KINDER™
EXPERIENCE INNOVATION PRODUCTIVITY

Installation, Operation & Maintenance - Super Eraser™ Primary Belt Cleaning System

Kinder Australia product:	Super Eraser™ Primary Belt Cleaner
Product category:	Conveyor Belt Cleaning System
Issue date:	31/08/2021

SAFE TORQUE™

⚠ WARNING ⚠

Always obey all applicable safety rules.
Be sure all power to the conveyor has been disconnected and controls are locked out.

ISO 9001 certified Equal Assurance
ISO 45001 certified Equal Assurance
ISO 14001 certified Equal Assurance

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KDOC00122

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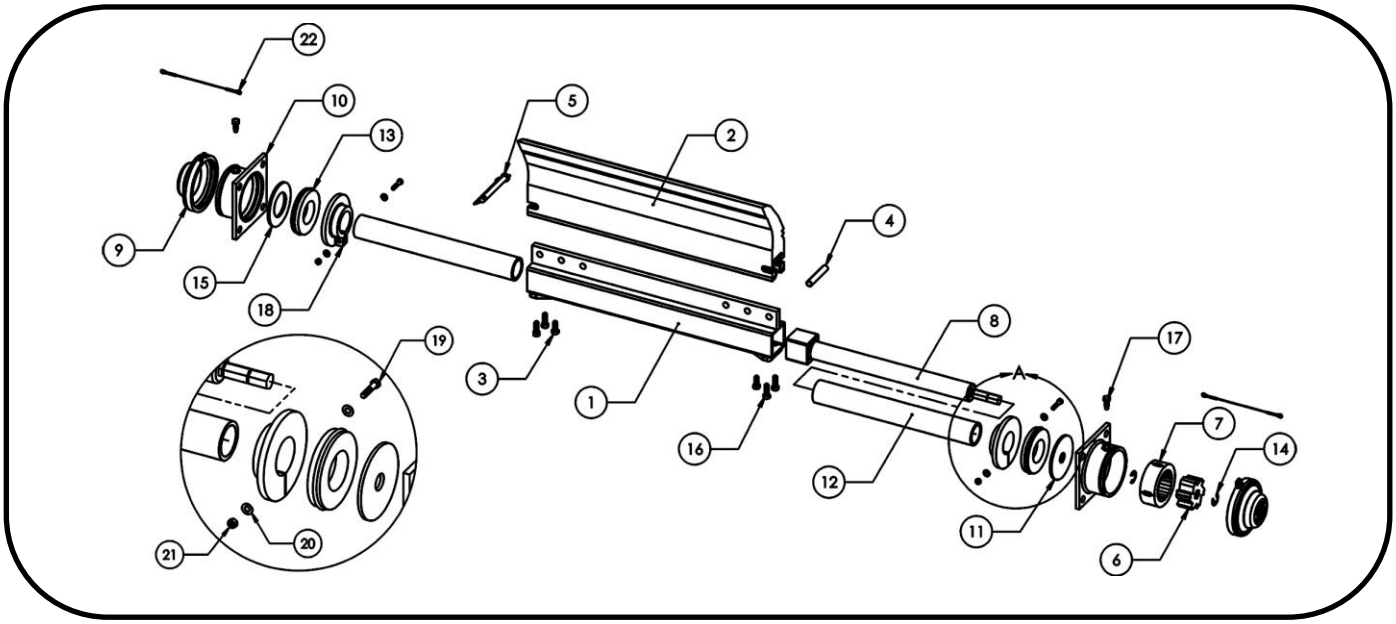
Installation, Operation & Maintenance - Super Eraser™ Primary Belt Cleaning System

Safe Torque™ Ratchet System – Assembly Breakdown



Number	Part Number	Quantity	Description
1	K-CLE-CP-SE2-M"XX"A	1	Mainframe
2	K-CLE-CP-SE2-B"XX"-G83	1	Raptor Blade
3	K-FAS-1/2x1.25HEXHD-SS	2	½" x 1 ¼" Stainless Steel Hex Head Bolt
4	K-CLE-CP-AR-505	1	Fixed Spring Pin
5	K-CLE-CP-SE2-P550	1	Safety Snap Pin
6*†	K-CLE-CP-SE2-P42C-G83	1	SE2 Inner Ratchet Catch
7*†	K-CLE-CP-SE2-P52C-G83	1	SE2 Outer Ratchet Catch
8*†	K-CLE-CP-SE2-P2075-E-B93	1	SE2 Perma-Torque™ Tensioner
9†	K-CLE-CP-P75B-Y83	2	SE2 Dust Cap
10†	K-CLE-CP-SE2-P33R	2	SE2 Ratchet Mounting Spool
11*†	K-CLE-CP-SE2-P56F	1	SE2 Ratchet Spool Washer
12†	K-CLE-CP-SE2-P22B	2	SE2 Stub End
13†	K-CLE-CP-SE2-P33-RT-B93	2	SE2 Inner Snap Seal
14*†	K-CLE-CP-AR-98407A156	2	Retaining Ring
15	K-CLE-CP-SE2-P56F-ST	1	Non-Tension SE2 Ratchet Spool Washer
16	K-FAS-1/2x1.5HEXHD-SS	6	½" x 1 ½" Stainless Steel Hex Head Bolt
17†	K-FAS-1/2x1.25HEXHD-Z	2	½" x 1 ¼" Zinc Plated Hex Head Bolt
18†	K-CLE-CP-SE2-PLC65-G83	2	SE2 Locking Collar
19†	K-FAS-3/8x1.75HEXHD-Z	2	3/8" x 1 ¾" Hex Head Bolt Zinc Plated
20†	K-FAS-3/8WASHER-Z	4	3/8" Zinc Plated Steel Washer
21†	K-FAS-3/8NUT-Z	2	3/8" Zinc Plated Steel Nut
22	K-CLE-CP-AR-90312A720	2	Wire Rope Lanyard

* Systems 1000BW and above come standard with dual tensioners. These parts require double quantity.

† Parts available as fully assembled Perma-Torque™ Tensioner (K-CLE-CP-SE2-RK33)

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Installing the Super Eraser™ Primary Belt Cleaner

Installation Tools Required

-Tape Measure
-Cutting Torch / Hole Saw
-Level
-Scribe or Chalk
-Welder or Drill
- ½" & ¾" Open End Spanner
-24mm Open End Spanner
-1" Open End Spanner or Shifter

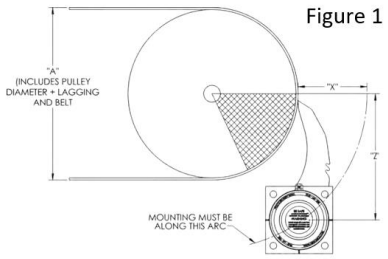
Bolts, lock washers and nuts for mounting are not supplied

Note:
The Super Eraser™ Primary Belt Cleaning System is designed to be used on conveyor pulleys of 585mm (23") in diameter and larger. For a pulley smaller than this, we recommend our Eraser™ for proper cleaning of your conveyer system.

