To contact Flow-Turn:
For service:
Tel: 908-687-3225
Fax: 908-687-1715

By mail:
Flow-Turn, Inc.
1050 Commerce Avenue
Union, NJ 07083

On the World Wide Web:
www.flow-turn.com

Read this document thoroughly before attempting to install Flow-Turn components or devices. Exercise extreme caution when working around moving and rotating conveyor equipment. Wear the proper clothing and safety equipment. DO NOT attempt to perform any maintenance until the equipment is de-energized, locked out and tagged out in accordance with established company procedures.

The information presented in this document is correct at the time of publication. Flow-Turn has made every effort to ensure that the information presented is correct and free from error. However, some errors or misprints may occur. Please contact Flow-Turn with any corrections.

This document is © copyrighted 2011 by Flow-Turn, Inc., all rights reserved. No part of this manual may be reproduced and/or distributed to parties other than the customer and the customer’s employees for whom it was originally produced.

Direct questions and comments concerning the information contained in this manual, please contact Flow-Turn.
# TABLE OF CONTENTS

Section 1: Introduction .............................................................................................................. 1
  1.1 Identification of Safety Statements .................................................................. 1
  1.2 Safety Summary .............................................................................................. 1
      Operating Safety Precautions ........................................................................ 3
      Maintenance Safety Precautions ................................................................. 3
Section 2: Layout in a System.................................................................................................. 5
Section 3: Tools Required for Installation ................................................................................. 7
Section 4: Field Installation ...................................................................................................... 9
  4.1 Installation Instructions .................................................................................... 9
  4.2 Installation with Floor Supports ..................................................................... 11
      Instructions for Assembling the H/S Style Floor Support ...................... 11
      Installation of Floor Supports ................................................................. 12
  4.3 Installation with Ceiling Hung Supports ..................................................... 13
Section 1: Introduction

This manual is specifically developed for the Flow-Turn Spiral Chain Driven Belt Curve. Manufacturer’s recommendations set for this equipment must be followed during the complete warranty period for the equipment.

1.1 Identification of Safety Statements

The following safety statements are used throughout this manual to emphasize the importance of the statements.

**WARNING**

Warnings identify hazards or procedures that could cause bodily injury or loss of life.

**CAUTION**

Cautions identify hazards or procedures that could result in equipment damage or destruction.

**NOTE:** The term NOTE is used to call attention to useful information and is not a safety notice. Information appearing in a NOTE provides additional information which is helpful in understanding the item being explained.

1.2 Safety Summary

The following are standard safety precautions that should be followed. Personnel working on this equipment must understand and apply these precautions in all phases of operation and maintenance.

Safety is the responsibility of every individual. The supervisor is responsible for instructing personnel in safety practices applicable to the operation and maintenance of the equipment.
Likewise, it is the responsibility of each individual operating and maintaining the equipment to understand and observe established safety standards and procedures.

The installation, operation, and maintenance of electronic equipment have several elements of danger. Carelessness can result in injury from electrical shock. The following precautions must be observed:

**WARNING**

Under no circumstance shall any personnel be on any portion of spiral chain driven belt curve (step on, walk on, cross over, etc.) for any reason unless the equipment is locked out.

**WARNING**

Always remember the following safety precautions and observe them when working on or around electrical equipment.

- Turn off curve power sources and affix appropriate lockout and tag-out devices to operating controls before servicing the equipment. Only trained and qualified personnel who are aware of the safety hazards should perform equipment adjustments or required maintenance while the curve is in operation.

- Observe all warning signs, lights, and alarms associated with the curve operation and maintenance, and be alert at all times to automatic operation of adjacent equipment.

- Use extreme caution near moving curve parts to avoid the hazard of hands, hair and clothing being caught.

- Do not sit on, stand on, walk, ride, or cross (over or under) the curve at any time except where suitable catwalks, gates, or bridges are provided for personnel travel.

