

Kleen-Drag Chain Conveyors

Models:

12", 14" AND 20" TALL

Installation and Operation Manual

PNEG-2375

Version 1.0

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PNEG-2375

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

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NOTES

1 Safety Precautions

Topics Covered in this Chapter

- Safety Guidelines
- Cautionary Symbol Definitions
- Safety Cautions
- Safety Decals
- Safety Sign-off Sheet

Safety Guidelines

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

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

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

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

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








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

ST-0001-4

Cautionary Symbol Definitions

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

Table 1-1 Description of the different cautionary symbols

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

ST-0005-2

Safety Cautions

This is all the topics contained in the Master Safety Reference File. Mainly used to verify formatting before releasing the topic.

Use Personal Protective Equipment

- Use appropriate personal protective equipment:

Eye Protection



Respiratory Protection



Foot Protection



Hearing Protection



Head Protection



Fall Protection



Hand Protection



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

ST-0004-1

Follow Safety Instructions

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



ST-0002-1

Chapter 1: Safety Precautions

Maintain Equipment and Work Area

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



ST-0003-1

Operate Motor Properly

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



ST-0009-3

Stay Clear of Moving Parts

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



ST-0017-1

Lifting Hazard

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



ST-0021-2

Install and Operate Electrical Equipment Properly

- Electrical controls must be installed by a qualified electrician and must meet the standards set by applicable local codes (National Electrical Code for the US, Canadian Electric Code, or EN60204 along with applicable European Directives for Europe).
- Lock-out power source before making adjustments, cleaning, or maintaining equipment.
- Make sure all equipment is properly grounded.



ST-0027-4

Sharp Edge Hazard

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



ST-0036-2

Toxic Fume and Dust Hazard

- Do all work outside or in a well-ventilated area. Dispose of paint and solvent properly.
- Remove paint before welding or heating:
 - Avoid potentially toxic fumes and dust. Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.
 - If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.
 - If you use solvent or paint-stripper, remove stripper with soap and water before welding.
 - Remove solvent or stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating



ST-0043-2

Chapter 1: Safety Precautions

Stay Clear of Hoisted Equipment

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



ST-0047-1

Stay Clear of Slide Gate

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



ST-0049-1

Fall Hazard

- Ladders, stairways and platforms are for use by competent and trained personnel only. Do not allow children or other unauthorized persons to have access to the equipment.
- Access to the equipment must be restricted by the use of security fencing and lockable gates.
- Lower sections of ladders must be fitted with a lockable safety gate to prevent unauthorized access.
- Make sure that hot surfaces have had adequate time to cool before working on or in the equipment.
- Lock out and tag out power supplies and fuel supplies to all equipment.
- Do not attach lifting equipment to ladders or platforms.
- Do not go outside of the safety rails provided on elevated platforms.
- Do not work at heights during high winds, rain, snow, or ice storms.



ST-0056-1

Stay Clear of Rotating Parts

- Do not service equipment while it is in operation.
- Entanglement in rotating parts or exposed belts will cause serious injury or death.
- Keep all shields and covers in place at all times.
- Lock-out power source before making adjustments, cleaning, or maintaining equipment.



ST-0077-1

Stay Clear of Rotating Parts

- Do not service equipment while the equipment is in operation.
- Entanglement in rotating shafts or exposed conveyor belts will cause serious injury or death.
- Keep all guards and covers in place at all times.
- Lock-out power source before making adjustments, cleaning, or maintaining equipment.



ST-0092-0

Stay Clear of Tail Shroud






- Improperly secured tail shroud can fall and impact user, causing serious injury or death.
- Always secure tail shroud properly during maintenance activities.



ST-0093-0

Safety Decals

The safety decals on your equipment are safety indicators which must be carefully read and understood by all personnel involved in the installation, operation, service and maintenance of the equipment.

Location	Decal No.	Decal	Description
Belt guard cover	DC-994		Decal, Danger Shear Point
Belt guard cover	DC-995		Decal, Warning Shear Point
Head and tail sections	DC-996		Decal, Warning Chain Sprocket
Head section	DC-997		Decal, Danger Chain Sprocket
Head, tail and intermediate sections	DC-1230		Decal, Chain and Flight Warning

To replace a damaged or missing decal, contact us to receive a free replacement.

GSI Decals

1004 E. Illinois St.
 Assumption, IL 62510
 Tel: 1-217-226-4421

2 General Information



- 1. Read and understand the Operator's Manual BEFORE operating the unit.**
- 2. Keep all safety shields and devices in place.**
- 3. Keep all covers in place.**
- 4. Make certain everyone is clear of the equipment before operating.**
- 5. Keep hands, feet and clothing away from moving parts.**
- 6. Shut OFF and lock out all power to adjust, service, clean or unclog the unit.**
- 7. Keep off the equipment at all times.**
- 8. Keep children, visitors and all untrained personnel away from the machine when in operation.**
- 9. Do not operate electric motor equipped units until motors are properly grounded.**
- 10. Disconnect power on electrical driven units before re-setting motor overloads.**
- 11. Do not repetitively stop and start the drive in order to free a plugged condition. "Jogging" the drive in this manner can damage the conveyor and/or drive components.**

Receiving Inspection

- Carefully inspect the shipment as soon as it is received. Verify that the quantity of parts or packages actually received corresponds to the quantity shown on the packing slip. Any discrepancies should be clarified immediately.
- Please remember that any damaged or missing parts must be noted on the bill of lading at the time of delivery.
- Report any damage or shortage to the delivering carrier as soon as possible. GSI's responsibility for damage to the equipment ends with acceptance by the delivering carrier.
- Save all paperwork and documentation furnished with any of the chain conveyor components.

Pre-Installation Preparation

1. Familiarize yourself thoroughly with this manual and all the conveyor parts. Read all manuals and safety signs before using or servicing equipment. Taking the time to do so will aid in the assembly of the conveyor.
2. Remove all banding and crating material. Arrange the conveyor components so that they are easily accessible.
3. Every shipment will include the final assembly drawing of the conveyor. This will show the order each of the sections should be installed in and also identify any accessory items that are to be installed. This drawing should be included in the manual packet, if this drawing is missing or damaged, contact your GSI dealer to obtain an electronic or physical copy.
4. Locate sturdy items to serve as blocking. (i.e. wood blocks, saw horses, etc.) Blocking is used to support the conveyor sections above the ground to aid in assembly.
5. Locate and place the conveyor sections on the blocking in order, starting with the head section and concluding with the tail section.

Welding



Remove paint before welding or heating. Toxic fumes can be generated when paint is heated by welding, soldering or using a torch. Always wear an approved respirator and work in well-ventilated area.

1. Welding on or to the conveyor may cause damage to both the conveyor and its electrical system.
2. If welding is necessary, precautions should be taken to protect the conveyor.
3. If it is necessary to fasten anything to the conveyor permanently, careful consideration should be given to methods of maintenance, removal and replacement of the conveyor and/or its parts.

Motor

1. Connect the conveyor motor to a power source according to the motor manufacturer's instructions and recommendations.
2. To avoid injury it is recommended that a certified electrician perform the motor wiring.
3. A shut off switch should be placed near the motor so that the system may easily be shut down to help prevent accidents during maintenance.
4. It is important to check proper motor shaft rotation before installing drive belts.

Support

1. The conveyor must be supported at intervals no greater than 10'.
2. It is recommended that supports be installed at vertical portions of flanges leaving bottoms of intermediate sections clear.
3. By attaching supports in this manner, the removable bottoms are unobstructed for ease of replacement. Support legs are available as an option.

Clearance

1. A clearance of at least the width of the conveyor is recommended on all sides of the unit.
2. While clearance may be acceptable, serious consideration must be given to methods of maintenance, removal and replacement of the conveyor and/or its parts.

Discharge

1. The standard conveyor is constructed with one discharge located at the drive end. If intermediate discharges are to be used the location(s) must be determined before proceeding with the conveyor assembly.
2. Intermediate discharges cannot be installed over a intermediate seam joint; therefore, it may be necessary to position a shorter trough section to serve as a spacer in order to accommodate the placement of the discharge(s) where they are required. Refer to [Installing the Gate Operator, page 70](#) for details.

NOTE: *The owner assumes all responsibility for any alterations to the equipment.*

NOTES

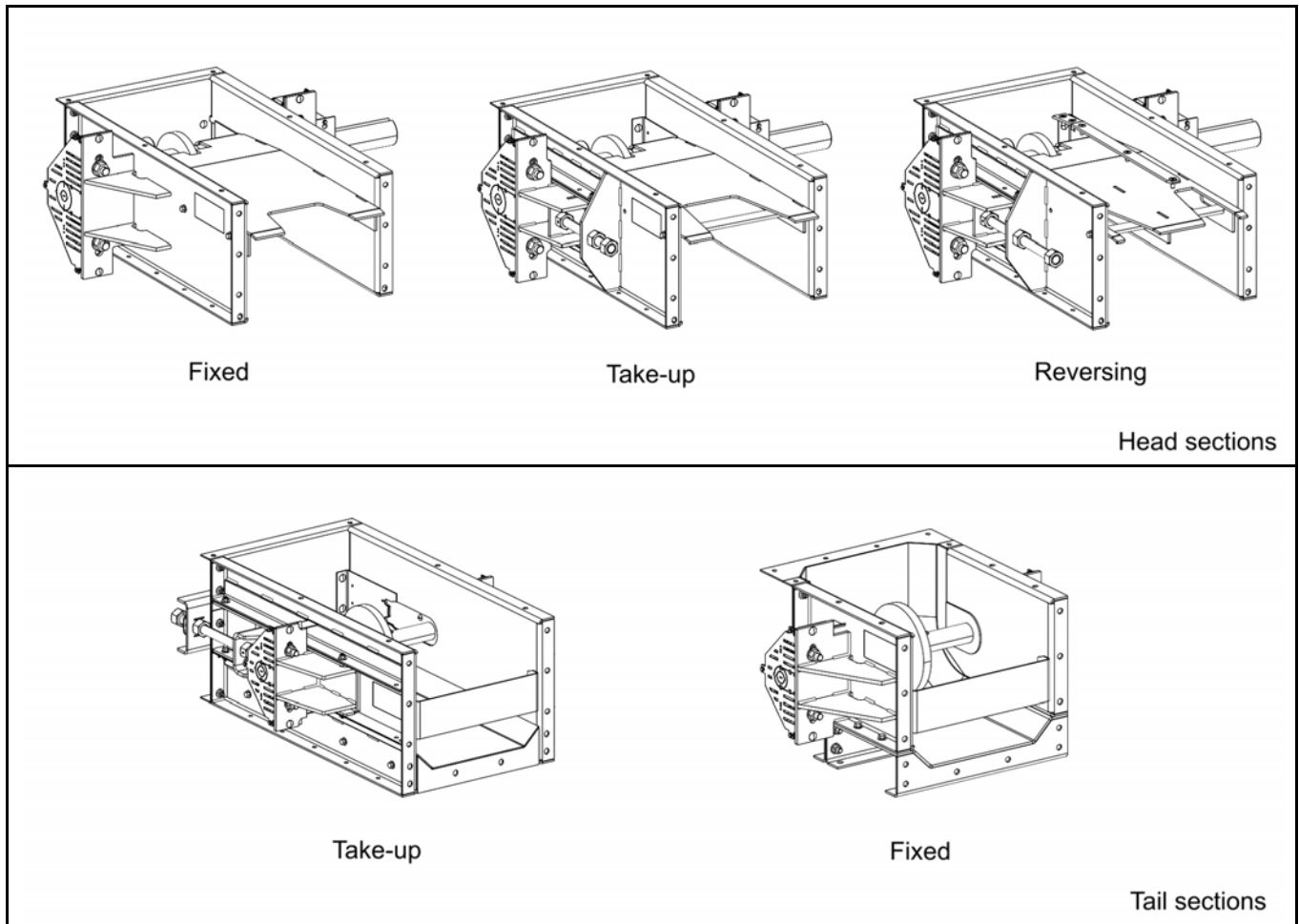
3 Component Identification

Topics Covered in this Chapter

- Conveyor Components

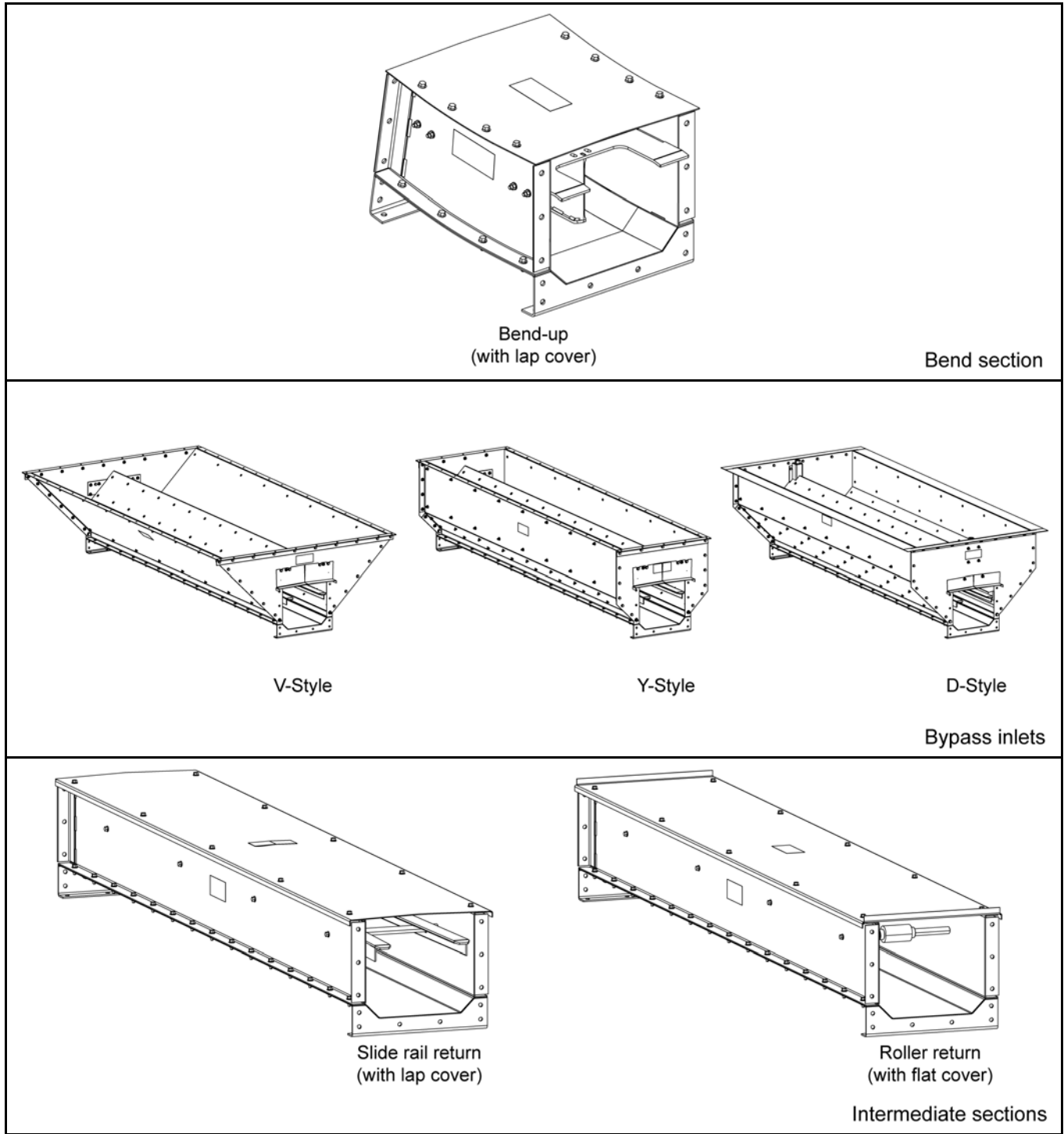
Conveyor Components

Table 3-1 Identifying the conveyor components



Chapter 3: Component Identification

Table 3-1 Identifying the conveyor components (cont'd.)



4 Installing the Conveyor

Topics Covered in this Chapter

- Installing the Intermediate Section
- Installing the Bend Section (Optional)
- Installing the Bypass Inlet (Optional)
- Adjusting the Bypass Inlet Choke
- Installing the Tail Section
- Installing the Head Section
- Stripper Plate Adjustment
- Installing the Chain Assemblies
- Installing the Covers

Installing the Intermediate Section

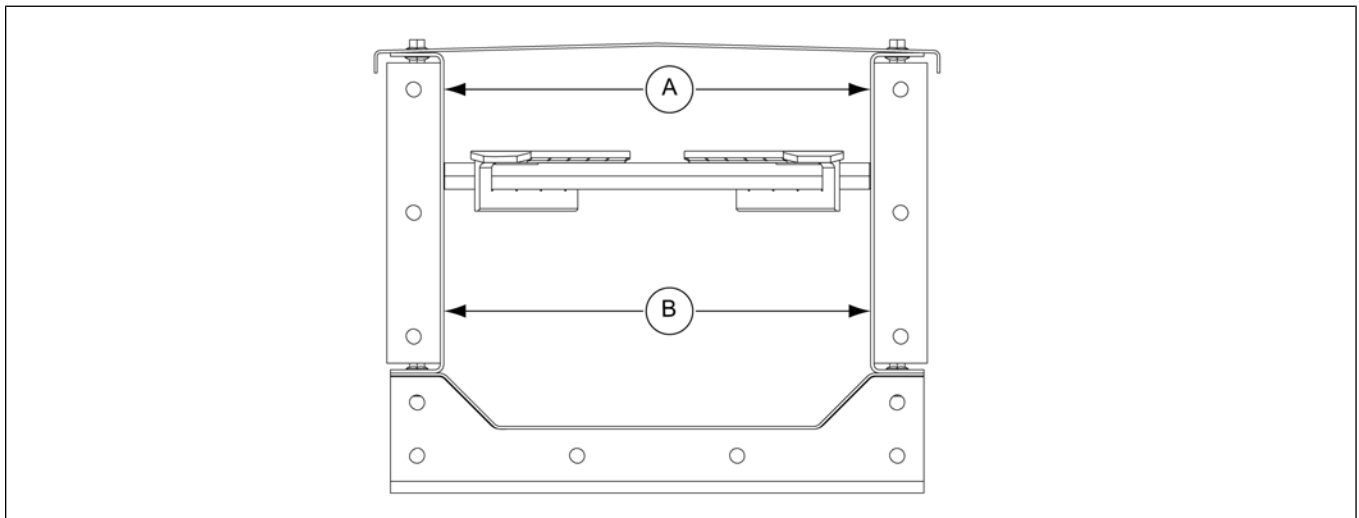
Before You Begin

Intermediate sections are shipped with covers installed. These covers (21) must be removed before the assembly of the conveyor can begin. Covers should be stored in a protected area in order to minimize any possible damage. Retain the factory supplied hardware for covers to re-install later.

What You Should Know

- Make sure the intermediate section assembly is square. It is critical for the straightness of the conveyor. Also, it is important that the inside dimensions of the box are equal when measured from side-to-side at both top and bottom of the trough box (dimension A = dimension B).
- Check tightness of all hardware as some may have loosened in transit.

Figure 4-1 *Checking the conveyor straightness*



Chapter 4: Installing the Conveyor

- During the assembly of each trough section to the next section, carefully inspect each flange joint. It is critical for straightness of the conveyor and to prevent chain assembly damage that the intermediate interior surfaces of the bottom plate weldment and the side weldments and any optional side liners be flush from one intermediate section to the next. This also extends to head, tail, bend, bypass inlet and dump hopper section installation.
- A chalk line is helpful during this phase of the assembly to ensure proper alignment of the surfaces. The maximum run-out in any direction should be plus or minus 1/4".
- Proper alignment minimizes wear on flights and other potential damage to the conveyor. Make sure that the conveyor is level in horizontal applications. Inspect the transition of each rail return weldment from one intermediate to the next to ensure that the top surfaces are flush and adjust if necessary.
- Failure to follow these installation guidelines may result in wear on chain assembly flight pads and other potential damage to the conveyor.

Installation

1. Determine the intermediate section (7) installation order. Note that the narrow, tapered end of the slide rail return weldment (6) of each intermediate section (7) will point towards the discharge end of the conveyor.
2. Attach the intermediate sections (7) together using 1/2" x 1-1/4" flange bolts (1) and 1/2" flange nuts (3).

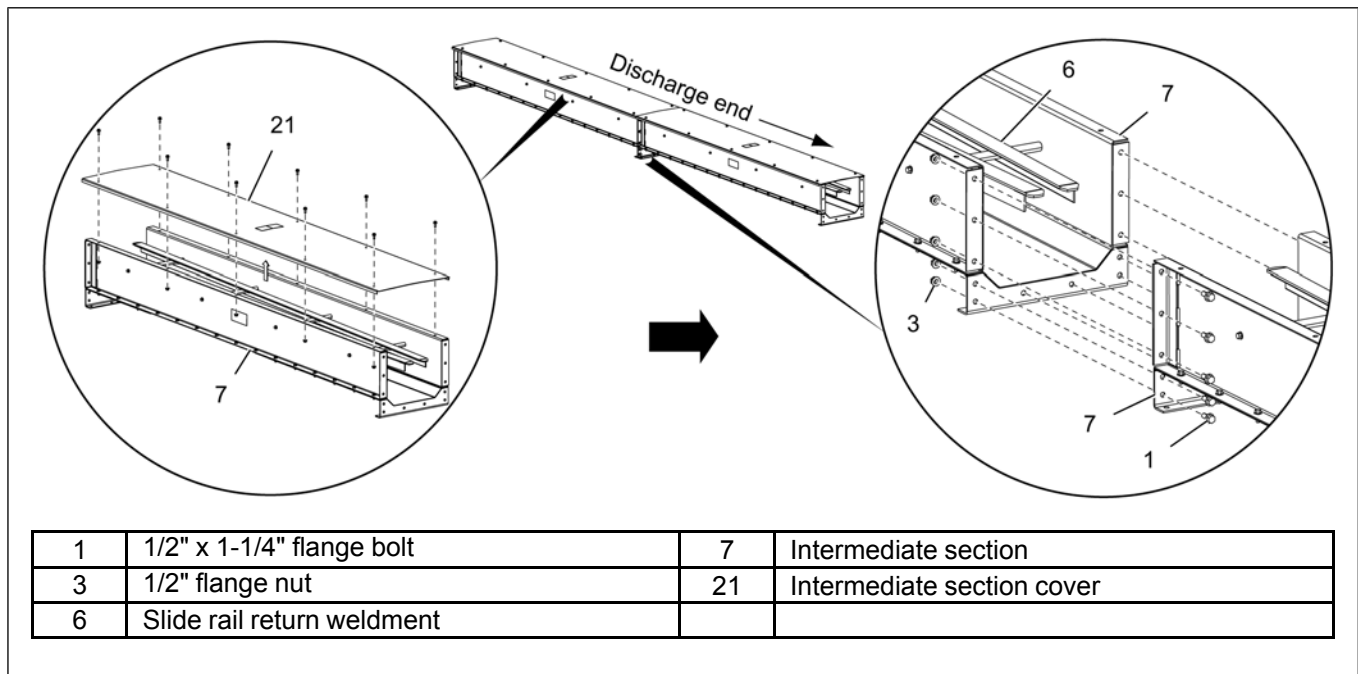
NOTE: Make sure the flanges and all the interior surfaces are flush from one intermediate section (7) to the adjoining section.

3. After aligning the side and bottom inside surfaces of each flange joint, tighten all the hardware for the joint.

4. Repeat the same process for the remaining intermediate sections (7).

NOTE: If your conveyor includes the optional support legs, refer to [Installing the Support Legs, page 57](#) section to install the support legs at the seam connection points.

Figure 4-2 Installing the intermediate sections



Installing the Bend Section (Optional)

Before You Begin

Bend sections are shipped with covers installed. These covers (22) must be removed before the assembly of the conveyor can begin. Covers should be stored in a protected area in order to minimize any possible damage. Retain the factory supplied hardware for covers to re-install later.

Installation

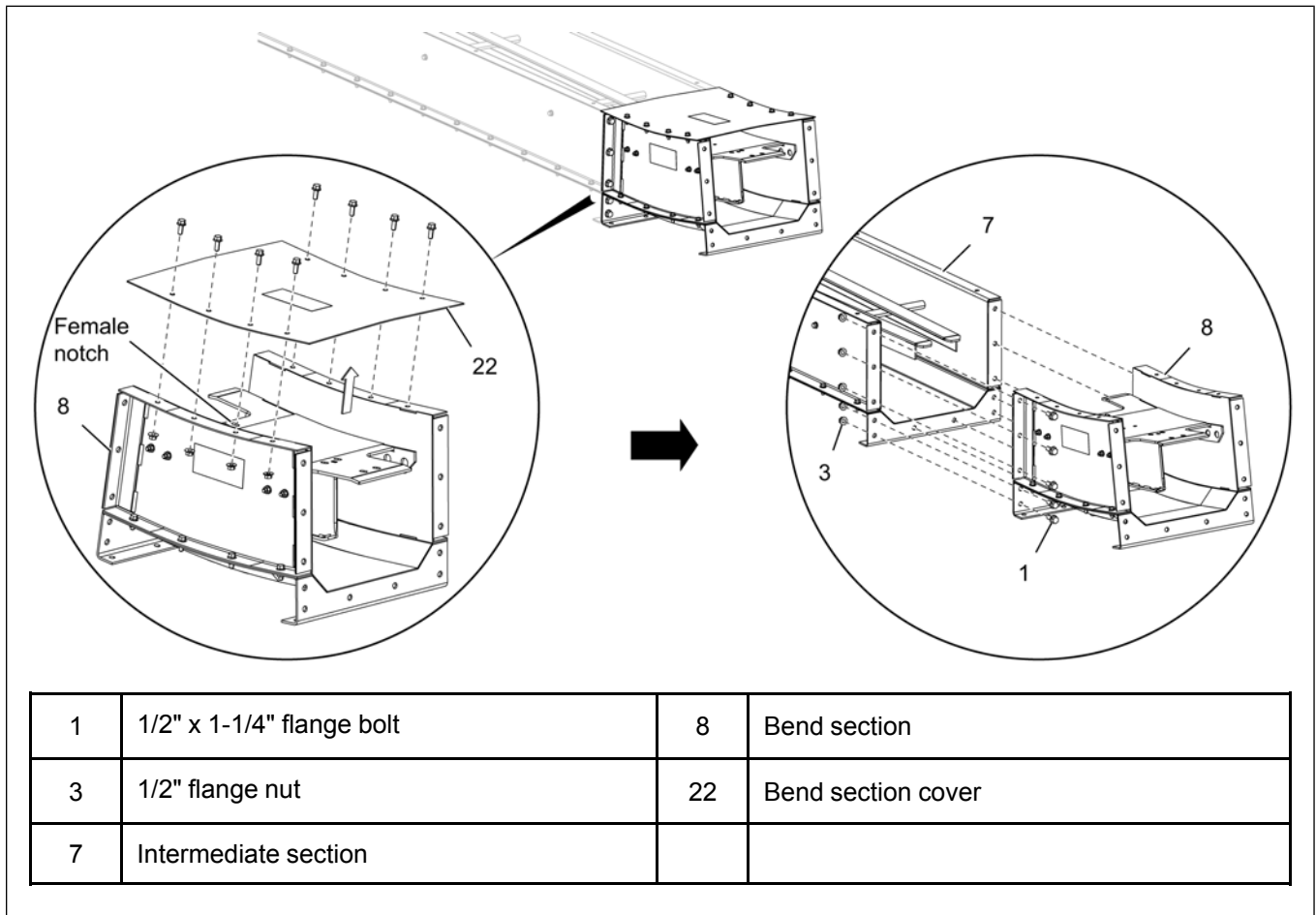
1. Determine the location for the bend section (8). Note that the tapered end of the adjoining horizontal intermediate section (7) fits into the female notch of the bend sections (8) return plate. The bend section (8) is not bi-directional, it must be installed in this orientation.
2. Align the bend section (8) flanges with the intermediate section (7) flanges and install using 1/2" x 1-1/4" flange bolts (1) and 1/2" flange nuts (3).

NOTE: Make sure the flanges and all the interior surfaces are flush from the bend section (8) to the adjoining sections.

3. After aligning the side and bottom inside surfaces of each flange joint, tighten all the hardware for the joint.

NOTE: If your conveyor includes the optional support legs, refer to [Installing the Support Legs, page 57](#) section to install the support legs at the seam connection points.

Figure 4-3 Installing the bend section



Installing the Bypass Inlet (Optional)

Before You Begin

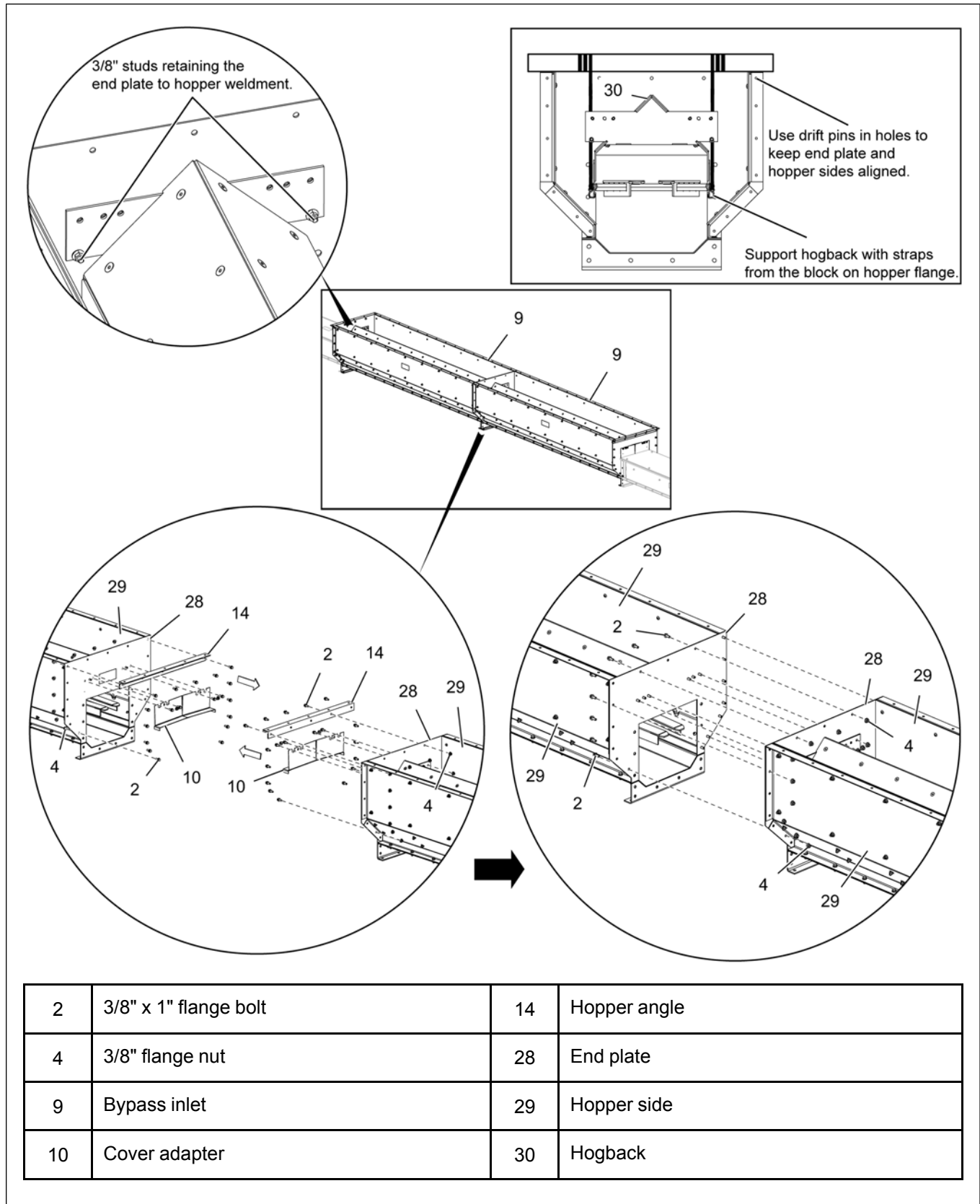
Before assembling the bypass inlet, remove the cover adapters (10) on each end plate. Cover adapters should be stored in a protected area in order to minimize any possible damage. Retain the factory supplied hardware for cover to re-install later.

