



EXCALIBUR™ BELT CLEANER

INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS



Check us out at
www.asgco.com

Customer Service
800-344-4000

24 Hour Emergency
Service and Parts
610-821-0210



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**Important
Safety
Notice**

Always observe the basic rules of safety when working with any conveyor system. To avoid injury and equipment damage, be sure that all controls to the conveyor are locked out and the power source is disconnected at all times during installation.

WARNING

PLEASE COMPLETELY READ AND UNDERSTAND THESE INSTRUCTIONS BEFORE ATTEMPTING THE INSTALLATION OF AN EXCALIBUR BELT CLEANING SYSTEM. FAILURE TO DO SO COULD LEAD TO SERIOUS INJURY AND EQUIPMENT DAMAGE. ENSURE THAT ALL CONTROLS AND POWER SOURCES TO THE CONVEYOR SYSTEM ARE PROPERLY DISCONNECTED AND LOCKED OUT WHILE INSTALLING, ADJUSTING OR MAINTAINING THE EXCALIBUR BELT CLEANING SYSTEM. NEVER ATTEMPT ANY INSTALLATION, ADJUSTMENT, OR SERVICE PROCEDURE WHILE THE CONVEYOR IS IN OPERATION.

ENSURE THAT ALL REQUIRED SAFETY EQUIPMENT IS ON HAND, SUCH AS A FIRE EXTINGUISHER AND FIRST-AID KIT BEFORE PROCEEDING. THOSE WHO USE AND MAINTAIN THE EXCALIBUR BELT CLEANING SYSTEM MUST BE PROPERLY TRAINED IN ITS PROPER USE, KNOW OF ITS DANGERS, AND READ AND UNDERSTAND THIS ENTIRE MANUAL BEFORE ATTEMPTING TO INSTALL, OPERATE, OR SERVICE THIS DEVICE. FAILURE TO OBSERVE ALL INSTRUCTIONS COULD RESULT IN SERIOUS INJURY. IT IS THE OWNER'S RESPONSIBILITY THAT THE OWNER AND EACH OPERATOR READ AND BE FAMILIAR WITH THIS MANUAL.

CAUTION:

ALL STAINLESS STEEL THREADED PARTS MUST BE KEPT WELL LUBRICATED. STAINLESS THREADS EASILY "GALL" (STRIP-OUT) WHEN POORLY LUBRICATED. THE STAINLESS STEEL MOUNTING HARDWARE SUPPLIED WITH THE SYSTEM HAS NOT BEEN PRE-LUBRICATED AT THE FACTORY. YOU MUST APPLY AN APPROPRIATE ANTI-SEIZE OR LUBRICANT BEFORE TIGHTENING.

WARNING:

All parts should be cleaned and sanitized in compliance with your facility policies prior to installation and use.

PLEASE CONTACT THE ENGINEERING DEPARTMENT AT ASGCO MANUFACTURING AT 800.344.4000 IF YOU HAVE FURTHER QUESTIONS OR ARE UNSURE OF THESE PROCEDURES.

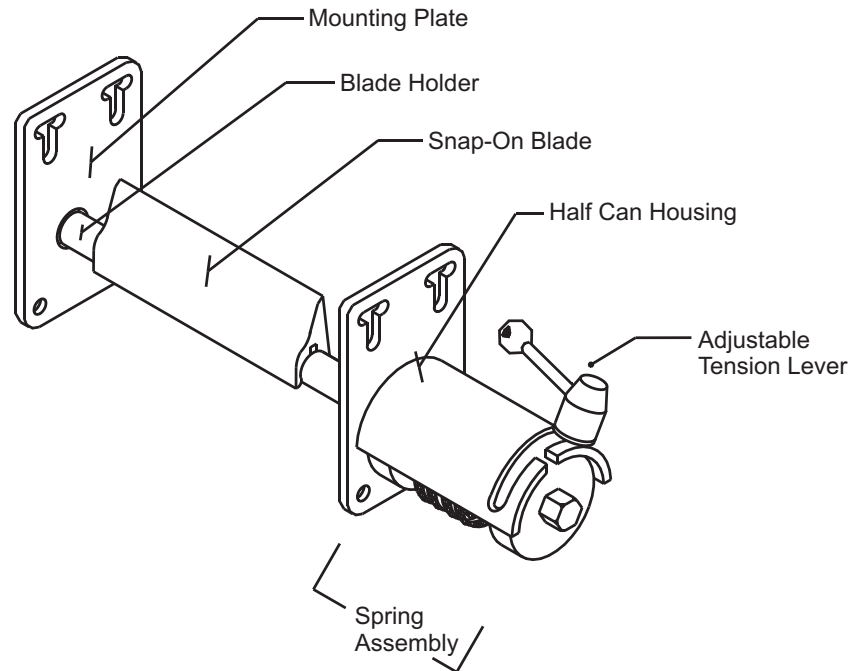
INSTALLATION INSTRUCTIONS

REQUIRED TOOLS:

