



# Powered Conveyors Installation and Operating Instructions

## Conveying & Hoisting Solutions P/L

**1. Purpose of Equipment** Powered conveyors are intended for the carriage of materials only, within the specifications of the machine. Powered conveyors are **not** intended for the carriage of humans or animals.

## 2. Safety

### 2.1 Warnings

- Read and understand these instructions and **safety warnings** before installing, using or removing conveyors.
- Before installing or removing conveyors, read and understand the **safety warnings** in Chapter 8.1
- Care should be used when loading with Excavators or “Bobcats.” Overloading will cause a lack of performance and may result in damage, injury or death. Do not exceed the rated capacity of the conveyor.
- The belt direction intended is towards the conveyor controls. 3 phase (415v) conveyors may operate in either direction. If 415v conveyors are operated with the belt running towards the tail and the load hopper at that end removed, be aware an entanglement hazard does exist. Use with caution and do not allow personnel within 800mm of the conveyor tail.

### 2.2 Hazard Assessment

Note: this checklist is indicative only. Users and/or installers must perform their own Hazard Assessment subject to the intended siting and use of the equipment. All personnel involved in the use or installation of the equipment should be made aware of the hazards, risks and control methods identified.

HAZARD	RISK	CONTROL
Entanglement Shearing of body parts	Moderate	<ul style="list-style-type: none"> <li>• Ensure guarding fitted under the belt at the drive roller and inside the conveyor at the tail roller, are in place.</li> <li>• Exercise caution when operating with the belt running towards the tail end.</li> <li>• Do not allow loose clothing, jewellery, gloves, rags, cleaning brushes or other materials near a running conveyor.</li> <li>• Ensure EMERGENCY STOP switches are in working order and within reach from all work positions.</li> <li>• Do not step over a conveyor while in operation.</li> </ul>
Crushing Stabbing	Moderate	<ul style="list-style-type: none"> <li><input type="checkbox"/> Elevated conveyors must be adequately supported and secured.</li> <li>• Ensure overloading does not occur.</li> <li>• Any materials conveyed must be stable and not able to fall off during use.</li> <li>• Do not convey materials over personnel.</li> </ul>
Electrocution	Moderate	<ul style="list-style-type: none"> <li><input type="checkbox"/> Use an E.L.C.B., an R.C.D. or other “safety switch” in the power supply.</li> <li>• Do not allow the Conveyor or load to enter the NO GO Zone for Power Lines.</li> <li>• Prevent moisture from coming into contact with leads and plugs.</li> <li>• Do not alter or tamper with electrical parts.</li> </ul>
Penetration	Low	<ul style="list-style-type: none"> <li><input type="checkbox"/> Ensure safety clips are used with compressed air hoses.</li> <li>• Regularly check air hose condition.</li> <li>• Do not allow personnel to stand near air exhaust.</li> <li>• Do not use with an air pressure greater than 100psi.</li> </ul>
Ergonomics and Manual Handling	Low	<ul style="list-style-type: none"> <li><input type="checkbox"/> Avoid using muscular force to lift, lower or move sideways if working in confined or cramped conditions. Use mechanical means (eg winches, Tirfors etc) wherever possible to minimize the risk of injury.</li> </ul>

		Where these means are not practicable, the use of control ropes and sufficient personnel should be used so that a sustained application of high force or poor posture is not required by any person. <ul style="list-style-type: none"> <li>• Adopt good work practices when loading/unloading conveyors to minimise the risk of injury.</li> <li>• Wear hearing protection when working with air powered conveyors.</li> </ul>
<b>HAZARD</b>	<b>RISK</b>	<b>CONTROL</b>
Slipping, tripping or falling	Low	<ul style="list-style-type: none"> <li>• Clean up any spills caused by top-up of air lubricating fluid.</li> <li>• Do not step over conveyors.</li> <li>• Employ height safety practices when installing or maintaining elevated conveyors.</li> </ul>
Explosion	Low	<ul style="list-style-type: none"> <li>• Before use, ensure there are no explosive substances present near the conveyor.</li> </ul>

## 2.3 Certification

Certification is not required to operate this equipment. Suspended conveyors may require installation by Certified personnel.