- Do not attempt to repair any equipment while the curve is running, replace any curve component without appropriate replacement parts, or modify the curve without prior approval by the manufacturer.
- Do not operate the curve until all safety guards are securely in place, all tools and non-product materials are removed from or near the conveying surfaces, and all personnel are in safe positions.
- Do not remove or modify any safety devices provided on or with the curve.
- Do not clear jams or reach into any unit before first turning off the equipment power sources and affixing appropriate lockout and tag-out devices.
- Frequently check safety guards, warning signs, lights, and alarms, and keep them in good condition to ensure the safety of all personnel.
- In the event of an electrical fire, use a Type C, BC, or ABC extinguisher only. Do not use water, soda-acid, or any other liquid stream extinguisher. These present a shock hazard to the user and will cause considerable damage to the electrical equipment.

**Operating Safety Precautions**
- Do not wear loose-fitting clothing, jewelry, ties, or other articles that could become caught in the curve.
- Keep hair away from the equipment to avoid its becoming entangled in the curve.
- Keep fingers, hands, and arms clear of feed belts, screws, chains, gears, and pulleys.
- Never place your hands on any moving part while the equipment is in operation.
- Always stop the equipment before attempting to clear any debris from the curve.
- Make certain that personnel are clear of moving parts before starting the equipment.
- Do not place food or drink on any part of the equipment, even if it is not in operation.

**Maintenance Safety Precautions**
- Keep the work area clean and neat.
- Warn others of possible hazards.
- Keep the equipment power off when performing maintenance procedures.
- Use goggles or a face mask when using compressed air for cleaning.
- Use extreme caution when checking or working in the vicinity of any electrical circuit.
Section 2: Layout in a System

A spiral chain driven belt curve is similar to straight belted conveyors. The inside and outside side panels are different sizes and need to be matched by aligning the ends of the panels with the ends of the belt. The between frame (BF) measurement is measured from the outer side panel to the inner side panel.

The ends of the two straight belted conveyors are to be positioned so that they are equal distance from the intersection of the centerline point known as the centerline radius. The correct elevation must be maintained to ensure the spiral chain driven belt curve is properly aligned to both straight belt conveyors when installed. The outer arc of the spiral chain driven belt curve should be the exact same arc as the outside radius of the two straight belted conveyors.

The spiral chain driven belt curve will fit between the straight belted conveyors perfectly when the following parameters are correct:

1. The BF of the chain driven belt curve and the BF of the straight belted conveyor is equal.

2. The outside arc of the two straight belted conveyors centerlines and the outer arc of the chain driven spiral curve are equal.

3. The straight belted conveyors are equal distance from the intersection of the centerline intersection and are the same as the centerline radius of the spiral chain driven belt curve.

4. The two straight belted conveyors are set to the proper elevations.
Section 3: Tools Required for Installation

<table>
<thead>
<tr>
<th>TOOL REQUIRED</th>
<th>USED FOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustable Wrench or Nut Driver Set</td>
<td>Motor Connections (Electrical)</td>
</tr>
<tr>
<td>½” SAE Wrench</td>
<td>Chain Cover and Side Panels</td>
</tr>
<tr>
<td>9/16” and ¾” SAE Wrench</td>
<td>Floor Supports (H/S Style)</td>
</tr>
</tbody>
</table>

WARNING

Make sure all guards are in place and bolted down before starting the spiral chain driven belt curve. Do not apply power to the unit until the unit is in place and all safety devices have been properly assembled.

NOTE: Flow-Turn highly recommends that all work performed on the spiral chain driven belt curve be performed by trained personnel. This is to prevent damage to the unit, and for the safety of operators and other personnel.
Section 4: Field Installation

Spiral chain driven belt curves are typically shipped as a single frame. A large spiral chain driven belt curve may be shipped in multiple sections and additional assembly will be required in the field.

NOTE: An inspection of unit is recommended upon arrival and uncrating of new spiral chain driven belt curve. During inspection check that all assembly materials are present and are removed from the unit before installation.

NOTE: If floor supports or drive units are supplied by Flow-Turn then these components are typically not assembled for shipping. All hardware, fasteners, and mounting brackets are included. Holes are already in appropriate positions for brackets mounting to the frame.

