S-Drive Standard Conveyor

Portable Grain Belt Conveyor
Assembly Manual

This manual applies to the following brands and models:

Batco, Westfield WCX:

2000 Series: 2065, 2075, 2085, 2095, 20105, 20110, 20120

2400 Series: 2465, 2475, 2485, 2495, 24105, 24110, 24120

Original Instructions

Read this manual before using product. Failure to follow instructions and safety precautions can result in serious injury, death, or property damage. Keep manual for future reference.

Part Number: P1512021 R9

Revised: November 2018

New in this Manual

The following changes have been made in this revision of the manual:

Description	Section
Important note about using a second “Square washer”.	Section 3.11. – Install the Hopper Roller and Hex Roller on page 48 and Section 3.12. – Install the Spout Roller on page 49.

CONTENTS

1. Safety

1.1. Safety Alert Symbol and Signal Words

This safety alert symbol indicates important safety messages in this manual. When you see this symbol, be alert to the possibility of injury or death, carefully read the message that follows, and inform others.

Signal Words: Note the use of the signal words **DANGER**, **WARNING**, **CAUTION**, and **NOTICE** with the safety messages. The appropriate signal word for each message has been selected using the definitions below as a guideline.

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

WARNING Indicates a hazardous situation that, if not avoided, could result in serious injury or death.

CAUTION Indicates a hazardous situation that, if not avoided, may result in minor or moderate injury.

NOTICE Indicates a potentially hazardous situation that, if not avoided, may result in property damage.

1.2. General Product Safety

YOU are responsible for the **SAFE** use and maintenance of your conveyor. **YOU** must ensure that you and anyone else who is going to work around the conveyor understands all procedures and related **SAFETY** information contained in this manual.

Remember, **YOU** are the key to safety. Good safety practices not only protect you, but also the people around you. Make these practices a working part of your safety program. All accidents can be avoided.

- It is the conveyor owner, operator, and maintenance personnel's responsibility to read and understand **ALL** safety instructions, safety decals, and manuals and follow them when operating, or maintaining the equipment.

- Owners must give instructions and review the information initially and annually with all personnel before allowing them to operate the conveyor. Untrained users/operators expose themselves and bystanders to possible serious injury or death.
- The conveyor is not intended to be used by children.
- Use the conveyor for its intended purposes only.
- Do not modify the conveyor in any way without written permission from the manufacturer. Unauthorized modification may impair the function and/or safety, and could affect the life of the conveyor. Any unauthorized modification will void the warranty.

1.3. Moving Conveyor Belt Safety

⚠ WARNING

- DO NOT step on or touch moving conveyor belt.
- Shut off and lock out power to adjust, service, or clean.

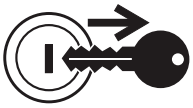
1.4. Rotating Parts Safety

⚠ WARNING

- Keep body, hair, and clothing away from rotating pulleys, belts, chains, and sprockets.
- Do not operate with any guard removed or modified. Keep guards in good working order.
- Shut off and remove key or lock out power source before inspecting or servicing machine.

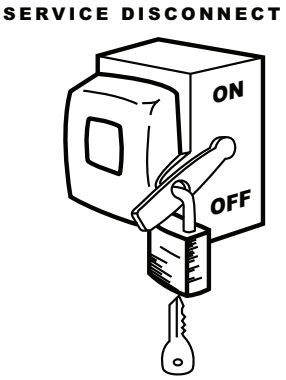
1.5. Drives and Lockout Safety

Inspect the power source(s) before using and know how to shut down in an emergency. Whenever you service or adjust your equipment, make sure you shut down the power source and unplug or remove the key (as applicable) to prevent inadvertent start-up and hazardous energy release. Know the procedure(s) that applies to your equipment from the following power source(s). Ensure that all personnel are clear before turning on power to equipment.



1.5.1 Electric Motor Safety

⚠ WARNING **Power Source**



- Electric motors and controls shall be installed and serviced by a qualified electrician and must meet all local codes and standards.
- A magnetic starter should be used to protect your motor.
- You must have a manual reset button.
- Reset and motor starting controls must be located so that the operator has full view of the entire operation.
- Locate main power disconnect switch within reach from ground level to permit ready access in case of an emergency.
- Motor must be properly grounded.
- Guards must be in place and secure.
- Ensure electrical wiring and cords remain in good condition; replace if necessary.
- Use a totally enclosed electric motor if operating in extremely dusty conditions.

Lockout

- The main power disconnect switch should be in the locked position during shutdown or whenever maintenance is performed.
- If reset is required, disconnect all power **before** resetting motor.

1.5.2 PTO Driveline Safety

⚠ WARNING **Drive**

- Keep body, hair, and clothing away from rotating PTO driveline.
- Make certain the driveline shields telescope and rotate freely on driveline before attaching.
- Make certain the driveline is securely attached at both ends.
- Do not operate conveyor unless all driveline, tractor, and equipment shields are in place and in good working order.
- Do not exceed the specified operating speed.
- Keep universal joint angles small and equal. Do not exceed maximum recommended length for PTO driveline.
- Engage tractor park brake and/or chock wheels.

Lockout

- Position all controls in neutral, shut off tractor's engine, and remove key from tractor.
- If removing key is impossible, remove PTO driveline from tractor.

1.5.3 Hydraulic Power Safety

⚠ WARNING **Power Source**

- Refer to the rules and regulations applicable to the power source operating your hydraulic drive.
- Do not connect or disconnect hydraulic lines while system is under pressure.
- Keep all hydraulic lines away from moving parts and pinch points.
- Escaping hydraulic fluid under pressure will cause serious injury if it penetrates the skin surface (serious infection or toxic reaction can develop). See a doctor immediately if injured.
- Use metal or wood as a backstop when searching for hydraulic leaks and wear proper hand and eye protection.
- Check all hydraulic components are tight and in good condition. Replace any worn, cut, abraded, flattened, or crimped hoses.
- Clean the connections before connecting to equipment.
- Do not attempt any makeshift repairs to the hydraulic fittings or hoses with tape, clamps, or adhesive. The hydraulic system operates under extremely high pressure; such repairs will fail suddenly and create a hazardous and unsafe condition.

Lockout

- Always place all hydraulic controls in neutral and relieve system pressure before disconnecting or working on hydraulic system.

1.6. Tire Safety

⚠ WARNING Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion that may result in serious injury or death.

- DO NOT attempt to mount a tire unless you have the proper equipment and experience to do the job.
- Have a qualified tire dealer or repair service perform required tire maintenance.
- When replacing worn tires, make sure they meet the original tire specifications. Never undersize the replacement tire.
- DO NOT weld to the tire rim with the tire mounted on the rim. This action may cause an explosion which could result in serious injury or death.
- Inflate tires to the manufacturer's recommended pressure.
- Tires should not be operated at speeds higher than their rated speed.
- Keep wheel lug nuts tightened to manufacturer's recommendations.
- Never reinflate a tire that has been run flat or seriously under-inflated without removing the tire from the wheel. Have the tire and wheel closely inspected for damage before remounting.

1.7. Personal Protective Equipment

The following Personal Protective Equipment (PPE) should be worn when assembling the equipment.

Safety Glasses

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

Work Gloves

- Wear work gloves to protect your hands from sharp and rough edges.

Steel-Toe Boots

- Wear steel-toe boots to protect feet from falling debris.

Coveralls

- Wear coveralls to protect skin.

Hard Hat

- Wear a hard hat to help protect your head.

1.8. Safety Equipment

The following safety equipment should be kept on site:

Fire Extinguisher

- Provide a fire extinguisher for use in case of an accident. Store in a highly visible and accessible place.

First-Aid Kit

- Have a properly-stocked first-aid kit available for use should the need arise, and know how to use it.

1.9. Safety Decals

- Keep safety decals clean and legible at all times.
- Replace safety decals that are missing or have become illegible. See decal location figures that follow.
- Replaced parts must display the same decal(s) as the original part.
- Replacement safety decals are available **free of charge** from your distributor, dealer, or factory as applicable.

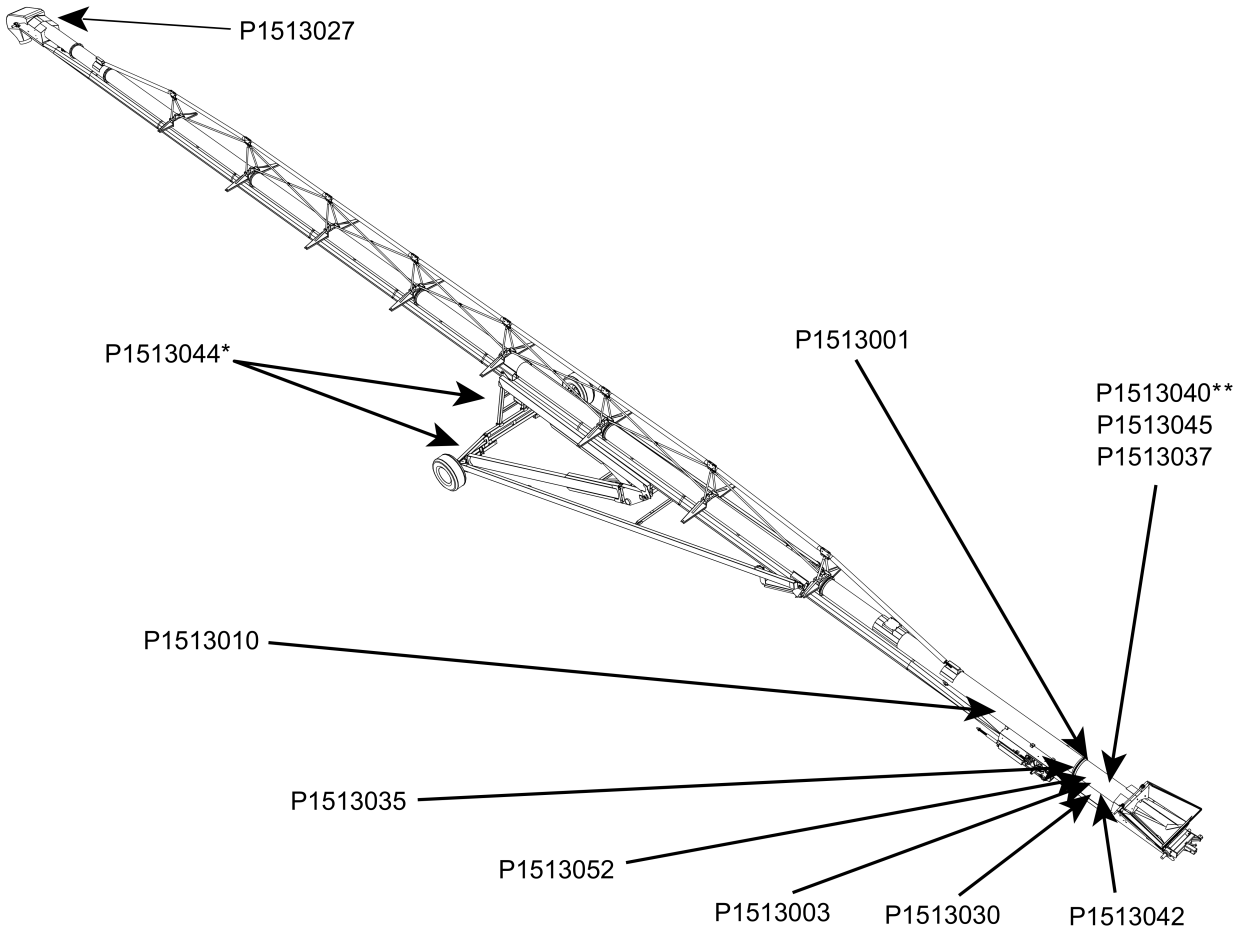
1.9.1 Decal Installation/Replacement

1. Decal area must be clean and dry, with a temperature above 50°F (10°C).
2. Decide on the exact position before you remove the backing paper.
3. Align the decal over the specified area and carefully press the small portion with the exposed sticky backing in place.
4. Slowly peel back the remaining paper and carefully smooth the remaining portion of the decal in place.
5. Small air pockets can be pierced with a pin and smoothed out using the sign backing paper.

1.9.2 Safety Decal Locations and Details

Replicas of the safety decals that are attached to the conveyor and their messages are shown in the figure(s) that follow. Safe operation and use of the conveyor requires that you familiarize yourself with the various safety decals and the areas or particular functions that the decals apply to, as well as the safety precautions that must be taken to avoid serious injury, death, or damage.

Figure 1. Scissor-Lift Conveyor Safety Decal Locations



* if equipped with retractable axles

** if equipped with Mover Kit

Figure 2. S-Drive Safety Decal Locations

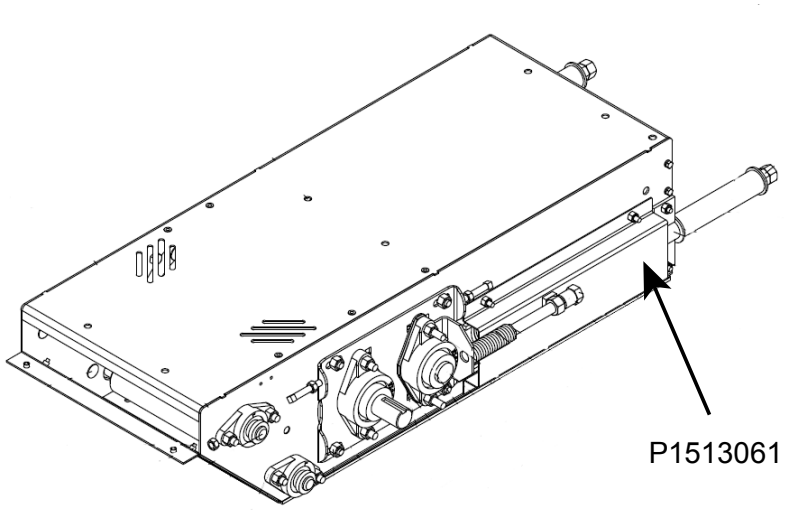


Figure 3. Side PTO Drive Safety Decal Location

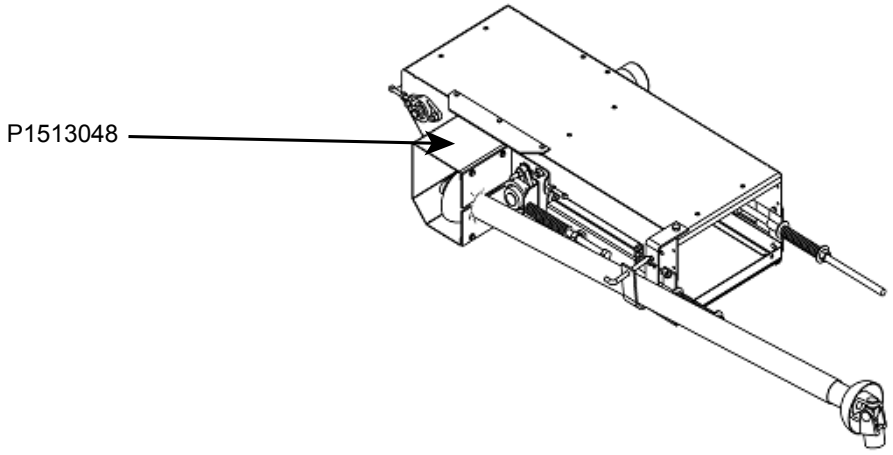


Figure 4. Front PTO Drive Safety Decal Locations

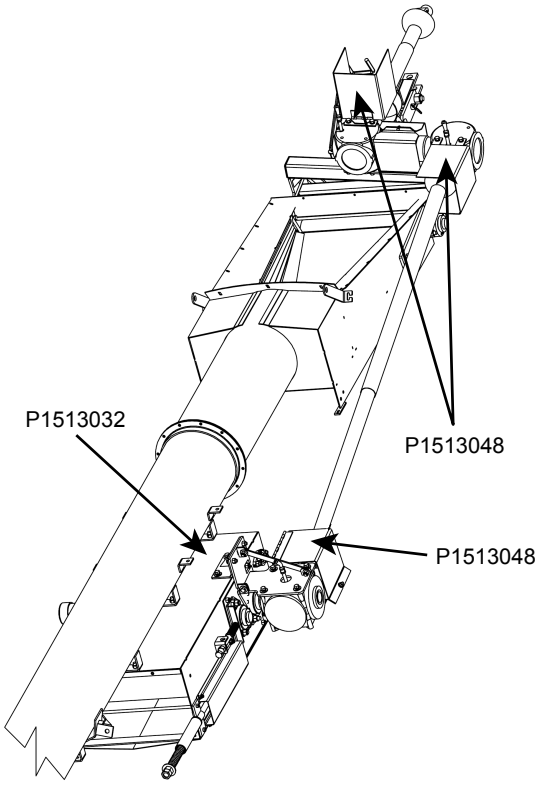


Figure 5. Electric Drive Safety Decal Locations

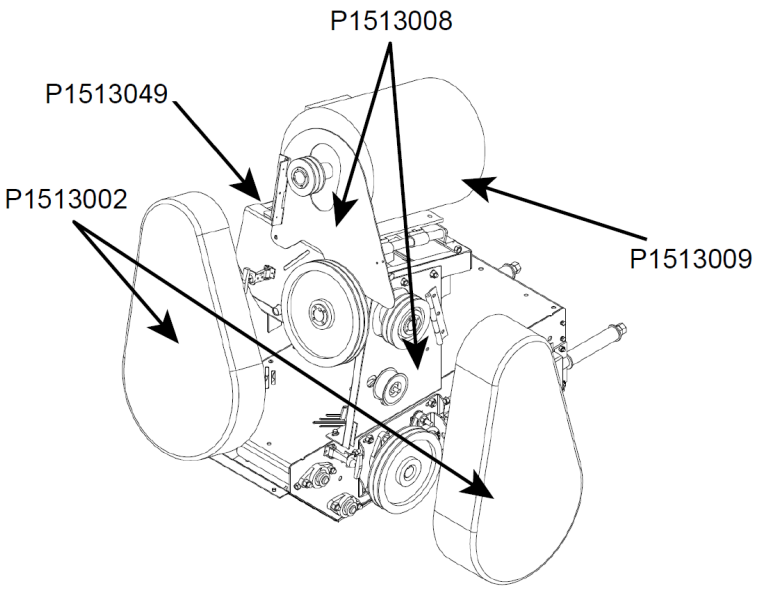


Table 1. Safety Decals

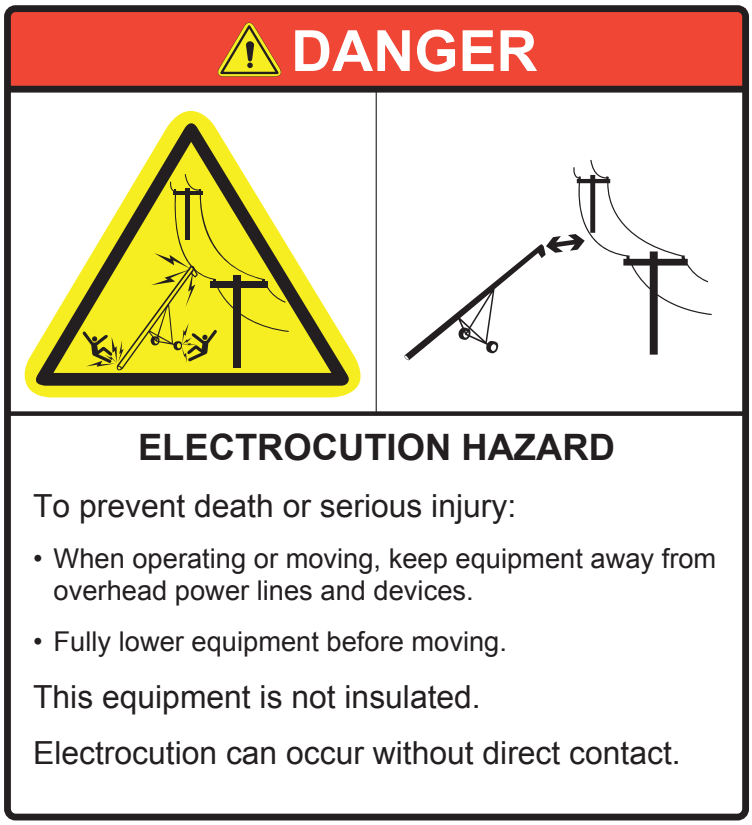
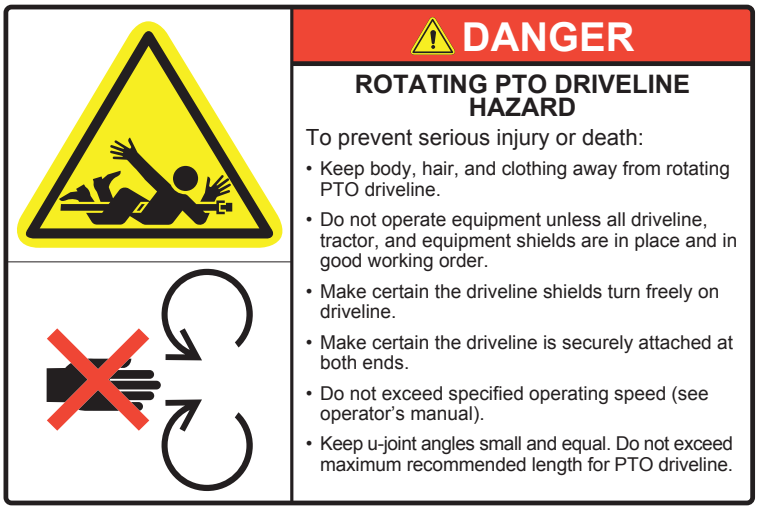
Part Number	Description
P1513003	
P1513048	

Table 1 Safety Decals (continued)

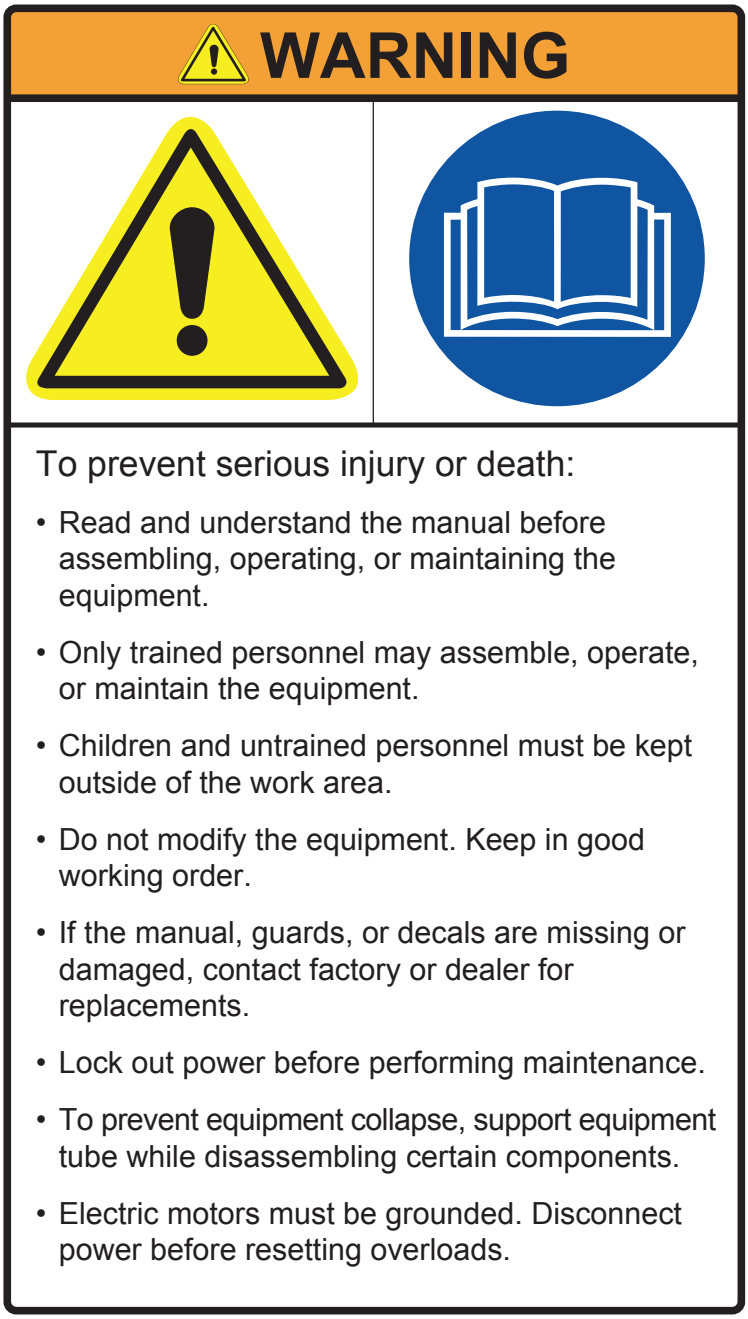
Part Number	Description
P1513001	

Table 1 Safety Decals (continued)

Part Number	Description
P1513002	
P1513008	

Table 1 Safety Decals (continued)

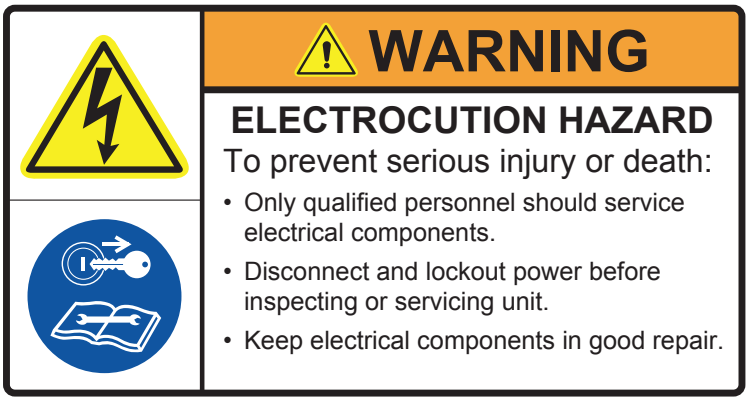
Part Number	Description
P1513009	
P1513035	

Table 1 Safety Decals (continued)

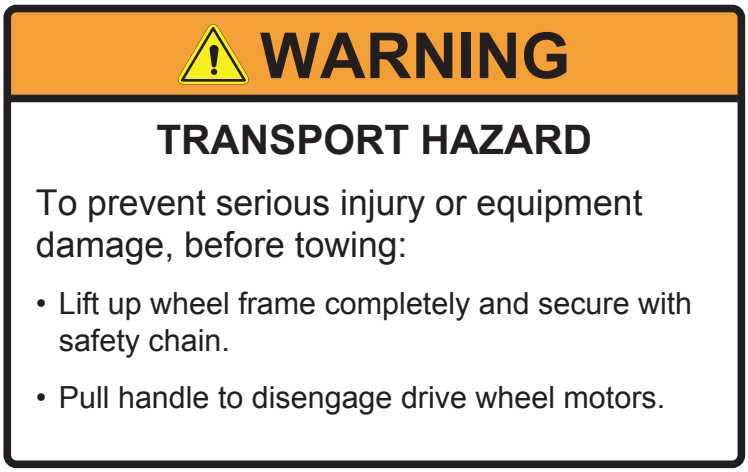
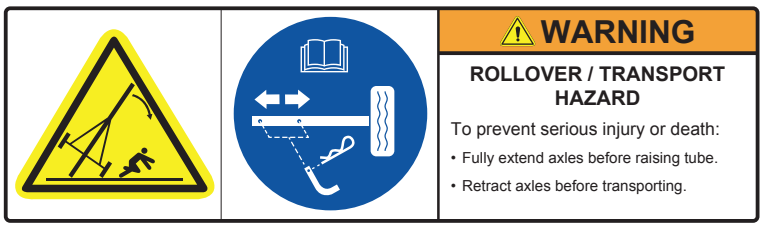
Part Number	Description
P1513045	
P1513040	
P1513044	

Table 1 Safety Decals (continued)

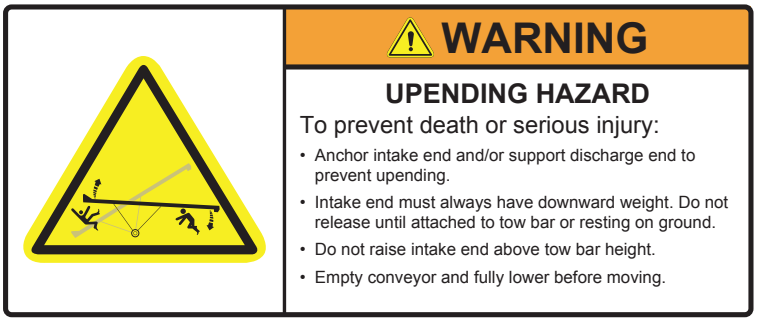
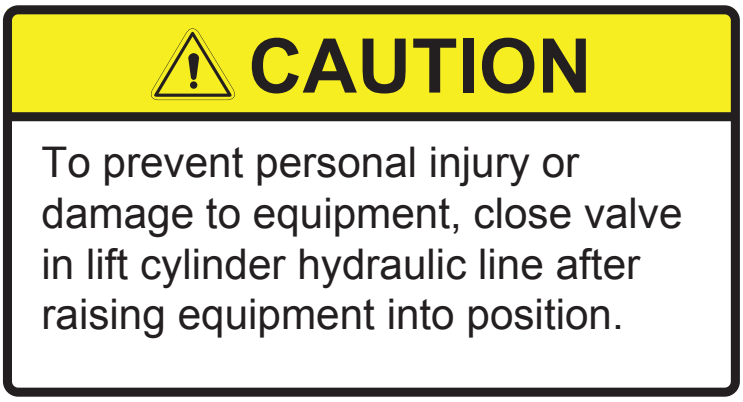
Part Number	Description
P1513042	
P1513037	
P1513010	

Table 1 Safety Decals (continued)

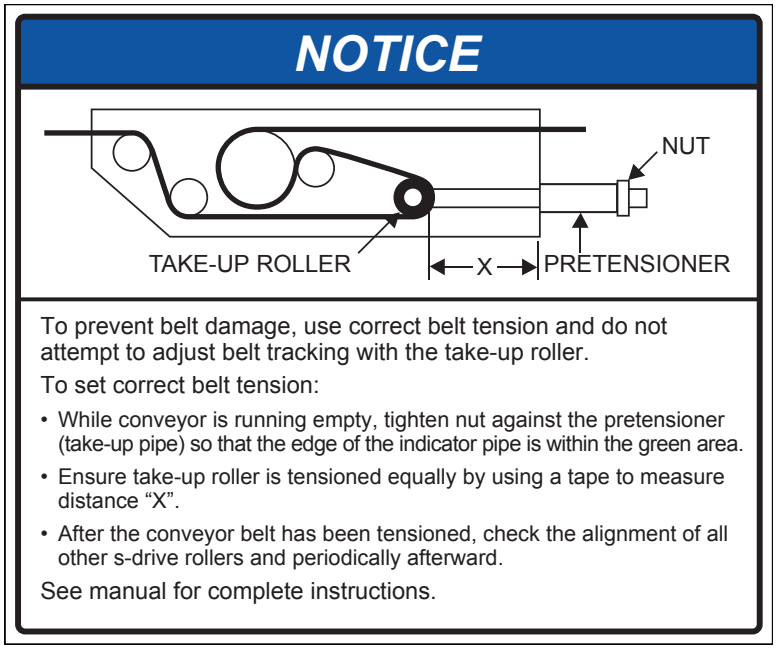
Part Number	Description
P1513030	
P1513061	

Table 1 Safety Decals (continued)

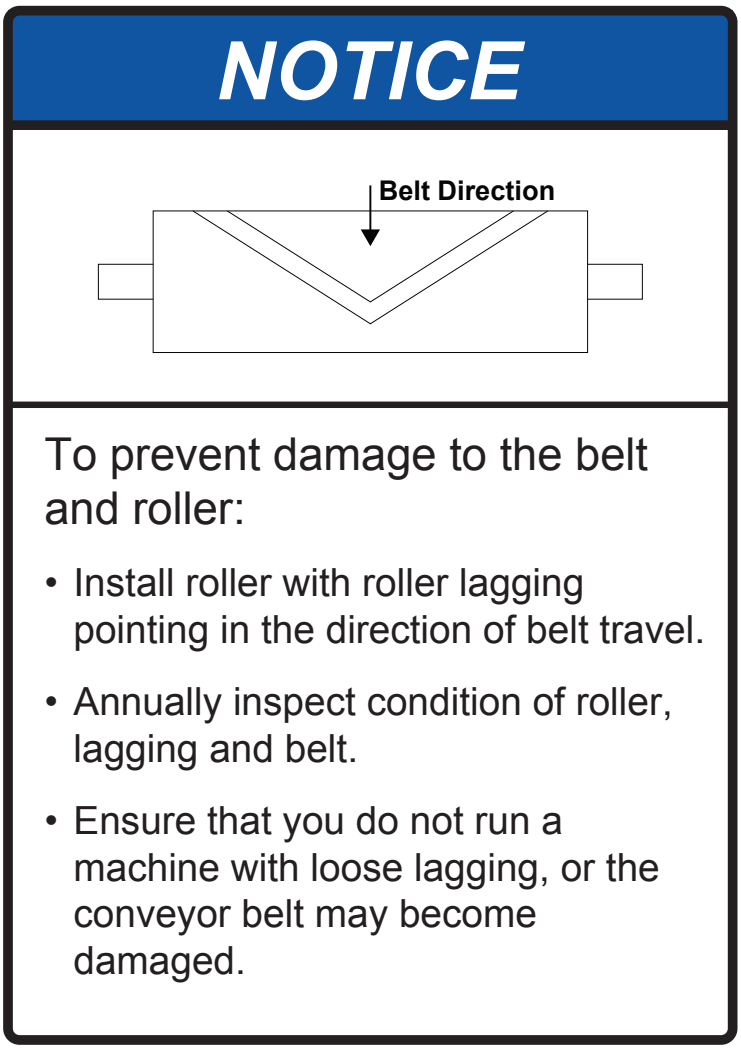
Part Number	Description
P1513027	

Table 1 Safety Decals (continued)

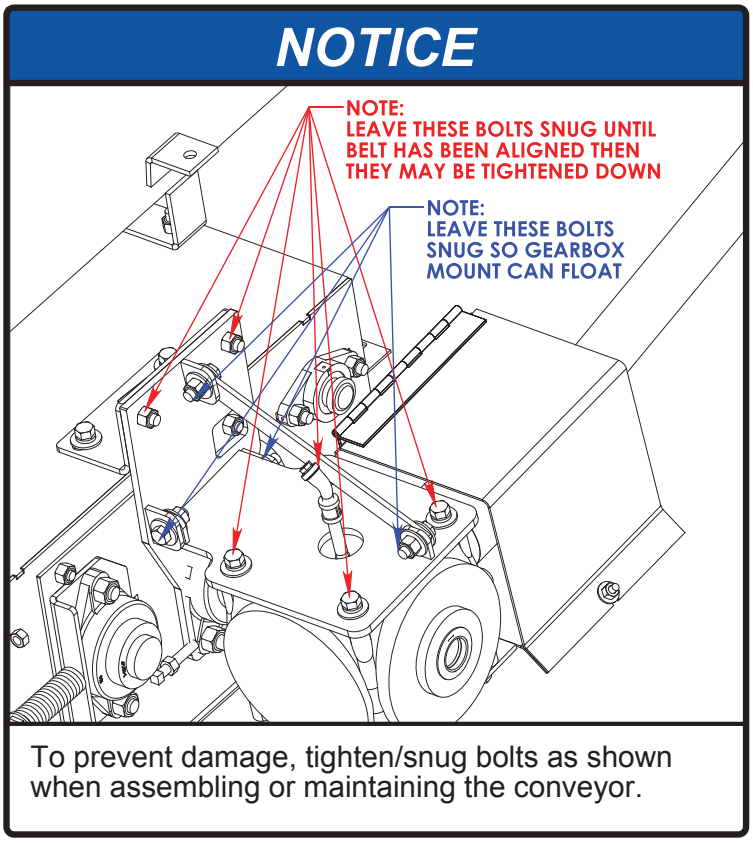
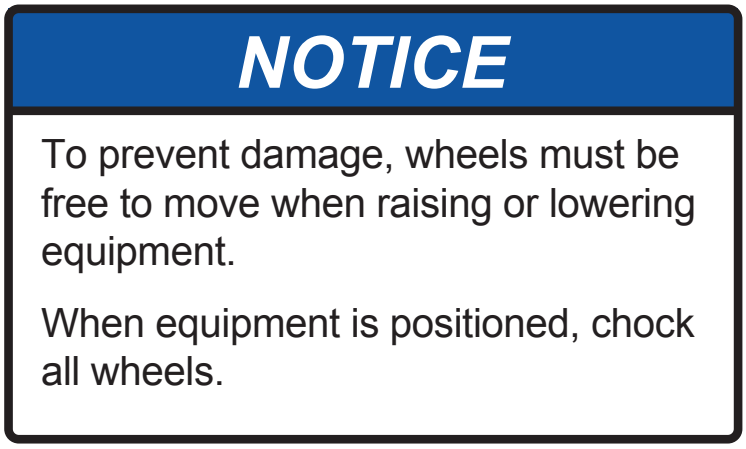
Part Number	Description
P1513032	
P1513052	

Table 1 Safety Decals (continued)

Part Number	Description
P1513049	

2. Features

This section covers the main features of the conveyor.

Figure 6. Typical S-Drive Standard Conveyor Components (For 65' — 120' Lengths)

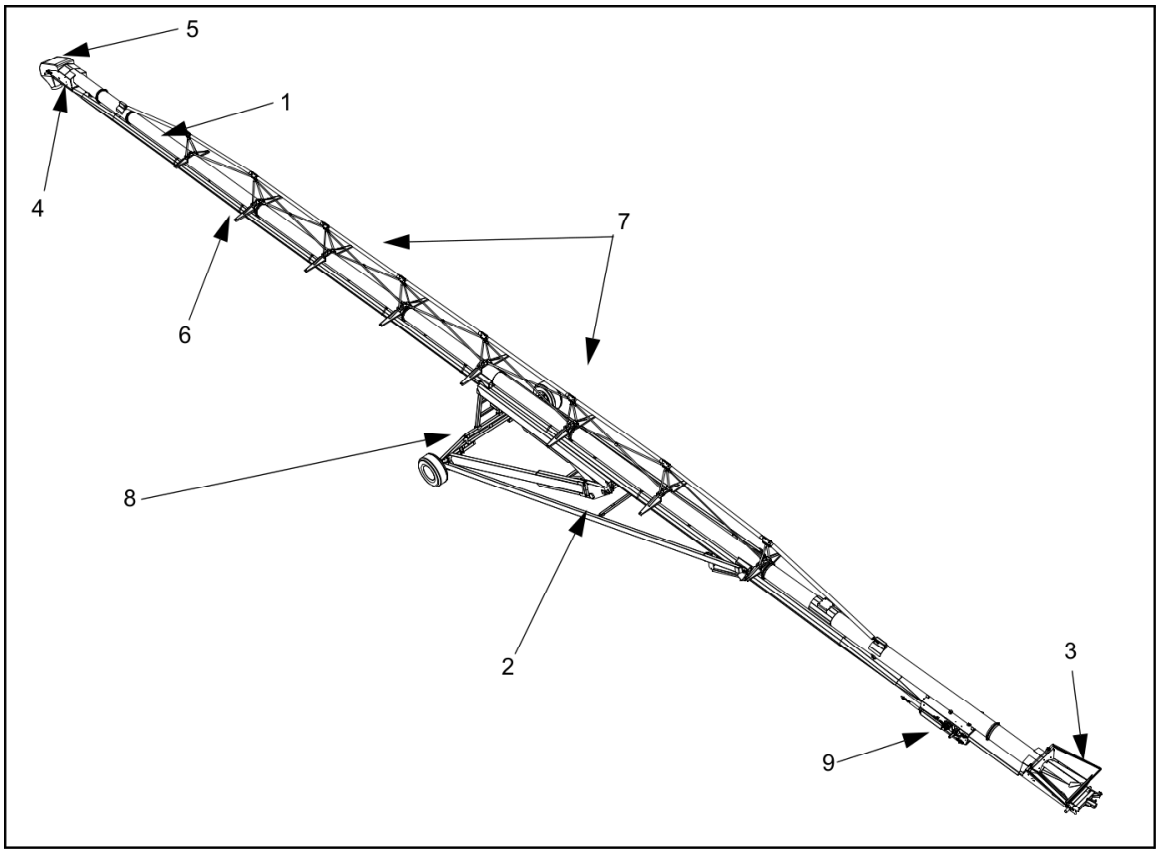
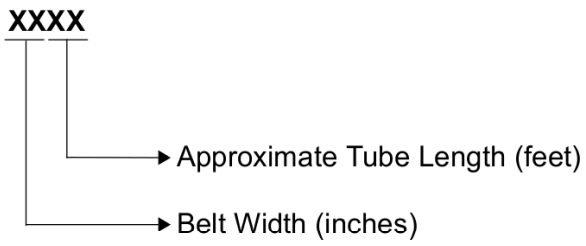


Table 2. Typical S-Drive Standard Conveyor Components (For 65' — 120' Lengths)

ITEM	DESCRIPTION
1	Tube
2	Scissor Frame
3	Hopper
4	Spout Assembly
5	Hood

ITEM	DESCRIPTION
6	Belt Return and Weather Guard
7	Trussing (Cable on 65' — 110')
	Trussing (Steel on 120')
8	Axle (Extendable on Specific Models)
9	S-Drive

2.1. Model Number



3. Assembly

Before continuing, ensure you have completely read and understood this manual's Safety section, in addition to the safety information in the section(s) below.

3.1. Assembly Safety

WARNING

- Do not take chances with safety. The components can be large, heavy, and hard to handle. Always use the proper tools, rated lifting equipment, and lifting points for the job.
- Carry out assembly in a large open area with a level surface.
- Always have two or more people assembling the conveyor.
- Make sure you have sufficient lighting for the work area.
- Tighten all fasteners according to their specifications. Do not replace or substitute bolts, nuts, or other hardware that is of lesser quality than the hardware supplied by the manufacturer.
- Stay away from overhead power lines and other obstructions during assembly. Contact with power lines can cause electrocution.
- Do not work in high winds.

3.2. Check Shipment

Unload the conveyor parts at the assembly site and compare the packing slip to the shipment. Ensure that all items have arrived and that none are damaged.

Report missing or damaged parts immediately to ensure that proper credit is received from Batco or your distributor/dealer, and to ensure that any missing parts can be shipped quickly to avoid holding up the assembly process.

Important

Do not assemble or install damaged components.

3.3. Required Tools

- 2–3 pipe stand(s)
- 2 sawhorse(s) (1200 lb [544.3 kg])
- 1 standard socket set(s)
- 2 wrench set(s)
- 1 torque wrench(es) and set of Allen Wrenches
- 1 drill with bits 3/16", 5/16"
- 2 tape measure(s) (25' [7.6 m])
- 1 tape measure(s) (120' [36.6 m])
- 1 hammer and punch
- 1 ratchet strap
- 2 C-clamp(s) or vise grip(s)
- 1 fish tape (120' [36.6 m])
- 1 tire pressure gauge
- 1 tire chuck
- 1 propane torch
- 1 picker with minimum reach of 12' (3.7 m) and 4000 lb to 6000 lb (1814 kg to 2722 kg) lifting capacity

3.4. Before You Begin

Before you assemble the conveyor:

- Familiarize yourself with all the sub-assemblies, components, and hardware that make up the equipment.
- Have all parts and components on hand, and arrange them for easy access.
- Separate the hardware (bolts, nuts, etc.) and lay them out into groups for easier identification during assembly.
- Ensure there is adequate space to remove the assembled conveyor from the assembly area.

3.5. Hydraulic Fittings and Bolt Tightening

Remember the following basic considerations when tightening hydraulic fittings and bolts:

- Tighten all fasteners to the torque specified in Section 5.1. – Bolt Torque on page 147. Do not replace or substitute bolts, nuts, or other hardware that is of lesser quality than the hardware supplied by the manufacturer.

  All hydraulic fittings should be torqued to the recommended specifications. See Section 5.2. – Fittings Torque Values on page 148.

NOTICE Do not over-tighten fittings! Over-tightening hose fittings can crack the fittings or motor body and will void the warranty.

3.6. Component Locations

Layout Drawing

Be sure to select the proper layout drawing. The dimensions change for each machine depending on the drive option selected. Incorrect placement of the components affects machine balance and can cause a heavy or light intake. The layout drawing is attached to the packing list.

Mark the Tube

Always ensure that the hopper remains level during the attachment of all components that bolt to the conveyor tubing. Use a tape measure to mark out component locations that bolt to the tube. Mark locations on the top side of the tube. Refer to the tube drawing attached to the packing list for layout measurements and component locations.

Tightening Brackets

For all bolt-on brackets and u-clamps, tighten nuts part-way on one side of bracket, then tighten part-way on opposite side. Do this until bracket is fully tightened and ensure it remains level during this procedure.

3.7. Assemble the Remainder of the S-Drive

Note

The s-drive normally comes mostly pre-assembled when delivered from the factory. The steps below are the remaining assembly which must be performed.

For each side of the s-drive:

1. Remove the shipping wire holding the square nut (2) onto the take-up roller bolt assembly (1), and thread off the square nut from the take-up roller bolt (see Figure 7).

   Note

   The take-up roller bolt assembly (1) is comprised of the take-up roller bolt, a flat washer, spring, bushing, pre-tensioner (take-up pipe), and hex nuts. This is factory pre-assembled.

2. Remove the take-up bracket (3), which was factory pre-assembled onto the s-drive.
3. Slide the take-up roller bearing units (4) to the spout-end of the s-drive.
4. Insert the square nut (2) into the take-up roller bearing unit (4).
5. Slide the take-up bracket (3) onto the take-up roller bolt assembly (1).
6. Thread the take-up roller bolt assembly (1) into the square nut (2).
7. Hammer the spring pin (5) through the square nut (2) and take-up roller bolt (1).
8. Re-fasten the take-up bracket (3) with the heads of the 3/8" x 1" hex bolts (6) on the inside of the s-drive and the 3/8" locknuts (7) on the outside of the s-drive, to keep the bolt shafts away from the belt.

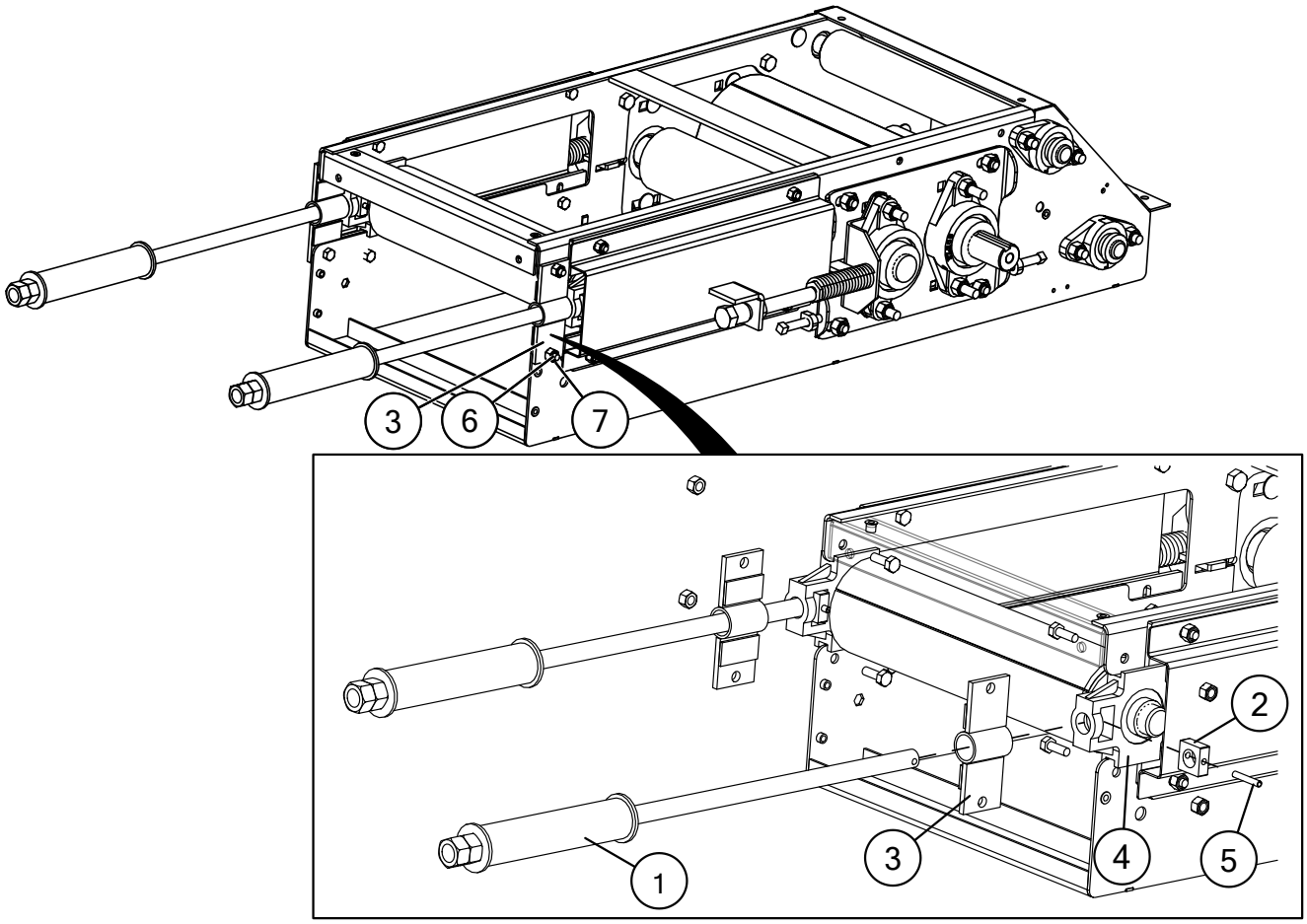
   Note

   The s-drive bottom guard will be assembled onto the conveyor later, after belt tensioning and alignment.

Table 3. S-Drive Components to Assemble

Item	Description	Quantity
1	Take-up Roller Bolt Assembly	2
2	Square Nut	2
3	Take-up Bracket	2
4	Take-up Roller Bearing Unit	2
5	Spring Pin 1/4" x 1–1/2"	2
6	Hex Bolt 3/8" x 1"	4
7	Nylon Locknut 3/8"	4

Figure 7. S-Drive Components



3.8. Assemble the Conveyor Tube

1. Review the tube layout figure below for your specific conveyor model to determine the order in which the tubes must be connected together. Part numbers are shown for tube identification.
2. Place the tubes on two support stands to support each tube section. The support stands must be set at equal height (see Figure 8). Anchor the tubes to the stands if necessary to prevent rolling.

   ⚠ CAUTION Failure to secure the tubes may result in personal injury.

3. Confirm that all tubes are set level and oriented correctly.
4. Fasten tube flanges together with 7/16" x 1" bolts (2) and 7/16" locknuts (1) as each tube section is placed, starting at the hopper end and working toward the spout end. Ensure the tubes are aligned and the bolts are straight.

   Note

   A punch can be used to assist alignment. If you are not careful, it is possible to bolt the flanges together non-concentrically with the bolts crooked through the holes.

