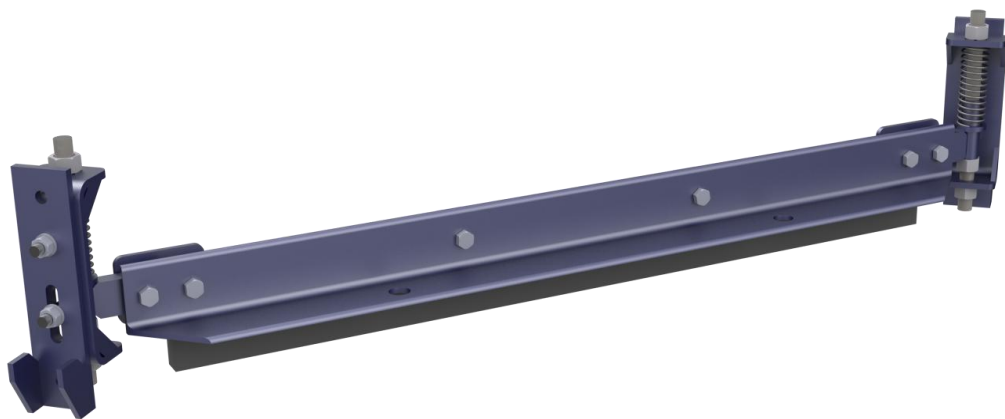




# Diagonal Plow

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## Installation Guide



**! IMPORTANT !****BENETECH, INC. HEREBY DISCLAIMS ANY LIABILITY FOR, BUT NOT LIMITED TO:**

- IMPROPER INSTALLATION OF EQUIPMENT
- IMPROPER SIZING OF EQUIPMENT
- DAMAGE DUE TO CONTAMINATION OF MATERIAL
- USER'S FAILURE TO INSPECT EQUIPMENT
- USER'S FAILURE TO MAINTAIN EQUIPMENT
- USER'S FAILURE TO TAKE REASONABLE CARE OF THE EQUIPMENT
- INJURIES OR DAMAGE RESULTING FROM USE OR APPLICATION OF THIS PRODUCT CONTRARY TO INSTRUCTIONS AND SPECIFICATIONS CONTAINED HEREIN.

**BENETECH, INC.'S LIABILITY SHALL BE LIMITED TO REPAIR OR REPLACEMENT OF EQUIPMENT SHOWN TO BE DEFECTIVE.****! SAFETY !**

Review and understand all safety rules given herein along with local and Governmental standards and regulations. Know and understand the American National Standards Institute (ANSI) z244.1-1982 lockout/tagout procedures, the American National Standard for Personnel Protection - Lockout/Tagout of Energy Sources - Minimum Safety Requirements and the Occupational Safety and Health Administration (OSHA) Federal Register, Part IV, 29 CFR Part 1910, Control of Hazardous Energy Source (Lockout/Tagout); Final Rule. Also observe all local and Governmental regulations concerning entry into confined spaces, welding, cutting, grinding, wash-down procedures and all Personal Protective Equipment (PPE) regulations.

*The following notations are used throughout in this manual.*

**! DANGER !**

**Danger:** Denotes immediate hazards that will result in severe personal injury or death.

**! WARNING !**

**Warning:** Denotes hazards or unsafe practices that could result in personal injury.

**! IMPORTANT !**

**Important:** Denotes instructions that must be followed for proper installation and/or operation of equipment.

**NOTE**

**Note:** Denotes general items to assist the reader/ installer/ operator.

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*Please pay close attention to all of these items and warnings.*  
*They have been included here for your safety and for ease of installation.*

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*All safety rules defined in this document and all owner/employer as well as State and Federal safety rules must be strictly adhered to when working on/with this, or any, conveyor plow system.*



**! DANGER !**

*Do not touch or go near the conveyor belt or conveyor accessories when the belt is running. Your body or clothing can get caught and you can be pulled into the conveyor, resulting in severe injury or death*

**! DANGER !**

*Before installing, servicing, or adjusting the plow, turn off AND lock out/tag out all energy sources to the conveyor and conveyor accessories according to ANSI standards. Failure to do so could result in serious injury or death.*

**! DANGER !**

*If this equipment is to be installed in an enclosed area, observe all confined space entry regulations and test the atmosphere for gas levels and dust content levels before using a cutting torch, welding equipment or electric hand tools. Using a torch, welding, grinding or drilling in an area with gas or dust may cause an explosion and/or fire resulting in serious injury or death.*

