# **MXDP** Diagonal Plow

# Installation, Operation and Maintenance Manual





# **MXDP** Diagonal Plow

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.

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#### **Section 1 - Important Information**

#### 1.1 General Introduction

We at Flexco are very pleased that you have selected the MXDP Diagonal Plow 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 plow and other conveyor components

#### 1.3 Service Option

The MXDP Diagonal Plow 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 MXDP Diagonal Plow, 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

#### **A** DANGER

It is imperative that OSHA/MSHA Lockout/Tagout (LOTO) regulations, 29 CFR 1910.147, be followed before undertaking the preceding activities. Failure to use LOTO exposes workers to uncontrolled behavior of the plow 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.

#### **A** 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 the plows. 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

#### 

Every plow is an in-running nip hazard. Never touch or prod an operating plow. Plow hazards cause instantaneous amputation and entrapment. Never adjust anything on an operating plow. Unforseeable belt projections and tears can catch on plows and cause violent movements of the plow structure. Flailing hardware can cause serious injury or death.

#### **A WARNING**

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



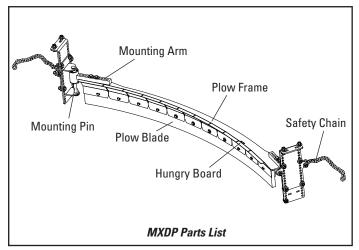
# **Section 3 - Pre-installation Checks and Options**

#### 3.1 Checklist

- Check that the plow 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 plow location adjustments?
  - Ensure proper clearance is available between topside and return side belts. (229mm (9") for standard; 279mm (11") for hungry board)

#### **Section 4 - Installation Instructions**

#### 4.1 MXDP Diagonal Plow



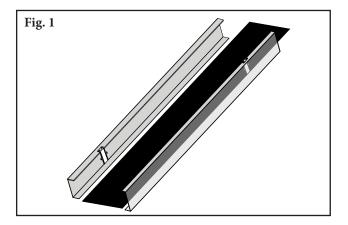
#### Locating the Plow Ideally the plow should Return Roller be positioned in a flat area and as close to the Belt tail pulley as possible. Direction 150 mm Requires a minimum of 125mm (5") of vertical clearance between the 45° Angle belt and the structure. Can be installed to discharge marterials to either side. For optimum cleaning performance, the plow Return Roller should be located about 150mm (6") behind a flat

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

return roller.

#### **Tools Needed:**

- 19mm (3/4") Wrench
- 24mm (15/16") Wrench
- Adjustable wrench
- Tape measure
- Ratchet straps or lifting equipment
- Drill or torch (for moutning holes)
- Bolt cutter or torch (for cutting safety chain)



1. Position the plow and frame on the conveyor.

Slide the plow onto the belt in the selected location.

Check for structure interference at both ends where the mounting brackets will be attached to the

**NOTE:** The plow frame should generally be installed at a 45-degree angle; this may vary on structure width. Both ends of the blade must be positioned past the belt's edges.



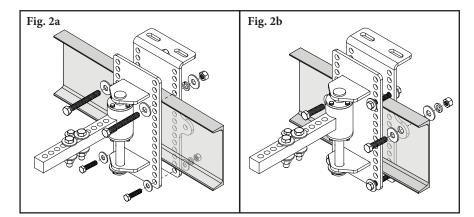
#### **Section 4 – Installation Instructions**

#### 4.1 MXDP Diagonal Plow

2. Attach mounting drop bracket to the structure. Drill, torch, or use existing holes in the conveyor framework to mount the drop bracket. Bracket may be mounted on top or the bottom of the channel, depending on accessibility and drop-height need (Fig. 1).

