



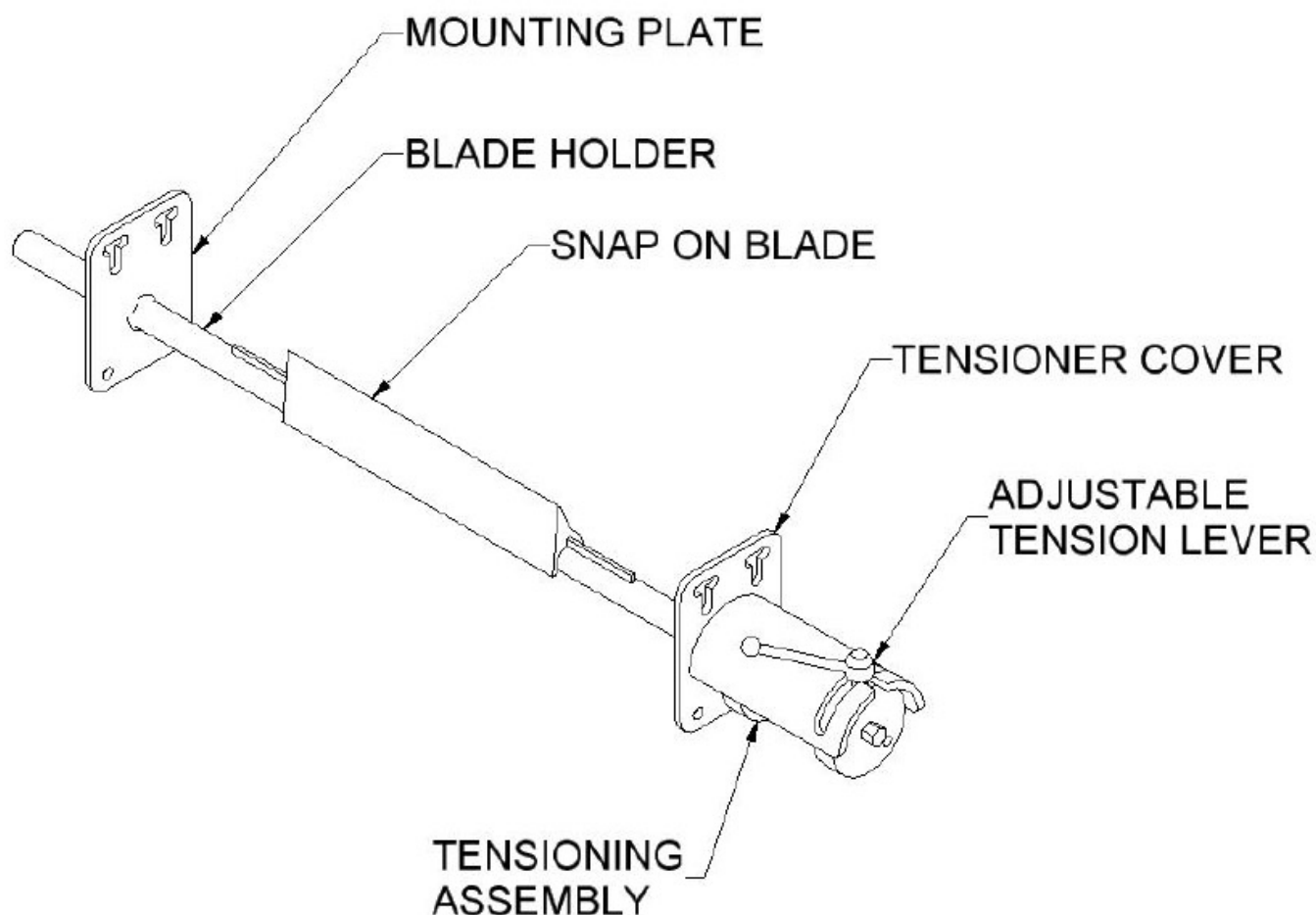
Razer Industries Pty Ltd

A.B.N 25 832 848



Quality
Endorsed
Company
AS9002 Lic 3386
Standards

Installation Operation & Maintenance Manual



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Important Notices

WARNING: ALL PARTS SHOULD BE CLEANED AND SANITIZED IN COMPLIANCE WITH YOUR LOCAL FACILITY POLICIES PRIOR TO INSTALLATION AND USE.