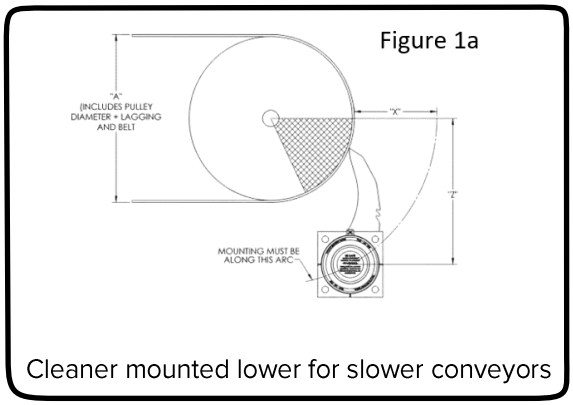
Step One: Layout
Note: Shaded areas in Figures 1 and 1a represent acceptable mounting locations. Figure 1a represents a mounting location more suitable to systems with a slow belt speed to avoid burden build-up on the cleaner.

Dimension Table (mm) – Table 1

Dia. "A"	"X"	"Z"
585 - 635	216	400 (minimum)
660 - 711	203	400 (minimum)
737 - 787	190.5	400 (minimum)
813 - 889	178	400 (minimum)
914 - 1016	165	400 (minimum)
1041 – 1143	152	400 (minimum)
1168 – 1245	146	400 (minimum)
1270 - 1524	140	400 (minimum)



Z dimension shown at 400mm

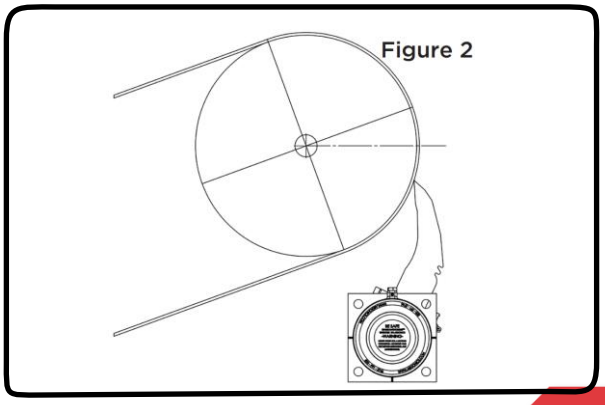


Cleaner mounted lower for slower conveyors

Inclined belt mounting position

Figure 2 demonstrates the correct mounting location for inclined conveyors. See pages 10-12 for mounting information with inclines and angles.

IMPORTANT
Tip of blade is below horizontal axis.



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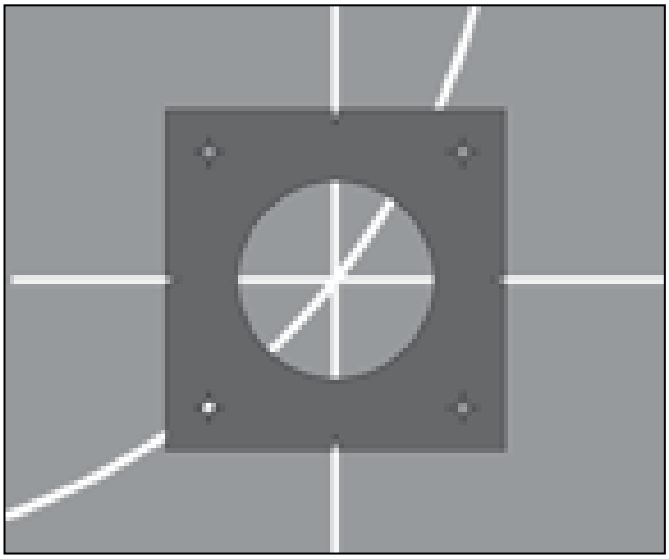
Step Two: Mounting Template

After you have determined the mounting location for your belt cleaning system, align the template (see page 9 of this guide) with your bisected horizontal and vertical on the mounting structure wall and transfer the centre hole, bolt holes and perimeter of the template to the chute wall using your scribe.



Repeat the layout procedure on the opposite mounting structure and ensure the mounts are level.

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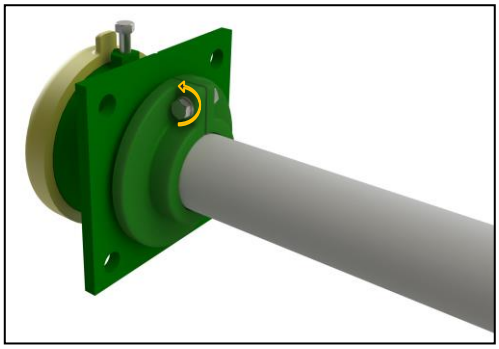
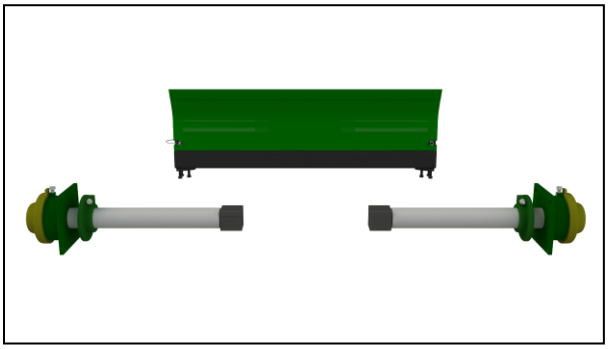
INSTALLATION – Tensioner

Step Three: Mounting the system's dual tensioners
Cut the tensioner holes which were scribed on the mounting structure (your finished holes should be approx. 90mm in diameter).

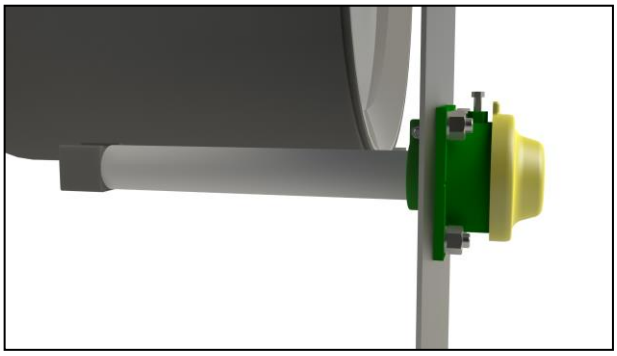
NOTES:
• For Bolt In Only - Using the bolt circles that you scribed as a guide, drill four 20mm diameter holes to accept M16 diameter grade 8.8 bolts per mounting spool.



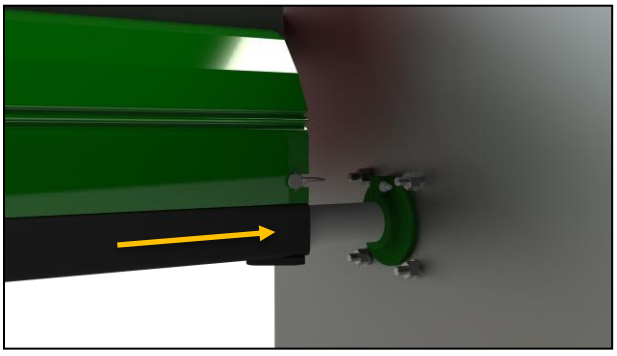
Loosen the locking nut and bolt then remove the urethane locking collars from the stub ends.