## 2.4 Incident Notification

The employer, as defined by the Regulations referred to below, who has management or control of the workplace must be aware that they may have an obligation to notify Workcover of any incidents involving this equipment. Refer to the Occupational Health and Safety Act and the Occupational Health & Safety (Incident Notification) Regulation applicable in your State.

## 2.5 Inspections

See the instructions under Section 6 Operator Maintenance; 6.1 Daily Tasks

# 3. Specifications

## 3.1 Capacities – Trough

Type	Mass	Max WLL (min 0.35m <sup>2</sup> )	Belt Speed	Cross-Sectional Area (soil)	Volume	Capacity (soil)
2m Aluminium	55kg	115kg	32m/min	0.009 m <sup>2</sup>	19.48 m <sup>3</sup> /hr	18 t/hr
3m Aluminium	80kg	115kg	32m/min	0.009 m <sup>2</sup>	19.48 m <sup>3</sup> /hr	18 t/hr
4m Aluminium	90kg	115kg	32m/min	0.009 m <sup>2</sup>	19.48 m <sup>3</sup> /hr	18 t/hr
6m Aluminium	110kg	115kg	32m/min	0.009 m <sup>2</sup>	19.48 m <sup>3</sup> /hr	18 t/hr
4m x 350mm	190kg	150kg	42m/min	0.011m <sup>2</sup>	27.72 m <sup>3</sup> /hr	30 t/hr
4m x 600mm	220kg	200kg	42m/min	0.04m <sup>2</sup>	100.8 m <sup>3</sup> /hr	100 t/hr
7m x 350mm	260kg	150kg	42m/min	0.011m <sup>2</sup>	27.72 m <sup>3</sup> /hr	30 t/hr
7m x 600mm	360kg	200kg	42m/min	0.04m <sup>2</sup>	100.8 m <sup>3</sup> /hr	100 t/hr
10m x 350mm	350kg	150kg	42m/min	0.011m <sup>2</sup>	27.72 m <sup>3</sup> /hr	30 t/hr
10m x 600mm	520kg	200kg	42m/min	0.04m <sup>2</sup>	100.8 m <sup>3</sup> /hr	100 t/hr

### 3.2 Capacities – Flat

Type	Mass	Max WLL (min $0.35m^2$ )	Belt Speed
4m x 350mm	190kg	150kg	28m/min
4m x 600mm	220kg	200kg	28m/min
7m x 350mm	260kg	150kg	28m/min
7m x 600mm	360kg	200kg	28m/min
10m x 350mm	350kg	150kg	28m/min
10m x 600mm	520kg	200kg	28m/min

### 3.3 Power Requirements

- 240v electric powered conveyors may be connected to a dedicated standard house type electrical outlet. The outlet must be within 20m of the conveyor and should be fitted with an E.L.C.B. an R.C.D. or other “safety switch”. Do not connect more than two steel conveyors or two aluminium conveyors to each fused circuit.
- Conveyors using 415v 3-phase supply require a dedicated 4 pin “Wilco” style outlet delivering at least 10A. The outlet must be within 20m of the conveyor and should be fitted with an E.L.C.B. an R.C.D. or other “safety switch”. Do not connect more than two steel conveyors or two aluminium conveyors to each fused circuit.
- Air powered conveyors require 100cfm to 175cfm @ 90psi depending on load placed on the belt

