# **Belt Driven Brush Cleaner**

# Installation, Operation and Maintenance Manual





www.flexco.com

Serial Number:
Purchase Date:
Purchased From:
Installation Date:

Serial number information can be found on the Serial Number Label included in the Information Packet shipped 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 a Belt Driven Brush 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: 1-800-541-8028

#### 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 product. 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 Belt Driven Brush 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. Before installing and operating the Belt Driven Brush 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
- Drum replacement
- Tension adjustments
- Cleaning

# **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 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

### 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

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.

# 2.3 Other Hazards

This cleaner is not intended for use in locations where fire or explosion hazards may exist due to flammable gases or vapors, flammable liquids, combustible dust, or ignitable fibers of flyings.

#### • Safety footwear Close quarters, springs and heavy components create a worksite that compromises a worker's eves feet and ski

Safety eyewear Hardhats

WARNING

Use Personal Protective Equipment (PPE):

Repairs

•

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.

# 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.



# **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

### 3.2 Optional Installation Accessories

#### **Optional Mounting Accessories**

Description	Ordering Number	ltem Code	Wt. Lbs.
Drop Bracket Kit (incl. 2)	MBCDBK	79536	28.9
Lead time: 1 working day			







1. **Install Drop Brackets.** Measure from a fixed point on both sides of the conveyor to ensure alignment and ensure the brackets are plumb to one another (Fig 1).







# **Section 4 - Installation Instructions - Belt Driven Brush Cleaner**

Fig. 2

2. Assemble mounting bracket with spacer and install onto the drop bracket. Line up mounting bracket such that the top

of the bracket is approximately 1.75" (45 mm) above the belt line (Fig. 2).

#### Hardware used:

(8) 1/2-13 X 2" Hex Head Bolt (2) 1/2-13 X 1.5" Hex Head Bolt (8) 1/2-13 Hex Nut (10) 1/2" Lock Washer (18) 1/2" Flat Washer



- 3. Insert the drive shaft onto the belt and on the side with the spacer (Fig. 3).
- 4. Install pillow block bearing onto drive roller, ensuring the set screw is facing out for easy adjustment later. Tighten bolt to mounting bracket (Fig. 4). NOTE: Ensure the drive roller is making full contact with the belt. Adjust the bracket/bearing/ roller assembly downward until full contact (Fig. 5).

#### Hardware used:

(4) 1/2-13 X 2.5" Hex Head Bolt (4) 1/2-13 Hex Nut (4) 1/2" Lock Washer (8) 1/2" Flat Washer



 $\cap$ 

Belt Line approx.

top of mounting

bracket

1.75" (45 mm) above

0





8

### **Section 4 - Installation Instructions - Belt Driven Brush Cleaner**

- 5. **Slide shaft left/right until centered with the belt**, ensuring the shaft on the drive side overhangs the bearing by 7" (175 mm) or more to provide room for bearing/drive system. Tighten set screw (Fig. 6).
- 6. **Install rotation arm/plate** by resting on the drive roller shaft. Flange must be facing the belt (Fig. 7).
- 7. Install upper bearing assembly onto roller shaft (Fig. 8).

#### Hardware used:

(4) 1/2-13 X 2" Hex Head Bolt
(4) 1/2-13 Hex Nut
(4) 1/2" Lock Washer
(8) 1/2" Flat Washer

8. Install bottom plate and slide brush/shaft/collar assembly to rest inside of the opening (Fig. 9).

#### Hardware used:

(4) 1/2-13 X 1.5" Hex Head Bolt
(4) 1/2" Lock Washer
(4) 1/2" Flat Washer
(4) 3/8-16 x 1.5" Socket Head Screw
(4) 3/8" Flat Washer











# **Section 4 - Installation Instructions - Belt Driven Brush Cleaner**

- 9. Install lower bearing assembly to brush shaft (Fig. 10).
- 10. **Install bottom collar on lower bearing.** Ensure you rotate bearing into an orientation that places the zerk fitting in the precut notch (Fig. 11).