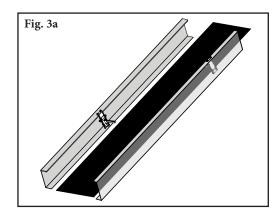
**NOTE:** Extra long bolts are provided in the situation where clamping the drop bracket and

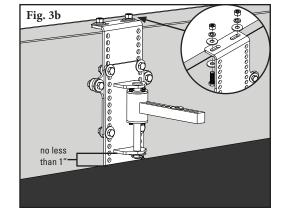
mounting pin around the channel or structure is preferred (Fig. 2a & 2b).

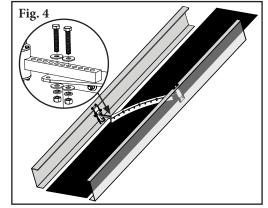


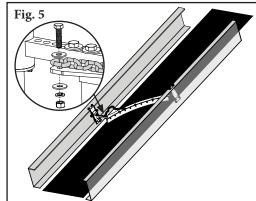
- 3. Attach the mounting pin/arm to the mounting drop bracket. Using the belt line as reference, locate the mounting bracket such that the lower flange is no less than 25mm (1") above the belt. Installing at this height ensures the plow can slide down the pin as the blade wears then bottom out on on the lower flange before the plow frame comes into contact with the belt (Fig. 3a & 3b).
- 4. Attach the plow frame/blade to the mounting arm. Using the multiple hole options, mount the arm to the frame. Check to ensure that the blade covers the entire belt width, or overhangs the belt slightly, before tightening down the hardware (Fig. 4).
- 5. **Install safety chain.** Using the safety chain kit provided, bolt the chain to the blade frame and then to the structure, ensuring the chain does not hang down or interfere with any moving parts of the plow or conveyor system (Fig. 5).
- 6. Check performance.

Run the belt and check that the plow runs smoothly and has an effective cleaning action. A final adjustment may be required.









# **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 cleaning performance.
- Make adjustments as necessary.

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



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

All safety procedures for inspection of equipment (stationary or operating) must be observed. The MXDP Diagonal Plow 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 plow 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 plow 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 blade is worn out and needs to be replaced.
- If there is damage to the blade or other belt plow components.
- If fugitive material is built up on the plow or in the transfer area.
- If there is cover damage to the belt.
- If there is vibration or bouncing of the plow on the belt.
- Check for build up on the leading return roll.

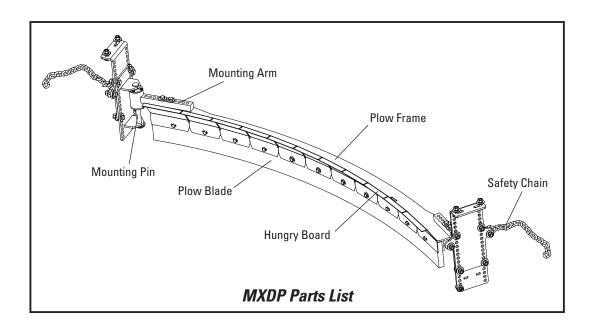
If any of the above conditions exist, a determination should be made on when the conveyor can be stopped for cleaner maintenance.

#### 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 plow to perform the following tasks:

- Clean material buildup off of the belt plow 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 plow 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 plow is performing properly.

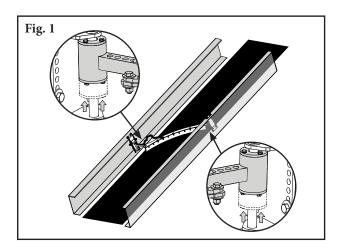
#### **6.4** Blade Replacement



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

#### **Tools Needed:**

- 19mm (3/4") Wrench
- Ratchet straps or lifting equipment
- Blocking



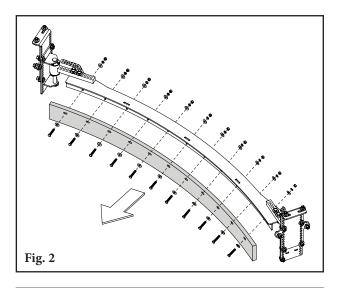
1. Lift the plow frame/blade. Using the mounting arm/pin assembly along with a chain fall, ratchet strap, etc., lift the plow frame/blade off of the belt until the mounting arm reaches the top of the mounting pin (Fig. 1).

