



# **CE Compliant Series II 12", 14", 20", 26" and 32" Tall En-Masse and Hi-Flight Incline Chain Conveyors**

Installation and Operation Manual -  
Original Instructions

PNEG-1848CE

Date: 09-13-13

G S I G R O U P



PNEG-1848CE



The GSI Group declares that

**GSI En-Masse and Hi-Flight Chain Conveyors**

Models

9" x 12"  
12" x 12"  
16" x 12"  
16" x 14"  
21" x 14"  
14" x 20"  
16" x 20"  
20" x 20"  
26" x 20"  
32" x 20"  
26" x 26"  
32" x 26"  
32" x 32"

Excluding:

Inspection port assemblies CE-03771 and CE-03771G.

Meet the following clauses of the Essential Requirements of the Machinery Directive 2006/42/EC.

- 1.1.2 and sub-clauses principles of safety integration
- 1.3.2 Risk of break-up during operation
- 1.3.7 Risk related to moving parts
- 1.3.8 Choice of protection against risks arising from moving parts
  - 1.3.8.1 Moving transmission parts
  - 1.3.8.2 Moving parts involved in the process (*Installer has responsibility to ensure complete compliance with this clause, as per manual.*)
- 1.3.9 Risks of uncontrolled movements
- 1.4 Required characteristics of guards and protective devices
  - 1.4.1 General requirements
  - 1.4.2 Special requirements for guards
    - 1.4.2.1 Fixed guards
- 1.5.4 Errors of fitting



- 1.5.5 Extreme temperatures
- 1.5.6 Fire
- 1.5.7 Explosion
- 1.5.8 Noise
- 1.5.9 Vibrations
- 1.5.13 Emissions of hazardous materials and substances
- 1.6 Maintenance
  - 1.6.1 Machinery maintenance
  - 1.6.4 Operator intervention
- 1.7 Information
  - 1.7.1 Information and warnings on the machinery
    - 1.7.1.1 Information and information devices
  - 1.7.2 Warning of residual risks
  - 1.7.4 Instructions
    - 1.7.4.1 General principles for the drafting of instructions
    - 1.7.4.2 Contents of the instructions but not inclusive of sub-clause (u)
    - 1.7.4.3 Sales literature

This declaration applies only to the mechanical elements of the above machines and does not imply conformity by any other items of equipment fitted to or connected with the above machines.

The equipment above must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of all relevant Directives, nor until these components have been assembled in the manner recommended in the manufacturers instructions.

Signed :

Name: Frank Ward Director Hennock International Limited On behalf The GSI Group

Date:

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# NOTES

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### 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 a hazardous situation which, if not avoided, will result in death or serious injury.



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



**CAUTION**, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.



**NOTICE** is used to address practices not related to personal injury.

## Safety Instructions

Our foremost concern is your safety and the safety of others associated with this equipment. We want to keep you as a customer. This manual is to help you understand safe operating procedures and some problems that 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.

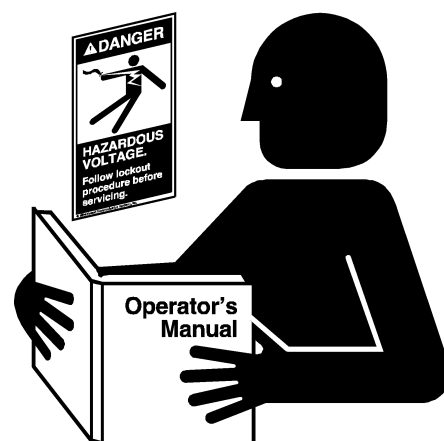
### Follow Safety Instructions

Carefully read all safety messages in this manual and 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.

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 or need assistance, contact your dealer.



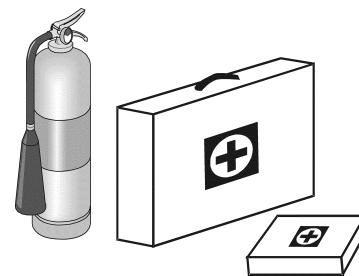
### Read and Understand Manual

### 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

# 1. Safety

## Wear Protective Clothing

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

Remove all jewelry.

Tie long hair up and back.

Wear safety glasses at all times to protect eyes from debris.

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

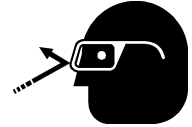
Wear steel-toed boots to help protect your feet from falling debris. Tuck in any loose or dangling shoestrings.

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

Wear a hard hat to help protect your head.

Wear appropriate fall protection equipment when working at elevations greater than six feet (6').

**Eye Protection**



**Gloves**



**Steel-Toed Boots**



**Respirator**



**Hard Hat**



**Fall Protection**



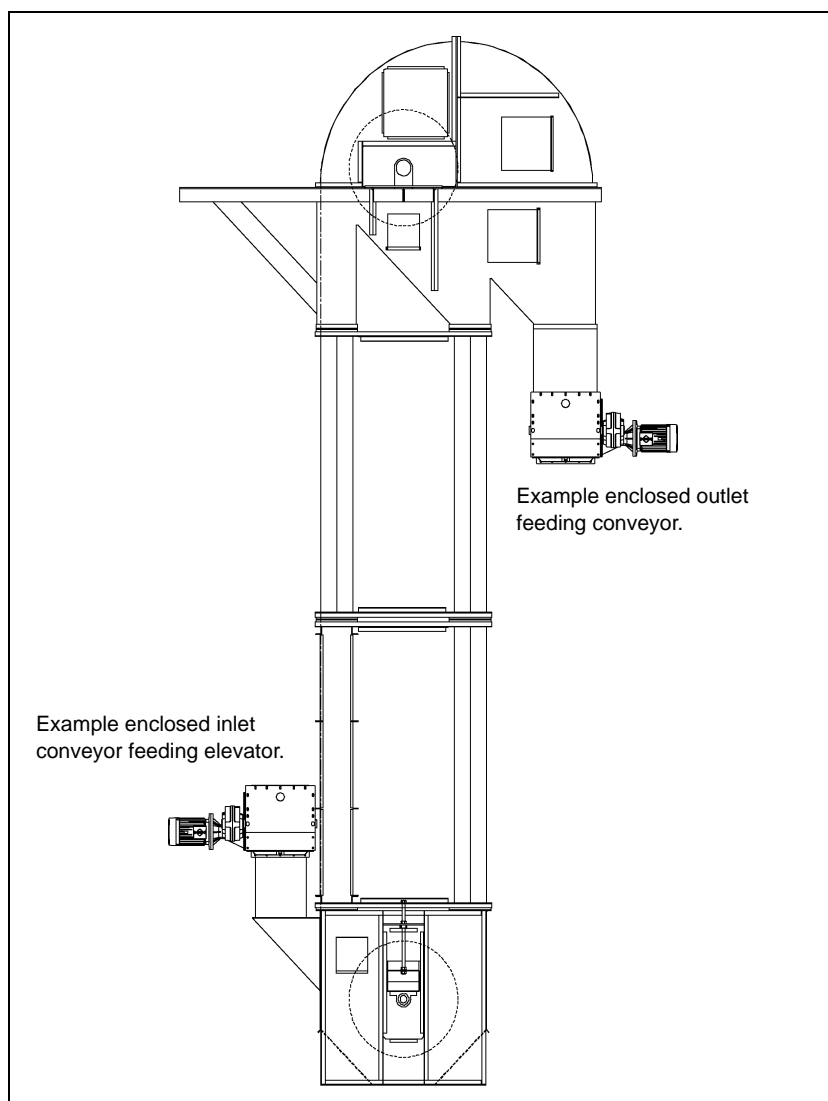


## Correct Use



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

1. The En-Masse Conveyor system is for conveying whole agricultural seeds and grains only. Any other use is prohibited.
2. It may be equipped to receive grains from trucks, trailers, other mechanical grain handling equipment.
3. It shall never be filled manually.
4. The conveyor shall never be used with personnel inside the store or bin.
5. Electrical control systems shall be designed to the requirements of the Machinery Directive 2006/42/EC, risk assessment and should be in accordance with EN60204:2006, EN ISO 13849:2006 or EN 954-1.
6. Never use the En-Masse Conveyor with any guards removed.



**Figure 1A** *Example of Enclosed Inlet and Outlet*

## 1. Safety

7. Power must be OFF, TAGGED and LOCKED before entering grain bin or store or working on the conveyor. (See Figure 1B.)



Figure 1B

8. Wherever possible run the En-Masse Conveyor empty before stopping it.
9. Never leave the En-Masse Conveyor running unattended.
10. Never allow an untrained person less or one less than 18 years old to operate the En-Masse Conveyor.
11. Never allow someone under the influence of alcohol or drugs to operate the equipment.
12. Never work alone.
13. Never start equipment until all persons are clear of the grain bin.
14. Keep hands and feet away from all moving parts.
15. Always think before acting. Never act impulsively around the equipment.

## Correct Installation

Final installation shall be in accordance with all the safety requirements outlined in this manual and fulfills the Essential Requirements of the Machinery Directive 2006/42/EC.

1. Supported conveyor at maximum 3 m intervals.
2. Do not fix lift equipment to the conveyor.
3. Do not use the conveyor as a walkway.
4. Provide suitable access ladders, stairs, platforms and walkways to all parts of the conveyor.
5. The conveyor should be installed straight in all directions and horizontal.
6. Never modify the Conveyor from it is original specification.
7. En-Masse inlet and outlet must always be enclosed or all moving parts inaccessible per ISO 13857.

## Guards

The following minimum guarding must be fitted at all times.

1. All trough, head and tail covers.
2. Inlet and outlet guarding. *(See Page 10.)*
3. Belt drive and pulley guard.

## Electrical Safety



Motors must be:

1. Selected to suit the length of conveyor (check with GSI).
2. IEC/CE compliant.
3. IP55 minimum.

Control equipment shall include:

1. Fuse protected main power supply.
  - a. The electrical supply should include earth leakage protection, eg Residual Current Device (RCD) or Residual Current Circuit Breaker (RCCB), to provide automatic disconnection in the event of a fault.

2. Lockable main safety disconnect.



- a. Disconnects all electrical power.

3. Lockable motor service disconnect.



- a. Adjacent to each motor (or group of motors).
- b. Disconnects all power to the motors.

4. Emergency stops.



- a. Stops all equipment immediately when pressed.
- b. Must remain engaged until manually disengaged.
- c. Equipment shall not immediately re-start when the emergency stop is re-set.

5. Door safety interlocks - where doors provide access to dangerous machinery. *(See Figure 1C on Page 12.)*

- a. Immediately stops and prevents re-start of all equipment when the door is open.
- b. Equipment shall not immediately re-start when the door is closed.
- c. Safety switches shall be SIL3 in accordance with IEC62061:2005
- d. Safety circuits should be Category 3 in accordance with EN 954-1:1997 or PLc in accordance with ISO 13849-1:2006.

# 1. Safety

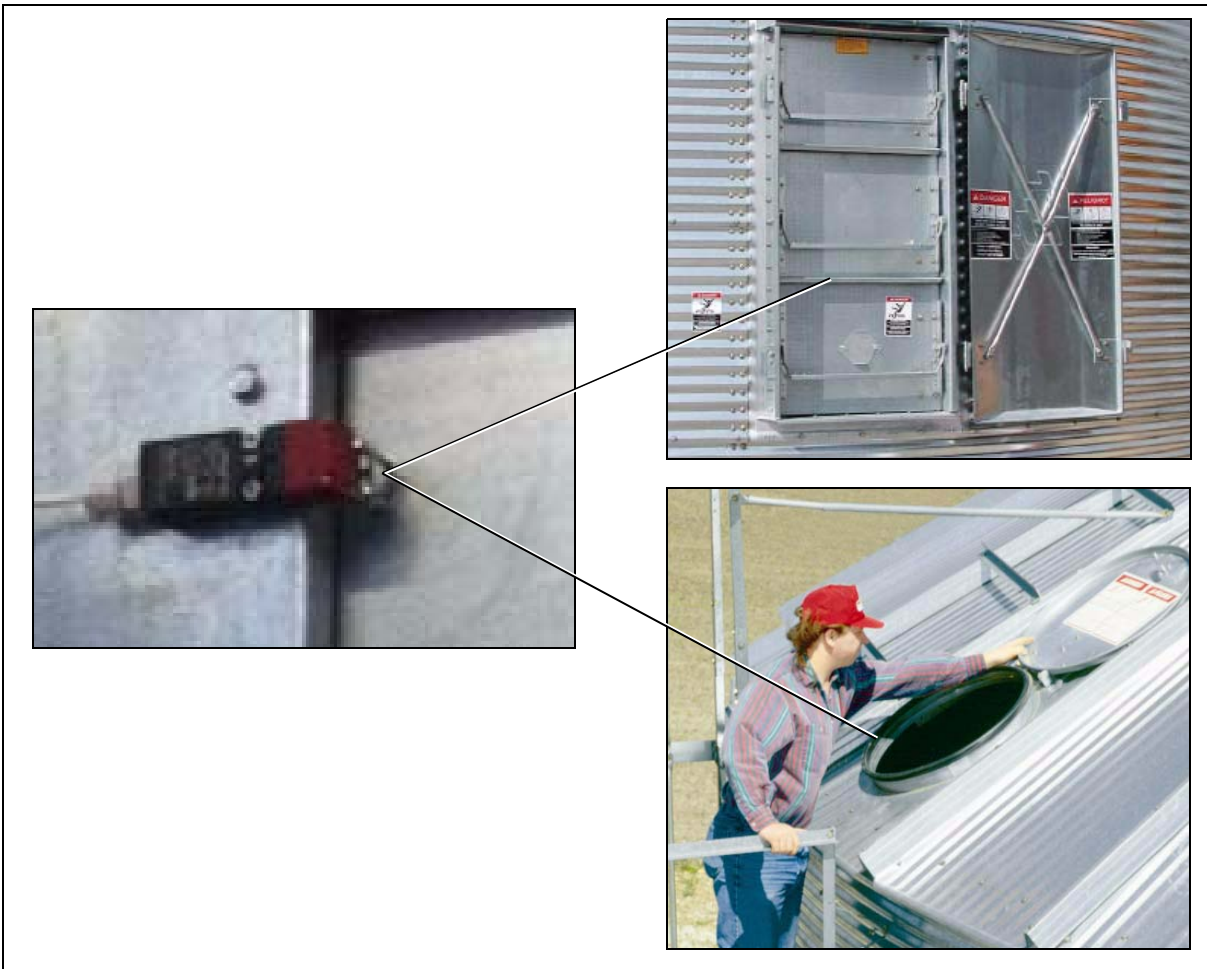
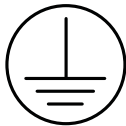


Figure 1C

6. The electrical supply must include a properly designed protective earth system (PE), with connection to all exposed conductive parts.



7. All motors shall be connected to protective earth at the terminal provided.
8. The control system shall include,

- a. Short circuit protection.



- b. Start/stop controls (labelled 1 and 0 respectively).



- c. Equipment shall not immediately re-start following reestablishment of power.
- d. Motor circuits shall include over current protection set according to the full load current, stated on the motor rating plate.
- e. Motor thermal protection may also be required.
9. All electrical design, installation and testing must be carried out by a qualified electrical engineer, in accordance with EU Directives and Standards, local laws and codes.

## Possible Hazards Inside Grain Bins

The inside of a grain bin, no matter what size, is a dangerous location. Grain bins should be kept **locked shut** at all times.



**NEVER** allow a child or untrained, inexperienced person to enter a grain bin.

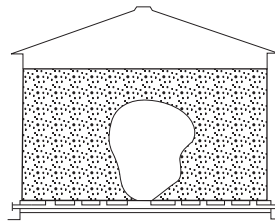
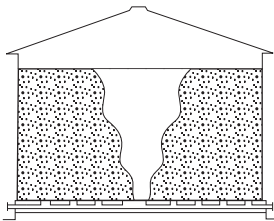
### Hazards present at any time may include:



Mass flow of grain when filling or emptying which could draw you in and cause suffocation/burial.



Bridged, crusted or capped grain which could collapse if you stand on it. It is recommended **NEVER** to walk on the surface of the stored material.



If grain has stopped flowing, become bridged, capped or crusted, the **only safe way** to remedy this is from the outside of the bin.



Exposed machinery such as fans, augers and conveyors with which you could become entangled.



It is a recommended additional safety measure to fit grain bin doors and hatches with electrical interlock switches, to stop all equipment if the door or hatch is opened. However this does not override the need to lock out power before entering.



Hazardous substances such as dust, mould spores, vapors and gases or low oxygen levels which could cause respiratory problems.



High temperature combustible material.