Table 4. Tube Connection Components

Item	Description
1	7/16" Locknut
2	7/16" x 1" Bolt GR8

Figure 8. Typical Tube Connection

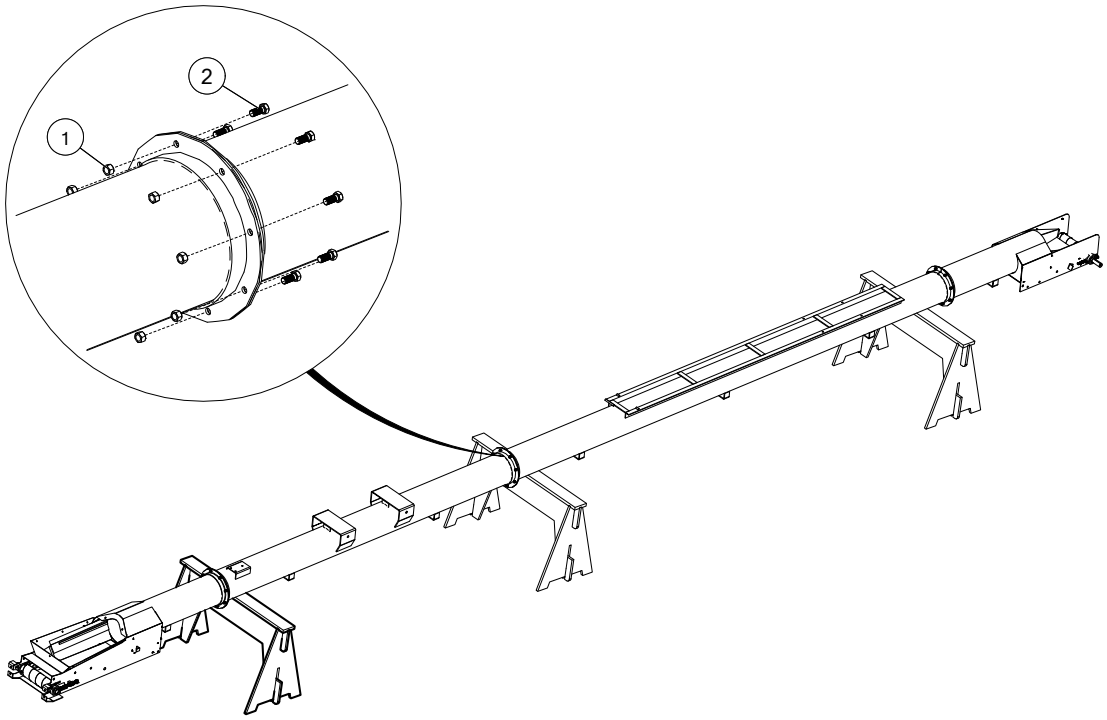


Figure 9. Conveyor Tube Layout for 2065 Model

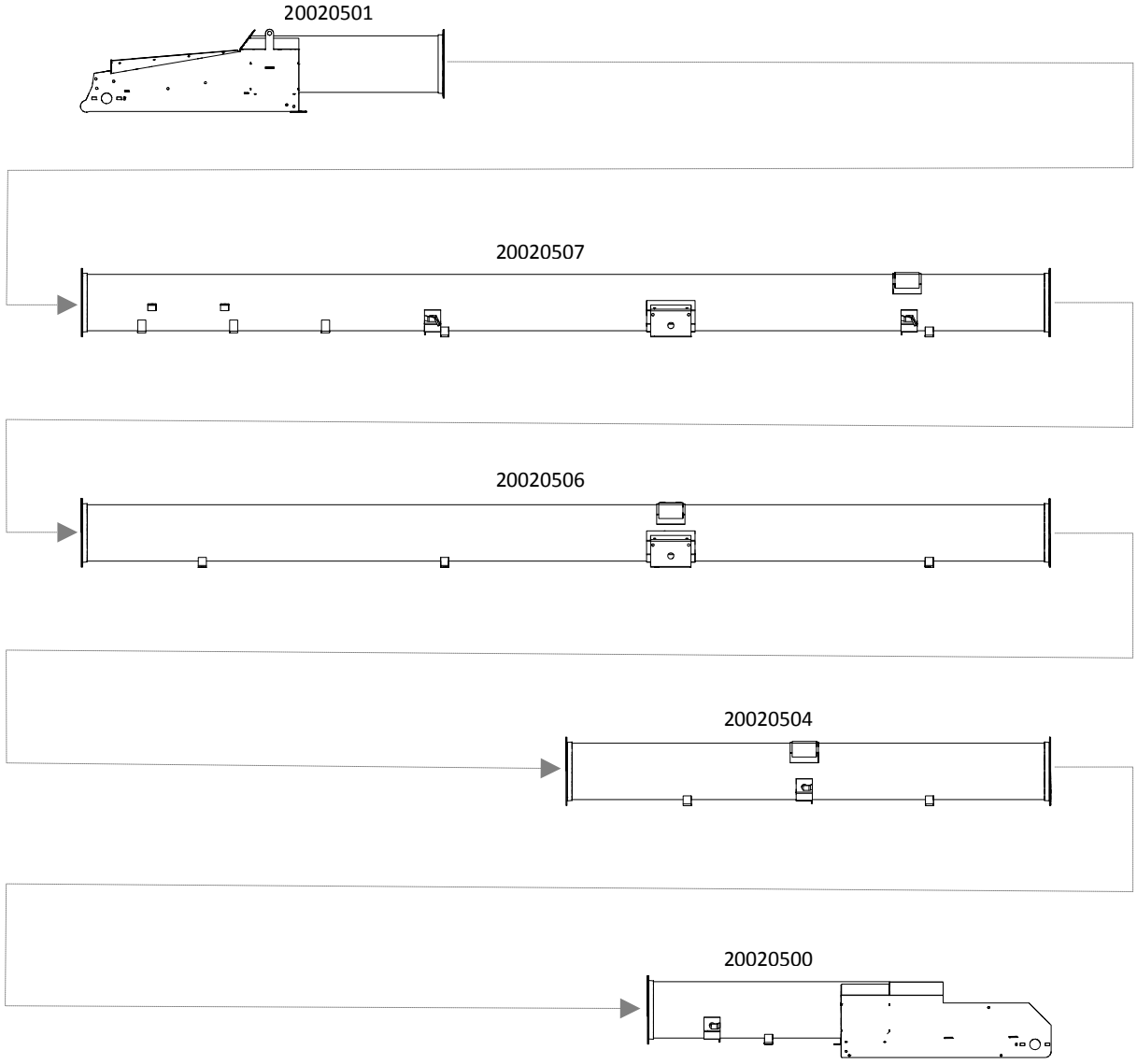


Figure 10. Conveyor Tube Layout for 2075 Model

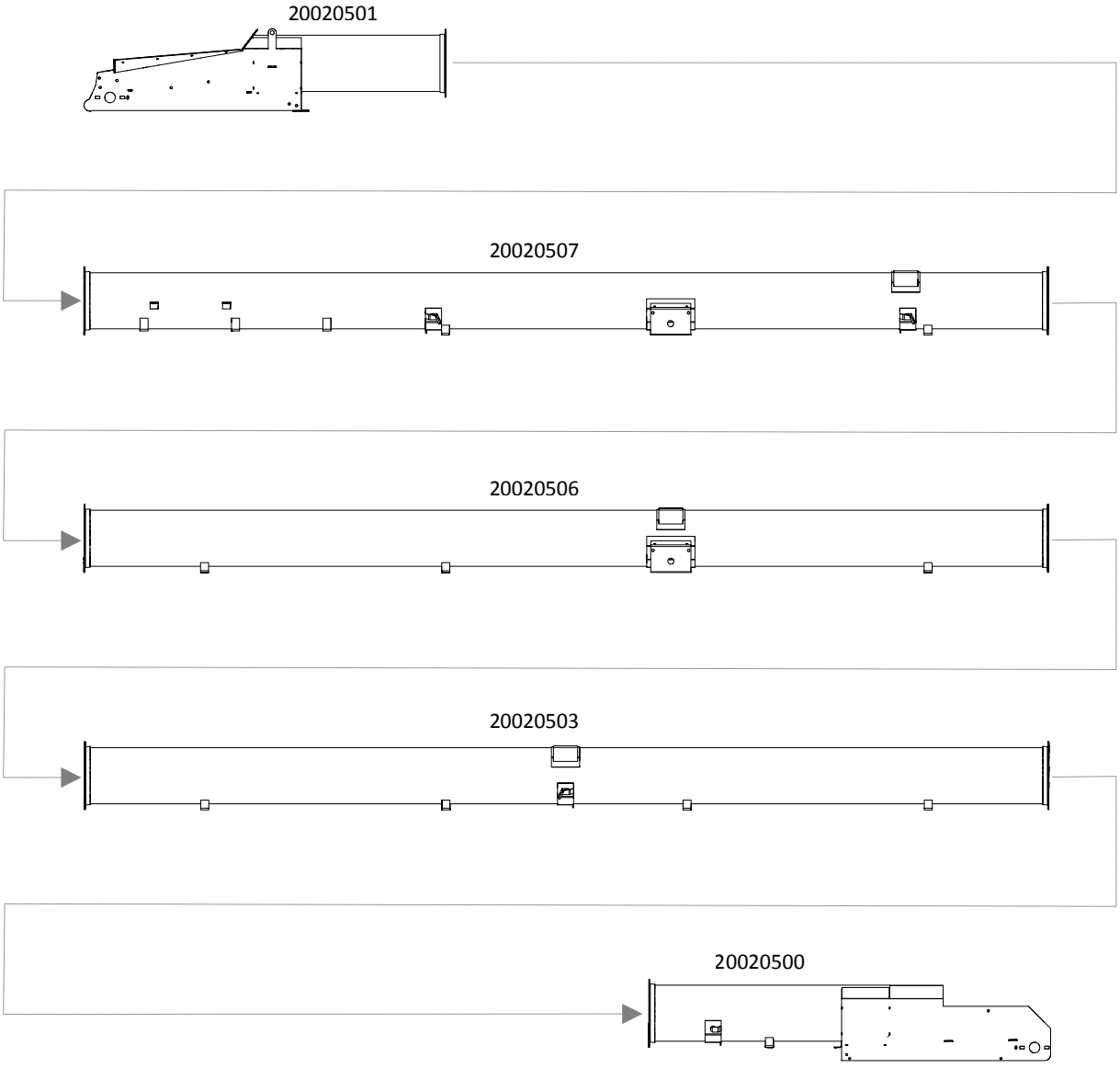


Figure 11. Conveyor Tube Layout for 2085 Model

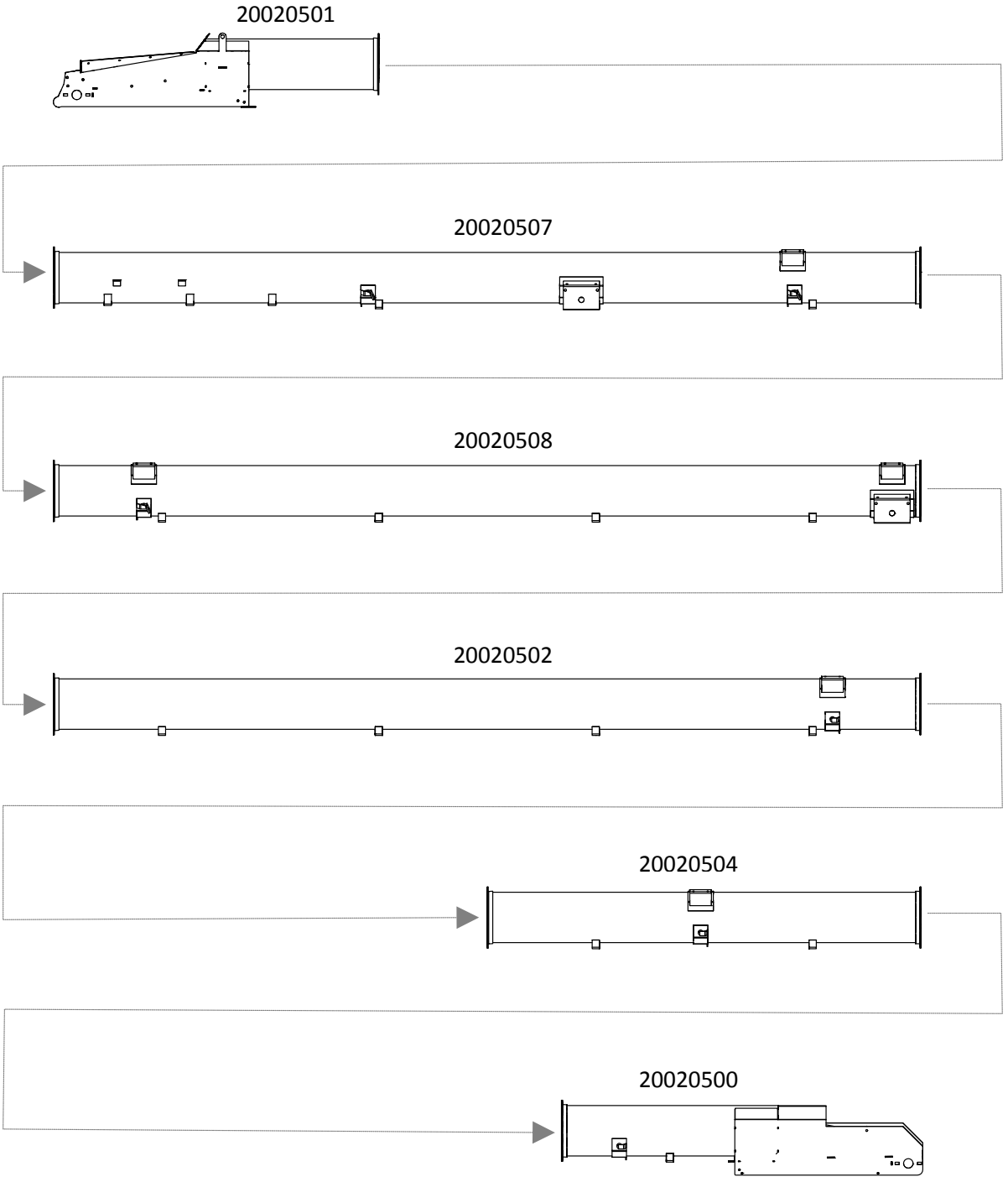


Figure 12. Conveyor Tube Layout for 2095 Model

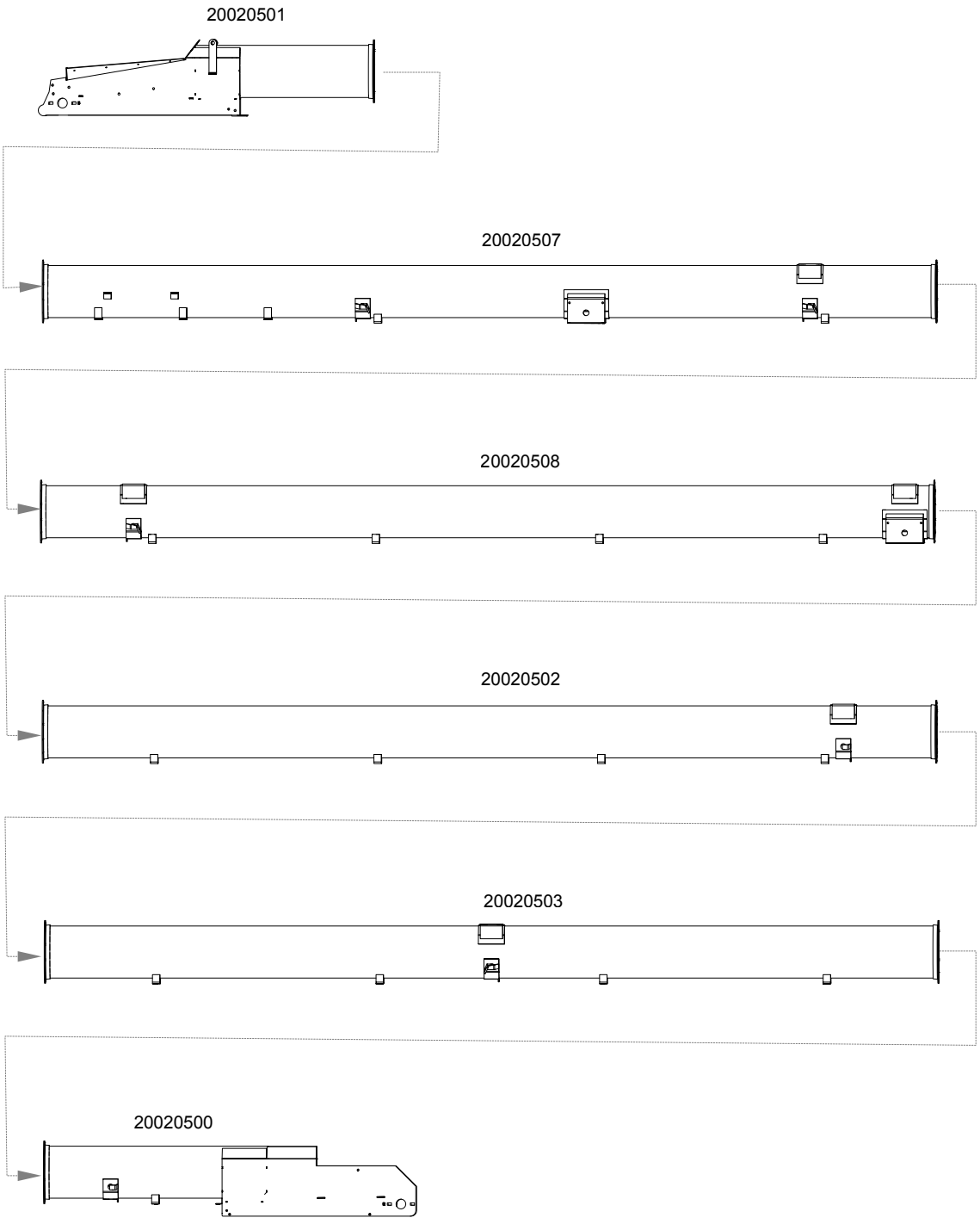


Figure 13. Conveyor Tube Layout for 20105 Model

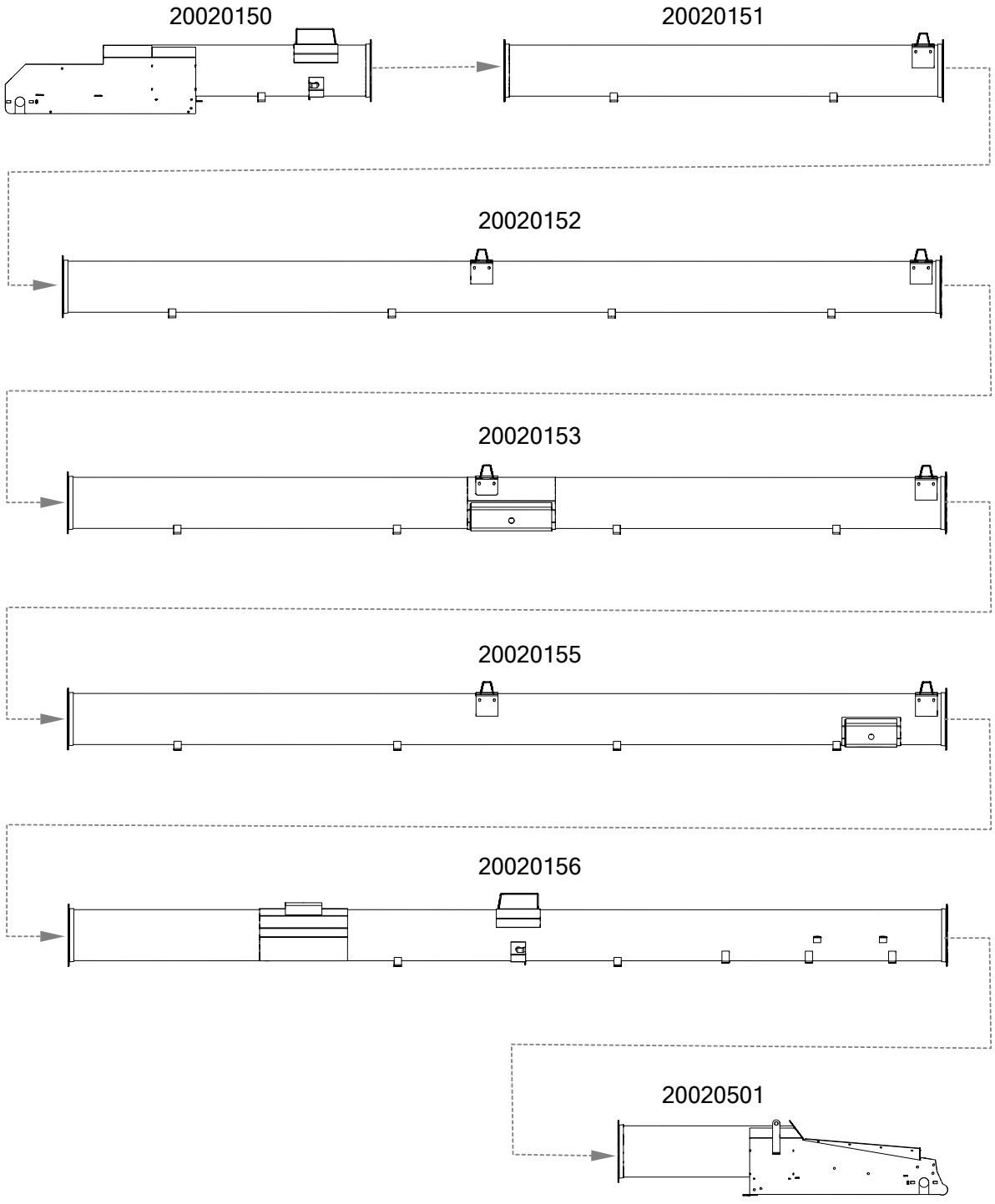


Figure 14. Conveyor Tube Layout for 20110 Model

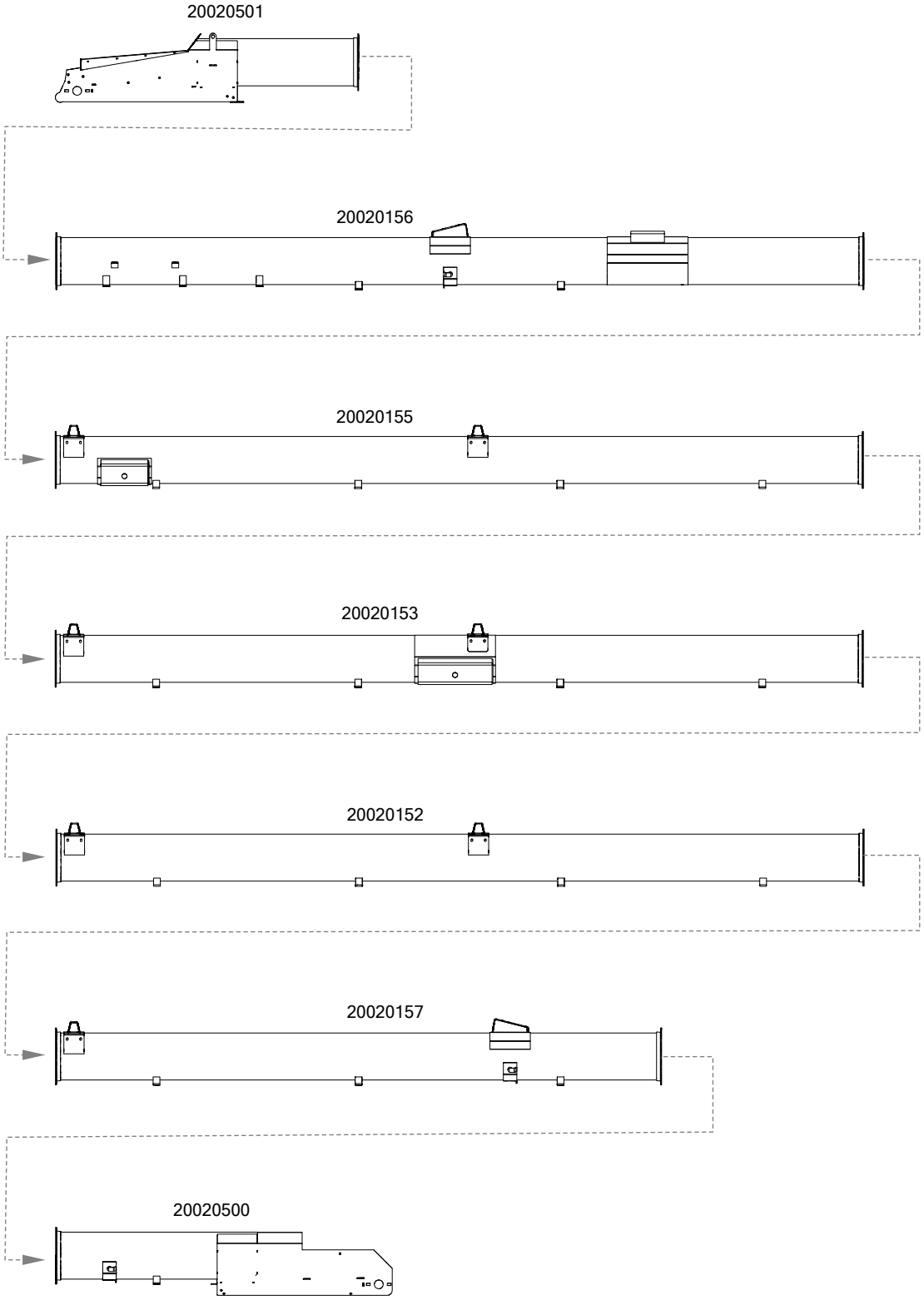


Figure 15. Conveyor Tube Layout for 20120 Model

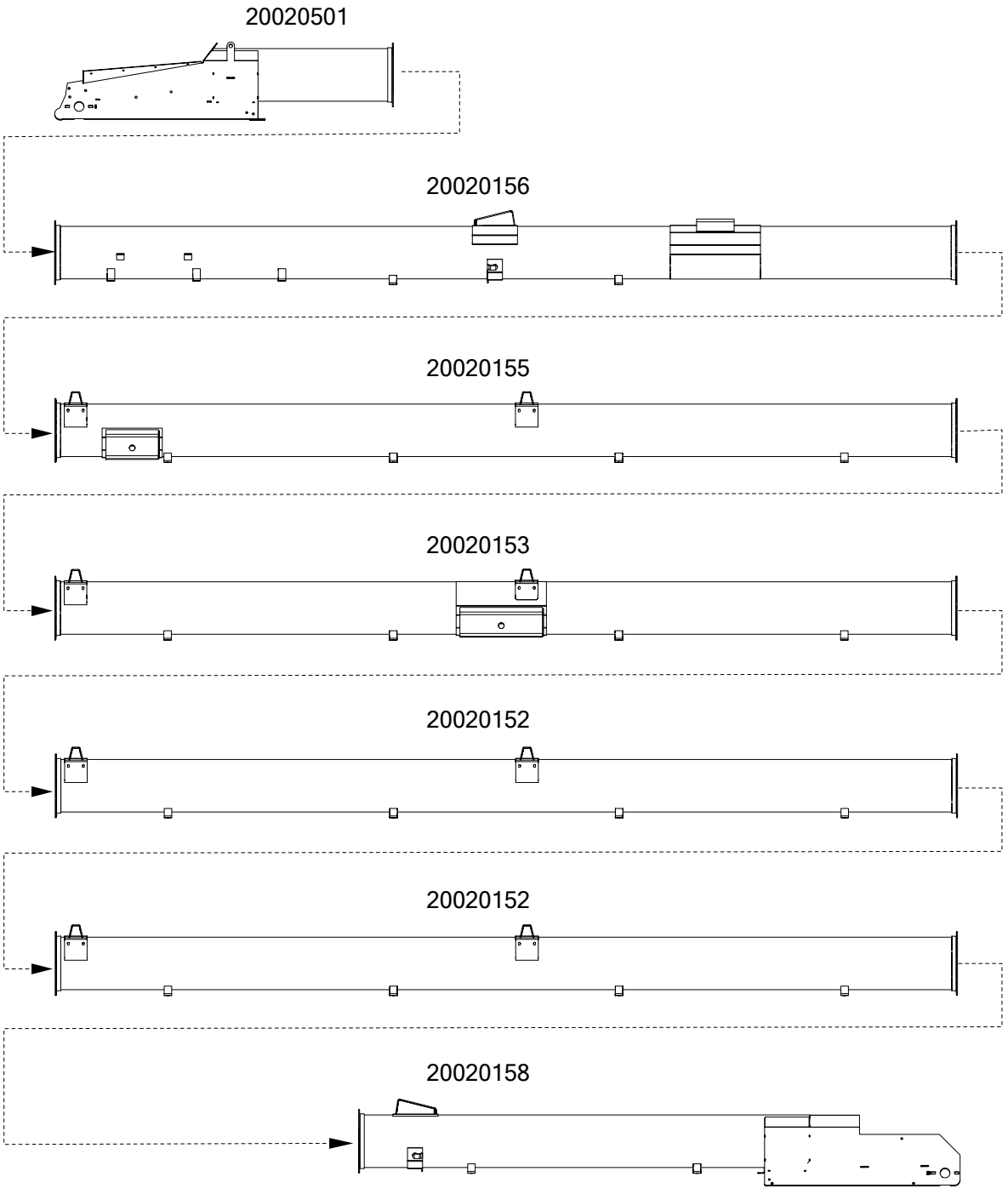


Figure 16. Conveyor Tube Layout for 2465 Model

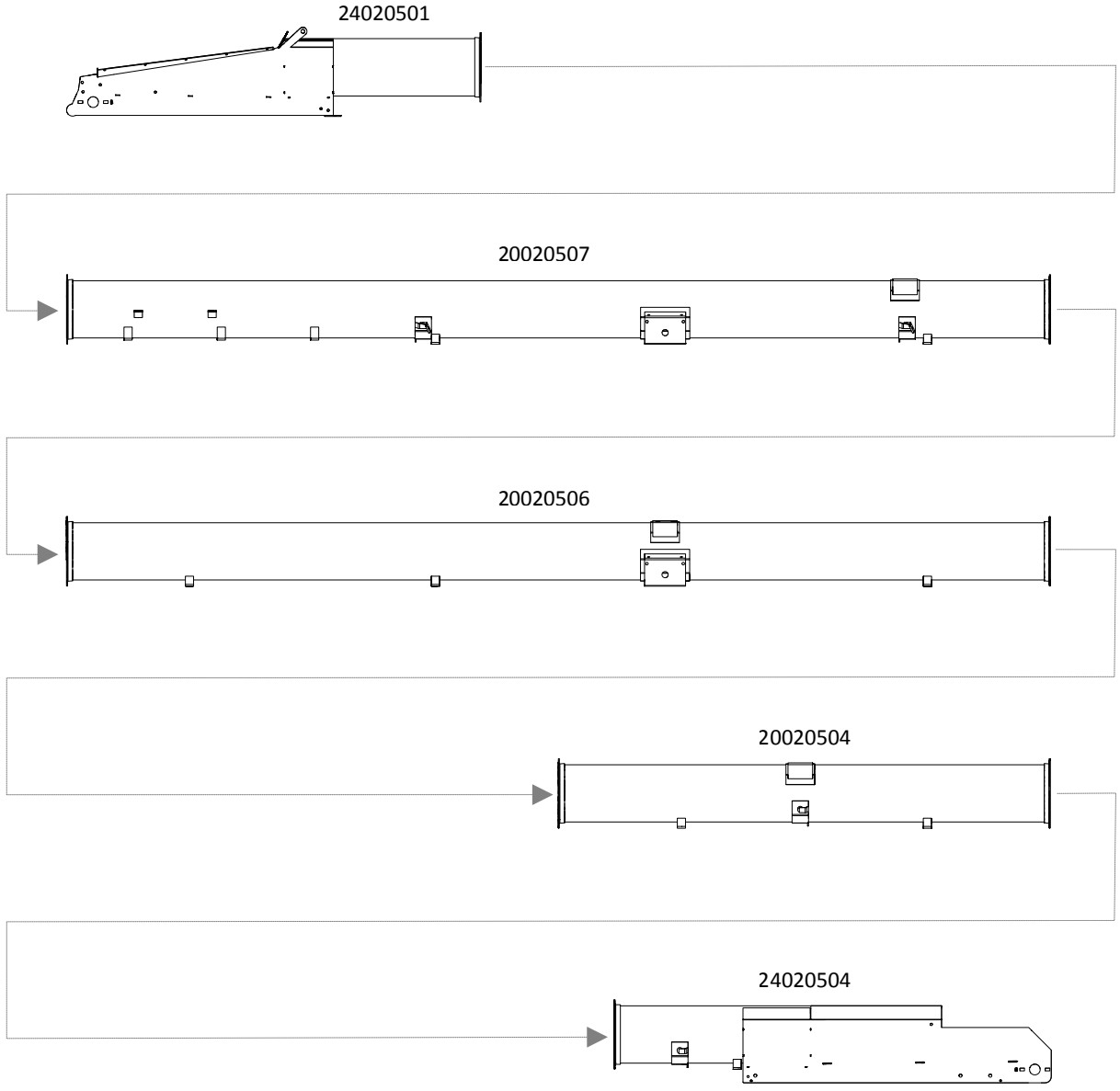


Figure 17. Conveyor Tube Layout for 2475 Model

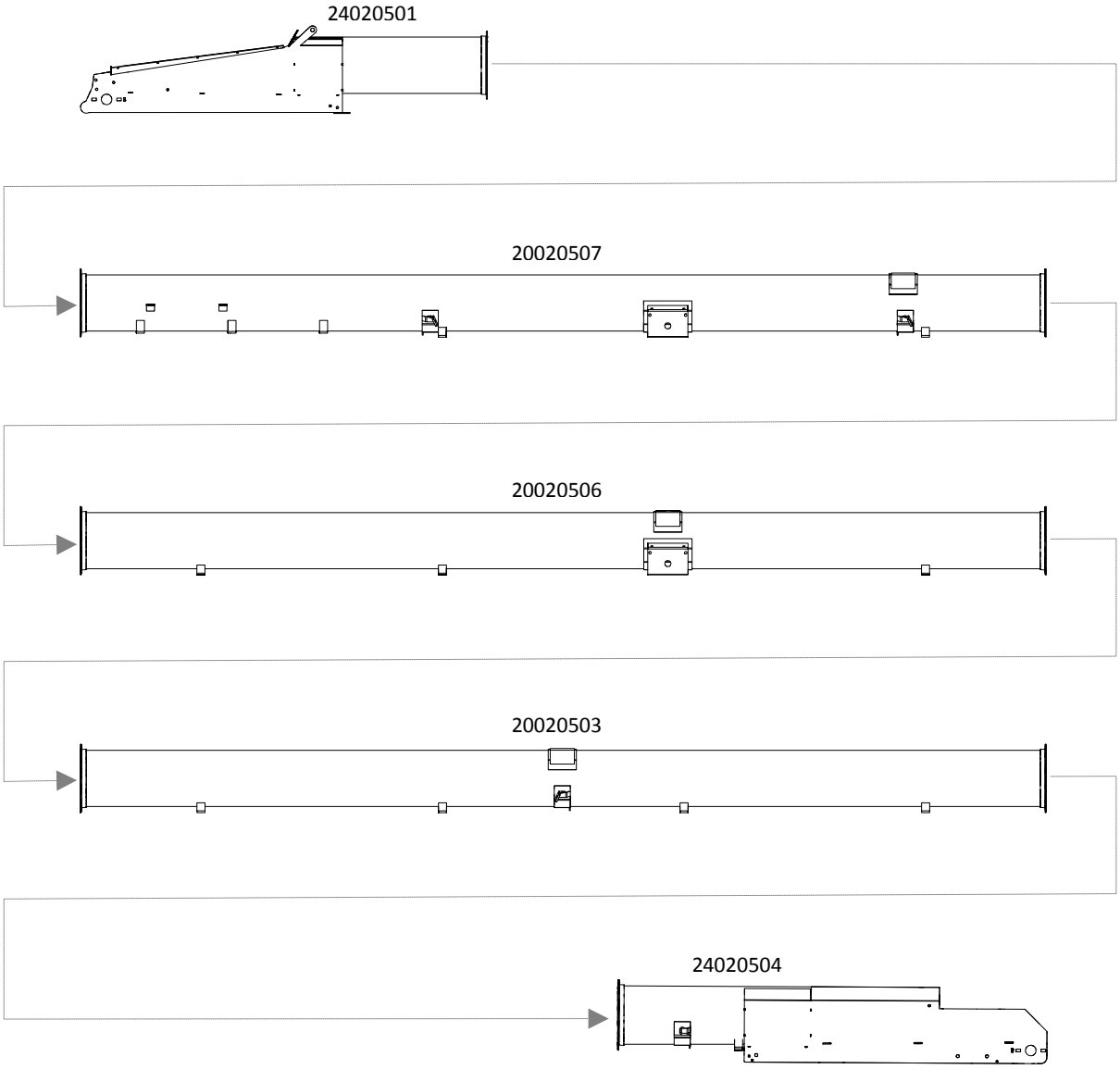


Figure 18. Conveyor Tube Layout for 2485 Model

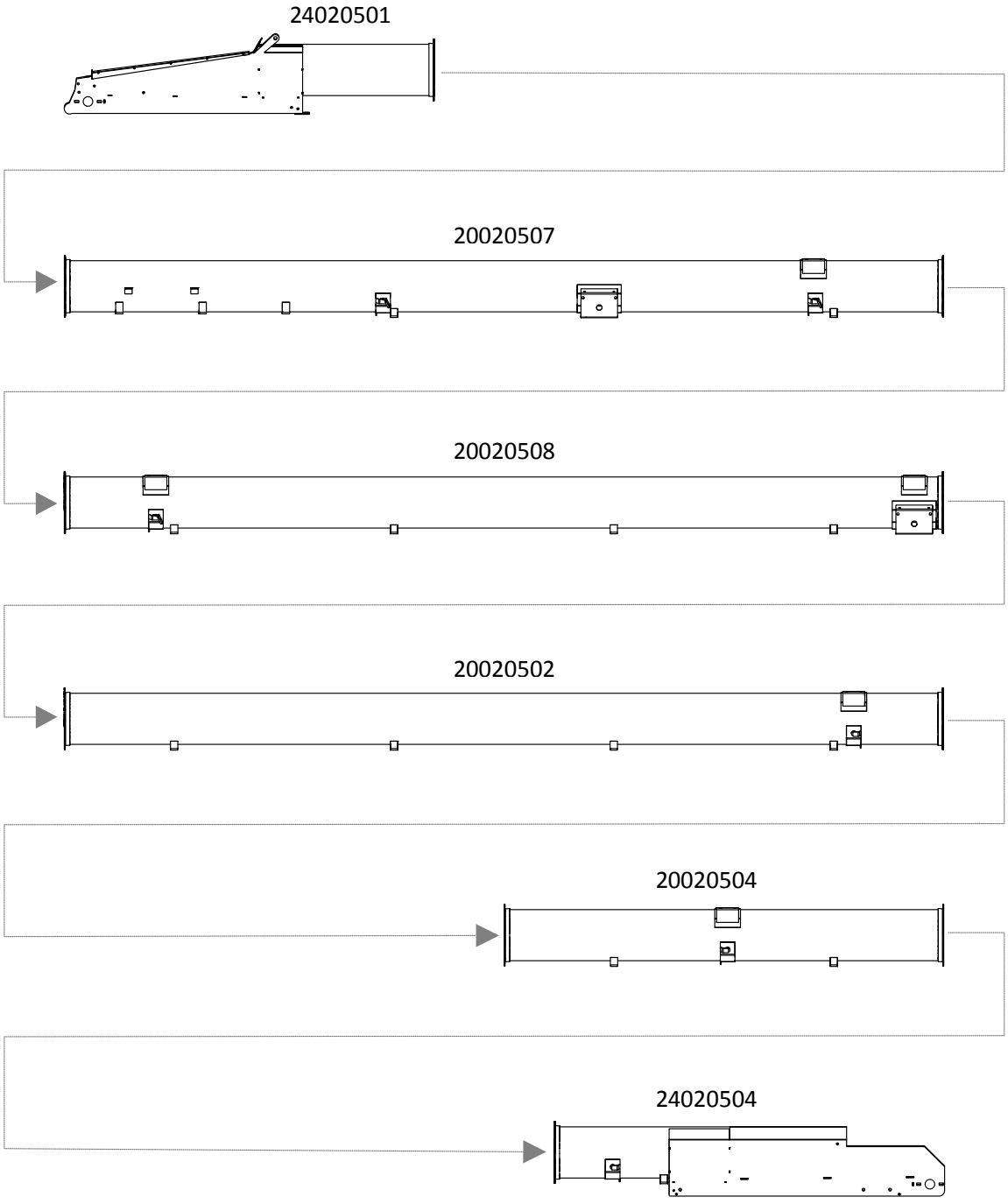


Figure 19. Conveyor Tube Layout for 2495 Model

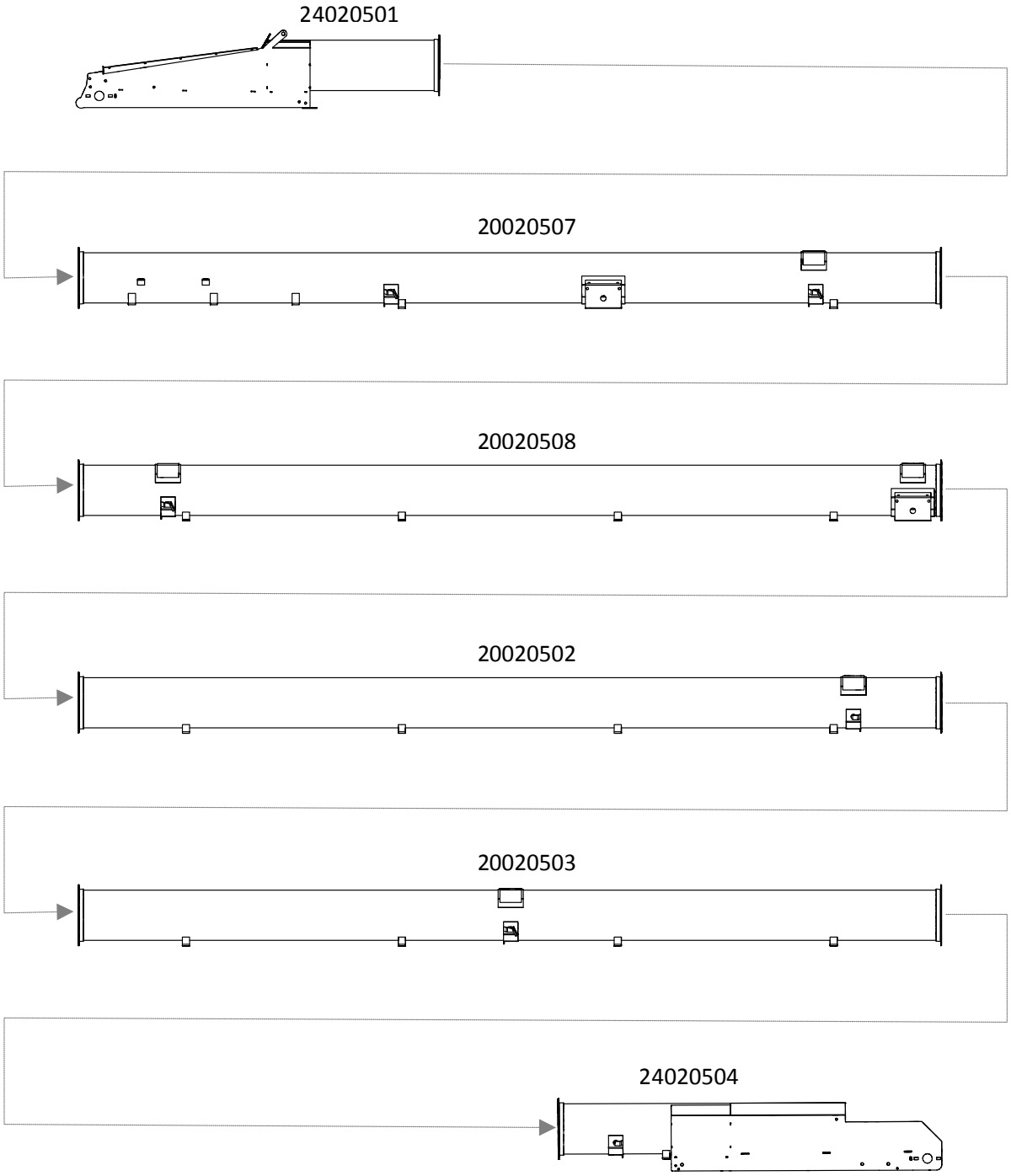


Figure 20. Conveyor Tube Layout for 24105 Model

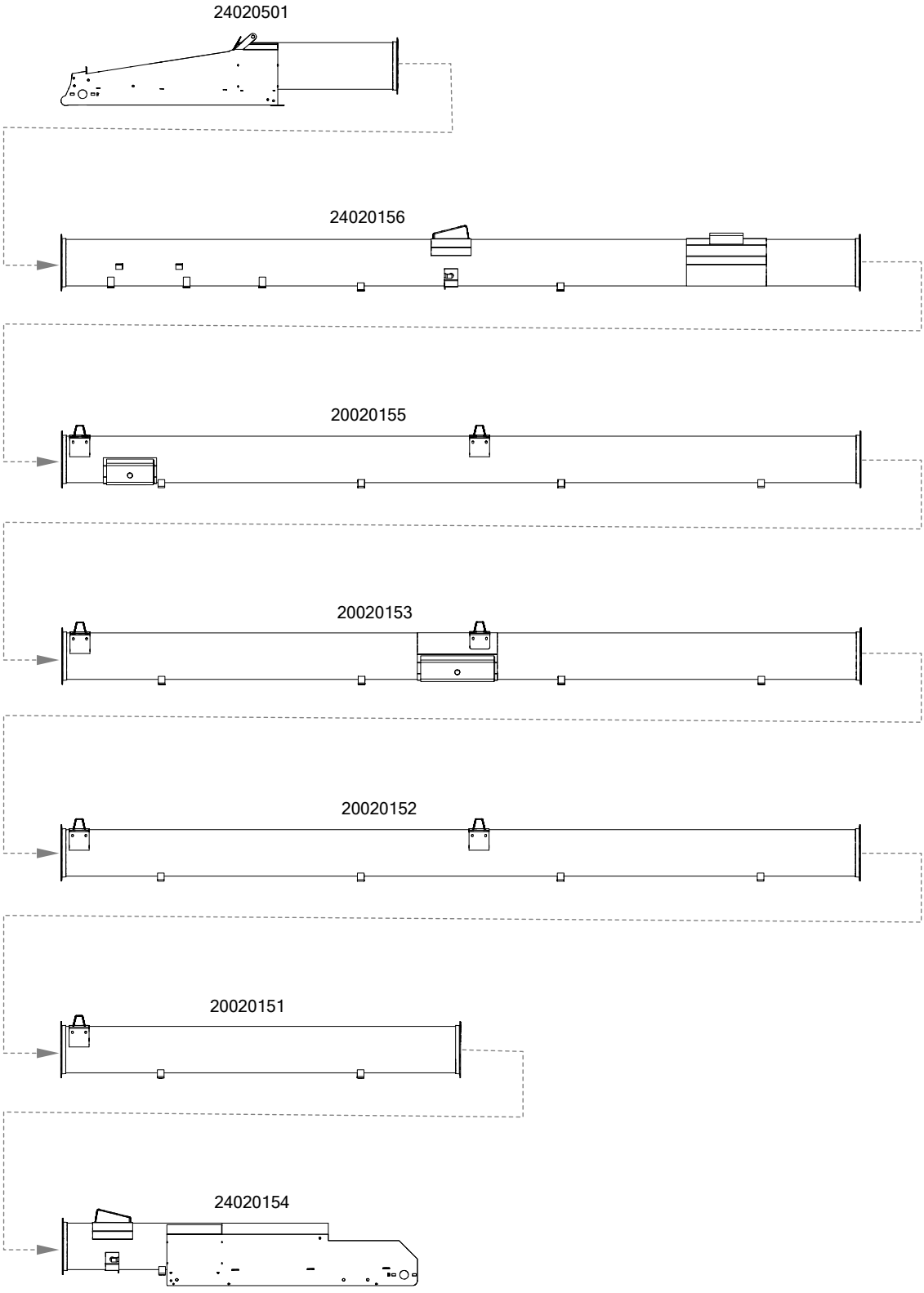


Figure 21. Conveyor Tube Layout for 24110 Model

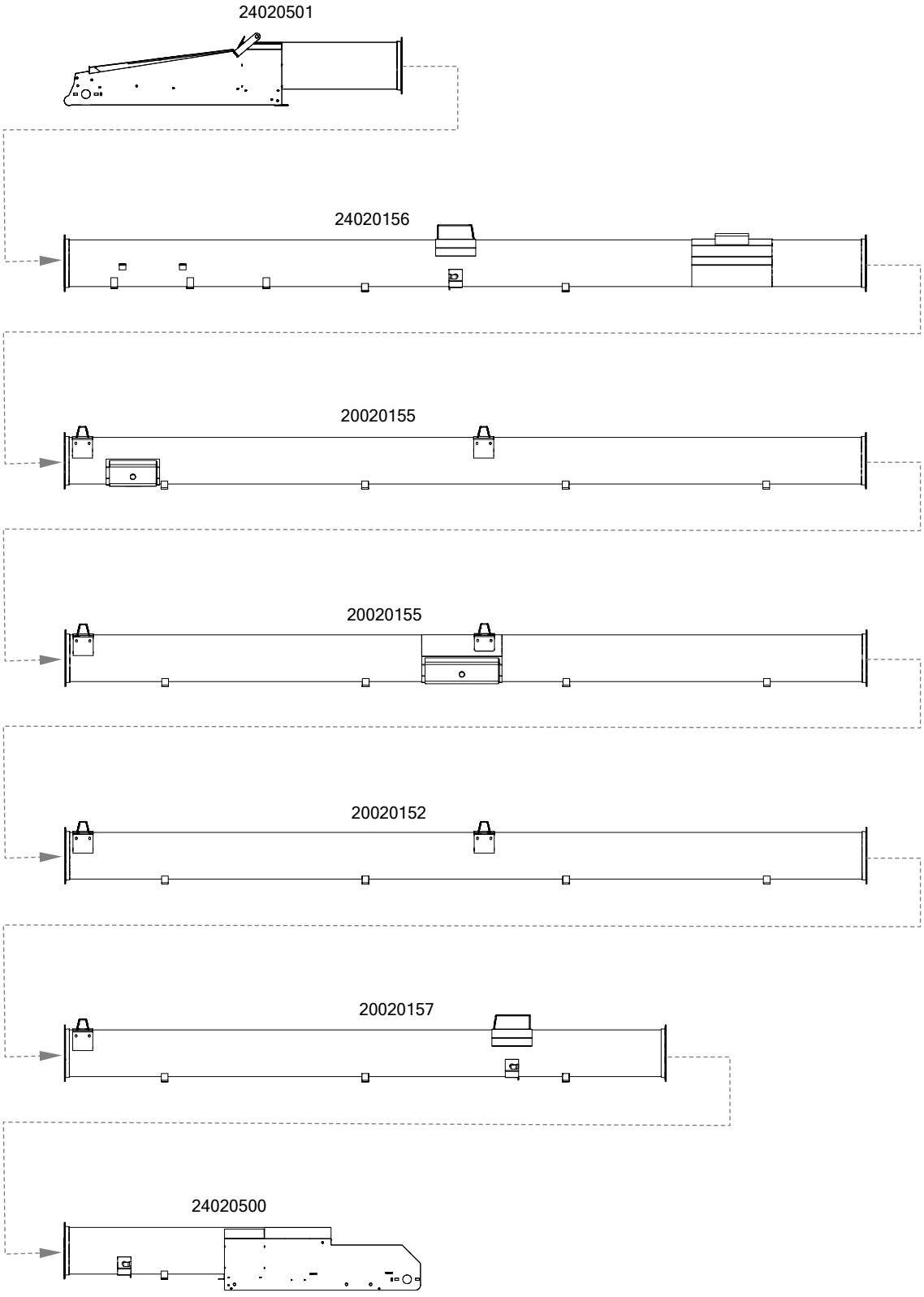
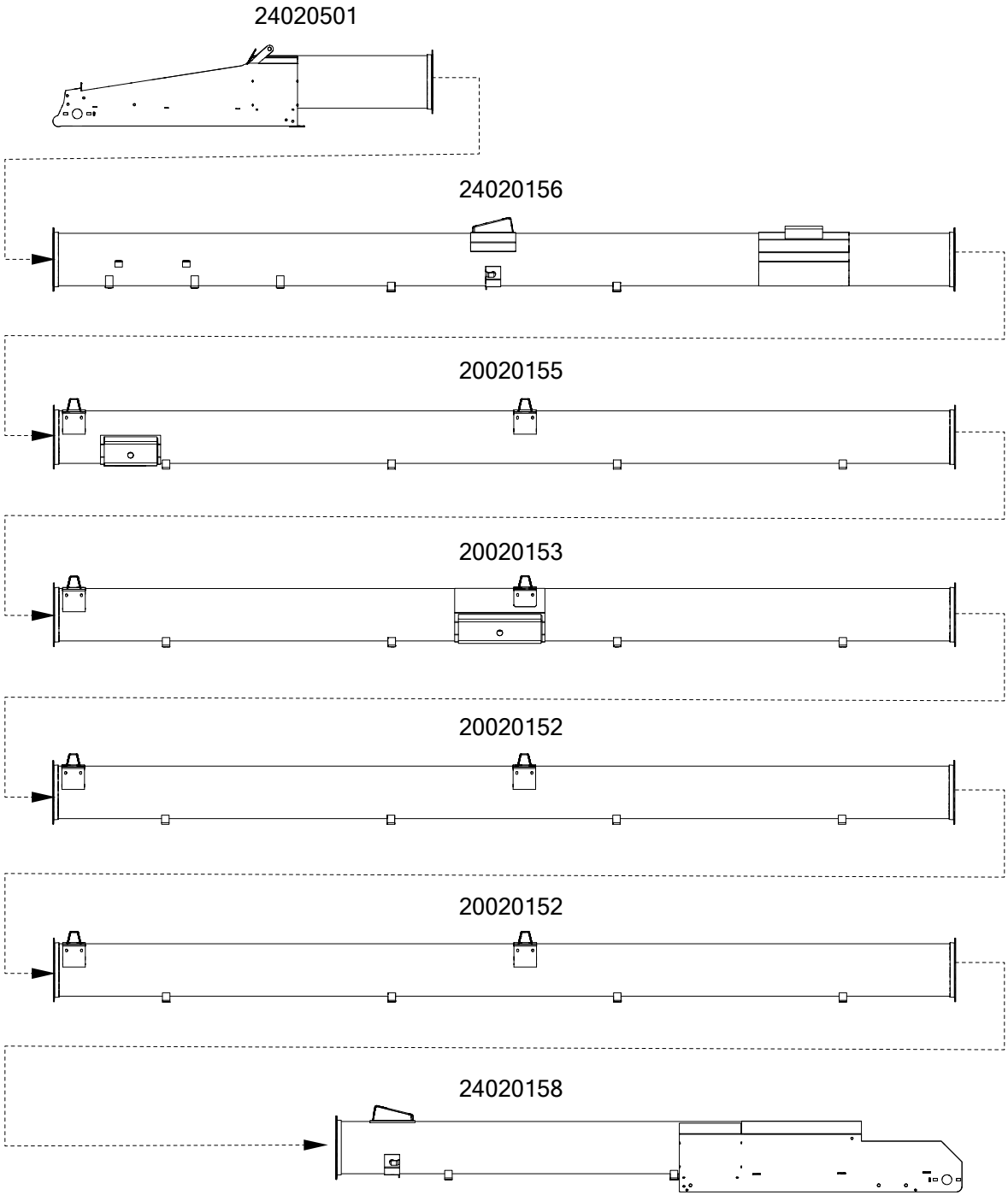


Figure 22. Conveyor Tube Layout for 24120 Model



3.9. Brand and Model Decal Placement

Important

Do not cover any existing safety or instruction decals with the brand and model decals. Also make sure the decals do not interfere with any welded-on brackets or tube flanges.

