

# **BESTREACH**

TELESCOPIC CONVEYORS

# **BEST<sup>®</sup>** **CONVEYORS**

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# **Maintenance and Service Guide**

**Company Name :**

**Ship/Install Date :**

**Model Number :**

**Job Number :**

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## Declaration of EC Conformity

According to the guidelines of the council for adjustment of the legal stipulations for the member states: **2006/42/EC** for machines.

**We hereby certify that the machinery stipulated below complies with all the relevant provisions of the EC Machinery Directive and the National Laws and Regulations adopting this Directive.**

**Modifications to the machine without prior approval from the undersigned will render this declaration null and void.**

### Equipment Details:

Machine description: BestReach TBC  
Model:  
Serial No:  
Date of Construction:  
Customer name:  
Supplied and manufactured by: Best Conveyors  
Brunel Rd  
Earlstrees Ind. Estate  
Corby  
UK  
NN17 4JW

### The following harmonised standards were applied:

Machinery Directive: 2006/42/EC

### With Reference To:

Safety of Machinery:  
- Basic Concepts, General Principles for Design BS EN ISO 12100 pt 1 & 2: 2003  
- Fluid Power Systems & Components BS EN ISO 982: 1996  
- Continuous Handling Systems & Equipment BS EN ISO 619: 2002  
- Electrical Equipment of Machines: BS EN ISO 60204-1-2006 + A1: 2009  
Low Voltage Directive: 2006/95/EC  
Electromagnetic Compatibility (EMC) Regulations: 2004/108/EC

On behalf of Best Conveyors



Signed P.P: .....On behalf of: J Markley, CEO

# 1 SERVICE CHECK

## General

General condition	<input type="checkbox"/>
Foreign bodies inside conveyor	<input type="checkbox"/>
External damage	<input type="checkbox"/>
Internal damage	<input type="checkbox"/>
Safety and warning signs	<input type="checkbox"/>
Access panels	<input type="checkbox"/>

## Operation

Belt operation – load	<input type="checkbox"/>
Belt operation – unload	<input type="checkbox"/>
Extend	<input type="checkbox"/>
Retract	<input type="checkbox"/>
Raise	<input type="checkbox"/>
Lower	<input type="checkbox"/>
Traverse	<input type="checkbox"/>
Lights	<input type="checkbox"/>
Push buttons	<input type="checkbox"/>
Emergency stops	<input type="checkbox"/>
Extension stop bar	<input type="checkbox"/>
Pop out rollers	<input type="checkbox"/>
Audible warning device	<input type="checkbox"/>

## Electrical

Damage to electrical items	<input type="checkbox"/>
Power supply	<input type="checkbox"/>

## Conveyor Belt

Belt tension	<input type="checkbox"/>
Belt tracking – load	<input type="checkbox"/>
Belt tracking – unload	<input type="checkbox"/>
Splice condition	<input type="checkbox"/>
Edge condition	<input type="checkbox"/>
Overall condition	<input type="checkbox"/>

## Mechanical

Extension drive – Torque Limiter	<input type="checkbox"/>
Extension drive – Chain and anchors	<input type="checkbox"/>
Extension drive - Motor	<input type="checkbox"/>
Extension shafts	<input type="checkbox"/>
Front load wheels and shafts	<input type="checkbox"/>
Rear guides and bearings	<input type="checkbox"/>
Belt pulleys	<input type="checkbox"/>
Drive pulley	<input type="checkbox"/>
Tilt hydraulics	<input type="checkbox"/>
Tilt pivot pin	<input type="checkbox"/>
Traverse wheels	<input type="checkbox"/>
Traverse rails	<input type="checkbox"/>
Man-Rider platform	<input type="checkbox"/>

Main isolation switch	<input type="checkbox"/>
Internal control cables	<input type="checkbox"/>

## Comments

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## 2 TROUBLESHOOTING

If the belt ceases to operate:

1. Check all emergency stops.
2. Check power supply.
3. Check for foreign objects jamming belt.
4. Check for belt slippage with motor running.
5. Check for electrical or electronic overloads.