Remove both tension cartridges from the mainframe. Make sure that both tensioner rachets are orientated to tension in the correct direction (remove the yellow end cap to check ratchet direction).



If there is room, slide the first tensioner cartridge through the chute wall and line up the mounting spool with the template that was transferred to the chute wall. Now bolt or weld into place.



Lift the mainframe into position. Slide the mainframe onto the cartridge, then temporarily retighten the three setscrews on the tensioner side to stabilise the system.

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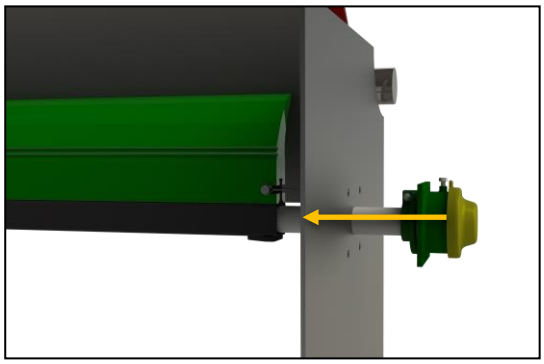
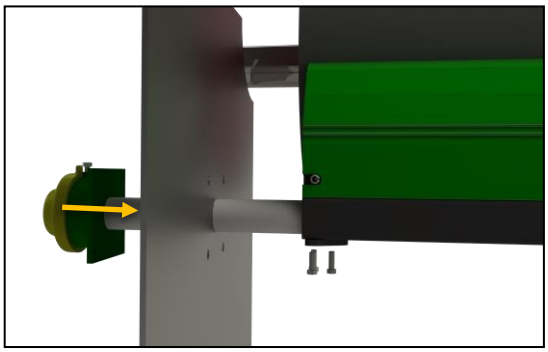
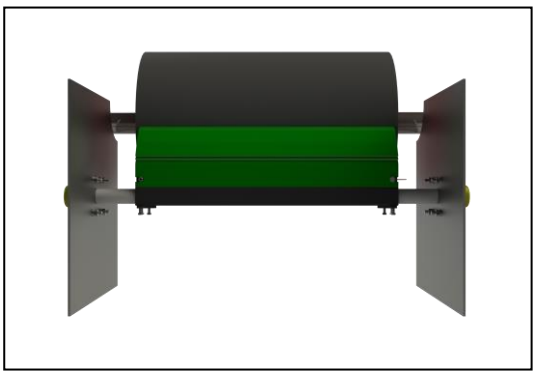


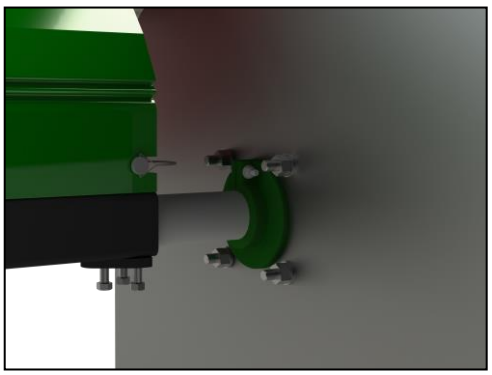
If there is insufficient room between the chute walls, hold the mainframe in place and slide the tension cartridge into the mainframe. Bolt or weld the mounting spool into position and tighten the setscrews.



Slide the second tensioner cartridge through the chute wall and insert into the mainframe. Temporarily retighten the setscrew on the tensioner side to stabilise the system. Bolt or stitch weld the mounting spool on the tensioner cartridge to the chute wall.



Loosen the setscrews and centre the mainframe and blade segment assembly to the belt's material path. If blade segment assembly is too wide, remove a blade or trim the outer blades until the segment is just wider than the material path (see page 13 & 14 for more). Tighten the setscrews to secure the stub ends.



Install the urethane locking collars by sliding them over the stub end, snugging them to the chute wall. Tighten the bolts to secure.

IMPORTANT

Check for free rotation, minimal lateral movement of the assembly shaft, and consistent contact of the blade to the belt. Adjust if necessary, realign, and tighten all mainframe set screws.

IMPORTANT

At the top point of the mounting spool, the inner ratchet catch must always point away from the load pulley.

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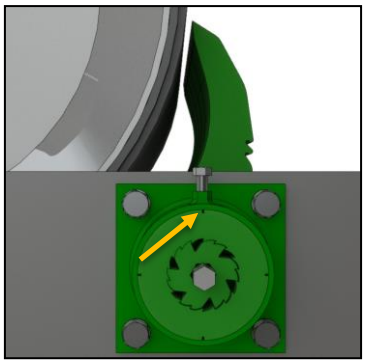
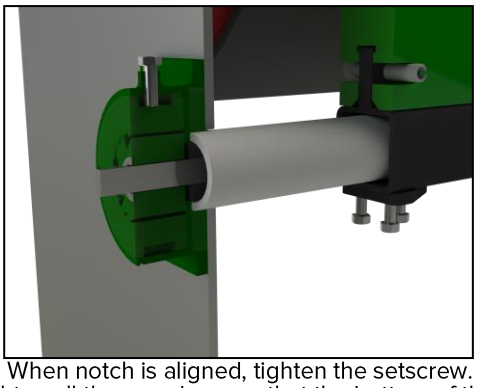
INSTALLATION – Tensioning

Step Four: Tensioning

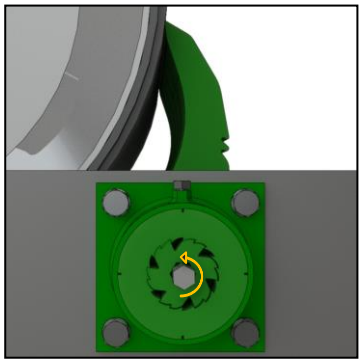
The Super Eraser™ Primary Belt Cleaning System is equipped with our patented internal Perma-Torque™ tensioner and our Safe Torque™ ratchet system. The Perma-Torque™ is an adjustable elastomeric tensioner. The tensioner may be adjusted from a recommended minimum of 30 Nm of force to a maximum of 105 Nm. Excessive tension could damage the blades as well as the Safe Torque™ ratchet system. The recommended level of tension can be seen in the table below.



To tension, first position the alignment notch on the outer ratchet catch with the mounting spool set screw. Grab the blade segment assembly and rotate to align the ratchet notch.



When notch is aligned, tighten the setscrew. It will tighten all the way down so that the bottom of the screw sits in the locking slot.



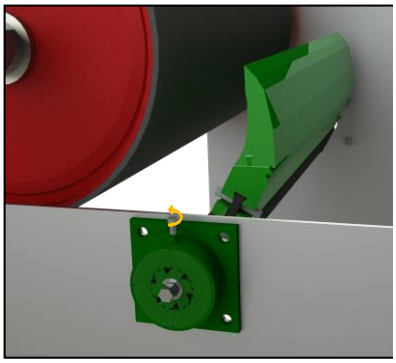
Use a 1" socket wrench on the exposed tensioner hex rod and turn the tensioner up and towards the pulley until the blade contacts the belt. Start tensioning by counting the clicks until you have reached the desired rotation. See the guideline chart for the recommended setting. Repeat the same number of clicks on the opposite side for a dual tensioner system. Re-attach the dust cap(s).

