Twin Pole V-Plough

Installation, Operation and Maintenance Manual





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| Purchase Date: - | |
|--------------------|--|
| Purchased From: | |
| Installation Date: | |

This information will be helpful for any future inquiries or questions about belt cleaner replacement parts, specifications or troubleshooting.

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Section 1 - Important Information

1.1 General Introduction

We at Flexco are very pleased that you have selected the Twin Pole V-Plough for your conveyor system.

This manual will help you to understand the operation of this product and assist you in making it work up to its maximum efficiency over its lifetime of service.

It is essential for safe and efficient operation that the information and guidelines presented be properly understood and implemented. This manual will provide safety precautions, installation instructions, maintenance procedures and troubleshooting tips.

If, however, you have any questions or problems that are not covered, please visit our web site or contact our Customer Service Department:

Customer Service: 612-8818-2000

Visit www.flexco.com for other Flexco locations and products.

Please read this manual thoroughly and pass it on to any others who will be directly responsible for installation, operation and maintenance of this cleaner. While we have tried to make the installation and service tasks as easy and simple as possible, it does however require correct installation and regular inspections and adjustments to maintain top working condition.

1.2 User Benefits

Correct installation and regular maintenance will provide the following benefits for your operation:

- Reduced conveyor downtime
- Reduced man-hour labor
- Lower maintenance budget costs
- Increased service life for the plough and other conveyor components

1.3 Service Option

The Twin Pole V-Plough is designed to be easily installed and serviced by your on-site personnel. However, if you would prefer complete turn-key factory service, please contact your local Flexco Field Engineer or your Flexco Distributor.

Section 2 - Safety Considerations and Precautions

Before installing and operating the Twin Pole V-Plough, it is important to review and understand the following safety information.

There are set-up, maintenance and operational activities involving both *stationary* and *operating* conveyors. Each case has a safety protocol.

2.1 Stationary Conveyors

The following activities are performed on stationary conveyors:

• Cleaning

- Installation
- Blade replacement Repairs
- Tension adjustments

A DANGER

It is imperative that Lockout/Tagout (LOTO) regulations be followed before undertaking the preceding activities. Failure to use LOTO exposes workers to uncontrolled behaviouer of the belt plough caused by movement of the conveyor belt. Severe injury or death can result.

Before working:

- Lockout/Tagout the conveyor power source
- Disengage any takeups
- Clear the conveyor belt or clamp securely in place

WARNING

Use Personal Protective Equipment (PPE):

- Safety eyewear
- Hardhats
- Safety footwear

Close quarters, springs and heavy components create a worksite that compromises a worker's eyes, feet and skull. PPE must be worn to control the foreseeable hazards associated with conveyor ploughs. Serious injuries can be avoided.

2.2 Operating Conveyors

There are two routine tasks that must be performed while the conveyor is running:

- Inspection of the cleaning performance
- Dynamic troubleshooting

A DANGER

Every plough is an in-running nip hazard. Never touch or prod an operating plough. Plough hazards may cause instantaneous amputation and entrapment.

A WARNING

Ploughs can become projectile hazards. Stay as far from the plough as practical and use safety eyewear and headgear. Missiles can inflict serious injury.

A WARNING

Never adjust anything on an operating plough. Unforeseeable belt projections and tears can catch on ploughs and cause violent movements of the plough structure. Flailing hardware can cause serious injury or death.



Section 3 - Pre-installation Checks and Options

3.1 Checklist

- Check that the plough size is correct for the beltline width
- Check the product packaging and make sure all the parts are included
- Review the "Tools Needed" list on the top of the installation nstructions
- Check the conveyor site:
 - Are there obstructions that may require plough location adjustments
 - Ensure proper clearance is available between topside and returnside belts (350mm)

Section 4 - Installation Instructions - Twin Pole V-Plough



Physically lock out and tag the conveyor at the power source before you begin installation.

Before Installation: Ideally the Twin Pole V-Plough should be positioned in a flat area on the inside of the belt close to the tail pulley. For optimum cleaning performance, the nose of the plough should be located about 150mm behind a return roller.

