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Lambton

Owner's Manual

GLID & GLIR SERIES INCLINE DRAGS
STANDARD AND ROUND BOTTOM
INCLINE DRAG CONVEYOR



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This manual covers general information on the installation and maintenance of a Lambton Conveyor drag conveyor including flat and round bottom of the incline type. It also covers the many safety precautions that should be followed by all operators and personnel working around the equipment.

Due to the various situations we cannot cover all aspects of installing the drag. We have provided a method for installation to be used as a guideline **only**; qualified contractors should be relied on to construct the drag. Some conditions and surroundings alter the practices and steps that should be taken during assembly. For these reasons we cannot be responsible for the installation of the drag. All personnel operating, installing, or maintaining the drag conveyor should thoroughly read and understand this manual before working with the equipment.

It is Lambton Conveyors concern that all personnel associated with our grain handling equipment are kept safe. It is the buyer's responsibility to ensure that this manual is accessible to all personnel working with the drag conveyor. Safety labels have been installed at the manufacturing plant and should never be removed, altered, or covered in any way. Guards have been provided and should be in place at all times unless the drag has been locked out. Failure to follow these guidelines could produce an extremely dangerous situation and may cause serious injury or death.

The following decal is found on various sections of the conveyor, it is located where caution must be taken to avoid serious injury or death.



This manual contains information that is important for the owner/operators to know and understand. The information pertains to safety precautions and preventative maintenance procedures when operating and maintaining this equipment. It is the owner/operators responsibility to ensure that the operators and personnel working close to this equipment are aware of these safety guidelines. Failure to read and understand this manual is a misuse of the equipment and could result in serious injury or death.

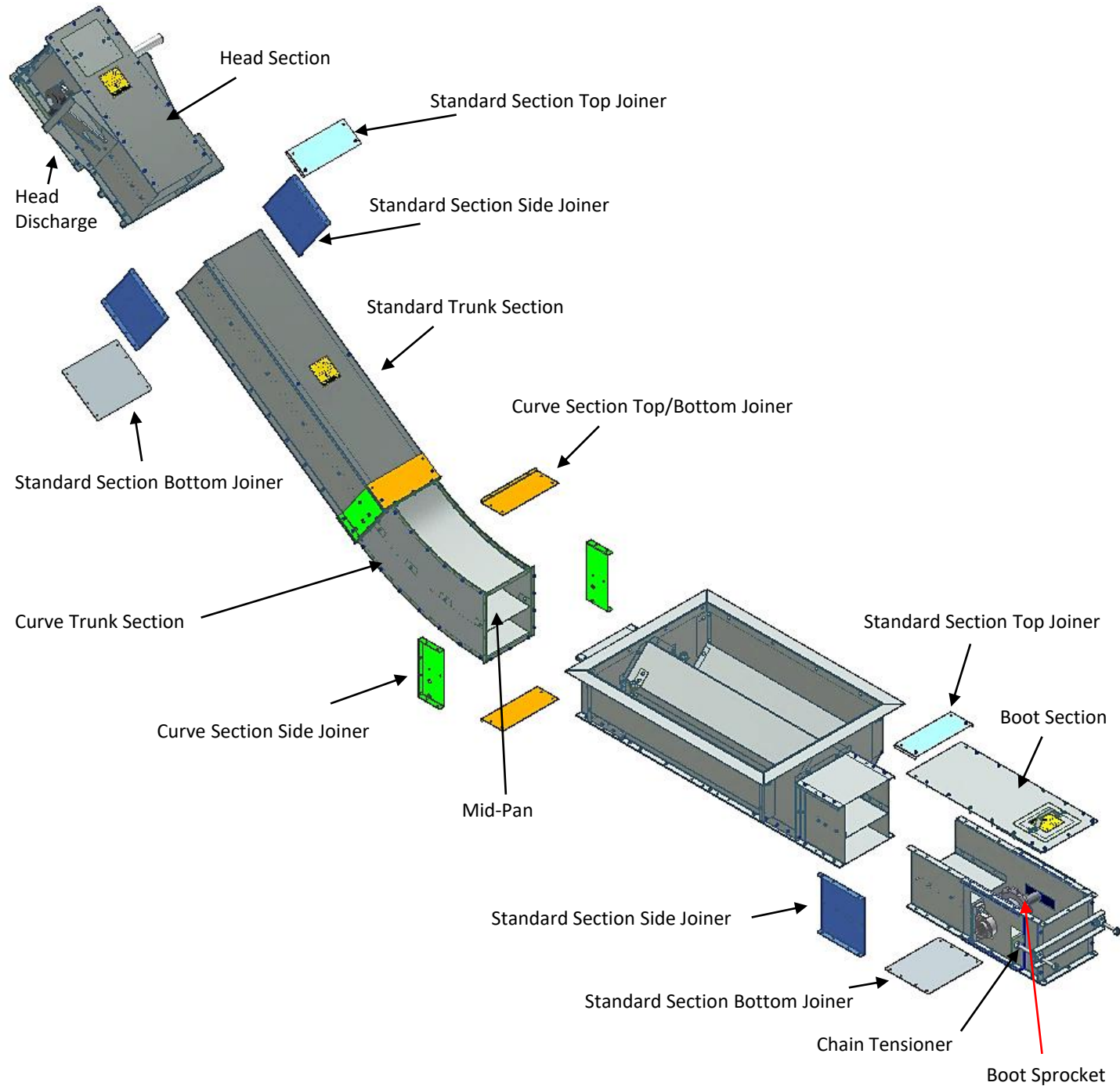
- Conveyors shall not be operated unless all covers and/or guards for the conveyor or drive unit are in place. If the conveyor is to be opened for inspection, cleaning, maintenance, or observation the power to the motor driving the conveyor must be locked out in such a manner that the conveyor cannot be restarted by anyone.
- Do not attempt any maintenance or repairs of the conveyor until power has been locked out.
- Do not place hands, feet, or any part of your body in the conveyor at any time unless the conveyor has been locked out.
- Do not poke or prod material into the conveyor with a bar or stick inserted through the openings.
- Keep area around the conveyor drive and control station free of debris and obstacles.
- Eliminate all sources of stored energy (materials or devices that could cause conveyor components to move without applied power) before opening the conveyor.
- Do not attempt to clear a jammed conveyor until power has been locked out.
- Electrical controls, machinery guards, railings, walkways, and operator training are all necessary to ensure a safe working environment. It is the responsibility of the contractor, installer, owner, and user to supply the materials and services required to cover these areas.

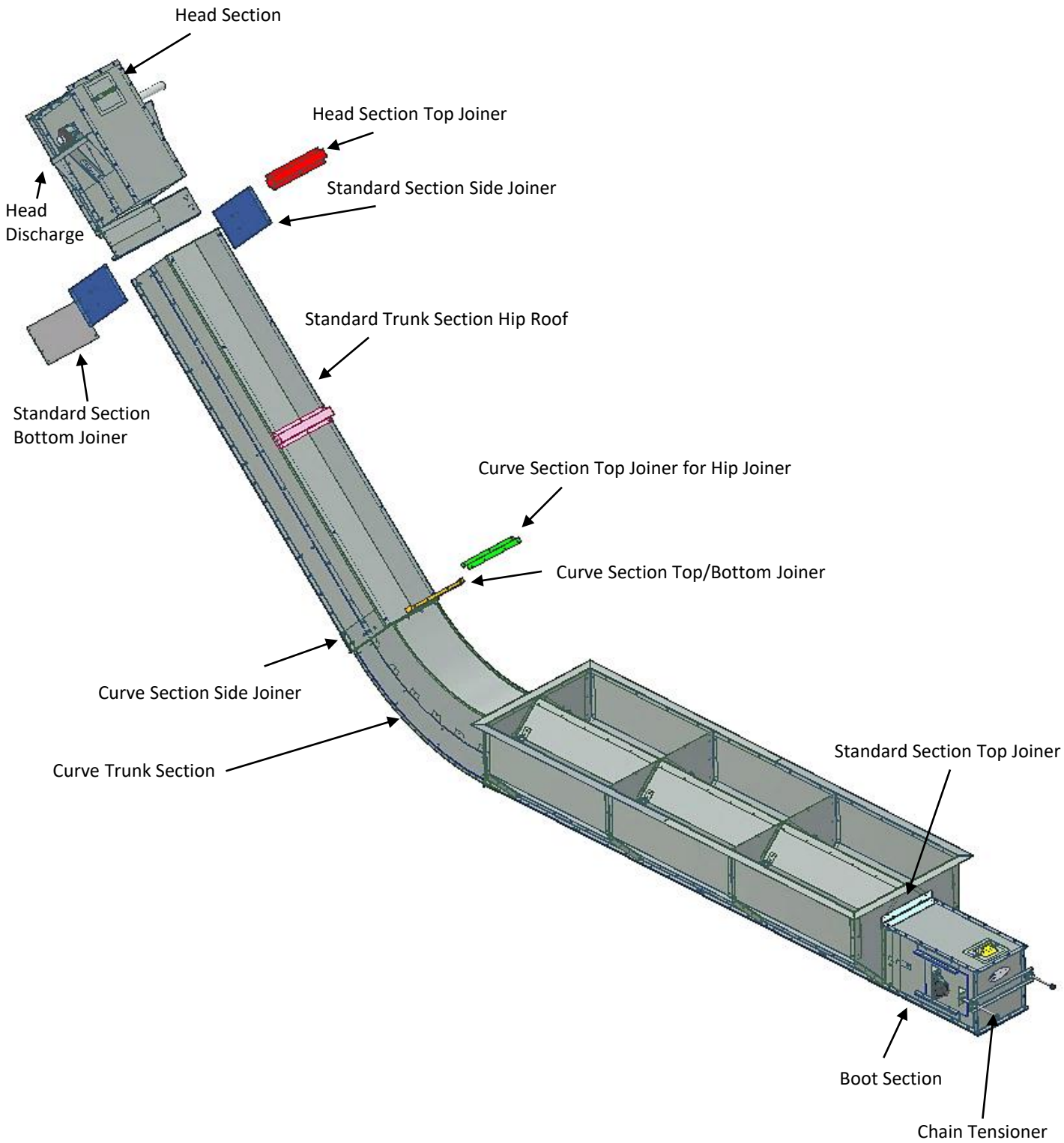
Carefully inspect your shipment as soon as it is received. Verify that the quantity of parts or packages corresponds with the packing slip. Any discrepancies should be taken care of immediately. Report any damages or shortage of parts to the delivering carrier as soon as possible. Lambton Conveyors responsibility to damaged equipment ends with your acceptance to delivery. Save all paperwork and documentation with any of the drag conveyor components.

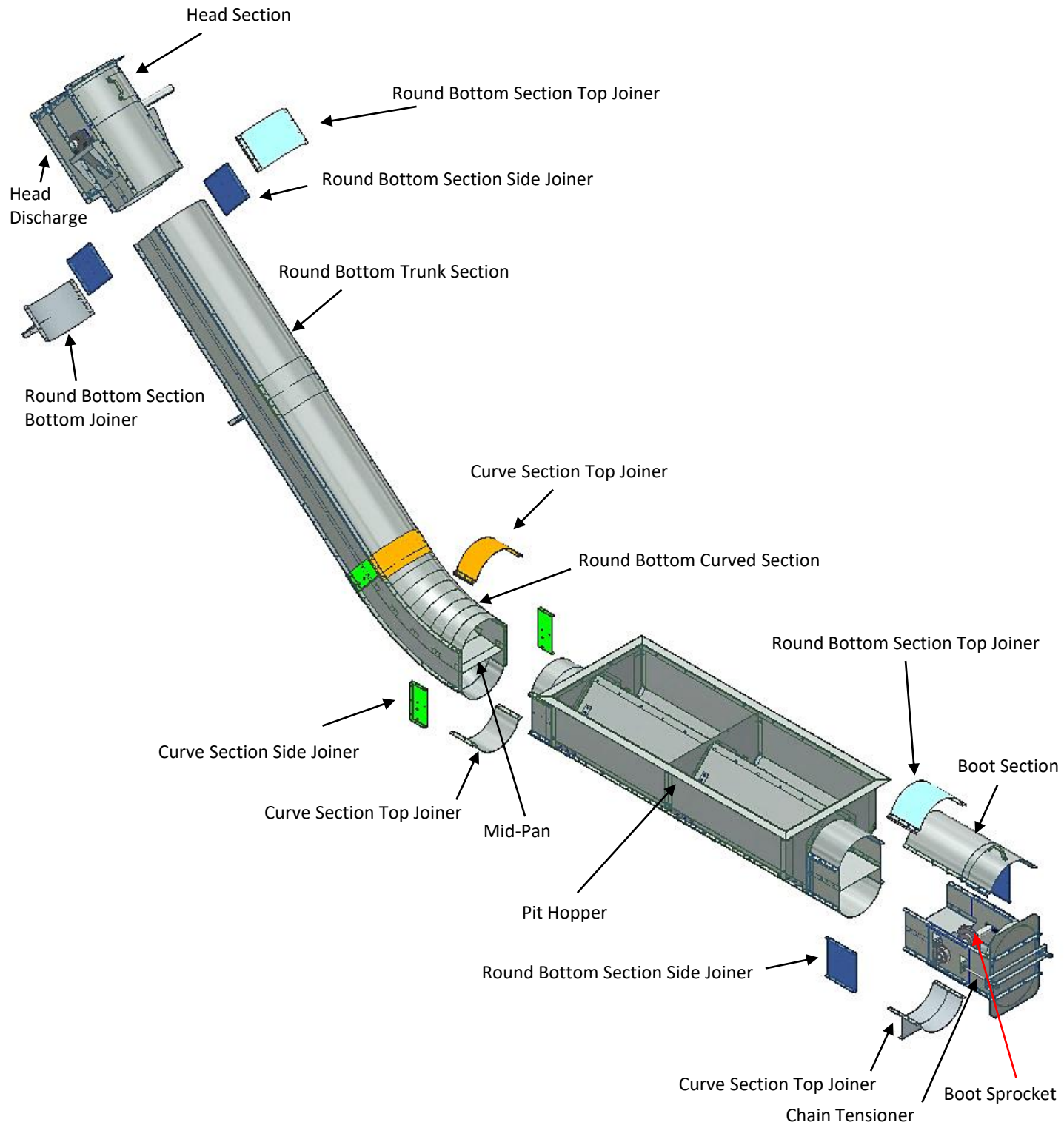
Familiarize yourself with this manual and all the conveyor parts to aid in the assembly and installation of your conveyor.

Start by unpacking and arranging all the conveyor components in a way that they are all easily accessible. The head, trunking, pit hopper (optional) and boot all come preassembled but are required to be joined. Blocking or sawhorses will be a helpful aid throughout to raise the sections off the ground. Ensure that all supports used will provide adequate strength and sturdiness. Arrange the conveyor components in order from start to finish while referring to the conveyor parts section of this manual located on page 6.

Lambton Conveyor incline drag conveyors have been designed to move material at a maximum of 45-degrees inclination, for optimum performance this should not be exceeded.




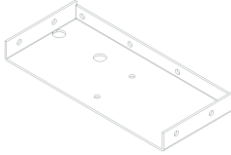
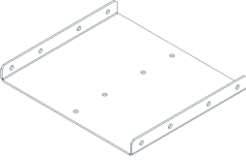

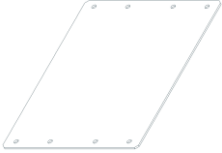




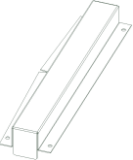
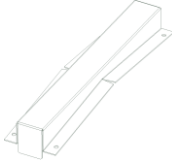
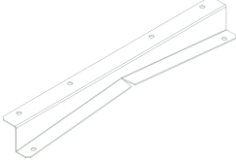

Once all the drag parts have been arranged in order from the boot section to the head section, and blocks or saw horses have been positioned underneath it is time to start connecting each section together. Top, and bottom joiners are used to join the sections. Different joiners are used depending on whether you are assembling a standard, or round bottom conveyor.