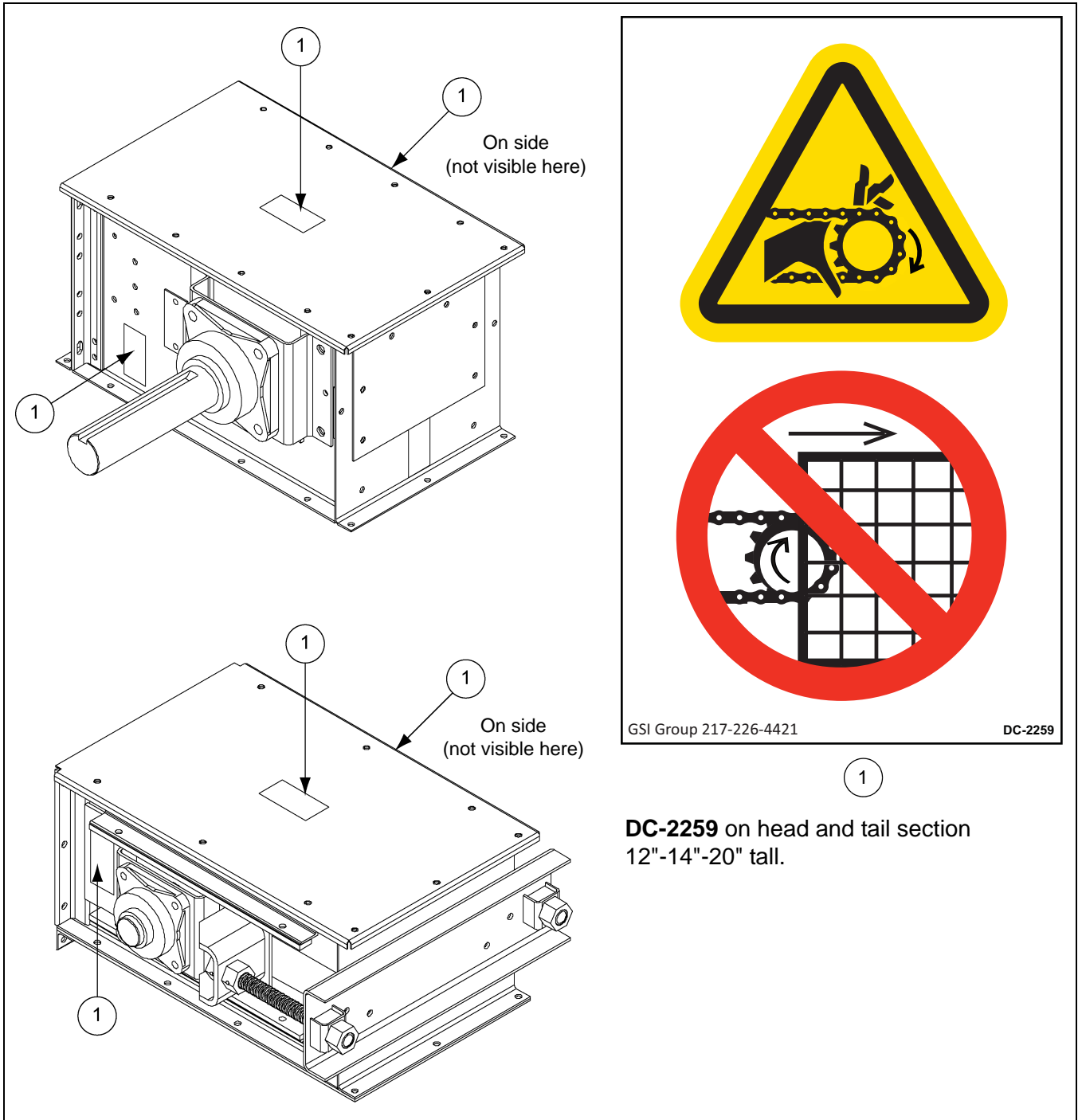


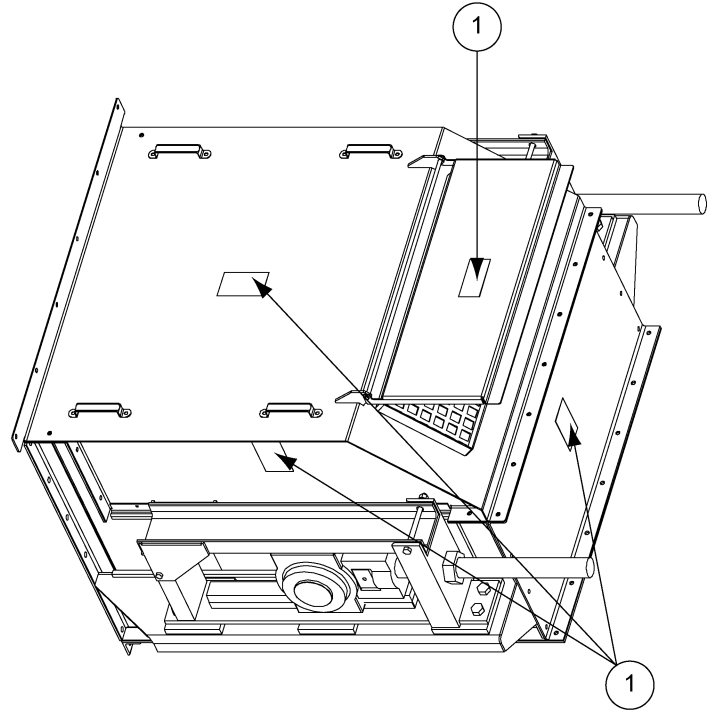
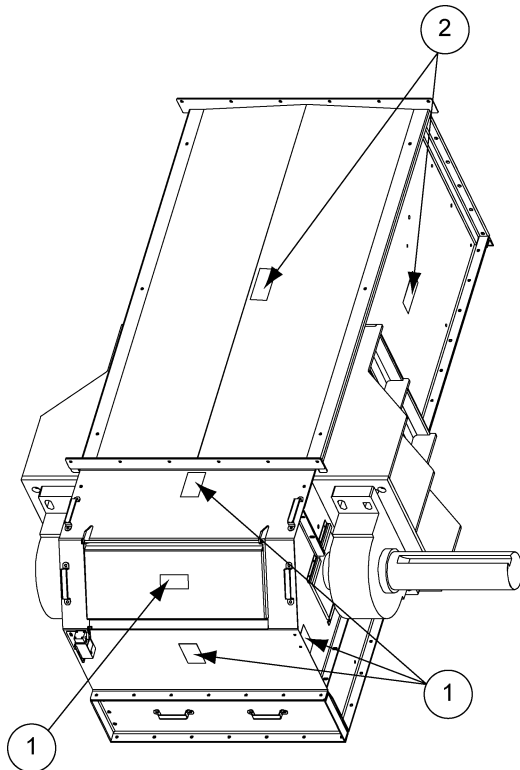
## 2. Safety Decals

Below are the safety warning decals that should be fitted and visible/legible at all times.

### International Decals

International, translated versions are available as part of the Language Pack (LPAK-0015-\*\*) that was supplied with the product. If you need further copies or a different language, please contact GSI or your dealer.

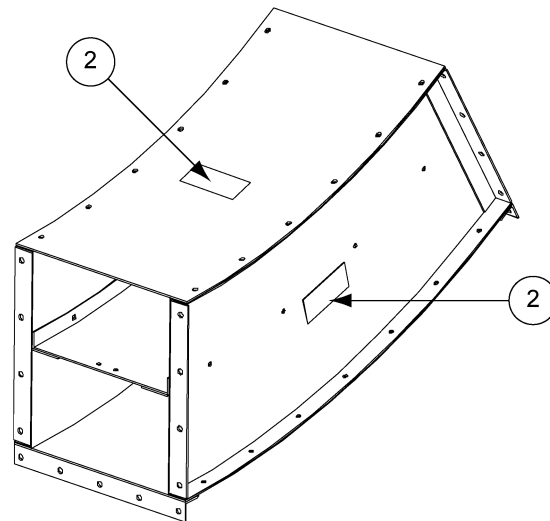




GSI Group 217-226-4421

DC-2259

1



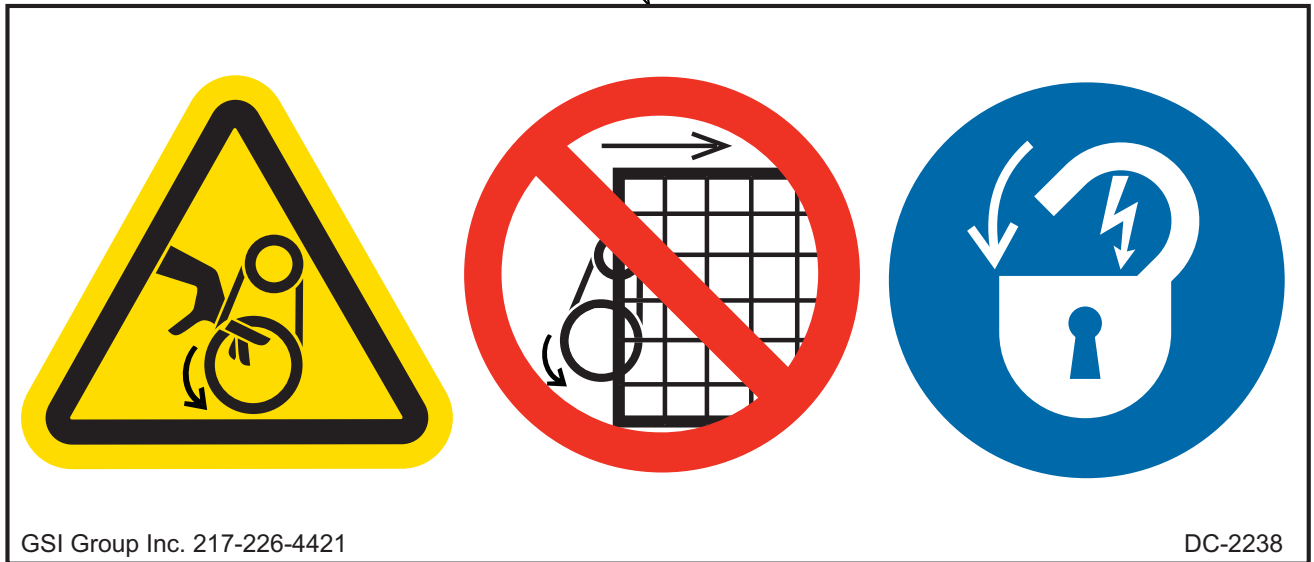
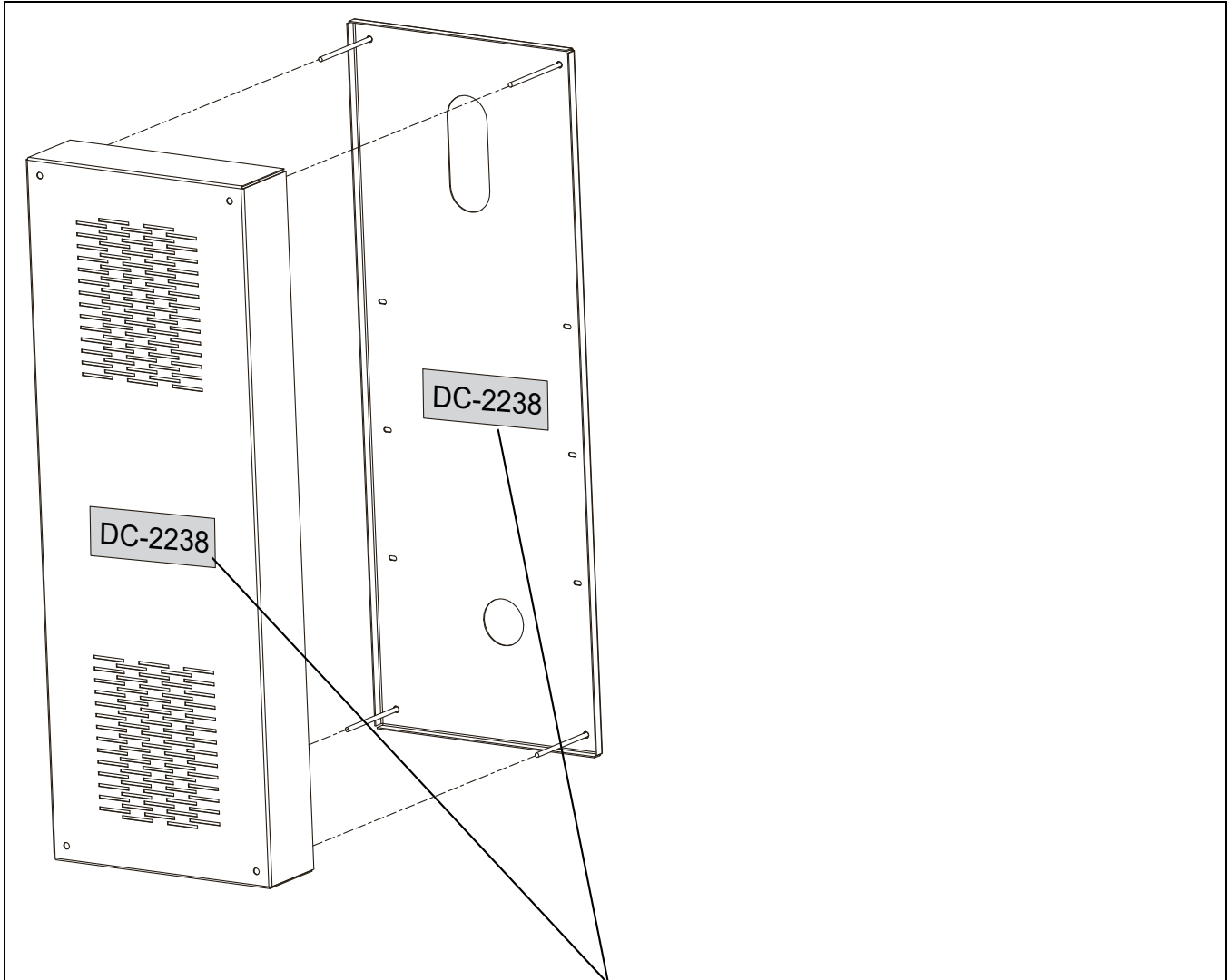
GSI Group 217-226-4421

DC-2258

2

DC-2258 and DC-2259 incline, head and tail section 26" and 32" tall.

## Belt Guard Cover

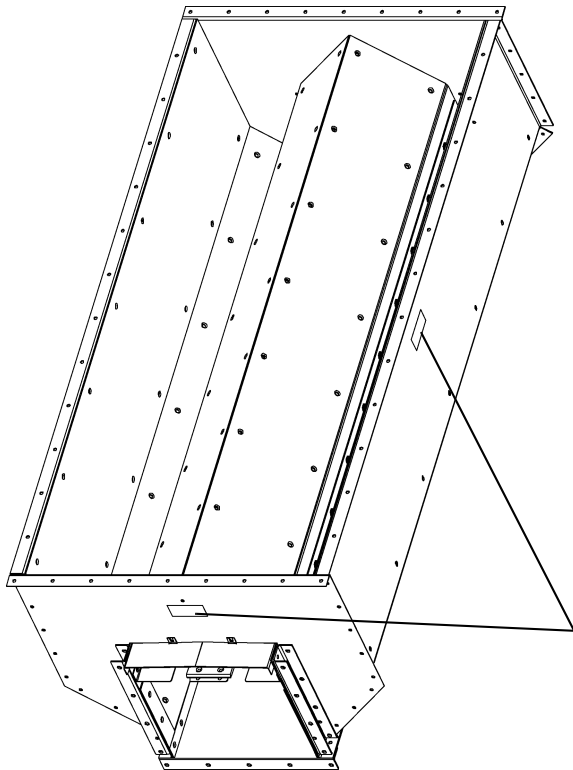
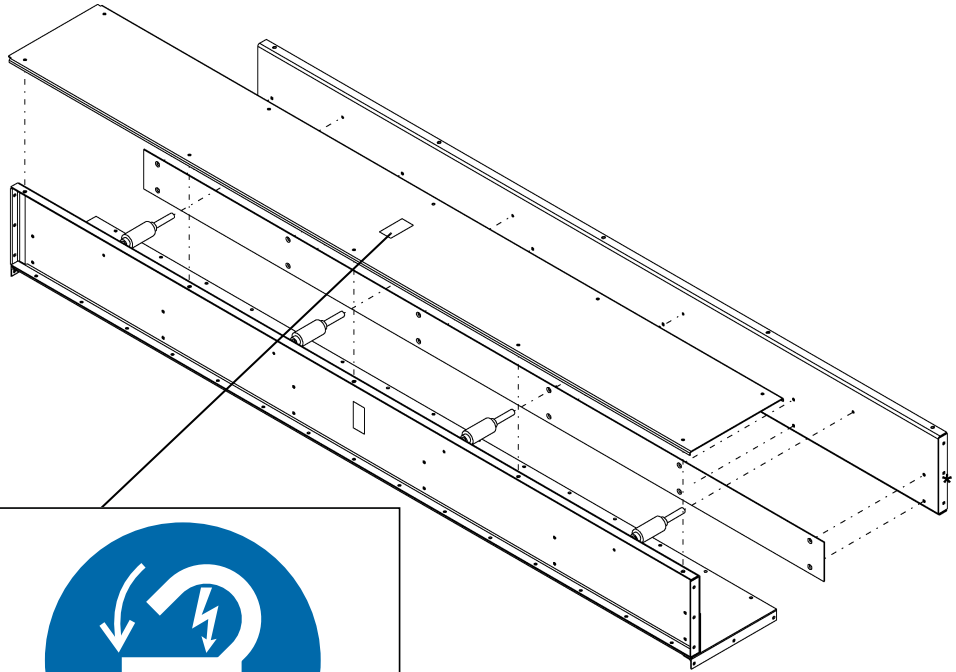


GSI Group Inc. 217-226-4421

DC-2238

**DC-2238** on belt guard.



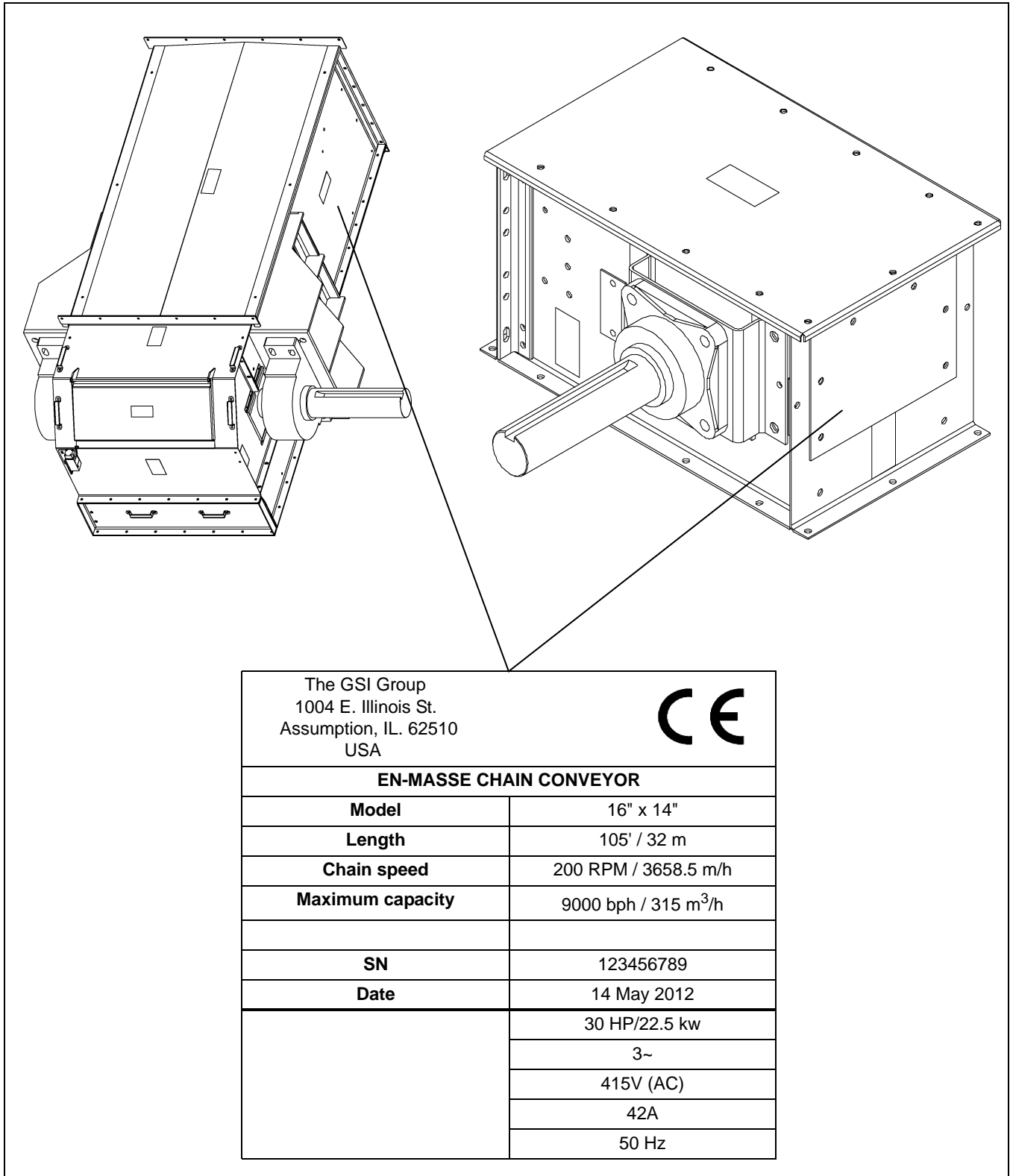


**DC-2258** on intermediate trough sections.

## 2. Safety Decals

### CE Mark and Rating Plate

Once the conveyor has been assembled equipped, in accordance with the instructions given in this manual, the installer or supplier shall make the full Declaration of Conformity and apply the CE mark, in accordance with the EU Machinery Directive 2006/42/EC. The rating plate, supplied with the drive unit should be fitted.

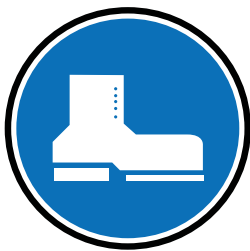


## Pre-Installation Preparation



Read this and other required manuals.

Use personal protection equipment.

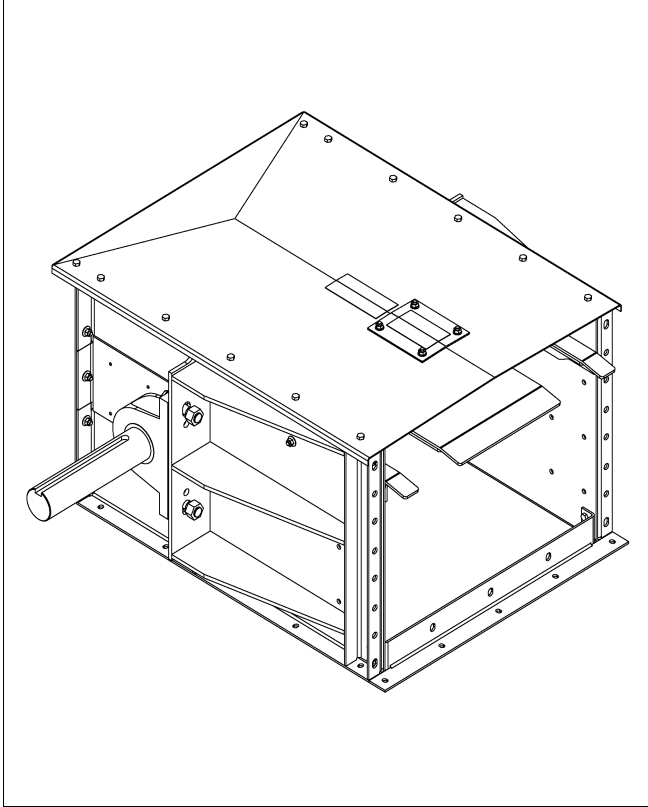


Arrange the conveyor components.