STEP 1. Measure the distance between the top side and return belts. A minimum of 350mm is required (Fig. 1). Place the Twin Pole V-Plough on the belt, positioned as specified above, to check for any clearance or obstruction problems.

STEP 2. Position the mounting brackets in either a horizontal or vertical position. The centre line of the poles must be within a range of 280mm to 440mm above the return belt to insure proper performance (Fig. 2a). **IMPORTANT:** The main linkage arms must be operated in a range between a minimum of 18° and a maximum of 59° (Fig. 2b). This allows the Twin Pole V-Plough to float on the belt.

Tip: For very fast belts (over 3m per sec) it pays to kick the back end of the parallelogram up 10mm and for very fast belts and widths of 1200mm and over an extra 10mm for a max of 20mm. The surface area at the rear of the V has more friction area and hence with the speed of the belt, the nose or front section of the V tends to lose contact with the belt.

Tools Needed:

- 14mm spanner
- 13mm spanner
- 19mm spanner
- 24mm spanner







STEP 3. Mark and drill holes for the mounting brackets.

Attach with 16 mm bolts, washers, and nuts provided (Fig. 3). Welding is optional.

STEP 4. Centre the Twin Pole V-Plough on the belt. Slide the plow in the direction needed to centre it on the belt. Once centred, the front pole can then be mounted.



STEP 5. Install front pole.

Slide the front pole through the first / leading bracket. Before feeding pole through second bracket, slide the first collar followed by 2 linkage arms and finally the last collar onto the pole. Finish feeding the pole all the way through both brackets (Fig. 4). Tighten lock bolts and jam nuts once linkage arms are aligned with plough frame (plough is still centred on the belt). Attach the linkage arms to the main body of the plough with the bolts provided (finger tight only).



STEP 6. Install second pole.

Repeat step 5 ensuring that the plough stays centred on the belt when aligning linkage arms, tightening lock bolts/ jam nuts, and while finger tightening linkage arms to main body.

STEP 7. Check position of plough to belt.

Make sure the unit is central to the stringers and sitting snug to the belt. Be very sure that both front and back linkage arm angles match each other. Once complete, tighten all bolts making sure that the linkage arms are free to move up and down with the belt.

STEP 8. Test run and inspect.

Run the belt and check that the Twin Pole V-Plough runs smoothly and has an effective cleaning action. If any vibration occurs, turn the adjuster to raise the nose slightly.

Section 5 - Pre-Operation Checklist and Testing

5.1 Pre-Op Checklist

- Recheck that all fasteners are tightened properly
- Check the blade location on the belt
- Be sure that all installation materials and tools have been removed from the belt and the conveyor area

5.2 Test Run the Conveyor

- Run the conveyor for at least 15 minutes and inspect the performance
- Make adjustments as necessary

NOTE: Observing the plough when it is running and performing properly will help to detect problems or when adjustments are needed later.



Flexco belt ploughs are designed to operate with minimum maintenance. However, to maintain superior performance some service is required. When the plough is installed a regular maintenance program should be set up. This program will ensure that the plough operates at optimal efficiency and problems can be identified and fixed before the plough stops working.

All safety procedures for inspection of equipment (stationary or operating) must be observed. The Twin Pole V-Plough operates near the tail pulley and is in direct contact with the moving belt. Only visual observations can be made while the belt is running. Service tasks can be done only with the conveyor stopped and by observing the correct lockout/tagout procedures.

6.1 New Installation Inspection

After the new plough has run for a few days a visual inspection should be made to ensure the cleaner is performing properly. Make adjustments as needed.

6.2 Routine Visual Inspection (every 2-4 weeks)

A visual inspection of the plough and belt can determine:

- If the belt looks clean or if there are areas that are dirty
- If the blade is worn out and needs to be replaced
- If there is damage to the blade or other belt plough components
- If fugitive material is built up on the plough or in the transfer area
- If there is cover damage to the belt
- If there is vibration or bouncing of the plough on the belt
- Check for buildup on the leading return roll

If any of the above conditions exist, a determination should be made on when the conveyor can be stopped for cleaner maintenance.