Joiners


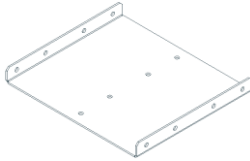
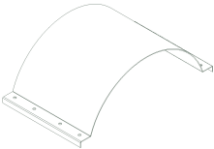
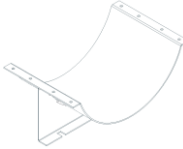
FLAT BOTTOM INCLINED DRAG CONVEYOR

	CURVED SECTION TOP/BOTTOM JOINERS		CURVED SECTION SIDE JOINERS
	STANDARD SECTION SIDE JOINERS		STANDARD SECTION TOP JOINER
	STANDARD SECTION BOTTOM JOINER		

FLAT BOTTOM WITH HIP ROOF INCLINE DRAG CONVEYOR

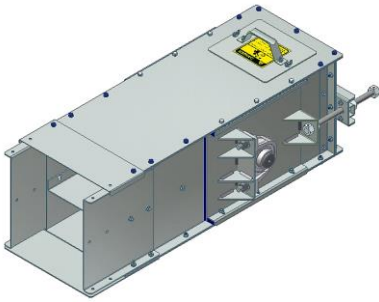
	HEAD & BOOT TO TRUNK JOINER		TRUNK TO TRUNK JOINER
	TRUNK TO INCLINE JOINER UPPER		TRUNK TO INCLINE JOINER LOWER

ROUND BOTTOM INCLINED DRAG CONVEYOR

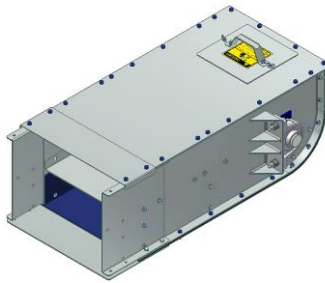
	CURVED SECTION SIDE JOINERS		STANDARD SECTION SIDE JOINERS
	STANDARD SECTION TOP JOINER		STANDARD SECTION BOTTOM JOINER

Boot Section

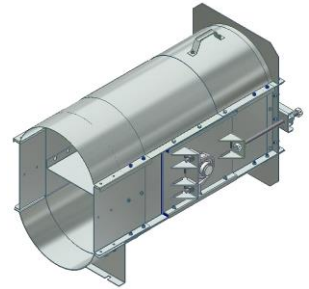
The boot section will be joined to either your hopper or first section of trunking using a Top Joiner, Bottom joiner and Side joiners. Use 5/16" x 1" hex head bolts on outside flanges, and 5/16" x 3/4" flat head socket cap screws on the walls of the boot section to prevent any obstructions. The boot sprocket should be checked to ensure it is centered on the shaft and tightened adequately.



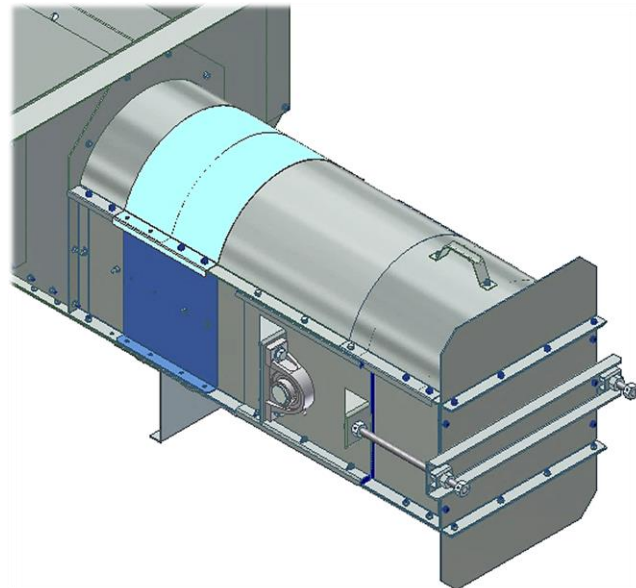
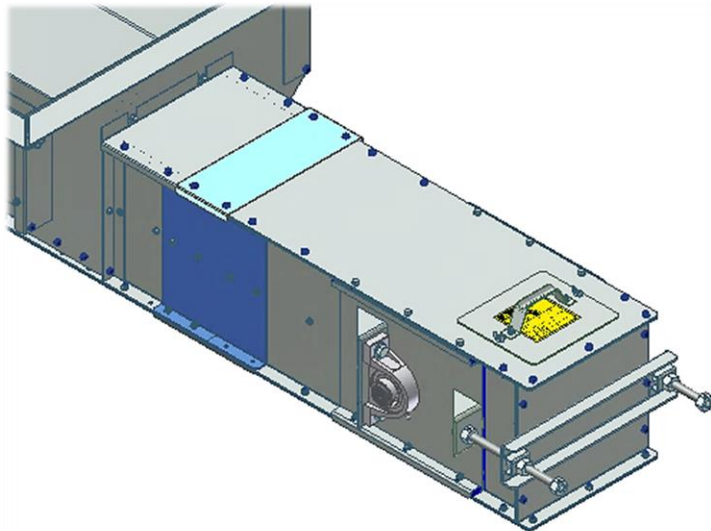
Standard Boot Section



Idler Boot Contoured & Standard
(Contoured Shown)



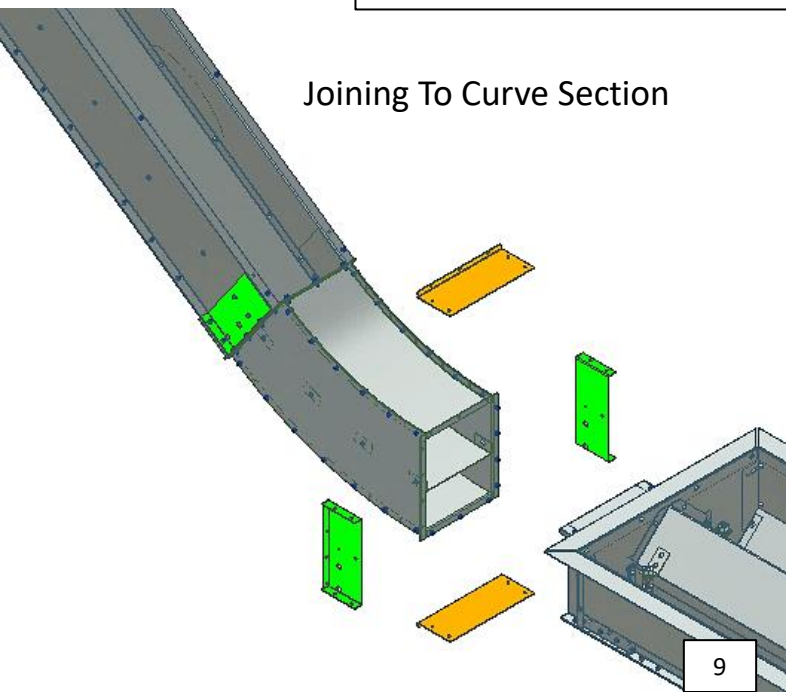
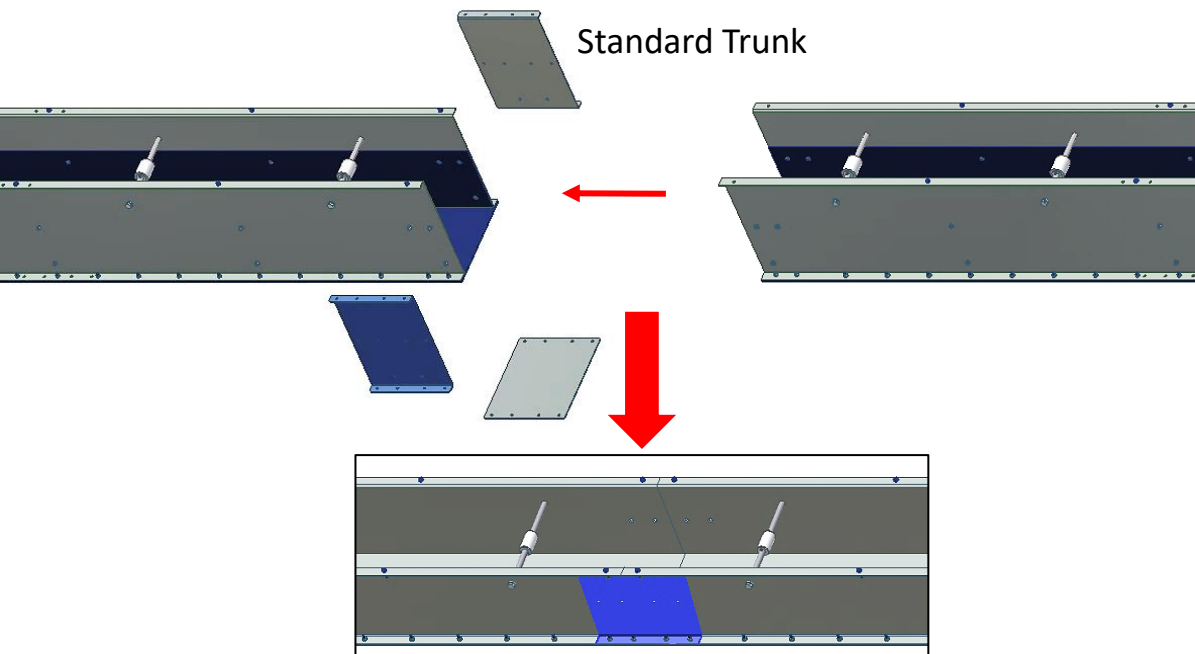
Round Bottom Boot Section



Trunking

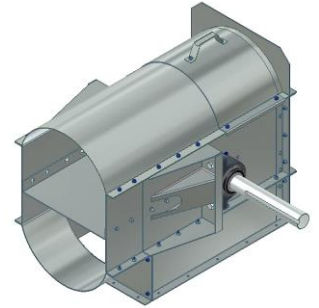
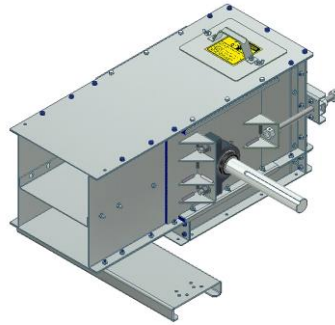
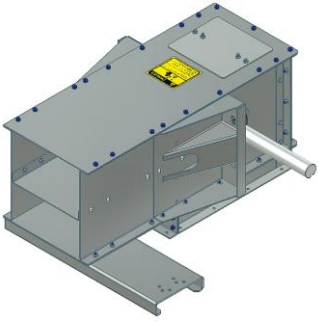
Standard and Curved trunking sections can now be joined together using side, top, and bottom joiners for your application. All top covers should be removed and stored along with the hardware in a safe place to minimize any possible damage or loss.

During assembly of each trunk section to the next carefully inspect each joint to ensure that the inside bottom, and side surfaces are flush. A chalk line is helpful to ensure the proper alignment. Maximum run-out in any direction is 1/4" (with all joints connected). Proper alignment will minimize wear on flights and other potential damage to the conveyor. All mid- pans need to be tack welded at each joint along the entire conveyor and ground off smooth to prevent catching.



Head Section

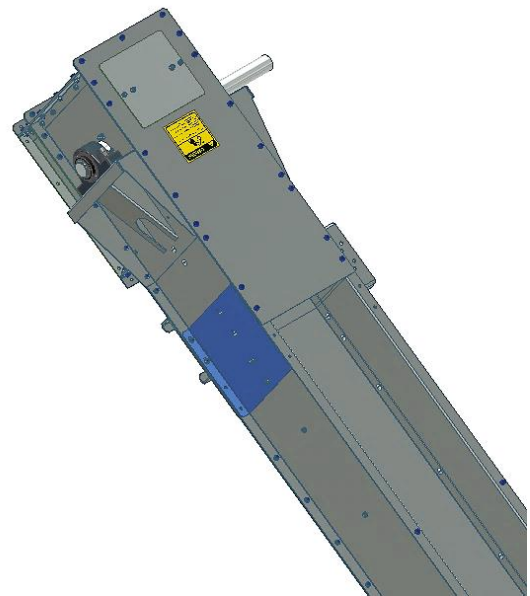
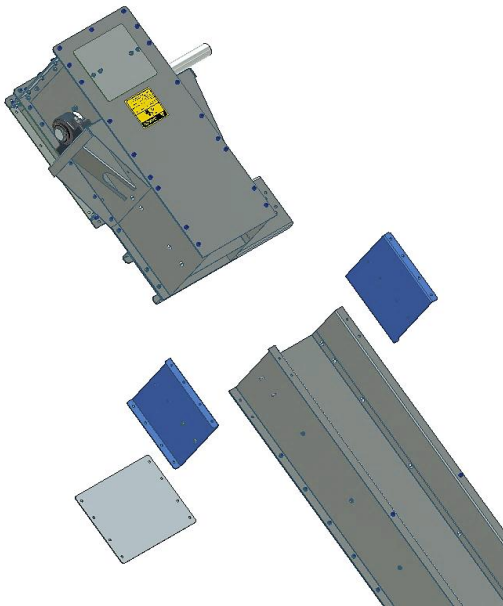
The head section of the elevator can now be joined to the end piece of trunking using the supplied joiners. Note: the two side joiners have been attached to the head section prior to shipping. This is a good time to ensure the head sprocket is in the centre of the shaft and tightened.



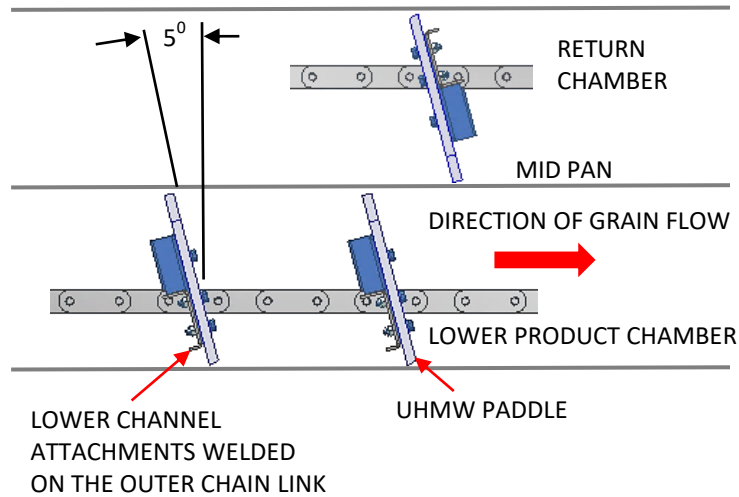
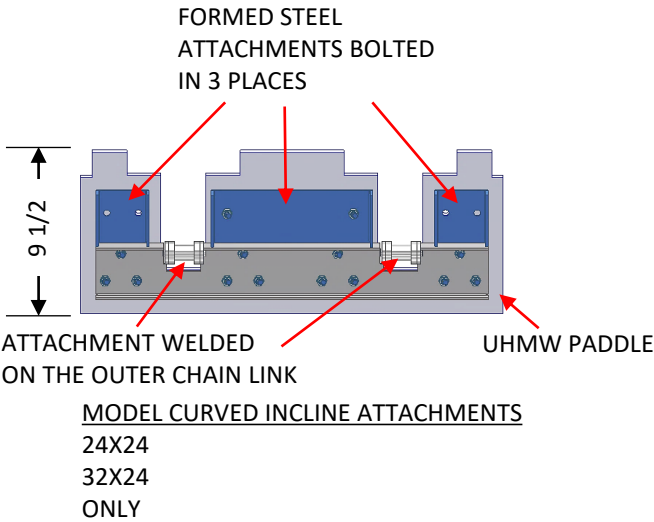
Standard Head Section

Take Up Head
(Chain Tensioner in Head Section)

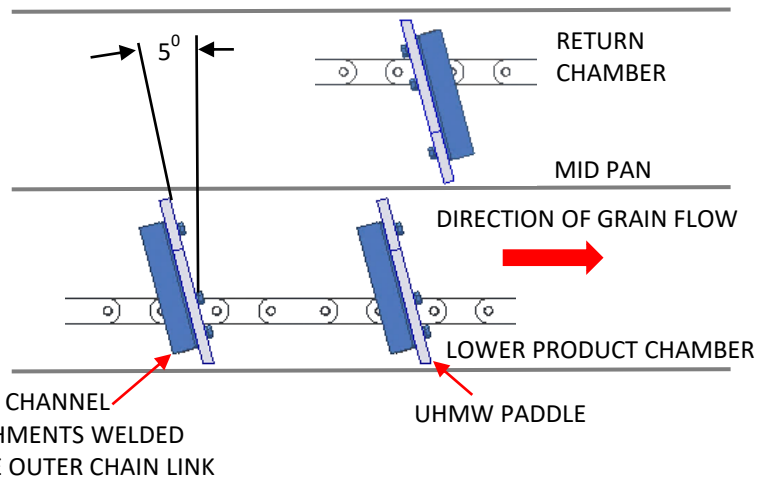
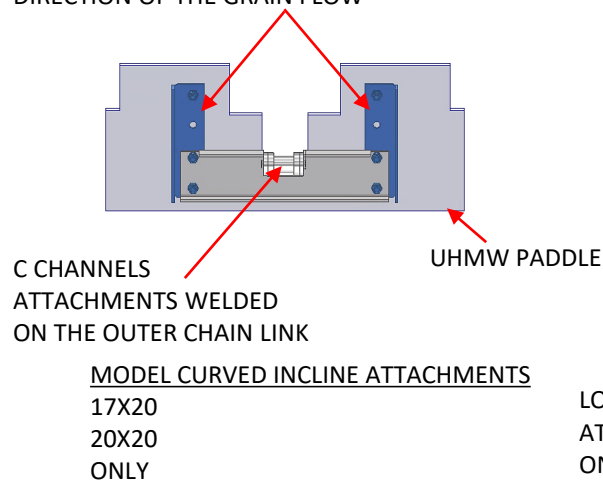
Round Bottom Head Section



The drag conveyor chain should be installed after all components of the drag have been joined. Start by loosening the chain tensioners located on the boot section to the loosest position. The chain is installed over the trunking mid-pans, head sprocket, and boot sprocket. The UHMW paddles should be facing the direction that grain is to flow and tilted at a 5 degree angle as shown when installed to produce a downward force on the chain. Refer to the below diagram for proper fastening procedures. Chains fasten together using the supplied hardware (connecting links).