Guideline for tensioning belt cleaning systems – Table 2

No. Of Blades	No. Of Clicks	Tensioning Force (N)	
5-11	4	68	Dual Tensioner
12-17	5	81	
18-19	6	95	

IMPORTANT

Do not over tension or excessive blade wear will occur.



When you need to release tension, just loosen the mounting spool setscrew. You will see the outer ratchet rotate as the tension is released.

***As the blades wears re-tensioning should occur to maintain an adequate cleaning performance.**

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TROUBLESHOOTING GUIDE

Problem	Probable Cause	Suggested solution
Excessive/Uneven blade wear or damaged blade	Cleaner under/over tensioned	Ensure tension was set correctly – See tensioning table on pg. 10
	Cleaner installed in wrong location	Ensure the blade is the correct "X" distance from the pulley and adjust if necessary – See table 1 on pg. 3
	Wrong urethane for operation	Consult Kinder for proper urethane selection
	Mechanical splice damaging blade	Repair, skive or replace splice
	Damaged belt	Fix damaged area or replace belt
	Cleaner not square to head pulley	Ensure the "X" dimension is correct, adjust if necessary, and that the mounting points are level – See table 1 on pg. 3 for correct "X" distance
Wear only on centre of blade (smile effect)	Blade wider than material path	Remove blades as required or cut excess to just outside material path - See page 16 & 17 for details
Vibration or noise	Cleaner at wrong distance	Use table on pg. 1 to ensure that the correct "X" distance has been used. Adjust if necessary.
	Cleaner running on empty belt	Use a spray pole to lubricate belt when running dry
	Cleaner under/over tensioned	Ensure tension was set correctly – See tensioning table on pg. 10
	Cleaner not securely fastened	Check all bolts and nuts for damage and ensure they are securely fastened.
	Cleaner not square to head pulley	Ensure the "X" dimension is correct, adjust if necessary, and that the mounting points are level – See table 1 on pg. 3 for correct "X" distance
	Material build-up in chute	Clean up build-up on cleaner and in chute
Poor cleaning performance	Cleaner under/over tensioned	Ensure tension was set correctly – See tensioning table on pg. 10
	Cleaner installed too high	Ensure "Z" dimension is above minimum using table 1 on pg. 3
	Urethane blade worn out or damaged	Install new blades as required and check for possible causes of wear/damage
Blade pushed away from pulley	Cleaner tension too low	Increase tension or add a second tensioner if required.
	Sticky material is overpowering cleaner	Ensure that set screw is seated in the notch of the outer ratchet catch (see page 10 for install guide)
		Increase tension or add a second tensioner if required
		Remove excess blade segments or trim outside blade segments to suit (just outside material path), use a harder urethane and increase tension of system
		Replace with larger sized cleaner
	Cleaner not set up correctly	Ensure tension, distance and position are correct and check bolts and nuts are tightened correctly.
Blade flipping through	Cleaner installed too far from pulley	Ensure the "X" dimension is correct and adjust if necessary - See table 1 on pg. 3 for correct "X" distance
	Cleaner too small for pulley	If cleaner does not reach just outside material path, then replace with larger sized cleaner.

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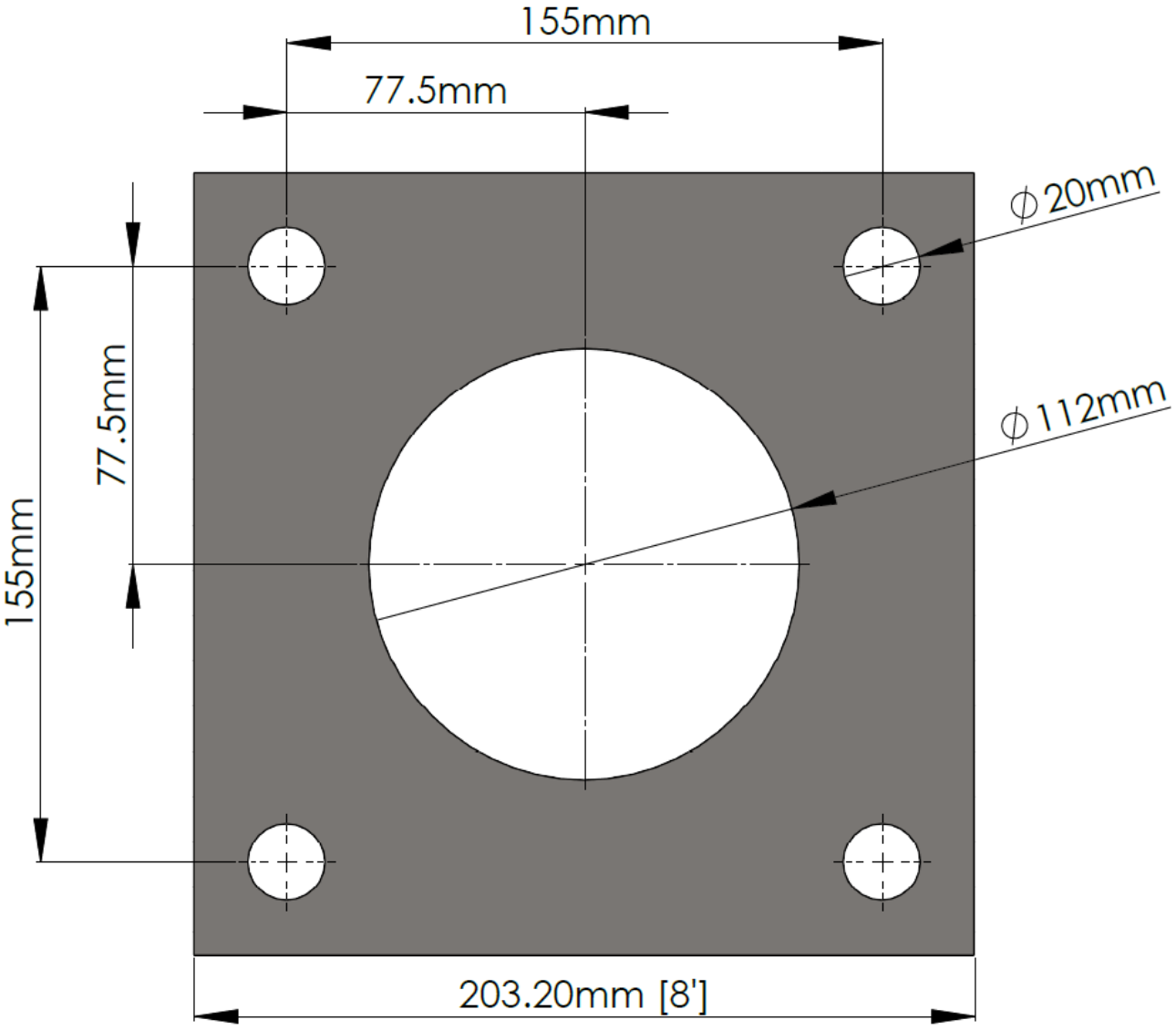
Mounting Template

Use the drawing below to create a cardboard template to use as your mounting spool template.