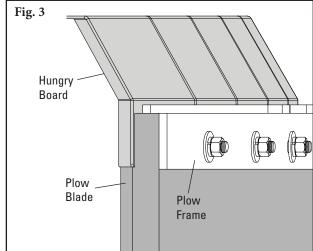
**NOTE:** Place blocking under the plow frame and/or the mounting arm if application allows.

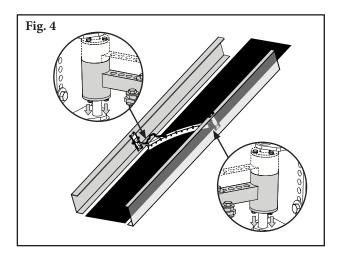
#### 6.4 Blade Replacement

**NOTE:** Belt and structure not shown for clarity.

- 2. Remove blade from plow. Loosen and remove all bolts securing worn blade to plow main frame. After removing the worn blade, clean off all fugitive material on the belt plow. Units that feature a hungry board will need to remove the hungry board to replace the worn blade. Hungry board may be re-used if still in good condition (Fig. 2).
- **3. Install new blade.** Use current bolts to secure new blade to belt plow main frame. If also using hungry board, re-install with the blade (Fig. 3).
- 4. Safely and slowly release the plow frame from blocking and/or suspension. Ensure the blade makes full contact with the belt and does not bind on the mounting pin (Fig. 4).
- **5. Check performance.** Run the belt and check that the plow runs smoothly and has an effective cleaning action. A final adjustment may be required.







# 6.5 Maintenance Log

Conveyor Name/No.		
Date:	Work done by:	Service Quote #:
Activity:		
Date:	Work done by:	Service Quote #:
Activity:		
	Work done by:	Service Quote #:
Activity:		
Date:	Work done by:	Service Quote #:
		Service Quote #:
Data	Work done by:	Sarvina Ovata #:
	Work done by:	
	Work done by:	
Activity.		

## 6.6 Plow Maintenance Checklist

Site:			Inspected by	<b>y</b> :					Date:		
Plow:			s	erial Numb	oer:						
Beltline Information: Beltline Number:			_ Belt Condi	tion:							
Belt 1200m Width: (48"		1350mm □ 1 (54")	500mm	0mm □ 1 6")	1800mm (72")	□ 1950mr (78")	n □ 2	2100mm 🗆 :	2400mm (96")	□ 2700mm (108")	□ 3000mm (120")
Belt Speed:	_ fpm	Belt Thi	ckness:								
Belt Splice:	C	ondition of Sp	olice:	_ Numb	er of Spl	ices:			mended	that mechani	cal fasteners
Material conveyed: _											
Days per week run:_			Hours per day r	un:							
Blade Life: Date blade installed:			Date blade ins	pected:			Estima	ated blade lif	e:		_
Is blade making com	plete co	ontact with be	elt?	□ Yes		lo					
Blade wear:	Lef	t	Mic	ldle		F	Right _				
Blade condition:		□ Good	☐ Grooved		Smiled		lot cor	ntacting belt	[	□ Damaged	
Was Plow Adjusted:		□ Yes	□No								
Frame Condition:		□ Good	☐ Bent	□ Wo	orn						
Lagging:	□ Side	e Lag [	□ Ceramic	□ Rubl	ber	□ Other		□ None			
Condition of lagging:		□ Good	□ Bad		Other: _						
Plow's Overall Perfo	rmance	<b>9</b> :	(Rate the follow	wing 1 - 5,	1= very	poor - 5 = v	ery go	ood)			
Appearance:	□:	Comments:									
Location::	□:	Comments:									
Maintenance::	□:	Comments:									
Performance::	□:	Comments:									
Other comments:											

