Be aware of any emergency shutdown procedures. Two (2) people must always be in a position where the operation of the equipment can be monitored.

D. Before starting the auger for the first time, make sure that all parts are assembled correctly according to the instructions in this manual.



Make certain ONLY trained operators are in the work area before operating or moving the machine. Two (2) people must always be in a position where the operation of the equipment can be monitored.

1. Maintain the Hopper



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

- A. Use caution when repairing or replacing equipment parts.
- B. Make sure ALL decals are legible and tightly attached to the hopper. 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

- C. Make sure ALL electrical wiring is not damaged, and that it meets proper wiring codes.
- D. Make sure ALL components are in good working condition before use.
- E. Grease the center pivot tube at least two (2) times each season.

2. Collector Ring Maintenance

A. Lubrication

1. All bearings are lubricated for life at the factory. Additional lubrication should not be required.
2. **CAUTION: Do not apply any lubricants or solvent cleaning agents to any part of the slip ring.**

B. Brush Holders

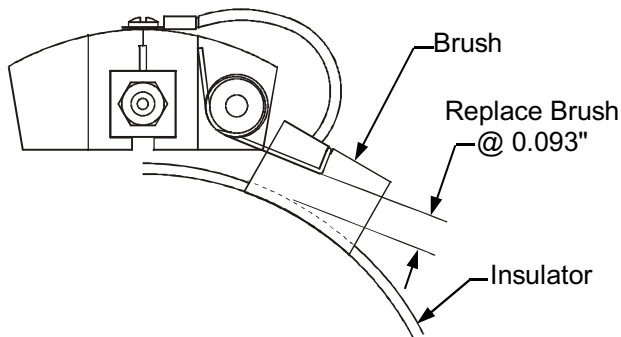
1. Make the first inspection shortly after installation and before operation. Make continuing inspections on a regular basis after every 200-400 hours of operation under normal conditions.

C. Brush Holders

1. Inspect brush holders for proper alignment. Locate brush holders so that the entire brush contact surface rides squarely on the ring with the brush moving freely in the brush holder. Position brush holders so that the brush makes contact with the middle of the conductor and is not offset.
2. Check brush holder clamps for tightness. Set clamp bolts at 10 in-lb max.
3. Inspect brush terminations at the holder to assure that no external force is imposed on the holder. We recommend flexible or soft wire leads for these terminations. Use external clamps to support the entire weight of the leads.

D. Brushes

1. Inspect for wear. If the distance from the top of the insulator to the lower part of the brush spring is 0.093" or less, replace the brush.



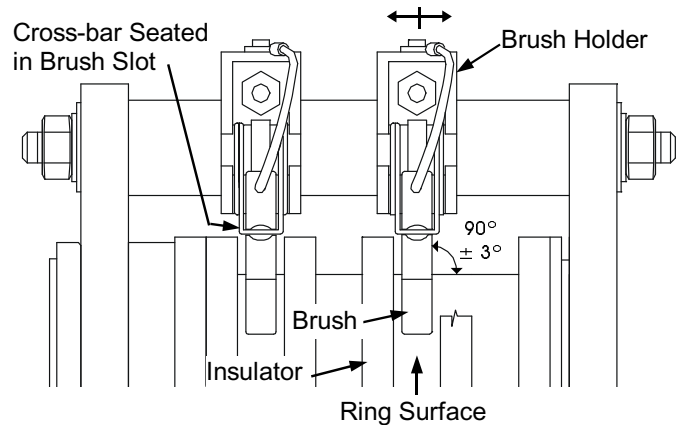
2. Inspect brush contact surface by removing the brush. Remove surface dirt, oxidation, pitting, or other contaminants (with a wire brush).

3. To remove and replace the brush:

- a) remove the clamp screw from the brush holder
- b) remove the screw from the brush lead
- c) remove the brush holder
- d) replace the brush
- e) reassemble.

E. Brush Fit Inspection

1. Brushes must run at $90^\circ \pm 3^\circ$ square on the rings. If brush is not square, adjust position of brush holder on brush post.
2. Brushes need not run on the center of the rings, but there should be no forceful friction against the insulators.
3. The brush spring cross-bar must be seated in the brush slot.

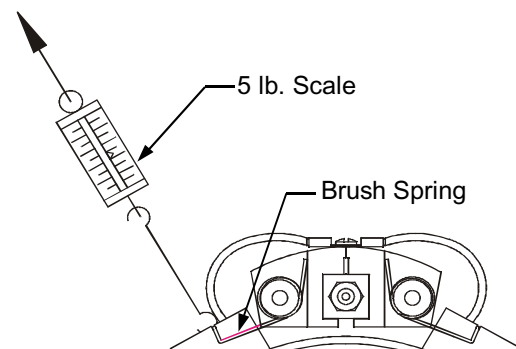


F. Brush Springs

1. Inspect and test brush springs to assure uniform brush pressure. If brush springs fall below recommended pressure, replace entire brush holder.

Brush Amperage	Spring Pressure
15	1.0 lb. min
35	1.5 lbs. min
75	3.0 lbs. min

Table 3.3.3 Brush Spring Tension



2. Collector Ring Maintenance (Cont.)

G. Rings

1. Inspect the ring surface for dirt, oxidation, or other contaminants. A properly operating ring will have a film that appears burnished in color with a darker surrounding color where the brushes track. If the ring requires cleaning, order Slip Ring Polishing Kit #41286.

H. Electrical Connections

1. Inspect all electrical connections for corrosion and tightness. Clean corroded parts with a wire brush and/or muriatic acid. Loose and/or corroded terminations will cause a concentration of excessive heat.

I. Brush Rigging

1. Brush posts are supported between two outboard bearings. The brush posts extend to the outboard bearings and are secured by a notch in the outboard
2. Spacing between the outboard bearings is critical to assure the free rotation of the brush rigging. The brush posts are cut to an exact length in order to provide the proper spacing. Locate the outboard bearings against the insulator and have a 0.20" clearance without deformation of the material. **CAUTION:** Do not over-tighten the outboard brush post jam nuts. Make a final check to assure there is no binding of the outboard brush rigging or binding of brushes with insulator barriers.