Installation

1. Determine the location for the bypass inlet(s) (9).
2. Skip to step 3, page 26, if there is no multiple bypass inlets (9) in the conveyor run. If there is multiple bypass inlets (9) in the conveyor run, follow the below procedure.
 - a. Determine what order the bypass inlets (9) will be connected in series, it is possible to have more than one linked together and the bypass inlets (9) are available in various lengths.
 - b. Place the bypass inlets (9) in line with each other and relatively close.
 - c. Only on the adjoining ends of the bypass inlets (9) that are to be installed in series, the 3/8" hardware that bolts the bypass inlet's end plates (28), hopper angles (14) and the cover adapters (10) will need to be removed from both the bypass inlets (9).
 - d. It is important to note that the end plates (28) support the bypass inlets hogback (30) weldment and hold the hopper sides (29) in place. Before removing any hardware, you must support or suspend the hogback (30) weldment from falling and prevent the hopper sides (29) from rolling out. There are two 3/8" studs welded to the inside of the end plates (28) that will retain the end plate (28) to the hopper weldment.
 - e. Potential ways to support these parts could be drift pins used in place of the hardware to keep the hopper sides (29) and end plates (28) holes aligned during this process. Laying an adequately sized structural shape bar or block of wood across the hopper's top flanges to support the hogback (30) with straps could be sufficient for suspending the hogback (30) and keeping the end plate (28) aligned. Welding the hogback (30) and hopper sides (29) in place prior to hardware removal is also an option, any welding should be coated to prevent rust and corrosion. It is ultimately up to the discretion of the installers to choose a method that is the safest for them.
 - f. With these parts and the hardware removed, the bypass inlets (9) can be positioned so that each bypass inlet's end plates (28) are back-to-back. The hardware can then be re-installed and any bracing can be removed.

NOTE: *The cover adapters (10), hopper angle (14) and unused hardware can be discarded.*

Figure 4-4 Connecting the multiple bypass inlets



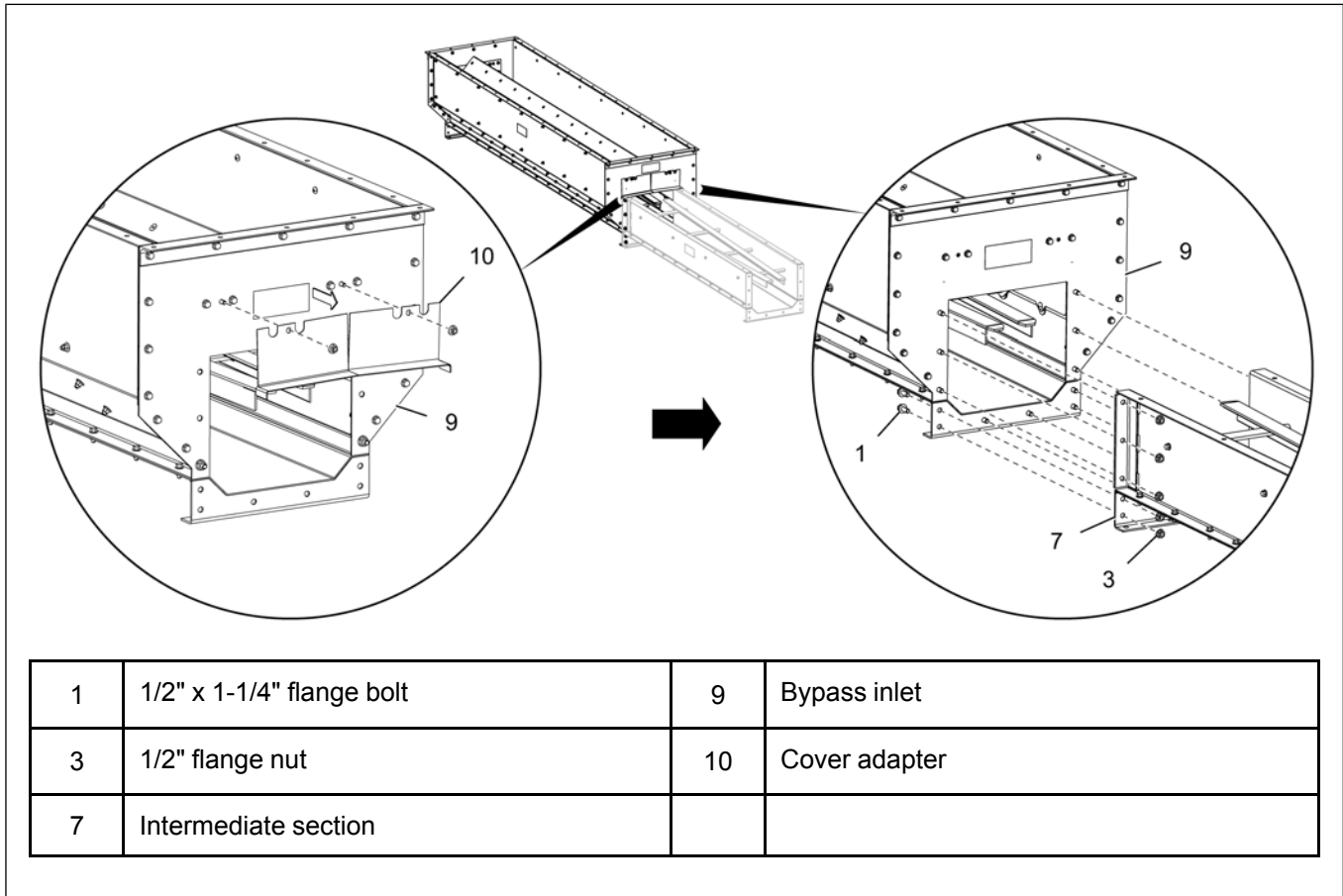
Chapter 4: Installing the Conveyor

- Align the bypass inlet (9) sides and bottom flange with the intermediate section (7) flanges and install using 1/2" x 1-1/4" flange bolts (1) and 1/2" flange nuts (3).

NOTE: Make sure the flanges and all the interior surface are flush from the bypass inlet (9) to the adjoining sections.

- After aligning the flange joint and the holes in the sides, tighten all the hardware.

Figure 4-5 Installing the bypass inlet (Y-style version shown)



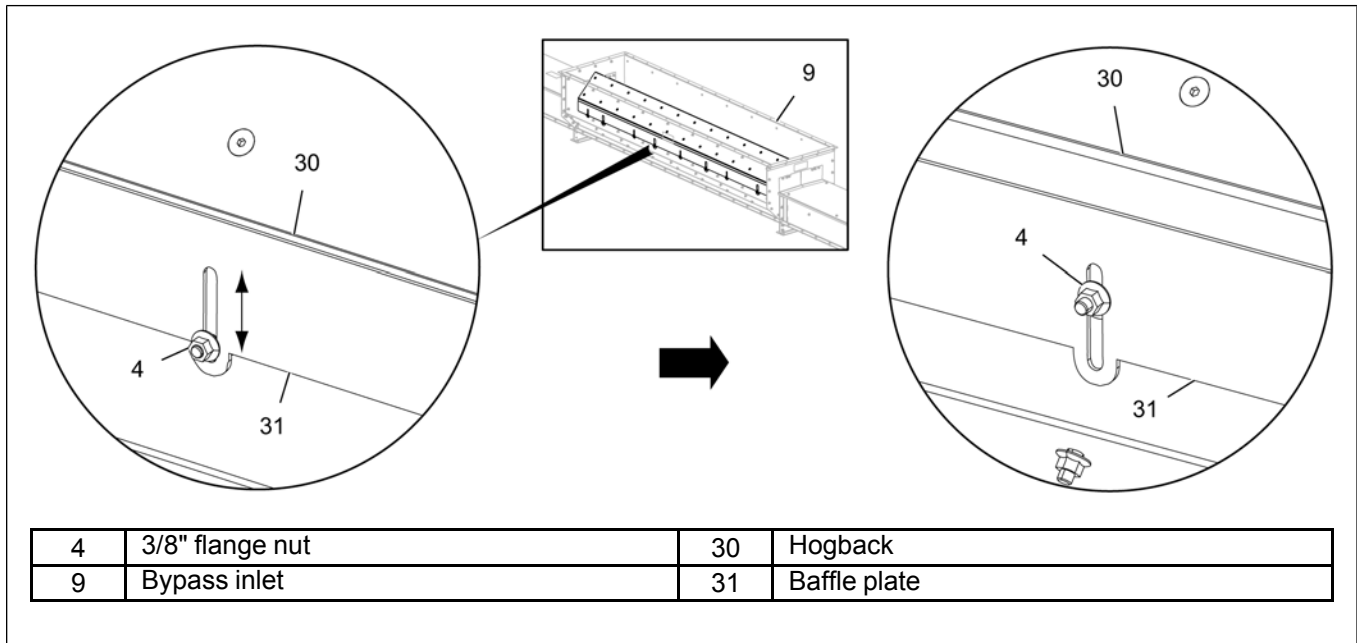
NOTE: While installing a bypass inlet in the conveyor run, lap covers of the head end adjoining intermediate section will need to be field modified. Refer to [Installing the Lap Cover, page 32](#) section for further information. Flat and hip covers do not require any modifications.

Adjusting the Bypass Inlet Choke

Fixed Hogback Bypass Inlet (BPI-Y and BPI-V Styles)

- Fixed hogback bypass inlets (9) have adjustable baffle (choke) plates (31) installed on each side of the hogback (30), these baffle plates (31) are set in the highest position at the factory.
- To adjust the baffle plates (31), loosen the 3/8" flange nuts (4) that are installed on the exposed threaded studs. These flange nuts (4) do not need to be removed. Do not loosen the hex bolts.
- Slide the baffle plate (31) to the desired location to choke the flow of material into the conveyor to the desired location.
- Once the baffle plate (31) location is set, tighten the 3/8" flange nuts (4).

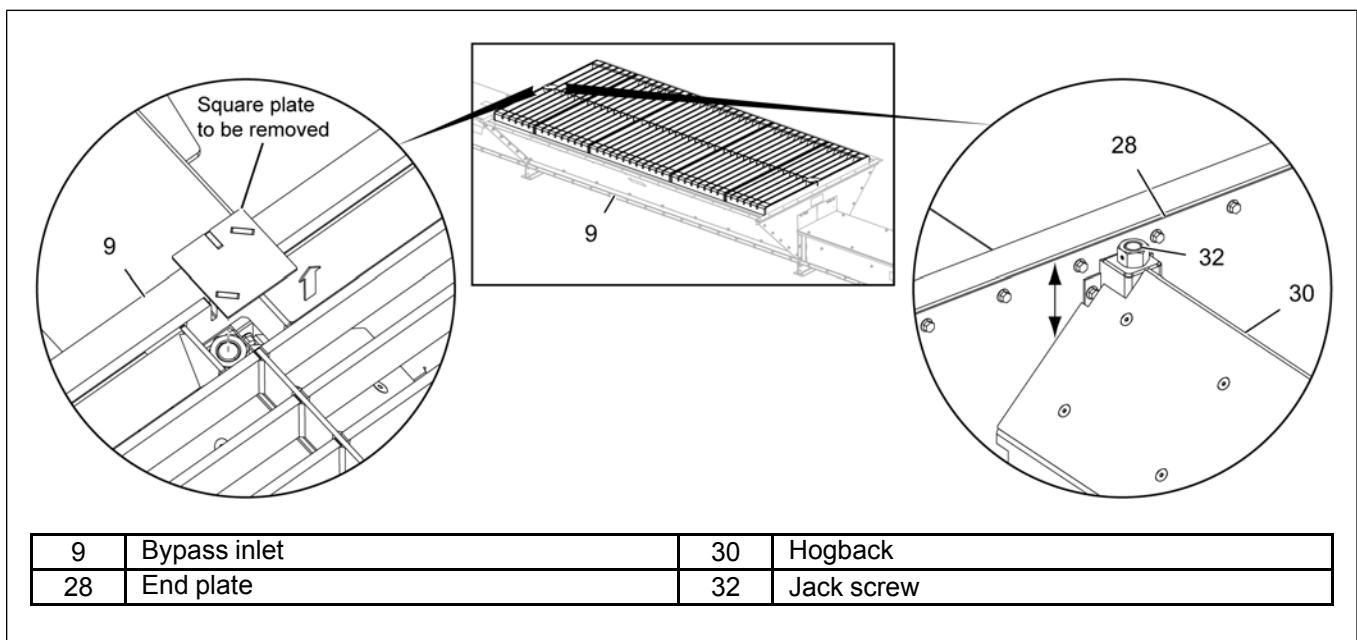
Figure 4-6 Adjusting the baffle plates in fixed hogback bypass inlet



Adjustable Hogback Bypass Inlet (BPI-D)

1. Adjustable hogback bypass inlets (9) have a hogback (30) that can raise and lower to choke the flow of material into the conveyor.
2. To adjust the hogback (30), turn the jack screws (32) located at each end of the hogback (30) next to the bypass inlets end plates (28). If there is a factory supplied grate over the bypass inlet, it will be necessary to remove the square cover plates that are installed over top of the jack screws (32).
3. When raising or lowering the adjustable hogback (30), it will be necessary to do so by incrementally turning each ends jack screws (32) by approximately the same amount in small degrees. It is possible to jam the hogback (30) by lowering one end too much in comparison with the opposite end. If a jam is encountered do not force the hogback (30) lower, instead raise the lower end of the adjustable hogback (30) up to level the hogback (30) and clear the jam. Then re-start.

Figure 4-7 Adjusting the hogback in adjustable hogback bypass inlet



Installing the Tail Section

Before You Begin

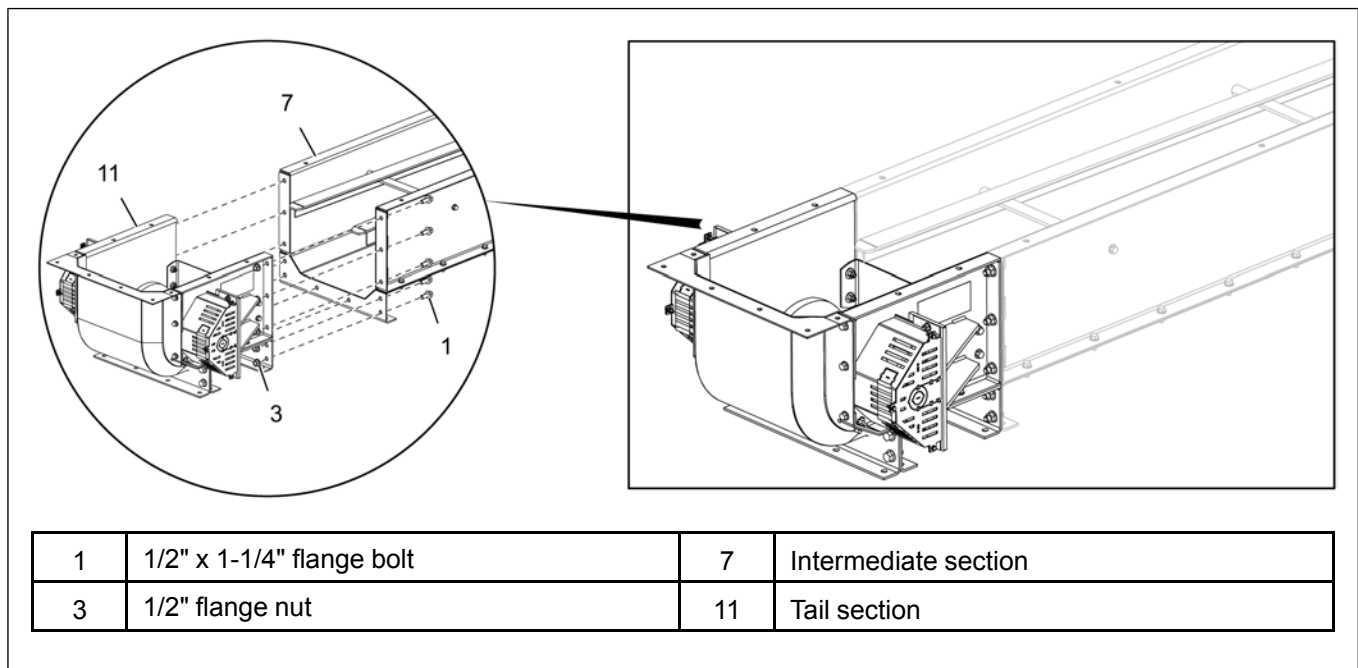
Tail covers ship loose from the factory. Locate the covers and store in a protected area in order to minimize any possible damage.

1. Determine the location for the tail section (11).
2. Align the tail section (11) flanges with the intermediate section (7) flanges and install using 1/2" x 1-1/4" flange bolts (1) and 1/2" flange nuts (3).

NOTE: Make sure the flanges and all the interior surface are flush from the tail section (11) to the adjoining sections.

3. After aligning the side and bottom inside surfaces of each flange joint, tighten all the hardware for the joint.

Figure 4-8 Installing the tail section



Installing the Head Section

Before You Begin

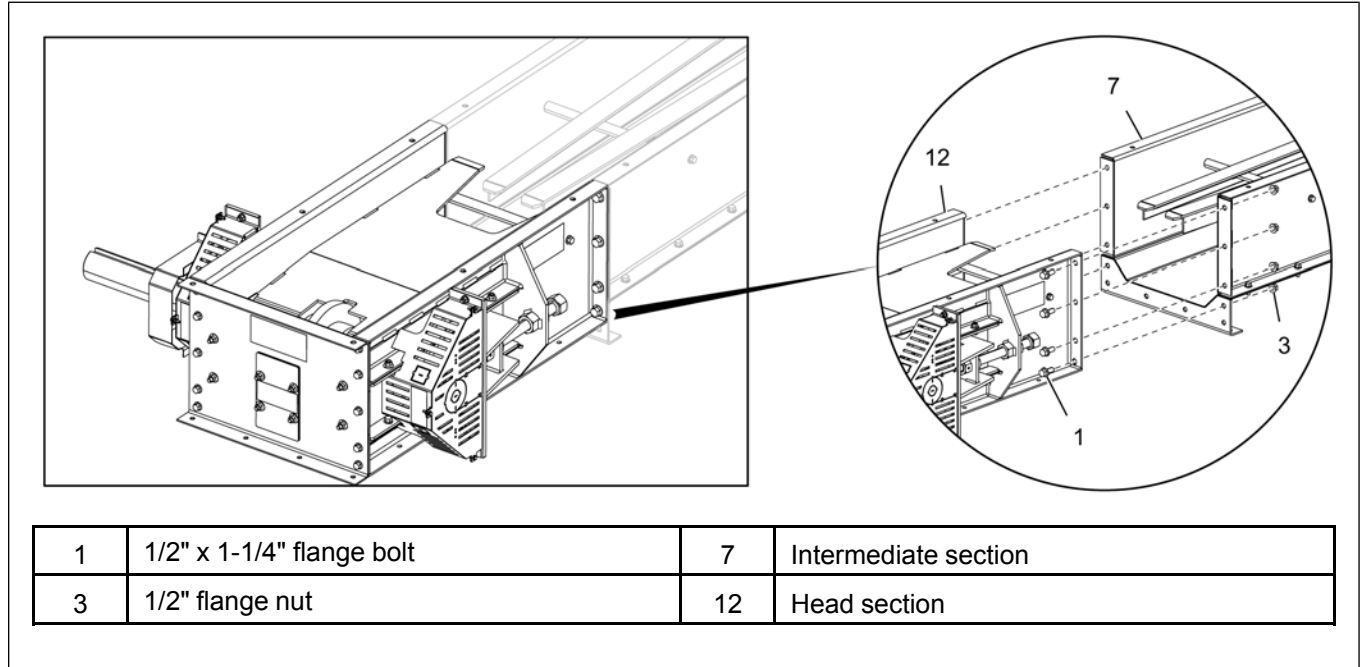
Head covers ship loose from the factory. Locate the covers and store in a protected area in order to minimize any possible damage.

1. Determine the location for the head section (12).
2. Align the head section (12) flanges with the intermediate section (7) flanges and install using 1/2" x 1-1/4" flange bolts (1) and 1/2" flange nuts (3).

NOTE: Make sure the flanges and all the interior surface are flush from the head section (12) to the adjoining sections.

- After aligning the side and bottom inside surfaces of each flange joint, tighten all the hardware for the joint.

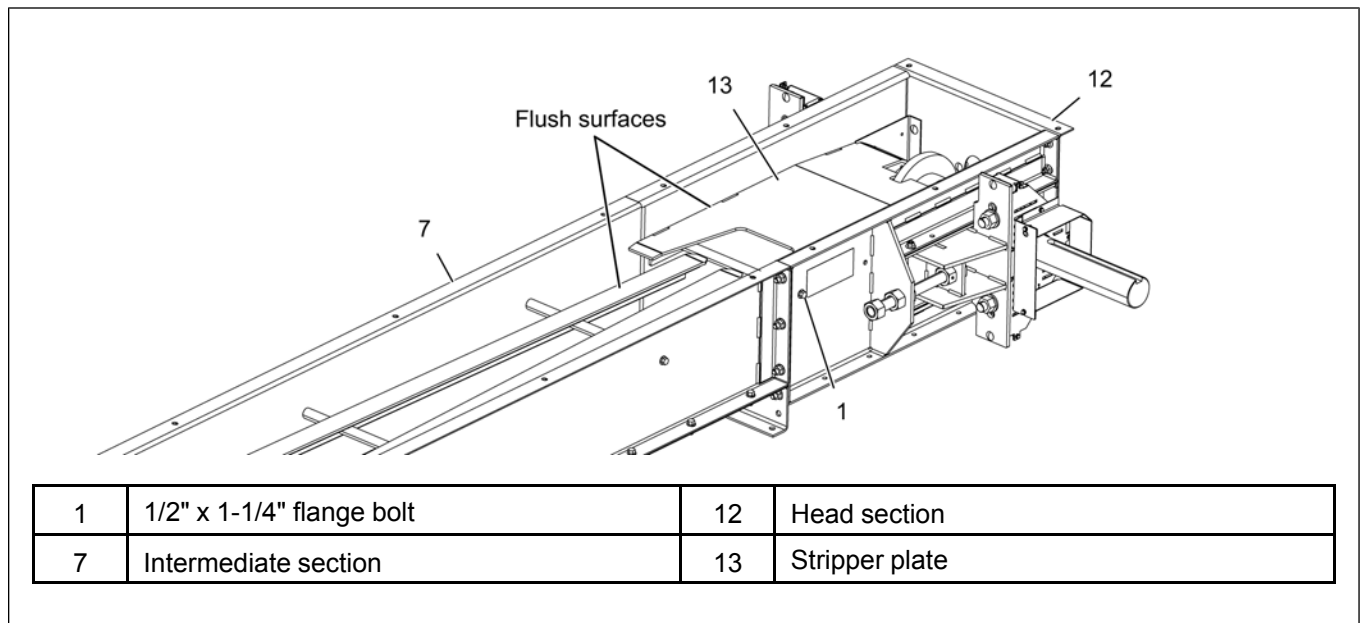
Figure 4-9 Installing the head section



Stripper Plate Adjustment

- Loosen the stripper plate mounting bolts (1) on both sides of the conveyor head (12).
- Adjust the stripper plate (13) so that the top surface of the stripper plate (13) is flush with the top surface of each rail in the slide rail weldment.
- After the stripper plate (13) is properly aligned, tighten the stripper plate mounting bolts (1).

Figure 4-10 Adjusting the stripper plate



Installing the Chain Assemblies

The chain assembly can be installed at anytime during the conveyor assembly.

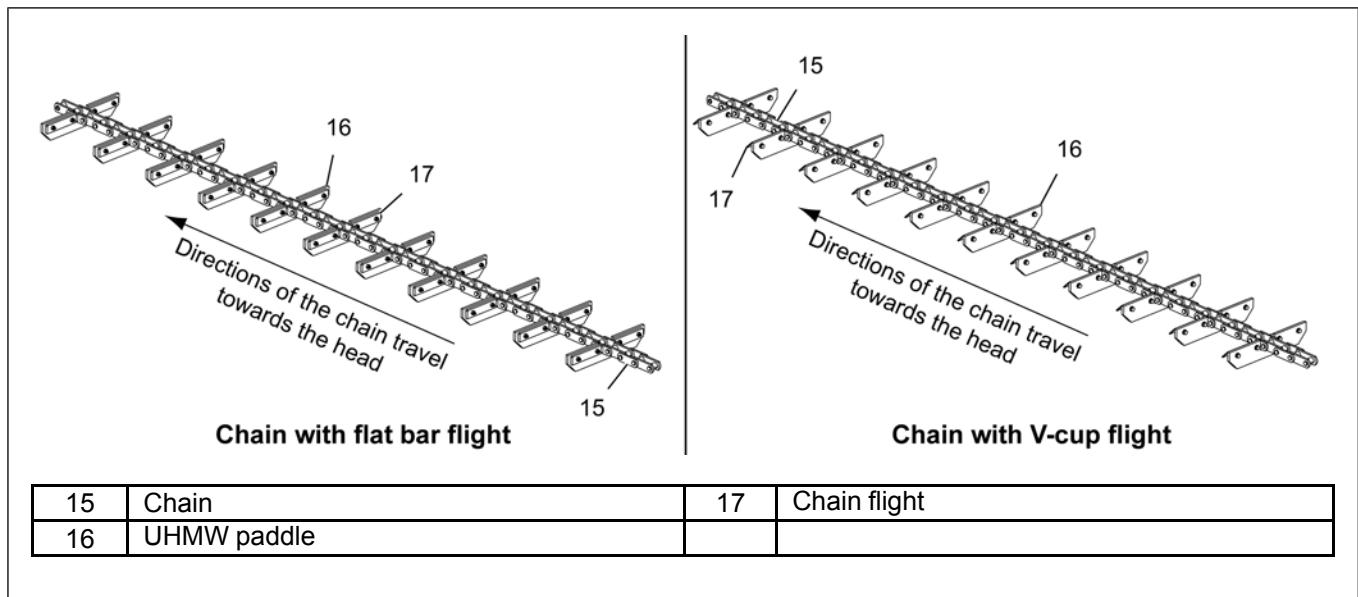
What You Should Know

The total length of the chain is pre-determined by the manufacturer for each conveyor. The total length is rounded up to the nearest 10' increment.

NOTE: Chains are offered in two attachment types, flat bar and V-cup. The orientation of the UHMW pads (16) installed on the attachments as the chain travels towards the head section depends on which type of chain you are installing.

- **Flat bar chains:** The UHMW pad (16) will be in front of the attachment as it travels towards the head.
- **V-cup chains:** The UHMW pad (16) will be behind the attachment as it travels towards the head.

Figure 4-11 Chain assembly types



NOTE: The method used to install the chain (15) into the conveyor is up to the discretion of the installers. The chain (15) sections are shipped in 10' lengths and must be field assembled. Each 10' section includes a connecting pin to be used to assemble the chain (15) sections together.

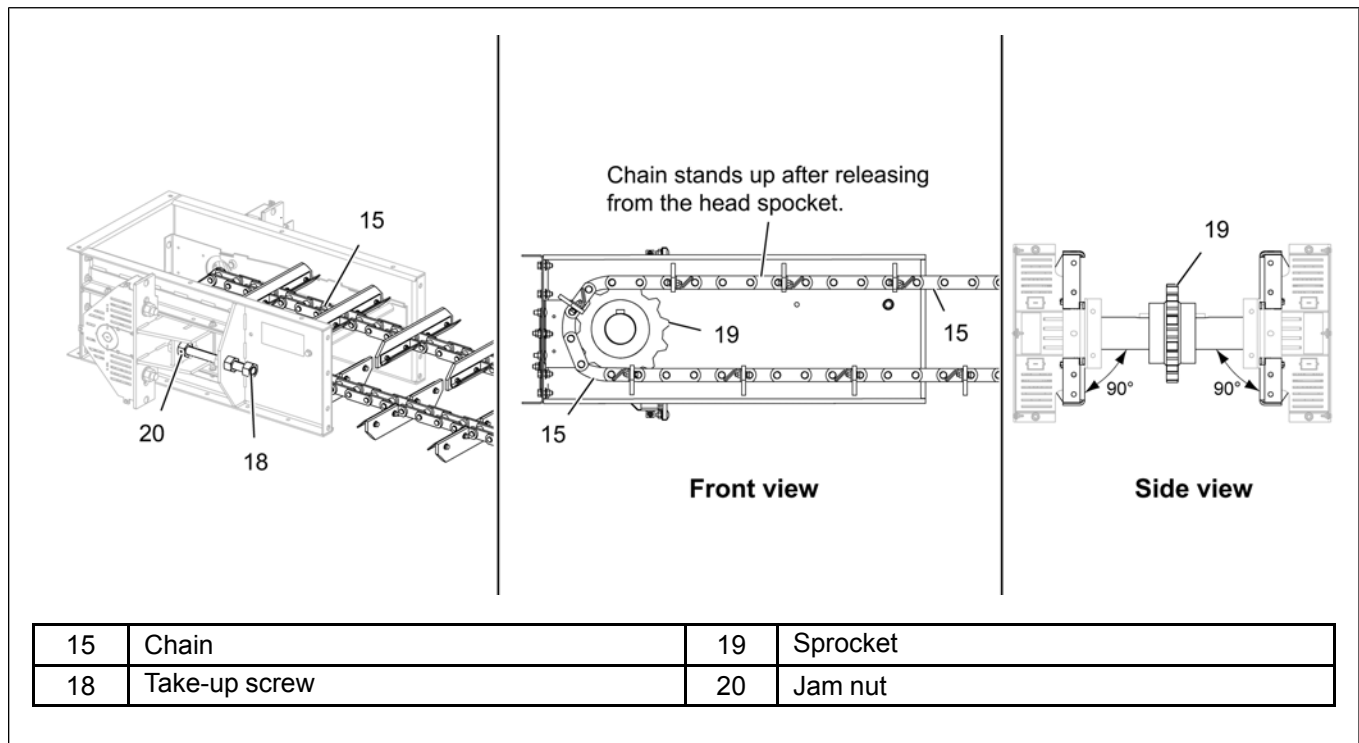
Installation

1. Determine correct orientation of chain (15) prior to installation and install chain (15) into the conveyor. Plan the installation such that the two loose ends of the assembled chain (15) are located on the top side of the conveyor at or near the tail section, which is the most common location for the chain (15) tensioning take-up assembly or the head section if that is where the take-up assembly is located.
2. The take-up assembly's sprocket (19) should be moved using the take-up screws (18), to the location with least amount of take-up, which is the farthest from the end of the conveyor. The take-up assemblies have a range of travel that will be used to tension the chain (15). It is important to set the sprocket (19) in this position initially as chains (15) will stretch during break-in periods and also over the life of the chain (15) from usage and that stretch needs to be monitored closely to prevent damage to the chain (15), sprockets (19) and conveyor.

3. The chain (15) will always have extra length than is needed for installation. Links will need to be removed from the chain (15) to fit the needs of any one specific conveyor installation. Make sure not to break the chain (15) too short.
4. Use the supplied additional cottered connecting pin(s) to assemble the two loose ends of the chain (15) together. The method of installing the pin is up to the discretion of the installer.
5. With the chain (15) wrapped around the sprockets (19), ensure the chain (15) is centered in the conveyor. The ends of the chain (15) should be equally spaced away from the sides of the conveyor. Adjust the sprocket (19) if necessary to achieve this.
6. Use the take-up screws (18) to tension the chain (15). Make sure to tighten or loosen both take-up screws (18) equal amounts to ensure the tail shaft/sprocket (19) and chain (15) are square in the conveyor. Remember to lock the position down with the jam nuts (20) after positioning.

NOTE: *The chain (15) only needs enough tension such that the UHMW pads on the return (top) side stand up perpendicular to the return plate in the head section under load. Do not overtighten the chain (15).*

Figure 4-12 Tightening the chain assembly



7. Rotate the chain (15) one complete revolution and check for any catch points or if the chain (15) is rubbing against the sides of the conveyor. If either is found determine and correct the reason, then rotate the chain (15) again to re-check.
8. Run the conveyor empty for several hours to ensure an adequate break-in period. This will allow the chain (15) to properly seat itself. During this period look for bearing heat, unusual noises and misalignment. It may be necessary to re-tension the chain (15) and repeat this process, how many times is up to the discretion of the installer.