- The decals should be placed as follows (see Figure 23):
  - Brand (B): as near as possible to the conveyor spout
  - Model (M): slightly above the lower suspension bracket

  Examples of the appearance of brand and model decals are in Figure 24 and Figure 25.

Figure 23. Brand (B) and Model (M) Decal Placement

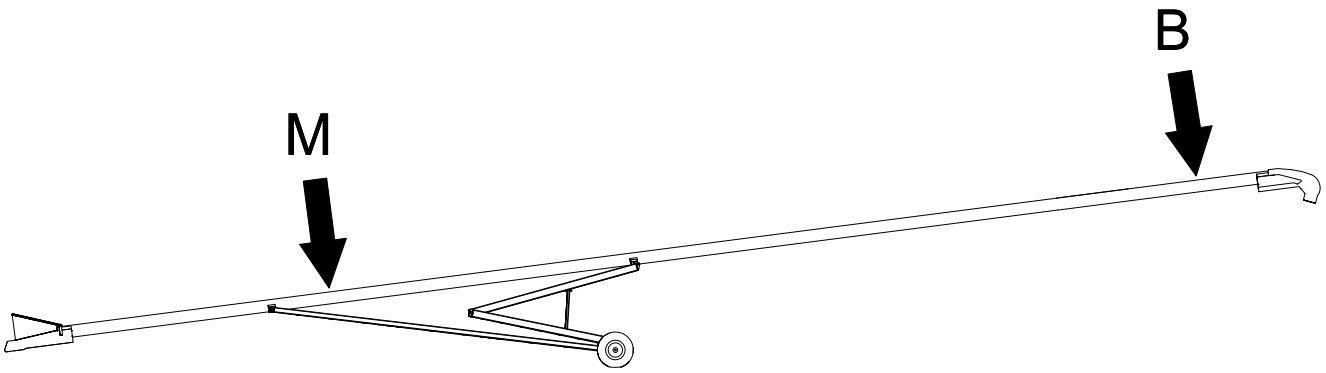


Figure 24. Brand Decal

BRANDNAME

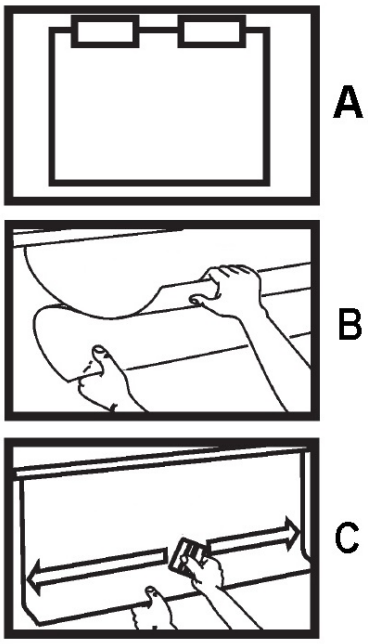
Figure 25. Model Decal (example)

FX1545

- Apply decals to both sides of conveyor tube.
- For each decal:
  1. Prepare surface by cleaning thoroughly with soap and water. Surface must be clean and free of dirt, grime, rust and oil. To clean oily surface, wipe with clean cloth and solvent cleaner or isopropyl alcohol.
  2. Position the decal by centering it vertically on the tube and apply masking tape along the top, creating a gate hinge (see Detail A in Figure 26).
  3. Remove backing paper from decal 6” from the top and use the squeegee to adhere decal to the tube (see Detail B). Start at the top center of the decal and work your way outward both left and right using overlapping strokes.
  4. As you work your way down the decal, peel back the backing paper 6” at a time. Repeat Step 3 until the entire decal has been applied to the tube (see Detail C as an example).
  5. Once the entire decal has been properly adhered to the tube, remove tape hinge from front of decal. Remove the front application tape at a sharp 180° angle.

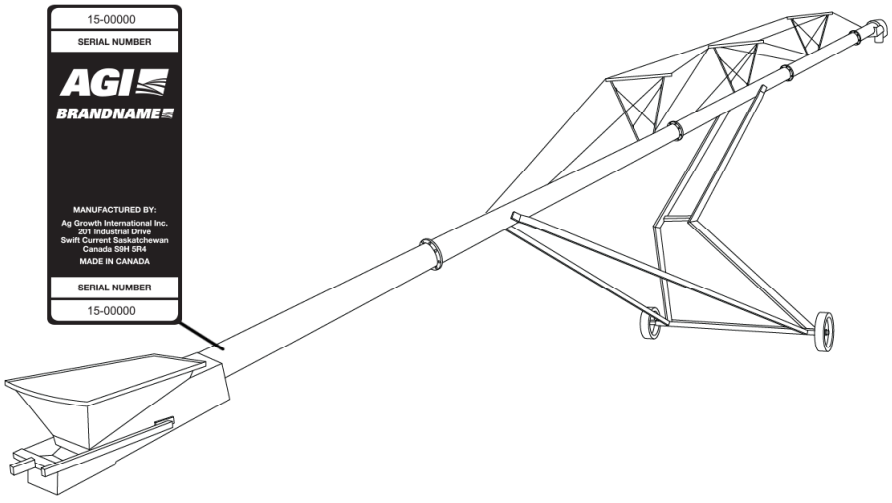
6. Inspect the entire decal for air pockets; if found, remove them by punching a tiny hole with a pin and then squeegee the surface flat.
7. Squeegee the corners and edges of the decal to ensure proper adhesion and to prevent premature peeling.

Figure 26. Decal Placement Technique



3.10. Serial Number Decal Placement

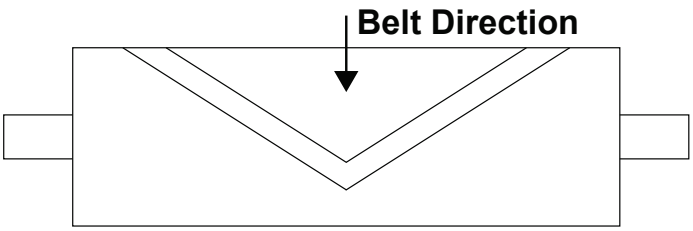
Place the serial number decal on the conveyor as shown below.



3.11. Install the Hopper Roller and Hex Roller

1. Insert the roller (1) into the front end of the hopper (3) (see Figure 28), with the roller lagging pointing in the direction of belt travel (see Figure 27).

Figure 27. Roller with Lagging Pointing in Belt Travel Direction



2. Slide a 1-15/16" bearing (4) on each end of the roller and secure to the hopper using 5/8" x 2" carriage bolts (7), 0.656" square flat washers (6), and 5/8" locknuts (5).

   Important

   If the square shoulder of the carriage bolt still sticks through the spout side plates, you must either add a 2nd square washer or tighten up the nut slowly as to not crack the bearing body.

3. Center the roller (1) in the hopper.
4. Make sure the roller (1) is positioned straight by measuring from each end of the roller to each end of the hopper weldment sidewall (it should be the same distance on both sides).
5. For each bearing, use a hammer and punch to rotate the lock collar so that it seats onto the inner race of the bearing. Tighten the lock collar securely to the shaft with its hex set screw.
6. Attach a 7/16" x 2–1/2" tap bolt (2) on each hopper bracket and secure with 7/16" hex nut (8).

   Note

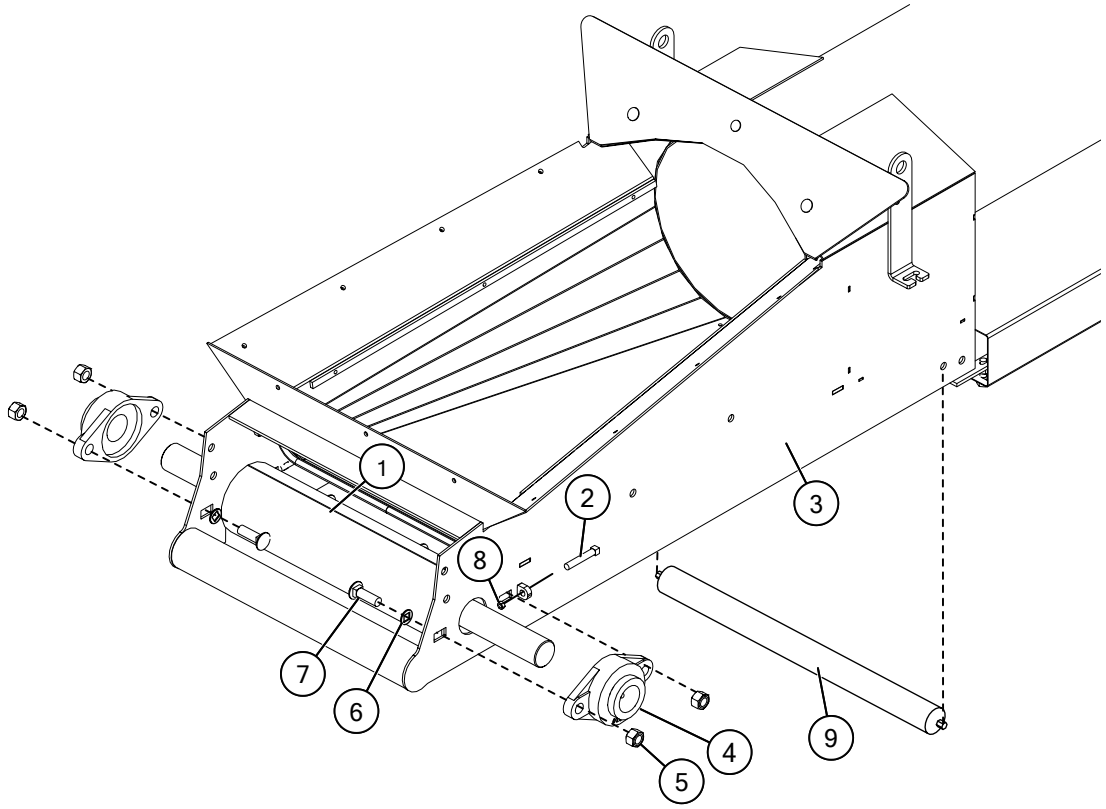
   The tap bolt will be used to set the alignment of the belt, after the belt is installed.

7. Insert the hex roller (9).

Table 5. Hopper Components

Item	Description	Quantity
1	Lagged Roller	1
2	Square Head Tap Bolt 7/16" x 2–1/2"	2
3	4' Hopper	1
4	Bearing Flange Unit 1-15/16" (FL210)	2
5	Nylon Locknut 5/8"	4
6	Flat Washer 0.656 Square -1.25-0.060	4
7	Carriage Bolt 5/8" x 2"	4
8	Nut Hex 7/16"	4
9	Hex Roller	1

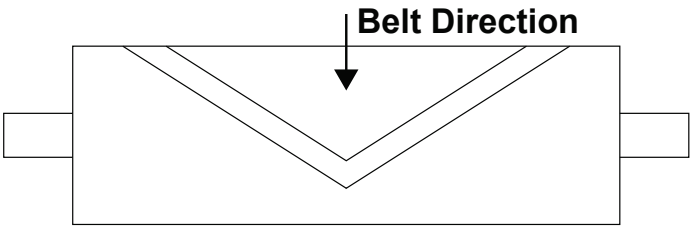
Figure 28. Installing Hopper Roller and Hex Roller



3.12. Install the Spout Roller

1. Insert the roller (2) into the spout (1) (see Figure 30), with the roller lagging pointing in the direction of belt travel (see Figure 29).

Figure 29. Roller with Lagging Pointing in Belt Travel Direction



2. Slide a bearing (5) on each end of the roller and secure to the spout using 5/8" x 2" carriage bolts (3), square flat washers (4), and 5/8" locknuts (6).

   Important

   If the square shoulder of the carriage bolt still sticks through the spout side plates, you must either add a 2nd square washer or tighten up the nut slowly as to not crack the bearing body.

3. Center the roller (2) in the spout.

4. Make sure the roller (2) is positioned straight by measuring the distance (d) from the end of the roller to the end of the spout weldment sidewall on both sides (it should be the same distance).
5. For each bearing, use a hammer and punch to rotate the lock collar so that it seats onto the inner race of the bearing. Tighten the lock collar securely to the shaft with its hex set screw.
6. Insert the 7/16" x 2-1/2" square-head set screws (7) in the spout.

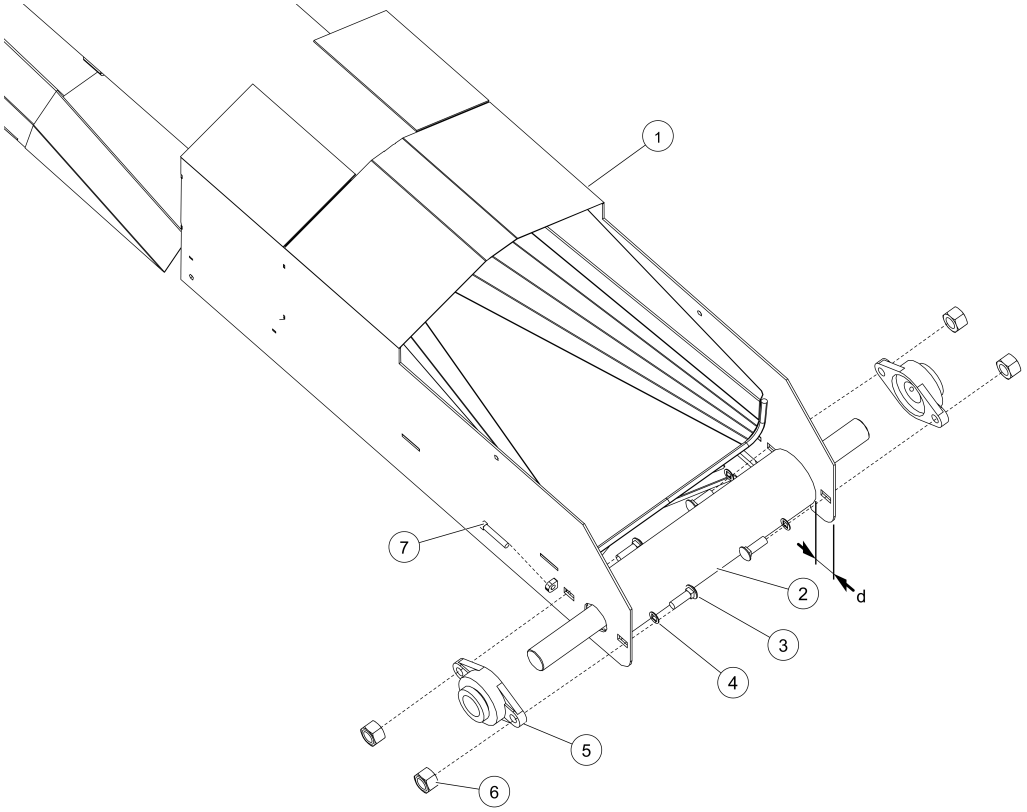
Note

The square-head set screws are used to set the alignment of the belt, after the belt is installed.

Table 6. Spout Roller Components

Item	Description	Quantity
1	Spout	1
2	Lagged Spout Roller	1
3	5/8" x 2" Carriage Bolt (plated)	4
4	Square Flat Washer (0.656" -1.25"-0.060")	4
5	1-15/16" Bearing Flange Unit (SAFL210–31)	2
6	5/8" Nylon Locknut	4
7	7/16" x 2-1/2" Square-Head Set Screw	2

Figure 30. Installing Spout Roller



3.13. Install the Hitch

1. Align the hitch with the pre-drilled holes along the hopper side weldment (see Figure 31).
2. Fasten the hitch (1) to the hopper using 1/2" x 1-1/2" bolts (2) and 1/2" nuts (3).
3. Assemble the tongue as shown in Figure 32.

Table 7. Hitch and Tongue Components

Item	Description
1	Hitch
2	1/2" x 1-1/2" Hex Bolt
3	1/2" Nylon Locknut
4	Pitstop Tongue
5	3/4" x 3–1/2" Hitch Pin
6	3/16" x 3–1/4" Hairpin
7	Non-Adjustable Tongue 20
8	Clevis 20
9	1" x 5" Hex Bolt
10	1" Nylon Locknut
11	1" x 3–1/2" Hitch Pin

Figure 31. Installing the Hitch

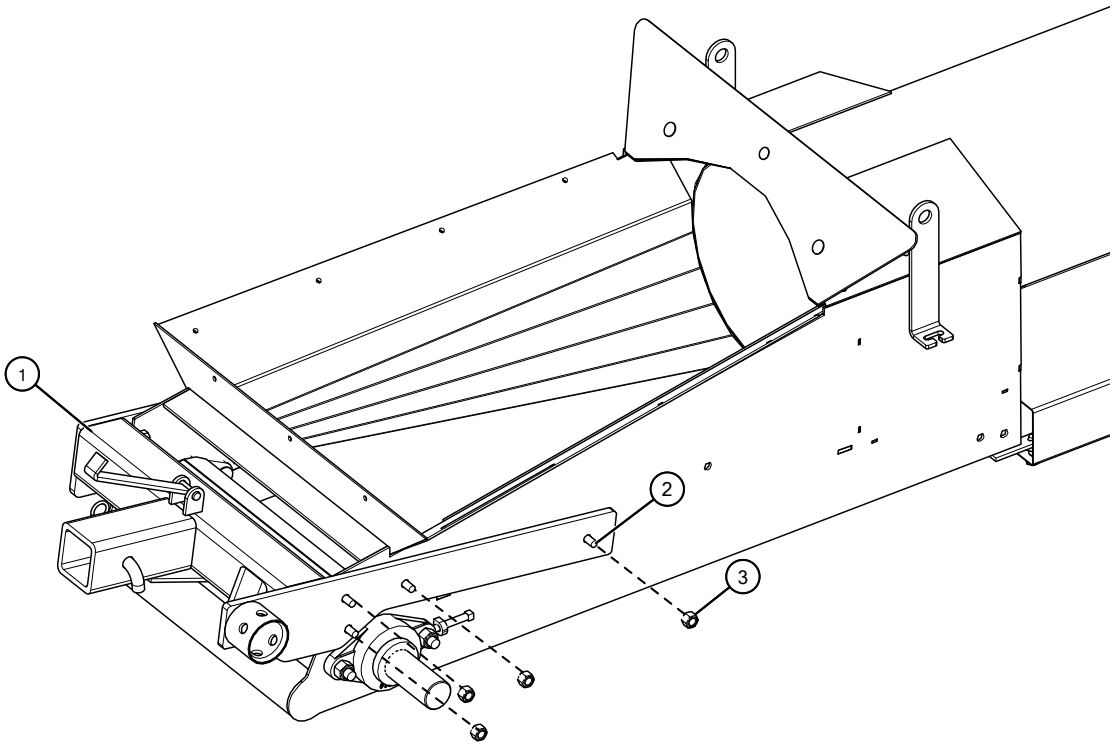
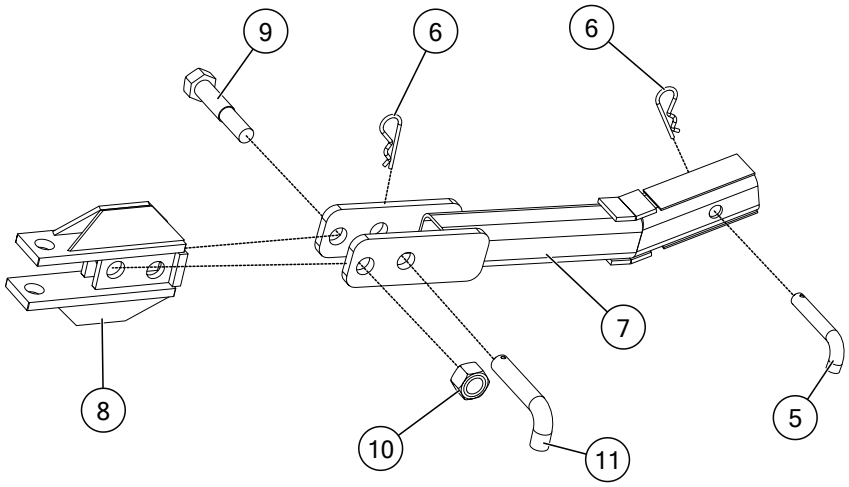


Figure 32. Hitch Tongue



3.14. Attach the S-Drive

Important

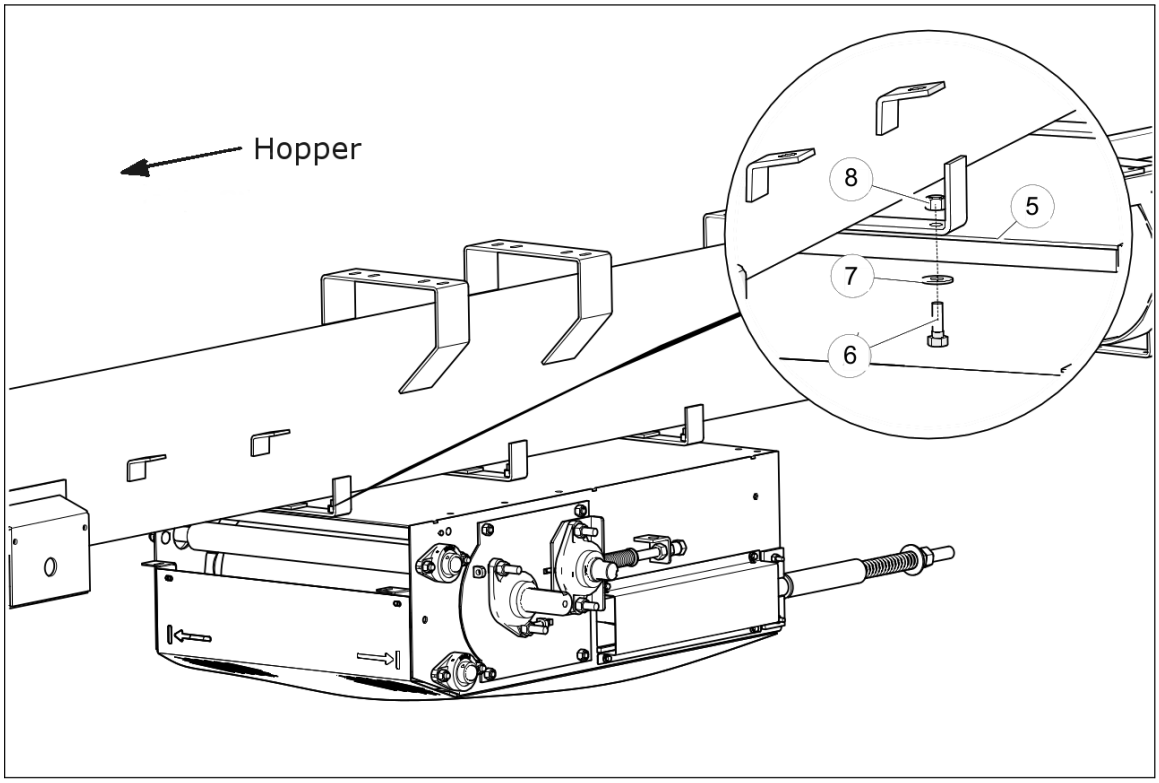
If your conveyor is equipped with a Front PTO Drive, perform the steps in Install the Swing Gearbox onto the S-Drive on page 123 before attaching the s-drive.

1. Attach the s-drive (5) to the brackets with 1/2" x 1–1/2" bolts (6), 1/2" flat washers (7), and 1/2" locknuts (8) (see Figure 33).

Table 8. Components to Install S-Drive

Item	Description	Quantity
5	S-Drive	1
6	1/2" x 1–1/2" Bolt Hex	6
7	1/2" Flat Washer USS	6
8	1/2" Nut Nylock	6

Figure 33. Attaching the S-Drive



3.15. Install the Cable Bridge (65' — 95' Models)

1. Locate the proper cable bridge brackets welded onto the tube for your model (see Figure 34).
2. Attach cable bridge (1) to each cable bridge bracket with 7/16" x 1–1/2" bolts (2) and 7/16" nuts (3) (see Figure 35).

   Important

   Some models may have extra cable bridge brackets welded onto the tube. Make sure you do not attach a cable bridge on the wrong bracket.

3. Install cable clamps (4):

   a. **For 65' — 75' Models:** Loosely install four cable clamps (4) on the cable bridge.

   b. **For 85' Models:** Loosely install two cable clamps (4) on the cable bridge nearest to the hopper, and four cable clamps (4) on the cable bridge nearest to the spout.

   c. **For 95' Models:** Loosely install two cable clamps (4) on the cable bridge nearest to the hopper, and four cable clamps (4) on the center cable bridge and on the cable bridge nearest to the spout.

   Important

   Before installing cable clamps, replace the existing cable clamp hex nuts with 3/8" nylock nuts (5).

Table 9. Cable Bridge Components

Item	Description
1	High Cable Bridge
2	7/16" x 1-1/2" Bolt GR8
3	7/16" Locknut
4	3/8" Cable Clamp
5	3/8" Locknut

Figure 34. Cable Bridge Locations (65' – 95' Models)

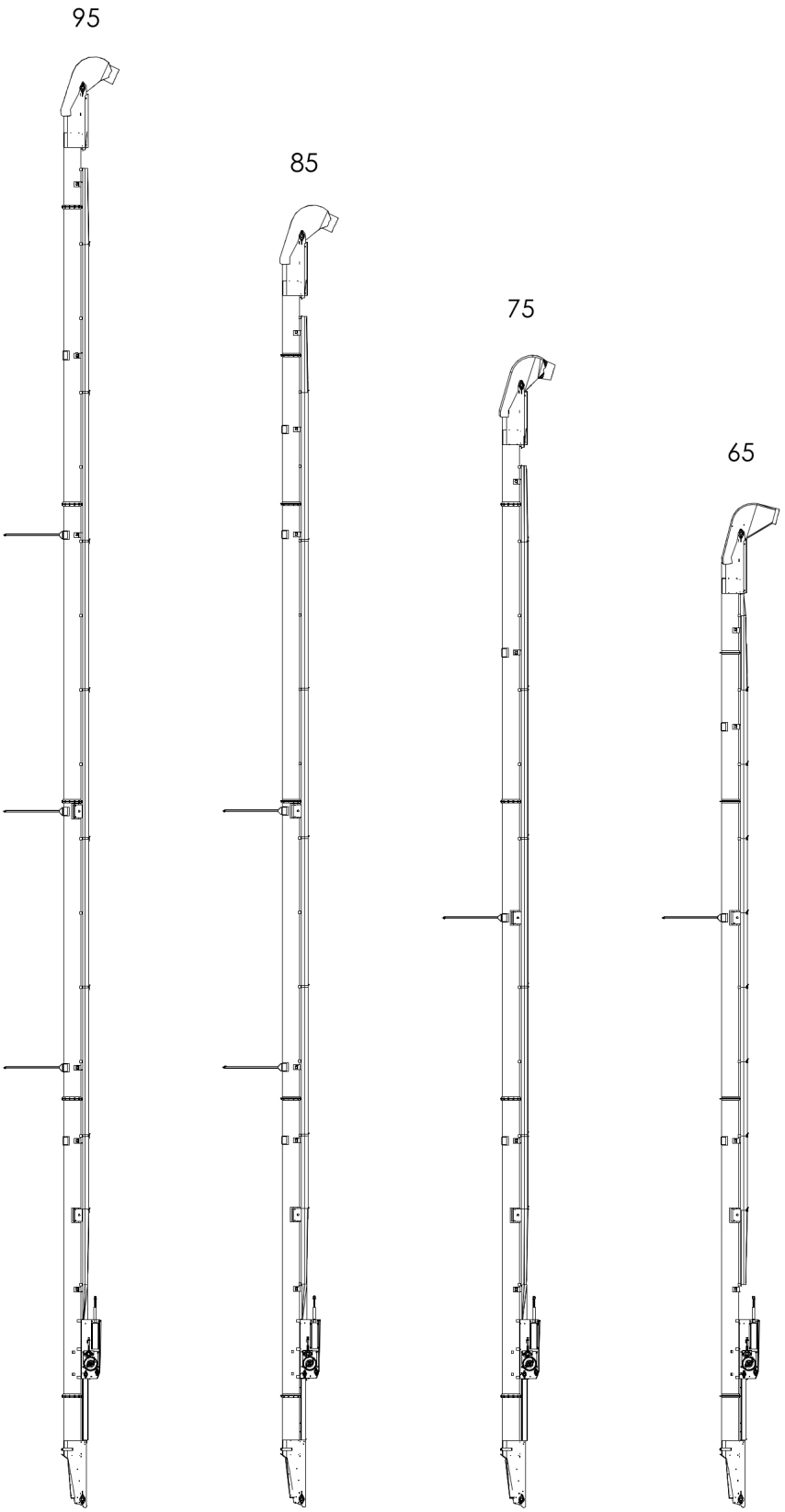
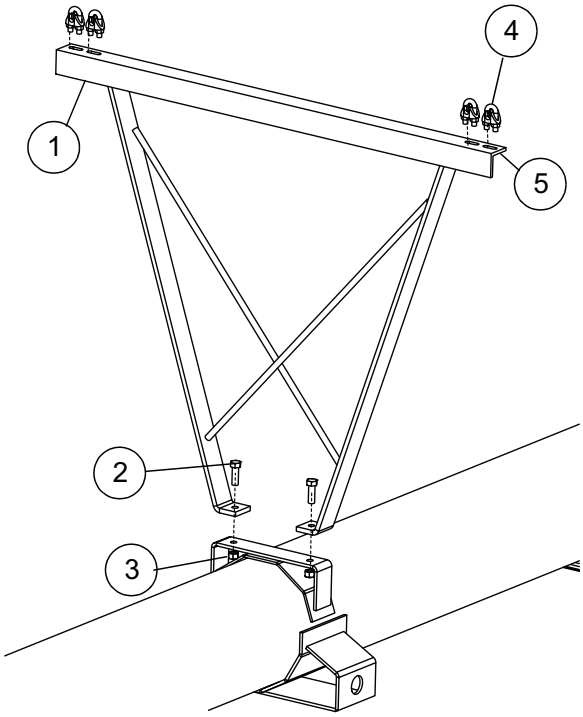


Figure 35. Attaching Cable Bridge and Cable Clamps



3.16. Install the Truss Cables (65' Models)

1. Thread the truss cable through the cable return and cable clamp located under the tube at the spout end.

   Important

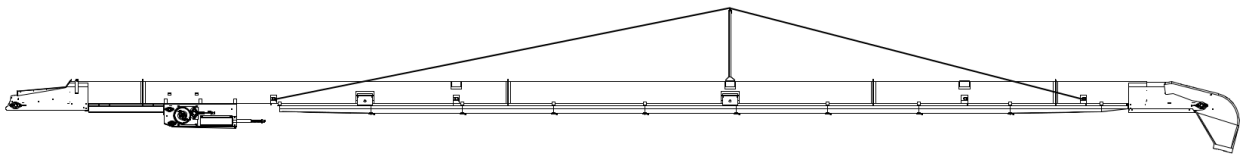
   Some models may have extra cable returns welded onto the tube. Make sure you do not use the wrong cable return.

2. Pull the cable through the cable return until there is an equal amount of cable on either side.
3. Working towards the hopper end, thread both ends of the cable through the cable clamps of the center cable bridge all the way to the anchor bracket.
4. Verify there is an equal amount of cable on either side of the conveyor.

Table 10. Truss Cable (65' Models)

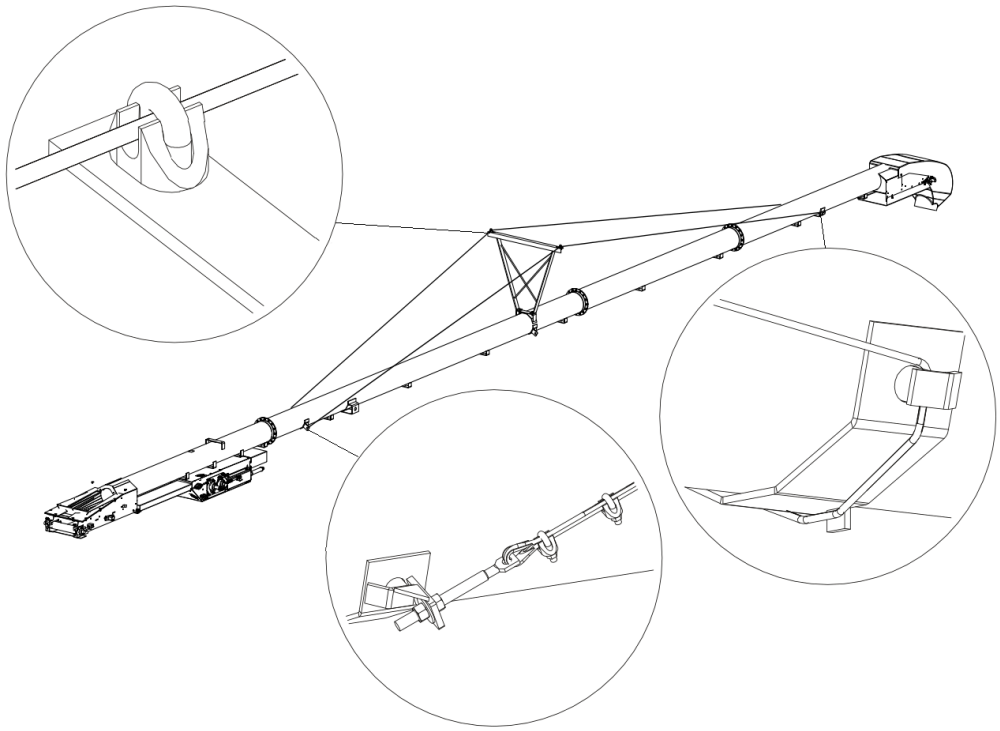
Item	Description	Length
2	3/8" Cable — 65' Conveyor	100' (30.48 m)

Figure 36. Truss Cable Layouts (65' Models)



65

Figure 37. Threading the Truss Cable (65' Models)

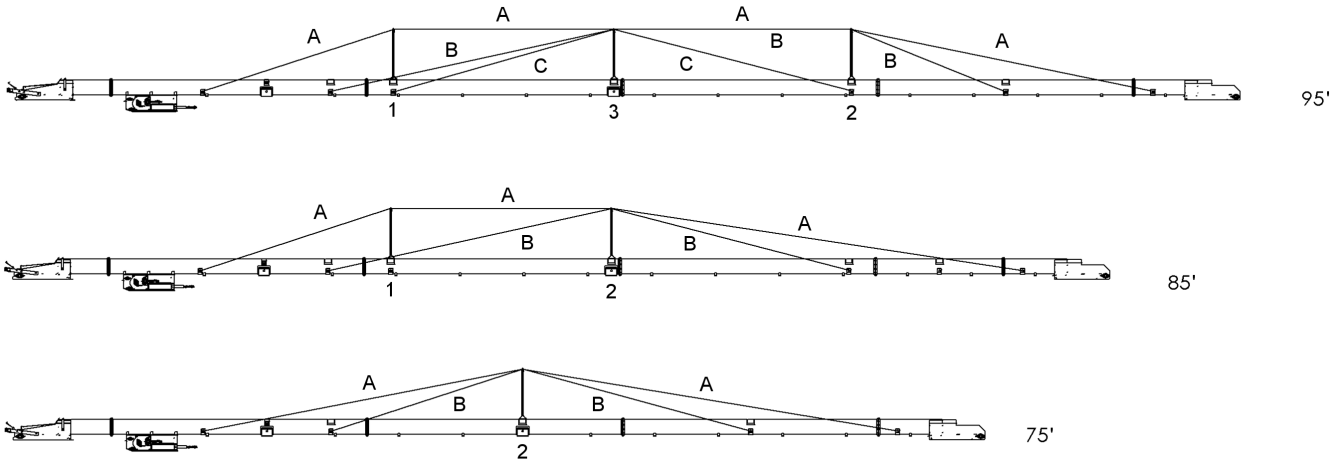


3.17. Install the Truss Cables (75' – 95' Models)

Table 11. Truss Cables (75' — 95' Models)

Item	Description	Length		
		A	B	C
1	3/8" Cable — 75' Conveyor	116' (41.45 m)	78' (20.7 m)	—
2	3/8" Cable — 85' Conveyor	136' (41.45 m)	93' (20.7 m)	—
3	3/8" Cable — 95' Conveyor	162' (49.38 m)	112' (29.9 m)	78' (20.7 m)

Figure 38. Truss Cable Layouts (75' — 95' Models)



Note

The number underneath the cable bridge represents the number of cables that intersect that particular cable bridge.

Thread the First Cable (A)

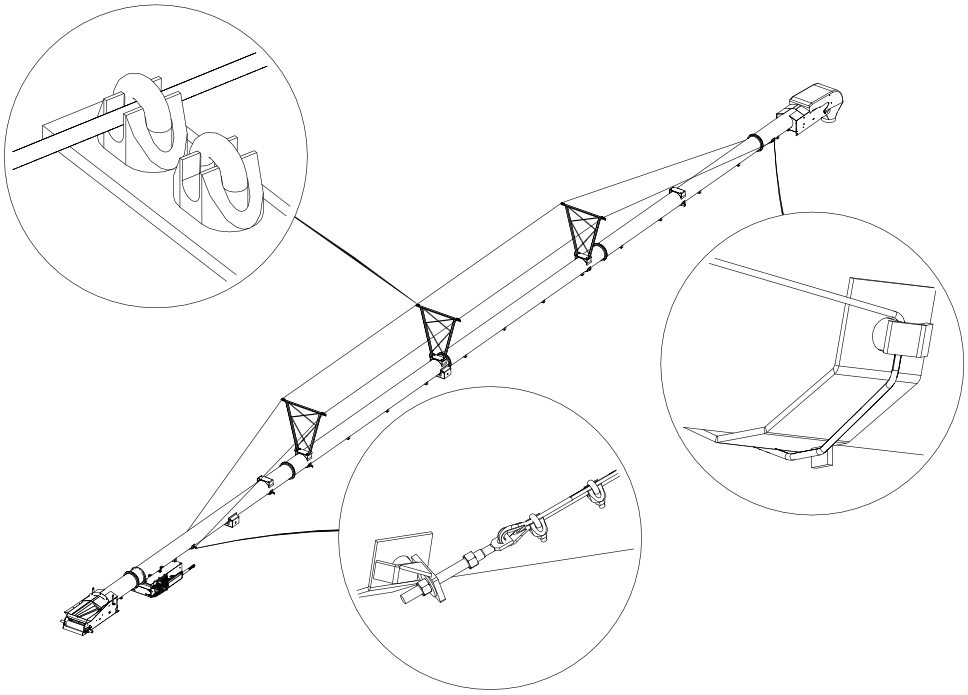
1. Thread the first cable (A) through the cable return located under the tube at the spout end.

   Important

   Some models may have extra cable returns welded onto the tube. Make sure you do not use the wrong cable return.

2. Pull the cable through the cable return until there is an equal amount of cable on either side.
3. Working towards the hopper end, thread both ends of the cable through the outermost cable clamps of the cable bridges all the way to the anchor bracket.
4. Verify there is an equal amount of cable on either side of the conveyor.

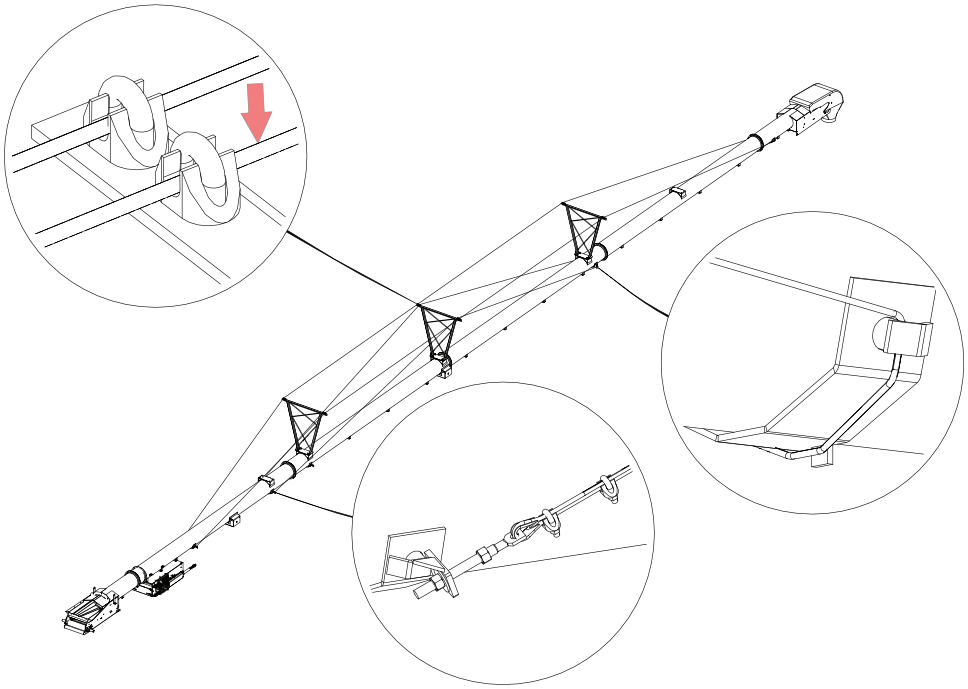
Figure 39. Threading the First Cable (A)



Thread the Second Cable (B)

1. Thread the second cable (B) through the cable return located under cable bridge closest to the spout.
2. Pull the cable through the cable return until there is an equal amount of cable on either side.
3. Working towards the hopper end, thread both ends of the cable through the innermost cable clamps of the cable bridge(s) all the way to the anchor bracket.
4. Verify there is an equal amount of cable on either side of the conveyor.

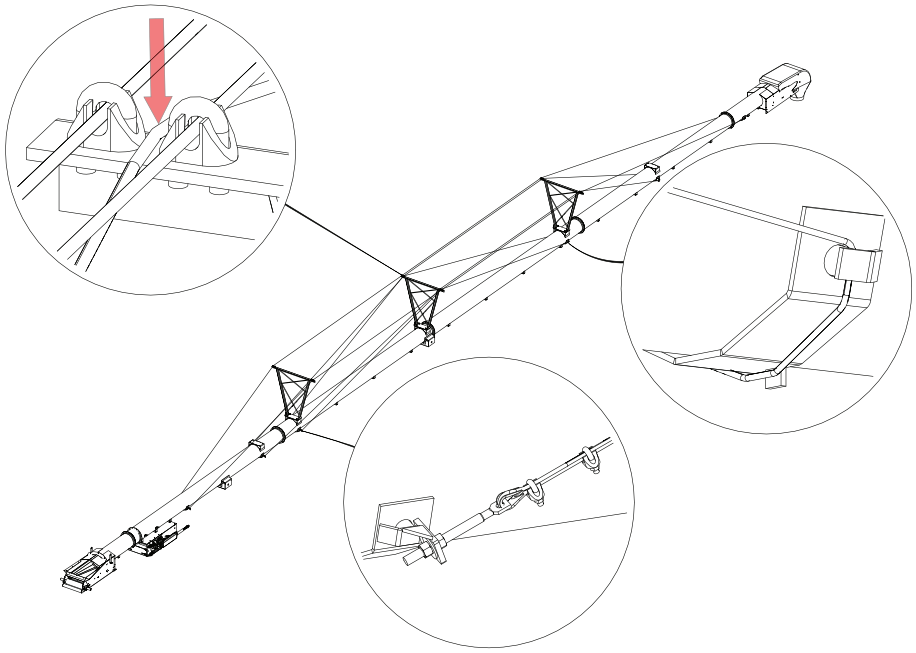
Figure 40. Threading the Second Cable (B)



Thread the Third Cable (C) (for 95' Models)

1. Thread the third cable (C) through the cable return located under cable bridge furthest from the spout end.
2. Pull the cable through the cable return until there is an equal amount of cable on either side.
3. Working towards the hopper end, thread both ends of the cable between the two cable clamps of the center cable bridge all the way to the anchor bracket.
4. Verify there is an equal amount of cable on either side of the conveyor.

Figure 41. Threading the Third Cable (C)



3.18. Secure the Truss Cables to the Anchor Brackets (65' – 95' Models)

Perform the following steps for each cable end.

1. Slide a 3/8" thimble (1) through a 5/6" x 6" eyebolt (2).
2. Slide two 3/8" cable clamps down one end of the cable.
3. Slide the end of cable over the thimble and through the eyebolt.
4. Thread the end of the cable back through both cable clamps.
5. Tighten the first cable clamp next to the thimble.
6. Tighten the second cable clamp 12" away from the first.
7. Attach the eyebolt to the anchor bracket using 5/8" hex nuts and a flat washer.

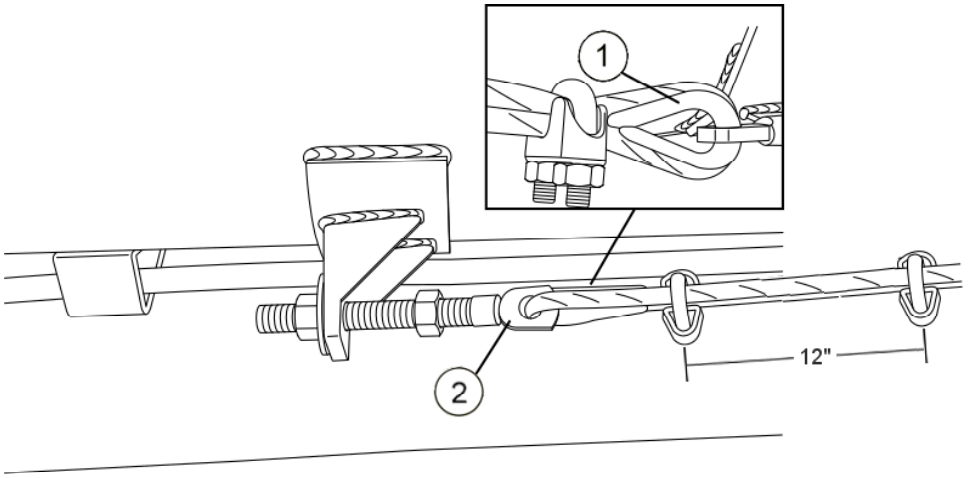
   Note

   Leave several inches between the two nuts to allow for proper tightening later.
8. Trim excess cable and apply tape to the loose end.

   Note

   Ensure the cable is pulled tight before securing the second end of the cable.

Figure 42. Securing the Cable to the Anchor Bracket.



Item	Description
1	3/8" Thimble
2	5/6" x 6" Eyebolt

3.19. Tighten the Truss Cables (65' – 95' Models)

Important

Ensure that the hex nut closest to the thimble (1) is backed off to allow for adjustment (see Figure 43).

1. Tighten both sides of the first truss cable (A) evenly using the hex nut furthest from the thimble until it is snug.

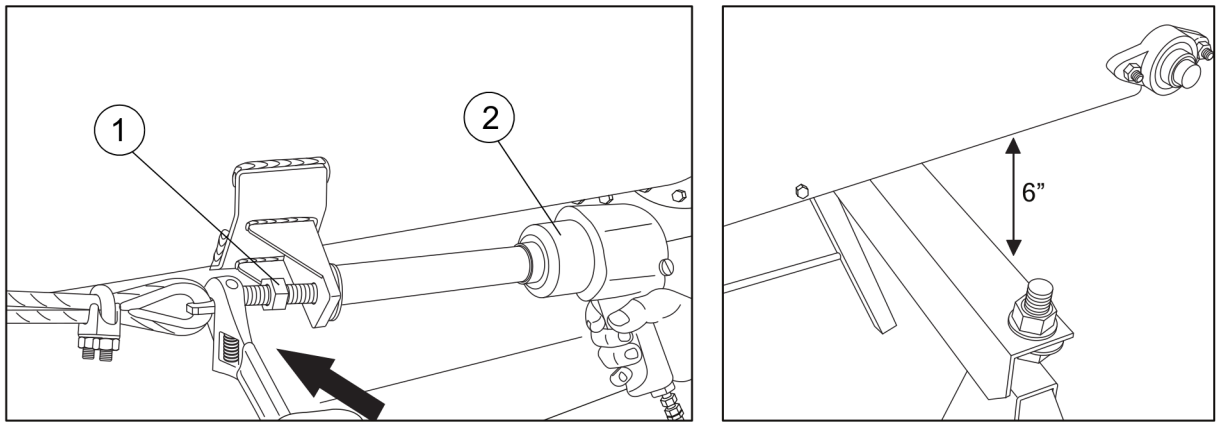
Note

For 75’ to 95’ Models: See Section 3.17. – Install the Truss Cables (75' – 95' Models) on page 57 for the letter identifying each cable.

Note

The first truss cable (A) is properly tightened when the spout end lifts 6" above the stand.

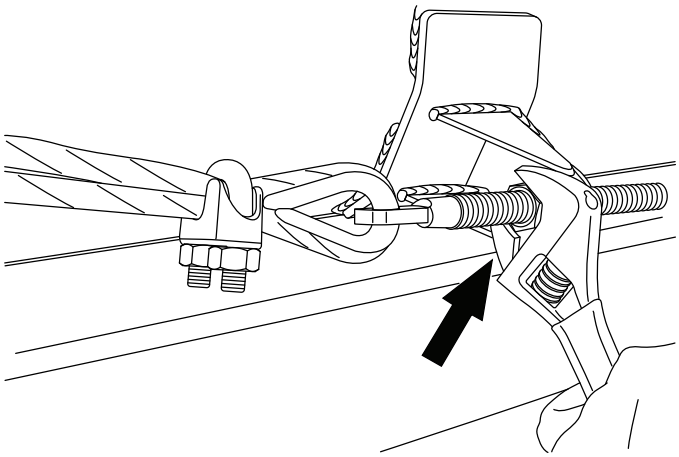
Figure 43. Tightening the Truss Cables and the Position of the Spout End



1	5/8" Hex Nut
2	Impact tool

2. Tighten both sides of the second truss cable (B) evenly using an impact tool (2) until it is snug.
3. Tighten both sides of the third truss cable (C) evenly using an impact tool (2) until it is snug.
4. Stand at the hopper end and visually inspect the tube for side-to-side straightness.
5. Adjust the cable tension to remove any side-to-side bowing.
6. Tighten the hex nut to the lock the eyebolt (see Figure 44).