ANGLES WRAP AROUND AND BOLTED TO THE WELD ON ATTACHMENTS THE UHMW IS BOLTED AHEAD IN THE DIRECTION OF THE GRAIN FLOW



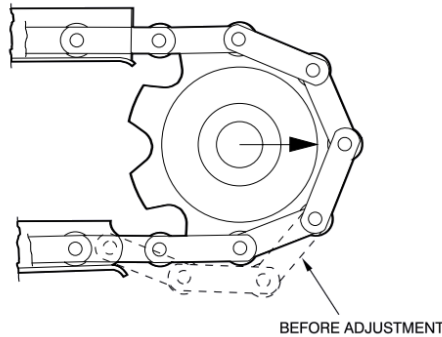
Once the drag chain has been installed and connected in the drag assembly it can be tightened by adjusting the chain tensioners on the boot section (or Head Section if take up head). The tensioners should be adjusted in small increments to ensure the boot sprocket is kept square to the head (note Torque Arm will need to be adjusted on the take up head once the chain tension is set).

Once the chain has been tensioned, it should be rotated at least one complete revolution through the conveyor. Check to see that the chain and paddles are not catching on flanges or rubbing on the sides of the trunk due to improper boot and/or head pulley alignment. Make adjustments if necessary.

Once the chain has been installed, adjustment of the chain will be necessary before the chain is run. Care must be taken that the chain is not over tightened, as this will add pre-tension into the chain which will in turn reduce chain life. The main requirement of chain adjustment is to remove slack from the chain (i.e. to take up the clearances between the pins and bushes in each link). Pre-tensioning of the chain is not required. On a screw type take-up unit, it is easy to keep on turning the adjustment screws and pre-tension the chain, so great care is needed.

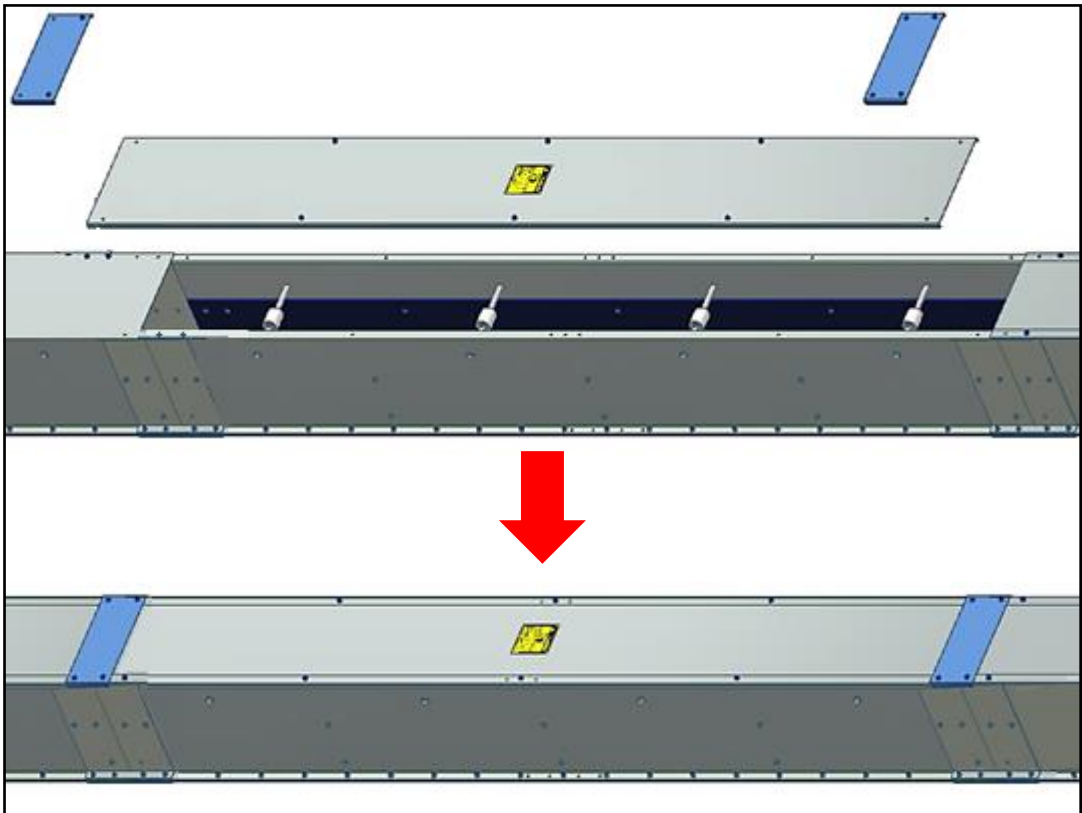
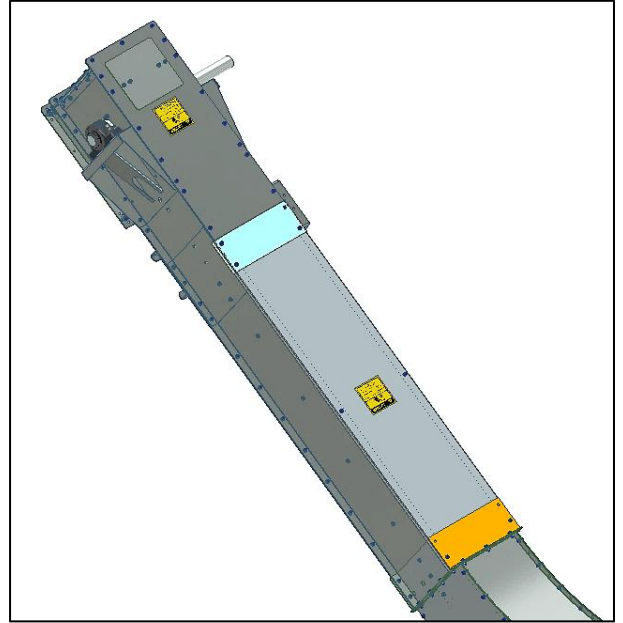
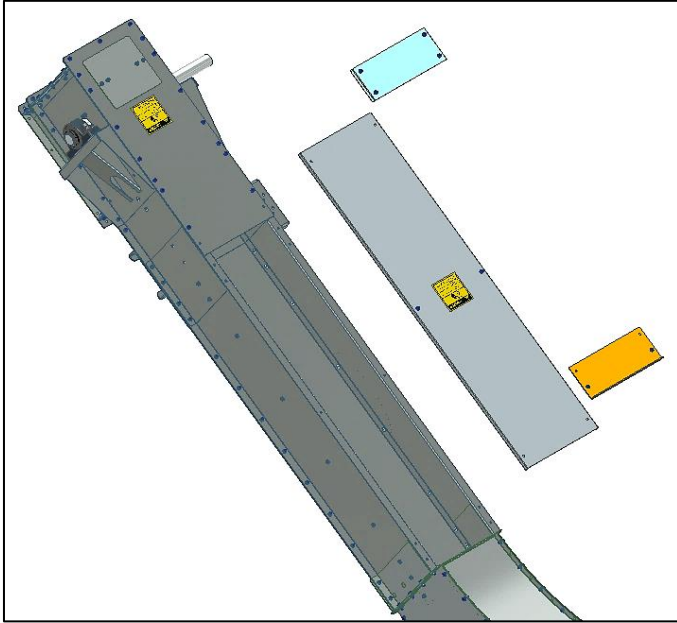
The following is a general guide to adjustment procedure:

- a) Check that the tail shaft is in line, i.e. bearings are an equal distance back in the slides.
- b) Adjust the take up screws a few turns at a time, equally each side, until the chain seats fully into the tail sprocket or drive sprocket. (See Below).
- c) Lock the adjusting screws.
- d) Run the conveyor for at least one complete circuit to allow the chain to settle and recheck the chain adjustment.
- e) Re-adjust if necessary



After the chain has been adjusted and correctly lubricated, the conveyor should be left to run, if possible, for 8 to 24 hours without load to allow the chain components to bed in and bearing surfaces to polish smooth. After this period the take-up should be rechecked and adjusted if necessary. Throughout the life of the chain the take-up should be checked on a regular maintenance schedule and re-adjusted when necessary. For maximum allowable extension

Once all sections of the drag conveyor have been tightened and properly aligned, the top covers can be reinstalled. Ensure that all rollers have been checked for tightness, joints are aligned, and no tools have been left behind prior to doing this. Although not necessary in most conditions it may be good practice to apply a sealer (not supplied) to the top of the trunking prior to bolting the covers into place. This will ensure that no moisture can enter the drag at any time



Once all sections of the drag conveyor have been tightened and properly aligned, the top covers can be reinstalled. Ensure that all rollers have been checked for tightness, joints are aligned, and no tools have been left behind prior to doing this. Although not necessary in most conditions it may be good practice to apply a sealer (not supplied) to the top of the trunking prior to bolting the covers into place. This will ensure that no moisture can enter the drag at any time.

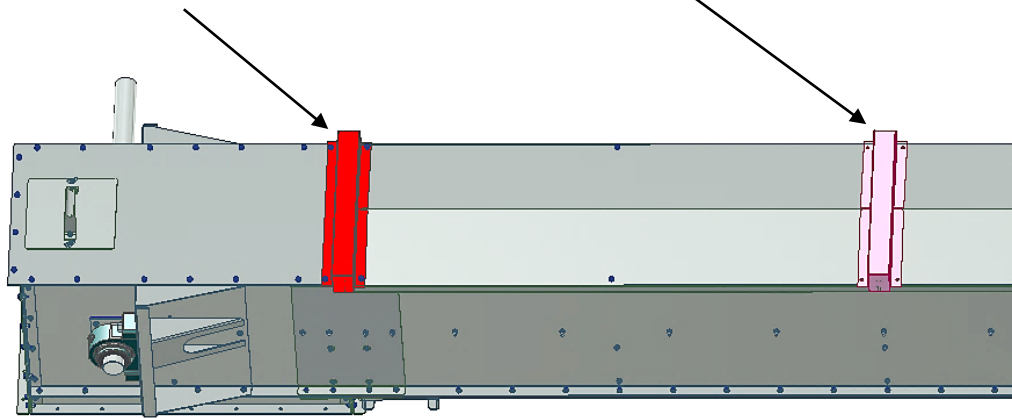
With hip roof trunks for incline conveyors there are 3 different top joiner types depending on what section is connecting to the trunk. See these types below

Head & Boot Joint

Joiner has one flat side and one hip side, hip side to be positioned towards the trunk

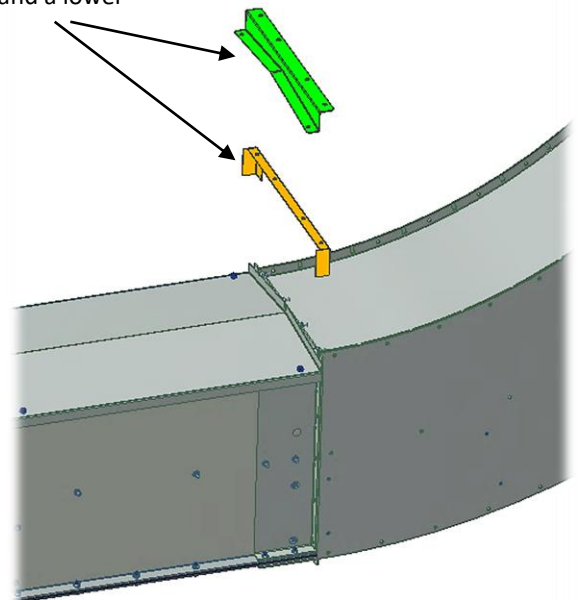
Trunk Joint

Joiner has two hip sides

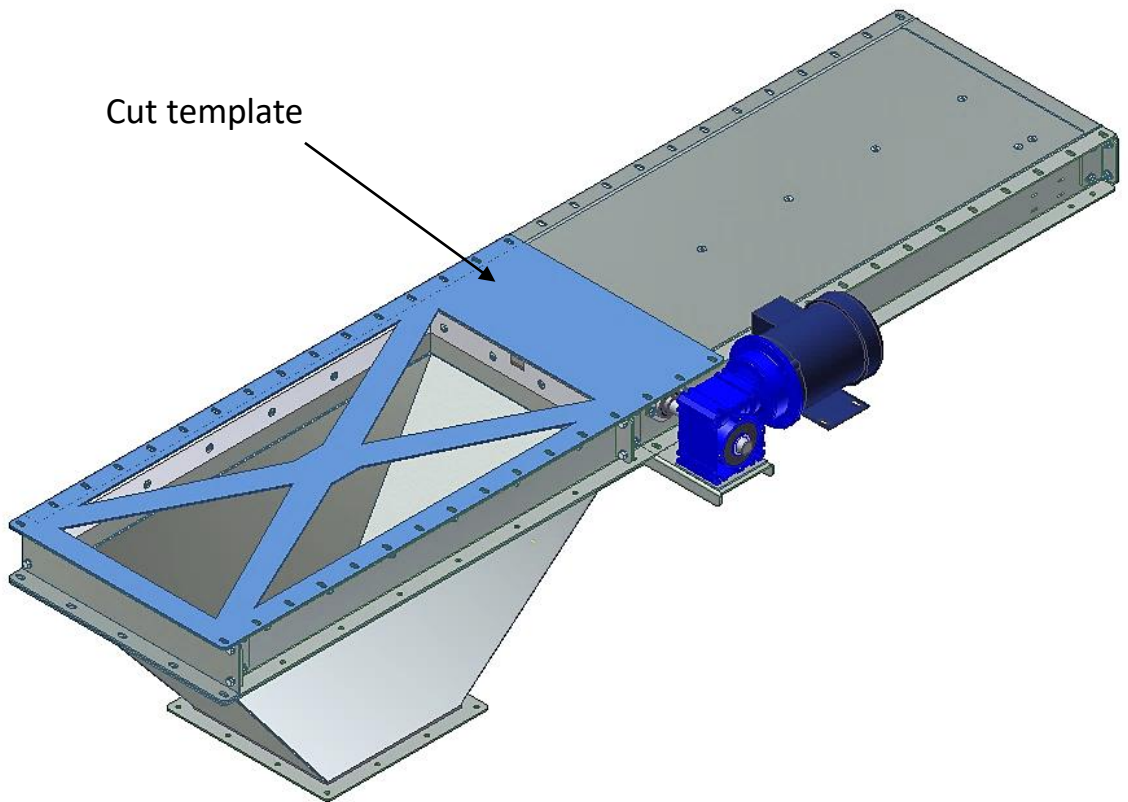


Trunk to Incline Joint

2 pcs required for this joint an upper and a lower

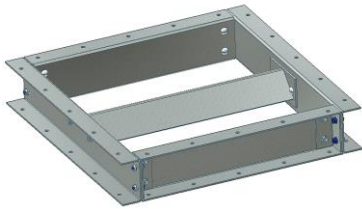


Use the template bolted to the top of the gate to cut a pattern in the bottom of the conveyor trunking then discard the template and bolt the gate directly to the bottom of the conveyor. Once tightened ensure that the slide plate moves freely. If it does not, adjust the UHMW slide rails that support the slide plate. These slide rails are bolted in slotted holes that allow for adjustment. The owner assumes all responsibility for any alterations to the drag conveyor.