J. Enclosure Inspection

1. Moisture is a major cause of slip ring deterioration. Water will corrode parts and breakdown insulation. Dust and dirt present within the enclosure will effect the proper operation of the assembly. Most dusts cause excessive brush and slip ring wear, and conductive dust, if allowed to accumulate, will form a path for short circuiting.
2. A properly designed NEMA 4 enclosure will be dust tight and watertight. However, NEMA 4 enclosures do not eliminate internal condensation. Condensation can be eliminated with the addition of a breather, drain, and a thermostatically controlled heater.

3. Periodically perform an inspection by removing the enclosure and checking for condensation, water and dust collection. If contaminants are found, wipe the enclosure and the assembly with a lint free cloth. If the problem persists, take steps to remedy the leakage or condensation problem.

K. Slip Ring Storage

1. When storing the slip ring, keep it at room temperature in a clean, dry, protective place. Place self-contained or bagged absorbent material in the collector ring enclosure during extended periods of storage. Remove absorbent material before putting collector ring into operation.

L. Serial Number

1. Make the following information available when ordering replacement parts or discussing the slip ring with the factory by recording the information in the spaces provided here. This information is located on your packing slip, factory invoice, and serial number tag.

Catalog No. Slip Ring: _____

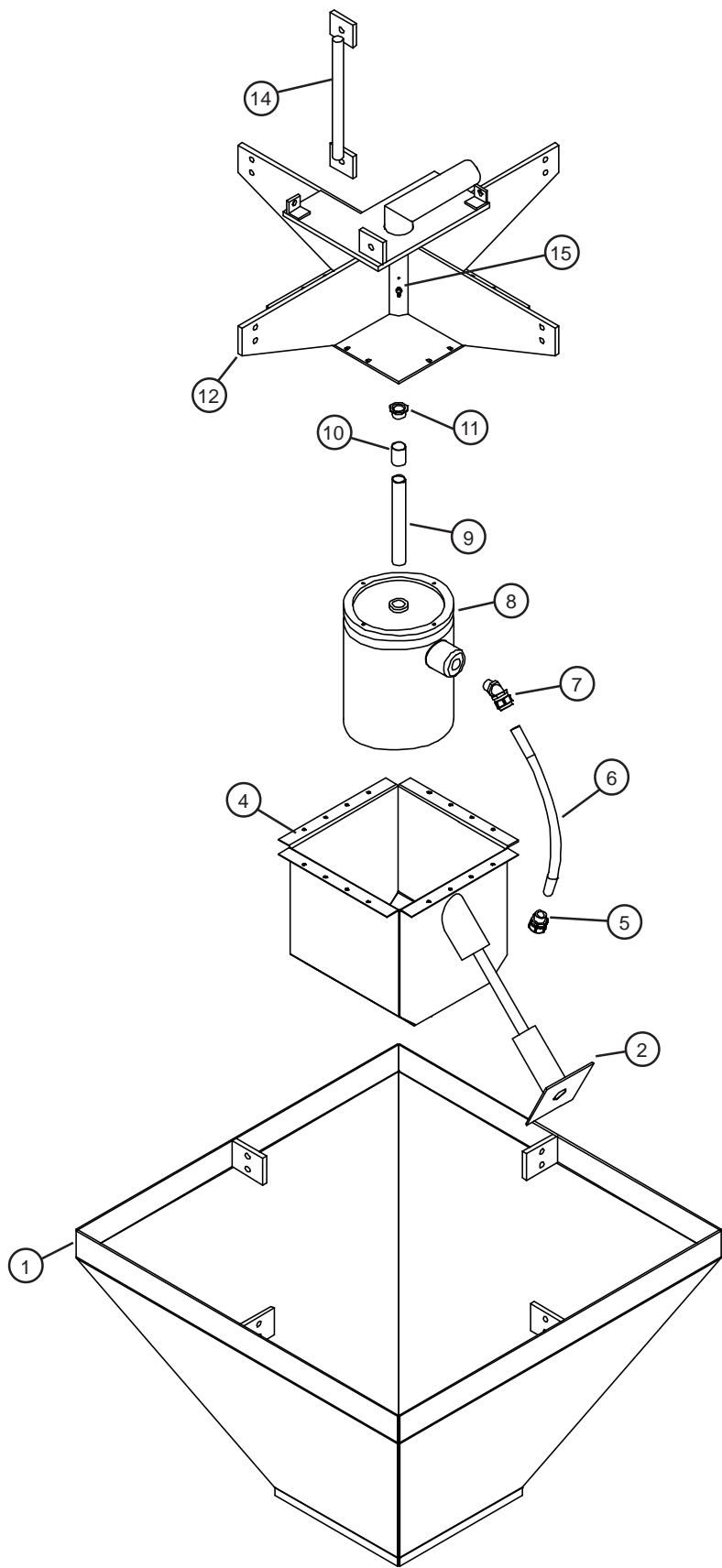
Serial No.: _____

Date of Purchase: _____

Problem	Possible Cause	Solution
1. Sweep will not run.	A. Power cords may be unplugged.	A1. Plug in the power cords.
	B. Foot switch may not be actuated.	B1. Make sure the foot switch is depressed and the switch is operating properly.
	C. Overloads may be tripped.	C1. Reset the overloads.
	D. The collector ring may not be making good connections.	D1. Check the collector ring terminals for proper contact. D2. Make sure the springs have correct tension according to the owners manual.
1. Intermittent Signal or Loss of Signal	A. Brush wear.	A1. Verify brush wear per section.
	B. Spring pressure.	B1. Check spring pressure per section.
	C. Dirty contact surface.	C1. Check contact surfaces for cleanliness (Ring Polishing Kit available.)
	D. Bad springs.	D1. Visually check for spring fit and function. Adjust or replace as necessary.
	E. Short in wire.	E1. Check core wiring for short circuit.

