IOM – Eraser™ Primary Belt Cleaning System

Kinder Australia product:	Eraser™ Primary Belt Cleaner
Product category:	Conveyor Belt Cleaning System
Issue date:	31.07.20
Revision:	10

SAFE TORQUE™

⚠ WARNING ⚠

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

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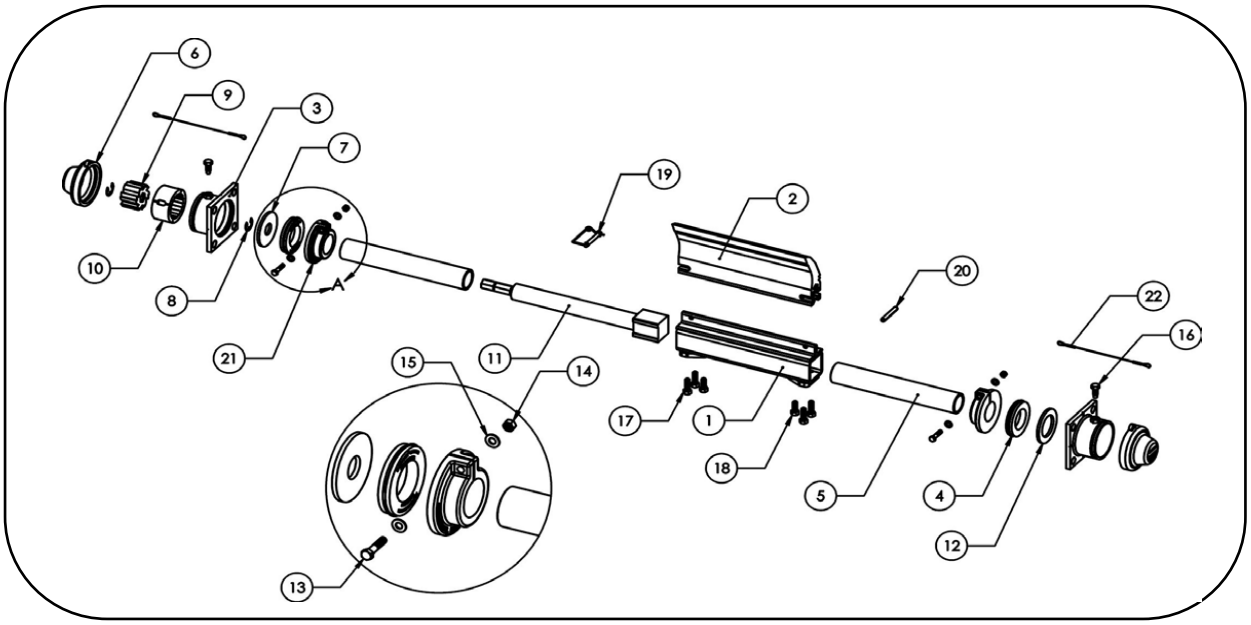
Safe Torque™ Ratchet System – Assembly Breakdown



Number	Part Number	Quantity	Description
1	K-CLE-CP-AR-"XX"A	1	Mainframe
2	K-CLE-CP-RE-"XX"-G83	1	Raptor Blade
3†	K-CLE-CP-AR-30R	2	Standard Ratchet Mounting Spool
4	K-CLE-CP-AR-23-RT-B93	2	Standard Inner Snap Seal
5	K-CLE-CP-AR-12B / CP-AR-22B	2	Stub End / Extended Stub end
6†	K-CLE-CP-AR-52B-Y83	2	Standard Dust Cap
7*†	K-CLE-CP-AR-41F	1	Standard Ratchet Spool Washer
8*†	K-CLE-CP-AR-98407A156	2	Retaining Ring
9*†	K-CLE-CP-AR-22C-G83	1	Standard Inner Ratchet Catch
10*†	K-CLE-CP-AR-32C-G83	1	Standard Outer Ratchet Catch
11*†	K-CLE-CP-AR-1-1375-E-B93 / K-CLE-CP-AR-1-2075-E-B93	1 1	1" Perma-Torque™ Tensioner 1" Extended Perma-Torque™ Tensioner
12*	K-CLE-CP-AR-41F-ST	1	Std. Rat. Spool Washer – Single
13*†	K-FAS-3/8x1.75HEXHD-Z	2	3/8" x 1¾" Long Hex Set Screw Zinc
14†	K-FAS-3/8-NUT-Z	2	3/8" Zinc Plated Steel Nut
15†	K-FAS-3/8-WASHER-Z	4	3/8" Zinc Plated Steel Washer
16	K-FAS-1/2x1.25-HEXHD-Z	2	3/8" x 1¼" Long Hex Set Screw Zinc
17	K-FAS-1/2x1.5-HEXHD-SS	4	Stainless Hex Head Set Screw ½" x 1½"
18	K-FAS-1/2x1.25-HEXHD-SS	2	Stainless
19†	K-CLE-CP-AR-250	1	Safety Snap Pin 3/8" x 2¼"
20	K-CLE-CP-AR-305	1	Spring Pin
21†	K-CLE-CP-AR-LC5-G83	2	Standard Locking Collar
22	K-CLE-CP-AR-120105	2	Wire Rope Lanyard; 12" Long, 3/64" Wire

* Systems 46" and above come standard with dual tensioners and require double of each of the noted parts

† Parts available as fully assembled Perma-Torque™ Tensioner (K-CLE-CP-AR-RK30)

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Installing the Eraser™ Primary Belt Cleaner

Installation Tools Required

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

Bolts, lock washers and nuts for mounting are not supplied

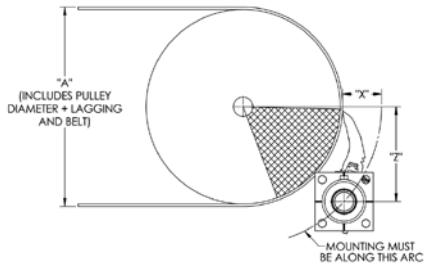
Note:
The Eraser™ Primary Belt Cleaning System is designed to be used on conveyor pulleys of 406mm (16") in diameter and larger. For a pulley smaller than this, we recommend our Micro Eraser™ for proper cleaning of your conveyer system.

