

V-Plough

Installation, Operation and Maintenance Manual



V-Plough

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 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 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
- Blade replacement
- Repairs
- Tension adjustments
- Cleaning

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

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

WARNING

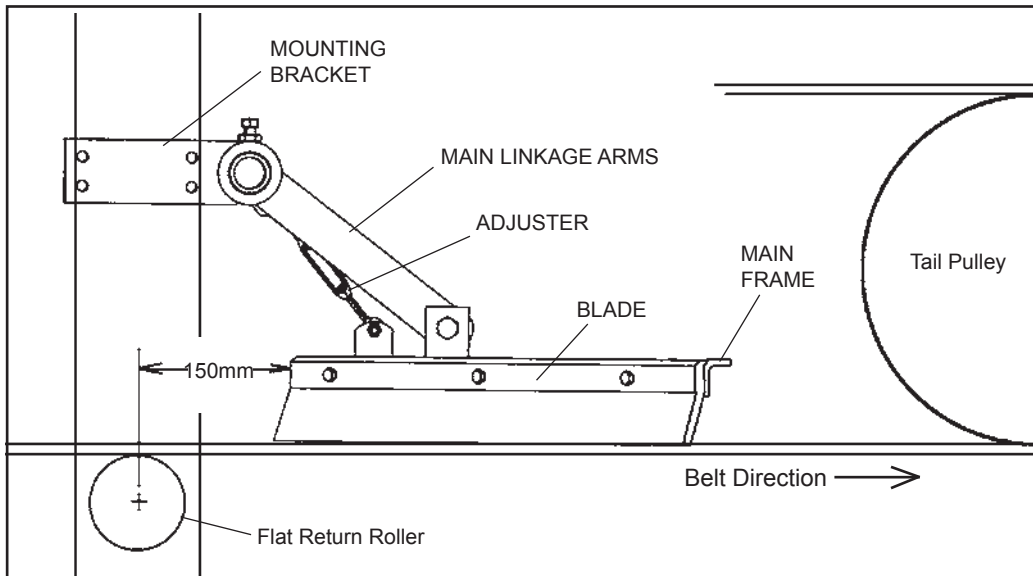
Never adjust anything on an operating plough. Unforseeable belt projections and tears can catch on ploughs and cause violent movements of the plough structure. Flailing hardware can cause serious injury or death.

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 topside and returnside belts (250mm)

Section 4 - Installation Instructions - V-Plough



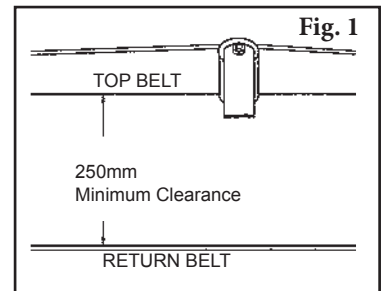
Physically lock out and tag the conveyor at the power source before you begin installation.

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 150mm behind a return roller.

Tools Needed:

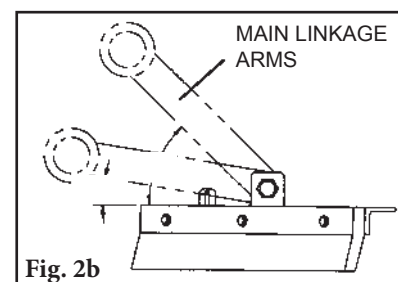
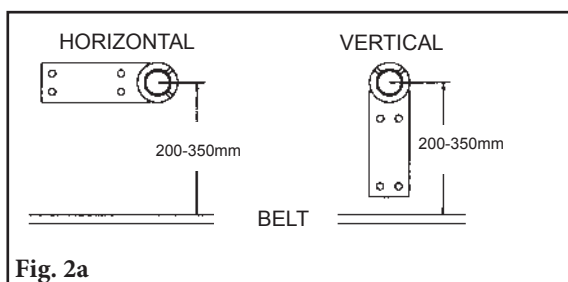
- 14mm wrench
- 13mm wrench
- 19mm wrench
- 24mm wrench

STEP 1. Measure the distance between the top side and return belts. A minimum of 250mm is required (Fig. 1). Place the 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 pole must be within a range of 200mm to 350mm 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 10° and a maximum of 45° (Fig. 2b). This allows the V-Plough to float on the belt.