PARTS SECTION

HIGH CAPACITY 12" HOPPER COMPONENTS

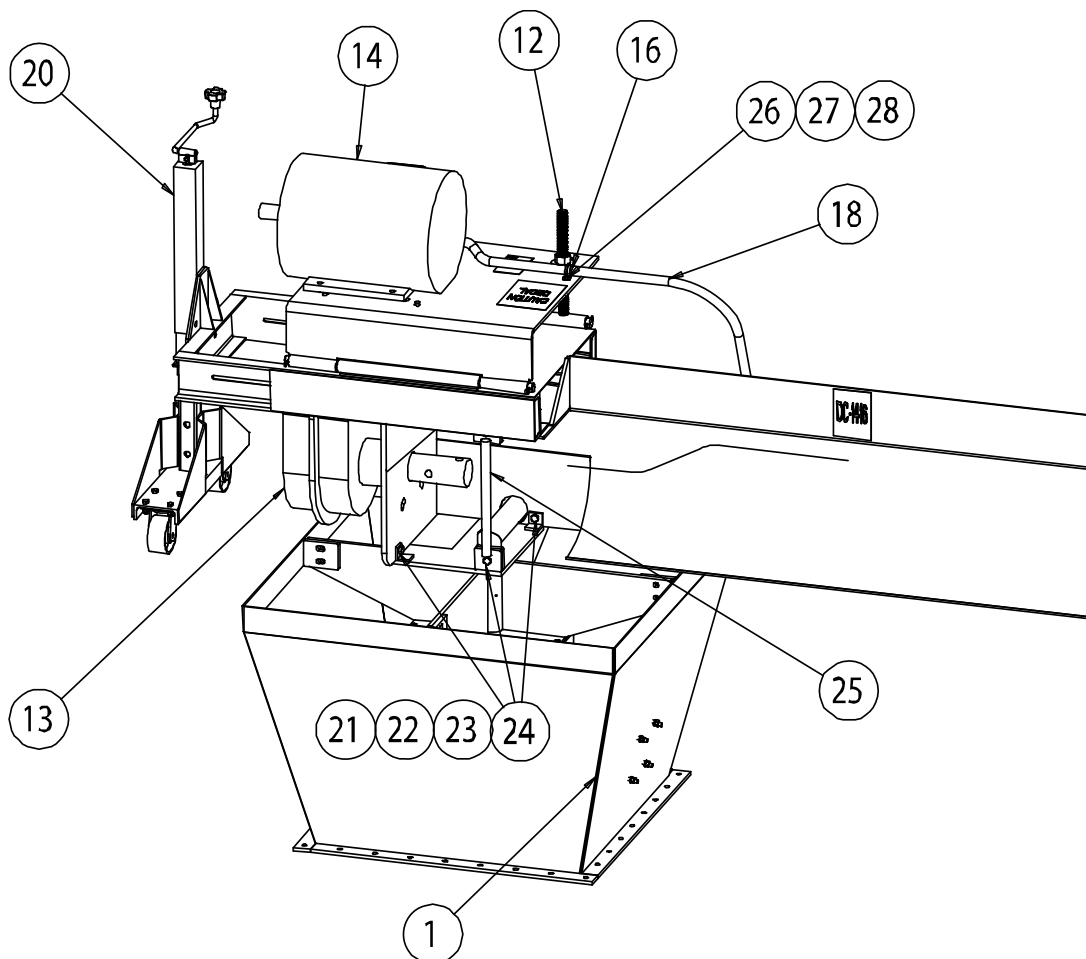


12" & 16" HOPPER COMPONENTS

Ref. #	Part #	Description
1		S2 Sweep Collector Ring Hopper
	GC04615	Standard Capacity 16" Square Discharge
	GC11410	High Capacity 30" Square Discharge
	GC11328	High Capacity 36" Square Discharge
2		Lower Tube Assembly
	GC04624	16" Square Discharge
	GC11416	30" Square Discharge
	GC11326	36" Square Discharge
4		S2 Sweep Collector Ring Shield
		Standard Capacity 16" Square Discharge
	GC11335	High Capacity 30" Square Discharge
	GC11335	High Capacity 36" Square Discharge
5	S-8518	Conduit Ftg 1" Straight Rigid-Flex
6	GC07881	Conduit, 1" Flex x 16"
7	GC04654	Conduit Ftg 1" 45 Degree Rigid-Flex
8	GC04547	Slip Ring, Insul 8 Model - 9 Ring
9	GC04653	Conduit, 1" x 9-3/8" Long
10	S-8519	Conduit, Coupling 1" Galv.
11	S-2122	Conduit, 1" Steel Chase Nipple
12	GC07880	S2 Sweep Collector Ring Hopper Crossbrace-12"
	GC07877	S2 Sweep Collector Ring Hopper Crossbrace-16"
14	GC06716	S2 Sweep Pivot Rod Assembly-12"
	GC06717	S2 Sweep Pivot Rod Assembly-16"
15	S-8427	Grease Ftg 45 Degree 1/4"-28 UNF
N/S	S-1102	Nut Hex 1/4"-20 Zn Gr2
N/S	S-1430	Washer Flat 1/4" SAE Zn Gr2
N/S	S-2041	Washer Lock Split 1/4" Med Zn
N/S	S-236	Washer Lock Split 1/2" Med Zn
N/S	S-3208	Washer Lock Split 5/8" Med Zn
N/S	S-3883	Bolt HHCS 1/2"-13 x 1 3/4" Zn Gr8
N/S	S-4110	Nut Hex 5/8"-11 Zn Gr5
N/S	S-4329	Bolt HHCS 5/8"-11 x 2" Zn Gr8
N/S	S-6998	Bolt HHCS 1/4"-20 x 1" Zn Gr5
N/S	S-7509	Washer Flat 1/2" USS
N/S	S-7510	Nut Hex 1/2"-13 Zn Gr2

