# **MHS HD Secondary Belt Cleaner**

# Installation, Operation and Maintenance Manual





# **MHS HD Secondary Cleaner**

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 an MHS HD Secondary Cleaner 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 contact your field representative or 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 belt cleaner and other conveyor components

#### 1.3 Service Option

The MHS HD Secondary Cleaner 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 Representative.

## **Section 2 - Safety Considerations and Precautions**

Before installing and operating the MHS HD Secondary Cleaner, 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 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

## **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 conveyor belt cleaners. 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 belt cleaner is an in-running nip hazard. Never touch or prod an operating cleaner. Cleaner hazards cause instantaneous amputation and entrapment.

#### **A WARNING**

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

#### **A** WARNING

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



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

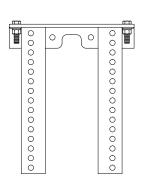
#### 3.1 Checklist

- Check that the cleaner size is correct for the beltline width
- Check the belt cleaner 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:
  - Will the cleaner be installed on a chute
  - Is the install on an open head pulley requiring mounting structure (see 3.2 - Optional Installation Accessories)

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

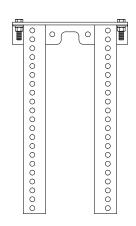
## 3.2 Optional Installation Accessories

Versatile, adjustable brackets that can be mounted on the conveyor structure so the MHS HD Secondary Cleaner can be quickly and easily bolted into place. Pole extenders are also available for wide, non-standard conveyor structures.



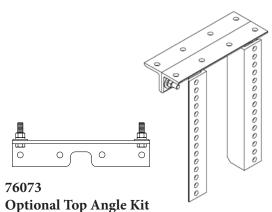
76071 Standard Mounting Bracket Kit

- For most secondary cleaner installs.
- 1325mm W x 388mm L



76072 Long Mounting Bracket Kit

- For installations that require extra length legs.
- 325mm W x 538mm L



- Used with both standard and long mounting bracket kits for additional mounting options.
- 325mm L

**Optional Mounting Kits** (includes 2 brackets/bars)

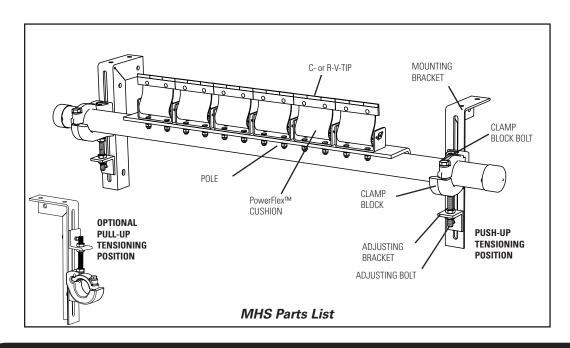
Description	Ordering Number	Item Code	Wt. Kg.
Standard Mounting Bracket Kit *	SSTSMB	76071	15.6
Long Mounting Bracket Kit *	SSTLMB	76072	19.7
Optional Top Angle Kit *	SSTOTA	76073	10.5

\*Hardware Included Lead time: 1 working day

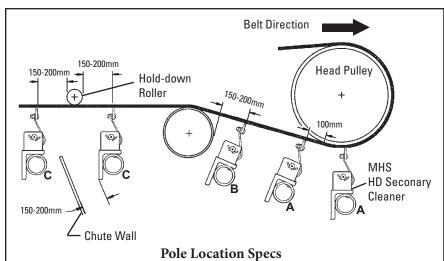


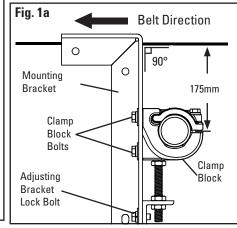
#### Section 4.1 - Installation Instructions

#### MHS HD Standard & Reversing Secondary Cleaners

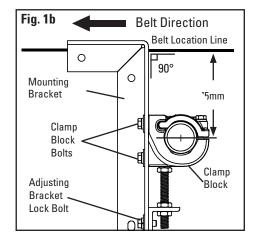


Physically lock out and tag the conveyor at the power source before you begin cleaner installation.