NOTE: *While performing any check-ups and maintenance activity to the chain (15) always fully stop the conveyor and ensure proper safety protocols are followed including lock out/tag out procedures.*

Installing the Covers

What You Should Know

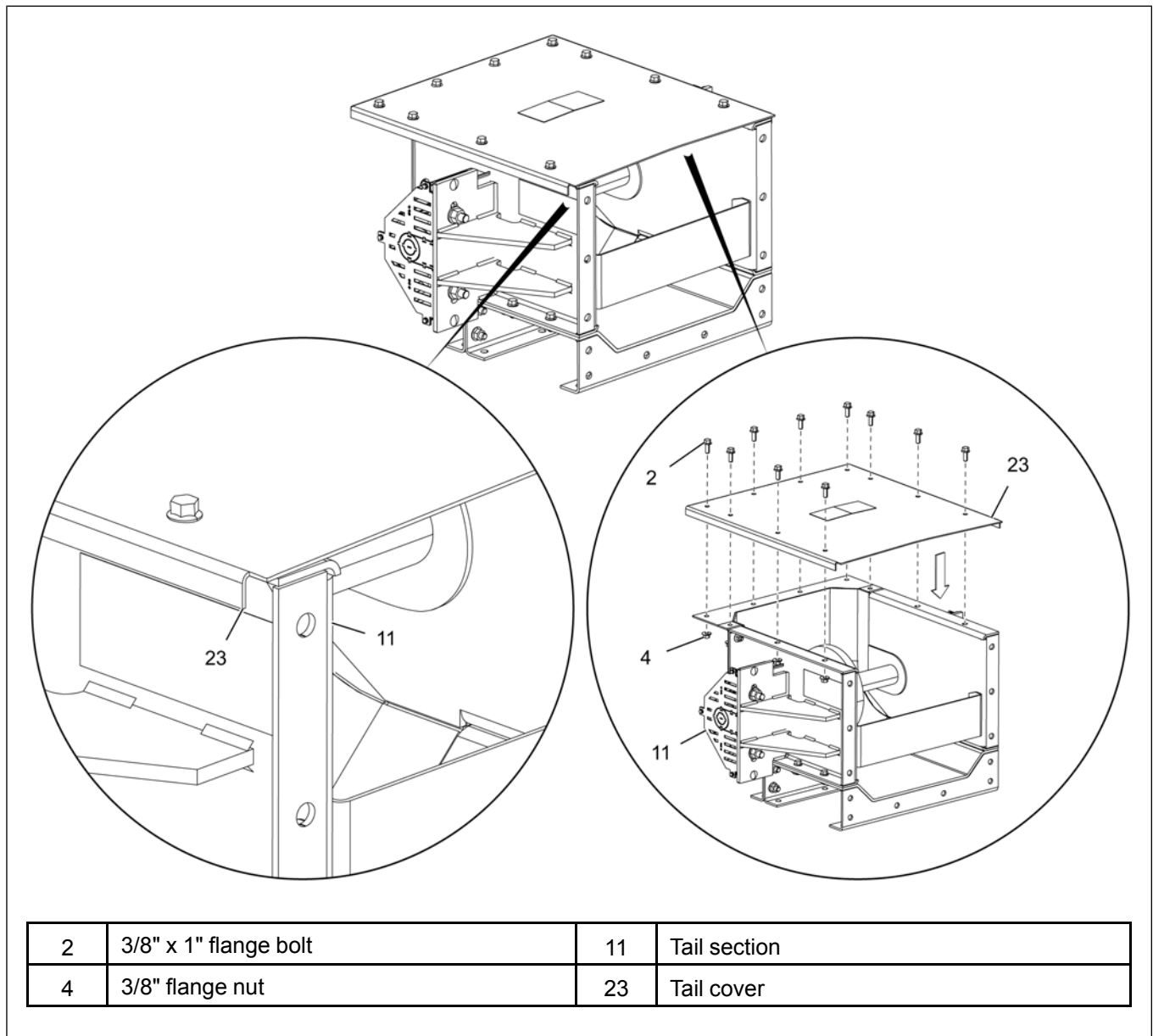
GSI offers three cover types: Lap, Flat and Hip. Lap cover installation is different than Flat and Hip.

Installing the Lap Cover

NOTE: *Lap cover installation is directional and are meant to be installed in a specific direction. The covers will overlap from head end toward the tail end, providing a water shedding joint.*

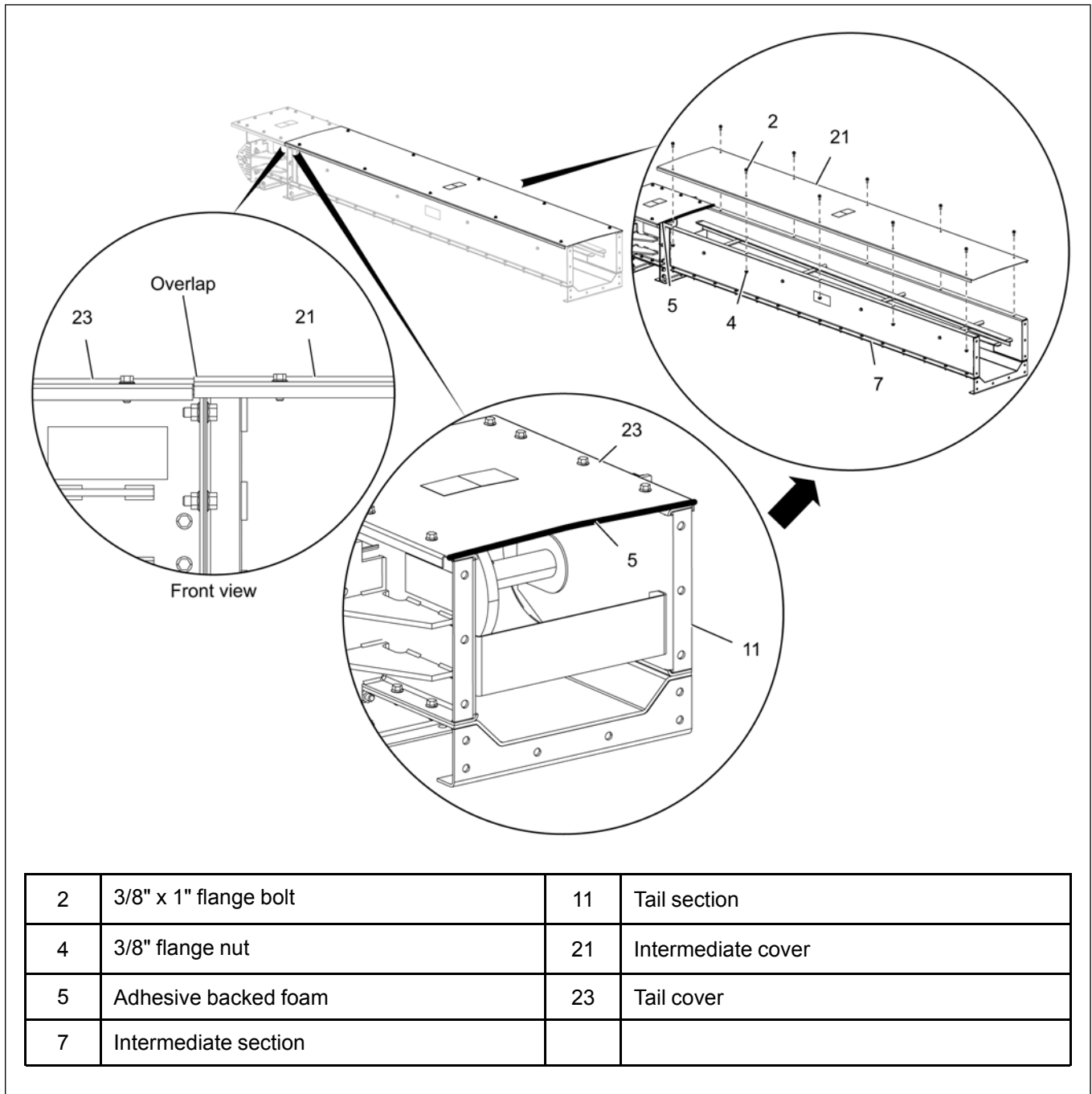
1. Locate the tail cover (23) and position it over the tail section (11). Notice the notch in the cover (23) at the seam joint between the tail (11) and the intermediate. This notch will be a common feature at each next seam as you progress towards the head section.
2. Install the tail cover (23) to the tail section (11) using 3/8" x 1" flange bolts (2) and 3/8" flange nuts (4).

Figure 4-13 *Installing the tail section cover*



3. Locate the roll(s) of adhesive backed foam strip (5) included with shipment. The foam (5) is to be field cut and installed on the top surface of the notched end spanning the width of the tail cover (23). Measure the cover (23) width at this location, cut a strip of foam (5) to length. Clean the surface of the cover (23) and adhere the foam (5) to the edge of cover (23).
4. Locate the next intermediate sections cover (21) to install on the next adjoining section. As before, the notched end of the intermediate cover (21) will point towards the head end of the conveyor. The opposite end of the cover (21) will overlap the seam joint towards the tail end of the conveyor.
5. Follow step 2, [page 32](#) and steps 3 and 4, [page 33](#) for the remaining intermediate covers (21) if no bypass inlets or bend sections are in the run.

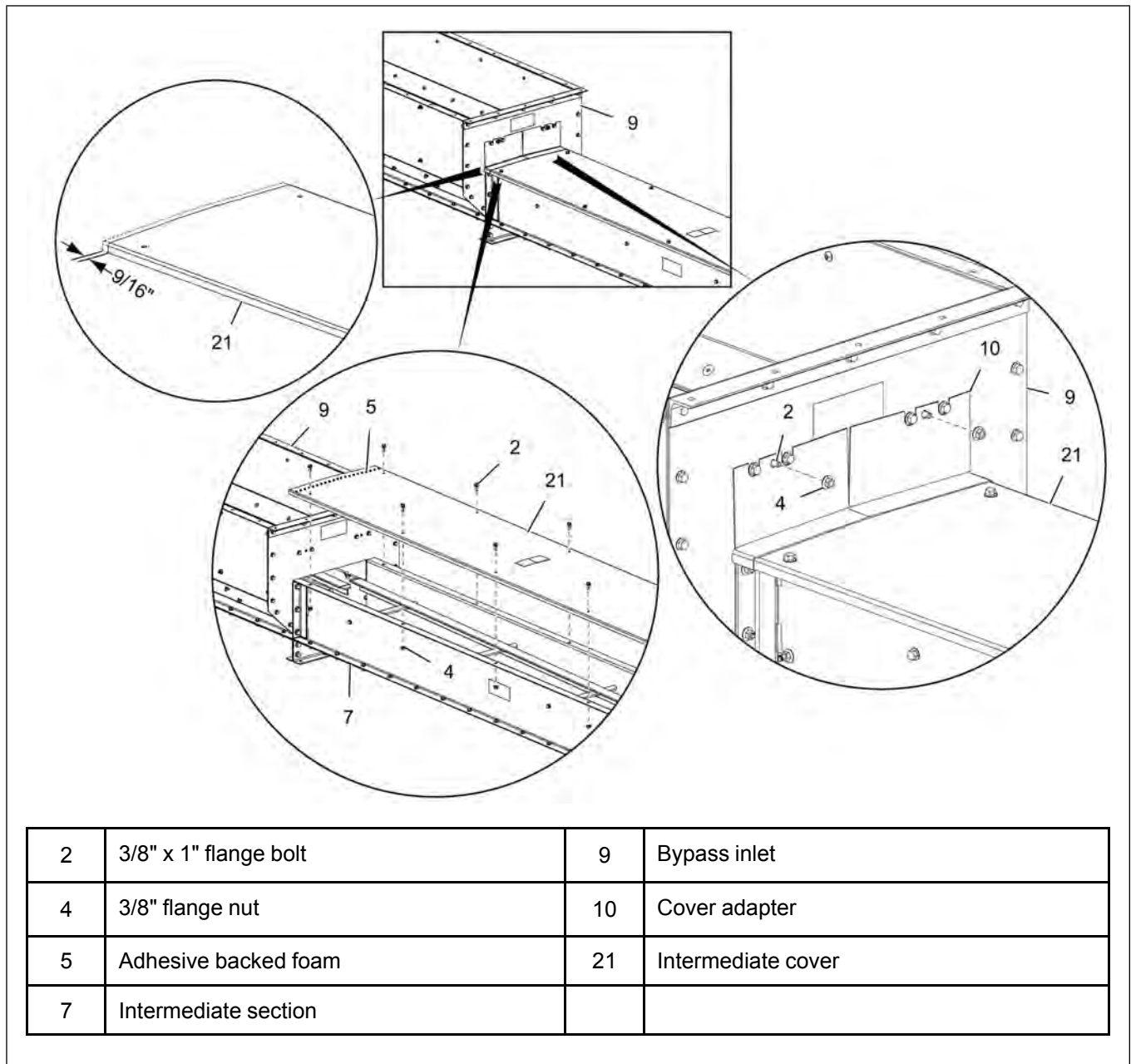
Figure 4-14 Installing the intermediate section cover



Chapter 4: Installing the Conveyor

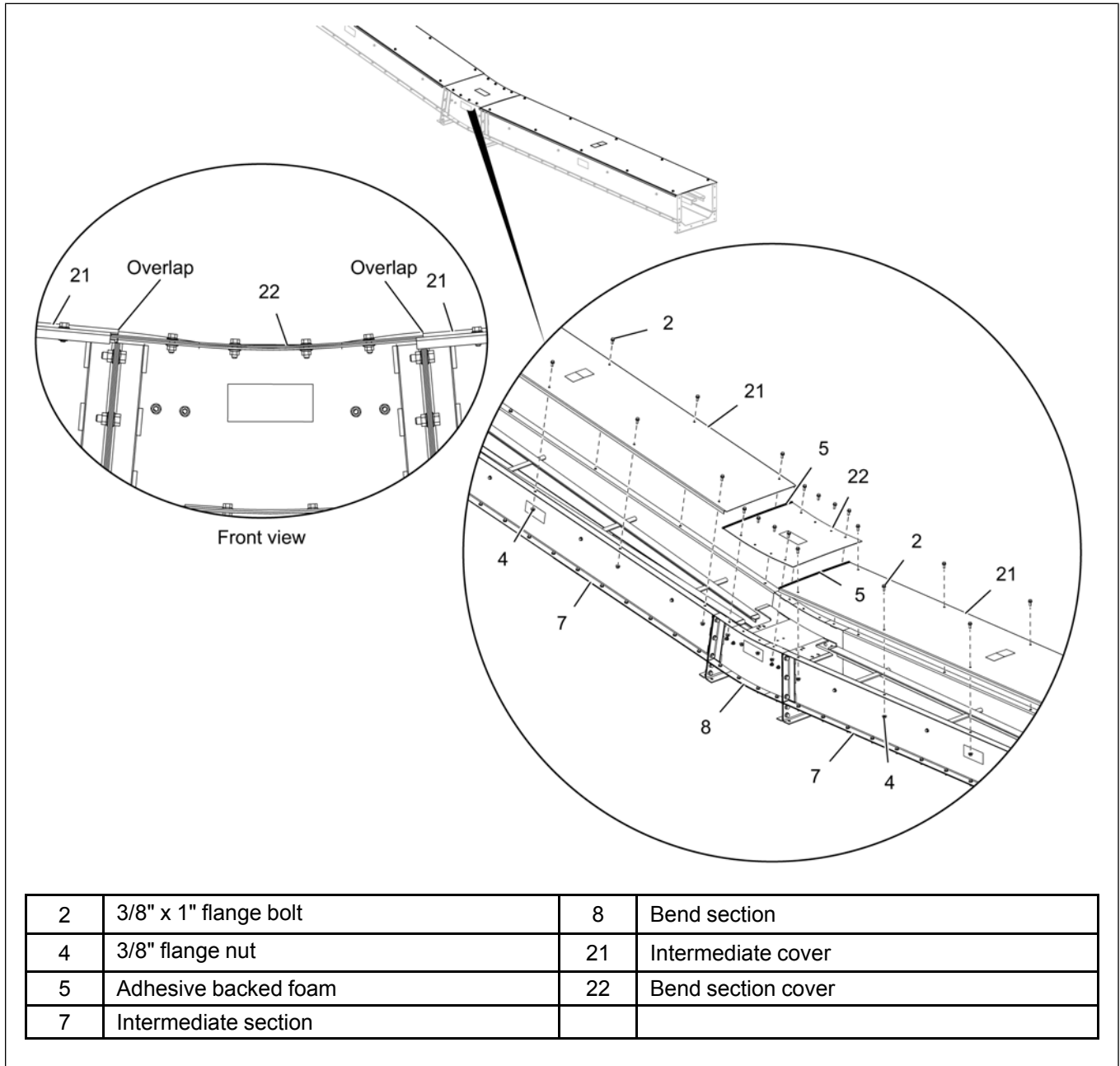
6. Skip to step 7, [page 35](#), if there is no bypass inlet (9) in the conveyor run. When there is a bypass inlet (9) in the conveyor run, follow the below procedure.
 - a. The over-hang portion of the intermediate cover (21) on the head end of the bypass inlet (9) must be field modified to remove the overhanging lip of the cover (21). The cover (21) needs to be flush to the seam joint to ensure proper fit of the cover (21) to both the bypass inlet (9) and the adjoining intermediate (7). The amount of material to remove is 9/16" from the end of the non-notched end of the intermediate cover (21).
 - b. Determine the best method to mark and remove this material, this is up to the discretion of the installer. Once the material is removed, coat the exposed metal with paint to avoid rust and corrosion. Apply a strip of the adhesive backed foam (5) on this cut end following step 4, [page 33](#). Locate the bypass inlet cover adapters (10) and re-install over the intermediate covers (21).
 - c. After this is done, follow step 2, [page 32](#) and steps 3 and 4, [page 33](#) for the remaining intermediate covers (21).

Figure 4-15 *Installing the bypass inlet cover*



7. Skip to step 8, page 36, if there is no bend section (8) in the conveyor run. When there is a bend section (8) in the conveyor run, follow the below procedure.
 - a. Bend section covers (22) are installed with the laps opposite of the way intermediate covers overlap.
 - b. The tail end of the bend section cover (22) will need to be overlapped by the next intermediates notched end, the foam (5) will be installed on the bend section cover (22) on this same end.
 - c. The head end of the bend section cover (22) will need to overlap the next head end's intermediate cover (21), the foam (5) is to be installed on the intermediates cover (21). This method is required to prevent creating a catch point for the chain to come into contact with as it returns towards the tail.

Figure 4-16 Installing the bend section cover

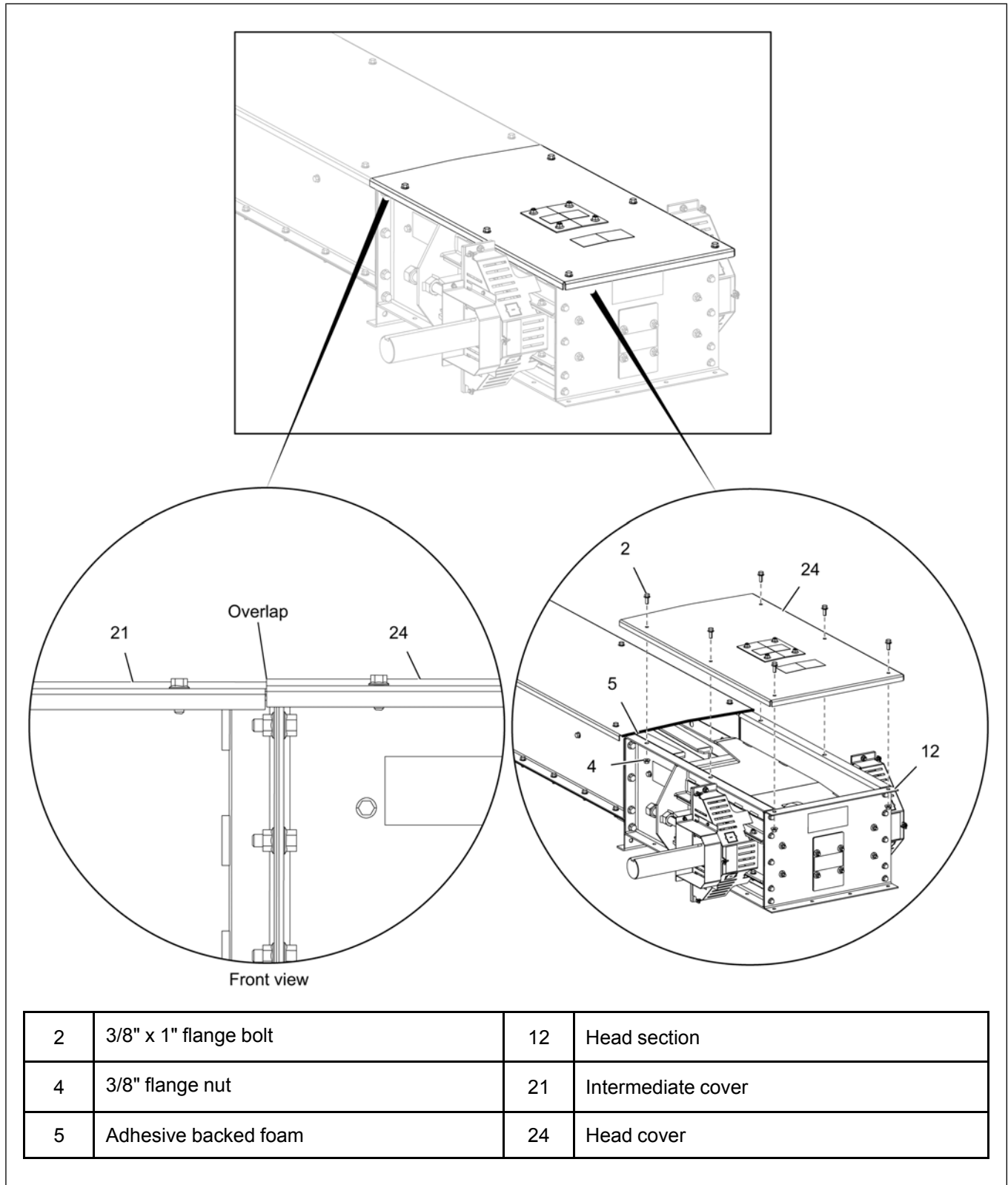


Chapter 4: Installing the Conveyor

8. Locate and install the head cover (24) by following the step 2, page 32 and steps 3 and 4, page 33.

NOTE: If the conveyor includes the optional slack chain detector, refer to *Installing the Slack Chain Detector*, page 58 before installing the head cover (24).

Figure 4-17 Installing the head section cover



Installing the Flat and Hip Cover

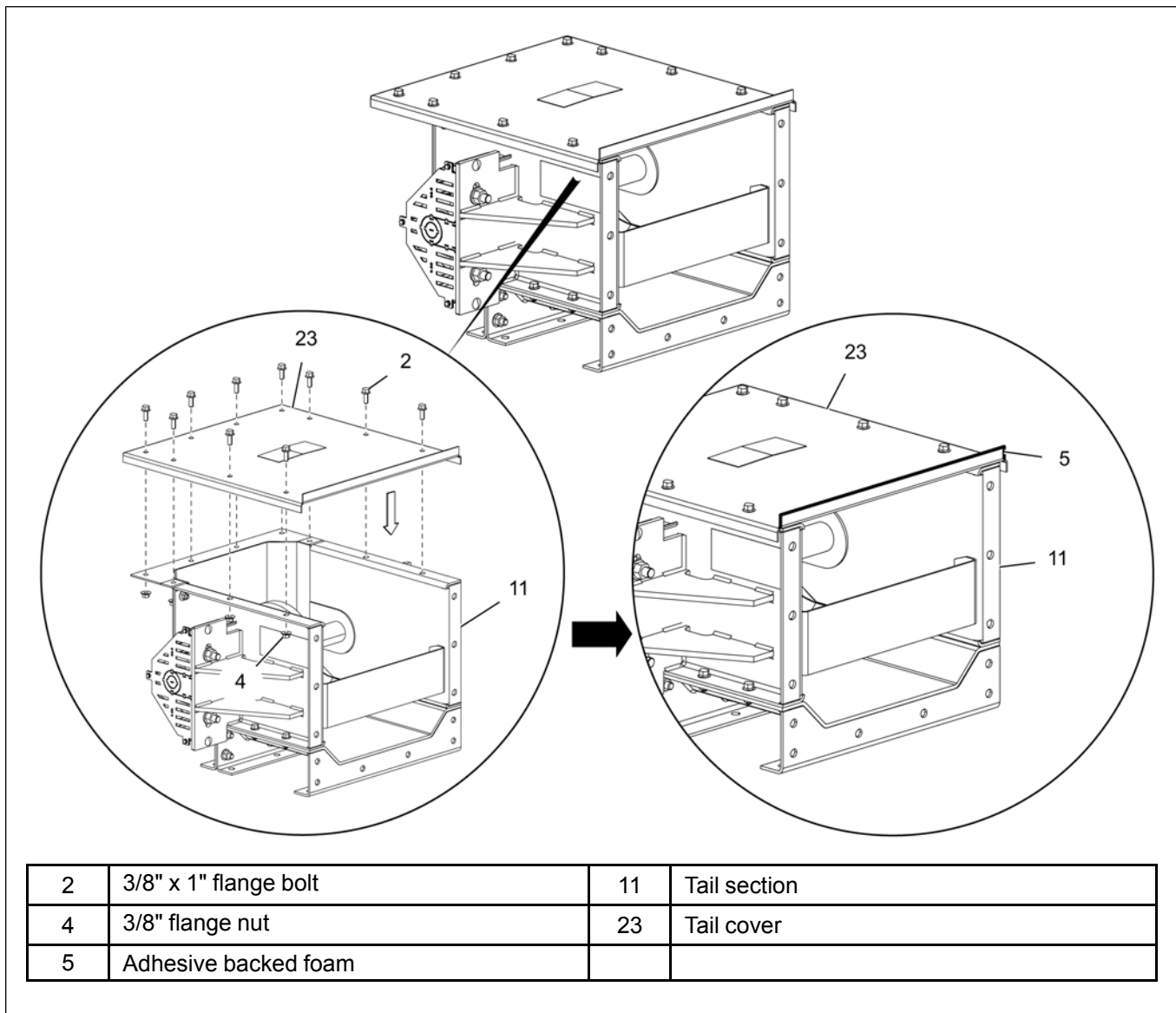
NOTE: Unlike lap covers, flat and hip covers are bi-directional and have standing flanges on each end which are covered by cover caps.

1. Locate the tail cover (23) and position it over the tail section (11). The standing flange should be slightly offset away from the seam joint.

NOTE: If the conveyor includes the optional slack chain detector, refer to [Installing the Slack Chain Detector, page 58](#) before installing the tail cover (23).

2. Install the cover using 3/8" x 1" flange bolts (2) and 3/8" flange nuts (4).
3. Locate the roll of adhesive backed foam strip (5) included with shipment. The foam (5) is to be field cut and installed on the outside surface of the standing flange at the seam joint and spanning the width of the cover (23). When the next sections cover is installed, the foam (5) will be pinched between the standing flanges. Measure the cover (23) width at this location, cut a strip of foam (5) to length. Clean the surface of the cover (23) and adhere the foam (5) to the edge of cover.

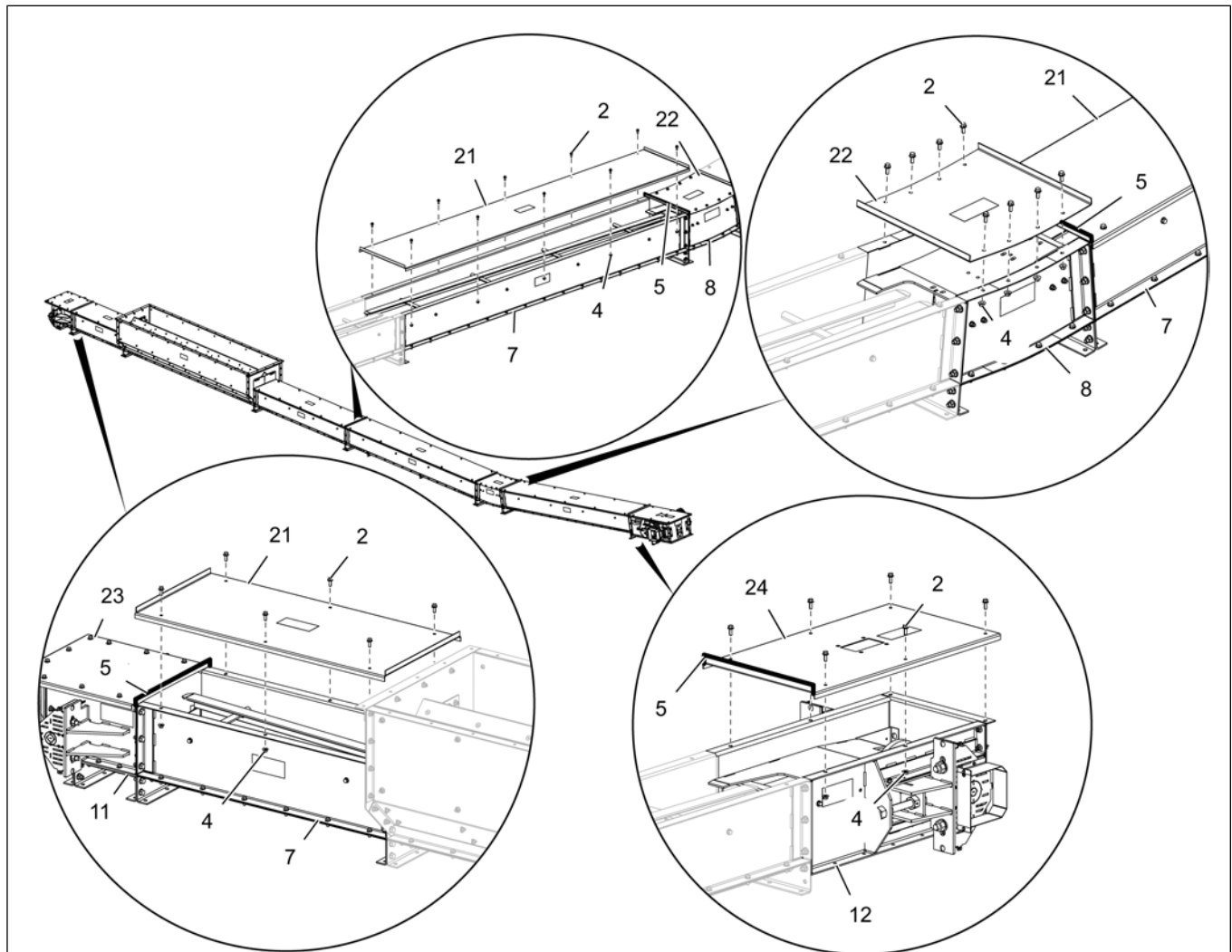
Figure 4-18 Installing the tail section cover



Chapter 4: Installing the Conveyor

4. Locate the next intermediate sections cover (21) to install on the next adjoining section. As before, the cover (21) should be slightly offset away from the next seam joint.
5. Follow steps 2 and 3, page 37 and step 4, page 38 for the remaining intermediate covers (21) and if applicable, bend section covers (22). If there is a bypass inlet in the run, continue the process from the head end of the seam joint for the next adjoining intermediate.
6. Locate and install the head cover (24) following the steps 2 and 3, page 37 and step 4, page 38.

Figure 4-19 Installing the remaining section covers



2	3/8" x 1" flange bolt	12	Head section
4	3/8" flange nut	21	Intermediate cover
5	Adhesive backed foam	22	Bend section cover
7	Intermediate section	23	Tail cover
8	Bend section	24	Head cover
11	Tail section		

7. Locate a seam cap (27) for an intermediate sections seam joint and position over the seam joint.

NOTE: Seam caps for head and tails (25 and 26) when used with hip covers require specific caps that have one side with a peaked notched cutout and one side without. Make sure to identify these two caps separately from the rest of the hip cover caps as they will only fit on the head and tail seam locations. Flat cover caps are all identical.