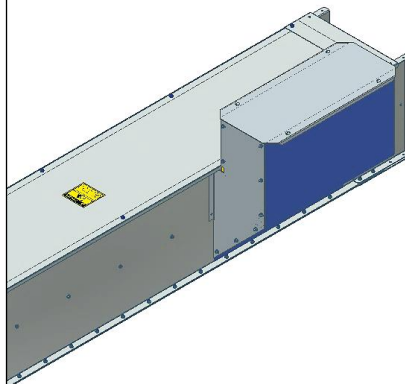


Optional inlets include the various sizes of Pit Hoppers, Side Inlet, and Top Inlet. Pit hoppers bolt directly to the trunking sections while the top and side inlets require field cutting, and welding to the drag at the required location. Lambton Conveyor recommends a minimum of 12” between the boot section and the start of the inlet. Inlets can be welded with either a solid seam or by stitch method, when using the stitch method be sure to apply a quality sealer (not supplied) around the inlet edges to ensure a weather tight seal. More information on pit hopper foundation recommendations and drag dimensions is located on following pages. Refer to Top / Side inlet sections of manual for information on installation procedures.

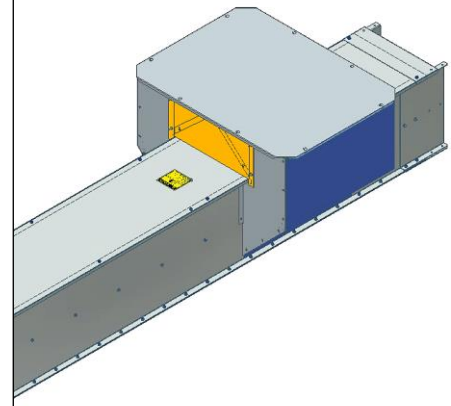
Top Inlet



Side Inlet (Single)



Top (Double Side) Inlet



Warning: Lambton Conveyor recommends all welding be performed prior to the installation of any electrical components including the drive system. By not following this recommendation the owner assumes all risks associated with this installation.

Standard Incline Drag Conveyor Dimensions

INSIDE CONCRETE TRENCH (HOLD)

WELDED SECTIONS OF DRIVE OVER BARS INSERT INTO NOTCHED TRENCH OPENING ABOVE RECEIVING HOPPER

MID PAN

PRODUCT CHAMBER
 9X14= 6"
 12X14=6"
 17X14=6"
 17X20=8 1/2"
 20X20=8 1/2"
 24X24=10"
 32X24=10"

CROSS SECTION A-A CONVEYOR INSTALLED

CROSS SECTION TYPICAL TROUGH

HOPPER WIDTH OPENING

BYPASS DEFLECTOR
CHAIN RETURN CHAMBER
FLOW ADJUSTMENT GUIDES
PRODUCT CHAMBER

CROSS SECTION A-A THROUGH 8FT RECEIVING HOPPER

STANDARD BASIC UNIT LENGTH PLUS OPTIONAL 60"/120" STRAIGHT LENGTHS
ANGLE OF CURVE CAN BE ADJUSTED IN 5 DEGREE INCREMENTS UP TO 50 DEGREE
CENTRE PAN THROUGH FULL LENGTH OF CONVEYOR PLUS OPTIONAL 60"/120" STRAIGHT TROUGH SECTIONS
STRAIGHT INCLINE OPTIONS AVAILABLE LESS CURVE SECTION

HEAD SECTION R/H OR L/H DRIVE OPTIONS

96.00
12.00
60.00
12.00
12.00
96.00
12.00

CENTRE OF DRIVE WAY
TOP OF STD GRATING
RECEIVING HOPPER
TAKEUP BOOT SECTION

ALLOW APPROX 12" BEHIND BOOT FOR SCREW TAKEUP

ALSO 4FT & 12FT LENGTHS AVAILABLE

M STANDARD

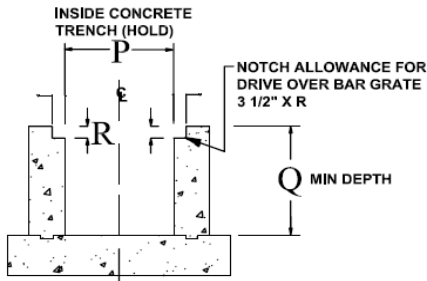
ALL INCLUDED IN BASIC LIST PRICE

CONVEYOR MODELS INCLINE FLAT BOTTOM DRAG CONVEYOR																
MODEL FLAT BOTTOM	CAPACITY BPH	CURVE RADIUS	A	B	C	D	E	F	J	L	M	P	Q	R	S	T
9X14	1000 TO 2500	60"	9	14	29	19	17	69	20	36	254	30.5"	26	3.5"	49.5"	109.5"
12X14	2500 TO 3900	60"	12	14	32	20	17	69	20	36	254	33.5"	26	3.5"	49.5"	109.5"
17X14 low profile	3900 TO 5000	60"	17	14	39	23	17	69	20	36	254	40.5"	28	3.5"	49.5"	109.5"
17X20	4000 TO 7000	72"	17	20	41	29	23	73	20	36	263	42.5"	34	3.5"	56"	117"
20X20	7000 TO 8500	72"	20	20	45	31	23	75	20	36	263	45.5"	36	4.5"	56"	117"
24X24	7000 TO 10,000	96"	24	24	51	37	27	78	24	46	290	52.5"	41	4.5"	71.5"	139"
32X24	10,000 TO 15,000	96"	32	24	59	41	27	78	24	46	290	60.5"	45	4.5"	71.5"	139"

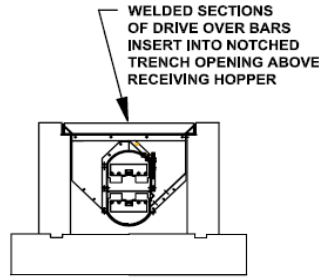
-ALL DIMENSIONS ARE IN INCHES INTENDED FOR LAYOUT PURPOSES.
-STANDARD TROUGH SECTIONS ARE IN 60" & 120" LG SECTIONS

CURVED INCLINE DRAG CONVEYORS ARE DESIGNED TO HAVE THE GEAR REDUCTION DRIVES LOCATED AT THE HEAD OR RAISED END OF THE CONVEYOR. PLEASE STATE LEFT OR RIGHT HAND SIDE IN DIRECTION OF THE GRAIN FLOW WHEN ORDERING (IF IMPORTANT). THE STANDARD IS RIGHT HAND. ALL DIMENSIONS ARE IN INCHES; SUBJECT TO CHANGE WITHOUT NOTICE.

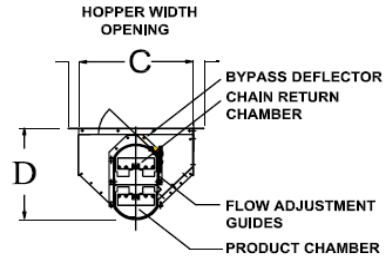
Round Bottom Incline Drag Conveyor Dimensions



SUGGESTED CROSS SECTION OF RECEIVING TRENCH



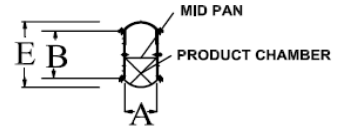
CROSS SECTION A-A CONVEYOR INSTALLED



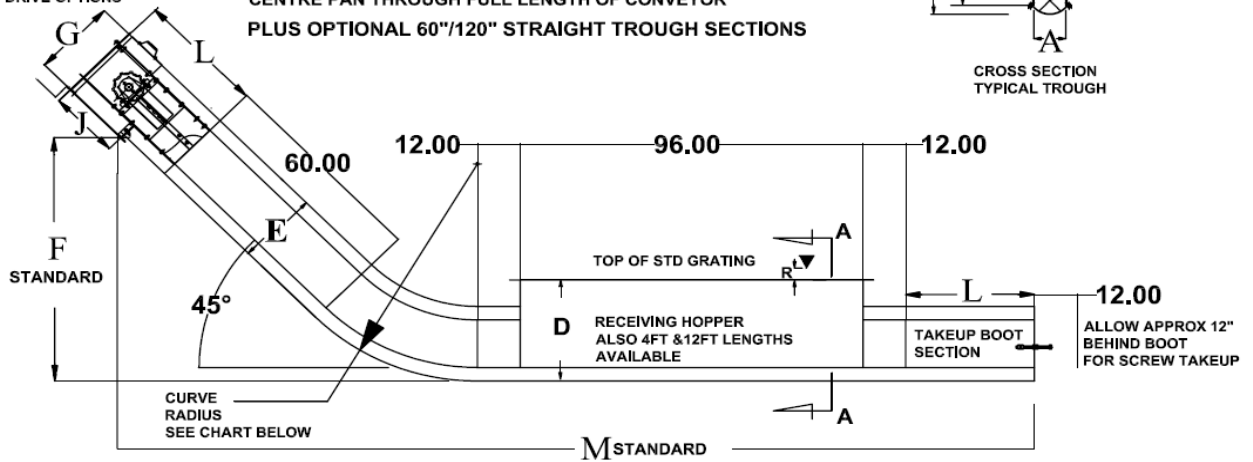
CROSS SECTION A-A THROUGH 96" RECEIVING HOPPER

STANDARD BASIC UNIT LENGTH PLUS OPTIONAL 60"/120" STRAIGHT LENGTHS
 ANGLE OF CURVE CAN BE ADJUSTED IN 5 DEGREE INCREMENTS UP TO 50 DEGREE
 CENTRE PAN THROUGH FULL LENGTH OF CONVEYOR PLUS OPTIONAL 60"/120" STRAIGHT TROUGH SECTIONS

HEAD SECTION R/H OR L/H DRIVE OPTIONS



CROSS SECTION TYPICAL TROUGH



ALL INCLUDED IN BASIC LIST PRICE

CONVEYOR MODELS INCLINE ROUND BOTTOM DRAG CONVEYOR

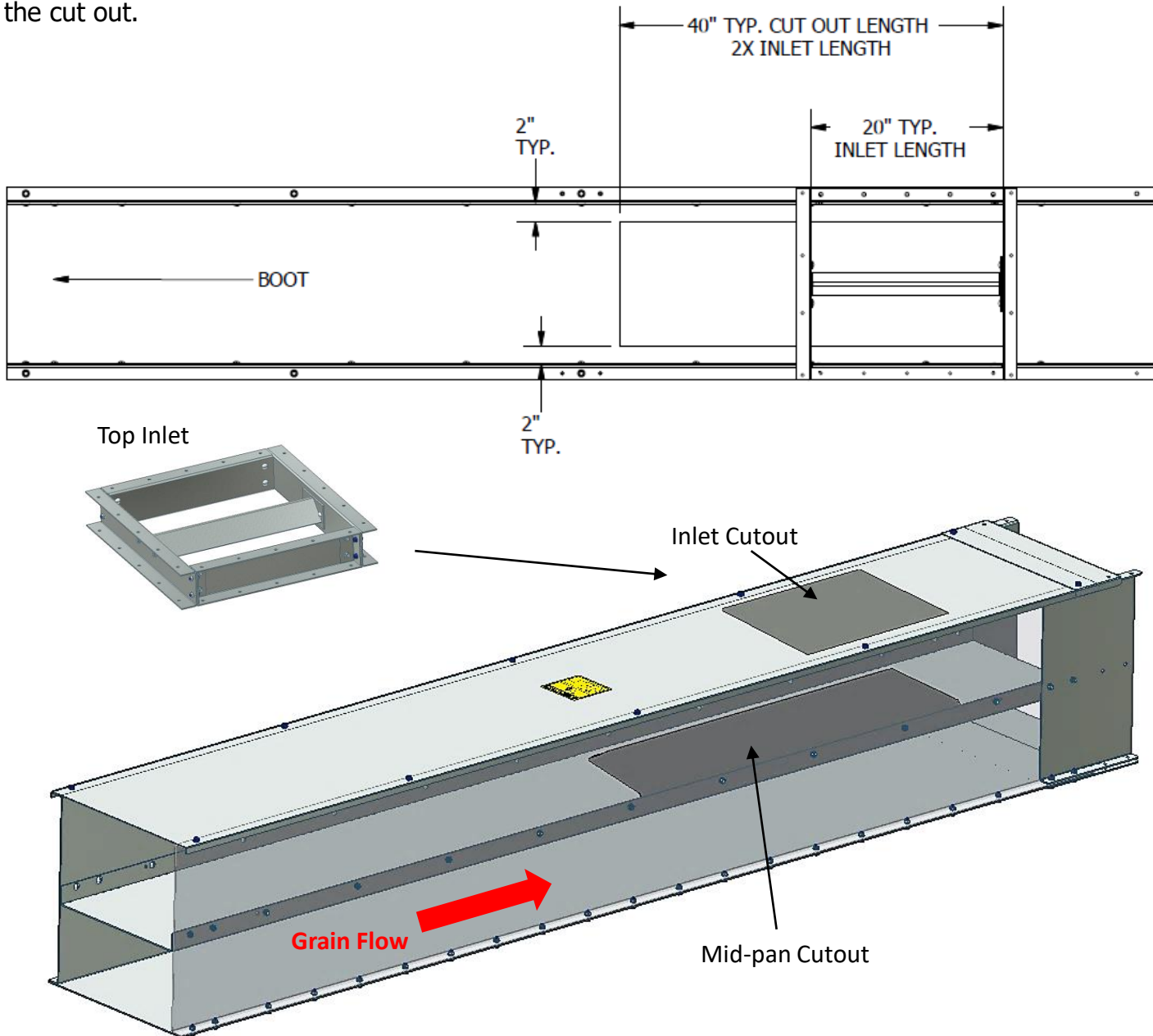
MODEL ROUND BOTTOM	CAPACITY BPH	CURVE RADIUS	A	B	C	D	E	F	G	J	L HEAD	L BOOT	M	P	Q	R
9X14	1000 TO 3100	62"	9"	14"	29"	25.5"	19.3"	70.4"	21.3"	20"	37.5"	37.5"	255"	30.5"	36"	3.5"
12X14	3100 TO 5000	64"	12"	14"	32"	30"	22"	72"	23.6"	20"	37.5"	37.5"	256"	33.5"	36"	3.5"
17X14	5000 TO 8000	64"	17"	14"	39"	30"	22"	72"	23.6"	20"	37.5"	37.5"	256"	40.5"	42"	3.5"
17X20	7000 TO 10,000	78"	17"	20"	41"	41"	33"	74"	35"	30"	43.5"	45.5"	273"	42.5"	48"	3.5"
24X24	10,000 TO 15,000	78"	24"	24"	51"											

-ALL DIMENSIONS ARE IN INCHES INTENDED FOR LAYOUT PURPOSES.
 -STANDARD TROUGH SECTIONS ARE IN 60" & 120" LG SECTIONS

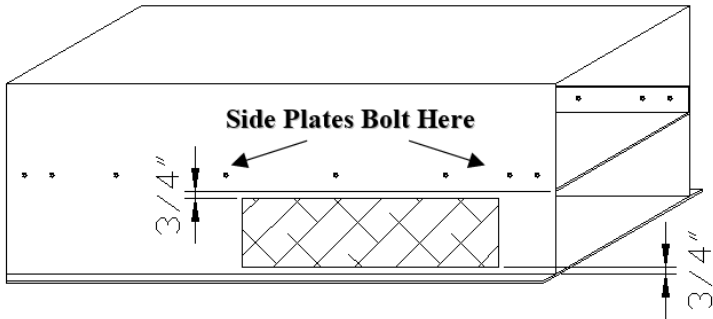
CONVEYOR CURVED INCLINE DRAG CONVEYORS ARE DESIGNED TO HAVE THE GEAR REDUCTION DRIVES LOCATED AT THE HEAD OR RAISED END OF THE CONVEYOR. PLEASE STATE LEFT OR RIGHT HAND SIDE IN DIRECTION OF THE GRAIN FLOW WHEN ORDERING (IF IMPORTANT), THE STANDARD IS RIGHT HAND. ALL DIMENSIONS ARE IN INCHES; SUBJECT TO CHANGE WITHOUT NOTICE.

Inlets mounted too close to the boot may allow grain to come in contact with the sprocket and chain. This could cause excessive damage to the grain being conveyed. The minimum distance from boot joint to the nearest edge of the inlet assembly should be 6" on a horizontal application. On a sloped application, the minimum distance from the boot to the first inlet needs to increase to allow grain to enter the bottom of the conveyor in front of the boot. Keeping grain out of the boot minimizes grain damage and risk of equipment damage.