Step One: Layout
Note: Shaded areas in Figures 1 and 1a represent acceptable mounting locations. 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

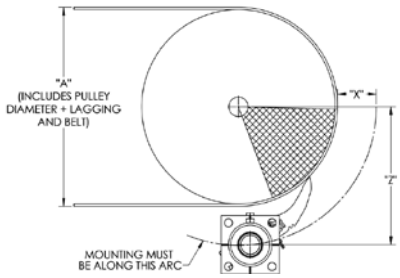
Dia. "A"	"X"	"Z"
406 - 712	102	248 (minimum)
712 & larger	76	248 (minimum)

Figure 1



Note: Z dimension shown at 248mm

Figure 1a

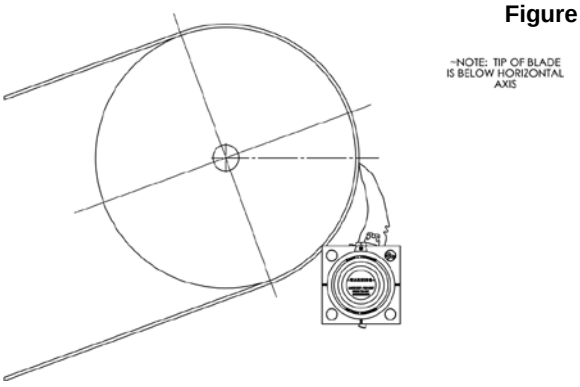


Note: Z dimension shown at 406mm

Inclined belt mounting position

Figure 2 demonstrates the correct mounting location for inclined conveyors. See pages 13-15 for mounting information with inclines and angles.

Figure 2



IMPORTANT
Tip of blade is below horizontal axis.

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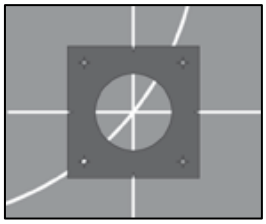
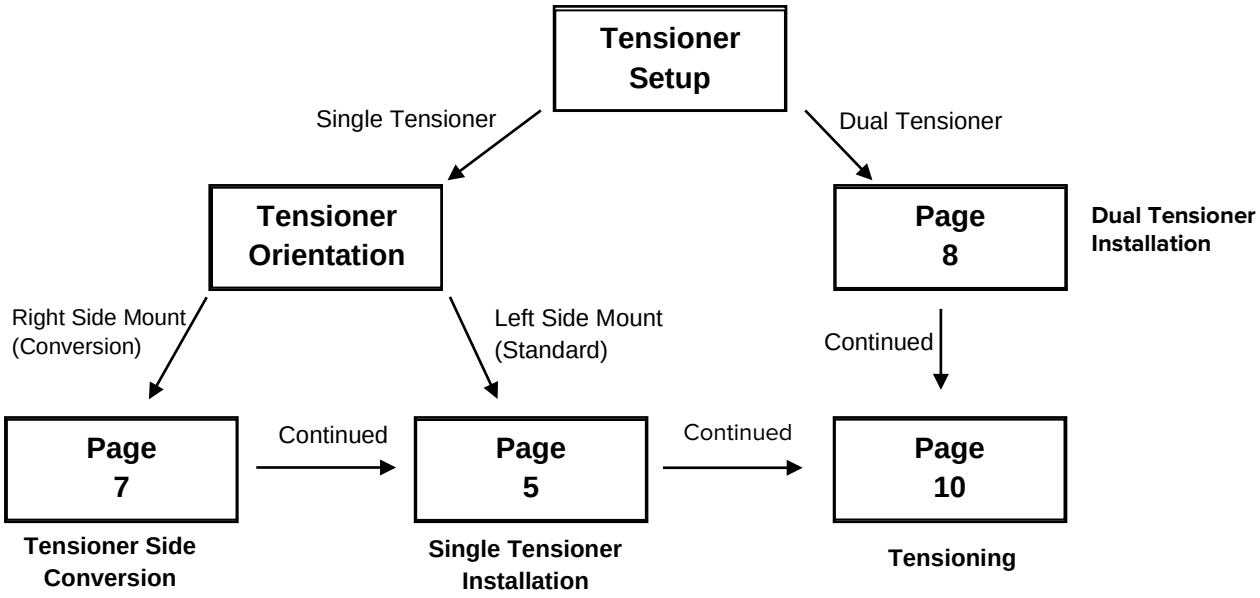
Step Two: Mounting Template

After you have determined the mounting location for your belt cleaning system, align the template (see page 12 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.

Follow the step guide below to determine which instructions to follow.



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INSTALLATION – Single Tensioner – Left Side

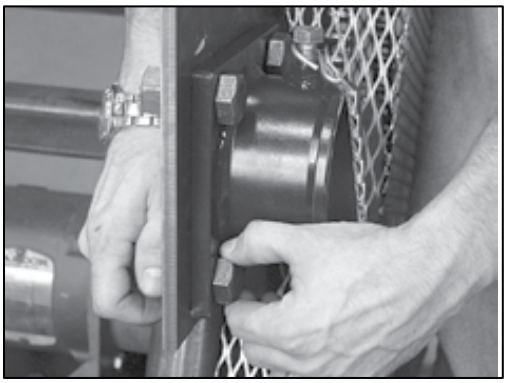
Step Three (A): Mounting systems equipped with a single tensioner

Cut the tensioner hole which was scribed on the mounting structure (your finished hole should be approx. 90mm in diameter)

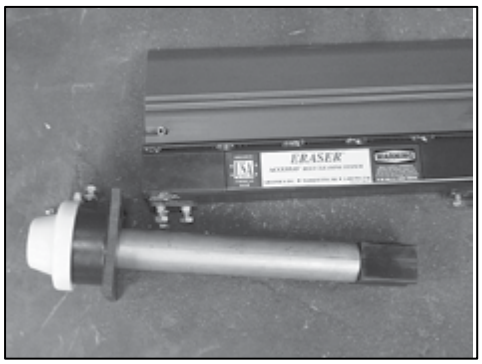
Notes:

• *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.

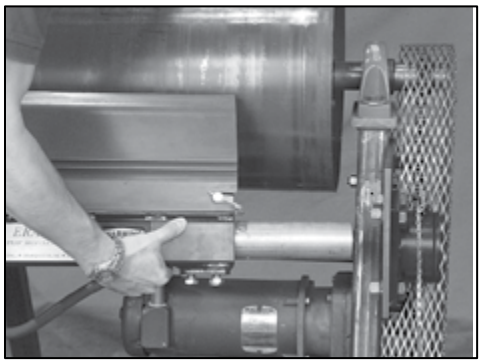
Remove the urethane locking collars from the stub ends.



Remove the mounting spool from the non-tensioner side of the system. Line up the spool the holes in the chute wall, then bolt it into place using four M16 grade 8 bolts and lock washers. You can also choose to stitch weld on the flat sides of the mounting spool.



Using a ½" end wrench, loosen the three setscrews located on the bottom of each end of the mainframe. Remove the entire tension cartridge from the left side of the mainframe.



Lift the mainframe into postion. Insert the stub end into the mounting spool on the non-tensioner side.