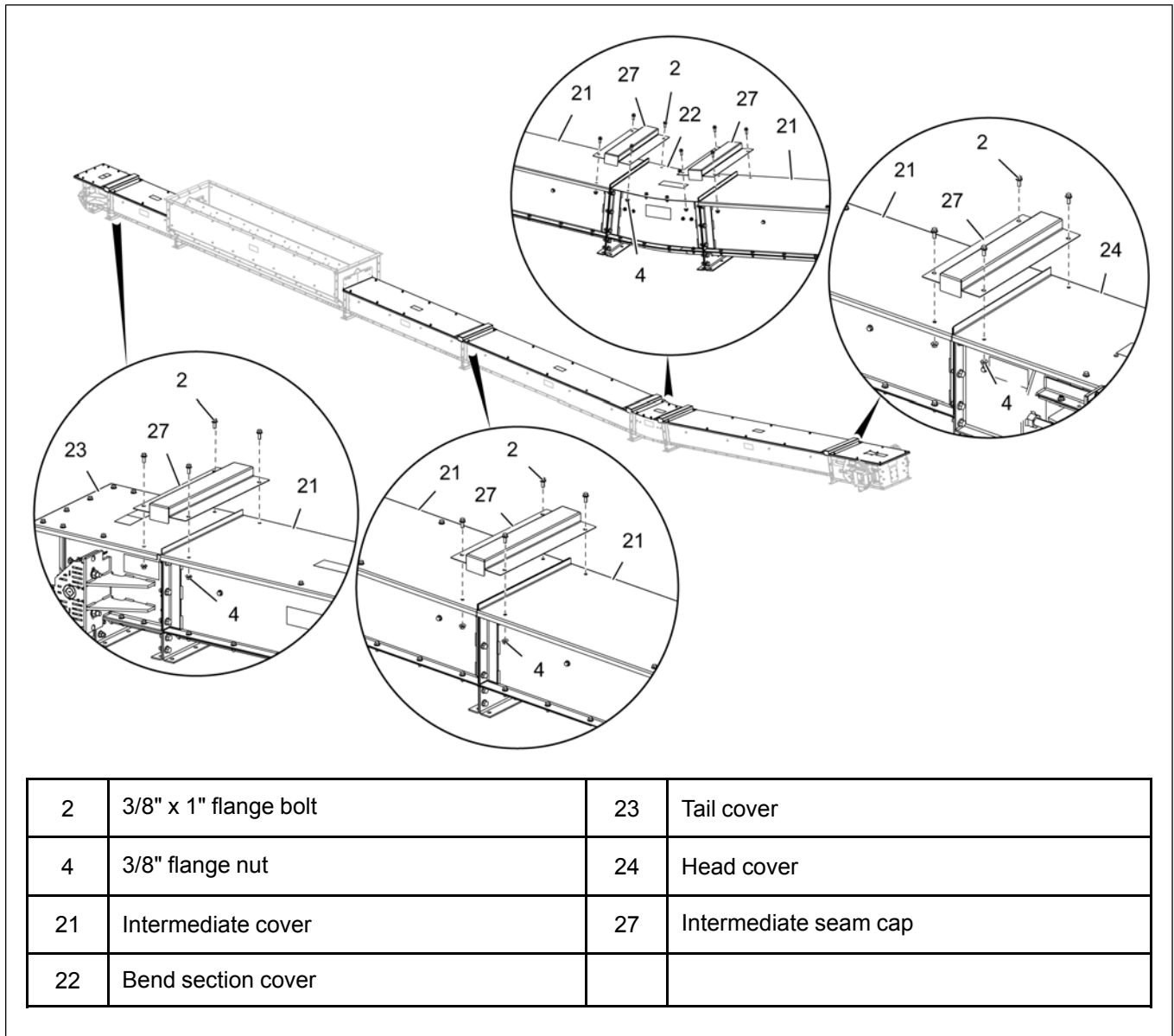
8. Install the cover caps (27) using 3/8" x 1" flange bolts (2) and 3/8" flange nuts (4).

9. Follow steps 2 and 3, page 37 and step 4, page 38 for the remaining intermediate sections.

10. Locate the seam caps for the head and tail sections (25 and 26) seam joint and position over the seam joint, repeat step 2, page 37.

11. If bypass inlets are in the conveyor run, locate the bypass inlet cover adapters and re-install over the intermediate covers.

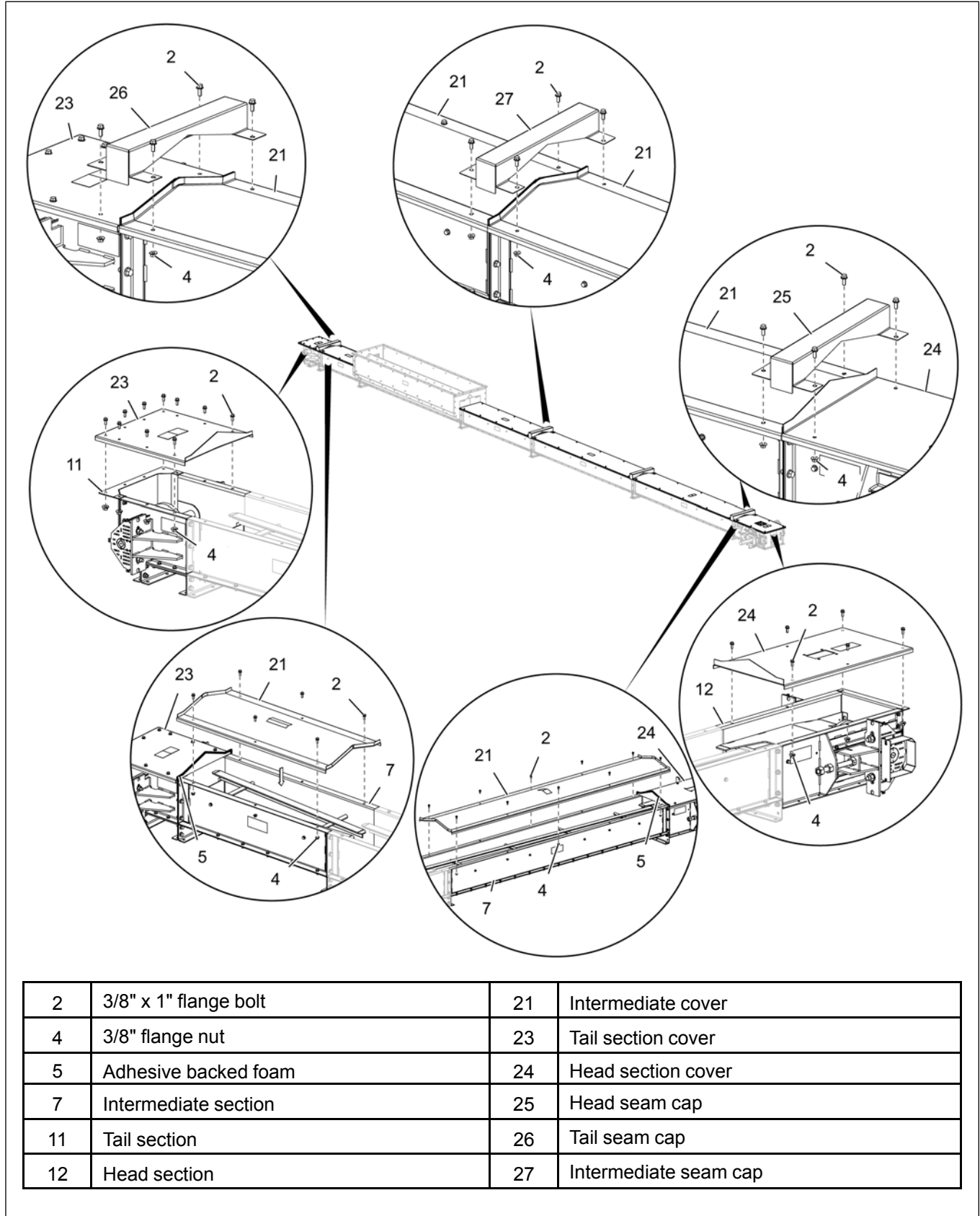
Figure 4-20 Installing the seam caps



Chapter 4: Installing the Conveyor

NOTE: The same procedure can be followed to install the hip covers to the conveyor as shown below. The only difference is that the conveyors with bend section will not have hip covers.

Figure 4-21 Installing the hip covers in a conveyor



5 Installing the Drive Assembly

Topics Covered in this Chapter

- Installing the Drive (Shaft Mounted Gear Reducers Only)
- Installing the Torque Restraint
- Adjusting the Motor Plate using the Motor Mount Brackets
- Initial Start-Up and Break-In Section

Installing the Drive (Shaft Mounted Gear Reducers Only)

What You Should Know

NOTE: Drive packages are calculated and supplied to meet specifications for the conveyor they are to be installed on, be sure to use only the parts included with the supplied drive package to ensure performance expectation of the conveyor can be met.

Installing the Gear Reducer

NOTE: The conveyor drive shafts are designed to fit specific gear reducer's bushing requirements for installation and removal needs, be sure to install only the gear reducer that the head shaft is designed for.

NOTE: The drive side's bearing guard cover plate will need to be removed prior to installing the reducer to ensure adequate access for the reducer's tapered bushing hardware installation.

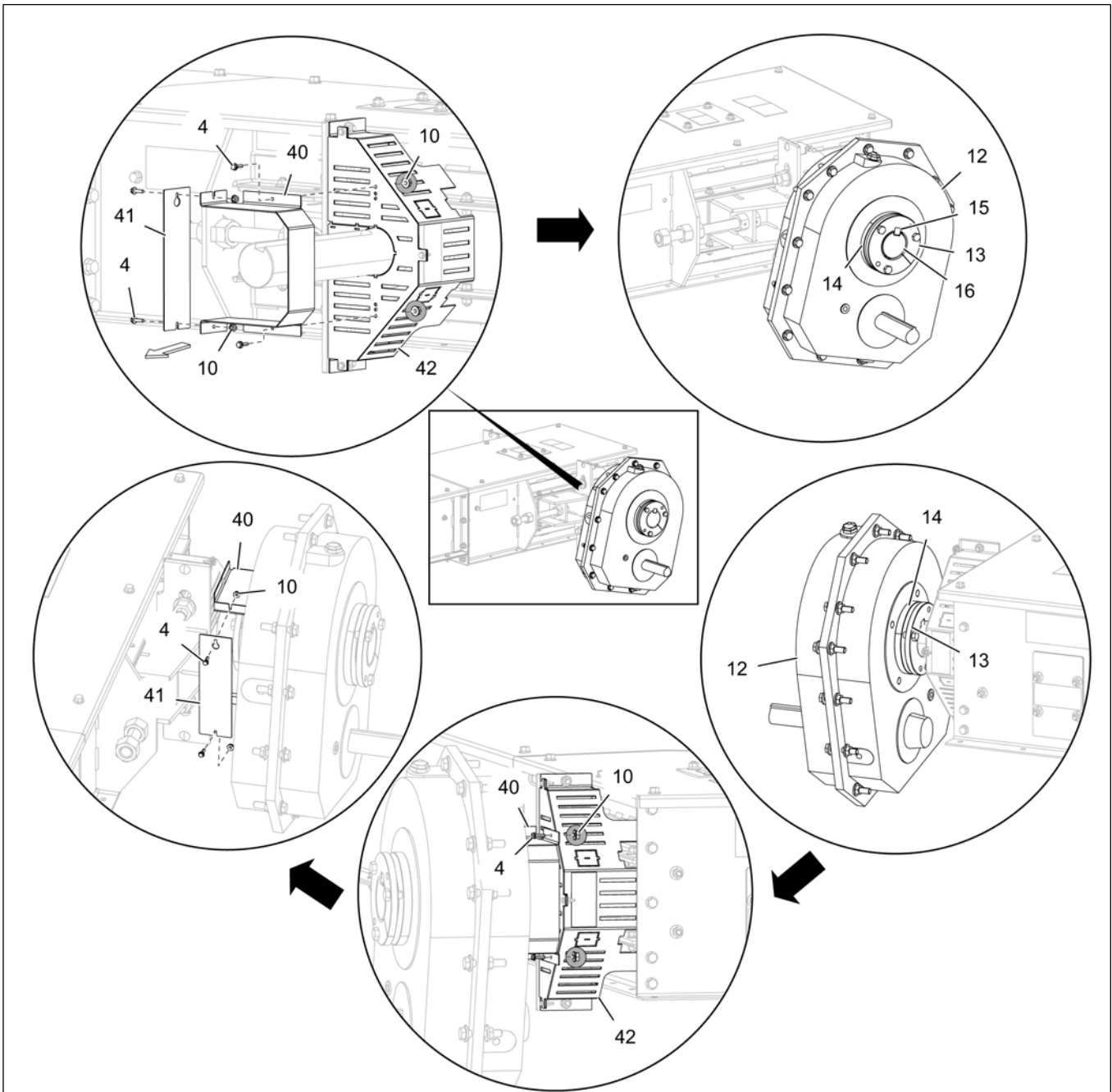
1. Remove the bearing guard cover plate (40) and the bearing guard reducer flat plate (41) from the bearing guard (42). To do this, remove the #10-32 x 3/4" flange bolts (4) and #10-32 flange nuts (10) from the cover tabs. Set the parts and hardware aside for re-installation.
2. Locate the gear reducer (12) and the tapered bushings (13), backing plates (14), rings and key (15) required for installation.
3. Follow the gear reducer manufacturer's installation instructions for installing the gear reducer (12) onto the drive shaft (16).

NOTE: The face of the gear reducer's outer bushing (13) will be flush to the end of the drive shaft (16), this will correctly space the gear reducer (12) to match the required space behind the reducer (12) for its removal method's needs.

4. Re-install the bearing guard cover plate (40) and the bearing guard reducer flat plate (41) onto the bearing guard (42) using the #10-32 x 3/4" flange bolts (4) and #10-32 flange nuts (10).

Chapter 5: Installing the Drive Assembly

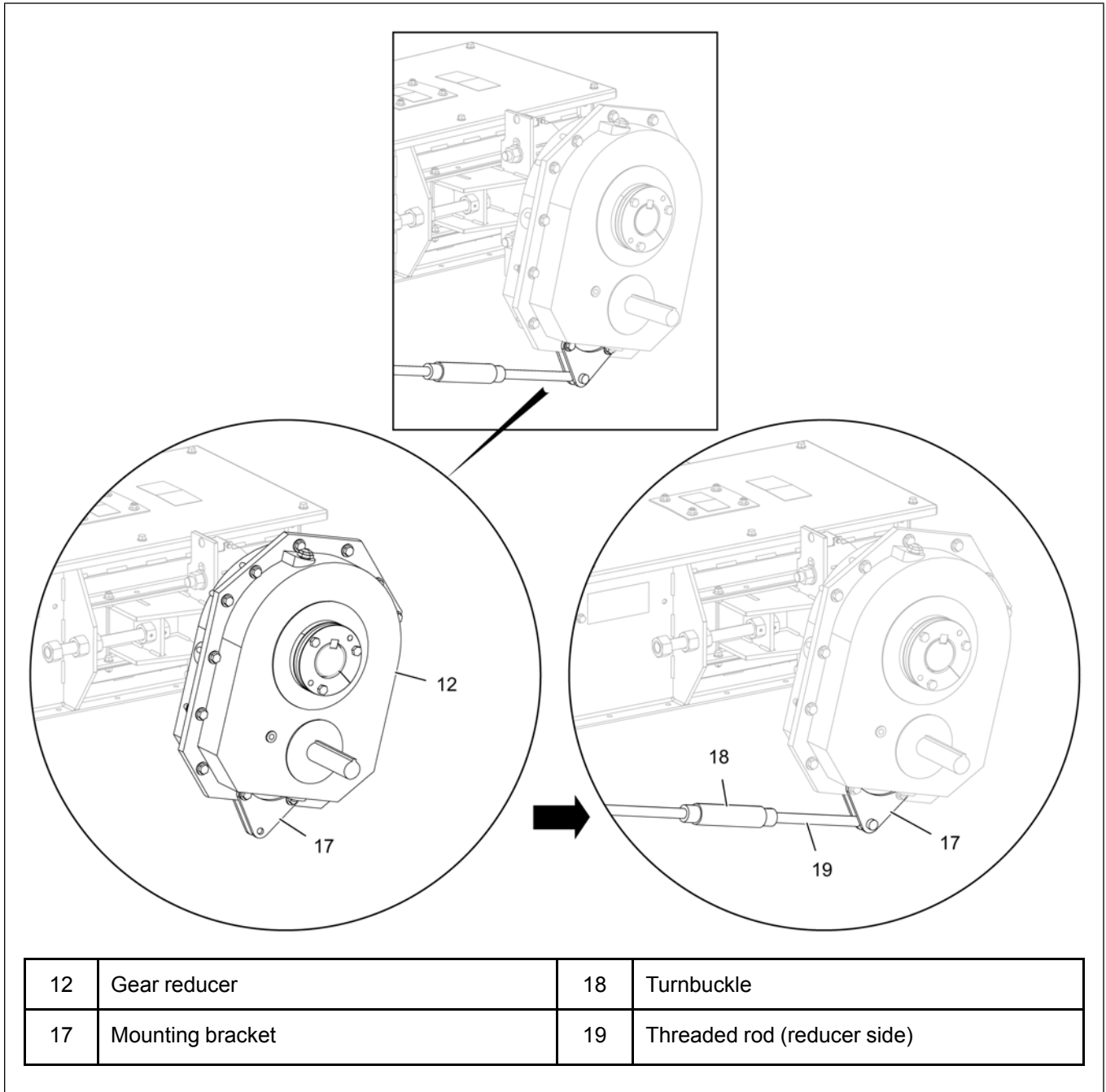
Figure 5-1 Installing the gear reducer to the drive shaft



4	#10-32 x 3/4" flange bolt	15	Key
10	#10-32 flange nut	16	Drive shaft
12	Gear reducer	40	Bearing guard cover plate
13	Tapered bushing	41	Bearing guard reducer flat plate
14	Backing plate	42	Bearing guard

5. Locate the gear reducer's rod assembly. This will consist of a set of threaded rod (19) with eye ends on a turnbuckle (18), a set of mounting brackets (17), a foot block and hardware.
6. Follow the gear reducer manufacturer's installation instructions for installing the gear reducer's rod assembly.

Figure 5-2 *Installing the rod assembly to the gear reducer*



Installing the Torque Restraint

What You Should Know

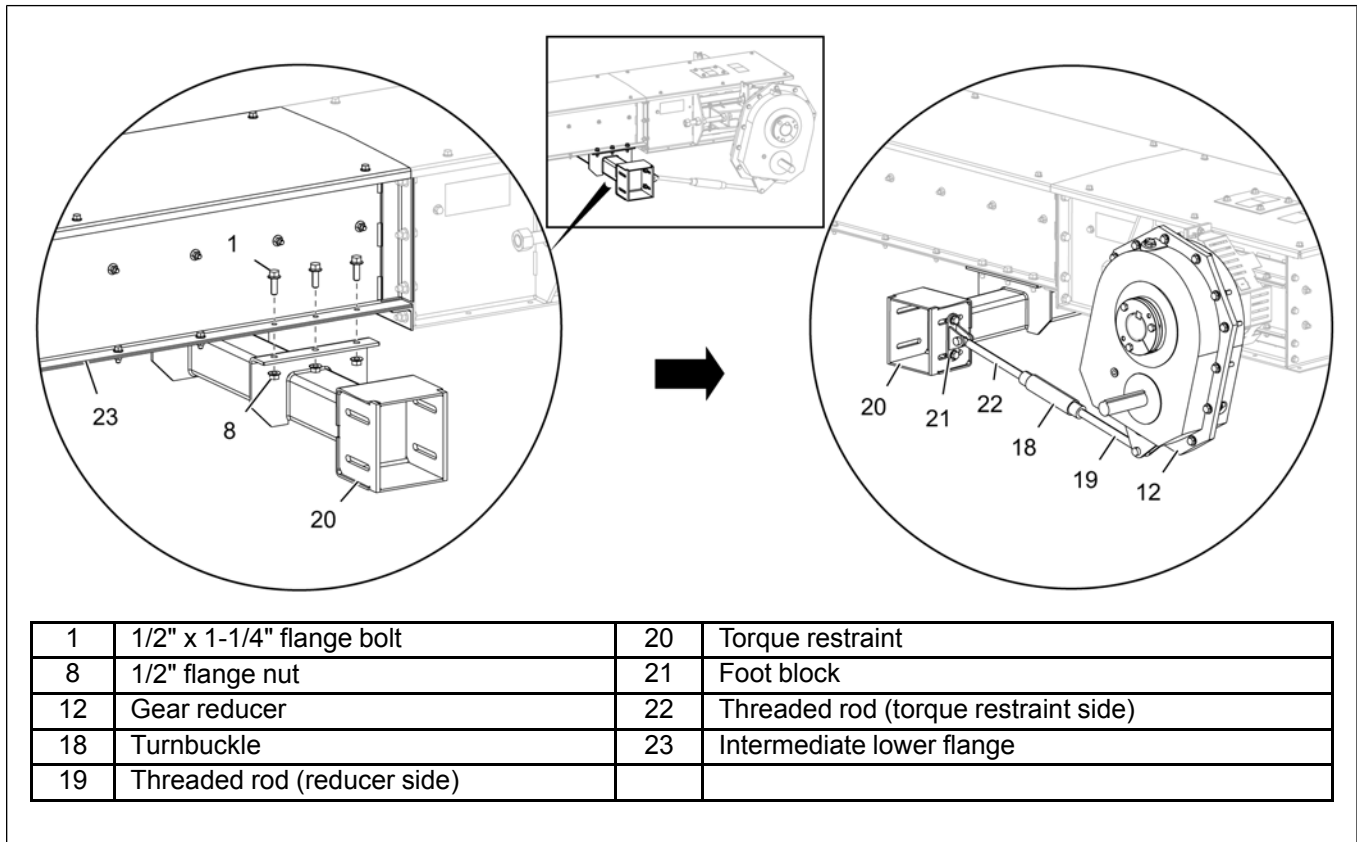
NOTE: All Kleen-Drag Conveyor torque restraints will be mounting on the adjoining intermediate section next to the head section. The intermediates have a series of predefined holes to help locate the most optimal location of the torque restraint in relation to the gear reducer manufacturer's installation requirements and the gear reducer's rod assembly length limitations. Some field drilling of the intermediate's sides may be required for the installation of the torque restraint hardware.

1. Locate the torque restraint (20).
2. To determine the optimal location of the torque restraint (20), refer to the gear reducer manufacturer's installation instructions for the gear reducer's torque rod assembly in relation to the gear reducer (12). It is important to follow these instructions to ensure the torque rod assembly functions as intended and is safe under load.

NOTE: Some drive installations will require the final fixed orientation of the gear reducer (12) to be rotated off of a vertical/plumb orientation in relation to the head section and/ground. Refer to the gear reducer manufacturer's documentation related to oil levels and gear reducer (12) rotation/orientation to ensure the correct level of oil is in the gear reducer (12) prior to operation.

3. Torque restraint (20) is mounted using 1/2" x 1-1/4" flange bolts (1) and 1/2" flange nuts (8). Test fit the torque restraint (20) by mounting the restraint on the conveyor and attach the gear reducer's rod assembly to the torque restraint (20), this will help to determine the optimal location for the torque restraint (20) to be placed, as well as verifying the installation correctness of the rod assembly. Refer to the gear reducer manufacturer's installation instructions for correct assembly of the rod assembly.
4. Once the torque restraint's (20) location has been identified, if necessary, match drill through any blocked holes using a 9/16" drill bit through the intermediate side's lower flange (23). Paint or coat the exposed metal to prevent rust and corrosion.
5. Finally mount the torque restraint (20) using 1/2" x 1-1/4" flange bolts (1) and 1/2" flange nuts (8).
6. Mount the foot block (21) to the torque restraint (20) using the supplied hardware.
7. Mount the gear reducer's rod assembly to the foot block (21) using the manufacturer supplied hardware.

Figure 5-3 Installing the torque restraint



Adjusting the Motor Plate using the Motor Mount Brackets

NOTE: There are multiple positions the motor mount brackets can be installed onto the gear reducer. The position these motor mount brackets will be installed is used in the calculation of the V-belt length that is supplied in the drive package, the positions are referred to as the 'M Position' in the chart below. Use the chart as a key to understand the drive package numbers coded meaning and to identify the position, the motor mounts must be installed for the V-belts to fit properly.

Part number as written: **53918T2BV2**

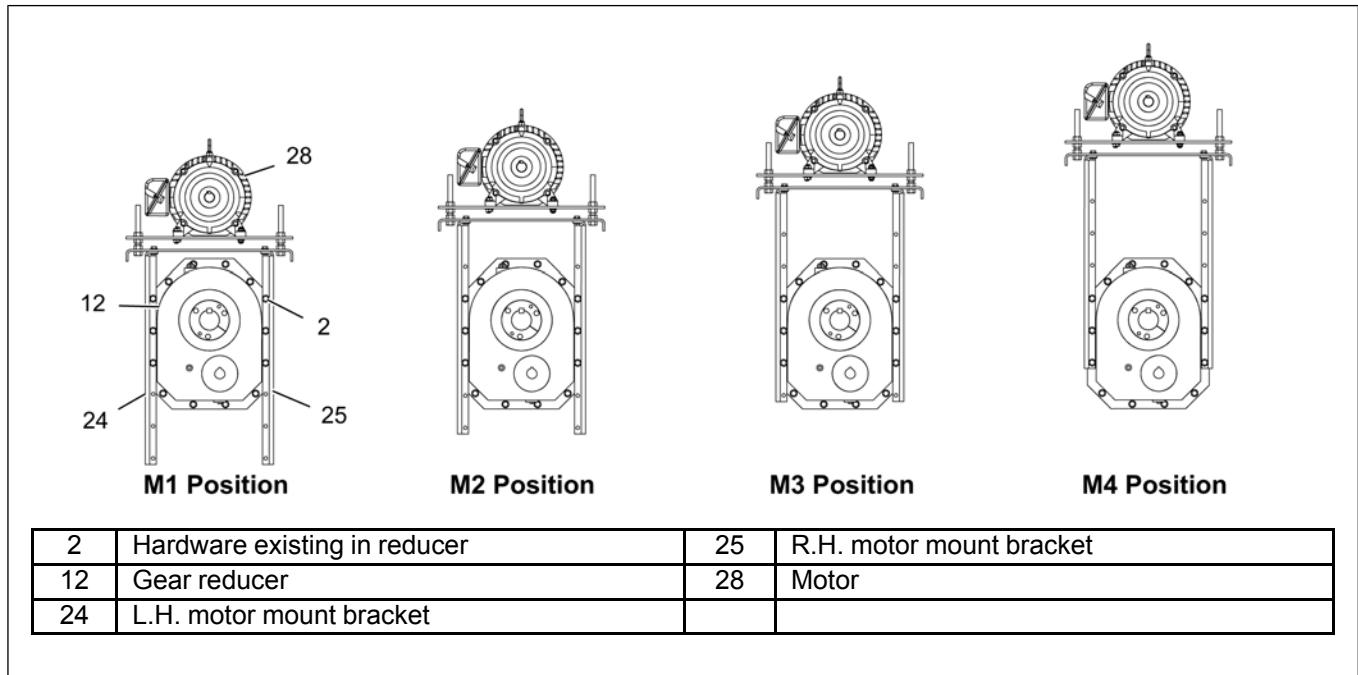
Table 5-1 Motor details

5	39	18	T	2	B	V	2
Horsepower*	Output RPM	Input Motor RPM (x 100)	Manufacturer	M Position	Reducer Bushing Bore Size	Drive Configuration	Drive Class
		"18" = 1750 RPM@60HTZ "15" = 1450 RPM@50HTZ	"T" for Dodge TA II Reducer	"1" = M1 Position "2" = M2 Position "3" = M3 Position "4" = M4 Position	"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"

NOTE: *Horsepower identification may contain 1 to 3 digits.

Chapter 5: Installing the Drive Assembly

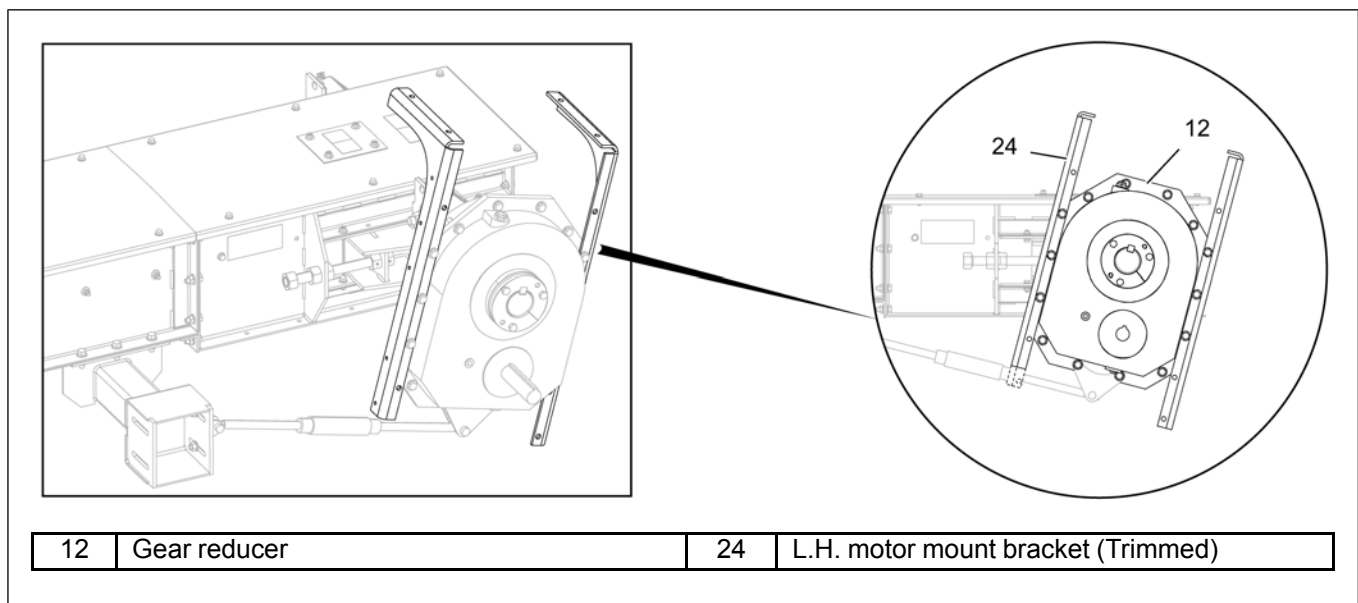
Figure 5-4 Adjusting the motor mount brackets



1. Locate the L.H and R.H motor mount brackets (24 and 25).
2. The motor mount brackets (24 and 25) will be installed on the outer flange of the reducer (12) using the reducer's existing hardware (2). As per the [Figure 5-4, page 46](#), remove only the necessary bolts, washers and nuts where the motor mount brackets (24 and 25) will be installed. Set the hardware (2) aside for re-installation.
3. Use the [Table 5-1, page 45](#) and [Figure 5-4, page 46](#) to identify the 'M Position' of the motor mount brackets (24 and 25). Install the motor mount brackets (24 and 25) using the hardware removed in step 2.

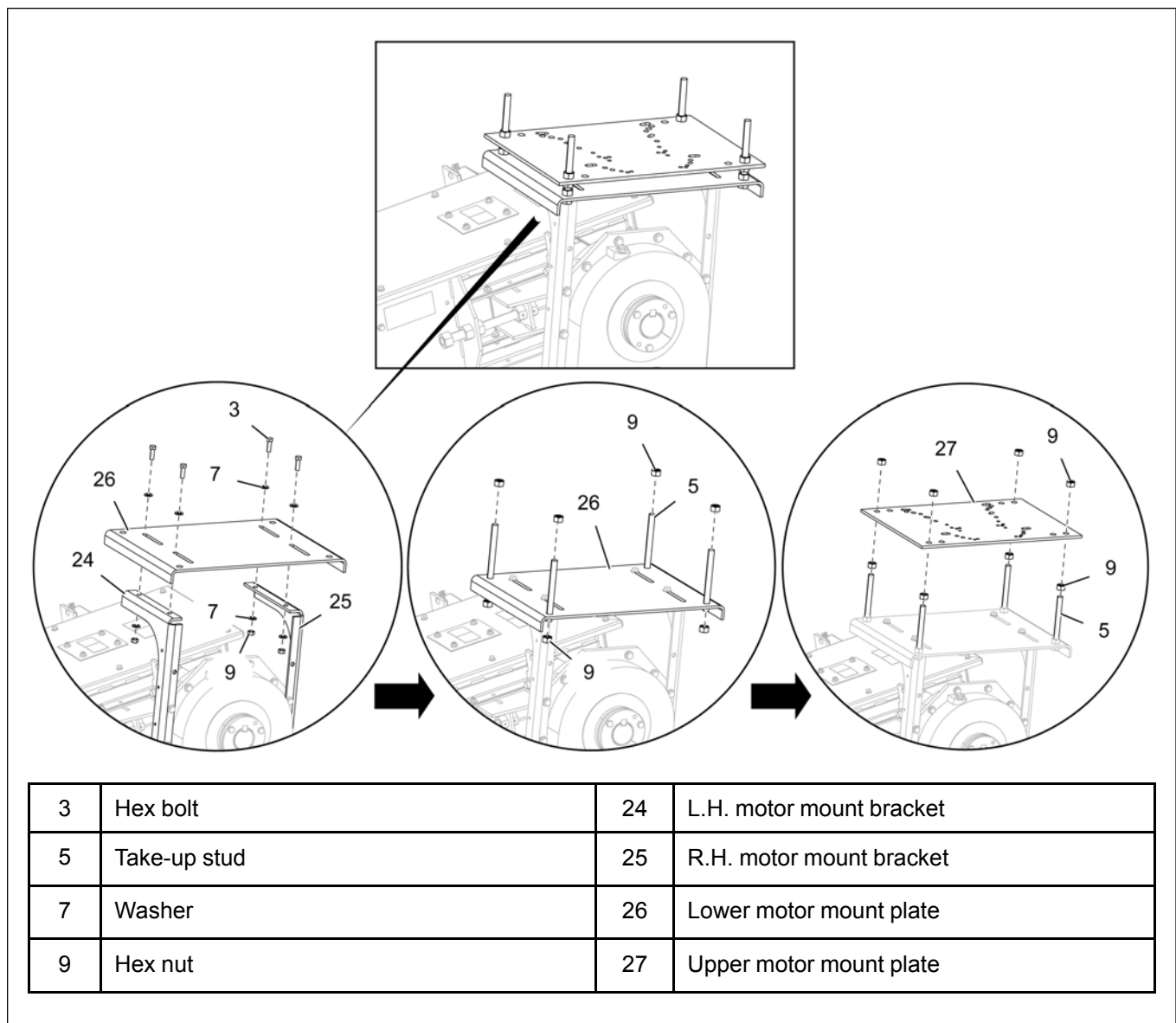
NOTE: The end of the motor mount bracket closest to the torque restraint may need to be trimmed off to avoid interference with the gear reducer's (12) rod assembly. If the motor mount bracket is cut, make sure to paint or coat the exposed metal to prevent rust and corrosion.