**! WARNING !**

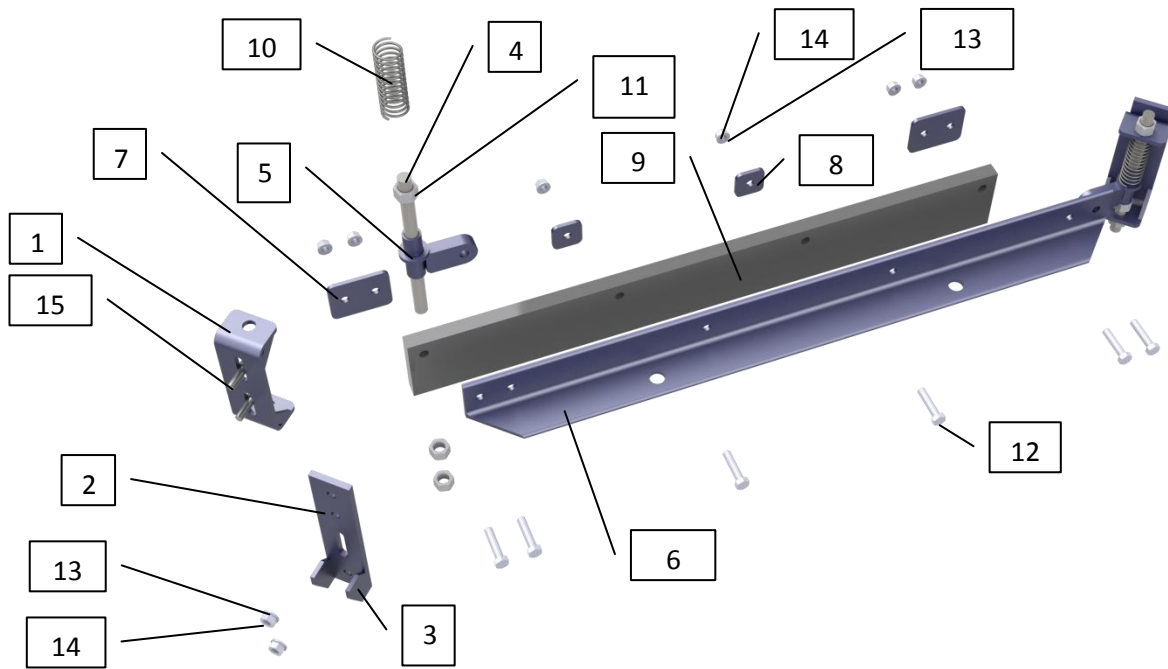
*Before using a cutting torch, welders, or grinding equipment, cover the conveyor belt with a fire retardant/resistant cover. Make sure a water source/fire hose is readily available AND OPERATIONAL. Failure to do so can allow the belt to catch fire.*

**! WARNING !**

*Conveyor plows are heavy and may require two people to lift. Attempting to lift the plow without assistance could result in injuries or damage to the equipment.*

# Provided Components

The parts listed below make up the diagonal plow assembly. The length and quantity of some parts may vary depending on the belt width application that your plow is intended for.



ITEM NO.	DESCRIPTION	QUANTITY
1	SUPPORT BRACKET	2
2	MOUNT PLATE	2
3	GUIDE	4
4	THREADED ROD	2
5	SUPPORT GUIDE	2
6	ANGLE MOUNT	1
7	LARGE KEEPER	2
8	SMALL KEEPER	2 - 8
9	PLOW BLADE	1
10	TENSION SPRING	2
11	¾-10 HEX NUT	6
12	HEX BOLT M12x55 DIN 931-8.8	6 - 12
13	PLAIN WASHER M12 DIN 934-8	10 - 16
14	HEX NUT M12 DIN 125 934-8	10 - 16
15	HEX BOLT M12 x 40	4

## Before Installing the Diagonal Plow

1. Inspect ALL shipping containers for damage and correct number of items (skids, pallets, cartons, boxes, etc.) being delivered. Report damage and/or shortages to delivery service immediately and fill out delivery service's claim form. Keep ALL damaged goods for examination. Benetech Inc is NOT responsible for damage occurring during transit.

2. All Benetech Inc. Diagonal Plows are shipped from our facilities assembled. Care should be taken while disassembling the units to ensure no parts are lost or damaged as the equipment is moved to its desired location. Dispose of shipping containers in an approved manner.