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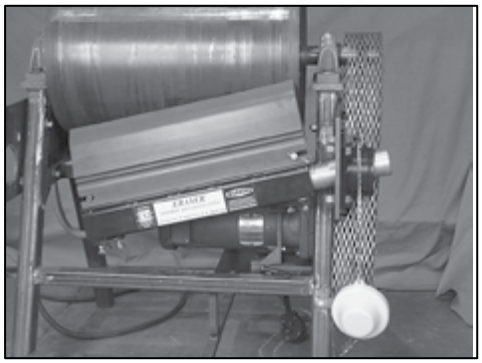
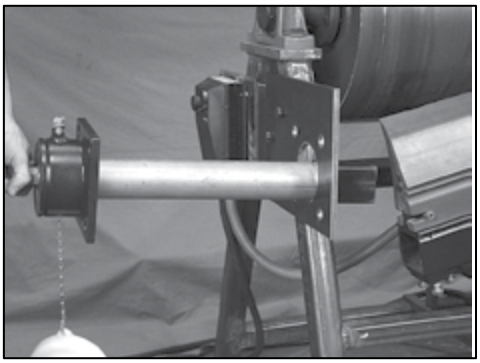
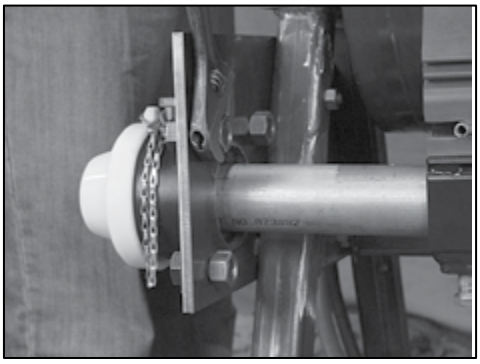


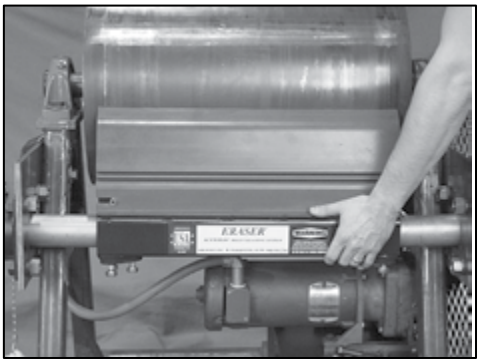
Temporarily retighten the three setscrews to hold the mainframe in place. Then carefully let the system hang in place.



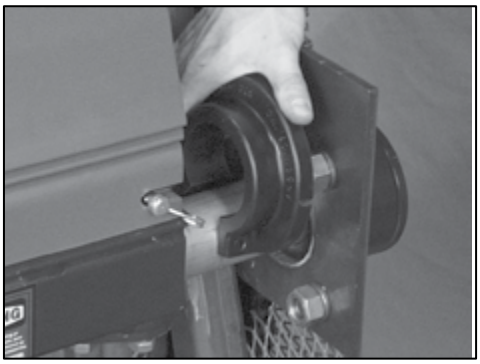
On the other side of the chute, slide the tensioner cartridge through the chute wall and insert it into the mainframe.



Temporarily retighten the setscrew 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 to the belt's material path (dirty area). If the blade is too wide trim it until it is just wider than the material path (see page 16/17 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

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

Proceed to the tensioning instructions on page 10.

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.

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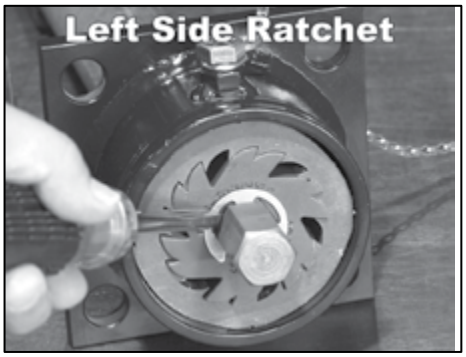
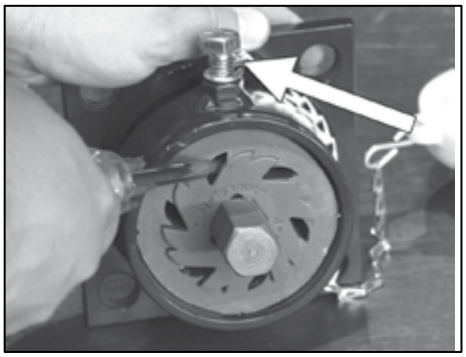
INSTALLATION –Right Side Tensioner Conversion

Tensioner Conversion Instructions

To mount a single tensioned Eraser™ system with the tensioner on the right side instead of the left side, you will need to switch the entire tensioning spool to the other side of the mainframe, as well as the direction that the ratchet gears are oriented. It is recommended that you perform this conversion on the ground before the system is mounted.

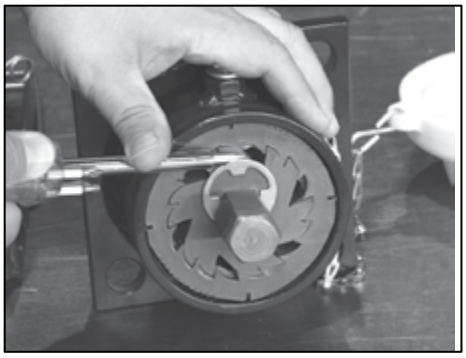


Remove the retainer clip from the hex rod using a flat blade screwdriver. Be sure not to lose the retainer clip.

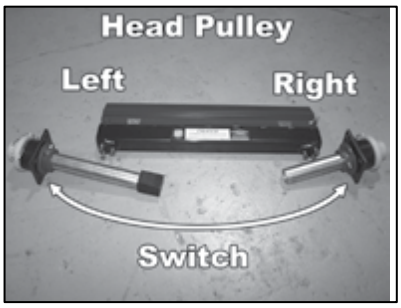


Unscrew the setscrew at the top of the mounting spool and remove both the inner ratchet and outer catch. Make sure you note what direction the gears are pointing.

Flip both the inner ratchet and outer catch so the gear teeth are pointed in the opposite direction and slide both back on to the hex rod.



Align the outer catch notch to the top of the mounting spool, tighten the set screw then re-insert the retaining clip to the outer groove of the hex rod.



Your Eraser™ system comes with the tensioner mounted on the left. You will need to switch the entire mounting spool assembly to the right of the mainframe.

IMPORTANT

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

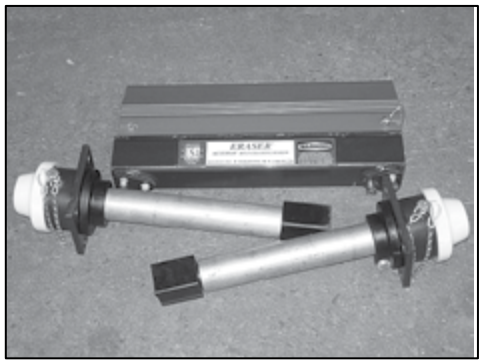
Return to the installation instructions located on page 5.