Figure 5-5 Trimming the motor mount bracket



4. Locate the motor mount plates (26 and 27), take-up studs (5) and hex nuts (9).
5. Install the lower motor mount plate (26) onto the motor mount brackets (24 and 25) with hex bolts (3), washers (7) and hex nuts (9). Leave the hardware slightly loose, the plate (26) will need to be able to slide in the slots for final fit of the drive components.
6. Install the take-up studs (5) and lower the set of hex nuts (9) onto the lower motor mount plate (26) and tighten.
7. Install the upper motor mount plate (27) onto the take-up studs (5), after installing another set of hex nuts (9) onto the take-up studs (5). Make sure to install the upper motor mount plate (27) so that the pattern of holes are narrower on the end that the gear reducer is located under. Set the position of the upper motor mount plate (27) within a couple of inches from the lower motor mount plate (26).
8. Install the last set of hex nuts (9) onto the take-up studs (5). Leave these upper set of nuts (9) loose, the upper motor mount plate (27) will need to be able to raise or lower for final fit of the drive components.

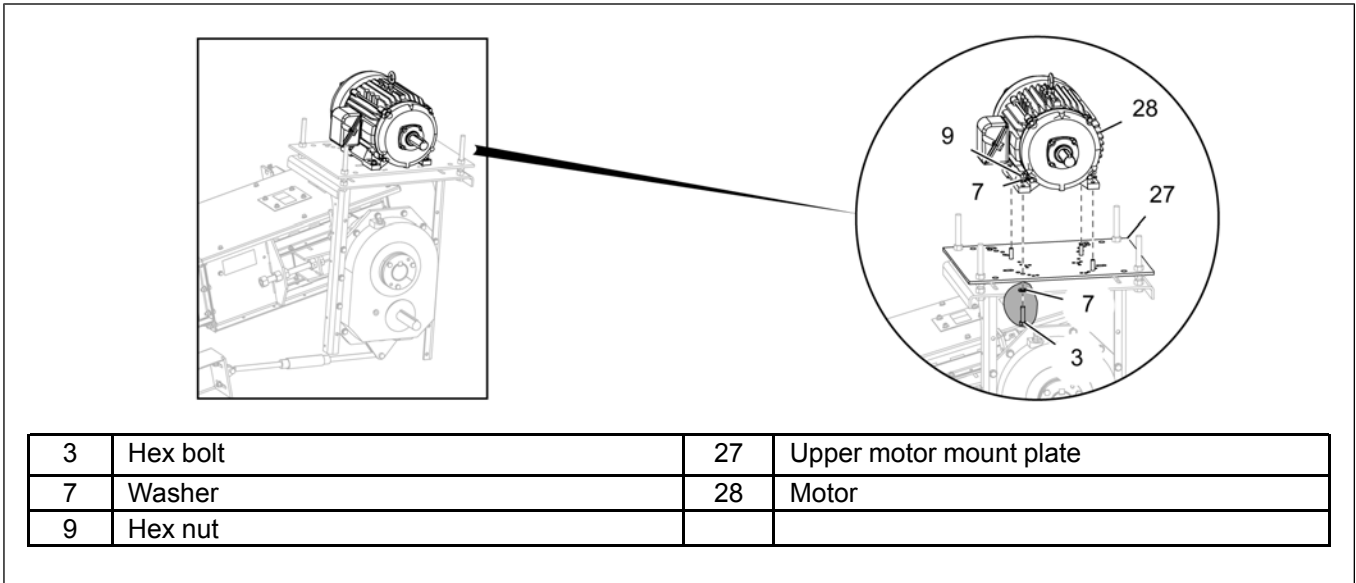
Figure 5-6 *Installing the lower and upper motor mount plates*



Chapter 5: Installing the Drive Assembly

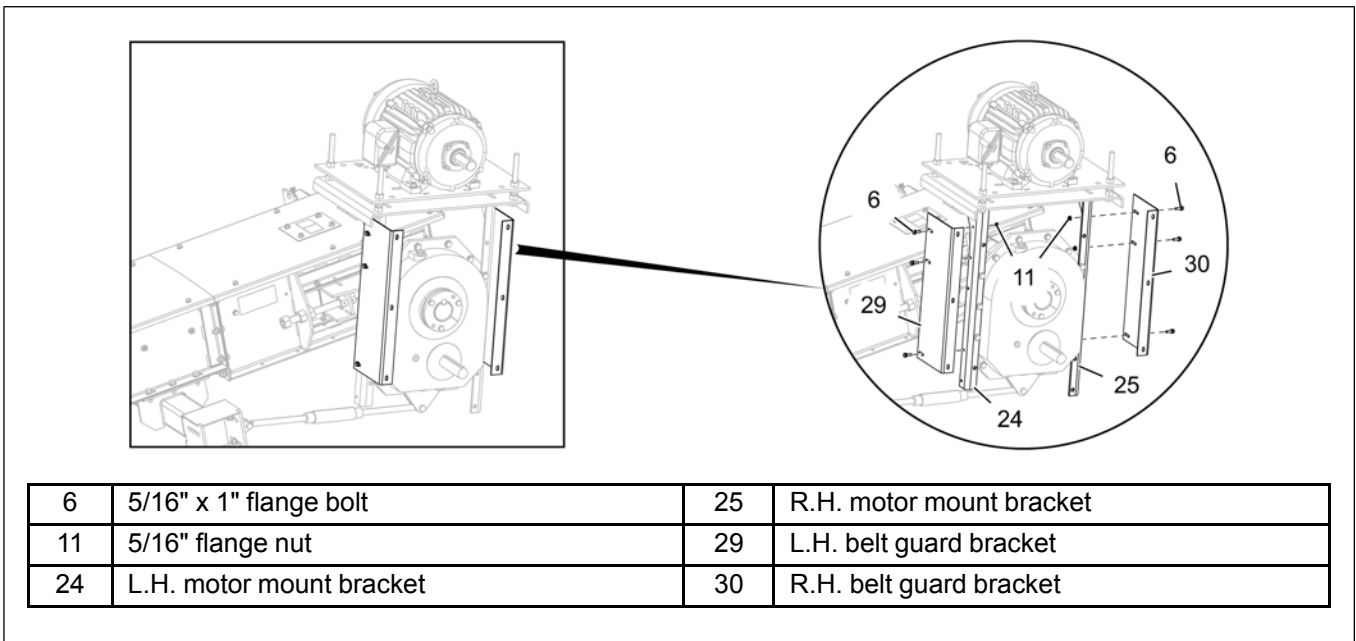
9. Locate the motor (28) and the motor mounting hardware.
10. Install the motor (28) onto the upper motor mount plate (27) using hex bolts (3), washers (7) and hex nuts (9). The motor (28) will only fit one set of holes that match the motor's frame size. Tighten the motor hardware.

Figure 5-7 *Installing the motor*



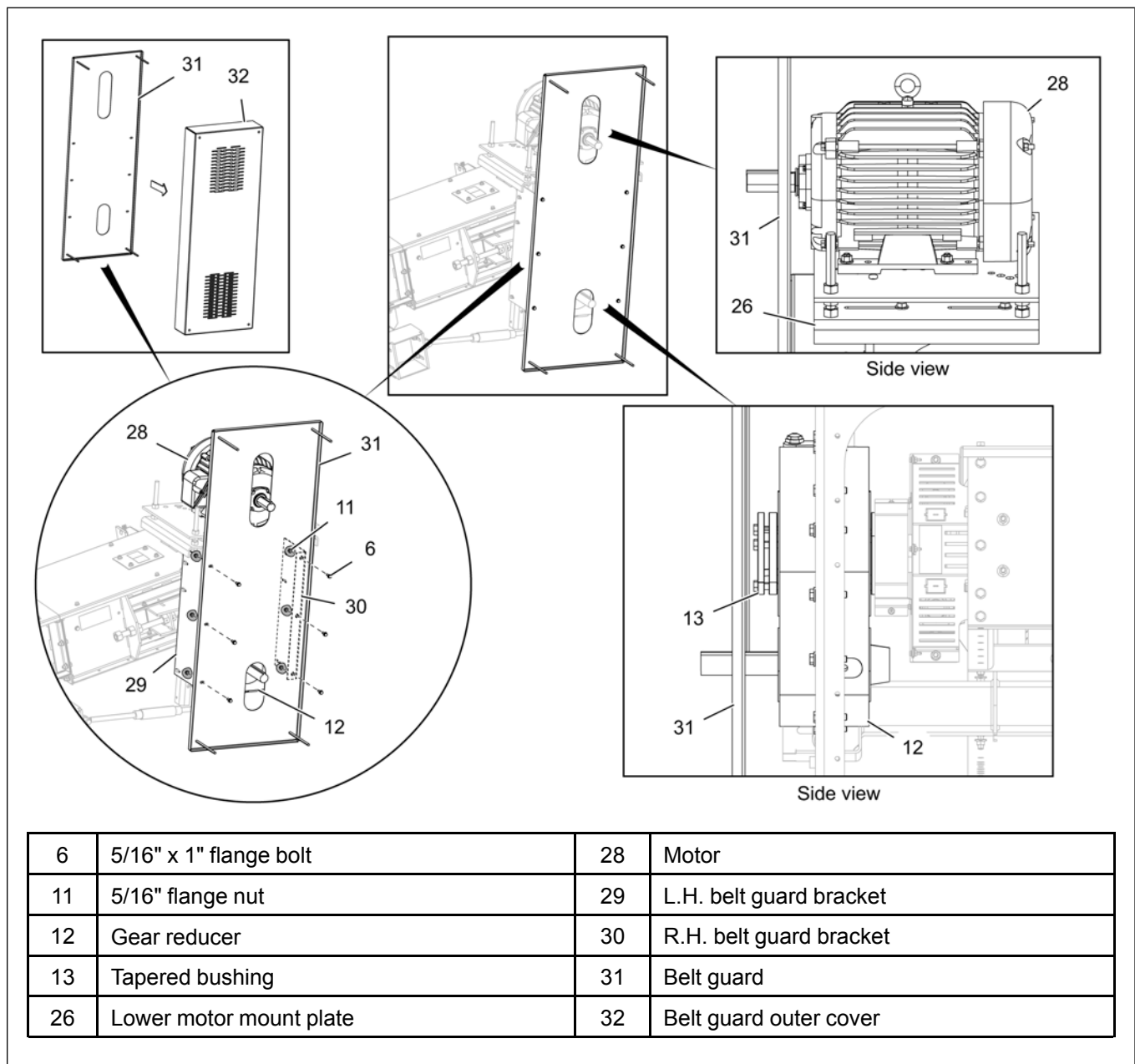
11. Locate the belt guard brackets (29 and 30), there are left and right hand brackets.
12. Install the belt guard brackets (29 and 30) onto the outside vertical surfaces of the motor mount brackets (24 and 25) using 5/16" x 1" flange bolts (6) and 5/16" flange nuts (11). Leave this hardware slightly loose.

Figure 5-8 *Installing the belt guard brackets*



13. Locate the belt guard (31).
14. Remove the belt guard's outer cover (32) and set aside.
15. Install the belt guard (31) back plate onto the belt guard brackets (29 and 30) using 5/16" x 1" flange bolts (6) and 5/16" flange nuts (11). Tighten the hardware.
16. Adjust the belt guard (31) back plate and the lower motor mount plate (26) to minimize exposure to rotating parts of the drive. Slide the belt guard (31) back towards the gear reducer (12) until it stops, then pull the guard (31) out slightly to create a gap between the back side of the guard (31) and the tapered shaft bushing (13) of the gear reducer (12). Slide the lower motor mount plate (26), with the motor (28) mounted on it, toward the belt guard (31). Leave a small gap between the belt guard's (31) back plate and the motor (28) face. Tighten the belt guard brackets and the lower motor mount plate's hardware.

Figure 5-9 *Installing the belt guard*



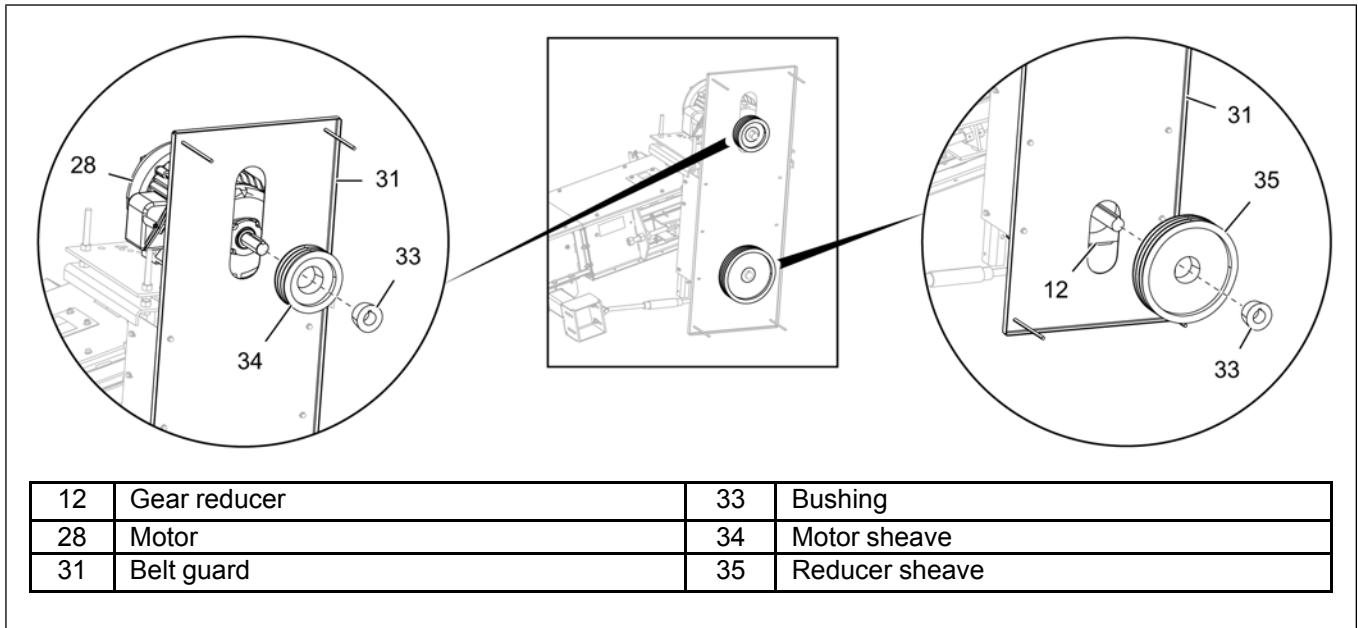
Chapter 5: Installing the Drive Assembly

17. Locate the bushings (33) and belt sheaves (34 and 35).

18. Install the bushings (33) and belt sheaves (34 and 35). The sheaves (34 and 35) should be located as close to the belt guard (31) back plate as possible, while still maintaining a clearance gap, to reduce the stress on the shafts. Tighten the set screws.

NOTE: For a speed reduction drive (the most common drive configuration) the larger diameter sheave (35) will go on the gear reducer's (12) input shaft, the smaller diameter sheave (34) will go on the motor's (28) output shaft. The bushings (33) will match the sheave and shaft diameters.

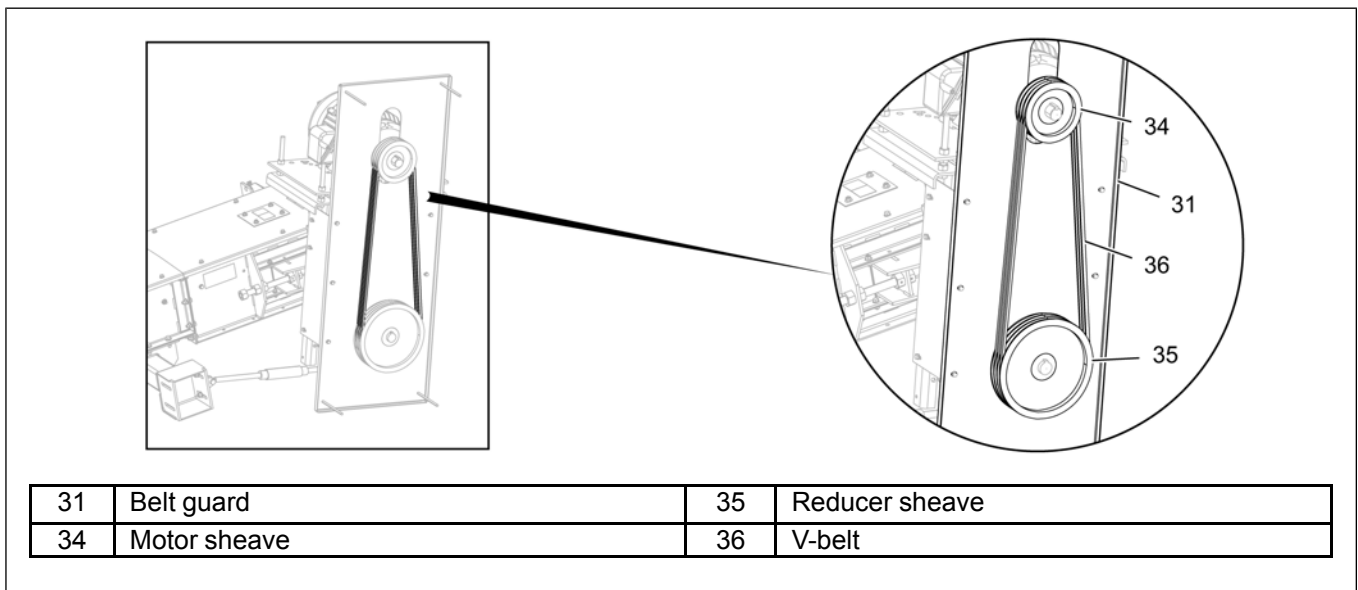
Figure 5-10 Installing the sheaves and bushings



19. Locate the V-belts (36).

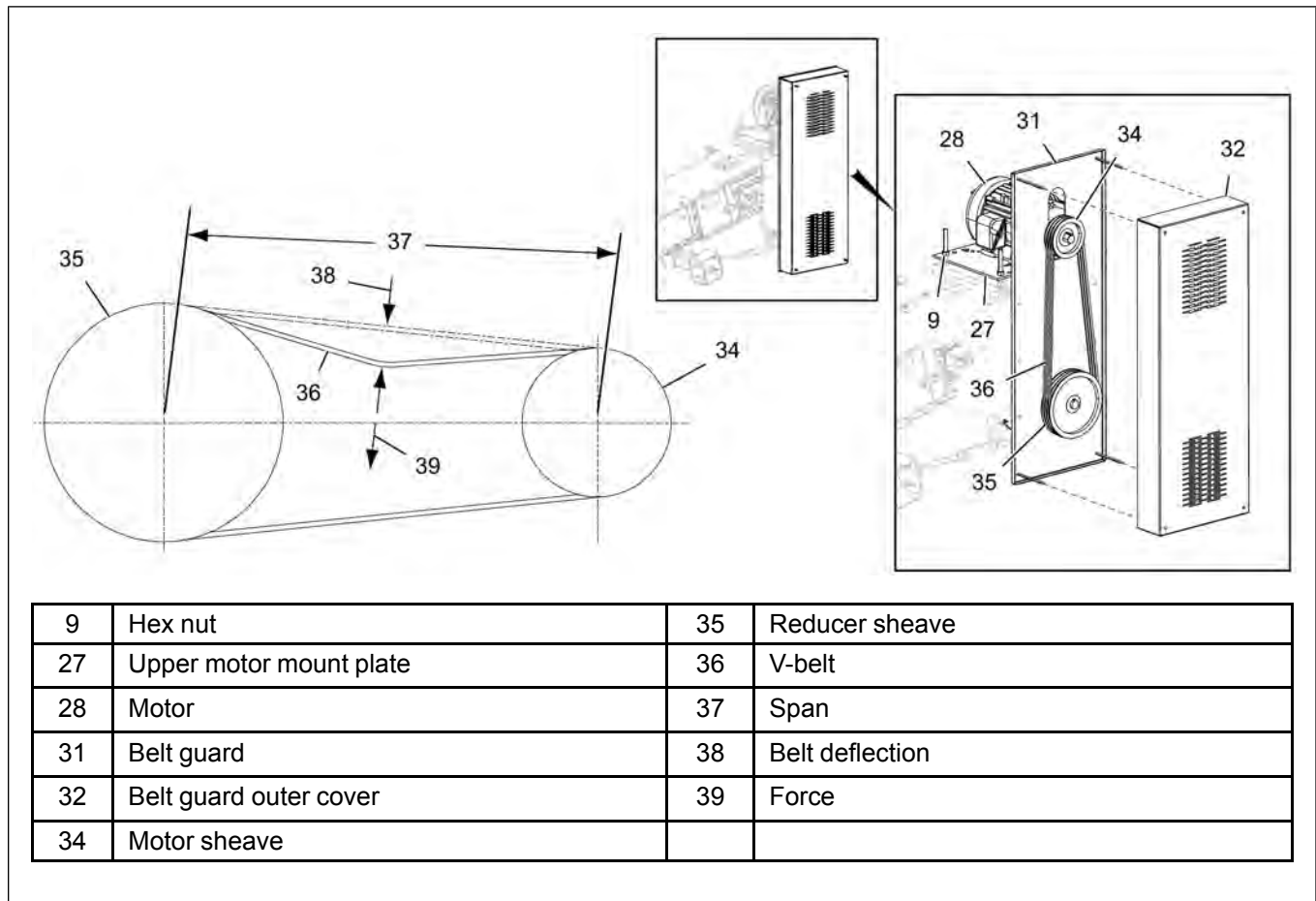
20. Install the V-belts (36) over sheave (34 and 35) grooves.

Figure 5-11 Installing the V-belts



21. Apply tension to the V-belts (36) by raising the upper motor mount plate (27) and motor (28) by using the set of hex nuts (9) under the upper motor mount plate (27) to raise the plate. Make sure not to over-tension the V-belts (36) as this could lead to pre-mature wear to the V-belts (36), as well as the motor (28) and gear reducer (12) shaft's bearings or possible seal failures. Proper tension is a deflection of the side of the belt $1/64$ " per 1" of distance between the gear reducer (12) input and the motor (28) output shaft centers. Use the deflection chart below to determine how much tension should be applied.
22. Tighten the upper motor mount plate (27) nuts.
23. Re-install the belt guard outer cover (32).
24. Fill the gear reducer (12) with oil, refer to the manufacturer's installation instructions for proper oil and fill level.

Figure 5-12 Adjusting the V-belt and installing belt guard outer cover



NOTE: Check the belt tension frequently during the first 24-48 hours of operation.

Sample Deflection Problem:

3-1/2' Span = $21/32$ " of Deflection (approximately $11/16$ ")

1. $3-1/2' = 42$ " (Span)
2. $1/64" = 0.015625$ " (Belt deflection per inch of span)
3. $42" \times 0.015625" = 0.65625$ " (Span x Belt deflection)
4. $0.65625" = 21/32$ " of Deflection for 3-1/2" span

Initial Start-Up and Break-In Section

What You Should Know



A certified electrician must perform electrical wiring for equipment.

1. Connect the conveyor motor to a power source according to the motor manufacturer's instructions and recommendations.
2. A shut off switch should be placed near the motor so that the system may easily be shut down.
3. Check proper motor shaft rotation before installing drive belts.
4. 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.
5. Ensure a "break-in" period whereby the chain is allowed to run and seat itself.
6. After running it for an adequate period of time, stop the machine, disconnect and lock out the power source.
7. Re-tighten as necessary and remove any excess chain portions.
8. Repeat this process as necessary.

6 Optional Accessories

Topics Covered in this Chapter

- Installing the Tail Shaft Speed Sensor (4B Whirligig®)
- Installing the Inspection Ports
- Installing the Standard Inlets
- Installing the Support Legs
- Installing the Slack Chain Detector
- Installing the Head Transition for Reversing Conveyors
- Installing the Discharge Transition(s)
- Installing the Gates
- Installing the Gate Operator
- Installing the Head Plug Sensor
- Installing the Bypass Inlet Grating

Installing the Tail Shaft Speed Sensor (4B Whirligig®)

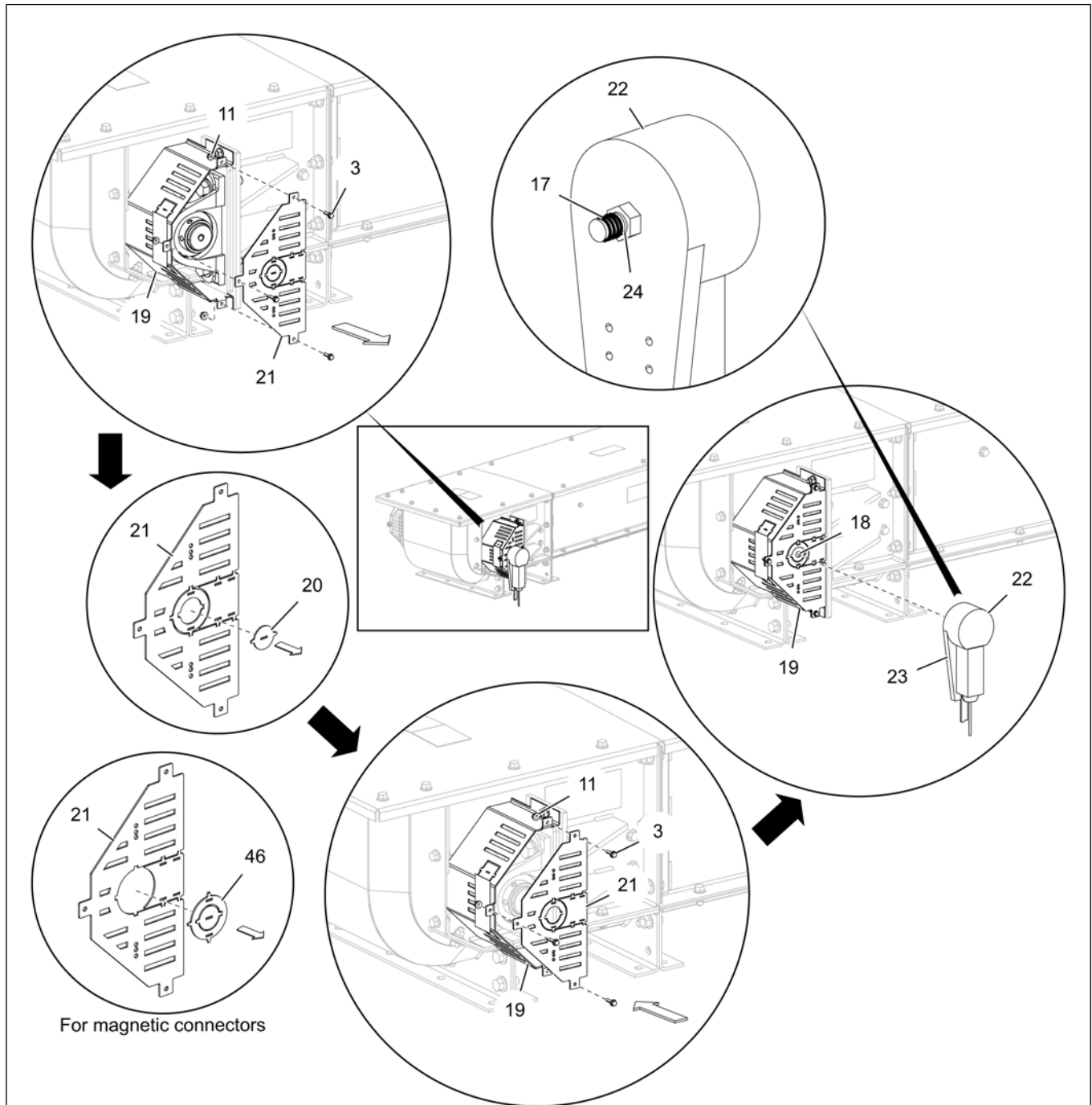
1. Tail shaft (18) ends are tapped for mounting the 4B Whirligig® shaft speed sensor (22) using the threaded stud (24) of the sensor.
2. After deciding which side of the tail the sensor (22) will be mounted, the bearing guard (19) will need to be modified to remove the knockout plate (20) covering the center of the shaft (18) end where the threaded hole is located. This bearing guard's cover plate (21) will need to be removed to do this. Remove the #10-32 x 3/4" flange bolts (3) and #10-32 flange nuts (11) to take the bearing guard cover plate (21) off. Retain the hardware for re-use.
3. Insert a flat blade screwdriver into the slot in the center of the knockout plate (20) and gently pivot the plate back and forth until the knockout (20) breaks free. Be careful to not warp the cover plate (21).

NOTE: *If the magnetic adapter is preferred for installing the speed sensor, the larger knockout ring (46) will need to be removed as well.*

4. Re-install the cover plate (21) to the bearing guard (19) using #10-32 x 3/4" flange bolts (3) and #10-32 flange nuts (11).
5. It may be easier to assemble the 4B M800 sensor (22) to the Whirligig® mount plate (23) prior to installing onto the tail shaft (18). Follow the manufacturer's instructions for assembly of the sensor and mount items.
6. Before installing the Whirligig® mount plate (23), it is recommended to apply a thread locking sealant (17) to the Whirligig® threaded stud (24).
7. Tighten the Whirligig® threaded stud (24) into the tail shaft (18) using a 5/8" open ended or crescent wrench.
8. Follow the manufacturer's instructions for the electrical connections in accordance with local and national electrical codes and all relevant OSHA regulations.

Chapter 6: Optional Accessories

Figure 6-1 Installing the tail shaft speed sensor



For magnetic connectors

3	#10-32 x 3/4" flange bolt	21	Bearing guard cover plate
11	#10-32 flange nut	22	4B M800 sensor
17	Sealant	23	Whirligig® mount plate
18	Tail shaft	24	Whirligig® threaded stud
19	Bearing guard	46	Knockout ring (for magnetic connector)
20	Knockout plate		

Installing the Inspection Ports

Inspection ports are installed onto the conveyor covers.

What You Should Know



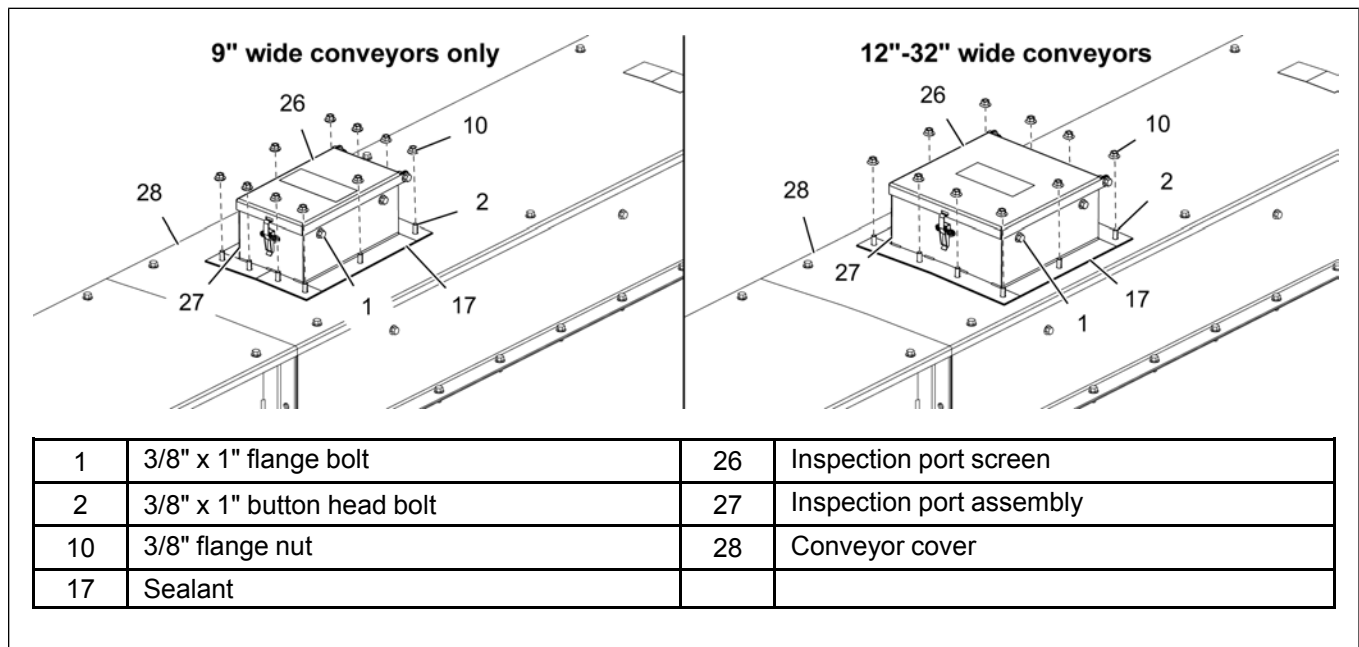
Remove paint before welding or heating. Toxic fumes can be generated when paint is heated by welding, soldering or using a torch. Always wear an approved respirator and work in well-ventilated area.

