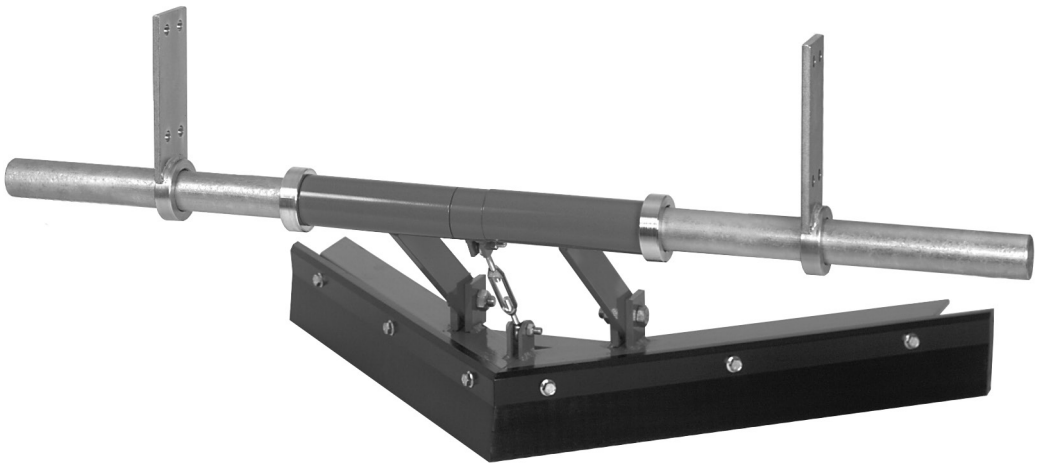
V-Plough

Installation, Operation and Maintenance Manual



FLEXCO

Serial Number: _____

Purchase Date: _____

Purchased From: _____

Installation Date: _____

Serial number information can be found on the Serial Number Label included in the Information Packet found in the cleaner carton.

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

Table of Contents

Section 1 - Important Information

1.1 General Introduction

We at Flexco are very pleased that you have selected the 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.

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 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 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:

- Installation
- Tension adjustments
- Blade replacement
- Cleaning
- Repairs

⚠ DANGER

It is imperative that Lockout/Tagout (LOTO) regulations, be followed before undertaking the preceding activities. Failure to use LOTO exposes workers to uncontrolled behavior of the belt cleaner 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

⚠ DANGER

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

⚠ WARNING

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

⚠ 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.

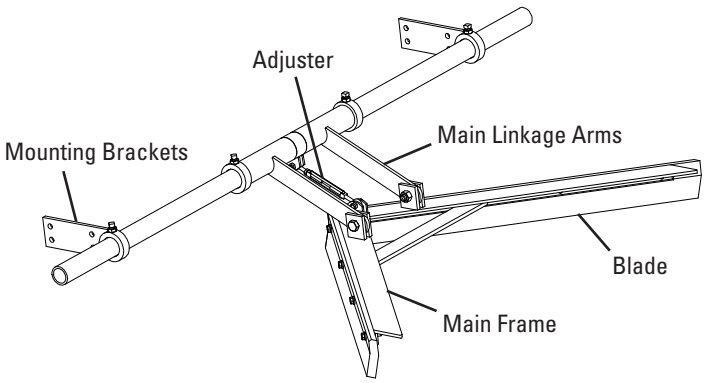
Section 3 - Pre-installation Checks and Options

3.1 Checklist

- Check that the plough size is correct for the beltline width.
- Check the product carton and make sure all the parts are included.
- Review the “Tools Needed” list on the top of the installation instructions.
- Check the conveyor site:
  - Are there obstructions that may require plough location adjustments?
  - Ensure proper clearance is available between top side and return side belts (250 mm (10")).

Section 4 - Installation Instructions

4.1 V-Plough



V-Plough Parts List

PHYSICALLY LOCK OUT AND TAG THE CONVEYOR AT THE POWER SOURCE BEFORE YOU BEGIN CLEANER INSTALLATION.

Tools Needed:

- 14 mm (9/16") Wrench
- 13 mm (1/2") Wrench
- 19 mm (3/4") Wrench
- 24 mm (15/16") Wrench **OR** Large Adjustable/ Crescent Wrenches (x2)

Before Installation:

- Ideally the 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 150 mm (6") behind a return roller (Fig. 1).