If the conveyor is control fed and has a midpan, another opening in the midpan should start at the edge of the inlet and extend a distance of twice the inlet opening, towards the boot. The pattern below is not suitable for dual chain conveyors and should be altered to ensure paddles carry over the cut out.



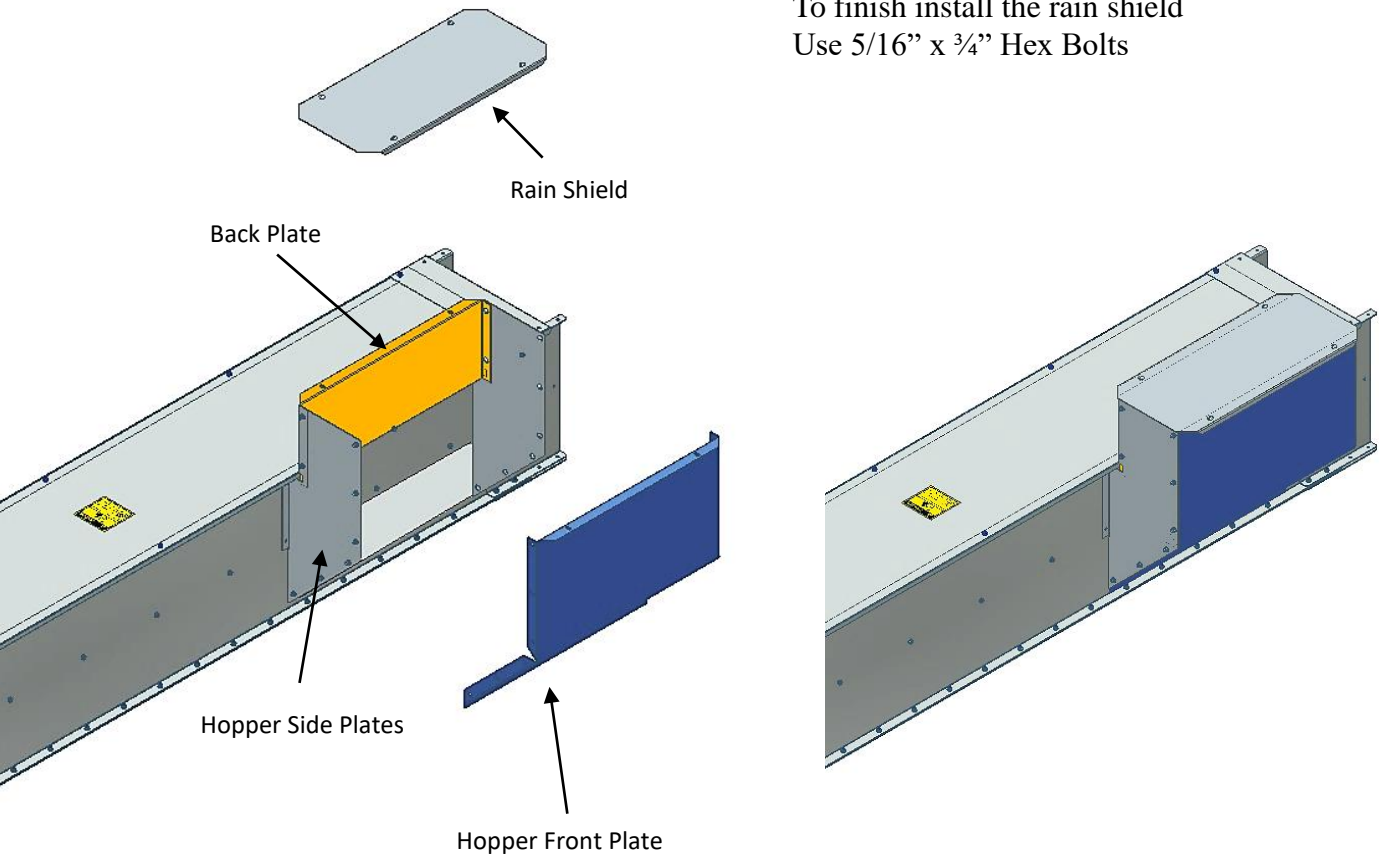
First determine where your hopper should be located. Next determine the proper spacing of the Side Plates by measuring the length of the Front Hopper Plate. This is the distance that should be between your two side plates (not the holes). Next drill the holes for the side plates and bolt them into place. Once the side plates have been positioned at a 90-degree angle to the bottom of the trunking the required hole can be marked out. The hole will start $\frac{3}{4}$ " from the bottom of the trunking and end $\frac{3}{4}$ " from the mid-pan of the trunk. Once you are satisfied with the positioning of your hole mark it on the other side as well, remove the side plates and cut the holes. For clarification refer to the below diagrams.



The side plates can now be bolted to the trunking then welded into place. The plates will be located just outside the hole with the bends facing out. Use $\frac{5}{16}$ " x $\frac{3}{4}$ " button head bolts with the head of the bolt on the inside of the trunking.

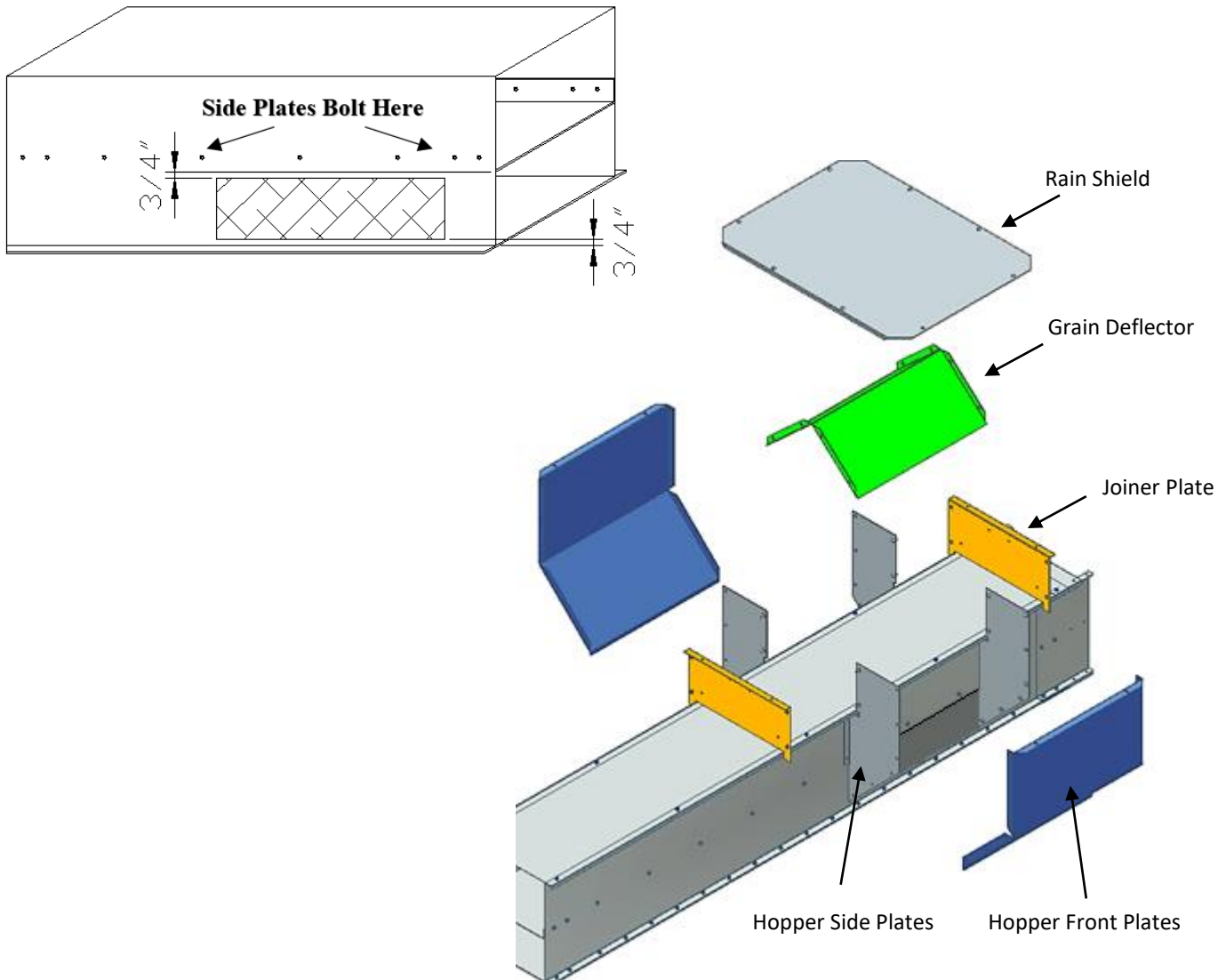
Next assembly the front plate and back plate with $\frac{5}{16}$ " x $\frac{3}{4}$ " Hex Bolts.

To finish install the rain shield
Use $\frac{5}{16}$ " x $\frac{3}{4}$ " Hex Bolts



For fixed inlet feeding it is preferable to cut a hole in the rain shield, but an alternative would be to cut a hole in the Front side of the hopper. Holes should be cut as far back in the hopper as possible to improve loading speeds.

First determine where your hopper should be located. Next determine the proper spacing of the Side Plates by measuring the length of the Front Hopper Plate. This is the distance that should be between your two side plates (not the holes). Next drill the holes for the side plates and bolt them into place. Once the side plates have been positioned at a 90-degree angle to the bottom of the trunking the required hole can be marked out. The hole will start $\frac{3}{4}$ " from the bottom of the trunking and end $\frac{3}{4}$ " from the mid-pan of the trunk. Once you are satisfied with the positioning of your hole mark it on the other side as well, remove the side plates and cut the holes. For clarification refer to the below diagrams.

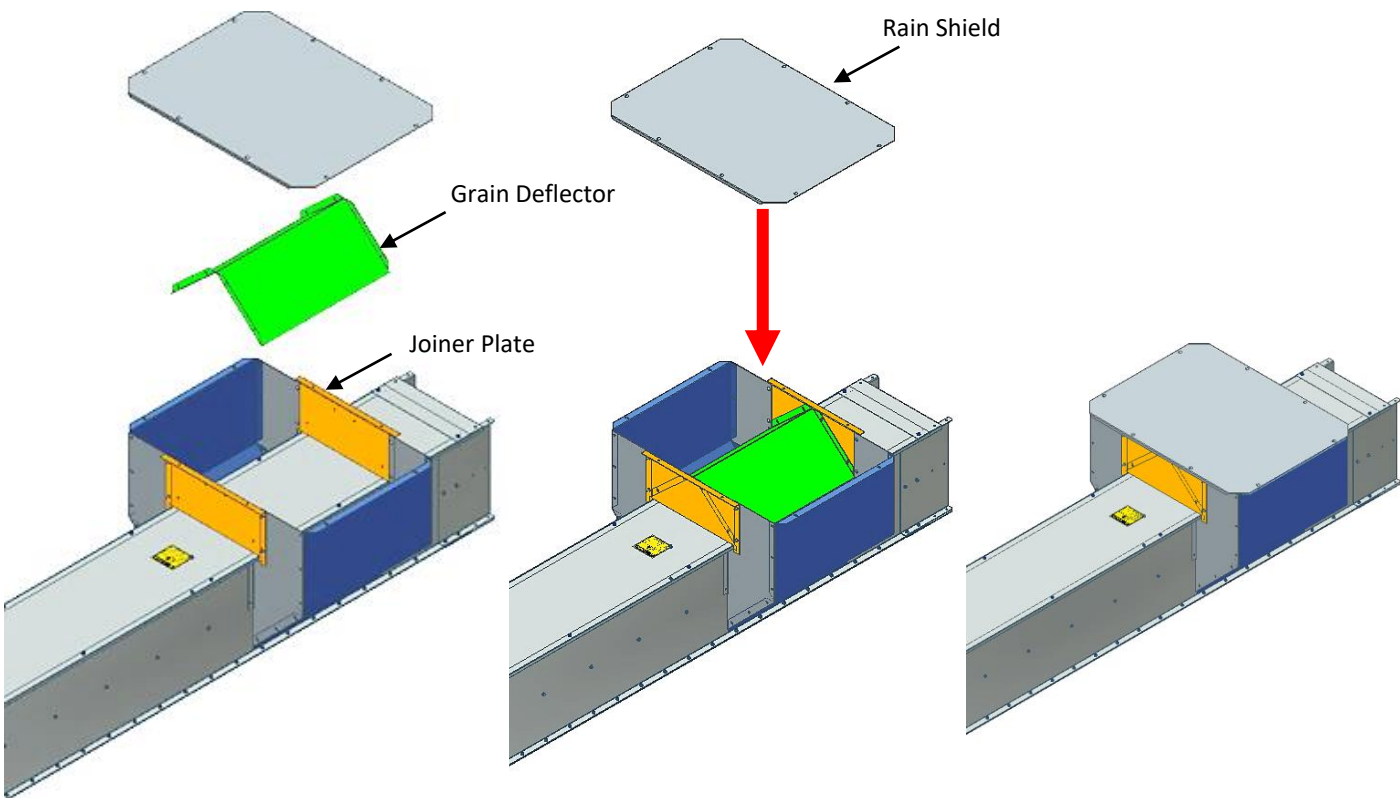


The four Hopper Side Plates can now be bolted to the trunking then welded into place. The plates will be located just outside the hole with the bends facing out. Use $\frac{5}{16}$ " x $\frac{3}{4}$ " button head bolts with the head of the bolt on the inside of the trunking.

Next locate the Hopper Front Plates and bolt them into place as shown using $\frac{5}{16}$ " x $\frac{3}{4}$ " hex head bolts.

Next bolt the two Joiner Plates to the outside of the hopper side plates on each side. The Grain Deflector can also be bolted into place as shown in the diagram. Use 5/16" x 3/4" hex head bolts.

Bolt the Rain Shield to the hopper using 5/16" x 3/4" hex head bolts. The hopper is now finished and should resemble the below picture.



For fixed inlet feeding the hole should be cut as far away from the head as possible and centred to improve loading speeds.

CHAIN COUPLING INSTALLATION INSTRUCTIONS



	<p>⚠ WARNING</p> <p>Disconnect power before installation and maintenance. Failure to do so can result in severe injury or death.</p>
--	---

MOUNTING:

1. Remove dirt and grease from coupling bore, shaft, and bushing (if bushed coupling). Do not use antigalling or antiseizing compounds when installing hubs or bushings to each other or onto the shaft. Make sure there are no burrs on the shaft, bore, key, or keyway.

2. Install Sprockets

Finished bore sprockets: If using a cover, place seal rings on shafts. (Refer to Table 1 for correct Seal selection). Place each shaft key in place and slide each coupling sprocket into place on shafts. Tighten setscrews to the torque specified in Table 4.

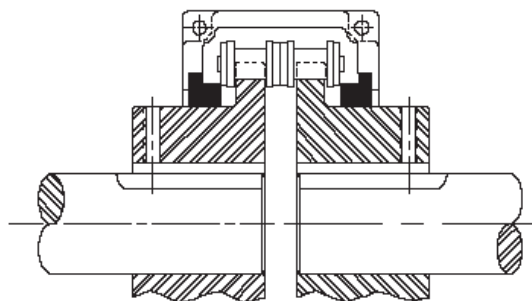
Bushed Bore Sprockets: If using a cover, place seal rings on shafts. (Refer to Table 1 for correct Seal selection). Place bushings (and external keys if applicable) into sprockets and start screws. Place assemblies on shafts so that bushing barrels are approximately flush with the end of the shafts. Install shaft key if applicable. Tighten bushing screws as specified by bushing instructions. See back page for TBF and TBH Hub Installation.

**Table 1
Seal Selection**

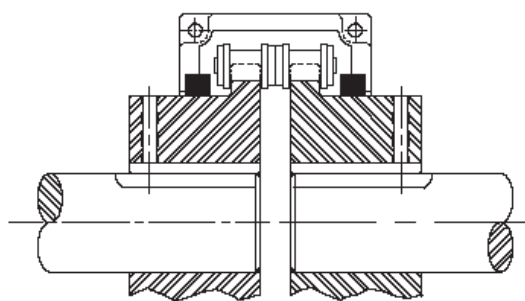
Finished Bore		Minimum Bore		Bushed Bore	
Coupling	Seal Assy	Coupling	Seal Assy	Coupling	Seal Assy
C4012	A	C40B12	A	C4020XH	A
C4016	B	C40B16	B	C6018XH	A
C5016	A	C60B16	A	C6018XP	B
C6018	B	C60B18	B	C6018XP	A
C8018	A	C60B18	A	C6020XB	B
C8020	B	C60B20	B	C8018XQ	A
C8018	A	C80B18	A	C10018XR	A
C8020	B	C80B20	B	*C4018 x 1108	B
C10018	A	C100B18	A	*C6018 x 1610	B
C10020	B	C100B20	B	*C6020 X 2012	B
				*C8020 x 3020	B
				*C10020 x 3535	B

* Style TBF and TBH use the same seal

Seal Assy "A"



Seal Assy "B"



Note: Seals for Assembly "A" and Assembly "B" are shipped with each Housing, discard unused Seal Assembly

3. Align Shafts

Since some misalignment usually develops because of shifting, wear, and settling, the sprockets should be aligned as well as possible to increase coupling life. Move the equipment to align the sprockets. Check angular and parallel misalignment with a magnet base dial indicator as follows. Maintain sprocket spacing as indicated in Table 2. Maximum allowable runouts are given in Table 3.