# **Section 7 - Troubleshooting**

Problem	<b>Possible Cause</b>	<b>Possible Solutions</b>		
Material building up behind plow/ not falling off belt	Angle of blade not steep enough	Ensure 45° blade angle		
	Worn blade	Replace blade		
Material getting through	Lack of blade coverage	Check blade angle (45°)		
	Space between blade and belt	Adjust mounting bracket or clear any debris preventing vertical movement		
	Mechanical splice damaging blade	Repair, skive or replace splice		
II	Mounting not level	Check and adjust height of mounting points		
Unequal blade wear	Mechanical splice damaging blade	Repair, skive or replace splice		
Eiii	Mounting arm damage	Inspect, replace mounting arms		
Excessive vibration	Loose hardware	Inspect, tighten hardware		

## **Section 8 - Specs and CAD Drawings**

#### 8.1 Specs and Guidelines

**ORDERING** 

**NUMBER** 

MXDP-48/1200

MXDP-54/1350

MXDP-60/1500

MXDP-66/1650

MXDP-72/1800

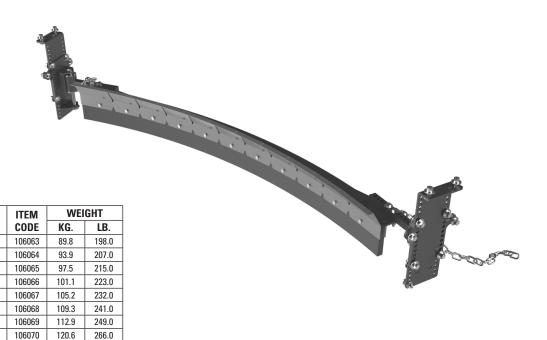
MXDP-78/1950

MXDP-84/2100

MXDP-96/2400

MXDP-108/2700

MXDP-120/3000



Lead time: 4 weeks

**BELT WIDTH** 

in.

54

60

66

72

78

84

96

108

120

mm

1200

1350

1500

1650

1800

1950

2100

2400

2700

3000

**MXDP Diagonal Plow** 

#### **MXDP Diagonal Plow with Hungry Board**

106071

106072

128.3

136.1

283.0

300.0

BELT \	NIDTH	ORDERING	ITEM	WEIGHT	
mm	in.	NUMBER	CODE	KG.	LB.
1200	48	MXDP-48/1200-H	106265	98.9	218.0
1350	54	MXDP-54/1350-H	106266	103.9	229.0
1500	60	MXDP-60/1500-H	106267	108.4	239.0
1650	66	MXDP-66/1650-H	106268	112.9	249.0
1800	72	MXDP-72/1800-H	106269	117.9	260.0
1950	78	MXDP-78/1950-H	106270	123.4	272.0
2100	84	MXDP-84/2100-H	106271	127.4	281.0
2400	96	MXDP-96/2400-H	106272	137.0	302.0
2700	108	MXDP-108/2700-H	106273	146.9	324.0
3000	120	MXDP-120/3000-H	106274	156.5	345.0

Lead time: 4 weeks

#### **Replacement Blades**

ORDERING	ITEM	WEIGHT		
NUMBER	CODE	KG.	LB.	
MXDPB-48/1200	106122	11.8	26.0	
MXDPB-54/1350	106123	13.2	29.0	
MXDPB-60/1500	106124	14.1	31.0	
MXDPB-66/1650	106125	15.4	34.0	
MXDPB-72/1800	106126	16.8	37.0	
MXDPB-78/1950	106127	18.1	40.0	
MXDPB-84/2100	106128	19.5	43.0	
MXDPB-96/2400	106129	21.8	48.0	
MXDPB-108/2700	106130	24.5	54.0	
MXDPB-120/3000	106131	26.8	59.0	

Lead time: 4 weeks

#### **Specifications:**

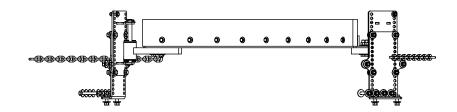
•	Maximum Belt Speed10.0 i	m/s (2000 FPIVI)
•	Belt DirectionOne V	Way