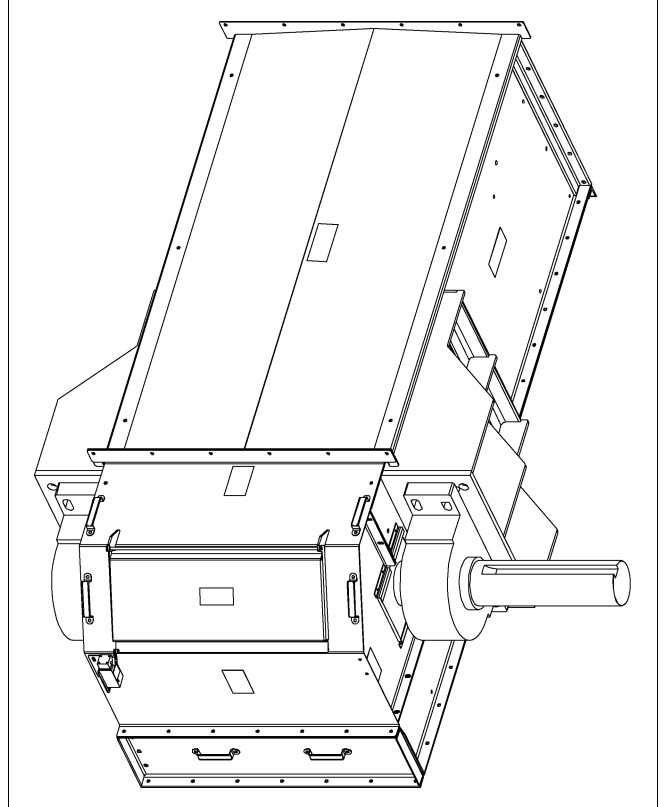
Provide suitable support for the conveyor items for assembly at ground level.

Layout the conveyor sections on supports assembly order, starting with the head section.

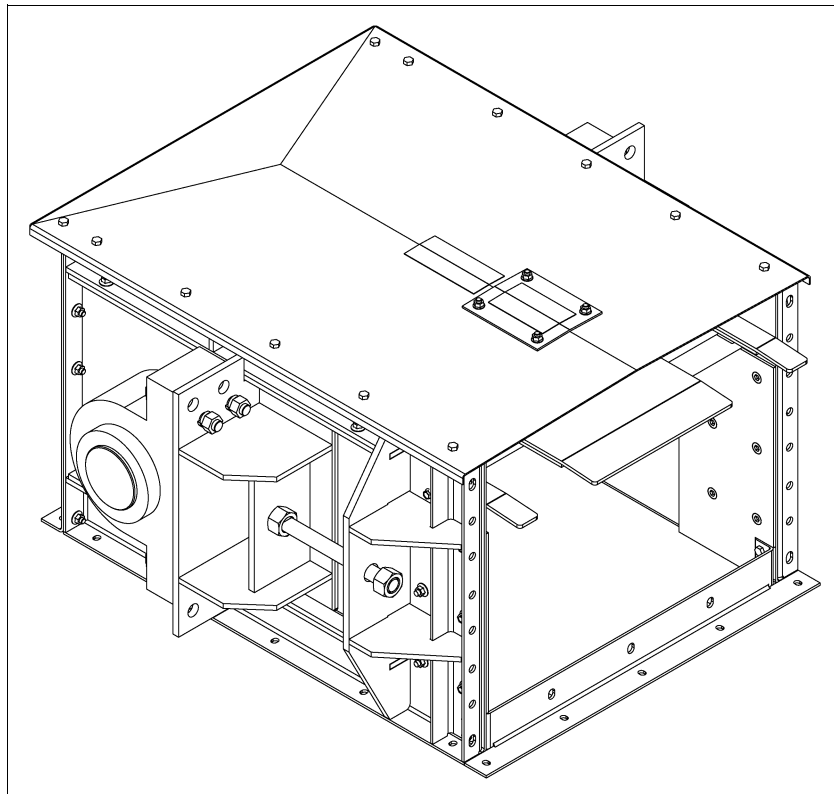
## Head and Tail Identification



**Figure 3A** 20" Fixed Head Section

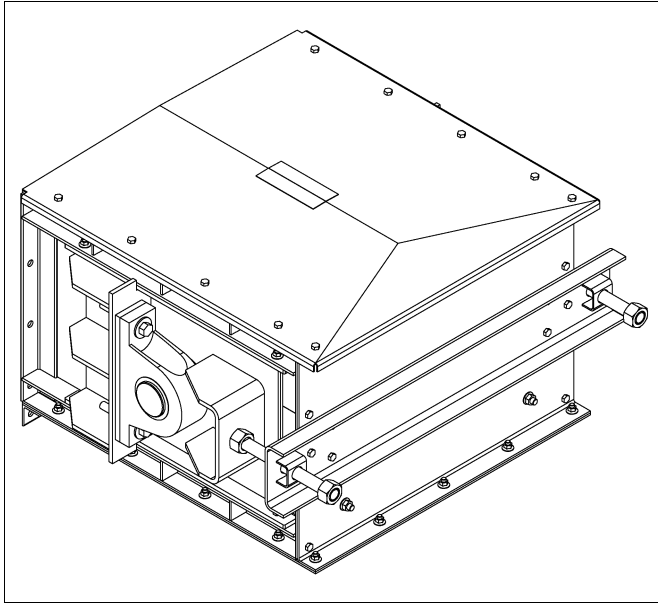


**Figure 3B** 26" Fixed Head Section

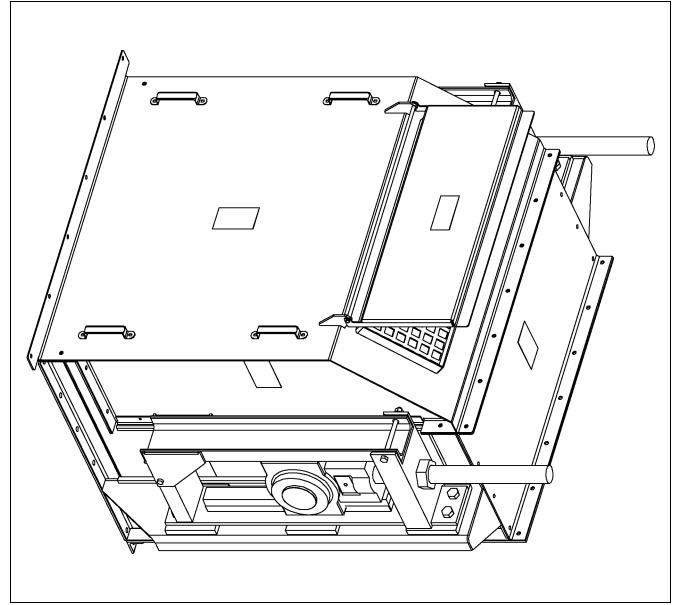


**Figure 3C** Take-Up Head Section

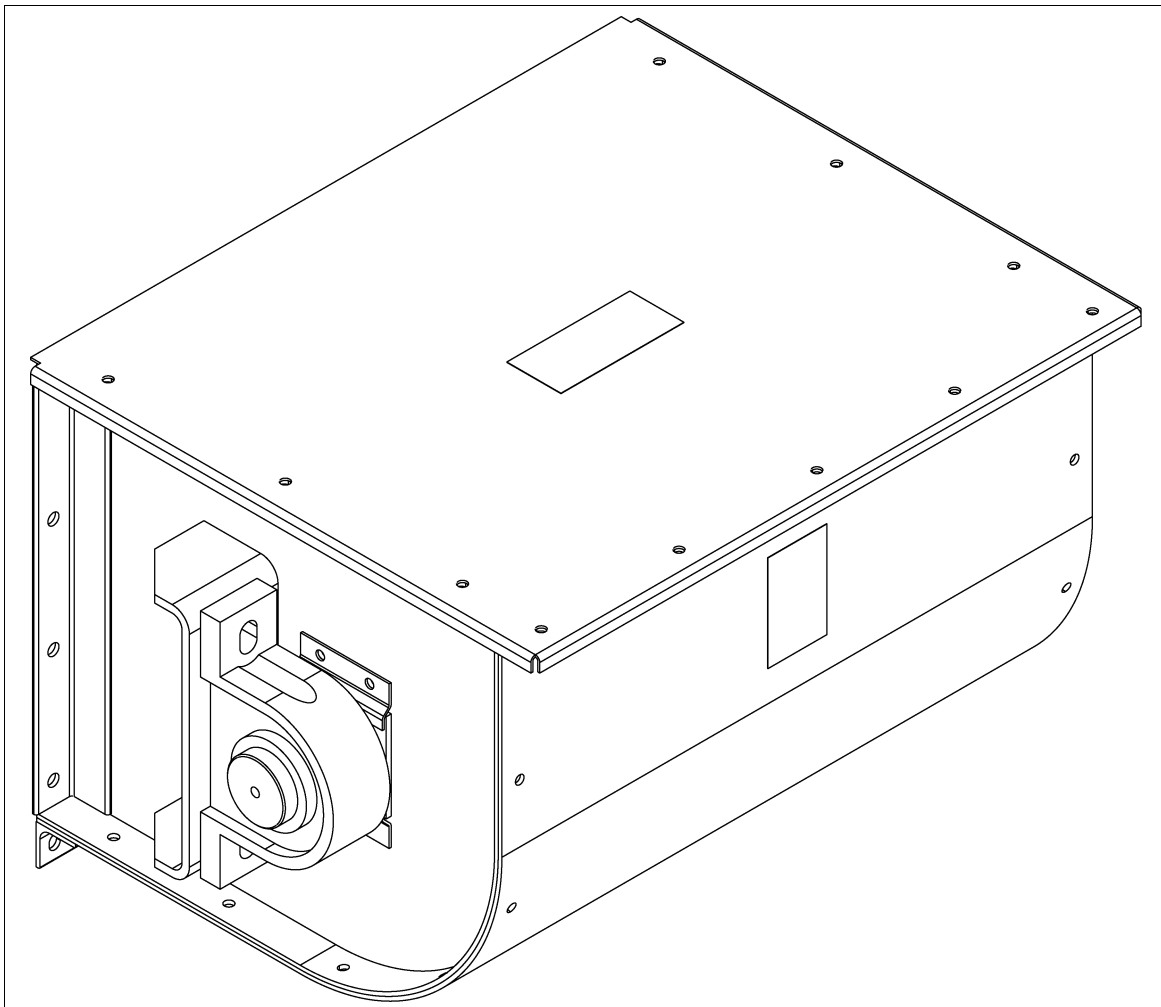
## Head and Tail Identification (Continued)



**Figure 3D** 20" Take-Up Tail Section



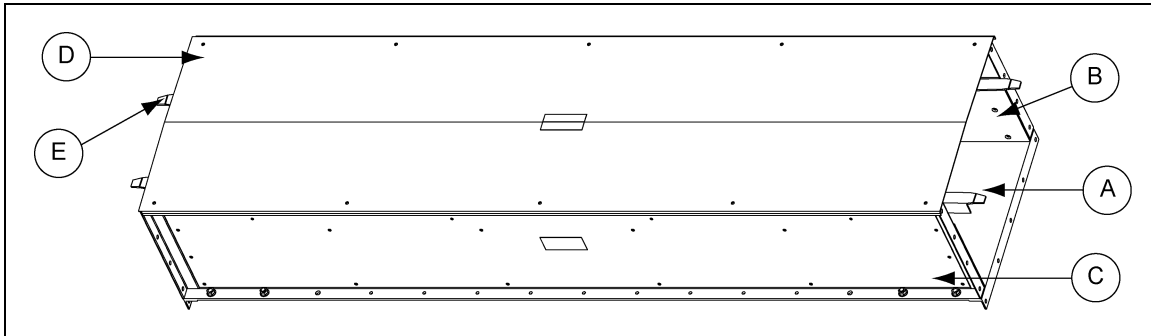
**Figure 3E** 26" Take-Up Tail Section



**Figure 3F** Clean-Out Tail Section

### 3. Installation

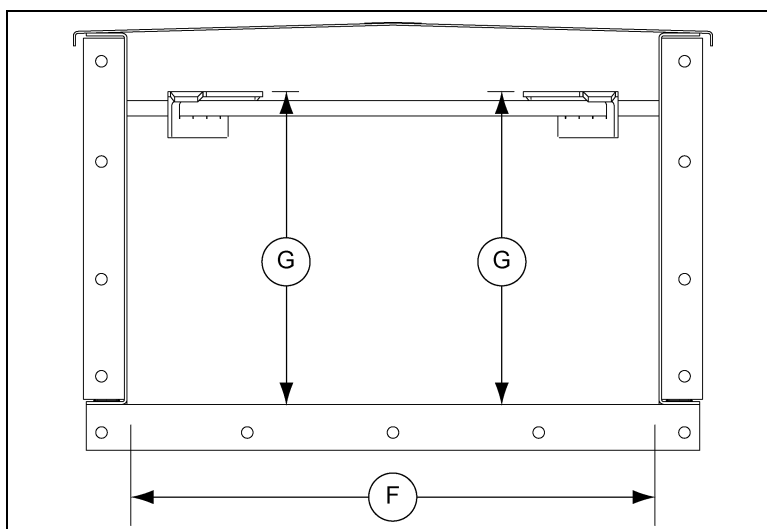
## Assembling an Un-Assembled Intermediate Section



**Figure 3G** Intermediate Trough Assembly

Ref #	Description	Hardware
A	Bottom Plate	3/8" and 5/8" Hex Bolts 3/8" and 5/8" Flange Nuts
B	Liner (Optional)	3/8" Countersunk Bolts 3/8" Flange Nuts
C	Side	
D	Cover	3/8" Hex Bolts 3/8" Flange Nuts
E	Rail Return	5/16" Flange Bolts

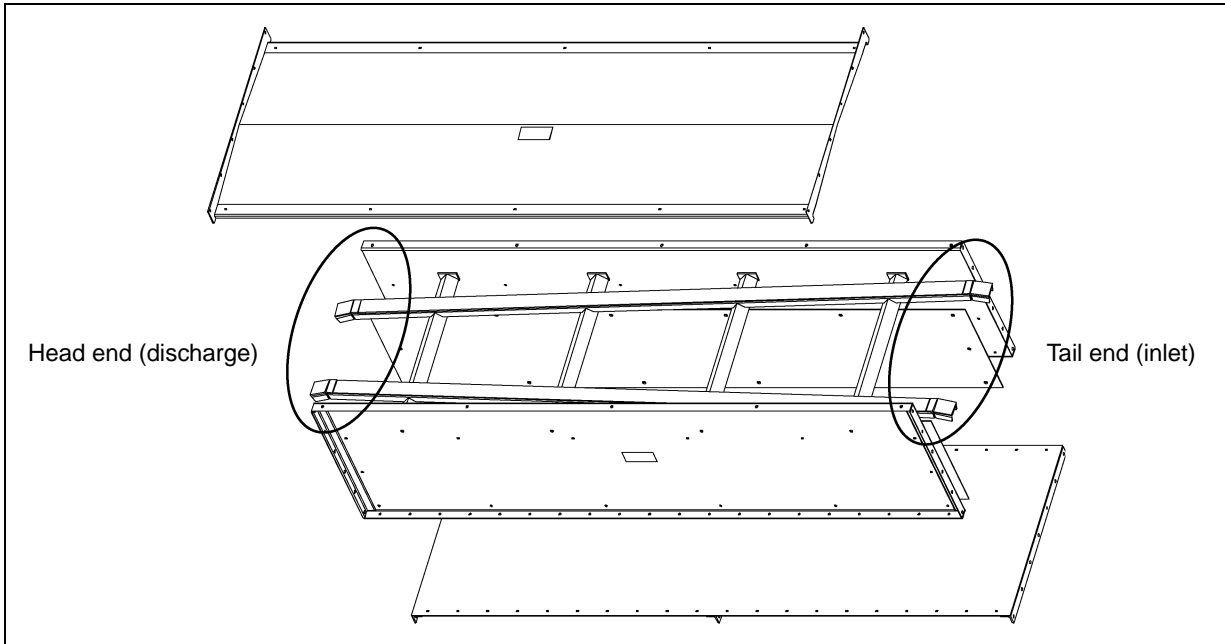
1. Assemble A, B (optional) and C.
2. Install E.
3. Check dimensions. (See Figure 3H.)
4. Leave D off.