## 4. Description

### 4.1 General

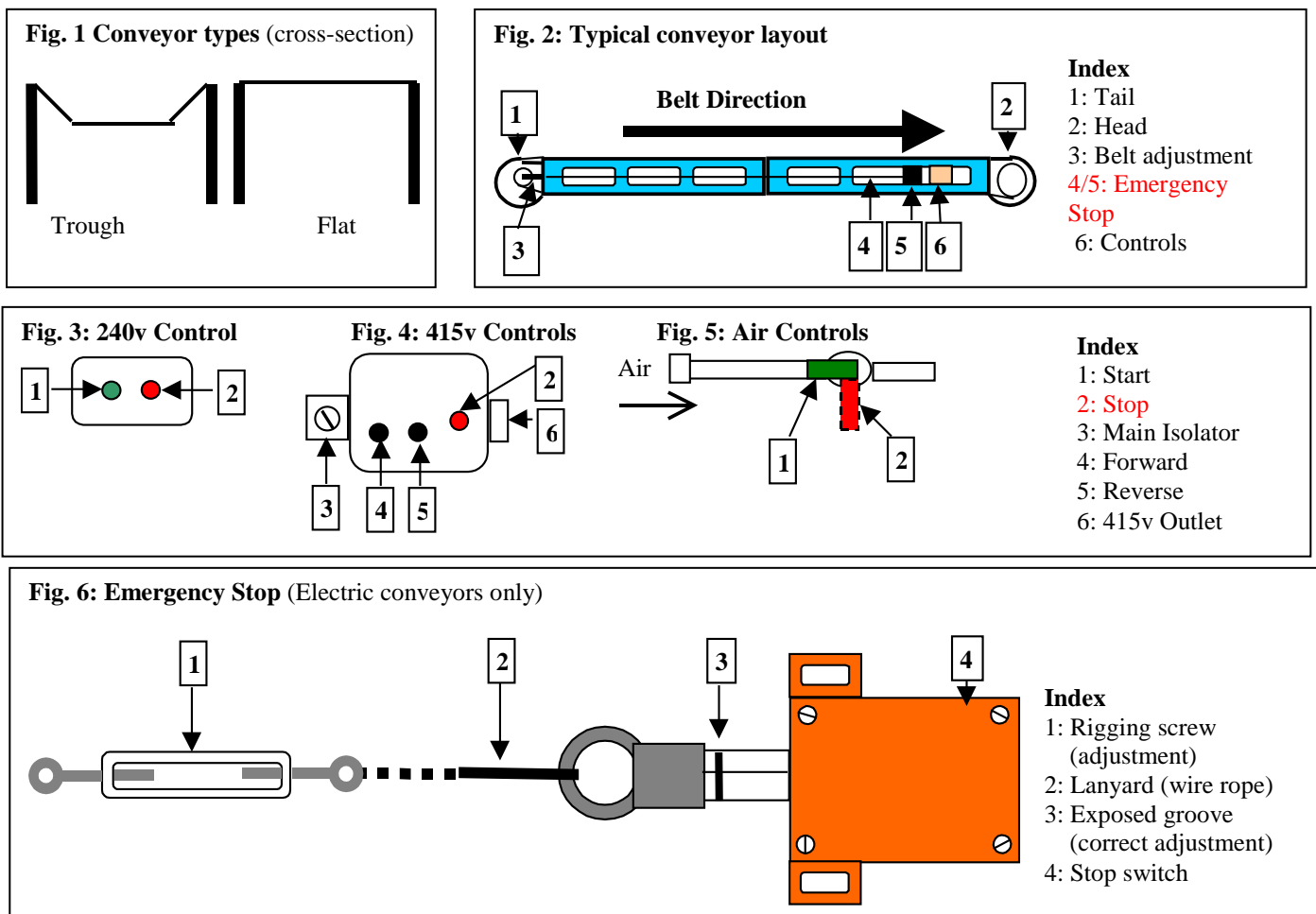
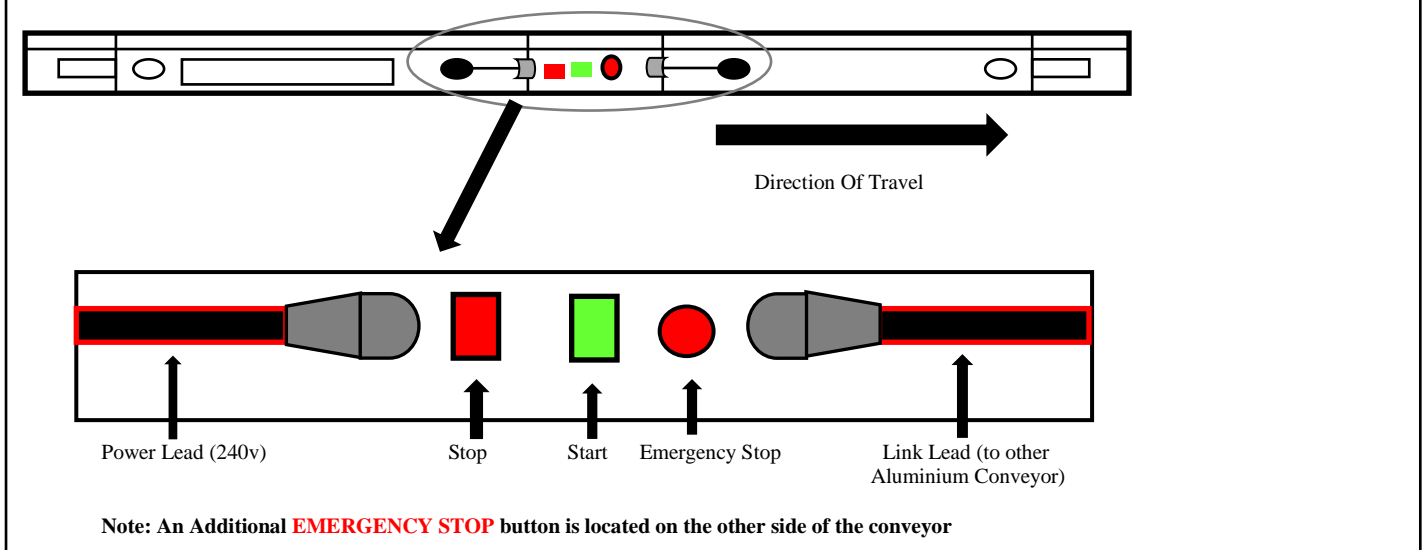