A. Angular Alignment: Mount the indicator base on one hub face, or side of sprocket for large sprockets. Place the pointer on the corresponding location on the other sprocket and rotate the indicator. Adjust the machines until there is little or no runout. Alternatively, a feeler gauge can be used between the two sprockets at 90° intervals. This reading should be the same at all four locations.

B. Parallel Alignment: Mount the indicator base on the outside diameter of one sprocket hub. Place the pointer on the O.D. of the other hub. Rotate the indicator. Adjust the machines until there is little or no runout.

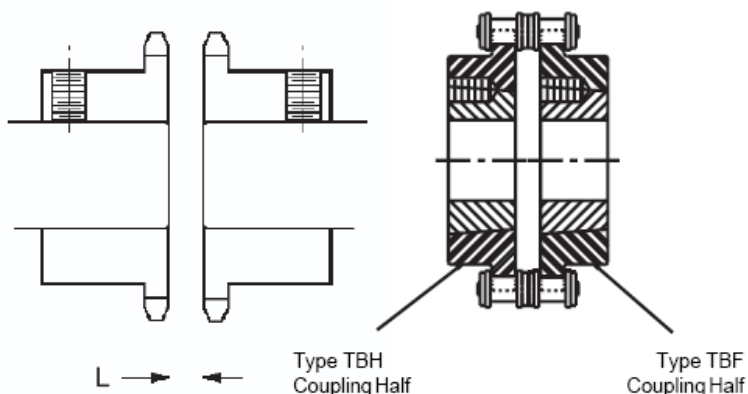
Tighten foundation bolts and re-check alignment.

Coupling Ref. No.	Spacing, L	Max. Cover RPM
C4012, C4018	5/16	4775
C4020	5/16	3727
C5018, C5018	3/8	3727
C6018, C6020	7/16	2996
C8018, C8020	9/16	2333
C10018, C10020	3/4	1886

Setscrew	Torque in. lbs.
10-24 x 1/4	33
10-24 x 3/8	33
1/4-20 x 1/4	87
1/4-20 x 3/8	87
3/8-18 x 3/8	290

Coupling No.	Parallel	Angular
4012	.010	.014
4018	.010	.020
4020	.010	.025
5018	.012	.025
5018	.012	.032
6018	.015	.035
6020	.015	.039
8018	.020	.046
8020	.020	.052
10018	.025	.058
10020	.025	.065

TBF and TBH Installation



4. Cover Assembly

Wrap coupling chain around sprocket teeth and install connecting link. Apply a small amount of Medium Duty bearing grease to each seal and slide seals onto coupling hubs. Place cover halves around coupling, position gaskets, install and tighten cover screws. Be careful to maintain proper seal position.

5. Lubrication

Remove the two pipe plugs from the cover. Install a grease fitting in one of the holes. Slowly fill the coupling with Medium Duty bearing grease having a minimum melting point of the 260 degrees F, until grease comes out the other hole. Remove the grease fitting and replace the two pipe plugs. Do not use Cup Grease. Regrease at regular intervals or when necessary by repeating procedure.

⚠ WARNING

Do not exceed maximum speeds listed in Table 2. Failure to do so could result in equipment damage, serious injury or death.

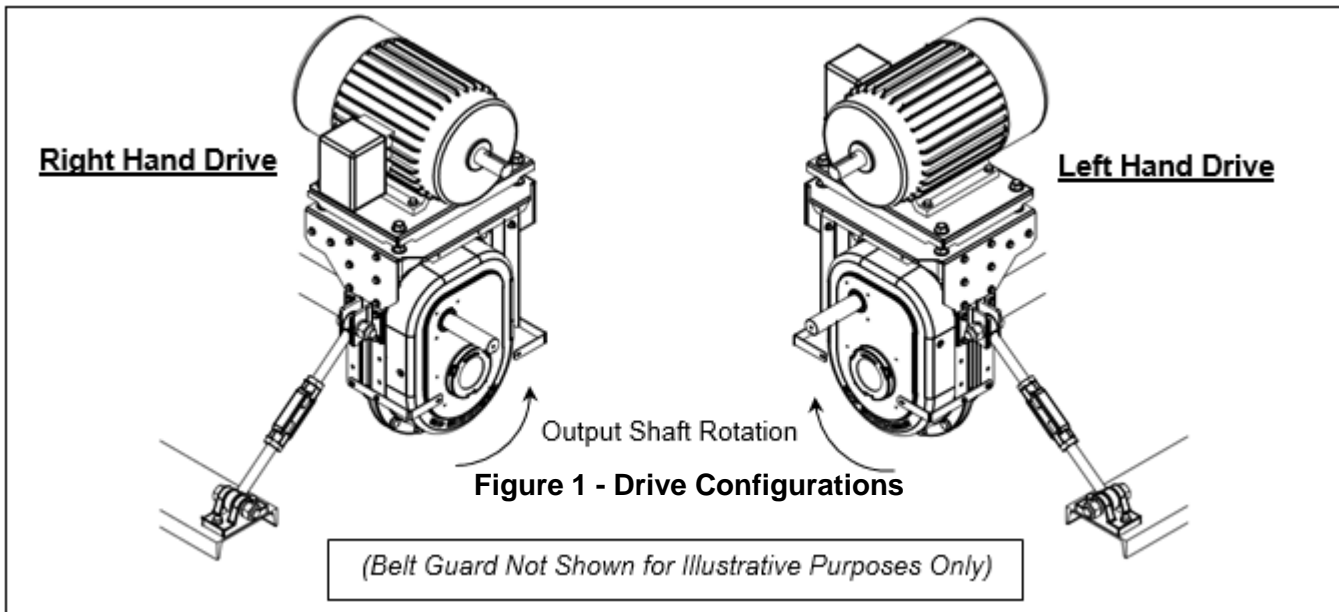
⚠ WARNING

Operating drives without guards in place can result in severe injury or death.

The following instructions detail the steps required to assemble a right hand conveyor drive assembly. For left hand drive conveyors, reconfigure the components to position the torque arm as shown in *Figure 1*.

! WARNING

It is imperative that the torque arm be in tension when the conveyor is under load. A torque arm mounted in compression can cause equipment failure resulting in serious injury or death.



Due to the numerous different conveyor and/or drive configurations, we cannot cover all aspects of the drive assembly. The following instructions are general guidelines only and some components shown may differ slightly from those supplied. Carefully read and understand all instructions before starting any work. Again, only qualified personnel should install this equipment.

Ensure the conveyor output shaft is clean, free of burrs and properly positioned in the head. This is also a good time to check that the head sprocket is centered and aligned on the shaft. A sprocket that is not properly aligned will prevent the chain from tracking correctly and cause excessive wear. Follow the manufacturer's instructions to install the speed reducer in the 12 o'clock orientation as shown in *Figure 2*. It may be necessary to relocate the lifting lug from the factory position depending on your conveyor and/or drive configuration. (Refer to manufacturer's instructions for housing flange bolt torque specifications.) Secure the speed reducer to the output shaft with the supplied bushing kit installed in the **Rear Mounting Configuration with Stabilizer Ring**. The output shaft should not extend through the end cap. It may be necessary to restrain the speed reducer in the 12 o'clock orientation until the torque arm kit is completely installed later in these instructions.

! WARNING

Speed reducers are shipped without oil. See the Lubrication section in this manual for further information.

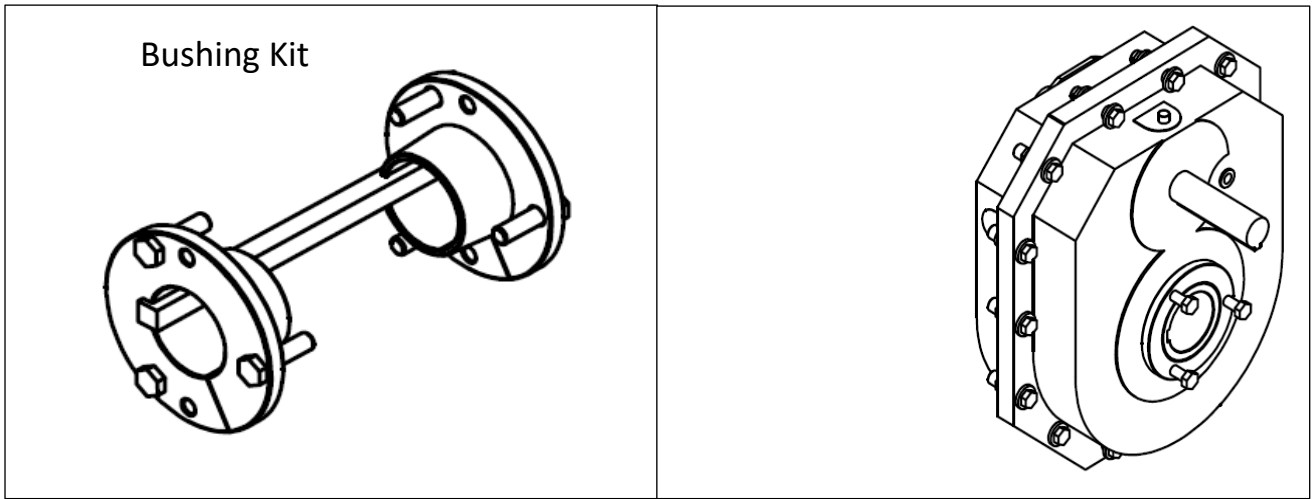


Figure 2 – Speed Reducer

Using the speed reducer housing flange bolts, install the motor mount/torque arm supports and motor mount supports as shown in *Figure 3*. Do not reinstall the flat washers on the bolts. Refer to the speed reducer manufacturer’s instructions for housing flange bolt torque specifications.

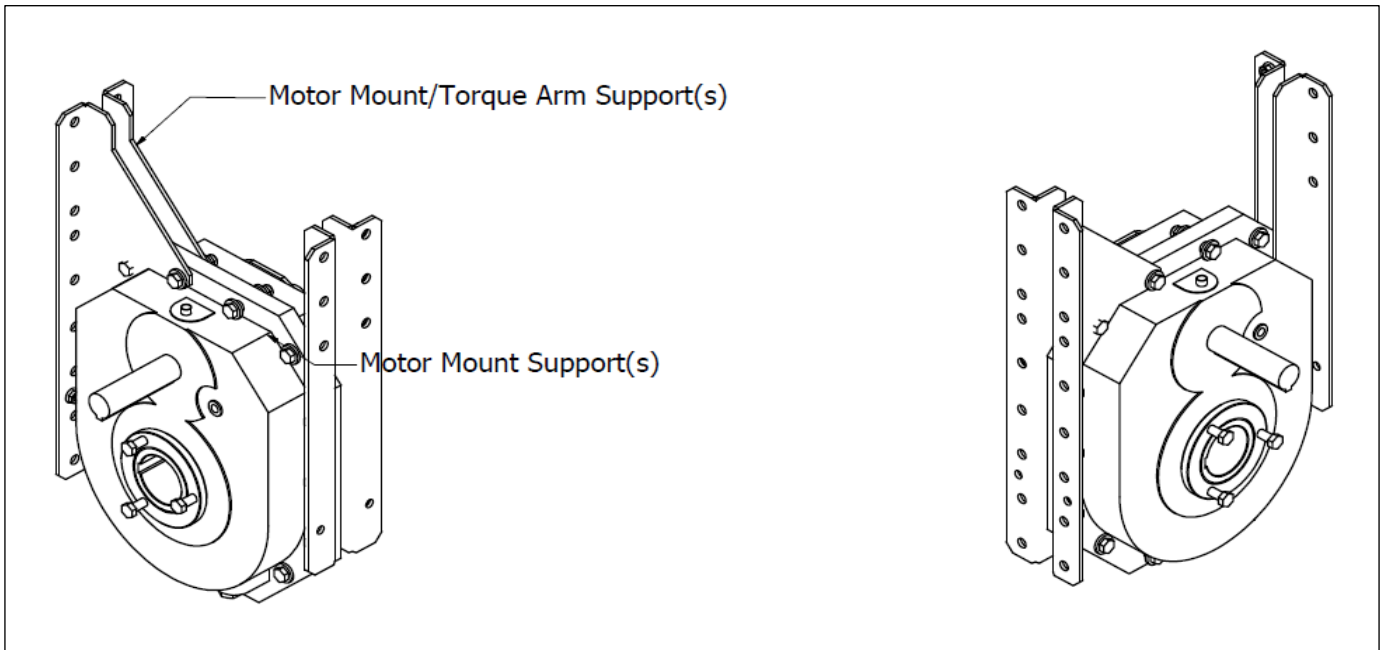


Figure 3 - Motor Mount / Torque Arm Supports and Motor Mount Supports

Install the motor mount adapter and the motor mount adapter inner reinforcements (407 and 415 speed reducers only) to the motor mount/torque arm supports and motor mount supports as shown in Figure 4.