If the conveyor will not extend or retract:

1. Check all emergency stops.
2. Check power supply.
3. Check extension stop bar for correct operation.
4. Check internally for foreign objects jamming path.
5. Check for drive clutch slipping.
6. Check extension drive chains for breakage.
7. Check for electric overloads

If conveyor will not traverse (manual traverse option):

1. Check that foot brake is released.
2. Check that conveyor is fully retracted.
3. Check for obstacles on track.
4. Check that the conveyor is not at track limit.

If conveyor will not traverse (powered traverse option):

1. Check all emergency stops.
2. Check power supply.
3. Check that conveyor is fully retracted.
4. Check for obstacles on track.
5. Check that conveyor is not at track limit.
6. Check drive clutch for slippage.
7. Check for electrical overloads.

If conveyor will not tilt up or down (hydraulic tilt option):

1. Check all emergency stops.
2. Check power supply
3. Check for obstructions.
4. Check oil level in reservoir.
5. Check for oil leaks.
6. Check for electrical overloads.

### 3 CONVEYOR BELT

The conveyor belt, and its associated components, is an integral part of the Telescopic Boom Conveyor (TBC) and so must be carefully observed and maintained. The belt is manufactured from 2 ply PVC with a low friction backing fabric. The belt has a vulcanised joint making it an endless construction. The belt is fitted during manufacture by Best Conveyors. A drawing of the belt path for each series of TBC can be found in the appendix.

#### 3.1 *Belt Tension*

The belt tension has been set in the factory before delivery. It should only be adjusted by an experienced tradesperson familiar with procedures required.

Belt slippage may occur after initial use of the conveyor due to:

- Belt stretch due to loading and operation of conveyor.
- Slippage due to excessive loading of freight on conveyor belt.
- Foreign substance spilt on belt. i.e. water, motor or vegetable oil, etc.

The procedure to add tension to the belt (when necessary) is as follows:

1. Isolate power and lock off.
2. Remove the bottom front cover from the conveyor. (Stage 1)
3. Measure and mark the present tension pulley position, and adjust both tensioning screws evenly approximately 2 to 5 turns clockwise.
4. Re-power and run conveyor at maximum speed in both directions, observing belt tracking behaviour, and adjust as required. Also test run the conveyor under loaded conditions, if the belt still slips, repeat step 3.
5. Re-fit the front cover.

#### 3.2 *Belt Tracking*

The belt tracking has been set in the factory before delivery. It should only be adjusted by an experienced tradesperson familiar with procedures required.

The belt should be running in the centre of each pulley with a maximum deviation of  $\pm 20$ mm.

For details on how to track a conveyor belt please refer to the appendix document 'Tensioning and Tracking of Belts (Ammeraal Beltech)'.

#### 3.3 *Drum Motor*

BestReach conveyor belts are driven by a  $\varnothing 220$ mm drum motor at the rear of the main body of the TBC. The drum motor can be reached by removing the rear access cover. The drum motor shell must be kept clean and free of debris to maintain the crowned profile essential for correct belt tracking. The oil level should be checked and maintained during the regular service.

Details are supplied online by the manufacturers at: [www.interroll.com](http://www.interroll.com) or [www.vandergraaf.com](http://www.vandergraaf.com).

## 4 EXTENSION SYSTEM

BestReach TBCs operate with a synchronised extension achieved via a series of chains fitted to each side of the TBC. The drive is provided by a geared motor fitted to the rear of the first moving stage of the TBC. The geared motor is a sealed for life unit and is therefore maintenance free.

### 4.1 Guides and Load Wheels

Guide bearings are fitted to the top, bottom and sides of each moving stage to allow for smooth running and fine adjustment of each stage relative to the next. The guide bearings and their running surfaces should be checked for wear and adjustment during each scheduled service.

The front of each moving stage runs over flanged load wheels which support and guide each stage as it emerges from the previous stage. The load wheels and their running rails should be checked for wear during each scheduled service.

A drawing of the guide bearings and load wheels in the TBC can be found in the appendix.

### 4.2 Extension Chains

It is important that the correct adjustment and tension of the extension chains be checked during each regular service to maintain the life of the TBC. Each chain should also be checked for wear and damage as a chain failure can result in a major failure of the TBC. The extension chains are either 5/8" standard simplex chain (10-B1) or Best Conveyors patented cable chain. A drawing of the extension chain system can be found in the appendix.