Drill and Bits
Open-end Wrenches
Tape Measure
Center punch

Set of Allen Drives
Level
De-burring tool
Hammer

Square
Saw (metal cutting)
File (metal)
Pencil



STEP 1:

Identify and become familiar with all parts. Ensure all parts have been included. perform Pre-assembly as indicated.

- a) Ensure that all parts have been included with your partially pre-assembled system

Blade Holder ¹	Mounting Hardware bag (4 bolts, 4 nuts, 8 washers) ²
Snap-on Blade	Fixed Handle Lever (large ball knob) ²
Half Can Housing with Integral Mounting Plate ²	Installation Instructions and Operator's Manual
Spring Assembly with Cap Screw ²	Tube of ASGCO-SEAL Food Grade Silicone ²
Adjustable Tension Lever (L-shaped) ²	CEMA Conveyor Safety Label ²
UHMW Polyethylene (PE) Bushing ²	Spare Snap-on Blade (if purchased)
Mounting Plate ²	Spare Parts / Refurbishment kit (if purchased)

Note #1:

If the conveyor's outer frame width exceeds 54-1/2", a long span blade holder must be used. If the conveyor's outer frame width exceeds 110", a reinforced long span blade holder is used. Make sure you have received the proper blade holder.

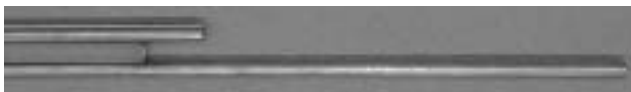


Exhibit 1: Long Span Blade Holder (one end shown)

**Note #2:
Dual Tensioner**

For systems with blade lengths greater than 79", a tensioning system is provided for each end of the blade holder. Dual tensioned systems come equipped with: (a) two spring assemblies (each with opposite spring rotations), (b) two half can housings, (c) two adjustable tension levers, (d) two fixed handle levers, (e) two UHMW-PE Bushings and (f) two mounting hardware bags are also included as well as an additional safety label, and tube of ASGCO-seal Silicone. The mounting plate is eliminated with dual tensioners.

- b) Remove and discard the nylon shipping bolt from the spring assembly, and replace this bolt with the adjustable tension lever (L-shaped handle) from the hardware bag. Attach the fixed handle lever (if desired). The fixed handle lever aids in setting the system tension. Remove and discard the two black o-rings provided to protect the mounting plate during shipping (see Exhibits 2, 3, & 4).



Exhibit 2



Exhibit 3 Parts Bag

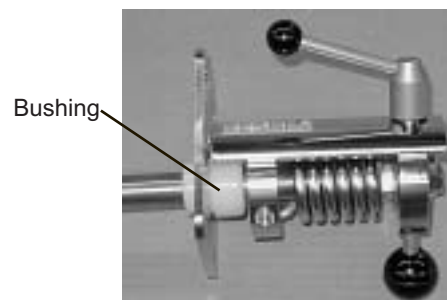
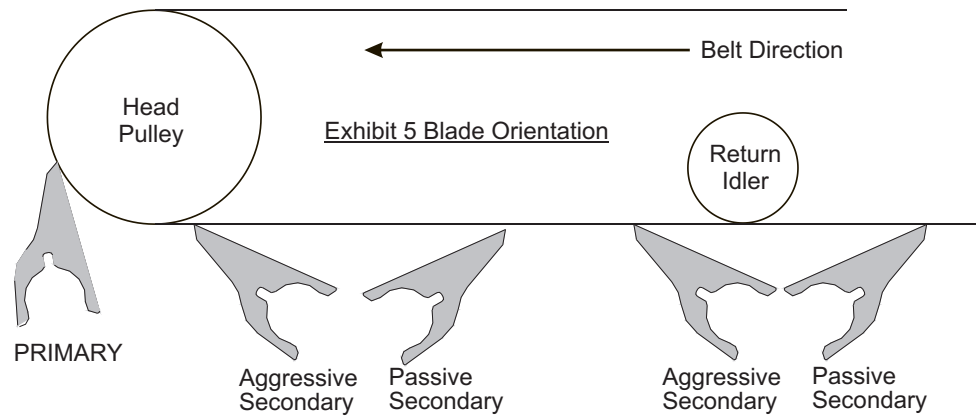