Fig. 7: Aluminium Conveyor Controls



## 5. Operating Instructions

### 5.1 Warnings

- Load the conveyor so that the goods conveyed are as close to the centre of the belt as possible.
- Loading by machine should be taken with care to not overload the conveyor, or have product spills. Use backing boards at the loading end of trough conveyors when moving soil, sand etc to reduce spills.
- DO NOT try to free jams when the belt is running. STOP the conveyor first.

### 5.2 Applying power

- **Steel electric conveyors:** Each conveyor must be connected separately to a power supply. Due to the starting currents required, a maximum of two (2) 240v conveyors may be connected to any 15A fused circuit. Additional 240v conveyors will require separately fused supplies. Ensure power leads are off the ground and away from moisture.
- **Aluminium electric conveyors:** The conveyor is connected to a 240v power supply using the power lead on the left-hand side. The right-hand side lead must have a special end plug (fitted) to operate. Up to two (2) aluminium conveyors may be connected together to operate as a single chain under one start/stop control. This is achieved by connecting the link lead of the first conveyor to the power lead of the second conveyor, and so on. The special end plug **must** be connected to the link lead of the last conveyor.
- **Air powered conveyors:** Connect an air hose of minimum 19mm ID, fitted with Minsup type B fittings, to the conveyor. The air supply must be of good quality and be moisture and dirt free. Where the air supply is of suspect quality, air cleaners, water removal and oil-mist treatment equipment should be used between the air supply and the conveyor. Ensure that air-line safety clips are used all detachable ends of the hose.

### 5.3 Controls – Steel electric conveyors

Steel electric conveyors are operated separately from a Control Box placed on the right-hand side of the conveyor, looking towards the head end.

An EMERGENCY-STOP is fitted to all steel electric conveyors, consisting of a wire rope lanyard running down both sides of the conveyor that is used to stop the conveyor in an emergency [see Fig. 2 & Fig. 6]

Pulling the wire rope lanyard will stop the conveyor. Releasing the wire rope lanyard will not restart the conveyor. Once the reason for the emergency stop is removed, restart the conveyor by pressing the green ON button (240v models) or by pressing either the FORWARD or REVERSE buttons (415v models).

- **240v** conveyors have a green ON button [1] in Fig.3] and a red STOP button [2] in Fig. 3]. Press and release the green button to start the conveyor. Press and release the red STOP button to stop the conveyor.
- **415v** conveyors have a main isolator switch [3] in Fig. 4] to “ON”. Press the FORWARD [4] in Fig. 4] or REVERSE button [5] in Fig. 4] to make the belt move in the desired direction. Press the red STOP button [2] in Fig. 4] to stop the conveyor.

## 5.4 Controls – Aluminium electric conveyors

Aluminium electric conveyors are operated from a Control Box placed on the right-hand side of the conveyor, looking towards the head end. They are placed in the middle of the conveyor, next to basic instructions (see Fig. 7)

By using the link lead a second or third aluminium conveyor may be added as a group, all controlled by the start/stop buttons on the first conveyor.