Figure 44. Locking the Eyebolt



7. Tighten all of the 3/8" cable clamps on the cable bridges.

3.20. Install the Truss Towers and Truss Tubes (105' — 120' Models)

Note

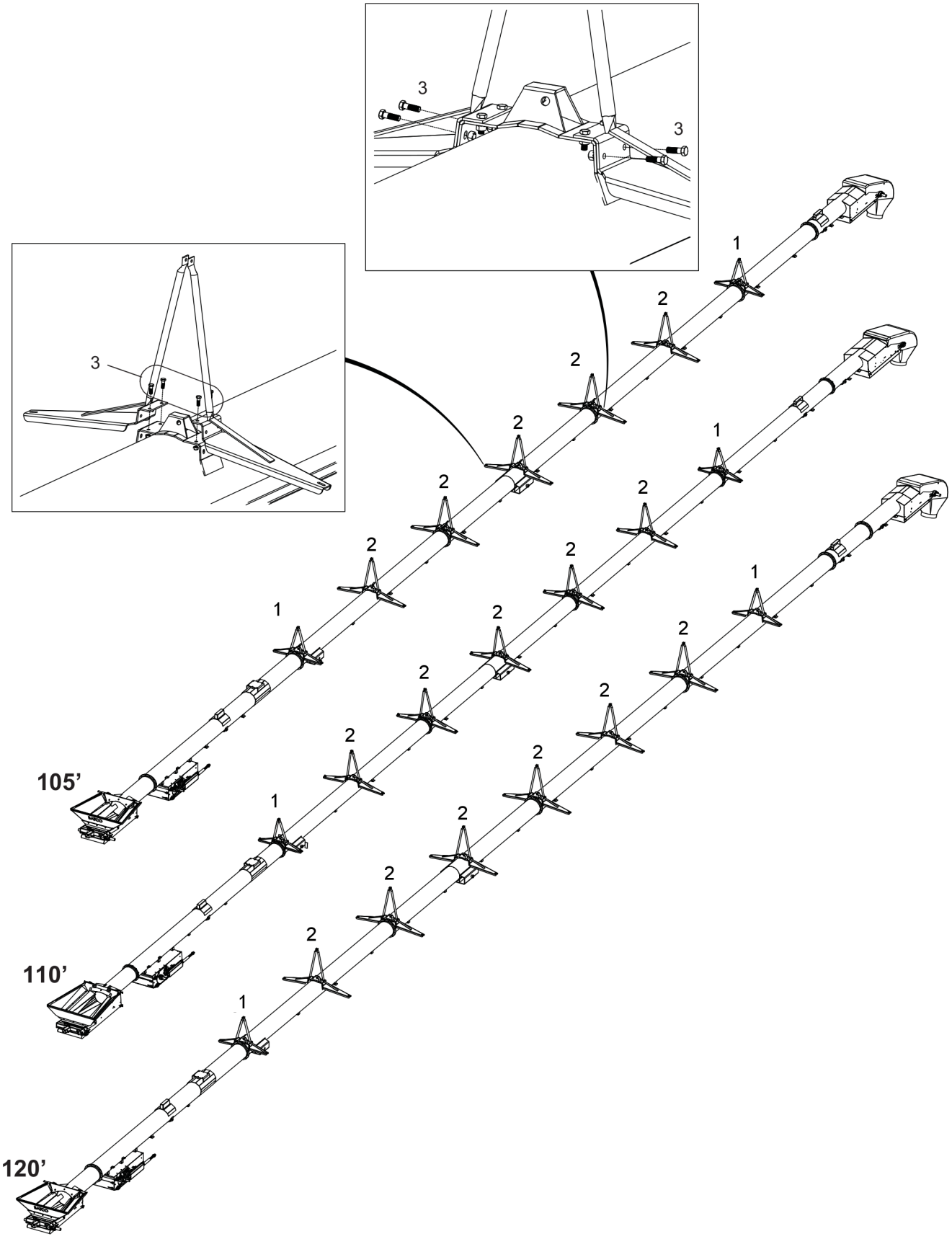
Due to rigidity of the tubular trussing, do not put an upward bow in the conveyor. Assemble trussing with main tube straight/level and well-supported over its length. When assembling the truss system, DO NOT tighten any bolts until all components are in place.

1. Attach pairs of low truss towers (1) and high truss towers (2) to the tube with 1/2" x 1-1/2" bolts and 1/2" locknuts (3) (see Figure 45).

Table 12. Truss Towers Components

Item	Description
1	Low Truss Tower
2	High Truss Tower
3	1/2" x 1-1/2" Hex Bolt Gr8
	1/2" Nylock Nut

Figure 45. Truss Tower Brackets



2. Starting at one end of the conveyor, attach a pair of five-bolt end joiner plates (8) to the low truss tower pair (see Figure 46).
3. Thread a 1" hex nut (5) as far as possible onto the threaded rod end of a truss adjust tube (7).
4. Insert the threaded rod end of the truss adjust tube (7) into the truss anchor bracket (4), and bolt the opposite end to the five-bolt end joiner plates (8).
5. Thread a 1" locknut (6) a short distance onto the threaded rod end of the truss adjust tube (7).
6. According to the diagram for your specific model, work from one end of the tube toward the opposite end:
   a. Install seven-bolt joiner plates (11) between truss tower pairs.

      Note

      When installing the seven-bolt joiner plates (11), ensure that the three 1/2" bolt holes are closest to the hopper, and the 3/4" bolt hole is closest to the discharge spout.

   b. Install truss tubes (10) between seven-bolt joiner plates (11).
   c. Install long crossbraces (13).
   d. When you reach the opposite end of the tube, install a pair of five-bolt end joiner plates (8) on the other low truss tower pair and install the other truss adjust tube (7).
7. Working in a pattern so you do not forget any, tighten all the truss towers, then the truss tubes, and then the crossbraces, but do not tighten the 1" nuts on the truss adjust tubes.
8. Install pairs of crossbrace clamps (15).
9. Adjust the 1" locknuts (6) on the truss adjust tubes until the truss tubes (10) are tight and the tube is straight (i.e. appears flat and well aligned, and does not have any noticeable bow).
10. Rotate the loose 1" hex nuts (5) on the truss adjust tubes toward the 1" locknut until they are locked tightly against their respective truss anchor brackets (4).

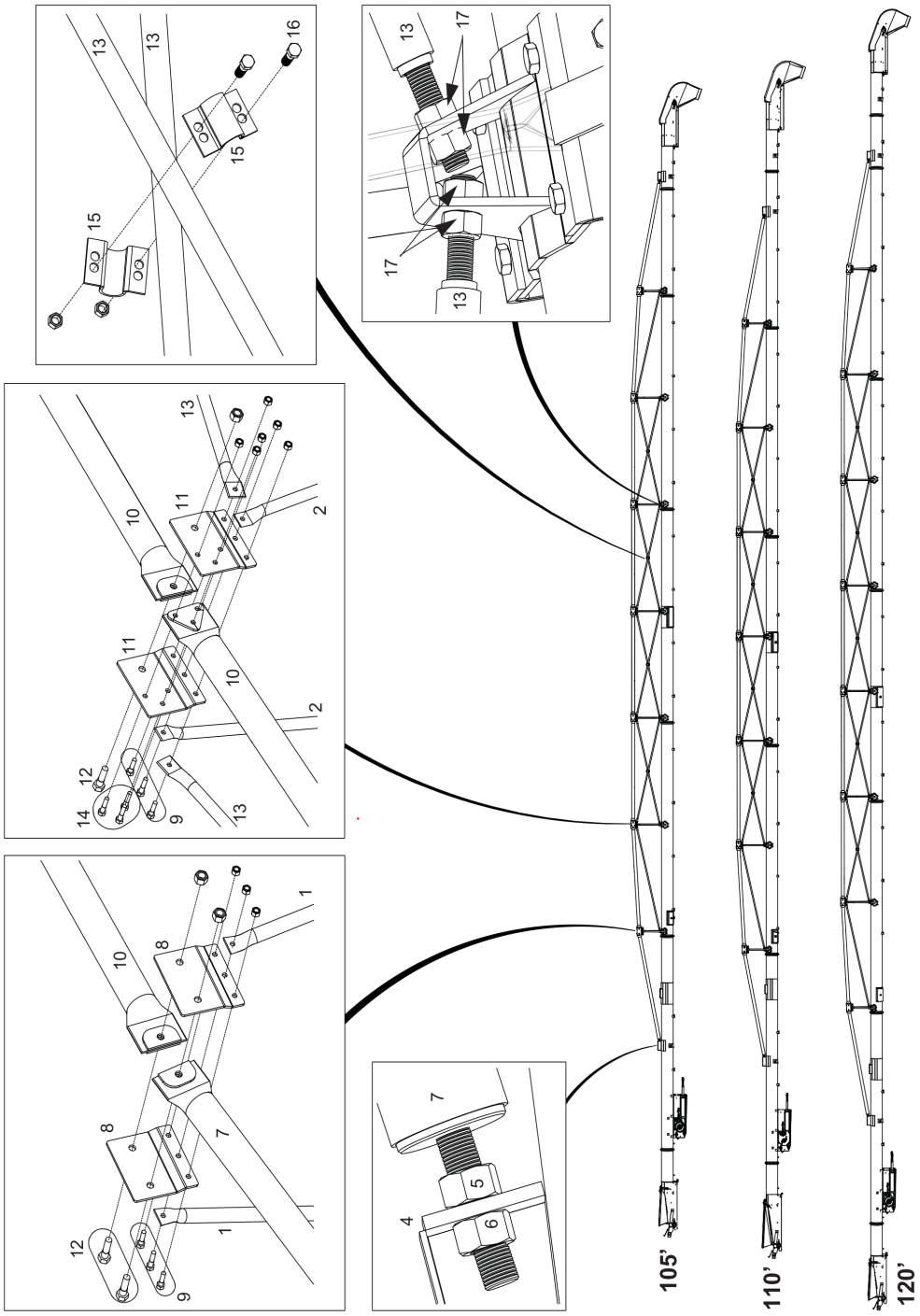
Table 13. Truss Tubes Components

Item	Description
4	Truss Anchor Brackets
5	1" Hex Nut
6	1" Nylock Nut
7	Long Truss Adjust Tube
8	Five-Bolt End Joiner Plate
9	1/2" x 1-3/4" Hex Bolt Gr8
	1/2" Nylock Nut
10	Truss Tube
11	Seven-Bolt Joiner Plate (Left)
	Seven-Bolt Joiner Plate (Right)
12	3/4" x 2-1/2" Hex Bolt Gr8
	3/4" Nylock Nut
13	Truss Crossbrace, Long
14	1/2" x 1-3/4" Hex Bolt Gr8
	1/2" Nylock Nut
15	Crossbrace clamps
16	7/16" x 1-1/4" Hex Bolt Gr8

Table 13 Truss Tubes Components (continued)

Item	Description
	7/16" Nylock Nut
17	3/4" Hex Nut

Figure 46. Truss Tubes



3.21. Install the Truss Cables (105' — 120' Models)

1. Thread the lower cable (2) through the lower cable return (4) (see Figure 47).
2. Pull the cable through the cable return until there is an equal amount of cable on either side.
3. Thread the upper cable (3) through the upper cable return (5).
4. Pull the cable through the cable return until there is an equal amount of cable on either side.
5. Pull the ends of both cables over the truss cable supports (6), and secure the cables to each truss cable support with a cable clamp (1), ensuring that the cable clamps are loose enough that the cables remain free to move.
6. Tension cables using a ratchet belt and vise grips.

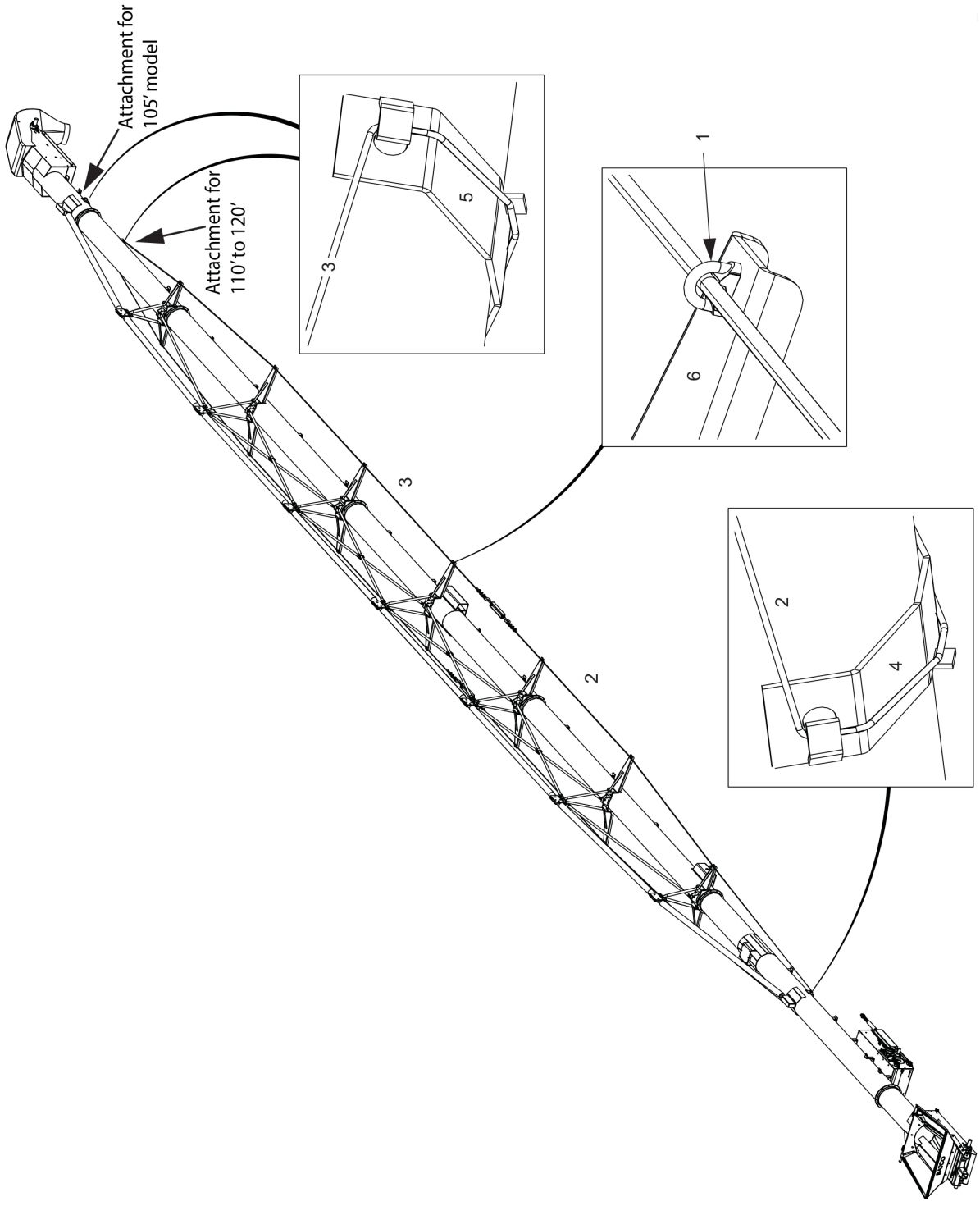
   Note

   The sub-section called “Connect the Conveyor Belt” in Section 3.25. – Install the Belt on page 76 provides the basic concept for tensioning both cables and belts.

Table 14. Truss Cables (105' — 120' Models)

Item	Description
1	1/2" Cable Clamp
2	1/2" x 76' Cable
3	1/2" x 96' Cable — For 105' and 110' Models
	1/2" x 120' Cable — For 120' Model
4	Lower Cable Return
5	Upper Cable Return
6	Truss Cable Support

Figure 47. Truss Cables (105' — 120' Models)



3.22. Secure the Cables to the Turnbuckle Eyebolts (105' — 120' Models)

Repeat the following steps for each cable end.

1. Open the turnbuckle (1) (eyebolts threaded out) as much as possible (see Figure 48).
2. Slide a 1/2" thimble (2) through the turnbuckle eyebolt.
3. Slide three 1/2" cable clamps (3) down one end of the cable.
4. Slide the end of cable over the thimble and through the eyebolt until there is 3' cable overlap.
5. Thread the end of the cable back through cable clamps.
6. Tighten the first cable clamp next to the thimble.
7. Tighten the second and third cable clamps with a 12" spacing.
8. Trim excess cable and apply tape to the loose end.

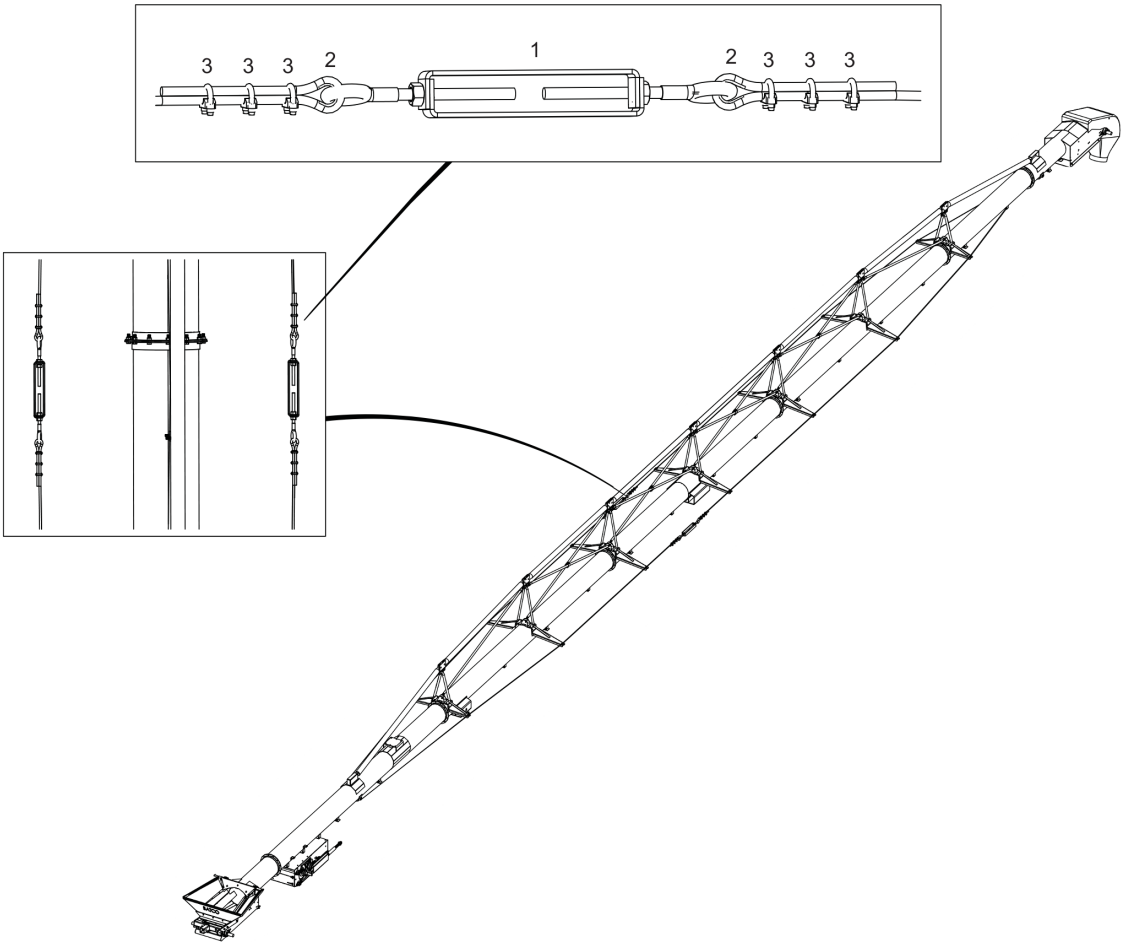
Note

Ensure the cable is pulled tight before securing the cables on the opposite side of the conveyor.

Table 15.

Item	Description
1	Turnbuckle
2	1/2" Thimble
3	1/2" Cable Clamps

Figure 48. Securing the Cable to the Turnbuckle Eyebolts



3.23. Tighten the Truss Cables (105' — 120' Models)

Important

Ensure that the hex nut closest to the thimble is backed off to allow for adjustment (see Figure 48).

1. Tighten the cables by adjusting the turnbuckle eyebolts. These cables must be very tight.
2. Stand at the hopper end and visually inspect the tube for straightness.
3. If the tube has a curve to one side, tighten the turnbuckle on the opposite side, while loosening the other turnbuckle slightly if required.
4. Tighten the hex nut closest to the thimble towards the bracket to the lock the eyebolt.
5. Tighten all the 3/8" cable clamps on the cable bridges.

3.24. Assemble the Weather Guard

1. Install the types of weather guard sections in Table 16 which are indicated by the identifier letters as shown on your particular conveyor model schematic that follows.

2. Connect each weather guard section to the tube brackets as indicated by the position arrows on your particular conveyor model schematic that follows. Use a bi-mount cast plate (1), 3/8" x 1-1/4" capscrew (2), and 3/8" locknut (3). Leave the 3/8" locknuts loose (see Figure 49).

   NOTICE Overlap of the weather guard sections must be as shown to prevent belt damage.

   Note

   Weather guard type "G" is fastened directly into 1/4" threaded inserts in the top of the s-drive with two 1/4" x 1" hex bolts and two 1/4" flat washers.

3. Confirm all weather guard mount bar holes are aligned.
4. Tighten the 3/8" locknuts (3) after all of the weather guards have been installed.

Table 16. Identifiers for Types of Weather Guard Sections

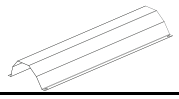
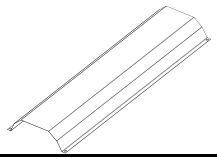
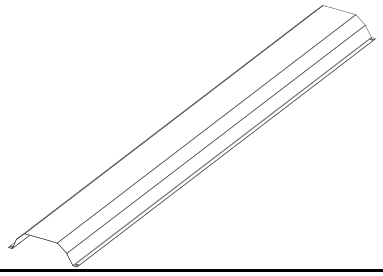
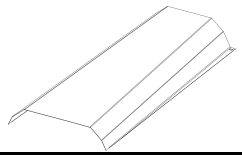
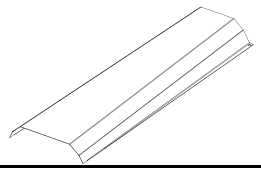
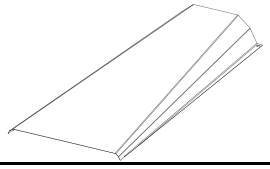
Identifier	Type of Weather Guard Section	
A	3' (0.91 m) Standard	
B	5' (1.52 m) Standard	
C	10' (3.05 m) Standard	
D	4' (1.22 m) Flared	
E	5' (1.52 m) Flared	
F	5' (1.52 m) Flat	

Table 16 Identifiers for Types of Weather Guard Sections (continued)

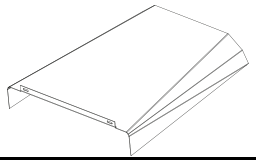
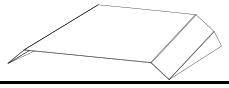
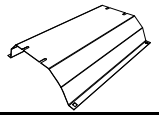
Identifier	Type of Weather Guard Section	
G	Guard -Above S-Drive	
H	Upper Transition	
J	2' (0.61 m) Standard	

Table 17. Components to Install the Weather Guard onto the Tube Bracket

Item	Description	Quantity
1	Bi-Mount Plate Cast	1
2	Capscrew 3/8" x 1-1/4" Flat Head Socket	2
3	Nylon Locknut 3/8"	2

Figure 49. Installing a Weather Guard Section

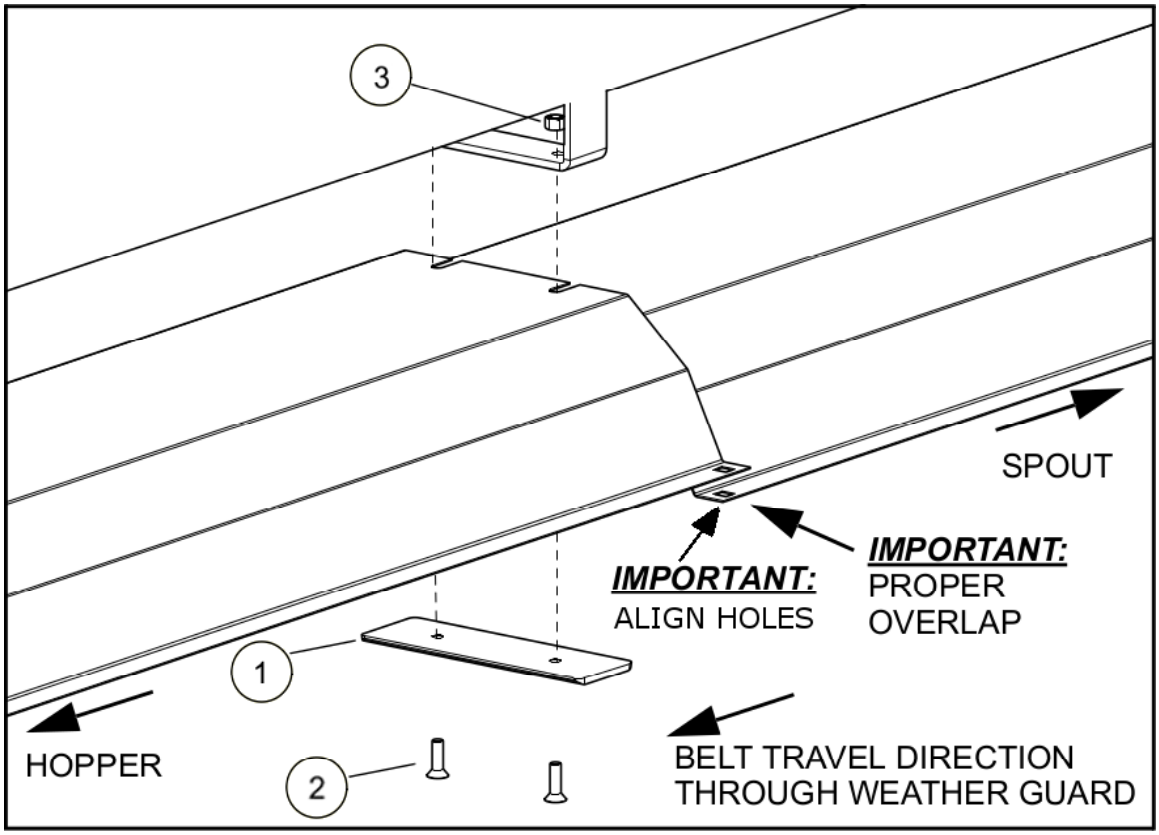


Figure 50. Weather Guard Section Locations (65' — 75' Models)

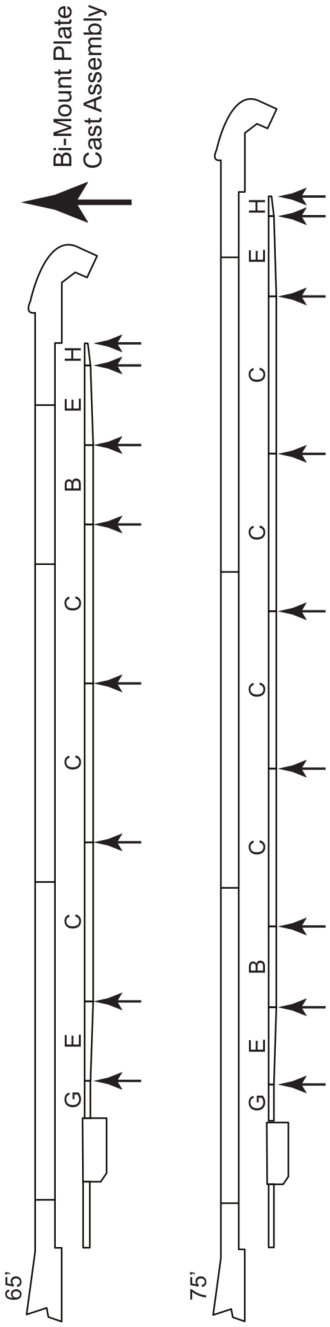
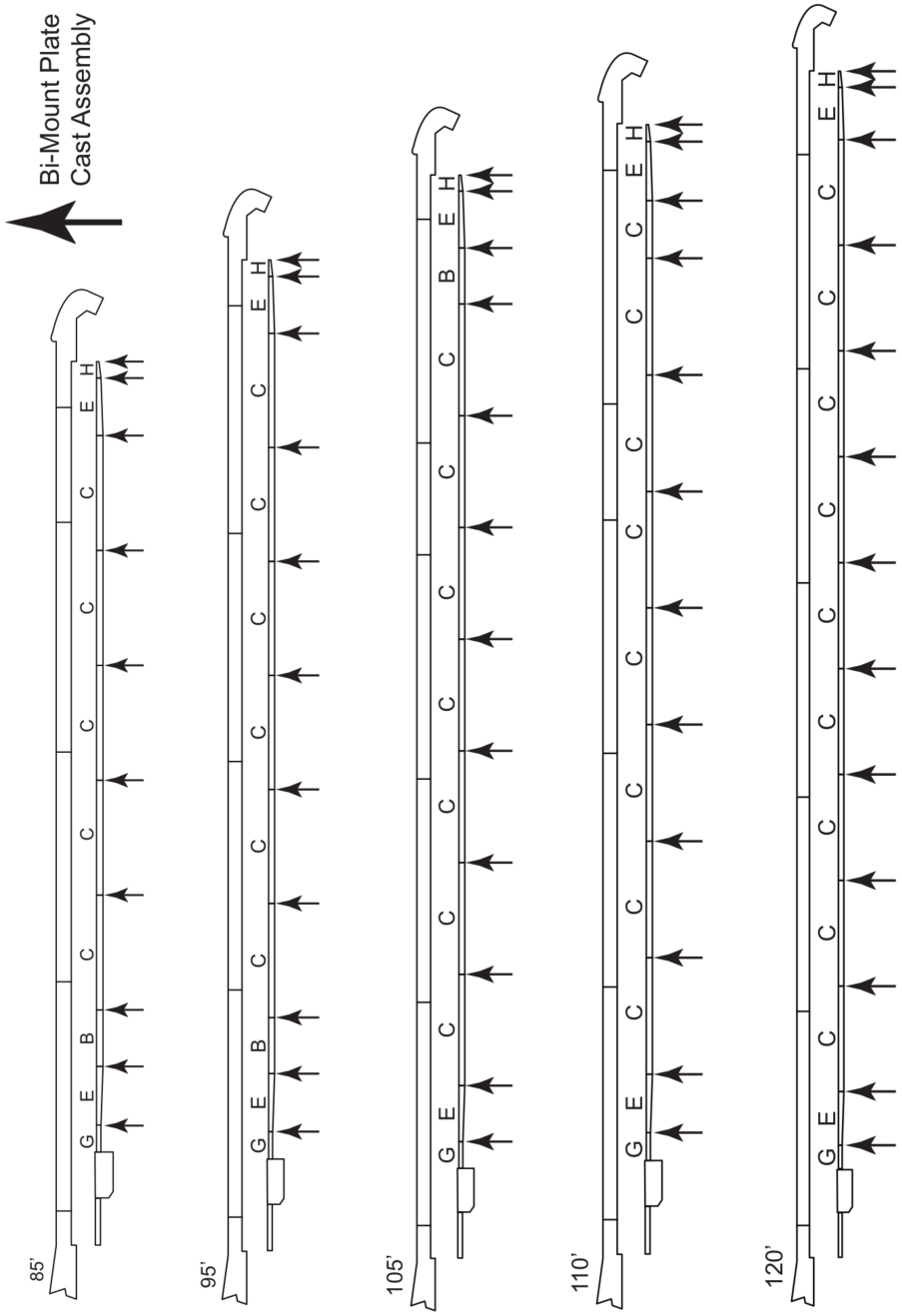


Figure 51. Weather Guard Section Locations (85' — 120' Models)



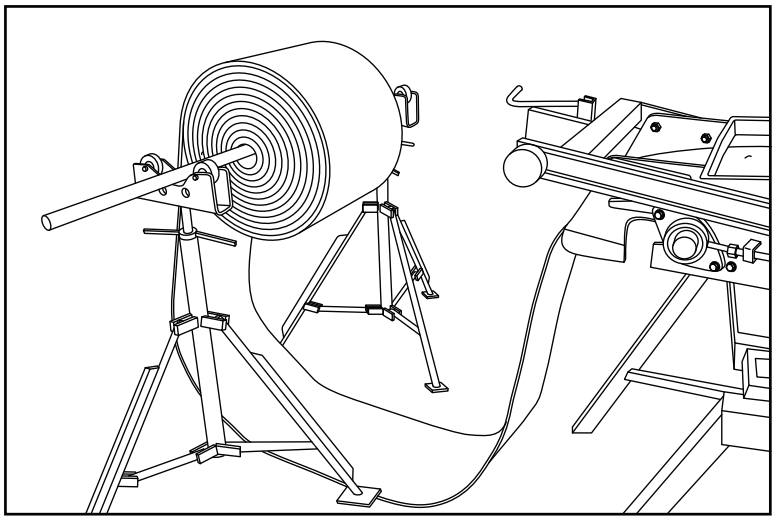
3.25. Install the Belt

This section describes how to install the conveyor belt in the tube. Refer to the packing slip for the length of the conveyor belt used in the installation.

Thread a Fish Tape through the Conveyor Tube

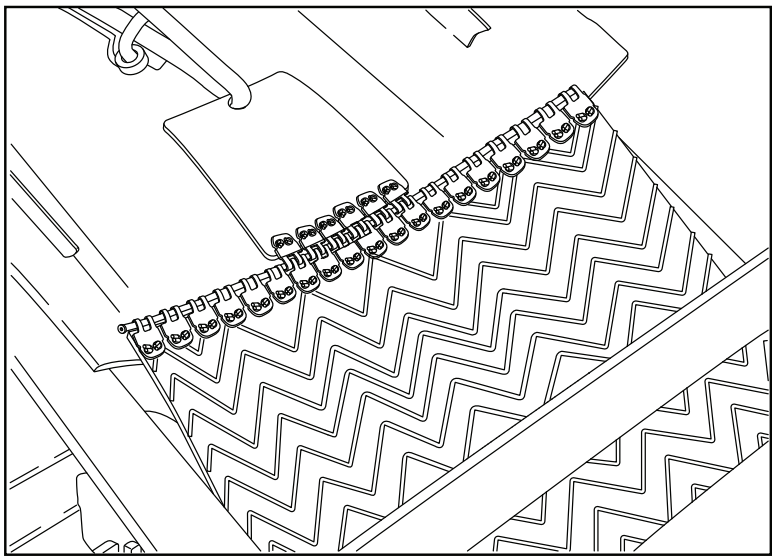
1. Place the rolled belt on a stand behind the hopper.
2. Pull the conveyor belt over the top of the hopper roller, until just inside the hopper, as shown below.

Figure 52. Rolled Belt Behind a Typical Hopper



3. Feed a fish tape in at the spout, through the tube, and into the hopper.
4. Attach the end of the belt to the fish tape using a clamp, or use a short piece of belt and thread the connector wire through the lacing clips to connect.

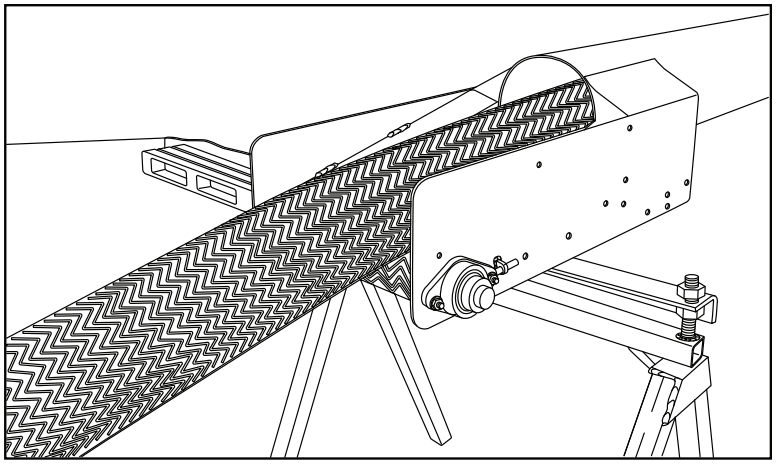
Figure 53. Fish Tape Connected to a Short Piece of Belt



Thread the Conveyor Belt

1. From the spout end, pull the fish tape until the belt emerges from the spout.

Figure 54. Conveyor Belt Pulled Through the Spout



2. Wrap the belt around the spout roller and pull it back under the conveyor tube up to the s-drive.
3. Remove the s-drive bottom guard.
4. Loosen the s-drive pinch roller bolts and take-up roller bolts (on both sides of s-drive) to the end of their threads.

   Note

   Do not tighten the nuts on the pinch roller bolts and take-up roller bolts on the s-drive until the belt is fully installed.

5. Guide the belt through the s-drive as shown in the figure below.
6. Pull the conveyor belt out from the back of the s-drive until approximately 6' (1.8 m) of excess belt remains on the stand behind the hopper.

Figure 55. S-Drive Conveyor Belt Path

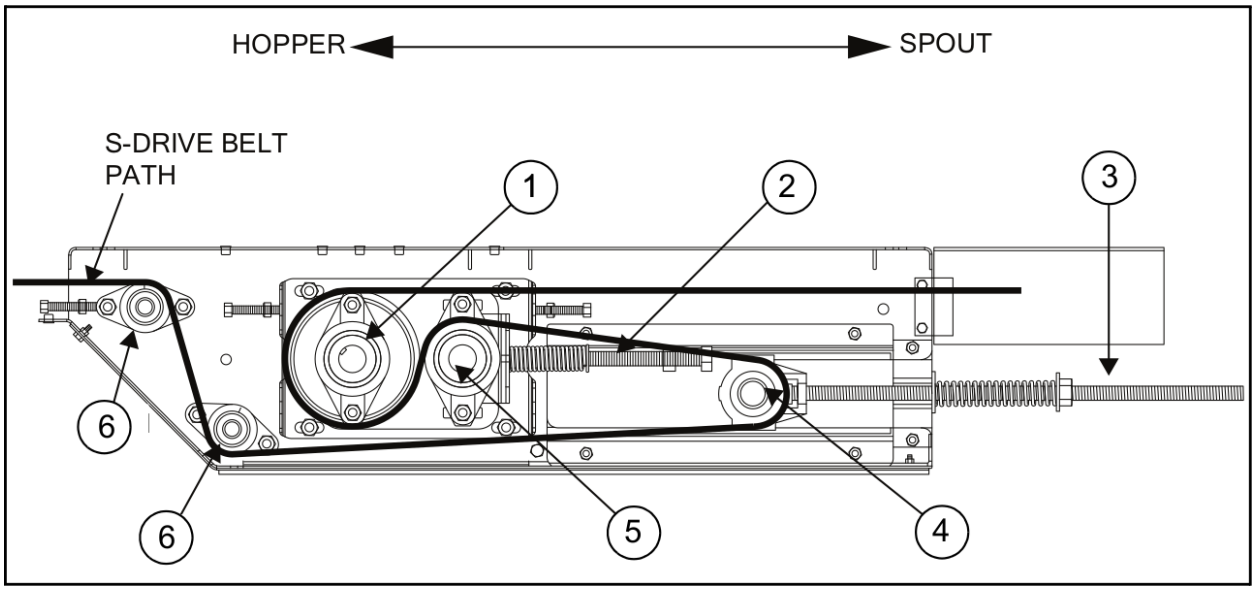
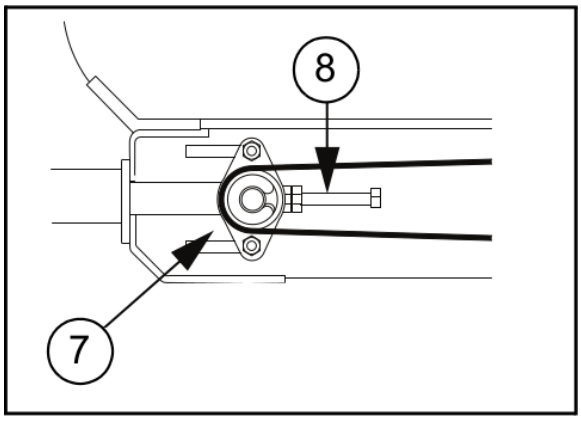


Figure 55 S-Drive Conveyor Belt Path (continued)

Item	Description
1	Drive Roller
2	Pinch Roller Bolt
3	Take-up Roller Bolt
4	Take-up Roller
5	Pinch Roller
6	Return Roller

7. Wrap the remaining conveyor belt around the hopper roller (7) and under the tube.

Figure 56. Conveyor Belt Around Hopper Roller



Item	Description
7	Hopper Roller
8	Take-up Bolt

The conveyor belt is now ready to be connected.

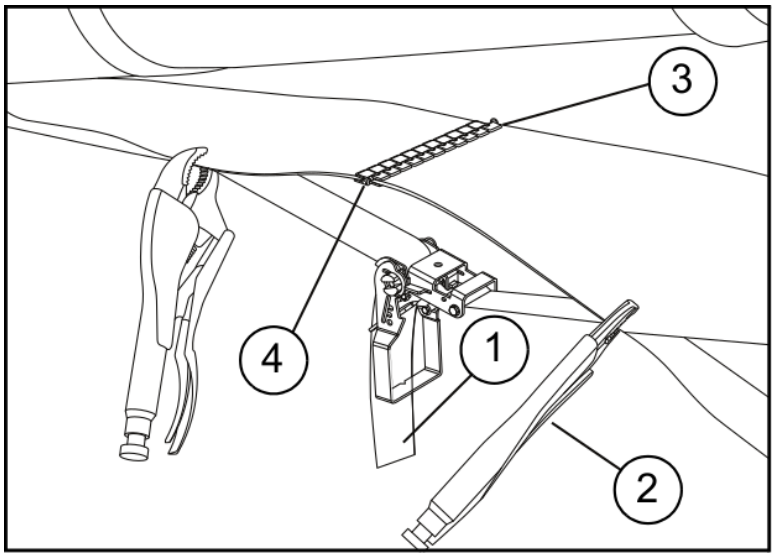
Connect the Conveyor Belt

1. Attach a strap puller (1) to each end of the belt and secure with vise-grips (2).

   NOTICE Do not attach the vise grips too tightly, this can damage the belt.

2. Pull the ends of the belt together.
3. Install connector wire through the belt lacing (3).

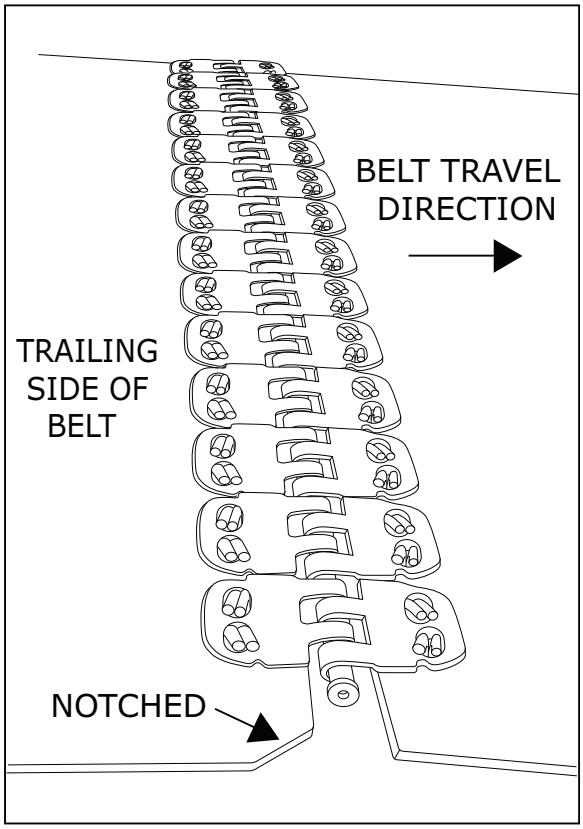
Figure 57. Using a Strap Puller



Item	Description
1	Strap Puller
2	Vise Grip
3	Belt Lacing
4	Lacing Pin

4. On both corners of the trailing edge of the belt, trim a tapered notch to prevent fraying.

Figure 58. Tapering the Trailing Edge of the Belt

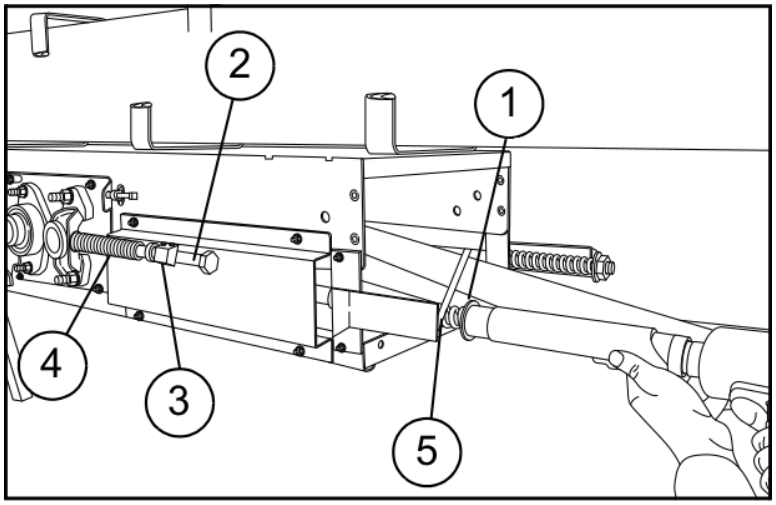


Tighten the Conveyor Belt

Use the s-drive take-up roller bolts to set the belt tension.

1. Tighten the take-up roller bolts (1) until the take-up springs are not visible.
2. Measure to be sure both sides are set at the same position.
3. Tighten the pinch roller bolts (2, both sides of s-drive) until the head of bolt contacts the pinch pipe (3).
4. Check to make sure the bolts on the pinch roller bearings are just loose enough to allow the pinch roller to kick back 1/4" during operation (when the belt seam passes through).
5. Re-attach the s-drive bottom guard.

Figure 59. S-Drive Roller Bolts and Pipes



Item	Description
1	Take-up Roller Bolt
2	Pinch Roller Bolt
3	Pinch Pipe
4	Spring
5	Take-up Pipe

The belt will require final tension and alignment after the conveyor is fully assembled. Refer to the conveyor operation manual for complete instructions.

3.26. Install the Hopper Belt Guard

1. Slide the s-drive hopper belt guards (1) into place on both sides of the conveyor. As shown in Figure 60, the s-drive hopper belt guard is installed over the hopper weldment bracket and over the s-drive angled guard mount.
2. Use two 1/4" x 3/4" bolts (3) and 1/4" lock washers (7) to secure the center of the belt guard. Screw the bolts into the threaded inserts located on the belt guard.
3. Use four 1/4" x 1" bolts (2), 1/4" flat washers (6), 1/4" lock washers (7), and 1/4" hex nuts (4) to secure the four corners of the belt guard.

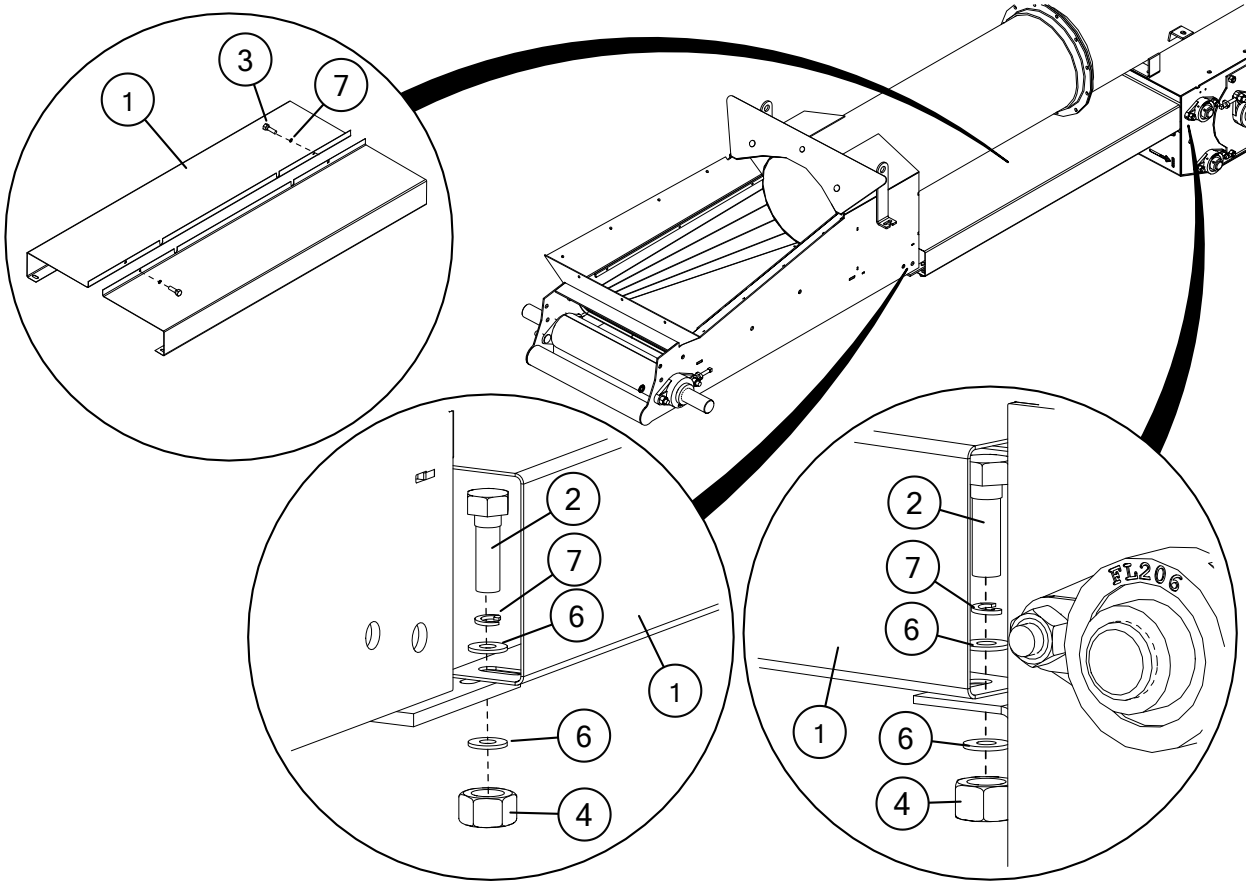
Table 18. Hopper Belt Guard Components

Item	Description	Quantity
1	S-Drive to Hopper Belt Guard	2
2	Bolt Hex 1/4" x 1"	4
3	Bolt Hex 1/4" x 3/4"	2
4	Nut Hex 1/4"	4

Table 18 Hopper Belt Guard Components (continued)

Item	Description	Quantity
6	Flat Washer 1/4" USS	8
7	Lock Washer 1/4"	4

Figure 60. Hopper Belt Guard Components



3.27. Install the Weather Guard Mount Bars

1. Install the types of mount bar assemblies in Figure 61 which are indicated by the position arrows and identifier letters as shown on your particular conveyor model schematic that follows.
2. Adjust the position on all weather guards and mount bars to achieve the best fit.
3. Tighten all nuts.