Template is not to scale, use as a base design with given dimensions.

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See below for correct mounting arrangements, allowing for different conveyor inclines:

Fig. 3

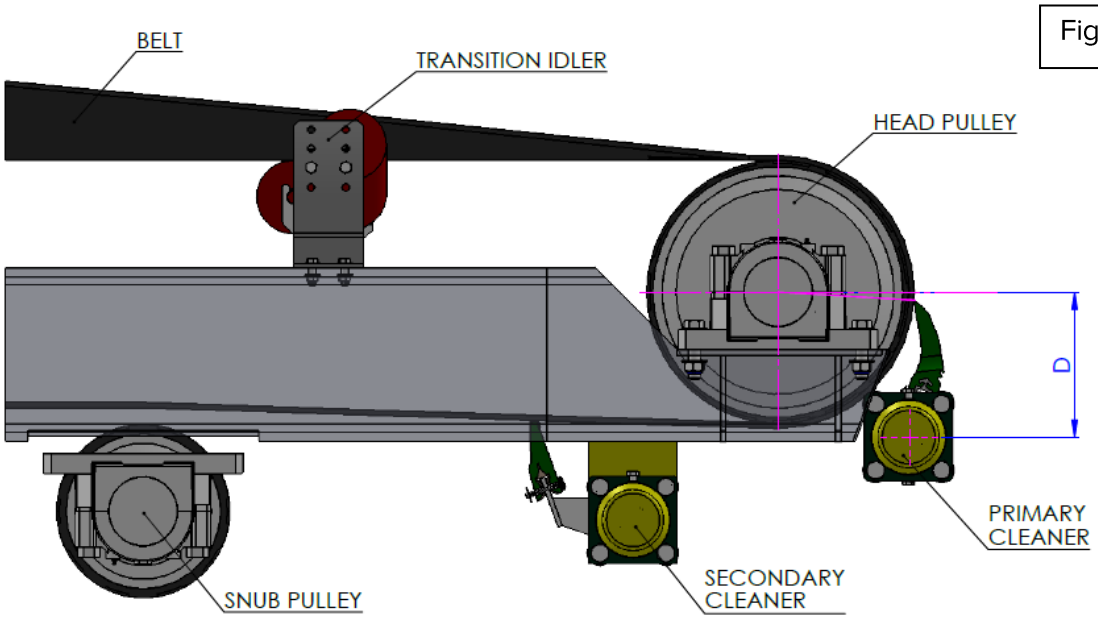
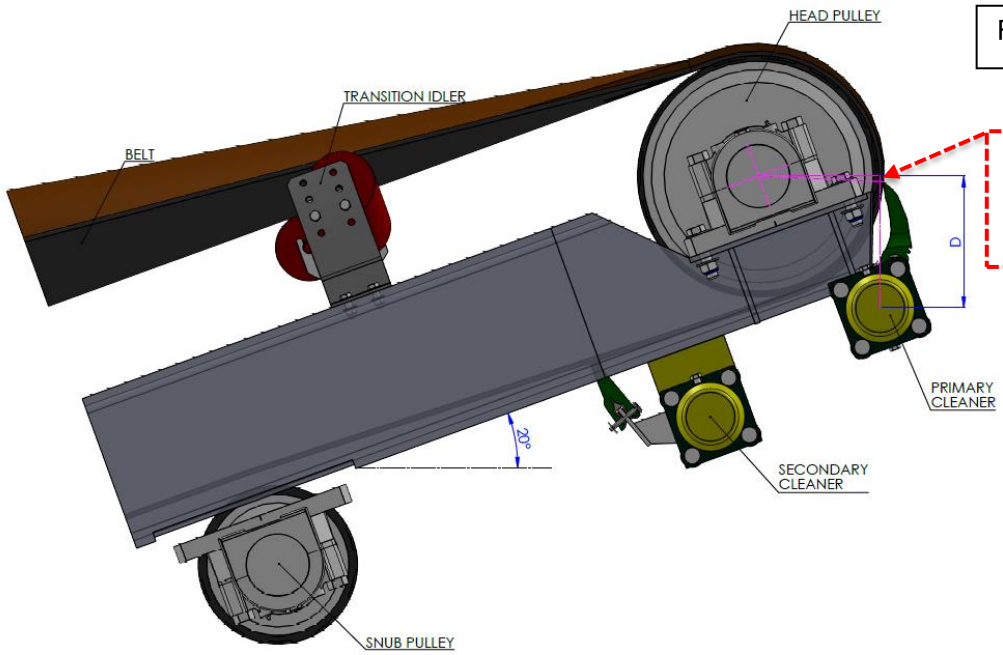


Fig. 4



NOTE: Tip of blade below horizontal axis

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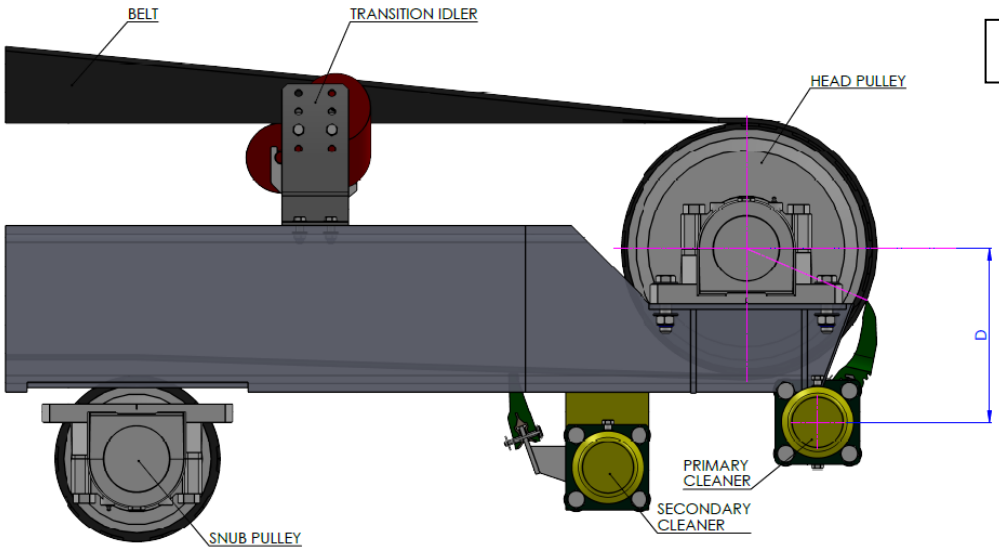

Fig. 5

- Blade tip always sits just below the horizontal axis of the pulley, parallel to the ground surface, below the flow of material.
- Fig. 4 shows the contact location of the blade on the inclined conveyor belt. This is parallel to the ground surface and not parallel to the inclination angle.
- Fig. 5 shows the contact location of a slow speed system with minimal trajectory.
- Note that in all cases the tensioning system is mounted parallel with the installation.