An EMERGENCY-STOP is fitted to all aluminium electric conveyors, consisting of two red buttons fitted to each side of the conveyor. Pressing either or both buttons will cause the conveyor(s) to stop. The conveyor(s) cannot be started until the stop button is twisted clockwise and released.

To start the conveyor, press the green ON button. To stop the conveyor(s), press the red STOP button.

## 5.5 Controls – Air powered conveyors

Air powered conveyors are controlled by a rotary tap in the airline found on the left-hand side of the conveyor, looking towards the head end.

- To operate the conveyor, turn the tap so the handle is in line with the airline [1] in Fig. 5]. The amount of turn will control the belt speed.
- To stop the conveyor, turn the tap so the handle is across the line of the airline [2] in Fig. 5]

# 6. Operator Maintenance

## 6.1 Daily Tasks

Before the start of each work period, the Operator should:

- Inspect the conveyor installation, frame, and power supply lines to ensure they are sound and fit for duty.
- Check the controls function as intended, especially the EMERGENCY-STOP switch.
- Top-up the lubricator on air powered conveyors with tool oil, compressor oil, hydraulic oil or other light oil. Clean the air filter screen from dirt or residue.
- Ensure the head, tail and return rollers underneath are not clogged up. STOP the conveyor before clearing.

## 6.2 Fault Finding

### All Conveyors

#### • Motor is running or trying to run, belt is not moving:

- 1) The belt is sticking. Turn the conveyor off. Unload the conveyor first, then unstick the belt by lifting the belt up off the frame. Restart the conveyor.
- 2) The belt is too loose. Contact your nearest Conveying and Hoisting Solutions branch for service.

### Electric Conveyors

#### • Steel electric conveyor will not function:

- 1) Check the conveyor is plugged in and the power is on.
- 2) Press the START, FORWARD or REVERSE button, depending on the conveyor type, while pulling out the EMERGENCY STOP lanyard. If the conveyor starts, release the lanyard (conveyor will stop). Adjust the lanyard by turning the rigging screw found at the other end of the wire rope until a groove on the shaft of the EMERGENCY-STOP switch is visible. Press START, FORWARD or REVERSE and the conveyor should operate.

#### • Aluminium electric conveyor will not function:

- 1) Check that the power lead is plugged in and the power turned on.
- 2) Check that a special end plug is fitted, or has not come loose, to the end of the link lead.
- 3) Check that all EMERGENCY STOP buttons have been released by twisting them clock-wise.

#### • All conveyors in a run stop when one is started

- 1) There are too many conveyors connected to the circuit. Only two 240v steel conveyors may be connected to each circuit.
- 2) The generator or compressor used to power the conveyors does not have enough power.

### Air Conveyors

#### • Air conveyor will not function:

- 1) Ensure air supply is available and the supply tap is turned on.
- 2) Check hoses are not kinked or blocked.

- 3) Check the filter screen in the conveyor airline is not blocked.

If these remedies do not work, contact your nearest Conveying and Hoisting Solutions depot for service.

## 7 Shut-down Procedure

### 7.1 Emergency Shut-down Procedure

- In the event of an emergency, stop the conveyor by:
  - **Electric conveyors:** press the red STOP button, pulling the EMERGENCY-STOP wire rope lanyard, or turning off the power supply.
  - **Air conveyors:** turn off the control tap at the head end, turn off air supply at the supply valve or at the compressor.
- Remove the power supply from the conveyor
- Place a sign “DO NOT USE – CONVEYOR UNDER REPAIR” at the controls
- Inform management or management’s agent of the fault.

### 7.2 End of Work Period Shut-down

- Turn off the conveyor and remove the power supply
- Clean the stationary conveyor using tools and methods that will not damage the belt. Do not scrape the belt with a shovel.