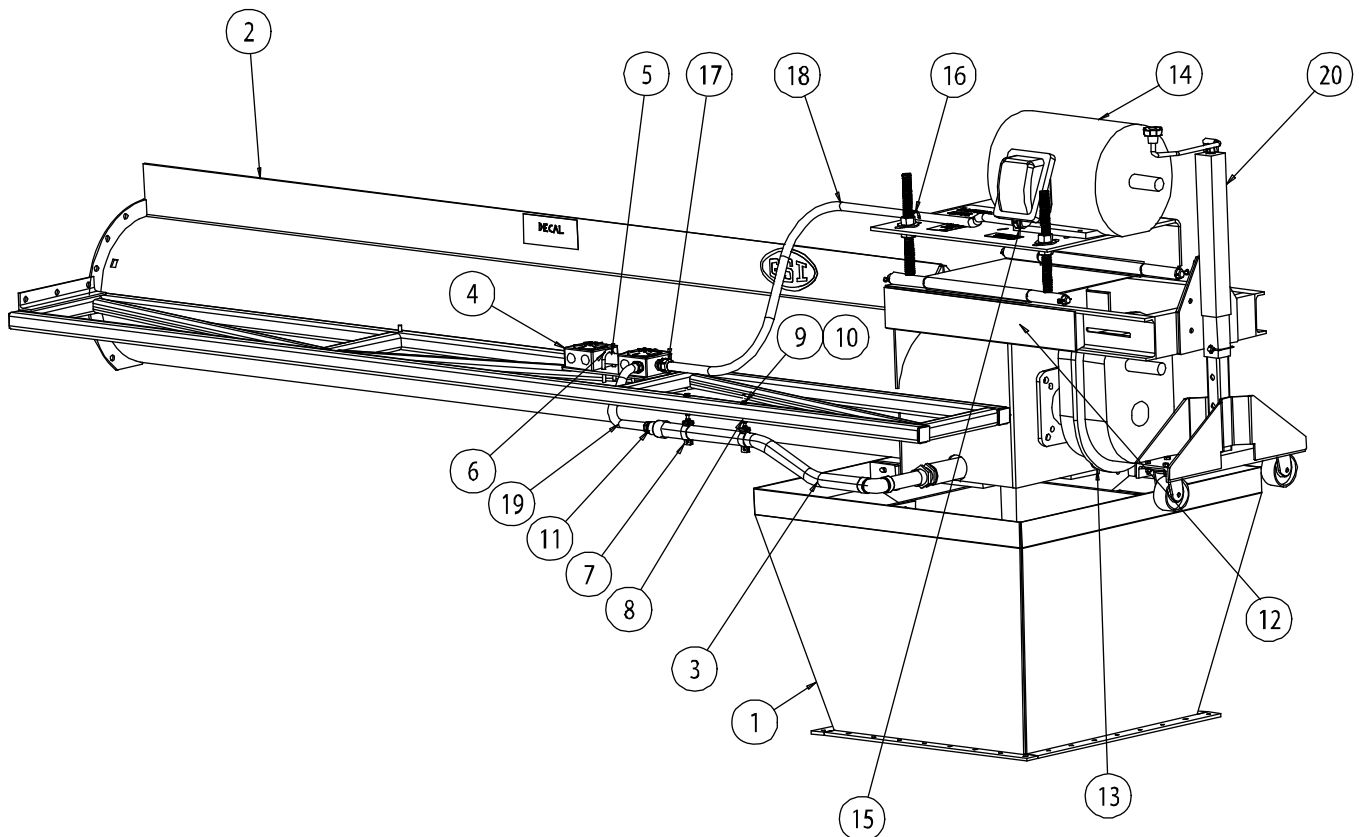
HIGH CAPACITY 12" & 16" SUMP COMPONENTS - 34,000BPH FRONT VIEW

Ref #	Part #	Description	Qty
1		SWEEP SUMP ASSEMBLY	1
12	GC09986	MOTOR MOUNT BASE	1
13	---	GEAR REDUCER	1
14	---	ELECTRIC MOTOR	1
16	S-8411	CONDUIT CLAMP 1" LMI ZN 1 HOLE	1
18	GC11523	CONDUIT 3/4" FLEX - UPPER	1
20		MOTOR MOUNT JACK ASSEMBLY	1
21	S-2121	WASHER FLAT 1/2"	2
22	S-236	WASHER LOCK 1/2"	4
23	S-7510	NUT HEX 1/2-13	4
24	S-3883	BOLT HHCS 1/2-13x1-3/4	4
25	GC06717	ROD WELDMENT 16in	1
	GC06716	ROD WELDMENT 12in	1
26	S-7721	BOLT HHCS 5/16-18x1-1/4	1
27	S-1147	WASHER LOCK SPLIT 5/16"	1
28	S-396	NUT HEX 5/16-18	1



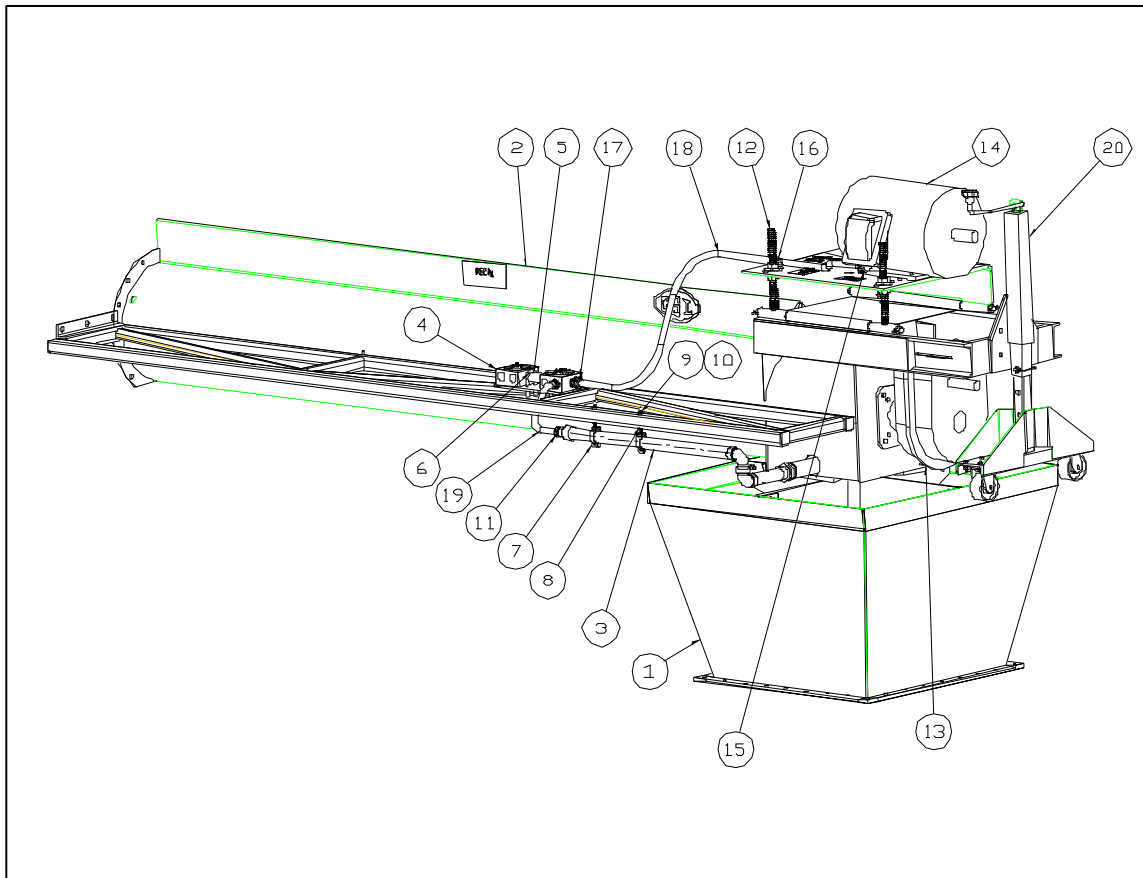
HIGH CAPACITY 12" & 16" SUMP COMPONENTS - 34,000BPH REAR VIEW (OBSOLETE AFTER MAY 2006)