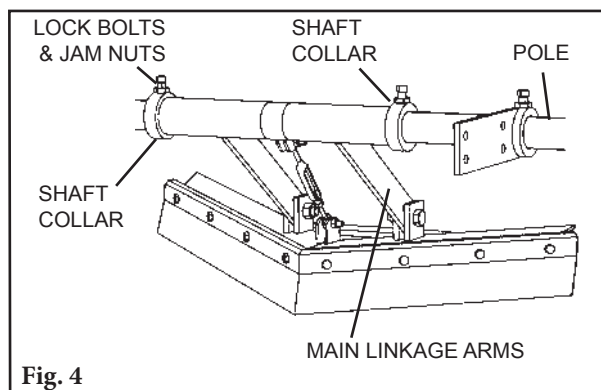
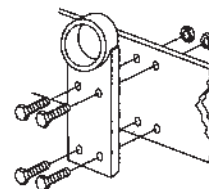


Section 4 – Installation Instructions (cont.)

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

Attach with 13mm bolts and nuts provided (Fig. 3). Welding is optional.

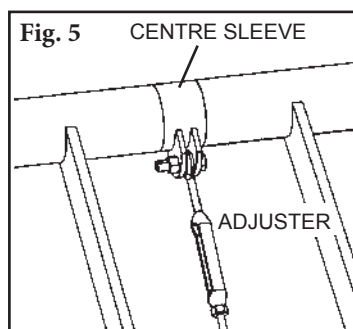
Fig. 3



STEP 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.

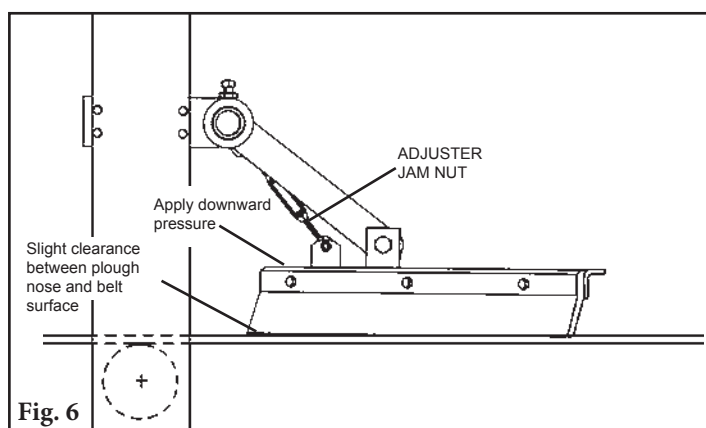
Fig. 5



STEP 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).

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



STEP 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). Tighten the adjuster jam nut (Fig. 6).

STEP 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.

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.