Specifying a System and Placing Orders

RFGC System

Selecting a mounting location

- ✓ In most cases, the preferred mounting position for the RFGC System is in the aggressive or passive secondary position (ie; on the return side of the conveyor just after the head pulley and before the first return idler).

Primary Position Installations

- ✓ The RFGC System can be mounted in the 'Primary' position (on the 'Head' pulley) for pulleys greater than 25mm in diameter. This position is usually less desired due to clearance, mounting ability, and potential performance problems caused by foreign material building up on pulleys.
- ✓ For primary mounting locations, select a position between 3 and 5 o'clock (7 and 9 o'clock) on the pulley. Check for clearance and mounting ability.

Background info on Primary Position installations

- ✓ When the RFGC System is mounted on the head pulley 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 conveyor systems, insufficient space often exists near the head pulley to allow proper mounting. It is usually not recommended that the RFGC System be mounted in a primary position on a head pulley (or snub-bar) that is less than 25mm in diameter.
- ✓ Note that for applications that are prone to having lump-like material build-up between the conveyor belt and the head pulley, we recommend avoiding a primary installation. Lumps cause the belt cleaner to have intermittent contact with the belt surface.

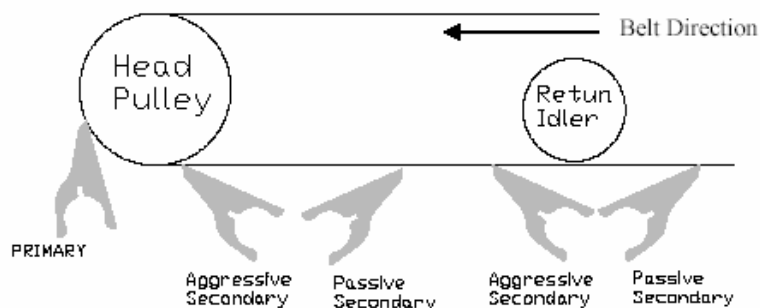
Secondary Position Installation

- ✓ For return side mounting locations, select a position where the belt is under tension. An easy way to check for adequate tension is use two fingers to raise the belt up. If you can displace the belt by more than 15mm in the selected area, either select another location or add a return roller. The return roller should be positioned about 25mm to 50mm behind the blade tip.
- ✓ Do not 'Pinch' the belt between the roller and the RFGC Blade.
- ✓ Check the following clearances and operational requirements: -
 - Clearance for Mounting Plates, tensioner, blade/blade holder and side extraction of the blade holder/spring assembly.
 - Check that the RFGC System will be clear of the conveyor's take up system and other system of facility devices.
 - Check for sufficient clearance for inspection and cleaning operations including blade removal.

Background info on Secondary position installations

When the RFGC System is mounted on the return-side of the belt this is referred to as the "Secondary" position. If the system 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 tangent point where the belt leaves 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 minimise the distance that the fugitive materials travel along the conveyor, thereby minimising the build-up on idler rollers that causes belt miss-tracking and wear damage to the belt cover surface.

Installation Orientations



For blade requirements wider than 1500mm, please refer to Razer Industries.

Complete the RFGC Data Sheet

- ✓ Fill in the details required on the RFGC Data Sheet. This will allow Razer to select the optimal torsion spring for your application and ensure that the proper length blade holder is provided.
- ✓ With the conveyor system turned off and locked out, accurately measure the conveyor frame outer width (mounting plate to mounting plate dimension), the frame inner width and the belt width. We suggest that you specify a blade length approximately equal to the belt plus the maximum wander width. Eg: Belt width plus 15mm.

INSTALLATION INSTRUCTIONS

'FGBC' Series Installation Procedure

Risk Hazard Assessments must be top priority.

The supply of suitable power, plant air and water must be available at the point of installation.