3. If any items are missing, IMMEDIATELY contact BENETECH, INC. or an authorized representative.

4. Gather tools. Minimum tools required for installation are:

- Tape measure/ String
- Torch/Hole Saw
- Level/Straight Edge
- Welder/Drill
- Open/Box End Wrenches
- Socket Set
- Marker/Soapstone (Welders chalk)



5. If using a cutting torch or welding, test atmosphere for gas level or dust content. Cover conveyor belt with fire retardant cover. Verify locations of fire extinguishers and operational water hoses prior to begin cutting/welding operations.

### **! WARNING !**

***Before installing equipment, turn off AND lock out/tag out all energy sources to the conveyor and conveyor accessories according to ANSI standards and local plant regulations. Failure to do so could result in serious injury or death.***

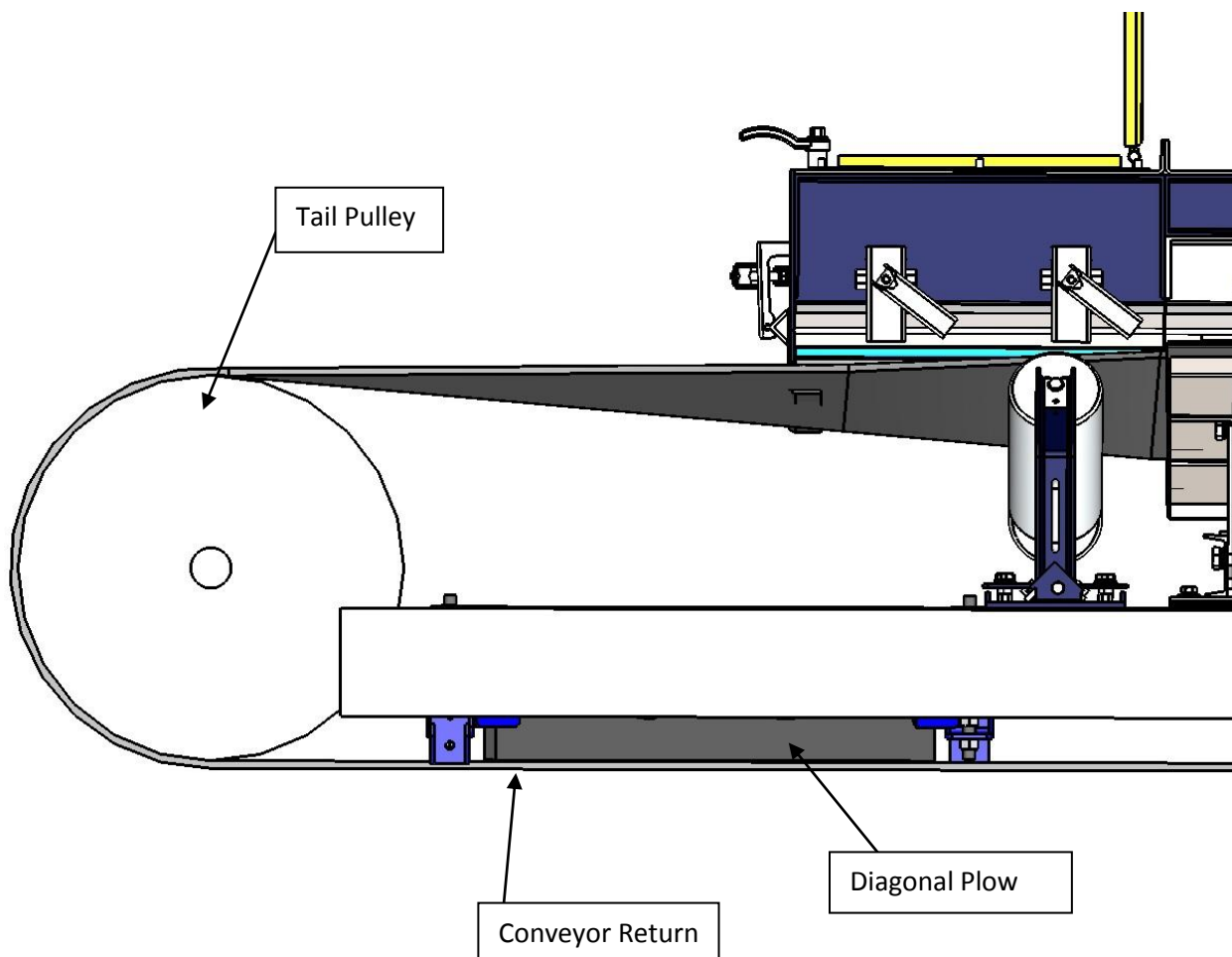
***If equipment will be installed in an enclosed area, the atmosphere in the structure/area must be tested for gas levels and dust content levels before using a cutting torch, welding equipment, grinding equipment or electric powered tools. Using a cutting torch, welding, drilling or grinding in an area with gas or dust may cause an explosion.***

## Installation Overview

The *Diagonal Plow* is designed to protect conveyor belts from damage caused by debris that could cycle between the pulley and belt surface. It protects by stopping objects that are on the return side of the belt by pushing them off and away from the moving pulley.