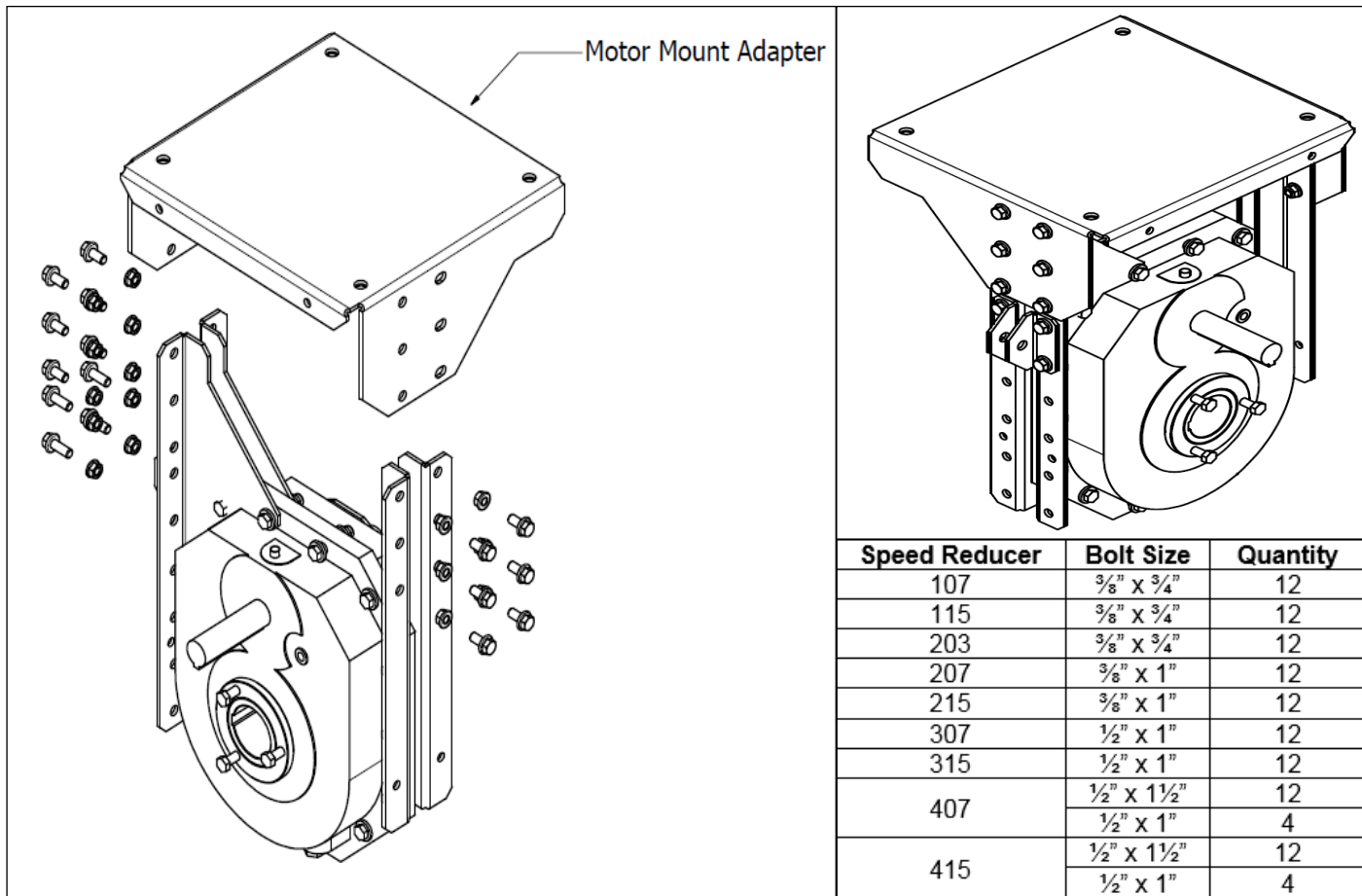
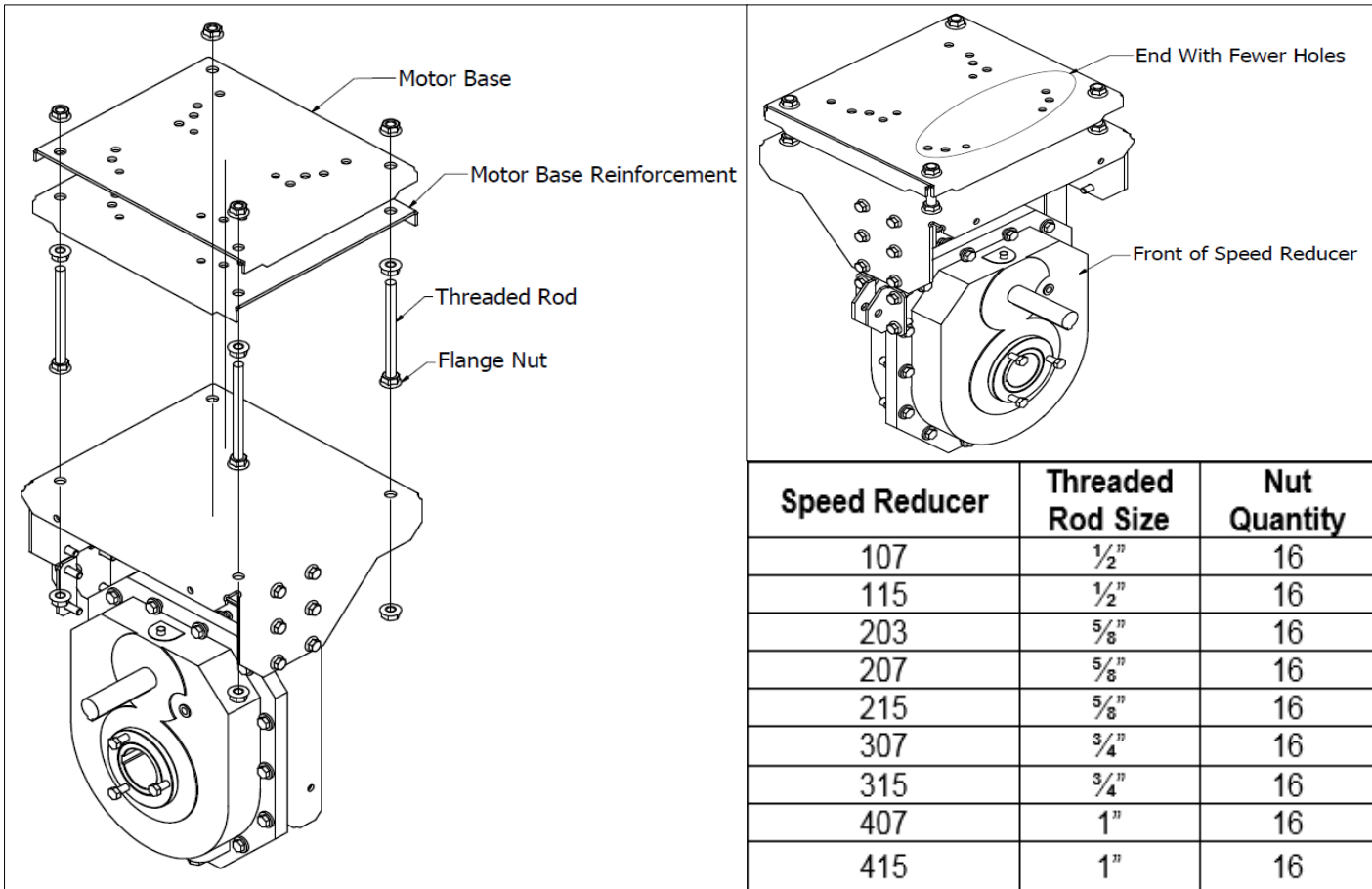


Figure 4 - Motor Mount Adapter

Install the motor base on top of the motor base reinforcement and position above motor mount adapter using the supplied threaded rod and flange nuts as shown in Figure 5. Excess length of threaded rod should project downwards so it does not interfere with the motor. Ensure motor mounting holes are positioned so that the end with fewer holes is at the front of the speed reducer where the input shaft is.

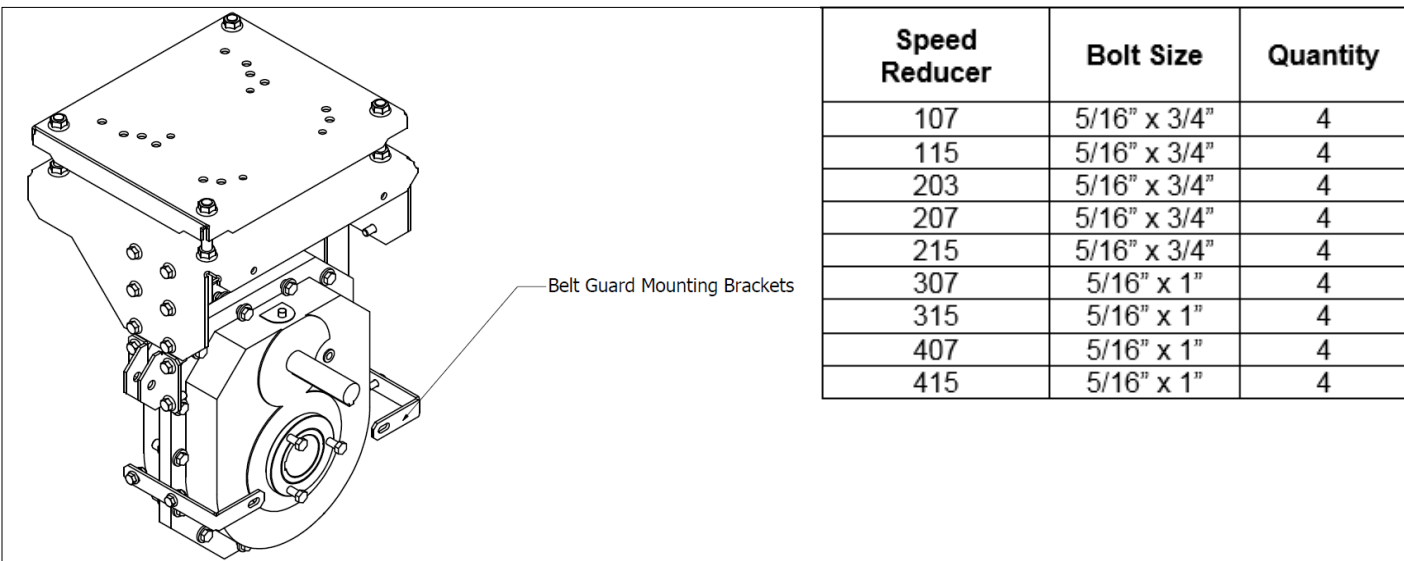
***Speed Reducer over 215 are available based on Manufacturing requirement only.**



Speed Reducer	Threaded Rod Size	Nut Quantity
107	1/2"	16
115	1/2"	16
203	5/8"	16
207	5/8"	16
215	5/8"	16
307	3/4"	16
315	3/4"	16
407	1"	16
415	1"	16

Figure 5 – Motor Base and Adjustment Rods

Install belt guard mounting brackets to the motor mount/torque arm supports and motor mount supports using supplied hardware as shown in *Figure 6*.



Speed Reducer	Bolt Size	Quantity
107	5/16" x 3/4"	4
115	5/16" x 3/4"	4
203	5/16" x 3/4"	4
207	5/16" x 3/4"	4
215	5/16" x 3/4"	4
307	5/16" x 1"	4
315	5/16" x 1"	4
407	5/16" x 1"	4
415	5/16" x 1"	4

Figure 6 – Belt Guard Mounting Brackets

Install the torque arm mounting brackets to the motor mount/torque arm supports using supplied hardware as shown in *Figure 7*. Placement of the torque arm mounting brackets will depend on your specific conveyor and/or drive configuration. Torque arm mounting brackets can be placed anywhere along the side of the motor mount assembly, including the motor mount adapter, in order to achieve the torque arm manufacturer's installation specifications.

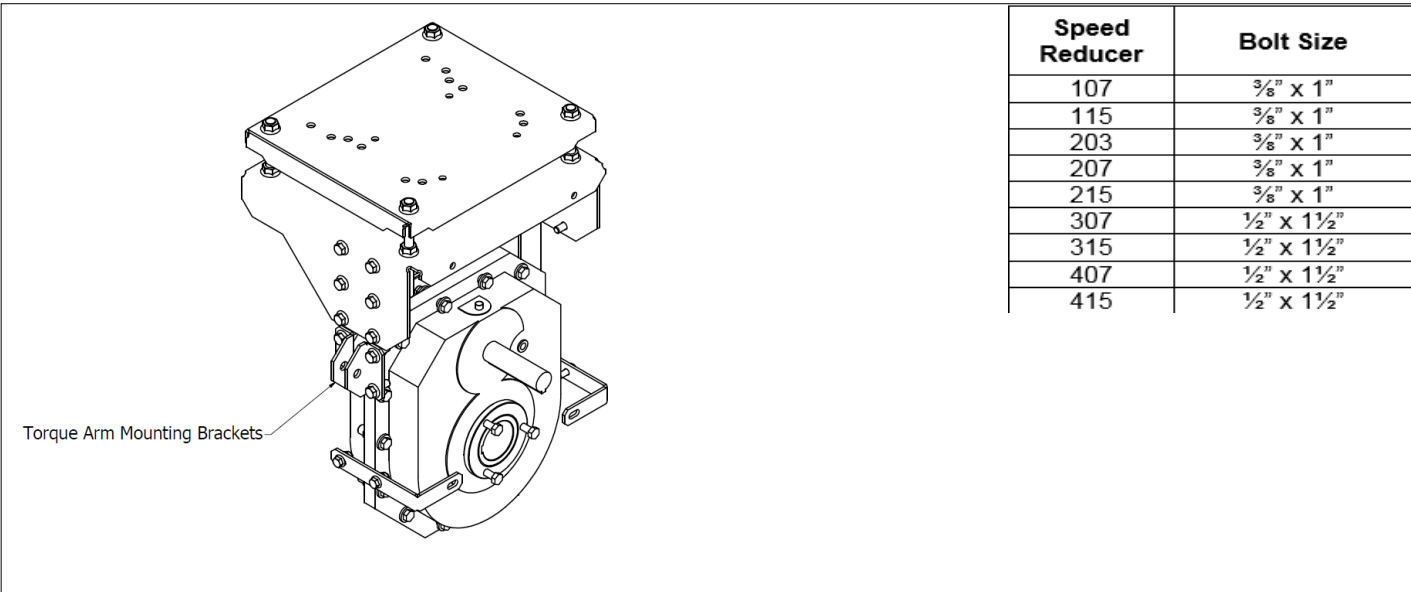


Figure 7 – Torque Arm Mounting Brackets

Mount the torque arm channel to the conveyor head and/or trunk section using a minimum of four existing fasteners (*two per side*). Placement will depend on your specific conveyor and/or drive configuration. *Figure 8* shows the most common installation.

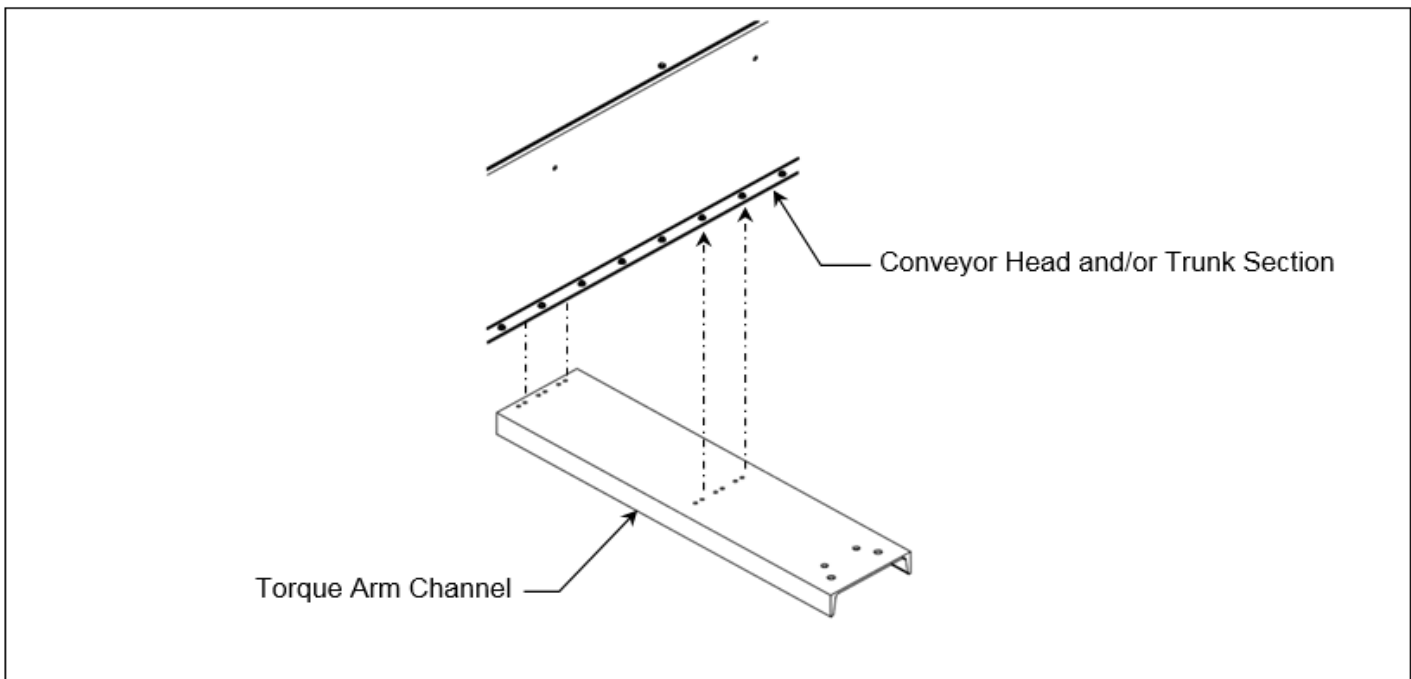


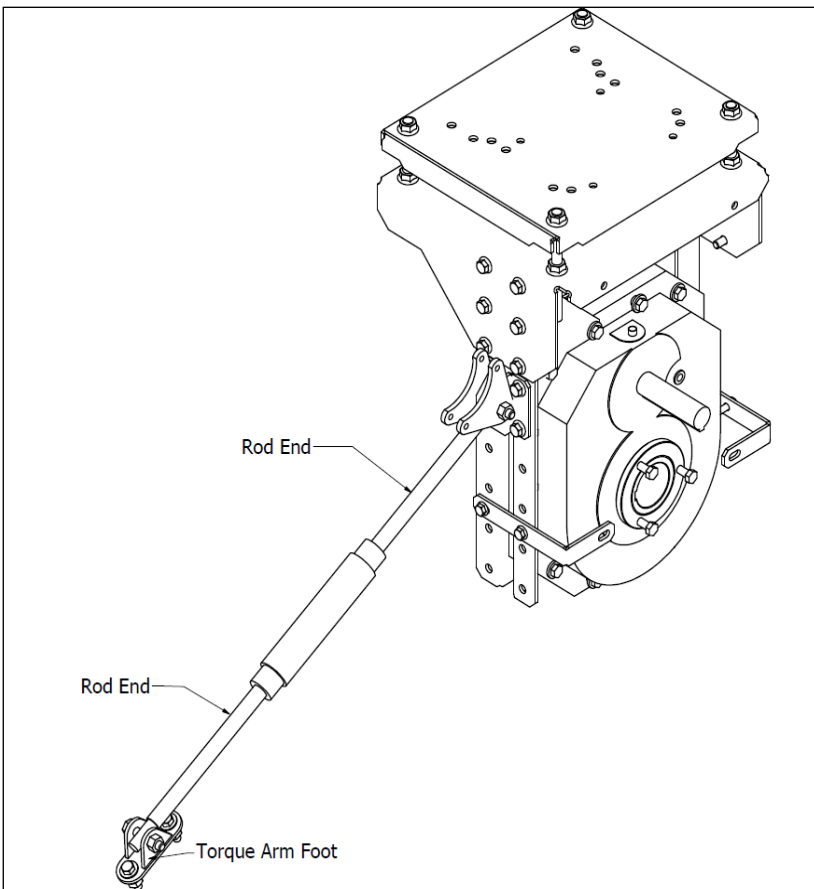
Figure 8 – Torque Arm Channel

Install the speed reducer torque arm kit following the manufacturer’s instructions for **Top Motor Mount** as shown in *Figure 9*. The torque arm foot is mounted to the torque arm channel using the supplied hex bolts, nuts, flat washers and lock washers. (Refer to torque arm kit manufacturer’s instructions for bolt torque specifications.) The fasteners used to secure the rod ends to the torque arm foot and the torque arm mounting brackets are supplied by the manufacturer. The torque arm brackets and mounting hardware supplied with the torque arm kit are not used and can be discarded.