4.1 Installation Instructions

Step 1: Place the unit between the two conveyors that are preset for the spiral chain driven belt curve to continue the conveyor train. Ensure that the unit is level across the belted surface (Inner Radius to Outer Radius). It is within specifications to have the previous conveyor to maintain a slightly higher elevation without causing a problem with the unit itself.

The tapered end rollers are set up to maintain approximately ¾”-1” gap between the straight belted conveyors on either end and the spiral chain driven belt curve itself. If the straight conveyor end roller is able to extend beyond the end of the frame of the straight belted conveyor a gap of less than ¾” is acceptable.

CAUTION

DO NOT lift the spiral chain driven belt curve by the shaft used to drive the curve due to causing damage to the drive shaft itself. For safety and proper installation a mechanic/electrician who has been trained on spiral chain driven belt curves should do installation work.
WARNING

When using equipment to lift spiral chain driven belt curve ensure that all safety precautions are taken and equipment is stable before beginning work.

Step 2: Connect the floor supports or ceiling hangers under the spiral chain driven belt curve. For instructions, refer to Section 4.2 "Installation with Floor Supports" or Section 4.3 "Installation with Ceiling Hung Supports".

Step 3: Install the drive unit. For instructions, refer to the Drive Installation Sheet instructions.

Step 4: Check and visually inspect the following:

- Belt Clearance to inside side panel
- Belt Tension
- Return Roller
- Motor(s)
- Drive Installation and Alignment

Step 5: Connect the drive unit to power and test the unit to ensure proper belt rotation (Is belt moving in correct direction). Within the first 40 hours of use check for noises that may indicate that something within the spiral chain driven belted curve may have loose or misaligned parts.
4.2 Installation with Floor Supports

Due to crate size Flow-Turn disassembles the floor supports for shipment. All mounting holes for the floor supports are pre-drilled. There are only two types of floor supports used and they are the following:

- H/S Style which are adjustable.

- Floor Blocks that are non-adjustable. (With this option no additional assembly is required. Height up to 14”)

Instructions for Assembling the H/S Style Floor Support.

H/S style supports are adjustable with 2” slots and holes every 2”. For adjustment four bolts must be used and welded for support to maintain proper elevation and support.
Installation of Floor Supports

1) Ensure the spiral chain driven belt curve is slightly higher than the final resting height of the curve.

2) Mount the assembled floor supports to the bottom footrail in the desired location. Ensure that the fasteners are only hand tight to allow for slight adjustments.

3) Lower the unit into its final position with the floor supports resting on the floor.

4) Ensure that the unit is in the proper position (Check that the belt height on both ends is correct) and the floor supports are vertical.

5) To adjust the height of the curve use the following:
   
a) H/S Style: For minor height adjustments loosen all four bolts that hold the upper and lower legs together. Raise or Lower the entire unit as needed. For major adjustments remove bolts that hold upper and lower legs together. Raise or lower the entire unit as needed then replace bolts in appropriate hole and tighten.

   Figure 2

b) Non-adjustable Legs: Measure the height difference needed to set the unit to the proper height. Place an appropriate block/shim under the leg that needs to be raised.

6) Tighten all hardware.

7) Anchor the curve to the floor using the appropriate style floor anchors. (Not included in hardware)
4.3 Installation with Ceiling Hung Supports

For a spiral chain driven belt curve with ceiling hung supports angle steel will be shipped in the crate along with the unit itself.

1) Lift the unit and attach the angle steel to the bottom side of the footrail.

2) Position the unit in the proper location. (Ensuring the elevation is correct, and the unit is properly aligned with the other two conveyors in the train.)

3) Mount the all-thread rods to the overhead structure to be used for support.

4) Install a jam nut on the bottom of the all-thread. Insert the all-thread into the pre-drilled hole in the angle steel. Install a second jam nut at the bottom of the all-thread under the angle steel.

5) Adjust the unit by tightening the jam nut installed. When the unit is in the desired location (elevation, and correct position) tighten all of the jam nuts to ensure the unit’s position is maintained.

⚠️ WARNING

Ensure that all safety precautions are observed when personnel are working under equipment overhead. Ensure that appropriate rigging is used. Do not lift the spiral chain driven belted curve by the drive shaft extension.