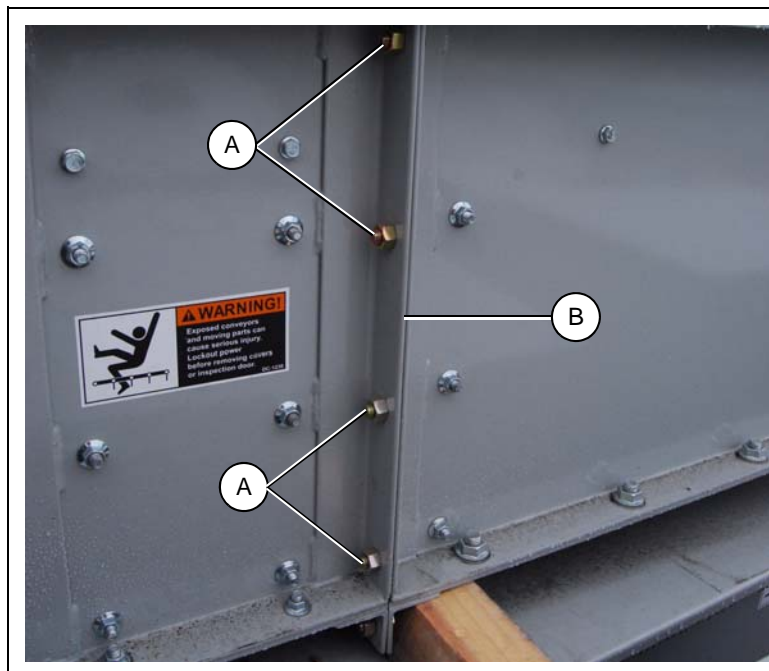
**Figure 3H** Check Dimensions

Ref #	Description
F	Nominal width of conveyor
G	It must be same for left and right rail

## Assemble Conveyor Sections



**Figure 3I** Check Section Direction



**Figure 3J** Connect Sections

Ref #	Description
A	1/2" Hex Bolts
	1/2" Flange Nuts
	<b>NOTE:</b> For 12"/14" tall, hardware is 3/8".
B	Connecting Seam

**NOTE:** Head, tail, bypass inlet and dump hopper all fit in a similar fashion.

## Assemble Conveyor Sections (Continued)

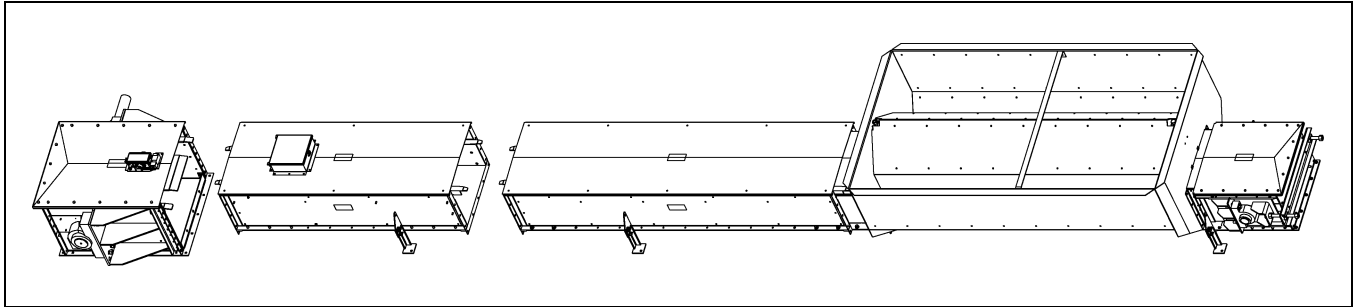


Figure 3K Assembly with Dump Hopper

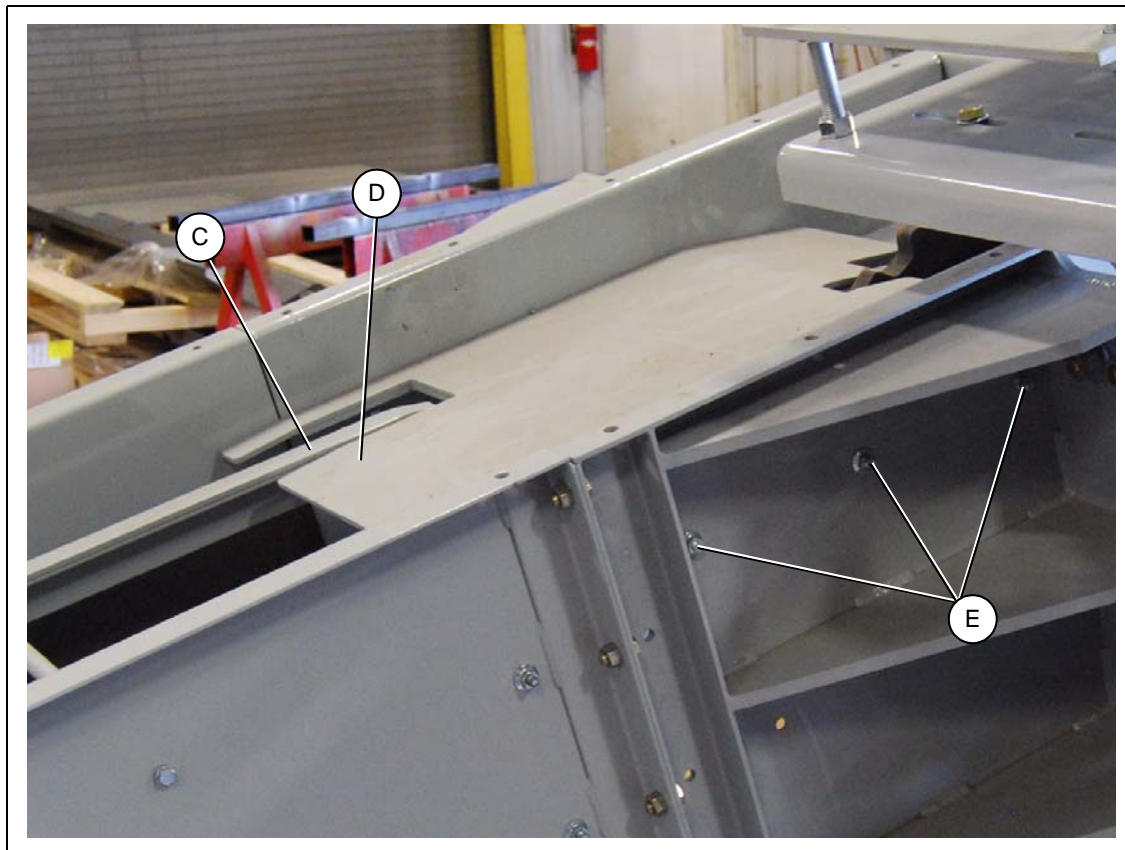


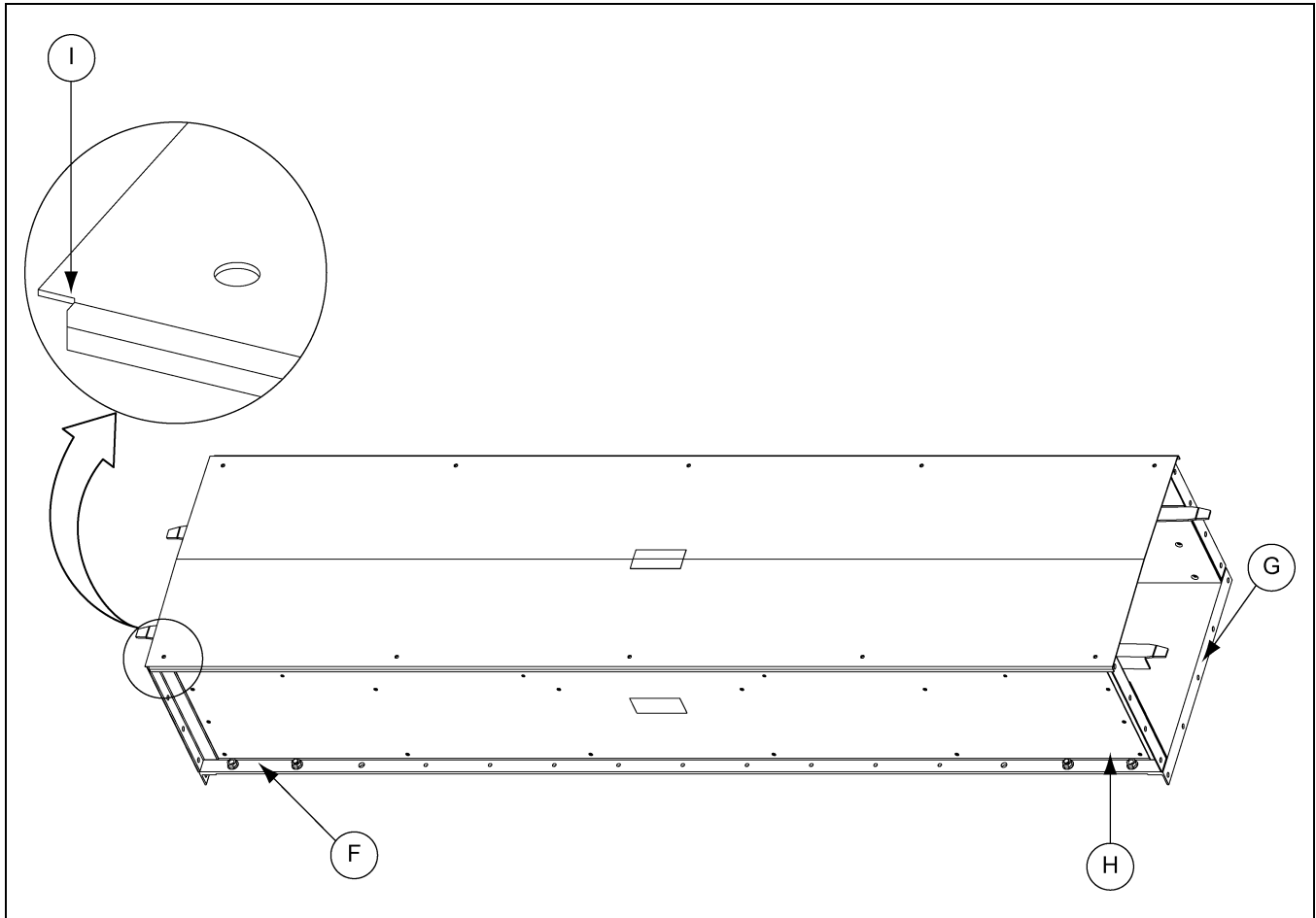
Figure 3L Adjust Stripper Plate

Ref #	Description
C	Rail
D	Stripper Plate
E	Stripper Plate Mounting Bolts

1. Loosen E.
2. Top of C must be flush with top of D.
3. Tighten E.



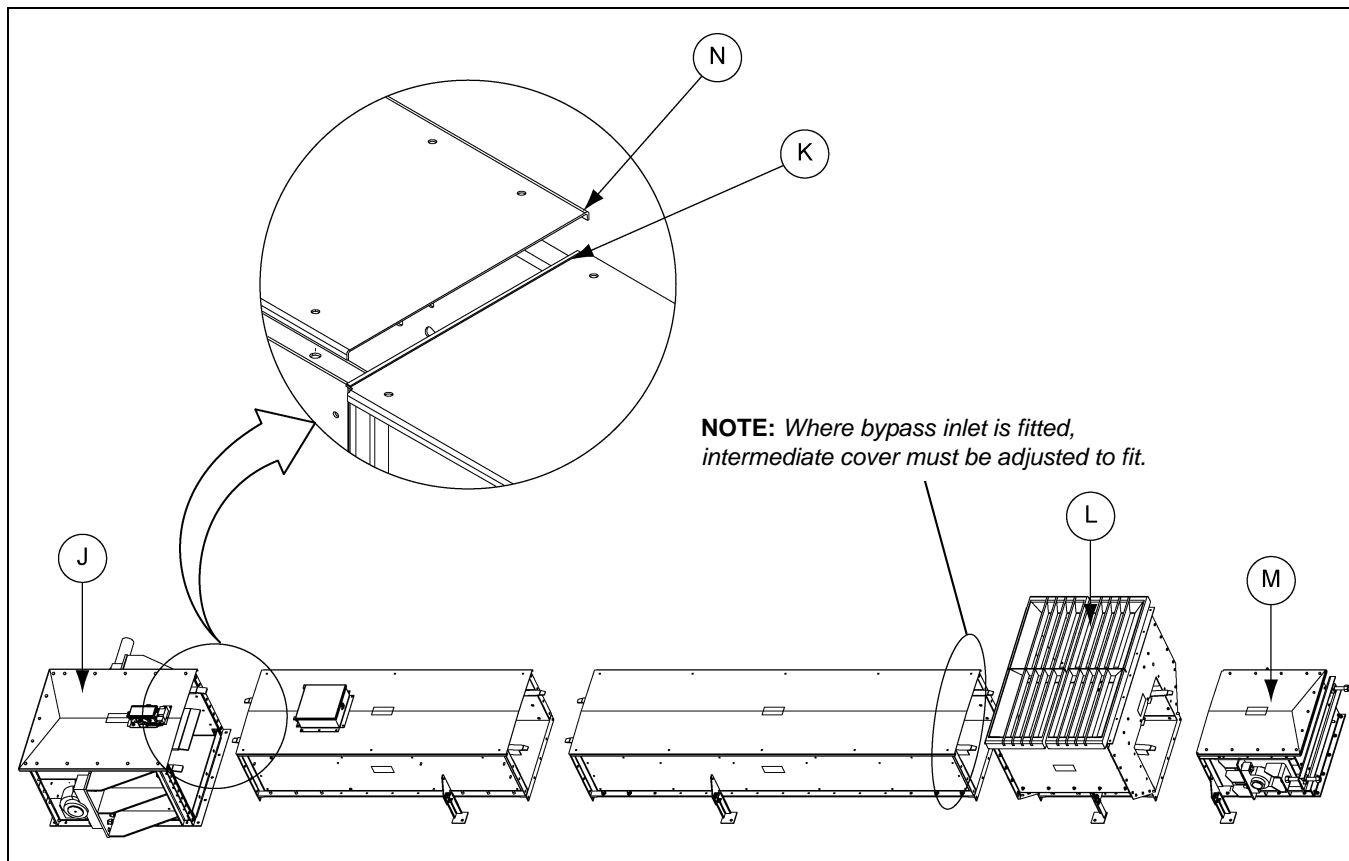
## Assemble Conveyor Sections (Continued)



**Figure 3M** *Fit Cover Assembly*

Ref #	Description
F	Head (Discharge) End
G	Liner (Optional)
H	Tail (Intake) End
I	Notch in Cover

## Assemble Conveyor Sections (Continued)



**Figure 3N** Assembly with By-Pass Inlet

Ref #	Description	Hardware
J	Head	1/2" Hex Bolts
		1/2" Flange Nuts
K	Apply Adhesive Back Foam Strip	
L	Bypass Inlet (Optional)	1/2" Hex Bolts
		1/2" Flange Nuts
M	Tail End	1/2" Hex Bolts
		1/2" Flange Nuts
N	Cover 12.5 mm Overhang Lip	

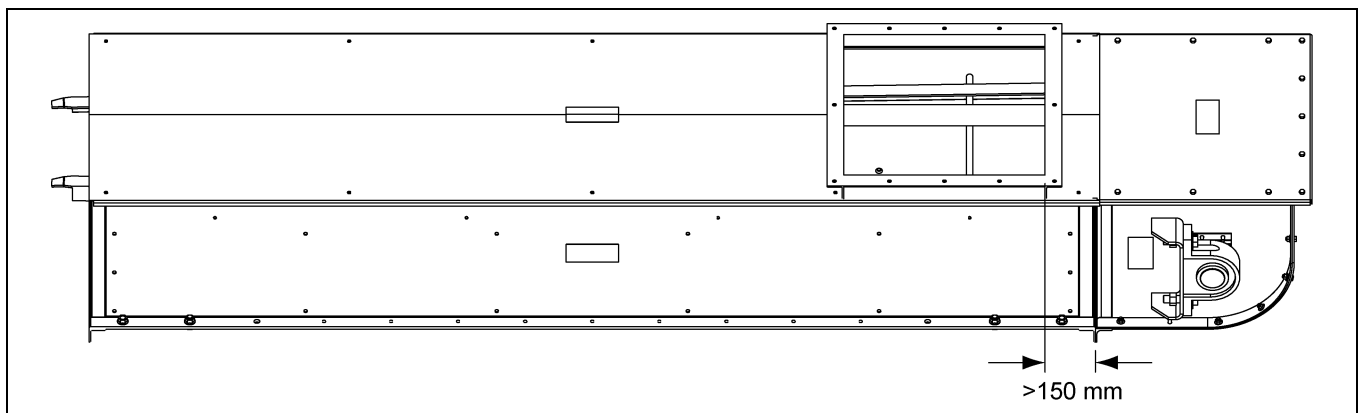
1. Use etched line or mark 12.5 mm from edge of cover.
2. Remove 12.5 mm off edge.
3. Repaint to prevent corrosion.
4. Fit cover to tabs. (See Figure 3N.)
5. Caulk joint.

## Assemble Conveyor Sections (Continued)



**Figure 3O** *Tabs on Bypass Inlet*

Ref #	Description
O	Clips



**Figure 3P** *Standard Inlet*

1. Attach by welding.



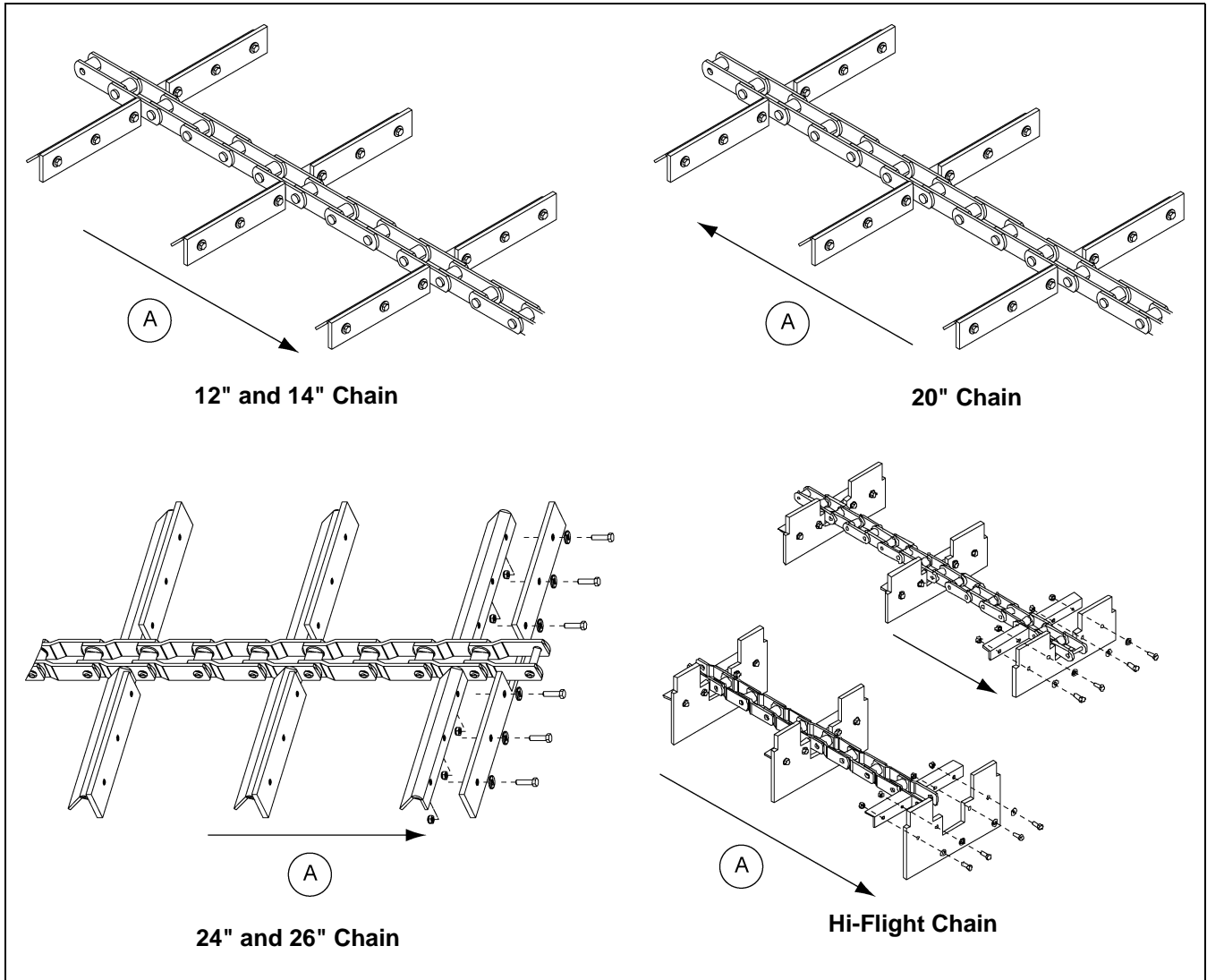
2. Remove paint before welding.



3. Re-paint following weld.

### 3. Installation

## Chain Installation



**Figure 3Q Chain Travel Direction (Bottom Run)**

Ref #	Description
A	Direction of Chain Travel Bottom Run

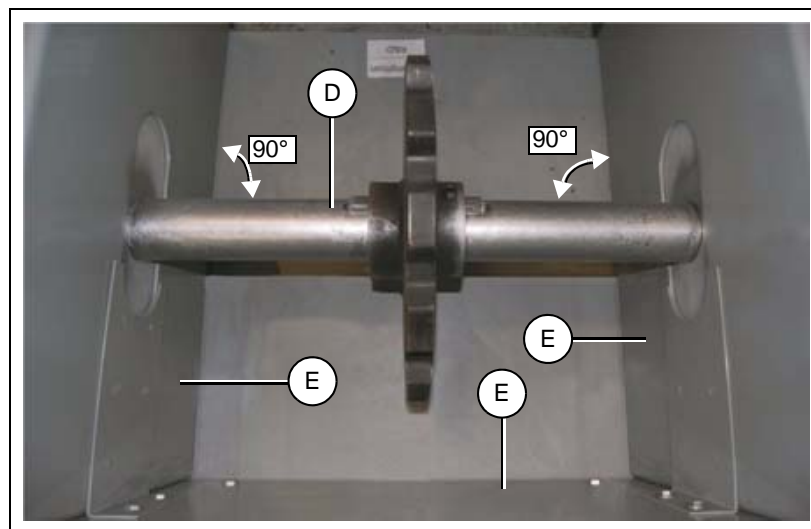
1. Assemble and install in 3 m sections.
2. 1.5 m section used to adjust final length.