1. Ensure all personnel have current site specific and generic inductions and confined space training if required.
2. Ensure all personnel are qualified and competent.
3. Job card Instruction, JSA (Job Safety Analysis) and Work Start Checklist to be issued and understood by Service Technician/s.
4. Ensure all electrical equipment being used such as drills and grinders etc, are tagged with the current electrical tag.
5. Identify the conveyor and its associated equipment.
6. Isolate, lock and danger tag the conveyor at the Main Positive Isolator.
7. Check that the correct cleaner has been selected and supplied to suit the belt width and pulley diameter. Chute widths should also be checked to ensure the pole length is correct or if the standard pole length needs to be altered.

Component familiarisation

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	Snap-on Blade
Tensioner Housing with Integral Mounting Plate	Installation Instructions and Operator's Manual
Spring Tensioner Assembly	Fixed Handle Lever
Adjustable Tension Lever	UHMW Polyethylene Bushing
Mounting Plate	

Note #1: If the conveyor's outer frame width exceeds 1400mm, a long span blade holder must be used. If the conveyor's outer frame width exceeds 2750mm, 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 RFGC Systems with blade lengths greater than 2000mm, a tensioning system is provided for each end of the blade holder. The mounting plate is eliminated with dual tensioners.

- b) Loosely assemble the RFGC System as per exhibits 2, and 3.



Exhibit 2: Assembled RFGC System



Exhibit 3: Tensioner and Bush.

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 RFGC System 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 4., 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 Tensioner Housing and mounting plate. In the selected installation location, measure 34.7mm from the tensioned belt (60mm for a Long Span Blade Holder). Securely fasten the mounting plate to the conveyor frame as shown in Exhibit 5a (or 5b). 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.

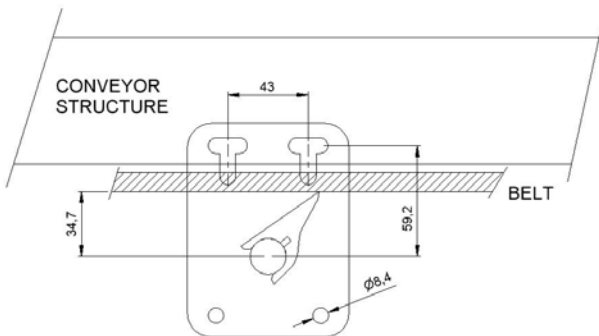


Exhibit 5a Secondary Mounting (Side View)

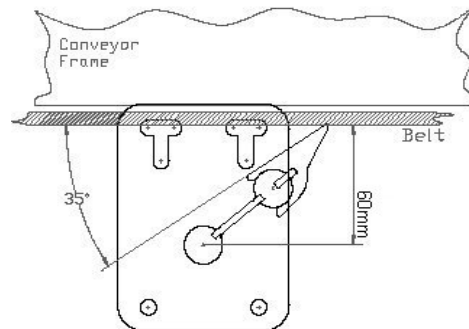


Exhibit 5b Secondary w/ Long Span Blade Holder

3. Securely fasten the Tensioner Housing on the opposite side of the conveyor frame. To prevent tracking and performance problems it is important that the Tensioner Housing be mounted exactly across from and parallel to the mounting plate. (For dual tensioned system, mount a Tensioner Housing on both sides). If desired, the mounting plates may be sealed to the conveyor frame using 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 Tensioner Housing and mounting plate. Slide the UHMW bushing and spring assembly over the tensioner side-end of the blade holder (see Exhibit 3). Ensure the UHMW bushing fully engages the centre hole in the Tensioner Housing and the tension adjustment lever engages the slot in the Tensioner Housing. Centre the blade holder. Note that it may be necessary to modify the blade holder by shortening (cutting) the 19mm rod ends. Ensure that the 19mm rod extends at least 13mm 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 1/4 of the way along the slot in the Tensioner 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 6). 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 6 Tension 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 7. 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 7: 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 8). If not, contact Razer and request the opposite handed spring. Tensioning the spring in the wrong direction could permanently distort the spring's geometry causing improper performance.