INSTALLATION – Dual Tensioner

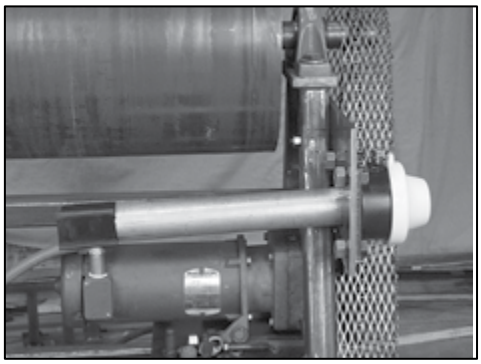
Step Three (B): Mounting systems equipped with a dual tensioner
Cut the tensioner holes which were scribed on the mounting structure (your finished holes should be approx. 90mm in diameter).

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.

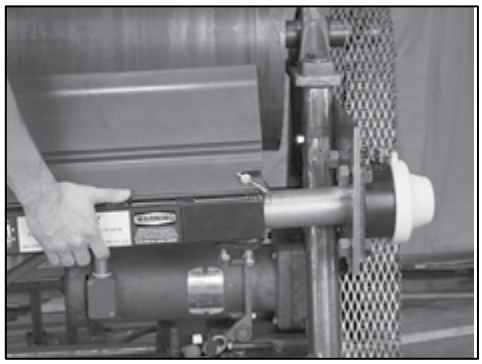
Remove the urethane locking collars from the stub ends.



Remove both tension cartridges from the mainframe.



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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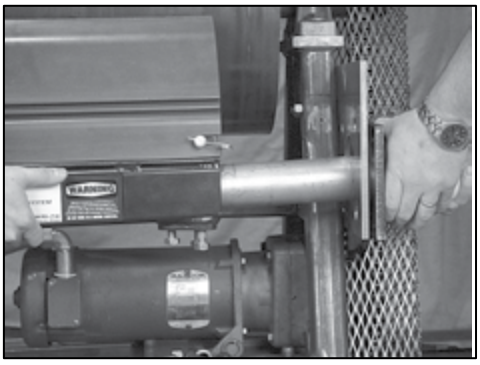
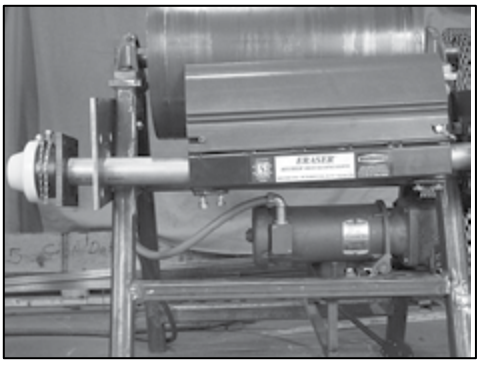
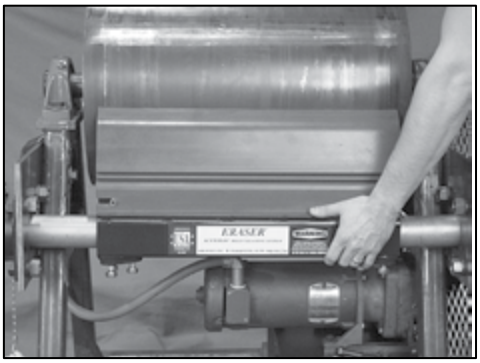


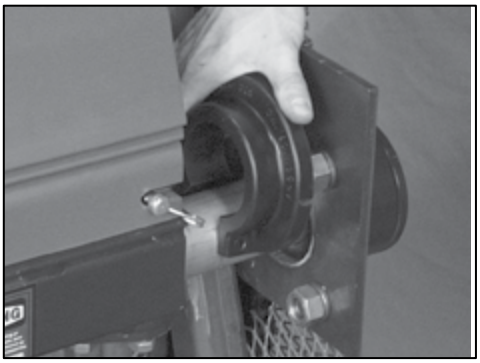
If there is not a lot of room between the chute walls, hold the mainframe in place and slide the tension cartridge into the mainframe. Bolt or weld the mounting spool into position and tighten the setscrews.



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 mainframe and blade to belt material path (dirty area). If blade is too wide trim it until it is just wider than the material path (see page 16/17 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.

Proceed to the tensioning instructions on page 10

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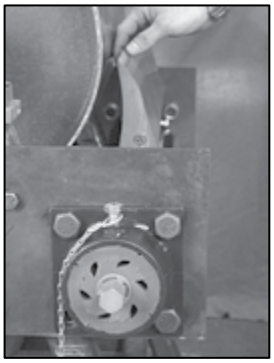
IOM – Eraser™ Primary Belt Cleaning System

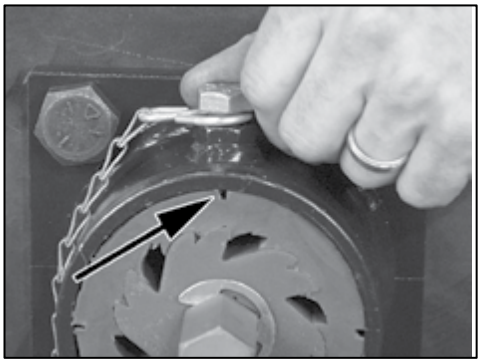
INSTALLATION – Tensioning

Step Four: Tensioning

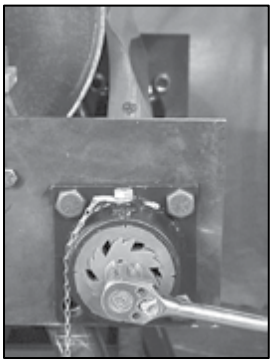
The Eraser™ Primary Belt Cleaning System is equipped with our patented internal Perma-Torque™ tensioner and our Safe Torque™ ratchet system. The Perma-Torque™ is an adjustable elastomeric tensioner. The tensioner may be adjusted from a recommended minimum of 30 Nm of force to a maximum of 105 Nm. Excessive tension could damage the blade as well as the Safe Torque™ ratchet system. Four (4) clicks, or 90° of rotation is recommended for most applications.