1. **Measure the distance between the top side and return belts.** A minimum of 250 mm (10") is required for installation (Fig. 1). Place the V-Plough on the belt, positioned as specified above, to check for any clearance or obstruction problems.

2. **Position the mounting brackets in a horizontal or vertical position.** The centre of the pole must be 200–350 mm (8–14") above the return belt to insure proper performance (Fig. 2).

   NOTE: The main linkage arms must be operated between 10° and 45° (Fig. 2a). This allows the V-Plough to "float" on the belt.

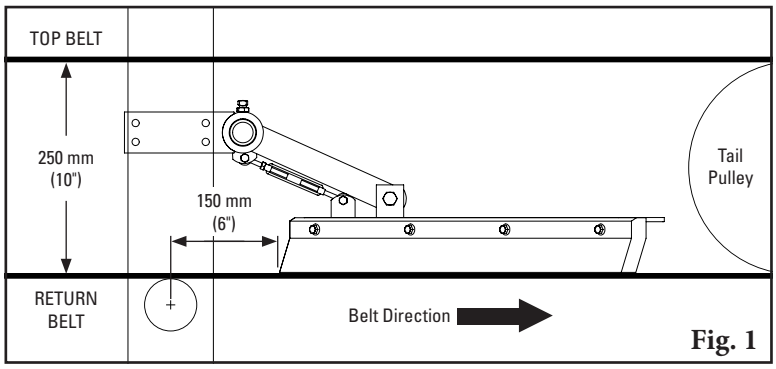


Fig. 1

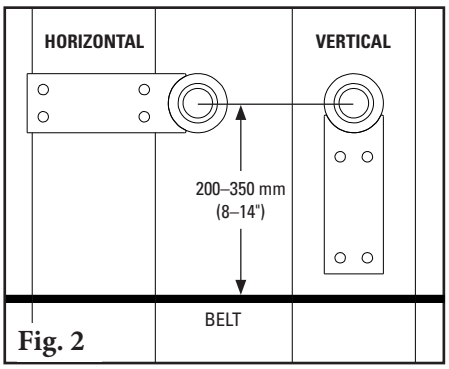


Fig. 2

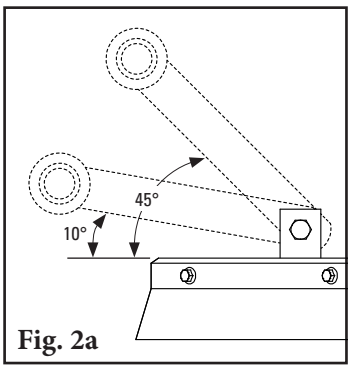


Fig. 2a

Section 4 - Installation Instructions

4.1 V-Plough

3. **Mark and drill holes for the mounting brackets.** Attach with 13 mm (1/2") bolts and nuts provided (Fig. 3). Welding is optional.

4. **Centre the V-Plough on the belt.** Loosen the jam nuts and lock bolts on both stop collars on the pole. Slide the plough in the direction needed to centre it on the belt. Once located, slide stop collars up to main linkage arms and tighten the lock bolts and jam nuts (Fig. 4).

   NOTE: Do not push stop collars too tightly against the main linkage assemblies so that it restricts easy movement of the linkage.

5. **Attach the adjuster to the centre sleeve.** Remove the nut and bolt from the centre sleeve, insert the end of the adjuster between the brackets, and reinstall the nut and bolt (Fig. 5).

   NOTE: Tighten only until snug; the adjuster should move freely.

6. **Position the V-Plough to the belt.** While applying downward pressure to the nose of the plough, turn the adjuster so that the nose just begins to lift off the surface of the belt (about 2–5 mm (1/8")). Tighten the adjuster jam nut (Fig. 6).