Exhibit 4 Assembled Tensioner

STEP 2:**Select an appropriate installation orientation.****Installation
Orientations:**

There are three common orientations/locations in which the Excalibur belt cleaner is generally mounted to a conveyor. These positions are referred to as "primary", "aggressive secondary", and "passive secondary". (See Exhibit 5).



Background Info on Secondary Position Installations:

When the Belt cleaner is mounted on the return-side of the belt this is referred to as the “Secondary” position. If the cleaner blade is oriented at a positive angle of attack, this is referred to as an “Aggressive Secondary” position. If the cleaner blade is oriented at a negative angle of attack this is referred to as a “Passive Secondary” position. Secondary belt cleaners are the most common in the light duty belt industry due the simple fact that clearance space for the belt cleaner can usually be found somewhere along the return side of the belt. It is most desirable to place the secondary type belt cleaner a few inches after the nip point on the head pulley. At this location the belt is still under tension and is usually relatively flat and square, having just come off the head pulley. This is recommended to minimize the distance that the fugitive materials travel along the conveyor, thereby minimizing the build-up on idler rollers that causes belt mis-tracking and wear damage to the belt cover surface.

Background Info on Primary Position Installations:

When the belt cleaner is mounted on the head pulley (see Exhibit 5) this is referred to as the “Primary” position. At this location the belt cleaner is often used to aid in the dislodgment of process material from the belt or to remove undesired fugitive material. “Primary” position belt cleaners often provide an aggressive and often highly effective means of scraping (by peeling) material from the belt. However, on many conveyance systems, insufficient space often exists near the head pulley to allow proper mounting. It is usually not recommended that the Excalibur be mounted in a primary position on a head pulley (or snub-bar) that is less than 1” in diameter. To avoid maintenance issues, the preferred blade contact point is between 7 and 9 o’clock, or 3 and 5 o’clock. Note that for applications that are prone to having lump-like material build-up between the conveyor belt and the head pulley, we usually advise avoiding a primary installation. Lumps cause the belt cleaner to have intermittent contact with the belt surface.

Step 3a Procedure for Secondary Position Installations (Skip to Step 3b for Primary Position Installation Procedure)

- 1) Select a secondary mounting position where the belt remains under tension. The tension must be sufficient to provide an opposing force to the tensioned blade. If the belt tension is too low the belt cleaner may not operate properly and may allow the blade to lift the belt enough that it will flip-thru. Note that a pressure roller may need to be added behind the belt as shown in Exhibit 5., however, to avoid damaging the conveyor belt, we recommend against placing the blade tip so that the belt is pinched directly between the idler roller and scraper blade.
- 2) Remove the blade from the pre-assembled system. Remove the blade holder and spring assembly from the half-can housing and mounting plate. In the selected installation location, measure 1-1/4" from the tensioned belt (2-3/8" for a Long Span Blade Holder). Securely fasten the mounting plate to the conveyor frame as shown in Exhibit 6a (or 6b). We suggest using the middle of the vertical portion of the T-slots for the bolt location. Some installations will require modifications to the conveyor frame to enable proper mounting. (Ask your distributor or call ASGCO regarding accessory mounting plates).