Table 19. Weather Guard Mount Bar Components

Item	Description
1	Mount Bar (Cross Bar with No Roller)
2	Mount Bar with Roller
3	Belt Guide Nylon Blocks

Table 19 Weather Guard Mount Bar Components (continued)

Item	Description
4	7/16" x 1" Carriage Bolt
5	7/16" Nylon Locknut
6	5/16" x 1-1/2" Carriage Bolt
7	5/16" Hex Nut
8	5/16" Lock Washer

Figure 61. Types of Mount Bar Assemblies

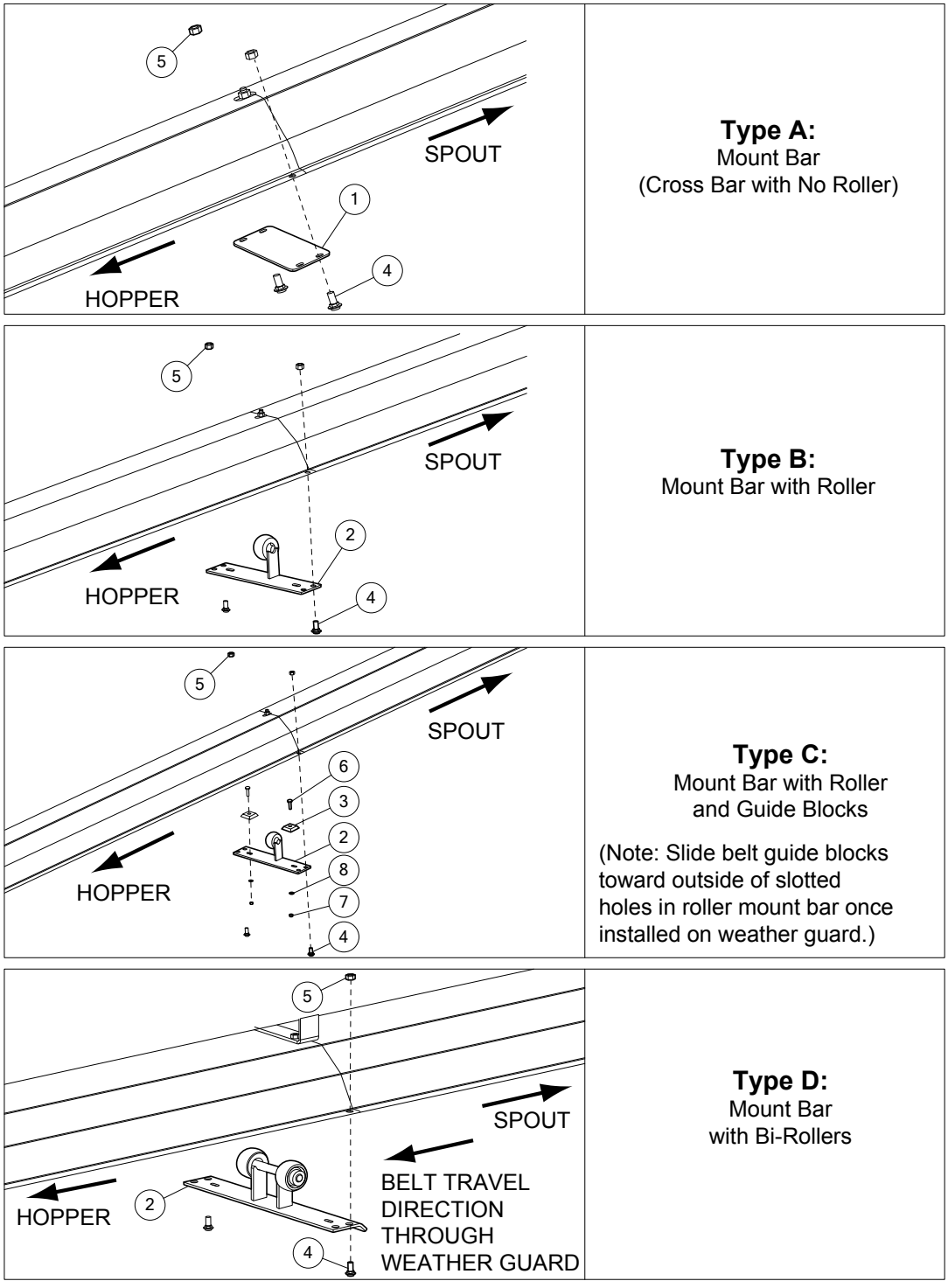


Figure 62. Mount Bar Schematic Diagram (65' - 75')

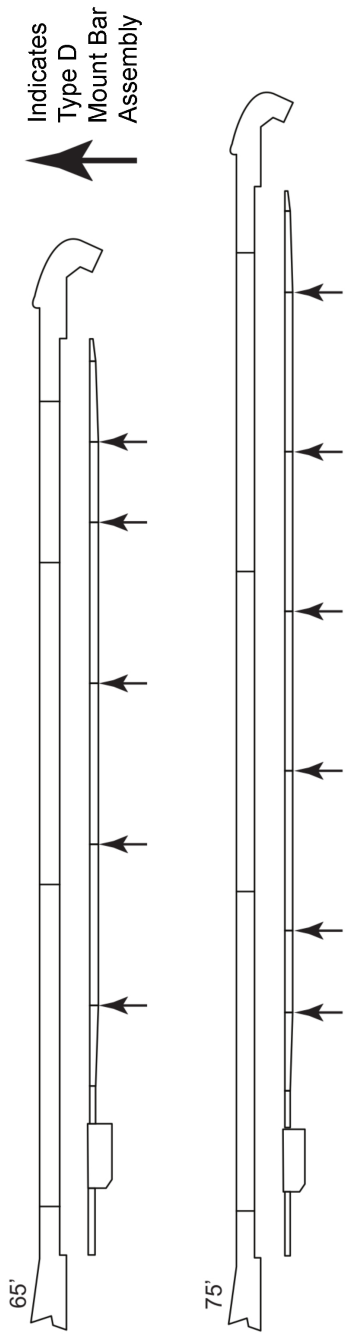
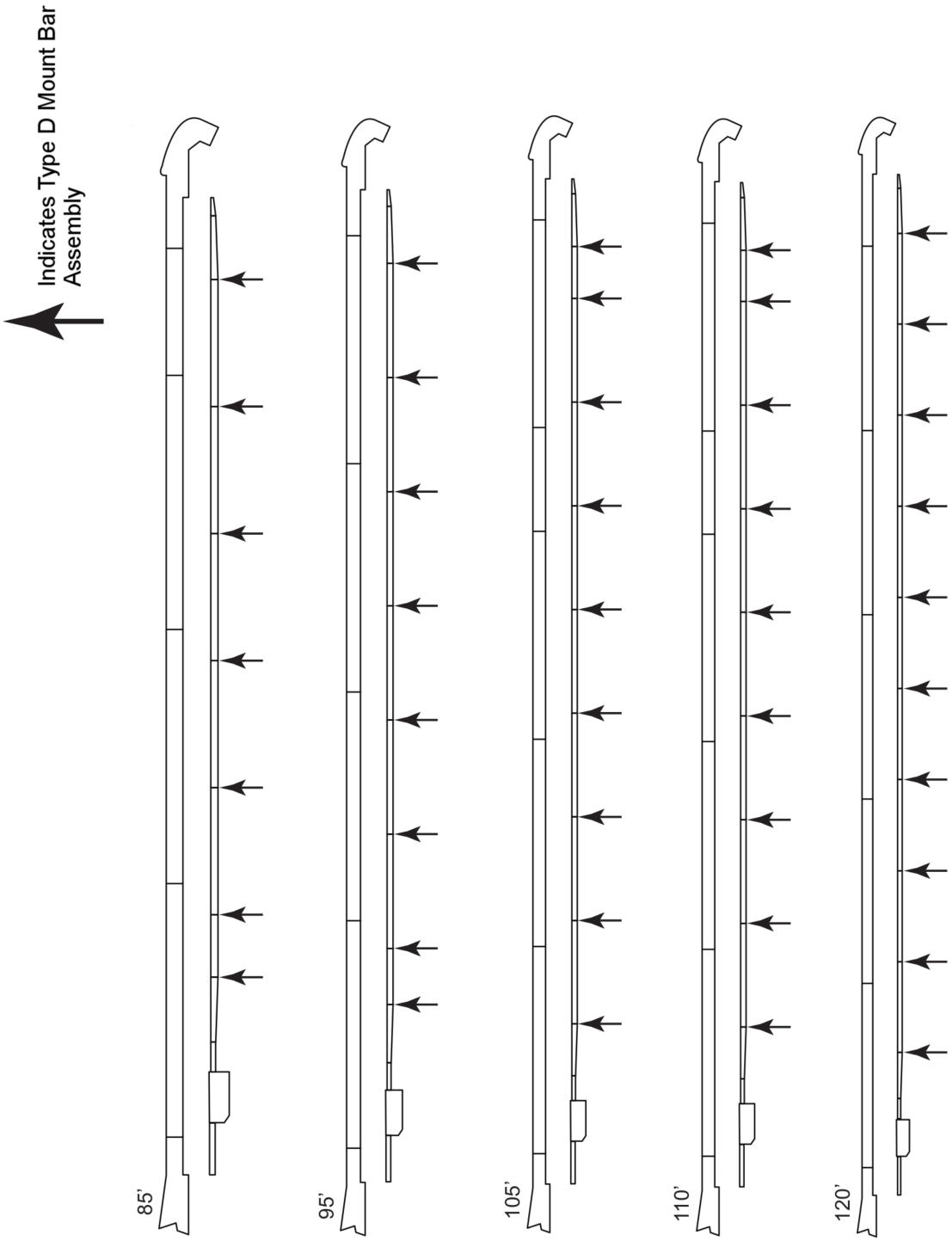


Figure 63. Mount Bar Schematic Diagram (85' - 120')



3.28. Install the Collapsible Hopper Cloth

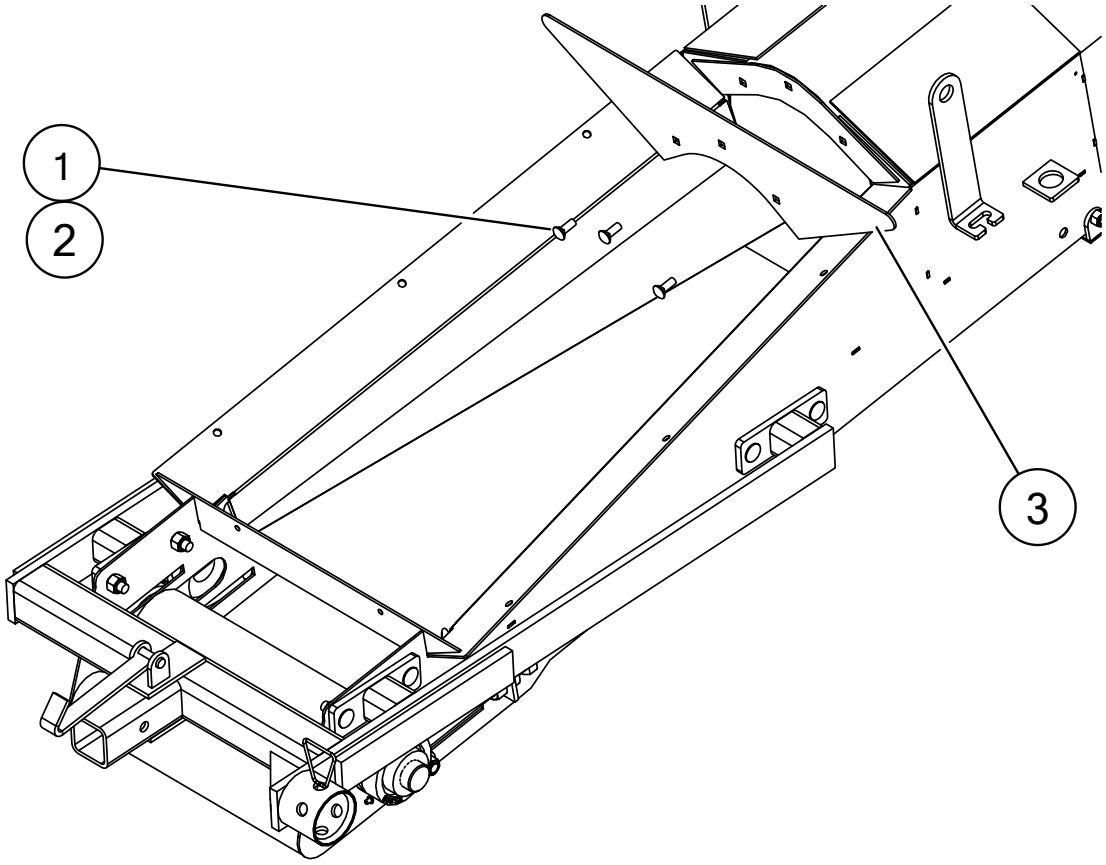
Install the Hopper Shield

1. Install the hopper shield (3) onto the conveyor frame using 3/8" x 1" carriage bolts (1) and 3/8" nuts (2) (see Figure 64).

Table 20. Hopper Shield Components

Item	Description
1	3/8" x 1" Carriage Bolt
2	3/8" Nut
3	Hopper Shield

Figure 64. Installing the Hopper Shield



Install the Flashing

1. Lay the front flashing (1) on the hopper while ensuring it is flush with the edge of the main hopper frame (see Figure 65).

   Note

   The textured side of the flashings should be facing down.

2. Lay the side flashings (2) on the hopper while ensuring they are flush with the edge of the main hopper frame and overlapping the front flashing.

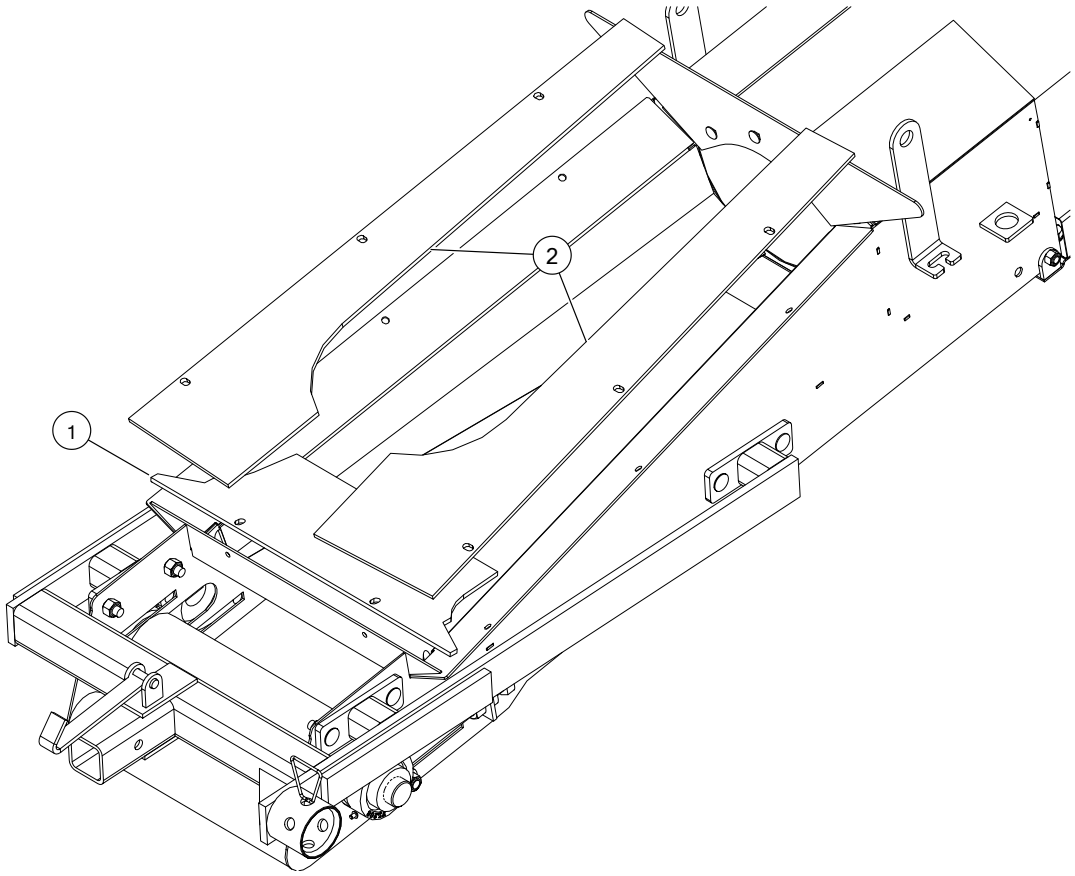
Note

Ensure there is no gap between front flashing and belt.

Table 21. Flashing

Item	Description
1	Front flashing
2	Side flashing

Figure 65. Installing the Flashing



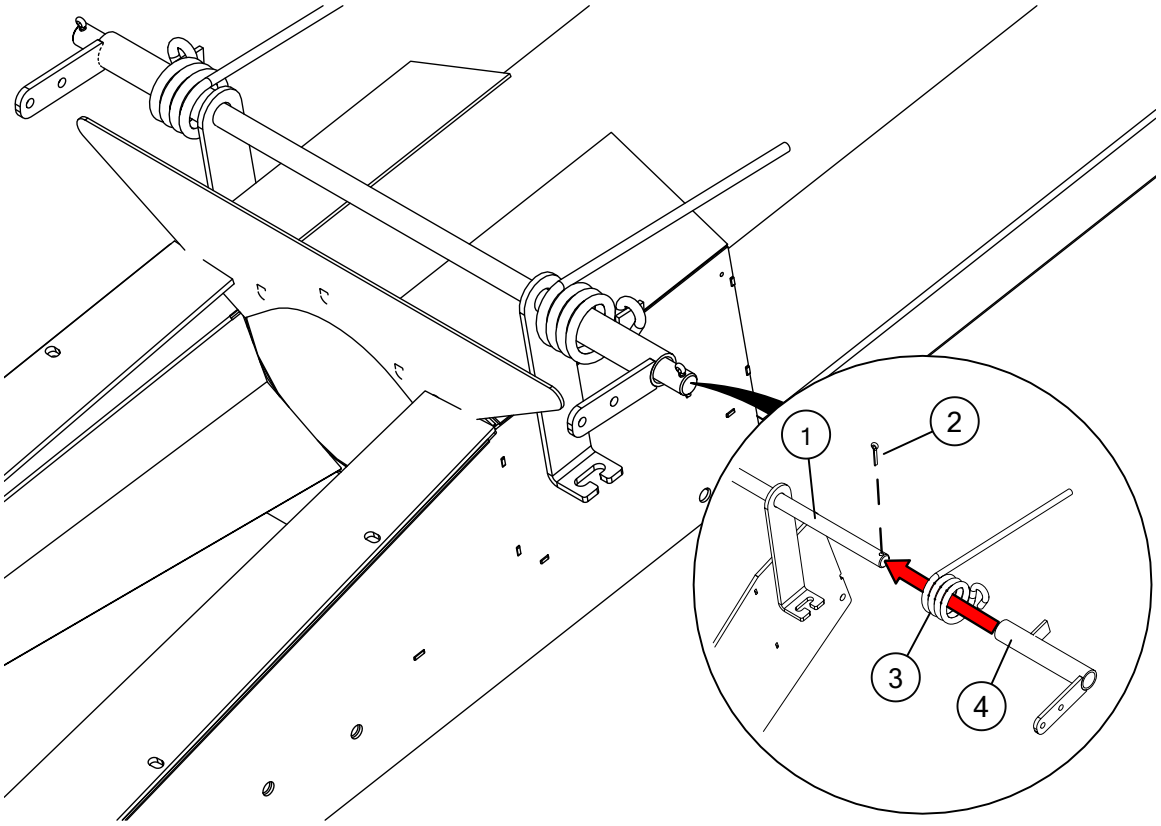
Install the Pivot Shaft

1. Slide the pivot shaft (1) through the mounting holes (see Figure 66).
2. Slide the hopper spring (3) over the end of the pivot shaft.
3. Slide the shaft bracket (4) onto the end of the pivot shaft, and orient the tab on the shaft bracket into the loop in the spring coil.
4. Secure the pivot shaft with a cotter pin (2).

Table 22. Pivot Shaft Components

Item	Description
1	Pivot shaft
2	Cotter pin
3	Hopper spring
4	Shaft bracket

Figure 66. Installing the Pivot Shaft, Hopper Springs, and Shaft Brackets



Install the Hopper Cloth Frame

1. Slide the two upper side frames (1, 5) into the hopper cloth (2) (see Figure 67).

   Note
   Apply grease to frame pieces if required.

2. Slide the upper front frame (7) into the hopper cloth.
3. Fasten the upper side frames to the upper front frame using 3/8" x 1" hex bolts (8) and 3/8" nuts (9).

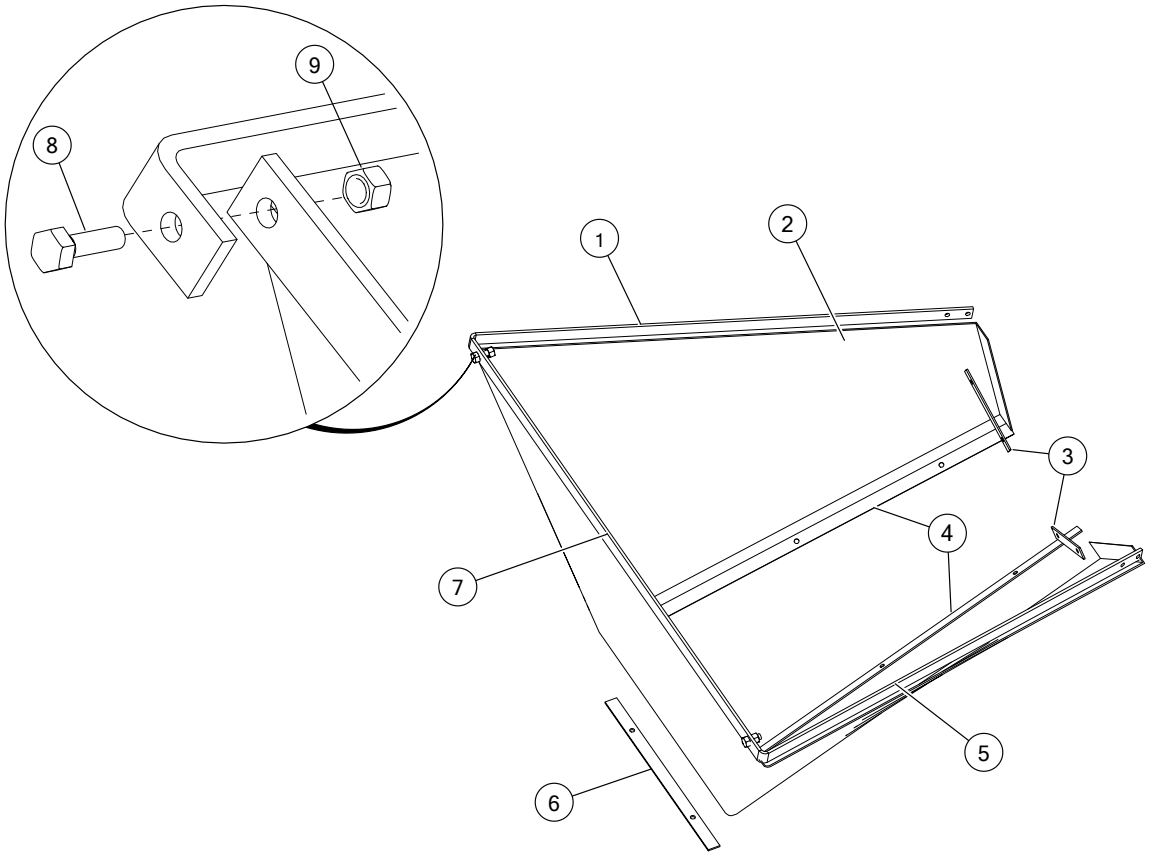
   Note
   Steps 4–6 will be performed later in the hopper cloth installation.

4. Slide the two lower side frames (4) into the hopper cloth.
5. Slide the lower front frame (6) into the hopper cloth.
6. Slide the two lower back frames (3) into the hopper cloth.

Table 23. Hopper Cloth Frame Components

Item	Description
1	Upper side frame (left)
2	Hopper cloth
3	Lower back frame
4	Lower side frame (long)
5	Upper side frame (right)
6	Lower front frame
7	Upper front frame
8	3/8" x 1" Hex bolt
9	3/8" Nut

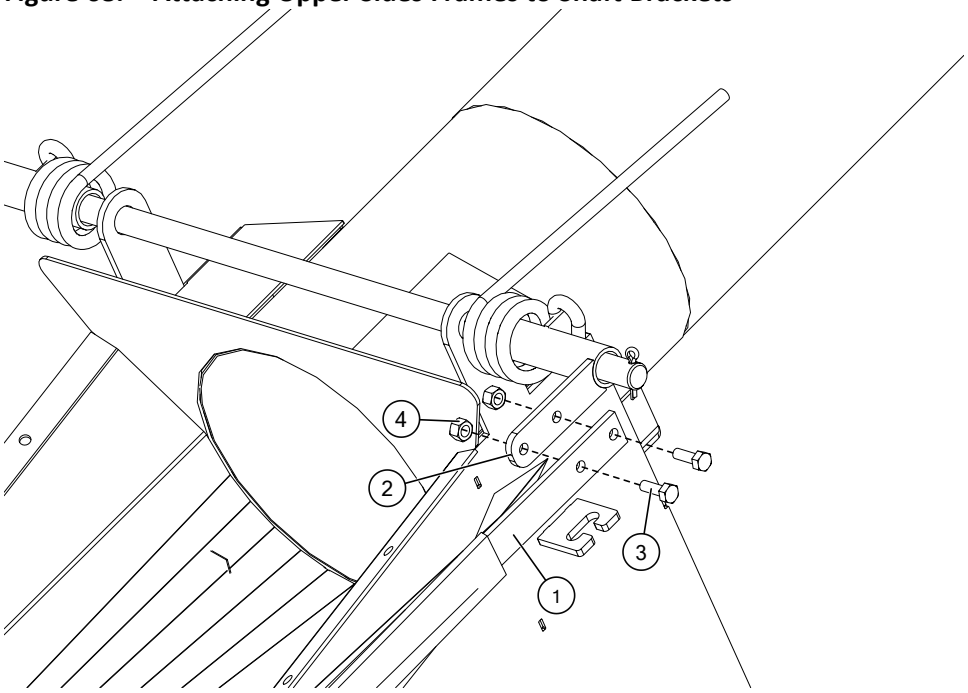
Figure 67. Installing the Hopper Cloth Frame



Install the Hopper Cloth

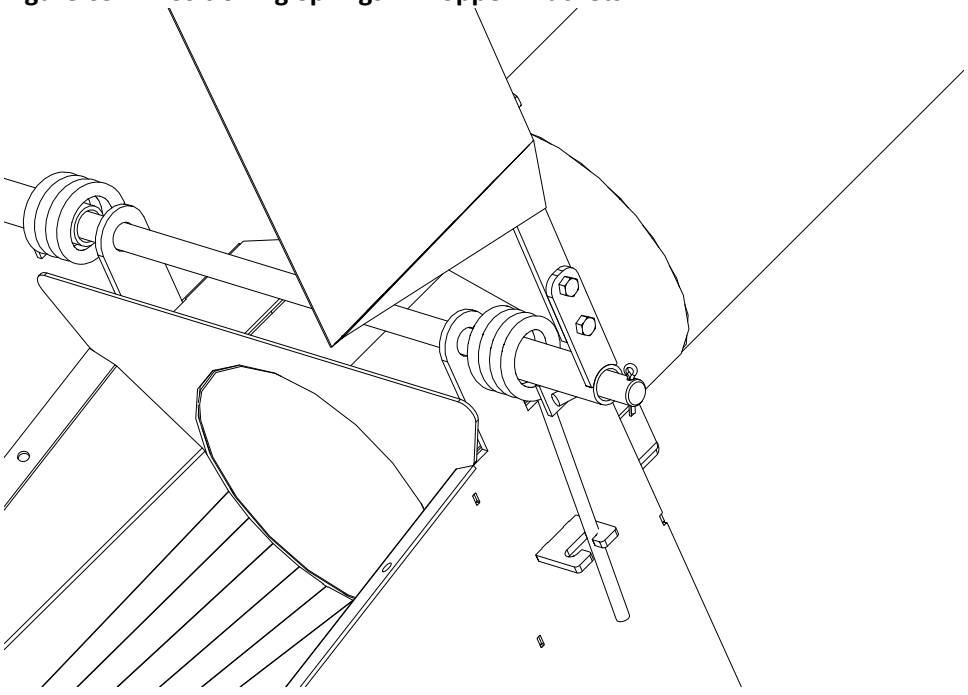
1. Attach the upper side frames (1) to the shaft brackets (2) using 3/8" x 1" hex bolts (3) and 3/8" nuts (4) (see Figure 68).

Figure 68. Attaching Upper Sides Frames to Shaft Brackets



2. Lift the upper frame (with the cloth on it) until it is nearly vertical, and position the springs in their brackets welded to the sides of the hopper (see Figure 69).

Figure 69. Positioning Springs in Hopper Brackets

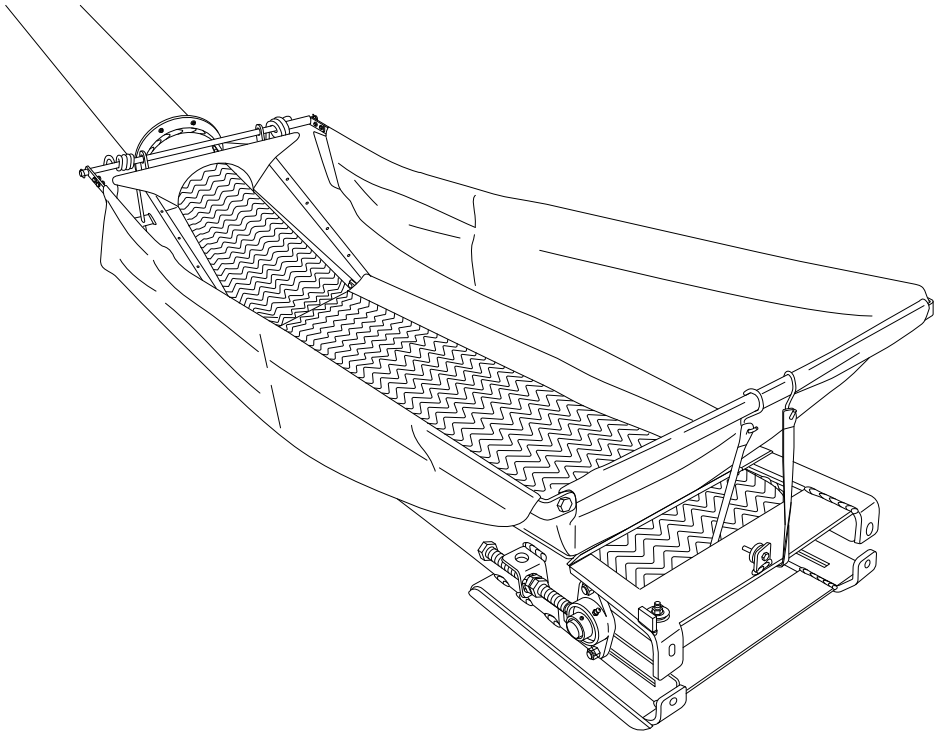


3. Pull the upper front frame down until the bottom of the cloth touches the front flashing, and hold it in place with a bungee cord around the front frame of the hopper weldment (similar to Figure 70).

Note

The length of the upper side frames provides leverage to pull the upper front frame down against the opposing torque of the springs.

Figure 70. Holding Upper Frame with Bungee Cord



4. Slide the lower frames into the hopper cloth, as described in a previous hopper cloth section (see Figure 67).
5. Attach the hopper cloth to the conveyor (see Figure 71):
   - First, attach the front of the hopper cloth to the front flashing. Afterward, attach the sides.
   - Drill through the hopper cloth and use the existing holes as a guide through the lower frames, flashings, and hopper weldment.
   - Fasten using 1/4" x 1-1/4" elevator bolts (5) and 1/4" nuts (6).
6. Attach the lower back frame (9) of the hopper cloth to the hopper using self-tapping screws (7), 1/4" flat washers (8), and vinyl screw caps (11).
7. Install trimlock (10) onto the upper frame of the hopper cloth.

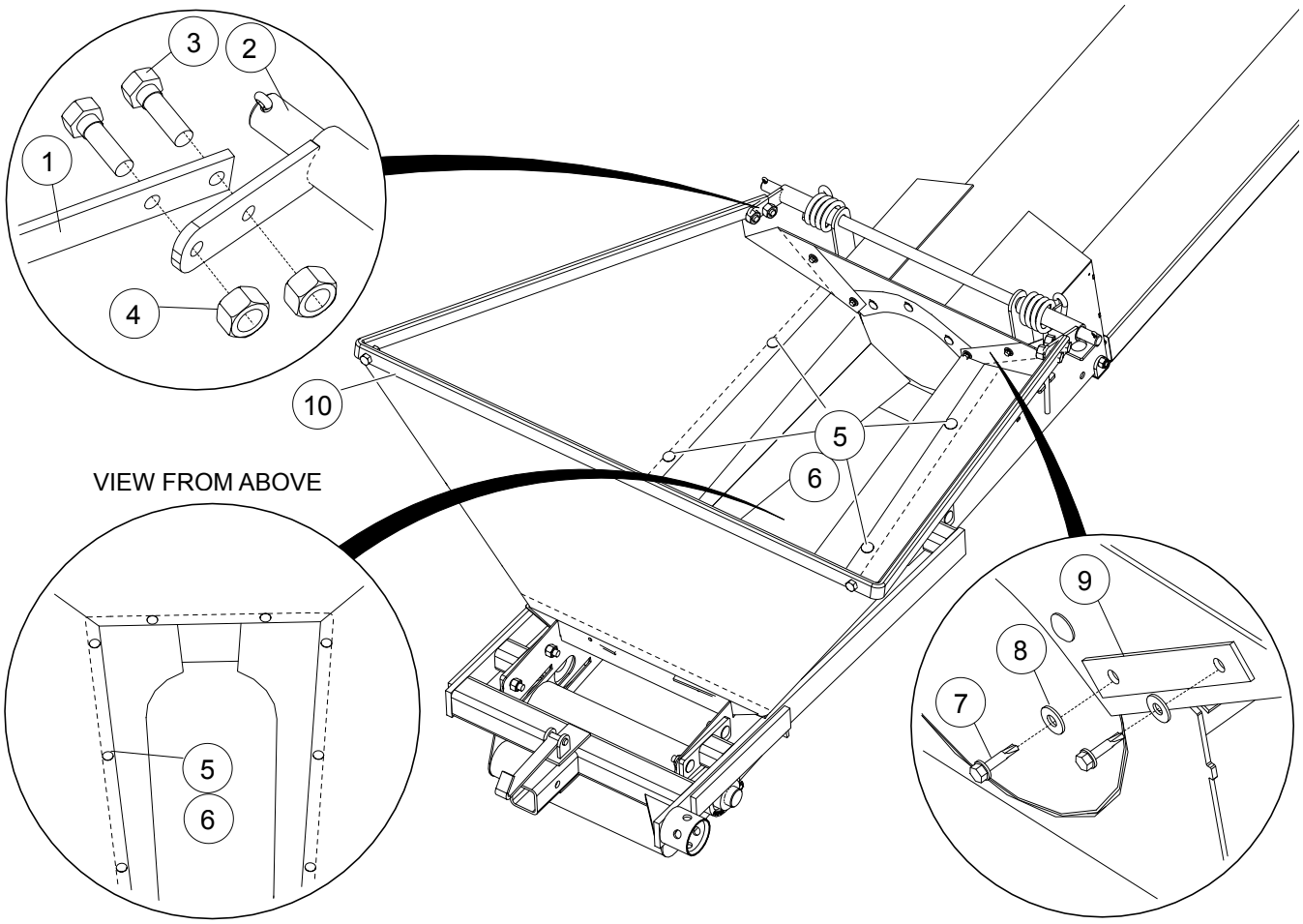
Table 24. Components for Installing the Hopper Cloth onto the Conveyor

Item	Description	Quantity for Series	
		2000	2400
1	Upper side frame	2	2
2	Shaft bracket	2	2
3	3/8" X 1" hex bolt	4	4
4	3/8" nut	4	4
5	1/4" X 1-1/4" elevator bolt	11	13
6	1/4" nut	11	13
7	1/4" x 1" Self-tapping screw	4	4

Table 24 Components for Installing the Hopper Cloth onto the Conveyor (continued)

Item	Description	Quantity for Series	
		2000	2400
8	1/4" flat washer	4	4
9	Lower back frame	2	2
10	Trimlock	11 ft [3.4 m]	12 ft [3.7 m]
11	Vinyl screw cap (not shown)	4	4

Figure 71. Installing the Hopper Cloth onto the Conveyor



3.29. Install the Spout Hood

1. Place the hood (2) around the bearing assembly (see Figure 72).
2. Use 1/4" x 1–1/2" self-tapping screws (3) and 1/4" flat washers (4) to tighten the hood (2) to the conveyor spout (1).

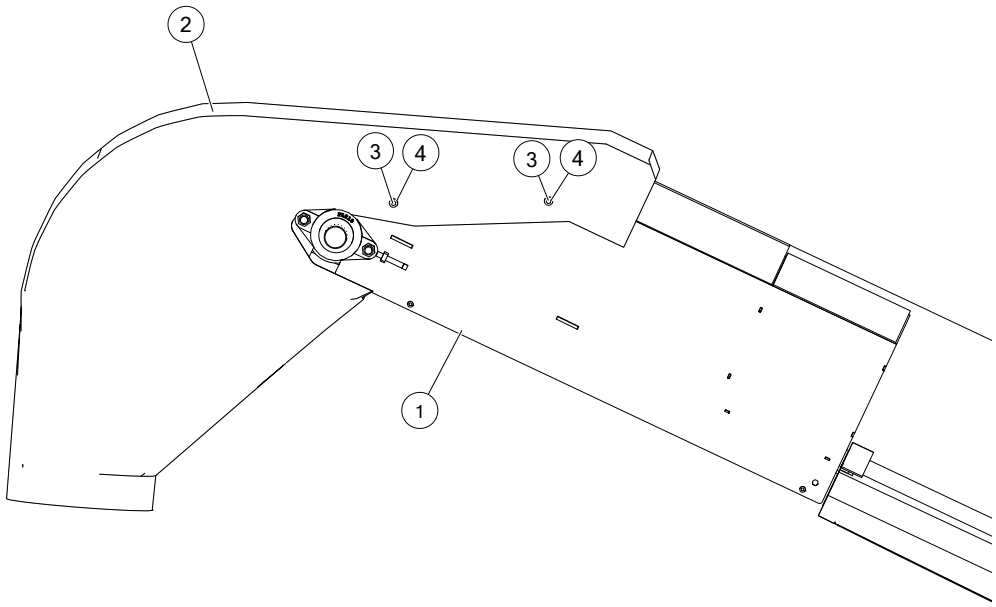
Note

Make sure the screws will not interfere with belt operation.

Table 25. Spout Hood Components

Item	Description	Quantity
1	Spout Assembly	1
2	Hood	1
3	1/4" x 1-1/2" Self-Tapping Screw	4
4	1/4" Flat Washer	4

Figure 72. Installing Spout Hood



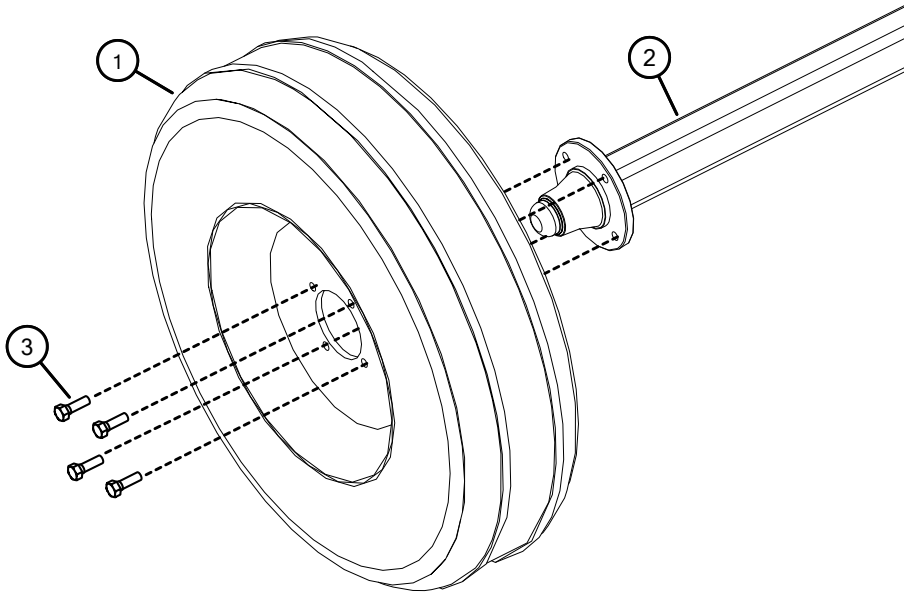
3.30. Install the Wheels

1. Check if the pressure of tires matches the pressure indicated on the tire sidewall.
2. Mount the wheels (1) to the axle (2) with wheel bolts (3) provided (see Figure 73).

Table 26. Components to Attach the Wheels to the Axle

Item	Description
1	Tire Assembly
2	Axle
3	Wheel Bolt

Figure 73. Attaching the Wheels to the Axle



Note
Wheels may have four or six bolts, depending on the model of conveyor.

3.31. Assemble the Scissor-Lift Frame (65' — 95' Models)

Note

Position frame components close to the conveyor tube before assembly.

1. Attach the extendable axle stubs to the axle (3) with a hitch pin (22) and a hairpin (24). Mount wheels (33) to extendable stubs (17) with 1/2” fine thread bolts (20).
2. Attach lower axle arms (5, 6) to the axle assembly (3) using 3/4” X 3-1/2” X 3-1/2” u-bolts (32) and 3/4” locknuts (27).
3. **For 85’ to 95’ models**: attach lower axle arm (5, 6) to upper axle arm (15, 16) with 1/2” X 1-1/2” bolts (20) and 1/2” nuts (26), then install the long and short axle arm crossbraces (7, 8) using 1/2” x 5” x 2” u-bolts (21) and 1/2” locknuts (26). Do not tighten the axle arm crossbraces (7, 8).
4. Fasten crossbraces (2) to axle arms (5, 6) and secure with 7/16” X 1-1/2” bolts (23) and 7/16” locknuts (25).
5. **For 85’ to 95’ models:** attach crossbraces (2) to the lower axle arms (5, 6), and also to the long and short axle arm crossbraces (7, 8). Do not tighten.
6. Position stands to support the lift arms (9).
7. Bolt lift arms (9) to the axle assembly (3) with 1” X 3” bolts (18) and 1” locknuts (28).
8. Attach the upper lift arm brace (12) and lower lift arm brace (11) to the lift arms (9) using 1” X 8” X 3-1/2” u-bolts (31) and 1” locknuts (28). Do not tighten.
9. Bolt the lower ladder brace (4), the transport brace (14), and the ladder cross tube (13) to the ladder arms (10) using 1/2” X 1-1/2” bolts (20) and 1/2” nuts (26), and 1” X 8” X 3-1/2” u-bolts (31) and 1” locknuts (28). Do not tighten.
10. Bolt the ladder arms (10) to the lift arms (9) using two 1-1/4” X 4-1/2” bolts (19), 1-1/4” flat washer (38), and 1-1/4” locknut (29).
11. Tighten 1” X 8” X 3-1/2” u-bolts (31) on upper lift arm brace (12) starting with the bottom 1” locknuts (28). While tightening, ensure upper lift arm brace (12) is butted up against the tab stops on the lift arms (9). Tighten the remaining u-bolts and repeat procedure for the lower lift arm brace (11).
12. Using a lifting device (crane and strong sling, or front-end loader with chain, or block & tackle system), raise the discharge end of the conveyor at point A shown in Figure 75. Height should be sufficient to clear the undercarriage.
13. Position scissor frame into position under tube assembly.
14. Lower the tube assembly onto the frame and align frame with the upper suspension bracket on the tube as shown in Figure 75.
15. Connect the ladder arm (10) to the upper suspension bracket with bolts (19, 18), bushings (1), flat washers (34, 30), and nuts (31, 28) as shown in Figure 76.
16. Raise the tube at point A so the discharge end is approximately 10’ off the ground. Attach a hoist at point B on the scissor frame, and lift until the axle arms are aligned with the lower suspension bracket. Attach with bolts (19, 18), bushings (1), flat washers (34, 30), and locknuts (31, 28).
17. Remove lifting device B.
18. Lift the tube at point A until the hydraulic cylinders (34) can be positioned. Insert the ram pins and secure them with snap pins.

Note

The rod ends of the hydraulic cylinders must be pointing down for the hoses to fit, with the hose connections pointing to the outside.

19. Tighten crossbrace bolts (25, 28).

20. Lower tubes until the transport brace (14) rests on the lower lift arm brace (11).

21. Remove lifting device A.

Table 27. Scissor Lift Components

Item	Description	Quantity for Model	
		65'/75'	85'/95'
1	Frame Bushing	4	4
2	Cross Brace 15	2	4
3	Axle Extendable	1	1
4	Lower Ladder Brace	1	1
5	Axle Arm	2	-
	Axle Arm Lower LH	-	1
6	Axle Arm Lower RH	-	1
7	Axle Arm CrossBrace Long	-	1
8	Axle Arm CrossBrace Short	-	1
9	Lift Arm	2	2
10	Ladder Arm	2	2
11	Lower Lift Arm Brace	1	1
12	Upper Lift Arm Brace	1	1
13	Ladder Cross Tube	11	1
14	Transport Brace	1	1
15	Axle Arm Upper LH	-	1
16	Axle Arm Upper RH	-	1
17	Axle Extension	2	2
18	1” X 3” Hex Bolt	6	6
19	1-1/4” X 4-1/2” Hex Bolt	2	2
20	1/2” X 1-1/2” Hex Bolt	16	28
21	1/2” x 5” x 2” U-Bolt	-	8
22	3/8” X 4-5/16” Hitch Pin	2	2
23	7/16” X 1-1/2” Hex Bolt	4	7
24	5/32” x 2-15/16” Hair Pin	2	2
25	7/16” Nylock Nut	4	7
26	1/2” Nylock Nut	16	44
27	3/4” Nylock Nut	8	8
28	1” Nylock Nut	30	30

Table 27 Scissor Lift Components (continued)

Item	Description	Quantity for Model	
		65'/75'	85'/95'
29	1-1/4” Nylock Nut	2	2
30	1” Flat Washer USS Plated	4	4
31	1” X 8” X 3-1/2” U-Bolt - Plated	12	12
32	3/4” X 3-1/2” X 3-1/2” U-Bolt - Plated	4	4
33	Tire Assembly	2	2
34	Hydraulic Cylinder	2	2
38	1-1/4” Flat Washer USS Plated	2	2

Figure 74. Scissor-Lift Frame for 65’ to 95’ Models

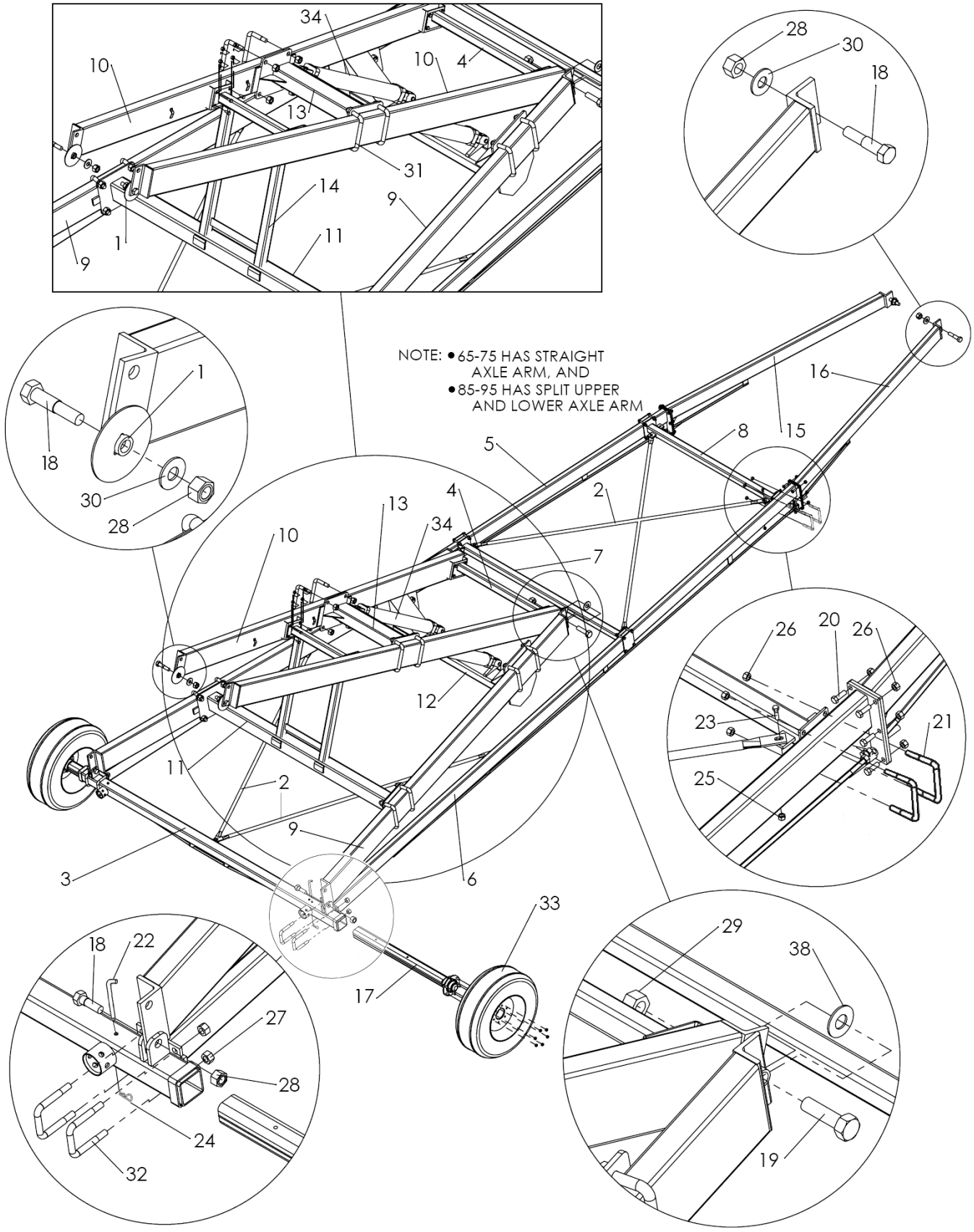


Figure 75. Tube Lift Points

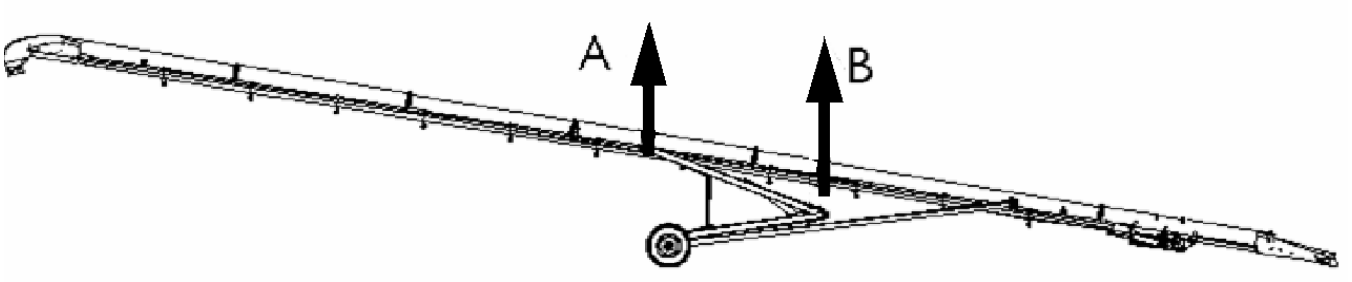
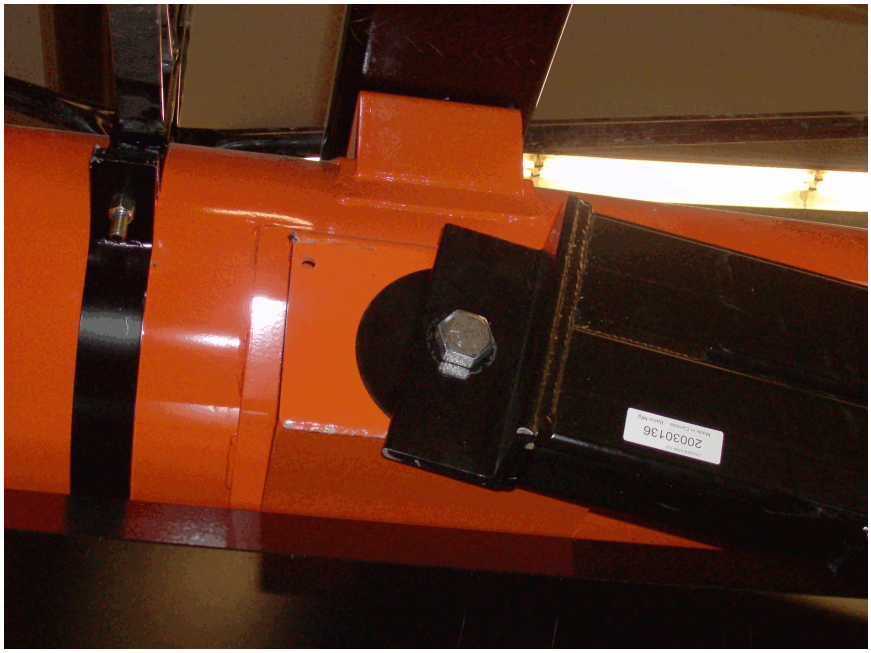


Figure 76. Upper Frame Connection



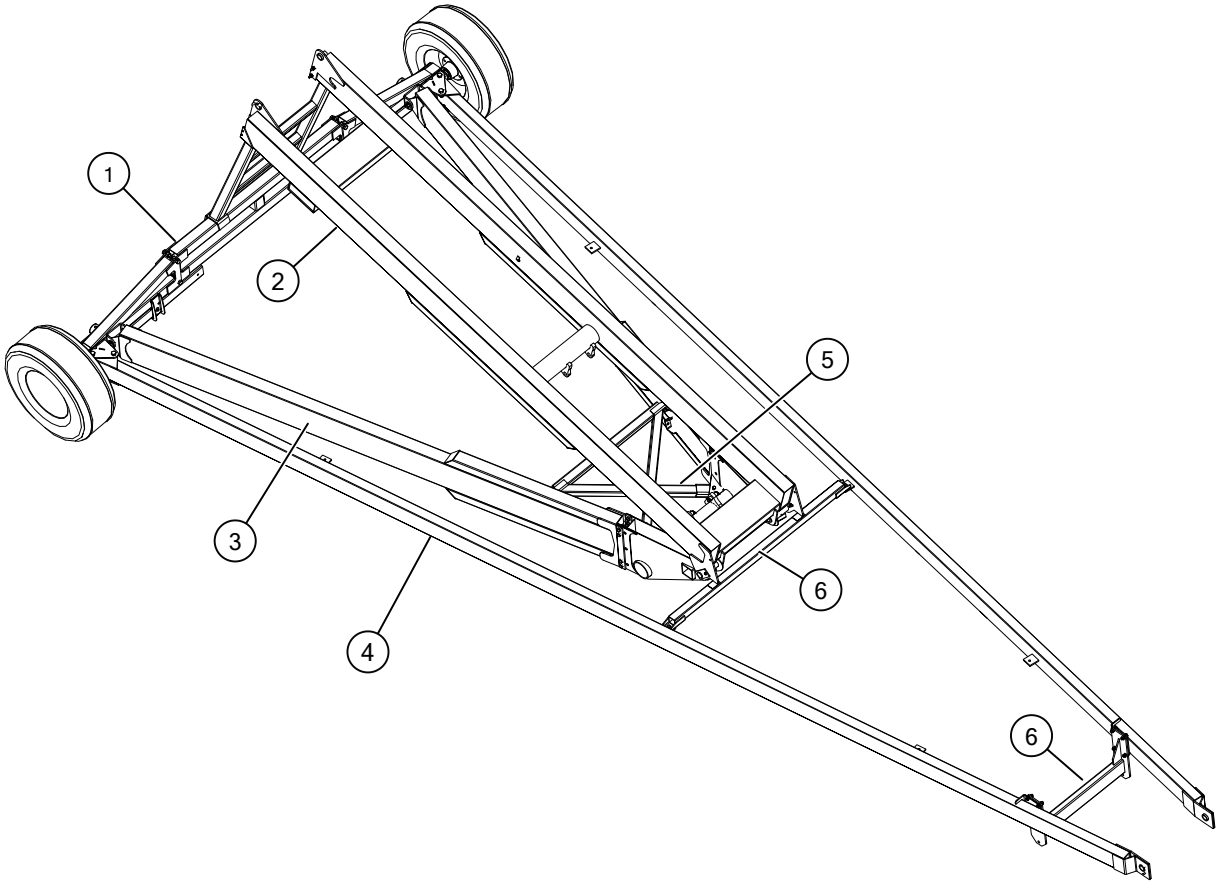
3.32. Assemble the Scissor-Lift Frame (105' — 120' Models)

Scissor Frame Component Overview

Table 28. General Components of the Scissor Frame

Item	Description
1	Axle
2	Lift Ladder
3	Lift Arms
4	Axle Arms
5	Bowtie and Bowtie Cross Brace
6	Supporting Braces

Figure 77. General Components of the Scissor Frame



Assemble the Axle

1. Assemble the axle ends (2, 3) to the axle center section (1).

   Note

   In this instance, the left-hand (LH) and right-hand (RH) sides are defined by standing at the hopper and looking toward the spout.