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

Section 6 - Maintenance

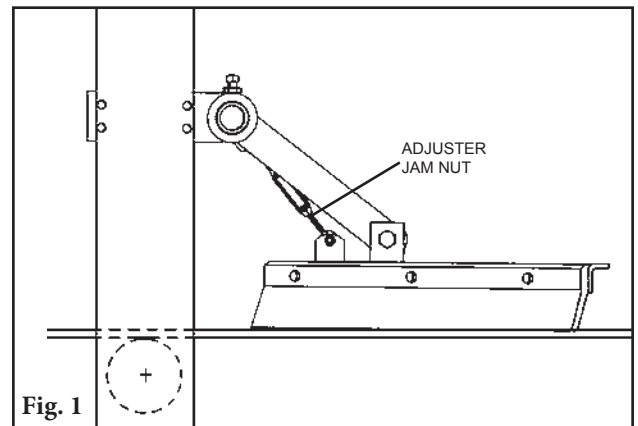
6.4 Blade Replacement Instructions

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

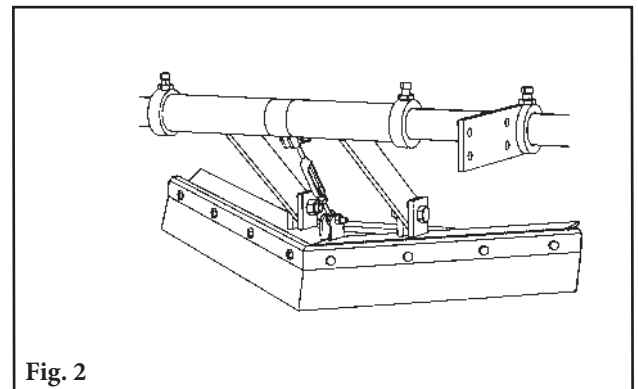
Tools Needed:

- 14mm wrench
- 13mm wrench
- 19mm wrench
- 24mm wrench

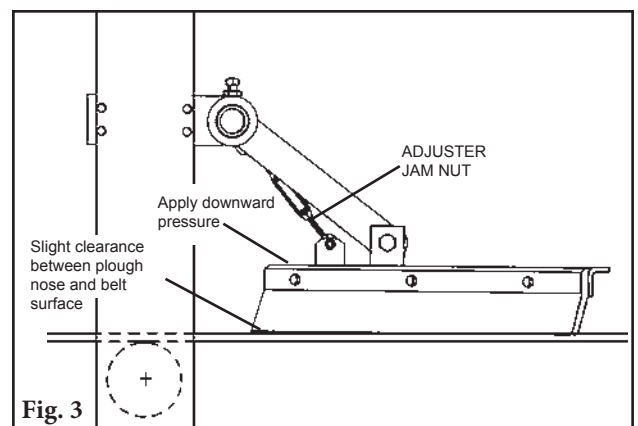
1. **Loosen adjuster jam nut.** After adjuster jam nut is loose the adjuster can be turned to provide more clearance for the new blade (Fig 1.)



2. **Remove worn blade.** Unscrew all bolts holding the old blade and face plate top main frame. Remove the blade and clean off any remaining material on plough frame (Fig 2.)
3. **Install new blade.** Use current bolts to secure new blade to 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). 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



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 #: _____

Activity: _____

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

Activity: _____

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

Activity: _____

Section 6 - Maintenance

6.6 Plough Maintenance Checklist

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	1. Check location of plough to flat return roller 2. Check turnbuckle adjustment and check main linkage arm angles
Attaining proper float	Restriction in movement on linkage arms	Shaft/ stop collars may be too tight
Material getting through	Too much space between belt and blade	Check V-Plough nose for proper clearance between nose and belt. Check adjuster arm angles.

Section 8 - Specs and CAD Drawings

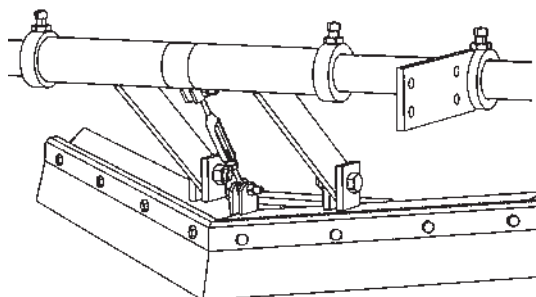
8.1 Specs and Guidelines

V-Plough

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

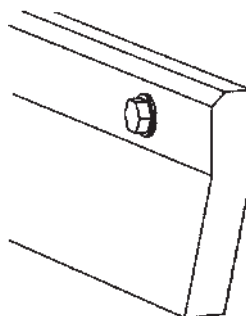
Use next larger size for belt widths between ranges.