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

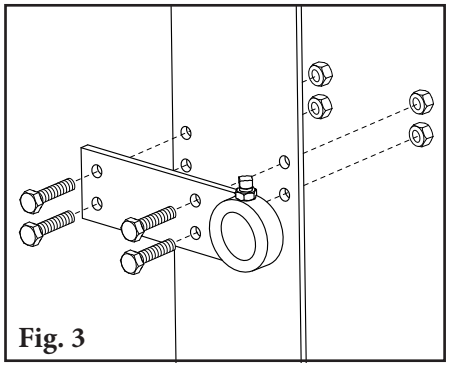


Fig. 3

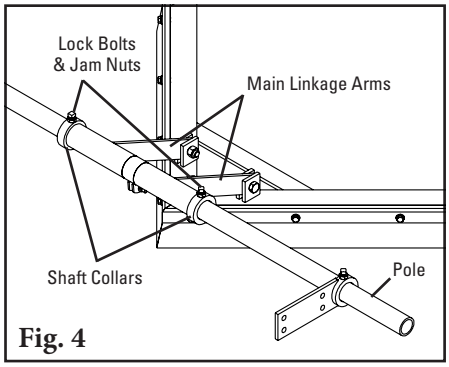


Fig. 4

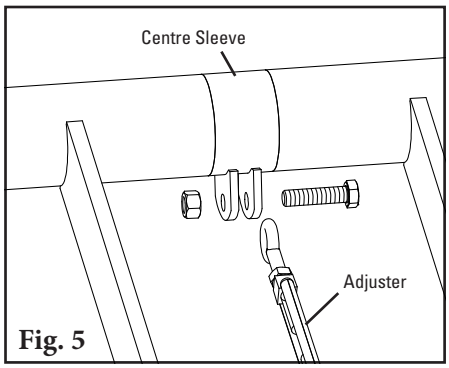


Fig. 5

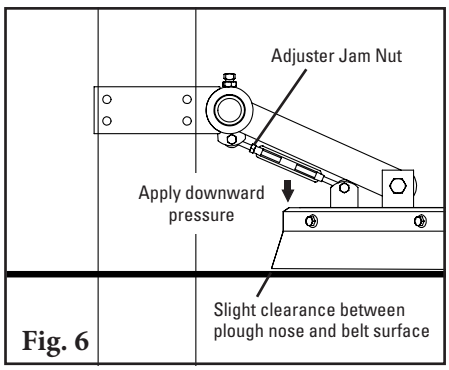


Fig. 6

Section 5 - Pre-Operation Checklist and Testing

5.1 Pre-Op Checklist

- Recheck that all fasteners are tightened properly.
- Apply all supplied labels to the plough.
- 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.

Section 6 - Maintenance

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 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 blade has optimal tensioning
- If the belt looks clean or if there are areas that are dirty
- If the blades are 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 build up 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

6.4 Blade Replacement Instructions

PHYSICALLY LOCK OUT AND TAG THE CONVEYOR AT THE POWER SOURCE BEFORE YOU BEGIN CLEANER INSTALLATION.

Tools Needed:

- 14 mm (9/16") Wrench
- 13 mm (1/2") Wrench
- 19 mm (3/4") Wrench
- 24 mm (15/16") Wrench

  OR Large Adjustable/Crescent Wrenches (x2)

1. **Loosen the adjuster jam nut.** After the adjuster jam nut is loose, the adjuster can be turned to provide more clearance for the new blade (Fig 1.)
2. **Remove the worn blade.** Unscrew all bolts securing the worn blade to the main frame. Remove the blade and clean off any remaning material on the plough frame (Fig 2.)
3. **Install the new blade.** Use the current bolts to secure the new blade to the main frame.
4. **Position the V-Plough to the belt.** While applying downward pressure to the nose of the plough, turn the adjuster so that the nose just begins to lift off the surface of the belt (about 2–5 mm (1/8")). Tighten the adjuster jam nut (Fig. 3).
5. **Test run and inspect.** Run the belt and check that the V-Plough runs smoothly and has an effective cleaning action. If any vibration occurs, turn the adjuster to raise the nose slightly.