6.3 Routine Physical Inspection (every 6-8 weeks)

When the conveyor is not in operation and properly locked and tagged out a physical inspection of the belt plough to perform the following tasks:

- Clean material buildup off of the belt plough blade and frame
- Closely inspect the blade for wear and any damage. Replace if needed.
- Ensure full blade to belt frame contact (tip should have slight clearance)
- Inspect the belt plough pole for damage
- Inspect all fasteners for tightness and wear. Tighten or replace as needed.
- Replace any worn or damaged components
- When maintenance tasks are completed, test run the conveyor to ensure the belt plough is performing properly

Section 6 - Maintenance (cont.)

6.4 Blade Replacement Inspection

Physically lock out and tag the conveyor at the power source before you begin maintenance.

Tools Needed:

- 14mm spanner
- 13mm spanner
- 19mm spanner
- 24mm spanner
- 1. Remove bolts and washers indicated in Fig 1. Discard used blade and retain hardware.
- 2. Install new blade. Use current bolts to secure new blade to main frame (Fig. 1).



3. Test run and inspect. Run the belt and check that the Twin Pole V-Plough runs smoothly and has an effective cleaning action. If any vibration occurs, turn the adjuster to raise the nose slightly.



Section 6 - Maintenance (cont.)

6.5 Maintenance Log

| Conveyor Name/No. | | |
|-------------------|---------------|------------------|
| Date: | Work done by: | Service Quote #: |
| Activity: | | |
| | | |
| Date: | Work done by: | Service Quote #: |
| Activity: | | |
| Date: | Work done by: | Service Quote #: |
| Activity: | | |
| | | |
| Date: | Work done by: | Service Quote #: |
| Activity: | | |
| Data | Work done by | Sorvice Quote #: |
| Activity: | work done by: | Service Quote # |
| | | |
| Date: | Work done by: | Service Quote #: |
| Activity: | | |
| | | |
| Date: | Work done by: | Service Quote #: |
| Activity: | | |
| Date: | Work done by: | Service Quote #: |
| Activity: | | |
| | | |

Section 6 - Maintenance (cont.)

6.5 Plough Maintenance Checklist

| Site: | Inspected by: | Date: | |
|---|--|---|--------------------------------|
| Plough: | Se | rial Number: | |
| Beltline Information: Beltline Number: | Belt Condition: | | |
| Belt □ 600mm □ 750mm □ 900mm Width: (24") (30") (36") | n 🗆 1050mm 🗆 1200mm 🗆 135 (42") (48") (54 | 0mm □ 1500mm □ 1800mm □ ") (60") (72") | 2100mm 🗆 2400mm (84") (96") |
| Head Pulley Diameter (Belt & Lagging): | Belt Speed | : m/s Belt Thickn | ess: |
| Belt Splice: Condition of Splic | e: Number of Splic | ces: 🗆 Skived 🗆 Un | skived |
| Material conveyed: | | | |
| Days per week run: Ho | urs per day run: | | |
| Blade Life: Date blade installed: Date b | lade inspected: | Estimated blade life: | _ |
| Is blade making complete contact with belt | ? 🗆 Yes 🗆 N | D | |
| Distance from wear line: Left | Middle | Right | |
| Blade condition: 🗆 Good | \Box Grooved \Box Smiled | □ Not contacting belt | 🗆 Damaged |
| Was Plough Adjusted: 🛛 Yes | □ No | | |
| Frame Condition: 🗆 Good | 🗆 Bent 🛛 Worn | | |
| Lagging: 🗆 Side Lag 🗆 0 | Ceramic 🛛 Rubber | □ Other □ None | |
| Condition of lagging: | 🗆 Bad 🛛 Other | | |
| Plough's Overall Performance: | (Rate the following 1 - 5, 1= very | poor - 5 = very good) | |
| Appearance: Comments: | | | |
| Location: Comments: | | | |
| Maintenance: Comments: | | | |
| Performance: Comments: | | | |
| Other comments: | | | |
| | | | |
| | | | |
| | | | |
| | | | |



