



# Safety, Operation, & Maintenance Manual

## Douglas Belt Conveyor Idler Instructions



**Warning:** This manual must be read, understood, and followed by anyone that installs, operates, and maintains this product. Failure to follow instructions may result in serious or fatal injury.

**Douglas Manufacturing Co., Inc.**

300 Industrial Park Drive, Pell City, Alabama 35125 • Tel: (205) 884-1200 • Fax: (205) 884-1206

Email: [sales@douglasmanufacturing.com](mailto:sales@douglasmanufacturing.com)

## ***SAFETY INSTRUCTIONS***

“Safety Standards for Conveyors and Related Equipment” ANSI B20.1 is a guide for safe construction, installation, operation and maintenance of conveyors and related equipment.

1. Follow all federal, state, local and owner recommended safety guidelines.
2. Before beginning work on a conveyor always lockout and tag-out the equipment. Follow all OSHA and other guidelines that pertain to lockout and tag-out procedures.
3. Do not allow anyone to attempt installation on a conveyor or attempt to operate the conveyor until they have read this manual thoroughly and understand it completely.
4. Only workers who are safety trained and familiar with the mechanics and mechanical nature of conveyors and rigging for unloading should work on or around conveyors.
5. Use only safety trained, certified and licensed electricians for all electrical requirements.
6. When loading or unloading conveyor components make sure that you are away from power lines and use caution to prevent metal equipment from contacting power lines.
7. Do not wear loose clothes, jewelry or neckties when working on or around conveyors. Long hair should be secured under a cap or bandana to prevent injury. The moving parts of a conveyor may catch loose clothes, jewelry, neckties or long hair and may result in serious injury.
8. Never allow anyone to ride on a conveyor.
9. Before starting the conveyor make sure that no one is exposed to the moving parts or material being discharged. The speed of the conveyor and the material being conveyed is sufficient to cause bodily injury.
14. Always replace worn components with factory recommended components.
16. Safety is the responsibility of all concerned. Be aware and alert at all times. Report unsafe conditions to the owner as soon as possible and always take improperly maintained or malfunctioning equipment out of service until such time as it may be properly serviced and returned to normal, safe operating conditions.

## **STORAGE AND PREPARATION**

Belt conveyor idlers are usually shipped to the job site mounted on skids in mass quantities. As idlers often arrive well in advance of their installation date, they should be stored under a cover or indoors to protect them from exposure to the weather and other adverse conditions.

Prior to installation, please check all idlers for evidence of damage to the rolls or frame due to mishandling etc. Check all rolls to make sure that they turn freely. Idlers should be cleared of any foreign matter that may have accumulated during transit or storage.

## **IDLER INSTALLATION CHECKLIST**

Remove mud, stones, or other debris from conveyor stringers or other mounting surfaces. Remove all burrs, dents, and bumps caused by excessive weld spatter to allow the belt conveyor idler frame to be securely positioned level with the plane of the conveyor and perpendicular to the line of conveyor belt travel.

Rotate each roller to ensure that it turns freely. Thoroughly inspect for any blocking or shipping straps that have not been removed. Visually inspect for any shipping or installation damage to the idler frame or rolls.

Check all idler mounting bolt holes to be sure they are all in-line along each side of the conveyor frame. This task can be made easier by stretching a length of string or piano wire along the length of the conveyor. Position the string or wire directly over the centerline of the bolt holes and inspect all holes for correct position. Any bolt holes found to be off center must be reworked in order to establish a common centerline for the conveyor belt.

Check for and remove any tools or other foreign objects on the belt, particularly on the return side where these items may be between the terminal pulleys as belt deterioration will occur.

Head and tail pulley shafts need to be parallel to each other. All bolts must be properly tightened.