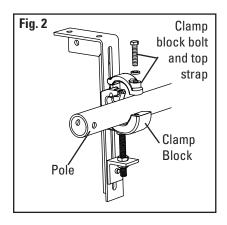


1. Install the mounting brackets. Locate the mounting bracket perpendicular to the beltline so that the centre of the clamp block hole is 175mm below the beltline (Fig. 1a). To move the clamp block, if necessary, loosen the clamp block lock bolts and the adjusting bracket lock bolt and move the clamp block to the correct position. Cut access holes as needed. Bolt or weld in place. Locate and install the mounting bracket on the opposite side. NOTE: For chute mounting, a belt location line must be drawn on the chute wall so the mounting bracket can be positioned 175mm below the belt (Fig. 1b).

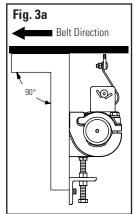


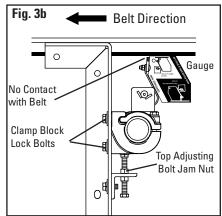
#### **Section 4.1 - Installation Instructions**

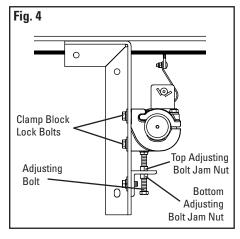
## MHS HD Standard & Reversing Secondary Cleaners (cont.)



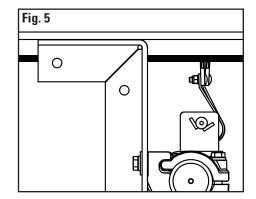
- 2. Install the pole. Remove the two clamp block bolts from the access side clamp block and remove the outer half. On the opposite side, just loosen the clamp block bolts. Slide the pole across the belt into the loosened clamp block, position the other end into the inner half clamp block and reassemble the outer half (Fig. 2). Do not fully tighten the clamp block bolts on either side.
- 3. Set the tip angle. With angle setup gauge provided, rotate the tips to the preset angle (Fig. 3a) and lock the pole in place by tightening the clamp block bolts equally. NOTE: Make sure there is NO tip-to-belt contact while making this alignment. If contact occurs, lower the pole by loosening the clamp block lock bolts and raising the top adjusting bolt jam nut (Fig. 3b). When tips are lowered and not touching the belt, repeat this step.







- 4. **Set the tip tension.** With all clamp block lock bolts slightly loosened, back down the bottom adjusting bolt jam nut 4-5 turns on both sides (Fig. 4). Turn the top adjusting bolt jam nuts down until light contact is made between tips and belt across the entire width of the cleaner. Give an additional 1 full turn to both top adjusting bolt jam nuts and tighten both bottom adjusting bolt jam nuts. Tighten all clamp block lock bolts. Double check that all bolts and nuts on the cleaner are tight.
- 5. Check the tip tension. Pull back on the outside tip until the belt to-tip contact is broken and release. The total blade thickness of the adjacent tip must be visible (Fig. 6). Add or reduce tension by 1/4 turn (see Step 4) until full thickness of the adjacent tip is visible.



**6. Test run the cleaner and inspect its performance.** If vibration occurs or more cleaning efficiency is desired, increase tip tension by making a 1/4 turn on each adjusting bolt.



## **Section 5 - Pre-Operation Checklist and Testing**

#### 5.1 Pre-Op Checklist

- Recheck that all fasteners are tightened properly
- Add pole caps
- Apply all supplied labels to the cleaner
- 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
- Check the tensioner spring for recommended length (proper tensioning)
- Make adjustments as necessary

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

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#### **Section 6 - Maintenance**

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

All safety procedures for inspection of equipment (stationary or operating) must be observed. The MHS HD Secondary Cleaner operates at the discharge end of the conveyor 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 cleaner 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 cleaner and belt should look for:

- If belt looks clean or if there are areas that are dirty
- If blades are worn out and needs to be replaced
- If there is damage to the blade or other cleaner components
- If fugitive material is built up on cleaner or in the transfer area
- If there is cover damage to the belt
- If there is vibration or bouncing of the cleaner on the belt
- If a snub pulley is used, a check should be made for material buildup on the pulley
- Significant signs of carryback

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 cleaner to perform the following tasks:

- Clean material buildup off of the cleaner blades and pole
- Closely inspect the blades for wear and any damage. Replace if needed.
- Ensure full blade to belt contact
- Inspect the cleaner 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 cleaner is performing properly