#### Hardware used:

(4) 1/2-13 X 2" Hex Head Bolt
(4) 1/2-13 Hex Nut
(4) 1/2" Lock Washer
(8) 1/2" Flat Washer
(4) 3/8-16 x 1.5" Socket Head Screw
(4) 3/8" Lock Washer

11. Install adjusting rod on both sides of cleaner (Fig. 12).

#### Hardware used:

- (4) 1/2-13 X 1.25" Hex Head Bolt
  (4) 1/2" Lock Washer
  (4) 1/2" Flat Washer
  (8) 1-5" ACME Hex Nut
  (4) 1" Flat Washer
- 12. Tighten the set screws on outer bearings (Fig. 13).









13. Install QD Bushings and Drive Pulley.

Put QD bushing/small pulley on drive shaft (roller) using hardware included with QD bushing, then line up the QD bushing/drive pulley to match, using level or alignment tool to assist (Fig. 14).

- 14. Install V-Belt. The top bearings mount to slotted holes. If necessary, loosen the bolts on the flange bearing to reduce the distance between shafts for easier V-belt installation (Fig. 15). Ensure that the V-belt is tight by sliding the bearings apart as much as possible.
- 15. **Tension Brush to the Belt.** Adjust the threaded rod until there is a 3" (75 mm) gap between the belt and the brush drum. Tighten locking nut and the guide bolt (between the two shafts) (Fig. 16).
- 16. Tighten all hardware.
- 17. Install Drive Guards (Fig. 17).











### 5.1 Pre-Op Checklist

- Recheck that all fasteners are tightened properly
- Apply all supplied labels to the cleaner
- Check the drum 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 drum and bristles for proper tensioning
- Make adjustments as necessary

#### Initial troubleshooting:

- 1. If neither brush or hold-down roller are turning: Reduce brush interference with the belt. If the brush is not contacting the belt, then move the cleaner down to improve belt wrap and pressure on the conveyor belt.
- 2. If the hold-down roller is turning, but not the brush: First ensure the V-belt is properly tensioned with the top flange bearing as high in the slots as possible. Second, if the V-belt is tensioned properly then reduce the interference of the brush on the conveyor belt.

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

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 Belt Driven Brush 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 cleaner is worn out and needs to be replaced
- If there is damage to the cleaner 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 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
- Closely inspect the cleaner for wear and any damage. Replace if needed.
- Ensure full cleaner to belt contact
- Inspect the cleaner for damage
- Inspect all fasteners for tightness and wear. Tighten or replace as needed.
- Grease bearings
- Replace any worn or damaged components Relube bearings with lithium complex base grease per table below

		Lubiicat	ion Scheuule - I	enou in weeks				
Belt Speed (fpm)	100	200	300	400	500	600	700	
8 Hours Run per Day	12	12	12	10	10	7	7	
16 Hours Run per Day	12	7	7	5	5	4	4	
24 Hours Run per Day	10	5	5	3	3	2	2	
						· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	_

#### Lubrication Schedule - Period in Weeks

Use a No. 2 Litium complex base grease or equivalent

• When maintenance tasks are completed, test run the conveyor to ensure the cleaner is performing properly.



### **Section 6 - Maintenance**

### 6.4 Brush Replacement Instructions



### PHYSICALLY LOCK OUT AND TAG THE CONVEYOR AT THE POWER SOURCE BEFORE YOU BEGIN BRUSH REPLACEMENT.

- 1. **Remove Drive Guards.** Where practical, plan to extract brush from the non-drive side (Fig. 1).
- 2. Remove tension completely to create room for the replacement brush by loosening locking bolt and threading the nuts on the tension rod to the farthest point (Fig. 2).





# **Section 6 - Maintenance**

### 6.4 Brush Replacement Instructions

- 3. **Remove bottom collar** from Brush Bearing, then remove the bottom plate to extract the worn brush (Fig. 3 & 3a).
- 4. **Remove brush locks** and slide the worn brush out and over the bearings. Slide new brush over the bearings and onto the shaft, sliding it to the same center location. Re-install brush locks.
- 5. **Re-install bottom plate and collar** for the Brush Bearing, ensuring that the zerk fitting is located at the bottom of the collar in the notch (Fig. 3 & 3a).
- 6. **Tension brush to the belt.** Adjust the threaded rod until there is a 3" (75mm) gap between the belt and the brush drum. Tighten locking nut and the guide bolt (between the two shafts) (Fig. 4).
- 7. Tighten all hardware.
- 8. Install drive guards (Fig 5).