### 4.3 Torque Limiter

The extension and retraction drive of the TBC is protected by a friction clutch. This has been pre-set by the manufacturer; however adjustment after initial use may be required.

Over-tightening of the clutch will negate an important safety feature of the TBC, and may cause premature failure of the telescopic drive train or breakage of the telescoping chains.

The clutch must only be adjusted by experienced maintenance personnel using the following procedure.

1. The TBC must be level for any adjustment to be performed.
2. Retract the TBC until stage two protrudes 800mm from stage one.
3. Isolate power, lock-off and tag before adjusting clutch.
4. Access to the extension drive can be achieved through the side access hatch.
5. The adjusting screws should be evenly tightened to increase the clutch tension - see drawing '100512' in the appendix.

## 5 ELECTRICAL

Electrical maintenance should be carried out by a qualified electrical engineer. The general functional test of the TBC should highlight any electrical maintenance issues that may be current. In addition to the functional test a visual inspection of the electrical cabinet should be carried out to highlight any physical damage that may have occurred.

### 5.1 Mains Supply

A visual inspection of the mains supply to the TBC should be carried out to ensure that all power cables, reels, and bars are free from physical damage or obstruction and that all fixed cables are secured.

### 5.2 Internal Cables

The cables inside the TBC carry power and control signals to and from the electrical cabinet. During a scheduled service these cables should be checked for signs of physical damage or wear.

### 5.3 Safety and Limit Switches

BestReach TBCs feature a number of emergency stops and limit switches providing a safe working environment for the operator. All switches and buttons must be checked for damage and correct function during each scheduled service.

## 6 HYDRAULIC TILT

BestReach TBCs may be fitted with the facility to raise and lower the operator end of the TBC via a pair of hydraulic rams.

The general condition of the pivot pin, wear blocks, and clevises should be checked for signs of wear or damage on a regular basis. Parts should be replaced immediately once damage or wear is found.

The hydraulic system should be checked each time that it is used in accordance with the operational guide. All flow controls are set during manufacture and should not be adjusted. A schematic of the hydraulic system may be found on drawing '100444' in the appendix.

**WARNING:** Under no circumstances should any person enter the area below the TBC or attempt any service or adjustment to the hydraulic system without fitting securely positioned chocks. Failure to observe this warning could result in SEVERE CRUSHING INJURY OR DEATH.



## **7 TRAVERSE**

BestReach TBCs may be fitted with the facility to traverse the TBC sideways to allow the TBC to be used on multiple doors.

The general condition of the wheels and floor rails should be checked for signs of wear or damage on a regular basis.

The drive for a powered traverse unit is provided by a geared motor. The geared motor is a sealed for life unit and is therefore maintenance free. The central drive unit is normally connected to the wheels at each end of the TBC via 2 torque tubes. The torque tubes are fixed at each end to the drives shafts using an M10 screw. The screw is designed to shear under extreme load such as an impact from a truck or traversing into a wall.

## **8 MAN-RIDER PLATFORM**

BestReach TBCs may be fitted with a Man-Rider platform attached to the last moving stage at the operator controls. The platform is designed to carry the operator as the TBC tilts and extends.

Please note that additional safety regulations may apply when a combination of Man-Rider platform and hydraulic tilt is used. Please check current health and safety regulations for service requirements.

The Man-Rider platform should be checked for any visible structural damage or wear during the scheduled service

The Man-Rider platform features a number of safety switches which prevent the platform from being driven into objects or persons. These switches must be checked for condition and function during the pre-operational checks.

## **9 APPENDIX**

### **9.1 *General Assembly Drawings***

#### **9.1.1 Belt Path**

#### **9.1.2 Extension System**

#### **9.1.3 Guides and Wheels**

#### **9.1.4 Cable Path**

### **9.2 *Torque Limiter Drawing***

### **9.3 *Hydraulic System Schematic***

### **9.4 *Tensioning and Tracking of Belts***

### **9.5 *Project Assembly Drawing***

### **9.6 *Electrical System Drawings***

### **9.7 *Control Software***