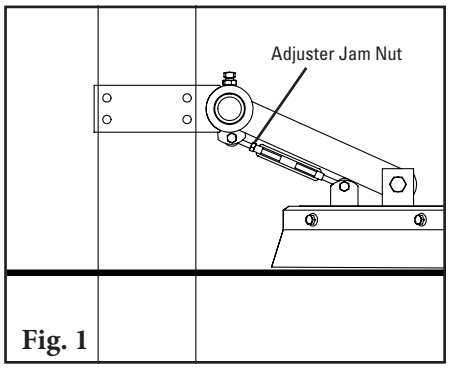


Fig. 1

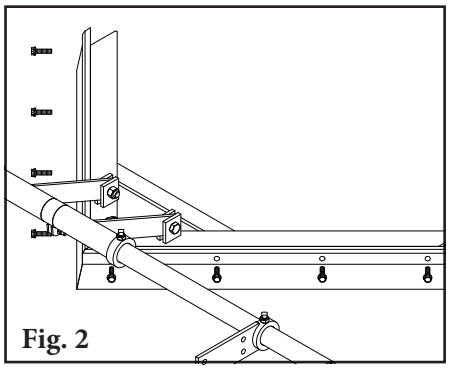


Fig. 2

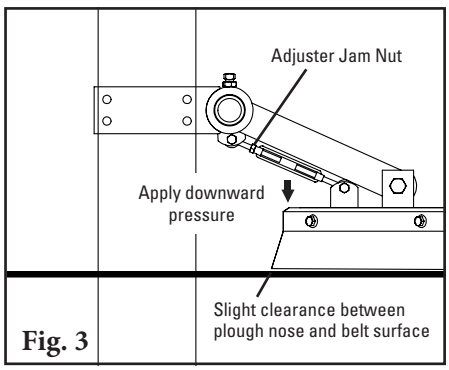


Fig. 3

Section 6 - Maintenance

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: _____

Date: _____ Work done by: _____ Service Quote #: _____

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Date: _____ Work done by: _____ Service Quote #: _____

Activity: _____

Date: _____ Work done by: _____ Service Quote #: _____

Activity: _____

Section 6 - Maintenance

6.6 Plough Maintenance Checklist

Site: _____ **Inspected by**: _____ **Date:** _____

Plough: _____ **Serial Number:** _____

Beltline Information:

Beltline Number: _____ Belt Condition: _____

Belt Width: ☐ 450mm (18") ☐ 600mm (24") ☐ 750mm (30") ☐ 900mm (36") ☐ 1050mm (42") ☐ 1200mm (48") ☐ 1350mm (54") ☐ 1500mm (60") ☐ 1800mm (72") ☐ 2100mm (84") ☐ 2400mm (96")

*Head Pulley Diameter (Belt & Lagging):*_____ Belt Speed:_____ fpm Belt Thickness: _____

Belt Splice:_____ Condition of Splice:_____ Number of Splices:_____ ☐ Skived ☐ Unskived

Material conveyed: _____

Days per week run:_____ Hours per day run:_____

Blade Life:

Date blade installed:_____ Date blade inspected:_____ Estimated blade life:_____

Is blade making complete contact with belt? ☐ Yes ☐ No

Distance from wear line: Left _____ Middle _____ Right _____

Blade condition: ☐ Good ☐ Grooved ☐ Smiled ☐ Not contacting belt ☐ Damaged

Was Plough Adjusted: ☐ Yes ☐ No

Frame Condition: ☐ Good ☐ Bent ☐ Worn

Lagging: ☐ Side Lag ☐ Ceramic ☐ Rubber ☐ Other ☐ None

Condition of lagging: ☐ Good ☐ Bad ☐ Other _____

Cleaner'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
		Check turnbuckle adjustment and check main linkage arm angles
Not maintaining proper float	Restriction in movement on linkage arms	Shaft/ stop collars may be too tight
Missing material on belt	Too much space between belt and blade	Check V-Plough nose for proper clearance between nose and belt. Check adjuster arm angles.
	Mechanical splice damaging blade	Repair, skive, or replace splice