# **Section 6 - Maintenance**

# 6.5 Maintenance Log

Conveyor Nam	e/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:			

# 6.6 Cleaner Maintenance Checklist

Belt Cleaner:					Seri	al Number: _			
Beltline Informa	tion:								
Beltline Number	:		Belt C	ondition:					
Belt Width:	24 □ (600mr	" 🗆 30" n) (750mm)	□ 36" (900mm)	□ 42" (1050mm)	□ 48" (1200mm)	□ 54" (1350mm)	□ 60" (1500mm)	□ 72" (1800mm)	
Head Pulley Dia	meter	(Belt & Lagging) <u>:</u>			Belt Speed:_	fpm	Belt Thi	ckness:	
Belt Splice:		_ Condition of	Splice:	Nur	nber of Splice	s:	□ Skived □	l Unskived	
Material convey	ed:								
Days per week r	un:		Hours per	day run:		_			
<b>Drum Life:</b> Date installed: Is cleaner makin	ig com	Date insp plete contact wit	bected: h belt?	E	Estimated life: es □ N	0	_		
Drum condition:		🗆 Good	□ Not	contacting l	belt 🗆	Damaged			
Was Cleaner Ad	justed	: םו	′es ⊑	No					
Shaft Condition:		🗆 Good	🗆 Ben	t □V	Vorn				
Lagging:		] Side Lag	🗆 Ceramic		ubber [	⊐ Other	□ None		
Condition of lage	ging:	🗆 Goo	od □	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
	Cleaner secure bolts not set	Ensure all locking nuts are tight (Loctite)
	Cleaner not set up correctly	Ensure cleaner set up properly
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
	Cleaner not set up correctly	Ensure cleaner set up properly
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 (if not a chevron belt)
	Excessive sticky material	Frequently clean unit of buildup
	Cleaner over-tensioned	Ensure cleaner is correctly tensioned
Damaged belt cover	Cleaner bristles damaged	Check bristles for wear, damage and chips, replace where necessary
	Material buildup in chute	Frequently clean unit of buildup
	Cleaner not set up correctly	Ensure cleaner set up properly
Cleaner not	Belt tension too high	Ensure cleaner can conform to belt, or replace with alternate Flexco secondary cleaner
conforming to belt	Belt flap	Introduce hold-down roller to flatten belt
	Cleaner cannot conform	Ensure cleaner can conform to belt, or replace with alternate Flexco secondary cleaner
	Cleaner not set up correctly	Ensure cleaner set up properly
	Cleaner tension too low	Ensure cleaner is correctly tensioned
Material passing	Cleaner bristles worn/damaged	Check bristles for wear, damage and chips, replace where necessary
cleaner	Cleaner being overburdened	Introduce Flexco precleaner
	Belt flap	Introduce hold-down roller to flatten belt
	Cleaner cannot conform	Ensure cleaner can conform to belt, or replace with alternate Flexco secondary cleaner
Missing matarial in	Cleaner shaft located too high	Ensure cleaner set up properly
belt center only	Cleaner bristles worn/damaged	Check bristles for wear, damage and chips, replace where necessary
Missing material an	Cleaner shaft located too low	Ensure cleaner set up properly
outer edges only	Cleaner bristles worn/damaged	Check bristles for wear, damage and chips, replace where necessary

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

# 8.1 Specs and Guidelines

Specifications	
Belt Speed	Up to 700 fpm (3.5 m/s)
Vertical Clearance	24.5" (622mm)
Horizontal Clearance	28.38" (720mm)
Temperature Range	-20°F to 180°F (-30°C to 82°C)
Maximum Chevron or Cleat Height	1/2" (13mm)
Bristle Length	3-1/4" (83mm)
Overall Diameter	12" (305mm)
Shaft Length (Brush and Roller)	Belt Width plus 42" (1067mm)
Shaft Diameter	1" (25mm)
CEMA Cleaner Rating	Class 4