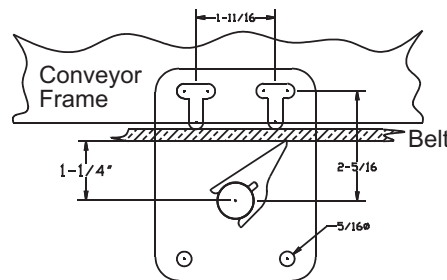


Exhibit 6A Secondary Mounting (sideview) Holder

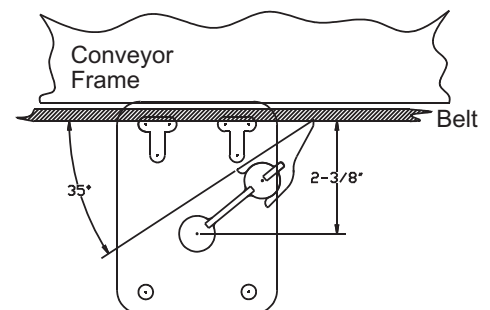


Exhibit 6B Secondary w/Long Span Blade

- 3) Securely fasten the half-can housing on the opposite side of the conveyor frame. To prevent tracking and performance problems it is important that the half-can housing be mounted exactly across from and parallel to the mounting plate. (For dual tensioned system, mount a half can housing on both sides). If desired, the mounting plates may be sealed to the conveyor frame using the ASGCO-seal food grade silicone adhesive. However we recommend doing this after completing the installation and confirming the systems operational performance.
- 4) Insert the blade holder into the half-can housing and mounting plate. Slide the UHMW bushing and spring assembly over the tensioner side-end of the blade holder (see Exhibit 4). Ensure the UHMW bushing fully engages the center hole in the half can housing and the tension adjustment lever engages the slot in the half can housing. Center the

blade holder. Note that it may be necessary to modify the blade holder by shortening (cutting) the $\frac{3}{4}$ " rod ends. Ensure that the $\frac{3}{4}$ " rod extends at least $\frac{1}{2}$ " beyond the mounting plate face. On the tensioner side, ensure that the blade holder fully engages the spring assembly clamp collar.

- 5) Rotate the tension lever until it is $\frac{1}{4}$ of the way along the slot in the half can housing in the direction the blade will be rotating into the conveyor belt when installed. Hand-tighten the tension lever (firmly) at this location. (see Exhibit 7). At this point the blade holder should freely rotate with-in the spring assembly. If not loosen the socket head cap screw on the spring assembly-clamping collar.

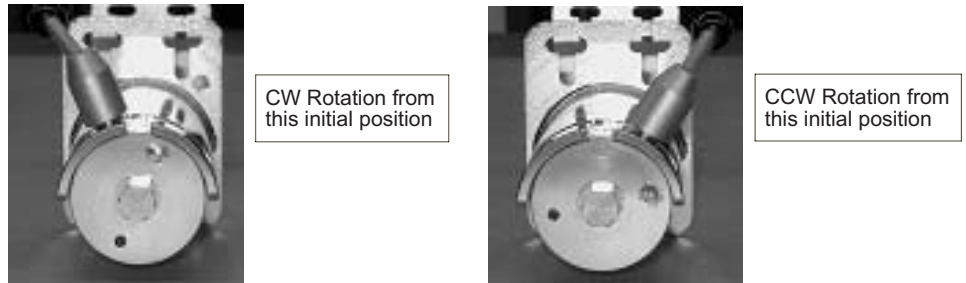


Exhibit 7 Tensioner Rotation

- 6) To adjust the rotation of the spring assembly: Rotate the blade holder so that the UHMW blade can be snapped onto the blade holder as shown in Exhibit 8. Center the blade on the blade holder. Rotate (by hand) the assembled blade/blade holder until the blade contacts the belt. Center the blade on the belt by adjusting (sliding) the blade holder to the left or right and by indexing (sliding) the blade along the blade holder. Examine the blade's line of contact with the conveyor belt. Adjust the vertical position of the mounting plates to ensure uniform blade contact with the belt.



Exhibit 8: Blade Installation Method

- 7) While maintaining the blade in contact with the belt, securely tighten the socket head cap screw on the spring assembly (clamp collar). This affixes both the rotation and translation (left and right motion) of the blade holder and spring assembly.
- 8) Final Adjustments: Loosen the adjustable tension lever by turning it one or two turns. Check the spring rotation and tensioning of the blade by rotating the spring assembly with the fixed tension lever. Make sure the spring is being turned in the correct direction (see Exhibit 9). If not, contact ASGCO and request the opposite handed spring. Tensioning the spring in the wrong direction could permanently distort the spring's geometry causing improper performance.