Temperature Rating ......-30 to 82°C (-20 to 180°F)
 Available for Belt Widths ......1200 to 3000mm (48 to 120")

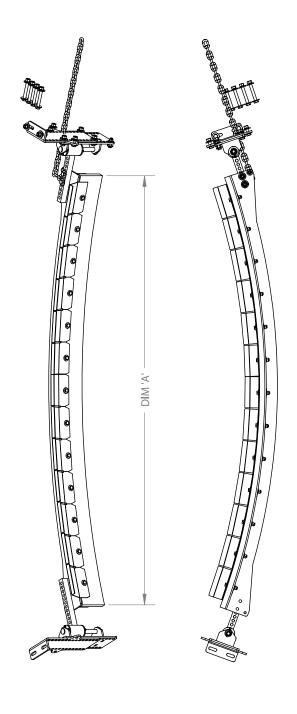
Belt Splice ......Mechanically Fastened/Vulcanized

# **Section 8 - Specs and CAD Drawings**

# 8.2 CAD Drawing

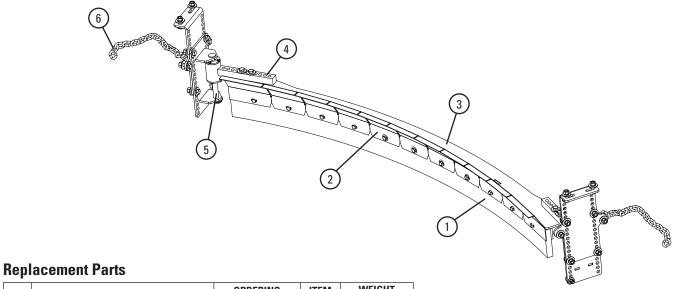


r BLADE	ITEM CODE	106122	106123	106124	106125	106126	106127	106128	106129	106130	106131
REPLACEMENT BLADE	ORDER NUMBER	MXDPB 48/1200	MXDPB-54/1350	MXDPB-60/1500	MXDPB-66/1650	MXDPB-72/1800	MXDPB-78/1950	MXDPB-84/2100	MXDPB-96/2400	MXDPB-108/2700	MXDPB-120/3000
W WITH	ITEM CODE	106265	106266	106267	106268	106269	106270	106271	106272	106273	106274
MX DIAGONAL PLOW WITH HUNGRY BOARD	ORDER NUMBER	MXDP-48/1200 - H	MXDP-54/1350 - H	MXDP-60/1500 - H	MXDP-66/1650 - H	MXDP-72/1800 - H	MXDP-78/1950 - H	MXDP-84/2100 - H	MXDP-96/2400 - H	MXDP-108/2700 - H	MXDP-120/3000 - H
'L PLOW	ITEM CODE	106063	106064	106065	106066	106067	106068	106069	106070	106071	106072
MX DIAGONAL PLOW	ORDER NUMBER	MXDP-48/1200	MXDP-54/1350	MXDP-60/1500	MXDP-66/1650	MXDP-72/1800	MXDP-78/1950	MXDP-84/2100	MXDP-96/2400	MXDP-108/2700	MXDP-120/3000
ATIONS	DIM 'A'	71-5/8	79-1/2	87-3/8	94-5/16	103-1/8	111-1/16	118-7/8	134-9/16	150-1/4	166
SPECIFICATIONS	BELT WIDTH	48	54	09	99	72	78	84	96	108	120