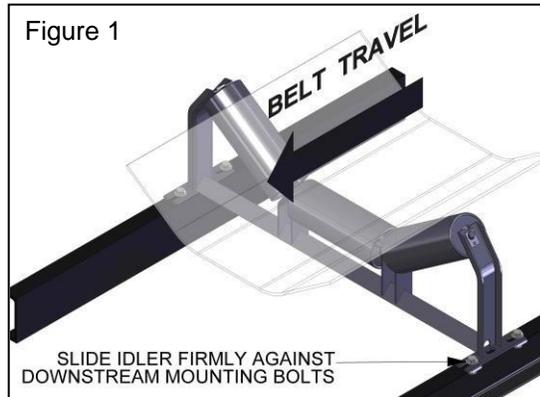
### **Trough Idlers:**

When you are installing idlers on a belt conveyor system, always install the trough or carrying idlers first. Alignment of the structure is critical if the belt is to track properly. Idler and pulley supports must be an equal distance from the conveyor centerline and level across the conveyor width.

When you are installing trough idlers, carefully lift them by their frames. If welding on the conveyor frame is necessary, never ground through a roll as bearing damage may occur.

Starting at the tail end of the conveyor, the first standard trough idler should be located an approximate distance from the centerline of the tail pulley equal to (1) belt width for 20° idlers, (1-1/2) belt widths for 35° idlers, and (2) times the belt width for 45° trough idlers.

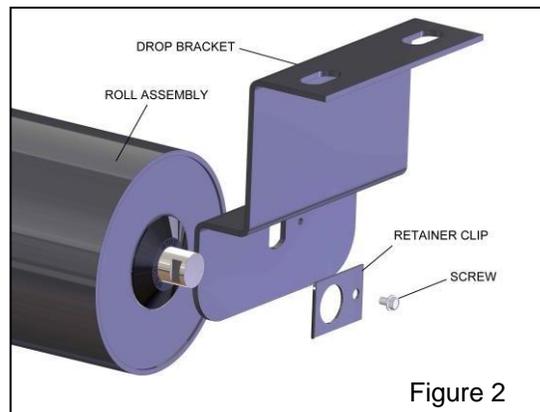
It is good practice to use a 20° trough idler as a transition idler for the first and last idler when using a 35° conveyor system. For 45° conveyor systems use both 20° and 35° transition idlers.



Place idlers in position by sliding them in the direction of belt travel until the foot brackets seat against the mounting bolts (see figure 1). Tighten all mounting bolts by hand. Final alignment requires that the centers of all idlers are in a straight line, perpendicular to the line of belt travel, properly spaced, and level. When alignment is complete, tighten all idler mounting bolts.

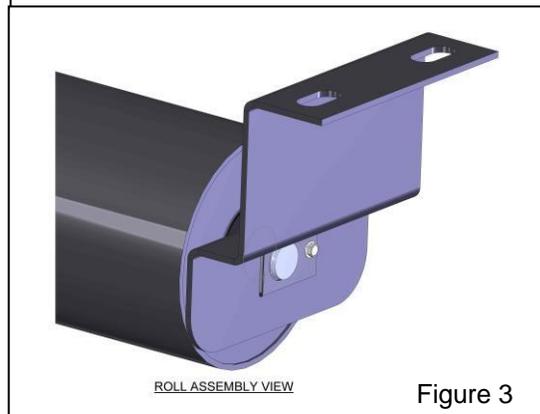
Trough idlers are shipped completely assembled less the mounting bolts. Four bolts are normally suggested and they must be securely tightened after the idler frame is correctly positioned.

### **Return Idlers:**



After the trough idlers have been set in place, the return idlers should be installed. The return idlers must be installed perpendicular to the conveyor centerline and level. Leave the training idlers out until the belt has been properly trained.

Hanger brackets and optional shaft retainer clips are shipped unassembled and without mounting bolts. Four (4) 1/2" mounting bolts are required per return idler.



First, install both hanger brackets loosely into place below belt conveyor frame side stringer.

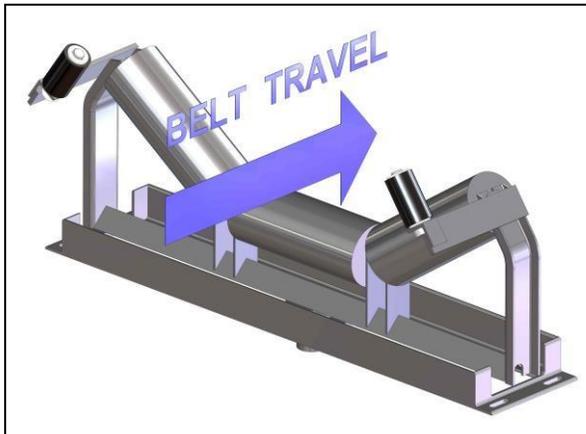
Next, insert the roller assembly into the slot of each hanger bracket and allow the shaft slots to seat firmly into the brackets, and then attach the optional retainer clips as detailed below.