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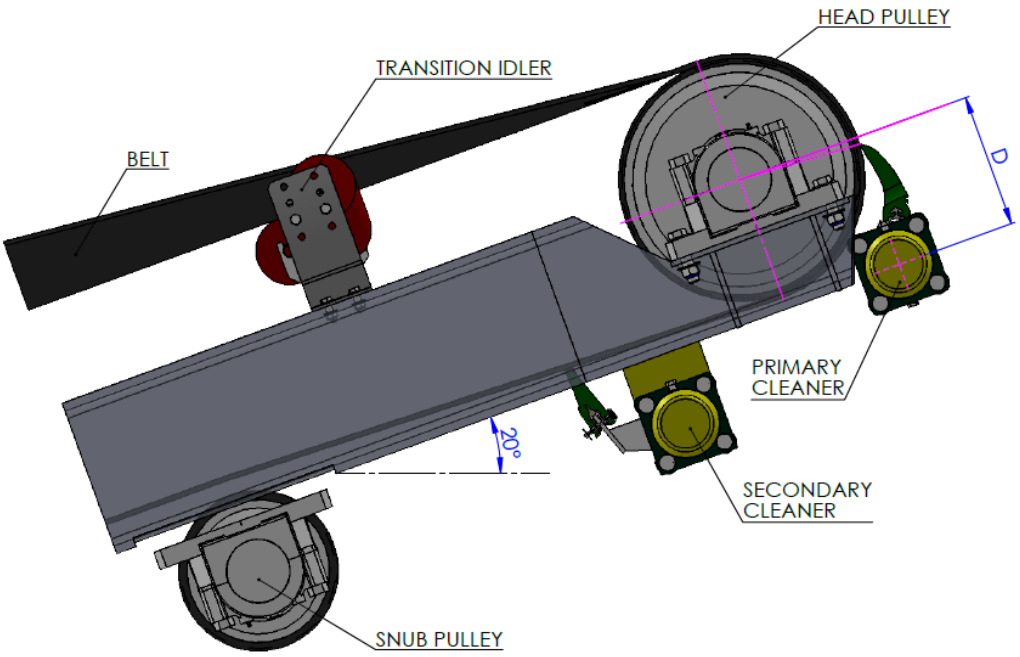

⚠ WARNING ⚠

The above mounting may cause premature wear on the blades and uneven tension across the belt surface.

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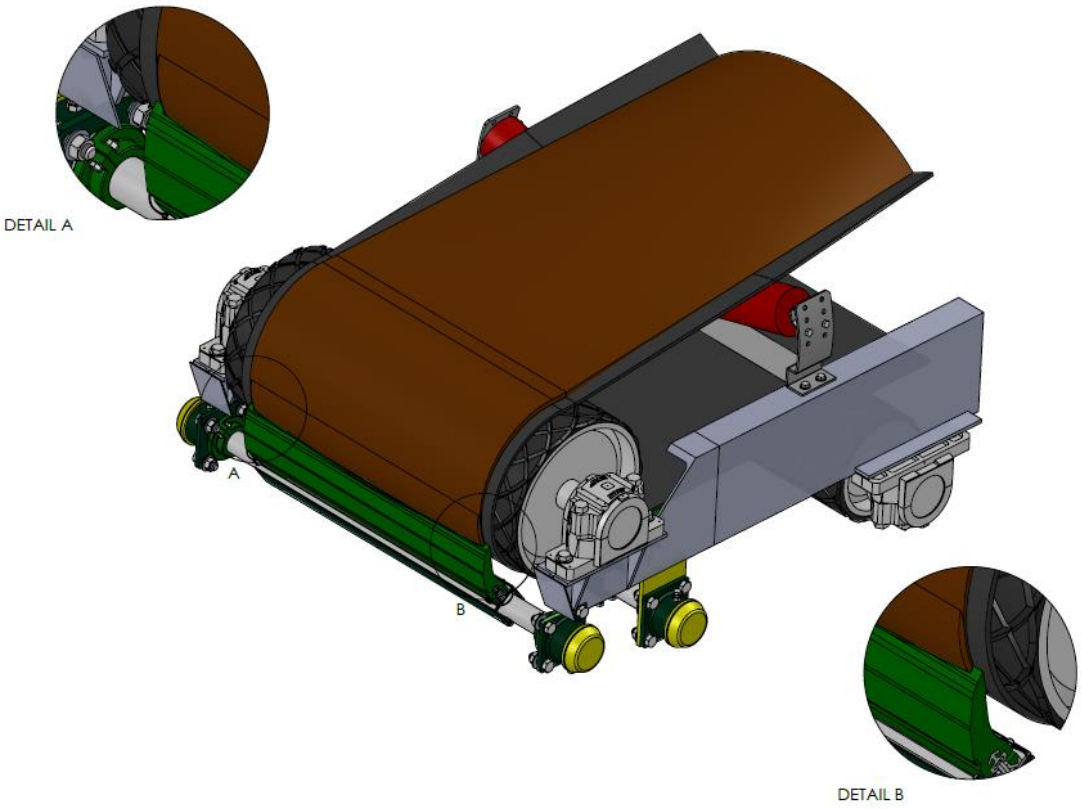

- The figure above shows uneven wear across the blade length cause by the unworn section of the blade preventing the worn section from maintaining contact with the belt.
- To avoid uneven wear, the outer blade edges should be trimmed to suit just outside the width of the material path (dirty part) of the belt.

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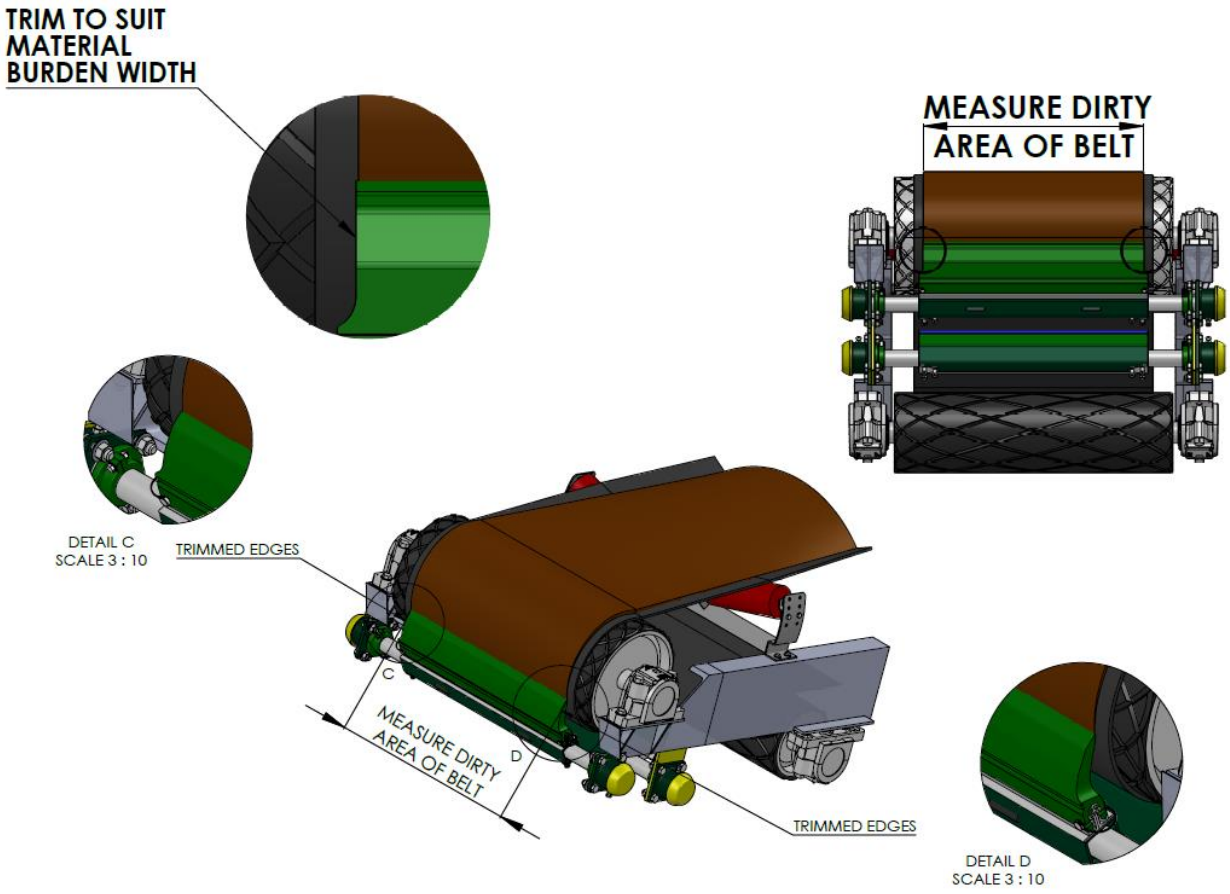