1. Inspection ports (27) are bolt-on assemblies which require field modifications to the covers (28) to mount.
2. To assist in identifying the field cut locations, remove the screen (26) in the assembly by removing the 3/8" x 1" flange bolts (1) and 3/8" flange nuts (10), then slide out the screen (26).
3. Locate the port assembly (27) where desired on a cover (28). The port is designed to sit on the center line of the conveyor's cover (28). With a felt tip pen, use the inside of the port assembly (27) to trace the outline of the box. Also, use the pen to mark the flange hole locations to drill for the mounting hardware.
4. Remove the cover (28) and use this outline as the guide to cut a hole in the cover (28). Drill the mounting holes with a 7/16" diameter (maximum) clearance hole. Paint the exposed metal to prevent corrosion and rust.
5. Re-install the screen (26) using the 3/8" x 1" flange bolts (1) and 3/8" flange nuts (10), that are removed in step 2.
6. Apply sealant (17) of choice to the bottom flanges of the inspection port and place the port assembly (27) onto the cover (28).
7. Fasten the inspection port assembly (27) to the cover (28) using 3/8" x 1" button head bolts (2) and 3/8" flange nuts (10).

NOTE: Install the button head bolts (2) with bolt head on the inner side of the cover (28).

8. Re-install the cover (28) to the conveyor.

Figure 6-2 Installing the inspection port assembly



Installing the Standard Inlets

1. Standard inlets (25) are bolt-on assemblies which require field modifications to the covers (28) to mount.
2. Locate the inlet (25) where desired on a cover (28). If locating the inlet (25) near the tail seam, it is important to keep the tail end edge of the inlet (25) at a minimum of 6" away from the tail to the intermediate seam location. This is to prevent flooding the tail with material.
3. The inlet (25) is designed to sit on the center line of the conveyor's cover (28). With a felt tip pen, use the inside of the inlet (25) to trace the outline of the box. Also, use the pen to mark the flange hole locations to drill for the mounting hardware.

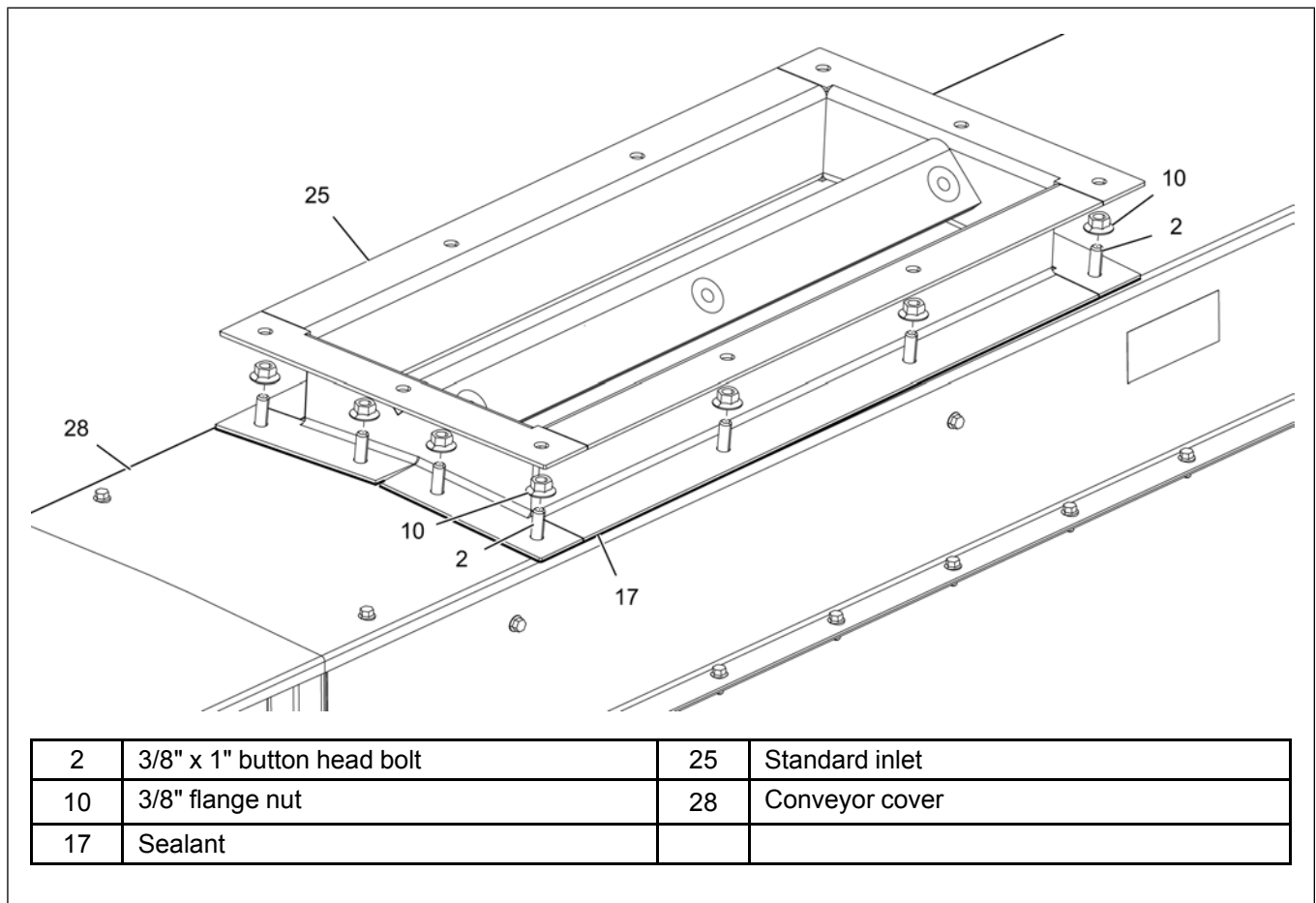
NOTE: *It may be necessary to remove the intermediate cover (28) fasteners to allow the inlet (25) to sit flush to the cover (28).*

4. Remove the cover (28) and use this outline as the guide to cut a hole in the cover (28). Drill the mounting holes with a 7/16" diameter (maximum) clearance hole. Paint the exposed metal to prevent corrosion and rust.
5. Apply sealant (17) of choice to the bottom flanges of the inlet (25) and place the inlet (25) onto the cover (28).
6. Fasten the inlet (25) to the cover (28) using 3/8" x 1" button head bolts (2) and 3/8" flange nuts (10).

NOTE: *Install the button head bolts (2) with bolt head on the inner side of the cover (28).*

7. Re-install the cover (28) to the conveyor.

Figure 6-3 Installing the standard inlet



Installing the Support Legs

What You Should Know

NOTE: The support legs can be used to suspend the conveyor off the ground or suspend from above. It is the responsibility of the installer to provide adequate support for the conveyors intended use. The support legs have a 0-60 degree range of inclination adjustment.

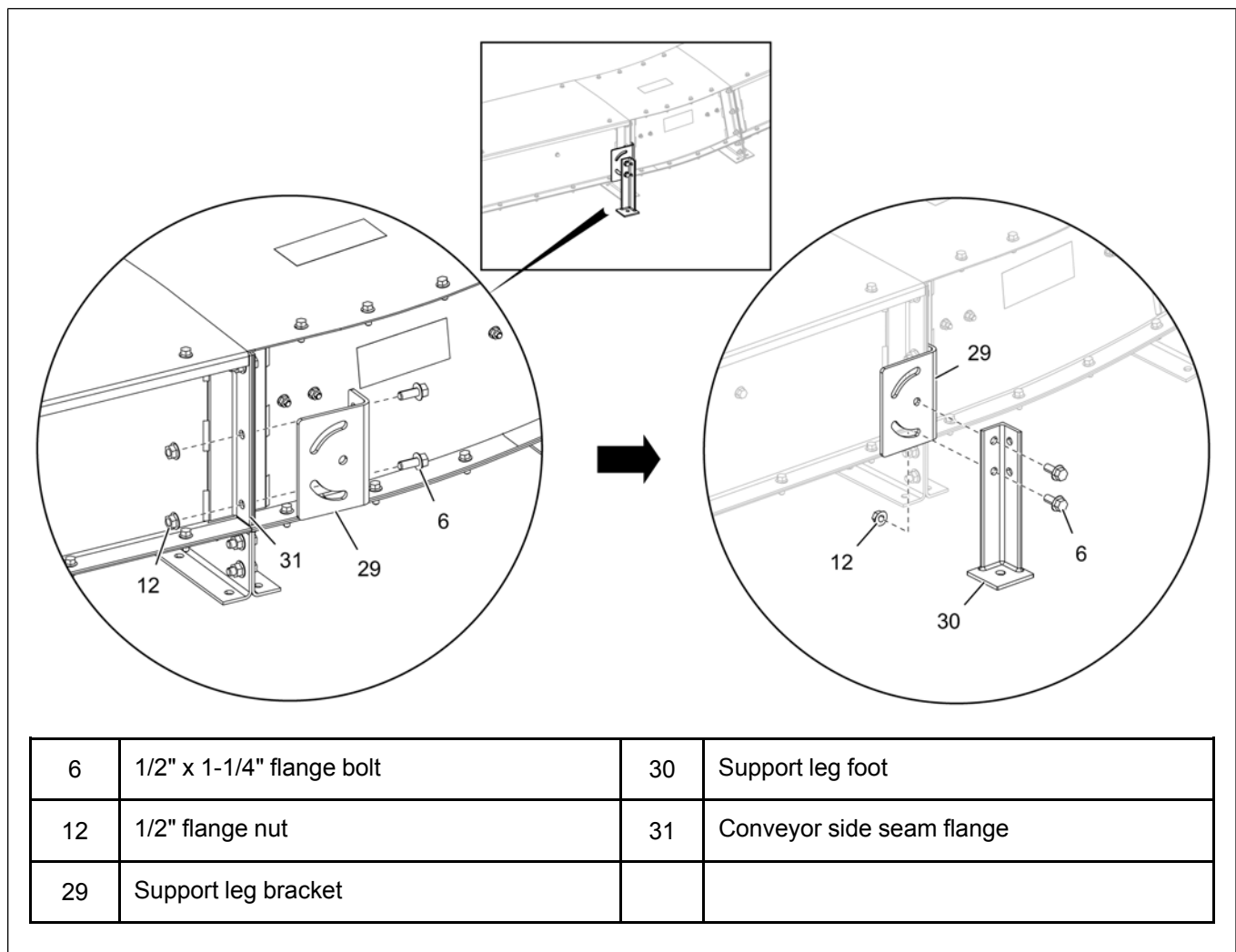
NOTE: It is recommended the conveyor be supported at each seam joint, or otherwise in no greater than a 10' length between the supports.

1. Locate and install the support leg bracket (29) to the conveyor side seam flange (31) using 1/2" x 1-1/4" flange bolts (6) and 1/2" flange nuts (12), replacing the existing 1/2" x 1" flange bolts.

NOTE: If the conveyor is suspended from off the ground, use the bottom set of conveyor side seam flange (31) holes. If the conveyor is suspended from the above, use any pair of conveyor side seam flange (31) holes as desired.

2. Locate and assemble the support leg foot (30) to the support leg bracket (29) using 1/2" x 1-1/4" flange bolts (6) and 1/2" flange nuts (12). Adjust the inclination of the joint as needed.

Figure 6-4 Assembling the support legs to the conveyor



Installing the Slack Chain Detector

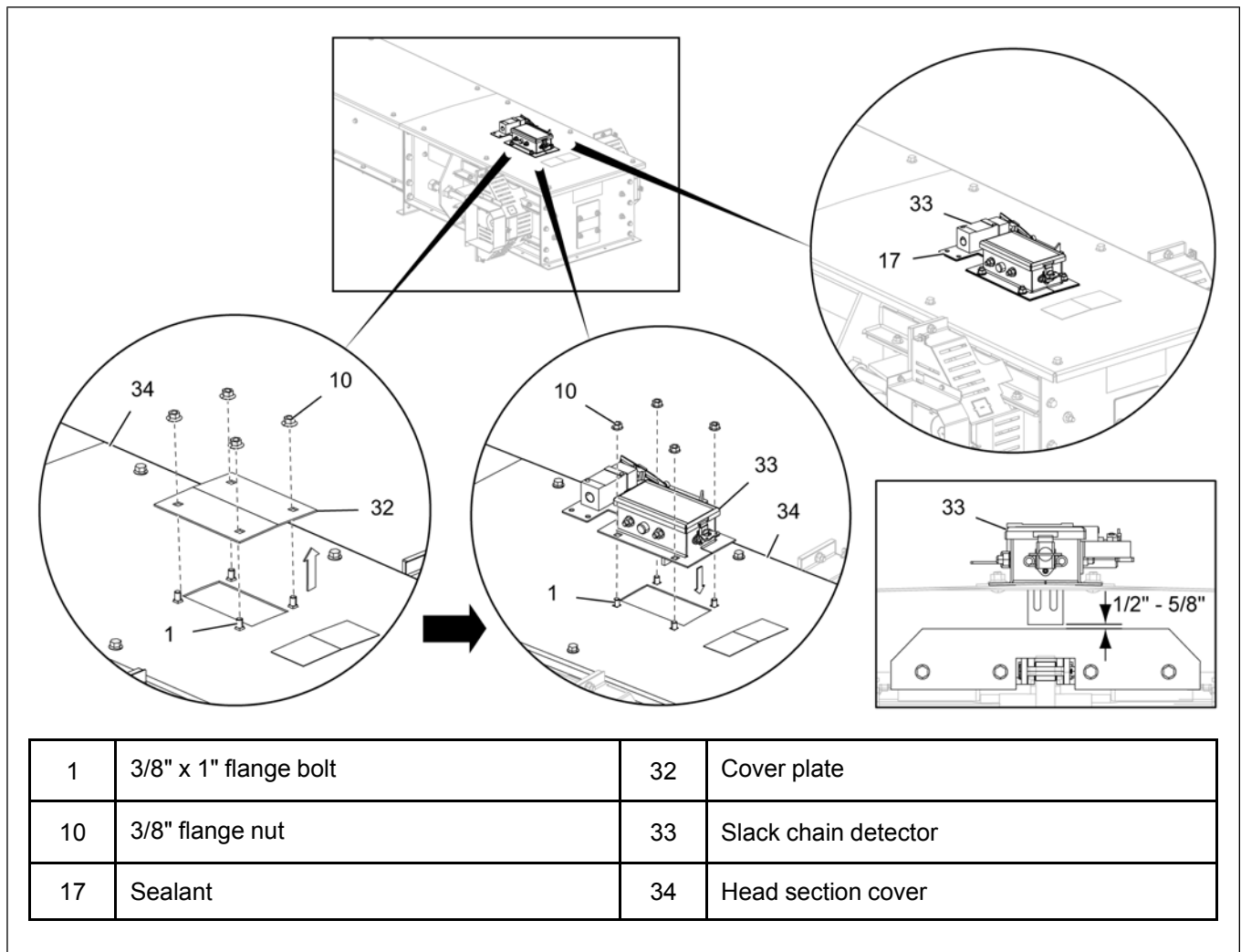
Slack chain should be checked periodically to ensure the trigger mechanisms can move freely.

What You Should Know

Detectors come pre-assembled with the limit switch installed. Explosion proof limit switches should be used in dusty conditions or in an enclosed environment.

1. Remove and discard the small plate (32) located on the head section cover (34) and retain the 3/8" flange nuts (10) for re-use.
2. Apply sealant (17) to the bottom of the slack chain detector (33) flange.
3. Install the slack chain detector (33) to the head section cover (34) in the orientation shown using the removed 3/8" flange nuts (10).
4. 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.
5. Ensure the clearance between the chain flight wiper pad and the UHMW pad is between 1/2" and 5/8".

Figure 6-5 Installing the slack chain detector



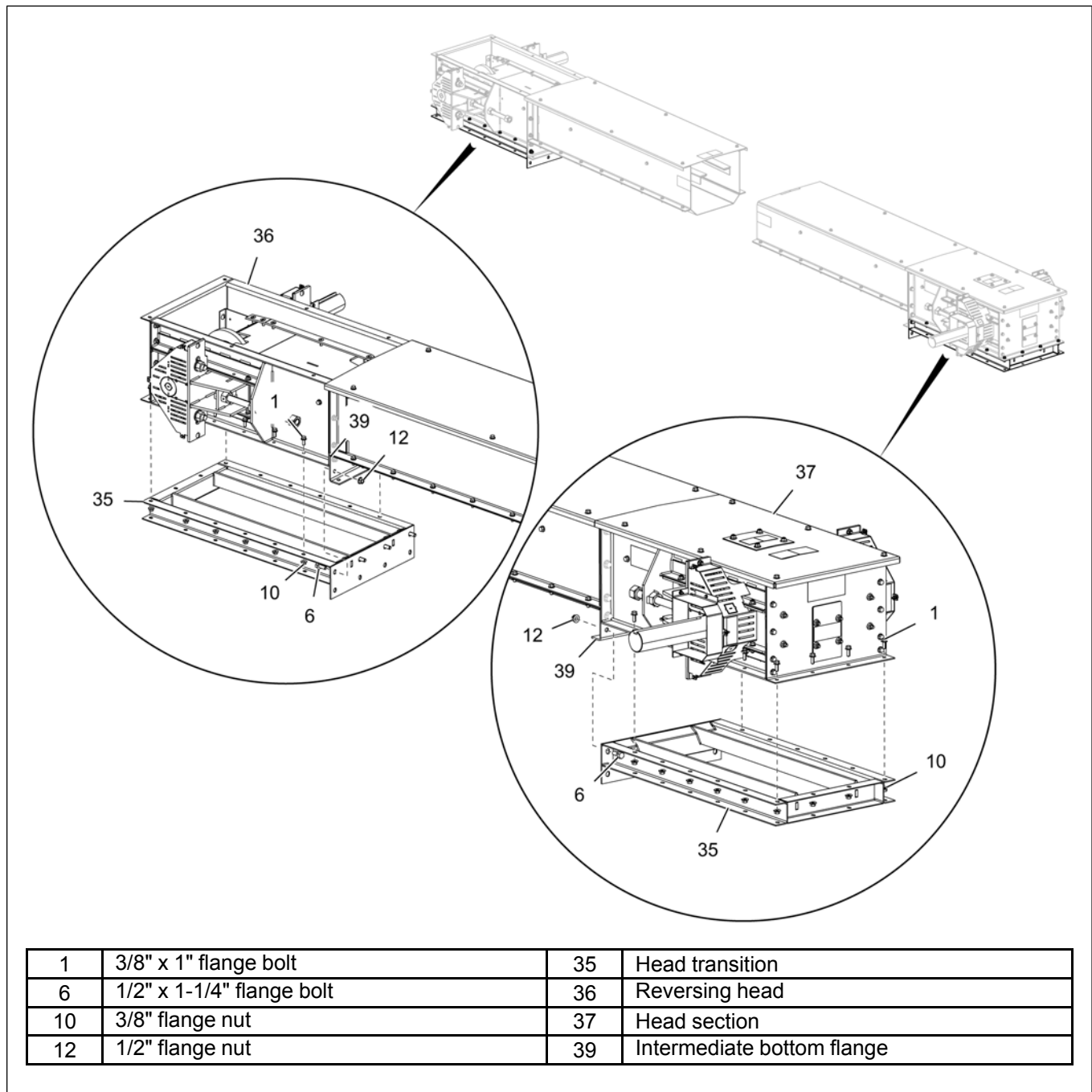
Installing the Head Transition for Reversing Conveyors

What You Should Know

NOTE: Reversing conveyors require to have carry-over bars in each head discharge location to prevent the returning chain from catching on the adjoining intermediate's bottom flange.

1. Locate the head transition (35) and mount it to the reversing head's (36) discharge flange using 3/8" x 1" flange bolts (1) and 3/8" flange nuts (10) and to the adjoining intermediate's bottom flange (39) using 1/2" x 1-1/4" flange bolts (6) and 1/2" flange nuts (12).
2. Locate another head transition (35) and mount it to the head section's (37) discharge flange using 3/8" x 1" flange bolts (1) and 3/8" flange nuts (10) and to the adjoining intermediate's bottom flange (39) using 1/2" x 1-1/4" flange bolts (6) and 1/2" flange nuts (12).

Figure 6-6 Installing the head transition for reversing conveyor



Installing the Discharge Transition(s)

What You Should Know

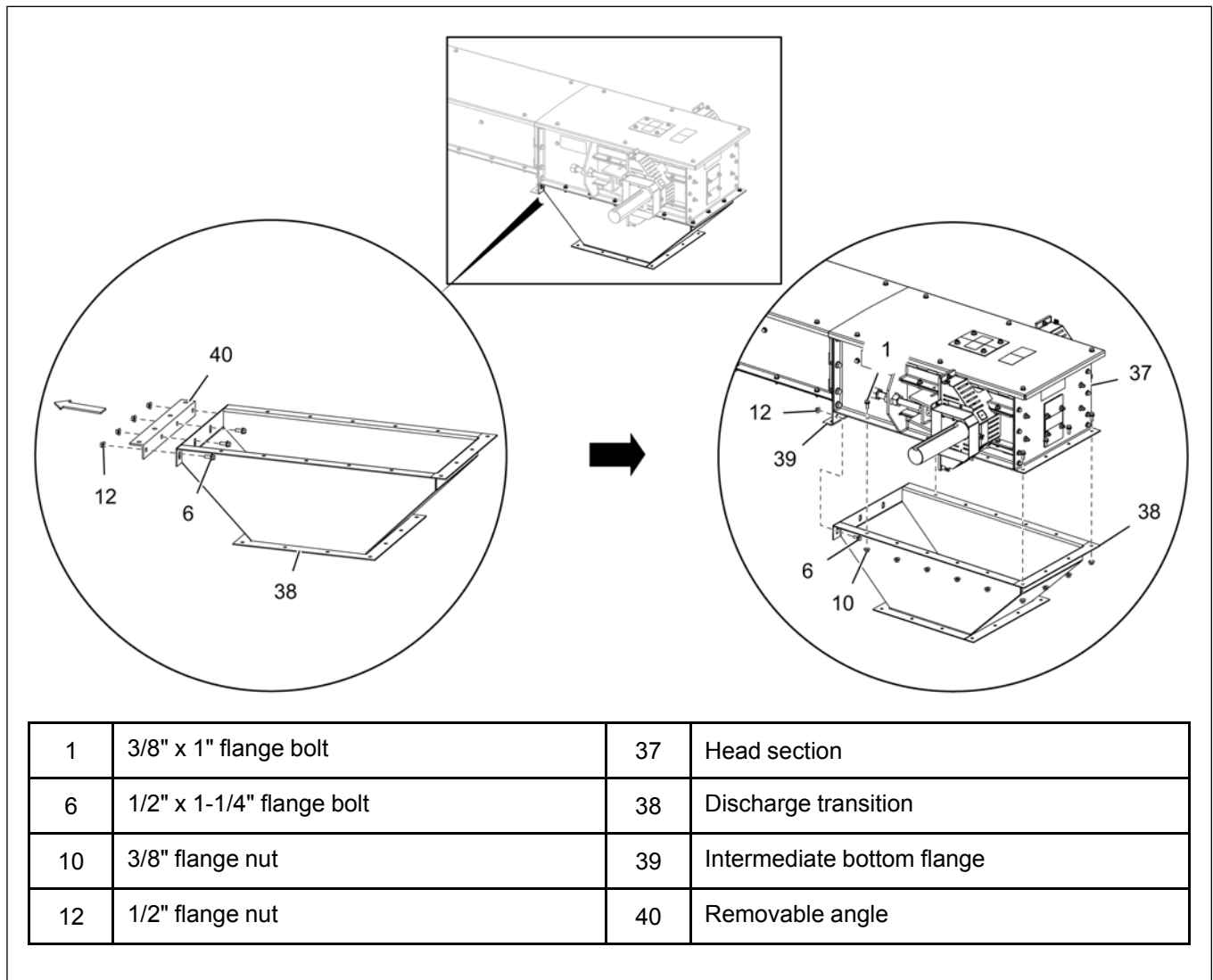
NOTE: Discharge transitions are universal, the same transition can be installed in a number of ways to fit the site application with some easy field modifications. Discharge transitions come with the upper and lower flange mounting hardware.

NOTE: The head discharge flange that attaches to the intermediate section will require access to the inside of the head section to install the bolts. The intermediate and head cover will need to be removed for this. It is advisable to install the discharge connection before installing the chain for easier access to this location.

Installing the Discharge Transition to the Head Discharge

1. The discharge transitions (38) to the head section's (37) discharge flanges have a removable angle (40) installed with 3/8" x 1" flange bolts (1) and 3/8" flange nuts (10) from the factory. This angle (40) will need to be removed and can be discarded along with its hardware.
2. Mount the discharge transition (38) to the head section's (37) discharge flange using 3/8" x 1" flange bolts (1) and 3/8" flange nuts (10) and to the adjoining intermediate's bottom flange (39) using 1/2" x 1-1/4" flange bolts (6) and 1/2" flange nuts (12).

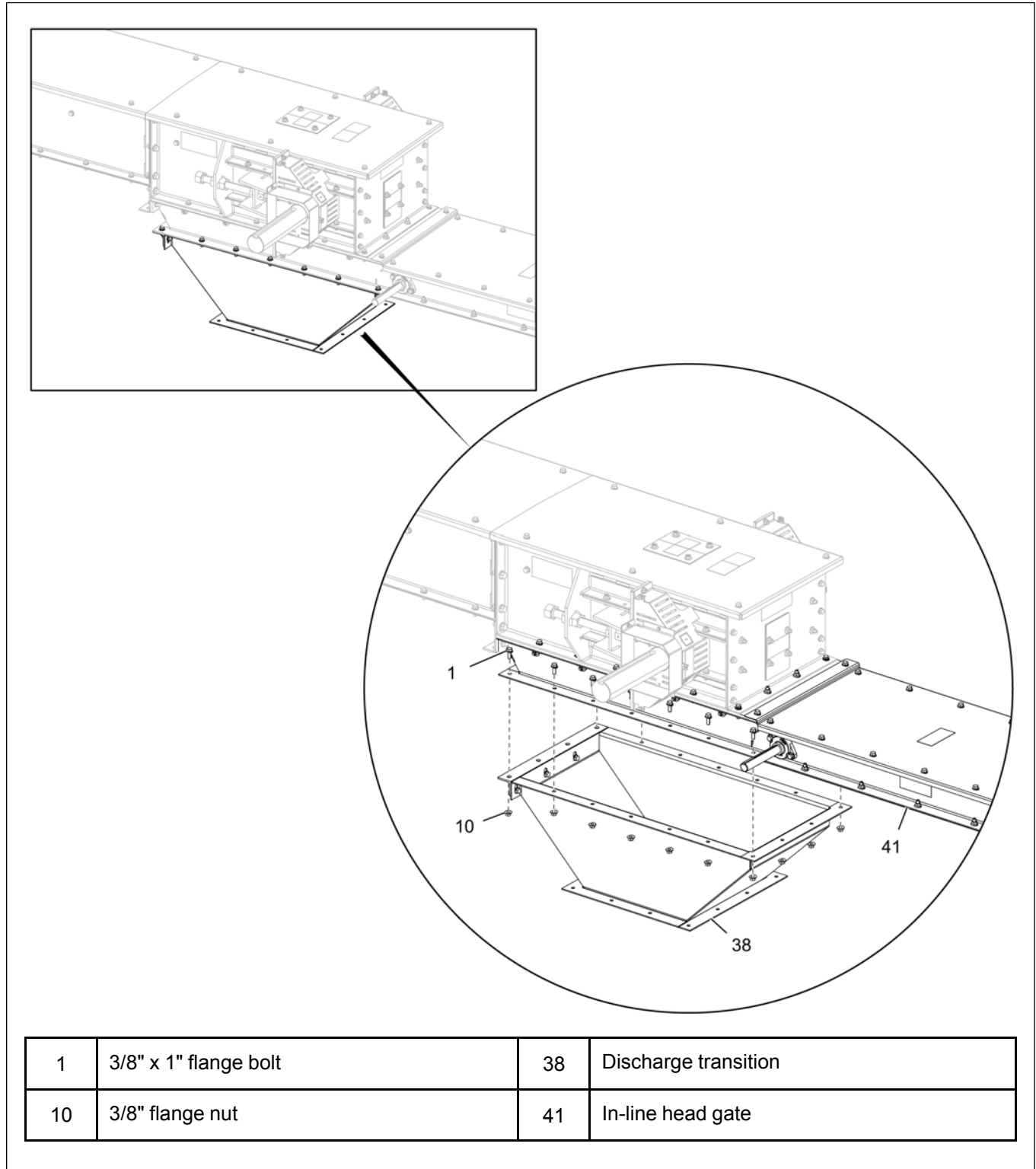
Figure 6-7 Installing the discharge transition to the head discharge



Installing the Discharge Transition to the Head Transition or Head Gate Discharge or Intermediate Gate Discharge

Mount the discharge transition (38) to the head gate's (41) discharge flange using 3/8" x 1" flange bolts (1) and 3/8" flange nuts (10).

Figure 6-8 *Installing the discharge transition to the head gate discharge*



Installing the Gates

What You Should Know

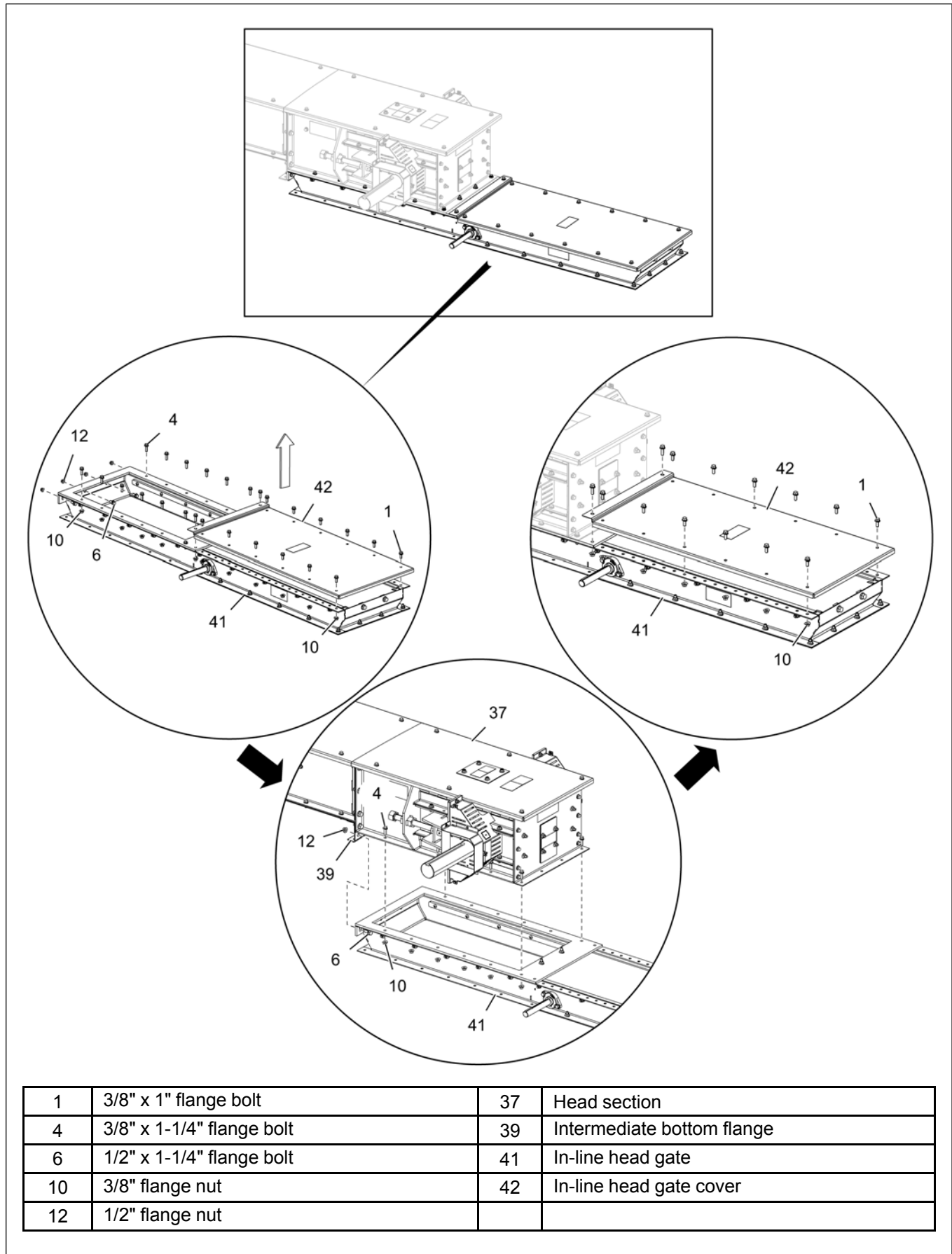
NOTE: *Gates are available in both cross-cut and in-line installation orientations, in both intermediate and head versions. Intermediate gates cannot be mounted on head sections, head gates cannot be mounted on intermediate sections.*

Installing the In-Line Head Gates

NOTE: *In-line head gates will be simpler to mount to the head section prior to mounting the head section to the conveyor.*

1. Locate the in-line head gate (41) to install. Place on a level surface capable of supporting the head gate (41) and head section (37). If the head section (37) is already mounted to the conveyor make sure to adequately support the components of the head gate (41) during the installation process.
2. Remove the 3/8" x 1-1/4" flange bolts (4) and 3/8" flange nuts (10) installed along the long sides of the discharge cutout of the head gate (41) and the 1/2" x 1-1/4" flange bolts (6) and 1/2" flange nuts (12) from the end of the gate frame that will be mounted to the adjoining intermediate bottom flange (39). Keep this hardware to re-install.
3. Remove the 3/8" x 1" flange bolts (1) and 3/8" flange nuts (10) from the top cover (42) of the head gate (41), lay the cover (42) and aside for re-installation later.
4. Place the head section (37) on top of the head gate (41) such that the end plate of the head section (37) is located approximately in the center of the head gate (41).
5. Re-install the 3/8" x 1-1/4" flange bolts (4) and 3/8" flange nuts (10) installed along the long sides of the discharge cutout of the head gate (41) and the 1/2" x 1-1/4" flange bolts (6) and 1/2" flange nuts (12) removed in step 2.
6. Re-install the top cover (42) to the head gate (41) using the 3/8" x 1" flange bolts (1) and 3/8" flange nuts (10) removed in step 3.
7. Install the head/gate assembly onto the conveyor using 1/2" x 1-1/4" flange bolts (6) and 1/2" flange nuts (12).