## Chain Installation (Continued)



**Figure 3R** *Adjust Chain Tension*

Ref #	Description
B	Take-Up Screws
C	Horizontal "C" Channel



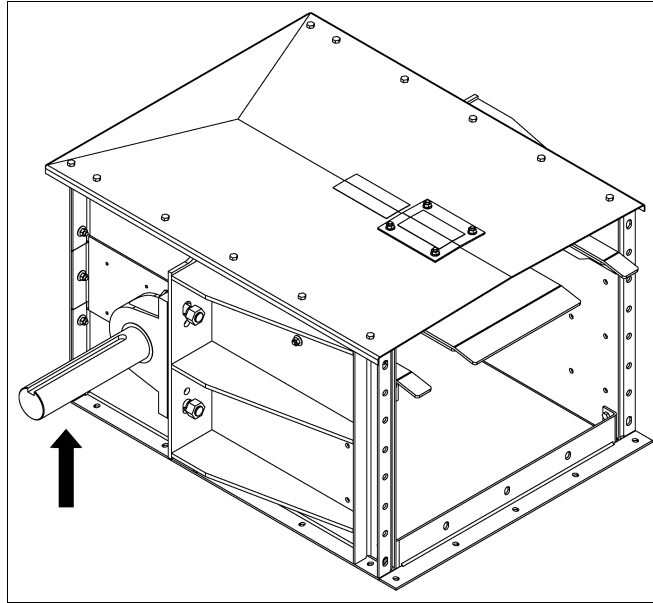
**Figure 3S** *Check Correct Alignment*

Ref #	Description
D	Shaft
E	Box Sides

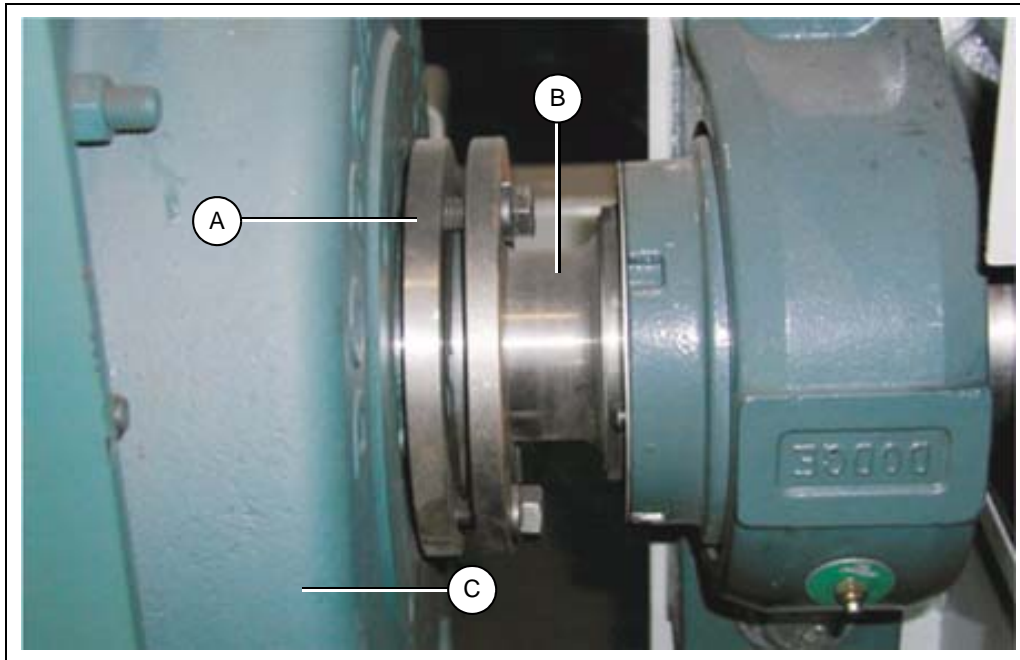
### 3. Installation

## Fit Torque Arm II Reducer

**NOTE:** Reducer is supplied *WITHOUT OIL* and must be filled before use. See Lubrication table on Page 43 and manufacturer's instructions with the reducer.



**Figure 3T** Clean the Conveyor Input Shaft

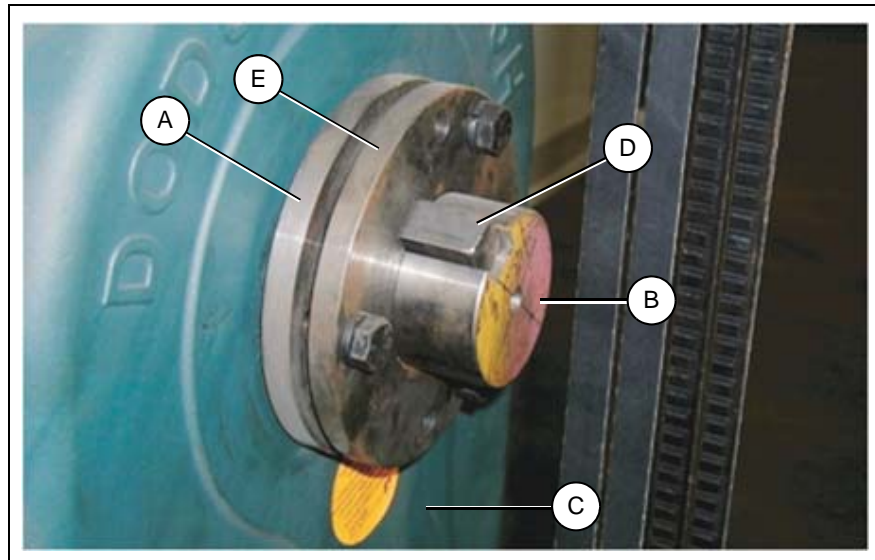


**Figure 3U** Fit Key and Insert Shaft into Reducer Inside Bushing

Ref #	Description
A	Inside Bushing
B	Conveyor Input Shaft
C	Torque Arm II Reducer

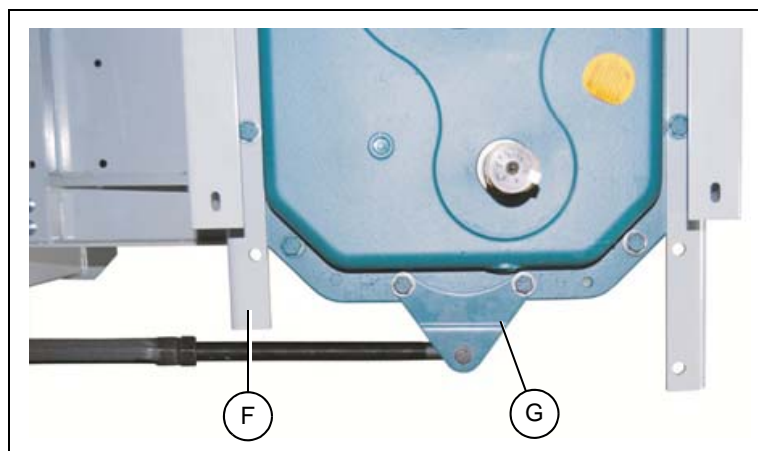
## Fit Torque Arm II Reducer (Continued)

### Torque Arm



**Figure 3V** Fit Outside Bushing and Tighten Both

Ref #	Description
A	Inside Bushing
B	Conveyor Input Shaft
C	Torque Arm II Reducer
D	Key
E	Outside Bushing

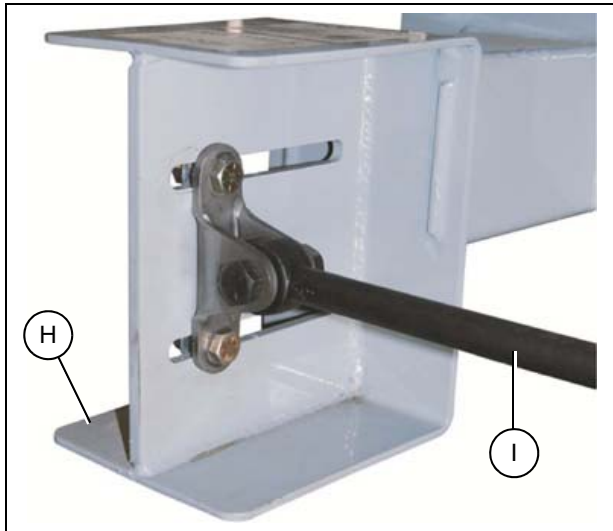


**Figure 3W**

Ref #	Description
F	Motor Mount Upright Bracket
G	Plates on Reducer Drive

### 3. Installation

#### Fit Torque Arm II Reducer (Continued)



Ref #	Description
H	Torque Arm Bracket
I	Torque Arm

Figure 3X Torque Arm

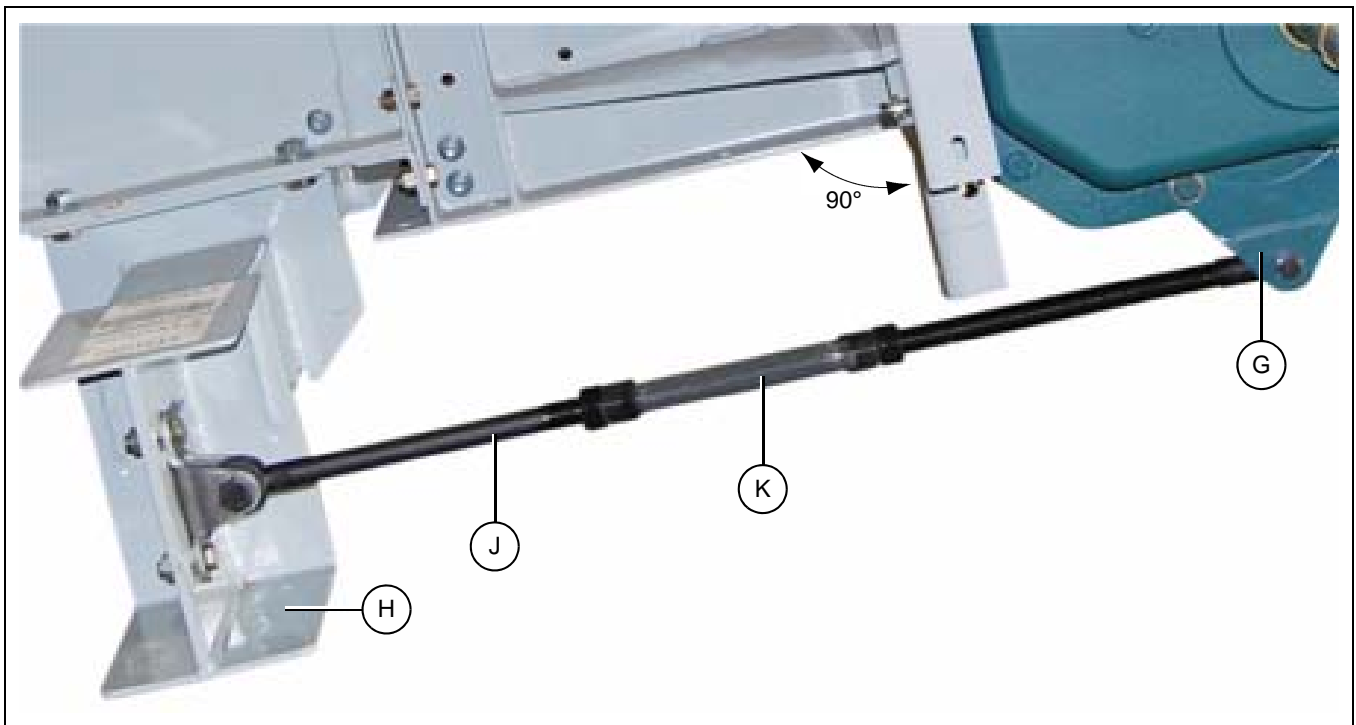


Figure 3Y Torque Arm Assembly

Ref #	Description
G	Plates on Reducer Drive
H	Torque Arm Bracket
J	Torque Arm Assembly
K	Turnbuckle



## Fit Torque Arm II Reducer (Continued)

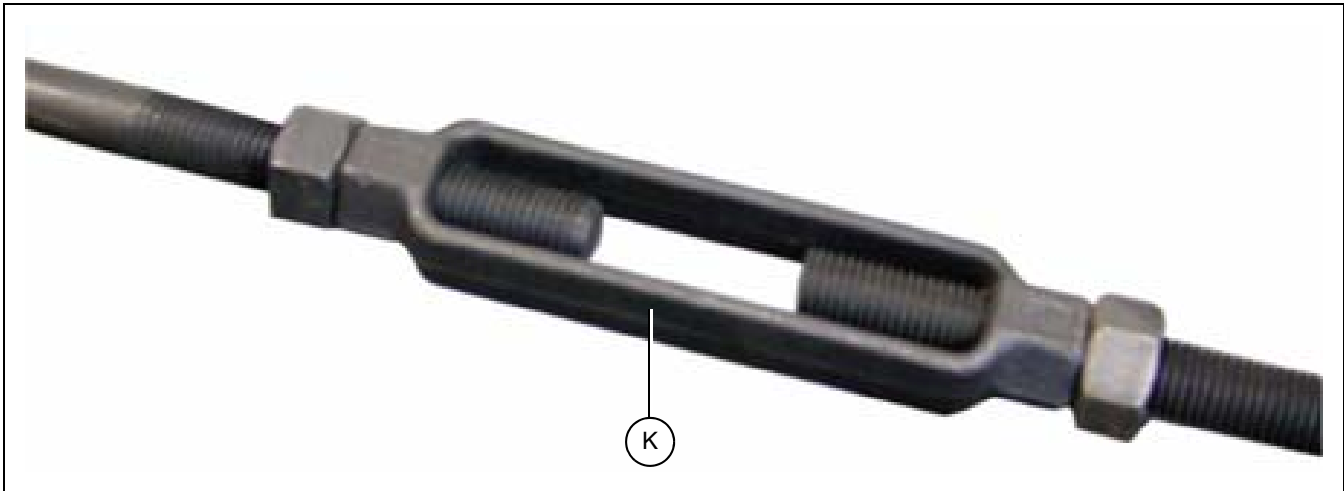


Figure 3Z Turnbuckle

Ref #	Description
K	Turnbuckle

## Reducer Drive Shaft Guard

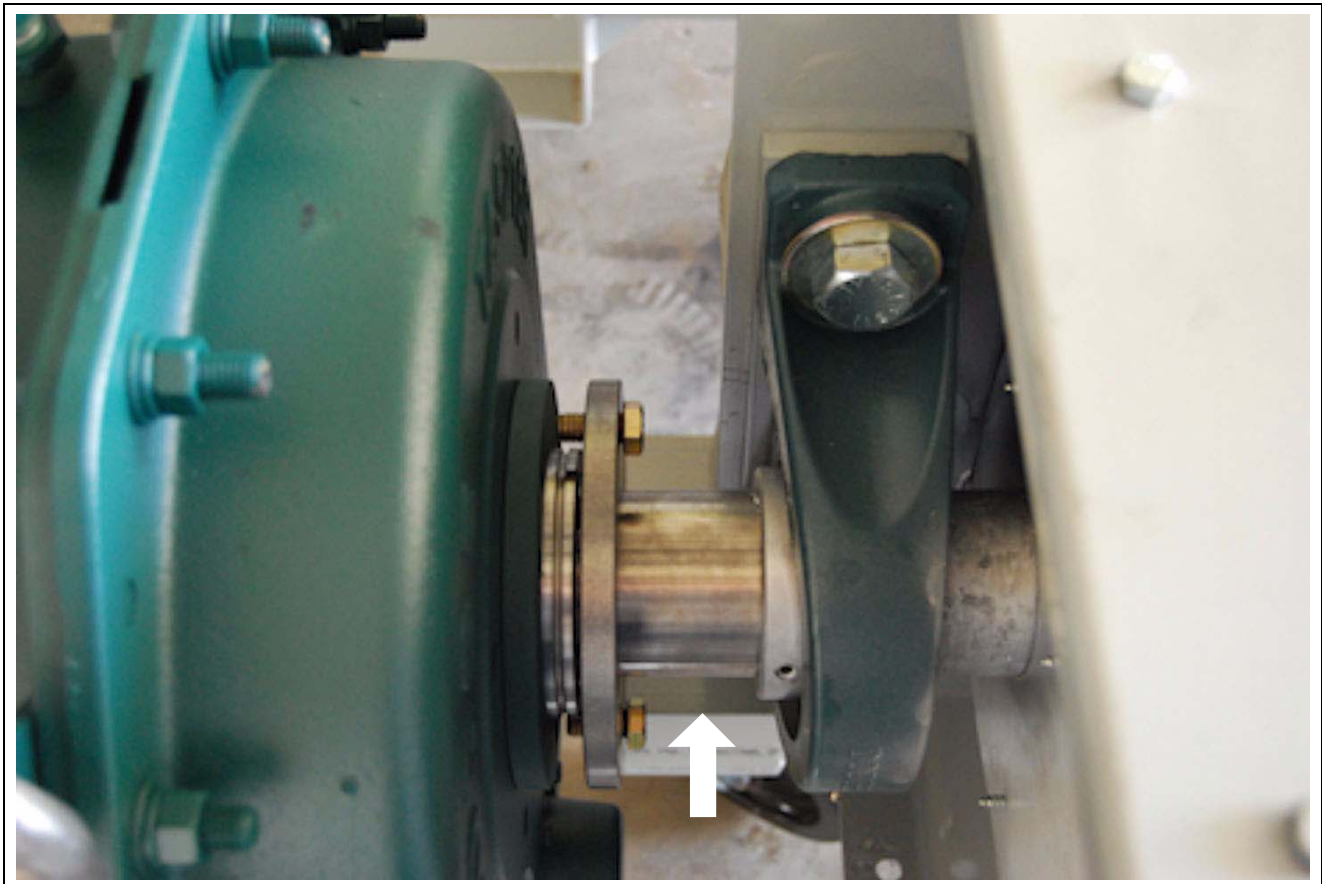
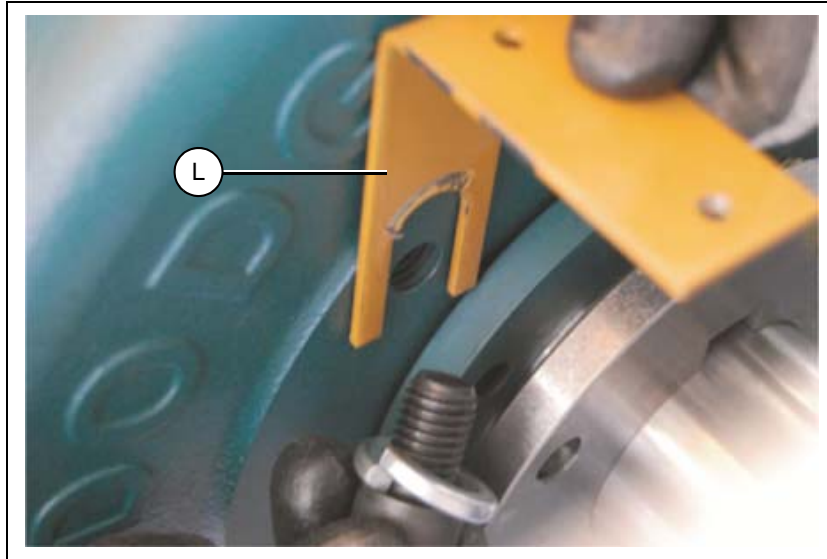