Ref #	Part #	Description	Qty
1		SWEEP SUMP ASSEMBLY	1
2	---	S2 SWEEP HEAD SECTION	1
3	GC11511	CONDUIT ASSEMBLY	1
4	GC07521	BOX JUNCTION - EXPLOSION PROOF	2
5	GC07744	CONDUIT NIPPLE 1" X 4 3/4"	1
6	S-8568	U-BOLT 3/8-16 X 1 3/8 IW	2
7	054_1024_6	CONDUIT HANGER 1 1/4"	2
8	GC11516	HANGER BOLT 1/4-20 X 4"	2
9	S-1430	WASHER FLAT 1/4"	4
10	S-1102	NUT HEX 1/4-20	6
11	S-8518	CONDUIT FITTING 1" ST RIGID FLEX	2
12	GC09986	MOTOR MOUNT BASE	1
13	---	GEAR REDUCER	1
14	---	ELECTRIC MOTOR	1
15	TFC-0054	ELBOW, PIPE 3/4X90DEG FLEX COND	1
16	S-8411	CONDUIT CLAMP 1" LMI ZN 1 HOLE	1
17	S-6198	CONDUIT FTG 3/4" ST RIGID-FLEX	1
18	GC11523	CONDUIT 3/4" FLEX - UPPER	1
19	GC07575	CONDUIT 3/4" FLEX - LOWER	1
20	GC09992	MOTOR MOUNT JACK ASSEMBLY	1



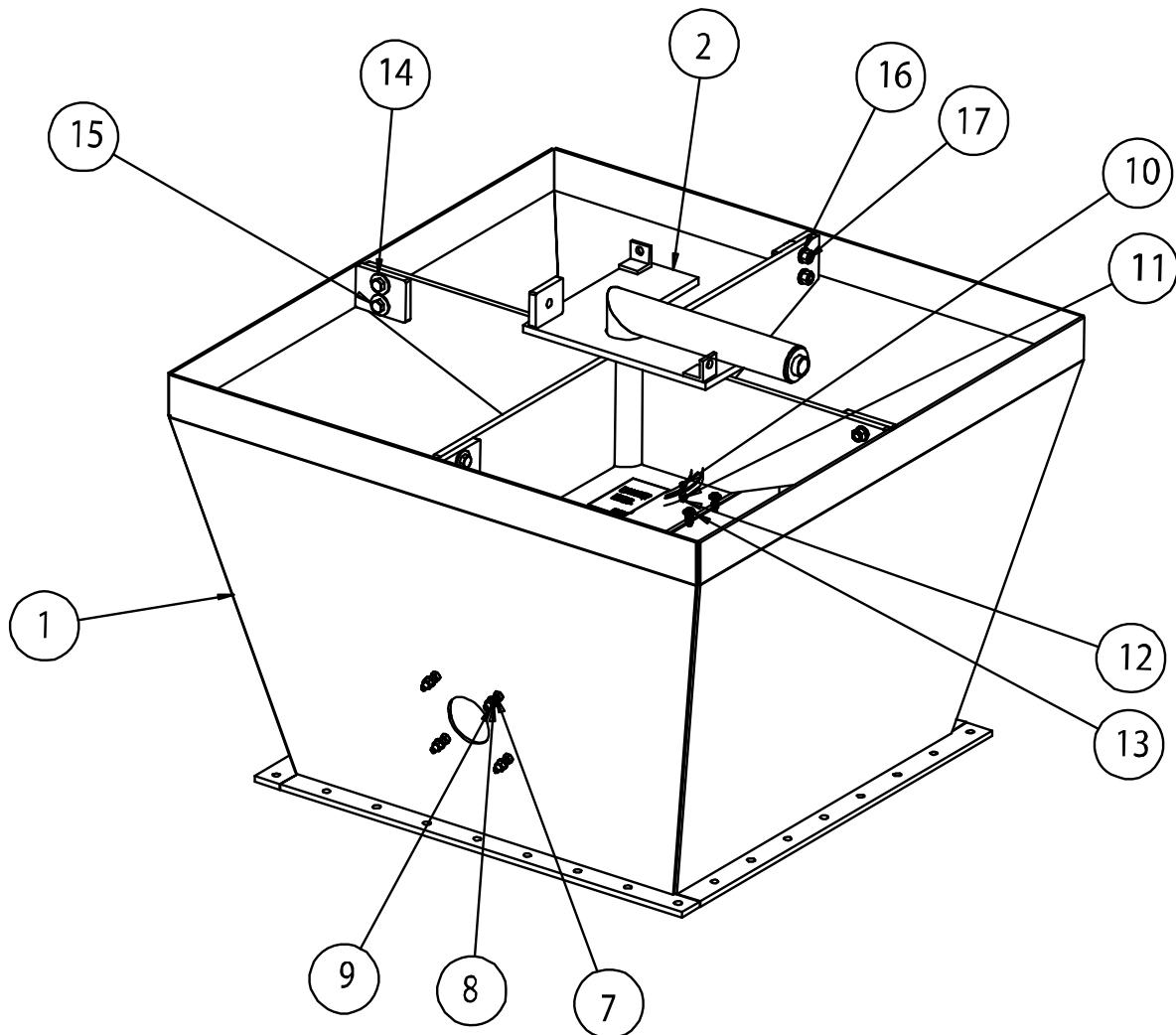
HIGH CAPACITY 12" & 16" SUMP COMPONENTS HIGH CAPACITY AFTER MAY 2006 REAR VIEW