The *Diagonal Plow* should be mounted as close to the tail pulley as possible in order to ensure optimum protection.

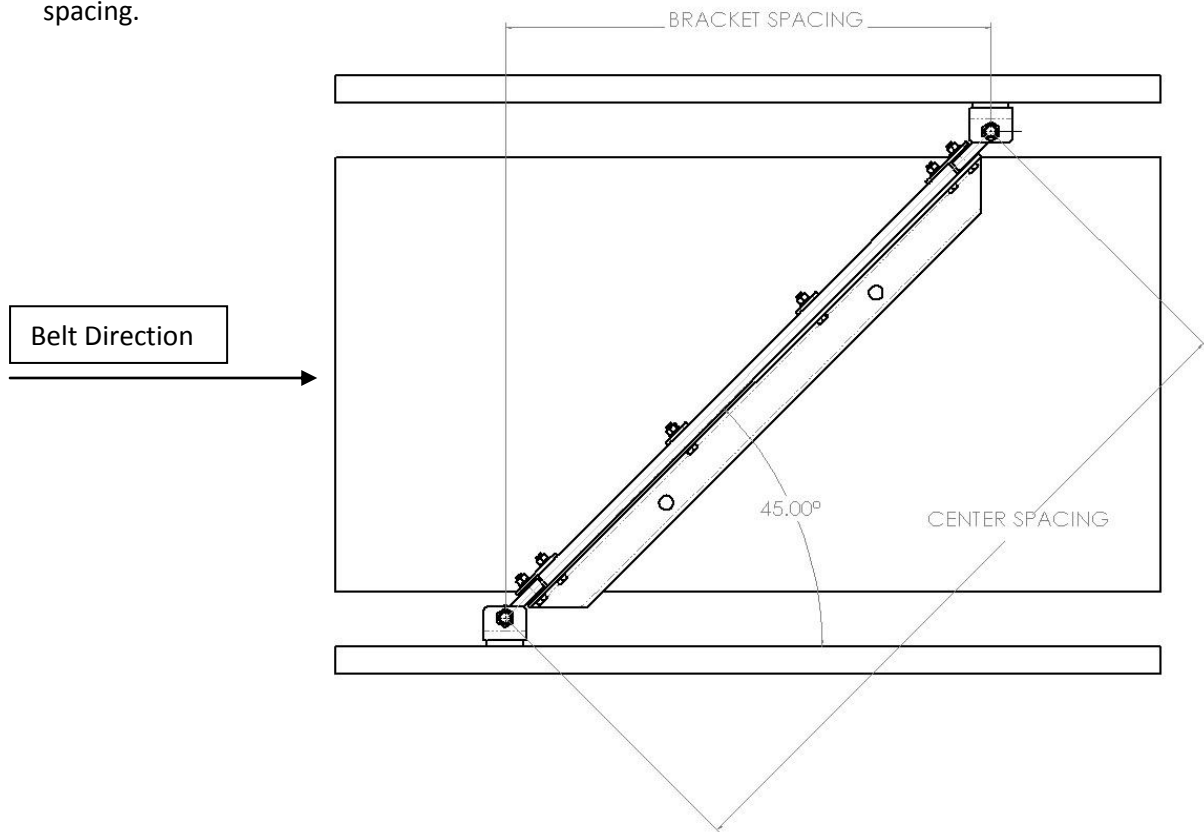
In some instances, the plow may not fit in the position shown. Always locate it as close as possible to the tail pulley where the belt is flat or rigid.



# Installation Instructions

Step 1. Locate plow position.

- a. As described on page 3, locate the mounting position for the *Diagonal Plow*.
- b. Mark the locations where the Mount Plates will be attached. Refer to **Table 1** for Mount Plate spacing.