2. Remove any dirt from the axle extensions (6), fully insert them into the axle ends (2, 3), and secure with pins (7, 8).
3. Install the wheels as described in Section 3.30. – Install the Wheels on page 95.

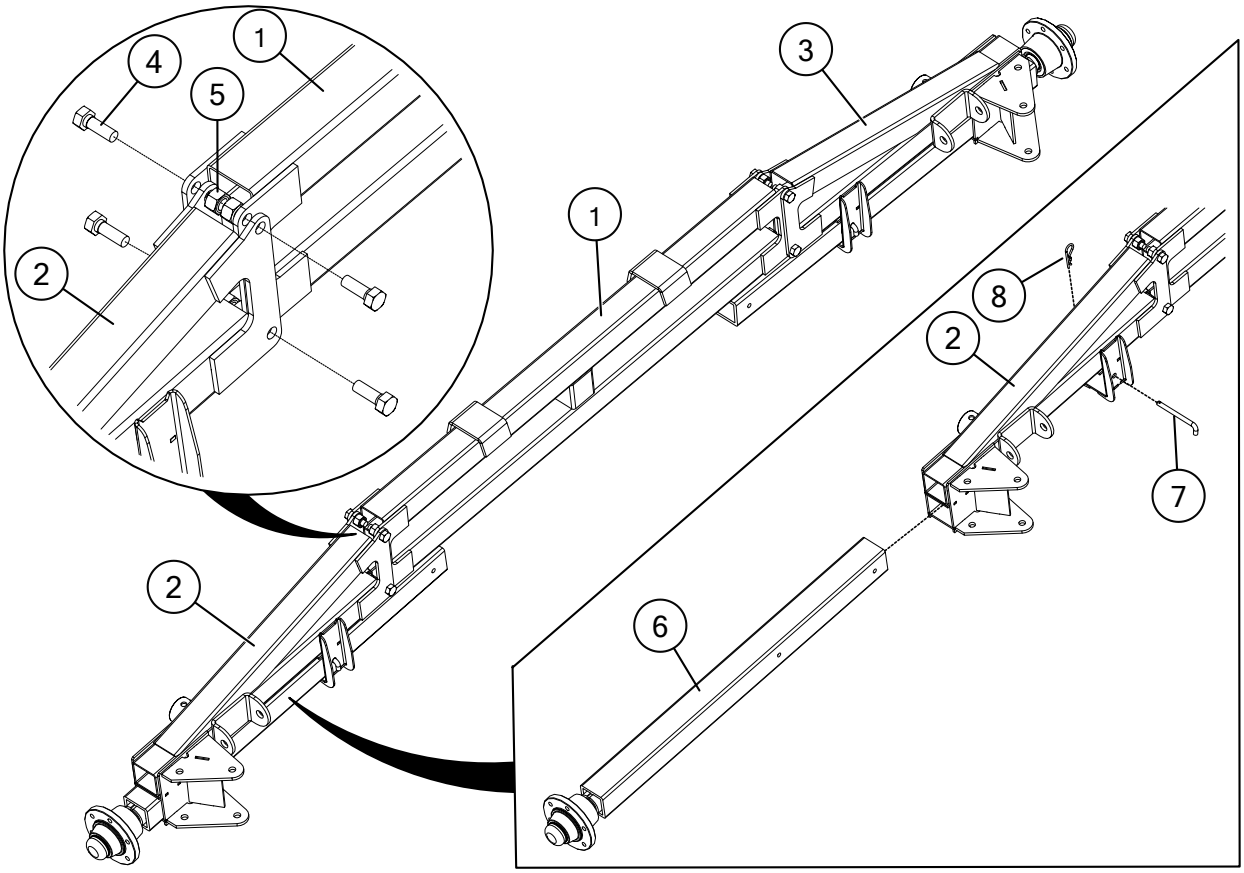
Table 29. Axle Components

Item	Description
1	Axle Center Section
2	Axle End — LH
3	Axle End — RH
4	3/4" x 2" Hex Bolt GR8
5	3/4" Nylon Locknut

Table 29 Axle Components (continued)

Item	Description
6	Axle Extension with Hub
7	1/2" x 5" Hitch Pin
8	3/16" x 3–1/4" Hairpin

Figure 78. Assembling the Axle



Install the Axle Arms onto the Axle

⚠ WARNING Shifting components while assembling.

Chock the wheels before beginning work. Failure to chock the wheels can result in injury and equipment damage.

1. Position the end of the axle arm (3) into the bracket welded to the axle (1) (see Figure 79).
2. Fasten the axle arm to the axle with 3/4" x 2" hex bolts (2) and 3/4" locknuts (4).
3. Loosely fasten the cross brace (7) to the axle arms using 1/2" x 1-3/4" hex bolts (6) and 1/2" locknuts (5).

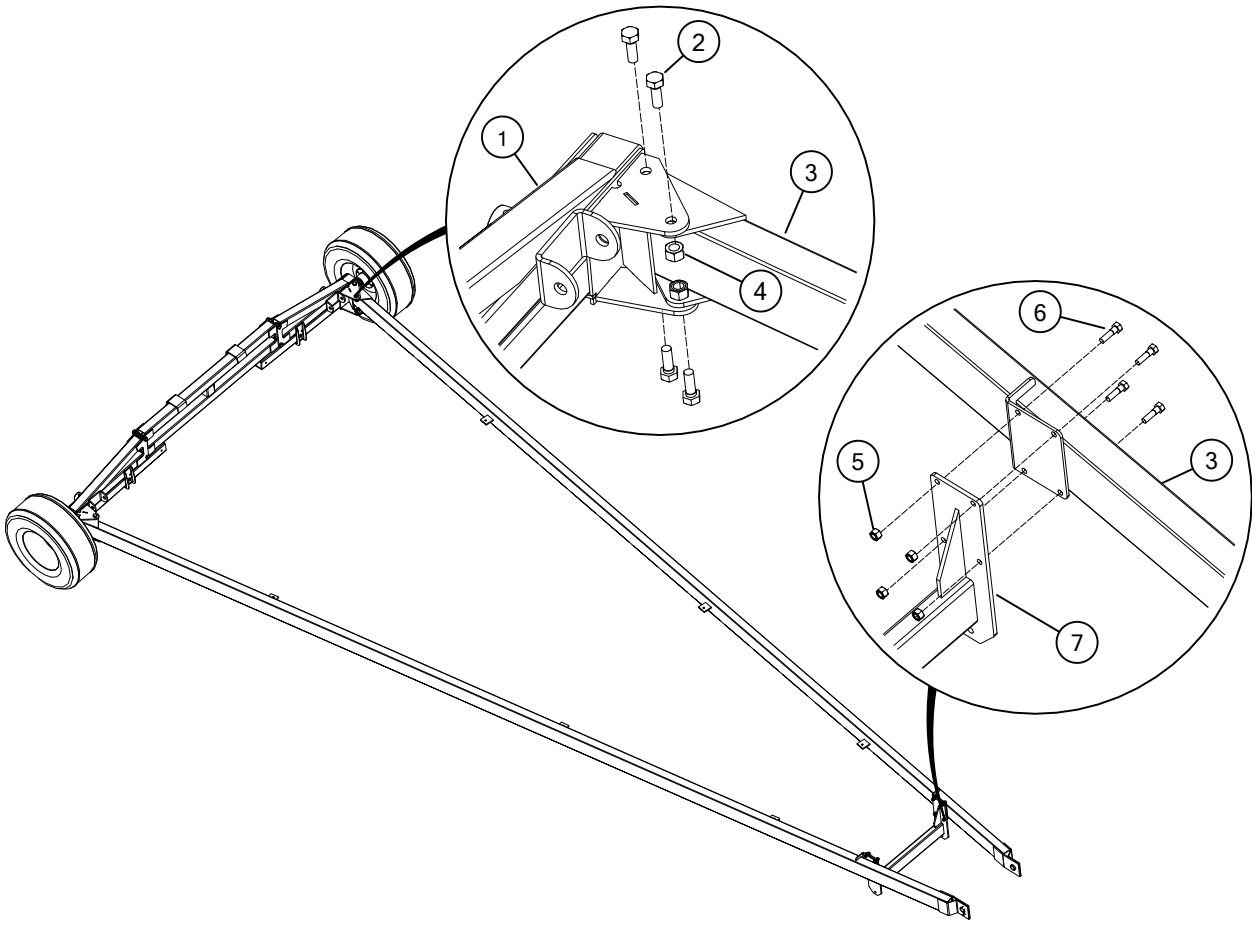
Note

The crossbrace will be tightened as the tube is attached to the frame.

Table 30. Axle Arm Components

Item	Description
1	Axle
2	3/4" x 2" Hex Bolt (Plated, GR8)
3	Axle Arm
4	3/4" Nylock Nut
5	1/2" Nylock Nut
6	1/2" x 1–3/4" Hex Bolt (Plated, GR8)
7	Cross Brace

Figure 79. Installing the Axle Arms



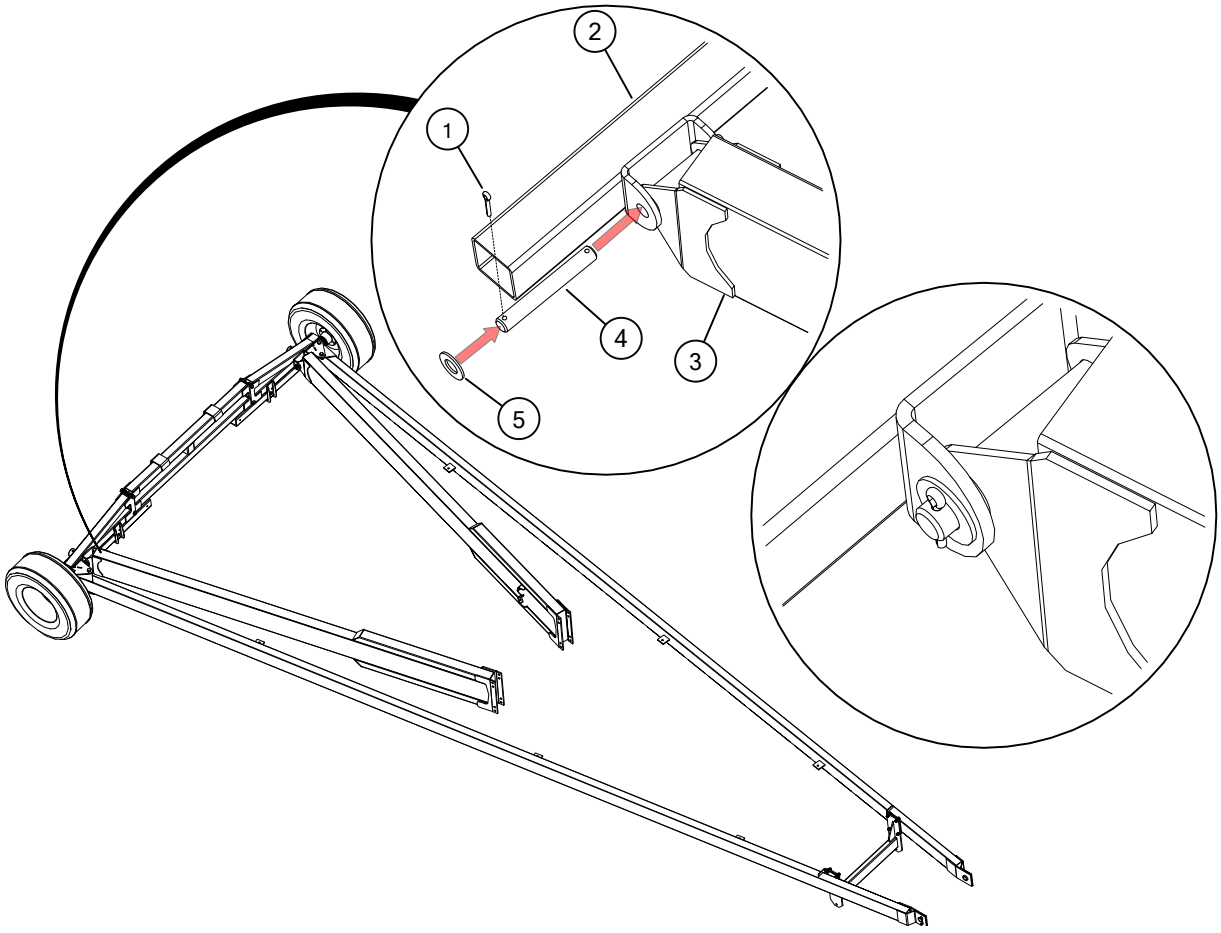
Install the Scissor Arms

1. Position the scissor arm (3) into the bracket on the axle (2) (see Figure 80).
2. Slide the lower scissor attach pin (4) through the holes in the bracket and the channel in the scissor arm.
3. Secure the attach pin in position with 1" flat washers (5) and 1/4" x 2" cotter pins (1).

Table 31. Scissor Arm Components

Item	Description
1	1/4" x 2" Cotter Pin (Plated)
2	Axle
3	Scissor Arm
4	1" x 7–1/2" Lower Scissor Attach Pin
5	1" Flat Washer (Plated)

Figure 80. Installing the Scissor Arms



Install the Bowtie

1. Slide the bowtie (5) over the ends of the scissor arms (4) (see Figure 81).
2. Fasten the bowtie to the scissor arms with 5/8" x 2" hex bolts (6) and 5/8" locknuts (7).
3. Fasten the bowtie cross brace (1) to the scissor arms with 1/2" x 1–1/2" hex bolts (3) and 1/2" locknuts (2).

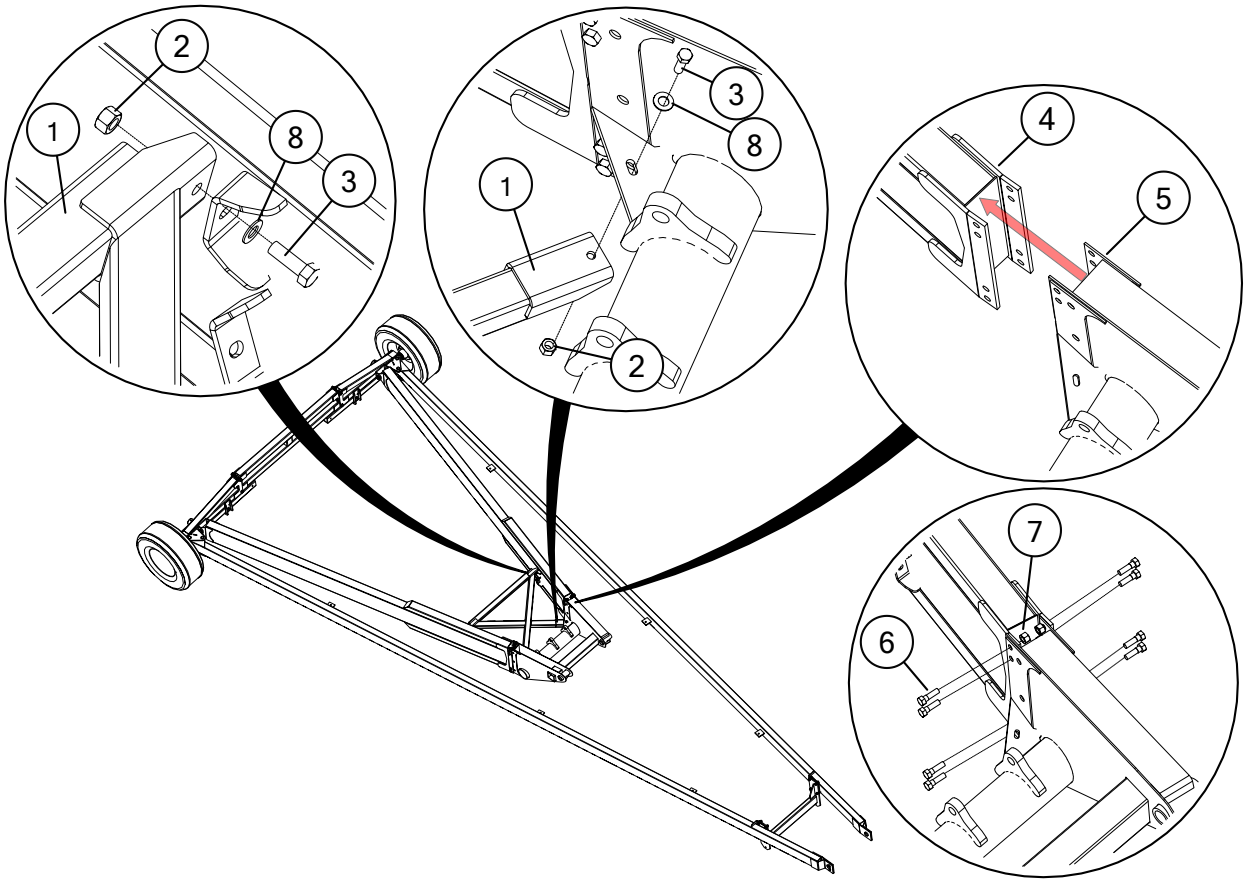
Note

A steel punch may be required to align the bolt holes.

Table 32. Bowtie and Bowtie Cross Brace Components

Item	Description
1	Bowtie Cross Brace
2	1/2" Nylock Nut
3	1/2" x 1–1/2" Hex Bolt (GR8)
4	Scissor Arm
5	Bowtie
6	5/8" x 2" Hex Bolt (GR8)
7	5/8" Nylock Nut
8	1/2" Flat Washer

Figure 81. Installing the Bowtie



Install the Lift Ladder and Transport Brace

1. Position the lift ladder (2) onto the bowtie (8) (see Figure 82).
2. Slide the scissor pins (6) into the holes on the lift ladder and through the channel on the bowtie.

Note

Grease the scissor pin before inserting it into the bowtie.

3. Secure the scissor pins in place with 7/16" x 1–1/2" hex bolts (5) and 7/16" (7) locknuts.
4. Loosely fasten the transport brace (4) to the lift ladder with 1/2" x 1–3/4" hex bolts (3) and 1/2" locknuts (1).

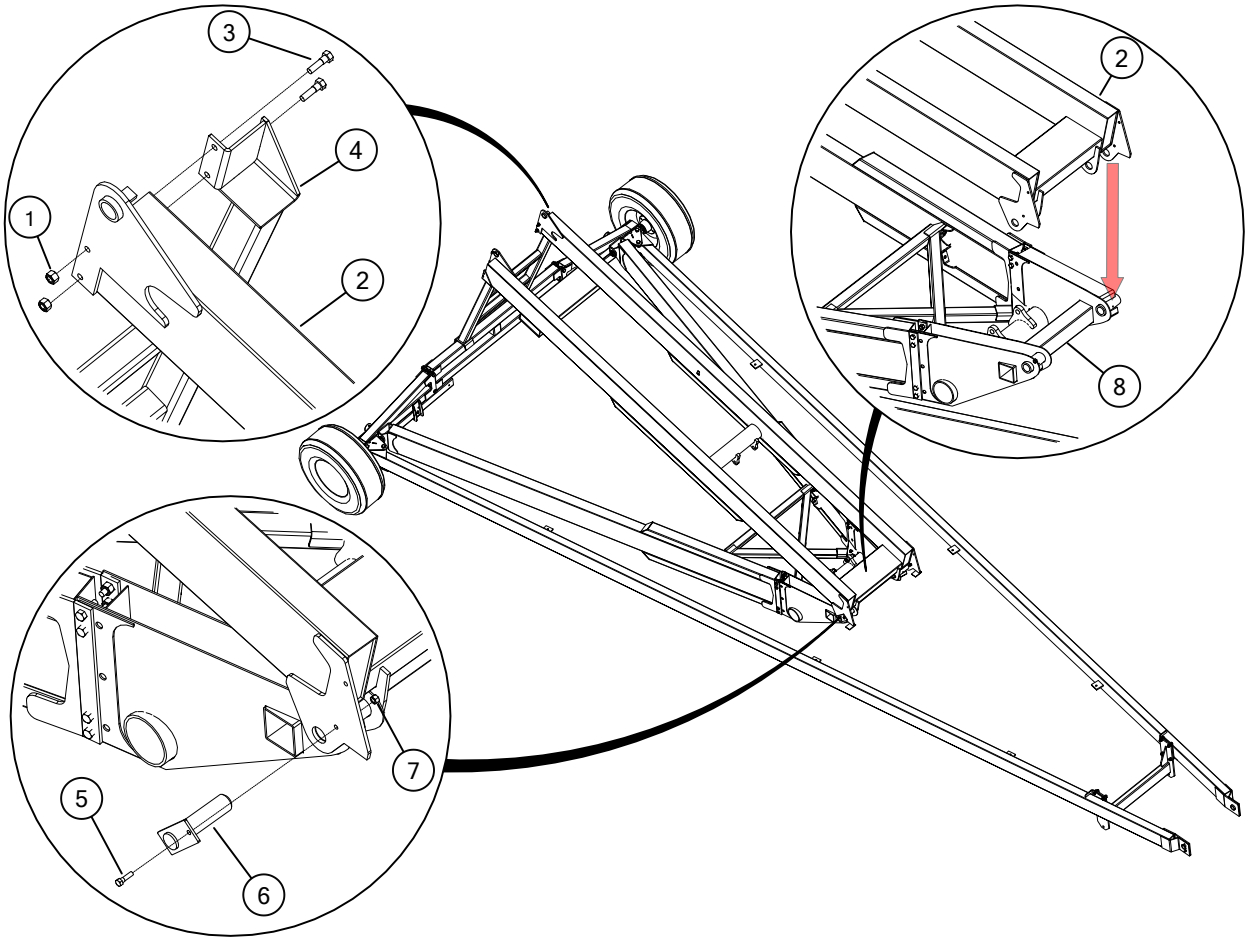
Note

The transport brace will be tightened after the tube has been attached.

Table 33. Lift Ladder and Transport Brace Components

Item	Description
1	1/2" Nylock Nut
2	Lift Ladder
3	1/2" x 1–3/4" Hex Bolts (GR8)
4	Transport Brace
5	7/16" x 1–1/2" Hex Bolts (GR8)
6	Scissor Pin
7	7/16" Nylock Nut
8	Bowtie

Figure 82. Installing the Lift Ladder and Transport Brace



Install the Hydraulic Cylinders

1. Unchock the wheels of the frame to allow them some movement .
2. Position the hydraulic cylinders (1) with the rod end towards the bowtie and the ports facing the ground (see Figure 83 and Figure 84).
3. Secure the rods with clevis pins (2) and hairpin clips (3).

Table 34. Hydraulic Cylinder Components

Item	Description
1	4–1/2" x 40" Hydraulic Cylinder
2	Clevis Pin
3	Hairpin Clip

Figure 83. Installing the Hydraulic Cylinders

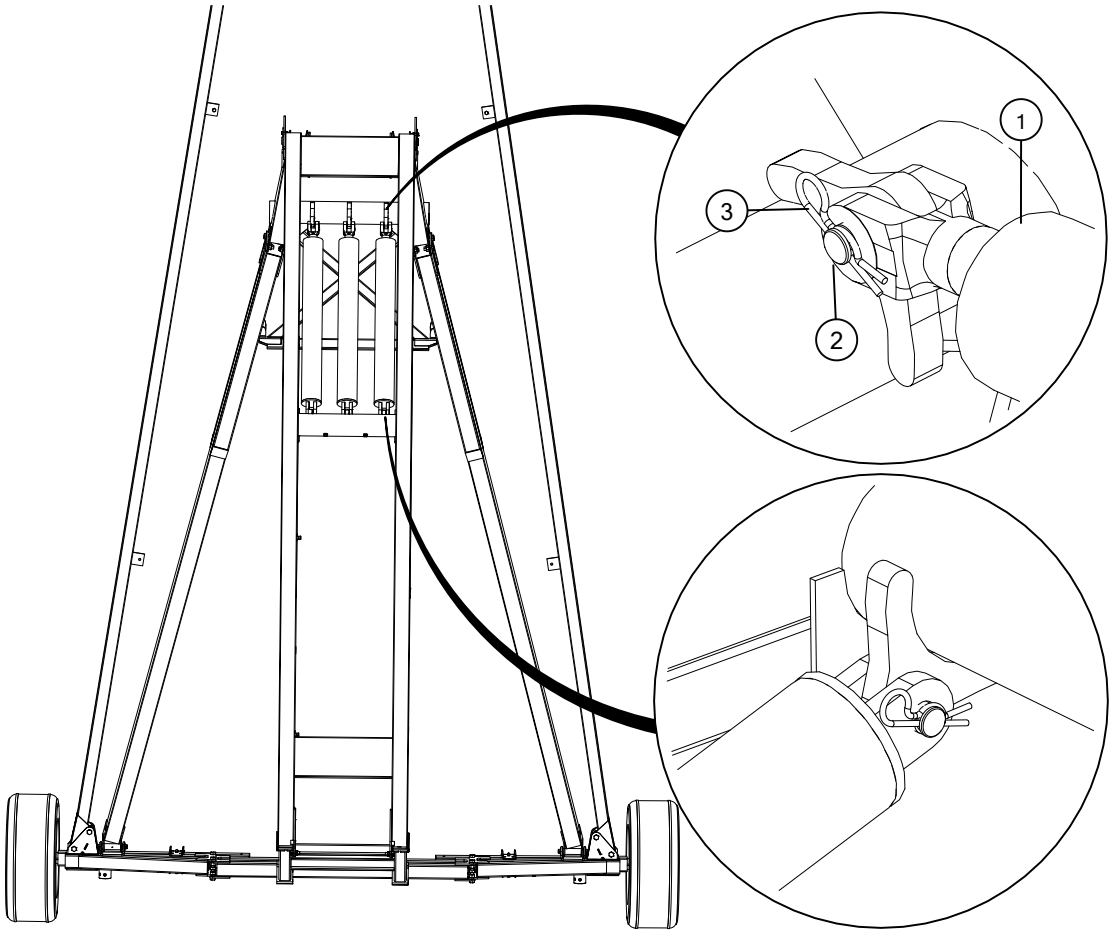
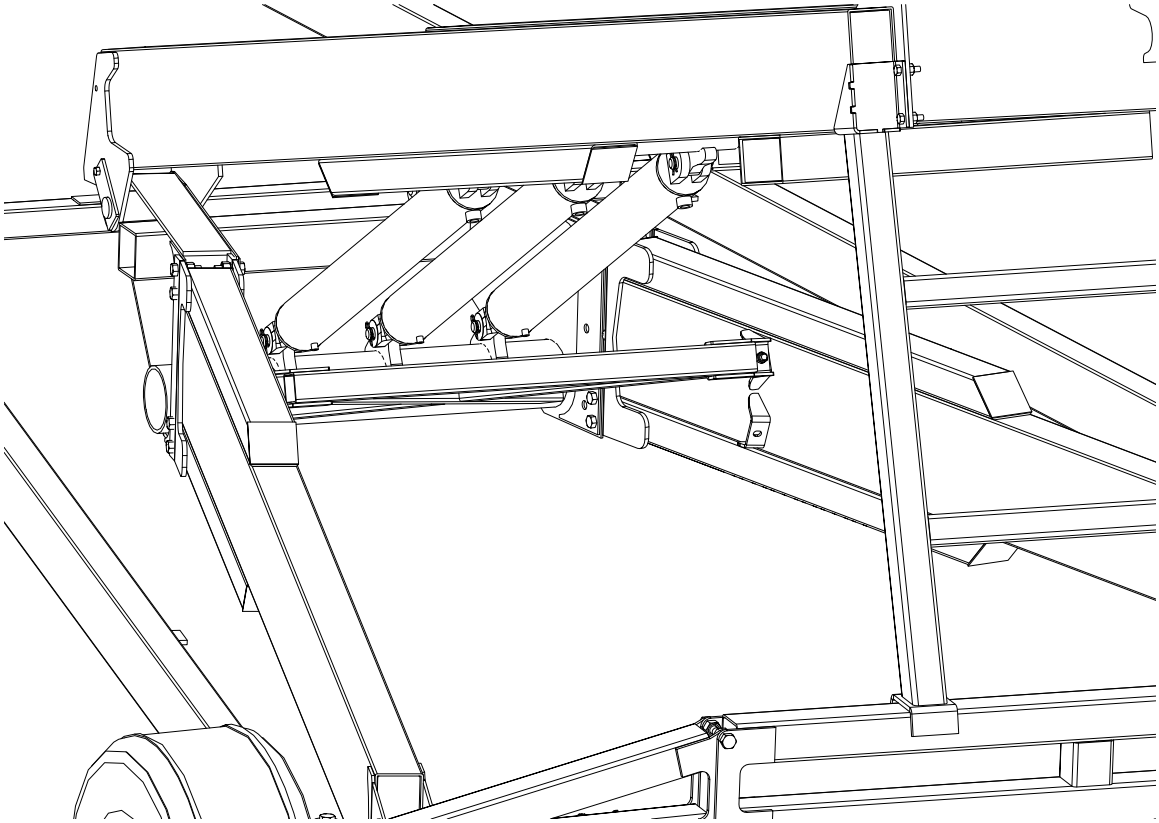


Figure 84. Position of Hydraulic Cylinder Ports



Attach the Tube to the Frame

1. Apply grease to the four tube frame pins (2) (see Figure 85).
2. Lower the tube into position on the frame taking care to center it.
3. Fasten the stiffener brackets (4) to the frame and lower suspension bracket with 1" x 5" hex bolts (1), tube frame pins (2), and 1" locknuts (3) (see also Figure 86).
4. Fasten the frame stiffener braces (5, 6) to the frame and stiffener bracket with 5/8" x 2" hex bolts (8), a 5/8" x 2–1/2" hex bolt (9), and 5/8" locknuts (10).
5. Tighten the bolts on the cross brace (7).
6. Fasten the upper suspension bracket to the frame with 1" x 5" hex bolts (1), tube frame pins (2), and 1" locknuts (3).
7. Tighten the bolts on the transport brace.
8. Fasten the scissor rest (12) to the frame with 1/2" x 1–1/2" hex bolts (11) and 1/2" locknuts (13) (see Figure 87).

Table 35. Tube Attachment Components

Item	Description
1	1" x 5" Hex Bolts (GR8, Plated)
2	Tube Frame Pin
3	1" Nylock Nut

Table 35 Tube Attachment Components (continued)

Item	Description
4	Stiffener Bracket
5	Stiffener Brace (LH)
6	Stiffener Brace (RH)
7	Crossbrace
8	5/8" x 2" Hex Bolts (GR8)
9	5/8" x 2–1/2" Hex Bolt (GR8)
10	5/8" Nylock Nut
11	1/2" x 1–1/2" Hex Bolts (GR8)
12	Scissor Rest
13	1/2" Nylock Nut

Figure 85. Attaching the Tube to the Frame

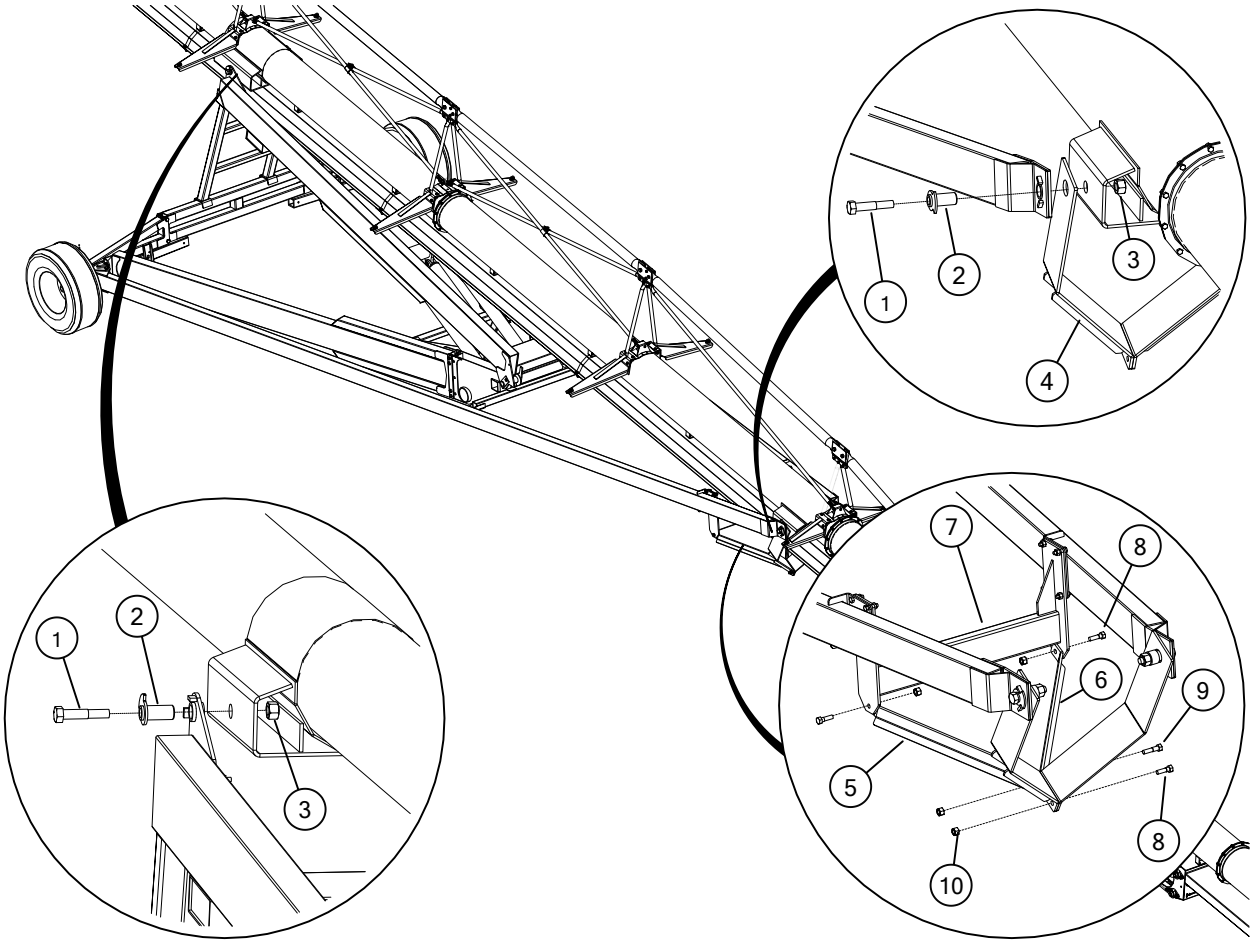


Figure 86. Correct Position of Tube Frame Pins

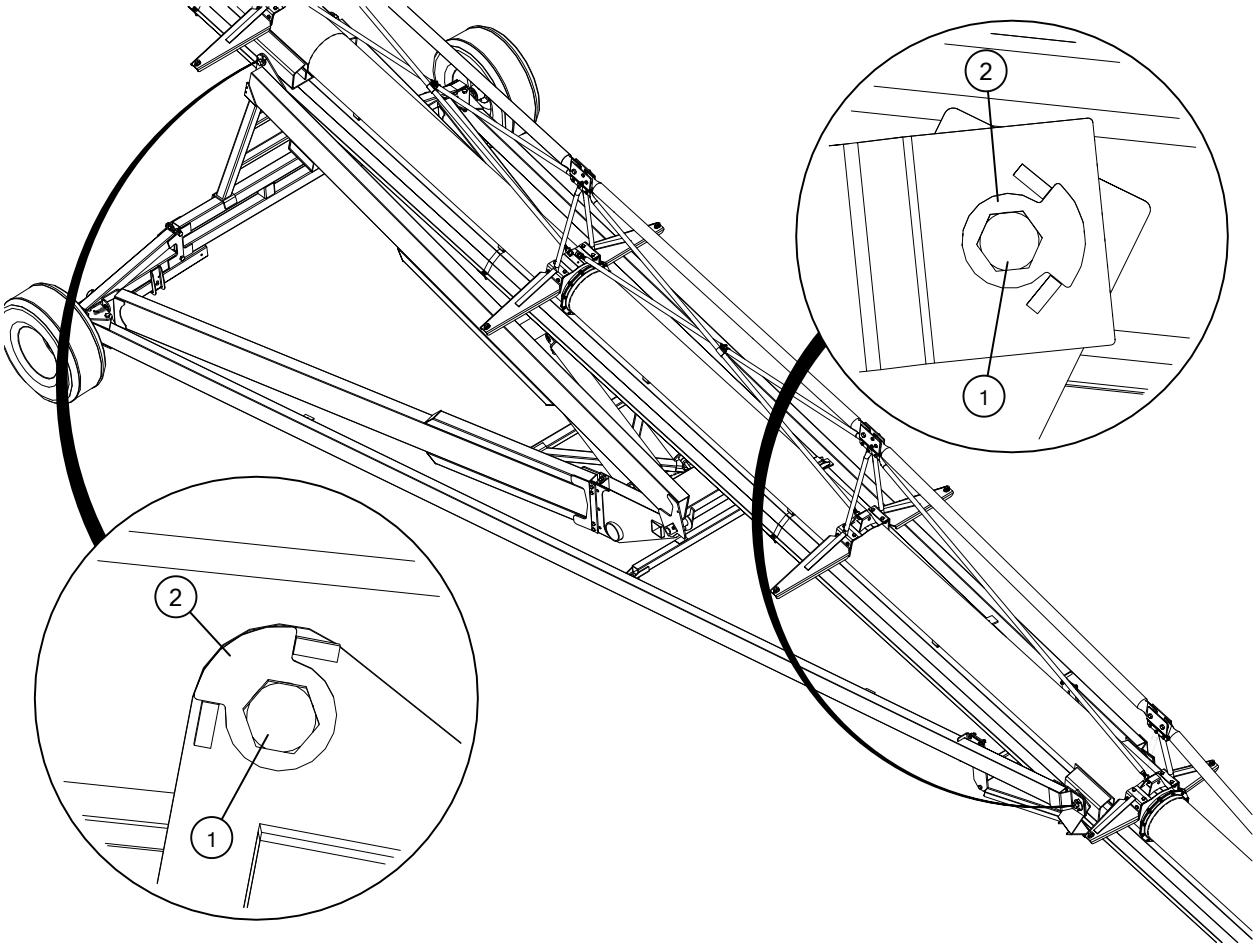
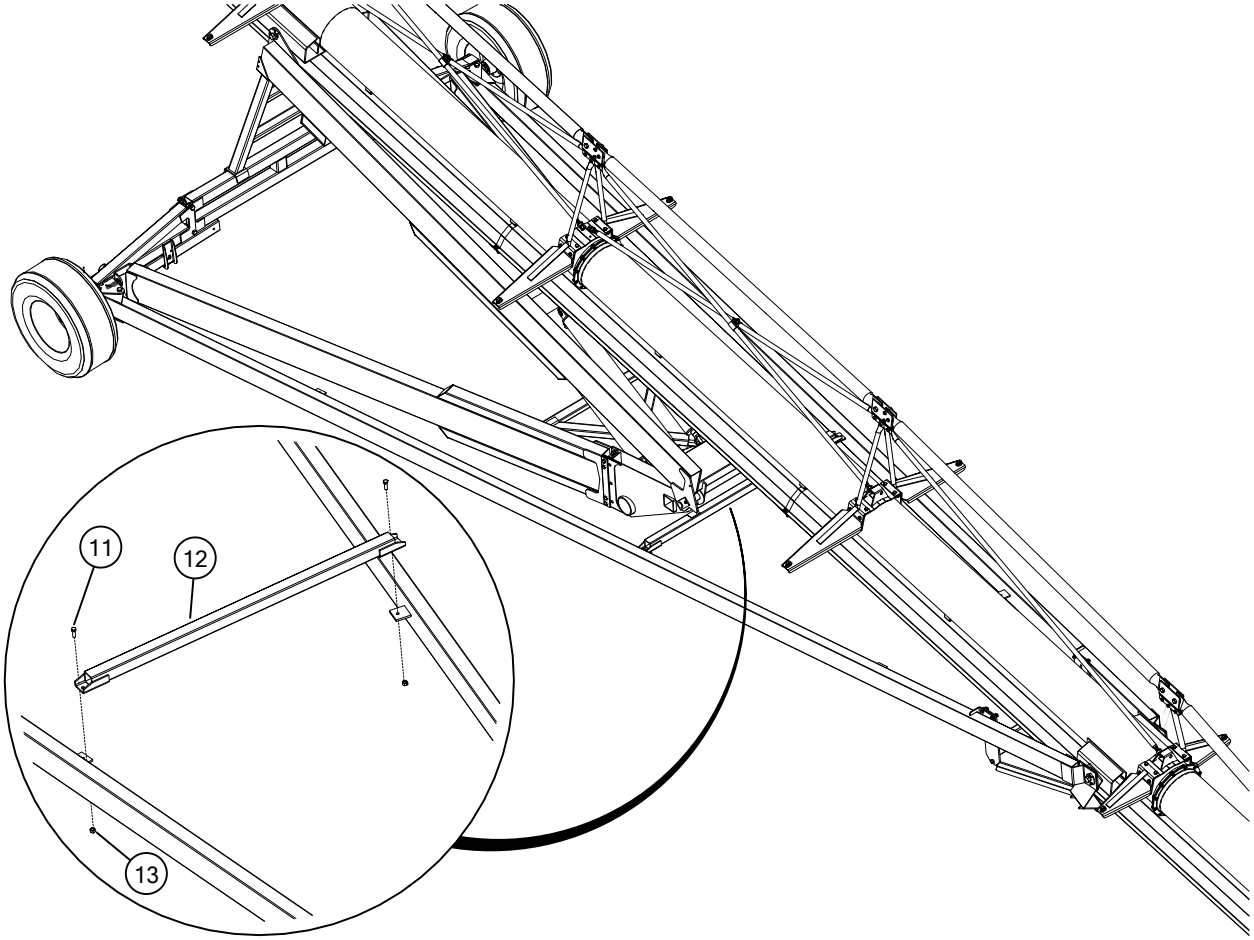


Figure 87. Installing the Scissor Rest



3.33. Plumb the Hydraulic Cylinder Hoses for the Scissor-Lift Frame (65’ – 95’ Models)

1. Remove plugs from the hydraulic cylinders (7) (see Figure 88).
2. Install the breather (2) on the lower end of cylinder.
3. Use pipe sealant on the check valve (12) joints. Install coupling (4), check valve (12), and swivel (9).

   Important

   Ensure hydraulic ports are aligned to prevent binding with the frame.
4. Attach the hydraulic hose end (6) to swivel fitting (9) by check valve.
5. Lay the hydraulic hose (6) along the ladder and within the weld-on hose clips. Provide slack or a loop at the suspension bracket.

   NOTICE Equipment Damage

   Do not make bends in the hydraulic hose too tight. The bends must have a radius of at least 4" to prevent failure of the hose.
6. Route hydraulic hose through the weather guard brackets welded onto the tube, all the way back to the hopper.

Important

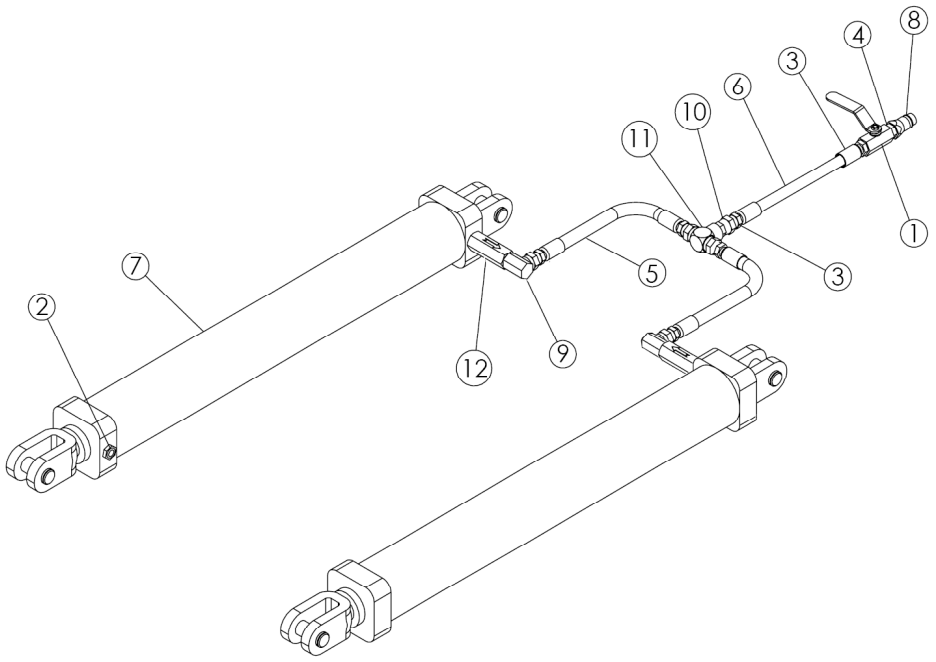
Protect hose end from dirt.

7. Install ball valve (1), coupling (4), and a pioneer tip (8) on the end of the hydraulic hose.
8. Tie the hose as required with the hose ties supplied. Gently tap the weld-on hose clips with a rubber mallet to ensure the hose is secure, but not squashed.

Table 36. Hydraulic Cylinder Components

Item	Description	Quantity For Model	
		65' / 75'	85' / 95'
1	Ball Valve-1/2” (Bvcs2103-d)	1	1
2	Brass Vent-1/2” (237-253)	2	2
3	Crimp 3/8 hose X 1/2 Npt	6	6
4	Hex Nipple-1/2” (S1022-d)	1	1
5	Hose 3/8” Hydraulic (2’)	2	2
6	Hose 3/8” Hydraulic (60’) Braid	1	-
	Hose 3/8” Hydraulic (65’) Braid	-	1
7	Hydraulic Cylinder 4x30	2	-
	Hydraulic Cylinder 4x36	-	2
8	Pioneer Tip	1	1
9	Swivel 90 - 1/2mpt X 1/2fpt	2	2
10	Swivel-1/2” Straight (S1120-dd)	1	1
11	Tee-swivel-1/2” Fem	1	1
12	Valve-check(Cvf(1.5)-04-a1-npt)	2	2

Figure 88. Hydraulic Plumbing for 65' to 95' Models



3.34. Plumb the Hydraulic Cylinder Hoses for the Scissor-Lift Frame (105’ – 120’ Models)

1. Remove plugs from the hydraulic cylinders (7) (see Figure 89).
2. Install the 90° swivel (2) into the cylinders.
3. Attach the hydraulic hose end (5) to 90° swivel (2).
4. Install tee-swivels (3) and one hex nipple (4).
5. Lay the hydraulic hose (6) along the ladder and within the weld-on hose clips (9) (see Figure 90). Provide slack or a loop at the suspension bracket (see Figure 91).

   NOTICE

   Equipment Damage

   Do not make bends in the hydraulic hose too tight. The bends must have a radius of at least 4" to prevent failure of the hose.

6. Route hydraulic hose through the weather guard brackets welded onto the tube, all the way back to the hopper.

   Important

   Protect hose end from dirt.

7. Install ball valve (1), hex nipple (4) and quick-coupling nipple (8) at the end of the hose.
8. Install the hose holders (12) as shown.
9. Tie the hose as required with the hose ties supplied. Gently tap the weld-on hose clips (9) with a rubber mallet to ensure the hose is secure, but not squashed.