Figure 6-9 Installing the in-line head gate



Installing the Cross-Cut Head Gates

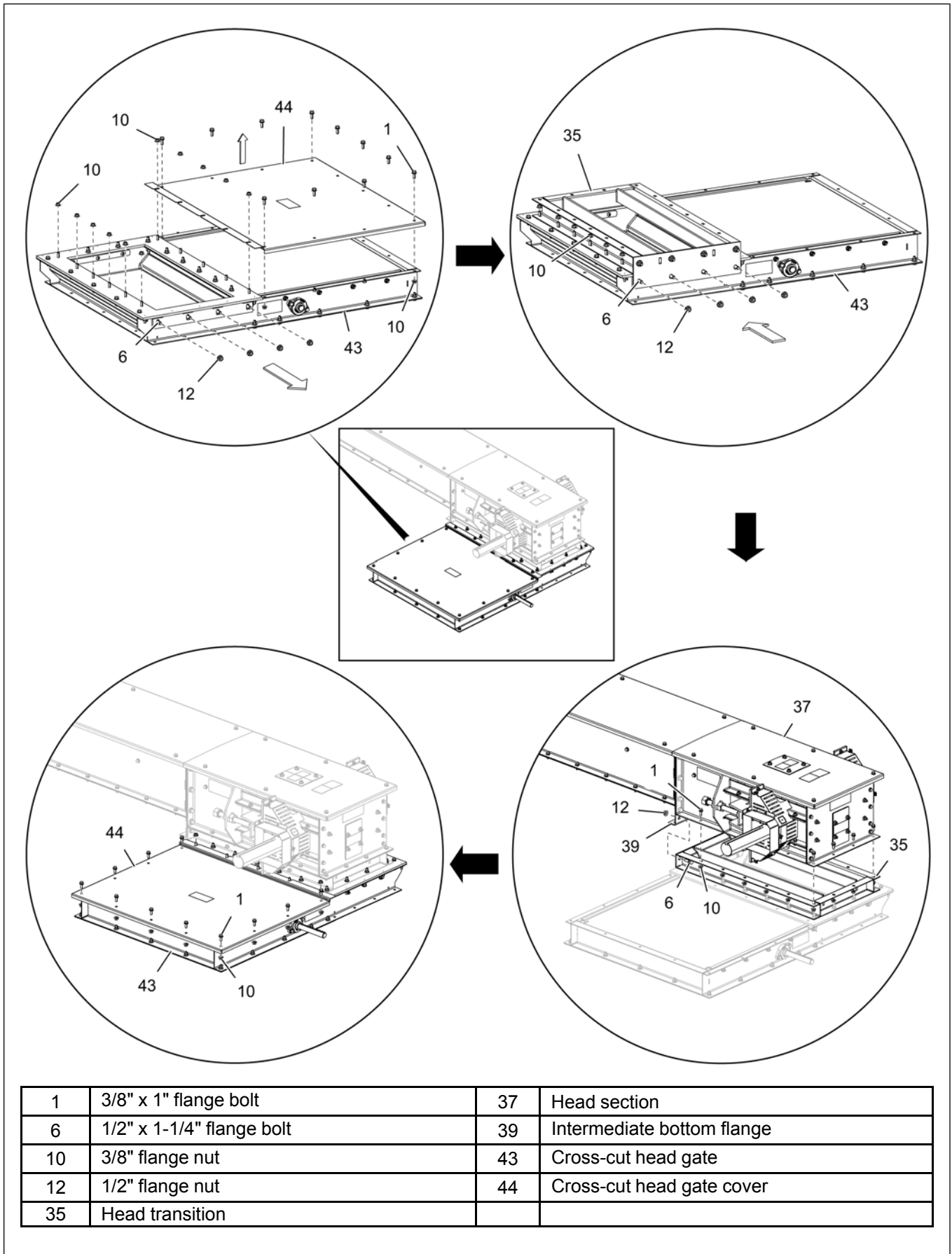
NOTE: *Cross-cut head gates have the same degree of ease of assembly to the head section with the head section either installed on the conveyor or loose.*

1. Locate the cross-cut head gate (43) to install. Place on a level surface capable of supporting the head gate (43) and head section (37). If the head section (37) is already mounted to the conveyor, make sure to adequately support the components of the head gate (43) during the installation process.
2. Remove the 3/8" flange nuts (10) installed on the weld studs along each side of the discharge cutout of the head gate (43) and the 1/2" x 1-1/4" flange bolts (6) and 1/2" flange nuts (12) from the end of the gate frame that will be mounted to the adjoining intermediate bottom flange (39). Keep this hardware to re-install.
3. Remove the 3/8" x 1" flange bolts (1) and 3/8" flange nuts (10) from the top cover (44) of the head gate (43), lay the cover and aside for re-installation later.

NOTE: *Head sections (37) which have bearing plates or other obstructions preventing the gate (43) installation direct to the head section's (37) discharge flange will require to have the head gate offset transition (35) installed between the head section (37) and the cross-cut head gate (43).*

4. Place the head section (37) on top of the head gate (43). If the head gate offset transition (35) is required, place the transition (35) between the head section (37) and the cross-cut head gate (43).
5. Re-install the 3/8" flange nuts (10) removed in step 2, [page 64](#). If the head gate offset transition (35) is required, the 3/8" flange nuts (10) removed from step 2, [page 64](#) will be installed on the lower flange of the transition (35), the 3/8" x 1" flange bolts (1) and 3/8" flange nuts (10) included with the transition (35) will be used to connect the top flange of the transition (35) to the head section (37) discharge flange.
6. Re-install the top cover (44) to the head gate (43) using the 3/8" x 1" flange bolts (1) and 3/8" flange nuts (10) removed in step 3, [page 64](#).
7. Install the head/gate assembly onto the conveyor using 1/2" x 1-1/4" flange bolts (6) and 1/2" flange nuts (12).

Figure 6-10 Installing the cross-cut head gate



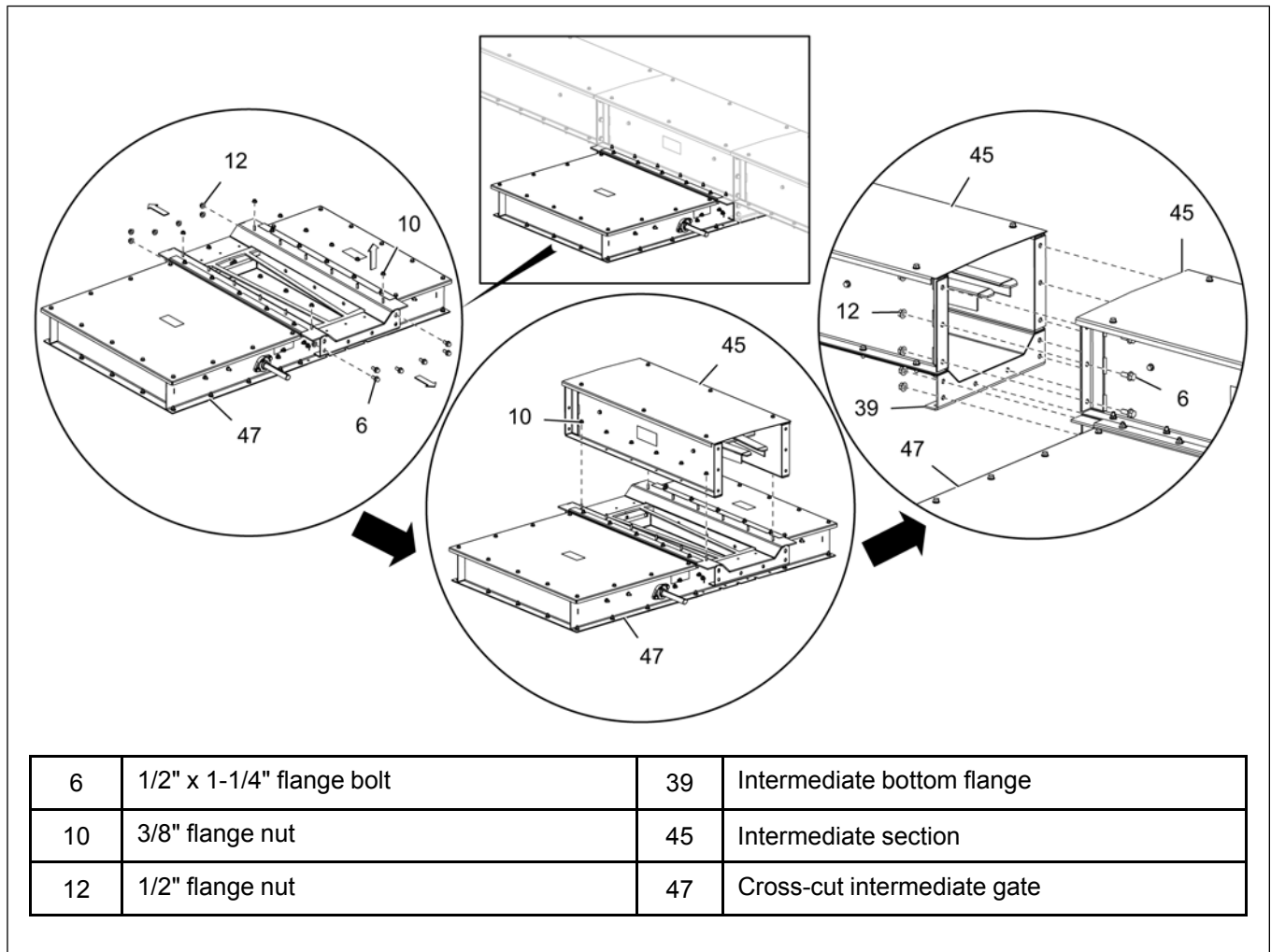
Installing the Cross-Cut Intermediate Gates

The cross-cut intermediate gates are used in intermediate sections that are **under 4' with no field modifications required to mount.**

NOTE: *Cross-cut intermediate gates will be simpler to mount to the intermediate section prior to mounting the intermediate section to the conveyor.*

1. Locate the cross-cut intermediate gate (47) to install. Place on a level surface capable of supporting the intermediate gate (47) and intermediate section (45). If the intermediate section (45) is already mounted to the conveyor, make sure to adequately support the components of the intermediate gate (47) during the installation process.
2. Remove the 3/8" flange nuts (10) installed on the weld studs along each side of the gate assembly and the 1/2" x 1-1/4" flange bolts (6) and 1/2" flange nuts (12) from the end of the gate frame that will be mounted to the adjoining intermediate bottom flange (39). Keep this hardware to re-install.
3. Place the intermediate section (45) on top of the intermediate gate (47), the end flange surfaces should be flush.
4. Re-install the 3/8" flange nuts (10) along the long sides of the intermediate gate (47) removed in step 2, [page 66](#).
5. Install the intermediate/gate assembly onto the conveyor using 1/2" x 1-1/4" flange bolts (6) and 1/2" flange nuts (12).

Figure 6-11 *Installing the cross-cut intermediate gate*



Installing the Cross-Cut Intermediate Gates (with Field Modifications)

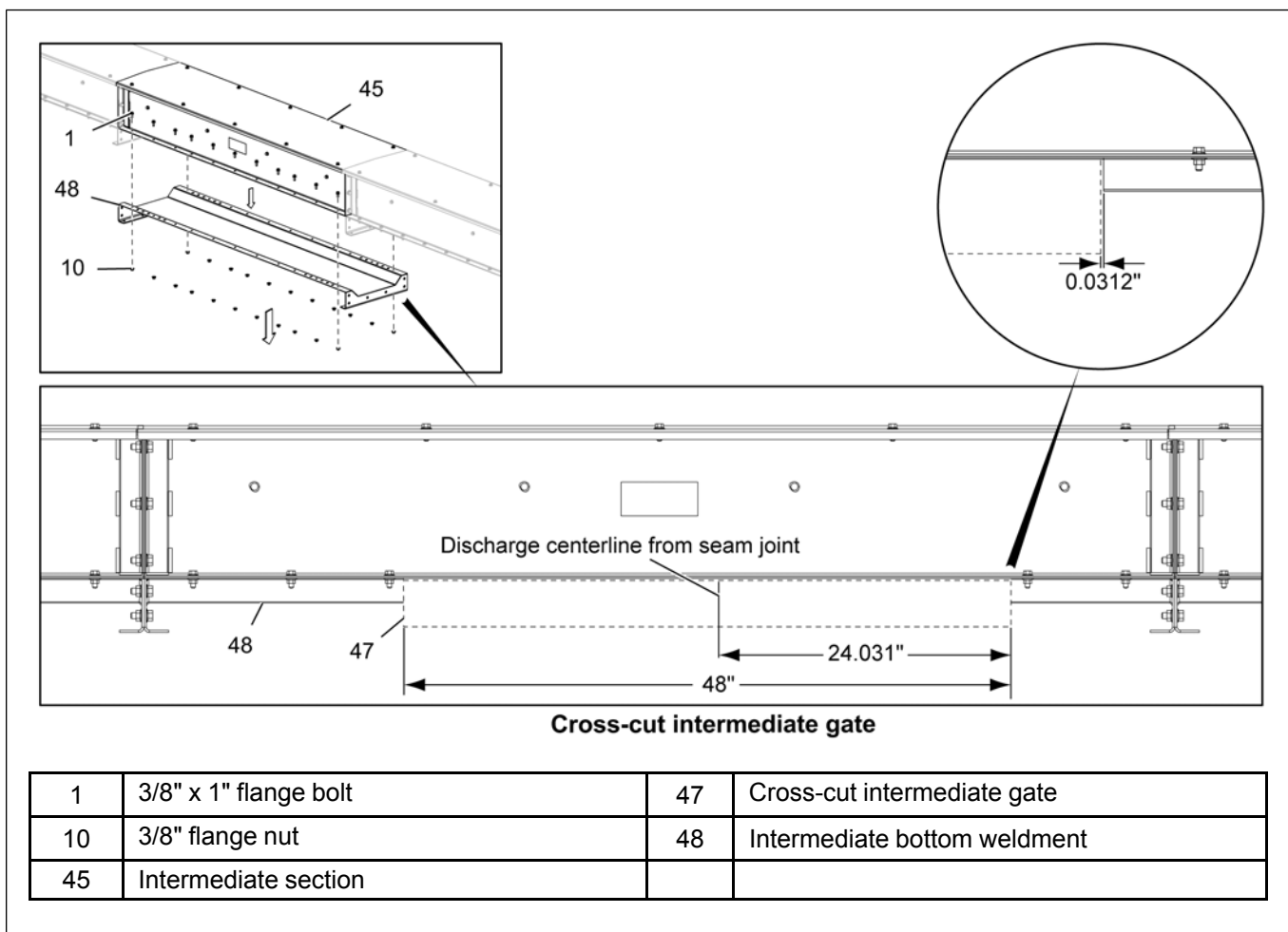
Field mounted cross-cut intermediate gates require field modifications to mount.

NOTE: Field mounted cross-cut intermediate gates will be simpler to mount to the intermediate section prior to mounting the intermediate section to the conveyor.

1. Locate the intermediate section (45) that the intermediate gate (47) will be mounted to and un-install the bottom liner weldment (48) by removing the 3/8" x 1" flange bolts (1) and 3/8" flange nuts (10) mounting it to the intermediate section (45).

NOTE: The intermediate's bottom weldment (48) will be measured, marked and cut to allow mounting of the intermediate gate (47) to the intermediate section (45). The gate's top liner will take the place of the removed section from the intermediate bottom weldment (48). Use the figures below for the dimensional values used to locate and mark the intermediate bottom liner (48) for cutting.

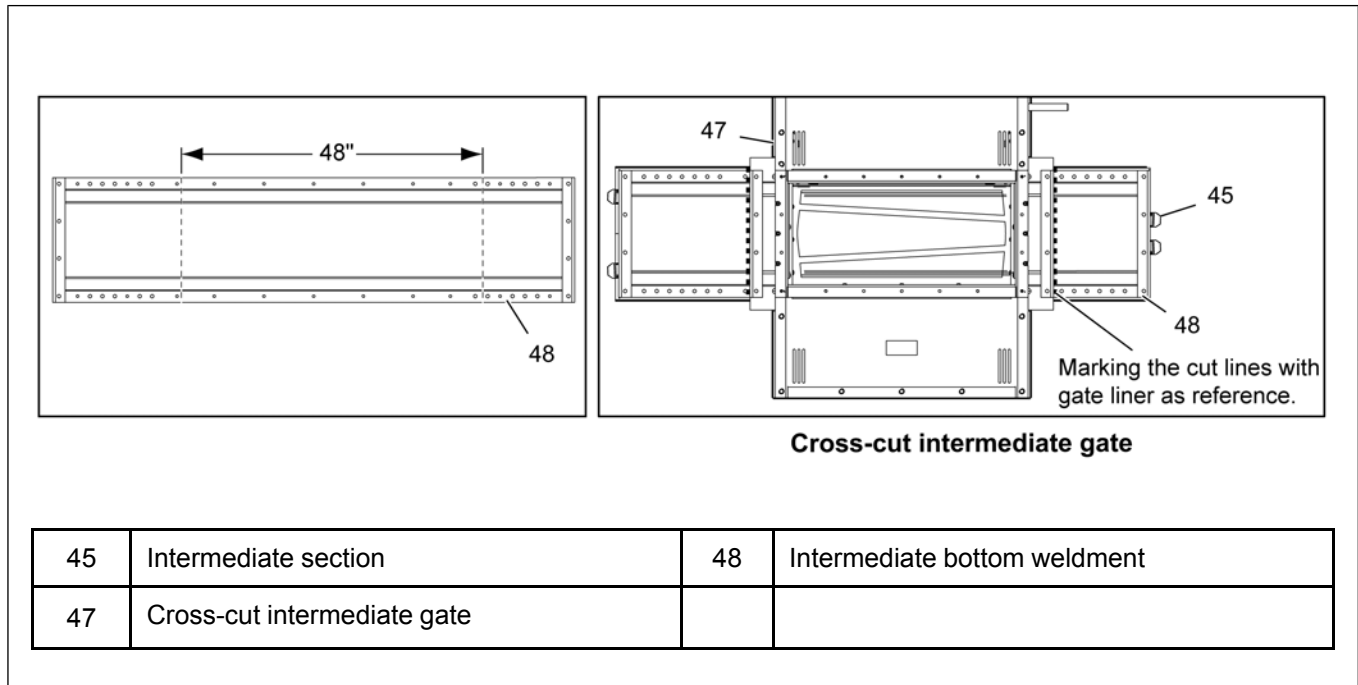
Figure 6-12 Dimension details for cutting the bottom weldment



2. Place the intermediate bottom weldment (48) on a level surface supporting the weldment in a way to ensure there is no bowing of the material. Using the [Figure 6-12, page 67](#), measure and mark the cut lines on the intermediate bottom weldment (48). Make sure the cut lines are accurate and perpendicular to the long edges of the intermediate bottom weldment (48).

NOTE: An alternate method for locating the gate (47) and marking the bottom cut lines would be to flip the gate (47) over and locate the gate (47) on the intermediate bottom weldment (48) where it is to be installed and use the gate liner to mark the locations of the cut lines.

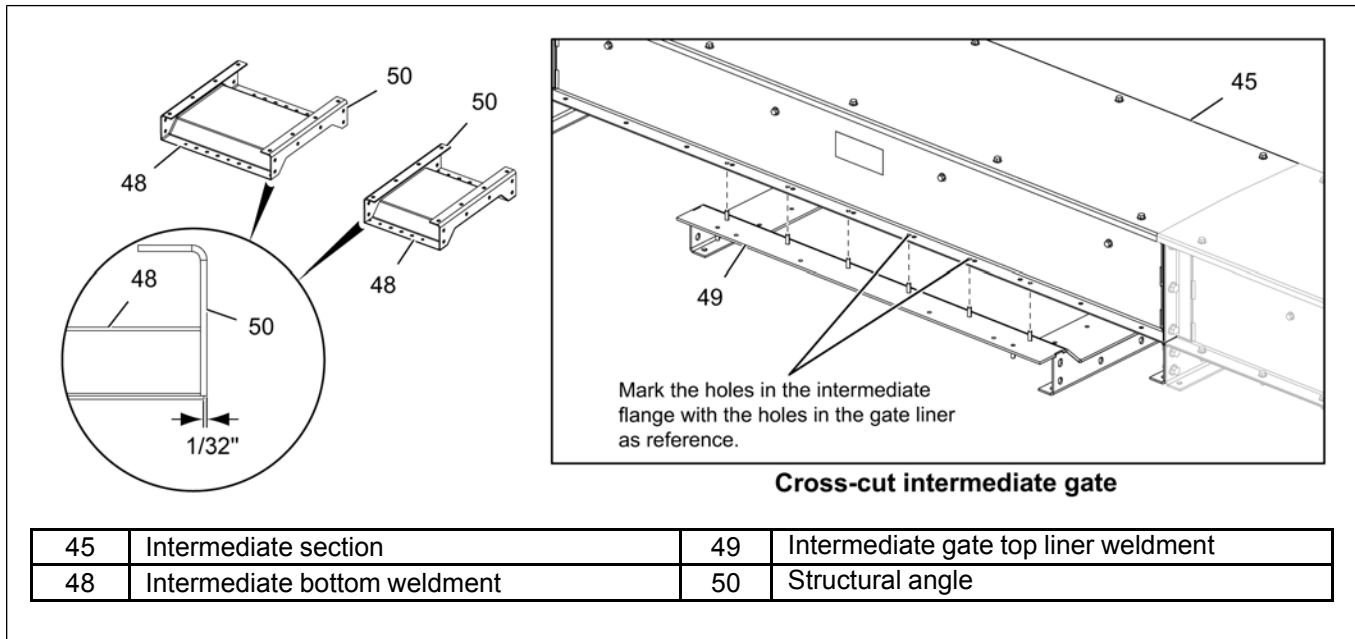
Figure 6-13 *Marking the intermediate bottom weldment for cutting*



3. The method for cutting the intermediate bottom weldment (48) is up to the discretion of the installer. It is important that the cut be made so that the cut ends of the intermediate bottom weldment (48) be as plumb as possible in all directions. The quality of the cut will directly impact the noise and wear potential of the chain's pads as it passes over the new seam locations.
4. It is advised to test fit the parts prior to moving forward by temporary re-installation of the two shortened intermediate bottom liner sections (48) and the intermediate gate (47) onto the intermediate section (45). Note any modifications that may need to be made to get the surfaces plumb and flush. This will also assist in completion of the next step.
5. Mounting holes will need to be drilled in the intermediate's lower flanges. These can be marked or match drilled using the intermediate gate (47) itself as the template. Either the intermediate gate (47) as a whole assembly can be located and temporarily clamped on the intermediate section (45) where it is to be installed or the gate's top liner weldment (49) can be removed from the gate assembly by removing the 3/8" flange nuts (10) to do the same purpose.
6. Next locate the set of pre-punched loose structural angles (50) that will be welded on the two cut sections of intermediate bottom liner weldment (48). These angles (50) will be the mounting flanges that the ends of the gate (47) will mount to, they will look identical to the flanges already welded on the intermediate bottom weldment (48). Assuming the cuts made in the intermediate bottom weldment (48) were accurate, these flanges will be welded offset 1/32" outward from that new edge. If the cut was not accurate you can still locate these angles (50) so that they are plumb and in the correct mounting position per the cut figures.

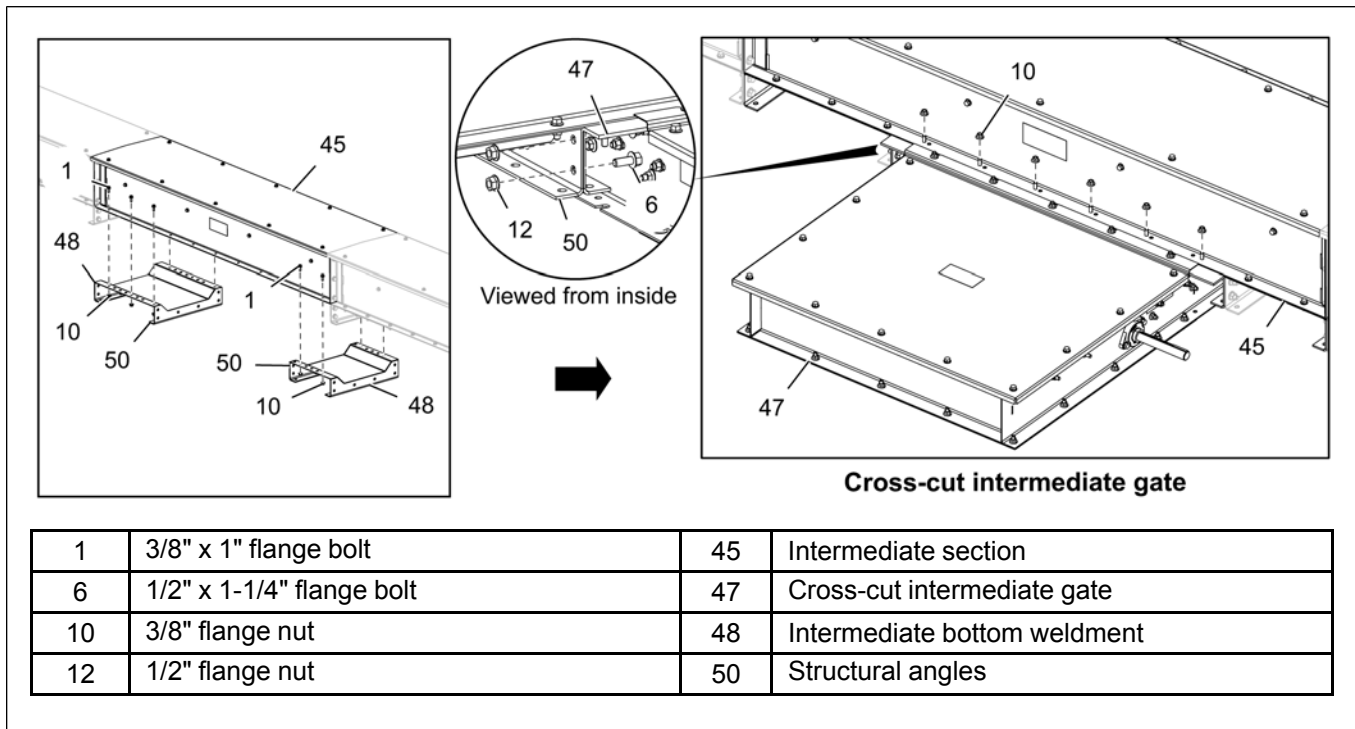
NOTE: *If when locating the gate (47) to the intermediate section (45) and if an existing mounting hole is not within 1-1/2" off the toe of the structural angles (50) that will be welded to the bottom of the intermediate bottom weldments (48), you will need to add another set of holes to accept 3/8" hardware on each side of the conveyor. This is to ensure that there is adequate clamping of the intermediate bottom weldment (48) near the cut for the gate (47) such that any warping or bowing can be mitigated. This can be done before or after gate (47) installation.*

Figure 6-14 Welding the structural angles to the intermediate bottom weldment



7. Prep the cut intermediate bottom weldments (48) surface and the loose flange angles (50) surfaces for welding by removing any paint and/or contaminants. Use the existing angle factory weld sizes and spacing for reference in welding on the loose flange angles (50). Make sure to paint the welds and any exposed metal surfaces to prevent rust and corrosion.
8. Re-install the cut sections of intermediate bottom weldment (48) onto the intermediate section (45) using the 3/8" x 1" flange bolts (1) and 3/8" flange nuts (10) removed in step 1, page 67.
9. Install the intermediate gate (47) onto the intermediate section (45) using the 3/8" flange nuts (10) that are removed in step 5, page 68 and the 1/2" x 1-1/4" flange bolts (6) and 1/2" flange nuts (12) included with the gate (47).

Figure 6-15 Installing the cross-cut intermediate gate to the intermediate section



Installing the Gate Operator

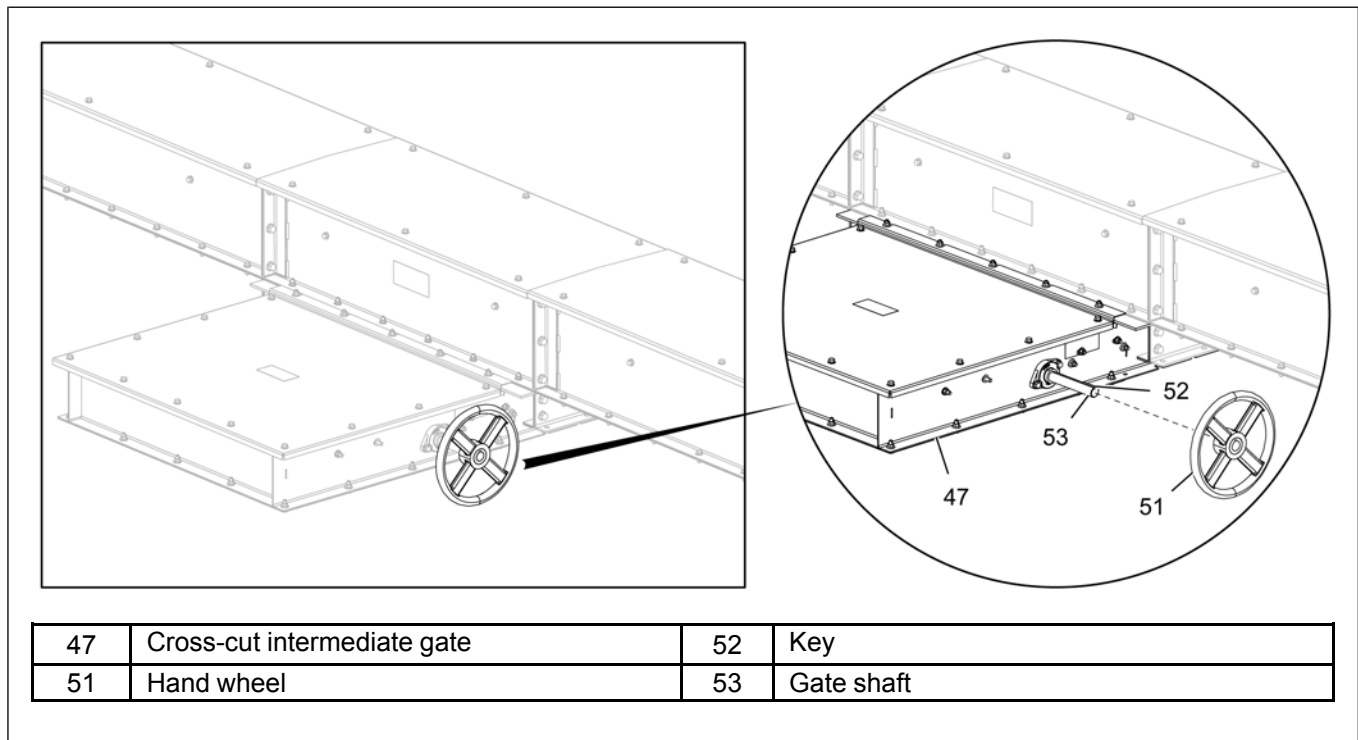
What You Should Know

NOTE: Gates can be operated manually or with drives. Operators are common to all gate types and mount locations.