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



When notch is aligned, tighten the setscrew. (Arrow indicates the proper notch position)



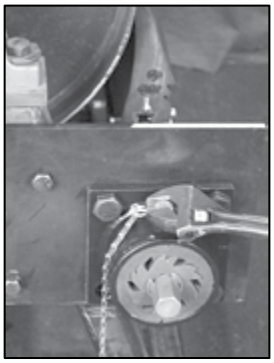
Use a 1” socket wrench on the exposed tensioner hex rod and turn the tensioner up and towards the pulley until the blade contacts the belt. Start tensioning by counting the clicks until you have reached the desired rotation. Four (4) clicks or 90º of rotation is the factory recommended setting. Repeat 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

Blade width (mm)	No. of clicks	Tensioning Force (Nm)	
250-700	4	68	Single Tensioner
725-1150	5	81	
1175-1750	4	68	Dual Tensioner
1775-2700	5	81	
2725-3000	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 blade 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	Replace with shorter blade or cut excess to just outside material path - See page 16 & 17 for details
Vibration or noise	Cleaner at wrong distance	Use table 1 on pg. 3 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 a new blade 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
		Replace with shorter blade (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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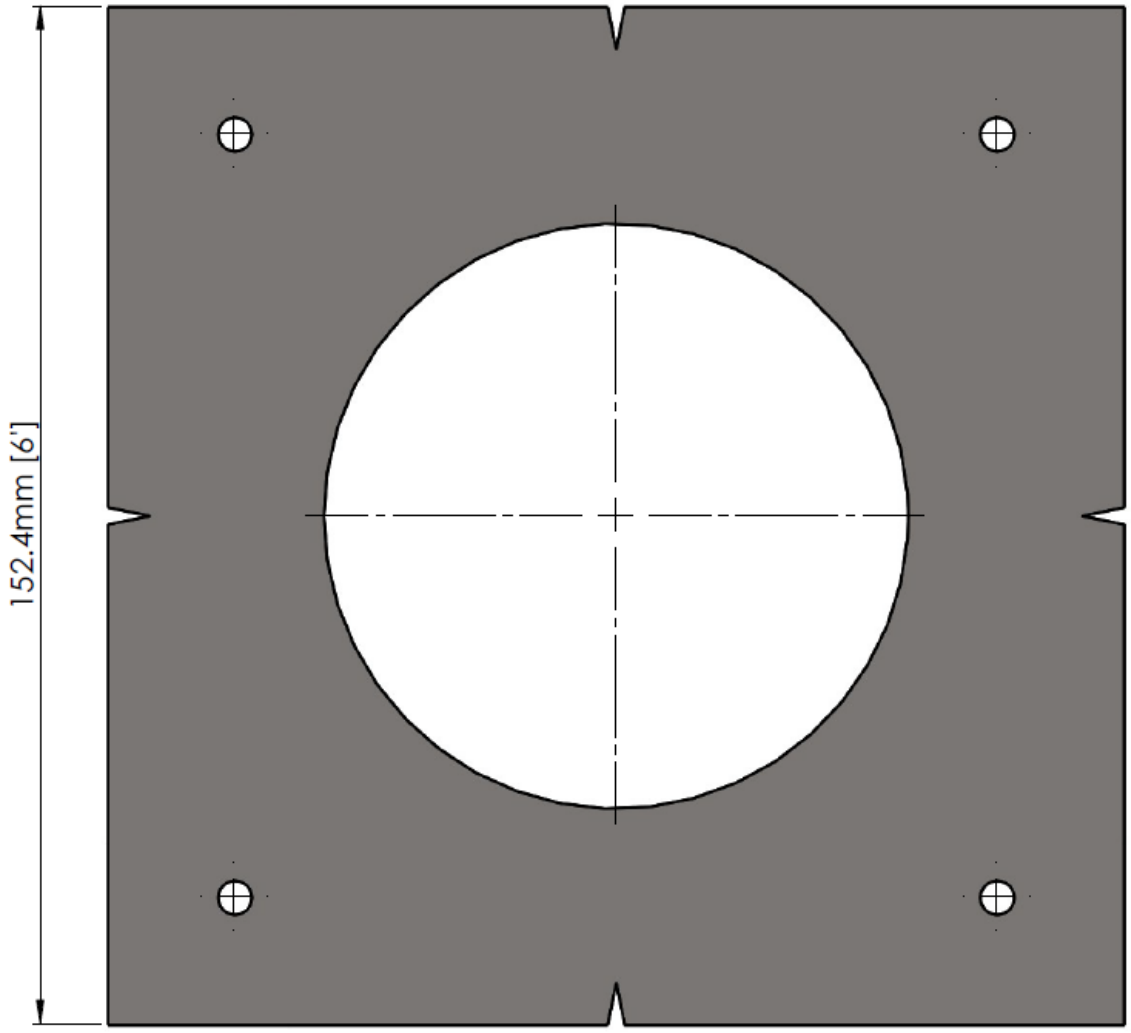
Mounting Template

Transfer the drawing below to cardboard and use as your mounting spool template.