Ref #	Part #	Description	Qty
1		SWEEP SUMP ASSEMBLY	1
2	---	S2 SWEEP HEAD SECTION	1
3	GC11727	CONDUIT ASSEMBLY	1
4	GC07521	BOX JUNCTION - EXPLOSION PROOF	2
5	GC07744	CONDUIT NIPPLE 1" X 4 3/4"	1
6	S-8568	U-BOLT 3/8-16 X 1 3/8 IW	2
7	054_1024_6	CONDUIT HANGER 1 1/4"	2
8	GC11516	HANGER BOLT 1/4-20 X 4"	2
9	S-1430	WASHER FLAT 1/4"	4
10	S-1102	NUT HEX 1/4-20	6
11	S-8518	CONDUIT FITTING 1" ST RIGID FLEX	2
12	GC09986	MOTOR MOUNT BASE	1
13	---	GEAR REDUCER	1
14	---	ELECTRIC MOTOR	1
15	TFC-0054	ELBOW, PIPE 3/4X90DEG FLEX COND	1
16	S-8411	CONDUIT CLAMP 1" LMI ZN 1 HOLE	1
17	S-6198	CONDUIT FTG 3/4" ST RIGID-FLEX	1
18	GC11523	CONDUIT 3/4" FLEX - UPPER	1
19	GC07575	CONDUIT 3/4" FLEX - LOWER	1
20	GC09992	MOTOR MOUNT JACK ASSEMBLY	1



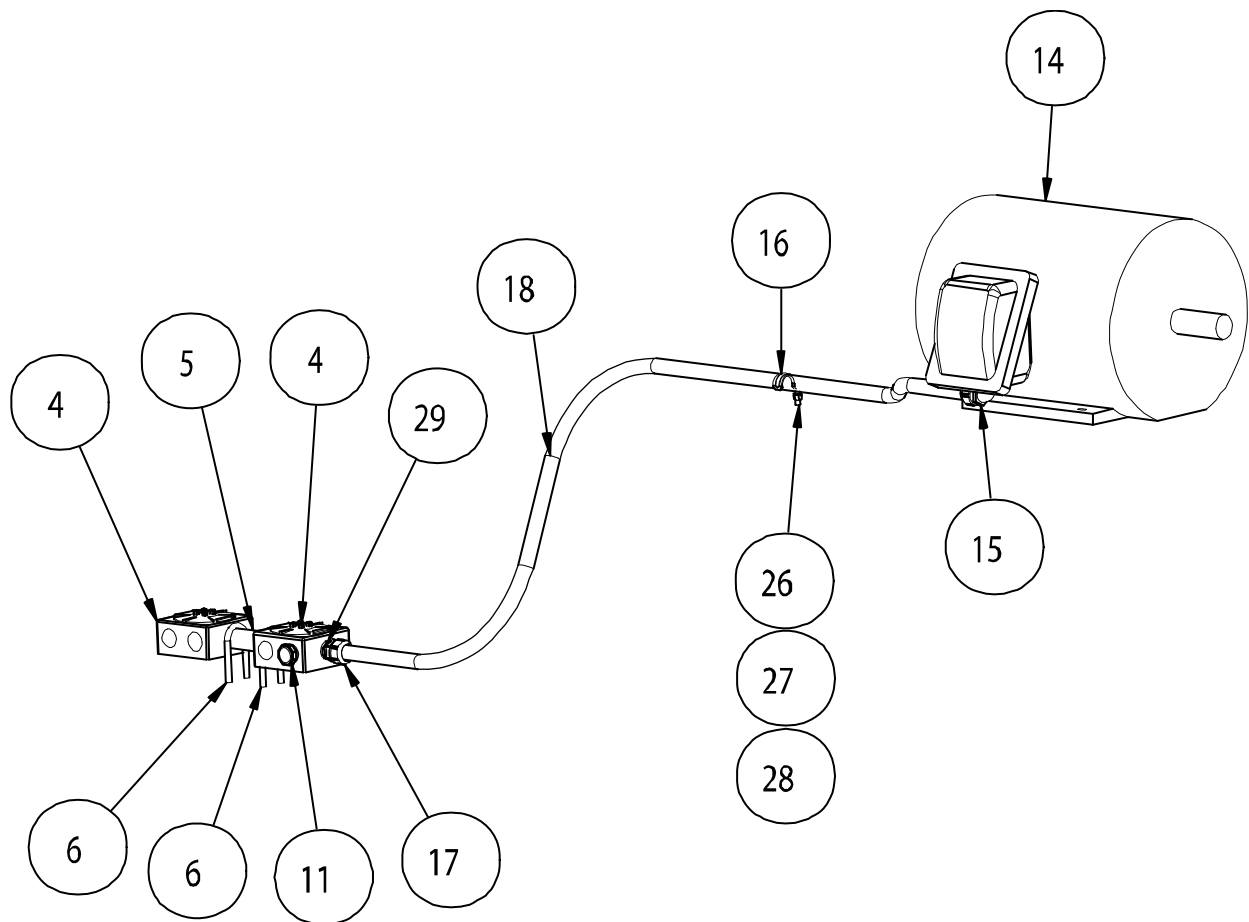
HIGH CAPACITY 12" & 16" HOPPER SUMP COMPONENTS - 34,000BPH

Ref #	Part #	Description	Qty
1	GC11410	HOPPER SUMP WELDMENT	1
2	GC07877	HOPPER SUMP CROSS BRACE ASSY. - 16 IN.	1
7	S-2071	BOLT HHCS 3/8-16x1-1/4"	4
8	S-1054	WASHER LOCK SPLIT 3/8"	4
9	S-456	NUT HEX 3/8-16	4
10	S-6998	BOLT HHCS 1/4-20x1"	20
11	S-2041	WASHER SPLIT 1/4"	20
12	S-1102	NUT HEX 1/4-20	20
13	S-1430	WASHER FLAT 1/4"	16
14	S-2121	WASHER FLAT 1/2"	8
15	S-3883	BOLT HHCS 1/2-13x1-3/4"	8
16	S-236	WASHER LOCK 1/2"	8
17	S-7510	NUT HEX 1/2-13	8