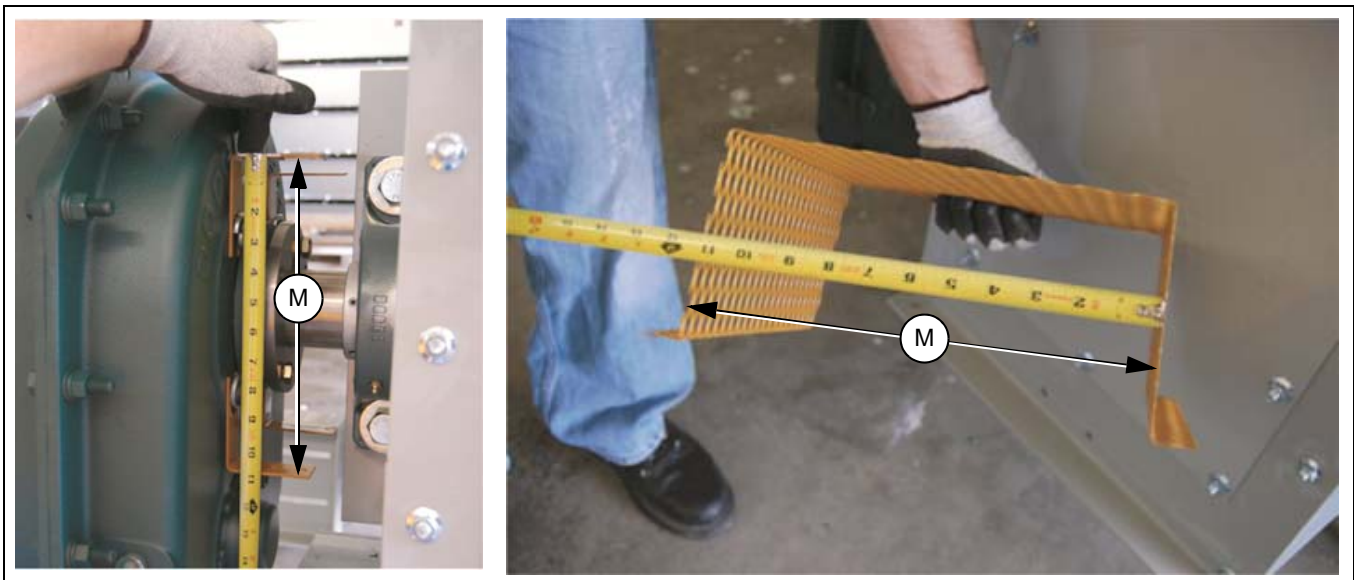
Figure 3AA Area to be Guarded

### Fit Torque Arm II Reducer (Continued)



**Figure 3AB** Fit Shaft Guard Clips (x 4) Finger Tighten Only

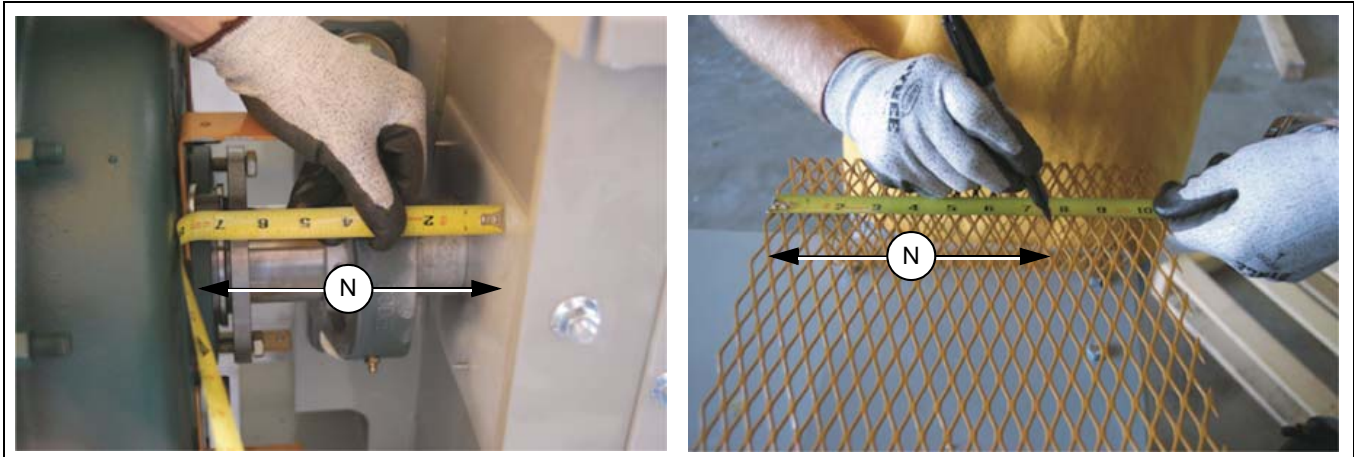
Ref #	Description
L	Reducer Shaft Guard Clip



**Figure 3AC** Check Clip Spacing

Ref #	Description
M	Height of Shaft Guard Shield

## Fit Torque Arm II Reducer (Continued)



**Figure 3AD** Measure to Cut Guard

Ref #	Description
N	Distance from Gear Reducer to Conveyor Side



**Figure 3AE** Cut First Guard to Size



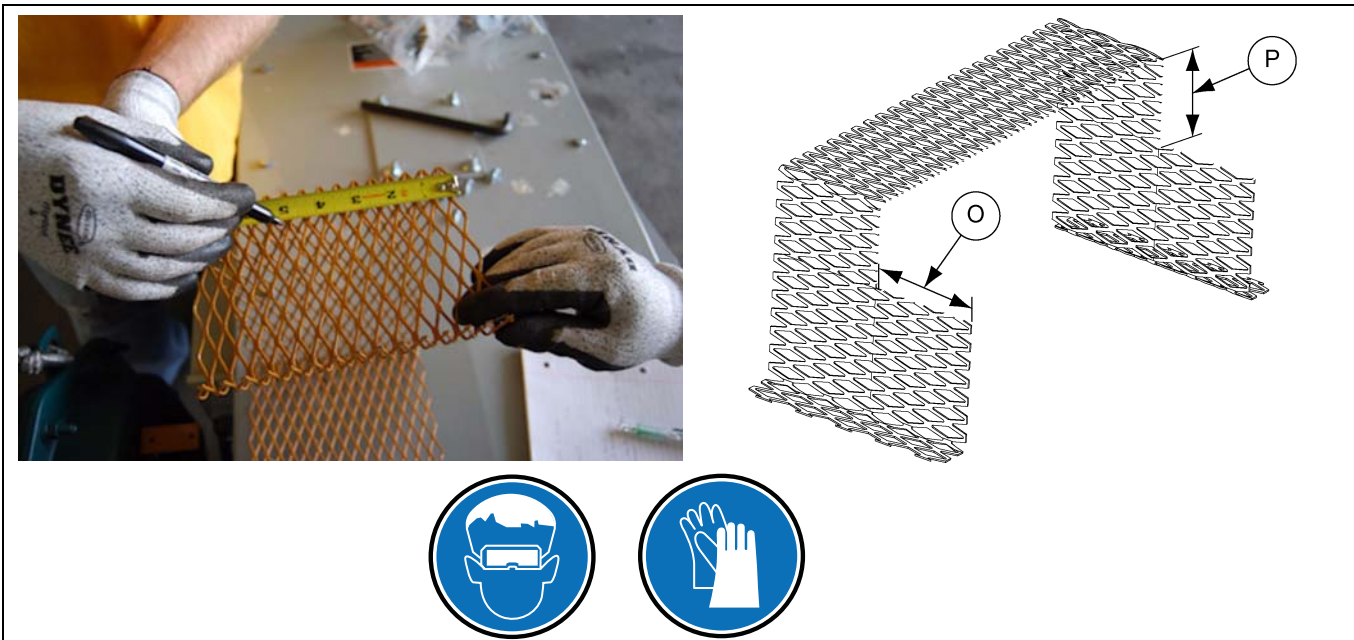
### 3. Installation

## Fit Torque Arm II Reducer (Continued)



**Figure 3AF** Measure Second Guard

Ref #	Description
O	Distance from Conveyor Side to the Outside of the Bearing Mount
P	Distance from First Shield Half to the Outside of the Bearing Mount



**Figure 3AG** Cut Second Guard

Ref #	Description
O	Distance from Conveyor Side to the Outside of the Bearing Mount
P	Distance from First Shield Half to the Outside of the Bearing Mount

## Fit Torque Arm II Reducer (Continued)

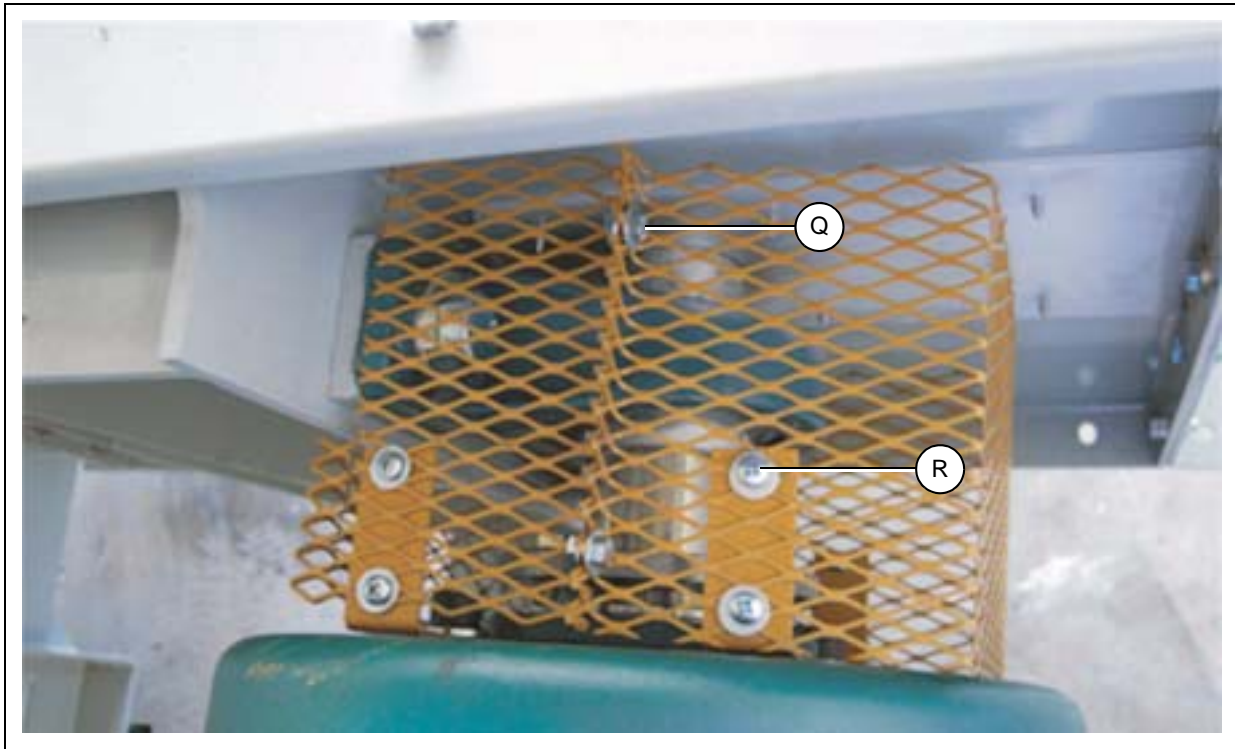


Figure 3AH Fit Guard

Ref #	Description
Q	Bolt on Guard Flange
R	Self-Tapping Screws to Guard Clip

## Fit Motor Mount Brackets

Identify drive type eg 53918T2BV2

5	39	18	T	2	B	V	2
Horsepower*	Output RPM	Input Motor RPM (x 100)	Manufacturer	Motor Mount Configuration	Reducer Bushing Bore Size	Drive Configuration	Drive Class
		"18" = 1750 RPM@60HTZ "15" = 1450 RPM@50HTZ	"T" for Dodge TA II Reducer	"1" = M1 "2" = M2 "3" = M3 "4" = M4	"A" = 1-7/16" "B" = 1-15/16" "C" = 2-3/16" "D" = 2-7/16" "E" = 2-15/16" "F" = 3-7/16" "G" = 3-15/16" "H" = 4-7/16" "I" = 4-15/16"	"V" = V-Belt Drive "H" = HTD Belt Drive	"1" or "2"

### 3. Installation

## Fit Motor Mount Brackets (Continued)

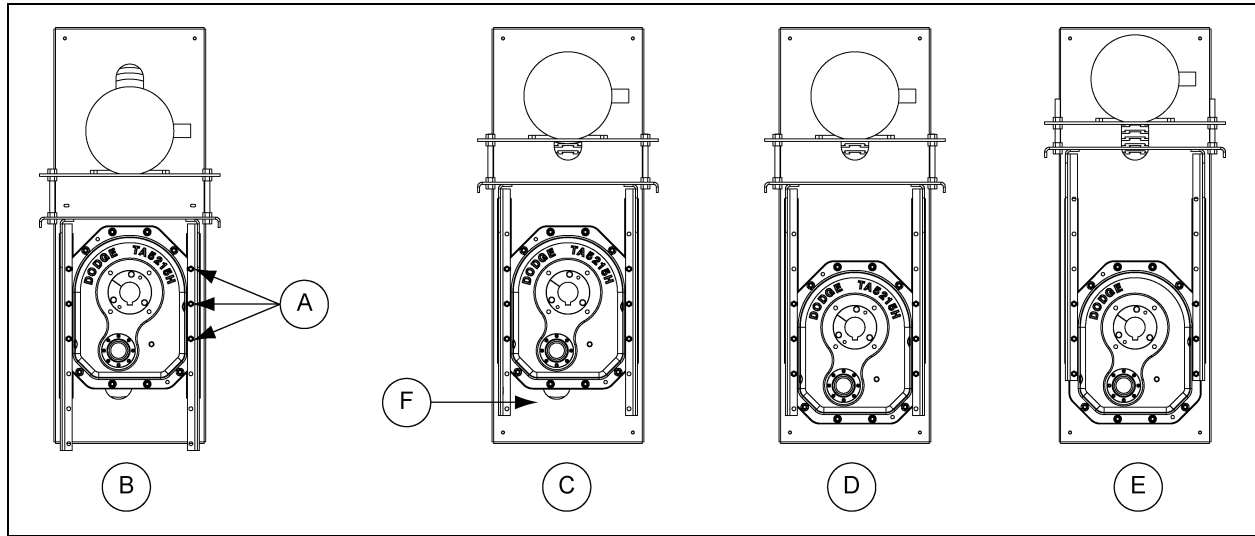


Figure 3AI Motor Mount Bracket Locations

Ref #	Description
A	Three (3) Bolts to Remove for Motor Mount Bracket
B	M1 Position
C	M2 Position

Ref #	Description
D	M3 Position
E	M4 Position
F	Bracket may need to be trimmed

1. Fit plate as close as possible to top of conveyor.
2. Use belts to gauge position.

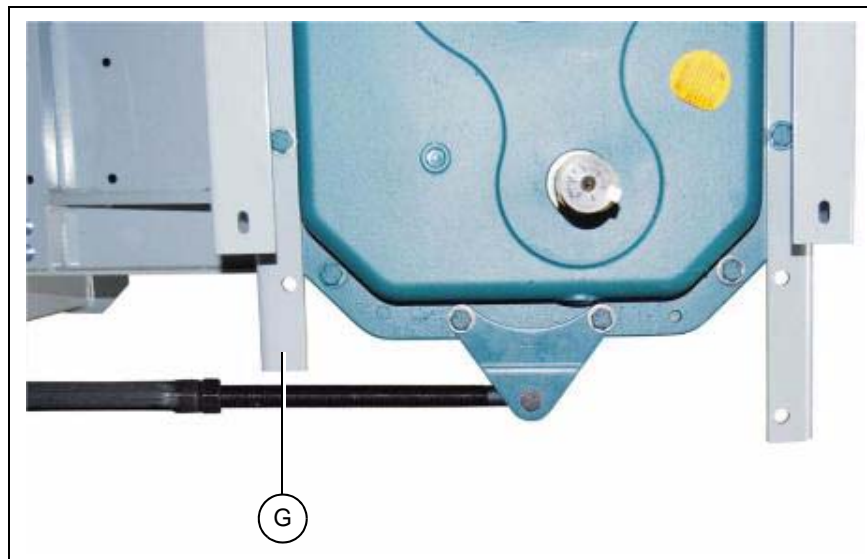


Figure 3AJ Bracket to be Trimmed

Ref #	Description
G	Trimmed Motor Mount Upright Bracket

## Fit Motor Mount Brackets (Continued)

### Motor Mount Adjustment Plate

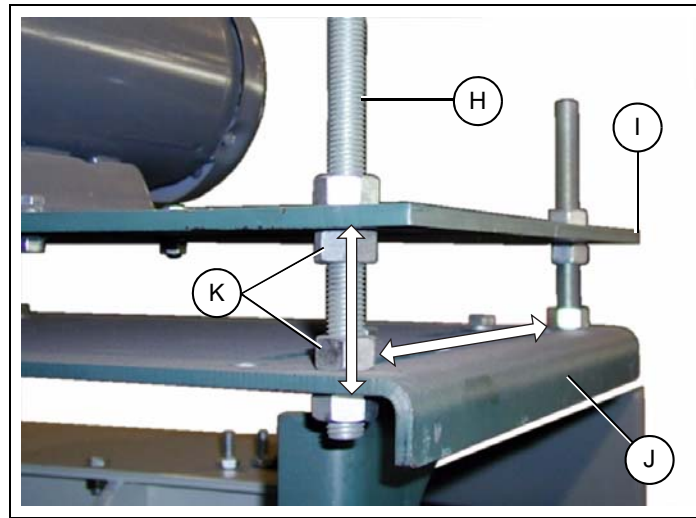


Figure 3AK Fit Motor Mount Adjustment Plate

Ref #	Description	Ref #	Description
H	Jack Screw x 4	J	Base Plate
I	Motor Mount Adjustment Plate	K	Nut x 16