# **Section 6 - Maintenance**

# 6.4 Maintenance Log

Conveyor Name/No.	·		
Date:	Work done by:	Service Quote #:	
		Service Quote #:	
Activity:			
Date:	Work done by:	Service Quote #:	
Activity:			
Date:	Work done by:	Service Quote #:	
Activity:			
Date:	Work done by:	Service Quote #:	
	Work done by:	Service Quote #:	
Dete	107- al- de are less	Carrier Oracha #	
		Service Quote #:	
		Service Quote #:	
-			

# **Section 6 - Maintenance**

# **6.5** Cleaner Maintenance Checklist

Belt Cleaner:         Serial Number:           Beltline Information:           Beltline Number:         Belt Condition:           Belt         600mm         750mm         900mm         1200mm         1350mm         1500mm         1800mm         2100mm         2400mm           Width:         (24")         (30")         (36")         (42")         (48")         (54")         (60")         (72")         (84")         (96")	
Beltline Number: Belt Condition:	
Belt Speed: m/s Belt Thickness:	
Belt Splice: Condition of Splice: Number of Splices:	
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	
Measurement of spring: Required Currently	
For SAT2 Tensioner only: Air/Nitrogen Pressure Required Currently Inspect SAT2 bags and lines	
Was Cleaner Adjusted: ☐ Yes ☐ No	
Pole 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**

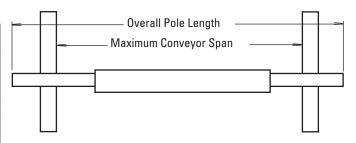
Problem	<b>Possible Cause</b>	<b>Possible Solutions</b>		
	Cleaner secure bolts not set	Ensure all locking nuts are tight (Loctite)		
	Cleaner not set up correctly	Ensure cleaner set up properly (check tip angle with gauge) MHS Standard 1°-3° into belt; MHS Reversing and SAT2 perpendicular		
Vibration	Belt tension too high	Ensure cleaner can conform to belt, or replace with alternate Flexco secondary cleaner		
	Belt flap	Introduce hold-down roller to flatten belt		
	Cleaner over-tensioned	Ensure cleaner is correctly tensioned		
	Cleaner under-tensioned	Ensure cleaner is correctly tensioned		
	Nylon bearing worn out or missing	Replace nylon bearing		
	Cleaner not set up correctly	Ensure cleaner set up properly (1°-3° into belt)		
Material buildup on	Buildup on chute	Ensure cleaner is not located too close to back of chute, allowing buildup		
cleaner	Cleaner being overburdened	Introduce Flexco precleaner		
	Excessive sticky material	Frequently clean unit of buildup		
	Cleaner over-tensioned	Ensure cleaner is correctly tensioned		
	Cleaner blade damage	Check blade for wear, damage and chips, replace where necessary		
Damaged belt cover	Attack angle not correct	Ensure cleaner set up properly (check tip angle with gauge) MHS Standard 1°-3° into belt; MHS Reversing and SAT2 perpendicular		
	Material buildup in chute	Frequently clean unit of buildup		
	Cleaner not set up correctly	Ensure cleaner set up properly (check tip angle with gauge) MHS Standard 1°-3° into belt; MHS Reversing and SAT2 perpendicular		
Cleaner not conforming to belt	Belt tension too high	Ensure cleaner can conform to belt (introduce hold-down roller), or replace with alternate Flexco secondary cleaner		
	Belt flap	Introduce hold-down roller to flatten belt		
	Cleaner cannot conform	Ensure cleaner can conform to belt (introduce hold-down roller), or replace with alternate Flexco secondary cleaner		
	Cleaner not set up correctly	Ensure cleaner set up properly (check tip angle with gauge) MHS Standard 1°-3° into belt; MHS Reversing and SAT2 perpendicular		
	Cleaner tension too low	Ensure cleaner is correctly tensioned		
	Cleaner blade worn/damaged	Check blade for wear, damage and chips, replace where necessary		
Material passing cleaner	Cleaner being overburdened	Introduce Flexco precleaner		
	Belt flap	Introduce hold-down roller to flatten belt		
	Belt worn or grooved	Introduce water spray pole		
	Cleaner cannot conform	Ensure cleaner can conform to belt (introduce hold-down roller), or replace with alternate Flexco secondary cleaner		
	Blade in backwards	Install blade correctly and set correct tension		
	Incorrect cleaner blade selection	Change blade type to accomodate fastener style (UC or UF)		
Damage to mechanical fastener	Belt not skived correctly	Spot and redo splice correctly, lowering the profile flush or below belt surface		
	Blade angle incorrect	Reset with gauge		
Missing material in halt	Cupped Belt	Install hold-down roller and reset blade angle with gauge		
Missing material in belt centre only	Cleaner blade worn/damaged	Check blade for wear, damage and chips, replace where necessary		
Missing material	Cupped Belt	Install hold-down roller and reset blade angle with gauge		
Missing material on outer edges only	Cleaner blade worn/damaged	Check blade for wear, damage and chips, replace where necessary		