! WARNING

It is imperative that the torque arm be in tension when the conveyor is under load. A torque arm mounted in compression can cause equipment failure resulting in serious injury or death.

The $90^\circ \pm 30^\circ$ torque arm angle specified by the manufacturer can normally be achieved by relocating the torque arm mounting brackets vertically along the side of the motor mount assembly and/or relocating the torque arm channel. Some installations may require some unique solutions such as shortening the torque arm rod ends or mounting the torque arm channel on top of the head and/or trunk sections. Though it is preferred to keep the motor mount assembly in a vertical orientation, it is permissible to angle the assembly in order to meet the manufacturer’s specifications. For round bottom conveyors, weld the torque arm channel to the conveyor once all adjustments are completed.



Speed Reducer	Torque Arm Foot Mounting Bolt Size
107	3/8" x 1 1/2"
115	3/8" x 1 1/2"
203	3/8" x 1 1/2"
207	7/16" x 1 1/2"
215	7/16" x 1 1/2"
307	1/2" x 1 3/4"
315	5/8" x 2"
407	5/8" x 2"
415	3/4" x 2 3/4"

Figure 9 – Torque Arm Kit

Install motor onto motor base as shown in *Figure 10*.

Note: Electric motor is not provided. Always use a motor with the correct HP rating. Too small of a motor will not supply the horsepower required to achieve capacity and damage to the motor may occur. Too large of a motor may cause high stress on components resulting in shorter life. “Soft Start” motors are also recommended to protect the conveyor from high torque shocks against a unit that may have inadvertently been stopped under load or plugged. Electric motors and controls shall be installed by a qualified electrician. Controls should be located so that the operator has a full view of the entire operation. An amp meter for the drive motor should be installed so the operator can easily monitor and avoid overloading the system. A magnetic starter should be used to protect your motor when starting and stopping. It should stop the motor in case of power interruption, conductor fault, low voltage, circuit interruption, or motor overload. The motor must be restarted manually. Some motors have a built-in thermal protection overload protection. If this type of motor is used, use only those with manual reset.



**Disconnect power before resetting motor overloads.
Make certain electric motors are grounded.**

IMPORTANT: After the motor is mounted and all controls are complete, run the motor prior to installing sheaves and belts to check rotational direction. A conveyor chain travelling in the wrong direction can lead to equipment failure.



**Disconnect power before resetting motor overloads.
Make certain electric motors are grounded.**

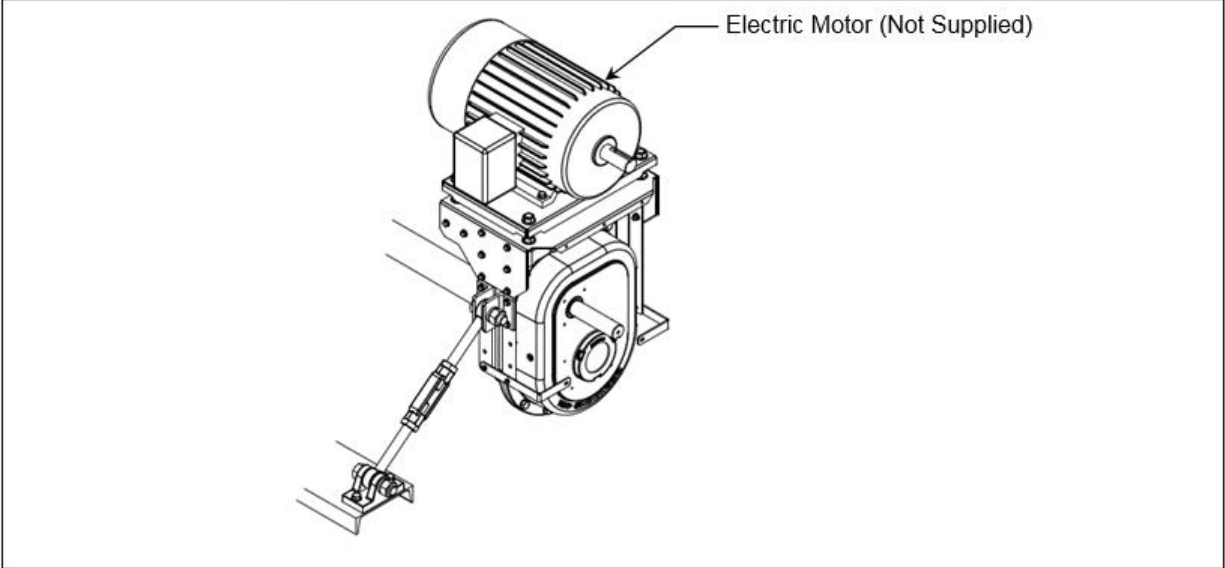


Figure 10 – Electric Motor

If applicable, mount the fan kit to the speed reducer following the manufacturer’s instructions prior to mounting belt guard assembly, mount the belt guard assembly to the motor mount adapter and the belt guard mounting brackets with the supplied hardware as shown in *Figure 11*.



The conveyor should never operate without guards in place. Failure to follow these precautions could result in serious injury or death.

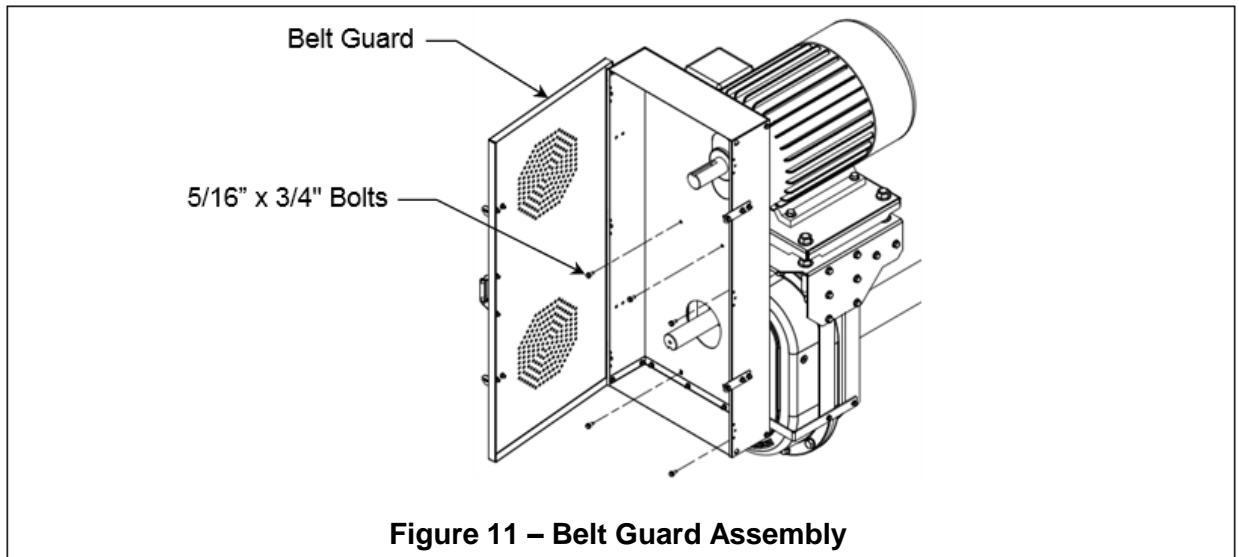


Figure 11 – Belt Guard Assembly

Install sheaves and bushings onto the reducer input shaft and motor shaft as shown in *Figure 12*. Refer to bushing manufacturer’s instructions for additional information and torque specifications. Sheaves should be installed as close to the motor and reducer as possible to prevent overhung loads, and aligned using a straight edge to avoid excessive belt wear. Be sure drive keys are properly installed. The drive belts can now be installed and tensioned using the motor mount adjustment rods. Ensure adjustment rods are turned equally to keep motor sheave parallel to the reducer sheave. Belts must be tightened sufficiently to avoid slipping which will result in excessive wear during normal operation. Over tightening creates high stress on belts and conveyor components resulting in shorter life. Close belt guard door and secure using supplied hardware.

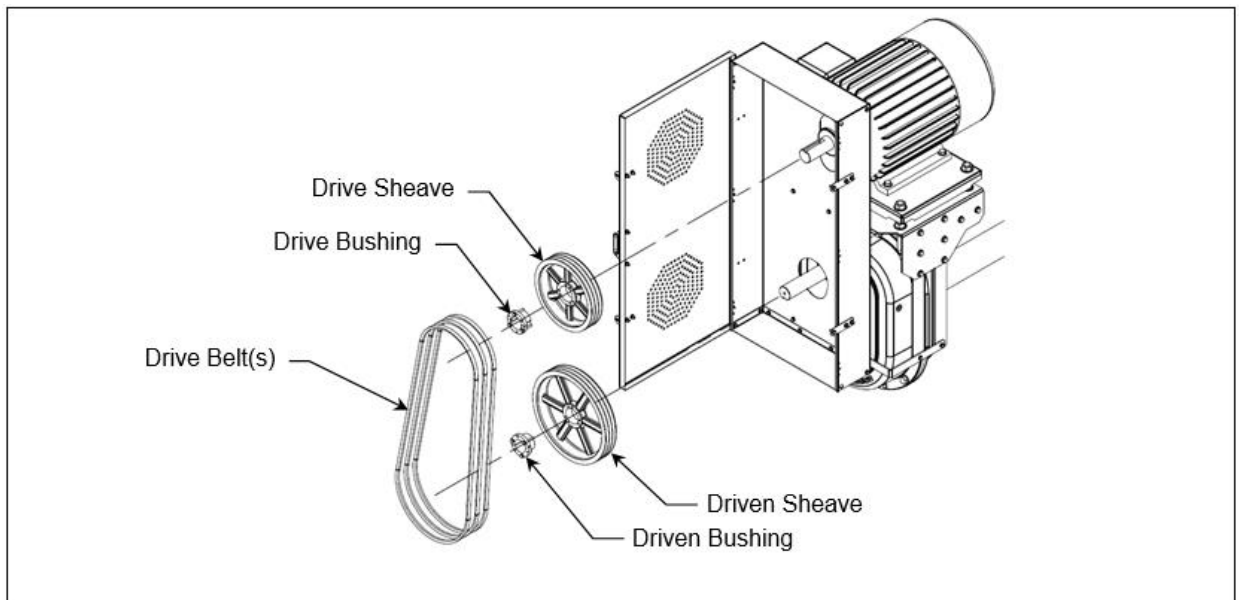


Figure 12 – Sheaves, Bushings and Drive Belts

Lubrication

Reducers are shipped without oil; refer to the Manufacturers manual to determine the proper type and quantity for your application. All bearings should be lightly lubricated before initial start-up but fully lubricated during. Some bearings are equipped with auto greasers (optional) to prevent over lubricating. It has been our experience that most bearings are ruined from over lubricating rather than lack of it. Pressure guns tend to break the seals, in which they are unable to retain lubricant. Ensure that all employees are aware of this fact.

Start-Up

A final check of all parts to ensure that no foreign objects or tools have been left in the drag is a good idea. All guards, inspection panels, and removable sections should be checked for proper placement. The boot chain tensioners need to be adjusted to tighten the chain on the sprockets, refer to drag chain section for more info. The drive should once again be turned by hand to check for proper tracking, and to ensure there are no obstructions. Finally check all setscrews to ensure they are tightened.

After a check of all mentioned components carefully run the conveyor **without** load and check for any problems or necessary adjustments. Make certain that the chain is running in proper alignment throughout the conveyor. If adjustments are required refer to the troubleshooting section of this manual.

Once all sections of the conveyor have been thoroughly checked, all adjustments have been made and proper lubrication is done the conveyor can be run **without** load for several hours for an initial break in. Look and listen carefully for any irregularities before running any material through the conveyor.

Once you are satisfied with the operation of your conveyor it can be put into use. At this point it may be a good idea to check the rest of your flow system. Be sure any outlets, inlets, etc are functioning properly.

A chart is located on the following page to assist you in recognizing and repairing any problems you may have with your conveyor during start-up or in the future. We at Lambton Conveyor stand ready to assist you with any problems or concerns regarding the operation of our equipment. Feel free to call upon us at any time for information or assistance.

Problem	Cause	Solution
Low Capacity	Improper Chain Speed Loose Chain Improper Feeding Plugged	<ul style="list-style-type: none"> • Check for proper shaft RPM • Check chain tension • Check inlet grain level • Check discharges
Noisy Operation	Loose UHMW Paddles Bottom not Aligned Worn Drive Components Worn Sprocket	<ul style="list-style-type: none"> • Check all bolts and chains • Check trunking joints for alignment • Check oil levels and shaft seals • V-belt alignment, and tension • Replace
Uneven UHMW (paddle wear)	Conveyor Misalignment Sprocket Slipped on shaft	<ul style="list-style-type: none"> • Check conveyor alignment • Check sprocket set screws
Excessive carry-over	Discharge Gates not fully open	<ul style="list-style-type: none"> • Check gate operation
Uneven Sprocket Wear	Worn Chain Improper Alignment Carry-over into discharge	<ul style="list-style-type: none"> • Replace Chain • Check Sprocket alignment • Check inlet location (pg. 10)

Tel #: (519) 627-8228

Toll Free #: 1 (888) 239-9713

Fax #: (519) 627-0250

Warning! Power must be locked out prior to any maintenance or repairs being performed on the equipment to prevent accidental start-up. Failure to follow this precaution may result in serious injury or death.

To extend the life of your drag conveyor perform the tasks listed frequently. Like all equipment the overall life of your drag conveyor can be greatly reduced if it is abused and poorly maintained.

- Check all bearings and moving parts daily during operation for any problems
- Lubricate all bearings, and drive components as needed according to the manufacturers recommendations.
- Inspect the v-belts frequently for proper tension and wear. Replace when necessary.
- Check drag chain, and sprockets periodically for wear, damage and proper adjustment. Any worn or broken paddles should be replaced or straightened.
- Tightening of bolts, electrical connections, and switches

Routine maintenance may include but is not limited to the above.



Lambton Conveyor has included this training sign-off sheet for the owner/operator to make use of in the training, installation, and operation processes of the equipment described in this manual. Read the entire manual, sign-off and date the chart below.

Date	Employee Signature	Employee Name Printed



RA#: _____ Date: _____ Originator: _____

Distributor: Lambton Conveyor Phone #: 519-627-8228 Fax #: 519-627-0250

Account #: _____ Contact: _____ Salesman: _____

Sales Order #: _____ Invoice #: _____ Purchase Order #: _____

Qty.	Part #	Reason for Return

FOR WARRANTY EVALUATION, THE FOLLOWING APPLICATION INFORMATION MUST BE COMPLETED

Application Information:

Type of Application: _____ Input RPM: _____ Output RPM: _____

HP: _____ Ratio: _____ Environment (wet, dusty, etc.): _____

Lubrication Type: _____ Type of Loading (shock, constant, etc.): _____

Type of Drive: _____ Operating Temperature: _____ Length of Service: _____

Probable Cause or Comments: _____