### Fit Belt Guard and Sheaves

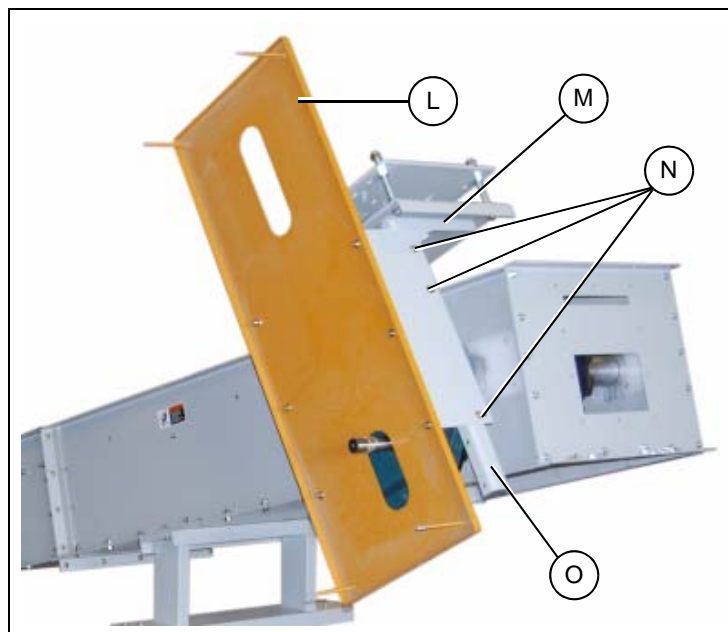


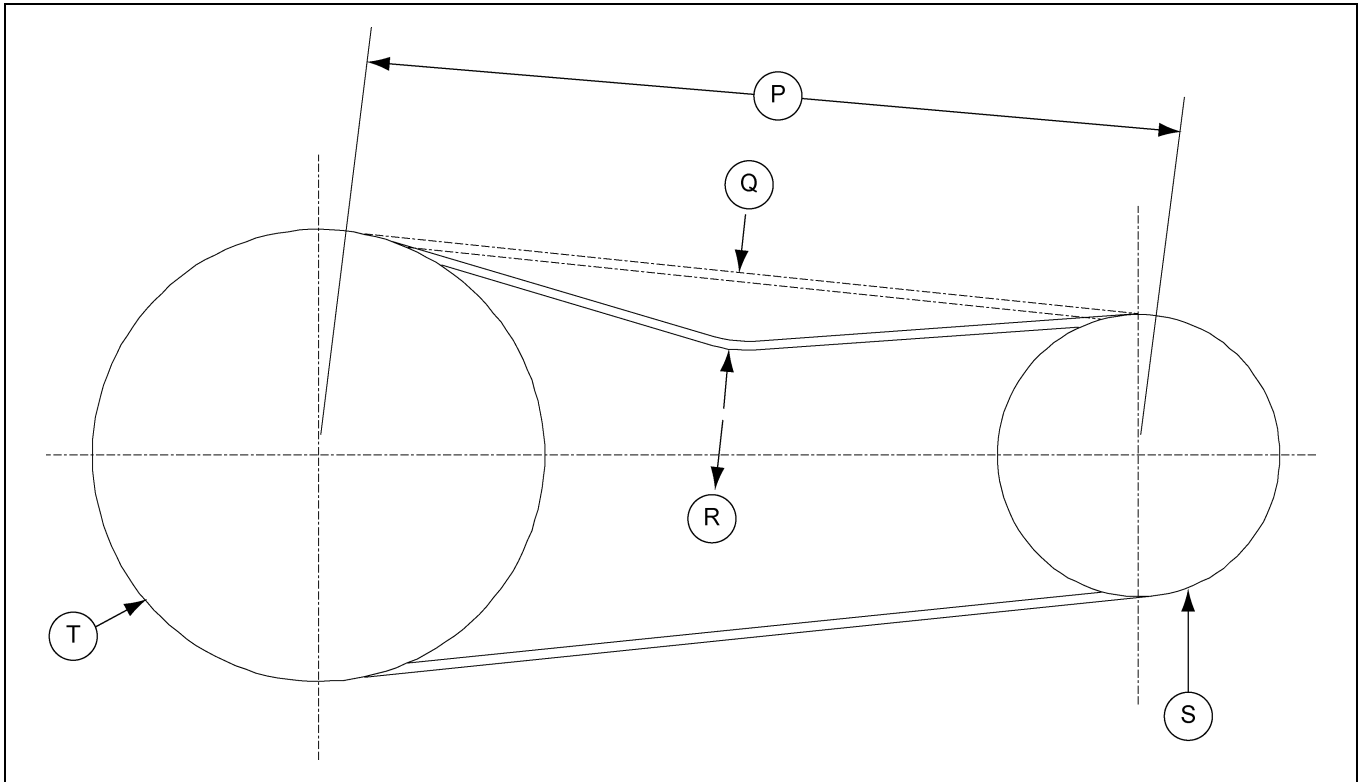
Figure 3AL Belt Guard Back Plate

Ref #	Description	Ref #	Description
L	Drive Guard Rear Panel	N	Slotted Holes
M	Belt Guard Mounting Bracket (Right Hand Shown)	O	Motor Mount Upright Bracket (Right Hand Shown)

### 3. Installation

## Fit Motor Mount Brackets (Continued)

1. Fit sheaves to motor and gear reducer.
2. Ensure they are correctly aligned.
3. Tighten bushings.
4. Fit belts.



**Figure 3AM** *Check Belt Tension*

Ref #	Description
P	Span
Q	Belt Deflection
R	Force
S	Motor
T	Reducer

1. Correct tension:  $Q = P/64$ .
2. Fit drive cover and tighten.



Example electrical control with safety circuit. (See section electrical safety on [Page 11](#).)

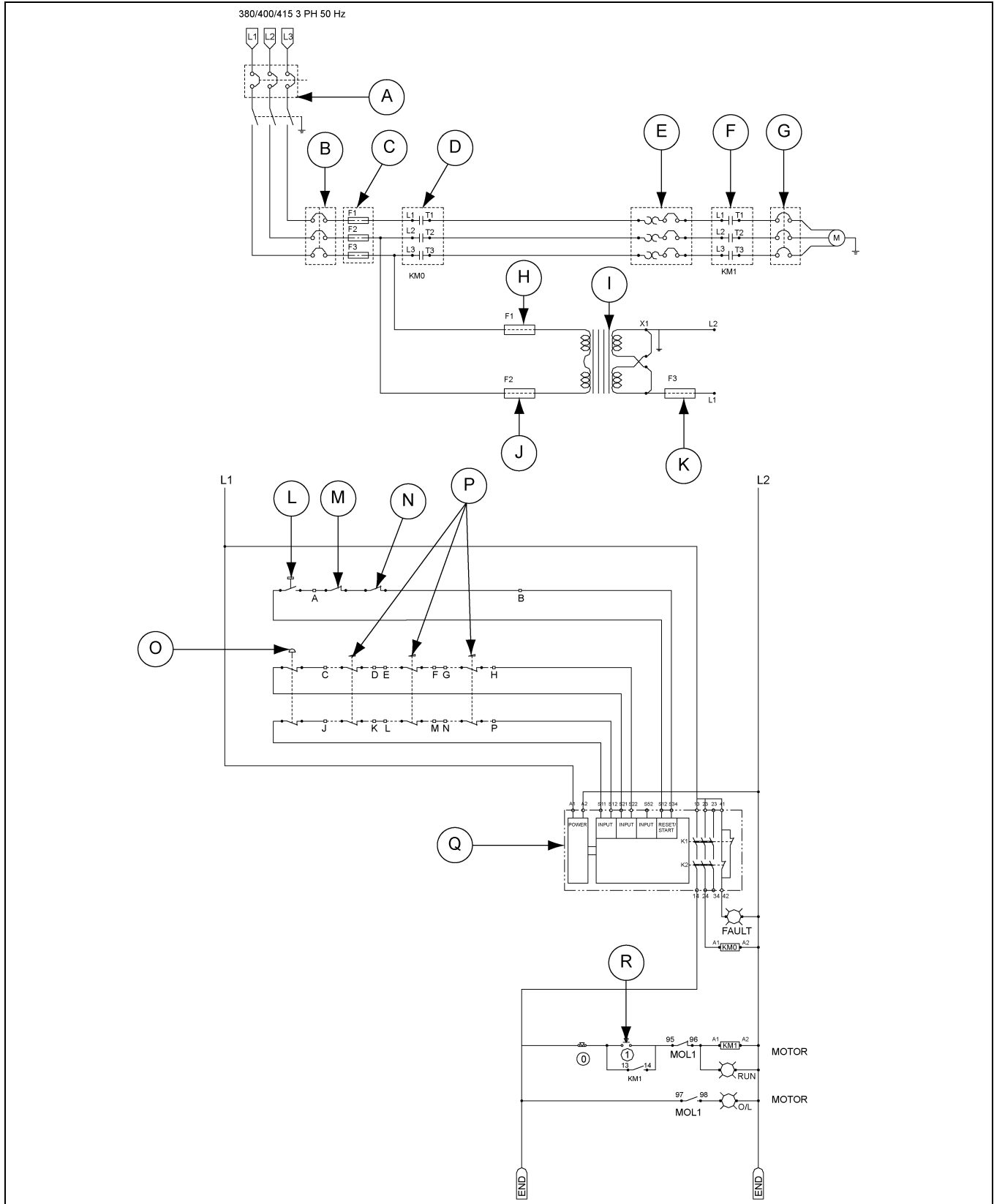


Figure 4A

**NOTE:** The parts pointed out on this page are listed on [Page 42](#).

## 4. Electrical Installation

---

Ref #	Description
A	Power Supply with RCD Protection
B	Control Isolator
C	Short Circuit Protection
D	Safety Contactor 3 Pole
E	Motor Over Current Relay
F	Motor Starter Contactor
G	Motor Service Disconnect
H and I	Control Transformer Primary Protection Fuses
J	Control Isolating Transformer
K	Control Transformer Secondary Protection Fuse
L	Safety Circuit Re-Set
M and N	Contactor NC Auxiliary Contacts
O	Emergency Stop(s) DPST (SIL3)
P	Safety Interlock Switches DPST (SIL3)
Q	Safety Relay Module (PLE)
R	Conveyor Start/Stop

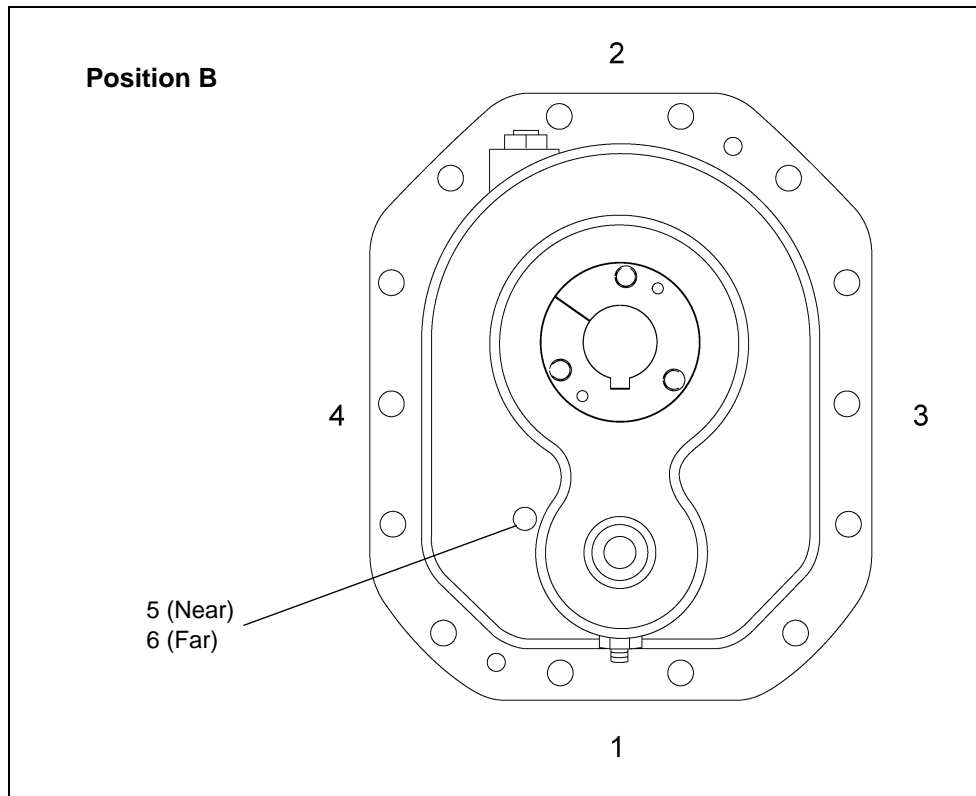


Figure 5A Torque Arm II Reducer Position B

Ref #	Description
1	Drain
2	Vent
3	Level
4, 5 and 6	Plug

ISO Grade Oil for Ambient 10°C - 25°C												
RPM	TA0107L	TA1107H	TA2115H	TA3203H	TA4207H	TA5215H	TA6307H	TA7315H	TA8407H	TA9415H	TA10507H	TA12608H
11-40	320	320	320	320	320	320	320	320	320	320	220	220
1-10	320	320	320	320	320	320	320	320	320	320	320	320
ISO Grade Oil for ambient 10°C to 15°C												
RPM	TA0107L	TA1107H	TA2115H	TA3203H	TA4207H	TA5215H	TA6307H	TA7315H	TA8407H	TA9415H	TA10507H	TA12608H
11-40	220	220	220	220	220	220	220	220	220	220	150	150
1-10	220	220	220	220	220	220	220	220	220	220	220	220
Approx. qty (l)*	0.6	0.8	1.3	1.8	2.9	5.5	6.5	13.2	13.2	18.8	30.9	46.5

\* Oil must reach level plug.

## 5. Reducer Lubrication

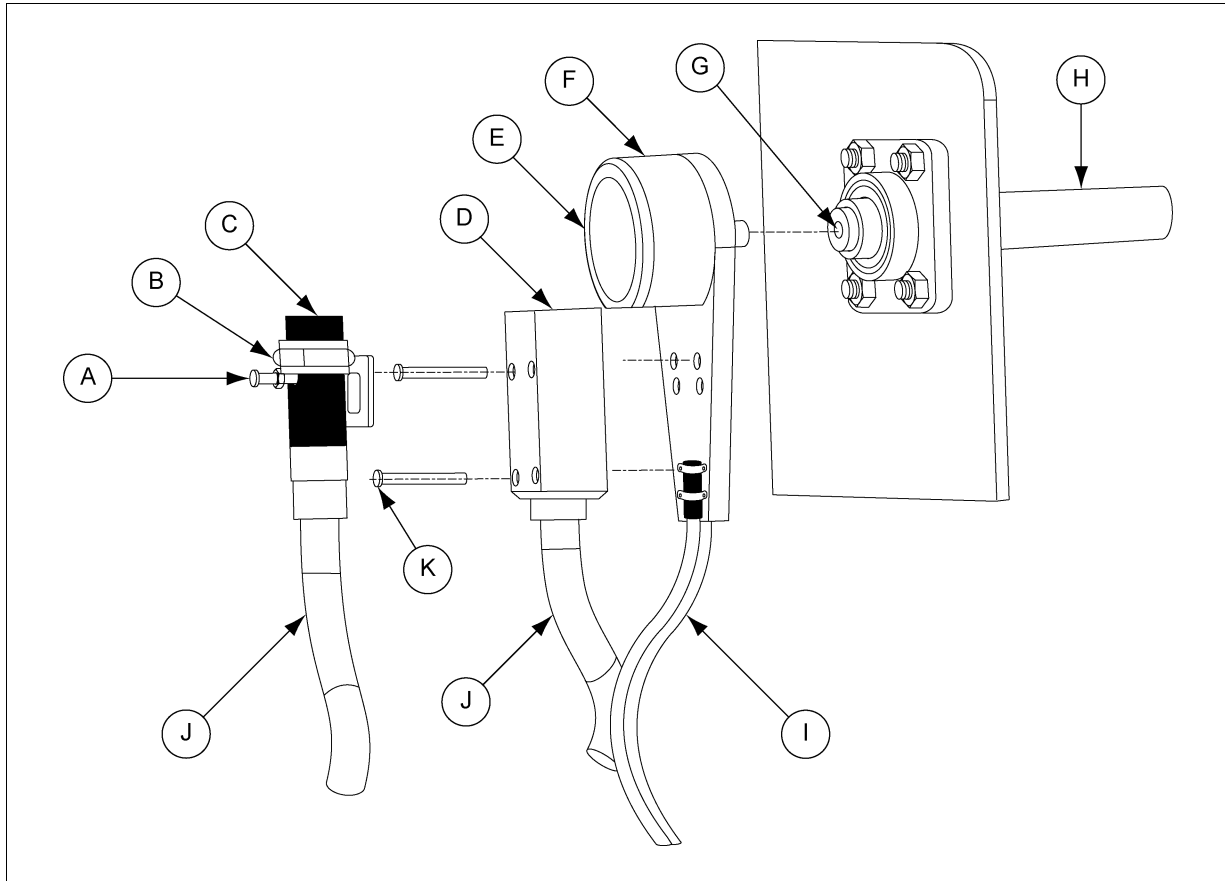
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### Start-Up and Break-In

1. Fill gear reducer with oil. NOTE IT IS SUPPLIED EMPTY. See lubrication table on [Page 43](#) and manufacturer's instructions.
2. Check proper motor shaft rotation before installing drive belts.
3. Rotate the chain, now on the sprockets, at least one complete revolution. Check to see that the chain and its wear pads are not catching on flanges or rubbing on the trough sides due to the sprockets not being centered within the box.
4. Ensure a "break-in" period whereby the chain is allowed to run and seat itself.
5. After running it for an adequate period of time, stop the machine, disconnect and lock out the power source.
6. Re-tighten as necessary and remove any excess chain portions.
7. Repeat this process as necessary.

1. Check all bearings and moving parts daily during use.
2. Lubricate bearings at regular intervals to bearing manufacturer's recommendations. If one bearing is re-lubricated, all other bearings should also be lubricated. Do not over lubricate as this will destroy bearing seals.
3. Check gear reducer lubrication. See lubrication table [Page 43](#) and manufacturer's instructions.
4. Inspect the V-belts periodically for proper tension and wear.
5. When not in regular use:
  - Empty the conveyor.
  - Thoroughly clean the unit.
  - Loosen the V-belt tension.
  - Lubricate shafts and drive chain.
  - Loosen the drag chain.

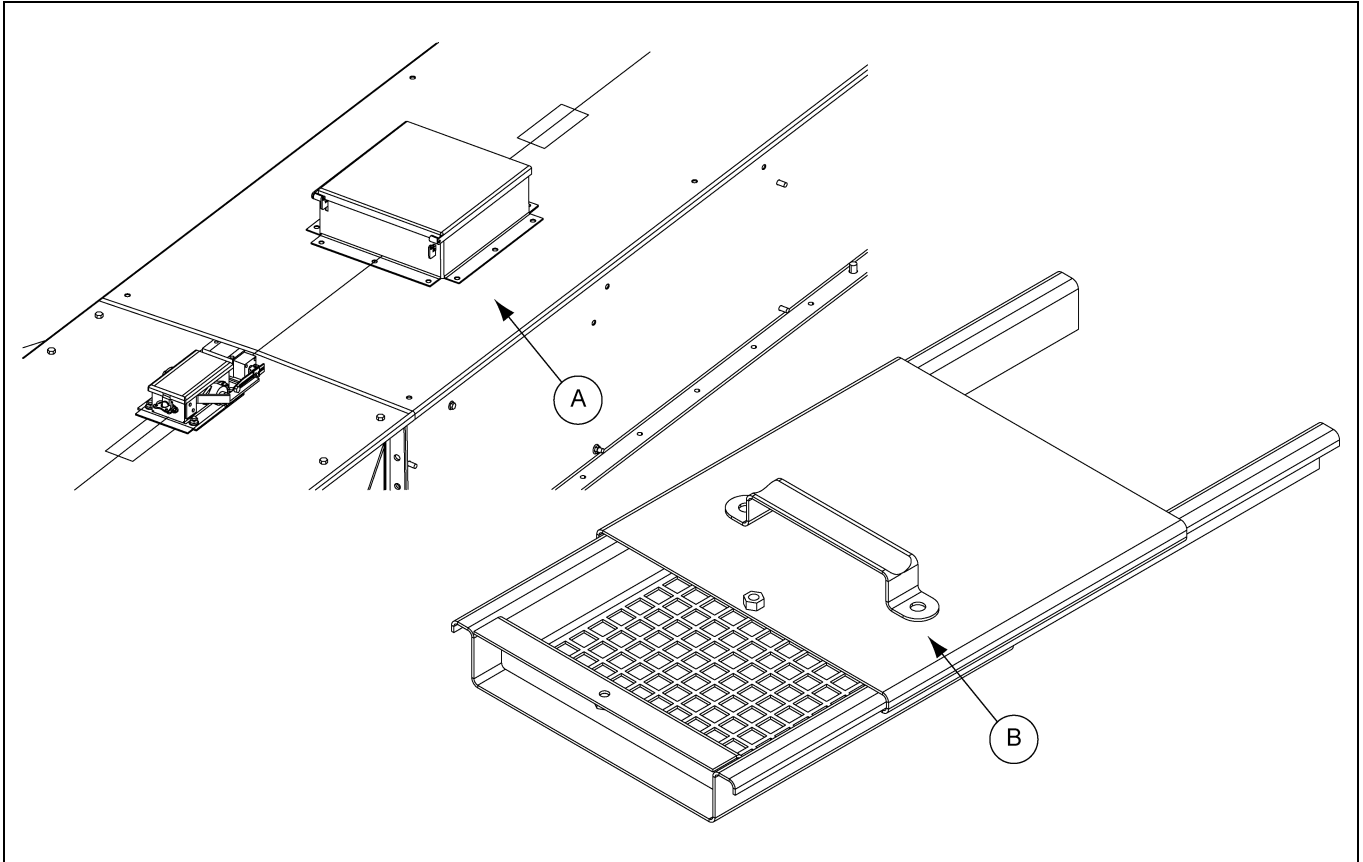
**'Whirlygig' Motion Sensor**



**Figure 7A 'Whirlygig' Motion Sensor**

Ref #	Description
A	10 mm Screws Four (4) (Supplied)
B	18/30 mm Bracket (Supplied)
C	Cylindrical Sensor
D	M800 Sensor
E	Whirligig
F	Cover
G	Tap Shaft for 1/2" UNC Centered
H	Machine Shaft
I	Flexible Strap
J	Flexible Conduit
K	50 mm Screws Four (4) (Supplied)

## Inspection Ports



**Figure 7B** 8" (203 mm) and 12" (305 mm) Inspection Ports

Ref #	Description
A	12 x 12 Inch Inspection Port
B	8 x 8 Inch Inspection Port

1. Cut opening in conveyor cover (203 mm/305 mm) as required.



- Weld port into place attach by welding.