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

## 8.1 Specs and Guidelines

#### **Pole Length Specifications**

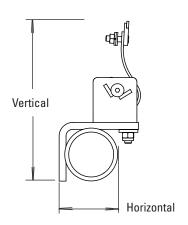
CLEANER SIZE		BLADE WIDTH		POLE LENGTH		MAXI CONVEY	
mm	in.	mm	in.	mm	in.	mm	in.
600	24	600	24	1350	54	1225	49
750	30	750	30	1500	60	1375	55
900	36	900	36	1650	66	1525	61
1050	42	1050	42	1800	72	1675	67
1200	48	1200	48	1950	78	1825	73
1350	54	1350	54	2200	88	2075	83
1500	60	1500	60	2350	94	2225	89
1800	72	1800	72	2650	106	2525	101
1800	72	1800	72	3150	126	3025	121
2100	84	2100	84	2950	118	2825	113
2400	96	2400	96	3250	130	3125	123
2600	104	2600	104	3450	138	3325	131
2800	112	2800	112	3650	146	3525	139
3000	120	3000	120	3850	154	3725	147



Pole Diameter - 73mm

#### Clearance Guidelines for Installation

HORIZ CLEAF REQU	RANCE		TICAL RANCE JIRED		
mm	in.	mm in.			
100	4	238 9 1/2			

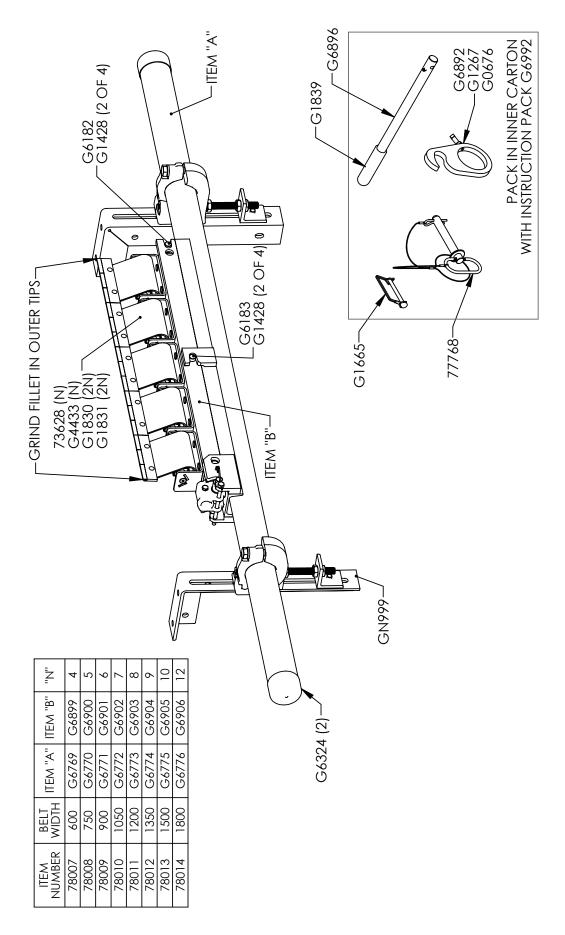


•	Maximum Belt Speed6m/s
•	Temperature Rating35°C to 82°C



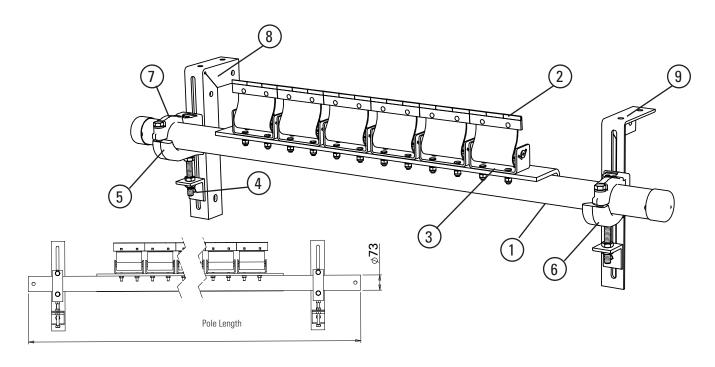
## **Section 8 - Specs and CAD Drawings**