Section 7 - Troubleshooting

| Problem | Possible Cause | Possible Solutions | | |
|---------------------------------|--|--|--|--|
| Poor cleaning performance | Plough not making proper contact with belt | Check location of plough to flat return roller | | |
| Attaining proper float function | Restriction in movement on linkage arms | Shaft/ stop collars may be too tight | | |
| Material getting through | Too much space between belt and blade | Check Twin Pole V-Plough nose for proper clearance between nose and belt. Check adjuster arm angles. | | |

Section 8 - Specs and CAD Drawings

8.1 Specs and Guidelines

Twin Pole V-Plough Belt Width Specifications

| BELT WIDTH (Min-Max) | | | | |
|-------------------------|-------------------------------|--|--|--|
| mm | in. | | | |
| 900 | 36 | | | |
| 1050 | 42 | | | |
| 1200 | 48 | | | |
| 1400 | 56 | | | |
| 1500 | 60 | | | |
| 1600 | 64 | | | |
| 1800 | 72 | | | |
| 2000 | 80 | | | |
| 2200 | 88 | | | |
| 2400 | 96 | | | |
| 2500 | 100 | | | |
| Use next large | Use next larger size for belt | | | |

widths between ranges.

Twin Pole V-Plough Blade Specifications

| Material | UHMWPE |
|---------------------------------|------------|
| Durometer | 67D |
| Working Temperature | |
| Degrees Celcius | -40 to 71 |
| Degrees Farenheit | -40 to 160 |
| Grease & Chemical Resistance | Excellent |
| Sticky Material Performance | Excellent |

- Belt Splice.....Mechanically Fastened/Vulcanised
- Belt Speed.....Refer to Flexco
- Belt DirectionOne Way