- Remove paint before welding.



- Re-paint following weld.

2. Ports must include safety screen for these conveyors.

## Overflow Relief Door

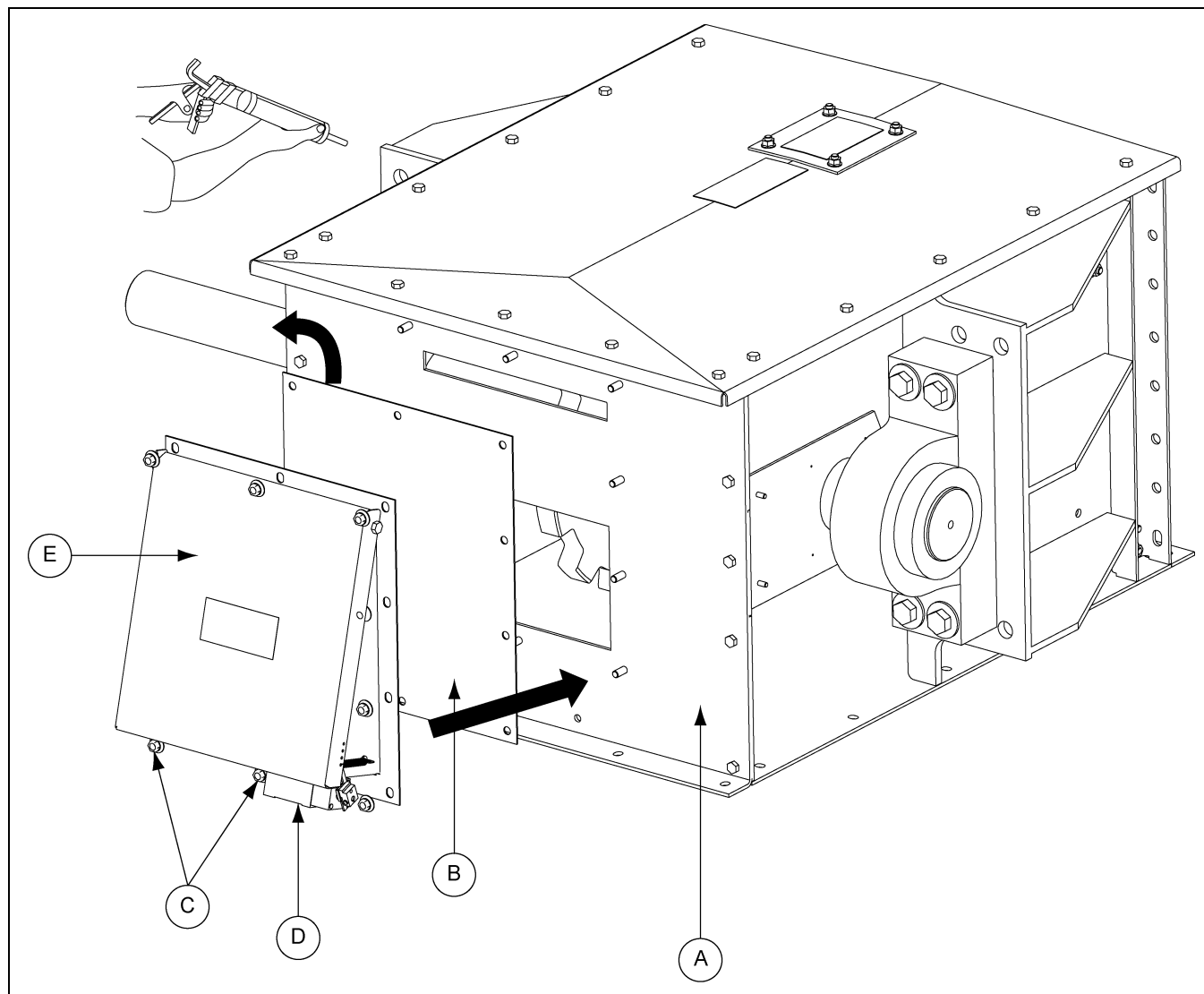
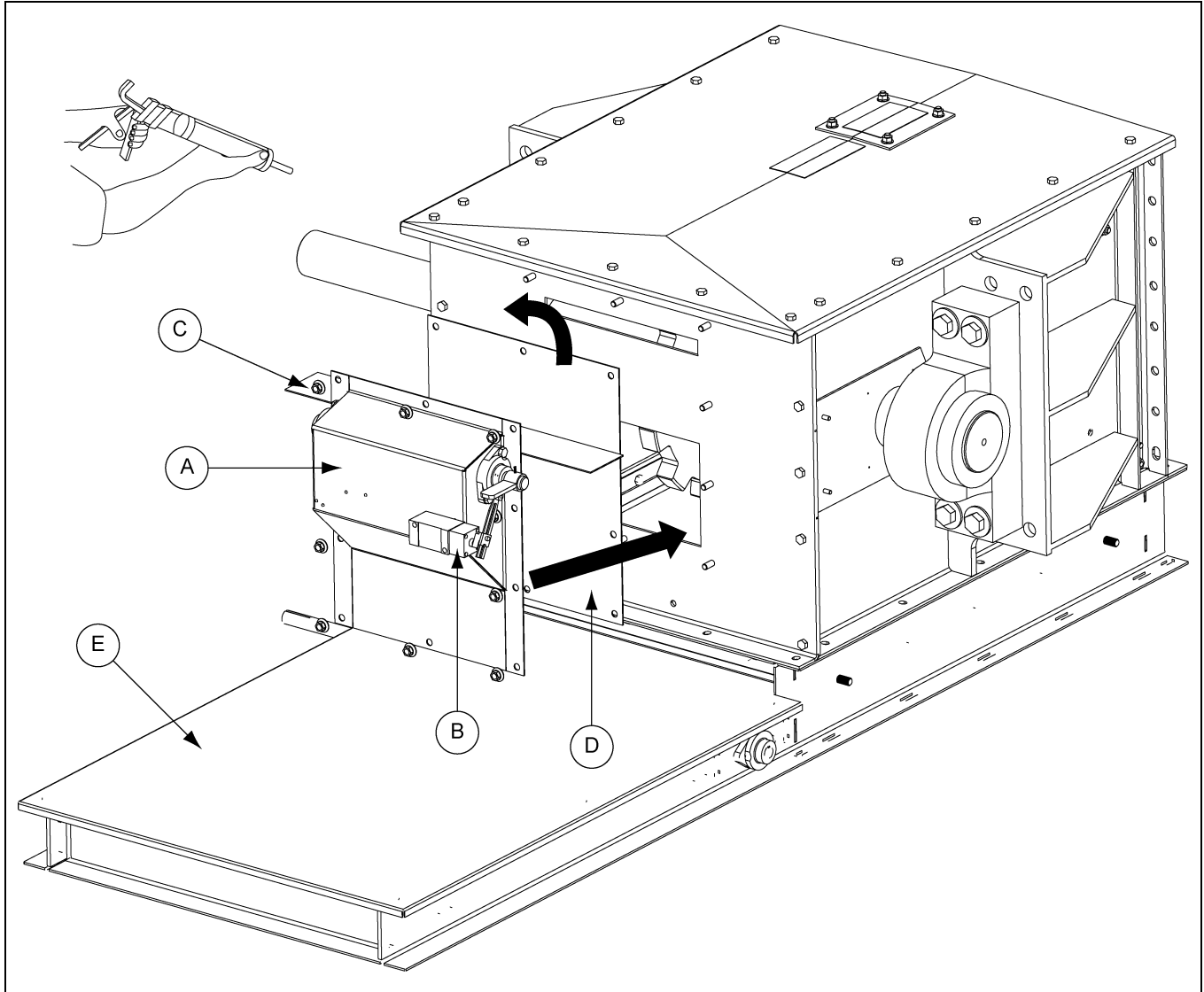


Figure 7C Overflow Relief Door

Ref #	Description
A	End Channel (as Shipped)
B	Cover Plate (Remove)
C	Knock-Out Plugs
D	Limit Switch
E	Overflow Relief Door Assembly



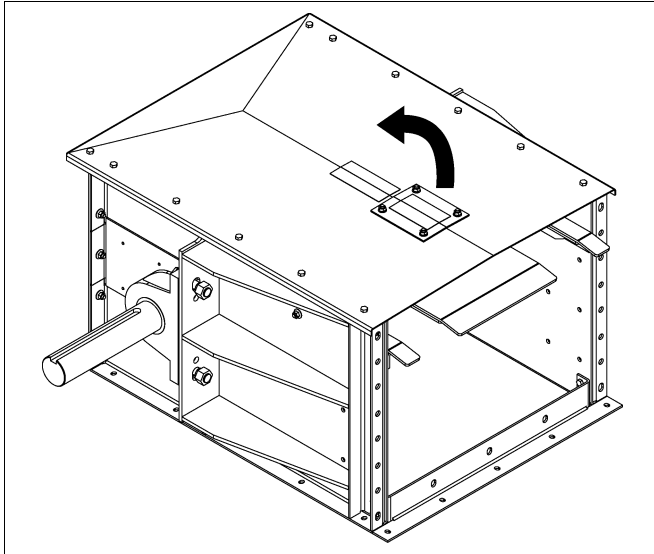
## Plug Relief Door



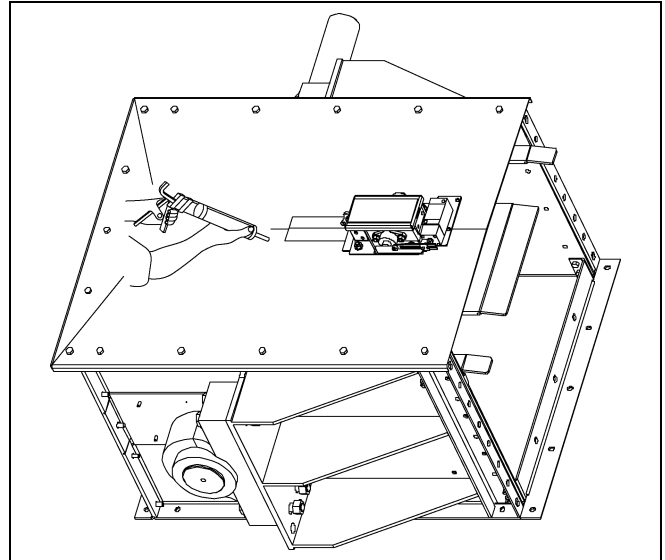
**Figure 7D** Plug Relief Door

Ref #	Description
A	Plug Relief Door
B	Limit Switch
C	Baffle Plates
D	Cover Plate
E	Head Gate

## Slack Chain Detector Option



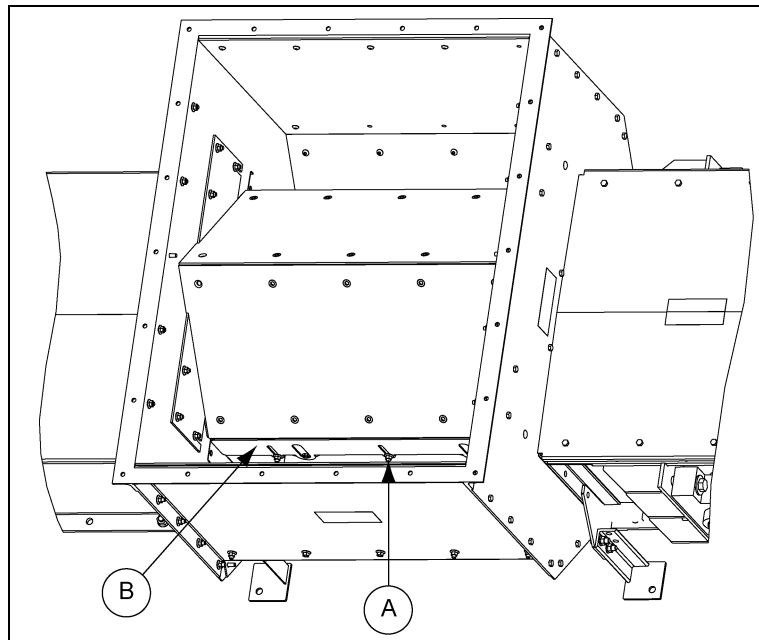
**Figure 7E** Remove Cover Plate - Retain Hardware



**Figure 7F** Fit Pre-Assembled Switch

1. Adjust by sliding the UHMW pad that hangs inside the conveyor up or down, this is the point the chain will make contact to operate the pivot plate.
2. Ensure the clearance between the chain flight wiper pad and the UHMW pad is 12-16 mm.

## Bypass Inlet with Baffles

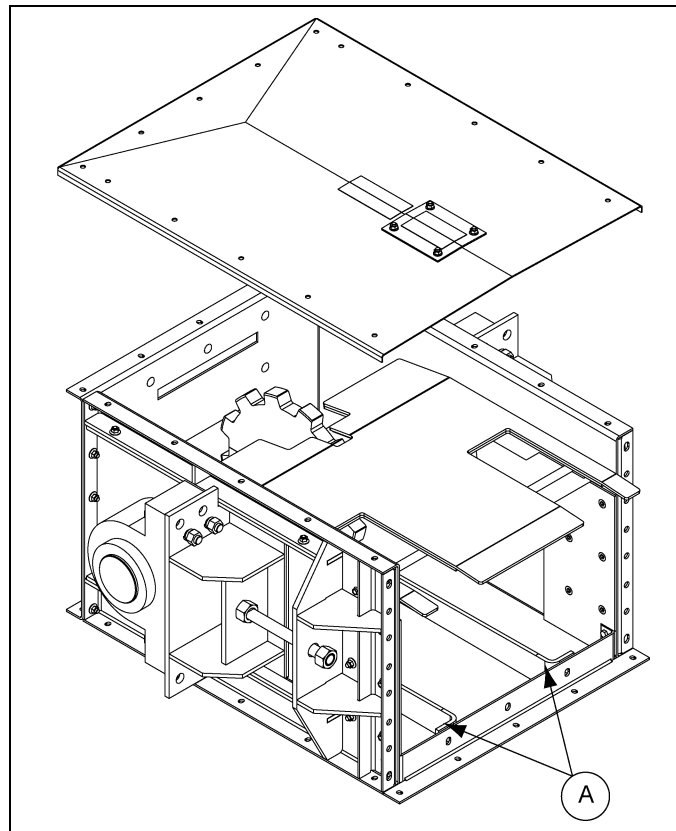


**Figure 7G** Bypass Inlet with Baffles

Ref #	Description
A	Flange Nuts (Adjustment for Baffle)
B	Baffle (Adjust to Control Flow)

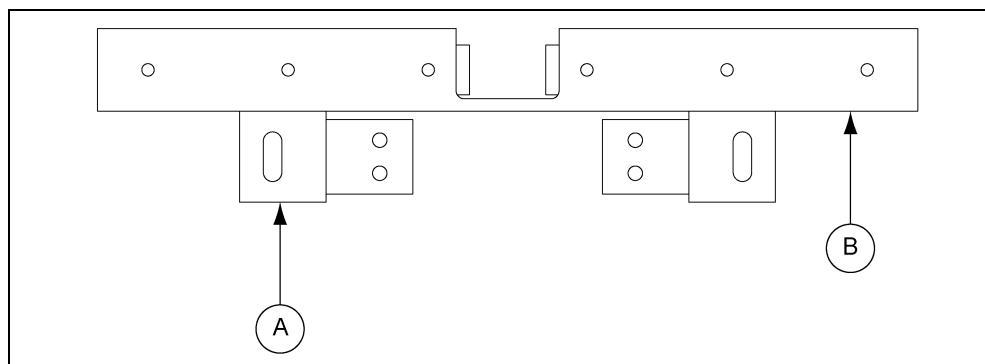
## Reversing Head with Carry-Over Bars

**NOTE:** Must be fitted in both discharge assemblies on reversing conveyors.



**Figure 7H** Head with Carry-Over Bars

Ref #	Description
A	Carry-Over Bars



**Figure 7I** Space Bars to Pick-Up UHMW Flights on Chain

Ref #	Description
A	Carry-Over Bars
B	UHMW Flight on Top of Bars

## 8. Troubleshooting

Problem	Cause	Solution
<b>Low capacity</b>	<ol style="list-style-type: none"> <li>1. Improper chain speed.</li> <li>2. Loose chain.</li> <li>3. Improper feed.</li> <li>4. Plugging.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the shaft RPM.</li> <li>2. Check the sag between idlers.</li> <li>3. Check the grain level at inlet.</li> <li>4. Check the discharges.</li> </ol>
<b>Noisy operation</b>	<ol style="list-style-type: none"> <li>1. Loose UHMW paddles.</li> <li>2. Bottom not aligned.</li> <li>3. Worn drive components.</li> <li>4. Worn sprocket.</li> <li>5. Return rail alignment.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check all bolts on chain.</li> <li>2. Check intermediate trough section joints and make flush.</li> <li>3. Check oil level and shaft seals; belt misalignment; loose belts.</li> <li>4. Replace.</li> <li>5. Check rail alignment.</li> </ol>
<b>Uneven UHMW paddle wear</b>	<ol style="list-style-type: none"> <li>1. Conveyor misalignment.</li> <li>2. Sprocket slipped.</li> <li>3. Return rail alignment.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the conveyor alignment.</li> <li>2. Check set screws on sprockets.</li> <li>3. Check rail alignment.</li> </ol>
<b>Excessive carry-over</b>	<ol style="list-style-type: none"> <li>1. Gates not fully opening.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the gate operation.</li> </ol>
<b>Uneven sprocket wear</b>	<ol style="list-style-type: none"> <li>1. Worn chain.</li> <li>2. Improper alignment.</li> <li>3. Material carry-over into discharge sprocket.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace chain. (<a href="#">See Page 28.</a>)</li> <li>2. Check the sprocket alignment.</li> <li>3. Check for improper location of inlet.</li> </ol>

## GSI Group, LLC Limited Warranty

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

### Warranty Extensions:

The Limited Warranty period is extended for the following products:

	Product	Warranty Period	
<b>AP Fans and Flooring</b>	Performer Series Direct Drive Fan Motor	3 Years	* Warranty prorated from list price: 0 to 3 years - no cost to end-user 3 to 5 years - end-user pays 25% 5 to 7 years - end-user pays 50% 7 to 10 years - end-user pays 75%
	All Fiberglass Housings	Lifetime	
	All Fiberglass Propellers	Lifetime	
<b>Cumberland Feeding/Watering Systems</b>	Feeder System Pan Assemblies	5 Years **	** Warranty prorated from list price: 0 to 3 years - no cost to end-user 3 to 5 years - end-user pays 50%
	Feed Tubes (1-3/4" and 2.00")	10 Years *	
	Centerless Augers	10 Years *	
	Watering Nipples	10 Years *	
<b>Grain Systems</b>	Grain Bin Structural Design	5 Years	
<b>Grain Systems Farm Fans Zimmerman</b>	Portable and Tower Dryers	2 Years	† Motors, burner components and moving parts not included. Portable dryer screens included. Tower dryer screens not included.
	Portable and Tower Dryer Frames and Internal Infrastructure †	5 Years	

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

### Conditions and Limitations:

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

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

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

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

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

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

**G S I G R O U P**



**GSI Group**  
**1004 E. Illinois St.**  
**Assumption, IL 62510-0020**  
**Phone: 1-217-226-4421**  
**Fax: 1-217-226-4420**  
**[www.gsiag.com](http://www.gsiag.com)**



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