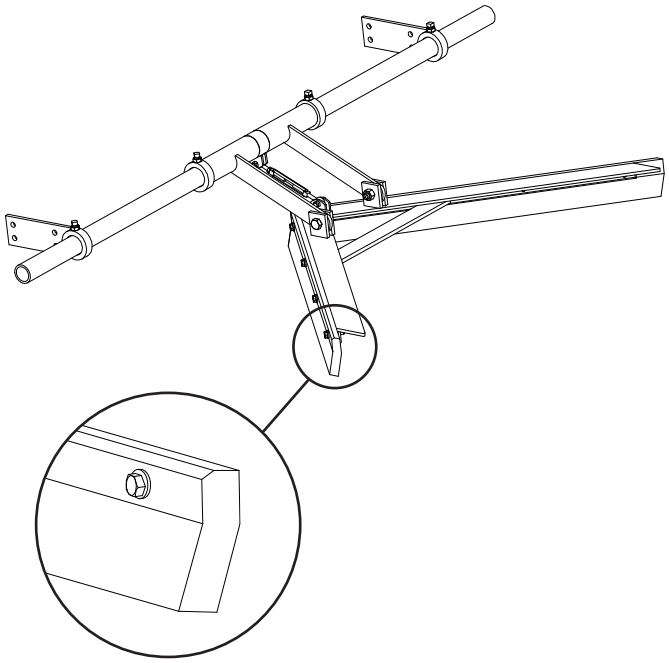
Section 8 - Specs and CAD Drawings

8.1 Specs and Guidelines

Belt Width Specifications

SIZE	BELT WIDTH (Min-Max)	
	mm	in.
Extra Small	450–600	18–24
Small	750–900	30–36
Medium	1050–1200	42–48
Large	1350–1500	54–60
72"	1800	72
84"	2100	84
96"	2400	96

Use next larger plough size for belt widths between ranges.

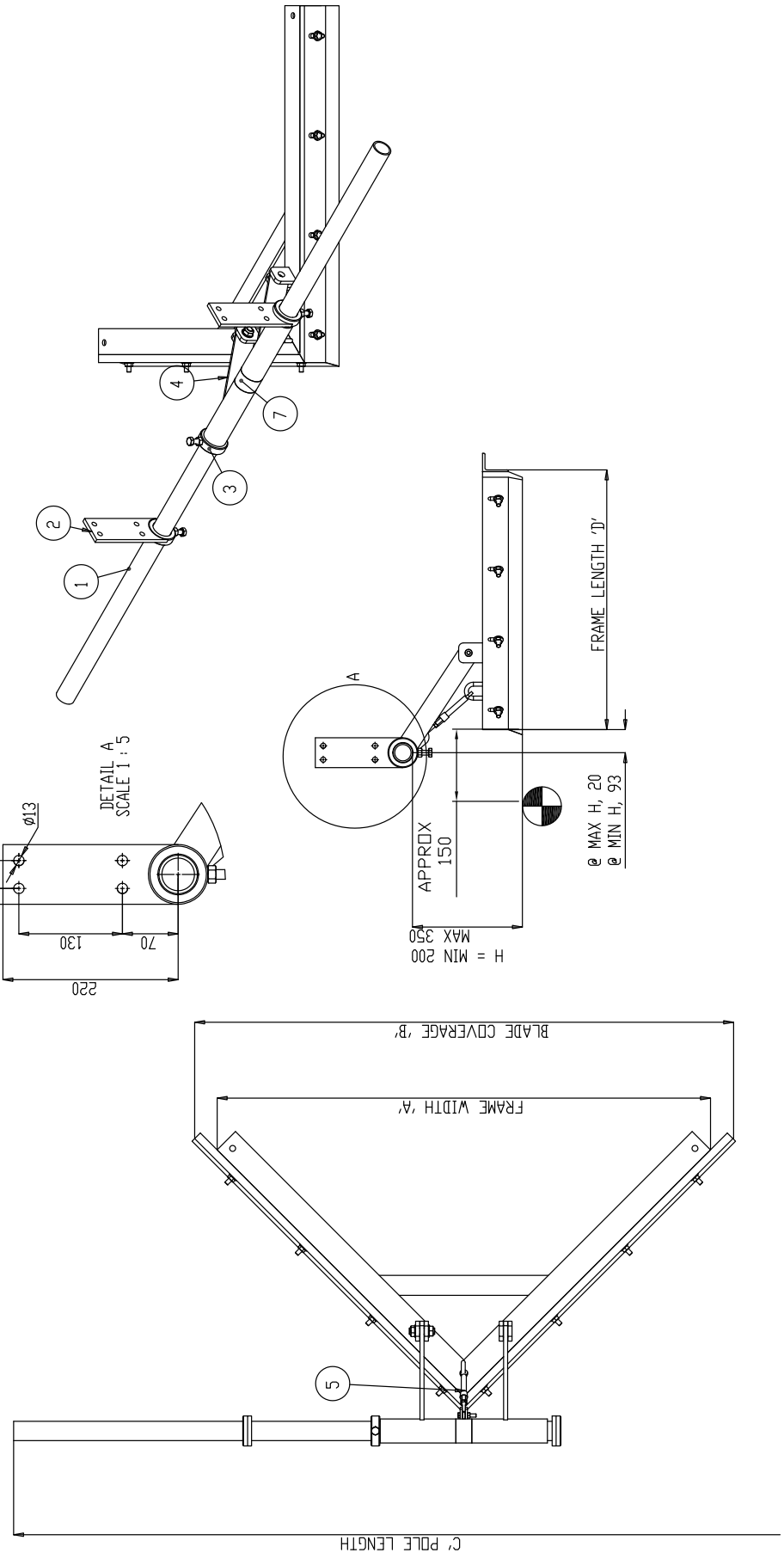


Specifications:

- Maximum Belt Speed.....5 m/s (1000 FPM)
- Temperature Rating.....-40 to 71°C (-40 to 160°F)
- Belt Splice.....Mechanically fastened & vulcanized belts
- Belt Direction.....One-Way
- Blade Material.....UHMWPE
- Durometer.....67-D
- Grease & Chemical Resistance.....Excellent
- Sticky Material Performance.....Excellent

Section 8 - Specs and CAD Drawings

8.2 CAD Drawing



BELT WIDTH (mm)	V Plough - Poly Urethane blade - Mild Steel			V Plough - Poly Urethane blade - Stainless Steel					
	ITEM	ITEM CODE	WEIGHT (kgs)	ITEM	ITEM CODE	WEIGHT (kgs)	A' FRAME WIDTH	B' BLADE COVERAGE	C' POLE LENGTH	D' FRAME LENGTH
450	BP450	73102	23	BP450-S/S	76337	24	608	480	1200	304
600	BP600	73104	25	BP600-S/S	76338	25	608	665	1200	304
750	BP750	73106	26	BP750-S/S	76339	27	608	775	1200	304
800	BP800	73107	28	BP800-S/S	76340	29	990	860	1500	495
900	BP900	73108	29	BP900-S/S	76341	30	990	945	1500	495
1050	BP1050	73110	31	BP1050-S/S	76342	32	990	1075	1500	495
1200	BP1200	73112	38	BP1200-S/S	76343	39	1230	1260	1800	615
1400	BP1400	73113	42	BP1400-S/S	76344	44	1230	1440	1800	615
1500	BP1500	73114	43	BP1500-S/S	76345	45	1650	1585	2150	825
1600	BP1600	73115	44	BP1600-S/S	76346	46	1650	1675	2150	825
1800	BP1800	73117	65	BP1800-S/S	76347	67	1910	1935	2400	955

Section 9 - Replacement Parts

9.1 Replacement Parts List

Replacement Parts

DESCRIPTION	BELT WIDTH mm	BELT WIDTH in.	POWDER COATED ORDERING NUMBER	POWDER COATED ITEM CODE	POWDER COATED WT. KG	STAINLESS STEEL ORDERING NUMBER	STAINLESS STEEL ITEM CODE	STAINLESS STEEL WT. KG
PL Pole	450–750	18–30	BP450-750-PL	73109	2.8	BP450-750-PL-S/S	A0683	2.7
	800–1050	32–48	BP800-1050-PL	73111	3.2	BP800-1050-PL-S/S	A0613	3.2
	1200–1400	48–56	BP1200-1400-PL	73118	3.6	BP1200-1400-PL-S/S	A0621	3.6
	1500–1600	60–64	BP1500-1600-PL	73119	4.6	BP1500-1600-PL-S/S	A0647	5.0
	1800	72	BP1800-PL	73121	5.5	BP1800-PL-S/S	A1547	5.9
Frame	450–750	18–30	BP450-750MF	73152	6.7	BP450-750MF-S/S MAIN FRAME	A0682	6.7
	800–1050	32–48	BP800-1050MF	73153	9.8	BP800-1050MF-S/S MAIN FRAME	A0612	9.8
	1200–1400	48–56	BP1200-1400MF	73154	12.6	BP1200-1400MF-S/S MAIN FRAME	A0620	12.6
	1500–1600	60–64	BP1500-1600MF	73147	16.0	BP1500-1600MF-S/S MAIN FRAME	A0646	16.0
	1800	72	BP1800MF	73148	18.3	BP1800MF-S/S MAIN FRAME	A1546	18.3
	2000	80	BP2000MF	A1996	19.7			
Polyurethane Blades 110mm (Pair)	450	18	BP450-B	74055	0.9			
	600	24	BP600-B	73777	0.9			
	750	30	BP750-B	73778	1.8			
	800	32	BP800-B	74057	1.8			
	900	36	BP900-B	73779	1.8			
	1050	42	BP1050-B	73780	1.8			
	1200	48	BP1200-B	73781	1.8			
	1400	56	BP1400-B	73782	2.3			
	1500	60	BP1500-B	73783	2.7			
	1600	64	BP1600-B	73784	2.7			
	1800	72	BP1800-B	73785	3.2			
Polyurethane HD Blades 180mm (Pair)	750	30	HBP750-B	A0223	5.2			
	900	36	HBP900-B	A0224	6.3			
	1050	42	HBP1050-B	A2237	7.2			
	1200	48	HBP1200-B	73301	8.4			
	1400	56	HBP1400-B	73302	9.7			
	1500	60	HBP1500-B	73303	10.6			
	1600	64	HBP1600-B	73304	11.6			
	1800	72	HBP1800-B	73306	13.0			
	2000	80	HBP2000-B	73307	14.5			
	2200	86	HBP2200-B	73308	15.9			
	2400	96	HBP2400-B	73309	16.9			
	2500	100	HBP2500-B	73311	17.8			
Mounting Bracket			BP-MB	73123	0.5	BP-MB-S/S	A0615	0.5
Shaft Collar			BP-SC	73125	0.5	BP-SC-S/S	A0616	0.5
Linkage Arm			BP-LA	73127	0.9	BP-LA-S/S	A0614	0.9
Turnbuckle Linkage			BP-TL	73141	0.5	BP-TL-S/S	A0617	0.5
Standard Turnbuckle						BP-TB	73138	0.5
Standard U-Bolt						BP-UB	73139	0.5