- The above figures show a blade that has been cut to suit the width of the belt. Therefore, the blade tip only contacted the material, increasing its effectiveness and prolonging its life.

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MAINTENANCE – INSPECTION

The following process should be considered when preparing the job and work instruction sheets.

IMPORTANT

Under no circumstances should a physical inspection of any belt cleaner be undertaken with the conveyor in operation.

Step One: Ensure all personnel are qualified and competent. Identify the conveyor and its associated equipment. Isolate, lock and danger tag the conveyor at the main positive isolator in accordance to the appropriate health and safety regulations in force at your site to prevent unauthorised starting.

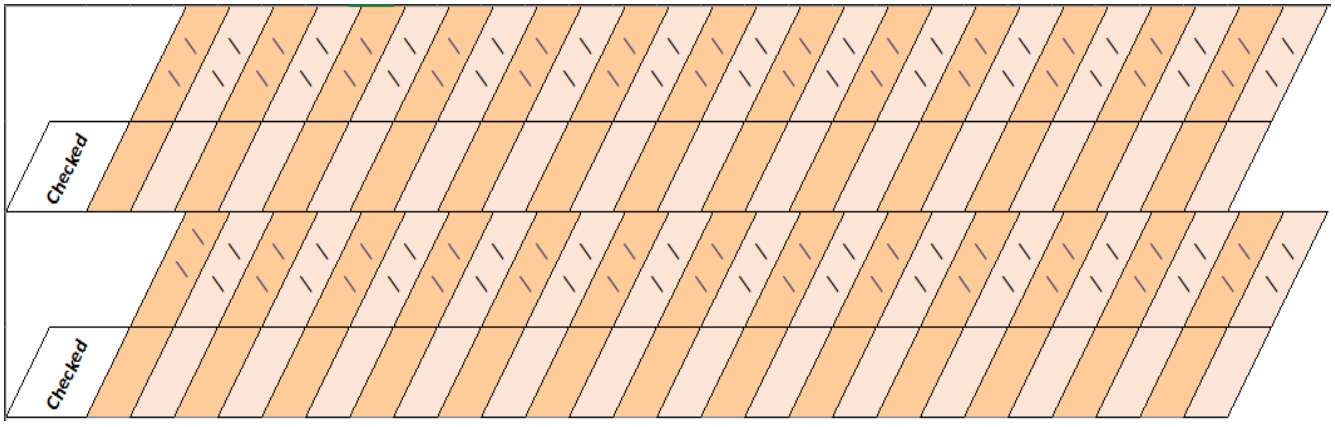
Step Two: Inspect the condition of the belt, using the inspection door if safety compliant, as well as the condition of the cleaner and blades. If the blades are excessively worn or damaged schedule a blade change at the next available opportunity. (See Maintenance – Replacement on pg. 17 for procedure)

Step Three: If necessary, and if plant rules allow, hose any material build-up from the blades and mainframe. Do this through the safety mesh screen.

Step Four: Check the Perma-Torque™ tensioner settings and adjust if necessary. These tensioners are designed to be tensioned once for the duration of a blade's lifetime.

MAINTENANCE – SCHEDULE

After a fresh installation inspection of the Super Eraser™ Primary Belt Cleaning System should occur **every day** for the first **3** days, then **once per week** for the **first month**, and then **monthly** until the next installation period. Use the chart below to help track of inspections.



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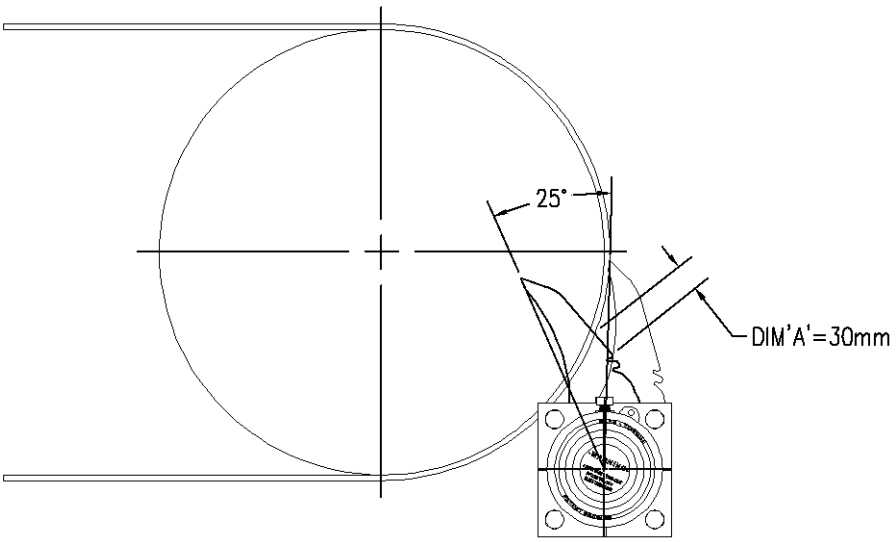
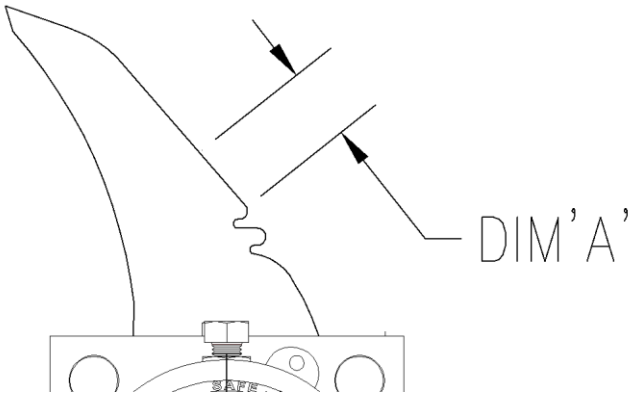
MAINTENANCE – WHEN TO REPLACE





As Per the diagrams above, the blade should be replaced when it has degraded to the point where the system has rotated approximately 25°. To determine whether this distance has been reached use the dimension “A”; which is the distance between the belt and the first indent in the blade. Blade replacement procedures should be scheduled such that the blade is replaced slightly before or just as dimension “A” reaches 30mm.