Section 8 - Specs and CAD Drawings

8.2 CAD Drawings



Section 9 - Replacement Parts

9.1 Replacement Parts List

| Replacement Parts | | | | | | | |
|-------------------|---------------------|--------------------|--------------|-------------|--------------------|--------------|-------------|
| | [| POWDER COATED | | | STAINLESS STEEL | | |
| DESCRIPTION | BELT WIDTH mm | ORDERING NUMBER | ITEM CODE | WT. KGS. | ORDERING NUMBER | ITEM CODE | WT. KGS. |
| | 900 | HBP900-PL-TP | A2294 | 14.0 | HBP900-PL-TP-S/S | A2492 | 15.0 |
| | 1050 | HBP1050-PL-TP | A2295 | 15.0 | HBP1050-PL-TP-S/S | A2493 | 16.0 |
| | 1200 | HBP1200-PL-TP | A2296 | 16.0 | HBP1200-PL-TP-S/S | A2494 | 17.0 |
| | 1400 | HBP1400-PL-TP | A2297 | 18.0 | HBP1400-PL-TP-S/S | A2495 | 19.0 |
| | 1500 | HBP1500-PL-TP | A2298 | 20.0 | HBP1500-PL-TP-S/S | A2496 | 21.0 |
| PL Pole | 1600 | HBP1600-PL-TP | A2299 | 21.0 | HBP1600-PL-TP-S/S | A2497 | 22.0 |
| | 1800 | HBP1800-PL-TP | A2300 | 22.0 | HBP1800-PL-TP-S/S | A2498 | 23.0 |
| | 2000 | HBP2000-PL-TP | A2301 | 24.0 | HBP2000-PL-TP-S/S | A2499 | 25.0 |
| | 2200 | HBP2200-PL-TP | A2303 | 26.0 | HBP2200-PL-TP-S/S | A2500 | 27.0 |
| | 2400 | HBP2400-PL-TP | A2302 | 28.0 | HBP2400-PL-TP-S/S | A2501 | 29.0 |
| | 2500 | HBP2500-PL-TP | A2304 | 29.0 | HBP2500-PL-TP-S/S | A2502 | 30.0 |
| | 900 | HBP900-MF-TP | A2305 | 26.0 | HBP900-MF-TP-S/S | A2504 | 27.0 |
| | 1050 | HBP1050-MF-TP | A2306 | 28.0 | HBP1050-MF-TP-S/S | A2505 | 29.0 |
| | 1200 | HBP1200-MF-TP | A2307 | 30.0 | HBP1200-MF-TP-S/S | A2506 | 31.0 |
| | 1400 | HBP1400-MF-TP | A2308 | 33.0 | HBP1400-MF-TP-S/S | A2507 | 34.0 |
| | 1500 | HBP1500-MF-TP | A2309 | 34.0 | HBP1500-MF-TP-S/S | A2508 | 35.0 |
| Frame | 1600 | HBP1600-MF-TP | A2310 | 35.5 | HBP1600-MF-TP-S/S | A2509 | 36.5 |
| | 1800 | HBP1800-MF-TP | A2311 | 38.0 | HBP1800-MF-TP-S/S | A2510 | 39.0 |
| | 2000 | HBP2000-MF-TP | A2312 | 41.0 | HBP2000-MF-TP-S/S | A2511 | 42.0 |
| | 2200 | HBP2200-MF-TP | A2314 | 44.0 | HBP2200-MF-TP-S/S | A2512 | 45.0 |
| | 2400 | HBP2400-MF-TP | A2313 | 52.0 | HBP2400-MF-TP-S/S | A2513 | 53.0 |
| | 2500 | HBP2500-MF-TP | A2315 | 54.0 | HBP2500-MF-TP-S/S | A2514 | 55.0 |
| | 900 | HBP900-B-TP | A2316 | 4.5 | | | |
| | 1050 | HBP1050-B-TP | A2317 | 5.0 | | | |
| | 1200 | HBP1200-B-TP | A2318 | 5.5 | | | |
| | 1400 | HBP1400-B-TP | A2319 | 6.3 | | | |
| | 1500 | HBP1500-B-TP | A2320 | 7.0 | | | |
| Blades | 1600 | HBP1600-B-TP | A2321 | 7.5 | | | |
| | 1800 | HBP1800-B-TP | A2322 | 8.2 | | | |
| | 2000 | HBP2000-B-TP | A2323 | 9.0 | | | |
| | 2200 | HBP2200-B-TP | A2325 | 9.8 | | | |
| | 2400 | HBP2400-B-TP | A2324 | 10.7 | | | |
| | 2500 | HBP2500-B-TP | A2326 | 11.2 | | | |
| Linkage Arm | 900-2500 | HBP-LA-TP | A2330 | 5.0 | HBP-LA-TP-S/S | A2515 | 5.0 |
| Mounting Bracket | 900-2500 | HBP-MB-TP | 73922 | 2.1 | HBP-MB-TP-S/S | A1155 | 2.1 |
| Shaft Collar | 900-2500 | HBP-SC-TP | 74490 | 0.7 | HBP-SC-TP-S/S | A2189 | 0.7 |



Flexco provides many conveyor products that help your conveyors to run more efficiently and safely. These components solve typical conveyor problems and improve productivity. Here is a quick overview on just a few of them:

EZP1 Precleaner



- Patented ConShear[™] blade renews its cleaning edge as it wears
- Visual Tension Check[™] for optimal blade tensioning and simple retensioning
- · Quick and easy one-pin blade replacement
- Material Path Option[™] for optimal cleaning and reduced maintenance

Flexco Slider/Impact Beds

PT Max[™] Belt Trainer



- Adjusting troughing angles for easy installation and adjustability
- Long-wearing UHMW for sealing the load zone
- Offered in both Light & Medium duty designs to affordably fit your application

MHS Secondary Cleaner



- Long-wearing tungsten carbide blades for superior cleaning efficiency
- Patented FormFlex[™] cushions independently tension each blade to the belt for consistent, constant cleaning power
- Easy to install, simple to service
- · Works with Flexco mechanical belt splices

Flexco Specialty Belt Cleaners



- "Limited space" cleaners for tight conveyor applications
- High Temp cleaners for severe, high heat applications
- A rubber fingered cleaner for chevron and raised rib belts
- Multiple cleaner styles in stainless steel for corrosive applications



- Patented "pivot & tilt" design for superior training action
- Dual sensor rollers on each side to minimise belt damage
- Pivot point guaranteed not or freeze up
- Available for topside and return side belts



The Flexco Vision

To become the leader in maximising belt conveyor productivity for our customers worldwide through superior service and innovation.

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