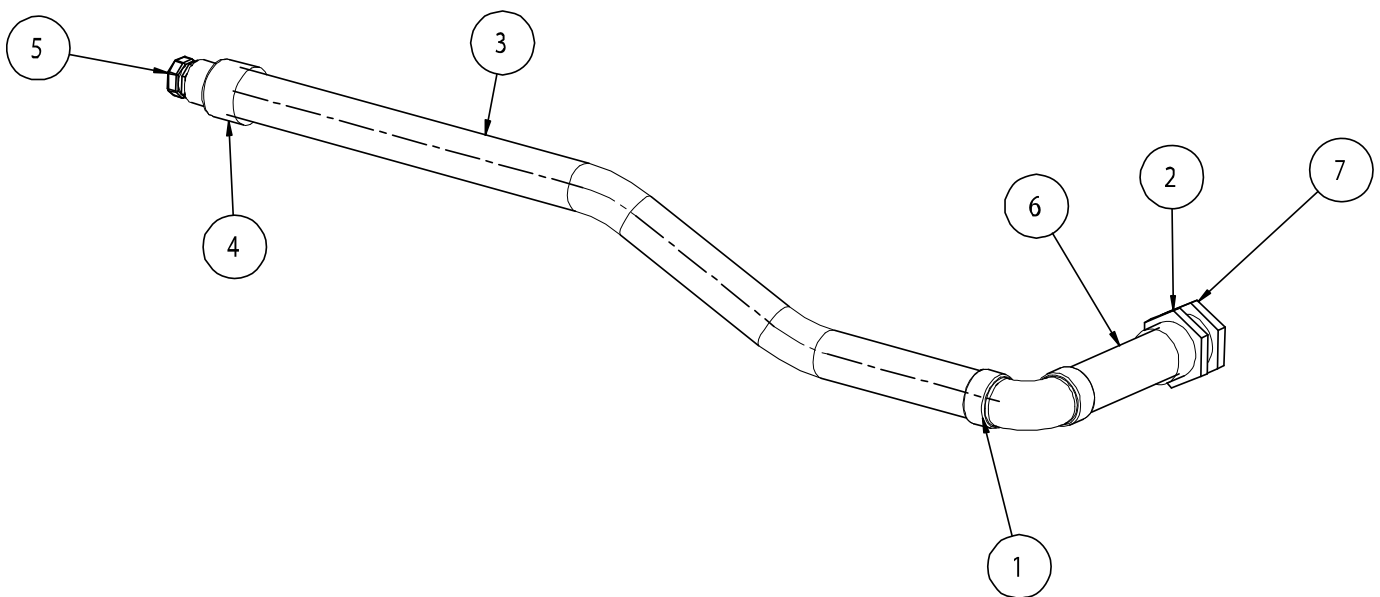
UPPER CONDUIT ASSEMBLY FOR HIGH CAPACITY 12" & 16" SUMP - HIGH CAPACITY

Ref #	Part #	Description
4	GC07521	BOX JUNCTION EXPLOSION PROOF RED DOT #GASS-3
5	GC07744	CONDUIT NIPPLE 1" X 4 3/4"
6	S-8568	U-BOLT 3/8-16 X 1 3/8 IW
11	S-8518	CONDUIT FITTING 1" ST RIGID FLEX
14		ELECTRIC MOTOR ASSEMBLIES
15	TFC-0054	ELBOW, PIPE 3/4X90DEG FLEX COND
16	S-8411	CONDUIT CLAMP 1" LMI ZN 1 HOLE
17	S-6198	CONDUIT FTG 3/4" ST RIGID-FLEX
18	GC11523	CONDUIT 3/4" FLEX - UPPER CONDUIT ASSEMBLY
26	S-7721	BOLT HHCS 5/16-18x1-1/4 ZN GR2
27	S-1147	WASHER LOCK SPLIT 5/16" ZN
28	S-396	NUT HEX 5/16-18 ZN YDP GR2
29	S-8513	CONDUIT REDUCER BUSHING 1"-3/4"



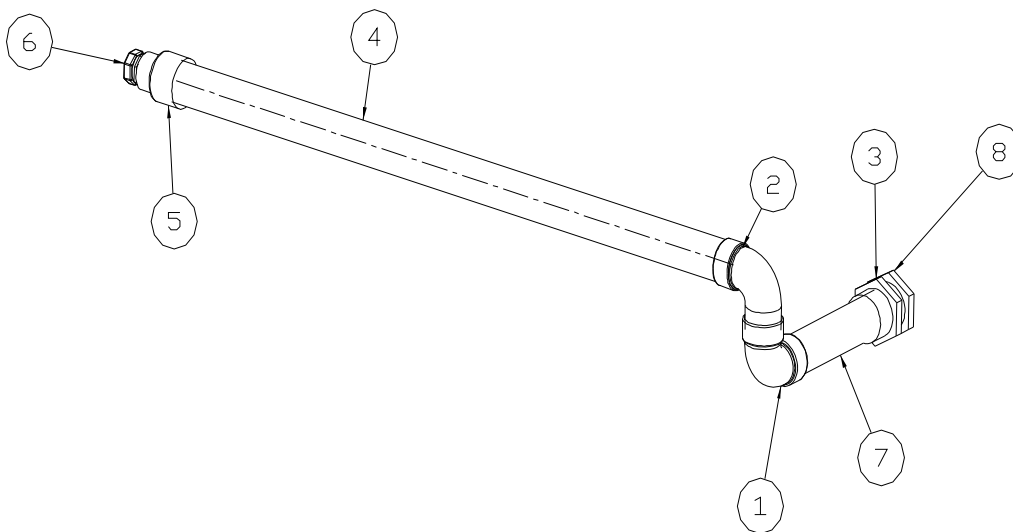
**LOWER CONDUIT ASSEMBLY FOR HIGH CAPACITY 12" & 16"
SUMP - 34,000BPH (OBSOLETE AFTER MAY 2006)**

Ref #	Part #	Description	Qty
1	GC11506	CONDUIT ELBOW 1 1/4"	1
2	GC11509	CONDUIT UNION 1 1/4"	1
3	GC11510	FORMED 1 1/4 PIPE	1
4	GC11505	CONDUIT BELL REDUCER 1 1/4" X 1"	1
5	S-8518	CONDUIT FITTING 1" ST RIGID FLEX	1
6	GC11507	CONDUIT NIPPLE 1 1/4" X 6"	1
7	GC11508	CONDUIT REDUCER BUSHING 1 1/4" X 1"	1