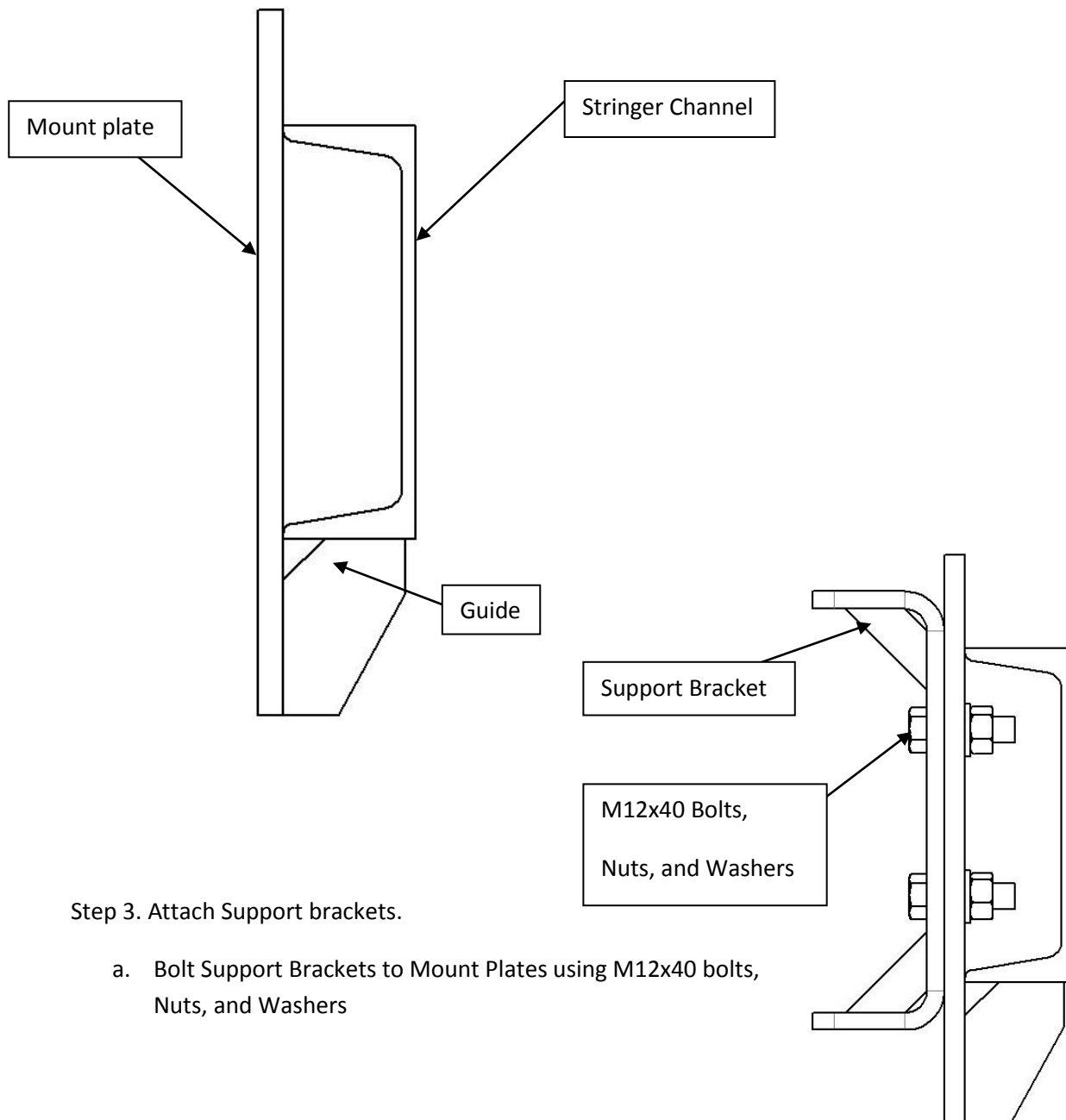
BELT WIDTH	BRACKET SPACING	CENTER SPACING
24"	27-5/8"	39"
30"	33-5/8"	47-1/2"
36"	39-5/8"	56"
42"	45-5/8"	64-1/2"
48"	51-3/8"	72-5/8"
54"	57-3/8"	81"
60"	63-3/8"	89-1/2"
72"	75-3/8"	106-1/2"



Step 2. Attach Mount Plates.

- a. Position the Mount Plates in the locations measured previously and push the Guide into contact with the bottom of the stringer.
- b. Once in position, weld the Mount Plates to the inside of the stringer channel.

**NOTE:** If the stringer channel is facing outward (the flat surface is on the inside) the Mount Plates can be bolted to the flat section along with the Support Brackets.