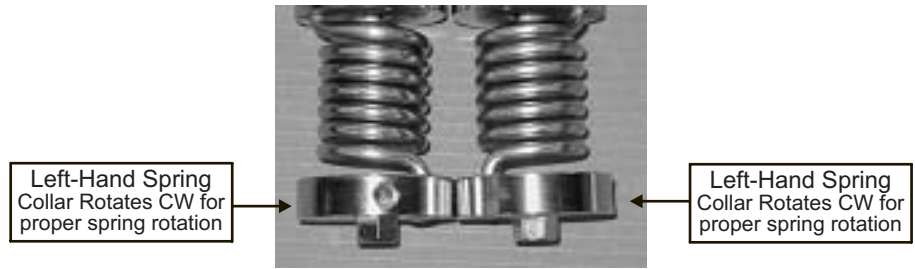
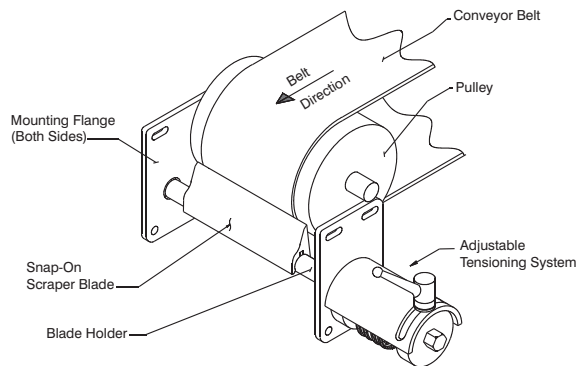


Exhibit 9 Spring Handedness

9) It is recommended that for the initial operation of the belt cleaning system, very light tension should be applied to the belt cleaner. Optimal tensioning is unique to every application. It is up to the user to determine the optimal operating tension and blade position and angle for each installation. Before operating the system, refer to the operation and maintenance instructions.

3b Procedure for Primary Position Installations

1) Locate the blade holder so that the blade tip falls within the 7 to 9 o'clock or 3 to 5 o'clock region.



2) Look up the N-dimension from Table 1a (or 1b for Long Span Blade Holder or 1c for Long Neck Blade). Accurately determine the proper center location for the blade holder centerline on both sides of the conveyor using the n-dimension indicated.

Table 1a: N-Dimension Table (for Standard Blade Holder)

PULLEY DIAMETER	N-DIMENSION		PULLEY DIAMETER	N-DIMENSION
<1"	Consult ASGCO		3"	1-1/8"
1"	1-7/16"		4"	1"
1-1/4"	1-3/8"		5"	1"
1-1/2"	1-5/16"		6"	15/16"
1-3/4"	1-1/4"		7"	7/8"
2"	1-1/4"		8+ "	7/8"

Table 1b: N-Dimension Table (for Long Span Blade Holder)

PULLEY DIAMETER	N-DIMENSION		PULLEY DIAMETER	N-DIMENSION
<1"	Consult ASGCO		3"	2-5/8"
1"	3-1/4"		4"	2-7/16"
1-1/4"	3-1/8"		5"	2-3/8"
1-1/2"	3"		6"	2-1/8"
1-3/4"	2-7/8"		7"	2"
2"	2-7/8"		8+ "	2"

Table 1c: N-Dimension Table (for Long Neck Blade)

PULLEY DIAMETER	N-DIMENSION		PULLEY DIAMETER	N-DIMENSION
<1"	Consult ASGCO		3"	1-15/16"
1"	3-1/4"		4"	1-11/16"
1-1/4"	3-1/8"		5"	1-9/16"
1-1/2"	3"		6"	1-3/8"
1-3/4"	2-7/8"		7"	1-5/16"
2"	2-3/16"		8+ "	1-3/16"

- 3) Determine the modifications to be made to the conveyor frame (if required). Fabricate and install plates or cut and modify the conveyor frame to accommodate the Excalibur mounting plates. Provide thru-holes in the frame to accommodate the mounting bolt and blade holder's 3/4" keyed bar. We suggest a clearance hole in the conveyor frame of at least 1-1/4" on the side with the half can housing to allow the UHMW bushing to clear the frame, and a 7/8" diameter clearance hole on the side with the plain mounting plate.
- 4) Securely fasten the mounting plate to the conveyor frame. Maintain the location of the blade holder centerline n-dimension. Securely fasten the half-can housing on the opposite side of the conveyor frame. To prevent tracking and performance problems it is important that the half-can housing be mounted directly across from and parallel to the mounting plate. (For dual tensioned system, mount a half can housing on both sides). If desired, the mounting plates may be sealed to the conveyor frame using the ASGCO-seal food grade silicone adhesive. However, we recommend doing this after completing the installation and confirming the system's operational performance.
- 5) Insert the blade holder into the half-can housing and mounting plate. (For systems using long span blade holders, the blade holder cannot pass through the half-can housing). Install the UHMW bushing and