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

# 8.1 CAD Drawing



Belt \ "/	Nidth A″	Shaft I "E	Length 3"	Ordering	ltem
in.	mm	in.	mm	Number	Code
30	750	99	1650	BDBC-24	93119
36	006	72	1800	BDBC-30	93120
42	1050	78	1950	BDBC-36	93121
48	1200	84	2100	BDBC-42	93122
44	1350	06	2250	BDBC-48	93123
09	1500	96	2400	BDBC-54	93124
99	1650	102	2550	BDBC-60	93125
78	1950	114	2850	BDBC-72	93126

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# **Section 9 - Replacement Parts**

# 9.1 Replacement Parts List



### **Replacement Parts**

		ORDERING	ITEM	WT.
REF	DESCRIPTION	NUMBER	CODE	LBS.
	18" (450mm) Brush Drum Shaft	BDBCR-BS-24	93135	27.4
	24" (600mm) Brush Drum Shaft	BDBCR-BS-30	93136	30.2
	30" (750mm) Brush Drum Shaft	BDBCR-BS-36	93137	32.9
1	36" (900mm) Brush Drum Shaft	BDBCR-BS-42	93138	35.7
1	42" (1050mm) Brush Drum Shaft	BDBCR-BS-48	93139	38.4
	48" (1200mm) Brush Drum Shaft	BDBCR-BS-54	93140	41.2
	54" (1350mm) Brush Drum Shaft	BDBCR-BS-60	93141	43.9
	60" (1500mm) Brush Drum Shaft	BDBCR-BS-72	93142	46.6
	24" (600mm) Replacement Brush Drum	MBRD-24	79515	13.5
	30" (750mm) Replacement Brush Drum	MBRD-30	79516	17.1
	36" (900mm) Replacement Brush Drum	MBRD-36	79517	20.5
2	42" (1050mm) Replacement Brush Drum	MBRD-42	79518	23.7
Z	48" (1200mm) Replacement Brush Drum	MBRD-48	79519	26.8
	54" (1350mm) Replacement Brush Drum	MBRD-54	79520	30.7
	60" (1500mm) Replacement Brush Drum	MBRD-60	79521	33.9
	72" (1800mm) Replacement Brush Drum	MBRD-72	79522	41.0
	24" (600mm) Replacement Roller	BDBCR-HDR-24	93127	79.5
	30" (750mm) Replacement Roller	BDBCR-HDR-30	93128	91.0
	36" (900mm) Replacement Roller	BDBCR-HDR-36	93129	102.6
3	42" (1050mm) Replacement Roller	BDBCR-HDR-42	93130	113.3
3	48" (1200mm) Replacement Roller	BDBCR-HDR-48	93131	124.7
	54" (1350mm) Replacement Roller	BDBCR-HDR-54	93132	136.2
	60" (1500mm) Replacement Roller	BDBCR-HDR-60	93133	147.6
	72" (1800mm) Replacement Roller	BDBCR-HDR-72	93134	170.5
4	Support Spacer Kit	BDBDR-SPACER	93370	1.7
5	Drive Guard Kit	BDBDR-GUARD	93371	20.6
6	Brush Shaft Bearing/Drive Hardware	BDBCR-B-HW	93372	8.0
7	Roller Shaft Bearing/Drive Hardware	BDBCR-R-HW	93373	23.3
8	Adjustment Arm Kit	BDBCR-ADJARM	93374	8.5
9	Brush Lock Kit	MBCBL	79532	1.5
10	Replacment V-Belt	BDBCR-VBELT	93376	0.3
11	Brush Cleaner Drop Brackets* (2)	MBCDBK	79536	28.9

\*Hardware included.



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 10" (250mm) TuffShear<sup>™</sup> blade provides increased blade tension on the belt to peel off abrasive materials
- The unique Visual Tension Check<sup>™</sup> ensures optimal blade tensioning and quick, accurate retensioning
- · Easy to install and simple to service

### MHS Secondary Cleaner with Service Advantage Cartridge



- An easy slide-out cartridge for service
- Cartridge design to speed up blade-change maintenance
- Patented PowerFlex<sup>™</sup> Cushions for superior cleaning performance
- · Compatible with Flexco mechanical splices

### **Flexco Specialty Belt Cleaners**



- "Limited space" cleaners for tight conveyor applications
- High Temp cleaners for severe, high heat applications
- 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
- · Four 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 seize or freeze up
- Available for topside and return side belts

### **Belt Plows**



- 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





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

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