Table 37. Hydraulic Cylinder Components

Item	Description	Quantity
1	Ball Valve 1/2” (bvcs3103-d)	1
2	Swivel 90 - 1/2mpt X 1/2fpt	3
3	Tee-swivel-1/2” Fem	2
4	Nipple-1/2"PT HEX	2
5	Hose 3/8 (2')	3
6	Hose 3/8 (75')	1
7	Hydraulic Cylinder 2x40	3
8	Quick Coupling Nipple-1/2"FPT	1
9	Welded-on Hose Clip	4
10	1/4" x 3" Tek Screw	2
11	1/4" Flat Washer	2
12	Plastic Hose Holder	2

Figure 89. Hydraulic Plumbing for 105' to 120' Models — View 1

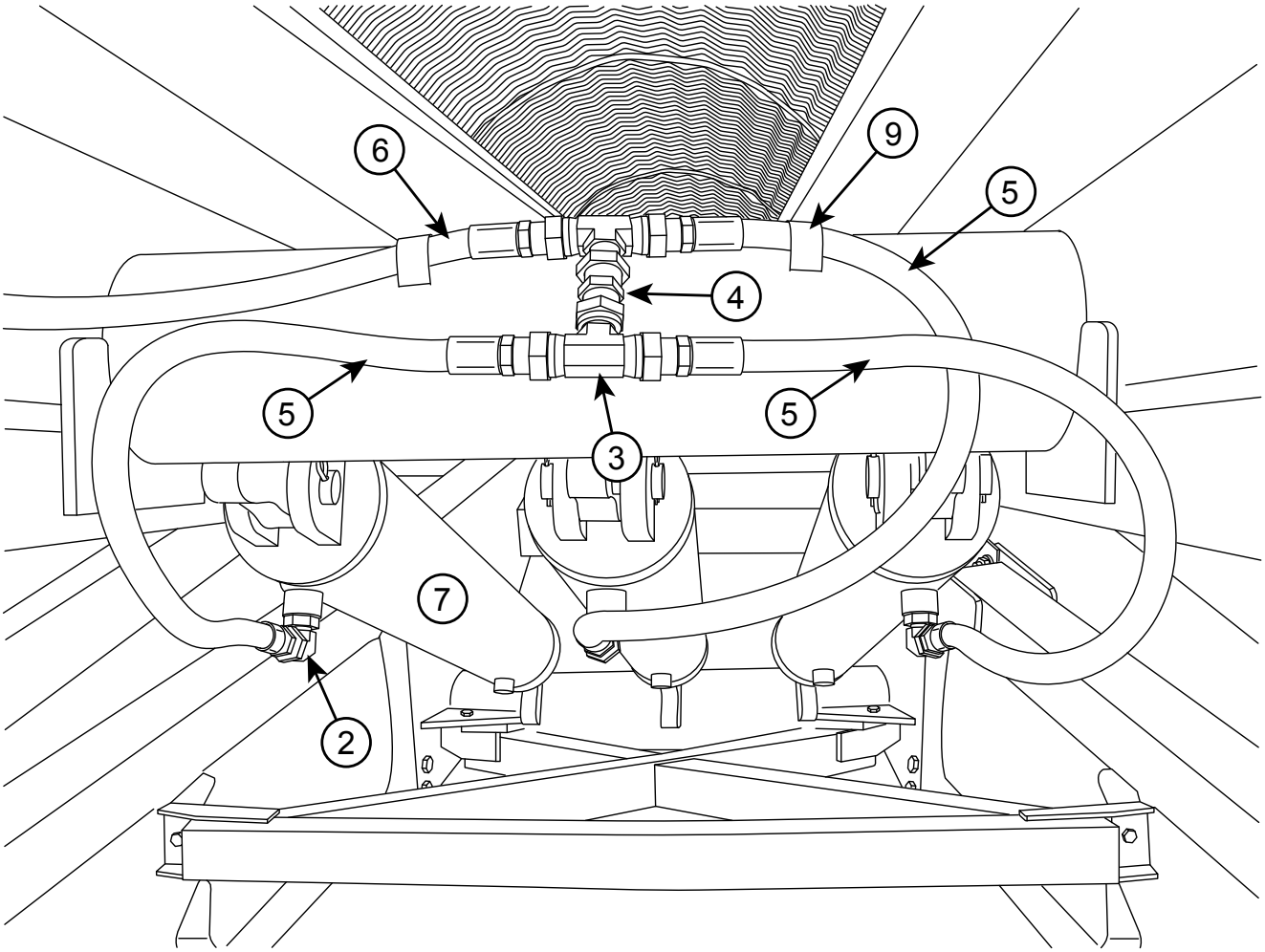


Figure 90. Hydraulic Plumbing for 105' to 120' Models — View 2

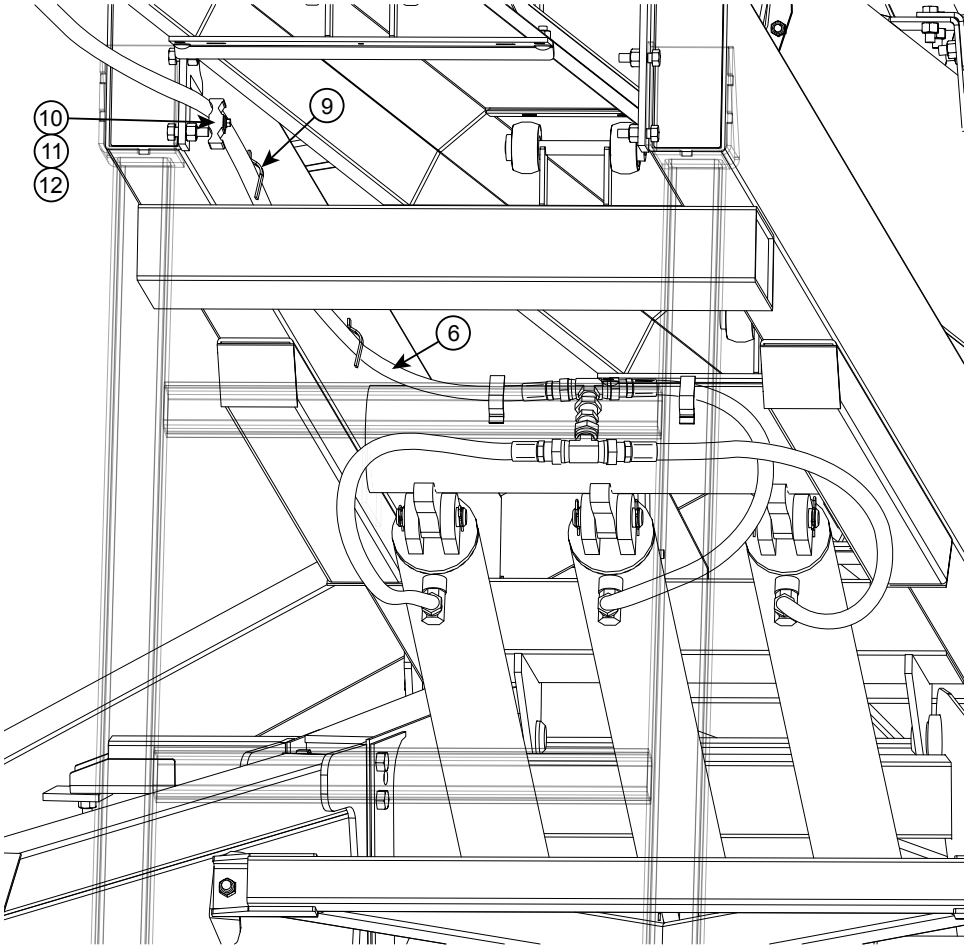
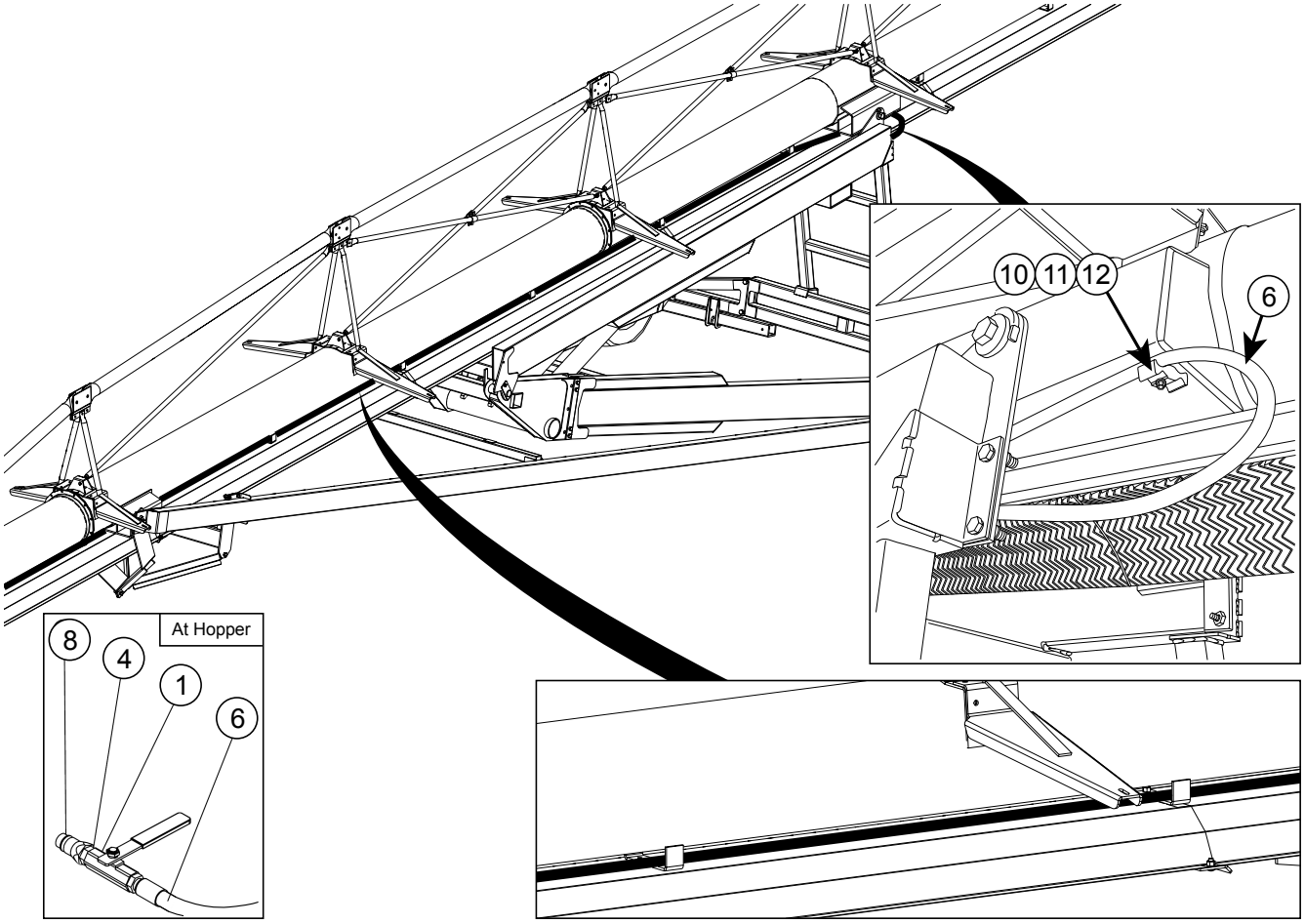


Figure 91. Hydraulic Plumbing for 105' to 120' Models — View 3

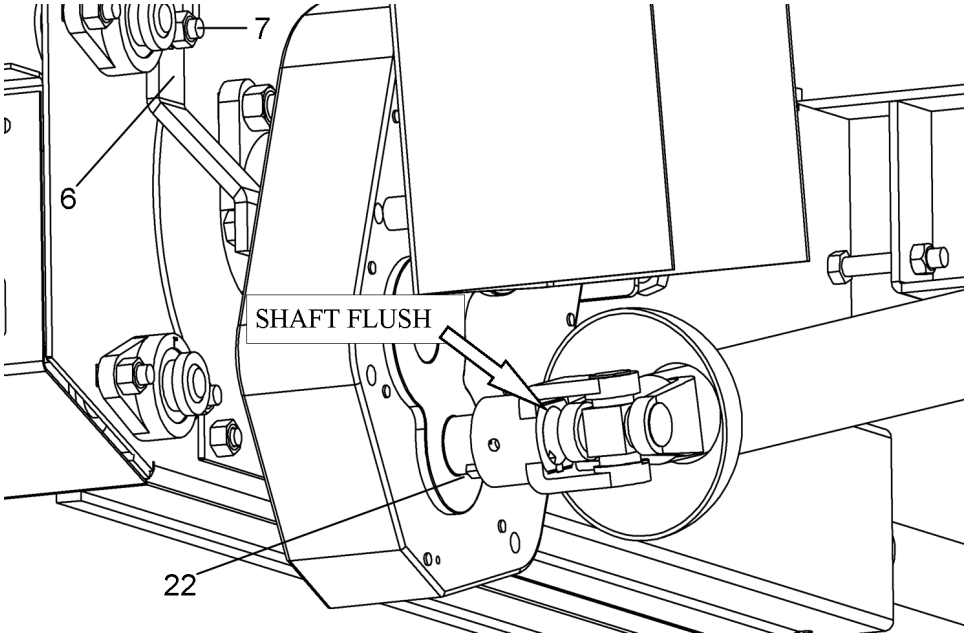


3.35. Drive Assemblies

3.35.1 Install the Side PTO

1. Slide the gearbox (17) onto the drive roller shaft. Secure with 3/8" x 4-3/8" key (1), 1/2" x 2" bolt (9), 1/2" flat washer (12), and 1/2" lock washer (14) (see Figure 93).
2. Slide the PTO shaft (18) onto the gearbox (17) with 3/8" x 2" key (2) until it is flush with the end of the shaft as shown in Figure 92. Be sure not to damage any grease fittings during installation.

Figure 92. PTO Shaft and Gearbox



3. Tighten both set screws on the yoke.
4. Install the gearbox stabilizer (6) with a 1/2" x 1-1/2" bolt (8) through the hole in the side of the s-drive and a 1/2" locknut (11).
5. Mount the PTO shield (4) using 1/2" x 6" bolts (7) and 1/2" locknuts (11). The front bolt (10) should secure the stabilizer bar (6) to the gearbox.
6. Install the PTO cradle (3) on the s-drive with 1/2" x 1-1/2" bolt (8) and 1/2" locknut (11).
7. Place the PTO shaft (18) in the cradle.
8. Install a 1/4" pin (15) and 3/16" x 3-1/4" hairpin (16) to secure the shaft.
9. Install the safety decal on the s-drive as shown in the Safety chapter.

   Important

   Ensure the shaft shield is seated against the bearing. It may be necessary to tap the cover for it to seat properly.

10. Place the PTO safety manual in the conveyor manual holder.
11. Install a gearbox breather to the inside top of the gearbox using a bushing (19), a 1/4" x 90° elbow (20), a 1/4" x 4" nipple (22), a 1/4" coupling (23), and a 1/4" vent (21).
12. Check the gearbox for oil.

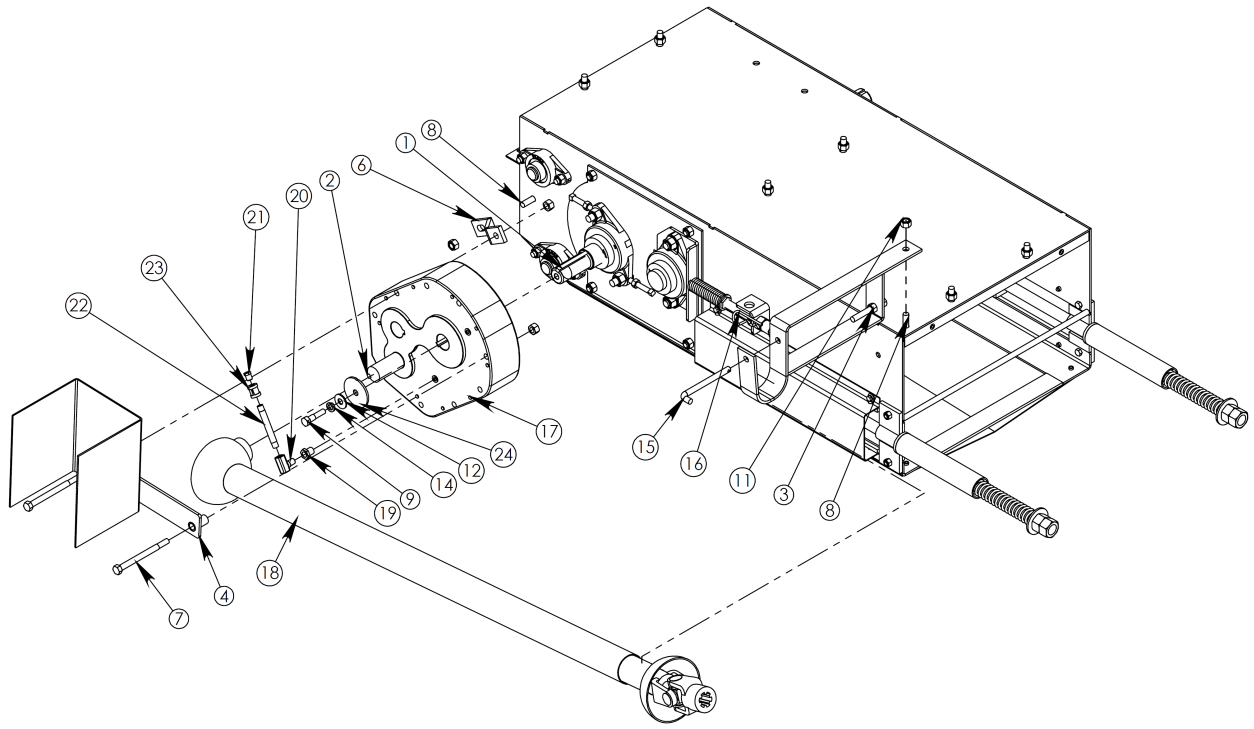
Table 38. Side PTO Components

Item	Description	Quantity
1	Key 3/8" x 4-3/8" Long	1
2	Key 3/8" x 2"	1
3	PTO Cradle Extended	1
4	PTO Guard M590 Mount	1
6	Gearbox Stabilizer	1

Table 38 Side PTO Components (continued)

Item	Description	Quantity
7	Bolt Hex 1/2" x 6"	2
8	Bolt Hex 1/2" x 1-1/2" GR8	2
9	Bolt Hex 1/2" x 2" GR8	1
11	Nut Nylock 1/2"	4
12	Flat Washer 1/2" Plated USS	1
14	Washer Lock 1/2"	1
15	Pin Hitch 1/4"	1
16	Hairpin 3/16" x 3-1/4"	1
17	Gearbox Par 2:1 CW/CW 1-1/2" M590A	1
18	PTO Shaft 1-1/2" x 75"	1
19	Reducer Bushing 3/8" x 1/4" BLK	1
20	Elbox, Extruded, 1/4" PT/90° Brass	1
21	Brass Vent, 1/4" MPT	1
22	Nipple 1/4" x 4" Black Pipe	1
23	Coupling 1/4" Black Pipe	1
24	End Cap for Axle	1

Figure 93. Side PTO Installation onto S-Drive



3.35.2 Install the Front PTO Drive

This procedure describes the installation of the hitch, gearbox, drive shafts, and guards.

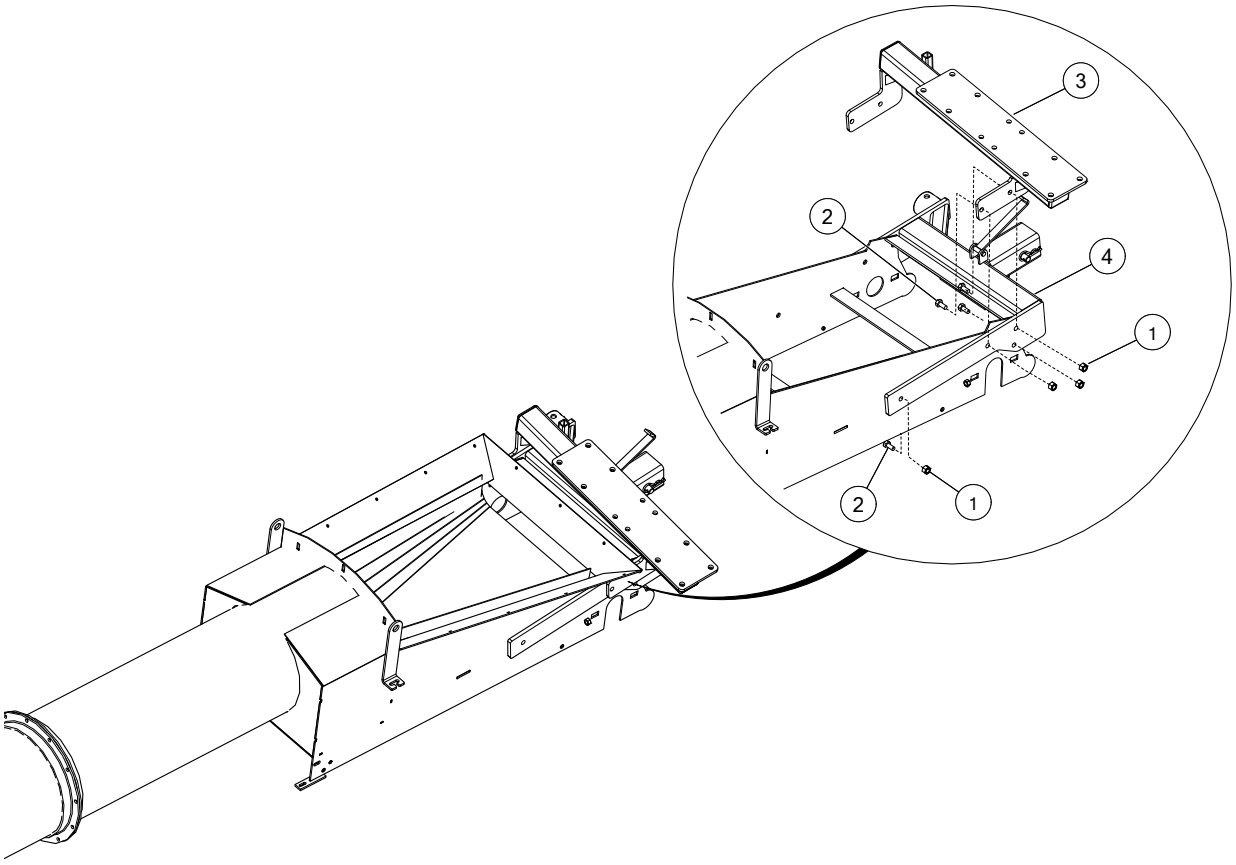
Install the Hitch and Gearbox Mount

1. Attach the hitch (4) and gearbox mount (3) to the hopper using 1/2" x 1" hex bolts (2) and 1/2" locknuts (1) (see Figure 94).

Table 39. Hitch and Gearbox Mount Components

Item	Description
1	1/2" Nut Nylock
2	1/2" x 1" Bolt Hex GR8
3	Gearbox Mount
4	Hitch

Figure 94. Installing the Hitch and Gearbox Mount



Install the 5190 Gearboxes

1. Fill each of the two 5190 gearboxes (1) with 80W-90 gear lube until oil flows out the side of the indicator port (see Figure 95).
2. Attach the gearboxes to the gearbox mount with 1/2" x 1–1/2" hex bolts (4) and 1/2" lock washers (3).
3. Connect the gearboxes with two sprockets (5), two 3/8" x 2" keys (6), and a chain connector (7).
4. Install the breather (8) to each gearbox.
5. Attach the half coupling guards (10) to the gearbox mount with 3/8" x 1" hex bolts (9) and 3/8" locknuts (12).
6. Fasten the coupling guards together using 1/4" x 3/4" bolt (2), 1/4" lock washer (11), and 1/4" locknut (13).

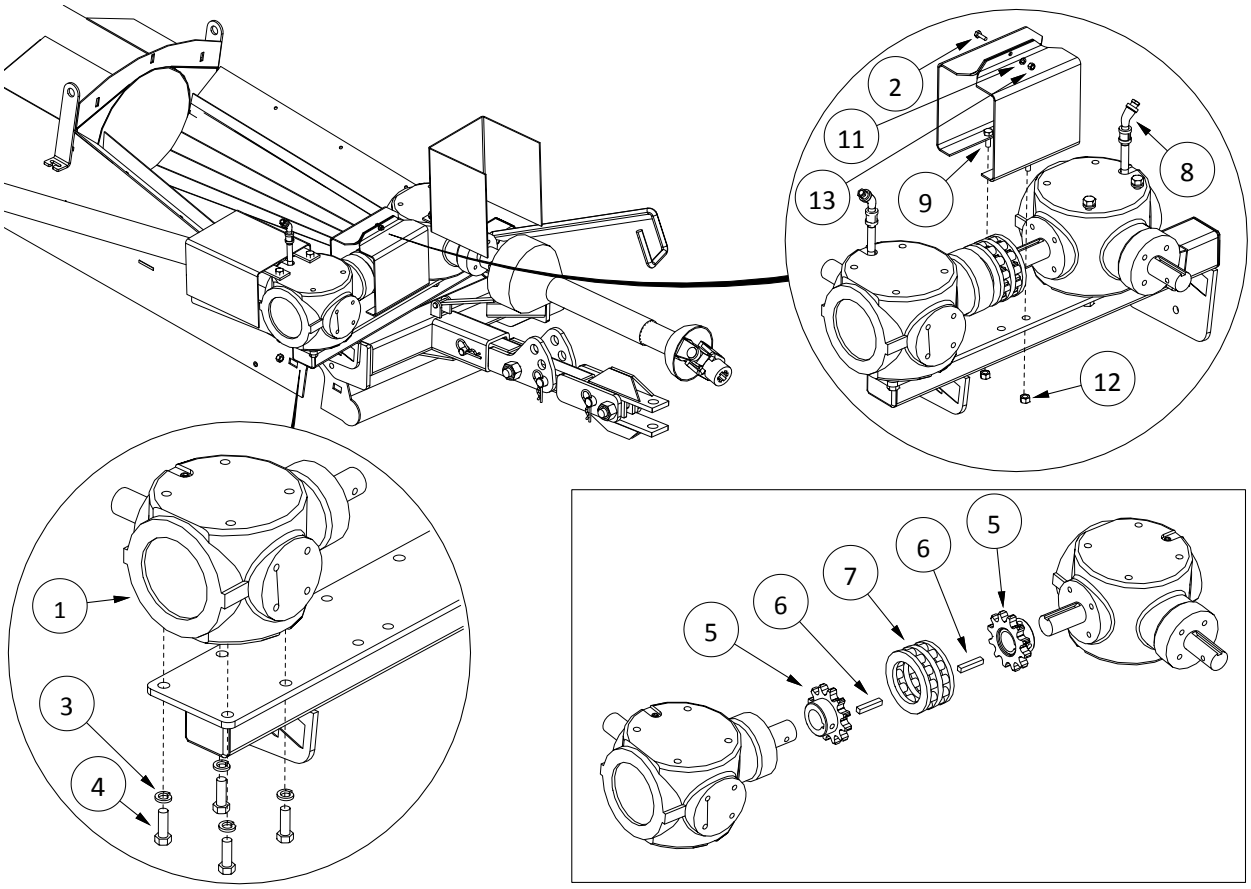
Table 40. 5190 Gearbox Components

Item	Description
1	5190 Gearbox 1:1 CW/CW, 1–1/2
2	1/4" x 3/4" Bolt
3	1/2" Lock Washer
4	1/2" x 1-1/2" Bolt Hex GR8
5	Sprocket H80B12 X 1.5

Table 40 5190 Gearbox Components (continued)

Item	Description
6	3/8" x 2" Key
7	Chain Connector Double 80 x 12
8	Breather
9	3/8" x 1" Hex Bolt GR8
10	Coupling Guard (1/2)
11	1/4" Lock Washer
12	3/8" Nut Nylock
13	1/4" Nut Nylock

Figure 95. Installing the 5190 Gearboxes



Assemble the Swing Gearbox Side Mount

1. Attach the top plate (5) of the swing gearbox side mount to the side plate (4) with 1/2" x 9" bolt (7), 1/2" flat washers (2), and 1/2" lock nuts (1) (see Figure 96).
2. Attach the link arm (6) to the assembled mount plates with 1/2" x 1–1/2" bolts (3), 1/2" flat washers (2) (2 per bolt), and 1/2" lock nuts (1).

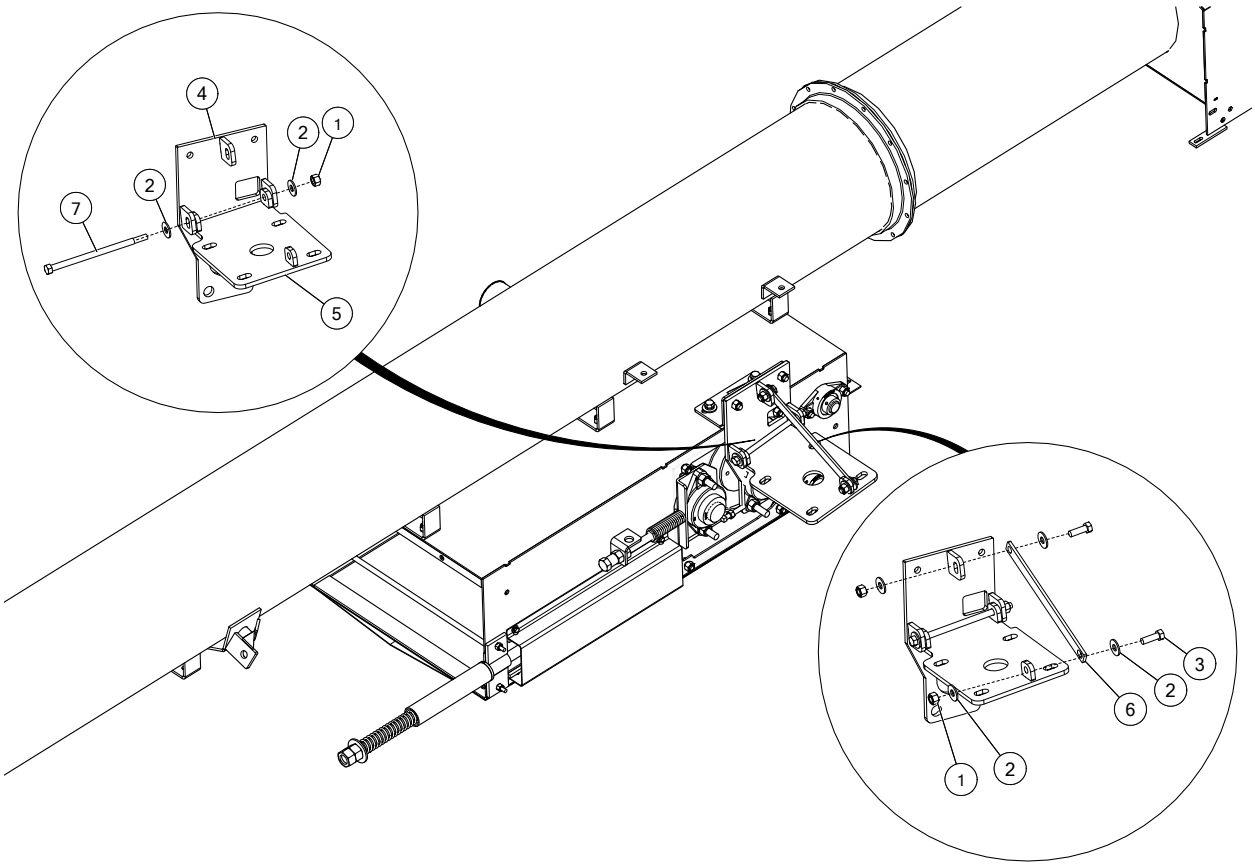
Important

Refer to Table 43 before tightening the bolts.

Table 41. Swing Gearbox Side Mount Components

Item	Description
1	1/2" Nylock Nut
2	1/2" Flat Washer (USS Plated)
3	1/2" x 1–1/2" Hex Bolt (GR 8)
4	Swing Gearbox Side Mount (side plate)
5	Swing Gearbox Side Mount (top plate)
6	Link Arm
7	1/2" x 9" Hex Bolt (GR 8)

Figure 96. Assembling the Swing Gearbox Side Mount



Install the Swing Gearbox onto the S-Drive

1. Fill the 6190 gearbox (11) with 80W-90 gear lube until oil flows out the side of the indicator port (see Figure 97).
2. Remove the locking collar/bearing (2), and 1/2" locknuts (1) from the drive roller shaft of the s-drive.

3. Slide the gearbox side mount (3) over the drive shaft of the s-drive.
4. Re-attach the locking collar, bearing, and 1/2" locknuts onto the s-drive.
5. Attach the gearbox mount bracket (12) to the gearbox side mount (3) with 1/2" x 1–1/2" bolts (4), 1/2" flat washers (6), and 1/2" locknuts (1).
6. Secure the gearbox mount bracket (12) to the s-drive with 1/2" x 1–1/2" bolts (4), 1/2" lock washers (5), and 1/2" flat washers (6).
7. Install the 3/8" x 5-1/4" key (7) into the drive roller shaft of the s-drive and secure it with a 1/2" x 1" bolt (8), 1/2" lock washer (5), and key retainer (9).
8. Slide the 6190 gearbox (11) over the drive roller shaft of the s-drive.

   Note

   Ensure the drive roller turns clockwise.

9. Attach the 6190 gearbox to the gearbox side mount with 1/2" x 1–1/2" hex bolts (4), 1/2" lock washers (5), and 1/2" flat washers (6).
10. Install the breather (10) and gearbox plug (13) into the 6190 gearbox.

Important

Refer to Table 43 before tightening the bolts.

Table 42. Swing Gearbox Components

Item	Description
1	1/2" Nylock Nut
2	Locking Collar/Bearing
3	Gearbox Side Mount
4	1/2" x 1–1/2" Hex Bolt
5	1/2" Lock Washer
6	1/2" Flat Washer Plated USS
7	3/8" x 5-1/4" Key
8	1/2" x 1" Bolt
9	Key Retainer
10	Breather
11	6190 Gearbox 1.85:1, 1–15/16
12	Gearbox Mount Angle Bracket
13	Gearbox Plug

Figure 97. Installing the Swing Gearbox

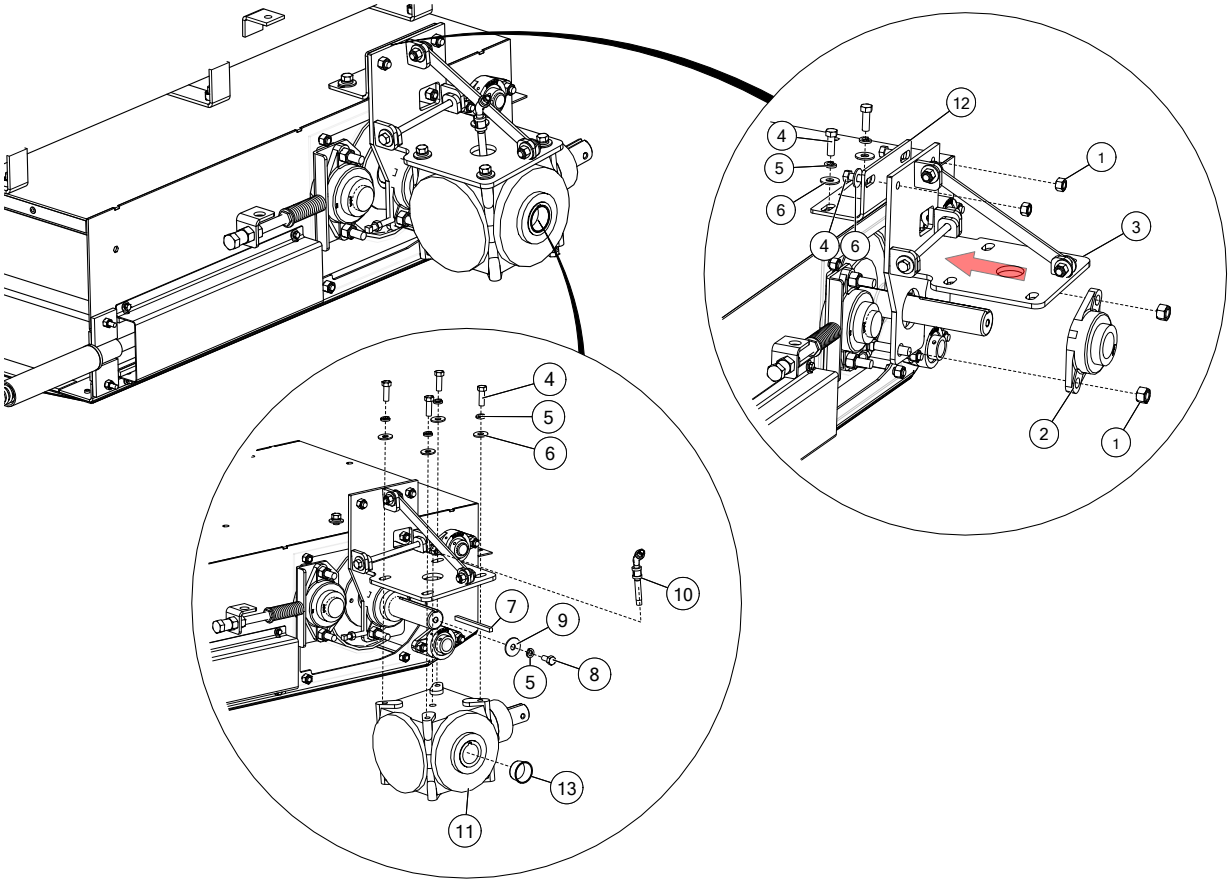
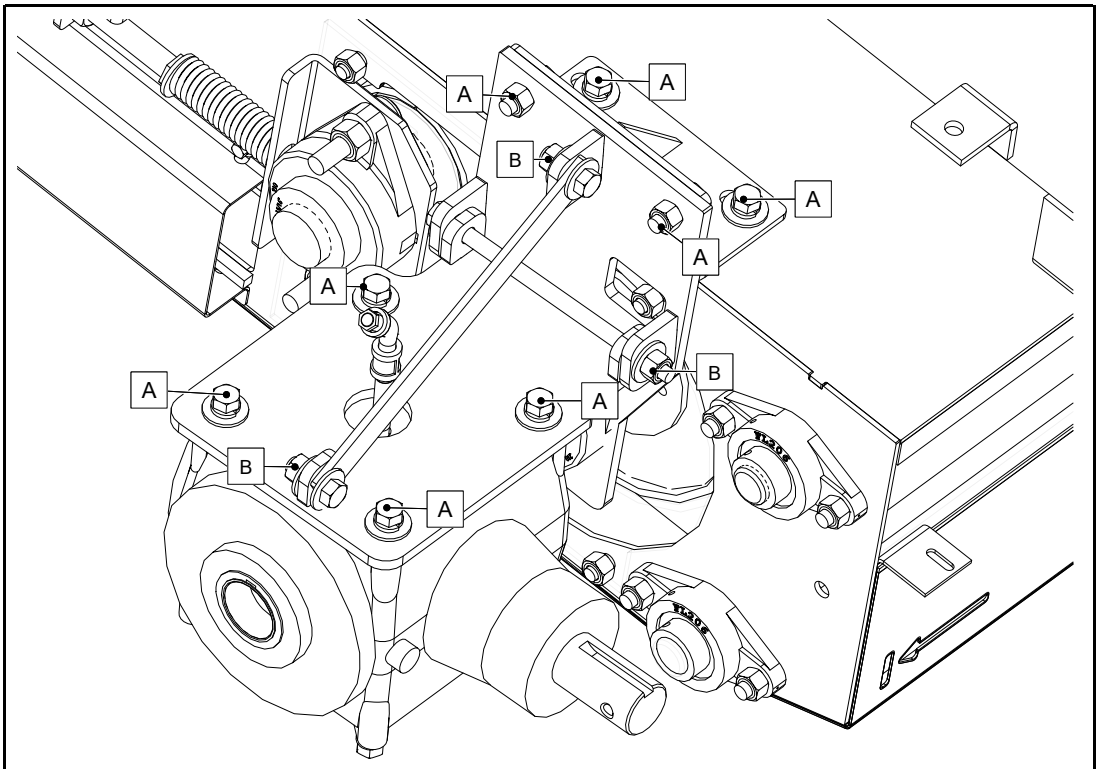


Table 43. Tightening the Bolts of the Swing Gearbox



A	Tighten these normally after the belt is aligned.
B	Do not tighten to a point where the connection is rigid; these connections must allow movement between components.

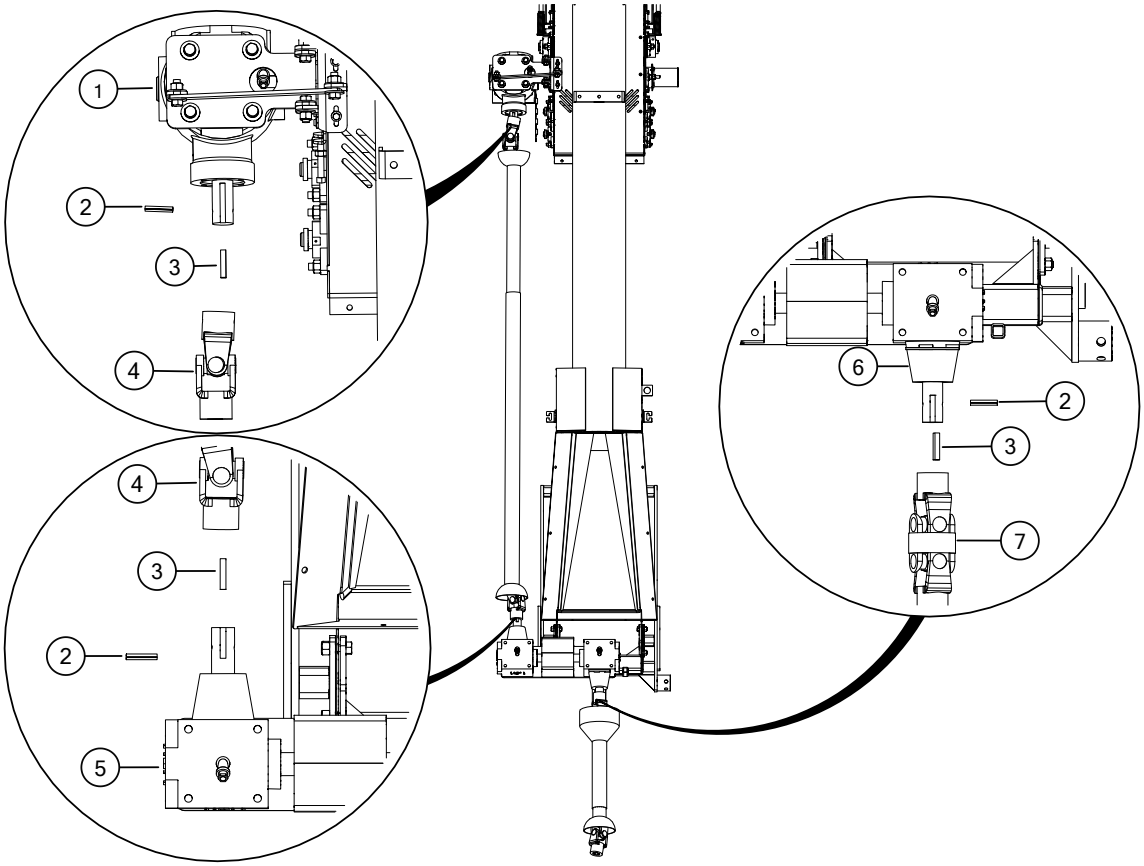
Install the PTO and Drive Shafts

1. Connect the drive shaft (4) and the 3/8" x 2" keys (3) to the 6190 gearbox (1) and 5190 gearbox (5) with 3/8" x 2" keys (3) and 3/8" x 3" spring pins (2) (see Figure 98).
2. When applicable, drill the pin hole in the PTO shaft to 3/8".
3. Connect the PTO shaft (7) to the 5190 gearbox (6) with a 3/8" x 2" key (3) and a 3/8" x 3" spring pin (2).

Table 44. PTO and Drive Shaft Components

Item	Description
1	6190 Gearbox 1.85:1, 1–15/16
2	3/8" x 3" Pin Spring
3	3/8" x 2" Key
4	Drive Shaft
5	5190 Gearbox 1:1 CW/CW, 1–1/2
6	5190 Gearbox 1:1 CW/CW, 1–1/2
7	PTO Shaft

Figure 98. Installing the PTO and Drive Shafts



Install the Guards, Hitch Tongue, and PTO Cradle

1. Attach the guards (2,3) to the 5190 gearboxes with 1/2" x 1-1/2" bolts (5) and 1/2" lock washers (4) (see Figure 99).
2. Insert the PTO cradle (6) into its welded channel on the hitch.
3. Attach the hitch tongue assembly (7) to the hitch using a 3/4" x 3–1/2" hitch pin (9) and a 3/16" x 3-1/4" hairpin (8).
4. Attach the guard (1) to the 6190 gearbox with two 1/2" x 1-1/2" bolts (5) and 1/2" lock washers (4).

   Note

   A 3/8" nut and 3/8" flat washer are used to keep the guard attached to the 6190 gearbox closed during operation.

5. Place the safety decals on each guard according to the decal location figures in the Safety chapter.

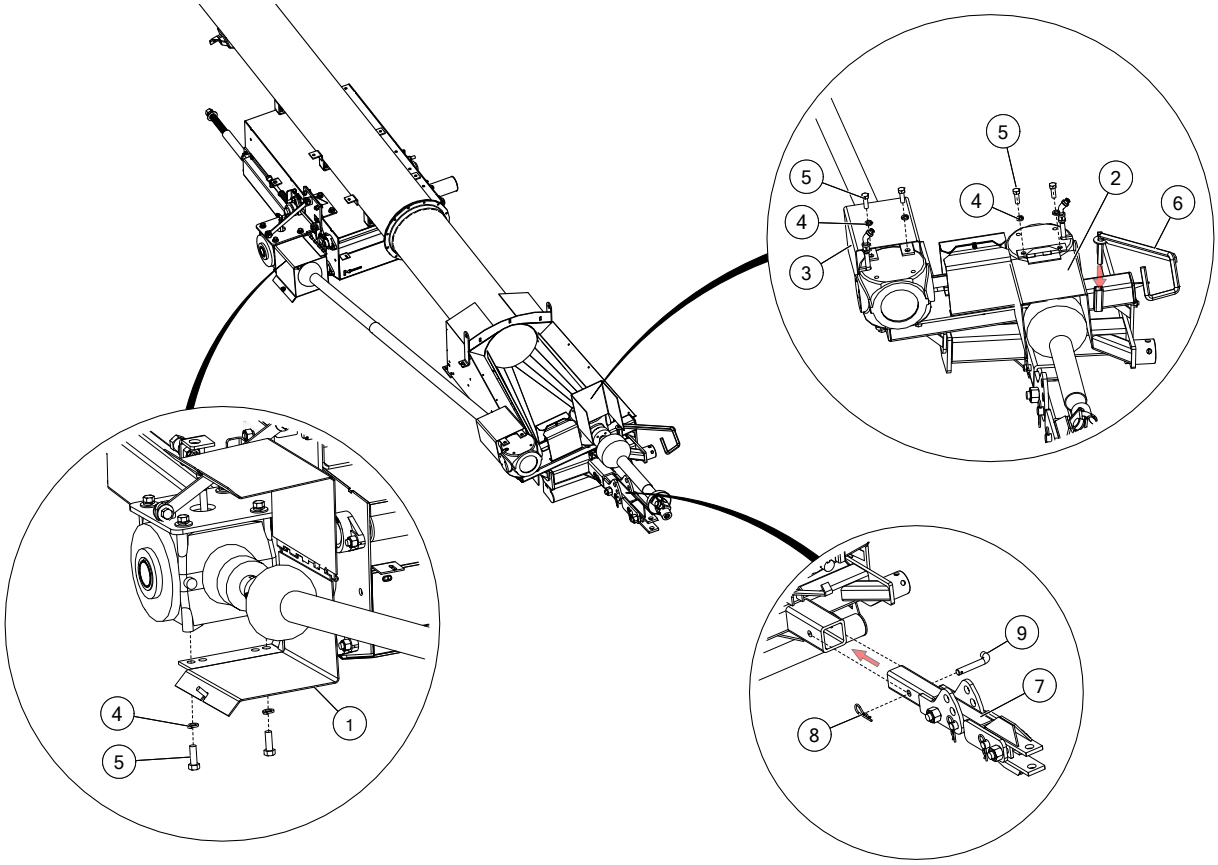
Table 45. Guards, Hitch Tongue, and PTO Cradle Components

Item	Description
1	6190 Gearbox Guard
2	PTO Guard Swing
3	5190 Gearbox Guard
4	1/2" Lock Washer

Table 45 Guards, Hitch Tongue, and PTO Cradle Components (continued)

Item	Description
5	1/2" x 1-1/2" Bolt Hex GR8
6	PTO Cradle
7	Hitch Tongue Assembly
8	Hairpin 3/16" x 3-1/4"
9	3/4" x 3-1/2" Hitch Pin

Figure 99. Installing the Guards, Hitch Tongue, and PTO Cradle



3.35.3 Install the Electric Drive (2000 Series)

1. Place the electric offset clamp (18) and u-clamp (1) on the tube (see Figure 100). Secure with 1/2" x 1-1/2" bolts (9) and 1/2" nylock nuts (29). Do not tighten.
2. Attach the electric mount adjuster (17) to the electric offset clamp (18) with 1/2" x 1-1/2" carriage bolts (13) and 1/2" nylock nuts (29). Do not tighten.
3. Install set screw (36) on the electric offset clamp.
4. Take the motor mount plate (2) and line up the tube with the hinge holes on the electric offset clamp (18) and electric mount adjuster (17). Insert the electric mount pin (25). Place a 3/4" washer (21) on the electric mount adjuster side and secure with a 3/16" x 1–1/2" cotter pin (14). Ensure that the motor mount plate is level before tightening all fasteners.

5. Mount gearbox stabilizer (24) on s-drive with a 1/2" x 2" bolt (12) and 1/2" nut (28).
6. In breather kit, install the vent and plug on the back side of the gearbox. Install the plug towards the bottom of the gearbox and install the vent towards the top of the gearbox.
7. Install 3/8" x 4-3/8" key (27) on drive roller shaft and attach the gearbox (23) to the shaft with 1/2" x 2" bolt (7), 1/2" lock washer (37), and end cap (19).
8. Prevent the gearbox from rotating, insert the 1/2" x 12" adjuster rod (3) through the gearbox (23) and gearbox stabilizer (24) with 1/2" nut nylock (29) at the back end. Insert another 1/2" x 12" adjuster rod (3) on the other side of the gearbox.
9. Install one 1/2" x 15" adjuster rod (4) and two 1/2" x 9" adjuster rod (5) to the black plate mount bar using two 1/2" nuts (28). This will hold the rods straight, allowing you to mount the remaining components.
10. Insert a 1/2" hex nut (28) onto the 1/2" x 9" adjuster rods (5).
11. Place the back plate (15). Ensure the back plate is level and tight against the gearbox.
12. Insert 1/2" flat washer (20) and 1/2" hex nut (28) onto the four adjuster rods (3, 5). Tighten to secure the back plate in place.
13. Attach electric motor (16) to mount plate (2).
14. Install pulleys/bushing (26, 11,32) on gearbox (23) and the electric motor with pulley (33). Ensure all pulleys are lined up.
15. Thread a set of 1/2" hex nut (28) onto the three adjuster rods (4,3). The 3-hex nut should be 1-5/8" higher than the pulley or more.
16. Place the pulley guard (34); align the three holes with the adjuster rods against the 1/2" hex nut (28). Tighten with 1/2" flat washer (20) and 1/2" nut nylock (29).