spring assembly as shown in Exhibit 4. (Do not tighten the spring assembly to the blade holder at this time). Center the blade holder between the mounting plates. Install the snap-on blade onto the blade holder as shown in Exhibit 8. Note that it may be necessary to modify the blade holder by shortening (cutting) the $\frac{3}{4}$ " rod ends. Ensure that the $\frac{3}{4}$ " rod extends at least $\frac{1}{2}$ " beyond the mounting plate face. On the tensioner side, ensure that the blade holder fully engages the spring assembly clamp collar.

- 6) Rotate the tension lever until it is $\frac{1}{4}$ of the way along the slot in the half can housing in the direction the blade will be rotating into the conveyor belt when installed. Hand-tighten the tension lever (firmly) at this location. (See Exhibit 7). At this point the blade holder should freely rotate with-in the spring assembly. If not loosen the socket head cap screw on the spring assembly-clamping collar.
- 7) To adjust the rotation of the spring assembly: Rotate the blade holder so that the UHMW blade can be snapped onto the blade holder (see Exhibit 8). Center the blade on the blade holder. Rotate (by hand) the assembled blade/blade holder until the blade contacts the belt. Center the blade on the belt by adjusting (sliding) the blade holder to the left or right and by indexing (sliding) the blade along the blade holder. Examine the blade's line of contact with the conveyor belt. Adjust the vertical position of the mounting plates to ensure uniform blade contact with the belt. Again, check the N-Dimension.
- 8) While maintaining the blade in contact with the belt, securely tighten the socket head cap screw on the spring assembly (clamp collar). This affixes both the rotation and translation of the blade holder and spring assembly.
- 9) Final Adjustments: Again ensure that the blade holder rod extends at least $\frac{1}{2}$ " beyond the outside of the mounting plate and the blade holder rod fully engages and is securely affixed to the clamp collar of the spring assembly. Loosen the adjustable tension lever by turning it one or two turns. Check the spring rotation and tensioning of the blade by rotating the spring assembly with the fixed tension lever. Make sure the spring is being turned in the correct direction (see Exhibit 9). If not, contact ASGCO and request the opposite handed spring. Tensioning the spring in the wrong direction could permanently distort the spring's geometry causing improper performance.
- 10) It is recommended that for the initial operation of the belt cleaning system, very light tension should be applied to the belt cleaner. Optimal tensioning is unique to every application and depends upon belt conditions, speed, width, material being conveyed, and many other factors and considerations. It is up to the user to determine the optimal operating tension and blade position and angle for each installation. Before operating the system, refer to the operation and maintenance instructions.

OPERATION & MAINTENANCE

Adjusting Blade Tension

To adjust the blade tension (i.e., the pressure of the blade against the belt), simply loosen the adjustable tension lever and rotate the lever along the slot in the half can housing. When the desired tension is achieved, firmly tighten the adjustable tension lever causing the spring tension to remain locked in place. Note that precise and repeatable tensioning can be achieved by applying a torque wrench to the hex head located at the end of the spring assembly.

The uniqueness of each application makes it nearly impossible for guidelines to be provided regarding proper blade tensioning. As a general rule, we suggest initially applying the blade with very light pressure to the belt. The belt should be inspected frequently to ensure that no damage is occurring. Continue to inspect the belt and increase the blade tension until acceptable material removal efficiency is achieved. Check the belt regularly, including the splice, for excessive wear. Back off on the tension or remove the blade holder immediately if excessive wear or damage is observed.

Limiting Maximum Blade Tension

The Excalibur Belt Cleaner has a built-in means of limiting the maximum applied tension. This technique may help prevent the accidental over-tensioning of the blade against the belt. This is accomplished by adjusting the spring's rotation on the blade holder in such a manner that the adjustable tension lever bottoms along the slot at the maximum desired applied tension. Periodic adjustment may be required as the blade wears and conditions change.