Installing the Hand Wheel Gate Operator

1. Locate the hand wheel (51) to be installed.
2. The gate assembly comes with the key (52) installed on the shaft (53) end to be used with the hand wheel (51). Remove the packaging material that holds the key (52) in place on the shaft (53).
3. Slide the hand wheel (51) onto the shaft (53) with the key (52) installed, located at the shaft (53) end. The hand wheel (51) bushing will be flush with the shaft (53) end.
4. Tighten the set screw in the hand wheel (51) to lock the hand wheel (51) to the shaft (53).
5. Check the operation of the gate (47) with the hand wheel (51). The gate (51) should have some resistance, but should operate without binding.

Figure 6-16 Installing the hand wheel to the gate assembly



Installing the Electric Drive Operator

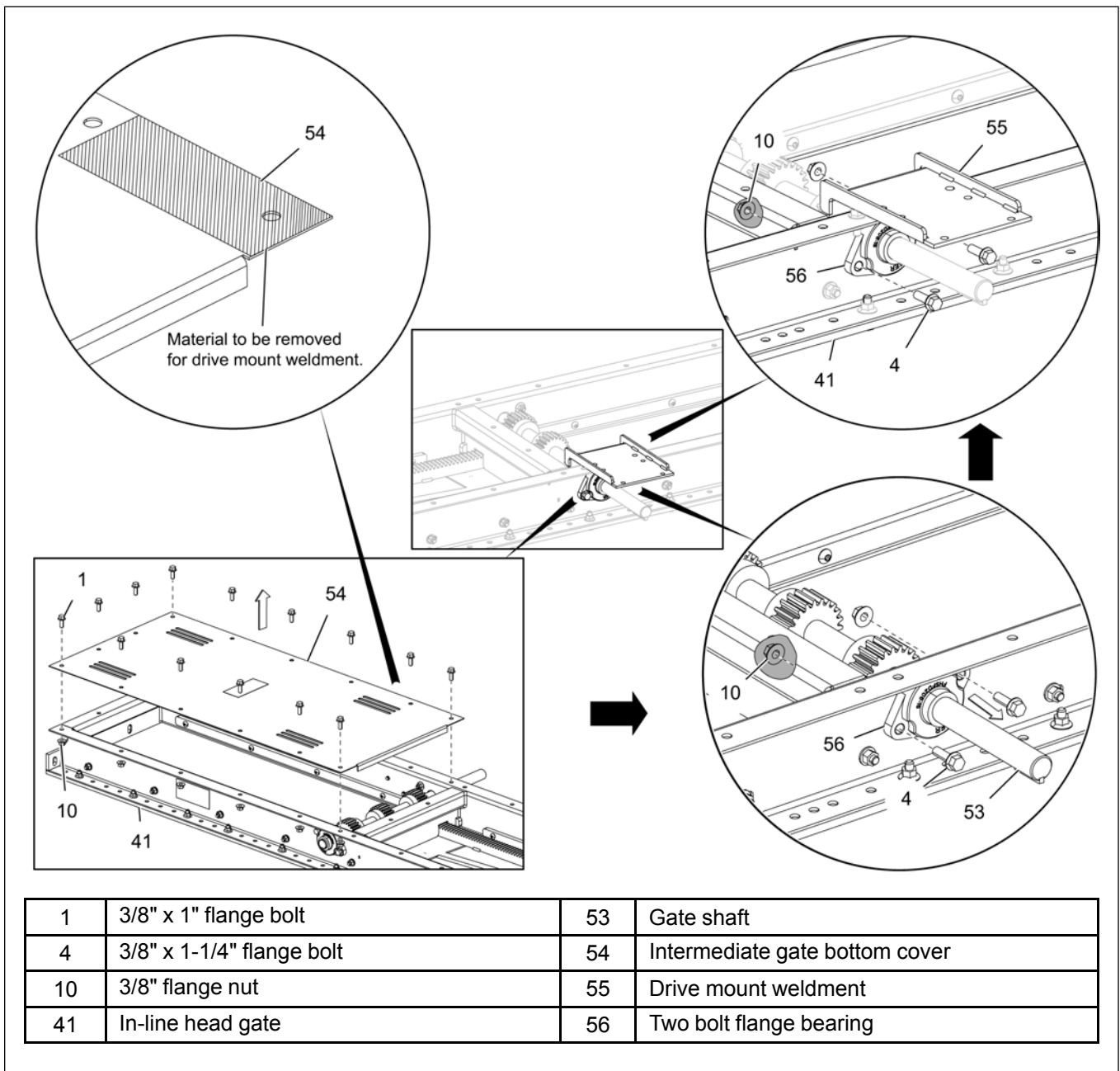
1. Locate the electric gate operator components to be installed.

NOTE: It is simpler to install the gate drive mount (55) prior to mounting the gate to the intermediate section or head section of the conveyor.

2. On a level surface capable of supporting the gate (41), turn the gate (41) over and remove the bottom cover (54) by removing the 3/8" x 1" flange bolts (1) and 3/8" flange nuts (10) holding the cover (54) on.

3. A small rectangular portion of the bottom cover (54) will need to be removed so that the cover (54) will miss the drive mount weldment (55) when re-installed. This portion is held on with small tabs, with a pair of pliers gently rock the corner of the cover plate to weaken these tabs until the portion pops off. Only remove the portion on the same side that the drive will be located on.
4. Only on the end where the gate shaft (53) is extending out of the bearing for the operator to mount on, remove the 3/8" x 1-1/4" flange bolts (4) and 3/8" flange nuts (10) of the two bolt flange bearing (56). Retain this hardware for re-use. Do not loosen the set screw of this bearing (56) to the shaft (53).
5. Install the gate drive mount weldment (55) on the inside surface of the gate frame. Re-install the 3/8" x 1-1/4" flange bolts (4) and 3/8" flange nuts (10) removed in step 4, [page 71](#). Leave the hardware slightly loose until the gearbox is installed.

Figure 6-17 *Installing the drive mount weldment*

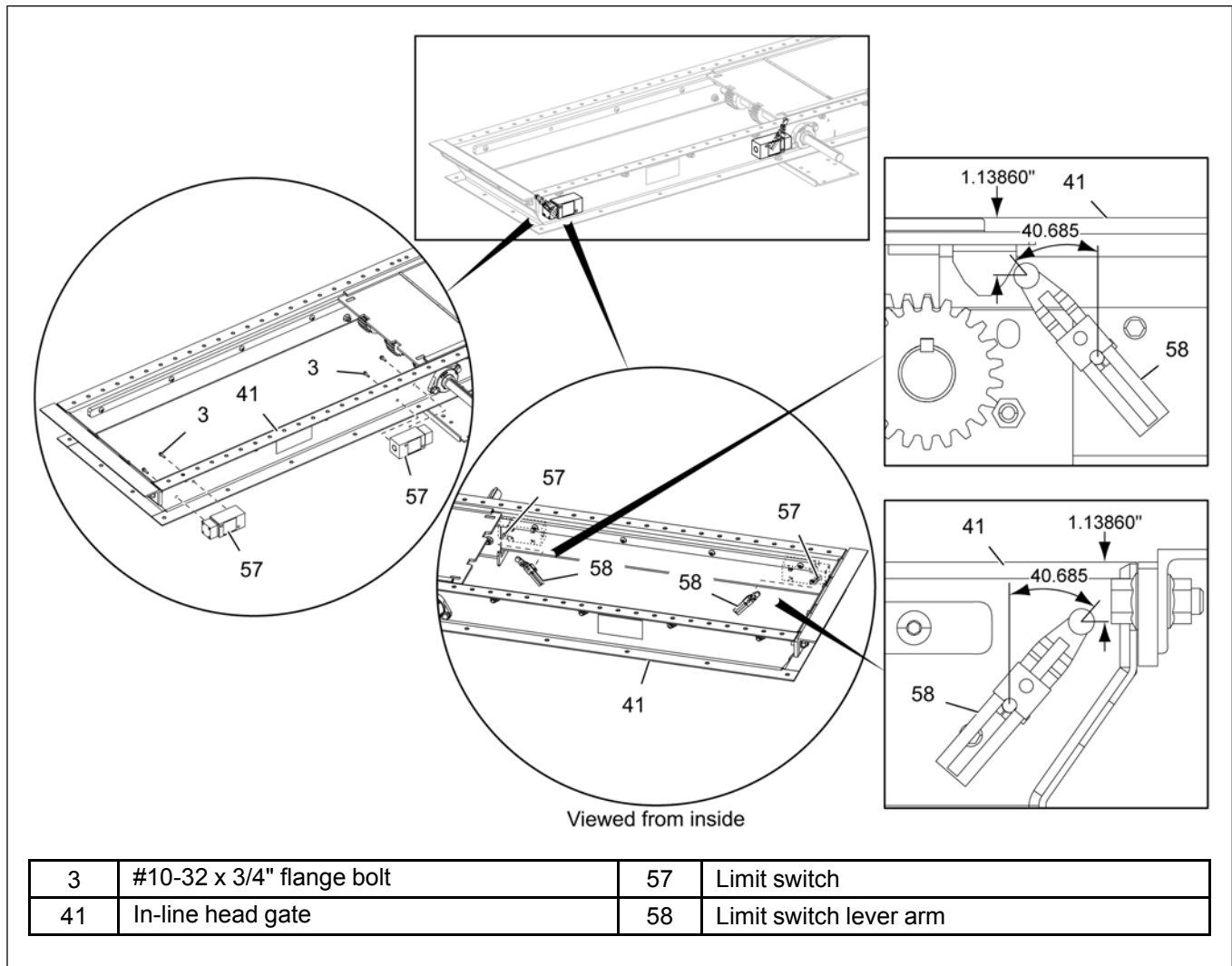


Chapter 6: Optional Accessories

6. Install the limit switches (57) by locating and identifying the correct knockout slots in the gate frame where the limit switches will be mounted. The switches (57) can be mounted on the same side, the opposite side or diagonally from the drive location. Mount the switches (57) in a convenient manner that works best for site conditions. Standard limit switches (57) will be installed with #10-32 x 3/4" flange bolts (3), the explosion proof limit switch will be installed with 5/16" x 3/4" flange bolts.
7. Install the limit switch lever arms (58) by sliding them onto the limit switch (57) shafts. The lever arms (58) should be oriented and positioned as per the below figure. Tighten the set screw on the lever arms (58) to secure it onto the limit switches (57) shaft.

NOTE: Limit switches (57) have a 15 degree range of travel between the trigger points, the arms (58) can be adjusted on-site to fit desired switch trigger settings. Refer to the limit switches (57) manufacturer's installation manual for adjustments.

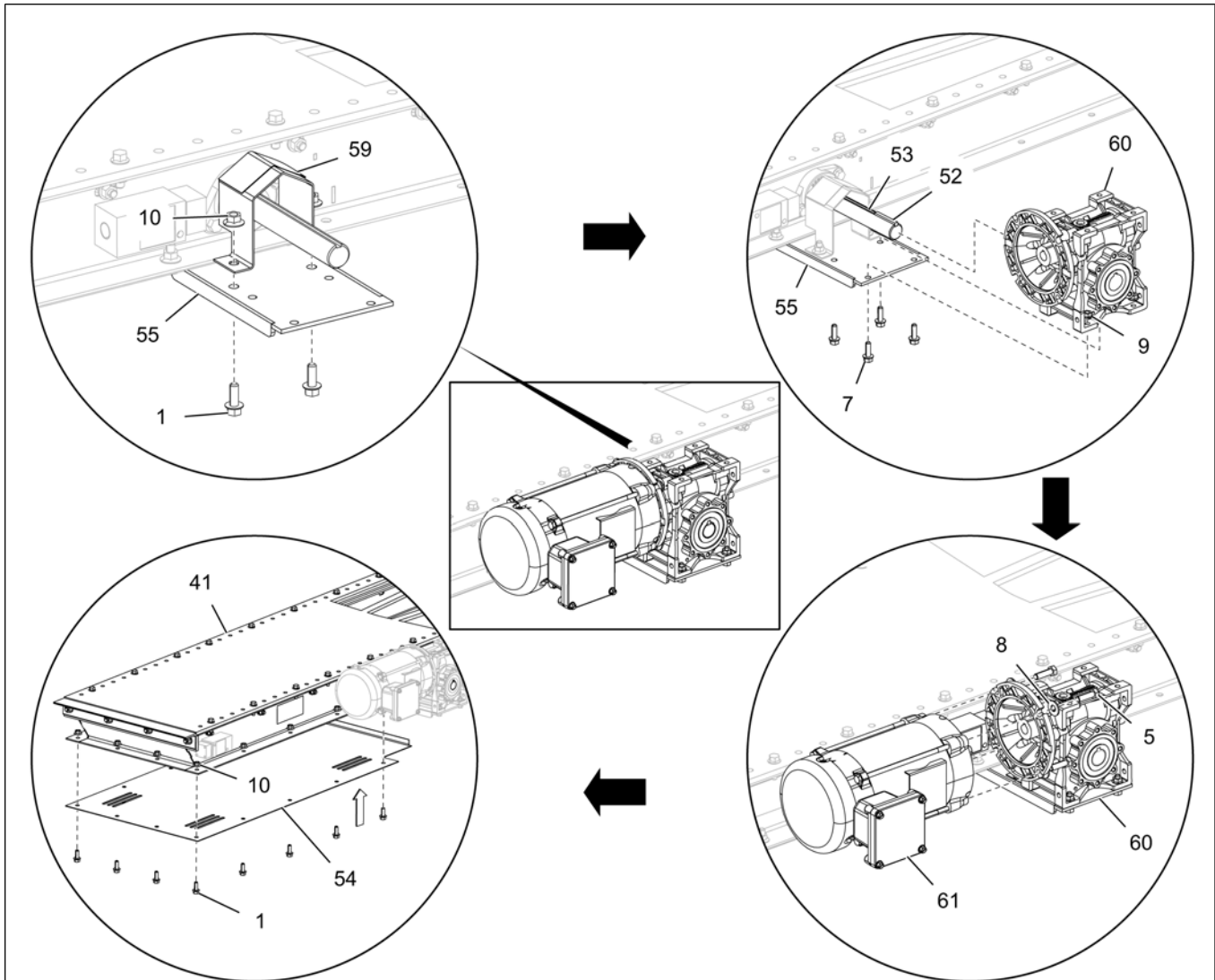
Figure 6-18 Installing the limit switches and lever arms



8. Flip the gate (41) back over and install the gate shaft guard (59) to the drive mount weldment (55) using 3/8" x 1" flange bolts (1) and 3/8" flange nuts (10).
9. Install the worm gear reducer (60) by sliding it over the gate shaft (53) end with the key (52) installed. Install the gear reducer (60) to the gate drive mount weldment (55) using 5/16" x 1" flange bolts (7) and 5/16" flange nuts (9).
10. Tighten the gate drive motor mount (55) bolts.

11. Install the C-face motor (61) to the worm gear reducer (60) with 3/8" flat washers (8) and 3/8" x 1-1/4" hex bolts (5).
12. Re-install the gate bottom cover (54) using the hardware that are removed in step 2, [page 70](#).
13. Install the gate (41) as per the instruction in gate installation section. Refer to [Installing the Gates, page 62](#) for details.
14. Follow the manufacturer's instructions for the electrical connections in accordance with local and national electrical codes and all relevant OSHA regulations.

Figure 6-19 *Installing the gear reducer and the motor*



1	3/8" x 1" flange bolt	52	Key
5	3/8" x 1-1/4" hex bolt	53	Gate shaft
7	5/16" x 1" flange bolt	54	Intermediate gate bottom cover
8	3/8" flat washers	55	Drive mount weldment
9	5/16" flange nut	59	Shaft guard
10	3/8" flange nut	60	Worm gear reducer
41	In-line head gate	61	C-face motor

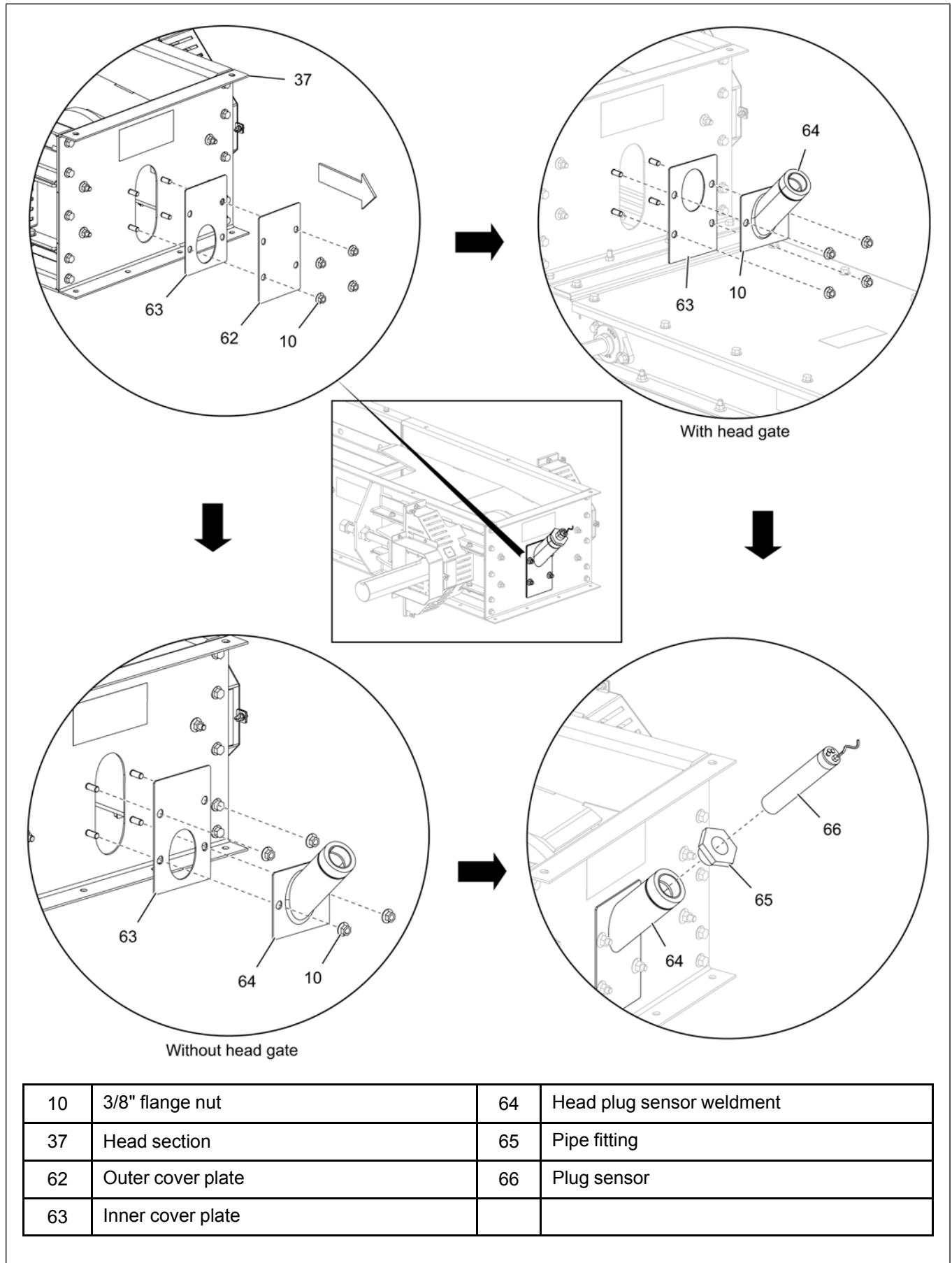
Installing the Head Plug Sensor

What You Should Know

NOTE: Heads come from the factory with cover plates over the location where the head plug sensor will be installed. These plates will only be removed if there is a head plug sensor to be installed.

1. Locate the head plug sensor weldment (64).
2. Remove the cover plates (62 and 63) blocking off the port in the head section (37) by removing the 3/8" flange nuts (10) holding them in place.
3. There are two plates in this location, the outer cover plate (62) without the oval cut in it can be discarded. The inner cover plate (63) will be re-used in conjunction with the head plug sensor weldment (64). The orientation of this inner plate (63) will be controlled by whether there is a head gate under the head section (37) or not.
4. Install the head plug sensor weldment (64) by sliding it over the studs and re-install the 3/8" flange nuts (10) removed in step 2. The head plug sensor weldment (64) will be angled upward when installed.
5. Next locate the plug sensor (66) and the plastic threaded pipe fitting (65). Thread the pipe fitting (65) into the plug sensor weldment (64). The sensor (66) will be held in place by a compression fit inside the plastic pipe fitting (65). Refer to the sensors instruction manual for pick up range to adjust how far away from the opening at the head section (37) end of the plug sensor weldment (64) that the sensor's (66) depth should be set to. This can be adjusted at any time later as well. Tighten the plastic pipe fitting (65) to clamp the sensor (66) in place.
6. The head section plug sensor (66) also comes with a conduit connector. Thread this onto the exposed end of the sensor (66) and follow the manufacturer's instructions for the electrical connections in accordance with local and national electrical codes and all relevant OSHA regulations.

Figure 6-20 Installing the head plug sensor



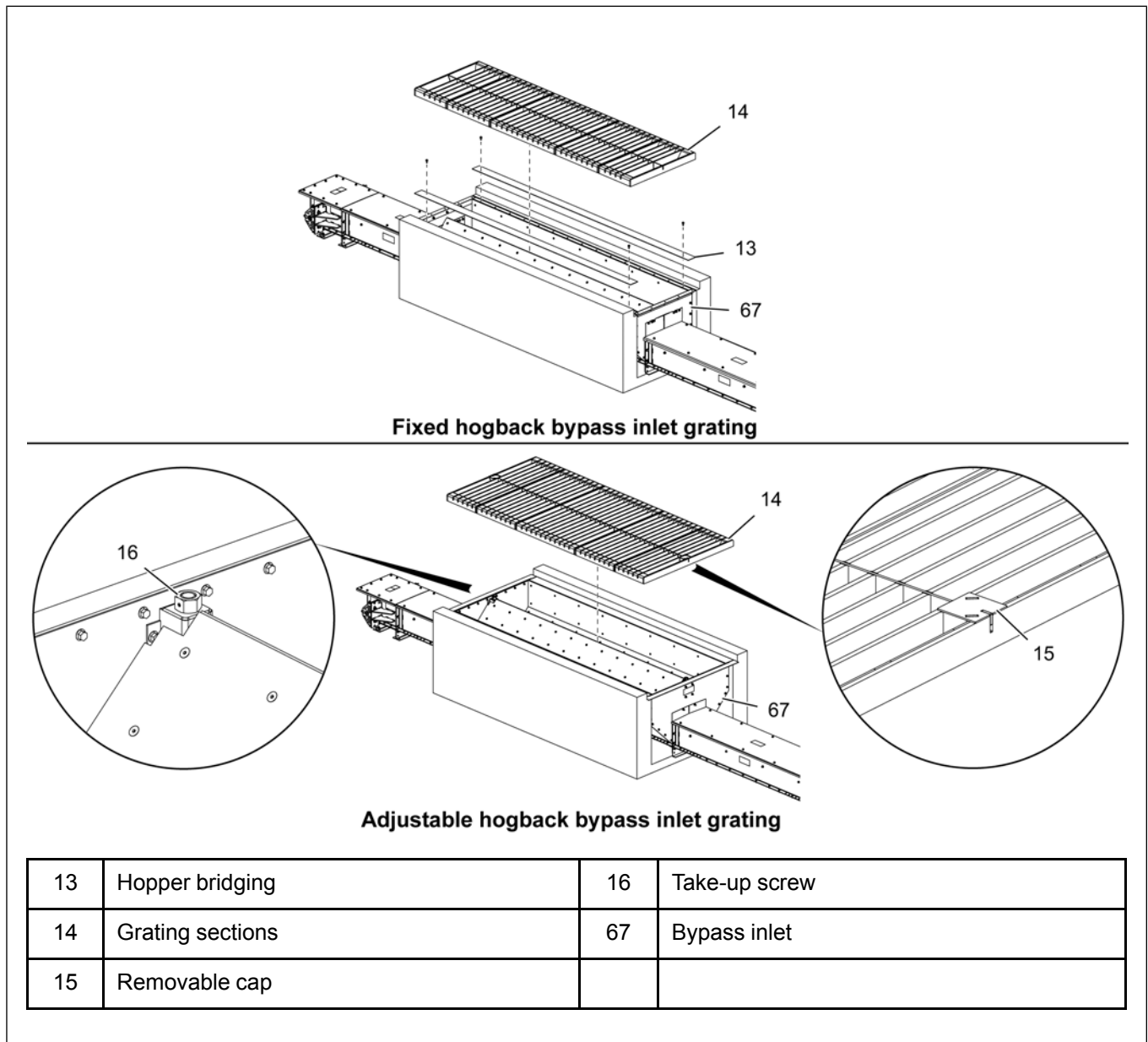
Installing the Bypass Inlet Grating

What You Should Know

NOTE: Fixed hogback bypass inlets requires a bridge assembly to be placed on top of the hopper flange and under the grate, this bridge blocks off openings for material to drop into the pit between the hopper and pit wall as well as spreads the load on the grate sections out over a larger surface to protect the pit wall's lip the grating rests on. Adjustable hogback bypass inlets have this bridge formed into the top flange of the hopper.

1. Locate the bypass inlet grating sections (14). If the bypass inlet is a fixed hopper also locate the hopper bridging (13).
2. The grating sections (14) are modular, the end sections must be placed such that they are aligned with the end plates.
3. Adjustable hoppers include a removable cap (15) that covers the screw take-up (16) operator to prevent material build-up.

Figure 6-21 Installing the bypass inlet grating



7 Shut Down

Topics Covered in this Chapter

- Normal Shut Down
- Emergency Shut Down
- Storage Preparation

Normal Shut Down

1. Before shutting down the unit, be sure the conveyors are empty.
2. Disconnect and lock out the power source before leaving the work area.

Emergency Shut Down

1. Know how to shut down the conveyor in case of an emergency.
2. Do not restart the conveyor while it is under load.



NEVER start the equipment under load. Doing so may cause damage. This type of damage is considered a misuse of the equipment. Any misuse of the equipment may void the warranty.

3. Close the inlets.
4. Reconnect and unlock the power source.
5. Clear the conveyor gradually, until there is no grain and there are no obstructions.

Storage Preparation

If the unit is to be inactive for an extended period, the following procedures are recommended.

1. Ensure all material is conveyed out of the unit.
2. Thoroughly clean the unit.
3. Loosen the V-belt tension to relieve the stress placed on the bearings and shafts of the drive and tail sections.
4. Lubricate shafts and drive chain components with a good grade of light machine oil.
5. Loosen the drag chain tension to relieve the stress placed on the bearings and shafts of the drive and tail sections.

NOTES

8 Maintenance and Troubleshooting

Topics Covered in this Chapter

- Maintenance
- Troubleshooting

Maintenance

The maintenance section is provided to help extend the life of the unit. Like all equipment, the useful life of the conveyor is greatly reduced if not used properly and well-maintained. Make sure you follow the below steps to ensure the safety and longevity of the equipment.

What You Should Know



Before any maintenance is performed on the conveyor, power must be shut OFF and locked out to prevent accidental start-up.

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. Follow manufacturer's recommendations for gear reducer lubrication and maintenance.
4. Inspect the V-belts periodically for proper tension and wear. V-belts should be replaced as necessary. If replacement or tension adjustment is required, refer to [Figure 5-12, page 51](#).

Troubleshooting

Table 8-1 Troubleshooting

Problem	Possible Cause	Solution
Low capacity	Improper chain speed.	Check the shaft RPM.
	Loose chain.	Check the sag between idlers.
	Improper feed.	Check the grain level at inlet.
	Plugging.	Check the discharges.
Noisy operation	Loose UHMW paddles.	Check all bolts on chain.
	Bottom not aligned.	Check intermediate trough section joints and make flush.
	Worn drive components.	Check oil level and shaft seals; belt misalignment; loose belts.
	Worn sprocket.	Replace.
	Return rail alignment.	Check rail alignment.
Uneven UHMW paddle wear	Conveyor misalignment.	Check the conveyor alignment.
	Sprocket slipped.	Check set screws on sprockets.
	Return rail alignment.	Check rail alignment.
Excessive carry-over	Gate slides not fully opening.	Check the gate slide operation.
Uneven sprocket wear	Worn chain.	Replace chain.
	Improper alignment.	Check the sprocket alignment.
	Material carry-over into discharge sprocket.	Check for improper location of inlet.
Plug sensor causing frequent conveyor shut down	Plug sensor positioned too low.	Adjust the sensor depth and/or mounting weldment location.
	Plug sensor mounting tube clogged.	
	Plug sensor heavily covered with dust.	
Plug sensor not detecting plug condition	Plug sensor positioned too high.	Adjust the sensor depth and/or mounting weldment location.
	Plug sensor mounting tube clogged.	
	Plug sensor not functioning or wired correctly.	Test the functionality of sensor and test the wired connections.

Limited Warranty — N.A. Grain Products

The GSI Group, LLC. (“GSI”) warrants products which it manufactures, to be free of defects in materials and workmanship under normal usage and conditions for a period of 12 months from the date of shipment (or, if shipped by vessel, 14 months from the date of arrival at the port of discharge). If, in GSI’s sole judgment, a product is found to have a defect in materials and/or workmanship, GSI will, at its own option and expense, repair or replace the product or refund the purchase price. This Limited Warranty is subject to extension and other terms as set forth below.

Warranty Enhancements: The warranty period for the following products is enhanced as shown below and is in lieu of (and not in addition to) the above stated warranty period. (Warranty Period is from date of shipment.)

	Product	Warranty Period
Storage	Grain Bin Structural Design • Sidewall, roof, doors, platforms and walkarounds • Flooring (when installed using GSI specified floor support system for that floor) • Hopper tanks (BFT, GHT, NCHT, and FCHT)	5 Years
Conditioning	Dryer Structural Design – (Tower, Portable and TopDry) • Includes (frame, portable dryer screens, ladders, access doors and platforms)	5 Years
	All other Dryer parts including: • Electrical (controls, sensors, switches and internal wiring)	2 Years
	All Non-PTO Driven Centrifugal and Axial Fans	3 Years
	Bullseye Controllers	2 Years
Material Handling	Bucket Elevators Structural Design	5 Years
	Towers Structural Design	5 Years
	Catwalks Structural Design	5 Years
	Accessories (stairs, ladders and platforms) Structural Design	5 Years

Conditions and Limitations:

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

The sole and exclusive remedy for any claimant is set forth in this Limited Warranty and shall not exceed the amount paid for the product purchased. This Warranty only covers the value of the warranted parts and equipment, and does not cover labor charges for removing or installing defective parts, shipping charges with respect to such parts, any applicable sales or other taxes, or any other charges or expenses not specified in this Warranty. GSI shall not be liable for any other direct, indirect, incidental or consequential damages, including, without limitation, loss of anticipated profits or benefits. Expenses incurred by or on behalf of a claimant without prior written authorization from the GSI warranty department shall not be reimbursed. This warranty is not transferable and applies only to the original end-user. GSI shall have no obligation or responsibility for any representations or warranties made by or on behalf of any dealer, agent or distributor. Prior to installation, the end-user bears all responsibility to comply with federal, state and local codes which apply to the location and installation of the products.

This Limited Warranty extends solely to products sold by GSI and does not cover any parts, components or materials used in conjunction with the product, that are not sold by GSI. GSI assumes no responsibility for claims resulting from construction defects, unauthorized modifications, corrosion or other cosmetic issues caused by storage, application or environmental conditions. Modifications to products not specifically delineated in the manual accompanying the product at initial sale will void all warranties. This Limited Warranty shall not extend to products or parts which have been damaged by negligent use, misuse, alteration, accident or which have been improperly/inadequately maintained.

Notice Procedure:

In order to make a valid warranty claim a written notice of the claim must be submitted, using the RMA form, within 60 days of discovery of a warrantable nonconformance. The RMA form is found on the OneGSI portal.

Service Parts:

GSI warrants, subject to all other conditions described in this Warranty, Service Parts which it manufactures for a period of 12 months from the date of purchase unless specified in Enhancements above.

(Limited Warranty - N.A. Grain Products_ revised 01 October 2020)

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



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