Ensure template is to scale upon printing

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

Fig. 3

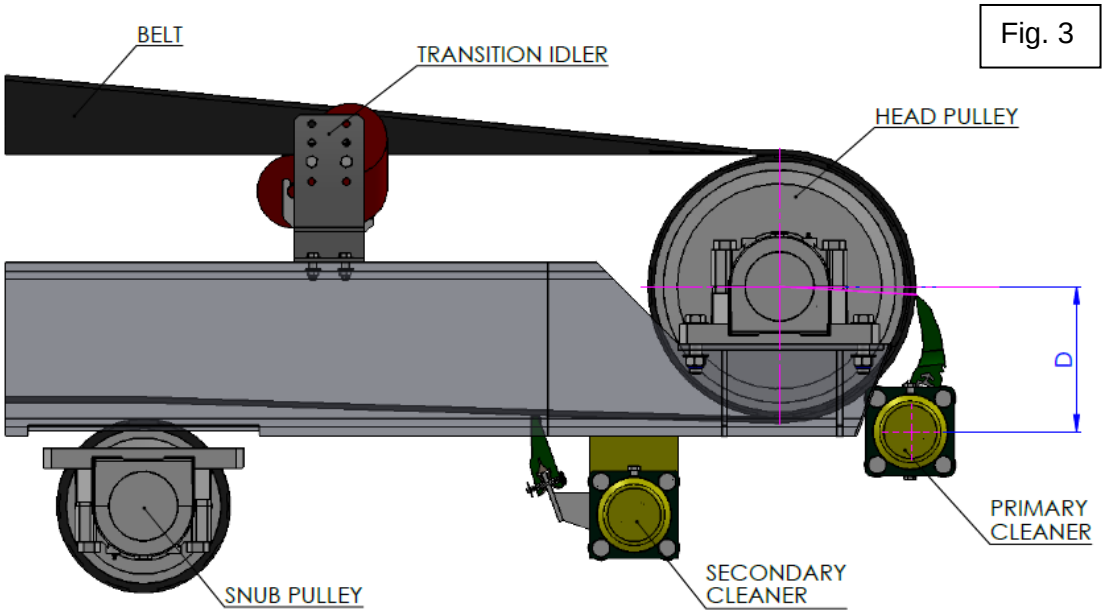
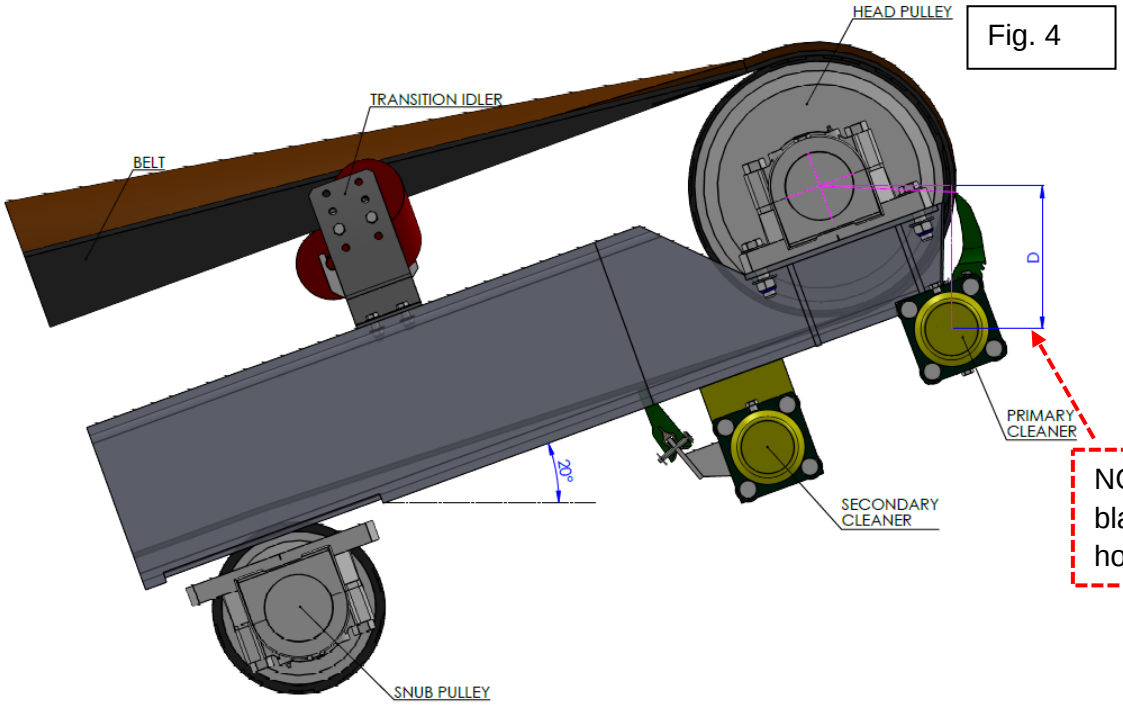


Fig. 4



NOTE: Tip of blade below horizontal

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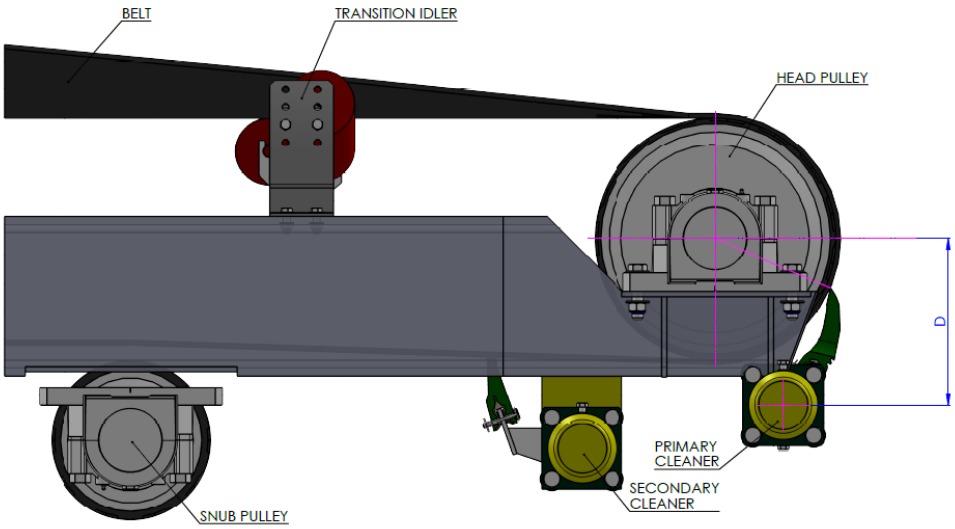

Fig. 5

- 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.

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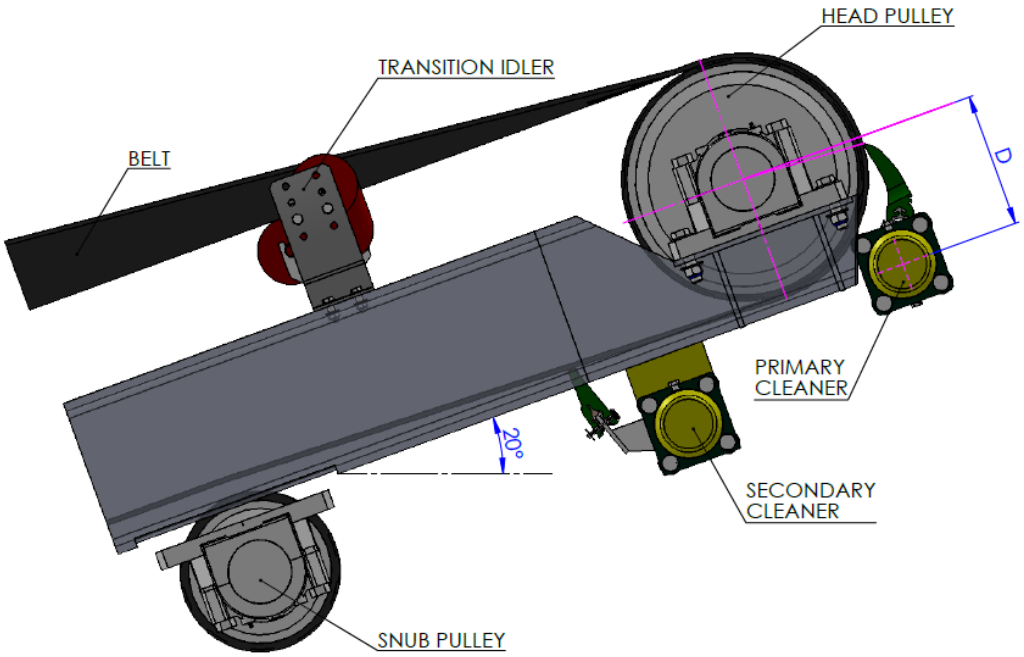