Cleaning Operations

There are at least three methods of cleaning and sanitizing the Excalibur Belt Cleaning System. The level and extent of this cleaning and the techniques used should be in compliance with your company's policies and any applicable legal or regulatory requirements.

IPC Cleaning Technique: The simplest way to clean the system using In-Place Cleaning techniques is to release the tension on the spring by loosening and rotating the Adjustable tension lever along the slot and then simply removing the blade by pushing up on one end of the blade with your fingers. The blade can be cleaned and/or sanitized using Out of Place cleaning techniques in accordance with your company's procedures. The remainder of the system can be cleaned and/or sanitized using In-Place Cleaning (mechanical) techniques, such as a high-pressure water wash, wipe down, or other technique in accordance with your company's procedures. When completed, the blade is "snapped" back onto the blade holder, tensioned, and ready to operate. This technique is often acceptable in bakery applications and most non-food applications. Note that hand tools are not required to perform this operation.

COP Cleaning Technique: For system using a standard blade holder (not a Long span Blade Holder), it is possible to side-extract the blade holder from the half-can housing. This is performed after removal of the scraper blade from the blade holder. Only the mounting plate and half can housing remain on the conveyor frame. For systems using long span blade holders or dual tensioners, the spring assembly will need be removed from one or both sides to facilitate removal of the blade holder. Clean Out-of-Place (COP) techniques are often acceptable for the Excalibur when used in bakery and beef & poultry applications. Note that hand tools are not required to perform this operation when a standard blade holder is used.

Complete Disassembly Technique: For applications where stringent cleaning and sanitization requirements exist, the entire system can be rapidly disassembled with an Allen wrench (for removal of the spring assembly) and wrenches (for removal of the mounting plates. This technique is the same as the COP Cleaning Technique however the spring assembly is removed from the blade holder and the mounting plates are removed from the conveyor frame to facilitate access to all surfaces. Please remember: to prevent “galling”, re-lubrication with a food grade anti-seize is necessary with the stainless steel hardware.

WARRANTY

ASGCO Manufacturing, Inc., warrants its products to be free from defects in material and workmanship under normal use and service, its obligation under this warranty being limited to replacement of any defective product, if returned by the purchaser, or refunding of the purchase price, at ASGCO’s discretion. ASGCO shall not be liable for incidental or consequential damages and including, but not limited to, claims for down time, lost profits, and/or business overhead expenses. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, AND EXPRESSLY EXCLUDES ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

Information

Key	Description	Part Number
	Snap-On UHMW-PE Blades	EXSOB-UHMW-01-[X] [X] = Blade Type, [BW] = Blade Width
	Blade Holders	EXSC-BH[X]
	Refurbishing Kit	M-EXSC-REFURB01
	Aluminum Extension Plates	M-EXSC-OPTAEP
	Aluminum "C" Mounting Plates	M-EXSC-OPTACP
	Mounting Plate	EXSC-MP01
	Half Can Housing	EXSC-HCH01
	LD RH Spring Assembly	M-EXSC-SA-LDRH01
	LD LH Spring Assembly	M-EXSC-SA-HDLH01
	Springs for Dual Tensioners	M-EXSC-DS-01
	Add. Tensioning System	M-EXSC-DT-01

Call your ASGCO Distributor for any questions or replacement parts

TROUBLE SHOOTING

PROBLEM	SOLUTION
<i>Excess vibration of the scraper.</i>	<p>Make certain all bolts are tight and the pin is securely engaged on the tensioner.</p> <p>Ensure the cleaners n-dimension is proper (See Table and Figure 1).</p>
<i>Excess carryback.</i>	<p>Check for excess build-up on the scraper.</p> <p>Check for proper Scraper tension. Put additional tension on cleaner.</p> <p>Check for non-uniform scraper wear.</p> <p>Check n-dimension.</p> <p>Clean the back-side of the belt cleaner.</p>
<i>Check for wear on the cleaning tips.</i>	<p>Check thickness of carryback. If the cleaner must remove more than about 1/8" of material then an additional cleaner may be needed.</p>
<i>Frozen material on scraper.</i>	<p>Place heaters near scraper to melt frozen material. (Use caution not to burn belt or cleaner)</p>
<i>Blade wearing in center</i>	<p>BVW-6" BW-12 (Put a new blade on the concentrates cleaning in the center of the flow of the material.</p>
<i>Blade wearing more on one side</i>	<p>Check n-dimension.</p>