If the blade has been in operation for some time and is found to no longer be cleaning properly, and a solution cannot be found from the troubleshooting steps from pg. 8, a replacement blade may be required to be installed prior to the designated conditions being met.

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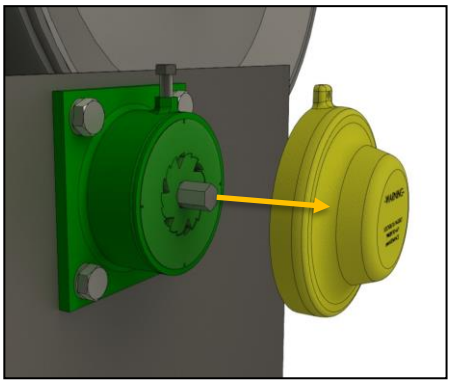
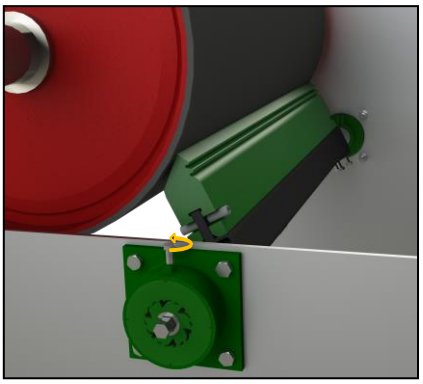
MAINTENANCE – REPLACEMENT

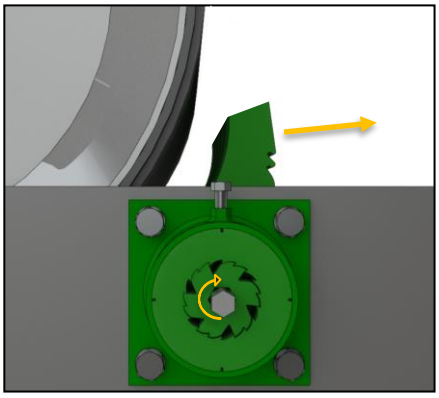
Shut down and lock out conveyor as per steps 1-3 of Maintenance – Inspection.



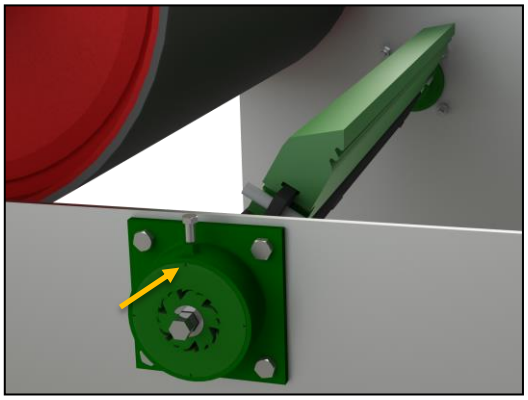
Remove the polyurethane dust caps and safety screen inside inspection door.



Use a ¾" socket wrench to loosen the mounting spool set screw to release the tension. For dual tensioner systems this must be completed on both sides.



Use a 1" socket wrench to back the blades away from the belt.



Tighten the mounting spool set screw when a notch is aligned to lock into one of the four locking positions.

IMPORTANT

Tightening the screw when the notch is not aligned may damage the tensioning system.

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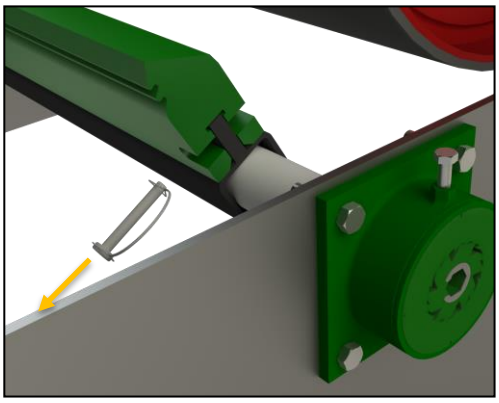
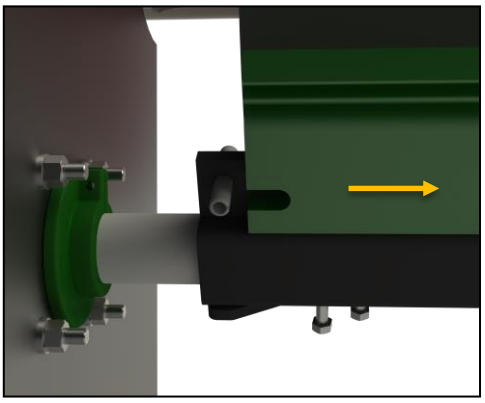
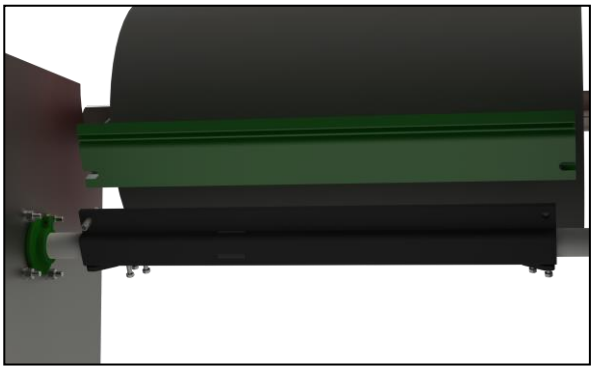
Installation, Operation & Maintenance - Super Eraser™ Primary Belt Cleaning System



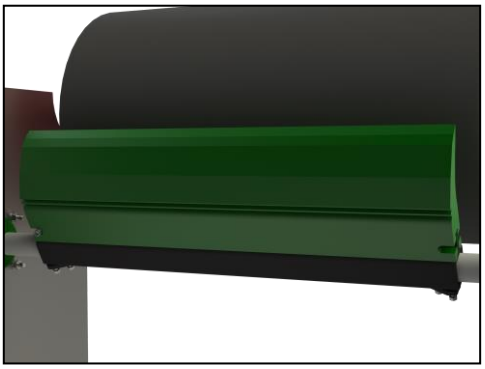
Loosen and remove the safety snap pin.



Slide blade clear of spring pin



Remove the blade from the Super Eraser™ Primary Belt Cleaning System mainframe.



Clean and inspect the blade. If worn excessively or otherwise damaged, replace with new.

Upon completion of replacement resecure the retaining pins, re-tension the system as per the tensioning instructions on pg. 7.

Remove all tools and debris from the belt and replace all access screens and guards.

Remove locks and tags and restart belt. Observe the belt to ensure expected action and effectiveness.

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