V-Plough

Blade Specifications

Material	Polyurethane
Durometer	67-D
Working Temperature	
°C	-40° to 71°
°F	-40° to 160°
Grease & Chemical Resistance	Excellent
Sticky Material Performance	Excellent

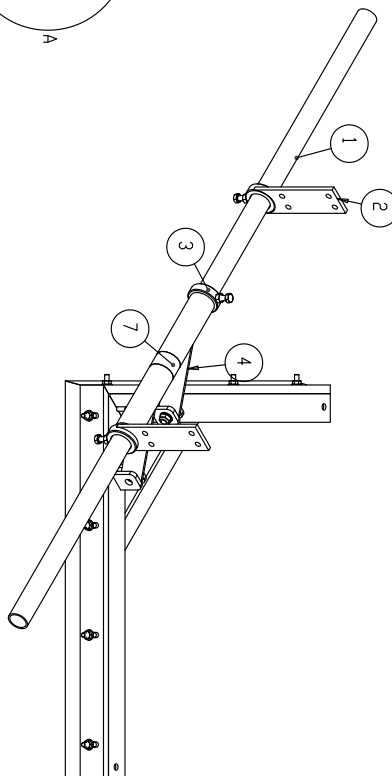
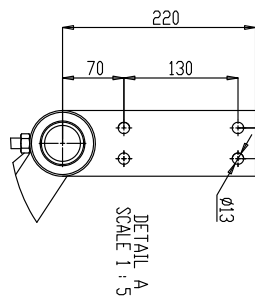
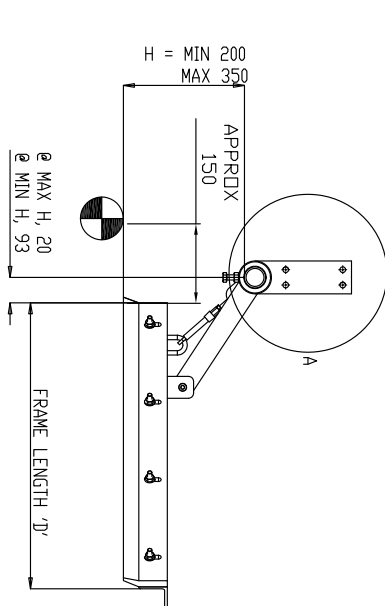
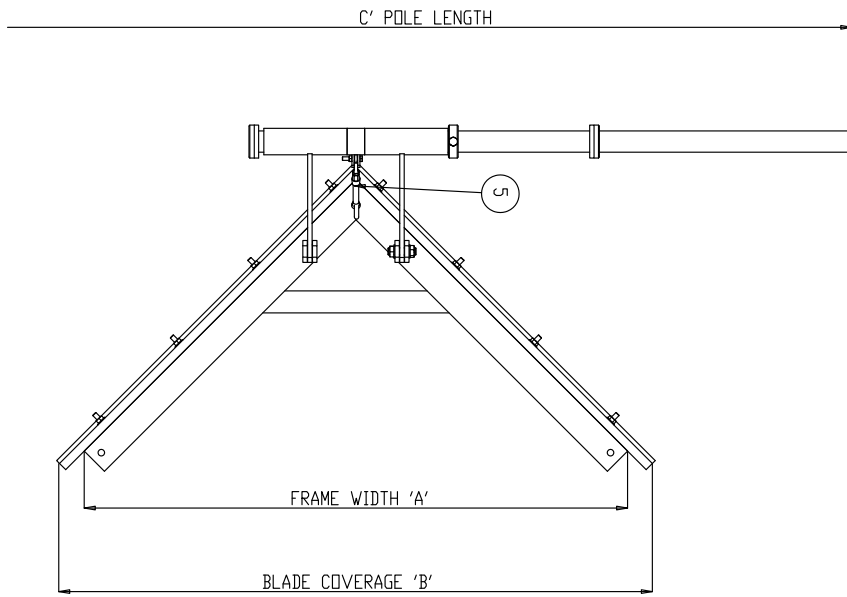


Application Guidelines

- Belt Splice.....Mechanically Fastened/Vulcanized
- Belt Speed5M/sec (1000 FPM) for V-Plough; 3.5M/sec (700 FPM) for Diagonal Plough
- Belt Direction.....One Way