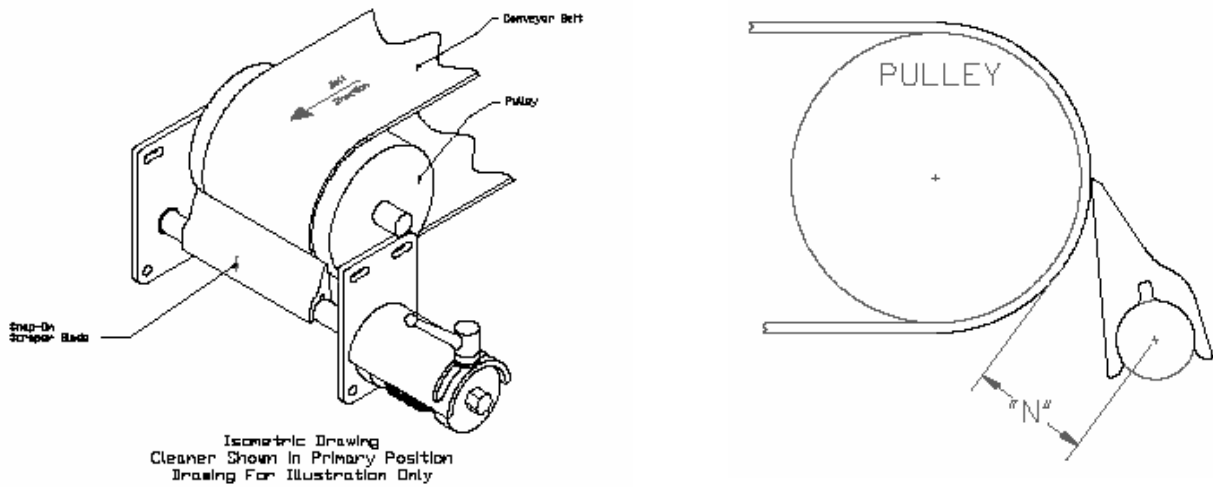


Exhibit 8: Spring Handing

9. It is recommended that for the initial operation of the RFGC 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.

Step #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). 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
<25mm	Consult Razer		76mm	28mm
25mm	35mm		100mm	25mm
28mm	35mm		127	25mm
38mm	34mm		152	24mm
45mm	32mm		178	22mm
50mm	32mm		200+mm	22mm

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

PULLEY DIAMETER	N-DIMENSION		PULLEY DIAMETER	N-DIMENSION
<25mm	Consult Razer		76mm	66mm
25mm	83mm		100mm	62mm
28mm	79mm		127	60mm
38mm	76mm		152	54mm
45mm	73mm		178	50mm
50mm	73mm		200+mm	50mm

- 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 RFGC mounting plates. Provide thru-holes in the frame to accommodate the mounting bolt and blade holder's 19mm key'd bar. We suggest a clearance hole in the conveyor frame of at least 32mm on the side with the Tensioner Housing to allow the UHMW bushing to clear the frame, and a 22mm diameter clearance hole on the side with the plain mounting plate.

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- 4) Securely fasten the mounting plate to the conveyor frame. Maintain the location of the blade holder centerline N-Dimension. Securely fasten the Tensioner Housing on the opposite side of the conveyor frame. To prevent tracking and performance problems it is important that the Tensioner Housing be mounted directly across from and parallel to the mounting plate. (For dual tensioned system, mount a Tensioner Housing on both sides). If desired, the mounting plates may be sealed to the conveyor frame using 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 Tensioner Housing and mounting plate. (For systems using long span blade holders, the blade holder cannot pass through the Tensioner Housing). Install the UHMW bushing and spring assembly as shown in Exhibit 3. (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 7. Note that it may be necessary to modify the blade holder by shortening (cutting) the 19mm rod ends. Ensure that the 19mm rod extends at least 13mm 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 1/4 of the way along the slot in the Tensioner 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 6). 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 7). 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 13mm 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 8). If not, contact Razer 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 RFGC System, very light tension should be applied. 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 Instructions

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 Tensioner 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 RFGC System 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 and Maintenance

Cleaning Operations

There are at least three methods of cleaning and sanitising the RFGC 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 sanitised using Out of Place cleaning techniques in accordance with your company's procedures. The remainder of the system can be cleaned and/or sanitised 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 Tensioner housing. This is performed after removal of the scraper blade from the blade holder. Only the mounting plate and Tensioner Housing remain on the conveyor frame. For systems using long span blade holders or dual tensioners, the spring assembly will need to 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 RFGC System 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 sanitation 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.