## 8 Installation Instructions

### 8.1 Warnings

#### **Before installing the Conveyor:**

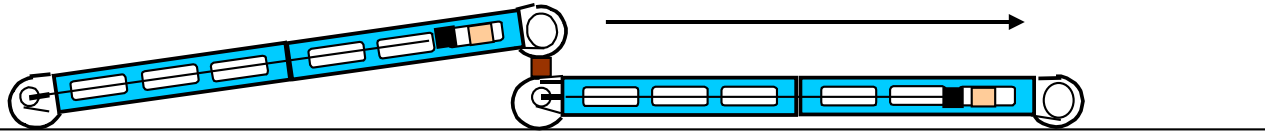
- Read and understand all instructions before installation, particularly Chapter 2 (Safety) and Chapter 5 (Operation).
- Avoid using muscular force to lift, lower or move sideways if working in confined or cramped conditions. Use mechanical means (eg winches, Tirlors etc) wherever possible to minimize the risk of injury. Where these means are not practicable, the use of control ropes and sufficient personnel should be used so that a sustained application of high force is not required by any person.
- Ensure that placement of the equipment conforms to the “No Go Zones for plant near overhead powerlines” rules.
- The mounting position is firm, stable and capable of withstanding the forces of the conveyor, its load and its operation.
- An inspection has been carried out on the equipment before installation, as described in Chapter 6.1 above.
- Unauthorised personnel are prevented from entering the mounting area during installation.
- Personal safety equipment is worn.

### 8.2 Instructions

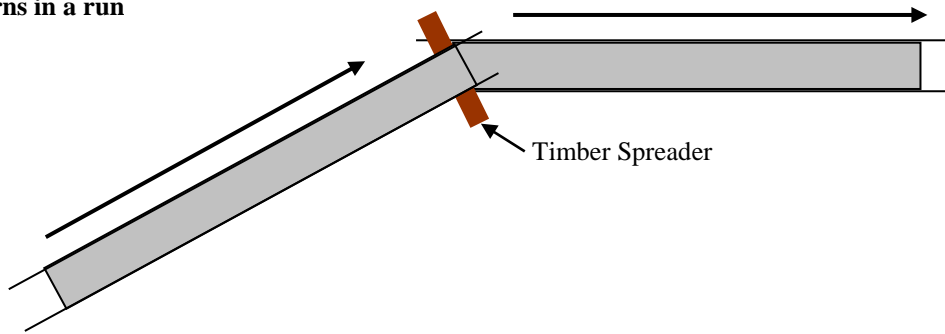
- Measure the intended path that the conveyors will take and ensure that there is sufficient width and height for the conveyor and it’s load, and that there is room to move each conveyor unit into position.
- If the conveyor needs to be inclined, keep the angle of incline to 20° or less. This angle will suit almost all product types. A 4m conveyor will have a maximum height of 1400mm, 7m length has 2400mm height and a 10m length has 3400mm maximum height. For more specific angle of incline according to your product, check with your nearest Conveying and Hoisting Solutions store.
- Stands supporting conveyors should be of adequate design and construction to support the conveyor and it’s load. Check installation area and stands, props or supports used are firm and stable.
- Inclined conveyors must be secured to the stand to prevent the conveyor slipping downwards under use.
- Align the conveyor so the belt direction is towards the head (control box end).
- Ensure that the conveyor has not been installed upside down. All signs should be the ‘right way up’.
- For long continuous runs, trough conveyors may be piggybacked one to another. Install the output conveyor first and then the preceding one. Place a timber or similar support over the tail of the first conveyor and then rest the head of the preceding conveyor onto the timber. Ensure there is sufficient overlap for the product to land on the next unit. Continue in this fashion until all conveyors are installed. See Fig. 8.
- Trough conveyor runs can be made to go around corners by placing the preceding conveyor at an angle over the tail of the first conveyor. Ensure the preceding conveyor discharges into the centre of the first conveyor. See Fig. 9.
- Long flat belt conveyor runs may be made by placing the head of the first conveyor against the tail of the next conveyor. Leave a 6mm gap between each belt.
- Unpack the power lead on electric conveyors. Do not let the lead hang over the EMERGENCY STOP lanyard or pass the lead between the belt and the frame. Damage to the lead may result, possibly leading to electrocution.

- Connect the power supply to the conveyor. Ensure leads or airlines are secured and do not become a trip hazard by hanging them above head height. Do not connect more than two (2) 240v steel conveyors to the same fused circuit.
- Ensure the lubricating oil reservoir found in the airline on air powered conveyors, is full.

**Fig.7: Continuous run (trough style)**



**Fig. 8: Turns in a run**



## 9 Removal Instructions

- Removal is the reverse of the 8. Installation Instructions above.