LOWER CONDUIT ASSEMBLY FOR HIGH CAPACITY 12" & 16" SUMP HIGH CAPACITY AFTER MAY 2006

Ref #	Part #	Description	Qty
1	GC11506	CONDUIT ELBOW 1 1/4"	1
2	GC11724	CONDUIT STREET ELBOW 1 1/4"	1
3	GC11509	CONDUIT UNION 1 1/4"	1
4	GC11726	CONDUIT - 1 1/4 X 32"	1
5	GC11505	CONDUIT BELL REDUCER 1 1/4" X 1"	1
6	S-8518	CONDUIT FITTING 1" ST RIGID FLEX	1
7	GC11727	CONDUIT NIPPLE 1 1/4" X 8" GALVANIZED	1
8	GC11508	CONDUIT REDUCER BUSHING 1 1/4" X 1"	1



Collector Ring Replacement Parts

7.1 Parts Descriptions

(Blank) = No Special Configuration
 X = Explosion-Proof Enclosure
 W = Explosion Proof Enclosure
 w/ 1" Air Passage
 T = Ball Bearings on Brush Carriage
 (standard is brass sleeve bearing)
 N = Non-Self- Contained
 (Kit Ring, no enclosure)

(Blank) = No Enclosure
 R = Revolving Unit (RU)
 S = Swivel Unit (SU)
 U = Wrap Around Cover

----- Required
 Optional

(BLANK) = Single Brush

(Ring Profile Section) D = All Circuits Double Brushed

(Amperage Profile Section) D = This Amperage Double Brushed

Number of Conductors

R A X R D - D A 03 - SPEC *

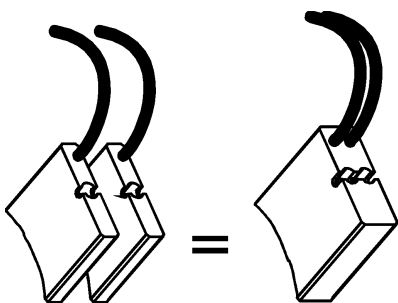
Ring Profile Section

Amperage Profile Section
 Multiple Sections Possible

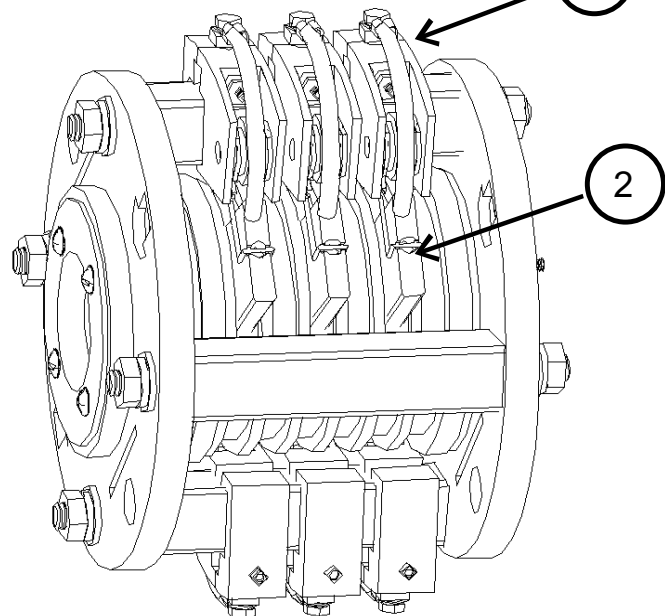
Slip Ring Bore Size

Z	A	B, C, D	E, F, G, H	J, K	Brush Holders	
Special Bore	1.50	2.5, 3.0, 3.5	4.0, 4.5, 5.0, 6.0	8.0, 10.0		Single Double
Brushes	30067A	30067B	30067C	30067D	A = 10 AMP / 250 V	02800 02807
	30066A	30066B	30066C	30066D	B = 15 AMP / 250 V	28000 02807
	30068A	30068B	30068C	30068D	C = 35 AMP / 250 V	02801 02808
	30068A	30068B	30068C	30068D	D = 35 AMP / 600 V	02801 02808
	30069A	30069B	30069C	30069D	E = 75 AMP / 600 V	02802 02809
	02840	02845	02850	02855	F = 110 AMP / 600 V	02803 02810
	02841	02846	02851	02856	G = 150 AMP / 600 V	02804 02811
	02842	02847	02852	02857	H = 225 AMP / 600 V	02805 02805 (x2)
	02843	02848	02853	02858	J = 300 AMP / 600 V	02806 02806 (x2)
	N/A	DRA3-20A-2500	DRA3-20A-4000	DRA3-20A-8000	K = 200 AMP / 600 V	Brushes & Holders Sold as a Unit in this AMP / VOLT Range
	N/A	03309	03247	03247	L = 400 AMP / 600 V	
	N/A	03248	03248	03248	M = 600 AMP / 600 V	

* Consult the Factory for Custom Application Configurations



Two 35 Amp Brushes
 Replace One 75 Amp Brush



NOTES



Limited Warranty

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

Warranty Extensions: The Limited Warranty period is extended for the following products:

	Product	Warranty Period
AP Fans and Flooring	Performer Series Direct Drive Fan Motor	3 Years
	All Fiberglass Housings	Lifetime
	All Fiberglass Propellers	Lifetime
Cumberland Feeding/Watering Systems	Feeder System Pan Assemblies	5 Years **
	Feed Tubes (1.75" & 2.00")	10 Years *
	Centerless Augers	10 Years *
	Watering Nipples	10 Years *
Grain Systems	Grain Bin Structural Design	5 Years
Grain Systems Farm Fans Zimmerman	Portable & Tower Dryers	2 Years
	Portable & Tower Dryer Frames and Internal Infrastructure †	5 Years

* Warranty prorated from list price:

0 to 3 years – no cost to end-user
 3 to 5 years – end-user pays 25%
 5 to 7 years – end-user pays 50%
 7 to 10 years – end user pays 75%

** Warranty prorated from list price:

0 to 3 years – no cost to end-user
 3 to 5 years – end-user pays 50%

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

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

Conditions and Limitations:

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

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

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

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

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

This Equipment shall be installed in accordance with the current installation codes and applicable regulations which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installation occurs.

G S I G R O U P



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