Section 8 - Specs and CAD Drawings

8.2 CAD Drawings



V Plough - Poly Urethane blade - Mild Steel			V Plough - Poly Urethane blade - Stainless Steel				
BELT WIDTH (mm)	ITEM	ITEM CODE	WEIGHT (kg)	ITEM CODE	WEIGHT (kg)		
450	BP450	73102	29	BP450-S.S	78337		
500	BP500	73104	29	BP500-S.S	78338		
750	BP750	73106	28	BP750-S.S	78339		
800	BP800	73107	28	BP800-S.S	78340		
900	BP900	73108	28	BP900-S.S	78341		
1050	BP1050	73110	31	BP1050-S.S	78342		
1200	BP1200	73112	38	BP1200-S.S	78343		
1400	BP1400	73113	42	BP1400-S.S	78344		
1500	BP1500	73114	42	BP1500-S.S	78345		
1600	BP1600	73115	44	BP1600-S.S	78346		
1800	BP1800	73117	46	BP1800-S.S	78347		
A FRAME WIDTH	S BLADE COVERAGE	C POLE LENGTH	D FRAME LENGTH	A FRAME WIDTH	S BLADE COVERAGE	C POLE LENGTH	D FRAME LENGTH
508	480	1200	304	508	480	1200	304
608	665	1200	304	608	665	1200	304
808	775	1200	304	808	775	1200	304
900	860	1500	495	900	860	1500	495
990	945	1500	495	990	945	1500	495
1075	1075	1500	495	1075	1075	1500	495
1200	1200	1800	615	1200	1200	1800	615
1440	1440	1800	615	1440	1440	1800	615
1590	1595	2150	825	1590	1595	2150	825
1600	1675	2150	825	1600	1675	2150	825
1910	1925	2400	905	1910	1925	2400	905

Section 9 - Replacement Parts

9.1 Replacement Parts List

Replacement Parts	MILD STEEL		STAINLESS STEEL	
	ORDERING NUMBER	ITEM CODE	ORDERING NUMBER	ITEM CODE
Pole	BP450-750-PL	73109	BP450-750-PL-S/S	A0683
	BP800-1050-PL	73111	BP800-1050-PL-S/S	A0613
	BP1200-1400-PI	73118	BP1200-1400-PI-S/S	A0621
	BP1500-1600-PI	73119	BP1500-1600-PI-S/S	A0647
	BP1800-PL	73121	BP1800-PL-S/S	A1547
Mounting Bracket	BP-MB	73123	BP-MB-S/S	A0615
Shaft Collar	BP-SC	73125	BP-SC-S/S	A0616
Linkage Arm	BP-LA	73127	BP-LA-S/S	A0614
Standard Turnbuckle	BP-TL	73141	BP-TB	73138
Standard U-Bolt			BP-UB	73139
Turnbuckle Linkage			BP-TL-S/S	A0617

Replacement Blades

Poly Urethane-pair

BELT WIDTH mm	ORDERING NUMBER	ITEM CODE	WT. KGS.
450	BP450-B	74055	0.9
600	BP600-B	73777	0.9
750	BP750-B	73778	1.8
800	BP800-B	74057	1.8
900	BP900-B	73779	1.8
1050	BP1050-B	73780	1.8
1200	BP1200-B	73781	1.8
1400	BP1400-B	73782	2.3
1500	BP1500-B	73783	2.3
1600	BP1600-B	73784	2.7
1800	BP1800-B	73785	3.2

Note: Poly Urethane Blades are approved for use in underground mines

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:

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



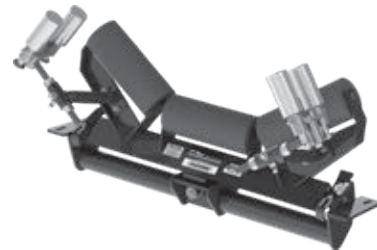
- Adjusting troughing angles for easy installation and adjustability
- Long-wearing UHMW for sealing the load zone
- Offered in both Light & Medium duty designs to affordably fit your application

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

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

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

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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