The optional retainer clips (available by request only) slide over the end of the shaft. The holes

in the clip and bracket will align when properly installed. Install with self-tapping screws by hand followed with a socket wrench. Do not over tighten.

### **Self-Aligning Trough Idlers:**

Self-Aligning trough idlers are intended to aid in maintaining belt alignment when conditions such as temporary off-center loading, unusual side winds, or misalignment of a transient nature, due to lump concentration, disturbs the alignment of a properly installed conveyor belt. A correctly aligned, loaded, and spliced conveyor belt will not require correction action from the belt self-aligning idlers.



Self-aligning trough idlers are installed along the conveyor length, as required, but no closer than 50 feet from any pulley. Positive arm type units are used on belts traveling in one direction only. Actuating type trainers (without arms) are used on reversing belts and on belts with traveling trippers or stackers.

All Douglas Self-Aligning trough idlers are shipped completely assembled less the mounting bolts. The pivot roller bearings are factory lubricated and ready for

operation. The UHMW guide rollers are maintenance free.

Carefully check the self-aligning idler position to be certain that the guide roller assemblies are properly located so that, if the conveyor belt shifts, the belt edges will contact the guide rollers first. The guide roller brackets should extend in the direction opposite the belt travel. **NOTE: for self-aligning trough/flat idlers, the guide roll arms should be pointing towards the tail pulley. For self-aligning return idlers, the guide roll arms should be pointing towards the head pulley.**

Place the trainer assembly on the conveyor frame and slide the frame in the direction of belt travel until the foot brackets seat against the mounting bolts. Remove any blocking or shipping wires so the trainer frame can pivot freely. Check for square and level the frame as required to complete the installation. Verify the type of roll relationship, i.e. be sure that both trainer and trougher have the same troughing angle and same belt width.

The self-aligning trough idler is designed to provide an elevated roll height as compared to standard trough idlers. This arrangement provides the greatest training effect, but also increases the load that the frame and rolls have to withstand. Douglas self-aligning trough center rolls are  $\frac{1}{2}$ " to  $\frac{3}{4}$ " higher than a standard trough idler center roll.

### **Self-Aligning Return Idlers:**



Self-aligning return idlers are installed along the length of the conveyor as required, but no closer than 50' from any pulley.

Self-aligning return idlers are shipped completely assembled and ready for mounting. Mounting bolts are not supplied. Four (4) ½" bolts are required to mount each assembly.

Self-aligning return idlers have the same features as self-aligning trough idlers (except they do not have an elevated roll height).

**Side Guide Idlers:**

Side guide idlers do not train a belt but can prevent a belt from running off the pulleys and damaging itself against the conveyor structure or other objects.

Side guide idlers should be installed so that they do not touch the edge of the belt when it is running normally. If the belt runs against a guide idler roll continually, the belt edges will begin to wear. This is true even though the rolls are still turning.

**Conveyor start-up:**

Before actual startup of a conveyor system, electrical controls should be checked to ensure that the entire system can be stopped quickly in case of an emergency.

During initial startup, the conveyor should be jogged on and off until the belt has made several complete revolutions. During this time, make a complete check of all equipment to determine proper adjustment and function.

**GENERAL MAINTENANCE**

Proper maintenance and care will help ensure that your conveyor provides years of long, trouble free life. Regular inspection, lubrication, adjustment and maintenance will help prevent breakdown situations.

***REQUIRED DAILY MAINTENANCE***

Check for loose bolts, loose clamps and check mechanical joints.

Listen for unusual sounds and check for unusual vibrations.

***REQUIRED WEEKLY MAINTENANCE***

Check trough and return idlers for wear and verify that they roll freely and contact the belt.