⚠WARNING⚠

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

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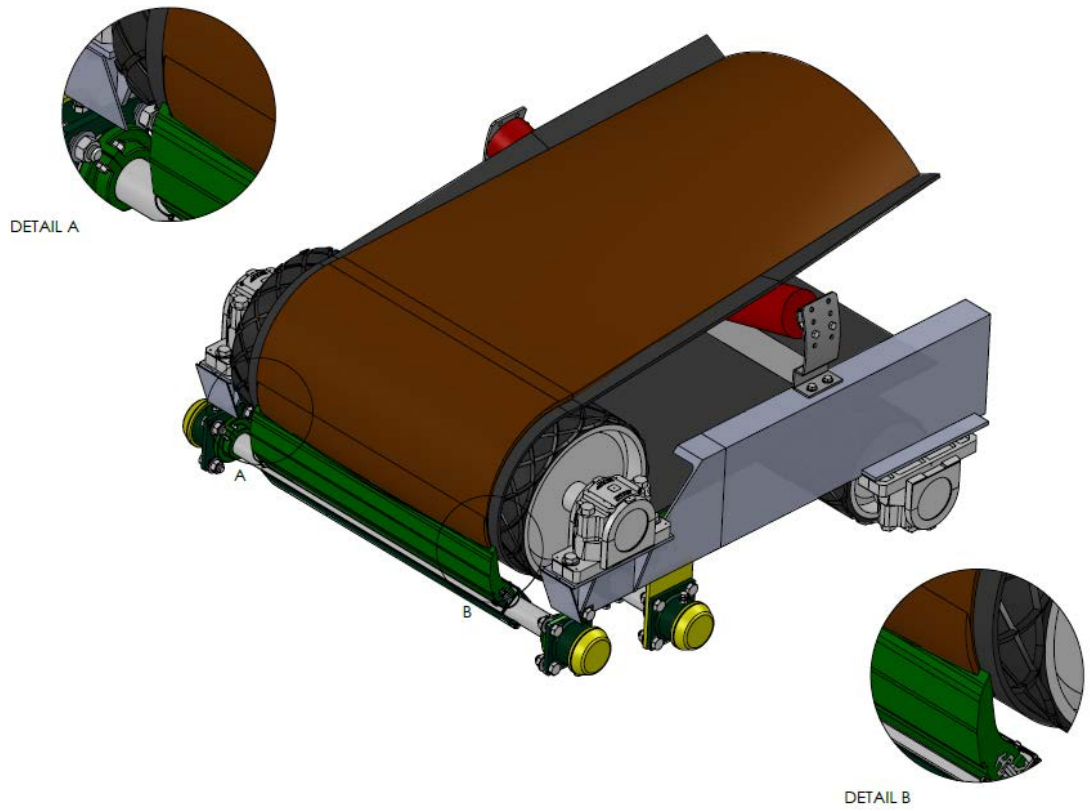

- The figure above shows uneven wear across the blade length cause by the unworn section of the blade preventing the worn section from maintaining contact with the belt.

- To avoid uneven wear, the blade edges should be trimmed to suit just outside the width of the material path (dirty part) of the belt.

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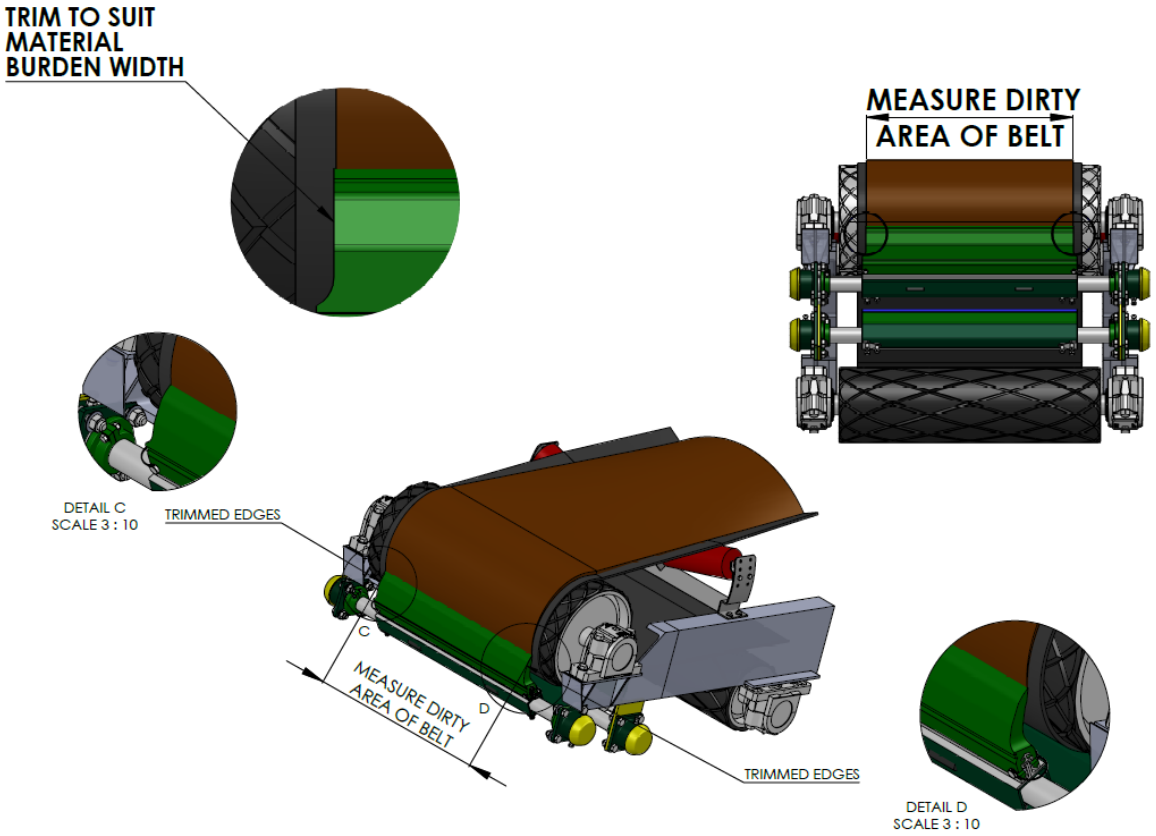

- The above figures show a blade that has been cut to suit the width of the belt. Therefore, the blade tip only contacted the material, increasing its effectiveness and prolonging its life.

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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.