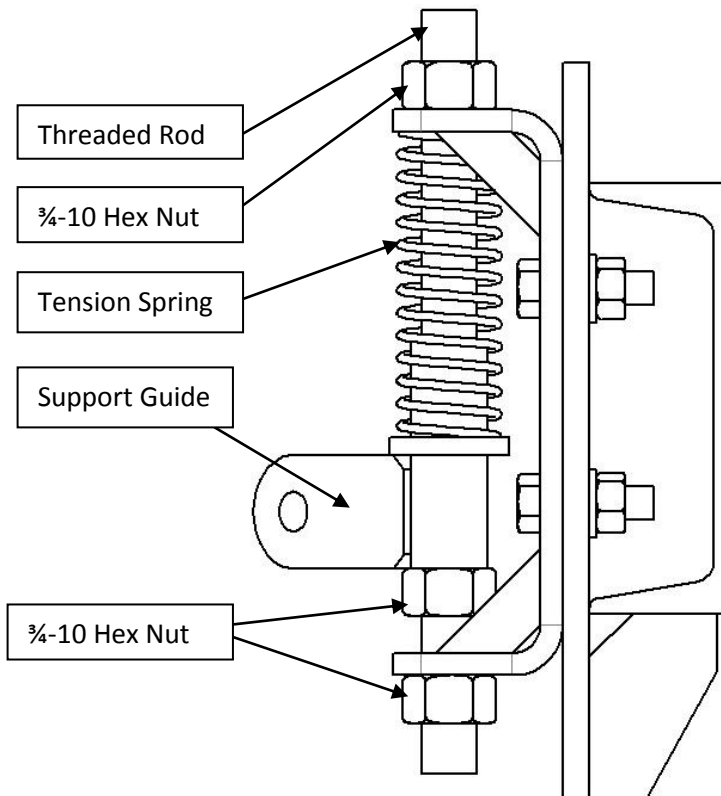


Step 3. Attach Support brackets.

- a. Bolt Support Brackets to Mount Plates using M12x40 bolts, Nuts, and Washers

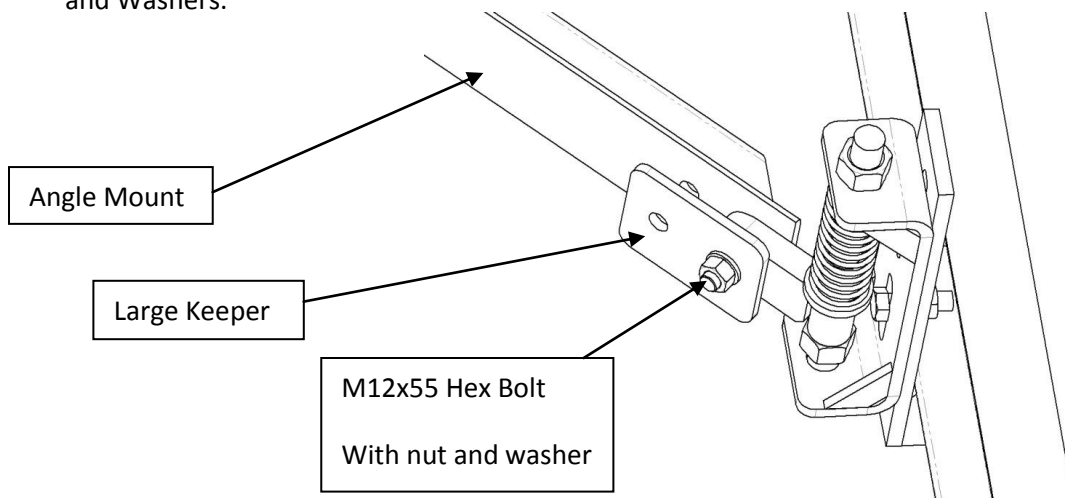
Step 4. Attach Threaded Rod, Support Guide, and Tension Spring.

- a. Drop the Threaded Rod through the Support Bracket, Tension Spring, Support Guide, and  $\frac{3}{4}$ -10 Hex Nut. Attach  $\frac{3}{4}$ -10 Hex Nuts on top and bottom.