## 8.2 CAD Drawing - MHS with Bolt Tensioner



# **Section 9 - Replacement Parts**

# 9.1 Replacement Parts List - MHS HD Secondary Cleaners



Rep	lacement Parts		MILD STEEL			STAINLESS STEEL		
	DESCRIPTION							
	BELT	POLE						
DEE	WIDTH	LENGTH	ORDERING	ITEM	WT.	ORDERING	ITEM	WT.
REF	mm	mm	NUMBER	CODE	KG.	NUMBER	CODE	KG.
	600	1350	MHS-P600*	77499	21.0	MHS-P600S/S*	77508	21.5
	750	1500	MHS-P750*	77500	23.5	MHS-P750S/S*	77509	24.0
	900	1650	MHS-P900*	77501	26.0	MHS-P900S/S*	77510	26.5
	1050	1800	MHS-P1050*	77502	28.5	MHS-P1050S/S*	77511	29.0
1	1200	1950	MHS-P1200*	77527	31.0	MHS-P1200S/S*	77528	31.8
'	1350	2100	MHS-P1350*	77503	33.5	MHS-P1350S/S*	77512	34.3
	1500	2350	MHS-P1500*	77504	36.0	MHS-P1500S/S*	77513	36.8
	1800	2650	MHS-P1800*	77505	38.5	MHS-P1800S/S*	77514	39.3
	2100	3200	MHS-P2100*	77506	43.5	MHS-P2100S/S*	77515	44.5
	2400	3250	MHS-P2400*	77507	51.0	MHS-P2400S/S*	77516	52.0
	R - V-Tip (for vulcanised belts only)		RSA150	73628	0.4	RVT6-S/S	76205	0.4
2	C-Tip (for mechanically spelts)	pliced and vulcanised	СТ6	74535	0.4			
3	PowerFlex™ Cushion		SPFC	79200	2.0	SPFC-S/S	79201	2.0
4	Adjusting Bracket Kit*	<sup>6</sup> (1ea.)	PAB	75513	0.7	PAB-S/S	75515	0.7
5	HD Pole Clamp Kit Lef (for sizes 1200-2400mm)	t* (1ea.) (incl. item 9a)	CCKHDL	79225	4.0	CCKHDL-S/S	79227	4.0
6	HD Pole Clamp Kit Rig (for sizes 1200-2400mm)	ht* (1ea.) (incl. item 9a)	CCKHDR	79229	4.0	CCKHDR-S/S	79231	4.0
7	HD Cradle Clamp Top Strap (1ea.) (for use on L or R HD Pole Clamp Kit)		CCKHDTS	79233	0.8	CCKHDTS-S/S	73235	0.8
8	Mounting Bracket Kit Left		PMBL (left)	75516	3.8	PMBL-S/S (left)	75518	3.8
9	Mounting Bracket Kit Right		PMBL (right)	75519	3.8	PMBL-S/S (right)	75521	3.8
-	HD Cradle Clamp Mounting Kit* (for sizes 1200-2400mm) (incl. 2 ea. item 4, and 1 ea. items 5, 6, 8 & 9)		CCMKHD	78920	16.7	CCMKHD-S/S	78922	16.7

<sup>\*</sup>Lead time: 3 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:



- Patented ConShear<sup>™</sup> 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<sup>™</sup> for optimal cleaning and reduced maintenance

#### **DRX Impact Beds**



- Exclusive Velocity Reduction Technology<sup>™</sup> to better protect the belt
- Slide-Out Service<sup>™</sup> 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

#### **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 or 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

#### **Belt Ploughs**



- A belt cleaner for the tail pulley
- Exclusive blade design quickly spirals debris off the belt
- Economical and easy to service
- Available in vee or diagonal models



#### **The Flexco Vision**

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