# **Section 9 - Replacement Parts**

# 9.1 Replacement Parts List



		ORDERING	ITEM	WEIGHT		
REF	DESCRIPTION	NUMBER	CODE	KG.	LB.	
	Replacement Blade 1200mm (48")	MXDPB-48/1200	106122	11.8	26.0	
	Replacement Blade 1350mm (54")	MXDPB-54/1350	106123	13.2	29.0	
	Replacement Blade 1500mm (60")	MXDPB-60/1500	106124	14.1	31.0	
	Replacement Blade 1650mm (66")	MXDPB-66/1650	106125	15.4	34.0	
1	Replacement Blade 1800mm (72")	MXDPB-72/1800	106126	16.8	37.0	
1	Replacement Blade 1950mm (78")	MXDPB-78/1950	106127	18.1	40.0	
	Replacement Blade 2100mm (84")	MXDPB-84/2100	106128	19.5	43.0	
	Replacement Blade 2400mm (96")	MXDPB-96/2400	106129	21.8	48.0	
	Replacement Blade 2700mm (108")	MXDPB-108/2700	106130	24.5	54.0	
	Replacement Blade 3000mm (120")	MXDPB-120/3000	106131	26.8	59.0	
	Hungry Board 1200mm (48")	MXDPH-48/1200	106106	9.1	20.0	
	Hungry Board 1350mm (54")	MXDPH-54/1350	106107	10.0	22.0	
	Hungry Board 1500mm (60")	MXDPH-60/1500	106108	11.3	25.0	
	Hungry Board 1650mm (66")	MXDPH-66/1650	106109	11.8	26.0	
2	Hungry Board 1800mm (72")	MXDPH-72/1800	106110	12.7	28.0	
	Hungry Board 1950mm (78")	MXDPH-78/1950	106111	14.1	31.0	
	Hungry Board 2100mm (84")	MXDPH-84/2100	106112	15.0	33.0	
	Hungry Board 2400mm (96")	MXDPH-96/2400	106113	16.3	36.0	
	Hungry Board 2700mm (108")	MXDPH-108/2700	106114	18.6	41.0	
	Hungry Board 3000mm (120")	MXDPH-120/3000	106115	20.4	45.0	
	Frame 1200mm (48")	MXDPF-48/1200	106634	24.5	54.0	
	Frame 1350mm (54")	MXDPF-54/1350	106635	27.2	60.0	
	Frame 1500mm (60")	MXDPF-60/1500	106636	29.5	65.0	
	Frame 1650mm (66")	MXDPF-66/1650	106637	31.7	70.0	
3	Frame 1800mm (72")	MXDPF-72/1800	106638	34.5	76.0	
J	Frame 1950mm (78")	MXDPF-78/1950	106639	36.7	81.0	
	Frame 2100mm (84")	MXDPF-84/2100	106640	39.5	87.0	
	Frame 2400mm (96")	MXDPF-96/2400	106641	44.4	98.0	
	Frame 2700mm (108")	MXDPF-108/2700	106642	49.4	109.0	
	Frame 3000mm (120")	MXDPF-120/3000	106643	54.4	120.0	
4	Mounting Arm Kit (1 ea.; hardware included)	MXDP-MAK	106095	11.8	26.0	
5	Mounting Pin Kit (1 ea.; hardware included)	MXDP-MPK	106548	1.4	3.0	
6	Safety Chain Kit (1 ea.; hardware included)	MXCP-SCK	106624	2.3	5.0	
-	Mounting Kit - Complete (includes 2 each mounting plates, 4, 5, 6)	MXDP-MK	106549	52.2	115.0	

Lead time: 4 weeks

#### **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

- Medium-duty mining precleaner with TuffShear blade
- Heavy-duty, 3-piece design pole with dual tensioners
- Allows for visual tension check
- Optional Stainless Steel components for superior corrosion resistance

#### **CBS Belt Cleaner**



- The thin, hard edge of the metal blade delivers high cleaning efficiency and long wear life.
- Made from heavy-duty, corrosion-resistant steel, the CBS is available in sizes for belt widths from 450 to 2400mm (18 to 96").
  - Additional sizes are available upon request.
- Flat blade for new or lightly used belts, or curved blade for worn or cupped 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

#### DRX™ Impact Beds



- Exclusive Velocity Reduction Technology<sup>™</sup> 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

#### PT Max<sup>™</sup> 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 or seize up
- Available for topside and return side belts