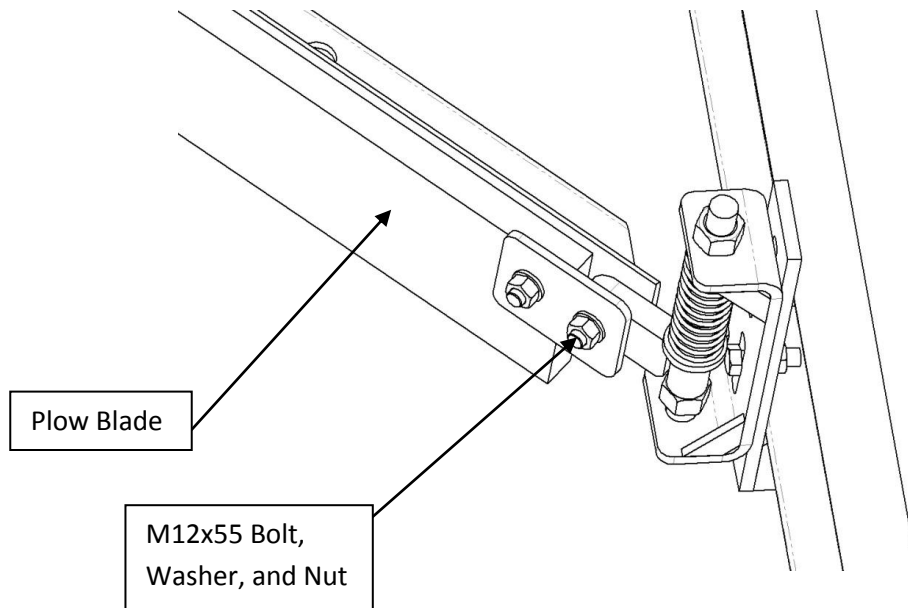
Step 5. Attach Angle Mount.

- a. Bolt the Angle Mount to BOTH Support Guides using Large Keepers and M12x55 Hex Bolts, Nuts, and Washers.



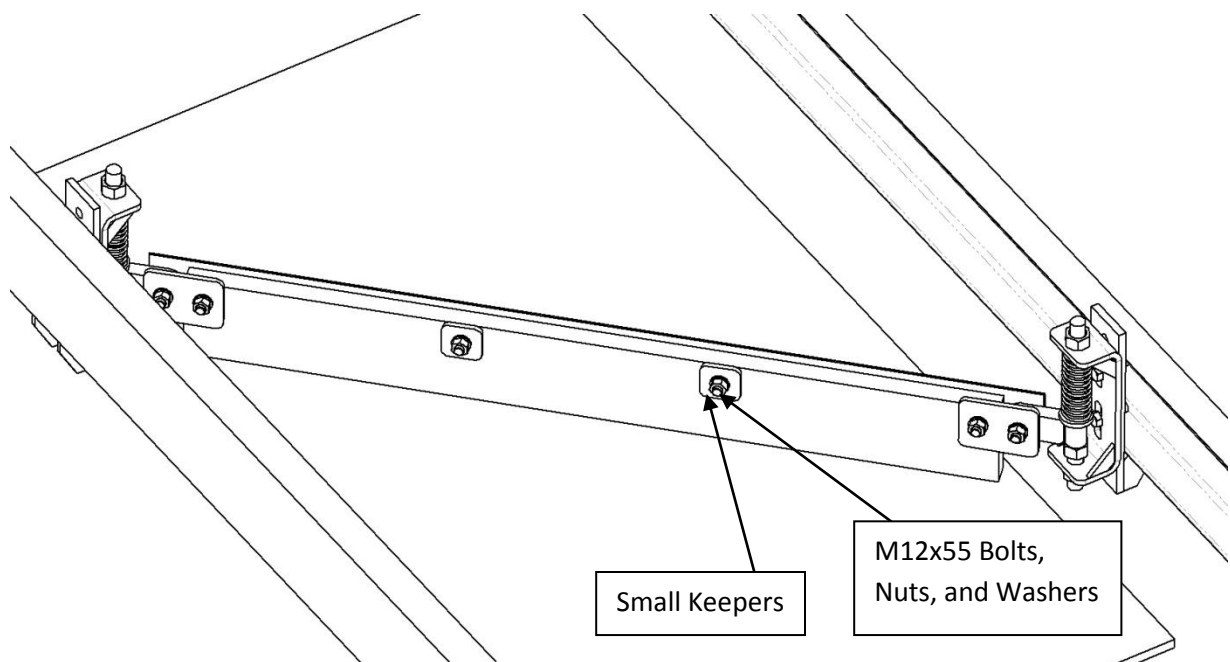
Step 6. Attach Plow Blade.

- a. Bolt Plow Blade between the Large Keeper and the Angle Mount with M12x55 Hex Bolts, washers, and nuts on both ends.



Step 7. Attach Small Keepers.

- a. Bolt Small Keepers to Plow Blade and Angle Mount using M12x55 Hex Bolts, Nuts, and Washers.