Lead time: 3 weeks

Shaded items are made to order.
Contact Flexco for lead times.

Section 10 - Other Flexco Conveyor Products

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:

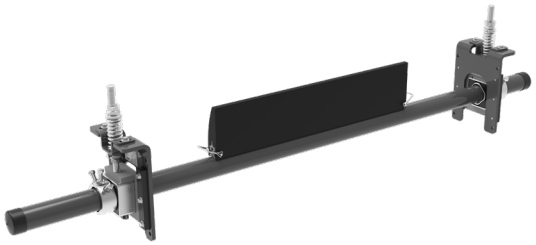
MMP Precleaner

- Extra cleaning power right on the head pulley
- A 250 mm (10") TuffShear™ blade provides increased blade tension on the belt to peel off abrasive materials
- The unique Visual Tension Check™ ensures optimal blade tensioning and quick, accurate retensioning
- Easy to install and simple to service

DRX Impact Beds

- Exclusive Velocity Reduction Technology™ in order to better protect the belt
- Slide-Out Service™ gives direct access to all impact bars for change-out
- Impact bar supports for longer bar life
- 4 models to custom fit to the application

MDWS DryWipe Secondary Cleaner

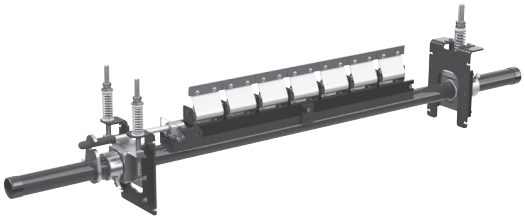


- Wipes the belt dry as final cleaner in system
- Automatic blade tensioning to the belt
- Easy, visual blade tension check
- Simple, one-pin blade replacement

PT Max™ Belt Trainer

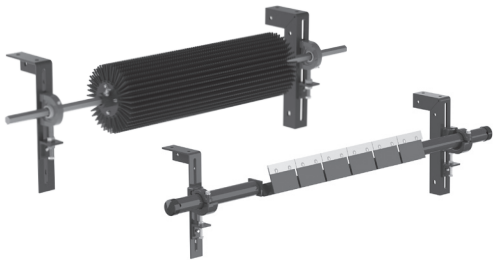
- Patented "pivot & tilt" design for superior training action
- Dual sensor rollers on each side to minimize belt damage
- Pivot point guaranteed not to freeze up
- Available for topside and return side belts

MHS Secondary Cleaner with Service Advantage Cartridge



- An easy slide-out cartridge for service
- Cartridge design to speed up blade-change maintenance
- Patented PowerFlex™ Cushions for superior cleaning performance with Flexco mechanical 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

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