Table 46. Electric Drive (2000 Series) Components

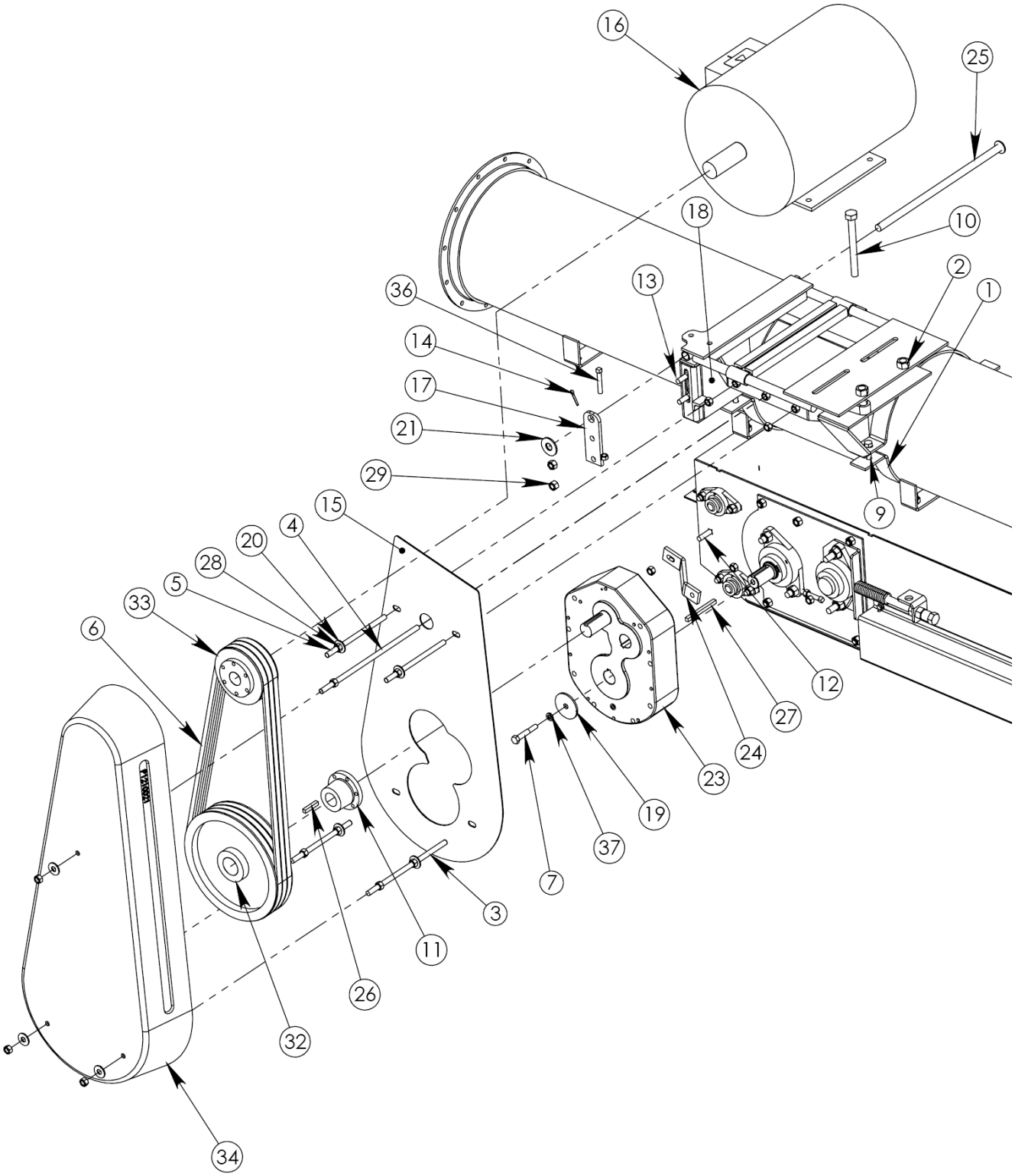
Item	Description	Quantity
1	2" U-clamp	2
2	20 Series Motor Mount Plate	1
3	1/2" x 12" Adjuster Rod	2
4	1/2" x 15" Adjuster Rod	1
5	1/2" x 9" Adjuster Rod	2
6	Belt B80	3
7	1/2" x 2" Hex Bolt	1
9	1/2" x 2-1/2" Bolt Tap	4
10	3/4" x 7" Bolt Tap	1
11	1-1/2" Bushing Q1	2
12	1/2" x 2" Carriage Bolt	1
13	1/2" x 1-1/2" Carriage Bolt	2
14	1/4" x 2" Cotter Pin	1
15	Electric Back Plate Pinch	1
16	10hp Electric Motor	1

Table 46 Electric Drive (2000 Series) Components (continued)

Item	Description	Quantity
17	Electric Mount Adjuster	1
18	Electric Offset Clamp	1
19	End Cap For Axle	1
20	1/2" Flat Washer USS Plated	7
21	3/4" Flat Washer USS Plated	1
23	Gearbox Par 4:1 Cw/cw 1-1/2" M590a	1
24	Gearbox Stabilizer	1
25	Hd Electric Mount Pin	1
26	3/8" x 2" Key	1
27	3/8" x 4-3/8" Key	1
28	1/2" Hex Nut	21
29	1/2" Nylock Nut	7
32	Pulley 3B120Q	1
33	Pulley 3B60Q	1
34	Pulley Guard - 46-1/2" L -7" To 16"	1
36	7/16" x 2-1/2" Sq Hd Setscrew	1
37	1/2" Lock Washer	1

NOT SHOWN: ATTACH TO M590 GEARBOX TO VENT PRESSURE BUILD UP	QTY
3/8" x 1/4" Bushing Black Pipe	1
1/4" Elbow Street 90	1
1/4" x 4" Nipple Black Pipe	1
1/4" Coupling Black Pipe	1
1/4" NPT Brass Vent	1

Figure 100. Installing Electric Drive (2000 Series) onto S-Drive



3.35.4 Install the Electric Drive (2400 Series)

1. Attach the offset clamp support bottom (16) to the s-drive using 1/2" x 1-1/2" bolts (1), 1/2" lock washers (13), and 1/2" washers (14). Do not tighten.
2. Secure the offset clamp support top (17) to the offset clamp support bottom (16) using 1/2" x 1-1/2" bolts (1), 1/2" washers (14), and 1/2" nylock nuts (4). Do not tighten.
3. Place the electric offset clamp (11) on the tube and line it up with the mounting brackets welded onto the tube. Secure to the brackets with 1/2" x 1-1/2" bolts (2) and 1/2" nylock nuts (4). Lift the offset clamp support top (17) and attach to the bottom of the electric offset clamp (11) with 1/2" x 1-1/2" bolts (1), 1/2" washers (14), and 1/2" nylock nuts (4). Do not tighten.
4. Attach the electric mount adjuster (9) to the electric offset clamp (11) with 1/2" x 1-1/2" carriage bolts (5) and 1/2" nylock nuts (4). Do not tighten.
5. Install set screw (6) on the electric offset clamp.
6. Take the motor mount plate (10) and line up the tube with the hinge holes on the electric offset clamp (11) and electric mount adjuster (9). Insert the electric mount pin (8). Place a 3/4" washer (15) on the electric mount adjuster side and secure with a 1/4" x 2" cotter pin (7). Ensure that the motor mount plate is level before tightening all fasteners (3, 18).
7. Mount gearbox stabilizer (20) on s-drive with a 1/2" x 1-1/2" bolt (1) and 1/2" nut (12).
8. In breather kit (26), install the vent and plug on the back side of the gearbox. Install the plug towards the bottom of the gearbox and install the vent towards the top of the gearbox.
9. Install 3/8" x 1/2" x 6-1/2" key (33) on drive roller shaft and attach the gearbox (27) to the shaft with 1/2" x 2-1/2" bolt (19), 1/2" lock washer (13), and end cap (23).
10. Install 1/2" x 17" adjuster rods (24) to the black plate mount bar using two 1/2" nuts (12). This will hold the rods straight, allowing you to mount the remaining components.
11. Insert a 1/2" hex nut (12) onto the 1/2" x 17" adjuster rods (24).
12. Place the back plate (28). Ensure the back plate is level and tight against the gearbox.
13. Insert 1/2" flat washer (14) and 1/2" hex nut (12) onto the adjuster rods (24). Tighten to secure the back plate in place.
14. Install 1/2" x 13" adjuster rod (32) to gearbox and back plate with 1/2" flat washer (14) and 1/2" hex nut (12).
15. Attach gearbox and back plate to the gearbox stabilizer (20) with a 1/2" x 6" bolt (34) and 1/2" nut (12). Fasten the another two 1/2" x 6" bolts (34) and 1/2" nuts (12) to further secure the back plate to the gearbox.
16. Attach electric motor to mount plate (10).
17. Install pulleys/bushing (21, 29, 30) on gearbox (27) and the electric motor with 3/8" x 2" key (22). Ensure all pulleys are lined up.
18. Mount metal guard (35) over belts/pulleys, securing with 1/2" flat washers (14) and 1/2" nylock nuts (4).
19. Install the pulley guard back plate (36) to the metal guard (35) using 1/4" x 1" self-tapping screws (37).

Table 47. Electric Drive (2400 Series) Components

Item	Description	Quantity
1	1/2" x 1-1/2" Hex Bolt GR8	9
2	1/2" x 2-1/2" Bolt Tap	4

Table 47 Electric Drive (2400 Series) Components (continued)

Item	Description	Quantity
3	3/4" x 7" Bolt Tap	1
4	1/2" Nylock Nut	15
5	1/2" x 1-1/2" Carriage Bolt	2
6	7/16" x 2-1/2" Sq HD Setscrew	1
7	1/4" x 2" Cotter Pin	1
8	HD Electric Mount Pin	1
9	Electric Mount Adjuster	1
10	20 Series Motor Mount Plate	1
11	24 Electric Offset Clamp	1
12	1/2" Hex Nut	20
13	1/2" Lock Washer	4
14	1/2" Flat Washer Plated USS	16
15	3/4" Flat Washer Plated USS	1
16	24 Elec Offset Clamp Support Bottom	1
17	24 Elec Offset Clamp Support Top	1
18	1/2" Threaded Rod Coarse	1
19	1/2" x 2-1/2" Hex Bolt GR8	1
20	24 Elec Gearbox Stabilizer	1
21	Pulley-TRPL-B-8"	1
22	3/8" x 2" Key	1
23	End Cap for Axle	1
24	1/2" x 17" Adjuster Rod	2
25	Decal - Electrocution Hazard	1
26	Breather - M590 GB (Not Shown)	1
27	Gearbox 6:1 CW/CW 1-15/16"	1
28	24 Electric Backplate Pinch	1
29	Pulley-Triple 3B124SK	1
30	1-1/2" Hub SK	1
31	Belt 3RB88 Banded	1
32	1/2" x 13" Adjuster Rod	1
33	3/8" x 1/2" x 6-1/2" Key – Long	1
34	1/2" x 6" Hex Bolt	3

Table 47 Electric Drive (2400 Series) Components (continued)

Item	Description	Quantity
35	24 Electric Pulley Guard	1
36	24 Electric Pulley Guard Back Plate	1
37	1/4" x 1" Self-Tapping Screw (TEKS)	4

Figure 101. Electric Motor Mount (2400 Series)

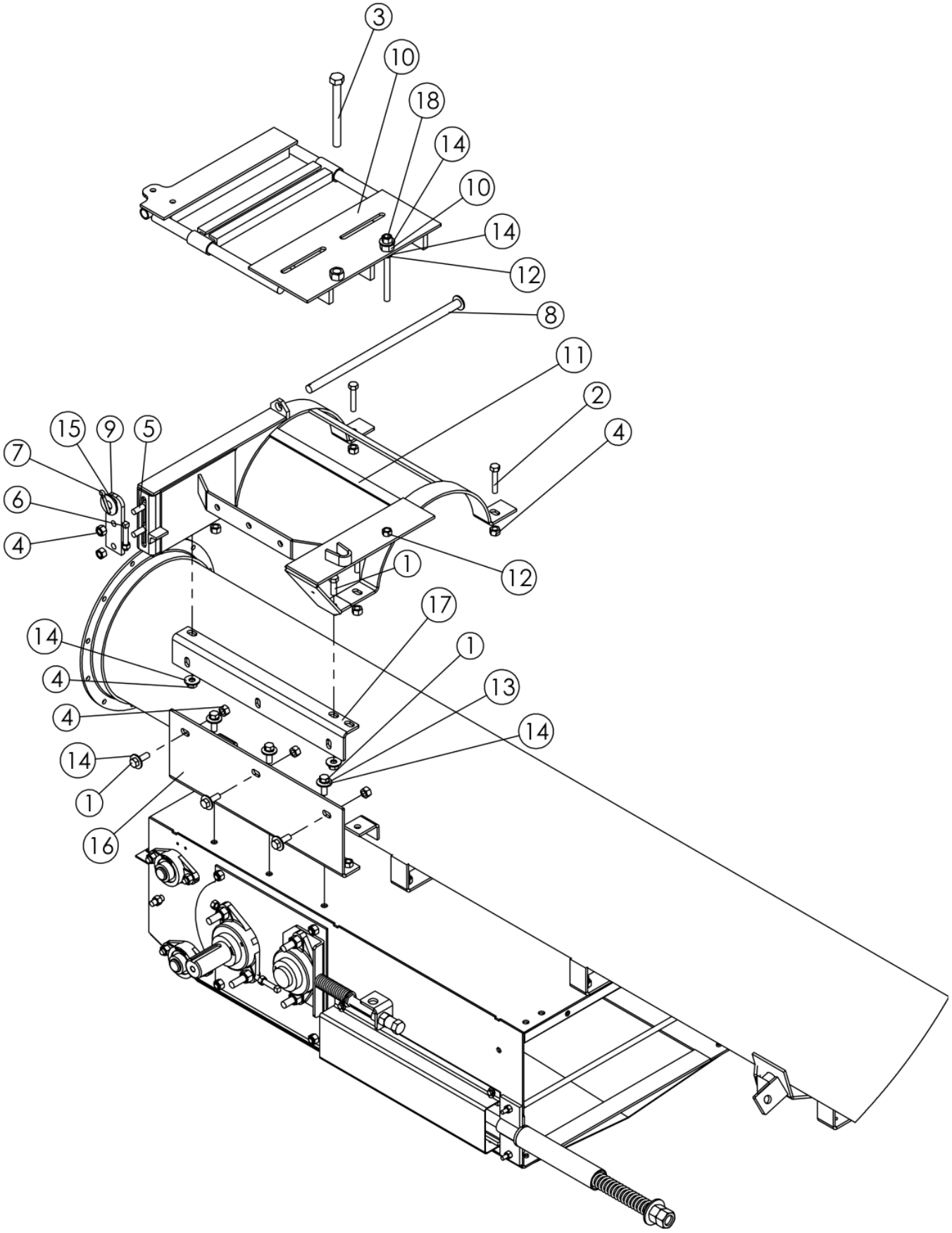
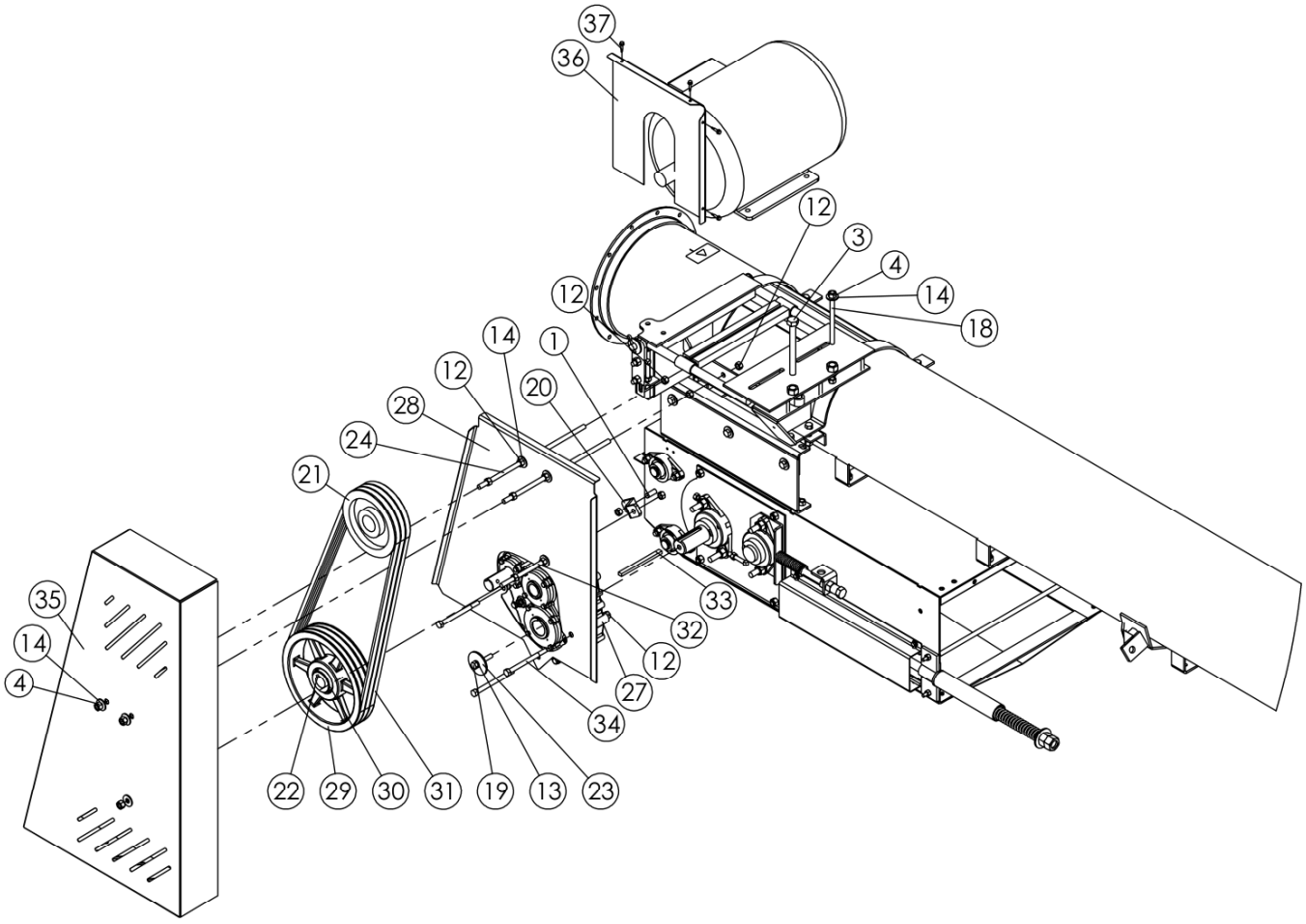


Figure 102. Electric Drive Components (2400 Series)



3.35.5 Install the Hydraulic Wet Kit to Electric Drive (2000 Series)

Note

The electric s-drive kit should be assembled prior to assembling the wet kit.

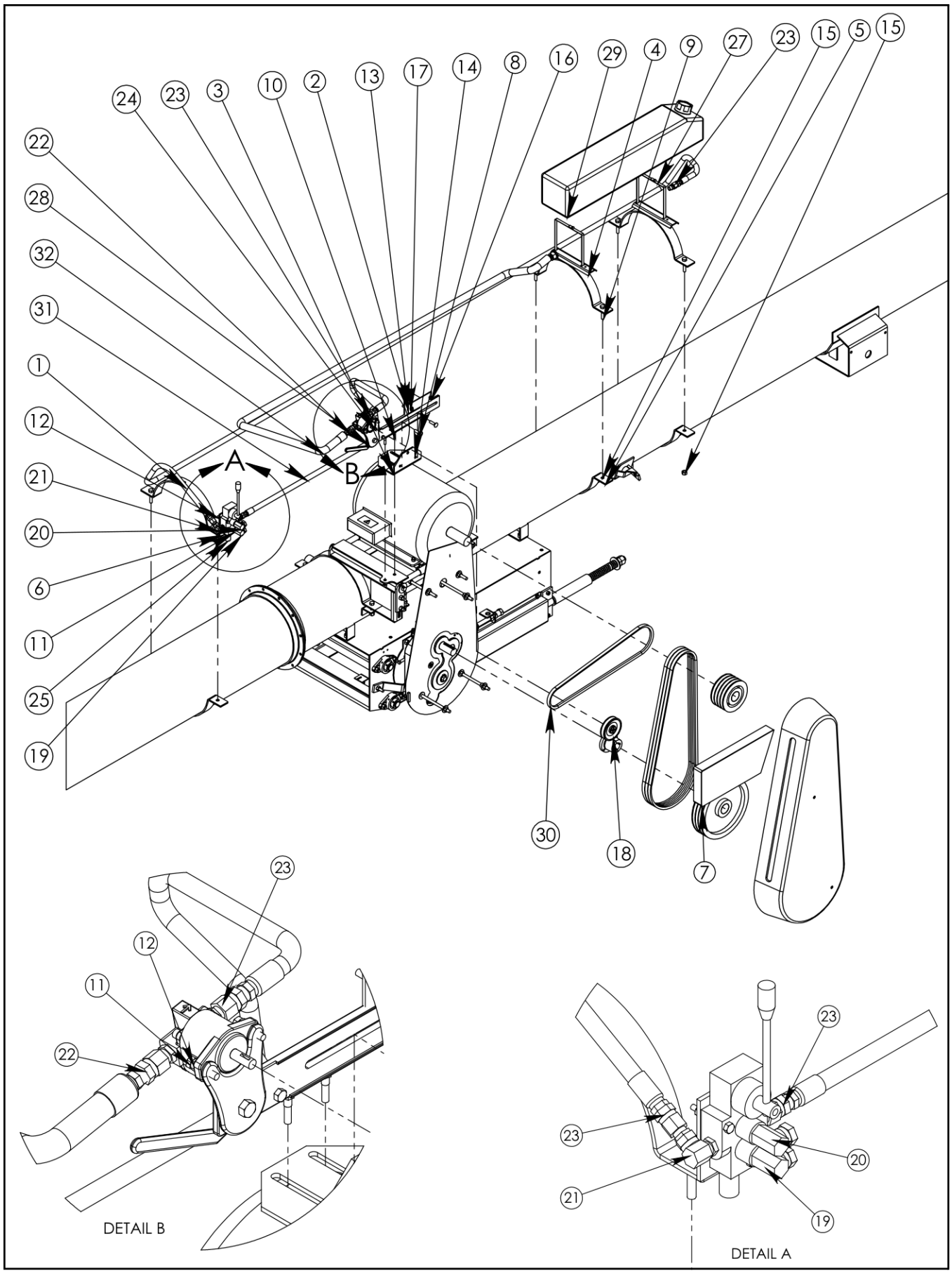
Table 48. Hydraulic Wet Kit (2000 Series) Components

Item	Description	Quantity
1	Hose 1/2" (10'10")-1/2" NPT-1/2" NPT	1
2	Pump Guard Arm	1
3	Belt Tightener Plate	1
4	Over-Center Plastic Tank Mount	2
5	2" U-Clamp	3
6	Control Valve Bracket	1
7	Wet Kit Pump Guard	1
8	7/16" x 1-1/2" Carriage Bolt	2

Table 48 Hydraulic Wet Kit (2000 Series) Components (continued)

Item	Description	Quantity
9	1/2" x 2-1/2" Tap Bolt	6
10	3/8" x 1-1/2" Hex Bolt	3
11	5/16" x 2-12" Hex Bolt GR8	2
12	5/16" Nylock Nut	2
13	3/8" Nylock Nut	3
14	7/16" Nylock Nut	2
15	1/2" Nylock Nut	6
16	1/4" x 1" Tek Screw	2
17	1/4"Flat Washer USS PLATED	2
18	Pulley 4-1/2" x 1/2"	1
19	Swivel 90 - 1/2" MPT x 1/2" FPT	1
20	Swivel 90 - 6 ORB x 1/2" FPT	1
21	Swivel 90 - #10 ORB x 1/2" FPT	1
22	#10 ORB x 1/2" FPT	1
23	#8 ORB x 1/2" FPT	4
24	Pump — Parker, with Side Ports	1
25	Valve Single Spool	1
26	Cable Tie 6" (NOT SHOWN)	8
27	32" Gear Clamp (116)	2
28	Small Pump Mount	1
29	Tank, 22L, Blk W/ftg, Cap Hose	1
30	Belt B50	1
31	Hose 1/2" (4'9")-1/2" NPT-1/2" NPT	1
32	Hose 3/4" (6')-1/2" NPT	1

Figure 103. Installing Hydraulic Wet Kit onto Electric Drive (2000 Series)



1. Uninstall the existing plastic guard.
2. Position the control valve bracket (6) and over-center plastic tank mounts (4) with u-clamps (5) and insert 1/2" x 2-1/2" tap bolts (9) and 1/2" nylon locknuts (15). Partially tighten the parts allowing enough room to slide them on the tube for adjustment.
3. Attach the control valve (25) to the bracket (6) with two 5/16" x 2-12" bolts (11) and 5/16" nylon locknuts (12).
4. Affix the hydraulic tank (29) to the over-center plastic tank mounts (4) with two hose clamps (27).
5. Install hydraulic fittings for the valve (19, 20, 21, 23).
6. Install hydraulic fittings for the pump (22, 23).
7. Connect hoses (1, 31, 32).
8. Adjust the hydraulic tank and control valve to minimize slack in the hose and tighten the u-clamps.
9. Tie the hydraulic hoses to the tube with 6" cable ties (26). Tighten the u-clamp nuts.
10. Install the belt tightener plate (3) to the engine mount with two 7/16" x 1-1/2" carriage bolts (8) and 7/16" nylon locknuts (14) leaving un-tightened for later adjustment.
11. Install the small pump mount (28) to the belt tightener plate (3) with two 3/8" x 1-1/2" hex bolts (10) and 3/8" nylon locknuts (13), leaving un-tightened for later adjustment.
12. Connect the pump (24) to the small pump mount (28) with two 3/8" x 1-1/2" hex bolts (10) and 3/8" nylon locknuts (13).
13. Attach the pulley (18) to the pump (24) and connect the belt (30) to the electric motor pulley and small pulley (18).
14. Adjust the position of the small pulley (18) in line with the electric motor pulley and tighten the belt (30) by adjusting the electric clutch so the belt deflects approximately 1" from a 5 lb force.
15. Secure the belt tightener plate (3) and pump mount (28) once they have been sufficiently adjusted.
16. Re-install the plastic guard.
17. Install the pump guard arm (2) with one 7/16" x 1-1/2" carriage bolt (8) and 7/16" nylon locknut (14) on the belt tightener plate.
18. Attach pump guard (7) to pump guard arm (2) using two 1/4" x 1" tek screws (16) and 1/4" flat washers (17).
19. Add hydraulic fluid up to approximately 2" [51 mm] from the tank opening. Do not overfill (leave space at top of tank). Remember to put the tank cap back on afterward.

3.35.6 Install the Hydraulic Wet Kit to Electric Drive (2400 Series)

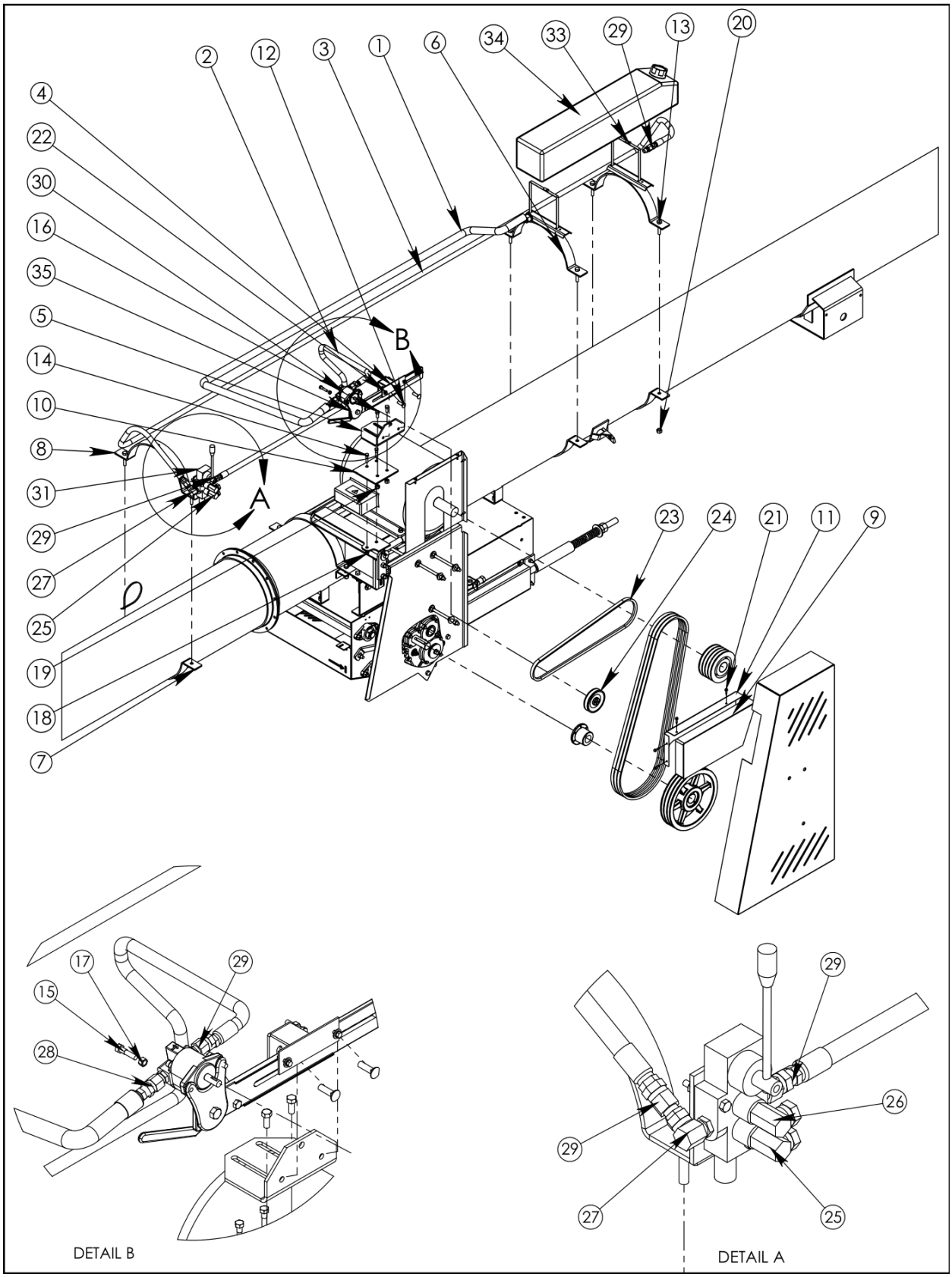
Table 49. Hydraulic Wet Kit (2400 Series) Components

Item	Description	Quantity
1	Hose 3/4" (6')-1/2" NPT-Hose	1
2	Hose 1/2" (4'9")-1/2" NPT-1/2" NPT	1
3	Hose 1/2" (10'10")-1/2" NPT-1/2" NPT	1
4	Pump Guard Arm	1
5	Belt Tightener Plate	1

Table 49 Hydraulic Wet Kit (2400 Series) Components (continued)

Item	Description	Quantity
6	Over-Center Plastic Tank Mount	2
7	2" U-Clamp	3
8	Control Valve Bracket	1
9	Wet Kit Pump Guard	1
10	24 Wet Kit Hyd Pump Mount Adaptor	1
11	24 Wet Kit Hyd Pump Back Guard	1
12	7/16" x 1-1/2" Carriage Bolt	2
13	1/2" x 2-1/2" Bolt Tap	6
14	3/8" x 1-1/2" Hex Bolt	4
15	5/16" x 2-12" Bolt Hex GR8	2
16	7/16" x 1" Hex Bolt GR8	2
17	5/16" Nylock Nut	2
18	3/8" Nylock Nut	4
19	7/16" Nylock Nut	4
20	1/2" Nylock Nut	6
21	1/4" x 1" Self-Tapping Screw (TEK)	6
22	1/4" Flat Washer USS Plated	2
23	Belt B58	1
24	Pulley 4-1/2" x 1/2"	1
25	Swivel 90 - 1/2" MPT X 1/2" FPT	1
26	Swivel 90 – 6 ORB x 1/2" FPT	1
27	Swivel 90 - #10 ORB x 1/2" FPT	1
28	#10 ORB x 1/2" FPT	1
29	#8 ORB x 1/2" FPT	4
30	Pump-Parker with Side Ports	1
31	Valve Single Spool	1
32	Cable Tie 6" (Not Shown)	8
33	Strap for Hydraulic Tank	2
34	Tank, 43L, Blk W/Ftg, Cap Hose	1
35	Small Pump Mount	1

Figure 104. Installing Hydraulic Wet Kit onto Electric Drive (2400 Series)



1. Uninstall the existing large steel guard.
2. Position the control valve bracket (8) and over-center plastic tank mounts (6) with 2" u-clamps (7) and insert 1/2" x 2-1/2" tap bolts (13) and 1/2" nylon locknuts (20). Partially tighten the parts allowing enough room to slide them on the tube for adjustment.
3. Attach the control valve (31) to the bracket (8) with two 5/16" x 2-12" bolts (15) and 5/16" nylon locknuts (17).
4. Affix the hydraulic tank (34) to the over-center plastic tank mounts (6) with two hose clamps (33).
5. Install hydraulic fittings for the valve (25, 26, 27, 29).
6. Install hydraulic fittings for the pump (28, 29).
7. Connect hoses (1,2,3).
8. Adjust the hydraulic tank and control valve to minimize slack in the hose and tighten the u-clamps.
9. Tie the hydraulic hoses to the tube with 6" cable ties (32). Tighten the u-clamp nuts.
10. Install the pump mount adaptor (10) to the engine mount with two 3/8" x 1-1/2" bolts (14) and 3/8" nylon locknuts (18).
11. Install the belt tightener plate (5) to pump mount adaptor (10) using two 7/16" x 1" bolts (16) and 7/16" nylon locknuts (19), leaving them un-tightened for later adjustment.
12. Install the small pump mount (35) to the belt tightener plate (5) with two 3/8" x 1-1/2" bolts (14) and 3/8" nylon locknuts (18), leaving them un-tightened for later adjustment.
13. Connect the pump (30) to the small pump mount (35) with two 7/16" x 1-1/2" carriage bolts (12) and 7/16" nylon locknuts (19).
14. Attach the pulley (24) to the pump (30) and connect the belt (23) to the electric motor pulley and small pulley (24).
15. Adjust the position of the small pulley (24) in line with the electric motor pulley and tighten the belt (23) by adjusting the electric clutch so the belt deflects approximately 1" from a 5 lb force.
16. Secure the belt tightener plate (5) and pump mount (35) once they have been sufficiently adjusted.
17. Re-install the large steel guard.
18. Install the pump guard arm (4) with one 7/16" x 1-1/2" carriage bolt (12) and 7/16" nylon locknut (19) on the belt tightener plate.
19. Attach pump guard (9) to pump guard arm (4) using two 1/4" x 1" screws (21) and 1/4" flat washers (22).
20. Install hydraulic pump back guard (11) to pump guard (9) using four 1/4" x 1" screws (21).
21. Add hydraulic fluid up to approximately 2" [51 mm] from the tank opening. Do not overfill (leave space at top of tank). Remember to put the tank cap back on afterward.

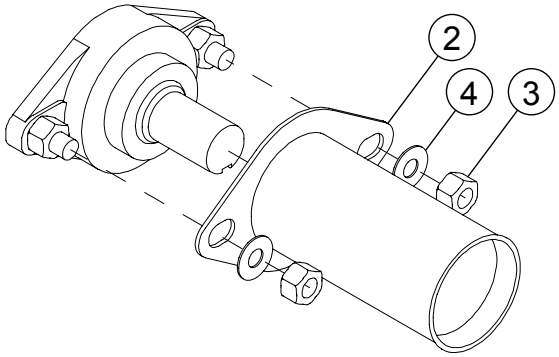
3.36. Install the Shaft Guard

1. Mount the shaft guard (2) over the roller shaft and onto the flange bearing carriage bolts (see Figure 105).
2. Secure the shaft guard in place using two locknuts (3) and two flat washers (4).

Note

When mounting onto a 15/16" bearing (FL210), use 5/8" locknuts and flat washers.
When mounting onto a 1-1/4" bearing (FL206) or 1-1/2" bearing (FL208), use ½" locknuts and flat washers.

Figure 105. Installing Shaft Guard



3.37. Install the Manual Container

1. Position the manual container (1) on the axle arm.
2. Depending on your type of container, either:
   a. secure with two gear clamps (2) (see Figure 106), or
   b. secure with two self-tapping screws (3) (see Figure 107).

Figure 106. Clamp-on Manual Container

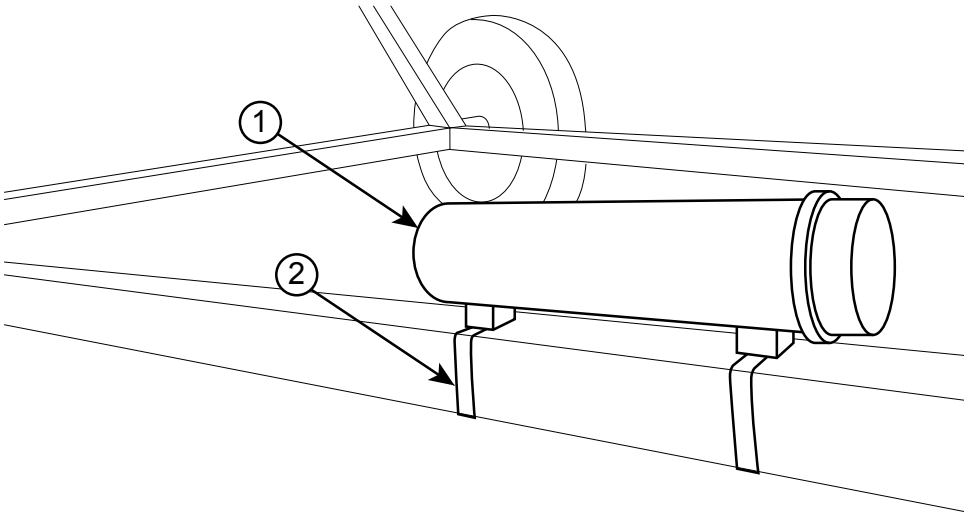
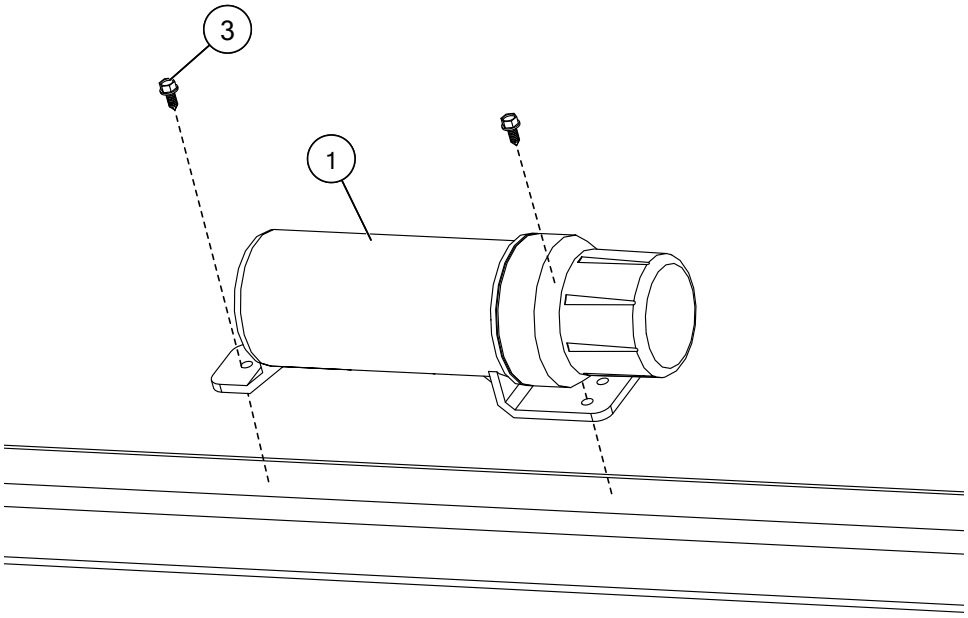


Figure 107. Screw-on Manual Container

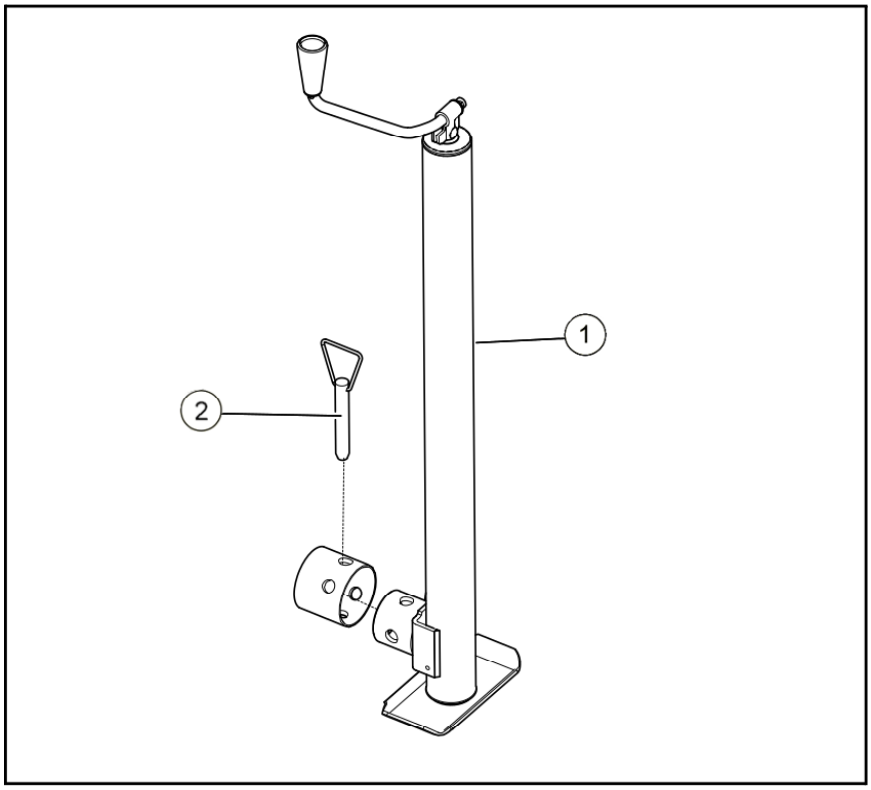


Item	Description
1	Manual Container
2	Gear Clamps
3	Self-Tapping Screw #14 x 5/8"

3.38. Attach the Jack

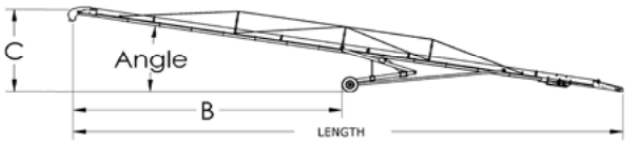
1. Insert the jack (1) into the jack stub (located on the conveyor hitch) (see Figure 108).
2. Secure the jack in place with the pin (2) provided.

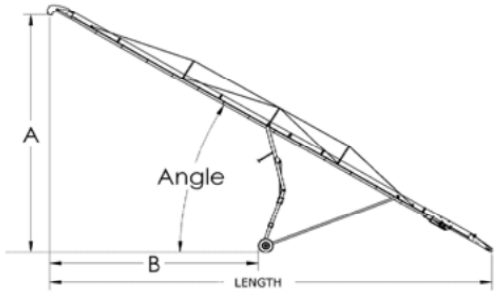
Figure 108. Attaching the Jack



Item	Description
1	Jack
2	Pin

4. Specifications





NOTE: ALL ANGLES AND MEASUREMENTS SHOWN ARE MACHINE LIMITS. THE MAX OPERATION ANGLE DEPENDS ON THE PRODUCT BEING CONVEYED, USUALLY LESS THAN 30°.

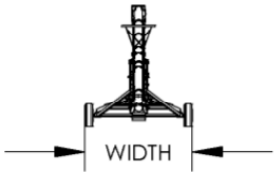


Table 50. S-Drive S-Drive Standard Conveyor Conveyor (2000 and 2400 Series: 65' — 120')

			UP — OPERATION			DOWN — TRANSPORT					
Model#	Belt Length	Total Weight (lb)	A (ft)	B (ft)	Angle (°)	C (ft)	B (ft)	Angle (°)	Width (ft)	PTO (hp)	Electric (hp)
2065	137' 10"	4826	31.1	22.3	30.0	12.2	25.3	10.0	11.6/14.8	60.0	25.0
2075	157' 10"	5126	36.3	31.1	30.0	13.7	35.3	10.0	11.6/14.8	60.0	30.0
2085	177' 10"	5868	40.7	32.1	30.0	12.7	38.1	10.0	11.6/14.8	70.0	30.0
2095	197' 10"	6127	46.4	40.7	30.0	14.4	48.0	9.0	11.6/14.8	80.0	40.0
20105	217' 10"	7990	51.1	39.6	30.0	16.6	49.1	9.0	11.6/14.8	80.0	40.0
20110	227' 10"	9155	54.0	44.4	30.0	17.1	54.1	8.0	11.6/14.8	100.0	50.0
20120	247' 10"	9430	59.3	52.1	30.0	18.4	63.8	8.0	11.6/14.8	100.0	50.0
2465	141' 2"	5081	32.1	23.4	30.0	12.5	26.0	10.0	11.6/14.8	60.0	25.0
2475	161' 2"	5396	36.1	32.0	30.0	14.3	35.8	10.0	11.6/14.8	70.0	30.0
2485	181' 2"	6153	42.3	32.6	30.0	13.7	38.6	8.0	11.6/14.8	80.0	30.0
2495	201' 2"	6630	47.1	41.5	30.0	14.9	48.5	8.0	11.6/14.8	80.0	40.0
24105	221' 2"	8305	52.5	40.7	30.0	16.3	49.7	8.0	11.6/14.8	90.0	40.0
24110	231' 2"	9495	53.9	45.3	30.0	17.1	54.7	8.0	11.6/14.8	100.0	50.0
24120	251' 2"	9770	60.0	53.4	30.0	18.4	64.6	8.0	11.6/14.8	120.0	50.0

Hydraulic Fluid Specification:

If your machine model is equipped with a hydraulic oil tank, use one of the following fluids:

- ISO 32 hydraulic fluid
- ATF — Automatic Transmission Fluid (Dexron 2™)

NOTICE Do not use “trans-hydraulic fluid”, because this may result in premature pump wear.

5. Appendix

5.1. Bolt Torque

Table 51 gives the correct torque values for various hardware. Tighten all bolts to the torque specified, unless otherwise noted. Check tightness periodically, using Table 51 as a guide. Replace the hardware with the same strength bolt, contact Batco if you are unsure.

Table 51. Recommended Bolt Torque[a]

Size	Dry or Lubricated	Threads per inch (Course/ Fine)	Area of Bolt (sq in.)		Recommended Torque (ft-lb)							
					Grade 2		Grade 5		Grade 8		8.8 S/S	
			Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine
1/4"	Dry	20/28	0.0318	0.0364	5.5	6.3	8	10	12	14	6.3	7.8
	Lubricated				6.3	4.7	6.3	7.2	9	10	-	-
5/16"	Dry	18/24	0.0524	0.058	11	12	17	19	24	27	11	11.8
	Lubricated				8	9	13	14	18	20	-	-
3/8"	Dry	16/24	0.0775	0.0878	20	23	30	35	45	50	20	22
	Lubricated				15	17	23	25	35	35	-	-
7/16"	Dry	14/20	0.1063	0.1187	32	36	50	55	70	80	31	33
	Lubricated				24	27	35	40	50	80	-	-
1/2"	Dry	13/20	0.1419	0.1599	50	55	75	85	110	120	43	45
	Lubricated				35	40	55	65	80	90	-	-
9/16"	Dry	12/18	0.182	0.203	70	80	110	120	150	170	57	63
	Lubricated				55	60	80	90	110	130	-	-
5/8"	Dry	11/18	0.226	0.256	100	110	150	170	210	240	93	104
	Lubricated				75	85	110	130	160	180	-	-
3/4"	Dry	10/16	0.334	0.373	175	200	260	300	380	420	128	124
	Lubricated				130	140	200	220	280	310	-	-
7/8"	Dry	9/14	0.462	0.508	170	180	430	470	600	670	194	193
	Lubricated				125	140	320	350	180	180	-	-
1"	Dry	8/14	0.606	0.679	250	280	640	720	910	1020	287	289
	Lubricated				190	210	480	540	680	760	-	-
1-1/8"	Dry	7/12	0.763	0.856	350	400	790	890	1290	1440	288	290
	Lubricated				270	300	590	670	970	1080	-	-
1-1/4"	Dry	7/12	0.989	1.073	500	550	1120	1240	1820	2010	289	291
	Lubricated				380	420	840	930	1360	1510	-	-
1-1/2"	Dry	6/12	1.405	1.581	870	960	1950	2200	3160	3560	-	-
	Lubricated				650	730	1460	1640	2370	2670	-	-

[a]Torque value for bolts and cap screws are identified by their head markings. Established at 75% of yield strength of bolt given the cross-sectional area.

Note

Torque figures in table are valid for non-greased or non-oiled threads and head unless otherwise specified. Therefore, do not grease or oil bolts or cap screws unless otherwise specified in this manual. When using locking elements, increase torque values by 5%.

5.2. Fittings Torque Values

These specifications are for carbon steel. With Zinc plating always lubricate threads and seals. For stainless steel, use the high value of the torque range of steel. For brass, use 70% of the torque value of steel. For mixed metals, use the torque of the lower of the two metals. Torque range is normally calculated +/- 10%.

Table 52. Pipe Rigid - Tapered Pipe Threads (NPTF, N/NF) - Carbon Steel

Pipe Size	Turns-from-finger	Max ft-lbs	Max N-m
1/8" (-2)	3/4 - 1 3/4	12	16
1/4" (-4)	3/4 - 1 3/4	25	34
3/8" (-6)	3/4 - 1 3/4	40	54
1/2" (-8)	1/2 - 1 1/2	54	73
3/4" (-12)	1/2 - 1 1/2	78	106
1" (-16)	1/2 - 1 1/2	112	152
1 1/4" (-20)	1/2 - 1 1/2	154	209
1 1/2" (-24)	1/2 - 1 1/2	211	286
2" (-32)	1/2 - 1 1/2	300	407

Table 53. Pipe Swivel - Straight Pipe Threads (NPSM, N/NFS) - Carbon Steel

Pipe Size	Max ft-lbs	Max N-m
1/8" (-2)	12	16
1/4" (-4)	25	3
3/8" (-6)	40	54
1/2" (-8)	54	73
3/4" (-12)	78	106
1" (-16)	112	152
1 1/4" (-20)	154	209
1 1/2" (-24)	211	286
2" (-32)	300	407
Note: seals on an internal male 30° seat		

Table 54. Stud End O-Ring Boss (ORB) SAE (U/UF)

		Carbon Steel	
Tube Size	**Thread UNF-2A**	**Max ft-lbs**	**Max N-m**
-2	5/16" - 24	6-7	8-9
-3	3/8" - 24	8-9	11-12
-4	7/16" - 20	13-15	18-20

Table 54 Stud End O-Ring Boss (ORB) SAE (U/UF) (continued)

		Carbon Steel	
Tube Size	**Thread UNF-2A**	**Max ft-lbs**	**Max N-m**
-5	1/2" - 20	17-19	23-26
-6	9/16" - 18	22-24	29-33
-8	3/4" - 16	40-43	49-53
-10	7/8" - 14	43-48	59-64
-12	1 1'16" - 12	68-75	93-102
-14	1 3/16" - 12	90-99	122-134
-16	1 5/16" - 12	112-123	151-166
-20	1 5/8" - 12	146-161	198-218
-24	1 7/8" - 12	154-170	209-231

Table 55. JIC 37° Flare Tube Fitting (J/JFS)

Tube Size	Thread UNF-2A	Torque ft-lbs	Torque N-m
-2	5/16 - 24	6-7	8-9
-3	3/8 - 24	8-9	11-12
-4	7/16 - 20	11-12	15-16
-5	1/2 - 20	14-15	19-21
-6	9/16 - 18	18-20	24-28
-8	3/4 - 16	36-39	49-53
-10	7/8 - 14	57-63	77-85
-12	1 1/16 - 12	79-88	107-119
-14	1 3/16 - 12	94-103	127-140
-16	1 5/16 - 12	108-113	147-154
-20	1 5/8 - 12	127-133	172-181
-24	1 7/8 - 12	158-167	215-226
-32	2 1/2 - 12	245-258	332-350

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