# Blade Adjustment

Upon Install, the *Diagonal Plow* should be adjusted so that it sits level across the return side of the conveyor belt, making even contact. The Plow Blade doesn't need to push hard onto the conveyor; it only needs to brush against it in order to deflect debris.

**NOTE:** Be sure to make equal adjustments on both sides of the plow.

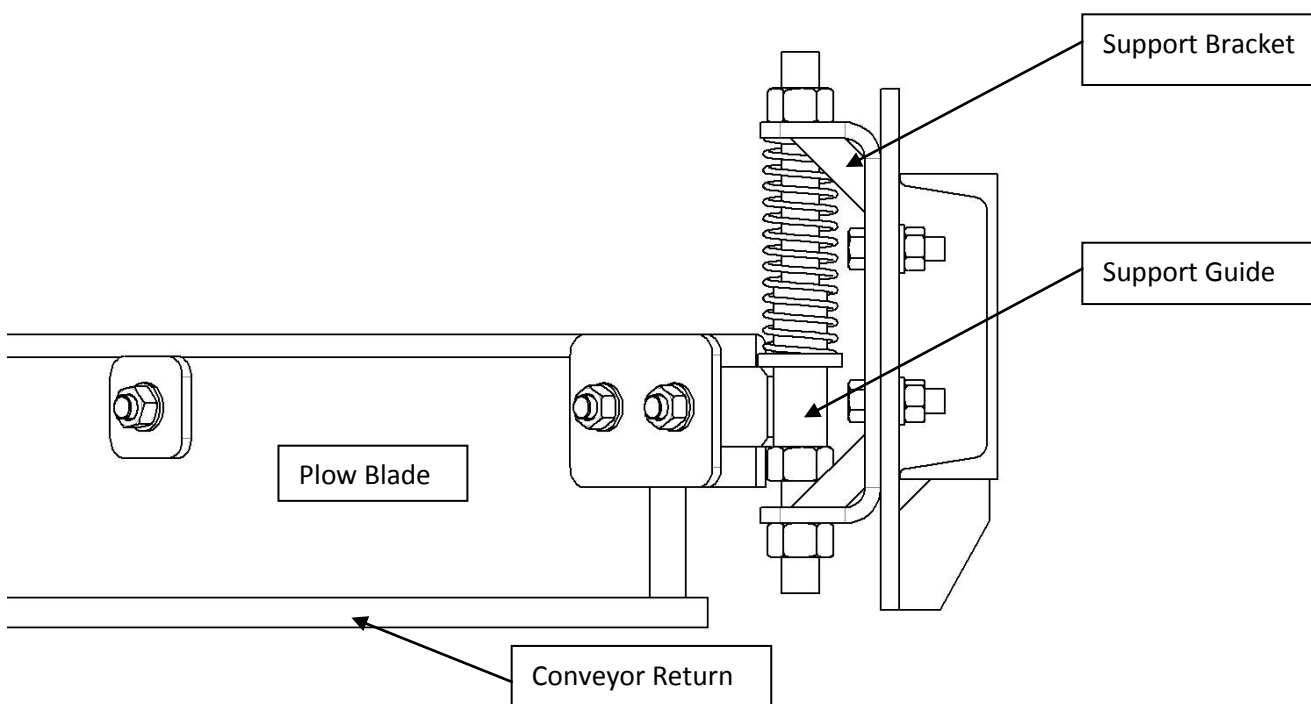
**To lower the blade:** Loosen the upper nut on the threaded rod until the blade contacts the return side of the belt. Tighten the lower nut to secure it.

**To Increase tension:** Raise the Support Guide by adjusting the nut below it. Loosen the nut on the Threaded Rod until the blade contacts the return side of the belt again. Tighten the lower nut to secure it.

**Extra tension:** If the Support Guide is moved up so far that the Threaded Rod runs out of travel, the Support Bracket can be adjusted down on its slots until contact is made with the belt.

**! WARNING !**

*Excessive tensioning of the plow blade can create premature wear of blades, damage to belt cover and excessive heat.*



**! DANGER !**

*Excessive heat created by excessive friction due to blades being improperly tensioned can create situations where fire and or explosions can occur*

**! WARNING !**

*Failure to remove tools from installation area and conveyor belt before turning on energy source can cause serious injury to personnel and damage to belt.*

**! WARNING !**

*Do not touch or go near conveyor belt or conveyor accessories when conveyor belt is running. Body or clothing can get caught and pull body into conveyor belt, causing severe injury or death.*