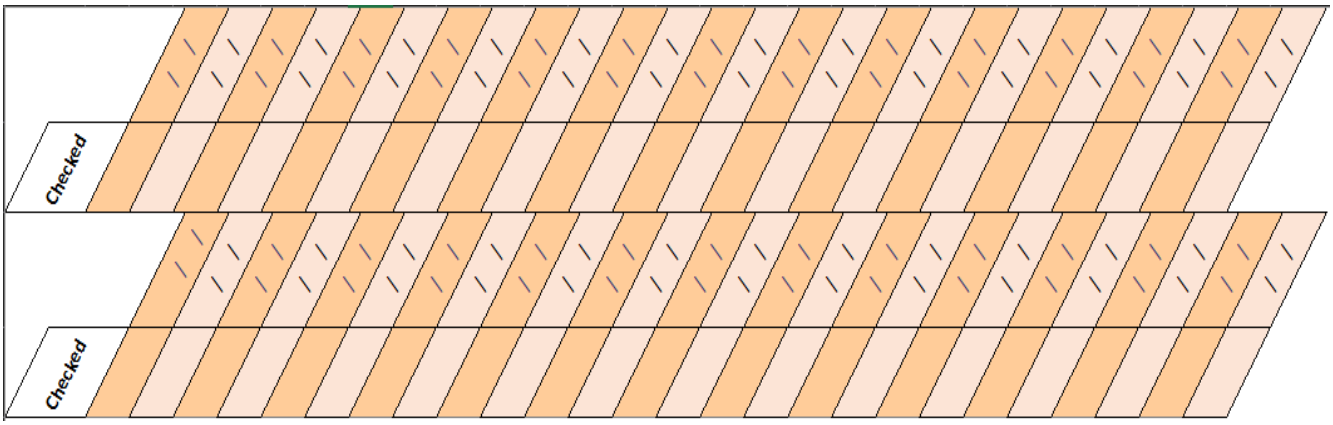
Step Two: Inspect the condition of the belt, using the inspection door if safety compliant, as well as the condition of the cleaner and blades. If the blades are excessively worn or damaged schedule a blade change at the next available opportunity. (See Maintenance – Replacement on pg. 20 for procedure)

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.

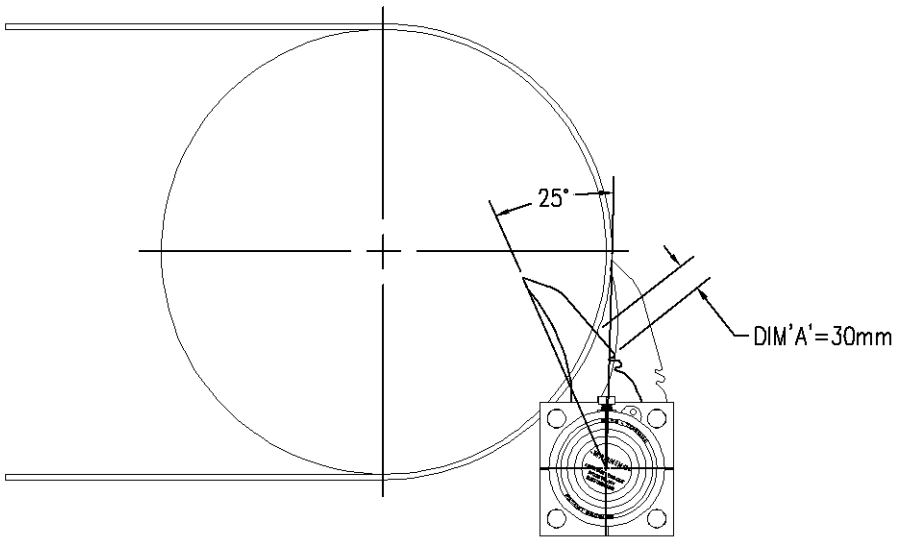
Step Four: Check the Perma-Torque™ tensioner settings and adjust if necessary. These tensioners are designed to be tensioned once for the duration of a blade's lifetime.

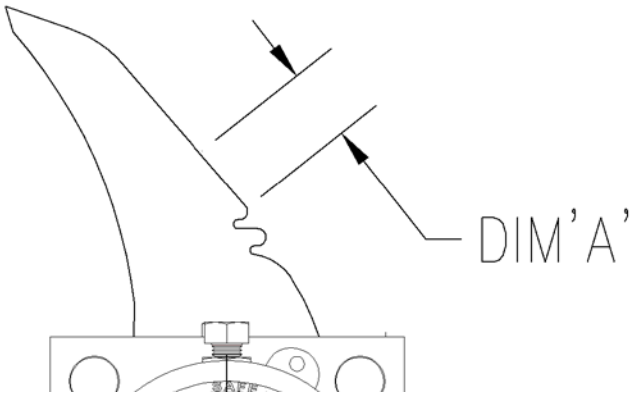
MAINTENANCE – SCHEDULE

After a fresh installation inspection of the 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.



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 page 11, a replacement blade may be required to be installed prior to the designated conditions being met.

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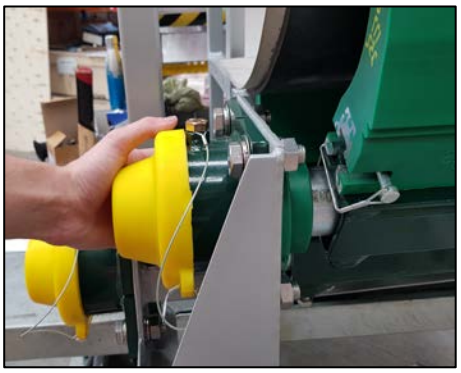
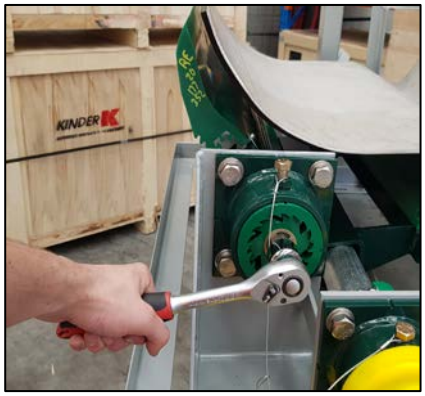
MAINTENANCE – REPLACEMENT

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

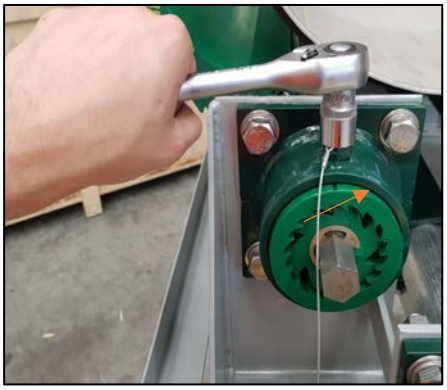


Remove the polyurethane dust caps and safety screen inside inspection door.

Use a ¾" socket wrench to loosen the mounting spool set screw to release the tension.



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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Loosen and remove the safety snap pin

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

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

Upon completion of replacement secure the retaining clips, re-tension the system as per the tensioning instructions on pg. 10.

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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